ANEJO Nº 6. ESTRUCTURAS

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1. Cuadro resumen

ESTRUCTURAS

IDENTIFICACIÓN	LOCALIZACIÓN
PASOS INFERIORES	
PASO INFERIOR 101.1	101+100
PASO INFERIOR 102.1	102+140
PASO INFERIOR BY-PASS 102.5	102+500
PASO INFERIOR 105.9	105+900
PASO INFERIOR 107.0	107+000
PASO INFERIOR 107.9	107+900
PASOS SUPERIORES	
PASO SUPERIOR 101.7	101+700
PASO SUPERIOR 103.7	103+700
PASO SUPERIOR 104.6	104+600

2. Descripción

ESTRUCTURAS

IDENTIFICACIÓN	Localización	Tipología	Aparatos de apoyo	Impermeabilización	Juntas
PASOS INFERIORES					
PASO INFERIOR 101.1	101+100	Boveda triarticulada y aletas prefabricadas	NO DISPONE	Geocompuesto formado por una lámina de polietileno de alta densidad y cubierta con un geotextil	Porexpan
PASO INFERIOR 102.1	102+140	Boveda triarticulada y aletas prefabricadas	NO DISPONE	Geocompuesto	Porexpan
PASO INFERIOR BY-PASS 102.5	102+500	Marco cerrado de muros y vigas prefabricadas en puente losa. Aletas prefabricadas	NO DISPONE (vigas empotradas)	Geocompuesto muros y aletas Tablero impermeabilización asfáltica	Porexpan
PASO INFERIOR 105.9	105+900	Marco cerrado y aletas de hormigón in situ	NO DISPONE	Geocompuesto muros y aletas Tablero impermeabilización asfáltica	Porexpan
PASO INFERIOR 107.0	107+000	Marco cerrado de muros y vigas prefabricadas en puente losa. Aletas prefabricadas	NO DISPONE (vigas empotradas)	Geocompuesto muros y aletas Tablero impermeabilización asfáltica	Porexpan
PASO INFERIOR 107.9	107+900	Marco cerrado de muros y vigas prefabricadas en puente losa. Aletas prefabricadas	NO DISPONE (vigas empotradas)	Geocompuesto muros y aletas Tablero impermeabilización asfáltica	Porexpan
PASOS SUPERIORES					
PASO SUPERIOR 101.7	101+700	Isostático de vigas doble T prefabricadas y losa de compresión	Caucho zunchado	Geocompuesto estribos y aletas	Junta dilatación de caucho de 25 mm recorrido
PASO SUPERIOR 103.7	103+700	Isostático de vigas doble T prefabricadas y losa de compresión Estribos: muros de tierra armada	Caucho zunchado	Geocompuesto estribos y aletas	Junta dilatación de caucho de 25 mm recorrido
PASO SUPERIOR 104.6	104+600	Isostático de vigas doble T prefabricadas y losa de compresión	Caucho zunchado	Geocompuesto estribos y aletas	Junta dilatación de caucho de 50 mm recorrido

3. Definición geométrica

ESTRUCTURAS

IDENTIFICACIÓN	Localización	Tipología	Longitud (m)	Sección (m)	Esviaje	Altura tierras (m)	Nº Vanos Luces (m)	Ancho tablero (m)
PASOS INFERIORES								
PASO INFERIOR 101.1	101+100	Boveda triarticulada y aletas prefabricadas	55	9,5 x 6	41.19	6,5		
PASO INFERIOR 102.1	102+140	Boveda triarticulada y aletas prefabricadas	69	9,5 x 6	---	8,5		
PASO INFERIOR BY-PASS 102.5	102+500	Marco cerrado de muros, aletas y vigas prefabricadas en puente losa	108,5	9,5 x 9,5	76.60	1,0		
PASO INFERIOR 105.9	105+900	Marco cerrado y aletas de hormigón in situ	34,4	7 x 5,8	19.64	5,0		
PASO INFERIOR 107.0	107+000	Marco cerrado de muros, aletas y vigas prefabricadas en puente losa	15	7 x 5,8	5.77	---		
PASO INFERIOR 107.9	107+900	Marco cerrado de muros, aletas y vigas prefabricadas en puente losa	19	8 x 5,8	39.64	---		
PASOS SUPERIORES								
PASO SUPERIOR 101.7	101+700	Isostático de vigas doble T prefabricadas y losa de compresión	43				3 12,95 – 16,90 – 12,95	8,40
PASO SUPERIOR 103.7	103+700	Isostático de vigas doble T prefabricadas y losa de compresión Estribos: muros de tierra armada	43				3 12,95 – 16,90 – 12,95	10,40
PASO SUPERIOR 104.6	104+600	Isostático de vigas doble T prefabricadas y losa de compresión	65,5				3 20,25 – 25,40 – 20,25	8,40

4. Cálculos

4. CÁLCULOS

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2. PASOS INFERIORES

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3. ESTRUCTURA E-20 (M-45)

1. PASOS SUPERIORES

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1. EMPARRILLADO TRIDIMENSIONAL
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4. CÁLCULO DEL TABLERO

4.1. DATOS GENERALES

Ancho total del Tablero: 8,40 m.

Ancho de aceras: 1,15 m.

Esviaje: Recto.

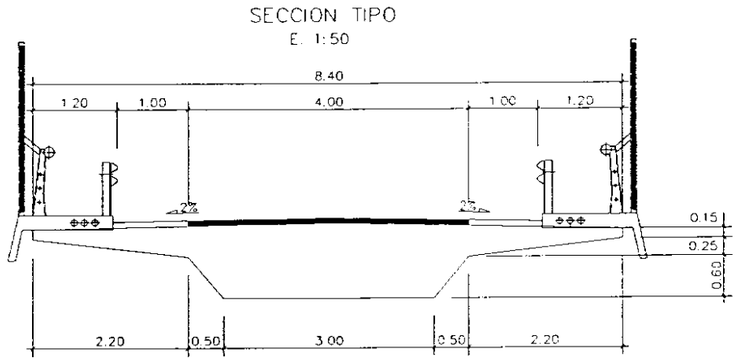
Luz de calculo: 12.75+17.00+12.75 m.

Solución adoptada: Tablero constituido por losa armada de 1,0 m de canto.

4.2. CARGAS

Peso propio

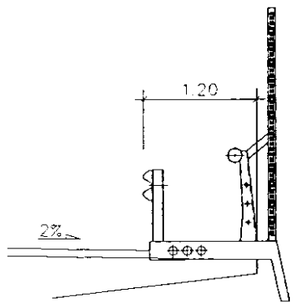
Se ha considerado una densidad para el hormigón de 2,5T/m³



Seccion tipo Area = 5,09 m²

Inercia = 0,437 m⁴

x_{cdg} = 0,62 m



Cargas muertas

Pavimento = 2,3 x 0,07 = 0,16 T/m²

Acera y barandilla = (1,10 . 0,2 . + 0,10 . 0,45 + 0,075 . 0,2).2,5 + 0,1 = 0,8 T/ml

Acciones reológicas

Se han obtenido de la norma EH-91.

Fluencia

$$\varepsilon_t = \varphi_t \frac{\sigma}{E_c}$$

donde

$$\varphi_t = \beta_a(j) + \varphi_{01} \cdot \varphi_{02}(\beta_t - \beta_j) + 0.4\beta'_{t-j}$$

Evaluamos la fluencia a tiempo inf inito

$$e = 1.5.\frac{2 \times 5{,}09.10^6}{17690} = 863{,}2 \text{ mm}$$

$\varphi_{01} = 2$

$\varphi_{02} = 1{,}25$

$\beta_t = 1{,}0$

$\beta_j = 0{,}2$

$\beta_{t-j} = 1{,}0$

$\varphi_\infty = 2{,}4$

Retracción

Del mismo modo la deformación producida por la tracción será

$$\varepsilon_t = \beta_t \varepsilon_{01} \varepsilon_{02}$$

$$\varepsilon_t = -1{,}0.32.10^{-5}.0{,}75 = -24.10^{-5}$$

ACCIONES VARIABLES

Tren de cargas

Sobrecarga uniforme de 0,4 T/m^2

Carro de 60 T

Sobrecarga peatonal 0,4 T/m^2

Frenado y arranque

Frenado = (6 x 0,4 x 42,5 + 60) / 20 = 8,1 T

Valor mínimo indicado por la norma es

Frenado = 2 x 6 = 12,0 < 14,0 T

Por lo que se tomará una carga de frenado de 14,0 T

ACCIONES CLIMATICAS

Viento

Al estar la estructura ubicada en Madrid, la velocidad de referencia es 24 m/s

Vc = Ct . Cr . Cz . Cg . Vref = 1,04 . 0,72 . 1,77 . 24 = 31,9 m/s

Por lo que la presión ejercida por el viento en la estructura es

$$F = C_D \cdot A \cdot (1/2\ \rho \cdot V_c^2) = 0{,}064\ C_D\ A \quad T/m^2$$

Se puede utilizar el método abreviado por las características del paso, por lo tanto.

Fuerza transversal $F = 3,7 \times 1,8 \times 0,166 = 1,1$ T/ml

Momento volcador $M = (0,6 \times 3,7 - 0,62) \times 1,1 = 3,39$ T/ml

Cuando se combine con la sobrecarga se reducirá en un 50% esta acción.

ACCIONES TERMICAS

Variación uniforme de temperatura

Por ser una losa armada, la variación uniforme de temperatura viene dada por:

$$\Delta T = K \cdot z^a \cdot h^b \cdot s^c = 23,89 \cdot 5^{0,292} \cdot 1^{-0,139} \cdot 1^0 = 38,22°$$

Gradiente térmico

Vertical $\Delta T_{SI} = (K_1 - K_2).\Delta T_{SI,ref} = 0,827 \cdot 1,082 \cdot 12,5 = 11,2$ °C/m

Al estar el eje longitudinal de la estructura con alineación Norte-Sur, no hace falta tener en cuenta la variación térmica lateral.

4.3 COMBINACIÓN DE ACCIONES

La combinación de acciones que se ha utilizado es la indicada en la IAP-96

Para obtener la envolvente de esfuerzos en los elementos de la estructura se realizan combinaciones de las distintas acciones antes descritas, contemplándose, en los casos en los que se requiera, hipótesis de alternancia de carga en vanos contiguos.

Combinaciones para el Estado Límite Ultimo

Situaciones persistentes o transitorias

$$\sum \gamma_G \cdot G_{Kj} + \sum \gamma_{Gi} \cdot G_{Kj} + \gamma_{G1} \cdot G_{K1} + \sum \gamma_G \cdot \Psi_{0i} Q_{Kj}$$

Situaciones accidentales

$$\sum \gamma_G \cdot G_{Kj} + \sum \gamma_{Gi} \cdot G_{Kj} + \gamma_{G1} \cdot \Psi_{11} \cdot G_{K1} + \sum \gamma_G \cdot \Psi_{2i} Q_{Kj} + \sum \gamma_A \cdot A_K$$

Combinaciones para el Estado Límite de Servicio

Combinación característica

$$\sum \gamma_G \cdot G_{Kj} + \sum \gamma_{Gi} \cdot G_{Kj} + \gamma_{G1} \cdot G_{K1} + \sum \gamma_G \cdot \Psi_{0i} Q_{Kj}$$

Combinación frecuente

$$\sum \gamma_G \cdot G_{Kj} + \sum \gamma_{Gi} \cdot G_{Kj} + \gamma_{G1} \cdot \Psi_{11} \cdot G_{K1} + \sum \gamma_G \cdot \Psi_{2i} Q_{Kj} + \sum \gamma_A \cdot A_K$$

Combinación casi permanente

$$\sum \gamma_G \cdot G_{Kj} + \sum \gamma_{Gi} \cdot G_{Kj} + \sum \gamma_G \cdot \Psi_{2i} Q_{Kj}$$

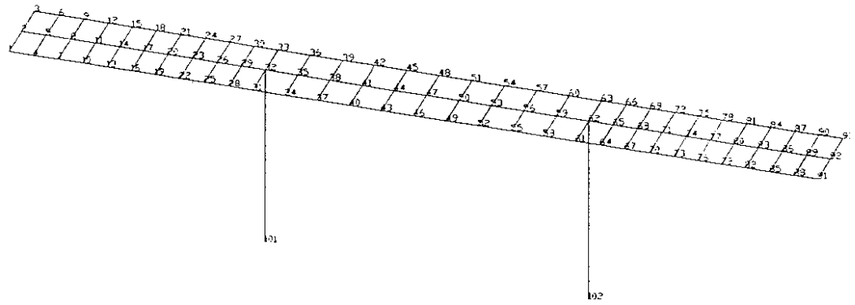
4.4 MODELO UTILIZADO

Se han realizado dos modelos para obtener los esfuerzos que solicitan a la estructura. El primero es un emparrillado tridimensional, en el que se han incluido las pilas, ya que estas están empotradas en el tablero. El segundo modelo es un pórtico espacial.

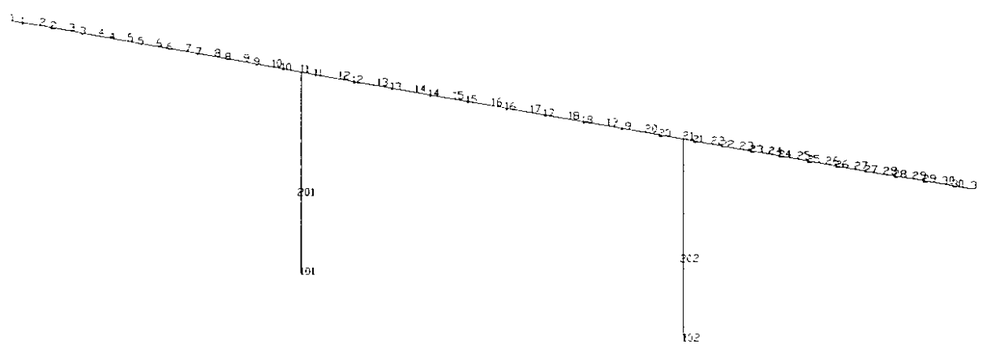
Emparrillado tridimensional.- Se dimensiona la losa según el método de Wood-Armer.
Pórtico tridimensional.- Se dimensiona com una viga a flexión y a torsión.

Se han realizado estos dos modelos con el fin de contrastar los resultados obtenidos.

Se adjunta a continuación un esquema de los modelos utilizados.



Emparrillado tridimensional



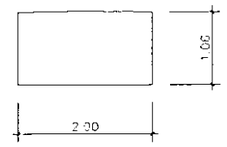
Pórtico tridimensional

En el emparrillado tridimensional, el tablero se ha modelizado con tres barras longitudinales. Las características de dichas barras son las siguientes.

Barras centrales

Area = 2,10 m^2

Inercia = 0,193 + 2,10 . $0,095^2$ = 0,212 m^4



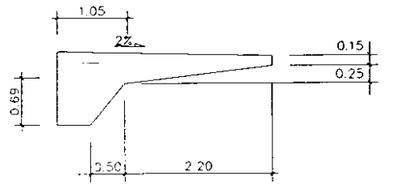
Barras Laterales

Area = 1,495 m^2

Inercia = 0,113 m^4

Excentricidad para el peso propio = 0,05m

Excentricidad de la sobrecarga = 0,55 m



La inercia a torsión de la losa es la de la mayor elipse inscrita, que en este caso será

$$I_T = \frac{\pi}{16}\frac{a^3 b^3}{a^2 + b^2} = \frac{\pi}{16}\frac{3{,}77^3 . 1{,}06^3}{3{,}77^2 + 1{,}06^2} = 0{,}817 m^4$$

La inercia a torsión de la barra central es

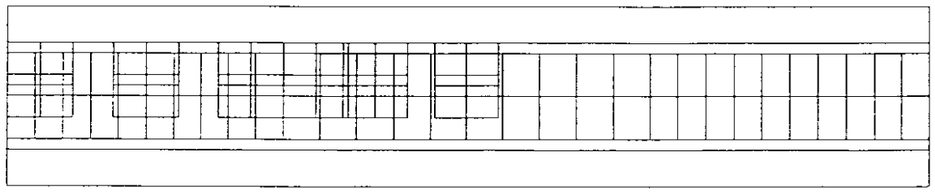
$$I_T = \alpha . b^3 . h = 0{,}224 . 1{,}04^3 . 2 = 0{,}504\ m^4$$

Por lo tanto a las barras laterales les asignaremos

$$I_T = (I_{Total} - I_{central})/2 = 0{,}157\ m^4$$

Barras transversales

Hay cuatro tipos de barras transversales, se adjunta en el listado de las características del modelo las barras consideradas en el cálculo.



4.5. HIPOTESIS CONSIDERADAS

Las hipótesis que se han considerado en el cálculo son las siguientes

1	Peso propio	Se ha discretizado el peso propio en 12 hipótesis, que corresponden a la división de cada vano en cuatro partes.
2	Pavimento	Se han discretizado a su vez también en 12 hipótesis.
3 - 14	Sobrecarga de uso	Se han considerado 12 hipótesis discretizandolo igual que el peso propio.
15 - 26	Carro	Se han considerado 12 posiciones del carro, 6 centradas, y otras seis excéntricas. Se adjunta a continuación un gráfico con las posiciones del carro.
27	Retracción	
28	Térmico	Esta hipótesis se ha considerado positiva y negativa según sea su efecto favorable o desfavorable
29	Gradiente térmico	
30-31	Viento	Esta hipótesis se ha considerado positiva y negativa según sea su efecto favorable o desfavorable
32	Frenado	Esta hipótesis se ha considerado positiva y negativa según sea su efecto favorable o desfavorable

4.6. DIMENSIONAMIENTO A FLEXION

Se ha calculado la armadura del tablero a partir de los esfuerzos obtenidos en el programa de emparrillado tridimensional.

El método de composición de los esfuerzos de flexión y torsión es el desarrollado por Wood-Armer.

También se ha calculado la armadura de torsión y de cortante con el modelo de pórtico espacial, escogiéndose la más desfavorable en ambos casos.

Al final de este anejo se presenta el listado de esfuerzos de ambos modelos.

Se presenta a continuación la armadura obtenida por el método de Wood-Armer.

DATOS DE LAS BARRAS

Barras Longitudinales : Tipo 1
Barras Transversales : Tipo 2

DATOS PARA EL TORSOR

ESFUERZO MINIMO

BARRA	TORSOR i	FLECTOR i	TORSOR j	FLECTOR j	ANCHO	CANTO	TIPO
1	-20.14	17.34	-20.34	5.35	2.000	1.000	1
2	-24.91	36.73	-25.21	22.67	2.000	1.000	1
3	-25.41	52.32	-25.73	32.88	2.000	1.000	1
4	-24.93	60.41	-25.16	35.76	2.000	1.000	1
5	-23.92	67.46	-24.84	46.95	2.000	1.000	1
6	-23.01	101.17	-22.68	50.85	2.000	1.000	1
7	-20.93	62.40	-20.25	41.85	2.000	1.000	1
8	-17.59	44.91	-16.40	13.04	2.000	1.000	1
9	-12.32	16.89	-11.42	-13.43	2.000	1.000	1
10	-10.03	-55.53	-11.96	-87.61	2.000	1.000	1
11	-23.99	-99.85	-24.68	-80.80	2.000	1.000	1
12	-21.04	-53.19	-21.73	-14.70	2.000	1.000	1
13	-14.58	11.96	-16.41	59.11	2.000	1.000	1
14	-10.18	61.73	-13.64	89.18	2.000	1.000	1
15	-7.35	105.76	-11.48	102.91	2.000	1.000	1
16	-6.62	111.72	-8.65	92.10	2.000	1.000	1
17	-5.43	129.37	-7.80	110.18	2.000	1.000	1
18	-4.65	105.39	-7.97	73.15	2.000	1.000	1
19	-3.92	84.61	-7.50	31.15	2.000	1.000	1
20	-8.80	10.23	-12.24	-6.42	2.000	1.000	1
21	-20.58	-62.37	-22.47	-71.06	2.000	1.000	1
22	-24.20	-25.92	-26.08	-34.56	2.000	1.000	1
23	-25.06	-3.39	-26.94	-14.16	2.000	1.000	1
24	-24.77	18.04	-26.65	1.56	2.000	1.000	1
25	-24.83	32.21	-26.71	7.76	2.000	1.000	1
26	-25.54	59.25	-27.39	26.22	2.000	1.000	1
27	-26.50	64.28	-28.38	18.33	2.000	1.000	1
28	-26.61	53.18	-28.48	-5.84	2.000	1.000	1
29	-22.19	27.81	-24.07	-55.05	2.000	1.000	1
30	-9.89	-32.98	-11.77	-6.31	2.000	1.000	1
31	-72.07	12.53	-71.27	56.25	2.000	1.000	1
32	-92.71	74.21	-91.91	133.15	2.000	1.000	1
33	-89.60	141.75	-88.81	191.83	2.000	1.000	1
34	-83.03	128.80	-82.23	143.83	2.000	1.000	1
35	-78.62	144.94	-77.83	145.70	2.000	1.000	1
36	-75.25	136.76	-74.61	121.86	2.000	1.000	1
37	-72.20	110.00	-71.56	78.99	2.000	1.000	1
38	-68.32	71.58	-67.68	22.97	2.000	1.000	1
39	-65.29	42.05	-65.10	-20.03	2.000	1.000	1
40	-74.32	-6.94	-74.73	-112.27	2.000	1.000	1
41	-48.85	-216.17	-47.80	1.92	2.000	1.000	1
42	-44.55	-19.28	-43.49	114.71	2.000	1.000	1
43	-38.68	33.22	-37.62	133.04	2.000	1.000	1
44	-33.56	131.32	-34.62	204.39	2.000	1.000	1
45	-28.09	204.62	-29.15	231.50	2.000	1.000	1
46	-24.47	118.05	-23.41	110.55	2.000	1.000	1
47	-22.29	112.24	-21.43	79.27	2.000	1.000	1

48	-24.35	81.09	-25.20	23.93	2.000	1.000	1
49	-28.66	30.71	-29.56	-62.55	2.000	1.000	1
50	-29.71	-44.32	-30.77	-215.48	2.000	1.000	1
51	-80.14	-191.36	-81.46	-78.31	2.000	1.000	1
52	-71.61	-91.39	-73.44	-25.14	2.000	1.000	1
53	-73.61	-33.31	-75.44	10.21	2.000	1.000	1
54	-76.39	6.48	-78.23	35.61	2.000	1.000	1
55	-78.75	33.90	-80.58	50.70	2.000	1.000	1
56	-81.18	49.50	-81.59	54.17	2.000	1.000	1
57	-80.86	52.51	-81.27	45.51	2.000	1.000	1
58	-76.07	42.29	-76.48	26.57	2.000	1.000	1
59	-60.65	21.19	-61.06	5.36	2.000	1.000	1
60	-29.65	3.01	-30.06	-0.85	2.000	1.000	1
61	-37.84	-29.32	-34.62	83.72	2.000	1.000	1
62	-40.29	32.42	-37.06	110.44	2.000	1.000	1
63	-34.41	67.38	-31.18	134.11	2.000	1.000	1
64	-28.81	56.98	-25.59	97.48	2.000	1.000	1
65	-26.97	59.36	-24.64	80.30	2.000	1.000	1
66	-26.73	34.87	-23.50	55.25	2.000	1.000	1
67	-26.88	24.15	-23.68	28.39	2.000	1.000	1
68	-28.39	-11.55	-25.17	-9.61	2.000	1.000	1
69	-30.19	-53.96	-27.32	-59.57	2.000	1.000	1
70	-26.24	-82.43	-24.43	-63.38	2.000	1.000	1
71	-12.79	-82.29	-8.49	-16.79	2.000	1.000	1
72	-10.12	-22.04	-5.82	63.34	2.000	1.000	1
73	-11.95	45.60	-8.58	105.50	2.000	1.000	1
74	-11.77	104.83	-10.17	160.01	2.000	1.000	1
75	-10.08	142.75	-8.97	177.23	2.000	1.000	1
76	-9.69	111.95	-7.02	89.01	2.000	1.000	1
77	-9.29	99.51	-7.63	47.41	2.000	1.000	1
78	-11.53	65.44	-11.03	8.71	2.000	1.000	1
79	-17.30	-8.28	-17.09	-46.95	2.000	1.000	1
80	-20.74	-66.56	-21.40	-87.70	2.000	1.000	1
81	-11.91	-27.20	-10.58	-17.59	2.000	1.000	1
82	-14.10	-25.99	-14.45	21.77	2.000	1.000	1
83	-19.19	-1.86	-19.61	45.33	2.000	1.000	1
84	-22.18	16.55	-22.60	58.25	2.000	1.000	1
85	-23.49	29.20	-23.91	65.87	2.000	1.000	1
86	-23.43	15.58	-25.24	47.65	2.000	1.000	1
87	-23.25	11.37	-25.09	42.66	2.000	1.000	1
88	-21.36	11.32	-23.20	38.78	2.000	1.000	1
89	-16.91	11.02	-18.75	35.95	2.000	1.000	1
90	-9.52	16.46	-11.36	7.24	2.000	1.000	1
91	-27.21	-35.53	-27.21	63.71	0.637	1.000	2
92	-16.25	-16.25	-16.25	18.85	0.637	1.000	2
93	-46.76	-4.37	-46.76	29.89	1.275	1.000	2
94	-31.21	-0.53	-31.21	4.83	1.275	1.000	2
95	-37.56	3.14	-37.56	0.83	1.275	1.000	2
96	-31.24	1.21	-31.24	2.42	1.275	1.000	2
97	-32.52	0.52	-32.52	-1.82	1.275	1.000	2
98	-30.78	-0.23	-30.78	1.60	1.275	1.000	2
99	-30.72	-0.58	-30.72	-3.18	1.275	1.000	2
100	-29.95	-1.00	-29.95	1.20	1.275	1.000	2
101	-29.66	-1.37	-29.66	-3.41	1.275	1.000	2
102	-28.95	-1.90	-28.95	0.86	1.275	1.000	2
103	-29.31	-2.04	-29.31	-4.71	1.275	1.000	2
104	-27.81	-2.45	-27.81	0.12	1.275	1.000	2
105	-29.36	-2.41	-29.36	-7.92	1.275	1.000	2
106	-25.58	-4.42	-25.58	-1.48	1.275	1.000	2
107	-29.95	-1.10	-29.95	-15.65	1.275	1.000	2
108	-21.46	-11.05	-21.46	-3.54	1.275	1.000	2
109	-30.34	3.93	-30.34	-40.90	1.275	1.000	2
110	-15.44	-29.07	-15.44	-2.95	1.275	1.000	2
111	-25.00	9.18	-25.00	-42.61	1.488	1.000	2
112	-24.64	-92.75	-24.64	12.01	1.488	1.000	2
113	-8.16	-3.97	-8.16	-42.62	1.700	1.000	2
114	-32.74	-54.12	-32.74	-2.54	1.700	1.000	2
115	-12.64	-6.67	-12.64	-17.71	1.700	1.000	2
116	-22.76	-19.21	-22.76	-6.54	1.700	1.000	2
117	-13.82	-4.53	-13.82	-5.79	1.700	1.000	2
118	-17.04	-13.76	-17.04	-4.89	1.700	1.000	2
119	-17.71	-2.92	-17.71	-5.68	1.700	1.000	2
120	-18.50	-9.19	-18.50	-3.63	1.700	1.000	2
121	-19.53	-2.38	-19.53	-6.67	1.700	1.000	2
122	-19.60	-7.33	-19.60	-3.31	1.700	1.000	2
123	-18.98	-2.62	-18.98	-8.00	1.700	1.000	2
124	-19.01	-13.31	-19.01	-0.48	1.700	1.000	2
125	-22.14	-5.71	-22.14	-6.22	1.700	1.000	2
126	-20.11	-13.51	-20.11	-3.51	1.700	1.000	2
127	-29.52	-7.10	-29.52	-16.30	1.700	1.000	2
128	-20.30	-18.95	-20.30	-6.07	1.700	1.000	2
129	-39.47	-1.62	-39.47	-50.04	1.700	1.000	2
130	-17.15	-44.20	-17.15	-2.21	1.700	1.000	2
131	-27.18	11.80	-27.18	-82.62	1.488	1.000	2
132	-34.82	-63.98	-34.82	9.14	1.488	1.000	2
133	-18.88	-3.53	-18.88	-25.86	1.275	1.000	2
134	-33.83	-45.89	-33.83	-1.44	1.275	1.000	2
135	-24.98	-3.44	-24.98	-9.46	1.275	1.000	2
136	-32.78	-20.30	-32.78	-4.76	1.275	1.000	2
137	-28.79	-1.25	-28.79	-3.75	1.275	1.000	2
138	-32.22	-8.90	-32.22	-3.77	1.275	1.000	2
139	-30.75	0.35	-30.75	-2.10	1.275	1.000	2
140	-32.38	-5.64	-32.38	-3.33	1.275	1.000	2
141	-31.76	1.13	-31.76	-1.58	1.275	1.000	2
142	-33.00	-3.84	-33.00	-1.98	1.275	1.000	2
143	-32.20	2.10	-32.20	-1.60	1.275	1.000	2
144	-34.01	-1.15	-34.01	-1.04	1.275	1.000	2
145	-31.35	3.74	-31.35	-1.29	1.275	1.000	2
146	-35.14	3.31	-35.14	-2.27	1.275	1.000	2
147	-27.97	4.84	-27.97	-2.25	1.275	1.000	2
148	-34.31	16.79	-34.31	-7.01	1.275	1.000	2
149	-19.67	7.92	-19.67	-3.01	1.275	1.000	2
150	-22.45	34.63	-22.45	-15.38	1.275	1.000	2
151	-7.45	10.71	-7.45	-6.86	0.637	1.000	2
152	-6.45	20.92	-6.45	-12.24	0.637	1.000	2

DATOS PARA EL TORSOR

ESFUERZO MAXIMO

BARRA	TORSOR i	FLECTOR i	TORSOR j	FLECTOR j	ANCHO	CANTO	TIPO
1	35.52	-27.21	32.30	86.12	2.000	1.000	1
2	36.62	39.37	33.39	107.00	2.000	1.000	1
3	30.45	60.32	27.23	106.82	2.000	1.000	1
4	26.47	74.44	24.18	78.48	2.000	1.000	1
5	24.70	43.15	22.95	66.98	2.000	1.000	1
6	24.27	19.09	22.39	35.85	2.000	1.000	1
7	24.40	6.54	22.53	16.07	2.000	1.000	1
8	25.74	-1.30	23.03	-9.20	2.000	1.000	1
9	26.36	-39.11	23.49	-54.05	2.000	1.000	1
10	21.49	-70.10	19.68	-67.81	2.000	1.000	1
11	10.33	-27.03	6.03	13.25	2.000	1.000	1
12	6.60	-14.91	2.30	47.48	2.000	1.000	1
13	9.05	43.13	5.68	78.51	2.000	1.000	1
14	10.32	91.59	8.72	117.72	2.000	1.000	1
15	12.07	100.53	10.96	125.13	2.000	1.000	1
16	13.58	62.73	10.37	73.88	2.000	1.000	1
17	14.04	89.53	11.53	59.96	2.000	1.000	1
18	17.41	58.96	16.29	15.80	2.000	1.000	1
19	23.38	-13.73	22.69	-48.20	2.000	1.000	1
20	25.56	-78.95	24.87	-92.20	2.000	1.000	1
21	13.22	-80.70	11.88	-13.30	2.000	1.000	1
22	13.48	-17.01	15.08	21.71	2.000	1.000	1
23	18.48	-1.91	20.32	45.30	2.000	1.000	1
24	21.54	16.51	23.38	58.22	2.000	1.000	1
25	23.19	39.06	24.88	65.86	2.000	1.000	1
26	24.30	13.94	25.50	47.66	2.000	1.000	1
27	23.86	7.01	25.17	42.68	2.000	1.000	1
28	22.13	8.72	23.23	38.79	2.000	1.000	1
29	17.76	9.62	18.76	35.96	2.000	1.000	1
30	10.57	12.45	11.36	7.24	2.000	1.000	1
31	61.49	9.53	60.70	41.15	2.000	1.000	1
32	79.38	54.67	78.75	55.45	2.000	1.000	1
33	79.59	59.46	79.18	71.64	2.000	1.000	1
34	77.18	73.22	76.77	73.50	2.000	1.000	1
35	74.49	74.23	74.08	62.25	2.000	1.000	1
36	72.31	63.00	71.89	38.75	2.000	1.000	1
37	69.98	40.45	69.57	3.56	2.000	1.000	1
38	67.20	7.82	66.79	-44.21	2.000	1.000	1
39	65.29	-34.82	65.10	-112.16	2.000	1.000	1
40	74.32	-98.01	74.73	-228.80	2.000	1.000	1
41	33.91	-297.80	32.86	-97.23	2.000	1.000	1
42	34.19	-99.84	33.13	5.22	2.000	1.000	1
43	30.89	86.11	29.83	150.44	2.000	1.000	1
44	30.96	168.16	32.02	202.16	2.000	1.000	1
45	35.42	201.31	36.48	210.16	2.000	1.000	1
46	37.17	210.08	36.11	193.79	2.000	1.000	1
47	37.56	270.07	36.50	198.35	2.000	1.000	1
48	42.87	200.39	43.93	101.61	2.000	1.000	1
49	48.79	110.80	49.84	-25.03	2.000	1.000	1
50	51.12	-3.04	52.18	-234.15	2.000	1.000	1
51	82.53	-91.50	80.70	2.01	2.000	1.000	1
52	73.42	-10.03	72.10	43.04	2.000	1.000	1
53	75.21	36.11	73.89	68.94	2.000	1.000	1
54	77.78	65.82	76.45	84.90	2.000	1.000	1
55	79.58	83.38	78.25	90.28	2.000	1.000	1
56	80.43	89.03	80.84	83.83	2.000	1.000	1
57	80.65	81.91	81.06	65.15	2.000	1.000	1
58	76.16	58.55	76.80	35.51	2.000	1.000	1
59	61.02	28.94	61.66	7.30	2.000	1.000	1
60	29.77	4.43	30.41	-1.03	2.000	1.000	1
61	19.57	16.17	18.35	2.25	2.000	1.000	1
62	24.04	32.73	22.63	15.68	2.000	1.000	1
63	24.56	46.01	22.80	22.05	2.000	1.000	1
64	24.28	52.41	22.44	22.03	2.000	1.000	1
65	23.59	56.59	21.88	24.98	2.000	1.000	1
66	22.68	72.15	20.84	34.58	2.000	1.000	1
67	20.93	62.39	19.09	19.32	2.000	1.000	1
68	17.59	44.90	15.75	-3.44	2.000	1.000	1
69	12.32	16.87	10.48	-32.28	2.000	1.000	1
70	8.84	-13.46	9.31	-50.79	2.000	1.000	1
71	22.04	-73.62	22.73	-73.03	2.000	1.000	1
72	18.90	-49.45	19.59	-25.12	2.000	1.000	1
73	12.74	7.96	14.57	38.96	2.000	1.000	1
74	9.81	50.74	13.27	60.70	2.000	1.000	1
75	9.80	78.18	13.93	62.65	2.000	1.000	1
76	10.59	125.75	12.63	95.45	2.000	1.000	1
77	10.42	161.75	12.99	109.75	2.000	1.000	1
78	9.63	108.70	13.50	45.86	2.000	1.000	1
79	7.40	66.16	11.70	-20.75	2.000	1.000	1
80	10.70	-12.33	14.99	-77.72	2.000	1.000	1
81	24.28	-81.58	27.83	-89.64	2.000	1.000	1
82	25.16	-69.03	29.86	-62.85	2.000	1.000	1
83	24.24	-22.32	28.66	-27.31	2.000	1.000	1
84	24.01	18.08	27.86	-7.44	2.000	1.000	1
85	24.30	32.26	28.06	-0.42	2.000	1.000	1
86	25.88	59.27	27.90	32.14	2.000	1.000	1
87	26.61	64.25	29.00	24.00	2.000	1.000	1
88	26.70	59.14	29.39	-3.05	2.000	1.000	1
89	22.34	31.26	25.02	-57.01	2.000	1.000	1
90	9.90	-32.99	12.32	-6.19	2.000	1.000	1
91	17.57	19.83	17.57	-16.75	0.637	1.000	2
92	29.32	64.55	29.32	-37.85	0.637	1.000	2
93	34.38	4.81	34.38	5.90	1.275	1.000	2
94	51.31	30.30	51.31	-5.70	1.275	1.000	2
95	34.93	-0.00	34.93	2.70	1.275	1.000	2
96	43.06	1.43	43.06	2.63	1.275	1.000	2
97	33.17	-1.06	33.17	-2.00	1.275	1.000	2
98	36.93	-8.99	36.93	2.67	1.275	1.000	2
99	31.79	-1.69	31.79	-2.98	1.275	1.000	2
100	32.86	-6.54	32.86	-1.41	1.275	1.000	2
101	30.33	-1.25	30.33	-4.25	1.275	1.000	2
102	31.47	-6.13	31.47	-2.12	1.275	1.000	2
103	28.89	-1.93	28.89	-4.25	1.275	1.000	2
104	31.09	-9.53	31.09	-3.39	1.275	1.000	2
105	26.02	-3.50	26.02	-6.53	1.275	1.000	2
106	31.07	-14.11	31.07	-4.75	1.275	1.000	2
107	21.47	-3.54	21.47	-11.05	1.275	1.000	2
108	32.64	-25.81	32.64	-4.90	1.275	1.000	2
109	15.44	-2.95	15.44	-29.07	1.275	1.000	2
110	34.69	-52.37	34.69	2.85	1.275	1.000	2
111	27.22	12.15	27.22	-85.22	1.488	1.000	2
112	29.94	-66.22	29.94	10.43	1.488	1.000	2
113	36.78	-2.35	36.78	-48.86	1.700	1.000	2
114	14.42	-42.78	14.42	-2.87	1.700	1.000	2
115	26.66	-7.12	26.66	-15.83	1.700	1.000	2
116	17.75	-18.39	17.75	-6.13	1.700	1.000	2

117	19.51	-6.54	19.51	-10.46	1.700	1.000	2
118	17.59	-9.03	17.59	-2.58	1.700	1.000	2
119	17.61	-6.45	17.61	-6.34	1.700	1.000	2
120	17.78	-12.77	17.78	0.52	1.700	1.000	2
121	13.00	-3.28	13.00	-7.19	1.700	1.000	2
122	12.99	-6.29	12.99	-2.37	1.700	1.000	2
123	11.90	-3.47	11.90	-6.32	1.700	1.000	2
124	12.49	-7.75	12.49	-2.73	1.700	1.000	2
125	10.87	-3.20	10.87	-8.67	1.700	1.000	2
126	12.95	-5.58	12.95	-2.95	1.700	1.000	2
127	11.45	-4.01	11.45	-13.54	1.700	1.000	2
128	19.24	-16.62	19.24	-6.88	1.700	1.000	2
129	10.61	-0.28	10.61	-29.60	1.700	1.000	2
130	29.16	-50.60	29.16	-2.01	1.700	1.000	2
131	28.79	8.66	28.79	-39.08	1.488	1.000	2
132	24.24	-81.01	24.24	9.18	1.488	1.000	2
133	31.46	5.06	31.46	-26.65	1.275	1.000	2
134	18.90	-27.02	18.90	-4.75	1.275	1.000	2
135	32.54	-0.97	32.54	-14.23	1.275	1.000	2
136	24.98	-10.81	24.98	-4.79	1.275	1.000	2
137	32.20	-2.13	32.20	-7.30	1.275	1.000	2
138	28.78	-5.09	28.78	-2.60	1.275	1.000	2
139	32.34	-1.82	32.34	-4.24	1.275	1.000	2
140	30.74	-3.30	30.74	-0.88	1.275	1.000	2
141	32.95	-1.11	32.95	-2.98	1.275	1.000	2
142	31.75	-2.29	31.75	0.42	1.275	1.000	2
143	33.96	-0.82	33.96	-0.83	1.275	1.000	2
144	32.19	-1.81	32.19	1.92	1.275	1.000	2
145	34.86	-1.73	34.86	4.61	1.275	1.000	2
146	31.34	-1.35	31.34	3.69	1.275	1.000	2
147	33.65	-6.25	33.65	16.97	1.275	1.000	2
148	27.76	-0.85	27.76	6.24	1.275	1.000	2
149	22.07	-14.13	22.07	33.48	1.275	1.000	2
150	19.49	-1.47	19.49	9.19	1.275	1.000	2
151	6.41	-11.74	6.41	21.39	0.637	1.000	2
152	7.34	-7.03	7.34	11.32	0.637	1.000	2

DATOS PARA EL FLECTOR

ESFUERZO MINIMO

BARRA	TORSOR i	FLECTOR i	TORSOR j	FLECTOR j	ANCHO	CANTO	TIPO
1	29.52	-21.98	-13.30	5.25	2.000	1.000	1
2	21.29	10.75	-13.85	14.97	2.000	1.000	1
3	13.18	19.70	-10.78	17.19	2.000	1.000	1
4	8.05	21.08	-11.15	12.26	2.000	1.000	1
5	7.78	15.99	-11.04	0.96	2.000	1.000	1
6	8.13	4.46	-10.37	-16.98	2.000	1.000	1
7	9.38	-14.03	-8.72	-41.88	2.000	1.000	1
8	11.86	-40.20	-4.43	-81.45	2.000	1.000	1
9	17.01	-83.61	1.45	-129.62	2.000	1.000	1
10	7.05	-134.74	-0.76	-161.17	2.000	1.000	1
11	-10.10	-155.43	-15.59	-110.76	2.000	1.000	1
12	-8.52	-91.69	-13.19	-33.57	2.000	1.000	1
13	1.50	-28.73	-4.06	7.21	2.000	1.000	1
14	1.87	7.24	-1.20	30.25	2.000	1.000	1
15	2.05	29.00	-0.38	40.48	2.000	1.000	1
16	2.50	38.69	-1.40	37.94	2.000	1.000	1
17	3.27	35.69	-2.03	23.04	2.000	1.000	1
18	7.83	19.13	0.06	-8.59	2.000	1.000	1
19	15.07	-17.77	8.84	-77.81	2.000	1.000	1
20	21.17	-104.05	9.72	-144.79	2.000	1.000	1
21	1.59	-149.39	-13.60	-122.82	2.000	1.000	1
22	0.53	-119.64	-17.18	-77.76	2.000	1.000	1
23	6.17	-76.57	-12.21	-38.85	2.000	1.000	1
24	10.13	-41.08	-9.97	-16.12	2.000	1.000	1
25	11.55	-19.33	-8.91	-1.02	2.000	1.000	1
26	11.91	-4.37	-8.72	7.10	2.000	1.000	1
27	11.45	4.46	-17.83	7.00	2.000	1.000	1
28	10.09	8.18	-23.14	-7.32	2.000	1.000	1
29	7.91	8.01	-21.20	-49.23	2.000	1.000	1
30	-7.68	-30.78	-9.58	-5.10	2.000	1.000	1
31	-14.41	4.82	-25.99	18.32	2.000	1.000	1
32	-19.00	25.15	-34.41	37.96	2.000	1.000	1
33	-35.19	41.08	3.40	44.16	2.000	1.000	1
34	-34.82	45.42	-34.82	36.73	2.000	1.000	1
35	-34.36	37.41	-34.36	16.69	2.000	1.000	1
36	-33.92	17.60	-18.10	-15.15	2.000	1.000	1
37	-17.63	-12.95	-17.63	-58.21	2.000	1.000	1
38	-17.11	-52.58	-17.11	-125.89	2.000	1.000	1
39	-16.91	-110.04	-16.91	-232.32	2.000	1.000	1
40	-19.61	-206.57	-19.61	-434.39	2.000	1.000	1
41	-1.10	-443.78	-1.10	-129.91	2.000	1.000	1
42	-0.87	-160.07	-0.87	-29.27	2.000	1.000	1
43	-0.31	-38.66	-0.31	22.93	2.000	1.000	1
44	0.28	20.41	0.28	59.82	2.000	1.000	1
45	0.80	59.23	0.80	77.47	2.000	1.000	1
46	1.30	77.44	1.30	72.71	2.000	1.000	1
47	1.82	73.22	6.70	46.91	2.000	1.000	1
48	7.31	49.11	15.17	-4.54	2.000	1.000	1
49	15.77	4.47	3.05	-139.53	2.000	1.000	1
50	1.45	-108.57	1.45	-433.48	2.000	1.000	1
51	23.08	-388.91	20.95	-184.91	2.000	1.000	1
52	-17.58	-209.21	17.90	-101.39	2.000	1.000	1
53	20.08	-116.02	-19.78	-50.97	2.000	1.000	1
54	20.19	-56.18	18.61	-16.90	2.000	1.000	1
55	20.30	-19.14	-21.05	7.95	2.000	1.000	1
56	19.70	6.64	37.00	21.81	2.000	1.000	1
57	36.56	20.36	36.56	23.90	2.000	1.000	1
58	34.00	21.34	-3.04	15.56	2.000	1.000	1
59	-2.49	11.37	14.70	2.93	2.000	1.000	1
60	13.23	1.10	0.00	-1.70	2.000	1.000	1
61	-35.02	-26.52	13.15	6.68	2.000	1.000	1
62	-22.90	8.65	12.43	18.16	2.000	1.000	1
63	-18.25	16.89	5.70	20.58	2.000	1.000	1
64	-13.03	18.06	6.17	15.49	2.000	1.000	1
65	-12.72	12.88	6.10	4.14	2.000	1.000	1
66	-13.06	1.31	5.44	-13.83	2.000	1.000	1
67	-14.32	-17.21	3.78	-38.77	2.000	1.000	1
68	-16.85	-43.43	-0.56	-78.43	2.000	1.000	1
69	-22.14	-87.00	-6.57	-126.81	2.000	1.000	1
70	-12.45	-138.47	-4.63	-158.66	2.000	1.000	1
71	4.58	-161.08	17.46	-112.43	2.000	1.000	1
72	10.14	-90.64	14.81	-34.94	2.000	1.000	1
73	0.04	-27.53	5.60	5.92	2.000	1.000	1
74	-0.34	8.48	2.72	28.98	2.000	1.000	1
75	-0.54	30.25	1.90	39.21	2.000	1.000	1
76	-0.99	39.94	2.92	36.68	2.000	1.000	1
77	-1.75	36.95	5.07	21.18	2.000	1.000	1
78	-4.74	20.99	3.89	-11.93	2.000	1.000	1
79	-11.20	-14.52	-2.61	-83.35	2.000	1.000	1
80	-15.51	-99.19	-4.03	-150.69	2.000	1.000	1
81	2.79	-146.44	20.13	-126.75	2.000	1.000	1
82	3.93	-116.39	23.77	-81.41	2.000	1.000	1
83	-1.71	-73.13	18.53	-42.40	2.000	1.000	1
84	-5.36	-37.58	16.32	-19.64	2.000	1.000	1
85	-6.58	-15.80	15.45	-4.59	2.000	1.000	1
86	-6.19	-0.92	14.44	3.38	2.000	1.000	1
87	-6.02	7.71	18.95	3.07	2.000	1.000	1
88	-5.06	10.85	22.39	-8.96	2.000	1.000	1
89	-3.85	8.82	22.18	-51.25	2.000	1.000	1
90	7.39	-32.41	10.08	-5.14	2.000	1.000	1
91	-21.96	-30.05	13.40	-11.95	0.637	1.000	2
92	-12.22	-9.93	26.53	-35.02	0.637	1.000	2
93	-27.73	-4.49	21.35	0.05	1.275	1.000	2
94	-18.91	1.80	39.56	-5.55	1.275	1.000	2
95	13.55	-1.20	1.17	-3.28	1.275	1.000	2
96	-1.16	-3.29	-7.01	-1.09	1.275	1.000	2
97	17.79	-3.72	-4.34	-9.29	1.275	1.000	2
98	16.18	-10.64	-7.93	-2.23	1.275	1.000	2
99	8.39	-6.24	-0.99	-9.49	1.275	1.000	2
100	8.10	-15.98	-2.21	-3.28	1.275	1.000	2
101	1.99	-6.94	-1.18	-9.58	1.275	1.000	2
102	2.96	-15.96	-0.27	-4.30	1.275	1.000	2
103	-2.56	-7.19	-1.62	-11.14	1.275	1.000	2
104	-0.13	-14.84	10.37	-5.75	1.275	1.000	2
105	3.90	-9.31	-4.11	-16.82	1.275	1.000	2
106	12.86	-20.76	12.85	-7.80	1.275	1.000	2
107	-3.23	-10.80	-9.16	-32.52	1.275	1.000	2
108	14.78	-38.89	8.41	-8.58	1.275	1.000	2
109	-8.64	-4.83	-8.81	-67.93	1.275	1.000	2
110	10.56	-75.31	5.41	-3.89	1.275	1.000	2
111	2.84	6.85	3.97	-126.91	1.488	1.000	2
112	-1.06	-138.65	-2.83	6.85	1.488	1.000	2
113	16.75	-9.77	18.94	-72.64	1.700	1.000	2
114	-16.58	-82.35	-15.69	-7.31	1.700	1.000	2
115	4.08	-13.47	7.07	-27.23	1.700	1.000	2
116	-11.07	-33.89	-7.10	-11.04	1.700	1.000	2

117	10.70	-8.85	1.96	-14.76	1.700	1.000	2
118	7.48	-17.26	-7.04	-7.87	1.700	1.000	2
119	5.10	-8.61	1.50	-12.12	1.700	1.000	2
120	4.97	-18.99	-5.23	-5.87	1.700	1.000	2
121	-0.37	-8.91	0.01	-11.68	1.700	1.000	2
122	-0.35	-20.58	0.01	-5.38	1.700	1.000	2
123	-6.88	-8.63	-6.88	-8.63	1.700	1.000	2
124	-6.88	-8.63	-6.88	-8.63	1.700	1.000	2
125	-6.88	-8.63	-6.88	-8.63	1.700	1.000	2
126	-6.88	-8.63	-6.88	-8.63	1.700	1.000	2
127	-6.88	-8.63	-6.88	-8.63	1.700	1.000	2
128	-6.88	-8.63	-6.88	-8.63	1.700	1.000	2
129	-6.88	-8.63	-6.88	-8.63	1.700	1.000	2
130	-6.88	-8.63	-6.88	-8.63	1.700	1.000	2
131	-6.88	-8.63	-6.88	-8.63	1.488	1.000	2
132	-6.88	-8.63	-6.88	-8.63	1.488	1.000	2
133	-6.88	-8.63	-6.88	-8.63	1.275	1.000	2
134	-6.88	-8.63	-6.88	-8.63	1.275	1.000	2
135	-6.88	-8.63	-6.88	-8.63	1.275	1.000	2
136	-6.88	-8.63	-6.88	-8.63	1.275	1.000	2
137	-6.88	-8.63	-6.88	-8.63	1.275	1.000	2
138	-6.88	-8.63	-6.88	-8.63	1.275	1.000	2
139	-6.88	-8.63	-6.88	-8.63	1.275	1.000	2
140	-6.88	-8.63	-6.88	-8.63	1.275	1.000	2
141	-6.88	-8.63	-6.88	-8.63	1.275	1.000	2
142	-6.88	-8.63	-6.88	-8.63	1.275	1.000	2
143	-6.88	-8.63	-6.88	-8.63	1.275	1.000	2
144	-6.88	-8.63	-6.88	-8.63	1.275	1.000	2
145	-6.88	-8.63	-6.88	-8.63	1.275	1.000	2
146	-6.88	-8.63	-6.88	-8.63	1.275	1.000	2
147	-6.88	-8.63	-6.88	-8.63	1.275	1.000	2
148	-6.88	-8.63	-6.88	-8.63	1.275	1.000	2
149	-6.88	-8.63	-6.88	-8.63	1.275	1.000	2
150	-6.88	-8.63	-6.88	-8.63	1.275	1.000	2
151	-6.88	-8.63	-6.88	-8.63	0.637	1.000	2
152	-6.88	-8.63	-6.88	-8.63	0.637	1.000	2

DATOS PARA EL FLECTOR

ESFUERZO MAXIMO

BARRA	TORSOR i	FLECTOR i	TORSOR j	FLECTOR j	ANCHO	CANTO	TIPO
1	-15.11	13.65	24.94	96.40	2.000	1.000	1
2	-0.83	75.92	21.21	124.77	2.000	1.000	1
3	-4.52	115.76	9.50	140.09	2.000	1.000	1
4	-3.23	136.98	6.65	157.76	2.000	1.000	1
5	-3.90	156.10	5.63	148.00	2.000	1.000	1
6	-3.47	146.53	5.75	119.33	2.000	1.000	1
7	-1.81	117.14	12.07	88.40	2.000	1.000	1
8	-4.70	82.99	13.14	62.09	2.000	1.000	1
9	-1.70	51.97	13.79	34.00	2.000	1.000	1
10	12.37	15.60	9.66	14.54	2.000	1.000	1
11	1.70	3.42	-1.33	37.84	2.000	1.000	1
12	-1.49	41.75	-4.03	87.04	2.000	1.000	1
13	-2.00	90.10	-4.21	139.98	2.000	1.000	1
14	-1.91	142.89	-3.52	180.62	2.000	1.000	1
15	1.98	181.31	-2.89	198.66	2.000	1.000	1
16	2.26	199.20	-1.14	181.45	2.000	1.000	1
17	1.78	182.48	4.79	144.99	2.000	1.000	1
18	2.63	143.69	4.38	90.19	2.000	1.000	1
19	4.35	85.66	1.11	42.19	2.000	1.000	1
20	-1.73	41.75	-2.66	12.63	2.000	1.000	1
21	-10.81	26.06	2.25	22.56	2.000	1.000	1
22	-13.28	39.62	5.73	50.46	2.000	1.000	1
23	-13.23	58.53	7.88	70.95	2.000	1.000	1
24	-12.91	75.22	10.71	87.17	2.000	1.000	1
25	-12.51	89.32	11.87	91.78	2.000	1.000	1
26	-12.98	93.25	11.81	86.05	2.000	1.000	1
27	-14.22	87.23	14.03	71.66	2.000	1.000	1
28	-15.44	70.93	13.08	49.22	2.000	1.000	1
29	-13.21	39.79	14.23	27.35	2.000	1.000	1
30	8.29	11.71	8.19	6.29	2.000	1.000	1
31	-0.04	22.05	-0.04	81.63	2.000	1.000	1
32	-0.02	112.89	-0.02	180.46	2.000	1.000	1
33	-0.01	193.42	-0.00	242.26	2.000	1.000	1
34	-21.12	247.13	-0.00	284.98	2.000	1.000	1
35	-0.00	286.64	-0.00	270.31	2.000	1.000	1
36	-0.00	271.69	-1.21	220.22	2.000	1.000	1
37	3.88	221.93	2.33	157.18	2.000	1.000	1
38	3.57	162.14	-0.00	107.65	2.000	1.000	1
39	-5.04	116.91	-0.00	41.76	2.000	1.000	1
40	-0.00	57.32	-0.00	-46.87	2.000	1.000	1
41	-0.00	-54.91	-0.00	96.87	2.000	1.000	1
42	-0.00	78.38	0.12	183.83	2.000	1.000	1
43	-0.01	173.65	-10.69	269.82	2.000	1.000	1
44	-8.59	267.53	-0.01	342.52	2.000	1.000	1
45	-5.18	341.95	-0.01	375.16	2.000	1.000	1
46	-0.00	375.18	6.58	343.15	2.000	1.000	1
47	-0.00	343.75	9.43	272.36	2.000	1.000	1
48	11.54	274.66	11.54	169.87	2.000	1.000	1
49	12.18	179.11	0.06	78.41	2.000	1.000	1
50	0.30	92.47	0.30	-39.03	2.000	1.000	1
51	1.20	-12.66	-0.38	65.22	2.000	1.000	1
52	0.91	53.85	-0.67	103.63	2.000	1.000	1
53	0.80	97.34	-1.05	133.01	2.000	1.000	1
54	0.93	128.85	-1.20	154.22	2.000	1.000	1
55	0.56	152.17	-1.57	158.48	2.000	1.000	1
56	-0.51	156.67	-0.51	144.06	2.000	1.000	1
57	-0.14	141.04	-0.14	110.49	2.000	1.000	1
58	-0.03	104.28	-0.03	61.49	2.000	1.000	1
59	-0.00	51.01	-0.00	12.83	2.000	1.000	1
60	0.00	8.24	13.23	-0.64	2.000	1.000	1
61	14.81	12.22	-24.97	96.49	2.000	1.000	1
62	0.81	75.98	-21.22	124.80	2.000	1.000	1
63	4.51	115.78	-19.10	150.94	2.000	1.000	1
64	3.23	136.98	-13.91	174.65	2.000	1.000	1
65	0.87	166.40	-8.67	157.65	2.000	1.000	1
66	3.77	154.74	-5.45	121.83	2.000	1.000	1
67	3.62	121.41	-16.50	90.68	2.000	1.000	1
68	5.98	84.29	-16.59	68.00	2.000	1.000	1
69	-0.14	54.53	-15.63	39.21	2.000	1.000	1
70	-12.56	19.77	-12.74	19.49	2.000	1.000	1
71	-0.59	6.53	-0.57	43.38	2.000	1.000	1
72	1.84	45.87	4.39	89.25	2.000	1.000	1
73	3.99	94.69	0.69	143.54	2.000	1.000	1
74	-0.68	141.30	-1.54	190.87	2.000	1.000	1
75	-3.87	185.04	1.00	208.09	2.000	1.000	1
76	0.07	208.99	3.46	184.82	2.000	1.000	1
77	2.60	192.38	-1.94	143.18	2.000	1.000	1
78	1.14	147.46	-0.86	87.27	2.000	1.000	1
79	-0.65	88.85	-0.27	41.41	2.000	1.000	1

80	2.38	42.44	3.31	11.86	2.000	1.000	1
81	10.59	26.57	-0.90	22.04	2.000	1.000	1
82	13.27	40.17	-4.17	49.95	2.000	1.000	1
83	13.29	59.09	-5.97	70.44	2.000	1.000	1
84	12.81	75.81	-8.69	86.65	2.000	1.000	1
85	12.69	89.93	-9.57	91.21	2.000	1.000	1
86	14.22	93.80	-10.57	85.42	2.000	1.000	1
87	15.17	87.71	-12.25	70.81	2.000	1.000	1
88	16.26	71.33	-11.24	47.78	2.000	1.000	1
89	13.85	39.91	-14.75	26.99	2.000	1.000	1
90	-7.54	11.52	-8.80	6.18	2.000	1.000	1
91	13.42	15.45	-21.96	61.88	0.637	1.000	2
92	26.53	63.44	-12.22	14.83	0.637	1.000	2
93	23.06	5.76	-31.68	35.00	1.275	1.000	2
94	31.68	35.00	-23.06	5.76	1.275	1.000	2
95	-7.01	4.76	-19.71	6.91	1.275	1.000	2
96	19.71	6.91	7.02	4.78	1.275	1.000	2
97	8.93	2.23	19.79	0.60	1.275	1.000	2
98	-15.70	-0.02	14.18	3.35	1.275	1.000	2
99	24.62	1.55	14.04	-0.10	1.275	1.000	2
100	-24.62	-1.31	2.46	3.96	1.275	1.000	2
101	24.11	1.03	9.62	-1.26	1.275	1.000	2
102	-24.11	-1.84	-4.68	2.32	1.275	1.000	2
103	23.18	0.21	23.18	-2.55	1.275	1.000	2
104	-23.18	-2.55	-23.18	0.21	1.275	1.000	2
105	21.37	-1.30	21.37	-4.63	1.275	1.000	2
106	-21.37	-4.63	-21.37	-1.30	1.275	1.000	2
107	-25.64	-1.15	9.46	-11.07	1.275	1.000	2
108	-9.46	-11.07	21.37	-0.93	1.275	1.000	2
109	-25.15	5.25	-24.64	-21.26	1.275	1.000	2
110	24.64	-21.26	18.97	6.00	1.275	1.000	2
111	-0.04	17.38	-16.75	-12.54	1.488	1.000	2
112	16.76	-12.54	2.50	21.05	1.488	1.000	2
113	2.54	3.89	3.69	-24.41	1.700	1.000	2
114	-3.69	-24.41	-7.16	4.39	1.700	1.000	2
115	4.67	-2.77	4.67	-8.86	1.700	1.000	2
116	-4.67	-8.86	-6.65	-2.46	1.700	1.000	2
117	0.87	0.02	0.87	-3.57	1.700	1.000	2
118	-0.86	-3.57	-0.86	0.02	1.700	1.000	2
119	-0.77	1.22	2.42	-2.51	1.700	1.000	2
120	0.77	-2.60	5.49	1.54	1.700	1.000	2
121	-1.82	1.49	-0.91	-1.77	1.700	1.000	2
122	1.82	-2.45	0.18	2.85	1.700	1.000	2
123	-2.86	1.22	2.00	-3.15	1.700	1.000	2
124	0.00	8.15	2.00	2.96	1.700	1.000	2
125	0.00	-2.48	2.00	-3.46	1.700	1.000	2
126	0.00	5.22	2.00	3.46	1.700	1.000	2
127	0.00	-8.07	2.00	-8.32	1.700	1.000	2
128	0.00	8.68	2.00	8.68	1.700	1.000	2
129	0.00	-24.26	2.00	-33.67	1.700	1.000	2
130	0.00	33.75	2.00	24.30	1.700	1.000	2
131	0.00	-26.79	2.00	-65.91	1.488	1.000	2
132	0.00	66.83	2.00	26.85	1.488	1.000	2
133	0.00	-19.72	2.00	-28.31	1.275	1.000	2
134	0.00	28.29	2.00	19.69	1.275	1.000	2
135	0.00	-8.63	2.00	-10.18	1.275	1.000	2
136	0.00	10.12	2.00	8.58	1.275	1.000	2
137	0.00	-4.03	2.00	-4.06	1.275	1.000	2
138	0.00	4.01	2.00	3.99	1.275	1.000	2
139	0.00	-2.54	2.00	-2.57	1.275	1.000	2
140	0.00	2.50	2.00	2.47	1.275	1.000	2
141	0.00	-2.35	2.00	-2.43	1.275	1.000	2
142	0.00	2.38	2.00	2.29	1.275	1.000	2
143	0.00	-1.87	2.00	-2.35	1.275	1.000	2
144	0.00	2.23	2.00	1.75	1.275	1.000	2
145	0.00	1.16	2.00	-2.07	1.275	1.000	2
146	0.00	1.59	2.00	-1.64	1.275	1.000	2
147	0.00	9.59	2.00	-2.09	1.275	1.000	2
148	0.00	1.58	2.00	-10.03	1.275	1.000	2
149	0.00	24.77	2.00	-2.39	1.275	1.000	2
150	0.00	2.81	2.00	-24.07	1.275	1.000	2
151	0.00	16.02	2.00	-7.25	0.637	1.000	2
152	0.00	7.49	2.00	-15.82	0.637	1.000	2

ARMADURA DE WOOD PARA EL MAXIMO TORSOR
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ESFUERZO MINIMO

Características de los materiales

Resistencia de cálculo del hormigón : 2000.00 t/m2
Resistencia de cálculo del acero : 4.435 t/cm2
Recubrimiento mecánico de las armaduras : 4.000 cm

El armado se realiza perpendicular a la dirección de las barras longitudinales

Armadura deducida del cálculo según el método de Wood y Armer en cm2/m

	CARA SUPERIOR		CARA INFERIOR	
Nudo	Longitudinal	Transversal	Longitudinal	Transversal
1	4.18	19.74	5.00	0.00
2	3.44	0.00	8.98	19.06
3	7.08	4.05	0.13	3.13
4	1.86	10.44	5.63	0.00
5	0.00	3.05	14.88	10.38
6	0.00	2.92	10.46	2.41
7	1.39	6.65	10.32	5.02
8	0.00	2.28	25.00	10.09
9	0.00	1.18	14.08	3.36
10	0.00	3.59	9.95	4.29
11	0.00	2.75	26.91	7.36
12	0.00	1.83	14.76	2.44
13	0.00	3.40	11.10	5.51
14	0.00	3.89	24.81	6.34
15	0.00	1.42	12.32	2.45
16	0.00	1.89	13.18	4.53
17	0.00	3.19	24.22	6.74
18	0.00	4.13	10.44	1.30
19	0.00	2.66	11.07	4.39
20	0.00	4.61	20.61	5.06
21	0.00	2.63	7.61	2.05
22	0.00	3.11	9.14	3.92
23	0.00	5.36	16.03	6.98
24	3.28	11.32	3.62	0.00
25	1.92	3.80	5.46	3.58
26	2.10	9.36	9.84	2.57
27	6.59	3.13	0.00	1.81
28	7.50	3.59	0.00	2.66
29	8.21	5.54	4.99	7.65
30	12.23	17.10	0.00	0.00
31	15.06	4.06	0.00	1.05
32	26.46	11.90	0.00	0.00
33	12.58	2.40	0.00	3.18
34	12.04	4.38	0.00	1.70
35	5.97	5.19	3.91	4.69
36	4.59	7.11	0.00	0.00
37	3.94	4.16	3.62	3.40
38	0.00	7.99	14.24	0.66
39	0.00	2.34	10.15	3.39
40	0.00	2.03	10.57	2.90
41	0.00	1.63	20.53	4.24
42	0.00	2.43	15.53	1.16
43	0.00	1.41	15.03	2.89
44	0.00	3.53	29.74	2.11
45	0.00	1.61	21.95	2.75
46	0.00	1.48	15.78	2.08
47	0.00	1.06	25.35	3.84
48	0.00	1.29	20.67	2.52
49	0.00	0.98	16.49	2.98
50	0.00	3.63	17.65	1.95
51	0.00	1.77	14.77	2.76
52	0.00	2.48	15.27	0.31
53	0.00	1.79	13.37	3.47
54	0.00	2.13	10.14	3.02
55	0.00	0.34	12.59	3.89
56	1.26	8.85	7.75	0.18
57	3.81	4.45	3.86	3.21
58	0.00	6.90	3.12	0.00
59	10.31	4.10	0.00	2.28
60	10.84	4.35	0.00	2.16
61	7.03	1.49	0.00	3.60
62	30.74	9.59	0.00	0.00
63	10.90	4.40	0.00	2.03
64	9.11	18.35	0.00	0.00
65	17.26	5.85	0.00	6.03
66	6.30	4.00	1.13	3.41
67	4.32	2.62	0.00	1.37
68	9.71	9.32	2.74	3.13
69	2.96	4.33	5.32	3.95
70	3.57	11.41	2.14	0.00
71	6.10	6.92	8.09	7.26
72	0.48	4.37	7.82	3.89
73	0.40	3.32	4.39	1.47
74	2.59	7.65	10.88	5.78
75	0.00	4.54	9.84	4.19
76	0.00	5.14	7.10	0.45
77	0.94	6.88	12.90	6.87
78	0.00	3.72	8.84	3.57
79	0.00	1.84	7.92	1.91
80	0.56	5.72	13.29	8.05
81	1.12	5.92	8.13	3.30
82	0.00	3.77	7.05	0.89
83	0.96	5.76	11.42	6.56
84	0.01	3.75	6.39	2.63
85	1.42	3.13	4.02	2.31
86	2.88	2.88	8.56	8.55
87	0.32	6.12	6.21	0.41
88	7.51	3.56	0.00	0.00
89	3.51	2.27	4.50	5.75
90	0.00	4.12	5.02	0.00
91	2.79	2.38	1.30	1.71
92	2.82	0.00	2.94	6.48
93	1.01	6.41	1.62	0.00

ARMADURA DE WOOD PARA EL MAXIMO TORSOR
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ESFUERZO MAXIMO

Caracteristicas de los materiales

Resistencia de cálculo del hormigón : 2000.00 t/m2
Resistencia de cálculo del acero : 4.435 t/cm2
Recubrimiento mecánico de las armaduras : 4.000 cm

El armado se realiza perpendicular a la dirección de las barras longitudinales

Armadura deducida del cálculo según el método de Wood y Armer en cm2/m

	CARA SUPERIOR		CARA INFERIOR	
Nudo	Longitudinal	Transversal	Longitudinal	Transversal
1	7.13	0.00	2.13	12.82
2	4.58	9.30	6.85	2.16
3	0.15	2.38	3.96	1.72
4	0.00	0.00	15.05	32.42
5	1.60	14.69	13.05	0.01
6	0.01	2.95	4.14	1.20
7	0.00	1.70	15.13	5.97
8	0.00	6.62	13.63	6.72
9	0.00	1.78	5.91	1.88
10	0.00	0.00	17.29	12.05
11	0.00	7.12	16.14	6.63
12	0.00	2.24	6.55	0.94
13	0.00	3.04	11.96	4.68
14	0.00	5.03	15.45	6.41
15	0.00	1.50	6.92	1.84
16	0.30	5.12	10.53	5.65
17	0.00	6.14	14.27	6.69
18	0.00	2.65	7.87	0.23
19	1.94	4.65	6.97	4.25
20	1.71	7.76	11.15	5.05
21	0.00	2.10	8.33	1.61
22	3.97	6.52	5.72	3.17
23	5.45	5.90	6.80	6.36
24	0.00	4.99	4.60	0.00
25	7.28	4.72	1.54	4.09
26	11.13	10.24	1.71	2.59
27	2.05	3.13	3.64	2.57
28	11.80	5.59	0.00	1.39
29	19.52	6.23	0.00	4.26
30	5.56	9.11	0.00	0.00
31	9.34	3.92	0.00	2.20
32	38.14	12.51	0.00	0.00
33	10.26	1.39	0.00	2.56
34	3.38	4.42	3.18	2.14
35	16.76	4.62	0.00	2.32
36	11.46	9.13	0.00	0.00
37	0.00	2.05	8.40	2.65
38	0.00	6.03	9.55	1.20
39	3.71	3.58	1.69	1.82
40	0.00	2.88	13.53	1.58
41	0.00	1.59	24.09	4.34
42	0.00	5.27	9.07	1.09
43	0.00	1.35	16.12	2.37
44	0.00	2.39	28.99	2.74
45	0.00	1.97	11.28	2.10
46	0.00	3.78	14.87	0.98
47	0.00	1.68	30.85	4.46
48	0.00	2.58	15.01	2.35
49	0.00	1.41	12.47	2.05
50	0.00	2.23	32.97	3.00
51	0.00	1.21	18.84	2.86
52	0.00	6.94	10.23	0.00
53	0.00	1.83	29.76	4.73
54	0.00	1.82	16.80	2.87
55	2.47	3.14	2.72	2.05
56	0.00	4.89	17.68	1.87
57	0.00	1.97	10.14	3.29
58	12.25	14.50	0.00	0.00
59	7.80	5.96	4.45	6.28
60	5.67	4.26	1.75	3.16
61	13.63	1.35	0.00	2.98
62	26.42	13.65	0.00	0.00
63	13.65	4.02	0.00	1.86
64	4.92	13.78	0.00	0.00
65	7.81	6.57	6.85	8.09
66	14.23	4.86	0.00	2.21
67	2.37	3.87	4.71	3.21
68	2.44	10.75	11.89	3.55
69	9.66	4.22	0.00	4.52
70	0.00	7.34	4.49	0.00
71	0.00	5.83	14.72	6.24
72	5.33	3.93	4.24	5.64
73	0.00	2.80	9.02	2.23
74	0.00	6.14	17.17	5.77
75	2.97	3.76	5.92	5.13
76	0.00	4.08	7.42	0.13
77	0.00	5.45	17.71	5.86
78	1.23	1.56	8.22	7.88
79	0.00	3.35	6.05	1.90
80	0.00	5.44	16.75	5.93
81	0.00	1.91	9.93	5.34
82	0.00	3.51	5.66	1.36
83	0.00	6.90	13.72	4.79
84	0.00	0.00	8.64	9.95
85	0.00	2.96	5.29	1.53
86	1.77	6.17	9.44	5.01
87	1.66	1.62	5.00	5.04
88	0.00	3.31	4.96	0.33
89	3.21	6.06	4.60	1.77
90	5.94	0.00	0.00	8.89
91	0.71	2.02	2.42	1.11
92	3.04	4.73	2.80	1.12
93	1.76	0.00	1.35	6.29

ARMADURA DE WOOD PARA EL MAXIMO FLECTOR
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ESFUERZO MINIMO

Características de los materiales

Resistencia de cálculo del hormigón : 2000.00 t/m2
Resistencia de cálculo del acero : 4.435 t/cm2
Recubrimiento mecánico de las armaduras : 4.000 cm

El armado se realiza perpendicular a la dirección de las barras longitudinales

Armadura deducida del cálculo según el método de Wood y Armer en cm2/m

	CARA SUPERIOR		CARA INFERIOR	
Nudo	Longitudinal	Transversal	Longitudinal	Transversal
1	8.44	17.19	0.43	0.00
2	1.53	5.75	1.78	0.00
3	5.20	2.81	0.00	0.62
4	2.33	6.98	3.87	0.00
5	1.45	11.19	4.85	0.00
6	0.63	2.73	2.44	0.34
7	1.31	4.19	5.42	2.53
8	0.00	2.90	7.98	2.68
9	0.00	2.12	3.45	0.18
10	0.05	1.97	4.57	2.64
11	0.00	3.04	8.53	2.08
12	0.00	1.66	3.16	0.00
13	0.15	2.03	3.48	1.59
14	0.00	2.14	6.73	1.43
15	0.00	1.83	2.56	0.00
16	0.35	1.28	0.99	0.06
17	0.55	3.27	4.60	1.87
18	0.72	2.24	1.23	0.00
19	4.06	2.91	0.40	1.54
20	3.15	2.95	0.00	0.00
21	2.89	2.25	0.00	0.00
22	6.97	4.07	0.00	0.00
23	8.21	2.43	0.00	0.00
24	5.95	2.28	0.00	0.00
25	11.24	2.56	0.00	0.00
26	15.41	2.76	0.00	0.00
27	11.00	2.34	0.00	0.00
28	16.85	3.96	0.00	0.00
29	28.13	2.44	0.00	0.00
30	17.01	2.47	0.00	0.00
31	19.53	1.78	0.00	0.00
32	56.14	2.51	0.00	0.00
33	20.05	2.18	0.00	0.00
34	13.07	3.94	0.00	0.00
35	17.78	1.58	0.00	0.00
36	13.58	3.04	0.00	0.00
37	4.35	2.00	0.00	0.00
38	4.44	2.25	0.00	0.00
39	4.76	2.67	0.00	0.00
40	0.00	2.78	0.86	0.00
41	0.00	1.59	3.05	0.00
42	0.00	2.37	1.26	0.00
43	0.00	1.78	3.61	0.00
44	0.00	2.39	7.17	0.00
45	0.00	1.75	3.83	0.00
46	0.00	4.19	5.10	0.00
47	0.00	1.62	9.83	0.00
48	0.00	1.70	5.00	0.00
49	0.00	2.04	4.44	0.00
50	0.00	3.89	8.84	0.00
51	0.00	1.73	4.72	0.00
52	0.00	8.34	2.87	0.00
53	0.00	1.81	6.47	0.00
54	0.00	1.94	3.02	0.00
55	2.80	2.13	0.00	0.10
56	1.64	8.77	0.37	0.00
57	2.64	2.67	0.00	0.00
58	12.72	16.02	0.00	0.00
59	15.54	1.86	0.00	0.00
60	12.05	2.76	0.00	0.00
61	17.93	0.00	0.00	1.10
62	52.69	12.18	0.00	0.00
63	18.68	2.43	0.00	0.00
64	14.99	23.00	0.00	0.00
65	25.45	1.82	0.00	0.00
66	15.91	2.94	0.00	0.00
67	11.05	3.20	0.00	0.00
68	15.12	7.97	0.00	0.00
69	10.59	2.98	0.00	0.00
70	6.54	13.39	0.00	0.00
71	8.41	3.35	0.00	0.00
72	6.07	2.93	0.00	0.00
73	3.01	2.78	0.00	0.00
74	3.84	4.40	0.00	0.00
75	3.40	2.91	0.00	0.00
76	1.70	6.10	0.09	0.00
77	0.90	3.33	2.62	0.20
78	1.60	2.87	0.69	0.00
79	0.65	2.56	2.01	0.11
80	0.07	4.38	5.05	0.73
81	0.58	2.83	1.61	0.00
82	0.45	3.74	1.64	0.00
83	0.00	3.96	5.32	1.30
84	0.52	2.94	1.95	0.00
85	1.23	2.46	1.31	0.07
86	0.00	1.81	1.76	0.00
87	1.41	3.00	1.23	0.00
88	5.93	3.83	0.00	0.00
89	1.40	3.65	1.58	0.00
90	7.11	5.35	0.00	0.00
91	1.19	1.82	0.00	0.00
92	0.84	3.04	0.00	0.00
93	2.47	5.07	0.48	0.00

ARMADURA DE WOOD PARA EL MAXIMO FLECTOR
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ESFUERZO MAXIMO

Características de los materiales

Resistencia de cálculo del hormigón : 2000.00 t/m2
Resistencia de cálculo del acero : 4.435 t/cm2
Recubrimiento mecánico de las armaduras : 4.000 cm

El armado se realiza perpendicular a la dirección de las barras longitudinales

Armadura deducida del cálculo según el método de Wood y Armer en cm2/m

	CARA SUPERIOR		CARA INFERIOR	
Nudo	Longitudinal	Transversal	Longitudinal	Transversal
1	0.38	0.00	4.99	9.15
2	0.00	0.00	4.70	13.53
3	0.00	0.15	2.32	1.28
4	0.00	0.00	16.06	30.06
5	0.00	0.00	12.84	4.06
6	0.00	0.51	11.17	0.46
7	0.00	0.00	17.35	3.96
8	0.00	0.00	24.08	5.28
9	0.00	0.00	15.29	1.30
10	0.00	0.00	20.02	9.85
11	0.00	0.00	31.57	2.05
12	0.00	0.52	18.08	0.32
13	0.00	0.00	19.84	1.84
14	0.00	0.00	35.97	1.91
15	0.00	0.00	21.11	1.05
16	0.00	0.00	19.83	3.37
17	0.00	0.12	33.44	0.21
18	0.00	1.17	18.98	0.00
19	0.00	0.00	15.20	1.46
20	0.00	0.00	27.92	1.72
21	0.00	0.00	14.95	1.61
22	0.00	0.38	12.17	1.94
23	0.00	1.41	19.70	0.00
24	0.00	4.74	10.54	0.00
25	0.00	0.81	9.51	3.00
26	0.00	0.00	14.21	3.13
27	0.00	0.00	7.90	4.01
28	0.12	3.29	5.99	2.80
29	0.00	1.76	5.86	0.00
30	0.00	10.82	3.57	0.00
31	1.50	2.37	3.62	2.75
32	6.06	0.00	0.00	5.22
33	0.00	0.00	2.08	4.82
34	0.00	1.48	7.03	1.97
35	0.00	1.61	10.45	0.00
36	0.00	5.26	5.29	0.00
37	0.00	0.47	12.91	2.36
38	0.00	0.00	22.65	3.46
39	0.00	0.00	11.38	4.08
40	0.00	0.79	19.36	1.85
41	0.00	0.86	34.57	0.86
42	0.00	1.88	17.09	0.00
43	0.00	0.45	24.05	1.89
44	0.00	0.00	43.51	1.65
45	0.00	0.00	23.03	1.93
46	0.00	1.05	26.28	1.27
47	0.00	0.51	47.67	0.49
48	0.00	0.75	25.29	0.00
49	0.00	0.49	24.51	2.24
50	0.00	0.66	43.09	0.00
51	0.00	0.00	23.13	1.10
52	0.00	2.11	17.90	0.00
53	0.00	0.40	35.15	1.28
54	0.00	0.48	17.58	0.00
55	0.00	0.00	13.10	3.55
56	0.00	1.90	22.93	0.10
57	0.00	0.00	10.70	0.68
58	0.00	5.07	6.39	0.00
59	0.00	0.00	11.06	1.22
60	0.00	0.46	5.11	0.00
61	0.00	0.00	2.68	3.16
62	3.76	1.48	0.00	0.00
63	0.00	0.00	2.86	1.02
64	0.00	2.86	5.28	0.00
65	0.00	0.00	7.19	1.63
66	0.00	0.53	4.27	0.17
67	0.00	0.00	7.19	1.27
68	0.00	1.49	11.99	0.00
69	0.00	0.00	7.16	1.02
70	0.00	3.47	8.90	0.00
71	0.00	0.00	15.98	0.72
72	0.00	0.45	9.43	0.35
73	0.00	0.48	11.52	0.62
74	0.00	0.47	18.48	0.00
75	0.00	0.37	11.33	0.51
76	0.00	1.33	11.93	0.00
77	0.00	0.00	19.22	1.01
78	0.00	0.46	11.91	0.50
79	0.00	0.06	11.14	0.83
80	0.00	0.10	17.10	0.00
81	0.00	1.94	10.78	0.00
82	0.00	0.60	9.40	0.43
83	0.00	0.00	12.84	2.32
84	0.00	0.56	9.47	0.58
85	0.00	0.00	6.09	0.99
86	0.00	0.00	6.74	0.17
87	0.00	4.62	5.37	0.00
88	0.00	0.58	3.02	0.36
89	0.00	0.00	1.43	3.26
90	0.00	3.14	2.66	0.00
91	0.00	0.29	1.35	0.81
92	0.60	0.00	0.73	2.07
93	0.16	6.77	0.86	0.00

ARMADURA DE WOOD PARA EL MAXIMO FLECTOR Y TORSOR

Características de los materiales

Resistencia de cálculo del hormigón : 2000.00 t/m2
Resistencia de cálculo del acero : 4.435 t/cm2
Recubrimiento mecánico de las armaduras : 4.000 cm

El armado se realiza perpendicular a la dirección de las barras longitudinales

Armadura deducida del cálculo según el método de Wood y Armer en cm2/m

	CARA SUPERIOR		CARA INFERIOR	
Nudo	Longitudinal	Transversal	Longitudinal	Transversal
1	8.44	19.74	5.00	12.82
2	4.58	9.30	8.98	19.06
3	7.08	4.05	3.96	3.13
4	2.33	10.44	16.06	32.42
5	1.60	14.69	14.88	10.38
6	0.63	2.95	11.17	2.41
7	1.39	6.65	17.35	5.97
8	0.00	6.62	25.00	10.09
9	0.00	2.12	15.29	3.36
10	0.05	3.59	20.02	12.05
11	0.00	7.12	31.57	7.36
12	0.00	2.24	18.08	2.44
13	0.15	3.40	19.84	5.51
14	0.00	5.03	35.97	6.41
15	0.00	1.83	21.11	2.45
16	0.35	5.12	19.83	5.65
17	0.55	6.14	33.44	6.74
18	0.72	4.13	18.98	1.30
19	4.06	4.65	15.20	4.39
20	3.15	7.76	27.92	5.06
21	2.89	2.63	14.95	2.05
22	6.97	6.52	12.17	3.92
23	8.21	5.90	19.70	6.98
24	5.95	11.32	10.54	0.00
25	11.24	4.72	9.51	4.09
26	15.41	10.24	14.21	3.13
27	11.00	3.13	7.90	4.01
28	16.85	5.59	5.99	2.80
29	28.13	6.23	5.86	7.65
30	17.01	17.10	3.57	0.00
31	19.53	4.06	3.62	2.75
32	56.14	12.51	0.00	5.22
33	20.05	2.40	2.08	4.82
34	13.07	4.42	7.03	2.14
35	17.78	5.19	10.45	4.69
36	13.58	9.13	5.29	0.00
37	4.35	4.16	12.91	3.40
38	4.44	7.99	22.65	3.46
39	4.76	3.58	11.38	4.08
40	0.00	2.88	19.36	2.90
41	0.00	1.63	34.57	4.34
42	0.00	5.27	17.09	1.16
43	0.00	1.78	24.05	2.89
44	0.00	3.53	43.51	2.74
45	0.00	1.97	23.03	2.75
46	0.00	4.19	26.28	2.08
47	0.00	1.68	47.67	4.46
48	0.00	2.58	25.29	2.52
49	0.00	2.04	24.51	2.98
50	0.00	3.89	43.09	3.00
51	0.00	1.77	23.13	2.86
52	0.00	8.34	17.90	0.31
53	0.00	1.83	35.15	4.73
54	0.00	2.13	17.58	3.02
55	2.80	3.14	13.10	3.89
56	1.64	8.85	22.93	1.87
57	3.81	4.45	10.70	3.29
58	12.72	16.02	6.39	0.00
59	15.54	5.96	11.06	6.28
60	12.05	4.35	5.11	3.16
61	17.93	1.49	2.68	3.60
62	52.69	13.65	0.00	0.00
63	18.68	4.40	2.86	2.03
64	14.99	23.00	5.28	0.00
65	25.45	6.57	7.19	8.09
66	15.91	4.86	4.27	3.41
67	11.05	3.87	7.19	3.21
68	15.12	10.75	11.99	3.55
69	10.59	4.33	7.16	4.52
70	6.54	13.39	8.90	0.00
71	8.41	6.92	15.98	7.26
72	6.07	4.37	9.43	5.64
73	3.01	3.32	11.52	2.23
74	3.84	7.65	18.48	5.78
75	3.40	4.54	11.33	5.13
76	1.70	6.10	11.93	0.45
77	0.94	6.88	19.22	6.87
78	1.60	3.72	11.91	7.88
79	0.65	3.35	11.14	1.91
80	0.56	5.72	17.10	8.05
81	1.12	5.92	10.78	5.34
82	0.45	3.77	9.40	1.36
83	0.96	6.90	13.72	6.56
84	0.52	3.75	9.47	9.95
85	1.42	3.13	6.09	2.31
86	2.88	6.17	9.44	8.55
87	1.66	6.12	6.21	5.04
88	7.51	3.83	4.96	0.36
89	3.51	6.06	4.60	5.75
90	7.11	5.35	5.02	8.89
91	2.79	2.38	2.42	1.71
92	3.04	4.73	2.94	6.48
93	2.47	6.77	1.62	6.29

4.7. COMPROBACION A FISURACION

Para evitar una fisuración excesiva, incompatible con el servicio que haya de prestar la estructura o con su durabilidad, las armaduras de tracción deben disponerse de forma que se limite la anchura de las fisuras.

Según el artículo 44 de la Instrucción EH-91, en función de las condiciones de ambiente y para el caso de disponer un recubrimiento mínimo c_{min} = 0,20 mm o un diámetro, la anchura característica de fisura w_k calculada según la EH-91, cumplirá:

Ambiente I: w_k = 0,4 mm

Ambiente II: w_k = 0,2 mm

Ambiente III: w_k = 0,1 mm

Para recubrimientos "c" superiores a "c_{min}", podrán aumentarse los valores anteriores multiplicándolos por la relación $c/c_{min} \leq 1,5$.

Por lo tanto, la anchura característica de fisura $w_k \leq 0,25$ mm.

Esta se calculará mediante la expresión:

$$w_k = 1,7 \times s_m \times \varepsilon_{sm}$$

siendo:

s_m: separación media de fisuras en la zona de recubrimiento.

ε_{sm}: alargamiento medio de las armaduras en la zona de recubrimiento teniendo en cuenta la colaboración del hormigón entre fisuras.

Los valores de s_m y ε_{sm} se obtienen de la siguiente manera:

$$s_m = 2 \times c + 0,2 \times s + K_1 \times K_2 \times \frac{\phi \times A_{c.eficaz}}{A_s}$$

$$\varepsilon_{sm} = \frac{\sigma_s}{E_s} \times \left[1 - \frac{K_3}{2,5 \times K_1} \times \left(\frac{\sigma_{sr}}{\sigma_s} \right)^2 \right] \geq 0,4 \times \frac{\sigma_s}{E_s}$$

Sección centro de vano

My = 522,03 mt $\qquad$ M_{fis} = 214,9 mt

$s_m = 2 \,.\, 0,03 + 0,2 \,.\, 0,08 + 0,4 \,.\, 0,125 \,.\, (0,025 \,.\, 0,5625) / (186,54 \,.\, 10^{-4}) = 0,114$ m

$$\varepsilon_{sm} = \frac{30174}{2.1.10^7} \cdot \left[1 - \frac{0,5}{2,5.0,4} \left(\frac{12421}{30174} \right)^2 \right] = 1,32 \text{ mm/m}$$

Por lo que w_k = 0,25 mm < 0,25 mm

Sección apoyo

My = -517,9 mt $\qquad$ M_{fis} = -302,8 mt

$s_m = 2 \,.\, 0,03 + 0,2 \,.\, 0,1 + 0,4 \,.\, 0,125 \,.\, (0,02 \,.\, 1,44) / (263,9 \,.\, 10^{-4}) = 0,135$ m

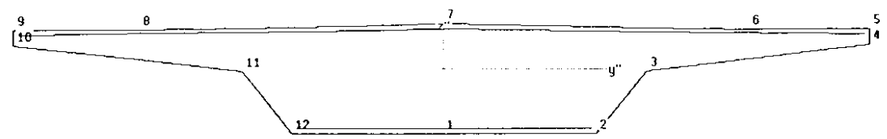
$$\varepsilon_{sm} = \frac{22829}{2.1.10^7} \cdot \left[1 - \frac{0,5}{2,5.0,4} \left(\frac{13347}{22829} \right)^2 \right] = 0,9 \text{ mm/m}$$

Por lo que w_k = 0,21 mm < 0,25 mm

Se ha comprobado la fisuración para la combinación característica.

Si se utiliza la combinación frecuente, los momentos flectores son del orden de un 20% menor en el apoyo, y de un 35% en centro de vano quedando del lado de la seguridad.

Mstb. 1 : 60.0



Sección :"SECTOTAL" Armadura :"B1"
Tipo : tipo viga/ Genérico Unidades :[cm]

Sección parcial 1: Hormigón = H300

Pto	Coord-Y	Coord-Z	Pto	Coord-Y	Coord-Z
1	0.00	0.00	2	150.00	0.00
3	200.00	60.00	4	420.00	85.00
5	420.00	100.00	6	300.00	100.00
7	0.00	106.00	8	-300.00	100.00
9	-420.00	100.00	10	-420.00	85.00
11	-200.00	60.00	12	-150.00	0.00

Características mecánicas de la sección:
Area : Ax= 5.090 [m2]
Momentos de inercia : Iy= 0.437224 [m4] Iz= 15.457 [m4]
Inercia a torsión : Ix= 0.820000 [m4]
Posición del centro de gravedad: ys= 0.000 [m] zs= 0.619993 [m]

I:	R=dist.borde [m]	W=I/R [m3]	W/Ax [m]
izq. Iz	-4.200	-3.680	0.723
dch. Iz	4.200	3.680	-0.723
abajo Iy	-0.620	-0.705208	0.195
arriba Iy	0.440	0.993676	-0.139

Armadura: "B1"

N°	Nom.mat	Cod.dim.	Area [cm2]	y1 [cm]	z1 [cm]	y2 [cm]	z2 [cm]
1	AEH500	(2)	186.54	-145.00	5.00	145.00	5.00
2	AEH500	(2)	65.97	-415.00	95.00	0.00	101.00
3	AEH500	(2)	65.97	0.00	101.00	415.00	95.00

Total: 318.48 Cuantía de armadura: 0.626 [o/o]

Cód. dimensionamiento: (0) = As constante
Cód. dimensionamiento: (1) = Aumentar As en zonas comprimida y traccionada
Cód. dimensionamiento: (2) = Aumentar As solo en zona traccionada

¡No se han definido valores para el cálculo a cortante!

Características del material:

Nom.Mat.	Módulo E [t/m2]	0.85*fcd,fyd [t/m2]	eps-fc [o/oo]	fct [t/m2]	fcv [t/m2]	fcw,mín [t/m2]
"H300"	3.30E+06	-1700.000	-2.000	0.0	70.700	3000.000
"AEH500"	2.10E+07	44347.0				

Leyenda:

fcd,fyd resistencia de cálculo del hormigón,acero
eps-fc deformación al final de la parábola (fig.2.3, cap.2.2)
fct resistencia de cálculo a tracción del hormigón
fcv resistencia virtual de cálculo del hormigón a esfuerzo cortante

Dimensionamiento : Viga "SECTOTAL"/"B1"

Esfuerzos (Rotura) Unidades : [tm]

N	Vy	Vz	Mx	My	Mz	Alpha
				214.900		45.0

La armadura mínima entrada es suficiente !
Armadura mínima definida con las áreas entradas ..
Factor actual de minoración de la resistencia de la sección 3.62
Factor necesario de minoración de la resistencia de la sección .. 1.00

Armadura Longitudinal:	y1 [cm]	z1 [cm]	y2 [cm]	z2 [cm]	dado (As-min)	dimens. [cm2]	As-nuevo [cm2]
1 "AEH500"	-145.0	5.0	145.0	5.0	186.54	-	186.54
2 "AEH500"	-415.0	95.0	0.0	101.0	65.97	-	65.97
3 "AEH500"	0.0	101.0	415.0	95.0	65.97	-	65.97

Cuantía arm. 0.63 [o/o] Suma 318.48

Deformaciones y tensiones extremas (Rotura):

1	Coordenadas y [cm]	z [cm]	Eps [o/oo]	Estado-II [t/m2]	
Hormigón-Min	-0.00	106.00	-1.560	-1617.702	"H300"
Armadura-Min	-0.00	101.00	-0.988	-20741.2	"AEH500"
Hormigón-Max	150.00	0.00	10.572	0.000	"H300"
Armadura-Max	145.00	5.00	10.000	44347.0	"AEH500"

Fibra neutra zn 92.37 cm yn -0.00 cm Angulo 0.0
Ancho zona comprim. 13.63 cm Zona comprimida/Canto útil 0.13

Dimensionamiento : Viga "SECTOTAL"/"B1"

Esfuerzos (Rotura) Unidades : [tm]

N	Vy	Vz	Mx	My	Mz	Alpha
				-89.100		45.0

La armadura mínima entrada es suficiente !
Armadura mínima definida con las áreas entradas ..
Factor actual de minoración de la resistencia de la sección 6.14
Factor necesario de minoración de la resistencia de la sección .. 1.00

Armadura Longitudinal:	y1 [cm]	z1 [cm]	y2 [cm]	z2 [cm]	dado (As-min)	dimens. [cm2]	As-nuevo [cm2]
1 "AEH500"	-145.0	5.0	145.0	5.0	186.54	-	186.54
2 "AEH500"	-415.0	95.0	0.0	101.0	65.97	-	65.97
3 "AEH500"	0.0	101.0	415.0	95.0	65.97	-	65.97

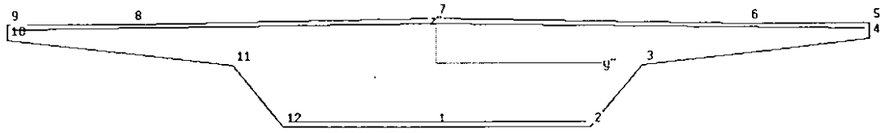
Cuantía arm. 0.63 [o/o] Suma 318.48

Deformaciones y tensiones extremas (Rotura):

1	Coordenadas y [cm]	z [cm]	Eps [o/oo]	Estado-II [t/m2]	
Hormigón-Min	150.00	0.00	-1.282	-1480.885	"H300"
Armadura-Min	145.00	5.00	-0.723	-15192.6	"AEH500"
Hormigón-Max	0.00	106.00	10.559	0.000	"H300"
Armadura-Max	0.00	101.00	10.000	44347.0	"AEH500"

Fibra neutra zn 11.48 cm yn 0.00 cm Angulo 0.0
Ancho zona comprim. 11.48 cm Zona comprimida/Canto útil 0.12

Mstb. 1 : 60.0



Sección :"SECTOTAP" Armadura :"B1"
Tipo : tipo viga/ Genérico Unidades :[cm]

Sección parcial 1: Hormigón = H300

Pto	Coord-Y	Coord-Z	Pto	Coord-Y	Coord-Z
1	0.00	0.00	2	150.00	0.00
3	200.00	60.00	4	420.00	85.00
5	420.00	100.00	6	300.00	100.00
7	0.00	106.00	8	-300.00	100.00
9	-420.00	100.00	10	-420.00	85.00
11	-200.00	60.00	12	-150.00	0.00

Características mecánicas de la sección:
Area : Ax= 5.090 [m2]
Momentos de inercia : Iy= 0.437224 [m4] Iz= 15.457 [m4]
Inercia a torsión : Ix= 0.820000 [m4]
Posición del centro de gravedad: ys= 0.000 [m] zs= 0.619993 [m]

	I:	R=dist.borde [m]	W=I/R [m3]	W/Ax [m]
izq.	Iz	-4.200	-3.680	0.723
dch.	Iz	4.200	3.680	-0.723
abajo	Iy	-0.620	-0.705208	0.195

arriba Iy 0.440 0.993676 -0.139

Armadura: "B1"

N°	Nom.mat	Cod.dim.	Area [cm2]	y1 [cm]	z1 [cm]	y2 [cm]	z2 [cm]
1	AEH500	(2)	98.18	-145.00	5.00	145.00	5.00
2	AEH500	(2)	131.95	-415.00	95.00	0.00	101.00
3	AEH500	(2)	131.95	0.00	101.00	415.00	95.00

Total: 362.08 Cuantía de armadura: 0.711 [o/o]

Cód. dimensionamiento: (0) = As constante
Cód. dimensionamiento: (1) = Aumentar As en zonas comprimida y traccionada
Cód. dimensionamiento: (2) = Aumentar As solo en zona traccionada

¡No se han definido valores para el cálculo a cortante!

Características del material:

Nom.Mat.	Módulo E [t/m2]	0.85*fcd,fyd [t/m2]	eps-fc [o/oo]	fct [t/m2]	fcv [t/m2]	fcw,mín [t/m2]
"H300"	3.30E+06	-1700.000	-2.000	0.0	70.700	3000.000
"AEH500"	2.10E+07	44347.0				

Leyenda:
fcd,fyd resistencia de cálculo del hormigón,acero
eps-fc deformación al final de la parábola (fig.2.3, cap.2.2)
fct resistencia de cálculo a tracción del hormigón
fcv resistencia virtual de cálculo del hormigón a esfuerzo cortante

Comprobación de las tensiones en el estado II: Viga "SECTOTAP"/"B1"

Esfuerzos (E.L.S.) Unidades : [tm]

N	Vy	Vz	Mx	My	Mz
				-89.100	

Deformaciones y tensiones extremas:

3	Coordenadas y [cm]	z [cm]	Eps [o/oo]	Estado-II [t/m2]	Estado-I [t/m2]	
Hormigón-Min	150.00	0.00	-0.065	-215.522	-126.346	"H300"
Armadura-Min	145.00	5.00	-0.053	-1109.179		"AEH500"
Hormigón-Max	0.00	106.00	0.200	0.000	89.667	"H300"
Armadura-Max	-0.00	101.00	0.187	3927.443		"AEH500"

Fibra neutra zn 26.14 cm yn 0.00 cm Angulo 0.0
Ancho zona comprim. 26.14 cm Zona comprimida/Canto útil 0.27

Esfuerzos	: Rigideces secantes:		Deformaciones:
N = 0.000 [t]	*EAx= 3.53629E+06 [t]		8.958482E-05
My= -89.100 [tm]	EIy= 356639.0 [tm2]		-2.498325E-04 [1/m]
Mz= 0.000 [tm]	*EIz= 5.73227E+06 [tm2]		3.609946E-15 [1/m]

(*) Rigidez tangencial !

Deformaciones y tensiones en vertices de la sección:

Coordenadas y [cm]	Coordenadas z [cm]	Eps [o/oo]	Est. I [t/m2]	Est. II [t/m2]	Dist.Fuerz.Compr. [t]	Dist.Fuerz.Compr. [cm]
0.00	0.00	-0.065	-126.346	-215.522	-88.602	53.08
150.00	0.00	-0.065	-126.346	-215.522		
200.00	60.00	0.085	-4.074	0.000		
420.00	85.00	0.147	46.872	0.000		
420.00	100.00	0.185	77.440	0.000		
300.00	100.00	0.185	77.440	0.000		
0.00	106.00	0.200	89.667	0.000		
-300.00	100.00	0.185	77.440	0.000		
-420.00	100.00	0.185	77.440	0.000		
-420.00	85.00	0.147	46.872	0.000		
-200.00	60.00	0.085	-4.074	0.000		
-150.00	0.00	-0.065	-126.346	-215.522		

Deformaciones y tensiones de la armadura pasiva (Estado II):

N°	Coordenadas y [cm]	Coordenadas z [cm]	Eps [o/oo]	Sigma-s [t/m2]
1	-145.000	5.000	-0.053	-1109.18
	145.000	5.000	-0.053	-1109.18
2	-415.000	95.000	0.172	3612.65
	0.000	101.000	0.187	3927.44
3	0.000	101.000	0.187	3927.44
	415.000	95.000	0.172	3612.65

Parámetros globales de cálculo :

Norma	EH-1991	
Inclinación estándar bielas comprimidas hormigón	45.00	[Grados]
Coeficiente de fluencia phi	0.00	
Factor minoración de la resistencia de la sección	1.00	
Def. máxima en compresión centrada del hormigón	-2.00	[o/oo]
Deformación máxima en flexión en vigas	-3.50	[o/oo]
Def. máxima en tracción del acero en vigas	10.00	[o/oo]
Modo de análisis / Inclinación del eje neutro	flexión esviada	
Cuantía mínima de armadura long. para pilas	0.40	[o/o]
Cuantía máxima de armadura long.	8.00	[o/o]
Modo de pretensado	adherente	

NO se usaron coef. de homogeneización para calcular las caract. mecánicas

Modelo para dimensionamiento a cortante:

Usar un canto útil constante en los cálculos a cortante
Cálculo separado para la arm. longitudinal adicional debida a cortante

4.8. DIMENSIONAMIENTO A CORTANTE Y TORSION

Se ha comparado la armadura de torsión resultante del emparrillado tridimensional con la obtenida del modelo pórtico tridimensional, colocando lamás desfavorable que es la del emparrillado tridimensional.

También se ha dimensionado la armadura de cortante según indica la norma EH-91.

Dimensionamiento a cortante

Suponemos un ancho colaborante de hormigón 3,5 m

Vcu = 247,5 T/m

La armadura mínima será $As = 0,02\ fcd/fyd\ .\ d = 33,3\ cm^2/m$

Dimensionamiento a torsión

he = 0,177 m

$Ae = 3,13\ m^2$

u = 8,760 m

$Tu_1 = 389,2\ mT$

$Tu_2 = 2\ Ae.At/s\ .\ f_{td} > Td$

$Tu_2 = 2\ Ae.Asl/u\ .\ f_{yd} > Td$

A continuación se presentan los listados de armaduras de torsión y cortante.

Dimensionamiento frente al esfuerzo cortante y torsión

Dimensionamiento a cortante

Barra	Distancia		Vd	Mxd	Vcu	Asu(cm2/m)	Vd/Vul+Td/Tul
1	0.00	54.20	-53.955	247.50	-51.14	0.16	
		218.78	53.955	247.50	-7.60	0.23	
1	1.28	34.71	-52.945	247.50	-56.29	0.15	
		155.21	52.945	247.50	-24.42	0.20	
2	0.00	34.71	-52.945	247.50	-56.29	0.15	
		155.21	52.945	247.50	-24.42	0.20	
2	1.28	15.22	-51.935	247.50	-61.45	0.14	
		118.19	51.935	247.50	-34.21	0.18	
3	0.00	15.22	-51.935	247.50	-61.45	0.14	
		118.19	51.935	247.50	-34.21	0.18	
3	1.28	-8.82	-50.925	247.50	-63.14	0.13	
		84.62	50.925	247.50	-43.09	0.17	
4	0.00	-8.82	-50.925	247.50	-63.14	0.13	
		84.62	50.925	247.50	-43.09	0.17	
4	1.28	-34.23	-49.916	247.50	-56.42	0.14	
		28.04	99.831	247.50	-58.06	0.27	
5	0.00	-37.68	-49.916	247.50	-55.51	0.14	
		24.35	99.831	247.50	-59.03	0.27	
5	1.28	-71.25	-48.906	247.50	-46.63	0.16	
		4.86	97.812	247.50	-64.19	0.25	
6	0.00	-71.25	-48.906	247.50	-46.63	0.16	
		4.86	97.812	247.50	-64.19	0.25	
6	1.28	-128.87	-47.896	247.50	-31.38	0.18	
		-18.19	95.792	247.50	-60.66	0.25	
7	0.00	-128.87	-47.896	247.50	-31.38	0.18	
		-18.20	95.792	247.50	-60.66	0.25	
7	1.28	-162.43	-46.886	247.50	-22.50	0.19	
		-37.68	93.773	247.50	-55.51	0.26	
8	0.00	-162.43	-46.886	247.50	-22.50	0.19	
		-37.68	93.772	247.50	-55.51	0.26	
8	1.28	-196.00	-45.876	247.50	-13.62	0.20	
		-60.83	91.753	247.50	-49.38	0.26	
9	0.00	-196.00	-45.876	247.50	-13.62	0.20	
		-60.83	91.753	247.50	-49.38	0.26	
9	1.28	-235.71	-44.867	247.50	-3.12	0.21	
		-81.06	89.733	247.50	-44.03	0.26	
10	0.00	-235.71	-44.867	247.50	-3.12	0.21	
		-81.06	89.733	247.50	-44.03	0.26	
10	1.28	-269.28	-43.857	247.50	5.76	0.22	
		-100.55	87.714	247.50	-38.88	0.27	
11	0.00	124.27	6.732	247.50	-32.60	0.07	
		310.22	-6.732	247.50	16.59	0.15	
11	1.70	96.95	5.386	247.50	-39.83	0.05	
		227.13	-5.386	247.50	-5.39	0.11	
12	0.00	96.95	-5.386	247.50	-39.83	0.05	
		227.12	5.386	247.50	-5.39	0.11	
12	1.70	65.64	-4.039	247.50	-48.11	0.04	
		182.37	4.039	247.50	-17.23	0.09	
13	0.00	65.64	4.039	247.50	-48.11	0.04	
		182.37	-4.039	247.50	-17.23	0.09	
13	1.70	39.66	2.693	247.50	-54.99	0.02	
		137.61	-2.693	247.50	-29.07	0.06	
14	0.00	39.65	-2.693	247.50	-54.99	0.02	
		137.61	2.693	247.50	-29.07	0.06	
14	1.70	12.43	-1.346	247.50	-62.19	0.01	
		94.10	1.346	247.50	-40.58	0.04	
15	0.00	12.43	1.346	247.50	-62.19	0.01	
		94.10	-1.346	247.50	-40.58	0.04	
15	1.70	-22.13	2.29E-05		247.50	-59.62	0.01
		27.91	-2.34E-05		247.50	-58.09	0.01
16	0.00	-30.47	3.79E-06		247.50	-57.42	0.01
		19.14	-6.41E-06		247.50	-60.41	0.01
16	1.70	-96.65	-1.346	247.50	-39.91	0.04	

		-15.41	1.346	247.50	-61.40	0.01
17	0.00	-96.66	1.346	247.50	-39.91	0.04
		-15.41	-1.346	247.50	-61.40	0.01
17	1.70	-140.17	2.693	247.50	-28.40	0.06
		-42.64	-2.693	247.50	-54.20	0.02
18	0.00	-140.17	2.693	247.50	-28.39	0.06
		-42.64	-2.693	247.50	-54.20	0.02
18	1.70	-184.92	4.039	247.50	-16.55	0.09
		-68.62	-4.039	247.50	-47.32	0.04
19	0.00	-184.92	-4.039	247.50	-16.55	0.09
		-68.62	4.039	247.50	-47.32	0.04
19	1.70	-229.68	-5.386	247.50	-4.71	0.11
		-94.61	5.386	247.50	-40.45	0.05
20	0.00	-229.68	5.386	247.50	-4.71	0.11
		-94.61	-5.386	247.50	-40.45	0.05
20	1.70	-274.44	6.732	247.50	7.13	0.13
		-120.59	-6.732	247.50	-33.57	0.07
21	0.00	99.06	-87.714	247.50	-39.27	0.27
		223.98	43.857	247.50	-6.22	0.21
21	1.28	79.57	-89.733	247.50	-44.43	0.26
		190.41	44.867	247.50	-15.10	0.19
22	0.00	79.57	-89.733	247.50	-44.43	0.26
		190.41	44.867	247.50	-15.10	0.19
22	1.28	60.08	-91.753	247.50	-49.58	0.26
		156.84	45.876	247.50	-23.98	0.18
23	0.00	60.08	-91.753	247.50	-49.58	0.26
		156.84	45.876	247.50	-23.98	0.18
23	1.28	40.59	-93.772	247.50	-54.74	0.26
		123.28	46.886	247.50	-32.86	0.17
24	0.00	40.59	-93.772	247.50	-54.74	0.26
		123.27	46.886	247.50	-32.86	0.17
24	1.28	21.11	-95.792	247.50	-59.89	0.25
		89.71	47.896	247.50	-41.74	0.16
25	0.00	21.10	-95.792	247.50	-59.89	0.25
		89.70	47.896	247.50	-41.74	0.16
25	1.28	-1.96	-97.812	247.50	-64.96	0.25
		62.09	48.906	247.50	-49.05	0.15
26	0.00	-1.96	-97.812	247.50	-64.96	0.25
		62.09	48.906	247.50	-49.05	0.15
26	1.28	-21.44	-99.831	247.50	-59.80	0.27
		28.52	49.916	247.50	-57.93	0.14
27	0.00	-21.45	-99.831	247.50	-59.80	0.27
		28.52	49.916	247.50	-57.93	0.14
27	1.28	-47.84	-101.851		247.50	-52.82	0.28
		3.11	50.925	247.50	-64.65	0.13
28	0.00	-47.84	-101.851		247.50	-52.82	0.28
		3.10	50.925	247.50	-64.66	0.13
28	1.28	-78.83	-103.87	247.50	-44.62	0.30
		-16.38	51.935	247.50	-61.14	0.14
29	0.00	-78.83	-103.87	247.50	-44.62	0.30
		-16.39	51.935	247.50	-61.14	0.14
29	1.28	-110.77	-52.945	247.50	-36.17	0.18
		-35.87	52.945	247.50	-55.99	0.15
30	0.00	-110.77	-52.945	247.50	-36.17	0.18
		-35.87	52.945	247.50	-55.99	0.15
30	1.28	-144.34	-53.955	247.50	-27.29	0.20
		-55.36	53.955	247.50	-50.83	0.16

Dimensionamiento a torsión

Barra	Distancia	Vd	Mxd	Tul	Asl(cm2/m)	Ast(cm2/m)	Vd/Vul+Td/Tul
1	0.00	82.35	-231.12	389.20	74.56	9.02	0.63
		162.35	326.04	389.20	105.17	12.73	0.90
1	1.28	62.52	-224.04	389.20	72.27	8.74	0.60
		90.86	281.24	389.20	90.72	10.98	0.76
2	0.00	62.52	-224.04	389.20	72.27	8.74	0.60
		90.86	281.23	389.20	90.72	10.98	0.76
2	1.28	42.70	-216.96	389.20	69.99	8.47	0.58
		49.82	241.75	389.20	77.98	9.44	0.64
3	0.00	42.70	-216.96	389.20	69.99	8.47	0.58
		49.82	241.75	389.20	77.98	9.44	0.64
3	1.28	22.87	-209.88	389.20	67.70	8.19	0.55
		14.21	209.88	389.20	67.70	8.19	0.55
4	0.00	22.87	-209.88	389.20	67.70	8.19	0.55
		14.21	209.88	389.20	67.70	8.19	0.55
4	1.28	3.05	-202.80	389.20	65.42	7.92	0.52
		-5.62	202.80	389.20	65.42	7.92	0.52
5	0.00	3.05	-202.80	389.20	65.42	7.92	0.52
		-5.62	202.80	389.20	65.42	7.92	0.52
5	1.28	-16.77	-199.99	389.20	64.51	7.81	0.52
		-25.45	199.99	389.20	64.51	7.81	0.52
6	0.00	-16.77	-199.99	389.20	64.51	7.81	0.52
		-25.45	199.99	389.20	64.51	7.81	0.52
6	1.28	-36.60	-192.91	389.20	62.23	7.53	0.51
		-45.27	192.91	389.20	62.23	7.53	0.51
7	0.00	-36.60	-192.91	389.20	62.23	7.53	0.51
		-45.28	192.91	389.20	62.23	7.53	0.51
7	1.28	-56.42	-185.82	389.20	59.94	7.25	0.50
		-65.10	185.82	389.20	59.94	7.25	0.50
8	0.00	-56.42	-185.82	389.20	59.94	7.25	0.50
		-65.10	185.82	389.20	59.94	7.25	0.50
8	1.28	-76.25	-178.74	389.20	57.66	6.98	0.49
		-84.92	178.74	389.20	57.66	6.98	0.49
9	0.00	-76.25	-178.74	389.20	57.66	6.98	0.49
		-84.93	178.74	389.20	57.66	6.98	0.49
9	1.28	-96.07	-177.03	389.20	57.11	6.91	0.49
		-104.75	177.03	389.20	57.11	6.91	0.50
10	0.00	-96.07	-177.03	389.20	57.11	6.91	0.49
		-104.75	177.03	389.20	57.11	6.91	0.50
10	1.28	-115.90	-177.38	389.20	57.22	6.92	0.50
		-124.57	177.38	389.20	57.22	6.92	0.51
11	0.00	155.64	-106.01	389.20	34.20	4.14	0.34
		196.03	107.75	389.20	34.76	4.21	0.36
11	1.70	124.92	-90.72	389.20	29.26	3.54	0.28
		165.31	92.46	389.20	29.82	3.61	0.31
12	0.00	124.92	-90.72	389.20	29.26	3.54	0.28
		165.31	92.45	389.20	29.82	3.61	0.31
12	1.70	94.20	-75.42	389.20	24.33	2.94	0.23
		134.60	77.16	389.20	24.89	3.01	0.25
13	0.00	94.20	-75.42	389.20	24.33	2.94	0.23
		134.60	77.16	389.20	24.89	3.01	0.25
13	1.70	63.48	-60.12	389.20	19.39	2.35	0.18
		103.88	61.86	389.20	19.96	2.41	0.20
14	0.00	63.48	-60.12	389.20	19.39	2.35	0.18
		103.88	61.86	389.20	19.96	2.41	0.20
14	1.70	32.77	-68.89	389.20	22.22	2.69	0.19
		73.16	70.63	389.20	22.78	2.76	0.21
15	0.00	32.77	-68.89	389.20	22.22	2.69	0.19
		73.16	70.63	389.20	22.78	2.76	0.21
15	1.70	2.05	-81.49	389.20	26.29	3.18	0.21
		12.44	83.23	389.20	26.85	3.25	0.22
16	0.00	2.05	-81.49	389.20	26.29	3.18	0.21
		-17.56	83.23	389.20	26.85	3.25	0.22
16	1.70	-28.67	-68.89	389.20	22.22	2.69	0.19
		-78.27	70.63	389.20	22.78	2.76	0.21
17	0.00	-28.67	-68.89	389.20	22.22	2.69	0.19
		-78.27	70.63	389.20	22.78	2.76	0.21
17	1.70	-59.39	-60.12	389.20	19.39	2.35	0.18
		-108.99	61.86	389.20	19.96	2.41	0.20
18	0.00	-59.39	-60.12	389.20	19.39	2.35	0.18
		-108.99	61.96	389.20	19.96	2.41	0.20
18	1.70	-90.10	-75.42	389.20	24.33	2.94	0.23
		-139.71	77.16	389.20	24.89	3.01	0.26
19	0.00	-90.10	-75.42	389.20	24.33	2.94	0.23
		-139.71	77.16	389.20	24.89	3.01	0.26
19	1.70	-120.82	-90.72	389.20	29.26	3.54	0.28
		-170.43	92.45	389.20	29.82	3.61	0.31
20	0.00	-120.82	-90.72	389.20	29.26	3.54	0.28
		-170.43	92.46	389.20	29.82	3.61	0.31
20	1.70	-151.54	-106.01	389.20	34.20	4.14	0.33

		-201.14	107.75	389.20	34.76	4.21	0.36
21	0.00	123.87	-177.38	389.20	57.22	6.92	0.51
		115.21	177.38	389.20	57.22	6.92	0.50
21	1.28	104.05	-177.03	389.20	57.11	6.91	0.50
		95.38	177.03	389.20	57.11	6.91	0.49
22	0.00	104.04	-177.03	389.20	57.11	6.91	0.50
		95.38	177.03	389.20	57.11	6.91	0.49
22	1.28	84.22	-178.74	389.20	57.66	6.98	0.49
		75.56	178.74	389.20	57.66	6.98	0.49
23	0.00	84.22	-178.74	389.20	57.66	6.98	0.49
		75.56	178.74	389.20	57.66	6.98	0.49
23	1.28	64.40	-185.82	389.20	59.94	7.25	0.50
		55.73	185.82	389.20	59.94	7.25	0.50
24	0.00	64.40	-185.82	389.20	59.94	7.25	0.50
		55.73	185.82	389.20	59.94	7.25	0.50
24	1.28	44.57	-192.90	389.20	62.23	7.53	0.51
		35.91	192.90	389.20	62.23	7.53	0.51
25	0.00	44.57	-192.91	389.20	62.23	7.53	0.51
		35.91	192.91	389.20	62.23	7.53	0.51
25	1.28	24.74	-199.99	389.20	64.51	7.81	0.52
		16.08	199.99	389.20	64.51	7.81	0.52
26	0.00	24.74	-199.99	389.20	64.51	7.81	0.52
		16.08	199.99	389.20	64.51	7.81	0.52
26	1.28	4.92	-202.80	389.20	65.42	7.92	0.52
		-3.74	202.80	389.20	65.42	7.92	0.52
27	0.00	4.92	-202.80	389.20	65.42	7.92	0.52
		-3.75	202.80	389.20	65.42	7.92	0.52
27	1.28	-14.91	-209.88	389.20	67.70	8.19	0.55
		-23.57	209.88	389.20	67.70	8.19	0.55
28	0.00	-14.91	-209.88	389.20	67.70	8.19	0.55
		-23.57	209.88	389.20	67.70	8.19	0.55
28	1.28	-34.73	-216.96	389.20	69.99	8.47	0.57
		-43.39	216.96	389.20	69.99	8.47	0.58
29	0.00	-34.73	-216.96	389.20	69.99	8.47	0.57
		-43.40	216.96	389.20	69.99	8.47	0.58
29	1.28	-54.56	-224.04	389.20	72.27	8.74	0.60
		-63.22	224.04	389.20	72.27	8.74	0.60
30	0.00	-54.56	-224.04	389.20	72.27	8.74	0.60
		-63.22	224.04	389.20	72.27	8.74	0.60
30	1.28	-74.38	-231.12	389.20	74.56	9.02	0.62
		-83.04	231.12	389.20	74.56	9.02	0.63

4.9. CALCULO A RASANTE DE LAS ALAS

Se calcula la armadura de cosido del ala con el alma.

El rasante será igual a $$Rq = \frac{V.Mest}{l} = \frac{Vd}{3,02}$$

Area = 0,615 m

Mest = 0,615 . (0,8555 - 0,62) = 0,145 m^3

Por lo que la armadura que se ha de disponer será

$$As = 0,08\ Vd\ (cm^2/m)$$

Se presentan a continuación los listados de obtención de la armadura de rasante.

Dimensionamiento frente al esfuerzo rasante

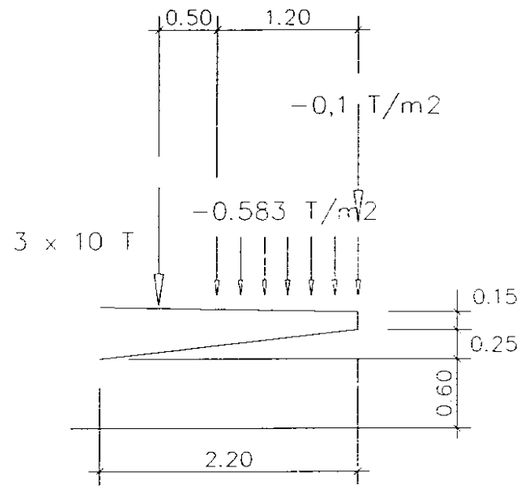
Barra	Distancia		Vd	Tens	Sigmal	Rasante	A ras (cm2/m)	
1	0.00	54.20	7.15	138.00	17.95	4.27		
	1.28	218.78	28.88	138.00	72.44	17.25		
1	0.00	34.71	4.58	138.00	11.49	2.74		
	1.28	155.21	20.49	138.00	51.39	12.24		
2	0.00	34.71	4.58	138.00	11.49	2.74		
	1.28	155.21	20.49	138.00	51.39	12.24		
2	0.00	15.22	2.01	138.00	5.04	1.20		
	1.28	118.19	15.60	138.00	39.14	9.32		
3	0.00	15.22	2.01	138.00	5.04	1.20		
	1.28	118.19	15.60	138.00	39.14	9.32		
3	0.00	-8.82	1.16	138.00	2.92	0.69		
	1.28	84.62	11.17	138.00	28.02	6.67		
4	0.00	-8.82	1.16	138.00	2.92	0.70		
	1.28	84.62	11.17	138.00	28.02	6.67		
4	0.00	-34.23	4.52	138.00	11.33	2.70		
	1.28	28.04	3.70	138.00	9.28	2.21		
5	0.00	-37.68	4.97	138.00	12.48	2.97		
	1.28	24.35	3.21	138.00	8.06	1.92		
5	0.00	-71.25	9.40	138.00	23.59	5.62		
	1.28	4.86	0.64	138.00	1.61	0.38		
6	0.00	-71.25	9.41	138.00	23.59	5.62		
	1.28	4.86	0.64	138.00	1.61	0.38		
6	0.00	-128.87	17.01	138.00	42.67	10.16		
	1.28	-18.19	2.40	138.00	6.02	1.43		
7	0.00	-128.87	17.01	138.00	42.67	10.16		
	1.28	-18.20	2.40	138.00	6.03	1.43		
7	0.00	-162.43	21.44	138.00	53.79	12.81		
	1.28	-37.68	4.97	138.00	12.48	2.97		
8	0.00	-162.43	21.44	138.00	53.79	12.81		
	1.28	-37.68	4.97	138.00	12.48	2.97		
8	0.00	-196.00	25.87	138.00	64.90	15.45		
	1.28	-60.83	8.03	138.00	20.14	4.80		
9	0.00	-196.00	25.87	138.00	64.90	15.45		
	1.28	-60.83	8.03	138.00	20.14	4.80		
9	0.00	-235.71	31.11	138.00	78.05	18.58		
	1.28	-81.06	10.70	138.00	26.84	6.39		
10	0.00	-235.71	31.11	138.00	78.05	18.58		
	1.28	-81.06	10.70	138.00	26.84	6.39		
10	0.00	-269.28	35.54	138.00	89.16	21.23		
	1.28	-100.55	13.27	138.00	33.29	7.93		
11	0.00	124.27	16.40	138.00	41.15	9.80		
	1.70	310.22	40.95	138.00	102.72	24.46		
11	0.00	96.95	12.80	138.00	32.10	7.64		
	1.70	227.13	29.98	138.00	75.21	17.91		
12	0.00	96.95	12.80	138.00	32.10	7.64		
	1.70	227.12	29.98	138.00	75.21	17.91		
12	0.00	65.64	8.66	138.00	21.74	5.18		
	1.70	182.37	24.07	138.00	60.39	14.38		
13	0.00	65.64	8.66	138.00	21.73	5.17		
	1.70	182.37	24.07	138.00	60.39	14.38		
13	0.00	39.66	5.23	138.00	13.13	3.13		
	1.70	137.61	18.16	138.00	45.57	10.85		
14	0.00	39.65	5.23	138.00	13.13	3.13		
	1.70	137.61	18.16	138.00	45.57	10.85		
14	0.00	12.43	1.64	138.00	4.11	0.98		
	1.70	94.10	12.42	138.00	31.16	7.42		
15	0.00	12.43	1.64	138.00	4.11	0.98		
	1.70	94.10	12.42	138.00	31.16	7.42		
15	0.00	-22.13	2.92	138.00	7.33	1.74		
	1.70	27.91	3.68	138.00	9.24	2.20		
16	0.00	-30.47	4.02	138.00	10.09	2.40		
	1.70	19.14	2.53	138.00	6.34	1.51		
16	0.00	-96.65	12.76	138.00	32.00	7.62		
	1.70	-15.41	2.03	138.00	5.10	1.21		
17	0.00	-96.66	12.76	138.00	32.00	7.62		
	1.70	-15.41	2.03	138.00	5.10	1.21		
17	0.00	-140.17	18.50	139.00	46.41	11.05		

	1.70	-42.64	5.63	138.00	14.12	3.36
18	0.00	-140.17	18.50	138.00	46.41	11.05
	1.70	-42.64	5.63	138.00	14.12	3.36
18	0.00	-184.92	24.41	138.00	61.23	14.58
	1.70	-68.62	9.06	138.00	22.72	5.41
19	0.00	-184.92	24.41	138.00	61.23	14.58
	1.70	-68.62	9.06	138.00	22.72	5.41
19	0.00	-229.68	30.32	138.00	76.05	18.11
	1.70	-94.61	12.49	138.00	31.33	7.46
20	0.00	-229.68	30.32	138.00	76.05	18.11
	1.70	-94.61	12.49	138.00	31.33	7.46
20	0.00	-274.44	36.23	138.00	90.87	21.64
	1.70	-120.59	15.92	138.00	39.93	9.51
21	0.00	99.06	13.08	138.00	32.80	7.81
	1.28	223.98	29.56	138.00	74.16	17.66
21	0.00	79.57	10.50	138.00	26.35	6.27
	1.28	190.41	25.13	138.00	63.05	15.01
22	0.00	79.57	10.50	138.00	26.35	6.27
	1.28	190.41	25.13	138.00	63.05	15.01
22	0.00	60.08	7.93	138.00	19.89	4.74
	1.28	156.84	20.70	138.00	51.93	12.37
23	0.00	60.08	7.93	138.00	19.89	4.74
	1.28	156.84	20.70	138.00	51.93	12.37
23	0.00	40.59	5.36	138.00	13.44	3.20
	1.28	123.28	16.27	138.00	40.82	9.72
24	0.00	40.59	5.36	138.00	13.44	3.20
	1.28	123.27	16.27	138.00	40.82	9.72
24	0.00	21.11	2.79	138.00	6.99	1.66
	1.28	89.71	11.84	138.00	29.70	7.07
25	0.00	21.10	2.79	138.00	6.99	1.66
	1.28	89.70	11.84	138.00	29.70	7.07
25	0.00	-1.96	0.26	138.00	0.65	0.15
	1.28	62.09	8.20	138.00	20.56	4.90
26	0.00	-1.96	0.26	138.00	0.65	0.15
	1.28	-21.44	2.83	138.00	7.10	1.69
26	0.00	28.52	3.76	138.00	9.44	2.25
	1.28	-21.45	2.83	138.00	7.10	1.69
27	0.00	28.52	3.76	138.00	9.44	2.25
	1.28	-47.84	6.31	138.00	15.84	3.77
27	0.00	3.11	0.41	138.00	1.03	0.24
	1.28	-47.84	6.31	138.00	15.84	3.77
28	0.00	3.10	0.41	138.00	1.03	0.24
	1.28	-78.83	10.41	138.00	26.10	6.22
28	0.00	-16.38	2.16	138.00	5.42	1.29
	1.28	-78.83	10.41	138.00	26.10	6.22
29	0.00	-16.39	2.16	138.00	5.43	1.29
	1.28	-110.77	14.62	138.00	36.68	8.73
29	0.00	-35.87	4.74	138.00	11.88	2.83
	1.28	-110.77	14.62	138.00	36.68	8.73
30	0.00	-35.87	4.74	138.00	11.88	2.83
	1.28	-144.34	19.05	138.00	47.80	11.38
30	0.00	-55.36	7.31	138.00	18.33	4.36

4.10. ARMADURA DE FLEXION DEL VOLADIZO

Se calcula en este apartado la armadura de flexión del voladizo. Para las cargas puntuales se han utilizado las fórmulas dadas por Westergard.

Se presenta un esquema del voladizo de la estructura con las cargas existentes.



Peso propio 0,15 . 2,5 . 2,2² / 2 + 0,15 . 2,5 . 2,2² / 6 = 1,21 mT/m

Acera y barandilla 0,7 . 1,6 + 0,1 . 2,2 = 1,34 mT/m

Viento N = 3,15 . 0,166 . 1,8 = 0,94 T/m

My = (0,6 . 3,15 - 0,3) . 0,94 = 1,50 mT/m

Sobrecarga uniforme

My = 0,97 mT/m

Carro

$$M_{rueda} = \frac{P}{\pi} \frac{1}{\left(1+\left(\frac{y}{u}\right)^2\right)}$$

u = 0,5 m

y = 0 y = ±1,5

M_{rueda} = 3,82 mt

Md = (1,21 + 1,34) . 1,35 + (0,97 + 3,82) . 1,5 + 1,5 . 0,45 = 11,3 mT/m

As,nec = 10,1 cm²/m

4.11. CALCULO DE LAS RIOSTRAS

Se dispondrán vigas riostras en las pilas y en los estribos. La viga riostra de estribos tiene una sección distinta al resto del puente, ya que con el fin de recoger las torsiones los apoyos se separan cuatro metros.

Riostra en pila

Tendrá un ancho de 1,5 metro. Según se obtiene del modelo emparrilado los esfuerzos existentes son los siguientes.

M_{yd} = 159,6 mt

M_{td} = 29,9 mt

La armadura de negativos necesaria para ese momento es de 43,0 cm^2 .

Debido al momento torsor

Asl = 29,9 x 5,32 / (2 . 1,53 . 5,1/1,15) = 11,8 cm^2

Ast = 29,9 / (2 . 1,53 . 4,2) = 2,33 cm^2 / m

Riostra en estribo

Tendrá un ancho de 1,5 metro. Según se obtiene del modelo emparrilado los esfuerzos existentes son los siguientes.

M_{yd} = 63,4 mt

Vd = 49,3 T < Vcu = 49,5 T As,mín = 7,1 cm^2 / m

M_{td} = 29,9 mt

La armadura de positivos necesaria para ese momento es de 17,0 cm^2 .

Debido al momento torsor

Asl = 29,9 x 5,32 / (2 . 1,53 . 5,1/1,15) = 11,8 cm^2

Ast = 29,9 / (2 . 1,53 . 4,2) = 2,33 cm^2 / m

4.12. DIMENSIONAMIENTO DE LOS APARATOS DE APOYO

Se dimensionan a continuación los aparatos de neopreno.

Las reacciones debidas a las distintas hipótesis son las siguientes

	N	Fx	Fy	Desplaz.x	Desplaz.y
C. Perm.	71.30	--	--	--	--
Retracción	-0.80	-3.40	--	5.10	--
Temperatura	-1.30	-5.40	--	8.10	--
Gradiente	13.80	--	--	--	--
Viento	-35.20	--	-14.20	--	21.40
Frenado	-0.80	-2.00	--	3.00	--
Sc y carro	70.60	--	--	--	--

Ancho (mm) =400.00
Largo (mm) = 300.00
Alto (mm) = 32.00

Se colocarán apoyos de 300x400x71(32)

	Acc. Lentas	Acc. Instantáneas
Rigidez del apoyo	375.00	750.00

Acciones lentas

tan g =u/T 0.41 < 0,5

Limitación de la distorsión admisible total

tan g =u/T 0.51 < 0,7 tan g =u/T 0.67 < 0,7

Limitación de las presiones verticales

		Tensión
Nmáx =	155.70	129.75 <150 Kg/cm2
Nmín =	34.00	28.33

Condición de estabilidad

a/10 < T < a/5

0.03 < 0.032 < 0.06

Giro máximo 0.0016 <0.002 Para carga máxima

Al haber dos apoyos no hay giro transversal

Por lo que el aparato dimensionado es válido

Cálculo de armadura bajo carga concentrada
Coef. seg. = 1.50
N = 155.70
Acero Fyd = 4435
Hormigón 2500.00
Fctk (t/m2) = 178.58
A apoyo = 0.30
B apoyo = 0.40
A cont. = 0.70
B cont. = 1.00

Nd	Nu	Ac1	Ac	Asa	Asb
155.70	483.05	0.12	0.70	6.02	6.32

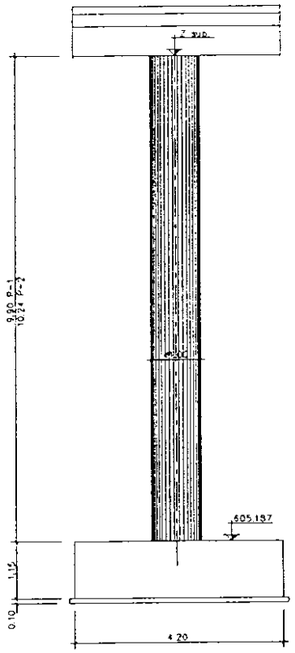
Leyenda

Nd	Carga de cálculo mayorada
Nu	Fuerza máxima de compresión
Ac1	Superficie sobre la que se situa la carga
Ac	Superficie resistente
Asa	Armadura necesaria en la dirección paralela a A
Asb	Armadura necesaria en la dirección paralela a B

5. CALCULO DE PILAS

Las pilas están formadas por fustes circulares de 1,0 metros de diámetro. La longitud de las mismas es de 10,20 m.

La carga es transmitida al terreno mediante una zapata cuadrada de 4,2 m de lado. La presión cobaricéntrica que dicha zapata transmite al terreno es en cualquier hipótesis menor de 30 T/m^2.



Se calcula a continuación la longitud de pandeo de las pilas. Se ha considerado la parte superior empotrada y coaccionado elásticamente por los neoprenos. En la zapata se admiten giros, por lo que lo colocaremos apoyado.

Los aparatos de apoyo son 300 x 400 x 71(32) por lo que la rigidez frente esfuerzos longitudinales serán

$$K = \frac{G.a.b}{T} = \frac{80.0,3.0,4}{0,032} = 300\ T/m$$

Como hay 2 aparatos de apoyo por estribo la rigidez frente a esfuerzos horizontales es de

$$K = 2 \times 300 = 600\ T/m$$

$$t = \frac{T}{EI/L^3} = \frac{600}{3,3.10^6 \times \frac{1,0^4 \Pi}{64} \cdot \frac{1}{10,25^3}} = 4,00$$

$r = 0$

$kL = 2,0 \rightarrow \beta = 1,57$

Por lo tan to la esbeltez sera

$$\lambda = \frac{L.\beta}{\phi / 4} = \frac{10.25 \times 1.57}{0.25} = 64,4$$

En las fórmulas anteriores las variables son

T es la rigidez de la superestructura

β es el coeficiente de pandeo

L es la longitud del pilote

ϕ es el diámetro del pilote

r es la rigidez frente al giro de la base

El método de obtención del factor de longitud de pandeo β ha sido tomada de la publicación escrita por German Gurfinkel en "Journal of the STRUCTURAL DIVISION, proceedings of the American Society of Civil Engineers", con el título de "Buckling of elastically restrained columns".

Al ser la esbeltez menor o igual que 100 según el artículo 43.1.1 de la norma EH-91, la excentricidad accidental que hay que tomar es, según el artículo 43.5.2, igual a

$$e_a = \left(0{,}85 + \frac{f_{yd}}{12000)}\right).\frac{h + 20e_0}{h + 10e_0}.\frac{l_0^2}{i}10^{-4} = \left(0{,}85 + \frac{4434.8}{12000}\right).\frac{0{,}89 + 20.e_0}{0{,}89 + 10.e_0}.\frac{10{,}25^2}{0{,}25}.10^{-4}$$

donde

e_a es la excentricidad adicional

f_{yd} es el límite elástico del acero

h es el canto de la sección

e_0 es la excentricidad de los esfuerzos

lo es la longitud de pandeo

i es el radio de giro de la sección

La excentricidad total para los esfuerzos solicitantes es por tanto

Se adjuntan a continuación los esfuerzos pésimos mayorados en la pila

Esfuerzo	N	My	Mz	e_a	M
N^+	-577.7	-23.3	54.8	0.075	102.8
N^-	-206.2	-39.3	0.0	0.082	56.2
My^+	-390.5	85.4	-0.1	0.083	118.0
Mz^+	-378.8	-32.3	181.2	0.090	218.2
Mz^+	-269.0	-29.5	184.1	0.092	211.2

El cálculo de la sección del pilote a flexión se ha realizado mediante un programa de ordenador llamado "FAGUS 2".Es un programa que sirve para realizar cálculos de secciones sometidas a flexión en ambas direccione, y a esfuerzo axil. Todos los cálculos se basan en la hipótesis de que toda sección deformada permanece plana.

Se han dispuesto 32 ϕ 20, y se ha obtenido el diagrama de iteración de la sección, comprobando que frente a los esfuerzos considerados la armadura es suficiente. También se ha hallado el momento último de rotura de la sección. Se adjuntan los resultados del cálculo descrito.

El cortante máximo es Vd = 52,0 T < Vcu = $0{,}89^2$. 5 . 14,1 = 56 T Por lo que se dispondrá armadura mínima As,mín = 8,0 cm^2/m

La zapata tiene un canto de 1,15 m y es cuadrada de 4,20 m de lado. Los esfuerzos con los que ha sido calculada son los siguientes.

Esfuerzo	N	Vy	Vz	Mx	My	Mz
N^+	-393.1	-13.4	2.0	0.1	-14.2	54.3
N^-	-240.7	0.0	6.8	0.0	-32.1	0.1
My^+	-323.0	0.1	12.9	0.0	-59.3	0.0
Mz^+	-268.7	44.6	2.0	-0.6	-14.9	-181.0

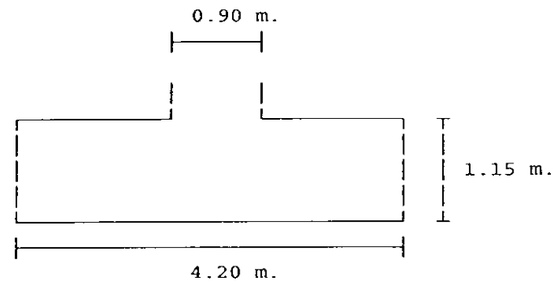
Se presentan a continuación los cálculos realizados de la zapata.

Estructura .....:Gif

Pila Nº : 1

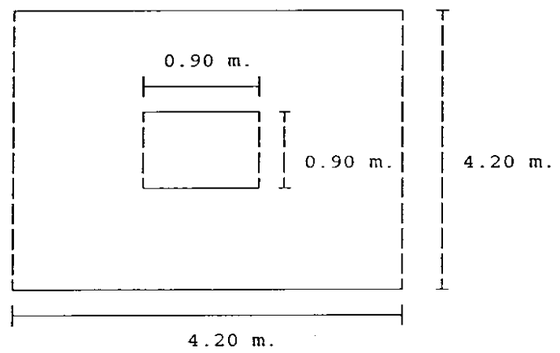
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* dibujo sin escala



ALZADO

Dirección del eje del tablero



PLANTA

CARACTERISTICAS DE LOS MATERIALES Y CIMENTACION

Fck (Kg/cm²) ..... 200 γcd ... 1.50

Fyk (Kg/cm²) ..... 5100 γyd ... 1.15

Recubrimiento de armaduras ..... 4.0 cms

Tensión admisible del terreno ..... 3.00 Kg/cm²

Coeficiente de rozamiento en cimentación ... 0.55

Coeficiente de seguridad al deslizamiento... 1.50

Coeficiente de seguridad al vuelco 1.50

©ESFUERZOS CONSIDERADOS

* Longitudinal y transversal según la dirección del eje del tablero
* Esfuerzos en t y m.t

Hipótesis	Axil	F.Long	F.Trans	M.Long	M.Trans	γf
1	393.10	13.40	2.00	14.20	54.30	1.50
2	240.70	0.00	6.80	32.10	0.10	1.50
3	323.00	0.10	12.90	59.30	0.00	1.50
4	268.70	44.60	2.00	0.60	14.90	1.50

RESULTADOS DE CALCULO

©Tensiones sobre el Terreno en Kg/cm² y coeficientes de seguridad

Hipótesis	σ1	σ2	σ3	σ4	σcob	Cd	Cv
1	3.21	2.30	2.73	1.82	2.77	18.22	16.47
2	1.98	1.85	1.46	1.33	1.77	23.57	19.06
3	2.72	2.48	1.76	1.52	2.34	15.93	13.21
4	2.37	2.09	1.53	1.25	2.01	3.94	12.93

Tensión cobaricéntrica Máxima 2.77 Kg/cm² para la Hipótesis 1

©Esfuerzos de cálculo

* Esfuerzos en m.t/m y t/m Armaduras en cm²/m

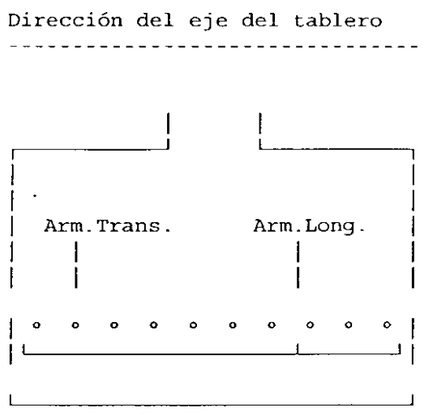
Recubrimiento de armaduras= 4.0 cms

Uc= 1480 t/m

Vcu long.= 128.17 t/m
Vcu trans.= 128.17 t/m

Hipótesis	M.long	M.trans	Ar.long	Ar.trans	Vd long.	Vd Trans.
1	68.31	66.83	14.18	13.86	40.6	41.1
2	38.59	39.92	7.93	8.21	17.7	17.2
3	54.87	57.31	11.34	11.85	31.9	31.0
4	46.93	48.83	9.67	10.07	25.1	24.4

©DIBUJO DE LA ARMADURA



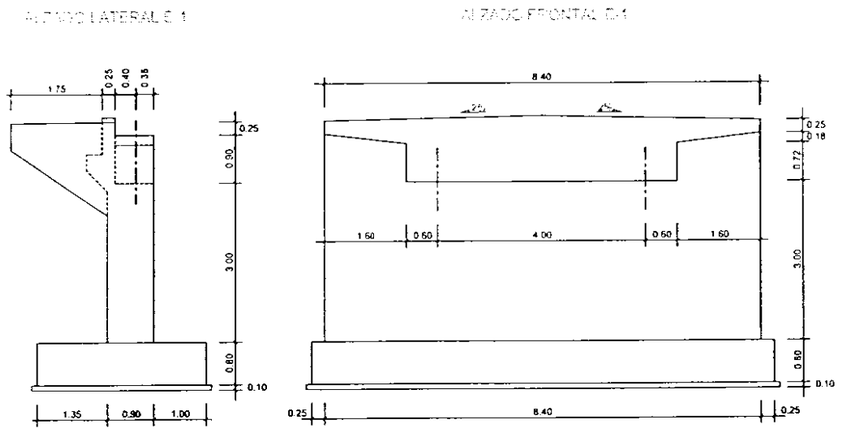
ALZADO

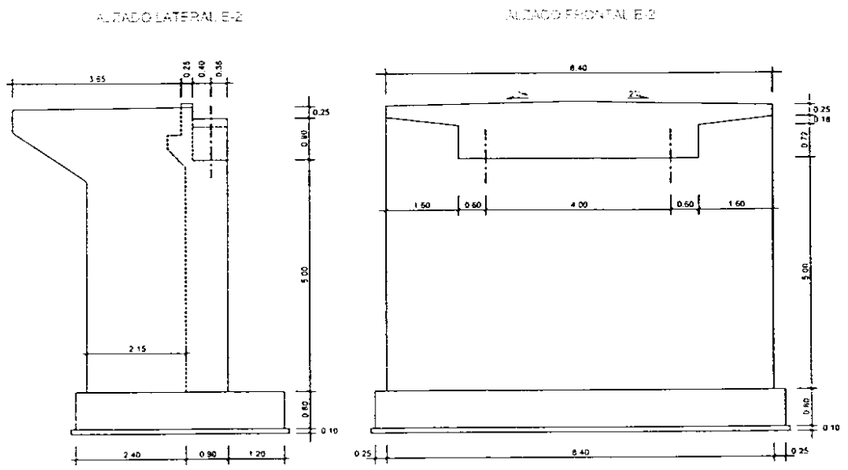
Armadura longitudinal Máxima 14.18 cm²/m para la Hipótesis 1

Armadura transversal Máxima 13.86 cm²/m para la Hipótesis 1

6.- CALCULO DE LOS ESTRIBOS

Los estribos correspondientes al paso superior PS-101+700 son estribos cerrados construidos "in situ" de hormigón armado. Además se disponen las aletas necesarias para evitar que el derrame de las tierras procedentes del terraplén, invadan la plataforma del ferrocarril.





El cálculo de los mismos se lleva a cabo mediante el programa "ESTRIBOS" de CIVILCAD, el cual permite proyectar estribos cerrados, es decir, constituidos por un muro frontal y dos aletas laterales para la contención de tierras. Estas pueden ser en voladizo, empotradas en el propio muro del estribo, o constituidas por un muro, de canto constante o variable, empotrado en la zapata y en el muro frontal del estribo, y con voladizo opcional.

El programa calcula los coeficientes de seguridad frente al deslizamiento y vuelco, las tensiones que produce sobre el terreno, los esfuerzos tanto en muro como en zapata y las armaduras necesarias.

Las cargas horizontales y verticales transmitidas por el tablero sobre los estribos son las siguientes:

	N	Fx	Fy	Desplaz$_x$	Desplaz$_y$
Peso propio + Cargas muertas	71.3	---	---	---	---
Retracción	-0.80	-3.4	---	5.10	---
Temperatura	1.30	5.4	---	-8.10	---
Gradiente	13.80	---	---	---	---
Viento	---	---	-14.20	---	21.40
Frenado	0.80	-2.00	---	3.00	---
Sobrecargas y Carro de 60 t	19.30+51.30	---	---	---	---

A continuación, se adjuntan los cálculos realizados por el ordenador.

ESTRIBO E-1:

** CivilCAD (c) 1995 . Autores : L.M.Callis y J.M.Roig **
****

Titulo proyecto :ESTRIBO E-1

DEFINICION GEOMETRICA ESTRIBO
==========

Cotas de definición de la sección media :

Cota superior del murete de coronación : 4.992 m
Cota en el área de apoyos : 3.800 m
Cota de la cara superior de la zapata : 0.800 m
Cota del terreno de la rasante inferior : 0.800 m

Dimensiones medias de la zapata :

Longitud de la zarpa delantera : 1.000 m
Longitud de la zarpa trasera : 2.250 m
Canto de la zapata : 0.800 m

Canto del muro :

Anchura del cargadero(M) : 0.750 m
Canto del muro de coronación(N) : 0.250 m
Anchura de la zona de apoyo de la losa de transición(O) : 0.000 m
Altura del muro de coronación en trasdós del estribo(P) : 1.150 m

Tacón de la zapata :

Altura del tacón : 0.000 m
Canto en su base : 0.000 m
Canto en el empotramiento en la zapata : 0.000 m

Apoyos:

2 neoprenos situados a 0.350 m

Definición geométrica de la aleta 1 :

Longitud total de la aleta(LA) : 3.200 m
Canto del voladizo de la aleta(EA) : 0.400 m
Altura de la aleta en su extremo(HA) : 0.500 m
Ley de variación longitudinal de la altura 1(V): 1.5(H)

Definición geométrica de la aleta 2 :

Longitud total de la aleta(LA) : 2.750 m
Canto del voladizo de la aleta(EA) : 0.400 m
Altura de la aleta en su extremo(HA) : 0.500 m
Ley de variación longitudinal de la altura 1(V): 1.5(H)

Materiales :

fck : 250.000 Kg/cm2 fyk : 5100.000 Kg/cm2

Recubrimientos :

Alzados : 0.050 m Zapata : 0.100 m

Terreno natural:

Densidad : 2.000 T/m3 Ang.Roz : 26.565°
Ang.Roz Terreno-Zapata : 26.565°

Terreno en trasdós:

Densidad : 2.000 T/m3 Ang.Roz : 30.000° Porosidad : 0.000

Cargas:

Hipotesis 1:
- Reacción vertical por apoyo : 0.000 T
- Reacción horizontal por apoyo : 0.000 T
- Sobrecarga en trasdós : 1.000 T/m2
- Nivel freático en trasdós : 0.000 m
- Nivel freático en intradós : 0.000 m

Hipotesis 2:
- Reacción vertical por apoyo : 78.960 T
- Reacción horizontal por apoyo : 2.730 T
- Sobrecarga en trasdós : 1.000 T/m2
- Nivel freático en trasdós : 0.000 m
- Nivel freático en intradós : 0.000 m

Hipotesis 3:
- Reacción vertical por apoyo : 33.390 T
- Reacción horizontal por apoyo : 2.730 T
- Sobrecarga en trasdós : 1.000 T/m2
- Nivel freático en trasdós : 0.000 m
- Nivel freático en intradós : 0.000 m

ESTABILIDAD
==========

Hipotesis 1
Coef. seg. desliz. : 1.500 Empuje pasivo movilizado: 0.910
Coef. seg. vuelco : 3.039 Empuje pasivo movilizado: 0.000

Hipotesis 2
Coef. seg. desliz. : 2.150 Empuje pasivo movilizado: 0.000
Coef. seg. vuelco : 3.913 Empuje pasivo movilizado: 0.000

Hipotesis 3
Coef. seg. desliz. : 1.639 Empuje pasivo movilizado: 0.000
Coef. seg. vuelco : 3.197 Empuje pasivo movilizado: 0.000

TENSIONES BAJO ZAPATA
=====================

Hipotesis 1
Ley de tensiones trapecial.
Tensión en puntera : 11.552 T/m2 Tensión en zarpa trasera : 4.050 T/m2

Hipotesis 2
Ley de tensiones trapecial.
Tensión en puntera : 21.108 T/m2 Tensión en zarpa trasera : 5.413 T/m2

Hipotesis 3
Ley de tensiones trapecial.
Tensión en puntera : 16.357 T/m2 Tensión en zarpa trasera : 3.862 T/m2

CALCULO DE LA ZAPATA
====================

Zarpa delantera.Cálculo a flexión.Envolvente de esfuerzos pml.

x : Distancia al extremo anterior de la zarpa delantera.
Md : Momento flector mayorado.
u1 : Armadura de tracción en cara inferior de la zapata pml.
u2 : Armadura de compresión en cara superior de la zapata pml.

x(m.)	Md(mT)	u1(T/m)	u2(T/m)
0.000	0.000	0.000	0.000
0.128	0.247	0.353	0.000
0.256	0.977	1.396	0.000
0.383	2.174	3.110	0.000
0.511	3.821	5.474	0.000
0.639	5.904	8.470	0.000
0.767	8.405	12.080	0.000
0.894	11.308	16.288	0.000
1.022	14.598	21.078	0.000
1.150	18.258	26.435	0.000

Cálculo de la zarpa a cortante : zapata tipo I (EH-91).
Cálculo de la resistencia del hormigón en sección S2 (EH-91):
Cortante de cálculo Vd(T/m) :18.24
Cortante resistido por el hormigón Vcu(T/m) :90.37

Zarpa trasera.Cálculo a flexión.Envolvente de esfuerzos pml.

x : Distancia al extremo posterior de la zarpa trasera.
Md : Momento flector mayorado.
u1 : Armadura de tracción en cara superior de la zapata pml.
u2 : Armadura de compresión en cara inferior de la zapata pml.

x(m.)	Md(mT)	u1(T/m)	u2(T/m)
0.000	0.000	0.000	0.000
0.156	0.142	0.203	0.000
0.311	0.552	0.788	0.000
0.467	1.215	1.738	0.000
0.622	2.123	3.038	0.000
0.778	3.260	4.668	0.000
0.933	4.611	6.609	0.000
1.089	6.162	8.843	0.000
1.244	7.900	11.351	0.000
1.400	9.642	13.872	0.000

Cálculo de la zarpa a cortante : zapata tipo I (EH-91).
Cálculo de la resistencia del hormigón en sección S2 (EH-91):
Cortante de cálculo Vd(T/m) :9.07
Cortante resistido por el hormigón Vcu(T/m) :90.37

CALCULO DEL MURO
================

Muro del estribo. Envolvente de esfuerzos pml.

x : Cota de la sección en el muro.
Md : Momento flector mayorado.
Nd : Axil mayorado.
u1 : Armadura de tracción en cara interior del muro pml.
u2 : Armadura de compresión en cara exterior del muro pml.
Vd : Cortante mayorado.
u3 : Cuantia de armadura de cortante pm2.

x(m.)	Md(T)	Nd(mT)	u1(T/m)	u2(T/m)	Vd(T)	u3(T/m2)
3.798	4.750	31.280	0.000	0.000	2.437	0.000
3.465	5.669	32.612	0.000	0.000	3.098	0.000
3.132	6.827	33.945	0.000	0.000	3.878	0.000
2.799	8.265	35.277	0.000	0.000	4.775	0.000
2.466	10.022	36.610	0.000	0.000	5.792	0.000
2.132	12.137	37.942	0.000	0.000	6.926	0.000
1.799	14.649	39.275	0.000	0.000	8.179	0.000
1.466	17.599	40.607	0.000	0.000	9.550	0.000
1.133	21.025	41.940	0.813	0.000	11.040	0.000
0.800	24.967	43.272	4.446	0.000	12.648	0.000

VOLADIZO DE LA ALETA 1

Esfuerzos en el empotramiento del voladizo por empuje de tierras :

Momento mayorado	Armadura de traccion	Armadura de compresion
2.062mT/m	5.932T/m.	0.000T/m.

Cortante mayorado	Armadura de cortante
2.148T/m	0.000T/m.

Esfuerzos en el empotramiento del voladizo por peso propio :

Momento mayorado	Armadura de traccion	Armadura de compresion
5.767mT	3.014T	0.000T

VOLADIZO DE LA ALETA 2

Esfuerzos en el empotramiento del voladizo por empuje de tierras :

Momento mayorado	Armadura de traccion	Armadura de compresion
1.421mT/m	4.079T/m.	0.000T/m.

Cortante mayorado	Armadura de cortante
1.707T/m	0.000T/m.

Esfuerzos en el empotramiento del voladizo por peso propio :

Momento mayorado	Armadura de traccion	Armadura de compresion
3.600mT	2.230T	0.000T

ESTRIBO E-2:

** CivilCAD (c) 1995 . Autores : L.M.Callis y J.M.Roig **

DEFINICION GEOMETRICA ESTRIBO

Cotas de definición de la sección media :

- Cota superior del murete de coronación : 7.034 m
- Cota en el área de apoyos : 5.800 m
- Cota de la cara superior de la zapata : 0.800 m
- Cota del terreno de la rasante inferior : 0.800 m

Dimensiones medias de la zapata :

- Longitud de la zarpa delantera : 1.200 m
- Longitud de la zarpa trasera : 3.290 m
- Canto de la zapata : 0.800 m

Canto del muro :

- Anchura del cargadero(M) : 0.750 m
- Canto del muro de coronación(N) : 0.250 m
- Anchura de la zona de apoyo de la losa de transición(O) : 0.000 m
- Altura del muro de coronación en trasdós del estribo(P) : 1.150 m

Tacón de la zapata :

- Altura del tacón : 0.000 m
- Canto en su base : 0.000 m
- Canto en el empotramiento en la zapata : 0.000 m

Apoyos:

2 neoprenos situados a 0.350 m

Definición geométrica de la aleta 1 :

- Longitud total de la aleta(LA) : 4.650 m
- Canto del voladizo de la aleta(EA) : 0.400 m
- Altura de la aleta en su extremo(HA) : 0.500 m
- Ley de variación longitudinal de la altura 1(V): 1.5(H)
- Longitud del muro de la aleta(LM) : 3.050 m
- Canto del muro de la aleta(EM) : 0.400 m

Definición geométrica de la aleta 2 :

Longitud total de la aleta(LA) : 3.100 m
Canto del voladizo de la aleta(EA) : 0.400 m
Altura de la aleta en su extremo(HA) : 0.500 m
Ley de variación longitudinal de la altura 1(V): 1.5(H)

Materiales :

fck : 250.000 Kg/cm2 fyk : 5100.000 Kg/cm2

Recubrimientos :

Alzados : 0.050 m Zapata : 0.100 m

Terreno natural:

Densidad : 2.000 T/m3 Ang.Roz : 26.565°
Ang.Roz Terreno-Zapata : 26.565°

Terreno en trasdós:

Densidad : 2.000 T/m3 Ang.Roz : 30.000° Porosidad : 0.000

Cargas:

Hipotesis 1:
- Reacción vertical por apoyo : 0.000 T
- Reacción horizontal por apoyo : 0.000 T
- Sobrecarga en trasdós : 1.000 T/m2
- Nivel freático en trasdós : 0.000 m
- Nivel freático en intradós : 0.000 m

Hipotesis 2:
- Reacción vertical por apoyo : 78.960 T
- Reacción horizontal por apoyo : 2.730 T
- Sobrecarga en trasdós : 1.000 T/m2
- Nivel freático en trasdós : 0.000 m
- Nivel freático en intradós : 0.000 m

Hipotesis 3:
- Reacción vertical por apoyo : 33.390 T
- Reacción horizontal por apoyo : 2.730 T
- Sobrecarga en trasdós : 1.000 T/m2
- Nivel freático en trasdós : 0.000 m
- Nivel freático en intradós : 0.000 m

ESTABILIDAD
==========

Hipotesis 1
Coef. seg. desliz. : 1.500 Empuje pasivo movilizado: 0.861
Coef. seg. vuelco : 3.141 Empuje pasivo movilizado: 0.000

Hipotesis 2
Coef. seg. desliz. : 1.858 Empuje pasivo movilizado: 0.000
Coef. seg. vuelco : 3.483 Empuje pasivo movilizado: 0.000

Hipotesis 3
Coef. seg. desliz. : 1.580 Empuje pasivo movilizado: 0.000
Coef. seg. vuelco : 3.151 Empuje pasivo movilizado: 0.000

TENSIONES BAJO ZAPATA
====================

Hipotesis 1
Ley de tensiones trapecial.
Tensión en puntera : 16.872 T/m2 Tensión en zarpa trasera : 5.674 T/m2

Hipotesis 2
Ley de tensiones trapecial.
Tensión en puntera : 25.553 T/m2 Tensión en zarpa trasera : 4.896 T/m2

Hipotesis 3
Ley de tensiones trapecial.
Tensión en puntera : 21.154 T/m2 Tensión en zarpa trasera : 4.734 T/m2

CALCULO DE LA ZAPATA
====================

Md : Momento flector de cálculo pml.
Nd : Axil de cálculo pml.
Vd : Cortante de cálculo pml.
Vcu : Cortante resistente del hormigón pml.

Esfuerzos longitudinales pml. Signo+

ul : Armadura de tracción en cara inferior de la zapata pml.
u2 : Armadura de compresión en cara superior de la zapata pml.
u3 : Cuantía de armadura de cortante pm2.

Nodo	Md(mT)	Nd(T)	u1(T/m)	u2(T/m)	Vd(T)	Vcu(T)	u3(T/m2)
1	10.96	0.00	15.78	0.00	6.12	45.18	0.00
2	36.19	0.00	53.12	0.00	-27.81	45.18	0.00
3	2.98	0.00	4.27	0.00	-19.07	45.18	0.00
4	-0.28	0.00	0.00	0.00	-4.31	45.18	0.00
5	-0.17	0.00	0.00	0.00	0.10	45.18	0.00
6	0.04	0.00	0.05	0.00	0.75	45.18	0.00
7	0.20	0.00	0.29	0.00	0.72	45.18	0.00
8	0.53	0.00	0.75	0.00	0.77	45.18	0.00
9	1.30	0.00	1.85	0.00	-1.51	45.18	0.00
10	1.49	0.00	2.13	0.00	-16.33	45.18	0.00
11	-6.44	0.00	0.00	0.00	-28.15	45.18	0.00
12	5.05	0.00	7.24	0.00	22.30	45.18	0.00
13	48.08	0.00	71.24	0.00	3.47	45.18	0.00
14	0.17	0.00	0.24	0.00	0.60	45.18	0.00
15	0.15	0.00	0.21	0.00	0.53	45.18	0.00
16	0.13	0.00	0.19	0.00	0.46	45.18	0.00
17	0.12	0.00	0.17	0.00	0.38	45.18	0.00
18	0.10	0.00	0.15	0.00	0.31	45.18	0.00
19	0.09	0.00	0.12	0.00	0.24	45.18	0.00
20	0.08	0.00	0.11	0.00	0.10	45.18	0.00
21	-4.69	0.00	0.00	0.00	15.74	45.18	0.00
22	-1.00	0.00	0.00	0.00	32.18	45.18	0.00
23	5.96	0.00	8.55	0.00	21.65	45.18	0.00
24	48.27	0.00	71.54	0.00	5.88	45.18	0.00
25	-4.84	0.00	0.00	0.00	3.06	45.18	0.00
26	-4.41	0.00	0.00	0.00	1.99	45.18	0.00
27	-3.59	0.00	0.00	0.00	0.78	45.18	0.00
28	-2.76	0.00	0.00	0.00	-0.23	45.18	0.00
29	-2.24	0.00	0.00	0.00	-0.79	45.18	0.00
30	-2.00	0.00	0.00	0.00	-1.00	45.18	0.00
31	-1.89	0.00	0.00	0.00	-0.45	45.18	0.00
32	-1.54	0.00	0.00	0.00	1.35	45.18	0.00
33	-0.69	0.00	0.00	0.00	3.34	45.18	0.00
34	6.33	0.00	9.08	0.00	21.33	45.18	0.00
35	48.29	0.00	71.57	0.00	19.03	45.18	0.00
36	-14.00	0.00	0.00	0.00	15.78	45.18	0.00
37	-11.34	0.00	0.00	0.00	13.89	45.18	0.00
38	-8.80	0.00	0.00	0.00	11.97	45.18	0.00
39	-6.13	0.00	0.00	0.00	10.12	45.18	0.00
40	-3.84	0.00	0.00	0.00	8.67	45.18	0.00
41	-2.07	0.00	0.00	0.00	7.08	45.18	0.00
42	-0.79	0.00	0.00	0.00	5.35	45.18	0.00
43	0.00	0.00	0.00	0.00	3.34	45.18	0.00
44	0.38	0.00	0.54	0.00	3.09	45.18	0.00
45	6.43	0.00	9.24	0.00	21.27	45.18	0.00
46	48.33	0.00	71.63	0.00	26.45	45.18	0.00
47	-21.49	0.00	0.00	0.00	23.09	45.18	0.00
48	-17.09	0.00	0.00	0.00	20.87	45.18	0.00
49	-12.97	0.00	0.00	0.00	18.42	45.18	0.00
50	-9.15	0.00	0.00	0.00	15.83	45.18	0.00
51	-5.52	0.00	0.00	0.00	13.44	45.18	0.00
52	-2.71	0.00	0.00	0.00	10.77	45.18	0.00
53	-0.75	0.00	0.00	0.00	7.81	45.18	0.00
54	0.35	0.00	0.50	0.00	4.66	45.18	0.00
55	0.84	0.00	1.20	0.00	3.92	45.18	0.00
56	6.46	0.00	9.27	0.00	21.27	45.18	0.00
57	48.35	0.00	71.66	0.00	29.30	45.18	0.00
58	-26.25	0.00	0.00	0.00	25.97	45.18	0.00
59	-21.01	0.00	0.00	0.00	23.78	45.18	0.00
60	-16.04	0.00	0.00	0.00	21.26	45.18	0.00
61	-11.48	0.00	0.00	0.00	18.46	45.18	0.00
62	-7.21	0.00	0.00	0.00	15.76	45.18	0.00
63	-3.71	0.00	0.00	0.00	12.67	45.18	0.00
64	-1.22	0.00	0.00	0.00	9.22	45.18	0.00
65	0.22	0.00	0.31	0.00	5.49	45.18	0.00
66	0.87	0.00	1.25	0.00	4.43	45.18	0.00
67	6.42	0.00	9.21	0.00	21.30	45.18	0.00
68	48.35	0.00	71.66	0.00	30.17	45.18	0.00
69	-28.89	0.00	0.00	0.00	26.89	45.18	0.00
70	-23.32	0.00	0.00	0.00	24.78	45.18	0.00
71	-17.98	0.00	0.00	0.00	22.31	45.18	0.00
72	-13.02	0.00	0.00	0.00	19.51	45.18	0.00
73	-8.52	0.00	0.00	0.00	16.76	45.18	0.00
74	-4.62	0.00	0.00	0.00	13.57	45.18	0.00
75	-1.78	0.00	0.00	0.00	9.95	45.18	0.00
76	-0.06	0.00	0.00	0.00	6.01	45.18	0.00
77	0.75	0.00	1.07	0.00	4.77	45.18	0.00
78	6.24	0.00	8.96	0.00	21.47	45.18	0.00
79	48.36	0.00	71.67	0.00	30.27	45.18	0.00
80	-30.03	0.00	0.00	0.00	27.01	45.18	0.00
81	-24.39	0.00	0.00	0.00	24.97	45.18	0.00
82	-18.95	0.00	0.00	0.00	22.56	45.18	0.00
83	-13.87	0.00	0.00	0.00	19.80	45.18	0.00
84	-9.32	0.00	0.00	0.00	17.07	45.18	0.00
85	-5.26	0.00	0.00	0.00	13.88	45.18	0.00
86	-2.24	0.00	0.00	0.00	10.25	45.18	0.00
87	-0.33	0.00	0.00	0.00	6.26	45.18	0.00
88	0.59	0.00	0.85	0.00	4.96	45.18	0.00
89	5.77	0.00	8.27	0.00	21.87	45.18	0.00
90	48.32	0.00	71.61	0.00	30.30	45.18	0.00
91	-29.96	0.00	0.00	0.00	27.06	45.18	0.00
92	-24.33	0.00	0.00	0.00	24.87	45.18	0.00
93	-19.04	0.00	0.00	0.00	22.18	45.18	0.00
94	-14.13	0.00	0.00	0.00	19.33	45.18	0.00

Nodo	Md(mT)	Nd(T)	u1(T/m)	u2(T/m)	Vd(T)	Vcu(T)	u3(T/m2)
95	-9.72	0.00	0.00	0.00	16.64	45.18	0.00
96	-5.76	0.00	0.00	0.00	13.59	45.18	0.00
97	-2.69	0.00	0.00	0.00	10.13	45.18	0.00
98	-0.66	0.00	0.00	0.00	6.29	45.18	0.00
99	0.37	0.00	0.52	0.00	5.04	45.18	0.00
100	5.39	0.00	7.73	0.00	21.22	45.18	0.00
101	47.23	0.00	69.93	0.00	59.75	45.18	35.20
102	-24.86	0.00	0.00	0.00	36.99	45.18	0.00
103	-23.07	0.00	0.00	0.00	17.76	45.18	0.00
104	-19.00	0.00	0.00	0.00	18.36	45.18	0.00
105	-14.76	0.00	0.00	0.00	16.95	45.18	0.00
106	-10.60	0.00	0.00	0.00	15.34	45.18	0.00
107	-6.68	0.00	0.00	0.00	13.06	45.18	0.00
108	-3.47	0.00	0.00	0.00	10.13	45.18	0.00
109	-1.18	0.00	0.00	0.00	6.55	45.18	0.00
110	0.04	0.00	0.05	0.00	5.36	45.18	0.00
111	10.28	0.00	14.79	0.00	7.60	45.18	0.00
112	37.13	0.00	54.55	0.00	-57.69	45.18	0.00
113	-29.70	0.00	0.00	0.00	-20.49	45.18	0.00
114	-23.02	0.00	0.00	0.00	16.16	45.18	0.00
115	-19.13	0.00	0.00	0.00	13.26	45.18	0.00
116	-14.89	0.00	0.00	0.00	12.78	45.18	0.00
117	-10.75	0.00	0.00	0.00	11.87	45.18	0.00
118	-6.84	0.00	0.00	0.00	10.36	45.18	0.00
119	-3.62	0.00	0.00	0.00	8.20	45.18	0.00
120	-1.34	0.00	0.00	0.00	5.51	45.18	0.00
121	-0.12	0.00	0.00	0.00	4.82	45.18	0.00
122	0.00	0.00	0.00	0.00	0.00	45.18	0.00
123	0.00	0.00	0.00	0.00	0.00	45.18	0.00
124	0.00	0.00	0.00	0.00	0.00	45.18	0.00
125	0.00	0.00	0.00	0.00	0.00	45.18	0.00
126	0.00	0.00	0.00	0.00	0.00	45.18	0.00
127	0.00	0.00	0.00	0.00	0.00	45.18	0.00
128	0.00	0.00	0.00	0.00	0.00	45.18	0.00
129	0.00	0.00	0.00	0.00	0.00	45.18	0.00

Esfuerzos transversales pm1. Signo+

u1 : Armadura de tracción en cara inferior de la zapata pm1.

u2 : Armadura de compresión en cara superior de la zapata pm1.

u3 : Cuantía de armadura de cortante pm2.

Nodo	Md(mT)	Nd(T)	u1(T/m)	u2(T/m)	Vd(T)	Vcu(T)	u3(T/m2)
1	0.32	0.00	0.46	0.00	-0.80	45.18	0.00
2	-1.51	0.00	0.00	0.00	34.44	45.18	0.00
3	3.78	0.00	5.42	0.00	-14.93	45.18	0.00
4	0.62	0.00	0.89	0.00	-2.65	45.18	0.00
5	-0.13	0.00	0.00	0.00	3.42	45.18	0.00
6	-0.03	0.00	0.00	0.00	4.25	45.18	0.00
7	0.22	0.00	0.32	0.00	3.50	45.18	0.00
8	0.63	0.00	0.89	0.00	3.01	45.18	0.00
9	0.91	0.00	1.29	0.00	6.22	45.18	0.00
10	-0.57	0.00	0.00	0.00	25.94	45.18	0.00
11	-1.15	0.00	0.00	0.00	-24.06	45.18	0.00
12	0.94	0.00	1.35	0.00	-0.55	45.18	0.00
13	4.41	0.00	6.32	0.00	17.22	45.18	0.00
14	-1.56	0.00	0.00	0.00	8.90	45.18	0.00
15	-0.45	0.00	0.00	0.00	10.03	45.18	0.00
16	0.88	0.00	1.26	0.00	12.98	45.18	0.00
17	1.27	0.00	1.81	0.00	17.11	45.18	0.00
18	1.31	0.00	1.87	0.00	22.27	45.18	0.00
19	1.53	0.00	2.19	0.00	28.73	45.18	0.00
20	2.92	0.00	4.18	0.00	37.26	45.18	0.00
21	7.76	0.00	11.15	0.00	49.78	45.18	35.20
22	-20.68	0.00	0.00	0.00	7.27	45.18	0.00
23	1.44	0.00	2.05	0.00	1.83	45.18	0.00
24	0.00	0.00	0.00	0.00	0.00	45.18	0.00
25	-1.64	0.00	0.00	0.00	-3.01	45.18	0.00
26	-2.22	0.00	0.00	0.00	-2.26	45.18	0.00
27	-2.96	0.00	0.00	0.00	0.15	45.18	0.00
28	-3.70	0.00	0.00	0.00	3.42	45.18	0.00
29	-4.26	0.00	0.00	0.00	7.32	45.18	0.00
30	-4.47	0.00	0.00	0.00	11.82	45.18	0.00
31	-4.20	0.00	0.00	0.00	17.51	45.18	0.00
32	-3.39	0.00	0.00	0.00	26.29	45.18	0.00
33	-6.28	0.00	0.00	0.00	30.82	45.18	0.00
34	1.52	0.00	2.17	0.00	1.66	45.18	0.00
35	0.00	0.00	0.00	0.00	0.00	45.18	0.00
36	-1.72	0.00	0.00	0.00	-3.70	45.18	0.00
37	-1.33	0.00	0.00	0.00	-3.67	45.18	0.00
38	-0.78	0.00	0.00	0.00	-2.38	45.18	0.00
39	-0.06	0.00	0.00	0.00	-0.65	45.18	0.00
40	0.67	0.00	0.96	0.00	1.23	45.18	0.00
41	1.35	0.00	1.93	0.00	3.15	45.18	0.00

Nodo	Md(mT)	Nd(T)	u1(T/m)	u2(T/m)	Vd(T)	Vcu(T)	u3(T/m2)
42	1.93	0.00	2.76	0.00	5.60	45.18	0.00
43	2.46	0.00	3.52	0.00	10.20	45.18	0.00
44	3.58	0.00	5.13	0.00	21.90	45.18	0.00
45	1.53	0.00	2.18	0.00	1.64	45.18	0.00
46	0.00	0.00	0.00	0.00	0.00	45.18	0.00
47	-1.86	0.00	0.00	0.00	-2.91	45.18	0.00
48	-1.43	0.00	0.00	0.00	-3.31	45.18	0.00
49	-0.79	0.00	0.00	0.00	-2.87	45.18	0.00
50	0.02	0.00	0.02	0.00	-2.15	45.18	0.00
51	0.88	0.00	1.25	0.00	-1.35	45.18	0.00
52	1.73	0.00	2.48	0.00	-0.38	45.18	0.00
53	2.59	0.00	3.70	0.00	1.21	45.18	0.00
54	3.49	0.00	4.99	0.00	4.75	45.18	0.00
55	4.86	0.00	6.97	0.00	13.93	45.18	0.00
56	1.53	0.00	2.19	0.00	1.65	45.18	0.00
57	0.00	0.00	0.00	0.00	0.00	45.18	0.00
58	-1.90	0.00	0.00	0.00	-1.82	45.18	0.00
59	-1.62	0.00	0.00	0.00	-2.23	45.18	0.00
60	-1.16	0.00	0.00	0.00	-2.15	45.18	0.00
61	-0.56	0.00	0.00	0.00	-1.90	45.18	0.00
62	0.12	0.00	0.17	0.00	-1.56	45.18	0.00
63	0.85	0.00	1.21	0.00	-1.08	45.18	0.00
64	1.62	0.00	2.31	0.00	-0.20	45.18	0.00
65	2.47	0.00	3.54	0.00	2.10	45.18	0.00
66	3.85	0.00	5.52	0.00	8.52	45.18	0.00
67	1.53	0.00	2.19	0.00	1.66	45.18	0.00
68	0.00	0.00	0.00	0.00	0.00	45.18	0.00
69	-1.91	0.00	0.00	0.00	-0.95	45.18	0.00
70	-1.74	0.00	0.00	0.00	-1.22	45.18	0.00
71	-1.43	0.00	0.00	0.00	-1.25	45.18	0.00
72	-1.01	0.00	0.00	0.00	-1.18	45.18	0.00
73	-0.51	0.00	0.00	0.00	-1.06	45.18	0.00
74	0.04	0.00	0.06	0.00	-0.84	45.18	0.00
75	0.65	0.00	0.92	0.00	-0.38	45.18	0.00
76	1.35	0.00	1.92	0.00	0.90	45.18	0.00
77	2.54	0.00	3.63	0.00	4.78	45.18	0.00
78	1.50	0.00	2.15	0.00	1.61	45.18	0.00
79	0.00	0.00	0.00	0.00	0.00	45.18	0.00
80	-1.92	0.00	0.00	0.00	-0.30	45.18	0.00
81	-1.77	0.00	0.00	0.00	-0.43	45.18	0.00
82	-1.53	0.00	0.00	0.00	-0.45	45.18	0.00
83	-1.20	0.00	0.00	0.00	-0.44	45.18	0.00
84	-0.80	0.00	0.00	0.00	-0.43	45.18	0.00
85	-0.36	0.00	0.00	0.00	-0.38	45.18	0.00
86	0.13	0.00	0.18	0.00	-0.23	45.18	0.00
87	0.68	0.00	0.97	0.00	0.27	45.18	0.00
88	1.67	0.00	2.38	0.00	2.09	45.18	0.00

Nodo	Md(mT)	Nd(T)	u1(T/m)	u2(T/m)	Vd(T)	Vcu(T)	u3(T/m2)
89	1.25	0.00	1.79	0.00	1.31	45.18	0.00
90	0.00	0.00	0.00	0.00	0.00	45.18	0.00
91	-1.95	0.00	0.00	0.00	0.21	45.18	0.00
92	-1.97	0.00	0.00	0.00	0.87	45.18	0.00
93	-1.55	0.00	0.00	0.00	0.67	45.18	0.00
94	-1.06	0.00	0.00	0.00	0.33	45.18	0.00
95	-0.61	0.00	0.00	0.00	0.02	45.18	0.00
96	-0.22	0.00	0.00	0.00	-0.21	45.18	0.00
97	0.12	0.00	0.17	0.00	-0.36	45.18	0.00
98	0.47	0.00	0.67	0.00	-0.43	45.18	0.00
99	1.17	0.00	1.67	0.00	-0.08	45.18	0.00
100	0.36	0.00	0.51	0.00	3.90	45.18	0.00
101	2.40	0.00	3.43	0.00	-16.74	45.18	0.00
102	-3.19	0.00	0.00	0.00	31.77	45.18	0.00
103	-0.07	0.00	0.00	0.00	-7.57	45.18	0.00
104	-0.11	0.00	0.00	0.00	-5.15	45.18	0.00
105	-0.12	0.00	0.00	0.00	-5.74	45.18	0.00
106	-0.15	0.00	0.00	0.00	-6.12	45.18	0.00
107	-0.15	0.00	0.00	0.00	-6.40	45.18	0.00
108	-0.13	0.00	0.00	0.00	-6.60	45.18	0.00
109	-0.13	0.00	0.00	0.00	-6.70	45.18	0.00
110	-0.04	0.00	0.00	0.00	-6.22	45.18	0.00
111	0.27	0.00	0.38	0.00	1.59	45.18	0.00
112	-0.65	0.00	0.00	0.00	-33.48	45.18	0.00
113	3.86	0.00	5.54	0.00	71.47	45.18	44.06
114	-0.66	0.00	0.00	0.00	-8.61	45.18	0.00
115	-0.23	0.00	0.00	0.00	-3.37	45.18	0.00
116	-0.26	0.00	0.00	0.00	-3.86	45.18	0.00
117	-0.29	0.00	0.00	0.00	-4.03	45.18	0.00
118	-0.30	0.00	0.00	0.00	-4.16	45.18	0.00
119	-0.30	0.00	0.00	0.00	-4.26	45.18	0.00
120	-0.29	0.00	0.00	0.00	-4.18	45.18	0.00
121	-0.24	0.00	0.00	0.00	-4.02	45.18	0.00
122	0.10	0.00	0.14	0.00	0.10	45.18	0.00
123	0.10	0.00	0.14	0.00	0.10	45.18	0.00
124	0.10	0.00	0.14	0.00	0.10	45.18	0.00
125	0.10	0.00	0.14	0.00	0.10	45.18	0.00
126	0.10	0.00	0.14	0.00	0.10	45.18	0.00
127	0.10	0.00	0.14	0.00	0.10	45.18	0.00
128	0.10	0.00	0.14	0.00	0.10	45.18	0.00
129	0.10	0.00	0.14	0.00	0.10	45.18	0.00

Esfuerzos longitudinales pml. Signo-

u1 : Armadura de tracción en cara superior de la zapata pml.

u2 : Armadura de compresión en cara inferior de la zapata pml.

u3 : Cuantía de armadura de cortante pm2.

Nodo	Md(mT)	Nd(T)	u1(T/m)	u2(T/m)	Vd(T)	Vcu(T)	u3(T/m2)
1	6.99	0.00	0.00	0.00	3.83	45.18	0.00
2	10.84	0.00	0.00	0.00	-50.50	45.18	35.20
3	1.93	0.00	0.00	0.00	-29.61	45.18	0.00
4	-0.45	0.00	0.65	0.00	-6.66	45.18	0.00
5	-0.30	0.00	0.42	0.00	-0.39	45.18	0.00
6	0.02	0.00	0.00	0.00	0.10	45.18	0.00
7	0.19	0.00	0.00	0.00	0.21	45.18	0.00
8	0.49	0.00	0.00	0.00	0.41	45.18	0.00
9	1.17	0.00	0.00	0.00	-1.70	45.18	0.00
10	1.28	0.00	0.00	0.00	-18.21	45.18	0.00
11	-7.13	0.00	10.25	0.00	-31.59	45.18	0.00
12	3.19	0.00	0.00	0.00	14.23	45.18	0.00
13	0.12	0.00	0.00	0.00	-3.60	45.18	0.00
14	0.11	0.00	0.00	0.00	-0.45	45.18	0.00
15	0.11	0.00	0.00	0.00	-0.38	45.18	0.00
16	0.10	0.00	0.00	0.00	-0.31	45.18	0.00
17	0.09	0.00	0.00	0.00	-0.23	45.18	0.00
18	0.08	0.00	0.00	0.00	-0.16	45.18	0.00
19	0.07	0.00	0.00	0.00	-0.09	45.18	0.00
20	0.07	0.00	0.00	0.00	-0.09	45.18	0.00
21	-5.13	0.00	7.35	0.00	14.23	45.18	0.00
22	-1.07	0.00	1.54	0.00	29.53	45.18	0.00
23	3.78	0.00	0.00	0.00	13.79	45.18	0.00
24	-7.14	0.00	10.26	0.00	-4.71	45.18	0.00
25	-5.93	0.00	8.50	0.00	-0.54	45.18	0.00
26	-4.84	0.00	6.93	0.00	0.07	45.18	0.00
27	-3.88	0.00	5.56	0.00	0.10	45.18	0.00
28	-3.09	0.00	4.42	0.00	-0.52	45.18	0.00
29	-2.54	0.00	3.63	0.00	-1.45	45.18	0.00
30	-2.21	0.00	3.16	0.00	-1.88	45.18	0.00
31	-2.03	0.00	2.91	0.00	-1.28	45.18	0.00
32	-1.70	0.00	2.43	0.00	0.79	45.18	0.00
33	-0.82	0.00	1.17	0.00	3.20	45.18	0.00
34	4.02	0.00	0.00	0.00	13.59	45.18	0.00
35	-21.32	0.00	30.94	0.00	5.76	45.18	0.00
36	-16.52	0.00	23.89	0.00	9.62	45.18	0.00
37	-12.62	0.00	18.20	0.00	9.72	45.18	0.00
38	-9.42	0.00	13.55	0.00	9.46	45.18	0.00
39	-6.65	0.00	9.54	0.00	8.90	45.18	0.00
40	-4.33	0.00	6.20	0.00	8.05	45.18	0.00
41	-2.51	0.00	3.60	0.00	6.55	45.18	0.00
42	-1.08	0.00	1.55	0.00	4.71	45.18	0.00
43	-0.12	0.00	0.17	0.00	2.75	45.18	0.00
44	0.36	0.00	0.00	0.00	2.70	45.18	0.00
45	4.09	0.00	0.00	0.00	13.55	45.18	0.00
46	-31.94	0.00	46.73	0.00	12.31	45.18	0.00
47	-25.00	0.00	36.38	0.00	16.05	45.18	0.00
48	-19.12	0.00	27.70	0.00	15.84	45.18	0.00
49	-14.10	0.00	20.35	0.00	15.10	45.18	0.00
50	-9.73	0.00	14.00	0.00	13.89	45.18	0.00
51	-6.05	0.00	8.68	0.00	12.24	45.18	0.00
52	-3.19	0.00	4.56	0.00	10.12	45.18	0.00
53	-1.13	0.00	1.61	0.00	7.23	45.18	0.00
54	0.14	0.00	0.00	0.00	4.17	45.18	0.00
55	0.77	0.00	0.00	0.00	3.60	45.18	0.00
56	4.10	0.00	0.00	0.00	13.55	45.18	0.00
57	-38.15	0.00	56.09	0.00	14.87	45.18	0.00
58	-30.34	0.00	44.33	0.00	18.64	45.18	0.00
59	-23.55	0.00	34.23	0.00	18.44	45.18	0.00
60	-17.56	0.00	25.42	0.00	17.63	45.18	0.00
61	-12.27	0.00	17.69	0.00	16.24	45.18	0.00
62	-7.77	0.00	11.16	0.00	14.30	45.18	0.00
63	-4.14	0.00	5.93	0.00	11.81	45.18	0.00
64	-1.57	0.00	2.25	0.00	8.63	45.18	0.00
65	0.01	0.00	0.00	0.00	5.02	45.18	0.00
66	0.79	0.00	0.00	0.00	4.16	45.18	0.00
67	4.09	0.00	0.00	0.00	13.56	45.18	0.00
68	-41.40	0.00	61.02	0.00	15.67	45.18	0.00
69	-33.30	0.00	48.77	0.00	19.48	45.18	0.00
70	-26.16	0.00	38.11	0.00	19.35	45.18	0.00
71	-19.76	0.00	28.64	0.00	18.57	45.18	0.00
72	-14.03	0.00	20.25	0.00	17.18	45.18	0.00
73	-9.09	0.00	13.07	0.00	15.19	45.18	0.00
74	-5.06	0.00	7.25	0.00	12.60	45.18	0.00
75	-2.07	0.00	2.96	0.00	9.36	45.18	0.00
76	-0.24	0.00	0.34	0.00	5.53	45.18	0.00
77	0.68	0.00	0.00	0.00	4.55	45.18	0.00
78	3.99	0.00	0.00	0.00	13.66	45.18	0.00
79	-42.75	0.00	63.08	0.00	15.77	45.18	0.00
80	-34.61	0.00	50.74	0.00	19.59	45.18	0.00
81	-27.41	0.00	39.96	0.00	19.53	45.18	0.00
82	-20.89	0.00	30.30	0.00	18.81	45.18	0.00
83	-15.01	0.00	21.68	0.00	17.44	45.18	0.00
84	-9.91	0.00	14.25	0.00	15.46	45.18	0.00
85	-5.70	0.00	8.18	0.00	12.87	45.18	0.00
86	-2.51	0.00	3.59	0.00	9.65	45.18	0.00
87	-0.48	0.00	0.68	0.00	5.78	45.18	0.00
88	0.54	0.00	0.00	0.00	4.76	45.18	0.00

Nodo	Md(mT)	Nd(T)	u1(T/m)	u2(T/m)	Vd(T)	Vcu(T)	u3(T/m2)
89	3.64	0.00	0.00	0.00	14.06	45.18	0.00
90	-42.76	0.00	63.09	0.00	15.83	45.18	0.00
91	-34.61	0.00	50.74	0.00	19.69	45.18	0.00
92	-27.45	0.00	40.02	0.00	19.48	45.18	0.00
93	-21.07	0.00	30.57	0.00	18.46	45.18	0.00
94	-15.36	0.00	22.19	0.00	16.97	45.18	0.00
95	-10.37	0.00	14.93	0.00	15.02	45.18	0.00
96	-6.20	0.00	8.90	0.00	12.57	45.18	0.00
97	-2.96	0.00	4.23	0.00	9.53	45.18	0.00
98	-0.78	0.00	1.11	0.00	5.81	45.18	0.00
99	0.33	0.00	0.00	0.00	4.84	45.18	0.00
100	3.02	0.00	0.00	0.00	14.39	45.18	0.00
101	-45.45	0.00	67.20	0.00	48.06	45.18	0.00
102	-29.88	0.00	43.65	0.00	30.77	45.18	0.00
103	-26.25	0.00	38.24	0.00	12.06	45.18	0.00
104	-21.08	0.00	30.59	0.00	14.52	45.18	0.00
105	-16.01	0.00	23.14	0.00	14.51	45.18	0.00
106	-11.28	0.00	16.24	0.00	13.69	45.18	0.00
107	-7.12	0.00	10.22	0.00	12.02	45.18	0.00
108	-3.73	0.00	5.35	0.00	9.55	45.18	0.00
109	-1.30	0.00	1.86	0.00	6.08	45.18	0.00
110	-0.01	0.00	0.01	0.00	5.17	45.18	0.00
111	7.22	0.00	0.00	0.00	2.63	45.18	0.00
112	-18.61	0.00	26.95	0.00	-81.00	45.18	60.03
113	-34.32	0.00	50.30	0.00	-32.11	45.18	0.00
114	-26.21	0.00	38.18	0.00	10.77	45.18	0.00
115	-21.22	0.00	30.79	0.00	9.24	45.18	0.00
116	-16.15	0.00	23.35	0.00	10.18	45.18	0.00
117	-11.43	0.00	16.46	0.00	10.09	45.18	0.00
118	-7.27	0.00	10.44	0.00	9.20	45.18	0.00
119	-3.89	0.00	5.57	0.00	7.54	45.18	0.00
120	-1.48	0.00	2.11	0.00	5.11	45.18	0.00
121	-0.18	0.00	0.26	0.00	4.70	45.18	0.00
122	0.00	0.00	0.00	0.00	0.00	45.18	0.00
123	0.00	0.00	0.00	0.00	0.00	45.18	0.00
124	0.00	0.00	0.00	0.00	0.00	45.18	0.00
125	0.00	0.00	0.00	0.00	0.00	45.18	0.00
126	0.00	0.00	0.00	0.00	0.00	45.18	0.00
127	0.00	0.00	0.00	0.00	0.00	45.18	0.00
128	0.00	0.00	0.00	0.00	0.00	45.18	0.00
129	0.00	0.00	0.00	0.00	0.00	45.18	0.00

Esfuerzos transversales pml. Signo-

u1 : Armadura de tracción en cara superior de la zapata pml.

u2 : Armadura de compresión en cara inferior de la zapata pml.

u3 : Cuantia de armadura de cortante pm2.

Nodo	Md(mT)	Nd(T)	u1(T/m)	u2(T/m)	Vd(T)	Vcu(T)	u3(T/m2)
1	0.21	0.00	0.00	0.00	-1.28	45.18	0.00
2	-2.36	0.00	3.38	0.00	22.35	45.18	0.00
3	2.44	0.00	0.00	0.00	-23.61	45.18	0.00
4	0.41	0.00	0.00	0.00	-4.61	45.18	0.00
5	-0.23	0.00	0.33	0.00	2.57	45.18	0.00
6	-0.11	0.00	0.16	0.00	3.13	45.18	0.00
7	0.17	0.00	0.00	0.00	2.63	45.18	0.00
8	0.55	0.00	0.00	0.00	2.39	45.18	0.00
9	0.81	0.00	0.00	0.00	6.12	45.18	0.00
10	-0.67	0.00	0.96	0.00	23.62	45.18	0.00
11	-1.29	0.00	1.85	0.00	-27.00	45.18	0.00
12	0.61	0.00	0.00	0.00	-2.94	45.18	0.00
13	2.87	0.00	0.00	0.00	11.17	45.18	0.00
14	-3.88	0.00	5.56	0.00	-23.61	45.18	0.00
15	-3.68	0.00	5.27	0.00	-4.61	45.18	0.00
16	-7.05	0.00	10.12	0.00	2.57	45.18	0.00
17	-11.44	0.00	16.48	0.00	3.13	45.18	0.00
18	-16.66	0.00	24.09	0.00	2.63	45.18	0.00
19	-22.71	0.00	32.99	0.00	2.39	45.18	0.00
20	-29.87	0.00	43.64	0.00	6.12	45.18	0.00
21	-38.79	0.00	57.06	0.00	23.62	45.18	0.00
22	-22.95	0.00	33.34	0.00	4.06	45.18	0.00
23	0.92	0.00	0.00	0.00	-1.53	45.18	0.00
24	0.00	0.00	0.00	0.00	0.00	45.18	0.00
25	-1.94	0.00	2.77	0.00	-3.41	45.18	0.00
26	-2.51	0.00	3.59	0.00	-2.90	45.18	0.00
27	-3.22	0.00	4.61	0.00	-0.74	45.18	0.00
28	-3.89	0.00	5.57	0.00	2.28	45.18	0.00
29	-4.45	0.00	6.38	0.00	5.82	45.18	0.00
30	-4.71	0.00	6.75	0.00	10.05	45.18	0.00
31	-4.49	0.00	6.44	0.00	15.45	45.18	0.00
32	-3.86	0.00	5.53	0.00	23.51	45.18	0.00
33	-7.15	0.00	10.26	0.00	27.74	45.18	0.00
34	0.97	0.00	0.00	0.00	-1.65	45.18	0.00
35	0.00	0.00	0.00	0.00	0.00	45.18	0.00
36	-2.00	0.00	2.86	0.00	-4.26	45.18	0.00
37	-1.61	0.00	2.31	0.00	-4.21	45.18	0.00
38	-1.01	0.00	1.44	0.00	-2.70	45.18	0.00
39	-0.38	0.00	0.54	0.00	-0.86	45.18	0.00
40	0.27	0.00	0.00	0.00	0.92	45.18	0.00
41	0.90	0.00	0.00	0.00	2.74	45.18	0.00

Nodo	Md(mT)	Nd(T)	u1(T/m)	u2(T/m)	Vd(T)	Vcu(T)	u3(T/m2)
42	1.46	0.00	0.00	0.00	4.93	45.18	0.00
43	1.97	0.00	0.00	0.00	9.05	45.18	0.00
44	2.65	0.00	0.00	0.00	19.53	45.18	0.00
45	0.97	0.00	0.00	0.00	-1.66	45.18	0.00
46	0.00	0.00	0.00	0.00	0.00	45.18	0.00
47	-2.05	0.00	2.93	0.00	-3.29	45.18	0.00
48	-1.64	0.00	2.35	0.00	-3.75	45.18	0.00
49	-0.97	0.00	1.38	0.00	-3.25	45.18	0.00
50	-0.22	0.00	0.31	0.00	-2.44	45.18	0.00
51	0.54	0.00	0.00	0.00	-1.53	45.18	0.00
52	1.31	0.00	0.00	0.00	-0.48	45.18	0.00
53	2.08	0.00	0.00	0.00	1.07	45.18	0.00
54	2.89	0.00	0.00	0.00	4.23	45.18	0.00
55	4.08	0.00	0.00	0.00	12.32	45.18	0.00
56	0.98	0.00	0.00	0.00	-1.65	45.18	0.00
57	0.00	0.00	0.00	0.00	0.00	45.18	0.00
58	-2.02	0.00	2.89	0.00	-2.05	45.18	0.00
59	-1.76	0.00	2.51	0.00	-2.52	45.18	0.00
60	-1.28	0.00	1.84	0.00	-2.44	45.18	0.00
61	-0.71	0.00	1.02	0.00	-2.16	45.18	0.00
62	-0.10	0.00	0.14	0.00	-1.78	45.18	0.00
63	0.55	0.00	0.00	0.00	-1.24	45.18	0.00
64	1.24	0.00	0.00	0.00	-0.25	45.18	0.00
65	2.01	0.00	0.00	0.00	1.88	45.18	0.00
66	3.25	0.00	0.00	0.00	7.46	45.18	0.00
67	0.98	0.00	0.00	0.00	-1.65	45.18	0.00
68	0.00	0.00	0.00	0.00	0.00	45.18	0.00
69	-1.98	0.00	2.83	0.00	-1.08	45.18	0.00
70	-1.82	0.00	2.60	0.00	-1.40	45.18	0.00
71	-1.50	0.00	2.15	0.00	-1.43	45.18	0.00
72	-1.10	0.00	1.57	0.00	-1.37	45.18	0.00
73	-0.65	0.00	0.92	0.00	-1.23	45.18	0.00
74	-0.15	0.00	0.21	0.00	-0.98	45.18	0.00
75	0.40	0.00	0.00	0.00	-0.45	45.18	0.00
76	1.03	0.00	0.00	0.00	0.81	45.18	0.00
77	2.12	0.00	0.00	0.00	4.08	45.18	0.00
78	0.98	0.00	0.00	0.00	-1.73	45.18	0.00
79	0.00	0.00	0.00	0.00	0.00	45.18	0.00
80	-1.95	0.00	2.79	0.00	-0.37	45.18	0.00
81	-1.82	0.00	2.60	0.00	-0.53	45.18	0.00
82	-1.58	0.00	2.26	0.00	-0.56	45.18	0.00
83	-1.25	0.00	1.79	0.00	-0.56	45.18	0.00
84	-0.88	0.00	1.26	0.00	-0.54	45.18	0.00
85	-0.47	0.00	0.67	0.00	-0.48	45.18	0.00
86	-0.02	0.00	0.03	0.00	-0.30	45.18	0.00
87	0.48	0.00	0.00	0.00	0.23	45.18	0.00
88	1.38	0.00	0.00	0.00	1.59	45.18	0.00

Nodo	Md(mT)	Nd(T)	u1(T/m)	u2(T/m)	Vd(T)	Vcu(T)	u3(T/m2)
89	0.87	0.00	0.00	0.00	-2.02	45.18	0.00
90	0.00	0.00	0.00	0.00	0.00	45.18	0.00
91	-1.97	0.00	2.82	0.00	0.11	45.18	0.00
92	-2.01	0.00	2.88	0.00	0.81	45.18	0.00
93	-1.59	0.00	2.27	0.00	0.58	45.18	0.00
94	-1.10	0.00	1.57	0.00	0.24	45.18	0.00
95	-0.66	0.00	0.94	0.00	-0.06	45.18	0.00
96	-0.28	0.00	0.40	0.00	-0.28	45.18	0.00
97	0.04	0.00	0.00	0.00	-0.42	45.18	0.00
98	0.36	0.00	0.00	0.00	-0.45	45.18	0.00
99	0.98	0.00	0.00	0.00	-0.48	45.18	0.00
100	0.25	0.00	0.00	0.00	2.21	45.18	0.00
101	1.76	0.00	0.00	0.00	-23.43	45.18	0.00
102	-3.50	0.00	5.01	0.00	27.76	45.18	0.00
103	-0.10	0.00	0.14	0.00	-7.88	45.18	0.00
104	-0.13	0.00	0.18	0.00	-5.22	45.18	0.00
105	-0.13	0.00	0.18	0.00	-5.79	45.18	0.00
106	-0.15	0.00	0.21	0.00	-6.17	45.18	0.00
107	-0.15	0.00	0.22	0.00	-6.44	45.18	0.00
108	-0.15	0.00	0.21	0.00	-6.64	45.18	0.00
109	-0.16	0.00	0.23	0.00	-6.75	45.18	0.00
110	-0.12	0.00	0.17	0.00	-6.40	45.18	0.00
111	0.15	0.00	0.00	0.00	0.55	45.18	0.00
112	-1.04	0.00	1.49	0.00	-46.85	45.18	35.20
113	3.38	0.00	0.00	0.00	63.59	45.18	0.00
114	-0.70	0.00	1.00	0.00	-9.17	45.18	0.00
115	-0.24	0.00	0.35	0.00	-3.42	45.18	0.00
116	-0.27	0.00	0.38	0.00	-3.88	45.18	0.00
117	-0.29	0.00	0.41	0.00	-4.05	45.18	0.00
118	-0.30	0.00	0.43	0.00	-4.18	45.18	0.00
119	-0.30	0.00	0.44	0.00	-4.29	45.18	0.00
120	-0.30	0.00	0.43	0.00	-4.24	45.18	0.00
121	-0.29	0.00	0.41	0.00	-4.12	45.18	0.00
122	0.10	0.00	0.00	0.00	0.10	45.18	0.00
123	0.10	0.00	0.00	0.00	0.10	45.18	0.00
124	0.10	0.00	0.00	0.00	0.10	45.18	0.00
125	0.10	0.00	0.00	0.00	0.10	45.18	0.00
126	0.10	0.00	0.00	0.00	0.10	45.18	0.00
127	0.10	0.00	0.00	0.00	0.10	45.18	0.00
128	0.10	0.00	0.00	0.00	0.10	45.18	0.00
129	0.10	0.00	0.00	0.00	0.10	45.18	0.00

CALCULO DEL MURO

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Esfuerzos longitudinales pml. Signo+

ul : Armadura de tracción en cara exterior del muro pml.

u2 : Armadura de compresión en cara interior del muro pml.

u3 : Cuantia de armadura de cortante pm2.

Nodo	Md(mT)	Nd(T)	ul(T/m)	u2(T/m)	Vd(T)	Vcu(T)	u3(T/m2)
61	-10.58	70.71	0.00	0.00	7.59	61.32	0.00
62	-8.54	65.21	0.00	0.00	5.82	61.32	0.00
63	-5.54	52.58	0.00	0.00	2.68	61.32	0.00
64	-3.62	39.08	0.00	0.00	0.04	61.32	0.00
65	-2.40	27.35	0.00	0.00	-1.90	61.32	0.00
66	-1.60	17.56	0.00	0.00	-2.80	61.32	0.00
67	-0.51	15.13	0.00	0.00	-2.27	61.32	0.00
68	3.84	3.32	2.31	0.00	-4.23	61.32	0.00
69	0.04	1.24	0.00	0.00	-3.53	12.91	0.00
70	-0.09	0.68	0.00	0.00	-0.48	12.91	0.00
71	-18.48	36.91	0.00	0.00	11.76	61.32	0.00
72	-14.77	35.09	0.00	0.00	9.58	61.32	0.00
73	-9.31	30.90	0.00	0.00	6.07	61.32	0.00
74	-5.67	25.87	0.00	0.00	3.72	61.32	0.00
75	-3.26	20.47	0.00	0.00	2.11	61.32	0.00
76	-1.67	15.00	0.00	0.00	0.90	61.32	0.00
77	-0.75	9.64	0.00	0.00	-0.03	61.32	0.00
78	-0.31	4.41	0.00	0.00	-0.05	61.32	0.00
79	0.26	1.36	0.46	0.00	-0.06	12.91	0.00
80	-0.09	0.90	0.00	0.00	-0.70	12.91	0.00
81	-28.32	26.86	0.00	0.00	18.64	61.32	0.00
82	-22.48	25.35	0.00	0.00	16.01	61.32	0.00
83	-13.57	22.17	0.00	0.00	11.33	61.32	0.00
84	-7.74	18.71	0.00	0.00	7.57	61.32	0.00
85	-4.14	15.06	0.00	0.00	4.73	61.32	0.00
86	-2.17	11.28	0.00	0.00	2.67	61.32	0.00
87	-1.33	7.42	0.00	0.00	1.47	61.32	0.00
88	-0.96	3.52	0.00	0.00	1.24	61.32	0.00
89	-0.25	1.18	0.00	0.00	0.95	12.91	0.00
90	0.04	0.79	0.00	0.00	0.24	12.91	0.00
91	-35.57	22.94	0.00	0.00	21.79	61.32	0.00
92	-28.67	21.49	0.00	0.00	19.15	61.32	0.00
93	-17.72	18.55	0.00	0.00	14.31	61.32	0.00
94	-10.17	15.54	0.00	0.00	10.21	61.32	0.00
95	-5.33	12.46	0.00	0.00	7.05	61.32	0.00
96	-2.57	9.33	0.00	0.00	5.11	61.32	0.00
97	-1.30	6.15	0.00	0.00	4.35	61.32	0.00
98	-0.94	2.95	0.00	0.00	2.89	61.32	0.00
99	-0.32	1.01	0.00	0.00	1.09	12.91	0.00
100	0.00	0.68	0.00	0.00	0.32	12.91	0.00
101	-40.67	21.35	0.00	0.00	23.29	61.32	0.00
102	-33.21	19.92	0.00	0.00	20.70	61.32	0.00
103	-21.04	17.06	0.00	0.00	15.91	61.32	0.00
104	-12.27	14.21	0.00	0.00	11.68	61.32	0.00
105	-6.40	11.34	0.00	0.00	8.07	61.32	0.00
106	-2.93	8.47	0.00	0.00	5.08	61.32	0.00
107	-1.31	5.58	0.00	0.00	2.88	61.32	0.00
108	-0.78	2.69	0.00	0.00	1.67	61.32	0.00
109	-0.25	0.94	0.00	0.00	0.90	12.91	0.00
110	0.00	0.62	0.00	0.00	0.19	12.91	0.00
111	-44.82	20.65	0.00	0.00	24.55	61.32	0.00
112	-36.85	19.23	0.00	0.00	22.05	61.32	0.00
113	-23.53	16.41	0.00	0.00	17.27	61.32	0.00
114	-13.68	13.61	0.00	0.00	12.79	61.32	0.00
115	-6.98	10.84	0.00	0.00	8.79	61.32	0.00
116	-2.95	8.08	0.00	0.00	5.41	61.32	0.00
117	-1.10	5.32	0.00	0.00	2.86	61.32	0.00
118	-0.68	2.57	0.00	0.00	1.45	61.32	0.00
119	-0.18	0.90	0.00	0.00	0.64	12.91	0.00
120	-0.04	0.60	0.00	0.00	-0.06	12.91	0.00
121	-50.34	20.07	0.00	0.00	31.68	61.32	0.00
122	-40.64	18.67	0.00	0.00	28.51	61.32	0.00
123	-25.21	15.92	0.00	0.00	22.62	61.32	0.00
124	-14.46	13.22	0.00	0.00	17.61	61.32	0.00
125	-7.24	10.55	0.00	0.00	13.57	61.32	0.00
126	-2.79	7.89	0.00	0.00	10.29	61.32	0.00
127	-0.60	5.22	0.00	0.00	7.51	61.32	0.00
128	-0.41	2.53	0.00	0.00	4.07	61.32	0.00
129	-0.50	0.89	0.00	0.00	1.47	12.91	0.00
130	0.07	0.59	0.00	0.00	0.72	12.91	0.00

Esfuerzos transversales pml. Signo+

u1 : Armadura de tracción en cara exterior del muro pml.

u2 : Armadura de compresión en cara interior del muro pml.

u3 : Cuantía de armadura de cortante pm2.

Nodo	Md(mT)	Nd(T)	u1(T/m)	u2(T/m)	Vd(T)	Vcu(T)	u3(T/m2)
61	0.00	0.00	0.00	0.00	0.00	61.32	0.00
62	0.50	0.00	0.53	0.00	-1.00	61.32	0.00
63	-1.88	0.00	0.00	0.00	0.82	61.32	0.00
64	-4.96	0.00	0.00	0.00	3.35	61.32	0.00
65	-7.25	0.00	0.00	0.00	4.97	61.32	0.00
66	-8.89	0.00	0.00	0.00	5.77	61.32	0.00
67	-11.63	0.00	0.00	0.00	7.67	61.32	0.00
68	-20.85	0.00	0.00	0.00	23.25	61.32	0.00
69	-1.00	0.00	0.00	0.00	1.66	12.91	0.00
70	-2.40	0.00	0.00	0.00	3.04	12.91	0.00
71	0.00	0.00	0.00	0.00	0.00	61.32	0.00
72	0.40	0.00	0.42	0.00	-1.63	61.32	0.00
73	0.48	0.00	0.51	0.00	-0.63	61.32	0.00
74	0.12	0.00	0.12	0.00	1.48	61.32	0.00
75	-0.47	0.00	0.00	0.00	3.09	61.32	0.00
76	-1.13	0.00	0.00	0.00	4.21	61.32	0.00
77	-1.60	0.00	0.00	0.00	6.36	61.32	0.00
78	-0.27	0.00	0.00	0.00	20.60	61.32	0.00
79	0.21	0.00	1.05	0.00	1.33	12.91	0.00
80	0.47	0.00	2.34	0.00	1.57	12.91	0.00
81	0.00	0.00	0.00	0.00	0.00	61.32	0.00
82	0.12	0.00	0.13	0.00	-2.05	61.32	0.00
83	0.78	0.00	0.82	0.00	-2.19	61.32	0.00
84	1.51	0.00	1.59	0.00	-0.93	61.32	0.00
85	2.16	0.00	2.27	0.00	0.35	61.32	0.00
86	2.77	0.00	2.92	0.00	1.85	61.32	0.00
87	3.84	0.00	4.05	0.00	4.02	61.32	0.00
88	6.38	0.00	6.73	0.00	9.85	61.32	0.00
89	0.21	0.00	1.06	0.00	0.81	12.91	0.00
90	0.15	0.00	0.74	0.00	0.32	12.91	0.00
91	0.00	0.00	0.00	0.00	0.00	61.32	0.00
92	0.07	0.00	0.07	0.00	-1.63	61.32	0.00
93	0.64	0.00	0.67	0.00	-2.14	61.32	0.00
94	1.57	0.00	1.65	0.00	-1.56	61.32	0.00
95	2.92	0.00	3.07	0.00	-0.85	61.32	0.00
96	4.49	0.00	4.73	0.00	0.18	61.32	0.00
97	5.73	0.00	6.05	0.00	1.67	61.32	0.00
98	5.41	0.00	5.71	0.00	8.31	61.32	0.00
99	0.13	0.00	0.64	0.00	0.67	12.91	0.00
100	0.06	0.00	0.29	0.00	0.36	12.91	0.00
101	0.00	0.00	0.00	0.00	0.00	61.32	0.00
102	0.03	0.00	0.03	0.00	-1.27	61.32	0.00
103	0.32	0.00	0.34	0.00	-1.81	61.32	0.00
104	0.87	0.00	0.91	0.00	-1.55	61.32	0.00
105	1.69	0.00	1.79	0.00	-1.22	61.32	0.00
106	2.71	0.00	2.86	0.00	-0.89	61.32	0.00
107	4.11	0.00	4.34	0.00	-0.13	61.32	0.00
108	6.92	0.00	7.30	0.00	7.31	61.32	0.00
109	0.22	0.00	1.13	0.00	0.53	12.91	0.00
110	0.17	0.00	0.83	0.00	0.29	12.91	0.00
111	0.00	0.00	0.00	0.00	0.00	61.32	0.00
112	0.03	0.00	0.03	0.00	-1.14	61.32	0.00
113	-0.16	0.00	0.00	0.00	-1.35	61.32	0.00
114	-0.06	0.00	0.00	0.00	-1.04	61.32	0.00
115	0.39	0.00	0.42	0.00	-0.81	61.32	0.00
116	1.06	0.00	1.12	0.00	-0.66	61.32	0.00
117	2.14	0.00	2.26	0.00	-0.53	61.32	0.00
118	4.19	0.00	4.42	0.00	0.86	61.32	0.00
119	0.16	0.00	0.81	0.00	0.22	12.91	0.00
120	0.18	0.00	0.93	0.00	-0.15	12.91	0.00
121	0.00	0.00	0.00	0.00	0.00	61.32	0.00
122	-0.86	0.00	0.00	0.00	-1.14	61.32	0.00
123	-0.86	0.00	0.00	0.00	-1.05	61.32	0.00
124	-0.47	0.00	0.00	0.00	-0.61	61.32	0.00
125	-0.05	0.00	0.00	0.00	-0.38	61.32	0.00
126	0.35	0.00	0.37	0.00	-0.24	61.32	0.00
127	0.43	0.00	0.46	0.00	-0.47	61.32	0.00
128	-0.38	0.00	0.00	0.00	-0.62	61.32	0.00
129	0.07	0.00	0.34	0.00	0.12	12.91	0.00
130	-0.55	0.00	0.00	0.00	-0.70	12.91	0.00

Esfuerzos longitudinales pml. Signo-

u1 : Armadura de tracción en cara interior del muro pml.

u2 : Armadura de compresión en cara exterior del muro pml.

u3 : Cuantía de armadura de cortante pm2.

Nodo	Md(mT)	Nd(T)	u1(T/m)	u2(T/m)	Vd(T)	Vcu(T)	u3(T/m2)
61	-12.56	104.84	0.00	0.00	6.52	61.32	0.00
62	-10.75	99.14	0.00	0.00	4.90	61.32	0.00
63	-7.82	85.89	0.00	0.00	1.74	61.32	0.00
64	-5.75	71.35	0.00	0.00	-1.40	61.32	0.00
65	-4.41	58.23	0.00	0.00	-4.15	61.32	0.00
66	-3.60	46.70	0.00	0.00	-5.89	61.32	0.00
67	-2.39	36.66	0.00	0.00	-5.66	61.32	0.00
68	0.88	17.03	0.00	0.00	-8.55	61.32	0.00
69	-0.13	0.67	0.22	0.00	-6.37	12.91	0.00
70	-0.20	0.46	0.73	0.00	-0.85	12.91	0.00
71	-22.28	68.57	0.00	0.00	11.43	61.32	0.00
72	-18.51	66.71	0.00	0.00	9.26	61.32	0.00
73	-12.94	62.39	0.00	0.00	5.76	61.32	0.00
74	-9.23	57.14	0.00	0.00	3.44	61.32	0.00
75	-6.88	51.45	0.00	0.00	1.78	61.32	0.00
76	-5.65	45.71	0.00	0.00	0.38	61.32	0.00
77	-5.50	40.18	0.00	0.00	-0.72	61.32	0.00
78	-3.17	19.71	0.00	0.00	-0.58	61.32	0.00
79	0.13	1.44	0.00	0.00	-0.30	12.91	0.00
80	-0.10	0.95	0.00	0.00	-0.89	12.91	0.00
81	-33.67	57.93	6.68	0.00	17.95	61.32	0.00
82	-27.65	56.41	0.77	0.00	15.34	61.32	0.00
83	-18.46	53.21	0.00	0.00	10.71	61.32	0.00
84	-12.45	49.71	0.00	0.00	7.01	61.32	0.00
85	-8.79	46.00	0.00	0.00	4.24	61.32	0.00
86	-6.98	42.16	0.00	0.00	2.13	61.32	0.00
87	-6.82	38.26	0.00	0.00	0.66	61.32	0.00
88	-4.23	18.94	0.00	0.00	0.64	61.32	0.00
89	-0.33	1.18	0.91	0.00	0.79	12.91	0.00
90	0.02	0.79	0.00	0.00	0.15	12.91	0.00
91	-42.17	53.84	18.19	0.00	20.89	61.32	0.00
92	-35.01	52.39	10.94	0.00	18.28	61.32	0.00
93	-23.64	49.45	0.00	0.00	13.49	61.32	0.00
94	-15.80	46.42	0.00	0.00	9.42	61.32	0.00
95	-10.75	43.33	0.00	0.00	6.15	61.32	0.00
96	-7.60	40.18	0.00	0.00	3.68	61.32	0.00
97	-5.16	36.99	0.00	0.00	2.01	61.32	0.00
98	-1.99	18.37	0.00	0.00	1.34	61.32	0.00
99	-0.41	1.02	1.44	0.00	0.88	12.91	0.00
100	-0.01	0.68	0.00	0.00	0.18	12.91	0.00
101	-48.11	52.18	25.68	0.00	22.30	61.32	0.00
102	-40.34	50.76	17.68	0.00	19.73	61.32	0.00
103	-27.61	47.90	5.01	0.00	14.98	61.32	0.00
104	-18.36	45.04	0.00	0.00	10.81	61.32	0.00
105	-12.12	42.17	0.00	0.00	7.27	61.32	0.00
106	-8.48	39.29	0.00	0.00	4.43	61.32	0.00
107	-7.19	36.41	0.00	0.00	2.16	61.32	0.00
108	-4.12	18.10	0.00	0.00	1.11	61.32	0.00
109	-0.33	0.94	1.06	0.00	0.74	12.91	0.00
110	-0.01	0.62	0.00	0.00	0.10	12.91	0.00
111	-52.87	51.46	31.40	0.00	23.50	61.32	0.00
112	-44.54	50.04	22.73	0.00	21.01	61.32	0.00
113	-30.52	47.22	8.56	0.00	16.27	61.32	0.00
114	-20.06	44.42	0.00	0.00	11.85	61.32	0.00
115	-12.89	41.65	0.00	0.00	7.93	61.32	0.00
116	-8.59	38.89	0.00	0.00	4.63	61.32	0.00
117	-6.79	36.14	0.00	0.00	2.13	61.32	0.00
118	-3.62	17.98	0.00	0.00	1.01	61.32	0.00
119	-0.22	0.90	0.55	0.00	0.55	12.91	0.00
120	-0.05	0.60	0.00	0.00	-0.11	12.91	0.00
121	-59.16	50.85	38.82	0.00	29.83	61.32	0.00
122	-48.86	49.46	27.87	0.00	26.74	61.32	0.00
123	-32.45	46.70	10.95	0.00	21.01	61.32	0.00
124	-20.95	44.01	0.00	0.00	16.10	61.32	0.00
125	-13.05	41.35	0.00	0.00	12.04	61.32	0.00
126	-7.80	38.69	0.00	0.00	8.56	61.32	0.00
127	-4.26	36.03	0.00	0.00	5.44	61.32	0.00
128	-1.48	17.94	0.00	0.00	2.83	61.32	0.00
129	-0.58	0.89	2.34	0.00	1.31	12.91	0.00
130	0.07	0.59	0.00	0.00	0.63	12.91	0.00

Esfuerzos transversales pm1. Signo-

u1 : Armadura de tracción en cara interior del muro pm1.

u2 : Armadura de compresión en cara exterior del muro pm1.

u3 : Cuantía de armadura de cortante pm2.

Nodo	Md(mT)	Nd(T)	u1(T/m)	u2(T/m)	Vd(T)	Vcu(T)	u3(T/m2)
61	0.00	0.00	0.00	0.00	0.00	61.32	0.00
62	0.18	0.00	0.00	0.00	-1.47	61.32	0.00
63	-2.41	0.00	2.54	0.00	0.07	61.32	0.00
64	-5.58	0.00	5.89	0.00	2.51	61.32	0.00
65	-7.95	0.00	8.40	0.00	4.09	61.32	0.00
66	-9.62	0.00	10.17	0.00	5.03	61.32	0.00
67	-11.89	0.00	12.58	0.00	7.14	61.32	0.00
68	-24.59	0.00	26.16	0.00	16.79	61.32	0.00
69	-1.36	0.00	6.89	0.00	1.12	12.91	0.00
70	-2.80	0.00	14.41	0.00	2.52	12.91	0.00
71	0.00	0.00	0.00	0.00	0.00	61.32	0.00
72	0.07	0.00	0.00	0.00	-2.10	61.32	0.00
73	-0.03	0.00	0.03	0.00	-1.34	61.32	0.00
74	-0.42	0.00	0.44	0.00	0.78	61.32	0.00
75	-1.03	0.00	1.08	0.00	2.44	61.32	0.00
76	-1.75	0.00	1.84	0.00	3.70	61.32	0.00
77	-2.58	0.00	2.72	0.00	5.97	61.32	0.00
78	-3.08	0.00	3.25	0.00	14.33	61.32	0.00
79	-0.05	0.00	0.25	0.00	0.92	12.91	0.00
80	0.30	0.00	0.00	0.00	1.26	12.91	0.00
81	0.00	0.00	0.00	0.00	0.00	61.32	0.00
82	-0.17	0.00	0.18	0.00	-2.47	61.32	0.00
83	0.34	0.00	0.00	0.00	-2.79	61.32	0.00
84	1.10	0.00	0.00	0.00	-1.40	61.32	0.00
85	1.76	0.00	0.00	0.00	0.09	61.32	0.00
86	2.21	0.00	0.00	0.00	1.42	61.32	0.00
87	2.73	0.00	0.00	0.00	3.40	61.32	0.00
88	3.53	0.00	0.00	0.00	8.83	61.32	0.00
89	0.08	0.00	0.00	0.00	0.65	12.91	0.00
90	0.02	0.00	0.00	0.00	0.22	12.91	0.00
91	0.00	0.00	0.00	0.00	0.00	61.32	0.00
92	-0.15	0.00	0.16	0.00	-1.95	61.32	0.00
93	0.32	0.00	0.00	0.00	-2.60	61.32	0.00
94	1.23	0.00	0.00	0.00	-1.98	61.32	0.00
95	2.13	0.00	0.00	0.00	-1.23	61.32	0.00
96	3.05	0.00	0.00	0.00	-0.63	61.32	0.00
97	3.99	0.00	0.00	0.00	0.73	61.32	0.00
98	4.23	0.00	0.00	0.00	5.87	61.32	0.00
99	0.02	0.00	0.00	0.00	0.51	12.91	0.00
100	-0.03	0.00	0.17	0.00	0.20	12.91	0.00
101	0.00	0.00	0.00	0.00	0.00	61.32	0.00
102	-0.11	0.00	0.11	0.00	-1.49	61.32	0.00
103	0.13	0.00	0.00	0.00	-2.15	61.32	0.00
104	0.70	0.00	0.00	0.00	-1.92	61.32	0.00
105	1.40	0.00	0.00	0.00	-1.66	61.32	0.00
106	2.27	0.00	0.00	0.00	-1.47	61.32	0.00
107	3.27	0.00	0.00	0.00	-0.60	61.32	0.00
108	4.57	0.00	0.00	0.00	3.62	61.32	0.00
109	0.11	0.00	0.00	0.00	0.37	12.91	0.00
110	0.05	0.00	0.00	0.00	0.18	12.91	0.00
111	0.00	0.00	0.00	0.00	0.00	61.32	0.00
112	-0.08	0.00	0.08	0.00	-1.30	61.32	0.00
113	-0.28	0.00	0.29	0.00	-1.56	61.32	0.00
114	-0.13	0.00	0.14	0.00	-1.21	61.32	0.00
115	0.25	0.00	0.00	0.00	-0.98	61.32	0.00
116	0.73	0.00	0.00	0.00	-0.87	61.32	0.00
117	1.39	0.00	0.00	0.00	-0.76	61.32	0.00
118	2.57	0.00	0.00	0.00	-1.44	61.32	0.00
119	0.08	0.00	0.00	0.00	0.13	12.91	0.00
120	0.11	0.00	0.00	0.00	-0.20	12.91	0.00
121	0.00	0.00	0.00	0.00	0.00	61.32	0.00
122	-0.98	0.00	1.03	0.00	-1.30	61.32	0.00
123	-0.96	0.00	1.01	0.00	-1.19	61.32	0.00
124	-0.48	0.00	0.51	0.00	-0.67	61.32	0.00
125	-0.22	0.00	0.23	0.00	-0.48	61.32	0.00
126	-0.10	0.00	0.11	0.00	-0.54	61.32	0.00
127	-0.24	0.00	0.25	0.00	-0.84	61.32	0.00
128	-1.11	0.00	1.16	0.00	-2.55	61.32	0.00
129	-0.03	0.00	0.13	0.00	-0.03	12.91	0.00
130	-0.60	0.00	3.03	0.00	-0.80	12.91	0.00

CALCULO DE LA ALETA I

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Esfuerzos longitudinales pm1. Signo+

u1 : Armadura de tracción en cara exterior de la aleta pm1.

u2 : Armadura de compresión en cara interior de la aleta pm1.

u3 : Cuantia de armadura de cortante pm2.

Nodo	Md(mT)	Nd(T)	u1(T/m)	u2(T/m)	Vd(T)	Vcu(T)	u3(T/m2)
1	-11.14	-62.80	0.00	0.00	20.29	22.59	0.00
2	-5.51	-59.33	0.00	0.00	15.83	22.59	0.00
3	0.02	-50.21	25.19	25.03	9.01	22.59	0.00
4	1.79	-33.28	22.61	10.67	5.06	22.59	0.00
5	1.87	-23.10	17.77	5.33	2.58	22.59	0.00
6	1.23	-14.20	11.20	3.01	1.15	22.59	0.00
7	0.47	-7.15	5.15	1.99	0.70	22.59	0.00
8	0.19	-1.77	1.51	0.26	1.18	22.59	0.00
9	0.21	-0.12	0.67	0.00	-0.16	22.59	0.00
10	-0.24	0.19	0.00	0.00	-2.16	22.59	0.00
11	-8.16	-44.30	0.00	0.00	11.41	22.59	0.00
12	-4.64	-42.06	0.00	0.00	9.24	22.59	0.00
13	0.06	-35.83	18.10	17.73	4.95	22.59	0.00
14	1.49	-27.69	18.82	8.86	1.60	22.59	0.00
15	1.46	-19.61	14.68	4.94	-0.10	22.59	0.00
16	0.88	-9.93	7.91	2.02	-0.77	22.59	0.00
17	0.28	-3.84	2.86	0.98	-0.79	22.59	0.00
18	-0.01	-0.91	0.00	0.00	-0.55	22.59	0.00
19	-0.05	0.24	0.00	0.00	-0.33	22.59	0.00
20	-0.10	0.38	0.00	0.00	-0.50	22.59	0.00
21	-6.23	-26.82	0.00	0.00	9.20	22.59	0.00
22	-3.40	-25.54	0.00	0.00	6.97	22.59	0.00
23	0.06	-21.73	11.06	10.67	3.14	22.59	0.00
24	1.17	-16.51	12.14	4.37	0.56	22.59	0.00
25	1.09	-11.23	9.26	1.96	-0.72	22.59	0.00
26	0.60	-5.51	4.75	0.76	-1.14	22.59	0.00
27	0.07	-1.98	1.24	0.74	-1.05	22.59	0.00
28	-0.27	0.10	0.00	0.00	-0.62	22.59	0.00
29	-0.21	0.70	0.00	0.00	-0.16	22.59	0.00
30	-0.11	0.62	0.00	0.00	-0.28	22.59	0.00
31	-4.36	-9.88	0.00	0.00	7.18	22.59	0.00
32	-2.19	-9.43	0.00	0.00	4.94	22.59	0.00
33	0.07	-7.81	4.13	3.68	1.55	22.59	0.00
34	0.77	-5.33	5.23	0.09	-0.25	22.59	0.00
35	0.69	-2.76	3.55	0.00	-1.04	22.59	0.00
36	0.32	-1.05	1.52	0.00	-1.22	22.59	0.00
37	-0.12	-0.13	0.00	0.00	-1.08	22.59	0.00
38	-0.52	1.13	0.00	0.00	-0.44	22.59	0.00
39	-0.35	1.19	0.00	0.00	0.35	22.59	0.00
40	0.07	0.86	0.00	0.00	0.35	22.59	0.00
41	-2.45	6.93	0.00	0.00	4.45	22.59	0.00
42	-1.13	6.54	0.00	0.00	2.53	22.59	0.00
43	0.01	6.05	0.00	0.00	-0.08	22.59	0.00
44	0.33	5.89	0.00	0.00	-1.06	22.59	0.00
45	0.27	5.79	0.00	0.00	-1.26	22.59	0.00
46	0.07	5.79	0.00	0.00	-1.16	22.59	0.00
47	-0.22	3.75	0.00	0.00	-1.01	22.59	0.00
48	-0.68	2.04	0.00	0.00	-0.30	22.59	0.00
49	-0.69	2.70	0.00	0.00	1.42	22.59	0.00
50	0.68	0.99	1.39	0.00	2.24	22.59	0.00
51	-0.69	23.96	0.00	0.00	1.08	22.59	0.00
52	-0.41	22.70	0.00	0.00	-0.03	22.59	0.00
53	-0.13	19.99	0.00	0.00	-1.36	22.59	0.00
54	-0.07	17.16	0.00	0.00	-1.55	22.59	0.00
55	-0.08	14.46	0.00	0.00	-1.24	22.59	0.00
56	-0.11	12.00	0.00	0.00	-0.90	22.59	0.00
57	-0.18	6.38	0.00	0.00	-0.76	22.59	0.00
58	-0.54	2.50	0.00	0.00	-0.38	22.59	0.00
59	-1.17	2.54	0.00	0.00	2.84	22.59	0.00
60	1.70	0.87	4.39	0.00	5.40	22.59	0.00
61	-10.58	70.71	0.00	0.00	7.59	22.59	0.00
62	-8.54	65.21	0.00	0.00	5.82	22.59	0.00
63	-5.54	52.58	0.00	0.00	2.68	22.59	0.00
64	-3.62	39.08	0.00	0.00	0.04	22.59	0.00
65	-2.40	27.35	0.00	0.00	-1.90	22.59	0.00
66	-1.60	17.56	0.00	0.00	-2.80	22.59	0.00
67	-0.51	15.13	0.00	0.00	-2.27	22.59	0.00
68	3.84	3.32	9.27	0.00	-4.23	22.59	0.00
69	0.04	1.24	0.00	0.00	-3.53	22.59	0.00
70	-0.09	0.68	0.00	0.00	-0.48	22.59	0.00

Esfuerzos transversales pml. Signo+

u1 : Armadura de tracción en cara exterior de la aleta pml.

u2 : Armadura de compresión en cara interior de la aleta pml.

u3 : Cuantía de armadura de cortante pm2.

Nodo	Md(mT)	Nd(T)	u1(T/m)	u2(T/m)	Vd(T)	Vcu(T)	u3(T/m2)
1	0.00	0.00	0.00	0.00	0.00	22.59	0.00
2	-0.63	0.00	0.00	0.00	2.16	22.59	0.00
3	-0.12	0.00	0.00	0.00	0.29	22.59	0.00
4	0.23	0.00	0.64	0.00	-0.40	22.59	0.00
5	0.33	0.00	0.95	0.00	-0.72	22.59	0.00
6	0.29	0.00	0.83	0.00	-0.95	22.59	0.00
7	0.17	0.00	0.49	0.00	-1.19	22.59	0.00
8	-0.14	0.00	0.00	0.00	-1.39	22.59	0.00
9	-0.52	0.00	0.00	0.00	-1.37	22.59	0.00
10	-0.50	0.00	0.00	0.00	-1.37	22.59	0.00
11	0.00	0.00	0.00	0.00	0.00	22.59	0.00
12	-0.10	0.00	0.00	0.00	1.99	22.59	0.00
13	-0.05	0.00	0.00	0.00	0.31	22.59	0.00
14	0.17	0.00	0.47	0.00	-0.79	22.59	0.00
15	0.17	0.00	0.50	0.00	-1.32	22.59	0.00
16	0.02	0.00	0.06	0.00	-1.62	22.59	0.00
17	-0.22	0.00	0.00	0.00	-1.85	22.59	0.00
18	-0.60	0.00	0.00	0.00	-1.89	22.59	0.00
19	-0.98	0.00	0.00	0.00	-1.72	22.59	0.00
20	-1.08	0.00	0.00	0.00	-1.68	22.59	0.00
21	0.00	0.00	0.00	0.00	0.00	22.59	0.00
22	0.01	0.00	0.02	0.00	1.66	22.59	0.00
23	-0.04	0.00	0.00	0.00	0.06	22.59	0.00
24	-0.08	0.00	0.00	0.00	-1.71	22.59	0.00
25	-0.30	0.00	0.00	0.00	-2.60	22.59	0.00
26	-0.65	0.00	0.00	0.00	-2.99	22.59	0.00
27	-1.03	0.00	0.00	0.00	-3.16	22.59	0.00
28	-1.37	0.00	0.00	0.00	-2.99	22.59	0.00
29	-1.66	0.00	0.00	0.00	-2.46	22.59	0.00
30	-1.88	0.00	0.00	0.00	-2.08	22.59	0.00
31	0.00	0.00	0.00	0.00	0.00	22.59	0.00
32	0.00	0.00	0.01	0.00	1.37	22.59	0.00
33	-0.24	0.00	0.00	0.00	-0.73	22.59	0.00
34	-0.71	0.00	0.00	0.00	-2.96	22.59	0.00
35	-1.29	0.00	0.00	0.00	-4.06	22.59	0.00
36	-1.88	0.00	0.00	0.00	-4.43	22.59	0.00
37	-2.37	0.00	0.00	0.00	-4.49	22.59	0.00
38	-2.62	0.00	0.00	0.00	-4.30	22.59	0.00
39	-2.67	0.00	0.00	0.00	-3.32	22.59	0.00
40	-2.87	0.00	0.00	0.00	-2.20	22.59	0.00
41	0.00	0.00	0.00	0.00	0.00	22.59	0.00
42	-0.05	0.00	0.00	0.00	0.91	22.59	0.00
43	-0.80	0.00	0.00	0.00	-2.02	22.59	0.00
44	-1.87	0.00	0.00	0.00	-4.58	22.59	0.00
45	-2.90	0.00	0.00	0.00	-5.72	22.59	0.00
46	-3.71	0.00	0.00	0.00	-5.93	22.59	0.00
47	-4.30	0.00	0.00	0.00	-5.78	22.59	0.00
48	-4.48	0.00	0.00	0.00	-5.76	22.59	0.00
49	-4.02	0.00	0.00	0.00	-4.80	22.59	0.00
50	-3.86	0.00	0.00	0.00	-1.51	22.59	0.00
51	0.00	0.00	0.00	0.00	0.00	22.59	0.00
52	-0.20	0.00	0.00	0.00	-0.16	22.59	0.00
53	-1.89	0.00	0.00	0.00	-3.81	22.59	0.00
54	-3.77	0.00	0.00	0.00	-6.58	22.59	0.00
55	-5.24	0.00	0.00	0.00	-7.59	22.59	0.00
56	-6.21	0.00	0.00	0.00	-7.48	22.59	0.00
57	-6.81	0.00	0.00	0.00	-6.98	22.59	0.00
58	-7.09	0.00	0.00	0.00	-7.08	22.59	0.00
59	-6.22	0.00	0.00	0.00	-7.84	22.59	0.00
60	-4.19	0.00	0.00	0.00	0.78	22.59	0.00
61	0.00	0.00	0.00	0.00	0.00	22.59	0.00
62	-0.71	0.00	0.00	0.00	-0.93	22.59	0.00
63	-3.78	0.00	0.00	0.00	-4.83	22.59	0.00
64	-6.66	0.00	0.00	0.00	-7.68	22.59	0.00
65	-8.50	0.00	0.00	0.00	-8.58	22.59	0.00
66	-9.42	0.00	0.00	0.00	-8.27	22.59	0.00
67	-9.80	0.00	0.00	0.00	-7.55	22.59	0.00
68	-10.18	0.00	0.00	0.00	-7.64	22.59	0.00
69	-10.21	0.00	0.00	0.00	-9.86	22.59	0.00
70	-3.14	0.00	0.00	0.00	2.35	22.59	0.00

Esfuerzos longitudinales pml. Signo-

ul : Armadura de tracción en cara interior de la aleta pml.

u2 : Armadura de compresión en cara exterior de la aleta pml.

u3 : Cuantía de armadura de cortante pm2.

Nodo	Md(mT)	Nd(T)	ul(T/m)	u2(T/m)	Vd(T)	Vcu(T)	u3(T/m2)
1	-11.50	-49.54	61.32	0.00	19.84	22.59	0.00
2	-5.75	-46.46	42.38	4.07	15.45	22.59	0.00
3	-0.10	-38.38	19.52	18.86	8.72	22.59	0.00
4	1.72	-32.22	0.00	0.00	4.79	22.59	0.00
5	1.79	-24.07	0.00	0.00	2.32	22.59	0.00
6	1.16	-15.32	0.00	0.00	0.91	22.59	0.00
7	0.41	-9.23	0.00	0.00	0.49	22.59	0.00
8	0.11	-4.06	0.00	0.00	1.03	22.59	0.00
9	0.13	-1.05	0.00	0.00	-0.25	22.59	0.00
10	-0.31	-0.25	1.04	0.00	-2.21	22.59	0.00
11	-8.40	-35.84	44.58	0.00	11.29	22.59	0.00
12	-4.84	-33.83	33.04	0.79	9.11	22.59	0.00
13	-0.05	-28.27	14.31	13.96	4.83	22.59	0.00
14	1.43	-21.12	0.00	0.00	1.50	22.59	0.00
15	1.43	-14.29	0.00	0.00	-0.20	22.59	0.00
16	0.87	-11.12	0.00	0.00	-0.86	22.59	0.00
17	0.24	-6.12	0.00	0.00	-0.86	22.59	0.00
18	-0.08	-1.96	1.24	0.71	-0.60	22.59	0.00
19	-0.11	-0.13	0.40	0.00	-0.35	22.59	0.00
20	-0.13	0.21	0.27	0.00	-0.52	22.59	0.00
21	-6.41	-23.04	31.56	0.00	9.14	22.59	0.00
22	-3.55	-21.86	22.64	0.00	6.90	22.59	0.00
23	-0.04	-18.39	9.32	9.07	3.07	22.59	0.00
24	1.11	-13.74	0.00	0.00	0.50	22.59	0.00
25	1.06	-9.21	0.00	0.00	-0.79	22.59	0.00
26	0.59	-6.05	0.00	0.00	-1.21	22.59	0.00
27	0.03	-2.15	0.00	0.00	-1.12	22.59	0.00
28	-0.33	0.37	0.74	0.00	-0.65	22.59	0.00
29	-0.26	0.91	0.21	0.00	-0.18	22.59	0.00
30	-0.13	0.76	0.00	0.00	-0.30	22.59	0.00
31	-4.48	-10.66	18.98	0.00	7.14	22.59	0.00
32	-2.30	-10.22	12.42	0.00	4.90	22.59	0.00
33	-0.01	-8.65	4.35	4.31	1.51	22.59	0.00
34	0.72	-6.37	0.00	0.00	-0.29	22.59	0.00
35	0.65	-4.11	0.00	0.00	-1.09	22.59	0.00
36	0.30	-2.04	0.00	0.00	-1.30	22.59	0.00
37	-0.15	1.22	0.00	0.00	-1.17	22.59	0.00
38	-0.59	2.80	0.08	0.00	-0.49	22.59	0.00
39	-0.39	1.95	0.00	0.00	0.34	22.59	0.00
40	0.05	1.26	0.00	0.00	0.34	22.59	0.00
41	-2.53	1.68	6.35	0.00	4.42	22.59	0.00
42	-1.20	1.39	2.65	0.00	2.50	22.59	0.00
43	-0.04	1.06	0.00	0.00	-0.10	22.59	0.00
44	0.29	1.00	0.00	0.00	-1.08	22.59	0.00
45	0.24	0.98	0.00	0.00	-1.30	22.59	0.00
46	0.05	1.91	0.00	0.00	-1.25	22.59	0.00
47	-0.24	4.78	0.00	0.00	-1.15	22.59	0.00
48	-0.77	5.11	0.00	0.00	-0.44	22.59	0.00
49	-0.69	2.03	0.83	0.00	1.34	22.59	0.00
50	0.65	1.48	0.00	0.00	2.17	22.59	0.00
51	-0.74	14.40	0.00	0.00	1.02	22.59	0.00
52	-0.44	13.29	0.00	0.00	-0.06	22.59	0.00
53	-0.15	10.87	0.00	0.00	-1.37	22.59	0.00
54	-0.10	8.34	0.00	0.00	-1.57	22.59	0.00
55	-0.11	6.00	0.00	0.00	-1.27	22.59	0.00
56	-0.14	5.80	0.00	0.00	-0.98	22.59	0.00
57	-0.23	6.69	0.00	0.00	-0.96	22.59	0.00
58	-0.66	6.79	0.00	0.00	-0.66	22.59	0.00
59	-1.24	1.67	2.62	0.00	2.58	22.59	0.00
60	1.64	1.03	0.00	0.00	5.17	22.59	0.00
61	-12.56	104.84	0.00	0.00	6.52	22.59	0.00
62	-10.75	99.14	0.00	0.00	4.90	22.59	0.00
63	-7.82	85.89	0.00	0.00	1.74	22.59	0.00
64	-5.75	71.35	0.00	0.00	-1.40	22.59	0.00
65	-4.41	58.23	0.00	0.00	-4.15	22.59	0.00
66	-3.60	46.70	0.00	0.00	-5.89	22.59	0.00
67	-2.39	36.66	0.00	0.00	-5.66	22.59	0.00
68	0.88	17.03	0.00	0.00	-8.55	22.59	0.00
69	-0.13	0.67	0.00	0.00	-6.37	22.59	0.00
70	-0.20	0.46	0.32	0.00	-0.85	22.59	0.00

Esfuerzos transversales pm1. Signo-

u1 : Armadura de tracción en cara interior de la aleta pm1.

u2 : Armadura de compresión en cara exterior de la aleta pm1.

u3 : Cuantía de armadura de cortante pm2.

Nodo	Md(mT)	Nd(T)	u1(T/m)	u2(T/m)	Vd(T)	Vcu(T)	u3(T/m2)
1	0.00	0.00	0.00	0.00	0.00	22.59	0.00
2	-0.66	0.00	1.88	0.00	2.08	22.59	0.00
3	-0.13	0.00	0.38	0.00	0.28	22.59	0.00
4	0.22	0.00	0.00	0.00	-0.40	22.59	0.00
5	0.33	0.00	0.00	0.00	-0.73	22.59	0.00
6	0.28	0.00	0.00	0.00	-0.97	22.59	0.00
7	0.16	0.00	0.00	0.00	-1.22	22.59	0.00
8	-0.16	0.00	0.44	0.00	-1.42	22.59	0.00
9	-0.54	0.00	1.54	0.00	-1.42	22.59	0.00
10	-0.53	0.00	1.53	0.00	-1.40	22.59	0.00
11	0.00	0.00	0.00	0.00	0.00	22.59	0.00
12	-0.11	0.00	0.31	0.00	1.91	22.59	0.00
13	-0.07	0.00	0.20	0.00	0.28	22.59	0.00
14	0.16	0.00	0.00	0.00	-0.80	22.59	0.00
15	0.17	0.00	0.00	0.00	-1.32	22.59	0.00
16	0.01	0.00	0.00	0.00	-1.63	22.59	0.00
17	-0.24	0.00	0.68	0.00	-1.88	22.59	0.00
18	-0.63	0.00	1.80	0.00	-1.94	22.59	0.00
19	-1.02	0.00	2.93	0.00	-1.79	22.59	0.00
20	-1.14	0.00	3.27	0.00	-1.70	22.59	0.00
21	0.00	0.00	0.00	0.00	0.00	22.59	0.00
22	0.00	0.00	0.01	0.00	1.59	22.59	0.00
23	-0.06	0.00	0.16	0.00	0.01	22.59	0.00
24	-0.09	0.00	0.26	0.00	-1.73	22.59	0.00
25	-0.31	0.00	0.90	0.00	-2.60	22.59	0.00
26	-0.68	0.00	1.95	0.00	-3.00	22.59	0.00
27	-1.07	0.00	3.07	0.00	-3.21	22.59	0.00
28	-1.42	0.00	4.08	0.00	-3.06	22.59	0.00
29	-1.75	0.00	5.02	0.00	-2.55	22.59	0.00
30	-1.99	0.00	5.71	0.00	-2.09	22.59	0.00
31	0.00	0.00	0.00	0.00	0.00	22.59	0.00
32	-0.01	0.00	0.03	0.00	1.31	22.59	0.00
33	-0.25	0.00	0.72	0.00	-0.78	22.59	0.00
34	-0.72	0.00	2.07	0.00	-2.97	22.59	0.00
35	-1.30	0.00	3.74	0.00	-4.07	22.59	0.00
36	-1.92	0.00	5.51	0.00	-4.44	22.59	0.00
37	-2.44	0.00	7.03	0.00	-4.55	22.59	0.00
38	-2.70	0.00	7.79	0.00	-4.40	22.59	0.00
39	-2.80	0.00	8.09	0.00	-3.41	22.59	0.00
40	-3.02	0.00	8.71	0.00	-2.20	22.59	0.00
41	0.00	0.00	0.00	0.00	0.00	22.59	0.00
42	-0.06	0.00	0.18	0.00	0.85	22.59	0.00
43	-0.81	0.00	2.32	0.00	-2.07	22.59	0.00
44	-1.89	0.00	5.43	0.00	-4.59	22.59	0.00
45	-2.91	0.00	8.38	0.00	-5.75	22.59	0.00
46	-3.75	0.00	10.85	0.00	-5.96	22.59	0.00
47	-4.40	0.00	12.75	0.00	-5.84	22.59	0.00
48	-4.61	0.00	13.38	0.00	-5.96	22.59	0.00
49	-4.21	0.00	12.21	0.00	-4.86	22.59	0.00
50	-4.05	0.00	11.73	0.00	-1.54	22.59	0.00
51	0.00	0.00	0.00	0.00	0.00	22.59	0.00
52	-0.21	0.00	0.61	0.00	-0.24	22.59	0.00
53	-1.90	0.00	5.47	0.00	-3.87	22.59	0.00
54	-3.79	0.00	10.97	0.00	-6.59	22.59	0.00
55	-5.26	0.00	15.29	0.00	-7.64	22.59	0.00
56	-6.24	0.00	18.21	0.00	-7.55	22.59	0.00
57	-6.94	0.00	20.27	0.00	-7.03	22.59	0.00
58	-7.33	0.00	21.47	0.00	-7.50	22.59	0.00
59	-6.43	0.00	18.76	0.00	-8.02	22.59	0.00
60	-4.44	0.00	12.87	0.00	0.66	22.59	0.00
61	0.00	0.00	0.00	0.00	0.00	22.59	0.00
62	-0.74	0.00	2.11	0.00	-1.02	22.59	0.00
63	-3.78	0.00	10.95	0.00	-4.89	22.59	0.00
64	-6.70	0.00	19.57	0.00	-7.69	22.59	0.00
65	-8.55	0.00	25.12	0.00	-8.64	22.59	0.00
66	-9.46	0.00	27.89	0.00	-8.36	22.59	0.00
67	-9.92	0.00	29.32	0.00	-7.59	22.59	0.00
68	-10.65	0.00	31.55	0.00	-8.23	22.59	0.00
69	-10.29	0.00	30.45	0.00	-10.21	22.59	0.00
70	-3.49	0.00	10.10	0.00	2.17	22.59	0.00

VOLADIZO DE LA ALETA 1

Esfuerzos en el empotramiento del voladizo por empuje de tierras :

Momento mayorado	Armadura de traccion	Armadura de compresion
0.719mT/m	2.060T/m.	0.000T/m.

Cortante mayorado	Armadura de cortante
1.196T/m	0.000T/m.

Esfuerzos en el empotramiento del voladizo por peso propio :

Momento mayorado	Armadura de traccion	Armadura de compresion
1.752mT	1.156T	0.000T

VOLADIZO DE LA ALETA 2

Esfuerzos en el empotramiento del voladizo por empuje de tierras :

Momento mayorado	Armadura de traccion	Armadura de compresion
1.907mT/m	5.482T/m.	0.000T/m.

Cortante mayorado	Armadura de cortante
2.046T/m	0.000T/m.

Esfuerzos en el empotramiento del voladizo por peso propio :

Momento mayorado	Armadura de traccion	Armadura de compresion
5.228mT	2.830T	0.000T

7. CALCULOS DE ORDENADOR

Se presentan a continuación los cálculos de ordenador realizados.

1 Emparrillado tridimensional

2 Pórtico tridimensional

3 Cálculo de las aletas

1 EMPARRILLADO TRIDIMENSIONAL

Se presentan a continuación las características del modelo realizado y los resultados de las hipótesis consideradas.

```
S T A T I K - 2   V.1.51                                          página    1
AEPO    28029 MADRID                                              26.10.98
Calculo del paso superior 101.7 11-JUN-98                         12:41
Emparrillado tridimensional.
------------------------------------------------------------------------------
*****************************
*     DATOS - ESTRUCTURA    *
*****************************
Titulo proy.:  Calculo del paso superior 101.7 11-JUN-98

Unidades    :   M , T
D A T O S  D E  N U D O S:(  95 Nudo  )          Apoyo          Especial
                    X          Y          Z       V     R
 Nudo          [ M]       [ M]       [ M]      XYZ   XYZ
------------------------------------------------------------------------------
    1      0.00000   -2.00000    0.00000      SSB   FFF
    2      0.00000    0.00000    0.00000
    3      0.00000    2.00000    0.00000      SSB   FFF
    4      1.27500   -2.00000    0.02550
    5      1.27500    0.00000    0.02550
    6      1.27500    2.00000    0.02550
    7      2.55000   -2.00000    0.05100
    8      2.55000    0.00000    0.05100
    9      2.55000    2.00000    0.05100
   10      3.82500   -2.00000    0.07650
   11      3.82500    0.00000    0.07650
   12      3.82500    2.00000    0.07650
   13      5.10000   -2.00000    0.10200
   14      5.10000    0.00000    0.10200
   15      5.10000    2.00000    0.10200
   16      6.37500   -2.00000    0.12750
   17      6.37500    0.00000    0.12750
   18      6.37500    2.00000    0.12750
   19      7.65000   -2.00000    0.15300
   20      7.65000    0.00000    0.15300
   21      7.65000    2.00000    0.15300
   22      8.92500   -2.00000    0.17850
   23      8.92500    0.00000    0.17850
   24      8.92500    2.00000    0.17850
   25     10.20000   -2.00000    0.20400
   26     10.20000    0.00000    0.20400
   27     10.20000    2.00000    0.20400
   28     11.47500   -2.00000    0.22950
   29     11.47500    0.00000    0.22950
   30     11.47500    2.00000    0.22950
   31     12.75000   -2.00000    0.25500
   32     12.75000    0.00000    0.25500
   33     12.75000    2.00000    0.25500
   34     14.45000   -2.00000    0.28900
   35     14.45000    0.00000    0.28900
   36     14.45000    2.00000    0.28900
   37     16.15000   -2.00000    0.32300
   38     16.15000    0.00000    0.32300
   39     16.15000    2.00000    0.32300
   40     17.85000   -2.00000    0.35700
   41     17.85000    0.00000    0.35700
   42     17.85000    2.00000    0.35700
```

Nudo	X [M]	Y [M]	Z [M]	V XYZ	R XYZ
43	19.55000	-2.00000	0.39100		
44	19.55000	0.00000	0.39100		
45	19.55000	2.00000	0.39100		
46	21.25000	-2.00000	0.42500		
47	21.25000	0.00000	0.42500		
48	21.25000	2.00000	0.42500		
49	22.95000	-2.00000	0.45900		
50	22.95000	0.00000	0.45900		
51	22.95000	2.00000	0.45900		
52	24.65000	-2.00000	0.49300		
53	24.65000	0.00000	0.49300		
54	24.65000	2.00000	0.49300		
55	26.35000	-2.00000	0.52700		
56	26.35000	0.00000	0.52700		
57	26.35000	2.00000	0.52700		
58	28.05000	-2.00000	0.56100		
59	28.05000	0.00000	0.56100		
60	28.05000	2.00000	0.56100		
61	29.75000	-2.00000	0.59500		
62	29.75000	0.00000	0.59500		
63	29.75000	2.00000	0.59500		
64	31.02500	-2.00000	0.62050		
65	31.02500	0.00000	0.62050		
66	31.02500	2.00000	0.62050		
67	32.30000	-2.00000	0.64600		
68	32.30000	0.00000	0.64600		
69	32.30000	2.00000	0.64600		
70	33.57500	-2.00000	0.67150		
71	33.57500	0.00000	0.67150		
72	33.57500	2.00000	0.67150		
73	34.85000	-2.00000	0.69700		
74	34.85000	0.00000	0.69700		
75	34.85000	2.00000	0.69700		
76	36.12500	-2.00000	0.72250		
77	36.12500	0.00000	0.72250		
78	36.12500	2.00000	0.72250		
79	37.40001	-2.00000	0.74800		
80	37.40001	0.00000	0.74800		
81	37.40001	2.00000	0.74800		
82	38.67501	-2.00000	0.77350		
83	38.67501	0.00000	0.77350		
84	38.67501	2.00000	0.77350		
85	39.95001	-2.00000	0.79900		
86	39.95001	0.00000	0.79900		
87	39.95001	2.00000	0.79900		
88	41.22501	-2.00000	0.82450	SSB	FFF
89	41.22501	0.00000	0.82450		
90	41.22501	2.00000	0.82450	SSB	FFF
91	42.50001	-2.00000	0.85000		
92	42.50001	0.00000	0.85000		
93	42.50001	2.00000	0.85000		
101	12.75000	0.00000	-10.00000	BBB	BBB
102	29.75000	0.00000	-10.00000	BBB	BBB

NUDOS CON APOYO ELASTICO: ("B"=Bloqueado "F"=Libre)

Nudo	D-X [T/M]	D-Y [T/M]	D-Z [T/M]	R-X [TM/ARC]	R-Y [TM/ARC]	R-Z [TM/ARC]
1	3.333E+02	3.333E+02	B	F	F	F
3	3.333E+02	3.333E+02	B	F	F	F
88	3.333E+02	3.333E+02	B	F	F	F
90	3.333E+02	3.333E+02	B	F	F	F

DATOS BARRAS: (154 Barras)

Barra	Incidencias Inicio	Fin	Long.Barras [M]	Nombre-sec. (Cant.var)	Articulaciones Especial Inicio	Fin
1	1	4	1.27525	%Q0002		
2	4	7	1.27525	%Q0002		
3	7	10	1.27525	%Q0002		
4	10	13	1.27526	%Q0002		
5	13	16	1.27526	%Q0002		
6	16	19	1.27526	%Q0002		
7	19	22	1.27526	%Q0002		
8	22	25	1.27525	%Q0002		
9	25	28	1.27525	%Q0002		
10	28	31	1.27526	%Q0002		
11	31	34	1.70034	%Q0002		
12	34	37	1.70034	%Q0002		
13	37	40	1.70034	%Q0002		
14	40	43	1.70034	%Q0002		
15	43	46	1.70034	%Q0002		
16	46	49	1.70034	%Q0002		
17	49	52	1.70034	%Q0002		
18	52	55	1.70034	%Q0002		
19	55	58	1.70034	%Q0002		
20	58	61	1.70034	%Q0002		
21	61	64	1.27525	%Q0002		
22	64	67	1.27525	%Q0002		
23	67	70	1.27526	%Q0002		
24	70	73	1.27526	%Q0002		
25	73	76	1.27526	%Q0002		
26	76	79	1.27526	%Q0002		
27	79	82	1.27526	%Q0002		
28	82	85	1.27526	%Q0002		
29	85	88	1.27526	%Q0002		
30	88	91	1.27526	%Q0002		
31	2	5	1.27525	%Q0001		
32	5	8	1.27525	%Q0001		
33	8	11	1.27525	%Q0001		
34	11	14	1.27526	%Q0001		
35	14	17	1.27526	%Q0001		
36	17	20	1.27526	%Q0001		
37	20	23	1.27526	%Q0001		
38	23	26	1.27525	%Q0001		
39	26	29	1.27525	%Q0001		
40	29	32	1.27526	%Q0001		
41	32	35	1.70034	%Q0001		

Barra	Incidencias Inicio	Fin	Long.Barras [M]	Nombre-sec. (Cant.var)	Articulaciones Especial Inicio	Fin
42	35	38	1.70034	%Q0001		
43	38	41	1.70034	%Q0001		
44	41	44	1.70034	%Q0001		
45	44	47	1.70034	%Q0001		
46	47	50	1.70034	%Q0001		
47	50	53	1.70034	%Q0001		
48	53	56	1.70034	%Q0001		
49	56	59	1.70034	%Q0001		
50	59	62	1.70034	%Q0001		
51	62	65	1.27525	%Q0001		
52	65	68	1.27525	%Q0001		
53	68	71	1.27526	%Q0001		
54	71	74	1.27526	%Q0001		
55	74	77	1.27526	%Q0001		
56	77	80	1.27526	%Q0001		
57	80	83	1.27526	%Q0001		
58	83	86	1.27526	%Q0001		
59	86	89	1.27526	%Q0001		
60	89	92	1.27526	%Q0001		
61	3	6	1.27525	%Q0002		
62	6	9	1.27525	%Q0002		
63	9	12	1.27525	%Q0002		
64	12	15	1.27526	%Q0002		
65	15	18	1.27526	%Q0002		
66	18	21	1.27526	%Q0002		
67	21	24	1.27526	%Q0002		
68	24	27	1.27525	%Q0002		
69	27	30	1.27525	%Q0002		
70	30	33	1.27526	%Q0002		
71	33	36	1.70034	%Q0002		
72	36	39	1.70034	%Q0002		
73	39	42	1.70034	%Q0002		
74	42	45	1.70034	%Q0002		
75	45	48	1.70034	%Q0002		
76	48	51	1.70034	%Q0002		
77	51	54	1.70034	%Q0002		
78	54	57	1.70034	%Q0002		
79	57	60	1.70034	%Q0002		
80	60	63	1.70034	%Q0002		
81	63	66	1.27525	%Q0002		
82	66	69	1.27525	%Q0002		
83	69	72	1.27526	%Q0002		
84	72	75	1.27526	%Q0002		
85	75	78	1.27526	%Q0002		
86	78	81	1.27526	%Q0002		
87	81	84	1.27526	%Q0002		
88	84	87	1.27526	%Q0002		
89	87	90	1.27526	%Q0002		
90	90	93	1.27526	%Q0002		
91	1	2	2.00000	TRANS4		
92	2	3	2.00000	TRANS4		
93	4	5	2.00000	TRANS1		
94	5	6	2.00000	TRANS1		
95	7	8	2.00000	TRANS1		

Barra	Incidencias Inicio	Fin	Long.Barras [M]	Nombre-sec. (Cant.var)	Articulaciones Especial Inicio	Fin
96	8	9	2.00000	TRANS1		
97	10	11	2.00000	TRANS1		
98	11	12	2.00000	TRANS1		
99	13	14	2.00000	TRANS1		
100	14	15	2.00000	TRANS1		
101	16	17	2.00000	TRANS1		
102	17	18	2.00000	TRANS1		
103	19	20	2.00000	TRANS1		
104	20	21	2.00000	TRANS1		
105	22	23	2.00000	TRANS1		
106	23	24	2.00000	TRANS1		
107	25	26	2.00000	TRANS1		
108	26	27	2.00000	TRANS1		
109	28	29	2.00000	TRANS1		
110	29	30	2.00000	TRANS1		
111	31	32	2.00000	TRANS3		
112	32	33	2.00000	TRANS3		
113	34	35	2.00000	TRANS2		
114	35	36	2.00000	TRANS2		
115	37	38	2.00000	TRANS2		
116	38	39	2.00000	TRANS2		
117	40	41	2.00000	TRANS2		
118	41	42	2.00000	TRANS2		
119	43	44	2.00000	TRANS2		
120	44	45	2.00000	TRANS2		
121	46	47	2.00000	TRANS2		
122	47	48	2.00000	TRANS2		
123	49	50	2.00000	TRANS2		
124	50	51	2.00000	TRANS2		
125	52	53	2.00000	TRANS2		
126	53	54	2.00000	TRANS2		
127	55	56	2.00000	TRANS2		
128	56	57	2.00000	TRANS2		
129	58	59	2.00000	TRANS2		
130	59	60	2.00000	TRANS2		
131	61	62	2.00000	TRANS3		
132	62	63	2.00000	TRANS3		
133	64	65	2.00000	TRANS1		
134	65	66	2.00000	TRANS1		
135	67	68	2.00000	TRANS1		
136	68	69	2.00000	TRANS1		
137	70	71	2.00000	TRANS1		
138	71	72	2.00000	TRANS1		
139	73	74	2.00000	TRANS1		
140	74	75	2.00000	TRANS1		
141	76	77	2.00000	TRANS1		
142	77	78	2.00000	TRANS1		
143	79	80	2.00000	TRANS1		
144	80	81	2.00000	TRANS1		
145	82	83	2.00000	TRANS1		
146	83	84	2.00000	TRANS1		
147	85	86	2.00000	TRANS1		
148	86	87	2.00000	TRANS1		
149	88	89	2.00000	TRANS1		

Barra	Incidencias Inicio	Fin	Long.Barras [M]	Nombre-sec. (Cant.var)	Articulaciones Inicio	Fin	Especial
150	89	90	2.00000	TRANS1			
151	91	92	2.00000	TRANS4			
152	92	93	2.00000	TRANS4			
201*	101	32	10.25500	PILA			
202*	102	62	10.59500	PILA			

Las barras marcadas con "*" son verticales. Sus ejes locales son tales que la dirección 'y' resulta coincidente con la global siempre y cuando no se haya rotado con la instruction 'O_ORIENTACION'.

CARACTERISTICAS DE SEC. / Nombre Sec.	Ax [M2] / Ix [M4] / zi [M1]	Iy [M4] / Fy [M2] / zs [M1]	Iz [M4] / Fz [M2] / yi [M1]	Phi[grados] / yd [M1]
ŝQ0001	2.1000E+00	2.1200E-01	7.0000E-01	0.00
	5.0400E-01	Undef	Undef	
	Undef	Undef	Undef	Undef
ŝQ0002	1.4950E+00	1.1300E-01	7.3800E+00	0.00
	1.5700E-01	Undef	Undef	
	Undef	Undef	Undef	Undef
PILA	7.7646E-01	4.7978E-02	4.7978E-02	0.00
	9.8175E-02	Undef	Undef	
	-0.5000	0.5000	-0.5000	0.5000
TRANS1	1.2750E+00	1.0625E-01	1.7272E-01	0.00
	2.1000E-01	Undef	Undef	
	-0.5000	0.5000	-0.6375	0.6375
TRANS2	1.7000E+00	1.4167E-01	4.0942E-01	0.00
	2.8000E-01	Undef	Undef	
	-0.5000	0.5000	-0.8500	0.8500
TRANS3	1.4875E+00	1.2396E-01	2.7428E-01	0.00
	2.5000E-01	Undef	Undef	
	-0.5000	0.5000	-0.7437	0.7437
TRANS4	6.3750E-01	5.3125E-02	2.1590E-02	-0.00
	1.1000E-01	Undef	Undef	
	-0.5000	0.5000	-0.3187	0.3187

MATERIALES:

Barra (hasta barra)	E-Módulo [T/ M2]	G-Módulo [T/ M2]
1 .. 202	3.0000E+06	1.2500E+06

STS-cálculo ok
Max free mem:157kB

==========
Hipótesis 1: Peso propio y barandillas 1
==========

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras	
P grav. Z gl const.	-2.500		Barra	201 .. 202 .. 90 1
Fuerza Z gl const.	-0.800000		Barra	1 .. 30 61 .. 90

==========
Hipótesis 2: Pavimento 1
==========

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras	
Fuerza Z gl const.	-0.320000		Barra	1 .. 90

Hipótesis 3: Sobrecarga de uso 1

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras	
Fuerza Z gl const.	-0.400000		Barra	31 .. 35
Fuerza Z gl const.	-1.280		Barra	1 .. 5
Momento X gl const.	0.200000		Barra	31 .. 35
Momento X gl const.	0.704000		Barra	1 .. 5

Hipótesis 4: Sobrecarga de uso 2

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras	
Fuerza Z gl const.	-0.400000		Barra	36 .. 40
Fuerza Z gl const.	-1.280		Barra	6 .. 10
Momento X gl const.	0.200000		Barra	36 .. 40
Momento X gl const.	0.704000		Barra	6 .. 10

Hipótesis 5: Sobrecarga de uso 3

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras	
Fuerza Z gl const.	-0.400000		Barra	41 .. 45
Fuerza Z gl const.	-1.280		Barra	11 .. 15
Momento X gl const.	0.200000		Barra	41 .. 45
Momento X gl const.	0.704000		Barra	11 .. 15

Hipótesis 6: Sobrecarga de uso 4

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras	
Fuerza Z gl const.	-0.400000		Barra	46 .. 50
Fuerza Z gl const.	-1.280		Barra	16 .. 20
Momento X gl const.	0.200000		Barra	46 .. 50
Momento X gl const.	0.704000		Barra	16 .. 20

Hipótesis 7: Sobrecarga de uso 5

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras	
Fuerza Z gl const.	-0.400000		Barra	51 .. 55
Fuerza Z gl const.	-1.280		Barra	21 .. 25
Momento X gl const.	0.200000		Barra	51 .. 55
Momento X gl const.	0.704000		Barra	21 .. 25

Hipótesis 8: Sobrecarga de uso 6

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras	
Fuerza Z gl const.	-0.400000		Barra	56 .. 60
Fuerza Z gl const.	-1.280		Barra	26 .. 30
Momento X gl const.	0.200000		Barra	56 .. 60
Momento X gl const.	0.704000		Barra	26 .. 30

Hipótesis 9: Sobrecarga de uso 7

Tipo de carga	Valor(a)	Valor(b)	Números nudos/barras
Fuerza Z gl const.	-0.400000		Barra 31 .. 35
Fuerza Z gl const.	-1.280		Barra 61 .. 65
Momento X gl const.	-0.200000		Barra 31 .. 35
Momento X gl const.	-0.704000		Barra 61 .. 65

Hipótesis 10: Sobrecarga de uso 8

Tipo de carga	Valor(a)	Valor(b)	Números nudos/barras
Fuerza Z gl const.	-0.400000		Barra 36 .. 40
Fuerza Z gl const.	-1.280		Barra 66 .. 70
Momento X gl const.	-0.200000		Barra 36 .. 40
Momento X gl const.	-0.704000		Barra 66 .. 70

Hipótesis 11: Sobrecarga de uso 9

Tipo de carga	Valor(a)	Valor(b)	Números nudos/barras
Fuerza Z gl const.	-0.400000		Barra 41 .. 45
Fuerza Z gl const.	-1.280		Barra 71 .. 75
Momento X gl const.	-0.200000		Barra 41 .. 45
Momento X gl const.	-0.704000		Barra 71 .. 75

Hipótesis 12: Sobrecarga de uso 10

Tipo de carga	Valor(a)	Valor(b)	Números nudos/barras
Fuerza Z gl const.	-0.400000		Barra 46 .. 50
Fuerza Z gl const.	-1.280		Barra 76 .. 80
Momento X gl const.	-0.200000		Barra 46 .. 50
Momento X gl const.	-0.704000		Barra 76 .. 80

Hipótesis 13: Sobrecarga de uso 11

Tipo de carga	Valor(a)	Valor(b)	Números nudos/barras
Fuerza Z gl const.	-0.400000		Barra 51 .. 55
Fuerza Z gl const.	-1.280		Barra 81 .. 85
Momento X gl const.	-0.200000		Barra 51 .. 55
Momento X gl const.	-0.704000		Barra 81 .. 85

Hipótesis 14: Sobrecarga de uso 12

Tipo de carga	Valor(a)	Valor(b)	Números nudos/barras
Fuerza Z gl const.	-0.400000		Barra 56 .. 60
Fuerza Z gl const.	-1.280		Barra 86 .. 90
Momento X gl const.	-0.200000		Barra 56 .. 60
Momento X gl const.	-0.704000		Barra 86 .. 90

Hipótesis 15: Carro 1

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras		
Fuerza Z gl conc.	-10.000	0.010000	Barra	31	
Fuerza Z gl conc.	-5.000	0.010000	Barra	1	61
Fuerza Z gl conc.	-10.000	0.225000	Barra	32	
Fuerza Z gl conc.	-5.000	0.225000	Barra	2	62
Fuerza Z gl conc.	-10.000	0.450000	Barra	33	
Fuerza Z gl conc.	-5.000	0.450000	Barra	3	63

Hipótesis 16: Carro 2

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras		
Fuerza Z gl conc.	-10.000	0	Barra	35	
Fuerza Z gl conc.	-5.000	0	Barra	5	65
Fuerza Z gl conc.	-10.000	1.050	Barra	34	
Fuerza Z gl conc.	-5.000	1.050	Barra	4	64
Fuerza Z gl conc.	-10.000	0.225000	Barra	36	
Fuerza Z gl conc.	-5.000	0.225000	Barra	6	66

Hipótesis 17: Carro 3

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras		
Fuerza Z gl conc.	-10.000	0	Barra	41	
Fuerza Z gl conc.	-5.000	0	Barra	11	71
Fuerza Z gl conc.	-10.000	0.825000	Barra	38	
Fuerza Z gl conc.	-5.000	0.825000	Barra	8	68
Fuerza Z gl conc.	-10.000	1.050	Barra	39	
Fuerza Z gl conc.	-5.000	1.050	Barra	9	69

Hipótesis 18: Carro 4

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras		
Fuerza Z gl conc.	-10.000	0	Barra	41	
Fuerza Z gl conc.	-5.000	0	Barra	11	71
Fuerza Z gl conc.	-10.000	1.500	Barra	41	
Fuerza Z gl conc.	-5.000	1.500	Barra	11	71
Fuerza Z gl conc.	-10.000	1.050	Barra	39	
Fuerza Z gl conc.	-5.000	1.050	Barra	9	69

Hipótesis 19: Carro 5

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras		
Fuerza Z gl conc.	-10.000	0.010000	Barra	41	
Fuerza Z gl conc.	-5.000	0.010000	Barra	11	71
Fuerza Z gl conc.	-10.000	1.500	Barra	41	
Fuerza Z gl conc.	-5.000	1.500	Barra	11	71
Fuerza Z gl conc.	-10.000	1.300	Barra	42	
Fuerza Z gl conc.	-5.000	1.300	Barra	12	72

Hipótesis 20: Carro 6

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras		
Fuerza Z gl conc.	-10.000	0	Barra	46	
Fuerza Z gl conc.	-5.000	0	Barra	16	76
Fuerza Z gl conc.	-10.000	1.500	Barra	46	
Fuerza Z gl conc.	-5.000	1.500	Barra	16	76
Fuerza Z gl conc.	-10.000	0.200000	Barra	45	
Fuerza Z gl conc.	-5.000	0.200000	Barra	15	75

Hipótesis 21: Carro 7

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras		
Fuerza Z gl conc.	-7.500	0.010000	Barra	31	
Fuerza Z gl conc.	-12.500	0.010000	Barra	61	
Fuerza Z gl conc.	-7.500	0.225000	Barra	32	
Fuerza Z gl conc.	-12.500	0.225000	Barra	2	62
Fuerza Z gl conc.	-7.500	0.450000	Barra	33	
Fuerza Z gl conc.	-12.500	0.450000	Barra	3	63

Hipótesis 22: Carro 2

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras		
Fuerza Z gl conc.	-7.500	0	Barra	35	
Fuerza Z gl conc.	-12.500	0	Barra	65	
Fuerza Z gl conc.	-7.500	1.050	Barra	34	
Fuerza Z gl conc.	-12.500	1.050	Barra	64	
Fuerza Z gl conc.	-7.500	0.225000	Barra	36	
Fuerza Z gl conc.	-12.500	0.225000	Barra	66	

Hipótesis 23: Carro 9

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras		
Fuerza Z gl conc.	-7.500	0	Barra	41	
Fuerza Z gl conc.	-12.500	0	Barra	71	
Fuerza Z gl conc.	-7.500	0.825000	Barra	38	
Fuerza Z gl conc.	-12.500	0.825000	Barra	68	
Fuerza Z gl conc.	-7.500	1.050	Barra	39	
Fuerza Z gl conc.	-12.500	1.050	Barra	69	

Hipótesis 24: Carro 10

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras		
Fuerza Z gl conc.	-7.500	0	Barra	41	
Fuerza Z gl conc.	-12.500	0	Barra	71	
Fuerza Z gl conc.	-7.500	1.500	Barra	41	
Fuerza Z gl conc.	-12.500	1.500	Barra	71	
Fuerza Z gl conc.	-7.500	1.050	Barra	39	
Fuerza Z gl conc.	-12.500	1.050	Barra	69	

Hipótesis 25: Carro 11

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras		
Fuerza Z gl conc.	-7.500	0.010000	Barra	41	
Fuerza Z gl conc.	-12.500	0.010000	Barra	71	
Fuerza Z gl conc.	-7.500	1.500	Barra	41	
Fuerza Z gl conc.	-12.500	1.500	Barra	71	
Fuerza Z gl conc.	-7.500	1.300	Barra	42	
Fuerza Z gl conc.	-12.500	1.300	Barra	72	

Hipótesis 26: Carro 12

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras		
Fuerza Z gl conc.	-7.500	0	Barra	46	
Fuerza Z gl conc.	-12.500	0	Barra	76	
Fuerza Z gl conc.	-7.500	1.500	Barra	46	
Fuerza Z gl conc.	-12.500	1.500	Barra	76	
Fuerza Z gl conc.	-7.500	0.200000	Barra	45	
Fuerza Z gl conc.	-12.500	0.200000	Barra	75	

Hipótesis 27: Retraccion

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras
Def. x X lo const.	-0.000240	Barra	1 .. 90

Hipótesis 28: Termico

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras
Def. x X lo const.	0.000382	Barra	1 .. 90

Hipótesis 29: Gradiente termico

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras
Giro y/zY lo const.	0.000112	Barra	1 .. 90

Hipótesis 30: Viento transversal 1

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras
Fuerza Y gl const.	1.100	Barra	1 .. 30
Momento X gl const.	-1.760	Barra	1 .. 30
Fuerza Y gl const.	3.390	Barra	201 .. 202

Hipótesis 31: Viento transversal 2

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras
Fuerza Y gl const.	-1.100	Barra	61 .. 90
Momento X gl const.	1.760	Barra	61 .. 90
Fuerza Y gl const.	-3.390	Barra	201 .. 202

Hipótesis 32: Frenado

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras
Fuerza X gl const.	0.109800	Barra	1 .. 90

CARGAS: '' Ejec. "0001"

Hipótesis	Factor	Etapa	Título
1	1.0000		Peso propio y barandillas 1

DESPLAZAMIENTOS:

NUDOS	DX [mm]	DY [mm]	DZ [mm]	RX [rad]	RY [rad]	RZ [rad]
1	-0.125959	-3.65E-05	-3.32E-16	-5.94E-05	0.000538	-1.17E-06
2	-0.124276	7.26E-14	-0.096435	-5.69E-19	0.000495	1.74E-18
3	-0.125959	3.65E-05	-3.32E-16	5.94E-05	0.000538	1.17E-06
4	-0.112725	-1.45E-05	-0.669086	-3.25E-05	0.000495	-6.34E-07
5	-0.112027	7.48E-14	-0.710799	-1.40E-18	0.000463	1.73E-18
6	-0.112725	1.45E-05	-0.669086	3.25E-05	0.000495	6.34E-07
7	-0.101437	2.49E-06	-1.239	-1.08E-05	0.000390	-2.04E-07
8	-0.101279	7.71E-14	-1.250	-2.14E-18	0.000375	1.72E-18
9	-0.101437	-2.49E-06	-1.239	1.08E-05	0.000390	2.04E-07
10	-0.093269	1.40E-05	-1.650	1.52E-07	0.000252	1.06E-08
11	-0.093323	7.93E-14	-1.648	-2.89E-18	0.000246	1.70E-18
12	-0.093269	-1.40E-05	-1.650	-1.52E-07	0.000252	-1.06E-08
13	-0.088781	2.27E-05	-1.876	5.06E-06	0.000102	1.08E-07
14	-0.088909	8.15E-14	-1.868	-3.31E-18	9.93E-05	1.69E-18
15	-0.088781	-2.27E-05	-1.876	-5.06E-06	0.000102	-1.08E-07
16	-0.088004	3.14E-05	-1.914	8.19E-06	-3.81E-05	1.71E-07
17	-0.088164	8.38E-14	-1.904	-4.02E-18	-4.05E-05	1.68E-18
18	-0.088004	-3.14E-05	-1.914	-8.19E-06	-3.81E-05	-1.71E-07
19	-0.090407	4.11E-05	-1.792	1.28E-05	-0.000146	2.63E-07
20	-0.090620	8.60E-14	-1.777	-4.58E-18	-0.000151	1.67E-18
21	-0.090407	-4.11E-05	-1.792	-1.28E-05	-0.000146	-2.63E-07
22	-0.094875	4.99E-05	-1.567	2.30E-05	-0.000198	4.65E-07
23	-0.095240	8.83E-14	-1.540	-5.43E-18	-0.000211	1.65E-18
24	-0.094875	-4.99E-05	-1.567	-2.30E-05	-0.000198	-4.65E-07
25	-0.099678	5.24E-05	-1.324	4.49E-05	-0.000169	8.93E-07
26	-0.100452	9.05E-14	-1.269	-7.35E-18	-0.000199	1.62E-18
27	-0.099678	-5.24E-05	-1.324	-4.49E-05	-0.000169	-8.93E-07
28	-0.102509	4.17E-05	-1.181	8.11E-05	-4.05E-05	1.60E-06
29	-0.104104	9.28E-14	-1.071	-9.93E-18	-8.93E-05	1.57E-18
30	-0.102509	-4.17E-05	-1.181	-8.11E-05	-4.05E-05	-1.60E-06
31	-0.100859	1.24E-05	-1.265	0.000111	0.000180	2.18E-06
32	-0.103065	9.50E-14	-1.101	-1.34E-17	0.000173	1.51E-18
33	-0.100859	-1.24E-05	-1.265	-0.000111	0.000180	-2.18E-06
34	-0.089980	-3.00E-05	-1.819	7.03E-05	0.000453	1.38E-06
35	-0.091354	9.80E-14	-1.725	-1.94E-17	0.000497	1.39E-18
36	-0.089980	3.00E-05	-1.819	-7.03E-05	0.000453	-1.38E-06
37	-0.072777	-5.00E-05	-2.692	2.99E-05	0.000545	5.91E-07
38	-0.073290	1.01E-13	-2.656	-2.59E-17	0.000563	1.26E-18
39	-0.072777	5.00E-05	-2.692	-2.99E-05	0.000545	-5.91E-07
40	-0.055480	-4.39E-05	-3.570	1.34E-05	0.000466	2.77E-07
41	-0.055720	1.04E-13	-3.554	-2.97E-17	0.000471	1.17E-18
42	-0.055480	4.39E-05	-3.570	-1.34E-05	0.000466	-2.77E-07
43	-0.042981	-2.46E-05	-4.208	8.61E-06	0.000270	1.84E-07
44	-0.043157	1.07E-13	-4.197	-3.22E-17	0.000272	1.12E-18
45	-0.042981	2.46E-05	-4.208	-8.61E-06	0.000270	-1.84E-07

DESPLAZAMIENTOS:

NUDOS	DX [mm]	DY [mm]	DZ [mm]	RX [rad]	RY [rad]	RZ [rad]
46	-0.038237	-2.93E-06	-4.456	7.63E-06	1.60E-05	1.64E-07
47	-0.038402	1.10E-13	-4.446	-3.37E-17	1.60E-05	1.06E-18
48	-0.038237	2.93E-06	-4.456	-7.63E-06	1.60E-05	-1.64E-07
49	-0.042322	1.63E-05	-4.260	8.53E-06	-0.000243	1.80E-07
50	-0.042498	1.13E-13	-4.249	-3.40E-17	-0.000244	1.05E-18
51	-0.042322	-1.63E-05	-4.260	-8.53E-06	-0.000243	-1.80E-07
52	-0.054454	2.97E-05	-3.659	1.31E-05	-0.000451	2.66E-07
53	-0.054696	1.16E-13	-3.644	-3.38E-17	-0.000456	1.05E-18
54	-0.054454	-2.97E-05	-3.659	-1.31E-05	-0.000451	-2.66E-07
55	-0.071966	3.07E-05	-2.788	2.86E-05	-0.000552	5.66E-07
56	-0.072491	1.19E-13	-2.754	-3.19E-17	-0.000569	1.06E-18
57	-0.071966	-3.07E-05	-2.788	-2.86E-05	-0.000552	-5.66E-07
58	-0.090255	1.42E-05	-1.878	6.68E-05	-0.000491	1.32E-06
59	-0.091671	1.22E-13	-1.789	-2.86E-17	-0.000533	1.12E-18
60	-0.090255	-1.42E-05	-1.878	-6.68E-05	-0.000491	-1.32E-06
61	-0.103325	-1.14E-05	-1.228	0.000105	-0.000256	2.07E-06
62	-0.105764	1.25E-13	-1.073	-2.50E-17	-0.000248	1.18E-18
63	-0.103325	1.14E-05	-1.228	-0.000105	-0.000256	-2.07E-06
64	-0.107323	-2.73E-05	-1.030	7.63E-05	-6.13E-05	1.52E-06
65	-0.108997	1.27E-13	-0.926883	-2.23E-17	-1.54E-05	1.22E-18
66	-0.107323	2.73E-05	-1.030	-7.63E-05	-6.13E-05	-1.52E-06
67	-0.107335	-3.37E-05	-1.032	4.23E-05	5.18E-05	8.42E-07
68	-0.108151	1.29E-13	-0.980489	-1.93E-17	7.96E-05	1.27E-18
69	-0.107335	3.37E-05	-1.032	-4.23E-05	5.18E-05	-8.42E-07
70	-0.105584	-3.35E-05	-1.123	2.17E-05	7.78E-05	4.36E-07
71	-0.105973	1.31E-13	-1.097	-1.66E-17	9.02E-05	1.31E-18
72	-0.105584	3.35E-05	-1.123	-2.17E-05	7.78E-05	-4.36E-07
73	-0.104053	-2.99E-05	-1.201	1.18E-05	3.67E-05	2.40E-07
74	-0.104273	1.33E-13	-1.187	-1.39E-17	4.20E-05	1.35E-18
75	-0.104053	2.99E-05	-1.201	-1.18E-05	3.67E-05	-2.40E-07
76	-0.104144	-2.52E-05	-1.197	6.61E-06	-4.75E-05	1.36E-07
77	-0.104292	1.35E-13	-1.189	-1.16E-17	-4.40E-05	1.39E-18
78	-0.104144	2.52E-05	-1.197	-6.61E-06	-4.75E-05	-1.36E-07
79	-0.106653	-1.99E-05	-1.071	1.54E-06	-0.000151	3.57E-08
80	-0.106725	1.37E-13	-1.068	-9.01E-18	-0.000146	1.43E-18
81	-0.106653	1.99E-05	-1.071	-1.54E-06	-0.000151	-3.57E-08
82	-0.111792	-1.23E-05	-0.811957	-7.07E-06	-0.000253	-1.34E-07
83	-0.111697	1.39E-13	-0.819537	-5.85E-18	-0.000241	1.49E-18
84	-0.111792	1.23E-05	-0.811957	7.07E-06	-0.000253	1.34E-07
85	-0.119193	5.44E-09	-0.437281	-2.14E-05	-0.000327	-4.16E-07
86	-0.118759	1.41E-13	-0.465776	-2.79E-18	-0.000308	1.54E-18
87	-0.119193	-5.44E-09	-0.437281	2.14E-05	-0.000327	4.16E-07
88	-0.127799	1.83E-05	-3.84E-16	-3.60E-05	-0.000343	-7.02E-07
89	-0.127010	1.43E-13	-0.052308	-4.20E-19	-0.000335	1.59E-18
90	-0.127799	-1.83E-05	-3.84E-16	3.60E-05	-0.000343	7.02E-07
91	-0.136393	3.98E-05	0.428068	-3.70E-05	-0.000333	-7.24E-07
92	-0.135607	1.45E-13	0.377993	7.18E-19	-0.000339	1.61E-18
93	-0.136393	-3.98E-05	0.428068	3.70E-05	-0.000333	7.24E-07
101	-1.58E-17	6.11E-31	-2.60E-15	-4.39E-33	-5.69E-20	-6.39E-34
102	1.75E-17	-1.47E-31	-2.46E-15	-2.08E-33	5.92E-20	-2.00E-33

REACCIONES EN APOYOS:

NUDOS	FX [t]	FY [t]	FZ [t]	MX [tm]	MY [tm]	MZ [tm]
1	0.041982	1.22E-05	33.199			
3	0.041982	-1.22E-05	33.199			
88	0.042595	-6.10E-06	38.426			
90	0.042595	6.10E-06	38.426			
101	1.583	-6.11E-14	259.963	4.39E-13	5.693	6.39E-14
102	-1.752	1.47E-14	246.195	2.08E-13	-5.917	2.00E-13
Sumas:	-1.19E-07	-4.64E-14	649.407			

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
1	0	-0.578511	0.034926	24.328	4.133	-2.949	-0.070553
1	1.275	-0.462809	0.034926	18.543	4.133	24.386	-0.026015
2	0	-0.424374	0.062570	14.143	3.349	20.198	-0.125086
2	1.275	-0.308672	0.062570	8.358	3.349	34.544	-0.045296
3	0	-0.272351	0.057807	8.314	1.678	32.637	-0.100123
3	1.275	-0.156650	0.057807	2.529	1.678	39.551	-0.026407
4	0	-0.141615	0.030995	3.476	0.755755	38.804	-0.039177
4	1.275	-0.025914	0.030995	-2.309	0.755755	39.548	0.000349
5	0	-0.032213	-0.012457	-1.228	0.481091	39.215	0.018439
5	1.275	0.083488	-0.012457	-7.013	0.481091	33.961	0.002554
6	0	0.053814	-0.072571	-5.935	0.708872	33.642	0.050349
6	1.275	0.169516	-0.072571	-11.720	0.708872	22.385	-0.042195
7	0	0.106773	-0.151270	-10.546	1.574	21.705	0.047980
7	1.275	0.222475	-0.151270	-16.331	1.574	4.567	-0.144920
8	0	0.107461	-0.246605	-14.447	3.360	2.848	0.017137
8	1.275	0.223163	-0.246605	-20.232	3.360	-19.263	-0.297334
9	0	0.032183	-0.346760	-15.298	5.578	-23.163	-0.017879
9	1.275	0.147885	-0.346760	-21.083	5.578	-46.360	-0.460068
10	0	-0.138038	-0.426600	-7.154	4.578	-52.769	-0.016962
10	1.275	-0.022336	-0.426600	-12.939	4.578	-65.580	-0.560964
11	0	-0.590431	-0.454200	16.942	-4.680	-66.689	0.492838
11	1.700	-0.436162	-0.454200	9.228	-4.680	-44.441	-0.279426
12	0	-0.746866	-0.377592	24.170	-4.669	-36.714	0.580002
12	1.700	-0.592597	-0.377592	16.456	-4.669	-2.176	-0.062006
13	0	-0.807198	-0.250125	20.031	-1.894	0.975678	0.388736
13	1.700	-0.652929	-0.250125	12.317	-1.894	28.476	-0.036545

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
14	0	-0.752036	-0.138232	13.842	-0.558471	29.347	0.175234
14	1.700	-0.597767	-0.138232	6.129	-0.558471	46.325	-0.059798
15	0	-0.641109	-0.075563	7.515	-0.113451	46.526	0.060115
15	1.700	-0.486840	-0.075563	-0.198447	-0.113451	52.746	-0.068363
16	0	-0.514137	-0.068084	1.207	0.103638	52.749	0.027397
16	1.700	-0.359868	-0.068084	-6.506	0.103638	48.244	-0.088364
17	0	-0.395872	-0.109680	-5.118	0.528287	48.055	0.021897
17	1.700	-0.241603	-0.109680	-12.831	0.528287	32.795	-0.164589
18	0	-0.316875	-0.185359	-11.309	1.793	31.970	0.018293
18	1.700	-0.162606	-0.185359	-19.023	1.793	6.184	-0.296868
19	0	-0.307114	-0.263622	-15.549	4.408	3.198	0.073452
19	1.700	-0.152845	-0.263622	-23.262	4.408	-29.796	-0.374777
20	0	-0.257217	-0.299890	-9.004	4.362	-37.087	0.254890
20	1.700	-0.102948	-0.299890	-16.717	4.362	-58.953	-0.255002
21	0	-0.216396	-0.274397	11.463	-4.355	-57.725	0.322559
21	1.275	-0.100694	-0.274397	5.678	-4.355	-46.795	-0.027353
22	0	-0.239908	-0.222275	18.731	-5.241	-40.773	0.261423
22	1.275	-0.124206	-0.222275	12.946	-5.241	-20.575	-0.022022
23	0	-0.237953	-0.157887	17.604	-3.161	-16.924	0.175216
23	1.275	-0.122252	-0.157887	11.819	-3.161	1.836	-0.026123
24	0	-0.195385	-0.093895	13.645	-1.523	3.458	0.090678
24	1.275	-0.079683	-0.093895	7.860	-1.523	17.170	-0.029058
25	0	-0.117728	-0.036760	9.025	-0.802744	17.860	0.033410
25	1.275	-0.002026	-0.036760	3.240	-0.802744	25.680	-0.013466
26	0	-0.013404	0.011508	4.271	-0.779982	26.131	0.012045
26	1.275	0.102298	0.011508	-1.514	-0.779982	27.889	0.026719
27	0	0.114304	0.049566	-0.722057	-1.326	28.584	0.019034
27	1.275	0.230006	0.049566	-6.507	-1.326	23.975	0.082241
28	0	0.265021	0.073066	-6.752	-2.209	25.437	0.035175
28	1.275	0.380723	0.073066	-12.537	-2.209	13.139	0.128349
29	0	0.434168	0.073057	-15.920	-2.240	15.634	0.035381
29	1.275	0.549870	0.073057	-21.705	-2.240	-8.356	0.128544
30	0	-0.171963	0.038036	8.901	-0.164446	-7.264	-0.027772
30	1.275	-0.056261	0.038036	3.116	-0.164446	0.398168	0.020732
31	0	-0.254626	-1.13E-14	17.725	-4.08E-13	5.900	1.40E-14

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
31	1.275	-0.120756	-1.13E-14	11.032	-4.08E-13	24.236	-3.60E-16
32	0	-0.197602	2.78E-15	19.831	-3.68E-13	32.614	5.51E-15
32	1.275	-0.063732	2.78E-15	13.138	-3.68E-13	53.635	9.06E-15
33	0	-0.136339	2.13E-14	13.225	-3.72E-13	57.451	-1.74E-14
33	1.275	-0.002469	2.13E-14	6.532	-3.72E-13	70.048	9.78E-15
34	0	-0.032504	2.35E-14	4.637	-2.06E-13	71.543	-1.17E-14
34	1.275	0.101366	2.35E-14	-2.057	-2.06E-13	73.188	1.83E-14
35	0	0.113961	2.68E-14	-4.220	-3.49E-13	73.854	-1.75E-14
35	1.275	0.247831	2.68E-14	-10.914	-3.49E-13	64.204	1.67E-14
36	0	0.307158	-2.19E-15	-13.069	-2.79E-13	64.840	-2.34E-15
36	1.275	0.441028	-2.19E-15	-19.763	-2.79E-13	43.906	-5.13E-15
37	0	0.566620	-1.14E-14	-22.112	-4.19E-13	45.265	7.27E-15
37	1.275	0.700489	-1.14E-14	-28.806	-4.19E-13	12.799	-7.27E-15
38	0	0.930447	4.70E-15	-32.575	-9.48E-13	16.235	5.76E-15
38	1.275	1.064	4.70E-15	-39.269	-9.48E-13	-29.573	1.18E-14
39	0	1.446	2.05E-14	-49.136	-1.28E-12	-21.777	-1.03E-14
39	1.275	1.580	2.05E-14	-55.830	-1.28E-12	-88.704	1.58E-14
40	0	2.152	4.19E-14	-83.690	-1.72E-12	-75.891	-8.92E-15
40	1.275	2.286	4.19E-14	-90.383	-1.72E-12	-186.880	4.45E-14
41	0	-2.961	7.01E-15	89.832	-2.23E-12	-195.202	-5.18E-15
41	1.700	-2.782	7.01E-15	80.907	-2.23E-12	-50.051	6.73E-15
42	0	-2.161	3.41E-15	51.023	-2.38E-12	-65.498	-5.33E-15
42	1.700	-1.982	3.41E-15	42.098	-2.38E-12	13.668	4.75E-16
43	0	-1.553	-1.49E-15	34.949	-1.42E-12	7.369	-9.47E-15
43	1.700	-1.375	-1.49E-15	26.024	-1.42E-12	59.204	-1.20E-14
44	0	-1.176	2.69E-15	22.974	-9.49E-13	57.465	-8.06E-15
44	1.700	-0.997932	2.69E-15	14.049	-9.49E-13	88.939	-3.49E-15
45	0	-0.911180	-4.47E-14	11.275	-5.46E-13	88.539	8.50E-15
45	1.700	-0.732687	-4.47E-14	2.350	-5.46E-13	100.122	-6.75E-14
46	0	-0.678111	-4.11E-14	-0.461178	-9.68E-14	100.117	2.10E-14
46	1.700	-0.499618	-4.11E-14	-9.386	-9.68E-14	91.746	-4.89E-14
47	0	-0.427554	-2.49E-14	-12.164	5.53E-14	92.122	2.48E-14
47	1.700	-0.249061	-2.49E-14	-21.089	5.53E-14	63.853	-1.75E-14
48	0	-0.098554	-4.66E-15	-24.134	7.13E-13	65.501	-3.10E-14
48	1.700	0.079939	-4.66E-15	-33.059	7.13E-13	16.879	-3.89E-14

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
49	0	0.369060	-1.49E-14	-40.008	1.24E-12	22.845	-3.81E-15
49	1.700	0.547553	-1.49E-14	-48.932	1.24E-12	-52.767	-2.91E-14
50	0	0.756232	-8.06E-15	-77.449	1.31E-12	-38.192	-4.34E-15
50	1.700	0.934725	-8.06E-15	-86.374	1.31E-12	-177.463	-1.80E-14
51	0	-1.598	2.11E-14	82.882	1.37E-12	-167.275	-3.09E-14
51	1.275	-1.464	2.11E-14	76.188	1.37E-12	-65.851	-3.99E-15
52	0	-1.186	2.86E-14	50.081	1.45E-12	-77.892	-3.38E-14
52	1.275	-1.052	2.86E-14	43.388	1.45E-12	-18.296	2.59E-15
53	0	-0.824454	2.14E-14	34.071	1.38E-12	-25.594	-3.35E-14
53	1.275	-0.690585	2.14E-14	27.378	1.38E-12	13.586	-6.25E-15
54	0	-0.544347	1.40E-14	23.725	1.29E-12	10.344	-4.35E-14
54	1.275	-0.410478	1.40E-14	17.031	1.29E-12	36.330	-2.56E-14
55	0	-0.334319	2.70E-14	14.700	1.17E-12	34.952	-2.57E-14
55	1.275	-0.200449	2.70E-14	8.007	1.17E-12	49.431	8.67E-15
56	0	-0.177725	2.62E-14	5.944	1.26E-12	48.530	-2.76E-14
56	1.275	-0.043855	2.62E-14	-0.749511	1.26E-12	51.842	5.81E-15
57	0	-0.067870	9.50E-15	-2.334	1.56E-12	50.451	-1.29E-14
57	1.275	0.066000	9.50E-15	-9.027	1.56E-12	43.207	-7.76E-16
58	0	-0.003949	9.09E-15	-8.540	1.51E-12	40.282	-1.95E-14
58	1.275	0.129921	9.09E-15	-15.233	1.51E-12	25.124	-7.90E-15
59	0	0.022979	3.31E-16	-8.466	1.17E-12	20.132	-5.09E-15
59	1.275	0.156848	3.31E-16	-15.160	1.17E-12	5.068	-4.67E-15
60	0	-0.021336	-4.61E-15	0.461790	5.63E-13	2.882	1.71E-15
60	1.275	0.112534	-4.61E-15	-6.232	5.63E-13	-0.796525	-4.16E-15
61	0	-0.578511	-0.034926	24.328	-4.133	-2.949	0.070553
61	1.275	-0.462809	-0.034926	18.543	-4.133	24.386	0.026015
62	0	-0.424374	-0.062570	14.143	-3.349	20.198	0.125086
62	1.275	-0.308672	-0.062570	8.358	-3.349	34.544	0.045296
63	0	-0.272351	-0.057807	8.314	-1.678	32.637	0.100123
63	1.275	-0.156650	-0.057807	2.529	-1.678	39.551	0.026407
64	0	-0.141615	-0.030995	3.476	-0.755755	38.804	0.039177
64	1.275	-0.025914	-0.030995	-2.309	-0.755755	39.548	-0.000349
65	0	-0.032213	0.012457	-1.228	-0.481091	39.215	-0.018439
65	1.275	0.083488	0.012457	-7.013	-0.481091	33.961	-0.002554
66	0	0.053814	0.072571	-5.935	-0.708872	33.642	-0.050349
66	1.275	0.169516	0.072571	-11.720	-0.708872	22.385	0.042195

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
67	0	0.106773	0.151270	-10.546	-1.574	21.705	-0.047980
67	1.275	0.222475	0.151270	-16.331	-1.574	4.567	0.144920
68	0	0.107461	0.246605	-14.447	-3.360	2.848	-0.017137
68	1.275	0.223163	0.246605	-20.232	-3.360	-19.263	0.297334
69	0	0.032183	0.346760	-15.298	-5.578	-23.163	0.017879
69	1.275	0.147885	0.346760	-21.083	-5.578	-46.360	0.460068
70	0	-0.138038	0.426600	-7.154	-4.578	-52.769	0.016962
70	1.275	-0.022336	0.426600	-12.939	-4.578	-65.580	0.560964
71	0	-0.590431	0.454200	16.942	4.680	-66.689	-0.492838
71	1.700	-0.436162	0.454200	9.228	4.680	-44.441	0.279426
72	0	-0.746866	0.377592	24.170	4.669	-36.714	-0.580002
72	1.700	-0.592597	0.377592	16.456	4.669	-2.176	0.062006
73	0	-0.807198	0.250125	20.031	1.894	0.975678	-0.388736
73	1.700	-0.652929	0.250125	12.317	1.894	28.476	0.036545
74	0	-0.752036	0.138232	13.842	0.558471	29.347	-0.175234
74	1.700	-0.597767	0.138232	6.129	0.558471	46.325	0.059798
75	0	-0.641109	0.075563	7.515	0.113451	46.526	-0.060115
75	1.700	-0.486840	0.075563	-0.198447	0.113451	52.746	0.068363
76	0	-0.514137	0.068084	1.207	-0.103638	52.749	-0.027397
76	1.700	-0.359868	0.068084	-6.506	-0.103638	48.244	0.088364
77	0	-0.395872	0.109680	-5.118	-0.528287	48.055	-0.021897
77	1.700	-0.241603	0.109680	-12.831	-0.528287	32.795	0.164589
78	0	-0.316875	0.185359	-11.309	-1.793	31.970	-0.018293
78	1.700	-0.162606	0.185359	-19.023	-1.793	6.184	0.296868
79	0	-0.307114	0.263622	-15.549	-4.408	3.198	-0.073452
79	1.700	-0.152845	0.263622	-23.262	-4.408	-29.796	0.374777
80	0	-0.257217	0.299890	-9.004	-4.362	-37.087	-0.254890
80	1.700	-0.102948	0.299890	-16.717	-4.362	-58.953	0.255002
81	0	-0.216396	0.274397	11.463	4.355	-57.725	-0.322559
81	1.275	-0.100694	0.274397	5.678	4.355	-46.795	0.027353
82	0	-0.239908	0.222274	18.731	5.241	-40.773	-0.261423
82	1.275	-0.124206	0.222274	12.946	5.241	-20.575	0.022022
83	0	-0.237953	0.157887	17.604	3.161	-16.924	-0.175216
83	1.275	-0.122252	0.157887	11.819	3.161	1.836	0.026123
84	0	-0.195385	0.093895	13.645	1.523	3.458	-0.090678

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
84	1.275	-0.079683	0.093895	7.860	1.523	17.170	0.029058
85	0	-0.117728	0.036760	9.025	0.802744	17.860	-0.033410
85	1.275	-0.002026	0.036760	3.240	0.802744	25.680	0.013466
86	0	-0.013404	-0.011508	4.271	0.779982	26.131	-0.012045
86	1.275	0.102298	-0.011508	-1.514	0.779982	27.889	-0.026720
87	0	0.114304	-0.049566	-0.722057	1.326	28.584	-0.019034
87	1.275	0.230006	-0.049566	-6.507	1.326	23.975	-0.082241
88	0	0.265021	-0.073066	-6.752	2.209	25.437	-0.035175
88	1.275	0.380723	-0.073066	-12.537	2.209	13.139	-0.128349
89	0	0.434168	-0.073057	-15.920	2.240	15.634	-0.035381
89	1.275	0.549870	-0.073057	-21.705	2.240	-8.356	-0.128544
90	0	-0.171963	-0.038036	8.901	0.164446	-7.264	0.027772
90	1.275	-0.056261	-0.038036	3.116	0.164446	0.398168	-0.020732
91	0	0.034916	0.049931	8.863	-2.950	-4.133	-0.012094
91	2.000	0.034916	0.049931	8.863	-2.950	13.593	0.087764
92	0	0.034916	-0.049931	-8.863	2.950	13.593	0.087764
92	2.000	0.034916	-0.049931	-8.863	2.950	-4.133	-0.012094
93	0	0.027641	0.049555	4.400	-4.189	0.781533	0.114727
93	2.000	0.027641	0.049555	4.400	-4.189	9.581	0.213833
94	0	0.027641	-0.049555	-4.400	4.189	9.581	0.213833
94	2.000	0.027641	-0.049555	-4.400	4.189	0.781531	0.114727
95	0	-0.004763	-0.035421	0.044202	-1.908	1.669	0.088225
95	2.000	-0.004763	-0.035421	0.044202	-1.908	1.758	0.017386
96	0	-0.004763	0.035421	-0.044202	1.908	1.758	0.017386
96	2.000	-0.004763	0.035421	-0.044202	1.908	1.669	0.088225
97	0	-0.026811	-0.033966	-0.946343	-0.747241	0.922072	0.031215
97	2.000	-0.026811	-0.033966	-0.946343	-0.747241	-0.970538	-0.036715
98	0	-0.026811	0.033966	0.946343	0.747241	-0.970538	-0.036715
98	2.000	-0.026811	0.033966	0.946343	0.747241	0.922072	0.031215
99	0	-0.043452	-0.015305	-1.082	-0.332795	0.274967	-0.012598
99	2.000	-0.043452	-0.015305	-1.082	-0.332795	-1.889	-0.043207
100	0	-0.043452	0.015305	1.082	0.332795	-1.889	-0.043207
100	2.000	-0.043452	0.015305	1.082	0.332795	0.274967	-0.012598
101	0	-0.060115	0.008083	-1.078	-0.318145	-0.226798	-0.052337
101	2.000	-0.060115	0.008083	-1.078	-0.318145	-2.383	-0.036172

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
102	0	-0.060115	-0.008083	1.078	0.318145	-2.383	-0.036172
102	2.000	-0.060115	-0.008083	1.078	0.318145	-0.226797	-0.052337
103	0	-0.078699	0.039291	-1.175	-0.679864	-0.863610	-0.107469
103	2.000	-0.078699	0.039291	-1.175	-0.679864	-3.214	-0.028890
104	0	-0.078699	-0.039291	1.175	0.679864	-3.214	-0.028890
104	2.000	-0.078699	-0.039291	1.175	0.679864	-0.863609	-0.107469
105	0	-0.095339	0.077296	-1.887	-1.718	-1.782	-0.197750
105	2.000	-0.095339	0.077296	-1.887	-1.718	-5.556	-0.043164
106	0	-0.095339	-0.077296	1.887	1.718	-5.556	-0.043164
106	2.000	-0.095339	-0.077296	1.887	1.718	-1.782	-0.197750
107	0	-0.100157	0.092283	-4.936	-3.899	-2.212	-0.323765
107	2.000	-0.100157	0.092283	-4.936	-3.899	-12.085	-0.139208
108	0	-0.100157	-0.092283	4.936	3.899	-12.085	-0.139208
108	2.000	-0.100157	-0.092283	4.936	3.899	-2.212	-0.323765
109	0	-0.079844	0.007328	-13.933	-6.408	1.008	-0.423033
109	2.000	-0.079844	0.007328	-13.933	-6.408	-26.856	-0.408378
110	0	-0.079844	-0.007328	13.933	6.408	-26.856	-0.408378
110	2.000	-0.079844	-0.007328	13.933	6.408	1.008	-0.423033
111	0	-0.027584	-0.029523	-29.886	-1.109	9.276	-0.868510
111	2.000	-0.027584	-0.029523	-29.886	-1.109	-50.494	-0.927553
112	0	-0.027584	0.029523	29.886	1.109	-50.494	-0.927553
112	2.000	-0.027584	0.029523	29.886	1.109	9.276	-0.868510
113	0	0.076607	0.011876	-14.945	7.726	0.005825	-0.859494
113	2.000	0.076607	0.011876	-14.945	7.726	-29.883	-0.835743
114	0	0.076607	-0.011876	14.945	-7.726	-29.883	-0.835743
114	2.000	0.076607	-0.011876	14.945	-7.726	0.005829	-0.859494
115	0	0.127464	0.143105	-3.578	3.150	-2.766	-0.506159
115	2.000	0.127464	0.143105	-3.578	3.150	-9.922	-0.219960
116	0	0.127464	-0.143105	3.578	-3.150	-9.922	-0.219961
116	2.000	0.127464	-0.143105	3.578	-3.150	-2.766	-0.506159
117	0	0.111891	0.068580	-1.527	0.870234	-1.331	-0.238446
117	2.000	0.111891	0.068580	-1.527	0.870234	-4.385	-0.101291
118	0	0.111891	-0.068580	1.527	-0.870234	-4.385	-0.101291
118	2.000	0.111891	-0.068580	1.527	-0.870234	-1.331	-0.238446
119	0	0.062669	0.015621	-1.387	0.200330	-0.442679	-0.128791
119	2.000	0.062669	0.015621	-1.387	0.200330	-3.217	-0.097551

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
120	0	0.062669	-0.015621	1.387	-0.200330	-3.217	-0.097551
120	2.000	0.062669	-0.015621	1.387	-0.200330	-0.442679	-0.128791
121	0	0.007479	-0.000819	-1.406	0.002742	-0.215305	-0.100087
121	2.000	0.007479	-0.000819	-1.406	0.002742	-3.027	-0.101725
122	0	0.007479	0.000819	1.406	-0.002742	-3.027	-0.101725
122	2.000	0.007479	0.000819	1.406	-0.002742	-0.215305	-0.100087
123	0	-0.041595	0.008236	-1.389	-0.188580	-0.422418	-0.118731
123	2.000	-0.041595	0.008236	-1.389	-0.188580	-3.201	-0.102259
124	0	-0.041595	-0.008236	1.389	0.188580	-3.201	-0.102259
124	2.000	-0.041595	-0.008236	1.389	0.188580	-0.422417	-0.118731
125	0	-0.075678	0.044794	-1.524	-0.824834	-1.261	-0.208131
125	2.000	-0.075678	0.044794	-1.524	-0.824834	-4.308	-0.118546
126	0	-0.075678	-0.044794	1.524	0.824834	-4.308	-0.118546
126	2.000	-0.075678	-0.044794	1.524	0.824834	-1.261	-0.208131
127	0	-0.078263	0.075043	-3.477	-2.984	-2.608	-0.422553
127	2.000	-0.078263	0.075043	-3.477	-2.984	-9.561	-0.272473
128	0	-0.078263	-0.075043	3.477	2.984	-9.561	-0.272473
128	2.000	-0.078263	-0.075043	3.477	2.984	-2.608	-0.422553
129	0	-0.036268	-0.180790	-14.257	-7.290	0.057846	-0.628647
129	2.000	-0.036268	-0.180790	-14.257	-7.290	-28.456	-0.990211
130	0	-0.036268	0.180790	14.257	7.290	-28.456	-0.990212
130	2.000	-0.036268	0.180790	14.257	7.290	0.057849	-0.628647
131	0	0.025488	-0.450032	-28.178	1.229	8.726	-0.403174
131	2.000	0.025488	-0.450032	-28.178	1.229	-47.627	-1.303
132	0	0.025488	0.450032	28.178	-1.229	-47.627	-1.303
132	2.000	0.025488	0.450032	28.178	-1.229	8.726	-0.403174
133	0	0.052122	-0.121851	-13.053	6.022	0.890886	-0.271023
133	2.000	0.052122	-0.121851	-13.053	6.022	-25.215	-0.514716
134	0	0.052122	0.121851	13.053	-6.022	-25.215	-0.514716
134	2.000	0.052122	0.121851	13.053	-6.022	0.890890	-0.271023
135	0	0.064399	0.020584	-4.659	3.650	-2.076	-0.238801
135	2.000	0.064399	0.020584	-4.659	3.650	-11.394	-0.197633
136	0	0.064399	-0.020584	4.659	-3.650	-11.394	-0.197633
136	2.000	0.064399	-0.020584	4.659	-3.650	-2.076	-0.238801
137	0	0.063989	0.036596	-1.828	1.622	-1.635	-0.149515

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
137	2.000	0.063989	0.036596	-1.828	1.622	-5.290	-0.076326
138	0	0.063989	-0.036596	1.828	-1.622	-5.290	-0.076326
138	2.000	0.063989	-0.036596	1.828	-1.622	-1.635	-0.149515
139	0	0.057134	0.014771	-1.166	0.689205	-0.719347	-0.076865
139	2.000	0.057134	0.014771	-1.166	0.689205	-3.051	-0.047324
140	0	0.057134	-0.014771	1.166	-0.689205	-3.051	-0.047324
140	2.000	0.057134	-0.014771	1.166	-0.689205	-0.719347	-0.076865
141	0	0.048266	-0.009262	-1.032	0.450598	-0.022294	-0.025958
141	2.000	0.048266	-0.009262	-1.032	0.450598	-2.085	-0.044481
142	0	0.048266	0.009262	1.032	-0.450598	-2.085	-0.044481
142	2.000	0.048266	0.009262	1.032	-0.450598	-0.022294	-0.025958
143	0	0.038057	-0.027855	-0.791683	0.695243	0.545487	0.018603
143	2.000	0.038057	-0.027855	-0.791683	0.695243	-1.038	-0.037105
144	0	0.038057	0.027855	0.791683	-0.695243	-1.038	-0.037105
144	2.000	0.038057	0.027855	0.791683	-0.695243	0.545487	0.018603
145	0	0.023498	-0.030089	0.244841	1.463	0.881742	0.064712
145	2.000	0.023498	-0.030089	0.244841	1.463	1.371	0.004537
146	0	0.023498	0.030089	-0.244841	-1.463	1.371	0.004537
146	2.000	0.023498	0.030089	-0.244841	-1.463	0.881742	0.064712
147	0	-1.04E-05	0.014175	3.384	2.496	0.029647	0.093582
147	2.000	-1.04E-05	0.014175	3.384	2.496	6.797	0.121930
148	0	-1.04E-05	-0.014175	-3.384	-2.496	6.797	0.121930
148	2.000	-1.04E-05	-0.014175	-3.384	-2.496	0.029646	0.093582
149	0	-0.035018	0.067172	7.811	1.093	-2.078	0.114772
149	2.000	-0.035018	0.067172	7.811	1.093	13.544	0.249110
150	0	-0.035018	-0.067172	-7.811	-1.093	13.544	0.249110
150	2.000	-0.035018	-0.067172	-7.811	-1.093	-2.078	0.114772
151	0	-0.038029	0.006012	3.116	-0.398277	-0.164701	0.017429
151	2.000	-0.038029	0.006012	3.116	-0.398277	6.068	0.029453
152	0	-0.038029	-0.006012	-3.116	0.398277	6.068	0.029453
152	2.000	-0.038029	-0.006012	-3.116	0.398277	-0.164702	0.017429
201	0	-259.963	-4.20E-14	-1.583	1.80E-14	5.693	4.04E-13
201	10.255	-240.057	-4.20E-14	-1.583	1.80E-14	-10.540	-2.73E-14
202	0	-246.194	1.18E-14	1.752	1.36E-14	-5.917	2.78E-13
202	10.595	-225.628	1.18E-14	1.752	1.36E-14	12.647	4.03E-13

CARGAS: '' Ejec. "0001"

Hipótesis	Factor	Etapa	Titulo
2	1.0000		Pavimento 1

DESPLAZAMIENTOS:

NUDOS	DX [mm]	DY [mm]	DZ [mm]	RX [rad]	RY [rad]	RZ [rad]
1	-0.008405	-2.26E-06	-2.22E-17	-3.85E-06	3.58E-05	-7.58E-08
2	-0.008294	4.67E-15	-0.006296	-3.09E-20	3.29E-05	1.09E-19
3	-0.008405	2.26E-06	-2.22E-17	3.85E-06	3.58E-05	7.58E-08
4	-0.007524	-8.47E-07	-0.044518	-2.05E-06	3.29E-05	-4.00E-08
5	-0.007480	4.81E-15	-0.047141	-8.05E-20	3.08E-05	1.08E-19
6	-0.007524	8.47E-07	-0.044518	2.05E-06	3.29E-05	4.00E-08
7	-0.006774	2.28E-07	-0.082368	-5.92E-07	2.59E-05	-1.11E-08
8	-0.006766	4.95E-15	-0.082924	-1.25E-19	2.49E-05	1.06E-19
9	-0.006774	-2.28E-07	-0.082368	5.92E-07	2.59E-05	1.11E-08
10	-0.006233	9.60E-07	-0.109628	1.38E-07	1.66E-05	3.24E-09
11	-0.006239	5.09E-15	-0.109315	-1.77E-19	1.62E-05	1.05E-19
12	-0.006233	-9.60E-07	-0.109628	-1.38E-07	1.66E-05	-3.24E-09
13	-0.005938	1.52E-06	-0.124437	4.67E-07	6.59E-06	9.75E-09
14	-0.005950	5.23E-15	-0.123776	-2.18E-19	6.42E-06	1.05E-19
15	-0.005938	-1.52E-06	-0.124437	-4.67E-07	6.59E-06	-9.75E-09
16	-0.005892	2.10E-06	-0.126723	6.76E-07	-2.78E-06	1.40E-08
17	-0.005906	5.37E-15	-0.125853	-2.54E-19	-2.94E-06	1.04E-19
18	-0.005892	-2.10E-06	-0.126723	-6.76E-07	-2.78E-06	-1.40E-08
19	-0.006059	2.75E-06	-0.118283	9.85E-07	-9.99E-06	2.02E-08
20	-0.006076	5.51E-15	-0.117091	-3.00E-19	-1.03E-05	1.03E-19
21	-0.006059	-2.75E-06	-0.118283	-9.85E-07	-9.99E-06	-2.02E-08
22	-0.006364	3.34E-06	-0.102891	1.67E-06	-1.34E-05	3.37E-08
23	-0.006391	5.65E-15	-0.100914	-3.46E-19	-1.43E-05	1.02E-19
24	-0.006364	-3.34E-06	-0.102891	-1.67E-06	-1.34E-05	-3.37E-08
25	-0.006690	3.52E-06	-0.086398	3.13E-06	-1.15E-05	6.24E-08
26	-0.006745	5.78E-15	-0.082530	-4.66E-19	-1.35E-05	9.95E-20
27	-0.006690	-3.52E-06	-0.086398	-3.13E-06	-1.15E-05	-6.24E-08
28	-0.006884	2.83E-06	-0.076606	5.56E-06	-2.88E-06	1.10E-07
29	-0.006994	5.92E-15	-0.069048	-6.44E-19	-6.15E-06	9.59E-20
30	-0.006884	-2.83E-06	-0.076606	-5.56E-06	-2.88E-06	-1.10E-07
31	-0.006778	8.70E-07	-0.082018	7.56E-06	1.19E-05	1.49E-07
32	-0.006928	6.06E-15	-0.070829	-8.83E-19	1.14E-05	9.16E-20
33	-0.006778	-8.70E-07	-0.082018	-7.56E-06	1.19E-05	-1.49E-07
34	-0.006053	-1.97E-06	-0.118899	4.84E-06	3.02E-05	9.50E-08
35	-0.006148	6.25E-15	-0.112447	-1.30E-18	3.32E-05	8.41E-20
36	-0.006053	1.97E-06	-0.118899	-4.84E-06	3.02E-05	-9.50E-08
37	-0.004904	-3.32E-06	-0.177210	2.13E-06	3.64E-05	4.21E-08
38	-0.004941	6.44E-15	-0.174664	-1.71E-18	3.76E-05	7.59E-20
39	-0.004904	3.32E-06	-0.177210	-2.13E-06	3.64E-05	-4.21E-08
40	-0.003747	-2.93E-06	-0.235950	1.03E-06	3.11E-05	2.11E-08
41	-0.003766	6.62E-15	-0.234719	-1.97E-18	3.15E-05	7.11E-20
42	-0.003747	2.93E-06	-0.235950	-1.03E-06	3.11E-05	-2.11E-08
43	-0.002912	-1.64E-06	-0.278590	7.04E-07	1.81E-05	1.49E-08
44	-0.002926	6.81E-15	-0.277698	-2.11E-18	1.82E-05	6.61E-20
45	-0.002912	1.64E-06	-0.278590	-7.04E-07	1.81E-05	-1.49E-08

DESPLAZAMIENTOS:

NUDOS	DX [mm]	DY [mm]	DZ [mm]	RX [rad]	RY [rad]	RZ [rad]
46	-0.002595	-1.95E-07	-0.295148	6.38E-07	1.05E-06	1.35E-08
47	-0.002608	6.99E-15	-0.294319	-2.17E-18	1.05E-06	6.39E-20
48	-0.002595	1.95E-07	-0.295148	-6.38E-07	1.05E-06	-1.35E-08
49	-0.002868	1.09E-06	-0.282010	6.99E-07	-1.63E-05	1.46E-08
50	-0.002883	7.17E-15	-0.281123	-2.24E-18	-1.63E-05	6.17E-20
51	-0.002868	-1.09E-06	-0.282010	-6.99E-07	-1.63E-05	-1.46E-08
52	-0.003680	1.98E-06	-0.241809	1.01E-06	-3.02E-05	2.04E-08
53	-0.003699	7.35E-15	-0.240601	-2.25E-18	-3.05E-05	6.17E-20
54	-0.003680	-1.98E-06	-0.241809	-1.01E-06	-3.02E-05	-2.04E-08
55	-0.004852	2.04E-06	-0.183538	2.05E-06	-3.69E-05	4.05E-08
56	-0.004889	7.53E-15	-0.181084	-2.11E-18	-3.81E-05	6.35E-20
57	-0.004852	-2.04E-06	-0.183538	-2.05E-06	-3.69E-05	-4.05E-08
58	-0.006074	9.22E-07	-0.122706	4.61E-06	-3.28E-05	9.09E-08
59	-0.006171	7.71E-15	-0.116559	-1.87E-18	-3.56E-05	6.61E-20
60	-0.006074	-9.22E-07	-0.122706	-4.61E-06	-3.28E-05	-9.09E-08
61	-0.006945	-8.07E-07	-0.079361	7.14E-06	-1.70E-05	1.42E-07
62	-0.007111	7.89E-15	-0.068793	-1.63E-18	-1.65E-05	7.06E-20
63	-0.006945	8.07E-07	-0.079361	-7.14E-06	-1.70E-05	-1.42E-07
64	-0.007209	-1.87E-06	-0.066326	5.24E-06	-3.93E-06	1.04E-07
65	-0.007324	8.02E-15	-0.059211	-1.46E-18	-8.51E-07	7.35E-20
66	-0.007209	1.87E-06	-0.066326	-5.24E-06	-3.93E-06	-1.04E-07
67	-0.007205	-2.28E-06	-0.066712	2.96E-06	3.68E-06	5.90E-08
68	-0.007262	8.15E-15	-0.063056	-1.29E-18	5.55E-06	7.63E-20
69	-0.007205	2.28E-06	-0.066712	-2.96E-06	3.68E-06	-5.90E-08
70	-0.007082	-2.25E-06	-0.073040	1.58E-06	5.45E-06	3.18E-08
71	-0.007110	8.28E-15	-0.071157	-1.11E-18	6.28E-06	7.89E-20
72	-0.007082	2.25E-06	-0.073040	-1.58E-06	5.45E-06	-3.18E-08
73	-0.006973	-2.00E-06	-0.078620	9.20E-07	2.72E-06	1.86E-08
74	-0.006990	8.41E-15	-0.077494	-9.52E-19	3.07E-06	8.09E-20
75	-0.006973	2.00E-06	-0.078620	-9.20E-07	2.72E-06	-1.86E-08
76	-0.006972	-1.69E-06	-0.078714	5.71E-07	-2.90E-06	1.17E-08
77	-0.006984	8.53E-15	-0.077957	-7.85E-19	-2.67E-06	8.33E-20
78	-0.006972	1.69E-06	-0.078714	-5.71E-07	-2.90E-06	-1.17E-08
79	-0.007133	-1.33E-06	-0.070629	2.31E-07	-9.85E-06	4.94E-09
80	-0.007140	8.66E-15	-0.070245	-5.99E-19	-9.50E-06	8.64E-20
81	-0.007133	1.33E-06	-0.070629	-2.31E-07	-9.85E-06	-4.94E-09
82	-0.007470	-8.45E-07	-0.053627	-3.45E-07	-1.66E-05	-6.42E-09
83	-0.007466	8.78E-15	-0.053964	-3.84E-19	-1.59E-05	9.04E-20
84	-0.007470	8.45E-07	-0.053627	3.45E-07	-1.66E-05	6.42E-09
85	-0.007958	-6.10E-08	-0.028909	-1.31E-06	-2.16E-05	-2.53E-08
86	-0.007931	8.91E-15	-0.030646	-1.80E-19	-2.04E-05	9.42E-20
87	-0.007958	6.10E-08	-0.028909	1.31E-06	-2.16E-05	2.53E-08
88	-0.008527	1.11E-06	-2.57E-17	-2.28E-06	-2.27E-05	-4.45E-08
89	-0.008476	9.03E-15	-0.003332	-2.58E-20	-2.21E-05	9.65E-20
90	-0.008527	-1.11E-06	-2.57E-17	2.28E-06	-2.27E-05	4.45E-08
91	-0.009095	2.48E-06	0.028294	-2.36E-06	-2.20E-05	-4.60E-08
92	-0.009045	9.16E-15	0.025105	4.91E-20	-2.24E-05	9.81E-20
93	-0.009095	-2.48E-06	0.028294	2.36E-06	-2.20E-05	4.60E-08
101	-1.05E-18	3.67E-32	-1.61E-16	-2.73E-34	-3.78E-21	-4.12E-35
102	1.16E-18	-1.29E-32	-1.51E-16	-1.19E-34	3.92E-21	-1.27E-34

REACCIONES EN APOYOS:

NUDOS	FX [t]	FY [t]	FZ [t]	MX [tm]	MY [tm]	MZ [tm]
1	0.002801	7.52E-07	2.224			
3	0.002801	-7.52E-07	2.224			
88	0.002842	-3.69E-07	2.574			
90	0.002842	3.69E-07	2.574			
101	0.104966	-3.67E-15	16.089	2.73E-14	0.377772	4.12E-15
102	-0.116252	1.29E-15	15.125	1.19E-14	-0.392327	1.27E-14
Sumas:	7.45E-09	-3.08E-14	40.808			

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
1	0	-0.038939	0.002159	1.639	0.277277	-0.198237	-0.004650
1	1.275	-0.030779	0.002159	1.231	0.277277	1.632	-0.001897
2	0	-0.028605	0.003779	0.957114	0.224447	1.351	-0.007893
2	1.275	-0.020445	0.003779	0.549130	0.224447	2.312	-0.003073
3	0	-0.018416	0.003343	0.566768	0.112397	2.184	-0.006098
3	1.275	-0.010256	0.003343	0.158784	0.112397	2.646	-0.001835
4	0	-0.009655	0.001507	0.242577	0.050594	2.596	-0.002035
4	1.275	-0.001496	0.001507	-0.165406	0.050594	2.646	-0.000113
5	0	-0.002329	-0.001401	-0.072600	0.032216	2.623	0.001758
5	1.275	0.005830	-0.001401	-0.480584	0.032216	2.271	-2.91E-05
6	0	0.003438	-0.005412	-0.388082	0.047500	2.249	0.003834
6	1.275	0.011598	-0.005412	-0.796066	0.047500	1.494	-0.003067
7	0	0.006986	-0.010670	-0.697102	0.105516	1.449	0.003635
7	1.275	0.015145	-0.010670	-1.105	0.105516	0.299677	-0.009972
8	0	0.007040	-0.017061	-0.958462	0.225208	0.184462	0.001542
8	1.275	0.015199	-0.017061	-1.366	0.225208	-1.298	-0.020214
9	0	0.002011	-0.023801	-1.016	0.373850	-1.559	-0.000841
9	1.275	0.010171	-0.023801	-1.423	0.373850	-3.114	-0.031192
10	0	-0.009354	-0.029208	-0.469611	0.306822	-3.544	-0.000874
10	1.275	-0.001194	-0.029208	-0.877594	0.306822	-4.403	-0.038120
11	0	-0.039598	-0.031150	1.149	-0.313662	-4.477	0.033408
11	1.700	-0.028718	-0.031150	0.604712	-0.313662	-2.986	-0.019556
12	0	-0.050011	-0.026123	1.633	-0.312914	-2.469	0.039523
12	1.700	-0.039132	-0.026123	1.089	-0.312914	-0.154400	-0.004893
13	0	-0.054032	-0.017649	1.356	-0.126918	0.056820	0.026841
13	1.700	-0.043152	-0.017649	0.811715	-0.126918	1.899	-0.003167

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
14	0	-0.050328	-0.010183	0.940983	-0.037427	1.958	0.012571
14	1.700	-0.039449	-0.010183	0.397005	-0.037427	3.095	-0.004743
15	0	-0.042893	-0.005996	0.516949	-0.007603	3.109	0.004847
15	1.700	-0.032013	-0.005996	-0.027029	-0.007603	3.525	-0.005348
16	0	-0.034385	-0.005499	0.094202	0.006947	3.525	0.002628
16	1.700	-0.023506	-0.005499	-0.449776	0.006947	3.223	-0.006722
17	0	-0.026464	-0.008287	-0.329653	0.035410	3.210	0.002227
17	1.700	-0.015585	-0.008287	-0.873632	0.035410	2.188	-0.011863
18	0	-0.021177	-0.013348	-0.744562	0.120166	2.132	0.001955
18	1.700	-0.010297	-0.013348	-1.289	0.120166	0.403752	-0.020740
19	0	-0.020544	-0.018555	-1.029	0.295488	0.203666	0.005650
19	1.700	-0.009664	-0.018555	-1.573	0.295488	-2.008	-0.025898
20	0	-0.017263	-0.020905	-0.589933	0.292452	-2.496	0.017921
20	1.700	-0.006383	-0.020905	-1.134	0.292452	-3.962	-0.017623
21	0	-0.014621	-0.019103	0.778794	-0.291913	-3.880	0.022293
21	1.275	-0.006462	-0.019103	0.370811	-0.291913	-3.147	-0.002067
22	0	-0.016252	-0.015535	1.266	-0.351334	-2.743	0.018003
22	1.275	-0.008092	-0.015535	0.858171	-0.351334	-1.389	-0.001807
23	0	-0.016150	-0.011169	1.191	-0.211894	-1.144	0.012106
23	1.275	-0.007990	-0.011169	0.782713	-0.211894	0.114420	-0.002137
24	0	-0.013315	-0.006858	0.925417	-0.102121	0.223194	0.006371
24	1.275	-0.005156	-0.006858	0.517433	-0.102121	1.143	-0.002374
25	0	-0.008125	-0.003028	0.615812	-0.053792	1.189	0.002484
25	1.275	3.50E-05	-0.003028	0.207828	-0.053792	1.715	-0.001377
26	0	-0.001139	0.000198	0.297219	-0.052233	1.745	0.001000
26	1.275	0.007020	0.000198	-0.110765	-0.052233	1.864	0.001253
27	0	0.007414	0.002750	-0.037369	-0.088760	1.910	0.001402
27	1.275	0.015573	0.002750	-0.445353	-0.088760	1.602	0.004909
28	0	0.017505	0.004366	-0.441315	-0.147889	1.700	0.002414
28	1.275	0.025665	0.004366	-0.849299	-0.147889	0.877357	0.007981
29	0	0.028846	0.004483	-1.055	-0.150117	1.044	0.002404
29	1.275	0.037006	0.004483	-1.463	-0.150117	-0.561503	0.008121
30	0	-0.011735	0.002368	0.607182	-0.011456	-0.488149	-0.001707
30	1.275	-0.003575	0.002368	0.199198	-0.011456	0.026001	0.001312
31	0	-0.016663	1.50E-16	1.168	-2.45E-14	0.396592	1.63E-16

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
31	1.275	-0.008504	1.50E-16	0.760401	-2.45E-14	1.626	3.55E-16
32	0	-0.012852	6.41E-16	1.309	-2.22E-14	2.188	-1.41E-15
32	1.275	-0.004692	6.41E-16	0.900569	-2.22E-14	3.597	-5.97E-16
33	0	-0.008745	1.52E-15	0.865268	-2.55E-14	3.852	-1.07E-15
33	1.275	-0.000586	1.52E-15	0.457284	-2.55E-14	4.695	8.59E-16
34	0	-0.001789	1.74E-15	0.289632	-2.03E-14	4.795	-6.74E-16
34	1.275	0.006371	1.74E-15	-0.118352	-2.03E-14	4.905	1.55E-15
35	0	0.008038	1.39E-15	-0.303978	-1.79E-14	4.949	-7.84E-16
35	1.275	0.016198	1.39E-15	-0.711962	-1.79E-14	4.301	9.90E-16
36	0	0.020986	1.20E-15	-0.897063	-2.25E-14	4.344	-8.79E-16
36	1.275	0.029145	1.20E-15	-1.305	-2.25E-14	2.940	6.52E-16
37	0	0.038369	3.22E-16	-1.503	-2.28E-14	3.031	-6.46E-16
37	1.275	0.046529	3.22E-16	-1.911	-2.28E-14	0.854191	-2.36E-16
38	0	0.062741	-4.97E-16	-2.204	-5.92E-14	1.084	5.16E-16
38	1.275	0.070901	-4.97E-16	-2.612	-5.92E-14	-1.987	-1.18E-16
39	0	0.097274	2.26E-17	-3.314	-8.78E-14	-1.464	-1.35E-16
39	1.275	0.105433	2.26E-17	-3.722	-8.78E-14	-5.951	-1.06E-16
40	0	0.144491	7.94E-16	-5.630	-1.19E-13	-5.092	2.91E-16
40	1.275	0.152651	7.94E-16	-6.038	-1.19E-13	-12.531	1.30E-15
41	0	-0.197196	1.09E-15	5.993	-1.53E-13	-13.081	-1.80E-17
41	1.700	-0.186316	1.09E-15	5.449	-1.53E-13	-3.355	1.83E-15
42	0	-0.143731	1.14E-15	3.392	-1.53E-13	-4.390	-8.97E-16
42	1.700	-0.132851	1.14E-15	2.848	-1.53E-13	0.914747	1.05E-15
43	0	-0.103047	4.07E-15	2.315	-9.73E-14	0.492649	-2.83E-15
43	1.700	-0.092168	4.07E-15	1.771	-9.73E-14	3.966	4.10E-15
44	0	-0.077818	7.74E-16	1.512	-5.02E-14	3.849	-3.55E-15
44	1.700	-0.066938	7.74E-16	0.968151	-5.02E-14	5.958	-2.24E-15
45	0	-0.060045	-1.71E-15	0.728154	-2.31E-14	5.931	2.81E-16
45	1.700	-0.049165	-1.71E-15	0.184176	-2.31E-14	6.707	-2.63E-15
46	0	-0.044421	-1.70E-15	-0.058341	-2.71E-14	6.706	5.76E-16
46	1.700	-0.033542	-1.70E-15	-0.602320	-2.71E-14	6.145	-2.32E-15
47	0	-0.027623	-3.95E-16	-0.842610	-4.39E-15	6.170	6.28E-16
47	1.700	-0.016743	-3.95E-16	-1.387	-4.39E-15	4.275	-4.26E-17
48	0	-0.005558	2.29E-15	-1.645	5.27E-14	4.385	-3.24E-15
48	1.700	0.005321	2.29E-15	-2.189	5.27E-14	1.126	6.54E-16

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
49	0	0.025815	5.53E-16	-2.709	8.91E-14	1.526	-3.21E-15
49	1.700	0.036695	5.53E-16	-3.253	8.91E-14	-3.542	-2.27E-15
50	0	0.051894	-1.33E-15	-5.218	8.82E-14	-2.565	8.46E-16
50	1.700	0.062774	-1.33E-15	-5.762	8.82E-14	-11.899	-1.42E-15
51	0	-0.106953	1.40E-15	5.536	8.45E-14	-11.225	-1.86E-15
51	1.275	-0.098794	1.40E-15	5.128	8.45E-14	-4.425	-7.68E-17
52	0	-0.079213	9.21E-16	3.338	8.66E-14	-5.232	-1.74E-15
52	1.275	-0.071054	9.21E-16	2.930	8.66E-14	-1.236	-5.62E-16
53	0	-0.054937	1.95E-15	2.265	8.87E-14	-1.725	-2.80E-15
53	1.275	-0.046777	1.95E-15	1.857	8.87E-14	0.902926	-3.13E-16
54	0	-0.036123	2.61E-15	1.571	7.72E-14	0.685570	-3.46E-15
54	1.275	-0.027963	2.61E-15	1.163	7.72E-14	2.429	-1.24E-16
55	0	-0.022030	3.67E-15	0.966477	8.23E-14	2.337	-3.91E-15
55	1.275	-0.013870	3.67E-15	0.558493	8.23E-14	3.309	7.75E-16
56	0	-0.011517	2.28E-15	0.379580	9.19E-14	3.249	-2.56E-15
56	1.275	-0.003357	2.28E-15	-0.028404	9.19E-14	3.473	3.42E-16
57	0	-0.004143	2.22E-15	-0.175198	1.07E-13	3.379	-1.89E-15
57	1.275	0.004017	2.22E-15	-0.583182	1.07E-13	2.896	9.41E-16
58	0	0.000153	2.62E-15	-0.591330	1.00E-13	2.700	-2.13E-15
58	1.275	0.008313	2.62E-15	-0.999314	1.00E-13	1.686	1.21E-15
59	0	0.001951	1.99E-15	-0.587249	7.64E-14	1.352	-2.52E-15
59	1.275	0.010111	1.99E-15	-0.995233	7.64E-14	0.342641	1.32E-17
60	0	-0.001011	1.90E-16	0.009617	3.70E-14	0.195861	2.50E-17
60	1.275	0.007149	1.90E-16	-0.398367	3.70E-14	-0.052007	2.68E-16
61	0	-0.038939	-0.002159	1.639	-0.277277	-0.198237	0.004650
61	1.275	-0.030779	-0.002159	1.231	-0.277277	1.632	0.001897
62	0	-0.028605	-0.003779	0.957114	-0.224447	1.351	0.007893
62	1.275	-0.020445	-0.003779	0.549130	-0.224447	2.312	0.003073
63	0	-0.018416	-0.003343	0.566768	-0.112397	2.184	0.006098
63	1.275	-0.010256	-0.003343	0.158784	-0.112397	2.646	0.001835
64	0	-0.009655	-0.001507	0.242577	-0.050594	2.596	0.002035
64	1.275	-0.001496	-0.001507	-0.165406	-0.050594	2.646	0.000113
65	0	-0.002329	0.001401	-0.072600	-0.032216	2.623	-0.001758
65	1.275	0.005830	0.001401	-0.480584	-0.032216	2.271	2.91E-05
66	0	0.003438	0.005412	-0.388082	-0.047500	2.249	-0.003834
66	1.275	0.011598	0.005412	-0.796066	-0.047500	1.494	0.003067

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
67	0	0.006986	0.010670	-0.697102	-0.105516	1.449	-0.003635
67	1.275	0.015145	0.010670	-1.105	-0.105516	0.299677	0.009972
68	0	0.007040	0.017061	-0.958462	-0.225208	0.184462	-0.001542
68	1.275	0.015199	0.017061	-1.366	-0.225208	-1.298	0.020214
69	0	0.002011	0.023801	-1.016	-0.373850	-1.559	0.000841
69	1.275	0.010171	0.023801	-1.423	-0.373850	-3.114	0.031192
70	0	-0.009354	0.029208	-0.469611	-0.306822	-3.544	0.000874
70	1.275	-0.001194	0.029208	-0.877594	-0.306822	-4.403	0.038120
71	0	-0.039598	0.031150	1.149	0.313662	-4.477	-0.033408
71	1.700	-0.028718	0.031150	0.604712	0.313662	-2.986	0.019556
72	0	-0.050011	0.026123	1.633	0.312914	-2.469	-0.039523
72	1.700	-0.039132	0.026123	1.089	0.312914	-0.154400	0.004893
73	0	-0.054032	0.017649	1.356	0.126918	0.056820	-0.026841
73	1.700	-0.043152	0.017649	0.811715	0.126918	1.899	0.003167
74	0	-0.050328	0.010183	0.940983	0.037427	1.958	-0.012571
74	1.700	-0.039449	0.010183	0.397005	0.037427	3.095	0.004743
75	0	-0.042893	0.005996	0.516949	0.007603	3.109	-0.004847
75	1.700	-0.032013	0.005996	-0.027029	0.007603	3.525	0.005348
76	0	-0.034385	0.005499	0.094202	-0.006947	3.525	-0.002628
76	1.700	-0.023506	0.005499	-0.449776	-0.006947	3.223	0.006722
77	0	-0.026464	0.008287	-0.329653	-0.035410	3.210	-0.002227
77	1.700	-0.015585	0.008287	-0.873632	-0.035410	2.188	0.011863
78	0	-0.021177	0.013348	-0.744562	-0.120166	2.132	-0.001955
78	1.700	-0.010297	0.013348	-1.289	-0.120166	0.403752	0.020740
79	0	-0.020544	0.018555	-1.029	-0.295488	0.203666	-0.005650
79	1.700	-0.009664	0.018555	-1.573	-0.295488	-2.008	0.025898
80	0	-0.017263	0.020905	-0.589933	-0.292452	-2.496	-0.017921
80	1.700	-0.006383	0.020905	-1.134	-0.292452	-3.962	0.017623
81	0	-0.014621	0.019103	0.778794	0.291913	-3.880	-0.022293
81	1.275	-0.006462	0.019103	0.370811	0.291913	-3.147	0.002067
82	0	-0.016252	0.015535	1.266	0.351334	-2.743	-0.018003
82	1.275	-0.008092	0.015535	0.858171	0.351334	-1.389	0.001807
83	0	-0.016150	0.011169	1.191	0.211894	-1.144	-0.012106
83	1.275	-0.007990	0.011169	0.782713	0.211894	0.114420	0.002137
84	0	-0.013315	0.006858	0.925417	0.102121	0.223194	-0.006371

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
84	1.275	-0.005156	0.006858	0.517433	0.102121	1.143	0.002374
85	0	-0.008125	0.003028	0.615812	0.053792	1.189	-0.002484
85	1.275	3.50E-05	0.003028	0.207828	0.053792	1.715	0.001377
86	0	-0.001139	-0.000198	0.297219	0.052233	1.745	-0.001000
86	1.275	0.007020	-0.000198	-0.110765	0.052233	1.864	-0.001253
87	0	0.007414	-0.002750	-0.037369	0.088760	1.910	-0.001402
87	1.275	0.015573	-0.002750	-0.445353	0.088760	1.602	-0.004909
88	0	0.017505	-0.004366	-0.441315	0.147889	1.700	-0.002414
88	1.275	0.025665	-0.004366	-0.849299	0.147889	0.877357	-0.007981
89	0	0.028846	-0.004483	-1.055	0.150117	1.044	-0.002404
89	1.275	0.037006	-0.004483	-1.463	0.150117	-0.561503	-0.008121
90	0	-0.011735	-0.002368	0.607182	0.011456	-0.488149	0.001707
90	1.275	-0.003575	-0.002368	0.199198	0.011456	0.026001	-0.001312
91	0	0.002158	0.003351	0.584251	-0.198280	-0.277291	-0.000895
91	2.000	0.002158	0.003351	0.584251	-0.198280	0.891163	0.005806
92	0	0.002158	-0.003351	-0.584251	0.198280	0.891163	0.005806
92	2.000	0.002158	-0.003351	-0.584251	0.198280	-0.277292	-0.000895
93	0	0.001620	0.003307	0.274068	-0.280796	0.052713	0.007052
93	2.000	0.001620	0.003307	0.274068	-0.280796	0.600828	0.013666
94	0	0.001620	-0.003307	-0.274068	0.280796	0.600827	0.013666
94	2.000	0.001620	-0.003307	-0.274068	0.280796	0.052712	0.007052
95	0	-0.000436	-0.002380	-0.017597	-0.127743	0.111966	0.005265
95	2.000	-0.000436	-0.002380	-0.017597	-0.127743	0.076774	0.000504
96	0	-0.000436	0.002380	0.017597	0.127743	0.076774	0.000504
96	2.000	-0.000436	0.002380	0.017597	0.127743	0.111966	0.005265
97	0	-0.001836	-0.002276	-0.083799	-0.050011	0.061786	0.001436
97	2.000	-0.001836	-0.002276	-0.083799	-0.050011	-0.105806	-0.003116
98	0	-0.001836	0.002276	0.083799	0.050011	-0.105806	-0.003116
98	2.000	-0.001836	0.002276	0.083799	0.050011	0.061786	0.001436
99	0	-0.002909	-0.001024	-0.092806	-0.022273	0.018406	-0.001504
99	2.000	-0.002909	-0.001024	-0.092806	-0.022273	-0.167199	-0.003551
100	0	-0.002909	0.001024	0.092806	0.022273	-0.167199	-0.003551
100	2.000	-0.002909	0.001024	0.092806	0.022273	0.018406	-0.001504
101	0	-0.004010	0.000543	-0.092548	-0.021311	-0.015209	-0.004168
101	2.000	-0.004010	0.000543	-0.092548	-0.021311	-0.200298	-0.003081

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
102	0	-0.004010	-0.000543	0.092548	0.021311	-0.200298	-0.003081
102	2.000	-0.004010	-0.000543	0.092548	0.021311	-0.015209	-0.004168
103	0	-0.005259	0.002631	-0.099067	-0.045563	-0.057873	-0.007860
103	2.000	-0.005259	0.002631	-0.099067	-0.045563	-0.255999	-0.002598
104	0	-0.005259	-0.002631	0.099067	0.045563	-0.255999	-0.002598
104	2.000	-0.005259	-0.002631	0.099067	0.045563	-0.057873	-0.007860
105	0	-0.006391	0.005173	-0.146751	-0.115165	-0.119446	-0.013907
105	2.000	-0.006391	0.005173	-0.146751	-0.115165	-0.412937	-0.003562
106	0	-0.006391	-0.005173	0.146751	0.115165	-0.412937	-0.003562
106	2.000	-0.006391	-0.005173	0.146751	0.115165	-0.119446	-0.013907
107	0	-0.006740	0.006167	-0.351155	-0.261328	-0.148240	-0.022343
107	2.000	-0.006740	0.006167	-0.351155	-0.261328	-0.850521	-0.010010
108	0	-0.006740	-0.006167	0.351155	0.261328	-0.850521	-0.010010
108	2.000	-0.006740	-0.006167	0.351155	0.261328	-0.148240	-0.022343
109	0	-0.005408	0.000449	-0.954098	-0.429469	0.067581	-0.028972
109	2.000	-0.005408	0.000449	-0.954098	-0.429469	-1.841	-0.028074
110	0	-0.005408	-0.000449	0.954098	0.429469	-1.841	-0.028074
110	2.000	-0.005408	-0.000449	0.954098	0.429469	0.067581	-0.028972
111	0	-0.001941	-0.002123	-2.027	-0.074222	0.621707	-0.059111
111	2.000	-0.001941	-0.002123	-2.027	-0.074222	-3.431	-0.063356
112	0	-0.001941	0.002123	2.027	0.074222	-3.431	-0.063356
112	2.000	-0.001941	0.002123	2.027	0.074222	0.621707	-0.059111
113	0	0.005027	0.000726	-1.029	0.517775	0.000397	-0.059084
113	2.000	0.005027	0.000726	-1.029	0.517775	-2.057	-0.057632
114	0	0.005027	-0.000726	1.029	-0.517775	-2.057	-0.057632
114	2.000	0.005027	-0.000726	1.029	-0.517775	0.000397	-0.059084
115	0	0.008474	0.009566	-0.266856	0.211134	-0.185335	-0.035447
115	2.000	0.008474	0.009566	-0.266856	0.211134	-0.719027	-0.016316
116	0	0.008474	-0.009566	0.266856	-0.211134	-0.719027	-0.016316
116	2.000	0.008474	-0.009566	0.266856	-0.211134	-0.185335	-0.035447
117	0	0.007466	0.004589	-0.129391	0.058320	-0.089165	-0.017525
117	2.000	0.007466	0.004589	-0.129391	0.058320	-0.347937	-0.008347
118	0	0.007466	-0.004589	0.129391	-0.058320	-0.347936	-0.008347
118	2.000	0.007466	-0.004589	0.129391	-0.058320	-0.089165	-0.017525
119	0	0.004188	0.001046	-0.120037	0.013425	-0.029623	-0.010185
119	2.000	0.004188	0.001046	-0.120037	0.013425	-0.269688	-0.008092

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
120	0	0.004188	-0.001046	0.120037	-0.013425	-0.269688	-0.008092
120	2.000	0.004188	-0.001046	0.120037	-0.013425	-0.029623	-0.010185
121	0	0.000497	-5.29E-05	-0.121278	0.000183	-0.014388	-0.008265
121	2.000	0.000497	-5.29E-05	-0.121278	0.000183	-0.256934	-0.008371
122	0	0.000497	5.29E-05	0.121278	-0.000183	-0.256934	-0.008371
122	2.000	0.000497	5.29E-05	0.121278	-0.000183	-0.014388	-0.008265
123	0	-0.002788	0.000556	-0.120168	-0.012640	-0.028286	-0.009516
123	2.000	-0.002788	0.000556	-0.120168	-0.012640	-0.268612	-0.008405
124	0	-0.002788	-0.000556	0.120168	0.012640	-0.268612	-0.008405
124	2.000	-0.002788	-0.000556	0.120168	0.012640	-0.028286	-0.009516
125	0	-0.005061	0.003009	-0.129163	-0.055287	-0.084475	-0.015510
125	2.000	-0.005061	0.003009	-0.129163	-0.055287	-0.342790	-0.009492
126	0	-0.005061	-0.003009	0.129163	0.055287	-0.342790	-0.009492
126	2.000	-0.005061	-0.003009	0.129163	0.055287	-0.084475	-0.015510
127	0	-0.005207	0.005048	-0.260076	-0.200005	-0.174768	-0.029891
127	2.000	-0.005207	0.005048	-0.260076	-0.200005	-0.694898	-0.019795
128	0	-0.005207	-0.005048	0.260076	0.200005	-0.694898	-0.019795
128	2.000	-0.005207	-0.005048	0.260076	0.200005	-0.174768	-0.029891
129	0	-0.002350	-0.012054	-0.982671	-0.488630	0.003870	-0.043751
129	2.000	-0.002350	-0.012054	-0.982671	-0.488630	-1.961	-0.067858
130	0	-0.002350	0.012054	0.982671	0.488630	-1.961	-0.067858
130	2.000	-0.002350	0.012054	0.982671	0.488630	0.003871	-0.043751
131	0	0.001801	-0.030009	-1.913	0.082250	0.584966	-0.028227
131	2.000	0.001801	-0.030009	-1.913	0.082250	-3.240	-0.088242
132	0	0.001801	0.030009	1.913	-0.082250	-3.240	-0.088242
132	2.000	0.001801	0.030009	1.913	-0.082250	0.584966	-0.028227
133	0	0.003568	-0.008117	-0.895374	0.403674	0.059774	-0.018880
133	2.000	0.003568	-0.008117	-0.895374	0.403674	-1.731	-0.035113
134	0	0.003568	0.008117	0.895374	-0.403674	-1.731	-0.035113
134	2.000	0.003568	0.008117	0.895374	-0.403674	0.059774	-0.018880
135	0	0.004367	0.001409	-0.332648	0.244704	-0.139147	-0.016699
135	2.000	0.004367	0.001409	-0.332648	0.244704	-0.804416	-0.013881
136	0	0.004367	-0.001409	0.332648	-0.244704	-0.804416	-0.013881
136	2.000	0.004367	-0.001409	0.332648	-0.244704	-0.139146	-0.016699
137	0	0.004311	0.002470	-0.142796	0.108725	-0.109589	-0.010700

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
137	2.000	0.004311	0.002470	-0.142796	0.108725	-0.395170	-0.005761
138	0	0.004311	-0.002470	0.142796	-0.108725	-0.395170	-0.005761
138	2.000	0.004311	-0.002470	0.142796	-0.108725	-0.109589	-0.010700
139	0	0.003830	0.001001	-0.098419	0.046195	-0.048225	-0.005824
139	2.000	0.003830	0.001001	-0.098419	0.046195	-0.245055	-0.003822
140	0	0.003830	-0.001001	0.098419	-0.046195	-0.245055	-0.003822
140	2.000	0.003830	-0.001001	0.098419	-0.046195	-0.048225	-0.005824
141	0	0.003226	-0.000613	-0.089430	0.030183	-0.001515	-0.002408
141	2.000	0.003226	-0.000613	-0.089430	0.030183	-0.180369	-0.003633
142	0	0.003226	0.000613	0.089430	-0.030183	-0.180368	-0.003633
142	2.000	0.003226	0.000613	0.089430	-0.030183	-0.001515	-0.002408
143	0	0.002552	-0.001861	-0.073382	0.046545	0.036521	0.000582
143	2.000	0.002552	-0.001861	-0.073382	0.046545	-0.110237	-0.003139
144	0	0.002552	0.001861	0.073382	-0.046545	-0.110237	-0.003139
144	2.000	0.002552	0.001861	0.073382	-0.046545	0.036521	0.000582
145	0	0.001616	-0.002015	-0.004022	0.097914	0.059069	0.003677
145	2.000	0.001616	-0.002015	-0.004022	0.097914	0.051026	-0.000352
146	0	0.001616	0.002015	0.004022	-0.097914	0.051025	-0.000352
146	2.000	0.001616	0.002015	0.004022	-0.097914	0.059069	0.003677
147	0	0.000117	0.000943	0.206061	0.167109	0.002125	0.005620
147	2.000	0.000117	0.000943	0.206061	0.167109	0.414230	0.007506
148	0	0.000117	-0.000943	-0.206061	-0.167109	0.414229	0.007506
148	2.000	0.000117	-0.000943	-0.206061	-0.167109	0.002125	0.005620
149	0	-0.002115	0.004486	0.502444	0.073378	-0.138810	0.007053
149	2.000	-0.002115	0.004486	0.502444	0.073378	0.866038	0.016024
150	0	-0.002115	-0.004486	-0.502444	-0.073378	0.866038	0.016024
150	2.000	-0.002115	-0.004486	-0.502444	-0.073378	-0.138810	0.007053
151	0	-0.002367	0.000409	0.199218	-0.026005	-0.011472	0.001082
151	2.000	-0.002367	0.000409	0.199218	-0.026005	0.386948	0.001900
152	0	-0.002367	-0.000409	-0.199218	0.026005	0.386948	0.001900
152	2.000	-0.002367	-0.000409	-0.199218	0.026005	-0.011472	0.001082
201	0	-16.089	-2.45E-15	-0.104966	1.10E-15	0.377751	2.50E-14
201	10.255	-16.089	-2.45E-15	-0.104966	1.10E-15	-0.698629	-1.82E-16
202	0	-15.125	1.11E-15	0.116252	8.18E-16	-0.392303	1.63E-14
202	10.595	-15.125	1.11E-15	0.116252	8.18E-16	0.839339	2.81E-14

CARGAS: '' Ejec. "0001"

Hipótesis	Factor	Etapa	Título
28	1.0000		Termico

DESPLAZAMIENTOS:

NUDOS	DX [mm]	DY [mm]	DZ [mm]	RX [rad]	RY [rad]	RZ [rad]
1	-7.910	-0.000113	-6.34E-18	-1.16E-06	3.15E-05	2.87E-08
2	-7.912	2.10E-12	-0.001863	-2.32E-18	3.08E-05	-4.26E-17
3	-7.910	0.000113	-6.34E-18	1.16E-06	3.15E-05	-2.87E-08
4	-7.423	-5.01E-05	-0.030144	-6.90E-07	3.07E-05	3.50E-08
5	-7.424	2.05E-12	-0.031052	-5.94E-18	3.02E-05	-4.26E-17
6	-7.423	5.01E-05	-0.030144	6.90E-07	3.07E-05	-3.50E-08
7	-6.935	-1.44E-06	-0.058253	-3.18E-07	2.84E-05	2.37E-08
8	-6.936	1.99E-12	-0.058622	-1.07E-17	2.82E-05	-4.24E-17
9	-6.935	1.44E-06	-0.058253	3.18E-07	2.84E-05	-2.37E-08
10	-6.448	2.45E-05	-0.082538	-1.45E-07	2.47E-05	1.02E-08
11	-6.448	1.94E-12	-0.082691	-1.55E-17	2.46E-05	-4.28E-17
12	-6.448	-2.45E-05	-0.082538	1.45E-07	2.47E-05	-1.02E-08
13	-5.961	3.36E-05	-0.101238	-1.08E-07	1.96E-05	9.37E-10
14	-5.961	1.88E-12	-0.101347	-2.04E-17	1.97E-05	-4.27E-17
15	-5.961	-3.36E-05	-0.101238	1.08E-07	1.96E-05	-9.37E-10
16	-5.473	3.43E-05	-0.112539	-1.90E-07	1.31E-05	-4.56E-09
17	-5.473	1.83E-12	-0.112732	-2.53E-17	1.32E-05	-4.30E-17
18	-5.473	-3.43E-05	-0.112539	1.90E-07	1.31E-05	4.56E-09
19	-4.986	3.28E-05	-0.114563	-4.59E-07	5.09E-06	-1.04E-08
20	-4.986	1.78E-12	-0.115063	-3.03E-17	5.45E-06	-4.34E-17
21	-4.986	-3.28E-05	-0.114563	4.59E-07	5.09E-06	1.04E-08
22	-4.499	3.13E-05	-0.105346	-1.08E-06	-4.50E-06	-2.31E-08
23	-4.499	1.72E-12	-0.106642	-3.53E-17	-3.64E-06	-4.35E-17
24	-4.499	-3.13E-05	-0.105346	1.08E-06	-4.50E-06	2.31E-08
25	-4.013	2.82E-05	-0.082881	-2.13E-06	-1.56E-05	-4.69E-08
26	-4.013	1.67E-12	-0.085819	-4.03E-17	-1.41E-05	-4.40E-17
27	-4.013	-2.82E-05	-0.082881	2.13E-06	-1.56E-05	4.69E-08
28	-3.526	1.94E-05	-0.045646	-2.84E-06	-2.74E-05	-6.81E-08
29	-3.526	1.61E-12	-0.050428	-4.54E-17	-2.68E-05	-4.42E-17
30	-3.526	-1.94E-05	-0.045646	2.84E-06	-2.74E-05	6.81E-08
31	-3.041	1.03E-06	0.005129	-4.50E-07	-3.61E-05	-2.89E-08
32	-3.040	1.56E-12	0.004632	-5.20E-17	-4.57E-05	-4.39E-17
33	-3.041	-1.03E-06	0.005129	4.50E-07	-3.61E-05	2.89E-08
34	-2.393	-1.97E-05	0.076984	2.34E-06	-3.15E-05	3.83E-08
35	-2.393	1.48E-12	0.080824	-4.85E-17	-3.05E-05	-4.41E-17
36	-2.393	1.97E-05	0.076984	-2.34E-06	-3.15E-05	-3.83E-08
37	-1.745	-2.32E-05	0.135457	1.21E-06	-2.17E-05	2.56E-08
38	-1.745	1.41E-12	0.137012	-4.66E-17	-2.08E-05	-4.44E-17
39	-1.745	2.32E-05	0.135457	-1.21E-06	-2.17E-05	-2.56E-08
40	-1.097	-1.67E-05	0.176858	3.95E-07	-1.17E-05	1.25E-08
41	-1.097	1.33E-12	0.177289	-4.49E-17	-1.14E-05	-4.48E-17
42	-1.097	1.67E-05	0.176858	-3.95E-07	-1.17E-05	-1.25E-08
43	-0.448614	-9.29E-06	0.201436	1.14E-07	-1.95E-06	5.60E-09
44	-0.448615	1.26E-12	0.201548	-4.31E-17	-1.88E-06	-4.50E-17
45	-0.448614	9.29E-06	0.201436	-1.14E-07	-1.95E-06	-5.60E-09

DESPLAZAMIENTOS:

NUDOS	DX [mm]	DY [mm]	DZ [mm]	RX [rad]	RY [rad]	RZ [rad]
46	0.200137	-6.19E-06	0.209532	5.53E-08	7.68E-06	1.22E-09
47	0.200136	1.18E-12	0.209584	-4.14E-17	7.68E-06	-4.52E-17
48	0.200137	6.19E-06	0.209532	-5.53E-08	7.68E-06	-1.22E-09
49	0.849214	-8.99E-06	0.201289	1.16E-07	1.73E-05	-9.63E-10
50	0.849212	1.11E-12	0.201402	-3.98E-17	1.72E-05	-4.54E-17
51	0.849214	8.99E-06	0.201289	-1.16E-07	1.73E-05	9.63E-10
52	1.499	-1.66E-05	0.176714	4.03E-07	2.69E-05	3.03E-09
53	1.499	1.03E-12	0.177154	-3.82E-17	2.66E-05	-4.54E-17
54	1.499	1.66E-05	0.176714	-4.03E-07	2.69E-05	-3.03E-09
55	2.148	-2.40E-05	0.135617	1.23E-06	3.67E-05	2.25E-08
56	2.148	9.56E-13	0.137201	-3.67E-17	3.57E-05	-4.56E-17
57	2.148	2.40E-05	0.135617	-1.23E-06	3.67E-05	-2.25E-08
58	2.798	-2.10E-05	0.077908	2.37E-06	4.61E-05	5.59E-08
59	2.798	8.80E-13	0.081798	-3.52E-17	4.51E-05	-4.52E-17
60	2.798	2.10E-05	0.077908	-2.37E-06	4.61E-05	-5.59E-08
61	3.449	1.29E-07	0.007565	-5.65E-07	5.02E-05	9.08E-09
62	3.448	8.04E-13	0.006863	-3.44E-17	6.02E-05	-4.53E-17
63	3.449	-1.29E-07	0.007565	5.65E-07	5.02E-05	-9.08E-09
64	3.937	1.90E-05	-0.041146	-3.03E-06	4.06E-05	-4.91E-08
65	3.937	7.47E-13	-0.046233	-2.99E-17	4.00E-05	-4.52E-17
66	3.937	-1.90E-05	-0.041146	3.03E-06	4.06E-05	4.91E-08
67	4.425	2.81E-05	-0.075300	-2.25E-06	2.81E-05	-4.03E-08
68	4.425	6.90E-13	-0.078409	-2.59E-17	2.65E-05	-4.51E-17
69	4.425	-2.81E-05	-0.075300	2.25E-06	2.81E-05	4.03E-08
70	4.912	3.15E-05	-0.093905	-1.14E-06	1.65E-05	-2.11E-08
71	4.912	6.34E-13	-0.095277	-2.20E-17	1.56E-05	-4.50E-17
72	4.912	-3.15E-05	-0.093905	1.14E-06	1.65E-05	2.11E-08
73	5.399	3.30E-05	-0.098846	-4.93E-07	6.76E-06	-8.69E-09
74	5.399	5.77E-13	-0.099382	-1.81E-17	6.39E-06	-4.42E-17
75	5.399	-3.30E-05	-0.098846	4.93E-07	6.76E-06	8.69E-09
76	5.886	3.43E-05	-0.092508	-2.25E-07	-1.14E-06	-4.04E-09
77	5.886	5.22E-13	-0.092737	-1.42E-17	-1.25E-06	-4.35E-17
78	5.886	-3.43E-05	-0.092508	2.25E-07	-1.14E-06	4.04E-09
79	6.373	3.30E-05	-0.077226	-1.75E-07	-7.27E-06	-7.03E-09
80	6.373	4.66E-13	-0.077408	-1.04E-17	-7.23E-06	-4.38E-17
81	6.373	-3.30E-05	-0.077226	1.75E-07	-7.27E-06	7.03E-09
82	6.859	2.35E-05	-0.055238	-2.80E-07	-1.17E-05	-1.90E-08
83	6.860	4.11E-13	-0.055562	-6.66E-18	-1.15E-05	-4.37E-17
84	6.859	-2.35E-05	-0.055238	2.80E-07	-1.17E-05	1.90E-08
85	7.346	-2.32E-06	-0.028736	-5.23E-07	-1.43E-05	-4.00E-08
86	7.346	3.56E-13	-0.029418	-3.21E-18	-1.40E-05	-4.33E-17
87	7.346	2.32E-06	-0.028736	5.23E-07	-1.43E-05	4.00E-08
88	7.832	-4.93E-05	-6.46E-18	-7.82E-07	-1.51E-05	-6.22E-08
89	7.833	3.00E-13	-0.001102	-4.97E-19	-1.50E-05	-4.33E-17
90	7.832	4.93E-05	-6.46E-18	7.82E-07	-1.51E-05	6.22E-08
91	8.319	-0.000108	0.028888	-7.92E-07	-1.50E-05	-6.19E-08
92	8.320	2.45E-13	0.027830	8.72E-19	-1.51E-05	-4.34E-17
93	8.319	0.000108	0.028888	7.92E-07	-1.50E-05	6.19E-08
101	-4.49E-17	1.82E-29	1.05E-17	-9.82E-32	-2.37E-19	-1.73E-32
102	4.55E-17	7.51E-30	1.51E-17	-4.30E-32	2.49E-19	-1.73E-32

REACCIONES EN APOYOS:

NUDOS	FX [t]	FY [t]	FZ [t]	MX [tm]	MY [tm]	MZ [tm]
1	2.636	3.78E-05	0.633967			
3	2.636	-3.78E-05	0.633967			
88	-2.610	1.64E-05	0.646477			
90	-2.610	-1.64E-05	0.646477			
101	4.493	-1.82E-12	-1.052	9.82E-12	23.681	1.73E-12
102	-4.545	-7.51E-13	-1.509	4.30E-12	-24.895	1.73E-12
Sumas:	0	-6.21E-12	-1.19E-07			

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
1	0	-2.521	0.108520	0.415986	0.072598	-0.050485	-0.123924
1	1.275	-2.521	0.108520	0.415986	0.072598	0.479981	0.014462
2	0	-2.041	0.204314	0.321493	0.057290	0.407628	-0.455669
2	1.275	-2.041	0.204314	0.321493	0.057290	0.817598	-0.195127
3	0	-1.803	0.207068	0.301759	0.026564	0.785062	-0.425314
3	1.275	-1.803	0.207068	0.301759	0.026564	1.170	-0.161261
4	0	-1.685	0.160279	0.299726	0.005579	1.159	-0.276383
4	1.275	-1.685	0.160279	0.299726	0.005579	1.541	-0.071994
5	0	-1.629	0.096086	0.300617	-0.012540	1.543	-0.128355
5	1.275	-1.629	0.096086	0.300617	-0.012540	1.927	-0.005826
6	0	-1.606	0.030476	0.299322	-0.041487	1.943	-0.027707
6	1.275	-1.606	0.030476	0.299322	-0.041487	2.324	0.011157
7	0	-1.612	-0.032234	0.279782	-0.095132	2.371	0.015680
7	1.275	-1.612	-0.032234	0.279782	-0.095132	2.728	-0.025425
8	0	-1.650	-0.092059	0.174334	-0.161465	2.841	0.008942
8	1.275	-1.650	-0.092059	0.174334	-0.161465	3.063	-0.108452
9	0	-1.737	-0.146055	-0.215922	-0.110226	3.262	-0.025525
9	1.275	-1.737	-0.146055	-0.215922	-0.110226	2.986	-0.211774
10	0	-1.925	-0.183198	-1.148	0.368134	3.056	-0.033234
10	1.275	-1.925	-0.183198	-1.148	0.368134	1.593	-0.266848
11	0	-2.507	-0.185498	-1.186	0.322221	0.087136	0.305414
11	1.700	-2.507	-0.185498	-1.186	0.322221	-1.929	-0.009982
12	0	-2.748	-0.135349	-0.234707	-0.130814	-1.749	0.244331
12	1.700	-2.748	-0.135349	-0.234707	-0.130814	-2.148	0.014200
13	0	-2.830	-0.076173	-0.014880	-0.093811	-1.981	0.106589
13	1.700	-2.830	-0.076173	-0.014880	-0.093811	-2.006	-0.022925

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
14	0	-2.858	-0.033664	0.007762	-0.032447	-1.952	0.011744
14	1.700	-2.858	-0.033664	0.007762	-0.032447	-1.939	-0.045493
15	0	-2.867	-0.009972	0.006284	-0.006747	-1.926	-0.033386
15	1.700	-2.867	-0.009972	0.006284	-0.006747	-1.916	-0.050341
16	0	-2.868	0.005801	0.004273	0.007011	-1.916	-0.049129
16	1.700	-2.868	0.005801	0.004273	0.007011	-1.908	-0.039266
17	0	-2.861	0.028726	0.002777	0.033168	-1.921	-0.047283
17	1.700	-2.861	0.028726	0.002777	0.033168	-1.917	0.001560
18	0	-2.837	0.071053	0.026114	0.095578	-1.972	-0.022491
18	1.700	-2.837	0.071053	0.026114	0.095578	-1.928	0.098318
19	0	-2.756	0.132270	0.252062	0.131515	-2.097	0.026385
19	1.700	-2.756	0.132270	0.252062	0.131515	-1.669	0.251281
20	0	-2.477	0.185840	1.227	-0.338839	-1.848	-0.003845
20	1.700	-2.477	0.185840	1.227	-0.338839	0.238177	0.312133
21	0	-1.886	0.185552	1.162	-0.379022	1.801	-0.272601
21	1.275	-1.886	0.185552	1.162	-0.379022	3.283	-0.035985
22	0	-1.712	0.149226	0.180431	0.119815	3.204	-0.213235
22	1.275	-1.712	0.149226	0.180431	0.119815	3.434	-0.022942
23	0	-1.627	0.095411	-0.229062	0.170770	3.224	-0.112713
23	1.275	-1.627	0.095411	-0.229062	0.170770	2.932	0.008956
24	0	-1.588	0.035243	-0.339381	0.099464	2.813	-0.031639
24	1.275	-1.588	0.035243	-0.339381	0.099464	2.380	0.013303
25	0	-1.580	-0.027890	-0.359820	0.041297	2.331	0.005364
25	1.275	-1.580	-0.027890	-0.359820	0.041297	1.873	-0.030201
26	0	-1.600	-0.093413	-0.361938	0.007602	1.858	-0.009422
26	1.275	-1.600	-0.093413	-0.361938	0.007602	1.397	-0.128542
27	0	-1.660	-0.156586	-0.366180	-0.016145	1.401	-0.071296
27	1.275	-1.660	-0.156586	-0.366180	-0.016145	0.934355	-0.270975
28	0	-1.782	-0.201487	-0.389586	-0.037424	0.958087	-0.152113
28	1.275	-1.782	-0.201487	-0.389586	-0.037424	0.461284	-0.409051
29	0	-2.031	-0.197058	-0.470613	-0.039901	0.505619	-0.169085
29	1.275	-2.031	-0.197058	-0.470613	-0.039901	-0.094509	-0.420374
30	0	0.057848	-0.102804	0.064764	-0.001619	-0.074907	0.073300
30	1.275	0.057848	-0.102804	0.064764	-0.001619	0.007680	-0.057795
31	0	-0.254999	-8.78E-13	0.330272	-1.78E-12	0.101002	6.45E-13

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
31	1.275	-0.254999	-8.78E-13	0.330272	-1.78E-12	0.522166	-4.74E-13
32	0	-1.217	-9.53E-13	0.519241	-2.34E-12	0.666939	1.09E-12
32	1.275	-1.217	-9.53E-13	0.519241	-2.34E-12	1.329	-1.28E-13
33	0	-1.690	-5.58E-13	0.558760	-2.40E-12	1.394	-1.32E-13
33	1.275	-1.690	-5.58E-13	0.558760	-2.40E-12	2.107	-8.43E-13
34	0	-1.926	5.75E-13	0.562797	-2.40E-12	2.128	-7.30E-14
34	1.275	-1.926	5.75E-13	0.562797	-2.40E-12	2.846	6.61E-13
35	0	-2.043	9.83E-13	0.560984	-2.42E-12	2.842	-9.56E-13
35	1.275	-2.043	9.83E-13	0.560984	-2.42E-12	3.558	2.97E-13
36	0	-2.082	1.51E-13	0.563590	-2.47E-12	3.526	-5.12E-13
36	1.275	-2.082	1.51E-13	0.563590	-2.47E-12	4.244	-3.20E-13
37	0	-2.074	-3.00E-13	0.602705	-2.46E-12	4.150	1.32E-13
37	1.275	-2.074	-3.00E-13	0.602705	-2.46E-12	4.919	-2.51E-13
38	0	-1.997	2.37E-13	0.813569	-2.50E-12	4.693	-7.88E-13
38	1.275	-1.997	2.37E-13	0.813569	-2.50E-12	5.731	-4.86E-13
39	0	-1.822	1.85E-13	1.594	-2.52E-12	5.334	-2.40E-13
39	1.275	-1.822	1.85E-13	1.594	-2.52E-12	7.367	-3.89E-15
40	0	-1.449	1.79E-12	3.457	-3.23E-12	7.227	-4.13E-13
40	1.275	-1.449	1.79E-12	3.457	-3.23E-12	11.636	1.87E-12
41	0	-4.753	1.39E-12	2.392	1.29E-12	-7.749	-1.50E-12
41	1.700	-4.753	1.39E-12	2.392	1.29E-12	-3.683	8.58E-13
42	0	-4.273	8.68E-13	0.489956	6.98E-13	-4.043	-1.22E-12
42	1.700	-4.273	8.68E-13	0.489956	6.98E-13	-3.210	2.56E-13
43	0	-4.108	8.19E-13	0.050290	6.42E-13	-3.543	-1.14E-12
43	1.700	-4.108	8.19E-13	0.050290	6.42E-13	-3.458	2.51E-13
44	0	-4.052	5.19E-13	0.005013	6.31E-13	-3.566	-7.35E-13
44	1.700	-4.052	5.19E-13	0.005013	6.31E-13	-3.557	1.48E-13
45	0	-4.033	3.87E-13	0.007972	6.31E-13	-3.583	-6.60E-13
45	1.700	-4.033	3.87E-13	0.007972	6.31E-13	-3.569	-2.01E-15
46	0	-4.032	5.29E-13	0.011953	5.95E-13	-3.569	-7.13E-13
46	1.700	-4.032	5.29E-13	0.011953	5.95E-13	-3.549	1.86E-13
47	0	-4.046	6.14E-13	0.015000	6.02E-13	-3.523	-5.60E-13
47	1.700	-4.046	6.14E-13	0.015000	6.02E-13	-3.497	4.84E-13
48	0	-4.094	7.33E-13	-0.031691	5.65E-13	-3.387	-9.21E-13
48	1.700	-4.094	7.33E-13	-0.031691	5.65E-13	-3.441	3.26E-13

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
49	0	-4.255	9.26E-13	-0.483592	5.48E-13	-3.101	-3.21E-13
49	1.700	-4.255	9.26E-13	-0.483592	5.48E-13	-3.924	1.25E-12
50	0	-4.814	1.29E-12	-2.433	2.83E-13	-3.566	-1.28E-12
50	1.700	-4.814	1.29E-12	-2.433	2.83E-13	-7.702	9.06E-13
51	0	-1.421	3.12E-13	-3.721	2.26E-12	12.432	-1.26E-13
51	1.275	-1.421	3.12E-13	-3.721	2.26E-12	7.687	2.72E-13
52	0	-1.768	-1.31E-13	-1.758	1.95E-12	7.845	2.04E-14
52	1.275	-1.768	-1.31E-13	-1.758	1.95E-12	5.604	-1.46E-13
53	0	-1.943	-5.10E-13	-0.939010	1.92E-12	6.024	4.20E-13
53	1.275	-1.943	-5.10E-13	-0.939010	1.92E-12	4.827	-2.30E-13
54	0	-2.019	-9.32E-13	-0.718329	1.94E-12	5.064	1.76E-12
54	1.275	-2.019	-9.32E-13	-0.718329	1.94E-12	4.148	5.71E-13
55	0	-2.033	-4.86E-13	-0.677426	1.93E-12	4.245	1.34E-12
55	1.275	-2.033	-4.86E-13	-0.677426	1.93E-12	3.381	7.22E-13
56	0	-1.992	6.29E-13	-0.673176	1.90E-12	3.410	-9.74E-13
56	1.275	-1.992	6.29E-13	-0.673176	1.90E-12	2.552	-1.72E-13
57	0	-1.875	8.73E-14	-0.664754	1.83E-12	2.542	-8.82E-14
57	1.275	-1.875	8.73E-14	-0.664754	1.83E-12	1.695	2.31E-14
58	0	-1.630	2.76E-14	-0.617923	1.71E-12	1.647	6.27E-13
58	1.275	-1.630	2.76E-14	-0.617923	1.71E-12	0.859106	6.63E-13
59	0	-1.130	5.33E-13	-0.455825	1.34E-12	0.770341	-4.30E-13
59	1.275	-1.130	5.33E-13	-0.455825	1.34E-12	0.189070	2.51E-13
60	0	-0.116838	1.06E-13	-0.129544	6.74E-13	0.149818	-3.80E-13
60	1.275	-0.116838	1.06E-13	-0.129544	6.74E-13	-0.015377	-2.45E-13
61	0	-2.521	-0.108520	0.415986	-0.072598	-0.050485	0.123924
61	1.275	-2.521	-0.108520	0.415986	-0.072598	0.479981	-0.014461
62	0	-2.041	-0.204314	0.321493	-0.057290	0.407628	0.455669
62	1.275	-2.041	-0.204314	0.321493	-0.057290	0.817598	0.195127
63	0	-1.803	-0.207067	0.301759	-0.026564	0.785062	0.425314
63	1.275	-1.803	-0.207067	0.301759	-0.026564	1.170	0.161261
64	0	-1.685	-0.160279	0.299726	-0.005579	1.159	0.276383
64	1.275	-1.685	-0.160279	0.299726	-0.005579	1.541	0.071994
65	0	-1.629	-0.096086	0.300617	0.012540	1.543	0.128355
65	1.275	-1.629	-0.096086	0.300617	0.012540	1.927	0.005826
66	0	-1.606	-0.030476	0.299322	0.041487	1.943	0.027707
66	1.275	-1.606	-0.030476	0.299322	0.041487	2.324	-0.011157

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
67	0	-1.612	0.032234	0.279782	0.095132	2.371	-0.015680
67	1.275	-1.612	0.032234	0.279782	0.095132	2.728	0.025425
68	0	-1.650	0.092059	0.174334	0.161465	2.841	-0.008942
68	1.275	-1.650	0.092059	0.174334	0.161465	3.063	0.108452
69	0	-1.737	0.146055	-0.215922	0.110226	3.262	0.025525
69	1.275	-1.737	0.146055	-0.215922	0.110226	2.986	0.211774
70	0	-1.925	0.183198	-1.148	-0.368134	3.056	0.033234
70	1.275	-1.925	0.183198	-1.148	-0.368134	1.593	0.266848
71	0	-2.507	0.185498	-1.186	-0.322221	0.087136	-0.305414
71	1.700	-2.507	0.185498	-1.186	-0.322221	-1.929	0.009982
72	0	-2.748	0.135349	-0.234707	0.130814	-1.749	-0.244330
72	1.700	-2.748	0.135349	-0.234707	0.130814	-2.148	-0.014200
73	0	-2.830	0.076173	-0.014880	0.093811	-1.981	-0.106589
73	1.700	-2.830	0.076173	-0.014880	0.093811	-2.006	0.022925
74	0	-2.858	0.033664	0.007762	0.032447	-1.952	-0.011744
74	1.700	-2.858	0.033664	0.007762	0.032447	-1.939	0.045493
75	0	-2.867	0.009972	0.006284	0.006747	-1.926	0.033386
75	1.700	-2.867	0.009972	0.006284	0.006747	-1.916	0.050341
76	0	-2.868	-0.005801	0.004273	-0.007011	-1.916	0.049129
76	1.700	-2.868	-0.005801	0.004273	-0.007011	-1.908	0.039266
77	0	-2.861	-0.028726	0.002777	-0.033168	-1.921	0.047283
77	1.700	-2.861	-0.028726	0.002777	-0.033168	-1.917	-0.001560
78	0	-2.837	-0.071053	0.026114	-0.095578	-1.972	0.022491
78	1.700	-2.837	-0.071053	0.026114	-0.095578	-1.928	-0.098318
79	0	-2.756	-0.132270	0.252062	-0.131515	-2.097	-0.026385
79	1.700	-2.756	-0.132270	0.252062	-0.131515	-1.669	-0.251281
80	0	-2.477	-0.185840	1.227	0.338839	-1.848	0.003845
80	1.700	-2.477	-0.185840	1.227	0.338839	0.238177	-0.312133
81	0	-1.886	-0.185552	1.162	0.379022	1.801	0.272601
81	1.275	-1.886	-0.185552	1.162	0.379022	3.283	0.035985
82	0	-1.712	-0.149226	0.180431	-0.119815	3.204	0.213235
82	1.275	-1.712	-0.149226	0.180431	-0.119815	3.434	0.022942
83	0	-1.627	-0.095412	-0.229062	-0.170770	3.224	0.112713
83	1.275	-1.627	-0.095412	-0.229062	-0.170770	2.932	-0.008957
84	0	-1.588	-0.035242	-0.339381	-0.099464	2.813	0.031639

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
84	1.275	-1.588	-0.035242	-0.339381	-0.099464	2.380	-0.013302
85	0	-1.580	0.027890	-0.359820	-0.041297	2.331	-0.005364
85	1.275	-1.580	0.027890	-0.359820	-0.041297	1.873	0.030201
86	0	-1.600	0.093413	-0.361938	-0.007602	1.858	0.009422
86	1.275	-1.600	0.093413	-0.361938	-0.007602	1.397	0.128542
87	0	-1.660	0.156586	-0.366180	0.016145	1.401	0.071296
87	1.275	-1.660	0.156586	-0.366180	0.016145	0.934355	0.270975
88	0	-1.782	0.201487	-0.389586	0.037424	0.958087	0.152113
88	1.275	-1.782	0.201487	-0.389586	0.037424	0.461284	0.409051
89	0	-2.031	0.197058	-0.470613	0.039901	0.505619	0.169085
89	1.275	-2.031	0.197058	-0.470613	0.039901	-0.094509	0.420374
90	0	0.057848	0.102803	0.064764	0.001619	-0.074907	-0.073300
90	1.275	0.057848	0.102803	0.064764	0.001619	0.007680	0.057795
91	0	0.108482	-0.123347	0.167647	-0.050492	-0.075055	0.122412
91	2.000	0.108482	-0.123347	0.167647	-0.050492	0.260225	-0.124271
92	0	0.108482	0.123347	-0.167647	0.050492	0.260225	-0.124271
92	2.000	0.108482	0.123347	-0.167647	0.050492	-0.075055	0.122412
93	0	0.095794	-0.479525	0.104085	-0.072366	0.005909	0.470443
93	2.000	0.095794	-0.479525	0.104085	-0.072366	0.214071	-0.488567
94	0	0.095794	0.479525	-0.104085	0.072366	0.214071	-0.488567
94	2.000	0.095794	0.479525	-0.104085	0.072366	0.005909	0.470443
95	0	0.002754	-0.237120	0.024495	-0.032545	0.026117	0.230975
95	2.000	0.002754	-0.237120	0.024495	-0.032545	0.075105	-0.243246
96	0	0.002754	0.237120	-0.024495	0.032545	0.075105	-0.243246
96	2.000	0.002754	0.237120	-0.024495	0.032545	0.026117	0.230975
97	0	-0.046789	-0.118354	0.004372	-0.010607	0.018681	0.115695
97	2.000	-0.046789	-0.118354	0.004372	-0.010607	0.027424	-0.121003
98	0	-0.046789	0.118354	-0.004372	0.010607	0.027424	-0.121003
98	2.000	-0.046789	0.118354	-0.004372	0.010607	0.018681	0.115695
99	0	-0.064193	-0.056819	0.000256	0.001672	0.016988	0.056574
99	2.000	-0.064193	-0.056819	0.000256	0.001672	0.017499	-0.057060
100	0	-0.064193	0.056819	-0.000256	-0.001672	0.017499	-0.057060
100	2.000	-0.064193	0.056819	-0.000256	-0.001672	0.016988	0.056574
101	0	-0.065609	-0.021276	0.001713	0.016085	0.028503	0.022455
101	2.000	-0.065609	-0.021276	0.001713	0.016085	0.031930	-0.020095

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
102	0	-0.065609	0.021276	-0.001713	-0.016085	0.031930	-0.020095
102	2.000	-0.065609	0.021276	-0.001713	-0.016085	0.028503	0.022455
103	0	-0.062711	0.006376	0.019446	0.047072	0.053726	-0.003676
103	2.000	-0.062711	0.006376	0.019446	0.047072	0.092616	0.009076
104	0	-0.062711	-0.006376	-0.019446	-0.047072	0.092616	0.009076
104	2.000	-0.062711	-0.006376	-0.019446	-0.047072	0.053726	-0.003676
105	0	-0.059825	0.038897	0.104665	0.112677	0.067012	-0.032920
105	2.000	-0.059825	0.038897	0.104665	0.112677	0.276334	0.044871
106	0	-0.059825	-0.038897	-0.104665	-0.112677	0.276334	0.044871
106	2.000	-0.059825	-0.038897	-0.104665	-0.112677	0.067012	-0.032920
107	0	-0.053995	0.096370	0.388418	0.198524	-0.049553	-0.084212
107	2.000	-0.053995	0.096370	0.388418	0.198524	0.727252	0.108519
108	0	-0.053995	-0.096370	-0.388418	-0.198524	0.727252	0.108519
108	2.000	-0.053995	-0.096370	-0.388418	-0.198524	-0.049553	-0.084212
109	0	-0.037143	0.205700	0.927656	0.069771	-0.474659	-0.188057
109	2.000	-0.037143	0.205700	0.927656	0.069771	1.381	0.223326
110	0	-0.037143	-0.205700	-0.927656	-0.069771	1.381	0.223326
110	2.000	-0.037143	-0.205700	-0.927656	-0.069771	-0.474659	-0.188057
111	0	-0.002300	0.583074	0.026367	-1.506	0.057348	-0.571172
111	2.000	-0.002300	0.583074	0.026367	-1.506	0.110080	0.594929
112	0	-0.002300	-0.583074	-0.026367	1.506	0.110080	0.594929
112	2.000	-0.002300	-0.583074	-0.026367	1.506	0.057348	-0.571172
113	0	0.050149	0.221977	-0.955443	0.179985	0.457994	-0.245486
113	2.000	0.050149	0.221977	-0.955443	0.179985	-1.453	0.198450
114	0	0.050149	-0.221977	0.955443	-0.179985	-1.453	0.198450
114	2.000	0.050149	-0.221977	0.955443	-0.179985	0.457994	-0.245486
115	0	0.059176	0.077327	-0.221426	0.166605	-0.035154	-0.093019
115	2.000	0.059176	0.077327	-0.221426	0.166605	-0.477987	0.061629
116	0	0.059176	-0.077327	0.221426	-0.166605	-0.477987	0.061629
116	2.000	0.059176	-0.077327	0.221426	-0.166605	-0.035154	-0.093019
117	0	0.042509	0.028208	-0.023223	0.054206	-0.060652	-0.035893
117	2.000	0.042509	0.028208	-0.023223	0.054206	-0.107096	0.020520
118	0	0.042509	-0.028208	0.023223	-0.054206	-0.107096	0.020520
118	2.000	0.042509	-0.028208	0.023223	-0.054206	-0.060652	-0.035893
119	0	0.023692	0.009136	0.001303	0.012802	-0.025455	-0.012575
119	2.000	0.023692	0.009136	0.001303	0.012802	-0.022849	0.005697

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
120	0	0.023692	-0.009136	-0.001303	-0.012802	-0.022849	0.005697
120	2.000	0.023692	-0.009136	-0.001303	-0.012802	-0.025455	-0.012575
121	0	0.015772	0.000739	0.001983	-6.29E-05	-0.013729	-0.001486
121	2.000	0.015772	0.000739	0.001983	-6.29E-05	-0.009764	-7.81E-06
122	0	0.015772	-0.000739	-0.001983	6.29E-05	-0.009764	-7.81E-06
122	2.000	0.015772	-0.000739	-0.001983	6.29E-05	-0.013729	-0.001486
123	0	0.022926	-0.006922	0.001643	-0.013090	-0.026310	0.007513
123	2.000	0.022926	-0.006922	0.001643	-0.013090	-0.023024	-0.006330
124	0	0.022926	0.006922	-0.001643	0.013090	-0.023024	-0.006330
124	2.000	0.022926	0.006922	-0.001643	0.013090	-0.026310	0.007513
125	0	0.042326	-0.024663	-0.022849	-0.055308	-0.062882	0.022802
125	2.000	0.042326	-0.024663	-0.022849	-0.055308	-0.108579	-0.026522
126	0	0.042326	0.024663	0.022849	0.055308	-0.108579	-0.026522
126	2.000	0.042326	0.024663	0.022849	0.055308	-0.062882	0.022802
127	0	0.061218	-0.084665	-0.224282	-0.169613	-0.037381	0.070845
127	2.000	0.061218	-0.084665	-0.224282	-0.169613	-0.485928	-0.098478
128	0	0.061218	0.084665	0.224282	0.169613	-0.485928	-0.098478
128	2.000	0.061218	0.084665	0.224282	0.169613	-0.037381	0.070845
129	0	0.053570	-0.298869	-0.968858	-0.178962	0.465122	0.264501
129	2.000	0.053570	-0.298869	-0.968858	-0.178962	-1.473	-0.333213
130	0	0.053570	0.298869	0.968858	0.178962	-1.473	-0.333213
130	2.000	0.053570	0.298869	0.968858	0.178962	0.465122	0.264501
131	0	-0.000288	-0.589116	0.076582	1.563	0.028485	0.585359
131	2.000	-0.000288	-0.589116	0.076582	1.563	0.181644	-0.592826
132	0	-0.000288	0.589116	-0.076582	-1.563	0.181644	-0.592826
132	2.000	-0.000288	0.589116	-0.076582	-1.563	0.028485	0.585359
133	0	-0.036326	-0.154674	0.984760	-0.079219	-0.502243	0.167379
133	2.000	-0.036326	-0.154674	0.984760	-0.079219	1.467	-0.141958
134	0	-0.036326	0.154674	-0.984760	0.079219	1.467	-0.141958
134	2.000	-0.036326	0.154674	-0.984760	0.079219	-0.502243	0.167379
135	0	-0.053815	-0.078368	0.411136	-0.210279	-0.052724	0.088804
135	2.000	-0.053815	-0.078368	0.411136	-0.210279	0.769515	-0.067926
136	0	-0.053815	0.078368	-0.411136	0.210279	0.769515	-0.067926
136	2.000	-0.053815	0.078368	-0.411136	0.210279	-0.052724	0.088804
137	0	-0.060169	-0.036660	0.111089	-0.118581	0.070482	0.042123

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
137	2.000	-0.060169	-0.036660	0.111089	-0.118581	0.292651	-0.031195
138	0	-0.060169	0.036660	-0.111089	0.118581	0.292651	-0.031195
138	2.000	-0.060169	0.036660	-0.111089	0.118581	0.070482	0.042123
139	0	-0.063132	-0.006757	0.020579	-0.048694	0.057998	0.009009
139	2.000	-0.063132	-0.006757	0.020579	-0.048694	0.099155	-0.004504
140	0	-0.063132	0.006757	-0.020579	0.048694	0.099155	-0.004504
140	2.000	-0.063132	0.006757	-0.020579	0.048694	0.057998	0.009009
141	0	-0.065523	0.021470	0.001707	-0.014386	0.034107	-0.020421
141	2.000	-0.065523	0.021470	0.001707	-0.014386	0.037521	0.022516
142	0	-0.065523	-0.021470	-0.001707	0.014386	0.037521	0.022516
142	2.000	-0.065523	-0.021470	-0.001707	0.014386	0.034107	-0.020421
143	0	-0.063173	0.058601	0.003042	0.004661	0.024888	-0.056778
143	2.000	-0.063173	0.058601	0.003042	0.004661	0.030972	0.060419
144	0	-0.063173	-0.058601	-0.003042	-0.004661	0.030972	0.060419
144	2.000	-0.063173	-0.058601	-0.003042	-0.004661	0.024888	-0.056778
145	0	-0.044901	0.123507	0.020964	0.023748	0.023652	-0.118584
145	2.000	-0.044901	0.123507	0.020964	0.023748	0.065578	0.128420
146	0	-0.044901	-0.123507	-0.020964	-0.023748	0.065578	0.128420
146	2.000	-0.044901	-0.123507	-0.020964	-0.023748	0.023652	-0.118584
147	0	0.004430	0.250133	0.076038	0.044366	0.007279	-0.239759
147	2.000	0.004430	0.250133	0.076038	0.044366	0.159349	0.260487
148	0	0.004430	-0.250133	-0.076038	-0.044366	0.159349	0.260487
148	2.000	0.004430	-0.250133	-0.076038	-0.044366	0.007279	-0.239759
149	0	0.094237	0.510516	0.152978	0.019611	-0.028397	-0.494391
149	2.000	0.094237	0.510516	0.152978	0.019611	0.277546	0.526600
150	0	0.094237	-0.510516	-0.152978	-0.019611	0.277546	0.526600
150	2.000	0.094237	-0.510516	-0.152978	-0.019611	-0.028397	-0.494391
151	0	0.102804	0.059856	0.063589	-0.007688	-0.000460	-0.057848
151	2.000	0.102804	0.059856	0.063589	-0.007688	0.126713	0.061859
152	0	0.102804	-0.059856	-0.063589	0.007688	0.126713	0.061859
152	2.000	0.102804	-0.059856	-0.063589	0.007688	-0.000460	-0.057848
201	0	1.052	-2.06E-12	-4.493	-5.25E-13	23.680	1.13E-11
201	10.255	1.052	-2.06E-12	-4.493	-5.25E-13	-22.396	-9.86E-12
202	0	1.509	-9.03E-13	4.545	-5.25E-13	-24.894	5.25E-12
202	10.595	1.509	-9.03E-13	4.545	-5.25E-13	23.260	-4.31E-12

CARGAS: Ejec. "0001"

Hipótesis	Factor	Etapa	Título
29	1.0000		Gradiente termico

DESPLAZAMIENTOS:

NUDOS	DX [mm]	DY [mm]	DZ [mm]	RX [rad]	RY [rad]	RZ [rad]
1	0.027671	-7.33E-06	-6.93E-17	-1.38E-05	-0.000430	-2.72E-07
2	0.028063	1.65E-14	-0.021946	-4.24E-19	-0.000439	5.22E-19
3	0.027671	7.33E-06	-6.93E-17	1.38E-05	-0.000430	2.72E-07
4	0.018424	-3.20E-06	0.460920	-8.20E-06	-0.000297	-1.61E-07
5	0.018606	1.72E-14	0.450318	-9.59E-19	-0.000304	5.12E-19
6	0.018424	3.20E-06	0.460920	8.20E-06	-0.000297	1.61E-07
7	0.012335	-1.75E-07	0.763982	-3.69E-06	-0.000182	-7.19E-08
8	0.012403	1.79E-14	0.759799	-2.02E-18	-0.000185	4.95E-19
9	0.012335	1.75E-07	0.763982	3.69E-06	-0.000182	7.19E-08
10	0.008980	1.54E-06	0.930486	-1.47E-06	-8.25E-05	-2.84E-08
11	0.009003	1.86E-14	0.928963	-3.09E-18	-8.36E-05	4.72E-19
12	0.008980	-1.54E-06	0.930486	1.47E-06	-8.25E-05	2.84E-08
13	0.007940	2.33E-06	0.981313	-6.00E-07	-7.48E-08	-1.16E-08
14	0.007949	1.92E-14	0.980723	-4.23E-18	-4.25E-07	4.46E-19
15	0.007940	-2.33E-06	0.981313	6.00E-07	-7.48E-08	1.16E-08
16	0.008787	2.72E-06	0.937841	-3.85E-07	6.54E-05	-7.42E-09
17	0.008794	1.99E-14	0.937464	-5.35E-18	6.54E-05	4.23E-19
18	0.008787	-2.72E-06	0.937841	3.85E-07	6.54E-05	7.42E-09
19	0.011085	3.10E-06	0.821804	-5.92E-07	0.000114	-1.15E-08
20	0.011099	2.06E-14	0.821189	-6.54E-18	0.000114	3.99E-19
21	0.011085	-3.10E-06	0.821804	5.92E-07	0.000114	1.15E-08
22	0.014395	3.51E-06	0.655167	-1.34E-06	0.000145	-2.65E-08
23	0.014430	2.13E-14	0.653654	-7.56E-18	0.000146	3.79E-19
24	0.014395	-3.51E-06	0.655167	1.34E-06	0.000145	2.65E-08
25	0.018272	3.56E-06	0.460092	-2.93E-06	0.000158	-5.90E-08
26	0.018357	2.19E-14	0.456410	-8.23E-18	0.000161	3.62E-19
27	0.018272	-3.56E-06	0.460092	2.93E-06	0.000158	5.90E-08
28	0.022274	2.52E-06	0.258605	-5.24E-06	0.000155	-1.06E-07
29	0.022451	2.26E-14	0.251146	-8.73E-18	0.000158	3.50E-19
30	0.022274	-2.52E-06	0.258605	5.24E-06	0.000155	1.06E-07
31	0.025994	-2.30E-07	0.070715	-6.07E-06	0.000138	-1.25E-07
32	0.026241	2.33E-14	0.061707	-8.90E-18	0.000135	3.37E-19
33	0.025994	2.30E-07	0.070715	6.07E-06	0.000138	1.25E-07
34	0.030107	-3.04E-06	-0.139723	-2.78E-06	0.000109	-5.63E-08
35	0.030192	2.41E-14	-0.143171	-9.31E-18	-0.000107	3.25E-19
36	0.030107	3.04E-06	-0.139723	2.78E-06	0.000109	5.63E-08
37	0.033213	-2.93E-06	-0.300578	-8.84E-07	8.02E-05	-1.71E-08
38	0.033236	2.50E-14	-0.301529	-9.53E-18	7.95E-05	3.18E-19
39	0.033213	2.93E-06	-0.300578	8.84E-07	8.02E-05	1.71E-08
40	0.035349	-1.73E-06	-0.413139	-2.41E-07	5.23E-05	-4.17E-09
41	0.035355	2.59E-14	-0.413376	-9.47E-18	5.21E-05	3.17E-19
42	0.035349	1.73E-06	-0.413139	2.41E-07	5.23E-05	4.17E-09
43	0.036544	-1.02E-06	-0.478678	-6.74E-08	2.49E-05	-1.23E-09
44	0.036545	2.67E-14	-0.478742	-9.25E-18	2.49E-05	3.16E-19
45	0.036544	1.02E-06	-0.478678	6.74E-08	2.49E-05	1.23E-09

DESPLAZAMIENTOS:

NUDOS	DX [mm]	DY [mm]	DZ [mm]	RX [rad]	RY [rad]	RZ [rad]
46	0.036815	-1.47E-06	-0.498058	-3.49E-08	-2.04E-06	-1.36E-09
47	0.036816	2.76E-14	-0.498091	-8.88E-18	-2.03E-06	3.19E-19
48	0.036815	1.47E-06	-0.498058	3.49E-08	-2.04E-06	1.36E-09
49	0.036178	-3.28E-06	-0.471984	-7.40E-08	-2.86E-05	-2.87E-09
50	0.036179	2.84E-14	-0.472055	-8.38E-18	-2.85E-05	3.29E-19
51	0.036178	3.28E-06	-0.471984	7.40E-08	-2.86E-05	2.87E-09
52	0.034645	-5.96E-06	-0.401084	-2.68E-07	-5.48E-05	-6.88E-09
53	0.034646	2.93E-14	-0.401350	-7.81E-18	-5.46E-05	3.34E-19
54	0.034645	5.96E-06	-0.401084	2.68E-07	-5.48E-05	6.88E-09
55	0.032228	-7.85E-06	-0.285813	-9.77E-07	-8.08E-05	-1.97E-08
56	0.032233	3.01E-14	-0.286874	-7.12E-18	-8.00E-05	3.43E-19
57	0.032228	7.85E-06	-0.285813	9.77E-07	-8.08E-05	1.97E-08
58	0.028936	-6.09E-06	-0.126195	-3.03E-06	-0.000107	-5.74E-08
59	0.028956	3.09E-14	-0.129986	-6.24E-18	-0.000105	3.59E-19
60	0.028936	6.09E-06	-0.126195	3.03E-06	-0.000107	5.74E-08
61	0.024788	5.88E-07	0.077654	-6.47E-06	-0.000132	-1.23E-07
62	0.024814	3.17E-14	0.068050	-5.41E-18	-0.000129	3.68E-19
63	0.024788	-5.88E-07	0.077654	6.47E-06	-0.000132	1.23E-07
64	0.021218	5.74E-06	0.255752	-5.51E-06	-0.000145	-1.07E-07
65	0.021287	3.23E-14	0.247924	-4.91E-18	-0.000149	3.75E-19
66	0.021218	-5.74E-06	0.255752	5.51E-06	-0.000145	1.07E-07
67	0.017508	7.29E-06	0.441519	-3.08E-06	-0.000143	-6.14E-08
68	0.017541	3.29E-14	0.437661	-4.32E-18	-0.000146	3.86E-19
69	0.017508	-7.29E-06	0.441519	3.08E-06	-0.000143	6.14E-08
70	0.014093	6.27E-06	0.612997	-1.43E-06	-0.000123	-3.00E-08
71	0.014103	3.35E-14	0.611385	-3.51E-18	-0.000124	4.04E-19
72	0.014093	-6.27E-06	0.612997	1.43E-06	-0.000123	3.00E-08
73	0.011449	4.00E-06	0.746162	-7.15E-07	-8.31E-05	-1.62E-08
74	0.011453	3.41E-14	0.745423	-2.54E-18	-8.34E-05	4.21E-19
75	0.011449	-4.00E-06	0.746162	7.15E-07	-8.31E-05	1.62E-08
76	0.010057	1.61E-06	0.816885	-6.60E-07	-2.47E-05	-1.49E-08
77	0.010063	3.47E-14	0.816212	-1.60E-18	-2.45E-05	4.40E-19
78	0.010057	-1.61E-06	0.816885	6.60E-07	-2.47E-05	1.49E-08
79	0.010394	-8.30E-08	0.801286	-1.25E-06	5.23E-05	-2.59E-08
80	0.010411	3.53E-14	0.799923	-9.15E-19	5.32E-05	4.52E-19
81	0.010394	8.30E-08	0.801286	1.25E-06	5.23E-05	2.59E-08
82	0.012931	-5.14E-07	0.675770	-2.80E-06	0.000148	-5.57E-08
83	0.012981	3.59E-14	0.672425	-5.56E-19	0.000150	4.59E-19
84	0.012931	5.14E-07	0.675770	2.80E-06	0.000148	5.57E-08
85	0.018138	6.63E-07	0.416868	-5.58E-06	0.000262	-1.10E-07
86	0.018256	3.65E-14	0.409453	-2.71E-19	0.000265	4.65E-19
87	0.018138	-6.63E-07	0.416868	5.58E-06	0.000262	1.10E-07
88	0.026508	3.41E-06	-7.56E-17	-8.41E-06	0.000396	-1.66E-07
89	0.026698	3.71E-14	-0.012078	-5.42E-20	0.000398	4.70E-19
90	0.026508	-3.41E-06	-7.56E-17	8.41E-06	0.000396	1.66E-07
91	0.038454	6.91E-06	-0.597504	-8.59E-06	0.000540	-1.69E-07
92	0.038643	3.77E-14	-0.609069	6.78E-20	0.000539	4.72E-19
93	0.038454	-6.91E-06	-0.597504	8.59E-06	0.000540	1.69E-07
101	-1.07E-17	-2.46E-31	1.40E-16	3.23E-34	-3.57E-20	-1.60E-34
102	1.03E-17	3.18E-32	1.50E-16	-7.26E-34	3.70E-20	-5.02E-34

REACCIONES EN APOYOS:

NUDOS	FX [t]	FY [t]	FZ [t]	MX [tm]	MY [tm]	MZ [tm]
1	-0.009223	2.44E-06	6.929			
3	-0.009223	-2.44E-06	6.929			
88	-0.008835	-1.14E-06	7.560			
90	-0.008835	1.14E-06	7.560			
101	1.066	2.46E-14	-14.017	-3.23E-14	3.572	1.60E-14
102	-1.030	-3.18E-15	-14.961	7.26E-14	-3.701	5.02E-14
Sumas:	1.19E-07	2.14E-14	-9.54E-07			

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
1	0	-0.101880	0.007016	4.974	0.856774	-0.607983	-0.014313
1	1.275	-0.101880	0.007016	4.974	0.856774	5.735	-0.005367
2	0	-0.095591	0.013144	3.827	0.694908	4.864	-0.027236
2	1.275	-0.095591	0.013144	3.827	0.694908	9.744	-0.010475
3	0	-0.087578	0.013478	3.592	0.341926	9.349	-0.025351
3	1.275	-0.087578	0.013478	3.592	0.341926	13.930	-0.008164
4	0	-0.082413	0.010527	3.566	0.133711	13.782	-0.016016
4	1.275	-0.082413	0.010527	3.566	0.133711	18.329	-0.002592
5	0	-0.079882	0.006077	3.571	0.033124	18.283	-0.006207
5	1.275	-0.079882	0.006077	3.571	0.033124	22.837	0.001541
6	0	-0.079357	0.000877	3.575	-0.031855	22.839	0.000324
6	1.275	-0.079357	0.000877	3.575	-0.031855	27.397	0.001443
7	0	-0.080877	-0.005046	3.563	-0.115066	27.445	0.001864
7	1.275	-0.080877	-0.005046	3.563	-0.115066	31.989	-0.004571
8	0	-0.085857	-0.011749	3.480	-0.245380	32.124	-0.002195
8	1.275	-0.085857	-0.011749	3.480	-0.245380	36.562	-0.017178
9	0	-0.099140	-0.018558	3.122	-0.354960	36.853	-0.009827
9	1.275	-0.099140	-0.018558	3.122	-0.354960	40.834	-0.033492
10	0	-0.132654	-0.023371	2.060	-0.128447	41.223	-0.010827
10	1.275	-0.132654	-0.023371	2.060	-0.128447	43.850	-0.040629
11	0	-0.250863	-0.022856	0.420770	0.380632	43.376	0.048946
11	1.700	-0.250863	-0.022856	0.420770	0.380632	44.092	0.010085
12	0	-0.293962	-0.015092	-0.007855	0.218585	43.717	0.030400
12	1.700	-0.293962	-0.015092	-0.007855	0.218585	43.704	0.004740
13	0	-0.303490	-0.007623	-0.051345	0.074128	43.584	0.007537
13	1.700	-0.303490	-0.007623	-0.051345	0.074128	43.497	-0.005424

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
14	0	-0.306080	-0.003199	-0.048621	0.020085	43.467	-0.004373
14	1.700	-0.306080	-0.003199	-0.048621	0.020085	43.384	-0.009813
15	0	-0.306702	-0.000606	-0.046598	0.003748	43.378	-0.009660
15	1.700	-0.306702	-0.000606	-0.046598	0.003748	43.298	-0.010691
16	0	-0.306006	0.003153	-0.045762	-0.004520	43.299	-0.012081
16	1.700	-0.306006	0.003153	-0.045762	-0.004520	43.221	-0.006719
17	0	-0.302804	0.011516	-0.043618	-0.022448	43.228	-0.011361
17	1.700	-0.302804	0.011516	-0.043618	-0.022448	43.154	0.008219
18	0	-0.292869	0.026704	-0.041372	-0.081798	43.188	-0.004804
18	1.700	-0.292869	0.026704	-0.041372	-0.081798	43.118	0.040600
19	0	-0.264191	0.046713	-0.094111	-0.236912	43.250	0.003997
19	1.700	-0.264191	0.046713	-0.094111	-0.236912	43.090	0.083422
20	0	-0.186142	0.062233	-0.578516	-0.396832	43.495	-0.016971
20	1.700	-0.186142	0.062233	-0.578516	-0.396832	42.511	0.088842
21	0	-0.030704	0.060920	-2.325	0.146882	42.973	-0.093292
21	1.275	-0.030704	0.060920	-2.325	0.146882	40.008	-0.015607
22	0	0.021256	0.049938	-3.432	0.374251	39.596	-0.077817
22	1.275	0.021256	0.049938	-3.432	0.374251	35.220	-0.014136
23	0	0.051083	0.035992	-3.802	0.253704	34.916	-0.050049
23	1.275	0.051083	0.035992	-3.802	0.253704	30.067	-0.004153
24	0	0.068267	0.024003	-3.888	0.110561	29.929	-0.024548
24	1.275	0.068267	0.024003	-3.888	0.110561	24.971	0.006061
25	0	0.078571	0.016347	-3.900	0.008335	24.932	-0.006158
25	1.275	0.078571	0.016347	-3.900	0.008335	19.959	0.014688
26	0	0.086062	0.013260	-3.905	-0.091239	19.985	0.005455
26	1.275	0.086062	0.013260	-3.905	-0.091239	15.005	0.022365
27	0	0.093652	0.013419	-3.958	-0.238618	15.120	0.012052
27	1.275	0.093652	0.013419	-3.958	-0.238618	10.073	0.029165
28	0	0.103122	0.014402	-4.217	-0.426787	10.353	0.014192
28	1.275	0.103122	0.014402	-4.217	-0.426787	4.976	0.032558
29	0	0.114247	0.013134	-5.096	-0.436856	5.465	0.010756
29	1.275	0.114247	0.013134	-5.096	-0.436856	-1.033	0.027505
30	0	-0.012331	0.006609	0.711281	-0.026889	-0.821473	-0.004311
30	1.275	-0.012331	0.006609	0.711281	-0.026889	0.085556	0.004117
31	0	-0.054909	5.51E-16	3.908	-2.65E-13	1.216	1.26E-15

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
31	1.275	-0.054909	5.51E-16	3.908	-2.65E-13	6.200	1.96E-15
32	0	-0.067477	2.44E-16	6.201	-5.24E-13	7.943	5.24E-15
32	1.275	-0.067477	2.44E-16	6.201	-5.24E-13	15.850	5.55E-15
33	0	-0.083515	-7.25E-15	6.672	-5.29E-13	16.642	3.14E-15
33	1.275	-0.083515	-7.25E-15	6.672	-5.29E-13	25.150	-6.10E-15
34	0	-0.093855	-1.11E-14	6.724	-5.61E-13	25.446	1.51E-15
34	1.275	-0.093855	-1.11E-14	6.724	-5.61E-13	34.020	-1.26E-14
35	0	-0.098900	-1.17E-14	6.714	-5.54E-13	34.113	6.21E-15
35	1.275	-0.098900	-1.17E-14	6.714	-5.54E-13	42.674	-8.71E-15
36	0	-0.099949	-2.71E-15	6.707	-5.88E-13	42.672	1.88E-15
36	1.275	-0.099949	-2.71E-15	6.707	-5.88E-13	51.224	-1.57E-15
37	0	-0.096916	4.68E-15	6.729	-5.04E-13	51.129	-2.70E-15
37	1.275	-0.096916	4.68E-15	6.729	-5.04E-13	59.710	3.27E-15
38	0	-0.086947	3.07E-15	6.896	-3.35E-13	59.441	-7.80E-15
38	1.275	-0.086947	3.07E-15	6.896	-3.35E-13	68.234	-3.88E-15
39	0	-0.060391	-6.49E-15	7.612	-2.44E-13	67.652	5.56E-16
39	1.275	-0.060391	-6.49E-15	7.612	-2.44E-13	77.359	-7.72E-15
40	0	0.006637	-1.89E-14	9.736	-8.72E-14	76.582	-3.86E-15
40	1.275	0.006637	-1.89E-14	9.736	-8.72E-14	88.997	-2.79E-14
41	0	-0.542358	5.60E-16	-1.021	-1.51E-13	82.585	-5.08E-15
41	1.700	-0.542358	5.60E-16	-1.021	-1.51E-13	80.850	-4.13E-15
42	0	-0.456175	3.37E-15	-0.163391	-8.04E-14	81.599	-6.14E-15
42	1.700	-0.456175	3.37E-15	-0.163391	-8.04E-14	81.321	-4.12E-16
43	0	-0.437102	4.29E-15	-0.076520	2.13E-14	81.561	-6.64E-15
43	1.700	-0.437102	4.29E-15	-0.076520	2.13E-14	81.430	6.59E-16
44	0	-0.431925	5.32E-15	-0.081883	8.25E-14	81.491	-1.05E-14
44	1.700	-0.431925	5.32E-15	-0.081883	8.25E-14	81.351	-1.51E-15
45	0	-0.430678	4.38E-15	-0.085962	1.35E-13	81.365	-8.81E-15
45	1.700	-0.430678	4.38E-15	-0.085962	1.35E-13	81.219	-1.36E-15
46	0	-0.432082	3.16E-15	-0.087548	1.86E-13	81.218	-3.32E-15
46	1.700	-0.432082	3.16E-15	-0.087548	1.86E-13	81.069	2.06E-15
47	0	-0.438479	1.02E-14	-0.091919	2.10E-13	81.054	-1.69E-14
47	1.700	-0.438479	1.02E-14	-0.091919	2.10E-13	80.898	4.01E-16
48	0	-0.458356	6.98E-15	-0.096385	2.57E-13	80.830	-1.11E-14
48	1.700	-0.458356	6.98E-15	-0.096385	2.57E-13	80.666	8.09E-16

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
49	0	-0.515707	6.98E-15	0.009044	3.25E-13	80.401	-8.52E-15
49	1.700	-0.515707	6.98E-15	0.009044	3.25E-13	80.417	3.35E-15
50	0	-0.671800	6.55E-15	0.977869	3.09E-13	79.607	-1.44E-14
50	1.700	-0.671800	6.55E-15	0.977869	3.09E-13	81.269	-3.25E-15
51	0	0.346067	8.93E-16	-10.466	2.48E-13	87.555	-5.58E-15
51	1.275	0.346067	8.93E-16	-10.466	2.48E-13	74.208	-4.44E-15
52	0	0.242148	8.42E-17	-8.253	2.88E-13	75.032	-7.65E-16
52	1.275	0.242148	8.42E-17	-8.253	2.88E-13	64.507	-6.57E-16
53	0	0.182505	3.13E-15	-7.512	4.00E-13	65.114	-2.47E-16
53	1.275	0.182505	3.13E-15	-7.512	4.00E-13	55.535	3.75E-15
54	0	0.148127	3.68E-15	-7.341	4.79E-13	55.809	-6.01E-15
54	1.275	0.148127	3.68E-15	-7.341	4.79E-13	46.448	-1.32E-15
55	0	0.127518	-1.56E-15	-7.318	4.65E-13	46.526	1.91E-15
55	1.275	0.127518	-1.56E-15	-7.318	4.65E-13	37.195	-8.09E-17
56	0	0.112546	4.49E-15	-7.306	3.40E-13	37.142	-6.32E-15
56	1.275	0.112546	4.49E-15	-7.306	3.40E-13	27.825	-5.96E-16
57	0	0.097359	1.60E-15	-7.202	1.77E-13	27.595	-7.75E-16
57	1.275	0.097359	1.60E-15	-7.202	1.77E-13	18.411	1.27E-15
58	0	0.078415	-8.01E-16	-6.684	1.41E-13	17.850	-5.77E-17
58	1.275	0.078415	-8.01E-16	-6.684	1.41E-13	9.326	-1.08E-15
59	0	0.056179	-1.44E-15	-4.926	1.07E-13	8.349	2.15E-15
59	1.275	0.056179	-1.44E-15	-4.926	1.07E-13	2.067	3.09E-16
60	0	0.024657	-9.25E-16	-1.422	6.03E-14	1.643	-2.89E-16
60	1.275	0.024657	-9.25E-16	-1.422	6.03E-14	-0.170824	-1.47E-15
61	0	-0.101880	-0.007016	4.974	-0.856774	-0.607983	0.014313
61	1.275	-0.101880	-0.007016	4.974	-0.856774	5.735	0.005367
62	0	-0.095591	-0.013144	3.827	-0.694908	4.864	0.027236
62	1.275	-0.095591	-0.013144	3.827	-0.694908	9.744	0.010475
63	0	-0.087578	-0.013478	3.592	-0.341926	9.349	0.025351
63	1.275	-0.087578	-0.013478	3.592	-0.341926	13.930	0.008164
64	0	-0.082413	-0.010527	3.566	-0.133711	13.782	0.016016
64	1.275	-0.082413	-0.010527	3.566	-0.133711	18.329	0.002592
65	0	-0.079882	-0.006077	3.571	-0.033124	18.283	0.006207
65	1.275	-0.079882	-0.006077	3.571	-0.033124	22.837	-0.001541
66	0	-0.079357	-0.000877	3.575	0.031855	22.839	-0.000324
66	1.275	-0.079357	-0.000877	3.575	0.031855	27.397	-0.001443

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
67	0	-0.080877	0.005046	3.563	0.115066	27.445	-0.001864
67	1.275	-0.080877	0.005046	3.563	0.115066	31.989	0.004571
68	0	-0.085857	0.011749	3.480	0.245380	32.124	0.002195
68	1.275	-0.085857	0.011749	3.480	0.245380	36.562	0.017178
69	0	-0.099140	0.018558	3.122	0.354960	36.853	0.009827
69	1.275	-0.099140	0.018558	3.122	0.354960	40.834	0.033492
70	0	-0.132654	0.023371	2.060	0.128447	41.223	0.010827
70	1.275	-0.132654	0.023371	2.060	0.128447	43.850	0.040629
71	0	-0.250863	0.022856	0.420770	-0.380632	43.376	-0.048946
71	1.700	-0.250863	0.022856	0.420770	-0.380632	44.092	-0.010085
72	0	-0.293962	0.015092	-0.007855	-0.218585	43.717	-0.030400
72	1.700	-0.293962	0.015092	-0.007855	-0.218585	43.704	-0.004740
73	0	-0.303490	0.007623	-0.051345	-0.074128	43.584	-0.007537
73	1.700	-0.303490	0.007623	-0.051345	-0.074128	43.497	0.005424
74	0	-0.306080	0.003199	-0.048621	-0.020085	43.467	0.004373
74	1.700	-0.306080	0.003199	-0.048621	-0.020085	43.384	0.009813
75	0	-0.306702	0.000606	-0.046598	-0.003748	43.378	0.009660
75	1.700	-0.306702	0.000606	-0.046598	-0.003748	43.298	0.010691
76	0	-0.306006	-0.003153	-0.045762	0.004520	43.299	0.012081
76	1.700	-0.306006	-0.003153	-0.045762	0.004520	43.221	0.006719
77	0	-0.302804	-0.011516	-0.043618	0.022448	43.228	0.011361
77	1.700	-0.302804	-0.011516	-0.043618	0.022448	43.154	-0.008219
78	0	-0.292869	-0.026704	-0.041372	0.081798	43.188	0.004804
78	1.700	-0.292869	-0.026704	-0.041372	0.081798	43.118	-0.040600
79	0	-0.264191	-0.046713	-0.094111	0.236912	43.250	-0.003997
79	1.700	-0.264191	-0.046713	-0.094111	0.236912	43.090	-0.083422
80	0	-0.186142	-0.062233	-0.578516	0.396832	43.495	0.016971
80	1.700	-0.186142	-0.062233	-0.578516	0.396832	42.511	-0.088842
81	0	-0.030704	-0.060920	-2.325	-0.146882	42.973	0.093292
81	1.275	-0.030704	-0.060920	-2.325	-0.146882	40.008	0.015607
82	0	0.021256	-0.049938	-3.432	-0.374251	39.596	0.077817
82	1.275	0.021256	-0.049938	-3.432	-0.374251	35.220	0.014136
83	0	0.051083	-0.035992	-3.802	-0.253704	34.916	0.050049
83	1.275	0.051083	-0.035992	-3.802	-0.253704	30.067	0.004153
84	0	0.068267	-0.024003	-3.888	-0.110561	29.929	0.024548

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
84	1.275	0.068267	-0.024003	-3.888	-0.110561	24.971	-0.006061
85	0	0.078571	-0.016347	-3.900	-0.908335	24.932	0.006158
85	1.275	0.078571	-0.016347	-3.900	-0.008335	19.959	-0.014688
86	0	0.086062	-0.013260	-3.905	0.091239	19.985	-0.005455
86	1.275	0.086062	-0.013260	-3.905	0.091239	15.005	-0.022365
87	0	0.093652	-0.013419	-3.958	0.238618	15.120	-0.012052
87	1.275	0.093652	-0.013419	-3.958	0.238618	10.073	-0.029165
88	0	0.103122	-0.014402	-4.217	0.426787	10.353	-0.014192
88	1.275	0.103122	-0.014402	-4.217	0.426787	4.976	-0.032558
89	0	0.114247	-0.013134	-5.096	0.436856	5.465	-0.010756
89	1.275	0.114247	-0.013134	-5.096	0.436856	-1.033	-0.027505
90	0	-0.012331	-0.006609	0.711281	0.026889	-0.821473	0.004311
90	1.275	-0.012331	-0.006609	0.711281	0.026889	0.085556	-0.004117
91	0	0.007013	0.011626	1.954	-0.608086	-0.856811	-0.002821
91	2.000	0.007013	0.011626	1.954	-0.608086	3.052	0.020430
92	0	0.007013	-0.011626	-1.954	0.608086	3.052	0.020430
92	2.000	0.007013	-0.011626	-1.954	0.608086	-0.856811	-0.002821
93	0	0.006127	0.016637	1.146	-0.871161	0.161449	0.025102
93	2.000	0.006127	0.016637	1.146	-0.871161	2.454	0.058375
94	0	0.006127	-0.016637	-1.146	0.871161	2.454	0.058375
94	2.000	0.006127	-0.016637	-1.146	0.871161	0.161448	0.025102
95	0	0.000335	-0.003306	0.235510	-0.395659	0.352629	0.021932
95	2.000	0.000335	-0.003306	0.235510	-0.395659	0.823631	0.015320
96	0	0.000335	0.003306	-0.235510	0.395659	0.823631	0.015320
96	2.000	0.000335	0.003306	-0.235510	0.395659	0.352629	0.021932
97	0	-0.002951	-0.004649	0.026065	-0.148094	0.208023	0.012015
97	2.000	-0.002951	-0.004649	0.026065	-0.148094	0.260150	0.002716
98	0	-0.002951	0.004649	-0.026065	0.148094	0.260150	0.002716
98	2.000	-0.002951	0.004649	-0.026065	0.148094	0.208023	0.012015
99	0	-0.004450	-0.002624	-0.004876	-0.045927	0.100512	0.005627
99	2.000	-0.004450	-0.002624	-0.004876	-0.045927	0.090761	0.000379
100	0	-0.004450	0.002624	0.004876	0.045927	0.090761	0.000379
100	2.000	-0.004450	0.002624	0.004876	0.045927	0.100512	0.005627
101	0	-0.005199	-0.000594	-0.003618	0.001366	0.064957	0.002516
101	2.000	-0.005199	-0.000594	-0.003618	0.001366	0.057720	0.001329

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
102	0	-0.005199	0.000594	0.003618	-0.001366	0.057720	0.001329
102	2.000	-0.005199	0.000594	0.003618	-0.001366	0.064957	0.002516
103	0	-0.005923	0.001738	0.011117	0.047571	0.083207	0.001243
103	2.000	-0.005923	0.001738	0.011117	0.047571	0.105439	0.004720
104	0	-0.005923	-0.001738	-0.011117	-0.047571	0.105439	0.004720
104	2.000	-0.005923	-0.001738	-0.011117	-0.047571	0.083207	0.001243
105	0	-0.006703	0.006645	0.083113	0.134922	0.130356	0.000231
105	2.000	-0.006703	0.006645	0.083113	0.134922	0.296575	0.013520
106	0	-0.006703	-0.006645	-0.083113	-0.134922	0.296575	0.013520
106	2.000	-0.006703	-0.006645	-0.083113	-0.134922	0.130356	0.000231
107	0	-0.006808	0.020439	0.357834	0.291122	0.109718	-0.005158
107	2.000	-0.006808	0.020439	0.357834	0.291122	0.825358	0.035719
108	0	-0.006808	-0.020439	-0.357834	-0.291122	0.825357	0.035719
108	2.000	-0.006808	-0.020439	-0.357834	-0.291122	0.109717	-0.005158
109	0	-0.004812	0.054744	1.061	0.388405	-0.225967	-0.027189
109	2.000	-0.004812	0.054744	1.061	0.388405	1.896	0.082295
110	0	-0.004812	-0.054744	-1.061	-0.388405	1.896	0.082295
110	2.000	-0.004812	-0.054744	-1.061	-0.388405	-0.225968	-0.027189
111	0	0.000513	0.150966	1.637	-0.473440	-0.507120	-0.099731
111	2.000	0.000513	0.150966	1.637	-0.473440	2.766	0.202190
112	0	0.000513	-0.150966	-1.637	0.473440	2.766	0.202190
112	2.000	0.000513	-0.150966	-1.637	0.473440	-0.507120	-0.099731
113	0	0.007764	0.051653	0.427684	-0.374716	0.162438	-0.017070
113	2.000	0.007764	0.051653	0.427684	-0.374716	1.018	0.086233
114	0	0.007764	-0.051653	-0.427684	0.374716	1.018	0.086233
114	2.000	0.007764	-0.051653	-0.427684	0.374716	0.162437	-0.017070
115	0	0.007468	0.010408	0.043261	-0.119600	0.144487	8.83E-05
115	2.000	0.007468	0.010408	0.043261	-0.119600	0.231006	0.020904
116	0	0.007468	-0.010408	-0.043261	0.119600	0.231006	0.020904
116	2.000	0.007468	-0.010408	-0.043261	0.119600	0.144487	8.83E-05
117	0	0.004424	0.002529	-0.002763	-0.030099	0.054057	3.03E-05
117	2.000	0.004424	0.002529	-0.002763	-0.030099	0.048531	0.005089
118	0	0.004424	-0.002529	0.002763	0.030099	0.048531	0.005089
118	2.000	0.004424	-0.002529	0.002763	0.030099	0.054057	3.03E-05
119	0	0.002593	0.000584	-0.002010	-0.006716	0.016329	0.000173
119	2.000	0.002593	0.000584	-0.002010	-0.006716	0.012310	0.001341

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
120	0	0.002593	-0.000584	0.002010	0.006716	0.012310	0.001341
120	2.000	0.002593	-0.000584	0.002010	0.006716	0.016329	0.000173
121	0	0.003760	-0.000718	-0.000839	0.000217	0.008255	0.001556
121	2.000	0.003760	-0.000718	-0.000839	0.000217	0.006578	0.000120
122	0	0.003760	0.000718	0.000839	-0.000217	0.006578	0.000120
122	2.000	0.003760	0.000718	0.000839	-0.000217	0.008255	0.001556
123	0	0.008363	-0.003236	-0.002099	0.007659	0.017833	0.004998
123	2.000	0.008363	-0.003236	-0.002099	0.007659	0.013635	-0.001473
124	0	0.008363	0.003236	0.002099	-0.007659	0.013635	-0.001473
124	2.000	0.008363	0.003236	0.002099	-0.007659	0.017833	0.004998
125	0	0.015187	-0.009986	-0.002012	0.033728	0.059067	0.014211
125	2.000	0.015187	-0.009986	-0.002012	0.033728	0.055043	-0.005761
126	0	0.015187	0.009986	0.002012	-0.033728	0.055043	-0.005761
126	2.000	0.015187	0.009986	0.002012	-0.033728	0.059067	0.014211
127	0	0.020010	-0.027618	0.053276	0.132452	0.154357	0.039701
127	2.000	0.020010	-0.027618	0.053276	0.132452	0.260905	-0.015533
128	0	0.020010	0.027618	-0.053276	-0.132452	0.260905	-0.015533
128	2.000	0.020010	0.027618	-0.053276	-0.132452	0.154357	0.039701
129	0	0.015519	-0.068347	0.485864	0.405017	0.157900	0.103574
129	2.000	0.015519	-0.068347	0.485864	0.405017	1.130	-0.033116
130	0	0.015519	0.068347	-0.485864	-0.405017	1.130	-0.033116
130	2.000	0.015519	0.068347	-0.485864	-0.405017	0.157900	0.103574
131	0	-0.001313	-0.120479	1.750	0.462137	-0.547176	0.171225
131	2.000	-0.001313	-0.120479	1.750	0.462137	2.952	-0.069724
132	0	-0.001313	0.120479	-1.750	-0.462137	2.952	-0.069724
132	2.000	-0.001313	0.120479	-1.750	-0.462137	-0.547175	0.171225
133	0	-0.010981	-0.029827	1.107	-0.412016	-0.228515	0.057653
133	2.000	-0.010981	-0.029827	1.107	-0.412016	1.986	-0.001999
134	0	-0.010981	0.029827	-1.107	0.412016	1.986	-0.001999
134	2.000	-0.010981	0.029827	-1.107	0.412016	-0.228515	0.057653
135	0	-0.013947	-0.022404	0.371258	-0.303760	0.119813	0.038318
135	2.000	-0.013947	-0.022404	0.371258	-0.303760	0.862299	-0.006489
136	0	-0.013947	0.022404	-0.371258	0.303760	0.862299	-0.006489
136	2.000	-0.013947	0.022404	-0.371258	0.303760	0.119813	0.038318
137	0	-0.011988	-0.015476	0.085635	-0.137336	0.142726	0.023253

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
137	2.000	-0.011988	-0.015476	0.085635	-0.137336	0.313990	-0.007698
138	0	-0.011988	0.015476	-0.085635	0.137336	0.313990	-0.007698
138	2.000	-0.011988	0.015476	-0.085635	0.137336	0.142726	0.023253
139	0	-0.007655	-0.010067	0.011924	-0.039610	0.101954	0.014260
139	2.000	-0.007655	-0.010067	0.011924	-0.039610	0.125802	-0.005873
140	0	-0.007655	0.010067	-0.011924	0.039610	0.125802	-0.005873
140	2.000	-0.007655	0.010067	-0.011924	0.039610	0.101954	0.014260
141	0	-0.003087	-0.007373	0.005890	0.025987	0.099359	0.011222
141	2.000	-0.003087	-0.007373	0.005890	0.025987	0.111139	-0.003523
142	0	-0.003087	0.007373	-0.005890	-0.025987	0.111139	-0.003523
142	2.000	-0.003087	0.007373	-0.005890	-0.025987	0.099359	0.011222
143	0	0.000159	-0.006545	0.052593	0.115025	0.147132	0.013258
143	2.000	0.000159	-0.006545	0.052593	0.115025	0.252314	0.000169
144	0	0.000159	0.006545	-0.052593	-0.115025	0.252314	0.000169
144	2.000	0.000159	0.006545	-0.052593	-0.115025	0.147132	0.013258
145	0	0.000982	-0.004293	0.258965	0.280492	0.187845	0.018732
145	2.000	0.000982	-0.004293	0.258965	0.280492	0.705755	0.010146
146	0	0.000982	0.004293	-0.258965	-0.280492	0.705754	0.010146
146	2.000	0.000982	0.004293	-0.258965	-0.280492	0.187845	0.018732
147	0	-0.001269	0.006460	0.879069	0.488723	0.009678	0.021998
147	2.000	-0.001269	0.006460	0.879069	0.488723	1.768	0.034917
148	0	-0.001269	-0.006460	-0.879069	-0.488723	1.768	0.034917
148	2.000	-0.001269	-0.006460	-0.879069	-0.488723	0.009677	0.021998
149	0	-0.006524	0.019269	1.752	0.212018	-0.410450	0.023610
149	2.000	-0.006524	0.019269	1.752	0.212018	3.093	0.062148
150	0	-0.006524	-0.019269	-1.752	-0.212018	3.093	0.062148
150	2.000	-0.006524	-0.019269	-1.752	-0.212018	-0.410451	0.023610
151	0	-0.006607	0.001898	0.711416	-0.085570	-0.026942	0.003575
151	2.000	-0.006607	0.001898	0.711416	-0.085570	1.396	0.007371
152	0	-0.006607	-0.001898	-0.711416	0.085570	1.396	0.007371
152	2.000	-0.006607	-0.001898	-0.711416	0.085570	-0.026942	0.003575
201	0	14.017	3.58E-14	-1.066	4.03E-15	3.572	-5.88E-14
201	10.255	14.017	3.58E-14	-1.066	4.03E-15	-7.359	3.09E-13
202	0	14.961	-4.46E-15	1.030	4.27E-15	-3.700	9.71E-14
202	10.595	14.961	-4.46E-15	1.030	4.27E-15	7.210	4.98E-14

CARGAS: '' Ejec. "0001"

Hipótesis	Factor	Etapa	Título
30	1.0000		Viento transversal 1

DESPLAZAMIENTOS:

NUDOS	DX [mm]	DY [mm]	DZ [mm]	RX [rad]	RY [rad]	RZ [rad]
1	0.143006	20.429	3.21E-16	-2.69E-05	-0.000149	7.26E-05
2	0.000156	20.429	-0.007030	-4.03E-05	-6.55E-07	7.17E-05
3	-0.142963	20.428	-3.21E-16	-1.28E-05	0.000148	7.29E-05
4	0.139152	20.522	0.196313	-0.000106	-0.000145	7.08E-05
5	0.000140	20.522	-0.006196	-0.000105	-6.52E-07	7.03E-05
6	-0.139144	20.521	-0.194637	-9.20E-05	0.000143	7.11E-05
7	0.135014	20.615	0.382597	-0.000198	-0.000137	6.85E-05
8	0.000124	20.614	-0.005369	-0.000191	-6.43E-07	6.84E-05
9	-0.135040	20.614	-0.379263	-0.000184	0.000135	6.88E-05
10	0.130593	20.707	0.560007	-0.000288	-0.000131	6.61E-05
11	0.000109	20.706	-0.004558	-0.000277	-6.28E-07	6.62E-05
12	-0.130653	20.706	-0.555050	-0.000273	0.000130	6.64E-05
13	0.125880	20.798	0.731694	-0.000373	-0.000128	6.36E-05
14	9.37E-05	20.798	-0.003771	-0.000362	-6.06E-07	6.37E-05
15	-0.125972	20.797	-0.725163	-0.000359	0.000126	6.39E-05
16	0.120909	20.888	0.899114	-0.000457	-0.000125	6.10E-05
17	7.91E-05	20.888	-0.003017	-0.000446	-5.77E-07	6.11E-05
18	-0.121032	20.887	-0.891074	-0.000443	0.000124	6.13E-05
19	0.115731	20.977	1.063	-0.000538	-0.000122	5.83E-05
20	6.51E-05	20.976	-0.002303	-0.000527	-5.42E-07	5.84E-05
21	-0.115883	20.976	-1.053	-0.000524	0.000120	5.86E-05
22	0.110413	21.064	1.221	-0.000616	-0.000117	5.56E-05
23	5.19E-05	21.064	-0.001638	-0.000606	-5.00E-07	5.57E-05
24	-0.110592	21.063	-1.210	-0.000602	0.000116	5.58E-05
25	0.105059	21.150	1.372	-0.000689	-0.000109	5.29E-05
26	3.96E-05	21.149	-0.001029	-0.000683	-4.53E-07	5.27E-05
27	-0.105261	21.149	-1.360	-0.000675	0.000109	5.32E-05
28	0.099878	21.234	1.508	-0.000750	-9.29E-05	5.04E-05
29	2.84E-05	21.233	-0.000486	-0.000759	-3.98E-07	4.97E-05
30	-0.100101	21.233	-1.495	-0.000736	9.21E-05	5.07E-05
31	0.095270	21.317	1.611	-0.000788	-5.92E-05	4.84E-05
32	1.85E-05	21.315	-1.87E-05	-0.000848	-3.33E-07	4.73E-05
33	-0.095511	21.316	-1.597	-0.000774	5.85E-05	4.86E-05
34	0.090228	21.424	1.679	-0.000838	-2.13E-05	4.55E-05
35	8.61E-06	21.423	0.000499	-0.000841	-2.75E-07	4.55E-05
36	-0.090490	21.423	-1.664	-0.000823	2.08E-05	4.57E-05
37	0.085530	21.528	1.702	-0.000855	-6.52E-06	4.30E-05
38	8.64E-07	21.528	0.000912	-0.000846	-2.11E-07	4.31E-05
39	-0.085808	21.527	-1.686	-0.000840	6.10E-06	4.33E-05
40	0.080821	21.628	1.707	-0.000859	-3.13E-07	4.05E-05
41	-4.75E-06	21.628	0.001215	-0.000848	-1.45E-07	4.06E-05
42	-0.081111	21.627	-1.691	-0.000844	2.46E-08	4.08E-05
43	0.076046	21.724	1.704	-0.000857	3.57E-06	3.80E-05
44	-8.18E-06	21.724	0.001403	-0.000846	-7.67E-08	3.82E-05
45	-0.076343	21.723	-1.687	-0.000843	-3.73E-06	3.83E-05

DESPLAZAMIENTOS:

NUDOS	DX [mm]	DY [mm]	DZ [mm]	RX [rad]	RY [rad]	RZ [rad]
46	0.071274	21.816	1.694	-0.000852	6.94E-06	3.55E-05
47	-9.35E-06	21.815	0.001475	-0.000841	-6.93E-09	3.58E-05
48	-0.071574	21.815	-1.677	-0.000838	-6.95E-06	3.58E-05
49	0.066619	21.903	1.679	-0.000844	1.03E-05	3.31E-05
50	-8.17E-06	21.903	0.001426	-0.000833	6.48E-08	3.34E-05
51	-0.066915	21.902	-1.662	-0.000830	-1.02E-05	3.34E-05
52	0.062209	21.986	1.656	-0.000833	1.42E-05	3.08E-05
53	-4.52E-06	21.985	0.001253	-0.000822	1.39E-07	3.11E-05
54	-0.062498	21.985	-1.640	-0.000819	-1.39E-05	3.11E-05
55	0.058203	22.064	1.625	-0.000816	2.04E-05	2.88E-05
56	1.80E-06	22.064	0.000954	-0.000808	2.14E-07	2.89E-05
57	-0.058479	22.064	-1.610	-0.000802	-1.99E-05	2.90E-05
58	0.054900	22.139	1.577	-0.000787	3.51E-05	2.72E-05
59	1.11E-05	22.138	0.000524	-0.000790	2.92E-07	2.70E-05
60	-0.055159	22.138	-1.562	-0.000773	-3.45E-05	2.75E-05
61	0.053015	22.210	1.485	-0.000725	7.25E-05	2.65E-05
62	2.33E-05	22.209	-3.67E-05	-0.000784	3.67E-07	2.57E-05
63	-0.053251	22.210	-1.471	-0.000711	-7.18E-05	2.67E-05
64	0.052852	22.262	1.363	-0.000678	0.000106	2.61E-05
65	3.35E-05	22.261	-0.000558	-0.000687	4.47E-07	2.63E-05
66	-0.053067	22.261	-1.350	-0.000664	-0.000105	2.64E-05
67	0.053433	22.311	1.210	-0.000608	0.000122	2.62E-05
68	4.56E-05	22.311	-0.001172	-0.000602	5.14E-07	2.64E-05
69	-0.053624	22.311	-1.199	-0.000594	-0.000121	2.65E-05
70	0.054490	22.359	1.042	-0.000527	0.000130	2.66E-05
71	5.92E-05	22.359	-0.001864	-0.000517	5.70E-07	2.68E-05
72	-0.054653	22.359	-1.032	-0.000513	-0.000129	2.69E-05
73	0.055921	22.406	0.866219	-0.000440	0.000134	2.72E-05
74	7.41E-05	22.406	-0.002623	-0.000429	6.19E-07	2.75E-05
75	-0.056054	22.405	-0.857392	-0.000426	-0.000133	2.75E-05
76	0.057707	22.451	0.686018	-0.000350	0.000137	2.80E-05
77	9.03E-05	22.451	-0.003438	-0.000340	6.58E-07	2.83E-05
78	-0.057806	22.451	-0.678820	-0.000336	-0.000136	2.82E-05
79	0.059850	22.495	0.503071	-0.000259	0.000138	2.89E-05
80	0.000107	22.495	-0.004297	-0.000250	6.89E-07	2.93E-05
81	-0.059915	22.495	-0.497592	-0.000245	-0.000137	2.92E-05
82	0.062330	22.538	0.320041	-0.000168	0.000137	3.01E-05
83	0.000125	22.538	-0.005190	-0.000160	7.11E-07	3.05E-05
84	-0.062360	22.538	-0.316351	-0.000154	-0.000135	3.04E-05
85	0.065008	22.581	0.144609	-8.19E-05	0.000125	3.15E-05
86	0.000144	22.581	-0.006105	-7.69E-05	7.24E-07	3.18E-05
87	-0.065001	22.580	-0.142752	-6.78E-05	-0.000124	3.17E-05
88	0.067402	22.623	3.52E-16	-1.14E-05	-8.51E-05	3.28E-05
89	0.000163	22.623	-0.007032	-1.08E-05	7.29E-07	3.30E-05
90	-0.067359	22.622	-3.52E-16	2.65E-06	-8.36E-05	3.31E-05
91	0.069092	22.665	-0.085136	2.56E-05	5.42E-05	3.35E-05
92	0.000182	22.665	-0.007961	2.17E-05	7.29E-07	3.34E-05
93	-0.069012	22.664	0.083278	3.97E-05	-5.27E-05	3.38E-05
101	2.76E-20	4.46E-16	-4.24E-20	-1.81E-18	9.49E-23	5.66E-21
102	-2.79E-20	4.42E-16	-8.07E-20	-1.81E-18	-9.79E-23	2.98E-21

REACCIONES EN APOYOS:

NUDOS	FX [t]	FY [t]	FZ [t]	MX [tm]	MY [tm]	MZ [tm]
1	-0.047664	-6.809	-32.128			
3	0.047650	-6.809	32.122			
88	-0.022465	-7.540	-35.167			
90	0.022451	-7.540	35.160			
101	-0.002761	-44.560	0.004242	180.957	-0.009488	-0.566284
102	0.002789	-44.183	0.008075	181.283	0.009791	-0.297630
Sumas:	-1.86E-09	-117.441	2.99E-06			

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
1	0	0.257048	-6.195	-17.739	-13.312	10.196	0.414642
1	1.275	0.257048	-4.793	-17.739	-11.068	-12.424	-6.636
2	0	-1.451	-4.925	-13.613	-15.344	6.492	-4.813
2	1.275	-1.451	-3.522	-13.613	-13.100	-10.867	-10.244
3	0	-3.069	-4.318	-13.141	-14.833	6.970	-8.581
3	1.275	-3.069	-2.915	-13.141	-12.590	-9.787	-13.238
4	0	-4.498	-3.792	-13.029	-14.330	7.357	-11.843
4	1.275	-4.498	-2.389	-13.029	-12.086	-9.258	-15.829
5	0	-5.707	-3.507	-12.885	-13.961	7.420	-14.576
5	1.275	-5.707	-2.104	-12.885	-11.717	-9.011	-18.199
6	0	-6.714	-2.689	-12.732	-13.618	7.278	-17.200
6	1.275	-6.714	-1.287	-12.732	-11.374	-8.958	-19.780
7	0	-7.546	-2.383	-12.658	-13.164	6.921	-18.952
7	1.275	-7.546	-0.979935	-12.658	-10.920	-9.220	-21.140
8	0	-8.211	-1.497	-12.805	-12.321	6.097	-20.473
8	1.275	-8.211	-0.094349	-12.805	-10.078	-10.231	-21.533
9	0	-8.674	-1.419	-13.273	-10.487	4.071	-21.057
9	1.275	-8.674	-0.016702	-13.273	-8.243	-12.855	-22.017
10	0	-8.924	-1.950	-12.939	-7.032	-0.714342	-21.533
10	1.275	-8.924	-0.547282	-12.939	-4.788	-17.215	-23.170
11	0	-9.725	-3.693	0.556185	-7.217	-8.019	-22.123
11	1.700	-9.725	-1.823	0.556185	-4.225	-7.074	-26.872
12	0	-11.179	-3.505	0.512923	-3.463	-3.388	-25.510
12	1.700	-11.179	-1.635	0.512923	-0.470785	-2.516	-29.940
13	0	-12.128	-2.739	0.203372	-1.962	-1.411	-29.075
13	1.700	-12.128	-0.868709	0.203372	1.030	-1.065	-32.202

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
14	0	-12.763	-1.982	0.306986	-1.337	-1.036	-31.628
14	1.700	-12.763	-0.112042	0.306986	1.655	-0.514007	-33.468
15	0	-13.097	-1.300	0.567498	-0.941405	-1.153	-33.144
15	1.700	-13.097	0.570685	0.567498	2.050	-0.187928	-33.824
16	0	-13.110	-0.494122	0.861471	-0.587444	-1.403	-33.857
16	1.700	-13.110	1.376	0.861471	2.404	0.061862	-33.167
17	0	-12.804	0.221752	1.123	-0.192520	-1.729	-33.579
17	1.700	-12.804	2.092	1.123	2.799	0.179832	-31.671
18	0	-12.196	1.073	1.228	0.429128	-2.278	-32.440
18	1.700	-12.196	2.944	1.228	3.421	-0.189469	-29.086
19	0	-11.261	1.603	0.925605	1.916	-3.717	-30.108
19	1.700	-11.261	3.473	0.925605	4.908	-2.143	-25.852
20	0	-9.857	1.449	0.891126	5.627	-8.230	-27.103
20	1.700	-9.857	3.319	0.891126	8.619	-6.714	-23.110
21	0	-9.094	0.551134	14.261	6.162	-17.992	-23.876
21	1.275	-9.094	1.954	14.261	8.406	0.193350	-22.324
22	0	-8.724	0.194010	14.590	9.584	-13.663	-22.718
22	1.275	-8.724	1.597	14.590	11.828	4.943	-21.621
23	0	-8.116	1.037	14.132	11.401	-11.058	-22.208
23	1.275	-8.116	2.440	14.132	13.645	6.963	-20.036
24	0	-7.328	1.483	14.005	12.231	-10.041	-20.885
24	1.275	-7.328	2.886	14.005	14.475	7.818	-18.144
25	0	-6.395	2.117	14.138	12.654	-9.728	-19.053
25	1.275	-6.395	3.520	14.138	14.898	8.301	-15.504
26	0	-5.329	2.807	14.476	12.887	-9.592	-16.646
26	1.275	-5.329	4.210	14.476	15.130	8.867	-12.217
27	0	-4.152	3.419	15.175	12.871	-9.201	-13.560
27	1.275	-4.152	4.821	15.175	15.115	10.150	-8.351
28	0	-2.922	3.944	16.813	12.184	-7.682	-9.680
28	1.275	-2.922	5.346	16.813	14.428	13.759	-3.802
29	0	-1.749	4.845	20.725	9.726	-2.571	-5.007
29	1.275	-1.749	6.248	20.725	11.970	23.858	2.021
30	0	-0.045312	-1.364	-7.144	4.583	12.784	0.966550
30	1.275	-0.045312	0.038741	-7.144	6.827	3.673	0.076693
31	0	0.001098	-1.799	-0.001566	-32.022	-0.000403	0.859602

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
31	1.275	0.001098	-1.799	-0.001566	-32.022	-0.002400	-1.434
32	0	0.004458	-2.960	-0.002362	-42.213	-0.002970	1.649
32	1.275	0.004458	-2.960	-0.002362	-42.213	-0.005982	-2.126
33	0	0.004806	-2.764	-0.002508	-42.879	-0.006229	0.960161
33	1.275	0.004806	-2.764	-0.002508	-42.879	-0.009427	-2.565
34	0	0.003842	-2.323	-0.002516	-42.088	-0.009511	0.236510
34	1.275	0.003842	-2.323	-0.002516	-42.088	-0.012719	-2.726
35	0	0.002563	-1.881	-0.002509	-41.160	-0.012734	-0.333443
35	1.275	0.002563	-1.881	-0.002509	-41.160	-0.015932	-2.733
36	0	0.001384	-1.574	-0.002508	-40.215	-0.015900	-0.745932
36	1.275	0.001384	-1.574	-0.002508	-40.215	-0.019099	-2.753
37	0	0.000344	-1.359	-0.002544	-39.175	-0.018991	-1.110
37	1.275	0.000344	-1.359	-0.002544	-39.175	-0.022235	-2.842
38	0	-0.000675	-1.127	-0.002756	-38.027	-0.021968	-1.556
38	1.275	-0.000675	-1.127	-0.002756	-38.027	-0.025483	-2.994
39	0	-0.001711	-0.352712	-0.003569	-37.575	-0.024973	-2.208
39	1.275	-0.001711	-0.352712	-0.003569	-37.575	-0.029525	-2.658
40	0	-0.002413	2.189	-0.005615	-43.575	-0.029107	-2.473
40	1.275	-0.002413	2.189	-0.005615	-43.575	-0.036268	0.318474
41	0	0.001638	-2.843	-0.002174	2.424	-0.019779	0.056496
41	1.700	0.001638	-2.843	-0.002174	2.424	-0.023475	-4.778
42	0	0.001920	-1.253	-0.000806	-1.920	-0.023235	-1.860
42	1.700	0.001920	-1.253	-0.000806	-1.920	-0.024605	-3.990
43	0	0.001623	-0.925024	-0.000463	-0.691637	-0.024351	-2.162
43	1.700	0.001623	-0.925024	-0.000463	-0.691637	-0.025137	-3.735
44	0	0.001254	-0.631979	-0.000423	0.635512	-0.025052	-2.525
44	1.700	0.001254	-0.631979	-0.000423	0.635512	-0.025771	-3.599
45	0	0.000946	-0.252067	-0.000424	1.794	-0.025750	-2.932
45	1.700	0.000946	-0.252067	-0.000424	1.794	-0.026472	-3.360
46	0	0.000735	0.141036	-0.000426	2.902	-0.026471	-3.270
46	1.700	0.000735	0.141036	-0.000426	2.902	-0.027196	-3.030
47	0	0.000739	0.520331	-0.000427	4.059	-0.027212	-3.525
47	1.700	0.000739	0.520331	-0.000427	4.059	-0.027938	-2.640
48	0	0.001224	0.844327	-0.000391	5.385	-0.028001	-3.716
48	1.700	0.001224	0.844327	-0.000391	5.385	-0.028665	-2.280

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
49	0	0.002449	1.412	-9.34E-05	6.614	-0.028836	-4.103
49	1.700	0.002449	1.412	-9.34E-05	6.614	-0.028994	-1.701
50	0	0.003833	3.718	0.000962	2.320	-0.029015	-4.868
50	1.700	0.003833	3.718	0.000962	2.320	-0.027380	1.454
51	0	-0.000886	-0.427028	0.007244	47.695	-0.044692	-1.967
51	1.275	-0.000886	-0.427028	0.007244	47.695	-0.035454	-2.512
52	0	-0.001226	0.969147	0.004717	41.783	-0.036075	-3.113
52	1.275	-0.001226	0.969147	0.004717	41.783	-0.030060	-1.878
53	0	-0.001190	1.337	0.003747	42.230	-0.030709	-3.007
53	1.275	-0.001190	1.337	0.003747	42.230	-0.025931	-1.303
54	0	-0.001004	1.527	0.003499	43.320	-0.026259	-2.838
54	1.275	-0.001004	1.527	0.003499	43.320	-0.021797	-0.890801
55	0	-0.000712	1.712	0.003457	44.185	-0.021919	-2.709
55	1.275	-0.000712	1.712	0.003457	44.185	-0.017511	-0.525607
56	0	-0.000236	1.952	0.003448	44.615	-0.017521	-2.583
56	1.275	-0.000236	1.952	0.003448	44.615	-0.013124	-0.093119
57	0	0.000522	2.189	0.003401	44.093	-0.013035	-2.374
57	1.275	0.000522	2.189	0.003401	44.093	-0.008698	0.417213
58	0	0.001506	2.223	0.003171	41.159	-0.008459	-1.952
58	1.275	0.001506	2.223	0.003171	41.159	-0.004416	0.882843
59	0	0.002165	1.853	0.002377	32.674	-0.004004	-1.341
59	1.275	0.002165	1.853	0.002377	32.674	-0.000973	1.021
60	0	0.000864	0.722778	0.000770	16.044	-0.000852	-0.844173
60	1.275	0.000864	0.722778	0.000770	16.044	0.000130	0.077518
61	0	-0.258016	-5.516	17.735	-12.189	-10.196	0.387450
61	1.275	-0.258016	-5.516	17.735	-12.189	12.420	-6.647
62	0	1.446	-4.261	13.611	-14.221	-6.496	-4.841
62	1.275	1.446	-4.261	13.611	-14.221	10.860	-10.274
63	0	3.065	-3.876	13.138	-13.711	-6.977	-8.502
63	1.275	3.065	-3.876	13.138	-13.711	9.777	-13.444
64	0	4.494	-3.175	13.027	-13.208	-7.367	-11.908
64	1.275	4.494	-3.175	13.027	-13.208	9.244	-15.956
65	0	5.705	-2.750	12.882	-12.839	-7.434	-14.755
65	1.275	5.705	-2.750	12.882	-12.839	8.994	-18.262
66	0	6.713	-2.218	12.729	-12.496	-7.295	-17.212
66	1.275	6.713	-2.218	12.729	-12.496	8.937	-20.040

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
67	0	7.545	-1.598	12.655	-12.042	-6.942	-19.173
67	1.275	7.545	-1.598	12.655	-12.042	9.196	-21.211
68	0	8.212	-0.976662	12.802	-11.200	-6.121	-20.538
68	1.275	8.212	-0.976662	12.802	-11.200	10.204	-21.783
69	0	8.676	-0.835786	13.272	-9.366	-4.099	-21.182
69	1.275	8.676	-0.835786	13.272	-9.366	12.826	-22.248
70	0	8.927	-1.088	12.940	-5.910	0.684070	-21.871
70	1.275	8.927	-1.088	12.940	-5.910	17.185	-23.258
71	0	9.726	-2.853	-0.554877	-5.720	7.992	-22.318
71	1.700	9.726	-2.853	-0.554877	-5.720	7.048	-27.169
72	0	11.180	-2.755	-0.513055	-1.967	3.363	-25.635
72	1.700	11.180	-2.755	-0.513055	-1.967	2.491	-30.318
73	0	12.129	-1.921	-0.203731	-0.466466	1.385	-29.265
73	1.700	12.129	-1.921	-0.203731	-0.466466	1.039	-32.531
74	0	12.765	-1.140	-0.307379	0.158759	1.009	-31.843
74	1.700	12.765	-1.140	-0.307379	0.158759	0.486657	-33.781
75	0	13.099	-0.465546	-0.567979	0.554528	1.125	-33.356
75	1.700	13.099	-0.465546	-0.567979	0.554528	0.159707	-34.148
76	0	13.112	0.305633	-0.861997	0.908509	1.375	-34.043
76	1.700	13.112	0.305633	-0.861997	0.908509	-0.090896	-33.523
77	0	12.806	1.070	-1.123	1.303	1.700	-33.808
77	1.700	12.806	1.070	-1.123	1.303	-0.209498	-31.989
78	0	12.198	1.877	-1.229	1.925	2.249	-32.628
78	1.700	12.198	1.877	-1.229	1.925	0.158882	-29.437
79	0	11.261	2.544	-0.926376	3.412	3.687	-30.393
79	1.700	11.261	2.544	-0.926376	3.412	2.112	-26.068
80	0	9.856	2.249	-0.892895	7.123	8.198	-27.224
80	1.700	9.856	2.249	-0.892895	7.123	6.680	-23.400
81	0	9.094	1.168	-14.261	7.284	17.955	-24.021
81	1.275	9.094	1.168	-14.261	7.284	-0.230807	-22.532
82	0	8.726	1.057	-14.588	10.706	13.626	-23.014
82	1.275	8.726	1.057	-14.588	10.706	-4.976	-21.667
83	0	8.117	1.481	-14.128	12.523	11.025	-22.232
83	1.275	8.117	1.481	-14.128	12.523	-6.991	-20.344
84	0	7.328	2.261	-14.002	13.353	10.013	-21.119

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
84	1.275	7.328	2.261	-14.002	13.353	-7.842	-18.235
85	0	6.395	2.776	-14.135	13.776	9.705	-19.209
85	1.275	6.395	2.776	-14.135	13.776	-8.320	-15.669
86	0	5.329	3.371	-14.472	14.008	9.573	-16.738
86	1.275	5.329	3.371	-14.472	14.008	-8.881	-12.439
87	0	4.151	3.953	-15.171	13.993	9.187	-13.623
87	1.275	4.151	3.953	-15.171	13.993	-10.159	-8.583
88	0	2.920	4.608	-16.809	13.306	7.672	-9.802
88	1.275	2.920	4.608	-16.809	13.306	-13.763	-3.926
89	0	1.746	5.724	-20.720	10.848	2.566	-5.221
89	1.275	1.746	5.724	-20.720	10.848	-23.857	2.077
90	0	0.044485	-0.699886	7.144	5.705	-12.783	0.956668
90	1.275	0.044485	-0.699886	7.144	5.705	-3.673	0.064170
91	0	0.573532	0.145370	-14.387	10.197	13.317	-0.173638
91	2.000	0.573532	0.145370	-14.387	10.197	-15.456	0.117090
92	0	-1.234	0.144303	-14.386	10.196	16.576	-0.107646
92	2.000	-1.234	0.144303	-14.386	10.196	-12.195	0.180949
93	0	-0.110432	1.625	-4.158	18.917	4.312	-1.773
93	2.000	-0.110432	1.625	-4.158	18.917	-4.005	1.477
94	0	-1.257	1.622	-4.158	18.917	6.246	-1.404
94	2.000	-1.257	1.622	-4.158	18.917	-2.069	1.839
95	0	-0.787270	1.609	-0.504676	17.838	1.767	-1.644
95	2.000	-0.787270	1.609	-0.504676	17.838	0.757855	1.574
96	0	-0.609155	1.608	-0.504521	17.838	1.485	-1.503
96	2.000	-0.609155	1.608	-0.504521	17.838	0.475685	1.714
97	0	-0.940450	1.426	-0.140384	17.145	1.769	-1.410
97	2.000	-0.940450	1.426	-0.140384	17.145	1.489	1.442
98	0	-0.466662	1.427	-0.140384	17.145	0.754221	-1.371
98	2.000	-0.466662	1.427	-0.140384	17.145	0.473463	1.483
99	0	-0.911951	1.206	-0.168515	16.679	1.898	-1.174
99	2.000	-0.911951	1.206	-0.168515	16.679	1.561	1.238
100	0	-0.498723	1.207	-0.168554	16.679	0.681579	-1.166
100	2.000	-0.498723	1.207	-0.168554	16.679	0.344484	1.248
101	0	-0.862079	1.004	-0.173187	16.290	1.921	-0.965611
101	2.000	-0.862079	1.004	-0.173187	16.290	1.574	1.042

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
102	0	-0.548596	1.005	-0.173233	16.290	0.668568	-0.969402
102	2.000	-0.548596	1.005	-0.173233	16.290	0.322115	1.040
103	0	-0.808644	0.829978	-0.090592	15.880	1.806	-0.790177
103	2.000	-0.808644	0.829978	-0.090592	15.880	1.625	0.869712
104	0	-0.594906	0.831015	-0.090584	15.880	0.618085	-0.797282
104	2.000	-0.594906	0.831015	-0.090584	15.880	0.436924	0.864681
105	0	-0.815769	0.668100	0.133489	15.318	1.415	-0.643247
105	2.000	-0.815769	0.668100	0.133489	15.318	1.682	0.692900
106	0	-0.584219	0.669121	0.133684	15.318	0.560628	-0.620417
106	2.000	-0.584219	0.669121	0.133684	15.318	0.827986	0.717772
107	0	-1.090	0.472247	0.459646	14.303	0.419952	-0.511476
107	2.000	-1.090	0.472247	0.459646	14.303	1.339	0.432980
108	0	-0.302796	0.473300	0.460403	14.304	0.902249	-0.360670
108	2.000	-0.302796	0.473300	0.460403	14.304	1.823	0.585892
109	0	-1.963	0.243654	-0.339198	12.142	-1.203	-0.420814
109	2.000	-1.963	0.243654	-0.339198	12.142	-1.882	0.066474
110	0	0.573532	0.244397	-0.337167	12.142	4.121	0.005700
110	2.000	0.573532	0.244397	-0.337167	12.142	3.447	0.494474
111	0	-3.196	0.531023	-13.509	9.196	2.448	-0.958067
111	2.000	-3.196	0.531023	-13.509	9.196	-24.569	0.103936
112	0	1.567	0.529667	-13.508	9.193	27.183	0.011690
112	2.000	1.567	0.529667	-13.508	9.193	0.168378	1.071
113	0	-1.734	1.454	0.014258	3.685	-0.733877	-1.408
113	2.000	-1.734	1.454	0.014258	3.685	-0.705362	1.500
114	0	-0.137743	1.454	0.012905	3.685	3.697	-1.328
114	2.000	-0.137743	1.454	0.012905	3.685	3.723	1.580
115	0	-1.092	0.955414	0.290511	1.105	1.510	-0.898524
115	2.000	-1.092	0.955414	0.290511	1.105	2.091	1.012
116	0	-0.778958	0.955702	0.290108	1.105	0.899136	-0.840398
116	2.000	-0.778958	0.955702	0.290108	1.105	1.479	1.071
117	0	-1.083	0.632617	-0.116246	0.029543	2.379	-0.557715
117	2.000	-1.083	0.632617	-0.116246	0.029543	2.146	0.707469
118	0	-0.788458	0.632986	-0.116306	0.029629	0.843411	-0.535450
118	2.000	-0.788458	0.632986	-0.116306	0.029629	0.610808	0.730472
119	0	-1.126	0.328717	-0.267163	-0.638818	2.601	-0.224618
119	2.000	-1.126	0.328717	-0.267163	-0.638818	2.067	0.432790

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
120	0	-0.745710	0.329021	-0.267145	-0.638797	0.922243	-0.260675
120	2.000	-0.745710	0.329021	-0.267145	-0.638797	0.387974	0.397341
121	0	-1.140	0.007363	-0.294273	-1.215	2.636	0.124608
121	2.000	-1.140	0.007363	-0.294273	-1.215	2.048	0.139333
122	0	-0.731461	0.007584	-0.294250	-1.215	0.941641	0.032714
122	2.000	-0.731461	0.007584	-0.294250	-1.215	0.353165	0.047881
123	0	-1.121	-0.311292	-0.254960	-1.791	2.588	0.469371
123	2.000	-1.121	-0.311292	-0.254960	-1.791	2.078	-0.153187
124	0	-0.750460	-0.311305	-0.254969	-1.791	0.910957	0.325160
124	2.000	-0.750460	-0.311305	-0.254969	-1.791	0.401040	-0.297426
125	0	-1.097	-0.609812	-0.093634	-2.458	2.355	0.782352
125	2.000	-1.097	-0.609812	-0.093634	-2.458	2.168	-0.437223
126	0	-0.778958	-0.610301	-0.093647	-2.458	0.821407	0.609282
126	2.000	-0.778958	-0.610301	-0.093647	-2.458	0.634120	-0.611272
127	0	-1.225	-0.929083	0.321582	-3.528	1.484	1.048
127	2.000	-1.225	-0.929083	0.321582	-3.528	2.127	-0.810223
128	0	-0.655465	-0.930310	0.321266	-3.528	0.862448	0.982828
128	2.000	-0.655465	-0.930310	0.321266	-3.528	1.505	-0.877718
129	0	-2.099	-1.403	0.062600	-6.086	-0.744693	1.267
129	2.000	-2.099	-1.403	0.062600	-6.086	-0.619497	-1.539
130	0	0.208989	-1.404	0.061524	-6.086	3.610	1.712
130	2.000	0.208989	-1.404	0.061524	-6.086	3.733	-1.096
131	0	-2.880	-1.031	-13.352	-11.278	2.443	0.716154
131	2.000	-2.880	-1.031	-13.352	-11.278	-24.260	-1.345
132	0	1.234	-1.029	-13.350	-11.276	26.873	1.460
132	2.000	1.234	-1.029	-13.350	-11.276	0.173629	-0.597240
133	0	-1.411	-0.375682	-0.321859	-13.857	-1.186	0.427272
133	2.000	-1.411	-0.375682	-0.321859	-13.857	-1.830	-0.324063
134	0	0.007125	-0.375293	-0.319356	-13.858	4.069	0.397018
134	2.000	0.007125	-0.375293	-0.319356	-13.858	3.430	-0.353538
135	0	-0.883453	-0.599085	0.470907	-16.001	0.413575	0.668896
135	2.000	-0.883453	-0.599085	0.470907	-16.001	1.355	-0.529227
136	0	-0.520097	-0.599103	0.471879	-16.002	0.885666	0.602285
136	2.000	-0.520097	-0.599103	0.471879	-16.002	1.829	-0.595872
137	0	-0.783708	-0.785891	0.141954	-17.005	1.397	0.855320

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
137	2.000	-0.783708	-0.785891	0.141954	-17.005	1.681	-0.716399
138	0	-0.616279	-0.786071	0.142224	-17.005	0.561017	0.789391
138	2.000	-0.616279	-0.786071	0.142224	-17.005	0.845453	-0.782689
139	0	-0.808644	-0.935279	-0.114351	-17.547	1.801	1.010
139	2.000	-0.808644	-0.935279	-0.114351	-17.547	1.572	-0.860884
140	0	-0.594906	-0.935572	-0.114305	-17.547	0.670946	0.933795
140	2.000	-0.594906	-0.935572	-0.114305	-17.547	0.442346	-0.937274
141	0	-0.826456	-1.072	-0.316041	-17.894	1.989	1.152
141	2.000	-0.826456	-1.072	-0.316041	-17.894	1.357	-0.992812
142	0	-0.580656	-1.073	-0.316046	-17.894	0.885708	1.066
142	2.000	-0.580656	-1.073	-0.316046	-17.894	0.253641	-1.080
143	0	-0.812206	-1.191	-0.675352	-18.069	2.234	1.274
143	2.000	-0.812206	-1.191	-0.675352	-18.069	0.883357	-1.108
144	0	-0.598468	-1.191	-0.675304	-18.069	1.359	1.181
144	2.000	-0.598468	-1.191	-0.675304	-18.069	0.008882	-1.202
145	0	-0.737398	-1.263	-1.613	-17.832	2.905	1.348
145	2.000	-0.737398	-1.263	-1.613	-17.832	-0.321937	-1.177
146	0	-0.676839	-1.264	-1.613	-17.832	2.564	1.250
146	2.000	-0.676839	-1.264	-1.613	-17.832	-0.661769	-1.277
147	0	-0.516535	-1.251	-3.887	-16.330	4.676	1.339
147	2.000	-0.516535	-1.251	-3.887	-16.330	-3.098	-1.163
148	0	-0.901264	-1.252	-3.887	-16.330	5.340	1.236
148	2.000	-0.901264	-1.252	-3.887	-16.330	-2.433	-1.267
149	0	-0.138930	-1.123	-7.270	-11.075	7.365	1.188
149	2.000	-0.138930	-1.123	-7.270	-11.075	-7.174	-1.058
150	0	-1.279	-1.122	-7.268	-11.074	9.415	1.131
150	2.000	-1.279	-1.122	-7.268	-11.074	-5.121	-1.113
151	0	0.005343	-0.188180	-7.142	-3.673	6.824	0.185108
151	2.000	0.005343	-0.188180	-7.142	-3.673	-7.459	-0.191236
152	0	-0.705337	-0.187299	-7.141	-3.673	8.580	0.199833
152	2.000	-0.705337	-0.187299	-7.141	-3.673	-5.702	-0.174751
201	0	-0.004242	-44.559	0.002761	0.566284	-0.009488	180.948
201	10.255	-0.004242	-9.796	0.002761	0.566284	0.018824	-97.746
202	0	-0.008075	-44.183	-0.002789	0.297630	0.009791	181.273
202	10.595	-0.008075	-8.267	-0.002789	0.297630	-0.019761	-96.568

CARGAS: '' Ejec. "0001"

Hipótesis	Factor	Etapa	Título
31	1.0000		Viento transversal 2

DESPLAZAMIENTOS:

NUDOS	DX [mm]	DY [mm]	DZ [mm]	RX [rad]	RY [rad]	RZ [rad]
1	-0.142963	-20.428	-3.21E-16	1.28E-05	0.000148	-7.29E-05
2	0.000156	-20.429	-0.007030	4.03E-05	-6.55E-07	-7.17E-05
3	0.143006	-20.429	3.21E-16	2.69E-05	-0.000149	-7.26E-05
4	-0.139144	-20.521	-0.194637	9.20E-05	0.000143	-7.11E-05
5	0.000140	-20.522	-0.006196	0.000105	-6.52E-07	-7.03E-05
6	0.139152	-20.522	0.196313	0.000106	-0.000145	-7.08E-05
7	-0.135040	-20.614	-0.379263	0.000184	0.000135	-6.88E-05
8	0.000124	-20.614	-0.005369	0.000191	-6.43E-07	-6.84E-05
9	0.135014	-20.615	0.382597	0.000198	-0.000137	-6.85E-05
10	-0.130653	-20.706	-0.555050	0.000273	0.000130	-6.64E-05
11	0.000109	-20.706	-0.004558	0.000277	-6.28E-07	-6.62E-05
12	0.130593	-20.707	0.560007	0.000288	-0.000131	-6.61E-05
13	-0.125972	-20.797	-0.725163	0.000359	0.000126	-6.39E-05
14	9.37E-05	-20.798	-0.003771	0.000362	-6.06E-07	-6.37E-05
15	0.125880	-20.798	0.731694	0.000373	-0.000128	-6.36E-05
16	-0.121032	-20.887	-0.891074	0.000443	0.000124	-6.13E-05
17	7.91E-05	-20.888	-0.003017	0.000446	-5.77E-07	-6.11E-05
18	0.120909	-20.888	0.899114	0.000457	-0.000125	-6.10E-05
19	-0.115883	-20.976	-1.053	0.000524	0.000120	-5.86E-05
20	6.51E-05	-20.976	-0.002303	0.000527	-5.42E-07	-5.84E-05
21	0.115731	-20.977	1.063	0.000538	-0.000122	-5.83E-05
22	-0.110592	-21.063	-1.210	0.000602	0.000116	-5.58E-05
23	5.19E-05	-21.064	-0.001638	0.000606	-5.00E-07	-5.57E-05
24	0.110413	-21.064	1.221	0.000616	-0.000117	-5.56E-05
25	-0.105261	-21.149	-1.360	0.000675	0.000109	-5.32E-05
26	3.96E-05	-21.149	-0.001029	0.000683	-4.53E-07	-5.27E-05
27	0.105059	-21.150	1.372	0.000689	-0.000109	-5.29E-05
28	-0.100101	-21.233	-1.495	0.000736	9.21E-05	-5.07E-05
29	2.84E-05	-21.233	-0.000486	0.000759	-3.98E-07	-4.97E-05
30	0.099878	-21.234	1.508	0.000750	-9.29E-05	-5.04E-05
31	-0.095511	-21.316	-1.597	0.000774	5.85E-05	-4.86E-05
32	1.85E-05	-21.315	-1.87E-05	0.000848	-3.33E-07	-4.73E-05
33	0.095270	-21.317	1.611	0.000788	-5.92E-05	-4.84E-05
34	-0.090490	-21.423	-1.664	0.000823	2.08E-05	-4.57E-05
35	8.61E-06	-21.423	0.000499	0.000841	-2.75E-07	-4.55E-05
36	0.090228	-21.424	1.679	0.000838	-2.13E-05	-4.55E-05
37	-0.085808	-21.527	-1.686	0.000840	6.10E-06	-4.33E-05
38	8.64E-07	-21.528	0.000912	0.000846	-2.11E-07	-4.31E-05
39	0.085530	-21.528	1.702	0.000855	-6.52E-06	-4.30E-05
40	-0.081111	-21.627	-1.691	0.000844	2.46E-08	-4.08E-05
41	-4.75E-06	-21.628	0.001215	0.000848	-1.45E-07	-4.06E-05
42	0.080821	-21.628	1.707	0.000859	-3.13E-07	-4.05E-05
43	-0.076343	-21.723	-1.687	0.000843	-3.73E-06	-3.83E-05
44	-8.18E-06	-21.724	0.001403	0.000846	-7.67E-08	-3.82E-05
45	0.076046	-21.724	1.704	0.000857	3.57E-06	-3.80E-05

DESPLAZAMIENTOS:

NUDOS	DX [mm]	DY [mm]	DZ [mm]	RX [rad]	RY [rad]	RZ [rad]
46	-0.071574	-21.815	-1.677	0.000838	-6.95E-06	-3.58E-05
47	-9.35E-06	-21.815	0.001475	0.000841	-6.93E-09	-3.58E-05
48	0.071274	-21.816	1.694	0.000852	6.94E-06	-3.55E-05
49	-0.066915	-21.902	-1.662	0.000830	-1.02E-05	-3.34E-05
50	-8.17E-06	-21.903	0.001426	0.000833	6.48E-08	-3.34E-05
51	0.066619	-21.903	1.679	0.000844	1.03E-05	-3.31E-05
52	-0.062498	-21.985	-1.640	0.000819	-1.39E-05	-3.11E-05
53	-4.52E-06	-21.985	0.001253	0.000822	1.39E-07	-3.11E-05
54	0.062209	-21.986	1.656	0.000833	1.42E-05	-3.08E-05
55	-0.058479	-22.064	-1.610	0.000802	-1.99E-05	-2.90E-05
56	1.80E-06	-22.064	0.000954	0.000808	2.14E-07	-2.89E-05
57	0.058203	-22.064	1.625	0.000816	2.04E-05	-2.88E-05
58	-0.055159	-22.138	-1.562	0.000773	-3.45E-05	-2.75E-05
59	1.11E-05	-22.138	0.000524	0.000790	2.92E-07	-2.70E-05
60	0.054900	-22.139	1.577	0.000787	3.51E-05	-2.72E-05
61	-0.053251	-22.210	-1.471	0.000711	-7.18E-05	-2.67E-05
62	2.33E-05	-22.209	-3.67E-05	0.000784	3.67E-07	-2.57E-05
63	0.053015	-22.210	1.485	0.000725	7.25E-05	-2.65E-05
64	-0.053067	-22.261	-1.350	0.000664	-0.000105	-2.64E-05
65	3.35E-05	-22.261	-0.000558	0.000687	4.47E-07	-2.63E-05
66	0.052852	-22.262	1.363	0.000678	0.000106	-2.61E-05
67	-0.053624	-22.311	-1.199	0.000594	-0.000121	-2.65E-05
68	4.56E-05	-22.311	-0.001172	0.000602	5.14E-07	-2.64E-05
69	0.053433	-22.311	1.210	0.000608	0.000122	-2.62E-05
70	-0.054653	-22.359	-1.032	0.000513	-0.000129	-2.69E-05
71	5.92E-05	-22.359	-0.001864	0.000517	5.70E-07	-2.68E-05
72	0.054490	-22.359	1.042	0.000527	0.000130	-2.66E-05
73	-0.056054	-22.405	-0.857392	0.000426	-0.000133	-2.75E-05
74	7.41E-05	-22.406	-0.002623	0.000429	6.19E-07	-2.75E-05
75	0.055921	-22.406	0.866219	0.000440	0.000134	-2.72E-05
76	-0.057806	-22.451	-0.678820	0.000336	-0.000136	-2.82E-05
77	9.03E-05	-22.451	-0.003438	0.000340	6.58E-07	-2.83E-05
78	0.057707	-22.451	0.686018	0.000350	0.000137	-2.80E-05
79	-0.059915	-22.495	-0.497592	0.000245	-0.000137	-2.92E-05
80	0.000107	-22.495	-0.004297	0.000250	6.89E-07	-2.93E-05
81	0.059850	-22.495	0.503071	0.000259	0.000138	-2.89E-05
82	-0.062360	-22.538	-0.316351	0.000154	-0.000135	-3.04E-05
83	0.000125	-22.538	-0.005190	0.000160	7.11E-07	-3.05E-05
84	0.062330	-22.538	0.320041	0.000168	0.000137	-3.01E-05
85	-0.065001	-22.580	-0.142752	6.78E-05	-0.000124	-3.17E-05
86	0.000144	-22.581	-0.006105	7.69E-05	7.24E-07	-3.18E-05
87	0.065008	-22.581	0.144609	8.19E-05	0.000125	-3.15E-05
88	-0.067359	-22.622	-3.52E-16	-2.65E-06	-8.36E-05	-3.31E-05
89	0.000163	-22.623	-0.007032	1.08E-05	7.29E-07	-3.30E-05
90	0.067402	-22.623	3.52E-16	1.14E-05	8.51E-05	-3.28E-05
91	-0.069012	-22.664	0.083278	-3.97E-05	-5.27E-05	-3.38E-05
92	0.000182	-22.665	-0.007961	-2.17E-05	7.29E-07	-3.34E-05
93	0.069092	-22.665	-0.085136	-2.56E-05	5.42E-05	-3.35E-05
101	2.76E-20	-4.46E-16	-4.24E-20	1.81E-18	9.49E-23	-5.66E-21
102	-2.79E-20	-4.42E-16	-8.07E-20	1.81E-18	-9.79E-23	-2.98E-21

REACCIONES EN APOYOS:

NUDOS	FX [t]	FY [t]	FZ [t]	MX [tm]	MY [tm]	MZ [tm]
1	0.047650	6.809	32.122			
3	-0.047664	6.809	-32.128			
88	0.022451	7.540	35.160			
90	-0.022465	7.540	-35.167			
101	-0.002761	44.560	0.004242	-180.957	-0.009488	0.566284
102	0.002789	44.183	0.008075	-181.283	0.009791	0.297630
Sumas:	-1.86E-09	117.441	2.99E-06			

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
1	0	-0.258016	5.516	17.735	12.189	-10.196	-0.387450
1	1.275	-0.258016	5.516	17.735	12.189	12.420	6.647
2	0	1.446	4.261	13.611	14.221	-6.496	4.841
2	1.275	1.446	4.261	13.611	14.221	10.860	10.274
3	0	3.065	3.876	13.138	13.711	-6.977	8.502
3	1.275	3.065	3.876	13.138	13.711	9.777	13.444
4	0	4.494	3.175	13.027	13.208	-7.367	11.908
4	1.275	4.494	3.175	13.027	13.208	9.244	15.956
5	0	5.705	2.750	12.882	12.839	-7.434	14.755
5	1.275	5.705	2.750	12.882	12.839	8.994	18.262
6	0	6.713	2.218	12.729	12.496	-7.295	17.212
6	1.275	6.713	2.218	12.729	12.496	8.937	20.040
7	0	7.545	1.598	12.655	12.042	-6.942	19.173
7	1.275	7.545	1.598	12.655	12.042	9.196	21.211
8	0	8.212	0.976662	12.802	11.200	-6.121	20.538
8	1.275	8.212	0.976662	12.802	11.200	10.204	21.783
9	0	8.676	0.835786	13.272	9.366	-4.099	21.182
9	1.275	8.676	0.835786	13.272	9.366	12.826	22.248
10	0	8.927	1.088	12.940	5.910	-0.684070	21.871
10	1.275	8.927	1.088	12.940	5.910	17.185	23.258
11	0	9.726	2.853	-0.554877	5.720	7.992	22.318
11	1.700	9.726	2.853	-0.554877	5.720	7.048	27.169
12	0	11.180	2.755	-0.513055	1.967	3.363	25.635
12	1.700	11.180	2.755	-0.513055	1.967	2.491	30.318
13	0	12.129	1.921	-0.203731	0.466466	1.385	29.265
13	1.700	12.129	1.921	-0.203731	0.466466	1.039	32.531

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
14	0	12.765	1.140	-0.307379	-0.158759	1.009	31.843
14	1.700	12.765	1.140	-0.307379	-0.158759	0.486657	33.781
15	0	13.099	0.465546	-0.567979	-0.554528	1.125	33.356
15	1.700	13.099	0.465546	-0.567979	-0.554528	0.159707	34.148
16	0	13.112	-0.305633	-0.861997	-0.908509	1.375	34.043
16	1.700	13.112	-0.305633	-0.861997	-0.908509	-0.090896	33.523
17	0	12.806	-1.070	-1.123	-1.303	1.700	33.808
17	1.700	12.806	-1.070	-1.123	-1.303	-0.209498	31.989
18	0	12.198	-1.877	-1.229	-1.925	2.249	32.628
18	1.700	12.198	-1.877	-1.229	-1.925	0.158882	29.437
19	0	11.261	-2.544	-0.926376	-3.412	3.687	30.393
19	1.700	11.261	-2.544	-0.926376	-3.412	2.112	26.068
20	0	9.856	-2.249	-0.892895	-7.123	8.198	27.224
20	1.700	9.856	-2.249	-0.892895	-7.123	6.680	23.400
21	0	9.094	-1.168	-14.261	-7.284	17.955	24.021
21	1.275	9.094	-1.168	-14.261	-7.284	-0.230807	22.532
22	0	8.726	-1.057	-14.588	-10.706	13.626	23.014
22	1.275	8.726	-1.057	-14.588	-10.706	-4.976	21.667
23	0	8.117	-1.481	-14.128	-12.523	11.025	22.232
23	1.275	8.117	-1.481	-14.128	-12.523	-6.991	20.344
24	0	7.328	-2.261	-14.002	-13.353	10.013	21.119
24	1.275	7.328	-2.261	-14.002	-13.353	-7.842	18.235
25	0	6.395	-2.776	-14.135	-13.776	9.705	19.209
25	1.275	6.395	-2.776	-14.135	-13.776	-8.320	15.669
26	0	5.329	-3.371	-14.472	-14.008	9.573	16.738
26	1.275	5.329	-3.371	-14.472	-14.008	-8.881	12.439
27	0	4.151	-3.953	-15.171	-13.993	9.187	13.623
27	1.275	4.151	-3.953	-15.171	-13.993	-10.159	8.583
28	0	2.920	-4.608	-16.809	-13.306	7.672	9.802
28	1.275	2.920	-4.608	-16.809	-13.306	-13.763	3.926
29	0	1.746	-5.724	-20.720	-10.848	2.566	5.221
29	1.275	1.746	-5.724	-20.720	-10.848	-23.857	-2.077
30	0	0.044485	0.699886	7.144	-5.705	-12.783	-0.956668
30	1.275	0.044485	0.699886	7.144	-5.705	-3.673	-0.064170
31	0	0.001098	1.799	-0.001566	32.022	-0.000403	-0.859602

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
31	1.275	0.001098	1.799	-0.001566	32.022	-0.002400	1.434
32	0	0.004458	2.960	-0.002362	42.213	-0.002970	-1.649
32	1.275	0.004458	2.960	-0.002362	42.213	-0.005982	2.126
33	0	0.004806	2.764	-0.002508	42.879	-0.006229	-0.960161
33	1.275	0.004806	2.764	-0.002508	42.879	-0.009427	2.565
34	0	0.003842	2.323	-0.002516	42.088	-0.009511	-0.236510
34	1.275	0.003842	2.323	-0.002516	42.088	-0.012719	2.726
35	0	0.002563	1.881	-0.002509	41.160	-0.012734	0.333443
35	1.275	0.002563	1.881	-0.002509	41.160	-0.015932	2.733
36	0	0.001384	1.574	-0.002508	40.215	-0.015900	0.745932
36	1.275	0.001384	1.574	-0.002508	40.215	-0.019099	2.753
37	0	0.000344	1.359	-0.002544	39.175	-0.018991	1.110
37	1.275	0.000344	1.359	-0.002544	39.175	-0.022235	2.842
38	0	-0.000675	1.127	-0.002756	38.027	-0.021968	1.556
38	1.275	-0.000675	1.127	-0.002756	38.027	-0.025483	2.994
39	0	-0.001711	0.352712	-0.003569	37.575	-0.024973	2.208
39	1.275	-0.001711	0.352712	-0.003569	37.575	-0.029525	2.658
40	0	-0.002413	-2.189	-0.005615	43.575	-0.029107	2.473
40	1.275	-0.002413	-2.189	-0.005615	43.575	-0.036268	-0.318474
41	0	0.001638	2.843	-0.002174	-2.424	-0.019779	-0.056496
41	1.700	0.001638	2.843	-0.002174	-2.424	-0.023475	4.778
42	0	0.001920	1.253	-0.000806	1.920	-0.023235	1.860
42	1.700	0.001920	1.253	-0.000806	1.920	-0.024605	3.990
43	0	0.001623	0.925024	-0.000463	0.691637	-0.024351	2.162
43	1.700	0.001623	0.925024	-0.000463	0.691637	-0.025137	3.735
44	0	0.001254	0.631979	-0.000423	-0.635512	-0.025052	2.525
44	1.700	0.001254	0.631979	-0.000423	-0.635512	-0.025771	3.599
45	0	0.000946	0.252067	-0.000424	-1.794	-0.025750	2.932
45	1.700	0.000946	0.252067	-0.000424	-1.794	-0.026472	3.360
46	0	0.000735	-0.141036	-0.000426	-2.902	-0.026471	3.270
46	1.700	0.000735	-0.141036	-0.000426	-2.902	-0.027196	3.030
47	0	0.000739	-0.520331	-0.000427	-4.059	-0.027212	3.525
47	1.700	0.000739	-0.520331	-0.000427	-4.059	-0.027938	2.640
48	0	0.001224	-0.844327	-0.000391	-5.385	-0.028001	3.716
48	1.700	0.001224	-0.844327	-0.000391	-5.385	-0.028665	2.280

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
49	0	0.002449	-1.412	-9.34E-05	-6.614	-0.028836	4.103
49	1.700	0.002449	-1.412	-9.34E-05	-6.614	-0.028994	1.701
50	0	0.003833	-3.718	0.000962	-2.320	-0.029015	4.868
50	1.700	0.003833	-3.718	0.000962	-2.320	-0.027380	-1.454
51	0	-0.000886	0.427028	0.007244	-47.695	-0.044692	1.967
51	1.275	-0.000886	0.427028	0.007244	-47.695	-0.035454	2.512
52	0	-0.001226	-0.969147	0.004717	-41.783	-0.036076	3.113
52	1.275	-0.001226	-0.969147	0.004717	-41.783	-0.030060	1.878
53	0	-0.001190	-1.337	0.003747	-42.230	-0.030709	3.007
53	1.275	-0.001190	-1.337	0.003747	-42.230	-0.025931	1.303
54	0	-0.001004	-1.527	0.003499	-43.320	-0.026259	2.838
54	1.275	-0.001004	-1.527	0.003499	-43.320	-0.021797	0.890801
55	0	-0.000712	-1.712	0.003457	-44.185	-0.021919	2.709
55	1.275	-0.000712	-1.712	0.003457	-44.185	-0.017511	0.525607
56	0	-0.000236	-1.952	0.003448	-44.615	-0.017521	2.583
56	1.275	-0.000236	-1.952	0.003448	-44.615	-0.013124	0.093119
57	0	0.000522	-2.189	0.003401	-44.093	-0.013035	2.374
57	1.275	0.000522	-2.189	0.003401	-44.093	-0.008698	-0.417213
58	0	0.001506	-2.223	0.003171	-41.159	-0.008459	1.952
58	1.275	0.001506	-2.223	0.003171	-41.159	-0.004416	-0.882843
59	0	0.002165	-1.853	0.002377	-32.674	-0.004004	1.341
59	1.275	0.002165	-1.853	0.002377	-32.674	-0.000973	-1.021
60	0	0.000864	-0.722778	0.000770	-16.044	-0.000852	0.844173
60	1.275	0.000864	-0.722778	0.000770	-16.044	0.000130	-0.077518
61	0	0.257048	6.195	-17.739	13.312	10.196	-0.414642
61	1.275	0.257048	4.793	-17.739	11.068	-12.424	6.636
62	0	-1.451	4.925	-13.613	15.344	6.492	4.813
62	1.275	-1.451	3.522	-13.613	13.100	-10.867	10.244
63	0	-3.069	4.318	-13.141	14.833	6.970	8.581
63	1.275	-3.069	2.915	-13.141	12.590	-9.787	13.238
64	0	-4.498	3.792	-13.029	14.330	7.357	11.843
64	1.275	-4.498	2.389	-13.029	12.086	-9.258	15.829
65	0	-5.707	3.507	-12.885	13.961	7.420	14.576
65	1.275	-5.707	2.104	-12.885	11.717	-9.011	18.199
66	0	-6.714	2.689	-12.732	13.618	7.278	17.200
66	1.275	-6.714	1.287	-12.732	11.374	-8.958	19.780

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
67	0	-7.546	2.383	-12.658	13.164	6.921	18.952
67	1.275	-7.546	0.979935	-12.658	10.920	-9.220	21.140
68	0	-8.211	1.497	-12.805	12.321	6.097	20.473
68	1.275	-8.211	0.094349	-12.805	10.078	-10.231	21.533
69	0	-8.674	1.419	-13.273	10.487	4.071	21.057
69	1.275	-8.674	0.016702	-13.273	8.243	-12.855	22.017
70	0	-8.924	1.950	-12.939	7.032	-0.714342	21.533
70	1.275	-8.924	0.547282	-12.939	4.788	-17.215	23.170
71	0	-9.725	3.693	0.556185	7.217	-8.019	22.123
71	1.700	-9.725	1.823	0.556185	4.225	-7.074	26.872
72	0	-11.179	3.505	0.512923	3.463	-3.388	25.510
72	1.700	-11.179	1.635	0.512923	0.470785	-2.516	29.940
73	0	-12.128	2.739	0.203372	1.962	-1.411	29.075
73	1.700	-12.128	0.868709	0.203372	-1.030	-1.065	32.202
74	0	-12.763	1.982	0.306986	1.337	-1.036	31.628
74	1.700	-12.763	0.112042	0.306986	-1.655	-0.514007	33.468
75	0	-13.097	1.300	0.567498	0.941405	-1.153	33.144
75	1.700	-13.097	-0.570685	0.567498	-2.050	-0.187928	33.824
76	0	-13.110	0.494122	0.861471	0.587444	-1.403	33.857
76	1.700	-13.110	-1.376	0.861471	-2.404	0.061862	33.167
77	0	-12.804	-0.221752	1.123	0.192520	-1.729	33.579
77	1.700	-12.804	-2.092	1.123	-2.799	0.179832	31.671
78	0	-12.196	-1.073	1.228	-0.429128	-2.278	32.440
78	1.700	-12.196	-2.944	1.228	-3.421	-0.189469	29.086
79	0	-11.261	-1.603	0.925605	-1.916	-3.717	30.108
79	1.700	-11.261	-3.473	0.925605	-4.908	-2.143	25.852
80	0	-9.857	-1.449	0.891126	-5.627	-8.230	27.103
80	1.700	-9.857	-3.319	0.891126	-8.619	-6.714	23.110
81	0	-9.094	-0.551134	14.261	-6.162	-17.992	23.876
81	1.275	-9.094	-1.954	14.261	-8.406	0.193351	22.324
82	0	-8.724	-0.194010	14.590	-9.584	-13.663	22.718
82	1.275	-8.724	-1.597	14.590	-11.828	4.943	21.621
83	0	-8.116	-1.037	14.132	-11.401	-11.058	22.208
83	1.275	-8.116	-2.440	14.132	-13.645	6.963	20.036
84	0	-7.328	-1.483	14.005	-12.231	-10.041	20.885

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
84	1.275	-7.328	-2.886	14.005	-14.475	7.818	18.144
85	0	-6.395	-2.117	14.138	-12.654	-9.728	19.053
85	1.275	-6.395	-3.520	14.138	-14.898	8.301	15.504
86	0	-5.329	-2.807	14.476	-12.887	-9.592	16.646
86	1.275	-5.329	-4.210	14.476	-15.130	8.867	12.217
87	0	-4.152	-3.419	15.175	-12.871	-9.201	13.560
87	1.275	-4.152	-4.821	15.175	-15.115	10.150	8.351
88	0	-2.922	-3.944	16.813	-12.184	-7.682	9.680
88	1.275	-2.922	-5.346	16.813	-14.428	13.759	3.802
89	0	-1.749	-4.845	20.725	-9.726	-2.571	5.007
89	1.275	-1.749	-6.248	20.725	-11.970	23.858	-2.021
90	0	-0.045312	1.364	-7.144	-4.583	12.784	-0.966550
90	1.275	-0.045312	-0.038741	-7.144	-6.827	3.673	-0.076693
91	0	-1.234	-0.144303	14.386	-10.196	-12.195	0.180948
91	2.000	-1.234	-0.144303	14.386	-10.196	16.576	-0.107646
92	0	0.573532	-0.145370	14.387	-10.197	-15.456	0.117089
92	2.000	0.573532	-0.145370	14.387	-10.197	13.317	-0.173638
93	0	-1.257	-1.622	4.158	-18.917	-2.069	1.839
93	2.000	-1.257	-1.622	4.158	-18.917	6.246	-1.404
94	0	-0.110432	-1.625	4.158	-18.917	-4.005	1.477
94	2.000	-0.110432	-1.625	4.158	-18.917	4.312	-1.773
95	0	-0.609155	-1.608	0.504521	-17.838	0.475662	1.714
95	2.000	-0.609155	-1.608	0.504521	-17.838	1.485	-1.503
96	0	-0.787270	-1.609	0.504676	-17.838	0.757831	1.574
96	2.000	-0.787270	-1.609	0.504676	-17.838	1.767	-1.644
97	0	-0.466662	-1.427	0.140384	-17.145	0.473429	1.483
97	2.000	-0.466662	-1.427	0.140384	-17.145	0.754187	-1.371
98	0	-0.940450	-1.426	0.140384	-17.145	1.489	1.442
98	2.000	-0.940450	-1.426	0.140384	-17.145	1.769	-1.410
99	0	-0.498723	-1.207	0.168554	-16.679	0.344439	1.248
99	2.000	-0.498723	-1.207	0.168554	-16.679	0.681534	-1.166
100	0	-0.911951	-1.206	0.168515	-16.679	1.561	1.238
100	2.000	-0.911951	-1.206	0.168515	-16.679	1.898	-1.174
101	0	-0.548596	-1.005	0.173233	-16.290	0.322059	1.040
101	2.000	-0.548596	-1.005	0.173233	-16.290	0.668512	-0.969406

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
102	0	-0.862079	-1.004	0.173187	-16.290	1.574	1.041
102	2.000	-0.862079	-1.004	0.173187	-16.290	1.921	-0.965614
103	0	-0.594906	-0.831015	0.090584	-15.880	0.436858	0.864678
103	2.000	-0.594906	-0.831015	0.090584	-15.880	0.618020	-0.797286
104	0	-0.808644	-0.829978	0.090592	-15.880	1.625	0.869709
104	2.000	-0.808644	-0.829978	0.090592	-15.880	1.806	-0.790180
105	0	-0.584219	-0.669121	-0.133684	-15.318	0.827910	0.717768
105	2.000	-0.584219	-0.669121	-0.133684	-15.318	0.560553	-0.620420
106	0	-0.815769	-0.668100	-0.133489	-15.318	1.682	0.692896
106	2.000	-0.815769	-0.668100	-0.133489	-15.318	1.415	-0.643250
107	0	-0.302796	-0.473300	-0.460403	-14.304	1.823	0.585888
107	2.000	-0.302796	-0.473300	-0.460403	-14.304	0.902164	-0.360673
108	0	-1.090	-0.472247	-0.459646	-14.303	1.339	0.432977
108	2.000	-1.090	-0.472247	-0.459646	-14.303	0.419866	-0.511479
109	0	0.573532	-0.244397	0.337167	-12.142	3.447	0.494471
109	2.000	0.573532	-0.244397	0.337167	-12.142	4.121	0.005697
110	0	-1.963	-0.243654	0.339198	-12.142	-1.882	0.066471
110	2.000	-1.963	-0.243654	0.339198	-12.142	-1.203	-0.420817
111	0	1.567	-0.529667	13.508	-9.193	0.168378	1.071
111	2.000	1.567	-0.529667	13.508	-9.193	27.183	0.011696
112	0	-3.196	-0.531023	13.509	-9.196	-24.569	0.103942
112	2.000	-3.196	-0.531023	13.509	-9.196	2.448	-0.958061
113	0	-0.137743	-1.454	-0.012905	-3.685	3.722	1.580
113	2.000	-0.137743	-1.454	-0.012905	-3.685	3.697	-1.328
114	0	-1.734	-1.454	-0.014258	-3.685	-0.705467	1.500
114	2.000	-1.734	-1.454	-0.014258	-3.685	-0.733982	-1.408
115	0	-0.778958	-0.955702	-0.290108	-1.105	1.479	1.071
115	2.000	-0.778958	-0.955702	-0.290108	-1.105	0.899030	-0.840409
116	0	-1.092	-0.955414	-0.290511	-1.105	2.091	1.012
116	2.000	-1.092	-0.955414	-0.290511	-1.105	1.510	-0.898535
117	0	-0.788458	-0.632986	0.116306	-0.029629	0.610703	0.730462
117	2.000	-0.788458	-0.632986	0.116306	-0.029629	0.843305	-0.535460
118	0	-1.083	-0.632617	0.116246	-0.029543	2.146	0.707458
118	2.000	-1.083	-0.632617	0.116246	-0.029543	2.378	-0.557725
119	0	-0.745710	-0.329021	0.267145	0.638797	0.387869	0.397331
119	2.000	-0.745710	-0.329021	0.267145	0.638797	0.922138	-0.260685

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
120	0	-1.126	-0.328717	0.267163	0.638818	2.067	0.432781
120	2.000	-1.126	-0.328717	0.267163	0.638818	2.601	-0.224628
121	0	-0.731461	-0.007584	0.294250	1.215	0.353060	0.047872
121	2.000	-0.731461	-0.007584	0.294250	1.215	0.941536	0.032705
122	0	-1.140	-0.007363	0.294273	1.215	2.048	0.139324
122	2.000	-1.140	-0.007363	0.294273	1.215	2.636	0.124599
123	0	-0.750460	0.311306	0.254969	1.791	0.400936	-0.297434
123	2.000	-0.750460	0.311306	0.254969	1.791	0.910853	0.325152
124	0	-1.121	0.311292	0.254960	1.791	2.078	-0.153195
124	2.000	-1.121	0.311292	0.254960	1.791	2.588	0.469363
125	0	-0.778958	0.610301	0.093647	2.458	0.634018	-0.611279
125	2.000	-0.778958	0.610301	0.093647	2.458	0.821304	0.609274
126	0	-1.097	0.609812	0.093634	2.458	2.168	-0.437231
126	2.000	-1.097	0.609812	0.093634	2.458	2.355	0.782345
127	0	-0.655465	0.930310	-0.321266	3.528	1.505	-0.877726
127	2.000	-0.655465	0.930310	-0.321266	3.528	0.862347	0.982821
128	0	-1.225	0.929083	-0.321582	3.528	2.127	-0.810230
128	2.000	-1.225	0.929083	-0.321582	3.528	1.484	1.048
129	0	0.208989	1.404	-0.061524	6.086	3.733	-1.096
129	2.000	0.208989	1.404	-0.061524	6.086	3.610	1.712
130	0	-2.099	1.403	-0.062600	6.086	-0.619596	-1.539
130	2.000	-2.099	1.403	-0.062600	6.086	-0.744791	1.267
131	0	1.234	1.029	13.350	11.276	0.173627	-0.597237
131	2.000	1.234	1.029	13.350	11.276	26.873	1.460
132	0	-2.880	1.031	13.352	11.278	-24.260	-1.345
132	2.000	-2.880	1.031	13.352	11.278	2.443	0.716158
133	0	0.007125	0.375293	0.319356	13.858	3.430	-0.353539
133	2.000	0.007125	0.375293	0.319356	13.858	4.069	0.397016
134	0	-1.411	0.375685	0.321859	13.857	-1.830	-0.324067
134	2.000	-1.411	0.375685	0.321859	13.857	-1.186	0.427273
135	0	-0.520097	0.599103	-0.471879	16.002	1.829	-0.595874
135	2.000	-0.520097	0.599103	-0.471879	16.002	0.885591	0.602283
136	0	-0.883453	0.599085	-0.470907	16.001	1.355	-0.529229
136	2.000	-0.883453	0.599085	-0.470907	16.001	0.413499	0.668894
137	0	-0.616279	0.786071	-0.142224	17.005	0.845389	-0.782690

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
137	2.000	-0.616279	0.786071	-0.142224	17.005	0.560953	0.789389
138	0	-0.783708	0.785891	-0.141954	17.005	1.681	-0.716401
138	2.000	-0.783708	0.785891	-0.141954	17.005	1.397	0.855318
139	0	-0.594906	0.935572	0.114305	17.547	0.442293	-0.937276
139	2.000	-0.594906	0.935572	0.114305	17.547	0.670893	0.933793
140	0	-0.808644	0.935279	0.114351	17.547	1.572	-0.860886
140	2.000	-0.808644	0.935279	0.114351	17.547	1.800	1.010
141	0	-0.580656	1.073	0.316046	17.894	0.253599	-1.080
141	2.000	-0.580656	1.073	0.316046	17.894	0.885666	1.066
142	0	-0.826456	1.072	0.316041	17.894	1.357	-0.992814
142	2.000	-0.826456	1.072	0.316041	17.894	1.989	1.152
143	0	-0.598468	1.191	0.675304	18.069	0.008851	-1.202
143	2.000	-0.598468	1.191	0.675304	18.069	1.359	1.181
144	0	-0.812206	1.191	0.675352	18.069	0.883325	-1.108
144	2.000	-0.812206	1.191	0.675352	18.069	2.234	1.274
145	0	-0.676839	1.264	1.613	17.832	-0.661788	-1.277
145	2.000	-0.676839	1.264	1.613	17.832	2.564	1.250
146	0	-0.737398	1.263	1.613	17.832	-0.321957	-1.177
146	2.000	-0.737398	1.263	1.613	17.832	2.905	1.348
147	0	-0.901264	1.252	3.887	16.330	-2.433	-1.267
147	2.000	-0.901264	1.252	3.887	16.330	5.340	1.236
148	0	-0.516535	1.251	3.887	16.330	-3.098	-1.163
148	2.000	-0.516535	1.251	3.887	16.330	4.676	1.339
149	0	-1.279	1.122	7.268	11.074	-5.121	-1.113
149	2.000	-1.279	1.122	7.268	11.074	9.415	1.131
150	0	-0.138930	1.123	7.270	11.075	-7.174	-1.058
150	2.000	-0.138930	1.123	7.270	11.075	7.365	1.188
151	0	-0.705337	0.187299	7.141	3.673	-5.702	-0.174751
151	2.000	-0.705337	0.187299	7.141	3.673	8.580	0.199833
152	0	0.005343	0.188180	7.142	3.673	-7.459	-0.191237
152	2.000	0.005343	0.188180	7.142	3.673	6.824	0.185108
201	0	-0.004242	44.559	0.002761	-0.566284	-0.009488	-180.948
201	10.255	-0.004242	9.796	0.002761	-0.566284	0.018824	97.746
202	0	-0.008075	44.183	-0.002789	-0.297630	0.009791	-181.273
202	10.595	-0.008075	8.267	-0.002789	-0.297630	-0.019761	96.568

CARGAS: '' Ejec. "0001"

Hipótesis	Factor	Etapa	Título
32	1.0000		Frenado

DESPLAZAMIENTOS:

NUDOS	DX [mm]	DY [mm]	DZ [mm]	RX [rad]	RY [rad]	RZ [rad]
1	3.324	4.40E-05	4.19E-18	7.96E-07	-1.73E-05	-4.88E-09
2	3.325	-1.64E-12	0.001270	1.95E-18	-1.68E-05	3.02E-17
3	3.324	-4.40E-05	4.19E-18	-7.96E-07	-1.73E-05	4.88E-09
4	3.324	1.87E-05	0.021855	4.76E-07	-1.67E-05	-9.95E-09
5	3.324	-1.60E-12	0.022476	4.99E-18	-1.64E-05	3.04E-17
6	3.324	-1.87E-05	0.021855	-4.76E-07	-1.67E-05	9.95E-09
7	3.324	-9.60E-07	0.042314	2.23E-07	-1.52E-05	-7.80E-09
8	3.324	-1.57E-12	0.042570	9.02E-18	-1.50E-05	3.05E-17
9	3.324	9.60E-07	0.042314	-2.23E-07	-1.52E-05	7.80E-09
10	3.324	-1.21E-05	0.060134	1.10E-07	-1.26E-05	-3.97E-09
11	3.324	-1.53E-12	0.060249	1.31E-17	-1.26E-05	3.08E-17
12	3.324	1.21E-05	0.060134	-1.10E-07	-1.26E-05	3.97E-09
13	3.324	-1.76E-05	0.074079	9.81E-08	-9.08E-06	-1.14E-09
14	3.324	-1.49E-12	0.074177	1.72E-17	-9.11E-06	3.08E-17
15	3.324	1.76E-05	0.074079	-9.81E-08	-9.08E-06	1.14E-09
16	3.323	-2.10E-05	0.082859	1.89E-07	-4.51E-06	1.26E-09
17	3.323	-1.45E-12	0.083052	2.14E-17	-4.64E-06	3.09E-17
18	3.323	2.10E-05	0.082859	-1.89E-07	-4.51E-06	-1.26E-09
19	3.323	-2.46E-05	0.085112	4.61E-07	1.15E-06	6.42E-09
20	3.323	-1.41E-12	0.085616	2.56E-17	7.92E-07	3.12E-17
21	3.323	2.46E-05	0.085112	-4.61E-07	1.15E-06	-6.42E-09
22	3.324	-2.80E-05	0.079385	1.07E-06	7.99E-06	1.96E-08
23	3.323	-1.37E-12	0.080683	2.97E-17	7.14E-06	3.16E-17
24	3.324	2.80E-05	0.079385	-1.07E-06	7.99E-06	-1.96E-08
25	3.324	-2.85E-05	0.064186	2.06E-06	1.59E-05	4.38E-08
26	3.324	-1.33E-12	0.067082	3.40E-17	1.45E-05	3.19E-17
27	3.324	2.85E-05	0.064186	-2.06E-06	1.59E-05	-4.38E-08
28	3.324	-2.09E-05	0.038553	2.55E-06	2.40E-05	6.25E-08
29	3.324	-1.29E-12	0.043047	3.83E-17	2.38E-05	3.22E-17
30	3.324	2.09E-05	0.038553	-2.55E-06	2.40E-05	-6.25E-08
31	3.325	-1.15E-06	0.004431	-3.66E-07	2.85E-05	1.48E-08
32	3.324	-1.25E-12	0.003688	4.37E-17	3.93E-05	3.19E-17
33	3.325	1.15E-06	0.004431	3.66E-07	2.85E-05	-1.48E-08
34	3.326	2.23E-05	-0.035970	-3.14E-06	1.76E-05	-5.26E-08
35	3.326	-1.20E-12	-0.040962	4.13E-17	1.60E-05	3.21E-17
36	3.326	-2.23E-05	-0.035970	3.14E-06	1.76E-05	5.26E-08
37	3.326	2.72E-05	-0.054182	-1.54E-06	4.07E-06	-3.16E-08
38	3.326	-1.15E-12	-0.056134	4.01E-17	2.85E-06	3.26E-17
39	3.326	-2.72E-05	-0.054182	1.54E-06	4.07E-06	3.16E-08
40	3.327	2.03E-05	-0.051996	-4.88E-07	-6.07E-06	-1.50E-08
41	3.326	-1.09E-12	-0.052525	3.91E-17	-6.46E-06	3.30E-17
42	3.327	-2.03E-05	-0.051996	4.88E-07	-6.07E-06	1.50E-08
43	3.326	1.05E-05	-0.035847	-1.21E-07	-1.23E-05	-7.92E-09
44	3.326	-1.04E-12	-0.035965	3.81E-17	-1.24E-05	3.36E-17
45	3.326	-1.05E-05	-0.035847	1.21E-07	-1.23E-05	7.92E-09

DESPLAZAMIENTOS:

NUDOS	DX [mm]	DY [mm]	DZ [mm]	RX [rad]	RY [rad]	RZ [rad]
46	3.326	1.20E-06	-0.012269	2.75E-09	-1.48E-05	-5.03E-09
47	3.326	-9.80E-13	-0.012266	3.71E-17	-1.49E-05	3.38E-17
48	3.326	-1.20E-06	-0.012269	-2.75E-09	-1.48E-05	5.03E-09
49	3.325	-7.85E-06	0.012373	1.23E-07	-1.36E-05	-2.87E-09
50	3.325	-9.23E-13	0.012494	3.60E-17	-1.37E-05	3.43E-17
51	3.325	7.85E-06	0.012373	-1.23E-07	-1.36E-05	2.87E-09
52	3.325	-1.74E-05	0.031676	4.75E-07	-8.52E-06	4.23E-09
53	3.325	-8.66E-13	0.032190	3.48E-17	-8.89E-06	3.42E-17
54	3.325	1.74E-05	0.031676	-4.75E-07	-8.52E-06	-4.23E-09
55	3.325	-2.48E-05	0.038995	1.48E-06	4.99E-07	2.79E-08
56	3.325	-8.09E-13	0.040867	3.35E-17	-6.63E-07	3.44E-17
57	3.325	2.48E-05	0.038995	-1.48E-06	4.99E-07	-2.79E-08
58	3.325	-2.12E-05	0.027691	3.04E-06	1.30E-05	6.96E-08
59	3.325	-7.52E-13	0.032479	3.22E-17	1.16E-05	3.47E-17
60	3.325	2.12E-05	0.027691	-3.04E-06	1.30E-05	-6.96E-08
61	3.325	-1.91E-07	-0.004540	4.50E-07	2.35E-05	2.91E-08
62	3.325	-6.94E-13	-0.003726	3.14E-17	3.38E-05	3.43E-17
63	3.325	1.91E-07	-0.004540	-4.50E-07	2.35E-05	-2.91E-08
64	3.326	1.78E-05	-0.032598	-2.34E-06	1.96E-05	-3.64E-08
65	3.326	-6.51E-13	-0.036770	2.73E-17	1.94E-05	3.46E-17
66	3.326	-1.78E-05	-0.032598	2.34E-06	1.96E-05	3.64E-08
67	3.326	2.50E-05	-0.052961	-1.91E-06	1.22E-05	-3.53E-08
68	3.326	-6.07E-13	-0.055662	2.38E-17	1.08E-05	3.45E-17
69	3.326	-2.50E-05	-0.052961	1.91E-06	1.22E-05	3.53E-08
70	3.327	2.52E-05	-0.063821	-9.91E-07	4.95E-06	-2.09E-08
71	3.327	-5.64E-13	-0.065031	2.03E-17	4.16E-06	3.46E-17
72	3.327	-2.52E-05	-0.063821	9.91E-07	4.95E-06	2.09E-08
73	3.327	2.27E-05	-0.066126	-4.29E-07	-1.18E-06	-1.07E-08
74	3.327	-5.20E-13	-0.066596	1.68E-17	-1.51E-06	3.48E-17
75	3.327	-2.27E-05	-0.066126	4.29E-07	-1.18E-06	1.07E-08
76	3.327	1.99E-05	-0.061350	-1.86E-07	-6.14E-06	-5.77E-09
77	3.327	-4.76E-13	-0.061539	1.32E-17	-6.25E-06	3.50E-17
78	3.327	-1.99E-05	-0.061350	1.86E-07	-6.14E-06	5.77E-09
79	3.326	1.69E-05	-0.050955	-1.25E-07	-9.99E-06	-5.39E-09
80	3.326	-4.32E-13	-0.051084	9.62E-18	-9.98E-06	3.46E-17
81	3.326	-1.69E-05	-0.050955	1.25E-07	-9.99E-06	5.39E-09
82	3.326	1.16E-05	-0.036340	-1.82E-07	-1.28E-05	-9.70E-09
83	3.326	-3.88E-13	-0.036551	6.16E-18	-1.26E-05	3.45E-17
84	3.326	-1.16E-05	-0.036340	1.82E-07	-1.28E-05	9.70E-09
85	3.326	6.89E-07	-0.018876	-3.35E-07	-1.44E-05	-1.87E-08
86	3.326	-3.44E-13	-0.019315	2.96E-18	-1.42E-05	3.43E-17
87	3.326	-6.89E-07	-0.018876	3.35E-07	-1.44E-05	1.87E-08
88	3.325	-1.82E-05	-4.28E-18	-5.00E-07	-1.49E-05	-2.85E-08
89	3.325	-3.00E-13	-0.000710	4.53E-19	-1.48E-05	3.45E-17
90	3.325	1.82E-05	-4.28E-18	5.00E-07	-1.49E-05	2.85E-08
91	3.325	-4.14E-05	0.018962	-5.08E-07	-1.48E-05	-2.85E-08
92	3.325	-2.57E-13	0.018282	-7.74E-19	-1.49E-05	3.44E-17
93	3.325	4.14E-05	0.018962	5.08E-07	-1.48E-05	2.85E-08
101	5.00E-17	-1.45E-29	8.38E-18	7.85E-32	2.62E-19	1.36E-32
102	4.57E-17	-6.36E-30	-8.19E-18	3.66E-32	2.47E-19	1.46E-32

REACCIONES EN APOYOS:

NUDOS	FX [t]	FY [t]	FZ [t]	MX [tm]	MY [tm]	MZ [tm]
1	-1.108	-1.47E-05	-0.418610			
3	-1.108	1.47E-05	-0.418610			
88	-1.108	6.06E-06	0.427793			
90	-1.108	-6.06E-06	0.427793			
101	-5.001	1.45E-12	-0.837662	-7.85E-12	-26.195	-1.36E-12
102	-4.569	6.36E-13	0.819295	-3.66E-12	-24.661	-1.46E-12
Sumas:	-14.002	3.00E-12	0			

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
1	0	1.065	-0.042098	-0.283834	-0.049158	0.034519	0.049636
1	1.275	0.925007	-0.042098	-0.286634	-0.049158	-0.329213	-0.004048
2	0	0.742435	-0.077796	-0.221069	-0.038909	-0.279813	0.174859
2	1.275	0.602446	-0.077796	-0.223869	-0.038909	-0.563506	0.075653
3	0	0.520863	-0.075960	-0.209812	-0.017436	-0.541561	0.154279
3	1.275	0.380873	-0.075960	-0.212612	-0.017436	-0.810899	0.057414
4	0	0.349923	-0.052795	-0.210789	-0.001797	-0.804393	0.086870
4	1.275	0.209934	-0.052795	-0.213588	-0.001797	-1.075	0.019546
5	0	0.206856	-0.019126	-0.213737	0.013983	-1.078	0.022192
5	1.275	0.066867	-0.019126	-0.216537	0.013983	-1.353	-0.002197
6	0	0.081876	0.021109	-0.214267	0.041807	-1.369	-0.018134
6	1.275	-0.058114	0.021109	-0.217066	0.041807	-1.644	0.008785
7	0	-0.022468	0.068138	-0.195332	0.093505	-1.692	-0.025939
7	1.275	-0.162457	0.068138	-0.198132	0.093505	-1.942	0.060951
8	0	-0.099159	0.121761	-0.086625	0.152249	-2.054	-0.001238
8	1.275	-0.239148	0.121761	-0.089425	0.152249	-2.166	0.154032
9	0	-0.120609	0.176182	0.314496	0.076341	-2.355	0.040835
9	1.275	-0.260598	0.176182	0.311696	0.076341	-1.956	0.265503
10	0	-0.034852	0.216090	1.244	-0.449277	-1.980	0.047666
10	1.275	-0.174842	0.216090	1.242	-0.449277	-0.395042	0.323225
11	0	0.496474	0.218663	1.045	-0.320404	1.295	-0.341117
11	1.700	0.309822	0.218663	1.041	-0.320404	3.068	0.030669
12	0	0.603924	0.161847	-0.132730	0.185280	2.802	-0.282110
12	1.700	0.417272	0.161847	-0.136463	0.185280	2.574	-0.006927
13	0	0.532236	0.092498	-0.398975	0.121004	2.361	-0.134549
13	1.700	0.345584	0.092498	-0.402708	0.121004	1.679	0.022723

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
14	0	0.399836	0.040717	-0.427976	0.042403	1.611	-0.038633
14	1.700	0.213183	0.040717	-0.431709	0.042403	0.880252	0.030596
15	0	0.245812	0.014038	-0.429302	0.014253	0.862249	-0.006510
15	1.700	0.059160	0.014038	-0.433035	0.014253	0.129145	0.017358
16	0	0.085795	0.010968	-0.432141	0.013879	0.121247	-0.012461
16	1.700	-0.100858	0.010968	-0.435874	0.013879	-0.616684	0.006188
17	0	-0.071169	0.030982	-0.436539	0.040637	-0.633940	-0.025647
17	1.700	-0.257822	0.030982	-0.440272	0.040637	-1.379	0.027031
18	0	-0.212634	0.075431	-0.414741	0.116076	-1.445	-0.017746
18	1.700	-0.399287	0.075431	-0.418474	0.116076	-2.153	0.110508
19	0	-0.297795	0.138576	-0.167037	0.179503	-2.356	0.019911
19	1.700	-0.484448	0.138576	-0.170770	0.179503	-2.644	0.255527
20	0	-0.181561	0.192742	0.952862	-0.298433	-2.901	-0.017734
20	1.700	-0.368213	0.192742	0.949129	-0.298433	-1.284	0.309979
21	0	0.242656	0.193168	1.165	-0.429961	0.315093	-0.290310
21	1.275	0.102666	0.193168	1.162	-0.429961	1.798	-0.043981
22	0	0.290875	0.159162	0.290920	0.067227	1.781	-0.234551
22	1.275	0.150885	0.159162	0.288120	0.067227	2.150	-0.031587
23	0	0.255117	0.111365	-0.089552	0.140932	1.974	-0.138206
23	1.275	0.115128	0.111365	-0.092352	0.140932	1.858	0.003807
24	0	0.174009	0.063129	-0.195928	0.086524	1.754	-0.057777
24	1.275	0.034020	0.063129	-0.198727	0.086524	1.503	0.022725
25	0	0.067753	0.019686	-0.217967	0.037409	1.459	-0.012056
25	1.275	-0.072236	0.019686	-0.220767	0.037409	1.179	0.013048
26	0	-0.057801	-0.018416	-0.222244	0.009265	1.165	-0.002628
26	1.275	-0.197790	-0.018416	-0.225044	0.009265	0.880063	-0.026112
27	0	-0.202294	-0.050771	-0.227008	-0.008778	0.881445	-0.022708
27	1.275	-0.342284	-0.050771	-0.229808	-0.008778	0.590179	-0.087451
28	0	-0.375261	-0.072985	-0.244187	-0.023504	0.604928	-0.056210
28	1.275	-0.515251	-0.072985	-0.246987	-0.023504	0.291754	-0.149280
29	0	-0.602608	-0.074303	-0.298534	-0.025439	0.320136	-0.066249
29	1.275	-0.742598	-0.074303	-0.301334	-0.025439	-0.062341	-0.161001
30	0	0.162386	-0.039541	0.044437	-0.001165	-0.049853	0.028738
30	1.275	0.022397	-0.039541	0.041637	-0.001165	0.005028	-0.021685
31	0	0.101694	2.72E-14	-0.225073	1.50E-12	-0.069060	8.05E-14

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
31	1.275	-0.038296	2.72E-14	-0.227872	1.50E-12	-0.357858	1.15E-13
32	0	0.327614	6.06E-14	-0.359013	1.99E-12	-0.456693	9.92E-14
32	1.275	0.187625	6.06E-14	-0.361813	1.99E-12	-0.916292	1.77E-13
33	0	0.351288	2.43E-13	-0.389899	2.04E-12	-0.960230	1.55E-13
33	1.275	0.211299	2.43E-13	-0.392699	2.04E-12	-1.459	4.65E-13
34	0	0.272920	-8.33E-14	-0.396375	2.03E-12	-1.472	-8.19E-14
34	1.275	0.132930	-8.33E-14	-0.399175	2.03E-12	-1.980	-1.88E-13
35	0	0.138241	-9.60E-13	-0.398859	2.05E-12	-1.973	6.32E-13
35	1.275	-0.001748	-9.60E-13	-0.401659	2.05E-12	-2.484	-5.92E-13
36	0	-0.032049	-5.97E-13	-0.406237	2.06E-12	-2.450	7.79E-13
36	1.275	-0.172038	-5.97E-13	-0.409037	2.06E-12	-2.970	1.75E-14
37	0	-0.241343	-7.23E-14	-0.452436	2.07E-12	-2.875	5.55E-13
37	1.275	-0.381333	-7.23E-14	-0.455236	2.07E-12	-3.454	4.63E-13
38	0	-0.509990	2.67E-13	-0.678308	2.08E-12	-3.231	9.29E-14
38	1.275	-0.649979	2.67E-13	-0.681108	2.08E-12	-4.098	4.33E-13
39	0	-0.886375	1.66E-14	-1.489	2.12E-12	-3.720	3.61E-13
39	1.275	-1.026	1.66E-14	-1.492	2.12E-12	-5.620	3.82E-13
40	0	-1.477	-1.23E-12	-3.357	2.69E-12	-5.572	1.34E-13
40	1.275	-1.617	-1.23E-12	-3.360	2.69E-12	-9.855	-1.43E-12
41	0	2.055	-3.51E-13	-3.704	-8.97E-13	11.857	6.09E-13
41	1.700	1.869	-3.51E-13	-3.708	-8.97E-13	5.556	1.25E-14
42	0	1.282	5.69E-13	-1.360	-4.25E-13	6.088	2.14E-13
42	1.700	1.095	5.69E-13	-1.364	-4.25E-13	3.772	1.18E-12
43	0	0.865251	3.06E-14	-0.838679	-3.85E-13	4.197	4.68E-13
43	1.700	0.678598	3.06E-14	-0.842412	-3.85E-13	2.768	5.20E-13
44	0	0.569879	5.43E-13	-0.791874	-3.62E-13	2.905	2.99E-13
44	1.700	0.383226	5.43E-13	-0.795607	-3.62E-13	1.555	1.22E-12
45	0	0.318232	5.90E-13	-0.800420	-3.75E-13	1.591	-2.08E-13
45	1.700	0.131579	5.90E-13	-0.804153	-3.75E-13	0.226787	7.94E-13
46	0	0.077667	3.10E-13	-0.805945	-3.85E-13	0.242468	3.32E-13
46	1.700	-0.108985	3.10E-13	-0.809678	-3.85E-13	-1.131	8.58E-13
47	0	-0.167301	3.54E-13	-0.808344	-4.37E-13	-1.097	-4.39E-13
47	1.700	-0.353953	3.54E-13	-0.812077	-4.37E-13	-2.474	1.63E-13
48	0	-0.445428	5.09E-14	-0.863138	-4.78E-13	-2.344	2.56E-13
48	1.700	-0.632081	5.09E-14	-0.866872	-4.78E-13	-3.814	3.43E-13

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
49	0	-0.835139	-1.00E-13	-1.370	-4.86E-13	-3.408	4.86E-13
49	1.700	-1.022	-1.00E-13	-1.373	-4.86E-13	-5.740	3.16E-13
50	0	-1.627	-4.03E-13	-3.621	-3.21E-13	-5.225	-3.75E-14
50	1.700	-1.814	-4.03E-13	-3.624	-3.21E-13	-11.384	-7.23E-13
51	0	1.515	-1.52E-13	-3.145	-1.99E-12	9.161	5.87E-13
51	1.275	1.375	-1.52E-13	-3.148	-1.99E-12	5.149	3.92E-13
52	0	0.999431	5.43E-14	-1.406	-1.74E-12	5.184	3.70E-14
52	1.275	0.859442	5.43E-14	-1.409	-1.74E-12	3.389	1.06E-13
53	0	0.650938	1.10E-13	-0.653446	-1.73E-12	3.741	1.35E-13
53	1.275	0.510949	1.10E-13	-0.656245	-1.73E-12	2.906	2.75E-13
54	0	0.392661	5.24E-13	-0.449072	-1.75E-12	3.113	2.07E-13
54	1.275	0.252671	5.24E-13	-0.451872	-1.75E-12	2.539	8.75E-13
55	0	0.186604	2.40E-13	-0.413388	-1.76E-12	2.626	1.87E-13
55	1.275	0.046614	2.40E-13	-0.416187	-1.76E-12	2.097	4.94E-13
56	0	0.016005	4.05E-13	-0.413275	-1.77E-12	2.125	-8.32E-13
56	1.275	-0.123984	4.05E-13	-0.416075	-1.77E-12	1.596	-3.15E-13
57	0	-0.114709	-2.84E-13	-0.412134	-1.71E-12	1.594	1.84E-13
57	1.275	-0.254698	-2.84E-13	-0.414933	-1.71E-12	1.066	-1.79E-13
58	0	-0.188125	-4.01E-13	-0.386145	-1.58E-12	1.037	9.33E-14
58	1.275	-0.328115	-4.01E-13	-0.388944	-1.58E-12	0.542491	-4.18E-13
59	0	-0.154025	-5.22E-13	-0.285877	-1.24E-12	0.485675	7.72E-13
59	1.275	-0.294015	-5.22E-13	-0.288677	-1.24E-12	0.119337	1.07E-13
60	0	0.095757	1.51E-13	-0.080478	-6.08E-13	0.094348	-3.46E-13
60	1.275	-0.044233	1.51E-13	-0.083278	-6.08E-13	-0.010063	-1.53E-13
61	0	1.065	0.042097	-0.283834	0.049158	0.034519	-0.049635
61	1.275	0.925007	0.042097	-0.286634	0.049158	-0.329213	0.004047
62	0	0.742435	0.077797	-0.221069	0.038909	-0.279813	-0.174860
62	1.275	0.602446	0.077797	-0.223869	0.038909	-0.563506	-0.075653
63	0	0.520863	0.075960	-0.209812	0.017436	-0.541561	-0.154279
63	1.275	0.380873	0.075960	-0.212612	0.017436	-0.810899	-0.057414
64	0	0.349923	0.052795	-0.210789	0.001797	-0.804393	-0.086870
64	1.275	0.209934	0.052795	-0.213588	0.001797	-1.075	-0.019546
65	0	0.206856	0.019126	-0.213737	-0.013983	-1.078	-0.022192
65	1.275	0.066867	0.019126	-0.216537	-0.013983	-1.353	0.002197
66	0	0.081876	-0.021109	-0.214267	-0.041807	-1.369	0.018134
66	1.275	-0.058114	-0.021109	-0.217066	-0.041807	-1.644	-0.008785

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
67	0	-0.022468	-0.068138	-0.195332	-0.093505	-1.692	0.025939
67	1.275	-0.162457	-0.068138	-0.198132	-0.093505	-1.942	-0.060951
68	0	-0.099159	-0.121761	-0.086625	-0.152249	-2.054	0.001238
68	1.275	-0.239148	-0.121761	-0.089425	-0.152249	-2.166	-0.154032
69	0	-0.120609	-0.176182	0.314496	-0.076341	-2.355	-0.040835
69	1.275	-0.260598	-0.176182	0.311696	-0.076341	-1.956	-0.265503
70	0	-0.034852	-0.216090	1.244	0.449277	-1.980	-0.047666
70	1.275	-0.174842	-0.216090	1.242	0.449277	-0.395042	-0.323225
71	0	0.496474	-0.218663	1.045	0.320404	1.295	0.341117
71	1.700	0.309822	-0.218663	1.041	0.320404	3.068	-0.030669
72	0	0.603924	-0.161846	-0.132730	-0.185280	2.802	0.282110
72	1.700	0.417272	-0.161846	-0.136463	-0.185280	2.574	0.006927
73	0	0.532236	-0.092498	-0.398975	-0.121004	2.361	0.134549
73	1.700	0.345584	-0.092498	-0.402708	-0.121004	1.679	-0.022723
74	0	0.399836	-0.040717	-0.427976	-0.042403	1.611	0.038633
74	1.700	0.213183	-0.040717	-0.431709	-0.042403	0.880252	-0.030596
75	0	0.245812	-0.014038	-0.429302	-0.014253	0.862249	0.006510
75	1.700	0.059160	-0.014038	-0.433035	-0.014253	0.129145	-0.017358
76	0	0.085795	-0.010968	-0.432141	-0.013879	0.121247	0.012461
76	1.700	-0.100858	-0.010968	-0.435874	-0.013879	-0.616684	-0.006188
77	0	-0.071169	-0.030982	-0.436539	-0.040637	-0.633940	0.025647
77	1.700	-0.257822	-0.030982	-0.440272	-0.040637	-1.379	-0.027031
78	0	-0.212634	-0.075431	-0.414741	-0.116076	-1.445	0.017746
78	1.700	-0.399287	-0.075431	-0.418474	-0.116076	-2.153	-0.110508
79	0	-0.297795	-0.138575	-0.167037	-0.179503	-2.356	-0.019911
79	1.700	-0.484448	-0.138575	-0.170770	-0.179503	-2.644	-0.255527
80	0	-0.181561	-0.192742	0.952862	0.298433	-2.901	0.017734
80	1.700	-0.368213	-0.192742	0.949129	0.298433	-1.284	-0.309979
81	0	0.242656	-0.193168	1.165	0.429961	0.315093	0.290310
81	1.275	0.102666	-0.193168	1.162	0.429961	1.798	0.043981
82	0	0.290875	-0.159162	0.290920	-0.067227	1.781	0.234551
82	1.275	0.150885	-0.159162	0.288120	-0.067227	2.150	0.031587
83	0	0.255117	-0.111365	-0.089552	-0.140932	1.974	0.138206
83	1.275	0.115128	-0.111365	-0.092352	-0.140932	1.858	-0.003807
84	0	0.174009	-0.063129	-0.195928	-0.086524	1.754	0.057777

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
84	1.275	0.034020	-0.063129	-0.198727	-0.086524	1.503	-0.022726
85	0	0.067753	-0.019686	-0.217967	-0.037409	1.459	0.012056
85	1.275	-0.072236	-0.019686	-0.220767	-0.037409	1.179	-0.013048
86	0	-0.057801	0.018416	-0.222244	-0.009265	1.165	0.002628
86	1.275	-0.197790	0.018416	-0.225044	-0.009265	0.880063	0.026112
87	0	-0.202294	0.050771	-0.227008	0.008778	0.881445	0.022708
87	1.275	-0.342284	0.050771	-0.229808	0.008778	0.590179	0.087451
88	0	-0.375261	0.072985	-0.244187	0.023504	0.604928	0.056210
88	1.275	-0.515251	0.072985	-0.246987	0.023504	0.291754	0.149280
89	0	-0.602608	0.074303	-0.298534	0.025439	0.320136	0.066249
89	1.275	-0.742598	0.074303	-0.301334	0.025439	-0.062341	0.161001
90	0	0.162386	0.039541	0.044437	0.001165	-0.049853	-0.028738
90	1.275	0.022397	0.039541	0.041637	0.001165	0.005028	0.021685
91	0	-0.042083	0.048817	-0.113534	0.034528	0.050136	-0.048657
91	2.000	-0.042083	0.048817	-0.113534	0.034528	-0.176923	0.048973
92	0	-0.042083	-0.048817	0.113534	-0.034528	-0.176923	0.048973
92	2.000	-0.042083	-0.048817	0.113534	-0.034528	0.050136	-0.048657
93	0	-0.035699	0.181736	-0.069214	0.049412	-0.006672	-0.179150
93	2.000	-0.035699	0.181736	-0.069214	0.049412	-0.145094	0.184308
94	0	-0.035699	-0.181736	0.069214	-0.049412	-0.145094	0.184308
94	2.000	-0.035699	-0.181736	0.069214	-0.049412	-0.006672	-0.179150
95	0	0.001836	0.080985	-0.015674	0.021958	-0.019898	-0.078962
95	2.000	0.001836	0.080985	-0.015674	0.021958	-0.051245	0.083002
96	0	0.001836	-0.080985	0.015674	-0.021958	-0.051245	0.083002
96	2.000	0.001836	-0.080985	0.015674	-0.021958	-0.019898	-0.078962
97	0	0.023166	0.030757	-0.002453	0.006512	-0.015046	-0.029728
97	2.000	0.023166	0.030757	-0.002453	0.006512	-0.019952	0.031784
98	0	0.023166	-0.030757	0.002453	-0.006512	-0.019952	0.031784
98	2.000	0.023166	-0.030757	0.002453	-0.006512	-0.015046	-0.029728
99	0	0.033669	0.003279	9.79E-05	-0.003173	-0.015726	-0.002984
99	2.000	0.033669	0.003279	9.79E-05	-0.003173	-0.015530	0.003573
100	0	0.033669	-0.003279	-9.79E-05	0.003173	-0.015530	0.003573
100	2.000	0.033669	-0.003279	-9.79E-05	0.003173	-0.015726	-0.002984
101	0	0.040235	-0.015854	-0.001965	-0.016708	-0.028140	0.015528
101	2.000	0.040235	-0.015854	-0.001965	-0.016708	-0.032069	-0.016179

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
102	0	0.040235	0.015854	0.001965	0.016708	-0.032069	-0.016179
102	2.000	0.040235	0.015854	0.001965	0.016708	-0.028140	0.015528
103	0	0.047029	-0.035367	-0.021012	-0.047345	-0.052383	0.033702
103	2.000	0.047029	-0.035367	-0.021012	-0.047345	-0.094405	-0.037028
104	0	0.047029	0.035367	0.021012	0.047345	-0.094405	-0.037028
104	2.000	0.047029	0.035367	0.021012	0.047345	-0.052383	0.033702
105	0	0.053623	-0.066039	-0.110235	-0.111552	-0.059978	0.060964
105	2.000	0.053623	-0.066039	-0.110235	-0.111552	-0.280439	-0.071108
106	0	0.053623	0.066039	0.110235	0.111552	-0.280439	-0.071108
106	2.000	0.053623	0.066039	0.110235	0.111552	-0.059978	0.060964
107	0	0.054421	-0.125964	-0.401464	-0.188982	0.073611	0.114622
107	2.000	0.054421	-0.125964	-0.401464	-0.188982	-0.729285	-0.137296
108	0	0.054421	0.125964	0.401464	0.188982	-0.729285	-0.137296
108	2.000	0.054421	0.125964	0.401464	0.188982	0.073611	0.114622
109	0	0.039908	-0.244591	-0.928012	-0.024183	0.521120	0.228388
109	2.000	0.039908	-0.244591	-0.928012	-0.024183	-1.335	-0.260773
110	0	0.039908	0.244591	0.928012	0.024183	-1.335	-0.260773
110	2.000	0.039908	0.244591	0.928012	0.024183	0.521120	0.228388
111	0	0.002573	-0.667685	0.210235	1.690	-0.142124	0.661569
111	2.000	0.002573	-0.667685	0.210235	1.690	0.278329	-0.673748
112	0	0.002573	0.667685	-0.210235	-1.690	0.278329	-0.673748
112	2.000	0.002573	0.667685	-0.210235	-1.690	-0.142124	0.661569
113	0	-0.056816	-0.270259	1.179	-0.265721	-0.511789	0.302568
113	2.000	-0.056816	-0.270259	1.179	-0.265721	1.847	-0.237929
114	0	-0.056816	0.270259	-1.179	0.265721	1.847	-0.237929
114	2.000	-0.056816	0.270259	-1.179	0.265721	-0.511789	0.302568
115	0	-0.069348	-0.109310	0.264751	-0.212545	0.061724	0.128727
115	2.000	-0.069348	-0.109310	0.264751	-0.212545	0.591205	-0.089884
116	0	-0.069348	0.109310	-0.264751	0.212545	0.591205	-0.089884
116	2.000	-0.069348	0.109310	-0.264751	0.212545	0.061724	0.128727
117	0	-0.051781	-0.053717	0.026349	-0.068358	0.077359	0.062898
117	2.000	-0.051781	-0.053717	0.026349	-0.068358	0.130055	-0.044531
118	0	-0.051781	0.053717	-0.026349	0.068358	0.130055	-0.044531
118	2.000	-0.051781	0.053717	-0.026349	0.068358	0.077359	0.062898
119	0	-0.026679	-0.033030	-0.001748	-0.017972	0.027400	0.037890
119	2.000	-0.026679	-0.033030	-0.001748	-0.017972	0.023904	-0.028167

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
120	0	-0.026679	0.033030	0.001748	0.017972	0.023904	-0.028167
120	2.000	-0.026679	0.033030	0.001748	0.017972	0.027400	0.037890
121	0	-0.003070	-0.026855	-0.000362	-0.007866	-0.000222	0.029943
121	2.000	-0.003070	-0.026855	-0.000362	-0.007866	-0.000945	-0.023765
122	0	-0.003070	0.026855	0.000362	0.007866	-0.000945	-0.023765
122	2.000	-0.003070	0.026855	0.000362	0.007866	-0.000222	0.029943
123	0	0.020014	-0.029732	0.001256	-0.017225	-0.027389	0.031491
123	2.000	0.020014	-0.029732	0.001256	-0.017225	-0.024878	-0.027970
124	0	0.020014	0.029732	-0.001256	0.017225	-0.024878	-0.027970
124	2.000	0.020014	0.029732	-0.001256	0.017225	-0.027389	0.031491
125	0	0.044449	-0.045832	-0.024617	-0.065266	-0.076321	0.043235
125	2.000	0.044449	-0.045832	-0.024617	-0.065266	-0.125552	-0.048427
126	0	0.044449	0.045832	0.024617	0.065266	-0.125552	-0.048427
126	2.000	0.044449	0.045832	0.024617	0.065266	-0.076321	0.043235
127	0	0.063144	-0.106459	-0.249363	-0.203379	-0.065236	0.089321
127	2.000	0.063144	-0.106459	-0.249363	-0.203379	-0.563942	-0.123587
128	0	0.063144	0.106459	0.249363	0.203379	-0.563942	-0.123587
128	2.000	0.063144	0.106459	0.249363	0.203379	-0.065236	0.089321
129	0	0.054166	-0.325664	-1.117	-0.257603	0.472331	0.282926
129	2.000	0.054166	-0.325664	-1.117	-0.257603	-1.762	-0.368377
130	0	0.054166	0.325664	1.117	0.257603	-1.762	-0.368377
130	2.000	0.054166	0.325664	1.117	0.257603	0.472331	0.282926
131	0	0.000426	-0.614705	-0.203128	1.599	0.119490	0.602713
131	2.000	0.000426	-0.614705	-0.203128	1.599	-0.286749	-0.626648
132	0	0.000426	0.614705	0.203128	-1.599	-0.286749	-0.626647
132	2.000	0.000426	0.614705	0.203128	-1.599	0.119490	0.602713
133	0	-0.034006	-0.171260	0.874381	-0.017767	-0.500864	0.180686
133	2.000	-0.034006	-0.171260	0.874381	-0.017767	1.248	-0.161822
134	0	-0.034006	0.171260	-0.874381	0.017767	1.248	-0.161822
134	2.000	-0.034006	0.171260	-0.874381	0.017767	-0.500864	0.180686
135	0	-0.047798	-0.095868	0.379670	-0.175591	-0.075807	0.105019
135	2.000	-0.047798	-0.095868	0.379670	-0.175591	0.683503	-0.086710
136	0	-0.047798	0.095868	-0.379670	0.175591	0.683503	-0.086710
136	2.000	-0.047798	0.095868	-0.379670	0.175591	-0.075807	0.105019
137	0	-0.048236	-0.057317	0.104746	-0.103964	0.053169	0.062727

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
137	2.000	-0.048236	-0.057317	0.104746	-0.103964	0.262653	-0.051902
138	0	-0.048236	0.057317	-0.104746	0.103964	0.262653	-0.051902
138	2.000	-0.048236	0.057317	-0.104746	0.103964	0.053168	0.062727
139	0	-0.043443	-0.033076	0.019910	-0.043667	0.048409	0.035836
139	2.000	-0.043443	-0.033076	0.019910	-0.043667	0.088227	-0.030314
140	0	-0.043443	0.033076	-0.019910	0.043667	0.088227	-0.030314
140	2.000	-0.043443	0.033076	-0.019910	0.043667	0.048409	0.035836
141	0	-0.038102	-0.014798	0.001760	-0.013905	0.027824	0.016292
141	2.000	-0.038102	-0.014798	0.001760	-0.013905	0.031344	-0.013303
142	0	-0.038102	0.014798	-0.001760	0.013905	0.031344	-0.013303
142	2.000	-0.038102	0.014798	-0.001760	0.013905	0.027824	0.016292
143	0	-0.032355	0.004315	0.001880	0.001390	0.018108	-0.002918
143	2.000	-0.032355	0.004315	0.001880	0.001390	0.021868	0.005712
144	0	-0.032355	-0.004315	-0.001880	-0.001390	0.021868	0.005712
144	2.000	-0.032355	-0.004315	-0.001880	-0.001390	0.018108	-0.002918
145	0	-0.022214	0.033356	0.013719	0.014763	0.015349	-0.030841
145	2.000	-0.022214	0.033356	0.013719	0.014763	0.042785	0.035869
146	0	-0.022214	-0.033356	-0.013719	-0.014763	0.042785	0.035869
146	2.000	-0.022214	-0.033356	-0.013719	-0.014763	0.015349	-0.030841
147	0	-0.001318	0.087732	0.049791	0.028396	0.003596	-0.082890
147	2.000	-0.001318	0.087732	0.049791	0.028396	0.103174	0.092567
148	0	-0.001318	-0.087732	-0.049791	-0.028396	0.103174	0.092567
148	2.000	-0.001318	-0.087732	-0.049791	-0.028396	0.003596	-0.082890
149	0	0.034756	0.197706	0.100179	0.012495	-0.020471	-0.190308
149	2.000	0.034756	0.197706	0.100179	0.012495	0.179879	0.205088
150	0	0.034756	-0.197706	-0.100179	-0.012495	0.179879	0.205088
150	2.000	0.034756	-0.197706	-0.100179	-0.012495	-0.020471	-0.190308
151	0	0.039541	0.022615	0.041186	-0.005025	-0.000729	-0.021692
151	2.000	0.039541	0.022615	0.041186	-0.005025	0.081640	0.023536
152	0	0.039541	-0.022615	-0.041186	0.005025	0.081640	0.023536
152	2.000	0.039541	-0.022615	-0.041186	0.005025	-0.000729	-0.021692
201	0	0.837662	1.65E-12	5.001	3.82E-13	-26.194	-9.05E-12
201	10.255	0.837662	1.65E-12	5.001	3.82E-13	25.091	7.83E-12
202	0	-0.819295	7.66E-13	4.569	3.98E-13	-24.660	-4.49E-12
202	10.595	-0.819295	7.66E-13	4.569	3.98E-13	23.743	3.63E-12

ENVOLVENTE: CS '' Ejec. "0001"

Grupo	Espe.	Hipótesis	Factor	Etapa	Título
A		3	1.000		Sobrecarga de uso 1
B	MAS	4	1.000		Sobrecarga de uso 2
C	MAS	5	1.000		Sobrecarga de uso 3
D	MAS	6	1.000		Sobrecarga de uso 4
E	MAS	7	1.000		Sobrecarga de uso 5
F	MAS	8	1.000		Sobrecarga de uso 6
G	MAS	9	1.000		Sobrecarga de uso 7
H	MAS	10	1.000		Sobrecarga de uso 8
I	MAS	11	1.000		Sobrecarga de uso 9
J	MAS	12	1.000		Sobrecarga de uso 10
K	MAS	13	1.000		Sobrecarga de uso 11
L	MAS	14	1.000		Sobrecarga de uso 12
M	MAS	15	1.000		Carro 1
N	MAS	16	1.000		Carro 2
O	O	17	1.000		Carro 3
P	O	18	1.000		Carro 4
Q	O	19	1.000		Carro 5
R	O	20	1.000		Carro 6
S	O	21	1.000		Carro 7
T	O	22	1.000		Carro 2
U	O	23	1.000		Carro 9
V	O	24	1.000		Carro 10
W	O	25	1.000		Carro 11
X	O	26	1.000		Carro 12

ENVOLVENTE para < N > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
201	0	-126.378	2.98E-08	-0.301174	-7.45E-09	1.760	4.20E-13
		1.759	0	0.283280	-9.31E-10	-1.282	0
201	10.255	-126.378	2.98E-08	-0.301174	-7.45E-09	-1.329	-2.38E-07
		1.759	0	0.283280	-9.31E-10	1.623	-7.45E-09
202	0	-92.279	0.456536	2.658	-0.055962	-9.878	0.349886
		9.455	9.31E-10	-1.385	-5.97E-14	6.464	2.98E-08
202	10.595	-92.279	0.456536	2.658	-0.055962	18.279	5.187
		9.455	9.31E-10	-1.385	-5.97E-14	-8.209	-5.76E-13

ENVOLVENTE para < Vz > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
1	0	0.332888	-0.517099	-12.758	-9.326	7.887	0.158752
		-1.246	0.303961	50.794	14.152	-10.530	-0.233339
1	1.275	0.332888	-0.517099	-12.758	-9.326	-8.382	-0.500656
		-1.113	0.303961	44.163	13.254	46.878	0.172225
2	0	0.093645	-0.446975	-10.053	-10.841	6.221	-0.222870
		-0.911200	0.315299	34.856	13.051	30.008	-0.152054
2	1.275	0.093645	-0.446975	-10.053	-10.841	-6.599	-0.792854
		-0.583841	0.314644	18.630	10.341	47.641	0.301517
3	0	-0.153283	-0.476542	-9.980	-10.327	7.043	-0.535623
		-0.375163	0.330974	17.413	8.449	37.344	0.054243
3	1.275	-0.091733	-0.141625	-12.884	-3.250	39.582	-0.668660
		-0.205947	0.268838	12.886	6.236	38.775	0.543862
4	0	-0.383777	-0.459098	-12.409	-9.162	22.172	-1.002
		-0.071079	0.268763	13.362	6.032	31.399	0.410974
4	1.275	-0.362417	-0.447033	-12.888	-9.118	11.868	-1.516
		0.040181	0.256698	7.210	5.091	40.752	0.700272
5	0	-0.546359	-0.500702	-12.640	-8.528	23.470	-1.312
		0.200993	0.226370	6.372	4.881	4.067	0.622162
5	1.275	-0.513720	-0.500702	-14.272	-9.426	6.311	-1.933
		0.200993	0.226370	6.372	4.881	12.193	0.910830
6	0	-0.695181	-0.531013	-14.066	-8.710	17.824	-1.733
		0.278440	0.217238	6.672	5.198	6.235	0.839372
6	1.275	-0.220064	-0.235921	-16.852	-4.140	31.517	-1.147
		0.311079	0.217238	5.040	4.300	13.703	1.134
7	0	-0.296291	-0.270243	-16.712	-3.412	36.615	-1.059
		0.373540	0.206109	5.436	5.015	8.068	1.082
7	1.275	-0.167800	-0.219455	-16.801	-2.813	20.146	-1.037
		0.277689	0.155322	3.894	3.519	9.118	0.996002
8	0	-0.379605	-0.296867	-16.365	-2.376	19.485	-1.302
		0.452938	0.184857	4.535	5.179	8.549	1.336

ENVOLVENTE para < Vz > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
8	1.275	-0.207896	-0.245603	-17.562	-2.210	1.989	-1.229
		0.347394	0.117032	3.101	4.106	-0.712337	1.114
9	0	-0.284821	-0.250275	-15.421	-0.675392	4.403	-1.107
		0.350263	0.075117	4.274	4.881	-5.837	1.136
9	1.275	-0.264999	-0.289578	-17.638	-1.104	-5.550	-1.473
		0.363886	0.053023	3.433	4.854	-9.376	1.195
10	0	-0.311552	-0.207132	-11.469	-1.578	-14.617	-1.285
		0.305403	-0.038168	7.310	4.836	-15.310	1.307
10	1.275	-0.278913	-0.207132	-13.101	-2.476	-30.283	-1.531
		0.305403	-0.038168	7.310	4.836	-5.989	1.258
11	0	-0.039970	-0.176959	-5.687	-5.670	-11.004	-0.549939
		-0.148061	-0.134984	17.109	2.659	-15.003	0.844692
11	1.700	-0.133954	-0.202382	-6.595	-5.655	-13.252	-0.850442
		-0.296757	-0.159167	9.415	2.028	-11.594	0.646347
12	0	0.075291	-0.173347	-2.284	-3.807	-0.100754	0.206449
		-0.749721	-0.133871	14.960	1.277	-19.570	0.234668
12	1.700	-0.060650	-0.190421	-3.153	-3.843	4.887	-0.082637
		-0.706203	-0.133871	12.784	0.079967	4.017	0.030985
13	0	-0.154316	-0.152786	-2.565	-2.918	9.766	0.069726
		-0.773931	-0.069319	14.319	2.221	1.289	0.235326
13	1.700	-0.154316	-0.152786	-2.565	-2.918	5.405	-0.190052
		-0.730413	-0.069319	12.143	1.024	23.785	0.141401
14	0	-0.217321	-0.120562	-2.577	-2.445	9.538	-0.104421
		-0.737732	-0.011842	12.870	2.637	20.261	0.236630
14	1.700	0.007436	-0.186038	-3.778	-3.436	10.839	0.380646
		-0.918970	0.053634	11.895	2.431	34.612	-0.449625
15	0	-0.065980	-0.158391	-3.247	-2.605	15.745	0.509638
		-0.866633	0.079098	11.912	3.106	29.877	-0.476071
15	1.700	-0.022462	-0.158391	-5.423	-3.801	8.374	0.264265

ENVOLVENTE para < Vz > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
		-0.766653	0.079098	6.913	3.106	42.630	-0.341583
16	0	-0.428457	-0.146036	-6.547	-3.111	44.282	0.356706
		-0.608923	0.196403	7.147	5.791	-2.111	-1.983
16	1.700	-0.328477	-0.146036	-11.546	-3.111	32.148	0.108404
		-0.565405	0.196403	4.971	4.594	8.191	-1.625
17	0	-0.374033	-0.150774	-11.528	-2.450	36.890	0.186866
		-0.469938	0.192163	5.517	5.325	-0.043205	-1.678
17	1.700	-0.187680	-0.164249	-12.633	-2.771	22.995	0.565272
		-0.612773	0.205638	4.447	4.450	1.781	-1.962
18	0	-0.249929	-0.175972	-11.908	-1.202	26.737	0.716753
		-0.518481	0.200791	4.435	4.568	-5.705	-2.060
18	1.700	-0.206411	-0.175972	-14.084	-2.398	4.641	0.441487
		-0.518481	0.200791	4.435	4.568	1.836	-1.719
19	0	-0.271459	-0.174776	-12.608	-0.361102	7.662	0.637595
		-0.435717	0.177156	4.526	4.718	-5.773	-1.799
19	1.700	-0.227941	-0.174776	-14.784	-1.558	-15.624	0.364364
		-0.435717	0.177156	4.526	4.718	1.922	-1.498
20	0	0.135514	-0.121044	-9.654	-2.255	-11.375	1.340
		-0.715326	0.106366	5.357	6.386	-8.539	-2.299
20	1.700	0.179033	-0.121044	-11.830	-3.452	-29.639	1.158
		-0.715326	0.106366	5.357	6.386	0.568900	-2.119
21	0	0.557731	-0.157339	-4.640	-4.988	-19.419	1.699
		-1.423	0.259121	10.466	6.581	-31.497	-3.488
21	1.275	0.557731	-0.157339	-4.640	-4.988	-25.336	1.499
		-1.390	0.259121	8.834	5.683	-19.191	-3.139
22	0	0.693331	-0.228771	-3.691	-3.857	0.969496	1.627
		-1.271	0.331424	12.733	6.160	-26.619	-3.202
22	1.275	0.693331	-0.228771	-3.691	-3.857	-3.737	1.335
		-1.238	0.331424	11.101	5.263	-11.422	-2.762

ENVOLVENTE para < Vz > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
23	0	0.615233	-0.209934	-3.447	-3.702	0.973661	1.418
		-1.133	0.344099	12.638	6.714	-19.561	-2.830
23	1.275	0.750473	-0.289396	-4.098	-4.883	0.368393	1.472
		-1.236	0.423561	11.656	6.997	-8.277	-2.694
24	0	0.652826	-0.275842	-3.526	-4.311	6.098	1.583
		-1.103	0.411095	11.881	7.893	-18.135	-2.813
24	1.275	0.685465	-0.275842	-5.158	-5.209	0.561469	1.249
		-1.103	0.411095	11.881	7.893	-2.985	-2.289
25	0	0.595049	-0.260111	-4.787	-4.722	6.784	1.355
		-0.966158	0.413584	12.082	8.571	-13.661	-2.415
25	1.275	0.627687	-0.260111	-6.419	-5.619	-0.360257	1.041
		-0.966158	0.413584	12.082	8.571	1.746	-1.888
26	0	0.545396	-0.246814	-6.176	-5.356	6.266	1.133
		-0.831157	0.422166	12.394	9.257	-9.431	-2.019
26	1.275	0.571685	-0.267302	-6.535	-5.879	2.078	0.848418
		-0.824806	0.442654	11.121	8.882	1.646	-1.493
27	0	0.497226	-0.265341	-6.220	-5.392	9.269	0.936668
		-0.694016	0.440851	11.397	9.162	-10.041	-1.623
27	1.275	0.529864	-0.265341	-7.852	-6.290	0.296891	0.616255
		-0.694016	0.440851	11.397	9.162	4.492	-1.061
28	0	0.474536	-0.265962	-8.152	-5.506	7.919	0.680930
		-0.581623	0.457329	12.336	8.918	-7.377	-1.162
28	1.275	0.507174	-0.265962	-9.784	-6.404	-3.517	0.359725
		-0.581623	0.457329	12.336	8.918	8.354	-0.579143
29	0	0.479124	-0.287756	-11.668	-4.596	3.922	0.389257
		-0.496763	0.511560	14.877	7.367	-2.735	-0.654660
29	1.275	0.511762	-0.287756	-13.300	-5.494	-11.998	0.040260
		-0.496763	0.511560	14.877	7.367	16.236	-0.002316
30	0	0.050820	0.000425	-4.839	3.885	8.671	-0.039481

ENVOLVENTE para < Vz > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
		-0.076121	0.002132	5.111	-2.047	-7.002	0.017820
30	1.275	0.050820	0.000425	-4.839	3.885	2.500	-0.038939
		-0.043482	0.002132	3.479	-2.944	-1.524	0.038490
31	0	0.039879	-0.116524	-2.624	-7.720	-0.816233	0.113948
		-0.535591	-0.000129	37.001	-0.025744	12.597	0.000291
31	1.275	0.039879	-0.116524	-2.624	-7.720	-4.162	-0.034644
		-0.165262	-0.000129	18.484	-0.025744	36.993	0.000127
32	0	0.060599	-0.163590	-4.163	-10.279	-5.331	0.113578
		-0.342908	-7.74E-05	35.130	-0.013816	54.904	7.84E-05
32	1.275	0.060599	-0.163590	-4.163	-10.279	-10.640	-0.095033
		-0.179396	-1.86E-09	21.468	-2.68E-07	73.774	5.12E-09
33	0	0.079693	3.73E-09	-4.479	2.38E-07	-11.167	-1.86E-09
		-0.357923	6.98E-10	24.069	-2.98E-07	79.481	-3.26E-09
33	1.275	0.254631	3.73E-09	-9.015	2.38E-07	8.652	-2.41E-14
		-0.312502	6.98E-10	17.587	1.79E-07	75.741	3.49E-09
34	0	0.218609	-2.15E-05	-11.452	0.000380	63.426	-9.86E-06
		-0.364743	4.66E-10	16.884	-3.87E-07	76.719	2.33E-10
34	1.275	0.216288	-2.15E-05	-11.818	0.000380	64.378	-3.73E-05
		-0.141248	-0.063003	6.918	-14.077	78.643	-0.061832
35	0	0.188864	-2.40E-05	-13.570	0.002057	64.078	-1.67E-05
		-0.095756	2.79E-09	3.955	-4.77E-07	23.229	-2.33E-10
35	1.275	0.209263	-2.40E-05	-14.590	0.002056	46.123	-4.72E-05
		-0.095756	2.79E-09	3.955	-4.77E-07	28.273	2.33E-10
36	0	0.211243	-2.93E-05	-15.400	0.002643	45.661	-2.04E-05
		-0.085738	-2.33E-10	3.438	-2.98E-07	28.940	1.45E-11
36	1.275	0.334952	-7.45E-09	-23.866	7.67E-13	66.222	-1.12E-08
		-0.050570	-2.33E-10	2.551	-5.96E-08	19.528	-6.98E-10
37	0	0.355256	-3.73E-09	-24.919	-1.19E-06	66.997	1.65E-14
		-0.043238	-6.98E-10	2.533	-2.98E-08	19.825	2.91E-11

ENVOLVENTE para < Vz > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
37	1.275	0.375656	-3.73E-09	-25.939	-2.38E-07	34.570	7.45E-09
		-0.043238	-6.98E-10	2.533	-2.98E-08	23.054	-4.66E-10
38	0	0.436548	3.73E-09	-27.774	7.15E-07	36.230	5.58E-14
		-0.031099	4.66E-10	2.212	2.54E-13	23.854	5.82E-11
38	1.275	0.456947	3.73E-09	-28.794	7.15E-07	0.162758	1.12E-08
		0.084874	4.66E-10	0.142755	8.70E-14	6.438	4.66E-10
39	0	0.555055	-3.73E-09	-33.582	-2.38E-07	3.747	-6.48E-14
		0.001306	-6.98E-10	0.140168	-5.96E-08	1.360	0
39	1.275	0.786075	-3.73E-09	-37.496	-2.38E-07	-19.384	-7.45E-09
		0.001306	-6.98E-10	0.140168	-5.96E-08	1.539	-4.66E-10
40	0	0.971187	-1.49E-08	-52.371	-2.38E-07	-12.673	-1.86E-09
		-0.025752	0	0.208325	-5.96E-08	1.451	-2.33E-10
40	1.275	0.991586	-1.49E-08	-53.391	2.38E-07	-80.107	7.45E-09
		-0.025752	0	0.208325	-5.96E-08	1.716	9.31E-10
41	0	0.213692	4.66E-10	-1.113	0	3.115	-4.66E-10
		-1.865	-5.59E-09	58.440	-3.23E-13	-83.581	-1.49E-08
41	1.700	0.213692	4.66E-10	-1.113	0	1.223	1.86E-09
		-2.216	0.058598	42.443	-12.963	-34.227	-0.101453
42	0	0.180220	6.98E-10	-0.776039	0	1.366	-1.16E-10
		-1.776	-0.003393	28.481	-12.504	-41.051	-0.126389
42	1.700	-0.181882	6.98E-10	-2.153	-3.90E-13	22.540	-1.40E-09
		-1.749	-0.003393	27.121	-12.504	6.217	-0.132158
43	0	-0.106811	-2.33E-10	-2.948	2.98E-08	21.138	2.33E-10
		-1.507	9.31E-10	23.668	2.38E-07	3.255	7.45E-09
43	1.700	-0.106811	-2.33E-10	-2.948	2.98E-08	16.127	1.40E-09
		-1.479	9.31E-10	22.308	-2.38E-07	42.340	-7.45E-09
44	0	-0.073321	4.66E-10	-2.939	2.98E-08	15.768	9.31E-10
		-1.372	9.31E-10	20.868	-2.38E-07	41.480	-3.01E-14
44	1.700	-0.073321	4.66E-10	-2.939	2.98E-08	10.771	-4.66E-10
		-1.345	9.31E-10	19.508	-2.38E-07	75.806	-3.73E-09

ENVOLVENTE para < Vz > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
45	0	-0.320330	0.072945	-3.650	8.343	29.381	-0.240488
		-1.060	-5.35E-14	19.116	2.38E-07	56.926	4.16E-14
45	1.700	-0.293131	0.072945	-5.010	8.343	22.019	-0.116461
		-0.849202	0.019807	9.133	-3.451	74.097	-0.137978
46	0	-0.758340	0.021556	-8.449	4.392	78.469	-0.176559
		0.392142	-9.31E-10	5.714	-3.55E-13	-0.926505	3.16E-14
46	1.700	-0.547513	2.49E-14	-18.433	2.88E-13	62.456	1.86E-09
		0.419340	-9.31E-10	4.354	-3.55E-13	7.632	-7.45E-09
47	0	-0.793791	2.33E-10	-18.893	2.98E-08	81.164	5.12E-09
		0.679387	-1.73E-13	3.685	-3.70E-13	-10.863	-3.73E-09
47	1.700	-0.766592	2.33E-10	-20.253	-2.09E-07	47.885	-9.31E-10
		0.679387	-1.73E-13	3.685	-3.70E-13	-4.598	-9.13E-14
48	0	-0.722309	5.82E-10	-21.692	5.96E-08	48.686	-5.12E-09
		0.687237	-7.65E-14	3.708	-4.27E-13	-4.710	3.70E-14
48	1.700	-0.695110	5.82E-10	-23.052	2.98E-07	10.646	1.02E-08
		0.687237	-7.65E-14	3.708	-4.27E-13	1.595	-9.31E-14
49	0	-0.642428	0.030053	-26.393	13.448	13.383	-0.180044
		0.721267	1.86E-09	4.037	-4.67E-13	1.220	5.13E-14
49	1.700	-0.615229	0.030053	-27.753	13.448	-32.649	-0.128944
		0.721267	1.86E-09	4.037	-4.67E-13	8.083	-8.54E-14
50	0	-0.758115	-0.070005	-40.842	13.869	-26.467	-0.142315
		0.874846	-7.04E-14	5.807	-1.19E-07	7.323	1.03E-13
50	1.700	-0.730916	-0.070005	-42.202	13.869	-97.065	-0.261343
		0.874846	-7.04E-14	5.807	-1.19E-07	17.197	-1.70E-14
51	0	0.010196	0.045216	-1.342	2.953	10.122	-0.086993
		-0.317842	-9.31E-10	26.732	5.96E-08	-81.571	-9.31E-09
51	1.275	0.010196	0.045216	-1.342	2.953	8.411	-0.029333
		-0.297443	-9.31E-10	25.712	1.19E-07	-48.133	3.20E-09

ENVOLVENTE para < Vz > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
52	0	0.098904	-1.72E-14	-0.929906	1.19E-07	8.890	8.38E-15
		-0.321655	0.103464	15.875	11.666	-53.009	-0.187845
52	1.275	0.098904	-1.72E-14	-0.929906	1.19E-07	7.704	-9.31E-10
		-0.301256	0.103464	14.855	11.666	-33.416	-0.055907
53	0	0.140898	1.42E-14	-0.882920	-1.19E-07	7.886	-2.49E-14
		-0.274441	0.097096	11.304	11.705	-36.186	-0.176779
53	1.275	0.140898	1.42E-14	-0.882920	-1.19E-07	6.760	4.66E-10
		-0.254042	0.097096	10.284	11.705	-22.422	-0.052962
54	0	0.160541	6.43E-14	-0.889572	-3.13E-13	6.821	1.86E-09
		-0.222980	0.104315	8.735	11.687	-23.610	-0.172142
54	1.275	0.160541	6.43E-14	-0.889572	-3.13E-13	5.687	1.30E-14
		-0.202581	0.104315	7.715	11.687	-13.121	-0.039119
55	0	0.135437	9.06E-14	-1.087	-3.08E-13	18.438	3.73E-09
		-0.145622	9.31E-10	6.803	3.20E-07	-26.323	-8.38E-09
55	1.275	0.155837	9.06E-14	-2.107	-4.77E-07	16.402	-6.80E-15
		-0.145622	9.31E-10	6.803	3.20E-07	-17.648	3.35E-10
56	0	0.166219	2.36E-14	-2.629	-4.77E-07	15.829	-3.98E-14
		-0.138584	2.33E-09	6.291	-3.58E-07	-17.303	3.73E-09
56	1.275	0.166219	2.36E-14	-2.629	-4.77E-07	12.476	-9.76E-15
		-0.118185	2.33E-09	5.271	1.19E-07	-9.931	1.87E-15
57	0	0.140596	-9.31E-10	-3.502	-2.38E-07	22.149	5.08E-14
		-0.088594	0.102674	5.187	11.214	-19.861	-0.117880
57	1.275	0.160995	-9.31E-10	-4.522	2.38E-07	17.033	-6.50E-15
		-0.088594	0.102674	5.187	11.214	-13.247	0.013050
58	0	0.134419	-5.82E-10	-4.768	-2.44E-13	16.146	-2.33E-10
		-0.073704	0.089371	4.815	10.333	-12.854	-0.088573
58	1.275	0.154819	-5.82E-10	-5.788	-4.77E-07	9.416	2.36E-14
		-0.073704	0.089371	4.815	10.333	-6.713	0.025393
59	0	0.102177	4.66E-10	-4.103	-4.77E-07	7.885	6.40E-10
		-0.052837	0.058272	3.549	8.142	-6.013	-0.057574

ENVOLVENTE para < Vz > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
59	1.275	0.122576	4.66E-10	-5.122	-1.96E-13	2.003	9.31E-10
		-0.052837	0.058272	3.549	8.142	-1.487	0.016736
60	0	0.017154	-3.44E-14	-0.714303	-9.73E-14	1.328	1.82E-09
		-0.019070	0.004890	1.025	4.008	-1.183	-0.045156
60	1.275	0.037554	-3.44E-14	-1.734	-9.73E-14	-0.232767	6.89E-15
		-0.019070	0.004890	1.025	4.008	0.123742	-0.038920
61	0	0.208236	0.250800	-8.238	5.487	4.656	-0.086862
		-1.495	-0.304034	63.264	-14.173	-10.560	0.233593
61	1.275	0.208236	0.250800	-8.238	5.487	-5.849	0.232959
		-1.113	-0.304034	44.136	-13.275	46.937	-0.172064
62	0	0.084736	0.229034	-6.489	6.240	2.662	0.086406
		-0.910893	-0.315420	34.840	-13.061	30.048	0.152168
62	1.275	0.084736	0.229034	-6.489	6.240	-5.613	0.378471
		-0.753226	-0.406504	25.668	-17.270	53.420	-0.405102
63	0	-0.044107	0.244930	-6.415	5.740	2.096	0.238863
		-0.498794	-0.438601	25.289	-14.851	34.535	-0.113240
63	1.275	-0.091428	0.141455	-12.891	3.248	39.588	0.668399
		-0.329578	-0.376465	20.761	-12.638	46.009	-0.740106
64	0	-0.159892	0.181704	-11.683	4.594	45.966	0.601051
		-0.168074	-0.383355	23.773	-10.868	31.070	-0.592537
64	1.275	-0.138533	0.169638	-12.162	4.550	36.587	0.761379
		0.276797	-0.463606	11.330	-10.145	13.626	-1.427
65	0	-0.216107	0.218143	-11.341	4.187	42.589	0.666686
		0.453913	-0.457261	11.668	-10.108	0.838600	-1.251
65	1.275	-0.183468	0.218143	-12.973	5.085	27.086	0.926911
		0.453913	-0.457261	11.668	-10.108	15.718	-1.834
66	0	-0.266882	0.245944	-12.610	4.386	32.942	0.827588
		0.603964	-0.462151	12.210	-10.364	3.117	-1.692
66	1.275	0.141846	0.110667	-21.158	4.342	33.183	0.475537

ENVOLVENTE para < Vz > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
		0.636602	-0.462151	10.578	-9.467	17.646	-2.300
67	0	0.076020	0.139162	-19.181	4.617	39.462	0.388101
		0.757021	-0.458138	11.690	-9.885	5.521	-2.191
67	1.275	0.204511	0.088374	-19.270	4.018	19.844	0.198497
		0.661169	-0.407350	10.147	-8.388	14.546	-2.426
68	0	0.008920	0.162549	-18.185	3.809	20.927	0.473990
		0.879255	-0.437963	12.646	-9.010	8.143	-2.734
68	1.275	0.180630	0.111285	-19.382	3.643	1.111	0.229377
		0.854371	-0.394110	8.788	-8.779	3.978	-2.920
69	0	0.126562	0.123534	-17.067	2.068	5.361	0.125798
		0.903593	-0.328509	11.523	-8.796	-6.800	-2.908
69	1.275	0.493789	0.045625	-21.501	-0.939225	0.245727	-0.546929
		0.962978	-0.303764	8.594	-9.429	-5.455	-3.271
70	0	0.128414	0.129162	-13.053	2.813	-13.988	0.162681
		0.951677	-0.116544	13.872	-8.961	-16.954	-3.361
70	1.275	0.161052	0.129162	-14.685	3.710	-31.674	0.309438
		0.951677	-0.116544	13.872	-8.961	0.735574	-3.509
71	0	0.901278	0.248197	-9.338	7.397	-5.771	-1.706
		0.503452	0.203624	28.123	-4.772	-13.399	-3.144
71	1.700	0.907558	0.273442	-13.738	5.738	-9.914	-1.367
		0.293334	0.154304	13.379	-5.707	-8.617	-2.249
72	0	1.022	0.322393	-5.989	5.686	5.111	-2.561
		-0.170987	0.163716	18.948	-5.173	-23.032	-1.846
72	1.700	0.945807	0.338993	-10.140	4.241	7.338	-1.999
		-0.127469	0.163716	16.772	-3.976	7.334	-1.591
73	0	0.770011	0.286147	-6.410	5.131	14.865	-2.282
		-0.214651	0.099103	18.534	-6.129	-1.924	-1.823
73	1.700	0.770011	0.286147	-6.410	5.131	3.967	-1.796
		-0.171132	0.099103	16.358	-4.932	27.739	-1.678

ENVOLVENTE para < Vz > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
74	0	0.629413	0.243452	-5.430	5.085	12.288	-1.985
		-0.215661	0.044687	18.257	-6.003	17.934	-1.836
74	1.700	0.854169	0.308928	-6.630	6.075	8.739	-2.261
		-0.396899	-0.020789	17.281	-5.796	41.443	-1.094
75	0	0.710991	0.274750	-5.885	5.275	18.038	-2.474
		-0.396700	-0.041233	20.757	-4.368	32.372	-1.173
75	1.700	0.754509	0.274750	-8.060	6.472	6.183	-2.031
		-0.146750	-0.041233	8.260	-4.368	48.915	-1.243
76	0	0.281902	0.180406	-8.180	4.667	50.809	-2.064
		0.154478	-0.080069	5.811	-3.757	-3.107	0.339197
76	1.700	0.531852	0.180406	-20.677	4.667	34.398	-1.758
		0.197996	-0.080069	3.635	-2.560	4.924	0.179123
77	0	0.430146	0.180677	-17.200	6.108	43.964	-1.944
		0.236703	-0.072147	4.182	-3.280	0.075590	0.173577
77	1.700	0.616499	0.194151	-18.306	6.429	20.425	-2.271
		0.093868	-0.085622	3.111	-2.404	-0.370735	0.661735
78	0	0.505534	0.190993	-16.407	5.405	30.937	-2.497
		0.130114	-0.075969	3.093	-2.500	-4.458	0.697401
78	1.700	0.549052	0.190993	-18.583	6.602	1.191	-2.196
		0.130114	-0.075969	3.093	-2.500	0.801371	0.568233
79	0	0.444774	0.191363	-16.875	4.560	11.234	-2.446
		0.148912	-0.052384	3.122	-2.621	-3.370	0.582458
79	1.700	0.488293	0.191363	-19.051	5.757	-19.307	-2.145
		0.148912	-0.052384	3.122	-2.621	1.938	0.493391
80	0	0.823400	0.179110	-13.895	6.261	-8.115	-3.171
		-0.217806	0.005050	3.651	-4.384	-5.043	1.214
80	1.700	0.866918	0.179110	-16.071	7.458	-33.590	-2.890
		-0.217806	0.005050	3.651	-4.384	1.165	1.223
81	0	1.193	0.321083	-8.272	8.907	-17.447	-3.498

ENVOLVENTE para < Vz > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
		-0.739959	-0.087345	7.253	-3.401	-15.370	1.659
81	1.275	1.193	0.321083	-8.272	8.907	-27.995	-3.089
		-0.707320	-0.087345	5.622	-2.503	-7.161	1.530
82	0	1.103	0.388085	-5.814	8.533	-17.271	-3.208
		-0.697030	-0.131382	9.119	-2.404	-24.473	1.546
82	1.275	1.103	0.388085	-5.814	8.533	-24.685	-2.714
		-0.664391	-0.131382	7.487	-1.507	-13.885	1.361
83	0	0.850868	0.326866	-5.214	6.207	-3.194	-2.376
		-0.620509	-0.142424	8.995	-3.032	-17.302	1.368
83	1.275	0.986109	0.406328	-5.864	7.388	-6.052	-2.280
		-0.723111	-0.221886	8.014	-3.315	-10.662	1.490
84	0	0.851852	0.404225	-5.297	6.739	2.790	-2.431
		-0.650923	-0.214915	8.219	-4.239	-15.828	1.549
84	1.275	0.884491	0.404225	-6.928	7.637	-5.005	-1.934
		-0.650923	-0.214915	8.219	-4.239	-5.347	1.275
85	0	0.752404	0.393559	-6.569	7.112	4.293	-2.083
		-0.576455	-0.214678	8.403	-4.931	-11.344	1.338
85	1.275	0.785042	0.393559	-8.201	8.010	-5.125	-1.599
		-0.576455	-0.214678	8.403	-4.931	-0.628714	1.064
86	0	0.658770	0.385100	-7.982	7.714	4.553	-1.733
		-0.502902	-0.222805	8.677	-5.636	-7.141	1.130
86	1.275	0.685059	0.405588	-8.341	8.236	-1.938	-1.272
		-0.496551	-0.243293	7.404	-5.261	-0.803270	0.858005
87	0	0.565478	0.420808	-8.092	7.682	8.264	-1.408
		-0.423953	-0.245562	7.568	-5.607	-7.866	0.930246
87	1.275	0.598117	0.420808	-9.724	8.580	-3.095	-0.889173
		-0.423953	-0.245562	7.568	-5.607	1.784	0.617103
88	0	0.497704	0.420209	-10.198	7.621	7.425	-1.002
		-0.362939	-0.253821	8.177	-5.584	-5.591	0.671088

ENVOLVENTE para < Vz > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
88	1.275	0.530343	0.420209	-11.830	8.519	-6.621	-0.484334
		-0.362939	-0.253821	8.177	-5.584	4.836	0.347414
89	0	0.455970	0.456623	-14.140	6.293	3.402	-0.560541
		-0.318928	-0.288602	9.851	-4.670	-2.188	0.383671
89	1.275	0.488609	0.456623	-15.772	7.190	-15.670	0.003795
		-0.318928	-0.288602	9.851	-4.670	10.374	0.015643
90	0	0.034242	0.000974	-3.125	-2.460	5.563	0.026480
		-0.083555	0.003085	6.465	3.458	-9.693	-0.034245
90	1.275	0.034242	0.000974	-3.125	-2.460	1.579	0.027721
		-0.050916	0.003085	4.833	4.356	-2.489	-0.048263
91	0	0.165665	-0.050686	-10.658	7.887	9.327	0.033986
		-0.035194	0.129197	23.634	-10.531	-14.153	-0.049847
91	2.000	0.165665	-0.050686	-10.658	7.887	-11.988	-0.067382
		-0.035194	0.129197	23.634	-10.531	33.113	0.208537
92	0	-0.103621	-0.144286	-25.812	13.574	34.154	0.217518
		0.087185	0.033400	6.456	-4.656	-7.423	-0.044556
92	2.000	-0.103621	-0.144286	-25.812	13.574	-17.467	-0.071043
		0.087185	0.033400	6.456	-4.656	5.488	0.022242
93	0	0.053257	0.185131	-2.708	14.603	1.520	-0.245487
		0.014246	-0.015881	9.310	-16.872	0.196387	0.329777
93	2.000	0.053257	0.185131	-2.708	14.603	-3.897	0.124760
		0.014246	-0.015881	9.310	-16.872	18.815	0.298016
94	0	0.010549	0.052974	-10.346	23.374	19.086	0.243133
		0.022633	-0.088528	1.751	-8.511	-2.746	0.044865
94	2.000	0.010549	0.052974	-10.346	23.374	-1.606	0.349078
		0.022633	-0.088528	1.751	-8.511	0.755062	-0.132183
95	0	-0.007201	0.004108	-1.963	0.733564	1.861	-0.011431
		-0.021841	-0.053709	2.060	3.092	1.120	0.154615
95	2.000	-0.007201	0.004108	-1.963	0.733564	-2.064	-0.003216
		-0.021841	-0.053709	2.060	3.092	5.239	0.047203

ENVOLVENTE para < Vz > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
96	0	-0.000169	0.124033	-1.642	5.103	5.168	-0.010620
		-0.007158	-0.003915	1.972	-0.728644	-2.074	-0.003450
96	2.000	-0.000169	0.124033	-1.642	5.103	1.885	0.237436
		-0.007158	-0.003915	1.972	-0.728644	1.869	-0.011280
97	0	-0.001949	-0.164742	-2.099	-7.048	0.849209	0.125950
		-0.053559	0.136059	1.629	12.958	-0.793549	-0.112912
97	2.000	-0.001949	-0.164742	-2.099	-7.048	-3.349	-0.203522
		-0.053559	0.136059	1.629	12.958	2.465	0.159194
98	0	-0.037858	-0.064661	-0.420090	-6.050	1.537	0.097055
		0.013877	0.221639	3.008	14.940	-4.250	-0.259869
98	2.000	-0.037858	-0.064661	-0.420090	-6.050	0.696688	-0.032262
		0.013877	0.221639	3.008	14.940	1.766	0.183391
99	0	-0.008248	-0.121388	-1.162	-6.139	-0.207299	0.079035
		-0.047549	0.137808	2.063	10.212	-2.181	-0.143648
99	2.000	-0.008248	-0.121388	-1.162	-6.139	-2.532	-0.163731
		-0.047549	0.137808	2.063	10.212	1.946	0.131957
100	0	-0.040682	-0.068422	-0.251627	-5.962	0.463543	0.072935
		-0.000191	0.216518	4.722	10.883	-6.863	-0.284146
100	2.000	-0.040682	-0.068422	-0.251627	-5.962	-0.039690	-0.063905
		-0.000191	0.216518	4.722	10.883	2.582	0.148873
101	0	-0.023190	-0.107373	-0.746207	-5.714	-0.422431	0.072275
		-0.023652	0.146558	1.748	6.930	-2.372	-0.169320
101	2.000	-0.023190	-0.107373	-0.746207	-5.714	-1.915	-0.142462
		-0.023652	0.146558	1.748	6.930	1.125	0.123784
102	0	-0.023299	-0.086154	-0.198162	-5.562	-0.141235	0.072780
		-0.020762	0.193263	4.023	6.902	-6.164	-0.259719
102	2.000	-0.023299	-0.086154	-0.198162	-5.562	-0.537544	-0.099521
		-0.020762	0.193263	4.023	6.902	1.881	0.126793

ENVOLVENTE para < Vz > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
103	0	-0.027436	0.003858	-0.651362	0.401921	-0.712168	-0.047783
		-0.011731	0.040978	0.987413	-1.404	-1.719	-0.065023
103	2.000	-0.027436	0.003858	-0.651362	0.401921	-2.015	-0.040066
		-0.011731	0.040978	0.987413	-1.404	0.255897	0.016929
104	0	-0.013059	0.005452	-0.091085	0.788382	-0.468351	-0.023357
		-0.026091	0.050254	2.421	-1.417	-4.542	-0.118181
104	2.000	-0.013059	0.005452	-0.091085	0.788382	-0.650514	-0.012453
		-0.026091	0.050254	2.421	-1.417	0.299716	-0.017677
105	0	-0.046801	0.042244	-0.960946	-0.323381	-1.816	-0.132922
		-0.023099	0.072741	0.703904	4.346	-1.451	-0.097499
105	2.000	-0.046801	0.042244	-0.960946	-0.323381	-3.738	-0.048437
		-0.023099	0.072741	0.703904	4.346	-0.043621	0.047977
106	0	0.001614	0.011194	-0.000690	0.584933	0.003777	-0.010927
		-0.034452	0.047535	2.784	6.154	-6.360	-0.163452
106	2.000	0.001614	0.011194	-0.000690	0.584933	0.002397	0.011461
		-0.034452	0.047535	2.784	6.154	-0.791198	-0.068387
107	0	-0.046890	0.040392	-2.579	-1.569	-2.032	-0.189780
		0.001058	0.064776	0.399876	2.046	-1.998	-0.112646
107	2.000	-0.046890	0.040392	-2.579	-1.569	-7.189	-0.108998
		0.001058	0.064776	0.399876	2.046	-1.198	0.016900
108	0	0.001058	0.012386	-0.003662	0.473461	0.016315	-0.012015
		-0.058063	0.070292	5.597	5.311	-11.434	-0.263400
108	2.000	0.001058	0.012386	-0.003662	0.473461	0.008991	0.012755
		-0.058063	0.070292	5.597	5.311	-0.240965	-0.122821
109	0	-0.036350	-0.056212	-7.438	-3.356	-0.208524	-0.190769
		0.002759	-0.012856	0.034343	0.044088	0.025003	0.014605
109	2.000	-0.036350	-0.056212	-7.438	-3.356	-15.084	-0.303189
		0.002759	-0.012856	0.034343	0.044088	0.093685	-0.011107
110	0	0.002759	0.012856	-0.034343	-0.044088	0.093685	-0.011107
		-0.133376	0.152384	10.811	4.519	-20.004	-0.459975

ENVOLVENTE para < Vz > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
110	2.000	0.002759	0.012856	-0.034343	-0.044088	0.025003	0.014605
		-0.133376	0.152384	10.811	4.519	1.617	-0.155218
111	0	-0.018252	-0.090381	-15.528	-0.296916	3.793	-0.422646
		0.000479	-0.035137	0.216657	0.111950	-0.074654	0.040851
111	2.000	-0.018252	-0.090381	-15.528	-0.296916	-27.262	-0.603401
		0.000479	-0.035137	0.216657	0.111950	0.358642	-0.029421
112	0	0.000479	0.035137	-0.216657	-0.111950	0.358642	-0.029421
		-0.243485	0.196426	20.664	2.237	-35.083	-0.824763
112	2.000	0.000479	0.035137	-0.216657	-0.111950	-0.074654	0.040851
		-0.243485	0.196426	20.664	2.237	6.244	-0.431928
113	0	0.036975	0.005757	-7.652	4.049	-1.210	-0.509544
		-0.003201	-0.013359	0.168789	-0.071379	-0.031544	0.020885
113	2.000	0.036975	0.005757	-7.652	4.049	-16.514	-0.498030
		-0.003201	-0.013359	0.168789	-0.071379	0.306020	-0.005833
114	0	-0.003201	0.013359	-0.168789	0.071379	0.306020	-0.005833
		-0.038707	-0.010802	12.147	-2.479	-22.989	-0.588011
114	2.000	-0.003201	0.013359	-0.168789	0.071379	-0.031544	0.020885
		-0.038707	-0.010802	12.147	-2.479	1.304	-0.609614
115	0	0.054611	0.067633	-1.756	1.596	-2.628	-0.318646
		0.026754	-0.000865	1.000	-1.316	-2.280	-0.071802
115	2.000	0.054611	0.067633	-1.756	1.596	-6.139	-0.183385
		0.026754	-0.000865	1.000	-1.316	-0.279090	-0.073532
116	0	-0.003970	0.005949	-0.031594	0.035632	0.086493	-0.002749
		0.073198	-0.092910	4.867	-4.265	-10.575	-0.234295
116	2.000	-0.003970	0.005949	-0.031594	0.035632	0.023309	0.009148
		0.073198	-0.092910	4.867	-4.265	-0.840947	-0.420108
117	0	0.040532	0.046281	-0.825141	-0.366683	-1.073	-0.158412
		0.030836	0.002704	0.739794	6.816	-1.763	-0.060325
117	2.000	0.040532	0.046281	-0.825141	-0.366683	-2.723	-0.065854

ENVOLVENTE para < Vz > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
		0.030836	0.002704	0.739794	6.816	-0.283221	-0.054918
118	0	0.042280	-0.007515	-0.090015	-0.982324	-0.820713	-0.045860
		0.051505	-0.063087	1.973	6.657	-4.391	-0.081996
118	2.000	0.042280	-0.007515	-0.090015	-0.982324	-1.001	-0.060890
		0.051505	-0.063087	1.973	6.657	-0.444004	-0.208164
119	0	0.006086	0.017779	-0.801879	-0.022648	-0.580505	-0.099073
		0.023751	-0.010621	1.796	3.916	-2.672	-0.040052
119	2.000	0.006086	0.017779	-0.801879	-0.022648	-2.184	-0.063516
		0.023751	-0.010621	1.796	3.916	0.920618	-0.061294
120	0	0.029059	0.014509	-0.240368	-0.149697	-0.348407	-0.050783
		0.021968	6.07E-06	4.132	4.287	-6.837	-0.160766
120	2.000	0.029059	0.014509	-0.240368	-0.149697	-0.829124	-0.021765
		0.021968	6.07E-06	4.132	4.287	1.427	-0.160754
121	0	0.002245	0.007678	-0.804852	0.341477	-0.565946	-0.087281
		0.005486	-0.008124	2.266	-0.582244	-3.110	-0.041425
121	2.000	0.002245	0.007678	-0.804852	0.341477	-2.176	-0.071926
		0.005486	-0.008124	2.266	-0.582244	1.422	-0.057673
122	0	0.006288	0.016574	-0.275450	0.338801	-0.202126	-0.046928
		0.009518	0.032209	5.157	-0.584632	-8.131	-0.206191
122	2.000	0.006288	0.016574	-0.275450	0.338801	-0.753004	-0.013780
		0.009518	0.032209	5.157	-0.584632	2.183	-0.141776
123	0	-0.000616	0.022376	-0.803301	2.112	-0.564841	-0.103003
		-0.009982	-0.026994	1.795	-6.472	-2.658	-0.021565
123	2.000	-0.000616	0.022376	-0.803301	2.112	-2.171	-0.058254
		-0.009982	-0.026994	1.795	-6.472	0.932404	-0.075552
124	0	-0.011610	0.026840	-0.238744	2.219	-0.337048	-0.060741
		0.007245	-0.001372	4.132	-6.853	-6.834	-0.157041
124	2.000	-0.011610	0.026840	-0.238744	2.219	-0.814517	-0.007063
		0.007245	-0.001372	4.132	-6.853	1.430	-0.159785

ENVOLVENTE para < Vz > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
125	0	-0.000102	-0.047674	-0.816327	-2.747	-0.765126	-0.039341
		-0.013671	-0.016049	0.745455	-8.376	-1.744	-0.039547
125	2.000	-0.000102	-0.047674	-0.816327	-2.747	-2.398	-0.134686
		-0.013671	-0.016049	0.745455	-8.376	-0.252658	-0.071644
126	0	-0.016438	-0.000178	-0.094014	2.055	-0.791261	-0.051234
		0.007468	-0.033015	1.975	-8.258	-4.353	-0.105291
126	2.000	-0.016438	-0.000178	-0.094014	2.055	-0.979283	-0.051590
		0.007468	-0.033015	1.975	-8.258	-0.402569	-0.171318
127	0	-0.005717	-0.004207	-1.669	-1.337	-2.281	-0.221235
		-0.014639	0.020319	0.163885	0.187617	0.126544	-0.004079
127	2.000	-0.005717	-0.004207	-1.669	-1.337	-5.619	-0.229649
		-0.014639	0.020319	0.163885	0.187617	0.454302	0.036557
128	0	-0.013015	-0.051744	-0.166686	-1.868	0.453985	0.066059
		-0.002449	-0.030382	1.902	-5.685	-6.089	-0.213811
128	2.000	-0.013015	-0.051744	-0.166686	-1.868	0.120626	-0.037426
		-0.002449	-0.030382	1.902	-5.685	-2.284	-0.274572
129	0	0.011049	-0.204478	-6.542	-3.112	-0.905090	-0.222951
		-0.014008	0.094515	0.883728	0.380259	-0.155549	-0.051354
129	2.000	0.011049	-0.204478	-6.542	-3.112	-13.988	-0.631892
		-0.014008	0.094515	0.883728	0.380259	1.612	0.137668
130	0	-0.005469	-0.128523	-0.886402	-2.050	1.597	0.169516
		-0.034909	0.176620	6.567	-3.832	-14.232	-0.629510
130	2.000	-0.005469	-0.128523	-0.886402	-2.050	-0.175821	-0.087521
		-0.034909	0.176620	6.567	-3.832	-1.097	-0.276284
131	0	0.014522	-0.433860	-11.685	1.386	2.573	0.030299
		-0.006850	0.175241	1.219	-2.028	-0.375056	-0.131286
131	2.000	0.014522	-0.433860	-11.685	1.386	-20.797	-0.837387
		-0.006850	0.175241	1.219	-2.028	2.063	0.219181
132	0	-0.001152	-0.188738	-1.162	0.567201	1.930	0.224772

ENVOLVENTE para < Vz > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
		-0.087650	0.393010	12.296	-7.309	-22.104	-0.825029
132	2.000	-0.001152	-0.188738	-1.162	0.567201	-0.394299	-0.152688
		-0.087650	0.393010	12.296	-7.309	2.487	-0.039041
133	0	0.009889	-0.110501	-4.917	2.439	-0.813022	-0.075994
		0.011879	0.030744	0.208402	-1.453	0.142035	-0.018245
133	2.000	0.009889	-0.110501	-4.917	2.439	-10.647	-0.296988
		0.011879	0.030744	0.208402	-1.453	0.558823	0.043240
134	0	0.007652	-0.048504	-0.204981	0.239188	0.535921	0.059934
		-0.026752	0.049631	4.936	-7.244	-10.843	-0.237985
134	2.000	0.007652	-0.048504	-0.204981	0.239188	0.125975	-0.037070
		-0.026752	0.049631	4.936	-7.244	-0.972163	-0.138727
135	0	0.011584	-0.083346	-1.802	-3.338	-1.716	-0.031535
		0.011103	0.021375	0.023071	-0.091113	0.110227	-0.016870
135	2.000	0.011584	-0.083346	-1.802	-3.338	-5.319	-0.198220
		0.011103	0.021375	0.023071	-0.091113	0.156368	0.025878
136	0	0.008945	-0.040386	-0.024750	-1.116	0.152747	0.044512
		0.007789	0.022112	1.775	-1.385	-5.339	-0.138084
136	2.000	0.008945	-0.040386	-0.024750	-1.116	0.103249	-0.036258
		0.007789	0.022112	1.775	-1.385	-1.789	-0.093862
137	0	0.006800	-0.069149	-0.797621	-5.040	-1.418	-0.001367
		0.000946	0.012149	0.003693	0.927921	-0.078599	-0.014807
137	2.000	0.006800	-0.069149	-0.797621	-5.040	-3.013	-0.139659
		0.000946	0.012149	0.003693	0.927921	-0.071212	0.009491
138	0	0.000167	-0.053260	-0.006475	-3.666	-0.082524	0.049329
		0.010563	0.007676	0.779906	0.347289	-3.004	-0.079903
138	2.000	0.000167	-0.053260	-0.006475	-3.666	-0.095473	-0.057186
		0.010563	0.007676	0.779906	0.347289	-1.445	-0.064551
139	0	0.002535	-0.074719	-0.618759	-5.257	-0.680963	0.034290
		0.001917	0.013981	0.049827	0.815952	-0.516179	-0.029270

ENVOLVENTE para < Vz > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
139	2.000	0.002535	-0.074719	-0.618759	-5.257	-1.918	-0.115143
		0.001917	0.013981	0.049827	0.815952	-0.416528	-0.001310
140	0	0.001656	-0.076131	-0.061046	-5.557	-0.517238	0.055464
		0.004718	0.012302	0.602609	0.578142	-1.898	-0.054383
140	2.000	0.001656	-0.076131	-0.061046	-5.557	-0.639325	-0.096790
		0.004718	0.012302	0.602609	0.578142	-0.692914	-0.029780
141	0	0.002449	-0.106058	-0.616729	-6.987	-0.482441	0.073086
		0.001732	0.042912	0.063158	2.442	-0.551445	-0.059806
141	2.000	0.002449	-0.106058	-0.616729	-6.987	-1.716	-0.139021
		0.001732	0.042912	0.063158	2.442	-0.425134	0.026016
142	0	0.001225	-0.105096	-0.099781	-7.107	-0.370737	0.087041
		0.010867	0.044590	0.580363	2.328	-1.577	-0.076154
142	2.000	0.001225	-0.105096	-0.099781	-7.107	-0.570292	-0.123141
		0.010867	0.044590	0.580363	2.328	-0.416290	0.013023
143	0	0.010673	-0.123974	-0.694765	-8.937	-0.692480	0.082268
		0.002857	0.055964	0.105140	4.440	-0.074905	-0.056804
143	2.000	0.010673	-0.123974	-0.694765	-8.937	-2.082	-0.165670
		0.002857	0.055964	0.105140	4.440	0.135367	0.055121
144	0	-0.006723	-0.120642	-0.190997	-9.014	0.155402	0.116186
		0.008102	0.063568	0.583410	4.312	-1.924	-0.105459
144	2.000	-0.006723	-0.120642	-0.190997	-9.014	-0.226577	-0.125089
		0.008102	0.063568	0.583410	4.312	-0.757133	0.021673
145	0	0.018855	-0.134432	-1.066	-10.812	-0.216982	0.097345
		-0.002910	0.064473	0.428823	6.565	-0.323757	-0.063931
145	2.000	0.018855	-0.134432	-1.066	-10.812	-2.350	-0.171509
		-0.002910	0.064473	0.428823	6.565	0.533854	0.065010
146	0	-0.013667	-0.129852	-0.626961	-10.919	0.611485	0.124934
		0.012325	0.076445	0.737283	6.318	-1.911	-0.111890
146	2.000	-0.013667	-0.129852	-0.626961	-10.919	-0.642388	-0.134759
		0.012325	0.076445	0.737283	6.318	-0.436088	0.040994

ENVOLVENTE para < Vz > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
147	0	0.043826	-0.135658	-2.538	-11.090	1.549	0.108993
		-0.021004	0.065736	1.883	7.439	-1.807	-0.066745
147	2.000	0.043826	-0.135658	-2.538	-11.090	-3.527	-0.162312
		-0.021004	0.065736	1.883	7.439	1.958	0.064721
148	0	-0.031092	-0.120497	-2.307	-10.023	2.390	0.118579
		0.028016	0.077490	1.673	7.024	-2.433	-0.099052
148	2.000	-0.031092	-0.120497	-2.307	-10.023	-2.224	-0.122405
		0.028016	0.077490	1.673	7.024	0.913419	0.055921
149	0	0.067350	-0.146631	-4.897	-7.565	3.481	0.102307
		-0.038182	0.069322	4.171	4.997	-3.447	-0.046992
149	2.000	0.067350	-0.146631	-4.897	-7.565	-6.313	-0.190944
		-0.038182	0.069322	4.171	4.997	4.894	0.091647
150	0	-0.049929	-0.138804	-4.982	-6.766	5.749	0.162442
		0.041145	0.086218	3.228	4.811	-4.247	-0.118712
150	2.000	-0.049929	-0.138804	-4.982	-6.766	-4.213	-0.115154
		0.041145	0.086218	3.228	4.811	2.209	0.053718
151	0	0.003367	-0.045938	-4.839	-2.500	3.885	0.036324
		-0.001804	0.026047	3.480	1.524	-2.944	-0.020581
151	2.000	0.003367	-0.045938	-4.839	-2.500	-5.793	-0.055549
		-0.001804	0.026047	3.480	1.524	4.014	0.031511
152	0	0.004834	-0.045724	-4.833	-2.489	5.311	0.051518
		0.000696	0.028229	3.125	1.579	-3.789	-0.034817
152	2.000	0.004834	-0.045724	-4.833	-2.489	-4.355	-0.039926
		0.000696	0.028229	3.125	1.579	2.460	0.021639
201	0	-67.580	6.80E-14	-3.188	7.30E-15	10.682	-9.18E-14
		-69.490	1.18E-08	2.486	-4.66E-09	-7.146	1.38E-12
201	10.255	-67.580	6.80E-14	-3.188	7.30E-15	-22.007	-2.38E-07
		-69.490	1.18E-08	2.486	-4.66E-09	18.346	-9.69E-08

ENVOLVENTE para < Vz > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
202	0	-13.072	-3.73E-09	-1.822	4.66E-10	7.705	2.24E-08
		-69.752	2.51E-14	3.094	-9.31E-10	-11.120	-1.49E-08
202	10.595	-13.072	-3.73E-09	-1.822	4.66E-10	-11.594	-2.38E-07
		-69.752	2.51E-14	3.094	-9.31E-10	21.664	3.50E-13

ENVOLVENTE para < Mx > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
1	0	0.205776	-0.474275	-11.039	-9.467	8.059	0.144587
		-1.246	0.303961	50.794	14.152	-10.530	-0.233339
1	1.275	0.205776	-0.474275	-11.039	-9.467	-6.018	-0.460210
		-1.113	0.303961	44.163	13.254	46.878	0.172225
2	0	-0.005946	-0.424774	-8.745	-11.165	9.041	-0.219691
		-0.911200	0.315299	34.856	13.051	30.008	-0.152054
2	1.275	-0.005946	-0.424774	-8.745	-11.165	-2.111	-0.761365
		-0.528631	0.315299	15.727	12.154	55.040	0.267968
3	0	-0.233772	-0.450639	-8.789	-10.810	12.188	-0.519564
		-0.325034	0.326152	16.592	8.796	43.929	0.033528
3	1.275	-0.233772	-0.450639	-8.789	-10.810	0.980309	-1.094
		0.057535	0.326152	-2.536	7.899	49.609	0.467390
4	0	-0.443477	-0.480450	-8.993	-10.273	14.574	-0.879645
		-0.076343	0.318139	11.097	6.591	46.412	0.319478
4	1.275	-0.443477	-0.480450	-8.993	-10.273	3.107	-1.492
		0.056276	0.318139	4.466	5.694	58.397	0.743122
5	0	-0.635287	-0.524321	-9.183	-9.669	16.005	-1.291
		0.291423	0.297351	-0.060617	5.587	51.683	0.611490
5	1.275	-0.575656	-0.509682	-10.908	-10.177	8.341	-1.848
		0.264430	0.282712	0.032034	5.198	46.518	0.897669

ENVOLVENTE para < Mx > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
6	0	-0.711778	-0.497912	-10.349	-9.187	17.770	-1.568
		0.329915	0.228073	-0.287576	5.351	43.267	0.705541
6	1.275	-0.711778	-0.497912	-10.349	-9.187	4.573	-2.202
		0.462533	0.228073	-6.919	4.453	36.609	1.014
7	0	-0.876928	-0.565245	-10.792	-8.241	8.719	-2.094
		0.190535	0.054877	-4.440	5.938	27.857	0.308610
7	1.275	-0.876928	-0.565245	-10.792	-8.241	-5.042	-2.815
		0.223173	0.054877	-6.072	5.041	21.155	0.396541
8	0	-1.041	-0.628854	-10.875	-7.016	-1.123	-2.618
		0.250097	0.043509	-5.674	6.540	14.010	0.389718
8	1.275	-1.041	-0.628854	-10.875	-7.016	-14.991	-3.419
		0.282736	0.043509	-7.306	5.642	5.735	0.463152
9	0	-1.084	-0.556558	-8.675	-5.719	-7.115	-2.742
		0.137306	-0.056337	-6.606	6.987	-0.943246	0.037368
9	1.275	-0.870669	-0.510748	-10.850	-5.956	-16.994	-2.918
		-0.043803	-0.102146	-6.062	6.327	-11.591	-0.549845
10	0	-1.226	-0.410282	-6.173	-5.573	-19.626	-2.614
		0.176129	-0.071889	-2.690	6.194	-18.519	0.048217
10	1.275	-0.969158	-0.389964	-9.042	-6.323	-28.915	-2.552
		-0.048355	-0.092207	-1.452	6.046	-21.572	-0.611006
11	0	-1.323	-0.262596	-2.102	-8.692	-23.264	-2.000
		-0.054195	-0.002376	7.203	4.167	-24.123	-0.523130
11	1.700	-1.323	-0.262596	-2.102	-8.692	-26.838	-2.446
		-0.010676	-0.002376	5.027	2.970	-13.726	-0.503235
12	0	-1.502	-0.200051	2.559	-8.569	-12.103	-2.075
		-0.477352	0.044675	9.041	4.097	-14.014	-1.327
12	1.700	-1.502	-0.200051	2.559	-8.569	-7.752	-2.415
		-0.433833	0.044675	6.866	2.900	-0.491131	-1.227
13	0	-1.606	-0.158066	3.110	-6.955	4.644	-2.228
		-0.611372	0.062551	7.903	4.683	-2.123	-1.227

ENVOLVENTE para < Mx > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
13	1.700	-1.397	-0.237372	3.335	-7.341	15.747	-1.796
		-0.776396	0.141856	5.501	3.872	3.649	-1.797
14	0	-1.255	-0.125954	1.789	-5.346	16.715	-1.688
		-1.088	0.083985	6.505	5.057	12.006	-1.819
14	1.700	-1.030	-0.191430	0.588370	-6.337	25.439	-1.212
		-1.269	0.149461	5.529	4.851	15.534	-2.343
15	0	-1.067	-0.160864	-0.554070	-3.646	34.148	-1.116
		-1.167	0.175305	5.496	5.703	6.501	-2.419
15	1.700	-1.024	-0.160864	-2.730	-4.843	31.356	-1.365
		-1.167	0.175305	5.496	5.703	15.846	-2.121
16	0	0.281230	-0.152396	-3.123	-3.160	4.901	0.381336
		-1.064	0.189035	5.800	6.402	6.161	-2.193
16	1.700	0.281230	-0.152396	-3.123	-3.160	-0.408389	0.122222
		-1.020	0.189035	3.624	5.205	14.172	-1.848
17	0	0.364571	-0.157506	-2.321	-2.612	2.844	0.219595
		-1.270	0.070847	0.064676	6.611	27.475	-1.908
17	1.700	0.550924	-0.170981	-3.427	-2.933	4.604	0.586555
		-1.413	0.084321	-1.006	5.735	20.028	-2.399
18	0	0.649519	-0.125175	-1.787	-2.454	-0.300183	0.702382
		-1.508	0.016749	-2.588	7.685	18.266	-2.428
18	1.700	0.871737	-0.138832	-4.318	-3.379	0.047924	1.182
		-1.687	0.030407	-2.233	7.414	8.629	-3.067
19	0	0.789537	-0.156066	-3.472	-2.556	5.188	1.329
		-1.623	0.034758	-1.744	8.921	-4.531	-3.064
19	1.700	0.833055	-0.156066	-5.648	-3.753	-2.565	1.087
		-1.623	0.034758	-1.744	8.921	-7.496	-3.005
20	0	0.709907	-0.169086	-4.248	-2.883	3.116	1.299
		-1.479	0.099020	2.490	8.991	-22.814	-3.004
20	1.700	0.753425	-0.169086	-6.424	-4.080	-5.956	1.035

ENVOLVENTE para < Mx > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
		-1.479	0.099020	2.490	8.991	-18.580	-2.836
21	0	0.318537	-0.132349	-3.709	-5.329	-22.642	1.174
		-1.184	0.234131	9.536	6.923	-28.274	-2.963
21	1.275	0.455251	-0.205168	-2.649	-5.579	-25.993	1.403
		-1.288	0.306950	6.844	6.275	-18.534	-3.044
22	0	0.460472	-0.180395	-1.770	-4.971	-20.603	1.470
		-1.202	0.318932	12.304	6.357	-25.430	-3.113
22	1.275	0.593861	-0.262809	-1.434	-5.740	-19.889	1.600
		-1.303	0.401347	10.336	6.229	-13.752	-3.048
23	0	0.514022	-0.254525	-0.080119	-4.599	-13.812	1.710
		-1.172	0.412051	11.178	7.130	-22.702	-3.158
23	1.275	0.546661	-0.254525	-1.712	-5.497	-14.955	1.404
		-1.172	0.412051	11.178	7.130	-8.448	-2.632
24	0	0.462815	-0.255790	-1.073	-4.550	-8.876	1.507
		-1.042	0.402055	11.407	7.932	-18.432	-2.749
24	1.275	0.495453	-0.255790	-2.705	-5.448	-11.285	1.198
		-1.042	0.402055	11.407	7.932	-3.887	-2.236
25	0	0.444334	-0.259420	-2.716	-4.781	-6.465	1.355
		-0.941282	0.413330	11.992	8.572	-13.086	-2.415
25	1.275	0.476972	-0.259420	-4.348	-5.678	-10.968	1.042
		-0.941282	0.413330	11.992	8.572	2.206	-1.888
26	0	0.545396	-0.246814	-6.176	-5.356	6.266	1.133
		-0.831157	0.422166	12.394	9.257	-9.431	-2.019
26	1.275	0.571685	-0.267302	-6.535	-5.879	2.078	0.848418
		-0.824806	0.442654	11.121	8.882	1.646	-1.493
27	0	0.497226	-0.265341	-6.220	-5.392	9.269	0.936668
		-0.694016	0.440851	11.397	9.162	-10.041	-1.623
27	1.275	0.529864	-0.265341	-7.852	-6.290	0.296891	0.616255
		-0.694016	0.440851	11.397	9.162	4.492	-1.061

ENVOLVENTE para < Mx > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
28	0	0.474536	-0.265962	-8.152	-5.506	7.919	0.680930
		-0.581623	0.457329	12.336	8.918	-7.377	-1.162
28	1.275	0.507174	-0.265962	-9.784	-6.404	-3.517	0.359725
		-0.581623	0.457329	12.336	8.918	8.354	-0.579143
29	0	0.479124	-0.287756	-11.668	-4.596	3.922	0.389257
		-0.496763	0.511560	14.877	7.367	-2.735	-0.654660
29	1.275	0.511762	-0.287756	-13.300	-5.494	-11.998	0.040260
		-0.496763	0.511560	14.877	7.367	16.236	-0.002316
30	0	-0.030213	0.008482	2.568	-2.072	-4.601	0.014694
		0.004912	-0.005925	-2.296	3.910	6.270	-0.036355
30	1.275	-0.043482	0.002132	3.479	-2.944	-1.524	0.038490
		0.050820	0.000425	-4.839	3.885	2.500	-0.038939
31	0	-0.153805	-0.304672	10.163	-30.117	3.289	0.397848
		-0.374092	0.180427	24.817	14.828	7.777	-0.206228
31	1.275	-0.143606	-0.304672	9.653	-29.862	15.925	0.004229
		-0.163933	0.180427	14.309	14.573	26.448	0.028952
32	0	-0.214589	-0.360501	15.107	-38.581	20.705	0.281188
		-0.355015	0.235456	28.664	18.850	37.565	-0.174301
32	1.275	-0.204389	-0.360501	14.597	-38.326	39.645	-0.183625
		-0.144856	0.235456	18.156	18.595	63.293	0.131054
33	0	-0.257493	-0.300673	14.950	-36.687	42.099	0.162691
		-0.312524	0.210473	20.901	18.177	68.346	-0.110878
33	1.275	-0.247293	-0.300673	14.440	-36.432	60.838	-0.225829
		-0.102365	0.210473	10.393	17.922	86.424	0.162617
34	0	-0.074872	-0.345183	2.809	-33.355	17.548	0.112957
		0.178639	0.182392	-9.280	16.714	78.520	-0.061435
34	1.275	-0.064673	-0.345183	2.299	-33.100	20.804	-0.332322
		0.188838	0.182392	-9.790	16.459	66.361	0.176252
35	0	-0.055650	-0.307886	1.764	-31.566	21.009	0.042251

ENVOLVENTE para < Mx > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
		0.156767	0.164566	-11.384	15.158	66.404	-0.025300
35	1.275	-0.045451	-0.307886	1.254	-31.311	22.934	-0.355467
		0.166967	0.164566	-11.894	14.903	51.561	0.189655
36	0	-0.022174	-0.252833	0.667527	-29.924	23.263	-0.013673
		0.162960	0.127495	-12.704	14.077	51.577	-0.001709
36	1.275	-0.011974	-0.252833	0.157547	-29.669	23.789	-0.341186
		0.173159	0.127495	-13.214	13.822	35.052	0.165973
37	0	0.111975	-0.231868	-2.392	-28.178	9.268	-0.066659
		0.280905	0.071137	-21.721	15.859	62.754	-0.017670
37	1.275	0.122174	-0.231868	-2.902	-27.923	5.892	-0.367438
		0.291105	0.071137	-22.231	15.604	34.730	0.078143
38	0	0.288182	-0.209180	-5.426	-26.093	-5.972	-0.095660
		0.324769	0.064677	-23.623	16.006	35.662	-0.010330
38	1.275	0.298381	-0.209180	-5.936	-25.838	-13.216	-0.367507
		0.334969	0.064677	-24.133	15.751	5.213	0.077246
39	0	0.456373	-0.265623	-9.300	-23.526	-10.265	-0.089620
		0.375870	0.070158	-27.539	15.051	7.717	-0.003525
39	1.275	0.466572	-0.265623	-9.810	-23.271	-22.450	-0.433443
		0.386070	0.070158	-28.049	14.796	-27.726	0.091041
40	0	0.820201	-0.357580	-22.603	-20.756	-42.715	-0.079928
		0.378369	-0.056535	-31.404	15.634	-19.248	-0.017236
40	1.275	0.830401	-0.357580	-23.113	-21.011	-71.863	-0.530816
		0.388568	-0.056535	-31.914	15.889	-59.620	-0.094430
41	0	-1.829	0.008713	30.723	-24.985	-71.847	-0.207315
		0.210569	0.149861	17.378	15.031	-62.362	-0.204870
41	1.700	-1.816	0.008713	30.043	-24.645	-20.188	-0.199301
		0.224168	0.149861	16.698	14.691	-33.393	0.056734
42	0	-1.467	-0.049548	21.120	-23.110	-24.472	-0.154116
		-0.073947	0.096473	8.327	16.214	-24.320	-0.180121

ENVOLVENTE para < Mx > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
42	1.700	-1.453	-0.049548	20.440	-22.770	10.860	-0.245161
		-0.060348	0.096473	7.647	15.874	-10.739	-0.009291
43	0	-1.145	-0.031029	18.979	-20.617	2.675	-0.194854
		-0.263140	0.099136	3.515	15.429	5.263	-0.194901
43	1.700	-1.131	-0.031029	18.299	-20.277	34.366	-0.254412
		-0.249540	0.099136	2.835	15.089	10.660	-0.019544
44	0	-1.040	-0.040166	17.067	-17.704	34.182	-0.072955
		-0.383797	0.129966	0.320011	15.974	23.765	-0.342691
44	1.700	-1.026	-0.040166	16.387	-18.044	62.622	-0.134448
		-0.370198	0.129966	-0.359962	16.314	23.731	-0.128513
45	0	-0.989964	-0.045254	14.054	-12.926	62.987	-0.082958
		-0.329538	0.138006	-1.072	17.818	23.464	-0.329186
45	1.700	-0.826394	-0.045254	5.875	-13.266	75.053	-0.153102
		-0.315939	0.138006	-1.752	18.158	21.063	-0.101338
46	0	0.415119	-0.067482	2.456	-9.815	-0.600775	0.084219
		-0.294633	0.138039	-2.439	18.283	21.010	-0.310224
46	1.700	0.428718	-0.067482	1.776	-9.475	2.996	-0.037319
		-0.281034	0.138039	-3.119	17.943	16.284	-0.068721
47	0	0.446476	-0.067702	1.080	-8.508	3.017	0.069981
		-0.596784	0.095034	-15.706	18.984	66.857	-0.254503
47	1.700	0.460075	-0.067702	0.400296	-8.168	4.275	-0.051931
		-0.583184	0.095034	-16.386	18.644	39.574	-0.086119
48	0	0.490757	-0.045365	-0.306422	-9.144	4.388	0.159100
		-0.542385	0.081339	-17.618	21.958	39.701	-0.351162
48	1.700	0.504357	-0.045365	-0.986394	-9.484	3.289	0.088767
		-0.528786	0.081339	-18.297	22.298	9.168	-0.219664
49	0	0.570108	-0.049839	-1.929	-11.004	3.715	0.153458
		-0.491269	0.079893	-20.428	24.452	10.888	-0.333501
49	1.700	0.583707	-0.049839	-2.609	-11.344	-0.142844	0.075517
		-0.477669	0.079893	-21.108	24.792	-24.423	-0.204461

ENVOLVENTE para < Mx > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
50	0	0.726787	-0.046448	-5.030	-12.429	1.011	0.142983
		-0.610057	-0.023557	-30.004	26.298	-20.156	-0.285298
50	1.700	0.740386	-0.046448	-5.710	-12.769	-8.119	0.070809
		-0.596457	-0.023557	-30.684	26.638	-71.750	-0.332151
51	0	-0.178664	-0.103663	8.586	-11.583	-12.089	0.197265
		-0.129267	0.282328	16.804	22.864	-59.356	-0.487455
51	1.275	-0.168465	-0.103663	8.076	-11.328	-1.465	0.059974
		-0.119067	0.282328	16.294	22.609	-38.252	-0.122329
52	0	-0.065529	-0.128569	5.046	-11.794	-2.527	0.223136
		-0.157222	0.232033	9.899	23.460	-41.592	-0.410981
52	1.275	-0.055330	-0.128569	4.536	-12.049	3.582	0.064285
		-0.147022	0.232033	9.389	23.715	-29.294	-0.120192
53	0	0.007619	-0.120941	3.205	-13.263	2.860	0.210093
		-0.141161	0.218037	7.217	24.969	-31.161	-0.386872
53	1.275	0.017818	-0.120941	2.695	-13.518	6.622	0.060968
		-0.130962	0.218037	6.707	25.224	-22.283	-0.113930
54	0	0.055003	-0.129008	1.987	-14.485	6.287	0.205010
		-0.117441	0.233323	5.859	26.172	-23.076	-0.377151
54	1.275	0.065202	-0.129008	1.477	-14.740	8.495	0.045597
		-0.107242	0.233323	5.349	26.427	-15.930	-0.084716
55	0	0.085264	-0.144338	0.924181	-15.501	8.346	0.207704
		-0.095385	0.253146	4.792	27.145	-16.231	-0.367575
55	1.275	0.095463	-0.144338	0.414200	-15.756	9.199	0.028744
		-0.085185	0.253146	4.282	27.400	-10.445	-0.049862
56	0	0.103387	-0.141236	-0.103202	-16.795	9.090	0.183743
		-0.075703	0.248634	3.765	28.328	-10.564	-0.324680
56	1.275	0.113586	-0.141236	-0.613182	-17.050	8.633	0.008738
		-0.065503	0.248634	3.255	28.583	-6.088	-0.012720

ENVOLVENTE para < Mx > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
57	0	0.110010	-0.131170	-1.065	-17.637	8.450	0.152251
		-0.058008	0.233844	2.750	28.851	-6.163	-0.270131
57	1.275	0.120209	-0.131170	-1.575	-17.892	6.767	-0.009918
		-0.047808	0.233844	2.240	29.106	-2.981	0.022969
58	0	0.102396	-0.108078	-1.747	-17.258	6.374	0.111524
		-0.041681	0.197449	1.795	27.592	-3.081	-0.200097
58	1.275	0.112596	-0.108078	-2.257	-17.513	3.821	-0.021198
		-0.031481	0.197449	1.285	27.847	-1.118	0.046591
59	0	0.075459	-0.060672	-1.582	-14.058	3.148	0.070922
		-0.026119	0.118944	1.028	22.200	-1.275	-0.128495
59	1.275	0.085659	-0.060672	-2.092	-14.313	0.805258	-0.001347
		-0.015920	0.118944	0.518218	22.455	-0.289122	0.018083
60	0	0.009318	0.008644	-0.221703	-6.809	0.507914	0.058970
		-0.011233	-0.003754	0.532066	10.817	-0.362386	-0.104126
60	1.275	0.019517	0.008644	-0.731683	-7.064	-0.099967	0.075093
		-0.001033	-0.003754	0.022086	11.072	-0.009058	-0.114013
61	0	-1.278	-0.394011	49.273	-17.466	-13.572	0.275247
		0.208236	0.250800	-8.238	5.487	4.656	-0.086862
61	1.275	-1.146	-0.394011	42.642	-16.569	41.895	-0.245149
		0.208236	0.250800	-8.238	5.487	-5.849	0.232959
62	0	-0.885845	-0.406504	32.299	-18.167	18.523	0.131225
		0.084736	0.229034	-6.489	6.240	2.662	0.086406
62	1.275	-0.753226	-0.406504	25.668	-17.270	53.420	-0.405102
		0.084736	0.229034	-6.489	6.240	-5.613	0.378471
63	0	-0.498794	-0.438601	25.289	-14.851	34.535	-0.113240
		-0.044107	0.244930	-6.415	5.740	2.096	0.238863
63	1.275	-0.366175	-0.438601	18.658	-13.954	61.617	-0.690498
		-0.044107	0.244930	-6.415	5.740	-6.084	0.551199
64	0	0.260254	-0.525047	10.218	-11.645	19.282	-0.782829
		-0.161265	0.262463	-6.524	5.178	0.897319	0.428803

ENVOLVENTE para < Mx > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
64	1.275	0.292892	-0.525047	8.586	-10.748	31.271	-1.470
		-0.161265	0.262463	-6.524	5.178	-7.422	0.763497
65	0	0.492803	-0.504650	9.305	-10.722	17.947	-1.275
		-0.254997	0.265532	-8.978	4.801	25.481	0.691130
65	1.275	0.465810	-0.490011	9.397	-10.333	24.725	-1.826
		-0.195366	0.250893	-10.702	5.310	18.078	0.918782
66	0	0.587628	-0.451962	9.434	-10.480	14.879	-1.582
		-0.250546	0.235754	-9.834	4.502	21.180	0.717569
66	1.275	0.620266	-0.451962	7.802	-9.583	25.868	-2.177
		-0.250546	0.235754	-9.834	4.502	8.639	1.018
67	0	0.738399	-0.439066	8.900	-10.150	13.523	-2.071
		0.094642	0.120090	-16.391	4.882	31.460	0.268892
67	1.275	0.771038	-0.439066	7.268	-9.252	23.832	-2.649
		0.094642	0.120090	-16.391	4.882	10.558	0.422032
68	0	0.970822	-0.422374	6.487	-10.273	0.691381	-2.649
		0.031540	0.139550	-15.449	4.239	16.866	0.337055
68	1.275	1.003	-0.422374	4.855	-9.375	7.923	-3.206
		0.031540	0.139550	-15.449	4.239	-2.835	0.515009
69	0	0.956611	-0.246514	4.490	-10.730	-12.586	-2.738
		0.132929	0.066284	-12.964	3.369	1.533	-0.019682
69	1.275	0.775502	-0.200705	5.034	-10.069	-9.083	-2.537
		0.346677	0.020475	-15.139	3.605	-13.815	-0.468480
70	0	0.976529	-0.064835	10.512	-9.755	-20.401	-3.196
		0.103562	0.077453	-9.694	3.607	-10.541	-0.002463
70	1.275	0.752045	-0.044517	11.750	-9.608	-6.619	-2.711
		0.360684	0.057135	-12.563	4.357	-24.319	-0.489195
71	0	0.249816	0.154304	15.555	-6.904	-33.215	-2.487
		0.901278	0.248197	-9.338	7.397	-5.771	-1.706
71	1.700	0.293334	0.154304	13.379	-5.707	-8.617	-2.249

ENVOLVENTE para < Mx > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
		0.901278	0.248197	-9.338	7.397	-21.649	-1.284
72	0	0.135239	0.151088	18.054	-6.441	-18.772	-2.588
		0.746613	0.307246	-2.990	7.143	-9.605	-1.673
72	1.700	0.178757	0.151088	15.878	-5.245	10.075	-2.355
		0.746613	0.307246	-2.990	7.143	-14.689	-1.151
73	0	0.093912	0.092235	17.517	-6.614	-0.487482	-2.549
		0.548996	0.291119	-3.223	5.729	1.989	-1.538
73	1.700	-0.071112	0.012930	15.116	-5.804	21.632	-1.716
		0.757539	0.370425	-2.998	6.115	2.324	-1.743
74	0	-0.303310	0.043557	17.894	-6.021	20.823	-1.833
		0.717062	0.244581	-5.067	5.103	9.398	-1.987
74	1.700	-0.484548	-0.021919	16.919	-5.815	43.716	-1.093
		0.941819	0.310057	-6.267	6.094	6.466	-2.262
75	0	-0.484082	-0.041673	20.396	-4.373	34.637	-1.171
		0.798373	0.275190	-5.523	5.281	15.772	-2.476
75	1.700	-0.234132	-0.041673	7.899	-4.373	50.566	-1.242
		0.841892	0.275190	-7.699	6.477	4.531	-2.032
76	0	-0.694866	-0.086329	1.734	-3.805	38.960	0.371089
		0.717405	0.263720	-7.316	5.811	14.272	-2.208
76	1.700	-0.551368	-0.086329	-5.441	-2.608	39.057	0.200372
		0.717405	0.263720	-7.316	5.811	1.833	-1.760
77	0	-0.501901	-0.078879	-5.025	-3.442	34.121	0.206306
		0.517180	0.181290	-16.839	6.115	42.932	-1.945
77	1.700	-0.644736	-0.092354	-6.096	-2.566	18.021	0.683017
		0.703533	0.194765	-17.944	6.436	20.008	-2.272
78	0	-0.769334	-0.025172	-7.027	-3.752	22.579	0.683031
		0.757329	0.130408	-15.133	6.236	21.650	-2.466
78	1.700	-0.948034	-0.038829	-6.672	-3.481	5.394	1.308
		0.979548	0.144066	-17.663	7.162	-0.692870	-2.937

ENVOLVENTE para < Mx > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
79	0	-0.912084	-0.033674	-6.014	-4.816	-0.895505	1.274
		0.874669	0.149667	-16.053	5.825	10.780	-3.159
79	1.700	-0.912084	-0.033674	-6.014	-4.816	-11.121	1.216
		0.918187	0.149667	-18.229	7.021	-18.365	-2.928
80	0	-0.792198	-0.042992	-1.755	-5.012	-19.534	1.173
		0.892675	0.186404	-13.729	6.276	-7.247	-3.169
80	1.700	-0.792198	-0.042992	-1.755	-5.012	-22.518	1.100
		0.936193	0.186404	-15.905	7.473	-32.440	-2.876
81	0	-0.322569	-0.026719	6.057	-4.085	-5.014	1.075
		0.953375	0.296093	-7.341	9.249	-20.671	-2.973
81	1.275	-0.426645	-0.099539	3.364	-3.437	0.289848	1.421
		1.090	0.368913	-6.281	9.498	-28.653	-2.994
82	0	-0.464171	-0.083006	7.198	-3.518	-2.900	1.389
		1.034	0.375593	-5.385	8.730	-18.459	-3.119
82	1.275	-0.564921	-0.165420	5.230	-3.389	2.267	1.625
		1.167	0.458007	-5.049	9.498	-22.355	-3.000
83	0	-0.519298	-0.187015	5.628	-3.929	-2.516	1.660
		1.027	0.457682	-3.723	8.282	-11.553	-3.170
83	1.275	-0.519298	-0.187015	5.628	-3.929	4.661	1.422
		1.059	0.457682	-5.355	9.180	-17.341	-2.604
84	0	-0.460911	-0.194863	5.767	-4.478	-0.853950	1.473
		0.914526	0.452007	-4.735	8.204	-6.569	-2.769
84	1.275	-0.460911	-0.194863	5.767	-4.478	6.500	1.224
		0.947165	0.452007	-6.367	9.102	-13.648	-2.211
85	0	-0.425740	-0.213987	6.332	-4.990	1.905	1.339
		0.833975	0.457669	-6.394	8.421	-4.148	-2.431
85	1.275	-0.425740	-0.213987	6.332	-4.990	9.979	1.066
		0.866614	0.457669	-8.026	9.319	-13.343	-1.866
86	0	-0.502902	-0.222805	8.677	-5.636	-7.141	1.130

ENVOLVENTE para < Mx > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
		0.747114	0.456843	-7.911	8.950	-1.586	-2.026
86	1.275	-0.496551	-0.243293	7.404	-5.261	-0.803270	0.858005
		0.773403	0.477331	-8.271	9.472	-7.988	-1.474
87	0	-0.423953	-0.245562	7.568	-5.607	-7.866	0.930246
		0.635929	0.480241	-8.043	8.833	3.777	-1.631
87	1.275	-0.423953	-0.245562	7.568	-5.607	1.784	0.617103
		0.668567	0.480241	-9.675	9.730	-7.520	-1.036
88	0	-0.362939	-0.253821	8.177	-5.584	-5.591	0.671088
		0.551926	0.487932	-10.175	8.627	4.456	-1.163
88	1.275	-0.362939	-0.253821	8.177	-5.584	4.836	0.347414
		0.584565	0.487932	-11.807	9.524	-9.559	-0.559043
89	0	-0.318928	-0.288602	9.851	-4.670	-2.188	0.383671
		0.498023	0.527343	-14.111	7.073	1.699	-0.648955
89	1.275	-0.318928	-0.288602	9.851	-4.670	10.374	0.015643
		0.530662	0.527343	-15.743	7.971	-17.336	0.005565
90	0	-0.011667	0.007323	-0.581581	-2.486	3.162	0.023354
		-0.037647	-0.003265	3.922	3.483	-7.292	-0.031120
90	1.275	0.034242	0.000974	-3.125	-2.460	1.579	0.027721
		-0.050916	0.003085	4.833	4.356	-2.489	-0.048263
91	0	-0.035194	0.129197	23.634	-10.531	-14.153	-0.049847
		0.173569	-0.055804	-10.328	8.060	9.468	0.042586
91	2.000	-0.035194	0.129197	23.634	-10.531	33.113	0.208537
		0.173569	-0.055804	-10.328	8.060	-11.188	-0.069017
92	0	0.087185	0.033400	6.456	-4.656	-7.423	-0.044556
		-0.103621	-0.144286	-25.812	13.574	34.154	0.217518
92	2.000	0.087185	0.033400	6.456	-4.656	5.488	0.022242
		-0.103621	-0.144286	-25.812	13.574	-17.467	-0.071043
93	0	0.014246	-0.015881	9.310	-16.872	0.196387	0.329777
		0.038284	0.125385	-0.495813	15.341	1.976	-0.097255

ENVOLVENTE para < Mx > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
93	2.000	0.014246	-0.015881	9.310	-16.872	18.815	0.298016
		0.038284	0.125385	-0.495813	15.341	0.984065	0.153505
94	0	0.022633	-0.088528	1.751	-8.511	-2.746	0.044865
		0.010549	0.052974	-10.346	23.374	19.086	0.243133
94	2.000	0.022633	-0.088528	1.751	-8.511	0.755062	-0.132183
		0.010549	0.052974	-10.346	23.374	-1.606	0.349078
95	0	0.006978	-0.220817	-0.860942	-11.111	3.352	0.302379
		-0.036020	0.171216	0.957696	14.937	-0.370765	-0.159194
95	2.000	0.006978	-0.220817	-0.860942	-11.111	1.630	-0.139237
		-0.036020	0.171216	0.957696	14.937	1.545	0.183224
96	0	-0.017006	-0.127310	0.077040	-7.709	-0.651127	0.104223
		0.026181	0.246683	-0.384278	18.887	3.181	-0.153518
96	2.000	-0.017006	-0.127310	0.077040	-7.709	-0.497053	-0.150386
		0.026181	0.246683	-0.384278	18.887	2.412	0.339828
97	0	-0.009955	-0.172567	-0.311708	-7.972	0.956669	0.194177
		-0.035846	0.213773	0.199397	13.595	-0.532297	-0.229376
97	2.000	-0.009955	-0.172567	-0.311708	-7.972	0.333278	-0.150943
		-0.035846	0.213773	0.199397	13.595	-0.133520	0.198153
98	0	-0.019885	-0.119323	-0.106437	-6.982	-0.346570	0.101999
		0.001117	0.249745	2.846	15.536	-3.169	-0.259064
98	2.000	-0.019885	-0.119323	-0.106437	-6.982	-0.559436	-0.136637
		0.001117	0.249745	2.846	15.536	2.522	0.240405
99	0	-0.023030	-0.144508	-0.469388	-6.714	0.104049	0.134381
		-0.031035	0.195520	0.186499	12.899	-0.600000	-0.213303
99	2.000	-0.023030	-0.144508	-0.469388	-6.714	-0.834689	-0.154625
		-0.031035	0.195520	0.186499	12.899	-0.227017	0.177721
100	0	-0.025902	-0.091492	0.442701	-6.539	-1.236	0.063764
		-0.010638	0.214294	0.714789	13.324	-1.407	-0.233287
100	2.000	-0.025902	-0.091492	0.442701	-6.539	-0.350175	-0.119213
		-0.010638	0.214294	0.714789	13.324	0.022110	0.195285

ENVOLVENTE para < Mx > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
101	0	-0.026503	-0.106561	-0.191882	-6.095	-0.148856	0.097823
		-0.030415	0.172422	-0.048459	12.273	-0.991656	-0.210711
101	2.000	-0.026503	-0.106561	-0.191882	-6.095	-0.532606	-0.115289
		-0.030415	0.172422	-0.048459	12.273	-1.089	0.134120
102	0	-0.019991	-0.085304	0.356565	-5.945	-1.524	0.045565
		-0.017784	0.169970	0.546790	12.690	-1.238	-0.188517
102	2.000	-0.019991	-0.085304	0.356565	-5.945	-0.810884	-0.125036
		-0.017784	0.169970	0.546790	12.690	-0.144884	0.151408
103	0	-0.018925	-0.033099	0.558910	-6.487	-1.845	-0.006914
		-0.039380	0.160453	0.199573	11.513	-1.141	-0.195242
103	2.000	-0.018925	-0.033099	0.558910	-6.487	-0.727686	-0.073109
		-0.039380	0.160453	0.199573	11.513	-0.741740	0.125652
104	0	-0.018897	-0.023822	1.992	-6.500	-3.558	-0.028143
		-0.014027	0.140132	1.095	12.346	-2.760	-0.190517
104	2.000	-0.018897	-0.023822	1.992	-6.500	0.426303	-0.075786
		-0.014027	0.140132	1.095	12.346	-0.569101	0.089736
105	0	-0.014977	-0.034844	-0.397373	-7.144	-1.499	-0.025500
		-0.047583	0.171055	-0.018224	10.327	-1.399	-0.219428
105	2.000	-0.014977	-0.034844	-0.397373	-7.144	-2.294	-0.095185
		-0.047583	0.171055	-0.018224	10.327	-1.435	0.122667
106	0	-0.016914	-0.044263	0.943303	-6.308	-2.528	-0.007913
		-0.021768	0.117530	1.379	11.917	-3.789	-0.194143
106	2.000	-0.016914	-0.044263	0.943303	-6.308	-0.641288	-0.096436
		-0.021768	0.117530	1.379	11.917	-1.030	0.040908
107	0	-0.017730	-0.053157	-1.819	-7.577	-1.263	-0.046825
		-0.013115	0.183594	-1.084	8.775	-1.374	-0.257614
107	2.000	-0.017730	-0.053157	-1.819	-7.577	-4.901	-0.153135
		-0.013115	0.183594	-1.084	8.775	-3.542	0.109559

ENVOLVENTE para < Mx > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
108	0	-0.009219	-0.033362	1.366	-5.267	-3.683	-0.041519
		-0.071721	0.100450	2.504	11.923	-6.368	-0.231392
108	2.000	-0.009219	-0.033362	1.366	-5.267	-0.950548	-0.108240
		-0.071721	0.100450	2.504	11.923	-1.360	-0.030500
109	0	0.020224	-0.087588	-4.609	-8.130	0.281222	-0.048434
		0.083826	0.127317	-4.077	7.277	-0.718165	-0.269974
109	2.000	0.020224	-0.087588	-4.609	-8.130	-8.937	-0.223602
		0.083826	0.127317	-4.077	7.277	-8.871	-0.015349
110	0	-0.041801	0.065551	4.208	-4.476	-8.561	-0.210921
		-0.153995	0.110852	6.715	12.519	-12.966	-0.323857
110	2.000	-0.041801	0.065551	4.208	-4.476	-0.144950	-0.079824
		-0.153995	0.110852	6.715	12.519	0.462962	-0.102162
111	0	0.082155	-0.181089	-7.352	-7.011	1.746	-0.060276
		0.131482	0.228312	-8.247	10.112	2.514	-0.490305
111	2.000	0.082155	-0.181089	-7.352	-7.011	-12.958	-0.422440
		0.131482	0.228312	-8.247	10.112	-13.980	-0.033699
112	0	-0.097619	0.260259	9.463	-8.063	-16.567	-0.579187
		-0.155908	-0.139689	8.844	12.100	-15.867	-0.149867
112	2.000	-0.097619	0.260259	9.463	-8.063	2.358	-0.058690
		-0.155908	-0.139689	8.844	12.100	1.820	-0.429234
113	0	0.092768	-0.120539	-4.261	-5.988	-1.459	-0.218264
		0.061400	0.086605	-4.664	14.735	-0.116657	-0.371550
113	2.000	0.092768	-0.120539	-4.261	-5.988	-9.979	-0.459331
		0.061400	0.086605	-4.664	14.735	-9.445	-0.198346
114	0	-0.060609	-0.027708	6.350	-12.044	-12.947	-0.335548
		0.004304	-0.064590	4.677	10.156	-10.082	-0.226642
114	2.000	-0.060609	-0.027708	6.350	-12.044	-0.247208	-0.390962
		0.004304	-0.064590	4.677	10.156	-0.727653	-0.355817
115	0	0.033684	-0.042454	-1.233	-7.163	-1.726	-0.123691
		0.041035	0.092093	-0.552175	12.396	-1.610	-0.219071

ENVOLVENTE para < Mx > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
115	2.000	0.033684	-0.042454	-1.233	-7.163	-4.191	-0.208596
		0.041035	0.092093	-0.552175	12.396	-2.714	-0.034892
116	0	0.044449	-0.128853	1.875	-9.801	-4.969	-0.051383
		0.059511	-0.052040	1.641	10.563	-4.647	-0.117862
116	2.000	0.044449	-0.128853	1.875	-9.801	-1.220	-0.309078
		0.059511	-0.052040	1.641	10.563	-1.366	-0.221937
117	0	0.026523	-0.061065	0.516399	-7.476	-1.099	0.033822
		0.048546	0.064898	-0.019246	10.141	-2.406	-0.207337
117	2.000	0.026523	-0.061065	0.516399	-7.476	-0.066507	-0.088302
		0.048546	0.064898	-0.019246	10.141	-2.445	-0.077547
118	0	0.066803	-0.126688	1.668	-8.497	-4.645	-0.054614
		0.033796	-0.000892	1.214	9.983	-2.229	-0.059362
118	2.000	0.066803	-0.126688	1.668	-8.497	-1.310	-0.307981
		0.033796	-0.000892	1.214	9.983	0.199568	-0.061147
119	0	0.025252	-0.101810	0.035041	-9.033	-0.853722	0.060908
		0.025959	0.059369	1.141	8.709	-2.688	-0.153147
119	2.000	0.025252	-0.101810	0.035041	-9.033	-0.783643	-0.142704
		0.025959	0.059369	1.141	8.709	-0.405556	-0.034413
120	0	0.034568	-0.128511	0.746443	-9.307	-2.302	0.027397
		0.019760	0.069997	3.477	9.080	-5.511	-0.187642
120	2.000	0.034568	-0.128511	0.746443	-9.307	-0.808678	-0.229615
		0.019760	0.069997	3.477	9.080	1.443	-0.047654
121	- 0	0.012403	-0.109143	-0.301690	-9.686	-0.700048	0.057713
		0.007910	0.055480	-0.346462	5.337	-0.646281	-0.118483
121	2.000	0.012403	-0.109143	-0.301690	-9.686	-1.303	-0.160564
		0.007910	0.055480	-0.346462	5.337	-1.339	-0.007528
122	0	0.012249	-0.116878	0.385576	-9.741	-1.434	0.045778
		0.006081	0.062767	0.180433	5.322	-1.056	-0.111591
122	2.000	0.012249	-0.116878	0.385576	-9.741	-0.662657	-0.187969

ENVOLVENTE para < Mx > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
		0.006081	0.062767	0.180433	5.322	-0.694768	0.013938
123	0	0.000918	-0.106485	-0.533870	-9.261	-0.764296	0.039017
		-0.006321	0.053340	-0.150039	4.829	-0.545939	-0.099321
123	2.000	0.000918	-0.106485	-0.533870	-9.261	-1.832	-0.173944
		-0.006321	0.053340	-0.150039	4.829	-0.846006	0.007355
124	0	0.001540	-0.032336	3.479	-9.570	-5.509	-0.091434
		-0.005905	0.057804	0.414517	4.935	-1.662	-0.126348
124	2.000	0.001540	-0.032336	3.479	-9.570	1.449	-0.156104
		-0.005905	0.057804	0.414517	4.935	-0.833383	-0.010744
125	0	-0.007496	-0.051900	0.734804	-10.924	-1.772	-0.003125
		-0.013456	0.047602	-0.791945	4.258	-0.654140	-0.134009
125	2.000	-0.007496	-0.051900	0.734804	-10.924	-0.302836	-0.106921
		-0.013456	0.047602	-0.791945	4.258	-2.238	-0.038809
126	0	0.001293	-0.068866	1.964	-10.806	-4.302	-0.070017
		-0.010263	0.035673	-0.083364	4.603	-0.841433	-0.086508
126	2.000	0.001293	-0.068866	1.964	-10.806	-0.373698	-0.207743
		-0.010263	0.035673	-0.083364	4.603	-1.008	-0.015166
127	0	0.004462	-0.074092	-0.488461	-13.160	-1.507	-0.032350
		-0.015613	0.065211	-0.847516	5.140	-0.820113	-0.163538
127	2.000	0.004462	-0.074092	-0.488461	-13.160	-2.484	-0.180528
		-0.015613	0.065211	-0.847516	5.140	-2.515	-0.033122
128	0	0.000854	-0.072678	1.612	-11.474	-4.557	-0.103089
		-0.004743	0.049099	0.657617	6.289	-2.650	-0.159967
128	2.000	0.000854	-0.072678	1.612	-11.474	-1.333	-0.248439
		-0.004743	0.049099	0.657617	6.289	-1.334	-0.061773
129	0	0.064539	-0.228574	-4.230	-15.318	-0.070083	-0.001631
		-0.013414	0.095085	-1.402	5.681	-0.866026	-0.228161
129	2.000	0.064539	-0.228574	-4.230	-15.318	-8.529	-0.458762
		-0.013414	0.095085	-1.402	5.681	-3.670	-0.037997

ENVOLVENTE para < Mx > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
130	0	-0.041612	0.064466	4.500	-11.119	-9.740	-0.382726
		0.010455	0.205049	4.256	8.413	-8.706	-0.456224
130	2.000	-0.041612	0.064466	4.500	-11.119	-0.740336	-0.253799
		0.010455	0.205049	4.256	8.413	-0.194632	-0.046142
131	0	0.136776	-0.363047	-6.874	-10.845	2.051	0.151674
		-0.014229	-0.301851	-8.116	6.997	1.877	0.020141
131	2.000	0.136776	-0.363047	-6.874	-10.845	-11.696	-0.574391
		-0.014229	-0.301851	-8.116	6.997	-14.353	-0.583537
132	0	-0.116401	0.261001	8.726	-12.920	-15.660	-0.571177
		0.027599	-0.056729	2.407	6.179	-4.513	-0.029079
132	2.000	-0.116401	0.261001	8.726	-12.920	1.792	-0.049197
		0.027599	-0.056729	2.407	6.179	0.301241	-0.142532
133	0	0.069808	-0.190204	-2.309	-7.991	0.090706	0.111226
		-0.022492	-0.027920	-4.028	6.484	-0.781583	-0.125977
133	2.000	0.069808	-0.190204	-2.309	-7.991	-4.526	-0.269167
		-0.022492	-0.027920	-4.028	6.484	-8.837	-0.181815
134	0	-0.059133	-0.032951	4.046	-11.288	-9.032	-0.122813
		0.040033	0.034078	0.684680	4.284	-1.275	-0.055239
134	2.000	-0.059133	-0.032951	4.046	-11.288	-0.940704	-0.188712
		0.040033	0.034078	0.684680	4.284	0.094516	0.012914
135	0	0.011944	-0.147809	-0.839383	-8.951	-0.903012	0.090467
		-0.001778	0.052769	-1.355	6.077	-1.138	-0.133645
135	2.000	0.011944	-0.147809	-0.839383	-8.951	-2.582	-0.205138
		-0.001778	0.052769	-1.355	6.077	-3.848	-0.028111
136	0	-0.005107	-0.114095	1.329	-10.801	-3.870	0.031978
		0.020669	0.053506	0.397091	4.783	-1.335	-0.084094
136	2.000	-0.005107	-0.114095	1.329	-10.801	-1.212	-0.196203
		0.020669	0.053506	0.397091	4.783	-0.540660	0.022913
137	0	-0.004138	-0.134181	-0.225741	-9.985	-0.804213	0.103810

ENVOLVENTE para < Mx > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
		0.005627	0.071057	-0.640392	6.079	-0.944589	-0.124329
137	2.000	-0.004138	-0.134181	-0.225741	-9.985	-1.256	-0.164542
		0.005627	0.071057	-0.640392	6.079	-2.225	0.017778
138	0	0.009323	-0.132537	0.622686	-10.772	-2.218	0.077487
		0.011976	0.061275	0.137679	5.515	-0.824934	-0.082043
138	2.000	0.009323	-0.132537	0.622686	-10.772	-0.972320	-0.187577
		0.011976	0.061275	0.137679	5.515	-0.549587	0.040503
139	0	-0.000804	-0.137369	-0.216832	-10.685	-0.542959	0.116642
		0.003059	0.076388	-0.357025	6.306	-0.765121	-0.115084
139	2.000	-0.000804	-0.137369	-0.216832	-10.685	-0.976606	-0.158084
		0.003059	0.076388	-0.357025	6.306	-1.479	0.037687
140	0	0.004996	-0.138780	0.340881	-10.985	-1.459	0.098405
		0.011954	0.071437	0.198002	6.081	-0.808810	-0.089308
140	2.000	0.004996	-0.138780	0.340881	-10.985	-0.777310	-0.179143
		0.011954	0.071437	0.198002	6.081	-0.412821	0.053560
141	0	0.003242	-0.140740	-0.039970	-11.177	-0.498016	0.127290
		0.000939	0.077595	-0.513602	6.632	-0.535869	-0.114010
141	2.000	0.003242	-0.140740	-0.039970	-11.177	-0.577952	-0.154179
		0.000939	0.077595	-0.513602	6.632	-1.563	0.041173
142	0	0.000431	-0.139778	0.476978	-11.297	-1.509	0.102199
		0.004616	0.079097	0.003448	6.521	-0.459375	-0.091662
142	2.000	0.000431	-0.139778	0.476978	-11.297	-0.554702	-0.177345
		0.004616	0.079097	0.003448	6.521	-0.452478	0.066525
143	0	0.009205	-0.136255	-0.273423	-11.688	-0.282687	0.122167
		0.004325	0.068245	-0.316202	7.192	-0.484698	-0.096702
143	2.000	0.009205	-0.136255	-0.273423	-11.688	-0.829511	-0.150332
		0.004325	0.068245	-0.316202	7.192	-1.117	0.039782
144	0	-0.005255	-0.132923	0.230345	-11.766	-1.097	0.100847
		0.006634	0.075849	0.162067	7.063	-0.671467	-0.090120

ENVOLVENTE para < Mx > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
144	2.000	-0.005255	-0.132923	0.230345	-11.766	-0.636364	-0.164988
		0.006634	0.075849	0.162067	7.063	-0.347345	0.061572
145	0	0.019989	-0.131172	-0.936739	-11.870	0.241168	0.113136
		-0.004044	0.061213	0.299082	7.623	-0.781907	-0.079722
145	2.000	0.019989	-0.131172	-0.936739	-11.870	-1.632	-0.149198
		-0.004044	0.061213	0.299082	7.623	-0.183767	0.042700
146	0	-0.014801	-0.126592	-0.497220	-11.977	-0.106134	0.102624
		0.013459	0.073185	0.607542	7.376	-1.193	-0.089580
146	2.000	-0.014801	-0.126592	-0.497220	-11.977	-1.101	-0.150550
		0.013459	0.073185	0.607542	7.376	0.022060	0.056785
147	0	0.043826	-0.135658	-2.538	-11.090	1.549	0.108993
		-0.021004	0.065736	1.883	7.439	-1.807	-0.066745
147	2.000	0.043826	-0.135658	-2.538	-11.090	-3.527	-0.162312
		-0.021004	0.065736	1.883	7.439	1.958	0.064721
148	0	-0.035990	-0.132592	-2.302	-11.258	2.155	0.122692
		0.028016	0.077490	1.673	7.024	-2.433	-0.099052
148	2.000	-0.035990	-0.132592	-2.302	-11.258	-2.449	-0.142480
		0.028016	0.077490	1.673	7.024	0.913419	0.055921
149	0	0.067350	-0.146631	-4.897	-7.565	3.481	0.102307
		-0.038182	0.069322	4.171	4.997	-3.447	-0.046992
149	2.000	0.067350	-0.146631	-4.897	-7.565	-6.313	-0.190944
		-0.038182	0.069322	4.171	4.997	4.894	0.091647
150	0	-0.055495	-0.144914	-4.952	-7.644	5.392	0.157984
		0.041145	0.086218	3.228	4.811	-4.247	-0.118712
150	2.000	-0.055495	-0.144914	-4.952	-7.644	-4.511	-0.131832
		0.041145	0.086218	3.228	4.811	2.209	0.053718
151	0	0.001685	-0.046731	-4.822	-2.502	3.884	0.037221
		0.009132	0.028810	3.103	1.570	-2.930	-0.026141
151	2.000	0.001685	-0.046731	-4.822	-2.502	-5.761	-0.056238
		0.009132	0.028810	3.103	1.570	3.275	0.031476

ENVOLVENTE para < Mx > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
152	0	0.006516	-0.046517	-4.817	-2.491	5.278	0.052207
		-0.010240	0.030992	2.748	1.624	-3.049	-0.034783
152	2.000	0.006516	-0.046517	-4.817	-2.491	-4.355	-0.040824
		-0.010240	0.030992	2.748	1.624	2.446	0.027198
201	0	-96.452	1.506	0.166997	-0.400355	-0.186926	-2.345
		-85.787	-0.531492	-0.885074	0.188156	2.722	1.330
201	10.255	-96.452	1.506	0.166997	-0.400355	1.526	13.096
		-85.787	-0.531492	-0.885074	0.188156	-6.354	-4.120
202	0	-26.115	-0.439981	0.031474	-0.327678	0.264522	3.012
		-32.392	0.443150	0.748690	0.145371	-2.913	-1.413
202	10.595	-26.115	-0.439981	0.031474	-0.327678	0.597980	-1.649
		-32.392	0.443150	0.748690	0.145371	5.019	3.282

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
1	0	-1.246	0.303961	50.794	14.152	-10.530	-0.233339
		0.205776	-0.474275	-11.039	-9.467	8.059	0.144587
1	1.275	0.306108	-0.423243	-12.075	-7.449	-9.221	-0.418662
		-1.112	0.287872	43.821	12.282	47.368	0.163956
2	0	0.020515	0.201165	3.216	4.688	-4.290	0.126507
		-0.846978	-0.114900	25.151	2.124	36.959	-0.364967
2	1.275	0.109312	-0.333124	-8.341	-7.022	-9.971	-0.584097
		-0.541183	0.246654	14.301	9.481	56.901	0.156917
3	0	0.143154	0.155805	1.093	2.955	-6.684	0.229532
		-0.512295	-0.074583	9.085	0.101415	52.709	-0.434867
3	1.275	-0.000259	-0.202674	-5.995	-3.992	-11.784	-0.463692
		-0.364257	0.109869	7.127	2.420	57.826	-0.039809

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
4	0	0.093595	0.012293	-1.999	0.306536	-9.406	0.079636
		-0.331202	0.043383	6.573	1.107	56.715	-0.188962
4	1.275	-0.101549	-0.209848	-6.016	-3.772	-14.607	-0.626986
		-0.164211	0.084126	0.689355	0.968494	63.424	0.013982
5	0	0.092194	-0.001796	-2.002	0.399031	-12.424	0.101489
		-0.070620	0.008622	-4.683	0.553662	62.996	-0.135759
5	1.275	-0.196684	-0.234284	-6.044	-3.648	-17.583	-0.825688
		0.014065	0.051744	-5.563	0.408970	56.469	0.059968
6	0	0.083844	-0.015021	-2.009	0.518556	-15.505	0.111449
		-0.028110	-0.021097	-5.897	0.454415	56.224	-0.102215
6	1.275	-0.292417	-0.255380	-6.058	-3.521	-20.649	-1.047
		0.173175	0.022676	-11.774	0.308012	42.895	0.093965
7	0	0.060755	-0.051088	-1.997	0.768199	-18.705	0.116166
		0.101487	-0.041317	-12.009	0.649207	42.595	-0.088212
7	1.275	-0.397513	-0.289584	-6.041	-3.280	-23.805	-1.309
		0.218700	0.002877	-12.888	0.503356	26.719	0.121929
8	0	0.009857	-0.106479	-1.841	1.281	-22.164	0.109693
		0.124615	-0.050242	-12.812	1.130	26.130	-0.086382
8	1.275	-0.526149	-0.358241	-5.865	-2.802	-26.999	-1.629
		0.164401	-0.035258	-9.456	1.215	15.767	0.113371
9	0	-0.090856	-0.167039	-1.008	2.055	-26.031	0.095004
		0.040761	-0.088550	-8.095	2.068	14.262	-0.103466
9	1.275	-0.762749	-0.459311	-9.220	-1.251	-34.289	-2.315
		0.349037	0.018157	-9.755	1.064	6.865	0.501479
10	0	-0.468253	-0.301100	-1.223	2.450	-35.179	-0.557655
		0.358367	-0.017072	-5.664	1.062	5.396	0.546258
10	1.275	-0.765549	-0.410282	-7.350	-1.891	-39.830	-1.971
		0.048283	0.012418	0.039221	-0.060229	0.970284	0.019823

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
11	0	-0.557709	-0.272954	9.285	-0.887336	-39.340	0.485530
		-0.010716	-0.007326	-0.534322	-0.391390	1.126	-0.183979
11	1.700	-0.116644	-0.118404	-1.421	-3.900	-30.989	-1.068
		0.224648	-0.142153	2.896	0.032002	6.694	0.881403
12	0	-0.392102	0.023424	4.911	-1.133	-26.851	-1.665
		-0.039887	-0.185842	6.491	-0.186073	6.864	0.786256
12	1.700	0.172476	-0.079505	0.459861	-3.094	-21.821	-0.799698
		-0.032652	-0.153431	2.818	-0.504920	16.455	0.737921
13	0	0.356036	0.079641	5.254	2.178	-21.775	-0.283099
		-0.726040	-0.184281	0.894714	-1.723	17.563	-0.582258
13	1.700	0.478798	-0.041191	1.307	-0.919592	-16.851	-0.245269
		-0.967335	-0.137376	10.502	-0.766996	28.688	0.205797
14	0	0.287419	0.076932	3.121	1.290	-17.465	-0.745154
		-1.768	-0.131946	5.591	-2.898	30.757	-1.728
14	1.700	0.600429	-0.009449	1.604	-0.143030	-13.750	0.007861
		-1.100	-0.104044	8.750	-0.803586	45.562	-0.058348
15	0	0.247056	0.061377	2.582	0.977945	-14.537	-0.908403
		-1.113	-0.071373	9.317	0.548995	45.663	0.029146
15	1.700	0.597667	-0.002560	1.592	-0.035985	-10.990	0.010530
		-0.969414	-0.071373	2.142	-0.647758	52.154	-0.068272
16	0	0.274854	0.059608	2.579	1.010	-11.820	-0.831967
		-0.869586	-0.061756	-2.325	0.649329	52.154	0.002659
16	1.700	0.595606	-0.004212	1.589	-0.003439	-8.277	0.007689
		-0.726087	-0.061756	-9.500	-0.547424	45.349	-0.078408
17	0	0.300303	0.048756	2.577	1.035	-9.123	-0.755621
		-0.728242	-0.063099	-8.933	0.808381	45.247	-0.002582
17	1.700	0.718783	-0.057665	0.651449	-0.657156	-5.803	0.432385
		-1.581	-0.028995	-5.084	3.459	30.435	-2.245
18	0	-0.311471	0.128357	3.328	2.857	-7.090	-1.818
		-0.456940	-0.103538	-10.801	0.508925	28.122	0.475035

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
18	1.700	0.368300	-0.095446	-4.073	-1.695	-6.760	0.958802
		-1.599	-0.001452	-4.716	5.851	13.752	-2.832
19	0	-1.017	0.135459	2.720	5.293	-9.374	-2.493
		-0.047623	-0.127079	-11.662	-0.148818	9.599	1.102
19	1.700	-0.390140	-0.128499	-13.826	0.778938	-18.066	0.180142
		0.082190	0.068083	3.160	1.289	5.239	-0.824253
20	0	-1.478	0.029597	0.390753	7.529	-26.074	-2.808
		0.709157	-0.099663	-2.149	-1.420	6.377	1.103
20	1.700	-0.295241	-0.114359	-9.524	0.513905	-34.656	0.237530
		0.061552	0.041865	2.344	1.402	7.069	-0.761837
21	0	-0.856188	0.099113	6.236	2.351	-35.216	-1.772
		0.217642	-0.041499	-0.256597	0.316095	5.584	0.068293
21	1.275	-0.325750	0.008688	-0.088622	-2.208	-32.339	-0.430557
		0.174058	-0.065098	1.746	1.031	7.264	-0.005962
22	0	-0.851227	0.219292	7.537	1.984	-32.168	-2.078
		0.273938	-0.116638	1.506	0.319597	6.519	0.502721
22	1.275	-0.003845	-0.024851	1.258	-2.200	-26.687	0.154858
		-0.129705	-0.022853	3.477	0.796942	9.677	-0.553898
23	0	-0.656582	0.238352	6.721	3.219	-27.863	-1.682
		0.138408	-0.104187	2.470	-0.207137	9.276	0.270201
23	1.275	-0.000249	-0.017869	2.135	-1.406	-22.286	0.149377
		-0.115977	0.007041	2.722	0.778360	12.598	-0.488513
24	0	-0.583757	0.223613	6.907	3.723	-24.144	-1.443
		0.133856	-0.088360	1.448	-0.140976	12.107	0.212489
24	1.275	-0.007190	-0.028098	2.300	-0.870912	-18.305	0.128266
		-0.083015	0.019062	1.705	0.838535	14.124	-0.428070
25	0	-0.512949	0.221528	6.939	3.979	-20.462	-1.224
		0.141840	-0.068054	0.355735	-0.129329	13.585	0.163282
25	1.275	-0.016878	-0.032248	2.312	-0.599280	-14.599	0.103863

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
		-0.038264	0.041475	0.619321	0.846252	14.220	-0.348467
26	0	-0.444630	0.224890	6.981	4.106	-16.852	-1.013
		0.158869	-0.049538	-0.763138	-0.205827	13.687	0.127315
26	1.275	-0.027909	-0.028511	2.306	-0.447196	-11.030	0.078797
		0.014684	0.060169	-0.480901	0.760350	12.934	-0.257596
27	0	-0.382007	0.211304	7.143	4.166	-13.237	-0.788945
		0.185217	-0.035793	-1.966	-0.396651	12.465	0.102538
27	1.275	0.208622	-0.202751	-1.444	-3.289	-8.285	0.409438
		-0.283646	0.290403	3.321	4.444	11.262	-0.646986
28	0	-0.329666	0.215248	7.700	4.062	-9.394	-0.560389
		0.222578	-0.023881	-3.516	-0.650325	9.937	0.078987
28	1.275	0.249523	-0.265854	-4.328	-4.694	-7.147	0.292155
		-0.313705	0.368835	5.551	5.859	10.038	-0.432960
29	0	-0.291384	0.244988	9.303	3.355	-4.512	-0.314237
		0.273744	-0.021184	-6.095	-0.583344	5.698	0.048833
29	1.275	0.511762	-0.287756	-13.300	-5.494	-11.998	0.040260
		-0.496763	0.511560	14.877	7.367	16.236	-0.002316
30	0	-0.076121	0.002132	5.111	-2.047	-7.002	0.017820
		0.050820	0.000425	-4.839	3.885	8.671	-0.039481
30	1.275	-0.033230	-0.008805	3.102	-2.930	-1.570	0.032648
		0.049700	0.002107	-4.822	3.884	2.502	-0.038030
31	0	0.039884	-9.26E-15	-2.624	-6.63E-13	-0.816233	6.64E-15
		-0.535591	-0.000129	37.001	-0.025744	12.597	0.000291
31	1.275	0.039879	-0.116524	-2.624	-7.720	-4.162	-0.034644
		-0.165262	-0.000129	18.484	-0.025744	36.993	0.000127
32	0	0.060589	7.45E-09	-4.163	-2.38E-07	-5.331	9.25E-15
		-0.342908	-7.74E-05	35.130	-0.013816	54.904	7.84E-05
32	1.275	0.060599	-0.163590	-4.163	-10.279	-10.640	-0.095033
		0.027421	-7.74E-05	16.613	-0.013816	80.676	-2.03E-05

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
33	0	0.079697	-0.152067	-4.479	-10.595	-11.167	0.075102
		-0.141334	-3.35E-05	15.041	-0.004026	88.013	1.18E-05
33	1.275	0.079697	-0.152067	-4.479	-10.595	-16.879	-0.118814
		-0.137564	6.98E-10	13.051	1.79E-07	101.272	3.49E-09
34	0	0.096256	-0.136163	-4.513	-10.585	-17.067	0.042753
		-0.201687	-0.063003	10.858	-14.077	104.042	0.018509
34	1.275	0.096256	-0.136163	-4.513	-10.585	-22.822	-0.130882
		-0.032132	4.66E-10	1.653	-3.87E-07	116.697	-6.29E-09
35	0	0.116406	-0.124340	-4.501	-10.558	-22.852	0.017922
		0.094796	2.79E-09	-9.098	-4.77E-07	117.532	-2.33E-10
35	1.275	0.116406	-0.124340	-4.501	-10.558	-28.592	-0.140636
		0.115195	2.79E-09	-10.118	8.52E-13	105.280	-7.22E-09
36	0	0.149987	-0.116601	-4.487	-10.547	-28.503	-0.002457
		0.078321	-2.33E-10	-10.956	-2.98E-07	105.764	-1.02E-10
36	1.275	0.150073	-1.40E-14	-4.487	-9.63E-13	-34.224	3.73E-09
		0.252905	-0.046211	-20.704	-0.808310	81.244	-0.086739
37	0	0.213148	3.73E-09	-4.510	-2.38E-07	-33.911	1.62E-15
		0.260428	-0.043103	-22.682	2.589	81.277	-0.040708
37	1.275	0.213148	3.73E-09	-4.510	-2.38E-07	-39.662	3.99E-16
		0.280827	-0.043103	-23.701	2.589	51.703	-0.095672
38	0	0.332770	3.73E-09	-4.823	-2.38E-07	-38.799	-7.04E-15
		0.294277	-0.040806	-25.630	3.965	52.568	-0.047153
38	1.275	0.332770	3.73E-09	-4.823	-2.38E-07	-44.950	-3.73E-09
		0.301276	-1.40E-09	-19.248	-1.19E-07	31.965	2.33E-09
39	0	0.554052	-3.73E-09	-6.493	-2.38E-07	-42.870	4.95E-15
		0.345402	-0.111997	-24.064	-5.594	35.036	-0.063845
39	1.275	0.624210	-3.73E-09	-14.812	-2.38E-07	-59.310	-7.45E-09
		0.478427	-6.98E-10	-26.169	5.96E-08	10.317	-2.33E-09
40	0	0.993117	9.14E-15	-23.289	-2.38E-07	-54.464	-1.86E-09

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
		0.494596	1.86E-09	-35.388	-5.96E-08	13.944	6.98E-10
40	1.275	0.706207	-1.49E-08	-48.720	2.38E-07	-95.634	7.45E-09
		-0.025752	0	0.208325	-5.96E-08	1.716	9.31E-10
41	0	-2.244	-5.59E-09	43.800	-8.35E-13	-107.561	-1.49E-08
		0.213692	4.66E-10	-1.113	0	3.115	-4.66E-10
41	1.700	0.278709	-1.86E-09	15.755	2.40E-13	-41.827	3.73E-09
		-1.092	4.66E-10	25.628	-3.97E-13	18.187	5.59E-09
42	0	0.261090	-7.32E-14	7.966	3.39E-14	-46.996	-1.86E-09
		-0.850526	6.98E-10	15.459	-1.19E-07	13.345	2.68E-09
42	1.700	0.738283	9.31E-10	4.107	3.39E-14	-33.572	3.73E-09
		-1.157	0.042994	10.176	0.135915	34.969	-0.135011
43	0	0.323313	9.31E-10	6.825	-2.38E-07	-35.365	6.53E-14
		-0.475590	-2.33E-10	1.454	2.98E-08	32.473	2.33E-10
43	1.700	0.815784	6.98E-10	2.965	-8.94E-08	-30.081	1.40E-09
		-1.754	0.009467	20.579	-11.871	55.576	-0.135869
44	0	0.829324	4.66E-10	2.952	-8.94E-08	-30.513	9.31E-10
		-1.639	0.018500	18.630	-9.535	55.419	-0.167068
44	1.700	0.829324	4.66E-10	2.952	-8.94E-08	-25.495	6.98E-09
		-1.648	-1.64E-14	17.852	-2.38E-07	86.366	-3.73E-09
45	0	0.834950	-2.33E-10	2.975	1.49E-07	-25.599	3.49E-09
		-1.561	0.019807	14.233	-3.451	86.311	-0.171656
45	1.700	0.834950	-2.33E-10	2.975	1.49E-07	-20.541	-2.79E-09
		-1.395	-4.37E-15	5.359	-6.22E-14	98.436	-7.42E-15
46	0	0.838936	-1.34E-13	2.981	-3.55E-13	-20.563	-5.59E-09
		-1.194	2.49E-14	-5.702	2.88E-13	98.437	-2.68E-14
46	1.700	0.838936	-1.34E-13	2.981	-3.55E-13	-15.494	1.86E-09
		-1.028	0.021556	-14.575	4.392	85.727	-0.139908
47	0	0.848498	1.16E-09	2.986	2.98E-08	-15.484	-6.05E-09
		-0.962902	2.74E-14	-18.194	4.14E-13	85.785	-4.89E-14

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
47	1.700	0.848339	0.036998	2.986	3.252	-10.407	-0.036702
		-0.971607	0.027332	-18.972	10.476	54.255	-0.138050
48	0	0.877083	0.036994	2.998	3.251	-10.338	-0.093096
		-0.928785	0.035974	-20.922	12.814	54.427	-0.192062
48	1.700	-0.232964	0.068697	-6.130	8.493	-9.195	-0.082751
		-0.384509	0.035974	-17.389	12.814	18.769	-0.130897
49	0	-0.196630	0.073669	-6.897	8.491	-8.093	-0.190314
		-0.346483	0.030053	-20.048	13.448	20.226	-0.180044
49	1.700	-0.609586	-6.98E-10	-27.750	2.09E-07	-32.708	3.12E-15
		0.721267	1.86E-09	4.037	-4.67E-13	8.083	-8.54E-14
50	0	-0.623357	4.66E-09	-28.989	-8.94E-08	-27.412	-3.60E-14
		0.741441	-7.04E-14	-6.042	-5.01E-13	8.248	-7.45E-09
50	1.700	-0.729563	-1.02E-08	-42.199	-8.05E-07	-97.080	1.68E-08
		0.874846	-7.04E-14	5.807	-1.19E-07	17.197	-1.70E-14
51	0	-0.317842	-9.31E-10	26.732	5.96E-08	-81.571	-9.31E-09
		0.010235	-7.87E-14	-1.342	-2.33E-13	10.122	6.43E-14
51	1.275	-0.050620	-9.31E-10	16.738	5.96E-08	-50.372	1.80E-09
		-0.236588	-7.87E-14	7.632	-5.96E-08	10.650	-4.66E-10
52	0	-0.136959	2.79E-09	9.694	-2.98E-07	-54.643	1.86E-09
		-0.085774	-1.86E-09	5.251	1.19E-07	10.522	-3.73E-09
52	1.275	-0.066415	1.48E-14	7.372	-4.77E-07	-43.881	-2.28E-15
		-0.135919	-9.31E-10	6.553	1.79E-07	18.168	9.31E-10
53	0	-0.095758	2.01E-14	5.614	9.45E-13	-46.040	-2.28E-14
		-0.037893	-1.40E-09	4.807	2.98E-08	17.739	-2.79E-09
53	1.275	-0.095758	2.01E-14	5.614	9.45E-13	-38.881	1.86E-09
		-0.017493	-1.40E-09	3.787	2.98E-08	23.219	-6.78E-15
54	0	-0.101967	1.90E-14	5.283	1.01E-12	-39.775	-2.17E-14
		0.039457	-1.40E-09	2.563	-2.09E-07	22.985	9.31E-10
54	1.275	-0.101967	1.90E-14	5.283	1.01E-12	-33.039	1.86E-09
		0.059856	-1.40E-09	1.543	-2.09E-07	25.604	-1.75E-09

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
55	0	-0.101594	1.26E-14	5.256	9.87E-13	-33.351	-7.45E-09
		0.091409	9.31E-10	0.459797	-1.56E-07	25.466	2.79E-09
55	1.275	-0.101594	1.26E-14	5.256	9.87E-13	-26.648	2.22E-15
		0.111808	9.31E-10	-0.560164	-6.33E-07	25.402	3.35E-10
56	0	-0.097372	1.68E-14	5.258	9.36E-13	-26.700	-1.96E-14
		0.125007	4.66E-10	-1.596	1.19E-07	25.226	3.73E-09
56	1.275	-0.097323	0.107398	5.258	11.533	-19.996	-0.003983
		0.145406	4.66E-10	-2.616	-3.58E-07	22.541	-9.76E-15
57	0	-0.088594	0.102674	5.187	11.214	-19.861	-0.117880
		0.140596	-9.31E-10	-3.502	-2.38E-07	22.149	5.08E-14
57	1.275	-0.088594	0.102674	5.187	11.214	-13.247	0.013050
		0.160995	-9.31E-10	-4.522	2.38E-07	17.033	-6.50E-15
58	0	-0.073704	0.089371	4.815	10.333	-12.854	-0.088573
		0.134419	-5.82E-10	-4.768	-2.44E-13	16.146	-2.33E-10
58	1.275	-0.073704	0.089371	4.815	10.333	-6.713	0.025393
		0.154819	-5.82E-10	-5.788	-4.77E-07	9.416	2.36E-14
59	0	-0.052837	0.058272	3.549	8.142	-6.013	-0.057574
		0.102177	4.66E-10	-4.103	-4.77E-07	7.885	6.40E-10
59	1.275	-0.052836	3.19E-15	3.549	6.10E-13	-1.487	4.66E-10
		0.122576	4.66E-10	-5.122	-1.96E-13	2.003	9.31E-10
60	0	-0.019070	0.004890	1.025	4.008	-1.183	-0.045156
		0.017154	-3.44E-14	-0.714303	-9.73E-14	1.328	1.82E-09
60	1.275	0.037554	-3.44E-14	-1.734	-9.73E-14	-0.232767	6.89E-15
		-0.019070	0.004890	1.025	4.008	0.123742	-0.038920
61	0	-1.278	-0.394011	49.273	-17.466	-13.572	0.275247
		0.208236	0.250800	-8.238	5.487	4.656	-0.086862
61	1.275	0.207378	0.234711	-7.895	4.515	-6.339	0.224690
		-1.112	-0.287945	43.793	-12.303	47.427	-0.163796

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
62	0	0.008471	-0.371573	6.494	-8.144	-5.973	-0.224321
		-0.846671	0.114779	25.135	-2.133	36.999	0.365081
62	1.275	0.097288	0.160389	-5.062	3.566	-7.474	0.267420
		-0.540876	-0.246775	14.285	-9.490	56.920	-0.156958
63	0	0.221047	-0.328678	4.328	-6.339	-8.552	-0.451720
		-0.511990	0.074413	9.078	-0.103552	52.724	0.434823
63	1.275	0.077605	0.023825	-2.759	0.608377	-9.527	0.017137
		-0.487888	-0.217496	15.002	-8.822	65.060	-0.156435
64	0	0.254371	-0.200684	1.271	-3.627	-11.417	-0.436444
		-0.331202	-0.043383	6.573	-1.107	56.715	0.188962
64	1.275	0.059222	0.028450	-2.747	0.452307	-12.449	0.034358
		-0.111236	-0.198718	3.602	-5.804	74.681	-0.341673
65	0	0.329073	-0.188307	1.287	-3.693	-14.498	-0.617863
		0.136280	-0.134927	-5.021	-2.578	69.864	-0.204973
65	1.275	0.040147	0.044918	-2.755	0.353842	-15.462	0.067582
		0.220965	-0.178049	-5.901	-2.433	62.906	-0.561765
66	0	0.391487	-0.175759	1.286	-3.807	-17.606	-0.799789
		0.183830	-0.104157	-2.705	-0.252637	61.695	-0.409069
66	1.275	0.015178	0.058794	-2.763	0.232605	-18.548	0.112836
		0.535085	-0.147931	-16.081	-0.106234	44.561	-0.764973
67	0	0.434552	-0.150949	1.293	-4.065	-20.826	-0.980822
		0.473798	-0.089764	-14.478	0.556098	45.442	-0.583019
67	1.275	-0.023819	0.095283	-2.750	-0.016486	-21.730	0.193859
		0.421815	-0.232137	2.592	-5.424	29.244	-1.534
68	0	0.445759	-0.098476	1.432	-4.609	-24.322	-1.167
		0.513140	-0.084075	-14.632	0.303656	27.572	-0.741471
68	1.275	-0.090317	0.150841	-2.593	-0.525731	-24.983	0.311318
		0.740688	-0.217847	-8.844	-5.045	22.329	-1.835
69	0	0.405398	-0.024169	2.232	-5.471	-28.285	-1.356
		0.649580	-0.155402	-4.459	-4.111	17.110	-1.605

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
69	1.275	-0.266514	0.273746	-5.980	-2.162	-32.410	0.817917
		1.108	-0.262110	-13.617	-3.107	12.661	-2.521
70	0	0.085865	0.176893	2.035	-6.049	-37.663	-0.900306
		1.146	-0.129459	-6.152	-1.279	10.029	-2.564
70	1.275	-0.211131	0.280782	-4.092	-1.699	-38.155	0.356118
		0.758956	-0.082571	2.213	-3.363	6.476	-2.198
71	0	0.032382	0.268091	13.250	-2.792	-43.103	-2.080
		0.875042	0.159654	1.066	1.626	4.585	-2.240
71	1.700	0.342279	0.150611	-2.358	5.149	-32.102	-0.092784
		1.176	0.210792	-1.087	-2.145	12.849	-3.064
72	0	0.036214	0.047094	3.962	2.216	-26.151	0.475914
		0.816600	0.334414	7.002	0.584048	11.448	-3.120
72	1.700	0.600988	0.150991	-0.488538	4.181	-22.734	-0.266731
		0.973806	0.302003	-4.169	0.902894	18.906	-2.819
73	0	0.760831	-0.010508	4.278	-1.148	-20.972	-0.810271
		0.198288	0.317642	-2.950	3.936	22.662	-1.630
73	1.700	0.883557	0.110249	0.330169	1.951	-17.709	-0.729094
		-0.408054	0.167161	14.718	-3.141	32.643	-1.743
74	0	0.666548	-0.011189	2.134	-0.272763	-16.633	-0.258785
		-1.209	0.124682	10.396	0.022627	28.991	0.140238
74	1.700	0.979427	0.075156	0.616985	1.160	-14.595	-0.899286
		-0.577784	0.136888	14.137	-2.562	52.394	-1.485
75	0	0.597667	0.002560	1.592	0.035985	-13.698	-0.014883
		-0.642979	0.109238	18.163	-1.811	48.157	-1.678
75	1.700	0.948063	0.065664	0.602787	1.050	-11.833	-0.825557
		-0.349511	0.109238	3.489	-0.614651	58.439	-1.516
76	0	0.595606	0.004212	1.589	0.003439	-10.979	-0.014851
		-0.159227	0.096125	-3.957	0.906212	58.681	-1.710
76	1.700	0.916379	0.067679	0.598825	1.017	-9.119	-0.746284

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
		0.134241	0.096125	-18.631	2.103	47.599	-1.571
77	0	0.590912	0.015528	1.587	-0.021937	-8.282	-0.015872
		0.075937	0.093002	-14.605	2.850	52.322	-1.754
77	1.700	1.144	0.174106	-1.994	2.682	-7.039	-1.723
		-0.812595	0.020962	-10.174	-0.290721	28.428	0.528847
78	0	0.337125	-0.003535	1.987	-0.789531	-5.843	0.455683
		0.298524	0.118559	-15.300	3.695	32.322	-2.255
78	1.700	0.969492	0.207293	-6.670	4.337	-8.983	-2.349
		-0.859681	-0.006971	-9.155	-1.919	10.518	1.074
79	0	-0.475402	-0.027782	0.114786	-2.677	-7.198	1.038
		0.668611	0.143666	-15.929	4.348	13.171	-2.911
79	1.700	0.326093	0.145086	-18.093	3.420	-21.750	-1.960
		0.311112	-0.006107	2.164	-0.284437	4.381	0.309169
80	0	-0.791448	0.026431	-3.854	-3.549	-22.795	0.977063
		0.904049	0.152574	-3.148	2.404	7.187	-1.654
80	1.700	0.392644	0.172425	-13.765	3.492	-38.607	-1.969
		0.256468	0.011735	1.345	-0.418352	6.182	0.301875
81	0	-0.221674	0.064131	2.604	1.560	-33.239	-0.031201
		0.397915	0.089186	-1.199	0.647847	6.157	-0.549332
81	1.275	0.309089	0.155056	-3.721	6.127	-34.999	-1.160
		0.354356	0.114318	0.803806	-0.066617	6.636	-0.413302
82	0	-0.277637	-0.019249	3.922	1.772	-30.022	0.421636
		0.436370	0.171389	0.566719	0.627889	7.104	-0.943197
82	1.275	0.569755	0.220049	-2.356	5.959	-29.152	-1.555
		0.032785	0.072538	2.537	0.150534	9.065	0.180013
83	0	-0.143685	-0.036677	3.078	0.462802	-25.604	0.220198
		0.281830	0.158788	1.528	1.147	9.870	-0.662142
83	1.275	0.512572	0.221026	-1.508	5.089	-24.673	-1.350
		0.027611	0.049641	1.781	0.161757	11.993	0.167512

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
84	0	-0.131952	-0.027433	3.245	-0.068947	-21.837	0.178631
		0.258653	0.141945	0.504826	1.078	12.705	-0.553663
84	1.275	0.444521	0.224315	-1.362	4.525	-20.668	-1.141
		0.041732	0.032829	0.761717	0.098681	13.520	0.154151
85	0	-0.123246	-0.022621	3.261	-0.338583	-18.145	0.146503
		0.248086	0.122881	-0.590719	1.065	14.183	-0.454484
85	1.275	0.372763	0.230498	-1.367	4.240	-16.974	-0.927071
		0.068110	0.013185	-0.327170	0.089031	13.610	0.127069
86	0	-0.116375	-0.025529	3.264	-0.485949	-14.562	0.124238
		0.247243	0.104415	-1.719	1.136	14.276	-0.367006
86	1.275	0.300301	0.230287	-1.411	4.068	-13.480	-0.711994
		0.103042	-0.004502	-1.437	0.170247	12.305	0.088385
87	0	-0.111944	-0.016015	3.314	-0.611720	-11.061	0.096115
		0.256595	0.090916	-2.951	1.310	13.024	-0.289205
87	1.275	0.478694	0.402590	-5.273	6.844	-10.993	-0.850373
		-0.102711	-0.182973	1.160	-2.607	10.366	0.410286
88	0	-0.110982	-0.011740	3.540	-0.727918	-7.609	0.069146
		0.278794	0.080839	-4.585	1.508	10.396	-0.210358
88	1.275	0.468213	0.468723	-8.488	8.028	-10.665	-0.524401
		-0.105288	-0.253713	2.720	-3.874	8.465	0.279844
89	0	-0.113548	-0.022031	4.278	-0.656854	-3.964	0.043247
		0.317472	0.083012	-7.387	1.277	5.839	-0.120285
89	1.275	0.530662	0.527343	-15.743	7.971	-17.336	0.005565
		-0.318928	-0.288602	9.851	-4.670	10.374	0.015643
90	0	-0.083555	0.003085	6.465	3.458	-9.693	-0.034245
		0.034242	0.000974	-3.125	-2.460	5.563	0.026480
90	1.275	-0.049796	0.004767	4.817	4.355	-2.491	-0.047353
		0.023990	-0.009964	-2.748	-2.446	1.624	0.021879
91	0	-0.035194	0.129197	23.634	-10.531	-14.153	-0.049847

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
		0.173569	-0.055804	-10.328	8.060	9.468	0.042586
91	2.000	0.165665	-0.050686	-10.658	7.887	-11.988	-0.067382
		-0.035194	0.129197	23.634	-10.531	33.113	0.208537
92	0	0.087185	0.033400	6.456	-4.656	-7.423	-0.044556
		-0.103621	-0.144286	-25.812	13.574	34.154	0.217518
92	2.000	-0.103621	-0.144286	-25.812	13.574	-17.467	-0.071043
		0.087185	0.033400	6.456	-4.656	5.488	0.022242
93	0	-0.032349	-0.083588	1.566	-8.784	-1.597	0.094147
		0.066589	0.159703	3.900	12.089	2.562	0.026784
93	2.000	0.049723	0.150610	-2.631	11.416	-4.066	0.086226
		0.010767	-0.009295	9.287	-15.211	18.854	0.305178
94	0	0.026112	-0.081941	1.728	-6.850	-2.785	0.037703
		0.007070	0.046388	-10.323	21.713	19.124	0.250296
94	2.000	-0.052266	0.164580	-3.868	16.669	-2.305	0.236139
		0.069280	-0.156038	-5.981	-0.403840	2.560	0.103641
95	0	-0.021297	0.194702	-0.453305	10.339	-0.808991	-0.242971
		0.005614	-0.199175	-0.529322	-9.376	3.593	0.298884
95	2.000	-0.013644	0.014450	-1.895	2.082	-2.152	0.001846
		-0.015398	-0.064050	1.992	1.744	5.327	0.042141
96	0	-0.013601	-0.014257	1.904	-2.077	-2.162	0.001612
		0.006273	0.134375	-1.574	6.451	5.255	-0.015682
96	2.000	-0.015643	-0.105667	0.408660	-5.974	-0.738398	-0.146892
		0.005657	0.199367	0.537909	9.381	3.601	0.299035
97	0	-0.039171	0.144796	0.977999	12.583	-1.824	-0.175094
		-0.016337	-0.173480	-1.448	-6.672	1.880	0.188132
97	2.000	-0.014462	-0.078074	-2.022	-2.172	-3.592	-0.129003
		-0.041046	0.049391	1.552	8.083	2.708	0.084676
98	0	0.001364	0.134971	2.931	10.065	-4.493	-0.185351
		-0.025345	0.022007	-0.342858	-1.175	1.780	0.022537

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
98	2.000	-0.018257	-0.099955	0.382706	-6.011	-0.834523	-0.141806
		-0.000511	0.230377	2.357	14.565	2.797	0.245574
99	0	-0.029379	0.080063	1.440	5.928	-2.864	-0.127033
		-0.026418	-0.063643	-0.539270	-1.855	0.476097	0.062421
99	2.000	-0.022514	-0.025790	-1.068	-0.322994	-2.831	-0.082950
		-0.033282	0.042209	1.969	4.396	2.245	0.051176
100	0	-0.014458	0.120919	4.628	5.067	-7.162	-0.203364
		-0.026415	0.027176	-0.157678	-0.145678	0.762650	-0.007846
100	2.000	-0.017965	-0.035795	0.518194	-1.807	-0.890866	-0.083027
		-0.018361	0.158773	4.099	6.599	3.265	0.132258
101	0	-0.025409	0.058945	1.144	1.671	-2.810	-0.113770
		-0.012715	-0.017795	-0.008877	-0.571119	0.116445	0.021915
101	2.000	-0.023079	-0.007878	-0.661025	-0.440210	-2.374	-0.063378
		-0.023764	0.047063	1.663	1.657	1.583	0.044700
102	0	-0.020650	0.093768	3.937	1.628	-6.623	-0.180634
		-0.023410	0.013341	-0.112981	-0.288123	0.317664	-0.006304
102	2.000	-0.023835	-0.008718	0.660124	-0.526675	-1.053	-0.064598
		-0.019005	0.105651	3.418	1.642	2.319	0.071243
103	0	-0.027190	0.050805	0.380849	-0.941944	-2.300	-0.114052
		-0.007292	-0.006356	-0.011590	-0.059794	0.006860	0.006773
103	2.000	-0.043739	0.016743	-0.583143	-0.377224	-2.485	-0.045611
		-0.003729	0.038235	0.930302	-0.779579	0.666919	0.029475
104	0	-0.034093	0.047511	2.364	-0.792844	-4.953	-0.130727
		0.002727	0.001581	0.000622	-0.001555	0.002399	-0.001411
104	2.000	-0.029194	0.053229	0.603905	6.149	-1.339	-0.008969
		-0.010631	0.060081	1.814	-0.955209	0.881229	0.031352
105	0	-0.056584	0.102249	-0.064242	4.425	-2.845	-0.197479
		0.003374	-0.003452	-0.001004	0.005225	0.009262	0.003770
105	2.000	-0.048562	0.034502	-0.959253	-0.913538	-3.741	-0.056230
		0.003374	-0.003452	-0.001004	0.005225	0.007255	-0.003134

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
106	0	-0.036212	0.055277	2.783	6.744	-6.363	-0.171245
		0.003374	0.003452	0.001004	-0.005225	0.007255	-0.003134
106	2.000	-0.047010	0.026552	1.068	6.742	-1.843	-0.067648
		-0.000967	0.077042	2.016	6.233	0.602649	0.031594
107	0	-0.031416	0.098442	-1.259	1.393	-3.521	-0.249367
		0.003576	-0.006861	0.002769	0.016057	0.020396	0.007583
107	2.000	-0.049409	0.034867	-2.578	-2.059	-7.199	-0.114876
		0.003576	-0.006861	0.002769	0.016057	0.025933	-0.006137
108	0	-0.060582	0.075818	5.596	5.801	-11.444	-0.269278
		0.003576	0.006861	-0.002769	-0.016057	0.025933	-0.006137
108	2.000	-0.049409	-0.034867	2.578	2.059	-2.043	-0.184608
		-0.025590	0.103958	3.938	4.659	1.282	0.013901
109	0	0.042720	0.021045	-4.614	-3.328	-1.898	-0.221689
		0.071682	-0.041652	-3.527	-1.414	0.690219	-0.044440
109	2.000	-0.036350	-0.056212	-7.438	-3.356	-15.084	-0.303189
		0.002759	-0.012856	0.034343	0.044088	0.093685	-0.011107
110	0	-0.133376	0.152384	10.811	4.519	-20.004	-0.459975
		0.002759	0.012856	-0.034343	-0.044088	0.093685	-0.011107
110	2.000	-0.130163	-0.012940	4.395	8.334	-1.054	-0.194189
		-0.088510	0.151795	7.845	1.429	2.415	-0.033528
111	0	0.000479	-0.035137	0.216657	0.111950	-0.074654	0.040851
		-0.017348	-0.003645	-15.511	-0.595293	3.800	-0.507138
111	2.000	-0.018252	-0.090381	-15.528	-0.296916	-27.262	-0.603401
		0.000479	-0.035137	0.216657	0.111950	0.358642	-0.029421
112	0	-0.243485	0.196426	20.664	2.237	-35.083	-0.824763
		0.000479	0.035137	-0.216657	-0.111950	0.358642	-0.029421
112	2.000	0.000479	0.035137	-0.216657	-0.111950	-0.074654	0.040851
		-0.243485	0.196426	20.664	2.237	6.244	-0.431928

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
113	0	0.099249	-0.057579	-5.125	3.141	-3.365	-0.438258
		0.066496	0.094609	-2.918	10.165	0.478757	-0.246981
113	2.000	0.036975	0.005757	-7.652	4.049	-16.514	-0.498030
		-0.003201	-0.013359	0.168789	-0.071379	0.306020	-0.005833
114	0	-0.038707	-0.010802	12.147	-2.479	-22.989	-0.588011
		-0.003201	0.013359	-0.168789	0.071379	0.306020	-0.005833
114	2.000	-0.038493	0.066043	5.359	-2.437	-1.726	-0.325058
		-0.045123	-0.033946	8.104	-2.812	2.622	-0.332120
115	0	0.061323	0.043268	-0.324694	-0.400263	-4.280	-0.306578
		-0.003970	-0.005949	0.031594	-0.035632	0.023309	0.009148
115	2.000	0.054611	0.067633	-1.756	1.596	-6.139	-0.183385
		-0.003970	-0.005949	0.031594	-0.035632	0.086493	-0.002749
116	0	0.073198	-0.092910	4.867	-4.265	-10.575	-0.234295
		-0.003970	0.005949	-0.031594	0.035632	0.086493	-0.002749
116	2.000	0.063393	-0.073697	1.723	-1.617	-2.659	-0.324908
		0.038629	-0.048777	3.542	-3.349	1.159	-0.185332
117	0	0.052470	0.034389	-0.071038	6.264	-2.547	-0.185950
		-0.003080	-0.002432	0.002336	-0.010837	0.013457	0.003475
117	2.000	0.050551	0.036142	-0.744428	0.438897	-3.358	-0.116421
		0.020817	0.012843	0.659081	6.010	0.351619	-0.004351
118	0	0.061524	-0.052948	1.893	5.852	-5.025	-0.132560
		-0.003080	0.002432	-0.002336	0.010837	0.018130	-0.001389
118	2.000	0.054251	-0.089256	0.785718	-3.830	-1.888	-0.249648
		0.029871	-0.031401	1.163	6.106	0.339839	-0.082536
119	0	0.031673	-0.002540	0.995195	3.200	-3.255	-0.128733
		-0.001837	0.009698	-0.000595	0.692989	0.002081	-0.010392
119	2.000	0.030909	0.020936	-0.680899	0.799748	-2.769	-0.103078
		0.013117	-0.007509	1.685	3.141	1.432	-0.021478
120	0	0.032601	0.003118	4.021	3.512	-7.348	-0.200581
		0.018425	0.011397	-0.129378	0.625133	0.162615	-0.010968

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
120	2.000	0.035829	-0.063331	0.725399	-3.289	-1.424	-0.194456
		0.014045	0.008087	3.331	3.571	2.009	-0.072072
121	0	0.007731	-0.000446	1.461	-0.240766	-3.676	-0.128706
		0	0	0	0	0	0
121	2.000	0.009599	0.002006	-0.692685	0.012013	-2.661	-0.114219
		0.005640	-0.000530	2.157	-0.243706	1.887	-0.015824
122	0	0.009364	0.039803	5.049	-0.246094	-8.596	-0.248039
		0.006442	0.008980	-0.166871	0.000263	0.262886	-0.005080
122	2.000	0.008533	0.008896	0.529402	-0.002677	-1.319	-0.101063
		0.007273	0.039887	4.352	-0.243155	2.749	-0.054494
123	0	-0.008535	-0.005870	0.993833	-4.377	-3.241	-0.123360
		-0.002063	0.001251	-0.001821	0.017252	0.018011	-0.001208
123	2.000	-0.006148	0.001837	-0.690598	-0.054051	-2.699	-0.115306
		-0.000436	-0.006931	1.685	-4.319	1.435	-0.020497
124	0	-0.002301	0.018691	4.022	-4.701	-7.336	-0.212094
		-0.002064	0.006777	-0.128688	0.066008	0.165411	-0.005688
124	2.000	-0.010163	0.005715	0.562735	0.123804	-1.397	-0.108861
		0.005798	0.019753	3.331	-4.759	2.013	-0.057988
125	0	-0.012199	-0.008499	-0.068768	-6.722	-2.500	-0.136904
		-0.008698	-0.026181	0.011076	-1.627	0.074772	0.032322
125	2.000	-0.014966	0.007729	-0.720208	-0.400864	-3.176	-0.133492
		-0.002316	-0.015964	0.663901	-6.487	0.371324	-0.030399
126	0	-0.003887	-0.032930	1.894	-6.369	-4.977	-0.146535
		-0.008847	-0.034515	-0.012198	-1.739	0.097183	0.036316
126	2.000	-0.014966	-0.007729	0.720208	0.400864	-1.736	-0.148949
		0.005996	-0.025464	1.161	-6.604	0.354208	-0.073960
127	0	0.003488	-0.029200	-1.500	-8.208	-2.454	-0.191809
		-0.016281	-0.011107	0.161067	-1.493	0.132459	0.029266
127	2.000	-0.005717	-0.004207	-1.669	-1.337	-5.619	-0.229649

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
		-0.016281	-0.011107	0.161067	-1.493	0.454580	0.007053
128	0	-0.002449	-0.030382	1.902	-5.685	-6.089	-0.213811
		-0.014639	-0.020319	-0.163885	-0.187617	0.454302	0.036557
128	2.000	-0.002449	-0.030382	1.902	-5.685	-2.284	-0.274572
		-0.014639	-0.020319	-0.163885	-0.187617	0.126544	-0.004079
129	0	-0.021902	0.064605	-2.751	0.819354	-1.368	-0.301500
		0.073027	-0.198094	-2.880	-10.456	0.432372	0.071708
129	2.000	0.011049	-0.204478	-6.542	-3.112	-13.988	-0.631892
		-0.022539	0.060464	0.880949	-1.289	1.627	0.105772
130	0	-0.034909	0.176620	6.567	-3.832	-14.232	-0.629510
		-0.014008	-0.094515	-0.883728	-0.380259	1.612	0.137668
130	2.000	-0.013364	-0.098614	2.749	-2.489	-1.389	-0.337668
		0.018943	0.174569	2.907	3.551	0.307832	0.027196
131	0	-0.001152	0.188738	1.162	-0.567201	-0.394299	-0.152688
		0.120281	-0.473524	-11.072	-4.529	2.640	0.097422
131	2.000	0.014522	-0.433860	-11.685	1.386	-20.797	-0.837387
		-0.006850	0.175241	1.219	-2.028	2.063	0.219181
132	0	-0.087650	0.393010	12.296	-7.309	-22.104	-0.825029
		-0.001152	-0.188738	-1.162	0.567201	1.930	0.224772
132	2.000	0.004579	-0.202207	-1.105	-0.893420	-0.413508	-0.174065
		0.014522	0.433860	11.685	-1.386	2.573	0.030299
133	0	0.000656	-0.084627	-4.452	3.695	-0.859698	-0.087602
		0.021111	0.004869	-0.257168	-2.708	0.188711	-0.006637
133	2.000	0.009889	-0.110501	-4.917	2.439	-10.647	-0.296988
		0.011879	0.030744	0.208402	-1.453	0.558823	0.043240
134	0	-0.026752	0.049631	4.936	-7.244	-10.843	-0.237985
		0.007652	-0.048504	-0.204981	0.239188	0.535921	0.059934
134	2.000	-0.035985	0.023756	4.470	-8.499	-1.019	-0.150335
		0.016885	-0.022629	0.260589	1.495	0.172644	-0.025462

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
135	0	0.007789	-0.022112	-1.775	1.385	-1.789	-0.093862
		0.013231	0.002364	0.021403	-1.298	0.117202	0.002517
135	2.000	0.007789	-0.022112	-1.775	1.385	-5.339	-0.138084
		0.013231	0.002364	0.021403	-1.298	0.160006	0.007245
136	0	0.004460	-0.039214	1.749	-6.110	-5.361	-0.077995
		0.011103	-0.021375	-0.023071	0.091113	0.156368	0.025878
136	2.000	0.004460	-0.039214	1.749	-6.110	-1.863	-0.156420
		0.011103	-0.021375	-0.023071	0.091113	0.110227	-0.016870
137	0	0.006379	2.10E-05	-0.774552	0.594297	-1.547	-0.075592
		0.011698	-0.009036	-0.005191	-1.234	0.055443	0.010950
137	2.000	0.002616	-0.061451	-0.792267	-4.098	-3.104	-0.135306
		0.011224	0.009760	-0.003519	-0.030387	0.045885	0.011285
138	0	0.006379	-2.10E-05	0.774551	-0.594297	-3.096	-0.075550
		0.010752	-0.028579	0.001845	-1.173	0.046717	0.029714
138	2.000	0.010075	-0.061502	0.756846	-5.287	-1.575	-0.138840
		0.011224	-0.009760	0.003519	0.030387	0.052922	-0.008235
139	0	0.005056	0.001193	-0.551929	0.233439	-1.201	-0.058271
		0.010057	-0.014756	-0.006036	-1.210	0.024778	0.015666
139	2.000	0.003681	-0.070172	-0.569812	-5.049	-2.326	-0.125355
		0.009150	0.012707	-0.001365	0.595080	0.018071	0.012974
140	0	0.005863	0.007755	0.553663	0.369827	-2.306	-0.064595
		0.009027	-0.031198	-0.001571	-1.797	0.022393	0.031060
140	2.000	0.006992	-0.063584	0.535784	-4.913	-1.213	-0.122330
		0.009957	-0.003759	0.003099	0.008186	0.023220	-0.003253
141	0	0.004606	0.007687	-0.512429	0.713077	-0.984004	-0.056616
		0.008259	-0.027449	-0.013721	-1.798	0.020592	0.028231
141	2.000	0.006923	-0.095943	-0.570755	-6.808	-2.086	-0.142700
		0.005948	0.032056	0.016933	2.257	0.029777	0.031510
142	0	0.006651	0.033733	0.534139	2.143	-2.032	-0.081648

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. linea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
		0.003040	-0.067989	-0.034919	-4.651	0.051123	0.066669
142	2.000	0.004098	-0.069870	0.475805	-5.378	-1.003	-0.119951
		0.007993	0.009364	0.004777	0.599029	0.016272	0.009832
143	0	0.003023	0.054085	-0.370763	4.568	-0.880967	-0.096378
		0.007262	-0.095264	-0.166889	-6.820	0.074293	0.094715
143	2.000	0.010673	-0.123974	-0.694765	-8.937	-2.082	-0.165670
		0.002857	0.055964	0.105140	4.440	0.135367	0.055121
144	0	0.008102	0.063568	0.583410	4.312	-1.924	-0.105459
		-0.000322	-0.091838	-0.159428	-6.810	0.203574	0.090561
144	2.000	0.000250	-0.114479	0.259415	-9.193	-0.945628	-0.156954
		0.007936	0.061689	0.107507	4.439	0.048929	0.061248
145	0	-0.005890	0.066584	0.118300	6.644	-1.021	-0.098083
		0.017795	-0.129136	-0.887016	-11.031	0.381155	0.116997
145	2.000	0.018855	-0.134432	-1.066	-10.812	-2.350	-0.171509
		-0.002910	0.064473	0.428823	6.565	0.533854	0.065010
146	0	0.012325	0.076445	0.737283	6.318	-1.911	-0.111890
		-0.007322	-0.100495	-0.584952	-8.859	0.724467	0.101167
146	2.000	-0.012607	-0.124555	-0.447497	-11.138	-1.241	-0.154411
		0.015306	0.078556	0.426760	6.397	0.261577	0.075146
147	0	-0.019985	0.077748	1.417	7.181	-1.813	-0.093276
		0.043738	-0.138976	-2.518	-11.079	1.549	0.112848
147	2.000	0.043826	-0.135658	-2.538	-11.090	-3.527	-0.162312
		-0.021004	0.065736	1.883	7.439	1.958	0.064721
148	0	0.028016	0.077490	1.673	7.024	-2.433	-0.099052
		-0.029199	-0.104090	-2.284	-9.503	2.433	0.104291
148	2.000	-0.035901	-0.135910	-2.282	-11.247	-2.449	-0.146336
		0.026997	0.089502	1.207	6.766	0.919844	0.082451
149	0	-0.038182	0.069322	4.171	4.997	-3.447	-0.046992
		0.067350	-0.146631	-4.897	-7.565	3.481	0.102307

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
149	2.000	0.063092	-0.145143	-4.801	-6.819	-6.334	-0.192632
		-0.033924	0.067835	4.074	4.250	4.915	0.093335
150	0	0.036887	0.084730	3.132	4.065	-4.268	-0.120400
		-0.046617	-0.112270	-4.845	-5.654	5.824	0.141697
150	2.000	-0.055495	-0.144914	-4.952	-7.644	-4.511	-0.131832
		0.041145	0.086218	3.228	4.811	2.209	0.053718
151	0	-0.001804	0.026047	3.480	1.524	-2.944	-0.020581
		0.003367	-0.045938	-4.839	-2.500	3.885	0.036324
151	2.000	0.003367	-0.045938	-4.839	-2.500	-5.793	-0.055549
		-0.001804	0.026047	3.480	1.524	4.014	0.031511
152	0	0.000696	0.028229	3.125	1.579	-3.789	-0.034817
		0.004834	-0.045724	-4.833	-2.489	5.311	0.051518
152	2.000	0.004834	-0.045724	-4.833	-2.489	-4.355	-0.039926
		0.000696	0.028229	3.125	1.579	2.460	0.021639
201	0	-69.490	1.18E-08	2.486	-4.66E-09	-7.146	1.38E-12
		-67.580	6.80E-14	-3.188	7.30E-15	10.682	-9.18E-14
201	10.255	-67.580	6.80E-14	-3.188	7.30E-15	-22.007	-2.38E-07
		-69.490	1.18E-08	2.486	-4.66E-09	18.346	-9.69E-08
202	0	-69.752	2.51E-14	3.094	-9.31E-10	-11.120	-1.49E-08
		-13.072	-3.73E-09	-1.822	4.66E-10	7.705	2.24E-08
202	10.595	-13.072	-3.73E-09	-1.822	4.66E-10	-11.594	-2.38E-07
		-69.752	2.51E-14	3.094	-9.31E-10	21.664	3.50E-13

ENVOLVENTE para < Mz > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
201	0	-84.836	1.462	0.379260	-0.395526	-0.796125	-2.350
		-73.771	0.017769	-1.715	0.142510	6.062	1.551
201	10.255	-73.435	-0.752514	1.411	0.069635	10.879	-7.944
		-86.316	1.727	-0.230981	-0.281834	-1.493	16.920
202	0	-32.392	0.443150	0.748690	0.145371	-2.913	-1.413
		-26.115	-0.439981	0.031474	-0.327678	0.264522	3.012
202	10.595	-19.540	-0.581770	-0.802400	0.081148	-4.503	-6.696
		-63.284	1.038	2.075	-0.137110	14.573	11.882

ENVOLVENTE DE REACCIONES EN APOYOS:
(1. línea/2. línea: MIN./MAX. de cada componente)

NUDOS	FX [t]	FY [t]	FZ [t]	MX [tm]	MY [tm]	MZ [tm]
1	-0.102147	-0.672831	-23.420			
	0.224338	0.338987	74.443			
3	-0.108619	-0.672841	-14.696			
	0.220192	0.338970	86.939			
88	-0.101836	-0.579083	-24.620			
	0.224630	0.328175	22.590			
90	-0.109752	-0.579085	-16.208			
	0.219825	0.328174	27.168			
101	-2.486	-0.753147	-1.759	-2.351	-7.146	-0.188156
	3.188	1.727	126.378	1.551	10.682	0.400355
102	-3.094	-0.633767	-9.455	-1.413	-11.120	-0.145371
	1.822	1.064	92.279	3.012	7.706	0.327678

ENVOLVENTE: CT '' Ejec. "0001"

Grupo	Espe.	Hipótesis	Factor	Etapa	Título
A	PERM.	1	1.350		Peso propio y barandillas 1
B	O	1	1.000		Peso propio y barandillas 1
C	MAS PER	2	2.030		Pavimento 1
D	O	2	1.000		Pavimento 1
E	MAS	3	1.500		Sobrecarga de uso 1
F	MAS	4	1.500		Sobrecarga de uso 2
G	MAS	5	1.500		Sobrecarga de uso 3
H	MAS	6	1.500		Sobrecarga de uso 4
I	MAS	7	1.500		Sobrecarga de uso 5
J	MAS	8	1.500		Sobrecarga de uso 6
K	MAS	9	1.500		Sobrecarga de uso 7
L	MAS	10	1.500		Sobrecarga de uso 8
M	MAS	11	1.500		Sobrecarga de uso 9
N	MAS	12	1.500		Sobrecarga de uso 10
O	MAS	13	1.500		Sobrecarga de uso 11
P	MAS	14	1.500		Sobrecarga de uso 12
Q	MAS	15	1.500		Carro 1
R	O	16	1.500		Carro 2
S	O	17	1.500		Carro 3
T	O	18	1.500		Carro 4
U	O	19	1.500		Carro 5
V	O	20	1.500		Carro 6
W	O	21	1.500		Carro 7
X	O	22	1.500		Carro 2
Y	O	23	1.500		Carro 9
Z	O	24	1.500		Carro 10
AA	O	25	1.500		Carro 11
AB	O	26	1.500		Carro 12
AC	MAS	27	0.900000		Retraccion
AD	MAS	28	0.900000		Termico
AE	MAS	28	-0.900000		Termico
AF	MAS	29	0.900000		Gradiente termico
AG	MAS	30	0.450000		Viento transversal 1
AH	MAS	31	0.450000		Viento transversal 2
AI	MAS	32	1.500		Frenado

ALTERNATIVA PARA ENVOLVENTE:

AJ	PERM.	1	1.350	Peso propio y barandillas 1
AK	O	1	1.000	Peso propio y barandillas 1
AL	MAS PER	2	2.030	Pavimento 1
AM	O	2	1.000	Pavimento 1
AN	MAS	3	0.900000	Sobrecarga de uso 1
AO	MAS	4	0.900000	Sobrecarga de uso 2
AP	MAS	5	0.900000	Sobrecarga de uso 3
AQ	MAS	6	0.900000	Sobrecarga de uso 4
AR	MAS	7	0.900000	Sobrecarga de uso 5
AS	MAS	8	0.900000	Sobrecarga de uso 6
AT	MAS	9	0.900000	Sobrecarga de uso 7
AU	MAS	10	0.900000	Sobrecarga de uso 8
AV	MAS	11	0.900000	Sobrecarga de uso 9
AW	MAS	12	0.900000	Sobrecarga de uso 10
AX	MAS	13	0.900000	Sobrecarga de uso 11
AY	MAS	14	0.900000	Sobrecarga de uso 12

AZ	MAS	15	0.900000	Carro 1
BA	O	16	0.900000	Carro 2
BB	O	17	0.900000	Carro 3
BC	O	18	0.900000	Carro 4
BD	O	19	0.900000	Carro 5
BE	O	20	0.900000	Carro 6
BF	O	21	0.900000	Carro 7
BG	O	22	0.900000	Carro 2
BH	O	23	0.900000	Carro 9
BI	O	24	0.900000	Carro 10
BJ	O	25	0.900000	Carro 11
BK	O	26	0.900000	Carro 12
BL	MAS	27	1.500	Retraccion
BM	MAS	28	0.900000	Termico
BN	MAS	28	-0.900000	Termico
BO	MAS	29	0.900000	Gradiente termico
BP	MAS	30	0.900000	Viento transversal 1
BQ	MAS	31	0.900000	Viento transversal 2
BR	MAS	32	0.900000	Frenado

ALTERNATIVA PARA ENVOLVENTE:

BS	PERM.	1	1.350	Peso propio y barandillas 1
BT	O	1	1.000	Peso propio y barandillas 1
BU	MAS PER	2	2.030	Pavimento 1
BV	O	2	1.000	Pavimento 1
BW	MAS	3	0.900000	Sobrecarga de uso 1
BX	MAS	4	0.900000	Sobrecarga de uso 2
BY	MAS	5	0.900000	Sobrecarga de uso 3
BZ	MAS	6	0.900000	Sobrecarga de uso 4
CA	MAS	7	0.900000	Sobrecarga de uso 5
CB	MAS	8	0.900000	Sobrecarga de uso 6
CC	MAS	9	0.900000	Sobrecarga de uso 7
CD	MAS	10	0.900000	Sobrecarga de uso 8
CE	MAS	11	0.900000	Sobrecarga de uso 9
CF	MAS	12	0.900000	Sobrecarga de uso 10
CG	MAS	13	0.900000	Sobrecarga de uso 11
CH	MAS	14	0.900000	Sobrecarga de uso 12
CI	MAS	15	0.900000	Carro 1
CJ	O	16	0.900000	Carro 2
CK	O	17	0.900000	Carro 3
CL	O	18	0.900000	Carro 4
CM	O	19	0.900000	Carro 5
CN	O	20	0.900000	Carro 6
CO	O	21	0.900000	Carro 7
CP	O	22	0.900000	Carro 2
CQ	O	23	0.900000	Carro 9
CR	O	24	0.900000	Carro 10
CS	O	25	0.900000	Carro 11
CT	O	26	0.900000	Carro 12
CU	MAS	27	0.900000	Retraccion
CV	MAS	28	1.500	Termico
CW	MAS	28	-1.500	Termico
CX	MAS	29	1.500	Gradiente termico
CY	MAS	30	0.900000	Viento transversal 1
CZ	MAS	31	0.900000	Viento transversal 2
DA	MAS	32	0.900000	Frenado

ALTERNATIVA PARA ENVOLVENTE:

DB	PERM.	1	1.350	Peso propio y barandillas 1
DC	O	1	1.000	Peso propio y barandillas 1
DD	MAS PER	2	2.030	Pavimento 1
DE	O	2	1.000	Pavimento 1
DF	MAS	27	0.900000	Retraccion
DG	MAS	28	0.900000	Termico
DH	MAS	28	-0.900000	Termico
DI	MAS	29	0.900000	Gradiente termico
DJ	MAS	30	1.500	Viento transversal 1
DK	MAS	31	1.500	Viento transversal 2

ENVOLVENTE para < N > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
201	0	-559.518	0	3.187	0	-22.018	0
		-251.112	-1.56E-12	-5.271	-1.86E-09	22.219	-1.49E-08
201	10.255	-532.645	0	3.187	0	10.661	0
		-231.206	-1.56E-12	-5.271	-1.86E-09	-31.829	-7.46E-09
202	0	-504.931	0.684803	6.779	-0.083942	-24.109	0.524826
		-229.672	9.30E-10	9.211	3.72E-09	-44.437	8.32E-12
202	10.595	-477.168	0.684803	6.779	-0.083942	47.713	7.780
		-209.106	9.30E-10	9.211	3.72E-09	53.152	-6.79E-12

ENVOLVENTE para < Vz > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
1	0	6.080	-6.266	-2.593	-16.158	13.263	0.741445
		-4.547	3.045	97.779	28.893	-21.959	-0.663764
1	1.275	6.078	-5.004	-8.789	-14.139	6.005	-6.484
		-4.325	3.045	86.693	27.546	95.661	3.246
2	0	3.207	-5.260	-7.063	-20.146	31.897	-3.567
		-2.841	2.587	69.856	27.716	59.649	1.527
2	1.275	3.205	-3.998	-13.258	-18.126	18.940	-9.511

ENVOLVENTE para < Vz > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
		-2.327	2.586	44.378	23.650	110.875	4.903
3	0	1.521	-3.014	-12.759	-20.440	46.560	-3.917
		-1.085	2.431	43.568	19.696	86.428	3.547
3	1.275	1.582	-1.974	-20.157	-10.788	70.824	-6.592
		-0.495034	4.146	32.999	20.999	125.112	12.295
4	0	0.251068	-2.751	-18.116	-20.234	52.545	-6.201
		1.118	3.400	34.733	18.649	101.696	10.592
4	1.275	0.186374	-2.089	-26.011	-18.841	50.338	-9.219
		1.402	3.377	21.537	17.484	116.996	14.879
5	0	-0.757959	-2.567	-23.918	-18.658	75.076	-8.203
		2.718	2.818	21.836	16.492	68.548	13.658
5	1.275	-0.746224	-1.936	-35.008	-18.995	37.505	-11.068
		2.842	2.818	15.643	16.492	92.445	17.251
6	0	-1.539	-2.156	-32.994	-18.182	61.716	-10.222
		3.821	2.160	16.949	16.571	72.109	16.259
6	1.275	-0.863216	-1.082	-45.816	-10.316	61.575	-10.694
		8.733	3.277	10.064	19.435	64.034	30.026
7	0	-1.392	-1.566	-43.742	-8.583	75.310	-10.106
		9.908	2.201	11.198	19.554	39.575	28.827
7	1.275	-1.236	-0.858962	-52.518	-6.674	21.281	-11.171
		10.032	2.201	5.005	19.554	49.906	31.634
8	0	-1.879	-1.173	-48.844	-3.911	24.442	-11.167
		10.869	1.108	7.087	20.019	25.319	30.832
8	1.275	-1.658	-0.464964	-59.281	-2.652	-38.293	-11.603
		10.993	1.108	0.894119	20.019	30.408	32.245
9	0	-5.892	-1.663	-49.045	2.080	-23.064	-11.204
		15.503	1.080	6.720	19.842	-2.482	31.783
9	1.275	-5.690	-1.091	-61.009	2.446	-76.546	-13.012
		15.627	1.080	0.527321	19.842	2.139	33.161

ENVOLVENTE para < Vz > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
10	0	-11.441	-2.851	-33.130	-0.514030	-85.125	-20.621
		11.908	1.027	17.180	13.199	-15.735	20.937
10	1.275	-6.259	-1.357	-43.805	1.065	-142.518	-13.815
		11.905	1.027	10.985	13.199	2.223	22.247
11	0	1.315	0.366971	8.403	-10.268	-77.588	10.028
		-1.283	-1.961	54.800	-6.824	-84.378	-8.870
11	1.700	1.339	0.328837	-1.217	-10.246	-59.189	10.653
		-1.556	-1.156	31.736	-6.424	-39.521	-11.470
12	0	2.515	0.683188	21.729	-9.450	4.155	12.289
		-3.371	-2.140	58.498	-6.130	-76.651	-10.622
12	1.700	2.196	0.657576	12.162	-9.504	47.382	13.459
		-3.076	-1.299	43.717	-6.578	10.246	-13.537
13	0	2.344	0.430706	16.789	-6.024	57.290	13.590
		-3.805	-1.596	50.841	-0.132358	10.933	-12.313
13	1.700	2.229	0.430706	8.526	-6.024	78.811	14.323
		-3.509	-0.754232	36.060	-0.581140	84.811	-14.302
14	0	9.128	0.291213	10.082	-4.206	90.464	14.281
		-10.671	-1.146	39.504	2.523	76.096	-13.609
14	1.700	9.350	0.192998	0.018335	-5.691	109.104	15.812
		-10.713	-0.205857	26.523	3.560	122.173	-15.868
15	0	9.405	-0.074530	2.210	-4.243	116.914	15.870
		-10.858	-0.588676	28.781	4.068	115.083	-15.571
15	1.700	9.152	-0.107153	-9.414	-6.085	132.965	15.750
		-10.274	0.285582	9.863	5.462	120.885	-15.853
16	0	8.765	-0.419382	-9.603	-4.958	165.273	15.927
		-10.289	-0.025396	12.392	8.587	75.319	-18.214
16	1.700	8.650	-0.448875	-28.105	-4.915	160.623	15.176
		-9.843	0.845732	0.350695	8.095	63.616	-17.494
17	0	8.426	-0.857649	-26.074	-3.484	168.260	15.548

ENVOLVENTE para < Vz > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
		-9.595	0.296840	2.794	8.505	50.241	-17.648
17	1.700	8.656	-0.877861	-39.255	-3.966	122.691	15.042
		-9.644	1.159	-7.070	8.538	36.637	-17.371
18	0	8.218	-1.353	-35.891	-0.044315	128.196	15.788
		-9.287	0.652642	-5.364	9.075	23.355	-17.689
18	1.700	8.233	-1.353	-50.678	-1.839	54.601	13.524
		-9.122	1.494	-13.621	10.421	7.216	-15.890
19	0	7.558	-1.744	-43.112	4.337	56.347	14.739
		-8.654	0.831205	-9.639	12.827	-9.175	-16.142
19	1.700	7.573	-1.744	-57.899	2.542	-29.526	11.809
		-8.489	1.673	-17.896	14.174	-32.583	-14.040
20	0	7.718	-1.857	-30.553	0.034679	-26.656	14.632
		-8.389	0.957924	1.126	16.036	-63.411	-15.401
20	1.700	8.014	-1.857	-45.334	-1.760	-91.171	11.510
		-8.504	1.800	-7.137	17.383	-68.521	-13.083
21	0	16.147	-2.262	-12.945	-14.886	1.365	36.692
		-12.398	0.772193	42.102	4.041	-127.359	-24.817
21	1.275	16.271	-2.262	-19.138	-14.886	-19.091	33.807
		-12.322	2.035	31.992	5.253	-80.117	-23.052
22	0	15.360	-1.997	-5.237	-21.491	7.866	35.044
		-7.294	0.625880	54.122	5.973	-101.134	-15.181
22	1.275	15.484	-1.997	-11.430	-21.491	-2.762	32.497
		-7.282	1.257	43.032	5.637	-39.188	-13.974
23	0	10.504	-2.272	-6.026	-21.776	32.795	33.389
		-3.324	0.607375	51.834	10.253	-64.210	-13.812
23	1.275	10.627	-2.272	-12.219	-21.776	21.162	30.492
		-3.305	1.358	41.723	11.688	-10.867	-13.110
24	0	9.416	-3.440	-10.236	-21.466	48.169	31.725
		-2.916	1.092	44.921	14.933	-30.721	-13.436

ENVOLVENTE para < Vz > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
24	1.275	9.540	-3.440	-16.430	-21.466	31.167	27.339
		-2.743	1.723	36.283	15.943	21.055	-11.662
25	0	8.115	-4.215	-15.395	-21.477	58.143	28.849
		-2.187	1.558	38.446	17.298	-1.760	-12.155
25	1.275	8.239	-4.215	-21.588	-21.477	34.563	23.475
		-2.015	2.189	29.808	18.308	41.759	-9.785
26	0	6.617	-5.117	-20.980	-21.920	61.894	25.117
		-1.321	2.049	32.005	18.514	17.633	-10.487
26	1.275	6.783	-5.113	-27.817	-22.247	42.873	18.602
		-2.125	4.392	22.160	20.763	36.331	-12.045
27	0	4.986	-5.985	-27.699	-23.189	71.115	20.409
		-0.810887	3.849	23.911	18.449	10.282	-13.497
27	1.275	1.874	-3.986	-37.020	-20.610	43.576	7.955
		-0.687025	5.112	17.718	20.468	36.825	-7.824
28	0	0.568113	-4.629	-39.517	-20.922	69.120	9.228
		0.809812	4.454	19.846	16.713	11.606	-9.406
28	1.275	0.644259	-4.629	-49.627	-21.729	12.281	3.342
		0.933674	5.717	13.653	18.733	32.965	-2.962
29	0	-0.797519	-5.648	-61.297	-17.957	38.195	4.803
		2.635	5.306	16.037	13.077	10.859	-4.709
29	1.275	-0.721373	-5.648	-71.406	-18.765	-46.417	-2.383
		2.759	6.568	9.844	15.096	27.362	2.822
30	0	-0.298571	-0.974495	-1.410	7.448	11.711	0.653507
		-0.069012	0.506580	25.468	-7.265	-29.975	-0.755461
30	1.275	-0.174710	0.287959	-7.603	9.468	5.964	0.175379
		0.024483	1.019	16.025	-8.828	-4.836	-0.113913
31	0	0.316571	-0.174786	14.135	-11.579	4.821	0.170922
		-1.131	-0.000193	63.578	-0.038617	22.048	0.000437
31	1.275	0.248616	-0.174786	7.029	-11.579	18.315	-0.051965
		-0.678420	-0.000193	40.936	-0.038616	81.627	0.000190

ENVOLVENTE para < Vz > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
32	0	2.158	-0.245385	13.594	-15.418	25.141	0.170367
		-1.774	-0.000116	67.943	-0.020723	112.886	0.000118
32	1.275	2.090	-0.245385	6.488	-15.418	37.945	-0.142550
		-1.632	-9.00E-13	52.582	-7.15E-07	170.096	-1.63E-09
33	0	2.983	3.65E-13	5.966	3.06E-12	41.064	2.33E-13
		-2.297	-9.31E-09	54.028	-2.09E-07	180.607	-1.63E-09
33	1.275	3.105	3.65E-13	-3.855	3.06E-12	97.850	6.98E-13
		-2.069	-9.31E-09	42.634	-2.09E-07	242.239	5.59E-09
34	0	3.360	-3.23E-05	-7.353	0.000570	126.060	-1.48E-05
		-2.413	-9.31E-10	38.732	1.19E-07	246.212	-1.98E-09
34	1.275	3.331	-3.23E-05	-15.849	0.000570	166.154	-5.60E-05
		-3.049	-0.056703	14.981	-12.669	204.171	-0.055649
35	0	3.539	-3.59E-05	-21.789	0.003084	166.043	-2.50E-05
		-3.177	-4.64E-10	9.948	2.24E-07	155.142	2.90E-10
35	1.275	3.557	-3.59E-05	-33.188	0.003084	130.990	-7.09E-05
		-3.035	-4.64E-10	2.846	2.24E-07	163.299	-1.16E-09
36	0	3.689	-4.39E-05	-37.674	0.003963	131.072	-3.05E-05
		-3.022	-2.79E-09	0.033877	8.94E-08	164.525	-8.06E-13
36	1.275	3.862	-8.96E-13	-60.242	1.91E-06	137.036	2.62E-14
		-2.849	2.56E-13	-7.866	-2.98E-08	147.624	-9.32E-10
37	0	3.975	-1.08E-13	-65.485	3.11E-12	140.314	8.33E-13
		-2.690	-4.66E-10	-10.338	-2.98E-08	149.057	1.75E-13
37	1.275	3.993	-1.08E-13	-76.883	1.91E-06	49.539	6.95E-13
		-2.548	-4.66E-10	-17.440	-2.98E-08	131.346	-2.33E-10
38	0	4.131	4.00E-13	-85.809	1.91E-06	57.506	1.39E-13
		-2.161	4.66E-10	-21.225	-4.47E-08	134.988	5.70E-11
38	1.275	4.149	4.00E-13	-97.208	1.91E-06	-59.186	6.49E-13
		-1.915	4.66E-10	-30.189	-4.47E-08	85.182	-2.34E-10

ENVOLVENTE para < Vz > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
39	0	4.262	-1.49E-08	-120.829	3.19E-12	-41.664	5.42E-13
		-1.279	2.33E-10	-38.515	-1.49E-08	87.462	1.74E-10
39	1.275	4.596	-1.49E-08	-136.569	3.19E-12	-172.499	5.74E-13
		-1.137	2.33E-10	-45.617	-1.49E-08	33.819	-1.74E-14
40	0	4.527	-5.96E-08	-203.860	4.03E-12	-143.950	2.01E-13
		0.110350	-9.29E-10	-69.343	2.98E-08	46.037	2.32E-10
40	1.275	4.545	-5.96E-08	-215.259	4.03E-12	-411.181	1.49E-08
		0.252379	-9.29E-10	-76.444	2.98E-08	-46.917	2.76E-12
41	0	6.723	-5.26E-13	84.175	-1.19E-07	-100.163	9.14E-13
		-11.688	9.33E-10	220.833	4.77E-07	-407.822	1.86E-08
41	1.700	6.633	-5.26E-13	74.700	-1.19E-07	34.903	1.88E-14
		-11.950	0.087897	183.686	-19.444	-118.540	-0.152179
42	0	5.739	8.54E-13	50.345	-5.96E-08	20.633	3.21E-13
		-9.899	-0.005090	117.753	-18.757	-151.178	-0.189584
42	1.700	5.106	8.54E-13	38.805	-5.96E-08	131.921	1.77E-12
		-9.595	-0.005090	102.561	-18.757	36.119	-0.198237
43	0	5.109	4.59E-14	31.441	5.96E-08	124.439	7.03E-13
		-8.444	7.63E-13	86.416	4.77E-07	22.331	-2.24E-08
43	1.700	5.019	4.59E-14	21.967	5.96E-08	169.842	7.81E-13
		-8.140	7.63E-13	71.223	7.26E-14	156.345	-7.45E-09
44	0	5.039	8.15E-13	18.808	-5.96E-08	167.867	4.48E-13
		-7.634	1.86E-09	64.382	3.00E-13	152.457	7.45E-09
44	1.700	4.949	8.15E-13	9.334	-5.96E-08	191.792	1.83E-12
		-7.330	1.86E-09	49.189	4.77E-07	249.007	8.73E-14
45	0	4.548	0.109418	5.237	12.515	219.384	-0.360733
		-6.755	3.42E-13	44.367	4.75E-13	220.091	7.45E-09
45	1.700	4.498	0.109418	-6.277	12.515	218.500	-0.174692
		-6.176	0.029711	16.240	-5.177	261.348	-0.206967
46	0	3.492	0.032334	-14.721	6.588	345.141	-0.264838
		-3.947	3.36E-13	7.047	1.18E-13	106.862	1.49E-08

ENVOLVENTE para < Vz > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
46	1.700	3.792	4.65E-13	-42.854	-1.19E-07	306.456	1.29E-12
		-3.717	3.36E-13	-4.461	1.18E-13	109.061	-7.45E-09
47	0	3.459	5.31E-13	-47.789	1.19E-07	335.076	-6.59E-13
		-3.262	3.82E-13	-8.480	1.16E-13	81.752	-3.06E-13
47	1.700	3.482	5.31E-13	-62.987	-3.58E-07	240.902	2.44E-13
		-3.072	3.82E-13	-17.949	1.16E-13	59.284	1.86E-09
48	0	-5.992	7.63E-14	-69.869	-2.38E-07	236.515	3.85E-13
		6.738	-9.54E-13	-21.190	-1.43E-12	69.016	1.18E-12
48	1.700	-5.968	7.63E-14	-85.067	-4.77E-07	104.798	5.15E-13
		6.928	-9.54E-13	-30.659	-1.43E-12	24.937	1.86E-09
49	0	-5.493	0.045080	-101.589	20.172	46.084	-0.270065
		7.051	-1.44E-12	-37.055	-1.16E-12	102.707	6.88E-13
49	1.700	-5.469	0.045080	-116.787	20.172	-139.566	-0.193417
		7.241	-1.44E-12	-46.524	-1.16E-12	31.653	-1.75E-12
50	0	-6.784	-0.105008	-184.033	20.803	-107.513	-0.213473
		8.334	0	-71.109	-2.38E-07	44.995	0
50	1.700	-6.761	-0.105008	-199.231	20.803	-433.338	-0.392014
		8.524	0	-80.577	-2.38E-07	-83.958	0
51	0	-1.946	0.040694	63.327	2.657	-12.878	-0.078293
		-0.770162	1.49E-08	168.686	0	-389.219	0
51	1.275	-1.930	0.040694	56.223	2.657	63.347	-0.026400
		-0.542275	1.49E-08	157.291	0	-181.375	0
52	0	-2.581	-1.78E-13	36.457	1.19E-07	52.355	-1.86E-09
		0.345482	0.155196	100.778	17.499	-206.815	-0.281767
52	1.275	-2.565	-1.78E-13	29.354	1.19E-07	94.316	-1.44E-13
		0.573369	0.155196	89.384	17.499	-85.568	-0.083860
53	0	-2.830	-6.61E-13	22.426	1.72E-12	88.520	-1.86E-09
		1.209	0.145644	68.929	17.558	-101.187	-0.265168
53	1.275	-2.814	-6.61E-13	15.322	1.72E-12	112.588	-1.03E-13

ENVOLVENTE para < Vz > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
		1.437	0.145644	57.535	17.558	-20.554	-0.079443
54	0	-2.914	-8.73E-13	12.152	1.19E-07	110.127	2.77E-12
		1.815	0.156472	49.377	17.530	-27.503	-0.258213
54	1.275	-2.898	-8.73E-13	5.048	1.19E-07	121.094	2.34E-10
		2.043	0.156472	37.983	17.530	28.198	-0.058679
55	0	-2.952	-1.86E-09	2.475	-2.38E-07	131.441	3.73E-09
		2.264	0	33.007	0	6.205	0
55	1.275	-2.918	-1.86E-09	-5.547	1.80E-12	129.482	1.52E-12
		2.462	0	23.143	0	42.007	0
56	0	-2.871	1.34E-12	-8.233	1.56E-12	127.996	-2.25E-12
		2.447	0	19.221	0	41.144	0
56	1.275	-2.874	1.34E-12	-15.628	1.56E-12	134.689	-5.42E-13
		2.693	0	8.119	0	36.668	0
57	0	-2.768	1.86E-09	-18.679	5.96E-07	140.971	4.19E-09
		2.542	0.154011	6.248	16.821	20.302	-0.176819
57	1.275	-2.679	1.86E-09	-29.464	8.34E-07	110.275	-1.33E-13
		2.684	0.154011	-0.853239	16.821	23.742	0.019576
58	0	-2.402	4.34E-11	-28.181	-4.77E-07	104.201	-2.39E-09
		2.276	0.134057	-0.999526	15.500	21.280	-0.132860
58	1.275	-2.313	4.34E-11	-38.966	4.77E-07	61.388	6.26E-13
		2.418	0.134057	-8.101	15.500	15.478	0.038090
59	0	-1.638	-9.31E-10	-24.541	-2.38E-07	50.961	-2.50E-09
		1.604	0.087409	-3.060	12.213	11.332	-0.086360
59	1.275	-1.548	-9.31E-10	-35.326	-2.38E-07	12.790	4.89E-13
		1.746	0.087409	-10.161	12.213	2.902	0.025104
60	0	-0.061004	2.70E-13	-2.542	4.87E-13	7.014	9.89E-10
		0.111495	0.007335	2.370	6.012	2.294	-0.067734
60	1.275	0.070109	-9.31E-10	-13.295	-3.58E-07	-1.707	1.86E-09
		0.262032	0.007335	-4.903	6.012	-0.640283	-0.058381

ENVOLVENTE para < Vz > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
61	0	3.463	9.415	-1.250	15.664	12.221	-0.728327
		-4.921	-3.045	116.484	-28.924	-22.004	0.664146
61	1.275	3.587	7.311	-7.443	12.298	6.679	10.003
		-4.324	-3.045	86.652	-27.578	95.751	-3.246
62	0	0.359747	7.620	-5.791	19.526	30.691	6.685
		-2.840	-2.587	69.832	-27.730	59.709	-1.527
62	1.275	0.483608	5.516	-11.984	16.160	19.357	15.129
		-2.581	-2.724	54.935	-34.043	119.544	-5.059
63	0	-2.253	6.719	-11.273	20.498	44.126	12.355
		-1.271	-2.592	55.381	-29.299	82.215	-3.636
63	1.275	1.583	1.973	-20.168	10.785	70.832	6.591
		-1.049	-2.592	44.295	-27.953	145.769	-6.968
64	0	-0.543060	3.967	-17.293	16.742	72.761	10.509
		-0.031588	-2.202	50.185	-23.495	114.392	-5.927
64	1.275	0.522201	1.673	-24.922	11.991	87.417	8.087
		1.615	-3.563	25.245	-22.033	92.583	-15.534
65	0	-1.841	3.617	-22.378	15.782	88.403	13.360
		2.946	-3.026	26.602	-21.196	65.643	-14.224
65	1.275	-0.250846	1.512	-33.060	12.483	68.668	9.559
		3.069	-3.026	20.409	-21.196	95.617	-18.082
66	0	-0.896220	1.728	-30.811	11.696	84.393	8.864
		4.113	-2.381	21.933	-21.221	69.303	-17.027
66	1.275	-0.320351	0.894273	-52.276	10.619	64.074	9.687
		4.267	-2.381	14.271	-20.413	92.386	-20.079
67	0	-0.833277	1.370	-47.445	10.391	79.579	9.099
		5.047	-1.633	16.432	-21.099	66.599	-19.305
67	1.275	-0.677764	0.662340	-56.221	8.482	20.829	9.913
		5.085	-1.587	8.850	-19.752	78.310	-21.073
68	0	-1.296	0.971609	-51.573	6.062	26.606	9.926

ENVOLVENTE para < Vz > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
		5.692	-0.853784	12.980	-21.164	57.300	-20.974
68	1.275	-1.075	0.263487	-62.011	4.803	-39.611	10.104
		5.793	-0.814316	3.315	-20.956	51.640	-21.727
69	0	-5.275	1.473	-51.513	0.008744	-21.627	9.732
		11.985	-1.110	11.413	-22.061	11.893	-21.737
69	1.275	-4.552	0.724651	-66.802	-5.511	-67.853	9.982
		12.037	-1.087	2.582	-22.631	10.482	-23.102
70	0	-5.821	1.871	-35.095	0.449877	-92.784	10.005
		7.947	-0.780179	24.409	-19.658	-51.783	-14.975
70	1.275	-5.599	1.240	-46.181	0.786463	-144.605	11.982
		7.861	-0.780179	18.211	-19.658	-24.608	-15.970
71	0	2.727	-0.260115	2.925	12.859	-69.737	-13.412
		-0.306094		2.064	71.321	3.654	-81.972	5.422
71	1.700	2.901	-0.222248	-11.931	10.371	-54.182	-13.980
		-0.670900		1.149	37.682	0.905232	-35.056	9.066
72	0	3.935	-0.459619	16.171	12.269	11.973	-15.821
		-2.503		2.185	64.479	0.285867	-81.844	8.205
72	1.700	3.706	-0.434719	1.681	10.101	51.059	-16.581
		-2.208		1.344	49.698	0.734649	15.222	11.196
73	0	3.731	-0.230664	11.022	9.344	64.938	-16.909
		-2.966		1.641	57.165	-5.730	6.114	9.931
73	1.700	3.616	-0.230664	2.759	9.344	76.654	-17.301
		-2.670		0.798909	42.383	-5.281	90.743	11.996
74	0	10.398	-0.106878	5.804	8.165	94.588	-17.415
		-9.888		1.195	47.584	-7.571	72.604	11.210
74	1.700	10.620	-0.008664	-4.260	9.651	105.954	-18.632
		-9.930		0.255123	34.603	-8.608	132.420	13.552
75	0	10.571	0.249068	-1.746	8.249	120.353	-18.817
		-10.153		0.645474	42.050	-5.962	118.824	13.097

ENVOLVENTE para < Vz > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
75	1.700	10.318	0.281690	-13.370	10.092	129.678	-18.400
		-9.344	-0.228784	11.884	-7.356	130.312	13.477
76	0	9.830	0.470936	-12.052	7.292	175.064	-18.488
		-9.144	0.199897	10.388	-5.536	73.826	15.748
76	1.700	9.940	0.500429	-41.802	7.248	163.998	-17.650
		-8.698	-0.671231	-1.653	-5.044	58.717	15.326
77	0	9.633	0.902503	-34.582	8.972	178.872	-18.184
		-8.535	-0.116817	0.790547	-5.437	50.420	15.391
77	1.700	9.863	0.922714	-47.764	9.454	118.836	-17.602
		-8.584	-0.978664	-9.073	-5.470	33.409	15.420
78	0	9.351	1.375	-42.640	6.350	134.496	-18.459
		-8.314	-0.465409	-7.376	-5.973	25.226	15.645
78	1.700	9.367	1.375	-57.427	8.145	49.426	-16.156
		-8.149	-1.307	-15.634	-7.319	5.664	14.165
79	0	8.632	1.769	-49.512	1.962	61.705	-17.451
		-7.777	-0.644046	-11.744	-9.682	-5.570	14.316
79	1.700	8.648	1.769	-64.299	3.757	-35.051	-14.479
		-7.612	-1.486	-20.002	-11.028	-32.558	12.533
80	0	8.750	1.944	-36.916	5.975	-21.765	-17.378
		-7.643	-0.790800	-1.433	-13.033	-58.166	13.772
80	1.700	9.046	1.944	-51.697	7.770	-97.098	-14.108
		-7.758	-1.632	-9.696	-14.379	-67.627	11.739
81	0	12.842	1.918	-13.882	18.268	-1.350	-25.524
		-15.660	-0.584482	39.493	-2.430	-111.171	35.579
81	1.275	12.966	1.918	-20.075	18.268	-23.001	-23.078
		-15.487	-2.689	30.855	-5.796	-66.317	33.559
82	0	15.360	1.997	-5.237	21.491	7.866	-35.044
		-14.985	-0.093712	49.905	-6.695	-78.223	33.880
82	1.275	15.484	1.997	-11.430	21.491	-2.762	-32.497
		-14.812	-2.198	41.267	-10.061	-20.091	32.486

ENVOLVENTE para < Vz > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
83	0	10.504	2.272	-6.026	21.776	32.795	-33.389
		-10.145	-1.181	47.715	-12.154	-46.480	32.886
83	1.275	10.627	2.272	-12.219	21.776	21.162	-30.492
		-9.973	-3.285	39.077	-15.520	8.860	30.107
84	0	9.416	3.440	-10.236	21.466	48.169	-31.725
		-8.956	-2.032	41.805	-15.936	-14.061	31.146
84	1.275	5.035	2.352	-16.898	20.128	48.612	-18.170
		-8.783	-4.136	33.167	-19.302	33.741	27.280
85	0	4.093	2.892	-15.497	19.549	73.337	-19.187
		-7.452	-3.161	35.168	-17.728	8.517	28.537
85	1.275	4.120	2.892	-23.161	20.357	48.689	-15.515
		-7.280	-5.265	26.530	-21.094	47.857	23.232
86	0	3.029	3.507	-22.160	20.498	73.988	-16.629
		-5.669	-4.363	28.614	-18.160	21.707	24.936
86	1.275	3.094	3.521	-29.323	21.295	56.778	-12.195
		-5.539	-6.463	20.619	-21.852	41.007	18.109
87	0	1.859	4.126	-28.595	21.863	83.433	-13.446
		-3.674	-5.410	22.539	-17.916	14.639	20.215
87	1.275	1.935	4.126	-38.704	22.671	40.523	-8.201
		-3.550	-7.514	16.346	-21.282	39.433	12.042
88	0	0.588965	4.768	-41.359	22.825	68.675	-9.517
		-1.489	-6.288	18.598	-15.975	14.211	14.260
88	1.275	0.665110	4.768	-51.468	23.633	9.488	-3.454
		-1.365	-8.392	12.405	-19.341	33.978	4.967
89	0	-0.818357	5.800	-63.521	19.484	37.727	-4.957
		0.814966	-7.634	14.801	-12.258	12.082	7.225
89	1.275	-0.742211	5.800	-73.631	20.292	-49.722	2.423
		0.938827	-9.738	8.608	-15.623	27.007	-3.784

ENVOLVENTE para < Vz > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
90	0	-0.336788	1.855	-1.303	-6.700	11.533	-1.313
		-0.075061	-0.218068	26.902	8.026	-31.942	0.313041
90	1.275	-0.212926	-0.249138	-7.496	-10.066	5.922	-0.221763
		0.000443	-0.501885	16.577	9.343	-4.813	0.084516
91	0	0.440445	0.437174	-13.542	13.263	16.170	-0.435279
		-0.501412	0.046475	45.966	-21.961	-28.899	0.102413
91	2.000	0.440445	0.437174	-13.542	13.263	-10.912	0.439034
		-0.501412	0.046475	45.966	-21.961	63.029	0.195360
92	0	-0.604053	-0.069109	-49.232	26.525	64.590	0.208831
		0.738429	-0.452070	12.379	-12.221	-9.081	0.451293
92	2.000	-0.604053	-0.069109	-49.232	26.525	-33.871	0.070619
		0.738429	-0.452070	12.379	-12.221	15.676	-0.452811
93	0	-0.252153	2.836	-1.783	25.892	6.064	-2.828
		-0.437419	-1.142	19.138	-34.175	-1.034	1.791
93	2.000	-0.252153	2.836	-1.783	25.892	2.498	2.844
		-0.437419	-1.142	19.138	-34.175	37.241	-0.492974
94	0	-0.437419	1.142	-19.138	34.175	37.241	-0.492972
		-0.276738	-3.193	1.716	-24.012	3.861	3.158
94	2.000	-0.437419	1.142	-19.138	34.175	-1.034	1.791
		-0.276738	-3.193	1.716	-24.012	7.294	-3.227
95	0	-0.372003	1.159	-3.222	7.041	5.416	-1.115
		-0.281913	-1.143	2.185	-17.560	4.629	1.386
95	2.000	-0.372003	1.159	-3.222	7.041	-1.029	1.203
		-0.281913	-1.143	2.185	-17.560	8.999	-0.898990
96	0	-0.281913	1.143	-2.185	17.560	8.999	-0.898987
		-0.371938	-1.158	3.235	-7.034	-1.044	1.202
96	2.000	-0.281913	1.143	-2.185	17.560	4.629	1.386
		-0.371938	-1.158	3.235	-7.034	5.427	-1.114
97	0	-0.362746	0.563605	-4.669	-3.941	3.390	-0.614694
		-0.344610	-0.542831	1.261	11.675	-0.923108	0.560186

ENVOLVENTE para < Vz > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
97	2.000	-0.362746	0.563605	-4.669	-3.941	-5.948	0.512470
		-0.344610	-0.542831	1.261	11.675	1.599	-0.525432
98	0	-0.329936	0.659293	0.521014	-0.837162	0.787159	-0.610592
		-0.339008	-0.478260	6.033	15.780	-7.300	0.427948
98	2.000	-0.329936	0.659293	0.521014	-0.837162	1.829	0.707941
		-0.339008	-0.478260	6.033	15.780	4.766	-0.528533
99	0	-0.397266	0.418836	-3.473	-2.241	1.017	-0.507770
		-0.324441	-0.373568	1.987	7.786	-3.331	0.336565
99	2.000	-0.397266	0.418836	-3.473	-2.241	-5.928	0.329868
		-0.324441	-0.373568	1.987	7.786	0.643656	-0.410542
100	0	-0.314141	0.477647	0.729964	-1.411	-1.579	-0.499073
		-0.385182	-0.276141	8.813	9.357	-12.424	0.149244
100	2.000	-0.314141	0.477647	0.729964	-1.411	-0.119463	0.456182
		-0.385182	-0.276141	8.813	9.357	5.201	-0.403016
101	0	-0.338486	0.323244	-2.837	-1.628	-0.303569	-0.432163
		-0.405520	-0.242835	1.531	2.740	-3.630	0.177754
101	2.000	-0.338486	0.323244	-2.837	-1.628	-5.978	0.214300
		-0.405520	-0.242835	1.531	2.740	-0.566803	-0.307896
102	0	-0.404989	0.333441	0.793954	-0.687568	-2.466	-0.384400
		-0.334843	-0.194408	7.752	3.409	-12.352	0.038412
102	2.000	-0.404989	0.333441	0.793954	-0.687568	-0.877717	0.282455
		-0.334843	-0.194408	7.752	3.409	3.151	-0.350389
103	0	-0.344510	0.382470	-2.849	6.690	-1.701	-0.539926
		-0.431032	-0.263265	0.274998	-9.892	-3.180	0.174052
103	2.000	-0.344510	0.382470	-2.849	6.690	-7.399	0.224983
		-0.431032	-0.263265	0.274998	-9.892	-2.630	-0.352457
104	0	-0.734077	0.698726	1.065	15.585	-3.038	-0.749369
		-0.342493	-0.301301	5.503	-8.213	-11.189	0.107810
104	2.000	-0.734077	0.698726	1.065	15.585	-0.908315	0.648028

ENVOLVENTE para < Vz > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
		-0.342493	-0.301301	5.503	-8.213	-0.183249	-0.494768
105	0	-0.298401	-0.273839	-4.589	-10.117	-5.087	-0.031862
		-0.563350	0.533214	-0.748668	11.801	-3.264	-0.676787
105	2.000	-0.298401	-0.273839	-4.589	-10.117	-14.264	-0.579518
		-0.563350	0.533214	-0.748668	11.801	-4.762	0.389598
106	0	-0.934261	-0.741998	1.631	-11.797	-3.592	0.654635
		-0.279876	0.408507	7.324	18.862	-18.197	-0.752039
106	2.000	-0.934261	-0.741998	1.631	-11.797	-0.330240	-0.829301
		-0.279876	0.408507	7.324	18.862	-3.550	0.064942
107	0	-0.191473	-0.334045	-12.292	-14.865	-5.215	-0.205369
		-1.178	0.756983	-3.395	11.288	-3.690	-1.042
107	2.000	-0.191473	-0.334045	-12.292	-14.865	-29.798	-0.873432
		-1.178	0.756983	-3.395	11.288	-10.479	0.472032
108	0	-1.178	-0.687537	3.751	-9.021	-9.386	0.446006
		-0.208233	0.500072	16.819	20.478	-36.165	-1.105
108	2.000	-1.178	-0.687537	3.751	-9.021	-1.884	-0.929014
		-0.208233	0.500072	16.819	20.478	-2.528	-0.104929
109	0	-0.941557	-0.598504	-33.790	-8.815	1.944	-0.493753
		0.370476	0.166915	-11.569	-17.039	3.149	-0.316705
109	2.000	-0.941557	-0.598504	-33.790	-8.815	-65.632	-1.691
		0.370476	0.166915	-11.569	-17.039	-19.988	0.017111
110	0	0.370476	-0.166915	11.569	17.039	-19.988	0.017114
		-1.087	0.742761	38.849	10.559	-73.013	-1.926
110	2.000	0.370476	-0.166915	11.569	17.039	3.149	-0.316702
		-1.087	0.742761	38.849	10.559	4.682	-0.440430
111	0	-1.503	-0.703676	-72.080	3.971	19.925	-1.558
		2.319	-0.165509	-10.155	-16.754	9.746	0.075047
111	2.000	-1.503	-0.703676	-72.080	3.971	-124.229	-2.965
		2.319	-0.165509	-10.155	-16.754	-10.562	-0.255958

ENVOLVENTE para < Vz > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
112	0	2.319	0.165509	10.155	16.754	-10.562	-0.255967
		-1.840	0.862743	79.784	-1.060	-135.960	-3.297
112	2.000	2.319	0.165509	10.155	16.754	9.746	0.075038
		-1.840	0.862743	79.784	-1.060	23.602	-1.572
113	0	0.153774	-0.398797	-33.988	15.620	0.386701	-1.542
		-1.625	0.685133	-12.133	10.323	-1.845	-1.414
113	2.000	0.153774	-0.398797	-33.988	15.620	-67.587	-2.340
		-1.625	0.685133	-12.133	10.323	-26.110	-0.043585
114	0	-1.625	-0.685133	12.133	-10.323	-26.110	-0.043596
		0.040251	0.391230	40.730	-13.264	-77.300	-2.475
114	2.000	-1.625	-0.685133	12.133	-10.323	-1.846	-1.414
		0.040251	0.391230	40.730	-13.264	4.157	-1.692
115	0	-0.025834	-0.044852	-8.253	6.571	-7.254	-0.822619
		-0.499534	0.313327	-1.453	1.214	-5.417	-0.724099
115	2.000	-0.025834	-0.044852	-8.253	6.571	-23.760	-0.912320
		-0.499534	0.313327	-1.453	1.214	-8.324	-0.097470
116	0	-1.024	-0.764642	2.795	-3.609	-6.816	0.495343
		0.002047	0.006936	12.920	-10.574	-30.413	-0.988680
116	2.000	-1.024	-0.764642	2.795	-3.609	-1.227	-1.034
		0.002047	0.006936	12.920	-10.574	-4.574	-0.974808
117	0	-0.218941	0.482709	-3.637	0.736335	-2.455	-0.873509
		-0.329149	-0.329510	-0.420752	10.957	-3.584	0.129173
117	2.000	-0.218941	0.482709	-3.637	0.736335	-9.728	0.091870
		-0.329149	-0.329510	-0.420752	10.957	-4.426	-0.529821
118	0	-0.311983	0.322293	1.395	-2.207	-5.232	-0.516229
		-0.202481	-0.507918	5.359	8.700	-12.229	0.067653
118	2.000	-0.311983	0.322293	1.395	-2.207	-2.441	0.128330
		-0.202481	-0.507918	5.359	8.700	-1.511	-0.948142
119	0	-0.476725	0.135408	-3.446	-0.075503	-0.264823	-0.368827

ENVOLVENTE para < Vz > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
		-0.212797	-0.139543	1.307	6.376	-4.309	-0.030080
119	2.000	-0.476725	0.135408	-3.446	-0.075503	-7.156	-0.098022
		-0.212797	-0.139543	1.307	6.376	-1.696	-0.309154
120	0	-0.204835	0.145375	1.028	-0.726908	-3.599	-0.293384
		-0.452903	-0.108730	8.441	6.472	-14.135	-0.243901
120	2.000	-0.204835	0.145375	1.028	-0.726908	-1.544	-0.002646
		-0.452903	-0.108730	8.441	6.472	2.746	-0.461353
121	0	-0.522829	-0.028398	-3.488	-0.041986	0.044685	-0.178248
		-0.299207	-0.016012	2.006	-0.327180	-4.745	-0.149776
121	2.000	-0.522829	-0.028398	-3.488	-0.041986	-6.931	-0.235042
		-0.299207	-0.016012	2.006	-0.327180	-0.732799	-0.181798
122	0	-0.298004	0.028687	0.979929	-0.037984	-3.169	-0.165675
		-0.511919	0.088228	10.016	-0.322746	-15.864	-0.436444
122	2.000	-0.298004	0.028687	0.979929	-0.037984	-1.209	-0.108304
		-0.511919	0.088228	10.016	-0.322746	4.168	-0.259995
123	0	-0.592513	-0.087357	-3.443	2.103	-0.261283	-0.129180
		-0.346408	0.057561	1.302	-9.141	-4.322	-0.240443
123	2.000	-0.592513	-0.087357	-3.443	2.103	-7.147	-0.303888
		-0.346408	0.057561	1.302	-9.141	-1.719	-0.125325
124	0	-0.348850	-0.057793	1.033	2.761	-3.623	-0.103105
		-0.580722	0.118863	8.436	-9.216	-14.141	-0.452073
124	2.000	-0.348850	-0.057793	1.033	2.761	-1.557	-0.218686
		-0.580722	0.118863	8.436	-9.216	2.731	-0.214357
125	0	-0.487893	-0.379279	-3.645	-6.569	-2.079	0.078748
		-0.511445	0.333350	-0.462195	-12.272	-3.603	-0.591417
125	2.000	-0.487893	-0.379279	-3.645	-6.569	-9.369	-0.679779
		-0.511445	0.333350	-0.462195	-12.272	-4.528	0.075257
126	0	-0.882599	-0.647475	1.439	0.412521	-4.415	0.427611
		-0.476538	0.258245	5.383	-9.938	-12.301	-0.635691

ENVOLVENTE para < Vz > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
112	0	2.319	0.165509	10.155	16.754	-10.562	-0.255967
		-1.840	0.862743	79.784	-1.060	-135.960	-3.297
112	2.000	2.319	0.165509	10.155	16.754	9.746	0.075038
		-1.840	0.862743	79.784	-1.060	23.602	-1.572
113	0	0.153774	-0.398797	-33.988	15.620	0.386701	-1.542
		-1.625	0.685133	-12.133	10.323	-1.845	-1.414
113	2.000	0.153774	-0.398797	-33.988	15.620	-67.587	-2.340
		-1.625	0.685133	-12.133	10.323	-26.110	-0.043585
114	0	-1.625	-0.685133	12.133	-10.323	-26.110	-0.043596
		0.040251	0.391230	40.730	-13.264	-77.300	-2.475
114	2.000	-1.625	-0.685133	12.133	-10.323	-1.846	-1.414
		0.040251	0.391230	40.730	-13.264	4.157	-1.692
115	0	-0.025834	-0.044852	-8.253	6.571	-7.254	-0.822619
		-0.499534	0.313327	-1.453	1.214	-5.417	-0.724099
115	2.000	-0.025834	-0.044852	-8.253	6.571	-23.760	-0.912320
		-0.499534	0.313327	-1.453	1.214	-8.324	-0.097470
116	0	-1.024	-0.764642	2.795	-3.609	-6.816	0.495343
		0.002047	0.006936	12.920	-10.574	-30.413	-0.988680
116	2.000	-1.024	-0.764642	2.795	-3.609	-1.227	-1.034
		0.002047	0.006936	12.920	-10.574	-4.574	-0.974808
117	0	-0.218941	0.482709	-3.637	0.736335	-2.455	-0.873509
		-0.329149	-0.329510	-0.420752	10.957	-3.584	0.129173
117	2.000	-0.218941	0.482709	-3.637	0.736335	-9.728	0.091870
		-0.329149	-0.329510	-0.420752	10.957	-4.426	-0.529821
118	0	-0.311983	0.322293	1.395	-2.207	-5.232	-0.516229
		-0.202481	-0.507918	5.359	8.700	-12.229	0.067653
118	2.000	-0.311983	0.322293	1.395	-2.207	-2.441	0.128330
		-0.202481	-0.507918	5.359	8.700	-1.511	-0.948142
119	0	-0.476725	0.135408	-3.446	-0.075503	-0.264823	-0.368827

ENVOLVENTE para < Vz > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
		-0.212797	-0.139543	1.307	6.376	-4.309	-0.030080
119	2.000	-0.476725	0.135408	-3.446	-0.075503	-7.156	-0.098022
		-0.212797	-0.139543	1.307	6.376	-1.696	-0.309154
120	0	-0.204835	0.145375	1.028	-0.726908	-3.599	-0.293384
		-0.452903	-0.108730	8.441	6.472	-14.135	-0.243901
120	2.000	-0.204835	0.145375	1.028	-0.726908	-1.544	-0.002646
		-0.452903	-0.108730	8.441	6.472	2.746	-0.461353
121	0	-0.522829	-0.028398	-3.488	-0.041986	0.044685	-0.178248
		-0.299207	-0.016012	2.006	-0.327180	-4.745	-0.149776
121	2.000	-0.522829	-0.028398	-3.488	-0.041986	-6.931	-0.235042
		-0.299207	-0.016012	2.006	-0.327180	-0.732799	-0.181798
122	0	-0.298004	0.028687	0.979929	-0.037984	-3.169	-0.165675
		-0.511919	0.088228	10.016	-0.322746	-15.864	-0.436444
122	2.000	-0.298004	0.028687	0.979929	-0.037984	-1.209	-0.108304
		-0.511919	0.088228	10.016	-0.322746	4.168	-0.259995
123	0	-0.592513	-0.087357	-3.443	2.103	-0.261283	-0.129180
		-0.346408	0.057561	1.302	-9.141	-4.322	-0.240443
123	2.000	-0.592513	-0.087357	-3.443	2.103	-7.147	-0.303888
		-0.346408	0.057561	1.302	-9.141	-1.719	-0.125325
124	0	-0.348850	-0.057793	1.033	2.761	-3.623	-0.103105
		-0.580722	0.118863	8.436	-9.216	-14.141	-0.452073
124	2.000	-0.348850	-0.057793	1.033	2.761	-1.557	-0.218686
		-0.580722	0.118863	8.436	-9.216	2.731	-0.214357
125	0	-0.487893	-0.379279	-3.645	-6.569	-2.079	0.078748
		-0.511445	0.333350	-0.462195	-12.272	-3.603	-0.591417
125	2.000	-0.487893	-0.379279	-3.645	-6.569	-9.369	-0.679779
		-0.511445	0.333350	-0.462195	-12.272	-4.528	0.075257
126	0	-0.882599	-0.647475	1.439	0.412521	-4.415	0.427611
		-0.476538	0.258245	5.383	-9.938	-12.301	-0.635691

ENVOLVENTE para < Vz > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
126	2.000	-0.882599	-0.647475	1.439	0.412521	-1.538	-0.867287
		-0.476538	0.258245	5.383	-9.938	-1.535	-0.119221
127	0	-0.269948	0.287999	-8.446	-5.310	-6.751	-1.160
		-1.294	-0.607547	-2.784	-5.672	-1.045	0.400694
127	2.000	-0.269948	0.287999	-8.446	-5.310	-23.641	-0.584238
		-1.294	-0.607547	-2.784	-5.672	-6.612	-0.814351
128	0	-1.292	0.579264	2.781	4.160	-6.613	-0.787806
		-0.265047	-0.339882	8.796	-5.224	-24.346	-0.560477
128	2.000	-1.292	0.579264	2.781	4.160	-1.050	0.370675
		-0.265047	-0.339882	8.796	-5.224	-6.756	-1.240
129	0	0.186348	-0.700753	-33.630	-13.309	1.535	-1.103
		-2.026	-0.871237	-11.805	-11.999	-1.447	0.039168
129	2.000	0.186348	-0.700753	-33.630	-13.309	-65.723	-2.504
		-2.026	-0.871237	-11.805	-11.999	-25.055	-1.703
130	0	-2.018	0.840629	11.802	10.497	-25.068	-1.675
		0.117412	0.658966	33.669	2.893	-66.088	-2.501
130	2.000	-2.018	0.840629	11.802	10.497	-1.465	0.006611
		0.117412	0.658966	33.669	2.893	1.247	-1.183
131	0	-1.235	-1.842	-65.876	-1.062	18.064	-0.187495
		1.877	0.424441	-8.421	20.048	9.105	-0.646331
131	2.000	-1.235	-1.842	-65.876	-1.062	-113.682	-3.871
		1.877	0.424441	-8.421	20.048	-7.737	0.202518
132	0	1.877	-0.424441	8.421	-20.048	-7.737	0.202513
		-1.388	1.781	66.792	-7.822	-115.642	-3.853
132	2.000	1.877	-0.424441	8.421	-20.048	9.105	-0.646335
		-1.388	1.781	66.792	-7.822	17.936	-0.291503
133	0	-0.489138	-0.289229	-28.404	6.489	0.306486	-0.571096
		-0.030027	-0.203361	-9.584	16.877	2.598	-0.118306
133	2.000	-0.489138	-0.289229	-28.404	6.489	-56.498	-1.150
		-0.030027	-0.203361	-9.584	16.877	-16.568	-0.525012

ENVOLVENTE para < Vz > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
134	0	-0.033831	0.187377	9.587	-17.969	-16.589	-0.509986
		-0.544100	0.197924	28.431	-13.695	-56.792	-1.061
134	2.000	-0.033831	0.187377	9.587	-17.969	2.584	-0.135247
		-0.544100	0.197924	28.431	-13.695	0.067742	-0.665196
135	0	-0.042017	0.290004	-10.483	7.926	-4.758	-0.801791
		-0.862824	-0.738877	-3.036	-11.502	-1.730	0.619262
135	2.000	-0.042017	0.290004	-10.483	7.926	-25.723	-0.221807
		-0.862824	-0.738877	-3.036	-11.502	-7.802	-0.858434
136	0	-0.864766	0.721767	3.035	10.416	-7.805	-0.841665
		-0.047710	-0.381855	10.443	-15.011	-25.753	-0.131603
136	2.000	-0.864766	0.721767	3.035	10.416	-1.736	0.601811
		-0.047710	-0.381855	10.443	-15.011	-4.868	-0.895282
137	0	-0.086873	0.355429	-4.180	2.685	-4.293	-0.637261
		-0.787833	-0.787092	-1.450	-13.216	-0.189867	0.750765
137	2.000	-0.086873	0.355429	-4.180	2.685	-12.652	0.073568
		-0.787833	-0.787092	-1.450	-13.216	-3.090	-0.823356
138	0	-0.788534	0.750093	1.447	10.752	-3.100	-0.787504
		-0.081229	-0.447637	4.153	-9.724	-12.639	0.163203
138	2.000	-0.788534	0.750093	1.447	10.752	-0.205111	0.712622
		-0.081229	-0.447637	4.153	-9.724	-4.334	-0.732036
139	0	-0.185381	-0.502095	-2.782	-14.684	-1.372	0.377835
		-0.618007	0.815366	-1.050	17.091	-0.550574	-0.885424
139	2.000	-0.185381	-0.502095	-2.782	-14.684	-6.936	-0.626315
		-0.618007	0.815366	-1.050	17.091	-2.650	0.745241
140	0	-0.618242	-0.871300	1.040	-21.357	-2.740	0.796340
		-0.182107	0.408469	2.758	7.666	-6.906	-0.535176
140	2.000	-0.618242	-0.871300	1.040	-21.357	-0.661356	-0.946191
		-0.182107	0.408469	2.758	7.666	-1.390	0.281730

ENVOLVENTE para < Vz > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
141	0	-0.202830	-0.686545	-2.644	-17.843	0.084116	0.617545
		-0.881242	1.612	-0.640057	27.333	0.476708	-1.656
141	2.000	-0.202830	-0.686545	-2.644	-17.843	-5.203	-0.755489
		-0.881242	1.612	-0.640057	27.333	-0.803354	1.568
142	0	-0.881242	-1.612	0.640057	-27.333	-0.803290	1.568
		-0.190203	0.594343	2.589	10.854	-4.995	-0.661188
142	2.000	-0.881242	-1.612	0.640057	-27.333	0.476772	-1.656
		-0.190203	0.594343	2.589	10.854	0.183323	0.527450
143	0	-0.200368	-0.848977	-2.568	-20.510	0.740665	0.805928
		-0.913806	1.804	0.197963	27.953	0.750102	-1.823
143	2.000	-0.200368	-0.848977	-2.568	-20.510	-4.396	-0.891957
		-0.913806	1.804	0.197963	27.953	1.146	1.786
144	0	-0.913806	-1.804	-0.197963	-27.953	1.146	1.786
		-0.204223	0.758368	2.401	13.572	-4.159	-0.801640
144	2.000	-0.913806	-1.804	-0.197963	-27.953	0.750148	-1.823
		-0.204223	0.758368	2.401	13.572	0.643672	0.715035
145	0	-0.527183	-1.547	-2.218	-24.168	3.372	1.618
		-1.021	1.960	2.998	29.094	0.447086	-1.914
145	2.000	-0.527183	-1.547	-2.218	-24.168	-1.065	-1.475
		-1.021	1.960	2.998	29.094	6.443	2.005
146	0	-1.021	-1.960	-2.998	-29.094	6.443	2.005
		-1.014	2.109	2.214	25.122	0.895969	-1.949
146	2.000	-1.021	-1.960	-2.998	-29.094	0.447115	-1.914
		-1.014	2.109	2.214	25.122	5.324	2.269
147	0	-0.781186	-2.228	-2.353	-21.898	7.036	2.460
		-1.349	2.130	11.676	28.683	-3.590	-1.959
147	2.000	-0.781186	-2.228	-2.353	-21.898	2.330	-1.996
		-1.349	2.130	11.676	28.683	19.761	2.300
148	0	-0.835263	-1.723	-12.021	-28.241	19.921	1.928
		-0.781186	2.228	2.353	21.898	2.330	-1.996

ENVOLVENTE para < Vz > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
148	2.000	-0.835263	-1.723	-12.021	-28.241	-4.119	-1.518
		-0.781186	2.228	2.353	21.898	7.036	2.460
149	0	-0.296169	-2.125	-2.953	-15.650	7.603	2.304
		-1.073	2.151	24.770	16.442	-11.466	-1.759
149	2.000	-0.296169	-2.125	-2.953	-15.650	1.698	-1.946
		-1.073	2.151	24.770	16.442	38.072	2.542
150	0	-1.083	-2.213	-25.500	-18.035	38.842	2.605
		-0.383599	2.361	2.815	15.474	3.242	-2.093
150	2.000	-1.083	-2.213	-25.500	-18.035	-12.156	-1.821
		-0.383599	2.361	2.815	15.474	8.872	2.629
151	0	-0.244863	-0.327885	-7.599	-5.964	9.462	0.337253
		-1.028	0.345474	16.021	4.835	-8.824	-0.285246
151	2.000	-0.244863	-0.327885	-7.599	-5.964	-5.734	-0.318490
		-1.028	0.345474	16.021	4.835	23.217	0.405675
152	0	-0.505200	-0.332366	-16.573	-4.813	23.807	0.395482
		-0.183005	0.363535	7.491	5.922	-4.920	-0.346123
152	2.000	-0.505200	-0.332366	-16.573	-4.813	-9.339	-0.269223
		-0.183005	0.363535	7.491	5.922	10.060	0.380918
201	0	-421.829	7.45E-09	-13.558	1.86E-09	58.943	1.68E-11
		-365.372	2.47E-12	15.531	5.72E-13	-77.049	-1.36E-11
201	10.255	-394.956	7.45E-09	-13.558	1.86E-09	-80.086	-2.38E-07
		-345.466	2.47E-12	15.531	5.72E-13	82.218	1.17E-11
202	0	-277.782	0	-8.936	0	51.001	0
		-454.100	3.71E-13	19.113	-3.73E-09	-88.188	-1.49E-08
202	10.595	-257.216	0	-8.936	0	-43.670	0
		-426.336	3.71E-13	19.113	-3.73E-09	114.311	4.77E-07

ENVOLVENTE para < Mx > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
1	0	5.966	-6.228	-1.047	-16.285	13.418	0.728697
		-4.547	3.045	97.779	28.893	-21.959	-0.663764
1	1.275	5.014	-3.053	-5.806	-14.951	10.204	-3.732
		-5.551	5.434	79.376	27.556	85.681	6.128
2	0	3.118	-5.240	-5.885	-20.438	34.435	-3.564
		-3.097	4.482	62.886	28.302	48.762	3.428
2	1.275	2.902	-2.572	-11.143	-19.211	26.756	-5.401
		-2.669	4.482	41.531	27.494	110.697	9.160
3	0	0.928751	-4.727	-11.668	-21.359	49.955	-7.280
		2.491	6.097	35.587	23.392	47.149	12.199
3	1.275	1.314	-2.344	-17.170	-20.154	36.333	-7.304
		2.663	6.097	26.949	23.392	87.021	19.974
4	0	-0.803024	-4.191	-16.910	-21.350	58.021	-10.842
		4.939	4.961	28.204	21.061	60.052	17.542
4	1.275	0.067499	-2.077	-22.586	-20.053	38.817	-9.226
		5.112	4.961	19.566	21.061	90.510	23.868
5	0	-8.185	-3.498	-20.711	-20.772	65.236	-14.452
		10.822	3.970	20.292	20.021	61.309	22.343
5	1.275	-4.808	-1.639	-29.383	-20.037	46.422	-10.965
		10.995	3.970	11.654	20.021	81.678	27.406
6	0	-9.155	-2.899	-21.285	-19.878	95.607	-16.878
		12.503	3.173	9.855	19.858	36.194	25.934
6	1.275	-5.425	-1.376	-30.283	-18.209	53.456	-12.238
		12.676	3.173	1.217	19.858	43.253	29.980
7	0	-12.728	-3.769	-26.771	-18.255	60.370	-28.360
		13.838	2.218	2.920	20.542	18.355	28.809
7	1.275	-9.881	-1.609	-32.776	-15.880	44.107	-21.760
		14.011	2.218	-5.718	20.542	16.571	31.638
8	0	-13.764	-2.603	-31.323	-15.263	43.647	-30.685
		14.894	1.232	-2.501	22.030	-9.125	30.820

ENVOLVENTE para < Mx > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
8	1.275	-10.693	-1.070	-37.428	-12.409	16.177	-22.963
		15.067	1.232	-11.139	22.030	-17.821	32.392
9	0	-14.629	-2.648	-33.609	-10.197	17.488	-31.636
		11.430	0.644770	-14.205	23.076	-47.830	19.150
9	1.275	-11.186	-1.092	-39.859	-7.525	-10.608	-23.301
		15.779	0.951232	-11.128	22.499	-54.045	32.998
10	0	-3.353	-1.377	-17.304	-7.967	-56.421	-13.518
		2.283	-0.418339	-7.904	18.883	-98.951	9.843
10	1.275	-3.054	-0.715515	-27.805	-8.083	-84.564	-14.014
		2.119	-0.448816	-14.687	18.662	-113.973	8.458
11	0	-2.935	-2.132	25.764	-23.828	-129.398	-13.172
		3.937	1.768	22.927	4.959	-20.489	20.673
11	1.700	-2.984	-1.290	14.241	-22.481	-95.389	-16.108
		11.642	3.607	8.312	4.219	1.092	40.455
12	0	-10.999	-2.560	39.342	-21.207	-69.586	-13.508
		8.185	1.330	39.272	2.714	-12.579	9.412
12	1.700	-10.769	-1.718	27.824	-19.861	-12.486	-17.172
		8.136	1.330	27.745	0.919249	44.394	11.709
13	0	-11.744	-1.909	33.992	-14.117	11.281	-15.755
		8.351	0.933871	32.526	5.599	44.142	11.393
13	1.700	-5.743	-0.795552	22.722	-13.814	68.489	-2.771
		2.531	0.661910	20.752	4.846	80.442	-2.525
14	0	-5.704	-0.803921	22.743	-9.524	71.230	-2.167
		2.078	0.085079	23.843	7.119	93.711	-2.620
14	1.700	0.607229	-0.010081	9.287	-10.408	108.863	13.250
		-4.052	0.132874	14.255	7.554	115.697	-18.536
15	0	-5.264	-0.739122	9.827	-6.309	121.995	-1.520
		1.860	0.216519	15.581	8.468	102.542	-3.534
15	1.700	0.925186	-0.154296	-5.210	-7.681	126.222	13.169

ENVOLVENTE para < Mx > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
		-4.149	0.473327	7.574	9.391	121.925	-18.386
16	0	3.670	-0.667517	-3.972	-5.312	107.862	0.745180
		-4.812	0.202149	9.876	9.784	86.066	-3.310
16	1.700	9.735	-0.445162	-12.617	-5.048	94.061	15.224
		-10.696	0.821429	-4.523	9.071	90.316	-17.856
17	0	3.914	-0.766588	-9.515	-4.086	98.787	0.513848
		-5.175	0.013707	-8.134	10.792	109.923	-2.909
17	1.700	10.121	-0.886588	-19.936	-4.481	84.068	15.103
		-11.201	0.975342	-20.757	10.738	75.044	-18.054
18	0	9.889	-1.308	-15.902	-2.817	77.033	15.784
		-11.094	0.407835	-20.707	14.645	69.920	-18.258
18	1.700	10.388	-1.328	-27.955	-4.206	48.056	14.599
		-11.411	1.270	-31.698	15.584	17.062	-17.878
19	0	15.739	-2.911	-21.494	-1.256	80.382	28.582
		-10.885	0.706915	-25.301	21.183	-9.161	-17.981
19	1.700	9.830	-1.805	-34.671	-2.802	5.329	12.683
		-10.934	1.549	-36.824	22.529	-61.976	-16.091
20	0	12.112	-3.471	-10.350	-6.691	10.196	41.089
		-3.406	0.080815	-11.015	22.999	-90.352	-16.317
20	1.700	5.050	-1.945	-22.760	-6.786	-0.331271	22.612
		-3.176	0.922447	-22.532	24.345	-118.871	-15.491
21	0	5.539	-1.127	3.674	-18.780	-87.037	22.486
		-3.421	0.099905	29.241	9.110	-77.646	-14.547
21	1.275	3.083	-0.785659	0.815249	-19.104	-103.003	12.105
		-5.636	1.456	19.199	9.516	-14.103	-22.812
22	0	15.240	-2.135	5.711	-24.024	-44.866	35.224
		-11.493	0.671315	39.665	9.524	-13.745	-23.625
22	1.275	15.413	-2.135	-2.927	-24.024	-43.091	32.501
		-14.741	2.337	32.764	12.594	20.238	-32.489

ENVOLVENTE para < Mx > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
23	0	14.204	-2.597	5.326	-23.733	-13.356	33.774
		-13.846	1.505	36.364	14.111	-0.329338	-33.272
23	1.275	14.377	-2.597	-3.312	-23.733	-12.071	30.463
		-13.722	3.609	30.171	17.476	42.093	-30.078
24	0	13.028	-3.585	-0.205709	-22.439	16.020	31.860
		-12.567	2.177	31.774	16.910	18.088	-31.281
24	1.275	13.201	-3.585	-8.844	-22.439	10.250	27.289
		-12.444	4.281	25.581	20.275	54.658	-27.230
25	0	11.732	-4.179	-7.241	-21.918	37.666	28.856
		-8.942	2.238	26.654	18.355	40.207	-19.298
25	1.275	11.905	-4.179	-15.879	-21.918	22.925	23.527
		-10.946	5.230	20.822	21.536	59.495	-23.284
26	0	10.395	-4.892	-18.323	-22.265	68.442	25.144
		-8.010	2.761	28.008	19.116	14.591	-16.802
26	1.275	10.568	-4.892	-26.961	-22.265	39.569	18.906
		-9.324	6.242	19.763	21.870	44.311	-18.413
27	0	4.986	-5.985	-27.699	-23.189	71.115	20.409
		-0.810887	3.849	23.911	18.449	10.282	-13.497
27	1.275	5.159	-5.985	-36.337	-23.189	30.286	12.777
		-3.550	7.514	16.346	21.282	39.433	-12.042
28	0	3.263	-6.973	-39.370	-23.659	59.479	14.632
		0.809812	4.454	19.846	16.713	11.606	-9.406
28	1.275	3.436	-6.973	-48.008	-23.659	3.767	5.739
		-1.365	8.392	12.405	19.341	33.978	-4.967
29	0	1.539	-8.643	-59.725	-20.029	32.448	7.742
		1.906	3.314	15.355	13.096	10.679	-2.950
29	1.275	1.712	-8.643	-68.363	-20.029	-49.221	-3.280
		0.938827	9.738	8.608	15.623	27.007	3.784
30	0	-0.148278	1.019	24.663	-8.828	-30.778	-1.414

ENVOLVENTE para < Mx > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
		-0.281842	-0.431653	2.755	7.754	7.515	0.243539
30	1.275	0.024483	1.019	16.025	-8.828	-4.836	-0.113913
		-0.212926	0.249139	-7.496	10.066	5.922	0.221763
31	0	-0.886703	-1.266	45.360	-59.585	14.890	0.983593
		0.104872	2.698	18.407	48.033	6.148	-1.289
31	1.275	-0.674115	-1.266	34.730	-59.202	65.955	-0.639057
		0.246901	2.698	11.306	48.033	25.093	2.151
32	0	-1.769	-1.873	58.136	-76.868	87.276	1.164
		1.578	4.440	20.376	63.320	33.821	-2.473
32	1.275	-1.557	-1.873	47.507	-76.485	154.635	-1.232
		1.720	4.440	13.274	63.320	55.276	3.189
33	0	-2.182	-1.695	48.542	-74.326	164.757	0.676108
		2.339	4.146	13.268	64.318	59.251	-1.440
33	1.275	-1.969	-1.695	37.913	-73.944	219.881	-1.493
		2.481	4.146	6.166	64.318	71.643	3.847
34	0	-1.976	-1.563	17.618	-68.972	157.451	0.275865
		2.794	3.485	4.098	63.132	73.206	-0.354764
34	1.275	-1.763	-1.563	6.988	-68.590	173.140	-1.725
		2.936	3.485	-3.003	63.132	73.904	4.089
35	0	-1.840	-1.309	2.879	-65.872	174.516	-0.086673
		3.118	2.822	-5.350	61.741	74.619	0.500165
35	1.275	-1.627	-1.309	-7.751	-65.489	171.409	-1.763
		3.261	2.822	-12.451	61.741	63.269	4.099
36	0	-1.525	-1.644	-12.322	-63.125	158.852	-0.683644
		3.382	2.361	-14.796	60.322	63.994	1.119
36	1.275	-1.319	-1.644	-22.646	-62.895	136.556	-2.785
		3.524	2.361	-21.897	60.322	40.599	4.130
37	0	-1.009	-1.432	-28.459	-60.618	125.336	-1.059
		3.643	2.038	-24.502	58.762	42.187	1.664

ENVOLVENTE para < Mx > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
37	1.275	-0.803020	-1.432	-38.783	-60.388	82.463	-2.889
		3.785	2.038	-31.604	58.762	6.414	4.264
38	0	-0.233751	-1.203	-46.398	-57.709	76.444	-1.487
		3.919	1.691	-35.976	57.041	10.410	2.335
38	1.275	-0.027283	-1.203	-56.722	-57.479	10.694	-3.025
		4.061	1.691	-43.077	57.041	-39.995	4.491
39	0	0.453111	-0.529068	-64.782	-56.362	33.278	-3.312
		4.211	0.529068	-54.791	56.362	-31.094	3.312
39	1.275	0.650399	-0.529068	-74.646	-56.362	-55.621	-3.987
		4.353	0.529068	-61.893	56.362	-105.492	3.987
40	0	1.897	3.284	-112.545	-65.363	-37.405	-3.709
		4.415	-3.284	-94.393	65.363	-91.616	3.709
40	1.275	2.094	3.284	-122.409	-65.363	-187.212	0.477712
		4.557	-3.284	-101.495	65.363	-216.514	-0.477712
41	0	2.419	1.293	169.543	-38.568	-294.392	-0.336396
		-7.334	-1.055	121.626	23.637	-294.208	-0.281882
41	1.700	2.422	1.293	155.365	-38.058	-18.176	1.851
		-7.124	-1.055	111.137	23.128	-96.327	-2.065
42	0	2.364	-0.638154	104.542	-35.529	-45.559	-1.068
		-6.441	0.708541	66.171	25.185	-98.646	0.566720
42	1.700	2.367	-0.638154	90.364	-35.019	120.137	-2.163
		-6.231	0.708541	55.683	24.675	4.947	1.782
43	0	3.115	-0.462805	78.006	-31.236	36.125	-1.265
		-6.141	0.564964	42.511	23.454	85.961	0.680661
43	1.700	3.118	-0.462805	63.828	-30.726	156.702	-2.062
		-5.931	0.564964	32.023	22.944	149.325	1.651
44	0	3.303	0.224141	57.480	-26.842	154.288	1.027
		-5.865	-0.089441	24.896	24.248	167.082	-1.650
44	1.700	3.307	0.224141	43.301	-27.352	239.966	1.418
		-5.655	-0.089441	14.408	24.758	200.496	-1.812

ENVOLVENTE para < Mx > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
45	0	3.367	0.045550	35.553	-20.197	240.031	1.195
		-5.482	0.093579	10.324	27.535	199.658	-1.813
45	1.700	3.595	0.045550	10.127	-20.707	271.552	1.282
		-5.273	0.093579	-0.164380	28.045	208.295	-1.664
46	0	5.457	-0.164689	0.701079	-16.028	158.093	1.598
		-5.182	0.270524	-4.247	28.730	208.209	-1.937
46	1.700	5.461	-0.164689	-13.477	-15.518	147.232	1.308
		-4.972	0.270524	-14.736	28.220	192.072	-1.467
47	0	5.679	-0.335702	-14.503	-14.589	115.602	1.691
		-5.535	0.376700	-40.894	30.302	300.586	-1.968
47	1.700	5.620	-0.335702	-25.557	-14.079	81.545	1.110
		-5.263	0.376700	-54.506	29.792	219.484	-1.317
48	0	5.776	-0.447995	-28.507	-16.139	79.134	1.911
		-5.054	0.501955	-62.462	35.360	226.566	-2.199
48	1.700	5.706	-0.447995	-39.001	-16.649	21.743	1.159
		-4.771	0.501955	-76.634	35.870	108.316	-1.356
49	0	6.037	-0.710317	-48.066	-19.482	28.964	2.076
		-4.479	0.755397	-90.578	39.654	119.827	-2.346
49	1.700	5.967	-0.710317	-58.561	-19.992	-61.683	0.878888
		-4.196	0.755397	-104.750	40.164	-46.229	-1.072
50	0	6.274	-1.743	-93.676	-19.688	-43.942	2.405
		-4.724	1.638	-161.465	40.491	-18.576	-2.619
50	1.700	6.204	-1.743	-104.170	-20.198	-212.138	-0.548022
		-4.441	1.638	-175.637	41.001	-305.158	0.156008
51	0	0.375585	0.640542	93.881	-71.543	-196.781	2.951
		-3.343	-0.640542	110.372	71.543	-158.685	-2.951
51	1.275	0.517614	0.640542	86.779	-71.543	-81.592	3.768
		-3.146	-0.640542	100.508	71.543	-24.228	-3.768

ENVOLVENTE para < Mx > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
52	0	1.324	-1.454	56.002	-62.675	-94.673	4.670
		-3.137	1.454	65.382	62.675	-41.239	-4.670
52	1.275	1.466	-1.454	48.901	-62.675	-27.786	2.816
		-2.940	1.454	55.518	62.675	35.848	-2.816
53	0	1.965	-2.005	37.718	-63.345	-36.191	4.511
		-2.811	2.005	42.993	63.345	25.925	-4.511
53	1.275	2.107	-2.005	30.616	-63.345	7.378	1.955
		-2.614	2.005	33.129	63.345	74.461	-1.955
54	0	2.376	-2.290	26.354	-64.980	3.571	4.257
		-2.493	2.290	27.970	64.980	70.102	-4.257
54	1.275	2.518	-2.290	19.252	-64.980	32.649	1.336
		-2.296	2.290	18.105	64.980	99.480	-1.336
55	0	2.622	-2.569	16.665	-66.277	31.036	4.064
		-2.212	2.569	14.617	66.277	97.591	-4.064
55	1.275	2.764	-2.569	9.563	-66.277	47.759	0.788410
		-2.015	2.569	4.753	66.277	109.941	-0.788410
56	0	2.729	-2.929	7.315	-66.923	46.756	3.874
		-1.955	2.929	1.618	66.923	108.581	-3.874
56	1.275	2.871	-2.929	0.213555	-66.923	51.556	0.139679
		-1.758	2.929	-8.246	66.923	104.355	-0.139679
57	0	2.675	-3.283	-1.530	-66.140	50.086	3.561
		-1.699	3.283	-10.581	66.140	102.073	-3.561
57	1.275	2.817	-3.283	-8.632	-66.140	43.607	-0.625820
		-1.502	3.283	-20.445	66.140	82.291	0.625820
58	0	2.387	-3.334	-8.221	-61.738	40.556	2.928
		-1.437	2.178	-17.682	61.876	74.628	-1.937
58	1.275	2.530	-3.334	-15.322	-61.738	25.545	-1.324
		-1.231	2.178	-28.006	62.105	45.497	0.836491
59	0	1.685	-2.779	-8.382	-49.011	20.349	2.012
		-0.952787	1.775	-16.537	49.387	36.978	-1.323

ENVOLVENTE para < Mx > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
59	1.275	1.827	-2.779	-15.483	-49.011	5.132	-1.532
		-0.746319	1.775	-26.861	49.616	9.307	0.935603
60	0	0.149126	-1.084	0.662346	-24.067	2.857	1.266
		-0.123150	0.647122	-0.274270	24.175	5.575	-0.853469
60	1.275	0.291155	-1.084	-6.439	-24.067	-0.825818	-0.116276
		0.083318	0.647122	-10.598	24.404	-1.356	-0.032846
61	0	-4.595	-3.180	95.497	-33.864	-26.522	0.726626
		3.463	9.415	-1.250	15.664	12.221	-0.728327
61	1.275	-4.373	-3.180	84.411	-32.518	88.188	-3.356
		3.587	7.311	-7.443	12.298	6.679	10.003
62	0	-2.803	-2.724	66.021	-35.390	42.422	-1.558
		0.359747	7.620	-5.791	19.526	30.691	6.685
62	1.275	-2.581	-2.724	54.935	-34.043	119.544	-5.059
		0.483608	5.516	-11.984	16.160	19.357	15.129
63	0	-1.271	-2.592	55.381	-29.299	82.215	-3.636
		-2.253	6.719	-11.273	20.498	44.126	12.355
63	1.275	-1.049	-2.592	44.295	-27.953	145.769	-6.968
		-2.129	4.615	-17.466	17.133	25.803	19.649
64	0	0.618799	-2.341	33.250	-23.822	74.190	-6.350
		-4.429	5.890	-16.265	20.697	50.737	17.400
64	1.275	0.840518	-2.341	22.164	-22.475	109.523	-9.362
		-4.305	3.786	-22.458	17.331	26.048	23.637
65	0	5.864	-1.762	23.808	-22.306	76.563	-8.872
		-10.061	5.188	-20.357	20.439	54.357	21.959
65	1.275	5.786	-1.740	15.305	-21.723	93.782	-10.979
		-9.937	3.084	-26.550	17.073	24.449	27.301
66	0	6.428	-1.526	13.712	-22.355	50.740	-10.236
		-11.531	4.084	-21.935	19.737	69.112	25.770
66	1.275	6.439	-1.526	2.622	-21.009	61.155	-12.210

ENVOLVENTE para < Mx > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
		-11.407	1.980	-28.128	16.371	37.192	29.703
67	0	6.951	-1.289	6.067	-23.103	34.433	-11.746
		-12.728	3.769	-26.771	18.255	60.370	28.360
67	1.275	6.963	-1.289	-5.024	-21.756	35.098	-13.417
		-12.604	1.665	-32.964	14.889	22.282	31.893
68	0	7.537	-1.019	-3.042	-25.646	-9.246	-13.215
		-13.764	2.603	-31.323	15.263	43.647	30.685
68	1.275	7.549	-1.019	-14.133	-24.300	-20.197	-14.541
		-13.641	0.498617	-37.516	11.897	-0.245445	32.730
69	0	7.704	-0.706895	-6.249	-28.496	-63.472	-13.693
		-14.629	2.648	-33.609	10.197	17.488	31.636
69	1.275	7.395	-0.638181	-14.076	-27.505	-80.287	-13.822
		-14.505	0.543765	-39.802	6.831	-29.319	33.738
70	0	3.484	0.213252	11.899	-24.225	-101.774	-14.564
		-10.832	3.133	-23.497	6.317	-24.761	32.278
70	1.275	3.320	0.243729	5.116	-24.004	-91.543	-13.440
		-1.059	0.216272	-33.086	5.133	-77.670	9.452
71	0	1.639	-0.379608	40.485	-8.569	-78.275	-14.619
		0.400991	2.110	14.909	21.885	-103.159	7.614
71	1.700	1.870	-0.379608	28.964	-6.774	-19.234	-15.301
		0.351360	1.268	3.386	20.538	-87.605	10.513
72	0	9.104	-1.037	52.791	-6.232	-19.716	-15.283
		-7.626	2.721	31.018	19.068	-65.839	7.886
72	1.700	9.055	-1.037	41.264	-4.436	60.243	-17.082
		-7.396	1.879	19.500	17.722	-22.892	11.824
73	0	9.409	-0.701692	46.948	-8.496	46.595	-17.057
		-8.513	2.109	24.493	12.279	7.298	10.107
73	1.700	3.589	-0.429731	35.174	-7.744	107.417	-2.744
		-2.512	0.995132	13.223	11.976	48.354	-2.537

ENVOLVENTE para < Mx > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
74	0	3.255	0.106234	40.928	-8.565	106.937	-2.859
		-2.745	0.981861	12.460	9.159	60.255	-3.346
74	1.700	-2.875	0.058439	31.339	-9.000	157.970	13.382
		3.566	0.188021	-0.996128	10.043	80.404	-18.461
75	0	2.884	-0.016071	37.931	-6.474	144.746	-1.852
		-2.466	0.910612	2.373	8.761	94.432	-3.868
75	1.700	-2.750	-0.272879	11.177	-7.396	174.005	13.341
		3.723	0.325786	-12.663	10.132	85.985	-18.265
76	0	-4.259	-0.048089	3.778	-5.889	135.265	0.577220
		4.324	0.834503	-10.262	9.289	121.919	-3.485
76	1.700	-9.993	-0.667369	-18.120	-5.176	127.643	15.384
		10.389	0.612148	-18.907	9.025	97.423	-17.680
77	0	-4.023	-0.025756	-15.769	-6.039	119.893	0.356401
		4.143	0.802264	-31.292	9.341	158.919	-3.102
77	1.700	-10.049	-0.987391	-28.392	-5.985	72.032	15.481
		10.350	0.922264	-41.712	9.736	107.174	-17.631
78	0	-9.986	-0.420468	-27.365	-8.746	76.389	15.641
		10.051	1.316	-35.920	8.491	109.959	-18.430
78	1.700	-10.303	-1.283	-38.356	-9.685	12.210	15.240
		10.549	1.336	-47.974	9.879	46.945	-17.232
79	0	-9.819	-0.705289	-31.707	-15.026	-3.707	15.295
		9.727	1.796	-42.022	5.909	62.873	-18.462
79	1.700	-9.869	-1.547	-43.230	-16.372	-67.413	13.407
		9.958	1.796	-53.543	7.704	-18.370	-15.445
80	0	-2.377	0.003228	-17.381	-17.029	-85.433	13.570
		2.726	1.089	-28.826	9.052	-14.935	-17.234
80	1.700	-11.308	-4.259	-25.331	-19.908	-98.050	35.502
		2.677	1.089	-40.353	10.847	-73.746	-15.418
81	0	-4.891	0.058506	24.683	-5.526	-22.512	21.699

ENVOLVENTE para < Mx > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
		3.867	0.922047	2.419	24.609	-106.636	-15.069
81	1.275	-11.011	-2.420	23.645	-8.649	-18.455	33.477
		4.035	1.031	-4.633	24.983	-106.993	-14.491
82	0	-14.865	-0.232453	38.957	-9.228	-25.491	34.060
		7.630	1.589	12.951	25.876	-86.863	-15.737
82	1.275	-14.741	-2.337	32.764	-12.594	20.238	32.489
		8.002	1.713	4.818	27.030	-71.398	-14.250
83	0	-13.846	-1.505	36.364	-14.111	-0.329338	33.272
		11.234	2.177	10.590	23.775	-32.303	-23.355
83	1.275	-13.722	-3.609	30.171	-17.476	42.093	30.078
		11.436	2.177	0.483107	24.583	-25.242	-20.595
84	0	-12.567	-2.177	31.774	-16.910	18.088	31.281
		13.028	3.585	-0.205709	22.439	16.020	-31.860
84	1.275	-12.444	-4.281	25.581	-20.275	54.658	27.230
		10.609	2.656	-5.969	22.679	1.244	-18.330
85	0	-11.070	-3.126	27.015	-18.170	28.994	28.544
		11.732	4.179	-7.241	21.918	37.666	-28.856
85	1.275	-10.946	-5.230	20.822	-21.536	59.495	23.284
		9.796	2.909	-14.406	22.064	14.785	-15.823
86	0	-9.448	-4.138	25.956	-18.504	15.159	24.964
		10.395	4.892	-18.323	22.265	68.442	-25.144
86	1.275	-9.324	-6.242	19.763	-21.870	44.311	18.413
		9.056	3.236	-27.766	22.442	45.562	-12.858
87	0	-3.674	-5.410	22.539	-17.916	14.639	20.215
		4.986	5.985	-27.699	23.189	71.115	-20.409
87	1.275	-3.550	-7.514	16.346	-21.282	39.433	12.042
		1.999	4.180	-38.661	23.706	36.540	-8.333
88	0	-1.489	-6.288	18.598	-15.975	14.211	14.260
		0.637765	4.829	-41.337	23.730	66.003	-9.662

ENVOLVENTE para < Mx > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
88	1.275	-1.365	-8.392	12.405	-19.341	33.978	4.967
		0.713910	4.829	-51.447	24.538	6.844	-3.521
89	0	0.814966	-7.634	14.801	-12.258	12.082	7.225
		-0.780509	5.864	-63.495	20.187	36.194	-5.037
89	1.275	0.938827	-9.738	8.608	-15.623	27.007	-3.784
		-0.704363	5.864	-73.605	20.995	-51.221	2.425
90	0	-0.336788	1.855	-1.303	-6.700	11.533	-1.313
		-0.148278	-1.019	24.663	8.828	-30.778	1.414
90	1.275	-0.212926	-0.249138	-7.496	-10.066	5.922	-0.221763
		-0.063326	-0.218068	15.812	9.372	-4.708	0.008032
91	0	-0.946998	-0.140594	43.940	-21.987	-28.373	0.282995
		0.333450	0.288952	-12.935	13.655	15.969	-0.279597
91	2.000	-0.946998	-0.140594	43.940	-21.987	59.503	0.001819
		0.333450	0.288952	-12.935	13.655	-9.900	0.298284
92	0	0.738429	-0.452070	12.379	-12.221	-9.081	0.451293
		-0.604053	-0.069109	-49.232	26.525	64.590	0.208831
92	2.000	0.738429	-0.452070	12.379	-12.221	15.676	-0.452811
		-0.604053	-0.069109	-49.232	26.525	-33.871	0.070619
93	0	-0.950913	-2.125	16.536	-36.923	-0.800244	2.753
		-0.156907	1.947	1.803	27.235	5.719	-1.780
93	2.000	-0.950913	-2.125	16.536	-36.923	32.270	-1.498
		-0.156907	1.947	1.803	27.235	9.325	2.115
94	0	-0.276738	-3.193	1.716	-24.012	3.861	3.158
		-0.460173	1.204	-18.418	45.769	33.927	-0.627070
94	2.000	-0.276738	-3.193	1.716	-24.012	7.294	-3.227
		-0.460173	1.204	-18.418	45.769	-2.907	1.780
95	0	-0.918269	-2.682	1.015	-29.977	3.535	2.929
		-0.414781	1.412	1.177	28.478	1.952	-1.342
95	2.000	-0.918269	-2.682	1.015	-29.977	5.565	-2.434
		-0.414781	1.412	1.177	28.478	4.305	1.482

ENVOLVENTE para < Mx > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
96	0	-1.190	-2.723	0.766295	-24.770	2.861	2.735
		-0.241481	1.318	0.420155	37.332	3.875	-1.150
96	2.000	-1.190	-2.723	0.766295	-24.770	4.394	-2.711
		-0.241481	1.318	0.420155	37.332	4.716	1.486
97	0	-0.784681	-2.302	-1.210	-26.970	2.284	2.385
		-0.402317	1.146	-0.804305	27.335	0.931720	-1.160
97	2.000	-0.784681	-2.302	-1.210	-26.970	-0.134915	-2.218
		-0.402317	1.146	-0.804305	27.335	-0.676825	1.131
98	0	-1.371	-2.276	1.247	-24.936	1.116	2.300
		-0.273870	1.136	5.869	31.379	-7.301	-1.169
98	2.000	-1.371	-2.276	1.247	-24.936	3.611	-2.252
		-0.273870	1.136	5.869	31.379	4.436	1.103
99	0	-0.722601	-1.753	-1.401	-25.556	0.990799	1.775
		-0.561064	0.768533	-0.970437	26.500	0.262961	-0.811526
99	2.000	-0.722601	-1.753	-1.401	-25.556	-1.811	-1.731
		-0.561064	0.768533	-0.970437	26.500	-1.678	0.725479
100	0	-1.472	-1.742	1.427	-24.664	0.302120	1.759
		-0.139458	0.776058	2.659	27.703	-5.179	-0.841838
100	2.000	-1.472	-1.742	1.427	-24.664	3.156	-1.724
		-0.139458	0.776058	2.659	27.703	0.138714	0.710216
101	0	-0.816061	-1.464	-1.386	-24.931	0.104275	1.448
		-0.561410	0.699195	-1.323	25.415	-0.781018	-0.784622
101	2.000	-0.816061	-1.464	-1.386	-24.931	-2.668	-1.480
		-0.561410	0.699195	-1.323	25.415	-3.427	0.613712
102	0	-1.421	-1.494	1.432	-24.111	-0.141046	1.506
		-0.184630	0.673884	2.379	26.754	-5.423	-0.760886
102	2.000	-1.421	-1.494	1.432	-24.111	2.723	-1.482
		-0.184630	0.673884	2.379	26.754	-0.665115	0.586828

ENVOLVENTE para < Mx > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
103	0	-0.917396	-1.197	-1.680	-24.899	-0.706785	1.141
		-0.950131	0.945482	-1.130	24.070	-0.117508	-1.006
103	2.000	-0.917396	-1.197	-1.680	-24.899	-4.067	-1.253
		-0.950131	0.945482	-1.130	24.070	-2.378	0.885035
104	0	-1.359	-1.294	1.383	-23.179	-0.854844	1.285
		-0.228214	0.580963	3.434	26.723	-8.970	-0.750840
104	2.000	-1.359	-1.294	1.383	-23.179	1.911	-1.303
		-0.228214	0.580963	3.434	26.723	-2.103	0.411039
105	0	-0.930356	-0.945955	-3.199	-25.695	-1.505	0.829826
		-0.978539	0.906022	-1.648	21.618	-1.591	-1.037
105	2.000	-0.930356	-0.945955	-3.199	-25.695	-7.903	-1.062
		-0.978539	0.906022	-1.648	21.618	-4.887	0.774872
106	0	-1.385	-1.126	1.664	-21.366	-2.931	1.045
		-0.260851	0.513501	5.216	27.507	-14.340	-0.798077
106	2.000	-1.385	-1.126	1.664	-21.366	0.398046	-1.206
		-0.260851	0.513501	5.216	27.507	-3.908	0.228883
107	0	-0.523976	-0.713898	-8.637	-27.541	-0.480245	0.519629
		-1.797	0.911947	-3.927	17.735	-1.676	-1.194
107	2.000	-0.523976	-0.713898	-8.637	-27.541	-17.753	-0.908110
		-1.797	0.911947	-3.927	17.735	-9.529	0.630067
108	0	-1.797	-0.911947	3.927	-17.735	-9.529	0.630062
		-0.228720	0.545308	12.180	30.396	-28.567	-1.057
108	2.000	-1.797	-0.911947	3.927	-17.735	-1.676	-1.194
		-0.228720	0.545308	12.180	30.396	-4.207	0.033552
109	0	0.795949	-0.657118	-21.599	-27.838	7.363	0.387276
		-3.067	0.607657	-13.606	11.787	-1.360	-1.277
109	2.000	0.795949	-0.657118	-21.599	-27.838	-35.833	-0.926907
		-3.067	0.607657	-13.606	11.787	-28.570	-0.061681
110	0	-3.067	-0.607657	13.606	-11.787	-28.570	-0.061686
		0.023338	0.900086	32.400	33.487	-59.754	-1.749

ENVOLVENTE para < Mx > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
110	2.000	-3.067	-0.607657	13.606	-11.787	-1.360	-1.277
		0.023338	0.900086	32.400	33.487	5.044	0.051036
111	0	1.440	0.417216	-36.426	-19.200	14.834	-1.389
		-1.262	-1.215	-48.295	22.583	13.906	-0.302035
111	2.000	1.440	0.417216	-36.426	-19.200	-58.016	-0.554801
		-1.262	-1.215	-48.295	22.583	-82.681	-2.731
112	0	-1.606	1.948	50.119	-19.511	-86.561	-3.549
		0.428422	-0.587655	50.151	25.716	-84.113	-0.882943
112	2.000	-1.606	1.948	50.119	-19.511	13.673	0.345389
		0.428422	-0.587655	50.151	25.716	16.185	-2.058
113	0	0.007089	-1.506	-18.816	-3.397	-1.799	0.262982
		-0.527751	1.031	-29.494	34.965	0.020904	-2.680
113	2.000	0.007089	-1.506	-18.816	-3.397	-39.430	-2.750
		-0.527751	1.031	-29.494	34.965	-58.964	-0.618121
114	0	-0.710765	-0.942652	32.023	-30.929	-64.218	-0.823928
		-0.125607	1.229	19.441	9.649	-39.584	-2.401
114	2.000	-0.710765	-0.942652	32.023	-30.929	-0.174963	-2.709
		-0.125607	1.229	19.441	9.649	-0.702619	0.056657
115	0	-0.348072	-0.609059	-5.064	-8.551	-4.601	0.084318
		-0.187264	0.851841	-6.187	23.765	-5.713	-1.560
115	2.000	-0.348072	-0.609059	-5.064	-8.551	-14.728	-1.134
		-0.187264	0.851841	-6.187	23.765	-18.086	0.144106
116	0	-0.182144	-0.906979	8.171	-19.874	-21.469	0.119364
		-0.309332	0.467318	5.676	13.651	-15.412	-0.997646
116	2.000	-0.182144	-0.906979	8.171	-19.874	-5.128	-1.695
		-0.309332	0.467318	5.676	13.651	-4.060	-0.063047
117	0	-0.331638	-0.422886	-0.758331	-10.508	-2.541	0.270421
		-0.210901	0.508358	-2.425	16.525	-4.503	-0.946924
117	2.000	-0.331638	-0.422886	-0.758331	-10.508	-4.057	-0.575318

ENVOLVENTE para < Mx > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
		-0.210901	0.508358	-2.425	16.525	-9.354	0.069751
118	0	-0.183516	-0.601044	4.899	-14.059	-12.655	0.104145
		-0.320728	0.329950	3.354	14.268	-7.301	-0.531902
118	2.000	-0.183516	-0.601044	4.899	-14.059	-2.858	-1.098
		-0.320728	0.329950	3.354	14.268	-0.592314	0.127972
119	0	-0.474224	-0.050521	-1.581	-13.675	-0.489200	-0.073287
		-0.183238	-0.028011	-0.285119	13.650	-4.519	-0.255290
119	2.000	-0.474224	-0.050521	-1.581	-13.675	-3.651	-0.174325
		-0.183238	-0.028011	-0.285119	13.650	-5.089	-0.311310
120	0	-0.170325	-0.075701	3.117	-14.546	-7.933	-0.218592
		-0.482462	0.002801	6.849	13.745	-10.742	-0.241737
120	2.000	-0.170325	-0.075701	3.117	-14.546	-1.699	-0.369987
		-0.482462	0.002801	6.849	13.745	2.955	-0.236135
121	0	-0.476801	-0.200891	-2.111	-15.085	-0.106194	0.077869
		-0.326362	0.076656	-2.535	8.553	-1.099	-0.303988
121	2.000	-0.476801	-0.200891	-2.111	-15.085	-4.327	-0.323897
		-0.326362	0.076656	-2.535	8.553	-6.170	-0.150683
122	0	-0.319854	-0.168753	2.594	-15.160	-6.311	-0.070720
		-0.486285	0.131327	1.929	8.539	-3.956	-0.250441
122	2.000	-0.319854	-0.168753	2.594	-15.160	-1.124	-0.408212
		-0.486285	0.131327	1.929	8.539	-0.098322	0.012203
123	0	-0.514203	-0.338388	-3.032	-15.015	-0.674181	0.144135
		-0.416925	0.235803	-1.624	7.869	-1.040	-0.417361
123	2.000	-0.514203	-0.338388	-3.032	-15.015	-6.737	-0.532615
		-0.416925	0.235803	-1.624	7.869	-4.287	0.054226
124	0	-0.405134	-0.204297	6.617	-14.982	-11.281	-0.093954
		-0.524438	0.265367	2.853	8.527	-6.483	-0.461225
124	2.000	-0.405134	-0.204297	6.617	-14.982	1.952	-0.502532
		-0.524438	0.265367	2.853	8.527	-0.777858	0.069489

ENVOLVENTE para < Mx > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
125	0	-0.512652	-0.376630	-1.317	-18.866	-3.643	0.120283
		-0.497454	0.419839	-2.770	6.710	-1.916	-0.720320
125	2.000	-0.512652	-0.376630	-1.317	-18.866	-6.276	-0.632946
		-0.497454	0.419839	-2.770	6.710	-7.456	0.119324
126	0	-0.475331	-0.451735	4.529	-16.531	-10.553	0.072516
		-0.516803	0.352289	2.294	9.385	-7.084	-0.602331
126	2.000	-0.475331	-0.451735	4.529	-16.531	-1.495	-0.830918
		-0.516803	0.352289	2.294	9.385	-2.497	0.102218
127	0	-0.511166	-0.653555	-6.386	-26.220	-5.600	-0.010368
		-0.469624	0.690357	-4.821	6.430	-3.177	-1.160
127	2.000	-0.511166	-0.653555	-6.386	-26.220	-18.370	-1.317
		-0.469624	0.690357	-4.821	6.430	-12.819	0.220765
128	0	-0.444924	-0.701558	5.968	-15.931	-15.881	0.115818
		-0.524973	0.616066	6.639	15.914	-18.618	-1.287
128	2.000	-0.444924	-0.701558	5.968	-15.931	-3.945	-1.287
		-0.524973	0.616066	6.639	15.914	-5.340	-0.054506
129	0	-0.772185	-2.000	-30.107	-37.096	0.772820	0.292675
		-0.025449	0.932358	-15.757	4.005	-0.054203	-1.788
129	2.000	-0.772185	-2.000	-30.107	-37.096	-59.438	-3.708
		-0.025449	0.932358	-15.757	4.005	-31.567	0.076204
130	0	-0.067746	-0.693030	20.404	-12.160	-40.673	-0.440887
		-0.853311	1.965	30.146	26.739	-59.704	-3.704
130	2.000	-0.067746	-0.693030	20.404	-12.160	0.134378	-1.827
		-0.853311	1.965	30.146	26.739	0.585955	0.225905
131	0	-1.063	-0.676683	-46.843	-22.166	13.554	-0.697741
		1.134	-1.632	-34.655	22.749	14.143	0.556345
131	2.000	-1.063	-0.676683	-46.843	-22.166	-80.128	-2.051
		1.134	-1.632	-34.655	22.749	-55.163	-2.707
132	0	0.418115	2.158	47.665	-30.502	-79.880	-3.674

ENVOLVENTE para < Mx > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
		-4.292	1.163	50.231	17.896	-87.523	-2.540
132	2.000	0.418115	2.158	47.665	-30.502	15.446	0.640855
		-4.292	1.163	50.231	17.896	12.934	-0.214860
133	0	-2.103	-0.859543	-12.549	-14.802	-1.487	0.553534
		0.141519	0.608520	-20.404	29.852	7.205	-1.180
133	2.000	-2.103	-0.859543	-12.549	-14.802	-26.583	-1.165
		0.141519	0.608520	-20.404	29.852	-33.600	0.037304
134	0	0.045339	-0.263888	26.808	-32.233	-51.421	-0.563781
		-2.103	0.859547	12.549	14.802	-26.584	-1.165
134	2.000	0.045339	-0.263888	26.808	-32.233	2.192	-1.092
		-2.103	0.859547	12.549	14.802	-1.487	0.553535
135	0	-1.317	-0.967330	-3.582	-20.570	-1.534	0.862253
		-0.605495	1.044	-8.276	29.736	-0.263911	-1.380
135	2.000	-1.317	-0.967330	-3.582	-20.570	-8.697	-1.072
		-0.605495	1.044	-8.276	29.736	-16.815	0.707920
136	0	-0.265744	-0.834325	9.435	-29.982	-21.290	0.416087
		-1.317	0.967330	3.582	20.570	-8.697	-1.072
136	2.000	-0.265744	-0.834325	9.435	-29.982	-2.421	-1.252
		-1.317	0.967330	3.582	20.570	-1.535	0.862251
137	0	-1.172	-1.187	-1.580	-24.007	0.543513	1.182
		-0.741126	1.287	-3.133	28.092	-1.265	-1.459
137	2.000	-1.172	-1.187	-1.580	-24.007	-2.617	-1.192
		-0.741126	1.287	-3.133	28.092	-7.531	1.115
138	0	-0.741126	-1.287	3.133	-28.092	-7.531	1.115
		-1.172	1.187	1.580	24.007	-2.617	-1.192
138	2.000	-0.741126	-1.287	3.133	-28.092	-1.265	-1.459
		-1.172	1.187	1.580	24.007	0.543417	1.182
139	0	-1.216	-1.402	-1.406	-25.665	2.077	1.453
		-0.714955	1.435	-1.632	27.417	-0.490553	-1.535

ENVOLVENTE para < Mx > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
139	2.000	-1.216	-1.402	-1.406	-25.665	-0.735448	-1.352
		-0.714955	1.435	-1.632	27.417	-3.755	1.336
140	0	-0.714955	-1.435	1.632	-27.417	-3.755	1.336
		-1.216	1.402	1.406	25.665	-0.735529	-1.352
140	2.000	-0.714955	-1.435	1.632	-27.417	-0.490472	-1.535
		-1.216	1.402	1.406	25.665	2.077	1.453
141	0	-1.247	-1.599	-1.593	-26.374	2.991	1.681
		-0.706055	1.558	-1.097	27.555	0.386678	-1.620
141	2.000	-1.247	-1.599	-1.593	-26.374	-0.196076	-1.517
		-0.706055	1.558	-1.097	27.555	-1.808	1.495
142	0	-0.706055	-1.558	1.097	-27.555	-1.808	1.495
		-1.247	1.599	1.593	26.374	-0.196140	-1.517
142	2.000	-0.706055	-1.558	1.097	-27.555	0.386742	-1.620
		-1.247	1.599	1.593	26.374	2.991	1.681
143	0	-1.085	-1.902	-1.883	-26.369	3.897	2.013
		-0.897858	1.793	-0.154709	28.244	0.978638	-1.816
143	2.000	-1.085	-1.902	-1.883	-26.369	0.131603	-1.790
		-0.897858	1.793	-0.154709	28.244	0.669232	1.769
144	0	-0.897858	-1.793	0.154709	-28.244	0.669279	1.769
		-1.085	1.902	1.883	26.369	0.131555	-1.790
144	2.000	-0.897858	-1.793	0.154709	-28.244	0.978685	-1.816
		-1.085	1.902	1.883	26.369	3.897	2.013
145	0	-1.015	-2.107	-2.210	-25.223	5.263	2.265
		-1.020	1.958	2.994	29.195	0.507926	-1.911
145	2.000	-1.015	-2.107	-2.210	-25.223	0.843444	-1.949
		-1.020	1.958	2.994	29.195	6.496	2.005
146	0	-0.674063	-1.417	-2.649	-29.465	5.348	1.464
		-1.015	2.107	2.210	25.223	0.843412	-1.949
146	2.000	-0.674063	-1.417	-2.649	-29.465	0.051339	-1.369
		-1.015	2.107	2.210	25.223	5.263	2.265

ENVOLVENTE para < Mx > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
147	0	-0.434479	-1.750	-2.350	-22.107	5.619	1.898
		-1.349	2.130	11.676	28.683	-3.590	-1.959
147	2.000	-0.434479	-1.750	-2.350	-22.107	0.919265	-1.601
		-1.349	2.130	11.676	28.683	19.761	2.300
148	0	-0.839671	-1.734	-12.016	-29.353	19.709	1.932
		-0.781186	2.228	2.353	21.898	2.330	-1.996
148	2.000	-0.839671	-1.734	-12.016	-29.353	-4.321	-1.536
		-0.781186	2.228	2.353	21.898	7.036	2.460
149	0	-0.296169	-2.125	-2.953	-15.650	7.603	2.304
		-1.891	2.260	24.181	18.444	-11.164	-1.924
149	2.000	-0.296169	-2.125	-2.953	-15.650	1.698	-1.946
		-1.891	2.260	24.181	18.444	37.197	2.594
150	0	-1.088	-2.219	-25.473	-18.825	38.520	2.601
		-0.383599	2.361	2.815	15.474	3.242	-2.093
150	2.000	-1.088	-2.219	-25.473	-18.825	-12.424	-1.836
		-0.383599	2.361	2.815	15.474	8.872	2.629
151	0	0.131579	-0.088775	-4.972	-6.291	9.350	0.124083
		-1.249	0.199684	13.934	5.096	-8.729	-0.158870
151	2.000	0.131579	-0.088775	-4.972	-6.291	-0.592697	-0.053461
		-1.249	0.199684	13.934	5.096	19.139	0.240481
152	0	-0.881642	-0.093256	-13.947	-5.139	18.665	0.130453
		0.038449	0.217744	5.404	6.184	-0.841833	-0.180930
152	2.000	-0.881642	-0.093256	-13.947	-5.139	-9.226	-0.056052
		0.038449	0.217744	5.404	6.184	9.966	0.254542
201	0	-352.793	41.458	-5.937	-0.869975	28.162	-164.964
		-372.543	-66.839	3.278	0.849426	-23.042	271.422
201	10.255	-332.887	10.172	-5.937	-0.869975	-32.722	99.758
		-345.670	-14.694	3.278	0.849426	10.571	-146.620

ENVOLVENTE para < Mx > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
202	0	-301.750	19.222	6.383	-0.625451	-30.069	-77.055
		-351.823	-66.274	-3.135	0.446446	24.375	271.910
202	10.595	-281.184	3.060	6.383	-0.625451	37.556	40.981
		-324.059	-12.401	-3.135	0.446446	-8.843	-144.851

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
1	0	-5.753	5.434	89.483	28.364	-21.984	-0.816933
		5.100	-3.684	0.391711	-15.961	13.655	0.584287
1	1.275	6.054	-4.919	-8.174	-12.449	5.250	-6.411
		-4.324	3.021	86.179	26.088	96.396	3.234
2	0	5.749	3.590	29.381	20.439	10.748	5.436
		-4.048	-2.192	43.048	-1.980	75.921	-3.137
2	1.275	3.075	-2.434	-10.537	-12.997	14.967	-5.135
		-2.263	2.484	37.884	22.360	124.765	4.686
3	0	4.726	1.622	15.675	12.329	19.693	4.918
		-4.051	-1.865	19.250	-5.671	115.753	-4.874
3	1.275	1.665	-1.972	-12.979	-9.928	17.186	-6.359
		-1.046	2.099	26.999	10.653	140.081	5.873
4	0	5.006	1.165	5.826	7.199	21.072	5.972
		-4.315	-1.517	16.058	-4.378	136.967	-5.796
4	1.275	0.580390	-1.672	-18.122	-10.302	12.246	-7.928
		0.154864	1.679	10.319	7.807	157.752	7.177
5	0	5.367	1.051	0.731887	6.929	15.979	7.033
		-4.278	-1.542	-7.737	-5.056	156.088	-6.781
5	1.275	-0.288050	-1.482	-23.123	-10.192	0.951010	-9.420
		1.157	1.338	-6.099	6.787	147.983	8.319

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
6	0	5.681	0.884394	-4.368	7.281	4.452	7.980
		-4.532	-1.350	-16.495	-4.624	146.519	-7.814
6	1.275	-1.012	-1.053	-28.096	-9.520	-16.996	-10.520
		1.984	0.923774	-22.491	6.907	119.316	9.100
7	0	5.928	0.629907	-9.247	8.531	-14.040	8.792
		-4.646	-1.406	-32.526	-2.960	117.126	-8.572
7	1.275	-1.636	-0.887850	-32.901	-7.874	-41.900	-11.504
		4.757	1.151	-16.709	13.219	88.382	18.930
8	0	6.093	0.333637	-12.791	11.012	-40.211	9.410
		-9.748	-1.918	-37.042	-5.846	82.968	-18.475
8	1.275	-2.094	-0.629846	-45.036	-3.279	-81.479	-12.186
		5.147	0.425440	-11.125	13.991	62.073	19.190
9	0	6.179	0.087372	-17.466	15.863	-83.638	9.747
		-10.517	-1.975	-29.406	-2.550	51.949	-19.127
9	1.275	-2.720	-0.735462	-47.403	2.601	-129.652	-13.376
		5.527	0.151069	-14.982	14.640	33.978	19.615
10	0	-2.214	-1.372	-12.769	5.899	-134.767	-10.447
		5.122	0.198283	0.293077	11.519	15.578	20.091
10	1.275	-2.698	-0.904432	-30.602	0.397591	-161.199	-13.359
		4.967	0.224825	-0.767034	10.509	14.520	19.890
11	0	-2.532	-2.475	41.277	-11.639	-155.454	-8.933
		4.423	1.960	16.903	0.568406	3.401	20.672
11	1.700	-7.571	-1.840	10.896	-14.051	-110.778	-14.110
		13.572	2.500	15.956	-0.199306	37.823	25.010
12	0	-9.334	-2.225	42.869	-10.053	-91.709	-12.894
		15.006	2.311	31.536	-2.614	41.731	23.686
12	1.700	-8.257	-1.537	24.675	-11.648	-33.590	-14.749
		15.010	2.340	19.970	-2.901	87.028	27.855
13	0	-8.464	-1.447	28.803	0.374976	-28.748	-13.002
		14.931	1.418	30.010	-3.531	90.079	26.064

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
13	1.700	-8.115	-0.786479	14.624	-2.925	7.190	-14.920
		14.776	1.461	27.136	-2.671	139.953	29.467
14	0	-8.819	-0.953674	19.065	0.735565	7.218	-15.156
		14.584	0.801237	24.878	-3.446	142.864	27.300
14	1.700	-8.184	-0.241611	8.533	-0.067130	30.228	-15.156
		7.439	0.257120	21.364	-1.978	180.592	15.127
15	0	-8.919	-0.582635	11.624	0.924062	28.975	-16.245
		7.566	0.023375	24.219	0.440000	181.276	15.176
15	1.700	-8.228	0.163095	1.882	0.749514	40.455	-15.325
		7.732	0.023375	1.934	-1.355	198.635	15.251
16	0	-8.748	-0.201096	5.020	1.372	38.662	-16.499
		7.888	-0.322454	-2.750	0.725656	199.174	15.408
16	1.700	3.547	-0.195553	-6.152	-0.271815	37.921	14.974
		-3.595	0.417909	-23.606	0.400534	181.418	-15.124
17	0	-8.546	0.128203	-2.271	2.130	35.670	-16.302
		15.737	-1.226	-16.700	0.237334	182.454	30.539
17	1.700	3.491	-0.612562	-14.433	-0.907682	23.016	14.909
		-7.849	1.650	-22.732	6.316	144.958	-30.761
18	0	-9.296	0.657138	-7.646	6.683	19.112	-17.353
		15.516	-2.166	-27.722	1.069	143.675	29.860
18	1.700	-8.261	1.160	-26.473	1.170	-8.603	-11.714
		14.641	-2.072	-34.086	5.896	90.162	23.362
19	0	-9.848	0.969345	-12.104	13.894	-17.753	-17.155
		14.857	-2.996	-35.366	2.758	85.681	28.410
19	1.700	-9.086	1.304	-54.948	10.316	-77.832	-11.312
		15.267	-2.709	-23.783	2.205	42.176	21.934
20	0	-9.537	0.705335	-9.833	19.556	-103.964	-16.059
		14.009	-2.718	-15.883	-2.916	41.812	25.751
20	1.700	-1.953	0.891491	-39.129	11.181	-144.910	-10.416

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
		4.759	-1.928	-15.723	-1.584	12.547	20.716
21	0	-2.934	-0.284397	31.125	0.382616	-149.364	-12.523
		5.458	-0.831432	-1.478	-11.706	26.084	21.204
21	1.275	6.219	-1.193	0.165279	-12.507	-122.984	9.505
		-10.953	1.957	19.799	3.058	22.437	-20.246
22	0	-3.051	-0.134004	45.464	-0.675849	-119.707	-12.638
		5.541	-0.846381	3.686	-14.171	39.570	20.788
22	1.275	6.245	-1.063	14.278	-16.081	-77.896	9.983
		-10.530	1.626	25.525	6.540	50.361	-20.068
23	0	-2.608	0.448754	42.958	5.012	-76.664	-12.090
		5.017	-1.294	2.256	-14.080	58.456	20.066
23	1.275	5.905	-1.002	9.782	-11.367	-38.921	9.337
		-9.875	2.268	26.665	9.034	70.858	-18.501
24	0	-2.056	0.850414	31.731	9.316	-41.174	-11.419
		4.280	-2.108	2.566	-14.020	75.099	19.196
24	1.275	5.528	-1.212	6.023	-9.086	-16.160	8.347
		-9.059	2.621	19.363	11.906	87.110	-16.709
25	0	-1.458	1.286	26.939	10.746	-19.437	-10.381
		3.494	-2.615	-5.472	-13.601	89.177	17.473
25	1.275	5.166	-1.297	1.081	-8.015	-0.991527	7.236
		-8.132	3.150	11.571	13.084	91.812	-14.299
26	0	-0.734892	1.749	22.085	11.115	-4.441	-8.984
		2.574	-3.201	-13.862	-14.067	93.152	15.189
26	1.275	4.810	-1.411	-4.148	-7.818	7.164	5.932
		-7.101	3.721	3.805	13.027	86.138	-11.372
27	0	0.112864	2.137	17.320	10.651	4.446	-7.161
		1.517	-3.780	-23.082	-15.306	87.214	12.272
27	1.275	7.598	-3.364	-21.150	-16.935	7.047	8.740
		-6.331	4.410	0.346713	15.248	71.723	-8.422

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
28	0	1.085	2.470	12.493	9.275	8.185	-4.936
		0.341352	-4.411	-35.344	-16.551	70.936	8.686
28	1.275	7.398	-6.540	-38.029	-22.261	-7.304	6.624
		-5.352	4.902	-5.565	14.268	49.250	-4.326
29	0	2.214	2.914	6.995	7.077	8.013	-2.439
		-0.982360	-5.408	-56.281	-14.346	39.794	4.497
29	1.275	1.712	-8.643	-68.363	-20.029	-49.221	-3.280
		2.759	6.568	9.844	15.096	27.362	2.822
30	0	-0.148278	1.019	24.663	-8.828	-30.778	-1.414
		-0.298571	-0.974495	-1.410	7.448	11.711	0.653507
30	1.275	-0.078230	1.241	13.936	-8.731	-5.097	0.010469
		0.010179	-0.088473	-4.972	9.351	6.291	-0.035403
31	0	0.316579	4.08E-14	14.135	2.26E-12	4.821	1.21E-13
		-1.131	-0.000193	63.578	-0.038617	22.048	0.000437
31	1.275	0.248616	-0.174786	7.029	-11.579	18.315	-0.051965
		-0.678420	-0.000193	40.936	-0.038616	81.627	0.000190
32	0	2.158	9.09E-14	13.594	2.99E-12	25.141	1.49E-13
		-1.774	-0.000116	67.943	-0.020723	112.886	0.000118
32	1.275	2.090	-0.245385	6.488	-15.418	37.945	-0.142550
		-1.321	-0.000116	45.301	-0.020725	180.449	-3.04E-05
33	0	2.983	-0.228100	5.966	-15.893	41.064	0.112653
		-1.972	-5.02E-05	40.487	-0.006039	193.406	1.77E-05
33	1.275	2.915	-0.228100	-1.140	-15.893	44.141	-0.178221
		-2.069	-9.31E-09	42.634	-2.09E-07	242.239	5.59E-09
34	0	3.345	-0.204245	-3.264	-15.878	45.403	0.064130
		-2.336	-0.094504	36.012	-21.115	247.114	0.027764
34	1.275	3.277	-0.204245	-10.370	-15.878	36.710	-0.196324
		-1.885	-9.31E-10	12.341	1.07E-06	284.961	-5.12E-09
35	0	3.499	-0.186509	-12.698	-15.837	37.388	0.026884

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
		-1.732	1.40E-09	-7.111	2.38E-07	286.620	-1.17E-10
35	1.275	3.431	-0.186509	-19.804	-15.837	16.665	-0.210954
		-1.504	1.40E-09	-18.505	2.38E-07	270.287	-6.98E-09
36	0	3.558	-0.174901	-22.134	-15.821	17.575	-0.003685
		-1.479	-1.86E-09	-23.027	-2.98E-08	271.659	2.03E-10
36	1.275	3.490	-8.96E-13	-29.239	3.09E-12	-15.181	2.62E-14
		-1.020	-0.069317	-47.514	-1.212	220.182	-0.130109
37	0	3.600	-1.08E-13	-31.945	3.11E-12	-12.981	8.33E-13
		-0.796227	-0.064654	-53.966	3.883	221.896	-0.061062
37	1.275	3.532	-1.08E-13	-39.050	3.11E-12	-58.248	6.95E-13
		-2.009	-0.038792	-49.285	2.330	157.137	-0.086105
38	0	3.654	4.00E-13	-44.226	3.13E-12	-52.623	1.39E-13
		-1.520	-0.036726	-56.046	3.569	162.102	-0.042438
38	1.275	4.031	4.00E-13	-67.766	3.13E-12	-125.948	6.49E-13
		-1.762	4.66E-10	-43.732	-4.47E-08	107.612	-3.96E-09
39	0	4.320	2.49E-14	-87.373	3.19E-12	-110.094	5.42E-13
		-1.005	-0.100797	-55.992	-5.034	116.872	-0.057461
39	1.275	4.353	2.49E-14	-102.543	3.19E-12	-232.388	5.74E-13
		-0.707665	-1.63E-09	-69.295	-1.49E-08	41.719	-3.34E-14
40	0	4.560	-1.84E-12	-160.237	4.03E-12	-206.636	2.01E-13
		0.578662	2.80E-09	-101.379	2.98E-08	57.280	1.16E-09
40	1.275	4.117	-5.96E-08	-208.253	4.03E-12	-434.471	1.49E-08
		0.252379	-9.29E-10	-76.444	2.98E-08	-46.917	2.76E-12
41	0	-12.255	0	198.872	4.77E-07	-443.811	1.86E-08
		7.887	4.63E-10	85.019	-3.86E-12	-54.927	-2.30E-10
41	1.700	-8.207	0	143.653	0	-129.962	0
		6.734	4.63E-10	99.614	-3.58E-07	96.844	-5.59E-09
42	0	-6.841	0	86.981	0	-160.116	0
		6.223	-1.17E-09	65.848	2.98E-08	78.349	9.34E-10

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
42	1.700	-5.032	0	50.371	0	-29.313	0
		5.137	0.038694	69.289	0.122323	183.787	-0.121509
43	0	-5.048	0	46.536	0	-38.708	0
		5.874	4.64E-10	52.214	2.09E-07	173.610	2.33E-09
43	1.700	-4.120	0	31.276	5.96E-08	22.885	0
		4.819	0.008520	56.271	-10.684	269.771	-0.122282
44	0	-3.838	0	27.908	-5.96E-08	20.367	0
		5.011	0.016650	50.005	-8.581	267.483	-0.150361
44	1.700	-3.649	0	18.439	-5.96E-08	59.768	0
		2.168	9.03E-14	46.436	-1.78E-12	342.473	1.83E-12
45	0	-3.531	0	15.458	-1.19E-07	59.183	0
		2.306	0.029711	36.758	-5.177	341.899	-0.257483
45	1.700	-3.342	0	5.989	-1.19E-07	77.415	0
		2.538	4.24E-13	10.290	-1.55E-12	375.100	-7.45E-09
46	0	-3.276	0	2.948	0	77.384	0
		2.838	-1.59E-13	-10.600	-9.56E-13	375.117	-7.45E-09
46	1.700	-3.250	4.65E-13	-7.735	-5.78E-13	72.650	1.29E-12
		3.234	0.032334	-35.853	6.588	343.082	-0.209862
47	0	-3.258	5.31E-13	-10.741	-1.19E-07	73.152	-6.59E-13
		3.455	-6.19E-13	-45.528	2.38E-07	343.677	7.72E-13
47	1.700	-3.349	0.055496	-20.215	4.878	46.835	-0.055053
		6.452	0.024599	-48.529	9.428	272.277	-0.124245
48	0	-3.326	0.055491	-23.625	4.876	49.022	-0.139644
		6.786	0.032376	-54.829	11.533	274.552	-0.172856
48	1.700	-4.895	0.103046	-45.771	12.740	-4.631	-0.124126
		7.427	0.032376	-65.414	11.533	169.769	-0.117807
49	0	-4.980	0.110504	-55.551	12.737	4.302	-0.285471
		8.136	0.027048	-77.206	12.103	178.909	-0.162039
49	1.700	-5.461	-1.50E-13	-116.782	7.15E-07	-139.654	4.74E-13
		9.130	-1.96E-12	-48.206	-1.08E-12	78.322	-2.47E-12

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
50	0	-6.579	-6.05E-13	-166.253	-4.77E-07	-108.956	-5.63E-14
		10.266	-3.73E-09	-82.573	-5.53E-13	92.195	3.73E-09
50	1.700	-6.755	-6.05E-13	-199.226	4.77E-07	-433.384	-1.08E-12
		10.576	-2.66E-12	-81.377	-5.53E-13	-38.951	-1.81E-12
51	0	-0.770162	1.49E-08	168.686	0	-389.219	0
		-1.946	-1.86E-09	63.327	1.81E-12	-12.878	-3.72E-09
51	1.275	-0.172040	-1.49E-08	143.830	0	-184.734	0
		-2.152	-3.73E-09	64.300	1.81E-12	65.362	4.66E-10
52	0	0.622527	0	91.507	0	-209.266	0
		-2.748	-1.78E-13	42.020	2.98E-08	53.824	-7.45E-09
52	1.275	0.925631	0	78.159	0	-101.266	0
		-2.777	4.65E-10	36.088	2.09E-07	103.734	-1.17E-10
53	0	1.477	0	60.394	0	-115.968	0
		-2.991	-6.61E-13	27.547	-1.19E-07	97.388	-1.86E-09
53	1.275	1.964	0	39.035	0	-50.927	0
		-3.247	-6.61E-13	31.020	1.19E-07	133.086	-4.66E-10
54	0	2.224	0	34.276	0	-56.076	0
		-3.251	1.40E-09	25.182	1.49E-07	129.002	-9.29E-10
54	1.275	2.366	0	27.174	0	-16.896	0
		-3.161	1.40E-09	14.397	-3.28E-07	154.237	-3.48E-10
55	0	2.470	0	24.547	0	-18.977	0
		-3.131	-3.26E-09	10.008	-2.38E-07	152.406	4.19E-09
55	1.275	2.612	0	17.445	0	7.798	0
		-3.042	-3.26E-09	-0.777158	1.80E-12	158.291	3.07E-10
56	0	2.583	0	15.200	0	6.716	0
		-2.982	-4.66E-09	-4.831	1.19E-07	156.785	-3.26E-09
56	1.275	2.725	0.161097	8.098	17.299	21.571	-0.005974
		-2.893	-4.66E-09	-15.616	-5.96E-08	143.748	-4.66E-10

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
57	0	2.542	0.154011	6.248	16.821	20.302	-0.176819
		-2.768	1.86E-09	-18.679	5.96E-07	140.971	4.19E-09
57	1.275	2.684	0.154011	-0.853239	16.821	23.742	0.019576
		-2.679	1.86E-09	-29.464	8.34E-07	110.275	-1.33E-13
58	0	2.276	0.134057	-0.999526	15.500	21.280	-0.132860
		-2.402	4.34E-11	-28.181	-4.77E-07	104.201	-2.39E-09
58	1.275	2.418	0.134057	-8.101	15.500	15.478	0.038090
		-2.313	4.34E-11	-38.966	4.77E-07	61.388	6.26E-13
59	0	1.604	0.087409	-3.060	12.213	11.332	-0.086360
		-1.638	-9.31E-10	-24.541	-2.38E-07	50.961	-2.50E-09
59	1.275	1.746	0	-10.161	0	2.902	0
		-1.548	-9.31E-10	-35.326	-2.38E-07	12.790	4.89E-13
60	0	0.120003	0.007335	2.199	6.012	1.084	-0.067734
		-0.069512	2.70E-13	-2.371	4.87E-13	8.225	9.89E-10
60	1.275	0.070109	-9.31E-10	-13.295	-3.58E-07	-1.707	1.86E-09
		0.262032	0.007335	-4.903	6.012	-0.640283	-0.058381
61	0	-4.595	-3.180	95.497	-33.864	-26.522	0.726626
		3.463	9.415	-1.250	15.664	12.221	-0.728327
61	1.275	3.587	7.311	-7.443	12.298	6.679	10.003
		-4.323	-3.021	86.138	-26.120	96.486	-3.234
62	0	4.313	-2.125	30.163	-22.047	8.649	-3.312
		-4.048	2.192	43.024	1.966	75.981	3.137
62	1.275	3.208	3.740	-8.767	11.579	18.153	9.038
		-2.263	-2.484	37.860	-22.374	124.795	-4.686
63	0	4.843	-1.881	20.529	-17.404	16.890	-5.252
		-4.051	1.865	19.239	5.668	115.775	4.874
63	1.275	1.781	1.704	-8.125	4.852	20.573	5.689
		-1.231	-2.260	38.812	-20.256	150.932	-6.167
64	0	5.247	-1.448	10.731	-12.179	18.054	-6.507
		-4.315	1.517	16.058	4.378	136.967	5.796

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
64	1.275	0.821548	1.399	-13.217	5.322	15.484	7.039
		0.234326	-1.851	14.688	-15.061	174.639	-7.669
65	0	5.722	-1.337	5.666	-11.870	12.868	-7.808
		-3.967	1.353	-8.244	2.019	166.389	6.269
65	1.275	0.067197	1.198	-18.189	5.251	4.131	8.283
		1.468	-1.528	-6.607	-9.824	157.638	-9.072
66	0	6.142	-1.171	0.574190	-12.214	1.300	-9.013
		-4.215	1.162	-11.707	4.927	154.726	7.047
66	1.275	-0.550243	0.758093	-23.154	4.587	-13.845	9.119
		2.527	-1.112	-28.951	-6.605	121.815	-10.107
67	0	6.489	-0.932963	-4.312	-13.476	-17.221	-10.089
		-4.088	1.209	-36.230	4.768	121.395	7.565
67	1.275	-1.076	0.596399	-27.965	2.930	-38.787	9.830
		4.940	-1.358	-2.777	-17.648	90.655	-20.201
68	0	6.747	-0.641070	-7.882	-16.005	-43.449	-10.997
		-9.398	1.797	-38.680	7.136	84.266	17.730
68	1.275	-1.440	0.318746	-40.127	-1.712	-78.456	10.209
		5.666	-0.653235	-10.574	-17.439	67.979	-20.739
69	0	6.924	-0.374184	-12.606	-20.986	-87.020	-11.639
		-9.969	1.756	-26.133	0.710950	54.512	17.589
69	1.275	-1.975	0.457115	-42.543	-7.721	-126.833	11.130
		6.210	-0.370626	-18.458	-16.479	39.194	-21.433
70	0	-1.383	1.186	-7.882	-11.297	-138.494	8.260
		5.831	-0.330161	-0.146043	-11.715	19.748	-21.907
70	1.275	-1.866	0.710181	-25.715	-5.784	-158.686	10.936
		5.607	-0.287962	1.190	-13.590	19.475	-21.850
71	0	-1.647	2.468	47.224	6.120	-161.100	6.541
		5.221	-1.823	18.343	0.543164	6.514	-22.853
71	1.700	-6.882	1.889	9.491	15.923	-112.448	12.369

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
		14.428	-2.438	12.371	-1.703	43.362	-26.974
72	0	-8.692	2.330	41.446	11.678	-90.659	11.110
		15.777	-2.177	31.996	2.973	45.857	-25.786
72	1.700	-7.614	1.645	23.253	13.279	-34.960	13.150
		15.916	-2.206	13.681	3.260	89.234	-29.728
73	0	-7.857	1.551	27.337	1.171	-27.544	11.362
		15.763	-1.298	26.550	5.523	94.668	-28.055
73	1.700	-7.507	0.890065	13.159	4.472	5.902	13.459
		15.279	-1.434	30.930	-0.846553	143.512	-30.850
74	0	-8.250	1.052	17.585	0.789787	8.466	13.650
		15.086	-0.807774	29.203	0.857860	141.275	-28.729
74	1.700	-7.615	0.340172	7.052	1.593	28.960	13.819
		8.223	-0.207853	29.444	-3.070	190.839	-17.443
75	0	-8.393	0.678540	10.140	0.596832	30.234	14.860
		8.271	0.033423	37.488	-2.334	185.018	-17.649
75	1.700	-7.702	-0.068440	0.397874	0.771499	39.191	14.103
		8.662	0.033423	3.955	-0.538484	208.062	-17.628
76	0	-8.267	0.296825	3.535	0.148155	39.924	15.229
		8.953	0.374008	-5.199	1.608	208.966	-17.969
76	1.700	4.028	0.290754	-7.637	1.792	36.658	-16.082
		-2.305	-0.366355	-37.303	1.933	184.794	12.650
77	0	-8.110	-0.031777	-3.757	-0.610878	36.932	15.145
		9.208	0.817463	-30.035	4.146	192.359	-17.938
77	1.700	4.130	0.787224	-18.401	3.944	21.163	-16.845
		-7.158	-1.657	-27.313	-3.464	143.151	29.217
78	0	-8.323	-0.469905	-9.658	-3.581	20.982	15.309
		16.196	2.180	-31.771	2.714	147.455	-31.462
78	1.700	-7.359	-0.992031	-30.367	2.792	-11.937	9.629
		15.306	2.065	-38.081	-2.357	87.251	-24.945

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
79	0	-9.035	-0.807829	-16.012	-9.969	-14.490	14.973
		15.501	3.011	-39.207	1.021	88.895	-30.037
79	1.700	-8.011	-1.279	-61.348	-4.017	-83.356	8.642
		15.473	2.765	-24.678	-1.301	41.403	-22.398
80	0	-8.507	-0.621292	-16.199	-13.587	-99.045	13.312
		14.184	2.766	-16.782	3.801	42.541	-26.246
80	1.700	-0.921309	-0.804393	-45.491	-5.172	-150.837	7.818
		4.934	1.977	-16.622	2.469	11.749	-21.130
81	0	-1.982	0.529264	25.677	5.484	-146.399	9.817
		5.620	0.874351	-2.326	12.573	26.600	-21.637
81	1.275	7.171	1.439	-5.283	18.386	-126.974	-11.891
		-10.791	-1.912	18.951	-2.191	21.872	19.868
82	0	-2.190	0.434067	40.042	6.310	-116.488	10.154
		5.687	0.895656	2.841	15.023	40.097	-21.185
82	1.275	7.106	1.356	8.856	21.720	-81.595	-12.082
		-10.384	-1.581	24.680	-5.687	49.810	19.731
83	0	-1.839	-0.146241	37.495	0.511336	-73.275	9.898
		5.147	1.344	1.409	14.926	58.991	-20.418
83	1.275	6.674	1.307	4.318	16.892	-42.500	-11.138
		-9.745	-2.217	25.818	-8.187	70.313	18.212
84	0	-1.378	-0.556144	26.238	-3.836	-37.714	9.523
		4.392	2.156	1.717	14.864	75.637	-19.503
84	1.275	6.206	1.507	0.531267	14.568	-19.704	-9.866
		-8.947	-2.575	18.514	-11.063	86.566	16.463
85	0	-0.873343	-0.987787	21.421	-5.285	-15.962	8.766
		3.589	2.664	-6.323	14.443	89.714	-17.735
85	1.275	5.750	1.594	-4.437	13.476	-4.554	-8.471
		-8.037	-3.101	10.719	-12.243	91.263	14.100
86	0	-0.242509	-1.450	16.510	-5.685	-1.007	7.650

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
		2.653	3.250	-14.722	14.905	93.682	-15.405
86	1.275	5.302	1.714	-9.723	13.249	3.489	-6.882
		-7.022	-3.671	2.944	-12.190	85.571	11.220
87	0	0.517958	-1.844	11.576	-5.319	7.709	6.121
		1.581	3.829	-23.968	16.128	87.717	-12.440
87	1.275	5.264	2.101	-21.153	17.953	3.147	-5.622
		-6.168	-4.314	-1.598	-13.595	70.916	8.209
88	0	1.413	-2.165	6.254	-4.273	10.864	4.199
		0.391946	4.462	-36.307	17.323	71.349	-8.805
88	1.275	7.136	4.076	-35.348	21.480	-8.922	-4.986
		-5.165	-4.798	-8.112	-12.481	47.835	4.188
89	0	2.481	-2.580	-0.543467	-3.030	8.834	2.033
		-0.943005	5.464	-57.443	14.970	39.920	-4.561
89	1.275	-0.704363	5.864	-73.605	20.995	-51.221	2.425
		0.938827	-9.738	8.608	-15.623	27.007	-3.784
90	0	-0.075703	-0.501885	26.686	8.535	-32.398	0.740679
		-0.336788	1.855	-1.303	-6.700	11.533	-1.313
90	1.275	-0.184447	-0.878316	13.946	9.226	-5.140	-0.126265
		-0.110213	-0.027693	-5.407	-9.969	6.184	-0.097382
91	0	-0.501412	0.046475	45.966	-21.961	-28.899	0.102413
		0.447558	0.432568	-13.245	13.418	16.296	-0.427539
91	2.000	0.321594	0.296628	-13.429	13.397	-11.100	0.300736
		-0.501412	0.046475	45.966	-21.961	63.029	0.195360
92	0	0.738429	-0.452070	12.379	-12.221	-9.081	0.451293
		-0.604053	-0.069109	-49.232	26.525	64.590	0.208831
92	2.000	-0.604053	-0.069109	-49.232	26.525	-33.871	0.070619
		0.738429	-0.452070	12.379	-12.221	15.676	-0.452811
93	0	-0.779036	0.172859	8.637	-25.979	-2.511	0.132501
		-0.033314	2.095	1.384	21.302	7.781	-2.045

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
93	2.000	-0.139749	1.985	-1.400	21.347	1.750	2.014
		-0.442638	-1.132	19.104	-31.684	37.299	-0.482231
94	0	-0.276584	-2.743	0.901178	-18.915	3.499	2.765
		-0.442638	1.132	-19.104	31.684	37.299	-0.482228
94	2.000	-0.808911	-0.051372	-12.090	37.806	-3.573	0.345492
		-0.033314	-2.095	-1.384	-21.302	7.781	-2.045
95	0	-0.038426	0.723039	-0.712751	13.554	0.499725	-0.727714
		-0.626604	-0.523262	-2.018	-15.039	7.282	0.685253
95	2.000	-0.026947	0.452660	-2.875	1.168	-1.580	0.501448
		-0.626969	-0.436570	1.838	-11.687	9.550	-0.197905
96	0	-0.026881	-0.452371	2.888	-1.161	-1.595	0.501096
		-0.626969	0.436570	-1.838	11.687	9.550	-0.197905
96	2.000	-0.029944	-0.589487	0.645782	-7.006	0.605613	-0.583596
		-0.626538	0.523551	2.031	15.046	7.293	0.685479
97	0	0.015896	0.400444	0.426772	18.102	-1.803	-0.444044
		-2.195	-0.162617	-1.420	-1.253	4.939	0.269545
97	2.000	0.041686	0.051906	-4.490	-4.343	-6.983	-0.024481
		-1.395	-0.151864	0.266432	6.775	2.839	-0.077774
98	0	0.065424	0.033439	5.854	16.182	-8.334	-0.109002
		-2.184	0.148385	1.003	0.939957	2.547	-0.039618
98	2.000	0.047268	-0.333182	1.614	-8.245	-0.317865	-0.394111
		-0.699514	0.465016	5.198	22.207	5.645	0.475699
99	0	0.054128	0.191983	0.985242	8.530	-4.051	-0.292068
		-2.242	-0.078158	-1.653	-0.534296	3.879	0.147128
99	2.000	0.046221	0.026794	-3.252	-0.986190	-7.185	-0.100951
		-0.767928	0.018474	1.766	6.531	1.900	0.020277
100	0	0.058305	0.115901	8.592	8.102	-13.680	-0.281572
		-2.224	0.071746	1.179	0.394875	1.406	0.009599
100	2.000	0.071249	-0.125582	1.952	-2.348	-1.091	-0.226058
		-0.763751	0.289411	7.811	10.101	5.921	0.225619

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
101	0	0.029071	0.107899	0.066656	1.985	-4.636	-0.259454
		-2.244	-0.012828	-1.172	-0.323801	3.206	0.077653
101	2.000	0.032567	0.007664	-2.640	-1.182	-7.279	-0.144905
		-1.448	0.025359	0.330644	1.258	0.906426	0.042488
102	0	0.036210	0.121172	7.555	2.964	-13.653	-0.320790
		-2.244	0.012828	1.172	0.323801	0.861806	0.051998
102	2.000	0.031432	-0.032558	2.639	-0.268626	-2.000	-0.185697
		-0.769434	0.156326	6.287	2.654	4.158	0.086822
103	0	0.004719	0.072237	-1.277	-2.563	-4.891	-0.276217
		-2.251	0.047670	-1.247	-0.640409	2.566	-0.005767
103	2.000	-0.005074	0.028306	-2.706	-1.624	-8.836	-0.174704
		-2.251	0.047670	-1.247	-0.640409	0.072284	0.089569
104	0	0.009395	0.068075	5.377	-0.130997	-12.537	-0.302378
		-2.251	-0.047670	1.247	0.640411	0.072284	0.089569
104	2.000	0.001714	0.083814	2.754	10.373	-3.450	-0.118592
		-2.251	-0.047670	1.247	0.640411	2.566	-0.005767
105	0	-0.050176	0.117273	-3.183	3.899	-7.004	-0.451694
		-2.262	0.121926	-1.865	-1.611	1.640	-0.129295
105	2.000	-0.038143	0.015652	-4.526	-4.109	-14.521	-0.312019
		-2.262	0.121926	-1.865	-1.611	-2.090	0.114546
106	0	-0.019619	0.119016	7.261	12.855	-18.454	-0.484541
		-2.262	-0.121926	1.865	1.611	-2.090	0.114546
106	2.000	-0.035816	0.075928	4.690	12.852	-5.500	-0.256947
		-2.262	-0.121926	1.865	1.611	1.640	-0.129296
107	0	-0.241343	0.382741	-8.585	-3.231	-8.497	-0.929359
		-2.123	-0.025783	-5.536	-4.190	1.175	-0.115896
107	2.000	-0.058993	-0.129348	-12.084	-9.162	-30.219	-0.719946
		-2.251	0.201998	-4.617	-3.721	-8.176	0.089057

ENVOLVENTE para < My > (y valores concomitantes)
(1. linea: MIN., 2. linea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
108	0	-0.075753	0.295375	16.611	14.776	-36.586	-0.951548
		-2.251	-0.201998	4.617	3.721	-8.176	0.089058
108	2.000	-0.268332	-0.287379	10.563	8.409	-6.280	-0.832220
		-2.123	0.025783	5.536	4.190	1.175	-0.115896
109	0	-0.942207	0.383388	-20.171	-5.953	-2.943	-1.168
		0.795949	-0.657118	-21.599	-27.838	7.363	0.387276
109	2.000	-0.941557	-0.598504	-33.790	-8.815	-65.632	-1.691
		0.737285	-0.124419	-12.591	-24.638	-19.566	-0.152848
110	0	-1.087	0.742761	38.849	10.559	-73.013	-1.926
		0.737285	0.124419	12.591	24.638	-19.566	-0.152843
110	2.000	-2.032	-0.629377	16.164	2.723	-2.007	-1.328
		0.430811	0.970499	29.643	21.652	8.117	0.374973
111	0	-0.021257	-1.642	-29.129	2.838	8.824	0.734655
		-0.801540	0.567273	-65.913	-4.175	20.147	-2.554
111	2.000	-1.503	-0.703676	-72.080	3.971	-124.229	-2.965
		2.319	-0.165509	-10.155	-16.754	-10.562	-0.255958
112	0	-1.840	0.862743	79.784	-1.060	-135.960	-3.297
		2.319	0.165509	10.155	16.754	-10.562	-0.255967
112	2.000	-0.021257	1.642	29.129	-2.838	8.824	0.734655
		-1.141	-0.278103	73.643	6.638	23.813	-2.441
113	0	-0.706803	-0.120516	-19.865	13.512	-6.706	-1.384
		-0.040867	-1.917	-22.758	5.778	6.151	0.852966
113	2.000	-0.564388	0.909725	-33.976	18.936	-69.568	-1.068
		-0.188269	-1.932	-12.157	3.690	-22.148	-2.588
114	0	-0.677911	-0.917292	40.718	-16.581	-79.281	-1.203
		-0.188269	1.932	12.157	-3.690	-22.148	-2.588
114	2.000	-0.913417	0.133211	20.216	-12.456	-4.247	-1.214
		0.035916	0.849885	30.361	-10.402	6.649	-0.551274
115	0	0.334767	0.348666	-5.976	4.074	-10.398	-1.286
		-2.751	0.048221	-3.481	3.009	1.714	-0.146557

ENVOLVENTE para < My > (y valores concomitantes)
(1. linea: MIN., 2. linea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
115	2.000	0.324698	0.385214	-8.122	7.068	-24.164	-0.534136
		-2.751	0.048221	-3.481	3.009	-5.248	-0.050119
116	0	0.352578	-0.423130	12.790	-11.071	-30.818	-0.610501
		-2.751	-0.048221	3.481	-3.009	-5.248	-0.050119
116	2.000	0.337871	-0.394310	8.073	-7.099	-7.966	-1.314
		-2.751	-0.048221	3.481	-3.009	1.714	-0.146557
117	0	0.282309	0.177917	-2.451	10.696	-5.784	-0.663872
		-2.746	0.033577	-1.625	0.821917	3.201	0.055752
117	2.000	0.279430	0.180546	-3.461	1.958	-11.690	-0.306921
		-2.746	0.033577	-1.625	0.821917	-0.048008	0.122903
118	0	0.295890	-0.205755	5.183	7.478	-14.191	-0.331129
		-2.746	-0.033577	1.625	-0.821917	-0.048009	0.122903
118	2.000	0.284981	-0.260218	3.523	-7.045	-4.796	-0.759418
		-2.746	-0.033577	1.625	-0.821917	3.201	0.055752
119	0	0.160903	0.027184	-0.624660	5.099	-5.543	-0.397468
		-2.773	0.003360	-1.511	0.188922	4.063	0.138663
119	2.000	0.159757	0.062399	-3.139	1.498	-9.050	-0.296999
		-2.773	0.003360	-1.511	0.188922	1.042	0.145383
120	0	0.162295	-0.026317	8.149	4.969	-15.917	-0.443255
		-2.773	-0.003360	1.511	-0.188922	1.042	0.145383
120	2.000	0.167137	-0.125990	3.206	-5.232	-2.796	-0.496052
		-1.674	0.038594	4.512	3.053	4.128	0.011920
121	0	0.031843	-0.041706	0.048870	-0.372379	-5.843	-0.300869
		-2.819	-0.002936	-1.531	0.003211	4.282	0.153949
121	2.000	0.034645	-0.038028	-3.182	0.006790	-8.606	-0.361207
		-2.819	-0.002936	-1.531	0.003211	1.220	0.148077
122	0	0.034292	0.100740	9.716	-0.357913	-17.509	-0.561938
		-2.819	0.002936	1.531	-0.003211	1.220	0.148077
122	2.000	0.033046	0.054381	2.937	0.007214	-2.308	-0.259403

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
		-0.842969	0.062534	8.059	-0.367944	5.266	-0.108896
123	0	-0.023960	-0.047384	-0.625452	-6.884	-5.554	-0.310648
		-2.878	0.016029	-1.514	-0.175124	4.088	0.123162
123	2.000	-0.020379	-0.035825	-3.152	-0.398936	-8.973	-0.375723
		-2.878	0.016029	-1.514	-0.175124	1.060	0.155218
124	0	-0.014609	0.066616	8.149	-6.733	-15.929	-0.520905
		-2.878	-0.016029	1.514	0.175124	1.060	0.155218
124	2.000	-0.026402	0.047153	2.960	0.503567	-2.788	-0.288899
		-1.758	-0.000273	4.513	-4.117	4.129	-0.033573
125	0	-0.025971	-0.037112	-2.480	-11.456	-5.795	-0.432445
		-2.943	0.075677	-1.621	-0.768637	3.284	0.012357
125	2.000	-0.030122	-0.012771	-3.457	-1.975	-11.562	-0.476052
		-2.943	0.075677	-1.621	-0.768637	0.041978	0.163704
126	0	-0.013503	-0.025030	5.217	-8.180	-14.262	-0.495618
		-2.943	-0.075677	1.621	0.768637	0.041977	0.163704
126	2.000	-0.030122	0.012771	3.457	1.975	-4.648	-0.450511
		-2.943	-0.075677	1.621	0.768637	3.284	0.012357
127	0	0.038818	-0.168130	-8.047	-17.204	-7.688	-0.721098
		-2.977	0.181272	-3.360	-2.816	1.895	-0.265447
127	2.000	0.025011	-0.130641	-8.301	-6.897	-24.030	-1.027
		-2.977	0.181272	-3.360	-2.816	-4.824	0.097082
128	0	0.029912	0.078757	8.651	-3.636	-24.734	-1.003
		-2.977	-0.181272	3.360	2.816	-4.824	0.097082
128	2.000	0.029912	0.078757	8.651	-3.636	-7.433	-0.845242
		-2.977	-0.181272	3.360	2.816	1.895	-0.265447
129	0	-1.091	-0.315176	-18.163	-9.131	-2.965	-0.928120
		0.321931	1.508	-21.769	-1.500	6.246	-2.251
129	2.000	-0.852421	-1.964	-33.575	-18.787	-67.626	-3.967
		0.044096	1.625	-11.919	-2.547	-21.235	1.194

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
130	0	-0.921357	1.922	33.613	8.370	-67.991	-3.964
		0.051774	-1.655	11.916	1.044	-21.248	1.223
130	2.000	-1.078	0.264163	18.159	6.627	-2.995	-0.982376
		0.321931	-1.508	21.769	1.500	6.247	-2.251
131	0	0.025054	0.694858	-26.770	-1.641	8.142	-1.496
		-0.521737	-2.832	-58.767	-1.162	18.311	1.029
131	2.000	-1.235	-1.842	-65.876	-1.062	-113.682	-3.871
		1.877	0.424441	-8.421	20.048	-7.737	0.202518
132	0	-1.388	1.781	66.792	-7.822	-115.642	-3.853
		1.877	-0.424441	8.421	-20.048	-7.737	0.202513
132	2.000	0.030211	-0.706981	26.822	0.326359	8.125	-1.515
		-0.680375	2.772	59.687	-7.709	18.210	0.928268
133	0	-1.315	-0.975133	-14.320	-3.473	-2.438	0.515965
		0.141519	0.608520	-20.404	29.852	7.205	-1.180
133	2.000	-0.489138	-0.289229	-28.404	6.489	-56.498	-1.150
		-0.030027	-0.203361	-9.584	16.877	-16.568	-0.525012
134	0	-0.544100	0.197924	28.431	-13.695	-56.792	-1.061
		-0.033831	0.187377	9.587	-17.969	-16.589	-0.509986
134	2.000	-1.348	0.920352	14.337	-0.850572	-2.581	0.459506
		0.141519	-0.608520	20.404	-29.852	7.205	-1.180
135	0	-0.012643	-0.216853	-8.689	7.050	-5.929	-0.259621
		-1.970	0.116633	-5.262	3.931	1.334	-0.241548
135	2.000	0.186334	0.112259	-10.231	7.810	-26.152	-0.402631
		-1.329	-0.216795	-3.462	1.814	-7.002	-0.333149
136	0	0.181340	-0.204247	10.191	-14.897	-26.184	-0.312497
		-1.331	0.199685	3.461	-2.900	-7.005	-0.316379
136	2.000	-0.017637	0.124864	8.649	-14.136	-6.041	-0.353457
		-1.970	-0.116633	5.262	-3.931	1.334	-0.241548
137	0	0.192862	0.108108	-4.082	3.475	-4.853	-0.398617

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
		-2.097	-0.007587	-1.794	1.501	1.812	0.007567
137	2.000	0.187217	0.015899	-4.108	-3.563	-13.029	-0.272043
		-2.097	-0.007587	-1.794	1.501	-1.776	-0.007606
138	0	0.192862	-0.108108	4.082	-3.475	-13.017	-0.182410
		-2.097	0.007587	1.794	-1.501	-1.776	-0.007606
138	2.000	0.198405	-0.200329	4.055	-10.515	-4.895	-0.493488
		-2.097	0.007587	1.794	-1.501	1.812	0.007567
139	0	0.184986	0.033662	-2.631	1.446	-2.956	-0.216197
		-2.108	0.001070	-1.235	0.656111	2.741	0.046738
139	2.000	0.182924	-0.073385	-2.658	-6.478	-8.251	-0.253079
		-2.108	0.001070	-1.235	0.656111	0.270891	0.048879
140	0	0.186197	-0.020241	2.634	-0.540807	-8.220	-0.161939
		-2.108	-0.001070	1.235	-0.656111	0.270891	0.048879
140	2.000	0.187892	-0.127249	2.607	-8.464	-2.974	-0.312285
		-2.108	-0.001070	1.235	-0.656111	2.741	0.046738
141	0	0.174617	-0.033445	-2.345	1.760	-1.559	-0.095162
		-2.121	0.003526	-1.114	0.491234	3.461	0.071306
141	2.000	0.178092	-0.188890	-2.433	-9.521	-6.366	-0.314235
		-2.121	0.003526	-1.114	0.491234	1.232	0.078358
142	0	0.177685	0.095575	2.378	2.524	-6.284	-0.222658
		-2.121	-0.003526	1.114	-0.491234	1.232	0.078358
142	2.000	0.173855	-0.059830	2.290	-8.757	-1.587	-0.190165
		-2.121	-0.003526	1.114	-0.491234	3.461	0.071306
143	0	0.137702	-0.034399	-1.426	7.587	-0.775905	-0.042242
		-2.116	0.006602	-1.168	1.141	4.330	0.094469
143	2.000	0.165125	-0.313154	-2.264	-12.379	-4.793	-0.393445
		-2.132	0.018268	-0.815065	0.849371	2.471	0.123893
144	0	0.161270	0.222545	2.097	5.441	-4.556	-0.303127
		-2.132	-0.018268	0.815065	-0.849371	2.471	0.123893

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
144	2.000	0.133543	-0.056192	1.259	-14.525	-0.872897	-0.133106
		-2.116	-0.006602	1.168	-1.141	4.330	0.094469
145	0	-0.222512	0.455353	1.113	19.516	-0.923780	-0.479629
		-1.111	-1.831	-1.846	-24.301	5.858	2.028
145	2.000	-0.212646	-0.982886	-2.116	-22.717	-2.343	-0.970712
		-1.020	1.958	2.994	29.195	6.496	2.005
146	0	-0.222441	0.895905	1.622	15.976	-1.684	-0.881285
		-1.020	-1.958	-2.994	-29.195	6.496	2.005
146	2.000	-0.232588	-0.542310	-1.607	-26.257	-1.252	-0.564120
		-1.111	1.831	1.846	24.301	5.858	2.028
147	0	-0.838166	0.695130	8.206	23.731	-3.805	-0.630230
		-0.771735	-1.625	0.014977	-20.307	7.074	1.951
147	2.000	-0.173085	-1.118	-2.078	-21.386	0.292769	-1.019
		-1.349	2.130	11.676	28.683	19.761	2.300
148	0	-0.448709	1.697	1.572	18.448	1.904	-1.544
		-0.833560	-1.708	-11.999	-27.774	19.960	1.915
148	2.000	-0.465805	-0.415787	-8.650	-26.817	-4.747	-0.339315
		-0.771735	1.625	-0.014977	20.307	7.074	1.951
149	0	-1.073	2.151	24.770	16.442	-11.466	-1.759
		-0.383599	-2.361	-2.815	-15.474	8.872	2.629
149	2.000	-0.143085	-1.399	-2.384	-14.075	1.274	-1.271
		-1.069	2.149	24.684	15.771	38.091	2.543
150	0	-0.383599	2.361	2.815	15.474	3.242	-2.093
		-1.080	-2.189	-25.378	-17.034	38.909	2.587
150	2.000	-0.576877	-1.605	-24.067	-18.293	-12.570	-1.250
		-0.383599	2.361	2.815	15.474	8.872	2.629
151	0	-1.028	0.345474	16.021	4.835	-8.824	-0.285246
		-0.183005	-0.363535	-7.491	-5.922	10.060	0.380918
151	2.000	-0.183564	-0.234853	-7.250	-5.816	-5.777	-0.228647
		-1.028	0.345474	16.021	4.835	23.217	0.405675

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
152	0	-0.183005	0.363535	7.491	5.922	-4.920	-0.346123
		-0.505200	-0.332366	-16.573	-4.813	23.807	0.395482
152	2.000	-0.217883	-0.252508	-15.810	-4.707	-9.370	-0.195531
		-0.183005	0.363535	7.491	5.922	10.060	0.380918
201	0	-365.372	2.47E-12	15.531	5.72E-13	-77.049	-1.36E-11
		-421.829	7.45E-09	-13.558	1.86E-09	58.943	1.68E-11
201	10.255	-394.956	7.45E-09	-13.558	1.86E-09	-80.086	-2.38E-07
		-345.466	2.47E-12	15.531	5.72E-13	82.218	1.17E-11
202	0	-454.100	3.71E-13	19.113	-3.73E-09	-88.188	-1.49E-08
		-277.782	0	-8.936	0	51.001	0
202	10.595	-257.216	0	-8.936	0	-43.670	0
		-426.336	3.71E-13	19.113	-3.73E-09	114.311	4.77E-07

ENVOLVENTE para < Mz > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
201	0	-264.984	66.839	3.940	-0.849426	-25.423	-271.422
		-382.669	-66.839	-6.390	0.849426	29.750	271.422
201	10.255	-355.797	-14.694	-6.390	0.849426	-35.775	-146.620
		-245.079	14.694	3.940	-0.849426	14.980	146.620
202	0	-263.542	66.274	-4.795	-0.446446	30.180	-271.910
		-348.254	-66.274	7.615	0.446446	-34.504	271.910
202	10.595	-239.407	-12.401	5.955	0.446446	34.391	-144.851
		-324.059	12.401	-3.135	-0.446446	-8.843	144.851

ENVOLVENTE DE REACCIONES EN APOYOS:
(1. línea/2. línea: MIN./MAX. de cada componente)

NUDOS	FX [t]	FY [t]	FZ [t]	MX [tm]	MY [tm]	MZ [tm]
1	-6.546	-10.213	-16.256			
	4.229	10.213	143.816			
3	-6.552	-10.213	-13.698			
	4.225	10.213	162.560			
88	-4.993	-11.310	-14.144			
	5.644	11.310	121.612			
90	-5.000	-11.310	-12.699			
	5.640	11.310	125.732			
101	-15.531	-66.840	251.112	-271.436	-77.052	-0.849426
	13.558	66.840	559.518	271.436	58.946	0.869975
102	-19.113	-66.275	229.672	-271.924	-88.193	-0.446446
	8.936	66.275	504.932	271.924	51.002	0.625451

2 PORTICO TRIDIMENSIONAL

Se presenta a continuación las características geométricas y los resultados de las distintas hipótesis y combinaciones de hipótesis considerados en el cálculo.

****
* DATOS - ESTRUCTURA *
****

Titulo proy.: Calculo del paso superior 101.7 11-JUN-98

Unidades : M , T

D A T O S D E N U D O S:(33 Nudo)

Nudo	X [M]	Y [M]	Z [M]	Apoyo V XYZ	Apoyo R XYZ	Especial
1	0.00000	0.00000	0.00000	SSB	BFF	
2	1.27500	0.00000	0.00000			
3	2.55000	0.00000	0.00000			
4	3.82500	0.00000	0.00000			
5	5.10000	0.00000	0.00000			
6	6.37500	0.00000	0.00000			
7	7.65000	0.00000	0.00000			
8	8.92500	0.00000	0.00000			
9	10.20000	0.00000	0.00000			
10	11.47500	0.00000	0.00000			
11	12.75000	0.00000	0.00000			
12	14.45000	0.00000	0.00000			
13	16.15000	0.00000	0.00000			
14	17.85000	0.00000	0.00000			
15	19.55000	0.00000	0.00000			
16	21.25000	0.00000	0.00000			
17	22.95000	0.00000	0.00000			
18	24.65000	0.00000	0.00000			
19	26.35000	0.00000	0.00000			
20	28.05000	0.00000	0.00000			
21	29.75000	0.00000	0.00000			
22	31.02500	0.00000	0.00000			
23	32.30000	0.00000	0.00000			
24	33.57500	0.00000	0.00000			
25	34.85000	0.00000	0.00000			
26	36.12500	0.00000	0.00000			
27	37.40001	0.00000	0.00000			
28	38.67501	0.00000	0.00000			
29	39.95001	0.00000	0.00000			
30	41.22501	0.00000	0.00000			
31	42.50001	0.00000	0.00000	SSB	BFF	
101	12.75000	0.00000	-10.00000	BBB	BBB	
102	29.75000	0.00000	-10.00000	BBB	BBB	

NUDOS CON APOYO ELASTICO: ("B"=Bloqueado "F"=Libre)

Nudo	D-X [T/M]	D-Y [T/M]	D-Z [T/M]	R-X [TM/ARC]	R-Y [TM/ARC]	R-Z [TM/ARC]
1	6.667E+02	6.667E+02	B	B	F	F
31	6.667E+02	6.667E+02	B	B	F	F

D A T O S B A R R A S : (32 Barras)

Barra	Incidencias Inicio	Fin	Long.Barras [M]	Nombre-sec. (Cant.var)	Articulaciones Inicio	Fin	Especial
1	1	2	1.27500	SECTOTAL			
2	2	3	1.27500	SECTOTAL			
3	3	4	1.27500	SECTOTAL			
4	4	5	1.27500	SECTOTAL			
5	5	6	1.27500	SECTOTAL			
6	6	7	1.27500	SECTOTAL			
7	7	8	1.27500	SECTOTAL			
8	8	9	1.27500	SECTOTAL			
9	9	10	1.27500	SECTOTAL			
10	10	11	1.27500	SECTOTAL			
11	11	12	1.70000	SECTOTAL			
12	12	13	1.70000	SECTOTAL			
13	13	14	1.70000	SECTOTAL			
14	14	15	1.70000	SECTOTAL			
15	15	16	1.70000	SECTOTAL			
16	16	17	1.70000	SECTOTAL			
17	17	18	1.70000	SECTOTAL			
18	18	19	1.70000	SECTOTAL			
19	19	20	1.70000	SECTOTAL			
20	20	21	1.70000	SECTOTAL			
21	21	22	1.27500	SECTOTAL			
22	22	23	1.27500	SECTOTAL			
23	23	24	1.27500	SECTOTAL			
24	24	25	1.27500	SECTOTAL			
25	25	26	1.27500	SECTOTAL			
26	26	27	1.27500	SECTOTAL			
27	27	28	1.27500	SECTOTAL			
28	28	29	1.27500	SECTOTAL			
29	29	30	1.27500	SECTOTAL			
30	30	31	1.27500	SECTOTAL			
201*	101	11	10.00000	PILA			
202*	102	21	10.00000	PILA			

Las barras marcadas con "*" son verticales. Sus ejes locales son
tales que la dirección 'y' resulta coincidente con la global siempre
y cuando no se haya rotado con la instruction 'O_ORIENTACION'.

CARACTERISTICAS DE SEC. / Nombre Sec.	Ax [M2] / Ix [M4] / zi [M1]	Iy [M4] / Fy [M2] / zs [M1]	Iz [M4] / Fz [M2] / yi [M1]	Phi[grados] / yd [M1]
PILA	7.7646E-01	4.7978E-02	4.7978E-02	0.00
	9.8175E-02	Undef	Undef	
	-0.5000	0.5000	-0.5000	0.5000
SECTOTAL	5.0900E+00	4.3722E-01	1.5457E+01	0.00
	8.2000E-01	Undef	Undef	
	-0.6200	0.4400	-4.2000	4.2000

MATERIALES:

Barra (hasta barra)	E-Módulo [T/ M2]	G-Módulo [T/ M2]
1 .. 202	3.2910E+06	1.2500E+06

STS-cálculo ok
Max free mem:157kB

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Hipótesis 1: Peso propio y barandillas
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Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras
P grav. Z gl const.	-2.500		Barra 201 .. 202 1 .. 30
Fuerza Z gl const.	-1.600		Barra 1 .. 30

Hipótesis 2: Pavimento 1

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras	
Fuerza Z gl const.	-0.960000		Barra	1 .. 30

Hipótesis 3: Sobrecarga de uso 1

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras	
Fuerza Z gl const.	-1.680		Barra	1 .. 5
Momento X gl const.	3.528		Barra	6 .. 10

Hipótesis 4: Sobrecarga de uso 2

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras	
Fuerza Z gl const.	-1.680		Barra	6 .. 10
Momento X gl const.	3.528		Barra	6 .. 10

Hipótesis 5: Sobrecarga de uso 3

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras	
Fuerza Z gl const.	-1.680		Barra	11 .. 15
Momento X gl const.	3.520		Barra	11 .. 15

Hipótesis 6: Sobrecarga de uso 4

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras	
Fuerza Z gl const.	-1.680		Barra	16 .. 20
Momento X gl const.	3.528		Barra	16 .. 20

Hipótesis 7: Sobrecarga de uso 5

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras	
Fuerza Z gl const.	-1.680		Barra	21 .. 25
Momento X gl const.	3.528		Barra	21 .. 25

Hipótesis 8: Sobrecarga de uso 6

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras	
Fuerza Z gl const.	-1.680		Barra	26 .. 30
Momento X gl const.	3.528		Barra	26 .. 30

Hipótesis 9: Sobrecarga de uso 7

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras	
Fuerza Z gl const.	-1.680		Barra	1 .. 5
Momento X gl const.	-3.528		Barra	6 .. 10

Hipótesis 10: Sobrecarga de uso 8

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras	
Fuerza Z gl const.	-1.680		Barra	6 .. 10
Momento X gl const.	-3.528		Barra	6 .. 10

Hipótesis 11: Sobrecarga de uso 9

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras	
Fuerza Z gl const.	-1.680		Barra	11 .. 15
Momento X gl const.	-3.520		Barra	11 .. 15

Hipótesis 12: Sobrecarga de uso 10

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras	
Fuerza Z gl const.	-1.680		Barra	16 .. 20
Momento X gl const.	-3.528		Barra	16 .. 20

Hipótesis 13: Sobrecarga de uso 11

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras	
Fuerza Z gl const.	-1.680		Barra	21 .. 25
Momento X gl const.	-3.528		Barra	21 .. 25

Hipótesis 14: Sobrecarga de uso 12

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras
Fuerza Z gl const.	-1.680		Barra 26 .. 30
Momento X gl const.	-3.528		Barra 26 .. 30

Hipótesis 15: Carro 1

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras
Fuerza Z gl conc.	-20.000	0.010000	Barra 1
Fuerza Z gl conc.	-20.000	0.225000	Barra 2
Fuerza Z gl conc.	-20.000	0.450000	Barra 3

Hipótesis 16: Carro 2

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras
Fuerza Z gl conc.	-20.000	0	Barra 5
Fuerza Z gl conc.	-20.000	1.050	Barra 4
Fuerza Z gl conc.	-20.000	0.225000	Barra 6

Hipótesis 17: Carro 3

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras
Fuerza Z gl conc.	-20.000	0	Barra 11
Fuerza Z gl conc.	-20.000	0.825000	Barra 8
Fuerza Z gl conc.	-20.000	1.050	Barra 9

Hipótesis 18: Carro 4

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras
Fuerza Z gl conc.	-20.000	0	Barra 11
Fuerza Z gl conc.	-20.000	1.500	Barra 11
Fuerza Z gl conc.	-20.000	1.050	Barra 9

Hipótesis 19: Carro 5

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras
Fuerza Z gl conc.	-20.000	0	Barra 11
Fuerza Z gl conc.	-20.000	1.500	Barra 11
Fuerza Z gl conc.	-20.000	1.300	Barra 12

Hipótesis 20: Carro 6

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras	
Fuerza Z gl conc.	-20.000	0	Barra	16
Fuerza Z gl conc.	-20.000	1.500	Barra	16
Fuerza Z gl conc.	-20.000	0.200000	Barra	15

Hipótesis 21: Carro 7

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras	
Fuerza Z gl conc.	-20.000	0.010000	Barra	1
Fuerza Z gl conc.	-20.000	0.225000	Barra	2
Fuerza Z gl conc.	-20.000	0.450000	Barra	3
Momento X gl conc.	-30.000	0.010000	Barra	1
Momento X gl conc.	-30.000	0.225000	Barra	2
Momento X gl conc.	-30.000	0.450000	Barra	3

Hipótesis 22: Carro 8

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras	
Fuerza Z gl conc.	-20.000	0	Barra	5
Fuerza Z gl conc.	-20.000	1.050	Barra	4
Fuerza Z gl conc.	-20.000	0.225000	Barra	6
Momento X gl conc.	-30.000	0	Barra	5
Momento X gl conc.	-30.000	1.050	Barra	4
Momento X gl conc.	-30.000	0.225000	Barra	6

Hipótesis 23: Carro 9

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras	
Fuerza Z gl conc.	-20.000	0	Barra	11
Fuerza Z gl conc.	-20.000	0.825000	Barra	8
Fuerza Z gl conc.	-20.000	1.050	Barra	9
Momento X gl conc.	-30.000	0	Barra	11
Momento X gl conc.	-30.000	0.825000	Barra	8
Momento X gl conc.	-30.000	1.050	Barra	9

Hipótesis 24: Carro 10

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras	
Fuerza Z gl conc.	-20.000	0	Barra	11
Fuerza Z gl conc.	-20.000	1.500	Barra	11
Fuerza Z gl conc.	-20.000	1.050	Barra	9
Momento X gl conc.	-30.000	0	Barra	11
Momento X gl conc.	-30.000	1.500	Barra	11
Momento X gl conc.	-30.000	1.050	Barra	9

Hipótesis 25: Carro 11

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras	
Fuerza Z gl conc.	-20.000	0	Barra	11
Fuerza Z gl conc.	-20.000	1.500	Barra	11
Fuerza Z gl conc.	-20.000	1.300	Barra	12
Momento X gl conc.	-30.000	0	Barra	11
Momento X gl conc.	-30.000	1.500	Barra	11
Momento X gl conc.	-30.000	1.300	Barra	12

Hipótesis 26: Carro 12

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras	
Fuerza Z gl conc.	-20.000	0	Barra	16
Fuerza Z gl conc.	-20.000	1.500	Barra	16
Fuerza Z gl conc.	-20.000	0.200000	Barra	15
Momento X gl conc.	-30.000	0	Barra	16
Momento X gl conc.	-30.000	1.500	Barra	16
Momento X gl conc.	-30.000	0.200000	Barra	15

Hipótesis 27: Retraccion

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras	
Def. x X lo const.	-0.000240		Barra	1 .. 30

Hipótesis 28: Termico

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras	
Def. x X lo const.	0.000382		Barra	1 .. 30

Hipótesis 29: Gradiente termico

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras	
Giro y/zY lo const.	0.000112		Barra	1 .. 30

Hipótesis 30: Viento transversal 1

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras	
Fuerza Y gl const.	1.100		Barra	1 .. 30
Momento X gl const.	-1.760		Barra	1 .. 30
Fuerza Y gl const.	3.390		Barra	201 .. 202

Hipótesis 31: Viento transversal 2

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras	
Fuerza Y gl const.	-1.100		Barra	1 .. 30
Momento X gl const.	1.760		Barra	1 .. 30
Fuerza Y gl const.	-3.390		Barra	201 .. 202

Hipótesis 32: Frenado

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras
Fuerza X gl const.	0.330000		Barra 1 .. 30

CARGAS: '' Ejec. "0001"

Hipótesis	Factor	Etapa	Título
1	1.0000		Peso propio y barandillas

DESPLAZAMIENTOS:

NUDOS	DX [mm]	DY [mm]	DZ [mm]	RX [rad]	RY [rad]	RZ [rad]
1	0.000670	-4.02E-18	-6.68E-16	0	0.000474	3.06E-21
2	0.000670	-2.20E-19	-0.589450	-1.39E-23	0.000440	2.84E-21
3	0.000670	3.06E-18	-1.098	-2.79E-23	0.000351	2.26E-21
4	0.000670	5.45E-18	-1.469	-4.18E-23	0.000227	1.46E-21
5	0.000670	6.75E-18	-1.672	-5.58E-23	9.03E-05	5.74E-22
6	0.000670	6.93E-18	-1.702	-6.97E-23	-3.95E-05	-2.67E-22
7	0.000670	6.14E-18	-1.583	-8.37E-23	-0.000142	-9.28E-22
8	0.000670	4.70E-18	-1.362	-9.76E-23	-0.000195	-1.28E-21
9	0.000670	3.08E-18	-1.114	-1.12E-22	-0.000180	-1.18E-21
10	0.000670	1.94E-18	-0.939908	-1.25E-22	-7.56E-05	-4.98E-22
11	0.000670	2.11E-18	-0.967806	-1.39E-22	0.000139	8.96E-22
12	0.000537	5.30E-18	-1.462	-1.39E-22	0.000405	2.62E-21
13	0.000403	1.03E-17	-2.234	-1.39E-22	0.000475	3.07E-21
14	0.000269	1.52E-17	-2.993	-1.39E-22	0.000398	2.58E-21
15	0.000135	1.87E-17	-3.532	-1.39E-22	0.000224	1.45E-21
16	1.11E-06	1.99E-17	-3.726	-1.39E-22	-3.61E-10	-1.84E-27
17	-0.000133	1.87E-17	-3.532	-1.39E-22	-0.000224	-1.45E-21
18	-0.000267	1.52E-17	-2.993	-1.39E-22	-0.000398	-2.58E-21
19	-0.000401	1.03E-17	-2.234	-1.39E-22	-0.000475	-3.07E-21
20	-0.000534	5.30E-18	-1.462	-1.39E-22	-0.000405	-2.62E-21
21	-0.000668	2.11E-18	-0.967807	-1.39E-22	-0.000139	-8.96E-22
22	-0.000668	1.94E-18	-0.939909	-1.25E-22	7.56E-05	4.98E-22
23	-0.000668	3.08E-18	-1.114	-1.12E-22	0.000180	1.18E-21
24	-0.000668	4.70E-18	-1.362	-9.76E-23	0.000195	1.28E-21
25	-0.000668	6.14E-18	-1.583	-8.37E-23	0.000142	9.28E-22
26	-0.000668	6.93E-18	-1.702	-6.97E-23	3.95E-05	2.67E-22
27	-0.000668	6.75E-18	-1.672	-5.58E-23	-9.03E-05	-5.74E-22
28	-0.000668	5.45E-18	-1.469	-4.18E-23	-0.000227	-1.46E-21
29	-0.000668	3.06E-18	-1.098	-2.79E-23	-0.000351	-2.26E-21
30	-0.000668	-2.20E-19	-0.589453	-1.39E-23	-0.000440	-2.84E-21
31	-0.000668	-4.02E-18	-6.68E-16	0	-0.000474	-3.06E-21
101	-1.32E-17	0	-2.57E-15	0	-4.40E-20	0

DESPLAZAMIENTOS:

NUDOS	DX [mm]	DY [mm]	DZ [mm]	RX [rad]	RY [rad]	RZ [rad]
102	1.32E-17	0	-2.57E-15	0	4.40E-20	0

REACCIONES EN APOYOS:

NUDOS	FX [t]	FY [t]	FZ [t]	MX [tm]	MY [tm]	MZ [tm]
1	-0.000447	2.68E-18	66.805	0		
31	0.000445	2.68E-18	66.805	0		
101	1.320	0	257.013	0	4.396	0
102	-1.320	0	257.013	0	-4.396	0
Sumas:	0	5.36E-18	647.636			

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
1	0	0.000447	2.63E-18	66.804	-1.12E-17	0.001808	8.41E-20
1	1.275	0.000447	2.63E-18	48.541	-1.12E-17	73.531	3.44E-18
2	0	0.000447	2.84E-18	48.540	-1.12E-17	73.534	3.36E-18
2	1.275	0.000447	2.84E-18	30.277	-1.12E-17	123.777	6.98E-18
3	0	0.000447	2.50E-18	30.275	-1.12E-17	123.779	6.91E-18
3	1.275	0.000447	2.50E-18	12.012	-1.12E-17	150.736	1.01E-17
4	0	0.000447	2.79E-18	12.012	-1.12E-17	150.737	1.02E-17
4	1.275	0.000447	2.79E-18	-6.252	-1.12E-17	154.408	1.38E-17
5	0	0.000447	2.66E-18	-6.253	-1.12E-17	154.407	1.37E-17
5	1.275	0.000447	2.66E-18	-24.516	-1.12E-17	134.793	1.71E-17
6	0	0.000447	2.73E-18	-24.518	-1.12E-17	134.792	1.70E-17
6	1.275	0.000447	2.73E-18	-42.781	-1.12E-17	91.890	2.05E-17
7	0	0.000447	2.65E-18	-42.782	-1.12E-17	91.888	2.05E-17
7	1.275	0.000447	2.65E-18	-61.046	-1.12E-17	25.701	2.39E-17
8	0	0.000447	2.69E-18	-61.046	-1.12E-17	25.698	2.40E-17
8	1.275	0.000447	2.69E-18	-79.310	-1.12E-17	-63.776	2.74E-17
9	0	0.000447	2.56E-18	-79.311	-1.12E-17	-63.779	2.75E-17
9	1.275	0.000447	2.56E-18	-97.575	-1.12E-17	-176.539	3.07E-17
10	0	0.000447	2.72E-18	-97.575	-1.12E-17	-176.544	3.08E-17
10	1.275	0.000447	2.72E-18	-115.839	-1.12E-17	-312.590	3.42E-17
11	0	-1.319	-2.68E-20	121.762	-3.04E-23	-321.388	4.52E-17
11	1.700	-1.319	-2.68E-20	97.411	-3.04E-23	-135.098	4.52E-17

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
12	0	-1.319	3.44E-20	97.410	-3.04E-23	-135.092	4.52E-17
12	1.700	-1.319	3.44E-20	73.058	-3.04E-23	9.800	4.52E-17
13	0	-1.319	-2.47E-20	73.057	-2.28E-23	9.804	4.52E-17
13	1.700	-1.319	-2.47E-20	48.705	-2.28E-23	113.298	4.51E-17
14	0	-1.319	-4.30E-20	48.704	-3.04E-23	113.302	4.52E-17
14	1.700	-1.319	-4.30E-20	24.353	-3.04E-23	175.398	4.51E-17
15	0	-1.319	4.53E-20	24.352	-2.28E-23	175.400	4.51E-17
15	1.700	-1.319	4.53E-20	0.000636	-2.28E-23	196.099	4.52E-17
16	0	-1.319	3.35E-20	-0.000653	-3.04E-23	196.099	4.52E-17
16	1.700	-1.319	3.35E-20	-24.352	-3.04E-23	175.400	4.52E-17
17	0	-1.319	1.13E-19	-24.353	-3.04E-23	175.398	4.51E-17
17	1.700	-1.319	1.13E-19	-48.705	-3.04E-23	113.301	4.53E-17
18	0	-1.319	-4.56E-20	-48.705	-2.28E-23	113.298	4.53E-17
18	1.700	-1.319	-4.56E-20	-73.057	-2.28E-23	9.804	4.52E-17
19	0	-1.319	-8.65E-20	-73.059	-3.04E-23	9.799	4.53E-17
19	1.700	-1.319	-8.65E-20	-97.410	-3.04E-23	-135.093	4.51E-17
20	0	-1.319	6.48E-20	-97.410	-2.28E-23	-135.100	4.52E-17
20	1.700	-1.319	6.48E-20	-121.762	-2.28E-23	-321.388	4.53E-17
21	0	0.000445	-2.80E-18	115.838	1.12E-17	-312.590	3.43E-17
21	1.275	0.000445	-2.80E-18	97.575	1.12E-17	-176.545	3.07E-17
22	0	0.000445	-2.70E-18	97.574	1.12E-17	-176.539	3.08E-17
22	1.275	0.000445	-2.70E-18	79.311	1.12E-17	-63.780	2.73E-17
23	0	0.000445	-2.62E-18	79.310	1.12E-17	-63.776	2.73E-17
23	1.275	0.000445	-2.62E-18	61.047	1.12E-17	25.698	2.39E-17
24	0	0.000446	-2.72E-18	61.046	1.12E-17	25.701	2.39E-17
24	1.275	0.000446	-2.72E-18	42.782	1.12E-17	91.889	2.05E-17
25	0	0.000445	-2.72E-18	42.781	1.12E-17	91.891	2.05E-17
25	1.275	0.000445	-2.72E-18	24.518	1.12E-17	134.792	1.71E-17
26	0	0.000445	-2.78E-18	24.516	1.12E-17	134.793	1.72E-17
26	1.275	0.000445	-2.78E-18	6.253	1.12E-17	154.408	1.36E-17
27	0	0.000445	-2.43E-18	6.253	1.12E-17	154.408	1.35E-17
27	1.275	0.000445	-2.43E-18	-12.011	1.12E-17	150.738	1.05E-17
28	0	0.000446	-2.67E-18	-12.012	1.12E-17	150.737	1.03E-17
28	1.275	0.000446	-2.67E-18	-30.276	1.12E-17	123.779	6.91E-18
29	0	0.000445	-2.65E-18	-30.277	1.12E-17	123.778	6.89E-18

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
29	1.275	0.000445	-2.65E-18	-48.541	1.12E-17	73.534	3.51E-18
30	0	0.000445	-2.60E-18	-48.541	1.12E-17	73.532	3.45E-18
30	1.275	0.000445	-2.60E-18	-66.805	1.12E-17	0.001206	1.36E-19
201	0	-257.013	-2.68E-18	-1.320	1.10E-17	4.396	1.56E-17
201	10.000	-237.602	-2.68E-18	-1.320	1.10E-17	-8.799	-1.12E-17
202	0	-257.013	-2.68E-18	1.320	-1.10E-17	-4.396	1.56E-17
202	10.000	-237.602	-2.68E-18	1.320	-1.10E-17	8.799	-1.12E-17

CARGAS: '' Ejec. "0001"

Hipótesis	Factor	Etapa	Título
2	1.0000		Pavimento 1

DESPLAZAMIENTOS:

NUDOS	DX [mm]	DY [mm]	DZ [mm]	RX [rad]	RY [rad]	RZ [rad]
1	4.43E-05	-2.59E-19	-4.47E-17	0	3.15E-05	2.03E-22
2	4.43E-05	-6.12E-21	-0.039198	-8.98E-25	2.92E-05	1.89E-22
3	4.43E-05	2.12E-19	-0.072978	-1.80E-24	2.33E-05	1.50E-22
4	4.43E-05	3.70E-19	-0.097540	-2.69E-24	1.50E-05	9.64E-23
5	4.44E-05	4.55E-19	-0.110846	-3.59E-24	5.83E-06	3.71E-23
6	4.44E-05	4.66E-19	-0.112620	-4.49E-24	-2.86E-06	-1.92E-23
7	4.44E-05	4.11E-19	-0.104351	-5.39E-24	-9.69E-06	-6.34E-23
8	4.44E-05	3.13E-19	-0.089291	-6.28E-24	-1.33E-05	-8.66E-23
9	4.44E-05	2.03E-19	-0.072454	-7.18E-24	-1.22E-05	-7.99E-23
10	4.44E-05	1.26E-19	-0.060617	-8.08E-24	-5.21E-06	-3.43E-23
11	4.44E-05	1.36E-19	-0.062321	-8.98E-24	9.23E-06	5.93E-23
12	3.55E-05	3.49E-19	-0.095243	-8.98E-24	2.70E-05	1.75E-22
13	2.66E-05	6.82E-19	-0.146852	-8.98E-24	3.18E-05	2.05E-22
14	1.78E-05	1.01E-18	-0.197647	-8.98E-24	2.66E-05	1.72E-22
15	8.93E-06	1.24E-18	-0.233696	-8.98E-24	1.50E-05	9.68E-23
16	7.27E-08	1.33E-18	-0.246641	-8.98E-24	-2.41E-11	-2.11E-28
17	-8.79E-06	1.24E-18	-0.233696	-8.98E-24	-1.50E-05	-9.68E-23
18	-1.76E-05	1.01E-18	-0.197647	-8.98E-24	-2.66E-05	-1.72E-22
19	-2.65E-05	6.82E-19	-0.146852	-8.98E-24	-3.18E-05	-2.05E-22
20	-3.54E-05	3.49E-19	-0.095243	-8.98E-24	-2.70E-05	-1.75E-22
21	-4.42E-05	1.36E-19	-0.062321	-8.98E-24	-9.23E-06	-5.93E-23
22	-4.42E-05	1.26E-19	-0.060617	-8.08E-24	5.21E-06	3.43E-23
23	-4.42E-05	2.03E-19	-0.072454	-7.18E-24	1.22E-05	7.99E-23
24	-4.42E-05	3.13E-19	-0.089291	-6.28E-24	1.33E-05	8.66E-23
25	-4.42E-05	4.11E-19	-0.104352	-5.39E-24	9.69E-06	6.34E-23
26	-4.42E-05	4.66E-19	-0.112620	-4.49E-24	2.86E-06	1.92E-23

DESPLAZAMIENTOS:

NUDOS	DX [mm]	DY [mm]	DZ [mm]	RX [rad]	RY [rad]	RZ [rad]
27	-4.42E-05	4.55E-19	-0.110846	-3.59E-24	-5.83E-06	-3.71E-23
28	-4.42E-05	3.70E-19	-0.097540	-2.69E-24	-1.50E-05	-9.64E-23
29	-4.42E-05	2.12E-19	-0.072978	-1.80E-24	-2.33E-05	-1.50E-22
30	-4.42E-05	-6.13E-21	-0.039198	-8.98E-25	-2.92E-05	-1.89E-22
31	-4.42E-05	-2.59E-19	-4.47E-17	0	-3.15E-05	-2.03E-22
101	-8.73E-19	0	-1.59E-16	0	-2.91E-21	0
102	8.73E-19	0	-1.59E-16	0	2.91E-21	0

REACCIONES EN APOYOS:

NUDOS	FX [t]	FY [t]	FZ [t]	MX [tm]	MY [tm]	MZ [tm]
1	-2.96E-05	1.73E-19	4.475	0		
31	2.95E-05	1.73E-19	4.475	0		
101	0.087316	0	15.925	0	0.290912	0
102	-0.087316	0	15.925	0	-0.290912	0
Sumas:	0	3.45E-19	40.800			

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
1	0	2.95E-05	1.72E-19	4.475	-7.22E-19	0.000118	4.02E-21
1	1.275	2.95E-05	1.72E-19	3.251	-7.22E-19	4.925	2.23E-19
2	0	2.96E-05	1.78E-19	3.251	-7.22E-19	4.925	2.20E-19
2	1.275	2.96E-05	1.78E-19	2.027	-7.22E-19	8.290	4.47E-19
3	0	2.95E-05	1.68E-19	2.027	-7.22E-19	8.290	4.40E-19
3	1.275	2.95E-05	1.68E-19	0.802825	-7.22E-19	10.093	6.54E-19
4	0	2.96E-05	1.73E-19	0.802821	-7.22E-19	10.094	6.64E-19
4	1.275	2.96E-05	1.73E-19	-0.421130	-7.22E-19	10.337	8.84E-19
5	0	2.95E-05	1.84E-19	-0.421177	-7.22E-19	10.337	8.74E-19
5	1.275	2.95E-05	1.84E-19	-1.645	-7.22E-19	9.020	1.11E-18
6	0	2.95E-05	1.67E-19	-1.645	-7.22E-19	9.019	1.10E-18
6	1.275	2.95E-05	1.67E-19	-2.869	-7.22E-19	6.142	1.32E-18
7	0	2.96E-05	1.73E-19	-2.869	-7.22E-19	6.142	1.32E-18
7	1.275	2.96E-05	1.73E-19	-4.093	-7.22E-19	1.703	1.54E-18
8	0	2.95E-05	1.76E-19	-4.093	-7.22E-19	1.703	1.54E-18
8	1.275	2.95E-05	1.76E-19	-5.317	-7.22E-19	-4.296	1.77E-18
9	0	2.95E-05	1.71E-19	-5.317	-7.22E-19	-4.296	1.76E-18
9	1.275	2.95E-05	1.71E-19	-6.541	-7.22E-19	-11.856	1.98E-18

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
10	0	2.96E-05	1.73E-19	-6.541	-7.22E-19	-11.856	1.98E-18
10	1.275	2.96E-05	1.73E-19	-7.765	-7.22E-19	-20.976	2.20E-18
11	0	-0.087286	1.20E-21	8.160	1.43E-24	-21.558	2.93E-18
11	1.700	-0.087286	1.20E-21	6.528	1.43E-24	-9.074	2.93E-18
12	0	-0.087286	-9.48E-22	6.528	1.43E-24	-9.073	2.93E-18
12	1.700	-0.087286	-9.48E-22	4.896	1.43E-24	0.636767	2.93E-18
13	0	-0.087286	6.98E-21	4.896	1.43E-24	0.637055	2.92E-18
13	1.700	-0.087286	6.98E-21	3.264	1.43E-24	7.573	2.93E-18
14	0	-0.087286	-1.54E-20	3.264	1.43E-24	7.573	2.94E-18
14	1.700	-0.087286	-1.54E-20	1.632	1.43E-24	11.734	2.91E-18
15	0	-0.087286	1.39E-20	1.632	1.90E-24	11.735	2.92E-18
15	1.700	-0.087286	1.39E-20	0.000100	1.90E-24	13.122	2.94E-18
16	0	-0.087286	-7.56E-21	-8.38E-05	1.43E-24	13.122	2.94E-18
16	1.700	-0.087286	-7.56E-21	-1.632	1.43E-24	11.735	2.92E-18
17	0	-0.087286	-3.74E-21	-1.632	1.43E-24	11.734	2.93E-18
17	1.700	-0.087286	-3.74E-21	-3.264	1.43E-24	7.573	2.93E-18
18	0	-0.087286	1.49E-21	-3.264	1.43E-24	7.573	2.93E-18
18	1.700	-0.087286	1.49E-21	-4.896	1.43E-24	0.637046	2.93E-18
19	0	-0.087286	4.12E-21	-4.896	9.51E-25	0.636708	2.93E-18
19	1.700	-0.087286	4.12E-21	-6.528	9.51E-25	-9.073	2.94E-18
20	0	-0.087286	-2.46E-21	-6.528	1.43E-24	-9.074	2.93E-18
20	1.700	-0.087286	-2.46E-21	-8.160	1.43E-24	-21.558	2.93E-18
21	0	2.95E-05	-1.67E-19	7.765	7.22E-19	-20.976	2.20E-18
21	1.275	2.95E-05	-1.67E-19	6.541	7.22E-19	-11.856	1.99E-18
22	0	2.95E-05	-1.75E-19	6.541	7.22E-19	-11.856	1.98E-18
22	1.275	2.95E-05	-1.75E-19	5.317	7.22E-19	-4.296	1.76E-18
23	0	2.95E-05	-1.79E-19	5.317	7.22E-19	-4.296	1.76E-18
23	1.275	2.95E-05	-1.79E-19	4.093	7.22E-19	1.703	1.53E-18
24	0	2.95E-05	-1.68E-19	4.093	7.22E-19	1.703	1.54E-18
24	1.275	2.95E-05	-1.68E-19	2.869	7.22E-19	6.142	1.32E-18
25	0	2.95E-05	-1.78E-19	2.869	7.22E-19	6.142	1.32E-18
25	1.275	2.95E-05	-1.78E-19	1.645	7.22E-19	9.019	1.10E-18
26	0	2.95E-05	-1.80E-19	1.645	7.22E-19	9.020	1.11E-18
26	1.275	2.95E-05	-1.80E-19	0.421171	7.22E-19	10.337	8.76E-19
27	0	2.95E-05	-1.54E-19	0.421195	7.22E-19	10.337	8.70E-19

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
27	1.275	2.95E-05	-1.54E-19	-0.802757	7.22E-19	10.094	6.74E-19
28	0	2.95E-05	-1.81E-19	-0.802898	7.22E-19	10.094	6.69E-19
28	1.275	2.95E-05	-1.81E-19	-2.027	7.22E-19	8.290	4.39E-19
29	0	2.95E-05	-1.65E-19	-2.027	7.22E-19	8.290	4.41E-19
29	1.275	2.95E-05	-1.65E-19	-3.251	7.22E-19	4.925	2.31E-19
30	0	2.95E-05	-1.67E-19	-3.251	7.22E-19	4.925	2.22E-19
30	1.275	2.95E-05	-1.67E-19	-4.475	7.22E-19	8.50E-05	9.38E-21
201	0	-15.925	-1.73E-19	-0.087316	7.27E-19	0.290894	1.01E-18
201	10.000	-15.925	-1.73E-19	-0.087316	7.27E-19	-0.582227	-7.22E-19
202	0	-15.925	-1.73E-19	0.087316	-7.27E-19	-0.290895	1.01E-18
202	10.000	-15.925	-1.73E-19	0.087316	-7.27E-19	0.582226	-7.22E-19

CARGAS: '' Ejec. "0001"

Hipótesis	Factor	Etapa	Título
28	1.0000		Termico

DESPLAZAMIENTOS:

NUDOS	DX [mm]	DY [mm]	DZ [mm]	RX [rad]	RY [rad]	RZ [rad]
1	-8.112	1.74E-20	-1.42E-17	0	2.64E-05	1.72E-22
2	-7.625	2.34E-19	-0.033289	6.02E-26	2.56E-05	1.66E-22
3	-7.138	4.37E-19	-0.064528	1.20E-25	2.32E-05	1.51E-22
4	-6.651	6.14E-19	-0.091663	1.81E-25	1.91E-05	1.25E-22
5	-6.164	7.51E-19	-0.112645	2.41E-25	1.35E-05	8.82E-23
6	-5.678	8.35E-19	-0.125421	3.01E-25	6.27E-06	4.13E-23
7	-5.191	8.52E-19	-0.127941	3.61E-25	-2.58E-06	-1.60E-23
8	-4.704	7.89E-19	-0.118152	4.21E-25	-1.30E-05	-8.37E-23
9	-4.217	6.34E-19	-0.094005	4.82E-25	-2.51E-05	-1.62E-22
10	-3.730	3.72E-19	-0.053447	5.42E-25	-3.88E-05	-2.50E-22
11	-3.243	-9.12E-21	0.005573	6.02E-25	-5.41E-05	-3.49E-22
12	-2.594	-5.44E-19	0.088294	6.02E-25	-4.33E-05	-2.80E-22
13	-1.946	-9.60E-19	0.152633	6.02E-25	-3.24E-05	-2.10E-22
14	-1.297	-1.26E-18	0.198590	6.02E-25	-2.16E-05	-1.40E-22
15	-0.648620	-1.43E-18	0.226164	6.02E-25	-1.08E-05	-6.99E-23
16	2.36E-07	-1.49E-18	0.235355	6.02E-25	1.13E-11	7.15E-29
17	0.648620	-1.43E-18	0.226164	6.02E-25	1.08E-05	6.99E-23
18	1.297	-1.26E-18	0.198590	6.02E-25	2.16E-05	1.40E-22
19	1.946	-9.60E-19	0.152633	6.02E-25	3.24E-05	2.10E-22
20	2.594	-5.44E-19	0.088294	6.02E-25	4.33E-05	2.80E-22

DESPLAZAMIENTOS:

NUDOS	DX [mm]	DY [mm]	DZ [mm]	RX [rad]	RY [rad]	RZ [rad]
21	3.243	-9.12E-21	0.005573	6.02E-25	5.41E-05	3.49E-22
22	3.730	3.72E-19	-0.053447	5.42E-25	3.88E-05	2.50E-22
23	4.217	6.34E-19	-0.094005	4.82E-25	2.51E-05	1.62E-22
24	4.704	7.89E-19	-0.118153	4.21E-25	1.30E-05	8.37E-23
25	5.191	8.52E-19	-0.127941	3.61E-25	2.58E-06	1.60E-23
26	5.678	8.35E-19	-0.125421	3.01E-25	-6.27E-06	-4.13E-23
27	6.164	7.51E-19	-0.112645	2.41E-25	-1.35E-05	-8.82E-23
28	6.651	6.14E-19	-0.091663	1.81E-25	-1.91E-05	-1.25E-22
29	7.138	4.37E-19	-0.064528	1.20E-25	-2.32E-05	-1.51E-22
30	7.625	2.34E-19	-0.033290	6.02E-26	-2.56E-05	-1.66E-22
31	8.112	1.74E-20	-1.42E-17	0	-2.64E-05	-1.72E-22
101	-5.63E-17	0	1.42E-17	0	-2.90E-19	0
102	5.63E-17	0	1.42E-17	0	2.90E-19	0

REACCIONES EN APOYOS:

NUDOS	FX [t]	FY [t]	FZ [t]	MX [tm]	MY [tm]	MZ [tm]
1	5.408	-1.16E-20	1.424	0		
31	-5.408	-1.16E-20	1.424	0		
101	5.633	0	-1.424	0	29.017	0
102	-5.633	0	-1.424	0	-29.017	0
Sumas:	-4.77E-07	-2.32E-20	0			

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
1	0	-5.399	-1.07E-20	1.424	4.84E-20	3.72E-05	2.31E-21
1	1.275	-5.399	-1.07E-20	1.424	4.84E-20	1.816	-1.13E-20
2	0	-5.411	-7.84E-21	1.424	4.84E-20	1.816	-1.44E-20
2	1.275	-5.411	-7.84E-21	1.424	4.84E-20	3.631	-2.44E-20
3	0	-5.410	-1.61E-20	1.424	4.84E-20	3.631	-3.06E-20
3	1.275	-5.410	-1.61E-20	1.424	4.84E-20	5.447	-5.11E-20
4	0	-5.406	-1.37E-20	1.424	4.84E-20	5.447	-3.79E-20
4	1.275	-5.406	-1.37E-20	1.424	4.84E-20	7.263	-5.54E-20
5	0	-5.406	9.86E-21	1.424	4.84E-20	7.263	-7.00E-20
5	1.275	-5.406	9.86E-21	1.424	4.84E-20	9.079	-5.75E-20
6	0	-5.412	-3.00E-20	1.424	4.84E-20	9.079	-6.13E-20
6	1.275	-5.412	-3.00E-20	1.424	4.84E-20	10.894	-9.96E-20
7	0	-5.406	-2.05E-21	1.424	4.84E-20	10.894	-9.67E-20
7	1.275	-5.406	-2.05E-21	1.424	4.84E-20	12.710	-9.93E-20

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
8	0	-5.409	-2.23E-20	1.424	4.84E-20	12.710	-9.37E-20
8	1.275	-5.409	-2.23E-20	1.424	4.84E-20	14.526	-1.22E-19
9	0	-5.409	-3.47E-21	1.424	4.84E-20	14.526	-1.18E-19
9	1.275	-5.409	-3.47E-21	1.424	4.84E-20	16.341	-1.22E-19
10	0	-5.408	-1.17E-20	1.424	4.84E-20	16.341	-1.41E-19
10	1.275	-5.408	-1.17E-20	1.424	4.84E-20	18.157	-1.56E-19
11	0	-11.042	2.05E-21	-6.60E-06	-8.92E-26	-9.153	-4.44E-18
11	1.700	-11.042	2.05E-21	-6.60E-06	-8.92E-26	-9.153	-4.44E-18
12	0	-11.039	-2.89E-21	-2.53E-05	-8.92E-26	-9.153	-4.44E-18
12	1.700	-11.039	-2.89E-21	-2.53E-05	-8.92E-26	-9.153	-4.44E-18
13	0	-11.042	-6.56E-21	-3.96E-05	-5.95E-26	-9.152	-4.43E-18
13	1.700	-11.042	-6.56E-21	-3.96E-05	-5.95E-26	-9.153	-4.44E-18
14	0	-11.041	5.37E-21	4.55E-05	-8.92E-26	-9.153	-4.44E-18
14	1.700	-11.041	5.37E-21	4.55E-05	-8.92E-26	-9.152	-4.43E-18
15	0	-11.041	-6.60E-21	-2.96E-05	-2.97E-26	-9.152	-4.43E-18
15	1.700	-11.041	-6.60E-21	-2.96E-05	-2.97E-26	-9.153	-4.44E-18
16	0	-11.041	4.30E-21	-3.79E-06	-5.95E-26	-9.153	-4.44E-18
16	1.700	-11.041	4.30E-21	-3.79E-06	-5.95E-26	-9.153	-4.43E-18
17	0	-11.041	3.43E-21	2.06E-05	-8.92E-26	-9.153	-4.44E-18
17	1.700	-11.041	3.43E-21	2.06E-05	-8.92E-26	-9.152	-4.43E-18
18	0	-11.042	-1.04E-20	-1.57E-05	-5.95E-26	-9.153	-4.43E-18
18	1.700	-11.042	-1.04E-20	-1.57E-05	-5.95E-26	-9.153	-4.45E-18
19	0	-11.040	4.32E-21	-3.45E-06	-8.92E-26	-9.153	-4.44E-18
19	1.700	-11.040	4.32E-21	-3.45E-06	-8.92E-26	-9.153	-4.44E-18
20	0	-11.042	-4.12E-21	7.12E-06	-5.95E-26	-9.152	-4.44E-18
20	1.700	-11.042	-4.12E-21	7.12E-06	-5.95E-26	-9.152	-4.44E-18
21	0	-5.406	8.70E-21	-1.424	-4.84E-20	18.157	-1.53E-19
21	1.275	-5.406	8.70E-21	-1.424	-4.84E-20	16.341	-1.42E-19
22	0	-5.409	6.09E-21	-1.424	-4.84E-20	16.341	-1.35E-19
22	1.275	-5.409	6.09E-21	-1.424	-4.84E-20	14.526	-1.27E-19
23	0	-5.406	2.24E-20	-1.424	-4.84E-20	14.526	-1.29E-19
23	1.275	-5.406	2.24E-20	-1.424	-4.84E-20	12.710	-1.00E-19
24	0	-5.413	-5.24E-21	-1.424	-4.84E-20	12.710	-9.42E-20
24	1.275	-5.413	-5.24E-21	-1.424	-4.84E-20	10.894	-1.01E-19
25	0	-5.406	2.69E-20	-1.424	-4.84E-20	10.894	-9.80E-20

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
25	1.275	-5.406	2.69E-20	-1.424	-4.84E-20	9.079	-6.37E-20
26	0	-5.406	7.01E-21	-1.424	-4.84E-20	9.078	-6.89E-20
26	1.275	-5.406	7.01E-21	-1.424	-4.84E-20	7.263	-6.00E-20
27	0	-5.406	1.82E-20	-1.424	-4.84E-20	7.263	-6.02E-20
27	1.275	-5.406	1.82E-20	-1.424	-4.84E-20	5.447	-3.71E-20
28	0	-5.413	6.49E-21	-1.424	-4.84E-20	5.447	-3.69E-20
28	1.275	-5.413	6.49E-21	-1.424	-4.84E-20	3.631	-2.86E-20
29	0	-5.406	1.95E-20	-1.424	-4.84E-20	3.631	-2.98E-20
29	1.275	-5.406	1.95E-20	-1.424	-4.84E-20	1.816	-4.95E-21
30	0	-5.406	1.74E-20	-1.424	-4.84E-20	1.816	-1.34E-20
30	1.275	-5.406	1.74E-20	-1.424	-4.84E-20	2.09E-05	8.85E-21
201	0	1.424	1.16E-20	-5.633	-4.29E-18	29.016	-6.74E-20
201	10.000	1.424	1.16E-20	-5.633	-4.29E-18	-27.308	4.84E-20
202	0	1.424	1.16E-20	5.633	4.29E-18	-29.016	-6.74E-20
202	10.000	1.424	1.16E-20	5.633	4.29E-18	27.308	4.84E-20

CARGAS: '' Ejec. "0001"

Hipótesis	Factor	Etapa	Título
29	1.0000		Gradiente termico

DESPLAZAMIENTOS:

NUDOS	DX [mm]	DY [mm]	DZ [mm]	RX [rad]	RY [rad]	RZ [rad]
1	0.000663	-8.83E-17	-1.52E-16	0	-0.000433	1.24E-20
2	0.000663	-7.25E-17	0.464889	-3.06E-22	-0.000299	1.23E-20
3	0.000663	-5.69E-17	0.769549	-6.12E-22	-0.000182	1.22E-20
4	0.000663	-4.16E-17	0.935818	-9.18E-22	-8.18E-05	1.19E-20
5	0.000663	-2.66E-17	0.985538	-1.22E-21	1.00E-06	1.15E-20
6	0.000663	-1.23E-17	0.940547	-1.53E-21	6.67E-05	1.10E-20
7	0.000663	1.41E-18	0.822686	-1.84E-21	0.000115	1.04E-20
8	0.000663	1.42E-17	0.653794	-2.14E-21	0.000147	9.70E-21
9	0.000664	2.61E-17	0.455711	-2.45E-21	0.000161	8.89E-21
10	0.000664	3.69E-17	0.250278	-2.75E-21	0.000158	7.96E-21
11	0.000664	4.64E-17	0.059334	-3.06E-21	0.000138	6.92E-21
12	0.000531	5.69E-17	-0.152369	-3.06E-21	0.000111	5.54E-21
13	0.000398	6.52E-17	-0.317027	-3.06E-21	8.30E-05	4.15E-21
14	0.000265	7.11E-17	-0.434641	-3.06E-21	5.53E-05	2.77E-21

DESPLAZAMIENTOS:

NUDOS	DX [mm]	DY [mm]	DZ [mm]	RX [rad]	RY [rad]	RZ [rad]
15	0.000132	7.46E-17	-0.505209	-3.06E-21	2.77E-05	1.38E-21
16	-7.28E-07	7.58E-17	-0.528731	-3.06E-21	1.46E-10	-2.00E-26
17	-0.000134	7.46E-17	-0.505209	-3.06E-21	-2.77E-05	-1.38E-21
18	-0.000266	7.11E-17	-0.434641	-3.06E-21	-5.53E-05	-2.77E-21
19	-0.000399	6.52E-17	-0.317028	-3.06E-21	-8.30E-05	-4.15E-21
20	-0.000532	5.69E-17	-0.152369	-3.06E-21	-0.000111	-5.54E-21
21	-0.000665	4.64E-17	0.059334	-3.06E-21	-0.000138	-6.92E-21
22	-0.000665	3.69E-17	0.250278	-2.75E-21	-0.000158	-7.96E-21
23	-0.000665	2.61E-17	0.455712	-2.45E-21	-0.000161	-8.89E-21
24	-0.000665	1.42E-17	0.653795	-2.14E-21	-0.000147	-9.70E-21
25	-0.000665	1.41E-18	0.822688	-1.84E-21	-0.000115	-1.04E-20
26	-0.000665	-1.23E-17	0.940550	-1.53E-21	-6.67E-05	-1.10E-20
27	-0.000665	-2.66E-17	0.985541	-1.22E-21	-1.00E-06	-1.15E-20
28	-0.000665	-4.16E-17	0.935821	-9.18E-22	8.18E-05	-1.19E-20
29	-0.000665	-5.69E-17	0.769551	-6.12E-22	0.000182	-1.22E-20
30	-0.000665	-7.25E-17	0.464891	-3.06E-22	0.000299	-1.23E-20
31	-0.000665	-8.83E-17	-1.52E-16	0	0.000433	-1.24E-20
101	-1.31E-17	0	1.52E-16	0	-4.36E-20	0
102	1.31E-17	0	1.52E-16	0	4.36E-20	0

REACCIONES EN APOYOS:

NUDOS	FX [t]	FY [t]	FZ [t]	MX [tm]	MY [tm]	MZ [tm]
1	-0.000442	5.88E-17	15.162	0		
31	0.000443	5.88E-17	15.162	0		
101	1.310	0	-15.162	0	4.363	0
102	-1.310	0	-15.162	0	-4.363	0
Sumas:	0	1.18E-16	0			

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
1	0	0.000442	6.00E-17	15.162	-2.46E-16	0.000425	-5.14E-19
1	1.275	0.000442	6.00E-17	15.162	-2.46E-16	19.331	7.59E-17
2	0	0.000442	5.94E-17	15.162	-2.46E-16	19.332	7.50E-17
2	1.275	0.000442	5.94E-17	15.162	-2.46E-16	38.662	1.51E-16
3	0	0.000442	5.86E-17	15.162	-2.46E-16	38.663	1.50E-16
3	1.275	0.000442	5.86E-17	15.162	-2.46E-16	57.994	2.25E-16
4	0	0.000442	5.85E-17	15.162	-2.46E-16	57.995	2.26E-16
4	1.275	0.000442	5.85E-17	15.162	-2.46E-16	77.325	3.00E-16
5	0	0.000442	5.87E-17	15.162	-2.46E-16	77.326	3.00E-16
5	1.275	0.000442	5.87E-17	15.162	-2.46E-16	96.657	3.75E-16

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
6	0	0.000442	5.90E-17	15.162	-2.46E-16	96.657	3.75E-16
6	1.275	0.000442	5.90E-17	15.162	-2.46E-16	115.988	4.50E-16
7	0	0.000442	5.90E-17	15.162	-2.46E-16	115.989	4.50E-16
7	1.275	0.000442	5.90E-17	15.162	-2.46E-16	135.319	5.26E-16
8	0	0.000442	5.85E-17	15.162	-2.46E-16	135.320	5.25E-16
8	1.275	0.000442	5.85E-17	15.162	-2.46E-16	154.651	6.00E-16
9	0	0.000442	5.91E-17	15.162	-2.46E-16	154.651	6.00E-16
9	1.275	0.000442	5.91E-17	15.162	-2.46E-16	173.982	6.75E-16
10	0	0.000443	5.88E-17	15.162	-2.46E-16	173.983	6.76E-16
10	1.275	0.000443	5.88E-17	15.162	-2.46E-16	193.313	7.51E-16
11	0	-1.309	-1.08E-19	8.23E-05	6.09E-22	184.581	8.35E-16
11	1.700	-1.309	-1.08E-19	8.23E-05	6.09E-22	184.581	8.35E-16
12	0	-1.309	1.36E-20	4.87E-05	7.31E-22	184.581	8.35E-16
12	1.700	-1.309	1.36E-20	4.87E-05	7.31E-22	184.581	8.35E-16
13	0	-1.309	2.38E-19	6.67E-05	6.09E-22	184.581	8.35E-16
13	1.700	-1.309	2.38E-19	6.67E-05	6.09E-22	184.581	8.36E-16
14	0	-1.309	-2.53E-19	-2.11E-05	6.09E-22	184.581	8.36E-16
14	1.700	-1.309	-2.53E-19	-2.11E-05	6.09E-22	184.581	8.35E-16
15	0	-1.309	5.28E-20	5.96E-05	7.31E-22	184.581	8.35E-16
15	1.700	-1.309	5.28E-20	5.96E-05	7.31E-22	184.581	8.35E-16
16	0	-1.309	2.84E-19	-7.08E-06	6.09E-22	184.581	8.35E-16
16	1.700	-1.309	2.84E-19	-7.08E-06	6.09E-22	184.581	8.36E-16
17	0	-1.309	-2.90E-19	8.56E-05	6.09E-22	184.581	8.36E-16
17	1.700	-1.309	-2.90E-19	8.56E-05	6.09E-22	184.581	8.35E-16
18	0	-1.309	-1.23E-19	1.82E-05	7.31E-22	184.581	8.36E-16
18	1.700	-1.309	-1.23E-19	1.82E-05	7.31E-22	184.581	8.35E-16
19	0	-1.309	1.73E-20	1.80E-05	6.09E-22	184.581	8.35E-16
19	1.700	-1.309	1.73E-20	1.80E-05	6.09E-22	184.581	8.35E-16
20	0	-1.309	2.12E-19	-4.68E-05	6.09E-22	184.581	8.35E-16
20	1.700	-1.309	2.12E-19	-4.68E-05	6.09E-22	184.581	8.36E-16
21	0	0.000444	-5.96E-17	-15.162	2.46E-16	193.313	7.51E-16
21	1.275	0.000444	-5.96E-17	-15.162	2.46E-16	173.983	6.75E-16
22	0	0.000443	-5.84E-17	-15.162	2.46E-16	173.982	6.75E-16
22	1.275	0.000443	-5.84E-17	-15.162	2.46E-16	154.651	6.01E-16
23	0	0.000443	-5.87E-17	-15.162	2.46E-16	154.650	6.00E-16

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
23	1.275	0.000443	-5.87E-17	-15.162	2.46E-16	135.320	5.26E-16
24	0	0.000444	-5.84E-17	-15.162	2.46E-16	135.319	5.25E-16
24	1.275	0.000444	-5.84E-17	-15.162	2.46E-16	115.988	4.51E-16
25	0	0.000443	-5.86E-17	-15.162	2.46E-16	115.988	4.50E-16
25	1.275	0.000443	-5.86E-17	-15.162	2.46E-16	96.657	3.76E-16
26	0	0.000443	-5.86E-17	-15.162	2.46E-16	96.657	3.75E-16
26	1.275	0.000443	-5.86E-17	-15.162	2.46E-16	77.326	3.01E-16
27	0	0.000444	-5.87E-17	-15.161	2.46E-16	77.325	3.00E-16
27	1.275	0.000444	-5.87E-17	-15.161	2.46E-16	57.995	2.25E-16
28	0	0.000443	-5.88E-17	-15.161	2.46E-16	57.994	2.25E-16
28	1.275	0.000443	-5.88E-17	-15.161	2.46E-16	38.663	1.50E-16
29	0	0.000444	-5.84E-17	-15.162	2.46E-16	38.662	1.50E-16
29	1.275	0.000444	-5.84E-17	-15.162	2.46E-16	19.332	7.56E-17
30	0	0.000443	-5.91E-17	-15.162	2.46E-16	19.331	7.54E-17
30	1.275	0.000443	-5.91E-17	-15.162	2.46E-16	0.000753	1.02E-19
201	0	15.162	-5.88E-17	-1.310	8.50E-17	4.363	3.43E-16
201	10.000	15.162	-5.88E-17	-1.310	8.50E-17	-8.733	-2.46E-16
202	0	15.162	-5.88E-17	1.310	-8.50E-17	-4.363	3.43E-16
202	10.000	15.162	-5.88E-17	1.310	-8.50E-17	8.733	-2.46E-16

CARGAS: '' Ejec. "0001"

Hipótesis	Factor	Etapa	Título
30	1.0000		Viento transversal 1

DESPLAZAMIENTOS:

NUDOS	DX [mm]	DY [mm]	DZ [mm]	RX [rad]	RY [rad]	RZ [rad]
1	2.62E-22	20.526	0	-1.21E-18	2.12E-22	3.30E-05
2	2.62E-22	20.568	-2.63E-19	-0.000149	1.95E-22	3.28E-05
3	2.62E-22	20.609	-4.86E-19	-0.000295	1.51E-22	3.22E-05
4	2.62E-22	20.649	-6.41E-19	-0.000438	9.02E-23	3.12E-05
5	2.62E-22	20.689	-7.13E-19	-0.000579	2.27E-23	3.00E-05
6	2.62E-22	20.726	-7.01E-19	-0.000717	-4.11E-23	2.85E-05
7	2.62E-22	20.761	-6.15E-19	-0.000852	-9.09E-23	2.67E-05
8	2.62E-22	20.794	-4.79E-19	-0.000984	-1.17E-22	2.48E-05
9	2.62E-22	20.824	-3.32E-19	-0.001113	-1.08E-22	2.28E-05
10	2.62E-22	20.852	-2.24E-19	-0.001240	-5.41E-23	2.07E-05
11	2.62E-22	20.877	-2.17E-19	-0.001363	5.45E-23	1.86E-05
12	2.10E-22	20.906	-4.40E-19	-0.001386	1.90E-22	1.55E-05
13	1.57E-22	20.930	-8.07E-19	-0.001403	2.27E-22	1.20E-05
14	1.05E-22	20.947	-1.17E-18	-0.001415	1.92E-22	8.19E-06
15	5.28E-23	20.957	-1.43E-18	-0.001423	1.08E-22	4.15E-06
16	5.06E-25	20.961	-1.53E-18	-0.001425	-1.75E-28	1.78E-10
17	-5.18E-23	20.957	-1.43E-18	-0.001423	-1.08E-22	-4.15E-06
18	-1.04E-22	20.947	-1.17E-18	-0.001415	-1.92E-22	-8.18E-06
19	-1.56E-22	20.930	-8.07E-19	-0.001403	-2.27E-22	-1.20E-05
20	-2.09E-22	20.906	-4.40E-19	-0.001386	-1.90E-22	-1.55E-05
21	-2.61E-22	20.877	-2.17E-19	-0.001363	-5.45E-23	-1.86E-05
22	-2.61E-22	20.852	-2.24E-19	-0.001240	5.41E-23	-2.07E-05
23	-2.61E-22	20.824	-3.32E-19	-0.001113	1.08E-22	-2.28E-05
24	-2.61E-22	20.794	-4.79E-19	-0.000984	1.17E-22	-2.48E-05
25	-2.61E-22	20.761	-6.15E-19	-0.000852	9.09E-23	-2.67E-05
26	-2.61E-22	20.726	-7.01E-19	-0.000717	4.11E-23	-2.85E-05
27	-2.61E-22	20.689	-7.13E-19	-0.000579	-2.27E-23	-3.00E-05
28	-2.61E-22	20.649	-6.41E-19	-0.000438	-9.02E-23	-3.12E-05
29	-2.61E-22	20.609	-4.86E-19	-0.000295	-1.51E-22	-3.22E-05
30	-2.61E-22	20.568	-2.63E-19	-0.000149	-1.95E-22	-3.28E-05
31	-2.61E-22	20.526	0	-1.21E-18	-2.12E-22	-3.30E-05
101	0	4.36E-16	0	-1.83E-18	0	2.28E-21
102	0	4.36E-16	0	-1.83E-18	0	-2.28E-21

REACCIONES EN APOYOS:

NUDOS	FX [t]	FY [t]	FZ [t]	MX [tm]	MY [tm]	MZ [tm]
1	-1.75E-22	-13.684	0	120.826		
31	1.74E-22	-13.684	0	120.826		
101	0	-43.591	0	182.980	0	-0.228298
102	0	-43.591	0	182.980	0	0.228294
Sumas:	-6.74E-25	-114.550	0			

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
1	0	1.75E-22	-13.766	-5.61E-17	-120.826	3.36E-19	0.051906
1	1.275	1.75E-22	-12.363	-5.61E-17	-118.582	-7.12E-17	-16.604
2	0	1.75E-22	-12.064	-5.42E-17	-118.582	-7.17E-17	-16.692
2	1.275	1.75E-22	-10.662	-5.42E-17	-116.338	-1.41E-16	-31.179
3	0	1.75E-22	-11.096	-5.70E-17	-116.338	-1.41E-16	-31.181
3	1.275	1.75E-22	-9.694	-5.70E-17	-114.094	-2.13E-16	-44.434
4	0	1.75E-22	-9.384	-5.50E-17	-114.094	-2.13E-16	-44.355
4	1.275	1.75E-22	-7.982	-5.50E-17	-111.850	-2.83E-16	-55.425
5	0	1.75E-22	-8.207	-5.64E-17	-111.850	-2.83E-16	-55.400
5	1.275	1.75E-22	-6.804	-5.64E-17	-109.606	-3.55E-16	-64.970
6	0	1.75E-22	-6.641	-5.54E-17	-109.606	-3.54E-16	-64.905
6	1.275	1.75E-22	-5.238	-5.54E-17	-107.362	-4.25E-16	-72.478
7	0	1.75E-22	-5.410	-5.65E-17	-107.362	-4.24E-16	-72.409
7	1.275	1.75E-22	-4.007	-5.65E-17	-105.118	-4.97E-16	-78.412
8	0	1.75E-22	-3.595	-5.38E-17	-105.118	-4.97E-16	-78.496
8	1.275	1.75E-22	-2.193	-5.38E-17	-102.874	-5.66E-16	-82.186
9	0	1.75E-22	-2.463	-5.56E-17	-102.874	-5.67E-16	-82.360
9	1.275	1.75E-22	-1.060	-5.56E-17	-100.630	-6.38E-16	-84.606
10	0	1.75E-22	-1.088	-5.57E-17	-100.630	-6.38E-16	-84.590
10	1.275	1.75E-22	0.314590	-5.57E-17	-98.386	-7.09E-16	-85.083
11	0	-5.15E-19	-9.501	-9.80E-19	-14.960	-7.11E-16	-84.710
11	1.700	-5.15E-19	-7.631	-9.80E-19	-11.968	-7.13E-16	-99.272
12	0	-5.15E-19	-7.395	5.49E-19	-11.968	-7.12E-16	-99.216
12	1.700	-5.15E-19	-5.525	5.49E-19	-8.976	-7.11E-16	-110.198
13	0	-5.15E-19	-5.607	1.93E-20	-8.976	-7.12E-16	-110.273
13	1.700	-5.15E-19	-3.737	1.93E-20	-5.984	-7.12E-16	-118.215
14	0	-5.15E-19	-3.685	3.56E-19	-5.984	-7.12E-16	-118.265

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
14	1.700	-5.15E-19	-1.815	3.56E-19	-2.992	-7.12E-16	-122.939
15	0	-5.15E-19	-1.866	2.29E-20	-2.992	-7.12E-16	-122.989
15	1.700	-5.15E-19	0.003486	2.29E-20	-5.19E-05	-7.12E-16	-124.573
16	0	-5.15E-19	-0.159719	-1.03E-18	-1.85E-05	-7.11E-16	-124.440
16	1.700	-5.15E-19	1.710	-1.03E-18	2.992	-7.13E-16	-123.122
17	0	-5.15E-19	1.890	1.30E-19	2.992	-7.12E-16	-123.003
17	1.700	-5.15E-19	3.760	1.30E-19	5.984	-7.12E-16	-118.201
18	0	-5.15E-19	3.812	4.67E-19	5.984	-7.12E-16	-118.279
18	1.700	-5.15E-19	5.682	4.67E-19	8.976	-7.11E-16	-110.209
19	0	-5.15E-19	5.598	-7.56E-20	8.976	-7.12E-16	-110.260
19	1.700	-5.15E-19	7.468	-7.56E-20	11.968	-7.12E-16	-99.154
20	0	-5.15E-19	7.485	3.36E-20	11.968	-7.12E-16	-99.148
20	1.700	-5.15E-19	9.355	3.36E-20	14.960	-7.12E-16	-84.834
21	0	1.74E-22	-0.173198	5.66E-17	98.386	-7.09E-16	-85.173
21	1.275	1.74E-22	1.229	5.66E-17	100.630	-6.37E-16	-84.500
22	0	1.74E-22	1.195	5.64E-17	100.630	-6.38E-16	-84.691
22	1.275	1.74E-22	2.598	5.64E-17	102.874	-5.66E-16	-82.274
23	0	1.74E-22	2.313	5.46E-17	102.874	-5.66E-16	-82.262
23	1.275	1.74E-22	3.716	5.46E-17	105.118	-4.97E-16	-78.419
24	0	1.74E-22	3.580	5.37E-17	105.118	-4.95E-16	-78.139
24	1.275	1.74E-22	4.983	5.37E-17	107.362	-4.26E-16	-72.681
25	0	1.74E-22	5.357	5.61E-17	107.362	-4.25E-16	-72.554
25	1.275	1.74E-22	6.760	5.61E-17	109.606	-3.54E-16	-64.829
26	0	1.74E-22	6.921	5.72E-17	109.606	-3.55E-16	-65.044
26	1.275	1.74E-22	8.323	5.72E-17	111.850	-2.82E-16	-55.326
27	0	1.74E-22	8.096	5.57E-17	111.850	-2.83E-16	-55.498
27	1.275	1.74E-22	9.498	5.57E-17	114.094	-2.12E-16	-44.282
28	0	1.74E-22	9.256	5.41E-17	114.094	-2.12E-16	-44.154
28	1.275	1.74E-22	10.658	5.41E-17	116.338	-1.43E-16	-31.460
29	0	1.74E-22	10.773	5.49E-17	116.338	-1.41E-16	-31.250
29	1.275	1.74E-22	12.176	5.49E-17	118.582	-7.13E-17	-16.621
30	0	1.74E-22	12.474	5.68E-17	118.582	-7.16E-17	-16.675
30	1.275	1.74E-22	13.876	5.68E-17	120.826	7.85E-19	0.122513
201	0	-5.56E-17	-43.590	-5.16E-19	0.228298	1.72E-18	182.972
201	10.000	-5.56E-17	-9.691	-5.16E-19	0.228298	-3.44E-18	-83.424

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
202	0	-5.56E-17	-43.590	5.16E-19	-0.228294	-1.72E-18	182.972
202	10.000	-5.56E-17	-9.691	5.16E-19	-0.228294	3.44E-18	-83.424

CARGAS: '' Ejec. "0001"

Hipótesis	Factor	Etapa	Título
31	1.0000		Viento transversal 2

DESPLAZAMIENTOS:

NUDOS	DX [mm]	DY [mm]	DZ [mm]	RX [rad]	RY [rad]	RZ [rad]
1	-2.62E-22	-20.526	0	1.21E-18	-2.12E-22	-3.30E-05
2	-2.62E-22	-20.568	2.63E-19	0.000149	-1.95E-22	-3.28E-05
3	-2.62E-22	-20.609	4.86E-19	0.000295	-1.51E-22	-3.22E-05
4	-2.62E-22	-20.649	6.41E-19	0.000438	-9.02E-23	-3.12E-05
5	-2.62E-22	-20.689	7.13E-19	0.000579	-2.27E-23	-3.00E-05
6	-2.62E-22	-20.726	7.01E-19	0.000717	4.11E-23	-2.85E-05
7	-2.62E-22	-20.761	6.15E-19	0.000852	9.09E-23	-2.67E-05
8	-2.62E-22	-20.794	4.79E-19	0.000984	1.17E-22	-2.48E-05
9	-2.62E-22	-20.824	3.32E-19	0.001113	1.08E-22	-2.28E-05
10	-2.62E-22	-20.852	2.24E-19	0.001240	5.41E-23	-2.07E-05
11	-2.62E-22	-20.877	2.17E-19	0.001363	-5.45E-23	-1.86E-05
12	-2.10E-22	-20.906	4.40E-19	0.001386	-1.90E-22	-1.55E-05
13	-1.57E-22	-20.930	8.07E-19	0.001403	-2.27E-22	-1.20E-05
14	-1.05E-22	-20.947	1.17E-18	0.001415	-1.92E-22	-8.19E-06
15	-5.28E-23	-20.957	1.43E-18	0.001423	-1.08E-22	-4.15E-06
16	-5.06E-25	-20.961	1.53E-18	0.001425	1.75E-28	-1.78E-10
17	5.18E-23	-20.957	1.43E-18	0.001423	1.08E-22	4.15E-06
18	1.04E-22	-20.947	1.17E-18	0.001415	1.92E-22	8.18E-06
19	1.56E-22	-20.930	8.07E-19	0.001403	2.27E-22	1.20E-05
20	2.09E-22	-20.906	4.40E-19	0.001386	1.90E-22	1.55E-05
21	2.61E-22	-20.877	2.17E-19	0.001363	5.45E-23	1.86E-05
22	2.61E-22	-20.852	2.24E-19	0.001240	-5.41E-23	2.07E-05
23	2.61E-22	-20.824	3.32E-19	0.001113	-1.08E-22	2.28E-05
24	2.61E-22	-20.794	4.79E-19	0.000984	-1.17E-22	2.48E-05
25	2.61E-22	-20.761	6.15E-19	0.000852	-9.09E-23	2.67E-05
26	2.61E-22	-20.726	7.01E-19	0.000717	-4.11E-23	2.85E-05
27	2.61E-22	-20.689	7.13E-19	0.000579	2.27E-23	3.00E-05
28	2.61E-22	-20.649	6.41E-19	0.000438	9.02E-23	3.12E-05
29	2.61E-22	-20.609	4.86E-19	0.000295	1.51E-22	3.22E-05
30	2.61E-22	-20.568	2.63E-19	0.000149	1.95E-22	3.28E-05
31	2.61E-22	-20.526	0	1.21E-18	2.12E-22	3.30E-05
101	0	-4.36E-16	0	1.83E-18	0	-2.28E-21
102	0	-4.36E-16	0	1.83E-18	0	2.28E-21

REACCIONES EN APOYOS:

NUDOS	FX [t]	FY [t]	FZ [t]	MX [tm]	MY [tm]	MZ [tm]
1	1.75E-22	13.684	0	-120.826		
31	-1.74E-22	13.684	0	-120.826		
101	0	43.591	0	-182.980	0	0.228298
102	0	43.591	0	-182.980	0	-0.228294
Sumas:	6.74E-25	114.550	0			

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
1	0	-1.75E-22	13.766	5.61E-17	120.826	-3.36E-19	-0.051906
1	1.275	-1.75E-22	12.363	5.61E-17	118.582	7.12E-17	16.604
2	0	-1.75E-22	12.064	5.42E-17	118.582	7.17E-17	16.692
2	1.275	-1.75E-22	10.662	5.42E-17	116.338	1.41E-16	31.179
3	0	-1.75E-22	11.096	5.70E-17	116.338	1.41E-16	31.181
3	1.275	-1.75E-22	9.694	5.70E-17	114.094	2.13E-16	44.434
4	0	-1.75E-22	9.384	5.50E-17	114.094	2.13E-16	44.355
4	1.275	-1.75E-22	7.982	5.50E-17	111.850	2.83E-16	55.425
5	0	-1.75E-22	8.207	5.64E-17	111.850	2.83E-16	55.400
5	1.275	-1.75E-22	6.804	5.64E-17	109.606	3.55E-16	64.970
6	0	-1.75E-22	6.641	5.54E-17	109.606	3.54E-16	64.905
6	1.275	-1.75E-22	5.238	5.54E-17	107.362	4.25E-16	72.478
7	0	-1.75E-22	5.410	5.65E-17	107.362	4.24E-16	72.409
7	1.275	-1.75E-22	4.007	5.65E-17	105.118	4.97E-16	78.412
8	0	-1.75E-22	3.595	5.38E-17	105.118	4.97E-16	78.496
8	1.275	-1.75E-22	2.193	5.38E-17	102.874	5.66E-16	82.186
9	0	-1.75E-22	2.463	5.56E-17	102.874	5.67E-16	82.360
9	1.275	-1.75E-22	1.060	5.56E-17	100.630	6.38E-16	84.606
10	0	-1.75E-22	1.088	5.57E-17	100.630	6.38E-16	84.590
10	1.275	-1.75E-22	-0.314590	5.57E-17	98.386	7.09E-16	85.083
11	0	5.15E-19	9.501	9.80E-19	14.960	7.11E-16	84.710
11	1.700	5.15E-19	7.631	9.80E-19	11.968	7.13E-16	99.272
12	0	5.15E-19	7.395	-5.49E-19	11.968	7.12E-16	99.216
12	1.700	5.15E-19	5.525	-5.49E-19	8.976	7.11E-16	110.198
13	0	5.15E-19	5.607	-1.93E-20	8.976	7.12E-16	110.273
13	1.700	5.15E-19	3.737	-1.93E-20	5.984	7.12E-16	118.215
14	0	5.15E-19	3.685	-3.56E-19	5.984	7.12E-16	118.265

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
14	1.700	5.15E-19	1.815	-3.56E-19	2.992	7.12E-16	122.939
15	0	5.15E-19	1.866	-2.29E-20	2.992	7.12E-16	122.989
15	1.700	5.15E-19	-0.003486	-2.29E-20	5.19E-05	7.12E-16	124.573
16	0	5.15E-19	0.159719	1.03E-18	1.85E-05	7.11E-16	124.440
16	1.700	5.15E-19	-1.710	1.03E-18	-2.992	7.13E-16	123.122
17	0	5.15E-19	-1.890	-1.30E-19	-2.992	7.12E-16	123.003
17	1.700	5.15E-19	-3.760	-1.30E-19	-5.984	7.12E-16	118.201
18	0	5.15E-19	-3.812	-4.67E-19	-5.984	7.12E-16	118.279
18	1.700	5.15E-19	-5.682	-4.67E-19	-8.976	7.11E-16	110.209
19	0	5.15E-19	-5.598	7.56E-20	-8.976	7.12E-16	110.260
19	1.700	5.15E-19	-7.468	7.56E-20	-11.968	7.12E-16	99.154
20	0	5.15E-19	-7.485	-3.36E-20	-11.968	7.12E-16	99.148
20	1.700	5.15E-19	-9.355	-3.36E-20	-14.960	7.12E-16	84.834
21	0	-1.74E-22	0.173198	-5.66E-17	-98.386	7.09E-16	85.173
21	1.275	-1.74E-22	-1.229	-5.66E-17	-100.630	6.37E-16	84.500
22	0	-1.74E-22	-1.195	-5.64E-17	-100.630	6.38E-16	84.691
22	1.275	-1.74E-22	-2.598	-5.64E-17	-102.874	5.66E-16	82.274
23	0	-1.74E-22	-2.313	-5.46E-17	-102.874	5.66E-16	82.262
23	1.275	-1.74E-22	-3.716	-5.46E-17	-105.118	4.97E-16	78.419
24	0	-1.74E-22	-3.580	-5.37E-17	-105.118	4.95E-16	78.139
24	1.275	-1.74E-22	-4.983	-5.37E-17	-107.362	4.26E-16	72.681
25	0	-1.74E-22	-5.357	-5.61E-17	-107.362	4.25E-16	72.554
25	1.275	-1.74E-22	-6.760	-5.61E-17	-109.606	3.54E-16	64.829
26	0	-1.74E-22	-6.921	-5.72E-17	-109.606	3.55E-16	65.044
26	1.275	-1.74E-22	-8.323	-5.72E-17	-111.850	2.82E-16	55.326
27	0	-1.74E-22	-8.096	-5.57E-17	-111.850	2.83E-16	55.498
27	1.275	-1.74E-22	-9.498	-5.57E-17	-114.094	2.12E-16	44.282
28	0	-1.74E-22	-9.256	-5.41E-17	-114.094	2.12E-16	44.154
28	1.275	-1.74E-22	-10.658	-5.41E-17	-116.338	1.43E-16	31.460
29	0	-1.74E-22	-10.773	-5.49E-17	-116.338	1.41E-16	31.250
29	1.275	-1.74E-22	-12.176	-5.49E-17	-118.582	7.13E-17	16.621
30	0	-1.74E-22	-12.474	-5.68E-17	-118.582	7.16E-17	16.675
30	1.275	-1.74E-22	-13.876	-5.68E-17	-120.826	-7.85E-19	-0.122513
201	0	5.56E-17	43.590	5.16E-19	-0.228298	-1.72E-18	-182.972
201	10.000	5.56E-17	9.691	5.16E-19	-0.228298	3.44E-18	83.424

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
202	0	5.56E-17	43.590	-5.16E-19	0.228294	1.72E-18	-182.972
202	10.000	5.56E-17	9.691	-5.16E-19	0.228294	-3.44E-18	83.424

CARGAS: '' Ejec. "0001"

Hipótesis	Factor	Etapa	Título
32	1.0000		Frenado

DESPLAZAMIENTOS:

NUDOS	DX [mm]	DY [mm]	DZ [mm]	RX [rad]	RY [rad]	RZ [rad]
1	2.848	1.34E-19	7.99E-18	0	-1.53E-05	-1.06E-22
2	2.848	6.59E-22	0.019366	-1.06E-25	-1.49E-05	-1.03E-22
3	2.848	-1.25E-19	0.037580	-2.12E-25	-1.35E-05	-9.39E-23
4	2.848	-2.36E-19	0.053492	-3.18E-25	-1.13E-05	-7.93E-23
5	2.848	-3.25E-19	0.065952	-4.24E-25	-8.12E-06	-5.88E-23
6	2.848	-3.84E-19	0.073807	-5.30E-25	-4.05E-06	-3.25E-23
7	2.848	-4.06E-19	0.075907	-6.36E-25	9.11E-07	-4.02E-25
8	2.848	-3.82E-19	0.071102	-7.43E-25	6.78E-06	3.76E-23
9	2.848	-3.07E-19	0.058239	-8.49E-25	1.35E-05	8.14E-23
10	2.848	-1.72E-19	0.036168	-9.55E-25	2.12E-05	1.31E-22
11	2.848	2.96E-20	0.003737	-1.06E-24	2.98E-05	1.87E-22
12	2.848	2.56E-19	-0.032946	-8.49E-25	1.39E-05	8.40E-23
13	2.848	3.28E-19	-0.045672	-6.36E-25	1.61E-06	4.12E-24
14	2.848	2.83E-19	-0.040430	-4.24E-25	-7.19E-06	-5.29E-23
15	2.849	1.61E-19	-0.023209	-2.12E-25	-1.25E-05	-8.71E-23
16	2.849	-3.91E-25	5.92E-08	-6.86E-31	-1.42E-05	-9.85E-23
17	2.849	-1.61E-19	0.023210	2.12E-25	-1.25E-05	-8.71E-23
18	2.848	-2.83E-19	0.040430	4.24E-25	-7.19E-06	-5.29E-23
19	2.848	-3.28E-19	0.045672	6.36E-25	1.61E-06	4.12E-24
20	2.848	-2.56E-19	0.032945	8.49E-25	1.39E-05	8.40E-23
21	2.848	-2.96E-20	-0.003737	1.06E-24	2.98E-05	1.87E-22
22	2.848	1.72E-19	-0.036168	9.55E-25	2.12E-05	1.31E-22
23	2.848	3.07E-19	-0.058239	8.49E-25	1.35E-05	8.14E-23
24	2.848	3.82E-19	-0.071102	7.43E-25	6.78E-06	3.76E-23
25	2.848	4.06E-19	-0.075908	6.36E-25	9.11E-07	-4.02E-25
26	2.848	3.84E-19	-0.073807	5.30E-25	-4.05E-06	-3.25E-23
27	2.848	3.25E-19	-0.065952	4.24E-25	-8.12E-06	-5.88E-23
28	2.848	2.36E-19	-0.053493	3.18E-25	-1.13E-05	-7.93E-23
29	2.848	1.25E-19	-0.037580	2.12E-25	-1.35E-05	-9.39E-23
30	2.848	-6.59E-22	-0.019366	1.06E-25	-1.49E-05	-1.03E-22
31	2.848	-1.34E-19	-7.99E-18	0	-1.53E-05	-1.06E-22
101	5.11E-17	0	9.55E-18	0	2.60E-19	0
102	5.11E-17	0	-9.55E-18	0	2.60E-19	0

REACCIONES EN APOYOS:

NUDOS	FX [t]	FY [t]	FZ [t]	MX [tm]	MY [tm]	MZ [tm]
1	-1.899	-8.94E-20	-0.799066	0		
31	-1.899	8.94E-20	0.799065	0		
101	-5.114	0	-0.955049	0	-26.039	0
102	-5.114	0	0.955050	0	-26.039	0
Sumas:	-14.025	4.52E-26	0			

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
1	0	1.899	-8.97E-20	-0.799064	-8.53E-20	-1.84E-05	-1.16E-21
1	1.275	1.478	-8.97E-20	-0.799064	-8.53E-20	-1.019	-1.16E-19
2	0	1.477	-8.72E-20	-0.799055	-8.53E-20	-1.019	-1.17E-19
2	1.275	1.056	-8.72E-20	-0.799055	-8.53E-20	-2.038	-2.28E-19
3	0	1.058	-9.44E-20	-0.799076	-8.53E-20	-2.038	-2.23E-19
3	1.275	0.636969	-9.44E-20	-0.799076	-8.53E-20	-3.056	-3.43E-19
4	0	0.638623	-9.05E-20	-0.799072	-8.53E-20	-3.056	-3.44E-19
4	1.275	0.217889	-9.05E-20	-0.799072	-8.53E-20	-4.075	-4.60E-19
5	0	0.213426	-8.39E-20	-0.799059	-8.53E-20	-4.075	-4.61E-19
5	1.275	-0.207308	-8.39E-20	-0.799059	-8.53E-20	-5.094	-5.68E-19
6	0	-0.202595	-9.40E-20	-0.799071	-8.53E-20	-5.094	-5.67E-19
6	1.275	-0.623328	-9.40E-20	-0.799071	-8.53E-20	-6.113	-6.87E-19
7	0	-0.627792	-8.60E-20	-0.799050	-8.53E-20	-6.113	-6.85E-19
7	1.275	-1.049	-8.60E-20	-0.799050	-8.53E-20	-7.132	-7.95E-19
8	0	-1.047	-9.56E-20	-0.799092	-8.53E-20	-7.132	-7.95E-19
8	1.275	-1.468	-9.56E-20	-0.799092	-8.53E-20	-8.150	-9.17E-19
9	0	-1.466	-8.55E-20	-0.799032	-8.53E-20	-8.151	-9.17E-19
9	1.275	-1.887	-8.55E-20	-0.799032	-8.53E-20	-9.169	-1.03E-18
10	0	-1.888	-8.89E-20	-0.799069	-8.53E-20	-9.169	-1.02E-18
10	1.275	-2.309	-8.89E-20	-0.799069	-8.53E-20	-10.188	-1.14E-18
11	0	2.804	-1.37E-19	-1.754	1.28E-19	14.910	1.15E-18
11	1.700	2.243	-1.37E-19	-1.754	1.28E-19	11.928	9.21E-19
12	0	2.244	-1.35E-19	-1.754	1.28E-19	11.928	9.21E-19
12	1.700	1.683	-1.35E-19	-1.754	1.28E-19	8.946	6.91E-19
13	0	1.682	-1.37E-19	-1.754	1.28E-19	8.946	6.91E-19
13	1.700	1.121	-1.37E-19	-1.754	1.28E-19	5.964	4.59E-19
14	0	1.122	-1.36E-19	-1.754	1.28E-19	5.964	4.62E-19

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
14	1.700	0.561493	-1.36E-19	-1.754	1.28E-19	2.982	2.30E-19
15	0	0.562679	-1.35E-19	-1.754	1.28E-19	2.982	2.31E-19
15	1.700	0.001701	-1.35E-19	-1.754	1.28E-19	5.50E-05	1.36E-21
16	0	-0.001701	-1.35E-19	-1.754	1.28E-19	-6.14E-05	9.16E-22
16	1.700	-0.562679	-1.35E-19	-1.754	1.28E-19	-2.982	-2.29E-19
17	0	-0.561493	-1.36E-19	-1.754	1.28E-19	-2.982	-2.29E-19
17	1.700	-1.122	-1.36E-19	-1.754	1.28E-19	-5.964	-4.60E-19
18	0	-1.121	-1.36E-19	-1.754	1.28E-19	-5.964	-4.60E-19
18	1.700	-1.682	-1.36E-19	-1.754	1.28E-19	-8.946	-6.91E-19
19	0	-1.683	-1.33E-19	-1.754	1.28E-19	-8.946	-6.92E-19
19	1.700	-2.244	-1.33E-19	-1.754	1.28E-19	-11.928	-9.19E-19
20	0	-2.243	-1.36E-19	-1.754	1.28E-19	-11.928	-9.22E-19
20	1.700	-2.804	-1.36E-19	-1.754	1.28E-19	-14.910	-1.15E-18
21	0	2.309	-8.61E-20	-0.799045	-8.53E-20	10.188	1.13E-18
21	1.275	1.888	-8.61E-20	-0.799045	-8.53E-20	9.169	1.02E-18
22	0	1.887	-9.09E-20	-0.799065	-8.53E-20	9.169	1.02E-18
22	1.275	1.466	-9.09E-20	-0.799065	-8.53E-20	8.151	9.08E-19
23	0	1.468	-9.42E-20	-0.799049	-8.53E-20	8.150	9.13E-19
23	1.275	1.047	-9.42E-20	-0.799049	-8.53E-20	7.132	7.93E-19
24	0	1.049	-8.56E-20	-0.799048	-8.53E-20	7.132	7.95E-19
24	1.275	0.627791	-8.56E-20	-0.799048	-8.53E-20	6.113	6.86E-19
25	0	0.623328	-8.92E-20	-0.799066	-8.53E-20	6.113	6.84E-19
25	1.275	0.202594	-8.92E-20	-0.799066	-8.53E-20	5.094	5.70E-19
26	0	0.207308	-8.95E-20	-0.799070	-8.53E-20	5.094	5.71E-19
26	1.275	-0.213426	-8.95E-20	-0.799070	-8.53E-20	4.075	4.57E-19
27	0	-0.217889	-8.68E-20	-0.799093	-8.53E-20	4.075	4.56E-19
27	1.275	-0.638623	-8.68E-20	-0.799093	-8.53E-20	3.056	3.45E-19
28	0	-0.636968	-8.97E-20	-0.799075	-8.53E-20	3.056	3.45E-19
28	1.275	-1.058	-8.97E-20	-0.799075	-8.53E-20	2.038	2.30E-19
29	0	-1.056	-8.39E-20	-0.799068	-8.53E-20	2.038	2.27E-19
29	1.275	-1.477	-8.39E-20	-0.799068	-8.53E-20	1.019	1.20E-19
30	0	-1.478	-8.84E-20	-0.799077	-8.53E-20	1.019	1.16E-19
30	1.275	-1.899	-8.84E-20	-0.799077	-8.53E-20	7.48E-06	3.82E-21
201	0	0.955049	-4.60E-20	5.114	2.29E-18	-26.038	2.47E-19
201	10.000	0.955049	-4.60E-20	5.114	2.29E-18	25.097	-2.13E-19

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
202	0	-0.955050	4.60E-20	5.114	2.29E-18	-26.038	-2.47E-19
202	10.000	-0.955050	4.60E-20	5.114	2.29E-18	25.097	2.13E-19

ENVOLVENTE: FC '' Ejec. "0001"

Grupo	Espe.	Hipótesis	Factor	Etapa	Título
A		3	1.000		Sobrecarga de uso 1
B	MAS	4	1.000		Sobrecarga de uso 2
C	MAS	5	1.000		Sobrecarga de uso 3
D	MAS	6	1.000		Sobrecarga de uso 4
E	MAS	7	1.000		Sobrecarga de uso 5
F	MAS	8	1.000		Sobrecarga de uso 6
G	MAS	9	1.000		Sobrecarga de uso 7
H	MAS	10	1.000		Sobrecarga de uso 8
I	MAS	11	1.000		Sobrecarga de uso 9
J	MAS	12	1.000		Sobrecarga de uso 10
K	MAS	13	1.000		Sobrecarga de uso 11
L	MAS	14	1.000		Sobrecarga de uso 12
M	MAS	15	1.000		Carro 1
N	MAS	16	1.000		Carro 2
O	O	17	1.000		Carro 3
P	O	18	1.000		Carro 4
Q	O	19	1.000		Carro 5
R	O	20	1.000		Carro 6
S	O	21	1.000		Carro 7
T	O	22	1.000		Carro 8
U	O	23	1.000		Carro 9
V	O	24	1.000		Carro 10
W	O	25	1.000		Carro 11
X	O	26	1.000		Carro 12

ENVOLVENTE para < N > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
201	0	-126.597	1.19E-07	-0.393343	-4.43E-18	2.155	-1.19E-07
		2.485	9.31E-10	0.444203	-3.73E-09	-1.960	2.98E-08
201	10.000	-126.597	1.19E-07	-0.393343	-4.43E-18	-1.778	-2.38E-07
		2.485	9.31E-10	0.444203	-3.73E-09	2.481	2.98E-08
202	0	-93.911	-1.49E-08	2.881	1.86E-09	-10.078	-2.98E-08
		9.183	2.72E-19	-1.612	4.14E-18	7.072	-1.36E-18
202	10.000	-93.911	-1.49E-08	2.881	1.86E-09	18.730	-3.58E-07
		9.183	2.72E-19	-1.612	4.14E-18	-9.050	1.36E-18

ENVOLVENTE para < Vz > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
1	0	0.001150	2.98E-08	-9.345	-1.56E-18	-0.000214	-2.91E-11
		-0.126756	-0.175473	121.881	-85.037	0.003029	0.002116
1	1.275	0.001150	2.98E-08	-9.345	-1.56E-18	-11.914	4.58E-19
		-0.126756	-0.175473	77.597	-55.037	102.066	-0.221604
2	0	0.001198	3.15E-19	-9.345	-1.56E-18	-11.915	5.04E-19
		-0.126756	-0.166133	77.597	-55.037	102.069	-0.223248
2	1.275	0.001198	3.15E-19	-9.345	-1.56E-18	-23.829	9.06E-19
		-0.258196	7.45E-09	51.015	9.54E-07	171.210	-5.96E-08
3	0	0.001150	4.02E-19	-9.345	-9.54E-07	-23.830	5.96E-08
		-0.258483	-7.45E-09	51.014	-2.15E-06	171.213	-3.73E-08
3	1.275	-0.125944	-0.173016	-21.093	4.963	99.717	-0.658771
		-0.195296	-7.45E-09	35.449	-2.15E-06	160.171	7.45E-08
4	0	-0.125848	-0.175287	-21.094	4.963	99.717	-0.656185
		-0.195296	3.35E-08	35.450	-1.44E-18	160.173	-4.47E-08
4	1.275	-0.169534	-0.175287	-23.298	4.963	105.282	-0.879668
		-0.151610	3.73E-09	13.369	-1.44E-18	165.680	3.28E-18
5	0	-0.301118	5.54E-19	-25.597	9.54E-07	202.858	3.58E-07
		-0.059937	1.12E-08	9.275	-4.77E-07	47.304	4.47E-08
5	1.275	-0.301118	5.54E-19	-29.880	9.54E-07	167.492	-4.77E-07
		-0.059937	1.12E-08	9.275	-4.77E-07	59.130	-1.49E-08
6	0	-0.301643	1.01E-18	-29.879	-1.91E-06	167.491	4.83E-18
		-0.059650	2.24E-08	9.275	-8.34E-07	59.130	4.69E-18
6	1.275	-0.359477	1.01E-18	-50.195	-1.84E-18	136.021	-1.19E-07
		-0.001816	-7.45E-09	5.307	1.19E-07	40.601	2.98E-08
7	0	-0.358951	5.96E-08	-50.197	-1.91E-06	136.018	-1.19E-07
		-0.001721	3.73E-09	5.307	-1.19E-07	40.601	5.68E-18
7	1.275	-0.358951	5.96E-08	-54.480	1.91E-06	69.289	-4.77E-07
		-0.001721	3.73E-09	5.307	-1.19E-07	47.367	-2.98E-08
8	0	-0.359286	5.96E-08	-54.480	-9.54E-07	69.287	-4.77E-07
		-0.001816	-3.73E-09	5.307	-2.65E-18	47.368	5.96E-08

ENVOLVENTE para < Vz > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
8	1.275	-0.359286	5.96E-08	-58.764	-9.54E-07	-2.903	2.38E-07
		0.087444	-3.73E-09	1.240	-2.85E-18	12.649	6.68E-18
9	0	-0.359382	2.98E-08	-58.764	9.54E-07	-2.906	4.77E-07
		0.087348	6.71E-19	1.240	-2.38E-07	12.649	6.67E-18
9	1.275	-0.267421	2.98E-08	-67.141	-9.54E-07	-39.028	-2.38E-07
		0.101137	0	0.417847	-2.38E-07	4.795	0
10	0	-0.267564	-5.96E-08	-67.141	9.54E-07	-39.031	4.77E-07
		0.101233	-3.73E-09	0.417840	1.19E-07	4.795	-5.96E-08
10	1.275	-0.267564	-5.96E-08	-71.425	-9.54E-07	-127.363	1.17E-17
		0.101233	-3.73E-09	0.417840	1.19E-07	5.328	-2.98E-08
11	0	0.545525	3.73E-09	-2.067	2.38E-07	7.809	0
		-1.191	-2.24E-08	67.558	1.91E-06	-134.484	-2.38E-07
11	1.700	0.474063	3.73E-09	-2.957	2.38E-07	12.947	7.96E-18
		-2.630	-2.24E-08	56.282	9.54E-07	-87.367	7.15E-07
12	0	0.474009	3.73E-09	-2.957	1.19E-07	12.947	7.97E-18
		-2.630	7.45E-09	56.283	2.96E-19	-87.364	-9.54E-07
12	1.700	-0.145110	3.73E-09	-6.503	1.19E-07	42.378	1.32E-17
		-2.630	7.45E-09	50.571	1.91E-06	3.458	2.38E-07
13	0	-0.145182	-7.45E-09	-6.503	-1.19E-07	42.378	1.32E-17
		-2.630	-7.45E-09	50.570	-9.54E-07	3.461	2.02E-17
13	1.700	-0.145182	-7.45E-09	-6.503	-1.19E-07	31.324	-1.19E-07
		-2.630	-7.45E-09	44.858	2.96E-19	84.571	2.01E-17
14	0	-0.145110	-6.37E-19	-6.503	-1.19E-07	31.323	5.96E-08
		-2.630	1.49E-08	44.858	2.96E-19	84.575	-1.19E-06
14	1.700	-0.843308	-6.37E-19	-7.333	-1.19E-07	59.258	-2.38E-07
		-1.932	8.47E-20	39.977	2.96E-19	116.986	-9.54E-07
15	0	-0.843308	-3.73E-09	-7.333	-2.38E-07	59.258	2.98E-07
		-1.932	-9.15E-20	39.976	2.96E-19	116.989	-4.77E-07
15	1.700	-0.843308	-3.73E-09	-13.045	-2.38E-07	41.937	3.58E-07

ENVOLVENTE para < Vz > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
		-1.932	-9.15E-20	19.976	2.96E-19	154.947	-9.54E-07
16	0	-2.283	1.12E-08	-18.609	-1.19E-07	161.226	1.19E-07
		1.272	7.45E-09	14.137	1.37E-18	-2.534	4.77E-07
16	1.700	-2.283	1.12E-08	-38.609	-1.19E-07	125.592	5.96E-08
		1.272	7.45E-09	8.425	1.37E-18	16.643	-4.77E-07
17	0	-2.283	1.84E-20	-38.609	-1.19E-07	125.590	-2.38E-07
		1.272	7.36E-20	8.426	1.37E-18	16.644	-9.02E-18
17	1.700	-2.981	1.84E-20	-43.491	-1.19E-07	95.502	-7.75E-07
		1.971	7.36E-20	7.595	1.37E-18	-9.434	-8.90E-18
18	0	-2.981	1.86E-08	-43.491	-2.38E-07	95.499	9.54E-07
		1.971	7.02E-20	7.595	1.37E-18	-9.434	-8.90E-18
18	1.700	-2.981	1.86E-08	-49.203	7.15E-07	16.713	5.96E-07
		1.971	7.02E-20	7.595	1.37E-18	3.478	-8.78E-18
19	0	-2.981	-1.12E-08	-49.203	4.77E-07	16.709	7.15E-07
		1.970	6.53E-20	7.595	1.37E-18	3.478	-8.77E-18
19	1.700	-2.981	-1.12E-08	-54.915	-9.54E-07	-71.787	-2.38E-07
		1.970	6.53E-20	7.595	1.37E-18	16.389	-8.66E-18
20	0	-2.981	3.10E-20	-54.915	-3.58E-07	-71.791	-2.38E-07
		1.971	7.38E-20	7.595	1.37E-18	16.390	-8.65E-18
20	1.700	-2.981	3.10E-20	-60.627	5.96E-07	-169.997	2.38E-07
		1.971	7.38E-20	7.595	1.37E-18	29.301	-8.53E-18
21	0	0.358569	3.40E-19	-1.588	9.36E-21	20.251	-4.39E-18
		-0.100465	-4.47E-08	33.284	1.56E-18	-151.268	-2.38E-07
21	1.275	0.358569	3.40E-19	-1.588	9.36E-21	18.226	-3.96E-18
		-0.100465	-4.47E-08	29.000	-4.77E-07	-111.563	4.32E-18
22	0	0.358091	3.45E-19	-1.588	9.36E-21	18.226	-3.95E-18
		-0.100417	-1.49E-08	29.000	-7.15E-07	-111.562	-2.38E-07
22	1.275	0.358091	3.45E-19	-1.588	9.36E-21	16.201	-3.51E-18
		-0.100417	-1.49E-08	24.716	-1.91E-06	-77.319	-1.19E-07

ENVOLVENTE para < Vz > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
23	0	0.358377	3.48E-19	-1.588	9.36E-21	16.201	-3.51E-18
		-0.100416	-2.24E-08	24.716	2.38E-07	-77.318	4.17E-07
23	1.275	0.358377	3.48E-19	-1.588	9.36E-21	14.176	-3.07E-18
		-0.100416	-2.24E-08	20.432	1.56E-18	-48.537	1.19E-07
24	0	0.358569	3.27E-19	-1.588	9.36E-21	14.176	-3.06E-18
		-0.100417	-7.45E-08	20.432	-1.91E-06	-48.536	-4.17E-07
24	1.275	0.358569	3.27E-19	-1.588	9.36E-21	12.151	-2.64E-18
		-0.100417	-7.45E-08	16.148	-9.54E-07	-25.216	4.17E-07
25	0	0.357995	3.49E-19	-1.588	9.36E-21	12.151	-2.63E-18
		-0.100417	-7.45E-08	16.148	-9.54E-07	-25.216	2.80E-18
25	1.275	0.300161	2.98E-08	-5.556	9.36E-21	35.422	-2.19E-18
		-0.042584	-4.47E-08	15.832	1.56E-18	-32.655	-1.19E-07
26	0	0.300544	3.49E-19	-5.556	9.36E-21	35.421	-2.20E-18
		-0.042582	-7.45E-09	15.832	-1.19E-06	-32.654	3.58E-07
26	1.275	0.300544	3.49E-19	-5.556	9.36E-21	28.338	1.19E-07
		-0.042582	-7.45E-09	11.549	-1.43E-06	-15.199	2.38E-07
27	0	0.300639	3.38E-19	-5.556	9.54E-07	28.337	-1.75E-18
		-0.042488	-3.73E-08	11.548	7.15E-07	-15.199	-1.19E-07
27	1.275	0.256953	-7.45E-09	-7.637	-1.43E-06	53.791	2.98E-08
		0.001198	-2.98E-08	9.345	1.56E-18	-35.744	1.19E-07
28	0	0.256380	-7.45E-09	-7.637	4.77E-07	53.790	1.19E-07
		0.001199	2.98E-08	9.345	1.56E-18	-35.744	1.19E-07
28	1.275	0.256380	-7.45E-09	-11.921	9.36E-21	41.323	-1.49E-08
		0.001199	2.98E-08	9.345	1.56E-18	-23.829	9.25E-19
29	0	0.256858	-2.24E-08	-11.921	-1.91E-06	41.322	-1.64E-07
		0.001150	2.98E-08	9.345	1.56E-18	-23.829	-1.19E-07
29	1.275	0.256858	-2.24E-08	-16.205	-3.81E-06	23.393	5.22E-08
		0.001150	2.98E-08	9.345	1.56E-18	-11.915	4.34E-19
30	0	0.256858	-2.24E-08	-16.205	-9.54E-07	23.392	2.98E-08

ENVOLVENTE para < Vz > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
		0.001246	-3.86E-19	9.345	1.56E-18	-11.914	4.63E-19
30	1.275	0.256858	-2.24E-08	-20.489	-3.81E-06	0.000376	1.75E-10
		0.001246	-3.86E-19	9.345	1.56E-18	-0.000133	-2.91E-11
201	0	-67.905	-3.72E-19	-3.528	1.79E-17	11.754	2.17E-18
		-68.786	4.66E-09	2.774	-3.73E-09	-8.023	-8.94E-08
201	10.000	-67.905	-3.72E-19	-3.528	1.79E-17	-23.525	-2.38E-07
		-68.786	4.66E-09	2.774	-3.73E-09	19.720	-3.28E-07
202	0	-16.823	4.47E-08	-2.259	1.86E-09	8.747	-2.98E-08
		-67.905	-3.72E-19	3.528	-1.79E-17	-11.754	7.68E-09
202	10.000	-16.823	4.47E-08	-2.259	1.86E-09	-13.845	1.19E-07
		-67.905	-3.72E-19	3.528	-1.79E-17	23.525	-1.56E-18

ENVOLVENTE para < Mx > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
1	0	-0.126350	-1.515	110.394	-141.205	0.002781	-0.006554
		2.39E-05	1.340	7.831	56.168	0.000171	0.008670
1	1.275	-0.258173	-1.960	65.953	-127.928	85.654	-2.516
		2.39E-05	1.340	5.689	56.168	8.619	1.717
2	0	-0.257766	-2.001	65.953	-127.928	85.657	-2.522
		4.78E-05	1.368	5.689	56.168	8.619	1.716
2	1.275	-0.257766	-2.001	43.811	-127.928	147.379	-5.073
		4.78E-05	1.368	3.547	56.168	14.507	3.460
3	0	-0.258125	-1.978	43.811	-127.928	147.382	-5.068
		7.17E-05	1.339	3.547	56.168	14.507	3.460
3	1.275	-0.258125	-1.978	21.669	-127.928	185.373	-7.590
		-0.063115	1.166	-7.313	61.131	74.515	4.508
4	0	-0.258077	-1.996	21.670	-127.928	185.374	-7.588

ENVOLVENTE para < Mx > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
		-0.063067	1.180	-7.314	61.131	74.515	4.518
4	1.275	-0.166117	-2.645	-4.566	-109.028	88.761	-13.471
		-0.063067	1.180	-9.456	61.131	63.825	6.023
5	0	-0.166427	-2.638	-4.566	-109.028	88.761	-13.470
		-0.063187	1.182	-9.456	61.131	63.824	6.023
5	1.275	-0.166427	-2.638	-6.708	-109.028	81.574	-16.834
		-0.063187	1.182	-11.597	61.131	50.404	7.530
6	0	-0.166308	-2.666	-6.708	-109.028	81.573	-16.819
		-0.063259	1.191	-11.598	61.131	50.403	7.523
6	1.275	-0.166308	-2.666	-8.850	-100.032	71.655	-20.219
		-0.194986	0.735380	-36.038	65.411	104.967	5.523
7	0	-0.166140	-2.618	-8.850	-100.032	71.655	-20.218
		-0.194532	0.692723	-36.039	65.411	104.965	5.531
7	1.275	-0.166140	-2.618	-10.992	-91.036	59.006	-23.555
		-0.194532	0.692723	-38.181	56.415	57.651	6.415
8	0	-0.166164	-2.658	-10.992	-91.035	59.005	-23.558
		-0.194938	0.724903	-38.180	56.415	57.650	6.430
8	1.275	-0.076905	-2.724	-17.201	-77.885	2.140	-27.828
		-0.194938	0.724903	-40.322	47.419	7.606	7.354
9	0	-0.077000	-2.741	-17.202	-77.885	2.139	-27.823
		-0.195033	0.723370	-40.323	47.418	7.604	7.350
9	1.275	0.004278	-1.623	-22.358	-79.096	-55.746	-18.789
		-0.195033	-0.384503	-42.465	51.985	-45.170	-4.291
10	0	0.004349	-1.655	-22.358	-79.096	-55.747	-18.787
		-0.194579	-0.367448	-42.464	51.985	-45.172	-4.289
10	1.275	0.004349	-1.655	-24.500	-88.092	-85.617	-20.898
		-0.194579	-0.367448	-44.606	60.982	-100.678	-4.758
11	0	-2.283	-0.465075	44.280	-88.529	-124.461	-15.817
		0.692929	1.111	17.334	62.713	-78.814	-13.714

ENVOLVENTE para < Mx > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
11	1.700	-2.283	-0.465075	41.424	-82.545	-51.616	-16.607
		0.126774	1.116	11.902	59.802	-22.804	-12.933
12	0	-2.283	-0.443172	41.424	-82.544	-51.613	-16.610
		0.126738	1.108	11.902	59.802	-22.803	-12.932
12	1.700	-2.283	-0.443172	38.568	-76.561	16.378	-17.363
		-0.492381	1.055	5.500	57.407	29.459	-11.255
13	0	-2.283	-0.463504	38.568	-76.561	16.380	-17.367
		-0.492470	1.053	5.499	57.407	29.459	-11.253
13	1.700	-2.283	-0.463504	35.712	-70.577	79.515	-18.155
		-0.492470	1.053	2.644	51.423	36.380	-9.462
14	0	-2.283	-0.465845	35.712	-70.577	79.518	-18.139
		-0.492327	1.062	2.643	51.423	36.380	-9.466
14	1.700	-2.283	-0.714323	32.856	-74.813	137.798	-10.024
		-0.492327	1.311	-0.212660	55.659	38.446	-16.567
15	0	-2.283	-0.679422	32.856	-74.813	137.801	-10.026
		-0.492381	1.279	-0.212383	55.659	38.446	-16.562
15	1.700	-2.283	-0.679422	10.000	-50.797	161.226	-11.181
		-0.492381	1.279	-3.068	61.643	35.658	-14.388
16	0	-0.152745	-0.692505	-9.64E-05	-35.797	22.963	1.583
		-0.492435	1.299	-3.069	61.643	35.658	-14.373
16	1.700	-0.152745	-0.692505	-2.856	-29.799	20.535	0.406104
		-1.932	0.686222	-31.489	74.799	133.846	-13.196
17	0	-0.152727	-0.702876	-2.856	-29.799	20.535	0.406133
		-1.932	0.711145	-31.489	74.799	133.844	-13.197
17	1.700	-0.152727	-0.465203	-5.712	-25.553	13.253	8.552
		-1.932	0.473472	-34.345	70.553	77.888	-21.329
18	0	-0.152781	-0.449574	-5.712	-25.554	13.252	8.556
		-1.932	0.443453	-34.345	70.554	77.885	-21.335
18	1.700	-0.152781	-0.449574	-8.568	-31.551	1.115	7.792
		-1.932	0.443453	-37.201	76.551	17.074	-20.581

ENVOLVENTE para < Mx > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
19	0	-0.152745	-0.459766	-8.568	-31.551	1.114	7.791
		-1.932	0.468180	-37.201	76.551	17.072	-20.582
19	1.700	-0.152745	-0.459766	-11.424	-37.548	-15.878	7.010
		-1.932	0.468180	-40.056	82.548	-48.594	-19.787
20	0	-0.152782	-0.444316	-11.424	-37.549	-15.879	7.005
		-1.932	0.439842	-40.057	82.549	-48.597	-19.785
20	1.700	-0.152782	-0.444316	-14.280	-43.546	-37.727	6.250
		-1.932	0.439842	-42.913	88.546	-119.118	-19.037
21	0	0.013909	-0.522077	13.928	-39.857	-41.034	6.515
		0.063787	1.532	18.985	73.271	-101.711	-19.329
21	1.275	0.013909	-0.522077	11.786	-35.359	-24.641	5.850
		0.063787	1.532	16.843	68.773	-82.671	-17.376
22	0	0.013885	-0.498311	11.786	-35.359	-24.641	5.849
		0.063763	1.509	16.843	68.773	-82.670	-17.382
22	1.275	0.013885	-1.037	9.644	-33.076	-10.979	10.799
		0.063763	2.048	14.701	66.489	-62.561	-21.044
23	0	0.013885	-1.069	9.644	-33.076	-10.979	10.794
		0.063669	2.068	14.701	66.490	-62.560	-21.038
23	1.275	0.013885	-1.069	7.502	-37.574	-0.048070	9.431
		0.063669	2.068	12.559	70.988	-45.182	-18.401
24	0	0.013909	-1.060	7.502	-37.574	-0.047734	9.440
		0.063811	2.071	12.559	70.988	-45.182	-18.411
24	1.275	0.013909	-1.060	5.360	-42.072	8.152	8.088
		0.063811	2.071	10.417	75.486	-30.534	-15.770
25	0	0.013885	-1.064	5.360	-42.072	8.152	8.094
		0.063668	2.042	10.417	75.486	-30.534	-15.763
25	1.275	0.013885	-1.064	3.218	-46.570	13.621	6.737
		0.063668	2.042	8.275	79.984	-18.618	-13.159

ENVOLVENTE para < Mx > (y valores concomitantes)
(1. línea: MIN., 2. linea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
26	0	0.013837	-1.058	3.218	-46.570	13.621	6.742
		0.063717	2.059	8.276	79.984	-18.617	-13.144
26	1.275	0.013837	-1.240	1.077	-45.809	16.359	6.323
		0.063717	2.241	6.134	79.223	-9.432	-11.450
27	0	0.013933	-1.241	1.076	-45.809	16.359	6.324
		0.063811	2.254	6.133	79.223	-9.432	-11.453
27	1.275	0.013933	-1.241	-1.066	-50.307	16.366	4.742
		0.063811	2.254	3.991	83.721	-2.977	-8.580
28	0	0.013885	-1.211	-1.066	-50.308	16.366	4.724
		0.063669	2.224	3.991	83.721	-2.977	-8.572
28	1.275	0.013885	-1.211	-3.208	-54.806	13.642	3.180
		0.063669	2.224	1.849	88.219	0.746105	-5.737
29	0	0.013861	-1.252	-3.208	-54.806	13.642	3.169
		0.063739	2.254	1.849	88.220	0.746254	-5.729
29	1.275	0.013861	-1.252	-5.350	-59.304	8.186	1.573
		0.063739	2.254	-0.292612	92.718	1.739	-2.856
30	0	0.013957	-1.249	-5.350	-59.304	8.186	1.587
		0.063739	2.262	-0.292643	92.718	1.739	-2.873
30	1.275	0.013957	-1.249	-7.492	-63.802	0.000145	-0.006044
		0.063739	2.262	-2.435	97.216	8.48E-05	0.011486
201	0	-96.243	3.290	0.203662	-0.707400	-0.314267	-4.037
		-63.557	-0.253093	-2.284	0.401884	7.609	4.287
201	10.000	-96.243	3.290	0.203662	-0.707400	1.722	28.865
		-63.557	-0.253093	-2.284	0.401884	-15.229	1.756
202	0	-29.098	-1.110	0.238093	-0.764286	-0.727789	7.377
		-21.170	1.008	-1.015	0.382181	4.603	-3.130
202	10.000	-29.098	-1.110	0.238093	-0.764286	1.653	-3.724
		-21.170	1.008	-1.015	0.382181	-5.550	6.952

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
1	0	0.001150	2.98E-08	-9.345	-1.56E-18	-0.000214	-2.91E-11
		-0.126756	-0.175473	121.881	-85.037	0.003029	0.002116
1	1.275	0.001150	2.98E-08	-9.345	-1.56E-18	-11.914	4.58E-19
		-0.126756	-0.175473	77.597	-55.037	102.066	-0.221604
2	0	0.001198	3.15E-19	-9.345	-1.56E-18	-11.915	5.04E-19
		-0.126756	-0.166133	77.597	-55.037	102.069	-0.223248
2	1.275	0.001198	3.15E-19	-9.345	-1.56E-18	-23.829	9.06E-19
		-0.258196	7.45E-09	51.015	9.54E-07	171.210	-5.96E-08
3	0	0.001150	4.02E-19	-9.345	-9.54E-07	-23.830	5.96E-08
		-0.258483	-7.45E-09	51.014	-2.15E-06	171.213	-3.73E-08
3	1.275	0.001150	4.02E-19	-9.345	-9.54E-07	-35.744	-1.19E-07
		-0.258483	-7.45E-09	26.730	-2.15E-06	217.023	7.45E-08
4	0	0.001247	2.98E-08	-9.345	9.54E-07	-35.744	-5.96E-08
		-0.258483	3.35E-08	26.731	-1.84E-18	217.024	-4.47E-08
4	1.275	0.001247	2.98E-08	-9.345	9.54E-07	-47.658	-1.19E-07
		-0.258483	3.35E-08	2.447	-1.84E-18	243.875	-2.38E-07
5	0	0.001198	3.44E-19	-9.345	9.54E-07	-47.659	-1.19E-07
		-0.258292	1.12E-08	-17.554	1.43E-06	243.874	-1.94E-07
5	1.275	0.001198	3.44E-19	-9.345	9.54E-07	-59.573	2.35E-18
		-0.258292	1.12E-08	-21.838	1.43E-06	218.763	-1.49E-08
6	0	0.001150	3.73E-19	-9.345	-1.56E-18	-59.573	2.37E-18
		-0.258674	-7.45E-09	-21.837	-2.74E-06	218.761	-4.77E-07
6	1.275	0.001150	3.73E-19	-9.345	-1.56E-18	-71.487	-1.19E-07
		-0.258674	-7.45E-09	-46.121	-8.34E-07	167.190	1.49E-07
7	0	0.001198	3.83E-19	-9.345	-1.56E-18	-71.488	-1.19E-07
		-0.258101	-5.59E-08	-46.122	-1.19E-07	167.188	-3.58E-07
7	1.275	0.001198	3.83E-19	-9.345	-1.56E-18	-83.402	3.34E-18
		-0.258101	-5.59E-08	-50.406	-5.96E-07	105.653	-3.87E-07
8	0	0.001246	3.68E-19	-9.345	-9.54E-07	-83.402	3.31E-18
		-0.258579	-3.35E-08	-50.406	-1.84E-18	105.651	2.98E-07

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
8	1.275	0.001246	3.68E-19	-9.345	-9.54E-07	-95.316	-2.38E-07
		-0.166618	-3.35E-08	-38.783	-3.05E-18	64.404	1.19E-07
9	0	0.001150	2.98E-08	-9.345	-9.54E-07	-95.317	3.78E-18
		-0.166714	2.98E-08	-38.783	-2.38E-07	64.402	-3.58E-07
9	1.275	-0.105818	2.98E-08	-24.551	-9.54E-07	-123.244	-2.38E-07
		-0.059746	7.57E-19	-47.861	-2.38E-07	23.738	8.50E-18
10	0	-0.105673	5.41E-19	-24.551	9.54E-07	-123.245	-4.77E-07
		-0.059937	-3.73E-09	-47.861	1.19E-07	23.736	-5.96E-08
10	1.275	-0.163603	-5.96E-08	-42.003	-9.54E-07	-172.229	7.07E-18
		0.101233	-3.73E-09	0.417840	1.19E-07	5.328	-2.98E-08
11	0	-2.630	-2.24E-08	61.994	1.91E-06	-187.898	-2.38E-07
		0.545525	3.73E-09	-2.067	2.38E-07	7.809	0
11	1.700	0.574274	-2.24E-08	30.443	9.54E-07	-99.144	7.15E-07
		-0.145110	3.73E-09	13.497	2.38E-07	27.432	1.42E-17
12	0	0.573952	7.45E-09	30.443	1.37E-18	-99.142	-9.54E-07
		-0.145110	3.73E-09	13.497	1.19E-07	27.433	1.42E-17
12	1.700	1.272	7.45E-09	14.138	1.37E-18	-74.638	-2.38E-07
		-0.843345	3.73E-09	4.091	-3.58E-07	64.770	-2.38E-07
13	0	1.272	-7.45E-09	14.138	1.37E-18	-74.637	4.77E-07
		-0.843380	-7.45E-09	4.091	3.58E-07	64.770	1.32E-17
13	1.700	2.516	-7.45E-09	5.528	-1.19E-07	-63.813	1.19E-07
		-3.527	-4.83E-20	41.424	1.90E-24	112.286	2.25E-17
14	0	2.516	6.40E-20	5.528	-1.19E-07	-63.812	-1.79E-07
		-3.527	6.76E-20	41.424	1.90E-24	112.289	-2.38E-07
14	1.700	2.516	6.40E-20	5.528	-1.19E-07	-54.415	-9.26E-18
		-3.527	6.76E-20	35.712	1.90E-24	177.852	2.26E-17
15	0	2.516	-3.73E-09	5.528	-2.38E-07	-54.414	-4.17E-07
		-3.527	-1.23E-19	35.712	1.90E-24	177.855	2.27E-17
15	1.700	2.516	-3.73E-09	5.528	-2.38E-07	-45.017	1.19E-07

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
		-3.527	-1.23E-19	10.000	1.90E-24	203.708	2.25E-17
16	0	2.516	-3.73E-09	5.528	-1.19E-07	-45.016	1.19E-07
		-3.527	2.56E-20	-10.000	1.90E-24	203.708	4.77E-07
16	1.700	2.516	-3.73E-09	5.528	-1.19E-07	-35.619	5.96E-08
		-3.527	2.56E-20	-35.712	1.90E-24	177.854	-4.77E-07
17	0	2.516	7.36E-20	5.528	-1.19E-07	-35.618	-2.38E-07
		-3.527	1.84E-20	-35.712	1.90E-24	177.852	2.26E-17
17	1.700	2.516	7.36E-20	5.528	-1.19E-07	-26.221	1.79E-07
		-3.527	1.84E-20	-41.424	2.38E-07	112.289	2.26E-17
18	0	2.516	3.73E-09	5.528	-2.38E-07	-26.220	2.38E-07
		-3.527	-1.05E-20	-41.424	-1.19E-07	112.286	4.77E-07
18	1.700	-0.843380	3.73E-09	-13.045	-2.38E-07	-24.594	1.19E-07
		-1.932	-7.45E-09	-37.159	-4.77E-07	39.134	-4.77E-07
19	0	-0.843380	3.73E-09	-13.045	2.28E-18	-24.594	2.38E-07
		-1.932	6.84E-20	-37.159	-4.77E-07	39.131	4.77E-07
19	1.700	-2.981	-1.12E-08	-54.915	-9.54E-07	-71.787	-2.38E-07
		1.970	6.53E-20	7.595	1.37E-18	16.389	-8.66E-18
20	0	-2.981	3.10E-20	-54.915	-3.58E-07	-71.791	-2.38E-07
		1.971	7.38E-20	7.595	1.37E-18	16.390	-8.65E-18
20	1.700	-2.981	3.10E-20	-60.627	5.96E-07	-169.997	2.38E-07
		1.971	7.38E-20	7.595	1.37E-18	29.301	-8.53E-18
21	0	-0.100465	-4.47E-08	33.284	1.56E-18	-151.268	-2.38E-07
		0.358569	3.40E-19	-1.588	9.36E-21	20.251	-4.39E-18
21	1.275	-0.042536	1.49E-08	15.832	1.56E-18	-113.399	2.38E-07
		0.300640	3.40E-19	11.580	9.36E-21	20.062	2.38E-07
22	0	-0.042584	4.47E-08	15.832	1.56E-18	-113.398	2.38E-07
		0.300257	3.45E-19	11.580	9.36E-21	20.062	4.77E-07
22	1.275	0.001198	2.98E-08	9.345	-9.54E-07	-95.317	3.84E-18
		0.256476	-1.49E-08	13.783	4.77E-07	34.199	-1.19E-07

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
23	0	0.001199	2.98E-08	9.345	9.54E-07	-95.316	3.84E-18
		0.256762	7.45E-09	13.783	-2.38E-07	34.200	-5.96E-08
23	1.275	0.001199	2.98E-08	9.345	9.54E-07	-83.403	-2.38E-07
		0.256762	7.45E-09	9.499	-7.15E-07	49.042	1.19E-07
24	0	0.001198	-3.94E-19	9.345	-9.54E-07	-83.402	2.38E-07
		0.256953	1.49E-08	9.499	7.15E-07	49.042	-4.17E-07
24	1.275	0.001198	-3.94E-19	9.345	-9.54E-07	-71.488	2.84E-18
		0.256953	1.49E-08	5.215	9.36E-21	58.422	-5.96E-08
25	0	0.001198	-2.98E-08	9.345	1.56E-18	-71.487	2.38E-07
		0.256380	1.49E-08	5.215	9.36E-21	58.422	2.38E-07
25	1.275	0.001198	-2.98E-08	9.345	1.56E-18	-59.573	2.42E-18
		0.256380	1.49E-08	0.931064	9.36E-21	62.340	-1.19E-07
26	0	0.001199	-4.05E-19	9.345	-9.54E-07	-59.573	2.38E-07
		0.256762	-7.45E-09	0.931306	-2.38E-07	62.340	1.19E-07
26	1.275	0.001199	-4.05E-19	9.345	-9.54E-07	-47.659	1.87E-18
		0.256762	-7.45E-09	-3.353	-4.77E-07	60.797	1.19E-07
27	0	0.001198	-2.98E-08	9.345	1.56E-18	-47.658	-2.38E-07
		0.256953	-7.45E-09	-3.353	7.15E-07	60.797	-1.75E-18
27	1.275	0.001198	-2.98E-08	9.345	1.56E-18	-35.744	1.19E-07
		0.256953	-7.45E-09	-7.637	-1.43E-06	53.791	2.98E-08
28	0	0.001199	2.98E-08	9.345	1.56E-18	-35.744	1.19E-07
		0.256380	-7.45E-09	-7.637	4.77E-07	53.790	1.19E-07
28	1.275	0.001199	2.98E-08	9.345	1.56E-18	-23.829	9.25E-19
		0.256380	-7.45E-09	-11.921	9.36E-21	41.323	-1.49E-08
29	0	0.001150	2.98E-08	9.345	1.56E-18	-23.829	-1.19E-07
		0.256858	-2.24E-08	-11.921	-1.91E-06	41.322	-1.64E-07
29	1.275	0.001150	2.98E-08	9.345	1.56E-18	-11.915	4.34E-19
		0.256858	-2.24E-08	-16.205	-3.81E-06	23.393	5.22E-08
30	0	0.001246	-3.86E-19	9.345	1.56E-18	-11.914	4.63E-19

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
		0.256858	-2.24E-08	-16.205	-9.54E-07	23.392	2.98E-08
30	1.275	0.001246	-3.86E-19	9.345	1.56E-18	-0.000133	-2.91E-11
		0.256858	-2.24E-08	-20.489	-3.81E-06	0.000376	1.75E-10
201	0	-68.786	4.66E-09	2.774	-3.73E-09	-8.023	-8.94E-08
		-67.905	-3.72E-19	-3.528	1.79E-17	11.754	2.17E-18
201	10.000	-67.905	-3.72E-19	-3.528	1.79E-17	-23.525	-2.38E-07
		-68.786	4.66E-09	2.774	-3.73E-09	19.720	-3.28E-07
202	0	-67.905	-3.72E-19	3.528	-1.79E-17	-11.754	7.68E-09
		-16.823	4.47E-08	-2.259	1.86E-09	8.747	-2.98E-08
202	10.000	-16.823	4.47E-08	-2.259	1.86E-09	-13.845	1.19E-07
		-67.905	-3.72E-19	3.528	-1.79E-17	23.525	-1.56E-18

ENVOLVENTE para < Mz > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
201	0	-84.666	2.127	0.444918	-0.587575	-0.994686	-4.101
		-73.643	0.808301	-1.870	0.287762	6.528	4.290
201	10.000	-95.711	-1.444	-0.496748	0.015467	-3.332	-16.042
		-86.157	3.476	-0.210473	-0.347198	-1.338	35.078
202	0	-27.439	-0.055549	-0.049891	0.267799	0.530455	-3.133
		-29.098	-0.046360	0.238093	-0.649904	-0.727789	7.380
202	10.000	-63.557	-1.149	2.284	0.083123	15.229	-13.859
		-61.898	2.154	1.996	-0.109338	13.608	25.445

ENVOLVENTE DE REACCIONES EN APOYOS:
(1. línea/2. línea: MIN./MAX. de cada componente)

NUDOS	FX [t]	FY [t]	FZ [t]	MX [tm]	MY [tm]	MZ [tm]
1	-0.208778	-2.732	-9.345	-56.168		
	0.399226	1.353	121.881	141.205		
31	-0.208207	-2.245	-9.345	-63.802		
	0.398365	1.240	20.489	97.216		
101	-2.774	-1.533	-2.485	-4.101	-8.024	-0.401884
	3.528	3.566	126.597	4.290	11.754	0.707400
102	-3.528	-1.440	-9.183	-3.133	-11.754	-0.382181
	2.259	2.288	93.911	7.380	8.748	0.764286

ENVOLVENTE: FD '' Ejec. "0001"

Grupo	Espe.	Hipótesis	Factor Etapa	Titulo
A	PERM.	1	1.350	Peso propio y barandillas
B	O	1	1.000	Peso propio y barandillas
C	MAS PER	2	2.030	Pavimento 1
D	O	2	1.000	Pavimento 1
E	MAS	3	1.500	Sobrecarga de uso 1
F	MAS	4	1.500	Sobrecarga de uso 2
G	MAS	5	1.500	Sobrecarga de uso 3
H	MAS	6	1.500	Sobrecarga de uso 4
I	MAS	7	1.500	Sobrecarga de uso 5
J	MAS	8	1.500	Sobrecarga de uso 6
K	MAS	9	1.500	Sobrecarga de uso 7
L	MAS	10	1.500	Sobrecarga de uso 8
M	MAS	11	1.500	Sobrecarga de uso 9
N	MAS	12	1.500	Sobrecarga de uso 10
O	MAS	13	1.500	Sobrecarga de uso 11
P	MAS	14	1.500	Sobrecarga de uso 12
Q	MAS	15	1.500	Carro 1
R	O	16	1.500	Carro 2
S	O	17	1.500	Carro 3
T	O	18	1.500	Carro 4
U	O	19	1.500	Carro 5
V	O	20	1.500	Carro 6
W	O	21	1.500	Carro 7
X	O	22	1.500	Carro 8
Y	O	23	1.500	Carro 9
Z	O	24	1.500	Carro 10
AA	O	25	1.500	Carro 11
AB	O	26	1.500	Carro 12
AC	MAS	27	0.900000	Retraccion
AD	MAS	28	0.900000	Termico
AE	MAS	28	-0.900000	Termico
AF	MAS	29	0.900000	Gradiente termico
AG	MAS	30	0.450000	Viento transversal 1
AH	MAS	31	0.450000	Viento transversal 2
AI	MAS	32	1.500	Frenado

ALTERNATIVA PARA ENVOLVENTE:

AJ	PERM.	1	1.350	Peso propio y barandillas
AK	O	1	1.000	Peso propio y barandillas
AL	MAS PER	2	2.030	Pavimento 1
AM	O	2	1.000	Pavimento 1
AN	MAS	3	0.900000	Sobrecarga de uso 1
AO	MAS	4	0.900000	Sobrecarga de uso 2
AP	MAS	5	0.900000	Sobrecarga de uso 3
AQ	MAS	6	0.900000	Sobrecarga de uso 4
AR	MAS	7	0.900000	Sobrecarga de uso 5
AS	MAS	8	0.900000	Sobrecarga de uso 6
AT	MAS	9	0.900000	Sobrecarga de uso 7
AU	MAS	10	0.900000	Sobrecarga de uso 8
AV	MAS	11	0.900000	Sobrecarga de uso 9
AW	MAS	12	0.900000	Sobrecarga de uso 10
AX	MAS	13	0.900000	Sobrecarga de uso 11
AY	MAS	14	0.900000	Sobrecarga de uso 12
AZ	MAS	15	0.900000	Carro 1
BA	O	16	0.900000	Carro 2
BB	O	17	0.900000	Carro 3
BC	O	18	0.900000	Carro 4
BD	O	19	0.900000	Carro 5
BE	O	20	0.900000	Carro 6
BF	O	21	0.900000	Carro 7
BG	O	22	0.900000	Carro 8
BH	O	23	0.900000	Carro 9
BI	O	24	0.900000	Carro 10
BJ	O	25	0.900000	Carro 11
BK	O	26	0.900000	Carro 12
BL	MAS	27	1.500	Retraccion
BM	MAS	28	0.900000	Termico
BN	MAS	28	-0.900000	Termico
BO	MAS	29	0.900000	Gradiente termico
BP	MAS	30	0.900000	Viento transversal 1
BQ	MAS	31	0.900000	Viento transversal 2
BR	MAS	32	0.900000	Frenado

ALTERNATIVA PARA ENVOLVENTE:

BS	PERM.	1	1.350	Peso propio y barandillas
BT	O	1	1.000	Peso propio y barandillas
BU	MAS PER	2	2.030	Pavimento 1
BV	O	2	1.000	Pavimento 1
BW	MAS	3	0.900000	Sobrecarga de uso 1
BX	MAS	4	0.900000	Sobrecarga de uso 2
BY	MAS	5	0.900000	Sobrecarga de uso 3
BZ	MAS	6	0.900000	Sobrecarga de uso 4
CA	MAS	7	0.900000	Sobrecarga de uso 5
CB	MAS	8	0.900000	Sobrecarga de uso 6
CC	MAS	9	0.900000	Sobrecarga de uso 7
CD	MAS	10	0.900000	Sobrecarga de uso 8
CE	MAS	11	0.900000	Sobrecarga de uso 9
CF	MAS	12	0.900000	Sobrecarga de uso 10
CG	MAS	13	0.900000	Sobrecarga de uso 11
CH	MAS	14	0.900000	Sobrecarga de uso 12
CI	MAS	15	0.900000	Carro 1
CJ	O	16	0.900000	Carro 2

CK	O	17	0.900000	Carro 3
CL	O	18	0.900000	Carro 4
CM	O	19	0.900000	Carro 5
CN	O	20	0.900000	Carro 6
CO	O	21	0.900000	Carro 7
CP	O	22	0.900000	Carro 8
CQ	O	23	0.900000	Carro 9
CR	O	24	0.900000	Carro 10
CS	O	25	0.900000	Carro 11
CT	O	26	0.900000	Carro 12
CU	MAS	27	0.900000	Retraccion
CV	MAS	28	1.500	Termico
CW	MAS	28	-1.500	Termico
CX	MAS	29	1.500	Gradiente termico
CY	MAS	30	0.900000	Viento transversal 1
CZ	MAS	31	0.900000	Viento transversal 2
DA	MAS	32	0.900000	Frenado

ALTERNATIVA PARA ENVOLVENTE:

DB	PERM.	1	1.350	Peso propio y barandillas
DC	O	1	1.000	Peso propio y barandillas
DD	MAS PER	2	2.030	Pavimento 1
DE	O	2	1.000	Pavimento 1
DF	MAS	27	0.900000	Retraccion
DG	MAS	28	0.900000	Termico
DH	MAS	28	-0.900000	Termico
DI	MAS	29	0.900000	Gradiente termico
DJ	MAS	30	1.500	Viento transversal 1
DK	MAS	31	1.500	Viento transversal 2

ENVOLVENTE para < N > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
201	0	-556.148	-19.615	5.083	0.102734	-31.133	82.337
		-244.963	39.231	-6.818	-0.205468	29.557	-164.675
201	10.000	-529.943	-4.361	5.083	0.102734	19.693	-37.541
		-225.552	8.722	-6.818	-0.205468	-38.622	75.081
202	0	-523.681	-19.615	5.698	-0.102732	-18.188	82.337
		-241.287	39.231	10.628	0.205464	-49.523	-164.675
202	10.000	-497.476	-4.361	5.698	-0.102732	38.790	-37.541
		-221.877	8.722	10.628	0.205464	56.757	75.081

ENVOLVENTE para < Vz > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
1	0	10.765	-6.194	53.977	-54.372	0.001530	0.023358
		-4.954	6.194	220.097	54.372	0.005682	-0.023358
1	1.275	10.134	-5.563	34.489	-53.362	56.396	-7.472
		-4.954	5.563	156.530	53.362	221.271	7.472
2	0	10.143	-5.429	34.489	-53.362	56.398	-7.511
		-4.965	5.429	156.530	53.362	221.279	7.511
2	1.275	9.512	-4.798	15.001	-52.352	87.947	-14.031
		-5.162	4.798	119.515	52.352	390.355	14.031
3	0	9.513	-4.993	15.000	-52.352	87.947	-14.032
		-5.161	4.993	119.512	52.352	390.362	14.032
3	1.275	8.786	-4.362	-9.033	-51.342	212.563	-19.995
		-5.161	4.362	85.946	51.342	521.337	19.995
4	0	8.788	-4.223	-9.034	-51.342	212.562	-19.960
		-5.157	4.223	85.948	51.342	521.341	19.960
4	1.275	8.092	-3.592	-34.449	-50.332	302.000	-24.941
		-8.244	7.183	30.238	100.665	440.739	49.883
5	0	7.885	-3.693	-37.898	-50.332	448.363	-24.930
		-8.161	7.386	26.553	100.665	334.201	49.860
5	1.275	7.254	-3.062	-71.464	-49.323	378.648	-29.236
		-8.161	6.124	7.065	98.645	355.632	58.473
6	0	7.269	-2.988	-71.464	-49.323	378.643	-29.207
		-8.170	5.977	7.064	98.645	355.632	58.415
6	1.275	6.551	-2.357	-129.079	-48.313	280.166	-32.615
		-8.118	4.714	-15.995	96.626	324.896	65.230
7	0	6.536	-2.434	-129.082	-48.313	280.159	-32.584
		-8.109	4.869	-15.996	96.626	324.895	65.168
7	1.275	5.905	-1.803	-162.649	-47.303	94.188	-35.285
		-8.109	3.606	-35.483	94.606	292.078	70.570
8	0	5.910	-1.618	-162.649	-47.303	94.181	-35.323
		-8.115	3.236	-35.484	94.606	292.077	70.647

ENVOLVENTE para < Vz > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
8	1.275	5.279	-0.986806	-196.215	-46.293	-134.586	-36.984
		-8.034	1.974	-58.632	92.586	197.077	73.967
9	0	5.284	-1.108	-196.217	-46.293	-134.595	-37.062
		-8.034	2.216	-58.633	92.586	197.074	74.124
9	1.275	4.791	-0.477080	-235.923	-45.283	-343.865	-38.073
		-8.022	0.954161	-78.861	90.567	101.405	76.145
10	0	4.787	-0.489534	-235.924	-45.283	-343.876	-38.065
		-8.020	0.979069	-78.861	90.567	101.401	76.131
10	1.275	4.155	0.141566	-269.490	-44.274	-666.064	-38.287
		-8.020	-0.283131	-98.349	88.547	-11.565	76.574
11	0	-6.319	-4.276	124.191	-6.732	-317.105	-38.119
		10.727	4.276	280.230	6.732	-472.977	38.119
11	1.700	-7.268	-3.434	96.873	-5.386	-115.096	-44.672
		8.568	3.434	227.129	5.386	-128.955	44.672
12	0	-7.264	3.328	96.872	5.386	-115.090	44.647
		8.567	-3.328	227.128	-5.386	-128.941	-44.647
12	1.700	-9.034	2.486	65.569	4.039	79.186	49.589
		8.567	-2.486	182.373	-4.039	219.121	-49.589
13	0	-9.038	2.523	65.568	4.039	79.190	49.623
		8.569	-2.523	182.370	-4.039	219.131	-49.623
13	1.700	-9.880	1.682	39.584	2.693	168.566	53.197
		8.569	-1.682	137.615	-2.693	491.107	-53.197
14	0	15.058	1.658	39.583	2.693	356.338	53.219
		-16.367	-1.658	137.613	-2.693	303.347	-53.219
14	1.700	13.169	0.816742	12.354	1.346	460.025	55.323
		-15.320	-0.816742	94.104	-1.346	440.756	-55.323
15	0	-11.764	0.839898	12.353	1.346	272.257	55.345
		9.616	-0.839898	94.102	-1.346	628.532	-55.345
15	1.700	-12.606	-0.001569	-22.198	2.29E-05	263.889	56.058

ENVOLVENTE para < Vz > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
		9.616	0.001569	27.915	-2.34E-05	712.742	-56.058
16	0	-10.261	-0.071874	-30.546	-8.32E-06	696.267	-55.998
		9.913	0.071874	19.154	8.32E-06	223.074	55.998
16	1.700	-11.102	0.769593	-96.733	1.346	607.584	-55.405
		9.913	-0.769593	-15.397	-1.346	226.268	55.405
17	0	9.952	-0.850564	-96.735	-1.346	457.930	55.352
		-11.139	0.850564	-15.398	1.346	375.915	-55.352
17	1.700	8.063	-1.692	-140.245	-2.693	316.047	53.190
		-10.092	1.692	-42.627	2.693	267.054	-53.190
18	0	-18.049	-1.715	-140.246	-2.693	294.391	53.226
		16.022	1.715	-42.628	2.693	288.698	-53.226
18	1.700	-18.891	-2.557	-185.001	-4.039	17.942	49.594
		16.022	2.557	-68.611	4.039	194.149	-49.594
19	0	-12.652	2.519	-185.003	4.039	23.102	-49.617
		9.781	-2.519	-68.613	-4.039	188.972	49.617
19	1.700	-13.493	3.361	-229.758	5.386	-329.431	-44.619
		9.781	-3.361	-94.596	-5.386	50.249	44.619
20	0	5.204	-3.368	-229.760	-5.386	-146.850	44.617
		-8.915	3.368	-94.597	5.386	-132.354	-44.617
20	1.700	4.362	-4.210	-274.515	-6.732	-575.465	38.175
		-8.915	4.210	-120.580	6.732	-315.247	-38.175
21	0	-5.765	0.155878	96.839	-88.547	7.685	76.656
		7.773	-0.077939	224.158	44.274	-718.082	-38.328
21	1.275	-6.143	-1.106	77.351	-90.567	118.727	76.050
		7.773	0.553160	190.591	45.283	-453.690	-38.025
22	0	-6.149	-1.076	77.351	-90.567	118.731	76.222
		7.776	0.537784	190.591	45.283	-453.680	-38.111
22	1.275	-6.528	-2.338	57.863	-92.586	204.926	74.046
		7.776	1.169	157.024	46.293	-232.084	-37.023

ENVOLVENTE para < Vz > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
23	0	-6.522	-2.082	57.863	-92.586	204.929	74.036
		7.770	1.041	157.023	46.293	-232.076	-37.018
23	1.275	-6.900	-3.344	38.375	-94.606	266.278	70.577
		7.770	1.672	123.457	47.303	-53.277	-35.288
24	0	-6.908	-3.222	38.374	-94.606	266.279	70.325
		7.779	1.611	123.456	47.303	-53.271	-35.163
24	1.275	-7.287	-4.484	18.886	-96.626	302.782	65.413
		7.779	2.242	89.889	48.313	82.731	-32.706
25	0	-7.282	-4.822	18.885	-96.626	302.783	65.298
		7.773	2.411	89.888	48.313	82.735	-32.649
25	1.275	-7.713	-6.084	-4.173	-98.645	337.204	58.346
		7.860	3.042	62.273	49.323	137.995	-29.173
26	0	-7.708	-6.229	-4.175	-98.645	337.205	58.539
		7.857	3.114	62.272	49.323	137.998	-29.270
26	1.275	-8.087	-7.491	-23.663	-100.665	319.459	49.793
		7.857	3.746	28.705	50.332	195.994	-24.897
27	0	-8.091	-7.286	-23.661	-100.665	319.457	49.948
		7.863	3.643	28.705	50.332	195.995	-24.974
27	1.275	-8.509	-8.549	-50.052	-102.684	369.306	39.854
		7.928	4.274	3.290	51.342	99.234	-19.927
28	0	-8.517	-8.330	-50.055	-102.684	369.303	39.739
		7.928	4.165	3.288	51.342	99.234	-19.869
28	1.275	-8.895	-9.592	-81.051	-104.704	285.726	28.314
		7.928	4.796	-16.199	52.352	91.004	-14.157
29	0	-8.884	-9.696	-81.053	-104.704	285.722	28.125
		7.922	4.848	-16.200	52.352	91.003	-14.063
29	1.275	-6.789	-5.479	-112.124	-53.362	164.360	7.479
		7.922	5.479	-35.688	53.362	57.926	-7.479
30	0	-6.791	-5.613	-112.126	-53.362	164.355	7.504

ENVOLVENTE para < Vz > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
		7.928	5.613	-35.688	53.362	57.925	-7.504
30	1.275	-7.422	-6.244	-145.692	-54.372	0.003059	-0.055131
		7.928	6.244	-55.176	54.372	0.001067	0.055131
201	0	-415.530	-39.231	-15.547	0.205468	67.172	164.675
		-361.641	19.615	18.057	-0.102734	-87.296	-82.337
201	10.000	-389.326	-8.722	-15.547	0.205468	-88.295	-75.081
		-342.231	4.361	18.057	-0.102734	93.265	37.541
202	0	-292.513	39.231	-12.000	0.205464	61.975	-164.675
		-467.658	-19.615	21.169	-0.102732	-93.254	82.337
202	10.000	-273.102	8.722	-12.000	0.205464	-58.016	75.081
		-441.453	-4.361	21.169	-0.102732	118.431	-37.541

ENVOLVENTE para < Mx > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
1	0	10.670	-8.467	198.299	-266.179	0.005201	0.013526
		-4.859	20.648	72.561	181.239	0.001960	-0.077859
1	1.275	9.841	-8.504	134.497	-245.254	190.831	-11.246
		-4.859	18.545	53.073	177.873	80.090	24.907
2	0	9.850	-8.430	134.496	-245.254	190.838	-11.295
		-4.870	18.096	53.073	177.873	80.093	25.038
2	1.275	9.219	-7.799	104.143	-244.245	342.964	-21.640
		-4.870	15.993	33.585	174.507	135.335	46.769
3	0	9.220	-7.960	104.141	-244.244	342.970	-21.634
		-4.869	16.644	33.584	174.507	135.337	46.772
3	1.275	8.589	-7.329	73.787	-243.235	456.395	-31.380
		-4.869	14.540	14.096	171.141	165.732	66.651
4	0	8.591	-7.218	73.789	-243.235	456.398	-31.342

ENVOLVENTE para < Mx > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
		-4.865	14.076	14.096	171.141	165.733	66.532
4	1.275	8.097	-7.559	7.294	-213.875	346.812	-45.148
		-4.865	11.972	-5.392	167.775	171.282	83.138
5	0	8.087	-7.650	7.293	-213.875	346.812	-45.136
		-4.865	12.310	-5.392	167.775	171.281	83.101
5	1.275	7.456	-7.019	-23.060	-212.865	336.760	-54.487
		-4.865	10.206	-24.880	164.409	151.983	97.454
6	0	7.472	-6.988	-23.062	-212.865	336.758	-54.437
		-4.870	9.961	-24.881	164.409	151.982	97.358
6	1.275	6.841	-6.357	-53.416	-198.361	288.006	-62.943
		-4.870	7.857	-44.369	161.043	107.837	108.717
7	0	6.826	-6.361	-53.417	-198.361	288.003	-62.910
		-4.865	8.114	-44.369	161.043	107.834	108.613
7	1.275	6.195	-5.730	-83.770	-183.857	200.550	-70.618
		-4.865	6.011	-63.857	157.677	38.843	117.617
8	0	6.200	-5.604	-83.772	-183.856	200.545	-70.661
		-4.868	5.393	-63.858	157.677	38.840	117.744
8	1.275	5.703	-5.073	-120.226	-163.121	12.164	-78.725
		-4.868	3.289	-83.345	154.311	-54.998	123.279
9	0	5.708	-5.220	-120.227	-163.121	12.158	-78.796
		-4.868	3.694	-83.347	154.311	-55.002	123.541
9	1.275	5.198	-2.912	-155.102	-163.927	-212.358	-66.256
		-4.868	1.590	-102.834	150.945	-173.688	126.909
10	0	5.195	-2.972	-155.103	-163.928	-212.366	-66.247
		-4.867	1.632	-102.834	150.945	-173.693	126.885
10	1.275	4.564	-2.341	-185.456	-176.412	-429.463	-69.634
		-4.867	-0.471885	-122.322	147.579	-317.224	127.624
11	0	-15.230	-4.973	238.959	-139.525	-650.361	-61.845
		18.221	5.942	159.646	100.801	-254.622	17.549

ENVOLVENTE para < Mx > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
11	1.700	-15.230	-4.132	200.169	-129.203	-277.117	-69.584
		16.530	5.109	123.833	95.089	33.066	25.273
12	0	-15.228	-3.993	200.168	-129.202	-277.105	-69.562
		16.531	4.990	123.832	95.089	33.074	25.249
12	1.700	-15.228	-3.151	161.378	-118.880	30.196	-75.634
		14.761	4.070	86.565	90.150	268.111	32.707
13	0	-15.230	-3.218	161.375	-118.880	30.206	-75.673
		14.761	4.103	86.563	90.150	268.115	32.744
13	1.700	-15.230	-2.377	122.584	-108.558	271.561	-80.429
		13.920	3.262	54.615	79.828	388.112	39.004
14	0	-15.230	-2.357	122.583	-108.558	271.570	-80.428
		13.921	3.251	54.613	79.827	388.116	39.020
14	1.700	-15.230	-1.888	83.793	-113.565	446.982	-70.359
		13.079	2.783	22.665	84.835	453.799	30.472
15	0	-15.230	-1.859	83.791	-113.566	446.988	-70.384
		13.081	2.758	22.665	84.835	453.800	30.502
15	1.700	-15.230	-1.018	15.000	-76.195	511.457	-72.829
		12.240	1.917	-9.284	92.465	465.174	34.476
16	0	-12.034	-1.111	-0.001114	-53.695	304.062	-53.623
		12.235	2.020	-9.286	92.465	465.173	34.439
16	1.700	-12.034	-1.808	-38.791	-46.045	271.090	56.014
		9.233	1.799	-79.580	113.545	580.981	-75.198
17	0	-12.034	-1.905	-38.793	-46.045	271.088	55.961
		9.235	1.917	-79.582	113.545	580.976	-75.147
17	1.700	-12.034	-2.390	-77.583	-41.023	172.172	66.018
		8.394	2.402	-111.530	108.523	418.538	-85.183
18	0	-12.035	-2.390	-77.584	-41.023	172.166	66.059
		8.396	2.381	-111.530	108.523	418.530	-85.228
18	1.700	-12.035	-3.231	-116.375	-51.365	7.308	61.282
		7.555	3.222	-143.479	118.866	201.781	-80.465

ENVOLVENTE para < Mx > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
19	0	-12.034	-3.209	-116.377	-51.366	7.300	61.304
		7.552	3.222	-143.481	118.866	201.771	-80.491
19	1.700	-12.034	-4.050	-155.167	-61.708	-223.504	55.134
		6.710	4.063	-175.429	129.208	-69.291	-74.299
20	0	-12.035	-4.035	-155.168	-61.709	-223.514	55.124
		6.712	4.028	-175.430	129.209	-69.303	-74.294
20	1.700	-12.035	-4.876	-193.958	-72.051	-520.259	47.550
		5.871	4.870	-207.378	139.551	-394.676	-66.732
21	0	-4.865	0.259797	122.322	-147.579	-317.224	127.759
		9.964	1.223	178.472	154.491	-422.349	-94.051
21	1.275	-4.865	-1.844	102.834	-150.944	-173.693	126.750
		9.964	2.485	149.404	152.462	-213.336	-91.688
22	0	-4.868	-1.793	102.834	-150.945	-173.688	127.037
		9.966	2.434	149.403	152.462	-213.328	-91.866
22	1.275	-4.868	-3.896	83.346	-154.311	-55.003	123.410
		7.927	3.896	106.304	154.311	23.080	-123.410
23	0	-4.865	-3.470	83.346	-154.311	-54.999	123.393
		7.921	3.470	106.303	154.311	23.085	-123.393
23	1.275	-4.865	-5.574	63.858	-157.676	38.840	117.628
		9.958	5.205	91.265	158.495	93.518	-87.138
24	0	-4.871	-5.370	63.857	-157.677	38.843	117.209
		9.968	5.086	91.264	158.495	93.522	-86.895
24	1.275	-4.871	-7.474	44.370	-161.043	107.835	109.021
		9.968	6.349	62.196	164.563	191.350	-79.606
25	0	-4.865	-8.036	44.369	-161.043	107.837	108.830
		9.963	6.659	62.195	164.563	191.353	-79.485
25	1.275	-4.865	-10.140	24.881	-164.409	151.982	97.244
		9.963	7.921	33.126	170.631	252.117	-70.190

ENVOLVENTE para < Mx > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
26	0	-4.865	-10.381	24.880	-164.409	151.984	97.566
		9.958	8.082	33.125	170.631	252.119	-70.369
26	1.275	-4.865	-12.485	5.392	-167.775	171.281	82.989
		9.958	9.508	4.056	171.965	275.821	-60.098
27	0	-4.865	-12.144	5.393	-167.775	171.281	83.247
		9.968	9.315	4.057	171.966	275.821	-60.256
27	1.275	-4.865	-14.248	-14.095	-171.141	165.734	66.423
		9.968	10.577	-25.011	178.033	262.463	-47.575
28	0	-4.871	-13.883	-14.097	-171.141	165.733	66.231
		9.964	10.331	-25.014	178.034	262.461	-47.453
28	1.275	-4.871	-15.987	-33.585	-174.507	135.337	47.189
		7.928	8.132	-53.334	184.681	213.408	-22.762
29	0	-4.865	-16.160	-33.585	-174.507	135.335	46.875
		7.922	8.229	-53.336	184.681	213.406	-22.656
29	1.275	-4.865	-18.264	-53.073	-177.873	80.093	24.931
		7.922	8.860	-83.689	192.438	126.056	-11.763
30	0	-4.865	-18.710	-53.074	-177.873	80.091	25.012
		7.928	9.007	-83.690	192.438	126.053	-11.813
30	1.275	-4.865	-20.814	-72.562	-181.239	0.001309	-0.183769
		7.928	9.638	-114.044	200.195	0.002568	0.072360
201	0	-400.892	24.551	-6.792	-1.164	31.951	-88.393
		-461.639	-19.995	9.360	0.705561	-59.704	88.768
201	10.000	-381.481	9.297	-6.792	-1.164	-35.966	80.839
		-435.435	-4.741	9.360	0.705561	33.892	-34.907
202	0	-411.383	-21.281	-4.758	-1.249	30.969	93.403
		-307.333	21.128	13.056	0.676003	-64.842	-87.032
202	10.000	-385.179	-6.026	-4.758	-1.249	-16.611	-43.127
		-287.922	5.873	13.056	0.676003	65.712	47.969

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
1	0	10.765	6.194	53.977	54.372	0.001530	-0.023358
		-4.954	-6.194	220.097	-54.372	0.005682	0.023358
1	1.275	10.134	-5.563	34.489	-53.362	56.396	-7.472
		-4.954	5.563	156.530	53.362	221.271	7.472
2	0	10.143	-5.429	34.489	-53.362	56.398	-7.511
		-4.965	5.429	156.530	53.362	221.279	7.511
2	1.275	9.512	-4.798	15.001	-52.352	87.947	-14.031
		-5.162	4.798	119.515	52.352	390.355	14.031
3	0	9.513	-4.993	15.000	-52.352	87.947	-14.032
		-5.161	4.993	119.512	52.352	390.362	14.032
3	1.275	8.882	-4.362	-4.488	-51.342	94.649	-19.995
		-5.161	4.362	85.946	51.342	521.337	19.995
4	0	8.884	-4.223	-4.488	-51.342	94.649	-19.960
		-5.157	4.223	85.948	51.342	521.341	19.960
4	1.275	8.253	-3.592	-23.976	-50.332	76.504	-24.941
		-5.157	3.592	22.381	50.332	602.773	24.941
5	0	8.244	-3.693	-23.976	-50.332	76.502	-24.930
		-5.157	3.693	-7.622	50.332	602.772	24.930
5	1.275	7.612	-3.062	-43.463	-49.323	33.511	-29.236
		-5.157	3.062	-41.188	49.323	571.657	29.236
6	0	7.628	-2.988	-43.465	-49.323	33.509	-29.207
		-5.163	2.988	-41.188	49.323	571.654	29.207
6	1.275	6.997	-2.357	-62.953	-48.313	-34.330	-32.615
		-5.163	2.357	-104.755	48.313	466.244	32.615
7	0	6.982	-2.434	-62.953	-48.313	-34.333	-32.584
		-5.157	2.434	-104.758	48.313	466.238	32.584
7	1.275	6.351	-1.803	-82.441	-47.303	-127.018	-35.285
		-8.283	3.606	-103.360	94.606	344.137	70.570
8	0	6.356	-1.618	-82.442	-47.303	-127.022	-35.323
		-8.289	3.236	-103.361	94.606	344.132	70.647

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
8	1.275	5.725	-0.986806	-135.164	-46.293	-271.300	-36.984
		-8.206	1.974	-86.806	92.586	242.513	73.967
9	0	5.730	-1.108	-135.166	-46.293	-271.307	-37.062
		-8.206	2.216	-86.807	92.586	242.509	74.124
9	1.275	5.033	-0.477080	-172.038	-45.283	-470.189	-38.073
		-8.167	0.954161	-122.311	90.567	118.455	76.145
10	0	5.029	-0.489534	-172.038	-45.283	-470.197	-38.065
		-8.165	0.979069	-122.312	90.567	118.449	76.131
10	1.275	4.311	0.141566	-225.356	-44.274	-733.364	-38.287
		-8.020	-0.283131	-98.349	88.547	-11.565	76.574
11	0	-16.367	-4.276	271.884	-6.732	-740.869	-38.119
		22.446	8.551	126.483	13.464	-26.726	76.239
11	1.700	-11.560	-3.434	188.370	-5.386	-334.391	-44.672
		21.319	6.868	114.508	10.771	187.025	89.345
12	0	-11.559	-3.328	188.369	-5.386	-334.378	-44.647
		21.318	6.656	114.507	10.771	187.032	89.294
12	1.700	-9.960	-2.486	97.110	-4.039	-89.878	-49.589
		19.633	4.973	110.671	8.078	376.640	99.178
13	0	-9.962	-2.523	97.108	-4.039	-89.872	-49.623
		19.636	5.046	110.669	8.078	376.646	99.246
13	1.700	-8.096	-1.682	58.211	-2.693	33.307	-53.197
		16.716	3.363	108.081	5.386	570.523	106.394
14	0	-8.095	-1.658	58.210	-2.693	33.311	-53.219
		16.716	3.316	108.080	5.386	570.531	106.438
14	1.700	-8.095	-0.816742	32.226	-1.346	110.178	-55.323
		16.211	1.633	66.752	2.693	719.131	110.645
15	0	-8.096	-0.839898	32.226	-1.346	110.180	-55.345
		16.212	1.680	66.750	2.693	719.136	110.690
15	1.700	-8.096	0.001569	6.242	-2.38E-05	142.877	-56.058

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
		7.753	-0.001569	12.370	2.34E-05	776.464	56.058
16	0	-8.098	-0.071874	3.609	-8.32E-06	142.877	-55.998
		7.750	0.071874	-15.001	8.32E-06	776.465	55.998
16	1.700	-8.940	0.769593	-22.374	1.346	126.928	-55.405
		15.706	-1.539	-68.329	-2.693	716.452	110.810
17	0	-8.938	0.850564	-22.375	1.346	126.926	-55.352
		15.705	-1.701	-68.331	-2.693	716.447	110.703
17	1.700	-9.779	1.692	-48.358	2.693	66.806	-53.190
		15.705	-3.384	-109.659	-5.386	565.162	106.381
18	0	-9.778	1.715	-48.359	2.693	66.802	-53.226
		15.707	-3.431	-109.660	-5.386	565.155	106.451
18	1.700	-15.132	2.557	-100.152	4.039	-48.105	-49.594
		16.826	-5.114	-143.239	-8.078	344.897	99.188
19	0	-15.133	2.519	-100.153	4.039	-48.112	-49.617
		16.824	-5.039	-143.242	-8.078	344.887	99.234
19	1.700	-19.733	3.361	-229.758	5.386	-334.604	-44.619
		20.888	-6.721	-98.333	-10.771	163.639	89.239
20	0	-19.733	3.368	-229.760	5.386	-334.620	-44.617
		20.889	-6.737	-98.334	-10.771	163.633	89.233
20	1.700	-20.574	4.210	-274.515	6.732	-763.235	-38.175
		20.889	-8.420	-124.317	-13.464	-25.612	76.351
21	0	7.773	-0.077939	224.158	44.274	-718.082	-38.328
		-5.765	0.155878	96.839	-88.547	7.685	76.656
21	1.275	7.860	0.553160	170.839	45.283	-456.444	-38.025
		-6.195	-1.106	89.203	-90.567	120.379	76.050
22	0	7.863	0.537784	170.839	45.283	-456.435	-38.111
		-6.202	-1.076	89.202	-90.567	120.384	76.222
22	1.275	7.929	1.169	133.967	46.293	-259.082	-37.023
		-6.620	-2.338	71.698	-92.586	221.124	74.046

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
23	0	7.923	1.041	133.966	46.293	-259.075	-37.018
		-6.613	-2.082	71.697	-92.586	221.128	74.036
23	1.275	7.923	1.672	81.243	47.303	-116.325	-35.288
		-6.992	-3.344	73.936	-94.606	308.406	70.577
24	0	7.931	1.611	81.242	47.303	-116.321	-35.163
		-6.999	-3.222	73.935	-94.606	308.409	70.325
24	1.275	7.931	2.242	61.755	48.313	-25.163	-32.706
		-7.378	-4.484	42.939	-96.626	382.913	65.413
25	0	7.925	2.411	61.754	48.313	-25.160	-32.649
		-7.373	-4.822	42.937	-96.626	382.915	65.298
25	1.275	7.925	3.042	42.267	49.323	41.150	-29.173
		-7.752	-6.084	11.941	-98.645	417.898	58.346
26	0	7.923	3.114	42.265	49.323	41.152	-29.270
		-7.747	-6.229	11.939	-98.645	417.900	58.539
26	1.275	7.923	3.746	22.778	50.332	82.616	-24.897
		-8.126	-7.491	-19.057	-100.665	413.362	49.793
27	0	7.928	3.643	22.778	50.332	82.616	-24.974
		-8.130	-7.286	-19.056	-100.665	413.361	49.948
27	1.275	7.928	4.274	3.290	51.342	99.234	-19.927
		-8.509	-8.549	-50.052	-102.684	369.306	39.854
28	0	7.928	4.165	3.288	51.342	99.234	-19.869
		-8.517	-8.330	-50.055	-102.684	369.303	39.739
28	1.275	7.928	4.796	-16.199	52.352	91.004	-14.157
		-6.167	-4.796	-78.556	-52.352	285.919	14.157
29	0	7.922	4.848	-16.200	52.352	91.003	-14.063
		-6.158	-4.848	-78.558	-52.352	285.915	14.063
29	1.275	7.922	5.479	-35.688	53.362	57.926	-7.479
		-6.789	-5.479	-112.124	-53.362	164.360	7.479
30	0	7.928	5.613	-35.688	53.362	57.925	-7.504

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
		-6.791	-5.613	-112.126	-53.362	164.355	7.504
30	1.275	7.928	-6.244	-55.176	-54.372	0.001067	-0.055131
		-9.643	12.488	-143.046	108.743	0.003296	0.110262
201	0	-361.641	19.615	18.057	-0.102734	-87.296	-82.337
		-415.530	-39.231	-15.547	0.205468	67.172	164.675
201	10.000	-389.326	-8.722	-15.547	0.205468	-88.295	-75.081
		-342.231	4.361	18.057	-0.102734	93.265	37.541
202	0	-467.658	-19.615	21.169	-0.102732	-93.254	82.337
		-292.513	39.231	-12.000	0.205464	61.975	-164.675
202	10.000	-273.102	8.722	-12.000	0.205464	-58.016	75.081
		-441.453	-4.361	21.169	-0.102732	118.431	-37.541

ENVOLVENTE para < Mz > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
201	0	-271.656	65.385	-6.476	-0.342447	30.801	-274.458
		-367.736	-65.385	5.115	0.342447	-32.060	274.458
201	10.000	-341.531	-14.537	5.115	0.342447	19.091	-125.136
		-252.245	14.537	-6.476	-0.342447	-33.959	125.136
202	0	-271.656	65.385	6.476	0.342441	-30.801	-274.458
		-367.736	-65.385	-5.115	-0.342441	32.060	274.458
202	10.000	-341.532	-14.537	-5.115	-0.342441	-19.091	-125.136
		-252.245	14.537	6.476	0.342441	33.959	125.136

ENVOLVENTE DE REACCIONES EN APOYOS:
(1. línea/2. línea: MIN./MAX. de cada componente)

NUDOS	FX [t]	FY [t]	FZ [t]	MX [tm]	MY [tm]	MZ [tm]
1	-13.067	-20.527	53.977	-181.239		
	8.414	20.527	220.098	266.179		
31	-10.008	-20.527	55.176	-181.239		
	11.472	20.527	145.692	200.195		
101	-18.057	-65.386	244.963	-274.471	-87.299	-0.705561
	15.547	65.386	556.149	274.471	67.175	1.164
102	-21.169	-65.386	241.288	-274.471	-93.258	-0.676003
	12.000	65.386	523.682	274.471	61.977	1.249

P.S.F. 103.7

P.S.F. 103.7

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4. CÁLCULO DEL TABLERO

4.1. DATOS GENERALES

Ancho total del Tablero: 10,40 m.

Ancho de aceras: 1,15 m.

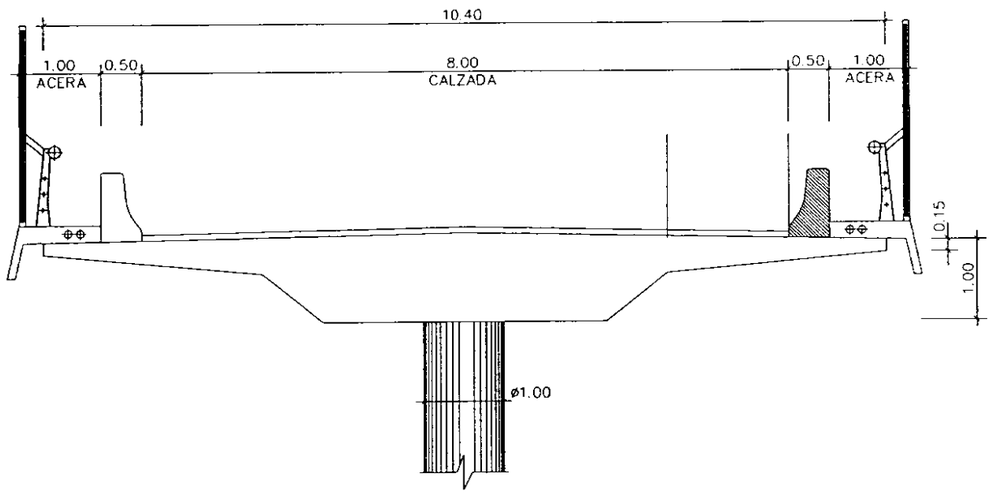
Esviaje: Recto.

Luz de calculo: 12.75+17.00+12.75 m.

Solución adoptada: Tablero constituido por losa armada de 1,0 m de canto.

4.2. CARGAS

Peso propio



Se ha considerado una densidad para el hormigón de 2,5T/m^3

Seccion tipo Area = 6,58 m^2

Inercia = 0,58 m^4

x_{cdg} = 0,643 m

Cargas muertas

Pavimento = 2,3 x 0,105 = 0,24 T/m^2

Aceras y barandillas = 3,0 T/ml

Acciones reológicas

Se han obtenido de la norma EH-91.

Retracción

$\varepsilon_t = \beta_t \varepsilon_{01} \varepsilon_{02}$

e = 915 mm

$\varepsilon_t = -1{,}0.32.10^{-5}.0{,}75 = -24.10^{-5}$

ACCIONES VARIABLES

Tren de cargas

Sobrecarga uniforme de 0,4 T/m^2

Carro de 60 T

Sobrecarga peatonal 0,4 T/m^2

Frenado y arranque

Frenado = (8 x 0,4 x 42,5 + 60) / 20 = 9,8 T

Valor mínimo indicado por la norma es

Frenado = 2 x 10,4 = 20,8 > 14,0 T

Por lo que se tomará una carga de frenado de 20,8 T

ACCIONES CLIMATICAS

Viento

Al estar la estructura ubicada en Madrid, la velocidad de referencia es 24 m/s

$Vc = Ct \cdot Cr \cdot Cz \cdot Cg \cdot Vref = 1,04 \cdot 1,025 \cdot 1,476 \cdot 24 = 37,7$ m/s

Por lo que la presión ejercida por el viento en la estructura es

$F = C_D \cdot A \cdot (1/2 \rho \cdot V_c^2) = 0,088\ C_D\ A$ T/m²

Se puede utilizar el método abreviado por las características del paso, por lo tanto.

Fuerza transversal Tablero = 0,17 T/m²

Pilas = 0,21 T/m²

Cuando se combine con la sobrecarga se reducirá en un 50% esta acción.

ACCIONES TERMICAS

Variación uniforme de temperatura

Por ser una losa armada, la variación uniforme de temperatura viene dada por:

$\Delta T = K \cdot z^a \cdot h^b \cdot s^c = 23,89 \cdot 5^{0,292} \cdot 1^{-0,139} \cdot 1^0 = 38,22°$

Gradiente térmico

Vertical $\Delta T_{SI} = (K_1 - K_2).\Delta T_{SI,ref} = 0,827 \cdot 1,12 \cdot 12,5 = 11,6$ °C/m

Al estar el eje longitudinal de la estructura con alineación Norte-Sur, no hace falta tener en cuenta la variación térmica lateral.

4.3 COMBINACIÓN DE ACCIONES

La combinación de acciones que se ha utilizado es la indicada en la IAP-96

Para obtener la envolvente de esfuerzos en los elementos de la estructura se realizan combinaciones de las distintas acciones antes descritas, contemplándose, en los casos en los que se requiera, hipótesis de alternancia de carga en vanos contiguos.

Combinaciones para el Estado Límite Ultimo

Situaciones persistentes o transitorias

$$\sum \gamma_G . G_{Kj} + \sum \gamma_{Gi} . G_{Kj} + \gamma_{G1} . G_{K1} + \sum \gamma_G . \Psi_{0i} Q_{Kj}$$

Situaciones accidentales

$$\sum \gamma_G . G_{Kj} + \sum \gamma_{Gi} . G_{Kj} + \gamma_{G1} . \Psi_{11} . G_{K1} + \sum \gamma_G . \Psi_{2i} Q_{Kj} + \sum \gamma_A . A_K$$

Combinaciones para el Estado Límite de Servicio

Combinación característica

$$\sum \gamma_G . G_{Kj} + \sum \gamma_{Gi} . G_{Kj} + \gamma_{G1} . G_{K1} + \sum \gamma_G . \Psi_{0i} Q_{Kj}$$

Combinación frecuente

$$\sum \gamma_G . G_{Kj} + \sum \gamma_{Gi} . G_{Kj} + \gamma_{G1} . \Psi_{11} . G_{K1} + \sum \gamma_G . \Psi_{2i} Q_{Kj} + \sum \gamma_A . A_K$$

Combinación casi permanente

$$\sum \gamma_G . G_{Kj} + \sum \gamma_{Gi} . G_{Kj} + \sum \gamma_G . \Psi_{2i} Q_{Kj}$$

Emparrillado tridimensional

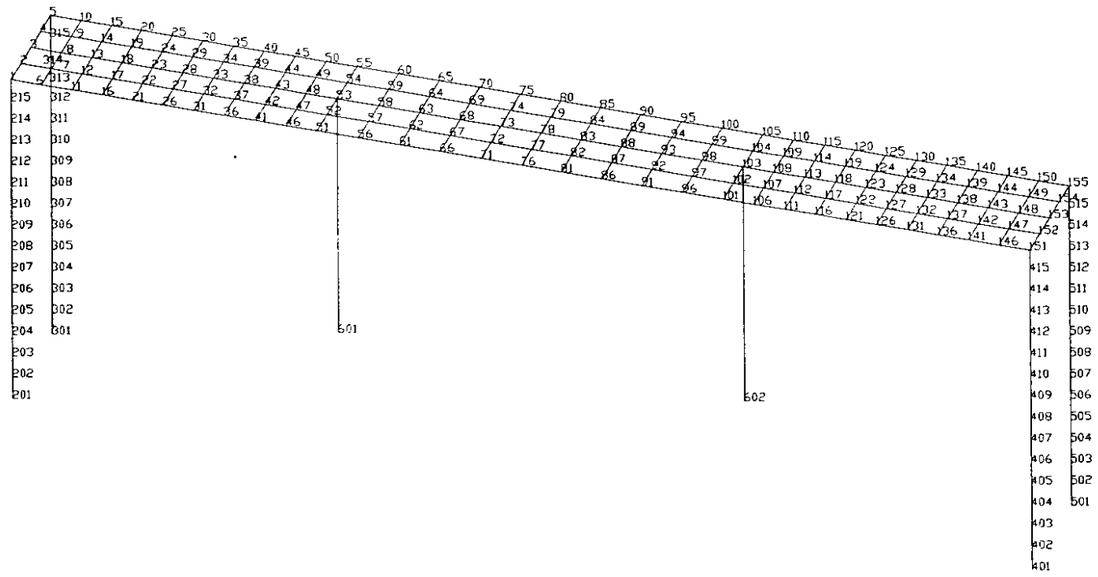
4.4 MODELO UTILIZADO

Se ha realizado uns modelo para obtener los esfuerzos que solicitan a la estructura. El primero es un emparrillado tridimensional, en el que se han incluido las pilas, ya que estas están empotradas en el tablero.

Emparrillado tridimensional.- Se dimensiona la losa según el método de Wood-Armer.

El programa utilizado es el STATIK2 desarrollado por CUBUS, que es un programa de cálculo matricial convencional.

Se adjunta a continuación un esquema del modelo utilizado.



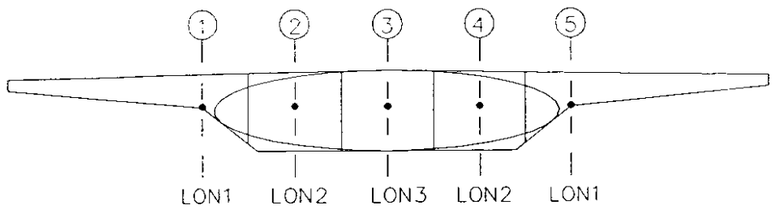
Emparrillado tridimensional

En el emparrillado tridimensional, el tablero se ha modelizado con tres barras longitudinales. Las características de dichas barras son las siguientes.

LON1

Area =1,255 m^2

Inercia = 0,07314 m^4



LON2

Area =1,339 m^2

Inercia = 0,1423 m^4

LON3

Area =1,368 m^2

Inercia = 0,1490 m^4

La inercia a torsión de la losa es la de la mayor elipse inscrita, que en este caso será

$$I_T = \frac{\pi}{16}\frac{a^3 b^3}{a^2 + b^2} = 1{,}15\ m^4$$

La inercia a torsión de la barra LON 3 es

$$I_T = b^3.h/6 = 0{,}277\ m^4$$

La inercia a torsión de la barra LON 2 es

$$I_T = b^3.h/6 = 0{,}208\ m^4$$

Por lo tanto a las barras laterales les asignaremos

$$I_T = (I_{Total} - I_{central})/2 = 0{,}233\ m^4$$

Barras transversales

Hay ocho tipos de barras transversales, se adjunta en el listado de las características del modelo las barras consideradas en el cálculo.

4.5. HIPOTESIS CONSIDERADAS

Las hipótesis que se han considerado en el cálculo son las siguientes

1	Peso propio	
2	Cargas muertas	Se incluye el valor máximo del pavimento y los pesos de aceras y barandillas.
3 - 8	Sobrecarga de uso	Se han considerado 6 hipótesis discretizandolo en dos partes cada vano.
8 - 20	Carro	Se han considerado 12 posiciones del carro, 6 centradas, y otras seis excéntricas.
21	Retracción	
22	Térmico	Esta hipótesis se ha considerado positiva y negativa según sea su efecto favorable o desfavorable
23	Gradiente térmico	
24-25	Viento sin sc	Esta hipótesis se ha considerado positiva y negativa según sea su efecto favorable o desfavorable
26-27	Viento con sc	Esta hipótesis se ha considerado positiva y negativa según sea su efecto favorable o desfavorable
28	Frenado	Esta hipótesis se ha considerado positiva y negativa según sea su efecto favorable o desfavorable

4.6. DIMENSIONAMIENTO A FLEXION

Se ha calculado la armadura del tablero a partir de los esfuerzos obtenidos en el programa de emparrillado tridimensional.

El método de composición de los esfuerzos de flexión y torsión es el desarrollado por Wood-Armer.

Al final de este anejo se presenta el listado de esfuerzos de ambos modelos.

Se presenta a continuación la armadura obtenida por el método de Wood-Armer.

4.7. COMPROBACION A FISURACION

Para evitar una fisuración excesiva, incompatible con el servicio que haya de prestar la estructura o con su durabilidad, las armaduras de tracción deben disponerse de forma que se limite la anchura de las fisuras.

Según el artículo 44 de la Instrucción EH-91, en función de las condiciones de ambiente y para el caso de disponer un recubrimiento mínimo $c_{min} = 0,20$ mm o un diámetro, la anchura característica de fisura w_k calculada según la EH-91, cumplirá:

Ambiente I: $w_k = 0,40$ mm
Ambiente II: $w_k = 0,20$ mm
Ambiente III: $w_k = 0,10$ mm

Para recubrimientos "c" superiores a "c_{min}", podrán aumentarse los valores anteriores multiplicándolos por la relación $c/c_{min} \leq 1,5$.

Por lo tanto, la anchura característica de fisura $w_k \leq 0,30$ mm.

Esta se calculará mediante la expresión:

$$w_k = 1,7 \times s_m \times \varepsilon_{sm}$$

siendo:

s_m: separación media de fisuras en la zona de recubrimiento.

ε_{sm}: alargamiento medio de las armaduras en la zona de recubrimiento teniendo en cuenta la colaboración del hormigón entre fisuras.

Los valores de s_m y ε_{sm} se obtienen de la siguiente manera:

$$s_m = 2 \times c + 0,2 \times s + K_1 \times K_2 \times \frac{\phi \times A_{c.eficaz}}{A_s}$$

$$\varepsilon_{sm} = \frac{\sigma_s}{E_s} \times \left[1 - \frac{K_3}{2,5 \times K_1} \times \left(\frac{\sigma_{sr}}{\sigma_s} \right)^2 \right] \geq 0,4 \times \frac{\sigma_s}{E_s}$$

Sección centro de vano

My = 158,23 mt
$w_k = 0,30$ mm < 0,30 mm

Sección apoyo

My = 253,9 mt
$w_k = 0,30$ mm < 0,30 mm

Sección intermedia

My = 122,2 mt
$w_k = 0,30$ mm < 0,30 mm

Se ha comprobado la fisuración para la combinación característica.

Si se utiliza la combinación frecuente, los momentos flectores son del orden de un 20% menor en el apoyo, y de un 35% en centro de vano quedando del lado de la seguridad.

4.8. DIMENSIONAMIENTO A CORTANTE

Se presenta a continuación el cálculo a cortante de la losa según indica la norma EH-91.

Dimensionamiento a cortante

Suponemos un ancho colaborante de hormigón la comprendida en las tres barras centrales

Vcu = 85,7 T/m

La armadura mínima será As = 0,02 fcd/fyd . d = 11,9 cm²/m y barra

Dimensionamiento a cortante

Barra	Vd	Barra	Vd	Barra	Vd	Barra	Vd	Barra	Vd	Vtotal	As,cort
1	7.52 31	15.08 61	11.35 91	14.73 121	-3.81	44.87	0.00
	80.31	46.86	33.85	43.71	66.14	270.86	1.51
1	0.95 31	10.43 61	6.60 91	10.08 121	-10.37	17.69	0.00
	68.90	39.62	25.54	36.47	54.73	225.25	0.00
2	-0.01 32	9.68 62	10.39 92	10.08 122	-10.36	19.77	0.00
	58.82	44.19	40.08	40.14	41.07	224.30	0.00
2	-6.58 32	5.03 62	5.64 92	5.43 122	-16.93	-7.42	0.00
	47.41	31.22	31.77	31.01	29.67	171.07	0.00
3	-4.08 33	2.66 63	4.25 93	3.48 123	-14.65	-8.34	0.00
	53.37	29.74	31.33	29.22	31.83	175.50	0.00
3	-16.56 33	-7.02 63	-2.71 93	-5.84 123	-21.22	-53.34	0.00
	29.68	11.14	18.70	16.16	20.42	96.09	0.00
4	-8.63 34	-7.42 64	-5.78 94	-5.79 124	-17.59	-45.21	0.00
	35.17	9.88	11.03	9.86	23.36	89.29	0.00
4	-15.52 34	-13.01 64	-11.38 94	-11.39 124	-24.48	-75.78	0.00
	24.08	3.58	3.57	3.57	12.27	47.07	0.00
5	-10.97 35	-14.96 65	-14.84 95	-14.34 125	-19.66	-74.78	0.00
	30.41	-2.26	-2.05	-1.79	17.02	41.32	0.00
5	-18.82 35	-22.20 65	-22.70 95	-21.58 125	-27.52	-112.82	0.00
	20.29	-6.91	-7.25	-6.44	6.90	6.58	0.00
6	-12.68 36	-26.52 66	-31.13 96	-28.33 126	-21.09	-119.75	0.00
	26.72	-9.72	-10.29	-9.72	12.69	9.68	0.00
6	-30.74 36	-44.19 66	-43.92 96	-42.69 126	-29.72	-191.26	0.00
	17.37	-14.37	-15.04	-14.37	3.34	-23.07	0.00
7	-20.74 37	-48.15 67	-49.51 97	-47.73 127	-22.30	-188.42	0.00
	25.06	-17.59	-18.17	-17.59	9.55	-18.74	0.00
7	-30.25 37	-55.39 67	-57.82 97	-54.96 127	-31.81	-230.23	0.00
	16.59	-22.25	-22.92	-22.24	1.09	-49.72	0.00
8	-19.91 38	-62.75 68	-62.08 98	-62.70 128	-21.99	-229.44	0.00
	26.64	-25.13	-26.78	-25.39	7.31	-43.35	0.00
8	-30.77 38	-69.98 68	-70.40 98	-69.94 128	-32.85	-273.93	2.32
	15.04	-32.70	-32.37	-32.73	0.19	-82.57	0.00
9	-16.94 39	-79.27 69	-81.27 99	-79.21 129	-18.68	-275.37	2.70
	27.29	-36.52	-38.05	-36.55	9.22	-74.63	0.00
9	-31.27 39	-93.01 69	-90.15 99	-92.48 129	-29.99	-336.90	18.98
	16.01	-41.27	-42.80	-41.30	2.55	-106.80	0.00
10	-10.08 400	-70.53 70	-192.39100	-67.91 130	-12.54	-353.44	23.35
	34.64	-21.38	-86.79	-21.38	17.13	-77.78	0.00
10	-34.16 40	-89.77 70	-206.70100	-87.15 130	-22.74	-440.52	46.39
	26.87	-26.03	-91.53	-26.03	9.36	-107.37	0.00
11	-11.44 41	35.70 71	70.82 101	35.99 131	-6.67	124.39	0.00
	45.30	101.89	180.80	98.63	21.10	447.71	48.29
11	-28.05 41	25.88 71	64.50 101	25.86 131	-16.17	72.02	0.00
	15.01	76.33	162.62	74.40	6.64	334.99	18.47
12	-3.37 42	36.88 72	37.02 102	38.35 132	0.60	109.48	0.00
	36.37	84.40	81.78	83.73	27.32	313.59	12.81
12	-19.74 42	27.88 72	30.70 102	28.09 132	-8.22	58.71	0.00
	21.22	74.75	70.69	74.08	12.17	252.90	0.00
13	-3.37 43	22.93 73	25.66 103	24.77 133	1.69	71.69	0.00
	35.16	62.66	65.38	61.86	25.87	250.93	0.00
13	-12.24 43	16.73 73	19.34 103	18.57 133	-7.18	35.23	0.00
	20.05	53.01	54.29	52.22	10.76	190.34	0.00
14	-2.83 44	13.83 74	15.01 104	14.29 134	1.34	41.64	0.00
	33.02	46.50	47.43	44.18	21.83	192.96	0.00
14	-11.87 44	7.63 74	8.69 104	8.08 134	-7.71	4.82	0.00
	18.10	36.85	36.34	34.53	6.91	132.72	0.00
15	-4.05 45	3.87 75	4.22 105	4.09 135	1.36	9.49	0.00
	35.45	31.00	26.56	30.44	17.15	140.60	0.00
15	-14.80 45	-2.33 75	-2.10 105	-2.12 135	-9.40	-30.74	0.00
	4.23	9.35	9.47	8.79	3.93	35.78	0.00
16	-6.05 46	-10.33 76	-10.51 106	-9.78 136	-1.05	-37.73	0.00
	8.49	0.93	0.85	1.09	12.62	23.98	0.00
16	-35.64 46	-31.98 76	-27.60 106	-31.43 136	-14.26	-140.92	0.00
	-2.26	-5.28	-5.47	-5.11	1.87	-16.26	0.00
17	-18.27 47	-37.84 77	-37.40 107	-35.53 137	-6.25	-135.28	0.00
	4.93	-9.25	-9.96	-9.09	9.20	-14.17	0.00
17	-33.19 47	-47.49 77	-48.48 107	-45.18 137	-21.18	-195.52	0.00
	-4.12	-15.45	-16.29	-15.29	0.15	-50.99	0.00
18	-20.17 48	-54.07 78	-55.32 108	-53.28 138	-10.61	-193.45	0.00
	3.31	-19.68	-20.77	-19.53	7.69	-49.00	0.00
18	-35.28 48	-63.72 78	-66.41 108	-62.93 138	-25.71	-254.04	0.00
	-5.56	-25.89	-27.10	-25.74	-1.18	-85.46	0.00
19	-21.08 49	-76.08 79	-71.69 109	-75.41 139	-12.20	-256.46	0.00
	3.64	-31.67	-30.70	-31.51	8.22	-82.01	0.00
19	-36.23 49	-85.73 79	-82.78 109	-85.05 139	-27.36	-317.15	0.00
	-5.18	-37.88	-37.02	-37.71	-0.60	-118.38	0.00
20	-14.45 50	-73.89 80	-169.36110	-72.00 140	-6.28	-335.98	18.73

	10.78		-28.12		-70.20		-27.71		16.59	-98.67	0.00
20	-28.91	50	-83.54	80	-180.45	110	-81.65	140	-20.74	-395.29	34.43
	1.27		-34.33		-76.53		-33.91		7.09	-136.41	0.00
21	-16.86	51	28.85	81	82.00	111	28.55	141	-7.94	114.60	0.00
	15.52		73.77		170.43		71.03		23.06	353.80	23.45
21	-24.63	51	24.20	81	77.25	111	23.90	141	-15.71	85.02	0.00
	5.31		66.53		161.51		63.79		12.86	310.00	11.86
22	-9.91	52	40.79	82	41.29	112	40.63	142	-1.34	111.47	0.00
	22.18		78.88		78.54		77.40		30.36	287.36	5.87
22	-16.57	52	36.14	82	36.54	112	35.98	142	-8.01	84.09	0.00
	10.87		71.64		69.62		70.17		19.05	241.35	0.00
23	-7.74	53	31.94	83	32.13	113	31.69	143	0.32	88.34	0.00
	23.59		61.25		60.75		60.23		31.96	237.78	0.00
23	-14.86	53	27.28	83	27.38	113	27.04	143	-6.68	60.17	0.00
	12.74		54.01		51.84		52.99		20.98	192.56	0.00
24	-8.39	54	23.29	84	24.39	114	23.04	144	-0.56	61.77	0.00
	21.83		46.08		47.68		45.18		30.32	191.08	0.00
24	-16.86	54	18.64	84	19.65	114	18.39	144	-8.89	30.93	0.00
	12.32		38.84		38.76		37.94		20.67	148.53	0.00
25	-10.57	55	15.53	85	16.38	115	15.29	145	-2.72	33.92	0.00
	19.33		32.73		33.98		31.85		27.78	145.66	0.00
25	-19.92	55	10.88	85	11.64	115	10.64	145	-12.07	1.17	0.00
	10.70		25.50		25.06		24.61		19.15	105.02	0.00
26	-14.05	56	8.17	86	8.56	116	7.88	146	-6.31	4.25	0.00
	16.79		20.10		20.56		19.25		25.35	102.04	0.00
26	-24.18	56	3.52	86	3.10	116	3.23	146	-16.43	-30.76	0.00
	8.94		12.87		12.36		12.01		17.50	63.66	0.00
27	-18.10	57	-0.15	87	0.21	117	-0.44	147	-10.48	-28.96	0.00
	13.51		9.39		8.37		8.52		22.18	61.98	0.00
27	-29.19	57	-6.45	87	-7.85	117	-6.74	147	-21.56	-71.79	0.00
	6.62		3.79		2.77		2.93		15.30	31.41	0.00
28	-23.73	58	-10.19	88	-11.18	118	-10.46	148	-16.29	-71.83	0.00
	10.13		1.62		0.09		0.82		18.92	31.57	0.00
28	-35.13	58	-17.42	88	-20.09	118	-17.70	148	-27.70	-118.0	0.00
	3.56		-3.04		-4.66		-3.84		12.35	4.38	0.00
29	-31.11	59	-20.71	89	-20.53	119	-20.82	149	-23.99	-117.16	0.00
	5.88		-5.38		-6.01		-5.79		14.76	3.46	0.00
29	-42.51	59	-27.95	89	-29.44	119	-28.06	149	-35.40	-163.37	0.00
	-0.69		-10.03		-10.76		-10.44		8.19	-23.73	0.00
30	-49.12	60	-27.78	90	-18.24	120	-27.57	150	-41.84	-164.55	0.00
	-2.08		-10.74		-6.84		-10.39		8.17	-21.89	0.00
30	-60.53	60	-35.02	90	-27.16	120	-34.81	150	-53.25	-210.75	0.00
	-8.65		-15.39		-11.59		-15.04		1.60	-49.07	0.00

4.9. CALCULO A RASANTE DE LAS ALAS

Se calcula la armadura de cosido del ala con el alma.

El rasante será igual a $$Rq = \frac{V.Mest}{I} = \frac{Vd}{3,20}$$

Area = 0,181 m

Mest = 0,2238 . 0,81 = 0,181 m^3

Por lo que la armadura que se ha de disponer será

$$As = 0,075\ Vd\ (cm^2/m)$$

Se presentan a continuación los listados de obtención de la armadura de rasante.

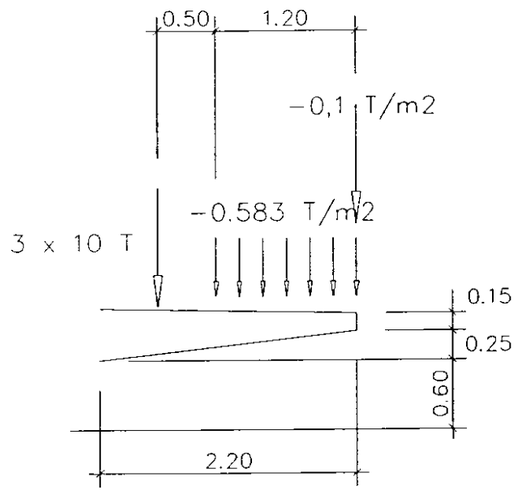
Seccion	Vtotal	Arasante	Seccion	Vtotal	Arasante	Seccion	Vtotal	Arasante
1	44.87	3.34	11	124.39	9.25	21	114.60	8.52
	270.86	20.14		447.71	33.28		353.80	26.30
1	17.69	1.32	11	72.02	5.35	21	85.02	6.32
	225.25	16.75		334.99	24.90		310.00	23.05
2	19.77	1.47	12	109.48	8.14	22	111.47	8.29
	224.30	16.67		313.59	23.31		287.36	21.36
2	-7.42	0.55	12	58.71	4.36	22	84.09	6.25
	171.07	12.72		252.90	18.80		241.35	17.94
3	-8.34	0.62	13	71.69	5.33	23	88.34	6.57
	175.50	13.05		250.93	18.65		237.78	17.68
3	-53.34	3.97	13	35.23	2.62	23	60.17	4.47
	96.09	7.14		190.34	14.15		192.56	14.31
4	-45.21	3.36	14	41.64	3.10	24	61.77	4.59
	89.29	6.64		192.96	14.34		191.08	14.20
4	-75.78	5.63	14	4.82	0.36	24	30.93	2.30
	47.07	3.50		132.72	9.87		148.53	11.04
5	-74.78	5.56	15	9.49	0.71	25	33.92	2.52
	41.32	3.07		140.60	10.45		145.66	10.83
5	-112.82	8.39	15	-30.74	2.29	25	1.17	0.09
	6.58	0.49		35.78	2.66		105.02	7.81

6	-119.75	8.90	16	-37.73	2.80	26	4.25	0.32
	9.68	0.72		23.98	1.78		102.04	7.59
6	-191.26	14.22	16	-140.92	10.48	26	-30.76	2.29
	-23.07	1.72		-16.26	1.21		63.66	4.73
7	-188.42	14.01	17	-135.28	10.06	27	-28.96	2.15
	-18.74	1.39		-14.17	1.05		61.98	4.61
7	-230.23	17.12	17	-195.52	14.53	27	-71.79	5.34
	-49.72	3.70		-50.99	3.79		31.41	2.34
8	-229.44	17.06	18	-193.45	14.38	28	-71.83	5.34
	-43.35	3.22		-49.00	3.64		31.57	2.35
8	-273.93	20.36	18	-254.04	18.89	28	-118.04	8.78
	-82.57	6.14		-85.46	6.35		4.38	0.33
9	-275.37	20.47	19	-256.46	19.07	29	-117.16	8.71
	-74.63	5.55		-82.01	6.10		3.46	0.26
9	-336.90	25.05	19	-317.15	23.58	29	-163.37	12.14
	-106.80	7.94		-118.38	8.80		-23.73	1.76
10	-353.44	26.27	20	-335.98	24.98	30	-164.55	12.23
	-77.78	5.78		-98.67	7.34		-21.89	1.63
10	-440.52	32.75	20	-395.29	29.39	30	-210.75	15.67
	-107.37	7.98		-136.41	10.14		-49.07	3.65

4.10. ARMADURA DE FLEXION DEL VOLADIZO

Se calcula en este apartado la armadura de flexión del voladizo. Para las cargas puntuales se han utilizado las fórmulas dadas por Westergard.

Se presenta un esquema del voladizo de la estructura con las cargas existentes.



Peso propio $0,15 \cdot 2,5 \cdot 2,7^2 / 2 + 0,15 \cdot 2,5 \cdot 2,7^2 / 6 = 1,82$ mT/m

Acera y barandilla $0,7 \cdot 2,5 + 0,8 \cdot 1,8 = 3,20$ mT/m

Viento $N = 3,15 \cdot 0,17 \cdot 1,8 = 0,94$ T/m

$My = (0,6 \cdot 3,15 - 0,3) \cdot 0,94 = 1,50$ mT/m

Sobrecarga uniforme

$My = 0,48$ mT/m

Carro

$$M_{rueda} = \frac{P}{\pi} \frac{1}{\left(1+\left(\frac{y}{u}\right)^2\right)}$$

u = 1,05 m

y = 0 y = ±1,5

M_{rueda} = 5,28 mt

Md = (1,8 + 3,2) . 1,35 + (0.48 + 5.28) . 1,5 + 1,5 . 0,45 = 16,1 mT/m

As,nec = 11,2 cm²/m

4.11. CALCULO DE LAS RIOSTRAS

Se dispondrán vigas riostras en las pilas y en los estribos. La viga riostra de estribos tiene una sección distinta al resto del puente, ya que con el fin de recoger las torsiones los apoyos se separan cuatro metros.

Riostra en pila

Tendrá un ancho de 2,0 metros. Según se obtiene del modelo emparrilado los esfuerzos existentes son los siguientes. Se han tomado los esfuerzos de la propia barra más la parte proporcional de las contiguas.

M_{yd} = -224,5 - 105,8 . 0,3 - 114,6 . 0,09 = -257,8 mt

M_{td} = -30,4 - 37,3 . 0,3 - 17,7 . 0,09 = -43,2 mt

La armadura de negativos necesaria para ese momento es de 62,5 cm² .

Debido al momento torsor

Asl = 17,0 cm²

Ast = 3,37 cm² / m

Riostra en estribo

Tendrá un ancho de 0,75 metros. Según se obtiene del modelo emparrilado los esfuerzos existentes son los siguientes.

M_{yd} = 59,3 mt

M_{yd} = -65,7 mt

Vd = 92,6 T > Vcu = 49,5 T As = 11,4 cm² / m

M_{td} = 29,9 mt

La armadura de positivos necesaria para ese momento es de 19,6 cm² .

Debido al momento torsor

Asl = 26,33 cm² Ast =9,48 cm² / m

4.12. DIMENSIONAMIENTO DE LOS APARATOS DE APOYO

Se dimensionan a continuación los aparatos de neopreno.

Las reacciones debidas a las distintas hipótesis son las siguientes

	N	Fx	Fy	Desplaz.x	Desplaz.y
C. Perm.	49,78	--	--	--	--
Retracción		-2,56	--	5,09	--
Temperatura		-2,01	--	4,03	--
Gradiente	0,80	--	--	--	--
Viento	4,00	--	2,67	--	5,33
Frenado		-1,70	--	3,41	--
Sc.y carro	52,87	--	--	--	--

Ancho (mm) 400,00
Largo (mm) = 300,00
Alto (mm) = 32,00

Se colocarán apoyos de 300x400x71(32)

	Acc. Lentas	c. Instantáneas
Rigidez del apoyo	375,00	750,00

Acciones lentas

tan γ =u/T 0,29 < 0,5

Limitación de la distorsión admisible total

tan γ =u/T 0,39 < 0,7 tan γ =u/T 0,17 < 0,7

Limitación de las presiones verticales

		Tensión	
Nmáx =	107,45	89,54	<130 Kg/cm2
Nmín =	34,78	28,98	<30 Kg/cm2

Condición de estabilidad

a/10 < T < a/5

0.03 < 0.032 < 0.06

Giro máximo 0,0016 <0.002 Para carga máxima

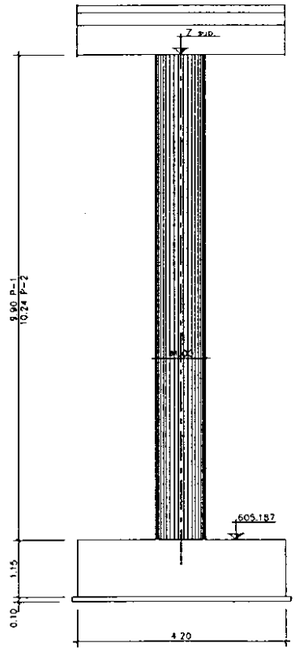
I haber dos apoyos no hay giro transversal

Por lo que el aparato dimensionado es válido

5. CALCULO DE PILAS

Las pilas están formadas por fustes circulares de 1,0 metros de diámetro. La longitud de las mismas son 9,9 m en la pila 1, y 10,24 m en la pila 2.

La carga es transmitida al terreno mediante una zapata cuadrada de 4,2 m de lado. La presión cobaricéntrica que dicha zapata transmite al terreno es en cualquier hipótesis menor de 30 T/m^2.



Se calcula a continuación la longitud de pandeo de las pilas. Se ha considerado la parte superior empotrada y coaccionado elásticamente por los neoprenos. En la zapata se admiten giros, por lo que lo colocaremos apoyado.

Los aparatos de apoyo son 300 x 400 x 71(32) por lo que la rigidez frente esfuerzos longitudinales serán

$$K = \frac{G.a.b}{T} = \frac{80.0,3.0,4}{0,032} = 300\ T/m$$

Como hay 2 aparatos de apoyo por estribo la rigidez frente a esfuerzos horizontales es de

$$K = 2 \times 300 = 600\ T/m$$

$$t = \frac{T}{EI/L^3} = \frac{600}{3,3.10^6.\times \frac{1,0^4\,\Pi}{64}.\frac{1}{10,25^3}} = 4,00$$

$r = 0$

$kL = 2,0 \rightarrow \beta = 1,57$

Por lo tan to la esbeltez sera

$$\lambda = \frac{L.\beta}{\phi / 4} = \frac{10.25 \times 1.57}{0.25} = 64,4$$

En las fórmulas anteriores las variables son

T es la rigidez de la superestructura

β es el coeficiente de pandeo

L es la longitud del pilote

ϕ es el diámetro del pilote

r es la rigidez frente al giro de la base

El método de obtención del factor de longitud de pandeo β ha sido tomada de la publicación escrita por German Gurfinkel en "Journal of the STRUCTURAL DIVISION, proceedings of the American Society of Civil Engineers", con el título de "Buckling of elastically restrained columns".

Al ser la esbeltez menor o igual que 100 según el artículo 43.1.1 de la norma EH-91, la excentricidad accidental que hay que tomar es, según el artículo 43.5.2, igual a

$$e_a = \left(0{,}85 + \frac{f_{yd}}{12000)}\right) \cdot \frac{h + 20e_0}{h + 10e_0} \cdot \frac{l_0^2}{i} 10^{-4} = \left(0{,}85 + \frac{4434.8}{12000}\right) \cdot \frac{0{,}89 + 20.e_0}{0{,}89 + 10.e_0} \cdot \frac{10{,}25^2}{0{,}25} .10^{-4}$$

donde

e_a es la excentricidad adicional

f_{yd} es el límite elástico del acero

h es el canto de la sección

e_0 es la excentricidad de los esfuerzos

lo es la longitud de pandeo

i es el radio de giro de la sección

La excentricidad total para los esfuerzos solicitantes es por tanto

Se adjuntan a continuación los esfuerzos pésimos mayorados en la pila

Esfuerzo	N	My	Mz	e_a	M
N⁺	-715.62	-18.2	18.4	0.12	85.9
N⁻	-339.91	3.3	14.6	0.14	47.6
My⁺	-597.88	88.1	-0.1	0.23	137.5
Mz⁺	-620.72	47.8	-53.0	0.20	124.1
Mz⁺	-376.36	25.4	-46.2	0.22	82.8

El cálculo de la sección del pilote a flexión se ha realizado mediante un programa de ordenador llamado "FAGUS 2".Es un programa que sirve para realizar cálculos de secciones sometidas a flexión en ambas direccione, y a esfuerzo axil. Todos los cálculos se basan en la hipótesis de que toda sección deformada permanece plana.

Se han dispuesto 32 ϕ 20, y se ha obtenido el diagrama de iteración de la sección, comprobando que frente a los esfuerzos considerados la armadura es suficiente. También se ha hallado el momento último de rotura de la sección. Se adjuntan los resultados del cálculo descrito.

El cortante máximo es Vd = 52,0 T < Vcu = $0{,}89^2$. 5 . 14,1 = 56 T Por lo que se dispondrá armadura mínima As,mín = 8,0 cm^2/m

La zapata tiene un canto de 1,15 m y es cuadrada de 4,75 m de lado. Los esfuerzos con los que ha sido calculada son los siguientes.

Esfuerzo	N	Vy	Vz	My	Mz
N⁺	-514.6	-2.4	1.6	-13.1	12.3
N⁻	-365.8	2.3	0.7	-1.5	-12.1
My⁺	-439.8	2.3	9.1	-49.7	-12.2
Mz⁺	-375.9	6.1	-2.4	16.5	-30.8

Una de las pilas se cimenta mediante un encepado, y la otra mediante una zapata. Se calcula a continuación el encepado.

Los pilotes son de 80 cm de diámetro separados entre sí dos diámetros. Por lo que la carga máxima en un pilote es de 152,6 T, dando una tensión en el pilote de 30,3 Kg/cm^2. Se ha realizado un modelo para estudiar los esfuerzos dados en los pilotes, siendo la armadura necesaria la mínima indicada en la Instrucción. Se presentan a continuación los resultados del modelo realizado.

Cálculo de portico plano (2-D)

****
* DATOS - ESTRUCTURA *
****

Titulo proy.: Pilote

Unidades : M , T

D A T O S D E N U D O S:(15 Nudo)

Nudo	X [M]	Y [M]	Z [M]	Apoyo V XYZ	Apoyo R XYZ	Especial
1	0.00000	0.00000	0.00000	S	B	F
2	0.00000	0.00000	-1.00000	S	F	F
3	0.00000	0.00000	-2.00000	S	F	F
4	0.00000	0.00000	-3.00000	S	F	F
5	0.00000	0.00000	-4.00000	S	F	F
6	0.00000	0.00000	-5.00000	S	F	F
7	0.00000	0.00000	-6.00000	S	F	F
8	0.00000	0.00000	-7.00000	S	F	F
9	0.00000	0.00000	-8.00000	S	F	F
10	0.00000	0.00000	-9.00000	S	F	F
11	0.00000	0.00000	-10.00000	S	F	F
12	0.00000	0.00000	-11.00000	S	F	F
13	0.00000	0.00000	-12.00000	S	F	F
14	0.00000	0.00000	-13.00000	S	F	F
15	0.00000	0.00000	-14.00000	S	F	F

NUDOS CON APOYO ELASTICO: ("B"=Bloqueado "F"=Libre)

Nudo	D-X [T/M]	D-Y [T/M]	D-Z [T/M]	R-X [TM/ARC]	R-Y [TM/ARC]	R-Z [TM/ARC]
1	3.200E+03		B		F	
2	3.200E+03		F		F	
3	3.200E+03		F		F	
4	3.200E+03		F		F	
5	3.200E+03		F		F	
6	3.200E+03		F		F	
7	3.200E+03		F		F	
8	3.200E+03		F		F	
9	3.200E+03		F		F	
10	3.200E+03		F		F	
11	3.200E+03		F		F	
12	3.200E+03		F		F	
13	3.200E+03		F		F	
14	3.200E+03		F		F	
15	3.200E+03		F		F	

D A T O S B A R R A S : (14 Barras)

Barra	Incidencias Inicio	Fin	Long.Barras [M]	Nombre-sec. (Cant.var)	Articulaciones Especial Inicio	Fin
1*	1	2	1.00000	PILOTE		
2*	2	3	1.00000	PILOTE		
3*	3	4	1.00000	PILOTE		
4*	4	5	1.00000	PILOTE		
5*	5	6	1.00000	PILOTE		
6*	6	7	1.00000	PILOTE		
7*	7	8	1.00000	PILOTE		
8*	8	9	1.00000	PILOTE		
9*	9	10	1.00000	PILOTE		
10*	10	11	1.00000	PILOTE		
11*	11	12	1.00000	PILOTE		
12*	12	13	1.00000	PILOTE		
13*	13	14	1.00000	PILOTE		
14*	14	15	1.00000	PILOTE		

Las barras marcadas con "*" son verticales. Sus ejes locales son
tales que la dirección 'y' resulta coincidente con la global siempre
y cuando no se haya rotado con la instruction 'O_ORIENTACION'.

CARACTERISTICAS DE SEC.

Nombre Sec.	Ax [M2] / zi [M1]	Iy [M4] / zs [M1]	Fz [M2]
PILOTE	4.9694E-01 / -0.4000	1.9652E-02 / 0.4000	Undef

MATERIALES:

Barra (hasta barra)	E-Módulo [T/ M2]	G-Módulo [T/ M2]
1 .. 14	2.7000E+06	1.1000E+06

STS-cálculo ok
Max free mem:157kB

Hipótesis 1: Empujes de la superestructura

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras
Fuerza Z	-152.600		Nudo 1
Fuerza X	2.800		Nudo 1

CARGAS: '' Ejec. "0001"

Hipótesis	Factor	Etapa	Título
1	1.0000		Empujes de la superestructura

DESPLAZAMIENTOS:

NUDOS	DX [mm]	DZ [mm]	RY [rad]
1	0.440926	-1.53E-15	0.000151
2	0.293896	-1.53E-15	0.000138
3	0.170090	-1.53E-15	0.000108
4	0.079207	-1.53E-15	7.42E-05
5	0.020357	-1.53E-15	4.46E-05
6	-0.012450	-1.53E-15	2.23E-05
7	-0.026693	-1.53E-15	7.38E-06
8	-0.029287	-1.53E-15	-1.28E-06
9	-0.025652	-1.53E-15	-5.37E-06
10	-0.019508	-1.53E-15	-6.56E-06
11	-0.013050	-1.53E-15	-6.20E-06
12	-0.007301	-1.53E-15	-5.27E-06
13	-0.002491	-1.53E-15	-4.39E-06
14	0.001601	-1.53E-15	-3.86E-06
15	0.005355	-1.53E-15	-3.70E-06

REACCIONES EN APOYOS:

NUDOS	FX [t]	FZ [t]	MY [tm]
1	-1.411	152.600	
2	-0.940467		
3	-0.544288		
4	-0.253463		
5	-0.065142		
6	0.039842		
7	0.085419		
8	0.093717		
9	0.082086		
10	0.062424		

REACCIONES EN APOYOS:

NUDOS	FX [t]	FZ [t]	MY [tm]
11	0.041759		
12	0.023364		
13	0.007972		
14	-0.005124		
15	-0.017136		
Sumas:	-2.800	152.600	

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vz [t]	My [tm]
1	0	0	1.389	2.28E-05
1	1.000	0	1.389	1.389
2	0	0	0.448569	1.389
2	1.000	0	0.448569	1.838
3	0	0	-0.095719	1.838
3	1.000	0	-0.095719	1.742
4	0	0	-0.349181	1.742
4	1.000	0	-0.349181	1.393
5	0	0	-0.414324	1.393
5	1.000	0	-0.414324	0.978387
6	0	0	-0.374482	0.978371
6	1.000	0	-0.374482	0.603904
7	0	0	-0.289064	0.603891
7	1.000	0	-0.289064	0.314839
8	0	0	-0.195346	0.314829
8	1.000	0	-0.195346	0.119491
9	0	0	-0.113259	0.119485
9	1.000	0	-0.113259	0.006231
10	0	0	-0.050835	0.006227
10	1.000	0	-0.050835	-0.044606
11	0	0	-0.009076	-0.044607
11	1.000	0	-0.009076	-0.053683
12	0	0	0.014288	-0.053683
12	1.000	0	0.014288	-0.039396
13	0	0	0.022260	-0.039395
13	1.000	0	0.022260	-0.017136
14	0	0	0.017136	-0.017135

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vz [t]	My [tm]
14	1.000	0	0.017136	-3.38E-07

Según el método de las bielas se ha hallado la armadura en cada faja de pilotes

$$A_d = \frac{228,5 \times (1,0 - 0,35 \times 0,9)}{5,1 / 1,15} = 35,3 \rightarrow 10\phi 25$$

Comprobación a cortante

$3 \times 1,80 \times 0,90 \times f_{cv} = 280,6T > V_d = 213,4$

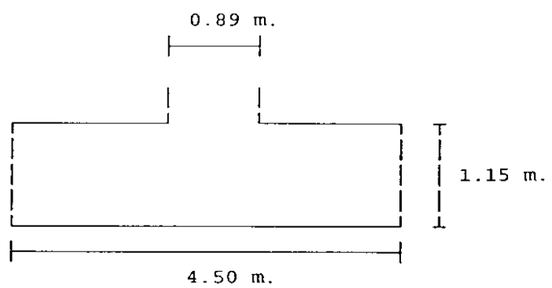
Se presentan a continuación los cálculos realizados de la zapata.

Estructura .....:PSF103-7

Pila Nº : 1

⊙DIBUJO

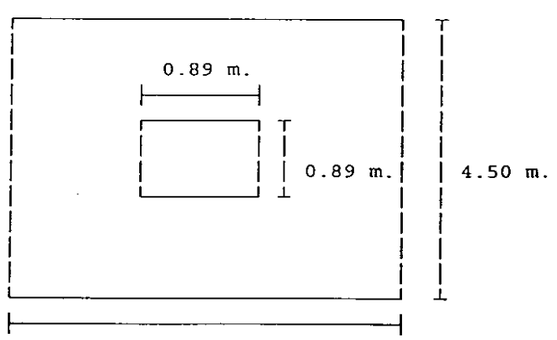
* dibujo sin escala



ALZADO

Dirección del eje del tablero

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PLANTA

CARACTERISTICAS DE LOS MATERIALES Y CIMENTACION

Fck (Kg/cm²) ..... 250 γcd ... 1.50

Fyk (Kg/cm²) ..... 5100 γyd ... 1.15

Recubrimiento de armaduras ..... 4.0 cms

Tensión admisible del terreno ..... 2.50 Kg/cm²

Coeficiente de rozamiento en cimentación ... 0.55

Coeficiente de seguridad al deslizamiento... 1.50

Coeficiente de seguridad al vuelco 1.50

⊙ESFUERZOS CONSIDERADOS

* Longitudinal y transversal según la dirección del eje del tablero
* Esfuerzos en t y m.t

Hipótesis	Axil	F.Long	F.Trans	M.Long	M.Trans	γf
1	514.60	2.40	1.60	13.10	12.30	1.50
2	365.80	2.30	0.70	1.50	12.10	1.50
3	439.80	2.30	9.10	49.70	12.20	1.50
4	375.90	6.10	2.40	16.50	30.80	1.50

RESULTADOS DE CALCULO

©Tensiones sobre el Terreno en Kg/cm² y coeficientes de seguridad

Hipótesis	σ1	σ2	σ3	σ4	σcob	Cd	Cv
1	3.03	2.84	2.82	2.63	2.90	131.27	81.26
2	2.21	2.04	2.15	1.98	2.13	101.40	73.93
3	2.95	2.65	2.26	1.97	2.63	30.10	21.41
4	2.52	2.08	2.21	1.77	2.27	39.14	29.11

Tensión cobaricéntrica Máxima 2.90 Kg/cm² para la Hipótesis 1

©Esfuerzos de cálculo

* Esfuerzos en m.t/m y t/m Armaduras en cm²/m

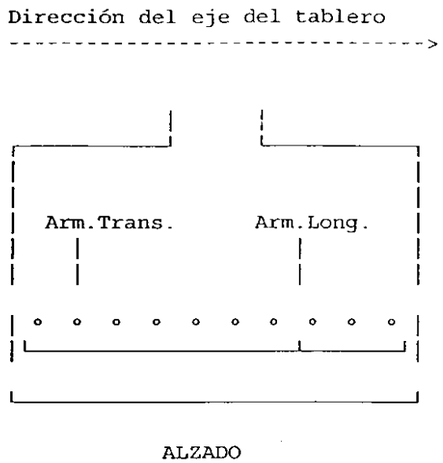
Recubrimiento de armaduras= 4.0 cms

Uc= 1850 t/m

Vcu long.= 143.30 t/m
Vcu trans.= 143.30 t/m

Hipótesis	M.long	M.trans	Ar.long	Ar.trans	Vd long.	Vd Trans.
1	76.34	76.43	15.81	15.83	4.37	4.37
2	53.85	53.39	11.09	10.99	2.47	2.49
3	72.34	73.92	14.96	15.30	4.18	4.11
4	61.65	61.12	12.72	12.61	3.15	3.18

©DIBUJO DE LA ARMADURA



ALZADO

Armadura longitudinal Máxima 15.81 cm²/m para la Hipótesis 1

Armadura transversal Máxima 15.83 cm²/m para la Hipótesis 1

6.- CALCULO DE LOS ESTRIBOS

Los estribos de la estructura se han realizado mediante un durmiente de hormigón armado, con el fin de contener las tierras y que estas no invadan la plataforma se han proyectado muros de suelo reforzado.

Se presenta a continuación un esquema del estribo.

Los esfuerzos utilizados para el dimensionamiento de los estribos son los obtenidos del emparrillado espacial.

	Apoyo dcho.	**Apoyo Izqdo.**
Carro centrado	102.	102.
Carro excéntrico	127.6	76.4

Se ha utilizado un programa de cálculo de muros de suelo reforzado comprobando la validez del durmiente dimensionado para las distintas hipótesis de carga. También se ha realizado un cálculo de viga flotante para el estudio del comportamiento transversal

7. CALCULOS DE ORDENADOR

Se presentan a continuación los cálculos de ordenador realizados.

1 Emparrillado tridimensional

2 Calculo de las pilas

3 Calculo del cargadero

4 Calculo de los muros de tierra reforzado

1 EMPARRILLADO TRIDIMENSIONAL

Se presentan a continuación las características del modelo realizado y los resultados de las hipótesis consideradas.

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S T A T I K - 2   V.1.51                                          página    1
AEPO    28029 MADRID                                              23.10.98
Modelo tridimensional. PSF 103.7                                  13:38
-------------------------------------------------------------------------


*****************************
*     DATOS - ESTRUCTURA    *
*****************************
Titulo proy.:  Modelo tridimensional. PSF 103.7
Unidades    :   M , T
D A T O S  D E  N U D O S:( 157 Nudo )          Apoyo          Especial
                X           Y           Z       V     R
 Nudo       [ M]        [ M]        [ M]       XYZ   XYZ
-------------------------------------------------------------------------
    1     0.00000    -2.50000     0.00000       SSB   FFF
    2     0.00000    -1.25000     0.00000
    3     0.00000     0.00000     0.00000
    4     0.00000     1.25000     0.00000
    5     0.00000     2.50000     0.00000       SSB   FFF
    6     1.27500    -2.50000     0.00000
    7     1.27500    -1.25000     0.00000
    8     1.27500     0.00000     0.00000
    9     1.27500     1.25000     0.00000
   10     1.27500     2.50000     0.00000
   11     2.55000    -2.50000     0.00000
   12     2.55000    -1.25000     0.00000
   13     2.55000     0.00000     0.00000
   14     2.55000     1.25000     0.00000
   15     2.55000     2.50000     0.00000
   16     3.82500    -2.50000     0.00000
   17     3.82500    -1.25000     0.00000
   18     3.82500     0.00000     0.00000
   19     3.82500     1.25000     0.00000
   20     3.82500     2.50000     0.00000
   21     5.10000    -2.50000     0.00000
   22     5.10000    -1.25000     0.00000
   23     5.10000     0.00000     0.00000
   24     5.10000     1.25000     0.00000
   25     5.10000     2.50000     0.00000
   26     6.37500    -2.50000     0.00000
   27     6.37500    -1.25000     0.00000
   28     6.37500     0.00000     0.00000
   29     6.37500     1.25000     0.00000
   30     6.37500     2.50000     0.00000
   31     7.65000    -2.50000     0.00000
   32     7.65000    -1.25000     0.00000
   33     7.65000     0.00000     0.00000
   34     7.65000     1.25000     0.00000
   35     7.65000     2.50000     0.00000
   36     8.92500    -2.50000     0.00000
   37     8.92500    -1.25000     0.00000
   38     8.92500     0.00000     0.00000
   39     8.92500     1.25000     0.00000
   40     8.92500     2.50000     0.00000
   41    10.20000    -2.50000     0.00000
   42    10.20000    -1.25000     0.00000
   43    10.20000     0.00000     0.00000
```

Nudo	X [M]	Y [M]	Z [M]	V XYZ	R XYZ
44	10.20000	1.25000	0.00000		
45	10.20000	2.50000	0.00000		
46	11.47500	-2.50000	0.00000		
47	11.47500	-1.25000	0.00000		
48	11.47500	0.00000	0.00000		
49	11.47500	1.25000	0.00000		
50	11.47500	2.50000	0.00000		
51	12.75000	-2.50000	0.00000		
52	12.75000	-1.25000	0.00000		
53	12.75000	0.00000	0.00000		
54	12.75000	1.25000	0.00000		
55	12.75000	2.50000	0.00000		
56	14.45000	-2.50000	0.00000		
57	14.45000	-1.25000	0.00000		
58	14.45000	0.00000	0.00000		
59	14.45000	1.25000	0.00000		
60	14.45000	2.50000	0.00000		
61	16.15000	-2.50000	0.00000		
62	16.15000	-1.25000	0.00000		
63	16.15000	0.00000	0.00000		
64	16.15000	1.25000	0.00000		
65	16.15000	2.50000	0.00000		
66	17.85000	-2.50000	0.00000		
67	17.85000	-1.25000	0.00000		
68	17.85000	0.00000	0.00000		
69	17.85000	1.25000	0.00000		
70	17.85000	2.50000	0.00000		
71	19.55000	-2.50000	0.00000		
72	19.55000	-1.25000	0.00000		
73	19.55000	0.00000	0.00000		
74	19.55000	1.25000	0.00000		
75	19.55000	2.50000	0.00000		
76	21.25000	-2.50000	0.00000		
77	21.25000	-1.25000	0.00000		
78	21.25000	0.00000	0.00000		
79	21.25000	1.25000	0.00000		
80	21.25000	2.50000	0.00000		
81	22.95000	-2.50000	0.00000		
82	22.95000	-1.25000	0.00000		
83	22.95000	0.00000	0.00000		
84	22.95000	1.25000	0.00000		
85	22.95000	2.50000	0.00000		
86	24.65000	-2.50000	0.00000		
87	24.65000	-1.25000	0.00000		
88	24.65000	0.00000	0.00000		
89	24.65000	1.25000	0.00000		
90	24.65000	2.50000	0.00000		
91	26.35000	-2.50000	0.00000		
92	26.35000	-1.25000	0.00000		
93	26.35000	0.00000	0.00000		
94	26.35000	1.25000	0.00000		
95	26.35000	2.50000	0.00000		
96	28.05000	-2.50000	0.00000		
97	28.05000	-1.25000	0.00000		
98	28.05000	0.00000	0.00000		

Nudo	X [M]	Y [M]	Z [M]	V XYZ	R XYZ	
99	28.05000	1.25000	0.00000			
100	28.05000	2.50000	0.00000			
101	29.75000	-2.50000	0.00000			
102	29.75000	-1.25000	0.00000			
103	29.75000	0.00000	0.00000			
104	29.75000	1.25000	0.00000			
105	29.75000	2.50000	0.00000			
106	31.02500	-2.50000	0.00000			
107	31.02500	-1.25000	0.00000			
108	31.02500	0.00000	0.00000			
109	31.02500	1.25000	0.00000			
110	31.02500	2.50000	0.00000			
111	32.30000	-2.50000	0.00000			
112	32.30000	-1.25000	0.00000			
113	32.30000	0.00000	0.00000			
114	32.30000	1.25000	0.00000			
115	32.30000	2.50000	0.00000			
116	33.57500	-2.50000	0.00000			
117	33.57500	-1.25000	0.00000			
118	33.57500	0.00000	0.00000			
119	33.57500	1.25000	0.00000			
120	33.57500	2.50000	0.00000			
121	34.85000	-2.50000	0.00000			
122	34.85000	-1.25000	0.00000			
123	34.85000	0.00000	0.00000			
124	34.85000	1.25000	0.00000			
125	34.85000	2.50000	0.00000			
126	36.12500	-2.50000	0.00000			
127	36.12500	-1.25000	0.00000			
128	36.12500	0.00000	0.00000			
129	36.12500	1.25000	0.00000			
130	36.12500	2.50000	0.00000			
131	37.40001	-2.50000	0.00000			
132	37.40001	-1.25000	0.00000			
133	37.40001	0.00000	0.00000			
134	37.40001	1.25000	0.00000			
135	37.40001	2.50000	0.00000			
136	38.67501	-2.50000	0.00000			
137	38.67501	-1.25000	0.00000			
138	38.67501	0.00000	0.00000			
139	38.67501	1.25000	0.00000			
140	38.67501	2.50000	0.00000			
141	39.95001	-2.50000	0.00000			
142	39.95001	-1.25000	0.00000			
143	39.95001	0.00000	0.00000			
144	39.95001	1.25000	0.00000			
145	39.95001	2.50000	0.00000			
146	41.22501	-2.50000	0.00000			
147	41.22501	-1.25000	0.00000			
148	41.22501	0.00000	0.00000			
149	41.22501	1.25000	0.00000			
150	41.22501	2.50000	0.00000			
151	42.50001	-2.50000	0.00000	SSB	FFF	
152	42.50001	-1.25000	0.00000			
153	42.50001	0.00000	0.00000			

Nudo	X [M]	Y [M]	Z [M]	V XYZ	R XYZ
154	42.50001	1.25000	0.00000		
155	42.50001	2.50000	0.00000	SSB	FFF
601	12.75000	0.00000	-11.00000	BBB	BBB
602	29.75000	0.00000	-11.00000	BBB	BBB

NUDOS CON APOYO ELASTICO: ("B"=Bloqueado "F"=Libre)

Nudo	D-X [T/M]	D-Y [T/M]	D-Z [T/M]	R-X [TM/ARC]	R-Y [TM/ARC]	R-Z [TM/ARC]
1	5.000E+02	5.000E+02	B	F	F	F
5	5.000E+02	5.000E+02	B	F	F	F
151	5.000E+02	5.000E+02	B	F	F	F
155	5.000E+02	5.000E+02	B	F	F	F

D A T O S B A R R A S : (276 Barras)

Barra	Incidencias Inicio	Fin	Long.Barras [M]	Nombre-sec. (Cant.var)	Articulaciones Inicio	Fin	Especial
1	1	6	1.27500	LON1			
2	6	11	1.27500	LON1			
3	11	16	1.27500	LON1			
4	16	21	1.27500	LON1			
5	21	26	1.27500	LON1			
6	26	31	1.27500	LON1			
7	31	36	1.27500	LON1			
8	36	41	1.27500	LON1			
9	41	46	1.27500	LON1			
10	46	51	1.27500	LON1			
11	51	56	1.70000	LON1			
12	56	61	1.70000	LON1			
13	61	66	1.70000	LON1			
14	66	71	1.70000	LON1			
15	71	76	1.70000	LON1			
16	76	81	1.70000	LON1			
17	81	86	1.70000	LON1			
18	86	91	1.70000	LON1			
19	91	96	1.70000	LON1			
20	96	101	1.70000	LON1			
21	101	106	1.27500	LON1			
22	106	111	1.27500	LON1			
23	111	116	1.27500	LON1			
24	116	121	1.27500	LON1			
25	121	126	1.27500	LON1			
26	126	131	1.27500	LON1			
27	131	136	1.27500	LON1			
28	136	141	1.27500	LON1			
29	141	146	1.27500	LON1			
30	146	151	1.27500	LON1			
31	2	7	1.27500	LON2			
32	7	12	1.27500	LON2			

Barra	Incidencias Inicio	Fin	Long.Barras [M]	Nombre-sec. (Cant.var)	Articulaciones Inicio	Fin	Especial
33	12	17	1.27500	LON2			
34	17	22	1.27500	LON2			
35	22	27	1.27500	LON2			
36	27	32	1.27500	LON2			
37	32	37	1.27500	LON2			
38	37	42	1.27500	LON2			
39	42	47	1.27500	LON2			
40	47	52	1.27500	LON2			
41	52	57	1.70000	LON2			
42	57	62	1.70000	LON2			
43	62	67	1.70000	LON2			
44	67	72	1.70000	LON2			
45	72	77	1.70000	LON2			
46	77	82	1.70000	LON2			
47	82	87	1.70000	LON2			
48	87	92	1.70000	LON2			
49	92	97	1.70000	LON2			
50	97	102	1.70000	LON2			
51	102	107	1.27500	LON2			
52	107	112	1.27500	LON2			
53	112	117	1.27500	LON2			
54	117	122	1.27500	LON2			
55	122	127	1.27500	LON2			
56	127	132	1.27500	LON2			
57	132	137	1.27500	LON2			
58	137	142	1.27500	LON2			
59	142	147	1.27500	LON2			
60	147	152	1.27500	LON2			
61	3	8	1.27500	LON3			
62	8	13	1.27500	LON3			
63	13	18	1.27500	LON3			
64	18	23	1.27500	LON3			
65	23	28	1.27500	LON3			
66	28	33	1.27500	LON3			
67	33	38	1.27500	LON3			
68	38	43	1.27500	LON3			
69	43	48	1.27500	LON3			
70	48	53	1.27500	LON3			
71	53	58	1.70000	LON3			
72	58	63	1.70000	LON3			
73	63	68	1.70000	LON3			
74	68	73	1.70000	LON3			
75	73	78	1.70000	LON3			
76	78	83	1.70000	LON3			
77	83	88	1.70000	LON3			
78	88	93	1.70000	LON3			
79	93	98	1.70000	LON3			
80	98	103	1.70000	LON3			
81	103	108	1.27500	LON3			
82	108	113	1.27500	LON3			
83	113	118	1.27500	LON3			
84	118	123	1.27500	LON3			
85	123	128	1.27500	LON3			
86	128	133	1.27500	LON3			
87	133	138	1.27500	LON3			

Barra	Incidencias Inicio	Fin	Long.Barras [M]	Nombre-sec. (Cant.var)	Articulaciones Especial Inicio	Fin
88	138	143	1.27500	LON3		
89	143	148	1.27500	LON3		
90	148	153	1.27500	LON3		
91	4	9	1.27500	LON2		
92	9	14	1.27500	LON2		
93	14	19	1.27500	LON2		
94	19	24	1.27500	LON2		
95	24	29	1.27500	LON2		
96	29	34	1.27500	LON2		
97	34	39	1.27500	LON2		
98	39	44	1.27500	LON2		
99	44	49	1.27500	LON2		
100	49	54	1.27500	LON2		
101	54	59	1.70000	LON2		
102	59	64	1.70000	LON2		
103	64	69	1.70000	LON2		
104	69	74	1.70000	LON2		
105	74	79	1.70000	LON2		
106	79	84	1.70000	LON2		
107	84	89	1.70000	LON2		
108	89	94	1.70000	LON2		
109	94	99	1.70000	LON2		
110	99	104	1.70000	LON2		
111	104	109	1.27500	LON2		
112	109	114	1.27500	LON2		
113	114	119	1.27500	LON2		
114	119	124	1.27500	LON2		
115	124	129	1.27500	LON2		
116	129	134	1.27500	LON2		
117	134	139	1.27500	LON2		
118	139	144	1.27500	LON2		
119	144	149	1.27500	LON2		
120	149	154	1.27500	LON2		
121	5	10	1.27500	LON1		
122	10	15	1.27500	LON1		
123	15	20	1.27500	LON1		
124	20	25	1.27500	LON1		
125	25	30	1.27500	LON1		
126	30	35	1.27500	LON1		
127	35	40	1.27500	LON1		
128	40	45	1.27500	LON1		
129	45	50	1.27500	LON1		
130	50	55	1.27500	LON1		
131	55	60	1.70000	LON1		
132	60	65	1.70000	LON1		
133	65	70	1.70000	LON1		
134	70	75	1.70000	LON1		
135	75	80	1.70000	LON1		
136	80	85	1.70000	LON1		
137	85	90	1.70000	LON1		
138	90	95	1.70000	LON1		
139	95	100	1.70000	LON1		
140	100	105	1.70000	LON1		
141	105	110	1.27500	LON1		
142	110	115	1.27500	LON1		

Barra	Incidencias Inicio	Fin	Long.Barras [M]	Nombre-sec. (Cant.var)	Articulaciones Especial Inicio	Fin
143	115	120	1.27500	LON1		
144	120	125	1.27500	LON1		
145	125	130	1.27500	LON1		
146	130	135	1.27500	LON1		
147	135	140	1.27500	LON1		
148	140	145	1.27500	LON1		
149	145	150	1.27500	LON1		
150	150	155	1.27500	LON1		
151	1	2	1.25000	TRAN4		
152	6	7	1.25000	TRAN1		
153	11	12	1.25000	TRAN1		
154	16	17	1.25000	TRAN1		
155	21	22	1.25000	TRAN1		
156	26	27	1.25000	TRAN1		
157	31	32	1.25000	TRAN1		
158	36	37	1.25000	TRAN1		
159	41	42	1.25000	TRAN1		
160	46	47	1.25000	TRAN1		
161	51	52	1.25000	TRAN2		
162	56	57	1.25000	TRAN3		
163	61	62	1.25000	TRAN3		
164	66	67	1.25000	TRAN3		
165	71	72	1.25000	TRAN3		
166	76	77	1.25000	TRAN3		
167	81	82	1.25000	TRAN3		
168	86	87	1.25000	TRAN3		
169	91	92	1.25000	TRAN3		
170	96	97	1.25000	TRAN3		
171	101	102	1.25000	TRAN2		
172	106	107	1.25000	TRAN1		
173	111	112	1.25000	TRAN1		
174	116	117	1.25000	TRAN1		
175	121	122	1.25000	TRAN1		
176	126	127	1.25000	TRAN1		
177	131	132	1.25000	TRAN1		
178	136	137	1.25000	TRAN1		
179	141	142	1.25000	TRAN1		
180	146	147	1.25000	TRAN1		
181	151	152	1.25000	TRAN4		
182	2	3	1.25000	TRAN8		
183	7	8	1.25000	TRAN5		
184	12	13	1.25000	TRAN5		
185	17	18	1.25000	TRAN5		
186	22	23	1.25000	TRAN5		
187	27	28	1.25000	TRAN5		
188	32	33	1.25000	TRAN5		
189	37	38	1.25000	TRAN5		
190	42	43	1.25000	TRAN5		
191	47	48	1.25000	TRAN5		
192	52	53	1.25000	TRAN6		
193	57	58	1.25000	TRAN7		
194	62	63	1.25000	TRAN7		
195	67	68	1.25000	TRAN7		
196	72	73	1.25000	TRAN7		
197	77	78	1.25000	TRAN7		

Barra	Incidencias Inicio	Fin	Long.Barras [M]	Nombre-sec. (Cant.var)	Articulaciones Especial Inicio	Fin
198	82	83	1.25000	TRAN7		
199	87	88	1.25000	TRAN7		
200	92	93	1.25000	TRAN7		
201	97	98	1.25000	TRAN7		
202	102	103	1.25000	TRAN6		
203	107	108	1.25000	TRAN5		
204	112	113	1.25000	TRAN5		
205	117	118	1.25000	TRAN5		
206	122	123	1.25000	TRAN5		
207	127	128	1.25000	TRAN5		
208	132	133	1.25000	TRAN5		
209	137	138	1.25000	TRAN5		
210	142	143	1.25000	TRAN5		
211	147	148	1.25000	TRAN5		
212	152	153	1.25000	TRAN8		
213	3	4	1.25000	TRAN8		
214	8	9	1.25000	TRAN5		
215	13	14	1.25000	TRAN5		
216	18	19	1.25000	TRAN5		
217	23	24	1.25000	TRAN5		
218	28	29	1.25000	TRAN5		
219	33	34	1.25000	TRAN5		
220	38	39	1.25000	TRAN5		
221	43	44	1.25000	TRAN5		
222	48	49	1.25000	TRAN5		
223	53	54	1.25000	TRAN6		
224	58	59	1.25000	TRAN7		
225	63	64	1.25000	TRAN7		
226	68	69	1.25000	TRAN7		
227	73	74	1.25000	TRAN7		
228	78	79	1.25000	TRAN7		
229	83	84	1.25000	TRAN7		
230	88	89	1.25000	TRAN7		
231	93	94	1.25000	TRAN7		
232	98	99	1.25000	TRAN7		
233	103	104	1.25000	TRAN6		
234	108	109	1.25000	TRAN5		
235	113	114	1.25000	TRAN5		
236	118	119	1.25000	TRAN5		
237	123	124	1.25000	TRAN5		
238	128	129	1.25000	TRAN5		
239	133	134	1.25000	TRAN5		
240	138	139	1.25000	TRAN5		
241	143	144	1.25000	TRAN5		
242	148	149	1.25000	TRAN5		
243	153	154	1.25000	TRAN8		
244	4	5	1.25000	TRAN4		
245	9	10	1.25000	TRAN1		
246	14	15	1.25000	TRAN1		
247	19	20	1.25000	TRAN1		
248	24	25	1.25000	TRAN1		
249	29	30	1.25000	TRAN1		
250	34	35	1.25000	TRAN1		
251	39	40	1.25000	TRAN1		
252	44	45	1.25000	TRAN1		

Barra	Incidencias Inicio	Fin	Long.Barras [M]	Nombre-sec. (Cant.var)	Articulaciones Especial Inicio	Fin
253	49	50	1.25000	TRAN1		
254	54	55	1.25000	TRAN2		
255	59	60	1.25000	TRAN3		
256	64	65	1.25000	TRAN3		
257	69	70	1.25000	TRAN3		
258	74	75	1.25000	TRAN3		
259	79	80	1.25000	TRAN3		
260	84	85	1.25000	TRAN3		
261	89	90	1.25000	TRAN3		
262	94	95	1.25000	TRAN3		
263	99	100	1.25000	TRAN3		
264	104	105	1.25000	TRAN2		
265	109	110	1.25000	TRAN1		
266	114	115	1.25000	TRAN1		
267	119	120	1.25000	TRAN1		
268	124	125	1.25000	TRAN1		
269	129	130	1.25000	TRAN1		
270	134	135	1.25000	TRAN1		
271	139	140	1.25000	TRAN1		
272	144	145	1.25000	TRAN1		
273	149	150	1.25000	TRAN1		
274	154	155	1.25000	TRAN4		
1601*	601	53	11.00000	PILA		
1602*	602	103	11.00000	PILA		

Las barras marcadas con "*" son verticales. Sus ejes locales son tales que la dirección 'y' resulta coincidente con la global siempre y cuando no se haya rotado con la instruction 'O_ORIENTACION'.

CARACTERISTICAS DE SEC. Nombre Sec.	Ax [M2] / Ix [M4] / zi [M1]	Iy [M4] / Fy [M2] / zs [M1]	Iz [M4] / Fz [M2] / yi [M1]	Phi[grados] / yd [M1]
LON1	1.2551E+00	3.1436E-02	1.0978E+00	5.25
	2.3000E-01	Undef	Undef	
	-0.5891	0.3709	-1.2887	2.1046
LON2	1.3388E+00	1.2820E-01	1.7296E-01	0.22
	2.1000E-01	Undef	Undef	
	-0.5423	0.5500	-0.6220	0.6321
LON3	1.3675E+00	1.3640E-01	1.7757E-01	0.00
	2.8000E-01	Undef	Undef	
	-0.5470	0.5530	-0.6250	0.6250
PILA	7.7646E-01	4.7978E-02	4.7978E-02	0.00
	9.8175E-02	Undef	Undef	
	-0.5000	0.5000	-0.5000	0.5000

CARACTERISTICAS DE SEC. / Nombre Sec.	Ax [M2] / Ix [M4] / zi [M1]	Iy [M4] / Fy [M2] / zs [M1]	Iz [M4] / Fz [M2] / yi [M1]	Phi[grados] / yd [M1]
TRAN1	1.3949E+00	1.3912E-01	1.8896E-01	0.00
	2.8000E-01	Undef	Undef	
	-0.5470	0.5470	-0.6375	0.6375
TRAN2	1.6273E+00	1.6230E-01	3.0006E-01	0.00
	3.2000E-01	Undef	Undef	
	-0.5470	0.5470	-0.7437	0.7437
TRAN3	1.8598E+00	1.8549E-01	4.4790E-01	-0.00
	3.7000E-01	Undef	Undef	
	-0.5470	0.5470	-0.8500	0.8500
TRAN4	1.0803E+00	1.0775E-01	8.7790E-02	0.00
	2.2000E-01	Undef	Undef	
	-0.5470	0.5470	-0.4937	0.4937
TRAN5	1.2368E+00	9.6971E-02	1.6754E-01	0.00
	1.9000E-01	Undef	Undef	
	-0.4850	0.4850	-0.6375	0.6375
TRAN6	1.4429E+00	1.1313E-01	2.6605E-01	0.00
	2.3000E-01	Undef	Undef	
	-0.4850	0.4850	-0.7437	0.7437
TRAN7	1.6490E+00	1.2930E-01	3.9713E-01	0.00
	2.6000E-01	Undef	Undef	
	-0.4850	0.4850	-0.8500	0.8500
TRAN8	9.5787E-01	7.5105E-02	7.7840E-02	0.00
	1.5000E-01	Undef	Undef	
	-0.4850	0.4850	-0.4937	0.4937

MATERIALES:

Barra (hasta barra)	E-Módulo [T/ M2]	G-Módulo [T/ M2]
1 .. 1602	3.3000E+06	1.3700E+06

STS-cálculo ok
Max free mem:157kB

Hipótesis 1: Peso propio

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras
P grav. Z gl const.	-2.500		Barra 1 .. 150 1601 ..1602

Hipótesis 2: Cargas muertas

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras
Fuerza Z gl const.	-0.513000		Barra 1 .. 30 121 .. 150
Momento X gl const.	0.225000		Barra 1 .. 30
Momento X gl const.	-0.225000		Barra 121 .. 150
Fuerza Z gl const.	-0.302000		Barra 31 .. 120
Fuerza Z gl const.	-1.500		Barra 1 .. 30 121 .. 150
Momento X gl const.	3.450		Barra 1 .. 30
Momento X gl const.	-3.450		Barra 121 .. 150

Hipótesis 3: Sobrecarga de uso1

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras
Fuerza Z gl const.	-1.330		Barra 1 .. 10
Momento X gl const.	1.380		Barra 1 .. 10
Fuerza Z gl const.	-0.500000		Barra 31 .. 40 61 .. 70
Momento X gl const.	0.313000		Barra 61 .. 70

Hipótesis 4: Sobrecarga de uso2

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras		
Fuerza Z gl const.	-1.330		Barra	11 .. 20	
Momento X gl const.	1.380		Barra	11 .. 20	
Fuerza Z gl const.	-0.500000		Barra	41 .. 50	71
			.. 80		
Momento X gl const.	0.313000		Barra	71 .. 80	

Hipótesis 5: Sobrecarga de uso3

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras		
Fuerza Z gl const.	-1.330		Barra	21 .. 30	
Momento X gl const.	1.380		Barra	21 .. 30	
Fuerza Z gl const.	-0.500000		Barra	51 .. 60	81
			.. 90		
Momento X gl const.	0.313000		Barra	81 .. 90	

Hipótesis 6: Sobrecarga de uso4

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras		
Fuerza Z gl const.	-1.330		Barra	121 .. 130	
Momento X gl const.	-1.380		Barra	121 .. 130	
Fuerza Z gl const.	-0.500000		Barra	91 .. 100	61
			.. 70		
Momento X gl const.	-0.313000		Barra	61 .. 70	

Hipótesis 7: Sobrecarga de uso5

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras		
Fuerza Z gl const.	-1.330		Barra	131 .. 140	
Momento X gl const.	-1.380		Barra	131 .. 140	
Fuerza Z gl const.	-0.500000		Barra	101 .. 110	71
			.. 80		
Momento X gl const.	-0.313000		Barra	71 .. 80	

Hipótesis 8: Sobrecarga de uso6

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras		
Fuerza Z gl const.	-1.330		Barra	141 .. 150	
Momento X gl const.	-1.380		Barra	141 .. 150	
Fuerza Z gl const.	-0.500000		Barra	111 .. 120	81
			.. 90		
Fuerza Z gl const.	-0.313000		Barra	81 .. 90	

Hipótesis 9: Carrol

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras		
Fuerza Z gl conc.	-8.000	0	Barra	31	91
Fuerza Z gl conc.	-4.000	0	Barra	61	
Fuerza Z gl conc.	-8.000	0.225000	Barra	32	92
Fuerza Z gl conc.	-4.000	0.225000	Barra	62	
Fuerza Z gl conc.	-8.000	0.450000	Barra	33	93
Fuerza Z gl conc.	-4.000	0.450000	Barra	63	

Hipótesis 10: Carro2

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras		
Fuerza Z gl conc.	-8.000	0	Barra	35	95
Fuerza Z gl conc.	-4.000	0	Barra	65	
Fuerza Z gl conc.	-8.000	1.050	Barra	33	93
Fuerza Z gl conc.	-4.000	1.050	Barra	63	
Fuerza Z gl conc.	-8.000	0.225000	Barra	36	96
Fuerza Z gl conc.	-4.000	0.225000	Barra	66	

Hipótesis 11: Carro3

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras		
Fuerza Z gl conc.	-8.000	1.274	Barra	40	100
Fuerza Z gl conc.	-4.000	1.274	Barra	70	
Fuerza Z gl conc.	-8.000	1.050	Barra	39	99
Fuerza Z gl conc.	-4.000	1.050	Barra	69	
Fuerza Z gl conc.	-8.000	0.825000	Barra	38	98
Fuerza Z gl conc.	-4.000	0.825000	Barra	68	

Hipótesis 12: Carro4

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras		
Fuerza Z gl conc.	-8.000	0	Barra	41	101
Fuerza Z gl conc.	-4.000	0	Barra	71	
Fuerza Z gl conc.	-8.000	1.050	Barra	39	99
Fuerza Z gl conc.	-4.000	1.050	Barra	69	
Fuerza Z gl conc.	-8.000	1.500	Barra	41	101
Fuerza Z gl conc.	-4.000	1.500	Barra	71	

Hipótesis 13: Carro5

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras		
Fuerza Z gl conc.	-8.000	0.001000	Barra	41	101
Fuerza Z gl conc.	-4.000	0.001000	Barra	71	
Fuerza Z gl conc.	-8.000	1.500	Barra	41	101
Fuerza Z gl conc.	-4.000	1.500	Barra	71	
Fuerza Z gl conc.	-8.000	1.300	Barra	42	102
Fuerza Z gl conc.	-4.000	1.300	Barra	72	

Hipótesis 14: Carro6

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras		
Fuerza Z gl conc.	-8.000	0	Barra	46	106
Fuerza Z gl conc.	-4.000	0	Barra	76	
Fuerza Z gl conc.	-8.000	0.200000	Barra	45	105
Fuerza Z gl conc.	-4.000	0.200000	Barra	75	
Fuerza Z gl conc.	-8.000	1.500	Barra	46	106
Fuerza Z gl conc.	-4.000	1.500	Barra	76	

Hipótesis 15: Carro7

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras	
Fuerza Z gl conc.	-12.000	0	Barra	1
Fuerza Z gl conc.	-8.000	0	Barra	31
Fuerza Z gl conc.	-12.000	0.225000	Barra	2
Fuerza Z gl conc.	-8.000	0.225000	Barra	32
Fuerza Z gl conc.	-12.000	0.450000	Barra	3
Fuerza Z gl conc.	-8.000	0.450000	Barra	33
Momento X gl conc.	10.000	0	Barra	1
Momento X gl conc.	10.000	0.225000	Barra	2
Momento X gl conc.	-10.000	0.450000	Barra	3

Hipótesis 16: Carro8

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras	
Fuerza Z gl conc.	-12.000	0	Barra	5
Fuerza Z gl conc.	-8.000	0	Barra	35
Fuerza Z gl conc.	-12.000	1.050	Barra	3
Fuerza Z gl conc.	-8.000	1.050	Barra	33
Fuerza Z gl conc.	-12.000	0.225000	Barra	6
Fuerza Z gl conc.	-8.000	0.225000	Barra	36
Momento X gl conc.	10.000	0	Barra	5
Momento X gl conc.	10.000	1.050	Barra	3
Momento X gl conc.	10.000	0.225000	Barra	6

Hipótesis 17: Carro9

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras	
Fuerza Z gl conc.	-12.000	1.274	Barra	10
Fuerza Z gl conc.	-8.000	1.274	Barra	40
Fuerza Z gl conc.	-12.000	1.050	Barra	9
Fuerza Z gl conc.	-8.000	1.050	Barra	39
Fuerza Z gl conc.	-12.000	0.825000	Barra	8
Fuerza Z gl conc.	-8.000	0.825000	Barra	38
Momento X gl conc.	10.000	1.274	Barra	10
Momento X gl conc.	10.000	1.050	Barra	9
Momento X gl conc.	10.000	0.825000	Barra	8

Hipótesis 18: Carro10

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras	
Fuerza Z gl conc.	-12.000	0	Barra	11
Fuerza Z gl conc.	-8.000	0	Barra	41
Fuerza Z gl conc.	-12.000	1.050	Barra	9
Fuerza Z gl conc.	-8.000	1.050	Barra	39
Fuerza Z gl conc.	-12.000	1.500	Barra	11
Fuerza Z gl conc.	-8.000	1.500	Barra	41
Momento X gl conc.	10.000	1.050	Barra	9 9
Momento X gl conc.	10.000	1.500	Barra	11

Hipótesis 19: Carro11

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras	
Fuerza Z gl conc.	-12.000	0.001000	Barra	11
Fuerza Z gl conc.	-8.000	0.001000	Barra	41
Fuerza Z gl conc.	-12.000	1.500	Barra	11
Fuerza Z gl conc.	-8.000	1.500	Barra	41
Fuerza Z gl conc.	-12.000	1.300	Barra	12
Fuerza Z gl conc.	-8.000	1.300	Barra	42
Momento X gl conc.	10.000	0.001000	Barra	11
Momento X gl conc.	10.000	1.500	Barra	11
Momento X gl conc.	10.000	1.300	Barra	12

Hipótesis 20: Carrol2

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras	
Fuerza Z gl conc.	-12.000	0	Barra	16
Fuerza Z gl conc.	-8.000	0	Barra	46
Fuerza Z gl conc.	-12.000	0.200000	Barra	15
Fuerza Z gl conc.	-8.000	0.200000	Barra	45
Fuerza Z gl conc.	-12.000	1.500	Barra	16
Fuerza Z gl conc.	-8.000	1.500	Barra	46
Momento X gl conc.	10.000	0	Barra	16
Momento X gl conc.	10.000	0.200000	Barra	15
Momento X gl conc.	10.000	1.500	Barra	16

Hipótesis 21: Retraccion

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras	
Def. x X lo const.	-0.000240		Barra	1 .. 150

Hipótesis 22: Termico

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras	
Def. x X lo const.	-0.000190		Barra	1 .. 150

Hipótesis 23: Gradiente

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras	
Giro y/zY lo const.	1.2E-0005		Barra	1 .. 150

Hipótesis 24: Viento sin sc 1

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras	
Fuerza Y gl const.	-0.366000		Barra	1 .. 30
Momento X gl const.	-0.158000		Barra	1 .. 30
Fuerza Y gl const.	-0.210000		Barra	1601 ..1602

Hipótesis 25: Viento sin sc 2

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras	
Fuerza Y gl const.	0.366000		Barra	121 .. 150
Momento X gl const.	0.158000		Barra	121 .. 150
Fuerza Y gl const.	0.210000		Barra	1601 ..1602

Hipótesis 26: Viento con sc 1

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras
Fuerza Y gl const.	-0.510000		Barra 1 .. 30
Momento X gl const.	-0.437000		Barra 1 .. 30
Fuerza Y gl const.	-0.210000		Barra 1601 ..1602

Hipótesis 27: Viento con sc 2

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras
Fuerza Y gl const.	0.510000		Barra 121 .. 150
Momento X gl const.	0.437000		Barra 121 .. 150
Fuerza Y gl const.	0.210000		Barra 1601 ..1602

Hipótesis 28: Frenado

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras
Fuerza X gl const.	0.075300		Barra 1 .. 150

CARGAS: '' Ejec. "0001"

Hipótesis	Factor	Etapa	Titulo
1	1.0000		Peso propio

DESPLAZAMIENTOS:

NUDOS	DX [mm]	DY [mm]	DZ [mm]	RX [rad]	RY [rad]	RZ [rad]
1	0.011788	-0.004890	-3.82E-16	-8.54E-05	0.000544	7.79E-06
2	0.004862	-0.002209	-0.106996	-7.03E-05	0.000518	5.49E-06
3	0.000474	-0.001168	-0.154774	-6.09E-10	0.000500	4.53E-06
4	-0.003915	-0.002209	-0.106994	7.03E-05	0.000518	5.49E-06
5	-0.010840	-0.004890	-3.83E-16	8.54E-05	0.000544	7.78E-06
6	0.011040	0.006206	-0.693291	-4.92E-05	0.000506	6.87E-06
7	0.004713	0.006059	-0.749048	-3.81E-05	0.000481	5.09E-06
8	0.000474	0.006073	-0.774129	-1.14E-08	0.000465	4.40E-06
9	-0.003766	0.006059	-0.749076	3.81E-05	0.000481	5.09E-06
10	-0.010092	0.006206	-0.693349	4.92E-05	0.000506	6.87E-06
11	0.008931	0.014179	-1.283	-2.12E-05	0.000400	4.52E-06
12	0.004182	0.013255	-1.306	-1.52E-05	0.000386	4.09E-06
13	0.000474	0.012880	-1.315	-2.35E-08	0.000377	3.80E-06
14	-0.003234	0.013255	-1.306	1.52E-05	0.000386	4.09E-06
15	-0.007983	0.014180	-1.283	2.11E-05	0.000400	4.52E-06
16	0.006075	0.019071	-1.713	-3.51E-06	0.000264	2.49E-06
17	0.003152	0.018155	-1.716	-1.83E-06	0.000255	2.53E-06
18	0.000474	0.017748	-1.717	-3.58E-08	0.000250	2.49E-06
19	-0.002204	0.018155	-1.716	1.76E-06	0.000255	2.53E-06
20	-0.005127	0.019071	-1.713	3.44E-06	0.000264	2.49E-06
21	0.002967	0.021244	-1.958	8.07E-06	0.000116	5.33E-07
22	0.001909	0.020388	-1.948	6.65E-06	0.000109	8.77E-07
23	0.000473	0.020010	-1.944	-4.79E-08	0.000106	9.43E-07
24	-0.000962	0.020388	-1.948	-6.75E-06	0.000109	8.76E-07
25	-0.002018	0.021243	-1.958	-8.17E-06	0.000116	5.31E-07
26	6.79E-05	0.020843	-2.017	1.70E-05	-2.29E-05	-1.36E-06
27	0.000763	0.020002	-1.997	1.31E-05	-2.84E-05	-6.66E-07
28	0.000473	0.019634	-1.989	-6.00E-08	-3.14E-05	-5.05E-07
29	0.000184	0.020000	-1.998	-1.32E-05	-2.84E-05	-6.68E-07
30	0.000882	0.020839	-2.017	-1.71E-05	-2.29E-05	-1.37E-06
31	-0.002155	0.018064	-1.917	2.59E-05	-0.000131	-3.09E-06
32	-1.38E-05	0.017266	-1.887	1.96E-05	-0.000137	-1.91E-06
33	0.000474	0.016926	-1.875	-7.18E-08	-0.000141	-1.61E-06
34	0.000961	0.017260	-1.887	-1.97E-05	-0.000137	-1.91E-06
35	0.003105	0.018054	-1.917	-2.60E-05	-0.000131	-3.10E-06
36	-0.003218	0.013282	-1.711	3.76E-05	-0.000185	-4.47E-06
37	-0.000202	0.012756	-1.669	2.83E-05	-0.000195	-2.58E-06
38	0.000476	0.012556	-1.650	-8.32E-08	-0.000200	-2.09E-06
39	0.001150	0.012744	-1.669	-2.85E-05	-0.000195	-2.58E-06
40	0.004164	0.013264	-1.711	-3.77E-05	-0.000185	-4.48E-06
41	-0.002642	0.007309	-1.483	5.48E-05	-0.000163	-4.97E-06
42	0.000271	0.007599	-1.420	4.32E-05	-0.000179	-2.31E-06
43	0.000483	0.007755	-1.393	-9.49E-08	-0.000190	-1.70E-06
44	0.000680	0.007580	-1.421	-4.33E-05	-0.000179	-2.30E-06
45	0.003578	0.007285	-1.484	-5.50E-05	-0.000163	-4.97E-06
46	-0.000138	0.002143	-1.347	7.71E-05	-4.41E-05	-3.29E-06

DESPLAZAMIENTOS:

NUDOS	DX [mm]	DY [mm]	DZ [mm]	RX [rad]	RY [rad]	RZ [rad]
47	0.001182	0.003705	-1.252	7.01E-05	-6.44E-05	-8.59E-07
48	0.000504	0.004331	-1.200	-1.08E-07	-9.26E-05	-4.30E-07
49	-0.000227	0.003681	-1.253	-7.03E-05	-6.43E-05	-8.36E-07
50	0.001046	0.002124	-1.347	-7.73E-05	-4.40E-05	-3.28E-06
51	0.003869	0.001276	-1.423	9.08E-05	0.000162	1.52E-06
52	0.002139	0.003284	-1.303	9.84E-05	0.000161	1.37E-06
53	0.000561	0.004126	-1.212	-1.27E-07	0.000154	1.42E-06
54	-0.001189	0.003290	-1.303	-9.87E-05	0.000161	1.48E-06
55	-0.003018	0.001278	-1.424	-9.11E-05	0.000162	1.54E-06
56	0.009017	0.008538	-1.921	7.06E-05	0.000418	7.11E-06
57	0.003243	0.009665	-1.836	6.16E-05	0.000435	3.59E-06
58	0.000398	0.010167	-1.792	-1.21E-07	0.000459	2.77E-06
59	-0.002478	0.009687	-1.836	-6.18E-05	0.000435	3.61E-06
60	-0.008284	0.008560	-1.922	-7.08E-05	0.000418	7.12E-06
61	0.010766	0.021393	-2.718	4.47E-05	0.000501	7.66E-06
62	0.004037	0.021176	-2.668	3.40E-05	0.000510	4.58E-06
63	0.000288	0.021109	-2.646	-1.17E-07	0.000516	3.68E-06
64	-0.003467	0.021189	-2.668	-3.42E-05	0.000510	4.58E-06
65	-0.010199	0.021413	-2.719	-4.49E-05	0.000501	7.65E-06
66	0.009099	0.033107	-3.517	3.07E-05	0.000422	5.78E-06
67	0.003659	0.032401	-3.483	2.30E-05	0.000426	3.92E-06
68	0.000190	0.032095	-3.468	-1.15E-07	0.000429	3.34E-06
69	-0.003280	0.032406	-3.483	-2.33E-05	0.000426	3.92E-06
70	-0.008716	0.033116	-3.518	-3.09E-05	0.000422	5.77E-06
71	0.005120	0.040834	-4.088	2.46E-05	0.000237	3.06E-06
72	0.002136	0.040064	-4.060	1.86E-05	0.000239	2.20E-06
73	9.50E-05	0.039720	-4.048	-1.14E-07	0.000240	1.93E-06
74	-0.001946	0.040066	-4.060	-1.88E-05	0.000239	2.20E-06
75	-0.004927	0.040836	-4.088	-2.48E-05	0.000237	3.06E-06
76	9.87E-07	0.043518	-4.293	2.28E-05	-3.92E-10	-7.08E-12
77	9.94E-07	0.042752	-4.267	1.73E-05	-3.94E-10	-5.65E-12
78	1.00E-06	0.042409	-4.256	-1.14E-07	-3.95E-10	-5.21E-12
79	1.01E-06	0.042752	-4.267	-1.76E-05	-3.94E-10	-5.65E-12
80	1.01E-06	0.043518	-4.293	-2.31E-05	-3.92E-10	-7.07E-12
81	-0.005118	0.040834	-4.088	2.46E-05	-0.000237	-3.06E-06
82	-0.002134	0.040064	-4.060	1.86E-05	-0.000239	-2.20E-06
83	-9.30E-05	0.039720	-4.048	-1.14E-07	-0.000240	-1.93E-06
84	0.001948	0.040066	-4.060	-1.88E-05	-0.000239	-2.20E-06
85	0.004929	0.040836	-4.088	-2.48E-05	-0.000237	-3.06E-06
86	-0.009097	0.033107	-3.517	3.07E-05	-0.000422	-5.78E-06
87	-0.003657	0.032401	-3.483	2.30E-05	-0.000426	-3.92E-06
88	-0.000188	0.032095	-3.468	-1.15E-07	-0.000429	-3.34E-06
89	0.003282	0.032406	-3.483	-2.33E-05	-0.000426	-3.92E-06
90	0.008718	0.033116	-3.518	-3.09E-05	-0.000422	-5.77E-06
91	-0.010764	0.021393	-2.718	4.47E-05	-0.000501	-7.66E-06
92	-0.004035	0.021176	-2.668	3.40E-05	-0.000510	-4.58E-06
93	-0.000286	0.021109	-2.646	-1.17E-07	-0.000516	-3.68E-06
94	0.003469	0.021189	-2.668	-3.42E-05	-0.000510	-4.58E-06
95	0.010201	0.021412	-2.719	-4.49E-05	-0.000501	-7.65E-06
96	-0.009015	0.008538	-1.921	7.06E-05	-0.000418	-7.11E-06
97	-0.003241	0.009665	-1.836	6.16E-05	-0.000435	-3.59E-06
98	-0.000396	0.010166	-1.792	-1.21E-07	-0.000459	-2.77E-06
99	0.002480	0.009687	-1.836	-6.18E-05	-0.000435	-3.61E-06
100	0.008286	0.008560	-1.922	-7.08E-05	-0.000418	-7.12E-06

DESPLAZAMIENTOS:

NUDOS	DX [mm]	DY [mm]	DZ [mm]	RX [rad]	RY [rad]	RZ [rad]
101	-0.003867	0.001276	-1.423	9.08E-05	-0.000162	-1.52E-06
102	-0.002137	0.003284	-1.303	9.84E-05	-0.000161	-1.37E-06
103	-0.000559	0.004125	-1.212	-1.27E-07	-0.000154	-1.42E-06
104	0.001191	0.003290	-1.303	-9.87E-05	-0.000161	-1.48E-06
105	0.003020	0.001278	-1.424	-9.11E-05	-0.000162	-1.54E-06
106	0.000140	0.002143	-1.347	7.71E-05	4.41E-05	3.29E-06
107	-0.001180	0.003705	-1.252	7.01E-05	6.44E-05	8.59E-07
108	-0.000502	0.004331	-1.200	-1.08E-07	9.26E-05	4.30E-07
109	0.000229	0.003681	-1.253	-7.03E-05	6.44E-05	8.36E-07
110	-0.001044	0.002124	-1.347	-7.73E-05	4.40E-05	3.28E-06
111	0.002644	0.007309	-1.483	5.48E-05	0.000163	4.97E-06
112	-0.000269	0.007599	-1.420	4.32E-05	0.000179	2.31E-06
113	-0.000481	0.007755	-1.393	-9.49E-08	0.000190	1.70E-06
114	-0.000678	0.007580	-1.421	-4.33E-05	0.000179	2.30E-06
115	-0.003576	0.007285	-1.484	-5.50E-05	0.000163	4.97E-06
116	0.003220	0.013282	-1.711	3.76E-05	0.000185	4.47E-06
117	0.000204	0.012756	-1.669	2.83E-05	0.000195	2.58E-06
118	-0.000474	0.012556	-1.650	-8.32E-08	0.000200	2.09E-06
119	-0.001148	0.012744	-1.669	-2.85E-05	0.000195	2.58E-06
120	-0.004162	0.013264	-1.711	-3.77E-05	0.000185	4.48E-06
121	0.002157	0.018064	-1.917	2.59E-05	0.000131	3.09E-06
122	1.58E-05	0.017266	-1.887	1.96E-05	0.000137	1.91E-06
123	-0.000472	0.016926	-1.875	-7.18E-08	0.000141	1.61E-06
124	-0.000959	0.017260	-1.887	-1.97E-05	0.000137	1.91E-06
125	-0.003103	0.018054	-1.917	-2.60E-05	0.000131	3.10E-06
126	-6.59E-05	0.020843	-2.017	1.70E-05	2.29E-05	1.36E-06
127	-0.000761	0.020002	-1.997	1.31E-05	2.84E-05	6.66E-07
128	-0.000471	0.019634	-1.989	-6.00E-08	3.14E-05	5.05E-07
129	-0.000182	0.020000	-1.998	-1.32E-05	2.84E-05	6.68E-07
130	-0.000880	0.020839	-2.017	-1.71E-05	2.29E-05	1.37E-06
131	-0.002965	0.021244	-1.958	8.07E-06	-0.000116	-5.33E-07
132	-0.001907	0.020388	-1.948	6.65E-06	-0.000109	-8.77E-07
133	-0.000471	0.020010	-1.944	-4.79E-08	-0.000106	-9.43E-07
134	0.000964	0.020388	-1.948	-6.75E-06	-0.000109	-8.76E-07
135	0.002020	0.021243	-1.958	-8.17E-06	-0.000116	-5.31E-07
136	-0.006073	0.019071	-1.713	-3.51E-06	-0.000264	-2.49E-06
137	-0.003150	0.018155	-1.716	-1.83E-06	-0.000255	-2.53E-06
138	-0.000472	0.017748	-1.717	-3.58E-08	-0.000250	-2.49E-06
139	0.002206	0.018155	-1.716	1.76E-06	-0.000255	-2.53E-06
140	0.005129	0.019071	-1.713	3.44E-06	-0.000264	-2.49E-06
141	-0.008929	0.014179	-1.283	-2.12E-05	-0.000400	-4.52E-06
142	-0.004180	0.013255	-1.306	-1.52E-05	-0.000386	-4.09E-06
143	-0.000472	0.012880	-1.315	-2.35E-08	-0.000377	-3.80E-06
144	0.003236	0.013255	-1.306	1.52E-05	-0.000386	-4.09E-06
145	0.007985	0.014180	-1.283	2.11E-05	-0.000400	-4.52E-06
146	-0.011038	0.006206	-0.693294	-4.92E-05	-0.000506	-6.87E-06
147	-0.004711	0.006059	-0.749051	-3.81E-05	-0.000481	-5.09E-06
148	-0.000472	0.006073	-0.774132	-1.14E-08	-0.000465	-4.40E-06
149	0.003768	0.006059	-0.749079	3.81E-05	-0.000481	-5.09E-06
150	0.010094	0.006206	-0.693352	4.92E-05	-0.000506	-6.87E-06
151	-0.011786	-0.004890	-3.82E-16	-8.54E-05	-0.000544	-7.79E-06
152	-0.004860	-0.002209	-0.106996	-7.03E-05	-0.000518	-5.49E-06
153	-0.000472	-0.001168	-0.154775	-6.09E-10	-0.000500	-4.53E-06
154	0.003917	-0.002209	-0.106994	7.03E-05	-0.000518	-5.49E-06

DESPLAZAMIENTOS:

NUDOS	DX [mm]	DY [mm]	DZ [mm]	RX [rad]	RY [rad]	RZ [rad]
155	0.010843	-0.004890	-3.83E-16	8.54E-05	-0.000544	-7.78E-06
601	-1.20E-17	4.89E-20	-2.93E-15	-2.87E-22	-4.42E-20	1.74E-22
602	1.20E-17	4.89E-20	-2.93E-15	-2.87E-22	4.42E-20	-1.74E-22

REACCIONES EN APOYOS:

NUDOS	FX [t]	FY [t]	FZ [t]	MX [tm]	MY [tm]	MZ [tm]
1	-0.005894	0.002445	38.241			
5	0.005420	0.002445	38.251			
151	0.005893	0.002445	38.241			
155	-0.005421	0.002445	38.251			
601	1.205	-0.004890	293.110	0.028727	4.415	-0.017415
602	-1.205	-0.004890	293.110	0.028726	-4.415	0.017415
Sumas:	0	3.94E-07	739.206			

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
1	0	-2.432	7.649	17.062	8.941	-6.308	2.056
1	1.275	-2.432	7.649	13.061	8.941	12.894	11.809
2	0	-6.851	7.109	9.760	6.933	5.097	15.459
2	1.275	-6.851	7.109	5.759	6.933	14.991	24.523
3	0	-9.277	3.704	6.397	4.362	10.534	26.257
3	1.275	-9.277	3.704	2.396	4.362	16.139	30.980
4	0	-10.097	0.331858	3.807	2.862	13.388	31.472
4	1.275	-10.097	0.331858	-0.193731	2.862	15.691	31.895
5	0	-9.419	-2.818	1.704	2.199	13.768	31.300
5	1.275	-9.419	-2.818	-2.297	2.199	13.389	27.707
6	0	-7.222	-5.914	-0.035627	2.206	11.695	25.986
6	1.275	-7.222	-5.914	-4.036	2.206	9.099	18.446
7	0	-3.452	-8.852	-1.410	2.883	7.109	15.498
7	1.275	-3.452	-8.852	-5.411	2.883	2.761	4.212
8	0	1.870	-10.790	-2.179	4.256	-0.182357	-0.058074
8	1.275	1.870	-10.790	-6.180	4.256	-5.511	-13.814
9	0	8.135	-9.721	-1.348	5.507	-10.327	-19.059
9	1.275	8.135	-9.721	-5.349	5.507	-14.596	-31.453
10	0	13.019	-3.967	2.137	3.406	-20.832	-35.720
10	1.275	13.019	-3.967	-1.863	3.406	-20.658	-40.778

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
11	0	12.542	4.657	4.398	-3.758	-21.206	-40.363
11	1.700	12.542	4.657	-0.936505	-3.758	-18.264	-32.447
12	0	4.262	10.193	7.780	-4.796	-11.485	-23.114
12	1.700	4.262	10.193	2.446	-4.796	-2.793	-5.786
13	0	-4.062	9.128	7.308	-2.596	1.092	3.059
13	1.700	-4.062	9.128	1.974	-2.596	8.981	18.577
14	0	-9.694	5.661	5.631	-1.136	10.690	24.294
14	1.700	-9.694	5.661	0.296639	-1.136	15.728	33.917
15	0	-12.472	1.882	3.680	-0.317340	16.400	36.675
15	1.700	-12.472	1.882	-1.654	-0.317340	18.122	39.874
16	0	-12.472	-1.882	1.654	0.317341	18.122	39.874
16	1.700	-12.472	-1.882	-3.680	0.317341	16.400	36.675
17	0	-9.694	-5.661	-0.296644	1.136	15.728	33.917
17	1.700	-9.694	-5.661	-5.631	1.136	10.690	24.294
18	0	-4.062	-9.128	-1.974	2.596	8.981	18.577
18	1.700	-4.062	-9.128	-7.308	2.596	1.091	3.059
19	0	4.262	-10.193	-2.446	4.796	-2.793	-5.786
19	1.700	4.262	-10.193	-7.780	4.796	-11.486	-23.114
20	0	12.542	-4.657	0.936543	3.758	-18.264	-32.447
20	1.700	12.542	-4.657	-4.398	3.758	-21.206	-40.364
21	0	13.019	3.967	1.863	-3.406	-20.658	-40.778
21	1.275	13.019	3.967	-2.137	-3.406	-20.832	-35.720
22	0	8.135	9.721	5.349	-5.507	-14.596	-31.453
22	1.275	8.135	9.721	1.348	-5.507	-10.327	-19.059
23	0	1.870	10.790	6.180	-4.256	-5.511	-13.814
23	1.275	1.870	10.790	2.179	-4.256	-0.182381	-0.058116
24	0	-3.452	8.852	5.411	-2.883	2.761	4.212
24	1.275	-3.452	8.852	1.410	-2.883	7.109	15.498
25	0	-7.222	5.914	4.036	-2.206	9.099	18.446
25	1.275	-7.222	5.914	0.035582	-2.206	11.695	25.986
26	0	-9.419	2.818	2.297	-2.199	13.389	27.707
26	1.275	-9.419	2.818	-1.704	-2.199	13.768	31.300
27	0	-10.097	-0.331877	0.193737	-2.862	15.691	31.896
27	1.275	-10.097	-0.331877	-3.807	-2.862	13.388	31.472
28	0	-9.277	-3.704	-2.396	-4.362	16.139	30.980
28	1.275	-9.277	-3.704	-6.397	-4.362	10.534	26.257

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
29	0	-6.851	-7.109	-5.759	-6.933	14.991	24.523
29	1.275	-6.851	-7.109	-9.760	-6.933	5.098	15.459
30	0	-2.432	-7.649	-13.061	-8.941	12.894	11.809
30	1.275	-2.432	-7.649	-17.062	-8.941	-6.308	2.056
31	0	-0.515544	-5.013	15.321	7.258	3.428	3.035
31	1.275	-0.515544	-5.013	11.054	7.258	20.241	-3.356
32	0	-1.841	-4.426	11.908	5.164	24.838	2.414
32	1.275	-1.841	-4.426	7.641	5.164	37.300	-3.229
33	0	-3.570	-2.246	7.027	3.027	39.919	0.792796
33	1.275	-3.570	-2.246	2.760	3.027	46.159	-2.070
34	0	-4.306	-0.202642	1.974	1.913	47.853	-0.546099
34	1.275	-4.306	-0.202642	-2.293	1.913	47.650	-0.804457
35	0	-3.970	1.711	-3.446	1.455	48.853	-1.720
35	1.275	-3.970	1.711	-7.713	1.455	41.740	0.461566
36	0	-2.693	3.605	-9.133	1.464	42.806	-2.805
36	1.275	-2.693	3.605	-13.400	1.464	28.442	1.791
37	0	-0.652702	5.432	-15.124	1.972	29.706	-3.737
37	1.275	-0.652702	5.432	-19.391	1.972	7.703	3.188
38	0	1.639	6.716	-21.843	3.346	9.563	-4.167
38	1.275	1.639	6.716	-26.110	3.346	-21.006	4.395
39	0	3.157	6.154	-29.248	6.069	-18.487	-3.326
39	1.275	3.157	6.154	-33.516	6.069	-58.497	4.520
40	0	3.315	2.443	-24.412	6.405	-58.148	-0.658197
40	1.275	3.315	2.443	-28.679	6.405	-91.992	2.457
41	0	2.869	-2.975	31.330	-6.240	-93.202	3.181
41	1.700	2.869	-2.975	25.640	-6.240	-44.779	-1.876
42	0	2.064	-6.329	32.317	-4.664	-44.688	5.685
42	1.700	2.064	-6.329	26.627	-4.664	5.412	-5.074
43	0	-0.981128	-5.555	22.659	-1.855	3.212	4.529
43	1.700	-0.981128	-5.555	16.970	-1.855	36.896	-4.915
44	0	-3.958	-3.418	14.555	-0.757085	35.863	2.391
44	1.700	-3.958	-3.418	8.866	-0.757085	55.770	-3.419
45	0	-5.550	-1.135	6.733	-0.209978	55.367	0.305968
45	1.700	-5.550	-1.135	1.044	-0.209978	61.977	-1.623
46	0	-5.550	1.135	-1.044	0.209979	61.977	-1.623
46	1.700	-5.550	1.135	-6.734	0.209979	55.366	0.305973

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
47	0	-3.958	3.418	-8.866	0.757086	55.770	-3.419
47	1.700	-3.958	3.418	-14.555	0.757086	35.863	2.391
48	0	-0.981117	5.555	-16.970	1.855	36.896	-4.915
48	1.700	-0.981117	5.555	-22.659	1.855	3.212	4.529
49	0	2.064	6.329	-26.627	4.664	5.412	-5.074
49	1.700	2.064	6.329	-32.317	4.664	-44.688	5.685
50	0	2.869	2.975	-25.640	6.240	-44.779	-1.876
50	1.700	2.869	2.975	-31.330	6.240	-93.202	3.181
51	0	3.315	-2.443	28.679	-6.405	-91.992	2.457
51	1.275	3.315	-2.443	24.411	-6.405	-58.148	-0.658199
52	0	3.157	-6.154	33.516	-6.069	-58.497	4.520
52	1.275	3.157	-6.154	29.249	-6.069	-18.487	-3.326
53	0	1.639	-6.716	26.110	-3.346	-21.007	4.395
53	1.275	1.639	-6.716	21.843	-3.346	9.563	-4.167
54	0	-0.652708	-5.432	19.391	-1.972	7.704	3.188
54	1.275	-0.652708	-5.432	15.124	-1.972	29.706	-3.737
55	0	-2.693	-3.605	13.401	-1.464	28.441	1.791
55	1.275	-2.693	-3.605	9.134	-1.464	42.806	-2.805
56	0	-3.970	-1.711	7.712	-1.455	41.740	0.461567
56	1.275	-3.970	-1.711	3.445	-1.455	48.853	-1.720
57	0	-4.306	0.202642	2.293	-1.913	47.651	-0.804459
57	1.275	-4.306	0.202642	-1.974	-1.913	47.853	-0.546100
58	0	-3.570	2.246	-2.760	-3.027	46.158	-2.070
58	1.275	-3.570	2.246	-7.027	-3.027	39.920	0.792798
59	0	-1.841	4.426	-7.641	-5.164	37.300	-3.229
59	1.275	-1.841	4.426	-11.908	-5.164	24.838	2.414
60	0	-0.515545	5.013	-11.054	-7.258	20.241	-3.356
60	1.275	-0.515545	5.013	-15.321	-7.258	3.428	3.035
61	0	-3.53E-05	-5.267	11.722	-0.003237	5.767	3.297
61	1.275	-3.53E-05	-5.267	7.363	-0.003237	17.933	-3.418
62	0	-0.000186	-5.360	12.258	-0.003663	24.341	3.145
62	1.275	-0.000186	-5.360	7.899	-0.003663	37.190	-3.690
63	0	-0.000464	-2.911	7.851	-0.003682	40.871	1.251
63	1.275	-0.000464	-2.911	3.492	-0.003682	48.102	-2.459
64	0	-0.000705	-0.251700	2.241	-0.003660	50.219	-0.549987
64	1.275	-0.000705	-0.251700	-2.118	-0.003660	50.298	-0.870892

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
65	0	-0.000413	2.220	-3.608	-0.003622	51.745	-2.080
65	1.275	-0.000413	2.220	-7.966	-0.003622	44.367	0.749435
66	0	0.001656	4.615	-9.649	-0.003541	45.627	-3.450
66	1.275	0.001656	4.615	-14.008	-0.003541	30.546	2.435
67	0	0.008214	6.818	-15.815	-0.003447	32.000	-4.568
67	1.275	0.008214	6.818	-20.174	-0.003447	9.058	4.124
68	0	0.025655	8.087	-21.733	-0.003513	11.228	-4.974
68	1.275	0.025655	8.087	-26.091	-0.003513	-19.259	5.336
69	0	0.072421	7.010	-29.480	-0.004016	-14.666	-3.886
69	1.275	0.072421	7.010	-33.839	-0.004016	-55.030	5.052
70	0	0.202065	2.846	-67.021	-0.005715	-43.256	-0.961995
70	1.275	0.202065	2.846	-71.380	-0.005715	-131.483	2.667
71	0	-0.432781	-3.549	67.849	0.001504	-136.798	3.479
71	1.700	-0.432781	-3.549	62.037	0.001504	-26.399	-2.554
72	0	-0.292573	-7.818	31.246	0.000768	-40.131	6.961
72	1.700	-0.292573	-7.818	25.435	0.000768	8.046	-6.329
73	0	-0.259883	-7.177	23.644	0.000501	4.681	5.984
73	1.700	-0.259883	-7.177	17.833	0.000501	39.935	-6.217
74	0	-0.251424	-4.493	15.348	0.000176	38.585	3.333
74	1.700	-0.251424	-4.493	9.536	0.000176	59.736	-4.304
75	0	-0.249625	-1.494	7.033	2.87E-05	59.201	0.602836
75	1.700	-0.249625	-1.494	1.221	2.87E-05	66.216	-1.937
76	0	-0.249625	1.494	-1.221	-2.87E-05	66.216	-1.937
76	1.700	-0.249625	1.494	-7.033	-2.87E-05	59.201	0.602847
77	0	-0.251424	4.493	-9.536	-0.000176	59.736	-4.304
77	1.700	-0.251424	4.493	-15.348	-0.000176	38.585	3.333
78	0	-0.259883	7.177	-17.833	-0.000501	39.935	-6.217
78	1.700	-0.259883	7.177	-23.644	-0.000501	4.681	5.984
79	0	-0.292573	7.818	-25.435	-0.000768	8.046	-6.329
79	1.700	-0.292573	7.818	-31.247	-0.000768	-40.132	6.961
80	0	-0.432781	3.549	-62.037	-0.001504	-26.399	-2.554
80	1.700	-0.432781	3.549	-67.849	-0.001504	-136.798	3.479
81	0	0.202064	-2.846	71.380	0.005715	-131.483	2.667
81	1.275	0.202064	-2.846	67.021	0.005715	-43.256	-0.961997
82	0	0.072420	-7.010	33.839	0.004016	-55.030	5.052
82	1.275	0.072420	-7.010	29.480	0.004016	-14.666	-3.886

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
83	0	0.025654	-8.087	26.092	0.003513	-19.259	5.336
83	1.275	0.025654	-8.087	21.733	0.003513	11.228	-4.974
84	0	0.008214	-6.818	20.174	0.003447	9.058	4.124
84	1.275	0.008214	-6.818	15.815	0.003447	32.000	-4.568
85	0	0.001656	-4.615	14.008	0.003541	30.546	2.435
85	1.275	0.001656	-4.615	9.649	0.003541	45.627	-3.450
86	0	-0.000414	-2.220	7.967	0.003622	44.367	0.749440
86	1.275	-0.000414	-2.220	3.608	0.003622	51.745	-2.080
87	0	-0.000706	0.251700	2.118	0.003660	50.298	-0.870893
87	1.275	-0.000706	0.251700	-2.241	0.003660	50.220	-0.549988
88	0	-0.000465	2.911	-3.492	0.003682	48.102	-2.459
88	1.275	-0.000465	2.911	-7.851	0.003682	40.871	1.251
89	0	-0.000186	5.360	-7.899	0.003663	37.190	-3.690
89	1.275	-0.000186	5.360	-12.258	0.003663	24.341	3.145
90	0	-3.54E-05	5.267	-7.363	0.003237	17.933	-3.418
90	1.275	-3.54E-05	5.267	-11.722	0.003237	5.767	3.297
91	0	0.515726	-5.013	15.321	-7.263	3.427	3.035
91	1.275	0.515726	-5.013	11.054	-7.263	20.241	-3.357
92	0	1.841	-4.426	11.908	-5.169	24.838	2.414
92	1.275	1.841	-4.426	7.641	-5.169	37.300	-3.229
93	0	3.569	-2.246	7.027	-3.033	39.920	0.793082
93	1.275	3.569	-2.246	2.760	-3.033	46.158	-2.071
94	0	4.305	-0.203158	1.974	-1.919	47.854	-0.546016
94	1.275	4.305	-0.203158	-2.293	-1.919	47.650	-0.805032
95	0	3.969	1.712	-3.446	-1.461	48.853	-1.721
95	1.275	3.969	1.712	-7.713	-1.461	41.740	0.461611
96	0	2.693	3.609	-9.134	-1.469	42.807	-2.808
96	1.275	2.693	3.609	-13.401	-1.469	28.441	1.793
97	0	0.655583	5.443	-15.124	-1.977	29.706	-3.744
97	1.275	0.655583	5.443	-19.392	-1.977	7.703	3.196
98	0	-1.629	6.745	-21.844	-3.351	9.563	-4.183
98	1.275	-1.629	6.745	-26.111	-3.351	-21.007	4.416
99	0	-3.141	6.227	-29.249	-6.073	-18.487	-3.364
99	1.275	-3.141	6.227	-33.516	-6.073	-58.498	4.575
100	0	-3.333	2.613	-24.407	-6.408	-58.149	-0.729282
100	1.275	-3.333	2.613	-28.674	-6.408	-91.986	2.602

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
101	0	-3.351	-2.846	31.324	6.237	-93.193	3.043
101	1.700	-3.351	-2.846	25.634	6.237	-44.780	-1.794
102	0	-2.570	-6.290	32.314	4.665	-44.685	5.645
102	1.700	-2.570	-6.290	26.625	4.665	5.411	-5.047
103	0	0.486026	-5.544	22.659	1.855	3.212	4.518
103	1.700	0.486026	-5.544	16.969	1.855	36.895	-4.906
104	0	3.467	-3.415	14.555	0.757217	35.863	2.389
104	1.700	3.467	-3.415	8.865	0.757217	55.769	-3.417
105	0	5.059	-1.134	6.734	0.209989	55.366	0.306055
105	1.700	5.059	-1.134	1.045	0.209989	61.978	-1.622
106	0	5.059	1.134	-1.044	-0.209990	61.977	-1.622
106	1.700	5.059	1.134	-6.734	-0.209990	55.366	0.306064
107	0	3.467	3.415	-8.866	-0.757219	55.770	-3.417
107	1.700	3.467	3.415	-14.555	-0.757219	35.862	2.389
108	0	0.486015	5.544	-16.969	-1.855	36.895	-4.906
108	1.700	0.486015	5.544	-22.659	-1.855	3.212	4.518
109	0	-2.570	6.290	-26.625	-4.665	5.411	-5.047
109	1.700	-2.570	6.290	-32.314	-4.665	-44.686	5.645
110	0	-3.351	2.846	-25.634	-6.237	-44.780	-1.794
110	1.700	-3.351	2.846	-31.324	-6.237	-93.193	3.043
111	0	-3.333	-2.613	28.674	6.408	-91.986	2.602
111	1.275	-3.333	-2.613	24.407	6.408	-58.149	-0.729284
112	0	-3.141	-6.227	33.516	6.073	-58.498	4.575
112	1.275	-3.141	-6.227	29.248	6.073	-18.487	-3.364
113	0	-1.629	-6.745	26.111	3.351	-21.007	4.416
113	1.275	-1.629	-6.745	21.844	3.351	9.563	-4.183
114	0	0.655587	-5.443	19.391	1.977	7.703	3.196
114	1.275	0.655587	-5.443	15.124	1.977	29.706	-3.744
115	0	2.693	-3.609	13.401	1.469	28.441	1.793
115	1.275	2.693	-3.609	9.134	1.469	42.807	-2.808
116	0	3.969	-1.712	7.713	1.461	41.740	0.461611
116	1.275	3.969	-1.712	3.446	1.461	48.853	-1.721
117	0	4.305	0.203159	2.293	1.919	47.650	-0.805034
117	1.275	4.305	0.203159	-1.974	1.919	47.854	-0.546017
118	0	3.569	2.246	-2.760	3.033	46.158	-2.071
118	1.275	3.569	2.246	-7.027	3.033	39.920	0.793082

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
119	0	1.841	4.426	-7.641	5.169	37.300	-3.229
119	1.275	1.841	4.426	-11.908	5.169	24.838	2.414
120	0	0.515728	5.013	-11.054	7.263	20.241	-3.357
120	1.275	0.515728	5.013	-15.321	7.263	3.427	3.035
121	0	2.433	7.649	17.067	-8.946	-6.312	2.056
121	1.275	2.433	7.649	13.066	-8.946	12.897	11.809
122	0	6.851	7.109	9.764	-6.939	5.095	15.459
122	1.275	6.851	7.109	5.764	-6.939	14.993	24.523
123	0	9.278	3.703	6.401	-4.368	10.531	26.256
123	1.275	9.278	3.703	2.400	-4.368	16.141	30.978
124	0	10.099	0.330382	3.811	-2.868	13.385	31.470
124	1.275	10.099	0.330382	-0.189470	-2.868	15.694	31.892
125	0	9.421	-2.819	1.708	-2.205	13.765	31.296
125	1.275	9.421	-2.819	-2.293	-2.205	13.391	27.701
126	0	7.221	-5.910	-0.031279	-2.212	11.692	25.978
126	1.275	7.221	-5.910	-4.032	-2.212	9.101	18.443
127	0	3.441	-8.836	-1.405	-2.888	7.106	15.486
127	1.275	3.441	-8.836	-5.406	-2.888	2.764	4.221
128	0	-1.905	-10.752	-2.174	-4.261	-0.184428	-0.067057
128	1.275	-1.905	-10.752	-6.174	-4.261	-5.506	-13.776
129	0	-8.223	-9.665	-1.343	-5.511	-10.327	-19.056
129	1.275	-8.223	-9.665	-5.343	-5.511	-14.589	-31.379
130	0	-13.203	-3.930	2.140	-3.409	-20.831	-35.711
130	1.275	-13.203	-3.930	-1.861	-3.409	-20.653	-40.721
131	0	-12.831	4.712	4.399	3.756	-21.208	-40.437
131	1.700	-12.831	4.712	-0.934877	3.756	-18.264	-32.427
132	0	-4.667	10.243	7.782	4.795	-11.488	-23.183
132	1.700	-4.667	10.243	2.448	4.795	-2.794	-5.770
133	0	3.613	9.148	7.309	2.596	1.091	3.041
133	1.700	3.613	9.148	1.975	2.596	8.982	18.592
134	0	9.232	5.664	5.631	1.136	10.691	24.296
134	1.700	9.232	5.664	0.296751	1.136	15.729	33.925
135	0	12.008	1.881	3.680	0.317338	16.401	36.680
135	1.700	12.008	1.881	-1.655	0.317338	18.122	39.878
136	0	12.008	-1.881	1.655	-0.317339	18.122	39.878
136	1.700	12.008	-1.881	-3.680	-0.317339	16.401	36.680

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
137	0	9.232	-5.664	-0.296744	-1.136	15.729	33.925
137	1.700	9.232	-5.664	-5.631	-1.136	10.691	24.296
138	0	3.613	-9.148	-1.975	-2.596	8.982	18.592
138	1.700	3.613	-9.148	-7.309	-2.596	1.091	3.041
139	0	-4.667	-10.243	-2.448	-4.795	-2.794	-5.770
139	1.700	-4.667	-10.243	-7.782	-4.795	-11.488	-23.183
140	0	-12.831	-4.712	0.934911	-3.756	-18.264	-32.427
140	1.700	-12.831	-4.712	-4.399	-3.756	-21.208	-40.437
141	0	-13.203	3.930	1.861	3.409	-20.653	-40.721
141	1.275	-13.203	3.930	-2.140	3.409	-20.831	-35.711
142	0	-8.223	9.666	5.344	5.511	-14.589	-31.379
142	1.275	-8.223	9.666	1.343	5.511	-10.327	-19.056
143	0	-1.905	10.752	6.174	4.261	-5.506	-13.776
143	1.275	-1.905	10.752	2.174	4.261	-0.184396	-0.066953
144	0	3.441	8.836	5.406	2.888	2.764	4.221
144	1.275	3.441	8.836	1.405	2.888	7.106	15.486
145	0	7.221	5.910	4.032	2.212	9.101	18.443
145	1.275	7.221	5.910	0.031244	2.212	11.692	25.978
146	0	9.421	2.819	2.293	2.205	13.391	27.702
146	1.275	9.421	2.819	-1.708	2.205	13.765	31.296
147	0	10.099	-0.330364	0.189479	2.868	15.694	31.892
147	1.275	10.099	-0.330364	-3.811	2.868	13.385	31.470
148	0	9.278	-3.703	-2.400	4.368	16.141	30.978
148	1.275	9.278	-3.703	-6.401	4.368	10.531	26.256
149	0	6.851	-7.109	-5.764	6.939	14.993	24.523
149	1.275	6.851	-7.109	-9.764	6.939	5.095	15.459
150	0	2.433	-7.649	-13.066	8.946	12.897	11.809
150	1.275	2.433	-7.649	-17.067	8.946	-6.312	2.056
151	0	7.647	2.438	21.179	-6.309	-8.941	-2.056
151	1.250	7.647	2.438	21.179	-6.309	17.532	0.991591
152	0	-0.540228	4.418	3.301	-7.798	2.008	-3.650
152	1.250	-0.540228	4.418	3.301	-7.798	6.134	1.873
153	0	-3.405	2.426	-0.637648	-4.457	2.571	-1.733
153	1.250	-3.405	2.426	-0.637648	-4.457	1.774	1.299
154	0	-3.372	0.820339	-1.411	-2.751	1.500	-0.492585
154	1.250	-3.372	0.820339	-1.411	-2.751	-0.264425	0.532797

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
155	0	-3.150	-0.678156	-1.897	-1.924	0.663544	0.595298
155	1.250	-3.150	-0.678156	-1.897	-1.924	-1.708	-0.252363
156	0	-3.096	-2.196	-2.262	-1.694	-0.007641	1.721
156	1.250	-3.096	-2.196	-2.262	-1.694	-2.835	-1.025
157	0	-2.938	-3.770	-2.626	-1.990	-0.676691	2.948
157	1.250	-2.938	-3.770	-2.626	-1.990	-3.959	-1.765
158	0	-1.938	-5.322	-3.232	-2.944	-1.373	4.269
158	1.250	-1.938	-5.322	-3.232	-2.944	-5.412	-2.382
159	0	1.069	-6.265	-4.832	-4.816	-1.251	5.244
159	1.250	1.069	-6.265	-4.832	-4.816	-7.291	-2.587
160	0	5.754	-4.884	-7.486	-6.236	2.101	4.267
160	1.250	5.754	-4.884	-7.486	-6.236	-7.256	-1.838
161	0	8.625	0.477703	-6.261	-0.548275	7.164	-0.414708
161	1.250	8.625	0.477703	-6.261	-0.548275	-0.662816	0.182397
162	0	5.536	8.280	-8.717	6.779	1.037	-9.332
162	1.250	5.536	8.280	-8.717	6.779	-9.859	1.018
163	0	-1.065	8.324	-4.862	3.884	-2.199	-8.845
163	1.250	-1.065	8.324	-4.862	3.884	-8.277	1.560
164	0	-3.468	5.631	-3.657	1.709	-1.460	-5.716
164	1.250	-3.468	5.631	-3.657	1.709	-6.031	1.323
165	0	-3.779	2.779	-3.383	0.671574	-0.819170	-2.758
165	1.250	-3.779	2.779	-3.383	0.671574	-5.048	0.715756
166	0	-3.763	-4.95E-06	-3.310	-8.32E-07	-0.634084	4.78E-06
166	1.250	-3.763	-4.95E-06	-3.310	-8.32E-07	-4.772	-1.41E-06
167	0	-3.779	-2.779	-3.383	-0.671574	-0.819190	2.758
167	1.250	-3.779	-2.779	-3.383	-0.671574	-5.048	-0.715759
168	0	-3.468	-5.631	-3.657	-1.709	-1.460	5.716
168	1.250	-3.468	-5.631	-3.657	-1.709	-6.031	-1.323
169	0	-1.065	-8.324	-4.863	-3.884	-2.199	8.845
169	1.250	-1.065	-8.324	-4.863	-3.884	-8.277	-1.560
170	0	5.536	-8.280	-8.717	-6.779	1.037	9.332
170	1.250	5.536	-8.280	-8.717	-6.779	-9.859	-1.018
171	0	8.625	-0.477693	-6.261	0.548264	7.164	0.414699
171	1.250	8.625	-0.477693	-6.261	0.548264	-0.662682	-0.182393
172	0	5.754	4.884	-7.486	6.236	2.101	-4.267
172	1.250	5.754	4.884	-7.486	6.236	-7.256	1.838

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
173	0	1.069	6.265	-4.832	4.816	-1.251	-5.244
173	1.250	1.069	6.265	-4.832	4.816	-7.291	2.587
174	0	-1.938	5.322	-3.231	2.944	-1.373	-4.269
174	1.250	-1.938	5.322	-3.231	2.944	-5.412	2.382
175	0	-2.938	3.770	-2.627	1.990	-0.676511	-2.948
175	1.250	-2.938	3.770	-2.627	1.990	-3.960	1.765
176	0	-3.096	2.196	-2.261	1.694	-0.008078	-1.721
176	1.250	-3.096	2.196	-2.261	1.694	-2.835	1.025
177	0	-3.150	0.678158	-1.897	1.924	0.663517	-0.595300
177	1.250	-3.150	0.678158	-1.897	1.924	-1.708	0.252364
178	0	-3.372	-0.820341	-1.411	2.751	1.500	0.492587
178	1.250	-3.372	-0.820341	-1.411	2.751	-0.264413	-0.532798
179	0	-3.405	-2.426	-0.637385	4.457	2.571	1.733
179	1.250	-3.405	-2.426	-0.637385	4.457	1.774	-1.299
180	0	-0.540234	-4.418	3.301	7.798	2.008	3.650
180	1.250	-0.540234	-4.418	3.301	7.798	6.135	-1.873
181	0	7.647	-2.438	21.179	6.309	-8.941	2.056
181	1.250	7.647	-2.438	21.179	6.309	17.532	-0.991594
182	0	2.634	2.954	5.858	-2.881	10.275	-2.044
182	1.250	2.634	2.954	5.858	-2.881	17.598	1.649
183	0	0.047052	5.743	2.447	-3.201	8.228	-3.898
183	1.250	0.047052	5.743	2.447	-3.201	11.287	3.281
184	0	-1.225	4.155	-0.024030	-1.838	3.911	-2.723
184	1.250	-1.225	4.155	-0.024030	-1.838	3.881	2.470
185	0	-1.329	1.557	-0.625587	-1.056	0.849510	-0.991421
185	1.250	-1.329	1.557	-0.625587	-1.056	0.067558	0.954534
186	0	-1.237	-1.014	-0.744808	-0.721130	-1.250	0.663157
186	1.250	-1.237	-1.014	-0.744808	-0.721130	-2.181	-0.604834
187	0	-1.202	-3.473	-0.841057	-0.627858	-2.844	2.242
187	1.250	-1.202	-3.473	-0.841057	-0.627858	-3.895	-2.099
188	0	-1.111	-5.811	-0.903430	-0.724709	-4.468	3.763
188	1.250	-1.111	-5.811	-0.903430	-0.724709	-5.597	-3.500
189	0	-0.653638	-7.613	-0.779318	-1.083	-6.786	4.973
189	1.250	-0.653638	-7.613	-0.779318	-1.083	-7.760	-4.544
190	0	0.507327	-7.784	-1.694	-2.295	-10.014	5.134
190	1.250	0.507327	-7.784	-1.694	-2.295	-12.131	-4.596

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
191	0	2.042	-5.042	-16.590	-5.886	-7.592	3.340
191	1.250	2.042	-5.042	-16.590	-5.886	-28.329	-2.961
192	0	3.207	0.923515	-66.270	-1.758	11.980	-0.541949
192	1.250	3.207	0.923515	-66.270	-1.758	-70.854	0.612399
193	0	2.182	9.085	-15.394	6.868	-11.435	-6.543
193	1.250	2.182	9.085	-15.394	6.868	-30.676	4.812
194	0	-0.291013	11.369	-0.894887	1.683	-11.087	-8.043
194	1.250	-0.291013	11.369	-0.894887	1.683	-12.205	6.168
195	0	-1.330	8.608	-1.242	0.674952	-7.128	-5.983
195	1.250	-1.330	8.608	-1.242	0.674952	-8.681	4.777
196	0	-1.496	4.370	-1.251	0.267571	-5.596	-3.009
196	1.250	-1.496	4.370	-1.251	0.267571	-7.160	2.453
197	0	-1.494	-7.73E-06	-1.220	-2.46E-07	-5.192	5.29E-06
197	1.250	-1.494	-7.73E-06	-1.220	-2.46E-07	-6.716	-4.36E-06
198	0	-1.496	-4.370	-1.251	-0.267571	-5.596	3.009
198	1.250	-1.496	-4.370	-1.251	-0.267571	-7.160	-2.453
199	0	-1.330	-8.608	-1.242	-0.674952	-7.128	5.983
199	1.250	-1.330	-8.608	-1.242	-0.674952	-8.681	-4.777
200	0	-0.291005	-11.369	-0.894222	-1.683	-11.087	8.043
200	1.250	-0.291005	-11.369	-0.894222	-1.683	-12.205	-6.168
201	0	2.182	-9.085	-15.394	-6.868	-11.434	6.543
201	1.250	2.182	-9.085	-15.394	-6.868	-30.676	-4.812
202	0	3.207	-0.923502	-66.270	1.758	11.980	0.541941
202	1.250	3.207	-0.923502	-66.270	1.758	-70.854	-0.612391
203	0	2.042	5.042	-16.590	5.886	-7.592	-3.340
203	1.250	2.042	5.042	-16.590	5.886	-28.329	2.961
204	0	0.507327	7.784	-1.694	2.295	-10.014	-5.134
204	1.250	0.507327	7.784	-1.694	2.295	-12.131	4.596
205	0	-0.653636	7.613	-0.779303	1.083	-6.786	-4.973
205	1.250	-0.653636	7.613	-0.779303	1.083	-7.760	4.544
206	0	-1.111	5.811	-0.903189	0.724712	-4.468	-3.763
206	1.250	-1.111	5.811	-0.903189	0.724712	-5.597	3.500
207	0	-1.202	3.473	-0.841501	0.627857	-2.843	-2.242
207	1.250	-1.202	3.473	-0.841501	0.627857	-3.895	2.099
208	0	-1.237	1.014	-0.744566	0.721130	-1.250	-0.663158
208	1.250	-1.237	1.014	-0.744566	0.721130	-2.181	0.604835

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
209	0	-1.329	-1.557	-0.625351	1.056	0.849361	0.991423
209	1.250	-1.329	-1.557	-0.625351	1.056	0.067704	-0.954536
210	0	-1.225	-4.155	-0.024047	1.838	3.911	2.723
210	1.250	-1.225	-4.155	-0.024047	1.838	3.881	-2.470
211	0	0.047051	-5.743	2.447	3.201	8.228	3.898
211	1.250	0.047051	-5.743	2.447	3.201	11.287	-3.281
212	0	2.634	-2.954	5.858	2.881	10.276	2.044
212	1.250	2.634	-2.954	5.858	2.881	17.598	-1.649
213	0	-2.633	2.954	-5.863	2.885	17.601	-1.649
213	1.250	-2.633	2.954	-5.863	2.885	10.272	2.044
214	0	-0.046418	5.744	-2.448	3.206	11.287	-3.281
214	1.250	-0.046418	5.744	-2.448	3.206	8.228	3.898
215	0	1.225	4.155	0.023900	1.843	3.881	-2.471
215	1.250	1.225	4.155	0.023900	1.843	3.911	2.723
216	0	1.330	1.557	0.625600	1.061	0.067523	-0.954862
216	1.250	1.330	1.557	0.625600	1.061	0.849491	0.991395
217	0	1.235	-1.015	0.744904	0.726108	-2.181	0.604595
217	1.250	1.235	-1.015	0.744904	0.726108	-1.250	-0.663760
218	0	1.194	-3.475	0.841527	0.632763	-3.895	2.100
218	1.250	1.194	-3.475	0.841527	0.632763	-2.843	-2.244
219	0	1.091	-5.817	0.903604	0.729455	-5.597	3.503
219	1.250	1.091	-5.817	0.903604	0.729455	-4.468	-3.768
220	0	0.615160	-7.631	0.779432	1.088	-7.760	4.554
220	1.250	0.615160	-7.631	0.779432	1.088	-6.786	-4.984
221	0	-0.569326	-7.831	1.695	2.299	-12.130	4.626
221	1.250	-0.569326	-7.831	1.695	2.299	-10.012	-5.161
222	0	-2.121	-5.171	16.592	5.891	-28.327	3.052
222	1.250	-2.121	-5.171	16.592	5.891	-7.588	-3.411
223	0	-3.183	0.353745	66.258	1.762	-70.837	-0.182126
223	1.250	-3.183	0.353745	66.258	1.762	11.983	0.260038
224	0	-2.087	8.944	15.397	-6.868	-30.675	-4.702
224	1.250	-2.087	8.944	15.397	-6.868	-11.430	6.478
225	0	0.349651	11.337	0.895875	-1.684	-12.205	-6.145
225	1.250	0.349651	11.337	0.895875	-1.684	-11.085	8.025
226	0	1.355	8.599	1.243	-0.675408	-8.681	-4.773
226	1.250	1.355	8.599	1.243	-0.675408	-7.128	5.976

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
227	0	1.502	4.369	1.251	-0.267654	-7.159	-2.454
227	1.250	1.502	4.369	1.251	-0.267654	-5.596	3.007
228	0	1.494	-7.72E-06	1.221	2.29E-07	-6.717	4.36E-06
228	1.250	1.494	-7.72E-06	1.221	2.29E-07	-5.191	-5.29E-06
229	0	1.502	-4.369	1.252	0.267654	-7.160	2.454
229	1.250	1.502	-4.369	1.252	0.267654	-5.595	-3.007
230	0	1.355	-8.600	1.243	0.675400	-8.681	4.773
230	1.250	1.355	-8.600	1.243	0.675400	-7.128	-5.976
231	0	0.349643	-11.337	0.895822	1.684	-12.205	6.145
231	1.250	0.349643	-11.337	0.895822	1.684	-11.085	-8.025
232	0	-2.087	-8.944	15.397	6.868	-30.675	4.702
232	1.250	-2.087	-8.944	15.397	6.868	-11.430	-6.478
233	0	-3.183	-0.353735	66.258	-1.762	-70.836	0.182120
233	1.250	-3.183	-0.353735	66.258	-1.762	11.983	-0.260032
234	0	-2.121	5.171	16.592	-5.891	-28.328	-3.052
234	1.250	-2.121	5.171	16.592	-5.891	-7.588	3.411
235	0	-0.569325	7.831	1.695	-2.299	-12.130	-4.626
235	1.250	-0.569325	7.831	1.695	-2.299	-10.012	5.161
236	0	0.615157	7.631	0.779417	-1.088	-7.760	-4.554
236	1.250	0.615157	7.631	0.779417	-1.088	-6.786	4.984
237	0	1.091	5.817	0.903362	-0.729455	-5.597	-3.503
237	1.250	1.091	5.817	0.903362	-0.729455	-4.468	3.768
238	0	1.194	3.475	0.841513	-0.632763	-3.895	-2.100
238	1.250	1.194	3.475	0.841513	-0.632763	-2.843	2.244
239	0	1.235	1.015	0.744663	-0.726106	-2.181	-0.604597
239	1.250	1.235	1.015	0.744663	-0.726106	-1.250	0.663762
240	0	1.330	-1.557	0.625364	-1.061	0.067669	0.954864
240	1.250	1.330	-1.557	0.625364	-1.061	0.849343	-0.991396
241	0	1.225	-4.155	0.023689	-1.843	3.881	2.471
241	1.250	1.225	-4.155	0.023689	-1.843	3.911	-2.723
242	0	-0.046417	-5.744	-2.448	-3.206	11.287	3.281
242	1.250	-0.046417	-5.744	-2.448	-3.206	8.228	-3.898
243	0	-2.633	-2.954	-5.863	-2.885	17.601	1.649
243	1.250	-2.633	-2.954	-5.863	-2.885	10.272	-2.044
244	0	-7.647	2.438	-21.185	6.312	17.534	-0.991646
244	1.250	-7.647	2.438	-21.185	6.312	-8.945	2.056

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
245	0	0.540556	4.419	-3.302	7.803	6.134	-1.873
245	1.250	0.540556	4.419	-3.302	7.803	2.007	3.650
246	0	3.406	2.426	0.637497	4.463	1.774	-1.299
246	1.250	3.406	2.426	0.637497	4.463	2.571	1.733
247	0	3.373	0.820997	1.411	2.756	-0.264434	-0.533456
247	1.250	3.373	0.820997	1.411	2.756	1.499	0.492749
248	0	3.149	-0.678177	1.897	1.929	-1.708	0.251895
248	1.250	3.149	-0.678177	1.897	1.929	0.663718	-0.595793
249	0	3.091	-2.199	2.262	1.700	-2.835	1.026
249	1.250	3.091	-2.199	2.262	1.700	-0.007742	-1.723
250	0	2.926	-3.780	2.627	1.995	-3.960	1.769
250	1.250	2.926	-3.780	2.627	1.995	-0.676291	-2.956
251	0	1.916	-5.346	3.232	2.949	-5.412	2.395
251	1.250	1.916	-5.346	3.232	2.949	-1.372	-4.287
252	0	-1.087	-6.318	4.832	4.821	-7.290	2.618
252	1.250	-1.087	-6.318	4.832	4.821	-1.251	-5.279
253	0	-5.735	-4.980	7.483	6.241	-7.252	1.893
253	1.250	-5.735	-4.980	7.483	6.241	2.101	-4.331
254	0	-8.642	0.371935	6.260	0.555241	-0.660211	-0.180917
254	1.250	-8.642	0.371935	6.260	0.555241	7.165	0.283983
255	0	-5.531	8.164	8.717	-6.775	-9.857	-0.960860
255	1.250	-5.531	8.164	8.717	-6.775	1.039	9.244
256	0	1.095	8.280	4.861	-3.884	-8.275	-1.540
256	1.250	1.095	8.280	4.861	-3.884	-2.199	8.809
257	0	3.484	5.618	3.656	-1.709	-6.030	-1.319
257	1.250	3.484	5.618	3.656	-1.709	-1.460	5.704
258	0	3.783	2.776	3.384	-0.671533	-5.049	-0.715730
258	1.250	3.783	2.776	3.384	-0.671533	-0.818461	2.755
259	0	3.763	-4.95E-06	3.308	8.16E-07	-4.770	1.41E-06
259	1.250	3.763	-4.95E-06	3.308	8.16E-07	-0.635522	-4.77E-06
260	0	3.783	-2.776	3.383	0.671533	-5.048	0.715734
260	1.250	3.783	-2.776	3.383	0.671533	-0.819571	-2.755
261	0	3.484	-5.618	3.656	1.709	-6.030	1.319
261	1.250	3.484	-5.618	3.656	1.709	-1.460	-5.704
262	0	1.095	-8.280	4.861	3.884	-8.275	1.540
262	1.250	1.095	-8.280	4.861	3.884	-2.199	-8.810

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
263	0	-5.531	-8.164	8.717	6.775	-9.857	0.960862
263	1.250	-5.531	-8.164	8.717	6.775	1.039	-9.244
264	0	-8.642	-0.371923	6.260	-0.555236	-0.660311	0.180911
264	1.250	-8.642	-0.371923	6.260	-0.555236	7.165	-0.283974
265	0	-5.735	4.980	7.483	-6.241	-7.252	-1.893
265	1.250	-5.735	4.980	7.483	-6.241	2.101	4.332
266	0	-1.087	6.318	4.832	-4.821	-7.290	-2.618
266	1.250	-1.087	6.318	4.832	-4.821	-1.250	5.279
267	0	1.916	5.346	3.232	-2.949	-5.412	-2.395
267	1.250	1.916	5.346	3.232	-2.949	-1.372	4.287
268	0	2.926	3.780	2.627	-1.995	-3.960	-1.769
268	1.250	2.926	3.780	2.627	-1.995	-0.676112	2.956
269	0	3.091	2.199	2.262	-1.700	-2.835	-1.026
269	1.250	3.091	2.199	2.262	-1.700	-0.007769	1.723
270	0	3.149	0.678179	1.897	-1.929	-1.708	-0.251896
270	1.250	3.149	0.678179	1.897	-1.929	0.663692	0.595793
271	0	3.373	-0.820998	1.411	-2.756	-0.264423	0.533457
271	1.250	3.373	-0.820998	1.411	-2.756	1.499	-0.492750
272	0	3.406	-2.426	0.637564	-4.463	1.774	1.299
272	1.250	3.406	-2.426	0.637564	-4.463	2.571	-1.733
273	0	0.540561	-4.419	-3.302	-7.803	6.134	1.873
273	1.250	0.540561	-4.419	-3.302	-7.803	2.007	-3.650
274	0	-7.647	-2.438	-21.185	-6.312	17.534	0.991650
274	1.250	-7.647	-2.438	-21.185	-6.312	-8.945	-2.056
1601	0	-293.110	-0.004890	-1.205	0.017415	4.415	0.028725
1601	11.000	-271.758	-0.004890	-1.205	0.017415	-8.835	-0.025063
1602	0	-293.110	-0.004890	1.205	-0.017415	-4.415	0.028725
1602	11.000	-271.758	-0.004890	1.205	-0.017415	8.835	-0.025063

CARGAS: '' Ejec. "0001"

Hipótesis	Factor	Etapa	Título
2	1.0000		Cargas muertas

DESPLAZAMIENTOS:

NUDOS	DX [mm]	DY [mm]	DZ [mm]	RX [rad]	RY [rad]	RZ [rad]
1	0.003658	-0.001704	-1.15E-16	9.97E-06	0.000169	2.39E-06
2	0.001521	-0.000881	0.005006	1.99E-06	0.000160	1.70E-06
3	0.000148	-0.000562	0.005298	-2.12E-10	0.000154	1.41E-06
4	-0.001224	-0.000881	0.005007	-1.99E-06	0.000160	1.70E-06
5	-0.003362	-0.001704	-1.15E-16	-9.97E-06	0.000169	2.39E-06
6	0.003428	0.001731	-0.215365	2.33E-05	0.000157	2.10E-06
7	0.001477	0.001681	-0.192848	1.26E-05	0.000148	1.58E-06
8	0.000148	0.001683	-0.185131	-3.96E-09	0.000143	1.37E-06
9	-0.001180	0.001681	-0.192857	-1.26E-05	0.000148	1.58E-06
10	-0.003131	0.001732	-0.215385	-2.33E-05	0.000157	2.10E-06
11	0.002785	0.004191	-0.398839	3.31E-05	0.000125	1.38E-06
12	0.001315	0.003907	-0.364987	2.03E-05	0.000120	1.27E-06
13	0.000148	0.003792	-0.352102	-8.19E-09	0.000117	1.19E-06
14	-0.001018	0.003907	-0.365008	-2.03E-05	0.000120	1.27E-06
15	-0.002488	0.004191	-0.398880	-3.31E-05	0.000125	1.38E-06
16	0.001918	0.005708	-0.533660	3.91E-05	8.33E-05	7.73E-07
17	0.001000	0.005431	-0.493097	2.48E-05	8.03E-05	7.97E-07
18	0.000148	0.005308	-0.477274	-1.25E-08	7.85E-05	7.86E-07
19	-0.000704	0.005431	-0.493128	-2.48E-05	8.03E-05	7.97E-07
20	-0.001621	0.005708	-0.533723	-3.91E-05	8.33E-05	7.73E-07
21	0.000976	0.006402	-0.612285	4.30E-05	3.85E-05	1.86E-07
22	0.000622	0.006145	-0.567437	2.77E-05	3.64E-05	2.96E-07
23	0.000148	0.006031	-0.549811	-1.67E-08	3.53E-05	3.16E-07
24	-0.000325	0.006145	-0.567479	-2.77E-05	3.64E-05	2.95E-07
25	-0.000679	0.006402	-0.612368	-4.30E-05	3.85E-05	1.85E-07
26	9.82E-05	0.006320	-0.634641	4.59E-05	-3.48E-06	-3.84E-07
27	0.000273	0.006067	-0.586605	2.98E-05	-5.26E-06	-1.71E-07
28	0.000148	0.005957	-0.567643	-2.09E-08	-6.23E-06	-1.22E-07
29	2.35E-05	0.006067	-0.586657	-2.98E-05	-5.25E-06	-1.72E-07
30	0.000199	0.006319	-0.634745	-4.60E-05	-3.47E-06	-3.85E-07
31	-0.000576	0.005520	-0.608650	4.87E-05	-3.62E-05	-9.05E-07
32	3.52E-05	0.005280	-0.557528	3.18E-05	-3.82E-05	-5.47E-07
33	0.000148	0.005178	-0.537277	-2.50E-08	-3.93E-05	-4.57E-07
34	0.000261	0.005278	-0.557590	-3.19E-05	-3.82E-05	-5.48E-07
35	0.000873	0.005517	-0.608775	-4.88E-05	-3.62E-05	-9.07E-07
36	-0.000902	0.004115	-0.550598	5.23E-05	-5.29E-05	-1.32E-06
37	-2.48E-05	0.003956	-0.495495	3.45E-05	-5.58E-05	-7.51E-07
38	0.000149	0.003896	-0.473589	-2.90E-08	-5.74E-05	-6.05E-07
39	0.000321	0.003952	-0.495567	-3.46E-05	-5.58E-05	-7.52E-07
40	0.001198	0.004109	-0.550743	-5.24E-05	-5.29E-05	-1.32E-06
41	-0.000735	0.002348	-0.485611	5.75E-05	-4.66E-05	-1.47E-06
42	0.000114	0.002434	-0.424275	3.90E-05	-5.13E-05	-6.73E-07
43	0.000151	0.002481	-0.399431	-3.31E-08	-5.46E-05	-4.89E-07
44	0.000183	0.002428	-0.424357	-3.91E-05	-5.13E-05	-6.71E-07
45	0.001028	0.002340	-0.485773	-5.76E-05	-4.66E-05	-1.47E-06
46	1.18E-05	0.000818	-0.447680	6.43E-05	-1.10E-05	-9.74E-07

DESPLAZAMIENTOS:

NUDOS	DX [mm]	DY [mm]	DZ [mm]	RX [rad]	RY [rad]	RZ [rad]
47	0.000385	0.001288	-0.376806	4.71E-05	-1.71E-05	-2.39E-07
48	0.000158	0.001477	-0.344632	-3.78E-08	-2.56E-05	-1.10E-07
49	-8.66E-05	0.001281	-0.376898	-4.72E-05	-1.71E-05	-2.32E-07
50	0.000272	0.000812	-0.447860	-6.43E-05	-1.10E-05	-9.70E-07
51	0.001212	0.000580	-0.473297	6.85E-05	5.09E-05	4.82E-07
52	0.000669	0.001184	-0.394647	5.57E-05	5.02E-05	4.29E-07
53	0.000175	0.001437	-0.350947	-4.44E-08	4.80E-05	4.44E-07
54	-0.000371	0.001186	-0.394748	-5.58E-05	5.02E-05	4.62E-07
55	-0.000946	0.000581	-0.473493	-6.85E-05	5.09E-05	4.90E-07
56	0.002750	0.002789	-0.626163	6.24E-05	0.000127	2.15E-06
57	0.000997	0.003128	-0.558071	4.46E-05	0.000132	1.09E-06
58	0.000124	0.003279	-0.528193	-4.20E-08	0.000140	8.45E-07
59	-0.000758	0.003135	-0.558174	-4.47E-05	0.000132	1.10E-06
60	-0.002521	0.002796	-0.626368	-6.25E-05	0.000127	2.15E-06
61	0.003267	0.006675	-0.868298	5.46E-05	0.000152	2.31E-06
62	0.001230	0.006610	-0.810583	3.63E-05	0.000155	1.39E-06
63	9.00E-05	0.006590	-0.787566	-4.09E-08	0.000156	1.12E-06
64	-0.001052	0.006614	-0.810684	-3.64E-05	0.000155	1.39E-06
65	-0.003090	0.006681	-0.868501	-5.47E-05	0.000152	2.31E-06
66	0.002756	0.010214	-1.110	5.04E-05	0.000128	1.74E-06
67	0.001111	0.010002	-1.058	3.30E-05	0.000129	1.19E-06
68	5.93E-05	0.009910	-1.037	-4.02E-08	0.000130	1.01E-06
69	-0.000993	0.010003	-1.058	-3.31E-05	0.000129	1.19E-06
70	-0.002637	0.010217	-1.111	-5.05E-05	0.000128	1.74E-06
71	0.001550	0.012548	-1.283	4.86E-05	7.18E-05	9.25E-07
72	0.000648	0.012316	-1.232	3.17E-05	7.23E-05	6.65E-07
73	2.97E-05	0.012213	-1.212	-3.99E-08	7.26E-05	5.85E-07
74	-0.000588	0.012316	-1.232	-3.18E-05	7.23E-05	6.65E-07
75	-0.001490	0.012548	-1.283	-4.86E-05	7.18E-05	9.24E-07
76	2.90E-07	0.013358	-1.345	4.80E-05	-1.22E-10	-7.55E-12
77	2.99E-07	0.013128	-1.295	3.13E-05	-1.22E-10	-7.14E-12
78	3.07E-07	0.013024	-1.275	-3.99E-08	-1.23E-10	-7.01E-12
79	3.16E-07	0.013128	-1.295	-3.14E-05	-1.23E-10	-7.14E-12
80	3.25E-07	0.013358	-1.345	-4.81E-05	-1.22E-10	-7.54E-12
81	-0.001549	0.012548	-1.283	4.86E-05	-7.18E-05	-9.25E-07
82	-0.000647	0.012316	-1.232	3.17E-05	-7.23E-05	-6.65E-07
83	-2.91E-05	0.012213	-1.212	-3.99E-08	-7.26E-05	-5.85E-07
84	0.000589	0.012316	-1.232	-3.18E-05	-7.23E-05	-6.65E-07
85	0.001490	0.012548	-1.283	-4.86E-05	-7.18E-05	-9.24E-07
86	-0.002756	0.010214	-1.110	5.04E-05	-0.000128	-1.74E-06
87	-0.001111	0.010001	-1.058	3.30E-05	-0.000129	-1.19E-06
88	-5.87E-05	0.009910	-1.037	-4.02E-08	-0.000130	-1.01E-06
89	0.000993	0.010003	-1.058	-3.31E-05	-0.000129	-1.19E-06
90	0.002638	0.010217	-1.111	-5.05E-05	-0.000128	-1.74E-06
91	-0.003267	0.006675	-0.868297	5.46E-05	-0.000152	-2.31E-06
92	-0.001230	0.006610	-0.810582	3.63E-05	-0.000155	-1.39E-06
93	-8.94E-05	0.006590	-0.787565	-4.09E-08	-0.000156	-1.12E-06
94	0.001053	0.006614	-0.810684	-3.64E-05	-0.000155	-1.39E-06
95	0.003091	0.006681	-0.868500	-5.47E-05	-0.000152	-2.31E-06
96	-0.002749	0.002789	-0.626163	6.24E-05	-0.000127	-2.15E-06
97	-0.000996	0.003128	-0.558070	4.46E-05	-0.000132	-1.09E-06
98	-0.000124	0.003279	-0.528192	-4.20E-08	-0.000140	-8.45E-07
99	0.000758	0.003135	-0.558174	-4.47E-05	-0.000132	-1.10E-06
100	0.002521	0.002796	-0.626367	-6.25E-05	-0.000127	-2.15E-06

DESPLAZAMIENTOS:

NUDOS	DX [mm]	DY [mm]	DZ [mm]	RX [rad]	RY [rad]	RZ [rad]
101	-0.001212	0.000580	-0.473297	6.85E-05	-5.09E-05	-4.82E-07
102	-0.000668	0.001184	-0.394647	5.57E-05	-5.02E-05	-4.29E-07
103	-0.000175	0.001437	-0.350947	-4.44E-08	-4.80E-05	-4.44E-07
104	0.000372	0.001186	-0.394749	-5.58E-05	-5.02E-05	-4.62E-07
105	0.000947	0.000581	-0.473493	-6.85E-05	-5.09E-05	-4.90E-07
106	-1.12E-05	0.000818	-0.447680	6.43E-05	1.10E-05	9.74E-07
107	-0.000385	0.001288	-0.376807	4.71E-05	1.71E-05	2.39E-07
108	-0.000157	0.001477	-0.344632	-3.78E-08	2.56E-05	1.10E-07
109	8.72E-05	0.001281	-0.376899	-4.72E-05	1.71E-05	2.32E-07
110	-0.000272	0.000812	-0.447860	-6.43E-05	1.10E-05	9.70E-07
111	0.000736	0.002347	-0.485611	5.75E-05	4.66E-05	1.47E-06
112	-0.000114	0.002434	-0.424275	3.90E-05	5.13E-05	6.73E-07
113	-0.000151	0.002481	-0.399432	-3.31E-08	5.46E-05	4.89E-07
114	-0.000182	0.002428	-0.424358	-3.91E-05	5.13E-05	6.71E-07
115	-0.001027	0.002340	-0.485774	-5.76E-05	4.66E-05	1.47E-06
116	0.000903	0.004114	-0.550600	5.23E-05	5.29E-05	1.32E-06
117	2.54E-05	0.003956	-0.495496	3.45E-05	5.58E-05	7.51E-07
118	-0.000148	0.003896	-0.473591	-2.90E-08	5.74E-05	6.05E-07
119	-0.000321	0.003952	-0.495569	-3.46E-05	5.58E-05	7.52E-07
120	-0.001197	0.004109	-0.550744	-5.24E-05	5.29E-05	1.32E-06
121	0.000577	0.005520	-0.608652	4.87E-05	3.62E-05	9.05E-07
122	-3.46E-05	0.005280	-0.557529	3.18E-05	3.82E-05	5.47E-07
123	-0.000148	0.005178	-0.537279	-2.50E-08	3.93E-05	4.57E-07
124	-0.000260	0.005278	-0.557592	-3.19E-05	3.82E-05	5.48E-07
125	-0.000873	0.005517	-0.608777	-4.88E-05	3.62E-05	9.07E-07
126	-9.76E-05	0.006320	-0.634643	4.59E-05	3.48E-06	3.84E-07
127	-0.000272	0.006067	-0.586607	2.98E-05	5.26E-06	1.71E-07
128	-0.000147	0.005957	-0.567645	-2.09E-08	6.23E-06	1.22E-07
129	-2.29E-05	0.006066	-0.586659	-2.98E-05	5.25E-06	1.72E-07
130	-0.000198	0.006318	-0.634747	-4.60E-05	3.47E-06	3.85E-07
131	-0.000976	0.006402	-0.612287	4.30E-05	-3.85E-05	-1.86E-07
132	-0.000621	0.006145	-0.567440	2.77E-05	-3.64E-05	-2.96E-07
133	-0.000147	0.006031	-0.549814	-1.67E-08	-3.53E-05	-3.16E-07
134	0.000326	0.006145	-0.567481	-2.77E-05	-3.64E-05	-2.95E-07
135	0.000680	0.006402	-0.612370	-4.30E-05	-3.85E-05	-1.85E-07
136	-0.001917	0.005708	-0.533662	3.91E-05	-8.33E-05	-7.73E-07
137	-0.001000	0.005431	-0.493098	2.48E-05	-8.03E-05	-7.97E-07
138	-0.000148	0.005307	-0.477276	-1.25E-08	-7.85E-05	-7.86E-07
139	0.000705	0.005431	-0.493130	-2.48E-05	-8.03E-05	-7.97E-07
140	0.001622	0.005708	-0.533725	-3.91E-05	-8.33E-05	-7.73E-07
141	-0.002784	0.004191	-0.398840	3.31E-05	-0.000125	-1.38E-06
142	-0.001314	0.003907	-0.364989	2.03E-05	-0.000120	-1.27E-06
143	-0.000148	0.003792	-0.352103	-8.19E-09	-0.000117	-1.19E-06
144	0.001019	0.003907	-0.365009	-2.03E-05	-0.000120	-1.27E-06
145	0.002489	0.004191	-0.398881	-3.31E-05	-0.000125	-1.38E-06
146	-0.003427	0.001731	-0.215366	2.33E-05	-0.000157	-2.10E-06
147	-0.001476	0.001680	-0.192848	1.26E-05	-0.000148	-1.58E-06
148	-0.000148	0.001683	-0.185132	-3.96E-09	-0.000143	-1.37E-06
149	0.001181	0.001680	-0.192858	-1.26E-05	-0.000148	-1.58E-06
150	0.003132	0.001731	-0.215386	-2.33E-05	-0.000157	-2.10E-06
151	-0.003657	-0.001704	-1.15E-16	9.97E-06	-0.000169	-2.39E-06
152	-0.001520	-0.000881	0.005006	1.99E-06	-0.000160	-1.70E-06
153	-0.000148	-0.000562	0.005298	-2.12E-10	-0.000154	-1.41E-06
154	0.001225	-0.000881	0.005007	-1.99E-06	-0.000160	-1.70E-06

DESPLAZAMIENTOS:

NUDOS	DX [mm]	DY [mm]	DZ [mm]	RX [rad]	RY [rad]	RZ [rad]
155	0.003362	-0.001704	-1.15E-16	-9.97E-06	-0.000169	-2.39E-06
601	-3.77E-18	1.70E-20	-8.17E-16	-1.00E-22	-1.38E-20	5.43E-23
602	3.77E-18	1.70E-20	-8.17E-16	-1.00E-22	1.38E-20	-5.43E-23

REACCIONES EN APOYOS:

NUDOS	FX [t]	FY [t]	FZ [t]	MX [tm]	MY [tm]	MZ [tm]
1	-0.001829	0.000852	11.526			
5	0.001681	0.000852	11.530			
151	0.001829	0.000852	11.526			
155	-0.001681	0.000852	11.530			
601	0.376811	-0.001703	81.749	0.010006	1.381	-0.005430
602	-0.376810	-0.001703	81.749	0.010005	-1.381	0.005430
Sumas:	-2.98E-08	1.52E-06	209.610			

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
1	0	-0.747859	2.348	6.138	5.639	-2.218	0.628172
1	1.275	-0.747859	2.348	3.571	0.953684	3.971	3.622
2	0	-2.089	2.161	3.792	4.751	1.321	4.720
2	1.275	-2.089	2.161	1.226	0.065813	4.519	7.475
3	0	-2.816	1.116	2.706	3.837	2.996	7.986
3	1.275	-2.816	1.116	0.139905	-0.848652	4.811	9.408
4	0	-3.059	0.095853	1.885	3.308	3.876	9.548
4	1.275	-3.059	0.095853	-0.681154	-1.377	4.644	9.670
5	0	-2.853	-0.850504	1.228	3.064	4.003	9.487
5	1.275	-2.853	-0.850504	-1.338	-1.621	3.933	8.403
6	0	-2.192	-1.779	0.691144	3.040	3.388	7.883
6	1.275	-2.192	-1.779	-1.875	-1.645	2.633	5.615
7	0	-1.058	-2.662	0.269205	3.228	2.015	4.727
7	1.275	-1.058	-2.662	-2.297	-1.457	-0.722280	1.334
8	0	0.541953	-3.246	0.032159	3.632	-0.173148	0.049487
8	1.275	0.541953	-3.246	-2.534	-1.054	-1.768	-4.088
9	0	2.427	-2.926	0.276635	4.003	-3.220	-5.667
9	1.275	2.427	-2.926	-2.290	-0.681955	-4.504	-9.398
10	0	3.900	-1.193	1.303	3.381	-6.380	-10.685
10	1.275	3.900	-1.193	-1.263	-1.305	-6.355	-12.207

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
11	0	3.746	1.400	2.213	2.002	-6.582	-12.068
11	1.700	3.746	1.400	-1.209	-4.245	-5.728	-9.688
12	0	1.260	3.065	3.248	1.679	-3.683	-6.886
12	1.700	1.260	3.065	-0.173732	-4.569	-1.070	-1.676
13	0	-1.245	2.747	3.107	2.341	0.100694	0.986136
13	1.700	-1.245	2.747	-0.314795	-3.906	2.474	5.655
14	0	-2.939	1.704	2.603	2.781	2.989	7.376
14	1.700	-2.939	1.704	-0.819323	-3.466	4.505	10.272
15	0	-3.776	0.566366	2.016	3.028	4.707	11.102
15	1.700	-3.776	0.566366	-1.406	-3.219	5.225	12.065
16	0	-3.776	-0.566337	1.406	3.219	5.225	12.065
16	1.700	-3.776	-0.566337	-2.016	-3.028	4.707	11.102
17	0	-2.939	-1.704	0.819305	3.466	4.505	10.272
17	1.700	-2.939	-1.704	-2.603	-2.781	2.989	7.376
18	0	-1.245	-2.747	0.314809	3.906	2.474	5.655
18	1.700	-1.245	-2.747	-3.107	-2.341	0.100691	0.986188
19	0	1.260	-3.065	0.173732	4.569	-1.070	-1.676
19	1.700	1.260	-3.065	-3.248	-1.679	-3.683	-6.886
20	0	3.746	-1.400	1.209	4.245	-5.728	-9.688
20	1.700	3.746	-1.400	-2.213	-2.002	-6.582	-12.068
21	0	3.900	1.193	1.263	1.305	-6.355	-12.207
21	1.275	3.900	1.193	-1.303	-3.381	-6.380	-10.685
22	0	2.427	2.926	2.290	0.681961	-4.504	-9.398
22	1.275	2.427	2.926	-0.276626	-4.003	-3.220	-5.667
23	0	0.541953	3.246	2.534	1.054	-1.768	-4.089
23	1.275	0.541953	3.246	-0.032110	-3.632	-0.173117	0.049563
24	0	-1.058	2.662	2.297	1.457	0.722302	1.334
24	1.275	-1.058	2.662	-0.269237	-3.228	2.015	4.727
25	0	-2.192	1.779	1.875	1.645	2.633	5.615
25	1.275	-2.192	1.779	-0.691150	-3.040	3.388	7.883
26	0	-2.853	0.850462	1.338	1.621	3.933	8.403
26	1.275	-2.853	0.850462	-1.228	-3.064	4.003	9.487
27	0	-3.059	-0.095849	0.681162	1.377	4.644	9.670
27	1.275	-3.059	-0.095849	-1.885	-3.308	3.876	9.548
28	0	-2.816	-1.116	-0.139900	0.848655	4.811	9.408
28	1.275	-2.816	-1.116	-2.706	-3.837	2.996	7.986

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
29	0	-2.089	-2.161	-1.226	-0.065812	4.519	7.475
29	1.275	-2.089	-2.161	-3.792	-4.751	1.321	4.720
30	0	-0.747861	-2.348	-3.571	-0.953686	3.971	3.622
30	1.275	-0.747861	-2.348	-6.138	-5.639	-2.218	0.628116
31	0	-0.153141	-1.542	3.942	2.394	1.264	0.933536
31	1.275	-0.153141	-1.542	3.557	2.394	6.045	-1.033
32	0	-0.561070	-1.346	3.037	1.732	7.641	0.732406
32	1.275	-0.561070	-1.346	2.652	1.732	11.268	-0.983759
33	0	-1.090	-0.676661	1.611	1.025	12.172	0.236543
33	1.275	-1.090	-0.676661	1.226	1.025	13.981	-0.626165
34	0	-1.312	-0.059085	0.116263	0.643906	14.557	-0.167086
34	1.275	-1.312	-0.059085	-0.268772	0.643906	14.460	-0.242417
35	0	-1.209	0.515800	-1.499	0.477205	14.860	-0.519184
35	1.275	-1.209	0.515800	-1.884	0.477205	12.704	0.138434
36	0	-0.822947	1.084	-3.201	0.462578	13.047	-0.844679
36	1.275	-0.822947	1.084	-3.586	0.462578	8.721	0.537709
37	0	-0.207978	1.633	-4.998	0.605144	9.113	-1.125
37	1.275	-0.207978	1.633	-5.383	0.605144	2.496	0.957456
38	0	0.482245	2.020	-7.016	1.012	3.062	-1.254
38	1.275	0.482245	2.020	-7.401	1.012	-6.129	1.321
39	0	0.939085	1.853	-9.244	1.827	-5.368	-1.002
39	1.275	0.939085	1.853	-9.629	1.827	-17.399	1.360
40	0	0.981423	0.733977	-7.784	1.938	-17.294	-0.198991
40	1.275	0.981423	0.733977	-8.169	1.938	-27.464	0.736793
41	0	0.853295	-0.895121	8.832	-1.870	-27.787	0.956565
41	1.700	0.853295	-0.895121	8.319	-1.870	-13.209	-0.565080
42	0	0.606510	-1.903	9.126	-1.406	-13.184	1.709
42	1.700	0.606510	-1.903	8.613	-1.406	1.893	-1.527
43	0	-0.308872	-1.672	6.220	-0.559152	1.231	1.362
43	1.700	-0.308872	-1.672	5.707	-0.559152	11.369	-1.480
44	0	-1.204	-1.029	3.781	-0.228229	11.057	0.718580
44	1.700	-1.204	-1.029	3.268	-0.228229	17.049	-1.030
45	0	-1.683	-0.341525	1.427	-0.063296	16.927	0.091146
45	1.700	-1.683	-0.341525	0.913707	-0.063296	18.917	-0.489423
46	0	-1.683	0.341527	-0.913781	0.063296	18.917	-0.489425
46	1.700	-1.683	0.341527	-1.427	0.063296	16.927	0.091147

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
47	0	-1.204	1.029	-3.268	0.228229	17.049	-1.030
47	1.700	-1.204	1.029	-3.781	0.228229	11.057	0.718584
48	0	-0.308868	1.672	-5.707	0.559153	11.369	-1.480
48	1.700	-0.308868	1.672	-6.220	0.559153	1.231	1.362
49	0	0.606513	1.903	-8.613	1.406	1.893	-1.527
49	1.700	0.606513	1.903	-9.126	1.406	-13.184	1.709
50	0	0.853298	0.895120	-8.319	1.870	-13.209	-0.565077
50	1.700	0.853298	0.895120	-8.832	1.870	-27.787	0.956563
51	0	0.981425	-0.733980	8.169	-1.938	-27.464	0.736795
51	1.275	0.981425	-0.733980	7.784	-1.938	-17.294	-0.198991
52	0	0.939086	-1.853	9.629	-1.827	-17.399	1.360
52	1.275	0.939086	-1.853	9.244	-1.827	-5.368	-1.002
53	0	0.482245	-2.020	7.401	-1.012	-6.129	1.321
53	1.275	0.482245	-2.020	7.016	-1.012	3.062	-1.254
54	0	-0.207980	-1.633	5.383	-0.605141	2.496	0.957458
54	1.275	-0.207980	-1.633	4.998	-0.605141	9.113	-1.125
55	0	-0.822950	-1.084	3.586	-0.462577	8.721	0.537709
55	1.275	-0.822950	-1.084	3.201	-0.462577	13.047	-0.844680
56	0	-1.209	-0.515801	1.884	-0.477204	12.704	0.138435
56	1.275	-1.209	-0.515801	1.499	-0.477204	14.860	-0.519186
57	0	-1.312	0.059085	0.268657	-0.643906	14.460	-0.242417
57	1.275	-1.312	0.059085	-0.116378	-0.643906	14.557	-0.167087
58	0	-1.090	0.676660	-1.226	-1.025	13.981	-0.626166
58	1.275	-1.090	0.676660	-1.611	-1.025	12.173	0.236543
59	0	-0.561072	1.346	-2.652	-1.732	11.268	-0.983761
59	1.275	-0.561072	1.346	-3.037	-1.732	7.641	0.732408
60	0	-0.153141	1.542	-3.557	-2.394	6.045	-1.033
60	1.275	-0.153141	1.542	-3.942	-2.394	1.264	0.933539
61	0	-1.05E-05	-1.610	2.894	-0.001127	1.909	1.008
61	1.275	-1.05E-05	-1.610	2.509	-0.001127	5.353	-1.045
62	0	-5.75E-05	-1.627	3.107	-0.001275	7.465	0.953781
62	1.275	-5.75E-05	-1.627	2.722	-0.001275	11.181	-1.121
63	0	-0.000146	-0.875602	1.843	-0.001281	12.421	0.373919
63	1.275	-0.000146	-0.875602	1.458	-0.001281	14.526	-0.742428
64	0	-0.000221	-0.071121	0.186317	-0.001273	15.244	-0.170449
64	1.275	-0.000221	-0.071121	-0.198718	-0.001273	15.236	-0.261125

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
65	0	-0.000129	0.671048	-1.558	-0.001261	15.718	-0.629440
65	1.275	-0.000129	0.671048	-1.943	-0.001261	13.486	0.226112
66	0	0.000519	1.390	-3.368	-0.001237	13.892	-1.040
66	1.275	0.000519	1.390	-3.753	-0.001237	9.352	0.731860
67	0	0.002572	2.051	-5.219	-0.001210	9.805	-1.375
67	1.275	0.002572	2.051	-5.604	-0.001210	2.906	1.239
68	0	0.008028	2.433	-6.996	-0.001236	3.566	-1.497
68	1.275	0.008028	2.433	-7.381	-0.001236	-5.599	1.604
69	0	0.022654	2.109	-9.317	-0.001404	-4.216	-1.170
69	1.275	0.022654	2.109	-9.702	-0.001404	-16.341	1.519
70	0	0.063205	0.855710	-20.580	-0.001983	-12.798	-0.290640
70	1.275	0.063205	0.855710	-20.965	-0.001983	-39.282	0.800347
71	0	-0.135378	-1.068	19.832	0.000526	-40.944	1.046
71	1.700	-0.135378	-1.068	19.319	0.000526	-7.666	-0.768999
72	0	-0.091516	-2.351	8.789	0.000255	-11.803	2.092
72	1.700	-0.091516	-2.351	8.275	0.000255	2.701	-1.905
73	0	-0.081290	-2.159	6.498	0.000162	1.685	1.799
73	1.700	-0.081290	-2.159	5.985	0.000162	12.295	-1.872
74	0	-0.078646	-1.352	4.001	5.69E-05	11.888	1.002
74	1.700	-0.078646	-1.352	3.488	5.69E-05	18.254	-1.296
75	0	-0.078085	-0.449606	1.499	9.35E-06	18.092	0.180349
75	1.700	-0.078085	-0.449606	0.985293	9.35E-06	20.204	-0.583950
76	0	-0.078085	0.449609	-0.985251	-9.29E-06	20.204	-0.583953
76	1.700	-0.078085	0.449609	-1.499	-9.29E-06	18.093	0.180352
77	0	-0.078646	1.352	-3.488	-5.68E-05	18.254	-1.296
77	1.700	-0.078646	1.352	-4.001	-5.68E-05	11.888	1.002
78	0	-0.081290	2.159	-5.985	-0.000162	12.295	-1.872
78	1.700	-0.081290	2.159	-6.498	-0.000162	1.685	1.799
79	0	-0.091516	2.351	-8.275	-0.000255	2.701	-1.905
79	1.700	-0.091516	2.351	-8.789	-0.000255	-11.804	2.092
80	0	-0.135378	1.068	-19.319	-0.000526	-7.667	-0.768995
80	1.700	-0.135378	1.068	-19.832	-0.000526	-40.944	1.046
81	0	0.063204	-0.855713	20.965	0.001983	-39.282	0.800349
81	1.275	0.063204	-0.855713	20.580	0.001983	-12.798	-0.290641
82	0	0.022654	-2.109	9.702	0.001404	-16.341	1.519
82	1.275	0.022654	-2.109	9.317	0.001404	-4.217	-1.170

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
83	0	0.008028	-2.433	7.381	0.001236	-5.599	1.604
83	1.275	0.008028	-2.433	6.996	0.001236	3.566	-1.497
84	0	0.002572	-2.051	5.604	0.001210	2.906	1.239
84	1.275	0.002572	-2.051	5.219	0.001210	9.805	-1.375
85	0	0.000519	-1.390	3.753	0.001237	9.353	0.731861
85	1.275	0.000519	-1.390	3.368	0.001237	13.892	-1.040
86	0	-0.000129	-0.671048	1.943	0.001261	13.486	0.226113
86	1.275	-0.000129	-0.671048	1.558	0.001261	15.718	-0.629441
87	0	-0.000221	0.071120	0.198573	0.001273	15.236	-0.261125
87	1.275	-0.000221	0.071120	-0.186462	0.001273	15.244	-0.170450
88	0	-0.000146	0.875602	-1.458	0.001281	14.526	-0.742430
88	1.275	-0.000146	0.875602	-1.843	0.001281	12.421	0.373919
89	0	-5.76E-05	1.627	-2.722	0.001275	11.181	-1.121
89	1.275	-5.76E-05	1.627	-3.107	0.001275	7.465	0.953782
90	0	-1.05E-05	1.610	-2.508	0.001127	5.353	-1.045
90	1.275	-1.05E-05	1.610	-2.894	0.001127	1.909	1.008
91	0	0.153201	-1.542	3.942	-2.395	1.264	0.933567
91	1.275	0.153201	-1.542	3.557	-2.395	6.045	-1.033
92	0	0.561062	-1.346	3.037	-1.734	7.641	0.732499
92	1.275	0.561062	-1.346	2.652	-1.734	11.268	-0.983879
93	0	1.090	-0.676871	1.611	-1.027	12.173	0.236636
93	1.275	1.090	-0.676871	1.226	-1.027	13.981	-0.626340
94	0	1.312	-0.059250	0.116188	-0.645807	14.557	-0.167058
94	1.275	1.312	-0.059250	-0.268847	-0.645807	14.460	-0.242599
95	0	1.209	0.515980	-1.499	-0.479094	14.860	-0.519403
95	1.275	1.209	0.515980	-1.884	-0.479094	12.704	0.138445
96	0	0.822849	1.085	-3.201	-0.464425	13.047	-0.845527
96	1.275	0.822849	1.085	-3.586	-0.464425	8.721	0.538425
97	0	0.208882	1.637	-4.998	-0.606902	9.114	-1.127
97	1.275	0.208882	1.637	-5.383	-0.606902	2.496	0.959917
98	0	-0.479134	2.029	-7.016	-1.013	3.062	-1.259
98	1.275	-0.479134	2.029	-7.401	-1.013	-6.129	1.327
99	0	-0.934057	1.875	-9.244	-1.828	-5.368	-1.014
99	1.275	-0.934057	1.875	-9.629	-1.828	-17.400	1.377
100	0	-0.987014	0.787084	-7.782	-1.939	-17.294	-0.221222
100	1.275	-0.987014	0.787084	-8.168	-1.939	-27.462	0.782271

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
101	0	-1.004	-0.854699	8.830	1.869	-27.784	0.913398
101	1.700	-1.004	-0.854699	8.317	1.869	-13.210	-0.539532
102	0	-0.764856	-1.891	9.125	1.406	-13.183	1.696
102	1.700	-0.764856	-1.891	8.612	1.406	1.893	-1.518
103	0	0.154004	-1.668	6.220	0.559287	1.231	1.359
103	1.700	0.154004	-1.668	5.707	0.559287	11.368	-1.477
104	0	1.051	-1.028	3.781	0.228270	11.057	0.717884
104	1.700	1.051	-1.028	3.268	0.228270	17.049	-1.029
105	0	1.530	-0.341409	1.427	0.063301	16.927	0.091173
105	1.700	1.530	-0.341409	0.913790	0.063301	18.917	-0.489200
106	0	1.530	0.341413	-0.913744	-0.063301	18.917	-0.489203
106	1.700	1.530	0.341413	-1.427	-0.063301	16.927	0.091175
107	0	1.051	1.028	-3.268	-0.228270	17.049	-1.029
107	1.700	1.051	1.028	-3.781	-0.228270	11.057	0.717886
108	0	0.154000	1.668	-5.707	-0.559287	11.368	-1.477
108	1.700	0.154000	1.668	-6.220	-0.559287	1.231	1.359
109	0	-0.764859	1.891	-8.612	-1.406	1.893	-1.518
109	1.700	-0.764859	1.891	-9.125	-1.406	-13.183	1.696
110	0	-1.004	0.854698	-8.317	-1.869	-13.210	-0.539529
110	1.700	-1.004	0.854698	-8.830	-1.869	-27.784	0.913396
111	0	-0.987016	-0.787087	8.168	1.939	-27.462	0.782272
111	1.275	-0.987016	-0.787087	7.782	1.939	-17.294	-0.221223
112	0	-0.934058	-1.875	9.629	1.828	-17.400	1.377
112	1.275	-0.934058	-1.875	9.244	1.828	-5.368	-1.014
113	0	-0.479134	-2.029	7.401	1.013	-6.129	1.327
113	1.275	-0.479134	-2.029	7.016	1.013	3.062	-1.259
114	0	0.208883	-1.637	5.383	0.606900	2.496	0.959919
114	1.275	0.208883	-1.637	4.998	0.606900	9.113	-1.127
115	0	0.822852	-1.085	3.586	0.464424	8.721	0.538426
115	1.275	0.822852	-1.085	3.201	0.464424	13.047	-0.845529
116	0	1.209	-0.515980	1.884	0.479093	12.704	0.138445
116	1.275	1.209	-0.515980	1.499	0.479093	14.860	-0.519404
117	0	1.312	0.059250	0.269011	0.645806	14.460	-0.242600
117	1.275	1.312	0.059250	-0.116024	0.645806	14.557	-0.167058
118	0	1.090	0.676872	-1.226	1.027	13.981	-0.626341
118	1.275	1.090	0.676872	-1.611	1.027	12.173	0.236637

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
119	0	0.561064	1.346	-2.652	1.734	11.268	-0.983880
119	1.275	0.561064	1.346	-3.037	1.734	7.641	0.732500
120	0	0.153202	1.542	-3.557	2.395	6.045	-1.033
120	1.275	0.153202	1.542	-3.943	2.395	1.264	0.933569
121	0	0.747956	2.348	6.140	-5.641	-2.219	0.628083
121	1.275	0.747956	2.348	3.573	-0.955322	3.972	3.622
122	0	2.089	2.161	3.794	-4.753	1.320	4.720
122	1.275	2.089	2.161	1.227	-0.067789	4.520	7.475
123	0	2.817	1.115	2.708	-3.839	2.995	7.986
123	1.275	2.817	1.115	0.141366	0.846606	4.812	9.408
124	0	3.059	0.095355	1.887	-3.310	3.875	9.548
124	1.275	3.059	0.095355	-0.679685	1.375	4.645	9.669
125	0	2.853	-0.850728	1.230	-3.066	4.002	9.485
125	1.275	2.853	-0.850728	-1.337	1.619	3.934	8.401
126	0	2.191	-1.778	0.692663	-3.042	3.387	7.881
126	1.275	2.191	-1.778	-1.874	1.643	2.634	5.614
127	0	1.055	-2.657	0.270852	-3.230	2.014	4.724
127	1.275	1.055	-2.657	-2.296	1.455	0.723344	1.336
128	0	-0.552944	-3.234	0.033964	-3.633	-0.173855	0.046759
128	1.275	-0.552944	-3.234	-2.533	1.052	-1.767	-4.076
129	0	-2.454	-2.909	0.278404	-4.005	-3.221	-5.665
129	1.275	-2.454	-2.909	-2.288	0.680575	-4.502	-9.374
130	0	-3.958	-1.182	1.304	-3.382	-6.380	-10.682
130	1.275	-3.958	-1.182	-1.262	1.303	-6.353	-12.189
131	0	-3.837	1.417	2.214	-2.003	-6.582	-12.091
131	1.700	-3.837	1.417	-1.208	4.244	-5.728	-9.682
132	0	-1.387	3.080	3.249	-1.679	-3.684	-6.907
132	1.700	-1.387	3.080	-0.173254	4.568	-1.070	-1.671
133	0	1.104	2.753	3.107	-2.341	0.100442	0.980421
133	1.700	1.104	2.753	-0.314574	3.906	2.474	5.660
134	0	2.795	1.705	2.603	-2.781	2.989	7.377
134	1.700	2.795	1.705	-0.819264	3.466	4.505	10.275
135	0	3.631	0.566180	2.016	-3.028	4.708	11.104
135	1.700	3.631	0.566180	-1.406	3.219	5.226	12.066
136	0	3.631	-0.566229	1.406	-3.219	5.226	12.066
136	1.700	3.631	-0.566229	-2.016	3.028	4.708	11.104

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
137	0	2.795	-1.705	0.819285	-3.466	4.505	10.275
137	1.700	2.795	-1.705	-2.603	2.781	2.989	7.377
138	0	1.104	-2.753	0.314569	-3.906	2.474	5.660
138	1.700	1.104	-2.753	-3.107	2.341	0.100424	0.980434
139	0	-1.387	-3.080	0.173250	-4.568	-1.070	-1.671
139	1.700	-1.387	-3.080	-3.249	1.679	-3.684	-6.907
140	0	-3.837	-1.417	1.208	-4.244	-5.728	-9.682
140	1.700	-3.837	-1.417	-2.214	2.003	-6.582	-12.091
141	0	-3.958	1.182	1.262	-1.303	-6.353	-12.189
141	1.275	-3.958	1.182	-1.304	3.382	-6.380	-10.682
142	0	-2.454	2.909	2.288	-0.680581	-4.502	-9.374
142	1.275	-2.454	2.909	-0.278372	4.005	-3.221	-5.665
143	0	-0.552944	3.234	2.532	-1.052	-1.767	-4.076
143	1.275	-0.552944	3.234	-0.033984	3.633	-0.173869	0.046728
144	0	1.055	2.657	2.296	-1.455	0.723339	1.336
144	1.275	1.055	2.657	-0.270843	3.230	2.014	4.724
145	0	2.191	1.778	1.874	-1.643	2.634	5.614
145	1.275	2.191	1.778	-0.692669	3.042	3.387	7.881
146	0	2.853	0.850694	1.337	-1.619	3.934	8.401
146	1.275	2.853	0.850694	-1.230	3.066	4.002	9.485
147	0	3.059	-0.095342	0.679694	-1.375	4.645	9.669
147	1.275	3.059	-0.095342	-1.887	3.310	3.875	9.548
148	0	2.817	-1.115	-0.141361	-0.846609	4.812	9.408
148	1.275	2.817	-1.115	-2.708	3.839	2.995	7.986
149	0	2.089	-2.161	-1.227	0.067789	4.520	7.475
149	1.275	2.089	-2.161	-3.794	4.753	1.320	4.720
150	0	0.747958	-2.348	-3.573	0.955324	3.972	3.622
150	1.275	0.747958	-2.348	-6.140	5.641	-2.219	0.628039
151	0	2.347	0.749687	5.388	-2.218	-5.639	-0.628077
151	1.250	2.347	0.749687	5.388	-2.218	1.096	0.308995
152	0	-0.187431	1.341	-0.220853	-2.651	-3.798	-1.098
152	1.250	-0.187431	1.341	-0.220853	-2.651	-4.074	0.578363
153	0	-1.045	0.727216	-1.481	-1.523	-3.771	-0.510963
153	1.250	-1.045	0.727216	-1.481	-1.523	-5.622	0.398020
154	0	-1.020	0.242786	-1.746	-0.934524	-4.157	-0.139932
154	1.250	-1.020	0.242786	-1.746	-0.934524	-6.339	0.163538

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
155	0	-0.946264	-0.206181	-1.910	-0.640671	-4.441	0.183513
155	1.250	-0.946264	-0.206181	-1.910	-0.640671	-6.828	-0.074203
156	0	-0.928957	-0.661166	-2.029	-0.545048	-4.662	0.519318
156	1.250	-0.928957	-0.661166	-2.029	-0.545048	-7.198	-0.307106
157	0	-0.882590	-1.134	-2.145	-0.618074	-4.874	0.886996
157	1.250	-0.882590	-1.134	-2.145	-0.618074	-7.554	-0.529893
158	0	-0.583666	-1.600	-2.329	-0.895370	-5.089	1.284
158	1.250	-0.583666	-1.600	-2.329	-0.895370	-8.001	-0.715985
159	0	0.319191	-1.885	-2.811	-1.452	-5.057	1.578
159	1.250	0.319191	-1.885	-2.811	-1.452	-8.571	-0.778322
160	0	1.733	-1.474	-3.593	-1.877	-4.063	1.287
160	1.250	1.733	-1.474	-3.593	-1.877	-8.555	-0.554402
161	0	2.594	0.154208	-3.477	-0.226929	-3.307	-0.138628
161	1.250	2.594	0.154208	-3.477	-0.226929	-7.653	0.054124
162	0	1.665	2.486	-4.457	2.044	-5.924	-2.802
162	1.250	1.665	2.486	-4.457	2.044	-11.495	0.305378
163	0	-0.318189	2.505	-3.281	1.171	-6.910	-2.662
163	1.250	-0.318189	2.505	-3.281	1.171	-11.011	0.469125
164	0	-1.043	1.695	-2.918	0.515047	-6.687	-1.721
164	1.250	-1.043	1.695	-2.918	0.515047	-10.335	0.397937
165	0	-1.137	0.836306	-2.835	0.202405	-6.495	-0.829982
165	1.250	-1.137	0.836306	-2.835	0.202405	-10.038	0.215358
166	0	-1.133	-1.53E-06	-2.813	-2.99E-07	-6.439	1.44E-06
166	1.250	-1.133	-1.53E-06	-2.813	-2.99E-07	-9.955	-4.76E-07
167	0	-1.137	-0.836308	-2.835	-0.202407	-6.494	0.829985
167	1.250	-1.137	-0.836308	-2.835	-0.202407	-10.038	-0.215359
168	0	-1.043	-1.695	-2.918	-0.515047	-6.687	1.721
168	1.250	-1.043	-1.695	-2.918	-0.515047	-10.335	-0.397939
169	0	-0.318185	-2.505	-3.281	-1.171	-6.910	2.662
169	1.250	-0.318185	-2.505	-3.281	-1.171	-11.011	-0.469125
170	0	1.665	-2.486	-4.457	-2.044	-5.924	2.802
170	1.250	1.665	-2.486	-4.457	-2.044	-11.495	-0.305378
171	0	2.594	-0.154204	-3.477	0.226922	-3.307	0.138625
171	1.250	2.594	-0.154204	-3.477	0.226922	-7.653	-0.054122
172	0	1.733	1.474	-3.593	1.877	-4.063	-1.287
172	1.250	1.733	1.474	-3.593	1.877	-8.555	0.554403

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
173	0	0.319189	1.885	-2.811	1.452	-5.057	-1.578
173	1.250	0.319189	1.885	-2.811	1.452	-8.571	0.778323
174	0	-0.583667	1.600	-2.330	0.895368	-5.089	-1.284
174	1.250	-0.583667	1.600	-2.330	0.895368	-8.001	0.715986
175	0	-0.882590	1.134	-2.145	0.618073	-4.874	-0.886998
175	1.250	-0.882590	1.134	-2.145	0.618073	-7.554	0.529894
176	0	-0.928959	0.661168	-2.029	0.545047	-4.662	-0.519319
176	1.250	-0.928959	0.661168	-2.029	0.545047	-7.198	0.307107
177	0	-0.946266	0.206182	-1.910	0.640670	-4.442	-0.183514
177	1.250	-0.946266	0.206182	-1.910	0.640670	-6.828	0.074203
178	0	-1.020	-0.242786	-1.746	0.934522	-4.157	0.139932
178	1.250	-1.020	-0.242786	-1.746	0.934522	-6.339	-0.163538
179	0	-1.045	-0.727217	-1.481	1.523	-3.771	0.510964
179	1.250	-1.045	-0.727217	-1.481	1.523	-5.622	-0.398021
180	0	-0.187432	-1.341	-0.220872	2.651	-3.798	1.098
180	1.250	-0.187432	-1.341	-0.220872	2.651	-4.074	-0.578364
181	0	2.347	-0.749689	5.388	2.218	-5.639	0.628078
181	1.250	2.347	-0.749689	5.388	2.218	1.096	-0.308996
182	0	0.805125	0.902828	1.446	-0.954032	-1.297	-0.624540
182	1.250	0.805125	0.902828	1.446	-0.954032	0.509888	0.503950
183	0	0.008725	1.749	0.299115	-1.055	-3.412	-1.187
183	1.250	0.008725	1.749	0.299115	-1.055	-3.038	0.999358
184	0	-0.375774	1.256	-0.439311	-0.619125	-4.916	-0.822283
184	1.250	-0.375774	1.256	-0.439311	-0.619125	-5.465	0.747472
185	0	-0.402177	0.465202	-0.635980	-0.358095	-5.958	-0.295541
185	1.250	-0.402177	0.465202	-0.635980	-0.358095	-6.752	0.285939
186	0	-0.371381	-0.309420	-0.679832	-0.240291	-6.662	0.202564
186	1.250	-0.371381	-0.309420	-0.679832	-0.240291	-7.511	-0.184195
187	0	-0.360491	-1.047	-0.712242	-0.202154	-7.184	0.676005
187	1.250	-0.360491	-1.047	-0.712242	-0.202154	-8.074	-0.632823
188	0	-0.333796	-1.749	-0.732768	-0.225331	-7.697	1.132
188	1.250	-0.333796	-1.749	-0.732768	-0.225331	-8.613	-1.053
189	0	-0.196967	-2.290	-0.696136	-0.329421	-8.407	1.496
189	1.250	-0.196967	-2.290	-0.696136	-0.329421	-9.278	-1.367
190	0	0.152025	-2.342	-0.967853	-0.690730	-9.386	1.545
190	1.250	0.152025	-2.342	-0.967853	-0.690730	-10.596	-1.382

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
191	0	0.614428	-1.516	-5.438	-1.771	-8.666	1.004
191	1.250	0.614428	-1.516	-5.438	-1.771	-15.464	-0.890472
192	0	0.964422	0.282335	-20.478	-0.550054	-3.845	-0.165649
192	1.250	0.964422	0.282335	-20.478	-0.550054	-29.442	0.187256
193	0	0.656543	2.733	-5.265	2.069	-11.959	-1.968
193	1.250	0.656543	2.733	-5.265	2.069	-18.540	1.448
194	0	-0.086653	3.420	-0.888556	0.507715	-11.858	-2.420
194	1.250	-0.086653	3.420	-0.888556	0.507715	-12.969	1.855
195	0	-0.399824	2.590	-0.991654	0.203467	-10.665	-1.800
195	1.250	-0.399824	2.590	-0.991654	0.203467	-11.905	1.437
196	0	-0.450282	1.315	-0.994652	0.080651	-10.203	-0.905748
196	1.250	-0.450282	1.315	-0.994652	0.080651	-11.446	0.738347
197	0	-0.449549	-2.38E-06	-0.985419	-7.18E-08	-10.081	1.62E-06
197	1.250	-0.449549	-2.38E-06	-0.985419	-7.18E-08	-11.313	-1.35E-06
198	0	-0.450282	-1.315	-0.994347	-0.080649	-10.203	0.905751
198	1.250	-0.450282	-1.315	-0.994347	-0.080649	-11.446	-0.738350
199	0	-0.399824	-2.590	-0.991654	-0.203467	-10.665	1.800
199	1.250	-0.399824	-2.590	-0.991654	-0.203467	-11.905	-1.437
200	0	-0.086653	-3.420	-0.888548	-0.507715	-11.858	2.420
200	1.250	-0.086653	-3.420	-0.888548	-0.507715	-12.969	-1.855
201	0	0.656544	-2.733	-5.265	-2.069	-11.959	1.968
201	1.250	0.656544	-2.733	-5.265	-2.069	-18.540	-1.448
202	0	0.964423	-0.282332	-20.478	0.550049	-3.845	0.165647
202	1.250	0.964423	-0.282332	-20.478	0.550049	-29.442	-0.187254
203	0	0.614428	1.516	-5.438	1.771	-8.666	-1.004
203	1.250	0.614428	1.516	-5.438	1.771	-15.464	0.890474
204	0	0.152025	2.342	-0.967829	0.690728	-9.386	-1.545
204	1.250	0.152025	2.342	-0.967829	0.690728	-10.596	1.383
205	0	-0.196967	2.290	-0.696108	0.329419	-8.408	-1.496
205	1.250	-0.196967	2.290	-0.696108	0.329419	-9.278	1.367
206	0	-0.333796	1.749	-0.732731	0.225330	-7.697	-1.132
206	1.250	-0.333796	1.749	-0.732731	0.225330	-8.613	1.053
207	0	-0.360489	1.047	-0.712201	0.202154	-7.184	-0.676006
207	1.250	-0.360489	1.047	-0.712201	0.202154	-8.074	0.632824
208	0	-0.371381	0.309420	-0.679789	0.240291	-6.662	-0.202564
208	1.250	-0.371381	0.309420	-0.679789	0.240291	-7.511	0.184196

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
209	0	-0.402177	-0.465203	-0.635939	0.358097	-5.958	0.295542
209	1.250	-0.402177	-0.465203	-0.635939	0.358097	-6.752	-0.285939
210	0	-0.375775	-1.256	-0.439277	0.619125	-4.916	0.822285
210	1.250	-0.375775	-1.256	-0.439277	0.619125	-5.465	-0.747473
211	0	0.008724	-1.749	0.299101	1.055	-3.412	1.187
211	1.250	0.008724	-1.749	0.299101	1.055	-3.038	-0.999361
212	0	0.805127	-0.902830	1.446	0.954034	-1.297	0.624542
212	1.250	0.805127	-0.902830	1.446	0.954034	0.509893	-0.503951
213	0	-0.805040	0.902838	-1.448	0.955362	0.511014	-0.503953
213	1.250	-0.805040	0.902838	-1.448	0.955362	-1.298	0.624550
214	0	-0.008528	1.749	-0.299414	1.057	-3.038	-0.999390
214	1.250	-0.008528	1.749	-0.299414	1.057	-3.412	1.187
215	0	0.376041	1.256	0.439268	0.620873	-5.465	-0.747542
215	1.250	0.376041	1.256	0.439268	0.620873	-4.916	0.822322
216	0	0.402307	0.465278	0.635954	0.359835	-6.752	-0.286042
216	1.250	0.402307	0.465278	0.635954	0.359835	-5.958	0.295532
217	0	0.370784	-0.309512	0.679878	0.242022	-7.512	0.184120
217	1.250	0.370784	-0.309512	0.679878	0.242022	-6.662	-0.202754
218	0	0.357981	-1.048	0.712299	0.203863	-8.074	0.632993
218	1.250	0.357981	-1.048	0.712299	0.203863	-7.184	-0.676646
219	0	0.327550	-1.751	0.732803	0.226991	-8.613	1.054
219	1.250	0.327550	-1.751	0.732803	0.226991	-7.697	-1.134
220	0	0.184921	-2.296	0.696164	0.331023	-9.278	1.370
220	1.250	0.184921	-2.296	0.696164	0.331023	-8.407	-1.499
221	0	-0.171421	-2.356	0.968146	0.692347	-10.596	1.392
221	1.250	-0.171421	-2.356	0.968146	0.692347	-9.386	-1.553
222	0	-0.639167	-1.556	5.439	1.772	-15.463	0.918945
222	1.250	-0.639167	-1.556	5.439	1.772	-8.665	-1.027
223	0	-0.957093	0.104108	20.474	0.551370	-29.435	-0.052665
223	1.250	-0.957093	0.104108	20.474	0.551370	-3.844	0.077465
224	0	-0.627023	2.689	5.266	-2.069	-18.539	-1.413
224	1.250	-0.627023	2.689	5.266	-2.069	-11.957	1.948
225	0	0.104986	3.410	0.889010	-0.508026	-12.969	-1.848
225	1.250	0.104986	3.410	0.889010	-0.508026	-11.857	2.414
226	0	0.407580	2.588	0.991801	-0.203612	-11.905	-1.436
226	1.250	0.407580	2.588	0.991801	-0.203612	-10.665	1.798

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
227	0	0.452139	1.315	0.994498	-0.080678	-11.446	-0.738387
227	1.250	0.452139	1.315	0.994498	-0.080678	-10.203	0.905006
228	0	0.449668	-2.38E-06	0.985443	1.50E-08	-11.313	1.35E-06
228	1.250	0.449668	-2.38E-06	0.985443	1.50E-08	-10.081	-1.62E-06
229	0	0.452135	-1.315	0.994499	0.080676	-11.446	0.738389
229	1.250	0.452135	-1.315	0.994499	0.080676	-10.203	-0.905009
230	0	0.407580	-2.588	0.991802	0.203612	-11.905	1.436
230	1.250	0.407580	-2.588	0.991802	0.203612	-10.665	-1.798
231	0	0.104986	-3.410	0.888859	0.508026	-12.968	1.848
231	1.250	0.104986	-3.410	0.888859	0.508026	-11.857	-2.414
232	0	-0.627023	-2.689	5.266	2.069	-18.539	1.413
232	1.250	-0.627023	-2.689	5.266	2.069	-11.957	-1.948
233	0	-0.957094	-0.104104	20.474	-0.551366	-29.435	0.052663
233	1.250	-0.957094	-0.104104	20.474	-0.551366	-3.844	-0.077462
234	0	-0.639167	1.556	5.439	-1.772	-15.463	-0.918947
234	1.250	-0.639167	1.556	5.439	-1.772	-8.665	1.027
235	0	-0.171420	2.356	0.968130	-0.692346	-10.596	-1.392
235	1.250	-0.171420	2.356	0.968130	-0.692346	-9.386	1.553
236	0	0.184921	2.296	0.696257	-0.331021	-9.278	-1.370
236	1.250	0.184921	2.296	0.696257	-0.331021	-8.407	1.499
237	0	0.327550	1.751	0.732773	-0.226990	-8.613	-1.054
237	1.250	0.327550	1.751	0.732773	-0.226990	-7.697	1.134
238	0	0.357981	1.048	0.712261	-0.203863	-8.074	-0.632994
238	1.250	0.357981	1.048	0.712261	-0.203863	-7.184	0.676647
239	0	0.370784	0.309512	0.679724	-0.242023	-7.511	-0.184120
239	1.250	0.370784	0.309512	0.679724	-0.242023	-6.662	0.202754
240	0	0.402307	-0.465279	0.636028	-0.359835	-6.753	0.286043
240	1.250	0.402307	-0.465279	0.636028	-0.359835	-5.958	-0.295533
241	0	0.376041	-1.256	0.439235	-0.620872	-5.465	0.747544
241	1.250	0.376041	-1.256	0.439235	-0.620872	-4.916	-0.822324
242	0	-0.008528	-1.749	-0.299399	-1.057	-3.038	0.999393
242	1.250	-0.008528	-1.749	-0.299399	-1.057	-3.412	-1.187
243	0	-0.805041	-0.902841	-1.448	-0.955364	0.511020	0.503954
243	1.250	-0.805041	-0.902841	-1.448	-0.955364	-1.298	-0.624551
244	0	-2.347	0.749637	-5.390	2.219	1.097	-0.309015
244	1.250	-2.347	0.749637	-5.390	2.219	-5.641	0.627994

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
245	0	0.187528	1.341	0.220657	2.653	-4.074	-0.578485
245	1.250	0.187528	1.341	0.220657	2.653	-3.798	1.098
246	0	1.045	0.727396	1.481	1.525	-5.622	-0.398194
246	1.250	1.045	0.727396	1.481	1.525	-3.771	0.511014
247	0	1.020	0.242991	1.746	0.936433	-6.339	-0.163752
247	1.250	1.020	0.242991	1.746	0.936433	-4.157	0.139975
248	0	0.946016	-0.206188	1.910	0.642588	-6.828	0.074048
248	1.250	0.946016	-0.206188	1.910	0.642588	-4.441	-0.183676
249	0	0.927497	-0.662032	2.029	0.546955	-7.198	0.307324
249	1.250	0.927497	-0.662032	2.029	0.546955	-4.662	-0.520182
250	0	0.878759	-1.137	2.145	0.619943	-7.554	0.531214
250	1.250	0.878759	-1.137	2.145	0.619943	-4.873	-0.889493
251	0	0.576996	-1.608	2.330	0.897155	-8.001	0.719948
251	1.250	0.576996	-1.608	2.330	0.897155	-5.089	-1.289
252	0	-0.324916	-1.901	2.811	1.454	-8.571	0.787903
252	1.250	-0.324916	-1.901	2.811	1.454	-5.057	-1.589
253	0	-1.727	-1.504	3.592	1.878	-8.553	0.571549
253	1.250	-1.727	-1.504	3.592	1.878	-4.063	-1.308
254	0	-2.599	0.121119	3.476	0.229207	-7.652	-0.053666
254	1.250	-2.599	0.121119	3.476	0.229207	-3.307	0.097727
255	0	-1.663	2.450	4.457	-2.043	-11.495	-0.287524
255	1.250	-1.663	2.450	4.457	-2.043	-5.923	2.775
256	0	0.327699	2.491	3.281	-1.171	-11.011	-0.462946
256	1.250	0.327699	2.491	3.281	-1.171	-6.910	2.651
257	0	1.048	1.691	2.917	-0.515018	-10.334	-0.396754
257	1.250	1.048	1.691	2.917	-0.515018	-6.688	1.717
258	0	1.138	0.835548	2.835	-0.202393	-10.038	-0.215351
258	1.250	1.138	0.835548	2.835	-0.202393	-6.494	0.829042
259	0	1.132	-1.53E-06	2.812	2.46E-07	-9.954	4.82E-07
259	1.250	1.132	-1.53E-06	2.812	2.46E-07	-6.439	-1.43E-06
260	0	1.138	-0.835551	2.835	0.202393	-10.038	0.215352
260	1.250	1.138	-0.835551	2.835	0.202393	-6.495	-0.829045
261	0	1.048	-1.691	2.917	0.515018	-10.334	0.396756
261	1.250	1.048	-1.691	2.917	0.515018	-6.688	-1.717
262	0	0.327694	-2.491	3.281	1.171	-11.011	0.462948
262	1.250	0.327694	-2.491	3.281	1.171	-6.910	-2.651

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
263	0	-1.663	-2.450	4.457	2.043	-11.494	0.287524
263	1.250	-1.663	-2.450	4.457	2.043	-5.923	-2.775
264	0	-2.599	-0.121116	3.476	-0.229201	-7.652	0.053665
264	1.250	-2.599	-0.121116	3.476	-0.229201	-3.307	-0.097724
265	0	-1.727	1.504	3.592	-1.878	-8.553	-0.571550
265	1.250	-1.727	1.504	3.592	-1.878	-4.063	1.308
266	0	-0.324915	1.901	2.811	-1.454	-8.571	-0.787904
266	1.250	-0.324915	1.901	2.811	-1.454	-5.057	1.589
267	0	0.576998	1.608	2.330	-0.897152	-8.001	-0.719949
267	1.250	0.576998	1.608	2.330	-0.897152	-5.089	1.289
268	0	0.878761	1.137	2.145	-0.619942	-7.554	-0.531215
268	1.250	0.878761	1.137	2.145	-0.619942	-4.873	0.889495
269	0	0.927499	0.662033	2.029	-0.546953	-7.199	-0.307325
269	1.250	0.927499	0.662033	2.029	-0.546953	-4.662	0.520183
270	0	0.946018	0.206188	1.910	-0.642586	-6.828	-0.074049
270	1.250	0.946018	0.206188	1.910	-0.642586	-4.441	0.183677
271	0	1.020	-0.242992	1.745	-0.936433	-6.339	0.163752
271	1.250	1.020	-0.242992	1.745	-0.936433	-4.157	-0.139975
272	0	1.045	-0.727397	1.481	-1.525	-5.622	0.398195
272	1.250	1.045	-0.727397	1.481	-1.525	-3.771	-0.511015
273	0	0.187530	-1.341	0.220640	-2.653	-4.074	0.578486
273	1.250	0.187530	-1.341	0.220640	-2.653	-3.798	-1.098
274	0	-2.347	-0.749639	-5.390	-2.219	1.097	0.309016
274	1.250	-2.347	-0.749639	-5.390	-2.219	-5.641	-0.627995
1601	0	-81.749	-0.001703	-0.376811	0.005430	1.381	0.010005
1601	11.000	-81.749	-0.001703	-0.376811	0.005430	-2.764	-0.008728
1602	0	-81.749	-0.001703	0.376810	-0.005430	-1.381	0.010004
1602	11.000	-81.749	-0.001703	0.376810	-0.005430	2.764	-0.008727

CARGAS: '' Ejec. "0001"

Hipótesis	Factor	Etapa	Título
21	1.0000		Retraccion

DESPLAZAMIENTOS:

NUDOS	DX [mm]	DY [mm]	DZ [mm]	RX [rad]	RY [rad]	RZ [rad]
1	5.093	0.000271	3.70E-18	9.91E-07	-1.29E-05	-4.13E-07
2	5.094	0.000175	0.001225	8.08E-07	-1.26E-05	-4.93E-07
3	5.094	-5.83E-05	0.001775	1.23E-09	-1.24E-05	-1.11E-07
4	5.094	-0.000265	0.001232	-8.11E-07	-1.25E-05	2.50E-07
5	5.094	-0.000294	3.70E-18	-1.00E-06	-1.27E-05	1.21E-07
6	4.788	-0.000184	0.016354	6.42E-07	-1.24E-05	-2.92E-07
7	4.788	-0.000220	0.017077	4.90E-07	-1.22E-05	-2.76E-07
8	4.788	-0.000219	0.017388	-1.66E-08	-1.20E-05	-1.10E-07
9	4.788	-0.000212	0.017026	-5.34E-07	-1.22E-05	4.00E-08
10	4.788	-0.000237	0.016241	-6.84E-07	-1.24E-05	1.22E-08
11	4.482	-0.000462	0.031463	4.06E-07	-1.11E-05	-1.60E-07
12	4.482	-0.000441	0.031908	2.96E-07	-1.10E-05	-1.57E-07
13	4.483	-0.000382	0.032088	-1.23E-08	-1.09E-05	-1.04E-07
14	4.483	-0.000324	0.031875	-3.18E-07	-1.10E-05	-6.07E-08
15	4.483	-0.000306	0.031406	-4.23E-07	-1.11E-05	-8.22E-08
16	4.177	-0.000614	0.044434	2.90E-07	-9.10E-06	-8.95E-08
17	4.177	-0.000584	0.044753	2.12E-07	-9.05E-06	-9.83E-08
18	4.177	-0.000530	0.044889	4.74E-09	-9.03E-06	-8.81E-08
19	4.177	-0.000477	0.044768	-1.95E-07	-9.08E-06	-8.41E-08
20	4.177	-0.000449	0.044474	-2.70E-07	-9.14E-06	-1.15E-07
21	3.871	-0.000705	0.054370	2.51E-07	-6.35E-06	-5.81E-08
22	3.871	-0.000686	0.054649	1.88E-07	-6.35E-06	-6.15E-08
23	3.871	-0.000652	0.054780	1.92E-08	-6.35E-06	-6.38E-08
24	3.871	-0.000617	0.054700	-1.45E-07	-6.37E-06	-7.27E-08
25	3.871	-0.000597	0.054477	-2.08E-07	-6.38E-06	-1.02E-07
26	3.565	-0.000767	0.060308	2.76E-07	-2.84E-06	-3.88E-08
27	3.565	-0.000757	0.060615	2.08E-07	-2.88E-06	-3.04E-08
28	3.565	-0.000738	0.060763	2.61E-08	-2.90E-06	-3.20E-08
29	3.565	-0.000719	0.060683	-1.54E-07	-2.88E-06	-4.23E-08
30	3.566	-0.000708	0.060444	-2.23E-07	-2.85E-06	-6.64E-08
31	3.260	-0.000803	0.061250	3.74E-07	1.46E-06	-1.70E-08
32	3.260	-0.000792	0.061666	2.82E-07	1.37E-06	5.67E-09
33	3.260	-0.000777	0.061858	2.70E-08	1.32E-06	9.46E-09
34	3.260	-0.000768	0.061734	-2.27E-07	1.37E-06	9.02E-11
35	3.260	-0.000766	0.061387	-3.20E-07	1.47E-06	-2.32E-08
36	2.954	-0.000802	0.056160	5.70E-07	6.59E-06	1.92E-08
37	2.954	-0.000775	0.056811	4.51E-07	6.39E-06	5.60E-08
38	2.954	-0.000751	0.057103	2.43E-08	6.27E-06	6.27E-08
39	2.954	-0.000748	0.056872	-4.01E-07	6.40E-06	5.37E-08
40	2.954	-0.000762	0.056283	-5.20E-07	6.60E-06	2.56E-08
41	2.649	-0.000728	0.043937	8.46E-07	1.26E-05	9.83E-08
42	2.648	-0.000674	0.045018	8.27E-07	1.23E-05	1.27E-07
43	2.648	-0.000633	0.045634	2.05E-08	1.18E-05	1.23E-07
44	2.648	-0.000634	0.045069	-7.86E-07	1.23E-05	1.18E-07
45	2.648	-0.000679	0.044040	-8.04E-07	1.26E-05	9.92E-08
46	2.343	-0.000504	0.023700	9.00E-07	1.90E-05	2.52E-07

DESPLAZAMIENTOS:

NUDOS	DX [mm]	DY [mm]	DZ [mm]	RX [rad]	RY [rad]	RZ [rad]
47	2.343	-0.000452	0.025110	1.35E-06	1.91E-05	2.15E-07
48	2.343	-0.000404	0.026673	1.85E-08	1.82E-05	1.73E-07
49	2.342	-0.000399	0.025155	-1.31E-06	1.91E-05	1.65E-07
50	2.342	-0.000464	0.023789	-8.64E-07	1.89E-05	2.25E-07
51	2.038	-9.00E-05	-0.003557	2.52E-07	2.36E-05	4.10E-07
52	2.037	-9.02E-05	-0.003262	1.92E-07	2.47E-05	3.26E-07
53	2.037	-9.82E-05	-0.003179	1.93E-08	3.06E-05	1.78E-07
54	2.037	-0.000105	-0.003213	-1.52E-07	2.47E-05	9.24E-08
55	2.037	-9.56E-05	-0.003456	-2.10E-07	2.36E-05	3.57E-07
56	1.630	0.000477	-0.042162	-6.72E-07	2.12E-05	2.56E-07
57	1.630	0.000432	-0.043222	-9.85E-07	2.12E-05	2.19E-07
58	1.630	0.000391	-0.044277	2.00E-08	2.03E-05	1.75E-07
59	1.629	0.000384	-0.043171	1.03E-06	2.12E-05	1.71E-07
60	1.629	0.000427	-0.042061	7.11E-07	2.12E-05	2.36E-07
61	1.223	0.000806	-0.073930	-4.66E-07	1.59E-05	1.29E-07
62	1.222	0.000774	-0.074485	-3.92E-07	1.57E-05	1.47E-07
63	1.222	0.000747	-0.074719	1.65E-08	1.55E-05	1.45E-07
64	1.222	0.000744	-0.074444	4.23E-07	1.57E-05	1.43E-07
65	1.222	0.000762	-0.073852	4.97E-07	1.59E-05	1.39E-07
66	0.815006	0.000983	-0.096426	-2.30E-07	1.05E-05	7.82E-08
67	0.814898	0.000975	-0.096677	-1.66E-07	1.04E-05	9.07E-08
68	0.814782	0.000966	-0.096770	1.31E-08	1.04E-05	9.52E-08
69	0.814666	0.000962	-0.096644	1.91E-07	1.04E-05	9.42E-08
70	0.814552	0.000963	-0.096363	2.55E-07	1.05E-05	8.97E-08
71	0.407502	0.001087	-0.109860	-1.22E-07	5.25E-06	4.02E-08
72	0.407449	0.001086	-0.109992	-8.52E-08	5.22E-06	4.40E-08
73	0.407392	0.001084	-0.110038	1.19E-08	5.21E-06	4.64E-08
74	0.407333	0.001083	-0.109962	1.09E-07	5.22E-06	4.67E-08
75	0.407276	0.001082	-0.109801	1.46E-07	5.25E-06	4.57E-08
76	1.42E-07	0.001122	-0.114333	-9.19E-08	-6.47E-12	-3.99E-13
77	1.43E-07	0.001123	-0.114431	-6.32E-08	-6.46E-12	-1.81E-13
78	1.43E-07	0.001123	-0.114464	1.17E-08	-6.38E-12	-7.12E-14
79	1.43E-07	0.001122	-0.114402	8.67E-08	-6.30E-12	3.89E-14
80	1.43E-07	0.001122	-0.114274	1.16E-07	-6.32E-12	2.57E-13
81	-0.407502	0.001087	-0.109860	-1.22E-07	-5.25E-06	-4.02E-08
82	-0.407449	0.001086	-0.109992	-8.52E-08	-5.22E-06	-4.40E-08
83	-0.407391	0.001084	-0.110038	1.19E-08	-5.21E-06	-4.64E-08
84	-0.407333	0.001083	-0.109962	1.09E-07	-5.22E-06	-4.67E-08
85	-0.407275	0.001082	-0.109801	1.46E-07	-5.25E-06	-4.57E-08
86	-0.815005	0.000983	-0.096426	-2.30E-07	-1.05E-05	-7.82E-08
87	-0.814898	0.000975	-0.096676	-1.66E-07	-1.04E-05	-9.07E-08
88	-0.814782	0.000966	-0.096770	1.31E-08	-1.04E-05	-9.52E-08
89	-0.814665	0.000962	-0.096644	1.91E-07	-1.04E-05	-9.42E-08
90	-0.814552	0.000963	-0.096363	2.55E-07	-1.05E-05	-8.97E-08
91	-1.223	0.000806	-0.073930	-4.66E-07	-1.59E-05	-1.29E-07
92	-1.222	0.000774	-0.074485	-3.92E-07	-1.57E-05	-1.47E-07
93	-1.222	0.000747	-0.074718	1.65E-08	-1.55E-05	-1.45E-07
94	-1.222	0.000744	-0.074444	4.23E-07	-1.57E-05	-1.43E-07
95	-1.222	0.000762	-0.073851	4.97E-07	-1.59E-05	-1.39E-07
96	-1.630	0.000477	-0.042162	-6.72E-07	-2.12E-05	-2.56E-07
97	-1.630	0.000432	-0.043221	-9.85E-07	-2.12E-05	-2.19E-07
98	-1.630	0.000391	-0.044277	2.00E-08	-2.03E-05	-1.75E-07
99	-1.629	0.000384	-0.043171	1.03E-06	-2.12E-05	-1.71E-07
100	-1.629	0.000427	-0.042061	7.11E-07	-2.12E-05	-2.36E-07

DESPLAZAMIENTOS:

NUDOS	DX [mm]	DY [mm]	DZ [mm]	RX [rad]	RY [rad]	RZ [rad]
101	-2.038	-9.00E-05	-0.003557	2.52E-07	-2.36E-05	-4.10E-07
102	-2.037	-9.02E-05	-0.003262	1.92E-07	-2.47E-05	-3.26E-07
103	-2.037	-9.82E-05	-0.003179	1.93E-08	-3.06E-05	-1.78E-07
104	-2.037	-0.000105	-0.003213	-1.52E-07	-2.47E-05	-9.24E-08
105	-2.037	-9.56E-05	-0.003456	-2.10E-07	-2.36E-05	-3.57E-07
106	-2.343	-0.000504	0.023700	9.00E-07	-1.90E-05	-2.52E-07
107	-2.343	-0.000452	0.025110	1.35E-06	-1.91E-05	-2.15E-07
108	-2.343	-0.000404	0.026673	1.85E-08	-1.82E-05	-1.73E-07
109	-2.342	-0.000399	0.025155	-1.31E-06	-1.91E-05	-1.65E-07
110	-2.342	-0.000464	0.023789	-8.64E-07	-1.89E-05	-2.25E-07
111	-2.649	-0.000728	0.043937	8.46E-07	-1.26E-05	-9.83E-08
112	-2.648	-0.000674	0.045018	8.27E-07	-1.23E-05	-1.27E-07
113	-2.648	-0.000633	0.045634	2.05E-08	-1.18E-05	-1.23E-07
114	-2.648	-0.000634	0.045069	-7.86E-07	-1.23E-05	-1.18E-07
115	-2.648	-0.000679	0.044040	-8.04E-07	-1.26E-05	-9.92E-08
116	-2.954	-0.000802	0.056160	5.70E-07	-6.59E-06	-1.92E-08
117	-2.954	-0.000775	0.056811	4.51E-07	-6.39E-06	-5.60E-08
118	-2.954	-0.000751	0.057103	2.43E-08	-6.27E-06	-6.27E-08
119	-2.954	-0.000748	0.056872	-4.01E-07	-6.40E-06	-5.37E-08
120	-2.954	-0.000762	0.056283	-5.20E-07	-6.60E-06	-2.56E-08
121	-3.260	-0.000803	0.061250	3.74E-07	-1.46E-06	1.70E-08
122	-3.260	-0.000792	0.061666	2.82E-07	-1.37E-06	-5.67E-09
123	-3.260	-0.000777	0.061858	2.70E-08	-1.32E-06	-9.46E-09
124	-3.260	-0.000768	0.061734	-2.27E-07	-1.37E-06	-8.84E-11
125	-3.260	-0.000766	0.061387	-3.20E-07	-1.47E-06	2.32E-08
126	-3.565	-0.000767	0.060309	2.76E-07	2.84E-06	3.88E-08
127	-3.565	-0.000757	0.060615	2.08E-07	2.88E-06	3.04E-08
128	-3.565	-0.000738	0.060763	2.61E-08	2.90E-06	3.20E-08
129	-3.565	-0.000719	0.060683	-1.54E-07	2.88E-06	4.23E-08
130	-3.566	-0.000708	0.060444	-2.23E-07	2.85E-06	6.64E-08
131	-3.871	-0.000705	0.054370	2.51E-07	6.35E-06	5.81E-08
132	-3.871	-0.000686	0.054649	1.88E-07	6.35E-06	6.15E-08
133	-3.871	-0.000652	0.054780	1.92E-08	6.35E-06	6.38E-08
134	-3.871	-0.000617	0.054700	-1.45E-07	6.37E-06	7.27E-08
135	-3.871	-0.000597	0.054477	-2.08E-07	6.38E-06	1.02E-07
136	-4.177	-0.000614	0.044434	2.90E-07	9.10E-06	8.95E-08
137	-4.177	-0.000584	0.044753	2.12E-07	9.05E-06	9.84E-08
138	-4.177	-0.000530	0.044889	4.74E-09	9.03E-06	8.81E-08
139	-4.177	-0.000477	0.044768	-1.95E-07	9.08E-06	8.41E-08
140	-4.177	-0.000449	0.044474	-2.70E-07	9.14E-06	1.15E-07
141	-4.482	-0.000462	0.031463	4.06E-07	1.11E-05	1.60E-07
142	-4.482	-0.000441	0.031908	2.96E-07	1.10E-05	1.57E-07
143	-4.483	-0.000382	0.032088	-1.23E-08	1.09E-05	1.04E-07
144	-4.483	-0.000324	0.031875	-3.18E-07	1.10E-05	6.07E-08
145	-4.483	-0.000306	0.031406	-4.23E-07	1.11E-05	8.22E-08
146	-4.788	-0.000184	0.016354	6.42E-07	1.24E-05	2.92E-07
147	-4.788	-0.000220	0.017077	4.90E-07	1.22E-05	2.76E-07
148	-4.788	-0.000219	0.017388	-1.66E-08	1.20E-05	1.10E-07
149	-4.788	-0.000212	0.017026	-5.34E-07	1.22E-05	-4.00E-08
150	-4.788	-0.000237	0.016241	-6.84E-07	1.24E-05	-1.22E-08
151	-5.093	0.000271	3.70E-18	9.91E-07	1.29E-05	4.13E-07
152	-5.094	0.000175	0.001225	8.08E-07	1.26E-05	4.93E-07
153	-5.094	-5.83E-05	0.001775	1.23E-09	1.24E-05	1.11E-07
154	-5.094	-0.000265	0.001232	-8.11E-07	1.25E-05	-2.50E-07

DESPLAZAMIENTOS:

NUDOS	DX [mm]	DY [mm]	DZ [mm]	RX [rad]	RY [rad]	RZ [rad]
155	-5.094	-0.000294	3.70E-18	-1.00E-06	1.27E-05	-1.21E-07
601	2.67E-17	1.12E-22	-7.41E-18	2.16E-24	1.51E-19	2.18E-23
602	-2.67E-17	1.12E-22	-7.41E-18	2.16E-24	-1.51E-19	-2.18E-23

REACCIONES EN APOYOS:

NUDOS	FX [t]	FY [t]	FZ [t]	MX [tm]	MY [tm]	MZ [tm]
1	-2.547	-0.000136	-0.370369			
5	-2.547	0.000147	-0.370233			
151	2.547	-0.000136	-0.370368			
155	2.547	0.000147	-0.370232			
601	-2.667	-1.12E-05	0.740602	-0.000216	-15.110	-0.002182
602	2.667	-1.12E-05	0.740600	-0.000216	15.110	0.002182
Sumas:	-2.38E-07	-7.28E-12	-5.96E-08			

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
1	0	1.947	-0.274348	-0.149315	-0.086183	0.074998	0.392914
1	1.275	1.947	-0.274348	-0.149315	-0.086183	-0.115371	0.043135
2	0	1.523	-0.407021	-0.104710	-0.058273	-0.038105	0.300653
2	1.275	1.523	-0.407021	-0.104710	-0.058273	-0.171605	-0.218277
3	0	1.325	-0.328889	-0.087386	-0.028760	-0.135931	-0.095812
3	1.275	1.325	-0.328889	-0.087386	-0.028760	-0.247343	-0.515128
4	0	1.246	-0.218843	-0.072335	-0.009575	-0.232497	-0.461554
4	1.275	1.246	-0.218843	-0.072335	-0.009575	-0.324721	-0.740568
5	0	1.239	-0.147566	-0.060361	0.006218	-0.323678	-0.734755
5	1.275	1.239	-0.147566	-0.060361	0.006218	-0.400635	-0.922894
6	0	1.276	-0.110193	-0.049068	0.024200	-0.412745	-0.950130
6	1.275	1.276	-0.110193	-0.049068	0.024200	-0.475304	-1.091
7	0	1.341	-0.070389	-0.033321	0.048362	-0.505236	-1.142
7	1.275	1.341	-0.070389	-0.033321	0.048362	-0.547718	-1.232
8	0	1.420	0.029310	0.004634	0.068382	-0.608174	-1.300
8	1.275	1.420	0.029310	0.004634	0.068382	-0.602266	-1.263
9	0	1.482	0.229467	0.103966	0.013282	-0.693530	-1.316
9	1.275	1.482	0.229467	0.103966	0.013282	-0.560978	-1.023
10	0	1.459	0.422239	0.119433	-0.160317	-0.521244	-0.990367
10	1.275	1.459	0.422239	0.119433	-0.160317	-0.368972	-0.452034

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
11	0	1.209	0.421294	0.177363	-0.171160	0.009177	-0.229202
11	1.700	1.209	0.421294	0.177363	-0.171160	0.310682	0.486969
12	0	1.160	0.202055	0.088011	0.038106	0.317256	0.561768
12	1.700	1.160	0.202055	0.088011	0.038106	0.466869	0.905247
13	0	1.191	0.043288	0.020603	0.043811	0.392271	0.864417
13	1.700	1.191	0.043288	0.020603	0.043811	0.427295	0.938003
14	0	1.210	0.001248	0.008227	0.019983	0.398420	0.911582
14	1.700	1.210	0.001248	0.008227	0.019983	0.412405	0.913704
15	0	1.214	-0.001780	0.002279	0.005609	0.401807	0.906448
15	1.700	1.214	-0.001780	0.002279	0.005609	0.405681	0.903423
16	0	1.214	0.001781	-0.002279	-0.005609	0.405681	0.903423
16	1.700	1.214	0.001781	-0.002279	-0.005609	0.401807	0.906451
17	0	1.210	-0.001250	-0.008229	-0.019983	0.412407	0.913710
17	1.700	1.210	-0.001250	-0.008229	-0.019983	0.398418	0.911585
18	0	1.191	-0.043277	-0.020601	-0.043811	0.427293	0.938003
18	1.700	1.191	-0.043277	-0.020601	-0.043811	0.392273	0.864435
19	0	1.160	-0.202051	-0.088011	-0.038106	0.466867	0.905242
19	1.700	1.160	-0.202051	-0.088011	-0.038106	0.317254	0.561768
20	0	1.209	-0.421297	-0.177361	0.171161	0.310679	0.486954
20	1.700	1.209	-0.421297	-0.177361	0.171161	0.009178	-0.229220
21	0	1.460	-0.422239	-0.119434	0.160317	-0.368970	-0.452021
21	1.275	1.460	-0.422239	-0.119434	0.160317	-0.521242	-0.990354
22	0	1.482	-0.229473	-0.103967	-0.013282	-0.560977	-1.023
22	1.275	1.482	-0.229473	-0.103967	-0.013282	-0.693529	-1.316
23	0	1.420	-0.029316	-0.004634	-0.068382	-0.602265	-1.263
23	1.275	1.420	-0.029316	-0.004634	-0.068382	-0.608174	-1.300
24	0	1.341	0.070399	0.033326	-0.048362	-0.547721	-1.232
24	1.275	1.341	0.070399	0.033326	-0.048362	-0.505232	-1.142
25	0	1.276	0.110177	0.049062	-0.024200	-0.475300	-1.091
25	1.275	1.276	0.110177	0.049062	-0.024200	-0.412748	-0.950136
26	0	1.239	0.147572	0.060363	-0.006218	-0.400635	-0.922894
26	1.275	1.239	0.147572	0.060363	-0.006218	-0.323676	-0.734747
27	0	1.245	0.218847	0.072334	0.009575	-0.324720	-0.740566
27	1.275	1.245	0.218847	0.072334	0.009575	-0.232498	-0.461547
28	0	1.325	0.328885	0.087383	0.028760	-0.247342	-0.515130
28	1.275	1.325	0.328885	0.087383	0.028760	-0.135933	-0.095818

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
29	0	1.523	0.407027	0.104712	0.058273	-0.171607	-0.218287
29	1.275	1.523	0.407027	0.104712	0.058273	-0.038104	0.300652
30	0	1.948	0.274348	0.149314	0.086183	-0.115371	0.043130
30	1.275	1.948	0.274348	0.149314	0.086183	0.074997	0.392909
31	0	0.566255	-0.315966	-0.154585	-0.071733	-0.042011	0.298213
31	1.275	0.566255	-0.315966	-0.154585	-0.071733	-0.239099	-0.104628
32	0	0.874437	-0.181486	-0.170366	-0.043717	-0.285359	0.168362
32	1.275	0.874437	-0.181486	-0.170366	-0.043717	-0.502567	-0.063023
33	0	1.024	-0.066453	-0.182678	-0.019040	-0.525950	0.067935
33	1.275	1.024	-0.066453	-0.182678	-0.019040	-0.758855	-0.016790
34	0	1.116	-0.000372	-0.195381	-0.005475	-0.770612	0.015535
34	1.275	1.116	-0.000372	-0.195381	-0.005475	-1.020	0.015062
35	0	1.173	0.040145	-0.203675	0.004591	-1.022	-0.013229
35	1.275	1.173	0.040145	-0.203675	0.004591	-1.281	0.037954
36	0	1.212	0.064473	-0.211054	0.016592	-1.274	-0.026849
36	1.275	1.212	0.064473	-0.211054	0.016592	-1.543	0.055351
37	0	1.228	0.073172	-0.227247	0.038171	-1.523	-0.026355
37	1.275	1.228	0.073172	-0.227247	0.038171	-1.813	0.066935
38	0	1.207	0.051225	-0.273463	0.085020	-1.778	-0.003488
38	1.275	1.207	0.051225	-0.273463	0.085020	-2.127	0.061822
39	0	1.134	-0.014705	-0.204155	0.117137	-2.127	0.045840
39	1.275	1.134	-0.014705	-0.204155	0.117137	-2.387	0.027093
40	0	1.095	-0.051945	1.175	-0.260452	-2.604	0.080213
40	1.275	1.095	-0.051945	1.175	-0.260452	-1.106	0.013986
41	0	1.622	-0.081471	1.004	-0.199281	0.011521	0.034393
41	1.700	1.622	-0.081471	1.004	-0.199281	1.718	-0.104102
42	0	1.536	-0.041905	-0.091528	0.100403	1.449	0.013499
42	1.700	1.536	-0.041905	-0.091528	0.100403	1.293	-0.057736
43	0	1.449	0.001782	-0.022171	0.038320	1.323	-0.018790
43	1.700	1.449	0.001782	-0.022171	0.038320	1.285	-0.015762
44	0	1.432	0.004583	-0.004917	0.013590	1.304	-0.017820
44	1.700	1.432	0.004583	-0.004917	0.013590	1.295	-0.010030
45	0	1.433	0.001213	-0.001336	0.003731	1.301	-0.014068
45	1.700	1.433	0.001213	-0.001336	0.003731	1.299	-0.012007
46	0	1.433	-0.001212	0.001336	-0.003731	1.299	-0.012007
46	1.700	1.433	-0.001212	0.001336	-0.003731	1.301	-0.014068

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
47	0	1.432	-0.004581	0.004917	-0.013590	1.295	-0.010031
47	1.700	1.432	-0.004581	0.004917	-0.013590	1.304	-0.017818
48	0	1.449	-0.001777	0.022169	-0.038320	1.285	-0.015765
48	1.700	1.449	-0.001777	0.022169	-0.038320	1.323	-0.018785
49	0	1.536	0.041909	0.091527	-0.100403	1.293	-0.057741
49	1.700	1.536	0.041909	0.091527	-0.100403	1.449	0.013502
50	0	1.622	0.081466	-1.004	0.199282	1.718	-0.104102
50	1.700	1.622	0.081466	-1.004	0.199282	0.011520	0.034385
51	0	1.095	0.051936	-1.175	0.260452	-1.106	0.013996
51	1.275	1.095	0.051936	-1.175	0.260452	-2.604	0.080212
52	0	1.134	0.014701	0.204152	-0.117136	-2.387	0.027095
52	1.275	1.134	0.014701	0.204152	-0.117136	-2.127	0.045838
53	0	1.207	-0.051234	0.273463	-0.085020	-2.127	0.061824
53	1.275	1.207	-0.051234	0.273463	-0.085020	-1.778	-0.003497
54	0	1.228	-0.073182	0.227243	-0.038171	-1.813	0.066944
54	1.275	1.228	-0.073182	0.227243	-0.038171	-1.523	-0.026360
55	0	1.211	-0.064476	0.211061	-0.016592	-1.543	0.055354
55	1.275	1.211	-0.064476	0.211061	-0.016592	-1.274	-0.026850
56	0	1.173	-0.040144	0.203670	-0.004591	-1.281	0.037953
56	1.275	1.173	-0.040144	0.203670	-0.004591	-1.022	-0.013228
57	0	1.115	0.000379	0.195386	0.005475	-1.020	0.015058
57	1.275	1.115	0.000379	0.195386	0.005475	-0.770608	0.015542
58	0	1.026	0.066465	0.182671	0.019040	-0.758850	-0.016797
58	1.275	1.026	0.066465	0.182671	0.019040	-0.525953	0.067942
59	0	0.872509	0.181492	0.170364	0.043717	-0.502567	-0.063030
59	1.275	0.872509	0.181492	0.170364	0.043717	-0.285361	0.168363
60	0	0.565942	0.315964	0.154585	0.071733	-0.239100	-0.104629
60	1.275	0.565942	0.315964	0.154585	0.071733	-0.042012	0.298209
61	0	0.143325	0.068571	-0.122673	-0.005362	-0.053197	-0.043407
61	1.275	0.143325	0.068571	-0.122673	-0.005362	-0.209599	0.044018
62	0	0.545478	0.089257	-0.186700	0.001304	-0.268479	-0.054368
62	1.275	0.545478	0.089257	-0.186700	0.001304	-0.506511	0.059430
63	0	0.817227	0.086449	-0.203922	0.005117	-0.537924	-0.047593
63	1.275	0.817227	0.086449	-0.203922	0.005117	-0.797914	0.062624
64	0	0.964967	0.083895	-0.210210	0.004344	-0.811447	-0.042318
64	1.275	0.964967	0.083895	-0.210210	0.004344	-1.079	0.064643

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
65	0	1.035	0.085099	-0.215783	0.002094	-1.082	-0.039620
65	1.275	1.035	0.085099	-0.215783	0.002094	-1.357	0.068876
66	0	1.058	0.085016	-0.221341	0.000265	-1.348	-0.035151
66	1.275	1.058	0.085016	-0.221341	0.000265	-1.631	0.073240
67	0	1.051	0.067745	-0.219052	-0.000814	-1.610	-0.018707
67	1.275	1.051	0.067745	-0.219052	-0.000814	-1.889	0.067665
68	0	1.012	0.001092	-0.202334	-0.001154	-1.837	0.027223
68	1.275	1.012	0.001092	-0.202334	-0.001154	-2.095	0.028616
69	0	0.906243	-0.135733	-0.540665	-0.000607	-1.911	0.109370
69	1.275	0.906243	-0.135733	-0.540665	-0.000607	-2.600	-0.063683
70	0	0.616060	-0.276565	-3.331	0.000248	-2.245	0.178727
70	1.275	0.616060	-0.276565	-3.331	0.000248	-6.492	-0.173879
71	0	2.021	-0.270119	-2.364	0.000152	4.744	0.228451
71	1.700	2.021	-0.270119	-2.364	0.000152	0.725351	-0.230733
72	0	1.710	-0.120416	0.006795	-0.000782	1.251	0.091896
72	1.700	1.710	-0.120416	0.006795	-0.000782	1.262	-0.112803
73	0	1.638	-0.020831	0.003758	-0.000761	1.353	0.000601
73	1.700	1.638	-0.020831	0.003758	-0.000761	1.360	-0.034810
74	0	1.619	0.002146	-0.006206	-0.000281	1.382	-0.018656
74	1.700	1.619	0.002146	-0.006206	-0.000281	1.371	-0.015008
75	0	1.615	0.001583	-0.001788	-4.06E-05	1.381	-0.017324
75	1.700	1.615	0.001583	-0.001788	-4.06E-05	1.378	-0.014632
76	0	1.615	-0.001583	0.001788	4.05E-05	1.378	-0.014632
76	1.700	1.615	-0.001583	0.001788	4.05E-05	1.381	-0.017324
77	0	1.620	-0.002146	0.006206	0.000281	1.371	-0.015008
77	1.700	1.620	-0.002146	0.006206	0.000281	1.382	-0.018656
78	0	1.638	0.020831	-0.003759	0.000761	1.360	-0.034810
78	1.700	1.638	0.020831	-0.003759	0.000761	1.353	0.000602
79	0	1.710	0.120416	-0.006797	0.000782	1.262	-0.112803
79	1.700	1.710	0.120416	-0.006797	0.000782	1.251	0.091896
80	0	2.021	0.270119	2.364	-0.000152	0.725361	-0.230733
80	1.700	2.021	0.270119	2.364	-0.000152	4.744	0.228450
81	0	0.616166	0.276565	3.331	-0.000248	-6.492	-0.173879
81	1.275	0.616166	0.276565	3.331	-0.000248	-2.245	0.178726
82	0	0.906243	0.135733	0.540661	0.000607	-2.600	-0.063683
82	1.275	0.906243	0.135733	0.540661	0.000607	-1.911	0.109370

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
83	0	1.012	-0.001092	0.202341	0.001154	-2.095	0.028616
83	1.275	1.012	-0.001092	0.202341	0.001154	-1.837	0.027223
84	0	1.051	-0.067745	0.219037	0.000814	-1.889	0.067665
84	1.275	1.051	-0.067745	0.219037	0.000814	-1.610	-0.018707
85	0	1.058	-0.085015	0.221348	-0.000265	-1.631	0.073239
85	1.275	1.058	-0.085015	0.221348	-0.000265	-1.348	-0.035151
86	0	1.035	-0.085099	0.215779	-0.002094	-1.357	0.068877
86	1.275	1.035	-0.085099	0.215779	-0.002094	-1.082	-0.039620
87	0	0.964588	-0.083895	0.210216	-0.004344	-1.079	0.064643
87	1.275	0.964588	-0.083895	0.210216	-0.004344	-0.811441	-0.042318
88	0	0.817077	-0.086449	0.203921	-0.005117	-0.797912	0.062624
88	1.275	0.817077	-0.086449	0.203921	-0.005117	-0.537923	-0.047593
89	0	0.545130	-0.089257	0.186698	-0.001304	-0.506506	0.059430
89	1.275	0.545130	-0.089257	0.186698	-0.001304	-0.268476	-0.054368
90	0	0.144626	-0.068571	0.122670	0.005362	-0.209593	0.044018
90	1.275	0.144626	-0.068571	0.122670	0.005362	-0.053195	-0.043407
91	0	0.543666	0.438214	-0.157638	0.062542	-0.019492	-0.373640
91	1.275	0.543666	0.438214	-0.157638	0.062542	-0.220473	0.185060
92	0	0.801829	0.324769	-0.188208	0.048620	-0.258209	-0.252610
92	1.275	0.801829	0.324769	-0.188208	0.048620	-0.498164	0.161454
93	0	0.882352	0.201587	-0.194213	0.027686	-0.517795	-0.139825
93	1.275	0.882352	0.201587	-0.194213	0.027686	-0.765406	0.117189
94	0	0.907590	0.132600	-0.198420	0.011422	-0.773826	-0.080643
94	1.275	0.907590	0.132600	-0.198420	0.011422	-1.027	0.088415
95	0	0.901136	0.094153	-0.203087	-0.002074	-1.027	-0.047989
95	1.275	0.901136	0.094153	-0.203087	-0.002074	-1.286	0.072052
96	0	0.878547	0.071792	-0.209907	-0.016403	-1.278	-0.028682
96	1.275	0.878547	0.071792	-0.209907	-0.016403	-1.545	0.062849
97	0	0.854344	0.047331	-0.225937	-0.039348	-1.526	-0.008417
97	1.275	0.854344	0.047331	-0.225937	-0.039348	-1.814	0.051928
98	0	0.858925	-0.016963	-0.271065	-0.086872	-1.780	0.036746
98	1.275	0.858925	-0.016963	-0.271065	-0.086872	-2.125	0.015119
99	0	0.914591	-0.179496	-0.200925	-0.118403	-2.126	0.132702
99	1.275	0.914591	-0.179496	-0.200925	-0.118403	-2.382	-0.096147
100	0	1.025	-0.430391	1.176	0.261540	-2.602	0.239301
100	1.275	1.025	-0.430391	1.176	0.261540	-1.103	-0.309425

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
101	0	1.526	-0.368145	1.007	0.199228	0.006639	0.340387
101	1.700	1.526	-0.368145	1.007	0.199228	1.718	-0.285435
102	0	1.666	-0.129610	-0.087872	-0.101907	1.445	0.102628
102	1.700	1.666	-0.129610	-0.087872	-0.101907	1.295	-0.117699
103	0	1.728	-0.023582	-0.021185	-0.039353	1.323	0.005490
103	1.700	1.728	-0.023582	-0.021185	-0.039353	1.287	-0.034598
104	0	1.736	-0.001613	-0.005089	-0.013866	1.304	-0.012833
104	1.700	1.736	-0.001613	-0.005089	-0.013866	1.296	-0.015575
105	0	1.733	0.000383	-0.001481	-0.003748	1.301	-0.014257
105	1.700	1.733	0.000383	-0.001481	-0.003748	1.299	-0.013605
106	0	1.733	-0.000384	0.001480	0.003748	1.299	-0.013604
106	1.700	1.733	-0.000384	0.001480	0.003748	1.301	-0.014258
107	0	1.736	0.001612	0.005087	0.013866	1.296	-0.015574
107	1.700	1.736	0.001612	0.005087	0.013866	1.304	-0.012835
108	0	1.728	0.023578	0.021184	0.039353	1.287	-0.034596
108	1.700	1.728	0.023578	0.021184	0.039353	1.323	0.005485
109	0	1.666	0.129605	0.087873	0.101907	1.295	-0.117695
109	1.700	1.666	0.129605	0.087873	0.101907	1.445	0.102626
110	0	1.526	0.368151	-1.007	-0.199229	1.718	-0.285435
110	1.700	1.526	0.368151	-1.007	-0.199229	0.006638	0.340394
111	0	1.025	0.430399	-1.176	-0.261540	-1.103	-0.309435
111	1.275	1.025	0.430399	-1.176	-0.261540	-2.602	0.239302
112	0	0.914591	0.179500	0.200931	0.118403	-2.382	-0.096149
112	1.275	0.914591	0.179500	0.200931	0.118403	-2.126	0.132704
113	0	0.858794	0.016973	0.271056	0.086872	-2.125	0.015116
113	1.275	0.858794	0.016973	0.271056	0.086872	-1.780	0.036756
114	0	0.854761	-0.047321	0.225931	0.039348	-1.814	0.051919
114	1.275	0.854761	-0.047321	0.225931	0.039348	-1.526	-0.008412
115	0	0.878157	-0.071788	0.209913	0.016403	-1.545	0.062846
115	1.275	0.878157	-0.071788	0.209913	0.016403	-1.278	-0.028680
116	0	0.901552	-0.094155	0.203082	0.002074	-1.286	0.072052
116	1.275	0.901552	-0.094155	0.203082	0.002074	-1.027	-0.047990
117	0	0.907200	-0.132607	0.198418	-0.011422	-1.027	0.088418
117	1.275	0.907200	-0.132607	0.198418	-0.011422	-0.773826	-0.080649
118	0	0.882190	-0.201599	0.194219	-0.027685	-0.765409	0.117196
118	1.275	0.882190	-0.201599	0.194219	-0.027685	-0.517790	-0.139832

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
119	0	0.801515	-0.324775	0.188208	-0.048620	-0.498166	0.161461
119	1.275	0.801515	-0.324775	0.188208	-0.048620	-0.258210	-0.252611
120	0	0.544966	-0.438211	0.157635	-0.062543	-0.220473	0.185061
120	1.275	0.544966	-0.438211	0.157635	-0.062543	-0.019496	-0.373636
121	0	1.892	0.083540	-0.156399	0.078867	0.039689	-0.438899
121	1.275	1.892	0.083540	-0.156399	0.078867	-0.159711	-0.332390
122	0	1.349	0.174492	-0.090619	0.064660	-0.094133	-0.685630
122	1.275	1.349	0.174492	-0.090619	0.064660	-0.209668	-0.463162
123	0	1.044	0.107313	-0.072404	0.037681	-0.170954	-0.664606
123	1.275	1.044	0.107313	-0.072404	0.037681	-0.263265	-0.527788
124	0	0.860018	0.002727	-0.064257	0.015343	-0.244438	-0.658896
124	1.275	0.860018	0.002727	-0.064257	0.015343	-0.326362	-0.655419
125	0	0.745049	-0.071816	-0.057700	-0.003779	-0.323269	-0.741801
125	1.275	0.745049	-0.071816	-0.057700	-0.003779	-0.396834	-0.833363
126	0	0.669411	-0.111086	-0.049219	-0.023937	-0.408473	-0.892236
126	1.275	0.669411	-0.111086	-0.049219	-0.023937	-0.471225	-1.034
127	0	0.618733	-0.117841	-0.035057	-0.049420	-0.501553	-1.078
127	1.275	0.618733	-0.117841	-0.035057	-0.049420	-0.546249	-1.228
128	0	0.596477	-0.064655	0.001628	-0.070223	-0.607499	-1.256
128	1.275	0.596477	-0.064655	0.001628	-0.070223	-0.605424	-1.338
129	0	0.656987	0.100478	0.101171	-0.014705	-0.697068	-1.309
129	1.275	0.656987	0.100478	0.101171	-0.014705	-0.568081	-1.181
130	0	0.896707	0.336678	0.120394	0.161479	-0.525734	-1.002
130	1.275	0.896707	0.336678	0.120394	0.161479	-0.372238	-0.572479
131	0	1.383	0.298444	0.175658	0.170879	0.015023	-0.059025
131	1.700	1.383	0.298444	0.175658	0.170879	0.313629	0.448309
132	0	1.688	0.089874	0.084595	-0.039793	0.324593	0.716658
132	1.700	1.688	0.089874	0.084595	-0.039793	0.468399	0.869437
133	0	1.754	-0.000651	0.018992	-0.044813	0.394179	0.906119
133	1.700	1.754	-0.000651	0.018992	-0.044813	0.426465	0.905012
134	0	1.764	-0.006366	0.007993	-0.020225	0.397677	0.905870
134	1.700	1.764	-0.006366	0.007993	-0.020225	0.411265	0.895049
135	0	1.765	-0.001405	0.002324	-0.005620	0.400750	0.894552
135	1.700	1.765	-0.001405	0.002324	-0.005620	0.404701	0.892164
136	0	1.765	0.001403	-0.002324	0.005620	0.404701	0.892166
136	1.700	1.765	0.001403	-0.002324	0.005620	0.400750	0.894550

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
137	0	1.764	0.006362	-0.007994	0.020225	0.411265	0.895052
137	1.700	1.764	0.006362	-0.007994	0.020225	0.397676	0.905867
138	0	1.754	0.000646	-0.018992	0.044813	0.426464	0.905016
138	1.700	1.754	0.000646	-0.018992	0.044813	0.394178	0.906113
139	0	1.688	-0.089873	-0.084594	0.039793	0.468397	0.869441
139	1.700	1.688	-0.089873	-0.084594	0.039793	0.324592	0.716663
140	0	1.382	-0.298442	-0.175656	-0.170879	0.313628	0.448315
140	1.700	1.382	-0.298442	-0.175656	-0.170879	0.015025	-0.059015
141	0	0.896760	-0.336670	-0.120395	-0.161479	-0.372237	-0.572495
141	1.275	0.896760	-0.336670	-0.120395	-0.161479	-0.525735	-1.002
142	0	0.656987	-0.100472	-0.101170	0.014705	-0.568080	-1.181
142	1.275	0.656987	-0.100472	-0.101170	0.014705	-0.697067	-1.309
143	0	0.596432	0.064659	-0.001627	0.070223	-0.605423	-1.338
143	1.275	0.596432	0.064659	-0.001627	0.070223	-0.607497	-1.256
144	0	0.618367	0.117850	0.035060	0.049420	-0.546250	-1.228
144	1.275	0.618367	0.117850	0.035060	0.049420	-0.501550	-1.078
145	0	0.669801	0.111079	0.049215	0.023937	-0.471223	-1.034
145	1.275	0.669801	0.111079	0.049215	0.023937	-0.408476	-0.892243
146	0	0.744682	0.071817	0.057702	0.003779	-0.396835	-0.833367
146	1.275	0.744682	0.071817	0.057702	0.003779	-0.323269	-0.741804
147	0	0.860408	-0.002736	0.064254	-0.015343	-0.326361	-0.655418
147	1.275	0.860408	-0.002736	0.064254	-0.015343	-0.244439	-0.658906
148	0	1.043	-0.107312	0.072404	-0.037680	-0.263265	-0.527782
148	1.275	1.043	-0.107312	0.072404	-0.037680	-0.170953	-0.664599
149	0	1.349	-0.174490	0.090619	-0.064660	-0.209667	-0.463151
149	1.275	1.349	-0.174490	0.090619	-0.064660	-0.094132	-0.685617
150	0	1.894	-0.083540	0.156398	-0.078867	-0.159710	-0.332379
150	1.275	1.894	-0.083540	0.156398	-0.078867	0.039690	-0.438888
151	0	-0.274211	0.598657	-0.221054	0.075002	0.086177	-0.392678
151	1.250	-0.274211	0.598657	-0.221054	0.075002	-0.190130	0.355613
152	0	-0.132675	0.425853	-0.044606	0.077273	-0.027909	-0.258057
152	1.250	-0.132675	0.425853	-0.044606	0.077273	-0.083665	0.274237
153	0	0.078136	0.198399	-0.017330	0.035678	-0.029511	-0.122783
153	1.250	0.078136	0.198399	-0.017330	0.035678	-0.051173	0.125206
154	0	0.110046	0.078339	-0.015057	0.014848	-0.019182	-0.053389
154	1.250	0.110046	0.078339	-0.015057	0.014848	-0.038002	0.044531

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
155	0	0.071271	0.006263	-0.011968	0.001047	-0.015795	-0.005607
155	1.250	0.071271	0.006263	-0.011968	0.001047	-0.030754	0.002222
156	0	0.037384	-0.037190	-0.011303	-0.012109	-0.017979	0.027416
156	1.250	0.037384	-0.037190	-0.011303	-0.012109	-0.032107	-0.019070
157	0	0.039792	-0.063653	-0.015725	-0.029931	-0.024173	0.051076
157	1.250	0.039792	-0.063653	-0.015725	-0.029931	-0.043828	-0.028487
158	0	0.099702	-0.080407	-0.037953	-0.060454	-0.020023	0.068618
158	1.250	0.099702	-0.080407	-0.037953	-0.060454	-0.067462	-0.031886
159	0	0.200158	-0.061639	-0.099330	-0.091267	0.055095	0.052851
159	1.250	0.200158	-0.061639	-0.099330	-0.091267	-0.069062	-0.024194
160	0	0.192769	0.023516	-0.015466	0.039729	0.173598	-0.033019
160	1.250	0.192769	0.023516	-0.015466	0.039729	0.154267	-0.003625
161	0	-0.000944	0.249691	-0.057929	0.378140	0.010841	-0.222657
161	1.250	-0.000944	0.249691	-0.057929	0.378140	-0.061566	0.089445
162	0	-0.219235	0.049276	0.089345	0.006565	-0.209260	-0.074705
162	1.250	-0.219235	0.049276	0.089345	0.006565	-0.097584	-0.013113
163	0	-0.158771	-0.030598	0.067411	-0.074599	-0.005704	0.040441
163	1.250	-0.158771	-0.030598	0.067411	-0.074599	0.078556	0.002195
164	0	-0.042035	-0.018677	0.012351	-0.028875	0.023843	0.026508
164	1.250	-0.042035	-0.018677	0.012351	-0.028875	0.039281	0.003163
165	0	-0.003025	-0.004439	0.005936	-0.010600	0.014381	0.007316
165	1.250	-0.003025	-0.004439	0.005936	-0.010600	0.021800	0.001767
166	0	0.003552	-6.84E-07	0.004578	2.16E-09	0.011208	6.85E-07
166	1.250	0.003552	-6.84E-07	0.004578	2.16E-09	0.016930	-1.70E-07
167	0	-0.003023	0.004435	0.005935	0.010600	0.014381	-0.007313
167	1.250	-0.003023	0.004435	0.005935	0.010600	0.021800	-0.001769
168	0	-0.042033	0.018685	0.012375	0.028875	0.023828	-0.026512
168	1.250	-0.042033	0.018685	0.012375	0.028875	0.039296	-0.003157
169	0	-0.158774	0.031698	0.067408	0.074599	-0.005702	-0.041127
169	1.250	-0.158774	0.031698	0.067408	0.074599	0.078554	-0.001506
170	0	-0.219241	-0.049255	0.089347	-0.006566	-0.209262	0.074694
170	1.250	-0.219241	-0.049255	0.089347	-0.006566	-0.097583	0.013127
171	0	-0.000946	-0.249741	-0.057928	-0.378139	0.010842	0.222685
171	1.250	-0.000946	-0.249741	-0.057928	-0.378139	-0.061566	-0.089479
172	0	0.192767	-0.023517	-0.015465	-0.039729	0.173598	0.033020
172	1.250	0.192767	-0.023517	-0.015465	-0.039729	0.154267	0.003625

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
173	0	0.200161	0.061641	-0.099330	0.091266	0.055096	-0.052853
173	1.250	0.200161	0.061641	-0.099330	0.091266	-0.069062	0.024196
174	0	0.099703	0.080386	-0.037953	0.060454	-0.020022	-0.068607
174	1.250	0.099703	0.080386	-0.037953	0.060454	-0.067462	0.031871
175	0	0.039793	0.064537	-0.015748	0.029931	-0.024159	-0.051629
175	1.250	0.039793	0.064537	-0.015748	0.029931	-0.043843	0.029039
176	0	0.037387	0.037189	-0.011295	0.012109	-0.017984	-0.027416
176	1.250	0.037387	0.037189	-0.011295	0.012109	-0.032102	0.019069
177	0	0.071272	-0.006256	-0.011971	-0.001047	-0.015793	0.005603
177	1.250	0.071272	-0.006256	-0.011971	-0.001047	-0.030756	-0.002217
178	0	0.110044	-0.078321	-0.015048	-0.014849	-0.019187	0.053378
178	1.250	0.110044	-0.078321	-0.015048	-0.014849	-0.037997	-0.044519
179	0	0.078134	-0.196600	-0.017321	-0.035678	-0.029517	0.121660
179	1.250	0.078134	-0.196600	-0.017321	-0.035678	-0.051167	-0.124080
180	0	-0.132674	-0.425860	-0.044607	-0.077273	-0.027909	0.258063
180	1.250	-0.132674	-0.425860	-0.044607	-0.077273	-0.083665	-0.274242
181	0	-0.274211	-0.599498	-0.221054	-0.075001	0.086177	0.393204
181	1.250	-0.274211	-0.599498	-0.221054	-0.075001	-0.190129	-0.356139
182	0	-0.590178	0.033805	-0.066471	0.032992	-0.118404	0.057426
182	1.250	-0.590178	0.033805	-0.066471	0.032992	-0.201489	0.099681
183	0	0.001806	0.116511	-0.028819	0.031022	-0.111681	0.000734
183	1.250	0.001806	0.116511	-0.028819	0.031022	-0.147703	0.146367
184	0	0.193168	0.046737	-0.005020	0.012305	-0.075848	-0.005786
184	1.250	0.193168	0.046737	-0.005020	0.012305	-0.082122	0.052633
185	0	0.176128	-0.013038	-0.002346	0.003100	-0.051564	0.012684
185	1.250	0.176128	-0.013038	-0.002346	0.003100	-0.054496	-0.003613
186	0	0.111788	-0.050876	-0.003679	-0.001024	-0.040822	0.030768
186	1.250	0.111788	-0.050876	-0.003679	-0.001024	-0.045421	-0.032824
187	0	0.061712	-0.073920	-0.003908	-0.004709	-0.044106	0.045502
187	1.250	0.061712	-0.073920	-0.003908	-0.004709	-0.048991	-0.046895
188	0	0.048491	-0.081783	0.000432	-0.010173	-0.065417	0.052790
188	1.250	0.048491	-0.081783	0.000432	-0.010173	-0.064877	-0.049436
189	0	0.077755	-0.057179	0.008267	-0.025368	-0.114312	0.038704
189	1.250	0.077755	-0.057179	0.008267	-0.025368	-0.103979	-0.032766
190	0	0.134228	0.010622	-0.168644	-0.091279	-0.101188	-0.008216
190	1.250	0.134228	0.010622	-0.168644	-0.091279	-0.311984	0.005062

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
191	0	0.155529	0.061482	-1.395	-0.177486	0.531819	-0.057050
191	1.250	0.155529	0.061482	-1.395	-0.177486	-1.212	0.019800
192	0	-0.030471	-0.277196	0.113697	1.495	-0.122735	0.069553
192	1.250	-0.030471	-0.277196	0.113697	1.495	0.019380	-0.276927
193	0	-0.179669	0.135787	1.185	-0.262434	-0.397231	-0.130636
193	1.250	-0.179669	0.135787	1.185	-0.262434	1.083	0.039091
194	0	-0.115085	0.054220	-0.001944	-0.044644	0.140636	-0.036621
194	1.250	-0.115085	0.054220	-0.001944	-0.044644	0.138206	0.031151
195	0	-0.039234	-0.000831	-0.004871	-0.010807	0.064024	0.005191
195	1.250	-0.039234	-0.000831	-0.004871	-0.010807	0.057936	0.004153
196	0	-0.006395	-0.005561	0.002372	-0.004535	0.031663	0.005896
196	1.250	-0.006395	-0.005561	0.002372	-0.004535	0.034627	-0.001054
197	0	0.001127	-4.23E-07	0.001865	2.42E-08	0.024392	3.80E-07
197	1.250	0.001127	-4.23E-07	0.001865	2.42E-08	0.026723	-1.49E-07
198	0	-0.006392	0.005325	0.002371	0.004535	0.031663	-0.005749
198	1.250	-0.006392	0.005325	0.002371	0.004535	0.034626	0.000907
199	0	-0.039229	0.000835	-0.004873	0.010807	0.064025	-0.005195
199	1.250	-0.039229	0.000835	-0.004873	0.010807	0.057935	-0.004152
200	0	-0.115088	-0.055135	-0.001946	0.044644	0.140638	0.037189
200	1.250	-0.115088	-0.055135	-0.001946	0.044644	0.138205	-0.031728
201	0	-0.179684	-0.136713	1.185	0.262433	-0.397231	0.131212
201	1.250	-0.179684	-0.136713	1.185	0.262433	1.083	-0.039672
202	0	-0.030476	0.277166	0.113695	-1.495	-0.122734	-0.069529
202	1.250	-0.030476	0.277166	0.113695	-1.495	0.019379	0.276915
203	0	0.155532	-0.061482	-1.395	0.177486	0.531819	0.057049
203	1.250	0.155532	-0.061482	-1.395	0.177486	-1.212	-0.019800
204	0	0.134226	-0.010621	-0.168645	0.091279	-0.101188	0.008215
204	1.250	0.134226	-0.010621	-0.168645	0.091279	-0.311985	-0.005061
205	0	0.077756	0.057164	0.008273	0.025368	-0.114316	-0.038692
205	1.250	0.077756	0.057164	0.008273	0.025368	-0.103975	0.032760
206	0	0.048499	0.081779	0.000431	0.010173	-0.065416	-0.052786
206	1.250	0.048499	0.081779	0.000431	0.010173	-0.064878	0.049434
207	0	0.061720	0.073920	-0.003910	0.004709	-0.044105	-0.045502
207	1.250	0.061720	0.073920	-0.003910	0.004709	-0.048992	0.046894
208	0	0.111795	0.050879	-0.003681	0.001024	-0.040821	-0.030771
208	1.250	0.111795	0.050879	-0.003681	0.001024	-0.045422	0.032825

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
209	0	0.176130	0.013048	-0.002346	-0.003100	-0.051563	-0.012692
209	1.250	0.176130	0.013048	-0.002346	-0.003100	-0.054496	0.003617
210	0	0.193161	-0.048308	-0.005019	-0.012306	-0.075848	0.006766
210	1.250	0.193161	-0.048308	-0.005019	-0.012306	-0.082122	-0.053617
211	0	0.001797	-0.116514	-0.028818	-0.031022	-0.111681	-0.000732
211	1.250	0.001797	-0.116514	-0.028818	-0.031022	-0.147703	-0.146368
212	0	-0.590175	-0.033077	-0.066470	-0.032992	-0.118404	-0.057880
212	1.250	-0.590175	-0.033077	-0.066470	-0.032992	-0.201489	-0.099224
213	0	-0.521607	-0.109956	0.056197	-0.020204	-0.196127	0.142873
213	1.250	-0.521607	-0.109956	0.056197	-0.020204	-0.125884	0.005434
214	0	0.022492	-0.286206	0.035212	-0.027855	-0.154369	0.245183
214	1.250	0.022492	-0.286206	0.035212	-0.027855	-0.110355	-0.112560
215	0	0.190360	-0.225673	0.012198	-0.019101	-0.085933	0.160387
215	1.250	0.190360	-0.225673	0.012198	-0.019101	-0.070686	-0.121693
216	0	0.173574	-0.159861	0.003956	-0.010422	-0.053726	0.101694
216	1.250	0.173574	-0.159861	0.003956	-0.010422	-0.048781	-0.098123
217	0	0.112992	-0.120500	0.001889	-0.003072	-0.043172	0.071389
217	1.250	0.112992	-0.120500	0.001889	-0.003072	-0.040811	-0.079230
218	0	0.061629	-0.098419	0.001659	0.003539	-0.047163	0.056937
218	1.250	0.061629	-0.098419	0.001659	0.003539	-0.045090	-0.066082
219	0	0.031221	-0.074639	-0.001864	0.010797	-0.063797	0.042504
219	1.250	0.031221	-0.074639	-0.001864	0.010797	-0.066127	-0.050791
220	0	0.011103	-0.018556	-0.008435	0.026945	-0.103640	0.007612
220	1.250	0.011103	-0.018556	-0.008435	0.026945	-0.114183	-0.015582
221	0	-0.002597	0.116951	0.169674	0.092814	-0.312530	-0.075726
221	1.250	-0.002597	0.116951	0.169674	0.092814	-0.100446	0.070457
222	0	0.014697	0.350442	1.396	0.177442	-1.213	-0.222579
222	1.250	0.014697	0.350442	1.396	0.177442	0.532061	0.215456
223	0	-0.024014	0.985856	-0.113447	-1.497	0.019815	-0.676592
223	1.250	-0.024014	0.985856	-0.113447	-1.497	-0.121988	0.555680
224	0	-0.029966	0.446107	-1.186	0.262890	1.084	-0.283406
224	1.250	-0.029966	0.446107	-1.186	0.262890	-0.397949	0.274205
225	0	-0.015501	0.127585	0.001082	0.046346	0.138184	-0.081832
225	1.250	-0.015501	0.127585	0.001082	0.046346	0.139537	0.077642
226	0	-0.016257	0.017702	0.005097	0.011609	0.057453	-0.012070
226	1.250	-0.016257	0.017702	0.005097	0.011609	0.063823	0.010057

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
227	0	-0.006958	-0.001302	-0.002054	0.004662	0.034381	0.001184
227	1.250	-0.006958	-0.001302	-0.002054	0.004662	0.031813	-0.000443
228	0	-0.002039	4.18E-07	-0.001667	2.10E-08	0.026641	-1.46E-07
228	1.250	-0.002039	4.18E-07	-0.001667	2.10E-08	0.024557	3.76E-07
229	0	-0.006955	0.001534	-0.002055	-0.004662	0.034381	-0.001329
229	1.250	-0.006955	0.001534	-0.002055	-0.004662	0.031812	0.000589
230	0	-0.016252	-0.017708	0.005095	-0.011609	0.057454	0.012073
230	1.250	-0.016252	-0.017708	0.005095	-0.011609	0.063822	-0.010062
231	0	-0.015503	-0.127610	0.001081	-0.046346	0.138185	0.081843
231	1.250	-0.015503	-0.127610	0.001081	-0.046346	0.139536	-0.077663
232	0	-0.029981	-0.446120	-1.186	-0.262889	1.084	0.283412
232	1.250	-0.029981	-0.446120	-1.186	-0.262889	-0.397949	-0.274216
233	0	-0.024020	-0.985828	-0.113445	1.497	0.019814	0.676580
233	1.250	-0.024020	-0.985828	-0.113445	1.497	-0.121987	-0.555656
234	0	0.014701	-0.350443	1.396	-0.177442	-1.213	0.222579
234	1.250	0.014701	-0.350443	1.396	-0.177442	0.532060	-0.215457
235	0	-0.002600	-0.116953	0.169681	-0.092814	-0.312535	0.075727
235	1.250	-0.002600	-0.116953	0.169681	-0.092814	-0.100441	-0.070459
236	0	0.011103	0.018569	-0.008442	-0.026945	-0.103635	-0.007617
236	1.250	0.011103	0.018569	-0.008442	-0.026945	-0.114187	0.015593
237	0	0.031228	0.074643	-0.001864	-0.010797	-0.063797	-0.042506
237	1.250	0.031228	0.074643	-0.001864	-0.010797	-0.066127	0.050794
238	0	0.061637	0.098419	0.001658	-0.003539	-0.047162	-0.056937
238	1.250	0.061637	0.098419	0.001658	-0.003539	-0.045090	0.066082
239	0	0.112999	0.120496	0.001888	0.003072	-0.043172	-0.071387
239	1.250	0.112999	0.120496	0.001888	0.003072	-0.040811	0.079227
240	0	0.173576	0.159850	0.003950	0.010422	-0.053722	-0.101690
240	1.250	0.173576	0.159850	0.003950	0.010422	-0.048785	0.098115
241	0	0.190353	0.225662	0.012200	0.019101	-0.085934	-0.160382
241	1.250	0.190353	0.225662	0.012200	0.019101	-0.070685	0.121684
242	0	0.022483	0.286209	0.035215	0.027855	-0.154370	-0.245184
242	1.250	0.022483	0.286209	0.035215	0.027855	-0.110353	0.112562
243	0	-0.521604	0.109962	0.056197	0.020204	-0.196127	-0.142876
243	1.250	-0.521604	0.109962	0.056197	0.020204	-0.125884	-0.005429
244	0	-0.083393	-0.654393	0.213834	-0.039694	-0.188420	0.379069
244	1.250	-0.083393	-0.654393	0.213834	-0.039694	0.078862	-0.438890

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
245	0	-0.090953	-0.542337	0.065784	-0.065584	-0.096433	0.325091
245	1.250	-0.090953	-0.542337	0.065784	-0.065584	-0.014206	-0.352804
246	0	0.067179	-0.304624	0.018222	-0.038717	-0.049752	0.179681
246	1.250	0.067179	-0.304624	0.018222	-0.038717	-0.026976	-0.201084
247	0	0.104586	-0.185145	0.008141	-0.018830	-0.032517	0.100050
247	1.250	0.104586	-0.185145	0.008141	-0.018830	-0.022342	-0.131372
248	0	0.074545	-0.115040	0.006549	-0.003096	-0.027312	0.057250
248	1.250	0.074545	-0.115040	0.006549	-0.003096	-0.019126	-0.086545
249	0	0.039267	-0.074704	0.008480	0.011637	-0.030759	0.034691
249	1.250	0.039267	-0.074704	0.008480	0.011637	-0.020160	-0.058686
250	0	0.006760	-0.051796	0.014149	0.030325	-0.043176	0.020747
250	1.250	0.006760	-0.051796	0.014149	0.030325	-0.025491	-0.043995
251	0	-0.053192	-0.021384	0.036686	0.061248	-0.066660	-0.000634
251	1.250	-0.053192	-0.021384	0.036686	0.061248	-0.020805	-0.027363
252	0	-0.165130	0.061269	0.099542	0.091647	-0.068906	-0.047433
252	1.250	-0.165130	0.061269	0.099542	0.091647	0.055516	0.029150
253	0	-0.236197	0.238987	0.019224	-0.042341	0.152154	-0.119730
253	1.250	-0.236197	0.238987	0.019224	-0.042341	0.176183	0.178991
254	0	0.038232	0.486617	0.055263	-0.387251	-0.059678	-0.094415
254	1.250	0.038232	0.486617	0.055263	-0.387251	0.009398	0.513833
255	0	0.208570	0.305858	-0.091058	-0.010955	-0.096849	-0.113855
255	1.250	0.208570	0.305858	-0.091058	-0.010955	-0.210667	0.268452
256	0	0.090527	0.066635	-0.065606	0.074221	0.076985	-0.046128
256	1.250	0.090527	0.066635	-0.065606	0.074221	-0.005019	0.037163
257	0	0.005712	0.010261	-0.010981	0.028787	0.038324	-0.011814
257	1.250	0.005712	0.010261	-0.010981	0.028787	0.024598	0.001011
258	0	-0.004961	0.000919	-0.005671	0.010515	0.021693	-0.001761
258	1.250	-0.004961	0.000919	-0.005671	0.010515	0.014604	-0.000613
259	0	-0.002807	6.79E-07	-0.004653	-5.13E-09	0.017053	-1.67E-07
259	1.250	-0.002807	6.79E-07	-0.004653	-5.13E-09	0.011237	6.82E-07
260	0	-0.004959	-0.000918	-0.005672	-0.010515	0.021694	0.001761
260	1.250	-0.004959	-0.000918	-0.005672	-0.010515	0.014604	0.000614
261	0	0.005714	-0.010272	-0.010983	-0.028788	0.038325	0.011822
261	1.250	0.005714	-0.010272	-0.010983	-0.028788	0.024597	-0.001017
262	0	0.090525	-0.065624	-0.065607	-0.074222	0.076986	0.045498
262	1.250	0.090525	-0.065624	-0.065607	-0.074222	-0.005020	-0.036529

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
263	0	0.208565	-0.304825	-0.091059	0.010955	-0.096849	0.113211
263	1.250	0.208565	-0.304825	-0.091059	0.010955	-0.210668	-0.267805
264	0	0.038229	-0.486566	0.055263	0.387253	-0.059677	0.094380
264	1.250	0.038229	-0.486566	0.055263	0.387253	0.009398	-0.513803
265	0	-0.236199	-0.238987	0.019223	0.042341	0.152154	0.119731
265	1.250	-0.236199	-0.238987	0.019223	0.042341	0.176182	-0.178991
266	0	-0.165127	-0.061273	0.099532	-0.091647	-0.068900	0.047436
266	1.250	-0.165127	-0.061273	0.099532	-0.091647	0.055510	-0.029152
267	0	-0.053190	0.021404	0.036687	-0.061248	-0.066661	0.000619
267	1.250	-0.053190	0.021404	0.036687	-0.061248	-0.020803	0.027373
268	0	0.006761	0.050911	0.014170	-0.030325	-0.043189	-0.020194
268	1.250	0.006761	0.050911	0.014170	-0.030325	-0.025477	0.043442
269	0	0.039270	0.074704	0.008480	-0.011637	-0.030759	-0.034690
269	1.250	0.039270	0.074704	0.008480	-0.011637	-0.020159	0.058686
270	0	0.074547	0.114141	0.006560	0.003096	-0.027319	-0.056688
270	1.250	0.074547	0.114141	0.006560	0.003096	-0.019119	0.085983
271	0	0.104584	0.185126	0.008143	0.018829	-0.032519	-0.100037
271	1.250	0.104584	0.185126	0.008143	0.018829	-0.022340	0.131361
272	0	0.067177	0.304609	0.018216	0.038717	-0.049749	-0.179669
272	1.250	0.067177	0.304609	0.018216	0.038717	-0.026980	0.201076
273	0	-0.090953	0.542345	0.065779	0.065584	-0.096430	-0.325095
273	1.250	-0.090953	0.542345	0.065779	0.065584	-0.014209	0.352809
274	0	-0.083393	0.654405	0.213834	0.039694	-0.188420	-0.379077
274	1.250	-0.083393	0.654405	0.213834	0.039694	0.078862	0.438897
1601	0	-0.740602	-1.12E-05	2.667	0.002182	-15.109	-0.000216
1601	11.000	-0.740602	-1.12E-05	2.667	0.002182	14.228	-0.000339
1602	0	-0.740600	-1.12E-05	-2.667	-0.002182	15.109	-0.000216
1602	11.000	-0.740600	-1.12E-05	-2.667	-0.002182	-14.228	-0.000339

CARGAS: '' Ejec. "0001"

Hipótesis	Factor	Etapa	Titulo
22	1.0000		Termico

DESPLAZAMIENTOS:

NUDOS	DX [mm]	DY [mm]	DZ [mm]	RX [rad]	RY [rad]	RZ [rad]
1	4.032	0.000215	2.93E-18	7.84E-07	-1.02E-05	-3.27E-07
2	4.033	0.000139	0.000970	6.40E-07	-9.97E-06	-3.90E-07
3	4.033	-4.61E-05	0.001405	9.70E-10	-9.81E-06	-8.76E-08
4	4.033	-0.000209	0.000975	-6.42E-07	-9.91E-06	1.98E-07
5	4.033	-0.000233	2.93E-18	-7.94E-07	-1.00E-05	9.59E-08
6	3.790	-0.000145	0.012947	5.08E-07	-9.84E-06	-2.32E-07
7	3.791	-0.000174	0.013519	3.88E-07	-9.64E-06	-2.19E-07
8	3.791	-0.000173	0.013765	-1.31E-08	-9.52E-06	-8.70E-08
9	3.791	-0.000168	0.013479	-4.22E-07	-9.62E-06	3.16E-08
10	3.791	-0.000188	0.012858	-5.42E-07	-9.79E-06	9.65E-09
11	3.548	-0.000366	0.024908	3.22E-07	-8.79E-06	-1.27E-07
12	3.549	-0.000349	0.025261	2.35E-07	-8.70E-06	-1.25E-07
13	3.549	-0.000302	0.025403	-9.71E-09	-8.65E-06	-8.27E-08
14	3.549	-0.000256	0.025235	-2.52E-07	-8.72E-06	-4.81E-08
15	3.549	-0.000242	0.024863	-3.35E-07	-8.82E-06	-6.50E-08
16	3.306	-0.000486	0.035177	2.29E-07	-7.20E-06	-7.08E-08
17	3.307	-0.000463	0.035429	1.68E-07	-7.16E-06	-7.79E-08
18	3.307	-0.000420	0.035537	3.76E-09	-7.15E-06	-6.97E-08
19	3.307	-0.000378	0.035441	-1.55E-07	-7.19E-06	-6.65E-08
20	3.307	-0.000355	0.035209	-2.14E-07	-7.24E-06	-9.14E-08
21	3.065	-0.000558	0.043043	1.99E-07	-5.03E-06	-4.60E-08
22	3.065	-0.000543	0.043263	1.49E-07	-5.03E-06	-4.87E-08
23	3.065	-0.000516	0.043367	1.52E-08	-5.03E-06	-5.05E-08
24	3.065	-0.000489	0.043304	-1.15E-07	-5.04E-06	-5.75E-08
25	3.065	-0.000473	0.043128	-1.65E-07	-5.05E-06	-8.08E-08
26	2.823	-0.000607	0.047744	2.19E-07	-2.25E-06	-3.07E-08
27	2.823	-0.000599	0.047987	1.65E-07	-2.28E-06	-2.41E-08
28	2.823	-0.000584	0.048104	2.07E-08	-2.30E-06	-2.53E-08
29	2.823	-0.000569	0.048040	-1.22E-07	-2.28E-06	-3.35E-08
30	2.823	-0.000561	0.047851	-1.77E-07	-2.25E-06	-5.25E-08
31	2.581	-0.000636	0.048490	2.96E-07	1.16E-06	-1.34E-08
32	2.581	-0.000627	0.048819	2.23E-07	1.08E-06	4.49E-09
33	2.581	-0.000615	0.048971	2.14E-08	1.04E-06	7.49E-09
34	2.581	-0.000608	0.048873	-1.79E-07	1.08E-06	7.03E-11
35	2.581	-0.000606	0.048598	-2.53E-07	1.16E-06	-1.84E-08
36	2.339	-0.000635	0.044460	4.51E-07	5.22E-06	1.52E-08
37	2.339	-0.000614	0.044975	3.57E-07	5.06E-06	4.43E-08
38	2.339	-0.000595	0.045207	1.93E-08	4.97E-06	4.97E-08
39	2.339	-0.000592	0.045024	-3.18E-07	5.07E-06	4.25E-08
40	2.339	-0.000604	0.044558	-4.12E-07	5.23E-06	2.03E-08
41	2.097	-0.000577	0.034783	6.70E-07	9.96E-06	7.78E-08
42	2.097	-0.000534	0.035639	6.55E-07	9.72E-06	1.01E-07
43	2.097	-0.000501	0.036127	1.62E-08	9.37E-06	9.77E-08
44	2.097	-0.000502	0.035680	-6.22E-07	9.73E-06	9.30E-08
45	2.096	-0.000537	0.034865	-6.37E-07	9.96E-06	7.85E-08
46	1.855	-0.000399	0.018763	7.13E-07	1.50E-05	2.00E-07

DESPLAZAMIENTOS:

NUDOS	DX [mm]	DY [mm]	DZ [mm]	RX [rad]	RY [rad]	RZ [rad]
47	1.855	-0.000357	0.019879	1.07E-06	1.51E-05	1.70E-07
48	1.855	-0.000320	0.021116	1.46E-08	1.44E-05	1.37E-07
49	1.854	-0.000316	0.019914	-1.04E-06	1.51E-05	1.31E-07
50	1.854	-0.000367	0.018833	-6.84E-07	1.50E-05	1.78E-07
51	1.613	-7.13E-05	-0.002816	1.99E-07	1.87E-05	3.25E-07
52	1.613	-7.14E-05	-0.002582	1.52E-07	1.95E-05	2.58E-07
53	1.612	-7.78E-05	-0.002517	1.53E-08	2.42E-05	1.41E-07
54	1.612	-8.28E-05	-0.002543	-1.20E-07	1.95E-05	7.31E-08
55	1.612	-7.57E-05	-0.002736	-1.67E-07	1.87E-05	2.83E-07
56	1.290	0.000378	-0.033378	-5.32E-07	1.68E-05	2.03E-07
57	1.290	0.000342	-0.034217	-7.80E-07	1.68E-05	1.73E-07
58	1.290	0.000310	-0.035052	1.58E-08	1.61E-05	1.39E-07
59	1.290	0.000304	-0.034177	8.12E-07	1.68E-05	1.35E-07
60	1.290	0.000338	-0.033298	5.63E-07	1.68E-05	1.87E-07
61	0.967826	0.000638	-0.058528	-3.69E-07	1.26E-05	1.02E-07
62	0.967686	0.000612	-0.058967	-3.10E-07	1.24E-05	1.17E-07
63	0.967547	0.000591	-0.059152	1.31E-08	1.23E-05	1.15E-07
64	0.967417	0.000589	-0.058935	3.35E-07	1.24E-05	1.13E-07
65	0.967284	0.000603	-0.058466	3.93E-07	1.26E-05	1.10E-07
66	0.645213	0.000778	-0.076337	-1.82E-07	8.33E-06	6.19E-08
67	0.645128	0.000772	-0.076536	-1.31E-07	8.27E-06	7.18E-08
68	0.645036	0.000764	-0.076610	1.04E-08	8.24E-06	7.54E-08
69	0.644944	0.000762	-0.076510	1.51E-07	8.27E-06	7.46E-08
70	0.644854	0.000762	-0.076287	2.02E-07	8.33E-06	7.10E-08
71	0.322606	0.000860	-0.086973	-9.67E-08	4.16E-06	3.18E-08
72	0.322564	0.000860	-0.087077	-6.75E-08	4.14E-06	3.49E-08
73	0.322518	0.000859	-0.087114	9.41E-09	4.12E-06	3.67E-08
74	0.322472	0.000857	-0.087053	8.62E-08	4.14E-06	3.70E-08
75	0.322427	0.000856	-0.086926	1.16E-07	4.16E-06	3.62E-08
76	7.72E-08	0.000888	-0.090514	-7.28E-08	-5.08E-12	-2.70E-13
77	7.73E-08	0.000889	-0.090591	-5.00E-08	-5.08E-12	-1.15E-13
78	7.74E-08	0.000889	-0.090617	9.26E-09	-5.01E-12	-5.09E-14
79	7.75E-08	0.000888	-0.090568	6.86E-08	-4.95E-12	1.35E-14
80	7.74E-08	0.000888	-0.090467	9.15E-08	-4.96E-12	1.69E-13
81	-0.322606	0.000860	-0.086973	-9.67E-08	-4.16E-06	-3.18E-08
82	-0.322564	0.000860	-0.087077	-6.75E-08	-4.14E-06	-3.49E-08
83	-0.322518	0.000859	-0.087114	9.41E-09	-4.12E-06	-3.67E-08
84	-0.322472	0.000857	-0.087053	8.62E-08	-4.14E-06	-3.70E-08
85	-0.322426	0.000856	-0.086926	1.16E-07	-4.16E-06	-3.62E-08
86	-0.645213	0.000778	-0.076337	-1.82E-07	-8.33E-06	-6.19E-08
87	-0.645128	0.000772	-0.076536	-1.31E-07	-8.27E-06	-7.18E-08
88	-0.645036	0.000764	-0.076609	1.04E-08	-8.24E-06	-7.54E-08
89	-0.644943	0.000762	-0.076510	1.51E-07	-8.27E-06	-7.46E-08
90	-0.644853	0.000762	-0.076287	2.02E-07	-8.33E-06	-7.10E-08
91	-0.967826	0.000638	-0.058528	-3.69E-07	-1.26E-05	-1.02E-07
92	-0.967686	0.000612	-0.058967	-3.10E-07	-1.24E-05	-1.17E-07
93	-0.967547	0.000591	-0.059152	1.31E-08	-1.23E-05	-1.15E-07
94	-0.967417	0.000589	-0.058935	3.35E-07	-1.24E-05	-1.13E-07
95	-0.967284	0.000603	-0.058466	3.93E-07	-1.26E-05	-1.10E-07
96	-1.290	0.000378	-0.033378	-5.32E-07	-1.68E-05	-2.03E-07
97	-1.290	0.000342	-0.034217	-7.80E-07	-1.68E-05	-1.73E-07
98	-1.290	0.000310	-0.035052	1.58E-08	-1.61E-05	-1.39E-07
99	-1.290	0.000304	-0.034177	8.12E-07	-1.68E-05	-1.35E-07
100	-1.290	0.000338	-0.033298	5.63E-07	-1.68E-05	-1.87E-07

DESPLAZAMIENTOS:

NUDOS	DX [mm]	DY [mm]	DZ [mm]	RX [rad]	RY [rad]	RZ [rad]
101	-1.613	-7.13E-05	-0.002816	1.99E-07	-1.87E-05	-3.25E-07
102	-1.613	-7.14E-05	-0.002582	1.52E-07	-1.95E-05	-2.58E-07
103	-1.612	-7.78E-05	-0.002517	1.53E-08	-2.42E-05	-1.41E-07
104	-1.612	-8.28E-05	-0.002543	-1.20E-07	-1.95E-05	-7.31E-08
105	-1.612	-7.57E-05	-0.002736	-1.67E-07	-1.87E-05	-2.83E-07
106	-1.855	-0.000399	0.018763	7.13E-07	-1.50E-05	-2.00E-07
107	-1.855	-0.000357	0.019879	1.07E-06	-1.51E-05	-1.70E-07
108	-1.855	-0.000320	0.021116	1.46E-08	-1.44E-05	-1.37E-07
109	-1.854	-0.000316	0.019914	-1.04E-06	-1.51E-05	-1.31E-07
110	-1.854	-0.000367	0.018833	-6.84E-07	-1.50E-05	-1.78E-07
111	-2.097	-0.000577	0.034783	6.70E-07	-9.96E-06	-7.78E-08
112	-2.097	-0.000534	0.035639	6.55E-07	-9.72E-06	-1.01E-07
113	-2.097	-0.000501	0.036127	1.62E-08	-9.37E-06	-9.77E-08
114	-2.097	-0.000502	0.035680	-6.22E-07	-9.73E-06	-9.30E-08
115	-2.096	-0.000537	0.034865	-6.37E-07	-9.96E-06	-7.85E-08
116	-2.339	-0.000635	0.044460	4.51E-07	-5.22E-06	-1.52E-08
117	-2.339	-0.000614	0.044975	3.57E-07	-5.06E-06	-4.43E-08
118	-2.339	-0.000595	0.045207	1.93E-08	-4.97E-06	-4.97E-08
119	-2.339	-0.000592	0.045024	-3.18E-07	-5.07E-06	-4.25E-08
120	-2.339	-0.000604	0.044558	-4.12E-07	-5.23E-06	-2.03E-08
121	-2.581	-0.000636	0.048490	2.96E-07	-1.16E-06	1.34E-08
122	-2.581	-0.000627	0.048819	2.23E-07	-1.08E-06	-4.49E-09
123	-2.581	-0.000615	0.048971	2.14E-08	-1.04E-06	-7.49E-09
124	-2.581	-0.000608	0.048873	-1.79E-07	-1.08E-06	-6.99E-11
125	-2.581	-0.000606	0.048598	-2.53E-07	-1.16E-06	1.84E-08
126	-2.823	-0.000607	0.047744	2.19E-07	2.25E-06	3.07E-08
127	-2.823	-0.000599	0.047987	1.65E-07	2.28E-06	2.41E-08
128	-2.823	-0.000584	0.048104	2.07E-08	2.30E-06	2.53E-08
129	-2.823	-0.000569	0.048040	-1.22E-07	2.28E-06	3.35E-08
130	-2.823	-0.000561	0.047851	-1.77E-07	2.25E-06	5.25E-08
131	-3.065	-0.000558	0.043043	1.99E-07	5.03E-06	4.60E-08
132	-3.065	-0.000543	0.043263	1.49E-07	5.03E-06	4.87E-08
133	-3.065	-0.000516	0.043367	1.52E-08	5.03E-06	5.05E-08
134	-3.065	-0.000489	0.043304	-1.15E-07	5.04E-06	5.75E-08
135	-3.065	-0.000473	0.043128	-1.65E-07	5.05E-06	8.08E-08
136	-3.307	-0.000486	0.035177	2.29E-07	7.20E-06	7.08E-08
137	-3.307	-0.000463	0.035429	1.68E-07	7.16E-06	7.79E-08
138	-3.307	-0.000420	0.035537	3.76E-09	7.15E-06	6.97E-08
139	-3.307	-0.000378	0.035442	-1.55E-07	7.19E-06	6.65E-08
140	-3.307	-0.000355	0.035209	-2.14E-07	7.24E-06	9.14E-08
141	-3.548	-0.000366	0.024908	3.22E-07	8.79E-06	1.27E-07
142	-3.549	-0.000349	0.025261	2.35E-07	8.70E-06	1.25E-07
143	-3.549	-0.000302	0.025403	-9.71E-09	8.65E-06	8.27E-08
144	-3.549	-0.000256	0.025235	-2.52E-07	8.72E-06	4.81E-08
145	-3.549	-0.000242	0.024863	-3.35E-07	8.82E-06	6.50E-08
146	-3.790	-0.000145	0.012947	5.08E-07	9.84E-06	2.32E-07
147	-3.791	-0.000174	0.013519	3.88E-07	9.64E-06	2.19E-07
148	-3.791	-0.000173	0.013765	-1.31E-08	9.52E-06	8.70E-08
149	-3.791	-0.000168	0.013479	-4.22E-07	9.62E-06	-3.16E-08
150	-3.791	-0.000188	0.012858	-5.42E-07	9.79E-06	-9.65E-09
151	-4.032	0.000215	2.93E-18	7.84E-07	1.02E-05	3.27E-07
152	-4.033	0.000139	0.000970	6.40E-07	9.97E-06	3.90E-07
153	-4.033	-4.61E-05	0.001405	9.70E-10	9.81E-06	8.76E-08
154	-4.033	-0.000209	0.000975	-6.42E-07	9.91E-06	-1.98E-07

DESPLAZAMIENTOS:

NUDOS	DX [mm]	DY [mm]	DZ [mm]	RX [rad]	RY [rad]	RZ [rad]
155	-4.033	-0.000233	2.93E-18	-7.94E-07	1.00E-05	-9.59E-08
601	2.11E-17	8.90E-23	-5.86E-18	1.71E-24	1.20E-19	1.73E-23
602	-2.11E-17	8.90E-23	-5.86E-18	1.71E-24	-1.20E-19	-1.73E-23

REACCIONES EN APOYOS:

NUDOS	FX [t]	FY [t]	FZ [t]	MX [tm]	MY [tm]	MZ [tm]
1	-2.016	-0.000107	-0.293209			
5	-2.016	0.000116	-0.293101			
151	2.016	-0.000107	-0.293208			
155	2.016	0.000116	-0.293101			
601	-2.111	-8.90E-06	0.586310	-0.000171	-11.962	-0.001727
602	2.111	-8.90E-06	0.586309	-0.000171	11.962	0.001727
Sumas:	2.38E-07		0	-5.96E-08		

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
1	0	1.542	-0.217194	-0.118208	-0.068228	0.059373	0.311057
1	1.275	1.542	-0.217194	-0.118208	-0.068228	-0.091336	0.034146
2	0	1.205	-0.322230	-0.082897	-0.046133	-0.030166	0.238018
2	1.275	1.205	-0.322230	-0.082897	-0.046133	-0.135855	-0.172809
3	0	1.049	-0.260373	-0.069181	-0.022768	-0.107612	-0.075852
3	1.275	1.049	-0.260373	-0.069181	-0.022768	-0.195814	-0.407814
4	0	0.986270	-0.173251	-0.057264	-0.007580	-0.184061	-0.365394
4	1.275	0.986270	-0.173251	-0.057264	-0.007580	-0.257070	-0.586280
5	0	0.980976	-0.116825	-0.047786	0.004923	-0.256244	-0.581678
5	1.275	0.980976	-0.116825	-0.047786	0.004923	-0.317169	-0.730624
6	0	1.010	-0.087224	-0.038841	0.019158	-0.326759	-0.752191
6	1.275	1.010	-0.087224	-0.038841	0.019158	-0.376279	-0.863398
7	0	1.061	-0.055725	-0.026380	0.038286	-0.399978	-0.904186
7	1.275	1.061	-0.055725	-0.026380	0.038286	-0.433611	-0.975232
8	0	1.124	0.023205	0.003668	0.054136	-0.481471	-1.029
8	1.275	1.124	0.023205	0.003668	0.054136	-0.476794	-0.999687
9	0	1.174	0.181659	0.082305	0.010515	-0.549044	-1.042
9	1.275	1.174	0.181659	0.082305	0.010515	-0.444109	-0.809982
10	0	1.155	0.334276	0.094552	-0.126918	-0.412651	-0.784040
10	1.275	1.155	0.334276	0.094552	-0.126918	-0.292103	-0.357855

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
11	0	0.957238	0.333525	0.140412	-0.135502	0.007266	-0.181453
11	1.700	0.957238	0.333525	0.140412	-0.135502	0.245957	0.385517
12	0	0.918379	0.159965	0.069677	0.030167	0.251160	0.444729
12	1.700	0.918379	0.159965	0.069677	0.030167	0.369606	0.716659
13	0	0.942892	0.034268	0.016310	0.034684	0.310549	0.684331
13	1.700	0.942892	0.034268	0.016310	0.034684	0.338275	0.742584
14	0	0.957570	0.000991	0.006514	0.015820	0.315415	0.721667
14	1.700	0.957570	0.000991	0.006514	0.015820	0.326488	0.723351
15	0	0.961020	-0.001406	0.001805	0.004441	0.318096	0.717603
15	1.700	0.961020	-0.001406	0.001805	0.004441	0.321165	0.715213
16	0	0.960999	0.001404	-0.001806	-0.004441	0.321166	0.715215
16	1.700	0.960999	0.001404	-0.001806	-0.004441	0.318095	0.717602
17	0	0.957641	-0.000986	-0.006513	-0.015820	0.326487	0.723351
17	1.700	0.957641	-0.000986	-0.006513	-0.015820	0.315416	0.721675
18	0	0.942892	-0.034263	-0.016309	-0.034684	0.338274	0.742586
18	1.700	0.942892	-0.034263	-0.016309	-0.034684	0.310549	0.684341
19	0	0.918357	-0.159961	-0.069676	-0.030167	0.369604	0.716651
19	1.700	0.918357	-0.159961	-0.069676	-0.030167	0.251159	0.444728
20	0	0.957249	-0.333529	-0.140411	0.135502	0.245955	0.385512
20	1.700	0.957249	-0.333529	-0.140411	0.135502	0.007266	-0.181463
21	0	1.155	-0.334273	-0.094552	0.126918	-0.292102	-0.357851
21	1.275	1.155	-0.334273	-0.094552	0.126918	-0.412650	-0.784032
22	0	1.173	-0.181662	-0.082306	-0.010515	-0.444108	-0.809972
22	1.275	1.173	-0.181662	-0.082306	-0.010515	-0.549043	-1.042
23	0	1.125	-0.023204	-0.003667	-0.054135	-0.476794	-0.999690
23	1.275	1.125	-0.023204	-0.003667	-0.054135	-0.481470	-1.029
24	0	1.061	0.055722	0.026379	-0.038286	-0.433610	-0.975231
24	1.275	1.061	0.055722	0.026379	-0.038286	-0.399978	-0.904188
25	0	1.011	0.087228	0.038842	-0.019158	-0.376280	-0.863399
25	1.275	1.011	0.087228	0.038842	-0.019158	-0.326758	-0.752188
26	0	0.981127	0.116831	0.047788	-0.004923	-0.317170	-0.730626
26	1.275	0.981127	0.116831	0.047788	-0.004923	-0.256243	-0.581673
27	0	0.986421	0.173253	0.057264	0.007580	-0.257070	-0.586281
27	1.275	0.986421	0.173253	0.057264	0.007580	-0.184061	-0.365392
28	0	1.048	0.260368	0.069179	0.022768	-0.195813	-0.407812
28	1.275	1.048	0.260368	0.069179	0.022768	-0.107613	-0.075855

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
29	0	1.205	0.322224	0.082895	0.046133	-0.135854	-0.172807
29	1.275	1.205	0.322224	0.082895	0.046133	-0.030167	0.238013
30	0	1.542	0.217192	0.118207	0.068228	-0.091336	0.034144
30	1.275	1.542	0.217192	0.118207	0.068228	0.059373	0.311053
31	0	0.447602	-0.250140	-0.122377	-0.056788	-0.033261	0.236085
31	1.275	0.447602	-0.250140	-0.122377	-0.056788	-0.189285	-0.082831
32	0	0.692050	-0.143679	-0.134876	-0.034609	-0.225908	0.133288
32	1.275	0.692050	-0.143679	-0.134876	-0.034609	-0.397868	-0.049896
33	0	0.811390	-0.052615	-0.144621	-0.015073	-0.416377	0.053785
33	1.275	0.811390	-0.052615	-0.144621	-0.015073	-0.600761	-0.013296
34	0	0.883373	-0.000299	-0.154676	-0.004334	-0.610068	0.012303
34	1.275	0.883373	-0.000299	-0.154676	-0.004334	-0.807272	0.011922
35	0	0.929358	0.031781	-0.161239	0.003634	-0.808922	-0.010472
35	1.275	0.929358	0.031781	-0.161239	0.003634	-1.014	0.030046
36	0	0.958401	0.051043	-0.167091	0.013135	-1.009	-0.021256
36	1.275	0.958401	0.051043	-0.167091	0.013135	-1.222	0.043821
37	0	0.972923	0.057934	-0.179904	0.030219	-1.206	-0.020867
37	1.275	0.972923	0.057934	-0.179904	0.030219	-1.435	0.052995
38	0	0.954872	0.040560	-0.216494	0.067307	-1.408	-0.002766
38	1.275	0.954872	0.040560	-0.216494	0.067307	-1.684	0.048945
39	0	0.897189	-0.011637	-0.161616	0.092733	-1.684	0.036287
39	1.275	0.897189	-0.011637	-0.161616	0.092733	-1.890	0.021451
40	0	0.867137	-0.041121	0.930479	-0.206191	-2.062	0.063500
40	1.275	0.867137	-0.041121	0.930479	-0.206191	-0.875363	0.011074
41	0	1.284	-0.064497	0.794612	-0.157764	0.009119	0.027227
41	1.700	1.284	-0.064497	0.794612	-0.157764	1.360	-0.082414
42	0	1.216	-0.033174	-0.072462	0.079486	1.147	0.010686
42	1.700	1.216	-0.033174	-0.072462	0.079486	1.024	-0.045707
43	0	1.147	0.001411	-0.017550	0.030337	1.048	-0.014876
43	1.700	1.147	0.001411	-0.017550	0.030337	1.018	-0.012478
44	0	1.133	0.003628	-0.003899	0.010758	1.032	-0.014108
44	1.700	1.133	0.003628	-0.003899	0.010758	1.025	-0.007940
45	0	1.134	0.000960	-0.001059	0.002954	1.030	-0.011137
45	1.700	1.134	0.000960	-0.001059	0.002954	1.028	-0.009505
46	0	1.134	-0.000960	0.001062	-0.002954	1.028	-0.009505
46	1.700	1.134	-0.000960	0.001062	-0.002954	1.030	-0.011137

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
47	0	1.133	-0.003627	0.003894	-0.010759	1.025	-0.007941
47	1.700	1.133	-0.003627	0.003894	-0.010759	1.032	-0.014106
48	0	1.147	-0.001408	0.017551	-0.030337	1.018	-0.012480
48	1.700	1.147	-0.001408	0.017551	-0.030337	1.048	-0.014873
49	0	1.215	0.033176	0.072460	-0.079485	1.024	-0.045710
49	1.700	1.215	0.033176	0.072460	-0.079485	1.147	0.010686
50	0	1.284	0.064493	-0.794612	0.157765	1.360	-0.082411
50	1.700	1.284	0.064493	-0.794612	0.157765	0.009120	0.027221
51	0	0.867338	0.041116	-0.930475	0.206191	-0.875362	0.011079
51	1.275	0.867338	0.041116	-0.930475	0.206191	-2.062	0.063500
52	0	0.897592	0.011636	0.161621	-0.092733	-1.890	0.021451
52	1.275	0.897592	0.011636	0.161621	-0.092733	-1.684	0.036287
53	0	0.955274	-0.040563	0.216495	-0.067307	-1.684	0.048946
53	1.275	0.955274	-0.040563	0.216495	-0.067307	-1.408	-0.002769
54	0	0.972216	-0.057937	0.179891	-0.030219	-1.435	0.052998
54	1.275	0.972216	-0.057937	0.179891	-0.030219	-1.206	-0.020869
55	0	0.958501	-0.051044	0.167095	-0.013135	-1.222	0.043822
55	1.275	0.958501	-0.051044	0.167095	-0.013135	-1.009	-0.021256
56	0	0.929458	-0.031780	0.161244	-0.003634	-1.014	0.030046
56	1.275	0.929458	-0.031780	0.161244	-0.003634	-0.808918	-0.010472
57	0	0.883473	0.000300	0.154677	0.004334	-0.807272	0.011921
57	1.275	0.883473	0.000300	0.154677	0.004334	-0.610067	0.012304
58	0	0.810865	0.052619	0.144614	0.015073	-0.600756	-0.013298
58	1.275	0.810865	0.052619	0.144614	0.015073	-0.416381	0.053788
59	0	0.692272	0.143683	0.134875	0.034609	-0.397868	-0.049900
59	1.275	0.692272	0.143683	0.134875	0.034609	-0.225908	0.133289
60	0	0.447017	0.250140	0.122378	0.056788	-0.189287	-0.082832
60	1.275	0.447017	0.250140	0.122378	0.056788	-0.033261	0.236084
61	0	0.114394	0.054285	-0.097114	-0.004245	-0.042116	-0.034364
61	1.275	0.114394	0.054285	-0.097114	-0.004245	-0.165932	0.034847
62	0	0.431666	0.070662	-0.147807	0.001032	-0.212544	-0.043042
62	1.275	0.431666	0.070662	-0.147807	0.001032	-0.400990	0.047048
63	0	0.647516	0.068439	-0.161437	0.004051	-0.425857	-0.037678
63	1.275	0.647516	0.068439	-0.161437	0.004051	-0.631681	0.049578
64	0	0.763069	0.066417	-0.166418	0.003439	-0.642395	-0.033502
64	1.275	0.763069	0.066417	-0.166418	0.003439	-0.854569	0.051176

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
65	0	0.819107	0.067370	-0.170824	0.001658	-0.856201	-0.031366
65	1.275	0.819107	0.067370	-0.170824	0.001658	-1.074	0.054527
66	0	0.838061	0.067304	-0.175234	0.000210	-1.067	-0.027828
66	1.275	0.838061	0.067304	-0.175234	0.000210	-1.291	0.057981
67	0	0.832292	0.053632	-0.173412	-0.000644	-1.274	-0.014809
67	1.275	0.832292	0.053632	-0.173412	-0.000644	-1.495	0.053568
68	0	0.800675	0.000865	-0.160185	-0.000914	-1.454	0.021551
68	1.275	0.800675	0.000865	-0.160185	-0.000914	-1.658	0.022654
69	0	0.717030	-0.107455	-0.428028	-0.000480	-1.512	0.086584
69	1.275	0.717030	-0.107455	-0.428028	-0.000480	-2.058	-0.050415
70	0	0.488128	-0.218947	-2.637	0.000196	-1.777	0.141492
70	1.275	0.488128	-0.218947	-2.637	0.000196	-5.140	-0.137654
71	0	1.600	-0.213844	-1.871	0.000120	3.755	0.180857
71	1.700	1.600	-0.213844	-1.871	0.000120	0.574235	-0.182664
72	0	1.354	-0.095329	0.005378	-0.000619	0.990058	0.072751
72	1.700	1.354	-0.095329	0.005378	-0.000619	0.999201	-0.089302
73	0	1.297	-0.016491	0.002980	-0.000603	1.071	0.000476
73	1.700	1.297	-0.016491	0.002980	-0.000603	1.076	-0.027558
74	0	1.282	0.001699	-0.004916	-0.000223	1.094	-0.014769
74	1.700	1.282	0.001699	-0.004916	-0.000223	1.086	-0.011881
75	0	1.279	0.001253	-0.001416	-3.21E-05	1.093	-0.013715
75	1.700	1.279	0.001253	-0.001416	-3.21E-05	1.091	-0.011584
76	0	1.279	-0.001253	0.001419	3.21E-05	1.091	-0.011584
76	1.700	1.279	-0.001253	0.001419	3.21E-05	1.093	-0.013715
77	0	1.282	-0.001699	0.004911	0.000223	1.086	-0.011881
77	1.700	1.282	-0.001699	0.004911	0.000223	1.094	-0.014769
78	0	1.297	0.016491	-0.002978	0.000603	1.076	-0.027558
78	1.700	1.297	0.016491	-0.002978	0.000603	1.071	0.000476
79	0	1.354	0.095329	-0.005376	0.000619	0.999202	-0.089303
79	1.700	1.354	0.095329	-0.005376	0.000619	0.990063	0.072751
80	0	1.600	0.213845	1.871	-0.000121	0.574246	-0.182664
80	1.700	1.600	0.213845	1.871	-0.000121	3.755	0.180856
81	0	0.487935	0.218947	2.637	-0.000196	-5.140	-0.137654
81	1.275	0.487935	0.218947	2.637	-0.000196	-1.777	0.141492
82	0	0.717442	0.107455	0.428020	0.000480	-2.058	-0.050416
82	1.275	0.717442	0.107455	0.428020	0.000480	-1.512	0.086584

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
83	0	0.800297	-0.000865	0.160184	0.000914	-1.658	0.022654
83	1.275	0.800297	-0.000865	0.160184	0.000914	-1.454	0.021551
84	0	0.832437	-0.053631	0.173416	0.000644	-1.495	0.053568
84	1.275	0.832437	-0.053631	0.173416	0.000644	-1.274	-0.014809
85	0	0.837381	-0.067304	0.175228	-0.000210	-1.291	0.057981
85	1.275	0.837381	-0.067304	0.175228	-0.000210	-1.067	-0.027828
86	0	0.819251	-0.067370	0.170830	-0.001658	-1.074	0.054527
86	1.275	0.819251	-0.067370	0.170830	-0.001658	-0.856196	-0.031366
87	0	0.764038	-0.066416	0.166419	-0.003439	-0.854569	0.051176
87	1.275	0.764038	-0.066416	0.166419	-0.003439	-0.642393	-0.033502
88	0	0.647018	-0.068438	0.161435	-0.004051	-0.631678	0.049578
88	1.275	0.647018	-0.068438	0.161435	-0.004051	-0.425857	-0.037678
89	0	0.431932	-0.070662	0.147806	-0.001032	-0.400986	0.047048
89	1.275	0.431932	-0.070662	0.147806	-0.001032	-0.212541	-0.043042
90	0	0.113837	-0.054285	0.097113	0.004245	-0.165928	0.034847
90	1.275	0.113837	-0.054285	0.097113	0.004245	-0.042113	-0.034364
91	0	0.431467	0.346919	-0.124796	0.049513	-0.015432	-0.295798
91	1.275	0.431467	0.346919	-0.124796	0.049513	-0.174541	0.146506
92	0	0.635576	0.257112	-0.148994	0.038491	-0.204418	-0.199984
92	1.275	0.635576	0.257112	-0.148994	0.038491	-0.394378	0.127821
93	0	0.697637	0.159596	-0.153762	0.021918	-0.409915	-0.110698
93	1.275	0.697637	0.159596	-0.153762	0.021918	-0.605953	0.092779
94	0	0.718794	0.104979	-0.157073	0.009042	-0.612618	-0.063846
94	1.275	0.718794	0.104979	-0.157073	0.009042	-0.812878	0.069997
95	0	0.713147	0.074539	-0.160780	-0.001642	-0.812907	-0.037992
95	1.275	0.713147	0.074539	-0.160780	-0.001642	-1.018	0.057041
96	0	0.695398	0.056833	-0.166175	-0.012986	-1.011	-0.022705
96	1.275	0.695398	0.056833	-0.166175	-0.012986	-1.223	0.049754
97	0	0.676843	0.037465	-0.178865	-0.031150	-1.208	-0.006661
97	1.275	0.676843	0.037465	-0.178865	-0.031150	-1.436	0.041105
98	0	0.679767	-0.013436	-0.214593	-0.068774	-1.409	0.029096
98	1.275	0.679767	-0.013436	-0.214593	-0.068774	-1.682	0.011966
99	0	0.723736	-0.142105	-0.159068	-0.093736	-1.683	0.105058
99	1.275	0.723736	-0.142105	-0.159068	-0.093736	-1.886	-0.076119
100	0	0.811874	-0.340728	0.930755	0.207053	-2.060	0.189448
100	1.275	0.811874	-0.340728	0.930755	0.207053	-0.873437	-0.244963

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
101	0	1.208	-0.291449	0.797193	0.157722	0.005257	0.269474
101	1.700	1.208	-0.291449	0.797193	0.157722	1.360	-0.225970
102	0	1.319	-0.102608	-0.069566	-0.080676	1.144	0.081248
102	1.700	1.319	-0.102608	-0.069566	-0.080676	1.025	-0.093179
103	0	1.368	-0.018670	-0.016770	-0.031155	1.047	0.004347
103	1.700	1.368	-0.018670	-0.016770	-0.031155	1.019	-0.027391
104	0	1.374	-0.001277	-0.004028	-0.010977	1.033	-0.010159
104	1.700	1.374	-0.001277	-0.004028	-0.010977	1.026	-0.012331
105	0	1.372	0.000303	-0.001174	-0.002967	1.030	-0.011287
105	1.700	1.372	0.000303	-0.001174	-0.002967	1.028	-0.010771
106	0	1.372	-0.000304	0.001169	0.002967	1.028	-0.010770
106	1.700	1.372	-0.000304	0.001169	0.002967	1.030	-0.011287
107	0	1.374	0.001276	0.004038	0.010977	1.026	-0.012330
107	1.700	1.374	0.001276	0.004038	0.010977	1.033	-0.010160
108	0	1.368	0.018667	0.016768	0.031155	1.019	-0.027389
108	1.700	1.368	0.018667	0.016768	0.031155	1.047	0.004343
109	0	1.319	0.102607	0.069566	0.080676	1.025	-0.093176
109	1.700	1.319	0.102607	0.069566	0.080676	1.144	0.081248
110	0	1.208	0.291454	-0.797197	-0.157723	1.360	-0.225972
110	1.700	1.208	0.291454	-0.797197	-0.157723	0.005253	0.269479
111	0	0.812076	0.340733	-0.930750	-0.207053	-0.873435	-0.244969
111	1.275	0.812076	0.340733	-0.930750	-0.207053	-2.060	0.189448
112	0	0.724139	0.142106	0.159062	0.093736	-1.886	-0.076119
112	1.275	0.724139	0.142106	0.159062	0.093736	-1.683	0.105059
113	0	0.679363	0.013439	0.214595	0.068774	-1.682	0.011965
113	1.275	0.679363	0.013439	0.214595	0.068774	-1.409	0.029099
114	0	0.676943	-0.037461	0.178860	0.031150	-1.436	0.041102
114	1.275	0.676943	-0.037461	0.178860	0.031150	-1.208	-0.006659
115	0	0.695499	-0.056832	0.166178	0.012986	-1.223	0.049753
115	1.275	0.695499	-0.056832	0.166178	0.012986	-1.011	-0.022705
116	0	0.713247	-0.074539	0.160777	0.001642	-1.018	0.057041
116	1.275	0.713247	-0.074539	0.160777	0.001642	-0.812908	-0.037992
117	0	0.718088	-0.104981	0.157084	-0.009042	-0.812885	0.069998
117	1.275	0.718088	-0.104981	0.157084	-0.009042	-0.612610	-0.063847
118	0	0.698726	-0.159599	0.153752	-0.021918	-0.605946	0.092781
118	1.275	0.698726	-0.159599	0.153752	-0.021918	-0.409920	-0.110701

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
119	0	0.634185	-0.257115	0.148996	-0.038491	-0.394380	0.127824
119	1.275	0.634185	-0.257115	0.148996	-0.038491	-0.204417	-0.199985
120	0	0.431689	-0.346919	0.124797	-0.049513	-0.174542	0.146508
120	1.275	0.431689	-0.346919	0.124797	-0.049513	-0.015432	-0.295797
121	0	1.498	0.066137	-0.123816	0.062436	0.031421	-0.347462
121	1.275	1.498	0.066137	-0.123816	0.062436	-0.126438	-0.263140
122	0	1.068	0.138140	-0.071741	0.051189	-0.074522	-0.542788
122	1.275	1.068	0.138140	-0.071741	0.051189	-0.165987	-0.366667
123	0	0.826553	0.084963	-0.057318	0.029830	-0.135340	-0.526148
123	1.275	0.826553	0.084963	-0.057318	0.029830	-0.208417	-0.417824
124	0	0.680693	0.002161	-0.050871	0.012146	-0.193513	-0.521630
124	1.275	0.680693	0.002161	-0.050871	0.012146	-0.258370	-0.518875
125	0	0.589928	-0.056852	-0.045679	-0.002992	-0.255922	-0.587263
125	1.275	0.589928	-0.056852	-0.045679	-0.002992	-0.314161	-0.659746
126	0	0.530174	-0.087941	-0.038963	-0.018950	-0.323376	-0.706357
126	1.275	0.530174	-0.087941	-0.038963	-0.018950	-0.373052	-0.818477
127	0	0.489329	-0.093296	-0.027755	-0.039124	-0.397062	-0.853089
127	1.275	0.489329	-0.093296	-0.027755	-0.039124	-0.432448	-0.972037
128	0	0.472386	-0.051190	0.001288	-0.055593	-0.480936	-0.993988
128	1.275	0.472386	-0.051190	0.001288	-0.055593	-0.479294	-1.059
129	0	0.520038	0.079543	0.080094	-0.011641	-0.551846	-1.036
129	1.275	0.520038	0.079543	0.080094	-0.011641	-0.449730	-0.934912
130	0	0.709738	0.266536	0.095312	0.127838	-0.416207	-0.793035
130	1.275	0.709738	0.266536	0.095312	0.127838	-0.294688	-0.453216
131	0	1.095	0.236267	0.139063	0.135279	0.011893	-0.046726
131	1.700	1.095	0.236267	0.139063	0.135279	0.248290	0.354912
132	0	1.336	0.071147	0.066971	-0.031503	0.256970	0.567356
132	1.700	1.336	0.071147	0.066971	-0.031503	0.370815	0.688301
133	0	1.389	-0.000518	0.015035	-0.035477	0.312059	0.717347
133	1.700	1.389	-0.000518	0.015035	-0.035477	0.337617	0.716467
134	0	1.397	-0.005039	0.006329	-0.016012	0.314827	0.717147
134	1.700	1.397	-0.005039	0.006329	-0.016012	0.325585	0.708581
135	0	1.398	-0.001109	0.001841	-0.004449	0.317260	0.708184
135	1.700	1.398	-0.001109	0.001841	-0.004449	0.320389	0.706298
136	0	1.398	0.001110	-0.001840	0.004449	0.320389	0.706298
136	1.700	1.398	0.001110	-0.001840	0.004449	0.317260	0.708185

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
137	0	1.397	0.005038	-0.006328	0.016012	0.325585	0.708582
137	1.700	1.397	0.005038	-0.006328	0.016012	0.314827	0.717146
138	0	1.389	0.000514	-0.015035	0.035477	0.337617	0.716470
138	1.700	1.389	0.000514	-0.015035	0.035477	0.312059	0.717344
139	0	1.337	-0.071149	-0.066971	0.031503	0.370815	0.688309
139	1.700	1.337	-0.071149	-0.066971	0.031503	0.256968	0.567361
140	0	1.095	-0.236265	-0.139061	-0.135279	0.248288	0.354910
140	1.700	1.095	-0.236265	-0.139061	-0.135279	0.011895	-0.046723
141	0	0.709890	-0.266527	-0.095311	-0.127838	-0.294688	-0.453226
141	1.275	0.709890	-0.266527	-0.095311	-0.127838	-0.416206	-0.793034
142	0	0.520416	-0.079539	-0.080092	0.011641	-0.449730	-0.934913
142	1.275	0.520416	-0.079539	-0.080092	0.011641	-0.551844	-1.036
143	0	0.472084	0.051186	-0.001289	0.055593	-0.479293	-1.059
143	1.275	0.472084	0.051186	-0.001289	0.055593	-0.480936	-0.993987
144	0	0.489481	0.093291	0.027754	0.039124	-0.432447	-0.972032
144	1.275	0.489481	0.093291	0.027754	0.039124	-0.397062	-0.853091
145	0	0.530325	0.087943	0.038964	0.018950	-0.373053	-0.818479
145	1.275	0.530325	0.087943	0.038964	0.018950	-0.323375	-0.706355
146	0	0.590079	0.056857	0.045681	0.002992	-0.314162	-0.659751
146	1.275	0.590079	0.056857	0.045681	0.002992	-0.255921	-0.587261
147	0	0.680088	-0.002165	0.050869	-0.012146	-0.258369	-0.518873
147	1.275	0.680088	-0.002165	0.050869	-0.012146	-0.193514	-0.521634
148	0	0.826825	-0.084956	0.057320	-0.029830	-0.208418	-0.417827
148	1.275	0.826825	-0.084956	0.057320	-0.029830	-0.135338	-0.526142
149	0	1.068	-0.138141	0.071739	-0.051189	-0.165986	-0.366659
149	1.275	1.068	-0.138141	0.071739	-0.051189	-0.074522	-0.542782
150	0	1.498	-0.066133	0.123816	-0.062436	-0.126437	-0.263135
150	1.275	1.498	-0.066133	0.123816	-0.062436	0.031422	-0.347451
151	0	-0.217086	0.474561	-0.175001	0.059376	0.068224	-0.311260
151	1.250	-0.217086	0.474561	-0.175001	0.059376	-0.150519	0.281917
152	0	-0.105035	0.336688	-0.035311	0.061174	-0.022096	-0.204017
152	1.250	-0.105035	0.336688	-0.035311	0.061174	-0.066233	0.216826
153	0	0.061857	0.156836	-0.013717	0.028245	-0.023365	-0.097060
153	1.250	0.061857	0.156836	-0.013717	0.028245	-0.040510	0.098978
154	0	0.087120	0.062304	-0.011915	0.011755	-0.015189	-0.042445
154	1.250	0.087120	0.062304	-0.011915	0.011755	-0.030082	0.035432

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
155	0	0.056424	0.005251	-0.009473	0.000829	-0.012505	-0.004622
155	1.250	0.056424	0.005251	-0.009473	0.000829	-0.024346	0.001942
156	0	0.029599	-0.028550	-0.008939	-0.009586	-0.014239	0.021147
156	1.250	0.029599	-0.028550	-0.008939	-0.009586	-0.025412	-0.014539
157	0	0.031504	-0.050870	-0.012462	-0.023695	-0.019129	0.040734
157	1.250	0.031504	-0.050870	-0.012462	-0.023695	-0.034706	-0.022851
158	0	0.078931	-0.062602	-0.030056	-0.047859	-0.015845	0.053665
158	1.250	0.078931	-0.062602	-0.030056	-0.047859	-0.053414	-0.024584
159	0	0.158458	-0.048273	-0.078646	-0.072253	0.043624	0.041513
159	1.250	0.158458	-0.048273	-0.078646	-0.072253	-0.054681	-0.018826
160	0	0.152608	0.018320	-0.012242	0.031452	0.137431	-0.025954
160	1.250	0.152608	0.018320	-0.012242	0.031452	0.122129	-0.003055
161	0	-0.000748	0.197675	-0.045860	0.299360	0.008583	-0.176272
161	1.250	-0.000748	0.197675	-0.045860	0.299360	-0.048740	0.070812
162	0	-0.173562	0.039804	0.070745	0.005198	-0.165673	-0.059638
162	1.250	-0.173562	0.039804	0.070745	0.005198	-0.077245	-0.009885
163	0	-0.125695	-0.024881	0.053364	-0.059058	-0.004514	0.032427
163	1.250	-0.125695	-0.024881	0.053364	-0.059058	0.062188	0.001328
164	0	-0.033278	-0.014896	0.009795	-0.022859	0.018865	0.021054
164	1.250	-0.033278	-0.014896	0.009795	-0.022859	0.031108	0.002435
165	0	-0.002395	-0.003361	0.004683	-0.008391	0.011395	0.005696
165	1.250	-0.002395	-0.003361	0.004683	-0.008391	0.017248	0.001495
166	0	0.002812	-5.33E-07	0.003595	2.45E-09	0.008891	5.17E-07
166	1.250	0.002812	-5.33E-07	0.003595	2.45E-09	0.013384	-1.49E-07
167	0	-0.002394	0.003622	0.004709	0.008392	0.011378	-0.005859
167	1.250	-0.002394	0.003622	0.004709	0.008392	0.017265	-0.001331
168	0	-0.033278	0.014374	0.009793	0.022859	0.018866	-0.020728
168	1.250	-0.033278	0.014374	0.009793	0.022859	0.031107	-0.002761
169	0	-0.125697	0.024912	0.053362	0.059057	-0.004513	-0.032445
169	1.250	-0.125697	0.024912	0.053362	0.059057	0.062187	-0.001307
170	0	-0.173565	-0.039811	0.070733	-0.005198	-0.165666	0.059642
170	1.250	-0.173565	-0.039811	0.070733	-0.005198	-0.077253	0.009881
171	0	-0.000748	-0.198412	-0.045860	-0.299360	0.008583	0.176730
171	1.250	-0.000748	-0.198412	-0.045860	-0.299360	-0.048740	-0.071275
172	0	0.152609	-0.018319	-0.012240	-0.031452	0.137430	0.025954
172	1.250	0.152609	-0.018319	-0.012240	-0.031452	0.122130	0.003057

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
173	0	0.158461	0.049168	-0.078637	0.072253	0.043618	-0.042073
173	1.250	0.158461	0.049168	-0.078637	0.072253	-0.054675	0.019385
174	0	0.078931	0.063489	-0.030048	0.047859	-0.015850	-0.054221
174	1.250	0.078931	0.063489	-0.030048	0.047859	-0.053408	0.025138
175	0	0.031503	0.050868	-0.012464	0.023695	-0.019127	-0.040733
175	1.250	0.031503	0.050868	-0.012464	0.023695	-0.034707	0.022850
176	0	0.029599	0.028549	-0.008941	0.009586	-0.014238	-0.021146
176	1.250	0.029599	0.028549	-0.008941	0.009586	-0.025414	0.014539
177	0	0.056424	-0.005250	-0.009476	-0.000829	-0.012504	0.004621
177	1.250	0.056424	-0.005250	-0.009476	-0.000829	-0.024348	-0.001941
178	0	0.087118	-0.062301	-0.011917	-0.011755	-0.015188	0.042444
178	1.250	0.087118	-0.062301	-0.011917	-0.011755	-0.030083	-0.035430
179	0	0.061856	-0.156830	-0.013719	-0.028245	-0.023364	0.097057
179	1.250	0.061856	-0.156830	-0.013719	-0.028245	-0.040511	-0.098973
180	0	-0.105035	-0.335799	-0.035310	-0.061174	-0.022097	0.203462
180	1.250	-0.105035	-0.335799	-0.035310	-0.061174	-0.066232	-0.216270
181	0	-0.217083	-0.474566	-0.175001	-0.059376	0.068224	0.311264
181	1.250	-0.217083	-0.474566	-0.175001	-0.059376	-0.150519	-0.281920
182	0	-0.467225	0.026274	-0.052623	0.026119	-0.093736	0.045767
182	1.250	-0.467225	0.026274	-0.052623	0.026119	-0.159512	0.078608
183	0	0.001425	0.092765	-0.022815	0.024559	-0.088414	0.000251
183	1.250	0.001425	0.092765	-0.022815	0.024559	-0.116932	0.116203
184	0	0.152922	0.037589	-0.003974	0.009742	-0.060046	-0.004948
184	1.250	0.152922	0.037589	-0.003974	0.009742	-0.065013	0.042037
185	0	0.139436	-0.009669	-0.001856	0.002454	-0.040822	0.009635
185	1.250	0.139436	-0.009669	-0.001856	0.002454	-0.043142	-0.002451
186	0	0.088504	-0.040542	-0.002914	-0.000811	-0.032317	0.024525
186	1.250	0.088504	-0.040542	-0.002914	-0.000811	-0.035959	-0.026151
187	0	0.048861	-0.059772	-0.003095	-0.003728	-0.034916	0.036805
187	1.250	0.048861	-0.059772	-0.003095	-0.003728	-0.038785	-0.037907
188	0	0.038394	-0.064743	0.000342	-0.008054	-0.051788	0.041790
188	1.250	0.038394	-0.064743	0.000342	-0.008054	-0.051361	-0.039135
189	0	0.061557	-0.045621	0.006548	-0.020083	-0.090499	0.030861
189	1.250	0.061557	-0.045621	0.006548	-0.020083	-0.082315	-0.026163
190	0	0.106261	0.008181	-0.133506	-0.072262	-0.080109	-0.006362
190	1.250	0.106261	0.008181	-0.133506	-0.072262	-0.246985	0.003864

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
191	0	0.123125	0.048641	-1.104	-0.140510	0.421025	-0.045145
191	1.250	0.123125	0.048641	-1.104	-0.140510	-0.959355	0.015655
192	0	-0.024124	-0.218974	0.090010	1.184	-0.097165	0.054768
192	1.250	-0.024124	-0.218974	0.090010	1.184	0.015343	-0.218939
193	0	-0.142239	0.107109	0.937798	-0.207760	-0.314471	-0.103177
193	1.250	-0.142239	0.107109	0.937798	-0.207760	0.857730	0.030703
194	0	-0.091110	0.043591	-0.001545	-0.035343	0.111341	-0.029409
194	1.250	-0.091110	0.043591	-0.001545	-0.035343	0.109409	0.025077
195	0	-0.031061	-0.000774	-0.003858	-0.008556	0.050687	0.004183
195	1.250	-0.031061	-0.000774	-0.003858	-0.008556	0.045865	0.003215
196	0	-0.005063	-0.004490	0.001883	-0.003591	0.025063	0.004723
196	1.250	-0.005063	-0.004490	0.001883	-0.003591	0.027416	-0.000889
197	0	0.000892	-3.22E-07	0.001484	1.93E-08	0.019305	2.69E-07
197	1.250	0.000892	-3.22E-07	0.001484	1.93E-08	0.021161	-1.34E-07
198	0	-0.005061	0.004255	0.001882	0.003591	0.025063	-0.004576
198	1.250	-0.005061	0.004255	0.001882	0.003591	0.027416	0.000742
199	0	-0.031058	0.000778	-0.003859	0.008556	0.050688	-0.004185
199	1.250	-0.031058	0.000778	-0.003859	0.008556	0.045864	-0.003214
200	0	-0.091113	-0.043574	-0.001546	0.035343	0.111342	0.029395
200	1.250	-0.091113	-0.043574	-0.001546	0.035343	0.109409	-0.025070
201	0	-0.142248	-0.107112	0.937808	0.207759	-0.314477	0.103180
201	1.250	-0.142248	-0.107112	0.937808	0.207759	0.857736	-0.030705
202	0	-0.024125	0.219585	0.090008	-1.184	-0.097165	-0.055145
202	1.250	-0.024125	0.219585	0.090008	-1.184	0.015341	0.219324
203	0	0.123129	-0.048640	-1.104	0.140509	0.421024	0.045143
203	1.250	0.123129	-0.048640	-1.104	0.140509	-0.959354	-0.015654
204	0	0.106262	-0.008181	-0.133514	0.072262	-0.080104	0.006362
204	1.250	0.106262	-0.008181	-0.133514	0.072262	-0.246990	-0.003864
205	0	0.061557	0.044826	0.006540	0.020083	-0.090494	-0.030363
205	1.250	0.061557	0.044826	0.006540	0.020083	-0.082320	0.025667
206	0	0.038396	0.064742	0.000348	0.008054	-0.051792	-0.041789
206	1.250	0.038396	0.064742	0.000348	0.008054	-0.051357	0.039135
207	0	0.048862	0.058981	-0.003096	0.003728	-0.034916	-0.036310
207	1.250	0.048862	0.058981	-0.003096	0.003728	-0.038786	0.037413
208	0	0.088505	0.039752	-0.002915	0.000811	-0.032316	-0.024031
208	1.250	0.088505	0.039752	-0.002915	0.000811	-0.035960	0.025657

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
209	0	0.139437	0.009671	-0.001857	-0.002454	-0.040821	-0.009636
209	1.250	0.139437	0.009671	-0.001857	-0.002454	-0.043142	0.002452
210	0	0.152920	-0.037585	-0.003974	-0.009742	-0.060046	0.004944
210	1.250	0.152920	-0.037585	-0.003974	-0.009742	-0.065013	-0.042035
211	0	0.001423	-0.092766	-0.022815	-0.024559	-0.088414	-0.000251
211	1.250	0.001423	-0.092766	-0.022815	-0.024559	-0.116932	-0.116204
212	0	-0.467223	-0.026276	-0.052622	-0.026119	-0.093736	-0.045766
212	1.250	-0.467223	-0.026276	-0.052622	-0.026119	-0.159512	-0.078609
213	0	-0.412940	-0.087203	0.044489	-0.015995	-0.155268	0.113204
213	1.250	-0.412940	-0.087203	0.044489	-0.015995	-0.099658	0.004205
214	0	0.017802	-0.226778	0.027876	-0.022052	-0.122208	0.194227
214	1.250	0.017802	-0.226778	0.027876	-0.022052	-0.087365	-0.089234
215	0	0.150698	-0.177929	0.009661	-0.015122	-0.068033	0.126518
215	1.250	0.150698	-0.177929	0.009661	-0.015122	-0.055957	-0.095884
216	0	0.137414	-0.127209	0.003127	-0.008251	-0.042530	0.080917
216	1.250	0.137414	-0.127209	0.003127	-0.008251	-0.038621	-0.078087
217	0	0.089457	-0.094932	0.001499	-0.002432	-0.034180	0.056227
217	1.250	0.089457	-0.094932	0.001499	-0.002432	-0.032307	-0.062433
218	0	0.048795	-0.077421	0.001310	0.002802	-0.037335	0.044766
218	1.250	0.048795	-0.077421	0.001310	0.002802	-0.035698	-0.052006
219	0	0.024721	-0.059092	-0.001473	0.008547	-0.050507	0.033650
219	1.250	0.024721	-0.059092	-0.001473	0.008547	-0.052349	-0.040211
220	0	0.008791	-0.014698	-0.006677	0.021332	-0.082048	0.006029
220	1.250	0.008791	-0.014698	-0.006677	0.021332	-0.090394	-0.012342
221	0	-0.002059	0.092617	0.134329	0.073478	-0.247422	-0.059969
221	1.250	-0.002059	0.092617	0.134329	0.073478	-0.079517	0.055797
222	0	0.011633	0.277531	1.105	0.140475	-0.960031	-0.176269
222	1.250	0.011633	0.277531	1.105	0.140475	0.421216	0.170630
223	0	-0.019012	0.780573	-0.089812	-1.185	-0.015687	-0.535700
223	1.250	-0.019012	0.780573	-0.089812	-1.185	-0.096574	0.439978
224	0	-0.023724	0.353440	-0.938851	0.208121	0.858474	-0.224534
224	1.250	-0.023724	0.353440	-0.938851	0.208121	-0.315043	0.217249
225	0	-0.012272	0.100690	0.000857	0.036690	0.109396	-0.064588
225	1.250	-0.012272	0.100690	0.000857	0.036690	0.110467	0.061270
226	0	-0.012871	0.014092	0.004028	0.009191	0.045488	-0.009604
226	1.250	-0.012871	0.014092	0.004028	0.009191	0.050522	0.008010

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
227	0	-0.005509	-0.001148	-0.001626	0.003691	0.027218	0.001010
227	1.250	-0.005509	-0.001148	-0.001626	0.003691	0.025185	-0.000424
228	0	-0.001614	3.20E-07	-0.001324	1.67E-08	0.021094	-1.32E-07
228	1.250	-0.001614	3.20E-07	-0.001324	1.67E-08	0.019438	2.68E-07
229	0	-0.005507	0.001146	-0.001645	-0.003691	0.027230	-0.001010
229	1.250	-0.005507	0.001146	-0.001645	-0.003691	0.025173	0.000423
230	0	-0.012868	-0.013628	0.004046	-0.009190	0.045477	0.009313
230	1.250	-0.012868	-0.013628	0.004046	-0.009190	0.050533	-0.007721
231	0	-0.012275	-0.101177	0.000866	-0.036691	0.109390	0.064889
231	1.250	-0.012275	-0.101177	0.000866	-0.036691	0.110473	-0.061578
232	0	-0.023733	-0.353438	-0.938851	-0.208120	0.858474	0.224533
232	1.250	-0.023733	-0.353438	-0.938851	-0.208120	-0.315043	-0.217247
233	0	-0.019013	-0.781184	-0.089810	1.185	0.015686	0.536086
233	1.250	-0.019013	-0.781184	-0.089810	1.185	-0.096573	-0.440356
234	0	0.011637	-0.277533	1.105	-0.140475	-0.960030	0.176270
234	1.250	0.011637	-0.277533	1.105	-0.140475	0.421215	-0.170632
235	0	-0.002058	-0.092618	0.134328	-0.073478	-0.247421	0.059970
235	1.250	-0.002058	-0.092618	0.134328	-0.073478	-0.079518	-0.055798
236	0	0.008791	0.014701	-0.006677	-0.021332	-0.082048	-0.006031
236	1.250	0.008791	0.014701	-0.006677	-0.021332	-0.090394	0.012345
237	0	0.024723	0.059092	-0.001481	-0.008547	-0.050503	-0.033650
237	1.250	0.024723	0.059092	-0.001481	-0.008547	-0.052353	0.040212
238	0	0.048796	0.078212	0.001310	-0.002802	-0.037335	-0.045260
238	1.250	0.048796	0.078212	0.001310	-0.002802	-0.035698	0.052500
239	0	0.089458	0.095722	0.001491	0.002432	-0.034175	-0.056721
239	1.250	0.089458	0.095722	0.001491	0.002432	-0.032311	0.062927
240	0	0.137415	0.126416	0.003127	0.008251	-0.042530	-0.080422
240	1.250	0.137415	0.126416	0.003127	0.008251	-0.038621	0.077592
241	0	0.150697	0.178715	0.009658	0.015122	-0.068031	-0.127010
241	1.250	0.150697	0.178715	0.009658	0.015122	-0.055959	0.096374
242	0	0.017799	0.225987	0.027875	0.022052	-0.122208	-0.193733
242	1.250	0.017799	0.225987	0.027875	0.022052	-0.087365	0.088740
243	0	-0.412938	0.087205	0.044489	0.015995	-0.155267	-0.113205
243	1.250	-0.412938	0.087205	0.044489	0.015995	-0.099658	-0.004203
244	0	-0.066021	-0.517511	0.169285	-0.031424	-0.149166	0.299752
244	1.250	-0.066021	-0.517511	0.169285	-0.031424	0.062432	-0.347110

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
245	0	-0.072005	-0.429202	0.052078	-0.051921	-0.076342	0.257271
245	1.250	-0.072005	-0.429202	0.052078	-0.051921	-0.011247	-0.279210
246	0	0.053183	-0.242269	0.014418	-0.030651	-0.039382	0.142940
246	1.250	0.053183	-0.242269	0.014418	-0.030651	-0.021361	-0.159885
247	0	0.082797	-0.146264	0.006456	-0.014906	-0.025750	0.079012
247	1.250	0.082797	-0.146264	0.006456	-0.014906	-0.017680	-0.103810
248	0	0.059017	-0.091218	0.005184	-0.002451	-0.021622	0.045413
248	1.250	0.059017	-0.091218	0.005184	-0.002451	-0.015142	-0.068605
249	0	0.031089	-0.058843	0.006717	0.009212	-0.024353	0.027278
249	1.250	0.031089	-0.058843	0.006717	0.009212	-0.015957	-0.046274
250	0	0.005353	-0.040267	0.011210	0.024007	-0.034187	0.015963
250	1.250	0.005353	-0.040267	0.011210	0.024007	-0.020174	-0.034368
251	0	-0.042110	-0.017277	0.029043	0.048488	-0.052773	-0.000284
251	1.250	-0.042110	-0.017277	0.029043	0.048488	-0.016470	-0.021879
252	0	-0.130728	0.048612	0.078798	0.072554	-0.054547	-0.037619
252	1.250	-0.130728	0.048612	0.078798	0.072554	0.043947	0.023144
253	0	-0.186990	0.189570	0.015219	-0.033519	0.120455	-0.095018
253	1.250	-0.186990	0.189570	0.015219	-0.033519	0.139478	0.141934
254	0	0.030267	0.384823	0.043750	-0.306574	-0.047245	-0.074485
254	1.250	0.030267	0.384823	0.043750	-0.306574	0.007440	0.406524
255	0	0.165117	0.242357	-0.072082	-0.008673	-0.076675	-0.090272
255	1.250	0.165117	0.242357	-0.072082	-0.008673	-0.166775	0.212662
256	0	0.071667	0.052133	-0.051937	0.058758	0.060946	-0.036130
256	1.250	0.071667	0.052133	-0.051937	0.058758	-0.003973	0.029034
257	0	0.004522	0.007969	-0.008707	0.022790	0.030349	-0.009257
257	1.250	0.004522	0.007969	-0.008707	0.022790	0.019465	0.000704
258	0	-0.003928	0.000805	-0.004494	0.008324	0.017176	-0.001442
258	1.250	-0.003928	0.000805	-0.004494	0.008324	0.011559	-0.000437
259	0	-0.002222	5.30E-07	-0.003669	-3.53E-09	0.013491	-1.47E-07
259	1.250	-0.002222	5.30E-07	-0.003669	-3.53E-09	0.008905	5.16E-07
260	0	-0.003927	-0.000805	-0.004467	-0.008324	0.017159	0.001443
260	1.250	-0.003927	-0.000805	-0.004467	-0.008324	0.011576	0.000437
261	0	0.004522	-0.007978	-0.008709	-0.022790	0.030349	0.009263
261	1.250	0.004522	-0.007978	-0.008709	-0.022790	0.019464	-0.000710
262	0	0.071665	-0.052167	-0.051937	-0.058759	0.060946	0.036153
262	1.250	0.071665	-0.052167	-0.051937	-0.058759	-0.003973	-0.029053

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
263	0	0.165114	-0.242353	-0.072097	0.008673	-0.076667	0.090270
263	1.250	0.165114	-0.242353	-0.072097	0.008673	-0.166784	-0.212660
264	0	0.030266	-0.384793	0.043750	0.306575	-0.047245	0.074465
264	1.250	0.030266	-0.384793	0.043750	0.306575	0.007441	-0.406508
265	0	-0.186990	-0.189571	0.015218	0.033519	0.120456	0.095020
265	1.250	-0.186990	-0.189571	0.015218	0.033519	0.139478	-0.141935
266	0	-0.130725	-0.048616	0.078808	-0.072554	-0.054553	0.037621
266	1.250	-0.130725	-0.048616	0.078808	-0.072554	0.043953	-0.023147
267	0	-0.042110	0.017281	0.029044	-0.048488	-0.052773	0.000280
267	1.250	-0.042110	0.017281	0.029044	-0.048488	-0.016470	0.021880
268	0	0.005352	0.040268	0.011211	-0.024007	-0.034187	-0.015964
268	1.250	0.005352	0.040268	0.011211	-0.024007	-0.020174	0.034369
269	0	0.031089	0.058843	0.006717	-0.009212	-0.024353	-0.027278
269	1.250	0.031089	0.058843	0.006717	-0.009212	-0.015957	0.046274
270	0	0.059017	0.091217	0.005195	0.002451	-0.021628	-0.045412
270	1.250	0.059017	0.091217	0.005195	0.002451	-0.015135	0.068604
271	0	0.082796	0.146260	0.006446	0.014906	-0.025744	-0.079010
271	1.250	0.082796	0.146260	0.006446	0.014906	-0.017686	0.103808
272	0	0.053181	0.241371	0.014425	0.030651	-0.039387	-0.142377
272	1.250	0.053181	0.241371	0.014425	0.030651	-0.021356	0.159324
273	0	-0.072005	0.430097	0.052076	0.051920	-0.076341	-0.257830
273	1.250	-0.072005	0.430097	0.052076	0.051920	-0.011248	0.279770
274	0	-0.066019	0.517516	0.169285	0.031425	-0.149166	-0.299756
274	1.250	-0.066019	0.517516	0.169285	0.031425	0.062432	0.347114
1601	0	-0.586310	-8.90E-06	2.111	0.001727	-11.961	-0.000171
1601	11.000	-0.586310	-8.90E-06	2.111	0.001727	11.264	-0.000269
1602	0	-0.586309	-8.90E-06	-2.111	-0.001727	11.961	-0.000171
1602	11.000	-0.586309	-8.90E-06	-2.111	-0.001727	-11.264	-0.000269

CARGAS: '' Ejec. "0001"

Hipótesis	Factor	Etapa	Título
23	1.0000		Gradiente

DESPLAZAMIENTOS:

NUDOS	DX [mm]	DY [mm]	DZ [mm]	RX [rad]	RY [rad]	RZ [rad]
1	0.004304	-0.010468	-8.33E-18	-2.24E-06	-4.49E-05	1.79E-06
2	0.002139	-0.010393	-0.002760	-1.82E-06	-4.54E-05	1.73E-06
3	4.34E-05	-0.010363	-0.003986	-1.31E-09	-4.58E-05	1.71E-06
4	-0.002052	-0.010393	-0.002756	1.82E-06	-4.54E-05	1.73E-06
5	-0.004216	-0.010468	-8.54E-18	2.23E-06	-4.48E-05	1.79E-06
6	0.004285	-0.008160	0.047826	-1.49E-06	-3.10E-05	1.77E-06
7	0.002133	-0.008148	0.046128	-1.16E-06	-3.15E-05	1.72E-06
8	4.34E-05	-0.008141	0.045354	-2.42E-08	-3.18E-05	1.71E-06
9	-0.002046	-0.008148	0.046068	1.11E-06	-3.15E-05	1.72E-06
10	-0.004198	-0.008160	0.047702	1.44E-06	-3.09E-05	1.77E-06
11	0.004226	-0.005909	0.079427	-9.24E-07	-1.91E-05	1.73E-06
12	0.002110	-0.005913	0.078399	-6.99E-07	-1.94E-05	1.70E-06
13	4.34E-05	-0.005914	0.077922	-5.02E-08	-1.95E-05	1.69E-06
14	-0.002023	-0.005913	0.078273	5.98E-07	-1.93E-05	1.70E-06
15	-0.004138	-0.005909	0.079174	8.22E-07	-1.90E-05	1.73E-06
16	0.004130	-0.003716	0.096971	-5.97E-07	-8.84E-06	1.69E-06
17	0.002064	-0.003719	0.096305	-4.56E-07	-8.99E-06	1.66E-06
18	4.34E-05	-0.003720	0.095970	-7.61E-08	-9.06E-06	1.66E-06
19	-0.001977	-0.003719	0.096115	3.03E-07	-8.94E-06	1.66E-06
20	-0.004042	-0.003716	0.096590	4.44E-07	-8.76E-06	1.69E-06
21	0.003998	-0.001586	0.102569	-4.26E-07	-2.99E-07	1.64E-06
22	0.001998	-0.001586	0.102088	-3.36E-07	-3.64E-07	1.61E-06
23	4.34E-05	-0.001587	0.101812	-1.02E-07	-3.89E-07	1.60E-06
24	-0.001911	-0.001587	0.101833	1.33E-07	-3.14E-07	1.61E-06
25	-0.003910	-0.001586	0.102059	2.22E-07	-2.10E-07	1.64E-06
26	0.003828	0.000468	0.098397	-3.53E-07	6.51E-06	1.57E-06
27	0.001913	0.000468	0.097992	-2.91E-07	6.50E-06	1.54E-06
28	4.34E-05	0.000468	0.097729	-1.28E-07	6.50E-06	1.54E-06
29	-0.001826	0.000468	0.097673	3.56E-08	6.55E-06	1.54E-06
30	-0.003741	0.000467	0.097760	9.80E-08	6.60E-06	1.57E-06
31	0.003622	0.002427	0.086671	-3.49E-07	1.16E-05	1.49E-06
32	0.001809	0.002427	0.086265	-2.96E-07	1.16E-05	1.46E-06
33	4.34E-05	0.002427	0.085983	-1.54E-07	1.16E-05	1.45E-06
34	-0.001722	0.002426	0.085882	-1.04E-08	1.17E-05	1.46E-06
35	-0.003534	0.002426	0.085906	4.41E-08	1.17E-05	1.49E-06
36	0.003378	0.004274	0.069629	-4.06E-07	1.49E-05	1.40E-06
37	0.001687	0.004270	0.069154	-3.48E-07	1.49E-05	1.36E-06
38	4.37E-05	0.004268	0.068824	-1.80E-07	1.50E-05	1.35E-06
39	-0.001600	0.004269	0.068705	-9.44E-09	1.50E-05	1.36E-06
40	-0.003291	0.004272	0.068735	5.09E-08	1.50E-05	1.40E-06
41	0.003096	0.005985	0.049533	-5.20E-07	1.64E-05	1.28E-06
42	0.001547	0.005975	0.048909	-4.64E-07	1.65E-05	1.25E-06
43	4.44E-05	0.005970	0.048481	-2.08E-07	1.66E-05	1.24E-06
44	-0.001460	0.005974	0.048395	5.76E-08	1.66E-05	1.25E-06
45	-0.003010	0.005983	0.048514	1.20E-07	1.65E-05	1.28E-06
46	0.002778	0.007533	0.028647	-6.61E-07	1.62E-05	1.14E-06

DESPLAZAMIENTOS:

NUDOS	DX [mm]	DY [mm]	DZ [mm]	RX [rad]	RY [rad]	RZ [rad]
47	0.001395	0.007515	0.027805	-6.68E-07	1.63E-05	1.11E-06
48	4.63E-05	0.007507	0.027146	-2.37E-07	1.65E-05	1.11E-06
49	-0.001307	0.007513	0.027225	2.18E-07	1.63E-05	1.11E-06
50	-0.002695	0.007531	0.027513	2.22E-07	1.62E-05	1.14E-06
51	0.002432	0.008882	0.008999	-7.09E-07	1.45E-05	9.73E-07
52	0.001232	0.008862	0.008065	-7.75E-07	1.45E-05	9.60E-07
53	5.15E-05	0.008854	0.007244	-2.76E-07	1.42E-05	9.59E-07
54	-0.001144	0.008863	0.007433	3.00E-07	1.45E-05	9.70E-07
55	-0.002353	0.008883	0.007780	2.43E-07	1.46E-05	9.74E-07
56	0.001949	0.010364	-0.013358	-5.36E-07	1.16E-05	7.63E-07
57	0.000993	0.010356	-0.014006	-4.89E-07	1.15E-05	7.68E-07
58	3.65E-05	0.010353	-0.014481	-2.61E-07	1.14E-05	7.70E-07
59	-0.000923	0.010358	-0.014651	-1.61E-08	1.15E-05	7.70E-07
60	-0.001881	0.010367	-0.014627	4.06E-08	1.16E-05	7.63E-07
61	0.001461	0.011502	-0.030655	-3.95E-07	8.68E-06	5.71E-07
62	0.000745	0.011501	-0.031128	-3.59E-07	8.63E-06	5.75E-07
63	2.64E-05	0.011500	-0.031513	-2.57E-07	8.61E-06	5.76E-07
64	-0.000693	0.011502	-0.031770	-1.51E-07	8.63E-06	5.75E-07
65	-0.001409	0.011504	-0.031932	-1.12E-07	8.68E-06	5.71E-07
66	0.000974	0.012314	-0.042963	-3.24E-07	5.78E-06	3.82E-07
67	0.000496	0.012314	-0.043358	-3.06E-07	5.76E-06	3.83E-07
68	1.74E-05	0.012315	-0.043709	-2.56E-07	5.74E-06	3.83E-07
69	-0.000462	0.012315	-0.043997	-2.05E-07	5.76E-06	3.83E-07
70	-0.000939	0.012315	-0.044240	-1.85E-07	5.78E-06	3.81E-07
71	0.000487	0.012802	-0.050336	-2.93E-07	2.89E-06	1.91E-07
72	0.000248	0.012802	-0.050696	-2.83E-07	2.88E-06	1.91E-07
73	8.67E-06	0.012802	-0.051033	-2.55E-07	2.87E-06	1.91E-07
74	-0.000231	0.012802	-0.051334	-2.27E-07	2.88E-06	1.91E-07
75	-0.000469	0.012802	-0.051611	-2.17E-07	2.89E-06	1.91E-07
76	-6.85E-08	0.012964	-0.052791	-2.85E-07	-5.87E-12	-2.23E-11
77	-4.05E-08	0.012965	-0.053143	-2.77E-07	-6.49E-12	-2.24E-11
78	-1.25E-08	0.012965	-0.053475	-2.55E-07	-7.73E-12	-2.24E-11
79	1.54E-08	0.012965	-0.053780	-2.34E-07	-7.21E-12	-2.24E-11
80	4.34E-08	0.012964	-0.054067	-2.25E-07	-7.07E-12	-2.23E-11
81	-0.000487	0.012802	-0.050336	-2.93E-07	-2.89E-06	-1.91E-07
82	-0.000248	0.012802	-0.050696	-2.83E-07	-2.88E-06	-1.91E-07
83	-8.69E-06	0.012802	-0.051033	-2.55E-07	-2.87E-06	-1.91E-07
84	0.000231	0.012802	-0.051334	-2.27E-07	-2.88E-06	-1.91E-07
85	0.000470	0.012802	-0.051611	-2.17E-07	-2.89E-06	-1.91E-07
86	-0.000974	0.012314	-0.042963	-3.24E-07	-5.78E-06	-3.82E-07
87	-0.000496	0.012314	-0.043358	-3.06E-07	-5.76E-06	-3.83E-07
88	-1.74E-05	0.012314	-0.043709	-2.56E-07	-5.74E-06	-3.83E-07
89	0.000462	0.012315	-0.043997	-2.05E-07	-5.76E-06	-3.83E-07
90	0.000939	0.012315	-0.044239	-1.85E-07	-5.78E-06	-3.81E-07
91	-0.001462	0.011502	-0.030655	-3.95E-07	-8.68E-06	-5.71E-07
92	-0.000745	0.011500	-0.031128	-3.59E-07	-8.63E-06	-5.75E-07
93	-2.64E-05	0.011500	-0.031513	-2.57E-07	-8.61E-06	-5.76E-07
94	0.000693	0.011502	-0.031769	-1.51E-07	-8.63E-06	-5.75E-07
95	0.001409	0.011503	-0.031932	-1.12E-07	-8.68E-06	-5.71E-07
96	-0.001949	0.010364	-0.013358	-5.36E-07	-1.16E-05	-7.63E-07
97	-0.000993	0.010355	-0.014006	-4.89E-07	-1.15E-05	-7.68E-07
98	-3.65E-05	0.010352	-0.014481	-2.61E-07	-1.14E-05	-7.70E-07
99	0.000923	0.010358	-0.014651	-1.61E-08	-1.15E-05	-7.70E-07
100	0.001881	0.010366	-0.014627	4.06E-08	-1.16E-05	-7.63E-07

DESPLAZAMIENTOS:

NUDOS	DX [mm]	DY [mm]	DZ [mm]	RX [rad]	RY [rad]	RZ [rad]
101	-0.002432	0.008881	0.008999	-7.09E-07	-1.45E-05	-9.73E-07
102	-0.001232	0.008862	0.008065	-7.75E-07	-1.45E-05	-9.60E-07
103	-5.16E-05	0.008853	0.007244	-2.76E-07	-1.42E-05	-9.59E-07
104	0.001144	0.008863	0.007433	3.00E-07	-1.45E-05	-9.70E-07
105	0.002353	0.008882	0.007780	2.43E-07	-1.46E-05	-9.74E-07
106	-0.002778	0.007532	0.028647	-6.61E-07	-1.62E-05	-1.14E-06
107	-0.001395	0.007515	0.027805	-6.68E-07	-1.63E-05	-1.11E-06
108	-4.63E-05	0.007507	0.027146	-2.37E-07	-1.65E-05	-1.11E-06
109	0.001307	0.007513	0.027225	2.18E-07	-1.63E-05	-1.11E-06
110	0.002695	0.007531	0.027513	2.22E-07	-1.62E-05	-1.14E-06
111	-0.003097	0.005985	0.049533	-5.20E-07	-1.64E-05	-1.28E-06
112	-0.001548	0.005975	0.048909	-4.64E-07	-1.65E-05	-1.25E-06
113	-4.44E-05	0.005970	0.048481	-2.07E-07	-1.66E-05	-1.24E-06
114	0.001460	0.005973	0.048395	5.76E-08	-1.66E-05	-1.25E-06
115	0.003010	0.005982	0.048514	1.20E-07	-1.65E-05	-1.28E-06
116	-0.003378	0.004273	0.069629	-4.06E-07	-1.49E-05	-1.40E-06
117	-0.001687	0.004270	0.069154	-3.48E-07	-1.49E-05	-1.36E-06
118	-4.37E-05	0.004268	0.068824	-1.80E-07	-1.50E-05	-1.35E-06
119	0.001600	0.004269	0.068705	-9.44E-09	-1.50E-05	-1.36E-06
120	0.003291	0.004271	0.068735	5.09E-08	-1.50E-05	-1.40E-06
121	-0.003622	0.002427	0.086671	-3.49E-07	-1.16E-05	-1.49E-06
122	-0.001809	0.002426	0.086265	-2.96E-07	-1.16E-05	-1.46E-06
123	-4.35E-05	0.002426	0.085983	-1.54E-07	-1.16E-05	-1.45E-06
124	0.001722	0.002426	0.085882	-1.04E-08	-1.17E-05	-1.46E-06
125	0.003535	0.002426	0.085906	4.41E-08	-1.17E-05	-1.49E-06
126	-0.003829	0.000467	0.098397	-3.53E-07	-6.51E-06	-1.57E-06
127	-0.001913	0.000467	0.097992	-2.91E-07	-6.50E-06	-1.54E-06
128	-4.34E-05	0.000467	0.097729	-1.28E-07	-6.50E-06	-1.54E-06
129	0.001826	0.000467	0.097673	3.56E-08	-6.55E-06	-1.54E-06
130	0.003741	0.000467	0.097760	9.80E-08	-6.60E-06	-1.57E-06
131	-0.003998	-0.001587	0.102569	-4.26E-07	2.99E-07	-1.64E-06
132	-0.001998	-0.001587	0.102088	-3.36E-07	3.64E-07	-1.61E-06
133	-4.34E-05	-0.001588	0.101812	-1.02E-07	3.89E-07	-1.60E-06
134	0.001911	-0.001587	0.101833	1.33E-07	3.14E-07	-1.61E-06
135	0.003910	-0.001587	0.102059	2.22E-07	2.10E-07	-1.64E-06
136	-0.004130	-0.003717	0.096971	-5.97E-07	8.84E-06	-1.69E-06
137	-0.002064	-0.003720	0.096305	-4.56E-07	8.99E-06	-1.66E-06
138	-4.34E-05	-0.003721	0.095970	-7.61E-08	9.06E-06	-1.66E-06
139	0.001977	-0.003720	0.096115	3.03E-07	8.94E-06	-1.66E-06
140	0.004042	-0.003717	0.096590	4.44E-07	8.76E-06	-1.69E-06
141	-0.004226	-0.005910	0.079427	-9.24E-07	1.91E-05	-1.73E-06
142	-0.002110	-0.005913	0.078399	-6.99E-07	1.94E-05	-1.70E-06
143	-4.35E-05	-0.005915	0.077922	-5.01E-08	1.95E-05	-1.69E-06
144	0.002023	-0.005913	0.078274	5.98E-07	1.93E-05	-1.70E-06
145	0.004138	-0.005910	0.079174	8.22E-07	1.90E-05	-1.73E-06
146	-0.004285	-0.008161	0.047826	-1.49E-06	3.10E-05	-1.77E-06
147	-0.002133	-0.008149	0.046128	-1.16E-06	3.15E-05	-1.73E-06
148	-4.35E-05	-0.008141	0.045354	-2.42E-08	3.18E-05	-1.71E-06
149	0.002046	-0.008149	0.046068	1.11E-06	3.15E-05	-1.72E-06
150	0.004198	-0.008161	0.047702	1.44E-06	3.09E-05	-1.77E-06
151	-0.004304	-0.010469	-8.33E-18	-2.24E-06	4.49E-05	-1.79E-06
152	-0.002139	-0.010394	-0.002760	-1.82E-06	4.54E-05	-1.73E-06
153	-4.34E-05	-0.010364	-0.003986	-1.31E-09	4.58E-05	-1.71E-06
154	0.002053	-0.010394	-0.002756	1.82E-06	4.54E-05	-1.73E-06

DESPLAZAMIENTOS:

NUDOS	DX [mm]	DY [mm]	DZ [mm]	RX [rad]	RY [rad]	RZ [rad]
155	0.004216	-0.010469	-8.54E-18	2.23E-06	4.48E-05	-1.79E-06
601	-1.11E-18	1.05E-19	1.69E-17	-6.16E-22	-4.07E-21	1.17E-22
602	1.11E-18	1.05E-19	1.69E-17	-6.16E-22	4.07E-21	-1.17E-22

REACCIONES EN APOYOS:

NUDOS	FX [t]	FY [t]	FZ [t]	MX [tm]	MY [tm]	MZ [tm]
1	-0.002152	0.005234	0.832960			
5	0.002108	0.005234	0.854399			
151	0.002152	0.005234	0.832964			
155	-0.002108	0.005234	0.854403			
601	0.111089	-0.010469	-1.687	0.061555	0.407192	-0.011728
602	-0.111089	-0.010468	-1.687	0.061552	-0.407192	0.011729
Sumas:	-7.45E-09	9.31E-10	1.19E-07			

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
1	0	-0.060210	0.218709	0.344132	0.185424	-0.128083	0.051775
1	1.275	-0.060210	0.218709	0.344132	0.185424	0.310668	0.330618
2	0	-0.192357	0.264809	0.221039	0.139890	0.150594	0.437815
2	1.275	-0.192357	0.264809	0.221039	0.139890	0.432407	0.775433
3	0	-0.312133	0.251336	0.183396	0.080769	0.346961	0.863600
3	1.275	-0.312133	0.251336	0.183396	0.080769	0.580782	1.184
4	0	-0.430078	0.242344	0.161595	0.042415	0.536292	1.270
4	1.275	-0.430078	0.242344	0.161595	0.042415	0.742317	1.579
5	0	-0.549230	0.240928	0.148293	0.017970	0.722271	1.667
5	1.275	-0.549230	0.240928	0.148293	0.017970	0.911337	1.974
6	0	-0.669972	0.242129	0.139196	0.000833	0.907144	2.065
6	1.275	-0.669972	0.242129	0.139196	0.000833	1.085	2.373
7	0	-0.792351	0.241180	0.131210	-0.013875	1.093	2.466
7	1.275	-0.792351	0.241180	0.131210	-0.013875	1.260	2.773
8	0	-0.915595	0.229772	0.120300	-0.028354	1.281	2.868
8	1.275	-0.915595	0.229772	0.120300	-0.028354	1.434	3.161
9	0	-1.034	0.194191	0.097319	-0.034703	1.471	3.253
9	1.275	-1.034	0.194191	0.097319	-0.034703	1.595	3.501
10	0	-1.126	0.130931	0.064980	-0.011845	1.633	3.573
10	1.275	-1.126	0.130931	0.064980	-0.011845	1.716	3.740

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
11	0	-1.176	0.047099	0.040441	0.031939	1.698	3.782
11	1.700	-1.176	0.047099	0.040441	0.031939	1.767	3.862
12	0	-1.187	0.004538	0.012416	0.026246	1.728	3.863
12	1.700	-1.187	0.004538	0.012416	0.026246	1.749	3.870
13	0	-1.187	-0.002134	0.005410	0.013047	1.732	3.866
13	1.700	-1.187	-0.002134	0.005410	0.013047	1.741	3.863
14	0	-1.187	-0.001114	0.002390	0.005723	1.733	3.861
14	1.700	-1.187	-0.001114	0.002390	0.005723	1.737	3.859
15	0	-1.187	-0.000246	0.000671	0.001604	1.734	3.858
15	1.700	-1.187	-0.000246	0.000671	0.001604	1.735	3.858
16	0	-1.187	0.000248	-0.000671	-0.001604	1.735	3.858
16	1.700	-1.187	0.000248	-0.000671	-0.001604	1.734	3.858
17	0	-1.187	0.001112	-0.002389	-0.005723	1.737	3.859
17	1.700	-1.187	0.001112	-0.002389	-0.005723	1.733	3.861
18	0	-1.187	0.002134	-0.005411	-0.013047	1.741	3.863
18	1.700	-1.187	0.002134	-0.005411	-0.013047	1.732	3.866
19	0	-1.187	-0.004539	-0.012415	-0.026246	1.749	3.870
19	1.700	-1.187	-0.004539	-0.012415	-0.026246	1.728	3.863
20	0	-1.176	-0.047100	-0.040441	-0.031940	1.767	3.862
20	1.700	-1.176	-0.047100	-0.040441	-0.031940	1.698	3.782
21	0	-1.126	-0.130937	-0.064982	0.011845	1.716	3.740
21	1.275	-1.126	-0.130937	-0.064982	0.011845	1.633	3.573
22	0	-1.034	-0.194183	-0.097318	0.034703	1.595	3.501
22	1.275	-1.034	-0.194183	-0.097318	0.034703	1.471	3.253
23	0	-0.915596	-0.229780	-0.120300	0.028354	1.434	3.161
23	1.275	-0.915596	-0.229780	-0.120300	0.028354	1.281	2.868
24	0	-0.792352	-0.241193	-0.131216	0.013875	1.260	2.773
24	1.275	-0.792352	-0.241193	-0.131216	0.013875	1.093	2.466
25	0	-0.669973	-0.242130	-0.139194	-0.000833	1.085	2.373
25	1.275	-0.669973	-0.242130	-0.139194	-0.000833	0.907146	2.065
26	0	-0.549230	-0.240932	-0.148293	-0.017970	0.911339	1.974
26	1.275	-0.549230	-0.240932	-0.148293	-0.017970	0.722272	1.667
27	0	-0.430079	-0.242343	-0.161593	-0.042416	0.742317	1.579
27	1.275	-0.430079	-0.242343	-0.161593	-0.042416	0.536294	1.270
28	0	-0.312133	-0.251330	-0.183394	-0.080770	0.580782	1.184
28	1.275	-0.312133	-0.251330	-0.183394	-0.080770	0.346963	0.863611

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
29	0	-0.192356	-0.264819	-0.221043	-0.139891	0.432411	0.775447
29	1.275	-0.192356	-0.264819	-0.221043	-0.139891	0.150592	0.437816
30	0	-0.060212	-0.218718	-0.344136	-0.185426	0.310672	0.330634
30	1.275	-0.060212	-0.218718	-0.344136	-0.185426	-0.128084	0.051780
31	0	-0.023093	-0.136825	0.354562	0.149281	0.071099	0.084497
31	1.275	-0.023093	-0.136825	0.354562	0.149281	0.523148	-0.089948
32	0	-0.079617	-0.159962	0.406538	0.103261	0.620378	0.094088
32	1.275	-0.079617	-0.159962	0.406538	0.103261	1.139	-0.109856
33	0	-0.157512	-0.150194	0.425662	0.054904	1.191	0.079833
33	1.275	-0.157512	-0.150194	0.425662	0.054904	1.734	-0.111657
34	0	-0.229223	-0.145449	0.441767	0.026915	1.764	0.071310
34	1.275	-0.229223	-0.145449	0.441767	0.026915	2.327	-0.114130
35	0	-0.295422	-0.145045	0.451322	0.010306	2.342	0.065603
35	1.275	-0.295422	-0.145045	0.451322	0.010306	2.918	-0.119323
36	0	-0.360076	-0.146178	0.457603	-0.001160	2.923	0.060488
36	1.275	-0.360076	-0.146178	0.457603	-0.001160	3.506	-0.125881
37	0	-0.423697	-0.146669	0.463671	-0.011685	3.504	0.054432
37	1.275	-0.423697	-0.146669	0.463671	-0.011685	4.095	-0.132563
38	0	-0.482261	-0.141959	0.474239	-0.026250	4.085	0.044389
38	1.275	-0.482261	-0.141959	0.474239	-0.026250	4.689	-0.136602
39	0	-0.529099	-0.122972	0.479949	-0.046037	4.676	0.025194
39	1.275	-0.529099	-0.122972	0.479949	-0.046037	5.288	-0.131589
40	0	-0.564913	-0.085814	0.328907	-0.024169	5.301	-0.005629
40	1.275	-0.564913	-0.085814	0.328907	-0.024169	5.720	-0.115037
41	0	-0.619800	-0.034317	-0.022001	0.048419	5.659	-0.027763
41	1.700	-0.619800	-0.034317	-0.022001	0.048419	5.622	-0.086099
42	0	-0.644366	-0.005175	-0.010856	0.022017	5.635	-0.052901
42	1.700	-0.644366	-0.005175	-0.010856	0.022017	5.616	-0.061699
43	0	-0.646882	0.000382	-0.003383	0.009022	5.626	-0.057210
43	1.700	-0.646882	0.000382	-0.003383	0.009022	5.621	-0.056561
44	0	-0.645377	0.000440	-0.001509	0.003837	5.625	-0.057082
44	1.700	-0.645377	0.000440	-0.001509	0.003837	5.622	-0.056334
45	0	-0.644597	0.000122	-0.000435	0.001068	5.624	-0.056781
45	1.700	-0.644597	0.000122	-0.000435	0.001068	5.623	-0.056573
46	0	-0.644597	-0.000123	0.000435	-0.001068	5.623	-0.056573
46	1.700	-0.644597	-0.000123	0.000435	-0.001068	5.624	-0.056781

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
47	0	-0.645377	-0.000440	0.001511	-0.003836	5.622	-0.056334
47	1.700	-0.645377	-0.000440	0.001511	-0.003836	5.625	-0.057082
48	0	-0.646883	-0.000382	0.003381	-0.009022	5.621	-0.056561
48	1.700	-0.646883	-0.000382	0.003381	-0.009022	5.626	-0.057210
49	0	-0.644367	0.005175	0.010856	-0.022017	5.616	-0.061698
49	1.700	-0.644367	0.005175	0.010856	-0.022017	5.635	-0.052901
50	0	-0.619801	0.034317	0.022002	-0.048419	5.622	-0.086099
50	1.700	-0.619801	0.034317	0.022002	-0.048419	5.659	-0.027763
51	0	-0.564913	0.085815	-0.328910	0.024169	5.720	-0.115038
51	1.275	-0.564913	0.085815	-0.328910	0.024169	5.301	-0.005628
52	0	-0.529100	0.122970	-0.479955	0.046037	5.288	-0.131588
52	1.275	-0.529100	0.122970	-0.479955	0.046037	4.676	0.025193
53	0	-0.482261	0.141961	-0.474248	0.026250	4.689	-0.136603
53	1.275	-0.482261	0.141961	-0.474248	0.026250	4.085	0.044390
54	0	-0.423698	0.146668	-0.463677	0.011685	4.095	-0.132563
54	1.275	-0.423698	0.146668	-0.463677	0.011685	3.504	0.054432
55	0	-0.360076	0.146177	-0.457602	0.001160	3.506	-0.125881
55	1.275	-0.360076	0.146177	-0.457602	0.001160	2.923	0.060488
56	0	-0.295421	0.145045	-0.451330	-0.010306	2.918	-0.119323
56	1.275	-0.295421	0.145045	-0.451330	-0.010306	2.342	0.065603
57	0	-0.229223	0.145449	-0.441766	-0.026915	2.327	-0.114130
57	1.275	-0.229223	0.145449	-0.441766	-0.026915	1.764	0.071310
58	0	-0.157511	0.150195	-0.425668	-0.054905	1.734	-0.111658
58	1.275	-0.157511	0.150195	-0.425668	-0.054905	1.191	0.079834
59	0	-0.079618	0.159961	-0.406539	-0.103261	1.139	-0.109855
59	1.275	-0.079618	0.159961	-0.406539	-0.103261	0.620374	0.094087
60	0	-0.023093	0.136824	-0.354563	-0.149281	0.523142	-0.089947
60	1.275	-0.023093	0.136824	-0.354563	-0.149281	0.071092	0.084497
61	0	2.99E-05	-0.153229	0.279405	-0.006902	0.122178	0.097006
61	1.275	2.99E-05	-0.153229	0.279405	-0.006902	0.478405	-0.098353
62	0	1.39E-05	-0.199150	0.423616	-0.007793	0.614901	0.121312
62	1.275	1.39E-05	-0.199150	0.423616	-0.007793	1.155	-0.132595
63	0	-5.65E-05	-0.191682	0.460980	-0.007809	1.231	0.105399
63	1.275	-5.65E-05	-0.191682	0.460980	-0.007809	1.819	-0.138985
64	0	-8.78E-05	-0.183146	0.472431	-0.007760	1.859	0.091998
64	1.275	-8.78E-05	-0.183146	0.472431	-0.007760	2.461	-0.141504

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
65	0	-3.87E-05	-0.181412	0.479944	-0.007753	2.482	0.084179
65	1.275	-3.87E-05	-0.181412	0.479944	-0.007753	3.094	-0.147111
66	0	0.000208	-0.182556	0.485510	-0.007803	3.103	0.078056
66	1.275	0.000208	-0.182556	0.485510	-0.007803	3.722	-0.154694
67	0	0.000890	-0.182004	0.489178	-0.007950	3.721	0.070370
67	1.275	0.000890	-0.182004	0.489178	-0.007950	4.345	-0.161677
68	0	0.002527	-0.172673	0.489136	-0.008266	4.334	0.056910
68	1.275	0.002527	-0.172673	0.489136	-0.008266	4.958	-0.163240
69	0	0.006722	-0.145293	0.521128	-0.008894	4.922	0.032643
69	1.275	0.006722	-0.145293	0.521128	-0.008894	5.587	-0.152597
70	0	0.018497	-0.099581	0.882531	-0.011817	5.495	-0.004292
70	1.275	0.018497	-0.099581	0.882531	-0.011817	6.621	-0.131252
71	0	-0.040013	-0.041786	-0.029329	0.003370	5.968	-0.029717
71	1.700	-0.040013	-0.041786	-0.029329	0.003370	5.919	-0.100750
72	0	-0.026823	-0.005504	-0.001346	0.000916	5.970	-0.062173
72	1.700	-0.026823	-0.005504	-0.001346	0.000916	5.968	-0.071530
73	0	-0.023806	0.001605	-0.003863	0.000360	5.983	-0.067833
73	1.700	-0.023806	0.001605	-0.003863	0.000360	5.976	-0.065105
74	0	-0.023143	0.001141	-0.001774	0.000113	5.983	-0.067068
74	1.700	-0.023143	0.001141	-0.001774	0.000113	5.980	-0.065127
75	0	-0.023043	0.000299	-0.000485	2.28E-05	5.983	-0.066235
75	1.700	-0.023043	0.000299	-0.000485	2.28E-05	5.982	-0.065728
76	0	-0.023043	-0.000299	0.000488	-2.26E-05	5.982	-0.065727
76	1.700	-0.023043	-0.000299	0.000488	-2.26E-05	5.983	-0.066236
77	0	-0.023143	-0.001141	0.001776	-0.000113	5.980	-0.065128
77	1.700	-0.023143	-0.001141	0.001776	-0.000113	5.983	-0.067067
78	0	-0.023806	-0.001604	0.003865	-0.000360	5.976	-0.065105
78	1.700	-0.023806	-0.001604	0.003865	-0.000360	5.983	-0.067833
79	0	-0.026823	0.005504	0.001344	-0.000916	5.968	-0.071530
79	1.700	-0.026823	0.005504	0.001344	-0.000916	5.970	-0.062174
80	0	-0.040013	0.041786	0.029327	-0.003370	5.919	-0.100750
80	1.700	-0.040013	0.041786	0.029327	-0.003370	5.968	-0.029717
81	0	0.018497	0.099579	-0.882532	0.011816	6.621	-0.131252
81	1.275	0.018497	0.099579	-0.882532	0.011816	5.495	-0.004293
82	0	0.006722	0.145294	-0.521131	0.008894	5.587	-0.152599
82	1.275	0.006722	0.145294	-0.521131	0.008894	4.922	0.032644

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
83	0	0.002527	0.172672	-0.489135	0.008266	4.958	-0.163240
83	1.275	0.002527	0.172672	-0.489135	0.008266	4.334	0.056909
84	0	0.000890	0.182004	-0.489178	0.007950	4.345	-0.161676
84	1.275	0.000890	0.182004	-0.489178	0.007950	3.721	0.070370
85	0	0.000208	0.182556	-0.485521	0.007803	3.722	-0.154694
85	1.275	0.000208	0.182556	-0.485521	0.007803	3.103	0.078056
86	0	-3.87E-05	0.181411	-0.479927	0.007753	3.094	-0.147111
86	1.275	-3.87E-05	0.181411	-0.479927	0.007753	2.482	0.084179
87	0	-8.78E-05	0.183146	-0.472445	0.007760	2.461	-0.141504
87	1.275	-8.78E-05	0.183146	-0.472445	0.007760	1.859	0.091998
88	0	-5.65E-05	0.191681	-0.460965	0.007809	1.819	-0.138985
88	1.275	-5.65E-05	0.191681	-0.460965	0.007809	1.231	0.105398
89	0	1.39E-05	0.199151	-0.423614	0.007793	1.155	-0.132595
89	1.275	1.39E-05	0.199151	-0.423614	0.007793	0.614912	0.121312
90	0	2.99E-05	0.153228	-0.279408	0.006902	0.478421	-0.098353
90	1.275	2.99E-05	0.153228	-0.279408	0.006902	0.122190	0.097005
91	0	0.023350	-0.137073	0.354907	-0.160014	0.070242	0.084630
91	1.275	0.023350	-0.137073	0.354907	-0.160014	0.522730	-0.090131
92	0	0.079619	-0.160447	0.406066	-0.114863	0.620762	0.094414
92	1.275	0.079619	-0.160447	0.406066	-0.114863	1.138	-0.110148
93	0	0.157448	-0.150621	0.424791	-0.066496	1.192	0.080088
93	1.275	0.157448	-0.150621	0.424791	-0.066496	1.734	-0.111946
94	0	0.229122	-0.145818	0.440832	-0.038488	1.765	0.071513
94	1.275	0.229122	-0.145818	0.440832	-0.038488	2.327	-0.114397
95	0	0.295312	-0.145270	0.450366	-0.021869	2.343	0.065711
95	1.275	0.295312	-0.145270	0.450366	-0.021869	2.917	-0.119501
96	0	0.360083	-0.146035	0.456701	-0.010387	2.923	0.060387
96	1.275	0.360083	-0.146035	0.456701	-0.010387	3.505	-0.125799
97	0	0.424109	-0.145787	0.462915	0.000214	3.504	0.053944
97	1.275	0.424109	-0.145787	0.462915	0.000214	4.094	-0.131927
98	0	0.483442	-0.139627	0.474205	0.015125	4.084	0.043141
98	1.275	0.483442	-0.139627	0.474205	0.015125	4.689	-0.134876
99	0	0.530766	-0.116880	0.482860	0.036277	4.675	0.022090
99	1.275	0.530766	-0.116880	0.482860	0.036277	5.291	-0.126927
100	0	0.563049	-0.070585	0.339740	0.018315	5.301	-0.011954
100	1.275	0.563049	-0.070585	0.339740	0.018315	5.735	-0.101945

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
101	0	0.575266	-0.022389	-0.031403	-0.053408	5.674	-0.040525
101	1.700	0.575266	-0.022389	-0.031403	-0.053408	5.620	-0.078585
102	0	0.597990	-0.001451	-0.012803	-0.022886	5.637	-0.056657
102	1.700	0.597990	-0.001451	-0.012803	-0.022886	5.615	-0.059123
103	0	0.601407	0.001319	-0.003631	-0.009058	5.626	-0.058084
103	1.700	0.601407	0.001319	-0.003631	-0.009058	5.620	-0.055843
104	0	0.600143	0.000605	-0.001501	-0.003813	5.625	-0.057201
104	1.700	0.600143	0.000605	-0.001501	-0.003813	5.622	-0.056173
105	0	0.599363	0.000131	-0.000425	-0.001061	5.624	-0.056757
105	1.700	0.599363	0.000131	-0.000425	-0.001061	5.623	-0.056535
106	0	0.599363	-0.000131	0.000423	0.001062	5.623	-0.056535
106	1.700	0.599363	-0.000131	0.000423	0.001062	5.624	-0.056758
107	0	0.600143	-0.000604	0.001501	0.003813	5.622	-0.056173
107	1.700	0.600143	-0.000604	0.001501	0.003813	5.625	-0.057201
108	0	0.601407	-0.001318	0.003631	0.009059	5.620	-0.055843
108	1.700	0.601407	-0.001318	0.003631	0.009059	5.626	-0.058084
109	0	0.597990	0.001450	0.012803	0.022886	5.615	-0.059123
109	1.700	0.597990	0.001450	0.012803	0.022886	5.637	-0.056657
110	0	0.575267	0.022389	0.031404	0.053408	5.620	-0.078585
110	1.700	0.575267	0.022389	0.031404	0.053408	5.674	-0.040525
111	0	0.563049	0.070585	-0.339739	-0.018315	5.735	-0.101946
111	1.275	0.563049	0.070585	-0.339739	-0.018315	5.301	-0.011953
112	0	0.530766	0.116878	-0.482869	-0.036277	5.291	-0.126925
112	1.275	0.530766	0.116878	-0.482869	-0.036277	4.675	0.022089
113	0	0.483442	0.139628	-0.474209	-0.015125	4.689	-0.134877
113	1.275	0.483442	0.139628	-0.474209	-0.015125	4.084	0.043142
114	0	0.424110	0.145786	-0.462923	-0.000214	4.094	-0.131927
114	1.275	0.424110	0.145786	-0.462923	-0.000214	3.504	0.053943
115	0	0.360084	0.146035	-0.456684	0.010386	3.505	-0.125800
115	1.275	0.360084	0.146035	-0.456684	0.010386	2.923	0.060388
116	0	0.295313	0.145270	-0.450394	0.021869	2.917	-0.119501
116	1.275	0.295313	0.145270	-0.450394	0.021869	2.343	0.065711
117	0	0.229121	0.145818	-0.440834	0.038488	2.327	-0.114397
117	1.275	0.229121	0.145818	-0.440834	0.038488	1.765	0.071513
118	0	0.157448	0.150620	-0.424801	0.066496	1.734	-0.111946
118	1.275	0.157448	0.150620	-0.424801	0.066496	1.192	0.080087

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
119	0	0.079618	0.160447	-0.406057	0.114864	1.138	-0.110148
119	1.275	0.079618	0.160447	-0.406057	0.114864	0.620764	0.094414
120	0	0.023351	0.137071	-0.354914	0.160014	0.522730	-0.090130
120	1.275	0.023351	0.137071	-0.354914	0.160014	0.070232	0.084629
121	0	0.059967	0.218877	0.354332	-0.195467	-0.135378	0.051235
121	1.275	0.059967	0.218877	0.354332	-0.195467	0.316376	0.330292
122	0	0.192385	0.265210	0.230121	-0.151978	0.144779	0.437258
122	1.275	0.192385	0.265210	0.230121	-0.151978	0.438171	0.775387
123	0	0.312297	0.251614	0.192517	-0.093257	0.341141	0.863190
123	1.275	0.312297	0.251614	0.192517	-0.093257	0.586590	1.184
124	0	0.430312	0.242545	0.170730	-0.055014	0.530445	1.270
124	1.275	0.430312	0.242545	0.170730	-0.055014	0.748117	1.579
125	0	0.549421	0.241259	0.157434	-0.030571	0.716395	1.666
125	1.275	0.549421	0.241259	0.157434	-0.030571	0.917115	1.974
126	0	0.669801	0.243090	0.148344	-0.013335	0.901264	2.063
126	1.275	0.669801	0.243090	0.148344	-0.013335	1.090	2.373
127	0	0.791093	0.243748	0.140394	0.001696	1.087	2.465
127	1.275	0.791093	0.243748	0.140394	0.001696	1.266	2.775
128	0	0.911931	0.234954	0.129476	0.017048	1.276	2.868
128	1.275	0.911931	0.234954	0.129476	0.017048	1.441	3.167
129	0	1.025	0.201412	0.106091	0.025325	1.467	3.256
129	1.275	1.025	0.201412	0.106091	0.025325	1.602	3.513
130	0	1.110	0.135519	0.071198	0.004999	1.632	3.580
130	1.275	1.110	0.135519	0.071198	0.004999	1.723	3.753
131	0	1.150	0.051394	0.042290	-0.037453	1.699	3.781
131	1.700	1.150	0.051394	0.042290	-0.037453	1.771	3.869
132	0	1.150	0.007596	0.012590	-0.028292	1.729	3.860
132	1.700	1.150	0.007596	0.012590	-0.028292	1.750	3.873
133	0	1.146	-0.001179	0.005467	-0.013541	1.732	3.866
133	1.700	1.146	-0.001179	0.005467	-0.013541	1.741	3.864
134	0	1.144	-0.001071	0.002399	-0.005823	1.733	3.861
134	1.700	1.144	-0.001071	0.002399	-0.005823	1.737	3.859
135	0	1.144	-0.000304	0.000670	-0.001620	1.734	3.859
135	1.700	1.144	-0.000304	0.000670	-0.001620	1.735	3.858
136	0	1.144	0.000302	-0.000670	0.001620	1.735	3.858
136	1.700	1.144	0.000302	-0.000670	0.001620	1.734	3.859

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
137	0	1.144	0.001072	-0.002399	0.005823	1.737	3.859
137	1.700	1.144	0.001072	-0.002399	0.005823	1.733	3.861
138	0	1.146	0.001172	-0.005469	0.013542	1.741	3.864
138	1.700	1.146	0.001172	-0.005469	0.013542	1.732	3.866
139	0	1.150	-0.007589	-0.012589	0.028292	1.750	3.873
139	1.700	1.150	-0.007589	-0.012589	0.028292	1.729	3.860
140	0	1.150	-0.051394	-0.042289	0.037453	1.771	3.869
140	1.700	1.150	-0.051394	-0.042289	0.037453	1.699	3.781
141	0	1.110	-0.135511	-0.071198	-0.004999	1.723	3.753
141	1.275	1.110	-0.135511	-0.071198	-0.004999	1.632	3.580
142	0	1.025	-0.201416	-0.106092	-0.025325	1.602	3.513
142	1.275	1.025	-0.201416	-0.106092	-0.025325	1.467	3.256
143	0	0.911931	-0.234964	-0.129476	-0.017048	1.441	3.167
143	1.275	0.911931	-0.234964	-0.129476	-0.017048	1.276	2.868
144	0	0.791093	-0.243738	-0.140390	-0.001696	1.266	2.775
144	1.275	0.791093	-0.243738	-0.140390	-0.001696	1.087	2.465
145	0	0.669802	-0.243107	-0.148349	0.013335	1.090	2.373
145	1.275	0.669802	-0.243107	-0.148349	0.013335	0.901261	2.063
146	0	0.549422	-0.241253	-0.157430	0.030571	0.917113	1.974
146	1.275	0.549422	-0.241253	-0.157430	0.030571	0.716398	1.666
147	0	0.430313	-0.242546	-0.170729	0.055014	0.748118	1.579
147	1.275	0.430313	-0.242546	-0.170729	0.055014	0.530447	1.270
148	0	0.312297	-0.251629	-0.192519	0.093257	0.586593	1.184
148	1.275	0.312297	-0.251629	-0.192519	0.093257	0.341141	0.863188
149	0	0.192384	-0.265203	-0.230120	0.151979	0.438173	0.775392
149	1.275	0.192384	-0.265203	-0.230120	0.151979	0.144781	0.437272
150	0	0.059967	-0.218875	-0.354331	0.195468	0.316377	0.330300
150	1.275	0.059967	-0.218875	-0.354331	0.195468	-0.135377	0.051246
151	0	0.213494	0.062363	0.488824	-0.128092	-0.185412	-0.051763
151	1.250	0.213494	0.062363	0.488824	-0.128092	0.425593	0.026188
152	0	0.046087	0.132144	0.123095	-0.160093	0.045538	-0.107166
152	1.250	0.046087	0.132144	0.123095	-0.160093	0.199400	0.058007
153	0	-0.013480	0.119775	0.037658	-0.085457	0.059114	-0.088148
153	1.250	-0.013480	0.119775	0.037658	-0.085457	0.106184	0.061565
154	0	-0.008997	0.117948	0.021805	-0.044496	0.038354	-0.086070
154	1.250	-0.008997	0.117948	0.021805	-0.044496	0.065609	0.061358

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
155	0	-0.001404	0.119149	0.013278	-0.020053	0.024457	-0.088059
155	1.250	-0.001404	0.119149	0.013278	-0.020053	0.041054	0.060870
156	0	0.001199	0.120744	0.009098	-0.004202	0.017138	-0.090251
156	1.250	0.001199	0.120744	0.009098	-0.004202	0.028510	0.060673
157	0	-0.000950	0.122379	0.007989	0.008070	0.014706	-0.092464
157	1.250	-0.000950	0.122379	0.007989	0.008070	0.024691	0.060503
158	0	-0.011412	0.123244	0.010923	0.020953	0.014473	-0.094573
158	1.250	-0.011412	0.123244	0.010923	0.020953	0.028126	0.059476
159	0	-0.035576	0.117915	0.022985	0.036733	0.006346	-0.092186
159	1.250	-0.035576	0.117915	0.022985	0.036733	0.035076	0.055203
160	0	-0.063262	0.092936	0.032339	0.037738	-0.022858	-0.072830
160	1.250	-0.063262	0.092936	0.032339	0.037738	0.017564	0.043336
161	0	-0.083831	0.049804	0.024541	-0.017493	-0.043784	-0.041107
161	1.250	-0.083831	0.049804	0.024541	-0.017493	-0.013109	0.021146
162	0	-0.042565	0.011179	0.028026	-0.038643	0.005694	-0.001079
162	1.250	-0.042565	0.011179	0.028026	-0.038643	0.040725	0.012895
163	0	-0.006667	-2.73E-05	0.007002	-0.017598	0.013200	0.004245
163	1.250	-0.006667	-2.73E-05	0.007002	-0.017598	0.021953	0.004211
164	0	0.001014	-0.000472	0.003022	-0.007771	0.007324	0.001688
164	1.250	0.001014	-0.000472	0.003022	-0.007771	0.011101	0.001097
165	0	0.000866	-0.000233	0.001717	-0.003016	0.004120	0.000538
165	1.250	0.000866	-0.000233	0.001717	-0.003016	0.006266	0.000247
166	0	0.000496	3.09E-08	0.001339	-2.51E-07	0.003210	-5.07E-08
166	1.250	0.000496	3.09E-08	0.001339	-2.51E-07	0.004883	-1.20E-08
167	0	0.000871	0.000232	0.001723	0.003015	0.004117	-0.000538
167	1.250	0.000871	0.000232	0.001723	0.003015	0.006270	-0.000248
168	0	0.001014	0.000473	0.003019	0.007771	0.007325	-0.001688
168	1.250	0.001014	0.000473	0.003019	0.007771	0.011099	-0.001097
169	0	-0.006667	2.73E-05	0.007005	0.017597	0.013199	-0.004245
169	1.250	-0.006667	2.73E-05	0.007005	0.017597	0.021954	-0.004211
170	0	-0.042565	-0.011178	0.028026	0.038643	0.005694	0.001078
170	1.250	-0.042565	-0.011178	0.028026	0.038643	0.040725	-0.012894
171	0	-0.083831	-0.049805	0.024542	0.017494	-0.043785	0.041108
171	1.250	-0.083831	-0.049805	0.024542	0.017494	-0.013109	-0.021146
172	0	-0.063263	-0.092936	0.032342	-0.037738	-0.022860	0.072830
172	1.250	-0.063263	-0.092936	0.032342	-0.037738	0.017566	-0.043335

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
173	0	-0.035574	-0.117915	0.022981	-0.036733	0.006349	0.092186
173	1.250	-0.035574	-0.117915	0.022981	-0.036733	0.035074	-0.055203
174	0	-0.011414	-0.123244	0.010908	-0.020953	0.014482	0.094573
174	1.250	-0.011414	-0.123244	0.010908	-0.020953	0.028117	-0.059476
175	0	-0.000950	-0.122378	0.007995	-0.008069	0.014702	0.092464
175	1.250	-0.000950	-0.122378	0.007995	-0.008069	0.024695	-0.060503
176	0	0.001199	-0.120743	0.009105	0.004203	0.017134	0.090251
176	1.250	0.001199	-0.120743	0.009105	0.004203	0.028514	-0.060673
177	0	-0.001404	-0.119149	0.013283	0.020054	0.024454	0.088060
177	1.250	-0.001404	-0.119149	0.013283	0.020054	0.041057	-0.060871
178	0	-0.008997	-0.117948	0.021806	0.044497	0.038353	0.086070
178	1.250	-0.008997	-0.117948	0.021806	0.044497	0.065610	-0.061359
179	0	-0.013480	-0.119775	0.037651	0.085457	0.059118	0.088148
179	1.250	-0.013480	-0.119775	0.037651	0.085457	0.106180	-0.061565
180	0	0.046087	-0.132145	0.123096	0.160093	0.045538	0.107167
180	1.250	0.046087	-0.132145	0.123096	0.160093	0.199401	-0.058008
181	0	0.213494	-0.062363	0.488827	0.128093	-0.185414	0.051762
181	1.250	0.213494	-0.062363	0.488827	0.128093	0.425596	-0.026188
182	0	0.076666	0.085456	0.134261	-0.057008	0.276328	-0.058310
182	1.250	0.076666	0.085456	0.134261	-0.057008	0.444148	0.048505
183	0	0.022957	0.188671	0.071134	-0.062871	0.245424	-0.126027
183	1.250	0.022957	0.188671	0.071134	-0.062871	0.334338	0.109802
184	0	-0.003715	0.197672	0.018501	-0.032871	0.154534	-0.128122
184	1.250	-0.003715	0.197672	0.018501	-0.032871	0.177660	0.118958
185	0	-0.004251	0.189658	0.005704	-0.014624	0.093597	-0.121608
185	1.250	-0.004251	0.189658	0.005704	-0.014624	0.100726	0.115455
186	0	-0.001000	0.185348	0.003762	-0.005065	0.057671	-0.118861
186	1.250	-0.001000	0.185348	0.003762	-0.005065	0.062374	0.112815
187	0	6.61E-05	0.185399	0.002812	0.000895	0.039976	-0.119138
187	1.250	6.61E-05	0.185399	0.002812	0.000895	0.043490	0.112601
188	0	-0.001441	0.186000	0.001903	0.005490	0.035219	-0.119810
188	1.250	-0.001441	0.186000	0.001903	0.005490	0.037598	0.112681
189	0	-0.006704	0.181809	0.000344	0.010759	0.042687	-0.117475
189	1.250	-0.006704	0.181809	0.000344	0.010759	0.043117	0.109777
190	0	-0.016586	0.164755	0.017261	0.023366	0.054862	-0.106592
190	1.250	-0.016586	0.164755	0.017261	0.023366	0.076438	0.099344

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
191	0	-0.026107	0.128750	0.183384	0.050625	-0.004298	-0.082623
191	1.250	-0.026107	0.128750	0.183384	0.050625	0.224923	0.078308
192	0	-0.032337	0.104693	0.375448	-0.078063	-0.085687	-0.066128
192	1.250	-0.032337	0.104693	0.375448	-0.078063	0.383604	0.064733
193	0	-0.013422	0.035744	0.016881	-0.025730	0.067128	-0.020305
193	1.250	-0.013422	0.035744	0.016881	-0.025730	0.088228	0.024373
194	0	-0.001109	0.002488	-0.000465	-0.007709	0.034947	-0.000278
194	1.250	-0.001109	0.002488	-0.000465	-0.007709	0.034366	0.002832
195	0	0.001073	-0.001978	0.001147	-0.003510	0.016287	0.001618
195	1.250	0.001073	-0.001978	0.001147	-0.003510	0.017721	-0.000855
196	0	0.000550	-0.001012	0.000642	-0.001359	0.009036	0.000695
196	1.250	0.000550	-0.001012	0.000642	-0.001359	0.009838	-0.000570
197	0	0.000245	4.90E-08	0.000469	-3.54E-07	0.007024	-3.43E-08
197	1.250	0.000245	4.90E-08	0.000469	-3.54E-07	0.007610	2.70E-08
198	0	0.000550	0.001013	0.000645	0.001359	0.009034	-0.000695
198	1.250	0.000550	0.001013	0.000645	0.001359	0.009841	0.000571
199	0	0.001073	0.001978	0.001145	0.003509	0.016289	-0.001618
199	1.250	0.001073	0.001978	0.001145	0.003509	0.017720	0.000855
200	0	-0.001109	-0.002487	-0.000463	0.007708	0.034946	0.000277
200	1.250	-0.001109	-0.002487	-0.000463	0.007708	0.034367	-0.002831
201	0	-0.013422	-0.035744	0.016881	0.025731	0.067129	0.020305
201	1.250	-0.013422	-0.035744	0.016881	0.025731	0.088229	-0.024373
202	0	-0.032337	-0.104693	0.375452	0.078063	-0.085689	0.066128
202	1.250	-0.032337	-0.104693	0.375452	0.078063	0.383608	-0.064733
203	0	-0.026105	-0.128750	0.183385	-0.050625	-0.004298	0.082623
203	1.250	-0.026105	-0.128750	0.183385	-0.050625	0.224924	-0.078308
204	0	-0.016588	-0.164755	0.017261	-0.023365	0.054863	0.106592
204	1.250	-0.016588	-0.164755	0.017261	-0.023365	0.076438	-0.099344
205	0	-0.006702	-0.181809	0.000350	-0.010759	0.042683	0.117475
205	1.250	-0.006702	-0.181809	0.000350	-0.010759	0.043121	-0.109777
206	0	-0.001440	-0.186000	0.001909	-0.005490	0.035216	0.119810
206	1.250	-0.001440	-0.186000	0.001909	-0.005490	0.037602	-0.112681
207	0	6.61E-05	-0.185398	0.002803	-0.000896	0.039981	0.119138
207	1.250	6.61E-05	-0.185398	0.002803	-0.000896	0.043485	-0.112601
208	0	-0.001000	-0.185349	0.003766	0.005065	0.057669	0.118862
208	1.250	-0.001000	-0.185349	0.003766	0.005065	0.062377	-0.112815

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
209	0	-0.004252	-0.189658	0.005692	0.014625	0.093604	0.121608
209	1.250	-0.004252	-0.189658	0.005692	0.014625	0.100719	-0.115455
210	0	-0.003713	-0.197672	0.018501	0.032872	0.154535	0.128122
210	1.250	-0.003713	-0.197672	0.018501	0.032872	0.177660	-0.118958
211	0	0.022957	-0.188670	0.071136	0.062872	0.245424	0.126027
211	1.250	0.022957	-0.188670	0.071136	0.062872	0.334341	-0.109802
212	0	0.076666	-0.085456	0.134261	0.057008	0.276330	0.058310
212	1.250	0.076666	-0.085456	0.134261	0.057008	0.444150	-0.048505
213	0	-0.076562	0.085426	-0.145159	0.065159	0.451050	-0.048500
213	1.250	-0.076562	0.085426	-0.145159	0.065159	0.269609	0.058278
214	0	-0.022969	0.188686	-0.073064	0.073595	0.335230	-0.109864
214	1.250	-0.022969	0.188686	-0.073064	0.073595	0.243904	0.125984
215	0	0.003756	0.197742	-0.018871	0.043543	0.177676	-0.119037
215	1.250	0.003756	0.197742	-0.018871	0.043543	0.154087	0.128130
216	0	0.004284	0.189690	-0.005741	0.025209	0.100672	-0.115528
216	1.250	0.004284	0.189690	-0.005741	0.025209	0.093496	0.121575
217	0	0.000735	0.185300	-0.003742	0.015617	0.062360	-0.112869
217	1.250	0.000735	0.185300	-0.003742	0.015617	0.057683	0.118746
218	0	-0.001079	0.185152	-0.002781	0.009666	0.043546	-0.112566
218	1.250	-0.001079	0.185152	-0.002781	0.009666	0.040069	0.118865
219	0	-0.000889	0.185318	-0.001737	0.005129	0.037749	-0.112383
219	1.250	-0.000889	0.185318	-0.001737	0.005129	0.035578	0.119255
220	0	0.002628	0.180171	0.000378	-1.69E-05	0.043434	-0.108809
220	1.250	0.002628	0.180171	0.000378	-1.69E-05	0.043907	0.116396
221	0	0.010790	0.160560	-0.014726	-0.012518	0.077067	-0.096541
221	1.250	0.010790	0.160560	-0.014726	-0.012518	0.058660	0.104152
222	0	0.019608	0.116974	-0.178018	-0.040490	0.227847	-0.069999
222	1.250	0.019608	0.116974	-0.178018	-0.040490	0.005333	0.076213
223	0	0.035930	0.052115	-0.400052	0.084552	0.422017	-0.025074
223	1.250	0.035930	0.052115	-0.400052	0.084552	-0.078028	0.040067
224	0	0.022861	0.022554	-0.011099	0.025702	0.090683	-0.014203
224	1.250	0.022861	0.022554	-0.011099	0.025702	0.076809	0.013988
225	0	0.005998	-0.000529	0.002041	0.007206	0.034924	-0.000865
225	1.250	0.005998	-0.000529	0.002041	0.007206	0.037475	-0.001527
226	0	0.000610	-0.002641	-0.000929	0.003296	0.017965	0.001107
226	1.250	0.000610	-0.002641	-0.000929	0.003296	0.016804	-0.002194

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
227	0	-0.000289	-0.001112	-0.000648	0.001302	0.009928	0.000537
227	1.250	-0.000289	-0.001112	-0.000648	0.001302	0.009118	-0.000853
228	0	-0.000348	4.94E-08	-0.000497	1.48E-07	0.007658	-2.17E-08
228	1.250	-0.000348	4.94E-08	-0.000497	1.48E-07	0.007037	4.01E-08
229	0	-0.000289	0.001112	-0.000654	-0.001302	0.009932	-0.000537
229	1.250	-0.000289	0.001112	-0.000654	-0.001302	0.009114	0.000853
230	0	0.000610	0.002641	-0.000932	-0.003295	0.017967	-0.001107
230	1.250	0.000610	0.002641	-0.000932	-0.003295	0.016802	0.002194
231	0	0.005998	0.000530	0.002040	-0.007205	0.034924	0.000865
231	1.250	0.005998	0.000530	0.002040	-0.007205	0.037475	0.001527
232	0	0.022861	-0.022554	-0.011099	-0.025703	0.090683	0.014203
232	1.250	0.022861	-0.022554	-0.011099	-0.025703	0.076809	-0.013988
233	0	0.035930	-0.052114	-0.400054	-0.084552	0.422018	0.025074
233	1.250	0.035930	-0.052114	-0.400054	-0.084552	-0.078030	-0.040067
234	0	0.019606	-0.116974	-0.178019	0.040490	0.227847	0.069999
234	1.250	0.019606	-0.116974	-0.178019	0.040490	0.005332	-0.076213
235	0	0.010791	-0.160561	-0.014729	0.012518	0.077069	0.096541
235	1.250	0.010791	-0.160561	-0.014729	0.012518	0.058659	-0.104152
236	0	0.002627	-0.180172	0.000374	1.72E-05	0.043437	0.108809
236	1.250	0.002627	-0.180172	0.000374	1.72E-05	0.043905	-0.116396
237	0	-0.000889	-0.185318	-0.001743	-0.005129	0.037753	0.112383
237	1.250	-0.000889	-0.185318	-0.001743	-0.005129	0.035575	-0.119255
238	0	-0.001079	-0.185152	-0.002761	-0.009666	0.043533	0.112566
238	1.250	-0.001079	-0.185152	-0.002761	-0.009666	0.040082	-0.118865
239	0	0.000735	-0.185300	-0.003751	-0.015617	0.062366	0.112869
239	1.250	0.000735	-0.185300	-0.003751	-0.015617	0.057677	-0.118746
240	0	0.004284	-0.189690	-0.005737	-0.025209	0.100670	0.115529
240	1.250	0.004284	-0.189690	-0.005737	-0.025209	0.093499	-0.121575
241	0	0.003756	-0.197742	-0.018880	-0.043543	0.177682	0.119037
241	1.250	0.003756	-0.197742	-0.018880	-0.043543	0.154082	-0.128130
242	0	-0.022969	-0.188686	-0.073063	-0.073595	0.335231	0.109864
242	1.250	-0.022969	-0.188686	-0.073063	-0.073595	0.243905	-0.125984
243	0	-0.076562	-0.085426	-0.145158	-0.065159	0.451051	0.048500
243	1.250	-0.076562	-0.085426	-0.145158	-0.065159	0.269611	-0.058278
244	0	-0.213636	0.062075	-0.500069	0.135385	0.429607	-0.026353
244	1.250	-0.213636	0.062075	-0.500069	0.135385	-0.195455	0.051238

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
245	0	-0.046342	0.132419	-0.124206	0.171609	0.198746	-0.058561
245	1.250	-0.046342	0.132419	-0.124206	0.171609	0.043495	0.106955
246	0	0.013582	0.119910	-0.037600	0.097042	0.105720	-0.062105
246	1.250	0.013582	0.119910	-0.037600	0.097042	0.058722	0.087776
247	0	0.009087	0.118015	-0.021809	0.056155	0.065494	-0.061886
247	1.250	0.009087	0.118015	-0.021809	0.056155	0.038233	0.085627
248	0	0.001282	0.119107	-0.013298	0.031729	0.041062	-0.061362
248	1.250	0.001282	0.119107	-0.013298	0.031729	0.024441	0.087516
249	0	-0.001843	0.120380	-0.009071	0.015861	0.028584	-0.061025
249	1.250	-0.001843	0.120380	-0.009071	0.015861	0.017246	0.089444
250	0	-0.000639	0.121291	-0.007961	0.003505	0.024979	-0.060489
250	1.250	-0.000639	0.121291	-0.007961	0.003505	0.015028	0.091119
251	0	0.008785	0.120838	-0.010917	-0.009677	0.028998	-0.058673
251	1.250	0.008785	0.120838	-0.010917	-0.009677	0.015352	0.092368
252	0	0.033540	0.113236	-0.023383	-0.026413	0.037506	-0.052814
252	1.250	0.033540	0.113236	-0.023383	-0.026413	0.008278	0.088725
253	0	0.065902	0.084691	-0.034894	-0.029886	0.023290	-0.038760
253	1.250	0.065902	0.084691	-0.034894	-0.029886	-0.020326	0.067099
254	0	0.084124	0.039896	-0.028909	0.023886	-0.006316	-0.021354
254	1.250	0.084124	0.039896	-0.028909	0.023886	-0.042451	0.028514
255	0	0.043798	-0.000168	-0.029701	0.042248	0.046286	-0.007940
255	1.250	0.043798	-0.000168	-0.029701	0.042248	0.009162	-0.008150
256	0	0.008766	-0.003946	-0.007116	0.018296	0.023648	-0.002565
256	1.250	0.008766	-0.003946	-0.007116	0.018296	0.014754	-0.007498
257	0	-0.000107	-0.001377	-0.003077	0.007877	0.011559	-0.000836
257	1.250	-0.000107	-0.001377	-0.003077	0.007877	0.007713	-0.002557
258	0	-0.000764	-0.000332	-0.001739	0.003028	0.006371	-0.000269
258	1.250	-0.000764	-0.000332	-0.001739	0.003028	0.004198	-0.000683
259	0	-0.000616	3.11E-08	-0.001337	5.89E-08	0.004913	3.40E-08
259	1.250	-0.000616	3.11E-08	-0.001337	5.89E-08	0.003241	7.29E-08
260	0	-0.000764	0.000332	-0.001721	-0.003028	0.006360	0.000269
260	1.250	-0.000764	0.000332	-0.001721	-0.003028	0.004209	0.000684
261	0	-0.000107	0.001377	-0.003070	-0.007877	0.011555	0.000836
261	1.250	-0.000107	0.001377	-0.003070	-0.007877	0.007718	0.002557
262	0	0.008770	0.003946	-0.007118	-0.018296	0.023650	0.002565
262	1.250	0.008770	0.003946	-0.007118	-0.018296	0.014752	0.007498

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
263	0	0.043798	0.000169	-0.029700	-0.042249	0.046285	0.007940
263	1.250	0.043798	0.000169	-0.029700	-0.042249	0.009162	0.008151
264	0	0.084124	-0.039896	-0.028907	-0.023886	-0.006317	0.021354
264	1.250	0.084124	-0.039896	-0.028907	-0.023886	-0.042450	-0.028514
265	0	0.065902	-0.084691	-0.034894	0.029886	0.023290	0.038760
265	1.250	0.065902	-0.084691	-0.034894	0.029886	-0.020326	-0.067099
266	0	0.033538	-0.113235	-0.023383	0.026413	0.037506	0.052814
266	1.250	0.033538	-0.113235	-0.023383	0.026413	0.008278	-0.088725
267	0	0.008786	-0.120838	-0.010920	0.009677	0.029000	0.058673
267	1.250	0.008786	-0.120838	-0.010920	0.009677	0.015350	-0.092368
268	0	-0.000640	-0.121292	-0.007947	-0.003505	0.024970	0.060489
268	1.250	-0.000640	-0.121292	-0.007947	-0.003505	0.015037	-0.091120
269	0	-0.001843	-0.120381	-0.009101	-0.015861	0.028603	0.061025
269	1.250	-0.001843	-0.120381	-0.009101	-0.015861	0.017227	-0.089445
270	0	0.001282	-0.119108	-0.013289	-0.031729	0.041057	0.061363
270	1.250	0.001282	-0.119108	-0.013289	-0.031729	0.024446	-0.087516
271	0	0.009087	-0.118015	-0.021801	-0.056155	0.065489	0.061886
271	1.250	0.009087	-0.118015	-0.021801	-0.056155	0.038239	-0.085627
272	0	0.013582	-0.119911	-0.037586	-0.097043	0.105712	0.062106
272	1.250	0.013582	-0.119911	-0.037586	-0.097043	0.058731	-0.087777
273	0	-0.046342	-0.132419	-0.124213	-0.171611	0.198752	0.058561
273	1.250	-0.046342	-0.132419	-0.124213	-0.171611	0.043491	-0.106955
274	0	-0.213636	-0.062076	-0.500072	-0.135385	0.429609	0.026353
274	1.250	-0.213636	-0.062076	-0.500072	-0.135385	-0.195456	-0.051239
1601	0	1.687	-0.010469	-0.111089	0.011728	0.407168	0.061552
1601	11.000	1.687	-0.010469	-0.111089	0.011728	-0.814764	-0.053597
1602	0	1.687	-0.010468	0.111089	-0.011729	-0.407168	0.061550
1602	11.000	1.687	-0.010468	0.111089	-0.011729	0.814764	-0.053595

CARGAS: '' Ejec. "0001"

Hipótesis	Factor	Etapa	Título
25	1.0000		Viento sin sc 2

DESPLAZAMIENTOS:

NUDOS	DX [mm]	DY [mm]	DZ [mm]	RX [rad]	RY [rad]	RZ [rad]
1	0.015231	3.996	4.03E-17	-2.90E-06	-1.50E-05	6.83E-06
2	0.007314	3.997	-0.001366	-8.07E-07	-9.28E-06	6.17E-06
3	-6.16E-05	3.997	-0.000888	-5.75E-07	9.42E-08	6.05E-06
4	-0.007432	3.997	8.06E-05	-2.92E-08	9.50E-06	6.15E-06
5	-0.015040	3.997	-4.01E-17	-1.66E-06	1.52E-05	6.26E-06
6	0.015120	4.005	0.023397	-1.06E-05	-1.69E-05	6.59E-06
7	0.007302	4.005	0.010751	-9.79E-06	-9.70E-06	6.15E-06
8	-5.88E-05	4.005	-0.000995	-9.28E-06	7.06E-08	6.04E-06
9	-0.007394	4.005	-0.012291	-9.07E-06	9.85E-06	6.12E-06
10	-0.014959	4.005	-0.023728	-9.33E-06	1.69E-05	6.27E-06
11	0.014833	4.013	0.047817	-1.99E-05	-1.70E-05	6.39E-06
12	0.007200	4.013	0.023135	-1.96E-05	-9.79E-06	6.04E-06
13	-5.74E-05	4.013	-0.001056	-1.92E-05	2.12E-08	5.98E-06
14	-0.007294	4.013	-0.024794	-1.89E-05	9.81E-06	6.02E-06
15	-0.014670	4.013	-0.048237	-1.86E-05	1.70E-05	6.02E-06
16	0.014380	4.021	0.072511	-2.96E-05	-1.72E-05	6.15E-06
17	0.007000	4.021	0.035579	-2.95E-05	-9.85E-06	5.85E-06
18	-6.11E-05	4.021	-0.001049	-2.91E-05	-3.12E-08	5.80E-06
19	-0.007101	4.021	-0.037212	-2.87E-05	9.77E-06	5.82E-06
20	-0.014207	4.021	-0.072876	-2.83E-05	1.71E-05	5.75E-06
21	0.013785	4.028	0.097459	-3.95E-05	-1.74E-05	5.88E-06
22	0.006719	4.028	0.048125	-3.94E-05	-9.95E-06	5.59E-06
23	-6.54E-05	4.028	-0.000980	-3.91E-05	-7.62E-08	5.55E-06
24	-0.006826	4.028	-0.049614	-3.87E-05	9.80E-06	5.55E-06
25	-0.013601	4.028	-0.097668	-3.82E-05	1.72E-05	5.45E-06
26	0.013071	4.035	0.122683	-4.95E-05	-1.76E-05	5.56E-06
27	0.006377	4.035	0.060836	-4.95E-05	-1.01E-05	5.29E-06
28	-6.65E-05	4.035	-0.000859	-4.92E-05	-1.13E-07	5.24E-06
29	-0.006487	4.035	-0.062081	-4.87E-05	9.88E-06	5.24E-06
30	-0.012882	4.035	-0.122646	-4.82E-05	1.73E-05	5.11E-06
31	0.012259	4.042	0.148202	-5.95E-05	-1.78E-05	5.20E-06
32	0.005990	4.042	0.073774	-5.96E-05	-1.03E-05	4.94E-06
33	-6.02E-05	4.042	-0.000696	-5.95E-05	-1.40E-07	4.91E-06
34	-0.006097	4.042	-0.074693	-5.88E-05	1.00E-05	4.90E-06
35	-0.012080	4.042	-0.147839	-5.82E-05	1.75E-05	4.74E-06
36	0.011368	4.048	0.173957	-6.93E-05	-1.79E-05	4.78E-06
37	0.005574	4.048	0.087024	-6.98E-05	-1.06E-05	4.56E-06
38	-4.36E-05	4.048	-0.000508	-7.01E-05	-1.52E-07	4.55E-06
39	-0.005662	4.048	-0.087563	-6.90E-05	1.03E-05	4.55E-06
40	-0.011227	4.048	-0.173205	-6.80E-05	1.76E-05	4.39E-06
41	0.010428	4.053	0.199520	-7.85E-05	-1.75E-05	4.32E-06
42	0.005135	4.053	0.100640	-7.97E-05	-1.08E-05	4.15E-06
43	-2.30E-05	4.053	-0.000319	-8.13E-05	-1.40E-07	4.15E-06
44	-0.005190	4.053	-0.100791	-7.90E-05	1.05E-05	4.19E-06
45	-0.010346	4.053	-0.198355	-7.72E-05	1.72E-05	4.10E-06
46	0.009486	4.058	0.223081	-8.61E-05	-1.50E-05	3.88E-06

DESPLAZAMIENTOS:

NUDOS	DX [mm]	DY [mm]	DZ [mm]	RX [rad]	RY [rad]	RZ [rad]
47	0.004666	4.058	0.114165	-8.85E-05	-1.00E-05	3.79E-06
48	-1.74E-05	4.058	-0.000167	-9.35E-05	-9.50E-08	3.68E-06
49	-0.004696	4.059	-0.113994	-8.77E-05	9.81E-06	3.82E-06
50	-0.009436	4.059	-0.221550	-8.47E-05	1.48E-05	3.83E-06
51	0.008580	4.063	0.239928	-9.14E-05	-8.27E-06	3.66E-06
52	0.004180	4.063	0.124678	-9.34E-05	-4.95E-06	3.46E-06
53	-3.49E-05	4.063	-9.16E-05	-0.000110	-1.98E-08	3.40E-06
54	-0.004238	4.063	-0.124347	-9.26E-05	4.91E-06	3.44E-06
55	-0.008480	4.064	-0.238199	-9.00E-05	8.20E-06	3.41E-06
56	0.007246	4.069	0.248913	-9.71E-05	-9.47E-07	3.19E-06
57	0.003494	4.069	0.126399	-9.90E-05	5.89E-07	2.94E-06
58	-5.29E-05	4.069	-0.000139	-0.000103	6.68E-08	2.92E-06
59	-0.003570	4.069	-0.126182	-9.83E-05	-4.52E-07	2.87E-06
60	-0.007107	4.069	-0.247364	-9.58E-05	1.03E-06	2.86E-06
61	0.005622	4.073	0.248940	-9.90E-05	6.75E-07	2.42E-06
62	0.002724	4.073	0.124806	-9.96E-05	8.16E-07	2.29E-06
63	-2.69E-05	4.073	-0.000287	-0.000100	9.91E-08	2.24E-06
64	-0.002748	4.074	-0.124904	-9.89E-05	-6.17E-07	2.24E-06
65	-0.005568	4.074	-0.247751	-9.77E-05	-5.27E-07	2.35E-06
66	0.003828	4.077	0.247686	-9.92E-05	5.75E-07	1.62E-06
67	0.001873	4.077	0.123647	-9.93E-05	4.81E-07	1.55E-06
68	-5.75E-07	4.077	-0.000450	-9.92E-05	8.71E-08	1.53E-06
69	-0.001867	4.077	-0.124079	-9.85E-05	-3.10E-07	1.55E-06
70	-0.003834	4.077	-0.246846	-9.79E-05	-4.42E-07	1.66E-06
71	0.001938	4.079	0.246827	-9.90E-05	2.85E-07	8.13E-07
72	0.000954	4.079	0.123047	-9.90E-05	2.16E-07	7.84E-07
73	5.43E-06	4.079	-0.000569	-9.88E-05	4.91E-08	7.75E-07
74	-0.000946	4.079	-0.123718	-9.82E-05	-1.20E-07	7.94E-07
75	-0.001953	4.079	-0.246228	-9.78E-05	-2.09E-07	8.50E-07
76	1.16E-07	4.080	0.246540	-9.90E-05	-7.20E-12	4.63E-11
77	5.81E-08	4.080	0.122863	-9.89E-05	-4.39E-12	4.62E-11
78	4.29E-10	4.080	-0.000612	-9.86E-05	-8.47E-14	4.61E-11
79	-5.72E-08	4.080	-0.123619	-9.82E-05	4.23E-12	4.61E-11
80	-1.15E-07	4.080	-0.246026	-9.77E-05	7.06E-12	4.60E-11
81	-0.001938	4.079	0.246827	-9.90E-05	-2.85E-07	-8.13E-07
82	-0.000954	4.079	0.123047	-9.90E-05	-2.16E-07	-7.84E-07
83	-5.43E-06	4.079	-0.000569	-9.88E-05	-4.91E-08	-7.75E-07
84	0.000945	4.079	-0.123718	-9.82E-05	1.20E-07	-7.93E-07
85	0.001953	4.079	-0.246228	-9.78E-05	2.09E-07	-8.50E-07
86	-0.003828	4.077	0.247686	-9.92E-05	-5.75E-07	-1.62E-06
87	-0.001873	4.077	0.123647	-9.93E-05	-4.81E-07	-1.55E-06
88	5.75E-07	4.077	-0.000450	-9.92E-05	-8.71E-08	-1.53E-06
89	0.001867	4.077	-0.124079	-9.85E-05	3.10E-07	-1.55E-06
90	0.003834	4.077	-0.246846	-9.79E-05	4.42E-07	-1.66E-06
91	-0.005622	4.073	0.248941	-9.90E-05	-6.75E-07	-2.42E-06
92	-0.002724	4.073	0.124806	-9.96E-05	-8.16E-07	-2.29E-06
93	2.69E-05	4.073	-0.000287	-0.000100	-9.91E-08	-2.23E-06
94	0.002748	4.074	-0.124904	-9.89E-05	6.17E-07	-2.24E-06
95	0.005568	4.074	-0.247751	-9.77E-05	5.27E-07	-2.35E-06
96	-0.007246	4.069	0.248913	-9.71E-05	9.47E-07	-3.19E-06
97	-0.003494	4.069	0.126400	-9.90E-05	-5.89E-07	-2.94E-06
98	5.29E-05	4.069	-0.000139	-0.000103	-6.68E-08	-2.92E-06
99	0.003570	4.069	-0.126182	-9.83E-05	4.52E-07	-2.87E-06
100	0.007107	4.069	-0.247364	-9.58E-05	-1.03E-06	-2.86E-06

DESPLAZAMIENTOS:

NUDOS	DX [mm]	DY [mm]	DZ [mm]	RX [rad]	RY [rad]	RZ [rad]
101	-0.008580	4.063	0.239928	-9.14E-05	8.27E-06	-3.66E-06
102	-0.004180	4.063	0.124678	-9.34E-05	4.95E-06	-3.46E-06
103	3.49E-05	4.063	-9.16E-05	-0.000110	1.98E-08	-3.40E-06
104	0.004238	4.063	-0.124347	-9.26E-05	-4.91E-06	-3.44E-06
105	0.008480	4.064	-0.238199	-9.00E-05	-8.20E-06	-3.41E-06
106	-0.009486	4.058	0.223081	-8.61E-05	1.50E-05	-3.88E-06
107	-0.004666	4.058	0.114165	-8.85E-05	1.00E-05	-3.79E-06
108	1.74E-05	4.058	-0.000167	-9.35E-05	9.50E-08	-3.68E-06
109	0.004696	4.059	-0.113994	-8.77E-05	-9.81E-06	-3.82E-06
110	0.009436	4.059	-0.221550	-8.47E-05	-1.48E-05	-3.83E-06
111	-0.010428	4.053	0.199520	-7.85E-05	1.75E-05	-4.32E-06
112	-0.005135	4.053	0.100640	-7.97E-05	1.08E-05	-4.15E-06
113	2.30E-05	4.053	-0.000319	-8.13E-05	1.40E-07	-4.15E-06
114	0.005189	4.053	-0.100791	-7.90E-05	-1.05E-05	-4.19E-06
115	0.010345	4.053	-0.198355	-7.72E-05	-1.72E-05	-4.10E-06
116	-0.011368	4.048	0.173957	-6.93E-05	1.79E-05	-4.78E-06
117	-0.005574	4.048	0.087024	-6.98E-05	1.06E-05	-4.56E-06
118	4.36E-05	4.048	-0.000508	-7.01E-05	1.52E-07	-4.55E-06
119	0.005662	4.048	-0.087564	-6.90E-05	-1.03E-05	-4.55E-06
120	0.011227	4.048	-0.173205	-6.80E-05	-1.76E-05	-4.39E-06
121	-0.012259	4.042	0.148202	-5.95E-05	1.78E-05	-5.20E-06
122	-0.005990	4.042	0.073774	-5.96E-05	1.03E-05	-4.94E-06
123	6.02E-05	4.042	-0.000696	-5.95E-05	1.40E-07	-4.91E-06
124	0.006096	4.042	-0.074693	-5.88E-05	-1.00E-05	-4.90E-06
125	0.012080	4.042	-0.147839	-5.82E-05	-1.75E-05	-4.74E-06
126	-0.013071	4.035	0.122683	-4.95E-05	1.76E-05	-5.56E-06
127	-0.006376	4.035	0.060836	-4.95E-05	1.01E-05	-5.29E-06
128	6.65E-05	4.035	-0.000859	-4.92E-05	1.13E-07	-5.24E-06
129	0.006487	4.035	-0.062081	-4.87E-05	-9.88E-06	-5.24E-06
130	0.012881	4.035	-0.122647	-4.82E-05	-1.73E-05	-5.11E-06
131	-0.013785	4.028	0.097459	-3.95E-05	1.74E-05	-5.88E-06
132	-0.006719	4.028	0.048125	-3.94E-05	9.95E-06	-5.59E-06
133	6.54E-05	4.028	-0.000981	-3.91E-05	7.62E-08	-5.55E-06
134	0.006826	4.028	-0.049614	-3.87E-05	-9.80E-06	-5.55E-06
135	0.013600	4.028	-0.097668	-3.82E-05	-1.72E-05	-5.45E-06
136	-0.014380	4.021	0.072512	-2.96E-05	1.72E-05	-6.15E-06
137	-0.007000	4.021	0.035579	-2.95E-05	9.85E-06	-5.85E-06
138	6.11E-05	4.021	-0.001049	-2.91E-05	3.12E-08	-5.80E-06
139	0.007101	4.021	-0.037212	-2.87E-05	-9.77E-06	-5.82E-06
140	0.014207	4.021	-0.072876	-2.83E-05	-1.71E-05	-5.75E-06
141	-0.014832	4.013	0.047817	-1.99E-05	1.70E-05	-6.39E-06
142	-0.007200	4.013	0.023135	-1.96E-05	9.79E-06	-6.04E-06
143	5.74E-05	4.013	-0.001056	-1.92E-05	-2.12E-08	-5.98E-06
144	0.007294	4.013	-0.024794	-1.89E-05	-9.81E-06	-6.02E-06
145	0.014670	4.013	-0.048237	-1.86E-05	-1.70E-05	-6.02E-06
146	-0.015120	4.005	0.023397	-1.06E-05	1.69E-05	-6.59E-06
147	-0.007302	4.005	0.010751	-9.79E-06	9.70E-06	-6.15E-06
148	5.88E-05	4.005	-0.000995	-9.28E-06	-7.06E-08	-6.04E-06
149	0.007394	4.005	-0.012291	-9.07E-06	-9.85E-06	-6.12E-06
150	0.014958	4.005	-0.023728	-9.33E-06	-1.69E-05	-6.27E-06
151	-0.015231	3.996	4.03E-17	-2.90E-06	1.50E-05	-6.83E-06
152	-0.007314	3.997	-0.001366	-8.07E-07	9.28E-06	-6.17E-06
153	6.16E-05	3.997	-0.000888	-5.75E-07	-9.42E-08	-6.05E-06
154	0.007431	3.997	8.06E-05	-2.92E-08	-9.50E-06	-6.15E-06

DESPLAZAMIENTOS:

NUDOS	DX [mm]	DY [mm]	DZ [mm]	RX [rad]	RY [rad]	RZ [rad]
155	0.015039	3.997	-4.01E-17	-1.66E-06	-1.52E-05	-6.26E-06
601	1.05E-21	6.09E-17	-2.13E-19	-3.08E-19	2.95E-24	4.16E-22
602	-1.05E-21	6.09E-17	-2.13E-19	-3.08E-19	-2.95E-24	-4.16E-22

REACCIONES EN APOYOS:

NUDOS	FX [t]	FY [t]	FZ [t]	MX [tm]	MY [tm]	MZ [tm]
1	-0.007616	-1.998	-4.029			
5	0.007520	-1.998	4.007			
151	0.007615	-1.998	-4.029			
155	-0.007520	-1.998	4.007			
601	-0.000105	-6.091	0.021338	30.848	-0.000295	-0.041585
602	0.000105	-6.091	0.021338	30.848	0.000295	0.041584
Sumas:	-4.73E-10	-20.175	-2.42E-07			

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
1	0	-0.360734	-0.894880	-1.952	-1.894	1.379	0.381696
1	1.275	-0.360734	-0.894880	-1.952	-1.894	-1.109	-0.759231
2	0	-0.933552	-0.530816	-1.748	-2.305	1.084	-0.179814
2	1.275	-0.933552	-0.530816	-1.748	-2.305	-1.144	-0.856577
3	0	-1.470	-0.444426	-1.769	-2.403	1.084	-0.348013
3	1.275	-1.470	-0.444426	-1.769	-2.403	-1.171	-0.914633
4	0	-1.933	-0.404648	-1.787	-2.445	1.088	-0.476777
4	1.275	-1.933	-0.404648	-1.787	-2.445	-1.190	-0.992682
5	0	-2.320	-0.367103	-1.803	-2.468	1.091	-0.610400
5	1.275	-2.320	-0.367103	-1.803	-2.468	-1.208	-1.078
6	0	-2.639	-0.353745	-1.818	-2.472	1.090	-0.739889
6	1.275	-2.639	-0.353745	-1.818	-2.472	-1.227	-1.191
7	0	-2.893	-0.368965	-1.829	-2.431	1.075	-0.899970
7	1.275	-2.893	-0.368965	-1.829	-2.431	-1.256	-1.370
8	0	-3.056	-0.417804	-1.829	-2.271	1.005	-1.155
8	1.275	-3.056	-0.417804	-1.829	-2.271	-1.327	-1.688
9	0	-3.059	-0.407314	-1.754	-1.872	0.744441	-1.605
9	1.275	-3.059	-0.407314	-1.754	-1.872	-1.492	-2.125
10	0	-2.945	-0.251926	-1.246	-1.321	0.036383	-2.154
10	1.275	-2.945	-0.251926	-1.246	-1.321	-1.552	-2.475

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
11	0	-3.249	-0.281685	-0.320025	-1.055	-0.389617	-2.130
11	1.700	-3.249	-0.281685	-0.320025	-1.055	-0.933637	-2.609
12	0	-3.956	-0.079301	0.044964	-0.345022	-0.310649	-1.868
12	1.700	-3.956	-0.079301	0.044964	-0.345022	-0.234213	-2.003
13	0	-4.372	-0.103609	0.039624	-0.034433	-0.177373	-1.592
13	1.700	-4.372	-0.103609	0.039624	-0.034433	-0.110015	-1.768
14	0	-4.604	-0.109447	0.022913	0.025053	-0.148077	-1.549
14	1.700	-4.604	-0.109447	0.022913	0.025053	-0.109127	-1.735
15	0	-4.723	-0.044242	0.007608	0.012804	-0.137329	-1.626
15	1.700	-4.723	-0.044242	0.007608	0.012804	-0.124397	-1.701
16	0	-4.723	0.045620	-0.007486	-0.012806	-0.124500	-1.703
16	1.700	-4.723	0.045620	-0.007486	-0.012806	-0.137226	-1.625
17	0	-4.604	0.106737	-0.023156	-0.025055	-0.108921	-1.732
17	1.700	-4.604	0.106737	-0.023156	-0.025055	-0.148284	-1.551
18	0	-4.372	0.104983	-0.039503	0.034432	-0.110119	-1.770
18	1.700	-4.372	0.104983	-0.039503	0.034432	-0.177271	-1.591
19	0	-3.956	0.080645	-0.044848	0.345020	-0.234312	-2.004
19	1.700	-3.956	0.080645	-0.044848	0.345020	-0.310551	-1.867
20	0	-3.249	0.279141	0.319803	1.055	-0.933448	-2.607
20	1.700	-3.249	0.279141	0.319803	1.055	-0.389807	-2.132
21	0	-2.945	0.254459	1.246	1.321	-1.552	-2.476
21	1.275	-2.945	0.254459	1.246	1.321	0.036521	-2.152
22	0	-3.059	0.409789	1.754	1.872	-1.492	-2.126
22	1.275	-3.059	0.409789	1.754	1.872	0.744579	-1.604
23	0	-3.056	0.420091	1.829	2.271	-1.327	-1.689
23	1.275	-3.056	0.420091	1.829	2.271	1.005	-1.153
24	0	-2.893	0.361566	1.828	2.431	-1.256	-1.366
24	1.275	-2.893	0.361566	1.828	2.431	1.075	-0.904679
25	0	-2.639	0.355997	1.818	2.472	-1.227	-1.192
25	1.275	-2.639	0.355997	1.818	2.472	1.091	-0.738443
26	0	-2.320	0.359622	1.802	2.468	-1.207	-1.074
26	1.275	-2.320	0.359622	1.802	2.468	1.091	-0.615158
27	0	-1.933	0.406814	1.787	2.445	-1.190	-0.994051
27	1.275	-1.933	0.406814	1.787	2.445	1.089	-0.475384
28	0	-1.470	0.456239	1.770	2.403	-1.171	-0.922151
28	1.275	-1.470	0.456239	1.770	2.403	1.085	-0.340469

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
29	0	-0.933554	0.523237	1.747	2.305	-1.144	-0.851735
29	1.275	-0.933554	0.523237	1.747	2.305	1.084	-0.184634
30	0	-0.360733	0.896985	1.952	1.894	-1.109	-0.760562
30	1.275	-0.360733	0.896985	1.952	1.894	1.379	0.383048
31	0	-0.042363	-0.581037	-0.033610	-2.026	0.162150	0.362568
31	1.275	-0.042363	-0.581037	-0.033610	-2.026	0.119300	-0.378224
32	0	-0.354525	-0.650156	0.102747	-2.211	-0.038144	0.365271
32	1.275	-0.354525	-0.650156	0.102747	-2.211	0.092854	-0.463644
33	0	-0.692120	-0.565953	0.176303	-2.229	-0.093042	0.272902
33	1.275	-0.692120	-0.565953	0.176303	-2.229	0.131735	-0.448659
34	0	-0.973726	-0.456724	0.187476	-2.245	-0.083919	0.176025
34	1.275	-0.973726	-0.456724	0.187476	-2.245	0.155103	-0.406274
35	0	-1.187	-0.353335	0.187114	-2.265	-0.069379	0.088753
35	1.275	-1.187	-0.353335	0.187114	-2.265	0.169182	-0.361730
36	0	-1.340	-0.265637	0.180694	-2.286	-0.048371	0.014298
36	1.275	-1.340	-0.265637	0.180694	-2.286	0.182005	-0.324376
37	0	-1.441	-0.178228	0.142322	-2.297	-0.003395	-0.057864
37	1.275	-1.441	-0.178228	0.142322	-2.297	0.178058	-0.285095
38	0	-1.520	-0.061883	-0.032781	-2.249	0.086229	-0.140796
38	1.275	-1.520	-0.061883	-0.032781	-2.249	0.044435	-0.219694
39	0	-1.627	0.100630	-0.686830	-1.969	0.185803	-0.229083
39	1.275	-1.627	0.100630	-0.686830	-1.969	-0.689870	-0.100785
40	0	-1.684	0.093692	-2.391	-1.118	-0.154391	-0.207069
40	1.275	-1.684	0.093692	-2.391	-1.118	-3.202	-0.087616
41	0	-1.782	-0.491957	2.051	-0.953581	-3.122	0.240487
41	1.700	-1.782	-0.491957	2.051	-0.953581	0.364697	-0.595805
42	0	-2.000	-0.425543	0.412171	-0.097134	-0.406937	0.144478
42	1.700	-2.000	-0.425543	0.412171	-0.097134	0.293726	-0.578915
43	0	-2.211	-0.269001	0.059325	0.057851	-0.032671	-0.019124
43	1.700	-2.211	-0.269001	0.059325	0.057851	0.133520	-0.476408
44	0	-2.389	-0.160796	0.007223	0.047397	0.059545	-0.121599
44	1.700	-2.389	-0.160796	0.007223	0.047397	0.071824	-0.394941
45	0	-2.479	-0.055546	0.001101	0.016202	0.052498	-0.215795
45	1.700	-2.479	-0.055546	0.001101	0.016202	0.054368	-0.310220
46	0	-2.479	0.055116	-0.001101	-0.016205	0.054369	-0.309854
46	1.700	-2.479	0.055116	-0.001101	-0.016205	0.052498	-0.216161

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
47	0	-2.389	0.161014	-0.007222	-0.047398	0.071823	-0.395126
47	1.700	-2.389	0.161014	-0.007222	-0.047398	0.059546	-0.121413
48	0	-2.211	0.269220	-0.059325	-0.057852	0.133519	-0.476593
48	1.700	-2.211	0.269220	-0.059325	-0.057852	0.032671	-0.018937
49	0	-2.000	0.425108	-0.412175	0.097131	0.293728	-0.578546
49	1.700	-2.000	0.425108	-0.412175	0.097131	-0.406942	0.144109
50	0	-1.782	0.492851	-2.051	0.953580	0.364697	-0.596565
50	1.700	-1.782	0.492851	-2.051	0.953580	-3.122	0.241245
51	0	-1.684	-0.094826	2.391	1.118	-3.202	-0.086894
51	1.275	-1.684	-0.094826	2.391	1.118	-0.154396	-0.207792
52	0	-1.627	-0.100237	0.686835	1.969	-0.689879	-0.101035
52	1.275	-1.627	-0.100237	0.686835	1.969	0.185801	-0.228832
53	0	-1.520	0.062244	0.032779	2.249	0.044434	-0.219924
53	1.275	-1.520	0.062244	0.032779	2.249	0.086225	-0.140566
54	0	-1.441	0.177050	-0.142318	2.297	0.178056	-0.284346
54	1.275	-1.441	0.177050	-0.142318	2.297	-0.003392	-0.058615
55	0	-1.340	0.265993	-0.180688	2.286	0.182002	-0.324604
55	1.275	-1.340	0.265993	-0.180688	2.286	-0.048367	0.014523
56	0	-1.187	0.353685	-0.187114	2.265	0.169183	-0.361955
56	1.275	-1.187	0.353685	-0.187114	2.265	-0.069378	0.088976
57	0	-0.973726	0.455531	-0.187476	2.245	0.155104	-0.405516
57	1.275	-0.973726	0.455531	-0.187476	2.245	-0.083919	0.175264
58	0	-0.692122	0.566290	-0.176299	2.229	0.131733	-0.448875
58	1.275	-0.692122	0.566290	-0.176299	2.229	-0.093039	0.273117
59	0	-0.354526	0.652029	-0.102747	2.211	0.092853	-0.464838
59	1.275	-0.354526	0.652029	-0.102747	2.211	-0.038145	0.366466
60	0	-0.042363	0.579830	0.033609	2.026	0.119299	-0.377454
60	1.275	-0.042363	0.579830	0.033609	2.026	0.162150	0.361801
61	0	0.009996	-0.723699	0.005392	-2.620	0.004895	0.458712
61	1.275	0.009996	-0.723699	0.005392	-2.620	0.011770	-0.463967
62	0	0.005071	-0.924182	0.006039	-2.972	0.013590	0.560916
62	1.275	0.005071	-0.924182	0.006039	-2.972	0.021290	-0.617368
63	0	-0.013097	-0.816395	0.000664	-3.000	0.018092	0.438620
63	1.275	-0.013097	-0.816395	0.000664	-3.000	0.018939	-0.602241
64	0	-0.015347	-0.656029	-0.001175	-3.010	0.016621	0.301776
64	1.275	-0.015347	-0.656029	-0.001175	-3.010	0.015123	-0.534628

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
65	0	-0.003954	-0.514419	-0.001775	-3.039	0.014176	0.189089
65	1.275	-0.003954	-0.514419	-0.001775	-3.039	0.011913	-0.466769
66	0	0.022385	-0.387252	-0.002938	-3.095	0.011504	0.092119
66	1.275	0.022385	-0.387252	-0.002938	-3.095	0.007758	-0.401608
67	0	0.058729	-0.277345	-0.004832	-3.195	0.007267	0.010122
67	1.275	0.058729	-0.277345	-0.004832	-3.195	0.001107	-0.343478
68	0	0.072914	-0.192659	-0.006723	-3.366	-0.000178	-0.058101
68	1.275	0.072914	-0.192659	-0.006723	-3.366	-0.008750	-0.303731
69	0	0.020011	-0.101606	-0.006877	-3.661	-0.011385	-0.151583
69	1.275	0.020011	-0.101606	-0.006877	-3.661	-0.020153	-0.281125
70	0	-0.061953	0.435535	-0.005847	-4.954	-0.022829	-0.406403
70	1.275	-0.061953	0.435535	-0.005847	-4.954	-0.030284	0.148882
71	0	-0.047968	-0.918621	0.007814	1.653	-0.029559	0.615282
71	1.700	-0.047968	-0.918621	0.007814	1.653	-0.016277	-0.946310
72	0	0.069200	-0.483649	0.007806	0.525052	-0.015185	0.174682
72	1.700	0.069200	-0.483649	0.007806	0.525052	-0.001915	-0.647489
73	0	0.069818	-0.366986	0.005871	0.242661	-0.001805	0.067743
73	1.700	0.069818	-0.366986	0.005871	0.242661	0.008175	-0.556109
74	0	0.015949	-0.229206	0.003213	0.103781	0.007319	-0.064116
74	1.700	0.015949	-0.229206	0.003213	0.103781	0.012781	-0.453750
75	0	-0.014423	-0.076954	0.001005	0.029002	0.012150	-0.201867
75	1.700	-0.014423	-0.076954	0.001005	0.029002	0.013859	-0.332684
76	0	-0.014423	0.077179	-0.001005	-0.029006	0.013859	-0.332875
76	1.700	-0.014423	0.077179	-0.001005	-0.029006	0.012150	-0.201676
77	0	0.015949	0.229430	-0.003213	-0.103783	0.012781	-0.453941
77	1.700	0.015949	0.229430	-0.003213	-0.103783	0.007319	-0.063925
78	0	0.069818	0.366544	-0.005871	-0.242664	0.008175	-0.555733
78	1.700	0.069818	0.366544	-0.005871	-0.242664	-0.001805	0.067368
79	0	0.069200	0.483869	-0.007806	-0.525055	-0.001915	-0.647675
79	1.700	0.069200	0.483869	-0.007806	-0.525055	-0.015185	0.174869
80	0	-0.047968	0.918208	-0.007814	-1.653	-0.016277	-0.945957
80	1.700	-0.047968	0.918208	-0.007814	-1.653	-0.029559	0.614930
81	0	-0.061953	-0.435123	0.005848	4.954	-0.030284	0.148620
81	1.275	-0.061953	-0.435123	0.005848	4.954	-0.022829	-0.406140
82	0	0.020011	0.102008	0.006877	3.661	-0.020153	-0.281382
82	1.275	0.020011	0.102008	0.006877	3.661	-0.011385	-0.151328

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
83	0	0.072914	0.193029	0.006723	3.366	-0.008750	-0.303968
83	1.275	0.072914	0.193029	0.006723	3.366	-0.000178	-0.057865
84	0	0.058729	0.277715	0.004832	3.195	0.001107	-0.343714
84	1.275	0.058729	0.277715	0.004832	3.195	0.007267	0.010358
85	0	0.022385	0.386037	0.002938	3.095	0.007758	-0.400833
85	1.275	0.022385	0.386037	0.002938	3.095	0.011505	0.091345
86	0	-0.003954	0.513199	0.001775	3.039	0.011913	-0.465991
86	1.275	-0.003954	0.513199	0.001775	3.039	0.014176	0.188313
87	0	-0.015347	0.657964	0.001175	3.010	0.015122	-0.535861
87	1.275	-0.015347	0.657964	0.001175	3.010	0.016621	0.303011
88	0	-0.013097	0.815162	-0.000664	3.000	0.018939	-0.601457
88	1.275	-0.013097	0.815162	-0.000664	3.000	0.018092	0.437833
89	0	0.005071	0.924526	-0.006039	2.972	0.021290	-0.617589
89	1.275	0.005071	0.924526	-0.006039	2.972	0.013590	0.561137
90	0	0.009996	0.724043	-0.005393	2.620	0.011770	-0.464187
90	1.275	0.009996	0.724043	-0.005393	2.620	0.004895	0.458932
91	0	0.130085	-0.678823	0.080408	-2.040	-0.169366	0.416043
91	1.275	0.130085	-0.678823	0.080408	-2.040	-0.066850	-0.449421
92	0	0.345981	-0.828090	-0.089535	-2.209	0.070408	0.485292
92	1.275	0.345981	-0.828090	-0.089535	-2.209	-0.043745	-0.570480
93	0	0.669301	-0.711519	-0.168649	-2.225	0.121386	0.361749
93	1.275	0.669301	-0.711519	-0.168649	-2.225	-0.093632	-0.545401
94	0	0.952991	-0.583445	-0.180436	-2.244	0.106846	0.251946
94	1.275	0.952991	-0.583445	-0.180436	-2.244	-0.123200	-0.491917
95	0	1.175	-0.464182	-0.182764	-2.265	0.089995	0.157024
95	1.275	1.175	-0.464182	-0.182764	-2.265	-0.143020	-0.434784
96	0	1.352	-0.350046	-0.180333	-2.286	0.066072	0.072257
96	1.275	1.352	-0.350046	-0.180333	-2.286	-0.163844	-0.374033
97	0	1.505	-0.253239	-0.147011	-2.295	0.015193	0.005058
97	1.275	1.505	-0.253239	-0.147011	-2.295	-0.172239	-0.317809
98	0	1.638	-0.198888	0.021528	-2.245	-0.085638	-0.034501
98	1.275	1.638	-0.198888	0.021528	-2.245	-0.058191	-0.288073
99	0	1.711	-0.160750	0.669826	-1.963	-0.204870	-0.064930
99	1.275	1.711	-0.160750	0.669826	-1.963	0.649124	-0.269878
100	0	1.587	-0.092846	2.379	-1.113	0.107393	-0.107857
100	1.275	1.587	-0.092846	2.379	-1.113	3.141	-0.226231

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
101	0	1.734	-0.474700	-2.020	-0.959868	3.051	0.213534
101	1.700	1.734	-0.474700	-2.020	-0.959868	-0.382560	-0.593423
102	0	2.137	-0.381271	-0.382347	-0.102081	0.365947	0.114608
102	1.700	2.137	-0.381271	-0.382347	-0.102081	-0.284018	-0.533527
103	0	2.290	-0.313883	-0.039429	0.056050	-0.043230	0.034399
103	1.700	2.290	-0.313883	-0.039429	0.056050	-0.110257	-0.499181
104	0	2.395	-0.198061	0.004092	0.047077	-0.050980	-0.086256
104	1.700	2.395	-0.198061	0.004092	0.047077	-0.044024	-0.422946
105	0	2.457	-0.065159	0.002609	0.016185	-0.032285	-0.211083
105	1.700	2.457	-0.065159	0.002609	0.016185	-0.027851	-0.321849
106	0	2.457	0.065378	-0.002608	-0.016186	-0.027851	-0.322035
106	1.700	2.457	0.065378	-0.002608	-0.016186	-0.032285	-0.210897
107	0	2.395	0.197630	-0.004092	-0.047081	-0.044023	-0.422579
107	1.700	2.395	0.197630	-0.004092	-0.047081	-0.050980	-0.086622
108	0	2.290	0.314102	0.039429	-0.056051	-0.110257	-0.499366
108	1.700	2.290	0.314102	0.039429	-0.056051	-0.043230	0.034586
109	0	2.137	0.381486	0.382350	0.102081	-0.284019	-0.533710
109	1.700	2.137	0.381486	0.382350	0.102081	0.365951	0.114791
110	0	1.734	0.474295	2.020	0.959866	-0.382559	-0.593079
110	1.700	1.734	0.474295	2.020	0.959866	3.051	0.213188
111	0	1.587	0.093252	-2.379	1.113	3.141	-0.226490
111	1.275	1.587	0.093252	-2.379	1.113	0.107385	-0.107599
112	0	1.711	0.161142	-0.669796	1.963	0.649109	-0.270127
112	1.275	1.711	0.161142	-0.669796	1.963	-0.204846	-0.064679
113	0	1.638	0.199247	-0.021547	2.245	-0.058176	-0.288302
113	1.275	1.638	0.199247	-0.021547	2.245	-0.085648	-0.034272
114	0	1.505	0.252062	0.147020	2.295	-0.172245	-0.317059
114	1.275	1.505	0.252062	0.147020	2.295	0.015198	0.004307
115	0	1.352	0.350401	0.180327	2.286	-0.163841	-0.374261
115	1.275	1.352	0.350401	0.180327	2.286	0.066067	0.072483
116	0	1.175	0.464532	0.182766	2.265	-0.143022	-0.435009
116	1.275	1.175	0.464532	0.182766	2.265	0.089996	0.157247
117	0	0.952993	0.582253	0.180427	2.244	-0.123196	-0.491158
117	1.275	0.952993	0.582253	0.180427	2.244	0.106840	0.251185
118	0	0.669301	0.711855	0.168652	2.225	-0.093635	-0.545617
118	1.275	0.669301	0.711855	0.168652	2.225	0.121388	0.361963

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
119	0	0.345982	0.828423	0.089532	2.209	-0.043742	-0.570693
119	1.275	0.345982	0.828423	0.089532	2.209	0.070407	0.485506
120	0	0.130086	0.679154	-0.080408	2.040	-0.066849	-0.449632
120	1.275	0.130086	0.679154	-0.080408	2.040	-0.169365	0.416256
121	0	0.263111	-1.110	1.879	-1.795	-1.377	0.189015
121	1.275	0.263111	-0.643776	1.879	-1.996	1.018	-0.929232
122	0	0.937121	-0.609485	1.706	-2.199	-1.156	-0.431407
122	1.275	0.937121	-0.142853	1.706	-2.400	1.019	-0.911003
123	0	1.506	-0.517045	1.740	-2.296	-1.186	-0.554042
123	1.275	1.506	-0.050413	1.740	-2.498	1.032	-0.915782
124	0	1.969	-0.494438	1.760	-2.342	-1.210	-0.662948
124	1.275	1.969	-0.027807	1.760	-2.543	1.034	-0.995866
125	0	2.336	-0.428381	1.779	-2.366	-1.235	-0.818193
125	1.275	2.336	0.038251	1.779	-2.568	1.034	-1.067
126	0	2.604	-0.308917	1.799	-2.371	-1.256	-0.967927
126	1.275	2.604	0.157714	1.799	-2.572	1.038	-1.064
127	0	2.771	-0.119818	1.817	-2.328	-1.258	-1.040
127	1.275	2.771	0.346813	1.817	-2.529	1.059	-0.895487
128	0	2.864	0.130923	1.825	-2.165	-1.195	-0.912055
128	1.275	2.864	0.597554	1.825	-2.367	1.132	-0.447669
129	0	2.955	0.315027	1.757	-1.763	-0.932051	-0.436470
129	1.275	2.955	0.781658	1.757	-1.964	1.308	0.262639
130	0	3.104	0.025454	1.243	-1.213	-0.211756	0.358752
130	1.275	3.104	0.492085	1.243	-1.415	1.373	0.688670
131	0	3.345	-0.950357	0.280287	-0.929804	0.219656	0.820816
131	1.700	3.345	-0.328182	0.280287	-1.198	0.696125	-0.265898
132	0	3.751	-1.117	-0.082381	-0.217725	0.095452	-0.015336
132	1.700	3.751	-0.494922	-0.082381	-0.486314	-0.044590	-1.385
133	0	4.224	-0.814021	-0.065555	0.097178	-0.081314	-0.962543
133	1.700	4.224	-0.191846	-0.065555	-0.171411	-0.192752	-1.817
134	0	4.583	-0.547829	-0.037460	0.158752	-0.138982	-1.465
134	1.700	4.583	0.074346	-0.037460	-0.109837	-0.202661	-1.868
135	0	4.759	-0.378731	-0.012197	0.147028	-0.166330	-1.691
135	1.700	4.759	0.243445	-0.012197	-0.121561	-0.187064	-1.806
136	0	4.759	-0.242067	0.012321	0.121558	-0.187170	-1.807
136	1.700	4.759	0.380108	0.012321	-0.147031	-0.166225	-1.690

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
137	0	4.583	-0.072970	0.037584	0.109836	-0.202767	-1.869
137	1.700	4.583	0.549206	0.037584	-0.158753	-0.138877	-1.464
138	0	4.224	0.189137	0.065315	0.171409	-0.192549	-1.815
138	1.700	4.224	0.811312	0.065315	-0.097181	-0.081518	-0.964844
139	0	3.751	0.496284	0.082506	0.486314	-0.044696	-1.387
139	1.700	3.751	1.118	0.082506	0.217725	0.095558	-0.014177
140	0	3.345	0.325611	-0.280521	1.198	0.696325	-0.263715
140	1.700	3.345	0.947784	-0.280521	0.929802	0.219459	0.818624
141	0	3.104	-0.489505	-1.242	1.415	1.372	0.687020
141	1.275	3.104	-0.022874	-1.242	1.213	-0.211606	0.360391
142	0	2.955	-0.779194	-1.757	1.964	1.308	0.261073
142	1.275	2.955	-0.312563	-1.757	1.763	-0.931912	-0.434894
143	0	2.864	-0.604973	-1.825	2.367	1.132	-0.442937
143	1.275	2.864	-0.138341	-1.825	2.165	-1.195	-0.916782
144	0	2.771	-0.344555	-1.817	2.529	1.059	-0.896919
144	1.275	2.771	0.122077	-1.817	2.328	-1.257	-1.039
145	0	2.604	-0.155486	-1.799	2.572	1.038	-1.066
145	1.275	2.604	0.311146	-1.799	2.371	-1.255	-0.966496
146	0	2.336	-0.036031	-1.779	2.568	1.034	-1.068
146	1.275	2.336	0.430601	-1.779	2.366	-1.235	-0.816770
147	0	1.969	0.029978	-1.760	2.543	1.034	-0.997238
147	1.275	1.969	0.496610	-1.760	2.342	-1.210	-0.661552
148	0	1.506	0.052520	-1.740	2.498	1.032	-0.917116
148	1.275	1.506	0.519152	-1.740	2.296	-1.185	-0.552689
149	0	0.937123	0.135287	-1.707	2.400	1.019	-0.906182
149	1.275	0.937123	0.601919	-1.707	2.199	-1.157	-0.436231
150	0	0.263107	0.645864	-1.879	1.996	1.018	-0.930564
150	1.275	0.263107	1.112	-1.879	1.795	-1.377	0.190346
151	0	1.104	0.368349	-2.077	1.379	1.893	-0.381429
151	1.250	1.104	0.368349	-2.077	1.379	-0.702948	0.078989
152	0	0.368672	0.572818	-0.204074	2.193	0.411906	-0.576640
152	1.250	0.368672	0.572818	-0.204074	2.193	0.156824	0.139354
153	0	0.078879	0.535991	0.021466	2.228	0.097566	-0.507948
153	1.250	0.078879	0.535991	0.021466	2.228	0.124396	0.162014
154	0	0.039439	0.463128	0.018474	2.260	0.042029	-0.441512
154	1.250	0.039439	0.463128	0.018474	2.260	0.065121	0.137375

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
155	0	0.041154	0.387266	0.015739	2.281	0.022627	-0.384431
155	1.250	0.041154	0.387266	0.015739	2.281	0.042299	0.099633
156	0	0.020577	0.319014	0.014294	2.298	0.004143	-0.335334
156	1.250	0.020577	0.319014	0.014294	2.298	0.022011	0.063418
157	0	-0.020577	0.254091	0.011443	2.302	-0.041045	-0.287155
157	1.250	-0.020577	0.254091	0.011443	2.302	-0.026742	0.030445
158	0	-0.048013	0.162474	1.18E-05	2.261	-0.159666	-0.214409
158	1.250	-0.048013	0.162474	1.18E-05	2.261	-0.159651	-0.011325
159	0	0.006859	0.003101	-0.074636	2.072	-0.398841	-0.082870
159	1.250	0.006859	0.003101	-0.074636	2.072	-0.492132	-0.078993
160	0	0.152613	-0.113446	-0.507744	1.529	-0.551281	0.024172
160	1.250	0.152613	-0.113446	-0.507744	1.529	-1.186	-0.117630
161	0	-0.020005	0.303949	-0.926821	1.163	-0.265943	-0.345529
161	1.250	-0.020005	0.303949	-0.926821	1.163	-1.424	0.034392
162	0	0.196625	0.707011	-0.364647	0.622890	-0.709980	-0.739706
162	1.250	0.196625	0.707011	-0.364647	0.622890	-1.166	0.144022
163	0	-0.020577	0.416006	0.005142	0.056880	-0.310624	-0.411027
163	1.250	-0.020577	0.416006	0.005142	0.056880	-0.304196	0.108960
164	0	-0.006859	0.231635	0.016751	-0.038199	-0.059513	-0.218190
164	1.250	-0.006859	0.231635	0.016751	-0.038199	-0.038575	0.071342
165	0	0.061731	0.119028	0.015441	-0.028165	0.012262	-0.108772
165	1.250	0.061731	0.119028	0.015441	-0.028165	0.031563	0.040008
166	0	0.091453	7.36E-08	0.014935	1.14E-06	0.025633	-2.00E-07
166	1.250	0.091453	7.36E-08	0.014935	1.14E-06	0.044301	-1.08E-07
167	0	0.064017	-0.119028	0.015428	0.028167	0.012271	0.108771
167	1.250	0.064017	-0.119028	0.015428	0.028167	0.031554	-0.040008
168	0	-0.006859	-0.231633	0.016758	0.038201	-0.059518	0.218189
168	1.250	-0.006859	-0.231633	0.016758	0.038201	-0.038571	-0.071341
169	0	-0.020577	-0.416009	0.005170	-0.056878	-0.310641	0.411028
169	1.250	-0.020577	-0.416009	0.005170	-0.056878	-0.304179	-0.108962
170	0	0.198911	-0.707007	-0.364616	-0.622889	-0.710003	0.739703
170	1.250	0.198911	-0.707007	-0.364616	-0.622889	-1.166	-0.144020
171	0	-0.022006	-0.303949	-0.926851	-1.163	-0.265924	0.345528
171	1.250	-0.022006	-0.303949	-0.926851	-1.163	-1.424	-0.034393
172	0	0.152613	0.113446	-0.507747	-1.529	-0.551277	-0.024172
172	1.250	0.152613	0.113446	-0.507747	-1.529	-1.186	0.117630

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
173	0	0.006859	-0.003099	-0.074631	-2.072	-0.398844	0.082868
173	1.250	0.006859	-0.003099	-0.074631	-2.072	-0.492129	0.078995
174	0	-0.048013	-0.162471	1.44E-05	-2.261	-0.159670	0.214408
174	1.250	-0.048013	-0.162471	1.44E-05	-2.261	-0.159652	0.011327
175	0	-0.020577	-0.254089	0.011437	-2.302	-0.041042	0.287154
175	1.250	-0.020577	-0.254089	0.011437	-2.302	-0.026747	-0.030444
176	0	0.020577	-0.319011	0.014279	-2.298	0.004153	0.335332
176	1.250	0.020577	-0.319011	0.014279	-2.298	0.022001	-0.063416
177	0	0.039439	-0.387267	0.015731	-2.281	0.022632	0.384432
177	1.250	0.039439	-0.387267	0.015731	-2.281	0.042295	-0.099633
178	0	0.039439	-0.463127	0.018488	-2.260	0.042020	0.441511
178	1.250	0.039439	-0.463127	0.018488	-2.260	0.065129	-0.137374
179	0	0.080593	-0.535994	0.021464	-2.228	0.097566	0.507950
179	1.250	0.080593	-0.535994	0.021464	-2.228	0.124395	-0.162016
180	0	0.366957	-0.572821	-0.204072	-2.193	0.411905	0.576642
180	1.250	0.366957	-0.572821	-0.204072	-2.193	0.156825	-0.139355
181	0	1.104	-0.368351	-2.077	-1.379	1.893	0.381430
181	1.250	1.104	-0.368351	-2.077	-1.379	-0.702948	-0.078990
182	0	0.524014	0.410711	-2.044	1.541	1.323	-0.282819
182	1.250	0.524014	0.410711	-2.044	1.541	-1.231	0.230548
183	0	0.294956	0.884984	-0.340428	2.036	0.341943	-0.603952
183	1.250	0.294956	0.884984	-0.340428	2.036	-0.083574	0.502234
184	0	0.164202	0.873591	-0.052087	2.043	0.142222	-0.575364
184	1.250	0.164202	0.873591	-0.052087	2.043	0.077116	0.516582
185	0	0.152039	0.744733	0.007316	2.044	0.081202	-0.486713
185	1.250	0.152039	0.744733	0.007316	2.044	0.090347	0.444167
186	0	0.139876	0.600577	0.016114	2.057	0.061904	-0.394870
186	1.250	0.139876	0.600577	0.016114	2.057	0.082046	0.355821
187	0	0.107948	0.471521	0.020710	2.081	0.042747	-0.312910
187	1.250	0.107948	0.471521	0.020710	2.081	0.068634	0.276469
188	0	0.066897	0.355696	0.049833	2.117	-0.015801	-0.236172
188	1.250	0.066897	0.355696	0.049833	2.117	0.046488	0.208429
189	0	0.069938	0.241134	0.175099	2.169	-0.207077	-0.155440
189	1.250	0.069938	0.241134	0.175099	2.169	0.011787	0.145965
190	0	0.168764	0.110099	0.579463	2.213	-0.771908	-0.069485
190	1.250	0.168764	0.110099	0.579463	2.213	-0.047608	0.068134

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
191	0	0.145958	-0.055879	1.196	2.064	-2.038	-0.011346
191	1.250	0.145958	-0.055879	1.196	2.064	-0.542775	-0.081192
192	0	-0.608411	0.401874	-5.369	1.243	-1.589	-0.293783
192	1.250	-0.608411	0.401874	-5.369	1.243	-8.299	0.208540
193	0	0.265562	0.925105	1.274	-0.148822	-2.022	-0.596249
193	1.250	0.265562	0.925105	1.274	-0.148822	-0.429174	0.560086
194	0	0.133795	0.626893	0.357894	-0.204191	-0.459166	-0.450861
194	1.250	0.133795	0.626893	0.357894	-0.204191	-0.011817	0.332724
195	0	0.103387	0.409729	0.068831	-0.112184	-0.028116	-0.283814
195	1.250	0.103387	0.409729	0.068831	-0.112184	0.057920	0.228326
196	0	0.170284	0.208539	0.021610	-0.047490	0.062791	-0.138889
196	1.250	0.170284	0.208539	0.021610	-0.047490	0.089802	0.121774
197	0	0.200692	1.05E-07	0.017179	1.23E-06	0.076753	-1.02E-07
197	1.250	0.200692	1.05E-07	0.017179	1.23E-06	0.098226	2.85E-08
198	0	0.168257	-0.208539	0.021599	0.047492	0.062797	0.138889
198	1.250	0.168257	-0.208539	0.021599	0.047492	0.089795	-0.121774
199	0	0.101360	-0.409728	0.068835	0.112186	-0.028118	0.283813
199	1.250	0.101360	-0.409728	0.068835	0.112186	0.057922	-0.228326
200	0	0.133795	-0.626893	0.357900	0.204194	-0.459172	0.450860
200	1.250	0.133795	-0.626893	0.357900	0.204194	-0.011816	-0.332724
201	0	0.263535	-0.925103	1.274	0.148824	-2.022	0.596247
201	1.250	0.263535	-0.925103	1.274	0.148824	-0.429179	-0.560085
202	0	-0.606637	-0.401873	-5.369	-1.243	-1.589	0.293782
202	1.250	-0.606637	-0.401873	-5.369	-1.243	-8.299	-0.208540
203	0	0.145958	0.055879	1.196	-2.064	-2.038	0.011346
203	1.250	0.145958	0.055879	1.196	-2.064	-0.542770	0.081192
204	0	0.168764	-0.110098	0.579469	-2.213	-0.771912	0.069484
204	1.250	0.168764	-0.110098	0.579469	-2.213	-0.047605	-0.068133
205	0	0.069938	-0.241134	0.175094	-2.169	-0.207075	0.155440
205	1.250	0.069938	-0.241134	0.175094	-2.169	0.011784	-0.145966
206	0	0.065377	-0.355697	0.049833	-2.117	-0.015800	0.236173
206	1.250	0.065377	-0.355697	0.049833	-2.117	0.046488	-0.208430
207	0	0.107948	-0.471521	0.020704	-2.081	0.042751	0.312909
207	1.250	0.107948	-0.471521	0.020704	-2.081	0.068630	-0.276468
208	0	0.141397	-0.600576	0.016114	-2.057	0.061905	0.394870
208	1.250	0.141397	-0.600576	0.016114	-2.057	0.082046	-0.355820

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
209	0	0.150519	-0.744734	0.007317	-2.044	0.081202	0.486713
209	1.250	0.150519	-0.744734	0.007317	-2.044	0.090347	-0.444167
210	0	0.164202	-0.873592	-0.052091	-2.043	0.142225	0.575364
210	1.250	0.164202	-0.873592	-0.052091	-2.043	0.077114	-0.516582
211	0	0.296477	-0.884985	-0.340427	-2.036	0.341943	0.603953
211	1.250	0.296477	-0.884985	-0.340427	-2.036	-0.083574	-0.502235
212	0	0.524014	-0.410711	-2.044	-1.541	1.323	0.282820
212	1.250	0.524014	-0.410711	-2.044	-1.541	-1.231	-0.230549
213	0	-0.200185	0.400715	-2.049	1.546	1.389	-0.228401
213	1.250	-0.200185	0.400715	-2.049	1.546	-1.172	0.272472
214	0	0.097305	0.889909	-0.341074	2.037	0.268055	-0.522540
214	1.250	0.097305	0.889909	-0.341074	2.037	-0.158271	0.589801
215	0	0.272150	0.891759	-0.046715	2.039	0.106028	-0.538633
215	1.250	0.272150	0.891759	-0.046715	2.039	0.047637	0.576021
216	0	0.308640	0.746984	0.009157	2.042	0.099903	-0.460163
216	1.250	0.308640	0.746984	0.009157	2.042	0.111348	0.473529
217	0	0.285834	0.589185	0.016711	2.056	0.111096	-0.368035
217	1.250	0.285834	0.589185	0.016711	2.056	0.131984	0.368416
218	0	0.234141	0.445182	0.021872	2.080	0.124552	-0.281603
218	1.250	0.234141	0.445182	0.021872	2.080	0.151891	0.274852
219	0	0.174845	0.319351	0.051721	2.116	0.146439	-0.203056
219	1.250	0.174845	0.319351	0.051721	2.116	0.211087	0.196118
220	0	0.153560	0.226950	0.176990	2.168	0.182560	-0.139298
220	1.250	0.153560	0.226950	0.176990	2.168	0.403788	0.144378
221	0	0.258467	0.163003	0.579613	2.211	0.247323	-0.084481
221	1.250	0.258467	0.163003	0.579613	2.211	0.971809	0.119265
222	0	0.684177	0.026085	1.195	2.062	0.750312	0.043611
222	1.250	0.684177	0.026085	1.195	2.062	2.244	0.076216
223	0	1.818	0.387993	-5.361	1.243	8.542	-0.216086
223	1.250	1.818	0.387993	-5.361	1.243	1.841	0.268886
224	0	0.699381	0.807936	1.274	-0.147731	0.699199	-0.560847
224	1.250	0.699381	0.807936	1.274	-0.147731	2.292	0.449033
225	0	0.251372	0.626274	0.359852	-0.204082	0.270632	-0.382507
225	1.250	0.251372	0.626274	0.359852	-0.204082	0.720429	0.400305
226	0	0.239209	0.463597	0.071467	-0.113040	0.196838	-0.263479
226	1.250	0.239209	0.463597	0.071467	-0.113040	0.286168	0.315994

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
227	0	0.320296	0.238912	0.023806	-0.048121	0.164585	-0.130309
227	1.250	0.320296	0.238912	0.023806	-0.048121	0.194342	0.168318
228	0	0.356786	9.57E-08	0.019196	1.23E-06	0.156239	-8.50E-08
228	1.250	0.356786	9.57E-08	0.019196	1.23E-06	0.180232	3.46E-08
229	0	0.320296	-0.238912	0.023810	0.048123	0.164586	0.130309
229	1.250	0.320296	-0.238912	0.023810	0.048123	0.194347	-0.168318
230	0	0.241236	-0.463597	0.071462	0.113043	0.196839	0.263479
230	1.250	0.241236	-0.463597	0.071462	0.113043	0.286162	-0.315994
231	0	0.251372	-0.626276	0.359849	0.204084	0.270634	0.382508
231	1.250	0.251372	-0.626276	0.359849	0.204084	0.720427	-0.400306
232	0	0.699381	-0.807936	1.274	0.147733	0.699197	0.560847
232	1.250	0.699381	-0.807936	1.274	0.147733	2.292	-0.449032
233	0	1.818	-0.387992	-5.361	-1.243	8.542	0.216086
233	1.250	1.818	-0.387992	-5.361	-1.243	1.841	-0.268885
234	0	0.684177	-0.026084	1.195	-2.062	0.750317	-0.043612
234	1.250	0.684177	-0.026084	1.195	-2.062	2.244	-0.076216
235	0	0.258467	-0.163002	0.579620	-2.211	0.247316	0.084480
235	1.250	0.258467	-0.163002	0.579620	-2.211	0.971812	-0.119264
236	0	0.153560	-0.226949	0.176988	-2.168	0.182563	0.139297
236	1.250	0.153560	-0.226949	0.176988	-2.168	0.403790	-0.144378
237	0	0.176366	-0.319352	0.051731	-2.116	0.146433	0.203056
237	1.250	0.176366	-0.319352	0.051731	-2.116	0.211094	-0.196118
238	0	0.234141	-0.445182	0.021875	-2.080	0.124551	0.281603
238	1.250	0.234141	-0.445182	0.021875	-2.080	0.151894	-0.274852
239	0	0.284314	-0.589185	0.016715	-2.056	0.111094	0.368035
239	1.250	0.284314	-0.589185	0.016715	-2.056	0.131987	-0.368416
240	0	0.310160	-0.746983	0.009155	-2.042	0.099904	0.460163
240	1.250	0.310160	-0.746983	0.009155	-2.042	0.111347	-0.473529
241	0	0.272150	-0.891760	-0.046713	-2.039	0.106028	0.538634
241	1.250	0.272150	-0.891760	-0.046713	-2.039	0.047639	-0.576022
242	0	0.097305	-0.889910	-0.341075	-2.037	0.268056	0.522541
242	1.250	0.097305	-0.889910	-0.341075	-2.037	-0.158271	-0.589802
243	0	-0.200185	-0.400715	-2.049	-1.546	1.389	0.228401
243	1.250	-0.200185	-0.400715	-2.049	-1.546	-1.172	-0.272473
244	0	-0.877869	0.270629	-2.129	1.377	0.867120	-0.143458
244	1.250	-0.877869	0.270629	-2.129	1.377	-1.795	0.194814

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
245	0	-0.053157	0.674011	-0.171133	2.175	0.011415	-0.344751
245	1.250	-0.053157	0.674011	-0.171133	2.175	-0.202494	0.497729
246	0	0.389249	0.568440	0.032408	2.205	0.063281	-0.356349
246	1.250	0.389249	0.568440	0.032408	2.205	0.103789	0.354173
247	0	0.438977	0.463288	0.020916	2.242	0.129873	-0.323579
247	1.250	0.438977	0.463288	0.020916	2.242	0.156017	0.255508
248	0	0.402967	0.367055	0.019048	2.269	0.153093	-0.280312
248	1.250	0.402967	0.367055	0.019048	2.269	0.176903	0.178488
249	0	0.348095	0.267972	0.019437	2.289	0.172793	-0.232820
249	1.250	0.348095	0.267972	0.019437	2.289	0.197088	0.102132
250	0	0.274360	0.167086	0.018399	2.296	0.220935	-0.182899
250	1.250	0.274360	0.167086	0.018399	2.296	0.243932	0.025950
251	0	0.207485	0.093143	0.008403	2.255	0.353853	-0.138042
251	1.250	0.207485	0.093143	0.008403	2.255	0.364357	-0.021618
252	0	0.294938	0.090731	-0.068653	2.064	0.689509	-0.104088
252	1.250	0.294938	0.090731	-0.068653	2.064	0.603696	0.009321
253	0	0.752777	0.149389	-0.514352	1.520	1.394	-0.086708
253	1.250	0.752777	0.149389	-0.514352	1.520	0.750949	0.100021
254	0	1.438	0.241006	-0.961922	1.153	1.687	-0.170834
254	1.250	1.438	0.241006	-0.961922	1.153	0.485060	0.130411
255	0	0.793359	0.405694	-0.363008	0.600863	1.434	-0.258561
255	1.250	0.793359	0.405694	-0.363008	0.600863	0.980669	0.248536
256	0	0.317801	0.472727	0.016950	0.036717	0.562309	-0.167894
256	1.250	0.317801	0.472727	0.016950	0.036717	0.583496	0.422991
257	0	0.358955	0.359211	0.028063	-0.053761	0.295120	-0.096895
257	1.250	0.358955	0.359211	0.028063	-0.053761	0.330198	0.352101
258	0	0.452695	0.176417	0.025309	-0.036373	0.225236	-0.043245
258	1.250	0.452695	0.176417	0.025309	-0.036373	0.256872	0.177268
259	0	0.486990	5.89E-08	0.024386	1.15E-06	0.212623	-1.44E-07
259	1.250	0.486990	5.89E-08	0.024386	1.15E-06	0.243104	-6.99E-08
260	0	0.452695	-0.176416	0.025313	0.036375	0.225230	0.043244
260	1.250	0.452695	-0.176416	0.025313	0.036375	0.256870	-0.177268
261	0	0.356669	-0.359208	0.028053	0.053763	0.295130	0.096893
261	1.250	0.356669	-0.359208	0.028053	0.053763	0.330195	-0.352099
262	0	0.317801	-0.472729	0.016943	-0.036715	0.562314	0.167895
262	1.250	0.317801	-0.472729	0.016943	-0.036715	0.583491	-0.422992

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
263	0	0.793359	-0.405690	-0.362961	-0.600863	1.434	0.258559
263	1.250	0.793359	-0.405690	-0.362961	-0.600863	0.980699	-0.248534
264	0	1.438	-0.241006	-0.961952	-1.153	1.687	0.170835
264	1.250	1.438	-0.241006	-0.961952	-1.153	0.485041	-0.130411
265	0	0.752777	-0.149390	-0.514321	-1.520	1.394	0.086709
265	1.250	0.752777	-0.149390	-0.514321	-1.520	0.750968	-0.100022
266	0	0.294938	-0.090732	-0.068681	-2.064	0.689529	0.104089
266	1.250	0.294938	-0.090732	-0.068681	-2.064	0.603681	-0.009322
267	0	0.209200	-0.093142	0.008419	-2.255	0.353844	0.138041
267	1.250	0.209200	-0.093142	0.008419	-2.255	0.364366	0.021619
268	0	0.274360	-0.167086	0.018379	-2.296	0.220947	0.182899
268	1.250	0.274360	-0.167086	0.018379	-2.296	0.243920	-0.025950
269	0	0.348095	-0.267972	0.019414	-2.289	0.172807	0.232820
269	1.250	0.348095	-0.267972	0.019414	-2.289	0.197073	-0.102131
270	0	0.402967	-0.367055	0.019040	-2.269	0.153098	0.280312
270	1.250	0.402967	-0.367055	0.019040	-2.269	0.176898	-0.178489
271	0	0.437262	-0.463288	0.020923	-2.242	0.129869	0.323579
271	1.250	0.437262	-0.463288	0.020923	-2.242	0.156022	-0.255508
272	0	0.387534	-0.568438	0.032400	-2.205	0.063286	0.356347
272	1.250	0.387534	-0.568438	0.032400	-2.205	0.103784	-0.354171
273	0	-0.053157	-0.674010	-0.171132	-2.175	0.011414	0.344750
273	1.250	-0.053157	-0.674010	-0.171132	-2.175	-0.202492	-0.497728
274	0	-0.877869	-0.270632	-2.129	-1.377	0.867120	0.143460
274	1.250	-0.877869	-0.270632	-2.129	-1.377	-1.795	-0.194816
1601	0	-0.021338	-6.091	0.000105	0.041585	-0.000295	30.847
1601	11.000	-0.021338	-3.781	0.000105	0.041585	0.000863	-23.447
1602	0	-0.021338	-6.091	-0.000105	-0.041584	0.000295	30.847
1602	11.000	-0.021338	-3.781	-0.000105	-0.041584	-0.000863	-23.447

CARGAS: '' Ejec. "0001"

Hipótesis	Factor	Etapa	Titulo
27	1.0000		Viento con sc 2

DESPLAZAMIENTOS:

NUDOS	DX [mm]	DY [mm]	DZ [mm]	RX [rad]	RY [rad]	RZ [rad]
1	0.019717	5.334	4.66E-17	-4.11E-06	-1.77E-05	8.83E-06
2	0.009471	5.335	-0.002436	-1.53E-06	-1.10E-05	8.00E-06
3	-7.55E-05	5.335	-0.002336	-8.00E-07	2.98E-08	7.83E-06
4	-0.009612	5.335	-0.000951	5.18E-07	1.11E-05	7.97E-06
5	-0.019486	5.334	-4.63E-17	-8.05E-07	1.77E-05	8.16E-06
6	0.019571	5.345	0.027580	-1.31E-05	-2.00E-05	8.54E-06
7	0.009454	5.345	0.011912	-1.21E-05	-1.15E-05	7.97E-06
8	-7.19E-05	5.345	-0.002359	-1.10E-05	-1.14E-09	7.82E-06
9	-0.009565	5.345	-0.015381	-1.01E-05	1.15E-05	7.92E-06
10	-0.019376	5.345	-0.027684	-9.70E-06	1.98E-05	8.15E-06
11	0.019189	5.355	0.056626	-2.42E-05	-2.04E-05	8.26E-06
12	0.009319	5.355	0.026690	-2.37E-05	-1.17E-05	7.83E-06
13	-7.00E-05	5.356	-0.002318	-2.27E-05	-6.91E-08	7.74E-06
14	-0.009433	5.356	-0.030055	-2.16E-05	1.16E-05	7.79E-06
15	-0.018994	5.356	-0.056528	-2.07E-05	2.01E-05	7.82E-06
16	0.018591	5.365	0.086337	-3.58E-05	-2.08E-05	7.94E-06
17	0.009056	5.365	0.041716	-3.55E-05	-1.20E-05	7.56E-06
18	-7.46E-05	5.366	-0.002185	-3.47E-05	-1.41E-07	7.50E-06
19	-0.009178	5.366	-0.044781	-3.34E-05	1.17E-05	7.52E-06
20	-0.018380	5.366	-0.085864	-3.23E-05	2.04E-05	7.45E-06
21	0.017807	5.375	0.116715	-4.78E-05	-2.13E-05	7.58E-06
22	0.008686	5.375	0.057056	-4.76E-05	-1.22E-05	7.22E-06
23	-8.07E-05	5.375	-0.001965	-4.68E-05	-2.02E-07	7.17E-06
24	-0.008817	5.375	-0.059666	-4.55E-05	1.18E-05	7.17E-06
25	-0.017580	5.375	-0.115751	-4.42E-05	2.08E-05	7.05E-06
26	0.016870	5.384	0.147802	-6.01E-05	-2.18E-05	7.16E-06
27	0.008237	5.384	0.072792	-5.99E-05	-1.26E-05	6.82E-06
28	-8.28E-05	5.384	-0.001676	-5.92E-05	-2.50E-07	6.77E-06
29	-0.008374	5.384	-0.074817	-5.78E-05	1.21E-05	6.76E-06
30	-0.016635	5.384	-0.146237	-5.65E-05	2.13E-05	6.60E-06
31	0.015810	5.393	0.179621	-7.25E-05	-2.23E-05	6.69E-06
32	0.007733	5.393	0.089006	-7.25E-05	-1.30E-05	6.37E-06
33	-7.48E-05	5.393	-0.001334	-7.20E-05	-2.84E-07	6.33E-06
34	-0.007866	5.393	-0.090344	-7.04E-05	1.24E-05	6.32E-06
35	-0.015587	5.393	-0.177361	-6.88E-05	2.17E-05	6.12E-06
36	0.014653	5.401	0.212092	-8.48E-05	-2.28E-05	6.15E-06
37	0.007193	5.401	0.105812	-8.53E-05	-1.35E-05	5.87E-06
38	-5.26E-05	5.401	-0.000963	-8.54E-05	-2.94E-07	5.86E-06
39	-0.007303	5.401	-0.106402	-8.31E-05	1.29E-05	5.86E-06
40	-0.014481	5.401	-0.209068	-8.11E-05	2.21E-05	5.66E-06
41	0.013440	5.408	0.244618	-9.63E-05	-2.24E-05	5.54E-06
42	0.006629	5.408	0.123282	-9.79E-05	-1.39E-05	5.34E-06
43	-2.46E-05	5.408	-0.000602	-9.97E-05	-2.68E-07	5.35E-06
44	-0.006692	5.408	-0.123131	-9.57E-05	1.33E-05	5.40E-06
45	-0.013347	5.408	-0.240815	-9.26E-05	2.18E-05	5.28E-06
46	0.012237	5.414	0.274691	-0.000106	-1.91E-05	4.98E-06

DESPLAZAMIENTOS:

NUDOS	DX [mm]	DY [mm]	DZ [mm]	RX [rad]	RY [rad]	RZ [rad]
47	0.006026	5.414	0.140781	-0.000109	-1.29E-05	4.88E-06
48	-1.70E-05	5.414	-0.000302	-0.000115	-1.96E-07	4.73E-06
49	-0.006057	5.415	-0.140004	-0.000107	1.25E-05	4.92E-06
50	-0.012188	5.415	-0.270196	-0.000102	1.87E-05	4.96E-06
51	0.011094	5.420	0.295788	-0.000112	-1.00E-05	4.72E-06
52	0.005408	5.420	0.154254	-0.000115	-6.05E-06	4.48E-06
53	-4.12E-05	5.420	-0.000123	-0.000137	-7.92E-08	4.40E-06
54	-0.005477	5.421	-0.153106	-0.000113	5.89E-06	4.45E-06
55	-0.010976	5.421	-0.290866	-0.000108	9.83E-06	4.43E-06
56	0.009406	5.428	0.305597	-0.000119	-1.82E-07	4.15E-06
57	0.004535	5.428	0.155369	-0.000122	1.48E-06	3.82E-06
58	-6.65E-05	5.428	-0.000109	-0.000126	5.20E-08	3.80E-06
59	-0.004631	5.428	-0.154221	-0.000119	-1.37E-06	3.73E-06
60	-0.009232	5.428	-0.300767	-0.000115	2.18E-07	3.74E-06
61	0.007316	5.434	0.303572	-0.000121	1.79E-06	3.15E-06
62	0.003545	5.434	0.152158	-0.000121	1.63E-06	2.99E-06
63	-3.16E-05	5.434	-0.000255	-0.000122	1.08E-07	2.91E-06
64	-0.003570	5.434	-0.151330	-0.000119	-1.42E-06	2.92E-06
65	-0.007255	5.434	-0.299128	-0.000117	-1.64E-06	3.09E-06
66	0.004988	5.438	0.300357	-0.000120	1.37E-06	2.10E-06
67	0.002443	5.438	0.149832	-0.000120	1.00E-06	2.03E-06
68	3.21E-06	5.438	-0.000441	-0.000120	1.02E-07	1.99E-06
69	-0.002428	5.438	-0.149387	-0.000118	-8.03E-07	2.03E-06
70	-0.005008	5.439	-0.296318	-0.000117	-1.22E-06	2.19E-06
71	0.002528	5.441	0.298281	-0.000120	6.80E-07	1.06E-06
72	0.001245	5.441	0.148571	-0.000120	4.67E-07	1.02E-06
73	9.58E-06	5.441	-0.000582	-0.000119	5.87E-08	1.01E-06
74	-0.001231	5.441	-0.148408	-0.000118	-3.53E-07	1.04E-06
75	-0.002554	5.441	-0.294528	-0.000116	-5.93E-07	1.12E-06
76	1.64E-07	5.442	0.297586	-0.000120	-9.14E-12	6.54E-11
77	8.21E-08	5.442	0.148171	-0.000119	-5.58E-12	6.52E-11
78	6.43E-10	5.442	-0.000633	-0.000119	-9.70E-14	6.52E-11
79	-8.08E-08	5.442	-0.148110	-0.000117	5.40E-12	6.51E-11
80	-1.62E-07	5.442	-0.293936	-0.000116	8.99E-12	6.50E-11
81	-0.002528	5.441	0.298281	-0.000120	-6.80E-07	-1.06E-06
82	-0.001245	5.441	0.148571	-0.000120	-4.67E-07	-1.02E-06
83	-9.58E-06	5.441	-0.000582	-0.000119	-5.87E-08	-1.01E-06
84	0.001231	5.441	-0.148408	-0.000118	3.53E-07	-1.04E-06
85	0.002554	5.441	-0.294528	-0.000116	5.93E-07	-1.12E-06
86	-0.004988	5.438	0.300357	-0.000120	-1.37E-06	-2.10E-06
87	-0.002443	5.438	0.149832	-0.000120	-1.00E-06	-2.03E-06
88	-3.21E-06	5.438	-0.000441	-0.000120	-1.02E-07	-1.99E-06
89	0.002428	5.438	-0.149387	-0.000118	8.03E-07	-2.03E-06
90	0.005007	5.439	-0.296318	-0.000117	1.22E-06	-2.19E-06
91	-0.007315	5.434	0.303572	-0.000121	-1.79E-06	-3.15E-06
92	-0.003545	5.434	0.152158	-0.000121	-1.63E-06	-2.99E-06
93	3.16E-05	5.434	-0.000255	-0.000122	-1.08E-07	-2.91E-06
94	0.003570	5.434	-0.151330	-0.000119	1.42E-06	-2.92E-06
95	0.007255	5.434	-0.299128	-0.000117	1.64E-06	-3.09E-06
96	-0.009405	5.428	0.305597	-0.000119	1.82E-07	-4.15E-06
97	-0.004535	5.428	0.155369	-0.000122	-1.48E-06	-3.82E-06
98	6.65E-05	5.428	-0.000109	-0.000126	-5.20E-08	-3.80E-06
99	0.004631	5.428	-0.154221	-0.000119	1.37E-06	-3.73E-06
100	0.009232	5.428	-0.300767	-0.000115	-2.18E-07	-3.74E-06

DESPLAZAMIENTOS:

NUDOS	DX [mm]	DY [mm]	DZ [mm]	RX [rad]	RY [rad]	RZ [rad]
101	-0.011094	5.420	0.295789	-0.000112	1.00E-05	-4.72E-06
102	-0.005408	5.420	0.154254	-0.000115	6.05E-06	-4.48E-06
103	4.13E-05	5.420	-0.000123	-0.000137	7.92E-08	-4.40E-06
104	0.005477	5.421	-0.153106	-0.000113	-5.89E-06	-4.45E-06
105	0.010976	5.421	-0.290866	-0.000108	-9.83E-06	-4.43E-06
106	-0.012237	5.414	0.274691	-0.000106	1.91E-05	-4.98E-06
107	-0.006026	5.414	0.140781	-0.000109	1.29E-05	-4.88E-06
108	1.70E-05	5.414	-0.000302	-0.000115	1.96E-07	-4.73E-06
109	0.006057	5.415	-0.140004	-0.000107	-1.25E-05	-4.92E-06
110	0.012187	5.415	-0.270197	-0.000102	-1.87E-05	-4.96E-06
111	-0.013440	5.408	0.244619	-9.63E-05	2.24E-05	-5.54E-06
112	-0.006628	5.408	0.123282	-9.79E-05	1.39E-05	-5.34E-06
113	2.46E-05	5.408	-0.000602	-9.97E-05	2.68E-07	-5.35E-06
114	0.006692	5.408	-0.123131	-9.57E-05	-1.33E-05	-5.40E-06
115	0.013347	5.408	-0.240815	-9.26E-05	-2.18E-05	-5.28E-06
116	-0.014653	5.401	0.212092	-8.48E-05	2.27E-05	-6.15E-06
117	-0.007193	5.401	0.105812	-8.53E-05	1.35E-05	-5.87E-06
118	5.26E-05	5.401	-0.000963	-8.54E-05	2.94E-07	-5.86E-06
119	0.007303	5.401	-0.106402	-8.31E-05	-1.29E-05	-5.86E-06
120	0.014480	5.401	-0.209068	-8.11E-05	-2.21E-05	-5.66E-06
121	-0.015810	5.393	0.179622	-7.25E-05	2.23E-05	-6.69E-06
122	-0.007732	5.393	0.089006	-7.25E-05	1.30E-05	-6.37E-06
123	7.48E-05	5.393	-0.001334	-7.20E-05	2.84E-07	-6.33E-06
124	0.007866	5.393	-0.090344	-7.04E-05	-1.24E-05	-6.32E-06
125	0.015587	5.393	-0.177361	-6.88E-05	-2.17E-05	-6.12E-06
126	-0.016870	5.384	0.147802	-6.01E-05	2.18E-05	-7.16E-06
127	-0.008237	5.384	0.072792	-5.99E-05	1.26E-05	-6.82E-06
128	8.28E-05	5.384	-0.001676	-5.92E-05	2.50E-07	-6.77E-06
129	0.008374	5.384	-0.074818	-5.78E-05	-1.21E-05	-6.76E-06
130	0.016635	5.384	-0.146237	-5.65E-05	-2.13E-05	-6.60E-06
131	-0.017806	5.375	0.116715	-4.78E-05	2.13E-05	-7.58E-06
132	-0.008686	5.375	0.057056	-4.76E-05	1.22E-05	-7.22E-06
133	8.07E-05	5.375	-0.001965	-4.68E-05	2.02E-07	-7.17E-06
134	0.008817	5.375	-0.059666	-4.55E-05	-1.18E-05	-7.17E-06
135	0.017580	5.375	-0.115751	-4.42E-05	-2.08E-05	-7.05E-06
136	-0.018590	5.365	0.086337	-3.58E-05	2.08E-05	-7.94E-06
137	-0.009056	5.365	0.041716	-3.55E-05	1.20E-05	-7.56E-06
138	7.46E-05	5.366	-0.002185	-3.47E-05	1.41E-07	-7.50E-06
139	0.009178	5.366	-0.044782	-3.34E-05	-1.17E-05	-7.52E-06
140	0.018380	5.366	-0.085864	-3.23E-05	-2.04E-05	-7.45E-06
141	-0.019189	5.355	0.056626	-2.42E-05	2.04E-05	-8.26E-06
142	-0.009319	5.355	0.026690	-2.37E-05	1.17E-05	-7.83E-06
143	7.00E-05	5.356	-0.002318	-2.27E-05	6.91E-08	-7.74E-06
144	0.009433	5.356	-0.030055	-2.16E-05	-1.16E-05	-7.79E-06
145	0.018993	5.356	-0.056528	-2.07E-05	-2.01E-05	-7.82E-06
146	-0.019571	5.345	0.027580	-1.31E-05	2.00E-05	-8.54E-06
147	-0.009454	5.345	0.011912	-1.21E-05	1.15E-05	-7.97E-06
148	7.19E-05	5.345	-0.002359	-1.10E-05	1.14E-09	-7.82E-06
149	0.009564	5.345	-0.015381	-1.01E-05	-1.15E-05	-7.92E-06
150	0.019376	5.345	-0.027684	-9.70E-06	-1.98E-05	-8.15E-06
151	-0.019717	5.334	4.66E-17	-4.11E-06	1.77E-05	-8.83E-06
152	-0.009471	5.335	-0.002436	-1.53E-06	1.10E-05	-8.00E-06
153	7.55E-05	5.335	-0.002336	-8.00E-07	-2.98E-08	-7.83E-06
154	0.009612	5.335	-0.000951	5.18E-07	-1.11E-05	-7.97E-06

DESPLAZAMIENTOS:

NUDOS	DX [mm]	DY [mm]	DZ [mm]	RX [rad]	RY [rad]	RZ [rad]
155	0.019486	5.334	-4.63E-17	-8.05E-07	-1.77E-05	-8.16E-06
601	5.63E-21	7.81E-17	-2.87E-19	-4.07E-19	1.96E-23	5.38E-22
602	-5.63E-21	7.81E-17	-2.87E-19	-4.07E-19	-1.96E-23	-5.38E-22

REACCIONES EN APOYOS:

NUDOS	FX [t]	FY [t]	FZ [t]	MX [tm]	MY [tm]	MZ [tm]
1	-0.009858	-2.667	-4.662			
5	0.009743	-2.667	4.633			
151	0.009858	-2.667	-4.662			
155	-0.009743	-2.667	4.633			
601	-0.000563	-7.813	0.028657	40.714	-0.001956	-0.053765
602	0.000563	-7.813	0.028657	40.714	0.001956	0.053764
Sumas:	-4.66E-10	-26.295	4.94E-07			

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
1	0	-0.473133	-1.169	-2.279	-2.224	1.617	0.493460
1	1.275	-0.473133	-1.169	-2.279	-2.224	-1.289	-0.996833
2	0	-1.241	-0.666681	-2.069	-2.735	1.297	-0.236430
2	1.275	-1.241	-0.666681	-2.069	-2.735	-1.341	-1.086
3	0	-1.946	-0.566710	-2.120	-2.882	1.317	-0.426719
3	1.275	-1.946	-0.566710	-2.120	-2.882	-1.386	-1.149
4	0	-2.546	-0.507844	-2.167	-2.965	1.339	-0.587150
4	1.275	-2.546	-0.507844	-2.167	-2.965	-1.424	-1.235
5	0	-3.042	-0.467711	-2.213	-3.027	1.359	-0.749128
5	1.275	-3.042	-0.467711	-2.213	-3.027	-1.462	-1.345
6	0	-3.445	-0.435370	-2.255	-3.064	1.373	-0.923588
6	1.275	-3.445	-0.435370	-2.255	-3.064	-1.502	-1.479
7	0	-3.757	-0.464873	-2.295	-3.040	1.369	-1.126
7	1.275	-3.757	-0.464873	-2.295	-3.040	-1.557	-1.719
8	0	-3.942	-0.536559	-2.319	-2.851	1.288	-1.461
8	1.275	-3.942	-0.536559	-2.319	-2.851	-1.668	-2.145
9	0	-3.907	-0.514650	-2.238	-2.331	0.943112	-2.070
9	1.275	-3.907	-0.514650	-2.238	-2.331	-1.910	-2.727
10	0	-3.714	-0.326165	-1.556	-1.601	-0.020130	-2.795
10	1.275	-3.714	-0.326165	-1.556	-1.601	-2.004	-3.211

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
11	0	-4.113	-0.370482	-0.320834	-1.259	-0.607795	-2.763
11	1.700	-4.113	-0.370482	-0.320834	-1.259	-1.153	-3.392
12	0	-5.092	-0.107099	0.158937	-0.321036	-0.477546	-2.390
12	1.700	-5.092	-0.107099	0.158937	-0.321036	-0.207363	-2.572
13	0	-5.671	-0.135613	0.124416	0.064677	-0.269831	-2.016
13	1.700	-5.671	-0.135613	0.124416	0.064677	-0.058332	-2.246
14	0	-5.994	-0.145505	0.073570	0.102192	-0.205763	-1.955
14	1.700	-5.994	-0.145505	0.073570	0.102192	-0.080699	-2.202
15	0	-6.159	-0.064179	0.024046	0.040237	-0.166828	-2.055
15	1.700	-6.159	-0.064179	0.024046	0.040237	-0.125952	-2.164
16	0	-6.159	0.062045	-0.024236	-0.040240	-0.125790	-2.163
16	1.700	-6.159	0.062045	-0.024236	-0.040240	-0.166990	-2.057
17	0	-5.994	0.147457	-0.073396	-0.102194	-0.080848	-2.204
17	1.700	-5.994	0.147457	-0.073396	-0.102194	-0.205615	-1.953
18	0	-5.671	0.137562	-0.124242	-0.064680	-0.058480	-2.248
18	1.700	-5.671	0.137562	-0.124242	-0.064680	-0.269684	-2.014
19	0	-5.092	0.104897	-0.159144	0.321035	-0.207189	-2.570
19	1.700	-5.092	0.104897	-0.159144	0.321035	-0.477722	-2.392
20	0	-4.113	0.372622	0.321023	1.259	-1.153	-3.394
20	1.700	-4.113	0.372622	0.321023	1.259	-0.607636	-2.761
21	0	-3.714	0.320100	1.556	1.601	-2.004	-3.207
21	1.275	-3.714	0.320100	1.556	1.601	-0.020473	-2.799
22	0	-3.907	0.518179	2.238	2.331	-1.910	-2.729
22	1.275	-3.907	0.518179	2.238	2.331	0.943316	-2.068
23	0	-3.942	0.530100	2.318	2.851	-1.668	-2.141
23	1.275	-3.942	0.530100	2.318	2.851	1.287	-1.465
24	0	-3.757	0.468108	2.295	3.040	-1.557	-1.721
24	1.275	-3.757	0.468108	2.295	3.040	1.369	-1.124
25	0	-3.445	0.438587	2.255	3.064	-1.502	-1.481
25	1.275	-3.445	0.438587	2.255	3.064	1.374	-0.921525
26	0	-3.042	0.461159	2.212	3.027	-1.462	-1.341
26	1.275	-3.042	0.461159	2.212	3.027	1.359	-0.753290
27	0	-2.546	0.520634	2.168	2.965	-1.424	-1.243
27	1.275	-2.546	0.520634	2.168	2.965	1.339	-0.578982
28	0	-1.946	0.560067	2.119	2.882	-1.385	-1.145
28	1.275	-1.946	0.560067	2.119	2.882	1.316	-0.430935

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
29	0	-1.241	0.669716	2.069	2.735	-1.341	-1.088
29	1.275	-1.241	0.669716	2.069	2.735	1.297	-0.234482
30	0	-0.473132	1.162	2.278	2.224	-1.288	-0.992570
30	1.275	-0.473132	1.162	2.278	2.224	1.616	0.489219
31	0	-0.061544	-0.779915	-0.014642	-2.380	0.192055	0.485648
31	1.275	-0.061544	-0.779915	-0.014642	-2.380	0.173387	-0.508703
32	0	-0.466240	-0.871573	0.135923	-2.621	-0.013224	0.490074
32	1.275	-0.466240	-0.871573	0.135923	-2.621	0.160071	-0.621137
33	0	-0.911839	-0.749037	0.216620	-2.671	-0.065813	0.360280
33	1.275	-0.911839	-0.749037	0.216620	-2.671	0.210367	-0.594704
34	0	-1.281	-0.592754	0.229312	-2.722	-0.052389	0.225378
34	1.275	-1.281	-0.592754	0.229312	-2.722	0.239971	-0.530354
35	0	-1.557	-0.453846	0.230242	-2.779	-0.034645	0.109610
35	1.275	-1.557	-0.453846	0.230242	-2.779	0.258902	-0.469020
36	0	-1.747	-0.328984	0.223557	-2.837	-0.007869	0.006561
36	1.275	-1.747	-0.328984	0.223557	-2.837	0.277155	-0.412877
37	0	-1.868	-0.208671	0.172667	-2.882	0.052391	-0.090733
37	1.275	-1.868	-0.208671	0.172667	-2.882	0.272533	-0.356778
38	0	-1.957	-0.046419	-0.067697	-2.846	0.174609	-0.204171
38	1.275	-1.957	-0.046419	-0.067697	-2.846	0.088299	-0.263353
39	0	-2.087	0.178770	-0.972247	-2.488	0.310762	-0.323810
39	1.275	-2.087	0.178770	-0.972247	-2.488	-0.928803	-0.095887
40	0	-2.142	0.167405	-3.334	-1.338	-0.163136	-0.288296
40	1.275	-2.142	0.167405	-3.334	-1.338	-4.414	-0.074863
41	0	-2.268	-0.691784	2.858	-1.137	-4.305	0.363828
41	1.700	-2.268	-0.691784	2.858	-1.137	0.554167	-0.812158
42	0	-2.574	-0.598692	0.578964	0.008949	-0.529512	0.229435
42	1.700	-2.574	-0.598692	0.578964	0.008949	0.454688	-0.788300
43	0	-2.865	-0.380263	0.087355	0.182870	0.082576	0.001232
43	1.700	-2.865	-0.380263	0.087355	0.182870	0.231074	-0.645190
44	0	-3.112	-0.227488	0.013042	0.127309	0.121738	-0.143233
44	1.700	-3.112	-0.227488	0.013042	0.127309	0.143909	-0.529948
45	0	-3.236	-0.078580	0.002521	0.042995	0.113731	-0.276412
45	1.700	-3.236	-0.078580	0.002521	0.042995	0.118017	-0.409993
46	0	-3.236	0.078240	-0.002517	-0.042997	0.118013	-0.409704
46	1.700	-3.236	0.078240	-0.002517	-0.042997	0.113734	-0.276701

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
47	0	-3.112	0.227797	-0.013037	-0.127312	0.143904	-0.530210
47	1.700	-3.112	0.227797	-0.013037	-0.127312	0.121742	-0.142970
48	0	-2.865	0.380572	-0.087366	-0.182872	0.231083	-0.645452
48	1.700	-2.865	0.380572	-0.087366	-0.182872	0.082567	0.001496
49	0	-2.574	0.598996	-0.578964	-0.008951	0.454687	-0.788559
49	1.700	-2.574	0.598996	-0.578964	-0.008951	-0.529514	0.229694
50	0	-2.268	0.691479	-2.858	1.137	0.554169	-0.811898
50	1.700	-2.268	0.691479	-2.858	1.137	-4.305	0.363566
51	0	-2.142	-0.168371	3.334	1.338	-4.414	-0.074248
51	1.275	-2.142	-0.168371	3.334	1.338	-0.163121	-0.288913
52	0	-2.087	-0.178217	0.972239	2.488	-0.928805	-0.096239
52	1.275	-2.087	-0.178217	0.972239	2.488	0.310750	-0.323456
53	0	-1.957	0.045393	0.067680	2.846	0.088307	-0.262699
53	1.275	-1.957	0.045393	0.067680	2.846	0.174595	-0.204825
54	0	-1.868	0.209186	-0.172654	2.882	0.272525	-0.357108
54	1.275	-1.868	0.209186	-0.172654	2.882	0.052400	-0.090406
55	0	-1.747	0.329491	-0.223559	2.837	0.277157	-0.413202
55	1.275	-1.747	0.329491	-0.223559	2.837	-0.007870	0.006882
56	0	-1.557	0.452806	-0.230244	2.779	0.258904	-0.468359
56	1.275	-1.557	0.452806	-0.230244	2.779	-0.034645	0.108946
57	0	-1.281	0.594787	-0.229316	2.722	0.239975	-0.531652
57	1.275	-1.281	0.594787	-0.229316	2.722	-0.052392	0.226672
58	0	-0.911840	0.747982	-0.216620	2.671	0.210368	-0.594033
58	1.275	-0.911840	0.747982	-0.216620	2.671	-0.065812	0.359607
59	0	-0.466243	0.872052	-0.135923	2.621	0.160070	-0.621442
59	1.275	-0.466243	0.872052	-0.135923	2.621	-0.013225	0.490381
60	0	-0.061540	0.778853	0.014642	2.380	0.173386	-0.508026
60	1.275	-0.061540	0.778853	0.014642	2.380	0.192054	0.484974
61	0	0.012621	-0.961268	0.010252	-3.084	-0.004401	0.609198
61	1.275	0.012621	-0.961268	0.010252	-3.084	0.017472	-0.616370
62	0	0.007045	-1.220	0.011282	-3.520	0.016792	0.740195
62	1.275	0.007045	-1.220	0.011282	-3.520	0.031176	-0.815566
63	0	-0.016552	-1.070	0.002316	-3.591	0.024074	0.573384
63	1.275	-0.016552	-1.070	0.002316	-3.591	0.027027	-0.790613
64	0	-0.021401	-0.852205	-0.001060	-3.647	0.022120	0.389266
64	1.275	-0.021401	-0.852205	-0.001060	-3.647	0.020768	-0.697252

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
65	0	-0.007510	-0.651899	-0.002315	-3.729	0.018465	0.232769
65	1.275	-0.007510	-0.651899	-0.002315	-3.729	0.015513	-0.598368
66	0	0.028181	-0.476595	-0.004179	-3.848	0.014387	0.101205
66	1.275	0.028181	-0.476595	-0.004179	-3.848	0.009060	-0.506430
67	0	0.078716	-0.326069	-0.006981	-4.026	0.008059	-0.009075
67	1.275	0.078716	-0.326069	-0.006981	-4.026	-0.000841	-0.424797
68	0	0.099166	-0.208955	-0.009714	-4.303	-0.002851	-0.101684
68	1.275	0.099166	-0.208955	-0.009714	-4.303	-0.015237	-0.368091
69	0	0.026938	-0.085986	-0.009941	-4.752	-0.019117	-0.229028
69	1.275	0.026938	-0.085986	-0.009941	-4.752	-0.031792	-0.338655
70	0	-0.085944	0.690977	-0.008706	-6.585	-0.035694	-0.592462
70	1.275	-0.085944	0.690977	-0.008706	-6.585	-0.046794	0.288499
71	0	-0.067136	-1.293	0.010139	2.536	-0.043348	0.893148
71	1.700	-0.067136	-1.293	0.010139	2.536	-0.026113	-1.304
72	0	0.092861	-0.670263	0.010956	0.919307	-0.024206	0.262653
72	1.700	0.092861	-0.670263	0.010956	0.919307	-0.005582	-0.876748
73	0	0.092299	-0.510301	0.008248	0.473288	-0.005283	0.116865
73	1.700	0.092299	-0.510301	0.008248	0.473288	0.008738	-0.750612
74	0	0.016916	-0.318528	0.004495	0.226013	0.007575	-0.066573
74	1.700	0.016916	-0.318528	0.004495	0.226013	0.015217	-0.608049
75	0	-0.025441	-0.107947	0.001403	0.067586	0.014340	-0.257183
75	1.700	-0.025441	-0.107947	0.001403	0.067586	0.016725	-0.440686
76	0	-0.025441	0.107597	-0.001403	-0.067591	0.016725	-0.440389
76	1.700	-0.025441	0.107597	-0.001403	-0.067591	0.014340	-0.257480
77	0	0.016916	0.318845	-0.004495	-0.226015	0.015217	-0.608318
77	1.700	0.016916	0.318845	-0.004495	-0.226015	0.007575	-0.066303
78	0	0.092299	0.509951	-0.008248	-0.473291	0.008738	-0.750315
78	1.700	0.092299	0.509951	-0.008248	-0.473291	-0.005283	0.116568
79	0	0.092861	0.670573	-0.010956	-0.919313	-0.005582	-0.877012
79	1.700	0.092861	0.670573	-0.010956	-0.919313	-0.024206	0.262917
80	0	-0.067136	1.293	-0.010138	-2.536	-0.026113	-1.304
80	1.700	-0.067136	1.293	-0.010138	-2.536	-0.043348	0.893448
81	0	-0.085944	-0.691977	0.008706	6.585	-0.046794	0.289136
81	1.275	-0.085944	-0.691977	0.008706	6.585	-0.035694	-0.593099
82	0	0.026938	0.086554	0.009941	4.752	-0.031792	-0.339019
82	1.275	0.026938	0.086554	0.009941	4.752	-0.019117	-0.228666

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
83	0	0.099166	0.209484	0.009715	4.303	-0.015237	-0.368430
83	1.275	0.099166	0.209484	0.009715	4.303	-0.002851	-0.101348
84	0	0.078716	0.325017	0.006981	4.026	-0.000841	-0.424125
84	1.275	0.078716	0.325017	0.006981	4.026	0.008059	-0.009745
85	0	0.028181	0.477114	0.004179	3.848	0.009060	-0.506761
85	1.275	0.028181	0.477114	0.004179	3.848	0.014387	0.101536
86	0	-0.007510	0.652411	0.002315	3.729	0.015513	-0.598695
86	1.275	-0.007510	0.652411	0.002315	3.729	0.018465	0.233097
87	0	-0.021401	0.851131	0.001060	3.647	0.020768	-0.696567
87	1.275	-0.021401	0.851131	0.001060	3.647	0.022119	0.388583
88	0	-0.016552	1.070	-0.002316	3.591	0.027027	-0.790933
88	1.275	-0.016552	1.070	-0.002316	3.591	0.024074	0.573699
89	0	0.007045	1.221	-0.011283	3.520	0.031176	-0.815882
89	1.275	0.007045	1.221	-0.011283	3.520	0.016791	0.740510
90	0	0.012621	0.960179	-0.010253	3.084	0.017472	-0.615677
90	1.275	0.012621	0.960179	-0.010253	3.084	0.004401	0.608504
91	0	0.164906	-0.891393	0.089070	-2.392	-0.209009	0.546908
91	1.275	0.164906	-0.891393	0.089070	-2.392	-0.095450	-0.589573
92	0	0.456991	-1.083	-0.114066	-2.610	0.054483	0.633073
92	1.275	0.456991	-1.083	-0.114066	-2.610	-0.090945	-0.747257
93	0	0.881623	-0.926938	-0.204256	-2.660	0.102223	0.469146
93	1.275	0.881623	-0.926938	-0.204256	-2.660	-0.158193	-0.712653
94	0	1.250	-0.751340	-0.219087	-2.717	0.081721	0.320071
94	1.275	1.250	-0.751340	-0.219087	-2.717	-0.197605	-0.637849
95	0	1.536	-0.586326	-0.224605	-2.777	0.060748	0.190504
95	1.275	1.536	-0.586326	-0.224605	-2.777	-0.225612	-0.557032
96	0	1.760	-0.428772	-0.223922	-2.836	0.029538	0.075503
96	1.275	1.760	-0.428772	-0.223922	-2.836	-0.255951	-0.471160
97	0	1.951	-0.292070	-0.180412	-2.880	-0.039487	-0.016986
97	1.275	1.951	-0.292070	-0.180412	-2.880	-0.269503	-0.389360
98	0	2.118	-0.217960	0.050566	-2.840	-0.178149	-0.068685
98	1.275	2.118	-0.217960	0.050566	-2.840	-0.113680	-0.346573
99	0	2.201	-0.167743	0.946866	-2.479	-0.342819	-0.106185
99	1.275	2.201	-0.167743	0.946866	-2.479	0.864386	-0.320048
100	0	2.007	-0.077288	3.318	-1.332	0.090553	-0.159493
100	1.275	2.007	-0.077288	3.318	-1.332	4.321	-0.258031

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
101	0	2.199	-0.648378	-2.814	-1.146	4.199	0.310050
101	1.700	2.199	-0.648378	-2.814	-1.146	-0.584864	-0.792148
102	0	2.757	-0.522214	-0.537230	0.001700	0.466898	0.174841
102	1.700	2.757	-0.522214	-0.537230	0.001700	-0.446356	-0.712887
103	0	2.967	-0.431710	-0.059538	0.180235	-0.102317	0.065639
103	1.700	2.967	-0.431710	-0.059538	0.180235	-0.203527	-0.668238
104	0	3.112	-0.271671	0.002737	0.126841	-0.114645	-0.101372
104	1.700	3.112	-0.271671	0.002737	0.126841	-0.109993	-0.563195
105	0	3.199	-0.089559	0.002627	0.042969	-0.090366	-0.272705
105	1.700	3.199	-0.089559	0.002627	0.042969	-0.085900	-0.424950
106	0	3.199	0.089219	-0.002631	-0.042972	-0.085897	-0.424661
106	1.700	3.199	0.089219	-0.002631	-0.042972	-0.090370	-0.272995
107	0	3.112	0.271980	-0.002725	-0.126844	-0.110002	-0.563457
107	1.700	3.112	0.271980	-0.002725	-0.126844	-0.114635	-0.101109
108	0	2.967	0.431369	0.059533	-0.180237	-0.203523	-0.667948
108	1.700	2.967	0.431369	0.059533	-0.180237	-0.102321	0.065351
109	0	2.757	0.522518	0.537230	-0.001702	-0.446355	-0.713146
109	1.700	2.757	0.522518	0.537230	-0.001702	0.466900	0.175099
110	0	2.199	0.648072	2.814	1.146	-0.584865	-0.791888
110	1.700	2.199	0.648072	2.814	1.146	4.199	0.309787
111	0	2.007	0.077859	-3.318	1.332	4.321	-0.258396
111	1.275	2.007	0.077859	-3.318	1.332	0.090560	-0.159130
112	0	2.201	0.168296	-0.946894	2.479	0.864411	-0.320400
112	1.275	2.201	0.168296	-0.946894	2.479	-0.342830	-0.105832
113	0	2.118	0.216933	-0.050556	2.840	-0.113683	-0.345919
113	1.275	2.118	0.216933	-0.050556	2.840	-0.178140	-0.069339
114	0	1.951	0.292584	0.180414	2.880	-0.269504	-0.389690
114	1.275	1.951	0.292584	0.180414	2.880	-0.039486	-0.016659
115	0	1.760	0.429280	0.223923	2.836	-0.255953	-0.471485
115	1.275	1.760	0.429280	0.223923	2.836	0.029538	0.075826
116	0	1.536	0.586827	0.224603	2.777	-0.225611	-0.557353
116	1.275	1.536	0.586827	0.224603	2.777	0.060747	0.190822
117	0	1.250	0.750295	0.219083	2.717	-0.197603	-0.637185
117	1.275	1.250	0.750295	0.219083	2.717	0.081717	0.319404
118	0	0.881628	0.927421	0.204264	2.660	-0.158199	-0.712962
118	1.275	0.881628	0.927421	0.204264	2.660	0.102228	0.469454

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
119	0	0.456990	1.083	0.114065	2.610	-0.090943	-0.747562
119	1.275	0.456990	1.083	0.114065	2.610	0.054484	0.633380
120	0	0.164906	0.891868	-0.089070	2.392	-0.095448	-0.589875
120	1.275	0.164906	0.891868	-0.089070	2.392	-0.209008	0.547212
121	0	0.357265	-1.535	2.166	-1.919	-1.604	0.274376
121	1.275	0.357265	-0.885250	2.166	-2.476	1.157	-1.269
122	0	1.243	-0.841795	2.007	-2.433	-1.392	-0.602941
122	1.275	1.243	-0.191571	2.007	-2.990	1.167	-1.262
123	0	1.992	-0.721738	2.076	-2.587	-1.450	-0.784495
123	1.275	1.992	-0.071515	2.076	-3.144	1.197	-1.290
124	0	2.599	-0.677024	2.129	-2.678	-1.500	-0.944457
124	1.275	2.599	-0.026800	2.129	-3.236	1.215	-1.393
125	0	3.071	-0.573274	2.181	-2.744	-1.550	-1.158
125	1.275	3.071	0.076950	2.181	-3.301	1.231	-1.474
126	0	3.404	-0.416263	2.231	-2.783	-1.592	-1.347
126	1.275	3.404	0.233961	2.231	-3.340	1.252	-1.463
127	0	3.595	-0.136128	2.281	-2.757	-1.609	-1.442
127	1.275	3.595	0.514096	2.281	-3.314	1.299	-1.202
128	0	3.683	0.225185	2.317	-2.564	-1.537	-1.255
128	1.275	3.683	0.875408	2.317	-3.121	1.417	-0.553302
129	0	3.766	0.461810	2.245	-2.039	-1.185	-0.561762
129	1.275	3.766	1.112	2.245	-2.597	1.677	0.441522
130	0	3.935	0.049248	1.552	-1.313	-0.199679	0.567481
130	1.275	3.935	0.699473	1.552	-1.870	1.778	1.045
131	0	4.250	-1.331	0.266686	-0.900521	0.395606	1.230
131	1.700	4.250	-0.463620	0.266686	-1.643	0.848954	-0.295221
132	0	4.817	-1.568	-0.211556	0.040226	0.203167	0.068321
132	1.700	4.817	-0.701425	-0.211556	-0.702644	-0.156464	-1.861
133	0	5.477	-1.142	-0.160398	0.432200	-0.066353	-1.258
133	1.700	5.477	-0.275203	-0.160398	-0.310671	-0.339019	-2.462
134	0	5.977	-0.770713	-0.093858	0.472753	-0.170030	-1.960
134	1.700	5.977	0.096253	-0.093858	-0.270118	-0.329583	-2.533
135	0	6.223	-0.529265	-0.030794	0.411568	-0.231847	-2.279
135	1.700	6.223	0.337701	-0.030794	-0.331303	-0.284194	-2.442
136	0	6.223	-0.335762	0.030967	0.331300	-0.284341	-2.444
136	1.700	6.223	0.531204	0.030967	-0.411570	-0.231700	-2.278

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
137	0	5.977	-0.098378	0.093676	0.270115	-0.329428	-2.531
137	1.700	5.977	0.768588	0.093676	-0.472756	-0.170186	-1.961
138	0	5.477	0.273035	0.160197	0.310668	-0.338849	-2.461
138	1.700	5.477	1.140	0.160197	-0.432203	-0.066524	-1.260
139	0	4.817	0.707455	0.212104	0.702643	-0.156929	-1.866
139	1.700	4.817	1.574	0.212104	-0.040228	0.203633	0.073448
140	0	4.250	0.461684	-0.266858	1.643	0.849101	-0.293578
140	1.700	4.250	1.329	-0.266858	0.900521	0.395462	1.228
141	0	3.935	-0.705619	-1.552	1.870	1.779	1.049
141	1.275	3.935	-0.055396	-1.552	1.313	-0.200045	0.563557
142	0	3.766	-1.118	-2.245	2.597	1.678	0.445445
142	1.275	3.766	-0.467953	-2.245	2.039	-1.185	-0.565672
143	0	3.683	-0.872180	-2.316	3.121	1.416	-0.555358
143	1.275	3.683	-0.221955	-2.316	2.564	-1.537	-1.253
144	0	3.595	-0.501167	-2.280	3.314	1.298	-1.210
144	1.275	3.595	0.149057	-2.280	2.757	-1.609	-1.434
145	0	3.404	-0.240454	-2.231	3.340	1.253	-1.459
145	1.275	3.404	0.409770	-2.231	2.783	-1.592	-1.351
146	0	3.071	-0.073802	-2.180	3.301	1.230	-1.476
146	1.275	3.071	0.576423	-2.180	2.744	-1.549	-1.156
147	0	2.599	0.020214	-2.130	3.236	1.215	-1.389
147	1.275	2.599	0.670439	-2.130	2.678	-1.500	-0.948642
148	0	1.992	0.074533	-2.076	3.144	1.197	-1.292
148	1.275	1.992	0.724758	-2.076	2.587	-1.450	-0.782557
149	0	1.243	0.194589	-2.007	2.990	1.167	-1.264
149	1.275	1.243	0.844813	-2.007	2.433	-1.392	-0.601017
150	0	0.357265	0.878556	-2.166	2.476	1.157	-1.265
150	1.275	0.357265	1.529	-2.166	1.919	-1.604	0.270112
151	0	1.497	0.482994	-2.383	1.617	2.224	-0.494075
151	1.250	1.497	0.482994	-2.383	1.617	-0.754889	0.109643
152	0	0.504137	0.767409	-0.210118	2.586	0.510872	-0.760800
152	1.250	0.504137	0.767409	-0.210118	2.586	0.248235	0.198424
153	0	0.102885	0.705020	0.050364	2.657	0.147005	-0.657679
153	1.250	0.102885	0.705020	0.050364	2.657	0.209957	0.223561
154	0	0.049728	0.600927	0.047937	2.725	0.083475	-0.564411
154	1.250	0.049728	0.600927	0.047937	2.725	0.143394	0.186717

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
155	0	0.051443	0.495974	0.044938	2.783	0.061333	-0.486618
155	1.250	0.051443	0.495974	0.044938	2.783	0.117502	0.133324
156	0	0.025721	0.402053	0.043183	2.835	0.037447	-0.420276
156	1.250	0.025721	0.402053	0.043183	2.835	0.091424	0.082270
157	0	-0.029151	0.312378	0.039313	2.871	-0.024519	-0.354955
157	1.250	-0.029151	0.312378	0.039313	2.871	0.024619	0.035502
158	0	-0.065161	0.185363	0.023534	2.844	-0.188664	-0.255466
158	1.250	-0.065161	0.185363	0.023534	2.844	-0.159248	-0.023772
159	0	0.008574	-0.035476	-0.080012	2.612	-0.519957	-0.075086
159	1.250	0.008574	-0.035476	-0.080012	2.612	-0.619968	-0.119429
160	0	0.202341	-0.192584	-0.682598	1.890	-0.729554	0.068163
160	1.250	0.202341	-0.192584	-0.682598	1.890	-1.583	-0.172557
161	0	-0.052014	0.399209	-1.235	1.396	-0.342365	-0.445335
161	1.250	-0.052014	0.399209	-1.235	1.396	-1.886	0.053656
162	0	0.267501	0.978967	-0.480107	0.675617	-0.937994	-1.002
162	1.250	0.267501	0.978967	-0.480107	0.675617	-1.538	0.221594
163	0	-0.032009	0.578612	0.034836	-0.062532	-0.385765	-0.555608
163	1.250	-0.032009	0.578612	0.034836	-0.062532	-0.342222	0.167628
164	0	-0.011432	0.322587	0.050919	-0.147233	-0.037544	-0.293546
164	1.250	-0.011432	0.322587	0.050919	-0.147233	0.026102	0.109671
165	0	0.084594	0.165859	0.049171	-0.086181	0.061940	-0.146426
165	1.250	0.084594	0.165859	0.049171	-0.086181	0.123401	0.060889
166	0	0.123462	6.74E-08	0.048422	1.45E-06	0.080511	-2.30E-07
166	1.250	0.123462	6.74E-08	0.048422	1.45E-06	0.141037	-1.46E-07
167	0	0.084594	-0.165860	0.049158	0.086184	0.061948	0.146426
167	1.250	0.084594	-0.165860	0.049158	0.086184	0.123393	-0.060890
168	0	-0.011432	-0.322586	0.050892	0.147235	-0.037527	0.293546
168	1.250	-0.011432	-0.322586	0.050892	0.147235	0.026085	-0.109671
169	0	-0.032009	-0.578613	0.034740	0.062534	-0.385705	0.555609
169	1.250	-0.032009	-0.578613	0.034740	0.062534	-0.342281	-0.167628
170	0	0.265215	-0.978962	-0.480073	-0.675617	-0.938015	1.002
170	1.250	0.265215	-0.978962	-0.480073	-0.675617	-1.538	-0.221592
171	0	-0.052014	-0.399204	-1.235	-1.396	-0.342405	0.445332
171	1.250	-0.052014	-0.399204	-1.235	-1.396	-1.886	-0.053653
172	0	0.202341	0.192585	-0.682536	-1.890	-0.729592	-0.068164
172	1.250	0.202341	0.192585	-0.682536	-1.890	-1.583	0.172558

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
173	0	0.008574	0.035475	-0.080043	-2.612	-0.519938	0.075086
173	1.250	0.008574	0.035475	-0.080043	-2.612	-0.619988	0.119429
174	0	-0.065161	-0.185362	0.023526	-2.844	-0.188657	0.255466
174	1.250	-0.065161	-0.185362	0.023526	-2.844	-0.159250	0.023773
175	0	-0.029151	-0.312371	0.039323	-2.871	-0.024526	0.354951
175	1.250	-0.029151	-0.312371	0.039323	-2.871	0.024626	-0.035498
176	0	0.025721	-0.402060	0.043162	-2.835	0.037460	0.420280
176	1.250	0.025721	-0.402060	0.043162	-2.835	0.091411	-0.082275
177	0	0.051443	-0.495971	0.044941	-2.783	0.061329	0.486617
177	1.250	0.051443	-0.495971	0.044941	-2.783	0.117503	-0.133323
178	0	0.049728	-0.600927	0.047942	-2.725	0.083472	0.564412
178	1.250	0.049728	-0.600927	0.047942	-2.725	0.143397	-0.186717
179	0	0.102885	-0.705020	0.050361	-2.657	0.147007	0.657679
179	1.250	0.102885	-0.705020	0.050361	-2.657	0.209955	-0.223560
180	0	0.504137	-0.767408	-0.210116	-2.586	0.510871	0.760799
180	1.250	0.504137	-0.767408	-0.210116	-2.586	0.248237	-0.198423
181	0	1.497	-0.482993	-2.383	-1.617	2.224	0.494075
181	1.250	1.497	-0.482993	-2.383	-1.617	-0.754889	-0.109642
182	0	0.718311	0.544534	-2.368	1.809	1.625	-0.375368
182	1.250	0.718311	0.544534	-2.368	1.809	-1.335	0.305272
183	0	0.410506	1.172	-0.360679	2.399	0.488757	-0.799792
183	1.250	0.410506	1.172	-0.360679	2.399	0.037926	0.665286
184	0	0.225018	1.151	-0.030342	2.431	0.260610	-0.757790
184	1.250	0.225018	1.151	-0.030342	2.431	0.222683	0.680434
185	0	0.203733	0.970580	0.035265	2.462	0.194406	-0.633893
185	1.250	0.203733	0.970580	0.035265	2.462	0.238486	0.579284
186	0	0.193090	0.771223	0.044019	2.508	0.174097	-0.506711
186	1.250	0.193090	0.771223	0.044019	2.508	0.229118	0.457279
187	0	0.147478	0.592777	0.049881	2.569	0.149829	-0.393407
187	1.250	0.147478	0.592777	0.049881	2.569	0.212177	0.347535
188	0	0.092744	0.432655	0.090238	2.646	0.069591	-0.287420
188	1.250	0.092744	0.432655	0.090238	2.646	0.182385	0.253377
189	0	0.098826	0.274928	0.263896	2.746	-0.195087	-0.176327
189	1.250	0.098826	0.274928	0.263896	2.746	0.134769	0.167319
190	0	0.235661	0.094434	0.824504	2.834	-0.977830	-0.058439
190	1.250	0.235661	0.094434	0.824504	2.834	0.052759	0.059599

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
191	0	0.190049	-0.137935	1.679	2.655	-2.733	0.020544
191	1.250	0.190049	-0.137935	1.679	2.655	-0.633373	-0.151868
192	0	-0.911729	0.525216	-7.427	1.505	-2.087	-0.384725
192	1.250	-0.911729	0.525216	-7.427	1.505	-11.371	0.271769
193	0	0.358813	1.285	1.799	-0.408173	-2.684	-0.820135
193	1.250	0.358813	1.285	1.799	-0.408173	-0.435196	0.785573
194	0	0.186502	0.869680	0.526329	-0.434664	-0.516139	-0.622314
194	1.250	0.186502	0.869680	0.526329	-0.434664	0.141746	0.464743
195	0	0.143931	0.569817	0.125202	-0.256576	0.081665	-0.392629
195	1.250	0.143931	0.569817	0.125202	-0.256576	0.238161	0.319614
196	0	0.235154	0.290416	0.059669	-0.116361	0.207738	-0.192368
196	1.250	0.235154	0.290416	0.059669	-0.116361	0.282322	0.170638
197	0	0.279752	9.15E-08	0.053536	1.56E-06	0.227091	-1.03E-07
197	1.250	0.279752	9.15E-08	0.053536	1.56E-06	0.294009	1.11E-08
198	0	0.235154	-0.290416	0.059647	0.116364	0.207750	0.192368
198	1.250	0.235154	-0.290416	0.059647	0.116364	0.282305	-0.170638
199	0	0.143931	-0.569816	0.125181	0.256579	0.081678	0.392628
199	1.250	0.143931	-0.569816	0.125181	0.256579	0.238148	-0.319613
200	0	0.188529	-0.869680	0.526337	0.434667	-0.516143	0.622314
200	1.250	0.188529	-0.869680	0.526337	0.434667	0.141751	-0.464743
201	0	0.360840	-1.285	1.799	0.408174	-2.684	0.820133
201	1.250	0.360840	-1.285	1.799	0.408174	-0.435212	-0.785573
202	0	-0.911729	-0.525215	-7.427	-1.505	-2.087	0.384724
202	1.250	-0.911729	-0.525215	-7.427	-1.505	-11.371	-0.271769
203	0	0.190049	0.137937	1.679	-2.655	-2.733	-0.020545
203	1.250	0.190049	0.137937	1.679	-2.655	-0.633382	0.151869
204	0	0.235661	-0.094433	0.824485	-2.834	-0.977818	0.058439
204	1.250	0.235661	-0.094433	0.824485	-2.834	0.052747	-0.059598
205	0	0.097305	-0.274926	0.263904	-2.746	-0.195092	0.176326
205	1.250	0.097305	-0.274926	0.263904	-2.746	0.134774	-0.167318
206	0	0.092744	-0.432656	0.090232	-2.646	0.069597	0.287421
206	1.250	0.092744	-0.432656	0.090232	-2.646	0.182383	-0.253378
207	0	0.147478	-0.592777	0.049874	-2.569	0.149833	0.393407
207	1.250	0.147478	-0.592777	0.049874	-2.569	0.212173	-0.347535
208	0	0.191570	-0.771227	0.044011	-2.508	0.174101	0.506714
208	1.250	0.191570	-0.771227	0.044011	-2.508	0.229113	-0.457281

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
209	0	0.205253	-0.970581	0.035263	-2.462	0.194407	0.633893
209	1.250	0.205253	-0.970581	0.035263	-2.462	0.238485	-0.579284
210	0	0.225018	-1.151	-0.030343	-2.431	0.260611	0.757790
210	1.250	0.225018	-1.151	-0.030343	-2.431	0.222683	-0.680434
211	0	0.410506	-1.172	-0.360678	-2.399	0.488756	0.799792
211	1.250	0.410506	-1.172	-0.360678	-2.399	0.037928	-0.665286
212	0	0.718311	-0.544536	-2.368	-1.809	1.625	0.375370
212	1.250	0.718311	-0.544536	-2.368	-1.809	-1.335	-0.305274
213	0	-0.241400	0.531912	-2.379	1.813	1.748	-0.303384
213	1.250	-0.241400	0.531912	-2.379	1.813	-1.225	0.361480
214	0	0.150519	1.178	-0.361708	2.399	0.473931	-0.690920
214	1.250	0.150519	1.178	-0.361708	2.399	0.021813	0.781129
215	0	0.375537	1.174	-0.021375	2.424	0.294336	-0.708870
215	1.250	0.375537	1.174	-0.021375	2.424	0.267619	0.758851
216	0	0.422669	0.975429	0.038640	2.457	0.294306	-0.600356
216	1.250	0.422669	0.975429	0.038640	2.457	0.342605	0.618882
217	0	0.390741	0.757335	0.045272	2.506	0.311335	-0.472763
217	1.250	0.390741	0.757335	0.045272	2.506	0.367923	0.473868
218	0	0.323844	0.557085	0.051743	2.567	0.330479	-0.352649
218	1.250	0.323844	0.557085	0.051743	2.567	0.395155	0.343679
219	0	0.244783	0.382121	0.093041	2.645	0.361169	-0.243620
219	1.250	0.244783	0.382121	0.093041	2.645	0.477465	0.234013
220	0	0.212855	0.254477	0.266631	2.744	0.411606	-0.155606
220	1.250	0.212855	0.254477	0.266631	2.744	0.744882	0.162477
221	0	0.358813	0.166662	0.824736	2.830	0.501815	-0.079619
221	1.250	0.358813	0.166662	0.824736	2.830	1.533	0.128701
222	0	0.966970	-0.025053	1.678	2.652	1.199	0.102453
222	1.250	0.966970	-0.025053	1.678	2.652	3.297	0.071137
223	0	2.606	0.506972	-7.418	1.505	12.033	-0.278954
223	1.250	2.606	0.506972	-7.418	1.505	2.762	0.354736
224	0	0.981161	1.125	1.799	-0.406267	1.182	-0.781536
224	1.250	0.981161	1.125	1.799	-0.406267	3.430	0.624183
225	0	0.346650	0.870243	0.529037	-0.434365	0.587845	-0.528747
225	1.250	0.346650	0.870243	0.529037	-0.434365	1.249	0.559013
226	0	0.332459	0.645199	0.128931	-0.257739	0.485478	-0.364501
226	1.250	0.332459	0.645199	0.128931	-0.257739	0.646635	0.441966

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
227	0	0.445982	0.332774	0.062769	-0.117238	0.440767	-0.180404
227	1.250	0.445982	0.332774	0.062769	-0.117238	0.519225	0.235547
228	0	0.494635	7.75E-08	0.056325	1.57E-06	0.429222	-8.48E-08
228	1.250	0.494635	7.75E-08	0.056325	1.57E-06	0.499626	1.20E-08
229	0	0.445982	-0.332774	0.062748	0.117241	0.440782	0.180404
229	1.250	0.445982	-0.332774	0.062748	0.117241	0.519215	-0.235547
230	0	0.332459	-0.645200	0.128952	0.257742	0.485465	0.364501
230	1.250	0.332459	-0.645200	0.128952	0.257742	0.646648	-0.441966
231	0	0.346650	-0.870241	0.529049	0.434368	0.587838	0.528746
231	1.250	0.346650	-0.870241	0.529049	0.434368	1.249	-0.559012
232	0	0.981161	-1.125	1.799	0.406268	1.182	0.781536
232	1.250	0.981161	-1.125	1.799	0.406268	3.430	-0.624182
233	0	2.607	-0.506969	-7.418	-1.505	12.033	0.278953
233	1.250	2.607	-0.506969	-7.418	-1.505	2.762	-0.354733
234	0	0.966970	0.025055	1.678	-2.652	1.199	-0.102453
234	1.250	0.966970	0.025055	1.678	-2.652	3.297	-0.071137
235	0	0.358813	-0.166660	0.824721	-2.830	0.501826	0.079617
235	1.250	0.358813	-0.166660	0.824721	-2.830	1.533	-0.128700
236	0	0.214375	-0.254476	0.266630	-2.744	0.411606	0.155605
236	1.250	0.214375	-0.254476	0.266630	-2.744	0.744881	-0.162477
237	0	0.244783	-0.382121	0.093045	-2.645	0.361166	0.243620
237	1.250	0.244783	-0.382121	0.093045	-2.645	0.477468	-0.234012
238	0	0.323844	-0.557085	0.051740	-2.567	0.330482	0.352649
238	1.250	0.323844	-0.557085	0.051740	-2.567	0.395154	-0.343679
239	0	0.390741	-0.757336	0.045266	-2.506	0.311340	0.472763
239	1.250	0.390741	-0.757336	0.045266	-2.506	0.367920	-0.473869
240	0	0.422669	-0.975432	0.038632	-2.457	0.294312	0.600357
240	1.250	0.422669	-0.975432	0.038632	-2.457	0.342601	-0.618884
241	0	0.375537	-1.174	-0.021374	-2.424	0.294336	0.708868
241	1.250	0.375537	-1.174	-0.021374	-2.424	0.267620	-0.758849
242	0	0.150519	-1.178	-0.361708	-2.399	0.473931	0.690920
242	1.250	0.150519	-1.178	-0.361708	-2.399	0.021814	-0.781130
243	0	-0.242577	-0.531914	-2.379	-1.813	1.748	0.303385
243	1.250	-0.242577	-0.531914	-2.379	-1.813	-1.225	-0.361481
244	0	-1.134	0.367008	-2.468	1.604	1.166	-0.185525
244	1.250	-1.134	0.367008	-2.468	1.604	-1.919	0.273217

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
245	0	-0.041154	0.885595	-0.158576	2.549	0.240735	-0.441887
245	1.250	-0.041154	0.885595	-0.158576	2.549	0.042523	0.665062
246	0	0.531573	0.749580	0.068814	2.618	0.317506	-0.458133
246	1.250	0.531573	0.749580	0.068814	2.618	0.403520	0.478804
247	0	0.600164	0.606599	0.053453	2.697	0.398847	-0.413746
247	1.250	0.600164	0.606599	0.053453	2.697	0.465660	0.344472
248	0	0.555580	0.472032	0.050773	2.764	0.427818	-0.354270
248	1.250	0.555580	0.472032	0.050773	2.764	0.491282	0.235746
249	0	0.481846	0.332730	0.051018	2.823	0.454539	-0.288831
249	1.250	0.481846	0.332730	0.051018	2.823	0.518309	0.127065
250	0	0.380675	0.191302	0.049477	2.862	0.521287	-0.220209
250	1.250	0.380675	0.191302	0.049477	2.862	0.583130	0.018910
251	0	0.288078	0.087622	0.035640	2.836	0.705636	-0.158573
251	1.250	0.288078	0.087622	0.035640	2.836	0.750184	-0.049050
252	0	0.409826	0.083485	-0.071636	2.601	1.171	-0.111550
252	1.250	0.409826	0.083485	-0.071636	2.601	1.082	-0.007197
253	0	1.056	0.168399	-0.692595	1.878	2.150	-0.089532
253	1.250	1.056	0.168399	-0.692595	1.878	1.284	0.120958
254	0	2.039	0.315225	-1.285	1.383	2.576	-0.213555
254	1.250	2.039	0.315225	-1.285	1.383	0.969361	0.180460
255	0	1.109	0.566743	-0.478558	0.645608	2.282	-0.342820
255	1.250	1.109	0.566743	-0.478558	0.645608	1.684	0.365580
256	0	0.438977	0.659953	0.051443	-0.090313	1.071	-0.219565
256	1.250	0.438977	0.659953	0.051443	-0.090313	1.135	0.605343
257	0	0.493849	0.500752	0.066688	-0.168847	0.700071	-0.124719
257	1.250	0.493849	0.500752	0.066688	-0.168847	0.783428	0.501195
258	0	0.628743	0.245846	0.062847	-0.097610	0.603125	-0.055047
258	1.250	0.628743	0.245846	0.062847	-0.097610	0.681681	0.252248
259	0	0.676756	4.54E-08	0.061663	1.46E-06	0.585558	-1.75E-07
259	1.250	0.676756	4.54E-08	0.061663	1.46E-06	0.662634	-1.18E-07
260	0	0.626456	-0.245846	0.062833	0.097613	0.603134	0.055047
260	1.250	0.626456	-0.245846	0.062833	0.097613	0.681672	-0.252248
261	0	0.493849	-0.500750	0.066715	0.168850	0.700054	0.124718
261	1.250	0.493849	-0.500750	0.066715	0.168850	0.783445	-0.501195
262	0	0.438977	-0.659955	0.051347	0.090316	1.071	0.219566
262	1.250	0.438977	-0.659955	0.051347	0.090316	1.135	-0.605344

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
263	0	1.107	-0.566741	-0.478523	-0.645608	2.282	0.342819
263	1.250	1.107	-0.566741	-0.478523	-0.645608	1.684	-0.365579
264	0	2.037	-0.315224	-1.285	-1.383	2.576	0.213555
264	1.250	2.037	-0.315224	-1.285	-1.383	0.969395	-0.180460
265	0	1.056	-0.168400	-0.692669	-1.878	2.150	0.089533
265	1.250	1.056	-0.168400	-0.692669	-1.878	1.284	-0.120958
266	0	0.411541	-0.083488	-0.071613	-2.601	1.171	0.111551
266	1.250	0.411541	-0.083488	-0.071613	-2.601	1.082	0.007196
267	0	0.288078	-0.087619	0.035658	-2.836	0.705627	0.158571
267	1.250	0.288078	-0.087619	0.035658	-2.836	0.750198	0.049051
268	0	0.378960	-0.191302	0.049492	-2.862	0.521277	0.220209
268	1.250	0.378960	-0.191302	0.049492	-2.862	0.583140	-0.018909
269	0	0.481846	-0.332731	0.051030	-2.823	0.454531	0.288831
269	1.250	0.481846	-0.332731	0.051030	-2.823	0.518317	-0.127066
270	0	0.555580	-0.472034	0.050783	-2.764	0.427812	0.354272
270	1.250	0.555580	-0.472034	0.050783	-2.764	0.491288	-0.235748
271	0	0.600164	-0.606604	0.053467	-2.697	0.398840	0.413749
271	1.250	0.600164	-0.606604	0.053467	-2.697	0.465670	-0.344476
272	0	0.531573	-0.749588	0.068813	-2.618	0.317507	0.458138
272	1.250	0.531573	-0.749588	0.068813	-2.618	0.403520	-0.478810
273	0	-0.041154	-0.885600	-0.158574	-2.549	0.240734	0.441890
273	1.250	-0.041154	-0.885600	-0.158574	-2.549	0.042524	-0.665066
274	0	-1.133	-0.367011	-2.468	-1.604	1.166	0.185527
274	1.250	-1.133	-0.367011	-2.468	-1.604	-1.919	-0.273219
1601	0	-0.028657	-7.813	0.000563	0.053765	-0.001956	40.713
1601	11.000	-0.028657	-5.503	0.000563	0.053765	0.004236	-32.524
1602	0	-0.028657	-7.813	-0.000563	-0.053764	0.001956	40.713
1602	11.000	-0.028657	-5.503	-0.000563	-0.053764	-0.004236	-32.524

CARGAS: '' Ejec. "0001"

Hipótesis	Factor	Etapa	Título
28	1.0000		Frenado

DESPLAZAMIENTOS:

NUDOS	DX [mm]	DY [mm]	DZ [mm]	RX [rad]	RY [rad]	RZ [rad]
1	3.409	0.000220	3.95E-18	1.07E-06	-1.44E-05	-3.38E-07
2	3.409	0.000143	0.001315	8.67E-07	-1.40E-05	-3.82E-07
3	3.410	-1.77E-05	0.001902	8.06E-10	-1.39E-05	-1.23E-07
4	3.409	-0.000149	0.001319	-8.69E-07	-1.40E-05	1.13E-07
5	3.409	-0.000155	3.95E-18	-1.07E-06	-1.42E-05	1.73E-08
6	3.409	-0.000168	0.018222	7.01E-07	-1.39E-05	-2.55E-07
7	3.409	-0.000195	0.019014	5.37E-07	-1.36E-05	-2.36E-07
8	3.410	-0.000195	0.019360	-1.08E-08	-1.35E-05	-1.22E-07
9	3.410	-0.000189	0.018981	-5.66E-07	-1.36E-05	-2.60E-08
10	3.410	-0.000203	0.018148	-7.29E-07	-1.38E-05	-5.32E-08
11	3.409	-0.000430	0.035148	4.48E-07	-1.25E-05	-1.60E-07
12	3.409	-0.000415	0.035640	3.29E-07	-1.24E-05	-1.53E-07
13	3.410	-0.000375	0.035845	-7.58E-09	-1.23E-05	-1.16E-07
14	3.410	-0.000337	0.035620	-3.43E-07	-1.24E-05	-8.95E-08
15	3.410	-0.000325	0.035113	-4.58E-07	-1.25E-05	-1.08E-07
16	3.409	-0.000596	0.049797	3.25E-07	-1.03E-05	-1.06E-07
17	3.410	-0.000576	0.050154	2.37E-07	-1.03E-05	-1.07E-07
18	3.410	-0.000540	0.050306	4.20E-09	-1.03E-05	-9.88E-08
19	3.410	-0.000504	0.050166	-2.24E-07	-1.03E-05	-9.76E-08
20	3.410	-0.000486	0.049829	-3.10E-07	-1.04E-05	-1.23E-07
21	3.410	-0.000712	0.061197	2.92E-07	-7.40E-06	-7.75E-08
22	3.410	-0.000699	0.061519	2.16E-07	-7.41E-06	-7.31E-08
23	3.410	-0.000676	0.061665	1.43E-08	-7.41E-06	-7.27E-08
24	3.410	-0.000652	0.061557	-1.84E-07	-7.42E-06	-7.97E-08
25	3.410	-0.000638	0.061276	-2.61E-07	-7.42E-06	-1.04E-07
26	3.410	-0.000798	0.068315	3.40E-07	-3.64E-06	-5.67E-08
27	3.410	-0.000789	0.068690	2.52E-07	-3.70E-06	-4.07E-08
28	3.410	-0.000774	0.068862	1.90E-08	-3.74E-06	-3.81E-08
29	3.410	-0.000759	0.068740	-2.13E-07	-3.71E-06	-4.61E-08
30	3.410	-0.000750	0.068414	-3.02E-07	-3.65E-06	-6.79E-08
31	3.410	-0.000855	0.070082	4.84E-07	9.65E-07	-3.34E-08
32	3.410	-0.000839	0.070617	3.60E-07	8.26E-07	-1.77E-10
33	3.410	-0.000820	0.070853	1.89E-08	7.56E-07	8.46E-09
34	3.410	-0.000809	0.070666	-3.21E-07	8.30E-07	-1.80E-10
35	3.410	-0.000809	0.070180	-4.45E-07	9.70E-07	-2.52E-08
36	3.410	-0.000872	0.065376	7.56E-07	6.47E-06	8.14E-09
37	3.410	-0.000827	0.066246	6.04E-07	6.19E-06	5.97E-08
38	3.410	-0.000788	0.066625	1.51E-08	6.01E-06	6.98E-08
39	3.410	-0.000782	0.066285	-5.71E-07	6.20E-06	5.97E-08
40	3.410	-0.000804	0.065456	-7.24E-07	6.48E-06	2.63E-08
41	3.410	-0.000796	0.052981	1.11E-06	1.29E-05	1.14E-07
42	3.410	-0.000710	0.054449	1.15E-06	1.25E-05	1.47E-07
43	3.410	-0.000642	0.055318	9.79E-09	1.18E-05	1.38E-07
44	3.410	-0.000639	0.054473	-1.13E-06	1.25E-05	1.31E-07
45	3.410	-0.000707	0.053032	-1.09E-06	1.29E-05	1.17E-07
46	3.410	-0.000510	0.032073	1.04E-06	1.95E-05	3.32E-07

DESPLAZAMIENTOS:

NUDOS	DX [mm]	DY [mm]	DZ [mm]	RX [rad]	RY [rad]	RZ [rad]
47	3.410	-0.000438	0.033864	1.84E-06	1.99E-05	2.56E-07
48	3.410	-0.000363	0.036182	7.42E-09	1.86E-05	1.82E-07
49	3.410	-0.000347	0.033881	-1.83E-06	1.99E-05	1.69E-07
50	3.410	-0.000438	0.032105	-1.02E-06	1.95E-05	2.84E-07
51	3.410	2.43E-05	0.004919	-1.93E-07	2.28E-05	5.35E-07
52	3.410	3.45E-06	0.004577	-3.89E-07	2.47E-05	4.03E-07
53	3.409	-1.87E-05	0.004022	9.60E-09	3.50E-05	1.52E-07
54	3.410	-2.01E-05	0.004603	4.11E-07	2.47E-05	-7.75E-10
55	3.410	1.65E-05	0.004975	2.16E-07	2.28E-05	4.42E-07
56	3.410	0.000634	-0.026634	-1.62E-06	1.35E-05	1.88E-07
57	3.410	0.000541	-0.029025	-2.12E-06	1.33E-05	1.75E-07
58	3.410	0.000463	-0.031172	1.12E-08	1.15E-05	1.13E-07
59	3.410	0.000459	-0.028996	2.14E-06	1.33E-05	9.07E-08
60	3.410	0.000548	-0.026576	1.64E-06	1.34E-05	1.53E-07
61	3.410	0.000736	-0.039867	-1.04E-06	2.01E-06	-5.72E-08
62	3.410	0.000676	-0.041085	-8.57E-07	1.59E-06	2.92E-08
63	3.410	0.000628	-0.041615	5.50E-09	1.27E-06	3.99E-08
64	3.410	0.000624	-0.041072	8.65E-07	1.60E-06	1.92E-08
65	3.410	0.000660	-0.039846	1.04E-06	2.01E-06	-4.17E-08
66	3.410	0.000561	-0.035928	-4.83E-07	-6.26E-06	-1.35E-07
67	3.410	0.000545	-0.036458	-3.55E-07	-6.45E-06	-6.19E-08
68	3.410	0.000529	-0.036676	1.57E-10	-6.54E-06	-3.95E-08
69	3.410	0.000522	-0.036459	3.53E-07	-6.44E-06	-5.77E-08
70	3.410	0.000524	-0.035931	4.81E-07	-6.26E-06	-1.17E-07
71	3.410	0.000298	-0.020742	-1.88E-07	-1.11E-05	-1.64E-07
72	3.410	0.000296	-0.020947	-1.37E-07	-1.12E-05	-1.07E-07
73	3.410	0.000292	-0.021034	-1.09E-09	-1.13E-05	-8.82E-08
74	3.410	0.000288	-0.020950	1.34E-07	-1.12E-05	-1.03E-07
75	3.411	0.000286	-0.020748	1.85E-07	-1.11E-05	-1.55E-07
76	3.410	1.18E-10	5.64E-08	1.11E-13	-1.28E-05	-1.74E-07
77	3.410	1.17E-10	5.65E-08	7.62E-14	-1.28E-05	-1.21E-07
78	3.410	1.17E-10	5.65E-08	-1.64E-14	-1.29E-05	-1.04E-07
79	3.411	1.18E-10	5.64E-08	-1.09E-13	-1.29E-05	-1.18E-07
80	3.411	1.19E-10	5.63E-08	-1.45E-13	-1.28E-05	-1.69E-07
81	3.410	-0.000298	0.020742	1.88E-07	-1.11E-05	-1.64E-07
82	3.410	-0.000296	0.020947	1.37E-07	-1.12E-05	-1.07E-07
83	3.410	-0.000292	0.021034	1.09E-09	-1.13E-05	-8.82E-08
84	3.410	-0.000288	0.020950	-1.34E-07	-1.12E-05	-1.03E-07
85	3.411	-0.000286	0.020749	-1.85E-07	-1.11E-05	-1.55E-07
86	3.410	-0.000561	0.035928	4.83E-07	-6.26E-06	-1.35E-07
87	3.410	-0.000545	0.036458	3.55E-07	-6.45E-06	-6.19E-08
88	3.410	-0.000529	0.036676	-1.57E-10	-6.54E-06	-3.95E-08
89	3.410	-0.000522	0.036459	-3.53E-07	-6.44E-06	-5.77E-08
90	3.410	-0.000524	0.035932	-4.81E-07	-6.26E-06	-1.17E-07
91	3.410	-0.000736	0.039867	1.04E-06	2.01E-06	-5.72E-08
92	3.410	-0.000676	0.041085	8.57E-07	1.59E-06	2.92E-08
93	3.410	-0.000628	0.041615	-5.50E-09	1.27E-06	3.99E-08
94	3.410	-0.000624	0.041072	-8.65E-07	1.60E-06	1.92E-08
95	3.410	-0.000660	0.039846	-1.04E-06	2.01E-06	-4.17E-08
96	3.410	-0.000634	0.026634	1.62E-06	1.35E-05	1.88E-07
97	3.410	-0.000541	0.029025	2.12E-06	1.33E-05	1.75E-07
98	3.410	-0.000463	0.031172	-1.12E-08	1.15E-05	1.13E-07
99	3.410	-0.000459	0.028995	-2.14E-06	1.33E-05	9.07E-08
100	3.410	-0.000548	0.026576	-1.64E-06	1.34E-05	1.53E-07

DESPLAZAMIENTOS:

NUDOS	DX [mm]	DY [mm]	DZ [mm]	RX [rad]	RY [rad]	RZ [rad]
101	3.410	-2.43E-05	-0.004919	1.93E-07	2.28E-05	5.35E-07
102	3.410	-3.45E-06	-0.004577	3.89E-07	2.47E-05	4.03E-07
103	3.409	1.87E-05	-0.004022	-9.60E-09	3.50E-05	1.52E-07
104	3.410	2.01E-05	-0.004603	-4.11E-07	2.47E-05	-7.75E-10
105	3.410	-1.65E-05	-0.004975	-2.16E-07	2.28E-05	4.42E-07
106	3.410	0.000510	-0.032073	-1.04E-06	1.95E-05	3.32E-07
107	3.410	0.000438	-0.033864	-1.84E-06	1.99E-05	2.56E-07
108	3.410	0.000363	-0.036183	-7.42E-09	1.86E-05	1.82E-07
109	3.410	0.000347	-0.033881	1.83E-06	1.99E-05	1.69E-07
110	3.410	0.000438	-0.032105	1.02E-06	1.95E-05	2.84E-07
111	3.410	0.000796	-0.052981	-1.11E-06	1.29E-05	1.14E-07
112	3.410	0.000710	-0.054449	-1.15E-06	1.25E-05	1.47E-07
113	3.410	0.000642	-0.055318	-9.79E-09	1.18E-05	1.38E-07
114	3.410	0.000639	-0.054473	1.13E-06	1.25E-05	1.31E-07
115	3.410	0.000707	-0.053032	1.09E-06	1.29E-05	1.17E-07
116	3.410	0.000872	-0.065376	-7.56E-07	6.47E-06	8.14E-09
117	3.410	0.000827	-0.066246	-6.04E-07	6.19E-06	5.97E-08
118	3.410	0.000788	-0.066625	-1.51E-08	6.01E-06	6.98E-08
119	3.410	0.000782	-0.066285	5.71E-07	6.20E-06	5.97E-08
120	3.410	0.000804	-0.065456	7.24E-07	6.48E-06	2.63E-08
121	3.410	0.000855	-0.070082	-4.84E-07	9.65E-07	-3.34E-08
122	3.410	0.000839	-0.070617	-3.60E-07	8.26E-07	-1.77E-10
123	3.410	0.000820	-0.070853	-1.89E-08	7.56E-07	8.46E-09
124	3.410	0.000809	-0.070666	3.21E-07	8.30E-07	-1.79E-10
125	3.410	0.000809	-0.070180	4.45E-07	9.70E-07	-2.52E-08
126	3.410	0.000798	-0.068315	-3.40E-07	-3.64E-06	-5.67E-08
127	3.410	0.000789	-0.068690	-2.52E-07	-3.70E-06	-4.07E-08
128	3.410	0.000774	-0.068862	-1.90E-08	-3.74E-06	-3.81E-08
129	3.410	0.000759	-0.068740	2.13E-07	-3.71E-06	-4.61E-08
130	3.410	0.000750	-0.068414	3.02E-07	-3.65E-06	-6.79E-08
131	3.410	0.000712	-0.061197	-2.92E-07	-7.40E-06	-7.75E-08
132	3.410	0.000699	-0.061519	-2.16E-07	-7.41E-06	-7.31E-08
133	3.410	0.000676	-0.061665	-1.43E-08	-7.41E-06	-7.27E-08
134	3.410	0.000652	-0.061557	1.84E-07	-7.42E-06	-7.97E-08
135	3.410	0.000638	-0.061276	2.61E-07	-7.42E-06	-1.04E-07
136	3.409	0.000596	-0.049797	-3.25E-07	-1.03E-05	-1.06E-07
137	3.410	0.000576	-0.050154	-2.37E-07	-1.03E-05	-1.07E-07
138	3.410	0.000540	-0.050306	-4.20E-09	-1.03E-05	-9.88E-08
139	3.410	0.000504	-0.050167	2.24E-07	-1.03E-05	-9.76E-08
140	3.410	0.000486	-0.049829	3.10E-07	-1.04E-05	-1.23E-07
141	3.409	0.000430	-0.035148	-4.48E-07	-1.25E-05	-1.60E-07
142	3.409	0.000415	-0.035640	-3.29E-07	-1.24E-05	-1.53E-07
143	3.410	0.000375	-0.035845	7.57E-09	-1.23E-05	-1.16E-07
144	3.410	0.000337	-0.035620	3.43E-07	-1.24E-05	-8.95E-08
145	3.410	0.000325	-0.035113	4.58E-07	-1.25E-05	-1.08E-07
146	3.409	0.000168	-0.018222	-7.01E-07	-1.39E-05	-2.55E-07
147	3.409	0.000195	-0.019014	-5.37E-07	-1.36E-05	-2.36E-07
148	3.410	0.000195	-0.019360	1.08E-08	-1.35E-05	-1.22E-07
149	3.410	0.000189	-0.018981	5.66E-07	-1.36E-05	-2.60E-08
150	3.410	0.000203	-0.018148	7.29E-07	-1.38E-05	-5.32E-08
151	3.409	-0.000220	-3.95E-18	-1.07E-06	-1.44E-05	-3.38E-07
152	3.409	-0.000143	-0.001315	-8.67E-07	-1.40E-05	-3.82E-07
153	3.410	1.77E-05	-0.001902	-8.06E-10	-1.39E-05	-1.23E-07
154	3.409	0.000149	-0.001319	8.69E-07	-1.40E-05	1.13E-07

DESPLAZAMIENTOS:

NUDOS	DX [mm]	DY [mm]	DZ [mm]	RX [rad]	RY [rad]	RZ [rad]
155	3.409	0.000155	-3.95E-18	1.07E-06	-1.42E-05	1.73E-08
601	4.59E-17	4.87E-22	9.37E-18	-1.30E-24	2.58E-19	1.86E-23
602	4.59E-17	-4.87E-22	-9.37E-18	1.30E-24	2.58E-19	1.86E-23

REACCIONES EN APOYOS:

NUDOS	FX [t]	FY [t]	FZ [t]	MX [tm]	MY [tm]	MZ [tm]
1	-1.704	-0.000110	-0.394956			
5	-1.705	7.75E-05	-0.395051			
151	-1.704	0.000110	0.394956			
155	-1.705	-7.75E-05	0.395050			
601	-4.592	-4.87E-05	-0.936802	0.000130	-25.759	-0.001861
602	-4.592	4.87E-05	0.936803	-0.000130	-25.759	-0.001861
Sumas:	-16.001	7.28E-12	0			

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
1	0	1.316	-0.220693	-0.160504	-0.090031	0.072741	0.252711
1	1.275	1.220	-0.220693	-0.160504	-0.090031	-0.131894	-0.028662
2	0	0.962464	-0.317374	-0.108376	-0.062427	-0.052400	0.122310
2	1.275	0.866461	-0.317374	-0.108376	-0.062427	-0.190574	-0.282325
3	0	0.758998	-0.263614	-0.089291	-0.030572	-0.153060	-0.218486
3	1.275	0.662995	-0.263614	-0.089291	-0.030572	-0.266901	-0.554580
4	0	0.634952	-0.190155	-0.073919	-0.008040	-0.252305	-0.536740
4	1.275	0.538948	-0.190155	-0.073919	-0.008040	-0.346547	-0.779178
5	0	0.560827	-0.143291	-0.060992	0.011867	-0.348535	-0.794977
5	1.275	0.464823	-0.143291	-0.060992	0.011867	-0.426297	-0.977666
6	0	0.519982	-0.112733	-0.047209	0.035492	-0.445147	-1.020
6	1.275	0.423979	-0.112733	-0.047209	0.035492	-0.505336	-1.164
7	0	0.507124	-0.054441	-0.025786	0.067379	-0.548153	-1.232
7	1.275	0.411120	-0.054441	-0.025786	0.067379	-0.581029	-1.302
8	0	0.513175	0.109778	0.030743	0.088189	-0.666345	-1.391
8	1.275	0.417171	0.109778	0.030743	0.088189	-0.627149	-1.251
9	0	0.491240	0.426059	0.181390	-0.019133	-0.749122	-1.314
9	1.275	0.395236	0.426059	0.181390	-0.019133	-0.517858	-0.771052
10	0	0.346015	0.691620	0.165039	-0.303615	-0.400289	-0.702009
10	1.275	0.250011	0.691620	0.165039	-0.303615	-0.189872	0.179771

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
11	0	-0.127172	0.602084	0.236395	-0.264209	0.466975	0.519348
11	1.700	-0.255177	0.602084	0.236395	-0.264209	0.868831	1.543
12	0	-0.189574	0.147045	0.035667	0.108005	0.820685	1.516
12	1.700	-0.317579	0.147045	0.035667	0.108005	0.881318	1.766
13	0	-0.088597	-0.149636	-0.095056	0.102412	0.713982	1.521
13	1.700	-0.216602	-0.149636	-0.095056	0.102412	0.552393	1.267
14	0	-0.010312	-0.226291	-0.119297	0.054683	0.478247	1.051
14	1.700	-0.138317	-0.226291	-0.119297	0.054683	0.275451	0.666496
15	0	0.041878	-0.236031	-0.127704	0.034829	0.233793	0.486521
15	1.700	-0.086127	-0.236031	-0.127704	0.034829	0.016704	0.085285
16	0	0.086127	-0.236031	-0.127705	0.034829	-0.016705	-0.085283
16	1.700	-0.041878	-0.236031	-0.127705	0.034829	-0.233794	-0.486519
17	0	0.138317	-0.226294	-0.119298	0.054683	-0.275451	-0.666493
17	1.700	0.010312	-0.226294	-0.119298	0.054683	-0.478249	-1.051
18	0	0.216602	-0.149633	-0.095055	0.102412	-0.552395	-1.267
18	1.700	0.088597	-0.149633	-0.095055	0.102412	-0.713982	-1.521
19	0	0.317578	0.147045	0.035668	0.108005	-0.881318	-1.766
19	1.700	0.189573	0.147045	0.035668	0.108005	-0.820685	-1.516
20	0	0.255178	0.602087	0.236394	-0.264210	-0.868829	-1.543
20	1.700	0.127173	0.602087	0.236394	-0.264210	-0.466976	-0.519343
21	0	-0.250012	0.691608	0.165037	-0.303615	0.189873	-0.179764
21	1.275	-0.346015	0.691608	0.165037	-0.303615	0.400286	0.702001
22	0	-0.395236	0.426065	0.181393	-0.019133	0.517856	0.771043
22	1.275	-0.491240	0.426065	0.181393	-0.019133	0.749122	1.314
23	0	-0.417171	0.109774	0.030741	0.088189	0.627150	1.251
23	1.275	-0.513174	0.109774	0.030741	0.088189	0.666343	1.391
24	0	-0.411120	-0.054425	-0.025780	0.067379	0.581025	1.302
24	1.275	-0.507123	-0.054425	-0.025780	0.067379	0.548157	1.232
25	0	-0.423978	-0.112746	-0.047214	0.035492	0.505339	1.164
25	1.275	-0.519982	-0.112746	-0.047214	0.035492	0.445144	1.020
26	0	-0.464823	-0.143282	-0.060988	0.011867	0.426294	0.977660
26	1.275	-0.560826	-0.143282	-0.060988	0.011867	0.348538	0.794983
27	0	-0.538948	-0.190163	-0.073922	-0.008040	0.346550	0.779183
27	1.275	-0.634951	-0.190163	-0.073922	-0.008040	0.252303	0.536735
28	0	-0.662994	-0.263610	-0.089289	-0.030572	0.266900	0.554577
28	1.275	-0.758997	-0.263610	-0.089289	-0.030572	0.153061	0.218487

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
29	0	-0.866459	-0.317378	-0.108378	-0.062426	0.190575	0.282325
29	1.275	-0.962463	-0.317378	-0.108378	-0.062426	0.052399	-0.122316
30	0	-1.220	-0.220692	-0.160503	-0.090030	0.131893	0.028657
30	1.275	-1.316	-0.220692	-0.160503	-0.090030	-0.072741	-0.252714
31	0	0.382000	-0.185250	-0.165669	-0.074355	-0.040228	0.183309
31	1.275	0.285996	-0.185250	-0.165669	-0.074355	-0.251448	-0.052875
32	0	0.501400	-0.090645	-0.185665	-0.046923	-0.298754	0.094295
32	1.275	0.405396	-0.090645	-0.185665	-0.046923	-0.535468	-0.021273
33	0	0.517535	-0.015263	-0.197844	-0.020760	-0.558981	0.029473
33	1.275	0.421531	-0.015263	-0.197844	-0.020760	-0.811221	0.010013
34	0	0.495753	0.028852	-0.210146	-0.004790	-0.821867	-0.004654
34	1.275	0.399749	0.028852	-0.210146	-0.004790	-1.090	0.032132
35	0	0.449767	0.058175	-0.218982	0.008223	-1.089	-0.024262
35	1.275	0.353764	0.058175	-0.218982	0.008223	-1.369	0.049909
36	0	0.387647	0.078570	-0.228432	0.024394	-1.357	-0.033964
36	1.275	0.291643	0.078570	-0.228432	0.024394	-1.648	0.066208
37	0	0.300517	0.084689	-0.252551	0.054847	-1.620	-0.029572
37	1.275	0.204513	0.084689	-0.252551	0.054847	-1.942	0.078403
38	0	0.149653	0.048444	-0.323594	0.123102	-1.893	0.005516
38	1.275	0.053650	0.048444	-0.323594	0.123102	-2.306	0.067280
39	0	-0.074625	-0.046814	-0.188999	0.155505	-2.325	0.075392
39	1.275	-0.170629	-0.046814	-0.188999	0.155505	-2.566	0.015706
40	0	-0.223069	-0.067108	2.118	-0.502515	-2.944	0.106418
40	1.275	-0.319072	-0.067108	2.118	-0.502515	-0.243448	0.020859
41	0	0.615220	-0.061932	1.316	-0.293335	1.707	-0.020074
41	1.700	0.487215	-0.061932	1.316	-0.293335	3.944	-0.125355
42	0	0.382269	0.054238	-0.654426	0.214061	3.479	-0.091293
42	1.700	0.254264	0.054238	-0.654426	0.214061	2.367	0.000908
43	0	0.182596	0.142098	-0.518074	0.085069	2.441	-0.148659
43	1.700	0.054591	0.142098	-0.518074	0.085069	1.561	0.092898
44	0	0.113013	0.147345	-0.485573	0.036874	1.607	-0.138801
44	1.700	-0.014992	0.147345	-0.485573	0.036874	0.781799	0.111676
45	0	0.079129	0.141376	-0.480608	0.023123	0.806908	-0.124224
45	1.700	-0.048876	0.141376	-0.480608	0.023123	-0.010094	0.116105
46	0	0.048876	0.141376	-0.480607	0.023123	0.010089	-0.116105
46	1.700	-0.079129	0.141376	-0.480607	0.023123	-0.806911	0.124224

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
47	0	0.014992	0.147345	-0.485571	0.036874	-0.781804	-0.111675
47	1.700	-0.113013	0.147345	-0.485571	0.036874	-1.607	0.138801
48	0	-0.054591	0.142098	-0.518078	0.085069	-1.561	-0.092898
48	1.700	-0.182596	0.142098	-0.518078	0.085069	-2.441	0.148659
49	0	-0.254263	0.054238	-0.654423	0.214061	-2.367	-0.000908
49	1.700	-0.382268	0.054238	-0.654423	0.214061	-3.479	0.091293
50	0	-0.487217	-0.061932	1.316	-0.293336	-3.944	0.125355
50	1.700	-0.615221	-0.061932	1.316	-0.293336	-1.707	0.020074
51	0	0.319073	-0.067108	2.118	-0.502515	0.243445	-0.020858
51	1.275	0.223069	-0.067108	2.118	-0.502515	2.944	-0.106418
52	0	0.170629	-0.046814	-0.188994	0.155505	2.566	-0.015706
52	1.275	0.074625	-0.046814	-0.188994	0.155505	2.325	-0.075392
53	0	-0.053650	0.048444	-0.323590	0.123102	2.306	-0.067280
53	1.275	-0.149653	0.048444	-0.323590	0.123102	1.893	-0.005516
54	0	-0.204513	0.084689	-0.252547	0.054847	1.942	-0.078403
54	1.275	-0.300517	0.084689	-0.252547	0.054847	1.620	0.029572
55	0	-0.291643	0.078570	-0.228448	0.024394	1.648	-0.066208
55	1.275	-0.387647	0.078570	-0.228448	0.024394	1.357	0.033964
56	0	-0.353763	0.058175	-0.218987	0.008223	1.369	-0.049909
56	1.275	-0.449767	0.058175	-0.218987	0.008223	1.089	0.024261
57	0	-0.399748	0.028853	-0.210136	-0.004790	1.090	-0.032132
57	1.275	-0.495752	0.028853	-0.210136	-0.004790	0.821873	0.004654
58	0	-0.421531	-0.015263	-0.197835	-0.020760	0.811215	-0.010013
58	1.275	-0.517535	-0.015263	-0.197835	-0.020760	0.558985	-0.029473
59	0	-0.405396	-0.090645	-0.185676	-0.046923	0.535476	0.021273
59	1.275	-0.501399	-0.090645	-0.185676	-0.046923	0.298748	-0.094295
60	0	-0.285996	-0.185250	-0.165668	-0.074355	0.251448	0.052875
60	1.275	-0.381999	-0.185250	-0.165668	-0.074355	0.040230	-0.183309
61	0	0.094151	0.073253	-0.130862	-0.003499	-0.056590	-0.046374
61	1.275	-0.001853	0.073253	-0.130862	-0.003499	-0.223432	0.047020
62	0	0.263912	0.095407	-0.199424	0.000977	-0.285870	-0.058127
62	1.275	0.167908	0.095407	-0.199424	0.000977	-0.540126	0.063513
63	0	0.347144	0.092649	-0.218080	0.003544	-0.572870	-0.051046
63	1.275	0.251141	0.092649	-0.218080	0.003544	-0.850911	0.067077
64	0	0.344672	0.090523	-0.225271	0.003026	-0.863908	-0.045741
64	1.275	0.248668	0.090523	-0.225271	0.003026	-1.151	0.069671

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
65	0	0.291106	0.092624	-0.232049	0.001435	-1.151	-0.043109
65	1.275	0.195103	0.092624	-0.232049	0.001435	-1.447	0.074981
66	0	0.202105	0.091368	-0.238915	-4.06E-05	-1.433	-0.036859
66	1.275	0.106102	0.091368	-0.238915	-4.06E-05	-1.738	0.079631
67	0	0.081789	0.061655	-0.232286	-0.001155	-1.708	-0.011132
67	1.275	-0.014214	0.061655	-0.232286	-0.001155	-2.004	0.067475
68	0	-0.085500	-0.045803	-0.203430	-0.001584	-1.928	0.060391
68	1.275	-0.181503	-0.045803	-0.203430	-0.001584	-2.188	0.001995
69	0	-0.364864	-0.255340	-0.775703	-0.000713	-1.904	0.183091
69	1.275	-0.460868	-0.255340	-0.775703	-0.000713	-2.893	-0.142455
70	0	-0.961500	-0.446458	-5.358	0.000656	-2.372	0.270990
70	1.275	-1.058	-0.446458	-5.358	0.000656	-9.204	-0.298221
71	0	1.357	-0.367527	-4.834	0.000352	10.329	0.298800
71	1.700	1.229	-0.367527	-4.834	0.000352	2.112	-0.325971
72	0	0.689482	-0.049331	-0.489661	-0.001277	3.137	0.016814
72	1.700	0.561477	-0.049331	-0.489661	-0.001277	2.304	-0.067046
73	0	0.431131	0.141824	-0.499471	-0.001207	2.493	-0.147914
73	1.700	0.303127	0.141824	-0.499471	-0.001207	1.644	0.093178
74	0	0.267345	0.183858	-0.516481	-0.000281	1.700	-0.173085
74	1.700	0.139340	0.183858	-0.516481	-0.000281	0.821761	0.139462
75	0	0.129517	0.184299	-0.510194	0.000246	0.854460	-0.161993
75	1.700	0.001512	0.184299	-0.510194	0.000246	-0.012835	0.151303
76	0	-0.001512	0.184299	-0.510195	0.000246	0.012831	-0.151303
76	1.700	-0.129517	0.184299	-0.510195	0.000246	-0.854466	0.161993
77	0	-0.139340	0.183858	-0.516482	-0.000281	-0.821765	-0.139462
77	1.700	-0.267345	0.183858	-0.516482	-0.000281	-1.700	0.173085
78	0	-0.303127	0.141824	-0.499466	-0.001207	-1.644	-0.093178
78	1.700	-0.431132	0.141824	-0.499466	-0.001207	-2.493	0.147914
79	0	-0.561477	-0.049332	-0.489666	-0.001277	-2.304	0.067046
79	1.700	-0.689481	-0.049332	-0.489666	-0.001277	-3.137	-0.016814
80	0	-1.229	-0.367528	-4.834	0.000352	-2.112	0.325971
80	1.700	-1.357	-0.367528	-4.834	0.000352	-10.329	-0.298800
81	0	1.058	-0.446458	-5.358	0.000656	9.204	0.298221
81	1.275	0.961501	-0.446458	-5.358	0.000656	2.372	-0.270990
82	0	0.460868	-0.255341	-0.775709	-0.000713	2.893	0.142455
82	1.275	0.364864	-0.255341	-0.775709	-0.000713	1.904	-0.183091

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
83	0	0.181503	-0.045802	-0.203421	-0.001584	2.188	-0.001995
83	1.275	0.085499	-0.045802	-0.203421	-0.001584	1.928	-0.060391
84	0	0.014215	0.061655	-0.232300	-0.001155	2.004	-0.067475
84	1.275	-0.081789	0.061655	-0.232300	-0.001155	1.708	0.011132
85	0	-0.106102	0.091368	-0.238912	-4.06E-05	1.738	-0.079631
85	1.275	-0.202105	0.091368	-0.238912	-4.06E-05	1.433	0.036859
86	0	-0.195102	0.092623	-0.232054	0.001435	1.447	-0.074981
86	1.275	-0.291106	0.092623	-0.232054	0.001435	1.151	0.043109
87	0	-0.248668	0.090523	-0.225261	0.003026	1.151	-0.069671
87	1.275	-0.344672	0.090523	-0.225261	0.003026	0.863912	0.045741
88	0	-0.251140	0.092649	-0.218087	0.003544	0.850914	-0.067077
88	1.275	-0.347144	0.092649	-0.218087	0.003544	0.572864	0.051046
89	0	-0.167908	0.095407	-0.199425	0.000977	0.540122	-0.063513
89	1.275	-0.263912	0.095407	-0.199425	0.000977	0.285865	0.058127
90	0	0.001853	0.073252	-0.130858	-0.003499	0.223425	-0.047020
90	1.275	-0.094151	0.073252	-0.130858	-0.003499	0.056587	0.046374
91	0	0.359410	0.315814	-0.167654	0.068335	-0.025192	-0.263871
91	1.275	0.263407	0.315814	-0.167654	0.068335	-0.238941	0.138776
92	0	0.423144	0.243696	-0.197509	0.050345	-0.280627	-0.184298
92	1.275	0.327141	0.243696	-0.197509	0.050345	-0.532440	0.126402
93	0	0.365865	0.159848	-0.205486	0.026712	-0.553525	-0.106453
93	1.275	0.269861	0.159848	-0.205486	0.026712	-0.815509	0.097345
94	0	0.270667	0.113284	-0.212210	0.008957	-0.824022	-0.065503
94	1.275	0.174663	0.113284	-0.212210	0.008957	-1.095	0.078928
95	0	0.155301	0.087286	-0.218762	-0.006426	-1.093	-0.042246
95	1.275	0.059297	0.087286	-0.218762	-0.006426	-1.372	0.069039
96	0	0.029446	0.068767	-0.227783	-0.024457	-1.360	-0.025312
96	1.275	-0.066557	0.068767	-0.227783	-0.024457	-1.650	0.062363
97	0	-0.090761	0.034762	-0.251116	-0.056421	-1.623	0.002261
97	1.275	-0.186764	0.034762	-0.251116	-0.056421	-1.943	0.046581
98	0	-0.164982	-0.070004	-0.319716	-0.125714	-1.896	0.073911
98	1.275	-0.260986	-0.070004	-0.319716	-0.125714	-2.303	-0.015340
99	0	-0.161755	-0.332058	-0.183423	-0.157241	-2.324	0.225214
99	1.275	-0.257759	-0.332058	-0.183423	-0.157241	-2.558	-0.198143
100	0	-0.081886	-0.721805	2.119	0.504671	-2.941	0.381969
100	1.275	-0.177890	-0.721805	2.119	0.504671	-0.239440	-0.538296

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
101	0	0.650919	-0.559077	1.322	0.293401	1.698	0.509696
101	1.700	0.522914	-0.559077	1.322	0.293401	3.945	-0.440697
102	0	0.715661	-0.100718	-0.647947	-0.216544	3.472	0.065539
102	1.700	0.587657	-0.100718	-0.647947	-0.216544	2.371	-0.105675
103	0	0.612194	0.094960	-0.516207	-0.086701	2.441	-0.103837
103	1.700	0.484189	0.094960	-0.516207	-0.086701	1.564	0.057589
104	0	0.404051	0.134533	-0.485757	-0.037066	1.609	-0.128008
104	1.700	0.276046	0.134533	-0.485757	-0.037066	0.782860	0.100689
105	0	0.177150	0.139209	-0.480998	-0.022677	0.807582	-0.122792
105	1.700	0.049145	0.139209	-0.480998	-0.022677	-0.010083	0.113854
106	0	-0.049145	0.139209	-0.480999	-0.022677	0.010079	-0.113854
106	1.700	-0.177150	0.139209	-0.480999	-0.022677	-0.807586	0.122792
107	0	-0.276046	0.134533	-0.485761	-0.037066	-0.782861	-0.100689
107	1.700	-0.404051	0.134533	-0.485761	-0.037066	-1.609	0.128008
108	0	-0.484189	0.094960	-0.516204	-0.086701	-1.564	-0.057589
108	1.700	-0.612194	0.094960	-0.516204	-0.086701	-2.441	0.103837
109	0	-0.587656	-0.100718	-0.647947	-0.216544	-2.371	0.105675
109	1.700	-0.715661	-0.100718	-0.647947	-0.216544	-3.472	-0.065539
110	0	-0.522916	-0.559079	1.322	0.293402	-3.945	0.440697
110	1.700	-0.650921	-0.559079	1.322	0.293402	-1.698	-0.509696
111	0	0.177890	-0.721806	2.119	0.504671	0.239436	0.538296
111	1.275	0.081886	-0.721806	2.119	0.504671	2.941	-0.381969
112	0	0.257759	-0.332058	-0.183424	-0.157241	2.558	0.198143
112	1.275	0.161755	-0.332058	-0.183424	-0.157241	2.324	-0.225214
113	0	0.260986	-0.070004	-0.319721	-0.125714	2.303	0.015340
113	1.275	0.164982	-0.070004	-0.319721	-0.125714	1.896	-0.073911
114	0	0.186764	0.034762	-0.251111	-0.056421	1.943	-0.046581
114	1.275	0.090760	0.034762	-0.251111	-0.056421	1.623	-0.002261
115	0	0.066557	0.068767	-0.227781	-0.024457	1.650	-0.062363
115	1.275	-0.029446	0.068767	-0.227781	-0.024457	1.360	0.025312
116	0	-0.059297	0.087286	-0.218767	-0.006426	1.372	-0.069039
116	1.275	-0.155301	0.087286	-0.218767	-0.006426	1.093	0.042246
117	0	-0.174663	0.113283	-0.212201	0.008957	1.095	-0.078928
117	1.275	-0.270667	0.113283	-0.212201	0.008957	0.824027	0.065502
118	0	-0.269860	0.159847	-0.205486	0.026712	0.815509	-0.097345
118	1.275	-0.365864	0.159847	-0.205486	0.026712	0.553524	0.106453

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
119	0	-0.327140	0.243695	-0.197505	0.050345	0.532439	-0.126402
119	1.275	-0.423144	0.243695	-0.197505	0.050345	0.280630	0.184298
120	0	-0.263406	0.315814	-0.167657	0.068335	0.238945	-0.138776
120	1.275	-0.359410	0.315814	-0.167657	0.068335	0.025191	0.263871
121	0	1.257	0.016840	-0.165323	0.085251	0.049251	-0.301854
121	1.275	1.161	0.016840	-0.165323	0.085251	-0.161528	-0.280384
122	0	0.777151	0.068879	-0.099034	0.066839	-0.089628	-0.533588
122	1.275	0.681148	0.068879	-0.099034	0.066839	-0.215891	-0.445771
123	0	0.460228	0.026350	-0.079304	0.036708	-0.176105	-0.594012
123	1.275	0.364225	0.026350	-0.079304	0.036708	-0.277214	-0.560417
124	0	0.221969	-0.042533	-0.068484	0.012087	-0.259682	-0.661313
124	1.275	0.125965	-0.042533	-0.068484	0.012087	-0.346995	-0.715540
125	0	0.031362	-0.094834	-0.059209	-0.010113	-0.347312	-0.786662
125	1.275	-0.064642	-0.094834	-0.059209	-0.010113	-0.422800	-0.907571
126	0	-0.130504	-0.125998	-0.047662	-0.035468	-0.441084	-0.959779
126	1.275	-0.226507	-0.125998	-0.047662	-0.035468	-0.501850	-1.120
127	0	-0.269677	-0.126703	-0.028268	-0.068819	-0.544874	-1.160
127	1.275	-0.365681	-0.126703	-0.028268	-0.068819	-0.580914	-1.322
128	0	-0.364225	-0.042447	0.025984	-0.090825	-0.666979	-1.337
128	1.275	-0.460229	-0.042447	0.025984	-0.090825	-0.633850	-1.392
129	0	-0.321111	0.208112	0.176723	0.017118	-0.755947	-1.312
129	1.275	-0.417115	0.208112	0.176723	0.017118	-0.530635	-1.046
130	0	0.009427	0.543731	0.166643	0.305914	-0.408172	-0.722349
130	1.275	-0.086577	0.543731	0.166643	0.305914	-0.195711	-0.029119
131	0	0.703899	0.386372	0.233269	0.263901	0.477183	0.816071
131	1.700	0.575894	0.386372	0.233269	0.263901	0.873724	1.473
132	0	0.962014	-0.051314	0.029557	-0.110782	0.833512	1.788
132	1.700	0.834009	-0.051314	0.029557	-0.110782	0.883757	1.700
133	0	0.783319	-0.229329	-0.098006	-0.103972	0.717433	1.596
133	1.700	0.655314	-0.229329	-0.098006	-0.103972	0.550829	1.207
134	0	0.505917	-0.239525	-0.119699	-0.054804	0.477240	1.044
134	1.700	0.377912	-0.239525	-0.119699	-0.054804	0.273760	0.636564
135	0	0.212631	-0.228933	-0.127306	-0.034371	0.232769	0.471801
135	1.700	0.084626	-0.228933	-0.127306	-0.034371	0.016357	0.082631
136	0	-0.084626	-0.228933	-0.127307	-0.034371	-0.016358	-0.082629
136	1.700	-0.212631	-0.228933	-0.127307	-0.034371	-0.232770	-0.471800

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
137	0	-0.377912	-0.239525	-0.119699	-0.054805	-0.273761	-0.636563
137	1.700	-0.505917	-0.239525	-0.119699	-0.054805	-0.477241	-1.044
138	0	-0.655314	-0.229329	-0.098006	-0.103972	-0.550829	-1.207
138	1.700	-0.783319	-0.229329	-0.098006	-0.103972	-0.717434	-1.596
139	0	-0.834008	-0.051314	0.029557	-0.110782	-0.883757	-1.700
139	1.700	-0.962013	-0.051314	0.029557	-0.110782	-0.833512	-1.788
140	0	-0.575896	0.386374	0.233268	0.263902	-0.873722	-1.473
140	1.700	-0.703901	0.386374	0.233268	0.263902	-0.477184	-0.816067
141	0	0.086577	0.543725	0.166643	0.305914	0.195710	0.029123
141	1.275	-0.009426	0.543725	0.166643	0.305914	0.408171	0.722344
142	0	0.417115	0.208111	0.176722	0.017118	0.530635	1.046
142	1.275	0.321111	0.208111	0.176722	0.017118	0.755946	1.312
143	0	0.460228	-0.042450	0.025982	-0.090825	0.633851	1.392
143	1.275	0.364224	-0.042450	0.025982	-0.090825	0.666977	1.337
144	0	0.365681	-0.126700	-0.028266	-0.068819	0.580913	1.322
144	1.275	0.269677	-0.126700	-0.028266	-0.068819	0.544875	1.160
145	0	0.226507	-0.125997	-0.047661	-0.035468	0.501850	1.120
145	1.275	0.130503	-0.125997	-0.047661	-0.035468	0.441084	0.959780
146	0	0.064642	-0.094826	-0.059205	-0.010113	0.422798	0.907565
146	1.275	-0.031362	-0.094826	-0.059205	-0.010113	0.347315	0.786667
147	0	-0.125965	-0.042541	-0.068487	0.012087	0.346997	0.715546
147	1.275	-0.221969	-0.042541	-0.068487	0.012087	0.259680	0.661307
148	0	-0.364224	0.026346	-0.079305	0.036708	0.277215	0.560418
148	1.275	-0.460228	0.026346	-0.079305	0.036708	0.176105	0.594008
149	0	-0.681147	0.068881	-0.099033	0.066839	0.215890	0.445766
149	1.275	-0.777150	0.068881	-0.099033	0.066839	0.089628	0.533586
150	0	-1.161	0.016841	-0.165322	0.085251	0.161527	0.280379
150	1.275	-1.257	0.016841	-0.165322	0.085251	-0.049251	0.301850
151	0	-0.220579	0.388075	-0.234454	0.072745	0.090025	-0.252612
151	1.250	-0.220579	0.388075	-0.234454	0.072745	-0.203031	0.232462
152	0	-0.096687	0.256754	-0.052124	0.079500	-0.027606	-0.150550
152	1.250	-0.096687	0.256754	-0.052124	0.079500	-0.092758	0.170380
153	0	0.053764	0.107667	-0.019087	0.037519	-0.031855	-0.063930
153	1.250	0.053764	0.107667	-0.019087	0.037519	-0.055712	0.070649
154	0	0.073455	0.027404	-0.015376	0.014601	-0.022530	-0.017520
154	1.250	0.073455	0.027404	-0.015376	0.014601	-0.041749	0.016734

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
155	0	0.046867	-0.021575	-0.012941	-0.001984	-0.019899	0.015713
155	1.250	0.046867	-0.021575	-0.012941	-0.001984	-0.036075	-0.011255
156	0	0.030553	-0.054869	-0.013781	-0.018847	-0.023626	0.042274
156	1.250	0.030553	-0.054869	-0.013781	-0.018847	-0.040851	-0.026309
157	0	0.058301	-0.082961	-0.021425	-0.042816	-0.031889	0.068398
157	1.250	0.058301	-0.082961	-0.021425	-0.042816	-0.058668	-0.035299
158	0	0.164216	-0.102433	-0.056519	-0.085317	-0.020816	0.089745
158	1.250	0.164216	-0.102433	-0.056519	-0.085317	-0.091463	-0.038291
159	0	0.316283	-0.074472	-0.150642	-0.121980	0.107314	0.062990
159	1.250	0.316283	-0.074472	-0.150642	-0.121980	-0.080980	-0.030096
160	0	0.265550	0.049857	0.016361	0.117560	0.284478	-0.068911
160	1.250	0.265550	0.049857	0.016361	0.117560	0.304929	-0.006591
161	0	-0.089529	0.375306	-0.071358	0.656836	-0.039407	-0.338811
161	1.250	-0.089529	0.375306	-0.071358	0.656836	-0.128601	0.130302
162	0	-0.455041	-0.065073	0.200732	-0.048154	-0.372212	0.026092
162	1.250	-0.455041	-0.065073	0.200732	-0.048154	-0.121307	-0.055245
163	0	-0.296678	-0.228772	0.130716	-0.167333	0.005600	0.245070
163	1.250	-0.296678	-0.228772	0.130716	-0.167333	0.168989	-0.040883
164	0	-0.076659	-0.205706	0.024251	-0.074139	0.047724	0.215324
164	1.250	-0.076659	-0.205706	0.024251	-0.074139	0.078036	-0.041798
165	0	-0.009738	-0.178426	0.008407	-0.041648	0.019854	0.179116
165	1.250	-0.009738	-0.178426	0.008407	-0.041648	0.030363	-0.043907
166	0	-3.32E-09	-0.173902	-5.35E-09	-0.033401	-1.38E-08	0.171164
166	1.250	-3.32E-09	-0.173902	-5.35E-09	-0.033401	-2.05E-08	-0.046204
167	0	0.009738	-0.178425	-0.008406	-0.041649	-0.019855	0.179116
167	1.250	0.009738	-0.178425	-0.008406	-0.041649	-0.030362	-0.043907
168	0	0.076659	-0.205704	-0.024235	-0.074139	-0.047734	0.215323
168	1.250	0.076659	-0.205704	-0.024235	-0.074139	-0.078026	-0.041797
169	0	0.296679	-0.228768	-0.130725	-0.167333	-0.005594	0.245068
169	1.250	0.296679	-0.228768	-0.130725	-0.167333	-0.168994	-0.040881
170	0	0.455041	-0.065066	-0.200730	-0.048153	0.372211	0.026087
170	1.250	0.455041	-0.065066	-0.200730	-0.048153	0.121309	-0.055241
171	0	0.089528	0.375305	0.071357	0.656836	0.039407	-0.338811
171	1.250	0.089528	0.375305	0.071357	0.656836	0.128600	0.130302
172	0	-0.265550	0.049858	-0.016352	0.117561	-0.284484	-0.068911
172	1.250	-0.265550	0.049858	-0.016352	0.117561	-0.304924	-0.006591

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
173	0	-0.316283	-0.074471	0.150649	-0.121980	-0.107319	0.062990
173	1.250	-0.316283	-0.074471	0.150649	-0.121980	0.080984	-0.030095
174	0	-0.164216	-0.102432	0.056540	-0.085317	0.020804	0.089745
174	1.250	-0.164216	-0.102432	0.056540	-0.085317	0.091476	-0.038290
175	0	-0.058301	-0.082961	0.021425	-0.042816	0.031888	0.068398
175	1.250	-0.058301	-0.082961	0.021425	-0.042816	0.058669	-0.035299
176	0	-0.030553	-0.054869	0.013782	-0.018847	0.023625	0.042274
176	1.250	-0.030553	-0.054869	0.013782	-0.018847	0.040852	-0.026309
177	0	-0.046867	-0.021575	0.012922	-0.001984	0.019911	0.015713
177	1.250	-0.046867	-0.021575	0.012922	-0.001984	0.036063	-0.011255
178	0	-0.073455	0.027404	0.015377	0.014600	0.022529	-0.017520
178	1.250	-0.073455	0.027404	0.015377	0.014600	0.041750	0.016734
179	0	-0.053764	0.107667	0.019089	0.037519	0.031853	-0.063930
179	1.250	-0.053764	0.107667	0.019089	0.037519	0.055713	0.070649
180	0	0.096686	0.256754	0.052121	0.079500	0.027608	-0.150550
180	1.250	0.096686	0.256754	0.052121	0.079500	0.092757	0.170380
181	0	0.220579	0.388075	0.234453	0.072745	-0.090025	-0.252612
181	1.250	0.220579	0.388075	0.234453	0.072745	0.203030	0.232462
182	0	-0.405829	0.006528	-0.068784	0.032519	-0.128683	0.049129
182	1.250	-0.405829	0.006528	-0.068784	0.032519	-0.214660	0.057289
183	0	-0.002082	0.042621	-0.032123	0.032208	-0.120194	0.023569
183	1.250	-0.002082	0.042621	-0.032123	0.032208	-0.160346	0.076843
184	0	0.129146	-0.006396	-0.006926	0.014017	-0.081874	0.020167
184	1.250	0.129146	-0.006396	-0.006926	0.014017	-0.090531	0.012172
185	0	0.117570	-0.044572	-0.003065	0.003955	-0.057719	0.031322
185	1.250	0.117570	-0.044572	-0.003065	0.003955	-0.061550	-0.024390
186	0	0.076189	-0.072266	-0.004073	-0.001635	-0.049080	0.045300
186	1.250	0.076189	-0.072266	-0.004073	-0.001635	-0.054171	-0.045029
187	0	0.050949	-0.090539	-0.004345	-0.006949	-0.057019	0.057752
187	1.250	0.050949	-0.090539	-0.004345	-0.006949	-0.062449	-0.055418
188	0	0.064421	-0.090768	0.002675	-0.014456	-0.089116	0.060548
188	1.250	0.064421	-0.090768	0.002675	-0.014456	-0.085773	-0.052907
189	0	0.127970	-0.048597	0.014513	-0.036994	-0.159724	0.034812
189	1.250	0.127970	-0.048597	0.014513	-0.036994	-0.141583	-0.025932
190	0	0.221025	0.053739	-0.285243	-0.140775	-0.113396	-0.037881
190	1.250	0.221025	0.053739	-0.285243	-0.140775	-0.469935	0.029290

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
191	0	0.245256	0.103203	-2.291	-0.260579	0.962887	-0.097497
191	1.250	0.245256	0.103203	-2.291	-0.260579	-1.900	0.031501
192	0	-0.084353	-0.557104	0.730820	2.607	-0.337765	0.171757
192	1.250	-0.084353	-0.557104	0.730820	2.607	0.575724	-0.524595
193	0	-0.338870	0.037227	2.171	-0.512337	-0.628646	-0.088990
193	1.250	-0.338870	0.037227	2.171	-0.512337	2.085	-0.042458
194	0	-0.208819	-0.154700	-0.005624	-0.092883	0.297984	0.107976
194	1.250	-0.208819	-0.154700	-0.005624	-0.092883	0.290955	-0.085392
195	0	-0.071412	-0.266391	-0.008265	-0.027483	0.126230	0.190012
195	1.250	-0.071412	-0.266391	-0.008265	-0.027483	0.115899	-0.142964
196	0	-0.015708	-0.274296	0.003439	-0.016508	0.044116	0.191192
196	1.250	-0.015708	-0.274296	0.003439	-0.016508	0.048415	-0.151664
197	0	6.86E-10	-0.269369	-2.34E-09	-0.013187	-3.01E-08	0.186208
197	1.250	6.86E-10	-0.269369	-2.34E-09	-0.013187	-3.30E-08	-0.150490
198	0	0.015708	-0.274295	-0.003444	-0.016508	-0.044113	0.191192
198	1.250	0.015708	-0.274295	-0.003444	-0.016508	-0.048418	-0.151663
199	0	0.071412	-0.266389	0.008256	-0.027483	-0.126224	0.190010
199	1.250	0.071412	-0.266389	0.008256	-0.027483	-0.115904	-0.142963
200	0	0.208819	-0.154697	0.005635	-0.092884	-0.297992	0.107974
200	1.250	0.208819	-0.154697	0.005635	-0.092884	-0.290948	-0.085390
201	0	0.338871	0.037230	-2.171	-0.512336	0.628650	-0.088992
201	1.250	0.338871	0.037230	-2.171	-0.512336	-2.085	-0.042456
202	0	0.084352	-0.557103	-0.730815	2.607	0.337763	0.171757
202	1.250	0.084352	-0.557103	-0.730815	2.607	-0.575720	-0.524595
203	0	-0.245256	0.103203	2.291	-0.260579	-0.962891	-0.097498
203	1.250	-0.245256	0.103203	2.291	-0.260579	1.900	0.031501
204	0	-0.221025	0.053740	0.285242	-0.140775	0.113397	-0.037882
204	1.250	-0.221025	0.053740	0.285242	-0.140775	0.469935	0.029290
205	0	-0.127970	-0.048597	-0.014513	-0.036994	0.159724	0.034812
205	1.250	-0.127970	-0.048597	-0.014513	-0.036994	0.141583	-0.025931
206	0	-0.064421	-0.090768	-0.002689	-0.014456	0.089125	0.060548
206	1.250	-0.064421	-0.090768	-0.002689	-0.014456	0.085764	-0.052907
207	0	-0.050948	-0.090539	0.004345	-0.006949	0.057018	0.057752
207	1.250	-0.050948	-0.090539	0.004345	-0.006949	0.062450	-0.055418
208	0	-0.076189	-0.072266	0.004073	-0.001636	0.049080	0.045300
208	1.250	-0.076189	-0.072266	0.004073	-0.001636	0.054171	-0.045029

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
209	0	-0.117570	-0.044572	0.003065	0.003955	0.057718	0.031322
209	1.250	-0.117570	-0.044572	0.003065	0.003955	0.061550	-0.024390
210	0	-0.129146	-0.006396	0.006919	0.014017	0.081878	0.020167
210	1.250	-0.129146	-0.006396	0.006919	0.014017	0.090527	0.012172
211	0	0.002081	0.042621	0.032124	0.032208	0.120193	0.023569
211	1.250	0.002081	0.042621	0.032124	0.032208	0.160346	0.076843
212	0	0.405829	0.006528	0.068784	0.032519	0.128683	0.049129
212	1.250	0.405829	0.006528	0.068784	0.032519	0.214660	0.057289
213	0	-0.332577	-0.088014	0.062072	-0.024069	-0.211161	0.103515
213	1.250	-0.332577	-0.088014	0.062072	-0.024069	-0.133575	-0.006497
214	0	0.020073	-0.222736	0.036447	-0.030227	-0.164823	0.181681
214	1.250	0.020073	-0.222736	0.036447	-0.030227	-0.119266	-0.096727
215	0	0.126388	-0.184432	0.011737	-0.018715	-0.093093	0.127090
215	1.250	0.126388	-0.184432	0.011737	-0.018715	-0.078423	-0.103441
216	0	0.115444	-0.140112	0.004104	-0.009035	-0.061033	0.088088
216	1.250	0.115444	-0.140112	0.004104	-0.009035	-0.055903	-0.087045
217	0	0.078290	-0.113314	0.002724	-0.001271	-0.052584	0.067733
217	1.250	0.078290	-0.113314	0.002724	-0.001271	-0.049178	-0.073903
218	0	0.049693	-0.096422	0.002530	0.006180	-0.060973	0.056715
218	1.250	0.049693	-0.096422	0.002530	0.006180	-0.057811	-0.063808
219	0	0.034707	-0.066255	-0.003919	0.015344	-0.084655	0.037586
219	1.250	0.034707	-0.066255	-0.003919	0.015344	-0.089554	-0.045229
220	0	0.020514	0.022616	-0.014377	0.039128	-0.141148	-0.018568
220	1.250	0.020514	0.022616	-0.014377	0.039128	-0.159118	0.009701
221	0	0.011487	0.238331	0.287039	0.142896	-0.470804	-0.151676
221	1.250	0.011487	0.238331	0.287039	0.142896	-0.112020	0.146226
222	0	0.054138	0.602578	2.292	0.260147	-1.902	-0.382254
222	1.250	0.054138	0.602578	2.292	0.260147	0.963252	0.370938
223	0	-0.005373	1.621	-0.730413	-2.610	-0.576433	-1.120
223	1.250	-0.005373	1.621	-0.730413	-2.610	-0.336546	0.905500
224	0	-0.020674	0.577720	-2.173	0.512968	2.087	-0.384269
224	1.250	-0.020674	0.577720	-2.173	0.512968	-0.629936	0.337852
225	0	-0.017663	-0.026859	0.004177	0.095659	0.290884	-0.004977
225	1.250	-0.017663	-0.026859	0.004177	0.095659	0.296105	-0.038549
226	0	-0.029377	-0.228513	0.008752	0.028595	0.114977	0.123667
226	1.250	-0.029377	-0.228513	0.008752	0.028595	0.125917	-0.161962

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
227	0	-0.015267	-0.266010	-0.002843	0.016226	0.047888	0.150555
227	1.250	-0.015267	-0.266010	-0.002843	0.016226	0.044334	-0.181944
228	0	4.12E-09	-0.267225	1.81E-09	0.012512	-3.28E-08	0.151940
228	1.250	4.12E-09	-0.267225	1.81E-09	0.012512	-3.05E-08	-0.182078
229	0	0.015267	-0.266009	0.002847	0.016226	-0.047891	0.150555
229	1.250	0.015267	-0.266009	0.002847	0.016226	-0.044331	-0.181944
230	0	0.029377	-0.228511	-0.008753	0.028595	-0.114977	0.123666
230	1.250	0.029377	-0.228511	-0.008753	0.028595	-0.125918	-0.161961
231	0	0.017663	-0.026856	-0.004179	0.095660	-0.290883	-0.004979
231	1.250	0.017663	-0.026856	-0.004179	0.095660	-0.296107	-0.038548
232	0	0.020674	0.577723	2.173	0.512967	-2.087	-0.384271
232	1.250	0.020674	0.577723	2.173	0.512967	0.629940	0.337854
233	0	0.005373	1.621	0.730409	-2.610	-0.576430	-1.120
233	1.250	0.005373	1.621	0.730409	-2.610	0.336544	0.905502
234	0	-0.054138	0.602579	-2.292	0.260147	1.902	-0.382255
234	1.250	-0.054138	0.602579	-2.292	0.260147	-0.963255	0.370939
235	0	-0.011487	0.238332	-0.287045	0.142896	0.470808	-0.151676
235	1.250	-0.011487	0.238332	-0.287045	0.142896	0.112016	0.146227
236	0	-0.020514	0.022617	0.014362	0.039128	0.141157	-0.018568
236	1.250	-0.020514	0.022617	0.014362	0.039128	0.159109	0.009701
237	0	-0.034706	-0.066255	0.003919	0.015344	0.084656	0.037586
237	1.250	-0.034706	-0.066255	0.003919	0.015344	0.089554	-0.045229
238	0	-0.049693	-0.096422	-0.002530	0.006180	0.060974	0.056715
238	1.250	-0.049693	-0.096422	-0.002530	0.006180	0.057811	-0.063807
239	0	-0.078290	-0.113314	-0.002725	-0.001271	0.052584	0.067733
239	1.250	-0.078290	-0.113314	-0.002725	-0.001271	0.049178	-0.073903
240	0	-0.115444	-0.140112	-0.004105	-0.009035	0.061033	0.088088
240	1.250	-0.115444	-0.140112	-0.004105	-0.009035	0.055903	-0.087045
241	0	-0.126388	-0.184432	-0.011737	-0.018716	0.093094	0.127090
241	1.250	-0.126388	-0.184432	-0.011737	-0.018716	0.078423	-0.103441
242	0	-0.020073	-0.222736	-0.036444	-0.030227	0.164821	0.181681
242	1.250	-0.020073	-0.222736	-0.036444	-0.030227	0.119268	-0.096728
243	0	0.332577	-0.088014	-0.062071	-0.024069	0.211161	0.103516
243	1.250	0.332577	-0.088014	-0.062071	-0.024069	0.133575	-0.006497
244	0	-0.016763	-0.447392	0.229728	-0.049256	-0.201903	0.257361
244	1.250	-0.016763	-0.447392	0.229728	-0.049256	0.085245	-0.301857

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
245	0	-0.052045	-0.383330	0.066292	-0.071905	-0.101275	0.226023
245	1.250	-0.052045	-0.383330	0.066292	-0.071905	-0.018414	-0.253120
246	0	0.042539	-0.222153	0.019725	-0.039789	-0.054787	0.129433
246	1.250	0.042539	-0.222153	0.019725	-0.039789	-0.030132	-0.148247
247	0	0.068880	-0.141206	0.010820	-0.017537	-0.038146	0.075741
247	1.250	0.068880	-0.141206	0.010820	-0.017537	-0.024622	-0.100759
248	0	0.052293	-0.094413	0.009281	0.000315	-0.033800	0.046954
248	1.250	0.052293	-0.094413	0.009281	0.000315	-0.022199	-0.071057
249	0	0.031175	-0.066049	0.011531	0.018282	-0.039776	0.030387
249	1.250	0.031175	-0.066049	0.011531	0.018282	-0.025363	-0.052171
250	0	0.000702	-0.043819	0.019387	0.043021	-0.057589	0.014905
250	1.250	0.000702	-0.043819	0.019387	0.043021	-0.033356	-0.039867
251	0	-0.084253	0.001656	0.054253	0.086064	-0.089819	-0.017729
251	1.250	-0.084253	0.001656	0.054253	0.086064	-0.022005	-0.015659
252	0	-0.250567	0.140090	0.150745	0.122102	-0.080483	-0.094754
252	1.250	-0.250567	0.140090	0.150745	0.122102	0.107941	0.080351
253	0	-0.335609	0.426266	-0.010084	-0.122454	0.301399	-0.209107
253	1.250	-0.335609	0.426266	-0.010084	-0.122454	0.288794	0.323704
254	0	0.157355	0.789885	0.066626	-0.672881	-0.125293	-0.142547
254	1.250	0.157355	0.789885	0.066626	-0.672881	-0.042014	0.844770
255	0	0.437685	0.387108	-0.203710	0.040220	-0.120050	-0.168658
255	1.250	0.437685	0.387108	-0.203710	0.040220	-0.374677	0.315208
256	0	0.178015	-0.051467	-0.127560	0.166321	0.166259	-0.039765
256	1.250	0.178015	-0.051467	-0.127560	0.166321	0.006816	-0.104096
257	0	0.010196	-0.148541	-0.021681	0.073581	0.076275	0.023087
257	1.250	0.010196	-0.148541	-0.021681	0.073581	0.049175	-0.162582
258	0	-0.010590	-0.165130	-0.007612	0.040982	0.029945	0.041962
258	1.250	-0.010590	-0.165130	-0.007612	0.040982	0.020431	-0.164442
259	0	4.63E-09	-0.168334	5.35E-09	0.032706	-2.07E-08	0.045520
259	1.250	4.63E-09	-0.168334	5.35E-09	0.032706	-1.40E-08	-0.164889
260	0	0.010590	-0.165129	0.007610	0.040982	-0.029945	0.041962
260	1.250	0.010590	-0.165129	0.007610	0.040982	-0.020432	-0.164441
261	0	-0.010196	-0.148539	0.021692	0.073581	-0.076282	0.023085
261	1.250	-0.010196	-0.148539	0.021692	0.073581	-0.049168	-0.162581
262	0	-0.178015	-0.051463	0.127555	0.166321	-0.166256	-0.039768
262	1.250	-0.178015	-0.051463	0.127555	0.166321	-0.006819	-0.104094

ESFUERZOS:

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
263	0	-0.437686	0.387113	0.203706	0.040218	0.120053	-0.168661
263	1.250	-0.437686	0.387113	0.203706	0.040218	0.374676	0.315211
264	0	-0.157354	0.789886	-0.066626	-0.672882	0.125292	-0.142548
264	1.250	-0.157354	0.789886	-0.066626	-0.672882	0.042013	0.844770
265	0	0.335609	0.426267	0.010086	-0.122453	-0.301400	-0.209108
265	1.250	0.335609	0.426267	0.010086	-0.122453	-0.288794	0.323704
266	0	0.250567	0.140091	-0.150742	0.122102	0.080481	-0.094755
266	1.250	0.250567	0.140091	-0.150742	0.122102	-0.107939	0.080352
267	0	0.084253	0.001657	-0.054253	0.086063	0.089819	-0.017729
267	1.250	0.084253	0.001657	-0.054253	0.086063	0.022005	-0.015658
268	0	-0.000702	-0.043819	-0.019388	0.043021	0.057589	0.014905
268	1.250	-0.000702	-0.043819	-0.019388	0.043021	0.033356	-0.039866
269	0	-0.031174	-0.066049	-0.011533	0.018282	0.039777	0.030387
269	1.250	-0.031174	-0.066049	-0.011533	0.018282	0.025362	-0.052171
270	0	-0.052293	-0.094413	-0.009262	0.000315	0.033788	0.046954
270	1.250	-0.052293	-0.094413	-0.009262	0.000315	0.022211	-0.071057
271	0	-0.068880	-0.141206	-0.010822	-0.017537	0.038148	0.075741
271	1.250	-0.068880	-0.141206	-0.010822	-0.017537	0.024621	-0.100759
272	0	-0.042540	-0.222153	-0.019727	-0.039789	0.054788	0.129433
272	1.250	-0.042540	-0.222153	-0.019727	-0.039789	0.030130	-0.148247
273	0	0.052045	-0.383331	-0.066294	-0.071905	0.101277	0.226024
273	1.250	0.052045	-0.383331	-0.066294	-0.071905	0.018412	-0.253120
274	0	0.016763	-0.447392	-0.229728	-0.049256	0.201903	0.257361
274	1.250	0.016763	-0.447392	-0.229728	-0.049256	-0.085245	-0.301857
1601	0	0.936802	-4.87E-05	4.592	0.001861	-25.758	0.000130
1601	11.000	0.936802	-4.87E-05	4.592	0.001861	24.749	-0.000406
1602	0	-0.936803	4.87E-05	4.592	0.001861	-25.758	-0.000130
1602	11.000	-0.936803	4.87E-05	4.592	0.001861	24.749	0.000406

ENVOLVENTE: BA '' Ejec. "0001"

Grupo	Espe.	Hipótesis	Factor	Etapa	Título
A		3	1.000		Sobrecarga de uso1
B	MAS	4	1.000		Sobrecarga de uso2
C	MAS	5	1.000		Sobrecarga de uso3
D	MAS	6	1.000		Sobrecarga de uso4
E	MAS	7	1.000		Sobrecarga de uso5
F	MAS	8	1.000		Sobrecarga de uso6
G	MAS	9	1.000		Carro1
H	O	10	1.000		Carro2
I	O	11	1.000		Carro3
J	O	12	1.000		Carro4
K	O	13	1.000		Carro5
L	O	14	1.000		Carro6
M	O	15	1.000		Carro7
N	O	16	1.000		Carro8
O	O	17	1.000		Carro9
P	O	18	1.000		Carro10
Q	O	19	1.000		Carro11
R	O	20	1.000		Carro12

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
1	0	-0.713955	7.250	32.198	27.861	-19.374	-0.067185
		-0.429846	-0.521907	-9.090	-8.823	6.530	0.621157
1	1.275	-0.429846	-0.521907	-9.090	-8.823	-5.059	-0.044247
		-0.713955	7.250	30.502	26.102	20.595	9.176
2	0	-0.497746	2.740	18.517	23.675	-9.309	2.292
		-5.063	3.323	6.756	1.749	8.961	12.178
2	1.275	-0.540664	-0.925294	-7.924	-10.290	-5.045	-0.755121
		-3.872	9.580	24.913	29.317	24.120	23.136
3	0	1.720	0.161604	11.457	16.130	-8.484	-2.566
		-9.174	4.365	1.047	-2.190	12.680	24.347
3	1.275	1.211	-1.514	-5.145	-6.207	-5.505	-5.934
		-8.433	8.353	10.717	15.078	28.033	38.758
4	0	2.375	0.114285	11.596	16.498	-9.037	-3.473
		-10.886	1.376	-1.361	-3.216	16.600	31.387
4	1.275	1.647	-1.457	-5.028	-6.041	-6.272	-7.884

ENVOLVENTE para < My > (y valores concomitantes)
(1. linea: MIN., 2. linea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
		-10.033	3.503	13.338	16.443	27.919	43.751
5	0	4.082	-0.510500	9.262	13.708	-9.767	-7.889
		-10.982	-2.506	-2.493	-1.139	21.041	42.998
5	1.275	2.089	-1.449	-4.932	-5.874	-7.064	-9.835
		-9.766	-1.938	4.426	8.986	22.301	40.565
6	0	4.969	-0.598673	9.371	13.933	-10.707	-9.724
		-9.134	-6.992	0.612102	0.920768	20.959	38.504
6	1.275	2.551	-1.474	-4.830	-5.683	-7.870	-11.840
		-2.703	1.354	13.040	18.829	16.236	18.326
7	0	5.843	-0.708946	9.521	14.254	-11.702	-11.677
		-5.767	-8.470	-9.873	-8.113	16.133	27.138
7	1.275	3.034	-1.494	-4.692	-5.426	-8.674	-13.898
		-1.806	1.121	13.572	19.678	16.431	18.392
8	0	6.713	-0.665868	9.781	14.788	-12.828	-13.810
		-2.458	-8.186	-9.393	-7.280	10.285	14.082
8	1.275	3.519	-1.386	-4.461	-5.055	-9.448	-15.851
		-0.848754	-0.557808	3.688	11.637	13.803	16.422
9	0	8.217	-0.387097	7.115	11.261	-14.590	-21.192
		-2.565	-4.449	-1.958	1.023	5.234	10.197
9	1.275	3.078	-1.923	-4.533	-4.433	-10.470	-18.210
		4.049	1.352	3.674	2.780	10.227	7.097
10	0	8.216	1.182	9.272	12.051	-17.488	-24.092
		1.981	-4.550	-2.124	-0.674659	5.216	13.444
10	1.275	4.677	-1.626	-5.551	-6.263	-12.500	-19.778
		5.809	5.606	18.812	20.463	10.225	2.839
11	0	8.371	4.297	9.029	9.870	-17.373	-23.563
		2.797	-4.366	-7.746	-8.712	7.032	7.178
11	1.700	4.611	-4.869	-11.212	-14.876	-13.828	-10.262
		3.677	5.319	-3.072	1.200	8.741	12.933

ENVOLVENTE para < My > (y valores concomitantes)
(1. linea: MIN., 2. linea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
12	0	5.131	6.887	12.905	13.846	-12.922	-10.390
		0.226816	-1.999	-8.189	-12.845	8.750	6.488
12	1.700	3.723	-1.078	-6.592	-12.968	-9.925	-9.629
		3.192	6.768	10.954	12.576	10.052	7.098
13	0	1.683	6.306	9.272	10.378	-6.560	-1.332
		-2.919	-0.676065	-4.168	-8.173	12.433	19.809
13	1.700	4.378	-0.463968	-3.957	-7.223	-7.042	-8.328
		-2.960	8.469	9.668	9.507	16.437	24.702
14	0	3.728	0.847900	1.006	0.809967	-5.293	-10.544
		-4.139	-0.933783	-3.417	-7.005	12.270	20.638
14	1.700	3.743	-0.079126	-3.528	-6.322	-6.205	-7.037
		-7.249	8.104	10.612	10.513	24.870	41.623
15	0	3.228	0.806723	1.093	1.021	-4.592	-8.733
		-12.897	1.511	1.465	-0.121801	17.033	35.983
15	1.700	3.290	-0.041351	-3.328	-5.871	-5.593	-5.957
		-10.541	3.233	2.921	3.174	24.586	49.782
16	0	2.154	0.394421	0.980213	1.303	-4.058	-7.617
		-10.541	-3.232	-2.921	-3.174	24.586	49.781
16	1.700	3.852	-0.453087	-3.413	-5.534	-5.431	-5.535
		-12.971	-1.530	-1.439	0.189155	17.119	36.103
17	0	1.972	0.377435	1.042	1.451	-3.801	-6.927
		-7.249	-8.105	-10.612	-10.513	24.870	41.624
17	1.700	3.034	-1.382	-4.668	-6.696	-5.465	-4.089
		-10.279	-4.512	-3.362	0.601893	11.523	25.537
18	0	1.806	0.374276	1.154	1.714	-3.608	-6.310
		-2.960	-8.469	-9.668	-9.507	16.437	24.703
18	1.700	1.820	-6.324	-9.241	-10.299	-6.681	-1.670
		-5.911	-6.081	-4.039	0.790686	4.618	10.652
19	0	0.650311	-1.315	2.432	6.496	-5.721	-7.481
		3.192	-6.768	-10.954	-12.576	10.052	7.098

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
19	1.700	5.290	-6.884	-12.864	-13.758	-13.063	-10.758
		-1.925	-0.287765	2.615	5.119	2.473	-0.406464
20	0	4.402	-1.294	3.123	7.795	-11.807	-17.162
		3.031	-2.325	-6.116	-9.343	5.104	1.252
20	1.700	8.532	-4.224	-8.953	-9.806	-17.487	-23.827
		-0.845380	0.376184	0.867442	1.112	1.835	2.458
21	0	4.783	1.784	5.671	6.292	-12.702	-20.075
		3.443	-1.241	-8.417	-10.905	3.480	-2.356
21	1.275	8.313	-1.025	-9.191	-12.077	-17.521	-24.100
		0.101757	1.519	1.712	1.476	2.270	3.374
22	0	3.083	2.122	4.660	4.417	-10.508	-18.223
		3.499	1.108	-5.657	-9.787	3.003	-1.859
22	1.275	8.217	0.385668	-7.115	-11.261	-14.591	-21.193
		-1.480	2.773	1.559	0.094620	3.413	6.340
23	0	3.527	1.394	4.505	5.111	-9.508	-15.931
		0.720665	2.487	-5.018	-9.888	5.225	2.094
23	1.275	6.712	0.665346	-9.781	-14.788	-12.828	-13.810
		-2.313	3.079	4.744	4.346	5.504	6.013
24	0	3.041	1.502	4.736	5.483	-8.730	-13.968
		-0.887466	1.812	-5.409	-9.680	7.512	6.909
24	1.275	5.843	0.708791	-9.521	-14.254	-11.702	-11.677
		-3.530	2.411	4.335	4.452	7.198	9.828
25	0	2.557	1.483	4.876	5.741	-7.922	-11.900
		-2.032	0.897723	-5.934	-9.646	9.185	10.482
25	1.275	4.969	0.598864	-9.371	-13.933	-10.707	-9.724
		-4.287	1.542	3.800	4.445	8.130	12.164
26	0	2.093	1.458	4.978	5.932	-7.113	-9.886
		-2.723	-0.054641	-6.550	-9.783	10.233	12.543
26	1.275	4.082	0.511662	-9.262	-13.708	-9.767	-7.888
		-4.570	0.632609	3.178	4.281	8.327	12.983

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
27	0	1.649	1.466	5.074	6.100	-6.317	-7.925
		-2.974	-1.035	-7.270	-10.099	10.682	13.070
27	1.275	3.183	0.464333	-9.158	-13.483	-8.847	-6.112
		-4.393	-0.306394	2.448	3.914	7.789	12.270
28	0	1.212	1.522	5.191	6.267	-5.545	-5.965
		-2.647	-2.045	-8.436	-11.084	10.586	11.604
28	1.275	2.298	0.466680	-9.014	-13.133	-7.924	-4.347
		-3.767	-1.337	1.549	3.235	6.496	9.923
29	0	0.739933	1.599	5.360	6.383	-4.811	-3.902
		-1.229	-2.475	-11.192	-14.408	10.163	6.559
29	1.275	0.220232	-1.586	-15.091	-19.699	-8.263	0.728631
		-1.418	-0.311614	6.687	9.356	5.685	2.549
30	0	-0.489457	0.312213	8.512	8.417	-4.614	0.259887
		0.424755	-1.557	-16.524	-15.579	10.125	1.198
30	1.275	0.424755	-1.557	-18.219	-17.339	-12.023	-0.787054
		-0.489457	0.312213	8.512	8.417	6.238	0.657943
31	0	-0.188883	0.398436	-0.483830	13.550	-1.287	-0.266926
		-0.281495	-3.972	9.409	2.159	3.855	2.388
31	1.275	0.028889	0.930185	-2.088	5.540	-3.635	0.600507
		-0.310476	-4.828	13.217	12.333	19.774	-3.322
32	0	0.530268	1.054	-2.638	-0.677633	-3.998	-0.619630
		-0.824935	-3.237	15.879	7.800	23.401	1.605
32	1.275	0.631964	1.003	-2.922	6.378	-7.491	0.717135
		-2.395	-5.196	11.396	18.100	36.864	-3.579
33	0	1.046	0.992667	-2.774	-0.340864	-7.676	-0.527401
		-3.831	-4.043	11.829	14.899	41.082	1.980
33	1.275	1.270	0.986094	-3.311	6.708	-11.465	0.757200
		-3.831	-4.043	3.191	14.899	53.957	-3.175
34	0	1.526	0.966881	-2.900	-0.119463	-11.358	-0.474591
		-4.856	-1.608	4.186	9.524	56.701	0.226802

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
34	1.275	1.847	0.973307	-3.473	6.916	-15.375	0.794793
		-4.856	-1.608	3.549	9.524	61.632	-1.824
35	0	1.980	0.973639	-3.000	0.057136	-15.067	-0.442688
		-5.019	0.896822	-3.114	3.853	62.879	-1.358
35	1.275	2.394	0.971352	-3.571	7.088	-19.234	0.840400
		-5.019	0.896822	-3.752	3.853	58.503	-0.214622
36	0	2.444	0.997425	-3.104	0.250951	-18.771	-0.417480
		-4.434	3.142	-3.062	-0.838467	58.408	-2.579
36	1.275	2.956	0.978671	-3.676	7.285	-23.077	0.893811
		-4.434	3.142	-11.700	-0.838467	45.698	1.427
37	0	2.910	1.009	-3.258	0.530352	-22.442	-0.373586
		-3.582	3.894	-11.378	-2.466	44.598	-2.825
37	1.275	3.532	0.972362	-3.847	7.578	-26.951	0.946469
		-3.582	3.894	-12.015	-2.466	29.685	2.140
38	0	3.260	0.886592	-3.585	1.029	-26.047	-0.221475
		-1.133	1.346	-2.623	10.113	31.747	-1.077
38	1.275	4.000	0.842970	-4.249	8.123	-31.028	0.942024
		-1.133	1.346	-11.260	10.113	24.396	0.639409
39	0	3.204	0.265919	-4.294	1.983	-29.702	0.250914
		-0.453549	2.817	-11.079	6.494	26.323	-1.920
39	1.275	3.637	1.967	-12.455	9.714	-37.544	1.725
		-0.033455	1.089	-12.501	6.004	11.645	0.588237
40	0	2.520	0.183461	-9.242	2.974	-36.508	0.351350
		0.120106	1.764	-8.962	1.312	12.020	-1.082
40	1.275	3.510	0.142255	-11.619	10.572	-50.561	0.645986
		0.367962	0.311537	-2.946	6.136	3.632	0.199772
41	0	2.436	-2.692	17.029	5.607	-52.104	2.742
		0.594811	0.143092	4.194	-1.836	3.029	-0.067193
41	1.700	1.863	-0.517949	9.190	-2.655	-26.438	-0.091360
		0.552050	-1.499	2.062	3.953	13.961	-1.272

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
42	0	2.382	-2.106	10.994	-3.821	-26.521	2.065
		0.358806	-0.282968	4.331	-2.059	12.876	0.217996
42	1.700	2.374	-0.231400	2.533	-1.339	-17.505	0.043324
		-0.118238	-2.221	3.889	-2.602	25.925	-1.920
43	0	2.250	-0.539122	2.044	-0.567639	-18.138	0.643298
		-1.578	-0.615288	2.724	-6.034	23.712	0.403932
43	1.700	2.895	-0.225765	1.157	-2.308	-15.933	0.039854
		-2.258	-4.333	13.952	8.511	37.400	-3.785
44	0	2.210	-0.314983	1.093	-0.169951	-16.205	0.430086
		-4.521	-3.923	13.627	8.276	37.354	2.951
44	1.700	2.617	-0.240337	1.011	-1.984	-14.380	-0.000961
		-4.521	-3.923	12.777	8.276	59.797	-3.718
45	0	1.980	-0.300773	1.036	-0.023551	-14.469	0.398438
		-5.409	-1.512	12.492	3.372	60.652	0.696501
45	1.700	2.357	-0.231342	0.948853	-1.828	-12.757	-0.014439
		-5.409	-1.512	3.642	3.372	69.165	-1.874
46	0	1.783	-0.291361	0.996856	0.073479	-12.746	0.372884
		-5.409	1.512	-3.642	-3.372	69.165	-1.874
46	1.700	2.133	-0.224433	0.908096	-1.726	-11.111	-0.028680
		-5.409	1.512	-12.492	-3.372	60.652	0.696474
47	0	1.610	-0.283079	0.954811	0.178650	-11.019	0.349418
		-4.521	3.923	-12.777	-8.276	59.797	-3.718
47	1.700	1.937	-0.217887	0.865175	-1.619	-9.465	-0.042629
		-4.521	3.923	-13.627	-8.276	37.354	2.951
48	0	1.451	-0.285812	0.881943	0.358118	-9.267	0.338950
		-2.258	4.333	-13.952	-8.511	37.400	-3.785
48	1.700	1.764	0.827959	-2.482	-4.752	-9.508	0.869287
		-2.082	4.112	-14.026	-8.551	13.090	3.397
49	0	1.021	0.245680	-2.129	2.106	-8.809	-0.087428

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
		0.448194	4.373	-16.325	-8.505	14.077	-3.552
49	1.700	1.325	4.494	-18.791	-6.441	-25.064	4.092
		0.123793	-0.464009	1.937	-0.190797	3.668	-0.422892
50	0	1.427	2.283	-14.876	2.630	-24.947	-1.563
		0.232574	-0.212982	0.995402	-1.859	3.847	0.150527
50	1.700	2.490	2.655	-17.041	-5.514	-52.763	2.720
		-0.031426	-0.270501	1.230	-0.115853	5.858	-0.284792
51	0	3.524	-0.237825	12.137	-10.615	-51.278	0.716808
		-0.337931	-0.072718	-0.734482	0.296490	5.361	0.002267
51	1.275	2.534	-0.279379	9.760	-3.017	-36.565	0.300104
		-0.080625	-0.067851	-0.450515	-1.362	4.485	-0.064856
52	0	3.624	-2.085	12.961	-9.779	-37.628	1.802
		-0.384118	0.076445	-0.500000	0.133008	4.517	-0.097390
52	1.275	3.204	-0.265740	4.294	-1.983	-29.702	0.251029
		-0.597001	-1.773	6.759	-2.043	11.664	-1.176
53	0	4.000	-0.843201	4.249	-8.123	-31.028	0.942172
		-1.343	-1.532	5.447	-0.298506	11.471	0.809955
53	1.275	3.260	-0.886797	3.585	-1.029	-26.046	-0.221607
		-1.153	-1.534	4.949	-1.905	18.089	-1.127
54	0	3.532	-0.972393	3.847	-7.578	-26.950	0.946490
		-1.843	-1.061	3.638	-0.279468	17.834	0.437116
54	1.275	2.910	-1.009	3.258	-0.530354	-22.442	-0.373591
		-1.682	-1.064	3.131	-1.882	22.142	-0.901992
55	0	2.956	-0.978694	3.676	-7.285	-23.077	0.893827
		-2.191	-0.513885	1.934	-0.369367	21.881	0.048368
55	1.275	2.444	-0.997434	3.104	-0.250950	-18.771	-0.417486
		-2.057	-0.519630	1.426	-1.971	24.017	-0.596803
56	0	2.394	-0.971369	3.571	-7.088	-19.234	0.840411
		-2.309	0.045281	0.285734	-0.548523	23.692	-0.321781
56	1.275	1.980	-0.973643	3.000	-0.057138	-15.067	-0.442691

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
		-2.201	0.036738	-0.221007	-2.151	23.731	-0.258256
57	0	1.847	-0.973126	3.473	-6.916	-15.375	0.794679
		-2.148	0.621529	-1.286	-0.854437	23.265	-0.682641
57	1.275	1.526	-0.966692	2.900	0.119464	-11.358	-0.474471
		-2.065	0.611523	-1.793	-2.459	21.307	0.111814
58	0	1.270	-0.986291	3.311	-6.708	-11.465	0.757326
		-1.648	1.261	-2.736	-1.385	20.589	-1.059
58	1.275	1.046	-0.992860	2.774	0.340864	-7.676	-0.527525
		-1.591	1.254	-3.250	-2.993	16.789	0.550264
59	0	0.631966	-1.003	2.922	-6.378	-7.491	0.717136
		-0.827960	1.972	-4.146	-2.288	15.668	-1.410
59	1.275	0.530269	-1.054	2.638	0.677632	-3.998	-0.619631
		-0.803102	1.975	-4.718	-3.898	10.026	1.112
60	0	0.028888	-0.930185	2.088	-5.540	-3.635	0.600507
		-0.227178	2.073	-4.982	-3.109	8.136	-1.378
60	1.275	-0.101593	-0.714580	1.323	-10.869	-1.260	-0.459925
		-0.096697	1.858	-4.855	2.220	1.664	1.139
61	0	-0.046158	1.210	-1.805	8.394	-0.782848	-0.766321
		-0.002189	-4.277	6.930	0.062587	5.805	2.670
61	1.275	-0.046158	1.210	-1.805	8.394	-3.084	0.775923
		-0.171203	-4.681	8.031	16.121	15.724	-3.028
62	0	-0.053270	1.589	-2.748	9.476	-3.949	-0.968535
		-0.254642	-5.593	11.716	17.427	21.384	3.330
62	1.275	-0.053270	1.589	-2.748	9.476	-7.453	1.057
		-0.022662	-5.586	11.533	0.070421	35.668	-3.804
63	0	-0.001196	1.268	-3.002	-5.00E-05	-7.911	-0.697572
		-0.006232	-4.101	9.197	14.951	39.721	2.036
63	1.275	-0.007495	1.545	-3.002	9.488	-11.739	1.118
		-0.033169	-3.904	6.799	0.070378	52.066	-3.069

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
64	0	-0.001814	1.222	-3.095	-5.44E-05	-11.934	-0.615646
		-0.038680	-1.583	5.076	0.069874	53.445	0.275353
64	1.275	-0.001814	1.222	-3.095	-5.44E-05	-15.880	0.942224
		-0.038680	-1.583	3.801	0.069874	59.103	-1.743
65	0	-0.001079	1.232	-3.178	4.13E-05	-15.905	-0.576657
		-0.042131	0.762195	-2.205	0.069587	60.010	-1.229
65	1.275	-0.001079	1.232	-3.178	4.13E-05	-19.956	0.994110
		-0.042131	0.762195	-3.480	0.069587	56.387	-0.256754
66	0	0.004256	1.276	-3.273	0.000328	-19.823	-0.553845
		-0.046921	2.786	-5.470	0.069284	57.131	-2.421
66	1.275	0.004256	1.276	-3.273	0.000328	-23.996	1.073
		-0.150859	3.280	-7.765	0.434657	46.516	1.461
67	0	0.021289	1.292	-3.392	0.000772	-23.664	-0.498909
		-0.058922	4.171	-11.452	0.068825	45.684	-3.129
67	1.275	0.021289	1.292	-3.392	0.000772	-27.989	1.148
		-0.407200	4.539	-11.427	-2.132	31.602	2.465
68	0	0.066817	1.082	-3.461	0.000995	-27.351	-0.288088
		-0.419201	4.949	-12.355	-3.041	31.061	-3.343
68	1.275	0.066817	1.082	-3.461	0.000995	-31.764	1.092
		-0.059540	2.408	-8.805	0.067991	22.531	1.253
69	0	0.189146	0.256737	-3.633	0.000428	-30.434	0.289153
		-0.124823	3.265	-11.685	0.067701	23.820	-2.222
69	1.275	0.108463	2.274	-11.503	-0.000489	-36.094	1.875
		-0.044140	1.248	-9.090	0.068619	8.238	0.682620
70	0	0.528078	-1.406	-9.353	-0.000468	-31.653	1.278
		-0.305889	3.156	-32.081	0.065411	10.932	-1.923
70	1.275	-0.124682	2.525	-34.659	-0.002323	-62.097	2.046
		-0.033504	0.017437	0.076535	0.068229	1.975	-0.013729
71	0	-0.897925	-2.761	35.228	0.000710	-74.276	2.601
		0.194651	0.130423	-1.679	0.080773	4.084	-0.125990

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
71	1.700	0.008256	-0.589203	22.173	0.001528	-19.957	-0.215050
		-0.011685	-1.222	11.162	0.081999	12.606	-1.104
72	0	-0.020985	-2.674	10.843	0.000806	-25.391	2.519
		0.009657	-0.675513	3.140	0.080341	9.825	0.503070
72	1.700	0.342600	-0.283225	2.106	0.000343	-18.043	0.019479
		-0.383112	-2.932	10.249	0.177623	23.944	-2.497
73	0	0.295221	-0.725534	2.137	0.000230	-19.017	0.839086
		-0.308583	-1.764	4.298	0.080306	22.116	1.264
73	1.700	0.427042	-0.421022	1.266	0.079219	-16.740	-0.129130
		-0.679160	-4.999	13.760	0.000907	38.796	-4.520
74	0	0.411398	-0.428973	1.165	0.079417	-17.138	0.558005
		-1.081	-4.085	11.157	8.853	40.152	3.035
74	1.700	0.411398	-0.428973	1.165	0.079417	-15.157	-0.171221
		-0.656912	-3.724	11.579	0.000332	59.422	-3.689
75	0	0.408211	-0.393750	1.097	0.079576	-15.328	0.501719
		-0.796287	-1.570	4.739	3.523	59.472	0.749529
75	1.700	0.408211	-0.393750	1.097	0.079576	-13.464	-0.167630
		-0.652128	-1.399	3.446	5.81E-05	67.387	-1.846
76	0	0.408501	-0.369797	1.052	0.079697	-13.503	0.460410
		-0.652128	1.399	-3.446	-5.16E-05	67.387	-1.846
76	1.700	0.408501	-0.369797	1.052	0.079697	-11.714	-0.168220
		-0.796286	1.570	-4.739	-3.523	59.472	0.749502
77	0	0.411340	-0.347005	1.003	0.080140	-11.643	0.423594
		-0.656912	3.724	-11.579	-0.000338	59.422	-3.689
77	1.700	0.411340	-0.347005	1.003	0.080140	-9.938	-0.166291
		-1.081	4.085	-11.157	-8.853	40.152	3.035
78	0	0.423180	-0.340545	0.930011	0.081518	-9.717	0.405255
		-0.679160	4.999	-13.761	-0.000907	38.796	-4.520
78	1.700	0.017480	0.797809	-2.340	0.081112	-9.643	0.786606
		-0.940591	4.790	-14.073	-10.796	15.012	3.914

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
79	0	0.097866	0.364009	-2.353	-6.912	-8.923	-0.085201
		-0.684426	4.804	-14.716	-11.225	15.053	-3.971
79	1.700	-0.611167	5.175	-18.489	0.083008	-22.927	4.534
		0.315444	-0.565417	1.922	0.000953	3.558	-0.503980
80	0	-0.886259	2.722	-33.736	0.091469	-16.374	-2.051
		0.427044	-0.284862	3.751	0.000653	2.916	0.204638
80	1.700	-0.886259	2.722	-35.436	0.091469	-75.168	2.576
		0.427044	-0.284862	3.751	0.000653	9.293	-0.279607
81	0	0.352857	-0.377867	25.404	0.335974	-62.673	0.730592
		-0.078674	-0.028954	-0.193715	0.000275	4.595	-0.041508
81	1.275	0.528078	1.406	9.353	0.000468	-31.653	1.278
		-0.253895	-1.813	14.183	-0.063278	4.650	-1.107
82	0	0.100917	-2.412	12.212	0.241810	-36.203	1.963
		0.024826	0.114003	-0.350450	0.000610	4.561	-0.130958
82	1.275	0.189146	-0.256948	3.633	-0.000428	-30.434	0.289018
		-0.063403	-2.041	6.554	-0.156211	12.848	-1.387
83	0	0.066817	-1.082	3.461	-0.000995	-31.764	1.091
		0.004764	-1.838	6.034	0.175696	12.407	0.991801
83	1.275	0.066817	-1.082	3.461	-0.000995	-27.352	-0.287971
		0.004764	-1.838	4.360	-0.223364	19.032	-1.352
84	0	0.021289	-1.292	3.392	-0.000772	-27.989	1.148
		0.028972	-1.317	4.302	0.113195	18.840	0.583336
84	1.275	0.021289	-1.292	3.392	-0.000772	-23.664	-0.498790
		0.028972	-1.317	2.628	-0.285865	23.257	-1.096
85	0	0.004256	-1.276	3.273	-0.000328	-23.996	1.073
		0.037547	-0.660067	2.518	0.052984	23.060	0.116723
85	1.275	0.004256	-1.276	3.273	-0.000328	-19.823	-0.553850
		0.037547	-0.660067	0.844111	-0.346076	25.203	-0.724830
86	0	-0.001079	-1.232	3.178	-4.13E-05	-19.956	0.994365
		0.040045	0.036521	0.753157	-0.006400	24.922	-0.345445

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
86	1.275	-0.001079	-1.232	3.178	-4.13E-05	-15.905	-0.576912
		0.040045	0.036521	-0.920853	-0.405459	24.815	-0.298883
87	0	-0.001814	-1.222	3.095	5.44E-05	-15.880	0.942227
		0.040277	0.776938	-0.962932	-0.066302	24.365	-0.805068
87	1.275	-0.001814	-1.222	3.095	5.44E-05	-11.934	-0.615649
		0.040277	0.776938	-2.637	-0.465362	22.070	0.185489
88	0	-0.007495	-1.545	3.003	-9.488	-11.739	1.118
		0.036955	1.610	-2.596	-0.126822	21.297	-1.274
88	1.275	-0.001196	-1.268	3.002	4.95E-05	-7.911	-0.697447
		0.036955	1.610	-4.270	-0.525881	16.921	0.778973
89	0	-0.053270	-1.589	2.748	-9.476	-7.453	1.057
		0.025598	2.383	-3.756	-0.179726	15.499	-1.624
89	1.275	-0.053270	-1.589	2.748	-9.476	-3.949	-0.968537
		0.025598	2.383	-5.430	-0.578786	9.643	1.415
90	0	-0.046158	-1.210	1.805	-8.394	-3.084	0.775925
		0.006593	2.185	-3.033	-0.180306	7.151	-1.414
90	1.275	-0.046158	-1.210	1.805	-8.394	-0.782811	-0.766323
		0.006593	2.185	-4.707	-0.579365	2.217	1.372
91	0	0.036803	0.424448	-1.520	-4.299	-0.734554	-0.271103
		0.091258	-3.654	9.710	11.754	4.138	2.261
91	1.275	-0.155464	0.899376	-2.297	0.986959	-3.381	0.591752
		0.620296	-4.467	11.062	-5.368	17.097	-2.964
92	0	-0.648008	1.544	-2.358	7.731	-4.233	-0.936175
		1.281	-3.377	13.210	-5.315	20.857	1.805
92	1.275	-0.530342	1.054	-2.638	0.677615	-7.361	0.723852
		2.080	-4.613	11.284	-3.716	35.308	-3.274
93	0	-1.252	1.434	-2.242	7.384	-8.108	-0.785219
		3.786	-3.145	11.542	-2.021	36.985	1.410
93	1.275	-1.047	0.991632	-2.774	0.340796	-11.213	0.737207
		3.786	-3.145	2.904	-2.021	49.494	-2.600

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
94	0	-1.842	1.386	-2.336	7.146	-11.764	-0.707303
		4.763	-1.291	4.519	-1.189	50.646	0.119903
94	1.275	-1.528	0.965582	-2.900	0.119369	-15.056	0.756675
		4.763	-1.291	3.882	-1.189	56.002	-1.526
95	0	-2.398	1.400	-2.441	6.958	-15.444	-0.672042
		4.943	0.623085	-2.590	-0.825940	56.743	-1.100
95	1.275	-1.983	0.975861	-2.999	-0.057142	-18.890	0.799203
		4.943	0.623085	-3.228	-0.825940	53.034	-0.305446
96	0	-2.948	1.447	-2.551	6.755	-19.138	-0.650619
		4.456	2.303	-2.022	-0.702108	53.583	-2.071
96	1.275	-2.444	1.008	-3.104	-0.250613	-22.728	0.860315
		4.456	2.303	-10.660	-0.702108	42.198	0.865521
97	0	-3.478	1.494	-2.699	6.470	-22.816	-0.613790
		3.462	3.406	-11.051	-0.657471	42.906	-2.606
97	1.275	-2.902	1.040	-3.258	-0.529343	-26.594	0.933400
		3.462	3.406	-11.689	-0.657471	28.410	1.737
98	0	-3.865	1.420	-2.974	5.983	-26.449	-0.473154
		2.077	3.901	-12.853	-0.822904	28.986	-2.703
98	1.275	-3.235	0.962569	-3.587	-1.028	-30.618	0.962874
		1.763	1.909	-11.387	-0.763992	19.657	0.929303
99	0	-3.847	0.906001	-3.437	5.117	-30.141	-0.036417
		1.030	2.743	-10.720	-1.622	20.249	-1.892
99	1.275	-2.822	2.139	-11.512	-2.472	-36.833	1.783
		0.689703	1.060	-12.143	-1.131	6.026	0.555642
100	0	-3.398	0.962558	-7.644	4.375	-36.776	0.043634
		0.546301	1.205	-7.168	-1.092	6.078	-0.794908
100	1.275	-2.626	0.522360	-9.878	-2.975	-48.698	0.875365
		0.216438	-0.023649	0.332975	0.186795	2.337	-0.046469
101	0	-2.404	-2.062	15.709	2.538	-50.291	2.065

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
		0.244467	0.079783	-0.558024	0.005357	2.560	-0.080506
101	1.700	-1.923	-0.544936	9.188	2.655	-26.438	-0.108415
		0.396641	-1.001	-0.183646	1.365	7.139	-0.904762
102	0	-1.952	-2.177	10.941	1.883	-26.495	2.082
		0.485908	-0.523012	4.423	0.897455	7.278	0.348987
102	1.700	-1.869	-0.113591	2.064	2.371	-17.513	0.166802
		0.402884	-2.587	4.449	0.409705	20.490	-2.326
103	0	-2.110	-0.712025	2.130	-1.193	-18.186	0.840061
		1.569	-1.291	3.928	0.444693	20.289	0.845296
103	1.700	-1.638	-0.318510	1.212	0.584840	-15.935	-0.078057
		1.705	-3.886	13.429	0.591127	36.448	-3.563
104	0	-1.812	-0.465766	1.178	-1.487	-16.253	0.600868
		2.563	-2.797	8.762	5.409	36.137	1.934
104	1.700	-1.407	-0.313040	1.088	0.289062	-14.351	-0.103889
		3.718	-2.940	11.236	0.364646	55.777	-3.004
105	0	-1.561	-0.441264	1.117	-1.643	-14.517	0.556085
		4.748	-1.116	12.119	0.126826	55.259	0.300028
105	1.700	-1.179	-0.294164	1.030	0.142907	-12.712	-0.107892
		4.748	-1.116	3.269	0.126826	63.138	-1.597
106	0	-1.337	-0.427553	1.076	-1.745	-12.799	0.524206
		4.748	1.116	-3.269	-0.126826	63.138	-1.597
106	1.700	-0.981005	-0.283430	0.991243	0.045949	-11.056	-0.116245
		4.748	1.116	-12.119	-0.126826	55.259	0.300021
107	0	-1.136	-0.413915	1.033	-1.853	-11.079	0.494512
		3.718	2.940	-11.236	-0.364651	55.777	-3.004
107	1.700	-0.807029	-0.271849	0.949341	-0.058949	-9.400	-0.122362
		2.563	2.797	-8.762	-5.409	36.137	1.934
108	0	-0.941316	-0.403344	0.960985	-2.031	-9.336	0.472901
		1.705	3.886	-13.429	-0.591127	36.448	-3.564
108	1.700	-0.917038	0.612887	-2.238	-0.372629	-9.281	0.611575

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
		0.575457	3.426	-12.094	-7.463	13.705	2.727
109	0	-1.892	-0.154489	-1.816	-7.119	-9.102	0.371964
		-0.320684	3.988	-15.883	-0.195502	13.674	-3.388
109	1.700	-1.388	4.085	-18.357	-2.141	-24.718	3.617
		0.174203	-0.572532	2.039	-1.592	3.749	-0.479254
110	0	-3.302	1.601	-13.394	-10.164	-25.513	-0.922149
		0.576348	-0.167488	1.229	0.116742	3.767	0.109911
110	1.700	-2.447	2.036	-15.752	-2.522	-50.978	2.052
		0.348804	-0.299571	1.459	-1.627	6.138	-0.256033
111	0	-2.648	-0.606659	10.270	3.076	-49.392	0.937000
		0.295248	-0.043393	-1.012	-1.952	5.628	-0.019193
111	1.275	-3.421	-1.047	8.036	-4.274	-36.971	-0.001986
		0.513174	0.062947	-0.734324	-0.296097	4.425	-0.033572
112	0	-2.817	-2.253	11.979	2.554	-37.013	1.857
		0.338007	0.024136	-0.671563	-1.753	4.628	-0.046546
112	1.275	-3.847	-0.906435	3.437	-5.117	-30.141	-0.036693
		0.878005	-1.662	6.544	0.441128	11.437	-1.138
113	0	-3.235	-0.962775	3.587	1.028	-30.618	0.963006
		1.236	-1.604	5.297	-1.359	11.424	0.873398
113	1.275	-3.865	-1.420	2.974	-5.983	-26.449	-0.473056
		1.411	-1.494	4.795	0.246864	17.871	-1.122
114	0	-2.902	-1.039	3.258	0.529342	-26.594	0.933285
		1.764	-1.159	3.497	-1.458	17.782	0.515953
114	1.275	-3.478	-1.494	2.699	-6.470	-22.816	-0.613686
		1.919	-1.050	2.987	0.144433	21.929	-0.909613
115	0	-2.444	-1.008	3.104	0.250613	-22.728	0.860442
		2.137	-0.622419	1.789	-1.454	21.834	0.131271
115	1.275	-2.948	-1.447	2.551	-6.755	-19.138	-0.650757
		2.270	-0.515630	1.278	0.148199	23.801	-0.608167

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
116	0	-1.983	-0.975675	2.999	0.057140	-18.891	0.799085
		2.281	-0.067183	0.134415	-1.362	23.650	-0.238830
116	1.275	-2.398	-1.399	2.440	-6.958	-15.444	-0.671931
		2.389	0.037310	-0.375763	0.240922	23.507	-0.269195
117	0	-1.528	-0.965776	2.900	-0.119366	-15.056	0.756800
		2.147	0.504712	-1.444	-1.144	23.221	-0.598996
117	1.275	-1.842	-1.386	2.336	-7.146	-11.764	-0.707434
		2.229	0.609017	-1.954	0.460786	21.071	0.101887
118	0	-1.047	-0.991632	2.774	-0.340795	-11.213	0.737209
		1.676	1.130	-2.883	-0.700901	20.528	-0.969118
118	1.275	-1.252	-1.434	2.242	-7.384	-8.108	-0.785223
		1.729	1.240	-3.400	0.907022	16.548	0.535485
119	0	-0.530342	-1.054	2.638	-0.677615	-7.361	0.723852
		0.873416	1.810	-4.195	0.124522	15.577	-1.311
119	1.275	-0.648009	-1.544	2.358	-7.731	-4.233	-0.936178
		0.902257	1.931	-4.770	1.735	9.877	1.074
120	0	-0.155464	-0.898991	2.297	-0.986957	-3.381	0.591507
		0.222085	1.944	-4.838	1.060	8.122	-1.298
120	1.275	0.036299	-0.424060	1.526	4.345	-0.740187	-0.270682
		-0.108087	1.179	-4.167	-7.212	1.967	0.726466
121	0	1.309	4.975	22.278	-17.857	-12.163	0.860788
		0.758285	1.435	-16.374	16.969	12.502	1.198
121	1.275	0.542610	0.553685	-16.763	16.731	-9.086	1.611
		1.309	4.975	20.583	-16.098	15.160	7.203
122	0	0.641955	0.868404	9.511	-12.295	-4.725	0.902702
		4.282	2.509	-12.777	18.823	13.585	9.270
122	1.275	0.126782	-0.297491	-14.929	19.953	-8.839	1.608
		4.911	6.319	12.637	-13.534	15.823	18.669
123	0	-1.147	-1.081	3.406	-5.480	-4.385	-4.345
		8.268	2.502	-7.314	12.019	15.964	20.831

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
123	1.275	-2.286	-1.459	-10.732	13.855	-9.048	-5.460
		9.051	4.769	7.903	-7.740	18.399	30.131
124	0	-1.583	-1.079	3.536	-5.755	-5.308	-6.262
		9.684	0.685587	-7.260	10.786	17.663	25.563
124	1.275	-3.176	-1.351	-10.621	13.757	-9.814	-7.324
		10.782	1.743	5.509	-6.823	19.259	33.392
125	0	-2.029	-1.113	3.635	-5.953	-6.229	-8.193
		9.682	-1.482	-3.576	3.702	18.083	33.665
125	1.275	-4.068	-1.306	-10.522	13.605	-10.595	-9.136
		10.941	-1.370	3.331	-6.424	17.916	31.481
126	0	-2.484	-1.161	3.738	-6.155	-7.170	-10.180
		7.990	-4.173	-5.433	3.738	16.956	30.636
126	1.275	-5.000	-1.276	-10.414	13.418	-11.384	-10.949
		9.538	-4.097	1.475	-6.399	14.413	24.885
127	0	-2.961	-1.185	3.880	-6.434	-8.157	-12.261
		5.050	-5.973	-6.312	3.753	13.316	23.202
127	1.275	-5.989	-1.197	-10.266	13.172	-12.163	-12.720
		6.899	-5.930	0.597408	-6.405	9.644	14.985
128	0	-3.478	-1.023	4.122	-6.868	-9.244	-14.439
		0.799314	-4.797	-10.108	10.149	9.549	7.921
128	1.275	-7.027	-0.931516	-10.021	12.847	-12.885	-14.213
		4.132	-3.498	2.320	-6.420	6.618	6.577
129	0	-6.597	-0.401444	1.397	-3.136	-10.820	-21.163
		2.115	-4.475	-1.999	-0.969946	5.235	10.249
129	1.275	-8.121	-1.281	-10.106	12.333	-13.786	-15.589
		2.002	-3.398	2.262	-6.838	2.978	-0.404347
130	0	-7.655	1.110	3.210	-3.704	-13.376	-23.401
		0.295933	-3.580	-2.331	0.631079	2.045	3.725
130	1.275	-9.351	-1.371	-11.385	14.221	-15.935	-17.348
		-0.080090	0.801632	5.942	-7.452	1.666	-3.582

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
131	0	-6.781	3.597	3.482	-0.762542	-12.474	-22.917
		-0.003333	-0.072472	-0.998293	1.841	1.250	1.269
131	1.700	-9.297	0.697470	-8.236	16.016	-15.703	-15.182
		0.605801	3.764	4.446	-4.116	3.680	1.775
132	0	-3.373	2.392	6.095	-6.409	-9.766	-13.429
		0.547478	1.959	-1.943	6.082	4.349	3.526
132	1.700	-5.554	3.030	-6.014	15.059	-8.720	-4.409
		3.311	3.259	3.383	-2.832	7.200	9.684
133	0	-3.820	0.784767	1.955	-2.259	-6.911	-12.293
		2.720	4.264	-0.926029	7.791	8.397	11.299
133	1.700	-3.652	0.643169	-0.631544	1.975	-5.789	-11.149
		4.839	6.286	3.185	0.841178	10.746	21.128
134	0	-3.168	0.846266	2.146	-2.691	-6.295	-10.610
		7.252	2.377	-0.780963	5.400	13.628	23.882
134	1.700	-3.102	0.675867	-0.454032	1.555	-4.825	-9.258
		9.147	4.658	2.506	0.646452	16.475	33.268
135	0	-2.875	0.645879	3.439	-5.097	-5.679	-6.357
		11.077	1.574	1.441	0.188853	17.143	36.353
135	1.700	-1.691	0.252009	-0.607907	1.310	-4.067	-7.810
		10.906	2.058	0.823992	0.267190	18.866	38.999
136	0	-2.566	0.482928	4.170	-6.560	-5.400	-4.149
		11.030	-1.928	-1.453	0.949935	18.908	37.681
136	1.700	-1.504	0.230528	-0.559162	1.193	-3.701	-7.092
		11.077	-1.574	-1.441	-0.188845	17.143	36.353
137	0	-3.284	0.246161	3.446	-5.654	-5.477	-5.435
		9.186	-4.686	-2.561	-0.583482	16.559	33.369
137	1.700	-1.324	0.206979	-0.497058	1.044	-3.337	-6.435
		7.252	-2.376	0.781076	-5.400	13.628	23.882
138	0	-3.512	-0.403993	3.906	-7.302	-5.724	-4.529
		4.858	-6.315	-3.240	-0.779470	10.802	21.168

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
138	1.700	-1.302	-0.894875	-1.022	0.645462	-3.331	-6.410
		2.719	-4.264	0.925947	-7.791	8.397	11.299
139	0	-5.695	-3.046	5.974	-15.024	-8.862	-4.770
		0.744306	-5.597	-4.978	2.990	4.956	4.883
139	1.700	-1.150	-5.700	-6.968	4.295	-8.067	-10.959
		-2.270	-0.279275	5.155	-9.478	4.420	0.341735
140	0	-9.440	-0.661002	8.233	-15.979	-15.887	-15.574
		1.156	-1.753	-3.444	5.098	3.376	0.856471
140	1.700	-6.938	-3.575	-3.530	0.861298	-12.740	-23.345
		-1.008	0.491135	3.383	-5.385	3.442	2.067
141	0	-9.436	1.486	11.400	-14.148	-16.062	-17.624
		0.518556	-0.898775	-5.433	6.851	2.162	-2.262
141	1.275	-7.672	-1.110	-3.257	3.768	-13.448	-23.496
		-0.916425	1.708	4.619	-5.334	3.409	2.220
142	0	-8.121	1.283	10.106	-12.333	-13.786	-15.590
		1.055	1.692	-2.767	5.836	1.675	-2.254
142	1.275	-6.612	0.406268	-1.439	3.200	-10.884	-21.248
		-0.158249	2.771	4.380	-4.001	4.641	5.475
143	0	-7.027	0.931713	10.021	-12.847	-12.885	-14.213
		2.459	2.788	-2.184	5.867	3.788	1.939
143	1.275	-3.491	1.029	-4.162	6.929	-9.302	-14.512
		-0.829670	2.879	7.622	-8.302	6.856	5.622
144	0	-5.989	1.198	10.266	-13.172	-12.163	-12.720
		3.650	2.133	-2.516	5.613	5.968	6.675
144	1.275	-2.972	1.191	-3.919	6.494	-8.210	-12.323
		0.822905	2.256	7.287	-8.487	8.643	9.416
145	0	-5.000	1.276	10.414	-13.418	-11.384	-10.949
		4.379	1.240	-2.981	5.508	7.541	10.192
145	1.275	-2.494	1.167	-3.777	6.214	-7.218	-10.232
		2.013	1.416	6.827	-8.573	9.675	11.763

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
146	0	-4.068	1.306	10.522	-13.605	-10.595	-9.136
		4.647	0.304318	-3.534	5.568	8.491	12.214
146	1.275	-2.038	1.118	-3.674	6.011	-6.273	-8.235
		2.721	0.531442	6.278	-8.506	9.973	12.613
147	0	-3.176	1.351	10.621	-13.757	-9.814	-7.324
		4.469	-0.664850	-4.194	5.814	8.845	12.717
147	1.275	-1.590	1.084	-3.575	5.812	-5.348	-6.294
		2.449	-0.138470	6.561	-9.363	9.572	10.884
148	0	-2.286	1.459	10.732	-13.855	-9.048	-5.460
		3.838	-1.728	-5.011	6.301	8.648	11.655
148	1.275	-1.154	1.087	-3.444	5.535	-4.420	-4.366
		1.406	-0.362304	8.192	-11.645	8.874	6.844
149	0	-0.243861	0.806101	13.477	-17.698	-8.545	-0.100959
		1.623	-2.060	-8.691	11.014	8.239	5.556
149	1.275	0.789305	-1.012	-9.510	12.214	-4.507	1.237
		-0.243861	0.806101	13.477	-17.698	8.637	0.926780
150	0	0.353113	-0.067111	15.320	-14.987	-8.532	0.789746
		0.398024	-1.769	-11.714	10.153	7.976	2.274
150	1.275	0.398024	-1.769	-13.410	11.913	-8.040	0.017986
		0.353113	-0.067111	15.320	-14.987	11.000	0.704182
151	0	6.889	1.417	37.400	-15.490	-30.445	-0.910782
		0.016003	0.439279	-10.047	6.530	8.823	-0.621368
151	1.250	-0.899800	-0.083573	-7.610	4.034	-3.921	-0.170931
		5.829	1.665	28.100	-9.699	20.461	0.846165
152	0	-2.084	3.135	2.589	-20.631	-5.699	-2.308
		-1.154	2.508	4.406	4.336	2.881	-2.419
152	1.250	-2.223	2.948	1.961	-15.901	-2.528	1.357
		-1.015	2.695	5.035	-0.393918	8.453	0.970639
153	0	-1.023	0.442177	-0.797832	-16.442	-1.533	0.314144

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
		-3.677	0.030624	-6.113	2.279	6.462	-0.154845
153	1.250	-1.864	3.176	-2.156	-18.526	-4.129	2.014
		-2.127	0.536973	2.382	-2.161	4.660	0.356735
154	0	-4.822	1.524	-4.355	-13.616	-3.159	-0.658721
		-1.652	-1.145	-2.917	0.831344	4.414	1.069
154	1.250	-4.819	1.529	-4.358	-12.636	-8.604	1.208
		-1.316	-0.397387	1.254	-2.139	2.734	-0.027797
155	0	-5.435	-0.337424	-4.824	-6.832	-4.367	0.540975
		0.027382	-0.718991	0.057277	0.076473	0.891093	0.601975
155	1.250	-5.435	-0.337424	-4.824	-6.832	-10.397	0.119212
		-2.203	0.086357	1.541	-0.711300	2.077	0.079041
156	0	-4.518	-2.195	-4.852	-1.362	-3.921	1.784
		-0.051994	-0.657738	0.254266	-0.778013	0.462331	0.542302
156	1.250	-4.518	-2.195	-4.852	-1.362	-9.985	-0.959345
		-1.841	-1.057	1.318	-0.629546	1.596	-0.447947
157	0	-1.501	-3.716	-3.285	2.443	-2.875	2.947
		0.044294	-0.639728	0.132411	-0.509562	0.248652	0.505150
157	1.250	-1.501	-3.716	-3.285	2.443	-6.981	-1.698
		-0.974723	-1.864	0.423242	-0.769827	0.606314	-0.819886
158	0	-1.635	-1.051	-3.931	-13.087	-3.902	1.122
		0.092307	-0.626891	0.045874	-0.378851	0.119130	0.490750
158	1.250	-1.635	-1.051	-3.931	-13.087	-8.815	-0.191562
		0.092307	-0.626891	0.045874	-0.378851	0.176470	-0.292833
159	0	0.272860	-1.414	-4.380	-13.824	-4.947	1.541
		0.188356	-0.593186	-0.052118	-0.339545	0.084685	0.466971
159	1.250	-2.457	-2.621	-6.256	-9.562	-12.733	-0.773843
		-1.045	-0.733037	0.653639	-0.938703	0.383737	-0.300243
160	0	-0.311442	-1.812	-5.075	-10.780	-7.397	1.962
		0.915229	0.359564	-0.785800	-0.029851	0.514610	-0.270941
160	1.250	-0.498779	-3.058	-8.456	-6.224	-13.884	-1.005

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
		-0.277566	-1.258	0.248192	-0.369851	0.611757	-0.534065
161	0	-0.288954	2.132	-4.377	-16.196	-3.083	-1.052
		0.029946	-0.602072	-11.120	4.207	3.454	0.255827
161	1.250	1.298	-1.639	-8.027	3.770	-11.654	-0.754745
		0.187202	-0.029367	0.849750	-1.072	2.215	0.056176
162	0	-1.893	3.933	-10.953	1.589	-5.097	-4.126
		1.403	2.536	-0.804473	1.002	0.339965	-2.617
162	1.250	-1.792	4.028	-11.028	0.494370	-18.866	0.930638
		-0.692752	1.584	0.573619	2.452	0.676313	0.095673
163	0	-3.058	2.116	-7.037	6.563	-5.798	-2.323
		-0.026007	-0.124515	0.018069	1.125	0.022408	0.000677
163	1.250	-3.020	2.291	-7.053	7.837	-14.613	0.230704
		-1.252	0.039575	0.857587	0.228231	0.472578	0.014778
164	0	-0.255927	1.649	-3.135	8.043	-3.807	-2.316
		-0.011360	-0.298548	0.003830	-0.121243	0.008016	0.302622
164	1.250	-0.346809	4.763	-3.326	-9.922	-7.796	2.162
		-0.605201	2.599	0.085717	0.429978	0.056830	0.594680
165	0	-4.888	3.448	-6.631	-8.262	-5.151	-2.957
		0	0	0	0	0	0
165	1.250	-4.888	3.448	-6.631	-8.262	-13.439	1.352
		-1.933	2.020	1.308	0.509371	1.310	0.420298
166	0	-6.652	-0.020216	-7.470	-0.071273	-6.206	0.027309
		0	0	0	0	0	0
166	1.250	-6.652	-0.020216	-7.470	-0.071273	-15.543	0.002039
		-2.579	-6.72E-07	1.652	8.95E-08	1.699	-1.98E-07
167	0	-4.888	-3.488	-6.633	8.118	-5.154	3.013
		1.17E-05	0.139441	0.000368	0.015113	0.001000	-0.135788
167	1.250	-4.888	-3.488	-6.633	8.118	-13.445	-1.348
		-1.933	-2.020	1.308	-0.509371	1.310	-0.420298

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
168	0	-0.345165	-4.784	-3.330	9.844	-3.645	3.821
		-0.023233	0.661231	0.013503	0.105458	0.030035	-0.652451
168	1.250	-0.345165	-4.784	-3.330	9.844	-7.807	-2.159
		-0.604049	-2.619	0.085625	-0.501047	0.055541	-0.592702
169	0	1.028	-5.007	-2.849	9.576	-3.903	3.965
		-0.103992	0.488121	0.062402	-1.100	0.055492	-0.360863
169	1.250	1.066	-5.182	-2.865	8.302	-7.483	-2.202
		-0.142073	0.662677	0.078141	0.173832	0.151803	0.158181
170	0	3.539	-4.637	-4.546	6.635	-2.222	3.985
		1.403	-2.536	-0.804649	-1.002	0.340076	2.617
170	1.250	3.630	-4.714	-4.616	7.802	-7.980	-1.955
		-0.307137	0.392515	0.192215	-1.040	0.159693	0.215543
171	0	1.083	-0.411577	0.040845	10.695	-0.784528	-0.344232
		3.079	-0.381573	-2.548	-6.205	1.503	0.712735
171	1.250	2.343	-0.059071	-2.498	-1.003	-3.054	0.061863
		1.445	-0.789093	-0.316781	1.363	0.444904	-0.412964
172	0	2.824	1.733	-3.771	11.233	-1.207	-1.947
		0.971498	0.055249	-0.632293	-0.218233	0.155914	-0.078053
172	1.250	2.824	1.733	-3.771	11.233	-5.921	0.218272
		-0.159012	-0.055286	0.151648	-1.157	0.202878	0.034786
173	0	0.631029	2.431	-2.257	9.295	-2.550	-2.364
		-0.044716	-0.093440	0.041553	-0.100957	0.065903	0.083548
173	1.250	0.631029	2.431	-2.257	9.295	-5.371	0.674413
		-0.044716	-0.093440	0.041553	-0.100957	0.117843	-0.033248
174	0	-0.635638	2.188	-1.565	8.403	-2.443	-2.050
		0.007698	-0.101164	0.019604	-0.050760	0.044050	0.080291
174	1.250	-0.635638	2.188	-1.565	8.403	-4.400	0.684608
		0.007698	-0.101164	0.019604	-0.050760	0.068553	-0.046159
175	0	-0.990056	1.733	-1.326	7.972	-2.103	-1.639
		0.012726	-0.102755	0.014179	-0.023991	0.028675	0.078014

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
175	1.250	-0.990056	1.733	-1.326	7.972	-3.760	0.527606
		0.012726	-0.102755	0.014179	-0.023991	0.046398	-0.050424
176	0	-1.006	1.275	-1.194	7.817	-1.844	-1.274
		0.008968	-0.104471	0.012172	-0.004486	0.023601	0.078136
176	1.250	-1.006	1.275	-1.194	7.817	-3.337	0.319364
		0.008968	-0.104471	0.012172	-0.004486	0.038815	-0.052448
177	0	-0.991127	0.828062	-1.084	7.842	-1.643	-0.941310
		0.005890	-0.106920	0.013704	0.014290	0.025934	0.079035
177	1.250	-0.991127	0.828062	-1.084	7.842	-2.997	0.093726
		0.005890	-0.106920	0.013704	0.014290	0.043064	-0.054610
178	0	-1.032	0.376011	-0.957685	9.010	-1.469	-0.652318
		0.003044	-0.116608	0.017035	-0.941895	0.037922	0.125272
178	1.250	-1.030	0.370809	-0.960357	8.030	-2.667	-0.144503
		0.000847	-0.111406	0.019706	0.038048	0.060041	-0.058303
179	0	-1.050	-0.254421	-0.742374	14.025	-1.442	-0.356892
		0.026036	-0.016812	-0.014630	-5.542	0.126524	0.236467
179	1.250	-0.654661	0.513833	-0.842390	12.932	-2.436	-0.259402
		-0.368893	-0.785066	0.085386	-4.449	0.174936	-0.200051
180	0	0.024221	-0.204499	1.433	18.389	-4.120	-0.468194
		-0.218064	-0.766960	-0.459085	-9.070	1.679	0.991605
180	1.250	-0.114674	-0.017364	0.804546	13.660	-2.393	-0.469695
		-0.079169	-0.954095	0.169165	-4.341	1.170	-0.221170
181	0	0.527087	0.431396	19.193	12.023	-17.338	-0.788104
		0.222149	-0.487741	-9.215	-6.239	8.417	0.657588
181	1.250	-0.902663	0.084342	-7.674	-4.071	-3.949	0.172853
		2.476	-0.498369	16.026	8.126	7.818	-0.437751
182	0	0.318493	0.007767	19.907	-14.887	-11.543	-0.004243
		1.297	1.847	-5.999	5.476	16.583	-1.279
182	1.250	-0.123908	0.260787	-9.872	7.561	-6.456	0.151213
		3.092	1.696	26.082	-19.102	22.778	0.925286

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
183	0	0.070556	-0.361484	2.901	-16.773	-3.019	0.281981
		-0.314919	3.363	0.103273	7.316	10.308	-2.307
183	1.250	-0.148161	-1.163	-0.609099	1.264	-2.230	-0.679907
		-0.119881	4.424	2.441	-4.200	12.737	2.524
184	0	-0.302843	0.158082	0.207686	-7.793	-2.130	-0.089229
		-0.737036	1.220	-0.263054	-0.459917	6.070	-0.794895
184	1.250	-2.211	1.974	-5.162	-3.592	-4.593	1.158
		-0.730099	1.215	-0.229254	-1.356	5.773	0.730101
185	0	-2.400	2.302	-5.283	-9.963	-3.354	-1.549
		-0.516932	-0.071799	-0.143725	-0.726825	3.580	0.075894
185	1.250	-2.400	2.302	-5.283	-9.963	-9.957	1.329
		-0.516932	-0.071799	-0.143725	-0.726825	3.400	-0.013850
186	0	-2.926	-0.416390	-6.102	-5.578	-4.834	0.291989
		-0.826251	0.168494	-0.833183	-0.296698	2.207	-0.102141
186	1.250	-2.926	-0.416390	-6.102	-5.578	-12.461	-0.228478
		-0.193323	-0.772349	0.164626	-0.492188	2.126	-0.443604
187	0	-2.258	-3.028	-5.472	-1.367	-5.420	2.053
		-0.679877	-1.379	-0.803051	-0.289012	1.603	0.907855
187	1.250	-2.258	-3.028	-5.472	-1.367	-12.260	-1.733
		-0.027251	-0.986354	0.094999	-0.321317	1.201	-0.587414
188	0	0.040766	-1.566	-1.788	-10.345	-5.713	0.988562
		-0.370884	-2.471	-0.151605	-0.221635	0.618784	1.617
188	1.250	-0.741857	-4.819	-3.503	1.545	-9.921	-2.814
		0.024794	-0.998120	0.045927	-0.217416	0.633320	-0.601527
189	0	-0.769034	-2.355	-3.724	-9.669	-7.378	1.491
		0.051717	-0.945919	0.030749	-0.169092	0.231220	0.611491
189	1.250	-0.769034	-2.355	-3.724	-9.669	-12.032	-1.453
		0.051717	-0.945919	0.030749	-0.169092	0.269655	-0.570861
190	0	-0.021190	-2.231	-3.141	-9.763	-9.978	1.434
		-0.000143	0.051336	-0.017540	-0.034945	0.083668	-0.034704

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
190	1.250	-1.364	-3.237	-5.982	-7.000	-17.226	-1.952
		-0.000143	0.051336	-0.017540	-0.034945	0.061744	0.029463
191	0	-0.578510	-1.610	-12.230	-8.686	-9.952	1.017
		-0.086913	-1.439	-4.716	-1.260	0.646347	0.943884
191	1.250	-0.979133	-3.201	-13.820	-4.719	-26.705	-1.894
		-0.017294	-0.004974	-0.034939	-0.001341	0.116077	-0.006797
192	0	-1.266	-3.295	-26.492	3.942	-1.556	2.209
		0.910571	1.310	-29.108	-2.425	5.547	-0.812211
192	1.250	-0.798539	0.145665	-44.684	-3.812	-55.191	0.132560
		-0.058923	-0.190927	0.901806	0.231750	0.894318	-0.130143
193	0	-1.660	4.542	-14.815	-0.611876	-13.274	-3.162
		-0.239321	1.724	-4.248	2.713	0.246651	-1.252
193	1.250	-1.634	4.739	-15.054	0.783807	-32.029	2.606
		-0.078870	-0.316642	0.411244	-0.216535	0.535796	-0.179427
194	0	-1.616	3.896	-5.554	5.172	-11.715	-2.667
		-0.035666	-0.422017	-0.004063	-0.108391	0.107728	0.294275
194	1.250	-1.616	3.896	-5.554	5.172	-18.657	2.202
		-0.035666	-0.422017	-0.004063	-0.108391	0.102649	-0.233225
195	0	0.115297	2.497	-2.533	7.013	-7.961	-1.720
		-0.009059	-0.453869	-0.001649	-0.092701	0.021642	0.314546
195	1.250	0.054988	7.199	-2.915	-10.165	-11.406	4.050
		-0.247056	3.627	0.051410	0.092832	0.023445	1.995
196	0	-2.469	4.346	-6.305	-7.474	-8.639	-3.053
		-0.742760	2.617	-0.908355	0.042230	1.126	-1.843
196	1.250	-2.469	4.346	-6.305	-7.474	-16.520	2.379
		0	0	0	0	0	0
197	0	-3.620	-0.031534	-8.153	-0.074304	-8.879	0.023233
		-0.983695	-1.14E-06	-1.141	-2.35E-07	1.486	7.87E-07
197	1.250	-3.620	-0.031534	-8.153	-0.074304	-19.070	-0.016184
		-0.983695	-1.14E-06	-1.141	-2.35E-07	0.060018	-6.37E-07

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
198	0	-2.469	-4.410	-6.306	7.325	-8.646	3.100
		-0.742760	-2.617	-0.908353	-0.042230	1.126	1.843
198	1.250	-2.469	-4.410	-6.306	7.325	-16.528	-2.412
		-0.000375	0.215113	0.000200	0.005139	0.002443	0.121269
199	0	0.057712	-7.232	-2.916	10.088	-7.779	4.974
		-0.018408	1.005	-0.002098	0.038022	0.074501	-0.692834
199	1.250	0.057712	-7.232	-2.916	10.088	-11.423	-4.066
		-0.018408	1.005	-0.002098	0.038022	0.071878	0.563080
200	0	0.984771	-7.709	-0.694224	9.742	-9.108	5.221
		-0.078158	0.934604	-0.009596	0.076071	0.255760	-0.648599
200	1.250	0.984771	-7.709	-0.694224	9.742	-9.976	-4.415
		-0.078158	0.934604	-0.009596	0.076071	0.243766	0.519609
201	0	1.829	-5.833	-6.991	8.485	-8.948	3.867
		-0.151722	0.501845	0.675007	-1.076	0.125743	-0.318876
201	1.250	1.855	-6.030	-7.231	7.089	-17.925	-3.514
		-0.177759	0.698339	0.914536	0.320074	1.208	0.398288
202	0	0.052105	1.334	-3.813	-0.238602	-0.580829	-0.856005
		1.433	-2.935	-23.524	3.496	3.196	1.818
202	1.250	1.785	-1.874	-31.566	10.499	-36.978	-1.314
		-0.137102	0.418114	2.051	-0.653956	2.043	0.287724
203	0	1.007	1.622	-5.238	8.858	-6.758	-1.136
		-0.039927	0.001744	-0.078281	-0.106897	0.365799	0.007903
203	1.250	1.007	1.622	-5.238	8.858	-13.305	0.891369
		-0.039927	0.001744	-0.078281	-0.106897	0.267951	0.010084
204	0	0.218937	3.045	-0.047096	7.298	-6.669	-2.051
		-0.000246	-0.124667	-0.040819	-0.030398	0.192002	0.084476
204	1.250	0.218937	3.045	-0.047096	7.298	-6.728	1.754
		-0.000246	-0.124667	-0.040819	-0.030398	0.140980	-0.071352
205	0	-0.298187	3.216	0.025029	6.853	-4.994	-2.127

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
		0.013502	-0.161067	0.003129	-0.017597	0.098453	0.104848
205	1.250	-0.298187	3.216	0.025029	6.853	-4.963	1.893
		0.013502	-0.161067	0.003129	-0.017597	0.102364	-0.096478
206	0	-0.449371	2.719	-0.079152	6.740	-3.982	-1.780
		0.012202	-0.164369	0.005196	-0.008844	0.064937	0.105690
206	1.250	-0.449371	2.719	-0.079152	6.740	-4.081	1.619
		0.012202	-0.164369	0.005196	-0.008844	0.071432	-0.099763
207	0	-0.440819	2.013	-0.070708	6.722	-3.370	-1.317
		0.009298	-0.161955	0.003807	-0.001392	0.054459	0.103924
207	1.250	-0.440819	2.013	-0.070708	6.722	-3.458	1.199
		0.009298	-0.161955	0.003807	-0.001392	0.059218	-0.098512
208	0	-0.418963	1.270	-0.040401	6.771	-2.881	-0.838964
		0.009152	-0.162297	0.003890	0.005820	0.060639	0.104038
208	1.250	-0.418963	1.270	-0.040401	6.771	-2.931	0.748697
		0.009152	-0.162297	0.003890	0.005820	0.065501	-0.098825
209	0	-0.413737	0.504002	0.028294	6.906	-2.371	-0.345009
		0.009961	-0.168328	0.005364	0.015185	0.085723	0.107519
209	1.250	-0.413737	0.504002	0.028294	6.906	-2.336	0.284968
		0.009961	-0.168328	0.005364	0.015185	0.092428	-0.102882
210	0	-0.333584	-0.268317	0.421560	8.075	-1.831	0.161519
		0.004510	-0.184886	-0.017480	-0.864650	0.144040	0.121006
210	1.250	-0.281726	0.535595	-0.351659	4.438	-1.816	0.330148
		-0.073121	-1.176	0.584545	-2.235	0.633899	-0.712140
211	0	0.070318	0.361465	2.901	16.773	-3.019	-0.281969
		-0.091284	-1.330	-0.894080	-9.163	1.777	0.912275
211	1.250	-0.149016	1.166	-0.619681	-1.315	-2.242	0.681895
		0.103482	-2.167	2.020	5.676	3.117	-1.264
212	0	0.206772	0.144459	17.238	12.981	-10.632	-0.095518
		0.241075	-0.673079	-8.852	-7.088	7.219	0.454282
212	1.250	-0.039639	-0.329348	-9.399	-7.325	-5.611	-0.188477

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
		0.206772	0.144459	17.238	12.981	10.914	0.085048
213	0	0.237683	0.085431	18.614	-14.190	-11.271	-0.039032
		-1.973	1.829	-14.439	10.075	22.243	-1.008
213	1.250	-0.568550	0.240432	-10.565	7.989	-6.503	0.174746
		-0.135309	1.888	19.273	-15.641	17.590	1.259
214	0	0.262173	-1.506	1.792	-7.836	-2.786	0.914963
		0.106344	4.520	-2.435	4.154	12.741	-2.585
214	1.250	-0.129105	0.466835	-1.722	10.205	-2.079	0.304920
		0.398688	2.799	-0.092856	-7.366	10.310	1.928
215	0	0.366605	0.126359	0.269633	-6.076	-1.915	-0.050236
		0.737744	1.209	0.232739	1.258	5.773	-0.725214
215	1.250	0.724135	4.186	-1.170	-8.668	-3.188	2.683
		0.737887	1.127	0.265084	0.410587	6.068	0.734811
216	0	0.070128	2.130	-1.564	-7.623	-5.306	-1.324
		0.523507	-0.074963	0.144164	0.629974	3.401	0.016343
216	1.250	0.070128	2.130	-1.564	-7.623	-7.262	1.338
		0.523507	-0.074963	0.144164	0.629974	3.581	-0.077357
217	0	-0.259227	-0.356659	-1.763	-4.721	-7.157	0.225174
		0.198555	-0.773582	-0.164834	0.395833	2.126	0.444834
217	1.250	-0.259227	-0.356659	-1.763	-4.721	-9.361	-0.220631
		0.826280	0.169399	0.833033	0.200593	2.207	0.103539
218	0	0.000475	-2.765	-1.503	-1.704	-7.700	1.723
		0.034019	-0.985594	-0.095159	0.225252	1.202	0.587596
218	1.250	0.000475	-2.765	-1.503	-1.704	-9.578	-1.734
		0.687829	-1.376	0.803002	0.193163	1.603	-0.905022
219	0	0.526246	-4.572	-1.033	0.628269	-7.355	2.810
		-0.011877	-0.994137	-0.045978	0.121617	0.633618	0.599893
219	1.250	0.526246	-4.572	-1.033	0.628269	-8.646	-2.905
		0.393197	-2.464	0.151527	0.126122	0.619058	-1.611

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
220	0	0.200502	-2.611	-1.082	-6.974	-9.049	1.532
		-0.027367	-0.934552	-0.030139	0.073589	0.269950	0.564436
220	1.250	0.200502	-2.611	-1.082	-6.974	-10.402	-1.731
		-0.027367	-0.934552	-0.030139	0.073589	0.232277	-0.603708
221	0	-0.821773	-3.383	-0.804784	-3.830	-12.306	1.980
		0.021713	0.068018	0.019483	-0.061149	0.062050	-0.040002
221	1.250	-0.821773	-3.383	-0.804784	-3.830	-13.312	-2.248
		0.021713	0.068018	0.019483	-0.061149	0.086403	0.045016
222	0	-1.630	-3.135	7.258	1.087	-20.696	1.887
		0.046800	0.041502	0.038890	-0.095542	0.117735	-0.025213
222	1.250	-1.630	-3.135	7.258	1.087	-11.625	-2.031
		0.150007	-1.338	4.721	1.164	0.654989	-0.888034
223	0	-1.706	-0.101808	27.876	-1.948	-38.475	0.126795
		0.055376	0.013696	-0.924256	-0.354271	0.922866	-0.023183
223	1.250	-1.087	-0.790583	12.780	-4.515	-4.675	-0.522828
		-0.632690	0.683281	29.098	2.426	5.551	0.503856
224	0	-2.064	4.672	6.460	-6.722	-24.428	-2.473
		0.046055	-0.265831	-0.406488	0.071054	0.537211	0.141939
224	1.250	-2.046	4.572	6.197	-5.390	-16.409	3.272
		0.263393	1.606	4.278	-2.796	0.250493	1.183
225	0	-0.496408	4.226	-1.429	1.319	-13.609	-2.218
		0.013557	-0.409882	0.005120	-0.037198	0.102989	0.227718
225	1.250	-0.496408	4.226	-1.429	1.319	-15.394	3.065
		0.013557	-0.409882	0.005120	-0.037198	0.109389	-0.284614
226	0	1.035	7.222	-0.817288	-9.065	-9.463	-3.975
		0.271549	3.619	-0.051378	-0.238900	0.023837	-1.988
226	1.250	1.035	7.222	-0.817288	-9.065	-10.484	5.052
		-0.000887	-0.450554	0.001871	-0.052870	0.021988	-0.308805
227	0	0.068734	4.063	-1.539	-5.773	-11.190	-2.275
		0	0	0	0	0	0

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
227	1.250	0.068734	4.063	-1.539	-5.773	-13.114	2.803
		0.751106	2.615	0.908100	-0.042313	1.126	1.839
228	0	-0.461503	-0.031615	-2.037	-0.072122	-12.025	0.019464
		0.984320	-1.14E-06	1.141	2.35E-07	0.060237	6.39E-07
228	1.250	-0.461503	-0.031615	-2.037	-0.072122	-14.572	-0.020053
		0.984320	-1.14E-06	1.141	2.35E-07	1.486	-7.85E-07
229	0	0.069685	-4.127	-1.539	5.629	-11.198	2.315
		-0.000515	0.214681	-0.000177	-0.005435	0.002427	-0.121187
229	1.250	0.069685	-4.127	-1.539	5.629	-13.122	-2.843
		0.751106	-2.615	0.908098	0.042313	1.126	-1.839
230	0	1.035	-7.255	-0.816436	8.995	-9.482	3.995
		-0.001146	0.997979	0.002157	-0.039537	0.071713	-0.560129
230	1.250	1.035	-7.255	-0.816436	8.995	-10.502	-5.073
		-0.015014	1.066	0.005070	2.171	0.076364	0.687340
231	0	0.693806	-7.974	-0.037651	10.514	-9.550	4.231
		0.016091	0.976426	0.028077	2.136	0.247041	-0.583277
231	1.250	0.693806	-7.974	-0.037651	10.514	-9.597	-5.736
		0.016091	0.976426	0.028077	2.136	0.282136	0.637206
232	0	-0.525929	-5.958	8.133	13.221	-17.543	3.028
		0.113966	0.657833	-0.832769	1.888	1.224	-0.388069
232	1.250	-0.511612	-5.878	7.894	11.825	-7.438	-4.337
		-0.011340	-0.116997	0.696970	7.850	0.368128	-0.213609
233	0	-1.513	-0.957219	28.939	-2.195	-33.148	0.487190
		0.203986	0.017185	-2.403	2.501	2.496	0.016308
233	1.250	0.118710	-0.035917	-2.050	0.653709	-0.519560	0.010255
		-1.513	-0.957219	28.939	-2.195	3.023	-0.709286
234	0	-1.096	1.609	5.824	-2.464	-13.177	-0.945716
		0.130611	-0.026767	0.139686	1.569	0.296161	0.005966
234	1.250	-1.096	1.609	5.824	-2.464	-5.897	1.065
		0.129376	0.106974	0.205698	3.305	0.477500	0.044632

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
235	0	-0.452507	3.176	0.578886	5.418	-6.962	-1.915
		0.042001	-0.086994	0.069723	1.483	0.146714	0.042782
235	1.250	-0.401624	2.896	0.349482	-0.915088	-6.457	1.914
		0.042001	-0.086994	0.069723	1.483	0.233863	-0.065956
236	0	0.003516	3.300	0.166771	5.960	-5.245	-1.998
		0.001948	-0.100143	0.004719	1.471	0.105738	0.053714
236	1.250	0.111332	3.013	0.100593	-0.391413	-5.079	1.969
		0.001948	-0.100143	0.004719	1.471	0.111636	-0.071461
237	0	0.227109	2.768	0.165309	6.178	-4.389	-1.691
		-0.006414	-0.095102	-0.004101	1.464	0.073618	0.052404
237	1.250	0.227109	2.768	0.165309	6.178	-4.182	1.769
		-0.006414	-0.095102	-0.004101	1.464	0.068492	-0.066468
238	0	0.302558	2.030	0.126884	6.295	-3.772	-1.250
		-0.003658	-0.088941	-0.004882	1.459	0.061578	0.049298
238	1.250	0.302558	2.030	0.126884	6.295	-3.614	1.288
		-0.003658	-0.088941	-0.004882	1.459	0.055476	-0.061874
239	0	0.362232	0.995700	0.097612	-0.046443	-3.236	-0.602625
		0.002661	-0.084643	-0.005124	1.455	0.070027	0.046934
239	1.250	0.362232	0.995700	0.097612	-0.046443	-3.114	0.641950
		0.002661	-0.084643	-0.005124	1.455	0.063622	-0.058866
240	0	0.374785	0.223524	0.067037	-0.072378	-2.629	-0.134013
		0.012876	-0.081350	0.000522	1.452	0.100399	0.044901
240	1.250	0.374785	0.223524	0.067037	-0.072378	-2.546	0.145381
		0.012876	-0.081350	0.000522	1.452	0.101051	-0.056783
241	0	0.383709	-0.237491	0.159884	6.278	-1.694	0.116783
		0.017642	-0.158504	-0.015781	-0.031383	0.154070	0.093488
241	1.250	0.347964	-0.621727	-0.095600	-1.104	-1.771	-0.408631
		0.030883	0.171180	0.136956	4.158	0.221475	0.098095
242	0	0.262363	1.506	1.792	7.836	-2.786	-0.914964
		-0.103030	-2.463	-1.239	-1.854	2.573	1.418

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
242	1.250	0.037187	0.719039	-0.563496	-4.748	-1.920	0.504080
		0.084667	-1.712	0.564229	7.532	1.851	-1.204
243	0	0.409349	0.077913	16.552	12.558	-10.701	-0.049817
		-0.936534	-0.646106	-11.069	-8.099	8.796	0.353064
243	1.250	-0.606674	-0.308767	-10.521	-7.860	-6.120	-0.220781
		0.409349	0.077913	16.552	12.558	9.988	0.047571
244	0	1.703	-0.146447	14.523	-8.504	-6.399	0.363777
		-6.251	1.842	-28.067	9.668	20.458	-0.917817
244	1.250	-5.512	1.349	-30.505	12.164	-17.856	0.860963
		-0.335177	0.832419	17.479	-12.502	16.969	1.198
245	0	0.140083	0.213173	-0.120807	6.601	-1.990	-0.278343
		1.102	2.541	-5.030	0.339928	8.453	-0.909870
245	1.250	-0.108985	0.621450	-0.745524	11.328	-2.859	0.155633
		0.686491	0.141749	1.471	-19.774	3.565	0.876276
246	0	2.001	2.630	0.930080	-6.715	-2.743	-1.000
		2.126	0.477661	-2.381	2.107	4.660	-0.325999
246	1.250	2.031	2.956	0.885616	-2.085	-1.632	2.350
		2.096	0.152060	-2.337	-2.523	1.735	0.208789
247	0	1.836	1.354	1.805	-6.654	-5.391	-0.418712
		1.319	-0.403111	-1.254	2.032	2.735	0.035357
247	1.250	1.845	1.401	1.801	-5.728	-3.136	1.271
		1.310	-0.450070	-1.251	1.106	1.168	-0.465732
248	0	1.676	-0.212490	2.254	-4.552	-6.790	0.286616
		2.202	0.087396	-1.541	0.604710	2.078	-0.074887
248	1.250	1.676	-0.212490	2.254	-4.552	-3.972	0.021013
		0.428447	-0.651411	-0.475145	1.156	0.808994	-0.588180
249	0	1.688	-1.805	2.326	-2.075	-7.056	0.987758
		1.845	-1.053	-1.318	0.522944	1.596	0.451139
249	1.250	1.688	-1.805	2.326	-2.075	-4.149	-1.269
		0.055945	-0.656970	-0.254393	0.671237	0.462368	-0.537158

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
250	0	1.645	-3.087	2.174	0.183352	-6.628	1.517
		0.988220	-1.853	-0.423544	0.663265	0.606764	0.819106
250	1.250	1.645	-3.087	2.174	0.183352	-3.911	-2.341
		-0.036564	-0.633855	-0.132605	0.402804	0.248768	-0.496174
251	0	1.113	-1.807	2.621	-5.920	-7.727	1.069
		-0.079254	-0.611260	-0.046367	0.271958	0.177480	0.288964
251	1.250	1.113	-1.807	2.621	-5.920	-4.450	-1.190
		-0.079254	-0.611260	-0.046367	0.271958	0.119523	-0.475081
252	0	-0.386462	-2.769	3.705	-2.745	-9.386	1.330
		1.058	-0.692272	-0.654158	0.831650	0.386070	0.280979
252	1.250	-0.386462	-2.769	3.705	-2.745	-4.755	-2.130
		-0.177132	-0.558610	0.051693	0.231798	0.086101	-0.439391
253	0	-2.585	-2.791	4.796	0.379601	-9.112	1.217
		0.295494	-1.195	-0.254943	1.217	0.616019	0.462473
253	1.250	-2.557	-2.734	4.786	1.275	-3.122	-2.266
		-0.908559	0.276209	0.787515	-0.017666	0.514683	0.212300
254	0	-3.580	0.089504	4.547	-3.764	-6.959	0.230729
		-0.170788	0.032727	-0.848108	1.005	2.211	-0.070170
254	1.250	-2.163	0.649523	2.328	3.711	-1.848	0.335718
		-2.067	0.053485	3.148	-14.233	1.795	0.979855
255	0	-2.829	4.129	5.689	-4.867	-12.270	-0.412240
		0.683345	1.506	-0.569261	-2.523	0.675762	-0.058438
255	1.250	-2.740	4.015	5.619	-6.032	-5.170	4.755
	-	-1.397	2.377	0.805523	-0.999751	-0.340734	2.498
256	0	0.320659	3.111	3.694	-0.929779	-10.984	-0.579567
		1.255	0.033561	-0.857657	-0.364552	0.474111	0.002906
256	1.250	0.320659	3.111	3.694	-0.929779	-6.367	3.309
		0.052229	-0.282603	-0.033598	0.012940	0.022261	-0.281940
257	0	1.878	5.003	2.528	-7.856	-8.189	-0.549233

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
		0.621116	2.586	-0.086254	-0.565762	0.057513	-0.575957
257	1.250	1.878	5.003	2.528	-7.856	-5.029	5.705
		0.004716	-0.293389	-0.003576	-0.014594	0.008467	-0.282701
258	0	1.815	2.795	2.959	-4.541	-9.639	-0.322878
		1.938	2.017	-1.308	-0.509311	1.310	-0.420249
258	1.250	1.815	2.795	2.959	-4.541	-5.940	3.170
		0	0	0	0	0	0
259	0	1.670	-0.020545	3.203	-0.065373	-10.421	0.013250
		2.579	-6.75E-07	-1.651	-8.93E-08	1.699	2.00E-07
259	1.250	1.670	-0.020545	3.203	-0.065373	-6.417	-0.012430
		0	0	0	0	0	0
260	0	1.816	-2.836	2.961	4.411	-9.644	0.349004
		1.938	-2.017	-1.308	0.509311	1.310	0.420248
260	1.250	1.816	-2.836	2.961	4.411	-5.943	-3.195
		-0.000514	0.138941	-0.000347	-0.015371	0.001018	0.135230
261	0	1.878	-5.024	2.531	7.797	-8.201	0.561325
		0.621268	-2.606	-0.086222	0.500300	0.055936	0.588835
261	1.250	1.878	-5.024	2.531	7.797	-5.038	-5.719
		-0.001286	0.688971	-0.011625	1.951	0.033819	0.452241
262	0	0.509282	-5.884	2.747	10.178	-7.639	0.393383
		0.102456	0.662758	-0.076920	1.877	0.168210	-0.375741
262	1.250	0.543505	-5.774	2.731	8.906	-4.206	-6.713
		0.068233	0.552801	-0.061244	3.150	0.073443	0.204385
263	0	-2.576	-4.958	4.033	10.445	-7.021	0.018573
		0.216630	0.286206	-0.216924	5.588	0.277379	-0.654961
263	1.250	-1.411	-2.059	3.145	1.775	-2.114	-2.347
		-1.397	-2.377	0.805699	0.999739	0.340845	-2.498
264	0	-2.215	0.070695	2.886	4.926	-3.251	-0.388149
		-1.467	-0.712327	0.318263	-1.367	0.443751	0.431124
264	1.250	-0.854477	-0.636992	0.271616	-6.562	-0.592357	-0.139374

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
		-2.149	0.004461	3.167	14.172	1.832	-0.927088
265	0	-2.721	1.722	3.473	-3.729	-5.376	-0.560180
		0.141038	0.096202	-0.198073	4.764	0.288326	-0.260782
265	1.250	-1.725	1.507	2.783	-2.905	-1.180	1.355
		-0.758993	0.415594	0.375369	7.526	0.215587	0.002717
266	0	-0.748749	2.409	2.254	-1.988	-5.234	-0.981018
		0.051603	-0.080809	-0.047758	1.735	0.144766	-0.038759
266	1.250	-0.748749	2.409	2.254	-1.988	-2.417	2.030
		0.019666	0.041307	-0.039094	3.684	0.085876	-0.128716
267	0	0.485607	2.119	1.616	-1.132	-4.448	-0.950206
		-0.004984	-0.065764	-0.020329	1.673	0.078349	-0.037814
267	1.250	0.485607	2.119	1.616	-1.132	-2.428	1.699
		-0.004984	-0.065764	-0.020329	1.673	0.052939	-0.120016
268	0	0.889240	1.616	1.386	-0.658737	-3.883	-0.765846
		-0.011896	-0.057858	-0.014461	1.643	0.049898	-0.038302
268	1.250	0.889240	1.616	1.386	-0.658737	-2.151	1.254
		-0.011896	-0.057858	-0.014461	1.643	0.031823	-0.110621
269	0	0.907640	1.303	1.262	6.654	-3.488	-0.922204
		-0.006752	-0.055118	-0.012469	1.623	0.040895	-0.038448
269	1.250	0.948319	1.116	1.258	-0.432366	-1.914	0.855306
		-0.006752	-0.055118	-0.012469	1.623	0.025309	-0.107342
270	0	0.947600	0.641187	1.147	-0.379475	-3.140	-0.304786
		-0.000804	-0.052017	-0.014359	1.604	0.048182	-0.039307
270	1.250	0.947600	0.641187	1.147	-0.379475	-1.706	0.496666
		-0.000804	-0.052017	-0.014359	1.604	0.030234	-0.104326
271	0	0.980979	0.176689	1.017	-0.498156	-2.745	-0.066737
		0.005948	-0.043972	-0.022050	1.578	0.078887	-0.042753
271	1.250	0.989927	0.130699	1.014	-1.477	-1.477	0.159779
		-0.019827	0.099900	-0.012582	4.540	0.058353	-0.111394

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
272	0	0.983973	-0.357561	0.820598	-1.826	-2.230	0.230907
		-0.002411	0.132843	-0.031379	4.500	0.212666	-0.246995
272	1.250	1.014	-0.683162	0.776143	-6.457	-1.256	-0.278290
		-0.032420	0.458443	0.013075	9.130	0.225404	-0.018685
273	0	0.148602	-0.312155	-0.213672	-6.530	-1.817	0.313886
		0.323981	-0.415720	0.441877	8.401	0.993039	-0.151058
273	1.250	-0.100465	-0.720433	-0.838367	-11.256	-2.802	-0.243813
		0.875489	0.596985	1.843	17.170	2.711	-0.137636
274	0	1.703	0.146451	14.523	8.504	-6.399	-0.363780
		-3.041	-0.789760	-12.052	-5.544	6.383	0.445927
274	1.250	-2.302	-0.296866	-14.490	-8.040	-11.912	-0.018198
		0.963531	-0.346443	16.962	11.000	14.986	-0.703760
1601	0	-64.783	-0.003750	2.181	-0.038534	-7.441	-0.012270
		-80.505	5.73E-05	-3.147	0.045174	11.535	-0.000410
1601	11.000	-80.505	5.73E-05	-3.147	0.045174	-23.082	0.000221
		-64.783	-0.003750	2.181	-0.038534	16.553	-0.053521
1602	0	-80.505	5.73E-05	3.147	-0.045174	-11.535	-0.000410
		-30.251	-0.026157	-1.758	0.018456	6.998	0.058763
1602	11.000	-30.251	-0.026157	-1.758	0.018456	-12.340	-0.228958
		-80.505	5.73E-05	3.147	-0.045174	23.082	0.000221

ENVOLVENTE DE REACCIONES EN APOYOS:
(1. línea/2. línea: MIN./MAX. de cada componente)

NUDOS	FX [t]	FY [t]	FZ [t]	MX [tm]	MY [tm]	MZ [tm]
1	-0.140084	-0.538303	-19.136			
	0.194178	1.148	77.924			
5	-0.133082	-0.537941	-35.099			
	0.210104	1.147	52.784			
151	-0.144906	-0.533815	-17.726			
	0.199077	1.031	37.413			
155	-0.134123	-0.533473	-32.281			
	0.206907	1.031	27.900			
601	-2.181	-2.711	-3.582	-1.884	-7.442	-0.239678
	3.147	1.083	138.678	5.082	11.536	0.114754
602	-3.147	-2.063	-8.046	-3.292	-11.536	-0.266953
	1.758	1.061	118.802	2.840	6.998	0.124358

ENVOLVENTE: BB '' Ejec. "0001"

Grupo	Espe.	Hipótesis	Factor	Etapa	Titulo
A	PERM.	1	1.350		Peso propio
B	O	1	1.000		Peso propio
C	MAS PER	2	1.350		Cargas muertas
D	O	2	1.000		Cargas muertas
E	MAS	3	1.500		Sobrecarga de uso1
F	MAS	4	1.500		Sobrecarga de uso2
G	MAS	5	1.500		Sobrecarga de uso3
H	MAS	6	1.500		Sobrecarga de uso4
I	MAS	7	1.500		Sobrecarga de uso5
J	MAS	8	1.500		Sobrecarga de uso6
K	MAS	9	1.500		Carro1
L	O	10	1.500		Carro2
M	O	11	1.500		Carro3
N	O	12	1.500		Carro4
O	O	13	1.500		Carro5
P	O	14	1.500		Carro6
Q	O	15	1.500		Carro7

R	O	16	1.500	Carro8
S	O	17	1.500	Carro9
T	O	18	1.500	Carro10
U	O	19	1.500	Carro11
V	O	20	1.500	Carro12
W	MAS	21	1.350	Retraccion
X	MAS	22	0.900000	Termico
Y	MAS	23	0.900000	Gradiente
Z	MAS	26	0.450000	Viento con sc 1
AA	O	27	0.450000	Viento con sc 2
AB	MAS	28	1.500	Frenado

ALTERNATIVA PARA ENVOLVENTE:

AC	PERM.	1	1.350	Peso propio
AD	O	1	1.000	Peso propio
AE	MAS PER	2	1.350	Cargas muertas
AF	O	2	1.000	Cargas muertas
AG	MAS	3	0.900000	Sobrecarga de uso1
AH	MAS	4	0.900000	Sobrecarga de uso2
AI	MAS	5	0.900000	Sobrecarga de uso3
AJ	MAS	6	0.900000	Sobrecarga de uso4
AK	MAS	7	0.900000	Sobrecarga de uso5
AL	MAS	8	0.900000	Sobrecarga de uso6
AM	MAS	9	0.900000	Carro1
AN	O	10	0.900000	Carro2
AO	O	11	0.900000	Carro3
AP	O	12	0.900000	Carro4
AQ	O	13	0.900000	Carro5
AR	O	14	0.900000	Carro6
AS	O	15	0.900000	Carro7
AT	O	16	0.900000	Carro8
AU	O	17	0.900000	Carro9
AV	O	18	0.900000	Carro10
AW	O	19	0.900000	Carro11
AX	O	20	0.900000	Carro12
AY	MAS	21	1.350	Retraccion
AZ	MAS	22	1.500	Termico

BA	MAS	23	1.500	Gradiente
BB	MAS	26	0.900000	Viento con sc 1
BC	O	27	0.900000	Viento con sc 2
BD	MAS	28	0.900000	Frenado

ALTERNATIVA PARA ENVOLVENTE:

BE	PERM.	1	1.350	Peso propio
BF	O	1	1.000	Peso propio
BG	MAS PER	2	1.350	Cargas muertas
BH	O	2	1.000	Cargas muertas
BI	MAS	21	1.350	Retraccion
BJ	MAS	22	0.900000	Termico
BK	MAS	23	0.900000	Gradiente
BL	MAS	24	1.500	Viento sin sc 1
BM	O	25	1.500	Viento sin sc 2

ENVOLVENTE para < Vz > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
1	0	1.953	7.792	7.991	0.032429	2.260	5.028
		-5.197	25.256	80.939	62.492	-41.405	3.337
1	1.275	1.809	7.792	1.424	-4.653	8.262	14.962
		-5.197	24.963	69.530	53.778	54.515	35.351
2	0	-5.724	6.267	0.356956	-5.195	14.431	21.514
		-17.477	27.557	59.330	63.607	-4.863	44.126
2	1.275	-5.868	6.267	-6.210	-9.881	10.699	29.503
		-17.477	27.265	47.921	54.893	63.507	79.073
3	0	-10.106	1.788	-3.728	-8.324	20.630	33.137
		-25.543	19.085	53.868	58.372	13.586	83.729
3	1.275	-17.785	2.533	-15.358	-4.819	23.042	62.539
		-17.767	10.789	29.793	40.020	51.978	71.545
4	- 0	-18.105	-4.384	-7.443	-8.017	34.036	62.834
		-18.924	4.228	35.272	44.936	13.855	70.799
4	1.275	-22.853	-4.235	-14.316	-12.183	27.478	71.792
		-14.319	3.786	24.169	35.703	44.434	61.455
5	0	-16.643	-8.673	-9.791	-9.166	31.840	56.406
		-17.052	-1.668	30.503	42.808	15.996	73.090
5	1.275	-21.082	-9.957	-17.631	-13.650	21.233	57.988

ENVOLVENTE para < Vz > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
		-12.757	-0.676170	20.367	33.893	41.551	58.139
6	0	-22.153	-16.370	-12.071	-5.706	39.945	72.040
		-9.697	-4.847	26.799	41.499	9.182	56.628
6	1.275	-22.337	-20.881	-29.677	-19.063	19.068	60.470
		-8.930	-4.517	17.447	33.361	36.047	48.297
7	0	-10.775	-26.438	-19.695	-9.852	30.810	50.470
		-3.495	-8.812	25.138	42.487	3.285	44.262
7	1.275	-13.047	-28.684	-28.899	-14.050	5.697	26.729
		-1.367	-6.858	16.365	33.286	23.878	22.875
8	0	-1.532	-28.354	-18.893	-5.262	12.315	11.686
		8.273	-13.479	26.698	46.327	-7.319	20.741
8	1.275	-2.205	-31.467	-29.441	-10.520	-14.735	-19.665
		12.853	-9.575	14.725	35.753	5.885	-15.074
9	0	13.046	-26.747	-15.657	0.333209	-10.410	-30.377
		21.807	-7.609	26.920	47.392	-30.748	-24.815
9	1.275	11.658	-23.205	-30.351	-5.854	-23.215	-43.501
		24.515	-6.701	15.570	36.112	-10.832	-45.774
10	0	20.989	-12.215	-8.738	-5.034	-29.476	-62.042
		35.741	3.750	34.114	39.655	-57.575	-67.766
10	1.275	24.761	-15.006	-33.138	-22.099	-43.555	-73.765
		29.675	5.263	26.343	32.845	-10.278	-44.627
11	0	20.877	-1.282	-10.645	-25.371	-17.750	-51.947
		31.079	18.197	44.903	33.362	-46.413	-64.749
11	1.700	24.528	5.754	-27.304	-37.759	-41.346	-56.070
		29.505	14.908	14.401	13.277	-16.286	-48.161
12	0	10.430	10.272	-2.672	-25.030	-2.669	-23.121
		11.624	29.050	35.909	19.303	-35.796	-46.378
12	1.700	7.739	14.764	-19.090	-37.232	-6.280	8.879
		10.991	27.977	20.758	8.950	12.692	3.590

ENVOLVENTE para < Vz > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
13	0	-4.894	8.613	-2.675	-20.624	20.079	25.873
		-8.175	27.796	34.711	23.421	-5.031	18.834
13	1.700	-5.522	9.185	-11.541	-27.904	8.955	42.163
		-7.739	26.834	19.609	12.835	40.180	64.106
14	0	-12.953	4.636	-2.122	-15.250	29.156	49.955
		-23.528	21.515	32.579	25.868	21.223	79.269
14	1.700	-14.173	4.842	-11.165	-22.376	19.682	61.099
		-22.500	20.918	17.654	15.128	62.098	112.247
15	0	-17.109	0.206593	-3.343	-11.351	34.746	63.173
		-32.984	8.218	35.009	29.544	46.809	123.908
15	1.700	-25.095	1.130	-14.093	-19.412	36.549	97.031
		-25.189	6.904	3.790	4.740	51.463	104.039
16	0	-14.992	-4.744	-5.345	-8.875	32.713	58.540
		-24.279	-2.878	8.027	9.960	36.762	86.810
16	1.700	-32.905	-8.602	-35.161	-29.388	46.355	122.857
		-16.484	-1.954	-2.723	1.899	24.645	49.982
17	0	-22.119	-21.290	-17.791	-14.938	61.472	110.886
		-13.849	-7.754	4.467	12.029	19.681	49.304
17	1.700	-23.340	-21.886	-32.717	-25.677	20.362	77.276
		-12.820	-7.548	-4.576	4.902	17.768	33.208
18	0	-7.209	-27.086	-19.706	-12.563	39.091	61.744
		-5.279	-13.080	2.845	16.038	8.691	26.241
18	1.700	-7.837	-28.047	-34.808	-23.149	-6.284	16.046
		-4.844	-12.508	-6.021	8.757	5.033	3.330
19	0	11.706	-27.752	-20.643	-8.656	11.055	0.381884
		8.120	-14.164	3.182	21.116	-11.555	-13.737
19	1.700	12.147	-28.825	-35.795	-19.010	-37.238	-49.205
		7.487	-13.482	-5.635	13.604	-13.317	-35.737
20	0	30.130	-13.895	-13.932	-13.577	-17.953	-51.056
		21.497	-5.919	10.189	22.624	-43.245	-68.095

ENVOLVENTE para < Vz > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
20	1.700	35.831	-16.405	-28.394	-22.394	-61.687	-93.359
		15.604	-3.799	0.681778	13.575	-26.246	-59.806
21	0	32.293	1.338	-16.273	-26.246	-25.521	-70.774
		21.711	11.730	14.887	7.807	-47.087	-83.654
21	1.275	38.215	2.851	-24.045	-33.056	-59.979	-85.497
		15.645	9.923	4.682	1.218	-25.855	-52.457
22	0	25.723	11.893	-9.289	-29.307	-19.409	-62.472
		12.597	23.082	21.498	3.404	-35.164	-66.396
22	1.275	26.572	12.625	-15.953	-35.142	-36.566	-49.478
		11.604	22.058	10.186	-4.159	-13.901	-34.984
23	0	16.360	14.675	-7.118	-26.908	-7.018	-38.722
		2.826	25.394	22.929	5.496	-20.433	-39.097
23	1.275	15.688	17.495	-14.546	-35.049	-17.067	-11.431
		3.354	22.281	12.382	0.238381	-1.685	-15.489
24	0	4.616	12.215	-7.762	-24.186	6.843	-8.139
		-5.611	21.030	21.166	8.255	-3.603	-2.252
24	1.275	2.343	14.170	-16.535	-33.388	-2.781	20.079
		-3.483	18.783	11.962	4.057	11.651	11.730
25	0	-4.002	8.739	-10.239	-25.198	22.446	24.579
		-11.741	14.008	18.962	11.999	4.691	19.070
25	1.275	-4.913	9.070	-19.592	-33.336	4.770	38.294
		-10.974	13.386	10.339	6.738	22.030	34.171
26	0	-8.636	3.773	-13.724	-26.292	30.114	39.994
		-16.333	8.013	16.421	13.322	13.730	39.986
26	1.275	-13.075	4.764	-23.861	-35.207	13.028	58.892
		-12.038	6.729	8.582	8.839	22.795	35.926
27	0	-11.144	-1.330	-17.772	-28.363	34.754	47.546
		-17.693	2.086	13.142	13.224	18.807	50.809
27	1.275	-15.893	-1.772	-28.875	-37.597	12.331	60.021
		-13.088	2.235	6.269	9.058	23.869	39.111

ENVOLVENTE para < Vz > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
28	0	-15.767	-8.569	-23.417	-32.700	43.842	61.232
		-11.589	-2.390	9.773	12.532	12.890	37.557
28	1.275	-15.911	-8.861	-34.826	-41.414	6.713	50.121
		-11.589	-2.390	3.206	7.846	21.163	34.510
29	0	-12.639	-15.755	-30.808	-37.921	42.458	48.923
		-7.421	-7.064	5.507	9.224	11.736	30.918
29	1.275	-12.783	-16.048	-42.218	-46.634	-4.094	28.650
		-7.421	-7.064	-1.060	4.539	14.571	21.913
30	0	-5.319	-16.751	-48.803	-38.129	39.008	23.424
		-0.109309	-8.440	-2.532	3.910	9.128	15.463
30	1.275	-5.463	-17.044	-60.212	-46.843	-30.486	1.880
		-0.109309	-8.440	-9.099	-0.775898	1.713	4.702
31	0	1.277	-6.487	15.244	6.840	3.953	4.245
		-1.367	-15.855	47.123	32.727	10.079	9.460
31	1.275	1.133	-6.487	10.592	6.840	20.423	-4.025
		-1.367	-15.855	39.886	32.727	65.545	-10.754
32	0	1.304	-4.385	9.876	17.476	25.796	2.574
		-4.761	-13.183	44.422	19.923	79.500	6.961
32	1.275	1.160	-4.385	5.224	17.476	35.422	-3.017
		-7.117	-16.122	31.417	35.372	121.960	-11.434
33	0	0.575385	-1.306	2.902	16.705	39.723	0.329603
		-12.623	-10.446	29.886	25.203	132.596	4.568
33	1.275	-1.976	-1.513	-6.757	8.692	76.267	-2.033
		-9.900	-6.724	11.298	4.808	117.921	-5.902
34	0	-3.183	2.106	-7.153	4.716	78.737	-2.283
		-15.677	-2.654	10.093	2.738	161.262	-0.642329
34	1.275	-6.629	1.681	-12.710	11.412	104.740	-0.352654
		-12.375	-2.229	3.762	-3.958	131.430	-3.272
35	0	-7.556	5.420	-14.689	15.043	152.059	-5.253
		-9.270	1.247	-2.127	-4.445	90.201	-2.084

ENVOLVENTE para < Vz > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
35	1.275	-7.700	5.420	-21.925	15.043	128.719	1.657
		-9.270	1.247	-6.780	-4.445	84.523	-0.494445
36	0	-3.371	9.592	-26.072	5.307	101.789	-7.192
		-6.329	3.768	-9.630	0.897373	73.167	-3.373
36	1.275	-5.786	12.240	-43.854	2.892	94.933	6.366
		-6.329	3.768	-14.282	0.897373	57.923	1.431
37	0	-0.444889	16.560	-47.807	1.725	96.004	-11.159
		-3.767	6.541	-17.497	1.654	59.606	-4.907
37	1.275	-0.588894	16.560	-55.044	1.725	30.438	9.955
		-3.767	6.541	-22.149	1.654	34.333	3.432
38	0	3.959	18.571	-62.314	7.346	33.592	-11.671
		2.281	8.328	-25.049	20.353	43.431	-5.245
38	1.275	3.815	18.571	-69.551	7.346	-50.468	12.006
		3.031	8.517	-32.581	6.904	-18.655	5.703
39	0	8.041	16.662	-78.786	15.438	-42.974	-9.147
		4.899	7.755	-36.612	10.216	-14.149	-4.086
39	1.275	8.514	15.122	-92.628	23.120	-123.428	10.895
		4.994	7.644	-41.357	9.209	-66.139	5.737
40	0	6.956	7.973	-70.191	17.068	-112.728	-3.081
		7.802	1.916	-22.661	8.583	-82.539	0.205483
40	1.275	6.956	7.973	-89.428	17.068	-206.843	7.084
		7.715	1.916	-27.313	8.583	-114.397	2.648
41	0	5.437	-1.800	36.281	-12.239	-108.507	2.640
		10.322	-9.664	101.028	-9.277	-211.987	9.426
41	1.700	3.861	-3.480	26.108	-9.322	-48.285	-2.110
		11.735	-9.834	75.444	-3.900	-104.394	-6.814
42	0	7.968	-6.710	37.284	-13.962	-33.606	6.217
		4.316	-18.119	84.298	1.599	-115.026	16.204
42	1.700	7.336	-8.397	28.296	-8.614	43.927	-6.814
		4.316	-18.119	74.649	1.599	20.074	-14.597

ENVOLVENTE para < Vz > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
43	0	2.466	-5.403	23.217	-11.044	38.479	4.389
		-4.952	-16.771	62.601	9.028	13.892	13.739
43	1.700	2.274	-5.403	17.015	-11.044	72.675	-4.796
		-4.952	-16.771	52.953	9.028	112.109	-14.770
44	0	-0.986818	-3.025	14.090	-9.859	70.478	2.087
		-13.946	-12.344	46.442	10.880	109.882	8.953
44	1.700	-1.179	-3.025	7.887	-9.859	89.157	-3.055
		-13.946	-12.344	36.794	10.880	180.630	-12.031
45	0	-2.294	-0.154700	4.130	-8.584	88.705	-0.521519
		-18.389	-4.639	30.946	4.582	181.045	1.816
45	1.700	-2.486	-0.154700	-2.072	-8.584	90.455	-0.784498
		-18.389	-4.639	9.297	4.582	207.450	-6.070
46	0	-18.233	4.870	-10.093	-4.455	207.083	-6.254
		-1.755	0.639987	0.806198	0.175096	75.397	-1.213
46	1.700	-18.425	4.870	-31.742	-4.455	179.325	2.025
		-1.755	0.639987	-5.397	0.175096	71.495	-0.124798
47	0	-13.823	12.585	-37.598	-10.728	178.944	-12.208
		-0.279805	3.535	-9.365	0.922325	71.899	-3.539
47	1.700	-14.015	12.585	-47.247	-10.728	106.829	9.186
		-0.279805	3.535	-15.568	0.922325	50.706	2.470
48	0	-4.917	17.004	-53.810	-8.795	109.126	-14.916
		3.001	6.260	-19.815	2.279	51.859	-5.503
48	1.700	-5.109	17.004	-63.459	-8.795	9.452	13.989
		3.001	6.260	-26.018	2.279	12.903	5.139
49	0	4.054	18.206	-75.728	-1.149	15.753	-14.590
		6.602	7.359	-31.875	5.561	15.381	-5.872
49	1.700	3.862	18.206	-85.377	-1.149	-121.181	16.359
		6.602	7.359	-38.078	5.561	-44.077	6.637
50	0	11.084	9.686	-73.488	3.599	-111.268	-6.566

ENVOLVENTE para < Vz > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
		3.407	3.090	-28.834	6.940	-53.448	-1.702
50	1.700	11.084	9.686	-83.137	3.599	-244.393	9.900
		3.215	3.090	-35.037	6.940	-107.737	3.551
51	0	7.778	-2.820	29.693	-7.742	-105.720	3.115
		10.731	-4.842	72.655	-28.739	-238.428	5.341
51	1.275	7.778	-2.820	25.041	-7.742	-70.829	-0.480804
		10.587	-4.842	65.418	-28.739	-150.410	-0.832020
52	0	4.942	-7.647	40.928	-8.954	-61.522	5.673
		12.448	-13.966	78.550	-25.869	-162.985	10.644
52	1.275	4.856	-7.647	36.276	-8.954	-12.306	-4.076
		12.448	-13.966	71.313	-25.869	-67.451	-7.162
53	0	1.959	-8.374	31.943	-5.342	-13.576	5.434
		8.987	-15.623	61.006	-17.498	-76.239	10.531
53	1.275	1.815	-8.374	27.291	-5.342	24.184	-5.242
		8.987	-15.623	53.770	-17.498	-3.073	-9.388
54	0	-2.829	-6.521	23.298	-1.144	22.096	3.577
		5.186	-13.023	45.820	-16.684	-8.948	8.142
54	1.275	-2.973	-6.521	18.646	-1.144	48.834	-4.738
		5.186	-13.023	38.583	-16.684	44.857	-8.462
55	0	-6.100	-3.989	15.540	0.660311	46.813	1.611
		0.033235	-9.040	32.471	-15.407	40.631	5.020
55	1.275	-6.186	-3.989	10.888	0.660311	63.660	-3.475
		0.033235	-9.040	25.234	-15.407	77.417	-6.505
56	0	-8.783	-1.705	8.137	4.412	77.773	-0.136853
		-1.636	-4.781	19.884	-20.413	58.892	2.220
56	1.275	-8.927	-1.705	3.485	4.412	85.182	-2.310
		-1.636	-4.781	12.647	-20.413	79.629	-3.876
57	0	-8.928	1.271	-0.196686	4.609	83.967	-2.055
		-3.235	-1.005	9.184	-22.292	75.453	-0.358581
57	1.275	-12.374	1.696	-6.528	-2.087	118.344	-0.646815

ENVOLVENTE para < Vz > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
		0.067247	-1.430	3.627	-15.596	44.955	-1.427
58	0	-9.981	6.249	-10.263	-4.963	114.551	-5.589
		-0.199404	1.282	1.454	-16.736	41.674	-1.350
58	1.275	-10.125	6.249	-17.500	-4.963	96.853	2.378
		-0.199404	1.282	-3.199	-16.736	40.562	0.285084
59	0	-5.374	11.151	-20.821	-11.725	90.968	-8.149
		0.549659	4.249	-5.502	-17.546	36.225	-2.985
59	1.275	-5.518	11.151	-28.057	-11.725	59.810	6.068
		0.549659	4.249	-10.154	-17.546	26.245	2.432
60	0	-1.716	11.424	-27.852	-21.236	48.376	-7.750
		0.703403	6.208	-10.841	-6.952	20.800	-3.946
60	1.275	-1.860	11.424	-35.089	-21.236	8.252	6.815
		0.703403	6.208	-15.493	-6.952	4.013	3.970
61	0	0.368387	-4.811	11.459	12.570	6.308	2.996
		-0.003626	-17.155	34.024	-1.306	16.895	10.755
61	1.275	0.224382	-4.811	6.715	12.570	17.893	-3.138
		-0.003626	-17.155	25.707	-1.306	54.972	-11.116
62	0	1.441	-4.278	10.558	14.213	24.900	2.446
		-0.031139	-18.541	40.341	-1.492	73.725	10.952
62	1.275	1.297	-4.278	5.814	14.213	35.337	-3.008
		-0.031139	-18.541	32.024	-1.492	119.856	-12.687
63	0	2.195	-1.151	4.443	14.243	39.458	0.172423
		-0.053308	-10.657	31.613	1.708	130.620	4.893
63	1.275	2.042	-3.209	-2.411	0.009909	73.967	-3.075
		-0.012902	-10.953	18.981	24.029	162.124	-8.880
64	0	2.472	1.389	-5.471	-1.634	78.664	-2.065
		-0.055828	-2.593	11.317	1.733	170.204	-0.651532
64	1.275	2.328	1.276	-11.025	-1.635	91.602	-0.690294
		-0.055503	-2.480	3.811	1.734	156.394	-3.561

ENVOLVENTE para < Vz > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
65	0	2.542	6.310	-14.475	-1.679	95.546	-5.326
		-0.034514	2.292	-1.860	1.770	114.161	-2.862
65	1.275	2.346	6.472	-22.288	-1.680	104.434	2.406
		0.017132	2.131	-7.108	1.771	76.121	0.373289
66	0	2.222	14.149	-30.754	-1.191	143.215	-10.670
		0.004084	5.327	-10.152	1.824	77.922	-4.220
66	1.275	2.234	13.407	-43.541	-1.740	96.646	6.873
		0.004084	5.327	-14.896	1.824	61.954	2.571
67	0	2.213	19.353	-49.129	-1.824	100.477	-13.178
		-0.015823	8.643	-18.033	1.904	64.050	-5.996
67	1.275	2.069	19.353	-57.445	-1.824	32.539	11.496
		-0.015823	8.643	-22.777	1.904	38.035	5.023
68	0	1.916	22.068	-61.715	-1.950	38.246	-13.794
		-0.019887	11.266	-26.641	2.028	41.465	-7.126
68	1.275	1.772	22.068	-70.032	-1.950	-45.739	14.342
		0.031402	10.455	-32.240	2.028	-12.879	6.897
69	0	1.315	18.519	-80.644	-2.151	-33.705	-10.495
		0.094824	8.936	-37.872	4.321	-9.890	-4.796
69	1.275	1.246	16.610	-89.589	-2.151	-122.881	11.712
		0.094824	8.936	-42.616	4.321	-61.199	6.597
70	0	0.116296	7.463	-189.742	-2.977	-91.761	-2.924
		0.341623	2.946	-86.204	5.962	-46.101	-0.757521
70	1.275	-0.027710	7.463	-204.058	-2.977	-338.979	6.590
		0.341623	2.946	-90.948	5.962	-159.031	2.998
71	0	5.922	-4.985	73.005	-1.014	-140.952	4.826
		-1.564	-10.536	180.970	1.147	-328.728	9.818
71	1.700	5.730	-4.985	66.680	-1.014	-22.224	-3.648
		-1.469	-11.051	162.790	12.694	-42.984	-8.366
72	0	0.777778	-9.669	37.261	-0.293298	-33.812	8.642
		2.123	-22.030	81.720	0.415314	-101.006	19.309

ENVOLVENTE para < Vz > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
72	1.700	0.585770	-9.669	30.936	-0.293298	24.153	-7.795
		2.123	-22.030	70.632	0.415314	28.488	-18.141
73	0	0.264297	-8.522	25.918	-0.093974	34.770	6.984
		2.130	-20.846	65.323	0.214029	20.271	17.075
73	1.700	0.072290	-8.522	19.593	-0.093974	73.454	-7.503
		2.130	-20.846	54.234	0.214029	121.890	-18.361
74	0	3.406	-4.401	15.274	0.017084	74.506	3.018
		-1.243	-14.104	47.368	0.103043	115.526	10.307
74	1.700	3.214	-4.401	8.949	0.017084	95.095	-4.463
		-1.243	-14.104	36.279	0.103043	186.623	-13.668
75	0	3.213	-0.448444	4.483	0.089285	94.477	-0.486858
		-1.253	-5.226	26.501	0.031170	185.265	2.209
75	1.700	3.021	-0.448444	-1.842	0.089285	96.723	-1.249
		-1.253	-5.226	9.412	0.031170	211.889	-6.675
76	0	-1.243	5.535	-10.261	0.088329	211.507	-6.923
		3.416	0.849319	0.724756	0.031484	80.645	-1.396
76	1.700	-1.435	5.535	-27.350	0.088329	183.439	2.487
		3.416	0.849319	-5.600	0.031484	76.501	0.048198
77	0	-1.439	14.413	-37.140	0.016101	184.852	-13.897
		3.406	4.657	-10.090	0.103110	77.064	-4.461
77	1.700	-1.631	14.413	-48.228	0.016101	112.292	10.605
		3.406	4.657	-16.415	0.103110	54.535	3.456
78	0	1.687	21.090	-55.070	-0.094609	118.752	-18.516
		0.030041	8.093	-20.899	0.213377	53.318	-6.935
78	1.700	1.495	21.090	-66.159	-0.094609	15.712	17.336
		0.030041	8.093	-27.224	0.213377	12.415	6.823
79	0	1.292	21.966	-71.446	-0.290863	24.240	-18.035
		0.022646	9.024	-30.822	0.413207	16.551	-7.218
79	1.700	1.100	21.966	-82.535	-0.290863	-106.639	19.306
		0.022646	9.024	-37.147	0.413207	-41.220	8.123

ENVOLVENTE para < Vz > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
80	0	-3.970	10.345	-167.690	-1.006	-73.729	-7.661
		4.235	4.202	-70.822	1.137	-22.862	-2.996
80	1.700	-4.162	10.345	-178.779	-1.006	-368.216	9.926
		4.235	4.202	-77.147	1.137	-148.631	4.148
81	0	1.833	-4.151	83.220	-6.022	-144.116	3.742
		2.362	-5.874	169.740	-9.576	-337.939	6.086
81	1.275	1.689	-4.151	78.476	-6.022	-41.039	-1.550
		2.362	-5.874	160.825	-10.175	-127.212	-1.402
82	0	0.818633	-9.239	41.379	-2.125	-55.154	6.603
		2.379	-15.990	78.273	-11.236	-156.023	11.884
82	1.275	0.674627	-9.239	36.635	-2.125	-5.422	-5.177
		2.379	-15.990	69.357	-11.834	-61.912	-8.502
83	0	0.357669	-10.283	32.075	-1.925	-10.852	6.727
		2.349	-19.113	60.532	-11.685	-73.176	12.967
83	1.275	0.213664	-10.283	27.331	-1.925	27.018	-6.383
		2.349	-19.113	51.617	-12.283	-1.683	-11.402
84	0	0.111844	-8.508	24.347	-1.801	24.362	5.088
		2.265	-16.519	47.453	-11.985	-6.951	10.349
84	1.275	-0.032162	-8.508	19.603	-1.801	52.378	-5.759
		2.265	-16.519	38.538	-12.583	47.866	-10.711
85	0	-0.048955	-5.677	16.340	-1.719	50.543	2.933
		2.170	-11.606	33.756	-12.203	44.408	6.517
85	1.275	-0.192961	-5.677	11.596	-1.719	68.352	-4.305
		2.170	-11.606	24.841	-12.802	81.763	-8.279
86	0	-0.172189	-2.647	8.517	-1.664	66.701	0.809995
		2.078	-6.209	20.338	-12.388	78.857	2.672
86	1.275	-0.376572	-2.827	3.004	-2.273	108.635	-3.123
		2.138	-6.028	12.193	-12.378	65.005	-4.686
87	0	-0.310069	1.406	0.107546	-1.725	106.013	-2.258
		1.983	-1.589	8.207	-12.483	62.434	0.012764

ENVOLVENTE para < Vz > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
87	1.275	-0.454399	1.519	-7.997	-2.321	124.438	-0.717865
		1.983	-1.702	2.653	-12.485	45.903	-1.762
88	0	-0.324832	7.357	-11.320	-1.788	119.397	-6.103
		1.674	1.290	-0.025872	-14.238	43.374	-1.396
88	1.275	-0.468837	7.357	-20.235	-2.386	99.281	3.276
		1.674	1.290	-4.770	-14.238	40.317	0.249178
89	0	-0.210610	13.881	-20.657	1.329	90.413	-9.513
		1.045	4.421	-6.113	-14.211	36.147	-3.103
89	1.275	-0.354616	13.881	-29.572	0.730769	58.393	8.184
		1.045	4.421	-10.857	-14.211	25.329	2.533
90	0	0.018313	13.241	-18.328	1.124	42.936	-8.582
		0.228415	4.921	-6.911	-12.576	18.228	-3.208
90	1.275	-0.125692	13.241	-27.244	0.525397	13.885	8.300
		0.228415	4.921	-11.655	-12.576	6.392	3.066
91	0	1.742	-2.968	14.886	2.928	4.807	1.454
		1.929	-16.075	43.915	-22.310	10.183	9.777
91	1.275	1.598	-2.968	10.234	2.928	20.821	-2.330
		1.929	-16.075	36.678	-22.310	61.559	-10.718
92	0	4.101	-3.644	10.252	-6.885	25.554	1.705
		5.022	-12.515	40.411	-16.213	75.664	6.753
92	1.275	3.957	-3.644	5.600	-6.885	35.659	-2.941
		6.221	-14.369	31.242	-13.814	119.596	-10.363
93	0	5.853	-1.197	3.676	-4.649	38.726	0.002155
		11.708	-8.379	29.449	-7.371	126.826	3.362
93	1.275	8.261	-2.315	-5.537	-8.115	70.906	-2.715
		11.625	-7.920	16.453	7.187	149.308	-6.999
94	0	9.548	1.391	-5.468	-5.624	75.267	-2.036
		14.369	-2.081	10.097	-4.055	161.773	-0.864946
94	1.275	12.959	0.761122	-11.024	-12.324	103.418	-1.180
		10.813	-1.452	3.764	2.645	131.945	-2.601

ENVOLVENTE para < Vz > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
95	0	12.059	4.839	-13.971	-9.609	107.574	-4.516
		6.467	2.551	-1.608	18.239	90.428	-2.644
95	1.275	11.915	4.839	-21.207	-9.609	85.149	1.653
		6.467	2.551	-6.260	18.239	85.413	0.608016
96	0	11.618	10.992	-27.872	-2.703	127.888	-8.640
		4.783	4.116	-9.619	-0.757654	73.146	-3.414
96	1.275	11.932	10.653	-42.305	-5.372	89.682	5.141
		4.783	4.116	-14.271	-0.757654	57.917	1.833
97	0	6.494	15.518	-47.330	-6.582	93.478	-10.820
		2.083	6.774	-17.482	-1.515	59.588	-4.864
97	1.275	6.350	15.518	-54.567	-6.582	28.521	8.964
		2.083	6.774	-22.134	-1.515	34.334	3.773
98	0	-1.784	18.415	-62.297	-7.368	33.583	-11.387
		0.627408	9.119	-25.248	-6.341	36.569	-6.047
98	1.275	-1.928	18.415	-69.534	-7.368	-50.456	12.091
		0.717448	8.314	-32.588	-6.827	-18.663	5.179
99	0	-6.236	16.016	-78.755	-14.037	-44.228	-8.621
		-1.007	7.840	-36.621	-10.984	-13.416	-4.509
99	1.275	-5.961	14.557	-92.081	-14.569	-133.088	10.644
		-1.095	7.726	-41.367	-9.977	-65.419	5.421
100	0	-7.969	7.621	-67.479	-15.511	-123.019	-2.670
		1.033	0.730591	-22.650	-9.329	-81.743	0.336842
100	1.275	-7.969	7.621	-86.716	-15.511	-213.676	7.047
		0.946426	0.730591	-27.303	-9.329	-113.587	1.268
101	0	-1.192	-3.600	36.525	8.077	-110.921	3.609
		-4.302	-9.242	97.664	17.080	-216.481	9.391
101	1.700	-2.188	-3.956	26.086	9.483	-48.306	-2.750
		-6.544	-9.395	73.449	16.117	-105.029	-6.204
102	0	3.227	-8.537	38.727	5.474	-42.038	7.412

ENVOLVENTE para < Vz > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
		-7.730	-16.921	83.612	11.456	-114.475	15.231
102	1.700	3.491	-9.620	28.465	6.862	35.779	-8.151
		-7.730	-16.921	73.963	11.456	19.458	-13.534
103	0	8.122	-6.911	25.041	2.654	33.341	5.204
		0.976091	-15.724	61.803	4.628	13.802	12.891
103	1.700	7.930	-6.911	18.838	2.654	70.637	-6.544
		0.976091	-15.724	52.154	4.628	110.662	-13.839
104	0	8.864	-3.289	14.533	0.982616	69.509	2.065
		12.223	-10.886	44.126	2.196	107.676	7.533
104	1.700	8.672	-3.289	8.330	0.982616	88.942	-3.526
		12.223	-10.886	34.477	2.196	174.486	-10.973
105	0	10.036	-0.318679	4.334	0.267816	88.486	-0.562144
		16.863	-4.048	30.386	0.705691	172.864	1.223
105	1.700	9.844	-0.318679	-1.868	0.267816	90.582	-1.104
		16.863	-4.048	8.738	0.705691	198.318	-5.659
106	0	16.731	4.287	-9.542	-0.654016	197.958	-5.848
		7.910	0.421101	0.932838	-2.822	75.401	-0.971837
106	1.700	16.539	4.287	-31.191	-0.654016	171.136	1.439
		7.910	0.421101	-5.270	-2.822	71.715	-0.255995
107	0	11.733	11.119	-35.291	-2.169	172.807	-11.142
		6.463	3.315	-9.245	-3.496	71.915	-3.303
107	1.700	11.541	11.119	-44.939	-2.169	104.614	7.760
		6.463	3.315	-15.448	-3.496	50.927	2.331
108	0	0.157093	15.897	-53.017	-4.684	107.685	-13.941
		5.871	6.465	-19.701	-4.964	51.764	-5.904
108	1.700	-0.034914	15.897	-62.666	-4.684	9.358	13.082
		5.871	6.465	-25.904	-4.964	13.001	5.087
109	0	-8.708	16.785	-75.044	-11.732	15.148	-13.375
		2.142	7.825	-31.744	-8.228	15.252	-6.441
109	1.700	-8.900	16.785	-84.692	-11.732	-120.623	15.158

ENVOLVENTE para < Vz > (y valores concomitantes)
(1. linea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
		2.142	7.825	-37.947	-8.228	-43.983	6.861
110	0	-7.395	8.517	-71.530	-15.653	-111.870	-5.497
		-3.109	2.724	-28.485	-9.542	-53.627	-1.720
110	1.700	-7.395	8.517	-81.179	-15.653	-241.667	8.982
		-3.301	2.724	-34.688	-9.542	-107.321	2.911
111	0	0.561121	-2.379	29.376	4.536	-107.294	2.413
		-10.089	-6.503	69.840	17.442	-235.559	6.778
111	1.275	0.561121	-2.379	24.723	4.536	-72.807	-0.620218
		-10.233	-6.503	62.603	17.442	-151.130	-1.512
112	0	-0.964215	-8.137	40.797	7.507	-61.472	5.687
		-8.494	-13.883	77.059	15.047	-162.028	10.638
112	1.275	-1.051	-8.137	36.145	7.507	-12.423	-4.687
		-8.494	-13.883	69.822	15.047	-68.395	-7.062
113	0	0.169142	-8.604	31.752	2.945	-13.477	5.424
		-5.523	-15.809	59.981	6.790	-75.798	10.760
113	1.275	0.025136	-8.604	27.100	2.945	24.040	-5.546
		-5.523	-15.809	52.745	6.790	-3.938	-9.396
114	0	1.094	-6.989	23.106	-1.242	22.194	4.093
		1.655	-12.862	44.919	5.918	-8.590	7.766
114	1.275	0.949978	-6.989	18.454	-1.242	48.688	-4.817
		1.655	-12.862	37.682	5.918	44.066	-8.632
115	0	3.537	-4.622	15.355	-1.788	47.440	2.296
		6.499	-8.771	31.584	4.533	40.991	4.594
115	1.275	3.393	-4.622	10.703	-1.788	64.051	-3.596
		6.499	-8.771	24.347	4.533	76.646	-6.588
116	0	6.161	-2.449	7.898	-5.621	76.459	0.585336
		8.487	-4.284	19.039	8.235	60.652	1.604
116	1.275	6.017	-2.449	3.246	-5.621	83.563	-2.538
		8.487	-4.284	11.803	8.235	80.313	-3.858

ENVOLVENTE para < Vz > (y valores concomitantes)
(1. linea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
117	0	8.059	0.850152	-0.421782	-1.782	100.234	-1.783
		7.884	-0.900426	8.320	5.935	59.588	-0.480085
117	1.275	9.881	0.941995	-6.762	-0.884119	117.965	-0.948469
		5.918	-0.992269	2.771	5.038	44.348	-1.379
118	0	8.026	5.461	-10.489	1.864	114.442	-4.924
		5.417	1.572	0.668862	6.153	42.062	-1.766
118	1.275	7.882	5.461	-17.726	1.864	96.455	2.039
		5.417	1.572	-3.983	6.153	39.949	0.237447
119	0	3.920	10.530	-20.904	8.503	90.798	-7.608
		3.465	4.010	-5.896	6.961	36.457	-3.131
119	1.275	3.776	10.530	-28.141	8.503	59.533	5.818
		3.465	4.010	-10.548	6.961	25.975	1.982
120	0	0.998242	12.882	-27.669	18.187	48.373	-8.508
		1.205	3.442	-10.485	-2.825	21.179	-2.538
120	1.275	0.854236	12.882	-34.906	18.187	8.483	7.916
		1.205	3.442	-15.138	-2.825	4.845	1.850
121	0	9.632	11.555	-3.498	11.815	10.784	2.570
		6.472	20.465	66.039	-47.517	-30.605	5.084
121	1.275	9.488	11.555	-10.065	16.500	2.138	17.302
		6.472	20.758	54.630	-38.803	46.319	31.363
122	0	13.010	10.202	-10.189	20.244	22.857	22.447
		20.168	21.853	40.912	-39.957	6.110	43.282
122	1.275	12.866	10.202	-16.756	24.929	5.680	35.454
		20.168	22.145	29.503	-31.243	50.998	71.329
123	0	14.611	5.124	-14.494	24.111	30.262	37.952
		28.732	12.878	31.643	-32.386	23.330	77.009
123	1.275	14.467	5.124	-21.061	28.797	7.597	44.485
		28.732	13.171	20.234	-23.672	56.400	93.615
124	0	14.420	-0.008798	-17.454	25.305	33.783	45.546
		32.688	2.854	23.158	-27.602	34.013	95.703

ENVOLVENTE para < Vz > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
124	1.275	18.882	0.140210	-24.325	29.467	14.462	60.081
		28.083	2.997	12.053	-18.365	49.147	84.982
125	0	12.269	-5.044	-19.533	24.705	33.454	45.113
		24.081	-4.342	16.798	-23.868	24.582	72.232
125	1.275	16.421	-6.328	-27.371	29.185	10.427	51.318
		19.786	-2.765	6.660	-14.949	32.662	54.247
126	0	10.550	-12.340	-20.893	21.823	33.269	45.726
		18.291	-8.599	12.452	-21.853	17.922	54.668
126	1.275	11.173	-12.962	-29.516	27.083	2.475	31.958
		17.524	-7.684	3.099	-13.715	26.495	41.926
127	0	0.223765	-18.106	-22.111	18.253	20.595	19.439
		13.145	-13.961	9.312	-21.791	11.946	39.386
127	1.275	3.234	-20.507	-31.320	22.449	-7.635	5.844
		9.990	-11.268	0.544406	-12.587	12.398	12.284
128	0	-11.424	-21.553	-21.827	13.314	7.168	-6.798
		2.829	-17.639	7.052	-23.530	-5.489	1.009
128	1.275	-9.553	-24.837	-32.380	18.569	-23.667	-30.044
		0.813656	-14.062	-0.370634	-15.386	-4.951	-25.526
129	0	-22.701	-21.895	-18.252	6.673	-11.906	-38.913
		-10.500	-11.922	8.595	-23.243	-27.908	-42.747
129	1.275	-23.560	-22.913	-29.564	14.236	-43.453	-70.108
		-9.785	-10.612	1.931	-17.406	-20.132	-54.480
130	0	-32.960	-7.334	-11.788	12.617	-30.874	-70.016
		-20.369	-1.817	16.389	-19.843	-49.420	-75.423
130	1.275	-38.966	-9.123	-21.992	19.204	-61.163	-97.885
		-14.507	0.264612	8.617	-13.031	-24.723	-59.035
131	0	-30.534	7.787	-6.153	27.086	-28.116	-73.576
		-21.715	14.842	20.510	-8.449	-53.588	-91.709
131	1.700	-36.367	9.932	-15.659	36.133	-54.415	-75.076
		-16.073	13.087	6.048	0.369432	-23.256	-51.409

ENVOLVENTE para < Vz > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
132	0	-10.192	16.862	1.039	26.733	-10.075	-39.961
		-5.289	27.272	26.873	-4.842	-27.902	-44.254
132	1.700	-10.677	18.331	-7.778	34.245	-16.125	-11.549
		-4.996	26.194	11.722	5.512	5.225	2.691
133	0	8.794	15.194	2.170	20.047	13.936	12.400
		6.681	20.235	25.111	-13.249	-4.430	7.999
133	1.700	8.989	16.548	-6.696	27.327	11.049	40.542
		6.295	19.272	10.009	-2.664	24.462	40.417
134	0	21.808	9.040	1.824	12.841	31.081	53.723
		19.239	12.506	21.124	-15.784	17.765	56.819
134	1.700	22.594	10.026	-7.219	19.967	28.316	73.018
		18.261	11.910	6.198	-5.045	39.168	74.483
135	0	28.649	2.491	1.845	4.828	39.713	77.613
		26.105	4.144	16.490	-16.928	31.925	87.026
135	1.700	38.899	4.195	-8.905	12.890	50.233	114.880
		15.663	2.830	3.272	-7.124	32.200	61.369
136	0	26.740	-4.933	-0.554856	-0.327208	43.104	90.000
		28.637	-4.426	11.965	-17.896	36.976	94.856
136	1.700	36.990	-6.247	-13.773	9.477	47.448	112.081
		18.195	-2.721	1.215	-9.835	31.656	57.198
137	0	27.307	-16.288	-5.762	-1.600	49.338	100.329
		14.355	-9.297	8.543	-20.312	18.066	54.425
137	1.700	28.093	-16.884	-20.688	9.140	28.678	75.223
		13.376	-8.311	-0.500274	-13.186	23.081	36.370
138	0	12.302	-24.178	-10.124	-2.750	31.015	58.403
		4.468	-14.404	7.031	-24.538	5.141	27.133
138	1.700	12.497	-25.141	-25.226	7.835	1.928	17.645
		4.081	-13.050	-1.835	-17.258	8.598	2.636
139	0	-6.247	-26.309	-11.755	-5.589	3.939	0.109084
		-12.140	-18.429	7.763	-34.358	-17.665	-14.644

ENVOLVENTE para < Vz > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
139	1.700	-6.733	-27.388	-26.907	4.765	-29.246	-47.033
		-11.847	-16.961	-1.054	-26.846	-11.640	-43.224
140	0	-16.959	-12.530	-5.765	0.119695	-24.568	-53.726
		-37.446	-9.297	16.004	-35.683	-56.001	-77.875
140	1.700	-22.793	-14.286	-20.227	8.938	-54.420	-93.081
		-31.804	-7.152	6.498	-26.635	-29.115	-75.294
141	0	-18.657	1.624	-7.247	13.828	-31.227	-73.189
		-38.965	10.109	22.264	-18.635	-61.060	-98.254
141	1.275	-24.663	3.705	-15.020	20.639	-54.177	-87.170
		-33.102	8.320	12.061	-12.048	-30.424	-69.127
142	0	-12.691	12.060	-0.772967	17.228	-24.912	-65.122
		-26.563	22.366	29.638	-14.312	-46.233	-75.471
142	1.275	-13.550	13.371	-7.437	23.065	-31.211	-51.543
		-25.848	21.348	18.326	-6.749	-14.593	-44.973
143	0	1.677	13.737	0.888141	14.384	-4.229	-22.878
		-11.566	24.423	31.248	-17.196	-25.511	-35.280
143	1.275	3.717	17.550	-6.398	22.558	-3.768	3.903
		-13.749	20.902	20.559	-11.970	3.541	-13.222
144	0	7.771	11.173	0.014675	12.157	8.624	5.264
		1.822	20.521	29.612	-20.006	-8.839	0.701777
144	1.275	11.074	14.045	-8.599	21.305	9.404	33.228
		-1.625	17.942	20.250	-15.754	16.694	13.333
145	0	15.822	8.293	-2.427	13.345	23.622	36.078
		7.691	13.223	27.353	-23.741	-1.049	21.031
145	1.275	16.445	9.207	-11.780	21.484	15.906	49.595
		6.924	12.600	18.730	-18.481	26.988	35.131
146	0	18.315	3.509	-6.016	14.602	30.362	49.466
		13.527	7.171	24.918	-25.140	7.837	41.440
146	1.275	22.467	5.086	-16.155	23.521	23.102	68.400
		9.231	5.886	17.081	-20.660	27.736	36.309

ENVOLVENTE para < Vz > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
147	0	18.425	-1.447	-10.183	16.870	34.047	55.044
		16.413	1.034	21.744	-25.118	12.812	51.883
147	1.275	22.887	-1.303	-21.288	26.106	21.297	67.742
		11.808	1.183	14.873	-20.955	28.842	38.846
148	0	20.366	-8.569	-16.014	21.569	42.190	66.741
		12.281	-3.726	18.483	-24.445	6.845	38.297
148	1.275	20.222	-8.277	-27.424	30.282	14.499	56.003
		12.281	-3.726	11.916	-19.759	26.224	33.546
149	0	14.215	-15.652	-23.733	27.562	39.945	52.329
		10.810	-8.660	14.321	-20.907	5.731	31.464
149	1.275	14.071	-15.359	-35.142	36.276	2.413	32.560
		10.810	-8.660	7.754	-16.221	19.803	20.423
150	0	3.364	-15.927	-41.575	30.015	35.785	24.390
		7.462	-10.797	7.652	-13.755	3.211	16.488
150	1.275	3.219	-15.634	-52.985	38.728	-24.494	4.271
		7.462	-10.797	1.085	-9.070	8.780	2.723
151	0	9.795	5.882	9.618	2.260	-0.032285	-5.028
		23.503	6.260	93.491	-35.580	-66.366	-4.804
151	1.250	9.795	5.882	9.618	2.260	11.989	2.324
		23.503	6.260	93.491	-35.580	50.493	3.020
152	0	-1.588	8.003	0.989358	5.241	-0.786919	-6.935
		-2.084	11.023	13.925	-40.217	-3.228	-8.436
152	1.250	-1.588	8.003	0.989358	5.241	0.449730	3.069
		-2.084	11.023	13.925	-40.217	14.177	5.342
153	0	-12.540	5.596	-13.158	-15.966	6.505	-3.719
		-7.611	4.387	1.515	-9.575	1.410	-3.033
153	1.250	-12.540	5.596	-13.158	-15.966	-9.943	3.275
		-7.611	4.387	1.515	-9.575	3.303	2.451
154	0	-12.546	3.666	-10.876	-25.098	-8.186	-1.794

ENVOLVENTE para < Vz > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
		-7.429	3.281	-0.691174	-3.996	-1.898	-2.348
154	1.250	-12.546	3.666	-10.876	-25.098	-21.780	2.788
		-7.429	3.281	-0.691174	-3.996	-2.762	1.753
155	0	-13.193	-1.939	-12.441	-14.961	-11.492	2.091
		-7.379	-0.424380	-1.463	-2.397	-3.502	0.437229
155	1.250	-13.193	-1.939	-12.441	-14.961	-27.042	-0.332561
		-7.379	-0.424380	-1.463	-2.397	-5.331	-0.093225
156	0	-11.804	-7.488	-13.135	-6.394	-12.025	6.008
		-6.773	-4.153	-2.287	-1.912	-4.714	3.279
156	1.250	-11.804	-7.488	-13.135	-6.394	-28.443	-3.352
		-6.773	-4.153	-2.287	-1.912	-7.573	-1.912
157	0	-6.934	-12.590	-11.450	-1.272	-11.643	9.965
		-5.296	-7.449	-4.111	-2.463	-5.432	5.857
157	1.250	-6.934	-12.590	-11.450	-1.272	-25.955	-5.772
		-5.296	-7.449	-4.111	-2.463	-10.571	-3.454
158	0	-5.083	-11.323	-13.578	-26.345	-14.314	9.571
		-3.944	-6.663	-4.979	-2.947	-7.000	5.260
158	1.250	-5.083	-11.323	-13.578	-26.345	-31.285	-4.582
		-3.944	-6.663	-4.979	-2.947	-13.224	-3.068
159	0	-0.921447	-15.189	-20.170	-22.001	-15.846	13.133
		0.074688	-9.127	-6.606	-8.818	-6.468	7.696
159	1.250	-0.921447	-15.189	-20.170	-22.001	-41.057	-5.853
		0.074688	-9.127	-6.606	-8.818	-14.725	-3.712
160	0	9.893	-13.192	-27.988	-17.920	-7.581	11.615
		7.752	-7.141	-10.175	-10.846	-0.316279	6.298
160	1.250	9.893	-13.192	-27.988	-17.920	-42.564	-4.874
		7.752	-7.141	-10.175	-10.846	-13.034	-2.628
161	0	16.388	2.076	-31.250	-0.720977	9.668	-1.778
		11.990	0.314275	-7.825	-3.021	5.722	-0.122628
161	1.250	16.388	2.076	-31.250	-0.720977	-29.393	0.816807

ENVOLVENTE para < Vz > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
		11.990	0.314275	-7.825	-3.021	-4.059	0.270200
162	0	7.249	21.243	-34.567	14.848	-14.582	-23.409
		5.166	12.492	-11.564	10.212	-5.236	-14.206
162	1.250	7.249	21.243	-34.567	14.848	-57.789	3.144
		5.166	12.492	-11.564	10.212	-19.690	1.408
163	0	-5.992	17.795	-21.588	18.609	-20.485	-19.233
		-4.053	10.742	-6.500	4.949	-10.174	-11.353
163	1.250	-5.992	17.795	-21.588	18.609	-47.470	3.010
		-4.053	10.742	-6.500	4.949	-18.298	2.073
164	0	-6.214	16.889	-13.888	-11.815	-16.105	-15.594
		-5.624	11.021	-6.358	2.625	-8.112	-11.170
164	1.250	-6.214	16.889	-13.888	-11.815	-33.465	5.517
		-5.624	11.021	-6.358	2.625	-16.060	2.607
165	0	-13.618	9.977	-18.363	-11.175	-17.293	-9.213
		-7.798	6.443	-4.207	1.512	-7.711	-6.526
165	1.250	-13.618	9.977	-18.363	-11.175	-40.247	3.258
		-7.798	6.443	-4.207	1.512	-12.969	1.527
166	0	-16.253	-0.291187	-19.493	-0.157013	-18.560	0.297718
		-8.701	-8.83E-06	-3.612	-5.67E-07	-7.559	8.42E-06
166	1.250	-16.253	-0.291187	-19.493	-0.157013	-42.924	-0.066250
		-8.701	-8.83E-06	-3.612	-5.67E-07	-12.075	-2.62E-06
167	0	-13.603	-10.306	-18.379	10.896	-17.328	9.565
		-7.783	-6.710	-4.221	-1.575	-7.740	6.795
167	1.250	-13.603	-10.306	-18.379	10.896	-40.300	-3.317
		-7.783	-6.710	-4.221	-1.575	-13.015	-1.593
168	0	-6.097	-17.230	-13.929	11.587	-16.187	15.962
		-5.507	-11.362	-6.395	-2.843	-8.186	11.535
168	1.250	-6.097	-17.230	-13.929	11.587	-33.598	-5.575
		-5.507	-11.362	-6.395	-2.843	-16.179	-2.667

ENVOLVENTE para < Vz > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
169	0	0.581997	-22.475	-15.503	5.350	-17.650	22.064
		-1.953	-10.673	-7.861	-4.627	-9.402	11.293
169	1.250	0.581997	-22.475	-15.503	5.350	-37.029	-6.029
		-1.953	-10.673	-7.861	-4.627	-19.228	-2.048
170	0	16.064	-22.370	-25.249	-2.475	-9.717	23.198
		6.794	-9.541	-12.286	-7.974	-4.005	10.926
170	1.250	16.064	-22.370	-25.249	-2.475	-41.277	-4.763
		6.794	-9.541	-12.286	-7.974	-19.362	-1.000
171	0	21.097	-2.989	-18.285	-1.290	6.800	2.723
		12.212	0.113434	-8.102	7.786	4.371	-0.565050
171	1.250	21.097	-2.989	-18.285	-1.290	-16.055	-1.013
		12.212	0.113434	-8.102	7.786	-5.756	-0.423263
172	0	14.478	11.279	-20.984	25.610	-4.847	-10.414
		7.618	6.004	-10.276	9.577	-0.831690	-5.332
172	1.250	14.478	11.279	-20.984	25.610	-31.076	3.684
		7.618	6.004	-10.276	9.577	-13.677	2.173
173	0	3.237	14.793	-13.944	21.417	-12.462	-12.831
		1.101	7.776	-7.298	7.076	-5.880	-6.552
173	1.250	3.237	14.793	-13.944	21.417	-29.891	5.659
		1.101	7.776	-7.298	7.076	-15.003	3.167
174	0	-3.831	12.875	-9.944	19.191	-12.095	-10.829
		-2.796	6.422	-5.427	2.336	-6.437	-5.098
174	1.250	-3.831	12.875	-9.944	19.191	-24.525	5.265
		-2.796	6.422	-5.427	2.336	-13.219	2.929
175	0	-6.254	9.493	-8.480	16.832	-10.436	-7.901
		-3.889	4.272	-4.692	-0.048535	-5.496	-3.245
175	1.250	-6.254	9.493	-8.480	16.832	-21.036	3.965
		-3.889	4.272	-4.692	-0.048535	-11.360	2.095
176	0	-6.583	6.025	-7.627	16.048	-8.874	-5.179
		-4.019	2.171	-4.215	-0.327064	-4.568	-1.618

ENVOLVENTE para < Vz > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
176	1.250	-6.583	6.025	-7.627	16.048	-18.408	2.352
		-4.019	2.171	-4.215	-0.327064	-9.836	1.096
177	0	-6.597	2.643	-6.810	16.472	-7.376	-2.668
		-4.089	0.143597	-3.722	0.101153	-3.645	-0.123496
177	1.250	-6.597	2.643	-6.810	16.472	-15.889	0.635094
		-4.089	0.143597	-3.722	0.101153	-8.298	0.055993
178	0	-6.973	-0.775085	-5.757	18.211	-5.617	-0.198579
		-4.426	-1.856	-3.049	1.347	-2.473	1.327
178	1.250	-6.973	-0.775085	-5.757	18.211	-12.813	-1.167
		-4.426	-1.856	-3.049	1.347	-6.284	-0.993832
179	0	-6.578	-3.574	-4.188	27.115	-3.543	1.692
		-5.054	-4.598	-1.901	-0.282765	-0.964804	3.638
179	1.250	-6.578	-3.574	-4.188	27.115	-8.778	-2.776
		-5.054	-4.598	-1.901	-0.282765	-3.341	-2.109
180	0	-1.300	-6.542	1.126	0.719042	-1.836	5.580
		-0.632145	-8.966	7.092	32.615	-4.868	6.886
180	1.250	-1.300	-6.542	1.126	0.719042	-0.428546	-2.597
		-0.632145	-8.966	7.092	32.615	3.996	-4.320
181	0	10.435	-5.373	11.218	-1.713	-0.775727	4.704
		14.292	-2.905	66.532	30.488	-46.841	1.877
181	1.250	10.435	-5.373	11.218	-1.713	13.246	-2.013
		14.292	-2.905	66.532	30.488	36.321	-1.753
182	0	1.750	4.572	-8.810	8.436	18.099	-2.907
		9.195	7.579	50.173	-34.694	-2.925	-5.273
182	1.250	1.750	4.572	-8.810	8.436	7.086	2.808
		9.195	7.579	50.173	-34.694	59.788	4.200
183	0	-0.938889	13.557	-1.464	1.055	10.418	-9.174
		2.386	15.444	10.142	-43.750	6.186	-10.465
183	1.250	-0.938889	13.557	-1.464	1.055	8.588	7.772
		2.386	15.444	10.142	-43.750	18.862	8.839

ENVOLVENTE para < Vz > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
184	0	-4.729	10.263	-9.064	-6.208	2.730	-6.698
		-1.302	6.198	0.774938	-20.260	-2.579	-3.965
184	1.250	-4.729	10.263	-9.064	-6.208	-8.599	6.130
		-1.302	6.198	0.774938	-20.260	-1.610	3.782
185	0	-5.147	5.576	-10.365	-15.742	-9.711	-3.663
		-1.709	3.670	-0.504672	-2.711	-6.788	-2.338
185	1.250	-5.147	5.576	-10.365	-15.742	-22.667	3.307
		-1.709	3.670	-0.504672	-2.711	-7.419	2.250
186	0	-5.929	-3.312	-11.882	-15.007	-15.455	2.200
		-1.886	-1.627	-0.383054	3.634	-7.367	1.079
186	1.250	-5.929	-3.312	-11.882	-15.007	-30.307	-1.940
		-1.886	-1.627	-0.383054	3.634	-7.845	-0.954928
187	0	-4.939	-11.005	-11.112	-7.541	-18.872	7.262
		-1.662	-5.761	-0.615911	3.039	-11.090	3.715
187	1.250	-4.939	-11.005	-11.112	-7.541	-32.761	-6.493
		-1.662	-5.761	-0.615911	3.039	-11.860	-3.486
188	0	-2.691	-16.922	-8.252	-2.309	-21.540	11.102
		-1.291	-9.705	-0.771506	2.030	-14.486	6.277
188	1.250	-2.691	-16.922	-8.252	-2.309	-31.855	-10.049
		-1.291	-9.705	-0.771506	2.030	-15.451	-5.854
189	0	-2.000	-15.766	-8.410	-17.490	-28.094	10.228
		-0.578939	-15.460	-0.476033	-0.849251	-19.003	10.100
189	1.250	-2.000	-15.766	-8.410	-17.490	-38.606	-9.479
		-0.578939	-15.460	-0.476033	-0.849251	-19.598	-9.225
190	0	-0.758637	-16.525	-14.156	-8.506	-35.809	10.799
		1.157	-11.489	-1.441	-10.993	-24.160	7.640
190	1.250	-0.758637	-16.525	-14.156	-8.506	-53.503	-9.857
		1.157	-11.489	-1.441	-10.993	-25.962	-6.720
191	0	2.991	-13.254	-57.621	-18.084	-31.852	8.707
		2.852	-6.525	-20.069	-4.514	-19.319	4.253

ENVOLVENTE para < Vz > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
191	1.250	2.991	-13.254	-57.621	-18.084	-103.875	-7.860
		2.852	-6.525	-20.069	-4.514	-44.405	-3.903
192	0	4.023	2.083	-187.479	-8.157	11.036	-1.203
		5.420	-0.487643	-77.743	2.570	9.644	-0.030768
192	1.250	4.023	2.083	-187.479	-8.157	-223.303	1.401
		5.420	-0.487643	-77.743	2.570	-87.531	-0.640298
193	0	1.612	22.484	-51.279	13.424	-49.858	-16.097
		1.990	12.288	-13.517	7.095	-26.271	-8.977
193	1.250	1.612	22.484	-51.279	13.424	-113.954	12.007
		1.990	12.288	-13.517	7.095	-43.166	6.383
194	0	-3.374	22.494	-11.804	6.479	-42.740	-15.734
		-0.215782	17.435	-0.559937	6.431	-29.124	-12.398
194	1.250	-3.374	22.494	-11.804	6.479	-57.495	12.382
		-0.215782	17.435	-0.559937	6.431	-29.824	9.395
195	0	-2.021	23.129	-8.392	-16.130	-30.762	-15.937
		-2.079	12.499	-1.160	2.835	-22.442	-8.700
195	1.250	-2.021	23.129	-8.392	-16.130	-41.252	12.973
		-2.079	12.499	-1.160	2.835	-23.892	6.923
196	0	-5.816	13.142	-13.460	-12.677	-29.852	-9.096
		-2.178	5.387	-1.258	2.277	-19.947	-3.735
196	1.250	-5.816	13.142	-13.460	-12.677	-46.676	7.331
		-2.178	5.387	-1.258	2.277	-21.519	2.999
197	0	-7.517	-0.451367	-16.181	-0.131239	-29.532	0.314169
		-2.088	-1.15E-05	-1.227	6.08E-07	-19.288	8.05E-06
197	1.250	-7.517	-0.451367	-16.181	-0.131239	-49.757	-0.250017
		-2.088	-1.15E-05	-1.227	6.08E-07	-20.821	-6.35E-06
198	0	-5.792	-13.649	-13.466	12.428	-29.929	9.453
		-2.085	-6.404	-1.269	-2.265	-19.823	4.450
198	1.250	-5.792	-13.649	-13.466	12.428	-46.760	-7.607
		-2.085	-6.404	-1.269	-2.265	-21.410	-3.554

ENVOLVENTE para < Vz > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
199	0	-1.908	-23.625	-8.381	15.861	-30.980	16.294
		-2.021	-19.423	-1.163	-3.060	-22.277	13.573
199	1.250	-1.908	-23.625	-8.381	15.861	-41.455	-13.236
		-2.021	-19.423	-1.163	-3.060	-23.731	-10.705
200	0	0.844615	-28.492	-4.506	15.639	-39.287	19.761
		0.433445	-23.977	-0.628991	-6.642	-29.245	16.945
200	1.250	0.844615	-28.492	-4.506	15.639	-44.920	-15.853
		0.433445	-23.977	-0.628991	-6.642	-30.032	-13.026
201	0	6.561	-24.653	-43.404	-18.047	-39.896	17.553
		2.544	-12.670	-15.116	-5.589	-26.768	9.101
201	1.250	6.561	-24.653	-43.404	-18.047	-94.148	-13.262
		2.544	-12.670	-15.116	-5.589	-45.662	-6.736
202	0	8.025	-5.511	-168.897	22.098	14.265	2.928
		5.424	0.191609	-77.367	-0.604166	9.690	0.071054
202	1.250	8.025	-5.511	-168.897	22.098	-196.848	-3.960
		5.424	0.191609	-77.367	-0.604166	-87.015	0.310556
203	0	5.498	10.639	-41.995	14.128	-27.793	-7.081
		2.448	7.027	-17.400	13.693	-19.831	-4.708
203	1.250	5.498	10.639	-41.995	14.128	-80.285	6.217
		2.448	7.027	-17.400	13.693	-41.580	4.075
204	0	1.173	15.036	-5.457	-1.305	-28.922	-9.882
		0.926152	13.050	-0.834098	19.177	-26.123	-8.707
204	1.250	1.173	15.036	-5.457	-1.305	-35.743	8.913
		0.926152	13.050	-0.834098	19.177	-27.165	7.604
205	0	-1.302	16.454	-3.160	3.486	-24.218	-10.746
		-0.858370	12.371	-0.279500	10.242	-19.422	-8.122
205	1.250	-1.302	16.454	-3.160	3.486	-28.167	9.820
		-0.858370	12.371	-0.279500	10.242	-19.772	7.341
206	0	-2.183	13.144	-3.393	4.998	-19.205	-8.518

ENVOLVENTE para < Vz > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
		-1.464	8.048	-0.575173	-0.068723	-14.886	-5.210
206	1.250	-2.183	13.144	-3.393	4.998	-23.446	7.911
		-1.464	8.048	-0.575173	-0.068723	-15.605	4.849
207	0	-2.248	9.290	-3.264	15.364	-15.990	-6.035
		-1.724	3.958	-0.486424	-3.335	-12.268	-2.541
207	1.250	-2.248	9.290	-3.264	15.364	-20.071	5.577
		-1.724	3.958	-0.486424	-3.335	-12.876	2.406
208	0	-2.237	4.497	-3.047	16.531	-12.775	-2.959
		-1.744	0.103021	-0.353893	-4.103	-9.760	-0.064765
208	1.250	-2.237	4.497	-3.047	16.531	-16.583	2.662
		-1.744	0.103021	-0.353893	-4.103	-10.203	0.064005
209	0	-2.278	-1.751	-2.705	1.106	-8.417	1.103
		-1.911	-2.768	-0.225979	7.829	-6.702	1.747
209	1.250	-2.278	-1.751	-2.705	1.106	-11.798	-1.085
		-1.911	-2.768	-0.225979	7.829	-6.984	-1.713
210	0	-2.122	-7.942	-1.385	1.379	-2.706	5.188
		-1.634	-4.547	0.804758	15.018	-2.790	2.953
210	1.250	-2.122	-7.942	-1.385	1.379	-4.438	-4.739
		-1.634	-4.547	0.804758	15.018	-1.784	-2.730
211	0	0.054323	-7.198	0.637190	-4.970	4.080	4.770
		0.195977	-11.064	8.452	26.028	4.314	7.509
211	1.250	0.054323	-7.198	0.637190	-4.970	4.876	-4.227
		0.195977	-11.064	8.452	26.028	14.879	-6.321
212	0	2.485	-4.664	-7.997	-8.035	18.671	3.053
		5.476	-4.809	37.009	25.560	-3.945	3.412
212	1.250	2.485	-4.664	-7.997	-8.035	8.675	-2.777
		5.476	-4.809	37.009	25.560	42.315	-2.599
213	0	-7.778	8.266	-32.729	21.172	59.009	-4.599
		-4.938	6.092	22.876	-20.517	7.029	-3.215
213	1.250	-7.778	8.266	-32.729	21.172	18.099	5.734

ENVOLVENTE para < Vz > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
		-4.938	6.092	22.876	-20.517	35.622	4.399
214	0	-0.757350	17.605	-9.015	24.400	23.406	-10.123
		0.730328	5.967	1.958	-24.615	5.428	-3.041
214	1.250	-0.757350	17.605	-9.015	24.400	12.138	11.882
		0.730328	5.967	1.958	-24.615	7.875	4.417
215	0	1.308	8.879	-2.725	1.626	-1.391	-5.352
		3.388	5.705	1.818	-11.700	-4.201	-3.231
215	1.250	1.308	8.879	-2.725	1.626	-4.797	5.746
		3.388	5.705	1.818	-11.700	-1.929	3.900
216	0	1.437	4.966	-2.057	-9.348	-12.170	-3.078
		4.727	5.302	3.779	1.677	-8.423	-3.201
216	1.250	1.437	4.966	-2.057	-9.348	-14.741	3.130
		4.727	5.302	3.779	1.677	-3.699	3.425
217	0	0.891691	-1.316	-2.307	-11.824	-17.164	0.822983
		4.380	-2.329	4.265	7.324	-14.466	1.354
217	1.250	0.891691	-1.316	-2.307	-11.824	-20.047	-0.822405
		4.380	-2.329	4.265	7.324	-9.135	-1.558
218	0	1.324	-7.516	-1.831	-6.411	-19.856	4.639
		3.852	-9.506	4.438	6.135	-18.824	5.691
218	1.250	1.324	-7.516	-1.831	-6.411	-22.144	-4.756
		3.852	-9.506	4.438	6.135	-13.277	-6.191
219	0	2.177	-12.943	-1.079	-1.793	-21.314	7.884
		2.946	-15.483	3.591	5.222	-22.443	9.286
219	1.250	2.177	-12.943	-1.079	-1.793	-22.664	-8.294
		2.946	-15.483	3.591	5.222	-17.955	-10.067
220	0	1.166	-11.854	-1.328	-10.494	-26.142	7.026
		1.892	-15.508	3.592	3.715	-28.426	9.261
220	1.250	1.166	-11.854	-1.328	-10.494	-27.802	-7.791
		1.892	-15.508	3.592	3.715	-23.937	-10.123

ENVOLVENTE para < Vz > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
221	0	-1.969	-13.248	-0.009310	2.641	-36.231	7.752
		-0.124616	-16.374	7.468	-0.395903	-39.123	9.694
221	1.250	-1.969	-13.248	-0.009310	2.641	-36.242	-8.807
		-0.124616	-16.374	7.468	-0.395903	-29.789	-10.773
222	0	-3.074	-6.661	20.079	4.534	-44.410	3.843
		-3.937	-11.840	50.919	15.413	-87.759	6.961
222	1.250	-3.074	-6.661	20.079	4.534	-19.312	-4.483
		-3.937	-11.840	50.919	15.413	-24.113	-7.838
223	0	-1.757	4.965	77.679	-2.673	-87.410	-3.270
		-7.957	0.491523	172.325	3.929	-197.113	-0.217813
223	1.250	-1.757	4.965	77.679	-2.673	9.686	2.936
		-7.957	0.491523	172.325	3.929	18.285	0.396566
224	0	-2.766	12.536	13.527	-7.313	-43.158	-6.724
		-3.825	23.053	42.441	-17.681	-92.658	-12.212
224	1.250	-2.766	12.536	13.527	-7.313	-26.249	8.945
		-3.825	23.053	42.441	-17.681	-39.609	16.603
225	0	-0.294366	17.504	-1.746	-3.385	-38.582	-9.301
		1.655	24.156	4.897	-0.183137	-41.522	-13.235
225	1.250	-0.294366	17.504	-1.746	-3.385	-40.764	12.579
		1.655	24.156	4.897	-0.183137	-35.400	16.959
226	0	3.096	18.951	-0.463666	-16.128	-29.145	-10.419
		2.814	18.245	4.565	3.619	-33.359	-10.250
226	1.250	3.096	18.951	-0.463666	-16.128	-29.724	13.269
		2.814	18.245	4.565	3.619	-27.652	12.555
227	0	1.805	10.328	-1.544	-10.685	-30.193	-5.747
		4.370	12.642	5.863	1.178	-29.843	-7.082
227	1.250	1.805	10.328	-1.544	-10.685	-32.122	7.163
		4.370	12.642	5.863	1.178	-22.515	8.720
228	0	1.050	-1.25E-05	-2.315	-2.65E-06	-31.110	7.32E-06
		4.687	-0.448271	6.151	-0.089411	-28.812	0.257113

ENVOLVENTE para < Vz > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
228	1.250	1.050	-1.25E-05	-2.315	-2.65E-06	-34.004	-8.33E-06
		4.687	-0.448271	6.151	-0.089411	-21.124	-0.303204
229	0	1.827	-10.726	-1.538	10.709	-30.265	5.972
		4.395	-13.137	5.870	-1.370	-29.929	7.367
229	1.250	1.827	-10.726	-1.538	10.709	-32.188	-7.435
		4.395	-13.137	5.870	-1.370	-22.591	-9.053
230	0	3.140	-19.341	-0.476742	16.063	-29.321	10.633
		2.896	-18.369	4.537	9.044	-33.405	10.034
230	1.250	3.140	-19.341	-0.476742	16.063	-29.917	-13.542
		2.896	-18.369	4.537	9.044	-27.734	-12.927
231	0	1.522	-23.176	0.338360	21.270	-32.882	12.320
		0.862895	-23.898	3.903	9.296	-40.644	12.868
231	1.250	1.522	-23.176	0.338360	21.270	-32.459	-16.649
		0.862895	-23.898	3.903	9.296	-35.766	-17.004
232	0	-2.762	-11.260	15.194	7.576	-45.635	5.873
		-3.981	-24.282	44.164	32.849	-95.353	12.573
232	1.250	-2.762	-11.260	15.194	7.576	-26.643	-8.201
		-3.981	-24.282	44.164	32.849	-40.150	-17.778
233	0	-1.617	-3.479	77.006	2.256	-86.512	2.256
		-8.683	0.604320	164.930	-9.653	-191.077	-0.757861
233	1.250	-1.617	-3.479	77.006	2.256	9.741	-2.094
		-8.683	0.604320	164.930	-9.653	15.077	-0.002491
234	0	-2.962	7.417	17.648	-7.328	-40.968	-4.366
		-4.555	11.243	42.918	-4.672	-80.692	-6.753
234	1.250	-2.962	7.417	17.648	-7.328	-18.909	4.905
		-4.555	11.243	42.918	-4.672	-27.047	7.300
235	0	-0.753401	11.325	1.376	-4.974	-24.681	-6.659
		-1.082	16.602	5.626	10.393	-37.409	-9.898
235	1.250	-0.753401	11.325	1.376	-4.974	-22.961	7.497
		-1.082	16.602	5.626	10.393	-30.377	10.854

ENVOLVENTE para < Vz > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
236	0	1.101	11.182	0.620223	-0.443461	-19.283	-6.671
		1.097	16.743	3.098	6.077	-28.183	-10.036
236	1.250	1.101	11.182	0.620223	-0.443461	-18.508	7.306
		1.097	16.743	3.098	6.077	-24.311	10.892
237	0	1.802	8.423	0.832409	2.372	-16.157	-5.081
		2.188	13.148	3.253	4.656	-23.434	-7.941
237	1.250	1.802	8.423	0.832409	2.372	-15.117	5.448
		2.188	13.148	3.253	4.656	-19.368	8.494
238	0	1.746	4.774	0.747176	5.701	-13.475	-2.914
		2.781	8.246	3.086	-5.617	-19.922	-4.960
238	1.250	1.746	4.774	0.747176	5.701	-12.541	3.053
		2.781	8.246	3.086	-5.617	-16.064	5.348
239	0	1.681	1.114	0.617824	6.535	-10.847	-0.690724
		3.053	3.278	2.865	-6.707	-16.386	-1.942
239	1.250	1.681	1.114	0.617824	6.535	-10.075	0.702071
		3.053	3.278	2.865	-6.707	-12.805	2.156
240	0	1.729	-2.686	0.513054	-2.652	-7.613	1.656
		3.388	-1.593	2.580	8.811	-11.545	0.941425
240	1.250	1.729	-2.686	0.513054	-2.652	-6.971	-1.701
		3.388	-1.593	2.580	8.811	-8.320	-1.050
241	0	1.644	-7.661	-0.268571	-5.102	-1.548	4.616
		3.214	-5.637	1.565	8.656	-4.126	3.226
241	1.250	1.644	-7.661	-0.268571	-5.102	-1.883	-4.959
		3.214	-5.637	1.565	8.656	-2.170	-3.820
242	0	-0.385807	-13.169	-7.174	-22.412	14.534	7.642
		0.751947	-5.791	1.500	21.315	4.994	3.036
242	1.250	-0.385807	-13.169	-7.174	-22.412	5.567	-8.818
		0.751947	-5.791	1.500	21.315	6.868	-4.202
243	0	-5.726	-6.624	-27.767	-18.243	39.155	3.771
		-3.622	-3.276	18.700	15.855	1.046	1.646

ENVOLVENTE para < Vz > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
243	1.250	-5.726	-6.624	-27.767	-18.243	4.447	-4.509
		-3.622	-3.276	18.700	15.855	24.420	-2.448
244	0	-22.462	6.547	-83.194	30.607	56.474	-3.100
		-8.627	1.784	2.811	-10.784	8.301	0.341624
244	1.250	-22.462	6.547	-83.194	30.607	-47.515	5.084
		-8.627	1.784	2.811	-10.784	11.815	2.572
245	0	1.826	12.375	-13.897	40.152	14.172	-5.874
		2.127	3.246	0.074546	-15.773	1.016	-0.117817
245	1.250	1.826	12.375	-13.897	40.152	-3.199	9.594
		2.127	3.246	0.074546	-15.773	1.109	3.939
246	0	7.712	3.714	-1.521	9.445	3.313	-2.125
		9.443	7.502	4.358	-2.344	-9.328	-3.341
246	1.250	7.712	3.714	-1.521	9.445	1.412	2.517
		9.443	7.502	4.358	-2.344	-3.881	6.037
247	0	7.474	2.736	0.690332	3.862	-2.759	-1.475
		9.273	3.147	7.026	-3.848	-16.946	-1.436
247	1.250	7.474	2.736	0.690332	3.862	-1.896	1.944
		9.273	3.147	7.026	-3.848	-8.164	2.498
248	0	7.447	-0.861729	1.461	2.261	-5.328	0.319615
		8.525	-1.679	8.571	-2.118	-21.624	0.899117
248	1.250	7.447	-0.861729	1.461	2.261	-3.502	-0.757503
		8.525	-1.679	8.571	-2.118	-10.910	-1.200
249	0	6.863	-4.484	2.283	1.774	-7.569	2.085
		8.302	-6.674	9.339	1.242	-24.047	3.268
249	1.250	6.863	-4.484	2.283	1.774	-4.715	-3.520
		8.302	-6.674	9.339	1.242	-12.374	-5.074
250	0	5.409	-7.673	4.107	2.324	-10.566	3.574
		7.789	-11.353	9.783	5.220	-25.426	5.346
250	1.250	5.409	-7.673	4.107	2.324	-5.433	-6.017
		7.789	-11.353	9.783	5.220	-13.199	-8.845

ENVOLVENTE para < Vz > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
251	0	4.070	-6.793	4.974	2.808	-13.217	3.138
		4.929	-12.101	11.614	-2.157	-29.653	5.709
251	1.250	4.070	-6.793	4.974	2.808	-7.000	-5.353
		4.929	-12.101	11.614	-2.157	-15.137	-9.416
252	0	0.390130	-9.119	6.608	8.669	-14.721	3.730
		-3.096	-14.951	16.339	3.555	-36.031	6.404
252	1.250	0.390130	-9.119	6.608	8.669	-6.461	-7.668
		-3.096	-14.951	16.339	3.555	-15.608	-12.285
253	0	-6.449	-6.896	10.162	10.749	-13.011	2.554
		-14.625	-12.523	22.498	10.598	-35.409	4.946
253	1.250	-6.449	-6.896	10.162	10.749	-0.308985	-6.066
		-14.625	-12.523	22.498	10.598	-7.287	-10.707
254	0	-9.434	0.866055	7.773	2.970	-4.013	-0.521966
		-20.181	4.567	20.815	-11.205	-22.187	-0.713618
254	1.250	-9.434	0.866055	7.773	2.970	5.703	0.560558
		-20.181	4.567	20.815	-11.205	3.831	4.995
255	0	-4.431	14.205	11.551	-10.439	-19.669	-2.146
		-14.175	20.400	26.569	-21.293	-47.900	-1.989
255	1.250	-4.431	14.205	11.551	-10.439	-5.232	15.611
		-14.175	20.400	26.569	-21.293	-14.690	23.511
256	0	3.962	10.580	6.499	-5.142	-18.293	-2.057
		2.599	19.504	16.555	-8.259	-42.030	-3.672
256	1.250	3.962	10.580	6.499	-5.142	-10.169	11.168
		2.599	19.504	16.555	-8.259	-21.337	20.707
257	0	5.659	10.760	6.356	-2.820	-16.055	-2.514
		9.157	17.598	12.696	-14.862	-34.060	-3.196
257	1.250	5.659	10.760	6.356	-2.820	-8.110	10.935
		9.157	17.598	12.696	-14.862	-18.191	18.800
258	0	7.908	6.280	4.204	-1.508	-12.964	-1.478

ENVOLVENTE para < Vz > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
		9.650	9.179	12.863	-8.035	-34.554	-1.766
258	1.250	7.908	6.280	4.204	-1.508	-7.709	6.372
		9.650	9.179	12.863	-8.035	-18.476	9.707
259	0	8.844	-6.08E-06	3.605	3.23E-07	-12.066	1.94E-06
		9.418	-0.283327	13.094	-0.049000	-35.246	0.088158
259	1.250	8.844	-6.08E-06	3.605	3.23E-07	-7.560	-5.66E-06
		9.418	-0.283327	13.094	-0.049000	-18.879	-0.265988
260	0	7.925	-6.528	4.213	1.570	-13.007	1.541
		9.666	-9.488	12.874	7.902	-34.605	1.868
260	1.250	7.925	-6.528	4.213	1.570	-7.741	-6.619
		9.666	-9.488	12.874	7.902	-18.513	-9.991
261	0	5.644	-11.013	6.389	2.832	-16.172	2.568
		9.142	-17.852	12.733	14.884	-34.192	3.249
261	1.250	5.644	-11.013	6.389	2.832	-8.186	-11.197
		9.142	-17.852	12.733	14.884	-18.277	-19.066
262	0	2.161	-9.772	7.848	4.600	-19.214	1.797
		2.615	-23.742	15.326	22.381	-37.261	3.333
262	1.250	2.161	-9.772	7.848	4.600	-9.404	-10.418
		2.615	-23.742	15.326	22.381	-18.105	-26.342
263	0	-5.255	-11.464	12.240	9.818	-19.277	1.589
		-15.238	-20.823	24.544	16.749	-39.613	2.445
263	1.250	-5.255	-11.464	12.240	9.818	-3.978	-12.741
		-15.238	-20.823	24.544	16.749	-8.934	-23.583
264	0	-9.007	-0.890454	8.268	-2.536	-5.787	0.510046
		-20.489	-2.472	19.237	13.241	-16.739	-0.072260
264	1.250	-9.007	-0.890454	8.268	-2.536	4.548	-0.602976
		-20.489	-2.472	19.237	13.241	7.307	-3.163
265	0	-6.267	6.241	10.218	-6.338	-13.577	-2.500
		-14.359	11.641	20.534	-14.371	-30.256	-4.376
265	1.250	-6.267	6.241	10.218	-6.338	-0.805513	5.302

ENVOLVENTE para < Vz > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
		-14.359	11.641	20.534	-14.371	-4.589	10.174
266	0	-0.743243	8.169	7.292	-4.636	-14.962	-3.509
		-3.263	14.621	13.936	-10.471	-29.683	-6.022
266	1.250	-0.743243	8.169	7.292	-4.636	-5.848	6.703
		-3.263	14.621	13.936	-10.471	-12.263	12.254
267	0	2.783	6.789	5.424	0.078254	-13.202	-3.217
		3.958	12.919	10.043	2.346	-24.554	-6.171
267	1.250	2.783	6.789	5.424	0.078254	-6.422	5.269
		3.958	12.919	10.043	2.346	-12.001	9.976
268	0	4.047	4.770	4.686	0.016678	-11.353	-2.346
		6.546	9.398	8.586	4.756	-21.223	-4.788
268	1.250	4.047	4.770	4.686	0.016678	-5.496	3.616
		6.546	9.398	8.586	4.756	-10.491	6.959
269	0	4.144	2.831	4.211	0.292551	-9.830	-1.429
		7.085	5.822	7.727	5.653	-18.636	-3.124
269	1.250	4.144	2.831	4.211	0.292551	-4.567	2.110
		7.085	5.822	7.727	5.653	-8.978	4.153
270	0	4.142	1.005	3.722	1.318	-8.290	-0.549474
		7.306	2.435	6.899	5.354	-16.076	-1.418
270	1.250	4.142	1.005	3.722	1.318	-3.638	0.707007
		7.306	2.435	6.899	5.354	-7.453	1.625
271	0	4.402	-0.852673	3.049	0.063753	-6.267	0.441428
		7.887	-1.063	5.827	-6.907	-12.919	0.821153
271	1.250	4.402	-0.852673	3.049	0.063753	-2.456	-0.624371
		7.887	-1.063	5.827	-6.907	-5.635	-0.507255
272	0	4.547	-2.876	1.953	-2.420	-3.303	1.442
		7.854	-4.427	4.163	-10.450	-8.470	2.378
272	1.250	4.547	-2.876	1.953	-2.420	-0.862193	-2.153
		7.854	-4.427	4.163	-10.450	-3.266	-3.155

ENVOLVENTE para < Vz > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
273	0	0.498674	-10.236	-6.510	-32.445	3.205	5.009
		2.206	-3.820	-0.025074	15.665	1.168	0.456343
273	1.250	0.498674	-10.236	-6.510	-32.445	-4.932	-7.786
		2.206	-3.820	-0.025074	15.665	1.137	-4.318
274	0	-17.622	-5.641	-59.516	-24.496	35.665	2.778
		-8.048	-2.202	0.406039	8.780	8.562	0.030146
274	1.250	-17.622	-5.641	-59.516	-24.496	-38.727	-4.272
		-8.048	-2.202	0.406039	8.780	9.070	-2.722
1601	0	-625.299	-0.018236	-6.956	0.109156	25.494	0.107069
		-472.144	3.504	14.080	-0.051869	-75.167	-18.301
1601	11.000	-596.474	-0.018236	-6.956	0.109156	-51.014	-0.093524
		-450.792	2.464	14.080	-0.051869	79.704	14.521
1602	0	-403.942	7.002	-6.770	0.036637	38.844	-36.551
		-626.704	-0.018163	13.843	-0.106365	-64.131	0.106871
1602	11.000	-382.590	4.923	-6.770	0.036637	-35.618	29.031
		-597.879	-0.018163	13.843	-0.106365	88.139	-0.092911

ENVOLVENTE para < Mx > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
1	0	1.953	7.792	7.991	0.032429	2.260	5.028
		-5.197	25.256	80.939	62.492	-41.405	3.337
1	1.275	1.809	7.792	1.424	-4.653	8.262	14.962
		-5.197	24.963	69.530	53.778	54.515	35.351
2	0	-5.724	6.267	0.356956	-5.195	14.431	21.514
		-17.477	27.557	59.330	63.607	-4.863	44.126
2	1.275	-5.868	6.267	-6.210	-9.881	10.699	29.503
		-17.477	27.265	47.921	54.893	63.507	79.073
3	0	-17.641	2.533	9.209	-15.134	30.336	59.310

ENVOLVENTE para < Mx > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
		-25.543	19.085	53.868	58.372	13.586	83.729
3	1.275	-11.236	2.178	-10.246	-13.307	13.374	38.709
		-16.781	10.398	29.744	40.317	50.294	68.252
4	0	-11.749	-2.604	-6.638	-9.390	23.024	36.978
		-18.924	4.228	35.272	44.936	13.855	70.799
4	1.275	-12.964	-2.571	-13.444	-14.557	11.999	37.042
		-17.853	3.902	24.101	36.705	49.926	72.618
5	0	-20.039	-8.153	-9.575	-9.197	33.030	59.114
		-13.656	-2.187	30.287	42.839	14.806	70.382
5	1.275	-21.038	-8.451	-16.611	-14.450	18.013	51.660
		-12.801	-2.182	19.347	34.693	44.771	64.466
6	0	-16.353	-12.188	-11.312	-8.425	27.715	46.395
		-8.813	-7.313	26.615	42.375	11.756	62.233
6	1.275	-23.078	-18.415	-28.093	-19.938	17.622	58.009
		-8.190	-6.983	15.862	34.237	37.494	50.758
7	0	-13.806	-22.896	-18.976	-11.075	31.169	51.469
		-0.463749	-12.354	24.419	43.710	2.926	43.263
7	1.275	-14.176	-23.827	-26.347	-16.270	3.042	22.745
		-0.237459	-11.715	13.814	35.506	26.533	26.859
8	0	-3.010	-24.370	-18.022	-6.777	13.531	14.288
		9.752	-17.462	25.827	47.842	-8.536	18.139
8	1.275	-3.683	-27.484	-27.169	-12.035	-11.515	-11.985
		14.332	-13.558	12.453	37.268	2.665	-22.754
9	0	10.937	-18.486	-13.723	-3.202	-9.216	-28.435
		23.917	-15.870	24.986	50.927	-31.941	-26.758
9	1.275	11.944	-12.130	-16.634	-10.552	-13.849	-34.339
		26.469	-12.595	12.494	38.429	-17.263	-60.534
10	0	23.724	-9.044	-8.100	-6.583	-28.169	-59.333
		33.006	0.578294	33.476	41.204	-58.881	-70.475
10	1.275	22.795	-10.446	-31.848	-24.840	-34.204	-52.739

ENVOLVENTE para < Mx > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
		31.641	0.703397	25.053	35.586	-19.628	-65.652
11	0	27.570	2.120	-8.385	-27.436	-24.452	-65.768
		24.386	14.795	42.643	35.427	-39.710	-50.928
11	1.700	26.639	7.526	-26.583	-38.509	-39.402	-52.751
		27.394	13.136	13.681	14.027	-18.230	-51.479
12	0	7.337	13.551	0.194500	-26.830	-7.118	-33.306
		12.424	25.530	33.115	21.126	-31.561	-37.213
12	1.700	4.646	18.433	-18.090	-39.366	-7.443	4.600
		14.084	24.308	19.759	11.084	13.855	7.870
13	0	-6.183	12.033	0.025313	-21.687	19.390	24.661
		-6.886	24.376	32.011	24.483	-4.342	20.046
13	1.700	-9.172	12.738	-10.652	-29.105	11.245	45.812
		-1.537	23.342	18.664	14.007	37.916	61.467
14	0	-16.330	6.957	0.027321	-15.729	32.180	56.881
		-20.151	19.194	30.429	26.347	18.198	72.343
14	1.700	-20.057	7.291	-10.850	-22.977	24.739	71.037
		-13.919	18.535	17.305	15.683	57.078	103.301
15	0	-21.537	1.219	-1.864	-11.514	40.135	75.280
		-28.556	7.205	33.529	29.707	41.420	111.801
15	1.700	-27.739	1.651	-13.891	-19.614	36.469	95.989
		-19.774	6.412	3.577	4.923	51.600	106.056
16	0	-9.577	-4.251	-5.132	-9.058	32.850	60.556
		-39.848	-6.094	6.138	10.500	56.133	126.090
16	1.700	-28.477	-7.589	-33.681	-29.552	40.965	110.751
		-33.838	-5.663	-5.889	2.400	46.620	97.828
17	0	-13.539	-18.906	-17.443	-15.493	56.451	101.939
		-29.059	-15.799	0.502421	13.454	40.490	91.270
17	1.700	-19.963	-19.565	-30.567	-26.157	17.338	70.350
		-25.524	-15.464	-10.374	6.207	30.342	62.652

ENVOLVENTE para < Mx > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
18	0	-1.008	-23.595	-18.760	-13.734	36.827	59.107
		-13.335	-23.098	-1.801	18.185	19.621	47.406
18	1.700	-6.548	-24.628	-32.107	-24.211	-5.595	17.257
		-10.538	-22.394	-12.479	10.767	6.597	8.643
19	0	14.799	-24.082	-19.644	-10.791	12.218	4.660
		5.658	-23.632	-1.135	24.546	-11.731	-16.615
19	1.700	12.947	-25.305	-33.000	-20.833	-33.003	-40.039
		5.025	-22.559	-11.819	16.700	-22.418	-54.378
20	0	28.019	-12.123	-13.212	-14.327	-19.897	-54.375
		28.515	-11.059	7.540	24.056	-47.649	-77.640
20	1.700	29.139	-13.003	-26.134	-24.459	-54.985	-79.538
		27.204	-10.568	-3.507	16.323	-42.576	-92.215
21	0	34.403	6.133	-14.863	-29.026	-35.074	-92.111
		19.601	6.934	13.476	10.587	-37.533	-62.316
21	1.275	35.624	6.258	-23.286	-34.644	-61.335	-88.218
		18.235	6.517	3.924	2.806	-24.499	-49.736
22	0	27.670	18.075	-6.088	-31.728	-25.801	-77.120
		8.790	16.525	18.218	6.129	-25.793	-45.042
22	1.275	28.674	21.175	-13.893	-38.783	-37.560	-50.941
		7.642	13.132	8.048	-0.215633	-10.028	-27.294
23	0	17.839	18.658	-4.846	-28.423	-10.238	-46.402
		-4.092	19.987	20.242	7.765	-8.857	-12.445
23	1.275	17.166	21.478	-13.675	-36.565	-18.283	-14.033
		-3.564	16.874	11.095	2.508	7.359	4.269
24	0	5.744	17.073	-5.211	-26.406	9.498	-4.155
		-11.438	14.658	18.001	10.880	1.104	10.319
24	1.275	5.374	17.712	-15.816	-34.610	-3.141	19.080
		-11.212	13.727	10.630	5.684	18.590	27.353
25	0	-3.261	11.206	-8.655	-26.073	23.892	27.040
		-16.443	10.072	16.640	13.040	9.597	30.666

ENVOLVENTE para < Mx > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
25	1.275	-4.028	11.536	-19.407	-34.211	7.344	43.899
		-15.820	9.450	9.417	7.778	24.868	40.749
26	0	-8.680	5.278	-12.704	-27.092	33.334	46.321
		-16.290	6.507	15.401	14.122	10.509	33.658
26	1.275	-9.678	5.283	-23.645	-35.238	11.837	56.185
		-15.435	6.209	8.366	8.869	23.985	38.634
27	0	-14.678	-1.446	-17.704	-29.365	40.246	58.709
		-14.159	2.202	13.074	14.226	13.315	39.646
27	1.275	-15.893	-1.772	-28.875	-37.597	12.331	60.021
		-13.088	2.235	6.269	9.058	23.869	39.111
28	0	-14.781	-8.178	-23.368	-32.997	42.158	57.939
		-12.575	-2.780	9.724	12.829	14.574	40.850
28	1.275	-15.911	-8.861	-34.826	-41.414	6.713	50.121
		-11.589	-2.390	3.206	7.846	21.163	34.510
29	0	-12.639	-15.755	-30.808	-37.921	42.458	48.923
		-7.421	-7.064	5.507	9.224	11.736	30.918
29	1.275	-12.783	-16.048	-42.218	-46.634	-4.094	28.650
		-7.421	-7.064	-1.060	4.539	14.571	21.913
30	0	-5.319	-16.751	-48.803	-38.129	39.008	23.424
		-0.109309	-8.440	-2.532	3.910	9.128	15.463
30	1.275	-5.463	-17.044	-60.212	-46.843	-30.486	1.880
		-0.109309	-8.440	-9.099	-0.775898	1.713	4.702
31	0	1.312	-8.046	18.428	-6.109	6.177	5.231
		-2.531	-13.646	41.531	55.064	6.714	8.246
31	1.275	1.168	-8.046	13.776	-6.109	26.706	-5.027
		-2.531	-13.646	34.294	55.064	55.050	-9.153
32	0	-0.271021	-6.572	14.604	-9.535	32.055	3.718
		-5.694	-13.858	34.351	51.798	70.684	7.890
32	1.275	-0.415026	-6.572	9.951	-9.535	47.708	-4.662
		-5.694	-13.858	27.115	51.798	109.867	-9.778

ENVOLVENTE para < Mx > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
33	0	-2.501	-3.094	7.907	-11.459	50.251	1.093
		-9.884	-8.647	25.686	42.794	121.420	3.763
33	1.275	-2.645	-3.094	3.255	-11.459	57.366	-2.851
		-9.884	-8.647	6.450	42.794	146.856	-7.262
34	0	-6.861	0.849479	-3.841	-12.177	94.089	-1.918
		-8.086	-0.851538	2.905	35.579	107.600	-0.722318
34	1.275	-7.005	0.849479	-8.493	-12.177	86.227	-0.834928
		-8.086	-0.851538	-4.332	35.579	106.690	-1.808
35	0	-9.353	3.560	-9.169	-12.006	91.084	-3.511
		-4.374	3.103	-8.416	33.748	108.954	-3.043
35	1.275	-9.353	3.560	-13.822	-12.006	76.428	1.028
		-4.518	3.103	-15.652	33.748	93.612	0.913470
36	0	-9.701	9.071	-15.833	-11.869	121.443	-7.258
		-1.674	6.879	-19.710	33.003	96.957	-5.124
36	1.275	-9.701	9.071	-32.485	-11.869	85.692	4.307
		-1.818	6.879	-26.947	33.003	67.214	3.646
37	0	-6.149	12.244	-35.058	-12.366	84.511	-8.665
		2.429	10.095	-30.640	32.876	74.193	-6.755
37	1.275	-6.149	12.244	-39.710	-12.366	36.848	6.946
		2.285	10.095	-37.877	32.876	30.515	6.115
38	0	-1.245	13.759	-44.665	-8.959	37.709	-8.820
		8.415	12.825	-46.589	34.308	21.555	-7.457
38	1.275	-1.245	13.759	-49.317	-8.959	-22.203	8.722
		8.271	12.825	-53.825	34.308	-42.457	8.895
39	0	2.927	11.252	-51.414	-3.461	-23.379	-6.293
		11.536	12.559	-67.670	39.700	-44.363	-6.101
39	1.275	2.927	11.252	-56.066	-3.461	-91.895	8.052
		11.392	12.559	-74.907	39.700	-135.252	9.910
40	0	5.913	6.025	-42.243	-4.104	-102.361	-2.118
		9.454	1.975	-48.910	39.286	-120.822	0.867103

ENVOLVENTE para < Mx > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
40	1.275	5.769	6.025	-47.852	-4.104	-159.795	5.564
		9.454	1.975	-55.191	39.286	-187.184	3.385
41	0	9.113	-3.632	62.459	-32.142	-184.574	4.314
		8.007	-7.295	59.363	11.979	-170.017	7.658
41	1.700	8.921	-3.632	54.085	-32.142	-85.516	-1.860
		8.007	-7.295	51.885	11.979	-75.460	-4.742
42	0	5.388	-10.873	59.786	-26.423	-79.633	10.079
		6.897	-13.955	61.796	14.060	-69.000	12.342
42	1.700	5.388	-10.873	51.412	-26.423	14.882	-8.405
		6.705	-13.955	54.318	14.060	29.693	-11.381
43	0	-1.789	-9.372	39.151	-19.763	27.883	7.670
		-0.697583	-12.802	46.667	17.747	24.487	10.458
43	1.700	-1.789	-9.372	30.778	-19.763	87.321	-8.262
		-0.889591	-12.802	39.189	17.747	97.463	-11.304
44	0	-7.318	-5.632	24.626	-16.130	84.824	3.931
		-7.614	-9.736	35.906	17.152	95.536	7.109
44	1.700	-7.318	-5.632	16.252	-16.130	119.568	-5.644
		-7.806	-9.736	28.429	17.152	150.219	-9.442
45	0	-9.911	-1.295	9.511	-12.873	119.144	-0.064960
		-10.771	-3.499	25.565	8.871	150.606	1.359
45	1.700	-9.911	-1.295	1.138	-12.873	128.196	-2.266
		-10.963	-3.499	6.087	8.871	169.709	-4.588
46	0	-6.177	2.766	-4.553	-11.793	111.628	-3.395
		-15.135	3.439	-7.903	4.666	177.573	-4.744
46	1.700	-6.177	2.766	-12.031	-11.793	97.532	1.307
		-15.327	3.439	-28.277	4.666	154.620	1.102
47	0	-7.683	9.978	-29.233	-17.000	148.533	-9.619
		-11.169	9.587	-31.905	7.672	155.739	-9.511
47	1.700	-7.683	9.978	-36.711	-17.000	92.483	7.343
		-11.361	9.587	-40.278	7.672	94.386	6.787

ENVOLVENTE para < Mx > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
48	0	-0.853921	13.035	-40.047	-17.514	94.480	-11.450
		-3.738	14.204	-47.724	11.665	96.440	-12.528
48	1.700	-0.853921	13.035	-47.524	-17.514	20.048	10.708
		-3.930	14.204	-56.098	11.665	8.194	11.617
49	0	6.442	14.043	-55.397	-13.610	25.373	-11.375
		3.704	15.166	-66.899	19.333	12.370	-12.082
49	1.700	6.442	14.043	-62.875	-13.610	-75.154	12.497
		3.512	15.166	-75.273	19.333	-108.471	13.699
50	0	7.356	7.147	-49.930	-12.280	-82.334	-4.495
		8.008	7.903	-63.462	23.996	-101.058	-5.416
50	1.700	7.164	7.147	-57.408	-12.280	-173.566	7.655
		8.008	7.903	-71.836	23.996	-216.057	8.018
51	0	12.332	-3.969	63.560	-36.329	-214.332	4.784
		4.775	-3.880	40.592	1.051	-132.038	3.693
51	1.275	12.188	-3.969	57.280	-36.329	-137.299	-0.275579
		4.775	-3.880	34.984	1.051	-83.861	-1.254
52	0	13.951	-13.774	76.692	-33.925	-149.985	10.636
		2.656	-7.983	43.096	0.935641	-74.361	5.653
52	1.275	13.951	-13.774	69.456	-33.925	-56.819	-6.926
		2.512	-7.983	38.444	0.935641	-22.381	-4.525
53	0	11.356	-14.040	55.875	-28.147	-69.158	9.808
		-0.410256	-9.957	37.074	5.307	-20.657	6.156
53	1.275	11.356	-14.040	48.638	-28.147	-2.533	-8.092
		-0.554262	-9.957	32.422	5.307	23.644	-6.538
54	0	6.204	-11.677	42.354	-26.158	-8.836	7.445
		-3.846	-7.867	26.764	8.330	21.985	4.273
54	1.275	6.204	-11.677	35.117	-26.158	40.549	-7.443
		-3.990	-7.867	22.112	8.330	53.142	-5.756
55	0	1.396	-8.131	30.520	-26.097	35.538	4.648

ENVOLVENTE para < Mx > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
		-6.774	-5.011	17.494	10.094	52.439	2.139
55	1.275	1.396	-8.131	23.284	-26.097	69.837	-5.719
		-6.918	-5.011	12.841	10.094	71.777	-4.249
56	0	-2.208	-4.299	18.945	-27.116	67.872	1.865
		-6.494	-3.066	11.768	11.132	51.624	0.939973
56	1.275	-2.208	-4.299	11.709	-27.116	87.414	-3.616
		-6.638	-3.066	7.115	11.132	63.662	-2.969
57	0	-6.574	-0.489460	7.582	-29.112	86.303	-0.778946
		-4.275	-0.123454	4.023	11.576	59.429	-0.945743
57	1.275	-6.718	-0.489460	0.345696	-29.112	91.357	-1.403
		-4.275	-0.123454	-0.628827	11.576	61.593	-1.103
58	0	-5.878	3.450	-2.516	-32.420	85.615	-3.311
		-3.418	3.172	-3.781	11.053	60.414	-2.953
58	1.275	-6.022	3.450	-9.753	-32.420	77.794	1.087
		-3.418	3.172	-8.433	11.053	52.628	1.091
59	0	-3.301	7.818	-13.303	-37.608	70.547	-5.715
		-1.098	6.609	-10.625	8.965	49.951	-4.754
59	1.275	-3.445	7.818	-20.539	-37.608	48.974	4.252
		-1.098	6.609	-15.277	8.965	33.440	3.672
60	0	-1.761	8.816	-22.286	-40.268	37.956	-6.075
		0.707602	7.950	-14.563	5.425	27.854	-5.071
60	1.275	-1.905	8.816	-29.523	-40.268	4.929	5.166
		0.707602	7.950	-19.215	5.425	6.322	5.065
61	0	0.473108	-11.193	22.238	-21.156	11.652	7.014
		-0.298674	-11.285	24.829	45.302	12.862	7.068
61	1.275	0.329103	-11.193	14.878	-20.557	35.313	-7.257
		-0.298674	-11.285	19.129	44.704	40.884	-7.320
62	0	-0.038021	-12.671	25.616	-22.970	51.478	7.479
		1.144	-11.961	27.704	49.095	54.882	7.039
62	1.275	-0.038021	-12.671	18.256	-22.371	79.445	-8.676

ENVOLVENTE para < Mx > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
		0.999926	-11.961	22.004	48.496	86.570	-8.211
63	0	-0.100907	-7.719	17.231	-21.689	87.336	3.549
		2.255	-7.154	18.928	44.110	96.558	3.226
63	1.275	-0.100907	-7.719	9.870	-21.090	104.612	-6.292
		2.111	-7.154	13.228	43.512	117.057	-5.894
64	0	-0.027352	-0.439585	0.979358	-20.303	125.375	-1.583
		2.402	0.470037	3.976	41.846	82.000	-1.254
64	1.275	-0.027352	-0.439585	-6.381	-19.704	121.931	-2.144
		2.258	0.470037	-1.724	41.247	83.435	-0.655108
65	0	-0.224834	4.947	-11.167	-19.620	124.521	-4.873
		2.175	4.120	-5.067	40.059	86.475	-3.481
65	1.275	-0.224834	4.947	-18.527	-19.021	105.592	1.434
		2.031	4.120	-10.767	39.460	76.382	1.772
66	0	0.175520	9.933	-23.350	-18.106	105.938	-7.656
		1.537	7.511	-14.292	38.011	81.783	-5.419
66	1.275	0.031515	9.933	-30.710	-17.508	71.476	5.009
		1.537	7.511	-19.992	37.413	59.928	4.156
67	0	1.808	17.758	-43.102	-18.654	98.526	-12.224
		-0.547962	11.214	-25.028	35.118	53.328	-7.176
67	1.275	1.664	17.758	-50.462	-18.055	38.881	10.416
		-0.547962	11.214	-30.728	34.519	17.786	7.122
68	0	1.489	19.921	-55.547	-18.493	42.291	-12.578
		-0.349465	13.318	-35.051	32.485	10.719	-7.691
68	1.275	1.345	19.921	-62.907	-17.894	-33.220	12.820
		-0.349465	13.318	-40.751	31.886	-37.603	9.289
69	0	0.967531	16.735	-73.235	-18.053	-23.287	-9.552
		-0.228263	10.408	-48.030	30.299	-27.816	-5.294
69	1.275	0.823525	16.735	-80.595	-18.652	-121.350	11.785
		-0.228263	10.408	-53.730	30.898	-92.685	7.975

ENVOLVENTE para < Mx > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
70	0	-0.178579	8.371	-152.861	-20.252	-86.632	-3.530
		0.948384	2.779	-122.576	27.692	-99.325	0.156064
70	1.275	-0.178579	8.371	-160.222	-20.851	-286.214	7.143
		0.804378	2.779	-128.276	28.290	-259.238	3.699
71	0	-0.359602	-4.256	106.611	-17.725	-230.994	4.644
		4.810	-11.092	142.042	32.313	-285.527	10.561
71	1.700	-0.359602	-4.256	99.011	-16.927	-56.223	-2.591
		4.618	-11.092	132.228	31.515	-52.407	-8.295
72	0	3.593	-11.678	47.421	-19.412	-60.328	10.661
		-1.194	-19.580	73.461	29.369	-86.889	17.343
72	1.700	3.401	-11.678	39.821	-18.614	13.825	-9.192
		-1.194	-19.580	63.647	28.571	29.648	-15.942
73	0	3.162	-10.534	34.779	-18.643	17.688	8.913
		-1.734	-18.865	58.170	26.467	23.439	15.644
73	1.700	2.970	-10.534	27.179	-17.845	70.350	-8.995
		-1.734	-18.865	48.356	25.669	113.982	-16.425
74	0	2.806	-5.939	20.551	-17.839	79.289	4.337
		-1.884	-13.158	39.666	21.304	113.613	9.796
74	1.700	2.614	-5.939	12.951	-17.041	107.764	-5.758
		-1.884	-13.158	29.852	20.506	172.701	-12.573
75	0	2.827	-1.783	8.315	-16.072	104.424	0.592154
		-1.301	-4.355	16.371	11.102	175.710	1.798
75	1.700	2.827	-1.783	0.714806	-15.274	112.099	-2.440
		-1.493	-4.355	6.557	10.303	195.197	-5.605
76	0	-0.911585	3.441	-5.138	-15.314	144.309	-4.286
		3.178	2.729	-3.636	5.020	104.643	-3.298
76	1.700	-0.911585	3.441	-14.951	-16.112	127.234	1.564
		2.986	2.729	-11.236	5.819	92.003	1.341
77	0	-2.080	13.468	-30.712	-20.387	170.930	-12.801
		3.284	6.500	-14.335	7.228	90.859	-6.206

ENVOLVENTE para < Mx > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
77	1.700	-2.272	13.468	-40.526	-21.185	110.380	10.093
		3.284	6.500	-21.935	8.026	60.030	4.843
78	0	-2.176	19.109	-49.192	-25.550	110.844	-16.580
		3.187	10.534	-26.921	9.476	61.991	-9.096
78	1.700	-2.368	19.109	-59.006	-26.348	18.879	15.904
		3.187	10.534	-34.521	10.274	9.767	8.812
79	0	-2.025	19.516	-64.462	-28.446	25.399	-15.837
		3.117	11.679	-38.450	11.732	14.621	-9.410
79	1.700	-2.217	19.516	-74.275	-29.244	-92.522	17.339
		3.117	11.679	-46.050	12.530	-57.200	10.443
80	0	2.792	10.482	-139.791	-31.376	-56.382	-7.744
		-2.709	4.396	-102.641	14.086	-44.429	-2.973
80	1.700	2.792	10.482	-149.605	-32.175	-302.358	10.075
		-2.901	4.396	-110.241	14.884	-225.372	4.501
81	0	2.369	-3.617	122.071	-27.788	-247.341	4.267
		1.782	-6.271	130.889	15.268	-234.693	5.424
81	1.275	2.369	-3.617	115.773	-27.788	-95.722	-0.344371
		1.638	-6.271	123.529	14.670	-72.509	-2.572
82	0	1.227	-12.158	53.308	-27.022	-106.829	9.250
		1.970	-13.070	66.343	13.661	-104.347	9.236
82	1.275	1.083	-12.158	47.009	-27.022	-42.879	-6.251
		1.970	-13.070	58.983	13.063	-24.455	-7.428
83	0	0.453046	-14.073	41.400	-27.204	-50.956	9.839
		2.253	-15.323	51.208	13.594	-33.072	9.855
83	1.275	0.309040	-14.073	35.700	-27.803	-1.807	-8.103
		2.253	-15.323	43.249	13.594	27.142	-9.681
84	0	0.036606	-12.194	32.374	-28.810	-5.333	7.944
		2.340	-12.833	39.426	15.025	22.744	7.493
84	1.275	-0.107400	-12.194	26.674	-29.409	32.308	-7.602
		2.340	-12.833	31.467	15.025	67.937	-8.868

ENVOLVENTE para < Mx > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
85	0	1.952	-9.059	23.420	-30.386	26.598	5.478
		0.168761	-8.223	26.677	16.463	68.354	3.972
85	1.275	1.808	-9.059	17.720	-30.984	52.823	-6.072
		0.168761	-8.223	18.718	16.463	97.292	-6.513
86	0	2.064	-5.632	14.570	-31.981	48.660	2.999
		-0.158665	-3.224	14.285	17.929	96.898	0.483365
86	1.275	2.064	-5.632	8.870	-32.580	63.603	-4.182
		-0.302670	-3.224	6.326	17.929	110.037	-3.627
87	0	1.988	-1.993	5.665	-33.655	61.406	0.521776
		-0.355776	1.721	2.873	19.448	105.884	-2.699
87	1.275	1.988	-1.993	-0.034699	-34.254	64.995	-2.019
		-0.499782	1.721	-5.086	19.448	104.473	-0.505074
88	0	1.736	1.867	-2.871	-35.420	61.886	-1.885
		-0.429448	7.170	-8.259	21.010	100.042	-5.903
88	1.275	1.736	1.867	-8.571	-36.018	54.592	0.494876
		-0.573453	7.170	-16.217	21.010	84.439	3.238
89	0	1.052	5.489	-9.692	-36.674	49.288	-3.840
		-0.232635	12.263	-17.079	22.208	77.261	-8.408
89	1.275	1.052	5.489	-15.392	-37.273	33.298	3.157
		-0.376640	12.263	-25.038	22.208	50.413	7.227
90	0	-0.108154	6.250	-10.141	-33.213	24.952	-4.071
		0.343807	11.479	-15.100	20.374	36.206	-7.442
90	1.275	-0.252160	6.250	-15.841	-33.812	8.390	3.898
		0.343807	11.479	-23.058	20.374	11.882	7.194
91	0	1.719	-14.683	38.465	-38.378	9.436	8.834
		1.690	-5.108	21.250	19.650	8.163	2.811
91	1.275	1.719	-14.683	31.228	-38.378	53.864	-9.887
		1.546	-5.108	16.597	19.650	32.289	-3.702
92	0	4.795	-12.750	36.135	-32.726	69.130	6.968
		4.863	-3.939	18.991	24.671	37.584	1.746

ENVOLVENTE para < Mx > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
92	1.275	4.795	-12.750	16.899	-32.726	97.988	-9.287
		4.719	-3.939	14.339	24.671	58.831	-3.277
93	0	9.657	-6.061	17.727	-25.225	107.239	2.080
		7.356	-1.365	12.986	26.893	60.807	-0.037976
93	1.275	9.657	-6.061	-1.509	-25.225	115.327	-5.648
		7.212	-1.365	8.334	26.893	74.398	-1.778
94	0	12.035	-0.690194	-2.155	-20.546	122.267	-1.361
		8.036	1.276	5.371	27.250	74.630	-1.718
94	1.275	12.035	-0.690194	-9.391	-20.546	114.906	-2.241
		7.892	1.276	0.718748	27.250	78.512	-0.091329
95	0	13.629	3.823	-13.007	-17.689	116.109	-4.016
		4.896	3.566	-2.571	26.320	81.892	-3.144
95	1.275	13.485	3.823	-20.243	-17.689	94.913	0.858363
		4.896	3.566	-7.223	26.320	75.649	1.402
96	0	13.012	8.978	-20.886	-16.193	133.576	-7.392
		1.463	6.948	-13.022	24.207	64.885	-4.966
96	1.275	12.868	8.978	-40.123	-16.193	89.734	4.054
		1.463	6.948	-17.674	24.207	45.316	3.893
97	0	6.875	13.923	-41.076	-16.262	87.197	-9.851
		-2.680	9.961	-23.011	21.369	39.338	-6.396
97	1.275	6.731	13.923	-48.312	-16.262	30.214	7.900
		-2.680	9.961	-27.663	21.369	7.035	6.304
98	0	1.068	16.351	-56.344	-19.820	34.402	-10.403
		-6.527	11.591	-34.154	17.061	8.503	-6.788
98	1.275	0.924420	16.351	-63.581	-19.820	-42.048	10.443
		-6.527	11.591	-38.806	17.061	-38.007	7.990
99	0	-2.915	15.402	-76.102	-25.947	-32.598	-8.649
		-8.631	8.790	-42.176	10.437	-38.598	-4.237
99	1.275	-3.059	15.402	-83.338	-25.947	-134.237	10.989
		-8.631	8.790	-46.828	10.437	-95.335	6.969

ENVOLVENTE para < Mx > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
100	0	-6.448	6.652	-56.239	-26.049	-124.655	-2.255
		-7.353	2.750	-32.615	11.023	-119.982	0.132931
100	1.275	-6.448	6.652	-62.520	-26.049	-200.361	6.227
		-7.497	2.750	-38.223	11.023	-165.139	3.639
101	0	-4.884	-4.903	48.261	-2.404	-154.690	5.179
		-7.095	-7.416	71.527	35.898	-210.494	8.202
101	1.700	-4.884	-4.903	40.783	-2.404	-79.005	-3.156
		-7.287	-7.416	63.154	35.898	-96.019	-4.404
102	0	-1.669	-10.174	51.063	-4.736	-64.229	9.262
		-6.639	-14.728	72.982	30.479	-102.179	13.280
102	1.700	-1.861	-10.174	43.585	-4.736	16.219	-8.034
		-6.639	-14.728	64.609	30.479	14.768	-11.756
103	0	3.047	-9.029	34.864	-9.187	10.288	7.548
		0.970249	-13.804	53.216	21.906	12.873	11.215
103	1.700	2.855	-9.029	27.386	-9.187	63.198	-7.802
		0.970249	-13.804	44.842	21.906	96.219	-12.251
104	0	8.092	-5.499	21.339	-10.340	68.014	3.994
		8.658	-9.226	34.569	15.183	97.082	6.418
104	1.700	7.900	-5.499	13.861	-10.340	97.933	-5.354
		8.658	-9.226	26.195	15.183	148.729	-9.265
105	0	10.895	-1.643	7.953	-10.651	104.808	0.437654
		13.023	-3.079	14.560	7.494	150.359	0.760765
105	1.700	10.703	-1.643	0.475060	-10.651	111.971	-2.355
		13.023	-3.079	6.186	7.494	167.993	-4.474
106	0	9.451	2.204	-5.425	-11.854	127.861	-3.168
		11.116	1.797	-1.684	3.800	100.151	-2.486
106	1.700	9.259	2.204	-13.799	-11.854	111.521	0.579314
		11.116	1.797	-9.162	3.800	90.932	0.569716
107	0	8.168	9.459	-27.009	-15.156	147.050	-9.434

ENVOLVENTE para < Mx > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
		8.789	4.975	-12.666	4.615	89.568	-4.970
107	1.700	7.976	9.459	-35.382	-15.156	94.020	6.645
		8.789	4.975	-20.143	4.615	61.682	3.487
108	0	0.151280	13.976	-45.705	-21.962	93.242	-12.352
		4.541	8.233	-25.028	4.636	63.746	-7.304
108	1.700	-0.040727	13.976	-54.079	-21.962	8.429	11.406
		4.541	8.233	-32.506	4.636	14.845	6.692
109	0	-7.617	14.592	-65.689	-30.755	10.458	-11.598
		-0.032248	9.672	-39.936	2.002	18.925	-7.824
109	1.700	-7.809	14.592	-74.063	-30.755	-108.326	13.208
		-0.032248	9.672	-47.414	2.002	-55.319	8.618
110	0	-8.137	6.539	-61.235	-35.434	-102.860	-3.697
		-3.307	4.249	-36.865	1.391	-63.355	-3.005
110	1.700	-8.137	6.539	-69.608	-35.434	-214.071	7.419
		-3.499	4.249	-44.343	1.391	-132.379	4.218
111	0	-7.264	-3.958	41.989	-10.114	-165.822	4.538
		-7.025	-5.325	60.173	24.875	-210.492	5.555
111	1.275	-7.264	-3.958	36.381	-10.114	-115.863	-0.508076
		-7.169	-5.325	53.892	24.875	-137.778	-1.234
112	0	-9.608	-10.259	45.351	-10.417	-105.068	8.087
		-4.714	-13.246	75.217	23.098	-149.067	9.799
112	1.275	-9.752	-10.259	40.699	-10.417	-50.214	-4.993
		-4.714	-13.246	67.981	23.098	-57.782	-7.089
113	0	-7.242	-12.382	38.645	-15.356	-48.573	8.590
		-1.796	-13.452	55.409	17.541	-67.947	8.897
113	1.275	-7.386	-12.382	33.993	-15.356	-2.268	-7.196
		-1.796	-13.452	48.173	17.541	-1.915	-8.254
114	0	-3.407	-10.364	28.409	-18.685	-3.078	6.624
		2.852	-10.936	41.817	15.536	-7.044	6.475
114	1.275	-3.551	-10.364	23.757	-18.685	30.177	-6.589

ENVOLVENTE para < Mx > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
		2.852	-10.936	34.580	15.536	41.657	-7.468
115	0	-0.209192	-7.697	19.634	-20.687	27.273	4.532
		7.425	-7.095	29.425	15.434	40.917	3.507
115	1.275	-0.353198	-7.697	14.982	-20.687	49.340	-5.281
		7.425	-7.095	22.188	15.434	73.819	-5.539
116	0	2.284	-4.820	10.884	-21.916	50.032	2.452
		11.904	-2.392	15.406	16.412	87.477	0.090104
116	1.275	2.140	-4.820	6.232	-21.916	60.943	-3.694
		11.904	-2.392	8.169	16.412	102.506	-2.960
117	0	5.590	-2.388	3.287	-22.475	57.772	0.802040
		10.003	1.865	3.957	18.496	102.422	-2.724
117	1.275	5.590	-2.388	-1.365	-22.475	58.997	-2.243
		9.859	1.865	-3.280	18.496	102.854	-0.347339
118	0	5.374	0.366213	-4.309	-22.083	58.853	-0.997340
		7.841	6.168	-6.129	21.946	97.944	-5.348
118	1.275	5.374	0.366213	-8.961	-22.083	50.393	-0.530437
		7.697	6.168	-13.365	21.946	85.517	2.516
119	0	3.516	3.039	-10.592	-20.133	48.626	-2.583
		3.735	10.946	-16.534	27.432	78.775	-7.806
119	1.275	3.516	3.039	-15.244	-20.133	32.157	1.291
		3.591	10.946	-23.771	27.432	53.082	6.150
120	0	1.076	4.426	-13.642	-15.859	27.434	-3.165
		1.127	11.897	-24.512	31.220	42.118	-7.881
120	1.275	1.076	4.426	-18.294	-15.859	7.075	2.479
		0.982894	11.897	-31.749	31.220	6.253	7.287
121	0	6.472	20.465	66.039	-47.517	-30.605	5.084
		9.955	12.877	-2.914	12.172	11.106	3.008
121	1.275	6.472	20.758	54.630	-38.803	46.319	31.363
		9.811	12.877	-9.481	16.857	3.204	19.425

ENVOLVENTE para < Mx > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
122	0	19.316	18.864	40.810	-43.331	5.241	41.343
		13.692	11.090	-10.044	20.576	23.810	24.089
122	1.275	19.316	19.157	29.401	-34.617	49.998	65.580
		13.548	11.090	-16.611	25.262	6.818	38.229
123	0	25.558	8.631	29.648	-35.006	19.928	69.257
		15.773	5.892	-14.445	24.589	31.885	41.119
123	1.275	24.573	8.534	18.190	-26.589	48.771	77.155
		16.615	6.283	-20.963	29.571	10.966	51.924
124	0	27.067	-0.325085	21.707	-29.160	26.356	80.441
		16.110	0.541748	-17.417	25.750	36.005	50.116
124	1.275	25.996	-0.065859	10.536	-20.928	45.133	76.828
		17.037	0.575122	-24.222	30.916	11.239	54.190
125	0	26.808	-7.636	15.702	-25.416	25.584	75.199
		12.965	-4.521	-19.222	24.926	37.351	53.561
125	1.275	25.665	-7.045	4.760	-17.269	36.953	62.710
		13.964	-4.818	-26.257	30.178	10.035	50.738
126	0	27.700	-16.172	9.265	-23.751	31.021	81.473
		6.838	-9.853	-20.709	22.700	30.681	39.914
126	1.275	26.789	-15.257	-1.488	-15.612	34.639	59.077
		7.605	-10.475	-27.932	27.960	1.014	29.316
127	0	16.906	-23.669	4.946	-23.814	17.429	50.450
		-1.140	-14.361	-21.378	19.471	20.938	20.200
127	1.275	16.393	-22.447	-5.660	-15.610	16.209	19.992
		-0.770788	-15.291	-28.748	24.666	-10.251	2.358
128	0	2.707	-25.467	4.436	-26.459	-3.148	6.256
		-9.936	-17.578	-20.949	14.821	8.380	-4.193
128	1.275	0.691835	-21.890	-4.387	-18.314	-6.837	-30.258
		-8.065	-20.863	-30.103	20.076	-20.443	-22.372
129	0	-12.262	-24.408	5.423	-28.836	-25.913	-36.341
		-23.939	-12.821	-16.035	10.403	-14.638	-45.226

ENVOLVENTE para < Mx > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
129	1.275	-12.494	-20.537	-2.377	-21.778	-24.901	-65.594
		-23.852	-16.399	-26.212	16.745	-40.640	-63.251
130	0	-26.803	-9.336	14.203	-24.014	-51.217	-77.292
		-28.811	-4.659	-11.145	14.165	-29.640	-67.901
130	1.275	-25.418	-8.630	5.779	-18.396	-36.537	-84.742
		-30.341	-5.073	-20.697	21.945	-51.881	-78.107
131	0	-21.424	7.912	17.439	-13.437	-44.956	-72.505
		-31.117	10.631	-3.901	29.149	-34.792	-86.626
131	1.700	-20.081	7.806	4.517	-3.304	-24.649	-55.334
		-32.651	11.127	-14.947	36.882	-52.457	-71.942
132	0	-4.142	19.438	23.550	-10.230	-25.179	-37.091
		-16.160	21.666	3.953	28.542	-14.280	-48.087
132	1.700	-1.681	18.045	10.170	-0.192760	3.815	-4.300
		-16.646	22.744	-6.730	36.389	-16.964	-11.841
133	0	6.592	16.689	22.406	-14.314	-3.735	9.330
		8.884	18.740	4.875	21.112	13.242	11.070
133	1.700	10.943	15.283	9.027	-3.841	21.841	33.451
		6.806	20.217	-5.786	28.532	13.519	46.347
134	0	16.767	10.164	18.973	-16.264	14.740	49.881
		24.280	11.381	3.974	13.321	34.107	60.661
134	1.700	20.977	9.459	5.830	-5.601	33.778	61.232
		22.569	12.325	-6.893	20.569	33.559	85.076
135	0	22.222	3.142	15.011	-17.090	26.534	74.895
		32.533	3.493	3.323	4.991	45.104	89.743
135	1.700	21.392	2.597	3.053	-7.306	31.970	59.245
		35.971	4.387	-8.701	13.090	50.337	115.855
136	0	25.709	-4.618	11.760	-18.097	37.079	95.832
		21.487	-2.450	1.061	0.208014	24.626	50.039
136	1.700	22.078	-3.723	-0.263881	-9.997	37.047	69.328
		22.124	-2.997	-10.897	9.992	26.183	65.937

ENVOLVENTE para < Mx > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
137	0	14.329	-11.595	8.217	-20.913	23.308	66.483
		22.094	-8.235	-1.745	-0.218366	28.195	55.027
137	1.700	15.849	-10.652	-2.651	-13.666	26.107	43.308
		17.692	-8.938	-14.888	10.445	16.101	45.760
138	0	5.641	-20.605	5.564	-28.613	12.536	44.094
		13.906	-13.670	-5.383	-0.624432	19.754	33.881
138	1.700	7.527	-19.129	-5.097	-21.193	11.882	8.156
		9.363	-15.075	-18.762	9.849	0.371580	12.503
139	0	-18.109	-22.846	6.715	-36.502	-18.503	-14.933
		1.594	-15.956	-7.386	-2.146	3.793	-1.046
139	1.700	-17.815	-21.768	-3.969	-28.656	-15.846	-51.353
		-1.059	-17.353	-20.766	7.891	-20.470	-30.290
140	0	-33.731	-10.492	15.292	-36.431	-54.044	-74.741
		-14.843	-7.816	-3.122	1.552	-20.173	-44.043
140	1.700	-32.388	-9.996	4.246	-28.698	-35.791	-88.345
		-16.378	-7.922	-16.045	11.685	-38.110	-61.230
141	0	-30.338	6.058	20.969	-21.377	-51.778	-78.475
		-27.283	5.675	-5.952	16.569	-40.509	-92.967
141	1.275	-28.953	5.645	11.417	-13.596	-29.190	-67.012
		-28.812	6.381	-14.376	22.187	-55.410	-89.285
142	0	-23.212	16.955	26.569	-16.617	-39.869	-61.756
		-16.042	17.472	2.295	19.533	-31.277	-78.838
142	1.275	-23.458	13.135	16.301	-10.378	-13.504	-43.258
		-15.940	21.584	-5.412	26.693	-32.300	-53.257
143	0	-10.078	20.449	28.971	-18.703	-22.287	-27.608
		-5.473	19.034	3.579	16.643	-15.805	-49.420
143	1.275	-12.262	16.928	19.681	-13.477	4.754	-10.618
		-3.433	22.848	-5.107	24.816	-12.806	-15.885
144	0	-2.475	15.127	26.887	-22.167	-11.779	-3.540
		7.213	18.038	3.353	14.721	4.203	-7.028

ENVOLVENTE para < Mx > (y valores concomitantes)
(1. línea: MIN., 2. linea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
144	1.275	-2.988	14.197	19.517	-16.972	17.037	14.094
		7.582	19.261	-7.253	22.925	2.481	17.810
145	0	4.121	10.736	25.769	-24.618	-2.510	18.389
		15.300	12.240	-0.104981	14.385	18.729	24.649
145	1.275	3.210	10.114	18.546	-19.357	24.401	29.319
		16.067	13.155	-10.858	22.524	13.080	43.199
146	0	8.790	5.893	23.908	-25.935	4.602	34.825
		23.052	4.786	-5.006	15.397	33.596	56.081
146	1.275	7.647	5.596	16.873	-20.683	28.924	39.019
		24.051	5.376	-15.947	23.544	21.914	65.690
147	0	12.879	1.150	21.678	-26.122	7.319	40.721
		21.960	-1.563	-10.117	17.874	39.540	66.206
147	1.275	11.808	1.183	14.873	-20.955	28.842	38.846
		22.887	-1.303	-21.288	26.106	21.297	67.742
148	0	13.267	-4.117	18.434	-24.741	8.529	41.589
		19.381	-8.179	-15.965	21.865	40.506	63.449
148	1.275	12.281	-3.726	11.916	-19.759	26.224	33.546
		20.222	-8.277	-27.424	30.282	14.499	56.003
149	0	10.810	-8.660	14.321	-20.907	5.731	31.464
		14.215	-15.652	-23.733	27.562	39.945	52.329
149	1.275	10.810	-8.660	7.754	-16.221	19.803	20.423
		14.071	-15.359	-35.142	36.276	2.413	32.560
150	0	7.462	-10.797	7.652	-13.755	3.211	16.488
		3.364	-15.927	-41.575	30.015	35.785	24.390
150	1.275	7.462	-10.797	1.085	-9.070	8.780	2.723
		3.219	-15.634	-52.985	38.728	-24.494	4.271
151	0	22.842	5.048	91.704	-41.407	-62.490	-3.337
		9.795	5.882	9.618	2.260	-0.032285	-5.028
151	1.250	22.842	5.048	91.704	-41.407	52.135	2.973
		9.795	5.882	9.618	2.260	11.989	2.324

ENVOLVENTE para < Mx > (y valores concomitantes)
(1. línea: MIN., 2. linea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
152	0	2.595	12.281	10.199	-59.382	-9.829	-8.773
		-1.523	7.534	1.067	6.169	0.542297	-6.551
152	1.250	2.595	12.281	10.199	-59.382	2.920	6.577
		-1.523	7.534	1.067	6.169	1.876	2.866
153	0	-8.183	8.065	-5.948	-49.923	-3.479	-4.656
		-4.480	4.239	-2.482	9.931	-1.557	-3.633
153	1.250	-8.183	8.065	-5.948	-49.923	-10.914	5.425
		-4.480	4.239	-2.482	9.931	-4.659	1.666
154	0	-12.486	3.062	-10.448	-38.816	-7.352	-0.794079
		-4.395	1.496	-3.658	11.334	-3.620	-1.561
154	1.250	-12.486	3.062	-10.448	-38.816	-20.411	3.034
		-4.395	1.496	-3.658	11.334	-8.192	0.308747
155	0	-5.535	-1.904	-6.660	-35.560	-6.616	2.937
		-4.355	-1.574	-4.200	11.482	-3.507	0.813594
155	1.250	-5.535	-1.904	-6.660	-35.560	-14.941	0.557502
		-4.355	-1.574	-4.200	11.482	-8.756	-1.154
156	0	-4.832	-4.986	-7.737	-34.393	-8.250	5.174
		-4.037	-3.686	-4.831	11.080	-5.457	2.324
156	1.250	-4.832	-4.986	-7.737	-34.393	-17.921	-1.058
		-4.037	-3.686	-4.831	11.080	-11.495	-2.284
157	0	-4.537	-7.888	-9.338	-34.514	-10.050	7.321
		-5.321	-9.108	-8.335	13.495	-8.288	6.708
157	1.250	-4.537	-7.888	-9.338	-34.514	-21.723	-2.539
	-	-5.321	-9.108	-8.335	13.495 -	-18.706	-4.676
158	0	-4.807	-10.361	-12.818	-35.323	-12.847	9.184
		-1.471	-10.796	-7.522	10.743	-8.983	7.991
158	1.250	-4.807	-10.361	-12.818	-35.323	-28.869	-3.766
		-1.471	-10.796	-7.522	10.743	-18.385	-5.503
159	0	3.148	-13.289	-16.936	-38.271	-14.873	11.992

ENVOLVENTE para < Mx > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
		3.523	-10.915	-9.042	5.963	-7.621	8.458
159	1.250	3.148	-13.289	-16.936	-38.271	-36.042	-4.619
		3.523	-10.915	-9.042	5.963	-18.923	-5.185
160	0	14.677	-8.744	-21.999	-41.200	-3.042	8.762
		11.344	-9.573	-14.778	3.629	-2.697	7.502
160	1.250	14.677	-8.744	-21.999	-41.200	-30.540	-2.168
		11.344	-9.573	-14.778	3.629	-21.169	-4.464
161	0	16.015	3.216	-19.514	-26.826	1.007	-1.501
		10.632	-0.740698	-21.540	16.495	1.747	-0.191137
161	1.250	16.015	3.216	-19.514	-26.826	-23.384	2.519
		10.632	-0.740698	-21.540	16.495	-25.177	-1.117
162	0	10.242	15.129	-17.689	-13.787	-6.808	-14.223
		14.541	16.567	-24.160	35.735	-10.041	-20.857
162	1.250	10.242	15.129	-17.689	-13.787	-28.919	4.687
		14.541	16.567	-24.160	35.735	-40.239	-0.149436
163	0	-0.994278	15.950	-11.022	-18.049	-13.036	-14.084
		0.297706	16.390	-14.673	27.529	-15.542	-19.371
163	1.250	-0.994278	15.950	-11.022	-18.049	-26.813	5.853
		0.297706	16.390	-14.673	27.529	-33.883	1.116
164	0	-4.817	12.480	-10.743	-20.714	-11.477	-10.255
		-5.051	10.740	-11.647	21.957	-14.211	-12.698
164	1.250	-4.817	12.480	-10.743	-20.714	-24.905	5.344
		-5.051	10.740	-11.647	21.957	-28.769	0.725945
165	0	-11.591	7.923	-15.454	-17.236	-13.040	-6.539
		-5.745	5.500	-9.725	17.009	-12.402	-7.196
165	1.250	-11.591	7.923	-15.454	-17.236	-32.356	3.363
		-5.745	5.500	-9.725	17.009	-24.557	-0.321080
166	0	-15.575	-0.336388	-18.845	-3.774	-16.677	0.743512
		-5.028	-0.216253	-7.033	13.202	-9.404	-1.291
166	1.250	-15.575	-0.336388	-18.845	-3.774	-40.232	0.323044

ENVOLVENTE para < Mx > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
		-5.028	-0.216253	-7.033	13.202	-18.195	-1.562
167	0	-9.810	-8.796	-7.131	-7.742	-11.993	9.510
		-11.577	-8.221	-15.469	17.064	-13.074	6.850
167	1.250	-9.810	-8.796	-7.131	-7.742	-20.906	-1.484
		-11.577	-8.221	-15.469	17.064	-32.410	-3.426
168	0	-6.905	-15.770	-9.540	-11.742	-12.814	16.873
		-4.699	-12.822	-10.784	20.486	-11.559	10.624
168	1.250	-6.905	-15.770	-9.540	-11.742	-24.739	-2.839
		-4.699	-12.822	-10.784	20.486	-25.038	-5.403
169	0	-0.174350	-21.216	-12.575	-18.177	-14.143	23.348
		-0.518378	-16.325	-11.233	17.665	-13.057	14.502
169	1.250	-0.174350	-21.216	-12.575	-18.177	-29.862	-3.171
		-0.518378	-16.325	-11.233	17.665	-27.098	-5.904
170	0	13.891	-21.040	-21.032	-25.899	-7.627	24.324
		11.029	-15.230	-18.044	13.563	-6.214	14.290
170	1.250	13.891	-21.040	-21.032	-25.899	-33.916	-1.975
		11.029	-15.230	-18.044	13.563	-28.768	-4.747
171	0	12.207	-1.342	-13.132	-11.327	4.204	1.911
		21.070	-1.229	-13.195	26.654	5.414	-0.646533
171	1.250	12.207	-1.342	-13.132	-11.327	-12.210	0.234429
		21.070	-1.229	-13.195	26.654	-11.079	-2.183
172	0	8.511	7.236	-13.279	-0.875797	-3.057	-5.870
		13.311	10.163	-18.214	35.116	-3.183	-9.917
172	1.250	8.511	7.236	-13.279	-0.875797	-19.655	3.175
		13.311	10.163	-18.214	35.116	-25.950	2.786
173	0	1.126	7.865	-7.717	-2.801	-6.905	-6.251
		3.211	14.703	-13.525	31.293	-11.437	-13.133
173	1.250	1.126	7.865	-7.717	-2.801	-16.551	3.581
		3.211	14.703	-13.525	31.293	-28.343	5.246

ENVOLVENTE para < Mx > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
174	0	-3.148	7.504	-6.102	-6.508	-7.862	-5.582
		-3.478	11.794	-9.269	28.035	-10.669	-10.344
174	1.250	-3.148	7.504	-6.102	-6.508	-15.490	3.797
		-3.478	11.794	-9.269	28.035	-22.255	4.397
175	0	-4.496	5.067	-5.230	-8.939	-6.779	-3.485
		-5.661	8.800	-7.944	26.979	-9.114	-7.788
175	1.250	-4.496	5.067	-5.230	-8.939	-13.315	2.849
		-5.661	8.800	-7.944	26.979	-19.043	3.211
176	0	-4.664	2.705	-4.681	-10.388	-5.754	-1.606
		-5.963	5.649	-7.171	27.368	-7.688	-5.362
176	1.250	-4.664	2.705	-4.681	-10.388	-11.604	1.776
		-5.963	5.649	-7.171	27.368	-16.651	1.699
177	0	-4.568	1.018	-4.234	-11.108	-4.875	-0.311602
		-6.175	2.706	-6.415	28.848	-6.355	-3.228
177	1.250	-4.568	1.018	-4.234	-11.108	-10.168	0.960865
		-6.175	2.706	-6.415	28.848	-14.374	0.154661
178	0	-4.620	-1.498	-3.505	-10.979	-3.474	1.553
		-6.797	-0.126691	-5.458	31.513	-4.897	-1.215
178	1.250	-4.620	-1.498	-3.505	-10.979	-7.855	-0.319130
		-6.797	-0.126691	-5.458	31.513	-11.719	-1.373
179	0	-4.678	-4.166	-2.301	-9.427	-1.378	3.590
		-6.880	-3.272	-4.019	35.746	-3.494	1.201
179	1.250	-4.678	-4.166	-2.301	-9.427	-4.255	-1.618
		-6.880	-3.272	-4.019	35.746	-8.517	-2.889
180	0	-1.371	-7.311	1.471	-5.444	0.628927	6.450
		-0.717841	-7.465	6.586	43.104	-8.505	5.228
180	1.250	-1.371	-7.311	1.471	-5.444	2.468	-2.689
		-0.717841	-7.465	6.586	43.104	-0.273217	-4.102
181	0	10.435	-5.373	11.218	-1.713	-0.775727	4.704
		14.292	-2.905	66.532	30.488	-46.841	1.877

ENVOLVENTE para < Mx > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
181	1.250	10.435	-5.373	11.218	-1.713	13.246	-2.013
		14.292	-2.905	66.532	30.488	36.321	-1.753
182	0	9.195	7.579	50.173	-34.694	-2.925	-5.273
		1.750	4.572	-8.810	8.436	18.099	-2.907
182	1.250	9.195	7.579	50.173	-34.694	59.788	4.200
		1.750	4.572	-8.810	8.436	7.086	2.808
183	0	2.386	15.444	10.142	-43.750	6.186	-10.465
		-0.049700	8.974	0.239042	11.517	5.301	-5.879
183	1.250	2.386	15.444	10.142	-43.750	18.862	8.839
		-0.049700	8.974	0.239042	11.517	5.600	5.338
184	0	-2.973	12.255	-4.519	-38.372	-1.910	-8.116
		-1.001	6.320	-0.437919	12.472	-2.736	-4.089
184	1.250	-2.973	12.255	-4.519	-38.372	-7.558	7.202
		-1.001	6.320	-0.437919	12.472	-3.283	3.810
185	0	-2.397	2.573	-2.648	-31.314	-8.413	-1.520
		-1.094	2.202	-0.630665	12.426	-7.793	-1.430
185	1.250	-2.397	2.573	-2.648	-31.314	-11.724	1.696
		-1.094	2.202	-0.630665	12.426	-8.581	1.323
186	0	-1.473	-2.703	-3.320	-29.556	-13.193	1.877
		-1.747	-2.140	-2.782	12.600	-8.845	1.438
186	1.250	-1.473	-2.703	-3.320	-29.556	-17.342	-1.501
		-1.747	-2.140	-2.782	12.600	-12.322	-1.236
187	0	-1.188	-7.674	-4.093	-28.417	-17.211	5.033
		-1.190	-5.856	-1.278	11.668	-12.559	3.762
187	1.250	-1.188	-7.674	-4.093	-28.417	-22.327	-4.559
		-1.190	-5.856	-1.278	11.668	-14.156	-3.558
188	0	-1.322	-12.136	-5.646	-27.533	-21.596	7.862
		-2.147	-12.660	-5.764	12.315	-18.210	8.295
188	1.250	-1.322	-12.136	-5.646	-27.533	-28.653	-7.307
		-2.147	-12.660	-5.764	12.315	-25.414	-7.530

ENVOLVENTE para < Mx > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
189	0	0.007148	-15.936	-4.816	-26.480	-27.682	10.434
		0.045976	-15.699	-2.567	11.605	-21.792	10.263
189	1.250	0.007148	-15.936	-4.816	-26.480	-33.702	-9.485
		0.045976	-15.699	-2.567	11.605	-25.001	-9.360
190	0	3.282	-17.261	-6.671	-27.777	-37.764	11.431
		2.135	-14.126	-3.229	8.541	-23.881	9.243
190	1.250	3.282	-17.261	-6.671	-27.777	-46.103	-10.144
		2.135	-14.126	-3.229	8.541	-27.917	-8.414
191	0	6.079	-8.604	-47.598	-36.352	-28.162	5.616
		4.132	-10.762	-28.999	2.750	-22.493	6.965
191	1.250	6.079	-8.604	-47.598	-36.352	-87.657	-5.139
		4.132	-10.762	-28.999	2.750	-58.741	-6.487
192	0	8.511	3.905	-146.027	-29.593	14.945	-2.084
		4.888	-2.019	-115.031	20.324	7.767	0.667019
192	1.250	8.511	3.905	-146.027	-29.593	-167.581	2.797
		4.888	-2.019	-115.031	20.324	-136.016	-1.856
193	0	3.860	19.251	-21.232	-16.671	-34.796	-13.358
		6.448	16.068	-38.832	34.799	-42.201	-11.790
193	1.250	3.860	19.251	-21.232	-16.671	-61.335	10.705
		6.448	16.068	-38.832	34.799	-90.740	8.294
194	0	0.158225	23.354	-3.372	-23.258	-30.500	-15.987
		1.030	22.050	-5.283	22.448	-41.081	-15.801
194	1.250	0.158225	23.354	-3.372	-23.258	-34.714	13.204
		1.030	22.050	-5.283	22.448	-47.684	11.760
195	0	-1.752	19.203	-7.460	-22.644	-24.311	-13.069
		-1.312	16.269	-5.494	19.458	-32.402	-11.467
195	1.250	-1.752	19.203	-7.460	-22.644	-33.636	10.934
		-1.312	16.269	-5.494	19.458	-39.269	8.869
196	0	-5.352	10.885	-12.589	-16.850	-24.077	-7.439
		-1.407	8.093	-2.985	16.584	-27.816	-5.900

ENVOLVENTE para < Mx > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
196	1.250	-5.352	10.885	-12.589	-16.850	-39.813	6.167
		-1.407	8.093	-2.985	16.584	-31.547	4.215
197	0	-7.509	-0.530755	-16.167	-4.007	-29.325	0.454174
		-1.502	-0.509749	-1.466	13.772	-20.729	0.006124
197	1.250	-7.509	-0.530755	-16.167	-4.007	-49.532	-0.209244
		-1.502	-0.509749	-1.466	13.772	-22.562	-0.631037
198	0	-3.662	-12.956	-3.503	-6.621	-23.912	9.128
		-5.329	-11.345	-12.595	16.713	-24.154	7.762
198	1.250	-3.662	-12.956	-3.503	-6.621	-28.291	-7.067
		-5.329	-11.345	-12.595	16.713	-39.897	-6.419
199	0	-2.288	-23.397	-2.095	-9.685	-28.732	16.476
		-1.640	-19.652	-7.449	22.486	-24.525	13.391
199	1.250	-2.288	-23.397	-2.095	-9.685	-31.350	-12.768
		-1.640	-19.652	-7.449	22.486	-33.835	-11.173
200	0	0.787924	-28.847	-1.774	-13.997	-37.530	20.527
		0.490136	-23.622	-3.361	22.993	-31.002	16.178
200	1.250	0.787924	-28.847	-1.774	-13.997	-39.748	-15.530
		0.490136	-23.622	-3.361	22.993	-35.204	-13.348
201	0	6.352	-22.523	-39.212	-27.821	-34.785	16.179
		4.412	-19.162	-24.620	15.727	-33.894	13.206
201	1.250	6.352	-22.523	-39.212	-27.821	-83.798	-11.974
		4.412	-19.162	-24.620	15.727	-64.667	-10.745
202	0	3.974	-0.790785	-100.731	-12.295	6.739	0.785156
		8.675	-4.584	-147.924	33.383	15.783	2.240
202	1.250	3.974	-0.790785	-100.731	-12.295	-119.170	-0.203286
		8.675	-4.584	-147.924	33.383	-169.115	-3.489
203	0	2.421	7.558	-21.789	-0.962285	-21.506	-4.992
		5.492	10.200	-37.229	32.011	-26.390	-6.866
203	1.250	2.421	7.558	-21.789	-0.962285	-48.741	4.456
		5.492	10.200	-37.229	32.011	-72.924	5.884

ENVOLVENTE para < Mx > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
204	0	0.434173	9.753	-2.078	-5.608	-20.488	-6.419
		1.664	18.333	-4.213	23.481	-34.557	-12.170
204	1.250	0.434173	9.753	-2.078	-5.608	-23.086	5.772
		1.664	18.333	-4.213	23.481	-39.823	10.745
205	0	-1.058	10.794	-0.445003	-8.169	-18.512	-7.015
		-1.114	16.943	-2.984	21.729	-24.244	-11.140
205	1.250	-1.058	10.794	-0.445003	-8.169	-19.069	6.477
		-1.114	16.943	-2.984	21.729	-27.974	10.037
206	0	-1.640	7.852	-0.610300	-9.643	-15.079	-5.046
		-2.116	13.608	-3.347	21.967	-19.105	-8.880
206	1.250	-1.640	7.852	-0.610300	-9.643	-15.842	4.769
		-2.116	13.608	-3.347	21.967	-23.288	8.130
207	0	-1.710	4.152	-0.501883	-10.743	-12.591	-2.639
		-2.263	9.096	-3.249	22.772	-15.667	-5.937
207	1.250	-1.710	4.152	-0.501883	-10.743	-13.219	2.551
		-2.263	9.096	-3.249	22.772	-19.728	5.432
208	0	-1.731	1.568	-0.399045	-11.602	-10.531	-0.978019
		-2.260	4.156	-3.031	23.996	-12.461	-2.766
208	1.250	-1.731	1.568	-0.399045	-11.602	-11.030	0.982448
		-2.260	4.156	-3.031	23.996	-16.250	2.429
209	0	-1.324	-2.353	-0.352540	-12.158	-7.331	1.530
		-2.858	-0.963568	-2.595	25.772	-8.411	0.535546
209	1.250	-1.324	-2.353	-0.352540	-12.158	-7.772	-1.411
		-2.858	-0.963568	-2.595	25.772	-11.655	-0.668866
210	0	-1.242	-6.493	-0.109925	-12.103	-2.166	4.227
		-2.514	-5.996	-0.470451	28.500	-3.330	3.914
210	1.250	-1.242	-6.493	-0.109925	-12.103	-2.304	-3.889
		-2.514	-5.996	-0.470451	28.500	-3.918	-3.581
211	0	-0.030201	-9.115	0.756584	-11.029	6.007	6.055

ENVOLVENTE para < Mx > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
		0.280501	-9.147	8.333	32.087	2.387	6.224
211	1.250	-0.030201	-9.115	0.756584	-11.029	6.953	-5.339
		0.280501	-9.147	8.333	32.087	12.802	-5.209
212	0	2.485	-4.664	-7.997	-8.035	18.671	3.053
		5.476	-4.809	37.009	25.560	-3.945	3.412
212	1.250	2.485	-4.664	-7.997	-8.035	8.675	-2.777
		5.476	-4.809	37.009	25.560	42.315	-2.599
213	0	-4.938	6.092	22.876	-20.517	7.029	-3.215
		-7.778	8.266	-32.729	21.172	59.009	-4.599
213	1.250	-4.938	6.092	22.876	-20.517	35.622	4.399
		-7.778	8.266	-32.729	21.172	18.099	5.734
214	0	1.418	11.805	-0.016140	-27.327	10.722	-6.538
		-0.041494	15.920	-8.913	25.816	29.539	-9.120
214	1.250	1.418	11.805	-0.016140	-27.327	10.702	8.218
		-0.041494	15.920	-8.913	25.816	18.399	10.779
215	0	2.990	9.016	-1.318	-27.448	-3.083	-5.341
		3.839	11.105	1.077	20.821	5.456	-6.640
215	1.250	2.990	9.016	-1.318	-27.448	-4.731	5.929
		3.839	11.105	1.077	20.821	6.803	7.240
216	0	2.706	1.303	0.633424	-26.957	-8.454	-0.686617
		3.876	3.886	2.823	17.161	-6.054	-2.463
216	1.250	2.706	1.303	0.633424	-26.957	-7.663	0.942342
		3.876	3.886	2.823	17.161	-2.525	2.394
217	0	2.740	-2.319	0.517909	-26.174	-12.818	1.499
		3.126	-2.339	2.744	15.026	-12.521	1.310
217	1.250	2.740	-2.319	0.517909	-26.174	-12.170	-1.399
		3.126	-2.339	2.744	15.026	-9.091	-1.614
218	0	2.685	-5.553	0.326233	-24.892	-16.500	3.442
		3.314	-7.883	2.650	13.891	-19.449	4.722
218	1.250	2.685	-5.553	0.326233	-24.892	-16.093	-3.499

ENVOLVENTE para < Mx > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
		3.314	-7.883	2.650	13.891	-16.136	-5.131
219	0	2.467	-9.266	-0.240709	-22.816	-20.801	5.616
		2.892	-12.514	3.180	13.075	-22.987	7.480
219	1.250	2.467	-9.266	-0.240709	-22.816	-21.102	-5.966
		2.892	-12.514	3.180	13.075	-19.012	-8.162
220	0	1.586	-12.643	0.504063	-20.355	-23.019	7.626
		2.260	-19.345	2.039	14.415	-30.992	11.558
220	1.250	1.586	-12.643	0.504063	-20.355	-22.389	-8.177
		2.260	-19.345	2.039	14.415	-28.443	-12.623
221	0	-0.267122	-10.691	2.301	-16.556	-29.360	6.333
		-0.410322	-20.436	5.404	17.047	-42.915	12.063
221	1.250	-0.267122	-10.691	2.301	-16.556	-26.483	-7.030
		-0.410322	-20.436	5.404	17.047	-36.160	-13.481
222	0	-3.109	-7.116	29.104	-9.184	-63.335	4.192
		-3.871	-11.711	44.313	25.885	-78.024	6.856
222	1.250	-3.109	-7.116	29.104	-9.184	-26.957	-4.702
		-3.871	-11.711	44.313	25.885	-22.636	-7.782
223	0	-4.827	5.762	110.882	-25.986	-128.794	-3.529
		-5.695	-0.578116	138.108	17.002	-157.326	0.262303
223	1.250	-4.827	5.762	110.882	-25.986	9.803	3.673
		-5.695	-0.578116	138.108	17.002	15.302	-0.460313
224	0	-3.885	22.831	36.741	-42.083	-81.858	-11.780
		-2.735	13.627	20.506	5.467	-65.341	-7.321
224	1.250	-3.885	22.831	36.741	-42.083	-35.934	16.758
		-2.735	13.627	20.506	5.467	-39.709	9.712
225	0	1.288	29.190	1.493	-28.481	-42.175	-15.509
		2.004	17.128	2.238	13.659	-34.715	-9.547
225	1.250	1.288	29.190	1.493	-28.481	-40.309	20.977
		2.004	17.128	2.238	13.659	-31.917	11.862

ENVOLVENTE para < Mx > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
226	0	3.537	23.676	0.471460	-22.647	-36.786	-12.907
		3.495	12.446	3.118	14.443	-28.530	-7.192
226	1.250	3.537	23.676	0.471460	-22.647	-36.197	16.687
		3.495	12.446	3.118	14.443	-24.633	8.365
227	0	2.531	12.910	-0.671681	-14.970	-37.073	-7.101
		3.668	5.270	3.210	14.371	-25.850	-3.238
227	1.250	2.531	12.910	-0.671681	-14.970	-37.912	9.036
		3.668	5.270	3.210	14.371	-21.838	3.350
228	0	2.398	0.237884	1.255	-4.029	-21.262	-0.045334
		3.816	-1.128	4.384	13.189	-30.103	0.322093
228	1.250	2.398	0.237884	1.255	-4.029	-19.693	0.252009
		3.816	-1.128	4.384	13.189	-24.623	-1.088
229	0	2.539	-5.707	3.634	-5.636	-23.024	3.344
		3.257	-9.864	2.169	15.918	-29.056	5.167
229	1.250	2.539	-5.707	3.634	-5.636	-18.481	-3.789
		3.257	-9.864	2.169	15.918	-26.345	-7.163
230	0	2.512	-11.984	3.567	-7.070	-25.209	6.832
		3.581	-24.067	0.459476	22.585	-36.987	13.121
230	1.250	2.512	-11.984	3.567	-7.070	-20.751	-8.148
		3.581	-24.067	0.459476	22.585	-36.412	-16.961
231	0	1.238	-16.292	2.668	-7.679	-30.233	9.021
		1.309	-29.264	1.481	28.526	-42.670	15.521
231	1.250	1.238	-16.292	2.668	-7.679	-26.898	-11.343
		1.309	-29.264	1.481	28.526	-40.819	-21.058
232	0	-2.753	-13.534	20.087	-2.242	-55.429	7.282
		-3.879	-21.936	40.102	42.797	-85.206	11.187
232	1.250	-2.753	-13.534	20.087	-2.242	-30.321	-9.636
		-3.879	-21.936	40.102	42.797	-35.081	-16.232
233	0	-6.332	-0.128324	143.270	-20.864	-162.606	-0.283937
		-4.852	-3.213	112.656	21.991	-130.358	1.783

ENVOLVENTE para < Mx > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
233	1.250	-6.332	-0.128324	143.270	-20.864	16.474	-0.444335
		-4.852	-3.213	112.656	21.991	10.456	-2.233
234	0	-4.762	9.229	37.929	-22.267	-72.377	-5.404
		-3.409	9.393	24.190	9.310	-52.806	-5.683
234	1.250	-4.762	9.229	37.929	-22.267	-24.968	6.132
		-3.409	9.393	24.190	9.310	-22.570	6.057
235	0	-1.352	17.198	4.671	-13.918	-40.075	-10.111
		-1.086	12.076	2.368	14.737	-24.674	-7.232
235	1.250	-1.352	17.198	4.671	-13.918	-34.236	11.386
		-1.086	12.076	2.368	14.737	-21.714	7.862
236	0	1.368	15.665	2.908	-12.130	-27.825	-9.296
		0.713273	13.396	0.818921	17.599	-20.538	-8.087
236	1.250	1.368	15.665	2.908	-12.130	-24.189	10.285
		0.713273	13.396	0.818921	17.599	-19.514	8.658
237	0	2.467	11.963	3.191	-12.296	-23.119	-7.154
		1.504	10.780	0.930232	19.243	-17.076	-6.575
237	1.250	2.467	11.963	3.191	-12.296	-19.130	7.799
		1.504	10.780	0.930232	19.243	-15.913	6.900
238	0	2.809	7.249	3.068	-13.033	-19.539	-4.327
		1.648	7.217	0.796446	20.485	-14.353	-4.446
238	1.250	2.809	7.249	3.068	-13.033	-15.705	4.733
		1.648	7.217	0.796446	20.485	-13.357	4.574
239	0	2.749	0.755508	2.811	-14.223	-15.390	-0.387304
		1.942	3.935	0.667363	21.458	-11.838	-2.449
239	1.250	2.749	0.755508	2.811	-14.223	-11.876	0.557043
		1.942	3.935	0.667363	21.458	-11.004	2.469
240	0	2.967	-4.537	2.425	-15.984	-10.712	2.818
		2.151	0.258069	0.667358	22.142	-8.445	-0.221188
240	1.250	2.967	-4.537	2.425	-15.984	-7.680	-2.852
		2.151	0.258069	0.667358	22.142	-7.611	0.101386

ENVOLVENTE para < Mx > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
241	0	2.595	-9.972	0.521728	-18.706	-2.501	5.983
		2.264	-3.326	0.774642	22.261	-3.173	1.859
241	1.250	2.595	-9.972	0.521728	-18.706	-1.849	-6.482
		2.264	-3.326	0.774642	22.261	-2.204	-2.297
242	0	-0.385807	-13.169	-7.174	-22.412	14.534	7.642
		0.751947	-5.791	1.500	21.315	4.994	3.036
242	1.250	-0.385807	-13.169	-7.174	-22.412	5.567	-8.818
		0.751947	-5.791	1.500	21.315	6.868	-4.202
243	0	-5.726	-6.624	-27.767	-18.243	39.155	3.771
		-3.622	-3.276	18.700	15.855	1.046	1.646
243	1.250	-5.726	-6.624	-27.767	-18.243	4.447	-4.509
		-3.622	-3.276	18.700	15.855	24.420	-2.448
244	0	-10.021	2.259	1.526	-11.106	10.264	0.185578
		-22.462	6.547	-83.194	30.607	56.474	-3.100
244	1.250	-10.021	2.259	1.526	-11.106	12.172	3.010
		-22.462	6.547	-83.194	30.607	-47.515	5.084
245	0	1.778	3.884	-0.561105	-20.606	4.421	-0.192451
		1.892	12.844	-13.820	41.081	12.746	-6.076
245	1.250	1.778	3.884	-0.561105	-20.606	3.719	4.663
		1.892	12.844	-13.820	41.081	-4.528	9.978
246	0	5.206	2.224	2.165	-25.067	-3.379	0.108803
		10.529	6.243	0.247941	30.071	-0.699155	-4.127
246	1.250	5.206	2.224	2.165	-25.067	-0.672539	2.889
		10.529	6.243	0.247941	30.071	-0.389241	3.676
247	0	5.346	0.480381	3.596	-26.725	-8.020	0.883219
		9.247	1.508	3.468	24.100	-7.203	-1.892
247	1.250	5.346	0.480381	3.596	-26.725	-3.526	1.484
		9.247	1.508	3.468	24.100	-2.868	-0.007000
248	0	5.278	-1.276	4.541	-26.552	-11.175	1.745
		7.392	-1.984	5.626	19.987	-12.012	0.068943

ENVOLVENTE para < Mx > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
248	1.250	5.278	-1.276	4.541	-26.552	-5.499	0.150130
		7.392	-1.984	5.626	19.987	-4.980	-2.411
249	0	5.496	-3.276	5.361	-24.995	-13.954	2.680
		6.661	-5.098	6.716	17.678	-15.245	1.777
249	1.250	5.496	-3.276	5.361	-24.995	-7.253	-1.414
		6.661	-5.098	6.716	17.678	-6.850	-4.595
250	0	5.128	-6.165	6.021	-22.396	-15.901	3.947
		7.576	-9.940	7.217	17.153	-17.796	4.051
250	1.250	5.128	-6.165	6.021	-22.396	-8.375	-3.759
		7.576	-9.940	7.217	17.153	-8.776	-8.374
251	0	3.216	-8.796	6.996	-18.886	-18.081	4.915
		4.688	-13.678	10.072	18.605	-24.885	5.680
251	1.250	3.216	-8.796	6.996	-18.886	-9.336	-6.081
		4.688	-13.678	10.072	18.605	-12.295	-11.417
252	0	-1.773	-8.851	9.387	-13.393	-20.398	4.430
		-2.654	-16.331	14.206	22.749	-29.492	6.377
252	1.250	-1.773	-8.851	9.387	-13.393	-8.664	-6.633
		-2.654	-16.331	14.206	22.749	-11.735	-14.036
253	0	-10.515	-7.175	14.059	-10.596	-19.885	3.471
		-12.426	-12.095	17.590	25.913	-24.491	4.265
253	1.250	-10.515	-7.175	14.059	-10.596	-2.312	-5.498
		-12.426	-12.095	17.590	25.913	-2.505	-10.853
254	0	-13.758	3.328	14.879	-23.839	-12.248	0.584691
		-18.481	-0.110998	13.578	15.170	-11.160	-0.889133
254	1.250	-13.758	3.328	14.879	-23.839	6.349	4.745
		-18.481	-0.110998	13.578	15.170	5.812	-1.028
255	0	-12.385	20.353	20.563	-38.868	-34.316	-0.314799
		-7.918	13.354	16.611	2.695	-27.149	-3.142
255	1.250	-12.385	20.353	20.563	-38.868	-8.614	25.125
		-7.918	13.354	16.611	2.695	-6.387	13.550

ENVOLVENTE para < Mx > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
256	0	2.212	21.581	12.883	-30.380	-31.735	-1.994
		3.148	12.222	10.958	7.725	-27.465	-3.719
256	1.250	2.212	21.581	12.883	-30.380	-15.632	24.981
		3.148	12.222	10.958	7.725	-13.768	11.557
257	0	8.115	15.988	10.744	-21.787	-29.474	-1.982
		6.691	7.778	9.025	10.724	-23.313	-3.271
257	1.250	8.115	15.988	10.744	-21.787	-16.044	18.002
		6.691	7.778	9.025	10.724	-12.033	6.450
258	0	8.677	8.545	10.967	-13.341	-30.224	-0.989737
		7.033	3.001	8.554	11.820	-21.515	-2.168
258	1.250	8.677	8.545	10.967	-13.341	-16.516	9.691
		7.033	3.001	8.554	11.820	-10.823	1.583
259	0	5.666	0.138943	6.759	-3.819	-17.415	0.383755
		8.353	-0.869104	10.413	11.898	-24.924	-1.098
259	1.250	5.666	0.138943	6.759	-3.819	-8.966	0.557427
		8.353	-0.869104	10.413	11.898	-11.909	-2.185
260	0	5.990	-3.601	8.073	-4.668	-19.305	1.550
		7.715	-6.330	9.228	15.535	-23.390	0.044362
260	1.250	5.990	-3.601	8.073	-4.668	-9.213	-2.950
		7.715	-6.330	9.228	15.535	-11.855	-7.868
261	0	5.770	-7.738	8.450	-5.004	-20.772	2.643
		8.099	-16.242	10.781	21.809	-29.606	2.035
261	1.250	5.770	-7.738	8.450	-5.004	-10.209	-7.029
		8.099	-16.242	10.781	21.809	-16.131	-18.267
262	0	2.678	-11.718	10.097	-3.597	-24.263	3.173
		1.926	-21.688	13.089	30.560	-32.025	1.947
262	1.250	2.678	-11.718	10.097	-3.597	-11.642	-11.473
		1.926	-21.688	13.089	30.560	-15.664	-25.162
263	0	-6.989	-12.090	15.888	-0.896079	-25.907	2.599

ENVOLVENTE para < Mx > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
		-13.121	-19.773	20.923	38.889	-34.203	0.059620
263	1.250	-6.989	-12.090	15.888	-0.896079	-6.048	-12.514
		-13.121	-19.773	20.923	38.889	-8.050	-24.656
264	0	-19.056	-0.970353	13.941	-13.985	-11.004	1.539
		-14.118	-2.056	14.806	22.738	-12.040	-0.828052
264	1.250	-19.056	-0.970353	13.941	-13.985	6.421	0.325656
		-14.118	-2.056	14.806	22.738	6.467	-3.399
265	0	-12.318	10.555	17.681	-23.730	-25.024	-3.595
		-10.075	7.957	14.142	10.275	-20.431	-3.844
265	1.250	-12.318	10.555	17.681	-23.730	-2.923	9.599
		-10.075	7.957	14.142	10.275	-2.753	6.101
266	0	-2.852	14.015	13.525	-20.334	-28.140	-5.367
		-1.914	9.832	8.138	12.624	-17.314	-4.954
266	1.250	-2.852	14.015	13.525	-20.334	-11.235	12.150
		-1.914	9.832	8.138	12.624	-7.142	7.335
267	0	3.883	11.015	9.264	-17.262	-22.184	-4.444
		2.731	9.418	6.403	16.787	-16.184	-5.163
267	1.250	3.883	11.015	9.264	-17.262	-10.605	9.325
		2.731	9.418	6.403	16.787	-8.181	6.609
268	0	6.176	7.771	7.932	-16.191	-19.027	-3.128
		4.303	7.053	5.471	19.491	-13.911	-4.269
268	1.250	6.176	7.771	7.932	-16.191	-9.113	6.586
		4.303	7.053	5.471	19.491	-7.072	4.547
269	0	6.636	4.623	7.157	-16.543	-16.666	-1.616
		4.523	4.581	4.893	21.176	-12.128	-3.159
269	1.250	6.636	4.623	7.157	-16.543	-7.720	4.163
		4.523	4.581	4.893	21.176	-6.011	2.567
270	0	6.759	0.705551	6.290	-18.065	-14.025	0.413500
		4.620	2.434	4.346	22.043	-10.380	-2.118
270	1.250	6.759	0.705551	6.290	-18.065	-6.162	1.295

ENVOLVENTE para < Mx > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
		4.620	2.434	4.346	22.043	-4.948	0.924372
271	0	7.270	-2.519	5.274	-20.894	-11.130	2.148
		4.905	0.475379	3.611	21.998	-8.004	-1.145
271	1.250	7.270	-2.519	5.274	-20.894	-4.538	-0.999945
		4.905	0.475379	3.611	21.998	-3.490	-0.550549
272	0	7.373	-6.010	3.691	-25.447	-7.334	3.840
		4.936	-1.472	2.405	20.494	-4.154	-0.245130
272	1.250	7.373	-6.010	3.691	-25.447	-2.721	-3.672
		4.936	-1.472	2.405	20.494	-1.148	-2.085
273	0	0.564309	-10.706	-6.432	-33.374	1.779	5.212
		2.140	-3.351	-0.102298	16.593	2.594	0.253873
273	1.250	0.564309	-10.706	-6.432	-33.374	-6.261	-8.170
		2.140	-3.351	-0.102298	16.593	2.466	-3.934
274	0	-17.622	-5.641	-59.516	-24.496	35.665	2.778
		-8.048	-2.202	0.406039	8.780	8.562	0.030146
274	1.250	-17.622	-5.641	-59.516	-24.496	-38.727	-4.272
		-8.048	-2.202	0.406039	8.780	9.070	-2.722
1601	0	-481.522	3.165	-0.336590	-0.173492	2.111	-19.282
		-649.216	-5.634	9.867	0.432399	-60.522	24.236
1601	11.000	-460.170	2.126	-0.336590	-0.173492	-1.592	9.818
		-620.391	-4.594	9.867	0.432399	48.013	-32.014
1602	0	-617.683	-3.193	-0.531561	-0.256627	12.948	19.447
		-440.061	2.828	8.783	0.404581	-45.546	-21.358
1602	11.000	-588.858	-2.154	-0.531561	-0.256627	7.101	-9.963
		-418.709	1.788	8.783	0.404581	51.061	4.027

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
1	0	-5.197	25.256	80.939	62.492	-41.405	3.337
		1.953	7.792	7.991	0.032429	2.260	5.028
1	1.275	1.809	7.792	1.424	-4.653	8.262	14.962
		-5.197	24.963	69.530	53.778	54.515	35.351
2	0	-4.529	12.498	41.873	48.075	-8.281	24.529
		-20.394	17.438	27.697	17.293	22.826	45.798
2	1.275	-5.868	6.267	-6.210	-9.881	10.699	29.503
		-17.477	27.265	47.921	54.893	63.507	79.073
3	0	-4.755	4.378	26.924	33.453	-0.296544	30.048
		-31.243	13.026	13.071	6.559	38.190	83.333
3	1.275	-7.424	1.221	-6.449	-7.199	11.158	29.076
		-28.369	19.359	20.613	28.848	71.475	114.215
4	0	-4.918	0.233382	23.799	32.091	2.250	34.292
		-35.622	2.631	4.813	2.210	49.292	103.336
4	1.275	-8.454	-2.723	-9.652	-8.942	9.097	26.489
		-32.044	6.128	19.944	28.163	70.637	123.685
5	0	-1.380	-4.603	17.603	27.090	1.318	26.554
		-34.903	-8.706	-0.643929	4.050	56.813	120.723
5	1.275	-7.254	-6.573	-12.245	-9.564	4.602	17.381
		-30.338	-7.585	2.859	15.759	58.312	111.942
6	0	3.004	-8.646	15.554	27.501	-3.115	16.175
		-28.563	-20.852	0.913555	7.086	53.235	104.923
6	1.275	-3.869	-10.497	-14.344	-9.239	-2.486	1.640
		-15.814	-8.089	12.719	30.505	41.843	62.738
7	0	9.471	-12.445	14.065	28.935	-10.910	-1.025
		-17.142	-28.240	-17.264	-5.299	38.116	69.723
7	1.275	1.732	-14.190	-15.885	-7.880	-12.229	-20.567
		-7.819	-13.580	11.103	32.921	31.183	38.311
8	0	18.798	-19.339	12.871	34.261	-22.556	-24.869
		-3.873	-26.348	-17.172	-4.341	16.805	23.039

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
8	1.275	10.315	-21.043	-19.443	-4.269	-26.932	-53.392
		2.089	-14.576	-2.031	22.040	15.464	10.502
9	0	32.135	-16.162	10.720	30.653	-43.155	-68.960
		4.027	-19.378	-4.928	9.964	-3.949	-7.435
9	1.275	20.768	-19.077	-17.632	-1.186	-44.283	-86.956
		17.463	-10.357	-1.032	10.137	-1.467	-25.862
10	0	37.024	-3.432	18.346	25.732	-64.653	-103.139
		20.549	-11.586	1.013	6.359	-17.911	-21.799
10	1.275	31.571	-7.645	-12.753	-8.065	-57.165	-103.304
		26.290	3.355	25.849	33.631	-9.232	-43.964
11	0	32.693	14.456	22.324	11.868	-63.847	-107.371
		23.582	1.680	-4.107	-15.145	-14.719	-36.761
11	1.700	27.054	0.707325	-19.858	-33.684	-53.651	-73.802
		24.710	15.817	-5.852	-6.191	-6.829	-14.471
12	0	12.859	28.181	34.318	16.416	-40.076	-57.161
		9.194	11.141	-1.080	-22.143	1.611	-12.339
12	1.700	10.747	16.234	-6.749	-32.237	-20.196	-25.675
		13.451	23.903	18.879	10.076	15.165	12.283
13	0	-5.334	21.273	24.379	15.341	-8.769	1.140
		-7.735	15.136	7.657	-12.545	23.817	43.567
13	1.700	-1.292	11.118	-4.220	-17.307	0.865760	10.729
		-7.988	28.463	16.590	5.876	43.422	78.030
14	0	-9.738	8.571	9.775	2.906	5.647	14.974
		-19.155	8.466	5.797	-8.372	40.063	81.462
14	1.700	-9.716	7.180	-5.782	-14.039	10.890	32.643
		-24.011	21.632	15.019	9.806	67.483	129.381
15	0	-14.178	3.629	7.346	4.260	14.145	33.753
		-37.009	5.436	9.689	3.357	56.858	125.413
15	1.700	-14.085	2.357	-8.041	-12.325	14.901	42.029
		-33.667	7.629	0.052823	0.201402	70.876	151.168

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
16	0	-15.659	-2.183	4.329	5.525	17.178	39.412
		-33.538	-7.983	-0.244392	-0.149152	70.851	151.040
16	1.700	-13.305	-3.454	-11.018	-10.977	12.535	37.818
		-37.183	-5.821	-9.842	-3.203	56.636	124.861
17	0	-12.165	-7.072	1.874	6.815	14.083	31.807
		-23.803	-21.972	-15.198	-9.724	67.069	128.382
17	1.700	-10.763	-9.711	-15.447	-11.653	4.671	23.081
		-28.349	-16.973	-16.144	-1.151	38.225	87.234
18	0	-4.825	-11.476	-0.127058	9.197	5.189	11.855
		-7.664	-28.689	-16.733	-5.723	42.594	76.131
18	1.700	-4.996	-21.524	-24.475	-15.069	-10.022	-1.649
		-12.090	-25.497	-20.110	1.625	11.024	27.549
19	0	6.615	-19.604	0.562451	22.692	-15.213	-25.101
		13.927	-23.681	-18.825	-9.914	13.843	9.632
19	1.700	13.382	-27.956	-34.203	-16.122	-41.518	-59.988
		6.251	-14.351	-7.226	10.716	-9.036	-24.955
20	0	27.123	-9.048	8.080	22.668	-51.922	-86.467
		24.124	-10.422	-7.575	-6.421	-13.587	-34.308
20	1.700	33.126	-13.443	-21.856	-12.168	-64.718	-108.544
		20.538	-7.572	-6.630	2.345	-23.021	-42.741
21	0	31.355	8.917	13.181	7.653	-57.183	-104.017
		22.366	4.224	-10.011	-19.748	-19.063	-52.022
21	1.275	36.649	4.703	-17.978	-26.226	-64.103	-102.099
		17.210	8.071	-1.384	-5.612	-21.731	-35.855
22	0	20.182	20.017	18.095	1.134	-43.564	-85.821
		16.046	14.688	-1.669	-20.676	-11.526	-38.142
22	1.275	31.398	16.802	-10.448	-30.682	-42.032	-66.988
		4.918	17.505	4.602	-8.317	-5.556	-11.248
23	0	9.702	21.217	19.555	4.486	-26.082	-51.634
		3.817	17.632	0.082006	-19.284	3.539	-9.113

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
23	1.275	18.029	19.502	-12.825	-34.129	-21.556	-22.783
		-4.426	18.851	10.245	0.072062	10.632	13.020
24	0	1.125	14.123	15.914	8.066	-11.442	-18.722
		-7.058	17.899	1.104	-17.823	18.675	23.038
24	1.275	8.710	12.366	-14.104	-28.834	-10.088	0.825517
		-14.548	19.072	8.918	-0.091125	25.537	45.607
25	0	-4.496	10.342	14.341	9.380	-1.807	3.295
		-15.445	11.295	-2.131	-16.677	32.024	52.719
25	1.275	2.224	8.476	-15.625	-27.448	-2.448	17.704
		-22.073	12.510	5.634	1.015	34.660	66.944
26	0	-7.944	6.367	12.221	9.670	5.169	18.774
		-20.470	4.380	-6.136	-16.938	40.850	71.375
26	1.275	-2.220	4.389	-17.694	-27.073	1.841	27.747
		-26.127	5.677	1.579	0.680239	38.265	76.891
27	0	-9.259	2.457	9.611	9.019	9.549	27.593
		-22.264	-2.709	-10.953	-18.659	45.302	78.831
27	1.275	-4.659	0.352263	-20.252	-27.581	2.912	31.141
		-26.835	-1.306	-3.294	-1.176	36.454	75.470
28	0	-8.418	-1.606	6.385	7.243	11.498	29.863
		-20.685	-10.290	-17.326	-22.903	45.705	74.315
28	1.275	-5.027	-3.828	-23.393	-29.003	0.774314	27.706
		-24.271	-8.881	-9.310	-5.038	29.144	62.023
29	0	-5.247	-5.731	2.202	3.926	11.337	25.206
		-14.812	-17.088	-27.503	-32.623	42.857	54.635
29	1.275	-4.896	-11.249	-36.897	-42.205	-6.634	21.996
		-16.370	-13.395	-7.695	-0.728196	17.990	31.170
30	0	-0.109309	-8.440	-2.532	3.910	9.128	15.463
		-5.319	-16.751	-48.803	-38.129	39.008	23.424
30	1.275	-5.463	-17.044	-60.212	-46.843	-30.486	1.880
		-0.109309	-8.440	-9.099	-0.775898	1.713	4.702

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
31	0	0.810347	-6.528	17.986	30.781	2.520	4.235
		-1.373	-15.282	40.432	15.331	12.268	9.234
31	1.275	0.993000	-5.730	10.928	18.766	19.890	-3.548
		-1.417	-16.566	39.864	30.592	65.697	-11.218
32	0	0.739278	-5.093	10.419	4.539	25.440	2.926
		-4.349	-12.398	44.304	22.275	79.509	6.521
32	1.275	1.160	-4.385	5.224	17.476	35.422	-3.017
		-7.117	-16.122	31.417	35.372	121.960	-11.434
33	0	-0.611283	-1.930	3.901	2.269	38.625	0.584691
		-11.773	-9.811	29.693	29.067	133.046	4.272
33	1.275	0.397344	-1.269	-1.749	15.241	40.066	-1.313
		-12.589	-10.482	10.649	26.667	163.779	-8.771
34	0	-0.861523	0.964363	-2.875	1.135	42.527	-1.299
		-14.501	-2.632	9.398	18.985	170.915	-0.657736
34	1.275	0.627159	1.505	-8.591	14.136	35.201	0.462550
		-15.652	-3.163	2.366	16.537	178.500	-4.490
35	0	0.185502	3.653	-10.089	0.789344	37.356	-2.918
		-14.085	4.423	-11.043	9.647	182.453	-5.048
35	1.275	2.063	4.056	-15.805	13.835	20.778	2.224
		-15.486	4.017	-18.073	7.147	163.996	0.169618
36	0	2.443	6.288	-17.667	1.097	23.030	-4.379
		-10.935	11.059	-20.933	2.618	165.644	-8.743
36	1.275	4.641	6.556	-23.379	14.200	-3.237	4.068
		-12.508	10.764	-39.968	0.064917	121.996	4.985
37	0	7.329	8.950	-25.933	4.830	-0.442526	-5.480
		-7.757	15.153	-43.736	-1.527	122.479	-10.792
37	1.275	8.119	8.895	-31.470	15.402	-37.005	5.981
		-7.757	15.153	-50.972	-1.527	62.105	8.527
38	0	10.606	10.265	-35.256	7.542	-33.036	-5.661

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
		-0.150714	13.664	-42.498	19.748	68.417	-8.986
38	1.275	12.315	13.257	-52.633	19.708	-91.064	9.476
		-0.893126	10.606	-50.006	18.223	13.719	6.434
39	0	13.503	11.027	-58.673	15.227	-84.776	-5.113
		2.001	12.202	-55.116	16.475	19.978	-7.331
39	1.275	12.129	13.739	-78.070	24.585	-167.965	10.563
		4.511	9.449	-61.027	17.980	-53.258	6.687
40	0	10.541	4.432	-53.227	13.830	-166.469	-0.434846
		4.934	5.671	-43.843	10.892	-52.574	-2.356
40	1.275	11.882	4.370	-63.073	25.228	-241.739	5.307
		5.711	3.179	-36.004	15.034	-103.646	3.269
41	0	7.659	-9.573	81.049	-3.049	-243.428	9.862
		10.037	-3.432	45.063	-9.436	-104.345	3.777
41	1.700	8.839	-5.690	58.344	-14.419	-118.195	-3.067
		7.048	-6.721	42.362	-3.500	-22.280	-5.195
42	0	6.020	-14.542	72.700	-13.922	-118.148	13.182
		7.528	-8.397	46.499	-8.614	-25.046	7.461
42	1.700	7.390	-8.310	38.779	-8.083	-19.162	-6.181
		5.239	-14.724	52.488	-11.546	60.228	-12.319
43	0	3.376	-7.865	31.906	-3.347	-22.806	6.856
		-2.717	-10.634	42.287	-12.013	53.058	8.246
43	1.700	4.343	-7.395	24.372	-5.958	24.256	-6.044
		-3.930	-16.211	50.756	9.805	131.412	-14.545
44	- 0	-0.446781	-4.816	19.971	-1.298	- 22.553	3.819
		-12.610	-11.759	44.460	11.227	129.590	8.264
44	1.700	0.164035	-4.704	13.644	-4.019	51.179	-4.212
		-12.802	-11.759	34.811	11.227	196.969	-11.725
45	0	-2.805	-1.892	9.713	-0.327952	50.535	1.119
		-16.841	-4.082	29.032	4.752	197.581	1.190
45	1.700	-2.314	-1.576	2.659	-3.000	61.685	-1.776

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
		-16.959	-4.294	8.104	4.717	220.748	-5.924
46	0	-3.102	1.004	-0.461394	0.402846	61.717	-1.369
		-16.886	4.506	-8.825	-4.682	220.763	-6.098
46	1.700	-2.695	1.316	-7.518	-2.262	54.360	0.664862
		-16.959	4.294	-29.753	-4.717	196.370	1.376
47	0	-1.323	4.140	-11.424	1.366	55.047	-3.854
		-12.779	11.980	-35.540	-11.172	195.796	-11.893
47	1.700	-1.025	4.238	-17.761	-1.330	30.253	3.318
		-12.779	11.980	-45.189	-11.172	127.179	8.472
48	0	2.095	6.840	-22.092	3.161	31.915	-5.735
		-4.011	16.424	-51.533	-9.678	129.070	-14.684
48	1.700	2.373	8.511	-33.340	-4.505	-13.522	7.418
		-3.747	16.091	-60.017	-9.737	33.462	12.958
49	0	4.980	8.413	-39.155	9.555	-9.668	-6.379
		5.707	18.035	-72.123	-4.793	38.904	-14.768
49	1.700	3.862	18.206	-85.377	-1.149	-121.181	16.359
		8.029	7.391	-38.930	5.619	-41.976	6.762
50	0	7.455	8.244	-64.899	13.941	-121.874	-5.086
		5.076	4.559	-38.150	7.893	-41.236	-3.430
50	1.700	6.816	9.425	-79.093	2.748	-246.977	9.859
		8.919	3.261	-38.997	7.415	-103.335	3.599
51	0	12.382	-4.614	67.026	-26.047	-242.449	5.382
		5.363	-3.024	34.598	-9.696	-101.870	3.072
51	1.275	10.897	-4.677	57.180	-14.649	-162.140	-0.671626
		4.967	-3.227	32.900	-11.720	-59.461	-0.989491
52	0	12.366	-13.987	78.546	-24.449	-164.245	10.654
		4.241	-7.771	41.242	-8.541	-60.101	5.635
52	1.275	13.615	-11.097	58.390	-14.994	-81.289	-5.226
		1.897	-10.706	48.354	-9.565	1.477	-6.328

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
53	0	12.234	-13.184	52.148	-19.524	-87.606	9.375
		-1.288	-10.813	40.801	-3.316	-2.210	6.589
53	1.275	10.382	-10.192	34.770	-7.358	-30.196	-5.669
		-0.404880	-13.873	45.502	-7.251	50.771	-9.070
54	0	7.812	-8.768	31.091	-15.319	-34.093	5.864
		-5.455	-10.776	38.027	-2.509	47.242	5.855
54	1.275	6.878	-8.823	25.554	-4.748	1.987	-5.436
		-5.357	-10.780	30.987	-4.912	91.225	-7.863
55	0	4.203	-6.438	23.037	-14.163	-0.765149	3.969
		-9.581	-6.704	24.977	-1.840	88.742	2.818
55	1.275	1.861	-6.170	17.325	-1.060	25.066	-4.328
		-7.951	-7.008	18.137	-6.796	116.093	-5.720
56	0	1.533	-3.969	15.476	-13.823	22.832	2.149
		-11.951	-2.517	12.545	-2.178	113.833	-0.065684
56	1.275	-0.488510	-3.566	9.760	-0.777010	38.990	-2.881
		-10.533	-2.935	5.711	-7.081	125.364	-3.363
57	0	0.027085	-1.461	8.276	-14.143	36.836	0.413875
		-12.189	1.727	0.712137	-3.540	122.584	-2.827
57	1.275	-1.606	-0.919875	2.559	-1.142	43.760	-1.291
		-11.057	1.181	-6.122	-8.394	119.056	-0.822939
58	0	-0.233477	1.246	1.453	-15.272	41.282	-1.328
		-9.947	6.285	-10.263	-6.427	114.943	-5.611
58	1.275	-1.386	1.907	-4.197	-2.300	39.464	0.540008
		-9.189	5.604	-17.121	-11.238	97.445	2.084
59	0	0.549659	4.249	-5.502	-17.546	36.225	-2.985
		-5.374	11.151	-20.821	-11.725	90.968	-8.149
59	1.275	-0.015236	4.957	-10.698	-4.610	25.888	2.785
		-5.068	10.370	-27.841	-16.492	59.895	5.640
60	0	0.563053	5.453	-11.177	-18.877	20.268	-3.470
		-1.721	12.155	-27.760	-16.868	48.616	-8.223

ENVOLVENTE para < My > (y valores concomitantes)
(1. linea: MIN., 2. linea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
60	1.275	0.367331	5.776	-16.976	-26.871	2.622	3.671
		-1.669	11.832	-33.849	-8.874	9.041	7.086
61	0	0.357312	-4.378	11.459	13.957	6.302	2.722
		0.002361	-16.270	30.382	-1.306	19.183	10.178
61	1.275	0.213307	-4.378	6.715	13.957	17.888	-2.860
		-0.251160	-16.877	25.629	22.782	55.461	-10.932
62	0	1.426	-3.728	10.558	15.797	24.890	2.113
		-0.379108	-18.551	38.702	24.544	75.575	10.970
62	1.275	1.282	-3.728	5.814	15.797	35.327	-2.640
		-0.031139	-18.541	32.024	-1.492	119.856	-12.687
63	0	2.202	-1.084	4.445	1.627	39.445	0.145801
		-0.017671	-11.917	27.298	20.796	132.646	5.601
63	1.275	2.048	-0.668482	-0.299913	15.860	42.087	-0.938308
		-0.058077	-11.621	17.297	-1.524	164.296	-9.406
64	0	2.506	2.202	-2.986	1.650	44.581	-1.975
		-0.068981	-3.359	11.315	-1.550	170.226	-0.301591
64	1.275	2.362	2.202	-7.730	1.650	37.750	0.832686
		-0.068981	-3.359	2.998	-1.550	179.350	-4.585
65	0	2.570	5.347	-10.724	1.680	39.638	-3.826
		-0.067344	4.589	-9.850	-1.587	183.333	-5.320
65	1.275	2.426	5.347	-15.468	1.680	22.941	2.991
		-0.067344	4.589	-18.167	-1.587	165.473	0.530192
66	0	2.481	8.446	-18.740	1.728	24.844	-5.493
		-0.054577	11.906	-25.343	-1.641	168.845	-9.576
66	1.275	2.337	8.446	-23.484	1.728	-2.073	5.274
		-0.210483	12.648	-35.189	-1.093	126.991	6.100
67	0	2.297	11.185	-26.919	1.805	0.417694	-6.743
		-0.037599	17.918	-45.135	-1.722	128.315	-12.658
67	1.275	2.153	11.185	-31.663	1.805	-36.927	7.517
		-0.595438	18.617	-51.500	-3.212	67.464	10.792

ENVOLVENTE para < My > (y valores concomitantes)
(1. linea: MIN., 2. linea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
68	0	2.048	12.171	-34.639	1.928	-32.917	-6.711
		-0.581056	21.470	-56.876	-4.575	70.464	-13.700
68	1.275	2.005	15.664	-51.106	-1.946	-88.812	10.903
		-0.097377	14.071	-46.236	2.026	13.402	8.839
69	0	1.746	11.994	-60.109	-2.147	-77.948	-5.995
		-0.097141	13.924	-55.852	2.227	21.282	-8.256
69	1.275	1.481	15.020	-78.318	-2.149	-160.207	11.185
		0.023884	10.898	-56.703	2.228	-53.978	7.609
70	0	0.940302	1.960	-147.203	-2.973	-131.359	0.734041
		-0.137536	8.035	-134.925	3.043	-34.700	-3.874
70	1.275	-0.182843	7.855	-191.567	-2.976	-350.896	7.073
		0.341623	2.946	-90.948	5.962	-159.031	2.998
71	0	-2.144	-10.956	171.216	1.145	-351.385	10.412
		5.922	-4.985	73.005	-1.014	-140.952	4.826
71	1.700	-0.784843	-7.697	143.095	1.146	-75.935	-5.395
		5.420	-7.013	85.942	-1.012	-5.160	-5.447
72	0	-0.508211	-18.041	70.317	0.416279	-108.210	16.118
		4.126	-11.208	44.018	-0.294792	-24.534	9.848
72	1.700	0.087521	-10.292	36.864	-0.412087	-16.320	-7.810
		3.253	-18.453	60.160	0.265114	61.854	-15.258
73	0	0.060274	-10.195	33.344	-0.211943	-22.163	8.989
		3.081	-15.079	46.394	0.118299	53.682	12.121
73	1.700	0.258005	-9.739	25.713	-0.093460	27.111	-7.945
		2.375	-20.162	52.053	0.212179	139.357	-18.028
74	0	0.279726	-6.344	21.095	0.017655	24.758	5.202
		1.660	-13.880	42.070	13.380	139.155	10.017
74	1.700	0.279726	-6.344	14.770	0.017655	55.242	-5.583
		2.105	-13.338	34.164	0.101618	203.869	-13.248
75	0	0.296343	-2.486	10.176	0.088986	54.289	1.652
		1.857	-4.747	17.857	5.315	203.074	1.728

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
75	1.700	0.298611	-2.209	3.086	0.089355	66.193	-2.347
		1.879	-4.768	8.144	0.030489	225.980	-6.460
76	0	0.296778	1.340	-0.627268	0.149925	66.153	-1.632
		1.877	5.044	-8.909	-0.030113	225.999	-6.687
76	1.700	0.102502	1.617	-7.718	0.150294	58.429	0.889700
		1.663	5.023	-18.623	-5.314	201.792	1.970
77	0	0.070629	5.456	-12.292	0.221262	59.280	-4.901
		1.896	13.614	-34.938	-0.102051	202.636	-13.457
77	1.700	-0.121378	5.456	-18.617	0.221262	33.009	4.375
		1.259	14.156	-42.845	-13.381	136.605	10.276
78	0	-0.202479	8.809	-23.168	0.332758	35.179	-7.283
		1.920	20.374	-52.802	-0.213990	136.891	-18.168
78	1.700	-1.003	10.517	-34.397	0.332148	-11.840	9.132
		1.486	19.831	-61.805	-16.193	39.288	16.319
79	0	-1.122	10.339	-37.969	-9.958	-6.097	-7.866
		1.959	21.187	-67.596	-16.838	45.062	-17.369
79	1.700	-2.428	21.718	-82.521	-0.292475	-109.219	19.116
		4.115	9.370	-38.311	0.827694	-36.593	8.502
80	0	-3.970	10.345	-167.690	-1.006	-73.729	-7.661
		4.944	3.945	-71.928	2.276	-20.710	-2.702
80	1.700	-4.162	10.345	-178.779	-1.006	-368.216	9.926
		4.944	3.945	-78.253	2.276	-148.357	4.005
81	0	2.120	-5.305	169.646	3.477	-337.954	5.548
		1.790	-4.014	83.220	-2.943	-144.096	3.604
81	1.275	2.383	-2.630	139.165	2.974	-127.800	0.327448
		1.383	-6.690	100.042	-3.039	-40.566	-3.057
82	0	2.161	-15.610	78.217	2.510	-156.031	11.530
		0.818633	-9.239	41.379	-2.125	-55.154	6.603
82	1.275	2.293	-12.377	58.945	2.146	-75.092	-6.270
		0.542285	-12.472	46.992	-2.361	7.678	-7.279

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
83	0	2.276	-15.732	50.801	1.944	-85.531	10.900
		0.271334	-13.285	41.774	-1.663	1.498	8.444
83	1.275	2.176	-12.239	34.334	-1.931	-30.025	-6.802
		0.183141	-16.872	44.578	-0.323570	55.314	-10.804
84	0	2.176	-11.092	31.314	-1.807	-33.920	7.416
		0.080140	-13.692	40.463	0.181501	51.328	7.869
84	1.275	2.176	-11.092	26.571	-1.807	2.980	-6.726
		-0.028443	-13.546	31.551	1.395	97.237	-9.593
85	0	2.177	-8.309	23.125	-1.728	0.534784	5.155
		-0.087027	-8.580	26.961	1.824	94.414	3.963
85	1.275	2.177	-8.309	18.381	-1.728	26.994	-5.438
		-0.231033	-8.580	18.046	1.226	123.105	-6.977
86	0	2.134	-5.208	15.120	-1.678	25.111	2.879
		-0.236733	-3.252	13.729	1.684	120.446	0.284544
86	1.275	2.134	-5.208	10.376	-1.678	41.364	-3.762
		-0.380739	-3.252	4.814	1.086	132.267	-3.861
87	0	1.990	-2.066	7.392	-1.645	39.477	0.728327
		-0.323547	2.285	0.920128	1.560	128.969	-3.281
87	1.275	1.990	-2.066	2.648	-1.645	45.877	-1.906
		-0.467553	2.285	-7.995	0.961307	124.459	-0.368086
88	0	1.671	0.808238	-0.027164	-15.854	43.364	-1.039
		-0.329601	8.320	-11.320	1.445	119.420	-6.815
88	1.275	1.680	1.224	-4.772	-1.622	40.304	0.222872
		-0.473606	8.320	-20.235	0.846266	99.304	3.792
89	0	1.030	3.871	-6.114	-15.795	36.137	-2.736
		-0.210610	13.881	-20.657	1.329	90.413	-9.513
89	1.275	1.030	3.871	-10.857	-15.795	25.318	2.200
		-0.354616	13.881	-29.572	0.730769	58.393	8.184
90	0	0.217340	4.488	-6.912	-13.963	18.223	-2.931

ENVOLVENTE para < My > (y valores concomitantes)
(1. linea: MIN., 2. linea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
		0.018313	13.241	-18.328	1.124	42.936	-8.582
90	1.275	0.217340	4.488	-11.656	-13.963	6.386	2.792
		-0.125692	13.241	-27.244	0.525397	13.885	8.300
91	0	2.460	-4.943	16.448	-16.951	3.417	2.642
		0.980528	-14.059	40.861	5.530	12.691	8.583
91	1.275	2.027	-4.230	10.630	-9.022	20.359	-3.177
		1.774	-15.279	36.609	-20.153	61.653	-10.192
92	0	3.505	-1.933	10.777	6.051	25.151	0.658278
		5.441	-13.490	40.306	-18.569	75.715	7.325
92	1.275	3.957	-3.644	5.600	-6.885	35.659	-2.941
		6.221	-14.369	31.242	-13.814	119.596	-10.363
93	0	4.746	0.304491	4.659	8.315	37.984	-0.810721
		12.507	-9.217	29.264	-9.770	126.920	3.788
93	1.275	5.709	-1.197	-0.976439	-4.649	40.446	-1.524
		11.708	-8.379	10.213	-7.371	157.059	-7.320
94	0	4.566	2.600	-2.042	9.417	41.893	-2.185
		15.497	-2.760	9.899	-6.502	161.849	-0.574401
94	1.275	6.023	1.291	-7.738	-3.571	35.678	0.101100
		14.369	-2.081	2.860	-4.055	170.033	-3.518
95	0	2.979	4.918	-9.251	9.734	36.760	-3.497
		15.361	3.547	-10.256	-5.126	173.263	-4.529
95	1.275	4.842	3.753	-14.944	-3.289	21.297	1.800
		13.977	4.077	-17.290	-2.626	155.774	0.495870
96	0	0.156636	7.310	-16.835	9.406	22.455	-4.761
		12.547	9.468	-19.375	-4.949	158.421	-7.950
96	1.275	2.353	6.265	-22.518	-3.656	-2.707	3.633
		10.962	9.855	-38.410	-2.395	116.733	4.546
97	0	-1.848	9.339	-25.095	5.660	-1.002	-5.813
		5.864	14.668	-43.244	-3.178	119.933	-10.428
97	1.275	-1.129	8.658	-30.586	-4.840	-36.468	5.558

ENVOLVENTE para < My > (y valores concomitantes)
(1. linea: MIN., 2. linea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
		5.864	14.668	-50.481	-3.178	60.186	8.273
98	0	-5.429	10.666	-34.337	2.964	-33.642	-5.997
		-0.248219	17.669	-57.837	-5.833	64.274	-11.334
98	1.275	-5.365	13.050	-51.638	-9.079	-90.450	9.049
		0.018507	11.610	-50.189	-4.218	6.616	7.172
99	0	-8.639	11.353	-57.385	-4.587	-85.442	-5.401
		-3.043	12.187	-54.565	-9.186	10.874	-7.148
99	1.275	-9.226	13.354	-76.629	-13.739	-166.856	10.359
		-1.573	9.511	-60.500	-10.681	-61.708	6.527
100	0	-9.840	4.098	-50.811	-2.811	-166.837	-0.079342
		-2.090	5.110	-41.142	-10.568	-61.513	-2.225
100	1.275	-8.825	3.438	-60.443	-13.836	-238.886	4.552
		-1.474	3.203	-33.046	-9.350	-104.854	2.957
101	0	-10.476	-7.797	79.039	15.266	-240.650	8.299
		3.165	-5.683	40.816	7.769	-104.838	5.425
101	1.700	-7.774	-6.105	58.350	14.410	-118.207	-3.670
		-0.301975	-6.529	38.973	11.472	-32.503	-4.656
102	0	-8.672	-14.074	72.596	11.019	-118.080	12.954
		3.683	-9.620	46.667	6.862	-33.480	8.202
102	1.700	-4.898	-8.586	38.091	9.628	-19.166	-6.636
		-0.283411	-15.108	53.321	8.254	52.073	-12.485
103	0	-1.190	-8.474	32.048	0.705974	-22.882	7.166
		6.905	-11.384	44.085	3.626	47.928	8.975
103	1.700	-0.481836	-7.884	24.467	3.373	-24.269	-6.801
		6.918	-15.276	49.962	3.846	129.972	-13.697
104	0	3.201	-5.264	20.104	-1.188	22.489	3.962
		13.269	-9.873	37.155	9.299	127.760	6.871
104	1.700	3.807	-5.035	13.766	1.476	51.242	-4.855
		14.810	-10.086	32.492	1.733	190.921	-10.186

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
105	0	5.687	-2.178	9.838	-2.172	50.476	1.109
		18.958	-3.416	28.470	0.497141	189.477	0.844369
105	1.700	6.334	-1.749	2.783	0.472970	61.772	-2.294
		18.692	-3.625	7.542	0.531157	211.688	-5.133
106	0	6.023	0.874654	-0.345775	-2.911	61.657	-1.516
		18.619	3.834	-8.263	-0.565174	211.702	-5.304
106	1.700	6.292	1.300	-7.397	-0.257719	54.458	0.284213
		18.692	3.625	-29.191	-0.531157	188.266	1.029
107	0	3.800	4.146	-11.314	-3.877	54.975	-4.109
		14.396	10.288	-33.221	-1.788	189.747	-10.337
107	1.700	4.102	4.359	-17.642	-1.187	30.355	3.069
		12.663	10.075	-37.884	-9.354	125.346	7.063
108	0	-0.162918	6.944	-21.982	-5.673	31.823	-6.061
		6.191	15.418	-50.736	-3.976	127.626	-13.784
108	1.700	-0.318508	8.468	-32.984	-3.184	-13.187	6.979
		4.496	14.728	-57.107	-14.284	34.389	11.954
109	0	-5.814	8.033	-38.691	-17.075	-10.106	-6.170
		-2.250	17.059	-71.443	-8.257	38.292	-13.920
109	1.700	-8.900	16.785	-84.692	-11.732	-120.623	15.158
		4.428	8.466	-38.879	-7.212	-41.953	7.242
110	0	-10.627	6.850	-62.676	-25.233	-122.737	-4.229
		-1.084	3.935	-37.887	-9.459	-41.291	-2.365
110	1.700	-11.518	6.920	-77.120	-14.802	-244.228	7.516
		2.673	4.982	-38.816	-8.964	-103.146	4.808
111	0	-8.592	-4.647	64.210	14.744	-239.569	5.452
		-1.243	-3.913	34.342	8.216	-101.678	3.466
111	1.275	-9.751	-5.306	54.577	3.719	-162.719	-0.720451
		-2.017	-4.290	32.467	9.243	-59.582	-1.656
112	0	-8.831	-14.024	77.056	13.627	-163.289	10.767
		-1.714	-8.383	41.002	6.119	-59.967	5.921

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
112	1.275	-8.396	-11.852	57.110	4.351	-81.956	-5.739
		-3.028	-11.064	48.025	7.179	1.143	-6.354
113	0	-4.974	-13.156	51.159	8.890	-86.995	9.073
		-0.380314	-11.258	40.575	0.844673	-2.279	7.111
113	1.275	-5.182	-10.771	33.857	-3.153	-30.799	-6.108
		-1.000	-14.163	45.271	4.781	50.445	-9.072
114	0	-0.847927	-8.605	30.208	4.755	-33.554	5.488
		3.597	-11.246	37.817	-0.079469	47.158	6.372
114	1.275	-1.711	-9.286	24.718	-5.744	1.431	-5.816
		3.685	-11.082	30.772	2.324	90.901	-7.888
115	0	2.453	-6.162	22.176	3.619	-0.231442	3.540
		7.583	-7.231	24.763	-0.875054	88.662	3.351
115	1.275	0.112038	-7.207	16.493	-9.443	24.495	-4.723
		9.224	-6.683	17.918	4.081	115.788	-5.718
116	0	4.753	-3.621	14.616	3.279	23.355	1.696
		9.895	-3.112	12.322	-0.665387	113.756	0.492381
116	1.275	2.746	-4.787	8.922	-9.744	38.400	-3.434
		11.297	-2.426	5.479	4.239	125.050	-3.220
117	0	5.760	-1.122	7.420	3.584	37.320	-0.016804
		10.183	1.072	0.477977	0.569035	122.503	-2.246
117	1.275	4.159	-2.430	1.723	-9.403	43.129	-2.087
		11.290	1.907	-6.368	5.424	118.722	-0.503474
118	0	5.305	1.437	0.668185	4.689	41.670	-1.671
		8.138	5.596	-10.489	3.327	114.834	-5.020
118	1.275	4.198	-0.064961	-4.967	-8.275	38.815	-0.651198
		8.873	6.599	-17.359	8.138	97.096	2.636
119	0	3.465	4.010	-5.896	6.961	36.457	-3.131
		3.920	10.530	-20.904	8.503	90.798	-7.608
119	1.275	2.869	2.299	-11.074	-5.975	25.572	0.935029
		4.238	11.687	-27.941	13.274	59.667	6.506

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
120	0	1.634	4.705	-10.881	9.125	20.717	-3.386
		0.781664	11.968	-27.523	13.794	48.548	-7.901
120	1.275	1.922	5.417	-16.689	17.122	3.447	3.038
		0.142401	10.820	-32.798	1.386	9.472	6.677
121	0	6.472	20.465	66.039	-47.517	-30.605	5.084
		9.955	12.877	-2.914	12.172	11.106	3.008
121	1.275	9.488	11.555	-10.065	16.500	2.138	17.302
		6.472	20.758	54.630	-38.803	46.319	31.363
122	0	14.411	10.656	28.393	-30.995	-1.628	19.047
		18.119	16.755	-1.565	13.547	29.794	41.808
122	1.275	12.388	9.525	-16.649	24.390	4.966	33.359
		20.168	22.145	29.503	-31.243	50.998	71.329
123	0	14.113	3.134	14.884	-17.458	5.679	25.110
		28.122	10.677	0.562142	8.163	43.165	78.607
123	1.275	10.477	3.083	-14.762	18.691	5.879	30.868
		31.082	13.852	16.393	-17.863	56.951	100.202
124	0	14.061	-1.555	11.725	-15.967	7.730	28.849
		31.512	1.984	-4.004	9.124	50.948	95.307
124	1.275	9.192	-1.497	-17.996	20.527	3.873	28.802
		35.493	3.395	8.202	-13.756	57.565	106.989
125	0	12.196	-5.887	9.163	-15.458	6.538	25.261
		30.207	-6.843	-2.240	-0.227581	52.450	107.596
125	1.275	6.231	-5.801	-20.603	21.163	-0.575279	20.012
		34.857	-6.758	1.219	-11.940	51.643	97.073
126	0	8.403	-10.035	7.099	-15.842	2.104	14.702
		23.763	-16.383	-8.128	-0.118943	47.316	94.156
126	1.275	1.422	-9.983	-22.706	20.835	-7.631	4.503
		29.148	-16.201	-4.624	-11.882	39.008	71.281
127	0	2.544	-13.765	5.597	-17.215	-5.691	-2.793
		12.738	-24.339	-11.900	-1.262	33.988	64.981

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
127	1.275	-5.379	-13.805	-24.242	19.487	-17.341	-17.467
		18.748	-23.959	-8.348	-13.033	20.899	31.937
128	0	-6.194	-20.512	4.379	-22.393	-17.295	-26.847
		-2.097	-21.214	-18.227	8.625	15.804	15.032
128	1.275	-14.977	-20.720	-27.786	15.938	-31.985	-49.987
		6.218	-18.628	-4.067	-14.227	4.588	-5.384
129	0	-21.742	-16.850	2.143	-18.473	-37.624	-70.038
		-8.279	-19.460	-4.978	-9.904	-3.843	-6.136
129	1.275	-27.564	-18.732	-25.998	13.017	-49.176	-82.574
		-5.056	-16.990	-3.133	-16.232	-12.428	-37.999
130	0	-31.016	-3.704	10.660	-14.523	-58.585	-100.627
		-17.492	-10.526	-0.687084	-5.124	-22.585	-37.807
130	1.275	-37.247	-7.613	-21.494	19.996	-62.224	-99.110
		-12.027	-3.557	3.728	-10.488	-21.322	-49.564
131	0	-34.584	14.081	14.031	1.795	-56.408	-105.802
		-6.979	6.049	6.674	3.214	-23.294	-44.023
131	1.700	-38.359	9.731	-15.367	35.397	-56.327	-79.435
		-9.096	12.807	5.397	1.801	-14.538	-32.964
132	0	-15.400	22.088	24.130	-5.256	-35.225	-60.746
		2.995	15.672	8.251	11.984	-5.083	-17.135
132	1.700	-14.336	22.216	-6.045	34.914	-18.366	-17.495
		2.512	18.840	7.674	4.991	10.871	15.806
133	0	1.452	12.564	13.276	-2.939	-9.205	-14.985
		13.806	22.435	12.642	11.744	-17.679	30.737
133	1.700	1.704	12.742	0.640844	9.326	2.620	6.420
		16.793	25.468	6.989	9.752	35.008	72.746
134	0	9.964	8.292	11.410	-5.468	4.162	14.876
		29.850	13.292	9.825	5.704	42.080	86.424
134	1.700	10.064	8.426	-1.246	6.813	12.848	29.173
		32.500	16.714	2.935	7.009	54.998	117.039

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
135	0	14.126	3.178	10.840	-10.171	12.485	37.223
		39.915	5.360	9.678	-3.459	57.050	126.144
135	1.700	15.902	2.977	-3.987	5.353	17.119	39.131
		39.467	6.085	-3.068	5.093	62.366	135.209
136	0	14.462	-2.218	9.138	-13.279	15.094	44.498
		39.525	-6.236	1.934	-3.318	62.404	133.110
136	1.700	15.864	-2.206	-6.711	4.264	15.104	35.414
		39.596	-5.705	-9.870	3.407	56.700	125.435
137	0	9.223	-7.403	5.554	-13.044	11.460	33.953
		31.992	-17.114	-3.197	-6.996	54.713	116.234
137	1.700	11.971	-7.072	-9.117	2.915	7.882	19.573
		29.091	-13.649	-10.005	-5.787	41.365	84.861
138	0	0.930751	-12.728	4.124	-17.472	1.891	14.541
		15.839	-25.854	-7.217	-9.816	34.266	70.995
138	1.700	4.054	-13.074	-12.025	0.362313	-4.912	-8.555
		12.631	-22.779	-12.790	-11.900	16.603	28.343
139	0	-15.799	-22.314	6.030	-35.027	-19.906	-20.590
		-2.588	-22.425	-10.023	-4.920	6.180	6.055
139	1.700	-13.509	-27.127	-25.394	1.920	-33.927	-59.722
		-2.775	-13.226	-3.388	-17.245	-6.225	-24.591
140	0	-39.438	-9.096	15.713	-34.946	-57.913	-82.234
		-9.136	-9.212	-3.543	0.067163	-16.304	-36.550
140	1.700	-35.876	-13.468	-13.752	-1.251	-57.523	-107.667
		-12.382	-5.456	-2.059	-9.744	-20.890	-45.595
141	0	-37.245	8.600	21.766	-19.427	-62.122	-99.478
		-11.410	3.954	-3.120	10.223	-20.699	-48.347
141	1.275	-31.055	4.517	-10.482	15.079	-58.081	-99.687
		-19.324	8.531	4.369	-1.472	-19.928	-38.982
142	0	-26.938	19.045	26.263	-12.992	-48.380	-81.006

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
		-4.426	12.976	3.120	12.397	-13.193	-36.170
142	1.275	-21.283	17.167	-1.940	18.594	-36.586	-68.199
		-11.208	17.215	8.815	2.474	-3.600	-11.331
143	0	-14.287	20.659	27.825	-16.074	-31.034	-47.902
		4.399	17.501	4.312	13.262	1.294	-10.256
143	1.275	-5.667	20.459	-4.400	22.349	-16.382	-24.949
		-3.994	18.276	14.539	-5.990	12.764	13.592
144	0	-4.830	13.615	24.199	-19.590	-16.470	-15.485
		14.423	18.080	5.427	11.741	16.255	21.450
144	1.275	2.931	13.589	-5.698	17.202	-4.953	-1.142
		6.802	18.572	13.320	-5.942	27.795	46.040
145	0	1.763	9.792	22.634	-20.888	-6.878	6.185
		21.750	11.723	2.293	10.492	29.452	50.924
145	1.275	8.585	9.852	-7.229	15.877	2.692	16.063
		14.994	12.057	10.147	-7.187	37.057	67.286
146	0	6.328	5.661	20.514	-21.178	0.058890	21.373
		25.514	5.018	-1.612	10.639	38.139	69.534
146	1.275	12.135	5.754	-9.310	15.530	6.993	26.379
		19.719	5.277	6.204	-6.995	40.806	77.200
147	0	9.003	1.432	17.893	-20.509	4.394	29.876
		25.836	-1.845	-6.332	12.261	42.465	77.051
147	1.275	13.717	1.497	-11.886	16.071	8.060	29.792
		20.327	-1.228	2.853	-6.970	39.201	74.279
148	0	9.931	-3.045	14.642	-18.636	6.295	31.710
		22.716	-9.251	-12.173	15.759	42.740	73.328
148	1.275	13.413	-3.083	-15.059	17.596	5.891	25.970
		17.140	-7.429	0.637195	-7.547	32.794	58.517
149	0	10.810	-8.660	14.321	-20.907	5.731	31.464
		14.215	-15.652	-23.733	27.562	39.945	52.329
149	1.275	13.466	-10.767	-28.539	30.975	-1.166	20.349

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
		10.164	-11.680	2.466	-11.759	22.507	30.093
150	0	7.462	-10.797	7.652	-13.755	3.211	16.488
		3.364	-15.927	-41.575	30.015	35.785	24.390
150	1.275	3.219	-15.634	-52.985	38.728	-24.494	4.271
		7.462	-10.797	1.085	-9.070	8.780	2.723
151	0	23.503	6.260	93.491	-35.580	-66.366	-4.804
		9.795	5.882	9.618	2.260	-0.032285	-5.028
151	1.250	8.422	5.097	13.272	-1.484	11.711	2.176
		21.914	6.631	79.540	-26.892	56.729	2.998
152	0	-4.338	12.195	6.716	-42.044	-11.767	-9.351
		-2.380	11.532	10.862	-5.654	3.506	-10.092
152	1.250	-4.546	11.914	5.774	-34.949	-3.469	5.510
		-2.357	11.117	11.988	-15.065	17.186	4.526
153	0	-6.109	4.641	-3.898	-31.047	-4.928	-2.301
		-10.923	3.842	-11.503	-5.388	9.625	-2.868
153	1.250	-7.369	8.743	-5.935	-34.174	-12.199	5.221
		-8.599	4.601	1.240	-12.048	4.006	2.644
154	0	-11.644	3.637	-10.355	-24.383	-8.925	-1.806
		-7.784	-0.527410	-8.030	-4.663	4.733	0.971140
154	1.250	-12.821	3.932	-10.853	-23.876	-21.961	2.869
		-6.099	0.307467	-1.280	-8.156	-2.263	0.628461
155	0	-12.364	-1.482	-11.756	-13.038	-11.945	1.666
		-4.886	-2.313	-4.394	-4.391	-1.966	2.027
155	1.250	-13.466	-1.719	-12.420	-13.711	-27.237	-0.274181
		-7.129	-0.867435	-1.504	-4.899	-5.189	-0.211602
156	0	-12.087	-7.309	-13.115	-5.120	-12.258	5.820
		-3.819	-3.915	-3.922	-4.685	-3.728	3.160
156	1.250	-12.087	-7.309	-13.115	-5.120	-28.650	-3.315
		-6.502	-4.513	-2.327	-4.462	-7.406	-1.986

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
157	0	-7.253	-12.310	-11.415	1.311	-11.915	9.646
		-3.169	-5.576	-4.676	-5.637	-4.782	4.469
157	1.250	-7.240	-12.450	-11.432	0.018813	-26.194	-5.757
		-4.977	-7.729	-4.147	-5.046	-10.343	-3.486
158	0	-5.434	-11.156	-13.556	-23.786	-14.734	9.341
		-1.812	-7.467	-5.525	-6.707	-5.663	6.082
158	1.250	-5.434	-11.156	-13.556	-23.786	-31.678	-4.604
		-1.812	-7.467	-5.525	-6.707	-12.568	-3.251
159	0	2.287	-13.140	-16.924	-28.023	-16.172	11.488
		2.869	-8.697	-7.971	-9.210	-5.018	7.361
159	1.250	-0.921447	-15.189	-20.170	-22.001	-41.057	-5.853
		0.966598	-8.600	-6.948	-9.408	-14.405	-3.445
160	0	7.660	-9.595	-20.228	-24.056	-14.829	8.913
		11.450	-7.465	-13.817	-11.816	1.091	6.596
160	1.250	9.450	-13.256	-27.949	-19.438	-42.883	-4.816
		8.268	-7.072	-10.218	-9.883	-12.642	-2.668
161	0	11.459	4.671	-18.161	-23.550	-2.177	-2.926
		14.644	0.228033	-28.173	5.497	12.014	-0.569588
161	1.250	16.857	-0.302490	-25.947	6.986	-29.887	-0.389705
		11.864	0.404904	-7.908	-3.010	-3.852	0.296486
162	0	3.929	17.981	-30.895	12.166	-16.018	-19.870
		10.885	15.084	-16.475	11.431	-2.697	-16.857
162	1.250	6.018	21.022	-34.058	12.898	-58.202	3.173
		7.061	11.330	-12.184	10.364	-18.632	1.230
163	0	-6.796	17.989	-21.394	16.488	-21.181	-19.184
		-0.872644	9.991	-8.030	5.947	-8.049	-10.780
163	1.250	-6.412	18.315	-21.557	18.552	-48.112	3.161
		-2.379	10.060	-7.104	4.951	-17.502	1.866
164	0	-6.478	12.509	-13.554	15.000	-16.726	-13.646
		-3.905	6.534	-6.559	2.096	-7.323	-6.637

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
164	1.250	-6.609	17.034	-13.865	-11.881	-33.787	5.566
		-4.439	9.141	-6.485	2.592	-15.482	2.129
165	0	-13.970	10.052	-18.341	-11.214	-17.600	-9.279
		-4.228	3.294	-6.237	0.882648	-6.640	-3.275
165	1.250	-13.970	10.052	-18.341	-11.214	-40.526	3.285
		-7.484	6.294	-4.251	1.590	-12.746	1.472
166	0	-16.588	-0.291187	-19.471	-0.157012	-18.858	0.297718
		-4.217	-8.22E-06	-6.153	-2.80E-06	-6.443	8.06E-06
166	1.250	-16.588	-0.291187	-19.471	-0.157012	-43.195	-0.066250
		-8.422	-8.90E-06	-3.656	-1.87E-06	-11.867	-2.49E-06
167	0	-13.955	-10.381	-18.357	10.935	-17.634	9.631
		-4.219	-3.328	-6.245	-0.906537	-6.657	3.314
167	1.250	-13.955	-10.381	-18.357	10.935	-40.579	-3.345
		-7.469	-6.561	-4.265	-1.652	-12.792	-1.538
168	0	-6.497	-17.521	-13.884	11.719	-16.555	16.226
		-3.846	-6.393	-6.572	-2.177	-7.347	6.516
168	1.250	-6.492	-17.375	-13.906	11.653	-33.921	-5.624
		-4.369	-9.346	-6.507	-2.722	-15.554	-2.165
169	0	-0.222370	-22.668	-15.310	7.471	-18.345	22.014
		-0.675797	-9.870	-8.109	-6.075	-8.024	10.677
169	1.250	0.162225	-22.995	-15.472	5.406	-37.671	-6.179
		-1.113	-9.633	-7.923	-4.739	-17.943	-1.746
170	0	12.759	-19.135	-21.584	0.096359	-11.147	19.698
		11.294	-15.143	-16.655	-11.475	-2.362	16.881
170	1.250	14.833	-22.149	-24.741	-0.525160	-41.691	-4.792
		7.817	-9.609	-12.707	-9.136	-18.987	-0.999382
171	0	13.651	-1.528	-11.427	16.284	1.329	0.322891
		19.354	-1.141	-15.208	-7.507	9.147	1.515
171	1.250	18.558	-1.682	-17.546	-1.850	-16.794	-0.454619
		13.330	-0.638391	-8.848	3.848	-5.517	-0.442311

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
172	0	11.965	9.550	-18.297	24.912	-5.970	-8.994
		11.260	7.884	-13.694	11.699	0.512493	-6.972
172	1.250	14.035	11.343	-20.946	27.128	-31.395	3.625
		8.134	5.935	-10.320	8.615	-13.285	2.213
173	0	2.350	14.554	-13.514	21.046	-12.736	-12.628
		2.375	8.013	-7.751	8.704	-5.131	-6.809
173	1.250	3.237	14.793	-13.944	21.417	-29.891	5.659
		1.582	7.789	-7.364	8.363	-14.572	3.118
174	0	-4.181	12.709	-9.923	16.631	-12.515	-10.599
		-2.037	6.720	-5.498	6.244	-5.711	-5.488
174	1.250	-4.181	12.709	-9.923	16.631	-24.918	5.286
		-2.037	6.720	-5.498	6.244	-12.583	2.912
175	0	-6.574	9.212	-8.445	14.249	-10.708	-7.582
		-3.250	4.833	-4.763	5.118	-4.951	-3.883
175	1.250	-6.561	9.353	-8.462	15.541	-21.274	3.949
		-3.250	4.833	-4.763	5.118	-10.905	2.158
176	0	-6.866	5.846	-7.607	14.773	-9.107	-4.991
		-3.476	2.892	-4.294	4.774	-4.136	-2.372
176	1.250	-6.866	5.846	-7.607	14.773	-18.616	2.316
		-3.476	2.892	-4.294	4.774	-9.503	1.243
177	0	-5.767	2.185	-6.125	14.549	-7.830	-2.243
		-4.692	1.267	-4.469	5.779	-3.025	-1.203
177	1.250	-6.870	2.423	-6.789	15.222	-16.083	0.576714
		-3.589	1.030	-3.805	5.105	-8.014	0.292744
178	0	-6.071	-0.745889	-5.235	17.496	-6.356	-0.186721
		-5.100	-1.076	-3.636	6.324	-1.600	0.529514
178	1.250	-7.248	-1.041	-5.733	16.989	-12.993	-1.249
		-3.921	-0.784197	-3.139	6.244	-6.052	-0.662989
179	0	-6.229	-4.196	-3.786	27.478	-4.743	2.139
		-5.195	-3.471	-2.332	5.093	0.288405	2.549

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
179	1.250	-5.637	-3.043	-3.936	25.838	-9.575	-2.482
		-5.550	-4.163	-2.242	6.077	-2.567	-2.164
180	0	-1.031	-7.413	5.060	38.800	-9.356	4.961
		-0.830474	-8.535	3.642	-1.329	1.745	7.726
180	1.250	-1.239	-7.132	4.118	31.706	-3.128	-3.923
		-0.807325	-8.120	4.768	8.082	6.401	-3.146
181	0	14.292	-2.905	66.532	30.488	-46.841	1.877
		10.435	-5.373	11.218	-1.713	-0.775727	4.704
181	1.250	8.748	-4.515	13.529	1.538	11.973	-1.825
		17.215	-4.299	61.781	24.642	38.069	-2.037
182	0	2.218	4.015	38.499	-27.195	-9.786	-2.528
		6.699	7.983	-0.589082	4.132	38.429	-5.523
182	1.250	1.750	4.572	-8.810	8.436	7.086	2.808
		9.195	7.579	50.173	-34.694	59.788	4.200
183	0	0.165262	7.867	7.094	-29.673	-1.316	-5.040
		-0.194744	15.245	3.659	6.620	23.600	-10.383
183	1.250	-0.162813	6.664	1.829	-2.617	3.295	4.028
		-0.010287	15.777	7.491	-12.810	31.820	9.016
184	0	-1.594	6.175	-0.326312	-14.317	-6.200	-3.949
		-2.952	8.355	-0.837207	-4.912	9.729	-5.463
184	1.250	-4.456	8.898	-8.381	-8.016	-10.691	5.344
		-2.941	8.348	-0.786508	-6.256	8.731	4.981
185	0	-4.933	5.545	-9.418	-16.471	-12.417	-3.640
		-2.771	2.195	-1.708	-3.994	0.799189	-1.345
185	1.250	-4.933	5.545	-9.418	-16.471	-24.189	3.290
		-2.771	2.195	-1.708	-3.994	-1.335	1.399
186	0	-6.215	-2.625	-11.090	-9.670	-18.089	1.738
		-2.637	-1.250	-2.691	-2.539	-4.381	0.832553
186	1.250	-6.215	-2.625	-11.090	-9.670	-31.951	-1.543
		-1.687	-2.661	-1.194	-2.832	-6.305	-1.558

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
187	0	-5.293	-10.934	-10.319	-3.192	-21.844	7.200
		-2.353	-6.688	-2.778	-2.418	-7.406	4.349
187	1.250	-5.293	-10.934	-10.319	-3.192	-34.742	-6.468
		-1.374	-6.099	-1.431	-2.467	-9.975	-3.668
188	0	-1.693	-12.859	-4.885	-16.842	-25.261	8.292
		-1.751	-11.293	-1.903	-2.468	-10.987	7.342
188	1.250	-2.867	-17.738	-7.458	0.991917	-34.328	-10.549
		-1.157	-9.083	-1.606	-2.462	-13.059	-5.468
189	0	-1.905	-16.970	-7.420	-15.283	-32.141	11.021
		-0.318771	-10.729	-1.685	-4.020	-14.246	7.001
189	1.250	-1.950	-17.094	-7.539	-16.519	-41.477	-10.266
		-0.318771	-10.729	-1.685	-4.020	-16.352	-6.410
190	0	1.573	-16.871	-8.709	-17.799	-41.977	11.068
		1.004	-9.917	-3.394	-5.533	-17.862	6.540
190	1.250	-0.548181	-18.422	-13.343	-14.929	-57.869	-10.944
		1.004	-9.917	-3.394	-5.533	-22.104	-5.856
191	0	2.781	-11.214	-47.163	-22.125	-38.111	7.326
		3.604	-7.480	-33.387	-11.865	-10.500	4.944
191	1.250	2.892	-13.435	-56.025	-16.977	-104.813	-8.021
		3.012	-6.245	-23.298	-9.972	-42.282	-3.604
192	0	1.981	-4.714	-135.327	11.014	2.678	2.715
		7.411	3.256	-150.263	-7.238	21.880	-1.942
192	1.250	4.023	2.083	-187.479	-8.157	-223.303	1.401
		5.806	0.123798	-78.123	-1.158	-87.110	-0.026791
193	0	0.624667	23.681	-43.601	9.653	-54.462	-17.004
		3.367	10.462	-22.554	9.136	-19.898	-7.635
193	1.250	1.543	23.640	-49.660	13.056	-114.680	12.713
		2.060	11.132	-15.136	7.462	-42.440	5.677
194	0	-2.850	26.201	-10.501	10.519	-48.781	-18.406

ENVOLVENTE para < My > (y valores concomitantes)
(1. linea: MIN., 2. linea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
		-0.274723	13.631	-2.272	2.276	-21.037	-9.635
194	1.250	-2.934	25.809	-10.738	10.715	-61.971	14.135
		-0.274723	13.631	-2.272	2.276	-23.877	7.402
195	0	-2.162	18.864	-6.815	11.705	-35.962	-13.087
		-1.247	10.032	-2.366	0.968483	-16.879	-6.960
195	1.250	-2.253	25.917	-7.389	-14.062	-44.901	14.464
		-1.461	13.705	-2.319	1.135	-19.833	7.602
196	0	-6.332	14.195	-12.490	-10.741	-34.287	-9.865
		-2.812	9.057	-3.625	0.428596	-13.730	-6.293
196	1.250	-6.332	14.195	-12.490	-10.741	-49.898	7.877
		-1.407	5.162	-2.290	0.424553	-18.045	2.898
197	0	-8.054	-0.451368	-15.207	-0.131238	-33.938	0.314170
		-3.152	-1.27E-05	-3.936	-1.64E-06	-12.755	8.87E-06
197	1.250	-8.054	-0.451368	-15.207	-0.131238	-52.945	-0.250018
		-2.296	-1.22E-05	-3.275	-2.40E-06	-17.492	-6.66E-06
198	0	-6.308	-14.702	-12.495	10.493	-34.364	10.222
		-2.789	-9.469	-3.630	-0.453357	-13.796	6.580
198	1.250	-6.308	-14.702	-12.495	10.493	-49.982	-8.154
		-1.393	-5.216	-2.292	-0.434787	-18.087	-2.926
199	0	-2.141	-26.365	-7.377	13.905	-35.879	18.253
		-1.191	-9.776	-2.359	-1.042	-16.945	6.791
199	1.250	-2.141	-26.365	-7.377	13.905	-45.101	-14.703
		-1.191	-9.776	-2.359	-1.042	-19.894	-5.429
200	0	1.365	-32.153	-3.203	11.712	-45.318	22.399
		-0.126854	-13.310	-2.271	-2.388	-21.173	9.414
200	1.250	1.281	-31.762	-3.440	11.517	-49.385	-17.582
		-0.126854	-13.310	-2.271	-2.388	-24.011	-7.222
201	0	6.367	-25.563	-35.123	1.388	-47.030	17.930
		3.450	-10.230	-23.598	-10.694	-19.530	7.436
201	1.250	7.285	-25.520	-41.182	-2.015	-96.651	-14.139

ENVOLVENTE para < My > (y valores concomitantes)
(1. linea: MIN., 2. linea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
		2.666	-10.432	-18.423	-8.311	-44.187	-5.331
202	0	3.609	-0.030421	-103.180	-2.746	3.948	0.264020
		8.321	-6.530	-142.982	12.755	18.859	3.708
202	1.250	8.025	-5.511	-168.897	22.098	-196.848	-3.960
		5.424	0.191609	-77.367	-0.604166	-87.015	0.310556
203	0	4.790	11.387	-33.238	21.991	-34.764	-7.651
		3.426	6.279	-27.152	10.401	-11.619	-4.175
203	1.250	5.503	11.221	-39.717	22.794	-81.862	6.564
		2.411	6.537	-19.301	8.255	-39.804	3.775
204	0	1.601	18.173	-3.641	13.890	-36.842	-12.050
		0.804783	9.899	-3.158	5.347	-17.662	-6.529
204	1.250	1.495	18.215	-4.012	15.165	-41.417	10.692
		0.497246	9.913	-2.651	3.983	-21.516	5.852
205	0	-1.391	18.188	-1.818	11.003	-28.326	-11.923
		-0.466965	9.689	-1.723	3.819	-14.222	-6.325
205	1.250	-1.435	18.311	-1.937	12.239	-30.660	10.886
		-0.466965	9.689	-1.723	3.819	-16.375	5.786
206	0	-2.525	14.452	-2.326	11.414	-22.531	-9.388
		-0.990634	7.439	-1.712	3.302	-11.538	-4.824
206	1.250	-2.525	14.452	-2.326	11.414	-25.439	8.676
		-0.990634	7.439	-1.712	3.302	-13.678	4.474
207	0	-2.643	9.274	-2.212	11.213	-18.682	-6.008
		-1.141	4.546	-1.588	3.132	-9.505	-2.946
207	1.250	-2.643	9.274	-2.212	11.213	-21.447	5.584
		-1.141	4.546	-1.588	3.132	-11.489	2.737
208	0	-2.569	3.797	-1.991	11.457	-15.086	-2.490
		-1.247	1.525	-1.452	3.229	-7.390	-1.007
208	1.250	-2.569	3.797	-1.991	11.457	-17.575	2.256
		-1.247	1.525	-1.452	3.229	-9.205	0.899546

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
209	0	-2.129	-1.403	-1.446	11.892	-10.856	0.847084
		-1.889	-2.174	-1.497	4.036	-4.229	1.372
209	1.250	-2.129	-1.403	-1.446	11.892	-12.664	-0.906013
		-1.889	-2.174	-1.497	4.036	-6.100	-1.345
210	0	-1.834	-6.352	0.004917	14.761	-5.628	4.089
		-1.774	-6.299	-0.428548	4.568	1.042	4.132
210	1.250	-1.756	-5.146	-1.155	9.305	-6.391	-3.095
		-2.150	-8.299	0.444579	0.889843	1.158	-4.936
211	0	0.168012	-7.803	7.142	29.721	-1.136	5.076
		0.143828	-12.132	2.211	-9.343	10.983	8.326
211	1.250	-0.160990	-6.596	1.862	2.589	3.518	-3.910
		0.327193	-12.328	6.907	15.072	17.631	-7.010
212	0	2.659	-3.776	34.598	24.384	-8.227	2.451
		5.723	-6.212	-4.766	-6.501	24.576	4.360
212	1.250	2.485	-4.664	-7.997	-8.035	8.675	-2.777
		5.476	-4.809	37.009	25.560	42.315	-2.599
213	0	-4.378	3.389	21.886	-18.340	-0.126477	-1.624
		-7.778	8.266	-32.729	21.172	59.009	-4.599
213	1.250	-6.256	4.414	-24.527	16.897	-2.247	3.313
		-4.354	7.562	20.484	-19.370	39.920	5.166
214	0	0.411823	4.921	-0.036815	-7.224	2.441	-2.480
		0.135385	16.983	-7.485	12.762	31.827	-9.717
214	1.250	-0.175094	7.880	-5.308	19.837	0.096110	5.580
		0.699104	13.344	-3.646	-6.680	23.600	9.108
215	0	2.865	5.299	1.064	-6.500	-6.687	-3.034
		3.309	9.385	0.794038	6.126	8.726	-5.597
215	1.250	3.401	11.388	-1.095	-10.389	-7.772	7.451
		3.310	9.262	0.842556	4.855	9.724	6.057
216	0	2.509	4.839	-0.847874	-9.923	-17.210	-2.985
		3.177	3.065	1.709	3.866	-1.338	-1.925

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
216	1.250	2.509	4.839	-0.847874	-9.923	-18.270	3.064
		3.177	3.065	1.709	3.866	0.798631	1.906
217	0	2.129	-2.741	-0.713468	-5.782	-23.989	1.651
		2.080	-1.977	1.195	2.704	-6.307	1.142
217	1.250	2.129	-2.741	-0.713468	-5.782	-24.880	-1.775
		3.021	-0.562568	2.691	2.411	-4.383	-0.391093
218	0	2.297	-10.601	-0.148879	-1.410	-27.898	6.475
		1.748	-5.584	1.432	2.339	-9.979	3.354
218	1.250	2.297	-10.601	-0.148879	-1.410	-28.084	-6.775
		2.728	-6.170	2.779	2.290	-7.409	-4.016
219	0	2.821	-17.329	0.649308	2.279	-30.475	10.511
		1.510	-8.720	1.608	2.334	-13.063	5.246
219	1.250	2.821	-17.329	0.649308	2.279	-29.663	-11.149
		2.118	-10.925	1.904	2.341	-10.989	-7.106
220	0	1.435	-17.321	0.330070	-8.431	-37.000	10.283
		0.970962	-10.268	1.689	3.955	-16.359	6.129
220	1.250	1.631	-17.436	0.210122	-9.667	-36.673	-11.441
		0.970962	-10.268	1.689	3.955	-14.248	-6.706
221	0	-2.221	-18.228	3.168	-1.300	-50.491	10.712
		-0.382089	-9.735	3.400	5.465	-22.103	5.766
221	1.250	-2.091	-18.303	2.797	-2.574	-46.971	-12.131
		-0.382089	-9.735	3.400	5.465	-17.853	-6.402
222	0	-6.205	-12.147	46.191	11.539	-95.806	7.113
		-1.819	-6.537	23.310	9.903	-42.264	3.936
222	1.250	-6.316	-13.773	39.874	10.783	-40.611	-9.070
		-1.640	-6.347	33.128	11.721	-10.471	-4.178
223	0	-8.982	0.238345	162.240	-0.475553	-198.202	-0.001783
		-1.430	3.120	78.097	1.166	-87.039	-1.977
223	1.250	-6.964	3.593	114.717	-11.871	-1.997	1.962
		-5.031	1.835	150.232	7.247	21.902	1.344

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
224	0	-6.808	22.208	36.775	-21.965	-103.279	-11.614
		-2.276	13.548	15.146	-7.678	-42.429	-7.428
224	1.250	-6.875	23.845	30.674	-18.656	-59.161	17.075
		-1.645	12.866	22.564	-9.135	-19.880	9.112
225	0	-0.130852	26.247	0.266808	-0.981200	-54.398	-14.118
		0.732590	15.459	2.275	-2.402	-23.887	-8.478
225	1.250	0.104504	25.855	0.028734	-0.785781	-54.292	18.438
		0.732590	15.459	2.275	-2.402	-21.043	10.846
226	0	3.932	25.936	1.791	-14.784	-41.986	-14.346
		2.239	14.860	2.324	-1.266	-19.852	-8.245
226	1.250	3.932	25.936	1.791	-14.784	-39.748	18.073
		1.994	11.198	2.372	-1.098	-16.891	7.770
227	0	2.742	13.767	0.721560	-9.130	-41.902	-7.722
		2.324	5.738	2.293	-0.425459	-18.064	-3.215
227	1.250	2.742	13.767	0.721560	-9.130	-41.001	9.485
		3.244	9.353	3.626	-0.429432	-13.737	6.503
228	0	1.932	-0.448273	-0.077604	-0.089415	-42.379	0.257114
		3.269	-9.94E-06	3.278	2.14E-06	-17.510	5.78E-06
228	1.250	1.932	-0.448273	-0.077604	-0.089415	-42.476	-0.303205
		3.638	-1.09E-05	3.938	1.48E-06	-12.762	-7.30E-06
229	0	2.766	-14.261	0.728215	8.939	-41.988	8.007
		2.337	-5.784	2.296	0.435172	-18.105	3.241
229	1.250	2.766	-14.261	0.728215	8.939	-41.077	-9.819
		3.267	-9.751	3.632	0.453770	-13.803	-6.775
230	0	3.976	-26.327	1.779	14.722	-42.186	14.561
		2.020	-10.910	2.364	1.041	-19.912	6.062
230	1.250	3.976	-26.327	1.779	14.722	-39.963	-18.347
		2.008	-10.849	2.367	3.030	-16.955	-7.575
231	0	1.681	-31.910	2.347	18.874	-48.745	17.131
		0.750751	-14.974	2.292	4.376	-24.019	8.153

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
231	1.250	1.916	-31.518	2.109	18.679	-46.040	-22.503
		0.750751	-14.974	2.292	4.376	-21.154	-10.564
232	0	-4.472	-23.270	42.545	32.483	-96.082	11.870
		-1.771	-13.220	18.506	10.296	-44.162	7.210
232	1.250	-4.543	-24.936	36.480	29.078	-44.760	-18.166
		-1.789	-12.265	24.848	16.791	-19.287	-8.897
233	0	-8.683	0.604320	164.930	-9.653	-191.077	-0.757861
		-1.617	-3.479	77.006	2.256	-86.512	2.256
233	1.250	-6.039	-2.653	97.842	3.109	3.999	-1.509
		-6.343	0.185576	151.088	-10.815	18.615	-0.293811
234	0	-5.485	10.761	40.603	-13.214	-81.674	-6.275
		-2.193	7.497	19.398	-6.077	-39.749	-4.519
234	1.250	-5.597	12.388	34.286	-12.458	-33.465	8.177
		-1.707	5.782	27.002	-7.464	-11.497	3.753
235	0	-1.684	18.275	4.813	3.897	-41.769	-10.840
		-0.523796	10.195	2.695	-1.816	-21.505	-6.059
235	1.250	-1.478	17.930	4.098	-4.329	-36.519	11.850
		-0.374164	9.932	3.187	-4.057	-17.619	6.515
236	0	1.108	18.389	2.225	6.969	-31.083	-11.010
		0.980246	9.357	1.733	-2.529	-16.380	-5.589
236	1.250	1.466	18.074	2.006	-1.323	-28.450	11.812
		0.980246	9.357	1.733	-2.529	-14.213	6.107
237	0	2.321	14.523	2.453	7.953	-25.899	-8.776
		1.601	6.801	1.717	-2.013	-13.686	-4.088
237	1.250	2.321	14.523	2.453	7.953	-22.833	9.377
		1.601	6.801	1.717	-2.013	-11.540	4.412
238	0	2.676	9.354	2.291	8.306	-21.914	-5.682
		1.794	3.577	1.590	-1.843	-11.496	-2.151
238	1.250	2.676	9.354	2.291	8.306	-19.050	6.011
		1.794	3.577	1.590	-1.843	-9.509	2.320

ENVOLVENTE para < My > (y valores concomitantes)
(1. linea: MIN., 2. linea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
239	0	2.944	3.530	2.073	-1.370	-18.027	-2.116
		1.890	0.186527	1.452	-1.939	-9.208	-0.090726
239	1.250	2.944	3.530	2.073	-1.370	-15.436	2.296
		1.890	0.186527	1.452	-1.939	-7.393	0.142423
240	0	2.793	-1.520	1.593	-1.634	-13.103	0.930340
		2.492	-3.929	1.503	-2.743	-6.100	2.408
240	1.250	2.793	-1.520	1.593	-1.634	-11.112	-0.970006
		2.492	-3.929	1.503	-2.743	-4.221	-2.503
241	0	2.701	-5.741	0.881645	6.775	-6.216	3.324
		2.276	-8.527	0.398891	-5.401	0.528284	5.098
241	1.250	2.648	-6.318	0.498420	-4.298	-5.528	-4.195
		2.288	-8.231	0.536354	-1.630	1.105	-5.378
242	0	0.381987	-5.256	-0.091451	7.179	2.688	2.753
		-0.208784	-14.232	-5.746	-9.357	16.822	8.239
242	1.250	0.044223	-6.436	-3.625	-11.698	0.513119	-4.512
		0.197966	-12.047	-2.715	6.884	11.092	-8.167
243	0	-3.622	-3.276	18.700	15.855	1.046	1.646
		-5.726	-6.624	-27.767	-18.243	39.155	3.771
243	1.250	-5.815	-4.648	-24.553	-16.739	-1.472	-3.392
		-3.038	-4.745	16.308	14.709	28.718	-3.215
244	0	-6.964	0.791130	-2.907	-5.110	7.983	0.495468
		-23.572	7.287	-79.537	26.863	56.750	-3.240
244	1.250	-22.462	6.547	-83.194	30.607	-47.515	5.084
		-10.021	2.259	1.526	-11.106	12.172	3.010
245	0	0.738183	4.856	-2.950	21.043	-2.701	-2.062
		2.814	10.843	-11.814	12.692	17.187	-4.324
245	1.250	0.364582	5.468	-3.887	28.133	-7.466	4.259
		2.191	7.244	-2.064	-17.478	4.518	7.144
246	0	8.021	6.392	4.099	-3.690	-10.115	-2.772

ENVOLVENTE para < My > (y valores concomitantes)
(1. linea: MIN., 2. linea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
		9.084	5.165	-1.233	11.976	4.001	-2.903
246	1.250	8.066	6.880	4.032	3.255	-5.069	5.311
		9.039	4.676	-1.167	5.030	2.537	3.459
247	0	9.003	2.874	7.002	-5.061	-17.125	-1.250
		6.650	0.838505	1.280	8.005	-2.263	-0.886056
247	1.250	7.836	2.657	6.502	-4.636	-8.900	2.166
		7.817	1.055	1.779	7.580	-0.136211	0.338665
248	0	8.275	-1.892	8.549	-3.362	-21.816	1.059
		7.650	-0.433660	1.506	4.751	-5.191	-0.001035
248	1.250	7.173	-1.654	7.884	-4.037	-11.363	-1.097
		6.092	-1.779	3.769	6.254	-2.089	-1.685
249	0	8.085	-6.823	9.316	-0.028098	-24.252	3.398
		7.002	-4.183	2.328	4.316	-7.409	1.825
249	1.250	8.085	-6.823	9.316	-0.028098	-12.607	-5.131
		4.318	-3.589	3.924	4.538	-3.727	-2.911
250	0	7.618	-11.440	9.760	3.932	-25.661	5.445
		5.457	-7.500	4.151	4.901	-10.347	3.375
250	1.250	7.741	-11.526	9.738	2.644	-13.473	-8.863
		4.113	-5.133	4.685	5.558	-4.779	-4.138
251	0	4.962	-12.180	11.582	-4.710	-30.038	5.852
		2.695	-7.244	5.536	6.628	-12.575	3.144
251	1.250	4.962	-12.180	11.582	-4.710	-15.561	-9.372
		2.695	-7.244	5.536	6.628	-5.655	-5.910
252	- 0	-3.096	-14.951	16.339	3.555	- -36.031	6.404
		-0.040286	-8.598	6.954	9.324	-14.403	3.479
252	1.250	-2.379	-15.288	15.908	3.183	-15.884	-12.465
		-1.797	-8.196	7.978	9.127	-5.006	-6.991
253	0	-14.138	-13.016	22.459	10.685	-35.723	5.193
		-7.049	-6.289	10.210	10.642	-12.624	2.250
253	1.250	-12.030	-11.111	19.793	9.818	-8.412	-9.491

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
		-10.239	-6.836	13.820	11.760	1.100	-6.109
254	0	-20.729	2.886	20.731	-6.996	-22.843	-0.302201
		-10.580	0.683995	7.886	2.915	-3.836	-0.435938
254	1.250	-15.657	2.592	15.097	4.822	-0.316773	2.135
		-16.369	1.849	16.185	-20.548	9.514	3.092
255	0	-12.975	21.478	26.041	-19.458	-48.301	-2.637
		-5.516	12.479	12.187	-10.444	-18.620	-1.621
255	1.250	-10.905	18.450	22.884	-18.835	-16.132	20.984
		-9.324	16.121	16.475	-11.445	-2.685	17.819
256	0	2.596	18.910	16.509	-8.178	-42.659	-3.475
		3.351	11.511	7.124	-5.098	-17.515	-2.354
256	1.250	2.783	19.047	16.373	-8.025	-22.034	20.238
		2.038	11.059	8.032	-4.947	-8.040	11.646
257	0	8.935	17.373	12.666	-14.786	-34.375	-3.140
		5.559	9.977	6.504	-2.734	-15.499	-2.357
257	1.250	9.103	17.147	12.636	-14.710	-18.562	18.349
		5.004	7.386	6.578	-2.238	-7.317	7.469
258	0	9.367	9.068	12.835	-7.991	-34.826	-1.741
		8.084	6.501	4.261	-1.596	-12.755	-1.527
258	1.250	9.367	9.068	12.835	-7.991	-18.782	9.593
		5.464	3.686	6.252	-0.893667	-6.638	3.660
259	0	9.113	-0.283327	13.067	-0.049000	-35.510	0.088158
		9.062	-6.05E-06	3.660	1.63E-06	-11.873	1.79E-06
259	1.250	9.113	-0.283327	13.067	-0.049000	-19.177	-0.265988
		5.496	-4.68E-06	6.162	2.45E-06	-6.445	-4.51E-06
260	0	9.384	-9.377	12.846	7.858	-34.877	1.843
		8.099	-6.749	4.270	1.657	-12.799	1.590
260	1.250	9.384	-9.377	12.846	7.858	-18.820	-9.877
		5.471	-3.710	6.257	0.916720	-6.656	-3.686

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
261	0	8.920	-17.627	12.703	14.808	-34.507	3.193
		5.550	-10.129	6.523	2.741	-15.569	2.389
261	1.250	9.088	-17.402	12.673	14.732	-18.648	-18.614
		4.989	-7.164	6.591	4.047	-7.338	-7.463
262	0	2.612	-23.147	15.280	22.300	-37.891	3.136
		2.153	-10.930	7.941	6.609	-17.940	1.982
262	1.250	2.850	-23.118	15.121	20.238	-18.804	-25.500
		1.893	-10.862	8.122	7.943	-8.000	-11.810
263	0	-13.251	-22.139	23.863	27.885	-40.247	1.793
		-6.332	-10.518	12.687	13.239	-18.870	0.827574
263	1.250	-9.568	-14.934	19.479	12.510	-10.986	-16.898
		-9.720	-15.773	16.658	11.481	-2.347	-17.535
264	0	-18.918	-1.460	18.141	7.729	-17.094	-0.147824
		-10.870	-0.706936	8.806	-3.865	-5.481	0.686493
264	1.250	-13.932	-1.388	11.913	-10.107	1.631	-0.573613
		-16.729	-0.576719	16.113	19.446	9.632	-1.745
265	0	-13.839	12.051	20.489	-15.893	-30.571	-4.522
		-6.886	5.684	10.270	-5.369	-13.190	-2.256
265	1.250	-10.279	9.909	16.802	-12.447	-5.933	8.609
		-9.802	7.842	13.458	-5.113	0.570217	6.594
266	0	-3.263	14.621	13.936	-10.471	-29.683	-6.022
		-0.719230	8.028	7.365	-6.905	-14.548	-3.347
266	1.250	-2.547	14.958	13.505	-10.099	-12.539	12.435
		-1.392	7.856	7.761	-5.493	-5.103	6.552
267	0	4.148	12.651	9.993	-5.740	-24.985	-5.701
		2.837	6.636	5.511	-4.800	-12.583	-2.934
267	1.250	4.148	12.651	9.993	-5.740	-12.494	10.112
		2.837	6.636	5.511	-4.800	-5.695	5.360
268	0	6.484	9.166	8.551	-4.581	-21.458	-4.296
		4.133	4.471	4.774	-3.678	-10.911	-2.032

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
268	1.250	6.606	9.253	8.529	-3.292	-10.783	7.171
		4.133	4.471	4.774	-3.678	-4.944	3.556
269	0	6.868	5.971	7.704	6.923	-18.841	-3.254
		4.415	2.272	4.302	-3.334	-9.509	-0.988671
269	1.250	6.929	5.691	7.697	-3.706	-9.216	4.432
		4.415	2.272	4.302	-3.334	-4.132	1.851
270	0	7.104	2.392	6.874	-4.035	-16.290	-1.015
		4.550	0.149087	3.812	-3.663	-8.016	0.091826
270	1.250	6.002	2.154	6.209	-3.360	-7.931	1.767
		5.652	0.386449	4.476	-4.338	-3.019	0.486705
271	0	7.617	-0.789797	5.803	-5.694	-13.099	0.634966
		4.890	-1.954	3.142	-4.800	-6.041	1.192
271	1.250	6.450	-0.571433	5.305	-6.198	-6.374	-0.171284
		6.047	-2.111	3.645	-3.099	-1.582	-1.435
272	0	6.431	-3.316	3.905	-9.182	-9.263	1.813
		6.101	-4.938	2.301	-6.037	-2.542	2.552
272	1.250	6.476	-3.805	3.838	-16.127	-4.460	-2.426
		6.074	-4.645	2.341	-1.870	0.380875	-3.564
273	0	0.829039	-5.578	-3.189	-21.043	-2.290	2.454
		1.726	-8.230	-3.706	0.311018	6.149	3.071
273	1.250	0.455437	-6.191	-4.126	-28.133	-7.353	-4.770
		2.553	-6.711	-1.605	13.464	3.265	-6.416
274	0	-6.939	-1.462	-3.252	5.036	8.286	-0.109439
		-18.731	-6.380	-55.859	-20.752	35.941	2.918
274	1.250	-17.622	-5.641	-59.516	-24.496	-38.727	-4.272
		-8.048	-2.202	0.406039	8.780	9.070	-2.722
1601	0	-472.144	3.504	14.080	-0.051869	-75.167	-18.301
		-625.299	-0.018236	-6.956	0.109156	25.494	0.107069
1601	11.000	-596.474	-0.018236	-6.956	0.109156	-51.014	-0.093524
		-450.792	2.464	14.080	-0.051869	79.704	14.521

ENVOLVENTE para < My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Distancia [m]	N [t]	Vy [t]	Vz [t]	Mx [tm]	My [tm]	Mz [tm]
1602	0	-626.704	-0.018163	13.843	-0.106365	-64.131	0.106871
		-403.942	7.002	-6.770	0.036637	38.844	-36.551
1602	11.000	-400.400	2.431	-6.557	0.024543	-36.260	14.258
		-597.879	-0.018163	13.843	-0.106365	88.139	-0.092911

ENVOLVENTE: BC '' Ejec. "0001"

Grupo	Espe.	Hipótesis	Factor Etapa	Título
A	PERM.	1	1.000	Peso propio
B	MAS PER	2	1.000	Cargas muertas
C	MAS	3	1.000	Sobrecarga de uso1
D	MAS	4	1.000	Sobrecarga de uso2
E	MAS	5	1.000	Sobrecarga de uso3
F	MAS	6	1.000	Sobrecarga de uso4
G	MAS	7	1.000	Sobrecarga de uso5
H	MAS	8	1.000	Sobrecarga de uso6
I	MAS	9	1.000	Carro1
J	O	10	1.000	Carro2
K	O	11	1.000	Carro3
L	O	12	1.000	Carro4
M	O	13	1.000	Carro5
N	O	14	1.000	Carro6
O	O	15	1.000	Carro7
P	O	16	1.000	Carro8
Q	O	17	1.000	Carro9
R	O	18	1.000	Carro10
S	O	19	1.000	Carro11
T	O	20	1.000	Carro12
U	MAS	21	1.000	Retraccion
V	MAS	22	0.600000	Termico
W	MAS	23	0.600000	Gradiente
X	MAS	26	0.300000	Viento con sc 1
Y	O	27	0.300000	Viento con sc 2
Z	MAS	28	1.000	Frenado

ALTERNATIVA PARA ENVOLVENTE:

AA	PERM.	1	1.000	Peso propio
AB	MAS PER	2	1.000	Cargas muertas
AC	MAS	3	0.600000	Sobrecarga de uso1
AD	MAS	4	0.600000	Sobrecarga de uso2
AE	MAS	5	0.600000	Sobrecarga de uso3
AF	MAS	6	0.600000	Sobrecarga de uso4
AG	MAS	7	0.600000	Sobrecarga de uso5
AH	MAS	8	0.600000	Sobrecarga de uso6

AI	MAS	9	0.600000	Carro1
AJ	O	10	0.600000	Carro2
AK	O	11	0.600000	Carro3
AL	O	12	0.600000	Carro4
AM	O	13	0.600000	Carro5
AN	O	14	0.600000	Carro6
AO	O	15	0.600000	Carro7
AP	O	16	0.600000	Carro8
AQ	O	17	0.600000	Carro9
AR	O	18	0.600000	Carro10
AS	O	19	0.600000	Carro11
AT	O	20	0.600000	Carro12
AU	MAS	21	1.000	Retraccion
AV	MAS	22	1.000	Termico
AW	MAS	23	1.000	Gradiente
AX	MAS	26	0.600000	Viento con sc 1
AY	O	27	0.600000	Viento con sc 2
AZ	MAS	28	0.600000	Frenado

ALTERNATIVA PARA ENVOLVENTE:

BA	PERM.	1	1.000	Peso propio
BB	MAS PER	2	1.000	Cargas muertas
BC	MAS	21	1.000	Retraccion
BD	MAS	22	0.600000	Termico
BE	MAS	23	0.600000	Gradiente
BF	MAS	24	1.000	Viento sin sc 1
BG	O	25	1.000	Viento sin sc 2

ENVOLVENTE DE REACCIONES EN APOYOS:
(1. línea/2. línea: MIN./MAX. de cada componente)

NUDOS	FX [t]	FY [t]	FZ [t]	MX [tm]	MY [tm]	MZ [tm]
1	-5.685	-1.995	28.291			
	0.189418	2.297	129.590			
5	-5.664	-1.995	12.351			
	0.221392	2.297	104.467			
151	-1.844	-1.995	30.096			
	4.698	2.228	89.473			
155	-1.850	-1.995	15.563			
	4.686	2.228	79.979			
601	-9.126	-6.332	369.321	-30.810	-49.692	-0.290769
	4.795	6.084	514.638	30.924	17.577	0.108046
602	-9.387	-6.104	365.794	-30.810	-43.336	-0.262106
	4.253	6.084	495.699	30.924	25.476	0.173588

2 CALCULO DE LAS PILAS

Se presenta a continuación las características geométricas y los resultados de las distintas hipótesis y combinaciones de hipótesis considerados en el cálculo.

```
Programa   F A G U S - 2    V.1.32                                  Seite     1
AEPO    28029 MADRID                                               23.10.98
-------------------------------------------------------------------------------
Sección  :"PILA"                        Armadura :"B1"
Tipo     :  tipo viga/ Círculo/tubo     Unidades :[cm]
Material :"H300V"
-------------------------------------------------------------------------------
Diámetro exterior = 100.000 cm

Características mecánicas de la sección:
Area                  : Ax= 0.776463 [m2]
Momentos de inercia   : Iy= 0.047978 [m4]  Iz= 0.047978 [m4]
Inercia a torsión     : Ix= 0.098175 [m4]

Posición del centro de gravedad: ys=    0.000 [m]  zs= 0.500000 [m]

      I:  R=dist.borde [m]  W=I/R [m3]   W/Ax [m]
izq.  Iz  -0.500          -0.095956       0.124
dch.  Iz   0.500           0.095956      -0.124
abajo Iy  -0.500          -0.095956       0.124
arriba Iy  0.500           0.095956      -0.124
```

```
Programa   F A G U S - 2    V.1.32                                  Seite     2
AEPO    28029 MADRID                                               23.10.98
-------------------------------------------------------------------------------

Armadura: "B1"
-------------------------------------------------------------------------------
N°    Nom.mat Cod.dim. Area      y1      z1      y2      z2
                       [cm2]     [cm]    [cm]    [cm]    [cm]
-------------------------------------------------------------------------------
  1   AEH500  (2)      5.00    43.75   64.21
  2   AEH500  (2)      5.00    37.22   77.04
  3   AEH500  (2)      5.00    27.04   87.21
  4   AEH500  (2)      5.00    14.21   93.75
  5   AEH500  (2)      5.00     0.00   96.00
  6   AEH500  (2)      5.00   -14.21   93.75
  7   AEH500  (2)      5.00   -27.04   87.21
  8   AEH500  (2)      5.00   -37.22   77.04
  9   AEH500  (2)      5.00   -43.75   64.21
 10   AEH500  (2)      5.00   -46.00   50.00
 11   AEH500  (2)      5.00   -43.75   35.78
 12   AEH500  (2)      5.00   -37.22   22.96
 13   AEH500  (2)      5.00   -27.04   12.79
 14   AEH500  (2)      5.00   -14.21    6.25
 15   AEH500  (2)      5.00     0.00    4.00
 16   AEH500  (2)      5.00    14.21    6.25
 17   AEH500  (2)      5.00    27.04   12.79
 18   AEH500  (2)      5.00    37.22   22.96
 19   AEH500  (2)      5.00    43.75   35.78
 20   AEH500  (2)      5.00    46.00   50.00
-------------------------------------------------------------------------------
          Total:      100.00 Cuantía de armadura: 1.288 [o/o]

Cód. dimensionamiento: (0) = As constante
Cód. dimensionamiento: (1) = Aumentar As en zonas comprimida y traccionada
Cód. dimensionamiento: (2) = Aumentar As solo en zona traccionada

¡No se han definido valores para el cálculo a cortante!

Características del material:
Nom.Mat.  Módulo E 0.85*fcd,fyd eps-fc    fct      fcv      fcw,min
          [ t/m2]    [ t/m2]      [o/oo]  [ t/m2]  [ t/m2]  [ t/m2]
-------------------------------------------------------------------------------
"H300V"    3.30E+06 -1530.000    -2.000    0.0      70.700  3000.000
"AEH500"   2.10E+07   44347.0

Leyenda:
fcd,fyd resistencia de cálculo del hormigón,acero
eps-fc  deformación al final de la parábola (fig.2.3, cap.2.2)
fct     resistencia de cálculo a tracción del hormigón
fcv     resistencia virtual de cálculo del hormigón a esfuerzo cortante
```

Cálculo Resistencia Ultima: Viga "PILA"/"B1"

Solicitación Unidades : [tm]

N	Vy	Vz	Mx	My	Mz
-715.600				85.900	

Coeficiente de seguridad 1.643

Cálculo Resistencia Ultima: Viga "PILA"/"B1"

Solicitación Unidades : [tm]

N	Vy	Vz	Mx	My	Mz
-339.900				47.600	

Coeficiente de seguridad 3.273

Cálculo Resistencia Ultima: Viga "PILA"/"B1"

Solicitación Unidades : [tm]

N	Vy	Vz	Mx	My	Mz
-597.900				137.500	

Coeficiente de seguridad 1.456

Cálculo Resistencia Ultima: Viga "PILA"/"B1"

Solicitación Unidades : [tm]

N	Vy	Vz	Mx	My	Mz
-620.700				124.100	

Coeficiente de seguridad 1.520

Cálculo Resistencia Ultima: Viga "PILA"/"B1"

Solicitación Unidades : [tm]

N	Vy	Vz	Mx	My	Mz
-376.400				82.800	

Coeficiente de seguridad 2.375

3 CALCULO DEL CARGADERO

Se presenta a continuación las características geométricas y los resultados de las distintas hipótesis y combinaciones de hipótesis considerados en el cálculo del cargadero. Se ha modelizado mediante una viga flotante considerando un coeficiente de balasto para el terreno de 3000 T/m^3.

```
S T A T I K - 2   V.1.51                                        página    1
AEPO    28029 MADRID                                            23.10.98
Viga flotante                                                   12:28
-------------------------------------------------------------------------

Cálculo de portico plano (2-D)

*****************************
*     DATOS - ESTRUCTURA    *
*****************************

Titulo proy.:  Viga flotante

Unidades    :   M , T
```

D A T O S D E N U D O S:(11 Nudo)

Nudo	X [M]	Y [M]	Z [M]	Apoyo V XYZ	Apoyo R XYZ	Especial
1	0.000000	0.000000	0.000000	S S	F	
2	0.937500	0.000000	0.000000	S S	F	
3	1.875000	0.000000	0.000000	S S	F	
4	2.812500	0.000000	0.000000	S S	F	
5	3.750000	0.000000	0.000000	S S	F	
6	4.687500	0.000000	0.000000	S S	F	
7	5.625000	0.000000	0.000000	S S	F	
8	6.562500	0.000000	0.000000	S S	F	
9	7.500000	0.000000	0.000000	S S	F	
10	8.437500	0.000000	0.000000	S S	F	
11	9.375000	0.000000	0.000000	S S	F	

NUDOS CON APOYO ELASTICO: ("B"=Bloqueado "F"=Libre)

Nudo	D-X [T/M]	D-Y [T/M]	D-Z [T/M]	R-X [TM/ARC]	R-Y [TM/ARC]	R-Z [TM/ARC]
1	1.000E+00		4.500E+03		F	
2	1.000E+00		4.500E+03		F	
3	1.000E+00		4.500E+03		F	
4	1.000E+00		4.500E+03		F	
5	1.000E+00		4.500E+03		F	
6	1.000E+00		4.500E+03		F	
7	1.000E+00		4.500E+03		F	
8	1.000E+00		4.500E+03		F	
9	1.000E+00		4.500E+03		F	
10	1.000E+00		4.500E+03		F	
11	1.000E+00		4.500E+03		F	

```
S T A T I K - 2   V.1.51                                        página    2
AEPO    28029 MADRID                                            23.10.98
Viga flotante                                                   12:28
-------------------------------------------------------------------------
```

D A T O S B A R R A S : (10 Barras)

Barra	Incidencias Inicio	Fin	Long.Barras [M]	Nombre-sec. (Cant.var)	Articulaciones Especial Inicio	Fin
1	1	2	0.937500	CARG		
2	2	3	0.937500	CARG		
3	3	4	0.937500	CARG		
4	4	5	0.937500	CARG		
5	5	6	0.937500	CARG		
6	6	7	0.937500	CARG		
7	7	8	0.937500	CARG		
8	8	9	0.937500	CARG		
9	9	10	0.937500	CARG		
10	10	11	0.937500	CARG		

CARACTERISTICAS DE SEC.

Nombre Sec.	Ax [M2] zi [M1]	Iy [M4] zs [M1]	Fz [M2]
CARG	1.2800E+00	6.8267E-02	Undef
	-0.4000	0.4000	

MATERIALES:

Barra (hasta barra)	E-Módulo [T/ M2]	G-Módulo [T/ M2]
1 .. 10	3.0000E+06	1.2500E+06

```
STS-cálculo ok
Max free mem:83kB
```

```
==================
Hipótesis       1:  Reacciones del tablero
==================
```

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras		
Fuerza Z	-102.000		Nudo	4	8

Hipótesis 2: Excentrico

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras	
Fuerza Z	-127.100		Nudo	4
Fuerza Z	-76.400		Nudo	8

CARGAS: '' Ejec. "0001"

Hipótesis	Factor	Etapa	Titulo
1	1.0000		Reacciones del tablero

DESPLAZAMIENTOS:

NUDOS	DX [mm]	DZ [mm]	RY [rad]
1	0	-2.608	0.000881
2	0	-3.426	0.000856
3	0	-4.187	0.000747
4	0	-4.778	0.000482
5	0	-5.082	0.000191
6	0	-5.168	-1.20E-17
7	0	-5.082	-0.000191
8	0	-4.778	-0.000482
9	0	-4.187	-0.000747
10	0	-3.426	-0.000856
11	0	-2.608	-0.000881

REACCIONES EN APOYOS:

NUDOS	FX [t]	FZ [t]	MY [tm]
1	0	11.738	
2	0	15.419	
3	0	18.842	
4	0	21.503	
5	0	22.870	
6	0	23.256	
7	0	22.870	
8	0	21.503	
9	0	18.842	
10	0	15.419	
11	0	11.738	
Sumas:	0	204.000	

CARGAS: '' Ejec. "0001"

Hipótesis	Factor	Etapa	Titulo
2	1.0000		Excentrico

DESPLAZAMIENTOS:

NUDOS	DX [mm]	DZ [mm]	RY [rad]
1	0	-3.515	0.000777
2	0	-4.233	0.000743
3	0	-4.875	0.000601
4	0	-5.298	0.000261
5	0	-5.357	-0.000100
6	0	-5.155	-0.000314
7	0	-4.782	-0.000482
8	0	-4.236	-0.000700
9	0	-3.479	-0.000890
10	0	-2.603	-0.000964
11	0	-1.689	-0.000981

REACCIONES EN APOYOS:

NUDOS	FX [t]	FZ [t]	MY [tm]
1	0	15.817	
2	0	19.048	
3	0	21.935	
4	0	23.839	
5	0	24.108	
6	0	23.199	
7	0	21.521	
8	0	19.062	
9	0	15.655	
10	0	11.714	
11	0	7.600	
Sumas:	0	203.500	

ENVOLVENTE para< Vz > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.

Barra	Distancia [m]	N [t]	Vz [t]	My [tm]
1	0	0	0	0
		0	15.818	-1.88E-05
1	0.937	0	0	0
		0	15.818	14.829
2	0	0	0	0
		0	34.864	14.830
2	0.937	0	0	0
		0	34.864	47.514
3	0	0	0	0
		0	56.801	47.516
3	0.937	0	0	0
		0	56.801	100.764
4	0	0	-46.461	100.765
		0	0	0
4	0.937	0	-46.461	57.210
		0	0	0
5	0	0	-22.352	57.208
		0	0	0
5	0.937	0	-22.352	36.254
		0	0	0
6	0	0	0	0
		0	11.628	36.343
6	0.937	0	0	0
		0	11.628	47.244
7	0	0	0	0
		0	34.500	47.244
7	0.937	0	0	0
		0	34.500	79.586
8	0	0	-45.999	79.586
		0	0	0
8	0.937	0	-45.999	36.464
		0	0	0
9	0	0	-27.156	36.463
		0	0	0
9	0.937	0	-27.156	11.005
		0	0	0
10	0	0	-11.737	11.004
		0	0	0
10	0.937	0	-11.737	0.000335
		0	0	0

ENVOLVENTE para< My > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.

Barra	Distancia [m]	N [t]	Vz [t]	My [tm]
1	0	0	15.818	-1.88E-05
		0	11.737	0.000271
1	0.937	0	0	0
		0	15.818	14.829
2	0	0	0	0
		0	34.864	14.830
2	0.937	0	0	0
		0	34.864	47.514
3	0	0	0	0
		0	56.801	47.516
3	0.937	0	0	0
		0	56.801	100.764
4	0	0	0	0
		0	-46.461	100.765
4	0.937	0	0	0
		0	-46.461	57.210
5	0	0	0	0
		0	-22.352	57.208
5	0.937	0	0	0
		0	-11.628	36.343
6	0	0	0	0
		0	11.628	36.343
6	0.937	0	0	0
		0	11.628	47.244
7	0	0	0	0
		0	34.500	47.244
7	0.937	0	0	0
		0	34.500	79.586
8	0	0	0	0
		0	-45.999	79.586
8	0.937	0	0	0
		0	-45.999	36.464
9	0	0	0	0
		0	-27.156	36.463
9	0.937	0	0	0
		0	-27.156	11.005
10	0	0	0	0
		0	-11.737	11.004
10	0.937	0	0	0
		0	-11.737	0.000335

Suma de las areas de armadura pasiva Ejecución resultados:"0001"

Barra	Distancia	Arm. long. sup. As(N,M) [cm2]	Arm. long. sup. Ass-tot [cm2]	Arm. long. inf. As(N,M) [cm2]	Arm. long. inf. Asi-tot [cm2]	Cercos(Vz) As-z [cm2/m']	Cercos(Vz) x/h (max.)
1	0.00	0.00	2.54	0.00	2.54	12.69	0.00
1	0.94	0.00	0.00	6.49	9.03	12.69	0.06
2	0.00	0.00	0.00	6.49	12.09	12.69	0.06
2	0.94	0.00	0.00	21.20	26.80	12.69	0.11
3	0.00	0.00	0.00	21.20	30.32	12.69	0.11
3	0.94	0.00	0.00	46.26	55.38	12.69	0.18
4	0.00	0.00	0.00	46.26	53.72	12.69	0.18
4	0.94	0.00	0.00	25.66	33.12	12.69	0.12
5	0.00	0.00	0.00	25.65	29.25	12.69	0.12
5	0.94	0.00	0.00	16.08	19.67	12.69	0.10
6	0.00	0.00	0.00	16.12	17.98	12.69	0.10
6	0.94	0.00	0.00	21.07	22.94	12.69	0.11
7	0.00	0.00	0.00	21.07	26.62	12.69	0.11
7	0.94	0.00	0.00	36.10	41.65	12.69	0.15
8	0.00	0.00	0.00	36.10	43.49	12.69	0.15
8	0.94	0.00	0.00	16.17	23.56	12.69	0.10
9	0.00	0.00	0.00	16.17	20.53	12.69	0.10
9	0.94	0.00	0.00	4.80	9.16	12.69	0.05
10	0.00	0.00	0.00	4.80	6.68	12.69	0.05
10	0.94	0.00	1.89	0.00	1.89	12.69	0.00

4 CALCULO DE MUROS DE SUELO REFORZADO

Para el cálculo de los muros se ha utilizado un programa realizado por Julián Díaz del Valle. Se presentan a continuación los listados de los resultados de dicho programa.

```
P R O G R A M A   T I E R E F

DISEÑO DE MUROS Y ESTRIBOS DE TIERRA REFORZADA

VERSION N° 2     FECHA : 12/06/1997

Copyright :  J.Díaz del Valle, 1997

E.T.S. de I.C.C. y P.  de Santander
```

```
D A T O S   D E   E N T R A D A

( METODO DE ANALISIS LIMITE ULTIMO )

DATOS GEOMETRICOS DEL MURO

Cota en m. del punto inicial de replanteo (PIR) ..... =   0.00
Escama de salida : Entera (=1) ó Media escama (=-1) ..... =   1
Entrega mínima en % de la altura ..... = 10.000
Entrega mínima absoluta en metros ..... =  0.400
Canto de la solera de hormigón en m. ..... =  0.200

-Puntos de coronación ( 4) :

N°     X      Z      N°     X      Z      N°     X      Z
      (m)    (m)           (m)    (m)           (m)    (m)
1  -15.400   0.400    2   -5.400   6.500    3    5.400   6.500
4   15.400   0.400

-Puntos de linea de entrega ( 2) :

N°     X      Z      N°     X      Z      N°     X      Z
      (m)    (m)           (m)    (m)           (m)    (m)
1  -15.400   0.000    2   15.400   0.000
```

```
DATOS  PROYECTO DEL ESTRIBO

PROYECTO : L A V Madrid Zargoza

REFERENCIA :

FECHA DEL CALCULO : 23-10-1998
```

DATOS DEL TERRENO REFORZADO

-Caracteristicas de las armaduras :

Tipo de armaduras :	Armaduras con resaltes
Anchura de la armadura en cm.	= 5.000
Espesor real de la armadura en cm.	= 0.400
Espesor sacrificado por corrosión (cm)	= 0.100
Diámetro del taladro en armadura en cm.	= 1.300
Límite elástico del acero en Kg/cm²	= 3500
Coeficiente f de fricción tierra-armadura	= 1.500
Coeficiente de seguridad a tracción	= 1.500
Coeficiente de seguridad a adherencia	= 2.000
Longitud de las armaduras fuera de cargadero en m.	= 0.00
Longitud de las armaduras bajo cargadero en m.	= 8.00

-Caracteristicas del terreno y suelo :

Peso específico del terreno reforzado en t/m3	Ø1 = 2.000
Peso específico del terreno del trasdós en t/m3	Ø2 = 2.000
Angulo de rozamiento interno del terreno reforzado (°)	Ý1 = 30.00
Angulo de rozamiento interno del terreno del trasdós (°)	Ý2 = 30.00
Angulo de rozamiento del terreno de cimentación (°)	Ý3 = 30.00

DATOS DEL CARGADERO

-Datos geométricos:

Alturas :	H1 =	1.150 m.	H2 =	0.800 m.	H3 =	0.150 m.
Bases :	B1 =	0.100 m.	B2 =	0.650 m.	B3 =	0.400 m.
	B4 =	0.250 m.	B5 =	0.300 m.	B6 =	1.600 m.

Longitud del cargadero = 10.40 m. Posición de su eje	X =	0.000 m.
Cota del extremo izquierdo del fondo del cargadero ..	Zi=	6.100 m.
Cota del extremo derecho del fondo del cargadero ..	Zd=	6.100 m.
Resguardo de la zona de influencia del cargadero	R =	0.000 m.

-Fuerzas aplicadas :

Sobrecarga sobre el relleno (t/m²)	q = 1.00
La sobrecarga q , sí actúa en la fricción entre tierra y armadura	
Reacción vertical del tablero (t/m)	Rv = 20.00
Reacción horizontal del tablero (t/m)	Rh = 0.60

RESULTADOS EN EL CARGADERO

Fuerzas Verticales:

Peso del murete del cargadero	Vm =	0.72 t.
Peso de la zapata del cargadero	Vz =	3.20 t.
Peso del relleno sobre talón del cargadero	Vr =	0.69 t.
Reacción vertical del tablero	Rv =	20.00 t.
Fuerza vertical total	Vtotal =	24.61 t.

Fuerzas Horizontales:

Empuje lateral del relleno	Er =	1.27 t.
Empuje lateral de la sobrecarga	Es =	0.65 t.
Reacción horizontal del tablero	Rh =	0.60 t.
Fuerza horizontal total	Htotal =	2.52 t.

Momentos volcadores Mv:

Debidos al empuje del relleno	Mvr =	0.82 t.m
Debidos al empuje de la sobrecarga	Mvs =	0.63 t.m
Debidos a la reacción horizontal del tablero	Mvrh =	0.57 t.m
Momento volcador total	Mv =	2.03 t.m

Momentos estabilizadores Me:

Debidos al peso de la zapata	Mez =	2.56 t.m
Debidos al peso del murete	Mem =	0.84 t.m
Debidos al peso del relleno sobre el talón	Mer =	1.00 t.m
Debidos a la reacción vertical del tablero	Merv =	13.00 t.m
Momento estabilizador total	Me =	17.41 t.m
Momento resultante	Mres =	15.38 t.m

Tensiones:

Tensión vertical	Õ10 =	19.69 t/m²
Excentricidad	exc =	0.175 m.
Tensión horizontal	Õ30 =	2.15 t/m²

(Fuerzas y momentos por metro de anchura)

RESULTADOS EN CIMENTACION BAJO CARGADERO

Fuerzas Verticales:

Peso de las tierras	Vt =	151.20 t.
Peso de la sobrecarga	Vs =	8.00 t.
Peso cargas transmitidas por cargadero	Vc =	18.48 t.
Fuerza vertical total	Vtotal =	177.68 t.

Fuerzas Horizontales:

Empuje del terreno reforzado	Et =	18.75 t.
Sobreempuje del terreno	Es =	12.25 t.
Empuje debido a acciones horiz. sobre cargadero	Ec =	1.25 t.
Fuerza horizontal total	Etotal =	32.25 t.

Momentos volcadores Mv:

Debidos al empuje Et	Mvt =	46.88 t.m
Debidos al sobreempuje Es	Mvs =	45.94 t.m
Debidos al empuje Ec del cargadero	Mvc =	9.38 t.m
Momento volcador total	Mv =	102.19 t.m

Momentos estabilizadores Me:

Debidos al peso de las tierras Vt	Met =	604.80 t.m
Debidos al peso de la sobrecarga Vs	Mes =	32.00 t.m
Debidos a acciones Vc concentradas en cargadero	Mec =	13.40 t.m
Momento estabilizador total	Me =	650.20 t.m
Momento resultante	Mres =	548.01 t.m

Tensiones y coeficientes de seguridad:

Tensión vertical	Õlc =	28.81 t/m²
Excentricidad	exc =	0.916 m.
Seguridad a vuelco	Cv =	6.36
Seguridad a deslizamiento	Cd =	3.18

(Fuerzas y momentos por metro de anchura)

(H = 7.50 m. L = 8.00 m.)

Fuerzas (t):

		Horizontales			Verticales			
Z	Et	Es	Ec	Etotal	Vt	Vs	Vc	Vtotal
0.375	0.05	0.61	1.25	1.91	37.20	8.00	18.48	63.68
1.125	0.42	1.84	1.25	3.51	49.20	8.00	18.48	75.68
1.875	1.17	3.06	1.25	5.48	61.20	8.00	18.48	87.68
2.625	2.30	4.29	1.25	7.83	73.20	8.00	18.48	99.68
3.375	3.80	5.51	1.25	10.56	85.20	8.00	18.48	111.68
4.125	5.67	6.74	1.25	13.66	97.20	8.00	18.48	123.68
4.875	7.92	7.96	1.25	17.13	109.20	8.00	18.48	135.68
5.625	10.55	9.19	1.25	20.98	121.20	8.00	18.48	147.68
6.375	13.55	10.41	1.25	25.21	133.20	8.00	18.48	159.68
7.125	16.92	11.64	1.25	29.81	145.20	8.00	18.48	171.68

Momentos (m.t):

		Estabilizadores			Volcadores				Result.
Z	Mec	Met	Mes	Me	Mvt	Mvc	Mvs	Mv	Mres
0.375	13.40	148.80	32.00	194.20	0.01	0.47	0.11	0.59	193.61
1.125	13.40	196.80	32.00	242.20	0.16	1.41	1.03	2.60	239.60
1.875	13.40	244.80	32.00	290.20	0.73	2.34	2.87	5.95	284.25
2.625	13.40	292.80	32.00	338.20	2.01	3.28	5.63	10.92	327.28
3.375	13.40	340.80	32.00	386.20	4.27	4.22	9.30	17.79	368.41
4.125	13.40	388.80	32.00	434.20	7.80	5.16	13.90	26.85	407.35
4.875	13.40	436.80	32.00	482.20	12.87	6.09	19.41	38.38	443.82
5.625	13.40	484.80	32.00	530.20	19.78	7.03	25.84	52.65	477.55
6.375	13.40	532.80	32.00	578.20	28.79	7.97	33.19	69.95	508.25
7.125	13.40	580.80	32.00	626.20	40.19	8.91	41.46	90.55	535.64

RESULTADOS EN TERRENO REFORZADO BAJO CARGADERO

Tensiones (t/m²):

Nivel	Z	Õ1'	Õ1''	Õ1	exc	Õ3	Õ1*	Õ3*
1	0.375	17.67	10.47	17.67	0.96	7.70	5.65	7.70
~~2~~	~~1.125~~	~~16.82~~	~~11.95~~	~~16.82~~	~~0.83~~	~~6.72~~	~~7.15~~	~~6.72~~
3	1.875	16.73	13.52	16.73	0.76	6.00	8.65	6.00
4	2.625	17.09	15.18	17.09	0.72	5.70	10.15	5.70
5	3.375	17.74	16.93	17.74	0.70	5.91	11.65	5.91
6	4.125	18.57	18.78	18.78	0.71	6.26	13.15	6.26
7	4.875	19.53	20.74	20.74	0.73	6.91	14.65	6.91
8	5.625	20.59	22.84	22.84	0.77	7.61	16.15	7.61
9	6.375	21.72	25.09	25.09	0.82	8.36	17.65	8.36
10	7.125	22.91	27.51	27.51	0.88	9.17	19.15	9.17

Dimensionamiento:

Nivel N°	Z (m)	Tipo de Escama	Número de armaduras nr	na	Arm	Coefs. seguridad Cr	Ca
1	0.375	14a	2.47	2.56	3	1.82	2.35
~~2~~	~~1.125~~	~~14a~~	~~2.16~~	~~1.76~~	~~3~~	~~2.08~~	~~3.40~~
3	1.875	14a	1.93	1.30	2	1.55	3.07
4	2.625	14a	1.83	1.05	2	1.64	3.80
5	3.375	14a	1.90	0.95	2	1.58	4.20
6	4.125	14a	2.01	0.89	2	1.49	4.48
7	4.875	14a	2.22	0.88	3	2.03	6.78
8	5.625	14a	2.45	0.88	3	1.84	6.79
9	6.375	14a	2.69	0.89	3	1.67	6.75
10	7.125	14a	2.95	0.90	3	1.53	6.68

Mediciones de esta columna de escamas :

Longitud de las armaduras ..... = 8.00 m
Metros lineales de armadura ..... = 26 x 8.00 ..... = 208.00 m
Superficie de escamas armadas ..... = 22.500 m²

RESULTADOS EN CIMENTACION

Fuerzas Verticales:

Peso de las tierras	Vt =	54.00 t.
Peso de la sobrecarga	Vs =	4.50 t.
Fuerza vertical total	Vtotal =	58.50 t.

Fuerzas Horizontales:

Empuje del terreno reforzado	Et =	12.00 t.
Sobreempuje del terreno	Es =	2.00 t.
Fuerza horizontal total	Etotal =	14.00 t.

Momentos volcadores Mv:

Debidos al empuje Et	Mvt =	24.00 t.m
Debidos al sobreempuje Es	Mvs =	6.00 t.m
Momento volcador total	Mv =	30.00 t.m

Momentos estabilizadores Me:

Debidos al peso de las tierras Vt	Met =	121.50 t.m
Debidos al peso de la sobrecarga Vs	Mes =	10.13 t.m
Momento estabilizador total	Me =	131.63 t.m
Momento resultante	Mres =	101.63 t.m

Tensiones y coeficientes de seguridad:

Tensión vertical	Õlc =	16.84 t/m²
Excentricidad	exc =	0.513 m.
Seguridad a vuelco	Cv =	4.39
Seguridad a deslizamiento	Cd =	2.41

(Fuerzas y momentos por metro de anchura)

RESULTADOS EN EL TERRENO REFORZADO

(H = 6.00 m. L = 4.50 m.)

Fuerzas (t):

		Horizontales			Verticales		
Nivel	Z	Et	Es	Etotal	Vt	Vs	Vtotal
1	0.375	0.05	0.13	0.17	3.38	4.50	7.88
2	1.125	0.42	0.38	0.80	10.13	4.50	14.63
3	1.875	1.17	0.63	1.80	16.88	4.50	21.38
4	2.625	2.30	0.88	3.17	23.63	4.50	28.13
5	3.375	3.80	1.13	4.92	30.38	4.50	34.88
6	4.125	5.67	1.38	7.05	37.13	4.50	41.63
7	4.875	7.92	1.63	9.55	43.88	4.50	48.38
8	5.625	10.55	1.88	12.42	50.63	4.50	55.13

Momentos (m.t):

		Estabilizadores			Volcadores		Result.
Nivel	Z	Mes	Met	Me	Mvt	Mvs	Mv	Mres
1	0.375	10.13	7.59	17.72	0.01	0.02	0.03	17.69
2	1.125	10.13	22.78	32.91	0.16	0.21	0.37	32.54
3	1.875	10.13	37.97	48.09	0.73	0.59	1.32	46.78
4	2.625	10.13	53.16	63.28	2.01	1.15	3.16	60.12
5	3.375	10.13	68.34	78.47	4.27	1.90	6.17	72.30
6	4.125	10.13	83.53	93.66	7.80	2.84	10.63	83.02
7	4.875	10.13	98.72	108.84	12.87	3.96	16.83	92.01
8	5.625	10.13	113.91	124.03	19.78	5.27	25.05	98.98

RESULTADOS EN EL TERRENO REFORZADO

Tensiones (t/m²):

Nivel	Z	Õ1	exc	Õ3	Õ1*	Õ3*
1	0.375	1.75	0.00	0.58	1.75	0.58
2	1.125	3.29	0.03	1.10	3.25	1.10
3	1.875	4.88	0.06	1.63	4.75	1.63
4	2.625	6.58	0.11	2.19	6.25	2.19
5	3.375	8.41	0.18	2.80	7.75	2.80
6	4.125	10.43	0.26	3.48	9.25	3.48
7	4.875	12.72	0.35	4.24	10.75	4.24
8	5.625	15.35	0.45	5.12	12.25	5.12

Dimensionamiento:

Nivel N°	Z (m)	Tipo de Escama	Número de armaduras nr	na	Arm	Coefs. seguridad Cr	Ca
1	0.375	14	0.19	1.11	2	15.97	3.59
2	1.125	14	0.35	1.12	2	8.52	3.56
3	1.875	14	0.52	1.14	2	5.73	3.50
4	2.625	14	0.70	1.17	2	4.26	3.42
5	3.375	14	0.90	1.21	2	3.33	3.32
6	4.125	14	1.12	1.25	2	2.68	3.19
7	4.875	14	1.36	1.31	2	2.20	3.04
8	5.625	14a	1.64	1.39	2	1.82	2.87

Mediciones de esta columna de escamas :

Longitud de las armaduras ..... = 4.50 m
Metros lineales de armadura ..... = 16 x 4.50 ..... = 72.00 m
Superficie de escamas armadas ..... = 1.125 m²
Superficie de escamas sin armar ..... = 16.875 m²

MEDICION GLOBAL DE ESCAMAS Y ARMADURAS

Tipo escama	No armadas (m²)	Armadas (m²)	Totales (m²)
14	27.00	69.75	96.75
N	9.00	11.25	20.25
M	5.63	5.63	11.25
C1	0.75	2.25	3.00
C5	0.00	7.50	7.50
C6	2.09	0.00	2.09
Ti	9.13	0.00	9.13
Td	13.63	0.00	13.63
	67.22	96.38	163.59

202 armaduras de longitud 8.00 m .. = 1616.0 metros
114 armaduras de longitud 4.50 m .. = 513.0 metros

Longitud total de armaduras ..... = 2129.0 metros

P.S.F. 104.6

P.S.F. 104.6

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PILAS

ESTRIBOS

PS 104+600

GENERALIDADES

La estructura PS 104+600 corresponde al paso superior sobre el ferrocarril en el PK 104+660 , cuya tipología de sección transversal corresponde al de losa maciza de hormigón armado y postesado "in situ" de canto constante 1.10 m , para formar una viga contínua de 3 vanos de luces de cálculo 20 - 25.50 - 20 m.

En planta pertenece a una alineación recta que cruza ortogonal con la alineación del ferrocarril, y por tanto por la alineación recta , presenta bombeo en toda su longitud

El ancho, de acuerdo con las indicaciones dadas para la realización de estructuras en el caso de caminos, resulta de 8.40 m que es suficiente para contener una calzada de 4.00 m con arcenes de 1.00 m y aceras de 1.20 m

Las cargas son transmitidas a estribos y pilas mediante apoyos elastoméricos.

Cada pila está formada por un único fuste circular de 1,10 metros de diámetro empotrado en una zapata de hormigón armado de 6x6x1.10 m para transmitir al terreno las cargas de la estructura, tomando, de acuerdo con el informe Geotécnico, el valor de 2.00 kg/cm² para la carga admisible en la cota de cimentación..

Los estribos son muros de carga convencionales "in situ" de hormigón armado.. La cimentación se lleva a cabo mediante una zapata también de hormigón armado.

INSTRUCCIONES Y NORMAS APLICADAS

Las normas aplicadas son las vigentes en la fecha de redacción de este Anejo de Cálculo.

- Acciones:

  IAP-96 "Instrucción sobre las Acciones a considerar en el Proyecto de Puentes de Carreteras" de 12 de Febrero de 1998.

- Hormigón armado:

  EH-91 "Instrucción para el proyecto y la ejecución de obras de hormigón en masa o armado" de 28 de Junio de 1991.

  Tomos I y II de "Hormigón armado" de P. Jiménez Montoya, A. García Meseguer y F. Morán Cabré.

- Sismo:

  Norma de Construcción Sismorresistente NCSE-94 de 29 de Diciembre de 1994.

- Aparatos de Apoyo:

  Nota técnica sobre aparatos de apoyo para puentes de carretera de Marzo de 1995.

NIVELES DE CONTROL DE CALIDAD ADOPTADOS.

El control de calidad se atendrá a lo especificado en la Instrucción EH-91 con los siguientes niveles:

- Materiales:

  Hormigón en alzados ..... Normal - Coef. minoración $\gamma_c = 1,50$

  Hormigón en zapatas ..... Normal - Coef. minoración $\gamma_c = 1,50$

  Acero en armaduras ..... Normal - Coef. minoración $\gamma_c = 1,15$

- Ejecución:

Tipo de control en Tablero ..... Intenso - Coef. mayoración $\gamma_f = 1,50$

Tipo de control en Pilas y Estribos Normal - Coef. mayoración $\gamma_f = 1,60$

CARACTERISTICAS DE LOS MATERIALES

Se consideran las siguientes características en los materiales empleados en el proyecto de la estructura:

La resistencia característica de los diferentes hormigones utilizados es la siguiente:

- Hormigón de nivelación y limpieza.....H-125
- Hormigón en cimentaciones ..... H-250 $f_{ck} = 250$ Kg/cm^2
- Hormigón en alzados de estribos ..... H-250 $f_{ck} = 250$ Kg/cm^2
- Hormigón en alzados de pilas ..... H-300 $f_{ck} = 300$ Kg/cm^2
- Hormigón en tablero ..... H-400 $f_{ck} = 400$ Kg/cm^2

El tipo de acero pasivo empleado en todas las armaduras dispuestas será un AEH-500N cuyo límite elástico es $f_{yk} = 5100$ Kg/cm^2.

Se considera un peso específico del hormigón $\gamma = 2,50$ t/m^2 y del pavimento de $\gamma_p = 2,30$ t/m^2

CARACTERISTICAS DEL TERRENO

Conforme a los parámetros dados en el Anejo de Geotecnia, se consideran para esta estructura las siguientes tensiones admisibles del terreno, para el cálculo de las cimentaciones de pilas y estribos:

Tensión admisible del terreno en estribos . $\sigma_{adm} = 2,00$ Kg/cm^2 a 2,00 m de profundidad

Tensión admisible del terreno en pilas .... $\sigma_{adm} = 2,00$ Kg/cm^2 a 2,00 m de profundidad

ACCIONES SISMICAS

Según la Norma de Construcción Sismorresistente NCSE-94, según el tipo de obra y la ubicación en donde se encuentran, no es necesario considerar las acciones sísmicas.

MODELOS DE CALCULO DEL TABLERO

La estructura se ha calculado como una viga continua de 3 vanos conforme con el proceso de construcción previsto, en una sola fase y cimbra convencional apoyada en el terreno. Los esfuerzos se han calculado mediante programas de ordenador en modelos de emparrillado plano y reticulado plano, basados en la matriz de rigidez y equilibrio de nudos, donde se suponen las hipótesis básicas de la Resistencia de Materiales es decir, de linealidad geométrica y material, despreciando la deformación por esfuerzo cortante.

Se ha modelizado un emparrillado formado por 93 nudos y 152 barras (90 barras longitudinales y 62 transversales) , mientras que para el cálculo como viga contínua se han tomado 31 nudos tal y como aparecen en los apartados respectivos, obteniéndose para el tablero las siguientes cuantías

Hormigón H-400	0.65 m3/m2
Acero AEH-500	67.5 Kg/m3
Acero A-190	16.2 Kg/m2

ACCIONES CONSIDERADAS

Se adoptan las indicadas en la nueva Norma IAP-96
De acuerdo con ella distinguiremos:

PESO PROPIO : Tomamos un peso específico del hormigón de 2.50 t/m3

CARGAS MUERTAS: De acuerdo con la sección transversal definida para el puente, se consideran los siguientes pesos de los elementos no resistentes:

Aceras	2x 0.55	= 1.10
Firme	0.06x 2.40x 8.40	= 1.21
		Σ 2.31 t/m

SOBRECARGAS:

- Sobrecarga Uniforme de 0.40 (t/m²) actuando a nivel de la calzada y pudiendo ocupar cualquier zona del tablero según sea mas desfavorable para el esfuerzo en estudio.

-.Carro de 60 t definido en la mencionada Instrucción, formado por 3 ejes de 20 t separados 1.50 m

FRENADO: El esfuerzo máximo de frenado que se considera actuando a nivel de pavimento será:

$$Hf = \frac{0.40x\ 8.40x\ 65.50 + 60}{20} = 14.00\ t$$

TEMPERATURA: Se considera una variación térmica de $T = \pm(20-0.75\sqrt{e})$

$$e = \text{espesor ficticio} = \alpha \frac{2.A}{u}$$

en nuestro caso A = 5.47 m²
u = 17.87 m
α = 1.50 (humedad media)

obtenemos e(cms) = 91.86

y variación térmica T = ± 13 °C
con coeficiente de dilatación α = 0.00001

RETRACCION:

$\epsilon r = ßt.\epsilon 1.\epsilon 2$

$\epsilon 1$ = -0.00032 (humedad media)
$\epsilon 2$ = 0.687
ßt = 0.931

ϵr = -0.00020

FLUENCIA:

Axil medio = 2032.23 t (ver Modelo Viga 8.- pretensado)

$$\sigma media = \frac{2032.23}{5.47} = 371.32\ t/m^2 \text{ (compresión)}$$

Ec = 3554575 t/m²

ßa(j) = 0.249
θ1 = 2.0 (humedad media)
θ2 = 1.26
ßt = 0.994
ßj = 0.239
ß't-j = 1.00

$\Phi t = ßa(j) + \theta 1.\theta 2.(ßt-ßj) + 0.4ß't\text{-}j = 2.556$

$$\epsilon f = \Phi t \frac{\sigma media}{Ec} = -0.00027$$

Total diferidas $\epsilon r + \epsilon f$ = -0.00047

VIENTO: La presión básica viene dada por Pv = 154(2-c)
que para c = 0.70 se obtiene Pv = 200 Kg/m²
y el empuje será e = Pv.S

en nuestro caso S = 1.10 + 1.00 = 2.10 m²/m

se obtiene e = 0.42 t/m

por lo que la fuerza total del viento sobre el tablero será:

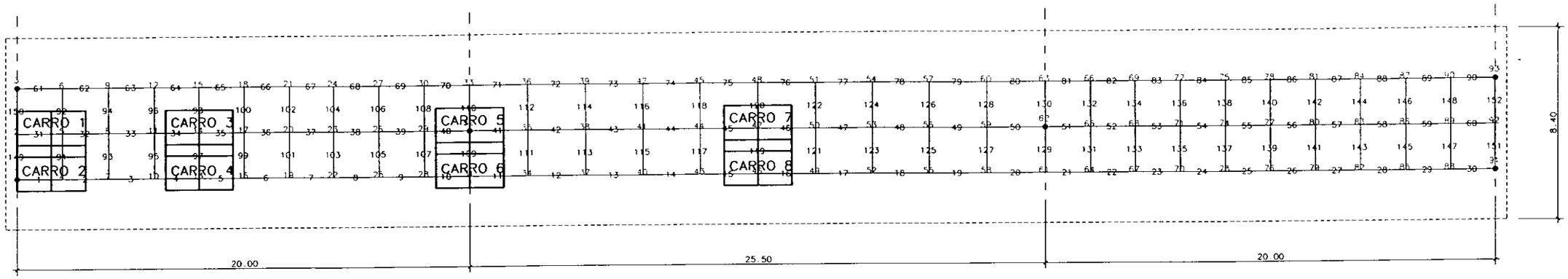
Hv = 0.42 x 65.50 = 27.51 t

MODELO EMPARRILLADO

PS 104+600

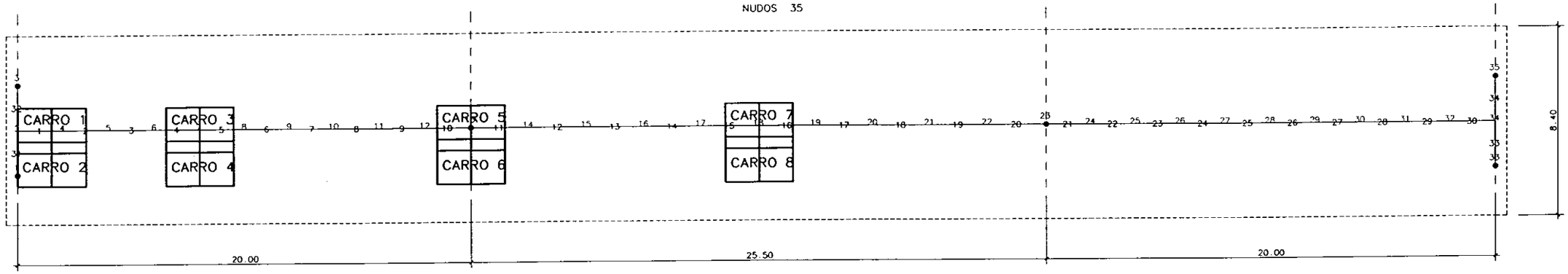
EMPARRILLADO FLEXION TRANSVERSAL

BARRAS 152
NUDOS 93

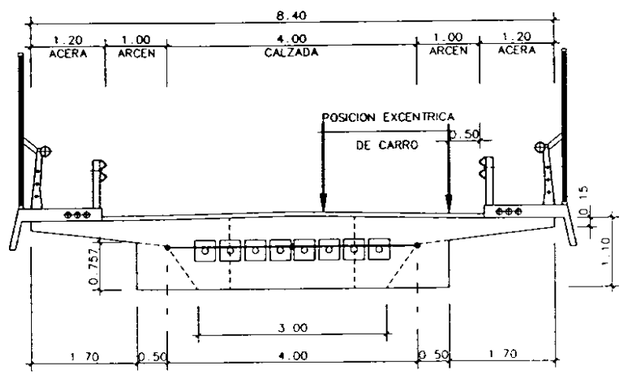


EMPARRILLADO TORSION

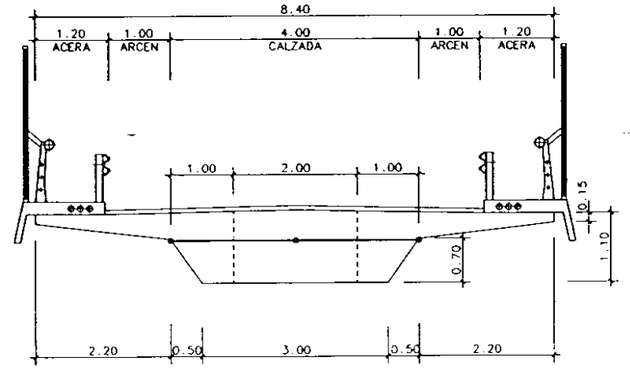
BARRAS 34
NUDOS 35



SECCION ESTRIBOS



SECCION TIPO



ESTRUCTURA: GIF2

DATOS GENERALES

N° de Nudos.....: 93
N° de Barras.....: 152
Máx. dif. Nudos..: 3

Módulo de Elasticidad (E) .....: 3554575
Coeficiente de Poisson .....: 0.20
Módulo de Rigidez Transversal (G): 1481073

Tipo de Rigidez	Barras
Biempotrada	1 a 152

DATOS GEOMETRICOS DE LAS BARRAS

Barra	Ni	Nj	Pro.X	Pro.Y	Inercia	Torsión	Area	Canto	Ancho
1	1	4	2.000	0.000	0.1480	0.2292	1.570	1.100	2.000
2	4	7	2.000	-0.000	0.1480	0.2292	1.570	1.100	2.000
3	7	10	2.000	0.000	0.1480	0.2292	1.570	1.100	2.000
4	10	13	2.000	-0.000	0.1480	0.2292	1.570	1.100	2.000
5	13	16	2.000	-0.000	0.1480	0.2292	1.570	1.100	2.000
6	16	19	2.000	0.000	0.1480	0.2292	1.570	1.100	2.000
7	19	22	2.000	-0.000	0.1480	0.2292	1.570	1.100	2.000
8	22	25	2.000	-0.000	0.1480	0.2292	1.570	1.100	2.000
9	25	28	2.000	0.000	0.1480	0.2292	1.570	1.100	2.000
10	28	31	2.000	-0.000	0.1480	0.2292	1.570	1.100	2.000
11	31	34	2.550	-0.000	0.1480	0.2292	1.570	1.100	2.000
12	34	37	2.550	0.000	0.1480	0.2292	1.570	1.100	2.000
13	37	40	2.550	-0.000	0.1480	0.2292	1.570	1.100	2.000
14	40	43	2.550	-0.000	0.1480	0.2292	1.570	1.100	2.000
15	43	46	2.550	-0.000	0.1480	0.2292	1.570	1.100	2.000
16	46	49	2.550	0.000	0.1480	0.2292	1.570	1.100	2.000
17	49	52	2.550	-0.000	0.1480	0.2292	1.570	1.100	2.000
18	52	55	2.550	-0.000	0.1480	0.2292	1.570	1.100	2.000
19	55	58	2.550	-0.000	0.1480	0.2292	1.570	1.100	2.000
20	58	61	2.550	0.000	0.1480	0.2292	1.570	1.100	2.000
21	61	64	2.000	-0.000	0.1480	0.2292	1.570	1.100	2.000
22	64	67	2.000	-0.000	0.1480	0.2292	1.570	1.100	2.000
23	67	70	2.000	0.000	0.1480	0.2292	1.570	1.100	2.000
24	70	73	2.000	-0.000	0.1480	0.2292	1.570	1.100	2.000
25	73	76	2.000	0.000	0.1480	0.2292	1.570	1.100	2.000
26	76	79	2.000	-0.000	0.1480	0.2292	1.570	1.100	2.000
27	79	82	2.000	-0.000	0.1480	0.2292	1.570	1.100	2.000
28	82	85	2.000	-0.000	0.1480	0.2292	1.570	1.100	2.000
29	85	88	2.000	0.000	0.1480	0.2292	1.570	1.100	2.000
30	88	91	2.000	-0.000	0.1480	0.2292	1.570	1.100	2.000
31	2	5	2.000	0.000	0.2783	0.4310	2.300	1.100	2.000
32	5	8	2.000	-0.000	0.2783	0.4310	2.300	1.100	2.000
33	8	11	2.000	0.000	0.2783	0.4310	2.300	1.100	2.000
34	11	14	2.000	-0.000	0.2783	0.4310	2.300	1.100	2.000
35	14	17	2.000	0.000	0.2783	0.4310	2.300	1.100	2.000
36	17	20	2.000	0.000	0.2783	0.4310	2.300	1.100	2.000
37	20	23	2.000	-0.000	0.2783	0.4310	2.300	1.100	2.000
38	23	26	2.000	-0.000	0.2783	0.4310	2.300	1.100	2.000
39	26	29	2.000	0.000	0.2783	0.4310	2.300	1.100	2.000
40	29	32	2.000	-0.000	0.2783	0.4310	2.300	1.100	2.000
41	32	35	2.550	-0.000	0.2783	0.4310	2.300	1.100	2.000
42	35	38	2.550	0.000	0.2783	0.4310	2.300	1.100	2.000
43	38	41	2.550	-0.000	0.2783	0.4310	2.300	1.100	2.000
44	41	44	2.550	-0.000	0.2783	0.4310	2.300	1.100	2.000
45	44	47	2.550	-0.000	0.2783	0.4310	2.300	1.100	2.000
46	47	50	2.550	0.000	0.2783	0.4310	2.300	1.100	2.000
47	50	53	2.550	-0.000	0.2783	0.4310	2.300	1.100	2.000
48	53	56	2.550	-0.000	0.2783	0.4310	2.300	1.100	2.000
49	56	59	2.550	-0.000	0.2783	0.4310	2.300	1.100	2.000
50	59	62	2.550	0.000	0.2783	0.4310	2.300	1.100	2.000
51	62	65	2.000	-0.000	0.2783	0.4310	2.300	1.100	2.000
52	65	68	2.000	-0.000	0.2783	0.4310	2.300	1.100	2.000
53	68	71	2.000	0.000	0.2783	0.4310	2.300	1.100	2.000
54	71	74	2.000	-0.000	0.2783	0.4310	2.300	1.100	2.000
55	74	77	2.000	0.000	0.2783	0.4310	2.300	1.100	2.000
56	77	80	2.000	-0.000	0.2783	0.4310	2.300	1.100	2.000
57	80	83	2.000	-0.000	0.2783	0.4310	2.300	1.100	2.000
58	83	86	2.000	-0.000	0.2783	0.4310	2.300	1.100	2.000
59	86	89	2.000	0.000	0.2783	0.4310	2.300	1.100	2.000
60	89	92	2.000	-0.000	0.2783	0.4310	2.300	1.100	2.000
61	3	6	2.000	0.000	0.1480	0.2292	1.570	1.100	2.000
62	6	9	2.000	-0.000	0.1480	0.2292	1.570	1.100	2.000
63	9	12	2.000	-0.000	0.1480	0.2292	1.570	1.100	2.000
64	12	15	2.000	0.000	0.1480	0.2292	1.570	1.100	2.000
65	15	18	2.000	-0.000	0.1480	0.2292	1.570	1.100	2.000
66	18	21	2.000	-0.000	0.1480	0.2292	1.570	1.100	2.000
67	21	24	2.000	0.000	0.1480	0.2292	1.570	1.100	2.000
68	24	27	2.000	-0.000	0.1480	0.2292	1.570	1.100	2.000
69	27	30	2.000	-0.000	0.1480	0.2292	1.570	1.100	2.000
70	30	33	2.000	0.000	0.1480	0.2292	1.570	1.100	2.000
71	33	36	2.550	-0.000	0.1480	0.2292	1.570	1.100	2.000
72	36	39	2.550	-0.000	0.1480	0.2292	1.570	1.100	2.000
73	39	42	2.550	0.000	0.1480	0.2292	1.570	1.100	2.000
74	42	45	2.550	-0.000	0.1480	0.2292	1.570	1.100	2.000
75	45	48	2.550	-0.000	0.1480	0.2292	1.570	1.100	2.000
76	48	51	2.550	-0.000	0.1480	0.2292	1.570	1.100	2.000
77	51	54	2.550	0.000	0.1480	0.2292	1.570	1.100	2.000
78	54	57	2.550	-0.000	0.1480	0.2292	1.570	1.100	2.000
79	57	60	2.550	-0.000	0.1480	0.2292	1.570	1.100	2.000
80	60	63	2.550	-0.000	0.1480	0.2292	1.570	1.100	2.000
81	63	66	2.000	0.000	0.1480	0.2292	1.570	1.100	2.000
82	66	69	2.000	-0.000	0.1480	0.2292	1.570	1.100	2.000
83	69	72	2.000	0.000	0.1480	0.2292	1.570	1.100	2.000
84	72	75	2.000	-0.000	0.1480	0.2292	1.570	1.100	2.000
85	75	78	2.000	-0.000	0.1480	0.2292	1.570	1.100	2.000
86	78	81	2.000	0.000	0.1480	0.2292	1.570	1.100	2.000
87	81	84	2.000	-0.000	0.1480	0.2292	1.570	1.100	2.000
88	84	87	2.000	-0.000	0.1480	0.2292	1.570	1.100	2.000

Barra	Ni	Nj	Pro.X	Pro.Y	Inercia	Torsión	Area	Canto	Ancho
89	87	90	2.000	0.000	0.1480	0.2292	1.570	1.100	2.000
90	90	93	2.000	-0.000	0.1480	0.2292	1.570	1.100	2.000
91	4	5	-0.000	2.000	0.2218	0.4437	2.200	1.100	2.000
92	5	6	-0.000	2.000	0.2218	0.4437	2.200	1.100	2.000
93	7	8	-0.000	2.000	0.2218	0.4437	2.200	1.100	2.000
94	8	9	0.000	2.000	0.2218	0.4437	2.200	1.100	2.000
95	10	11	-0.000	2.000	0.2218	0.4437	2.200	1.100	2.000
96	11	12	0.000	2.000	0.2218	0.4437	2.200	1.100	2.000
97	13	14	-0.000	2.000	0.2218	0.4437	2.200	1.100	2.000
98	14	15	-0.000	2.000	0.2218	0.4437	2.200	1.100	2.000
99	16	17	-0.000	2.000	0.2218	0.4437	2.200	1.100	2.000
100	17	18	0.000	2.000	0.2218	0.4437	2.200	1.100	2.000
101	19	20	-0.000	2.000	0.2218	0.4437	2.200	1.100	2.000
102	20	21	0.000	2.000	0.2218	0.4437	2.200	1.100	2.000
103	22	23	-0.000	2.000	0.2218	0.4437	2.200	1.100	2.000
104	23	24	-0.000	2.000	0.2218	0.4437	2.200	1.100	2.000
105	25	26	-0.000	2.000	0.2218	0.4437	2.200	1.100	2.000
106	26	27	0.000	2.000	0.2218	0.4437	2.200	1.100	2.000
107	28	29	-0.000	2.000	0.2218	0.4437	2.200	1.100	2.000
108	29	30	0.000	2.000	0.2218	0.4437	2.200	1.100	2.000
109	31	32	-0.000	2.000	0.2523	0.5047	2.503	1.100	2.275
110	32	33	-0.000	2.000	0.2523	0.5047	2.503	1.100	2.275
111	34	35	-0.000	2.000	0.2828	0.5657	2.805	1.100	2.550
112	35	36	0.000	2.000	0.2828	0.5657	2.805	1.100	2.550
113	37	38	-0.000	2.000	0.2828	0.5657	2.805	1.100	2.550
114	38	39	0.000	2.000	0.2828	0.5657	2.805	1.100	2.550
115	40	41	-0.000	2.000	0.2828	0.5657	2.805	1.100	2.550
116	41	42	-0.000	2.000	0.2828	0.5657	2.805	1.100	2.550
117	43	44	-0.000	2.000	0.2828	0.5657	2.805	1.100	2.550
118	44	45	0.000	2.000	0.2828	0.5657	2.805	1.100	2.550
119	46	47	-0.000	2.000	0.2828	0.5657	2.805	1.100	2.550
120	47	48	0.000	2.000	0.2828	0.5657	2.805	1.100	2.550
121	49	50	-0.000	2.000	0.2828	0.5657	2.805	1.100	2.550
122	50	51	0.000	2.000	0.2828	0.5657	2.805	1.100	2.550
123	52	53	-0.000	2.000	0.2828	0.5657	2.805	1.100	2.550
124	53	54	-0.000	2.000	0.2828	0.5657	2.805	1.100	2.550
125	55	56	-0.000	2.000	0.2828	0.5657	2.805	1.100	2.550
126	56	57	0.000	2.000	0.2828	0.5657	2.805	1.100	2.550
127	58	59	-0.000	2.000	0.2828	0.5657	2.805	1.100	2.550
128	59	60	0.000	2.000	0.2828	0.5657	2.805	1.100	2.550
129	61	62	-0.000	2.000	0.2523	0.5047	2.503	1.100	2.275
130	62	63	0.000	2.000	0.2523	0.5047	2.503	1.100	2.275
131	64	65	-0.000	2.000	0.2218	0.4437	2.200	1.100	2.000
132	65	66	-0.000	2.000	0.2218	0.4437	2.200	1.100	2.000
133	67	68	-0.000	2.000	0.2218	0.4437	2.200	1.100	2.000
134	68	69	0.000	2.000	0.2218	0.4437	2.200	1.100	2.000
135	70	71	-0.000	2.000	0.2218	0.4437	2.200	1.100	2.000
136	71	72	-0.000	2.000	0.2218	0.4437	2.200	1.100	2.000
137	73	74	-0.000	2.000	0.2218	0.4437	2.200	1.100	2.000
138	74	75	-0.000	2.000	0.2218	0.4437	2.200	1.100	2.000
139	76	77	-0.000	2.000	0.2218	0.4437	2.200	1.100	2.000
140	77	78	0.000	2.000	0.2218	0.4437	2.200	1.100	2.000
141	79	80	-0.000	2.000	0.2218	0.4437	2.200	1.100	2.000
142	80	81	-0.000	2.000	0.2218	0.4437	2.200	1.100	2.000
143	82	83	-0.000	2.000	0.2218	0.4437	2.200	1.100	2.000
144	83	84	0.000	2.000	0.2218	0.4437	2.200	1.100	2.000
145	85	86	-0.000	2.000	0.2218	0.4437	2.200	1.100	2.000
146	86	87	0.000	2.000	0.2218	0.4437	2.200	1.100	2.000
147	88	89	-0.000	2.000	0.2218	0.4437	2.200	1.100	2.000
148	89	90	-0.000	2.000	0.2218	0.4437	2.200	1.100	2.000
149	1	2	-0.000	2.000	0.1664	0.3328	1.650	1.100	1.500
150	2	3	0.000	2.000	0.1664	0.3328	1.650	1.100	1.500
151	91	92	-0.000	2.000	0.1664	0.3328	1.650	1.100	1.500
152	92	93	0.000	2.000	0.1664	0.3328	1.650	1.100	1.500

N U D O S

Nudo	COORDENADAS Coor.X	Coor.Y	COACCIONES DE APOYOS Movim. Z	Giro X	Giro Y
1	0.500	2.200	∞		
2	0.500	4.200			
3	0.500	6.200	∞		
4	2.500	2.200			
5	2.500	4.200			
6	2.500	6.200			
7	4.500	2.200			
8	4.500	4.200			
9	4.500	6.200			
10	6.500	2.200			
11	6.500	4.200			
12	6.500	6.200			
13	8.500	2.200			
14	8.500	4.200			
15	8.500	6.200			
16	10.500	2.200			
17	10.500	4.200			
18	10.500	6.200			
19	12.500	2.200			
20	12.500	4.200			
21	12.500	6.200			
22	14.500	2.200			
23	14.500	4.200			
24	14.500	6.200			
25	16.500	2.200			
26	16.500	4.200			
27	16.500	6.200			
28	18.500	2.200			
29	18.500	4.200			
30	18.500	6.200			
31	20.500	2.200			
32	20.500	4.200	∞		
33	20.500	6.200			
34	23.050	2.200			
35	23.050	4.200			
36	23.050	6.200			
37	25.600	2.200			
38	25.600	4.200			
39	25.600	6.200			
40	28.150	2.200			
41	28.150	4.200			
42	28.150	6.200			
43	30.700	2.200			
44	30.700	4.200			
45	30.700	6.200			
46	33.250	2.200			
47	33.250	4.200			
48	33.250	6.200			
49	35.800	2.200			
50	35.800	4.200			
51	35.800	6.200			
52	38.350	2.200			
53	38.350	4.200			

N U D O S

Nudo	COORDENADAS Coor.X	Coor.Y	COACCIONES DE APOYOS Movim. Z	Giro X	Giro Y
54	38.350	6.200			
55	40.900	2.200			
56	40.900	4.200			
57	40.900	6.200			
58	43.450	2.200			
59	43.450	4.200			
60	43.450	6.200			
61	46.000	2.200			
62	46.000	4.200		∞	
63	46.000	6.200			
64	48.000	2.200			
65	48.000	4.200			
66	48.000	6.200			
67	50.000	2.200			
68	50.000	4.200			
69	50.000	6.200			
70	52.000	2.200			
71	52.000	4.200			
72	52.000	6.200			
73	54.000	2.200			
74	54.000	4.200			
75	54.000	6.200			
76	56.000	2.200			
77	56.000	4.200			
78	56.000	6.200			
79	58.000	2.200			
80	58.000	4.200			
81	58.000	6.200			
82	60.000	2.200			
83	60.000	4.200			
84	60.000	6.200			
85	62.000	2.200			
86	62.000	4.200			
87	62.000	6.200			
88	64.000	2.200			
89	64.000	4.200			
90	64.000	6.200			
91	66.000	2.200		∞	
92	66.000	4.200			
93	66.000	6.200		∞	

Estructura: GIF2

Hipótesis	Título
1	Peso Propio
2	Cargas Permanentes
3	Sobrecarga Uniforme 0.4 t/m² en Banda 1 del Vano 1
4	Sobrecarga Uniforme 0.4 t/m² en Banda 2 del Vano 1
5	Sobrecarga Uniforme 0.4 t/m² en Banda 3 del Vano 1
6	Sobrecarga Uniforme 0.4 t/m² en Banda 1 del Vano 2
7	Sobrecarga Uniforme 0.4 t/m² en Banda 2 del Vano 2
8	Sobrecarga Uniforme 0.4 t/m² en Banda 3 del Vano 2
9	Sobrecarga Uniforme 0.4 t/m² en Banda 1 del Vano 3
10	Sobrecarga Uniforme 0.4 t/m² en Banda 2 del Vano 3
11	Sobrecarga Uniforme 0.4 t/m² en Banda 3 del Vano 3
12	Carro 1
13	Carro 2
14	Carro 3
15	Carro 4
16	Carro 5
17	Carro 6
18	Carro 7
19	Carro 8
20	Gradiente 10° C
21	Pretensado Final, Familia 1

CARGAS EN BARRAS:

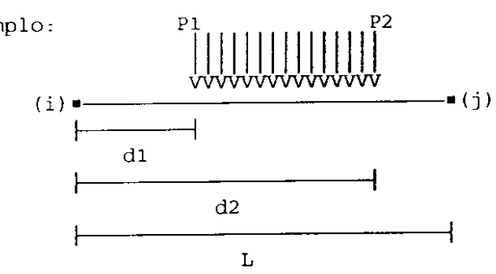
	TIPO	P1	P2	A	B
Uniforme	0	P		A	B
Trapecial	1	P1	P2	A	B
Concentrada	2	F		A	
Torsor Concentrado	3	T		A	
Torsor Uniforme	4	Tu		A	B
Gradiente Térmico	5	°C	K°		
Flector Puntual	6	M		A	
Peso Propio	7	Peso específico			

Las cargas son positivas según los ejes globales de la estructura.

P1 y P2 son los valores de la carga en los puntos A y B excepto en el caso de Gradiente, donde P1 son los grados centígrados y P2 es el coeficiente de dilatación térmica y en el caso de Peso Propio que P1 es el peso específico.

A y B son los porcentaje ,en tanto por uno de barra, de la posición inicial(A) y final(B) de la carga:

ejemplo:



A = d1/L : B = d2/L

CARGAS EN NUDOS (según ejes globales)

F.ejeZ	Mom.ejeX	Mom.ejeY	Nudos

Hipótesis 1 : Peso Propio

CARGAS EN BARRAS:

TIPO	P1	P2	A	B	Barras
7	2.500				1-90

Hipótesis 2 : Cargas Permanentes

CARGAS EN BARRAS:

TIPO	P1	P2	A	B	Barras
0	-0.322		0.000	1.000	1-90
0	-0.800		0.000	1.000	1-30/61-90
4	1.360		0.000	1.000	1-30
4	-1.360		0.000	1.000	61-90

Hipótesis 3 : Sobrecarga Uniforme 0.4 t/m² en Banda 1 del Vano 1

CARGAS EN BARRAS:

TIPO	P1	P2	A	B	Barras
0	-1.280		0.000	1.000	1a10
4	0.768		0.000	1.000	1a10

Hipótesis 4 : Sobrecarga Uniforme 0.4 t/m² en Banda 2 del Vano 1

CARGAS EN BARRAS:

TIPO	P1	P2	A	B	Barras
0	-0.800		0.000	1.000	31a40

Hipótesis 5 : Sobrecarga Uniforme 0.4 t/m² en Banda 3 del Vano 1

CARGAS EN BARRAS:

TIPO	P1	P2	A	B	Barras
0	-1.280		0.000	1.000	61a70
4	-0.768		0.000	1.000	61a70

Hipótesis 6 : Sobrecarga Uniforme 0.4 t/m² en Banda 1 del Vano 2

CARGAS EN BARRAS:

TIPO	P1	P2	A	B	Barras
0	-1.280		0.000	1.000	11a20
4	0.768		0.000	1.000	11a20

Hipótesis 7 : Sobrecarga Uniforme 0.4 t/m² en Banda 2 del Vano 2

CARGAS EN BARRAS:

TIPO	P1	P2	A	B	Barras
0	-0.800		0.000	1.000	41a50

Hipótesis 8 : Sobrecarga Uniforme 0.4 t/m² en Banda 3 del Vano 2

CARGAS EN BARRAS:

TIPO	P1	P2	A	B	Barras
0	-1.280		0.000	1.000	71a80
4	-0.768		0.000	1.000	71a80

Hipótesis 9 : Sobrecarga Uniforme 0.4 t/m² en Banda 1 del Vano 3

CARGAS EN BARRAS:

TIPO	P1	P2	A	B	Barras
0	-1.280		0.000	1.000	21a30
4	0.768		0.000	1.000	21a30

Hipótesis 10 : Sobrecarga Uniforme 0.4 t/m² en Banda 2 del Vano 3

CARGAS EN BARRAS:

TIPO	P1	P2	A	B	Barras
0	-0.800		0.000	1.000	51a60

Hipótesis 11 : Sobrecarga Uniforme 0.4 t/m² en Banda 3 del Vano 3

CARGAS EN BARRAS:

TIPO	P1	P2	A	B	Barras
0	-1.280		0.000	1.000	81a90
4	-0.768		0.000	1.000	81a90

Hipótesis 12 : Carro 1

CARGAS EN BARRAS:

TIPO	P1	P2	A	B	Barras
2	-5.000		0.000		1
2	-5.000		0.000		31
2	-5.000		0.000		31
2	-5.000		0.000		61
2	-5.000		0.750		1
2	-5.000		0.750		31
2	-5.000		0.750		31
2	-5.000		0.750		61
2	-5.000		0.500		2
2	-5.000		0.500		32
2	-5.000		0.500		32
2	-5.000		0.500		62

Hipótesis 13 : Carro 2

CARGAS EN BARRAS:

TIPO	P1	P2	A	B	Barras
2	-10.000		0.000		1
3	5.000		0.000		1
2	-2.500		0.000		1
2	-7.500		0.000		31
2	-10.000		0.750		1
3	5.000		0.750		1
2	-2.500		0.750		1
2	-7.500		0.750		31
2	-10.000		0.500		2
3	5.000		0.500		2
2	-2.500		0.500		2
2	-7.500		0.500		32

Hipótesis 14 : Carro 3

CARGAS EN BARRAS:

TIPO	P1	P2	A	B	Barras
2	-5.000		0.250		4
2	-5.000		0.250		34
2	-5.000		0.250		34
2	-5.000		0.250		64
2	-5.000		1.000		4
2	-5.000		1.000		34
2	-5.000		0.000		35
2	-5.000		0.000		65
2	-5.000		0.750		5
2	-5.000		0.750		35
2	-5.000		0.750		35
2	-5.000		0.750		65

Hipótesis 15 : Carro 4

CARGAS EN BARRAS:

TIPO	P1	P2	A	B	Barras
2	-10.000		0.250		4
3	5.000		0.250		4
2	-2.500		0.250		4
2	-7.500		0.250		34
2	-10.000		0.000		5
3	5.000		0.000		5
2	-2.500		1.000		4
2	-7.500		1.000		34
2	-10.000		0.750		5
3	5.000		0.750		5
2	-2.500		0.750		5
2	-7.500		0.750		35

Hipótesis 16 : Carro 5

CARGAS EN BARRAS:

TIPO	P1	P2	A	B	Barras
2	-5.000		0.250		10
2	-5.000		0.250		40
2	-5.000		0.250		40
2	-5.000		0.250		70
2	-5.000		1.000		10
2	-5.000		1.000		40
2	-5.000		1.000		40
2	-5.000		0.000		71
2	-5.000		0.588		11

CARGAS EN BARRAS:

TIPO	P1	P2	A	B	Barras
2	-5.000		0.588		41
2	-5.000		0.588		41
2	-5.000		0.588		71

Hipótesis 17 : Carro 6

CARGAS EN BARRAS:

TIPO	P1	P2	A	B	Barras
2	-10.000		0.250		10
3	5.000		0.250		10
2	-2.500		0.250		10
2	-7.500		0.250		40
2	-10.000		1.000		10
3	5.000		1.000		10
2	-2.500		1.000		10
2	-7.500		1.000		40
2	-10.000		0.588		11
3	5.000		0.588		11
2	-2.500		0.588		11
2	-7.500		0.588		41

Hipótesis 18 : Carro 7

CARGAS EN BARRAS:

TIPO	P1	P2	A	B	Barras
2	-5.000		0.412		15
2	-5.000		0.412		45
2	-5.000		0.412		45
2	-5.000		0.412		75
2	-5.000		0.000		16
2	-5.000		1.000		45
2	-5.000		0.000		46
2	-5.000		1.000		75
2	-5.000		0.588		16
2	-5.000		0.588		46
2	-5.000		0.588		46
2	-5.000		0.588		76

Hipótesis 19 : Carro 8

CARGAS EN BARRAS:

TIPO	P1	P2	A	B	Barras
2	-10.000		0.412		15
3	5.000		0.412		15
2	-2.500		0.412		15
2	-7.500		0.412		45
2	-10.000		1.000		15
3	5.000		1.000		15
2	-2.500		0.000		16
2	-7.500		1.000		45
2	-10.000		0.588		16
3	5.000		0.588		16
2	-2.500		0.588		16
2	-7.500		0.588		46

Hipótesis 20 : Gradiente 10° C

CARGAS EN BARRAS:

TIPO	P1	P2	A	B	Barras
5	10.000	0.000010			1-90

Hipótesis 21 : Pretensado Final, Familia 1

CARGAS EN BARRAS:

TIPO	P1	P2	A	B	Barras
6	-0.267		0.500		1,61
6	-0.534		0.500		31
0	4.434		0.000	1.000	1,61
0	8.868		0.000	1.000	31
6	0.279		0.500		2,62
6	0.558		0.500		32
0	4.309		0.000	1.000	2,62
0	8.618		0.000	1.000	32
6	0.559		0.500		3,63
6	1.118		0.500		33
0	4.325		0.000	1.000	3,63
0	8.650		0.000	1.000	33
6	0.948		0.500		4,64
6	1.896		0.500		34
0	4.358		0.000	1.000	4,64
0	8.715		0.000	1.000	34
6	0.814		0.500		5,65
6	1.628		0.500		35
0	4.353		0.000	1.000	5,65
0	8.706		0.000	1.000	35
6	-0.216		0.500		6,66
6	-0.433		0.500		36
0	4.340		0.000	1.000	6,66

CARGAS EN BARRAS:

TIPO	P1	P2	A	B	Barras
0	8.681		0.000	1.000	36
6	-0.226		0.500		7,67
6	-0.452		0.500		37
0	4.321		0.000	1.000	7,67
0	8.642		0.000	1.000	37
6	-0.305		0.500		8,68
6	-0.610		0.500		38
0	4.254		0.000	1.000	8,68
0	8.508		0.000	1.000	38
6	0.072		0.500		9,69
6	0.144		0.500		39
0	4.081		0.000	1.000	9,69
0	8.163		0.000	1.000	39
6	1.194		0.500		10,70
6	2.389		0.500		40
0	-21.359		0.000	1.000	10,70
0	-42.717		0.000	1.000	40
6	1.141		0.500		11,71
6	2.281		0.500		41
0	-21.186		0.000	1.000	11,71
0	-42.372		0.000	1.000	41
6	-0.158		0.500		12,72
6	-0.316		0.500		42
0	5.351		0.000	1.000	12,72
0	10.702		0.000	1.000	42
6	-2.351		0.500		13,73
6	-4.703		0.500		43
0	5.444		0.000	1.000	13,73
0	10.889		0.000	1.000	43
6	-3.481		0.500		14,74
6	-6.961		0.500		44
0	5.277		0.000	1.000	14,74
0	10.555		0.000	1.000	44
6	-2.621		0.500		15,75
6	-5.242		0.500		45
0	5.108		0.000	1.000	15,75
0	10.215		0.000	1.000	45
6	2.621		0.500		16,76
6	5.242		0.500		46
0	5.108		0.000	1.000	16,76
0	10.215		0.000	1.000	46
6	3.481		0.500		17,77
6	6.961		0.500		47
0	5.277		0.000	1.000	17,77
0	10.555		0.000	1.000	47
6	2.351		0.500		18,78
6	4.703		0.500		48
0	5.444		0.000	1.000	18,78
0	10.889		0.000	1.000	48
6	0.151		0.500		19,79
6	0.303		0.500		49
0	5.348		0.000	1.000	19,79
0	10.696		0.000	1.000	49

CARGAS EN BARRAS:

TIPO	P1	P2	A	B	Barras
6	-1.146		0.500		20,80
6	-2.293		0.500		50
0	-21.183		0.000	1.000	20,80
0	-42.366		0.000	1.000	50
6	-1.208		0.500		21,81
6	-2.416		0.500		51
0	-21.362		0.000	1.000	21,81
0	-42.724		0.000	1.000	51
6	-0.071		0.500		22,82
6	-0.142		0.500		52
0	4.085		0.000	1.000	22,82
0	8.170		0.000	1.000	52
6	0.305		0.500		23,83
6	0.610		0.500		53
0	4.254		0.000	1.000	23,83
0	8.508		0.000	1.000	53
6	0.226		0.500		24,84
6	0.452		0.500		54
0	4.321		0.000	1.000	24,84
0	8.642		0.000	1.000	54
6	0.216		0.500		25,85
6	0.433		0.500		55
0	4.340		0.000	1.000	25,85
0	8.681		0.000	1.000	55
6	-0.814		0.500		26,86
6	-1.628		0.500		56
0	4.353		0.000	1.000	26,86
0	8.706		0.000	1.000	56
6	-0.948		0.500		27,87
6	-1.896		0.500		57
0	4.358		0.000	1.000	27,87
0	8.715		0.000	1.000	57
6	-0.559		0.500		28,88
6	-1.118		0.500		58
0	4.325		0.000	1.000	28,88
0	8.650		0.000	1.000	58
6	-0.289		0.500		29,89
6	-0.578		0.500		59
0	4.308		0.000	1.000	29,89
0	8.616		0.000	1.000	59
6	0.271		0.500		30,90
6	0.542		0.500		60
0	4.435		0.000	1.000	30,90
0	8.870		0.000	1.000	60

CARGAS EN NUDOS (según ejes globales)

Fz	Mx	My	Nudos
-34.820	0.000	0.000	1,3
-69.640	0.000	0.000	2
-34.820	0.000	0.000	91,93
-69.640	0.000	0.000	92

1.- Coeficientes de Excentricidad del Carro

COMBINACIONES DE HIPOTESIS DE CARGAS

COMBINACION: C1 = +1.00*(H:12)
COMBINACION: C2 = +1.00*(H:13)
COMBINACION: C3 = +1.00*(H:14)
COMBINACION: C4 = +1.00*(H:15)
COMBINACION: C5 = +1.00*(H:16)
COMBINACION: C6 = +1.00*(H:17)
COMBINACION: C7 = +1.00*(H:18)
COMBINACION: C8 = +1.00*(H:19)

	NUDO DORSAL (i)			NUDO FRONTAL (j)		
	Cortante	Torsor	Flector	Cortante	Torsor	Flector
Barra: 1						
C1	16.67	-2.68	-2.50	6.67	2.68	18.35
C2	33.89	-12.98	-9.57	8.89	2.98	26.95
C3	9.67	-1.53	-1.43	9.67	1.53	17.91
C4	20.37	-10.94	-13.80	20.37	10.94	26.93
C5	0.05	-0.01	-0.01	0.05	0.01	0.10
C6	8.51	-7.44	-9.82	8.51	7.44	7.21
C7	-1.92	0.30	0.29	-1.92	-0.30	-3.56
C8	4.13	-5.02	-6.74	4.13	5.02	1.53
Barra: 2						
C1	3.77	-1.33	15.81	-1.23	1.33	18.35
C2	8.07	-5.15	17.88	-4.43	0.15	21.52
C3	8.12	-0.73	16.48	8.12	0.73	32.71
C4	17.87	-11.41	6.86	17.87	11.41	42.61
C5	0.04	-0.00	0.09	0.04	0.00	0.17
C6	7.59	-8.41	-7.57	7.59	8.41	7.61
C7	-1.61	0.15	-3.28	-1.61	-0.15	-6.51
C8	3.79	-5.87	-8.76	3.79	5.87	-1.18
Barra: 3						
C1	-1.45	-0.38	17.68	-1.45	0.38	14.79
C2	-2.58	0.03	20.02	-2.58	-0.03	14.87
C3	8.02	-0.17	32.38	8.02	0.17	48.42
C4	18.84	-10.77	23.64	18.84	10.77	61.33
C5	0.04	-0.00	0.17	0.04	0.00	0.26
C6	7.51	-8.50	-7.30	7.51	8.50	7.72
C7	-1.60	0.04	-6.44	-1.60	-0.04	-9.64
C8	3.75	-6.05	-11.79	3.75	6.05	-4.30
Barra: 4						
C1	-1.44	-0.09	14.64	-1.44	0.09	11.77
C2	-1.82	0.28	15.18	-1.82	-0.28	11.54
C3	7.92	-0.03	48.39	-2.08	0.03	56.72
C4	21.55	-11.23	45.12	6.55	6.23	69.47
C5	0.04	-0.00	0.26	0.04	0.00	0.34
C6	7.50	-8.51	-7.20	7.50	8.51	7.81
C7	-1.60	0.01	-9.62	-1.60	-0.01	-12.83
C8	3.74	-6.08	-14.96	3.74	6.08	-7.49

	NUDO DORSAL (i)			NUDO FRONTAL (j)		
	Cortante	Torsor	Flector	Cortante	Torsor	Flector
Barra: 5						
C1	-1.43	-0.02	11.74	-1.43	0.02	8.87
C2	-1.69	0.29	12.02	-1.69	-0.29	8.64
C3	-2.27	-0.03	56.71	-7.27	0.03	49.67
C4	9.72	-8.10	61.33	-12.78	-1.90	54.53
C5	0.04	-0.00	0.34	0.04	0.00	0.43
C6	7.50	-8.52	-7.11	7.50	8.52	7.90
C7	-1.60	-0.00	-12.82	-1.60	0.00	-16.03
C8	3.74	-6.09	-18.16	3.74	6.09	-10.69
Barra: 6						
C1	-1.43	-0.01	8.86	-1.43	0.01	6.00
C2	-1.67	0.27	9.11	-1.67	-0.27	5.77
C3	-7.39	-0.04	49.62	-7.39	0.04	34.84
C4	-10.08	1.30	54.40	-10.08	-1.30	34.25
C5	0.04	-0.02	0.42	0.04	0.02	0.51
C6	7.51	-8.54	-7.03	7.51	8.54	7.99
C7	-1.60	-0.01	-16.03	-1.60	0.01	-19.24
C8	3.74	-6.10	-21.37	3.74	6.10	-13.90
Barra: 7						
C1	-1.43	-0.01	5.99	-1.43	0.01	3.13
C2	-1.67	0.26	6.24	-1.67	-0.26	2.90
C3	-7.41	-0.05	34.81	-7.41	0.05	19.99
C4	-8.93	1.49	36.61	-8.93	-1.49	18.75
C5	0.04	-0.07	0.48	0.04	0.07	0.56
C6	7.54	-8.62	-6.97	7.54	8.62	8.10
C7	-1.60	-0.04	-19.25	-1.60	0.04	-22.46
C8	3.74	-6.13	-24.59	3.74	6.13	-17.12
Barra: 8						
C1	-1.44	-0.03	3.11	-1.44	0.03	0.24
C2	-1.67	0.24	3.36	-1.67	-0.24	0.02
C3	-7.42	-0.17	19.92	-7.42	0.17	5.09
C4	-8.73	1.33	21.27	-8.73	-1.33	3.80
C5	0.02	-0.28	0.46	0.02	0.28	0.51
C6	7.73	-8.87	-6.94	7.73	8.87	8.51
C7	-1.61	-0.18	-22.53	-1.61	0.18	-25.75
C8	3.73	-6.27	-27.87	3.73	6.27	-20.41
Barra: 9						
C1	-1.41	-0.11	0.19	-1.41	0.11	-2.64
C2	-1.65	0.16	0.43	-1.65	-0.16	-2.86
C3	-7.30	-0.55	4.79	-7.30	0.55	-9.82
C4	-8.59	0.92	6.07	-8.59	-0.92	-11.11
C5	0.21	-0.95	-0.00	0.21	0.95	0.42
C6	9.09	-9.33	-6.75	9.09	9.33	11.43
C7	-1.49	-0.59	-26.08	-1.49	0.59	-29.05
C8	3.86	-6.68	-31.41	3.86	6.68	-23.68
Barra: 10						
C1	-1.11	-0.16	-2.85	-1.11	0.16	-5.08
C2	-1.35	0.11	-2.60	-1.35	-0.11	-5.30
C3	-5.79	-0.81	-10.88	-5.79	0.81	-22.46
C4	-7.08	0.64	-9.62	-7.08	-0.64	-23.77
C5	2.79	-1.43	-1.43	-7.21	1.43	-3.34
C6	14.51	-10.37	-2.66	-10.49	0.37	7.61
C7	0.15	-0.88	-30.20	0.15	0.88	-29.91
C8	5.52	-6.94	-35.47	5.52	6.94	-24.43

	NUDO DORSAL (i)			NUDO FRONTAL (j)		
	Cortante	Torsor	Flector	Cortante	Torsor	Flector
Barra: 11						
C1	0.03	0.16	-5.10	0.03	-0.16	-5.02
C2	-0.20	0.43	-4.80	-0.20	-0.43	-5.30
C3	-0.01	0.79	-22.59	-0.01	-0.79	-22.60
C4	-1.24	2.30	-21.03	-1.24	-2.30	-24.19
C5	2.88	1.39	-3.57	-2.12	-1.39	-1.48
C6	3.43	0.38	2.74	-9.07	-5.38	-1.64
C7	6.40	0.86	-30.05	6.40	-0.86	-13.73
C8	11.55	-5.43	-36.53	11.55	5.43	-7.08
Barra: 12						
C1	0.28	0.07	-4.81	0.28	-0.07	-4.11
C2	0.05	0.35	-4.51	0.05	-0.35	-4.39
C3	1.24	0.37	-21.55	1.24	-0.37	-18.38
C4	0.00	1.87	-19.97	0.00	-1.87	-19.96
C5	-0.01	0.63	0.33	-0.01	-0.63	0.30
C6	-3.87	4.44	6.32	-3.87	-4.44	-3.55
C7	7.75	0.40	-12.59	7.75	-0.40	7.17
C8	12.93	-5.88	-19.18	12.93	5.88	13.78
Barra: 13						
C1	0.28	0.01	-4.08	0.28	-0.01	-3.37
C2	0.05	0.29	-3.78	0.05	-0.29	-3.66
C3	1.23	0.07	-18.23	1.23	-0.07	-15.08
C4	-0.01	1.56	-16.65	-0.01	-1.56	-16.66
C5	-0.03	0.11	0.56	-0.03	-0.11	0.49
C6	-3.22	3.95	4.71	-3.22	-3.95	-3.51
C7	7.74	0.08	7.33	7.74	-0.08	27.07
C8	12.98	-6.25	0.71	12.98	6.25	33.82
Barra: 14						
C1	0.27	0.00	-3.37	0.27	-0.00	-2.67
C2	0.04	0.28	-3.07	0.04	-0.28	-2.95
C3	1.23	0.01	-15.06	1.23	-0.01	-11.94
C4	-0.01	1.51	-13.48	-0.01	-1.51	-13.52
C5	-0.04	0.02	0.52	-0.04	-0.02	0.41
C6	-3.17	3.81	4.52	-3.17	-3.81	-3.58
C7	7.73	0.03	27.11	7.73	-0.03	46.81
C8	13.64	-6.26	20.62	13.64	6.26	55.40
Barra: 15						
C1	0.27	0.00	-2.67	0.27	-0.00	-1.97
C2	0.05	0.28	-2.37	0.05	-0.28	-2.26
C3	1.23	0.00	-11.93	1.23	-0.00	-8.80
C4	-0.01	1.50	-10.35	-0.01	-1.50	-10.39
C5	-0.04	0.00	0.41	-0.04	-0.00	0.30
C6	-3.17	3.78	4.40	-3.17	-3.78	-3.68
C7	7.62	0.02	46.87	2.62	-0.02	58.80
C8	16.62	-6.42	44.09	-5.88	-3.58	67.73
Barra: 16						
C1	0.27	0.00	-1.97	0.27	-0.00	-1.27
C2	0.05	0.28	-1.67	0.05	-0.28	-1.56
C3	1.23	0.00	-8.80	1.23	-0.00	-5.68
C4	-0.01	1.50	-7.22	-0.01	-1.50	-7.26
C5	-0.04	0.00	0.30	-0.04	-0.00	0.19
C6	-3.17	3.78	4.29	-3.17	-3.78	-3.79
C7	2.38	-0.02	58.80	-7.62	0.02	46.87
C8	-1.62	1.42	67.73	-16.62	-6.42	44.09

	NUDO DORSAL (i)			NUDO FRONTAL (j)		
	Cortante	Torsor	Flector	Cortante	Torsor	Flector
Barra: 17						
C1	0.27	0.00	-1.27	0.27	-0.00	-0.57
C2	0.05	0.28	-0.97	0.05	-0.28	-0.86
C3	1.23	0.00	-5.68	1.23	-0.00	-2.55
C4	-0.01	1.50	-4.09	-0.01	-1.50	-4.13
C5	-0.04	0.00	0.19	-0.04	-0.00	0.08
C6	-3.17	3.77	4.18	-3.17	-3.77	-3.90
C7	-7.73	-0.03	46.81	-7.73	0.03	27.11
C8	-13.64	6.26	55.40	-13.64	-6.26	20.62
Barra: 18						
C1	0.27	0.00	-0.57	0.27	-0.00	0.13
C2	0.05	0.28	-0.28	0.05	-0.28	-0.16
C3	1.23	0.01	-2.54	1.23	-0.01	0.59
C4	-0.01	1.51	-0.96	-0.01	-1.51	-0.99
C5	-0.04	-0.00	0.08	-0.04	0.00	-0.03
C6	-3.17	3.77	4.06	-3.17	-3.77	-4.02
C7	-7.74	-0.08	27.07	-7.74	0.08	7.33
C8	-12.98	6.25	33.82	-12.98	-6.25	0.71
Barra: 19						
C1	0.28	0.01	0.14	0.28	-0.01	0.84
C2	0.05	0.29	0.43	0.05	-0.29	0.55
C3	1.23	0.07	0.61	1.23	-0.07	3.75
C4	-0.01	1.57	2.20	-0.01	-1.57	2.17
C5	-0.04	-0.00	-0.03	-0.04	0.00	-0.14
C6	-3.17	3.78	3.95	-3.17	-3.78	-4.12
C7	-7.75	-0.40	7.17	-7.75	0.40	-12.59
C8	-12.93	5.88	13.78	-12.93	-5.88	-19.18
Barra: 20						
C1	0.22	0.03	0.88	0.22	-0.03	1.45
C2	-0.00	0.31	1.17	-0.00	-0.31	1.16
C3	1.00	0.14	3.94	1.00	-0.14	6.50
C4	-0.23	1.65	5.53	-0.23	-1.65	4.95
C5	-0.04	-0.01	-0.15	-0.04	0.01	-0.24
C6	-3.14	3.79	3.86	-3.14	-3.79	-4.16
C7	-6.40	-0.86	-13.73	-6.40	0.86	-30.05
C8	-11.55	5.43	-7.08	-11.55	-5.43	-36.53
Barra: 21						
C1	-0.01	-0.03	1.45	-0.01	0.03	1.43
C2	-0.25	0.23	1.69	-0.25	-0.23	1.19
C3	-0.05	-0.15	6.47	-0.05	0.15	6.38
C4	-1.33	1.30	7.78	-1.33	-1.30	5.12
C5	0.00	0.01	-0.24	0.00	-0.01	-0.23
C6	-3.24	3.66	3.05	-3.24	-3.66	-3.42
C7	-0.15	0.88	-29.91	-0.15	-0.88	-30.20
C8	-5.52	6.94	-24.43	-5.52	-6.94	-35.47
Barra: 22						
C1	-0.07	-0.02	1.38	-0.07	0.02	1.24
C2	-0.31	0.25	1.62	-0.31	-0.25	1.00
C3	-0.32	-0.10	6.19	-0.32	0.10	5.54
C4	-1.60	1.36	7.47	-1.60	-1.36	4.27
C5	0.01	0.00	-0.22	0.01	-0.00	-0.20
C6	-3.21	3.67	3.01	-3.21	-3.67	-3.42
C7	1.49	0.59	-29.05	1.49	-0.59	-26.08
C8	-3.86	6.68	-23.68	-3.86	-6.68	-31.41

	NUDO DORSAL (i)			NUDO FRONTAL (j)		
	Cortante	Torsor	Flector	Cortante	Torsor	Flector
Barra: 23						
C1	-0.08	-0.01	1.23	-0.08	0.01	1.07
C2	-0.31	0.26	1.46	-0.31	-0.26	0.84
C3	-0.34	-0.03	5.49	-0.34	0.03	4.80
C4	-1.62	1.43	6.77	-1.62	-1.43	3.52
C5	0.01	0.00	-0.20	0.01	-0.00	-0.17
C6	-3.21	3.67	3.02	-3.21	-3.67	-3.40
C7	1.61	0.18	-25.75	1.61	-0.18	-22.53
C8	-3.73	6.27	-20.41	-3.73	-6.27	-27.87
Barra: 24						
C1	-0.08	-0.00	1.07	-0.08	0.00	0.92
C2	-0.31	0.27	1.30	-0.31	-0.27	0.68
C3	-0.34	-0.01	4.79	-0.34	0.01	4.10
C4	-1.62	1.45	6.07	-1.62	-1.45	2.83
C5	0.01	0.00	-0.17	0.01	-0.00	-0.15
C6	-3.21	3.67	3.04	-3.21	-3.67	-3.38
C7	1.60	0.04	-22.46	1.60	-0.04	-19.25
C8	-3.74	6.13	-17.12	-3.74	-6.13	-24.59
Barra: 25						
C1	-0.08	-0.00	0.92	-0.08	0.00	0.76
C2	-0.31	0.27	1.15	-0.31	-0.27	0.53
C3	-0.34	-0.00	4.10	-0.34	0.00	3.42
C4	-1.62	1.46	5.38	-1.62	-1.46	2.14
C5	0.01	0.00	-0.15	0.01	-0.00	-0.12
C6	-3.21	3.67	3.06	-3.21	-3.67	-3.35
C7	1.60	0.01	-19.24	1.60	-0.01	-16.03
C8	-3.74	6.10	-13.90	-3.74	-6.10	-21.37
Barra: 26						
C1	-0.08	0.00	0.76	-0.08	-0.00	0.61
C2	-0.31	0.27	1.00	-0.31	-0.27	0.37
C3	-0.34	0.00	3.42	-0.34	-0.00	2.73
C4	-1.62	1.46	4.70	-1.62	-1.46	1.46
C5	0.01	-0.00	-0.12	0.01	0.00	-0.10
C6	-3.21	3.67	3.09	-3.21	-3.67	-3.33
C7	1.60	0.00	-16.03	1.60	-0.00	-12.82
C8	-3.74	6.09	-10.69	-3.74	-6.09	-18.16
Barra: 27						
C1	-0.08	0.00	0.61	-0.08	-0.00	0.46
C2	-0.31	0.27	0.85	-0.31	-0.27	0.22
C3	-0.34	0.00	2.73	-0.34	-0.00	2.05
C4	-1.62	1.46	4.01	-1.62	-1.46	0.77
C5	0.01	-0.00	-0.10	0.01	0.00	-0.07
C6	-3.21	3.67	3.12	-3.21	-3.67	-3.30
C7	1.60	-0.01	-12.83	1.60	0.01	-9.62
C8	-3.74	6.08	-7.49	-3.74	-6.08	-14.96
Barra: 28						
C1	-0.08	0.00	0.46	-0.08	-0.00	0.31
C2	-0.31	0.27	0.69	-0.31	-0.27	0.07
C3	-0.34	0.01	2.05	-0.34	-0.01	1.37
C4	-1.62	1.47	3.33	-1.62	-1.47	0.09
C5	0.01	-0.00	-0.07	0.01	0.00	-0.05
C6	-3.21	3.67	3.14	-3.21	-3.67	-3.28
C7	1.60	-0.04	-9.64	1.60	0.04	-6.44
C8	-3.75	6.05	-4.30	-3.75	-6.05	-11.79

	NUDO DORSAL (i)			NUDO FRONTAL (j)		
	Cortante	Torsor	Flector	Cortante	Torsor	Flector
Barra: 29						
C1	-0.08	0.01	0.31	-0.08	-0.01	0.16
C2	-0.32	0.27	0.54	-0.32	-0.27	-0.09
C3	-0.34	0.03	1.39	-0.34	-0.03	0.70
C4	-1.64	1.47	2.66	-1.64	-1.47	-0.61
C5	0.01	-0.00	-0.05	0.01	0.00	-0.03
C6	-3.25	3.63	3.16	-3.25	-3.63	-3.33
C7	1.61	-0.15	-6.51	1.61	0.15	-3.28
C8	-3.79	5.87	-1.18	-3.79	-5.87	-8.76
Barra: 30						
C1	-0.09	0.01	0.17	-0.09	-0.01	-0.01
C2	-0.36	0.25	0.39	-0.36	-0.25	-0.32
C3	-0.41	0.06	0.76	-0.41	-0.06	-0.06
C4	-1.86	1.34	1.98	-1.86	-1.34	-1.74
C5	0.01	-0.00	-0.03	0.01	0.00	0.00
C6	-3.64	3.21	3.04	-3.64	-3.21	-4.23
C7	1.92	-0.30	-3.56	1.92	0.30	0.29
C8	-4.13	5.02	1.53	-4.13	-5.02	-6.74
Barra: 31						
C1	21.09	-0.00	5.00	1.09	0.00	22.18
C2	18.54	-9.00	4.62	3.54	9.00	22.95
C3	11.91	0.00	2.86	11.91	-0.00	26.69
C4	11.93	-17.74	2.92	11.93	17.74	26.78
C5	0.06	0.00	0.02	0.06	-0.00	0.14
C6	0.06	-14.14	0.02	0.06	14.14	0.15
C7	-2.37	0.00	-0.57	-2.37	-0.00	-5.31
C8	-2.37	-10.12	-0.57	-2.37	10.12	-5.31
Barra: 32						
C1	6.90	-0.00	27.26	-3.10	0.00	31.05
C2	6.55	-4.71	26.83	-0.95	4.71	32.42
C3	15.02	-0.00	29.56	15.02	0.00	59.61
C4	14.94	-19.55	29.90	14.94	19.55	59.79
C5	0.08	0.00	0.16	0.08	-0.00	0.32
C6	0.08	-15.85	0.16	0.08	15.85	0.32
C7	-2.99	0.00	-5.88	-2.99	-0.00	-11.86
C8	-2.99	-11.35	-5.88	-2.99	11.35	-11.86
Barra: 33						
C1	-2.67	0.00	32.39	-2.67	-0.00	27.06
C2	-2.10	-0.90	32.16	-2.10	0.90	27.97
C3	15.21	0.00	60.28	15.21	-0.00	90.71
C4	14.33	-17.98	61.37	14.33	17.98	90.03
C5	0.08	0.00	0.32	0.08	-0.00	0.48
C6	0.08	-15.99	0.33	0.08	15.99	0.49
C7	-3.02	0.00	-12.00	-3.02	-0.00	-18.04
C8	-3.02	-11.45	-12.00	-3.02	11.45	-18.04
Barra: 34						
C1	-2.69	-0.00	27.35	-2.69	0.00	21.97
C2	-2.64	0.23	27.52	-2.64	-0.23	22.24
C3	15.43	0.00	90.76	0.43	-0.00	106.62
C4	12.68	-12.54	91.53	-2.32	12.54	105.65
C5	0.08	0.00	0.48	0.08	-0.00	0.64
C6	0.08	-16.00	0.50	0.08	16.00	0.66
C7	-3.01	0.00	-18.07	-3.01	-0.00	-24.10
C8	-3.01	-11.46	-18.07	-3.01	11.46	-24.10

	NUDO DORSAL (i)			NUDO FRONTAL (j)		
	Cortante	Torsor	Flector	Cortante	Torsor	Flector
Barra: 35						
C1	-2.70	-0.00	22.04	-2.70	0.00	16.64
C2	-2.69	0.46	22.11	-2.69	-0.46	16.72
C3	0.79	-0.00	106.65	-14.21	0.00	93.24
C4	-3.96	-4.89	105.69	-11.46	4.89	94.01
C5	0.08	0.00	0.65	0.08	-0.00	0.81
C6	0.08	-16.00	0.67	0.08	16.00	0.83
C7	-3.01	0.00	-24.10	-3.01	-0.00	-30.13
C8	-3.01	-11.46	-24.10	-3.01	11.46	-30.13
Barra: 36						
C1	-2.70	-0.00	16.66	-2.70	0.00	11.27
C2	-2.69	0.50	16.69	-2.69	-0.50	11.30
C3	-13.97	0.00	93.34	-13.97	-0.00	65.41
C4	-13.08	0.56	92.66	-13.08	-0.56	66.50
C5	0.08	0.00	0.82	0.08	-0.00	0.98
C6	0.08	-15.99	0.85	0.08	15.99	1.02
C7	-3.01	-0.00	-30.12	-3.01	0.00	-36.15
C8	-3.01	-11.46	-30.12	-3.01	11.46	-36.15
Barra: 37						
C1	-2.69	0.00	11.28	-2.69	-0.00	5.89
C2	-2.69	0.50	11.30	-2.69	-0.50	5.91
C3	-13.92	-0.00	65.48	-13.92	0.00	37.63
C4	-13.84	2.31	65.66	-13.84	-2.31	37.97
C5	0.09	0.00	1.02	0.09	-0.00	1.20
C6	0.09	-15.93	1.12	0.09	15.93	1.30
C7	-3.01	0.00	-36.12	-3.01	-0.00	-42.14
C8	-3.01	-11.45	-36.12	-3.01	11.45	-42.14
Barra: 38						
C1	-2.69	-0.00	5.92	-2.69	0.00	0.54
C2	-2.69	0.51	5.94	-2.69	-0.51	0.56
C3	-13.91	-0.00	37.77	-13.91	0.00	9.95
C4	-13.91	2.67	37.85	-13.91	-2.67	10.03
C5	0.12	0.00	1.40	0.12	-0.00	1.64
C6	0.04	-15.57	1.77	0.04	15.57	1.84
C7	-2.99	0.00	-42.01	-2.99	-0.00	-47.99
C8	-2.99	-11.45	-42.01	-2.99	11.45	-47.99
Barra: 39						
C1	-2.74	0.00	0.66	-2.74	-0.00	-4.82
C2	-2.74	0.50	0.68	-2.74	-0.50	-4.79
C3	-14.14	0.00	10.56	-14.14	-0.00	-17.72
C4	-14.14	2.73	10.57	-14.14	-2.73	-17.70
C5	-0.26	0.00	2.66	-0.26	-0.00	2.14
C6	-1.14	-13.80	3.78	-1.14	13.80	1.50
C7	-3.24	-0.00	-47.34	-3.24	0.00	-53.83
C8	-3.24	-11.43	-47.34	-3.24	11.43	-53.83
Barra: 40						
C1	-3.34	-0.00	-4.40	-3.34	0.00	-11.07
C2	-3.33	0.50	-4.37	-3.33	-0.50	-11.04
C3	-17.17	0.00	-15.60	-17.17	-0.00	-49.93
C4	-17.17	2.72	-15.59	-17.17	-2.72	-49.92
C5	-5.42	0.00	5.84	-25.42	-0.00	-20.00
C6	-8.13	-8.29	6.64	-23.13	8.29	-20.86
C7	-6.52	-0.00	-51.53	-6.52	0.00	-64.56
C8	-6.52	-11.39	-51.53	-6.52	11.39	-64.56

	NUDO DORSAL (i)			NUDO FRONTAL (j)		
	Cortante	Torsor	Flector	Cortante	Torsor	Flector
Barra: 41						
C1	1.00	0.00	-11.02	1.00	-0.00	-8.46
C2	1.00	0.52	-10.99	1.00	-0.52	-8.43
C3	4.77	0.00	-49.67	4.77	-0.00	-37.50
C4	4.77	2.83	-49.67	4.77	-2.83	-37.50
C5	14.08	0.00	-19.55	4.08	-0.00	5.85
C6	13.96	0.28	-20.33	6.46	-0.28	7.40
C7	17.20	0.00	-64.28	17.20	-0.00	-20.42
C8	17.20	-11.82	-64.28	17.20	11.82	-20.41
Barra: 42						
C1	0.51	0.00	-8.87	0.51	-0.00	-7.57
C2	0.51	0.52	-8.85	0.51	-0.52	-7.55
C3	2.28	0.00	-39.61	2.28	-0.00	-33.80
C4	2.28	2.82	-39.61	2.28	-2.82	-33.80
C5	-0.15	-0.00	2.22	-0.15	0.00	1.85
C6	0.21	5.86	2.06	0.21	-5.86	2.60
C7	14.50	0.00	-22.69	14.50	-0.00	14.29
C8	14.50	-11.76	-22.67	14.50	11.76	14.31
Barra: 43						
C1	0.51	0.00	-7.63	0.51	-0.00	-6.32
C2	0.51	0.52	-7.61	0.51	-0.52	-6.31
C3	2.29	0.00	-34.11	2.29	-0.00	-28.27
C4	2.29	2.82	-34.11	2.29	-2.82	-28.27
C5	-0.11	-0.00	1.33	-0.11	0.00	1.06
C6	-0.11	6.96	1.48	-0.11	-6.96	1.20
C7	14.52	0.00	13.96	14.52	-0.00	50.98
C8	14.52	-11.63	14.07	14.52	11.63	51.10
Barra: 44						
C1	0.52	-0.00	-6.33	0.52	0.00	-5.02
C2	0.51	0.52	-6.32	0.51	-0.52	-5.00
C3	2.31	-0.00	-28.31	2.31	0.00	-22.42
C4	2.31	2.82	-28.31	2.31	-2.82	-22.42
C5	-0.08	-0.00	1.00	-0.08	0.00	0.79
C6	-0.08	7.08	1.04	-0.08	-7.08	0.82
C7	14.55	0.00	50.91	14.55	-0.00	88.01
C8	14.19	-10.53	51.63	14.19	10.53	87.81
Barra: 45						
C1	0.52	0.00	-5.02	0.52	-0.00	-3.70
C2	0.51	0.52	-5.01	0.51	-0.52	-3.69
C3	2.31	-0.00	-22.43	2.31	0.00	-16.55
C4	2.31	2.82	-22.43	2.31	-2.82	-16.55
C5	-0.08	-0.00	0.78	-0.08	0.00	0.57
C6	-0.08	7.10	0.80	-0.08	-7.10	0.58
C7	14.76	0.00	87.88	-0.24	-0.00	110.53
C8	12.40	-4.93	89.38	-2.60	4.93	109.76
Barra: 46						
C1	0.52	-0.00	-3.70	0.52	0.00	-2.39
C2	0.51	0.52	-3.69	0.51	-0.52	-2.38
C3	2.31	0.00	-16.55	2.31	-0.00	-10.67
C4	2.31	2.82	-16.55	2.31	-2.82	-10.67
C5	-0.08	-0.00	0.57	-0.08	0.00	0.36
C6	-0.08	7.10	0.58	-0.08	-7.10	0.36
C7	0.24	-0.00	110.53	-14.76	0.00	87.88
C8	-4.90	4.93	109.76	-12.40	-4.93	89.38

	NUDO DORSAL (i)			NUDO FRONTAL (j)		
	Cortante	Torsor	Flector	Cortante	Torsor	Flector
Barra: 47						
C1	0.52	0.00	-2.39	0.52	-0.00	-1.07
C2	0.51	0.52	-2.38	0.51	-0.52	-1.07
C3	2.31	0.00	-10.67	2.31	-0.00	-4.79
C4	2.31	2.82	-10.67	2.31	-2.82	-4.79
C5	-0.08	-0.00	0.36	-0.08	0.00	0.16
C6	-0.08	7.10	0.36	-0.08	-7.10	0.15
C7	-14.55	-0.00	88.01	-14.55	0.00	50.91
C8	-14.19	10.53	87.81	-14.19	-10.53	51.63
Barra: 48						
C1	0.52	0.00	-1.07	0.52	-0.00	0.24
C2	0.51	0.52	-1.07	0.51	-0.52	0.24
C3	2.30	0.00	-4.80	2.30	-0.00	1.07
C4	2.30	2.82	-4.80	2.30	-2.82	1.07
C5	-0.08	-0.00	0.16	-0.08	0.00	-0.05
C6	-0.08	7.10	0.15	-0.08	-7.10	-0.06
C7	-14.52	-0.00	50.98	-14.52	0.00	13.96
C8	-14.52	11.63	51.10	-14.52	-11.63	14.07
Barra: 49						
C1	0.51	0.00	0.23	0.51	-0.00	1.54
C2	0.51	0.52	0.23	0.51	-0.52	1.54
C3	2.30	0.00	1.02	2.30	-0.00	6.89
C4	2.30	2.82	1.02	2.30	-2.82	6.88
C5	-0.08	-0.00	-0.05	-0.08	0.00	-0.26
C6	-0.08	7.10	-0.06	-0.08	-7.10	-0.27
C7	-14.50	0.00	14.29	-14.50	-0.00	-22.69
C8	-14.50	11.76	14.31	-14.50	-11.76	-22.67
Barra: 50						
C1	0.62	0.00	1.46	0.62	-0.00	3.03
C2	0.61	0.52	1.45	0.61	-0.52	3.02
C3	2.75	-0.00	6.50	2.75	0.00	13.53
C4	2.75	2.83	6.50	2.75	-2.83	13.53
C5	-0.10	-0.00	-0.24	-0.10	0.00	-0.49
C6	-0.10	7.13	-0.26	-0.10	-7.13	-0.52
C7	-17.20	-0.00	-20.42	-17.20	0.00	-64.28
C8	-17.20	11.82	-20.41	-17.20	-11.82	-64.28
Barra: 51						
C1	-0.28	0.00	3.04	-0.28	-0.00	2.49
C2	-0.27	0.50	3.03	-0.27	-0.50	2.48
C3	-1.23	-0.00	13.57	-1.23	0.00	11.11
C4	-1.23	2.73	13.57	-1.23	-2.73	11.11
C5	0.04	-0.00	-0.49	0.04	0.00	-0.40
C6	0.05	6.87	-0.52	0.05	-6.87	-0.43
C7	6.52	0.00	-64.56	6.52	-0.00	-51.53
C8	6.52	11.39	-64.56	6.52	-11.39	-51.53
Barra: 52						
C1	-0.15	-0.00	2.57	-0.15	0.00	2.27
C2	-0.15	0.50	2.57	-0.15	-0.50	2.26
C3	-0.68	-0.00	11.50	-0.68	0.00	10.13
C4	-0.68	2.74	11.50	-0.68	-2.74	10.13
C5	0.02	-0.00	-0.42	0.02	0.00	-0.37
C6	0.03	6.90	-0.44	0.03	-6.90	-0.39
C7	3.24	-0.00	-53.83	3.24	0.00	-47.34
C8	3.24	11.43	-53.83	3.24	-11.43	-47.34

	NUDO DORSAL (i)			NUDO FRONTAL (j)		
	Cortante	Torsor	Flector	Cortante	Torsor	Flector
Barra: 53						
C1	-0.14	0.00	2.29	-0.14	-0.00	2.01
C2	-0.14	0.51	2.29	-0.14	-0.51	2.00
C3	-0.64	0.00	10.24	-0.64	-0.00	8.97
C4	-0.64	2.74	10.24	-0.64	-2.74	8.97
C5	0.02	-0.00	-0.37	0.02	0.00	-0.33
C6	0.02	6.91	-0.39	0.02	-6.91	-0.34
C7	2.99	-0.00	-47.99	2.99	0.00	-42.01
C8	2.99	11.45	-47.99	2.99	-11.45	-42.01
Barra: 54						
C1	-0.14	0.00	2.01	-0.14	-0.00	1.72
C2	-0.14	0.51	2.01	-0.14	-0.51	1.72
C3	-0.64	-0.00	8.99	-0.64	0.00	7.70
C4	-0.64	2.74	8.99	-0.64	-2.74	7.70
C5	0.02	-0.00	-0.33	0.02	0.00	-0.28
C6	0.02	6.91	-0.34	0.02	-6.91	-0.29
C7	3.01	0.00	-42.14	3.01	-0.00	-36.12
C8	3.01	11.45	-42.14	3.01	-11.45	-36.12
Barra: 55						
C1	-0.14	0.00	1.72	-0.14	-0.00	1.44
C2	-0.14	0.51	1.72	-0.14	-0.51	1.43
C3	-0.64	-0.00	7.71	-0.64	0.00	6.42
C4	-0.64	2.74	7.71	-0.64	-2.74	6.42
C5	0.02	-0.00	-0.28	0.02	0.00	-0.23
C6	0.02	6.91	-0.29	0.02	-6.91	-0.25
C7	3.01	-0.00	-36.15	3.01	0.00	-30.12
C8	3.01	11.46	-36.15	3.01	-11.46	-30.12
Barra: 56						
C1	-0.14	0.00	1.44	-0.14	-0.00	1.15
C2	-0.14	0.51	1.43	-0.14	-0.51	1.15
C3	-0.64	0.00	6.42	-0.64	-0.00	5.14
C4	-0.64	2.74	6.42	-0.64	-2.74	5.14
C5	0.02	-0.00	-0.23	0.02	0.00	-0.19
C6	0.02	6.91	-0.25	0.02	-6.91	-0.20
C7	3.01	0.00	-30.13	3.01	-0.00	-24.10
C8	3.01	11.46	-30.13	3.01	-11.46	-24.10
Barra: 57						
C1	-0.14	0.00	1.15	-0.14	-0.00	0.86
C2	-0.14	0.51	1.15	-0.14	-0.51	0.86
C3	-0.64	0.00	5.14	-0.64	-0.00	3.85
C4	-0.64	2.74	5.14	-0.64	-2.74	3.85
C5	0.02	-0.00	-0.19	0.02	0.00	-0.14
C6	0.02	6.91	-0.20	0.02	-6.91	-0.15
C7	3.01	-0.00	-24.10	3.01	0.00	-18.07
C8	3.01	11.46	-24.10	3.01	-11.46	-18.07
Barra: 58						
C1	-0.14	0.00	0.86	-0.14	-0.00	0.57
C2	-0.14	0.51	0.86	-0.14	-0.51	0.57
C3	-0.64	-0.00	3.85	-0.64	0.00	2.56
C4	-0.64	2.74	3.85	-0.64	-2.74	2.56
C5	0.02	-0.00	-0.14	0.02	0.00	-0.09
C6	0.02	6.91	-0.15	0.02	-6.91	-0.10
C7	3.02	-0.00	-18.04	3.02	0.00	-12.00
C8	3.02	11.45	-18.04	3.02	-11.45	-12.00

	NUDO DORSAL (i)			NUDO FRONTAL (j)		
	Cortante	Torsor	Flector	Cortante	Torsor	Flector
Barra: 59						
C1	-0.14	0.00	0.57	-0.14	-0.00	0.28
C2	-0.14	0.50	0.56	-0.14	-0.50	0.28
C3	-0.64	0.00	2.53	-0.64	-0.00	1.25
C4	-0.64	2.72	2.53	-0.64	-2.72	1.25
C5	0.02	-0.00	-0.09	0.02	0.00	-0.05
C6	0.02	6.84	-0.10	0.02	-6.84	-0.05
C7	2.99	-0.00	-11.86	2.99	0.00	-5.88
C8	2.99	11.35	-11.86	2.99	-11.35	-5.88
Barra: 60						
C1	-0.11	0.00	0.25	-0.11	-0.00	0.03
C2	-0.11	0.45	0.25	-0.11	-0.45	0.03
C3	-0.51	-0.00	1.13	-0.51	0.00	0.12
C4	-0.51	2.42	1.13	-0.51	-2.42	0.12
C5	0.02	-0.00	-0.04	0.02	0.00	-0.00
C6	0.02	6.10	-0.04	0.02	-6.10	-0.00
C7	2.37	-0.00	-5.31	2.37	0.00	-0.57
C8	2.37	10.12	-5.31	2.37	-10.12	-0.57
Barra: 61						
C1	16.67	2.68	-2.50	6.67	-2.68	18.35
C2	2.02	-2.30	4.95	2.02	2.30	8.98
C3	9.67	1.53	-1.43	9.67	-1.53	17.91
C4	-1.04	-7.74	10.89	-1.04	7.74	8.81
C5	0.05	0.01	-0.01	0.05	-0.01	0.10
C6	-8.41	-7.43	9.81	-8.41	7.43	-7.01
C7	-1.92	-0.30	0.29	-1.92	0.30	-3.56
C8	-7.98	-5.63	7.31	-7.98	5.63	-8.65
Barra: 62						
C1	3.77	1.33	15.81	-1.23	-1.33	18.35
C2	-0.18	-1.66	14.18	-0.18	1.66	13.82
C3	8.12	0.73	16.48	8.12	-0.73	32.71
C4	-1.56	-9.41	25.76	-1.56	9.41	22.64
C5	0.04	0.00	0.09	0.04	-0.00	0.17
C6	-7.50	-8.40	7.75	-7.50	8.40	-7.26
C7	-1.61	-0.15	-3.28	-1.61	0.15	-6.51
C8	-7.02	-6.17	2.21	-7.02	6.17	-11.83
Barra: 63						
C1	-1.45	0.38	17.68	-1.45	-0.38	14.79
C2	-0.89	-0.52	15.58	-0.89	0.52	13.81
C3	8.02	0.17	32.38	8.02	-0.17	48.42
C4	-1.91	-8.96	40.02	-1.91	8.96	36.20
C5	0.04	0.00	0.17	0.04	-0.00	0.26
C6	-7.42	-8.50	7.65	-7.42	8.50	-7.20
C7	-1.60	-0.04	-6.44	-1.60	0.04	-9.64
C8	-6.95	-6.13	-1.09	-6.95	6.13	-14.98
Barra: 64						
C1	-1.44	0.09	14.64	-1.44	-0.09	11.77
C2	-1.10	0.03	13.95	-1.10	-0.03	11.75
C3	7.92	0.03	48.39	2.92	-0.03	56.72
C4	-2.98	-6.41	50.89	-2.98	6.41	44.94
C5	0.04	0.00	0.26	0.04	-0.00	0.34
C6	-7.42	-8.51	7.72	-7.42	8.51	-7.11
C7	-1.60	-0.01	-9.62	-1.60	0.01	-12.83
C8	-6.94	-6.10	-4.28	-6.94	6.10	-18.17

	NUDO DORSAL (i)			NUDO FRONTAL (j)		
	Cortante	Torsor	Flector	Cortante	Torsor	Flector
Barra: 65						
C1	-1.43	0.02	11.74	-1.43	-0.02	8.87
C2	-1.17	0.21	11.41	-1.17	-0.21	9.07
C3	2.73	0.03	56.71	-7.27	-0.03	49.67
C4	-4.50	-2.80	53.05	-4.50	2.80	44.04
C5	0.04	0.00	0.34	0.04	-0.00	0.43
C6	-7.42	-8.50	7.80	-7.42	8.50	-7.03
C7	-1.60	0.00	-12.82	-1.60	-0.00	-16.03
C8	-6.94	-6.09	-7.48	-6.94	6.09	-21.37
Barra: 66						
C1	-1.43	0.01	8.86	-1.43	-0.01	6.00
C2	-1.19	0.26	8.62	-1.19	-0.26	6.23
C3	-7.39	0.04	49.62	-7.39	-0.04	34.84
C4	-5.58	-0.08	45.52	-5.58	0.08	34.35
C5	0.04	0.02	0.42	0.04	-0.02	0.51
C6	-7.42	-8.47	7.88	-7.42	8.47	-6.97
C7	-1.60	0.01	-16.03	-1.60	-0.01	-19.24
C8	-6.94	-6.08	-10.69	-6.94	6.08	-24.58
Barra: 67						
C1	-1.43	0.01	5.99	-1.43	-0.01	3.13
C2	-1.20	0.27	5.76	-1.20	-0.27	3.37
C3	-7.41	0.05	34.81	-7.41	-0.05	19.99
C4	-5.97	1.05	32.83	-5.97	-1.05	20.89
C5	0.04	0.07	0.48	0.04	-0.07	0.56
C6	-7.46	-8.33	7.88	-7.46	8.33	-7.03
C7	-1.60	0.04	-19.25	-1.60	-0.04	-22.46
C8	-6.95	-6.05	-13.91	-6.95	6.05	-27.80
Barra: 68						
C1	-1.43	0.03	3.11	-1.43	-0.03	0.24
C2	-1.20	0.30	2.89	-1.20	-0.30	0.49
C3	-7.42	0.17	19.92	-7.42	-0.17	5.09
C4	-6.10	1.51	18.50	-6.10	-1.51	6.29
C5	0.02	0.28	0.46	0.02	-0.28	0.51
C6	-7.60	-7.77	7.55	-7.60	7.77	-7.64
C7	-1.61	0.18	-22.53	-1.61	-0.18	-25.75
C8	-6.96	-5.91	-17.19	-6.96	5.91	-31.10
Barra: 69						
C1	-1.41	0.11	0.19	-1.41	-0.11	-2.64
C2	-1.18	0.38	-0.04	-1.18	-0.38	-2.39
C3	-7.30	0.55	4.79	-7.30	-0.55	-9.82
C4	-6.01	1.98	3.48	-6.01	-1.98	-8.54
C5	0.21	0.95	-0.00	0.21	-0.95	0.42
C6	-7.79	-5.97	5.69	-7.79	5.97	-9.88
C7	-1.49	0.59	-26.08	-1.49	-0.59	-29.05
C8	-6.84	-5.49	-20.75	-6.84	5.49	-34.43
Barra: 70						
C1	-1.11	0.16	-2.85	-1.11	-0.16	-5.08
C2	-0.88	0.43	-3.07	-0.88	-0.43	-4.82
C3	-5.79	0.81	-10.88	-5.79	-0.81	-22.46
C4	-4.50	2.26	-12.14	-4.50	-2.26	-21.15
C5	2.79	1.43	-1.43	-2.21	-1.43	-3.34
C6	-6.22	-2.74	-0.93	-6.22	2.74	-13.36
C7	0.15	0.88	-30.20	0.15	-0.88	-29.91
C8	-5.22	-5.18	-24.93	-5.22	5.18	-35.38

	NUDO DORSAL (i)			NUDO FRONTAL (j)		
	Cortante	Torsor	Flector	Cortante	Torsor	Flector
Barra: 71						
C1	0.03	-0.16	-5.10	0.03	0.16	-5.02
C2	0.26	0.12	-5.37	0.26	-0.12	-4.72
C3	-0.01	-0.79	-22.59	-0.01	0.79	-22.60
C4	1.23	0.71	-24.14	1.23	-0.71	-21.01
C5	7.88	-1.39	-3.57	-2.12	1.39	-1.48
C6	2.44	-1.53	-9.01	2.44	1.53	-2.80
C7	6.40	-0.86	-30.05	6.40	0.86	-13.73
C8	1.25	-7.14	-23.56	1.25	7.14	-20.38
Barra: 72						
C1	0.28	-0.07	-4.81	0.28	0.07	-4.11
C2	0.51	0.20	-5.09	0.51	-0.20	-3.81
C3	1.24	-0.37	-21.55	1.24	0.37	-18.38
C4	2.48	1.13	-23.12	2.48	-1.13	-16.80
C5	-0.01	-0.63	0.33	-0.01	0.63	0.30
C6	3.48	2.14	-5.42	3.48	-2.14	3.46
C7	7.75	-0.40	-12.59	7.75	0.40	7.17
C8	2.57	-6.63	-6.02	2.57	6.63	0.53
Barra: 73						
C1	0.28	-0.01	-4.08	0.28	0.01	-3.37
C2	0.50	0.26	-4.36	0.50	-0.26	-3.07
C3	1.23	-0.07	-18.23	1.23	0.07	-15.08
C4	2.47	1.43	-19.81	2.47	-1.43	-13.50
C5	-0.03	-0.11	0.56	-0.03	0.11	0.49
C6	3.16	3.48	-3.67	3.16	-3.48	4.38
C7	7.74	-0.08	7.33	7.74	0.08	27.07
C8	2.50	-6.15	13.84	2.50	6.15	20.20
Barra: 74						
C1	0.27	-0.00	-3.37	0.27	0.00	-2.67
C2	0.50	0.27	-3.65	0.50	-0.27	-2.37
C3	1.23	-0.01	-15.06	1.23	0.01	-11.94
C4	2.47	1.49	-16.64	2.47	-1.49	-10.35
C5	-0.04	-0.02	0.52	-0.04	0.02	0.41
C6	3.09	3.73	-3.48	3.09	-3.73	4.38
C7	7.73	-0.03	27.11	7.73	0.03	46.81
C8	2.17	-5.28	32.87	2.17	5.28	38.41
Barra: 75						
C1	0.27	-0.00	-2.67	0.27	0.00	-1.97
C2	0.50	0.28	-2.95	0.50	-0.28	-1.67
C3	1.23	-0.00	-11.93	1.23	0.00	-8.80
C4	2.47	1.50	-13.51	2.47	-1.50	-7.22
C5	-0.04	-0.00	0.41	-0.04	0.00	0.30
C6	3.08	3.77	-3.57	3.08	-3.77	4.29
C7	7.62	-0.02	46.87	-2.38	0.02	58.80
C8	0.97	-2.35	48.15	0.97	2.35	50.63
Barra: 76						
C1	0.27	-0.00	-1.97	0.27	0.00	-1.27
C2	0.50	0.28	-2.26	0.50	-0.28	-0.97
C3	1.23	-0.00	-8.80	1.23	0.00	-5.68
C4	2.47	1.50	-10.38	2.47	-1.50	-4.10
C5	-0.04	-0.00	0.30	-0.04	0.00	0.19
C6	3.08	3.77	-3.68	3.08	-3.77	4.18
C7	-2.62	0.02	58.80	-7.62	-0.02	46.87
C8	-0.97	2.35	50.63	-0.97	-2.35	48.15

	NUDO DORSAL (i)			NUDO FRONTAL (j)		
	Cortante	Torsor	Flector	Cortante	Torsor	Flector
Barra: 77						
C1	0.27	-0.00	-1.27	0.27	0.00	-0.57
C2	0.50	0.28	-1.56	0.50	-0.28	-0.28
C3	1.23	-0.00	-5.68	1.23	0.00	-2.55
C4	2.47	1.50	-7.26	2.47	-1.50	-0.97
C5	-0.04	-0.00	0.19	-0.04	0.00	0.08
C6	3.08	3.77	-3.79	3.08	-3.77	4.06
C7	-7.73	0.03	46.81	-7.73	-0.03	27.11
C8	-2.17	5.28	38.41	-2.17	-5.28	32.87
Barra: 78						
C1	0.27	-0.00	-0.57	0.27	0.00	0.13
C2	0.50	0.27	-0.86	0.50	-0.27	0.42
C3	1.23	-0.01	-2.54	1.23	0.01	0.59
C4	2.47	1.49	-4.13	2.47	-1.49	2.17
C5	-0.04	0.00	0.08	-0.04	-0.00	-0.03
C6	3.08	3.77	-3.90	3.08	-3.77	3.95
C7	-7.74	0.08	27.07	-7.74	-0.08	7.33
C8	-2.50	6.15	20.20	-2.50	-6.15	13.84
Barra: 79						
C1	0.28	-0.01	0.14	0.28	0.01	0.84
C2	0.50	0.26	-0.15	0.50	-0.26	1.13
C3	1.23	-0.07	0.61	1.23	0.07	3.75
C4	2.47	1.43	-0.97	2.47	-1.43	5.33
C5	-0.04	0.00	-0.03	-0.04	-0.00	-0.14
C6	3.08	3.78	-4.02	3.08	-3.78	3.82
C7	-7.75	0.40	7.17	-7.75	-0.40	-12.59
C8	-2.57	6.63	0.53	-2.57	-6.63	-6.02
Barra: 80						
C1	0.22	-0.03	0.88	0.22	0.03	1.45
C2	0.45	0.25	0.59	0.45	-0.25	1.74
C3	1.00	-0.14	3.94	1.00	0.14	6.50
C4	2.24	1.36	2.35	2.24	-1.36	8.05
C5	-0.04	0.01	-0.15	-0.04	-0.01	-0.24
C6	3.07	3.80	-4.17	3.07	-3.80	3.66
C7	-6.40	0.86	-13.73	-6.40	-0.86	-30.05
C8	-1.25	7.14	-20.38	-1.25	-7.14	-23.56
Barra: 81						
C1	-0.01	0.03	1.45	-0.01	-0.03	1.43
C2	0.23	0.30	1.20	0.23	-0.30	1.66
C3	-0.05	0.15	6.47	-0.05	-0.15	6.38
C4	1.24	1.60	5.16	1.24	-1.60	7.64
C5	0.00	-0.01	-0.24	0.00	0.01	-0.23
C6	3.24	3.65	-3.55	3.24	-3.65	2.93
C7	-0.15	-0.88	-29.91	-0.15	0.88	-30.20
C8	5.22	5.18	-35.38	5.22	-5.18	-24.93
Barra: 82						
C1	-0.07	0.02	1.38	-0.07	-0.02	1.24
C2	0.16	0.29	1.14	0.16	-0.29	1.47
C3	-0.32	0.10	6.19	-0.32	-0.10	5.54
C4	-0.96	1.56	4.90	0.96	-1.56	6.82
C5	0.01	-0.00	-0.22	0.01	0.00	-0.20
C6	3.24	3.66	-3.48	3.24	-3.66	3.00
C7	1.49	-0.59	-29.05	1.49	0.59	-26.08
C8	6.84	5.49	-34.43	6.84	-5.49	-20.75

	NUDO DORSAL (i)			NUDO FRONTAL (j)		
	Cortante	Torsor	Flector	Cortante	Torsor	Flector
Barra: 83						
C1	-0.08	0.01	1.23	-0.08	-0.01	1.07
C2	0.16	0.28	0.99	0.16	-0.28	1.31
C3	-0.34	0.03	5.49	-0.34	-0.03	4.80
C4	0.94	1.49	4.21	0.94	-1.49	6.08
C5	0.01	-0.00	-0.20	0.01	0.00	-0.17
C6	3.24	3.67	-3.43	3.24	-3.67	3.04
C7	1.61	-0.18	-25.75	1.61	0.18	-22.53
C8	6.96	5.91	-31.10	6.96	-5.91	-17.19
Barra: 84						
C1	-0.08	0.00	1.07	-0.08	-0.00	0.92
C2	0.16	0.27	0.83	0.16	-0.27	1.15
C3	-0.34	0.01	4.79	-0.34	-0.01	4.10
C4	0.94	1.47	3.51	0.94	-1.47	5.38
C5	0.01	-0.00	-0.17	0.01	0.00	-0.15
C6	3.23	3.67	-3.40	3.23	-3.67	3.06
C7	1.60	-0.04	-22.46	1.60	0.04	-19.25
C8	6.95	6.05	-27.80	6.95	-6.05	-13.91
Barra: 85						
C1	-0.08	0.00	0.92	-0.08	-0.00	0.76
C2	0.16	0.27	0.68	0.16	-0.27	1.00
C3	-0.34	0.00	4.10	-0.34	-0.00	3.42
C4	0.94	1.46	2.82	0.94	-1.46	4.70
C5	0.01	-0.00	-0.15	0.01	0.00	-0.12
C6	3.23	3.67	-3.38	3.23	-3.67	3.09
C7	1.60	-0.01	-19.24	1.60	0.01	-16.03
C8	6.94	6.08	-24.58	6.94	-6.08	-10.69
Barra: 86						
C1	-0.08	-0.00	0.76	-0.08	0.00	0.61
C2	0.16	0.27	0.53	0.16	-0.27	0.85
C3	-0.34	-0.00	3.42	-0.34	0.00	2.73
C4	0.94	1.46	2.14	0.94	-1.46	4.01
C5	0.01	0.00	-0.12	0.01	-0.00	-0.10
C6	3.23	3.67	-3.35	3.23	-3.67	3.12
C7	1.60	-0.00	-16.03	1.60	0.00	-12.82
C8	6.94	6.09	-21.37	6.94	-6.09	-7.48
Barra: 87						
C1	-0.08	-0.00	0.61	-0.08	0.00	0.46
C2	0.16	0.27	0.37	0.16	-0.27	0.69
C3	-0.34	-0.00	2.73	-0.34	0.00	2.05
C4	0.94	1.46	1.46	0.94	-1.46	3.33
C5	0.01	0.00	-0.10	0.01	-0.00	-0.07
C6	3.23	3.67	-3.33	3.23	-3.67	3.14
C7	1.60	0.01	-12.83	1.60	-0.01	-9.62
C8	6.94	6.10	-18.17	6.94	-6.10	-4.28
Barra: 88						
C1	-0.08	-0.00	0.46	-0.08	0.00	0.31
C2	0.16	0.27	0.22	0.16	-0.27	0.54
C3	-0.34	-0.01	2.05	-0.34	0.01	1.37
C4	0.94	1.45	0.78	0.94	-1.45	2.65
C5	0.01	0.00	-0.07	0.01	-0.00	-0.05
C6	3.24	3.67	-3.30	3.24	-3.67	3.17
C7	1.60	0.04	-9.64	1.60	-0.04	-6.44
C8	6.95	6.13	-14.98	6.95	-6.13	-1.09

	NUDO DORSAL (i)			NUDO FRONTAL (j)		
	Cortante	Torsor	Flector	Cortante	Torsor	Flector
Barra: 89						
C1	-0.08	-0.01	0.31	-0.08	0.01	0.16
C2	0.16	0.26	0.07	0.16	-0.26	0.40
C3	-0.34	-0.03	1.39	-0.34	0.03	0.70
C4	0.95	1.41	0.11	0.95	-1.41	2.01
C5	0.01	0.00	-0.05	0.01	-0.00	-0.03
C6	3.27	3.63	-3.26	3.27	-3.63	3.28
C7	1.61	0.15	-6.51	1.61	-0.15	-3.28
C8	7.02	6.17	-11.83	7.02	-6.17	2.21
Barra: 90						
C1	-0.09	-0.01	0.17	-0.09	0.01	-0.01
C2	0.18	0.22	-0.06	0.18	-0.22	0.30
C3	-0.41	-0.06	0.76	-0.41	0.06	-0.06
C4	1.04	1.21	-0.46	1.04	-1.21	1.62
C5	0.01	0.00	-0.03	0.01	-0.00	0.00
C6	3.67	3.21	-3.10	3.67	-3.21	4.24
C7	1.92	0.30	-3.56	1.92	-0.30	0.29
C8	7.98	5.63	-8.65	7.98	-5.63	7.31
Barra: 91						
C1	2.90	2.54	1.35	2.90	-2.54	7.16
C2	0.81	9.08	-2.17	0.81	-9.08	-0.54
C3	1.56	1.43	0.80	1.56	-1.43	3.91
C4	2.50	20.07	-0.48	2.50	-20.07	4.52
C5	0.01	0.01	0.00	0.01	-0.01	0.02
C6	0.92	14.78	-0.97	0.92	-14.78	0.88
C7	-0.31	-0.29	-0.16	-0.31	0.29	-0.78
C8	0.35	10.29	-0.85	0.35	-10.29	-0.16
Barra: 92						
C1	-2.90	-2.54	7.16	-2.90	2.54	1.35
C2	-2.19	5.20	3.74	-2.19	-5.20	-0.64
C3	-1.56	-1.43	3.91	-1.56	1.43	0.80
C4	-0.52	16.95	2.71	-0.52	-16.95	1.67
C5	-0.01	-0.01	0.02	-0.01	0.01	0.00
C6	0.91	14.76	-0.84	0.91	-14.76	0.98
C7	0.31	0.29	-0.78	0.31	-0.29	-0.16
C8	0.96	10.86	-1.39	0.96	-10.86	0.54
Barra: 93						
C1	0.22	0.67	0.95	0.22	-0.67	1.39
C2	-1.85	1.50	0.17	-1.85	-1.50	-3.53
C3	0.10	0.33	0.56	0.10	-0.33	0.75
C4	-0.97	18.97	0.64	-0.97	-18.97	-1.31
C5	0.00	0.00	0.00	0.00	-0.00	0.00
C6	0.08	14.91	-0.09	0.08	-14.91	0.07
C7	-0.02	-0.07	-0.11	-0.02	0.07	-0.14
C8	0.04	10.60	-0.17	0.04	-10.60	-0.09
Barra: 94						
C1	-0.22	-0.67	1.39	-0.22	0.67	0.95
C2	-0.71	1.76	0.28	-0.71	-1.76	-1.14
C3	-0.10	-0.33	0.75	-0.10	0.33	0.56
C4	-0.36	17.38	0.26	-0.36	-17.38	-0.45
C5	-0.00	-0.00	0.00	-0.00	0.00	0.00
C6	0.08	14.91	-0.07	0.08	-14.91	0.09
C7	0.02	0.07	-0.14	0.02	-0.07	-0.11
C8	0.07	10.75	-0.19	0.07	-10.75	-0.04

	NUDO DORSAL (i)			NUDO FRONTAL (j)		
	Cortante	Torsor	Flector	Cortante	Torsor	Flector
Barra: 95						
C1	-0.01	0.14	0.29	-0.01	-0.14	0.27
C2	-0.76	-0.31	0.26	-0.76	0.31	-1.26
C3	0.11	0.03	0.14	0.11	-0.03	0.36
C4	-2.71	16.20	-0.45	-2.71	-16.20	-5.86
C5	-0.00	0.00	0.00	-0.00	-0.00	-0.00
C6	0.01	14.92	-0.01	0.01	-14.92	0.00
C7	0.00	-0.01	-0.03	0.00	0.01	-0.03
C8	0.01	10.67	-0.04	0.01	-10.67	-0.02
Barra: 96						
C1	0.01	-0.14	0.27	0.01	0.14	0.29
C2	-0.21	0.14	-0.12	-0.21	-0.14	-0.55
C3	-0.11	-0.03	0.36	-0.11	0.03	0.14
C4	-1.06	14.69	-0.43	-1.06	-14.69	-2.55
C5	0.00	-0.00	-0.00	0.00	0.00	0.00
C6	0.01	14.92	-0.01	0.01	-14.92	0.01
C7	-0.00	0.01	-0.03	-0.00	-0.01	-0.03
C8	0.00	10.69	-0.03	0.00	-10.69	-0.03
Barra: 97						
C1	-0.00	0.03	0.07	-0.00	-0.03	0.06
C2	-0.13	-0.47	0.00	-0.13	0.47	-0.26
C3	0.18	0.02	-0.00	0.18	-0.02	0.36
C4	-3.17	8.14	-1.87	-3.17	-8.14	-8.21
C5	-0.00	0.00	-0.00	-0.00	-0.00	-0.00
C6	-0.00	14.92	-0.01	-0.00	-14.92	-0.01
C7	0.00	-0.00	-0.01	0.00	0.00	-0.01
C8	0.00	10.68	-0.01	0.00	-10.68	-0.01
Barra: 98						
C1	0.00	-0.03	0.06	0.00	0.03	0.07
C2	-0.08	-0.34	-0.03	-0.08	0.34	-0.18
C3	-0.18	-0.02	0.36	-0.18	0.02	-0.00
C4	-1.53	8.11	-0.56	-1.53	-8.11	-3.61
C5	0.00	-0.00	-0.00	0.00	0.00	-0.00
C6	-0.00	14.92	-0.01	-0.00	-14.92	-0.01
C7	-0.00	0.00	-0.01	-0.00	-0.00	-0.01
C8	0.00	10.68	-0.01	0.00	-10.68	-0.01
Barra: 99						
C1	0.00	0.01	0.01	0.00	-0.01	0.02
C2	-0.02	-0.48	-0.01	-0.02	0.48	-0.05
C3	0.12	0.05	-0.01	0.12	-0.05	0.23
C4	-2.70	0.13	-0.60	-2.70	-0.13	-6.00
C5	-0.00	0.01	-0.01	-0.00	-0.01	-0.01
C6	-0.00	14.93	-0.02	-0.00	-14.93	-0.03
C7	0.00	0.00	-0.01	0.00	-0.00	-0.01
C8	-0.00	10.68	-0.01	-0.00	-10.68	-0.01
Barra: 100						
C1	-0.00	-0.01	0.02	-0.00	0.01	0.01
C2	-0.02	-0.45	-0.01	-0.02	0.45	-0.05
C3	-0.12	-0.05	0.23	-0.12	0.05	-0.01
C4	-1.08	1.47	-0.55	-1.08	-1.47	-2.71
C5	0.00	-0.01	-0.01	0.00	0.01	-0.01
C6	-0.01	14.90	-0.02	-0.01	-14.90	-0.03
C7	0.00	-0.00	-0.01	0.00	0.00	-0.01
C8	0.00	10.68	-0.01	0.00	-10.68	-0.01

	NUDO DORSAL (i)			NUDO FRONTAL (j)		
	Cortante	Torsor	Flector	Cortante	Torsor	Flector
Barra: 101						
C1	0.00	0.00	-0.00	0.00	-0.00	-0.00
C2	-0.00	-0.47	-0.01	-0.00	0.47	-0.01
C3	0.02	0.04	-0.01	0.02	-0.04	0.03
C4	-1.15	-2.36	0.19	-1.15	2.36	-2.11
C5	0.00	0.02	-0.05	0.00	-0.02	-0.04
C6	-0.03	14.95	-0.08	-0.03	-14.95	-0.13
C7	0.00	0.01	-0.03	0.00	-0.01	-0.03
C8	0.00	10.69	-0.03	0.00	-10.69	-0.03
Barra: 102						
C1	-0.00	-0.00	-0.00	-0.00	0.00	-0.00
C2	-0.00	-0.47	-0.01	-0.00	0.47	-0.02
C3	-0.02	-0.04	0.03	-0.02	0.04	-0.01
C4	-0.39	-1.52	-0.36	-0.39	1.52	-1.13
C5	-0.00	-0.02	-0.04	-0.00	0.02	-0.05
C6	-0.03	14.85	-0.07	-0.03	-14.85	-0.14
C7	-0.00	-0.01	-0.03	-0.00	0.01	-0.03
C8	-0.00	10.67	-0.03	-0.00	-10.67	-0.03
Barra: 103						
C1	0.00	0.01	-0.02	0.00	-0.01	-0.02
C2	0.00	-0.46	-0.03	0.00	0.46	-0.02
C3	0.01	0.07	-0.12	0.01	-0.07	-0.10
C4	-0.20	-2.52	-0.16	-0.20	2.52	-0.55
C5	0.01	0.10	-0.22	0.01	-0.10	-0.19
C6	-0.19	15.05	-0.25	-0.19	-15.05	-0.64
C7	0.01	0.07	-0.14	0.01	-0.07	-0.12
C8	0.01	10.75	-0.13	0.01	-10.75	-0.12
Barra: 104						
C1	-0.00	-0.01	-0.02	-0.00	0.01	-0.02
C2	-0.00	-0.48	-0.02	-0.00	0.48	-0.03
C3	-0.01	-0.07	-0.10	-0.01	0.07	-0.12
C4	-0.13	-2.39	-0.20	-0.13	2.39	-0.46
C5	-0.01	-0.10	-0.19	-0.01	0.10	-0.22
C6	-0.14	14.58	-0.28	-0.14	-14.58	-0.56
C7	-0.01	-0.07	-0.12	-0.01	0.07	-0.14
C8	-0.01	10.61	-0.12	-0.01	-10.61	-0.14
Barra: 105						
C1	-0.02	0.06	-0.08	-0.02	-0.06	-0.12
C2	-0.02	-0.41	-0.08	-0.02	0.41	-0.12
C3	-0.12	0.30	-0.38	-0.12	-0.30	-0.61
C4	-0.14	-2.27	-0.41	-0.14	2.27	-0.70
C5	-0.19	0.51	-0.67	-0.19	-0.51	-1.04
C6	-1.36	15.27	-0.46	-1.36	-15.27	-3.19
C7	-0.13	0.32	-0.42	-0.13	-0.32	-0.67
C8	-0.13	11.00	-0.41	-0.13	-11.00	-0.67
Barra: 106						
C1	0.02	-0.06	-0.12	0.02	0.06	-0.08
C2	0.02	-0.53	-0.12	0.02	0.53	-0.08
C3	0.12	-0.30	-0.61	0.12	0.30	-0.38
C4	0.09	-2.81	-0.64	0.09	2.81	-0.47
C5	0.19	-0.51	-1.04	0.19	0.51	-0.67
C6	-0.19	13.33	-1.42	-0.19	-13.33	-1.80
C7	0.12	-0.32	-0.67	0.12	0.32	-0.42
C8	0.12	10.35	-0.66	0.12	-10.35	-0.42

	NUDO DORSAL (i)			NUDO FRONTAL (j)		
	Cortante	Torsor	Flector	Cortante	Torsor	Flector
Barra: 107						
C1	-0.30	0.21	-0.05	-0.30	-0.21	-0.65
C2	-0.30	-0.26	-0.05	-0.30	0.26	-0.65
C3	-1.51	1.06	-0.26	-1.51	-1.06	-3.29
C4	-1.51	-1.49	-0.28	-1.51	1.49	-3.30
C5	-2.58	1.85	-0.48	-2.58	-1.85	-5.64
C6	-5.42	14.10	-1.03	-5.42	-14.10	-11.87
C7	-1.64	1.15	-0.29	-1.64	-1.15	-3.56
C8	-1.66	11.79	-0.26	-1.66	-11.79	-3.58
Barra: 108						
C1	0.30	-0.21	-0.65	0.30	0.21	-0.05
C2	0.30	-0.68	-0.65	0.30	0.68	-0.05
C3	1.51	-1.06	-3.29	1.51	1.06	-0.26
C4	1.51	-3.60	-3.30	1.51	3.60	-0.28
C5	2.58	-1.85	-5.64	2.58	1.85	-0.48
C6	1.57	8.96	-6.37	1.57	-8.96	-3.23
C7	1.64	-1.15	-3.56	1.64	1.15	-0.29
C8	1.61	9.50	-3.54	1.61	-9.50	-0.31
Barra: 109						
C1	-1.14	0.03	0.32	-1.14	-0.03	-1.97
C2	-1.15	-0.50	0.33	-1.15	0.50	-1.98
C3	-5.78	0.13	1.61	-5.78	-0.13	-9.95
C4	-5.84	-2.73	1.66	-5.84	2.73	-10.01
C5	-10.09	0.22	2.82	-10.09	-0.22	-17.35
C6	-13.92	4.88	0.74	-13.92	-4.88	-27.09
C7	-6.25	0.14	1.74	-6.25	-0.14	-10.76
C8	-6.03	12.10	1.51	-6.03	-12.10	-10.55
Barra: 110						
C1	1.14	-0.03	-1.97	1.14	0.03	0.32
C2	1.13	-0.55	-1.96	1.13	0.55	0.31
C3	5.78	-0.13	-9.95	5.78	0.13	1.61
C4	5.73	-2.99	-9.91	5.73	2.99	1.55
C5	10.09	-0.22	-17.35	10.09	0.22	2.82
C6	8.65	4.35	-18.51	8.65	-4.35	-1.21
C7	6.25	-0.14	-10.76	6.25	0.14	1.74
C8	6.47	11.82	-10.98	6.47	-11.82	1.96
Barra: 111						
C1	-0.25	-0.21	-0.08	-0.25	0.21	-0.58
C2	-0.25	-0.79	-0.09	-0.25	0.79	-0.58
C3	-1.25	-1.05	-0.43	-1.25	1.05	-2.92
C4	-1.24	-4.22	-0.43	-1.24	4.22	-2.92
C5	-2.11	-1.82	-0.76	-2.11	1.82	-4.99
C6	-5.20	-7.96	-0.94	-5.20	7.96	-11.34
C7	-1.35	-1.14	-0.46	-1.35	1.14	-3.16
C8	-1.38	12.11	-0.45	-1.38	-12.11	-3.21
Barra: 112						
C1	0.25	0.21	-0.58	0.25	-0.21	-0.08
C2	0.25	-0.38	-0.58	0.25	0.38	-0.08
C3	1.25	1.05	-2.92	1.25	-1.05	-0.43
C4	1.25	-2.12	-2.93	1.25	2.12	-0.42
C5	2.11	1.82	-4.99	2.11	-1.82	-0.76
C6	1.05	-2.63	-5.76	1.05	2.63	-3.67
C7	1.35	1.14	-3.16	1.35	-1.14	-0.46
C8	1.32	14.36	-3.15	1.32	-14.36	-0.51

	NUDO DORSAL (i)			NUDO FRONTAL (j)		
	Cortante	Torsor	Flector	Cortante	Torsor	Flector
Barra: 113						
C1	0.00	-0.03	-0.06	0.00	0.03	-0.06
C2	0.00	-0.61	-0.06	0.00	0.61	-0.06
C3	0.01	-0.15	-0.30	0.01	0.15	-0.28
C4	0.01	-3.32	-0.30	0.01	3.32	-0.28
C5	0.02	-0.26	-0.52	0.02	0.26	-0.48
C6	-0.65	-8.25	-0.49	-0.65	8.25	-1.78
C7	0.01	-0.17	-0.32	0.01	0.17	-0.30
C8	-0.06	13.07	-0.37	-0.06	-13.07	-0.48
Barra: 114						
C1	-0.00	0.03	-0.06	-0.00	-0.03	-0.06
C2	-0.00	-0.55	-0.06	-0.00	0.55	-0.06
C3	-0.01	0.15	-0.28	-0.01	-0.15	-0.30
C4	-0.01	-3.01	-0.29	-0.01	3.01	-0.30
C5	-0.02	0.26	-0.48	-0.02	-0.26	-0.52
C6	-0.33	-7.13	-0.69	-0.33	7.13	-1.34
C7	-0.01	0.17	-0.30	-0.01	-0.17	-0.32
C8	-0.07	13.31	-0.34	-0.07	-13.31	-0.48
Barra: 115						
C1	0.00	-0.00	-0.01	0.00	0.00	-0.01
C2	0.00	-0.59	-0.01	0.00	0.59	-0.01
C3	0.01	-0.02	-0.05	0.01	0.02	-0.04
C4	0.01	-3.18	-0.05	0.01	3.18	-0.04
C5	0.01	-0.03	-0.09	0.01	0.03	-0.07
C6	-0.05	-8.03	-0.14	-0.05	8.03	-0.24
C7	0.01	-0.03	-0.04	0.01	0.03	-0.02
C8	-0.65	13.20	-0.01	-0.65	-13.20	-1.32
Barra: 116						
C1	-0.00	0.00	-0.01	-0.00	-0.00	-0.01
C2	-0.00	-0.58	-0.01	-0.00	0.58	-0.01
C3	-0.01	0.02	-0.04	-0.01	-0.02	-0.05
C4	-0.01	-3.14	-0.04	-0.01	3.14	-0.05
C5	-0.01	0.03	-0.07	-0.01	-0.03	-0.09
C6	-0.07	-7.86	-0.11	-0.07	7.86	-0.25
C7	-0.01	0.03	-0.02	-0.01	-0.03	-0.04
C8	-0.32	12.67	-0.22	-0.32	-12.67	-0.86
Barra: 117						
C1	-0.00	-0.00	-0.00	-0.00	0.00	-0.00
C2	0.00	-0.58	-0.00	0.00	0.58	-0.00
C3	0.00	-0.00	-0.01	0.00	0.00	-0.01
C4	-0.00	-3.17	-0.01	-0.00	3.17	-0.01
C5	-0.00	-0.01	-0.01	-0.00	0.01	-0.01
C6	-0.01	-7.98	-0.03	-0.01	7.98	-0.04
C7	0.11	-0.06	-0.01	0.11	0.06	0.21
C8	-2.99	11.31	-0.16	-2.99	-11.31	-6.14
Barra: 118						
C1	0.00	0.00	-0.00	0.00	-0.00	-0.00
C2	0.00	-0.58	-0.00	0.00	0.58	-0.00
C3	0.00	0.00	-0.01	0.00	-0.00	-0.01
C4	0.00	-3.16	-0.01	0.00	3.16	-0.01
C5	0.00	0.01	-0.01	0.00	-0.01	-0.01
C6	-0.01	-7.95	-0.03	-0.01	7.95	-0.04
C7	-0.11	0.06	0.21	-0.11	-0.06	-0.01
C8	-1.20	9.74	-0.53	-1.20	-9.74	-2.93

	NUDO DORSAL (i)			NUDO FRONTAL (j)		
	Cortante	Torsor	Flector	Cortante	Torsor	Flector
Barra: 119						
C1	-0.00	-0.00	-0.00	-0.00	0.00	-0.00
C2	0.00	-0.58	-0.00	0.00	0.58	-0.00
C3	-0.00	-0.00	-0.00	-0.00	0.00	-0.00
C4	-0.00	-3.16	-0.00	-0.00	3.16	-0.00
C5	-0.00	-0.00	-0.00	-0.00	0.00	-0.00
C6	-0.00	-7.97	-0.01	-0.00	7.97	-0.01
C7	0.24	0.00	-0.05	0.24	-0.00	0.43
C8	-4.25	-0.00	-2.16	-4.25	0.00	-10.66
Barra: 120						
C1	0.00	0.00	-0.00	0.00	-0.00	-0.00
C2	0.00	-0.58	-0.00	0.00	0.58	-0.00
C3	0.00	0.00	-0.00	0.00	-0.00	-0.00
C4	0.00	-3.16	-0.00	0.00	3.16	-0.00
C5	0.00	0.00	-0.00	0.00	-0.00	-0.00
C6	-0.00	-7.96	-0.01	-0.00	7.96	-0.01
C7	-0.24	0.00	0.43	-0.24	-0.00	-0.05
C8	-1.94	-0.00	-0.81	-1.94	0.00	-4.70
Barra: 121						
C1	-0.00	-0.00	0.00	-0.00	0.00	0.00
C2	0.00	-0.58	0.00	0.00	0.58	0.00
C3	0.00	-0.00	0.00	0.00	0.00	0.00
C4	0.00	-3.16	0.00	0.00	3.16	0.00
C5	-0.00	-0.00	-0.00	-0.00	0.00	-0.00
C6	-0.00	-7.97	-0.00	-0.00	7.97	-0.00
C7	0.11	0.06	-0.01	0.11	-0.06	0.21
C8	-2.99	-11.31	-0.17	-2.99	11.31	-6.14
Barra: 122						
C1	0.00	0.00	0.00	0.00	-0.00	0.00
C2	0.00	-0.58	0.00	0.00	0.58	0.00
C3	-0.00	0.00	0.00	-0.00	-0.00	0.00
C4	0.00	-3.16	0.00	0.00	3.16	0.00
C5	0.00	0.00	-0.00	0.00	-0.00	-0.00
C6	0.00	-7.97	-0.00	0.00	7.97	-0.00
C7	-0.11	-0.06	0.21	-0.11	0.06	-0.01
C8	-1.20	-9.74	-0.53	-1.20	9.74	-2.94
Barra: 123						
C1	-0.00	-0.00	0.00	-0.00	0.00	0.00
C2	-0.00	-0.58	0.00	-0.00	0.58	0.00
C3	-0.00	-0.00	0.01	-0.00	0.00	0.01
C4	-0.00	-3.17	0.01	-0.00	3.17	0.01
C5	0.00	0.00	-0.00	0.00	-0.00	-0.00
C6	-0.00	-7.97	-0.00	-0.00	7.97	-0.00
C7	0.01	0.03	-0.04	0.01	-0.03	-0.02
C8	-0.65	-13.20	-0.01	-0.65	13.20	-1.32
Barra: 124						
C1	0.00	0.00	0.00	0.00	-0.00	0.00
C2	0.00	-0.58	0.00	0.00	0.58	0.00
C3	0.00	0.00	0.01	0.00	-0.00	0.01
C4	0.00	-3.16	0.01	0.00	3.16	0.01
C5	-0.00	-0.00	-0.00	-0.00	0.00	-0.00
C6	-0.00	-7.97	-0.00	-0.00	7.97	-0.00
C7	-0.01	-0.03	-0.02	-0.01	0.03	-0.04
C8	-0.32	-12.67	-0.22	-0.32	12.67	-0.86

	NUDO DORSAL (i)			NUDO FRONTAL (j)		
	Cortante	Torsor	Flector	Cortante	Torsor	Flector
Barra: 125						
C1	-0.00	-0.01	0.01	-0.00	0.01	0.01
C2	-0.00	-0.59	0.01	-0.00	0.59	0.01
C3	-0.00	-0.03	0.05	-0.00	0.03	0.05
C4	-0.00	-3.19	0.06	-0.00	3.19	0.05
C5	0.00	0.00	-0.00	0.00	-0.00	-0.00
C6	-0.00	-7.97	0.00	-0.00	7.97	-0.00
C7	0.01	0.17	-0.32	0.01	-0.17	-0.30
C8	-0.06	-13.07	-0.36	-0.06	13.07	-0.48
Barra: 126						
C1	0.00	0.01	0.01	0.00	-0.01	0.01
C2	0.00	-0.58	0.01	0.00	0.58	0.01
C3	0.00	0.03	0.05	0.00	-0.03	0.05
C4	0.00	-3.13	0.05	0.00	3.13	0.05
C5	-0.00	-0.00	-0.00	-0.00	0.00	-0.00
C6	-0.00	-7.97	0.00	-0.00	7.97	-0.01
C7	-0.01	-0.17	-0.30	-0.01	0.17	-0.32
C8	-0.07	-13.31	-0.34	-0.07	13.31	-0.48
Barra: 127						
C1	0.05	-0.04	0.02	0.05	0.04	0.12
C2	0.05	-0.63	0.02	0.05	0.63	0.12
C3	0.23	-0.19	0.08	0.23	0.19	0.53
C4	0.22	-3.36	0.08	0.22	3.36	0.53
C5	-0.01	0.01	-0.00	-0.01	-0.01	-0.02
C6	-0.02	-7.98	0.01	-0.02	7.98	-0.03
C7	-1.35	1.14	-0.46	-1.35	-1.14	-3.16
C8	-1.38	-12.11	-0.45	-1.38	12.11	-3.21
Barra: 128						
C1	-0.05	0.04	0.12	-0.05	-0.04	0.02
C2	-0.05	-0.54	0.12	-0.05	0.54	0.02
C3	-0.23	0.19	0.53	-0.23	-0.19	0.08
C4	-0.23	-2.98	0.54	-0.23	2.98	0.07
C5	0.01	-0.01	-0.02	0.01	0.01	-0.00
C6	-0.01	-7.99	-0.01	-0.01	7.99	-0.02
C7	1.35	-1.14	-3.16	1.35	1.14	-0.46
C8	1.32	-14.36	-3.15	1.32	14.36	-0.51
Barra: 129						
C1	0.23	0.01	-0.07	0.23	-0.01	0.40
C2	0.24	-0.52	-0.08	0.24	0.52	0.41
C3	1.05	0.02	-0.29	1.05	-0.02	1.81
C4	1.10	-2.84	-0.35	1.10	2.84	1.86
C5	-0.04	-0.00	0.01	-0.04	0.00	-0.06
C6	0.09	-7.21	-0.13	0.09	7.21	0.06
C7	-6.25	-0.14	1.74	-6.25	0.14	-10.76
C8	-6.03	-12.10	1.51	-6.03	12.10	-10.55
Barra: 130						
C1	-0.23	-0.01	0.40	-0.23	0.01	-0.07
C2	-0.22	-0.53	0.39	-0.22	0.53	-0.06
C3	-1.05	-0.02	1.81	-1.05	0.02	-0.29
C4	-1.00	-2.89	1.76	-1.00	2.89	-0.24
C5	0.04	0.00	-0.06	0.04	-0.00	0.01
C6	0.17	-7.21	-0.20	0.17	7.21	0.15
C7	6.25	0.14	-10.76	6.25	-0.14	1.74
C8	6.47	-11.82	-10.98	6.47	11.82	1.96

	NUDO DORSAL (i)			NUDO FRONTAL (j)		
	Cortante	Torsor	Flector	Cortante	Torsor	Flector
Barra: 131						
C1	0.06	0.04	0.01	0.06	-0.04	0.13
C2	0.06	-0.43	0.01	0.06	0.43	0.13
C3	0.27	0.19	0.05	0.27	-0.19	0.60
C4	0.27	-2.35	0.05	0.27	2.35	0.59
C5	-0.01	-0.01	-0.00	-0.01	0.01	-0.02
C6	-0.02	-6.43	0.01	-0.02	6.43	-0.04
C7	-1.64	-1.15	-0.29	-1.64	1.15	-3.56
C8	-1.66	-11.79	-0.26	-1.66	11.79	-3.58
Barra: 132						
C1	-0.06	-0.04	0.13	-0.06	0.04	0.01
C2	-0.06	-0.51	0.13	-0.06	0.51	0.01
C3	-0.27	-0.19	0.60	-0.27	0.19	0.05
C4	-0.28	-2.74	0.60	-0.28	2.74	0.04
C5	0.01	0.01	-0.02	0.01	-0.01	-0.00
C6	-0.00	-6.41	-0.01	-0.00	6.41	-0.01
C7	1.64	1.15	-3.56	1.64	-1.15	-0.29
C8	1.61	-9.50	-3.54	1.61	9.50	-0.31
Barra: 133						
C1	0.00	0.01	0.02	0.00	-0.01	0.03
C2	0.00	-0.46	0.02	0.00	0.46	0.02
C3	0.02	0.05	0.07	0.02	-0.05	0.11
C4	0.02	-2.50	0.07	0.02	2.50	0.11
C5	-0.00	-0.00	-0.00	-0.00	0.00	-0.00
C6	-0.01	-6.44	0.00	-0.01	6.44	-0.01
C7	-0.13	-0.32	-0.42	-0.13	0.32	-0.67
C8	-0.13	-11.00	-0.41	-0.13	11.00	-0.67
Barra: 134						
C1	-0.00	-0.01	0.03	-0.00	0.01	0.02
C2	-0.01	-0.48	0.03	-0.01	0.48	0.02
C3	-0.02	-0.05	0.11	-0.02	0.05	0.07
C4	-0.02	-2.61	0.11	-0.02	2.61	0.07
C5	0.00	0.00	-0.00	0.00	-0.00	-0.00
C6	-0.00	-6.44	0.00	-0.00	6.44	-0.01
C7	0.13	0.32	-0.67	0.13	-0.32	-0.42
C8	0.12	-10.35	-0.66	0.12	10.35	-0.42
Barra: 135						
C1	-0.00	0.00	0.01	-0.00	-0.00	0.00
C2	-0.00	-0.47	0.01	-0.00	0.47	0.00
C3	-0.00	0.01	0.02	-0.00	-0.01	0.02
C4	-0.00	-2.55	0.02	-0.00	2.55	0.02
C5	0.00	-0.00	-0.00	0.00	0.00	-0.00
C6	-0.00	-6.44	0.00	-0.00	6.44	-0.00
C7	0.01	-0.07	-0.14	0.01	0.07	-0.12
C8	0.01	-10.75	-0.13	0.01	10.75	-0.12
Barra: 136						
C1	0.00	-0.00	0.00	0.00	0.00	0.01
C2	0.00	-0.47	0.00	0.00	0.47	0.01
C3	0.00	-0.01	0.02	0.00	0.01	0.02
C4	0.00	-2.57	0.02	0.00	2.57	0.02
C5	-0.00	0.00	-0.00	-0.00	-0.00	-0.00
C6	-0.00	-6.44	0.00	-0.00	6.44	-0.00
C7	-0.01	0.07	-0.12	-0.01	-0.07	-0.14
C8	-0.01	-10.61	-0.12	-0.01	10.61	-0.14

	NUDO DORSAL (i)			NUDO FRONTAL (j)		
	Cortante	Torsor	Flector	Cortante	Torsor	Flector
Barra: 137						
C1	-0.00	0.00	0.00	-0.00	-0.00	0.00
C2	-0.00	-0.47	0.00	-0.00	0.47	0.00
C3	-0.00	0.00	0.01	-0.00	-0.00	0.00
C4	-0.00	-2.55	0.01	-0.00	2.55	0.00
C5	0.00	-0.00	-0.00	0.00	0.00	-0.00
C6	-0.00	-6.44	0.00	-0.00	6.44	-0.00
C7	0.00	-0.01	-0.03	0.00	0.01	-0.03
C8	0.00	-10.69	-0.03	0.00	10.69	-0.03
Barra: 138						
C1	0.00	-0.00	0.00	0.00	0.00	0.00
C2	0.00	-0.47	0.00	0.00	0.47	0.00
C3	0.00	-0.00	0.00	0.00	0.00	0.01
C4	0.00	-2.56	0.00	0.00	2.56	0.01
C5	-0.00	0.00	-0.00	-0.00	-0.00	-0.00
C6	-0.00	-6.44	0.00	-0.00	6.44	-0.00
C7	-0.00	0.01	-0.03	-0.00	-0.01	-0.03
C8	-0.00	-10.67	-0.03	-0.00	10.67	-0.03
Barra: 139						
C1	0.00	0.00	0.00	0.00	-0.00	0.00
C2	0.00	-0.47	0.00	0.00	0.47	0.00
C3	-0.00	0.00	0.00	-0.00	-0.00	0.00
C4	0.00	-2.56	0.00	0.00	2.56	0.00
C5	0.00	-0.00	-0.00	0.00	0.00	-0.00
C6	-0.00	-6.44	-0.00	-0.00	6.44	-0.00
C7	-0.00	-0.00	-0.01	-0.00	0.00	-0.01
C8	-0.00	-10.68	-0.01	-0.00	10.68	-0.01
Barra: 140						
C1	0.00	-0.00	0.00	0.00	0.00	0.00
C2	0.00	-0.47	0.00	0.00	0.47	0.00
C3	0.00	-0.00	0.00	0.00	0.00	0.00
C4	0.00	-2.56	0.00	0.00	2.56	0.00
C5	0.00	0.00	-0.00	0.00	-0.00	-0.00
C6	-0.00	-6.44	-0.00	-0.00	6.44	-0.00
C7	0.00	0.00	-0.01	0.00	-0.00	-0.01
C8	-0.00	-10.68	-0.01	-0.00	10.68	-0.01
Barra: 141						
C1	0.00	-0.00	0.00	0.00	0.00	0.00
C2	0.00	-0.47	0.00	0.00	0.47	0.00
C3	-0.00	-0.00	0.00	-0.00	0.00	0.00
C4	0.00	-2.56	0.00	0.00	2.56	0.00
C5	0.00	0.00	-0.00	0.00	-0.00	-0.00
C6	0.00	-6.44	-0.00	0.00	6.44	-0.00
C7	0.00	0.00	-0.01	0.00	-0.00	-0.01
C8	0.00	-10.68	-0.01	0.00	10.68	-0.01
Barra: 142						
C1	0.00	0.00	0.00	0.00	-0.00	0.00
C2	0.00	-0.47	0.00	0.00	0.47	0.00
C3	0.00	0.00	0.00	0.00	-0.00	0.00
C4	0.00	-2.56	0.00	0.00	2.56	0.00
C5	-0.00	-0.00	-0.00	-0.00	0.00	-0.00
C6	0.00	-6.44	-0.00	0.00	6.44	0.00
C7	-0.00	-0.00	-0.01	-0.00	0.00	-0.01
C8	-0.00	-10.68	-0.01	-0.00	10.68	-0.01

	NUDO DORSAL (i)			NUDO FRONTAL (j)		
	Cortante	Torsor	Flector	Cortante	Torsor	Flector
Barra: 143						
C1	-0.00	-0.00	0.00	-0.00	0.00	0.00
C2	0.00	-0.47	0.00	0.00	0.47	0.00
C3	-0.00	-0.00	0.01	-0.00	0.00	0.01
C4	0.00	-2.56	0.01	0.00	2.56	0.01
C5	0.00	0.00	-0.00	0.00	-0.00	-0.00
C6	0.00	-6.44	-0.00	0.00	6.44	0.00
C7	0.00	0.01	-0.03	0.00	-0.01	-0.03
C8	0.01	-10.67	-0.04	0.01	10.67	-0.02
Barra: 144						
C1	0.00	0.00	0.00	0.00	-0.00	0.00
C2	0.00	-0.47	0.00	0.00	0.47	0.00
C3	0.00	0.00	0.01	0.00	-0.00	0.01
C4	0.00	-2.55	0.00	0.00	2.55	0.01
C5	-0.00	-0.00	-0.00	-0.00	0.00	-0.00
C6	0.00	-6.44	-0.00	0.00	6.44	0.00
C7	-0.00	-0.01	-0.03	-0.00	0.01	-0.03
C8	0.00	-10.69	-0.03	0.00	10.69	-0.03
Barra: 145						
C1	0.00	-0.00	0.01	0.00	0.00	0.01
C2	0.00	-0.47	0.00	0.00	0.47	0.01
C3	0.00	-0.02	0.02	0.00	0.02	0.03
C4	0.02	-2.57	0.01	0.02	2.57	0.04
C5	-0.00	0.00	-0.00	-0.00	-0.00	-0.00
C6	0.04	-6.44	-0.04	0.04	6.44	0.03
C7	-0.02	0.07	-0.11	-0.02	-0.07	-0.14
C8	0.04	-10.60	-0.17	0.04	10.60	-0.09
Barra: 146						
C1	-0.00	0.00	0.01	-0.00	-0.00	0.01
C2	0.00	-0.47	0.00	0.00	0.47	0.01
C3	-0.00	0.02	0.03	-0.00	-0.02	0.02
C4	0.01	-2.54	0.02	0.01	2.54	0.04
C5	0.00	-0.00	-0.00	0.00	0.00	-0.00
C6	0.04	-6.44	-0.03	0.04	6.44	0.04
C7	0.02	-0.07	-0.14	0.02	0.07	-0.11
C8	0.07	-10.75	-0.19	0.07	10.75	-0.04
Barra: 147						
C1	0.01	-0.01	0.01	0.01	0.01	0.04
C2	0.04	-0.48	-0.02	0.04	0.48	0.06
C3	0.07	-0.06	0.03	0.07	0.06	0.17
C4	0.22	-2.59	-0.13	0.22	2.59	0.31
C5	-0.00	0.00	-0.00	-0.00	-0.00	-0.01
C6	0.39	-6.38	-0.42	0.39	6.38	0.36
C7	-0.31	0.29	-0.16	-0.31	-0.29	-0.78
C8	0.35	-10.29	-0.85	0.35	10.29	-0.16
Barra: 148						
C1	-0.01	0.01	0.04	-0.01	-0.01	0.01
C2	0.01	-0.45	0.01	0.01	0.45	0.04
C3	-0.07	0.06	0.17	-0.07	-0.06	0.03
C4	0.09	-2.47	0.02	0.09	2.47	0.20
C5	0.00	-0.00	-0.01	0.00	0.00	-0.00
C6	0.40	-6.38	-0.38	0.40	6.38	0.42
C7	0.31	-0.29	-0.78	0.31	0.29	-0.16
C8	0.96	-10.86	-1.39	0.96	10.86	0.54

	NUDO DORSAL (i)			NUDO FRONTAL (j)		
	Cortante	Torsor	Flector	Cortante	Torsor	Flector
Barra: 149						
C1	10.55	2.50	-2.68	10.55	-2.50	18.41
C2	15.34	9.57	-12.98	15.34	-9.57	17.70
C3	5.96	1.43	-1.53	5.96	-1.43	10.38
C4	15.07	13.80	-10.94	15.07	-13.80	19.20
C5	0.03	0.01	-0.01	0.03	-0.01	0.06
C6	7.28	9.82	-7.44	7.28	-9.82	7.12
C7	-1.19	-0.29	0.30	-1.19	0.29	-2.07
C8	4.01	6.74	-5.02	4.01	-6.74	2.99
Barra: 150						
C1	-10.55	-2.50	18.41	-10.55	2.50	-2.68
C2	-3.20	4.95	8.70	-3.20	-4.95	2.30
C3	-5.96	-1.43	10.38	-5.96	1.43	-1.53
C4	3.14	10.89	1.46	3.14	-10.89	7.74
C5	-0.03	-0.01	0.06	-0.03	0.01	-0.01
C6	7.22	9.81	-7.01	7.22	-9.81	7.43
C7	1.19	0.29	-2.07	1.19	-0.29	0.30
C8	6.38	7.31	-7.13	6.38	-7.31	5.63
Barra: 151						
C1	0.06	-0.01	-0.01	0.06	0.01	0.10
C2	0.29	-0.32	-0.25	0.29	0.32	0.32
C3	0.25	-0.06	-0.06	0.25	0.06	0.44
C4	1.50	-1.74	-1.34	1.50	1.74	1.65
C5	-0.01	0.00	0.00	-0.01	-0.00	-0.02
C6	3.12	-4.23	-3.21	3.12	4.23	3.04
C7	-1.19	0.29	0.30	-1.19	-0.29	-2.07
C8	4.01	-6.74	-5.02	4.01	6.74	2.99
Barra: 152						
C1	-0.06	0.01	0.10	-0.06	-0.01	-0.01
C2	0.17	-0.30	-0.13	0.17	0.30	0.22
C3	-0.25	0.06	0.44	-0.25	-0.06	-0.06
C4	0.99	-1.62	-0.77	0.99	1.62	1.21
C5	0.01	-0.00	-0.02	0.01	0.00	0.00
C6	3.14	-4.24	-3.07	3.14	4.24	3.21
C7	1.19	-0.29	-2.07	1.19	0.29	0.30
C8	6.38	-7.31	-7.13	6.38	7.31	5.63

COMBINACIONES DE HIPOTESIS DE CARGAS

COMBINACION: C1 = +1.00*(H:12)
COMBINACION: C2 = +1.00*(H:13)
COMBINACION: C3 = +1.00*(H:14)
COMBINACION: C4 = +1.00*(H:15)
COMBINACION: C5 = +1.00*(H:16)
COMBINACION: C6 = +1.00*(H:17)
COMBINACION: C7 = +1.00*(H:18)
COMBINACION: C8 = +1.00*(H:19)

REACCIONES

	Reacción Z	Torsor	Flector
Nudo: 1			
C1	27.22	0.00	0.00
C2	49.22	0.00	0.00
C3	15.63	0.00	0.00
C4	35.44	0.00	0.00
C5	0.08	0.00	0.00
C6	15.80	0.00	0.00
C7	-3.11	0.00	0.00
C8	8.14	0.00	0.00
Nudo: 3			
C1	27.22	0.00	0.00
C2	5.22	0.00	0.00
C3	15.63	0.00	0.00
C4	-4.18	0.00	0.00
C5	0.08	0.00	0.00
C6	-15.63	0.00	0.00
C7	-3.11	0.00	0.00
C8	-14.36	0.00	0.00
Nudo: 32			
C1	6.63	0.00	0.00
C2	6.62	0.00	0.00
C3	33.50	0.00	0.00
C4	33.50	0.00	0.00
C5	59.67	0.00	0.00
C6	59.66	0.00	0.00
C7	36.22	0.00	0.00
C8	36.22	0.00	0.00
Nudo: 62			
C1	-1.36	0.00	0.00
C2	-1.36	0.00	0.00
C3	-6.09	0.00	0.00
C4	-6.09	0.00	0.00
C5	0.22	0.00	0.00
C6	0.22	0.00	0.00
C7	36.22	0.00	0.00
C8	36.22	0.00	0.00
Nudo: 91			
C1	0.15	0.00	0.00
C2	0.64	0.00	0.00
C3	0.66	0.00	0.00
C4	3.36	0.00	0.00
C5	-0.02	0.00	0.00
C6	6.76	0.00	0.00
C7	-3.11	0.00	0.00
C8	8.14	0.00	0.00
Nudo: 93			
C1	0.15	0.00	0.00
C2	-0.35	0.00	0.00
C3	0.66	0.00	0.00
C4	-2.03	0.00	0.00
C5	-0.02	0.00	0.00
C6	-6.81	0.00	0.00
C7	-3.11	0.00	0.00
C8	-14.36	0.00	0.00
Suman las Reacciones:			
C1	60.00	0.00	0.00
C2	60.00	0.00	0.00
C3	60.00	0.00	0.00
C4	60.00	0.00	0.00
C5	60.00	0.00	0.00
C6	60.00	0.00	0.00
C7	60.00	0.00	0.00
C8	60.00	0.00	0.00

ESTRUCTURA...:GIF2

COEFICIENTES DE EXCENTRICIDAD DEL CARRO DE LA INSTRUCCION

PARA ESFUERZOS CORTANTES

Banda	Coef(+)	Coef(-)
1	2.42	1.00
2	1.57	1.00
3	1.64	1.00
4	1.81	1.00
5	1.00	1.00
6	2.85	1.00
7	2.85	1.00
8	2.87	1.00
9	1.00	1.02
10	1.00	1.23
11	1.18	1.00
12	1.00	1.00
13	1.00	2.79
14	1.00	2.81
15	2.15	2.81
16	1.00	1.35
17	1.00	1.00
18	1.00	1.00
19	1.00	1.00
20	1.00	1.18
21	0.85	1.00
22	1.95	1.00
23	2.01	1.00
24	2.01	1.00
25	2.01	1.00
26	2.01	1.00
27	2.01	1.00
28	2.01	1.00
29	2.02	1.00
30	2.22	1.00
31	2.22	1.00
	õ 51.65	õ 37.18
Valores Medios	1.67	1.20

ESTRUCTURA...:GIF2

COEFICIENTES DE EXCENTRICIDAD DEL CARRO DE LA INSTRUCCION

PARA ESFUERZOS FLECTORES

Banda	Coef(+)	Coef(-)
1	2.27	1.00
2	0.99	1.72
3	1.01	1.00
4	1.01	1.00
5	1.00	1.00
6	1.00	1.00
7	1.00	1.00
8	1.01	1.00
9	1.08	0.98
10	1.00	0.95
11	1.00	1.07
12	2.17	0.99
13	1.01	1.00
14	1.01	1.00
15	1.02	1.00
16	1.00	1.00
17	1.00	1.00
18	1.00	1.00
19	1.03	2.84
20	0.93	0.88
21	1.06	1.07
22	0.99	0.99
23	1.00	1.00
24	1.00	1.00
25	1.00	1.00
26	1.00	1.00
27	1.00	1.00
28	1.00	1.00
29	1.00	0.98
30	1.00	1.78
31	1.00	2.66
	õ 33.60	õ 35.90
Valores Medios	1.08	1.16

2.- Flexión Transversal, Armadura de WOOD

FICHERO:GIF2

ARMADURA DE WOOD PARA MAXIMOS DE FLEXION Y TORSION

Hormigón Fck(Kg/cm²) 350
Coeficiente de seguridad (γc)... 1.50

Acero Fyk (Kg/cm²) 5100
Coeficiente de seguridad (γs)... 1.15

Recubrimento de armaduras (cm).. 3

Armado Transversal Perpendicular a las barras longitudinales (cm²/m)

Banda	Cara Superior	Cara Inferior
1	16.14 5 ϕ 20	20.86 5 ϕ 25
2	5.80 5 ϕ 12	6.46 6 ϕ 12
3	3.78 5 ϕ 10	5.67 5 ϕ 12
4	5.81 5 ϕ 12	4.30 6 ϕ 10
5	4.17 6 ϕ 10	3.83 5 ϕ 10
6	3.16 4 ϕ 10	3.62 5 ϕ 10
7	3.14 4 ϕ 10	3.34 5 ϕ 10
8	4.37 6 ϕ 10	2.93 4 ϕ 10
9	6.66 6 ϕ 12	2.62 4 ϕ 10
10	13.52 5 ϕ 20	4.06 6 ϕ 10
11	23.75 5 ϕ 25	4.16 6 ϕ 10
12	10.13 5 ϕ 16	2.99 4 ϕ 10
13	3.85 5 ϕ 10	1.50 2 ϕ 10
14	3.69 5 ϕ 10	1.71 3 ϕ 10

Armadura Transversal (cm²/m)

Banda	Cara Superior	Cara Inferior
15	3.85 5 ϕ 10	1.39 2 ϕ 10
16	3.34 5 ϕ 10	0.97 2 ϕ 10
17	3.85 5 ϕ 10	1.59 2 ϕ 10
18	3.85 5 ϕ 10	1.88 3 ϕ 10
19	4.94 5 ϕ 12	1.75 3 ϕ 10
20	9.44 5 ϕ 16	3.19 4 ϕ 10
21	22.32 5 ϕ 25	6.44 6 ϕ 12
22	12.06 6 ϕ 16	3.03 4 ϕ 10
23	5.75 5 ϕ 12	2.19 3 ϕ 10
24	4.53 6 ϕ 10	2.44 3 ϕ 10
25	4.26 6 ϕ 10	2.79 4 ϕ 10
26	4.32 6 ϕ 10	3.05 4 ϕ 10
27	4.46 6 ϕ 10	3.25 4 ϕ 10
28	4.57 6 ϕ 10	3.52 5 ϕ 10
29	4.69 6 ϕ 10	4.28 6 ϕ 10
30	5.89 6 ϕ 12	5.05 5 ϕ 12
31	13.75 5 ϕ 20	16.15 5 ϕ 20

3.- Armado de Riostras de Pilas y Estribos

ESFUERZOS EN RIOSTRAS

ENVOLVENTE MAYORADA PARA ESFUERZO MAXIMO CORTANTE

		NUDO DORSAL (i)			NUDO FRONTAL (j)		
Barra		<CORTANTE>	Torsor	Flector	<CORTANTE>	Torsor	Flector
109	<MAX>	-59.24	1.29	13.25	-59.24	-1.29	-105.23
	<MIN>	-140.17	9.99	26.42	-140.17	-9.99	-253.93
110	<MAX>	134.43	-3.00	-239.31	134.43	3.00	29.54
	<MIN>	59.24	-1.29	-105.23	59.24	1.29	13.25
129	<MAX>	-57.59	-5.55	12.73	-57.59	5.55	-102.44
	<MIN>	-128.68	-2.88	27.92	-128.68	2.88	-229.44
130	<MAX>	129.01	-15.06	-229.76	129.01	15.06	28.25
	<MIN>	57.67	1.26	-102.52	57.67	-1.26	12.81
149	<MAX>	79.84	49.11	-51.68	79.84	-49.11	108.00
	<MIN>	4.90	-18.15	10.39	4.90	18.15	20.19
150	<MAX>	4.15	32.43	12.77	4.15	-32.43	21.07
	<MIN>	-72.65	-38.50	109.06	-72.65	38.50	-36.23
151	<MAX>	62.84	-44.86	-39.74	62.84	44.86	85.94
	<MIN>	4.90	18.15	10.39	4.90	-18.15	20.19
152	<MAX>	2.89	-28.69	12.60	2.89	28.69	18.38
	<MIN>	-57.21	34.84	82.11	-57.21	-34.84	-32.31

ENVOLVENTE MAYORADA PARA ESFUERZO MAXIMO TORSOR

		NUDO DORSAL (i)			NUDO FRONTAL (j)		
Barra		Cortante	<TORSOR>	Flector	Cortante	<TORSOR>	Flector
109	<MAX>	-114.83	43.86	24.99	-81.51	25.85	-144.69
	<MIN>	-81.51	-25.85	18.33	-114.83	-43.86	-204.67
110	<MAX>	82.46	39.47	-146.15	114.38	30.19	25.05
	<MIN>	114.38	-30.19	-203.71	82.46	-39.47	18.78
129	<MAX>	-71.18	21.78	15.40	-114.83	43.86	-204.67
	<MIN>	-114.83	-43.86	24.99	-71.18	-21.78	-126.96
130	<MAX>	115.16	25.91	-204.99	82.46	39.47	18.78
	<MIN>	82.46	-39.47	-146.15	115.16	-25.91	25.33
149	<MAX>	79.43	55.46	-48.61	4.90	18.15	20.19
	<MIN>	4.90	-18.15	10.39	79.43	-55.46	110.25
150	<MAX>	-1.97	34.06	25.48	-72.65	38.50	-36.23
	<MIN>	-72.65	-38.50	109.06	-1.97	-34.06	21.54
151	<MAX>	4.90	18.15	10.39	62.84	44.86	85.94
	<MIN>	62.84	-44.86	-39.74	4.90	-18.15	20.19
152	<MAX>	-57.21	34.84	82.11	2.89	28.69	18.38
	<MIN>	2.89	-28.69	12.60	-57.21	-34.84	-32.31

ENVOLVENTE MAYORADA PARA ESFUERZO MAXIMO FLECTOR

		NUDO DORSAL (i)			NUDO FRONTAL (j)		
Barra		Cortante	Torsor	<FLECTOR>	Cortante	Torsor	<FLECTOR>
109	<MAX>	-134.43	3.00	29.54	-59.24	-1.29	-105.23
	<MIN>	-59.24	1.29	13.25	-140.17	-9.99	-253.93
110	<MAX>	59.24	-1.29	-105.23	134.43	3.00	29.54
	<MIN>	132.28	3.86	-241.06	72.22	-5.23	11.43
129	<MAX>	-128.68	-2.88	27.92	-57.59	5.55	-102.44
	<MIN>	-57.59	-5.55	12.73	-128.68	2.88	-229.44
130	<MAX>	57.67	1.26	-102.52	129.01	15.06	28.25
	<MIN>	129.01	-15.06	-229.76	57.67	-1.26	12.81
149	<MAX>	4.90	-18.15	10.39	79.43	-55.46	110.25
	<MIN>	79.84	49.11	-51.68	4.90	18.15	20.19
150	<MAX>	-72.65	-38.50	109.06	-1.97	-34.06	21.54
	<MIN>	2.89	28.69	12.60	-72.65	38.50	-36.23
151	<MAX>	4.90	18.15	10.39	61.51	41.11	86.00
	<MIN>	62.84	-44.86	-39.74	4.90	-18.15	20.19
152	<MAX>	-57.21	34.84	82.11	2.89	28.69	18.38
	<MIN>	2.89	-28.69	12.60	-57.21	-34.84	-32.31

CALCULO DE RIOSTRAS ESTRUCTURA ...:GIF2

Materiales:

Fck = 350Kg/cm²
Gc = 1.50

Acero = 5100Kg/cm²
Gs = 1.15

recubrimiento = 3 cms

$Fcd = Fck/Gc = 2333.3\ t/m^2$

$$Fcv = 0.5 \times \left|\frac{Fck}{Gc}\right|^{1/2} = 76.4\ t/m^2$$

$fyd = fck/Gs = 4434.8\ Kg/cm^2$

$ftd = fyd \leq 4200\ Kg/cm^2 = 4200.0\ Kg/cm^2$

GEOMETRIA:

Riostra	Barras	Ancho	Canto
10	109 a 110	2.500	1.100
20	129 a 130	2.500	1.100
30	149 a 150	1.000	1.100
31	151 a 152	1.000	1.100

CAPACIDADES MECANICAS:

Uc = Fcd x b x d

Vcu= Fcv x b x d

Vul = 0.3 x Fcd x b x d

Tul = 0.36 x Fcd x Ae x he
0.36 x Fcd ≤ 90 Kg/cm²

Riostra	d	Uc	Vcu	Vul	He	Ae	u	Tul
10	1.070	6242	204.31	1872.50	0.183	2.124	6.467	327.04
20	1.070	6242	204.31	1872.50	0.183	2.124	6.467	327.04
30	1.070	2497	81.72	749.00	0.167	0.778	3.533	108.89
31	1.070	2497	81.72	749.00	0.167	0.778	3.533	108.89

ARMADURA DE CORTANTE:

$$Vsu = Vd - Vcu$$

$$As\alpha = \frac{Vsu}{0.90 \times Fyd} \times \frac{s}{d} \quad (cm^2/m)$$

$$beta = \frac{Td}{Tul} + \frac{Vd}{Vul}$$

Riostra	Vcu	Vd	Vul	Td	Tul	beta	Asα
10	185.92	140.17	1703.98	9.99	295.27	0.12	0.00
20	185.92	129.01	1703.98	15.06	295.27	0.13	0.00
30	122.58	79.84	1123.50	49.11	185.87	0.34	0.00
31	122.58	62.84	1123.50	44.86	185.87	0.30	0.00

ARMADURA DE TORSION:

Longitudinal:

$$Atl = \frac{Td \times u}{2 \times Ae \times fyd} \quad (cm^2)$$

Transversal:

$$At = \frac{Td \times s}{2 \times Ae \times ftd} \quad (cm^2/m)$$

$$beta = \frac{Td}{Tul} + \frac{Vd}{Vul}$$

Riostra	Td	Tul	Vd	Vul	beta	Atl	Att
10	43.86	295.27	114.83	1703.98	0.22	15.52	2.72
20	43.86	295.27	114.83	1703.98	0.22	15.52	2.72
30	55.46	185.87	79.43	1123.50	0.37	23.14	5.47
31	44.86	185.87	62.84	1123.50	0.30	18.72	4.43

ARMADURA DE FLEXION:

$$Us = Uc \times \left[1 - \left[1 - \frac{2 \times Md}{Uc \times d} \right]^{1/2} \right]$$

$$As = Us/fyd \ (cm^2)$$

Riostra	Md(+)	Md(-)	Uc	Us(+)	Us(-)	As(+)	As(-)
10	0.00	-253.93	5679.92	0.00	242.49	0.00	54.68
20	0.00	-229.76	5679.92	0.00	218.95	0.00	50.92
30	110.25	-51.68	3745.00	104.49	48.61	27.35	14.71
31	86.00	-39.74	3745.00	81.25	37.33	22.65	11.60

4.- Reacciones, Dimensionamiento de Neoprenos

COMBINACIONES DE HIPOTESIS DE CARGAS

COMBINACION: C1 = +1.00*(H:1) **Peso propio**
COMBINACION: C2 = +1.00*(H:2) **Cargas Permanentes**
COMBINACION: C3 = +1.00*(H:20) **Gradiente 10° C**
COMBINACION: C4 = +1.00*(H:21) **Pretensado Final**

REACCIONES

	Reacción Z	Torsor	Flector
Nudo: 1			
C1	50.07	0.00	0.00
C2	9.45	0.00	0.00
C3	5.44	0.00	0.00
C4	7.43	0.00	0.00
Nudo: 3			
C1	50.07	0.00	0.00
C2	9.45	0.00	0.00
C3	5.44	0.00	0.00
C4	7.43	0.00	0.00
Nudo: 32			
C1	345.26	0.00	0.00
C2	65.14	0.00	0.00
C3	-10.87	0.00	0.00
C4	-14.86	0.00	0.00
Nudo: 62			
C1	345.26	0.00	0.00
C2	65.14	0.00	0.00
C3	-10.87	0.00	0.00
C4	-14.87	0.00	0.00
Nudo: 91			
C1	50.07	0.00	0.00
C2	9.45	0.00	0.00
C3	5.44	0.00	0.00
C4	7.43	0.00	0.00
Nudo: 93			
C1	50.07	0.00	0.00
C2	9.45	0.00	0.00
C3	5.44	0.00	0.00
C4	7.43	0.00	0.00
Suman las Reacciones:			
C1	890.80	0.00	0.00
C2	168.07	0.00	0.00
C3	-0.00	0.00	0.00
C4	0.00	0.00	0.00

REACCIONES Máximas , Mínimas y concomitantes : **Sobrecarga + Carro**

Reacción Máxima (+) Reacción Mínima (-)

Nudos: 1	3	32	62	91	93
84.84(+)	-13.66	47.80	39.82	36.26	-19.23
-26.36(-)	28.14	80.34	80.34	-26.36	28.14
8.34	62.84(+)	47.81	39.82	-18.73	35.77
47.05	-38.88(-)	103.77	44.34	38.01	-30.06
11.90	11.90	150.10(+)	43.90	-2.45	-2.45
0.56	0.56	-5.13(-)	41.62	14.80	14.80
5.71	-16.79	79.90	126.65(+)	19.95	-2.55
30.43	30.43	75.12	-11.22(-)	1.22	1.22
43.76	-33.24	77.40	77.40	43.76(+)	-33.24
-26.36	28.14	80.34	80.34	-26.36(-)	28.14
-3.25	51.25	74.68	35.10	-18.22	36.28(+)
39.39	-37.61	80.34	80.34	39.39	-37.61(-)

REACCIONES MAXIMAS , MINIMAS Y CONCOMITANTES

Reacción Máxima (+) Reacción Mínima (-)

Nudos: 1	3	32	62	91	93
151.79(+)	53.29	443.34	435.36	103.21	47.72
40.60(-)	95.09	475.87	475.87	40.60	95.09
75.29	129.79(+)	443.34	435.35	48.22	102.72
114.00	28.08(-)	499.31	439.87	104.96	36.90
78.85	78.85	545.63(+)	439.43	64.50	64.50
67.51	67.51	390.40(-)	437.15	81.75	81.75
72.66	50.16	475.43	522.18(+)	86.90	64.40
97.38	97.38	470.65	384.32(-)	68.17	68.17
110.71	33.71	472.93	472.93	110.71(+)	33.71
40.60	95.09	475.87	475.87	40.60(-)	95.09
63.70	118.20	470.22	430.63	48.74	103.23(+)
106.34	29.35	475.87	475.87	106.34	29.35(-)

CALCULO DE NEOPRENOS EN PLANTA

σmáx y σmín en t/m²

Banda	Rmax	Rmin	Neopreno	σmáx	σmín	Anclaje
1	151.79	28.08	300 x 400	1265	234	- tipo 2
11	545.63	390.40	ϕ 700	1418	1014	-
21	522.18	384.32	ϕ 700	1357	999	-
31	110.71	29.35	300 x 400	923	246	- tipo 2

5.- Armaduras Bajo Apoyos

COMPROBACION A PUNZONAMIENTO

Se comprueba el punzonamiento en Pilas (neopreno Φ700)

según EH-91 Artículo 55.5

Reacción máxima sin Mayorar en Pila 545.63 t

Nd = 1.50 x 545.63 = 818.45 t (Norma antigua)

Nd = 1.35 x (345.26+65.14) + 1.50 x 150.10 = 779.19 t (IAP-96)

Perímetro eficaz a una altura de d/2 = Π x (0.70 + 1.07) = 5.56 m

Area eficaz = 5.56 x 1.10 = 6.12 m²

$$Td = \frac{818.45}{6.12} = 133.73 \text{ t/m}^2$$

$$fcv = 5 \times \left|\frac{350}{1.5}\right|^{1/2} = 76.38 \text{ t/m}^2$$

Td < 2.fcv No necesita armadura de punzonamiento

ARMADURAS BAJO APOYOS: (art. 57 EH-91)

$$As = 0.30 \times Ndx \left(1 - \frac{a1}{a}\right) \times \frac{1}{fyd}$$

ESTRIBOS:

Neoprenos 300x400x63(45 neto)

Nd = 1.50 x 151.79 = 227.69 t (Norma antigua)

Nd = 1.35 x (50.07+9.45+5.44+7.43) + 1.50 x 84.88 = 225.05 t (IAP-96)

longitudinal

$$As = 0.30 \times 227.69 \times \left(1 - \frac{0.30}{1.00}\right) \times \frac{1.15}{5.1} = 10.78 \text{ cm}^2$$

transversal

$$As = 0.30 \times 227.69 \times \left(1 - \frac{0.40}{1.00}\right) \times \frac{1.15}{5.1} = 9.24 \text{ cm}^2$$

PILAS:

Neoprenos Φ700 x 70(50 neto)

Nd = 1.50 x 545.63 = 818.45 t (Norma antigua)

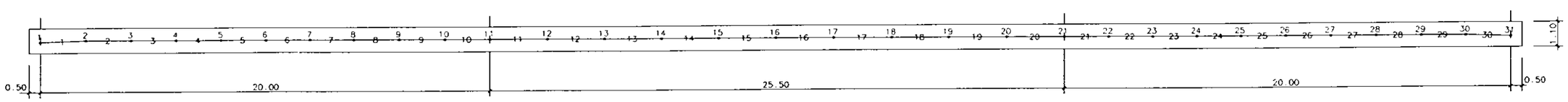
Nd = 1.35 x (345.26+65.14) + 1.50 x 150.10 = 779.19 t (IAP-96)

$$As = 0.30 \times 818.45 \times \left(1 - \frac{0.70}{1.00}\right) \times \frac{1.15}{5.1} = 16.60 \text{ cm}^2$$

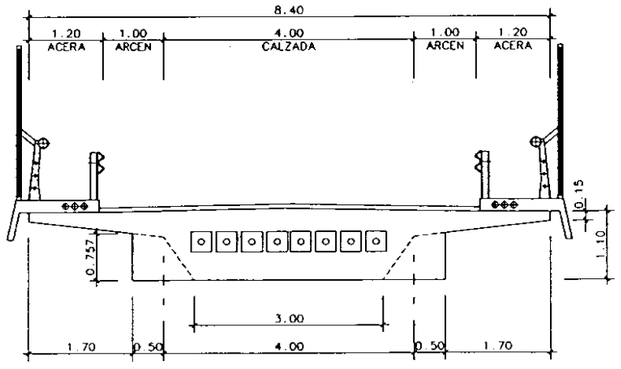
MODELO VIGA CONTINUA

MODELO VIGA

NUDOS 31
BARRAS 30

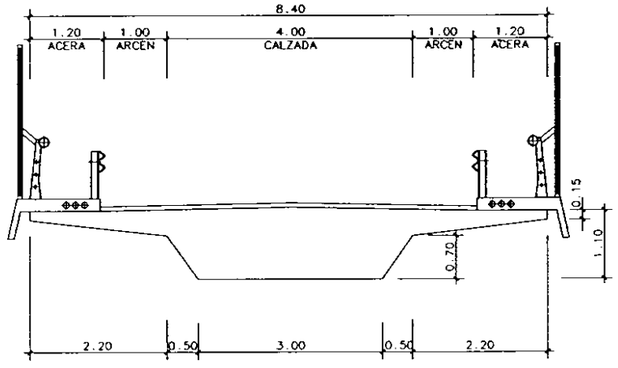


SECCION ESTRIBOS



Area = 6.5184 m2
Iflex = 0.7350 m4
Itors = 1.2464 m4
Hcdg = 0.6198 m

SECCION TIPO



Area = 5.4400 m2
Iflex = 0.5744 m4
Itors = 0.8894 m4
Hcdg = 0.6789 m

1.- Geometría, Materiales y Características Mecánicas

Estructura=PS 104+600

Vanos= 3
Fases= 1

Barras= 30
Nudos = 31

Canto Constante= 1.100 m.

Vano	Long.(m)	Barras
1	20.000	10
2	25.500	10
3	20.000	10

Apoyos en Nudos 1 , 11 , 21 , 31

Fase	NudoI.	NudoF.
1	1	31

DEFINICION GEOMETRICA DE NUDOS Y BARRAS

	Nudo	Canto(m)	Xg(m)	Yg(m)	Barra	Proy.X(m.)	Proy.Y(m.)
E-1	1	1.100	0.000	0.620			
					1	2.000	0.044
	2	1.100	2.000	0.679			
					2	2.000	0.000
	3	1.100	4.000	0.679			
					3	2.000	0.000
	4	1.100	6.000	0.679			
					4	2.000	0.000
	5	1.100	8.000	0.679			
					5	2.000	0.000
	6	1.100	10.000	0.679			
					6	2.000	0.000
	7	1.100	12.000	0.679			
					7	2.000	0.000
	8	1.100	14.000	0.679			
					8	2.000	0.000
	9	1.100	16.000	0.679			
					9	2.000	0.000
	10	1.100	18.000	0.679			
					10	2.000	0.000
P-1	11	1.100	20.000	0.679			
					11	2.550	0.000
	12	1.100	22.550	0.679			
					12	2.550	0.000
	13	1.100	25.100	0.679			
					13	2.550	0.000
	14	1.100	27.650	0.679			
					14	2.550	0.000
	15	1.100	30.200	0.679			
					15	2.550	0.000
	16	1.100	32.750	0.679			
					16	2.550	0.000
	17	1.100	35.300	0.679			
					17	2.550	0.000
	18	1.100	37.850	0.679			
					18	2.550	0.000
	19	1.100	40.400	0.679			
					19	2.550	0.000
	20	1.100	42.950	0.679			
					20	2.550	0.000
P-2	21	1.100	45.500	0.679			
					21	2.000	0.000
	22	1.100	47.500	0.679			
					22	2.000	0.000
	23	1.100	49.500	0.679			
					23	2.000	0.000
	24	1.100	51.500	0.679			
					24	2.000	0.000
	25	1.100	53.500	0.679			
					25	2.000	0.000
	26	1.100	55.500	0.679			

DEFINICION GEOMETRICA DE NUDOS Y BARRAS

	Nudo	Canto(m)	Xg(m)	Yg(m)	Barra	Proy.X(m.)	Proy.Y(m.)
	26	1.100	55.500	0.679			
					26	2.000	0.000
	27	1.100	57.500	0.679			
					27	2.000	0.000
	28	1.100	59.500	0.679			
					28	2.000	0.000
	29	1.100	61.500	0.679			
					29	2.000	0.000
	30	1.100	63.500	0.679			
					30	2.000	-0.044
E-2	31	1.100	65.500	0.620			

D E F I N I C I O N D E M A T E R I A L E S

HORMIGON:

Fck (Kg/cm²) en el instante de tesar.....:	350
Fck (Kg/cm²) a los 28 dias .....:	400
Módulo de Elasticidad Instantáneo (Kg/cm²).....:	355457
Módulo de Elasticidad Diferido (Kg/cm²).....:	224499
Densidad del hormigón t/m3 .....:	2.50
Coeficiente de Fluencia .....:	2.00
Coeficiente de Retracción .....:	0.00025
Coeficiente de Dilatación Térmica .....:	0.000010
Coeficiente de seguridad γc .....:	1.50

ACERO PASIVO:

Límite Elástico Fyk(Kg/cm²) .....:	5100
Coeficiente de seguridad γs .....:	1.15
Módulo de Elasticidad : Es (Kg/mm²) .....:	21000
Tipo de acero: Dureza natural	
Recubrimiento de armaduras pasivas (cms.) .....:	3

ACERO ACTIVO:

Carga de Rotura Fmax,k(Kg/cm²) .....:	19000
Límite Elástico Fpk(Kg/cm²) .....:	17000
Coeficiente de seguridad γp .....:	1.10
Módulo de Elasticidad : Ep (Kg/mm²) .....:	19000

CARACTERISTICAS DE LAS SECCIONES:

$$\text{Coeficiente de equivalencia } n = \frac{Ep}{Ec} = 5.00$$

		BRUTA			NETA			HOMOGENEA		
	Nudo	Area	Inercia	Hcdg	Area	Inercia	Hcdg	Area	Inercia	Hcdg
E-1	1	6.518	0.7350	0.620	6.456	0.7350	0.620	6.542	0.7350	0.620
	2	5.440	0.5744	0.679	5.377	0.5724	0.681	5.464	0.5752	0.678
	3	5.440	0.5744	0.679	5.377	0.5701	0.682	5.464	0.5760	0.678
	4	5.440	0.5744	0.679	5.377	0.5682	0.683	5.464	0.5767	0.678
	5	5.440	0.5744	0.679	5.377	0.5675	0.683	5.464	0.5770	0.677
	6	5.440	0.5744	0.679	5.377	0.5682	0.683	5.464	0.5767	0.678
	7	5.440	0.5744	0.679	5.377	0.5700	0.682	5.464	0.5760	0.678
	8	5.440	0.5744	0.679	5.377	0.5724	0.681	5.464	0.5752	0.678
	9	5.440	0.5744	0.679	5.377	0.5742	0.680	5.464	0.5745	0.679
	10	5.440	0.5744	0.679	5.377	0.5739	0.678	5.464	0.5746	0.679
P-1	11	5.440	0.5744	0.679	5.377	0.5725	0.677	5.464	0.5751	0.680
	12	5.440	0.5744	0.679	5.377	0.5743	0.679	5.464	0.5744	0.679
	13	5.440	0.5744	0.679	5.377	0.5715	0.681	5.464	0.5755	0.678
	14	5.440	0.5744	0.679	5.377	0.5648	0.683	5.464	0.5780	0.677
	15	5.440	0.5744	0.679	5.377	0.5589	0.685	5.464	0.5802	0.677
	16	5.440	0.5744	0.679	5.377	0.5566	0.685	5.464	0.5811	0.677
	17	5.440	0.5744	0.679	5.377	0.5589	0.685	5.464	0.5802	0.677
	18	5.440	0.5744	0.679	5.377	0.5648	0.683	5.464	0.5780	0.677
	19	5.440	0.5744	0.679	5.377	0.5715	0.681	5.464	0.5755	0.678
	20	5.440	0.5744	0.679	5.377	0.5743	0.679	5.464	0.5744	0.679
P-2	21	5.440	0.5744	0.679	5.377	0.5725	0.677	5.464	0.5751	0.680
	22	5.440	0.5744	0.679	5.377	0.5739	0.678	5.464	0.5746	0.679
	23	5.440	0.5744	0.679	5.377	0.5742	0.680	5.464	0.5745	0.679
	24	5.440	0.5744	0.679	5.377	0.5724	0.681	5.464	0.5752	0.678
	25	5.440	0.5744	0.679	5.377	0.5700	0.682	5.464	0.5760	0.678
	26	5.440	0.5744	0.679	5.377	0.5682	0.683	5.464	0.5767	0.678
	27	5.440	0.5744	0.679	5.377	0.5675	0.683	5.464	0.5770	0.677
	28	5.440	0.5744	0.679	5.377	0.5682	0.683	5.464	0.5767	0.678
	29	5.440	0.5744	0.679	5.377	0.5701	0.682	5.464	0.5760	0.678
	30	5.440	0.5744	0.679	5.377	0.5724	0.681	5.464	0.5752	0.678
E-2	31	6.518	0.7350	0.620	6.456	0.7350	0.620	6.542	0.7350	0.620

2.- Cargas Actuantes

C A R G A S A C T U A N T E S :

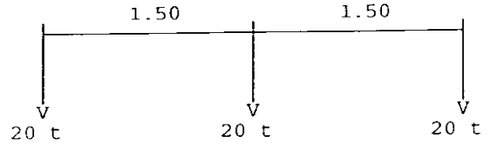
-.**PESO PROPIO:**
Densidad .....: 2.50 (t/m3)

-.**CARGAS PERMANENTES:**
Firme .....: 6 cms.
Densidad .....: 2.40 (t/m3)

Acera .....: 1.000 m
Peso .....: 0.550 t/m

-.**SOBRECARGAS:**
Sobrecarga Uniforme ..: 0.40 (t/m²)
Pudiendo actuar en todos los Vanos de la Estructura

Carro de 60 t :



Pudiendo actuar : Sobre Apoyos, o en 0.4L de los Vanos Laterales
o en 0.5L de los Vanos Intermedios

Se consideran los coeficientes de excentricidad siguientes:

Flexión Positiva .....: 1.16

Flexión Negativa.....: 1.16

Cortante .....: 1.67

Se considera un coeficiente de
sobrecargas frecuentes/totales: 50%

-.**ACCIONES TERMICAS:**
Gradiente térmico entre cara superior e inferior de 10 °C

3.- Pretensado

ACERO ACTIVO: Familia de Pretensado N° 1

N° de cables	8
Area (mm²) de cada Cable	2171
Diámetro de la vaina (mm.)	100
Fuerza de Tesado (toneladas/cable)	310.0
Coeficiente de Rozamiento μ	0.21
Serpenteo ß (Rad/m)	0.006
Penetración de Cuñas (mm.)	2

Cables de Baja Relajación
Tesado desde Ambos Extremos y tesando Cable a Cable

La ordenada Yp se mide, en cada punto, en vertical desde el fondo del encofrado

TRAZADO DE PRETENSADO: Familia N° 1

	Nudo	X(m)	Yp(m)	tangente	Excen(m)
E-1	1	0.000	0.620	-0.06745	0.000
	2	2.000	0.502	-0.05059	-0.177
	3	4.000	0.417	-0.03373	-0.261
	4	6.000	0.367	-0.01686	-0.312
	5	8.000	0.350	0.00000	-0.329
	6	10.000	0.367	0.01667	-0.312
	7	12.000	0.417	0.03333	-0.262
	8	14.000	0.500	0.05000	-0.179
	9	16.000	0.617	0.06667	-0.062
	10	18.000	0.767	0.08333	0.088
P-1	11	20.000	0.850	0.00000	0.171
	12	22.550	0.710	-0.10980	0.031
	13	25.100	0.465	-0.08235	-0.214
	14	27.650	0.290	-0.05490	-0.389
	15	30.200	0.185	-0.02745	-0.494
	16	32.750	0.150	-0.00000	-0.529
	17	35.300	0.185	0.02745	-0.494
	18	37.850	0.290	0.05490	-0.389
	19	40.400	0.465	0.08235	-0.214
	20	42.950	0.710	0.10980	0.031
P-2	21	45.500	0.850	-0.00000	0.171
	22	47.500	0.767	-0.08333	0.088
	23	49.500	0.617	-0.06667	-0.062
	24	51.500	0.500	-0.05000	-0.179
	25	53.500	0.417	-0.03333	-0.262
	26	55.500	0.367	-0.01667	-0.312
	27	57.500	0.350	-0.00000	-0.329
	28	59.500	0.367	0.01686	-0.312
	29	61.500	0.417	0.03372	-0.261
	30	63.500	0.502	0.05059	-0.177
E-2	31	65.500	0.620	0.06745	-0.000

Longitud = 65.586 m

FUERZAS DE PRETENSADO: Familia N° 1 Fase 1

Punto Neutro de Rozamiento a 32.750 (m.) desde el Nudo 1
Valor de la Fuerza en Punto Neutro = 2164.08 (tn.)
Alargamiento de tesado 0.231 (m.) desde el Nudo 1
Alargamiento de tesado 0.231 (m.) desde el Nudo 31

Penetración de cuñas hasta 9.472 (m.) desde el Nudo 1
Penetración de cuñas hasta 9.472 (m.) desde el Nudo 31

Valores de Fuerzas en toneladas

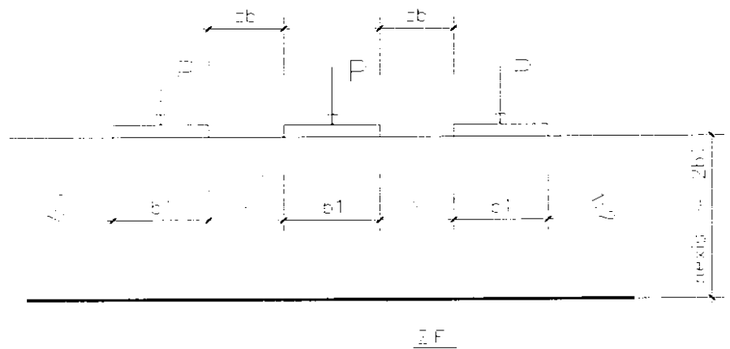
	Nudo	Rozam.	Cuñas	Acort.	Retrac.	Fluenc.	Relajac.
E-1	1	2480.00	2339.89	2322.71	2242.46	2170.41	2071.34
	2	2465.03	2354.86	2329.12	2250.26	2157.52	2059.10
	3	2450.15	2369.74	2338.09	2260.07	2163.26	2063.41
	4	2435.35	2384.54	2348.63	2271.18	2172.34	2070.58
	5	2420.63	2399.26	2362.45	2285.10	2186.55	2082.02
	6	2406.11	2406.11	2372.24	2294.48	2198.86	2092.11
	7	2391.68	2391.68	2363.71	2285.16	2194.94	2089.41
	8	2377.34	2377.34	2355.41	2275.99	2190.31	2086.05
	9	2363.10	2363.10	2343.63	2263.81	2179.11	2077.14
	10	2348.97	2348.97	2323.45	2244.40	2154.12	2056.58
P-1	11	2302.50	2302.50	2269.34	2191.69	2108.16	2020.17
	12	2243.00	2243.00	2221.81	2142.10	2058.31	1979.24
	13	2223.07	2223.07	2204.08	2124.28	2044.09	1967.90
	14	2203.26	2203.26	2172.45	2094.57	2003.42	1933.48
	15	2183.59	2183.59	2140.65	2064.60	1964.03	1900.03
	16	2164.08	2164.08	2116.67	2041.31	1938.88	1878.91
	17	2183.59	2183.59	2140.65	2064.60	1964.03	1900.03
	18	2203.26	2203.26	2172.45	2094.57	2003.42	1933.48
	19	2223.07	2223.07	2204.08	2124.28	2044.09	1967.90
	20	2243.00	2243.00	2221.81	2142.10	2058.31	1979.24
P-2	21	2302.50	2302.50	2269.34	2191.69	2108.16	2020.17
	22	2348.97	2348.97	2323.45	2244.40	2154.12	2056.58
	23	2363.10	2363.10	2343.63	2263.81	2179.11	2077.14
	24	2377.34	2377.34	2355.41	2275.99	2190.31	2086.05
	25	2391.68	2391.68	2363.71	2285.16	2194.94	2089.41
	26	2406.11	2406.11	2372.24	2294.48	2198.86	2092.11
	27	2420.63	2399.26	2362.45	2285.10	2186.55	2082.02
	28	2435.35	2384.54	2348.63	2271.18	2172.34	2070.58
	29	2450.15	2369.74	2338.09	2260.07	2163.26	2063.41
	30	2465.03	2354.86	2329.15	2250.20	2157.37	2058.96
E-2	31	2480.00	2339.89	2322.71	2242.46	2170.41	2071.34

4.- Refuerzo en Anclajes de Pretensado

ARMADURA DE INTRODUCCION DE PRETENSADO.

-Armadura horizontal.

El esquema de la placa es el indicado en la siguiente figura:



En nuestro caso tenemos 8 cargas aplicadas:

P = 310 t

b1 = 0.32 m.

zb = 0.40 – 0.32 = 0.08 m. < 2 * b1

Por lo tanto la longitud total vale:

b = 8 * 0.32 + 7 * 0.08 + 2 * 0.32 = 3.76 m.

Se considera como una viga continua de gran canto cuya carga exterior está dada por la compresión de los cables de pretensado:

σ = 8 * 310 / 3.76 / 1.10 = 599.61 t/m^2

lo que representa una carga uniforme de

P = 599.61 * 1.10 = 659.57 t/m

De acuerdo con las formulas de la línea de influencia de infinitos vanos iguales tenemos que los momentos valen:

Momento máximo en centro de vano

M = 0.0676 * 659.57 * 0.40^2 = 7.13 mt

Momento mínimo en apoyos

M = -0.0529 * 659.57 * 0.40^2 = 5.58 mt

El brazo mecánico a considerar será de 0.5 * l = 0.5 * 0.40 = 0.20 m

Md = 1.5 * 7.13 = 10.70 m.t

Uc = 3500.00 / 1.5 * 1.10 * 0.20 = 513.34 t

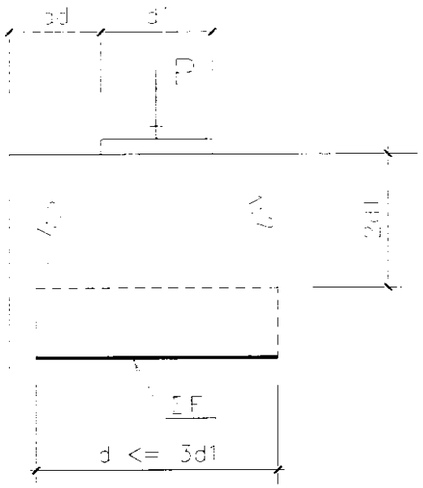
Us1 = 513.34 (1- SQRT(1 - 2 * 10.70 / 513.34 / 0.20)) = 56.59 t

As = 56.59 * 1.15 / 5.1 = 12.76 cm^2

-Armadura vertical.

Se calcula la armadura como la necesaria debido a la una carga concentrada.

El esquema de la placa es el indicado en la siguiente figura:



En nuestro caso tenemos:

P = 310 t

d1 = 0.32 m.

ad = 0.506 – 0.32 / 2 = 0.346 m.

La armadura vertical a disponer valdrá:

As = 0.30 * 1.5* 310.00 * (1 - 0.32 / 0.96) * 1.15 / 5.1 = 20.97 cm^2

5.- Esfuerzos de Hipótesis

	Nudo	Peso Propio Axil	Peso Propio Cortan.	Peso Propio Flector	Cargas Permanentes Axil	Cargas Permanentes Cortan.	Cargas Permanentes Flector
E-1	1	-2.26	102.65	0.00	-0.42	18.92	0.00
	2	-0.00	72.78	175.45	-0.00	13.78	32.70
	3	-0.00	45.58	293.81	-0.00	8.64	55.13
	4	-0.00	18.38	357.76	-0.00	3.50	67.27
	5	-0.00	-8.82	367.31	-0.00	-1.64	69.14
	6	-0.00	-36.02	322.46	-0.00	-6.78	60.72
	7	-0.00	-63.22	223.21	-0.00	-11.92	42.03
	8	-0.00	-90.42	69.56	-0.00	-17.06	13.05
	9	-0.00	-117.62	-138.48	-0.00	-22.20	-26.20
	10	-0.00	-144.82	-400.93	-0.00	-27.34	-75.74
P-1	11	-0.00	173.40	-717.78	-0.00	32.77	-135.55
	12	-0.00	138.72	-319.83	-0.00	26.21	-60.35
	13	-0.00	104.04	-10.31	-0.00	19.66	-1.86
	14	-0.00	69.36	210.78	-0.00	13.11	39.92
	15	-0.00	34.68	343.43	-0.00	6.55	64.98
	16	-0.00	-0.00	387.64	-0.00	-0.00	73.34
	17	-0.00	-34.68	343.43	-0.00	-6.55	64.98
	18	-0.00	-69.36	210.78	-0.00	-13.11	39.92
	19	-0.00	-104.04	-10.31	-0.00	-19.66	-1.86
	20	-0.00	-138.72	-319.83	-0.00	-26.21	-60.35
P-2	21	-0.00	172.02	-717.78	-0.00	32.48	-135.55
	22	-0.00	144.82	-400.93	-0.00	27.34	-75.74
	23	-0.00	117.62	-138.48	-0.00	22.20	-26.20
	24	-0.00	90.42	69.56	-0.00	17.06	13.05
	25	-0.00	63.22	223.21	-0.00	11.92	42.03
	26	-0.00	36.02	322.46	-0.00	6.78	60.72
	27	-0.00	8.82	367.31	-0.00	1.64	69.14
	28	-0.00	-18.38	357.76	-0.00	-3.50	67.27
	29	-0.00	-45.58	293.81	-0.00	-8.64	55.13
	30	-1.60	-72.76	175.45	-0.30	-13.78	32.70
E-2	31	-2.26	-102.65	0.00	-0.42	-18.92	0.00

(Sobrecarga + Carro) Máximos CORTANTES

(Sobrecarga + Carro) Máximos CORTANTES

		MAXIMOS			MINIMOS		
	Nudo	Axil	<CORT.>	Flec.	Axil	<CORT.>	Flec.
E-1	1	-1.87	121.61	0.00	0.27	-16.36	-0.00
	2	-0.00	76.20	127.23	0.00	-16.37	-26.39
	3	-0.00	69.48	241.02	0.00	-16.37	-52.78
	4	-0.00	62.76	341.38	0.00	-16.37	-79.17
	5	-0.00	6.06	150.55	-0.00	-20.58	207.45
	6	-0.00	3.34	26.64	-0.00	-57.98	291.56
	7	-0.00	3.34	31.97	-0.00	-64.70	198.19
	8	-0.00	3.34	37.30	-0.00	-71.42	91.38
	9	-0.00	3.34	42.62	-0.00	-78.14	-28.87
	10	-0.00	3.34	47.95	-0.00	-84.86	-162.56
P-1	11	0.00	96.96	-344.01	-0.00	-11.97	53.28
	12	0.00	88.39	-146.70	-0.00	-11.97	28.94
	13	0.00	79.83	28.77	-0.00	-11.97	4.60
	14	0.00	71.26	182.39	-0.00	-11.97	-19.74
	15	0.00	62.69	314.15	-0.00	-11.97	-44.08
	16	-0.00	11.97	-68.42	0.00	-20.72	389.27
	17	-0.00	11.97	-44.08	0.00	-62.69	314.15
	18	-0.00	11.97	-19.74	0.00	-71.26	182.39
	19	-0.00	11.97	4.60	0.00	-79.83	28.77
	20	-0.00	11.97	28.94	0.00	-88.39	-146.70
P-2	21	-0.00	91.58	-309.69	-0.00	-3.34	53.28
	22	-0.00	84.86	-162.56	-0.00	-3.34	47.95
	23	-0.00	78.14	-28.87	-0.00	-3.34	42.62
	24	-0.00	71.42	91.38	-0.00	-3.34	37.30
	25	-0.00	64.70	198.19	-0.00	-3.34	31.97
	26	-0.00	57.98	291.56	-0.00	-3.34	26.64
	27	-0.00	20.58	207.45	-0.00	-6.06	150.55
	28	0.00	16.37	-79.17	-0.00	-62.76	341.38
	29	0.00	16.37	-52.78	-0.00	-69.48	241.02
	30	0.27	16.36	-26.39	-1.21	-76.18	127.23
E-2	31	0.27	16.36	0.00	-1.87	-121.61	-0.00

(Sobrecarga + Carro) Máximos FLECTORES

(Sobrecarga + Carro) Máximos FLECTORES

		MAXIMOS			MINIMOS		
	Nudo	Axil	Cort.	<FLEC.>	Axil	Cort.	<FLEC.>
E-1	1	-1.23	76.92	0.00	0.14	-10.39	-0.00
	2	-0.00	76.20	127.23	0.00	-16.37	-26.39
	3	-0.00	69.48	241.02	0.00	-16.37	-52.78
	4	-0.00	62.76	341.38	0.00	-16.37	-79.17
	5	-0.00	-10.76	393.49	0.00	-16.37	-105.56
	6	-0.00	-50.88	362.56	0.00	-16.37	-131.95
	7	-0.00	-57.60	283.39	0.00	-16.37	-158.34
	8	-0.00	-64.32	190.79	0.00	-16.37	-184.73
	9	-0.00	-20.82	86.06	0.00	-16.37	-211.12
	10	-0.00	3.34	47.95	0.00	-47.25	-249.13
P-1	11	-0.00	-11.97	53.28	0.00	96.96	-344.01
	12	-0.00	-11.97	28.94	-0.00	46.25	-187.03
	13	0.00	71.78	90.30	-0.00	11.97	-141.44
	14	0.00	67.24	231.73	-0.00	7.95	-125.42
	15	0.00	58.67	353.24	-0.00	7.95	-111.34
	16	0.00	-16.70	418.10	-0.00	7.95	-97.25
	17	0.00	-58.67	353.24	-0.00	-7.95	-111.34
	18	0.00	-67.24	231.73	-0.00	-7.95	-125.42
	19	0.00	-71.78	90.30	-0.00	-11.97	-141.44
	20	-0.00	11.97	28.94	-0.00	-46.25	-187.03
P-2	21	-0.00	-3.34	53.28	0.00	53.97	-344.01
	22	-0.00	-3.34	47.95	0.00	47.25	-249.13
	23	-0.00	20.82	86.06	0.00	16.37	-211.12
	24	-0.00	64.32	190.79	0.00	16.37	-184.73
	25	-0.00	57.60	283.39	0.00	16.37	-158.34
	26	-0.00	50.88	362.56	0.00	16.37	-131.95
	27	-0.00	10.76	393.49	0.00	16.37	-105.56
	28	-0.00	-62.76	341.38	0.00	16.37	-79.17
	29	-0.00	-69.48	241.02	0.00	16.37	-52.78
	30	-1.21	-76.18	127.23	0.27	16.36	-26.39
E-2	31	-1.07	-84.93	0.00	-1.36	-82.90	-0.00

Gradiente Térmico 10.00° C

	Nudo	Axil	Cortan.	Flector
E-1	1	-0.15	6.87	-0.00
	2	0.00	6.87	13.74
	3	0.00	6.87	27.47
	4	0.00	6.87	41.21
	5	0.00	6.87	54.94
	6	0.00	6.87	68.68
	7	0.00	6.87	82.42
	8	0.00	6.87	96.15
	9	0.00	6.87	109.89
	10	0.00	6.87	123.62
P-1	11	0.00	-0.00	137.36
	12	0.00	0.00	137.36
	13	0.00	0.00	137.36
	14	0.00	0.00	137.36
	15	0.00	0.00	137.36
	16	0.00	0.00	137.36
	17	0.00	0.00	137.36
	18	0.00	-0.00	137.36
	19	0.00	-0.00	137.36
	20	0.00	-0.00	137.36
P-2	21	0.00	-6.87	137.36
	22	0.00	-6.87	123.62
	23	0.00	-6.87	109.89
	24	0.00	-6.87	96.15
	25	0.00	-6.87	82.42
	26	0.00	-6.87	68.68
	27	0.00	-6.87	54.94
	28	0.00	-6.87	41.21
	29	0.00	-6.87	27.47
	30	-0.15	-6.87	13.74
E-2	31	-0.15	-6.87	0.00

6.- Pretensado

	Nudo	Pretensado Inicial Axil	Cortan.	Flector	Pretensado Final Axil	Cortan.	Flector
E-1	1	-2313.95	-184.38	0.00	-2063.53	-164.51	-0.00
	2	-2326.15	-94.82	-331.17	-2056.47	-83.74	-292.61
	3	-2336.76	-55.95	-484.27	-2062.24	-49.25	-426.86
	4	-2348.30	-16.74	-560.27	-2070.29	-14.61	-493.04
	5	-2362.45	22.85	-558.69	-2082.02	20.30	-491.11
	6	-2371.91	62.39	-476.49	-2091.82	55.16	-418.80
	7	-2362.40	101.60	-309.77	-2088.25	89.90	-272.71
	8	-2352.47	140.48	-65.50	-2083.45	124.47	-57.28
	9	-2338.44	178.75	255.42	-2072.54	158.47	226.97
	10	-2315.42	215.81	649.69	-2049.47	191.09	576.23
P-1	11	-2269.34	-0.00	882.38	-2020.17	-0.00	783.82
	12	-2208.54	-242.51	567.04	-1967.42	-216.03	503.05
	13	-2196.64	-180.90	28.28	-1961.26	-161.52	22.24
	14	-2169.18	-119.09	-345.93	-1930.57	-105.99	-309.59
	15	-2139.85	-58.74	-559.72	-1899.32	-52.14	-497.40
	16	-2116.67	0.00	-622.76	-1878.91	-0.00	-553.44
	17	-2139.85	58.74	-559.72	-1899.32	52.14	-497.40
	18	-2169.18	119.09	-345.93	-1930.57	105.99	-309.59
	19	-2196.64	180.90	28.28	-1961.26	161.52	22.24
	20	-2208.54	242.51	567.04	-1967.42	216.03	503.05
P-2	21	-2269.34	-22.85	882.38	-2020.17	-20.30	783.82
	22	-2315.42	-215.81	649.69	-2049.47	-191.09	576.23
	23	-2338.44	-178.75	255.42	-2072.54	-158.47	226.97
	24	-2352.47	-140.48	-65.50	-2083.45	-124.47	-57.28
	25	-2362.40	-101.60	-309.77	-2088.25	-89.90	-272.71
	26	-2371.91	-62.39	-476.49	-2091.82	-55.16	-418.80
	27	-2362.45	-22.85	-558.69	-2082.02	-20.30	-491.11
	28	-2348.30	16.74	-560.27	-2070.29	14.61	-493.04
	29	-2336.76	55.95	-484.27	-2062.24	49.25	-426.86
	30	-2323.52	145.94	-331.17	-2054.00	128.92	-292.59
E-2	31	-2313.95	184.38	0.00	-2063.53	164.51	0.00

MOMENTOS HIPERESTATICOS DE PRETENSADO FINAL TOTAL

Esfuerzos en toneladas y metros.toneladas

Exc. es la distancia del c.d.g de los cables al c.d.g. de la sección
(+) por encima
(-) por debajo

	Nudo	Exc.(m)	Axil	Mom.Total	Mom.Isos	Mom.Hiper
E-1	1	0.000	2063.53	-0.00	0.00	-0.00
	2	-0.177	2056.47	-292.61	-364.28	71.67
	3	-0.261	2062.24	-426.86	-539.17	112.31
	4	-0.312	2070.29	-493.04	-646.01	152.97
	5	-0.329	2082.02	-491.11	-684.78	193.66
	6	-0.312	2091.82	-418.80	-653.14	234.34
	7	-0.262	2088.25	-272.71	-547.61	274.90
	8	-0.179	2083.45	-57.28	-372.73	315.45
	9	-0.062	2072.54	226.97	-128.98	355.95
	10	0.088	2049.47	576.23	179.88	396.35
P-1	11	0.171	2020.17	783.82	345.65	438.17
	12	0.031	1967.42	503.05	61.19	441.86
	13	-0.214	1961.26	22.24	-419.51	441.75
	14	-0.389	1930.57	-309.59	-750.80	441.21
	15	-0.494	1899.32	-497.40	-938.07	440.67
	16	-0.529	1878.91	-553.44	-993.75	440.31
	17	-0.494	1899.32	-497.40	-938.07	440.67
	18	-0.389	1930.57	-309.59	-750.80	441.21
	19	-0.214	1961.26	22.24	-419.51	441.75
	20	0.031	1967.42	503.05	61.19	441.86
P-2	21	0.171	2020.17	783.82	345.65	438.17
	22	0.088	2049.47	576.23	179.88	396.35
	23	-0.062	2072.54	226.97	-128.98	355.95
	24	-0.179	2083.45	-57.28	-372.73	315.45
	25	-0.262	2088.25	-272.71	-547.61	274.90
	26	-0.312	2091.82	-418.80	-653.14	234.34
	27	-0.329	2082.02	-491.11	-684.78	193.66
	28	-0.312	2070.29	-493.04	-646.01	152.97
	29	-0.261	2062.24	-426.86	-539.17	112.31
	30	-0.177	2054.00	-292.59	-363.84	71.25
E-2	31	-0.000	2063.53	0.00	-0.00	0.00

(σs,σi) tensiones Kg/cm², cara superior e inferior (-)tracción

	Nudo	Peso Propio σs	σi	Cargas Permanentes σs	σi
E-1	1	0.03	0.03	0.01	0.01
	2	12.86	-20.74	2.40	-3.87
	3	21.54	-34.73	4.04	-6.52
	4	26.23	-42.28	4.93	-7.95
	5	26.93	-43.41	5.07	-8.17
	6	23.64	-38.11	4.45	-7.18
	7	16.36	-26.38	3.08	-4.97
	8	5.10	-8.22	0.96	-1.54
	9	-10.15	16.37	-1.92	3.10
	10	-29.39	47.39	-5.55	8.95
P-1	11	-52.62	84.84	-9.94	16.02
	12	-23.45	37.80	-4.42	7.13
	13	-0.76	1.22	-0.14	0.22
	14	15.45	-24.91	2.93	-4.72
	15	25.18	-40.59	4.76	-7.68
	16	28.42	-45.82	5.38	-8.67
	17	25.18	-40.59	4.76	-7.68
	18	15.45	-24.91	2.93	-4.72
	19	-0.76	1.22	-0.14	0.22
	20	-23.45	37.80	-4.42	7.13
P-2	21	-52.62	84.84	-9.94	16.02
	22	-29.39	47.39	-5.55	8.95
	23	-10.15	16.37	-1.92	3.10
	24	5.10	-8.22	0.96	-1.54
	25	16.36	-26.38	3.08	-4.97
	26	23.64	-38.11	4.45	-7.18
	27	26.93	-43.41	5.07	-8.17
	28	26.23	-42.28	4.93	-7.95
	29	21.54	-34.73	4.04	-6.52
	30	12.89	-20.71	2.40	-3.86
E-2	31	0.03	0.03	0.01	0.01

(σs,σi) tensiones Kg/cm², cara superior e inferior (-)tracción

	Nudo	Pretensado Inicial σs	Pretensado Inicial σi	Pretensado Final σs	Pretensado Final σi
E-1	1	35.50	35.50	31.66	31.66
	2	18.48	81.90	16.35	72.39
	3	7.45	100.19	6.62	88.36
	4	2.09	109.39	1.91	96.33
	5	2.47	109.46	2.27	96.32
	6	8.67	99.92	7.75	87.95
	7	20.72	80.04	18.39	70.62
	8	38.44	50.99	34.10	45.07
	9	61.71	12.80	54.74	11.27
	10	90.19	-34.23	79.92	-30.43
P-1	11	106.40	-62.58	94.60	-55.51
	12	82.17	-26.42	73.04	-23.29
	13	42.45	37.04	37.68	33.42
	14	14.51	80.76	12.79	72.08
	15	-1.70	105.49	-1.55	93.70
	16	-6.75	112.52	-6.03	99.95
	17	-1.70	105.49	-1.55	93.70
	18	14.51	80.76	12.79	72.08
	19	42.45	37.04	37.68	33.42
	20	82.17	-26.42	73.04	-23.29
P-2	21	106.40	-62.58	94.60	-55.51
	22	90.19	-34.23	79.92	-30.43
	23	61.71	12.80	54.74	11.27
	24	38.44	50.99	34.10	45.07
	25	20.72	80.04	18.39	70.62
	26	8.67	99.92	7.75	87.95
	27	2.47	109.46	2.27	96.32
	28	2.09	109.39	1.91	96.33
	29	7.45	100.19	6.62	88.36
	30	18.43	81.85	16.31	72.34
E-2	31	35.50	35.50	31.66	31.66

(Sobrecarga + Carro) Máximas Tensiones

(σs,σi) tensiones Kg/cm², cara superior e inferior (-)tracción

	Nudo	MAXIMAS σs	MAXIMAS σi	MINIMAS σs	MINIMAS σi
E-1	1	0.02	0.02	-0.00	-0.00
	2	9.33	-15.04	-1.93	3.12
	3	17.67	-28.49	-3.87	6.24
	4	25.03	-40.35	-5.80	9.36
	5	28.85	-46.51	-7.74	12.48
	6	26.58	-42.85	-9.67	15.60
	7	20.78	-33.50	-11.61	18.71
	8	13.99	-22.55	-13.54	21.83
	9	6.31	-10.17	-15.48	24.95
	10	3.52	-5.67	-18.26	29.45
P-1	11	3.91	-6.30	-25.22	40.66
	12	2.12	-3.42	-13.71	22.11
	13	6.62	-10.67	-10.37	16.72
	14	16.99	-27.39	-9.19	14.82
	15	25.90	-41.75	-8.16	13.16
	16	30.65	-49.42	-7.13	11.49
	17	25.90	-41.75	-8.16	13.16
	18	16.99	-27.39	-9.19	14.82
	19	6.62	-10.67	-10.37	16.72
	20	2.12	-3.42	-13.71	22.11
P-2	21	3.91	-6.30	-25.22	40.66
	22	3.52	-5.67	-18.26	29.45
	23	6.31	-10.17	-15.48	24.95
	24	13.99	-22.55	-13.54	21.83
	25	20.78	-33.50	-11.61	18.71
	26	26.58	-42.85	-9.67	15.60
	27	28.85	-46.51	-7.74	12.48
	28	25.03	-40.35	-5.80	9.36
	29	17.67	-28.49	-3.87	6.24
	30	9.35	-15.02	-1.94	3.11
E-2	31	0.02	0.02	0.02	0.02

Tensiones de Gradiente térmico 10.00° C

(σs,σi) tensiones Kg/cm², cara superior e inferior (-)tracción

	Nudo	σs	σi
E-1	1	0.00	0.00
	2	1.01	-1.62
	3	2.01	-3.25
	4	3.02	-4.87
	5	4.03	-6.49
	6	5.04	-8.12
	7	6.04	-9.74
	8	7.05	-11.36
	9	8.06	-12.99
	10	9.06	-14.61
P-1	11	10.07	-16.24
	12	10.07	-16.24
	13	10.07	-16.24
	14	10.07	-16.24
	15	10.07	-16.24
	16	10.07	-16.24
	17	10.07	-16.24
	18	10.07	-16.24
	19	10.07	-16.24
	20	10.07	-16.24
P-2	21	10.07	-16.24
	22	9.06	-14.61
	23	8.06	-12.99
	24	7.05	-11.36
	25	6.04	-9.74
	26	5.04	-8.12
	27	4.03	-6.49
	28	3.02	-4.87
	29	2.01	-3.25
	30	1.01	-1.62
E-2	31	0.00	0.00

8.- Comprobación a Fisuración

Estructura Completa

Combinación 1 = Peso Propio + 1.10*Pretensado Inicial
Combinación 2 = Peso Propio + Cargas Permanentes + 0.90*Pretensado Final
Combinación 3 = Combinación 2 + 0.50*Máximas Sobrecargas
Combinación 4 = Combinación 2 + 0.50*Mínimas Sobrecargas

σs y σi son las tensiones en Kg/cm² de la cara superior e inferior

	Nudo	Combinación 1 σs	Combinación 1 σi	Combinación 2 σs	Combinación 2 σi	Combinación 3 σs	Combinación 3 σi	Combinación 4 σs	Combinación 4 σi
E-1	1	39.08	39.08	28.53	28.53	28.54	28.54	28.53	28.53
	2	33.19	69.35	29.98	40.55	34.64	33.03	29.01	42.10
	3	29.74	75.49	31.53	38.28	40.37	24.04	29.60	41.40
	4	28.53	78.04	32.88	36.46	45.39	16.29	29.98	41.14
	5	29.64	76.99	34.04	35.10	48.46	11.85	30.17	41.34
	6	33.18	71.80	35.07	33.87	48.36	12.44	30.23	41.66
	7	39.15	61.66	36.00	32.21	46.39	15.46	30.20	41.57
	8	47.39	47.86	36.75	30.80	43.74	19.52	29.98	41.71
	9	57.73	30.44	37.19	29.61	40.35	24.52	29.45	42.09
	10	69.82	9.74	36.98	28.95	38.74	26.12	27.85	43.67
P-1	11	64.42	16.00	22.58	50.90	24.53	47.75	9.97	71.23
	12	66.94	8.74	37.87	23.97	38.93	22.26	31.01	35.03
	13	45.94	41.96	33.02	31.52	36.33	26.18	27.84	39.88
	14	31.42	63.93	29.89	35.24	38.39	21.55	25.29	42.65
	15	23.31	75.45	28.54	36.06	41.49	15.19	24.46	42.64
	16	21.00	77.95	28.36	35.47	43.69	10.76	24.80	41.22
	17	23.31	75.45	28.54	36.06	41.49	15.19	24.46	42.64
	18	31.42	63.93	29.89	35.24	38.39	21.55	25.29	42.65
	19	45.94	41.96	33.02	31.52	36.33	26.18	27.84	39.88
	20	66.94	8.74	37.87	23.97	38.93	22.26	31.01	35.03
P-2	21	64.42	16.00	22.58	50.90	24.53	47.75	9.97	71.23
	22	69.82	9.74	36.98	28.95	38.74	26.12	27.85	43.67
	23	57.73	30.44	37.19	29.61	40.35	24.52	29.45	42.09
	24	47.39	47.86	36.75	30.80	43.74	19.52	29.97	41.71
	25	39.15	61.66	36.00	32.21	46.39	15.46	30.20	41.57
	26	33.18	71.80	35.07	33.87	48.36	12.44	30.23	41.66
	27	29.64	76.99	34.04	35.10	48.46	11.85	30.17	41.34
	28	28.53	78.04	32.88	36.46	45.39	16.29	29.98	41.14
	29	29.74	75.49	31.53	38.28	40.37	24.04	29.60	41.40
	30	33.17	69.33	29.97	40.54	34.65	33.03	29.00	42.09
E-2	31	39.08	39.08	28.53	28.53	28.54	28.54	28.54	28.54

Combinación 5 = Combinación 2 + Máximas Sobrecargas
Combinación 6 = Combinación 2 + Mínimas Sobrecargas

σs y σi son las tensiones en Kg/cm² de la cara superior e inferior

	Nudo	Combinación 5 σs	Combinación 5 σi	Combinación 6 σs	Combinación 6 σi
E-1	1	28.55	28.55	28.53	28.53
	2	39.30	25.51	28.04	43.66
	3	49.20	9.80	27.67	44.52
	4	57.91	-3.89	27.08	45.82
	5	62.89	-11.41	26.30	47.58
	6	61.65	-8.99	25.39	49.46
	7	56.78	-1.29	24.39	50.92
	8	50.73	8.25	23.20	52.63
	9	43.50	19.44	21.71	54.56
	10	40.50	23.28	18.72	58.40
P-1	11	26.49	44.61	-2.64	91.56
	12	39.99	20.55	24.16	46.08
	13	39.64	20.85	22.65	48.24
	14	46.88	7.85	20.70	50.07
	15	54.44	-5.69	20.38	49.22
	16	59.02	-13.95	21.23	46.97
	17	54.44	-5.69	20.38	49.22
	18	46.88	7.85	20.70	50.07
	19	39.64	20.85	22.65	48.24
	20	39.99	20.55	24.16	46.08
P-2	21	26.49	44.61	-2.64	91.56
	22	40.50	23.28	18.72	58.40
	23	43.50	19.44	21.71	54.56
	24	50.73	8.25	23.20	52.63
	25	56.78	-1.29	24.39	50.92
	26	61.65	-8.99	25.39	49.46
	27	62.89	-11.41	26.30	47.58
	28	57.91	-3.89	27.08	45.82
	29	49.20	9.80	27.67	44.52
	30	39.32	25.52	28.03	43.65
E-2	31	28.55	28.55	28.55	28.55

COMPROBACION EN CLASE II SEGÚN IAP-96

FRECUENTE = Peso Propio + Cargas Permanentes + 0.90*Pretensado Final +
+0.50*Máximas Sobrecargas + 0.20*Gradiente

Tensiones en Kg/cm²

Las tensiones deberán ser ≥ 0 y ≤ Fck/1.6 = 218.75

	Nudo	MAXIMAS σs	MAXIMAS σi	MINIMAS σs	MINIMAS σi
E-1	1	28.54	28.54	28.53	28.53
	2	34.84	32.70	29.21	41.78
	3	40.77	23.39	30.00	40.75
	4	46.00	15.31	30.58	40.17
	5	49.27	10.55	30.97	40.04
	6	49.36	10.82	31.24	40.04
	7	47.60	13.51	31.40	39.62
	8	45.15	17.25	31.38	39.44
	9	41.96	21.93	31.06	39.49
	10	40.55	23.19	29.66	40.75
P-1	11	26.55	44.51	11.98	67.99
	12	40.94	19.02	33.03	31.78
	13	38.35	22.94	29.85	36.63
	14	40.40	18.30	27.31	39.41
	15	43.51	11.94	26.48	39.39
	16	45.70	7.52	26.81	37.97
	17	43.51	11.94	26.48	39.39
	18	40.40	18.30	27.31	39.41
	19	38.35	22.94	29.85	36.63
	20	40.94	19.02	33.03	31.78
P-2	21	26.55	44.51	11.98	67.99
	22	40.55	23.19	29.66	40.75
	23	41.96	21.93	31.06	39.49
	24	45.15	17.25	31.38	39.44
	25	47.60	13.51	31.40	39.62
	26	49.36	10.82	31.24	40.04
	27	49.27	10.55	30.97	40.04
	28	46.00	15.31	30.58	40.17
	29	40.77	23.39	30.00	40.75
	30	34.85	32.70	29.20	41.77
E-2	31	28.54	28.54	28.54	28.54

CARACTERISTICA = Peso Propio + Cargas Permanentes + 0.90*Pretensado Final +
+ Máximas Sobrecargas + 0.60*Gradiente

Tensiones en Kg/cm²

Las tensiones deberán ser ≥ Fct,k = -22.35 y ≤ Fck/1.6 = 218.75

	Nudo	MAXIMAS σs	MAXIMAS σi	MINIMAS σs	MINIMAS σi
E-1	1	28.55	28.55	28.53	28.53
	2	39.91	24.53	28.65	42.69
	3	50.41	7.85	28.87	42.57
	4	59.72	-6.81	28.89	42.90
	5	65.30	-15.30	28.72	43.68
	6	64.67	-13.86	28.41	44.59
	7	60.40	-7.13	28.02	45.08
	8	54.96	1.43	27.43	45.81
	9	48.33	11.64	26.55	46.77
	10	45.93	14.52	24.16	49.63
P-1	11	32.53	34.86	3.40	81.82
	12	46.03	10.81	30.20	36.34
	13	45.68	11.11	28.69	38.50
	14	52.92	-1.89	26.74	40.32
	15	60.48	-15.43	26.42	39.48
	16	65.06	-22.89	27.28	37.23
	17	60.48	-15.43	26.42	39.48
	18	52.92	-1.89	26.74	40.32
	19	45.68	11.11	28.69	38.50
	20	46.03	10.81	30.20	36.34
P-2	21	32.53	34.86	3.40	81.82
	22	45.93	14.52	24.16	49.63
	23	48.33	11.64	26.55	46.77
	24	54.96	1.43	27.43	45.81
	25	60.40	-7.13	28.02	45.08
	26	64.67	-13.86	28.41	44.59
	27	65.30	-15.30	28.72	43.68
	28	59.72	-6.81	28.89	42.90
	29	50.41	7.85	28.87	42.57
	30	39.93	24.55	28.64	42.68
E-2	31	28.55	28.55	28.55	28.55

9.- Combinación de Hipótesis

C O M B I N A C I O N E S D E H I P O T E S I S

Coeficientes de Combinaciones:

	Favorable	Desfavorable
Peso Propio y Cargas permanentes ....:	1.00	1.35
Pretensado .....:	1.00	1.00
Sobrecargas .....:	0.00	1.50
Gradiente Térmico .....:	0.00	1.50

Combinación 1 =Peso Propio y Pretensado Inicial

Combinación 2 =Peso Propio, Cargas Permanentes y Pretensado Final

Combinación 3 =Combinación 2 y Máximas Sobrecargas

Combinación 4 =Combinación 3 y Gradiente Térmico

Los Esfuerzos vienen dados en tn. y m.t , mayorados por sus correspondientes coeficientes

ESFUERZOS CORTANTES

			MAXIMOS			MINIMOS		
	Nudo	Combi.	Axil	Cort.	Flec.	Axil	Cort.	Flec.
E-1	1							
		C1	-2316.99	-45.79	0.00	-2316.20	-81.72	0.00
		C2	-2067.14	-0.39	-0.00	-2066.20	-42.94	-0.00
		C3	-2069.95	182.03	0.00	-2065.80	-67.48	-0.00
		C4	-2070.17	192.33	-0.00	-2065.80	-67.48	-0.00
	2							
		C1	-2326.15	3.43	-94.30	-2326.15	-22.04	-155.71
		C2	-2056.47	33.12	-11.59	-2056.47	2.82	-84.45
		C3	-2056.47	147.41	179.26	-2056.47	-21.73	-124.03
		C4	-2056.47	157.72	199.86	-2056.47	-21.73	-124.03
	3							
		C1	-2336.76	5.57	-87.63	-2336.76	-10.38	-190.46
		C2	-2062.24	23.94	44.20	-2062.24	4.97	-77.93
		C3	-2062.24	128.16	405.74	-2062.24	-19.59	-157.10
		C4	-2062.24	138.46	446.95	-2062.24	-19.59	-157.10
	4							
		C1	-2348.30	8.06	-77.30	-2348.30	1.63	-202.51
		C2	-2070.29	14.92	80.76	-2070.29	7.26	-68.00
		C3	-2070.29	109.06	592.82	-2070.29	-17.29	-186.76
		C4	-2070.29	119.36	654.64	-2070.29	-17.29	-186.76
	5							
		C1	-2362.45	14.03	-191.39	-2362.45	10.94	-62.83
		C2	-2082.02	9.83	-54.66	-2082.02	6.17	98.09
		C3	-2082.02	18.92	171.16	-2082.02	-24.69	409.26
		C4	-2082.02	29.22	253.57	-2082.02	-24.69	409.26
	6							
		C1	-2371.91	26.36	-154.03	-2371.91	13.75	-41.16
		C2	-2091.82	12.36	-35.61	-2091.82	-2.62	98.50
		C3	-2091.82	17.37	4.35	-2091.82	-89.60	535.84
		C4	-2091.82	27.67	107.37	-2091.82	-89.60	535.84
	7							
		C1	-2362.40	38.38	-86.55	-2362.40	16.25	-8.43
		C2	-2088.25	14.76	-7.47	-2088.25	-11.54	85.37
		C3	-2088.25	19.78	40.48	-2088.25	-108.59	382.65
		C4	-2088.25	30.08	164.11	-2088.25	-108.59	382.65
	8							
		C1	-2352.47	50.05	4.07	-2352.47	18.41	28.41
		C2	-2083.45	16.99	25.34	-2083.45	-20.63	54.26
		C3	-2083.45	22.00	81.28	-2083.45	-127.77	191.32
		C4	-2083.45	32.30	225.51	-2083.45	-127.77	191.32
	9							
		C1	-2338.44	61.13	116.94	-2338.44	19.96	68.47
		C2	-2072.54	18.64	62.29	-2072.54	-30.29	4.65
		C3	-2072.54	23.66	126.22	-2072.54	-147.51	-38.66
		C4	-2072.54	33.96	291.05	-2072.54	-147.51	-38.66

ESFUERZOS CORTANTES

	Nudo	Combi.	MAXIMOS Axil	MAXIMOS Cort.	MAXIMOS Flec.	MINIMOS Axil	MINIMOS Cort.	MINIMOS Flec.
	10							
		C1	-2315.42	70.98	248.75	-2315.42	20.29	108.43
		C2	-2049.47	18.92	99.56	-2049.47	-41.33	-67.28
		C3	-2049.47	23.94	171.49	-2049.47	-168.63	-311.11
		C4	-2049.47	34.24	356.92	-2049.47	-168.63	-311.11
P-1	11							
		C1	-2269.34	234.09	-86.62	-2269.34	173.40	164.60
		C2	-2020.17	278.33	-368.18	-2020.17	206.17	-69.52
		C3	-2020.17	423.77	-884.20	-2020.17	188.21	10.40
		C4	-2020.17	423.77	-884.20	-2020.17	188.21	216.44
	12							
		C1	-2208.54	-55.23	135.27	-2208.54	-103.79	247.21
		C2	-1967.42	6.63	-10.20	-1967.42	-51.10	122.87
		C3	-1967.42	139.22	-230.24	-1967.42	-69.06	166.28
		C4	-1967.42	139.22	-24.20	-1967.42	-69.06	166.28
	13							
		C1	-2196.64	-40.45	14.37	-2196.64	-76.86	17.98
		C2	-1961.26	5.48	5.81	-1961.26	-37.82	10.07
		C3	-1961.26	125.22	48.96	-1961.26	-55.78	16.96
		C4	-1961.26	125.22	255.00	-1961.26	-55.78	16.96
	14							
		C1	-2169.18	-25.46	-61.38	-2169.18	-49.73	-135.15
		C2	-1930.57	5.34	28.85	-1930.57	-23.53	-58.89
		C3	-1930.57	112.22	302.43	-1930.57	-41.49	-88.51
		C4	-1930.57	112.22	508.47	-1930.57	-41.49	-88.51
	15							
		C1	-2139.85	-11.92	-96.09	-2139.85	-24.06	-216.29
		C2	-1899.32	3.53	53.95	-1899.32	-10.90	-88.99
		C3	-1899.32	97.56	525.18	-1899.32	-28.87	-155.12
		C4	-1899.32	97.56	731.22	-1899.32	-28.87	-155.12
	16							
		C1	-2116.67	-0.00	-235.12	-2116.67	-0.00	-99.44
		C2	-1878.91	-0.00	-92.46	-1878.91	-0.00	68.89
		C3	-1878.91	17.96	-195.09	-1878.91	-31.08	652.80
		C4	-1878.91	17.96	-195.09	-1878.91	-31.08	652.80
	17							
		C1	-2139.85	24.06	-216.29	-2139.85	11.92	-96.09
		C2	-1899.32	10.90	-88.99	-1899.32	-3.53	53.95
		C3	-1899.32	28.87	-155.12	-1899.32	-97.56	525.18
		C4	-1899.32	28.87	50.92	-1899.32	-97.56	525.18
	18							
		C1	-2169.18	49.73	-135.15	-2169.18	25.46	-61.38
		C2	-1930.57	23.53	-58.89	-1930.57	-5.34	28.85
		C3	-1930.57	41.49	-88.51	-1930.57	-112.22	302.43
		C4	-1930.57	41.49	-88.51	-1930.57	-112.22	508.47

ESFUERZOS CORTANTES

	Nudo	Combi.	MAXIMOS Axil	MAXIMOS Cort.	MAXIMOS Flec.	MINIMOS Axil	MINIMOS Cort.	MINIMOS Flec.
	19							
		C1	-2196.64	76.86	17.98	-2196.64	40.45	14.37
		C2	-1961.26	37.82	10.07	-1961.26	-5.48	5.81
		C3	-1961.26	55.78	16.96	-1961.26	-125.22	48.96
		C4	-1961.26	55.78	16.96	-1961.26	-125.22	255.00
	20							
		C1	-2208.54	103.79	247.21	-2208.54	55.23	135.27
		C2	-1967.42	51.10	122.87	-1967.42	-6.63	-10.20
		C3	-1967.42	69.06	166.28	-1967.42	-139.22	-230.24
		C4	-1967.42	69.06	166.28	-1967.42	-139.22	-24.20
P-2	21							
		C1	-2269.34	209.38	-86.62	-2269.34	149.17	164.60
		C2	-2020.17	255.78	-368.18	-2020.17	184.21	-69.52
		C3	-2020.17	393.16	-832.71	-2020.17	179.19	10.40
		C4	-2020.17	393.16	-832.71	-2020.17	168.89	195.84
	22							
		C1	-2315.42	-20.29	108.43	-2315.42	-70.98	248.75
		C2	-2049.47	41.33	-67.28	-2049.47	-18.92	99.56
		C3	-2049.47	168.63	-311.11	-2049.47	-23.94	171.49
		C4	-2049.47	168.63	-311.11	-2049.47	-34.24	336.32
	23							
		C1	-2338.44	-19.96	68.47	-2338.44	-61.13	116.94
		C2	-2072.54	30.29	4.65	-2072.54	-18.64	62.29
		C3	-2072.54	147.51	-38.66	-2072.54	-23.66	126.22
		C4	-2072.54	147.51	-38.66	-2072.54	-33.96	270.45
	24							
		C1	-2352.47	-18.41	28.41	-2352.47	-50.05	4.07
		C2	-2083.45	20.63	54.26	-2083.45	-16.99	25.34
		C3	-2083.45	127.77	191.32	-2083.45	-22.00	81.28
		C4	-2083.45	127.77	191.32	-2083.45	-32.30	204.91
	25							
		C1	-2362.40	-16.25	-8.43	-2362.40	-38.38	-86.55
		C2	-2088.25	11.54	85.37	-2088.25	-14.76	-7.47
		C3	-2088.25	108.59	382.65	-2088.25	-19.78	40.48
		C4	-2088.25	108.59	382.65	-2088.25	-30.08	143.50
	26							
		C1	-2371.91	-13.75	-41.16	-2371.91	-26.36	-154.03
		C2	-2091.82	2.62	98.50	-2091.82	-12.36	-35.61
		C3	-2091.82	89.60	535.84	-2091.82	-17.37	4.35
		C4	-2091.82	89.60	535.84	-2091.82	-27.67	86.76
	27							
		C1	-2362.45	-10.94	-62.83	-2362.45	-14.03	-191.39
		C2	-2082.02	-6.17	98.09	-2082.02	-9.83	-54.67
		C3	-2082.02	24.69	409.26	-2082.02	-18.92	171.16
		C4	-2082.02	24.69	409.26	-2082.02	-29.22	232.97

ESFUERZOS CORTANTES

	Nudo	Combi.	MAXIMOS Axil	MAXIMOS Cort.	MAXIMOS Flec.	MINIMOS Axil	MINIMOS Cort.	MINIMOS Flec.
	28							
		C1	-2348.30	-1.63	-202.51	-2348.30	-8.06	-77.30
		C2	-2070.29	-7.26	-68.00	-2070.29	-14.92	80.76
		C3	-2070.29	17.29	-186.76	-2070.29	-109.06	592.82
		C4	-2070.29	17.29	-186.76	-2070.29	-119.36	634.03
	29							
		C1	-2336.76	10.38	-190.46	-2336.76	-5.57	-87.63
		C2	-2062.24	-4.97	-77.93	-2062.24	-23.94	44.20
		C3	-2062.24	19.59	-157.10	-2062.24	-128.16	405.74
		C4	-2062.24	19.59	-157.10	-2062.24	-138.46	426.34
	30							
		C1	-2325.13	73.18	-155.72	-2325.69	47.72	-94.31
		C2	-2055.90	42.38	-84.43	-2056.57	12.09	-11.57
		C3	-2055.50	66.93	-124.01	-2058.39	-102.17	179.28
		C4	-2055.50	66.93	-124.01	-2058.61	-112.47	179.28
E-2	31							
		C1	-2316.20	81.72	0.00	-2316.99	45.79	0.00
		C2	-2066.20	42.94	0.00	-2067.14	0.39	0.00
		C3	-2065.80	67.48	0.00	-2069.95	-182.03	0.00
		C4	-2065.80	67.48	0.00	-2070.17	-192.33	0.00

ESFUERZOS FLECTORES

	Nudo	Combi.	MAXIMOS Axil	MAXIMOS Cort.	MAXIMOS Flec.	MINIMOS Axil	MINIMOS Cort.	MINIMOS Flec.
E-1	1							
		C1	-2316.99	-45.79	0.00	-2316.20	-81.72	0.00
		C2	-2067.14	-0.39	-0.00	-2066.20	-42.94	-0.00
		C3	-2068.99	115.00	0.00	-2066.00	-58.52	-0.00.
		C4	-2068.99	115.00	0.00	-2066.22	-48.22	20.60
	2							
		C1	-2326.15	3.43	-94.30	-2326.15	-22.04	-155.71
		C2	-2056.47	33.12	-11.59	-2056.47	2.82	-84.45
		C3	-2056.47	147.41	179.26	-2056.47	-21.73	-124.03
		C4	-2056.47	157.72	199.86	-2056.47	-21.73	-124.03
	3							
		C1	-2336.76	5.57	-87.63	-2336.76	-10.38	-190.46
		C2	-2062.24	23.94	44.20	-2062.24	4.97	-77.93
		C3	-2062.24	128.16	405.74	-2062.24	-19.59	-157.10
		C4	-2062.24	138.46	446.95	-2062.24	-19.59	-157.10
	4							
		C1	-2348.30	8.06	-77.30	-2348.30	1.63	-202.51
		C2	-2070.29	14.92	80.76	-2070.29	7.26	-68.00
		C3	-2070.29	109.06	592.82	-2070.29	-17.29	-186.76
		C4	-2070.29	119.36	654.64	-2070.29	-17.29	-186.76
	5							
		C1	-2362.45	10.94	-62.83	-2362.45	14.03	-191.39
		C2	-2082.02	6.17	98.09	-2082.02	9.83	-54.66
		C3	-2082.02	-9.97	688.33	-2082.02	-14.72	-213.01
		C4	-2082.02	0.33	770.74	-2082.02	-14.72	-213.01
	6							
		C1	-2371.91	13.75	-41.16	-2371.91	26.36	-154.03
		C2	-2091.82	-2.62	98.50	-2091.82	12.36	-35.61
		C3	-2091.82	-78.95	642.34	-2091.82	-12.19	-233.54
		C4	-2091.82	-68.64	745.36	-2091.82	-12.19	-233.54
	7							
		C1	-2362.40	16.25	-8.43	-2362.40	38.38	-86.55
		C2	-2088.25	-11.54	85.37	-2088.25	14.76	-7.47
		C3	-2088.25	-97.94	510.46	-2088.25	-9.79	-244.98
		C4	-2088.25	-87.64	634.08	-2088.25	-9.79	-244.98
	8							
		C1	-2352.47	18.41	28.41	-2352.47	50.05	4.07
		C2	-2083.45	-20.63	54.26	-2083.45	16.99	25.34
		C3	-2083.45	-117.12	340.44	-2083.45	-7.57	-251.76
		C4	-2083.45	-106.81	484.66	-2083.45	-7.57	-251.76
	9							
		C1	-2338.44	61.13	116.94	-2338.44	19.96	68.47
		C2	-2072.54	18.64	62.29	-2072.54	-30.29	4.65
		C3	-2072.54	-12.59	191.37	-2072.54	-54.85	-312.04
		C4	-2072.54	-2.29	356.21	-2072.54	-54.85	-312.04

No se consideran Descensos de Apoyos

ESFUERZOS FLECTORES

			MAXIMOS			MINIMOS		
	Nudo	Combi.	Axil	Cort.	Flec.	Axil	Cort.	Flec.
	10							
		C1	-2315.42	70.98	248.75	-2315.42	20.29	108.43
		C2	-2049.47	18.92	99.56	-2049.47	-41.33	-67.28
		C3	-2049.47	23.94	171.49	-2049.47	-112.21	-440.97
		C4	-2049.47	34.24	356.92	-2049.47	-112.21	-440.97
P-1	11							
		C1	-2269.34	173.40	164.60	-2269.34	234.09	-86.62
		C2	-2020.17	206.17	-69.52	-2020.17	278.33	-368.18
		C3	-2020.17	188.21	10.40	-2020.17	423.77	-884.20
		C4	-2020.17	188.21	216.44	-2020.17	423.77	-884.20
	12							
		C1	-2208.54	-103.79	247.21	-2208.54	-55.23	135.27
		C2	-1967.42	-51.10	122.87	-1967.42	6.63	-10.20
		C3	-1967.42	-69.06	166.28	-1967.42	76.00	-290.74
		C4	-1967.42	-69.06	372.32	-1967.42	76.00	-290.74
	13							
		C1	-2196.64	-76.86	17.98	-2196.64	-40.45	14.37
		C2	-1961.26	-37.82	10.07	-1961.26	5.48	5.81
		C3	-1961.26	69.86	145.52	-1961.26	23.44	-206.36
		C4	-1961.26	69.86	351.56	-1961.26	23.44	-206.36
	14							
		C1	-2169.18	-25.46	-61.38	-2169.18	-49.73	-135.15
		C2	-1930.57	5.34	28.85	-1930.57	-23.53	-58.89
		C3	-1930.57	106.19	376.44	-1930.57	-11.60	-247.03
		C4	-1930.57	106.19	582.48	-1930.57	-11.60	-247.03
	15							
		C1	-2139.85	-11.92	-96.09	-2139.85	-24.06	-216.29
		C2	-1899.32	3.53	53.95	-1899.32	-10.90	-88.99
		C3	-1899.32	91.53	583.81	-1899.32	1.02	-256.00
		C4	-1899.32	91.53	789.85	-1899.32	1.02	-256.00
	16							
		C1	-2116.67	-0.00	-99.44	-2116.67	-0.00	-235.12
		C2	-1878.91	-0.00	68.89	-1878.91	-0.00	-92.46
		C3	-1878.91	-25.05	696.04	-1878.91	11.93	-238.34
		C4	-1878.91	-25.05	902.08	-1878.91	11.93	-238.34
	17							
		C1	-2139.85	11.92	-96.09	-2139.85	24.06	-216.29
		C2	-1899.32	-3.53	53.95	-1899.32	10.90	-88.99
		C3	-1899.32	-91.53	583.81	-1899.32	-1.02	-256.00
		C4	-1899.32	-91.53	789.85	-1899.32	-1.02	-256.00
	18							
		C1	-2169.18	25.46	-61.38	-2169.18	49.73	-135.15
		C2	-1930.57	-5.34	28.85	-1930.57	23.53	-58.89
		C3	-1930.57	-106.19	376.44	-1930.57	11.60	-247.03
		C4	-1930.57	-106.19	582.48	-1930.57	11.60	-247.03

ESFUERZOS FLECTORES

			MAXIMOS			MINIMOS		
	Nudo	Combi.	Axil	Cort.	Flec.	Axil	Cort.	Flec.
	19							
		C1	-2196.64	76.86	17.98	-2196.64	40.45	14.37
		C2	-1961.26	37.82	10.07	-1961.26	-5.48	5.81
		C3	-1961.26	-69.86	145.52	-1961.26	-23.44	-206.36
		C4	-1961.26	-69.86	351.56	-1961.26	-23.44	-206.36
	20							
		C1	-2208.54	103.79	247.21	-2208.54	55.23	135.27
		C2	-1967.42	51.10	122.87	-1967.42	-6.63	-10.20
		C3	-1967.42	69.06	166.28	-1967.42	-76.00	-290.74
		C4	-1967.42	69.06	372.32	-1967.42	-76.00	-290.74
P-2	21							
		C1	-2269.34	149.17	164.60	-2269.34	209.38	-86.62
		C2	-2020.17	184.21	-69.52	-2020.17	255.78	-368.18
		C3	-2020.17	179.19	10.40	-2020.17	336.74	-884.20
		C4	-2020.17	168.89	216.44	-2020.17	336.74	-884.20
	22							
		C1	-2315.42	-70.98	248.75	-2315.42	-20.29	108.43
		C2	-2049.47	-18.92	99.56	-2049.47	41.33	-67.28
		C3	-2049.47	-23.94	171.49	-2049.47	112.21	-440.97
		C4	-2049.47	-34.24	356.92	-2049.47	112.21	-440.97
	23							
		C1	-2338.44	-61.13	116.94	-2338.44	-19.96	68.47
		C2	-2072.54	-18.64	62.29	-2072.54	30.29	4.65
		C3	-2072.54	12.59	191.37	-2072.54	54.85	-312.04
		C4	-2072.54	2.29	356.21	-2072.54	54.85	-312.04
	24							
		C1	-2352.47	-18.41	28.41	-2352.47	-50.05	4.07
		C2	-2083.45	20.63	54.26	-2083.45	-16.99	25.34
		C3	-2083.45	117.12	340.44	-2083.45	7.57	-251.76
		C4	-2083.45	106.81	484.66	-2083.45	7.57	-251.76
	25							
		C1	-2362.40	-16.25	-8.43	-2362.40	-38.38	-86.55
		C2	-2088.25	11.54	85.37	-2088.25	-14.76	-7.47
		C3	-2088.25	97.94	510.46	-2088.25	9.79	-244.98
		C4	-2088.25	87.64	634.08	-2088.25	9.79	-244.98
	26							
		C1	-2371.91	-13.75	-41.16	-2371.91	-26.36	-154.03
		C2	-2091.82	2.62	98.50	-2091.82	-12.36	-35.61
		C3	-2091.82	78.95	642.34	-2091.82	12.19	-233.54
		C4	-2091.82	68.64	745.36	-2091.82	12.19	-233.54
	27							
		C1	-2362.45	-10.94	-62.83	-2362.45	-14.03	-191.39
		C2	-2082.02	-6.17	98.09	-2082.02	-9.83	-54.67
		C3	-2082.02	9.97	688.33	-2082.02	14.72	-213.01
		C4	-2082.02	-0.33	770.74	-2082.02	14.72	-213.01

ESFUERZOS FLECTORES

			MAXIMOS			MINIMOS	
Nudo	Combi.	Axil	Cort.	Flec.	Axil	Cort.	Flec.
28							
	C1	-2348.30	-8.06	-77.30	-2348.30	-1.63	-202.51
	C2	-2070.29	-14.92	80.76	-2070.29	-7.26	-68.00
	C3	-2070.29	-109.06	592.82	-2070.29	17.29	-186.76
	C4	-2070.29	-119.36	654.64	-2070.29	17.29	-186.76
29							
	C1	-2336.76	-5.57	-87.63	-2336.76	10.38	-190.46
	C2	-2062.24	-23.94	44.20	-2062.24	-4.97	-77.93
	C3	-2062.24	-128.16	405.74	-2062.24	19.59	-157.10
	C4	-2062.24	-138.46	446.95	-2062.24	19.59	-157.10
30							
	C1	-2325.69	47.72	-94.31	-2325.13	73.18	-155.72
	C2	-2056.57	12.09	-11.57	-2055.90	42.38	-84.43
	C3	-2058.39	-102.17	179.28	-2055.50	66.93	-124.01
	C4	-2058.61	-112.47	199.88	-2055.50	66.93	-124.01
E-2 31							
	C1	-2316.99	45.79	0.00	-2316.20	81.72	0.00
	C2	-2067.14	0.39	0.00	-2066.20	42.94	0.00
	C3	-2068.74	-127.00	0.00	-2068.25	-81.41	0.00
	C4	-2068.96	-137.30	20.60	-2068.25	-81.41	0.00

10.- Comprobación a Rotura

COMPROBACION DE AGOTAMIENTO POR FLEXION LONGITUDINAL

HORMIGON :

Fck (kg/cm²) = 400
Gamma c = 1.50
Ec tiempo inyección (kg/cm²)= 300416
Ec fase considerada (kg/cm²)= 355457

ACERO PASIVO :

Fyk (kg/cm²) = 5100
Gamma s = 1.15
Es (Kg/cm²) = 2100000
Tipo de acero: Dureza natural
Recubrimiento de armaduras pasivas (cms.) = 3

ACERO ACTIVO :

Fmax,k (Kg/cm²) = 19000
Fyp (Kg/cm²) = 17000
Gamma p = 1.10
Ep (Kg/cm²) = 1900000

Coeficientes de Combinaciones:

	Favorable	Desfavorable
Peso Propio y Cargas permanentes	1.00	1.35
Pretensado hiperestático	0.00	1.00
Sobrecargas	0.00	1.50
Gradiente Térmico	0.00	1.50

	Nudo	%Pini	%Pfin.	Mu(+)	Md(+)	Mu(-)	Md(-)
E-1	1	6.34	16.48	1274.6	0.0	-1585.6	20.6
	2	6.08	16.97	1543.7	564.1	-994.2	168.6
	3	5.72	16.80	1800.8	986.1	-807.3	269.8
	4	5.30	16.51	1957.4	1300.6	-703.8	306.3
	5	4.74	16.05	2010.7	1455.5	-670.7	278.1
	6	4.35	15.64	1959.8	1398.5	-703.3	185.3
	7	4.69	15.75	1805.2	1181.7	-806.5	27.7
	8	5.02	15.88	1551.1	857.4	-992.1	-194.5
	9	5.50	16.24	1202.3	485.2	-1275.6	-539.0
	10	6.31	17.07	769.9	177.0	-1666.7	-1017.2
P-1	11	8.49	18.54	542.2	-129.2	-1890.2	-1668.0
	12	10.41	20.19	922.6	311.1	-1504.3	-793.8
	13	11.13	20.65	1647.7	771.1	-904.6	-228.6
	14	12.40	22.04	2185.9	1333.3	-562.7	62.6
	15	13.68	23.39	2514.8	1727.9	-404.2	241.4
	16	14.65	24.24	2624.8	1895.8	-361.4	315.1
	17	13.68	23.39	2514.8	1727.9	-404.2	241.4
	18	12.40	22.04	2185.9	1333.3	-562.7	62.6
	19	11.13	20.65	1647.7	771.1	-904.6	-228.6
	20	10.41	20.19	922.6	311.1	-1504.3	-793.8
P-2	21	8.49	18.54	542.2	-129.2	-1890.2	-1668.0
	22	6.31	17.07	769.9	177.0	-1666.7	-1017.2
	23	5.50	16.24	1202.3	485.2	-1275.6	-539.0
	24	5.02	15.88	1551.1	857.4	-992.1	-194.5
	25	4.69	15.75	1805.2	1181.7	-806.5	27.7
	26	4.35	15.64	1959.8	1398.5	-703.3	185.3
	27	4.74	16.05	2010.7	1455.5	-670.7	278.1
	28	5.30	16.51	1957.4	1300.6	-703.8	306.3
	29	5.72	16.80	1800.8	986.1	-807.3	269.8
	30	6.08	16.98	1543.7	563.7	-994.2	168.6
E-2	31	6.34	16.48	1274.6	20.6	-1585.6	0.0

11.- Armadura, Rasante y Cortante

ARMADURA DE CORTANTE :

-.Vd(t) = Cortante máximo mayorado (Modelo Emparrillado)

-.fct,k= 24.43 Kg/cm²

-.σs,d y σi,d (Kg/cm²) = Las tensiones de cálculo en las fibras superior e inferior producidas por el flector concomitante con el cortante reducido y que definen la Zona AB si dichas tensiones son menores que fct,k ó bien la Zona C si son mayores

-.cotg = La cotangente del ángulo(θ) de las posibles fisuras oblicuas

-.Vcu(t) = La contribución del hormigón a esfuerzos cortantes y de valor dependiendo de la Zona AB ó C

-.Vu1(t) = Esfuerzo cortante de agotamiento por compresión oblícua se deberá cumplir Vu1 > Vd

*. en Ar(cm²/m) significa armadura mínima

	Nudo	Vd(t)	σs,d	σi,d	cotg	Vcu	Vu1	Zona	Ar(cm²/m)
E-1	1	183.58	31.77	31.77	1.556	408.6	3406.5	AB	55.56 *.
	2	126.84	58.08	5.11	1.641	276.4	2251.6	AB	37.58 *.
	3	107.59	75.28	-22.34	1.642	276.4	2250.7	AB	37.58 *.
	4	88.51	89.63	-45.10	1.644	468.9	2249.5	C	37.58 *.
	5	29.44	83.51	-34.65	1.647	522.4	2247.6	C	37.58 *.
	6	66.13	77.00	-23.69	1.649	524.2	2246.1	C	37.58 *.
	7	85.11	65.92	-6.00	1.649	276.4	2246.6	AB	37.58 *.
	8	104.28	52.03	16.17	1.647	276.4	2247.4	AB	37.58 *.
	9	124.01	35.19	42.79	1.645	276.4	2249.1	AB	37.58 *.
	10	145.12	15.01	74.21	1.639	276.4	2252.7	AB	37.58 *.
P-1	11	393.60	-2.81	101.53	1.631	276.4	2257.4	AB	37.58 *.
	12	109.07	42.82	25.45	1.618	276.4	2265.7	AB	37.58 *.
	13	95.08	37.93	33.03	1.617	276.4	2266.7	AB	37.58 *.
	14	82.10	78.50	-33.86	1.609	519.5	2271.6	C	37.58 *.
	15	67.45	92.92	-58.60	1.601	460.6	2276.6	C	37.58 *.
	16	21.08	64.46	-13.70	1.595	276.4	2279.9	AB	37.58 *.
	17	67.45	92.92	-58.60	1.601	460.6	2276.6	C	37.58 *.
	18	82.10	54.60	4.67	1.609	276.4	2271.6	AB	37.58 *.
	19	95.08	37.93	33.03	1.617	276.4	2266.7	AB	37.58 *.
	20	109.07	42.82	25.45	1.618	276.4	2265.7	AB	37.58 *.
P-2	21	335.79	-26.71	140.06	1.631	298.4	2257.4	C	37.58 *.
	22	111.27	6.89	87.31	1.639	276.4	2252.7	AB	37.58 *.
	23	90.17	22.10	63.89	1.645	276.4	2249.1	AB	37.58 *.
	24	70.43	33.98	45.26	1.647	276.4	2247.4	AB	37.58 *.
	25	51.27	42.91	31.09	1.649	276.4	2246.6	AB	37.58 *.
	26	32.29	49.03	21.40	1.649	276.4	2246.1	AB	37.58 *.
	27	29.61	60.51	2.41	1.647	276.4	2247.6	AB	37.58 *.
	28	43.68	69.92	-13.31	1.644	276.4	2249.5	AB	37.58 *.
	29	62.77	62.13	-1.15	1.642	276.4	2250.7	AB	37.58 *.
	30	82.02	51.55	15.75	1.641	276.4	2251.3	AB	37.58 *.
E-2	31	104.01	31.77	31.77	1.556	408.6	3406.5	AB	55.56 *.

ARMADURA DE RASANTE :

-.Vd(t) = Cortante tomado de la envolvente de las combinaciones mayoradas

-.Me/I (m3/m4) = La relación entre el momento estático del voladizo respecto al cdg. de la sección y el momento de inercia de dicha sección

-.Rd(t/m) = El esfuerzo rasante de cálculo en la unión del voladizo

-.σd(t/m²) = La tensión tangencial producida por Rd

-.cotg = La cotangente del ángulo(θ) de las posibles fisuras oblicuas

-.σu1(t/m²) = La tensión tangencial máxima para producir el agotamiento por compresión del hormigón y de valor 0.60*Fcd*sen(θ)²*cotg(θ) en cada sección deberá resultar σu1 > σd

-.2.Ar(cm²/m) = La Armadura total de cosido (entre las dos caras)

	Nudo	Me/I	Vd(t)	Rd	σd	cotg	σu1	2.Ar
E-1	1	0.2221	183.58	40.76	118.78	1.556	636.74	10.78
	2	0.3252	126.84	41.25	103.11	1.641	622.19	10.91
	3	0.3252	107.59	34.99	87.47	1.642	621.94	9.26
	4	0.3252	88.51	28.78	71.95	1.644	621.59	7.61
	5	0.3252	29.44	9.57	23.93	1.647	621.08	2.53
	6	0.3252	66.13	21.50	53.76	1.649	620.65	5.69
	7	0.3252	85.11	27.68	69.19	1.649	620.81	7.32
	8	0.3252	104.28	33.91	84.77	1.647	621.02	8.97
	9	0.3252	124.01	40.33	100.81	1.645	621.49	10.67
	10	0.3252	145.12	47.19	117.97	1.639	622.50	12.48
P-1	11	0.3252	393.60	127.99	319.97	1.631	623.77	33.86
	12	0.3252	109.07	35.47	88.67	1.618	626.09	9.38
	13	0.3252	95.08	30.92	77.29	1.617	626.36	8.18
	14	0.3252	82.10	26.70	66.74	1.609	627.71	7.06
	15	0.3252	67.45	21.93	54.83	1.601	629.09	5.80
	16	0.3252	21.08	6.86	17.14	1.595	630.00	1.81
	17	0.3252	67.45	21.93	54.83	1.601	629.09	5.80
	18	0.3252	82.10	26.70	66.74	1.609	627.71	7.06
	19	0.3252	95.08	30.92	77.29	1.617	626.36	8.18
	20	0.3252	109.07	35.47	88.67	1.618	626.09	9.38
P-2	21	0.3252	335.79	109.19	272.98	1.631	623.77	28.89
	22	0.3252	111.27	36.18	90.46	1.639	622.50	9.57
	23	0.3252	90.17	29.32	73.30	1.645	621.49	7.76
	24	0.3252	70.43	22.90	57.26	1.647	621.02	6.06
	25	0.3252	51.27	16.67	41.68	1.649	620.81	4.41
	26	0.3252	32.29	10.50	26.25	1.649	620.65	2.78
	27	0.3252	29.61	9.63	24.07	1.647	621.08	2.55
	28	0.3252	43.68	14.20	35.51	1.644	621.59	3.76
	29	0.3252	62.77	20.41	51.03	1.642	621.94	5.40
	30	0.3252	82.02	26.67	66.68	1.641	622.08	7.06
E-2	31	0.2221	104.01	23.10	67.30	1.556	636.74	6.11

ARMADURA DE TORSION (EP-93):

Tdmáx(m.t) = Torsor máximo mayorado (Modelo Emparrillado)

Tul=Torsor de agotamiento por Compresión oblícua del Hormigón
de valor = 0.36*fcd*Ae*He

Atrsv.= Armadura transversal en cm²/m = $\frac{Td}{2.Ae.Ftd}$

Along.= Armadura total longitudinal en cm²= $\frac{Td.u-Ap.Fyp}{2.Ae.Ftd}$

Ap(cm²)= 173.68 ; Fyp(Kg/cm²)= 15455 ; Ftd(Kg/cm²)= 4200

	Nudo	He(m)	Ae(m²)	u(m)	Tul	Tdmáx	Atrsv.	Along.
E-1	1	0.183	4.415	11.467	728.52	303.69	8.19	21.52
	2	0.183	3.194	8.745	527.08	280.41	10.45	0.00
	3	0.183	3.194	8.745	527.08	269.83	10.06	0.00
	4	0.183	3.194	8.745	527.08	259.24	9.66	0.00
	5	0.183	3.194	8.745	527.08	224.33	8.36	0.00
	6	0.183	3.194	8.745	527.08	213.74	7.97	0.00
	7	0.183	3.194	8.745	527.08	203.16	7.57	0.00
	8	0.183	3.194	8.745	527.08	192.58	7.18	0.00
	9	0.183	3.194	8.745	527.08	181.99	6.78	0.00
	10	0.183	3.194	8.745	527.08	183.84	6.85	0.00
P-1	11	0.183	3.194	8.745	527.08	168.58	6.28	0.00
	12	0.183	3.194	8.745	527.08	155.08	5.78	0.00
	13	0.183	3.194	8.745	527.08	141.59	5.28	0.00
	14	0.183	3.194	8.745	527.08	128.09	4.77	0.00
	15	0.183	3.194	8.745	527.08	114.60	4.27	0.00
	16	0.183	3.194	8.745	527.08	75.25	2.80	0.00
	17	0.183	3.194	8.745	527.08	114.60	4.27	0.00
	18	0.183	3.194	8.745	527.08	128.09	4.77	0.00
	19	0.183	3.194	8.745	527.08	141.59	5.28	0.00
	20	0.183	3.194	8.745	527.08	155.08	5.78	0.00
P-2	21	0.183	3.194	8.745	527.08	168.58	6.28	0.00
	22	0.183	3.194	8.745	527.08	157.99	5.89	0.00
	23	0.183	3.194	8.745	527.08	156.14	5.82	0.00
	24	0.183	3.194	8.745	527.08	166.72	6.21	0.00
	25	0.183	3.194	8.745	527.08	177.31	6.61	0.00
	26	0.183	3.194	8.745	527.08	187.89	7.00	0.00
	27	0.183	3.194	8.745	527.08	198.48	7.40	0.00
	28	0.183	3.194	8.745	527.08	209.06	7.79	0.00
	29	0.183	3.194	8.745	527.08	219.64	8.19	0.00
	30	0.183	3.194	8.745	527.08	230.23	8.58	0.00
E-2	31	0.183	4.415	11.467	728.52	230.23	6.21	0.00

COMPROBACION TENIENDO EN CUENTA LA FLEXION

M A X I M O C O R T A N T E

	Nudo	Vd(t)	Vu1	Zona	Td(m.t)	Tu1	α
E-1	1	183.58	3406.5	AB	130.38	728.5	0.25
	2	126.84	2251.6	AB	117.68	527.1	0.30
	3	107.59	2250.7	AB	117.68	527.1	0.29
	4	88.51	2249.5	C	117.68	527.1	0.28
	5	29.44	2247.6	C	15.00	527.1	0.04
	6	66.13	2246.1	C	17.32	527.1	0.06
	7	85.11	2246.6	AB	17.32	527.1	0.07
	8	104.28	2247.4	AB	17.32	527.1	0.08
	9	124.01	2249.1	AB	17.32	527.1	0.09
	10	145.12	2252.7	AB	17.32	527.1	0.10
P-1	11	393.60	2257.4	AB	67.50	527.1	0.31
	12	109.07	2265.7	AB	67.50	527.1	0.19
	13	95.08	2266.7	AB	67.50	527.1	0.18
	14	82.10	2271.6	C	67.50	527.1	0.17
	15	67.45	2276.6	C	67.50	527.1	0.17
	16	21.08	2279.9	AB	22.50	527.1	0.05
	17	67.45	2276.6	C	67.50	527.1	0.17
	18	82.10	2271.6	AB	67.50	527.1	0.17
	19	95.08	2266.7	AB	67.50	527.1	0.18
	20	109.07	2265.7	AB	67.50	527.1	0.19
P-2	21	335.79	2257.4	C	67.50	527.1	0.29
	22	111.27	2252.7	AB	67.50	527.1	0.19
	23	90.17	2249.1	AB	67.50	527.1	0.18
	24	70.43	2247.4	AB	67.50	527.1	0.17
	25	51.27	2246.6	AB	67.50	527.1	0.16
	26	32.29	2246.1	AB	0.00	527.1	0.01
	27	29.61	2247.6	AB	0.00	527.1	0.01
	28	43.68	2249.5	AB	0.00	527.1	0.02
	29	62.77	2250.7	AB	0.00	527.1	0.03
	30	82.02	2251.3	AB	17.32	527.1	0.07
E-2	31	104.01	3406.5	AB	67.50	728.5	0.13

12.- Flexión Local de Voladizo

FLEXION TRANSVERSAL LOCAL DEL VOLADIZO :

Peso Propio:
Densidad = 2.50 t/m3

Cargas Permanentes:
Firme = 6 cms.
densidad = 2.40 t/m3

Acera = 1.000 m
Peso = 0.550 t/m

SobreCargas:
SobreCarga uniforme 0.40 t/m²
Carro de la Instrucción separado 0.50 m de la Acera
(Aplicamos Westergaard)

Con las cargas anteriores se obtienen los esfuerzos en la sección de empotramiento del voladizo:

Con los coeficientes de mayoración de cargas:

Peso Propio y Cargas Permanentes: 1.35

Sobrecargas: 1.50

Se obtienen los esfuerzos de cálculo

VOLADIZO DEL NUDO 1

Longitud = 1.700 m
Canto Máximo= 0.343 m
Canto mínimo= 0.150 m
Area = 0.419 m²/m
dist.Cdg = 0.739 m

Esfuerzos:	V(t/m)	M(mt/m)	Vd(t/m)	Md(mt/m)
Peso Propio	1.05	0.77	1.41	1.05
Firme	0.10	0.04	0.14	0.05
Acera	0.55	0.66	0.74	0.89
Sobrecarga Unif.	0.68	0.58	1.02	0.87
Carro	8.82	3.29	13.24	4.94
			õ 16.55	7.79

Canto útil = 0.31 m Uc= 835.20 t/m Vcu= 25.57 t/m

Armadura de flexión:
Us = 25.26 t/m
As = 5.70 cm²/m

Armadura de Cortante:
Vd<Vcu no necesita armadura de Cortante

VOLADIZO DE NUDOS 2 a 30

Longitud = 2.200 m
Canto Máximo= 0.400 m
Canto mínimo= 0.150 m
Area = 0.605 m²/m
dist.Cdg = 0.933 m

Esfuerzos:	V(t/m)	M(mt/m)	Vd(t/m)	Md(mt/m)
Peso Propio	1.51	1.41	2.04	1.91
Firme	0.17	0.10	0.23	0.14
Acera	0.55	0.94	0.74	1.26
Sobrecarga Unif.	0.88	0.97	1.32	1.45
Carro	6.82	4.32	10.23	6.48
			õ 14.56	11.24

Canto útil = 0.37 m Uc= 986.67 t/m Vcu= 30.21 t/m

Armadura de flexión:
Us = 30.87 t/m
As = 6.96 cm²/m

Armadura de Cortante:
Vd<Vcu no necesita armadura de Cortante

VOLADIZO DEL NUDO 31

Longitud = 1.700 m
Canto Máximo= 0.343 m
Canto mínimo= 0.150 m
Area = 0.419 m²/m
dist.Cdg = 0.739 m

Esfuerzos:	V(t/m)	M(mt/m)	Vd(t/m)	Md(mt/m)
Peso Propio	1.05	0.77	1.41	1.05
Firme	0.10	0.04	0.14	0.05
Acera	0.55	0.66	0.74	0.89
Sobrecarga Unif.	0.68	0.58	1.02	0.87
Carro	8.82	3.29	13.24	4.94
			õ 16.55	7.79

Canto útil = 0.31 m Uc= 835.20 t/m Vcu= 25.57 t/m

Armadura de flexión:
Us = 25.26 t/m
As = 5.70 cm²/m

Armadura de Cortante:
Vd<Vcu no necesita armadura de Cortante

Armadura de Flexión máxima = 6.96 cm²/m en Nudos 2 a 30

13.- Reparto de acciones longitudinales a Pilas y Estribo

REPARTO DE ACCIONES DEL TABLERO A LA SUBESTRUCTURA

Título .....:PS 104+600

MODULO DEL HORMIGON (Kg/cm²):

Instantáneo .: 355457
Diferido ....: 244499

Coeficiente térmico α ...:0.00001

MODULO DE NEOPRENOS (Kg/cm²):

Instantáneo .: 16
Diferido ....: 8

ACCIONES CONSIDERADAS:

Temperatura °C .....: 13.00

Reológicas °C .....: 47.00

Frenado (t) .....: 14.00

Viento (t) .....: 27.51

GEOMETRIA

Vano	Longitud (m)	Area (m²)
1	20.000	5.470
2	25.500	5.470
3	20.000	5.470

DATOS DE SOPORTES:

Soporte	Altura(m)	Inercia(m4)	N° de Apoyos	Neopreno	Junta
Estribo 1	8.65	1.5379	2	300 x 400 x 37	Si
Pila 1	14.52	0.0719	1	ϕ 700 x 50	—
Pila 2	12.74	0.0719	1	ϕ 700 x 50	—
Estribo 2	3.86	1.5379	2	300 x 400 x 37	Si

S A L I D A D E R E S U L T A D O S

RIGIDECES, COEFICIENTE Y LONGITUD DE PANDEO DE SOPORTES

δ es el desplazamiento total en mm.
K es la rigidez al desplazamiento horizontal en t/m
ß es el coefiente de pandeo
Lp es la longitud de pandeo en m.

Soporte	δ	K	ß	Lp
Estribo 1	0.06	319.30	1.98	17.15
Pila 1	1.73	406.95	1.12	16.19
Pila 2	1.52	401.57	1.26	16.09
Estribo 2	0.01	317.30	2.00	7.71

MOVIMIENTOS Y FUERZAS SOBRE NEOPRENOS:

Ft = Fuerza debida a temperatura de 13.00°C
Fd = Fuerza debida a diferidas de 47.00°C
Fr = Fuerza debida al frenado de 14.00 t
Fv = Fuerza debida al viento de 27.51 t

	LONGITUDINAL			TRANSVERSAL
Soporte	Ft	Fd	Fr	Fv
Estribo 1	-2.19	-7.93	5.54	10.89
Pila 1	-0.24	-0.85	1.15	2.27
Pila 2	0.28	1.01	1.58	3.10
Estribo 2	2.15	7.77	5.72	11.25

MOVIMIENTOS (mm.)

	LONGITUDINAL			TRANSVERSAL
Soporte	ut	ud	ur	uv
Estribo 1	-4.23	-15.28	-5.34	-10.49
Pila 1	-0.38	-1.39	-0.94	-1.84
Pila 2	0.46	1.65	-1.28	-2.52
Estribo 2	4.14	14.97	-5.52	-10.84

COMPROBACION DE NEOPRENOS

*) Todas las unidades en mm
Movx.= Movimiento Máximo
Reco.= Recorrido Máximo
Aper.= Apertura Inicial
Espm.= Espesor Neto Mínimo de cada neopreno
Espr.= Espesor Neto de cada neopreno Dispuesto realmente
Desp.= Movimiento Máximo admitido para el neopreno dispuesto

Soporte	Movx.	Reco.	Aper.	Espm.	Espr.	Desp.
Estribo 1	24.8	34.4	9.6	35	37	25.9
Pila 1	2.7			4	50	35.0
Pila 2	3.4			5	50	35.0
Estribo 2	24.6	34.3	9.7	35	37	25.9

PILAS

CALCULO Pilas PS 104+600

HORMIGON

Fck (Kg/cm²)	= 250
gamma c	= 1.50
densidad	= 2.50

ACERO:

Fyk (Kg/cm²)	= 5100
gamma s	= 1.15
recubrim.(cm)	= 3.0

FUSTE:

Altura (m)	:14.52
Longitud de pandeo	:16.19
Diámetro (m)	: 1.10
Sección (m²)	: 0.9503
Inercia (m4)	: 0.0719
radio de giro (m)	: 0.28
Peso propio (tns)	: 34.50
Esbeltez mecánica	: 58.87

se deben considerar los efectos de 2° orden por ser la esbeltez mecánica > 35

y la excentricidad adicional vendrá dada por :

$$ea = \left(0.85 + \frac{Fyd}{12000} \right) x \frac{h+20eo}{h+10eo} x \frac{Lp^2}{i} x 0.0001$$

Con los valores de las cargas que se indican a continuación y contemplando todas las hipótesis de las Acciones a considerar en el Proyecto de puentes de carreteras obtenemos las siguientes combinaciones:

I máx = Hipótesis I con sobrecargas máximas
I mín = Hipótesis I con sobrecargas mínimas

II = Hipótesis II

III máx = Hipótesis III con sobrecargas máximas
III mín = Hipótesis III con sobrecargas mínimas

ACCIONES EN CABEZA DE PILA (tns)

Reacciones Verticales:

Cargas Permanentes	395.54
Sobrecargas Máximas	150.10
Sobrecargas Mínimas	-11.22
Gradiente Térmico	-10.87

Reacciones Longitudinales:

Reológicas	1.29
Frenado	1.58

Reacciones Transversales:

Viento	3.10

Resultados de Cálculo (Esfuerzos en arranque de pila t, mt):

Hipót	ΣN	ΣFl	ΣFt	ΣMl	ΣMt	Gf	Nd	Md	eo	ead	etot	Nu	Mu	W
I máx	569.27	2.87	0.00	41.67	0.00	1.60	910.83	66.68	0.07	0.16	0.24	0.64	0.14	0.30
I min	407.95	2.87	0.00	41.67	0.00	1.60	652.72	66.68	0.10	0.17	0.27	0.46	0.11	0.12
II	419.17	1.29	3.10	18.73	45.01	1.60	670.67	78.01	0.12	0.18	0.29	0.47	0.13	0.16
III máx	569.27	2.87	1.55	41.67	22.51	1.44	819.74	68.20	0.08	0.17	0.25	0.58	0.13	0.24
III min	407.95	2.87	1.55	41.67	22.51	1.44	587.44	68.20	0.12	0.18	0.29	0.41	0.11	0.09

Tomando el valor mayor de W= 0.30 la armadura total será

$$Atot = W \frac{Ac\ Fcd}{Fyd} = 97.13\ cm^2$$

31 ϕ 20 (8.89 cms entre barras)

Cuantía de armaduras 80.57 Kg/m3

Cortante Máximo en hipótesis 3

ΣFl = 1.29 ΣFt = 3.10 Gf = 1.60

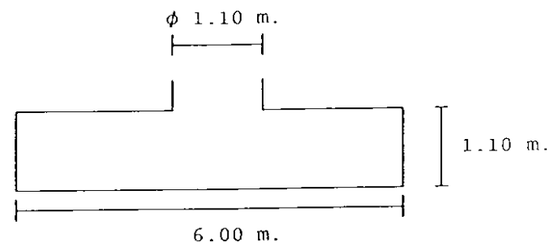
Vd = 5.37 Vcu= 65.52

No necesita armadura de cortante

CALCULO DE ZAPATA

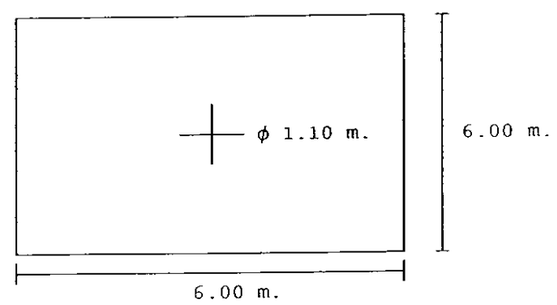
DIBUJO

* dibujo sin escala



ALZADO

Dirección del eje del tablero
---------->



PLANTA

CARACTERISTICAS DE LOS MATERIALES Y CIMENTACION

Fck (Kg/cm²) ..... 250 γcd ... 1.50

Fyk (Kg/cm²) ..... 5100 γyd ... 1.15

Recubrimiento de armaduras ..... 5.0 cms

Tensión admisible del terreno ..... 2.00 Kg/cm²

Coeficiente de rozamiento en cimentación ... 0.55

Coeficiente de seguridad al deslizamiento... 1.50

Coeficiente de seguridad al vuelco 1.50

ESFUERZOS CONSIDERADOS

* Longitudinal y transversal según la dirección del eje del tablero
* Esfuerzos en t y m.t

Hipótesis	Axil	F.Long	F.Trans	M.Long	M.Trans	γf
1	569.27	2.87	0.00	44.83	0.00	1.60
2	407.95	2.87	0.00	44.83	0.00	1.60
3	419.17	1.29	3.10	20.15	48.42	1.60
4	569.27	2.87	1.55	44.83	24.21	1.44
5	407.95	2.87	1.55	44.83	24.21	1.44

RESULTADOS DE CALCULO

Tensiones sobre el Terreno en Kg/cm² y coeficientes de seguridad

Hipótesis	σ1	σ2	σ3	σ4	σcob	Cd	Cv
1	1.98	1.98	1.73	1.73	1.90	128.07	44.72
2	1.53	1.53	1.28	1.28	1.45	97.15	33.93
3	1.63	1.36	1.52	1.25	1.51	84.88	32.10
4	2.05	1.91	1.80	1.66	1.92	112.68	44.72
5	1.60	1.47	1.35	1.22	1.47	85.48	33.93

Tensión cobaricéntrica Máxima 1.92 Kg/cm² para la Hipótesis 4

Esfuerzos de cálculo

* Esfuerzos en m.t/m y t/m Armaduras en cm²/m

Recubrimiento de armaduras= 5.0 cms

FLEXION:
Secclong..= 2.615 m
Secctran..= 2.615 m

Uc .....= 1750 t/m

CORTANTE:
Secclong..= 1.925 m (Flexible Longitudinal)
Secctran..= 1.925 m (Flexible Transversal)

Vcu .....= 67.78 t/m

Hipótesis	M.long	M.trans	Ar.long	Ar.trans	Vd long.	Vd Trans.
1	91.34	93.32	20.13	20.58	52.54	51.31
2	66.82	68.80	14.62	15.06	38.74	37.51
3	73.23	71.98	16.05	15.77	40.40	41.18
4	85.52	86.34	18.81	19.00	48.55	48.04
5	63.45	64.27	13.87	14.05	36.13	35.62

PRONTUARIO INFORMATICO DEL HORMIGON. PROGRAMA TT3 Versión 2.0

Obra : PS 104+600 (Punzonamiento de Zapatas de Pilas)

CALCULO A PUNZONAMIENTO

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1. Datos

- Materiales:

fck [kp/cm²] = 250
fyk [kp/cm²] = 5100
γc = 1.50
γs = 1.15

- Tipo de Pilar:

pilar circular centrado

- Sección

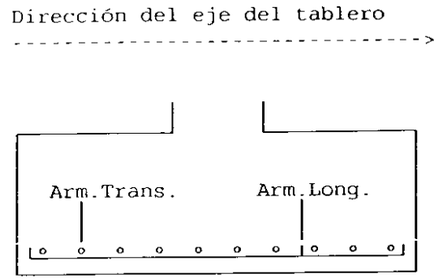
ϕ [cm] = 110.0
h [cm] = 110.0
r [cm] = 5.0

2. Resultados comprobación

Md1 [m·Mp] = 66.68
Md2 [m·Mp] = 0.00

Npu [Mp] = 966.68 > **Ndmáx** 910.86

DIBUJO DE LA ARMADURA



ALZADO

Armadura longitudinal Máxima 20.13 cm²/m para la Hipótesis 1

Armadura transversal Máxima 20.58 cm²/m para la Hipótesis 1

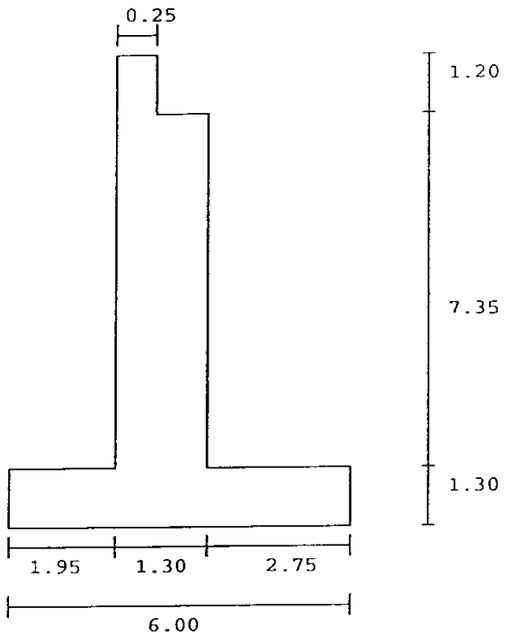
ESTRIBOS

Estructura ....:PS 104+600

Estribo .....:1

DATOS GEOMETRICOS (sin escala)

* Cotas en mtrs.



Area de la sección 17.66 m²

MATERIALES

Hormigón en zapata y alzado ..... 250 Kg/cm²

Coeficiente de seguridad del hormigón 1.50

Acero en armaduras, zapata y alzado ..... 5100 Kg/cm²

Coeficiente de seguridad del acero 1.15

CARACTERISTICAS DEL TERRENO

Densidad de las tierras (t/m3) 2.00

Coeficiente de empuje activo horizontal 0.33

Tensión admisible del terreno en cimentación (Kg/cm²) 2.5

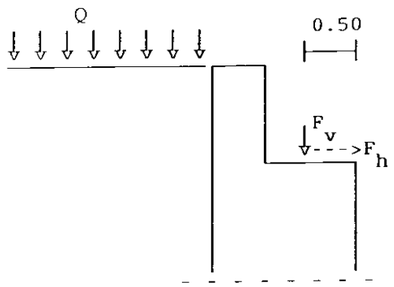
Coeficiente de rozamiento en cota de cimentación 0.55

Coeficiente de seguridad al deslizamiento (Cd) 1.50

Coeficiente de seguridad al vuelco (Cv) 1.80

Altura considerada de empuje de tierras (mtrs.) 8.55

HIPOTESIS DE CARGA



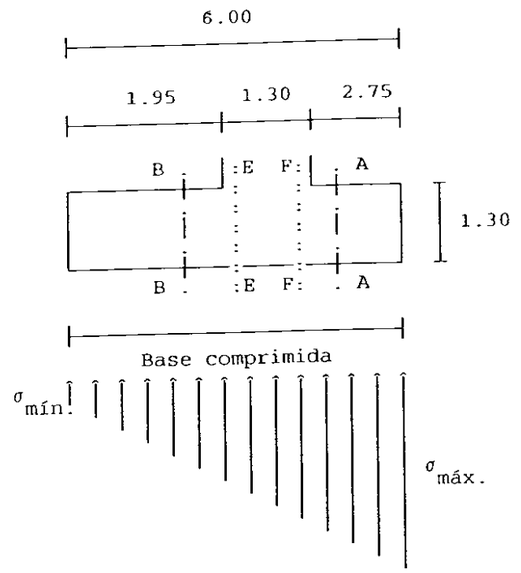
CARGAS ACTUANTES :

Hipótesis	Fv(t/m)	Fh(t/m)	Q(t/m²)	Coeficiente
1	0.00	0.00	1.00	1.30 Construcción
2	25.71	1.86	1.00	1.60 Servicio
3	17.24	1.20	1.00	1.60 Servicio

COMPROBACION DE ESTABILIDAD:

Hipótesis	ΣFv(t/m)	ΣFh(t/m)	Cd	ΣMe(mt/m)	ΣMv(mt/m)	Cv
1	79.43	26.95	1.62	320.02	115.84	2.76
2	105.14	28.81	2.01	403.58	131.93	3.06
3	96.67	28.15	1.89	376.05	126.22	2.98

TENSIONES EN CIMIENTOS



COMPROBACION DE TENSIONES:

Hipótesis	σmáx. (t/m²)	σmín. (t/m²)	σcob. (t/m²)	Base comprimida
1	18.93	7.55	15.45	6.00
2	24.82	10.23	20.35	6.00
3	22.81	9.41	18.70	6.00

ARMADURAS:

ZAPATA

CORTANTE: fcv= 64.55 t/m²

Sección A-A | d = 1.25 m. | Vcu= 80.69 t/m

Sección B-B | d = 1.25 m. | Vcu= 161.37 t/m

FLEXION: | d = 1.25 m. | Uc = 2083 t/m

ZAPATA DELANTERA:

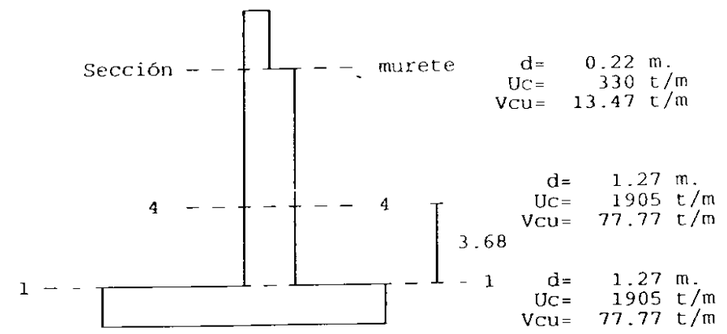
Hipót.	Vd(A-A) (t/m)	Md(F-F) (mt/m)	Us (t/m)	As (cm²/m)	Reparto (cm²/m)
1	27.80	77.88	63.27	18.79	4.70
2	47.39	133.10	109.35	24.66	4.83
3	42.93	120.51	98.75	22.27	4.70

ZAPATA TRASERA:

Hipót.	Vd(B-B) (t/m)	Md(E-E) (mt/m)	Us (t/m)	As (cm²/m)	Reparto (cm²/m)
1	-21.60	-36.77	29.62	18.79	4.70
2	-20.17	-33.99	27.37	18.79	4.70
3	-22.17	-37.51	30.23	18.79	4.70

ALZADO

fcv= 61.24 t/m²



SECCION 1-1:

Hipót.	Vd (t/m)	Nd (t/m)	Md (mt/m)	Us (t/m)	As (cm²/m)	Reparto (cm²/m)
1	35.03	32.03	104.55	68.54	17.18	10.40
2	46.09	80.56	156.72	89.50	20.18	10.40
3	45.03	67.00	146.92	87.47	19.72	10.40

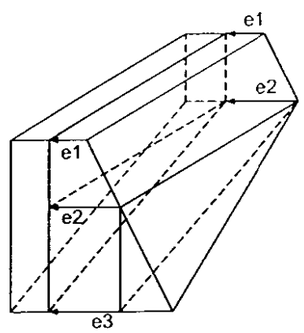
SECCION 4-4:

Hipót.	Vd (t/m)	Nd (t/m)	Md (mt/m)	Us (t/m)	As (cm²/m)	Reparto (cm²/m)
1	12.29	16.50	21.15	8.38	17.18	10.40
2	18.10	61.45	43.14	3.60	17.18	10.40
3	17.04	47.89	37.23	5.54	17.18	10.40

SECCION MURETE:

Hipót.	Vd (t/m)	Nd (t/m)	Md (mt/m)	Us (t/m)	As (cm²/m)	Reparto (cm²/m)
1	1.13	0.98	0.56	1.99	2.98	2.00
2	1.39	1.20	0.68	2.46	2.98	2.00
3	1.39	1.20	0.68	2.46	2.98	2.00

Armadura de las aletas.



Debido al empuje de las tierras:

$e_1 = 0,33$ t / m^2

$e_2 = 0,66$ t / m^2

$e_3 = 1,83$ t / m^2

$$E_1 = \frac{0,33+0,66}{2} \times 0,50 \times 3,40 = 0,84 \quad t$$

$$\delta_1 = 1,70\ m$$

$$E_2 = \frac{1}{2} \times 0,66 \times 1,77 \times 3,40 = 1,92\ t$$

$$\delta_2 = 1,13\ m$$

$$E_3 = \frac{1}{3} \times (1,83 - 0,66) \times 1,77 \times 3,40 = 2,35\ t$$

$$\delta_3 = 1,13\ m$$

$M_1 = 0,84$ x 1,70 + 1,92 x 1,13 + 2,35 x 1,13 = 6,25 mt

Debido al peso propio de la aleta:

V1 = 2,5 x 0,30 x 3,40 x 0,50 = 1,275 t

$\delta 1 = 1,70$ m

V2 = 2,5 x (1,77 x 0,30 x 3,40)/2 = 2,26 mt

$\delta 2 = 1,13$ m

$M_2 = 1,275$ x 1,70 + 2,26 x 1,13 = 4,72 mt

$$M = \sqrt{M_1^{\,2} + M_2^{\,2}} = 7,83\ mt$$

$M_d = 1,6$ x 7,83 = 12,53 mt

La capacidad mecánica de la sección total de hormigón"U_c":

$$U_c = f_{cd} \times b \times d = \frac{2500}{1,5} \times 0,27 = 450\ t/m$$

$$0,35 \times U_c \times d = 42,53\ mt > M_d$$

La capacidad mecánica de la armadura de tracción "Us1" será:

$$U_{s1} = U_c \times \left[1 - \sqrt{1 - 2 \times \frac{M_d}{U_c \times d}}\right] = 49,08\ t$$

Luego la armadura de flexión "As" necesaria será la siguiente:

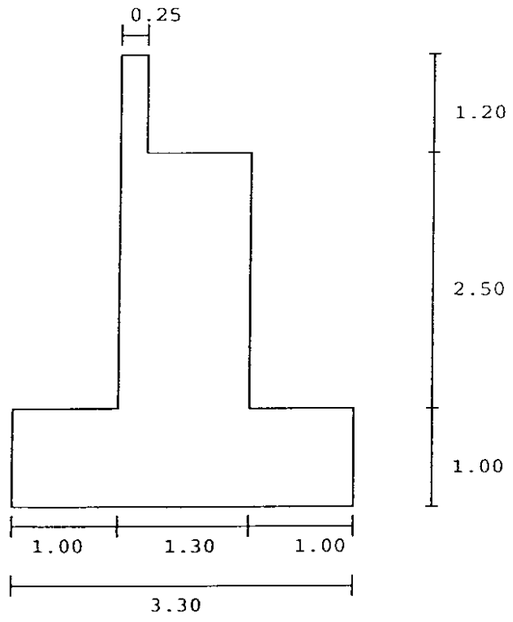
$$A_s = \frac{U_{s1}}{f_{yd}} = \frac{49,08}{\frac{5,1}{1,15}} = 11,07 cm^2$$

Estructura ....:PS 104+600

Estribo .....:2

DATOS GEOMETRICOS (sin escala)

* Cotas en mtrs.



Area de la sección 6.85 m²

MATERIALES

Hormigón en zapata y alzado ..... 250 Kg/cm²

Coeficiente de seguridad del hormigón 1.50

Acero en armaduras, zapata y alzado ..... 5100 Kg/cm²

Coeficiente de seguridad del acero 1.15

CARACTERISTICAS DEL TERRENO

Densidad de las tierras (t/m3) 2.00

Coeficiente de empuje activo horizontal 0.33

Tensión admisible del terreno en cimentación (Kg/cm²) 2.5

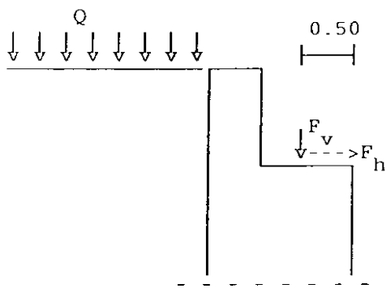
Coeficiente de rozamiento en cota de cimentación 0.55

Coeficiente de seguridad al deslizamiento (Cd) 1.50

Coeficiente de seguridad al vuelco (Cv) 1.80

Altura considerada de empuje de tierras (mtrs.) 4.70

HIPOTESIS DE CARGA



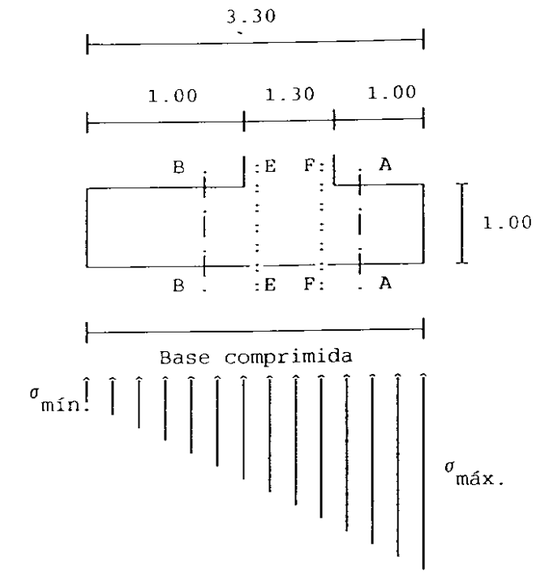
CARGAS ACTUANTES :

Hipótesis	Fv(t/m)	Fh(t/m)	Q(t/m²)	Coeficiente
1	0.00	0.00	1.00	1.30 Construcción
2	25.71	1.86	1.00	1.60 Servicio
3	17.24	1.20	1.00	1.60 Servicio

COMPROBACION DE ESTABILIDAD:

Hipótesis	ΣFv(t/m)	ΣFh(t/m)	Cd	ΣMe(mt/m)	ΣMv(mt/m)	Cv
1	25.53	8.84	1.59	52.17	15.07	3.46
2	51.24	10.70	2.63	90.74	21.58	4.21
3	42.77	10.04	2.34	78.03	19.27	4.05

TENSIONES EN CIMIENTOS



COMPROBACION DE TENSIONES:

Hipótesis	σmáx. (t/m²)	σmín. (t/m²)	σcob. (t/m²)	Base comprimida
1	10.50	4.97	8.78	3.30
2	24.00	7.05	18.98	3.30
3	19.46	6.46	15.56	3.30

ARMADURAS:

ZAPATA

CORTANTE: fcv= 64.55 t/m²

Sección A-A | d = 0.79 m. | Vcu= 101.67 t/m

Sección B-B | d = 0.79 m. | Vcu= 101.67 t/m

FLEXION: | d = 0.95 m. | Uc = 1583 t/m

ZAPATA DELANTERA:

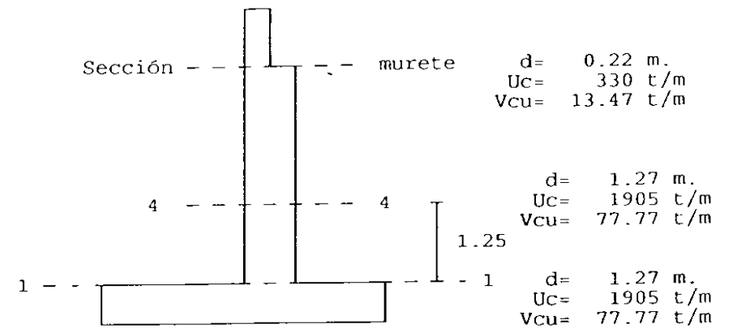
Hipót.	Vd(A-A) (t/m)	Md(F-F) (mt/m)	Us (t/m)	As (cm²/m)	Reparto (cm²/m)
1	5.16	6.80	7.18	14.28	3.62
2	16.93	22.22	23.57	14.28	3.62
3	13.38	17.58	18.62	14.28	3.62

ZAPATA TRASERA:

Hipót.	Vd(B-B) (t/m)	Md(E-E) (mt/m)	Us (t/m)	As (cm²/m)	Reparto (cm²/m)
1	-3.74	-4.67	4.93	14.28	3.62
2	-2.10	-1.80	1.90	14.28	3.62
3	-2.86	-3.03	3.19	14.28	3.62

ALZADO

fcv= 61.24 t/m²



SECCION 1-1:

Hipót.	Vd (t/m)	Nd (t/m)	Md (mt/m)	Us (t/m)	As (cm²/m)	Reparto (cm²/m)
1	7.46	11.54	9.67	1.76	17.18	10.40
2	12.16	55.34	25.51	2.77	17.18	10.40
3	11.10	41.78	20.84	2.09	17.18	10.40

SECCION 4-4:

Hipót.	Vd (t/m)	Nd (t/m)	Md (mt/m)	Us (t/m)	As (cm²/m)	Reparto (cm²/m)
1	3.63	6.26	2.88	0.31	17.18	10.40
2	7.44	48.84	13.43	2.44	17.18	10.40
3	6.38	35.28	10.08	1.76	17.18	10.40

SECCION MURETE:

Hipót.	Vd (t/m)	Nd (t/m)	Md (mt/m)	Us (t/m)	As (cm²/m)	Reparto (cm²/m)
1	1.13	0.98	0.56	1.99	2.98	2.00
2	1.39	1.20	0.68	2.46	2.98	2.00
3	1.39	1.20	0.68	2.46	2.98	2.00

2. PASOS INFERIORES

P.B.F. 101.1

P.B.F. 101.1

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INTRODUCCIÓN

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   - CON MÓDULO DE BALASTO DE 1000 Mp/m^3
   - CON MÓDULO DE BALASTO DE 10.000 Mp/m^3

CÁLCULO DE LA LOSA SUPERIOR POR EL MÉTODO DEL EMPARRILLADO

1. DEFINICIÓN GEOMÉTRICA
2. DATOS GENERALES
3. ARMADURAS
4. LISTADOS DE ORDENADOR

INTRODUCCION

Se trata de un paso inferior bajo ferrocarril y la solución adoptada es un marco cerrado de hormigón armado de 7.00 m de gálibo horizontal y 5.80 de vertical.

La longitud total de paso es de 51.80 m y en planta presenta un esviaje de 41.2 grados.

El espesor de la losa superior e inferior es de 1.00 m, el espesor de los hastíales es también de 1.00 m.

La altura de tierras encima de marco es de 7.00 m y los valores utilizados en el cálculo de pórtico son:

-coeficiente de empuje al reposo de 0.50.

-módulo de balasto comprendido entre 1000.00 y 10000.00 Mp/m^3 . Se realiza el cálculo para ambos valores y se toman los valores máximos de las armaduras obtenidas.

-el tren de cargas utilizado y más desfavorable corresponde al tren de 12 Mp/m de la Instrucción Española siendo el coeficiente de impacto de 1.70 y aplicando una reducción en función de la altura de tierras de:

$\Phi = (h - 1.0) / 10.0 = 0.6$

nos queda un coeficiente de impacto de 1.1 y una sobrecarga sobre el cajón de:

$Q = 12.0 * 1.1 * 2 / (2 *7.00 + 1.43) = 1.71 \ Mp/m^2$

A continuación se procesa un programa de cálculo y armado de porticos cerrados.

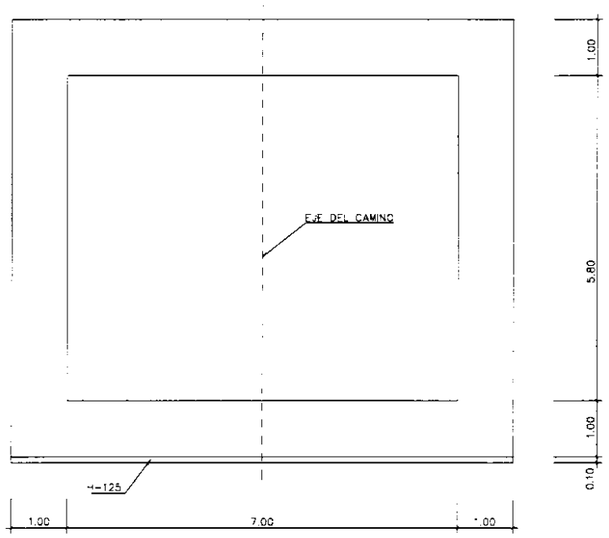
El modelo utilizado corresponde al de pórtico plano con cimentación elástica, asimilada unos muelles, cuya rigidez es función del módulo de balasto y del área de influencia de cada nudo coaccionado.

El cálculo se realiza mediante programa de ordenador, basado en la matriz de rigidez y equilibrio de nudos, en dónde se tienen en cuenta las hipótesis básicas de la resistencia de materiales, esto es linealidad geométrica y material despreciando la deformación por esfuerzo cortante.

El cálculo se realiza por m. de estructura.

CALCULOS

1.Definición geométrica.



2.Datos generales.

DATOS GENERALES

Modulo de elasticidad del hormigón Ec	1340000.000 T/m²
Densidad del hormigón	2.500 T/m²
Densidad de las tierras	2.000 T/m²
Altura de tierras encima del cajón	7.00 m
Coeficiente de empuje al reposo	0.500
Sobrecarga uniforme por m de tablero	1.71 T/m
Modulo de balasto	1000.000-10000.000 T/m3
Fck del hormigón	250.000 Kg/cm²
Fyk del acero	5100.000 Kg/cm²
Fyα,d del acero Kg/cm2	4200.000 Kg/cm²
Coeficiente de minoración del hormigón	1.500
Coeficiente de minoración del acero	1.150
Coeficiente de mayoración de las acciones	1.600
Recubrimiento	0.030 m

3.Hipótesis de carga.

HIPOTESIS DE CARGAS

-Peso propio

-Carga permanente sobre el dintel

-Empuje de tierras por un lado sin tierras en el dintel

-Empuje de tierras por los dos lados con tierras en el dintel

-Tren de cargas

El modelo utilizado corresponde al de pórtico plano con cimentación elástica, asimilada unos muelles, cuya rigidez es función del módulo de balasto y del área de influencia de cada nudo coaccionado.

El cálculo se realiza mediante programa de ordenador, basado en la matriz de rigidez y equilibrio de nudos, en dónde se tienen en cuenta las hipótesis básicas de la resistencia de materiales, esto es linealidad geométrica y material despreciando la deformación por esfuerzo cortante.

El cálculo se realiza por m. de estructura.

COMBINACION DE HIPOTESIS

El programa calcula, para cada sección, la combinación pésima de hipótesis

compatibles entre si y afectadas por los coeficientes de ponderación:

	Favorable	Desfavorable
Peso propio y cargas permanentes	0.90	1.60
Sobrecargas	0.00	1.60

Las dos hipótesis básicas consideradas son las siguientes:

-Peso propio y empuje de tierras por un solo lado y sin tierras encima

-Peso propio, carga permanente, empuje por los dos lados, tren de cargas en la posición más desfavorable.

ARMADO DE LAS SECCIONES

Con las combinaciones pésimas anteriormente calculadas, se procede al cálculo de las armaduras de flexión y cortante, contemplando las armaduras mínimas, y de acuerdo con la Norma EH-91

4.Resumen de armaduras.

CON MODULO DE BALASTO DE 1000 Mp/m^3

RESUMEN DE ARMADURAS

SECCION		ARMADURAS DE FLEXION				ARMADURA DE CORTANTE	
Dintel.-Empotramiento	inferior	14.58 cm²/m	superior	21.63 cm²/m	cortante	10.40 cm²/m
Dintel.-Cuartos de luz	inferior	22.18 cm²/m	superior	14.58 cm²/m	cortante	0.00 cm²/m
Dintel.-Centro de vano	inferior	36.95 cm²/m	superior	14.58 cm²/m	cortante	0.00 cm²/m
Hastial.-Empot. superior	exterior	15.50 cm²/m	interior	14.58 cm²/m	cortante	0.00 cm²/m
Hastial.-Cuarto superior	exterior	14.58 cm²/m	interior	14.58 cm²/m	cortante	0.00 cm²/m
Hastial.-Centro de vano	exterior	14.58 cm²/m	interior	14.58 cm²/m	cortante	0.00 cm²/m
Hastial.-Cuarto inferior	exterior	14.58 cm²/m	interior	14.58 cm²/m	cortante	0.00 cm²/m
Hastial.-Empotramiento inf	interior	14.58 cm²/m	exterior	18.79 cm²/m	cortante	0.00 cm²/m
Solera.-Empotramiento	inferior	25.58 cm²/m	superior	14.58 cm²/m	cortante	11.42 cm²/m
Solera.-Cuartos de luz	inferior	14.58 cm²/m	superior	25.48 cm²/m	cortante	0.00 cm²/m
Solera.-Centro de vano	inferior	14.58 cm²/m	superior	42.34 cm²/m	cortante	0.00 cm²/m

CON MODULO DE BALASTO DE 10000 Mp/m^3

RESUMEN DE ARMADURAS

SECCION	ARMADURAS DE FLEXION				ARMADURA DE CORTANTE	
Dintel.-Empotramiento	inferior	14.58 cm²/m	superior	22.26 cm²/m	cortante	10.40 cm²/m
Dintel.-Cuartos de luz	inferior	20.84 cm²/m	superior	14.58 cm²/m	cortante	0.00 cm²/m
Dintel.-Centro de vano	inferior	35.55 cm²/m	superior	14.58 cm²/m	cortante	0.00 cm²/m
Hastial.-Empot. superior	exterior	16.56 cm²/m	interior	14.58 cm²/m	cortante	0.00 cm²/m
Hastial.-Cuarto superior	exterior	14.58 cm²/m	interior	14.58 cm²/m	cortante	0.00 cm²/m
Hastial.-Centro de vano	exterior	14.58 cm²/m	interior	14.58 cm²/m	cortante	0.00 cm²/m
Hastial.-Cuarto inferior	exterior	14.58 cm²/m	interior	14.58 cm²/m	cortante	0.00 cm²/m
Hastial.-Empotramiento inf	interior	14.58 cm²/m	exterior	14.58 cm²/m	cortante	0.00 cm²/m
Solera.-Empotramiento	inferior	20.07 cm²/m	superior	14.58 cm²/m	cortante	9.04 cm²/m
Solera.-Cuartos de luz	inferior	14.58 cm²/m	superior	20.82 cm²/m	cortante	0.00 cm²/m
Solera.-Centro de vano	inferior	14.58 cm²/m	superior	27.59 cm²/m	cortante	0.00 cm²/m

5.ALETAS.

10-17-1998

DATOS DE ENTRADA

Proyecto : E1011

Muro ... : Aletas 1 y 4

Longitud muro .... :	13.400 m	Ancho coronacion . :	0.400 m
Talud trasdos .... :	10.000 %	Talud param. ext...:	0.000 %
Sobrecarga terrapl.:	3.000 Tm/m2		
Canto zapata ..... :	1.250 m	Cota solera zapata :	0.000 m
Cota sup. arranque :	6.085 m	Cota sup. extremo :	8.300 m
Cota cono t. arr. :	0.000 m	Cota cono t. extr. :	0.000 m
Coef. roz. zap/terr:	0.550	Tensi¢n cob. adm. :	30.000 Tm/m2
Coef. seg. desliz. :	1.500	Coef. seg. vuelco :	1.500
Densidad tierras . :	2.000 Tm/m3	Ang. talud trasdos :	25.260 deg
Angulo roz. terr.. :	35.000 deg	Ang. roz. hor/terr :	12.000 deg
Kh inclinado ..... :	0.429	Kv inclinado ..... :	0.091
Kh horizontal..... :	0.291	Kv horizontal..... :	0.062
Ang. muro-calz.sup.:	0.000 deg	Dist. mur-calz arrq:	0.000 m
Fck (Kg/cm2)..... :	250.000	Fyk (Kg/cm2)..... :	5100.000
Coef. seg. Horm... :	1.500	Coef. seg. Acero.. :	1.150
Coef. seg. Acciones:	1.500		

ZONA ENTRE 0.00 m Y 1.00 m

RESULTADOS

Secc. de calculo ... :	0.500 m	Altura del alzado .. :	4.918 m
Ancho zarpa delant . :	1.250 m	Ancho total zapata . :	5.200 m
Empuje horizontal .. :	27.125 Tm	Empuje vertical .... :	5.766 Tm
Momento emp. horiz . :	68.934 m*Tm	Momento emp. vertic. :	29.981 m*Tm
Resultante F horiz . :	27.125 Tm	Resultante F vertic. :	75.925 Tm
Resultante M horiz . :	102.840 m*Tm	Resultante M vertic. :	258.451 m*Tm
Coef. seg. desliz. . :	1.539	Coef. seg. vuelco .. :	2.513
Tension cobaric..... :	18.522 Tm/m2		
Sigma max. solera .. :	23.875 Tm/m2	Sigma min. solera .. :	5.327 Tm/m2

ZONA ENTRE 1.00 m Y 2.00 m

RESULTADOS

Secc. de calculo ... :	1.500 m	Altura del alzado .. :	5.083 m
Ancho zarpa delant . :	1.250 m	Ancho total zapata . :	5.200 m
Empuje horizontal .. :	28.284 Tm	Empuje vertical .... :	6.012 Tm
Momento emp. horiz . :	73.514 m*Tm	Momento emp. vertic. :	31.262 m*Tm
Resultante F horiz . :	28.284 Tm	Resultante F vertic. :	77.551 Tm
Resultante M horiz . :	108.869 m*Tm	Resultante M vertic. :	264.070 m*Tm
Coef. seg. desliz. . :	1.508	Coef. seg. vuelco .. :	2.426
Tension cobaric..... :	19.375 Tm/m2		
Sigma max. solera .. :	25.217 Tm/m2	Sigma min. solera .. :	4.611 Tm/m2

ZONA ENTRE 2.00 m Y 3.00 m

RESULTADOS

Secc. de calculo ... :	2.500 m	Altura del alzado .. :	5.248 m
Ancho zarpa delant . :	1.250 m	Ancho total zapata . :	5.400 m
Empuje horizontal .. :	30.152 Tm	Empuje vertical .... :	6.409 Tm
Momento emp. horiz . :	81.100 m*Tm	Momento emp. vertic. :	34.609 m*Tm
Resultante F horiz . :	30.152 Tm	Resultante F vertic. :	83.343 Tm
Resultante M horiz . :	118.790 m*Tm	Resultante M vertic. :	293.028 m*Tm
Coef. seg. desliz. . :	1.520	Coef. seg. vuelco .. :	2.467
Tension cobaric..... :	19.933 Tm/m2		
Sigma max. solera .. :	25.884 Tm/m2	Sigma min. solera .. :	4.984 Tm/m2

ZONA ENTRE 3.00 m Y 4.00 m

RESULTADOS

Secc. de calculo ... :	3.500 m	Altura del alzado .. :	5.414 m
Ancho zarpa delant . :	1.250 m	Ancho total zapata . :	5.600 m
Empuje horizontal .. :	32.079 Tm	Empuje vertical .... :	6.819 Tm
Momento emp. horiz . :	89.178 m*Tm	Momento emp. vertic. :	38.184 m*Tm
Resultante F horiz . :	32.079 Tm	Resultante F vertic. :	89.319 Tm
Resultante M horiz . :	129.277 m*Tm	Resultante M vertic. :	323.942 m*Tm
Coef. seg. desliz. . :	1.531	Coef. seg. vuelco .. :	2.506
Tension cobaric..... :	20.491 Tm/m2		
Sigma max. solera .. :	26.554 Tm/m2	Sigma min. solera .. :	5.345 Tm/m2

ZONA ENTRE 4.00 m Y 5.00 m

RESULTADOS

Secc. de calculo ... :	4.500 m	Altura del alzado .. :	5.579 m
Ancho zarpa delant . :	1.250 m	Ancho total zapata . :	5.600 m
Empuje horizontal .. :	33.335 Tm	Empuje vertical .... :	7.086 Tm
Momento emp. horiz . :	94.584 m*Tm	Momento emp. vertic. :	39.679 m*Tm
Resultante F horiz . :	33.335 Tm	Resultante F vertic. :	91.102 Tm
Resultante M horiz . :	136.253 m*Tm	Resultante M vertic. :	330.498 m*Tm
Coef. seg. desliz. . :	1.503	Coef. seg. vuelco .. :	2.426
Tension cobaric..... :	21.364 Tm/m2		
Sigma max. solera .. :	27.909 Tm/m2	Sigma min. solera .. :	4.628 Tm/m2

ZONA ENTRE 5.00 m Y 6.00 m

RESULTADOS

Secc. de calculo ... :	5.500 m	Altura del alzado .. :	5.744 m
Ancho zarpa delant . :	1.250 m	Ancho total zapata . :	5.800 m
Empuje horizontal .. :	35.356 Tm	Empuje vertical .... :	7.515 Tm
Momento emp. horiz . :	103.502 m*Tm	Momento emp. vertic. :	43.588 m*Tm
Resultante F horiz . :	35.356 Tm	Resultante F vertic. :	97.337 Tm
Resultante M horiz . :	147.697 m*Tm	Resultante M vertic. :	363.907 m*Tm
Coef. seg. desliz. . :	1.514	Coef. seg. vuelco .. :	2.464
Tension cobaric..... :	21.910 Tm/m2		
Sigma max. solera .. :	28.566 Tm/m2	Sigma min. solera .. :	4.999 Tm/m2

ZONA ENTRE 6.00 m Y 7.00 m

RESULTADOS

Secc. de calculo ... :	6.500 m	Altura del alzado .. :	5.909 m
Ancho zarpa delant . :	1.250 m	Ancho total zapata . :	6.000 m
Empuje horizontal .. :	37.435 Tm	Empuje vertical .... :	7.957 Tm
Momento emp. horiz . :	112.951 m*Tm	Momento emp. vertic. :	47.742 m*Tm
Resultante F horiz . :	37.435 Tm	Resultante F vertic. :	103.755 Tm
Resultante M horiz . :	159.745 m*Tm	Resultante M vertic. :	399.412 m*Tm
Coef. seg. desliz. . :	1.524	Coef. seg. vuelco .. :	2.500
Tension cobaric..... :	22.458 Tm/m2		
Sigma max. solera .. :	29.225 Tm/m2	Sigma min. solera .. :	5.360 Tm/m2

ZONA ENTRE 7.00 m Y 8.00 m

RESULTADOS

Secc. de calculo ... :	7.500 m	Altura del alzado .. :	6.075 m
Ancho zarpa delant . :	1.250 m	Ancho total zapata . :	6.200 m
Empuje horizontal .. :	39.571 Tm	Empuje vertical .... :	8.411 Tm
Momento emp. horiz . :	122.948 m*Tm	Momento emp. vertic. :	52.149 m*Tm
Resultante F horiz . :	39.571 Tm	Resultante F vertic. :	110.357 Tm
Resultante M horiz . :	172.412 m*Tm	Resultante M vertic. :	437.075 m*Tm
Coef. seg. desliz. . :	1.534	Coef. seg. vuelco .. :	2.535
Tension cobaric..... :	23.008 Tm/m2		
Sigma max. solera .. :	29.887 Tm/m2	Sigma min. solera .. :	5.712 Tm/m2

ZONA ENTRE 8.00 m Y 9.00 m

RESULTADOS

Secc. de calculo ... :	8.500 m	Altura del alzado .. :	6.240 m
Ancho zarpa delant . :	1.250 m	Ancho total zapata . :	6.200 m
Empuje horizontal .. :	40.961 Tm	Empuje vertical .... :	8.707 Tm
Momento emp. horiz . :	129.604 m*Tm	Momento emp. vertic. :	53.981 m*Tm
Resultante F horiz . :	40.961 Tm	Resultante F vertic. :	112.373 Tm
Resultante M horiz . :	180.806 m*Tm	Resultante M vertic. :	445.150 m*Tm
Coef. seg. desliz. . :	1.509	Coef. seg. vuelco .. :	2.462
Tension cobaric..... :	23.885 Tm/m2		
Sigma max. solera .. :	31.238 Tm/m2	Sigma min. solera .. :	5.012 Tm/m2

ZONA ENTRE 9.00 m Y 10.00 m

RESULTADOS

Secc. de calculo ... :	9.500 m	Altura del alzado .. :	6.405 m
Ancho zarpa delant . :	1.250 m	Ancho total zapata . :	6.400 m
Empuje horizontal .. :	43.193 Tm	Empuje vertical .... :	9.181 Tm
Momento emp. horiz . :	140.529 m*Tm	Momento emp. vertic. :	58.757 m*Tm
Resultante F horiz . :	43.193 Tm	Resultante F vertic. :	119.234 Tm
Resultante M horiz . :	194.520 m*Tm	Resultante M vertic. :	485.562 m*Tm
Coef. seg. desliz. . :	1.518	Coef. seg. vuelco .. :	2.496
Tension cobaric..... :	24.424 Tm/m2		
Sigma max. solera .. :	31.888 Tm/m2	Sigma min. solera .. :	5.373 Tm/m2

ZONA ENTRE 10.00 m Y 11.00 m

RESULTADOS

Secc. de calculo ... :	10.500 m	Altura del alzado .. :	6.571 m
Ancho zarpa delant . :	1.250 m	Ancho total zapata . :	6.600 m
Empuje horizontal .. :	45.482 Tm	Empuje vertical .... :	9.667 Tm
Momento emp. horiz . :	152.041 m*Tm	Momento emp. vertic. :	63.805 m*Tm
Resultante F horiz . :	45.482 Tm	Resultante F vertic. :	126.278 Tm
Resultante M horiz . :	208.893 m*Tm	Resultante M vertic. :	528.272 m*Tm
Coef. seg. desliz. . :	1.527	Coef. seg. vuelco .. :	2.529
Tension cobaric..... :	24.964 Tm/m2		
Sigma max. solera .. :	32.540 Tm/m2	Sigma min. solera .. :	5.726 Tm/m2

ZONA ENTRE 11.00 m Y 12.00 m

RESULTADOS

Secc. de calculo ... :	11.500 m	Altura del alzado .. :	6.736 m
Ancho zarpa delant . :	1.250 m	Ancho total zapata . :	6.600 m
Empuje horizontal .. :	46.969 Tm	Empuje vertical .... :	9.984 Tm
Momento emp. horiz . :	159.681 m*Tm	Momento emp. vertic. :	65.891 m*Tm
Resultante F horiz . :	46.969 Tm	Resultante F vertic. :	128.451 Tm
Resultante M horiz . :	218.393 m*Tm	Resultante M vertic. :	537.458 m*Tm
Coef. seg. desliz. . :	1.504	Coef. seg. vuelco .. :	2.461
Tension cobaric..... :	25.856 Tm/m2		
Sigma max. solera .. :	33.901 Tm/m2	Sigma min. solera .. :	5.024 Tm/m2

ZONA ENTRE 12.00 m Y 13.00 m

RESULTADOS

Secc. de calculo ... :	12.500 m	Altura del alzado .. :	6.901 m
Ancho zarpa delant . :	1.250 m	Ancho total zapata . :	6.800 m
Empuje horizontal .. :	49.353 Tm	Empuje vertical .... :	10.490 Tm
Momento emp. horiz . :	172.186 m*Tm	Momento emp. vertic. :	71.333 m*Tm
Resultante F horiz . :	49.353 Tm	Resultante F vertic. :	135.754 Tm
Resultante M horiz . :	233.877 m*Tm	Resultante M vertic. :	583.091 m*Tm
Coef. seg. desliz. . :	1.513	Coef. seg. vuelco .. :	2.493
Tension cobaric..... :	26.387 Tm/m2		
Sigma max. solera .. :	34.542 Tm/m2	Sigma min. solera .. :	5.386 Tm/m2

ZONA ENTRE 13.00 m Y 13.40 m

RESULTADOS

Secc. de calculo ... :	13.200 m	Altura del alzado .. :	7.017 m
Ancho zarpa delant . :	1.250 m	Ancho total zapata . :	7.000 m
Empuje horizontal .. :	51.323 Tm	Empuje vertical .... :	10.909 Tm
Momento emp. horiz . :	182.760 m*Tm	Momento emp. vertic. :	76.364 m*Tm
Resultante F horiz . :	51.323 Tm	Resultante F vertic. :	142.544 Tm
Resultante M horiz . :	246.915 m*Tm	Resultante M vertic. :	628.062 m*Tm
Coef. seg. desliz. . :	1.528	Coef. seg. vuelco .. :	2.544
Tension cobaric..... :	26.655 Tm/m2		
Sigma max. solera .. :	34.782 Tm/m2	Sigma min. solera .. :	5.944 Tm/m2

RESULTADOS

Coeficiente global de seg. al deslizamiento ...	1.5
Coeficiente global de seg. al vuelco	2.5
Tension maxima en solera (Tm/m2)	34.8

ZONA ENTRE 0.00 m Y 1.00 m

RESULTADOS

Secc. de calculo ... :	0.500 m	Altura del alzado .. :	4.918 m
Ancho zarpa delant . :	1.250 m	Ancho total zapata . :	5.267 m
Resultante F horiz . :	27.345 Tm	Resultante F vertic. :	77.270 Tm
Resultante M horiz . :	103.979 m*Tm	Resultante M vertic. :	265.884 m*Tm
Coef. seg. desliz. . :	1.554	Coef. seg. vuelco .. :	2.557
Tension cobaric..... :	18.439 Tm/m2		
Tension max. solera :	23.666 Tm/m2	Tension min. solera :	5.675 Tm/m2

NOTA: Los momentos estan referidos al vertice inferior de la zarpa delantera de la zapata

ARMADURA ZARPA DELANTERA

Vd	34.834 Tm	Md	22.625	m*Tm
Vcuo	77.460 Tm	Us	18.461	Tm
		As	5.764	cm2/m

ARMADURA ZARPA TRASERA

Vd	27.021 Tm	Md	72.609	m*Tm
Vcuo	77.460 Tm	Us	60.468	Tm
		As	15.299	cm2/m

ARMADURA ALZADO MURO

SECCION H = 3.69 M (D=0.52 M) :

Vd	9.875 Tm	Md	8.814	m*Tm
Vcuo	31.174 Tm	Us	18.104	Tm
		As	4.976	cm2/m

SECCION H = 2.46 M (D=0.65 M) :

Vd	19.611 Tm	Md	28.488	m*Tm
Vcuo	39.110 Tm	Us	47.732	Tm
		As	10.763	cm2/m

SECCION H = 1.23 M (D=0.77 M) :

Vd	31.701 Tm	Md	62.920	m*Tm
Vcuo	47.045 Tm	Us	89.692	Tm
		As	20.225	cm2/m

SECCION H = 0.00 M (D=0.89 M) :

Vd	36.773 Tm	Md	80.045	m*Tm
Vcuo	54.981 Tm	Us	97.191	Tm
		As	21.916	cm2/m

ZONA ENTRE 1.00 m Y 2.00 m

RESULTADOS

Secc. de calculo ... :	1.500 m	Altura del alzado .. :	5.083 m
Ancho zarpa delant . :	1.250 m	Ancho total zapata . :	5.401 m
Resultante F horiz . :	28.961 Tm	Resultante F vertic. :	81.672 Tm
Resultante M horiz . :	112.437 m*Tm	Resultante M vertic. :	287.139 m*Tm
Coef. seg. desliz. . :	1.551	Coef. seg. vuelco .. :	2.554
Tension cobaric..... :	19.090 Tm/m2		
Tension max. solera :	24.554 Tm/m2	Tension min. solera :	5.687 Tm/m2

NOTA: Los momentos estan referidos al vertice inferior de la zarpa delantera de la zapata

ARMADURA ZARPA DELANTERA

Vd	36.421 Tm	Md	23.637	m*Tm
Vcuo	77.460 Tm	Us	19.294	Tm
		As	6.001	cm2/m

ARMADURA ZARPA TRASERA

Vd	28.524 Tm	Md	80.297	m*Tm
Vcuo	77.460 Tm	Us	67.078	Tm
		As	16.347	cm2/m

ARMADURA ALZADO MURO

SECCION H = 3.81 M (D=0.53 M) :

Vd	10.356 Tm	Md	9.492	m*Tm
Vcuo	31.440 Tm	Us	19.356	Tm
		As	5.246	cm2/m

SECCION H = 2.54 M (D=0.65 M) :

Vd	20.657 Tm	Md	30.876	m*Tm
Vcuo	39.643 Tm	Us	51.161	Tm
		As	11.536	cm2/m

SECCION H = 1.27 M (D=0.78 M) :

Vd	33.471 Tm	Md	68.415	m*Tm
Vcuo	47.846 Tm	Us	96.220	Tm
		As	21.697	cm2/m

SECCION H = 0.00 M (D=0.91 M) :

Vd	38.982 Tm	Md	87.582	m*Tm
Vcuo	56.048 Tm	Us	104.660	Tm
		As	23.600	cm2/m

ZONA ENTRE 2.00 m Y 3.00 m

RESULTADOS

Secc. de calculo ... :	2.500 m	Altura del alzado .. :	5.248 m
Ancho zarpa delant . :	1.250 m	Ancho total zapata . :	5.536 m
Resultante F horiz . :	30.622 Tm	Resultante F vertic. :	86.190 Tm
Resultante M horiz . :	121.325 m*Tm	Resultante M vertic. :	309.472 m*Tm
Coef. seg. desliz. . :	1.548	Coef. seg. vuelco .. :	2.551
Tension cobaric..... :	19.742 Tm/m2		
Tension max. solera :	25.441 Tm/m2	Tension min. solera :	5.698 Tm/m2

NOTA: Los momentos estan referidos al vertice inferior de la zarpa delantera de la zapata

ARMADURA ZARPA DELANTERA

Vd	38.011 Tm	Md	24.649	m*Tm
Vcuo	77.460 Tm	Us	20.129	Tm
		As	6.237	cm2/m

ARMADURA ZARPA TRASERA

Vd	30.051 Tm	Md	88.495	m*Tm
Vcuo	77.460 Tm	Us	74.171	Tm
		As	17.334	cm2/m

ARMADURA ALZADO MURO

SECCION H = 3.94 M (D=0.53 M) :

Vd	10.850 Tm	Md	10.203	m*Tm
Vcuo	31.707 Tm	Us	20.659	Tm
		As	5.518	cm2/m

SECCION H = 2.62 M (D=0.66 M) :

Vd	21.729 Tm	Md	33.392	m*Tm
Vcuo	40.177 Tm	Us	54.731	Tm
		As	12.341	cm2/m

SECCION H = 1.31 M (D=0.79 M) :

Vd	35.289 Tm	Md	74.217	m*Tm
Vcuo	48.646 Tm	Us	103.017	Tm
		As	23.229	cm2/m

SECCION H = 0.00 M (D=0.92 M) :

Vd	41.255 Tm	Md	95.572	m*Tm
Vcuo	57.115 Tm	Us	112.446	Tm
		As	25.355	cm2/m

ZONA ENTRE 3.00 m Y 4.00 m

RESULTADOS

Secc. de calculo ... :	3.500 m	Altura del alzado .. :	5.414 m
Ancho zarpa delant . :	1.250 m	Ancho total zapata . :	5.670 m
Resultante F horiz . :	32.328 Tm	Resultante F vertic. :	90.825 Tm
Resultante M horiz . :	130.655 m*Tm	Resultante M vertic. :	332.909 m*Tm
Coef. seg. desliz. . :	1.545	Coef. seg. vuelco .. :	2.548
Tension cobaric..... :	20.393 Tm/m2		
Tension max. solera :	26.327 Tm/m2	Tension min. solera :	5.709 Tm/m2

NOTA: Los momentos estan referidos al vertice inferior de la zarpa delantera de la zapata

ARMADURA ZARPA DELANTERA

Vd	39.604 Tm	Md	25.662	m*Tm
Vcuo	77.460 Tm	Us	20.965	Tm
		As	6.472	cm2/m

ARMADURA ZARPA TRASERA

Vd	31.660 Tm	Md	97.219	m*Tm
Vcuo	77.460 Tm	Us	81.769	Tm
		As	18.438	cm2/m

ARMADURA ALZADO MURO

SECCION H = 4.06 M (D=0.54 M) :

Vd	11.354 Tm	Md	10.948	m*Tm
Vcuo	31.974 Tm	Us	22.014	Tm
		As	5.791	cm2/m

SECCION H = 2.71 M (D=0.67 M) :

Vd	22.828 Tm	Md	36.040	m*Tm
Vcuo	40.710 Tm	Us	58.444	Tm
		As	13.179	cm2/m

SECCION H = 1.35 M (D=0.81 M) :

Vd	37.154 Tm	Md	80.336	m*Tm
Vcuo	49.446 Tm	Us	110.086	Tm
		As	24.823	cm2/m

SECCION H = 0.00 M (D=0.94 M) :

Vd	43.591 Tm	Md	104.029	m*Tm
Vcuo	58.182 Tm	Us	120.553	Tm
		As	27.183	cm2/m

ZONA ENTRE 4.00 m Y 5.00 m

RESULTADOS

Secc. de calculo ... :	4.500 m	Altura del alzado .. :	5.579 m
Ancho zarpa delant . :	1.250 m	Ancho total zapata . :	5.804 m
Resultante F horiz . :	34.079 Tm	Resultante F vertic. :	95.576 Tm
Resultante M horiz . :	140.435 m*Tm	Resultante M vertic. :	357.476 m*Tm
Coef. seg. desliz. . :	1.542	Coef. seg. vuelco .. :	2.545
Tension cobaric..... :	21.044 Tm/m2		
Tension max. solera :	27.212 Tm/m2	Tension min. solera :	5.719 Tm/m2

NOTA: Los momentos estan referidos al vertice inferior de la zarpa delantera de la zapata

ARMADURA ZARPA DELANTERA

Vd	41.198 Tm	Md	26.675	m*Tm
Vcuo	77.460 Tm	Us	21.802	Tm
		As	6.704	cm2/m

ARMADURA ZARPA TRASERA

Vd	33.238 Tm	Md	106.484	m*Tm
Vcuo	77.460 Tm	Us	89.894	Tm
		As	20.270	cm2/m

ARMADURA ALZADO MURO

SECCION H = 4.18 M (D=0.54 M) :

Vd	11.869 Tm	Md	11.729	m*Tm
Vcuo	32.241 Tm	Us	23.421	Tm
		As	6.065	cm2/m

SECCION H = 2.79 M (D=0.68 M) :

Vd	23.954 Tm	Md	38.823	m*Tm
Vcuo	41.244 Tm	Us	62.302	Tm
		As	14.049	cm2/m

SECCION H = 1.39 M (D=0.82 M) :

Vd	39.067 Tm	Md	86.780	m*Tm
Vcuo	50.246 Tm	Us	117.432	Tm
		As	26.480	cm2/m

SECCION H = 0.00 M (D=0.96 M) :

Vd	45.990 Tm	Md	112.966	m*Tm
Vcuo	59.249 Tm	Us	128.984	Tm
		As	29.085	cm2/m

ZONA ENTRE 5.00 m Y 6.00 m

RESULTADOS

Secc. de calculo ... :	5.500 m	Altura del alzado .. :	5.744 m
Ancho zarpa delant . :	1.250 m	Ancho total zapata . :	5.939 m
Resultante F horiz . :	35.875 Tm	Resultante F vertic. :	100.445 Tm
Resultante M horiz . :	150.678 m*Tm	Resultante M vertic. :	383.199 m*Tm
Coef. seg. desliz. . :	1.540	Coef. seg. vuelco .. :	2.543
Tension cobaric..... :	21.695 Tm/m2		
Tension max. solera :	28.097 Tm/m2	Tension min. solera :	5.730 Tm/m2

NOTA: Los momentos estan referidos al vertice inferior de la zarpa delantera de la zapata

ARMADURA ZARPA DELANTERA

Vd	42.795 Tm	Md	27.688	m*Tm
Vcuo	77.460 Tm	Us	22.640	Tm
		As	6.935	cm2/m

ARMADURA ZARPA TRASERA

Vd	34.839 Tm	Md	116.305	m*Tm
Vcuo	77.460 Tm	Us	98.569	Tm
		As	22.226	cm2/m

ARMADURA ALZADO MURO

SECCION H = 4.31 M (D=0.54 M) :

Vd	12.396 Tm	Md	12.546	m*Tm
Vcuo	32.507 Tm	Us	24.882	Tm
		As	6.337	cm2/m

SECCION H = 2.87 M (D=0.69 M) :

Vd	25.106 Tm	Md	41.745	m*Tm
Vcuo	41.777 Tm	Us	66.307	Tm
		As	14.951	cm2/m

SECCION H = 1.44 M (D=0.83 M) :

Vd	41.027 Tm	Md	93.557	m*Tm
Vcuo	51.047 Tm	Us	125.057	Tm
		As	28.199	cm2/m

SECCION H = 0.00 M (D=0.97 M) :

Vd	48.453 Tm	Md	122.396	m*Tm
Vcuo	60.316 Tm	Us	137.744	Tm
		As	31.060	cm2/m

ZONA ENTRE 6.00 m Y 7.00 m

RESULTADOS

Secc. de calculo ... :	6.500 m	Altura del alzado .. :	5.909 m
Ancho zarpa delant . :	1.250 m	Ancho total zapata . :	6.073 m
Resultante F horiz . :	37.715 Tm	Resultante F vertic. :	105.430 Tm
Resultante M horiz . :	161.392 m*Tm	Resultante M vertic. :	410.106 m*Tm
Coef. seg. desliz. . :	1.537	Coef. seg. vuelco .. :	2.541
Tension cobaric..... :	22.346 Tm/m2		
Tension max. solera :	28.980 Tm/m2	Tension min. solera :	5.740 Tm/m2

NOTA: Los momentos estan referidos al vertice inferior de la zarpa delantera de la zapata

ARMADURA ZARPA DELANTERA

Vd	44.393 Tm	Md	28.702	m*Tm
Vcuo	77.460 Tm	Us	23.479	Tm
		As	7.164	cm2/m

ARMADURA ZARPA TRASERA

Vd	36.462 Tm	Md	126.697	m*Tm
Vcuo	77.460 Tm	Us	107.819	Tm
		As	24.312	cm2/m

ARMADURA ALZADO MURO

SECCION H = 4.43 M (D=0.55 M) :

Vd	12.934 Tm	Md	13.399	m*Tm
Vcuo	32.774 Tm	Us	26.397	Tm
		As	6.608	cm2/m

SECCION H = 2.95 M (D=0.70 M) :

Vd	26.285 Tm	Md	44.809	m*Tm
Vcuo	42.311 Tm	Us	70.460	Tm
		As	15.888	cm2/m

SECCION H = 1.48 M (D=0.84 M) :

Vd	43.034 Tm	Md	100.675	m*Tm
Vcuo	51.847 Tm	Us	132.965	Tm
		As	29.982	cm2/m

SECCION H = 0.00 M (D=0.99 M) :

Vd	50.979 Tm	Md	132.333	m*Tm
Vcuo	61.383 Tm	Us	146.837	Tm
		As	33.110	cm2/m

ZONA ENTRE 7.00 m Y 8.00 m

RESULTADOS

Secc. de calculo ... :	7.500 m	Altura del alzado .. :	6.075 m
Ancho zarpa delant . :	1.250 m	Ancho total zapata . :	6.207 m
Resultante F horiz . :	39.600 Tm	Resultante F vertic. :	110.532 Tm
Resultante M horiz . :	172.588 m*Tm	Resultante M vertic. :	438.221 m*Tm
Coef. seg. desliz. . :	1.535	Coef. seg. vuelco .. :	2.539
Tension cobaric..... :	22.996 Tm/m2		
Tension max. solera :	29.863 Tm/m2	Tension min. solera :	5.750 Tm/m2

NOTA: Los momentos estan referidos al vertice inferior de la zarpa delantera de la zapata

ARMADURA ZARPA DELANTERA

Vd	45.992 Tm	Md	29.717	m*Tm
Vcuo	77.460 Tm	Us	24.318	Tm
		As	7.392	cm2/m

ARMADURA ZARPA TRASERA

Vd	38.185 Tm	Md	137.674	m*Tm
Vcuo	77.460 Tm	Us	117.670	Tm
		As	26.534	cm2/m

ARMADURA ALZADO MURO

SECCION H = 4.56 M (D=0.55 M) :

Vd	13.484 Tm	Md	14.291	m*Tm
Vcuo	33.041 Tm	Us	27.967	Tm
		As	6.875	cm2/m

SECCION H = 3.04 M (D=0.70 M) :

Vd	27.491 Tm	Md	48.018	m*Tm
Vcuo	42.844 Tm	Us	74.763	Tm
		As	16.858	cm2/m

SECCION H = 1.52 M (D=0.86 M) :

Vd	45.089 Tm	Md	108.143	m*Tm
Vcuo	52.647 Tm	Us	141.160	Tm
		As	31.830	cm2/m

SECCION H = 0.00 M (D=1.01 M) :

Vd	53.569 Tm	Md	142.789	m*Tm
Vcuo	62.450 Tm	Us	156.265	Tm
		As	35.236	cm2/m

ZONA ENTRE 8.00 m Y 9.00 m

RESULTADOS

Secc. de calculo ... :	8.500 m	Altura del alzado .. :	6.240 m
Ancho zarpa delant . :	1.250 m	Ancho total zapata . :	6.342 m
Resultante F horiz . :	41.531 Tm	Resultante F vertic. :	115.750 Tm
Resultante M horiz . :	184.277 m*Tm	Resultante M vertic. :	467.573 m*Tm
Coef. seg. desliz. . :	1.533	Coef. seg. vuelco .. :	2.537
Tension cobaric..... :	23.647 Tm/m2		
Tension max. solera :	30.744 Tm/m2	Tension min. solera :	5.760 Tm/m2

NOTA: Los momentos estan referidos al vertice inferior de la zarpa delantera de la zapata

ARMADURA ZARPA DELANTERA

Vd	47.593 Tm	Md	30.731	m*Tm
Vcuo	77.460 Tm	Us	25.159	Tm
		As	7.618	cm2/m

ARMADURA ZARPA TRASERA

Vd	39.856 Tm	Md	149.253	m*Tm
Vcuo	77.460 Tm	Us	128.149	Tm
		As	28.896	cm2/m

ARMADURA ALZADO MURO

SECCION H = 4.68 M (D=0.56 M) :

Vd	14.044 Tm	Md	15.220	m*Tm
Vcuo	33.308 Tm	Us	29.593	Tm
		As	7.139	cm2/m

SECCION H = 3.12 M (D=0.71 M) :

Vd	28.723 Tm	Md	51.375	m*Tm
Vcuo	43.378 Tm	Us	79.219	Tm
		As	17.863	cm2/m

SECCION H = 1.56 M (D=0.87 M) :

Vd	47.191 Tm	Md	115.969	m*Tm
Vcuo	53.447 Tm	Us	149.646	Tm
		As	33.744	cm2/m

SECCION H = 0.00 M (D=1.02 M) :

Vd	56.221 Tm	Md	153.777	m*Tm
Vcuo	63.517 Tm	Us	166.033	Tm
		As	37.439	cm2/m

ZONA ENTRE 9.00 m Y 10.00 m

RESULTADOS

Secc. de calculo ... :	9.500 m	Altura del alzado .. :	6.405 m
Ancho zarpa delant . :	1.250 m	Ancho total zapata . :	6.476 m
Resultante F horiz . :	43.506 Tm	Resultante F vertic. :	121.085 Tm
Resultante M horiz . :	196.468 m*Tm	Resultante M vertic. :	498.186 m*Tm
Coef. seg. desliz. . :	1.531	Coef. seg. vuelco .. :	2.536
Tension cobaric..... :	24.297 Tm/m2		
Tension max. solera :	31.625 Tm/m2	Tension min. solera :	5.770 Tm/m2

NOTA: Los momentos estan referidos al vertice inferior de la zarpa delantera de la zapata

ARMADURA ZARPA DELANTERA

Vd	49.196 Tm	Md	31.745	m*Tm
Vcuo	77.460 Tm	Us	26.000	Tm
		As	7.842	cm2/m

ARMADURA ZARPA TRASERA

Vd	41.549 Tm	Md	161.447	m*Tm
Vcuo	77.460 Tm	Us	139.282	Tm
		As	31.407	cm2/m

ARMADURA ALZADO MURO

SECCION H = 4.80 M (D=0.56 M) :

Vd	14.616 Tm	Md	16.189	m*Tm
Vcuo	33.574 Tm	Us	31.275	Tm
		As	7.398	cm2/m

SECCION H = 3.20 M (D=0.72 M) :

Vd	29.982 Tm	Md	54.884	m*Tm
Vcuo	43.911 Tm	Us	83.829	Tm
		As	18.903	cm2/m

SECCION H = 1.60 M (D=0.88 M) :

Vd	49.340 Tm	Md	124.161	m*Tm
Vcuo	54.248 Tm	Us	158.425	Tm
		As	35.723	cm2/m

SECCION H = 0.00 M (D=1.04 M) :

Vd	58.937 Tm	Md	165.311	m*Tm
Vcuo	64.584 Tm	Us	176.145	Tm
		As	39.719	cm2/m

ZONA ENTRE 10.00 m Y 11.00 m

RESULTADOS

Secc. de calculo ... :	10.500 m	Altura del alzado .. :	6.571 m
Ancho zarpa delant . :	1.250 m	Ancho total zapata . :	6.610 m
Resultante F horiz . :	45.526 Tm	Resultante F vertic. :	126.538 Tm
Resultante M horiz . :	209.172 m*Tm	Resultante M vertic. :	530.087 m*Tm
Coef. seg. desliz. . :	1.529	Coef. seg. vuelco .. :	2.534
Tension cobaric..... :	24.947 Tm/m2		
Tension max. solera :	32.505 Tm/m2	Tension min. solera :	5.780 Tm/m2

NOTA: Los momentos estan referidos al vertice inferior de la zarpa delantera de la zapata

ARMADURA ZARPA DELANTERA

Vd	50.799 Tm	Md	32.760	m*Tm
Vcuo	77.460 Tm	Us	26.842	Tm
		As	8.064	cm2/m

ARMADURA ZARPA TRASERA

Vd	43.262 Tm	Md	174.273	m*Tm
Vcuo	77.460 Tm	Us	151.100	Tm
		As	34.072	cm2/m

ARMADURA ALZADO MURO

SECCION H = 4.93 M (D=0.56 M) :

Vd	15.200 Tm	Md	17.197	m*Tm
Vcuo	33.841 Tm	Us	33.013	Tm
		As	7.651	cm2/m

SECCION H = 3.29 M (D=0.73 M) :

Vd	31.268 Tm	Md	58.548	m*Tm
Vcuo	44.445 Tm	Us	88.594	Tm
		As	19.977	cm2/m

SECCION H = 1.64 M (D=0.89 M) :

Vd	51.537 Tm	Md	132.728	m*Tm
Vcuo	55.048 Tm	Us	167.501	Tm
		As	37.770	cm2/m

SECCION H = 0.00 M (D=1.06 M) :

Vd	61.717 Tm	Md	177.403	m*Tm
Vcuo	65.651 Tm	Us	186.604	Tm
		As	42.077	cm2/m

ZONA ENTRE 11.00 m Y 12.00 m

RESULTADOS

Secc. de calculo ... :	11.500 m	Altura del alzado .. :	6.736 m
Ancho zarpa delant . :	1.250 m	Ancho total zapata . :	6.745 m
Resultante F horiz . :	47.590 Tm	Resultante F vertic. :	132.106 Tm
Resultante M horiz . :	222.399 m*Tm	Resultante M vertic. :	563.303 m*Tm
Coef. seg. desliz. . :	1.527	Coef. seg. vuelco .. :	2.533
Tension cobaric..... :	25.597 Tm/m2		
Tension max. solera :	33.384 Tm/m2	Tension min. solera :	5.789 Tm/m2

NOTA: Los momentos estan referidos al vertice inferior de la zarpa delantera de la zapata

ARMADURA ZARPA DELANTERA

Vd	52.403 Tm	Md	33.775	m*Tm
Vcuo	77.460 Tm	Us	27.685	Tm
		As	8.284	cm2/m

ARMADURA ZARPA TRASERA

Vd	44.997 Tm	Md	187.745	m*Tm
Vcuo	77.460 Tm	Us	163.632	Tm
		As	36.897	cm2/m

ARMADURA ALZADO MURO

SECCION H = 5.05 M (D=0.57 M) :

Vd	15.794 Tm	Md	18.247	m*Tm
Vcuo	34.108 Tm	Us	34.810	Tm
		As	7.896	cm2/m

SECCION H = 3.37 M (D=0.74 M) :

Vd	32.580 Tm	Md	62.371	m*Tm
Vcuo	44.978 Tm	Us	93.518	Tm
		As	21.087	cm2/m

SECCION H = 1.68 M (D=0.91 M) :

Vd	53.781 Tm	Md	141.678	m*Tm
Vcuo	55.848 Tm	Us	176.878	Tm
		As	39.884	cm2/m

SECCION H = 0.00 M (D=1.07 M) :

Vd	64.559 Tm	Md	190.068	m*Tm
Vcuo	66.718 Tm	Us	197.415	Tm
		As	44.515	cm2/m

ZONA ENTRE 12.00 m Y 13.00 m

RESULTADOS

Secc. de calculo ... :	12.500 m	Altura del alzado .. :	6.901 m
Ancho zarpa delant . :	1.250 m	Ancho total zapata . :	6.879 m
Resultante F horiz . :	49.700 Tm	Resultante F vertic. :	137.792 Tm
Resultante M horiz . :	236.160 m*Tm	Resultante M vertic. :	597.861 m*Tm
Coef. seg. desliz. . :	1.525	Coef. seg. vuelco .. :	2.532
Tension cobaric..... :	26.246 Tm/m2		
Tension max. solera :	34.262 Tm/m2	Tension min. solera :	5.799 Tm/m2

NOTA: Los momentos estan referidos al vertice inferior de la zarpa delantera de la zapata

ARMADURA ZARPA DELANTERA

Vd	54.008 Tm	Md	34.789	m*Tm
Vcuo	77.460 Tm	Us	28.529	Tm
		As	8.502	cm2/m

ARMADURA ZARPA TRASERA

Vd	46.856 Tm	Md	201.877	m*Tm
Vcuo	77.460 Tm	Us	176.911	Tm
		As	39.892	cm2/m

ARMADURA ALZADO MURO

SECCION H = 5.18 M (D=0.57 M) :

Vd	16.400 Tm	Md	19.338	m*Tm
Vcuo	34.375 Tm	Us	36.665	Tm
		As	8.268	cm2/m

SECCION H = 3.45 M (D=0.75 M) :

Vd	33.919 Tm	Md	66.355	m*Tm
Vcuo	45.512 Tm	Us	98.601	Tm
		As	22.233	cm2/m

SECCION H = 1.73 M (D=0.92 M) :

Vd	56.072 Tm	Md	151.019	m*Tm
Vcuo	56.648 Tm	Us	186.559	Tm
		As	42.067	cm2/m

SECCION H = 0.00 M (D=1.09 M) :

Vd	67.465 Tm	Md	203.317	m*Tm
Vcuo	67.785 Tm	Us	208.579	Tm
		As	47.033	cm2/m

ZONA ENTRE 13.00 m Y 13.40 m

RESULTADOS

Secc. de calculo ... :	13.200 m	Altura del alzado .. :	7.017 m
Ancho zarpa delant . :	1.250 m	Ancho total zapata . :	6.973 m
Resultante F horiz . :	51.203 Tm	Resultante F vertic. :	141.841 Tm
Resultante M horiz . :	246.115 m*Tm	Resultante M vertic. :	622.862 m*Tm
Coef. seg. desliz. . :	1.524	Coef. seg. vuelco .. :	2.531
Tension cobaric..... :	26.701 Tm/m2		
Tension max. solera :	34.876 Tm/m2	Tension min. solera :	5.806 Tm/m2

NOTA: Los momentos estan referidos al vertice inferior de la zarpa delantera de la zapata

ARMADURA ZARPA DELANTERA

Vd	55.132 Tm	Md	35.500	m*Tm
Vcuo	77.460 Tm	Us	29.120	Tm
		As	8.654	cm2/m

ARMADURA ZARPA TRASERA

Vd	48.035 Tm	Md	212.172	m*Tm
Vcuo	77.460 Tm	Us	186.667	Tm
		As	42.092	cm2/m

ARMADURA ALZADO MURO

SECCION H = 5.26 M (D=0.58 M) :

Vd	16.830 Tm	Md	20.127	m*Tm
Vcuo	34.561 Tm	Us	37.999	Tm
		As	8.568	cm2/m

SECCION H = 3.51 M (D=0.75 M) :

Vd	34.872 Tm	Md	69.242	m*Tm
Vcuo	45.885 Tm	Us	102.255	Tm
		As	23.057	cm2/m

SECCION H = 1.75 M (D=0.93 M) :

Vd	57.705 Tm	Md	157.795	m*Tm
Vcuo	57.209 Tm	Us	193.519	Tm
Necesita armadura a cortante				
		As	43.637	cm2/m

SECCION H = 0.00 M (D=1.10 M) :

Vd	69.537 Tm	Md	212.946	m*Tm
Vcuo	68.532 Tm	Us	216.608	Tm
Necesita armadura a cortante				
		As	48.843	cm2/m

10-17-1998

DATOS DE ENTRADA

Proyecto : E1011

Muro ... : Aletas 2 y 3

Longitud muro .... :	8.200 m	Ancho coronacion . :	0.400 m
Talud trasdos .... :	10.000 %	Talud param. ext...:	0.000 %
Sobrecarga terrapl.:	3.000 Tm/m2		
Canto zapata ..... :	0.800 m	Cota solera zapata :	0.000 m
Cota sup. arranque :	3.850 m	Cota sup. extremo :	7.850 m
Cota cono t. arr. :	0.000 m	Cota cono t. extr. :	0.000 m
Coef. roz. zap/terr:	0.550	Tensi¢n cob. adm. :	30.000 Tm/m2
Coef. seg. desliz. :	1.500	Coef. seg. vuelco :	1.500
Densidad tierras . :	2.000 Tm/m3	Ang. talud trasdos :	0.000 deg
Angulo roz. terr.. :	35.000 deg	Ang. roz. hor/terr :	12.000 deg
Kh inclinado ..... :	0.291	Kv inclinado ..... :	0.062
Kh horizontal..... :	0.291	Kv horizontal..... :	0.062
Ang. muro-calz.sup.:	0.000 deg	Dist. mur-calz arrq:	0.000 m
Fck (Kg/cm2)..... :	250.000	Fyk (Kg/cm2)..... :	5100.000
Coef. seg. Horm... :	1.500	Coef. seg. Acero.. :	1.150
Coef. seg. Acciones:	1.500		

ZONA ENTRE 0.00 m Y 1.00 m

RESULTADOS

Secc. de calculo ... :	0.500 m	Altura del alzado .. :	3.294 m
Ancho zarpa delant . :	0.500 m	Ancho total zapata . :	2.000 m
Empuje horizontal .. :	6.029 Tm	Empuje vertical .... :	1.282 Tm
Momento emp. horiz . :	8.199 m*Tm	Momento emp. vertic. :	2.563 m*Tm
Resultante F horiz . :	6.029 Tm	Resultante F vertic. :	18.593 Tm
Resultante M horiz . :	13.023 m*Tm	Resultante M vertic. :	24.235 m*Tm
Coef. seg. desliz. . :	1.696	Coef. seg. vuelco .. :	1.861
Tension cobaric..... :	15.416 Tm/m2		
Sigma max. solera .. :	20.555 Tm/m2	D triang. tensiones :	1.809 m

ZONA ENTRE 1.00 m Y 2.00 m

RESULTADOS

Secc. de calculo ... :	1.500 m	Altura del alzado .. :	3.782 m
Ancho zarpa delant . :	0.500 m	Ancho total zapata . :	2.000 m
Empuje horizontal .. :	7.459 Tm	Empuje vertical .... :	1.585 Tm
Momento emp. horiz . :	11.484 m*Tm	Momento emp. vertic. :	3.171 m*Tm
Resultante F horiz . :	7.459 Tm	Resultante F vertic. :	20.544 Tm
Resultante M horiz . :	17.451 m*Tm	Resultante M vertic. :	26.834 m*Tm
Coef. seg. desliz. . :	1.515	Coef. seg. vuelco .. :	1.538
Tension cobaric..... :	22.492 Tm/m2		
Sigma max. solera .. :	29.990 Tm/m2	D triang. tensiones :	1.370 m

ZONA ENTRE 2.00 m Y 3.00 m

RESULTADOS

Secc. de calculo ... :	2.500 m	Altura del alzado .. :	4.270 m
Ancho zarpa delant . :	0.500 m	Ancho total zapata . :	2.200 m
Empuje horizontal .. :	9.027 Tm	Empuje vertical .... :	1.919 Tm
Momento emp. horiz . :	15.499 m*Tm	Momento emp. vertic. :	4.221 m*Tm
Resultante F horiz . :	9.027 Tm	Resultante F vertic. :	25.245 Tm
Resultante M horiz . :	22.721 m*Tm	Resultante M vertic. :	35.576 m*Tm
Coef. seg. desliz. . :	1.538	Coef. seg. vuelco .. :	1.566
Tension cobaric..... :	24.787 Tm/m2		
Sigma max. solera .. :	33.050 Tm/m2	D triang. tensiones :	1.528 m

ZONA ENTRE 3.00 m Y 4.00 m

RESULTADOS

Secc. de calculo ... :	3.500 m	Altura del alzado .. :	4.757 m
Ancho zarpa delant . :	0.500 m	Ancho total zapata . :	2.400 m
Empuje horizontal .. :	10.733 Tm	Empuje vertical .... :	2.281 Tm
Momento emp. horiz . :	20.313 m*Tm	Momento emp. vertic. :	5.475 m*Tm
Resultante F horiz . :	10.733 Tm	Resultante F vertic. :	30.376 Tm
Resultante M horiz . :	28.900 m*Tm	Resultante M vertic. :	45.938 m*Tm
Coef. seg. desliz. . :	1.557	Coef. seg. vuelco .. :	1.590
Tension cobaric..... :	27.078 Tm/m2		
Sigma max. solera .. :	36.104 Tm/m2	D triang. tensiones :	1.683 m

ZONA ENTRE 4.00 m Y 5.00 m

RESULTADOS

Secc. de calculo ... :	4.500 m	Altura del alzado .. :	5.245 m
Ancho zarpa delant . :	0.500 m	Ancho total zapata . :	2.800 m
Empuje horizontal .. :	12.578 Tm	Empuje vertical .... :	2.673 Tm
Momento emp. horiz . :	25.993 m*Tm	Momento emp. vertic. :	7.486 m*Tm
Resultante F horiz . :	12.578 Tm	Resultante F vertic. :	39.038 Tm
Resultante M horiz . :	36.055 m*Tm	Resultante M vertic. :	66.955 m*Tm
Coef. seg. desliz. . :	1.707	Coef. seg. vuelco .. :	1.857
Tension cobaric..... :	24.660 Tm/m2		
Sigma max. solera .. :	32.880 Tm/m2	D triang. tensiones :	2.375 m

ZONA ENTRE 5.00 m Y 6.00 m

RESULTADOS

Secc. de calculo ... :	5.500 m	Altura del alzado .. :	5.733 m
Ancho zarpa delant . :	0.500 m	Ancho total zapata . :	3.000 m
Empuje horizontal .. :	14.561 Tm	Empuje vertical .... :	3.095 Tm
Momento emp. horiz . :	32.607 m*Tm	Momento emp. vertic. :	9.285 m*Tm
Resultante F horiz . :	14.561 Tm	Resultante F vertic. :	45.228 Tm
Resultante M horiz . :	44.255 m*Tm	Resultante M vertic. :	82.232 m*Tm
Coef. seg. desliz. . :	1.708	Coef. seg. vuelco .. :	1.858
Tension cobaric..... :	26.932 Tm/m2		
Sigma max. solera .. :	35.909 Tm/m2	D triang. tensiones :	2.519 m

ZONA ENTRE 6.00 m Y 7.00 m

RESULTADOS

Secc. de calculo ... :	6.500 m	Altura del alzado .. :	6.221 m
Ancho zarpa delant . :	0.500 m	Ancho total zapata . :	3.400 m
Empuje horizontal .. :	16.682 Tm	Empuje vertical .... :	3.546 Tm
Momento emp. horiz . :	40.222 m*Tm	Momento emp. vertic. :	12.056 m*Tm
Resultante F horiz . :	16.682 Tm	Resultante F vertic. :	55.338 Tm
Resultante M horiz . :	53.567 m*Tm	Resultante M vertic. :	111.840 m*Tm
Coef. seg. desliz. . :	1.824	Coef. seg. vuelco .. :	2.088
Tension cobaric..... :	26.275 Tm/m2		
Sigma max. solera .. :	35.034 Tm/m2	D triang. tensiones :	3.159 m

ZONA ENTRE 7.00 m Y 8.00 m

RESULTADOS

Secc. de calculo ... :	7.500 m	Altura del alzado .. :	6.709 m
Ancho zarpa delant . :	0.500 m	Ancho total zapata . :	3.800 m
Empuje horizontal .. :	18.942 Tm	Empuje vertical .... :	4.026 Tm
Momento emp. horiz . :	48.905 m*Tm	Momento emp. vertic. :	15.300 m*Tm
Resultante F horiz . :	18.942 Tm	Resultante F vertic. :	66.269 Tm
Resultante M horiz . :	64.059 m*Tm	Resultante M vertic. :	147.382 m*Tm
Coef. seg. desliz. . :	1.924	Coef. seg. vuelco .. :	2.301
Tension cobaric..... :	26.353 Tm/m2		
Sigma max. solera .. :	35.137 Tm/m2	D triang. tensiones :	3.772 m

ZONA ENTRE 8.00 m Y 8.20 m

RESULTADOS

Secc. de calculo ... :	8.100 m	Altura del alzado .. :	7.001 m
Ancho zarpa delant . :	0.500 m	Ancho total zapata . :	4.000 m
Empuje horizontal .. :	20.364 Tm	Empuje vertical .... :	4.329 Tm
Momento emp. horiz . :	54.656 m*Tm	Momento emp. vertic. :	17.314 m*Tm
Resultante F horiz . :	20.364 Tm	Resultante F vertic. :	72.463 Tm
Resultante M horiz . :	70.948 m*Tm	Resultante M vertic. :	168.538 m*Tm
Coef. seg. desliz. . :	1.957	Coef. seg. vuelco .. :	2.376
Tension cobaric..... :	26.903 Tm/m2		
Sigma max. solera .. :	35.867 Tm/m2	Sigma min. solera .. :	0.365 Tm/m2

RESULTADOS

Coeficiente global de seg. al deslizamiento ...	1.8
Coeficiente global de seg. al vuelco	2.0
Tension maxima en solera (Tm/m2)	36.1

ZONA ENTRE 0.00 m Y 1.00 m

RESULTADOS

Secc. de calculo ... :	0.500 m	Altura del alzado .. :	3.294 m
Ancho zarpa delant . :	0.500 m	Ancho total zapata . :	2.122 m
Resultante F horiz . :	6.029 Tm	Resultante F vertic. :	20.006 Tm
Resultante M horiz . :	13.023 m*Tm	Resultante M vertic. :	27.304 m*Tm
Coef. seg. desliz. . :	1.825	Coef. seg. vuelco .. :	2.097
Tension cobaric..... :	14.013 Tm/m2		
Tension max. solera :	18.683 Tm/m2	Tension min. solera :	0.174 Tm/m2

NOTA: Los momentos estan referidos al vertice inferior de la zarpa delantera de la zapata

ARMADURA ZARPA DELANTERA

Vd	11.124 Tm	Md	2.926	m*Tm
Vcuo	48.412 Tm	Us	3.796	Tm
		As	1.251	cm2/m

ARMADURA ZARPA TRASERA

Vd	8.041 Tm	Md	5.249	m*Tm
Vcuo	48.412 Tm	Us	6.827	Tm
		As	2.204	cm2/m

ARMADURA ALZADO MURO

SECCION H = 2.47 M (D=0.48 M) :

Vd	2.356 Tm	Md	1.344	m*Tm
Vcuo	28.553 Tm	Us	2.960	Tm
		As	0.968	cm2/m

SECCION H = 1.65 M (D=0.56 M) :

Vd	4.900 Tm	Md	4.577	m*Tm
Vcuo	33.869 Tm	Us	8.546	Tm
		As	2.655	cm2/m

SECCION H = 0.82 M (D=0.65 M) :

Vd	8.159 Tm	Md	10.438	m*Tm
Vcuo	39.184 Tm	Us	16.962	Tm
		As	4.936	cm2/m

SECCION H = -0.00 M (D=0.73 M) :

Vd	9.044 Tm	Md	12.299	m*Tm
Vcuo	44.500 Tm	Us	17.574	Tm
		As	5.187	cm2/m

ZONA ENTRE 1.00 m Y 2.00 m

RESULTADOS

Secc. de calculo ... :	1.500 m	Altura del alzado .. :	3.782 m
Ancho zarpa delant . :	0.500 m	Ancho total zapata . :	2.366 m
Resultante F horiz . :	7.459 Tm	Resultante F vertic. :	25.141 Tm
Resultante M horiz . :	17.451 m*Tm	Resultante M vertic. :	37.447 m*Tm
Coef. seg. desliz. . :	1.854	Coef. seg. vuelco .. :	2.146
Tension cobaric..... :	15.804 Tm/m2		
Tension max. solera :	21.071 Tm/m2	Tension min. solera :	0.182 Tm/m2

NOTA: Los momentos estan referidos al vertice inferior de la zarpa delantera de la zapata

ARMADURA ZARPA DELANTERA

Vd	12.931 Tm	Md	3.379	m*Tm
Vcuo	48.412 Tm	Us	4.386	Tm
		As	1.440	cm2/m

ARMADURA ZARPA TRASERA

Vd	9.921 Tm	Md	8.147	m*Tm
Vcuo	48.412 Tm	Us	10.628	Tm
		As	3.340	cm2/m

ARMADURA ALZADO MURO

SECCION H = 2.84 M (D=0.49 M) :

Vd	2.687 Tm	Md	1.683	m*Tm
Vcuo	29.341 Tm	Us	3.608	Tm
		As	1.172	cm2/m

SECCION H = 1.89 M (D=0.59 M) :

Vd	5.790 Tm	Md	6.010	m*Tm
Vcuo	35.443 Tm	Us	10.744	Tm
		As	3.278	cm2/m

SECCION H = 0.95 M (D=0.68 M) :

Vd	9.837 Tm	Md	14.055	m*Tm
Vcuo	41.546 Tm	Us	21.613	Tm
		As	6.083	cm2/m

SECCION H = -0.00 M (D=0.78 M) :

Vd	11.188 Tm	Md	17.226	m*Tm
Vcuo	47.649 Tm	Us	23.065	Tm
		As	6.583	cm2/m

ZONA ENTRE 2.00 m Y 3.00 m

RESULTADOS

Secc. de calculo ... :	2.500 m	Altura del alzado .. :	4.270 m
Ancho zarpa delant . :	0.500 m	Ancho total zapata . :	2.610 m
Resultante F horiz . :	9.027 Tm	Resultante F vertic. :	30.792 Tm
Resultante M horiz . :	22.721 m*Tm	Resultante M vertic. :	49.704 m*Tm
Coef. seg. desliz. . :	1.876	Coef. seg. vuelco .. :	2.188
Tension cobaric..... :	17.570 Tm/m2		
Tension max. solera :	23.425 Tm/m2	Tension min. solera :	0.173 Tm/m2

NOTA: Los momentos estan referidos al vertice inferior de la zarpa delantera de la zapata

ARMADURA ZARPA DELANTERA

Vd	14.716 Tm	Md	3.827	m*Tm
Vcuo	48.412 Tm	Us	4.969	Tm
		As	1.625	cm2/m

ARMADURA ZARPA TRASERA

Vd	11.903 Tm	Md	11.884	m*Tm
Vcuo	48.412 Tm	Us	15.564	Tm
		As	4.718	cm2/m

ARMADURA ALZADO MURO

SECCION H = 3.20 M (D=0.51 M) :

Vd	3.034 Tm	Md	2.066	m*Tm
Vcuo	30.128 Tm	Us	4.319	Tm
		As	1.393	cm2/m

SECCION H = 2.13 M (D=0.61 M) :

Vd	6.744 Tm	Md	7.690	m*Tm
Vcuo	37.018 Tm	Us	13.190	Tm
		As	3.948	cm2/m

SECCION H = 1.07 M (D=0.72 M) :

Vd	11.656 Tm	Md	18.375	m*Tm
Vcuo	43.908 Tm	Us	26.828	Tm
		As	7.285	cm2/m

SECCION H = 0.00 M (D=0.83 M) :

Vd	13.540 Tm	Md	23.249	m*Tm
Vcuo	50.797 Tm	Us	29.302	Tm
		As	8.066	cm2/m

ZONA ENTRE 3.00 m Y 4.00 m

RESULTADOS

Secc. de calculo ... :	3.500 m	Altura del alzado .. :	4.757 m
Ancho zarpa delant . :	0.500 m	Ancho total zapata . :	2.854 m
Resultante F horiz . :	10.733 Tm	Resultante F vertic. :	36.961 Tm
Resultante M horiz . :	28.900 m*Tm	Resultante M vertic. :	64.270 m*Tm
Coef. seg. desliz. . :	1.894	Coef. seg. vuelco .. :	2.224
Tension cobaric..... :	19.312 Tm/m2		
Tension max. solera :	25.748 Tm/m2	Tension min. solera :	0.156 Tm/m2

NOTA: Los momentos estan referidos al vertice inferior de la zarpa delantera de la zapata

ARMADURA ZARPA DELANTERA

Vd	16.482 Tm	Md	4.269	m*Tm
Vcuo	48.412 Tm	Us	5.547	Tm
		As	1.807	cm2/m

ARMADURA ZARPA TRASERA

Vd	14.004 Tm	Md	16.553	m*Tm
Vcuo	48.412 Tm	Us	21.787	Tm
		As	6.299	cm2/m

ARMADURA ALZADO MURO

SECCION H = 3.57 M (D=0.52 M) :

Vd	3.397 Tm	Md	2.498	m*Tm
Vcuo	30.915 Tm	Us	5.091	Tm
		As	1.631	cm2/m

SECCION H = 2.38 M (D=0.64 M) :

Vd	7.761 Tm	Md	9.634	m*Tm
Vcuo	38.592 Tm	Us	15.884	Tm
		As	4.659	cm2/m

SECCION H = 1.19 M (D=0.76 M) :

Vd	13.617 Tm	Md	23.456	m*Tm
Vcuo	46.269 Tm	Us	32.611	Tm
		As	8.521	cm2/m

SECCION H = 0.00 M (D=0.88 M) :

Vd	16.099 Tm	Md	30.470	m*Tm
Vcuo	53.946 Tm	Us	36.291	Tm
		As	9.610	cm2/m

ZONA ENTRE 4.00 m Y 5.00 m

RESULTADOS

Secc. de calculo ... :	4.500 m	Altura del alzado .. :	5.245 m
Ancho zarpa delant . :	0.500 m	Ancho total zapata . :	3.098 m
Resultante F horiz . :	12.578 Tm	Resultante F vertic. :	43.647 Tm
Resultante M horiz . :	36.055 m*Tm	Resultante M vertic. :	81.342 m*Tm
Coef. seg. desliz. . :	1.909	Coef. seg. vuelco .. :	2.256
Tension cobaric..... :	21.033 Tm/m2		
Tension max. solera :	28.044 Tm/m2	Tension min. solera :	0.138 Tm/m2

NOTA: Los momentos estan referidos al vertice inferior de la zarpa delantera de la zapata

ARMADURA ZARPA DELANTERA

Vd	18.231 Tm	Md	4.707	m*Tm
Vcuo	48.412 Tm	Us	6.118	Tm
		As	1.985	cm2/m

ARMADURA ZARPA TRASERA

Vd	16.182 Tm	Md	22.249	m*Tm
Vcuo	48.412 Tm	Us	29.458	Tm
		As	8.007	cm2/m

ARMADURA ALZADO MURO

SECCION H = 3.93 M (D=0.53 M) :

Vd	3.776 Tm	Md	2.979	m*Tm
Vcuo	31.702 Tm	Us	5.927	Tm
		As	1.884	cm2/m

SECCION H = 2.62 M (D=0.66 M) :

Vd	8.840 Tm	Md	11.860	m*Tm
Vcuo	40.166 Tm	Us	18.828	Tm
		As	5.405	cm2/m

SECCION H = 1.31 M (D=0.79 M) :

Vd	15.719 Tm	Md	29.355	m*Tm
Vcuo	48.631 Tm	Us	38.968	Tm
		As	9.772	cm2/m

SECCION H = 0.00 M (D=0.92 M) :

Vd	18.866 Tm	Md	38.990	m*Tm
Vcuo	57.095 Tm	Us	44.037	Tm
		As	11.187	cm2/m

ZONA ENTRE 5.00 m Y 6.00 m

RESULTADOS

Secc. de calculo ... :	5.500 m	Altura del alzado .. :	5.733 m
Ancho zarpa delant . :	0.500 m	Ancho total zapata . :	3.341 m
Resultante F horiz . :	14.561 Tm	Resultante F vertic. :	50.850 Tm
Resultante M horiz . :	44.255 m*Tm	Resultante M vertic. :	101.116 m*Tm
Coef. seg. desliz. . :	1.921	Coef. seg. vuelco .. :	2.285
Tension cobaric..... :	22.738 Tm/m2		
Tension max. solera :	30.316 Tm/m2	Tension min. solera :	0.120 Tm/m2

NOTA: Los momentos estan referidos al vertice inferior de la zarpa delantera de la zapata

ARMADURA ZARPA DELANTERA

Vd	19.964 Tm	Md	5.141	m*Tm
Vcuo	48.412 Tm	Us	6.685	Tm
		As	2.160	cm2/m

ARMADURA ZARPA TRASERA

Vd	18.504 Tm	Md	29.064	m*Tm
Vcuo	48.412 Tm	Us	38.755	Tm
		As	9.722	cm2/m

ARMADURA ALZADO MURO

SECCION H = 4.30 M (D=0.54 M) :

Vd	4.170 Tm	Md	3.512	m*Tm
Vcuo	32.489 Tm	Us	6.824	Tm
		As	2.152	cm2/m

SECCION H = 2.87 M (D=0.69 M) :

Vd	9.982 Tm	Md	14.384	m*Tm
Vcuo	41.741 Tm	Us	22.022	Tm
		As	6.180	cm2/m

SECCION H = 1.43 M (D=0.83 M) :

Vd	17.962 Tm	Md	36.128	m*Tm
Vcuo	50.992 Tm	Us	45.902	Tm
		As	11.015	cm2/m

SECCION H = 0.00 M (D=0.97 M) :

Vd	21.841 Tm	Md	48.911	m*Tm
Vcuo	60.244 Tm	Us	52.547	Tm
		As	12.770	cm2/m

ZONA ENTRE 6.00 m Y 7.00 m

RESULTADOS

Secc. de calculo ... :	6.500 m	Altura del alzado .. :	6.221 m
Ancho zarpa delant . :	0.500 m	Ancho total zapata . :	3.585 m
Resultante F horiz . :	16.682 Tm	Resultante F vertic. :	58.571 Tm
Resultante M horiz . :	53.567 m*Tm	Resultante M vertic. :	123.789 m*Tm
Coef. seg. desliz. . :	1.931	Coef. seg. vuelco .. :	2.311
Tension cobaric..... :	24.427 Tm/m2		
Tension max. solera :	32.568 Tm/m2	Tension min. solera :	0.104 Tm/m2

NOTA: Los momentos estan referidos al vertice inferior de la zarpa delantera de la zapata

ARMADURA ZARPA DELANTERA

Vd	21.683 Tm	Md	5.571	m*Tm
Vcuo	48.412 Tm	Us	7.248	Tm
		As	2.333	cm2/m

ARMADURA ZARPA TRASERA

Vd	20.879 Tm	Md	37.091	m*Tm
Vcuo	48.412 Tm	Us	49.869	Tm
		As	11.260	cm2/m

ARMADURA ALZADO MURO

SECCION H = 4.67 M (D=0.56 M) :

Vd	4.581 Tm	Md	4.098	m*Tm
Vcuo	33.277 Tm	Us	7.783	Tm
		As	2.434	cm2/m

SECCION H = 3.11 M (D=0.71 M) :

Vd	11.187 Tm	Md	17.222	m*Tm
Vcuo	43.315 Tm	Us	25.467	Tm
		As	6.979	cm2/m

SECCION H = 1.56 M (D=0.87 M) :

Vd	20.346 Tm	Md	43.832	m*Tm
Vcuo	53.354 Tm	Us	53.418	Tm
		As	12.230	cm2/m

SECCION H = 0.00 M (D=1.02 M) :

Vd	25.023 Tm	Md	60.333	m*Tm
Vcuo	63.393 Tm	Us	61.828	Tm
		As	14.329	cm2/m

ZONA ENTRE 7.00 m Y 8.00 m

RESULTADOS

Secc. de calculo ... :	7.500 m	Altura del alzado .. :	6.709 m
Ancho zarpa delant . :	0.500 m	Ancho total zapata . :	3.829 m
Resultante F horiz . :	18.942 Tm	Resultante F vertic. :	66.808 Tm
Resultante M horiz . :	64.059 m*Tm	Resultante M vertic. :	149.556 m*Tm
Coef. seg. desliz. . :	1.940	Coef. seg. vuelco .. :	2.335
Tension cobaric..... :	26.102 Tm/m2		
Tension max. solera :	34.803 Tm/m2	Tension min. solera :	0.091 Tm/m2

NOTA: Los momentos estan referidos al vertice inferior de la zarpa delantera de la zapata

ARMADURA ZARPA DELANTERA

Vd	23.391 Tm	Md	5.998	m*Tm
Vcuo	48.412 Tm	Us	7.807	Tm
		As	2.503	cm2/m

ARMADURA ZARPA TRASERA

Vd	23.424 Tm	Md	46.423	m*Tm
Vcuo	48.412 Tm	Us	63.014	Tm
		As	14.209	cm2/m

ARMADURA ALZADO MURO

SECCION H = 5.03 M (D=0.57 M) :

Vd	5.006 Tm	Md	4.741	m*Tm
Vcuo	34.064 Tm	Us	8.804	Tm
		As	2.729	cm2/m

SECCION H = 3.35 M (D=0.74 M) :

Vd	12.455 Tm	Md	20.392	m*Tm
Vcuo	44.890 Tm	Us	29.164	Tm
		As	7.796	cm2/m

SECCION H = 1.68 M (D=0.90 M) :

Vd	22.872 Tm	Md	52.523	m*Tm
Vcuo	55.715 Tm	Us	61.523	Tm
		As	13.873	cm2/m

SECCION H = 0.00 M (D=1.07 M) :

Vd	28.413 Tm	Md	73.358	m*Tm
Vcuo	66.541 Tm	Us	71.886	Tm
		As	16.210	cm2/m

ZONA ENTRE 8.00 m Y 8.20 m

RESULTADOS

Secc. de calculo ... :	8.100 m	Altura del alzado .. :	7.001 m
Ancho zarpa delant . :	0.500 m	Ancho total zapata . :	3.976 m
Resultante F horiz . :	20.364 Tm	Resultante F vertic. :	71.999 Tm
Resultante M horiz . :	70.948 m*Tm	Resultante M vertic. :	166.584 m*Tm
Coef. seg. desliz. . :	1.945	Coef. seg. vuelco .. :	2.348
Tension cobaric..... :	27.102 Tm/m2		
Tension max. solera :	36.136 Tm/m2	Tension min. solera :	0.084 Tm/m2

NOTA: Los momentos estan referidos al vertice inferior de la zarpa delantera de la zapata

ARMADURA ZARPA DELANTERA

Vd	24.410 Tm	Md	6.253	m*Tm
Vcuo	48.412 Tm	Us	8.141	Tm
		As	2.604	cm2/m

ARMADURA ZARPA TRASERA

Vd	24.958 Tm	Md	52.687	m*Tm
Vcuo	48.412 Tm	Us	71.971	Tm
		As	16.229	cm2/m

ARMADURA ALZADO MURO

SECCION H = 5.25 M (D=0.58 M) :

Vd	5.269 Tm	Md	5.155	m*Tm
Vcuo	34.536 Tm	Us	9.447	Tm
		As	2.913	cm2/m

SECCION H = 3.50 M (D=0.75 M) :

Vd	13.245 Tm	Md	22.461	m*Tm
Vcuo	45.834 Tm	Us	31.503	Tm
		As	8.292	cm2/m

SECCION H = 1.75 M (D=0.93 M) :

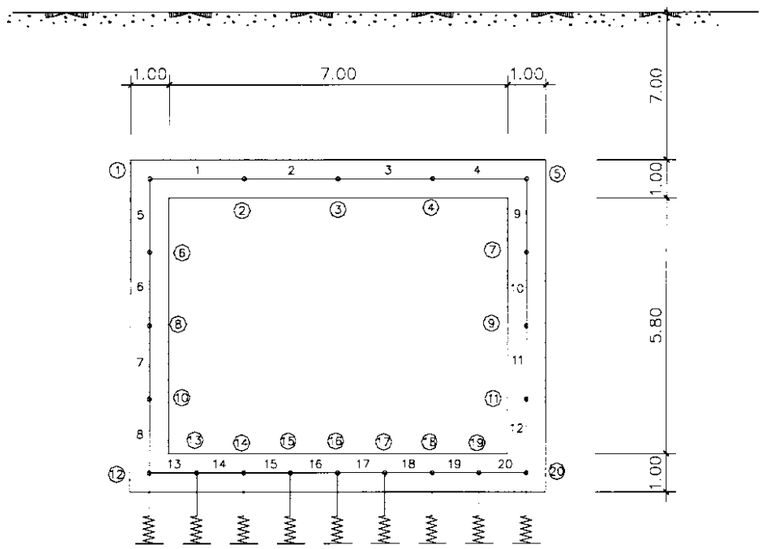
Vd	24.455 Tm	Md	58.237	m*Tm
Vcuo	57.132 Tm	Us	66.670	Tm
		As	15.033	cm2/m

SECCION H = 0.00 M (D=1.10 M) :

Vd	30.546 Tm	Md	81.984	m*Tm
Vcuo	68.431 Tm	Us	78.298	Tm
		As	17.655	cm2/m

6. LISTADOS DE ORDENADOR.

PORTICO. DEFINICION



CON MODULO DE BALASTO DE 1000 Mp/m^3

DATOS GENERALES DE LA ESTRUCTURA

COORDENADAS DE NUDOS

Nudo	X	Y
1	0.500	7.300
2	2.500	7.300
3	4.500	7.300
4	6.500	7.300
5	8.500	7.300
6	0.500	5.600
7	8.500	5.600
8	0.500	3.900
9	8.500	3.900
10	0.500	2.200
11	8.500	2.200
12	0.500	0.500
13	1.500	0.500
14	2.500	0.500
15	3.500	0.500
16	4.500	0.500
17	5.500	0.500
18	6.500	0.500
19	7.500	0.500
20	8.500	0.500

DATOS GENERALES DE LA ESTRUCTURA

CARACTERISTICAS DE BARRAS

Barra	i	j	If.i	Area.i
1	1	2	0.08333	1.000
2	2	3	0.08333	1.000
3	3	4	0.08333	1.000
4	4	5	0.08333	1.000
5	1	6	0.08333	1.000
6	6	8	0.08333	1.000
7	8	10	0.08333	1.000
8	10	12	0.08333	1.000
9	5	7	0.08333	1.000
10	7	9	0.08333	1.000
11	9	11	0.08333	1.000
12	11	20	0.08333	1.000
13	12	13	0.08333	1.000
14	13	14	0.08333	1.000
15	14	15	0.08333	1.000
16	15	16	0.08333	1.000
17	16	17	0.08333	1.000
18	17	18	0.08333	1.000
19	18	19	0.08333	1.000
20	19	20	0.08333	1.000

RESULTADOS DE PESO PROPIO

HIPOTESIS DE CARGA N° 1

Barra	P1	P2	D1	Longitud	Angulo	Tipo
1	2.500	0.000	0.000	2.000	-90.000	2
2	2.500	0.000	0.000	2.000	-90.000	2
3	2.500	0.000	0.000	2.000	-90.000	2
4	2.500	0.000	0.000	2.000	-90.000	2
5	2.500	0.000	0.000	1.700	-90.000	2
6	2.500	0.000	0.000	1.700	-90.000	2
7	2.500	0.000	0.000	1.700	-90.000	2
8	2.500	0.000	0.000	1.700	-90.000	2
9	2.500	0.000	0.000	1.700	-90.000	2
10	2.500	0.000	0.000	1.700	-90.000	2
11	2.500	0.000	0.000	1.700	-90.000	2
12	2.500	0.000	0.000	1.700	-90.000	2
13	2.500	0.000	0.000	1.000	-90.000	2
14	2.500	0.000	0.000	1.000	-90.000	2
15	2.500	0.000	0.000	1.000	-90.000	2
16	2.500	0.000	0.000	1.000	-90.000	2
17	2.500	0.000	0.000	1.000	-90.000	2
18	2.500	0.000	0.000	1.000	-90.000	2
19	2.500	0.000	0.000	1.000	-90.000	2
20	2.500	0.000	0.000	1.000	-90.000	2

RESULTADOS DE PESO PROPIO

DESPLAZAMIENTOS DE NUDOS

Nudo	Direc. x	Direc. y	Giro
1	-0.00001	-0.01029	0.00031
2	0.00000	-0.01088	0.00024
3	0.00000	-0.01114	0.00000
4	0.00000	-0.01088	-0.00024
5	0.00001	-0.01029	-0.00031
6	-0.00045	-0.01027	0.00020
7	0.00045	-0.01027	-0.00020
8	-0.00066	-0.01025	0.00004
9	0.00066	-0.01025	-0.00004
10	-0.00054	-0.01023	-0.00019
11	0.00054	-0.01023	0.00019
12	0.00001	-0.01020	-0.00047
13	0.00001	-0.00967	-0.00056
14	0.00000	-0.00914	-0.00046
15	0.00000	-0.00877	-0.00026
16	0.00000	-0.00864	0.00000
17	0.00000	-0.00877	0.00026
18	0.00000	-0.00914	0.00046
19	-0.00001	-0.00967	0.00056
20	-0.00001	-0.01020	0.00047

RESULTADOS DE PESO PROPIO

ESFUERZOS EN BARRAS

Barra	i	j	Axil i	Corte.i	Momto.i	Axil j	Corte.j	Momto.j
1	1	2	2.347	-10.000	-4.794	2.347	-5.000	-10.206
2	2	3	2.347	-5.000	10.206	2.347	0.000	-15.206
3	3	4	2.347	0.000	15.206	2.347	5.000	-10.206
4	4	5	2.347	5.000	10.206	2.347	10.000	4.794
5	1	6	-10.000	-2.347	4.794	-14.250	-2.347	-8.784
6	6	8	-14.250	-2.347	8.784	-18.500	-2.347	-12.774
7	8	10	-18.500	-2.347	12.774	-22.750	-2.347	-16.763
8	10	12	-22.750	-2.347	16.763	-27.000	-2.347	-20.753
9	5	7	-10.000	2.347	-4.794	-14.250	2.347	8.784
10	7	9	-14.250	2.347	-8.784	-18.500	2.347	12.774
11	9	11	-18.500	2.347	-12.774	-22.750	2.347	16.763
12	11	20	-22.750	2.347	-16.763	-27.000	2.347	20.753
13	12	13	-2.347	21.902	20.753	-2.347	24.402	2.399
14	13	14	-2.347	14.737	-2.399	-2.347	17.237	18.385
15	14	15	-2.347	8.094	-18.385	-2.347	10.594	27.729
16	15	16	-2.347	1.820	-27.729	-2.347	4.320	30.800
17	16	17	-2.347	-4.320	-30.800	-2.347	-1.820	27.729
18	17	18	-2.347	-10.594	-27.729	-2.347	-8.094	18.385
19	18	19	-2.347	-17.237	-18.385	-2.347	-14.737	2.399
20	19	20	-2.347	-24.402	-2.399	-2.347	-21.902	-20.753

RESULTADOS DE CARGA PERMANENTE

HIPOTESIS DE CARGA N° 2

Barra	P1	P2	D1	Longitud	Angulo	Tipo
1	14.000	0.000	0.000	2.000	-90.000	2
2	14.000	0.000	0.000	2.000	-90.000	2
3	14.000	0.000	0.000	2.000	-90.000	2
4	14.000	0.000	0.000	2.000	-90.000	2
5	0.000	0.000	0.000	0.000	0.000	0
6	0.000	0.000	0.000	0.000	0.000	0
7	0.000	0.000	0.000	0.000	0.000	0
8	0.000	0.000	0.000	0.000	0.000	0
9	0.000	0.000	0.000	0.000	0.000	0
10	0.000	0.000	0.000	0.000	0.000	0
11	0.000	0.000	0.000	0.000	0.000	0
12	0.000	0.000	0.000	0.000	0.000	0
13	0.000	0.000	0.000	0.000	0.000	0
14	0.000	0.000	0.000	0.000	0.000	0
15	0.000	0.000	0.000	0.000	0.000	0
16	0.000	0.000	0.000	0.000	0.000	0
17	0.000	0.000	0.000	0.000	0.000	0
18	0.000	0.000	0.000	0.000	0.000	0
19	0.000	0.000	0.000	0.000	0.000	0
20	0.000	0.000	0.000	0.000	0.000	0

RESULTADOS DE CARGA PERMANENTE

DESPLAZAMIENTOS DE NUDOS

Nudo	Direc. x	Direc. y	Giro
1	0.00000	-0.01650	0.00121
2	0.00000	-0.01907	0.00111
3	0.00000	-0.02026	0.00000
4	0.00000	-0.01907	-0.00111
5	0.00000	-0.01650	-0.00121
6	-0.00153	-0.01643	0.00060
7	0.00153	-0.01643	-0.00060
8	-0.00203	-0.01636	-0.00001
9	0.00203	-0.01636	0.00001
10	-0.00151	-0.01629	-0.00060
11	0.00151	-0.01629	0.00060
12	0.00000	-0.01622	-0.00118
13	0.00000	-0.01495	-0.00130
14	0.00000	-0.01374	-0.00106
15	0.00000	-0.01290	-0.00059
16	0.00000	-0.01260	0.00000
17	0.00000	-0.01290	0.00059
18	0.00000	-0.01374	0.00106
19	0.00000	-0.01495	0.00130
20	0.00000	-0.01622	0.00118

RESULTADOS DE CARGA PERMANENTE

ESFUERZOS EN BARRAS

Barra	i	j	Axil i	Corte.i	Momto.i	Axil j	Corte.j	Momto.j
1	1	2	-0.477	-56.000	-40.850	-0.477	-28.000	-43.150
2	2	3	-0.477	-28.000	43.150	-0.477	0.000	-71.150
3	3	4	-0.477	0.000	71.150	-0.477	28.000	-43.150
4	4	5	-0.477	28.000	43.150	-0.477	56.000	40.850
5	1	6	-56.000	0.477	40.850	-56.000	0.477	-40.040
6	6	8	-56.000	0.477	40.040	-56.000	0.477	-39.230
7	8	10	-56.000	0.477	39.230	-56.000	0.477	-38.420
8	10	12	-56.000	0.477	38.420	-56.000	0.477	-37.609
9	5	7	-56.000	-0.477	-40.850	-56.000	-0.477	40.040
10	7	9	-56.000	-0.477	-40.040	-56.000	-0.477	39.230
11	9	11	-56.000	-0.477	-39.230	-56.000	-0.477	38.420
12	11	20	-56.000	-0.477	-38.420	-56.000	-0.477	37.609
13	12	13	0.477	47.890	37.609	0.477	47.890	10.281
14	13	14	0.477	32.945	-10.281	0.477	32.945	43.226
15	14	15	0.477	19.204	-43.226	0.477	19.204	62.430
16	15	16	0.477	6.302	-62.430	0.477	6.302	68.732
17	16	17	0.477	-6.302	-68.732	0.477	-6.302	62.430
18	17	18	0.477	-19.204	-62.430	0.477	-19.204	43.226
19	18	19	0.477	-32.945	-43.226	0.477	-32.945	10.281
20	19	20	0.477	-47.890	-10.281	0.477	-47.890	-37.609

RESULTADOS DE EMPUJE POR UN SOLO LADO SIN TIERRAS ENCIMA

HIPOTESIS DE CARGA N° 3

Barra	P1	P2	D1	Longitud	Angulo	Tipo
1	0.000	0.000	0.000	0.000	0.000	0
2	0.000	0.000	0.000	0.000	0.000	0
3	0.000	0.000	0.000	0.000	0.000	0
4	0.000	0.000	0.000	0.000	0.000	0
5	-2.000	-3.700	0.000	1.700	0.000	3
6	-3.700	-5.400	0.000	1.700	0.000	3
7	-5.400	-7.100	0.000	1.700	0.000	3
8	-7.100	-8.800	0.000	1.700	0.000	3
9	0.000	0.000	0.000	0.000	0.000	0
10	0.000	0.000	0.000	0.000	0.000	0
11	0.000	0.000	0.000	0.000	0.000	0
12	0.000	0.000	0.000	0.000	0.000	0
13	0.000	0.000	0.000	0.000	0.000	0
14	0.000	0.000	0.000	0.000	0.000	0
15	0.000	0.000	0.000	0.000	0.000	0
16	0.000	0.000	0.000	0.000	0.000	0
17	0.000	0.000	0.000	0.000	0.000	0
18	0.000	0.000	0.000	0.000	0.000	0
19	0.000	0.000	0.000	0.000	0.000	0
20	0.000	0.000	0.000	0.000	0.000	0

RESULTADOS DE EMPUJE POR UN SOLO LADO SIN TIERRAS ENCIMA

DESPLAZAMIENTOS DE NUDOS

Nudo	Direc. x	Direc. y	Giro
1	0.01994	0.00959	0.00240
2	0.01993	0.00499	0.00223
3	0.01992	0.00055	0.00223
4	0.01991	-0.00405	0.00239
5	0.01990	-0.00914	0.00272
6	0.01564	0.00959	0.00268
7	0.01503	-0.00913	0.00298
8	0.01078	0.00958	0.00302
9	0.00988	-0.00913	0.00305
10	0.00544	0.00958	0.00321
11	0.00478	-0.00912	0.00293
12	0.00009	0.00957	0.00298
13	0.00007	0.00675	0.00266
14	0.00004	0.00424	0.00237
15	0.00002	0.00198	0.00216
16	0.00000	-0.00012	0.00206
17	0.00001	-0.00218	0.00207
18	0.00001	-0.00430	0.00220
19	0.00002	-0.00660	0.00240
20	0.00002	-0.00911	0.00263

RESULTADOS DE EMPUJE POR UN SOLO LADO SIN TIERRAS ENCIMA

ESFUERZOS EN BARRAS

Barra	i	j	Axil i	Corte.i	Momto.i	Axil j	Corte.j	Momto.j
1	1	2	-7.147	4.581	13.829	-7.147	4.581	-4.666
2	2	3	-7.147	4.581	4.666	-7.147	4.581	4.496
3	3	4	-7.147	4.581	-4.496	-7.147	4.581	13.658
4	4	5	-7.147	4.581	-13.658	-7.147	4.581	22.820
5	1	6	4.581	7.147	-13.829	4.581	2.302	22.270
6	6	8	4.581	2.302	-22.270	4.581	-5.433	20.018
7	8	10	4.581	-5.433	-20.018	4.581	-16.058	2.161
8	10	12	4.581	-16.058	-2.161	4.581	-29.573	-36.216
9	5	7	-4.581	-7.147	-22.820	-4.581	-7.147	10.670
10	7	9	-4.581	-7.147	-10.670	-4.581	-7.147	-1.480
11	9	11	-4.581	-7.147	1.480	-4.581	-7.147	-13.630
12	11	20	-4.581	-7.147	13.630	-4.581	-7.147	-25.780
13	12	13	-29.573	0.204	36.216	-29.573	0.204	-36.012
14	13	14	-29.573	6.952	36.012	-29.573	6.952	-29.060
15	14	15	-29.573	11.190	29.060	-29.573	11.190	-17.870
16	15	16	-29.573	13.171	17.870	-29.573	13.171	-4.700
17	16	17	7.147	13.053	4.700	7.147	13.053	8.353
18	17	18	7.147	10.878	-8.353	7.147	10.878	19.231
19	18	19	7.147	6.574	-19.231	7.147	6.574	25.804
20	19	20	7.147	-0.024	-25.804	7.147	-0.024	25.780

RESULTADOS DE EMPUJE POR LOS DOS LADOS CON TIERRAS ENCIMA

HIPOTESIS DE CARGA N° 4

Barra	P1	P2	D1	Longitud	Angulo	Tipo
1	0.000	0.000	0.000	0.000	0.000	0
2	0.000	0.000	0.000	0.000	0.000	0
3	0.000	0.000	0.000	0.000	0.000	0
4	0.000	0.000	0.000	0.000	0.000	0
5	-9.000	-10.700	0.000	1.700	0.000	3
6	-10.700	-12.400	0.000	1.700	0.000	3
7	-12.400	-14.100	0.000	1.700	0.000	3
8	-14.100	-15.800	0.000	1.700	0.000	3
9	9.000	10.700	0.000	1.700	0.000	3
10	10.700	12.400	0.000	1.700	0.000	3
11	12.400	14.100	0.000	1.700	0.000	3
12	14.100	15.800	0.000	1.700	0.000	3
13	0.000	0.000	0.000	0.000	0.000	0
14	0.000	0.000	0.000	0.000	0.000	0
15	0.000	0.000	0.000	0.000	0.000	0
16	0.000	0.000	0.000	0.000	0.000	0
17	0.000	0.000	0.000	0.000	0.000	0
18	0.000	0.000	0.000	0.000	0.000	0
19	0.000	0.000	0.000	0.000	0.000	0
20	0.000	0.000	0.000	0.000	0.000	0

RESULTADOS DE EMPUJE POR LOS DOS LADOS CON TIERRAS ENCIMA

DESPLAZAMIENTOS DE NUDOS

Nudo	Direc. x	Direc. y	Giro
1	0.00011	0.00102	-0.00076
2	0.00006	0.00216	-0.00038
3	0.00000	0.00255	0.00000
4	-0.00006	0.00216	0.00038
5	-0.00011	0.00102	0.00076
6	0.00144	0.00102	-0.00066
7	-0.00144	0.00102	0.00066
8	0.00206	0.00102	-0.00002
9	-0.00206	0.00102	0.00002
10	0.00149	0.00102	0.00066
11	-0.00149	0.00102	-0.00066
12	0.00014	0.00102	0.00079
13	0.00010	0.00033	0.00058
14	0.00007	-0.00015	0.00038
15	0.00003	-0.00043	0.00019
16	0.00000	-0.00053	0.00000
17	-0.00003	-0.00043	-0.00019
18	-0.00007	-0.00015	-0.00038
19	-0.00010	0.00033	-0.00058
20	-0.00014	0.00102	-0.00079

RESULTADOS DE EMPUJE POR LOS DOS LADOS CON TIERRAS ENCIMA

ESFUERZOS EN BARRAS

Barra	i	j	Axil i	Corte.i	Momto.i	Axil j	Corte.j	Momto.j
1	1	2	-38.015	0.000	-21.303	-38.015	0.000	21.303
2	2	3	-38.015	0.000	-21.303	-38.015	0.000	21.303
3	3	4	-38.015	0.000	-21.303	-38.015	0.000	21.303
4	4	5	-38.015	0.000	-21.303	-38.015	0.000	21.303
5	1	6	0.000	38.015	21.303	0.000	21.270	29.498
6	6	8	0.000	21.270	-29.498	0.000	1.635	49.376
7	8	10	0.000	1.635	-49.376	0.000	-20.890	33.418
8	10	12	0.000	-20.890	-33.418	0.000	-46.305	-23.289
9	5	7	0.000	-38.015	-21.303	0.000	-21.270	-29.498
10	7	9	0.000	-21.270	29.498	0.000	-1.635	-49.376
11	9	11	0.000	-1.635	49.376	0.000	20.890	-33.418
12	11	20	0.000	20.890	33.418	0.000	46.305	23.289
13	12	13	-46.305	0.510	23.289	-46.305	0.510	-22.780
14	13	14	-46.305	0.844	22.780	-46.305	0.844	-21.936
15	14	15	-46.305	0.696	21.936	-46.305	0.696	-21.239
16	15	16	-46.305	0.264	21.239	-46.305	0.264	-20.976
17	16	17	-46.305	-0.264	20.976	-46.305	-0.264	-21.239
18	17	18	-46.305	-0.696	21.239	-46.305	-0.696	-21.936
19	18	19	-46.305	-0.844	21.936	-46.305	-0.844	-22.780
20	19	20	-46.305	-0.510	22.780	-46.305	-0.510	-23.289

RESULTADOS DE SOBRECARGA UNIFORME

HIPOTESIS DE CARGA N° 5

Barra	P1	P2	D1	Longitud	Angulo	Tipo
1	1.710	0.000	0.000	2.000	-90.000	2
2	1.710	0.000	0.000	2.000	-90.000	2
3	1.710	0.000	0.000	2.000	-90.000	2
4	1.710	0.000	0.000	2.000	-90.000	2
5	0.000	0.000	0.000	0.000	0.000	0
6	0.000	0.000	0.000	0.000	0.000	0
7	0.000	0.000	0.000	0.000	0.000	0
8	0.000	0.000	0.000	0.000	0.000	0
9	0.000	0.000	0.000	0.000	0.000	0
10	0.000	0.000	0.000	0.000	0.000	0
11	0.000	0.000	0.000	0.000	0.000	0
12	0.000	0.000	0.000	0.000	0.000	0
13	0.000	0.000	0.000	0.000	0.000	0
14	0.000	0.000	0.000	0.000	0.000	0
15	0.000	0.000	0.000	0.000	0.000	0
16	0.000	0.000	0.000	0.000	0.000	0
17	0.000	0.000	0.000	0.000	0.000	0
18	0.000	0.000	0.000	0.000	0.000	0
19	0.000	0.000	0.000	0.000	0.000	0
20	0.000	0.000	0.000	0.000	0.000	0

RESULTADOS DE SOBRECARGA UNIFORME

DESPLAZAMIENTOS DE NUDOS

Nudo	Direc. x	Direc. y	Giro
1	0.00000	-0.00202	0.00015
2	0.00000	-0.00233	0.00014
3	0.00000	-0.00248	0.00000
4	0.00000	-0.00233	-0.00014
5	0.00000	-0.00202	-0.00015
6	-0.00019	-0.00201	0.00007
7	0.00019	-0.00201	-0.00007
8	-0.00025	-0.00200	0.00000
9	0.00025	-0.00200	0.00000
10	-0.00018	-0.00199	-0.00007
11	0.00018	-0.00199	0.00007
12	0.00000	-0.00198	-0.00014
13	0.00000	-0.00183	-0.00016
14	0.00000	-0.00168	-0.00013
15	0.00000	-0.00158	-0.00007
16	0.00000	-0.00154	0.00000
17	0.00000	-0.00158	0.00007
18	0.00000	-0.00168	0.00013
19	0.00000	-0.00183	0.00016
20	0.00000	-0.00198	0.00014

RESULTADOS DE SOBRECARGA UNIFORME

ESFUERZOS EN BARRAS

Barra	i	j	Axil i	Corte.i	Momto.i	Axil j	Corte.j	Momto.j
1	1	2	-0.058	-6.840	-4.990	-0.058	-3.420	-5.270
2	2	3	-0.058	-3.420	5.270	-0.058	0.000	-8.690
3	3	4	-0.058	0.000	8.690	-0.058	3.420	-5.270
4	4	5	-0.058	3.420	5.270	-0.058	6.840	4.990
5	1	6	-6.840	0.058	4.990	-6.840	0.058	-4.891
6	6	8	-6.840	0.058	4.891	-6.840	0.058	-4.792
7	8	10	-6.840	0.058	4.792	-6.840	0.058	-4.693
8	10	12	-6.840	0.058	4.693	-6.840	0.058	-4.594
9	5	7	-6.840	-0.058	-4.990	-6.840	-0.058	4.891
10	7	9	-6.840	-0.058	-4.891	-6.840	-0.058	4.792
11	9	11	-6.840	-0.058	-4.792	-6.840	-0.058	4.693
12	11	20	-6.840	-0.058	-4.693	-6.840	-0.058	4.594
13	12	13	0.058	5.849	4.594	0.058	5.849	1.256
14	13	14	0.058	4.024	-1.256	0.058	4.024	5.280
15	14	15	0.058	2.346	-5.280	0.058	2.346	7.625
16	15	16	0.058	0.770	-7.625	0.058	0.770	8.395
17	16	17	0.058	-0.770	-8.395	0.058	-0.770	7.625
18	17	18	0.058	-2.346	-7.625	0.058	-2.346	5.280
19	18	19	0.058	-4.024	-5.280	0.058	-4.024	1.256
20	19	20	0.058	-5.849	-1.256	0.058	-5.849	-4.594

Calculo de la armadura a cortante

El esfuerzo cortante de agotamiento por tracción en el alma vale:

$$Vu2 = Vsu + Vcu$$

donde :

Vsu = contribución de la armadura transversal del alma a la resistencia a esfuerzo cortante.

Vcu = contribución del hormigón a la resistencia a esfuerzo cortante.

a)calculo de vsu

$$V_{su} = \sum A_\alpha * f_{y\alpha d} * 0{,}9 * d * \text{sen}\alpha * (\text{cotg}\alpha + \text{cotg}\theta)$$

$f_{y\alpha d}$ = resistencia de calculo de las armaduras transversales ≤ 4200 kp/cm^2

b)calculo de V_{cu}

en general el término Vcu de cálculo se tomará igual a:

$$V_{cu} = f_{cv} * b_w * d$$

siendo :

d = canto útil de la sección.

bw = anchura del alma de la viga.

f_{cv} = resistencia virtual de calculo del hormigón a esfuerzo cortante, dada en kp/cm^2 por

$$f_{cv} = 0{,}5 * \sqrt{f_{cd}}$$

donde:

f_{cd} = resistencia de calculo del hormigón expresada en kp/cm^2.

a continuación se adjunta salida de resultados de las secciones estudiadas con las características de las mismas así como los valores del esfuerzo cortante de calculo y armadura a disponer si fuera necesario.

SECCION Dintel.-Empotramiento

-Armadura inferior

El momento máximo corresponde a la hipótesis 1 y su valor es el siguiente :

Md = HIP 1 * 0.9 + HIP 3 * 1.6

Md = 22.19 m Mp/m

Nd = 9.32 Mp/m

Us2 = 0,05 * 9.323 = 0.47 Mp/m

$$Uc = \frac{2500.00}{1,5} * 1,0 * 0.97 = 1616.67 \text{ Mp/m}$$

$$Us1 = 1616.67 \left(1 - SQRT\left(1 - 2 * \frac{22.19 - 0.47 * 0.94}{1616.67 * 0.97}\right)\right) + \frac{0.47 - 9.32}{1,15} = 13.73 \text{ Mp/m}$$

$$As1 = \frac{}{5,1} * 13.73 = 3.10 \text{ cm}^2/\text{m}$$

Se dispone armadura mínima 14.58 cm²/m

-Armadura superior

El momento máximo corresponde a la hipótesis 2 y su valor es el siguiente :

Md = HIP 1 * 1.6 + HIP 2 * 1.6 + HIP 4 * 1.6 + HIP 5 * 1.6

Md = 142.32 m Mp/m

Nd = 57.92 Mp/m

Us2 = 0,05 * 57.925 = 2.90 Mp/m

$$Uc = \frac{2500.00}{1,5} * 1,0 * 0.97 = 1616.67 \text{ Mp/m}$$

$$Us1 = 1616.67 \left(1 - SQRT\left(1 - 2 * \frac{142.32 - 2.90 * 0.94}{1616.67 * 0.97}\right)\right) + \frac{2.90 - 57.92}{1,15} = 95.94 \text{ Mp/m}$$

$$As1 = \frac{1,15}{5,1} * 95.94 = 21.63 \text{ cm}^2/\text{m}$$

SECCION Dintel.-Empotramiento

-Armadura de cortante

El cortante máximo corresponde a la hipótesis 2 y su valor es el siguiente :

Vd = HIP 1 * 1.6 + HIP 2 * 1.6 + HIP 4 * 1.6 + HIP 5 * 1.6

Vd = 116.54 Mp/m

fcv = 0,5 * SQRT(166.667) = 6.45 kp/m²

Vcu = 10 * 6.455 * 0.97 = 62.61 Mp/m

Vsu = 53.93 Mp/m

Se disponen barras a 45°. La armadura total a disponer es :

As = 10.40 cm²/m

SECCION Dintel.-Cuartos de luz

-Armadura inferior

El momento máximo corresponde a la hipótesis 2 y su valor es el siguiente :

Md = HIP 1 * 1.6 + HIP 2 * 1.6 + HIP 5 * 1.6

Md = 95.16 m Mp/m

Nd = 2.90 Mp/m

Us2 = 0,05 * 2.899 = 0.14 Mp/m

$$Uc = \frac{2500.00}{1,5} * 1,0 * 0.97 = 1616.67 \text{ Mp/m}$$

$$Us1 = 1616.67 \left(1 - SQRT\left(1 - 2 * \frac{95.16 - 0.14 * 0.94}{1616.67 * 0.97}\right)\right) + 0.14 - 2.90 = 98.38 \text{ Mp/m}$$

$$As1 = \frac{1,15}{5,1} * 98.38 = 22.18 \text{ cm}^2/\text{m}$$

-Armadura superior

Armadura mínima 14.58 cm²/m

-Armadura de cortante

El cortante máximo corresponde a la hipótesis 2 y su valor es el siguiente :

Vd = HIP 1 * 1.6 + HIP 2 * 1.6 + HIP 4 * 1.6 + HIP 5 * 1.6

Vd = 58.27 Mp/m

fcv = 0,5 * SQRT(166.667) = 6.45 kp/m²

Vcu = 10 * 6.455 * 0.97 = 62.61 Mp/m

Vcu > Vd. No precisa armadura a cortante

SECCION Dintel.-Centro de vano

-Armadura inferior

El momento máximo corresponde a la hipótesis 2 y su valor es el siguiente :

Md = HIP 1 * 1.6 + HIP 2 * 1.6 + HIP 5 * 1.6

Md = 153.44 m Mp/m

Nd = 2.90 Mp/m

Us2 = 0,05 * 2.899 = 0.14 Mp/m

$$Uc = \frac{2500.00}{1,5} * 1,0 * 0.97 = 1616.67 \text{ Mp/m}$$

$$Us1 = 1616.67 \left(1 - SQRT\left(1 - 2 * \frac{153.44 - 0.14 * 0.94}{1616.67 * 0.97}\right)\right) + 0.14 - 2.90 = 163.87 \text{ Mp/m}$$

$$As1 = \frac{1,15}{5,1} * 163.87 = 36.95 \text{ cm}^2/\text{m}$$

-Armadura superior

Armadura mínima 14.58 cm²/m

-Armadura de cortante

El cortante máximo corresponde a la hipótesis 1 y su valor es el siguiente :

Vd = HIP 1 * 0.9 + HIP 3 * 1.6

Vd = 7.33 Mp/m

fcv = 0,5 * SQRT(166.667) = 6.45 kp/m²

Vcu = 10 * 6.455 * 0.97 = 62.61 Mp/m

Vcu > Vd. No precisa armadura a cortante

SECCION Hastial.-Empot. superior

-Armadura exterior

El momento máximo corresponde a la hipótesis 2 y su valor es el siguiente :

Md = HIP 1 * 1.6 + HIP 2 * 1.6 + HIP 4 * 1.6 + HIP 5 * 1.6

Md = 169.87 m Mp/m

Nd = 116.54 Mp/m

Us2 = 0,05 * 116.544 = 5.83 Mp/m

$$Uc = \frac{2500.00}{1,5} * 1,0 * 0.97 = 1616.67 \text{ Mp/m}$$

$$Us1 = 1616.67 \left(1 - SQRT\left(1 - 2 * \frac{169.87 - 5.83 * 0.94}{1616.67 * 0.97}\right)\right) +$$

$$+ 5.83 - 116.54 = 68.72 \text{ Mp/m}$$

$$As1 = \frac{1,15}{5,1} * 68.72 = 15.50 \text{ cm}^2/\text{m}$$

-Armadura interior

El momento máximo corresponde a la hipótesis 1 y su valor es el siguiente :

Md = HIP 1 * 0.9 + HIP 3 * 1.6

Md = 18.60 m Mp/m

Nd = 1.67 Mp/m

Us2 = 0,05 * 1.670 = 0.08 Mp/m

$$Uc = \frac{2500.00}{1,5} * 1,0 * 0.97 = 1616.67 \text{ Mp/m}$$

$$Us1 = 1616.67 \left(1 - SQRT\left(1 - 2 * \frac{18.60 - 0.08 * 0.94}{1616.67 * 0.97}\right)\right) +$$

$$+ 0.08 - 1.67 = 17.62 \text{ Mp/m}$$

$$As1 = \frac{1,15}{5,1} * 17.62 = 3.97 \text{ cm}^2/\text{m}$$

Se dispone armadura mínima 14.58 cm²/m

SECCION Hastial.-Empot. superior

-Armadura de cortante

El cortante máximo corresponde a la hipótesis 2 y su valor es el siguiente :

Vd = HIP 1 * 0.9 + HIP 2 * 1.6 + HIP 4 * 1.6 + HIP 5 * 1.6

Vd = 59.57 Mp/m

fcv = 0,5 * SQRT(166.667) = 6.45 kp/m²

Vcu = 10 * 6.455 * 0.97 = 62.61 Mp/m

Vcu > Vd. No precisa armadura a cortante

SECCION Hastial.-Cuarto superior

-Armadura exterior

El momento máximo corresponde a la hipótesis 2 y su valor es el siguiente :

Md = HIP 1 * 1.6 + HIP 2 * 1.6 + HIP 5 * 1.6

Md = 143.92 m Mp/m

Nd = 123.34 Mp/m

Us2 = 0,05 * 123.344 = 6.17 Mp/m

$$Uc = \frac{2500.00}{1,5} * 1,0 * 0.97 = 1616.67 \text{ Mp/m}$$

$$Us1 = 1616.67 \left(1 - SQRT\left(1 - 2 * \frac{143.92 - 6.17 * 0.94}{1616.67 * 0.97}\right)\right) +$$

$$+ 6.17 - 123.34 = 32.11 \text{ Mp/m}$$

$$As1 = \frac{1,15}{5,1} * 32.11 = 7.24 \text{ cm}^2/\text{m}$$

Se dispone armadura mínima 14.58 cm²/m

-Armadura interior

El momento máximo corresponde a la hipótesis 1 y su valor es el siguiente :

Md = HIP 1 * 0.9 + HIP 3 * 1.6

Md = 30.31 m Mp/m

Nd = 5.50 Mp/m

Us2 = 0,05 * 5.495 = 0.27 Mp/m

$$Uc = \frac{2500.00}{1,5} * 1,0 * 0.97 = 1616.67 \text{ Mp/m}$$

$$Us1 = 1616.67 \left(1 - SQRT\left(1 - 2 * \frac{30.31 - 0.27 * 0.94}{1616.67 * 0.97}\right)\right) +$$

$$+ 0.27 - 5.50 = 26.06 \text{ Mp/m}$$

$$As1 = \frac{1,15}{5,1} * 26.06 = 5.88 \text{ cm}^2/\text{m}$$

Se dispone armadura mínima 14.58 cm²/m

SECCION Hastial.-Cuarto superior

-Armadura de cortante

El cortante máximo corresponde a la hipótesis 2 y su valor es el siguiente :

Vd = HIP 1 * 0.9 + HIP 2 * 1.6 + HIP 4 * 1.6 + HIP 5 * 1.6

Vd = 32.78 Mp/m

fcv = 0,5 * SQRT(166.667) = 6.45 kp/m²

Vcu = 10 * 6.455 * 0.97 = 62.61 Mp/m

Vcu > Vd. No precisa armadura a cortante

SECCION Hastial.-Centro de vano

-Armadura exterior

El momento máximo corresponde a la hipótesis 2 y su valor es el siguiente :

Md = HIP 1 * 1.6 + HIP 2 * 1.6 + HIP 5 * 1.6

Md = 152.04 m Mp/m

Nd = 130.14 Mp/m

Us2 = 0,05 * 130.144 = 6.51 Mp/m

$$Uc = \frac{2500.00}{1,5} * 1,0 * 0.97 = 1616.67 \text{ Mp/m}$$

$$Us1 = 1616.67 \left(1 - SQRT\left(1 - 2 * \frac{152.04 - 6.51 * 0.94}{1616.67 * 0.97}\right)\right) +$$

$$+ 6.51 - 130.14 = 34.54 \text{ Mp/m}$$

$$As1 = \frac{1,15}{5,1} * 34.54 = 7.79 \text{ cm}^2/\text{m}$$

Se dispone armadura mínima 14.58 cm²/m

-Armadura interior

El momento máximo corresponde a la hipótesis 2 y su valor es el siguiente :

Md = HIP 1 * 0.9 + HIP 2 * 0.9 + HIP 4 * 1.6

Md = 63.71 m Mp/m

Nd = 67.05 Mp/m

Us2 = 0,05 * 67.050 = 3.35 Mp/m

$$Uc = \frac{2500.00}{1,5} * 1,0 * 0.97 = 1616.67 \text{ Mp/m}$$

$$Us1 = 1616.67 \left(1 - SQRT\left(1 - 2 * \frac{63.71 - 3.35 * 0.94}{1616.67 * 0.97}\right)\right) +$$

$$+ 3.35 - 67.05 = 0.00 \text{ Mp/m}$$

$$As1 = \frac{1,15}{5,1} * 0.00 = 0.00 \text{ cm}^2/\text{m}$$

Se dispone armadura mínima 14.58 cm²/m

SECCION Hastial.-Centro de vano

-Armadura de cortante

El cortante máximo corresponde a la hipótesis 1 y su valor es el siguiente :

Vd = HIP 1 * 1.6 + HIP 3 * 1.6

Vd = 12.45 Mp/m

fcv = 0,5 * SQRT(166.667) = 6.45 kp/m²

Vcu = 10 * 6.455 * 0.97 = 62.61 Mp/m

Vcu > Vd. No precisa armadura a cortante

SECCION Hastial.-Cuarto inferior

-Armadura exterior

El momento máximo corresponde a la hipótesis 2 y su valor es el siguiente :

Md = HIP 1 * 1.6 + HIP 2 * 1.6 + HIP 5 * 1.6

Md = 160.17 m Mp/m

Nd = 136.94 Mp/m

Us2 = 0,05 * 136.944 = 6.85 Mp/m

$$Uc = \frac{2500.00}{1,5} * 1,0 * 0.97 = 1616.67 \text{ Mp/m}$$

$$Us1 = 1616.67 \left(1 - SQRT\left(1 - 2 * \frac{160.17 - 6.85 * 0.94}{1616.67 * 0.97}\right)\right) +$$

$$+ 6.85 - 136.94 = 37.02 \text{ Mp/m}$$

$$As1 = \frac{1,15}{5,1} * 37.02 = 8.35 \text{ cm}^2/\text{m}$$

Se dispone armadura mínima 14.58 cm²/m

-Armadura interior

El momento máximo corresponde a la hipótesis 2 y su valor es el siguiente :

Md = HIP 1 * 0.9 + HIP 2 * 0.9 + HIP 4 * 1.6

Md = 37.12 m Mp/m

Nd = 70.87 Mp/m

Us2 = 0,05 * 70.875 = 3.54 Mp/m

$$Uc = \frac{2500.00}{1,5} * 1,0 * 0.97 = 1616.67 \text{ Mp/m}$$

$$Us1 = 1616.67 \left(1 - SQRT\left(1 - 2 * \frac{37.12 - 3.54 * 0.94}{1616.67 * 0.97}\right)\right) +$$

$$+ 3.54 - 70.87 = 0.00 \text{ Mp/m}$$

$$As1 = \frac{1,15}{5,1} * 0.00 = 0.00 \text{ cm}^2/\text{m}$$

Se dispone armadura mínima 14.58 cm²/m

SECCION Hastial.-Cuarto inferior

-Armadura de cortante

El cortante máximo corresponde a la hipótesis 2 y su valor es el siguiente :

Vd = HIP 1 * 1.6 + HIP 2 * 0.9 + HIP 4 * 1.6

Vd = 36.75 Mp/m

fcv = 0,5 * SQRT(166.667) = 6.45 kp/m²

Vcu = 10 * 6.455 * 0.97 = 62.61 Mp/m

Vcu > Vd. No precisa armadura a cortante

SECCION Hastial.-Empotramiento inferior

-Armadura interior

Armadura mínima 14.58 cm²/m

-Armadura exterior

El momento máximo corresponde a la hipótesis 2 y su valor es el siguiente :

Md = HIP 1 * 1.6 + HIP 2 * 1.6 + HIP 4 * 1.6 + HIP 5 * 1.6

Md = 205.55 m Mp/m

Nd = 143.74 Mp/m

Us2 = 0,05 * 143.744 = 7.19 Mp/m

$$Uc = \frac{2500.00}{1,5} * 1,0 * 0.97 = 1616.67 \text{ Mp/m}$$

$$Us1 = 1616.67 \left(1 - SQRT\left(1 - 2 * \frac{205.55 - 7.19 * 0.94}{1616.67 * 0.97}\right)\right) +$$

$$+ 7.19 - 143.74 = 83.34 \text{ Mp/m}$$

$$As1 = \frac{1,15}{5,1} * 83.34 = 18.79 \text{ cm²/m}$$

-Armadura de cortante

El cortante máximo corresponde a la hipótesis 2 y su valor es el siguiente :

Vd = HIP 1 * 1.6 + HIP 2 * 0.9 + HIP 4 * 1.6

Vd = 77.41 Mp/m

Si despreciamos las cargas que actuan dentro de la seccion a 45 grados el cortante es

Vd = 77.41 - 1.60 * 20.01 = 45.39

fcv = 0,5 * SQRT(166.667) = 6.45 kp/m²

Vcu = 10 * 6.455 * 0.97 = 62.61 Mp/m

Vcu > Vd. No precisa armadura a cortante

SECCION Solera.-Empotramiento

-Armadura inferior

El momento máximo corresponde a la hipótesis 2 y su valor es el siguiente :

Md = HIP 1 * 1.6 + HIP 2 * 1.6 + HIP 4 * 1.6 + HIP 5 * 1.6

Md = 174.18 m Mp/m

Nd = 76.99 Mp/m

Us2 = 0,05 * 76.987 = 3.85 Mp/m

$$Uc = \frac{2500.00}{1,5} * 1,0 * 0.97 = 1616.67 \text{ Mp/m}$$

$$Us1 = 1616.67 \left(1 - SQRT\left(1 - 2 * \frac{174.18 - 3.85 * 0.94}{1616.67 * 0.97}\right)\right) +$$

$$+ 3.85 - 76.99 = 113.46 \text{ Mp/m}$$

$$As1 = \frac{1,15}{5,1} * 113.46 = 25.58 \text{ cm²/m}$$

-Armadura superior

Armadura mínima 14.58 cm²/m

-Armadura de cortante

El cortante máximo corresponde a la hipótesis 2 y su valor es el siguiente :

Vd = HIP 1 * 1.6 + HIP 2 * 1.6 + HIP 4 * 1.6 + HIP 5 * 1.6

Vd = 121.84 Mp/m

fcv = 0,5 * SQRT(166.667) = 6.45 kp/m²

Vcu = 10 * 6.455 * 0.97 = 62.61 Mp/m

Vsu = 59.23 Mp/m

Se disponen barras a 45°. La armadura total a disponer es :

As = 11.42 cm²/m

SECCION Solera.-Cuartos de luz

-Armadura inferior

El momento máximo corresponde a la hipótesis 1 y su valor es el siguiente :

Md = HIP 1 * 0.9 + HIP 3 * 1.6

Md = 53.18 m Mp/m

Nd = 49.43 Mp/m

Us2 = 0,05 * 49.429 = 2.47 Mp/m

$$Uc = \frac{2500.00}{1,5} * 1,0 * 0.97 = 1616.67 \text{ Mp/m}$$

$$Us1 = 1616.67 \left(1 - SQRT\left(1 - 2 * \frac{53.18 - 2.47 * 0.94}{1616.67 * 0.97}\right)\right) +$$

$$+ 2.47 - 49.43 = 6.35 \text{ Mp/m}$$

$$As1 = \frac{1,15}{5,1} * 6.35 = 1.43 \text{ cm}^2/\text{m}$$

Se dispone armadura mínima 14.58 cm²/m

-Armadura superior

El momento máximo corresponde a la hipótesis 2 y su valor es el siguiente :

Md = HIP 1 * 1.6 + HIP 2 * 1.6 + HIP 5 * 1.6

Md = 108.39 m Mp/m

Nd = 2.90 Mp/m

Us2 = 0,05 * 2.899 = 0.14 Mp/m

$$Uc = \frac{2500.00}{1,5} * 1,0 * 0.97 = 1616.67 \text{ Mp/m}$$

$$Us1 = 1616.67 \left(1 - SQRT\left(1 - 2 * \frac{108.39 - 0.14 * 0.94}{1616.67 * 0.97}\right)\right) +$$

$$+ 0.14 - 2.90 = 112.99 \text{ Mp/m}$$

$$As1 = \frac{1,15}{5,1} * 112.99 = 25.48 \text{ cm}^2/\text{m}$$

SECCION Solera.-Cuartos de luz

-Armadura de cortante

El cortante máximo corresponde a la hipótesis 2 y su valor es el siguiente :

Vd = HIP 1 * 1.6 + HIP 2 * 1.6 + HIP 4 * 1.6 + HIP 5 * 1.6

Vd = 48.54 Mp/m

fcv = 0,5 * SQRT(166.667) = 6.45 kp/m²

Vcu = 10 * 6.455 * 0.97 = 62.61 Mp/m

Vcu > Vd. No precisa armadura a cortante

SECCION Solera.-Centro de vano

-Armadura inferior

Armadura mínima 14.58 cm²/m

-Armadura superior

El momento máximo corresponde a la hipótesis 2 y su valor es el siguiente :

Md = HIP 1 * 1.6 + HIP 2 * 1.6 + HIP 5 * 1.6

Md = 174.05 m Mp/m

Nd = 2.90 Mp/m

Us2 = 0,05 * 2.899 = 0.14 Mp/m

$$Uc = \frac{2500.00}{1,5} * 1,0 * 0.97 = 1616.67 \text{ Mp/m}$$

$$Us1 = 1616.67 \left(1 - SQRT\left(1 - 2 * \frac{174.05 - 0.14 * 0.94}{1616.67 * 0.97}\right)\right) + 0.14 - 2.90 = 187.76 \text{ Mp/m}$$

$$As1 = \frac{1,15}{5,1} * 187.76 = 42.34 \text{ cm²/m}$$

-Armadura de cortante

El cortante máximo corresponde a la hipótesis 2 y su valor es el siguiente :

Vd = HIP 1 * 1.6 + HIP 2 * 1.6 + HIP 4 * 1.6 + HIP 5 * 1.6

Vd = 18.65 Mp/m

fcv = 0,5 * SQRT(166.667) = 6.45 kp/m²

Vcu = 10 * 6.455 * 0.97 = 62.61 Mp/m

Vcu > Vd. No precisa armadura a cortante

REACCIONES Y TENSIONES MAXIMAS EN SOLERA

NUDO	REACCION	TENSION
12	13.69 Mp	13.69 Mp/m²
13	26.10 Mp	26.10 Mp/m²
14	24.71 Mp	24.71 Mp/m²
15	23.68 Mp	23.68 Mp/m²
16	23.31 Mp	23.31 Mp/m²
17	23.68 Mp	23.68 Mp/m²
18	24.71 Mp	24.71 Mp/m²
19	26.10 Mp	26.10 Mp/m²
20	13.69 Mp	13.69 Mp/m²

CON MODULO DE BALASTO DE 10000 Mp/m^3

DATOS GENERALES DE LA ESTRUCTURA

COORDENADAS DE NUDOS

Nudo	X	Y
1	0.500	7.300
2	2.500	7.300
3	4.500	7.300
4	6.500	7.300
5	8.500	7.300
6	0.500	5.600
7	8.500	5.600
8	0.500	3.900
9	8.500	3.900
10	0.500	2.200
11	8.500	2.200
12	0.500	0.500
13	1.500	0.500
14	2.500	0.500
15	3.500	0.500
16	4.500	0.500
17	5.500	0.500
18	6.500	0.500
19	7.500	0.500
20	8.500	0.500

DATOS GENERALES DE LA ESTRUCTURA

CARACTERISTICAS DE BARRAS

Barra	i	j	If.i	Area.i
1	1	2	0.08333	1.000
2	2	3	0.08333	1.000
3	3	4	0.08333	1.000
4	4	5	0.08333	1.000
5	1	6	0.08333	1.000
6	6	8	0.08333	1.000
7	8	10	0.08333	1.000
8	10	12	0.08333	1.000
9	5	7	0.08333	1.000
10	7	9	0.08333	1.000
11	9	11	0.08333	1.000
12	11	20	0.08333	1.000
13	12	13	0.08333	1.000
14	13	14	0.08333	1.000
15	14	15	0.08333	1.000
16	15	16	0.08333	1.000
17	16	17	0.08333	1.000
18	17	18	0.08333	1.000
19	18	19	0.08333	1.000
20	19	20	0.08333	1.000

RESULTADOS DE PESO PROPIO

HIPOTESIS DE CARGA N° 1

Barra	P1	P2	D1	Longitud	Angulo	Tipo
1	2.500	0.000	0.000	2.000	-90.000	2
2	2.500	0.000	0.000	2.000	-90.000	2
3	2.500	0.000	0.000	2.000	-90.000	2
4	2.500	0.000	0.000	2.000	-90.000	2
5	2.500	0.000	0.000	1.700	-90.000	2
6	2.500	0.000	0.000	1.700	-90.000	2
7	2.500	0.000	0.000	1.700	-90.000	2
8	2.500	0.000	0.000	1.700	-90.000	2
9	2.500	0.000	0.000	1.700	-90.000	2
10	2.500	0.000	0.000	1.700	-90.000	2
11	2.500	0.000	0.000	1.700	-90.000	2
12	2.500	0.000	0.000	1.700	-90.000	2
13	2.500	0.000	0.000	1.000	-90.000	2
14	2.500	0.000	0.000	1.000	-90.000	2
15	2.500	0.000	0.000	1.000	-90.000	2
16	2.500	0.000	0.000	1.000	-90.000	2
17	2.500	0.000	0.000	1.000	-90.000	2
18	2.500	0.000	0.000	1.000	-90.000	2
19	2.500	0.000	0.000	1.000	-90.000	2
20	2.500	0.000	0.000	1.000	-90.000	2

RESULTADOS DE PESO PROPIO

DESPLAZAMIENTOS DE NUDOS

Nudo	Direc. x	Direc. y	Giro
1	0.00000	-0.00173	0.00027
2	0.00000	-0.00227	0.00023
3	0.00000	-0.00251	0.00000
4	0.00000	-0.00227	-0.00023
5	0.00000	-0.00173	-0.00027
6	-0.00038	-0.00171	0.00017
7	0.00038	-0.00171	-0.00017
8	-0.00055	-0.00169	0.00002
9	0.00055	-0.00169	-0.00002
10	-0.00044	-0.00166	-0.00016
11	0.00044	-0.00166	0.00016
12	0.00000	-0.00163	-0.00037
13	0.00000	-0.00122	-0.00042
14	0.00000	-0.00084	-0.00033
15	0.00000	-0.00058	-0.00018
16	0.00000	-0.00049	0.00000
17	0.00000	-0.00058	0.00018
18	0.00000	-0.00084	0.00033
19	0.00000	-0.00122	0.00042
20	0.00000	-0.00163	0.00037

RESULTADOS DE PESO PROPIO

ESFUERZOS EN BARRAS

Barra	i	j	Axil i	Corte.i	Momto.i	Axil j	Corte.j	Momto.j
1	1	2	1.406	-10.000	-5.761	1.406	-5.000	-9.239
2	2	3	1.406	-5.000	9.239	1.406	0.000	-14.239
3	3	4	1.406	0.000	14.239	1.406	5.000	-9.239
4	4	5	1.406	5.000	9.239	1.406	10.000	5.761
5	1	6	-10.000	-1.406	5.761	-14.250	-1.406	-8.152
6	6	8	-14.250	-1.406	8.152	-18.500	-1.406	-10.543
7	8	10	-18.500	-1.406	10.543	-22.750	-1.406	-12.934
8	10	12	-22.750	-1.406	12.934	-27.000	-1.406	-15.325
9	5	7	-10.000	1.406	-5.761	-14.250	1.406	8.152
10	7	9	-14.250	1.406	-8.152	-18.500	1.406	10.543
11	9	11	-18.500	1.406	-10.543	-22.750	1.406	12.934
12	11	20	-22.750	1.406	-12.934	-27.000	1.406	15.325
13	12	13	-1.406	18.837	15.325	-1.406	21.337	4.762
14	13	14	-1.406	9.114	-4.762	-1.406	11.614	15.127
15	14	15	-1.406	3.232	-15.127	-1.406	5.732	19.609
16	15	16	-1.406	-0.057	-19.609	-1.406	2.443	20.801
17	16	17	-1.406	-2.443	-20.801	-1.406	0.057	19.609
18	17	18	-1.406	-5.732	-19.609	-1.406	-3.232	15.127
19	18	19	-1.406	-11.614	-15.127	-1.406	-9.114	4.762
20	19	20	-1.406	-21.337	-4.762	-1.406	-18.837	-15.325

RESULTADOS DE CARGA PERMANENTE

HIPOTESIS DE CARGA N° 2

Barra	P1	P2	D1	Longitud	Angulo	Tipo
1	14.000	0.000	0.000	2.000	-90.000	2
2	14.000	0.000	0.000	2.000	-90.000	2
3	14.000	0.000	0.000	2.000	-90.000	2
4	14.000	0.000	0.000	2.000	-90.000	2
5	0.000	0.000	0.000	0.000	0.000	0
6	0.000	0.000	0.000	0.000	0.000	0
7	0.000	0.000	0.000	0.000	0.000	0
8	0.000	0.000	0.000	0.000	0.000	0
9	0.000	0.000	0.000	0.000	0.000	0
10	0.000	0.000	0.000	0.000	0.000	0
11	0.000	0.000	0.000	0.000	0.000	0
12	0.000	0.000	0.000	0.000	0.000	0
13	0.000	0.000	0.000	0.000	0.000	0
14	0.000	0.000	0.000	0.000	0.000	0
15	0.000	0.000	0.000	0.000	0.000	0
16	0.000	0.000	0.000	0.000	0.000	0
17	0.000	0.000	0.000	0.000	0.000	0
18	0.000	0.000	0.000	0.000	0.000	0
19	0.000	0.000	0.000	0.000	0.000	0
20	0.000	0.000	0.000	0.000	0.000	0

RESULTADOS DE CARGA PERMANENTE

DESPLAZAMIENTOS DE NUDOS

Nudo	Direc. x	Direc. y	Giro
1	0.00001	-0.00335	0.00113
2	0.00000	-0.00580	0.00107
3	0.00000	-0.00695	0.00000
4	0.00000	-0.00580	-0.00107
5	-0.00001	-0.00335	-0.00113
6	-0.00138	-0.00328	0.00051
7	0.00138	-0.00328	-0.00051
8	-0.00176	-0.00321	-0.00004
9	0.00176	-0.00321	0.00004
10	-0.00127	-0.00314	-0.00053
11	0.00127	-0.00314	0.00053
12	-0.00001	-0.00307	-0.00094
13	-0.00001	-0.00207	-0.00098
14	0.00000	-0.00119	-0.00075
15	0.00000	-0.00060	-0.00040
16	0.00000	-0.00040	0.00000
17	0.00000	-0.00060	0.00040
18	0.00000	-0.00119	0.00075
19	0.00001	-0.00207	0.00098
20	0.00001	-0.00307	0.00094

RESULTADOS DE CARGA PERMANENTE

ESFUERZOS EN BARRAS

Barra	i	j	Axil i	Corte.i	Momto.i	Axil j	Corte.j	Momto.j
1	1	2	-2.660	-56.000	-43.096	-2.660	-28.000	-40.904
2	2	3	-2.660	-28.000	40.904	-2.660	0.000	-68.904
3	3	4	-2.660	0.000	68.904	-2.660	28.000	-40.904
4	4	5	-2.660	28.000	40.904	-2.660	56.000	43.096
5	1	6	-56.000	2.660	43.096	-56.000	2.660	-38.573
6	6	8	-56.000	2.660	38.573	-56.000	2.660	-34.051
7	8	10	-56.000	2.660	34.051	-56.000	2.660	-29.528
8	10	12	-56.000	2.660	29.528	-56.000	2.660	-25.006
9	5	7	-56.000	-2.660	-43.096	-56.000	-2.660	38.573
10	7	9	-56.000	-2.660	-38.573	-56.000	-2.660	34.051
11	9	11	-56.000	-2.660	-34.051	-56.000	-2.660	29.528
12	11	20	-56.000	-2.660	-29.528	-56.000	-2.660	25.006
13	12	13	2.660	40.667	25.006	2.660	40.667	15.661
14	13	14	2.660	19.941	-15.661	2.660	19.941	35.602
15	14	15	2.660	8.060	-35.602	2.660	8.060	43.663
16	15	16	2.660	2.015	-43.663	2.660	2.015	45.678
17	16	17	2.660	-2.015	-45.678	2.660	-2.015	43.663
18	17	18	2.660	-8.060	-43.663	2.660	-8.060	35.602
19	18	19	2.660	-19.941	-35.602	2.660	-19.941	15.661
20	19	20	2.660	-40.667	-15.661	2.660	-40.667	-25.006

RESULTADOS DE EMPUJE POR UN SOLO LADO SIN TIERRAS ENCIMA

HIPOTESIS DE CARGA N° 3

Barra	P1	P2	D1	Longitud	Angulo	Tipo
1	0.000	0.000	0.000	0.000	0.000	0
2	0.000	0.000	0.000	0.000	0.000	0
3	0.000	0.000	0.000	0.000	0.000	0
4	0.000	0.000	0.000	0.000	0.000	0
5	-2.000	-3.700	0.000	1.700	0.000	3
6	-3.700	-5.400	0.000	1.700	0.000	3
7	-5.400	-7.100	0.000	1.700	0.000	3
8	-7.100	-8.800	0.000	1.700	0.000	3
9	0.000	0.000	0.000	0.000	0.000	0
10	0.000	0.000	0.000	0.000	0.000	0
11	0.000	0.000	0.000	0.000	0.000	0
12	0.000	0.000	0.000	0.000	0.000	0
13	0.000	0.000	0.000	0.000	0.000	0
14	0.000	0.000	0.000	0.000	0.000	0
15	0.000	0.000	0.000	0.000	0.000	0
16	0.000	0.000	0.000	0.000	0.000	0
17	0.000	0.000	0.000	0.000	0.000	0
18	0.000	0.000	0.000	0.000	0.000	0
19	0.000	0.000	0.000	0.000	0.000	0
20	0.000	0.000	0.000	0.000	0.000	0

RESULTADOS DE EMPUJE POR UN SOLO LADO SIN TIERRAS ENCIMA

DESPLAZAMIENTOS DE NUDOS

Nudo	Direc. x	Direc. y	Giro
1	0.00608	0.00144	0.00038
2	0.00607	0.00088	0.00021
3	0.00606	0.00048	0.00021
4	0.00605	-0.00006	0.00037
5	0.00604	-0.00109	0.00069
6	0.00522	0.00144	0.00066
7	0.00464	-0.00108	0.00093
8	0.00381	0.00143	0.00099
9	0.00296	-0.00108	0.00100
10	0.00194	0.00143	0.00117
11	0.00132	-0.00107	0.00090
12	0.00009	0.00142	0.00091
13	0.00007	0.00067	0.00059
14	0.00004	0.00023	0.00032
15	0.00002	0.00001	0.00014
16	0.00000	-0.00008	0.00006
17	0.00001	-0.00015	0.00009
18	0.00001	-0.00028	0.00020
19	0.00002	-0.00057	0.00039
20	0.00002	-0.00107	0.00061

RESULTADOS DE EMPUJE POR UN SOLO LADO SIN TIERRAS ENCIMA

ESFUERZOS EN BARRAS

Barra	i	j	Axil i	Corte.i	Momto.i	Axil j	Corte.j	Momto.j
1	1	2	-6.940	4.503	13.730	-6.940	4.503	-4.724
2	2	3	-6.940	4.503	4.724	-6.940	4.503	4.283
3	3	4	-6.940	4.503	-4.283	-6.940	4.503	13.289
4	4	5	-6.940	4.503	-13.289	-6.940	4.503	22.296
5	1	6	4.503	6.940	-13.730	4.503	2.095	21.819
6	6	8	4.503	2.095	-21.819	4.503	-5.640	19.215
7	8	10	4.503	-5.640	-19.215	4.503	-16.265	1.006
8	10	12	4.503	-16.265	-1.006	4.503	-29.780	-37.723
9	5	7	-4.503	-6.940	-22.296	-4.503	-6.940	10.498
10	7	9	-4.503	-6.940	-10.498	-4.503	-6.940	-1.300
11	9	11	-4.503	-6.940	1.300	-4.503	-6.940	-13.098
12	11	20	-4.503	-6.940	13.098	-4.503	-6.940	-24.896
13	12	13	-29.780	2.597	37.723	-29.780	2.597	-35.126
14	13	14	-29.780	9.301	35.126	-29.780	9.301	-25.825
15	14	15	-29.780	11.553	25.825	-29.780	11.553	-14.272
16	15	16	-29.780	11.633	14.272	-29.780	11.633	-2.639
17	16	17	6.940	10.818	2.639	6.940	10.818	8.179
18	17	18	6.940	9.355	-8.179	6.940	9.355	17.534
19	18	19	6.940	6.534	-17.534	6.940	6.534	24.068
20	19	20	6.940	0.828	-24.068	6.940	0.828	24.896

RESULTADOS DE EMPUJE POR LOS DOS LADOS CON TIERRAS ENCIMA

HIPOTESIS DE CARGA N° 4

Barra	P1	P2	D1	Longitud	Angulo	Tipo
1	0.000	0.000	0.000	0.000	0.000	0
2	0.000	0.000	0.000	0.000	0.000	0
3	0.000	0.000	0.000	0.000	0.000	0
4	0.000	0.000	0.000	0.000	0.000	0
5	-9.000	-10.700	0.000	1.700	0.000	3
6	-10.700	-12.400	0.000	1.700	0.000	3
7	-12.400	-14.100	0.000	1.700	0.000	3
8	-14.100	-15.800	0.000	1.700	0.000	3
9	9.000	10.700	0.000	1.700	0.000	3
10	10.700	12.400	0.000	1.700	0.000	3
11	12.400	14.100	0.000	1.700	0.000	3
12	14.100	15.800	0.000	1.700	0.000	3
13	0.000	0.000	0.000	0.000	0.000	0
14	0.000	0.000	0.000	0.000	0.000	0
15	0.000	0.000	0.000	0.000	0.000	0
16	0.000	0.000	0.000	0.000	0.000	0
17	0.000	0.000	0.000	0.000	0.000	0
18	0.000	0.000	0.000	0.000	0.000	0
19	0.000	0.000	0.000	0.000	0.000	0
20	0.000	0.000	0.000	0.000	0.000	0

RESULTADOS DE EMPUJE POR LOS DOS LADOS CON TIERRAS ENCIMA

DESPLAZAMIENTOS DE NUDOS

Nudo	Direc. x	Direc. y	Giro
1	0.00011	0.00079	-0.00073
2	0.00006	0.00188	-0.00036
3	0.00000	0.00225	0.00000
4	-0.00006	0.00188	0.00036
5	-0.00011	0.00079	0.00073
6	0.00137	0.00079	-0.00063
7	-0.00137	0.00079	0.00063
8	0.00195	0.00079	-0.00001
9	-0.00195	0.00079	0.00001
10	0.00139	0.00079	0.00063
11	-0.00139	0.00079	-0.00063
12	0.00014	0.00079	0.00069
13	0.00011	0.00022	0.00045
14	0.00007	-0.00013	0.00026
15	0.00004	-0.00031	0.00011
16	0.00000	-0.00036	0.00000
17	-0.00004	-0.00031	-0.00011
18	-0.00007	-0.00013	-0.00026
19	-0.00011	0.00022	-0.00045
20	-0.00014	0.00079	-0.00069

RESULTADOS DE EMPUJE POR LOS DOS LADOS CON TIERRAS ENCIMA

ESFUERZOS EN BARRAS

Barra	i	j	Axil i	Corte.i	Momto.i	Axil j	Corte.j	Momto.j
1	1	2	-37.090	0.000	-20.352	-37.090	0.000	20.352
2	2	3	-37.090	0.000	-20.352	-37.090	0.000	20.352
3	3	4	-37.090	0.000	-20.352	-37.090	0.000	20.352
4	4	5	-37.090	0.000	-20.352	-37.090	0.000	20.352
5	1	6	0.000	37.090	20.352	0.000	20.345	28.877
6	6	8	0.000	20.345	-28.877	0.000	0.710	47.183
7	8	10	0.000	0.710	-47.183	0.000	-21.815	29.653
8	10	12	0.000	-21.815	-29.653	0.000	-47.230	-28.626
9	5	7	0.000	-37.090	-20.352	0.000	-20.345	-28.877
10	7	9	0.000	-20.345	28.877	0.000	-0.710	-47.183
11	9	11	0.000	-0.710	47.183	0.000	21.815	-29.653
12	11	20	0.000	21.815	29.653	0.000	47.230	28.626
13	12	13	-47.230	3.948	28.626	-47.230	3.948	-24.677
14	13	14	-47.230	6.174	24.677	-47.230	6.174	-18.503
15	14	15	-47.230	4.906	18.503	-47.230	4.906	-13.597
16	15	16	-47.230	1.820	13.597	-47.230	1.820	-11.776
17	16	17	-47.230	-1.820	11.776	-47.230	-1.820	-13.597
18	17	18	-47.230	-4.906	13.597	-47.230	-4.906	-18.503
19	18	19	-47.230	-6.174	18.503	-47.230	-6.174	-24.677
20	19	20	-47.230	-3.948	24.677	-47.230	-3.948	-28.626

RESULTADOS DE SOBRECARGA UNIFORME

HIPOTESIS DE CARGA N° 5

Barra	P1	P2	D1	Longitud	Angulo	Tipo
1	1.710	0.000	0.000	2.000	-90.000	2
2	1.710	0.000	0.000	2.000	-90.000	2
3	1.710	0.000	0.000	2.000	-90.000	2
4	1.710	0.000	0.000	2.000	-90.000	2
5	0.000	0.000	0.000	0.000	0.000	0
6	0.000	0.000	0.000	0.000	0.000	0
7	0.000	0.000	0.000	0.000	0.000	0
8	0.000	0.000	0.000	0.000	0.000	0
9	0.000	0.000	0.000	0.000	0.000	0
10	0.000	0.000	0.000	0.000	0.000	0
11	0.000	0.000	0.000	0.000	0.000	0
12	0.000	0.000	0.000	0.000	0.000	0
13	0.000	0.000	0.000	0.000	0.000	0
14	0.000	0.000	0.000	0.000	0.000	0
15	0.000	0.000	0.000	0.000	0.000	0
16	0.000	0.000	0.000	0.000	0.000	0
17	0.000	0.000	0.000	0.000	0.000	0
18	0.000	0.000	0.000	0.000	0.000	0
19	0.000	0.000	0.000	0.000	0.000	0
20	0.000	0.000	0.000	0.000	0.000	0

RESULTADOS DE SOBRECARGA UNIFORME

DESPLAZAMIENTOS DE NUDOS

Nudo	Direc. x	Direc. y	Giro
1	0.00000	-0.00041	0.00014
2	0.00000	-0.00071	0.00013
3	0.00000	-0.00085	0.00000
4	0.00000	-0.00071	-0.00013
5	0.00000	-0.00041	-0.00014
6	-0.00017	-0.00040	0.00006
7	0.00017	-0.00040	-0.00006
8	-0.00022	-0.00039	-0.00001
9	0.00022	-0.00039	0.00001
10	-0.00015	-0.00038	-0.00006
11	0.00015	-0.00038	0.00006
12	0.00000	-0.00037	-0.00012
13	0.00000	-0.00025	-0.00012
14	0.00000	-0.00015	-0.00009
15	0.00000	-0.00007	-0.00005
16	0.00000	-0.00005	0.00000
17	0.00000	-0.00007	0.00005
18	0.00000	-0.00015	0.00009
19	0.00000	-0.00025	0.00012
20	0.00000	-0.00037	0.00012

RESULTADOS DE SOBRECARGA UNIFORME

ESFUERZOS EN BARRAS

Barra	i	j	Axil i	Corte.i	Momto.i	Axil j	Corte.j	Momto.j
1	1	2	-0.325	-6.840	-5.264	-0.325	-3.420	-4.996
2	2	3	-0.325	-3.420	4.996	-0.325	0.000	-8.416
3	3	4	-0.325	0.000	8.416	-0.325	3.420	-4.996
4	4	5	-0.325	3.420	4.996	-0.325	6.840	5.264
5	1	6	-6.840	0.325	5.264	-6.840	0.325	-4.711
6	6	8	-6.840	0.325	4.711	-6.840	0.325	-4.159
7	8	10	-6.840	0.325	4.159	-6.840	0.325	-3.607
8	10	12	-6.840	0.325	3.607	-6.840	0.325	-3.054
9	5	7	-6.840	-0.325	-5.264	-6.840	-0.325	4.711
10	7	9	-6.840	-0.325	-4.711	-6.840	-0.325	4.159
11	9	11	-6.840	-0.325	-4.159	-6.840	-0.325	3.607
12	11	20	-6.840	-0.325	-3.607	-6.840	-0.325	3.054
13	12	13	0.325	4.967	3.054	0.325	4.967	1.913
14	13	14	0.325	2.436	-1.913	0.325	2.436	4.349
15	14	15	0.325	0.985	-4.349	0.325	0.985	5.333
16	15	16	0.325	0.246	-5.333	0.325	0.246	5.579
17	16	17	0.325	-0.246	-5.579	0.325	-0.246	5.333
18	17	18	0.325	-0.985	-5.333	0.325	-0.985	4.349
19	18	19	0.325	-2.436	-4.349	0.325	-2.436	1.913
20	19	20	0.325	-4.967	-1.913	0.325	-4.967	-3.054

Calculo de la armadura a cortante

El esfuerzo cortante de agotamiento por tracción en el alma vale:

$$Vu2 = Vsu + Vcu$$

donde :

Vsu = contribución de la armadura transversal del alma a la resistencia a esfuerzo cortante.

Vcu = contribución del hormigón a la resistencia a esfuerzo cortante.

a)calculo de vsu

$$V_{su} = \sum A_\alpha * f_{y\alpha d} * 0{,}9 * d * \text{sen}\alpha * (\text{cotg}\alpha + \text{cotg}\theta)$$

$f_{y\alpha d}$ = resistencia de calculo de las armaduras transversales ≤ 4200 kp/cm^2

b)calculo de V_{cu}

en general el término Vcu de cálculo se tomará igual a:

$$V_{cu} = f_{cv} * b_w * d$$

siendo :

d = canto útil de la sección.

bw = anchura del alma de la viga.

f_{cv} = resistencia virtual de calculo del hormigón a esfuerzo cortante, dada en kp/cm^2 por

$$f_{cv} = 0{,}5 * \sqrt{f_{cd}}$$

donde:

f_{cd} = resistencia de calculo del hormigón expresada en kp/cm^2.

a continuación se adjunta salida de resultados de las secciones estudiadas con las características de las mismas así como los valores del esfuerzo cortante de calculo y armadura a disponer si fuera necesario.

SECCION Dintel.-Empotramiento

-Armadura inferior

El momento máximo corresponde a la hipótesis 1 y su valor es el siguiente :

Md = HIP 1 * 0.9 + HIP 3 * 1.6

Md = 21.41 m Mp/m

Nd = 9.84 Mp/m

Us2 = 0,05 * 9.839 = 0.49 Mp/m

$$Uc = \frac{2500.00}{1,5} * 1,0 * 0.97 = 1616.67 \text{ Mp/m}$$

$$Us1 = 1616.67 \left(1 - SQRT\left(1 - 2 * \frac{21.41 - 0.49 * 0.94}{1616.67 * 0.97}\right)\right) + 0.49 - 9.84 = 12.39 \text{ Mp/m}$$

$$As1 = \frac{1,15}{5,1} * 12.39 = 2.79 \text{ cm}^2/\text{m}$$

Se dispone armadura mínima 14.58 cm²/m

-Armadura superior

El momento máximo corresponde a la hipótesis 2 y su valor es el siguiente :

Md = HIP 1 * 1.6 + HIP 2 * 1.6 + HIP 4 * 1.6 + HIP 5 * 1.6

Md = 148.24 m Mp/m

Nd = 61.87 Mp/m

Us2 = 0,05 * 61.870 = 3.09 Mp/m

$$Uc = \frac{2500.00}{1,5} * 1,0 * 0.97 = 1616.67 \text{ Mp/m}$$

$$Us1 = 1616.67 \left(1 - SQRT\left(1 - 2 * \frac{148.24 - 3.09 * 0.94}{1616.67 * 0.97}\right)\right) + 3.09 - 61.87 = 98.72 \text{ Mp/m}$$

$$As1 = \frac{1,15}{5,1} * 98.72 = 22.26 \text{ cm}^2/\text{m}$$

SECCION Dintel.-Empotramiento

-Armadura de cortante

El cortante máximo corresponde a la hipótesis 2 y su valor es el siguiente :

Vd = HIP 1 * 1.6 + HIP 2 * 1.6 + HIP 4 * 1.6 + HIP 5 * 1.6

Vd = 116.54 Mp/m

fcv = 0,5 * SQRT(166.667) = 6.45 kp/m²

Vcu = 10 * 6.455 * 0.97 = 62.61 Mp/m

Vsu = 53.93 Mp/m

Se disponen barras a 45°. La armadura total a disponer es :

As = 10.40 cm²/m

SECCION Dintel.-Cuartos de luz

-Armadura inferior

El momento máximo corresponde a la hipótesis 2 y su valor es el siguiente :

Md = HIP 1 * 1.6 + HIP 2 * 1.6 + HIP 5 * 1.6

Md = 89.41 m Mp/m

Nd = 2.53 Mp/m

Us2 = 0,05 * 2.526 = 0.13 Mp/m

$$Uc = \frac{2500.00}{1,5} * 1,0 * 0.97 = 1616.67 \text{ Mp/m}$$

$$Us1 = 1616.67 \left(1 - SQRT\left(1 - 2 * \frac{89.41 - 0.13 * 0.94}{1616.67 * 0.97}\right)\right) +$$

$$+ 0.13 - 2.53 = 92.43 \text{ Mp/m}$$

$$As1 = \frac{1,15}{5,1} * 92.43 = 20.84 \text{ cm}^2/\text{m}$$

-Armadura superior

Armadura mínima 14.58 cm²/m

-Armadura de cortante

El cortante máximo corresponde a la hipótesis 2 y su valor es el siguiente :

Vd = HIP 1 * 1.6 + HIP 2 * 1.6 + HIP 4 * 1.6 + HIP 5 * 1.6

Vd = 58.27 Mp/m

fcv = 0,5 * SQRT(166.667) = 6.45 kp/m²

Vcu = 10 * 6.455 * 0.97 = 62.61 Mp/m

Vcu > Vd. No precisa armadura a cortante

SECCION Dintel.-Centro de vano

-Armadura inferior

El momento máximo corresponde a la hipótesis 2 y su valor es el siguiente :

Md = HIP 1 * 1.6 + HIP 2 * 1.6 + HIP 5 * 1.6

Md = 147.68 m Mp/m

Nd = 2.53 Mp/m

Us2 = 0,05 * 2.526 = 0.13 Mp/m

$$Uc = \frac{2500.00}{1,5} * 1,0 * 0.97 = 1616.67 \text{ Mp/m}$$

$$Us1 = 1616.67 \left(1 - SQRT\left(1 - 2 * \frac{147.68 - 0.13 * 0.94}{1616.67 * 0.97}\right)\right) +$$

$$+ 0.13 - 2.53 = 157.65 \text{ Mp/m}$$

$$As1 = \frac{1,15}{5,1} * 157.65 = 35.55 \text{ cm}^2/\text{m}$$

-Armadura superior

Armadura mínima 14.58 cm²/m

-Armadura de cortante

El cortante máximo corresponde a la hipótesis 1 y su valor es el siguiente :

Vd = HIP 1 * 0.9 + HIP 3 * 1.6

Vd = 7.20 Mp/m

fcv = 0,5 * SQRT(166.667) = 6.45 kp/m²

Vcu = 10 * 6.455 * 0.97 = 62.61 Mp/m

Vcu > Vd. No precisa armadura a cortante

SECCION Hastial.-Empot. superior
==========

-Armadura exterior

El momento máximo corresponde a la hipótesis 2 y su valor es el siguiente :

Md = HIP 1 * 1.6 + HIP 2 * 1.6 + HIP 4 * 1.6 + HIP 5 * 1.6

Md = 173.93 m Mp/m

Nd = 116.54 Mp/m

Us2 = 0,05 * 116.544 = 5.83 Mp/m

$$Uc = \frac{2500.00}{1,5} * 1,0 * 0.97 = 1616.67 \text{ Mp/m}$$

$$Us1 = 1616.67 \left(1 - SQRT\left(1 - 2 * \frac{173.93 - 5.83 * 0.94}{1616.67 * 0.97}\right)\right) +$$

$$+ 5.83 - 116.54 = 73.44 \text{ Mp/m}$$

$$As1 = \frac{1,15}{5,1} * 73.44 = 16.56 \text{ cm}^2/\text{m}$$

-Armadura interior

El momento máximo corresponde a la hipótesis 1 y su valor es el siguiente :

Md = HIP 1 * 0.9 + HIP 3 * 1.6

Md = 17.63 m Mp/m

Nd = 1.80 Mp/m

Us2 = 0,05 * 1.795 = 0.09 Mp/m

$$Uc = \frac{2500.00}{1,5} * 1,0 * 0.97 = 1616.67 \text{ Mp/m}$$

$$Us1 = 1616.67 \left(1 - SQRT\left(1 - 2 * \frac{17.63 - 0.09 * 0.94}{1616.67 * 0.97}\right)\right) +$$

$$+ 0.09 - 1.80 = 16.48 \text{ Mp/m}$$

$$As1 = \frac{1,15}{5,1} * 16.48 = 3.72 \text{ cm}^2/\text{m}$$

Se dispone armadura mínima 14.58 cm²/m

SECCION Hastial.-Empot. superior
==========

-Armadura de cortante

El cortante máximo corresponde a la hipótesis 2 y su valor es el siguiente :

Vd = HIP 1 * 0.9 + HIP 2 * 1.6 + HIP 4 * 1.6 + HIP 5 * 1.6

Vd = 62.85 Mp/m

fcv = 0,5 * SQRT(166.667) = 6.45 kp/m²

Vcu = 10 * 6.455 * 0.97 = 62.61 Mp/m

Vsu ≈ 0 Mp/m

No precisa armadura a cortante

SECCION Hastial.-Cuarto superior

-Armadura exterior

El momento máximo corresponde a la hipótesis 2 y su valor es el siguiente :

Md = HIP 1 * 1.6 + HIP 2 * 1.6 + HIP 5 * 1.6

Md = 140.27 m Mp/m

Nd = 123.34 Mp/m

Us2 = 0,05 * 123.344 = 6.17 Mp/m

$$Uc = \frac{2500.00}{1,5} * 1,0 * 0.97 = 1616.67 \text{ Mp/m}$$

$$Us1 = 1616.67 \left(1 - SQRT\left(1 - 2 * \frac{140.27 - 6.17 * 0.94}{1616.67 * 0.97}\right)\right) +$$

$$+ 6.17 - 123.34 = 27.97 \text{ Mp/m}$$

$$As1 = \frac{1,15}{5,1} * 27.97 = 6.31 \text{ cm}^2/\text{m}$$

Se dispone armadura mínima 14.58 cm²/m

-Armadura interior

El momento máximo corresponde a la hipótesis 1 y su valor es el siguiente :

Md = HIP 1 * 0.9 + HIP 3 * 1.6

Md = 30.22 m Mp/m

Nd = 5.62 Mp/m

Us2 = 0,05 * 5.620 = 0.28 Mp/m

$$Uc = \frac{2500.00}{1,5} * 1,0 * 0.97 = 1616.67 \text{ Mp/m}$$

$$Us1 = 1616.67 \left(1 - SQRT\left(1 - 2 * \frac{30.22 - 0.28 * 0.94}{1616.67 * 0.97}\right)\right) +$$

$$+ 0.28 - 5.62 = 25.84 \text{ Mp/m}$$

$$As1 = \frac{1,15}{5,1} * 25.84 = 5.83 \text{ cm}^2/\text{m}$$

Se dispone armadura mínima 14.58 cm²/m

SECCION Hastial.-Cuarto superior

-Armadura de cortante

El cortante máximo corresponde a la hipótesis 2 y su valor es el siguiente :

Vd = HIP 1 * 0.9 + HIP 2 * 1.6 + HIP 4 * 1.6 + HIP 5 * 1.6

Vd = 36.06 Mp/m

fcv = 0,5 * SQRT(166.667) = 6.45 kp/m²

Vcu = 10 * 6.455 * 0.97 = 62.61 Mp/m

Vcu > Vd. No precisa armadura a cortante

SECCION Hastial.-Centro de vano

-Armadura exterior

El momento máximo corresponde a la hipótesis 2 y su valor es el siguiente :

Md = HIP 1 * 1.6 + HIP 2 * 1.6 + HIP 5 * 1.6

Md = 139.17 m Mp/m

Nd = 130.14 Mp/m

Us2 = 0,05 * 130.144 = 6.51 Mp/m

$$Uc = \frac{2500.00}{1,5} * 1,0 * 0.97 = 1616.67 \text{ Mp/m}$$

$$Us1 = 1616.67 \left(1 - SQRT\left(1 - 2 * \frac{139.17 - 6.51 * 0.94}{1616.67 * 0.97}\right)\right) +$$

$$+ 6.51 - 130.14 = 19.91 \text{ Mp/m}$$

$$As1 = \frac{1,15}{5,1} * 19.91 = 4.49 \text{ cm}^2/\text{m}$$

Se dispone armadura mínima 14.58 cm²/m

-Armadura interior

El momento máximo corresponde a la hipótesis 2 y su valor es el siguiente :

Md = HIP 1 * 0.9 + HIP 2 * 0.9 + HIP 4 * 1.6

Md = 66.87 m Mp/m

Nd = 67.05 Mp/m

Us2 = 0,05 * 67.050 = 3.35 Mp/m

$$Uc = \frac{2500.00}{1,5} * 1,0 * 0.97 = 1616.67 \text{ Mp/m}$$

$$Us1 = 1616.67 \left(1 - SQRT\left(1 - 2 * \frac{66.87 - 3.35 * 0.94}{1616.67 * 0.97}\right)\right) +$$

$$+ 3.35 - 67.05 = 3.39 \text{ Mp/m}$$

$$As1 = \frac{1,15}{5,1} * 3.39 = 0.76 \text{ cm}^2/\text{m}$$

Se dispone armadura mínima 14.58 cm²/m

SECCION Hastial.-Centro de vano

-Armadura de cortante

El cortante máximo corresponde a la hipótesis 1 y su valor es el siguiente :

Vd = HIP 1 * 1.6 + HIP 3 * 1.6

Vd = 11.27 Mp/m

fcv = 0,5 * SQRT(166.667) = 6.45 kp/m²

Vcu = 10 * 6.455 * 0.97 = 62.61 Mp/m

Vcu > Vd. No precisa armadura a cortante

SECCION Hastial.-Cuarto inferior

-Armadura exterior

El momento máximo corresponde a la hipótesis 2 y su valor es el siguiente :

Md = HIP 1 * 1.6 + HIP 2 * 1.6 + HIP 5 * 1.6

Md = 138.07 m Mp/m

Nd = 136.94 Mp/m

Us2 = 0,05 * 136.944 = 6.85 Mp/m

$$Uc = \frac{2500.00}{1,5} * 1,0 * 0.97 = 1616.67 \text{ Mp/m}$$

$$Us1 = 1616.67 \left(1 - SQRT\left(1 - 2 * \frac{138.07 - 6.85 * 0.94}{1616.67 * 0.97}\right)\right) +$$

$$+ 6.85 - 136.94 = 11.84 \text{ Mp/m}$$

$$As1 = \frac{1,15}{5,1} * 11.84 = 2.67 \text{ cm}^2/\text{m}$$

Se dispone armadura mínima 14.58 cm²/m

-Armadura interior

El momento máximo corresponde a la hipótesis 2 y su valor es el siguiente :

Md = HIP 1 * 0.9 + HIP 2 * 0.9 + HIP 4 * 1.6

Md = 42.54 m Mp/m

Nd = 70.87 Mp/m

Us2 = 0,05 * 70.875 = 3.54 Mp/m

$$Uc = \frac{2500.00}{1,5} * 1,0 * 0.97 = 1616.67 \text{ Mp/m}$$

$$Us1 = 1616.67 \left(1 - SQRT\left(1 - 2 * \frac{42.54 - 3.54 * 0.94}{1616.67 * 0.97}\right)\right) +$$

$$+ 3.54 - 70.87 = 0.00 \text{ Mp/m}$$

$$As1 = \frac{1,15}{5,1} * 0.00 = 0.00 \text{ cm}^2/\text{m}$$

Se dispone armadura mínima 14.58 cm²/m

SECCION Hastial.-Cuarto inferior

-Armadura de cortante

El cortante máximo corresponde a la hipótesis 2 y su valor es el siguiente :

Vd = HIP 1 * 1.6 + HIP 2 * 0.9 + HIP 4 * 1.6

Vd = 34.76 Mp/m

fcv = 0,5 * SQRT(166.667) = 6.45 kp/m²

Vcu = 10 * 6.455 * 0.97 = 62.61 Mp/m

Vcu > Vd. No precisa armadura a cortante

SECCION Hastial.-Empotramiento inferior
==========

-Armadura interior

Armadura mínima 14.58 cm²/m

-Armadura exterior

El momento máximo corresponde a la hipótesis 2 y su valor es el siguiente :

Md = HIP 1 * 1.6 + HIP 2 * 1.6 + HIP 4 * 1.6 + HIP 5 * 1.6

Md = 182.78 m Mp/m

Nd = 143.74 Mp/m

Us2 = 0,05 * 143.744 = 7.19 Mp/m

$$Uc = \frac{2500.00}{1,5} * 1,0 * 0.97 = 1616.67 \text{ Mp/m}$$

$$Us1 = 1616.67 \left(1 - SQRT\left(1 - 2 * \frac{182.78 - 7.19 * 0.94}{1616.67 * 0.97}\right)\right) +$$

$$+ 7.19 - 143.74 = 56.43 \text{ Mp/m}$$

$$As1 = \frac{1,15}{5,1} * 56.43 = 12.72 \text{ cm²/m}$$

Se dispone armadura mínima 14.58 cm²/m

-Armadura de cortante

El cortante máximo corresponde a la hipótesis 2 y su valor es el siguiente :

Vd = HIP 1 * 1.6 + HIP 2 * 0.9 + HIP 4 * 1.6

Vd = 75.42 Mp/m

Si despreciamos las cargas que actuan dentro de la seccion a 45 grados el cortante es

Vd = 75.42 - 1.60 * 20.20 = 43.09

fcv = 0,5 * SQRT(166.667) = 6.45 kp/m²

Vcu = 10 * 6.455 * 0.97 = 62.61 Mp/m

Vcu > Vd. No precisa armadura a cortante

SECCION Solera.-Empotramiento
==========

-Armadura inferior

El momento máximo corresponde a la hipótesis 2 y su valor es el siguiente :

Md = HIP 1 * 1.6 + HIP 2 * 1.6 + HIP 4 * 1.6 + HIP 5 * 1.6

Md = 149.55 m Mp/m

Nd = 73.04 Mp/m

Us2 = 0,05 * 73.042 = 3.65 Mp/m

$$Uc = \frac{2500.00}{1,5} * 1,0 * 0.97 = 1616.67 \text{ Mp/m}$$

$$Us1 = 1616.67 \left(1 - SQRT\left(1 - 2 * \frac{149.55 - 3.65 * 0.94}{1616.67 * 0.97}\right)\right) +$$

$$+ 3.65 - 73.04 = 89.00 \text{ Mp/m}$$

$$As1 = \frac{1,15}{5,1} * 89.00 = 20.07 \text{ cm²/m}$$

-Armadura superior

Armadura mínima 14.58 cm²/m

-Armadura de cortante

El cortante máximo corresponde a la hipótesis 2 y su valor es el siguiente :

Vd = HIP 1 * 1.6 + HIP 2 * 1.6 + HIP 4 * 1.6 + HIP 5 * 1.6

Vd = 109.47 Mp/m

fcv = 0,5 * SQRT(166.667) = 6.45 kp/m²

Vcu = 10 * 6.455 * 0.97 = 62.61 Mp/m

Vsu = 46.86 Mp/m

Se disponen barras a 45°. La armadura total a disponer es :

As = 9.04 cm²/m

SECCION Solera.-Cuartos de luz

-Armadura inferior

El momento máximo corresponde a la hipótesis 1 y su valor es el siguiente :

Md = HIP 1 * 0.9 + HIP 3 * 1.6

Md = 50.69 m Mp/m

Nd = 48.91 Mp/m

Us2 = 0,05 * 48.913 = 2.45 Mp/m

$$Uc = \frac{2500.00}{1,5} * 1,0 * 0.97 = 1616.67 \text{ Mp/m}$$

$$Us1 = 1616.67 \left(1 - SQRT\left(1 - 2 * \frac{50.69 - 2.45 * 0.94}{1616.67 * 0.97}\right)\right) +$$

$$+ 2.45 - 48.91 = 4.22 \text{ Mp/m}$$

$$As1 = \frac{1,15}{5,1} * 4.22 = 0.95 \text{ cm}^2/\text{m}$$

Se dispone armadura mínima 14.58 cm²/m

-Armadura superior

El momento máximo corresponde a la hipótesis 2 y su valor es el siguiente :

Md = HIP 1 * 1.6 + HIP 2 * 1.6 + HIP 5 * 1.6

Md = 89.31 m Mp/m

Nd = 2.53 Mp/m

Us2 = 0,05 * 2.526 = 0.13 Mp/m

$$Uc = \frac{2500.00}{1,5} * 1,0 * 0.97 = 1616.67 \text{ Mp/m}$$

$$Us1 = 1616.67 \left(1 - SQRT\left(1 - 2 * \frac{89.31 - 0.13 * 0.94}{1616.67 * 0.97}\right)\right) +$$

$$+ 0.13 - 2.53 = 92.33 \text{ Mp/m}$$

$$As1 = \frac{1,15}{5,1} * 92.33 = 20.82 \text{ cm}^2/\text{m}$$

SECCION Solera.-Cuartos de luz

-Armadura de cortante

El cortante máximo corresponde a la hipótesis 2 y su valor es el siguiente :

Vd = HIP 1 * 1.6 + HIP 2 * 1.6 + HIP 4 * 1.6 + HIP 5 * 1.6

Vd = 27.49 Mp/m

fcv = 0,5 * SQRT(166.667) = 6.45 kp/m²

Vcu = 10 * 6.455 * 0.97 = 62.61 Mp/m

Vcu > Vd. No precisa armadura a cortante

SECCION Solera.-Centro de vano

-Armadura inferior

Armadura mínima 14.58 cm²/m

-Armadura superior

El momento máximo corresponde a la hipótesis 2 y su valor es el siguiente :

Md = HIP 1 * 1.6 + HIP 2 * 1.6 + HIP 5 * 1.6

Md = 116.48 m Mp/m

Nd = 2.53 Mp/m

Us2 = 0,05 * 2.526 = 0.13 Mp/m

$$Uc = \frac{2500.00}{1,5} * 1,0 * 0.97 = 1616.67 \text{ Mp/m}$$

$$Us1 = 1616.67 \left(1 - SQRT\left(1 - 2 * \frac{116.48 - 0.13 * 0.94}{1616.67 * 0.97}\right)\right) + 0.13 - 2.53 = 122.38 \text{ Mp/m}$$

$$As1 = \frac{1,15}{5,1} * 122.38 = 27.59 \text{ cm²/m}$$

-Armadura de cortante

El cortante máximo corresponde a la hipótesis 1 y su valor es el siguiente :

Vd = HIP 1 * 0.9 + HIP 3 * 1.6

Vd = 15.11 Mp/m

fcv = 0,5 * SQRT(166.667) = 6.45 kp/m²

Vcu = 10 * 6.455 * 0.97 = 62.61 Mp/m

Vcu > Vd. No precisa armadura a cortante

REACCIONES Y TENSIONES MAXIMAS EN SOLERA

NUDO	REACCION	TENSION
12	21.42 Mp	21.42 Mp/m²
13	33.25 Mp	33.25 Mp/m²
14	22.98 Mp	22.98 Mp/m²
15	15.66 Mp	15.66 Mp/m²
16	13.05 Mp	13.05 Mp/m²
17	15.66 Mp	15.66 Mp/m²
18	22.98 Mp	22.98 Mp/m²
19	33.25 Mp	33.25 Mp/m²
20	21.42 Mp	21.42 Mp/m²

P.B.F. 101+100

CALCULO DE LA LOSA SUPERIOR POR EL METODO DEL EMPARRILLADO

CALCULO

INDICE

1.Definición geométrica.

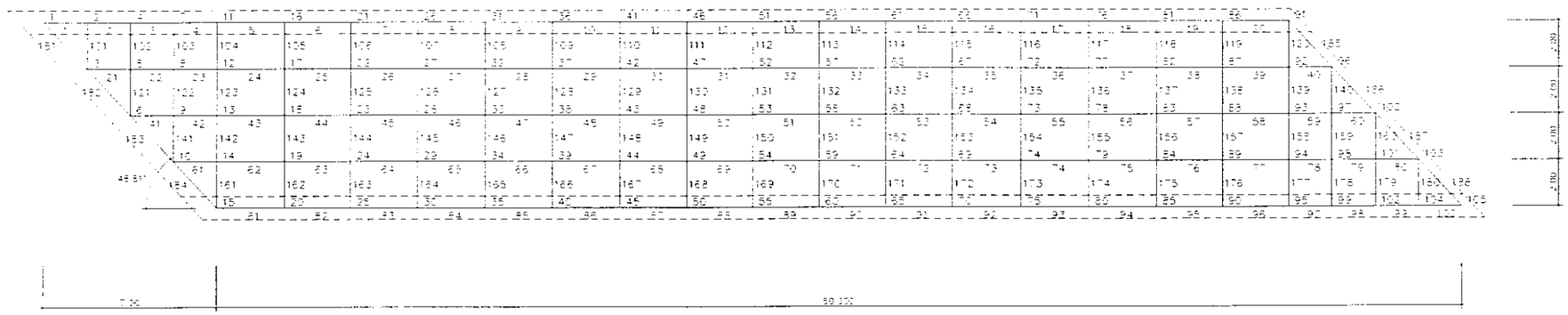
2.Datos generales.

3.Armaduras.

4.Listados de ordenador.

1.Definición geométrica.

ESQUEMA DEL ENPARRILLADO



2.Datos generales.

Se considera que actúan las hipótesis de peso propio, carga permanente y el tren de cargas utilizado anteriormente, que en nuestro caso representa una sobrecarga de:

Q = 12 * 1.1 * 2 * 8.00 / sen (48.8) = 35.09 Mp

La carga permanente la repartimos en todas las barras. Siendo el area del trapecio de 217.08 el peso total de tierras será:

CP = 217.08 * 8.0 * 2.0 = 3473.28 Mp

Las hipótesis 1 y 2 corresponden al peso propio y carga permanente, y la 3 al tren de cargas.

Las características de los materiales y los coeficientes utilizados son los siguientes:

Fck del hormigón	250.000 Kg/cm²
Fyk del acero	5100.000 Kg/cm²
Fyα,d del acero Kg/cm2	4200.000 Kg/cm²
Coeficiente de minoración del hormigón	1.500
Coeficiente de minoración del acero	1.150
Coeficiente de mayoración de las acciones	1.600
Recubrimiento	0.030 m

El modelo utilizado corresponde al de emparrillado plano.

El cálculo se realiza mediante programa de ordenador, basado en la matriz de rigidez y equilibrio de nudos, en dónde se tienen en cuenta las hipótesis básicas de la resistencia de materiales, esto es linealidad geométrica y material despreciando la deformación por esfuerzo cortante.

Los nudos de empotramiento se encuentran coaccionados al giro según el eje x para asimilar a la rigidez que tiene el conjunto con los hastiales.

3.Armaduras.

SECCION Centro de vano.

El momento máximo por metro se produce en la barra 128 siendo su valor

Md = 1.60 * 155.03 = 248.05 mMp

Uc = 2500 / 1.5 * 2.706 * 0.97 = 4374.7 Mp

Us1= 4374.7 (1 - SQRT(1 - 2 * 248.05 / 4374.7 / 0.97)) = 263.67 Mp

As1= 263.67 * 1.15 / 5.1 / 2.706 = 21.97 cm²/m

menor que la armadura dispuesta

SECCION Empotramiento.

El momento máximo por metro se produce en la barra 104 siendo su valor

Md = 1.60 * 80.31 = 128.50 mMp

Uc = 2500 / 1.5 * 2.23 * 0.97 = 3605.17 Mp

Us1= 3605.17 (1 - SQRT(1 - 2 * 128.50 / 3605.17 / 0.97)) = 135.00 Mp

As1= 135.00 * 1.15 / 5.1 / 2.23 = 13.65 cm²/m

menor que la armadura dispuesta

-Armadura de cortante

El cortante máximo por metro se produce en la barra 119 siendo su valor

Vd = 1.60 * 117.21 = 187.54 Mp

fcv = 0,5 * SQRT(166.667) = 6.45 kp/m²

Vcu = 10 * 6.455 * 0.97 * 2.706 = 169.43 Mp

Vsu = 18.10 Mp = 6.69 Mp/m < 53.93 Mp/m, valor obtenido en el cálculo del pórtico.

VIGA RIOSTRA. Centro de vano.

El momento máximo por metro se produce en la barra 184 siendo su valor

Md = 1.60 *78.28 = 125.25 mMp

Uc = 2500 / 1.5 * 1.50 * 0.97 = 2425.00 Mp

Us1= 2425.00 (1 - SQRT(1 - 2 * 125.25 / 2425.00 / 0.97)) = 132.76 Mp

As1= 132.76 * 1.15 / 5.1 / 1.50 = 19.96 cm²/m

valor inferior al dispuesto.

VIGA RIOSTRA. Empotramiento.

El momento máximo por metro se produce en la barra 86 siendo su valor

Md = 1.60 * 60.17 = 96.27 mMp

Uc = 2500 / 1.5 * 1.50 * 0.97 = 2425.00 Mp

Us1= 2425.00 (1 - SQRT(1 - 2 * 96.27 / 2425.00 / 0.97)) = 101.37 Mp

As1= 101.37 * 1.15 / 5.1 / 1.50 = 15.24 cm²/m

valor inferior al dispuesto

4. LISTADOS DE ORDENADOR.

NOMBRE DEL FICHERO: e1011

DATOS GENERALES DE LA ESTRUCTURA

No. DE NUDOS: 105
No. DE BARRAS: 188
MODULO DE ELASTICIDAD: 3000000
COEFICIENTE DE POISSON: .15
INERCIA A FLEXION DE REFERENCIA DE LAS BARRAS: .1
INERCIA A TORSION DE REFERENCIA DE LAS BARRAS: .1
COEFICIENTE DE BALASTO: 0

DATOS GEOMETRICOS DE LAS BARRAS

BARRA	Ni	Nj	Lx	Ly	Ri	Rt	Tipo
1	1	2	1.75	0.00	1.25	2.50	0
2	2	4	1.75	0.00	1.25	2.50	0
3	4	7	1.75	0.00	1.25	2.50	0
4	7	11	1.75	0.00	1.25	2.50	0
5	11	16	2.71	0.00	1.25	2.50	0
6	16	21	2.71	0.00	1.25	2.50	0
7	21	26	2.71	0.00	1.25	2.50	0
8	26	31	2.71	0.00	1.25	2.50	0
9	31	36	2.71	0.00	1.25	2.50	0
10	36	41	2.71	0.00	1.25	2.50	0
11	41	46	2.71	0.00	1.25	2.50	0
12	46	51	2.71	0.00	1.25	2.50	0
13	51	56	2.71	0.00	1.25	2.50	0
14	56	61	2.71	0.00	1.25	2.50	0
15	61	66	2.71	0.00	1.25	2.50	0
16	66	71	2.71	0.00	1.25	2.50	0
17	71	76	2.71	0.00	1.25	2.50	0
18	76	81	2.71	0.00	1.25	2.50	0
19	81	86	2.71	0.00	1.25	2.50	0
20	86	91	2.71	0.00	1.25	2.50	0
21	3	5	1.75	0.00	1.67	3.33	0
22	5	8	1.75	0.00	1.67	3.33	0
23	8	12	1.75	0.00	1.67	3.33	0
24	12	17	2.71	0.00	1.67	3.33	0
25	17	22	2.71	0.00	1.67	3.33	0
26	22	27	2.71	0.00	1.67	3.33	0
27	27	32	2.71	0.00	1.67	3.33	0
28	32	37	2.71	0.00	1.67	3.33	0
29	37	42	2.71	0.00	1.67	3.33	0
30	42	47	2.71	0.00	1.67	3.33	0
31	47	52	2.71	0.00	1.67	3.33	0
32	52	57	2.71	0.00	1.67	3.33	0
33	57	62	2.71	0.00	1.67	3.33	0
34	62	67	2.71	0.00	1.67	3.33	0
35	67	72	2.71	0.00	1.67	3.33	0
36	72	77	2.71	0.00	1.67	3.33	0
37	77	82	2.71	0.00	1.67	3.33	0
38	82	87	2.71	0.00	1.67	3.33	0
39	87	92	2.71	0.00	1.67	3.33	0
40	92	96	1.75	0.00	1.67	3.33	0
41	6	9	1.75	0.00	1.67	3.33	0
42	9	13	1.75	0.00	1.67	3.33	0
43	13	18	2.71	0.00	1.67	3.33	0
44	18	23	2.71	0.00	1.67	3.33	0
45	23	28	2.71	0.00	1.67	3.33	0
46	28	33	2.71	0.00	1.67	3.33	0
47	33	38	2.71	0.00	1.67	3.33	0
48	38	43	2.71	0.00	1.67	3.33	0
49	43	48	2.71	0.00	1.67	3.33	0
50	48	53	2.71	0.00	1.67	3.33	0
51	53	58	2.71	0.00	1.67	3.33	0
52	58	63	2.71	0.00	1.67	3.33	0
53	63	68	2.71	0.00	1.67	3.33	0
54	68	73	2.71	0.00	1.67	3.33	0
55	73	78	2.71	0.00	1.67	3.33	0
56	78	83	2.71	0.00	1.67	3.33	0
57	83	88	2.71	0.00	1.67	3.33	0
58	88	93	2.71	0.00	1.67	3.33	0
59	93	97	1.75	0.00	1.67	3.33	0
60	97	100	1.75	0.00	1.67	3.33	0
61	10	14	1.75	0.00	1.67	3.33	0
62	14	19	2.71	0.00	1.67	3.33	0
63	19	24	2.71	0.00	1.67	3.33	0
64	24	29	2.71	0.00	1.67	3.33	0
65	29	34	2.71	0.00	1.67	3.33	0
66	34	39	2.71	0.00	1.67	3.33	0
67	39	44	2.71	0.00	1.67	3.33	0
68	44	49	2.71	0.00	1.67	3.33	0
69	49	54	2.71	0.00	1.67	3.33	0
70	54	59	2.71	0.00	1.67	3.33	0
71	59	64	2.71	0.00	1.67	3.33	0
72	64	69	2.71	0.00	1.67	3.33	0
73	69	74	2.71	0.00	1.67	3.33	0
74	74	79	2.71	0.00	1.67	3.33	0
75	79	84	2.71	0.00	1.67	3.33	0
76	84	89	2.71	0.00	1.67	3.33	0
77	89	94	2.71	0.00	1.67	3.33	0
78	94	98	1.75	0.00	1.67	3.33	0
79	98	101	1.75	0.00	1.67	3.33	0
80	101	103	1.75	0.00	1.67	3.33	0
81	15	20	2.71	0.00	1.25	2.50	0
82	20	25	2.71	0.00	1.25	2.50	0
83	25	30	2.71	0.00	1.25	2.50	0
84	30	35	2.71	0.00	1.25	2.50	0
85	35	40	2.71	0.00	1.25	2.50	0
86	40	45	2.71	0.00	1.25	2.50	0
87	45	50	2.71	0.00	1.25	2.50	0
88	50	55	2.71	0.00	1.25	2.50	0
89	55	60	2.71	0.00	1.25	2.50	0
90	60	65	2.71	0.00	1.25	2.50	0
91	65	70	2.71	0.00	1.25	2.50	0
92	70	75	2.71	0.00	1.25	2.50	0
93	75	80	2.71	0.00	1.25	2.50	0
94	80	85	2.71	0.00	1.25	2.50	0

BARRA	Ni	Nj	Lx	Ly	Ri	Rt	Tipo
95	85	90	2.71	0.00	1.25	2.50	0
96	90	95	2.71	0.00	1.25	2.50	0
97	95	99	1.75	0.00	1.25	2.50	0
98	99	102	1.75	0.00	1.25	2.50	0
99	102	104	1.75	0.00	1.25	2.50	0
100	104	105	1.75	0.00	1.25	2.50	0
101	2	3	0.00	-2.00	1.09	2.18	0
102	4	5	0.00	-2.00	1.46	2.92	0
103	7	8	0.00	-2.00	1.46	2.92	0
104	11	12	0.00	-2.00	1.86	3.72	0
105	16	17	0.00	-2.00	2.26	4.52	0
106	21	22	0.00	-2.00	2.26	4.52	0
107	26	27	0.00	-2.00	2.26	4.52	0
108	31	32	0.00	-2.00	2.26	4.52	0
109	36	37	0.00	-2.00	2.26	4.52	0
110	41	42	0.00	-2.00	2.26	4.52	0
111	46	47	0.00	-2.00	2.26	4.52	0
112	51	52	0.00	-2.00	2.26	4.52	0
113	56	57	0.00	-2.00	2.26	4.52	0
114	61	62	0.00	-2.00	2.26	4.52	0
115	66	67	0.00	-2.00	2.26	4.52	0
116	71	72	0.00	-2.00	2.26	4.52	0
117	76	77	0.00	-2.00	2.26	4.52	0
118	81	82	0.00	-2.00	2.26	4.52	0
119	86	87	0.00	-2.00	2.26	4.52	0
120	91	92	0.00	-2.00	1.09	2.18	0
121	5	6	0.00	-2.00	1.09	2.18	0
122	8	9	0.00	-2.00	1.46	2.92	0
123	12	13	0.00	-2.00	1.86	3.72	0
124	17	18	0.00	-2.00	2.26	4.52	0
125	22	23	0.00	-2.00	2.26	4.52	0
126	27	28	0.00	-2.00	2.26	4.52	0
127	32	33	0.00	-2.00	2.26	4.52	0
128	37	38	0.00	-2.00	2.26	4.52	0
129	42	43	0.00	-2.00	2.26	4.52	0
130	47	48	0.00	-2.00	2.26	4.52	0
131	52	53	0.00	-2.00	2.26	4.52	0
132	57	58	0.00	-2.00	2.26	4.52	0
133	62	63	0.00	-2.00	2.26	4.52	0
134	67	68	0.00	-2.00	2.26	4.52	0
135	72	73	0.00	-2.00	2.26	4.52	0
136	77	78	0.00	-2.00	2.26	4.52	0
137	82	83	0.00	-2.00	2.26	4.52	0
138	87	88	0.00	-2.00	2.26	4.52	0
139	92	93	0.00	-2.00	1.86	3.72	0
140	96	97	0.00	-2.00	1.09	2.18	0
141	9	10	0.00	-2.00	1.09	2.18	0
142	13	14	0.00	-2.00	1.86	3.72	0
143	18	19	0.00	-2.00	2.26	4.52	0
144	23	24	0.00	-2.00	2.26	4.52	0
145	28	29	0.00	-2.00	2.26	4.52	0
146	33	34	0.00	-2.00	2.26	4.52	0
147	38	39	0.00	-2.00	2.26	4.52	0
148	43	44	0.00	-2.00	2.26	4.52	0
149	48	49	0.00	-2.00	2.26	4.52	0
150	53	54	0.00	-2.00	2.26	4.52	0
151	58	59	0.00	-2.00	2.26	4.52	0

BARRA	Ni	Nj	Lx	Ly	Ri	Rt	Tipo
152	63	64	0.00	-2.00	2.26	4.52	0
153	68	69	0.00	-2.00	2.26	4.52	0
154	73	74	0.00	-2.00	2.26	4.52	0
155	78	79	0.00	-2.00	2.26	4.52	0
156	83	84	0.00	-2.00	2.26	4.52	0
157	88	89	0.00	-2.00	2.26	4.52	0
158	93	94	0.00	-2.00	1.86	3.72	0
159	97	98	0.00	-2.00	1.46	2.92	0
160	100	101	0.00	-2.00	1.09	2.18	0
161	14	15	0.00	-2.00	1.09	2.18	0
162	19	20	0.00	-2.00	2.26	4.52	0
163	24	25	0.00	-2.00	2.26	4.52	0
164	29	30	0.00	-2.00	2.26	4.52	0
165	34	35	0.00	-2.00	2.26	4.52	0
166	39	40	0.00	-2.00	2.26	4.52	0
167	44	45	0.00	-2.00	2.26	4.52	0
168	49	50	0.00	-2.00	2.26	4.52	0
169	54	55	0.00	-2.00	2.26	4.52	0
170	59	60	0.00	-2.00	2.26	4.52	0
171	64	65	0.00	-2.00	2.26	4.52	0
172	69	70	0.00	-2.00	2.26	4.52	0
173	74	75	0.00	-2.00	2.26	4.52	0
174	79	80	0.00	-2.00	2.26	4.52	0
175	84	85	0.00	-2.00	2.26	4.52	0
176	89	90	0.00	-2.00	2.26	4.52	0
177	94	95	0.00	-2.00	1.86	3.72	0
178	98	99	0.00	-2.00	1.46	2.92	0
179	101	102	0.00	-2.00	1.46	2.92	0
180	103	104	0.00	-2.00	1.09	2.18	0
181	1	3	1.75	-2.00	1.25	2.50	0
182	3	6	1.75	-2.00	1.25	2.50	0
183	6	10	1.75	-2.00	1.25	2.50	0
184	10	15	1.75	-2.00	1.25	2.50	0
185	91	96	1.75	-2.00	1.25	2.50	0
186	96	100	1.75	-2.00	1.25	2.50	0
187	100	103	1.75	-2.00	1.25	2.50	0
188	103	105	1.75	-2.00	1.25	2.50	0

COORDENADAS DE LOS NUDOS

NUDO	COOR X	COOR Y
1	0.00	8.00
2	1.75	8.00
3	1.75	6.00
4	3.50	8.00
5	3.50	6.00
6	3.50	4.00
7	5.25	8.00
8	5.25	6.00
9	5.25	4.00
10	5.25	2.00
11	7.00	8.00
12	7.00	6.00
13	7.00	4.00
14	7.00	2.00
15	7.00	0.00
16	9.71	8.00
17	9.71	6.00
18	9.71	4.00
19	9.71	2.00
20	9.71	0.00
21	12.42	8.00
22	12.42	6.00
23	12.42	4.00
24	12.42	2.00
25	12.42	0.00
26	15.12	8.00
27	15.12	6.00
28	15.12	4.00
29	15.12	2.00
30	15.12	0.00
31	17.83	8.00
32	17.83	6.00
33	17.83	4.00
34	17.83	2.00
35	17.83	0.00
36	20.53	8.00
37	20.53	6.00
38	20.53	4.00
39	20.53	2.00
40	20.53	0.00
41	23.24	8.00
42	23.24	6.00
43	23.24	4.00
44	23.24	2.00
45	23.24	0.00
46	25.95	8.00
47	25.95	6.00
48	25.95	4.00
49	25.95	2.00
50	25.95	0.00
51	28.65	8.00
52	28.65	6.00
53	28.65	4.00
54	28.65	2.00
55	28.65	0.00
56	31.36	8.00
57	31.36	6.00
58	31.36	4.00
59	31.36	2.00
60	31.36	0.00
61	34.06	8.00
62	34.06	6.00
63	34.06	4.00
64	34.06	2.00
65	34.06	0.00
66	36.77	8.00
67	36.77	6.00
68	36.77	4.00
69	36.77	2.00
70	36.77	0.00
71	39.48	8.00
72	39.48	6.00
73	39.48	4.00
74	39.48	2.00
75	39.48	0.00
76	42.18	8.00
77	42.18	6.00
78	42.18	4.00
79	42.18	2.00
80	42.18	0.00
81	44.89	8.00
82	44.89	6.00
83	44.89	4.00
84	44.89	2.00
85	44.89	0.00
86	47.59	8.00
87	47.59	6.00
88	47.59	4.00
89	47.59	2.00
90	47.59	0.00
91	50.30	8.00
92	50.30	6.00
93	50.30	4.00
94	50.30	2.00
95	50.30	0.00
96	52.05	6.00
97	52.05	4.00
98	52.05	2.00
99	52.05	0.00
100	53.80	4.00
101	53.80	2.00
102	53.80	0.00
103	55.55	2.00
104	55.55	0.00
105	57.30	0.00

CONDICIONES DE CONTORNO

NUDO	Kz	Kgx	Kgy
1	1.00E+20	1.35E+05	1.00E+20
2	1.00E+20	1.35E+05	1.00E+20
4	1.00E+20	1.35E+05	1.00E+20
7	1.00E+20	1.35E+05	1.00E+20
11	1.00E+20	2.10E+05	1.00E+20
15	1.00E+20	2.10E+05	1.00E+20
16	1.00E+20	2.10E+05	1.00E+20
20	1.00E+20	2.10E+05	1.00E+20
21	1.00E+20	2.10E+05	1.00E+20
25	1.00E+20	2.10E+05	1.00E+20
26	1.00E+20	2.10E+05	1.00E+20
30	1.00E+20	2.10E+05	1.00E+20
31	1.00E+20	2.10E+05	1.00E+20
35	1.00E+20	2.10E+05	1.00E+20
36	1.00E+20	2.10E+05	1.00E+20
40	1.00E+20	2.10E+05	1.00E+20
41	1.00E+20	2.10E+05	1.00E+20
45	1.00E+20	2.10E+05	1.00E+20
46	1.00E+20	2.10E+05	1.00E+20
50	1.00E+20	2.10E+05	1.00E+20
51	1.00E+20	2.10E+05	1.00E+20
55	1.00E+20	2.10E+05	1.00E+20
56	1.00E+20	2.10E+05	1.00E+20
60	1.00E+20	2.10E+05	1.00E+20
61	1.00E+20	2.10E+05	1.00E+20
65	1.00E+20	2.10E+05	1.00E+20
66	1.00E+20	2.10E+05	1.00E+20
70	1.00E+20	2.10E+05	1.00E+20
71	1.00E+20	2.10E+05	1.00E+20
75	1.00E+20	2.10E+05	1.00E+20
76	1.00E+20	2.10E+05	1.00E+20
80	1.00E+20	2.10E+05	1.00E+20
81	1.00E+20	2.10E+05	1.00E+20
85	1.00E+20	2.10E+05	1.00E+20
86	1.00E+20	2.10E+05	1.00E+20
90	1.00E+20	2.10E+05	1.00E+20
91	1.00E+20	2.10E+05	1.00E+20
95	1.00E+20	2.10E+05	1.00E+20
99	1.00E+20	1.35E+05	1.00E+20
102	1.00E+20	1.35E+05	1.00E+20
104	1.00E+20	1.35E+05	1.00E+20
105	1.00E+20	1.35E+05	1.00E+20

CARGA EN BARRAS (tipos de carga)

	TIPO	D1	D2	D3	D4
REPARTIDA UNIFORME	: TIPO (0)	, P		, A	, B
TRAPECIAL	: TIPO (1)	, P1	, P2	, A	, B
CARGA CONCENTRADA	: TIPO (2)	, F		, A	
TORSOR CONCENTRADO	: TIPO (3)	, T		, A	
TORSOR REPARTIDO	: TIPO (4)	, Tr		, A	, B
GRADIENTE Tø	: TIPO (5)	, Grad. Tø,	Kø	, Canto barra	

HIPOTESIS DE CARGA No. 1

TIPO	D1	D2	D3	D4	BARRAS
0	-5.00		0.00	1.00	41a60
0	-6.25		0.00	1.00	21a40,61a80

HIPOTESIS DE CARGA No. 2

TIPO	D1	D2	D3	D4	BARRAS
0	-22.68		0.00	1.00	105a119,124a138, 143a157,162a176
0	-14.67		0.00	1.00	101a103,121,122,141
0	-14.67		0.00	1.00	140,159,160,178a180
0	-18.69		0.00	1.00	104,123,142,161
0	-18.69		0.00	1.00	120,139,158,177

HIPOTESIS DE CARGA No. 3

TIPO	D1	D2	D3	D4	BARRAS
0	-0.23		0.00	1.00	105a119,124a138, 143a157,162a176
0	-0.15		0.00	1.00	101a103,121,122,141
0	-0.15		0.00	1.00	140,159,160,178a180
0	-0.19		0.00	1.00	104,123,142,161
0	-0.19		0.00	1.00	120,139,158,177

HIPOTESIS Y/O COMBINACIONES DE CARGA CONSIDERADAS

HIPOTESIS: C1 = +1.00*(Hip:1)
HIPOTESIS: C2 = +1.00*(Hip:2)
HIPOTESIS: C3 = +1.00*(Hip:3)
HIPOTESIS: C4 = +1.00*(Hip:1)+1.00*(Hip:2)+1.00*(Hip:3)

HIPOT.	Qi	Mxi	Myi	Qj	Mxj	Myj
BARRA: 1						
C1	-0.000	-1.917	+0.000	-0.000	+1.917	-0.000
C2	+0.000	-6.530	-0.000	+0.000	+6.530	+0.000
C3	+0.000	-0.067	-0.000	+0.000	+0.067	+0.000
C4	+0.000	-8.513	-0.000	+0.000	+8.513	+0.000
BARRA: 2						
C1	+0.000	-2.466	-0.000	+0.000	+2.466	+0.000
C2	+0.000	-7.138	-0.000	+0.000	+7.138	+0.000
C3	+0.000	-0.073	-0.000	+0.000	+0.073	+0.000
C4	+0.000	-9.677	-0.000	+0.000	+9.677	+0.000
BARRA: 3						
C1	-0.000	-1.462	+0.000	-0.000	+1.462	-0.000
C2	-0.000	-4.223	+0.000	-0.000	+4.223	+0.000
C3	+0.000	-0.042	+0.000	+0.000	+0.042	+0.000
C4	-0.000	-5.728	+0.000	-0.000	+5.728	+0.000
BARRA: 4						
C1	+0.000	-0.574	-0.000	+0.000	+0.574	+0.000
C2	+0.000	-1.195	-0.000	+0.000	+1.195	+0.000
C3	+0.000	-0.011	-0.000	+0.000	+0.011	+0.000
C4	+0.000	-1.781	-0.000	+0.000	+1.781	+0.000
BARRA: 5						
C1	+0.000	-0.844	-0.000	+0.000	+0.844	+0.000
C2	+0.000	-2.273	-0.000	+0.000	+2.273	+0.000
C3	+0.000	-0.022	-0.000	+0.000	+0.022	+0.000
C4	+0.000	-3.139	-0.000	+0.000	+3.139	+0.000
BARRA: 6						
C1	-0.000	-0.162	+0.000	-0.000	+0.162	-0.000
C2	-0.000	-0.636	+0.000	-0.000	+0.636	-0.000
C3	-0.000	-0.006	+0.000	-0.000	+0.006	-0.000
C4	-0.000	-0.805	+0.000	-0.000	+0.805	-0.000
BARRA: 7						
C1	-0.000	-0.028	+0.000	-0.000	+0.028	-0.000
C2	-0.000	-0.206	+0.000	-0.000	+0.206	-0.000
C3	-0.000	-0.002	+0.000	-0.000	+0.002	-0.000
C4	-0.000	-0.235	+0.000	-0.000	+0.235	-0.000
BARRA: 8						
C1	-0.000	-0.006	+0.000	-0.000	+0.006	-0.000
C2	-0.000	-0.070	+0.000	-0.000	+0.070	-0.000
C3	-0.000	-0.001	+0.000	-0.000	+0.001	-0.000
C4	-0.000	-0.077	+0.000	-0.000	+0.077	-0.000
BARRA: 9						
C1	-0.000	-0.002	+0.000	-0.000	+0.002	-0.000
C2	-0.000	-0.021	+0.000	-0.000	+0.021	-0.000
C3	-0.000	-0.000	+0.000	-0.000	+0.000	-0.000
C4	-0.000	-0.023	+0.000	-0.000	+0.023	-0.000
BARRA: 10						
C1	-0.000	-0.000	+0.000	-0.000	+0.000	-0.000
C2	-0.000	-0.005	+0.000	-0.000	+0.005	-0.000
C3	-0.000	-0.000	+0.000	-0.000	+0.000	-0.000
C4	-0.000	-0.006	+0.000	-0.000	+0.006	-0.000
BARRA: 11						
C1	-0.000	-0.000	+0.000	-0.000	+0.000	-0.000
C2	-0.000	-0.001	+0.000	-0.000	+0.001	-0.000
C3	-0.000	-0.000	+0.000	-0.000	+0.000	-0.000
C4	-0.000	-0.001	+0.000	-0.000	+0.001	-0.000
BARRA: 12						
C1	-0.000	+0.000	+0.000	-0.000	+0.000	-0.000
C2	-0.000	-0.000	+0.000	-0.000	+0.000	-0.000
C3	-0.000	-0.000	+0.000	-0.000	+0.000	-0.000
C4	-0.000	-0.000	+0.000	-0.000	+0.000	-0.000
BARRA: 13						
C1	+0.000	+0.000	-0.000	+0.000	+0.000	+0.000
C2	+0.000	+0.000	-0.000	+0.000	-0.000	+0.000
C3	+0.000	+0.000	-0.000	+0.000	-0.000	+0.000
C4	+0.000	+0.000	-0.000	+0.000	-0.000	+0.000
BARRA: 14						
C1	+0.000	+0.000	-0.000	+0.000	-0.000	+0.000
C2	+0.000	+0.001	-0.000	+0.000	-0.001	+0.000
C3	+0.000	+0.000	-0.000	+0.000	-0.000	+0.000
C4	+0.000	+0.001	-0.000	+0.000	-0.001	+0.000
BARRA: 15						
C1	+0.000	+0.000	-0.000	+0.000	-0.000	+0.000
C2	+0.000	+0.005	-0.000	+0.000	-0.005	+0.000
C3	+0.000	+0.000	-0.000	+0.000	-0.000	+0.000

HIPOT.	Qi	Mxi	Myi	Qj	Mxj	Myj
C4	+0.000	+0.005	-0.000	+0.000	-0.005	+0.000
BARRA: 16						
C1	+0.000	+0.001	-0.000	+0.000	-0.001	+0.000
C2	+0.000	+0.020	-0.000	+0.000	-0.020	+0.000
C3	+0.000	+0.000	-0.000	+0.000	-0.000	+0.000
C4	+0.000	+0.021	-0.000	+0.000	-0.021	+0.000
BARRA: 17						
C1	+0.000	+0.001	-0.000	+0.000	-0.001	+0.000
C2	+0.000	+0.058	-0.000	+0.000	-0.058	+0.000
C3	+0.000	+0.001	-0.000	+0.000	-0.001	+0.000
C4	+0.000	+0.060	-0.000	+0.000	-0.060	+0.000
BARRA: 18						
C1	-0.000	-0.014	+0.000	-0.000	+0.014	-0.000
C2	+0.000	+0.089	-0.000	+0.000	-0.089	+0.000
C3	+0.000	+0.001	-0.000	+0.000	-0.001	+0.000
C4	+0.000	+0.076	-0.000	+0.000	-0.076	+0.000
BARRA: 19						
C1	+0.000	-0.175	-0.000	+0.000	+0.175	+0.000
C2	+0.000	-0.329	-0.000	+0.000	+0.329	+0.000
C3	+0.000	-0.004	-0.000	+0.000	+0.004	+0.000
C4	+0.000	-0.507	-0.000	+0.000	+0.507	+0.000
BARRA: 20						
C1	-0.000	-0.527	+0.000	-0.000	+0.527	-0.000
C2	-0.000	-1.855	+0.000	-0.000	+1.855	-0.000
C3	-0.000	-0.020	+0.000	-0.000	+0.020	-0.000
C4	-0.000	-2.402	+0.000	-0.000	+2.402	-0.000
BARRA: 21						
C1	+6.727	-1.167	-1.242	-4.216	+1.167	+0.957
C2	+4.521	-3.827	-0.147	+4.521	+3.827	+7.769
C3	+0.046	-0.039	-0.001	+0.046	+0.039	+0.080
C4	+11.295	-5.033	-1.390	+0.352	+5.033	+8.806
BARRA: 22						
C1	+6.375	-0.580	-1.383	-4.568	+0.580	+0.199
C2	+3.203	-1.452	+0.463	+3.203	+1.452	+6.070
C3	+0.032	-0.014	+0.005	+0.032	+0.014	+0.062
C4	+9.611	-2.046	-0.915	-1.332	+2.046	+6.332
BARRA: 23						
C1	+5.577	-0.754	-1.586	-5.365	+0.754	-1.400
C2	+1.529	-1.626	+0.578	+1.529	+1.626	+3.255
C3	+0.015	-0.016	+0.007	+0.015	+0.016	+0.033

HIPOT.	Qi	Mxi	Myi	Qj	Mxj	Myj
C4	+7.121	-2.395	-1.001	-3.822	+2.395	+1.887
BARRA: 24						
C1	+8.502	-0.261	-3.151	-8.411	+0.261	-3.028
C2	+1.090	-0.378	-0.754	+1.090	+0.378	+2.195
C3	+0.011	-0.003	-0.007	+0.011	+0.003	+0.021
C4	+9.602	-0.642	-3.913	-7.311	+0.642	-0.812
BARRA: 25						
C1	+8.413	-0.053	-3.570	-8.499	+0.053	-3.686
C2	+0.076	-0.342	+0.388	+0.076	+0.342	+0.592
C3	+0.001	-0.003	+0.004	+0.001	+0.003	+0.006
C4	+8.490	-0.398	-3.179	-8.423	+0.398	-3.088
BARRA: 26						
C1	+8.446	-0.013	-3.771	-8.466	+0.013	-3.798
C2	+0.005	-0.200	+0.182	+0.005	+0.200	+0.197
C3	+0.000	-0.002	+0.002	+0.000	+0.002	+0.002
C4	+8.452	-0.215	-3.588	-8.461	+0.215	-3.600
BARRA: 27						
C1	+8.456	-0.005	-3.808	-8.457	+0.005	-3.809
C2	-0.005	-0.083	+0.087	-0.005	+0.083	+0.074
C3	-0.000	-0.001	+0.001	-0.000	+0.001	+0.001
C4	+8.451	-0.089	-3.720	-8.462	+0.089	-3.734
BARRA: 28						
C1	+8.456	-0.002	-3.811	-8.457	+0.002	-3.812
C2	-0.006	-0.026	+0.038	-0.006	+0.026	+0.022
C3	-0.000	-0.000	+0.000	-0.000	+0.000	+0.000
C4	+8.450	-0.028	-3.773	-8.463	+0.028	-3.790
BARRA: 29						
C1	+8.456	-0.000	-3.813	-8.456	+0.000	-3.813
C2	-0.003	-0.006	+0.013	-0.003	+0.006	+0.005
C3	-0.000	-0.000	+0.000	-0.000	+0.000	+0.000
C4	+8.453	-0.007	-3.800	-8.459	+0.007	-3.809
BARRA: 30						
C1	+8.456	-0.000	-3.814	-8.456	+0.000	-3.814
C2	-0.001	-0.001	+0.003	-0.001	+0.001	+0.000
C3	-0.000	-0.000	+0.000	-0.000	+0.000	+0.000
C4	+8.455	-0.001	-3.811	-8.457	+0.001	-3.813
BARRA: 31						
C1	+8.456	-0.000	-3.814	-8.456	+0.000	-3.814
C2	-0.000	-0.000	+0.000	-0.000	+0.000	-0.000
C3	-0.000	-0.000	+0.000	-0.000	+0.000	-0.000

HIPOT.	Qi	Mxi	Myi	Qj	Mxj	Myj
C4	+8.456	-0.000	-3.813	-8.457	+0.000	-3.814
BARRA: 32						
C1	+8.456	+0.000	-3.814	-8.456	+0.000	-3.814
C2	+0.000	+0.000	-0.000	+0.000	-0.000	+0.000
C3	+0.000	+0.000	-0.000	+0.000	-0.000	+0.000
C4	+8.456	+0.000	-3.814	-8.456	-0.000	-3.813
BARRA: 33						
C1	+8.456	+0.000	-3.814	-8.456	-0.000	-3.814
C2	+0.001	+0.001	+0.000	+0.001	-0.001	+0.003
C3	+0.000	+0.000	+0.000	+0.000	-0.000	+0.000
C4	+8.457	+0.001	-3.813	-8.455	-0.001	-3.811
BARRA: 34						
C1	+8.456	+0.000	-3.814	-8.456	-0.000	-3.813
C2	+0.003	+0.006	+0.004	+0.003	-0.006	+0.012
C3	+0.000	+0.000	+0.000	+0.000	-0.000	+0.000
C4	+8.459	+0.007	-3.809	-8.453	-0.007	-3.801
BARRA: 35						
C1	+8.457	+0.002	-3.813	-8.456	-0.002	-3.812
C2	+0.006	+0.026	+0.020	+0.006	-0.026	+0.037
C3	+0.000	+0.000	+0.000	+0.000	-0.000	+0.000
C4	+8.463	+0.028	-3.792	-8.449	-0.028	-3.774
BARRA: 36						
C1	+8.457	+0.006	-3.811	-8.456	-0.006	-3.810
C2	+0.005	+0.085	+0.068	+0.005	-0.085	+0.083
C3	+0.000	+0.001	+0.001	+0.000	-0.001	+0.001
C4	+8.462	+0.092	-3.742	-8.450	-0.092	-3.726
BARRA: 37						
C1	+8.444	+0.019	-3.808	-8.469	-0.019	-3.841
C2	-0.065	+0.217	+0.170	-0.065	-0.217	-0.007
C3	-0.001	+0.002	+0.002	-0.001	-0.002	-0.000
C4	+8.378	+0.238	-3.636	-8.535	-0.238	-3.849
BARRA: 38						
C1	+8.321	+0.124	-3.890	-8.592	-0.124	-4.257
C2	-0.597	+0.554	+0.037	-0.597	-0.554	-1.579
C3	-0.006	+0.005	-0.000	-0.006	-0.005	-0.016
C4	+7.717	+0.683	-3.853	-9.195	-0.683	-5.853
BARRA: 39						
C1	+9.283	+1.460	-5.268	-7.630	-1.460	-3.032
C2	+1.008	+3.896	-4.154	+1.008	-3.896	-1.428
C3	+0.011	+0.039	-0.043	+0.011	-0.039	-0.015

HIPOT.	Qi	Mxi	Myi	Qj	Mxj	Myj
C4	+10.301	+5.395	-9.465	-6.612	-5.395	-4.474
BARRA: 40						
C1	+5.242	+3.463	-5.010	-5.701	-3.463	-5.412
C2	-2.524	+9.590	-8.401	-2.524	-9.590	-12.820
C3	-0.025	+0.097	-0.086	-0.025	-0.097	-0.130
C4	+2.693	+13.150	-13.497	-8.250	-13.150	-18.362
BARRA: 41						
C1	+4.921	+3.404	-0.899	-3.834	-3.404	+0.053
C2	+3.220	+10.310	-0.182	+3.220	-10.310	+5.456
C3	+0.033	+0.105	-0.001	+0.033	-0.105	+0.056
C4	+8.174	+13.820	-1.082	-0.581	-13.820	+5.565
BARRA: 42						
C1	+4.374	+2.606	-1.685	-4.381	-2.606	-1.691
C2	+0.227	+8.385	+0.111	+0.227	-8.385	+0.508
C3	+0.001	+0.086	+0.002	+0.001	-0.086	+0.004
C4	+4.602	+11.077	-1.572	-4.153	-11.077	-1.179
BARRA: 43						
C1	+6.838	+0.856	-2.697	-6.692	-0.856	-2.500
C2	+1.021	+2.590	-1.864	+1.021	-2.590	+0.897
C3	+0.010	+0.026	-0.019	+0.010	-0.026	+0.008
C4	+7.868	+3.472	-4.581	-5.662	-3.472	-1.595
BARRA: 44						
C1	+6.716	+0.207	-2.901	-6.814	-0.207	-3.033
C2	+0.246	+0.587	-0.229	+0.246	-0.587	+0.436
C3	+0.002	+0.006	-0.003	+0.002	-0.006	+0.004
C4	+6.964	+0.800	-3.133	-6.566	-0.800	-2.593
BARRA: 45						
C1	+6.770	+0.023	-3.047	-6.760	-0.023	-3.034
C2	+0.077	+0.065	+0.086	+0.077	-0.065	+0.293
C3	+0.001	+0.001	+0.001	+0.001	-0.001	+0.003
C4	+6.847	+0.089	-2.961	-6.683	-0.089	-2.738
BARRA: 46						
C1	+6.765	+0.002	-3.045	-6.765	-0.002	-3.044
C2	-0.001	+0.006	+0.116	-0.001	-0.006	+0.114
C3	+0.000	+0.000	+0.001	+0.000	-0.000	+0.001
C4	+6.765	+0.009	-2.928	-6.765	-0.009	-2.929
BARRA: 47						
C1	+6.765	+0.000	-3.048	-6.765	-0.000	-3.049
C2	-0.008	+0.001	+0.054	-0.008	-0.001	+0.033
C3	-0.000	+0.000	+0.001	-0.000	-0.000	+0.000

HIPOT.	Qi	Mxi	Myi	Qj	Mxj	Myj
C4	+6.757	+0.002	-2.994	-6.773	-0.002	-3.016
BARRA: 48						
C1	+6.765	+0.000	-3.050	-6.765	-0.000	-3.051
C2	-0.004	+0.000	+0.018	-0.004	-0.000	+0.007
C3	-0.000	+0.000	+0.000	-0.000	-0.000	+0.000
C4	+6.761	+0.000	-3.032	-6.769	-0.000	-3.043
BARRA: 49						
C1	+6.765	+0.000	-3.051	-6.765	-0.000	-3.051
C2	-0.001	+0.000	+0.004	-0.001	-0.000	+0.001
C3	-0.000	+0.000	+0.000	-0.000	-0.000	+0.000
C4	+6.763	+0.000	-3.046	-6.767	-0.000	-3.050
BARRA: 50						
C1	+6.765	+0.000	-3.051	-6.765	+0.000	-3.051
C2	-0.000	+0.000	+0.001	-0.000	-0.000	-0.000
C3	-0.000	-0.000	+0.000	-0.000	+0.000	-0.000
C4	+6.765	+0.000	-3.050	-6.765	-0.000	-3.051
BARRA: 51						
C1	+6.765	+0.000	-3.051	-6.765	-0.000	-3.051
C2	+0.000	+0.000	-0.000	+0.000	-0.000	+0.001
C3	+0.000	+0.000	-0.000	+0.000	-0.000	+0.000
C4	+6.765	+0.000	-3.051	-6.765	-0.000	-3.050
BARRA: 52						
C1	+6.765	+0.000	-3.051	-6.765	-0.000	-3.051
C2	+0.001	+0.000	+0.001	+0.001	-0.000	+0.004
C3	+0.000	+0.000	+0.000	+0.000	-0.000	+0.000
C4	+6.766	+0.000	-3.050	-6.764	-0.000	-3.046
BARRA: 53						
C1	+6.765	+0.000	-3.051	-6.765	-0.000	-3.050
C2	+0.004	+0.000	+0.007	+0.004	-0.000	+0.018
C3	+0.000	+0.000	+0.000	+0.000	-0.000	+0.000
C4	+6.769	+0.000	-3.043	-6.761	-0.000	-3.032
BARRA: 54						
C1	+6.765	+0.000	-3.049	-6.765	-0.000	-3.048
C2	+0.008	+0.001	+0.033	+0.008	-0.001	+0.054
C3	+0.000	+0.000	+0.000	+0.000	-0.000	+0.001
C4	+6.773	+0.002	-3.016	-6.757	-0.002	-2.994
BARRA: 55						
C1	+6.765	+0.002	-3.044	-6.765	-0.002	-3.045
C2	+0.001	+0.007	+0.114	+0.001	-0.007	+0.116
C3	-0.000	+0.000	+0.001	-0.000	-0.000	+0.001

HIPOT.	Qi	Mxi	Myi	Qj	Mxj	Myj
C4	+6.765	+0.009	-2.929	-6.765	-0.009	-2.928
BARRA: 56						
C1	+6.760	+0.023	-3.034	-6.770	-0.023	-3.047
C2	-0.077	+0.065	+0.293	-0.077	-0.065	+0.086
C3	-0.001	+0.001	+0.003	-0.001	-0.001	+0.001
C4	+6.683	+0.089	-2.738	-6.847	-0.089	-2.961
BARRA: 57						
C1	+6.814	+0.207	-3.033	-6.716	-0.207	-2.901
C2	-0.246	+0.587	+0.436	-0.246	-0.587	-0.229
C3	-0.002	+0.006	+0.004	-0.002	-0.006	-0.003
C4	+6.566	+0.800	-2.593	-6.964	-0.800	-3.133
BARRA: 58						
C1	+6.692	+0.856	-2.500	-6.838	-0.856	-2.697
C2	-1.021	+2.590	+0.897	-1.021	-2.590	-1.864
C3	-0.010	+0.026	+0.008	-0.010	-0.026	-0.019
C4	+5.662	+3.472	-1.595	-7.868	-3.472	-4.580
BARRA: 59						
C1	+4.381	+2.606	-1.691	-4.374	-2.606	-1.685
C2	-0.227	+8.385	+0.508	-0.227	-8.385	+0.111
C3	-0.001	+0.086	+0.004	-0.001	-0.086	+0.002
C4	+4.153	+11.077	-1.179	-4.602	-11.077	-1.572
BARRA: 60						
C1	+3.834	+3.404	+0.053	-4.921	-3.404	-0.899
C2	-3.220	+10.310	+5.456	-3.220	-10.310	-0.182
C3	-0.033	+0.105	+0.056	-0.033	-0.105	-0.001
C4	+0.581	+13.820	+5.565	-8.174	-13.820	-1.082
BARRA: 61						
C1	+5.701	+3.463	-5.412	-5.242	-3.463	-5.010
C2	+2.524	+9.590	-12.820	+2.524	-9.590	-8.401
C3	+0.025	+0.097	-0.130	+0.025	-0.097	-0.086
C4	+8.250	+13.150	-18.363	-2.692	-13.150	-13.497
BARRA: 62						
C1	+7.630	+1.460	-3.031	-9.283	-1.460	-5.268
C2	-1.007	+3.896	-1.427	-1.007	-3.896	-4.154
C3	-0.011	+0.039	-0.015	-0.011	-0.039	-0.043
C4	+6.612	+5.395	-4.474	-10.301	-5.395	-9.465
BARRA: 63						
C1	+8.592	+0.124	-4.257	-8.321	-0.124	-3.890
C2	+0.597	+0.554	-1.579	+0.597	-0.554	+0.037
C3	+0.006	+0.005	-0.016	+0.006	-0.005	-0.000

HIPOT.	Qi	Mxi	Myi	Qj	Mxj	Myj
C4	+9.195	+0.683	-5.853	-7.717	-0.683	-3.853
BARRA: 64						
C1	+8.469	+0.019	-3.841	-8.444	-0.019	-3.808
C2	+0.066	+0.217	-0.007	+0.066	-0.217	+0.170
C3	+0.001	+0.002	-0.000	+0.001	-0.002	+0.002
C4	+8.535	+0.238	-3.849	-8.378	-0.238	-3.636
BARRA: 65						
C1	+8.456	+0.006	-3.810	-8.457	-0.006	-3.811
C2	-0.005	+0.085	+0.083	-0.005	-0.085	+0.068
C3	-0.000	+0.001	+0.001	-0.000	-0.001	+0.001
C4	+8.450	+0.092	-3.726	-8.462	-0.092	-3.742
BARRA: 66						
C1	+8.456	+0.002	-3.812	-8.457	-0.002	-3.813
C2	-0.006	+0.026	+0.037	-0.006	-0.026	+0.020
C3	-0.000	+0.000	+0.000	-0.000	-0.000	+0.000
C4	+8.449	+0.028	-3.774	-8.463	-0.028	-3.792
BARRA: 67						
C1	+8.456	+0.000	-3.813	-8.456	-0.000	-3.814
C2	-0.003	+0.006	+0.012	-0.003	-0.006	+0.004
C3	-0.000	+0.000	+0.000	-0.000	-0.000	+0.000
C4	+8.453	+0.007	-3.801	-8.459	-0.007	-3.809
BARRA: 68						
C1	+8.456	+0.000	-3.814	-8.456	-0.000	-3.814
C2	-0.001	+0.001	+0.003	-0.001	-0.001	+0.000
C3	-0.000	+0.000	+0.000	-0.000	-0.000	+0.000
C4	+8.455	+0.001	-3.811	-8.457	-0.001	-3.813
BARRA: 69						
C1	+8.456	+0.000	-3.814	-8.456	-0.000	-3.814
C2	-0.000	+0.000	+0.000	-0.000	-0.000	-0.000
C3	-0.000	+0.000	+0.000	-0.000	-0.000	-0.000
C4	+8.456	+0.000	-3.813	-8.456	-0.000	-3.814
BARRA: 70						
C1	+8.456	-0.000	-3.814	-8.456	+0.000	-3.814
C2	+0.000	-0.000	-0.000	+0.000	+0.000	+0.000
C3	+0.000	-0.000	-0.000	+0.000	+0.000	+0.000
C4	+8.456	-0.000	-3.814	-8.456	+0.000	-3.813
BARRA: 71						
C1	+8.456	-0.000	-3.814	-8.456	+0.000	-3.814
C2	+0.001	-0.001	+0.000	+0.001	+0.001	+0.003
C3	+0.000	-0.000	+0.000	+0.000	+0.000	+0.000

HIPOT.	Qi	Mxi	Myi	Qj	Mxj	Myj
C4	+8.457	-0.001	-3.813	-8.455	+0.001	-3.811
BARRA: 72						
C1	+8.456	-0.000	-3.813	-8.456	+0.000	-3.813
C2	+0.003	-0.006	+0.005	+0.003	+0.006	+0.013
C3	+0.000	-0.000	+0.000	+0.000	+0.000	+0.000
C4	+8.459	-0.007	-3.809	-8.453	+0.007	-3.800
BARRA: 73						
C1	+8.457	-0.002	-3.812	-8.456	+0.002	-3.811
C2	+0.006	-0.026	+0.022	+0.006	+0.026	+0.038
C3	+0.000	-0.000	+0.000	+0.000	+0.000	+0.000
C4	+8.463	-0.028	-3.790	-8.450	+0.028	-3.773
BARRA: 74						
C1	+8.457	-0.005	-3.809	-8.456	+0.005	-3.808
C2	+0.005	-0.083	+0.074	+0.005	+0.083	+0.087
C3	+0.000	-0.001	+0.001	+0.000	+0.001	+0.001
C4	+8.462	-0.089	-3.734	-8.451	+0.089	-3.720
BARRA: 75						
C1	+8.466	-0.013	-3.798	-8.446	+0.013	-3.771
C2	-0.005	-0.200	+0.197	-0.005	+0.200	+0.182
C3	-0.000	-0.002	+0.002	-0.000	+0.002	+0.002
C4	+8.461	-0.215	-3.600	-8.452	+0.215	-3.588
BARRA: 76						
C1	+8.499	-0.053	-3.686	-8.413	+0.053	-3.570
C2	-0.076	-0.342	+0.593	-0.076	+0.342	+0.388
C3	-0.001	-0.003	+0.006	-0.001	+0.003	+0.004
C4	+8.423	-0.398	-3.088	-8.490	+0.398	-3.179
BARRA: 77						
C1	+8.411	-0.261	-3.028	-8.502	+0.261	-3.151
C2	-1.090	-0.378	+2.195	-1.090	+0.378	-0.754
C3	-0.011	-0.003	+0.021	-0.011	+0.003	-0.007
C4	+7.311	-0.642	-0.812	-9.602	+0.642	-3.912
BARRA: 78						
C1	+5.365	-0.754	-1.400	-5.577	+0.754	-1.586
C2	-1.529	-1.626	+3.255	-1.529	+1.626	+0.578
C3	-0.015	-0.016	+0.033	-0.015	+0.016	+0.007
C4	+3.822	-2.395	+1.887	-7.121	+2.395	-1.001
BARRA: 79						
C1	+4.568	-0.580	+0.199	-6.375	+0.580	-1.383
C2	-3.203	-1.452	+6.070	-3.203	+1.452	+0.463
C3	-0.032	-0.014	+0.062	-0.032	+0.014	+0.005

HIPOT.	Qi	Mxi	Myi	Qj	Mxj	Myj
C4	+1.332	-2.046	+6.332	-9.610	+2.046	-0.915
BARRA: 80						
C1	+4.216	-1.167	+0.957	-6.727	+1.167	-1.242
C2	-4.521	-3.827	+7.769	-4.521	+3.827	-0.147
C3	-0.046	-0.039	+0.080	-0.046	+0.039	-0.001
C4	-0.352	-5.033	+8.806	-11.295	+5.033	-1.390
BARRA: 81						
C1	+0.000	-0.527	-0.000	+0.000	+0.527	+0.000
C2	+0.000	-1.855	-0.000	+0.000	+1.855	+0.000
C3	+0.000	-0.020	-0.000	+0.000	+0.020	+0.000
C4	+0.000	-2.402	-0.000	+0.000	+2.402	+0.000
BARRA: 82						
C1	-0.000	-0.175	+0.000	-0.000	+0.175	-0.000
C2	-0.000	-0.329	+0.000	-0.000	+0.329	-0.000
C3	-0.000	-0.004	+0.000	-0.000	+0.004	-0.000
C4	-0.000	-0.507	+0.000	-0.000	+0.507	-0.000
BARRA: 83						
C1	+0.000	-0.014	-0.000	+0.000	+0.014	+0.000
C2	-0.000	+0.089	+0.000	-0.000	-0.089	-0.000
C3	-0.000	+0.001	+0.000	-0.000	-0.001	-0.000
C4	-0.000	+0.076	+0.000	-0.000	-0.076	-0.000
BARRA: 84						
C1	-0.000	+0.001	+0.000	-0.000	-0.001	-0.000
C2	-0.000	+0.058	+0.000	-0.000	-0.058	-0.000
C3	-0.000	+0.001	+0.000	-0.000	-0.001	-0.000
C4	-0.000	+0.060	+0.000	-0.000	-0.060	-0.000
BARRA: 85						
C1	-0.000	+0.001	+0.000	-0.000	-0.001	-0.000
C2	-0.000	+0.020	+0.000	-0.000	-0.020	-0.000
C3	-0.000	+0.000	+0.000	-0.000	-0.000	-0.000
C4	-0.000	+0.021	+0.000	-0.000	-0.021	-0.000
BARRA: 86						
C1	-0.000	+0.000	+0.000	-0.000	-0.000	-0.000
C2	-0.000	+0.005	+0.000	-0.000	-0.005	-0.000
C3	-0.000	+0.000	+0.000	-0.000	-0.000	-0.000
C4	-0.000	+0.005	+0.000	-0.000	-0.005	-0.000
BARRA: 87						
C1	-0.000	+0.000	+0.000	-0.000	-0.000	-0.000
C2	-0.000	+0.001	+0.000	-0.000	-0.001	-0.000
C3	-0.000	+0.000	+0.000	-0.000	-0.000	-0.000

HIPOT.	Qi	Mxi	Myi	Qj	Mxj	Myj
C4	-0.000	+0.001	+0.000	-0.000	-0.001	-0.000
BARRA: 88						
C1	-0.000	+0.000	+0.000	-0.000	+0.000	-0.000
C2	-0.000	+0.000	+0.000	-0.000	-0.000	-0.000
C3	-0.000	+0.000	+0.000	-0.000	-0.000	-0.000
C4	-0.000	+0.000	+0.000	-0.000	-0.000	-0.000
BARRA: 89						
C1	+0.000	+0.000	-0.000	+0.000	+0.000	+0.000
C2	+0.000	-0.000	-0.000	+0.000	+0.000	+0.000
C3	+0.000	-0.000	-0.000	+0.000	+0.000	+0.000
C4	+0.000	-0.000	-0.000	+0.000	+0.000	+0.000
BARRA: 90						
C1	+0.000	-0.000	-0.000	+0.000	+0.000	+0.000
C2	+0.000	-0.001	-0.000	+0.000	+0.001	+0.000
C3	+0.000	-0.000	-0.000	+0.000	+0.000	+0.000
C4	+0.000	-0.001	-0.000	+0.000	+0.001	+0.000
BARRA: 91						
C1	+0.000	-0.000	-0.000	+0.000	+0.000	+0.000
C2	+0.000	-0.005	-0.000	+0.000	+0.005	+0.000
C3	+0.000	-0.000	-0.000	+0.000	+0.000	+0.000
C4	+0.000	-0.005	-0.000	+0.000	+0.005	+0.000
BARRA: 92						
C1	+0.000	-0.002	-0.000	+0.000	+0.002	+0.000
C2	+0.000	-0.021	-0.000	+0.000	+0.021	+0.000
C3	+0.000	-0.000	-0.000	+0.000	+0.000	+0.000
C4	+0.000	-0.023	-0.000	+0.000	+0.023	+0.000
BARRA: 93						
C1	+0.000	-0.006	-0.000	+0.000	+0.006	+0.000
C2	+0.000	-0.071	-0.000	+0.000	+0.071	+0.000
C3	+0.000	-0.001	-0.000	+0.000	+0.001	+0.000
C4	+0.000	-0.077	-0.000	+0.000	+0.077	+0.000
BARRA: 94						
C1	+0.000	-0.028	-0.000	+0.000	+0.028	+0.000
C2	+0.000	-0.206	-0.000	+0.000	+0.206	+0.000
C3	+0.000	-0.002	-0.000	+0.000	+0.002	+0.000
C4	+0.000	-0.235	-0.000	+0.000	+0.235	+0.000
BARRA: 95						
C1	+0.000	-0.162	-0.000	+0.000	+0.162	+0.000
C2	+0.000	-0.636	-0.000	+0.000	+0.636	+0.000
C3	+0.000	-0.006	-0.000	+0.000	+0.006	+0.000

HIPOT.	Qi	Mxi	Myi	Qj	Mxj	Myj
C4	+0.000	-0.805	-0.000	+0.000	+0.805	+0.000
BARRA:	96					
C1	-0.000	-0.844	+0.000	-0.000	+0.844	-0.000
C2	-0.000	-2.273	+0.000	-0.000	+2.273	-0.000
C3	-0.000	-0.022	+0.000	-0.000	+0.022	-0.000
C4	-0.000	-3.139	+0.000	-0.000	+3.139	-0.000
BARRA:	97					
C1	-0.000	-0.574	+0.000	-0.000	+0.574	-0.000
C2	-0.000	-1.195	+0.000	-0.000	+1.195	-0.000
C3	-0.000	-0.011	+0.000	-0.000	+0.011	-0.000
C4	-0.000	-1.781	+0.000	-0.000	+1.781	-0.000
BARRA:	98					
C1	+0.000	-1.462	-0.000	+0.000	+1.462	+0.000
C2	+0.000	-4.223	+0.000	+0.000	+4.223	+0.000
C3	-0.000	-0.042	+0.000	-0.000	+0.042	+0.000
C4	+0.000	-5.728	+0.000	+0.000	+5.728	+0.000
BARRA:	99					
C1	-0.000	-2.466	+0.000	-0.000	+2.466	-0.000
C2	-0.000	-7.138	+0.000	-0.000	+7.138	-0.000
C3	-0.000	-0.073	+0.000	-0.000	+0.073	-0.000
C4	-0.000	-9.677	+0.000	-0.000	+9.677	-0.000
BARRA:	100					
C1	+0.000	-1.917	-0.000	+0.000	+1.917	+0.000
C2	-0.000	-6.530	+0.000	-0.000	+6.530	-0.000
C3	-0.000	-0.067	+0.000	-0.000	+0.067	-0.000
C4	-0.000	-8.513	+0.000	-0.000	+8.513	-0.000
BARRA:	101					
C1	+6.519	+2.000	-8.858	+6.519	-2.000	+4.180
C2	+33.905	+5.637	-29.721	+4.565	-5.637	+8.750
C3	+0.347	+0.057	-0.304	+0.047	-0.057	+0.089
C4	+40.771	+7.694	-38.883	+11.131	-7.694	+13.019
BARRA:	102					
C1	+10.936	+1.711	-12.199	+10.936	-1.711	+9.673
C2	+45.717	+5.014	-38.418	+16.377	-5.014	+23.677
C3	+0.467	+0.051	-0.392	+0.167	-0.051	+0.242
C4	+57.120	+6.775	-51.009	+27.480	-6.775	+33.592
BARRA:	103					
C1	+13.088	+1.042	-13.143	+13.088	-1.042	+13.032
C2	+52.574	+2.840	-41.591	+23.234	-2.840	+34.217
C3	+0.536	+0.028	-0.424	+0.236	-0.028	+0.349

HIPOT.	Qi	Mxi	Myi	Qj	Mxj	Myj
C4	+66.198	+3.910	-55.158	+36.558	-3.910	+47.599
BARRA:	104					
C1	+19.384	+1.240	-19.442	+19.384	-1.240	+19.327
C2	+74.211	+1.993	-60.257	+36.831	-1.993	+50.785
C3	+0.755	+0.019	-0.613	+0.375	-0.019	+0.517
C4	+94.350	+3.252	-80.312	+56.590	-3.252	+70.628
BARRA:	105					
C1	+23.615	+0.354	-21.863	+23.615	-0.354	+25.366
C2	+89.466	+1.275	-66.934	+44.106	-1.275	+66.638
C3	+0.908	+0.012	-0.679	+0.448	-0.012	+0.676
C4	+113.989	+1.640	-89.476	+68.169	-1.641	+92.681
BARRA:	106					
C1	+23.694	+0.059	-21.598	+23.694	-0.059	+25.789
C2	+90.437	+0.494	-66.837	+45.077	-0.494	+68.678
C3	+0.917	+0.005	-0.678	+0.457	-0.005	+0.697
C4	+115.048	+0.557	-89.113	+69.228	-0.557	+95.164
BARRA:	107					
C1	+23.679	+0.013	-21.534	+23.679	-0.013	+25.825
C2	+90.656	+0.193	-66.900	+45.296	-0.193	+69.053
C3	+0.919	+0.002	-0.678	+0.459	-0.002	+0.700
C4	+115.255	+0.207	-89.112	+69.435	-0.207	+95.579
BARRA:	108					
C1	+23.677	+0.004	-21.526	+23.677	-0.004	+25.828
C2	+90.715	+0.064	-66.936	+45.355	-0.064	+69.134
C3	+0.920	+0.001	-0.679	+0.460	-0.001	+0.701
C4	+115.312	+0.069	-89.141	+69.492	-0.069	+95.664
BARRA:	109					
C1	+23.678	+0.001	-21.525	+23.678	-0.001	+25.830
C2	+90.725	+0.017	-66.941	+45.365	-0.017	+69.149
C3	+0.920	+0.000	-0.679	+0.460	-0.000	+0.701
C4	+115.323	+0.018	-89.145	+69.503	-0.018	+95.680
BARRA:	110					
C1	+23.678	+0.000	-21.525	+23.678	-0.000	+25.830
C2	+90.723	+0.003	-66.938	+45.363	-0.003	+69.149
C3	+0.920	+0.000	-0.679	+0.460	-0.000	+0.701
C4	+115.321	+0.003	-89.142	+69.501	-0.003	+95.680
BARRA:	111					
C1	+23.678	+0.000	-21.525	+23.678	-0.000	+25.830
C2	+90.721	+0.000	-66.936	+45.361	-0.000	+69.147
C3	+0.920	+0.000	-0.679	+0.460	-0.000	+0.701

HIPOT.	Qi	Mxi	Myi	Qj	Mxj	Myj
C4	+115.319	+0.000	-89.140	+69.499	-0.000	+95.678
BARRA:	112					
C1	+23.678	+0.000	-21.525	+23.678	-0.000	+25.830
C2	+90.721	+0.000	-66.935	+45.361	-0.000	+69.146
C3	+0.920	+0.000	-0.679	+0.460	-0.000	+0.701
C4	+115.318	+0.000	-89.139	+69.498	-0.000	+95.677
BARRA:	113					
C1	+23.678	-0.000	-21.525	+23.678	-0.000	+25.830
C2	+90.721	-0.000	-66.936	+45.361	+0.000	+69.147
C3	+0.920	-0.000	-0.679	+0.460	+0.000	+0.701
C4	+115.319	-0.000	-89.139	+69.499	+0.000	+95.678
BARRA:	114					
C1	+23.678	-0.000	-21.525	+23.678	+0.000	+25.830
C2	+90.723	-0.003	-66.938	+45.363	+0.003	+69.149
C3	+0.920	-0.000	-0.679	+0.460	+0.000	+0.701
C4	+115.321	-0.003	-89.142	+69.501	+0.003	+95.680
BARRA:	115					
C1	+23.678	-0.001	-21.525	+23.678	+0.001	+25.830
C2	+90.725	-0.016	-66.940	+45.365	+0.016	+69.150
C3	+0.920	-0.000	-0.679	+0.460	+0.000	+0.701
C4	+115.323	-0.017	-89.144	+69.503	+0.017	+95.682
BARRA:	116					
C1	+23.677	-0.003	-21.523	+23.677	+0.003	+25.831
C2	+90.715	-0.062	-66.929	+45.355	+0.062	+69.141
C3	+0.920	-0.001	-0.679	+0.460	+0.001	+0.701
C4	+115.312	-0.066	-89.132	+69.492	+0.066	+95.673
BARRA:	117					
C1	+23.668	-0.009	-21.506	+23.668	+0.009	+25.830
C2	+90.625	-0.182	-66.822	+45.265	+0.182	+69.069
C3	+0.919	-0.002	-0.678	+0.459	+0.002	+0.700
C4	+115.212	-0.192	-89.005	+69.392	+0.192	+95.599
BARRA:	118					
C1	+23.625	+0.008	-21.384	+23.625	-0.008	+25.865
C2	+90.231	-0.311	-66.219	+44.871	+0.311	+68.884
C3	+0.915	-0.003	-0.672	+0.455	+0.003	+0.699
C4	+114.771	-0.306	-88.274	+68.951	+0.305	+95.448
BARRA:	119					
C1	+24.493	+0.422	-21.498	+24.493	-0.422	+27.487
C2	+91.790	+0.916	-65.683	+46.430	-0.916	+72.537
C3	+0.931	+0.010	-0.667	+0.471	-0.010	+0.736

HIPOT.	Qi	Mxi	Myi	Qj	Mxj	Myj
C4	+117.214	+1.349	-87.847	+71.394	-1.349	+100.761
BARRA:	120					
C1	+18.573	+0.462	-14.926	+18.573	-0.462	+22.220
C2	+72.132	+2.585	-47.888	+34.752	-2.585	+58.997
C3	+0.734	+0.027	-0.487	+0.354	-0.027	+0.601
C4	+91.439	+3.074	-63.302	+53.679	-3.074	+81.817
BARRA:	121					
C1	+0.345	-0.629	+9.086	+0.345	+0.629	+9.776
C2	+17.696	-2.293	+21.302	-11.644	+2.293	+27.354
C3	+0.181	-0.024	+0.217	-0.119	+0.024	+0.279
C4	+18.222	-2.946	+30.605	-11.418	+2.946	+37.408
BARRA:	122					
C1	+2.942	-0.743	+13.206	+2.942	+0.743	+19.091
C2	+24.908	-2.652	+34.392	-4.432	+2.652	+54.868
C3	+0.254	-0.027	+0.350	-0.046	+0.027	+0.559
C4	+28.105	-3.422	+47.948	-1.535	+3.422	+74.518
BARRA:	123					
C1	+5.517	-0.511	+18.835	+5.517	+0.511	+29.869
C2	+37.270	-2.016	+49.536	-0.110	+2.016	+86.696
C3	+0.379	-0.021	+0.504	-0.001	+0.021	+0.882
C4	+43.166	-2.548	+68.875	+5.406	+2.548	+117.447
BARRA:	124					
C1	+6.790	-0.188	+25.158	+6.790	+0.188	+38.739
C2	+45.120	-0.532	+66.602	-0.240	+0.532	+111.482
C3	+0.458	-0.006	+0.677	-0.002	+0.006	+1.132
C4	+52.368	-0.726	+92.437	+6.548	+0.726	+151.353
BARRA:	125					
C1	+6.748	-0.026	+25.749	+6.748	+0.026	+39.246
C2	+45.148	+0.083	+68.536	-0.212	-0.083	+113.471
C3	+0.458	+0.001	+0.695	-0.002	-0.001	+1.151
C4	+52.354	+0.058	+94.981	+6.534	-0.058	+153.869
BARRA:	126					
C1	+6.757	+0.003	+25.817	+6.757	-0.003	+39.332
C2	+45.307	+0.083	+68.937	-0.053	-0.083	+114.190
C3	+0.459	+0.001	+0.699	-0.001	-0.001	+1.158
C4	+52.523	+0.087	+95.453	+6.703	-0.087	+154.680
BARRA:	127					
C1	+6.765	+0.001	+25.825	+6.765	-0.001	+39.354
C2	+45.356	+0.029	+69.077	-0.004	-0.029	+114.430
C3	+0.460	+0.000	+0.701	-0.000	-0.000	+1.160

HIPOT.	Qi	Mxi	Myi	Qj	Mxj	Myj
C4	+52.581	+0.031	+95.602	+6.761	-0.031	+154.945
BARRA:	128					
C1	+6.765	+0.000	+25.829	+6.765	-0.000	+39.359
C2	+45.362	+0.007	+69.129	+0.002	-0.007	+114.493
C3	+0.460	+0.000	+0.701	+0.000	-0.000	+1.161
C4	+52.587	+0.008	+95.659	+6.767	-0.008	+155.013
BARRA:	129					
C1	+6.765	+0.000	+25.830	+6.765	-0.000	+39.360
C2	+45.361	+0.001	+69.143	+0.001	-0.001	+114.506
C3	+0.460	+0.000	+0.701	+0.000	-0.000	+1.161
C4	+52.586	+0.001	+95.674	+6.766	-0.001	+155.027
BARRA:	130					
C1	+6.765	+0.000	+25.830	+6.765	-0.000	+39.360
C2	+45.360	+0.000	+69.146	+0.000	-0.000	+114.507
C3	+0.460	+0.000	+0.701	+0.000	-0.000	+1.161
C4	+52.585	+0.000	+95.677	+6.765	-0.000	+155.028
BARRA:	131					
C1	+6.765	+0.000	+25.830	+6.765	-0.000	+39.360
C2	+45.360	+0.000	+69.146	+0.000	-0.000	+114.507
C3	+0.460	+0.000	+0.701	-0.000	-0.000	+1.161
C4	+52.585	+0.000	+95.677	+6.765	-0.000	+155.028
BARRA:	132					
C1	+6.765	+0.000	+25.830	+6.765	-0.000	+39.360
C2	+45.360	-0.000	+69.146	+0.000	+0.000	+114.507
C3	+0.460	-0.000	+0.701	+0.000	+0.000	+1.161
C4	+52.586	-0.000	+95.677	+6.766	+0.000	+155.028
BARRA:	133					
C1	+6.765	-0.000	+25.830	+6.765	+0.000	+39.360
C2	+45.361	-0.001	+69.143	+0.001	+0.001	+114.506
C3	+0.460	-0.000	+0.701	+0.000	+0.000	+1.161
C4	+52.586	-0.001	+95.674	+6.766	+0.001	+155.027
BARRA:	134					
C1	+6.765	-0.001	+25.829	+6.765	+0.001	+39.359
C2	+45.362	-0.008	+69.130	+0.002	+0.008	+114.494
C3	+0.460	-0.000	+0.701	+0.000	+0.000	+1.161
C4	+52.587	-0.009	+95.661	+6.767	+0.009	+155.014
BARRA:	135					
C1	+6.765	-0.002	+25.827	+6.765	+0.002	+39.356
C2	+45.356	-0.031	+69.082	-0.004	+0.031	+114.435
C3	+0.460	-0.000	+0.701	-0.000	+0.000	+1.161

HIPOT.	Qi	Mxi	Myi	Qj	Mxj	Myj
C4	+52.581	-0.034	+95.610	+6.761	+0.034	+154.952
BARRA:	136					
C1	+6.768	-0.007	+25.817	+6.768	+0.007	+39.353
C2	+45.336	-0.094	+68.937	-0.024	+0.094	+114.248
C3	+0.460	-0.001	+0.699	-0.000	+0.001	+1.159
C4	+52.564	-0.102	+95.452	+6.744	+0.102	+154.760
BARRA:	137					
C1	+6.835	-0.041	+25.759	+6.835	+0.041	+39.430
C2	+45.403	-0.266	+68.547	+0.043	+0.266	+113.994
C3	+0.460	-0.003	+0.696	+0.000	+0.003	+1.157
C4	+52.699	-0.310	+95.002	+6.879	+0.310	+154.580
BARRA:	138					
C1	+6.618	-0.588	+26.151	+6.618	+0.588	+39.387
C2	+44.825	-1.658	+69.195	-0.535	+1.658	+113.485
C3	+0.455	-0.016	+0.703	-0.005	+0.016	+1.153
C4	+51.898	-2.263	+96.050	+6.078	+2.263	+154.025
BARRA:	139					
C1	+5.701	-1.517	+20.217	+5.701	+1.517	+31.620
C2	+38.284	-4.388	+53.302	+0.904	+4.388	+92.491
C3	+0.389	-0.044	+0.542	+0.009	+0.044	+0.941
C4	+44.375	-5.949	+74.062	+6.615	+5.949	+125.052
BARRA:	140					
C1	+5.265	-2.481	+9.360	+5.265	+2.481	+19.889
C2	+30.778	-7.997	+24.577	+1.438	+7.997	+56.794
C3	+0.314	-0.081	+0.250	+0.014	+0.081	+0.578
C4	+36.357	-10.559	+34.187	+6.717	+10.559	+77.262
BARRA:	141					
C1	-5.265	-2.481	+19.889	-5.265	+2.481	+9.359
C2	-1.438	-7.997	+56.794	-30.778	+7.997	+24.577
C3	-0.014	-0.081	+0.578	-0.314	+0.081	+0.250
C4	-6.718	-10.559	+77.262	-36.358	+10.559	+34.186
BARRA:	142					
C1	-5.701	-1.517	+31.620	-5.701	+1.517	+20.217
C2	-0.904	-4.388	+92.490	-38.284	+4.388	+53.302
C3	-0.009	-0.044	+0.941	-0.389	+0.044	+0.542
C4	-6.615	-5.949	+125.051	-44.375	+5.950	+74.062
BARRA:	143					
C1	-6.618	-0.588	+39.387	-6.618	+0.588	+26.151
C2	+0.535	-1.658	+113.485	-44.825	+1.659	+69.195
C3	+0.005	-0.016	+1.153	-0.455	+0.016	+0.703

HIPOT.	Qi	Mxi	Myi	Qj	Mxj	Myj
C4	-6.078	-2.263	+154.025	-51.898	+2.263	+96.050
BARRA:	144					
C1	-6.835	-0.041	+39.430	-6.835	+0.041	+25.759
C2	-0.043	-0.266	+113.993	-45.403	+0.266	+68.548
C3	-0.000	-0.003	+1.157	-0.460	+0.003	+0.696
C4	-6.879	-0.310	+154.580	-52.699	+0.310	+95.002
BARRA:	145					
C1	-6.768	-0.007	+39.353	-6.768	+0.007	+25.817
C2	+0.024	-0.094	+114.248	-45.336	+0.094	+68.936
C3	+0.000	-0.001	+1.159	-0.460	+0.001	+0.699
C4	-6.744	-0.102	+154.760	-52.564	+0.102	+95.452
BARRA:	146					
C1	-6.765	-0.002	+39.356	-6.765	+0.002	+25.827
C2	+0.003	-0.031	+114.435	-45.357	+0.031	+69.082
C3	+0.000	-0.000	+1.160	-0.460	+0.000	+0.701
C4	-6.761	-0.034	+154.952	-52.581	+0.034	+95.610
BARRA:	147					
C1	-6.765	-0.001	+39.359	-6.765	+0.001	+25.829
C2	-0.001	-0.008	+114.493	-45.361	+0.008	+69.130
C3	-0.000	-0.000	+1.161	-0.460	+0.000	+0.701
C4	-6.767	-0.009	+155.014	-52.587	+0.009	+95.661
BARRA:	148					
C1	-6.765	-0.000	+39.360	-6.765	+0.000	+25.830
C2	-0.001	-0.001	+114.506	-45.361	+0.001	+69.143
C3	-0.000	-0.000	+1.161	-0.460	+0.000	+0.701
C4	-6.766	-0.001	+155.027	-52.586	+0.001	+95.674
BARRA:	149					
C1	-6.765	+0.000	+39.360	-6.765	+0.000	+25.830
C2	-0.000	-0.000	+114.507	-45.360	+0.000	+69.146
C3	-0.000	-0.000	+1.161	-0.460	+0.000	+0.701
C4	-6.766	-0.000	+155.028	-52.586	+0.000	+95.677
BARRA:	150					
C1	-6.765	+0.000	+39.360	-6.765	-0.000	+25.830
C2	-0.000	+0.000	+114.507	-45.360	-0.000	+69.146
C3	+0.000	+0.000	+1.161	-0.460	-0.000	+0.701
C4	-6.765	+0.000	+155.028	-52.585	-0.000	+95.677
BARRA:	151					
C1	-6.765	+0.000	+39.360	-6.765	-0.000	+25.830
C2	-0.000	+0.000	+114.507	-45.360	-0.000	+69.146
C3	-0.000	+0.000	+1.161	-0.460	-0.000	+0.701

HIPOT.	Qi	Mxi	Myi	Qj	Mxj	Myj
C4	-6.765	+0.000	+155.028	-52.585	-0.000	+95.677
BARRA:	152					
C1	-6.765	+0.000	+39.360	-6.765	-0.000	+25.830
C2	-0.001	+0.001	+114.506	-45.361	-0.001	+69.143
C3	-0.000	+0.000	+1.161	-0.460	-0.000	+0.701
C4	-6.766	+0.001	+155.027	-52.586	-0.001	+95.674
BARRA:	153					
C1	-6.765	+0.000	+39.359	-6.765	-0.000	+25.829
C2	-0.002	+0.007	+114.493	-45.362	-0.007	+69.129
C3	-0.000	+0.000	+1.161	-0.460	-0.000	+0.701
C4	-6.767	+0.008	+155.013	-52.587	-0.008	+95.659
BARRA:	154					
C1	-6.765	+0.001	+39.354	-6.765	-0.001	+25.825
C2	+0.004	+0.029	+114.430	-45.356	-0.029	+69.077
C3	+0.000	+0.000	+1.160	-0.460	-0.000	+0.701
C4	-6.761	+0.031	+154.945	-52.581	-0.031	+95.603
BARRA:	155					
C1	-6.757	+0.003	+39.332	-6.757	-0.003	+25.817
C2	+0.053	+0.083	+114.190	-45.307	-0.083	+68.937
C3	+0.001	+0.001	+1.158	-0.459	-0.001	+0.699
C4	-6.703	+0.087	+154.680	-52.523	-0.087	+95.453
BARRA:	156					
C1	-6.748	-0.026	+39.246	-6.748	+0.026	+25.749
C2	+0.212	+0.083	+113.472	-45.148	-0.083	+68.536
C3	+0.002	+0.001	+1.151	-0.458	-0.001	+0.695
C4	-6.534	+0.058	+153.869	-52.354	-0.058	+94.981
BARRA:	157					
C1	-6.790	-0.188	+38.739	-6.790	+0.188	+25.158
C2	+0.240	-0.532	+111.482	-45.120	+0.532	+66.602
C3	+0.002	-0.006	+1.132	-0.458	+0.006	+0.677
C4	-6.548	-0.726	+151.353	-52.368	+0.726	+92.437
BARRA:	158					
C1	-5.517	-0.511	+29.869	-5.517	+0.511	+18.835
C2	+0.110	-2.016	+86.696	-37.270	+2.016	+49.536
C3	+0.001	-0.021	+0.882	-0.379	+0.021	+0.504
C4	-5.406	-2.548	+117.447	-43.166	+2.548	+68.875
BARRA:	159					
C1	-2.942	-0.743	+19.091	-2.942	+0.743	+13.206
C2	+4.432	-2.652	+54.868	-24.908	+2.652	+34.392
C3	+0.046	-0.027	+0.559	-0.254	+0.027	+0.350

HIPOT.	Qi	Mxi	Myi	Qj	Mxj	Myj
C4	+1.535	-3.422	+74.518	-28.105	+3.422	+47.948
BARRA:	160					
C1	-0.345	-0.629	+9.776	-0.345	+0.629	+9.086
C2	+11.644	-2.293	+27.354	-17.696	+2.293	+21.302
C3	+0.119	-0.024	+0.279	-0.181	+0.024	+0.217
C4	+11.418	-2.946	+37.408	-18.222	+2.946	+30.605
BARRA:	161					
C1	-18.573	+0.462	+22.220	-18.573	-0.462	-14.926
C2	-34.752	+2.585	+58.997	-72.132	-2.585	-47.888
C3	-0.354	+0.027	+0.601	-0.734	-0.027	-0.487
C4	-53.679	+3.074	+81.817	-91.439	-3.074	-63.302
BARRA:	162					
C1	-24.492	+0.422	+27.487	-24.492	-0.422	-21.498
C2	-46.430	+0.916	+72.537	-91.790	-0.916	-65.682
C3	-0.471	+0.010	+0.736	-0.931	-0.010	-0.667
C4	-71.394	+1.349	+100.761	-117.214	-1.349	-87.847
BARRA:	163					
C1	-23.625	+0.008	+25.865	-23.625	-0.008	-21.384
C2	-44.871	-0.311	+68.884	-90.231	+0.311	-66.219
C3	-0.455	-0.003	+0.699	-0.915	+0.003	-0.672
C4	-68.951	-0.306	+95.447	-114.771	+0.306	-88.274
BARRA:	164					
C1	-23.668	-0.009	+25.830	-23.668	+0.009	-21.506
C2	-45.265	-0.182	+69.068	-90.625	+0.182	-66.822
C3	-0.459	-0.002	+0.700	-0.919	+0.002	-0.678
C4	-69.392	-0.192	+95.599	-115.212	+0.192	-89.005
BARRA:	165					
C1	-23.677	-0.003	+25.831	-23.677	+0.003	-21.523
C2	-45.355	-0.062	+69.141	-90.715	+0.062	-66.930
C3	-0.460	-0.001	+0.701	-0.920	+0.001	-0.679
C4	-69.492	-0.066	+95.673	-115.312	+0.066	-89.132
BARRA:	166					
C1	-23.678	-0.001	+25.830	-23.678	+0.001	-21.525
C2	-45.365	-0.016	+69.150	-90.725	+0.016	-66.940
C3	-0.460	-0.000	+0.701	-0.920	+0.000	-0.679
C4	-69.503	-0.017	+95.682	-115.323	+0.017	-89.144
BARRA:	167					
C1	-23.678	-0.000	+25.830	-23.678	+0.000	-21.525
C2	-45.363	-0.003	+69.149	-90.723	+0.003	-66.938
C3	-0.460	-0.000	+0.701	-0.920	+0.000	-0.679

HIPOT.	Qi	Mxi	Myi	Qj	Mxj	Myj
C4	-69.501	-0.003	+95.680	-115.321	+0.003	-89.141
BARRA:	168					
C1	-23.678	-0.000	+25.830	-23.678	+0.000	-21.525
C2	-45.361	-0.000	+69.147	-90.721	+0.000	-66.936
C3	-0.460	-0.000	+0.701	-0.920	+0.000	-0.679
C4	-69.499	-0.000	+95.678	-115.319	+0.000	-89.139
BARRA:	169					
C1	-23.677	+0.000	+25.830	-23.677	+0.000	-21.525
C2	-45.361	-0.000	+69.146	-90.721	+0.000	-66.935
C3	-0.460	+0.000	+0.701	-0.920	+0.000	-0.679
C4	-69.498	-0.000	+95.677	-115.318	+0.000	-89.139
BARRA:	170					
C1	-23.678	+0.000	+25.830	-23.678	+0.000	-21.525
C2	-45.361	+0.000	+69.147	-90.721	-0.000	-66.936
C3	-0.460	+0.000	+0.701	-0.920	-0.000	-0.679
C4	-69.499	+0.000	+95.678	-115.319	-0.000	-89.140
BARRA:	171					
C1	-23.678	+0.000	+25.830	-23.678	-0.000	-21.525
C2	-45.363	+0.003	+69.148	-90.723	-0.003	-66.938
C3	-0.460	+0.000	+0.701	-0.920	-0.000	-0.679
C4	-69.501	+0.003	+95.680	-115.321	-0.003	-89.142
BARRA:	172					
C1	-23.678	+0.001	+25.830	-23.678	-0.001	-21.525
C2	-45.365	+0.017	+69.149	-90.725	-0.016	-66.941
C3	-0.460	+0.000	+0.701	-0.920	-0.000	-0.679
C4	-69.503	+0.018	+95.680	-115.323	-0.018	-89.145
BARRA:	173					
C1	-23.677	+0.004	+25.829	-23.677	-0.004	-21.526
C2	-45.355	+0.064	+69.134	-90.715	-0.064	-66.936
C3	-0.460	+0.001	+0.701	-0.920	-0.001	-0.679
C4	-69.492	+0.069	+95.664	-115.312	-0.069	-89.141
BARRA:	174					
C1	-23.679	+0.013	+25.825	-23.679	-0.013	-21.534
C2	-45.296	+0.193	+69.053	-90.656	-0.193	-66.900
C3	-0.459	+0.002	+0.700	-0.919	-0.002	-0.678
C4	-69.435	+0.207	+95.579	-115.255	-0.207	-89.112
BARRA:	175					
C1	-23.694	+0.059	+25.789	-23.694	-0.059	-21.598
C2	-45.077	+0.494	+68.678	-90.437	-0.494	-66.837
C3	-0.457	+0.005	+0.697	-0.917	-0.005	-0.678

HIPOT.	Qi	Mxi	Myi	Qj	Mxj	Myj
C4	-69.228	+0.557	+95.164	-115.048	-0.557	-89.113
BARRA:	176					
C1	-23.615	+0.354	+25.366	-23.615	-0.354	-21.863
C2	-44.106	+1.275	+66.638	-89.466	-1.274	-66.934
C3	-0.448	+0.012	+0.676	-0.908	-0.012	-0.679
C4	-68.168	+1.640	+92.681	-113.988	-1.640	-89.476
BARRA:	177					
C1	-19.384	+1.240	+19.327	-19.384	-1.240	-19.442
C2	-36.831	+1.993	+50.785	-74.211	-1.993	-60.257
C3	-0.375	+0.019	+0.517	-0.755	-0.019	-0.613
C4	-56.590	+3.252	+70.628	-94.350	-3.252	-80.312
BARRA:	178					
C1	-13.088	+1.042	+13.032	-13.088	-1.042	-13.143
C2	-23.234	+2.840	+34.217	-52.574	-2.840	-41.591
C3	-0.236	+0.028	+0.349	-0.536	-0.028	-0.424
C4	-36.558	+3.910	+47.599	-66.198	-3.910	-55.158
BARRA:	179					
C1	-10.936	+1.711	+9.673	-10.936	-1.711	-12.199
C2	-16.377	+5.014	+23.677	-45.717	-5.014	-38.418
C3	-0.167	+0.051	+0.242	-0.467	-0.051	-0.392
C4	-27.480	+6.775	+33.592	-57.120	-6.775	-51.009
BARRA:	180					
C1	-6.519	+2.000	+4.180	-6.519	-2.000	-8.858
C2	-4.565	+5.637	+8.750	-33.905	-5.637	-29.721
C3	-0.047	+0.057	+0.089	-0.347	-0.057	-0.304
C4	-11.131	+7.694	+13.019	-40.771	-7.694	-38.883
BARRA:	181					
C1	+2.700	-0.689	-7.506	+2.700	+0.689	-0.329
C2	+9.481	-1.939	-23.640	+9.481	+1.939	+1.562
C3	+0.097	-0.020	-0.241	+0.097	+0.020	+0.017
C4	+12.278	-2.648	-31.388	+12.278	+2.648	+1.249
BARRA:	182					
C1	+2.492	+3.403	+3.195	+2.492	-3.403	+9.819
C2	+9.525	+10.476	+7.409	+9.525	-10.476	+32.726
C3	+0.097	+0.107	+0.076	+0.097	-0.107	+0.334
C4	+12.114	+13.985	+10.679	+12.114	-13.985	+42.880
BARRA:	183					
C1	-2.084	+6.450	+15.619	-2.084	-6.450	+10.081
C2	-5.339	+19.840	+47.180	-5.339	-19.840	+32.987
C3	-0.055	+0.202	+0.481	-0.055	-0.202	+0.336

HIPOT.	Qi	Mxi	Myi	Qj	Mxj	Myj
C4	-7.478	+26.493	+63.281	-7.478	-26.493	+43.405
BARRA:	184					
C1	-13.049	+4.396	+19.717	-13.049	-4.396	-14.970
C2	-38.642	+14.049	+57.976	-38.642	-14.049	-44.739
C3	-0.394	+0.144	+0.590	-0.394	-0.144	-0.457
C4	-52.086	+18.588	+78.284	-52.086	-18.588	-60.166
BARRA:	185					
C1	+13.049	+4.396	-14.970	+13.049	-4.396	+19.717
C2	+38.642	+14.049	-44.739	+38.642	-14.049	+57.976
C3	+0.394	+0.144	-0.457	+0.394	-0.144	+0.590
C4	+52.086	+18.588	-60.166	+52.086	-18.588	+78.284
BARRA:	186					
C1	+2.084	+6.450	+10.081	+2.084	-6.450	+15.619
C2	+5.339	+19.840	+32.988	+5.339	-19.840	+47.181
C3	+0.055	+0.202	+0.336	+0.055	-0.202	+0.481
C4	+7.478	+26.493	+43.405	+7.478	-26.493	+63.281
BARRA:	187					
C1	-2.492	+3.403	+9.819	-2.492	-3.403	+3.195
C2	-9.525	+10.476	+32.727	-9.525	-10.476	+7.409
C3	-0.097	+0.107	+0.334	-0.097	-0.107	+0.076
C4	-12.114	+13.985	+42.880	-12.114	-13.985	+10.679
BARRA:	188					
C1	-2.700	-0.689	-0.329	-2.700	+0.689	-7.506
C2	-9.481	-1.939	+1.562	-9.481	+1.939	-23.640
C3	-0.097	-0.020	+0.017	-0.097	+0.020	-0.241
C4	-12.278	-2.648	+1.249	-12.278	+2.648	-31.388

HIPOTESIS Y/O COMBINACIONES DE CARGA CONSIDERADAS

HIPOTESIS: C1 = +1.00*(Hip:1)
HIPOTESIS: C2 = +1.00*(Hip:2)
HIPOTESIS: C3 = +1.00*(Hip:3)
HIPOTESIS: C4 = +1.00*(Hip:1)+1.00*(Hip:2)+1.00*(Hip:3)

REACCIONES

HIPOT	NUDO	Rz	Mx	My
C1	1	+2.70	-8.02	-4.43
C2	1	+9.48	-25.59	-14.11
C3	1	+0.10	-0.26	-0.14
C4	1	+12.28	-33.87	-18.68
C1	2	+6.52	-9.41	-2.00
C2	2	+33.91	-30.33	-5.64
C3	2	+0.35	-0.31	-0.06
C4	2	+40.77	-40.05	-7.69
C1	4	+10.94	-11.20	-1.71
C2	4	+45.72	-35.50	-5.01
C3	4	+0.47	-0.36	-0.05
C4	4	+57.12	-47.06	-6.78
C1	7	+13.09	-12.26	-1.04
C2	7	+52.57	-38.56	-2.84
C3	7	+0.54	-0.39	-0.03
C4	7	+66.20	-51.21	-3.91
C1	11	+19.38	-19.71	-1.24
C2	11	+74.21	-61.34	-1.99
C3	11	+0.75	-0.62	-0.02
C4	11	+94.35	-81.67	-3.25
C1	15	+31.62	+22.77	+13.63
C2	15	+110.77	+70.44	+42.62
C3	15	+1.13	+0.72	+0.44
C4	15	+143.52	+93.93	+56.69
C1	16	+23.61	-21.18	-0.35
C2	16	+89.47	-65.30	-1.27
C3	16	+0.91	-0.66	-0.01
C4	16	+113.99	-87.14	-1.64
C1	20	+24.49	+21.85	+0.42
C2	20	+91.79	+67.21	+0.92
C3	20	+0.93	+0.68	+0.01
C4	20	+117.21	+89.74	+1.35
C1	21	+23.69	-21.46	-0.06
C2	21	+90.44	-66.41	-0.49
C3	21	+0.92	-0.67	-0.00
C4	21	+115.05	-88.54	-0.56
C1	25	+23.62	+21.55	+0.01
C2	25	+90.23	+66.64	-0.31
C3	25	+0.92	+0.68	-0.00
C4	25	+114.77	+88.86	-0.31
C1	26	+23.68	-21.51	-0.01
C2	26	+90.66	-66.76	-0.19
C3	26	+0.92	-0.68	-0.00
C4	26	+115.26	-88.95	-0.21
C1	30	+23.67	+21.52	-0.01
C2	30	+90.62	+66.79	-0.18
C3	30	+0.92	+0.68	-0.00
C4	30	+115.21	+88.99	-0.19
C1	31	+23.68	-21.52	-0.00
C2	31	+90.72	-66.89	-0.06
C3	31	+0.92	-0.68	-0.00
C4	31	+115.31	-89.09	-0.07
C1	35	+23.68	+21.52	-0.00
C2	35	+90.72	+66.89	-0.06
C3	35	+0.92	+0.68	-0.00
C4	35	+115.31	+89.09	-0.07
C1	36	+23.68	-21.52	-0.00
C2	36	+90.72	-66.92	-0.02
C3	36	+0.92	-0.68	-0.00
C4	36	+115.32	-89.13	-0.02
C1	40	+23.68	+21.52	-0.00
C2	40	+90.73	+66.93	-0.02
C3	40	+0.92	+0.68	-0.00
C4	40	+115.32	+89.13	-0.02
C1	41	+23.68	-21.52	-0.00
C2	41	+90.72	-66.93	-0.00
C3	41	+0.92	-0.68	-0.00
C4	41	+115.32	-89.14	-0.00
C1	45	+23.68	+21.52	-0.00
C2	45	+90.72	+66.93	-0.00
C3	45	+0.92	+0.68	-0.00
C4	45	+115.32	+89.14	-0.00
C1	46	+23.68	-21.52	-0.00
C2	46	+90.72	-66.94	-0.00
C3	46	+0.92	-0.68	-0.00
C4	46	+115.32	-89.14	-0.00
C1	50	+23.68	+21.53	-0.00
C2	50	+90.72	+66.93	-0.00
C3	50	+0.92	+0.68	-0.00
C4	50	+115.32	+89.14	-0.00

HIPOT	NUDO	Rz	Mx	My
C1	51	+23.68	-21.53	-0.00
C2	51	+90.72	-66.93	-0.00
C3	51	+0.92	-0.68	-0.00
C4	51	+115.32	-89.14	-0.00
C1	55	+23.68	+21.53	-0.00
C2	55	+90.72	+66.93	-0.00
C3	55	+0.92	+0.68	-0.00
C4	55	+115.32	+89.14	-0.00
C1	56	+23.68	-21.52	-0.00
C2	56	+90.72	-66.93	+0.00
C3	56	+0.92	-0.68	+0.00
C4	56	+115.32	-89.14	+0.00
C1	60	+23.68	+21.52	+0.00
C2	60	+90.72	+66.94	+0.00
C3	60	+0.92	+0.68	+0.00
C4	60	+115.32	+89.14	+0.00
C1	61	+23.68	-21.52	+0.00
C2	61	+90.72	-66.93	+0.00
C3	61	+0.92	-0.68	+0.00
C4	61	+115.32	-89.14	+0.00
C1	65	+23.68	+21.52	+0.00
C2	65	+90.72	+66.93	+0.00
C3	65	+0.92	+0.68	+0.00
C4	65	+115.32	+89.14	+0.00
C1	66	+23.68	-21.52	+0.00
C2	66	+90.73	-66.93	+0.02
C3	66	+0.92	-0.68	+0.00
C4	66	+115.32	-89.13	+0.02
C1	70	+23.68	+21.52	+0.00
C2	70	+90.72	+66.92	+0.02
C3	70	+0.92	+0.68	+0.00
C4	70	+115.32	+89.13	+0.02
C1	71	+23.68	-21.52	+0.00
C2	71	+90.72	-66.89	+0.06
C3	71	+0.92	-0.68	+0.00
C4	71	+115.31	-89.09	+0.07
C1	75	+23.68	+21.52	+0.00
C2	75	+90.72	+66.89	+0.06
C3	75	+0.92	+0.68	+0.00
C4	75	+115.31	+89.09	+0.07
C1	76	+23.67	-21.52	+0.01
C2	76	+90.63	-66.79	+0.18
C3	76	+0.92	-0.68	+0.00
C4	76	+115.21	-88.99	+0.19
C1	80	+23.68	+21.51	+0.01

HIPOT	NUDO	Rz	Mx	My
C2	80	+90.66	+66.76	+0.19
C3	80	+0.92	+0.68	+0.00
C4	80	+115.26	+88.95	+0.21
C1	81	+23.62	-21.55	-0.01
C2	81	+90.23	-66.64	+0.31
C3	81	+0.92	-0.68	+0.00
C4	81	+114.77	-88.86	+0.31
C1	85	+23.69	+21.46	+0.06
C2	85	+90.44	+66.41	+0.49
C3	85	+0.92	+0.67	+0.00
C4	85	+115.05	+88.54	+0.56
C1	86	+24.49	-21.85	-0.42
C2	86	+91.79	-67.21	-0.92
C3	86	+0.93	-0.68	-0.01
C4	86	+117.21	-89.74	-1.35
C1	90	+23.61	+21.18	+0.35
C2	90	+89.47	+65.30	+1.27
C3	90	+0.91	+0.66	+0.01
C4	90	+113.99	+87.14	+1.64
C1	91	+31.62	-22.77	-13.63
C2	91	+110.77	-70.44	-42.62
C3	91	+1.13	-0.72	-0.44
C4	91	+143.53	-93.93	-56.69
C1	95	+19.38	+19.71	+1.24
C2	95	+74.21	+61.34	+1.99
C3	95	+0.75	+0.62	+0.02
C4	95	+94.35	+81.67	+3.25
C1	99	+13.09	+12.26	+1.04
C2	99	+52.57	+38.56	+2.84
C3	99	+0.54	+0.39	+0.03
C4	99	+66.20	+51.21	+3.91
C1	102	+10.94	+11.20	+1.71
C2	102	+45.72	+35.50	+5.01
C3	102	+0.47	+0.36	+0.05
C4	102	+57.12	+47.06	+6.78
C1	104	+6.52	+9.41	+2.00
C2	104	+33.91	+30.33	+5.64
C3	104	+0.35	+0.31	+0.06
C4	104	+40.77	+40.05	+7.69
C1	105	+2.70	+8.02	+4.43
C2	105	+9.48	+25.59	+14.11
C3	105	+0.10	+0.26	+0.14
C4	105	+12.28	+33.87	+18.68

P.B.F. 102.1

P.B.F. 102.1

ÍNDICE

MEMORIA

CARGAS ACTUANTES

COEFICIENTES DINÁMICOS

CÁLCULO DEL MARCO

CÁLCULO DE LAS ALETAS

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MEMORIA

La estructura P.B.F. 102.1 corresponde al paso inferior situado en el punto kilométrico P.K. 102+140 y consiste en un marco cerrado de hormigón armado de 7.00 metros de luz libre horizontal y 5.80 metros de gálibo vertical.

La longitud total del paso es de 46.00 metros y en planta presenta un esviaje de 90.22°. El espesor tanto de la losa superior como de la solera es de 1.10 metros, siendo el de los hastiales de 1.00 m.

La altura de tierras por encima del marco es de 8.20 metros.

CARGAS ACTUANTES

Se consideran las siguientes cargas actuando sobre el marco:

- Peso propio: Se considera un peso específico del hormigón de 2.50 t/m^3.

- Cargas muertas: Se toman los siguientes pesos de los elementos no resistentes:

Balasto	0.40 x 1.60 = 0.64 t/m
Traviesas	2 x 0.52 = 1.04 t/m
Carriles	2 x 0.12 = 0.24 t/m
Barandillas	2 x 0.05 = 0.10 t/m
Total	2.02 t/m

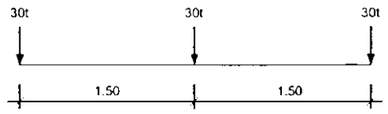
- Empuje de tierras sobre los hastiales del marco: Se considera actuando el empuje al reposo $K = 1\text{-sen}\varphi = 0.50$, y un peso específico de 2 t/m^3.

- Sobrecargas:

a) Norma española IPFC-75:

- Sobrecarga de 0,5 t/m^2 actuando en los paseos según la posición más desfavorable para el elemento en estudio.

- Tren tipo A:

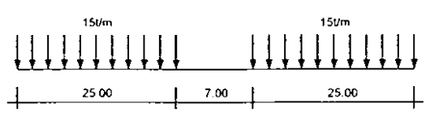


- Tren tipo B:

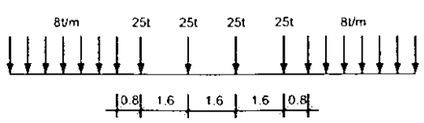
"ai" y "bi" son tales que producen los esfuerzos más desfavorables.

b) Norma U.I.C-776-1:

- Tren tipo SW/2:



- Tren tipo UIC-71:



COEFICIENTES DINAMICOS

a) Norma española IPFC-75:

$$I = \frac{144 \times L}{3{,}10 - 1{,}76 \times \sqrt{L} + L} = 1{,}70$$

b) Norma U.I.C-776-1:

$$\Phi_1 = \frac{0{,}96}{\sqrt{L} - 0{,}2} + 0{,}88 = 1{,}27$$

$$\Phi_2 = \frac{1.44}{\sqrt{L} - 0{,}2} + 0{,}82 = 1{,}40$$

En función de la calidad de las lineas se tiene:

Linea de alta calidad: Φ_2 Flector

Φ_1 Cortante

Con los coeficientes de impacto anteriores, nos quedamos, para los marcos de 9,5 m de luz libre horizontal, con las cargas correspondientes al tren tipo A de la Norma española, o bien el tren tipo SW/2 de la UIC..

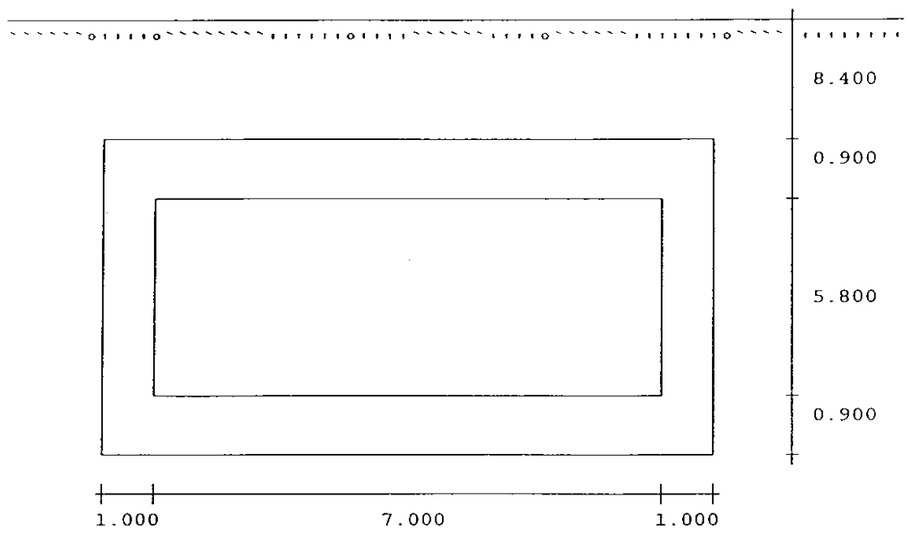
Para un reparto de las cargas a 45°y relleno de "H" m, tenemos un valor de la carga:

$$W_a = 1{,}40 \times \frac{15}{2 + 2 \times H} = 1{,}14 \text{ t/m}^2$$

$$W_b = 1{,}70 \times \frac{3 \times 30}{(2 + 2 \times H) \times (3 + 2 \times H)} = 0{,}43 \text{ t/m}^2$$

2 - M A R C O :

PBF 102+100 DEFINICION SECCION (m.):



RELLENO

Peso específico (tn/m3)	2.00
Coeficiente de empuje al reposo	0.50
Módulo de balasto (t/m3)	1000

HORMIGON:

Fck (Kg/cm²)	250
Módulo de elasticidad (Kg/cm²).....	300000
Peso específico (tn/m3)	2.50
Coeficiente de minoración	1.50

ACERO:

Fyk (Kg/cm²)	5100
Fyα,d (Kg/cm²)	4200
Coeficiente de minoración	1.15
Recubrimiento de armaduras (cms) ...	3.0

SOBRECARGAS

Sobrecarga uniforme (t/m²).....	3.16

H I P O T E S I S D E C A R G A S

-(1) Peso propio

-(2) Carga permanente sobre el dintel

-(3) Empuje de tierras por un lado hasta altura del dintel y actuando una sobrecarga de construcción de 1.00 t/m²

-(4) Empuje de tierras por los dos lados hasta altura total

-(5) Sobrecarga uniforme de 3.16 t/m²

M O D E L O D E C A L C U L O

El modelo utilizado corresponde al de pórtico plano con cimentación elástica asimilada a unos muelles, cuya rigidez es función del módulo de balasto y del área de influencia de cada nudo coaccionado.

El cálculo se efectúa mediante programa de ordenador, basado en la matriz de rigidez y equilibrio de nudos, suponiendo comportamiento elástico y lineal, desarrollado por personal del Departamento de Estructuras de AEPO.SA y ejecutado en ordenador Pentium con mas de 16 Mb de memoria RAM.

El cálculo se entiende por m. de estructura.

En el apartado "Cálculos realizados con ordenador" se puede ver la modelización de la estructura con los resultados obtenidos.

C O M B I N A C I O N D E H I P O T E S I S

El programa calcula , para cada sección , la combinación pésima de hipótesis compatibles entre si y afectadas por los coeficientes de ponderación:

	Favorable	Desfavorable
Peso propio y cargas permanentes.....	0.90	1.60
Sobrecargas	0.00	1.60

A R M A D O D E L A S S E C C I O N E S

Con las combinaciones pésimas anteriormente calculadas, se procede al cálculo de las armaduras de flexión y cortante, contemplando las armaduras mínimas de acuerdo con la Norma EH-91

CARACTERISTICAS MECANICAS:

Uc = Capacidad mecánica de la sección = fcd * b * d

Vcu = Contribución del hormigón a la resistencia a esfuerzo cortante de valor = fcv * b * d

Vu1 = Esfuerzo cortante de agotamiento por compresión oblícua del hormigón del alma, que para el caso de barras levantadas o estribos normales al eje de la pieza vale = 0.30 * fcd * b * d

d = Canto útil de la sección.

b = Anchura del elemento. (en nuestro caso 1.00 m)

fcd = Resistencia de cálculo del hormigón = 166.67 Kg/cm² =1666.67 t/m²

fcv = Resistencia virtual de cálculo del hormigón a esfuerzo cortante dada en kp/cm² = 0,5 * √fcd = 6.45 Kg/cm² = 64.55 t/m²

fyd = Resistencia de cálculo de las armaduras = 4.43 t/cm²

fyα,d = Resistencia de cálculo de las armaduras transversales con la limitación ≤ 4200 Kg/cm² , en nuestro caso = 4.20 t/cm²

Sección	Canto	d(m)	Uc(t/m)	Vcu(t/m)	Vu1(t/m)
Dintel	0.90	0.87	1450.0	56.16	435.00
Hastial	1.00	0.97	1616.7	62.61	485.00
Solera	0.90	0.87	1450.0	56.16	435.00

ARMADURA DE FLEXION:

Se emplean la fórmulas del método de cálculo del Momento Tope definidas en el Anejo 7 de la Norma EH-91 y cuya expresión toma el valor:

$$Us1 = Uc * \left[1 - \left| 1 - 2 \frac{Md - Us2 * (d-d')}{Uc * d} \right|^{1/2} \right] + Us2 \geq 0.04 * Uc$$

y la armadura necesaria será:

As1= Us1/fyd (cm²)

ARMADURA DE CORTANTE

Se procede al armado según la regla del cosido. (Norma EH-91 art. 39)

El esfuerzo cortante de agotamiento por tracción en el alma vale:

Vu2 = Vsu + Vcu

Vsu = contribución de la armadura transversal del alma a esfuerzo cortante.

a) Cálculo de Vsu

$$Vsu = \Sigma A\alpha * fy\alpha,d * 0,9 * d * (sen\alpha + cos\alpha)$$

A continuación se adjuntan, para cada sección analizada, las combinaciones mas desfavorables de cada esfuerzo en estudio.

DINTEL: Empotramiento

Armadura inferior

El momento máximo corresponde a la combinación:
Md = 0.9*Hip(1) + 1.6*Hip(3)

Md = 15.18 m.t/m
Nd = 6.10 t/m

Us2 = 0,05 x Nd = 0.30 t/m

Us1 = 11.46 t/m <-- Armadura mínima 6.75 cm²/m

Armadura superior

El momento máximo corresponde a la combinación:
Md = 1.6*Hip(1) + 1.6*Hip(2) + 1.6*Hip(4) + 1.6*Hip(5) + 1.6*Hip(6)

Md = 167.58 m.t/m
Nd = 58.46 t/m

Us2 = 0,05 x Nd = 2.92 t/m

Us1 =148.64 t/m <-- As1 = 33.52 cm²/m

Armadura de Cortante

El cortante máximo corresponde a la combinación:
Vd = 1.6*Hip(1) + 1.6*Hip(2) + 1.6*Hip(4) + 1.6*Hip(5) + 1.6*Hip(6)

Vd = 142.14 t/m Vu1 = 435.00 t/m
Vcu = 56.16 t/m

Vsu = 85.99 t/m

Se disponen barras a 45°. La armadura total a disponer es :

As = 18.49 cm²/m

DINTEL: Cuartos de luz

Armadura inferior

El momento máximo corresponde a la combinación:
Md = 1.6*Hip(1) + 1.6*Hip(2) + 1.6*Hip(5)

Md = 99.72 m.t/m
Nd = 3.33 t/m

Us2 = 0,05 x Nd = 0.17 t/m

Us1 =116.21 t/m <-- As1 = 26.20 cm²/m

Armadura superior

Armadura mínima 6.75 cm²/m

Armadura de Cortante

El cortante máximo corresponde a la combinación:
Vd = 1.6*Hip(1) + 1.6*Hip(2) + 1.6*Hip(4) + 1.6*Hip(5) + 1.6*Hip(6)

Vd = 71.07 t/m Vu1 = 435.00 t/m
Vcu = 56.16 t/m

Vsu = 14.91 t/m

Se disponen barras a 45°. La armadura total a disponer es :

As = 3.21 cm²/m

DINTEL: Centro de vano

Armadura inferior

El momento máximo corresponde a la combinación:
Md = 1.6*Hip(1) + 1.6*Hip(2) + 1.6*Hip(5)

Md = 170.79 m.t/m
Nd = 3.33 t/m

Us2 = 0,05 x Nd = 0.17 t/m

Us1 =208.42 t/m <-- As1 = 47.00 cm²/m

Armadura superior

Armadura mínima 6.75 cm²/m

Armadura de Cortante

El cortante máximo corresponde a la combinación:
Vd = 0.9*Hip(1) + 1.6*Hip(3)

Vd = 5.49 t/m Vu1 = 435.00 t/m
Vcu = 56.16 t/m

Vcu > Vd No precisa armadura a cortante

HASTIAL: Empot. superior

Armadura exterior

El momento máximo corresponde a la combinación:
Md = 1.6*Hip(1) + 1.6*Hip(2) + 1.6*Hip(4) + 1.6*Hip(5)

Md = 209.84 m.t/m
Nd = 142.14 t/m

Us2 = 0,05 x Nd = 7.11 t/m

Us1 = 90.08 t/m <-- As1 = 20.31 cm²/m

Armadura interior

El momento máximo corresponde a la combinación:
Md = 0.9*Hip(1) + 1.6*Hip(3)

Md = 13.84 m.t/m
Nd = 2.61 t/m

Us2 = 0,05 x Nd = 0.13 t/m

Us1 = 11.73 t/m <-- Armadura mínima 7.50 cm²/m

Armadura de Cortante

El cortante máximo corresponde a la combinación:
Vd = 0.9*Hip(1) + 1.6*Hip(2) + 1.6*Hip(4) + 1.6*Hip(5)

Vd = 60.26 t/m Vu1 = 485.00 t/m
Vcu = 62.61 t/m

Vcu > Vd No precisa armadura a cortante

HASTIAL: Cuarto superior

Armadura exterior

El momento máximo corresponde a la combinación:
Md = 1.6*Hip(1) + 1.6*Hip(2) + 1.6*Hip(5)

Md = 190.44 m.t/m
Nd = 148.84 t/m

Us2 = 0,05 x Nd = 7.44 t/m

Us1 = 60.29 t/m <-- As1 = 13.60 cm²/m

Armadura interior

El momento máximo corresponde a la combinación:
Md = 0.9*Hip(1) + 1.6*Hip(3)

Md = 22.44 m.t/m
Nd = 6.38 t/m

Us2 = 0,05 x Nd = 0.32 t/m

Us1 = 16.93 t/m <-- Armadura mínima 7.50 cm²/m

Armadura de Cortante

El cortante máximo corresponde a la combinación:
Vd = 0.9*Hip(1) + 1.6*Hip(2) + 1.6*Hip(4) + 1.6*Hip(5)

Vd = 32.96 t/m Vu1 = 485.00 t/m
Vcu = 62.61 t/m

Vcu > Vd No precisa armadura a cortante

HASTIAL: Centro de vano

Armadura exterior

El momento máximo corresponde a la combinación:
Md = 1.6*Hip(1) + 1.6*Hip(2) + 1.6*Hip(5)

Md = 199.17 m.t/m
Nd = 155.54 t/m

Us2 = 0,05 x Nd = 7.78 t/m

Us1 = 63.88 t/m <-- As1 = 14.40 cm²/m

Armadura interior

El momento máximo corresponde a la combinación:
Md = 0.9*Hip(1) + 0.9*Hip(2) + 1.6*Hip(4) + 1.6*Hip(6)

Md = 58.99 m.t/m
Nd = 76.12 t/m

Us2 = 0,05 x Nd = 3.81 t/m

Us1 =-14.14 t/m <-- Armadura mínima 7.50 cm²/m

Armadura de Cortante

El cortante máximo corresponde a la combinación:
Vd = 1.6*Hip(1) + 1.6*Hip(3)

Vd = 9.78 t/m Vu1 = 485.00 t/m
Vcu = 62.61 t/m

Vcu > Vd No precisa armadura a cortante

HASTIAL: Cuarto inferior

Armadura exterior

El momento máximo corresponde a la combinación:
Md = 1.6*Hip(1) + 1.6*Hip(2) + 1.6*Hip(5)

Md = 207.90 m.t/m
Nd = 162.24 t/m

Us2 = 0,05 x Nd = 8.11 t/m

Us1 = 67.53 t/m <-- As1 = 15.23 cm²/m

Armadura interior

Armadura mínima 7.50 cm²/m

Armadura de Cortante

El cortante máximo corresponde a la combinación:
Vd = 0.9*Hip(1) + 1.6*Hip(2) + 1.6*Hip(5)

Vd = 37.34 t/m Vu1 = 485.00 t/m
Vcu = 62.61 t/m

Vcu > Vd No precisa armadura a cortante

HASTIAL: Empot. inferior

Armadura interior

Armadura mínima 7.50 cm²/m

Armadura exterior

El momento máximo corresponde a la combinación:
Md = 1.6*Hip(1) + 1.6*Hip(2) + 1.6*Hip(4) + 1.6*Hip(5) + 1.6*Hip(6)

Md = 246.76 m.t/m
Nd = 168.94 t/m

Us2 = 0,05 x Nd = 8.45 t/m

Us1 =108.01 t/m <-- As1 = 24.36 cm²/m

Armadura de Cortante

El cortante máximo corresponde a la combinación:
Vd = 0.9*Hip(1) + 1.6*Hip(2) + 1.6*Hip(5)

Vd = 78.11 t/m Vu1 = 485.00 t/m
Vcu = 62.61 t/m

Vsu = 15.50 t/m

Se disponen barras a 45°. La armadura total a disponer es :

As = 2.99 cm²/m

SOLERA: Empotramiento

Armadura inferior

El momento máximo corresponde a la combinación:
Md = 1.6*Hip(1) + 1.6*Hip(2) + 1.6*Hip(4) + 1.6*Hip(5)

Md = 199.99 m.t/m
Nd = 77.69 t/m

Us2 = 0,05 x Nd = 3.88 t/m

Us1 =173.39 t/m <-- As1 = 39.10 cm²/m

Armadura superior

Armadura mínima 6.75 cm²/m

Armadura de Cortante

El cortante máximo corresponde a la combinación:
Vd = 1.6*Hip(1) + 1.6*Hip(2) + 1.6*Hip(4) + 1.6*Hip(5)

Vd = 144.66 t/m Vu1 = 435.00 t/m
Vcu = 56.16 t/m

Vsu = 88.50 t/m

Se disponen barras a 45°. La armadura total a disponer es :

As = 19.03 cm²/m

SOLERA: Cuartos de luz

Armadura inferior

El momento máximo corresponde a la combinación:
Md = 0.9*Hip(1) + 1.6*Hip(3)

Md = 35.89 m.t/m
Nd = 40.00 t/m

Us2 = 0,05 x Nd = 2.00 t/m

Us1 = 1.87 t/m <-- Armadura mínima 6.75 cm²/m

Armadura superior

El momento máximo corresponde a la combinación:
Md = 1.6*Hip(1) + 1.6*Hip(2) + 1.6*Hip(5) + 1.6*Hip(6)

Md = 112.45 m.t/m
Nd = 3.33 t/m

Us2 = 0,05 x Nd = 0.17 t/m

Us1 =132.25 t/m <-- As1 = 29.82 cm²/m

Armadura de Cortante

El cortante máximo corresponde a la combinación:
Vd = 1.6*Hip(1) + 1.6*Hip(2) + 1.6*Hip(4) + 1.6*Hip(5)

Vd = 59.16 t/m Vu1 = 435.00 t/m
Vcu = 56.16 t/m

Vsu = 3.00 t/m

Se disponen barras a 45°. La armadura total a disponer es :

As = 0.65 cm²/m

SOLERA: Centro de vano

Armadura inferior

Armadura mínima 6.75 cm²/m

Armadura superior

El momento máximo corresponde a la combinación:
Md = 1.6*Hip(1) + 1.6*Hip(2) + 1.6*Hip(5) + 1.6*Hip(6)

Md = 192.81 m.t/m
Nd = 3.33 t/m

Us2 = 0,05 x Nd = 0.17 t/m

Us1 =238.41 t/m <-- As1 = 53.76 cm²/m

Armadura de Cortante

El cortante máximo corresponde a la combinación:
Vd = 1.6*Hip(1) + 1.6*Hip(2) + 1.6*Hip(4) + 1.6*Hip(5) + 1.6*Hip(6)

Vd = 21.98 t/m Vu1 = 435.00 t/m
Vcu = 56.16 t/m

Vcu > Vd No precisa armadura a cortante

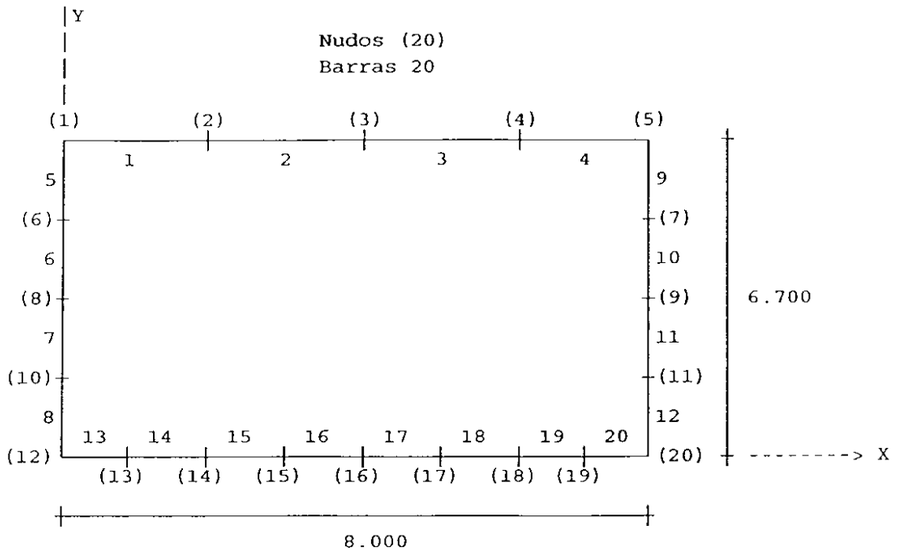
RESUMEN DE ARMADURAS (cm²/m)

Sección		Armaduras de Flexión		Cortante
DINTEL:		inferior	superior	
	Empotramiento	6.75	33.52	18.49
	Cuartos de Luz	26.20	6.75	3.21
	Centro de Vano	47.00	6.75	0.00
HASTIAL:		exterior	interior	
	Empotra.Superior	20.31	7.50	0.00
	Cuarto Superior	13.60	7.50	0.00
	Centro de Vano	14.40	7.50	0.00
	Cuarto Inferior	15.23	7.50	0.00
	Empotra.Inferior	24.36	7.50	2.99
SOLERA:		inferior	superior	
	Empotramiento	39.10	6.75	19.03
	Cuartos de Luz	6.75	29.82	0.65
	Centro de Vano	6.75	53.76	0.00

Reacciones y Tensiones Máximas en Solera

Solera	Reacción (tns)	Tensión (Kg/cm²)
0	15.18	1.52
L/8	29.46	2.95
L/4	28.47	2.85
3L/8	27.74	2.77
L/2	27.47	2.75
5L/8	27.74	2.77
3L/4	28.47	2.85
7L/8	29.46	2.95
L	15.18	1.52

M O D E L O D E C A L C U L O



COORDENADAS DE NUDOS

Nudo	X	Y
1	0.000	6.700
2	2.000	6.700
3	4.000	6.700
4	6.000	6.700
5	8.000	6.700
6	0.000	5.025
7	8.000	5.025
8	0.000	3.350
9	8.000	3.350
10	0.000	1.675
11	8.000	1.675
12	0.000	0.000
13	1.000	0.000
14	2.000	0.000
15	3.000	0.000
16	4.000	0.000
17	5.000	0.000
18	6.000	0.000
19	7.000	0.000
20	8.000	0.000

CARACTERISTICAS DE BARRAS

Barra	i	j	Inercia	Area
1	1	2	0.06075	0.900
2	2	3	0.06075	0.900
3	3	4	0.06075	0.900
4	4	5	0.06075	0.900
5	1	6	0.08333	1.000
6	6	8	0.08333	1.000
7	8	10	0.08333	1.000
8	10	12	0.08333	1.000
9	5	7	0.08333	1.000
10	7	9	0.08333	1.000
11	9	11	0.08333	1.000
12	11	20	0.08333	1.000
13	12	13	0.06075	0.900
14	13	14	0.06075	0.900
15	14	15	0.06075	0.900
16	15	16	0.06075	0.900
17	16	17	0.06075	0.900
18	17	18	0.06075	0.900
19	18	19	0.06075	0.900
20	19	20	0.06075	0.900

CARGAS EN BARRAS

Tipos de carga: (2)=Uniforme (3)=Trapecial

Las cargas son positivas según los ejes globales de la estructura.

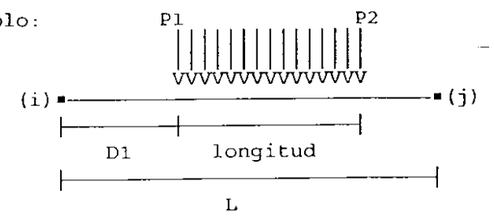
D1 es la distancia, del origen de la carga, respecto al origen de la barra.

Longitud es la extensión de dicha carga.

P1 es el valor de la carga en el origen, P2 es el incremento de carga en el final.

Angulo, es el ángulo de la carga respecto al eje de la barra.

ejemplo:



PESO PROPIO: Hipótesis N° 1

Barra	P1	P2	D1	Longitud	Angulo	Tipo
1	2.250	0.000	0.000	2.000	-90.000	2
2	2.250	0.000	0.000	2.000	-90.000	2
3	2.250	0.000	0.000	2.000	-90.000	2
4	2.250	0.000	0.000	2.000	-90.000	2
5	2.500	0.000	0.000	1.675	-90.000	2
6	2.500	0.000	0.000	1.675	-90.000	2
7	2.500	0.000	0.000	1.675	-90.000	2
8	2.500	0.000	0.000	1.675	-90.000	2
9	2.500	0.000	0.000	1.675	-90.000	2
10	2.500	0.000	0.000	1.675	-90.000	2
11	2.500	0.000	0.000	1.675	-90.000	2
12	2.500	0.000	0.000	1.675	-90.000	2
13	2.250	0.000	0.000	1.000	-90.000	2
14	2.250	0.000	0.000	1.000	-90.000	2
15	2.250	0.000	0.000	1.000	-90.000	2
16	2.250	0.000	0.000	1.000	-90.000	2
17	2.250	0.000	0.000	1.000	-90.000	2
18	2.250	0.000	0.000	1.000	-90.000	2
19	2.250	0.000	0.000	1.000	-90.000	2
20	2.250	0.000	0.000	1.000	-90.000	2

ESFUERZOS EN BARRAS

Barra	i	j	Axil i	Corte.i	Momto.i	Axil j	Corte.j	Momto.j
1	1	2	2.58	-9.00	-5.30	2.58	-4.50	-8.20
2	2	3	2.58	-4.50	8.20	2.58	0.00	-12.70
3	3	4	2.58	0.00	12.70	2.58	4.50	-8.20
4	4	5	2.58	4.50	8.20	2.58	9.00	5.30
5	1	6	-9.00	-2.58	5.30	-13.19	-2.58	-9.62
6	6	8	-13.19	-2.58	9.62	-17.38	-2.58	-13.95
7	8	10	-17.38	-2.58	13.95	-21.56	-2.58	-18.27
8	10	12	-21.56	-2.58	18.27	-25.75	-2.58	-22.60
9	5	7	-9.00	2.58	-5.30	-13.19	2.58	9.62
10	7	9	-13.19	2.58	-9.62	-17.38	2.58	13.95
11	9	11	-17.38	2.58	-13.95	-21.56	2.58	18.27
12	11	20	-21.56	2.58	-18.27	-25.75	2.58	22.60
13	12	13	-2.58	21.16	22.60	-2.58	23.41	-0.31
14	13	14	-2.58	14.50	0.31	-2.58	16.75	15.31
15	14	15	-2.58	8.11	-15.31	-2.58	10.36	24.55
16	15	16	-2.58	1.93	-24.55	-2.58	4.18	27.61
17	16	17	-2.58	-4.18	-27.61	-2.58	-1.93	24.55
18	17	18	-2.58	-10.36	-24.55	-2.58	-8.11	15.31
19	18	19	-2.58	-16.75	-15.31	-2.58	-14.50	-0.31
20	19	20	-2.58	-23.41	0.31	-2.58	-21.16	-22.60

CARGA PERMANENTE: Hipótesis N° 2

Barra	P1	P2	D1	Longitud	Angulo	Tipo
1	16.800	0.000	0.000	2.000	-90.000	2
2	16.800	0.000	0.000	2.000	-90.000	2
3	16.800	0.000	0.000	2.000	-90.000	2
4	16.800	0.000	0.000	2.000	-90.000	2

No hay mas barras cargadas para ésta hipótesis

ESFUERZOS EN BARRAS

Barra	i	j	Axil i	Corte.i	Momto.i	Axil j	Corte.j	Momto.j
1	1	2	-0.42	-67.20	-55.98	-0.42	-33.60	-44.82
2	2	3	-0.42	-33.60	44.82	-0.42	0.00	-78.42
3	3	4	-0.42	0.00	78.42	-0.42	33.60	-44.82
4	4	5	-0.42	33.60	44.82	-0.42	67.20	55.98
5	1	6	-67.20	0.42	55.98	-67.20	0.42	-55.28
6	6	8	-67.20	0.42	55.28	-67.20	0.42	-54.58
7	8	10	-67.20	0.42	54.58	-67.20	0.42	-53.87
8	10	12	-67.20	0.42	53.87	-67.20	0.42	-53.17
9	5	7	-67.20	-0.42	-55.98	-67.20	-0.42	55.28
10	7	9	-67.20	-0.42	-55.28	-67.20	-0.42	54.58
11	9	11	-67.20	-0.42	-54.58	-67.20	-0.42	53.87
12	11	20	-67.20	-0.42	-53.87	-67.20	-0.42	53.17
13	12	13	0.42	58.07	53.17	0.42	58.07	4.90
14	13	14	0.42	40.63	-4.90	0.42	40.63	45.53
15	14	15	0.42	23.99	-45.53	0.42	23.99	69.52
16	15	16	0.42	7.93	-69.52	0.42	7.93	77.45
17	16	17	0.42	-7.93	-77.45	0.42	-7.93	69.52
18	17	18	0.42	-23.99	-69.52	0.42	-23.99	45.53
19	18	19	0.42	-40.63	-45.53	0.42	-40.63	4.90
20	19	20	0.42	-58.07	-4.90	0.42	-58.07	-53.17

EMPUJE POR UN LADO, HASTA ALTURA DE DINTEL: Hipótesis N° 3

Barra	P1	P2	D1	Longitud	Angulo	Tipo
5	-0.950	-2.625	0.000	1.675	0.000	3
6	-2.625	-4.300	0.000	1.675	0.000	3
7	-4.300	-5.975	0.000	1.675	0.000	3
8	-5.975	-7.650	0.000	1.675	0.000	3

No hay mas barras cargadas para ésta hipótesis

ESFUERZOS EN BARRAS

Barra	i	j	Axil i	Corte.i	Momto.i	Axil j	Corte.j	Momto.j
1	1	2	-5.26	3.43	10.86	-5.26	3.43	-4.00
2	2	3	-5.26	3.43	4.00	-5.26	3.43	2.86
3	3	4	-5.26	3.43	-2.86	-5.26	3.43	9.72
4	4	5	-5.26	3.43	-9.72	-5.26	3.43	16.58
5	1	6	3.43	5.26	-10.86	3.43	2.27	17.57
6	6	8	3.43	2.27	-17.57	3.43	-3.53	16.90
7	8	10	3.43	-3.53	-16.90	3.43	-12.14	4.18
8	10	12	3.43	-12.14	-4.18	3.43	-23.55	-25.31
9	5	7	-3.43	-5.26	-16.58	-3.43	-5.26	7.76
10	7	9	-3.43	-5.26	-7.76	-3.43	-5.26	-1.06
11	9	11	-3.43	-5.26	1.06	-3.43	-5.26	-9.87
12	11	20	-3.43	-5.26	9.87	-3.43	-5.26	-18.69
13	12	13	-23.55	-0.06	25.31	-23.55	-0.06	-25.37
14	13	14	-23.55	4.82	25.37	-23.55	4.82	-20.55
15	14	15	-23.55	7.97	20.55	-23.55	7.97	-12.58
16	15	16	-23.55	9.48	12.58	-23.55	9.48	-3.10
17	16	17	5.26	9.43	3.10	5.26	9.43	6.33
18	17	18	5.26	7.84	-6.33	5.26	7.84	14.17
19	18	19	5.26	4.67	-14.17	5.26	4.67	18.84
20	19	20	5.26	-0.15	-18.84	5.26	-0.15	18.69

EMPUJE POR AMBOS LADOS HASTA ALTURA TOTAL: Hipótesis N° 4

Barra	P1	P2	D1	Longitud	Angulo	Tipo
5	-9.350	-11.025	0.000	1.675	0.000	3
6	-11.025	-12.700	0.000	1.675	0.000	3
7	-12.700	-14.375	0.000	1.675	0.000	3
8	-14.375	-16.050	0.000	1.675	0.000	3
9	9.350	11.025	0.000	1.675	0.000	3
10	11.025	12.700	0.000	1.675	0.000	3
11	12.700	14.375	0.000	1.675	0.000	3
12	14.375	16.050	0.000	1.675	0.000	3

No hay mas barras cargadas para ésta hipótesis

ESFUERZOS EN BARRAS

Barra	i	j	Axil i	Corte.i	Momto.i	Axil j	Corte.j	Momto.j
1	1	2	-38.62	0.00	-17.58	-38.62	0.00	17.58
2	2	3	-38.62	0.00	-17.58	-38.62	0.00	17.58
3	3	4	-38.62	0.00	-17.58	-38.62	0.00	17.58
4	4	5	-38.62	0.00	-17.58	-38.62	0.00	17.58
5	1	6	0.00	38.62	17.58	0.00	21.55	33.20
6	6	8	0.00	21.55	-33.20	0.00	1.68	53.05
7	8	10	0.00	1.68	-53.05	0.00	-20.99	37.27
8	10	12	0.00	-20.99	-37.27	0.00	-46.47	-18.84
9	5	7	0.00	-38.62	-17.58	0.00	-21.55	-33.20
10	7	9	0.00	-21.55	33.20	0.00	-1.68	-53.05
11	9	11	0.00	-1.68	53.05	0.00	20.99	-37.27
12	11	20	0.00	20.99	37.27	0.00	46.47	18.84
13	12	13	-46.47	0.26	18.84	-46.47	0.26	-18.58
14	13	14	-46.47	0.43	18.58	-46.47	0.43	-18.15
15	14	15	-46.47	0.36	18.15	-46.47	0.36	-17.79
16	15	16	-46.47	0.14	17.79	-46.47	0.14	-17.66
17	16	17	-46.47	-0.14	17.66	-46.47	-0.14	-17.79
18	17	18	-46.47	-0.36	17.79	-46.47	-0.36	-18.15
19	18	19	-46.47	-0.43	18.15	-46.47	-0.43	-18.58
20	19	20	-46.47	-0.26	18.58	-46.47	-0.26	-18.84

SOBRECARGA UNIFORME: Hipótesis N° 5

Barra	P1	P2	D1	Longitud	Angulo	Tipo
1	3.160	0.000	0.000	2.000	-90.000	2
2	3.160	0.000	0.000	2.000	-90.000	2
3	3.160	0.000	0.000	2.000	-90.000	2
4	3.160	0.000	0.000	2.000	-90.000	2

No hay mas barras cargadas para ésta hipótesis

ESFUERZOS EN BARRAS

Barra	i	j	Axil i	Corte.i	Momto.i	Axil j	Corte.j	Momto.j
1	1	2	-0.08	-12.64	-10.53	-0.08	-6.32	-8.43
2	2	3	-0.08	-6.32	8.43	-0.08	0.00	-14.75
3	3	4	-0.08	0.00	14.75	-0.08	6.32	-8.43
4	4	5	-0.08	6.32	8.43	-0.08	12.64	10.53
5	1	6	-12.64	0.08	10.53	-12.64	0.08	-10.40
6	6	8	-12.64	0.08	10.40	-12.64	0.08	-10.27
7	8	10	-12.64	0.08	10.27	-12.64	0.08	-10.13
8	10	12	-12.64	0.08	10.13	-12.64	0.08	-10.00
9	5	7	-12.64	-0.08	-10.53	-12.64	-0.08	10.40
10	7	9	-12.64	-0.08	-10.40	-12.64	-0.08	10.27
11	9	11	-12.64	-0.08	-10.27	-12.64	-0.08	10.13
12	11	20	-12.64	-0.08	-10.13	-12.64	-0.08	10.00
13	12	13	0.08	10.92	10.00	0.08	10.92	0.92
14	13	14	0.08	7.64	-0.92	0.08	7.64	8.56
15	14	15	0.08	4.51	-8.56	0.08	4.51	13.08
16	15	16	0.08	1.49	-13.08	0.08	1.49	14.57
17	16	17	0.08	-1.49	-14.57	0.08	-1.49	13.08
18	17	18	0.08	-4.51	-13.08	0.08	-4.51	8.56
19	18	19	0.08	-7.64	-8.56	0.08	-7.64	0.92
20	19	20	0.08	-10.92	-0.92	0.08	-10.92	-10.00

CALCULO DE LAS ALETAS

INTRODUCCION

El objeto de este Anejo de Cálculo es la justificación técnica de los muros a disponer que serán tipo ménsula. Esta se efectúa mediante la realización y exposición de los cálculos correspondientes.

El muro trabaja esencialmente a flexión, siendo la compresión vertical debida a su propio peso prácticamente despreciable.

INSTRUCCIONES Y NORMAS APLICADAS

Las normas aplicadas son las vigentes en la fecha de redacción de este Anejo de Cálculo.

- Acciones: "Instrucción sobre las acciones a considerar en el Proyecto de Puentes de Carreteras" de 12 de Febrero de 1998.

- Hormigón armado: EH-91 "Instrucción para el proyecto y la ejecución de obras de hormigón en masa o armado " de 28 de Junio de 1991.

- Norma de Construcción Sismorresistente: Parte General y Edificación (NCSE-94) de 29 de Diciembre de 1994.

- Hormigón armado de P. Jiménez Montoya, A. García Meseguer y F. Morán Cabré.

NIVELES DE CONTROL DE CALIDAD ADOPTADOS.

El control de calidad se atendrá a lo especificado en la Instrucción EH-91 con los siguientes niveles de control:

- Materiales:

Hormigón de alzados ..... Normal - Coef. minoración $\gamma_c = 1,50$

Hormigón de zapatas ..... Normal - Coef. minoración $\gamma_c = 1,50$

Acero de armaduras ..... Normal - Coef. minoración $\gamma_c = 1,15$

- Ejecución:

Tipo de control ..... Normal Coef. mayoración $\gamma_f = 1,60$

Tipo de control ..... Sismo Coef. mayoración $\gamma_f = 1,00$

CARACTERISTICAS DE LOS MATERIALES.

Se consideran las siguientes características en los materiales empleados en el proyecto del muro:

- La resistencia característica de los diferentes hormigones utilizados es la siguiente:

Hormigón en Cimentación ..... H-250 $f_{ck} = 250$ Kg/cm^2

Hormigón en Alzados ..... H-250 $f_{ck} = 250$ Kg/cm^2

Acero de armar ..... AEH-500 $f_{yk} = 5100$ Kg/cm^2

- Peso específico del hormigón ..... 2.50 t/m^2

CARACTERISTICAS DEL TERRENO.

Conforme a los parámetros dados en el Anejo de Geotecnia, se consideran las siguientes valores característicos del terreno:

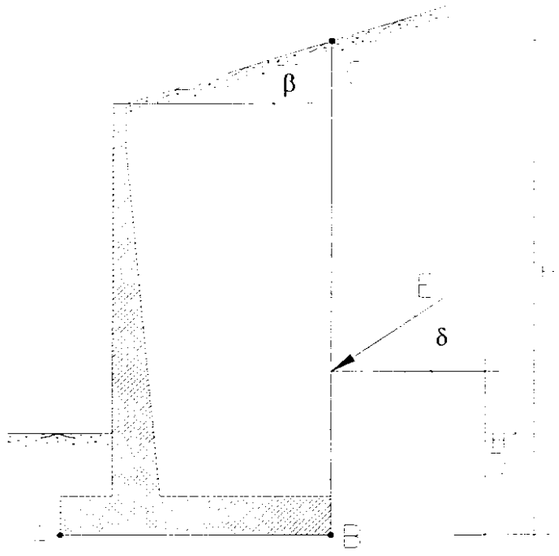
Peso específico de las tierras (t/m^3) ..... $\gamma = 2.00$

Angulo de rozamiento interno de las tierras ..... $\Phi = 35^\circ$

Angulo de rozamiento entre tierras y muro ..... $\delta = 12^\circ$

Coeficiente de rozamiento entre tierras y cimentación ..... $\mu = 0.55$

Tensión admisible del terreno ..... $\sigma_{adm} = 2,5$ Kg/cm^2.



CARGAS Y SOBRECARGAS.

Se consideran como cargas actuando sobre el muro, el empuje de las tierras a contener. Además se tendrá en cuenta el peso propio del muro.

ACCIONES SISMICAS.

Según la Norma de Construcción Sismorresistente NCSE-94, las obras se hayan situadas en zona cuyo efecto sísmico no es determinante.

CALCULO DE LOS MUROS.

Cálculo del empuje del terreno sobre los muros

La presión del terreno sobre el muro está fuertemente condicionada por la deformabilidad del muro, entendiendo por tal no sólo la deformación que el muro experimenta como pieza de hormigón, sino también la que en el muro produce la deformación del terreno.

Si el muro se desplaza, permitiendo la expansión lateral del suelo se produce un fallo por corte del mismo y la cuña de rotura avanza hacia el muro y desciende. Esto origina un empuje de las tierras sobre el muro, que recibe el nombre de "Empuje activo".

El cálculo del empuje activo "K_A" de los muros se realiza mediante la Teoría de Coulomb.

Teniendo en cuenta un muro cuyo trasdós forma un ángulo "α" con la horizontal y una superficie del terreno plana , formando un talud de ángulo "β", sobre la que actúa una carga uniformemente repartida de valor "q" por metro lineal de proyección, la presión "P" del terreno sobre el muro a la profundidad "z", contada a partir de la cota superior del terreno, tiene la siguiente expresión:

$$P = (\gamma \times z + q) \times K_A$$

siendo K: coeficiente de empuje activo de Coulomb.

Seguridad frente al deslizamiento y al vuelco.

Se considera un coeficiente de seguridad frente al deslizamiento mayor o igual a 1.50, y frente a l vuelco mayor o igual a 1,80. En el caso de que haya que considerar la acción del sismo, ambos coeficientes se reducen a 1.20.

El coeficiente de seguridad al **deslizamiento** será:

$$CD = \frac{\mu \times \sum F_v}{\sum F_h}$$

siendo "μ" el coeficiente de rozamiento entre cimentación y terreno y $\sum F_v$ y $\sum F_h$, las sumas de las fuerzas verticales y horizontales respectivamente.

El coeficiente de seguridad al **vuelco** será:

$$CV = \frac{\sum M_e}{\sum M_v}$$

siendo $\sum M_e$ y $\sum M_v$ las sumas de los momentos estabilizadores y de vuelco respectivamente.

<u>Cálculo de las tensiones sobre el terreno.</u>

En función del valor de la excentricidad de la resultante de las cargas existentes, se considera dos tipos de distribución de las tensiones (Item 21.2-5 , P.Jiménez Montoya)

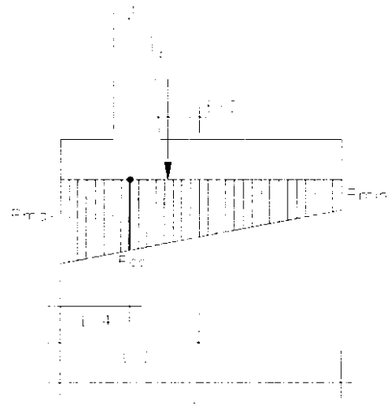
- Distribución trapecial de tensiones: se produce cuando la excentricidad "EXC" ≤L/6, siendo "L" el ancho de la zapata del muro.

En este caso el valor de las presiones máxima "P_{max}", mínima "P_{min}"y de comparación "P_{co}" producidas sobre el terreno son las siguientes:

$$P_{max} = \frac{\sum F_v}{L} \times \left(1 + \frac{6 \times EXC}{L}\right)$$

$$P_{min} = \frac{\sum F_v}{L} \times \left(1 - \frac{6 \times EXC}{L}\right)$$

$$P_{co} = \frac{\sum F_v}{L} \times \left(1 + \frac{3 \times EXC}{L}\right)$$

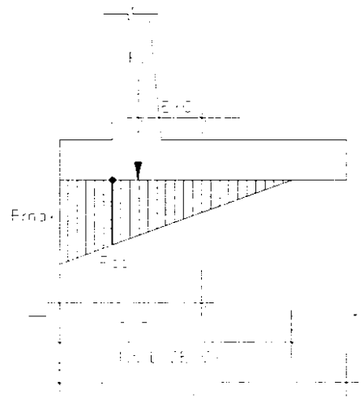


- Distribución triangular de tensiones: se produce cuando la excentricidad "EXC">L/6, siendo "L" el ancho de la zapata del muro.

$$P_{max} = \frac{4 \times \sum F_v}{3 \times (L - 2 \times EXC)}$$

$$P_{min} = 0$$

$$P_{co} = \frac{\sum F_v}{(L - 2 \times EXC)}$$



DATOS DE ENTRADA

Muro ..... : Aleta 1 PI-102+100

GEOMETRIA:

Longitud muro ..... :	8.13	m
Altura mínima total.....:	4.70	m
Altura máxima total.....:	7.80	m
Canto de Zapata..... :	0.80	m
Ancho coronacion ..... :	0.40	m
Talud trasdós..... :	10.00	%
Talud exterior..... :	0.00	%
Angulo muro-calzada .....:	60.00	°
Distancia muro-calzada.....:	0.00	m
Talud de terraplén (H/V)...:	2 / 1	
Angulo de talud trasdós....:	14.04	°

TERRENO:

Densidad de tierras.....:	2.00	t/m3
Angulo de rozam. interno...:	35.00	°
Roz. Muro-tierras .....:	12.00	°
Coeficiente de roz.....:	0.55	
Tensión admisible .....:	2.00	Kg/cm²
Sobrecarga terraplén..... :	3.00	t/m²
Kh inclinado .....:	0.346	
Kh horizontal.....:	0.291	
Kv inclinado .....:	0.074	
Kv horizontal.....:	0.062	

MATERIALES

Fck (Kg/cm²).....:	250	
Gc .....:	1.50	
Fyk (Kg/cm²).....:	5100	
Gs .....:	1.15	
Recubrimiento en Alzados...:	3	cms
Recubrimiento en Cimientos.:	5	cms

SEGURIDAD

Coeficiente desliz.....:	1.50
Coeficiente vuelco.....:	1.50
Coeficiente de acciones....:	1.60

CONDICIONES DE EQUILIBRIO

H = Altura (m) del alzado de la sección
Eh = Empuje Horizontal (t)
Ev = Empuje Vertical (t)
Meh = Momento (m.t) de los empujes Horizontales
Mev = Momento (m.t) de los empujes Verticales
ΣFh = Sumatorio de Fuerzas horizontales (t)
ΣFv = Sumatorio de Fuerzas verticales (t)
ΣMeh = Sumatorio de Momentos (m.t) de los empujes Horizontales
ΣMev = Sumatorio de Momentos (m.t) de los empujes Verticales

Zona		Secc	H	Eh	Ev	Meh	Mev	ΣFh	ΣFv	ΣMeh	ΣMev
0.00	1.00	0.50	4.09	11.85	2.52	21.52	7.33	11.85	33.89	31.01	62.43
1.00	2.00	1.50	4.47	13.72	2.92	27.03	9.36	13.72	39.31	38.01	80.27
2.00	3.00	2.50	4.85	15.72	3.34	33.38	11.72	15.72	45.09	45.95	101.11
3.00	4.00	3.50	5.23	17.84	3.79	40.61	14.45	17.84	51.23	54.89	125.19
4.00	5.00	4.50	5.62	19.87	4.22	49.60	18.20	19.87	62.76	65.49	170.00
5.00	6.00	5.50	6.00	20.71	4.40	55.14	20.28	20.71	71.21	71.71	203.85
6.00	7.00	6.50	6.38	20.78	4.42	56.36	20.80	20.78	76.05	72.99	221.14
7.00	8.00	7.50	6.76	20.52	4.36	55.30	20.54	20.52	77.85	71.71	224.65
8.00	8.13	8.07	6.98	20.37	4.33	54.70	20.39	20.37	78.21	71.00	224.82

H = Altura (m) de la sección en estudio
Zarpa = Longitud (m) de la parte delantera de la zapata
Zap = Longitud (m) total de la zapata
Csd = Coeficiente de seguridad al Deslizamiento
Csv = Coeficiente de seguridad al Vuelco
σmáx = Tensión (Kg/cm²) punta en cota de cimentación
σmín = Tensión (Kg/cm²) mínima en cota de cimentación
σcob = Tensión (Kg/cm²) de comparación
Base = Base comprimida (m) para el caso de diagrama triangular

Zona		Secc	H	Zarpa	Zap	Csd	Csv	σmáx	σmín	σcob	Base
0.00	1.00	0.50	4.09	0.70	2.91	1.57	2.01	2.44	0.00	1.83	2.78
1.00	2.00	1.50	4.47	0.80	3.21	1.58	2.11	2.44	0.01	1.83	3.21
2.00	3.00	2.50	4.85	0.90	3.51	1.58	2.20	2.45	0.12	1.84	3.51
3.00	4.00	3.50	5.23	1.00	3.81	1.58	2.28	2.47	0.22	1.87	3.81
4.00	5.00	4.50	5.62	1.00	4.31	1.74	2.60	2.45	0.46	1.88	4.31
5.00	6.00	5.50	6.00	1.00	4.61	1.89	2.84	2.45	0.64	1.92	4.61
6.00	7.00	6.50	6.38	1.00	4.71	2.01	3.03	2.45	0.78	1.95	4.71
7.00	8.00	7.50	6.76	1.00	4.71	2.09	3.13	2.48	0.83	1.98	4.71
8.00	8.13	8.07	6.98	1.00	4.71	2.11	3.17	2.48	0.84	1.99	4.71

Coeficiente global de seg. al deslizamiento ... 1.83
Coeficiente global de seg. al vuelco 2.70
Tensión máxima en solera (Kg/cm²)..... 2.48

A R M A D U R A S EH-91

Para cada sección:

H = Altura (m) sobre cara superior de zapata
d = Canto útil (m)
Vd = Cortante de cálculo (t)
Vcu= Contribución del hormigón a cortante (t)
Md = Momento de cálculo de la sección (m.t)
Us = Capacidad necesaria (t)
As = Armadura en cm²

Z A P A T A :

Vcu= 48.41 t
d = 0.75 m

		ZARPA DELANTERA				ZARPA TRASERA			
Zona		Vd	Md	Us	As	Vd	Md	Us	As
0.00	1.00	21.22	8.10	10.56	3.32	21.22	8.10	24.32	6.89
1.00	2.00	24.12	9.62	12.57	3.90	24.12	9.62	31.27	8.37
2.00	3.00	27.17	11.31	14.80	4.51	27.17	11.31	39.46	9.84
3.00	4.00	30.04	13.17	17.27	5.17	30.04	13.17	49.01	11.16
4.00	5.00	33.06	15.06	19.79	5.81	33.06	15.06	58.88	13.28
5.00	6.00	34.93	16.48	21.69	6.28	34.93	16.48	65.42	14.75
6.00	7.00	34.85	17.15	22.59	6.49	34.85	17.15	66.14	14.91
7.00	8.00	34.29	17.39	22.90	6.56	34.29	17.39	61.17	13.79
8.00	8.13	33.88	17.51	23.07	6.60	33.88	17.51	58.54	13.20

A L Z A D O S

		Sección						
Zona		H	d	Vd	Vcu	Md	Us	As
0.00	1.00	2.73	0.54	6.24	32.69	5.45	10.57	3.20
		1.36	0.67	13.87	41.49	20.22	31.42	8.03
		-0.00	0.81	18.42	50.29	31.83	40.88	10.20
1.00	2.00	2.98	0.55	6.98	33.51	6.52	12.36	3.68
		1.49	0.70	15.78	43.13	24.77	37.16	9.07
		0.00	0.85	21.32	52.75	39.98	49.16	11.63
2.00	3.00	3.24	0.56	7.75	34.33	7.72	14.31	4.19
		1.62	0.72	17.81	44.77	29.94	43.43	10.09
		-0.00	0.89	24.41	55.21	49.37	58.26	13.14
3.00	4.00	3.49	0.57	8.55	35.15	9.05	16.41	4.71
		1.74	0.75	19.95	46.41	35.75	50.23	11.33
		0.00	0.92	27.71	57.67	60.10	68.19	15.38
4.00	5.00	3.74	0.59	9.40	35.97	10.51	18.67	5.26
		1.87	0.77	21.91	48.05	42.07	57.31	12.92
		-0.00	0.96	30.43	60.13	71.47	78.09	17.61
5.00	6.00	4.00	0.60	9.73	36.79	11.67	20.29	5.64
		2.00	0.80	22.64	49.69	46.44	61.27	13.82
		-0.00	1.00	31.82	62.59	79.77	83.85	18.91
6.00	7.00	4.25	0.61	9.29	37.61	11.50	19.53	5.50
		2.13	0.83	22.53	51.33	47.72	60.84	13.72
		-0.00	1.04	32.34	65.06	84.06	84.92	19.15
7.00	8.00	4.51	0.63	8.74	38.43	11.06	18.36	5.25
		2.25	0.85	22.26	52.97	48.30	59.55	13.43
		-0.00	1.08	32.68	67.52	87.43	84.97	19.16
8.00	8.13	4.65	0.63	8.19	38.89	10.11	16.54	4.83
		2.33	0.87	21.84	53.90	47.22	57.08	12.87
		-0.00	1.10	32.60	68.91	87.52	83.19	18.76

DATOS DE ENTRADA

Muro ..... : Aleta 2 PI-102+100

GEOMETRIA:

Longitud muro	:	7.63 m
Altura mínima total.....	:	4.30 m
Altura máxima total.....	:	7.80 m
Canto de Zapata.....	:	0.80 m
Ancho coronacion	:	0.40 m
Talud trasdós.....	:	10.00 %
Talud exterior.....	:	0.00 %
Angulo muro-calzada	:	60.00 °
Distancia muro-calzada.....	:	0.00 m
Talud de terraplén (H/V)...	:	2 / 1
Angulo de talud trasdós....	:	14.04 °

TERRENO:

Densidad de tierras.....	:	2.00 t/m3
Angulo de rozam. interno...	:	35.00 °
Roz. Muro-tierras	:	12.00 °
Coeficiente de roz.....	:	0.55
Tensión admisible	:	2.00 Kg/cm²
Sobrecarga terraplén.....	:	3.00 t/m²
Kh inclinado	:	0.346
Kh horizontal.....	:	0.291
Kv inclinado	:	0.074
Kv horizontal.....	:	0.062

MATERIALES

Fck (Kg/cm²).....	:	250
Gc	:	1.50
Fyk (Kg/cm²).....	:	5100
Gs	:	1.15
Recubrimiento en Alzados...	:	3 cms
Recubrimiento en Cimientos.:		5 cms

SEGURIDAD

Coeficiente desliz.....	:	1.50
Coeficiente vuelco.....	:	1.50
Coeficiente de acciones....	:	1.60

CONDICIONES DE EQUILIBRIO

H = Altura (m) del alzado de la sección
Eh = Empuje Horizontal (t)
Ev = Empuje Vertical (t)
Meh = Momento (m.t) de los empujes Horizontales
Mev = Momento (m.t) de los empujes Verticales
ΣFh = Sumatorio de Fuerzas horizontales (t)
ΣFv = Sumatorio de Fuerzas verticales (t)
ΣMeh = Sumatorio de Momentos (m.t) de los empujes Horizontales
ΣMev = Sumatorio de Momentos (m.t) de los empujes Verticales

Zona		Secc	H	Eh	Ev	Meh	Mev	ΣFh	ΣFv	ΣMeh	ΣMev
0.00	1.00	0.50	3.73	10.26	2.18	17.16	5.83	10.26	29.80	25.36	49.96
1.00	2.00	1.50	4.19	12.33	2.62	22.89	7.79	12.33	35.38	32.76	66.39
2.00	3.00	2.50	4.65	14.47	3.08	29.37	10.07	14.47	40.04	40.95	84.68
3.00	4.00	3.50	5.11	16.99	3.61	37.76	13.27	16.99	48.03	51.36	113.84
4.00	5.00	4.50	5.56	19.04	4.05	47.15	16.89	19.04	59.83	62.38	157.62
5.00	6.00	5.50	6.02	19.95	4.24	52.55	18.96	19.95	68.71	68.51	191.56
6.00	7.00	6.50	6.48	20.21	4.30	54.04	19.65	20.21	73.77	70.21	208.61
7.00	7.63	7.32	6.86	20.32	4.32	54.47	20.18	20.32	77.21	70.72	220.83

H = Altura (m) de la sección en estudio
Zarpa = Longitud (m) de la parte delantera de la zapata
Zap = Longitud (m) total de la zapata
Csd = Coeficiente de seguridad al Deslizamiento
Csv = Coeficiente de seguridad al Vuelco
σmáx = Tensión (Kg/cm²) punta en cota de cimentación
σmín = Tensión (Kg/cm²) mínima en cota de cimentación
σcob = Tensión (Kg/cm²) de comparación
Base = Base comprimida (m) para el caso de diagrama triangular

Zona		Secc	H	Zarpa	Zap	Csd	Csv	σmáx	σmín	σcob	Base
0.00	1.00	0.50	3.73	0.60	2.67	1.60	1.97	2.41	0.00	1.81	2.48
1.00	2.00	1.50	4.19	0.70	2.97	1.58	2.03	2.48	0.00	1.86	2.85
2.00	3.00	2.50	4.65	0.90	3.27	1.52	2.07	2.44	0.00	1.83	3.27
3.00	4.00	3.50	5.11	1.00	3.67	1.55	2.22	2.45	0.16	1.85	3.67
4.00	5.00	4.50	5.56	1.00	4.17	1.73	2.53	2.45	0.41	1.88	4.17
5.00	6.00	5.50	6.02	1.00	4.47	1.89	2.80	2.45	0.62	1.92	4.47
6.00	7.00	6.50	6.48	1.00	4.57	2.01	2.97	2.48	0.74	1.97	4.57
7.00	7.63	7.32	6.86	1.00	4.67	2.09	3.12	2.48	0.82	1.99	4.67

Coeficiente global de seg. al deslizamiento ... 1.78
Coeficiente global de seg. al vuelco 2.59
Tensión máxima en solera (Kg/cm²)..... 2.48

A R M A D U R A S EH-91

Para cada sección:

H = Altura (m) sobre cara superior de zapata
d = Canto útil (m)
Vd = Cortante de cálculo (t)
Vcu= Contribución del hormigón a cortante (t)
Md = Momento de cálculo de la sección (m.t)
Us = Capacidad necesaria (t)
As = Armadura en cm²

Z A P A T A :

Vcu= 48.41 t
d = 0.75 m

		ZARPA DELANTERA				ZARPA TRASERA			
Zona		Vd	Md	Us	As	Vd	Md	Us	As
0.00	1.00	18.03	5.97	7.78	2.49	18.03	5.97	19.98	5.86
1.00	2.00	21.26	7.65	9.97	3.15	21.26	7.65	27.24	7.54
2.00	3.00	25.03	9.59	12.52	3.88	25.03	9.59	36.08	9.27
3.00	4.00	28.70	11.80	15.46	4.69	28.70	11.80	46.62	10.87
4.00	5.00	31.91	14.02	18.40	5.46	31.91	14.02	56.73	12.79
5.00	6.00	33.59	15.66	20.59	6.01	33.59	15.66	62.25	14.04
6.00	7.00	34.23	16.66	21.94	6.33	34.23	16.66	61.72	13.92
7.00	7.63	34.23	17.40	22.92	6.57	34.23	17.40	59.13	13.33

A L Z A D O S

		Sección						
Zona		H	d	Vd	Vcu	Md	Us	As
0.00	1.00	2.49	0.52	5.61	31.91	4.57	9.06	2.78
		1.24	0.65	12.21	39.93	16.52	26.57	7.06
		0.00	0.77	15.92	47.96	25.28	33.91	8.85
1.00	2.00	2.79	0.54	6.45	32.89	5.73	11.06	3.33
		1.40	0.68	14.39	41.91	21.40	32.94	8.32
		0.00	0.82	19.19	50.92	33.90	43.05	10.59
2.00	3.00	3.10	0.55	7.34	33.88	7.07	13.27	3.92
		1.55	0.71	16.72	43.88	27.12	40.06	9.56
		-0.00	0.86	22.75	53.88	44.21	53.34	12.28
3.00	4.00	3.40	0.57	8.29	34.87	8.59	15.70	4.54
		1.70	0.74	19.23	45.85	33.74	47.92	10.81
		-0.00	0.91	26.52	56.84	56.34	64.77	14.61
4.00	5.00	3.71	0.59	9.22	35.86	10.29	18.33	5.18
		1.85	0.77	21.15	47.83	40.61	55.53	12.52
		-0.00	0.96	29.30	59.80	68.61	75.28	16.97
5.00	6.00	4.02	0.60	9.24	36.84	11.03	19.12	5.38
		2.01	0.80	21.78	49.80	44.44	58.38	13.16
		-0.00	1.00	30.79	62.76	76.79	80.34	18.12
6.00	7.00	4.32	0.62	8.88	37.83	11.01	18.58	5.29
		2.16	0.83	21.99	51.78	46.66	58.88	13.28
		-0.00	1.05	31.84	65.72	83.02	82.89	18.69
7.00	7.63	4.57	0.63	8.46	38.63	10.64	17.55	5.07
		2.29	0.86	21.97	53.38	47.66	58.24	13.13
		-0.00	1.09	32.51	68.14	87.15	83.84	18.91

DATOS DE ENTRADA

Muro ..... : Aleta 3 PI-102+100

GEOMETRIA:

Longitud muro ..... :	8.43	m
Altura mínima total.....:	4.00	m
Altura máxima total.....:	7.80	m
Canto de Zapata..... :	0.80	m
Ancho coronacion ..... :	0.40	m
Talud trasdós..... :	10.00	%
Talud exterior..... :	0.00	%
Angulo muro-calzada .....:	60.00	°
Distancia muro-calzada.....:	0.00	m
Talud de terraplén (H/V)...:	2 / 1	
Angulo de talud trasdós....:	14.04	°

TERRENO:

Densidad de tierras.....:	2.00	t/m3
Angulo de rozam. interno...:	35.00	°
Roz. Muro-tierras .....:	12.00	°
Coeficiente de roz.....:	0.55	
Tensión admisible .....:	2.00	Kg/cm²
Sobrecarga terraplén..... :	3.00	t/m²
Kh inclinado .....:	0.346	
Kh horizontal.....:	0.291	
Kv inclinado .....:	0.074	
Kv horizontal.....:	0.062	

MATERIALES

Fck (Kg/cm²).....:	250	
Gc .....:	1.50	
Fyk (Kg/cm²).....:	5100	
Gs .....:	1.15	
Recubrimiento en Alzados...:	3	cms
Recubrimiento en Cimientos.:	5	cms

SEGURIDAD

Coeficiente desliz.....:	1.50
Coeficiente vuelco.....:	1.50
Coeficiente de acciones....:	1.60

CONDICIONES DE EQUILIBRIO

H = Altura (m) del alzado de la sección
Eh = Empuje Horizontal (t)
Ev = Empuje Vertical (t)
Meh = Momento (m.t) de los empujes Horizontales
Mev = Momento (m.t) de los empujes Verticales
ΣFh = Sumatorio de Fuerzas horizontales (t)
ΣFv = Sumatorio de Fuerzas verticales (t)
ΣMeh = Sumatorio de Momentos (m.t) de los empujes Horizontales
ΣMev = Sumatorio de Momentos (m.t) de los empujes Verticales

Zona		Secc	H	Eh	Ev	Meh	Mev	ΣFh	ΣFv	ΣMeh	ΣMev
0.00	1.00	0.50	3.43	8.98	1.91	13.92	4.66	8.98	26.30	21.10	39.87
1.00	2.00	1.50	3.88	10.81	2.30	18.62	6.30	10.81	30.37	27.27	53.18
2.00	3.00	2.50	4.33	12.90	2.74	24.55	8.34	12.90	35.94	34.87	70.16
3.00	4.00	3.50	4.78	15.28	3.25	31.95	11.18	15.28	43.53	44.17	96.04
4.00	5.00	4.50	5.23	17.72	3.77	40.58	14.47	17.72	51.72	54.75	127.26
5.00	6.00	5.50	5.68	19.41	4.13	49.06	17.50	19.41	61.93	64.58	165.40
6.00	7.00	6.50	6.13	20.14	4.28	53.63	19.45	20.14	70.86	69.74	200.07
7.00	8.00	7.50	6.58	20.28	4.31	54.30	20.01	20.28	75.63	70.52	216.17
8.00	8.43	8.22	6.90	20.34	4.32	54.55	20.50	20.34	78.67	70.83	227.61

H = Altura (m) de la sección en estudio
Zarpa = Longitud (m) de la parte delantera de la zapata
Zap = Longitud (m) total de la zapata
Csd = Coeficiente de seguridad al Deslizamiento
Csv = Coeficiente de seguridad al Vuelco
σmáx = Tensión (Kg/cm²) punta en cota de cimentación
σmín = Tensión (Kg/cm²) mínima en cota de cimentación
σcob = Tensión (Kg/cm²) de comparación
Base = Base comprimida (m) para el caso de diagrama triangular

Zona		Secc	H	Zarpa	Zap	Csd	Csv	σmáx	σmín	σcob	Base
0.00	1.00	0.50	3.43	0.50	2.44	1.61	1.89	2.46	0.00	1.84	2.14
1.00	2.00	1.50	3.88	0.70	2.74	1.55	1.95	2.37	0.00	1.78	2.56
2.00	3.00	2.50	4.33	0.80	3.04	1.53	2.01	2.44	0.00	1.83	2.95
3.00	4.00	3.50	4.78	0.90	3.44	1.57	2.17	2.43	0.10	1.83	3.44
4.00	5.00	4.50	5.23	1.00	3.84	1.61	2.32	2.44	0.25	1.84	3.84
5.00	6.00	5.50	5.68	1.00	4.24	1.75	2.56	2.48	0.44	1.90	4.24
6.00	7.00	6.50	6.13	1.00	4.54	1.93	2.87	2.45	0.67	1.93	4.54
7.00	8.00	7.50	6.58	1.00	4.64	2.05	3.07	2.46	0.80	1.96	4.64
8.00	8.43	8.22	6.90	1.00	4.74	2.13	3.21	2.45	0.86	1.97	4.74

Coeficiente global de seg. al deslizamiento ...	1.79
Coeficiente global de seg. al vuelco	2.61
Tensión máxima en solera (Kg/cm²).....	2.48

A R M A D U R A S EH-91

Para cada sección:

H = Altura (m) sobre cara superior de zapata
d = Canto útil (m)
Vd = Cortante de cálculo (t)
Vcu= Contribución del hormigón a cortante (t)
Md = Momento de cálculo de la sección (m.t)
Us = Capacidad necesaria (t)
As = Armadura en cm²

Z A P A T A :

Vcu= 48.41 t
d = 0.75 m

		Z A R P A D E L A N T E R A				Z A R P A T R A S E R A			
Zona		Vd	Md	Us	As	Vd	Md	Us	As
0.00	1.00	15.31	4.32	5.61	1.83	15.31	4.32	16.84	5.06
1.00	2.00	18.37	5.74	7.47	2.40	18.37	5.74	23.18	6.63
2.00	3.00	21.68	7.43	9.68	3.06	21.68	7.43	30.92	8.30
3.00	4.00	25.22	9.41	12.29	3.82	25.22	9.41	40.23	9.96
4.00	5.00	28.92	11.67	15.28	4.64	28.92	11.67	51.01	11.50
5.00	6.00	31.94	13.84	18.16	5.40	31.94	13.84	60.23	13.58
6.00	7.00	33.38	15.42	20.28	5.93	33.38	15.42	64.08	14.45
7.00	8.00	33.62	16.47	21.67	6.27	33.62	16.47	61.58	13.89
8.00	8.43	33.64	17.20	22.66	6.51	33.64	17.20	58.91	13.28

A L Z A D O S

		Sección						
Zona		H	d	Vd	Vcu	Md	Us	As
0.00	1.00	2.28	0.51	5.08	31.25	3.89	7.87	2.45
		1.14	0.63	10.88	38.62	13.73	22.77	6.24
		0.00	0.74	13.92	45.99	20.45	28.51	7.71
1.00	2.00	2.58	0.53	5.88	32.22	4.93	9.70	2.96
		1.29	0.66	12.91	40.56	18.02	28.57	7.47
		-0.00	0.79	16.96	48.90	27.90	36.77	9.42
2.00	3.00	2.88	0.54	6.73	33.19	6.13	11.73	3.52
		1.44	0.69	15.10	42.50	23.08	35.09	8.71
		-0.00	0.83	20.27	51.81	36.90	46.13	11.12
3.00	4.00	3.19	0.56	7.63	34.16	7.51	13.98	4.11
		1.59	0.72	17.46	44.44	28.99	42.33	9.92
		0.00	0.88	23.86	54.72	47.60	56.62	12.77
4.00	5.00	3.49	0.57	8.58	35.13	9.07	16.45	4.72
		1.74	0.75	19.94	46.38	35.78	50.30	11.34
		-0.00	0.92	27.49	57.63	59.98	68.11	15.36
5.00	6.00	3.79	0.59	9.37	36.10	10.71	18.96	5.33
		1.89	0.78	21.51	48.32	42.17	57.10	12.88
		-0.00	0.97	29.90	60.54	71.47	77.51	17.48
6.00	7.00	4.09	0.60	9.20	37.07	11.10	19.12	5.39
		2.04	0.81	21.91	50.26	45.19	58.81	13.26
		-0.00	1.01	31.13	63.45	78.58	81.32	18.34
7.00	8.00	4.39	0.62	8.81	38.04	11.00	18.45	5.26
		2.19	0.84	22.04	52.20	47.14	58.98	13.30
		-0.00	1.06	32.08	66.36	84.41	83.46	18.82
8.00	8.43	4.60	0.63	8.35	38.74	10.42	17.14	4.97
		2.30	0.86	21.92	53.59	47.48	57.77	13.03
		0.00	1.09	32.54	68.44	87.29	83.57	18.84

DATOS DE ENTRADA

Muro ..... : Aleta 4 PI-102+100

GEOMETRIA:

Longitud muro ..... :	8.93	m
Altura mínima total.....:	5.15	m
Altura máxima total.....:	7.80	m
Canto de Zapata..... :	0.80	m
Ancho coronacion ..... :	0.40	m
Talud trasdós..... :	10.00	%
Talud exterior..... :	0.00	%
Angulo muro-calzada .....:	60.00	°
Distancia muro-calzada.....:	0.00	m
Talud de terraplén (H/V)...:	2 / 1	
Angulo de talud trasdós....:	14.04	°

TERRENO:

Densidad de tierras.....:	2.00	t/m3
Angulo de rozam. interno...:	35.00	°
Roz. Muro-tierras .....:	12.00	°
Coeficiente de roz.....:	0.55	
Tensión admisible .....:	2.00	Kg/cm²
Sobrecarga terraplén..... :	3.00	t/m²
Kh inclinado .....:	0.346	
Kh horizontal.....:	0.291	
Kv inclinado .....:	0.074	
Kv horizontal.....:	0.062	

MATERIALES

Fck (Kg/cm²).....:	250	
Gc .....:	1.50	
Fyk (Kg/cm²).....:	5100	
Gs .....:	1.15	
Recubrimiento en Alzados...:	3	cms
Recubrimiento en Cimientos.:	5	cms

SEGURIDAD

Coeficiente desliz.....:	1.50
Coeficiente vuelco.....:	1.50
Coeficiente de acciones....:	1.60

CONDICIONES DE EQUILIBRIO

H = Altura (m) del alzado de la sección
Eh = Empuje Horizontal (t)
Ev = Empuje Vertical (t)
Meh = Momento (m.t) de los empujes Horizontales
Mev = Momento (m.t) de los empujes Verticales
ΣFh = Sumatorio de Fuerzas horizontales (t)
ΣFv = Sumatorio de Fuerzas verticales (t)
ΣMeh = Sumatorio de Momentos (m.t) de los empujes Horizontales
ΣMev = Sumatorio de Momentos (m.t) de los empujes Verticales

Zona		Secc	H	Eh	Ev	Meh	Mev	ΣFh	ΣFv	ΣMeh	ΣMev
0.00	1.00	0.50	4.50	13.77	2.93	27.19	9.51	13.77	38.77	38.21	81.44
1.00	2.00	1.50	4.80	15.37	3.27	32.24	11.27	15.37	43.76	44.54	96.73
2.00	3.00	2.50	5.09	16.93	3.60	37.44	13.13	16.93	47.56	50.98	112.14
3.00	4.00	3.50	5.39	18.95	4.03	44.55	16.31	18.95	56.50	59.71	145.36
4.00	5.00	4.50	5.69	20.89	4.44	52.37	19.75	20.89	65.99	69.08	183.84
5.00	6.00	5.50	5.98	21.84	4.64	58.55	22.05	21.84	73.95	76.02	217.55
6.00	7.00	6.50	6.28	21.85	4.64	60.37	22.53	21.85	78.26	77.85	233.90
7.00	8.00	7.50	6.58	21.33	4.53	58.69	21.99	21.33	80.35	75.76	239.21
8.00	8.93	8.47	6.86	20.67	4.39	55.93	21.31	20.67	81.06	72.47	239.35

H = Altura (m) de la sección en estudio
Zarpa = Longitud (m) de la parte delantera de la zapata
Zap = Longitud (m) total de la zapata
Csd = Coeficiente de seguridad al Deslizamiento
Csv = Coeficiente de seguridad al Vuelco
σmáx = Tensión (Kg/cm²) punta en cota de cimentación
σmín = Tensión (Kg/cm²) mínima en cota de cimentación
σcob = Tensión (Kg/cm²) de comparación
Base = Base comprimida (m) para el caso de diagrama triangular

Zona		Secc	H	Zarpa	Zap	Csd	Csv	σmáx	σmín	σcob	Base
0.00	1.00	0.50	4.50	0.90	3.25	1.55	2.13	2.32	0.07	1.74	3.25
1.00	2.00	1.50	4.80	0.90	3.45	1.57	2.17	2.44	0.09	1.83	3.45
2.00	3.00	2.50	5.09	1.00	3.65	1.55	2.20	2.46	0.15	1.85	3.65
3.00	4.00	3.50	5.39	1.00	4.05	1.64	2.43	2.45	0.34	1.86	4.05
4.00	5.00	4.50	5.69	1.00	4.45	1.74	2.66	2.45	0.51	1.90	4.45
5.00	6.00	5.50	5.98	1.00	4.75	1.86	2.86	2.46	0.65	1.93	4.75
6.00	7.00	6.50	6.28	1.00	4.85	1.97	3.00	2.47	0.75	1.96	4.85
7.00	8.00	7.50	6.58	1.00	4.85	2.07	3.16	2.46	0.86	1.97	4.85
8.00	8.93	8.47	6.86	1.00	4.85	2.16	3.30	2.43	0.91	1.97	4.85

Coeficiente global de seg. al deslizamiento ...	1.81
Coeficiente global de seg. al vuelco	2.74
Tensión máxima en solera (Kg/cm²).....	2.47

A R M A D U R A S EH-91

Para cada sección:

H = Altura (m) sobre cara superior de zapata
d = Canto útil (m)
Vd = Cortante de cálculo (t)
Vcu= Contribución del hormigón a cortante (t)
Md = Momento de cálculo de la sección (m.t)
Us = Capacidad necesaria (t)
As = Armadura en cm²

Z A P A T A :

Vcu= 48.41 t
d = 0.75 m

		ZARPA DELANTERA				ZARPA TRASERA			
Zona		Vd	Md	Us	As	Vd	Md	Us	As
0.00	1.00	25.64	12.32	16.14	4.87	25.64	12.32	28.30	7.77
1.00	2.00	27.78	13.49	17.69	5.28	27.78	13.49	34.80	9.04
2.00	3.00	29.94	14.70	19.31	5.69	29.94	14.70	42.24	10.26
3.00	4.00	32.15	15.96	20.99	6.11	32.15	15.96	50.70	11.43
4.00	5.00	34.70	17.24	22.71	6.52	34.70	17.24	60.10	13.55
5.00	6.00	36.30	18.23	24.03	6.83	36.30	18.23	68.16	15.37
6.00	7.00	36.46	18.46	24.35	6.90	36.46	18.46	71.23	16.06
7.00	8.00	35.22	17.96	23.67	6.74	35.22	17.96	67.85	15.30
8.00	8.93	33.78	17.35	22.85	6.55	33.78	17.35	60.94	13.74

A L Z A D O S

		Sección						
Zona		H	d	Vd	Vcu	Md	Us	As
0.00	1.00	3.00	0.55	6.99	33.56	6.56	12.41	3.70
		1.50	0.70	15.85	43.24	24.98	37.38	9.12
		-0.00	0.85	21.44	52.92	40.40	49.52	11.69
1.00	2.00	3.20	0.56	7.60	34.20	7.50	13.95	4.10
		1.60	0.72	17.45	44.52	29.02	42.31	9.92
		-0.00	0.88	23.87	54.84	47.72	56.65	12.78
2.00	3.00	3.39	0.57	8.24	34.84	8.52	15.58	4.51
		1.70	0.74	19.11	45.80	33.46	47.57	10.73
		-0.00	0.91	26.43	56.75	55.86	64.31	14.50
3.00	4.00	3.59	0.58	8.90	35.48	9.63	17.32	4.93
		1.80	0.76	20.86	47.07	38.31	53.16	11.99
		-0.00	0.94	29.11	58.67	64.86	72.48	16.34
4.00	5.00	3.79	0.59	9.58	36.12	10.83	19.16	5.37
		1.90	0.78	22.67	48.35	43.61	59.11	13.33
		0.00	0.97	31.77	60.58	74.69	81.12	18.29
5.00	6.00	3.99	0.60	10.24	36.75	12.10	21.08	5.81
		1.99	0.80	23.81	49.63	48.62	64.38	14.52
		0.00	1.00	33.33	62.50	83.49	88.11	19.87
6.00	7.00	4.19	0.61	10.03	37.39	12.44	21.29	5.88
		2.09	0.82	23.69	50.90	50.31	64.89	14.63
		-0.00	1.03	33.62	64.41	87.52	89.56	20.20
7.00	8.00	4.38	0.62	9.40	38.03	11.86	19.92	5.60
		2.19	0.84	23.10	52.18	49.94	62.68	14.13
		-0.00	1.06	33.40	66.33	88.82	88.08	19.86
8.00	8.93	4.57	0.63	8.70	38.65	11.09	18.30	5.24
		2.29	0.86	22.39	53.41	48.98	59.88	13.50
		0.00	1.09	33.03	68.18	89.19	85.84	19.36

P.B.F. 102.5 (PERGOLA)

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MEMORIA

La estructura P.B.F. 102.5 corresponde al paso inferior situado en el punto kilométrico P.K. 102+500 y consiste en un marco cerrado de hormigón armado de 9.50 metros de luz libre horizontal y vertical.

La longitud total del paso es de 108.00 metros y en planta presenta un esviaje de 13.40 °. El espesor tanto de la losa superior como de la solera y hastiales es de 0.90 metros.

Esta estructura es necesaria para salvar el cruce del eje del Ramal Barcelona-Sevilla con la Linea de Alta Velocidad Madrid-Zaragoza-Frontera francesa.

CARGAS ACTUANTES

Se consideran las siguientes cargas actuando sobre el marco:

- Peso propio: Se considera un peso específico del hormigón de 2.50 t/m^3.

- Cargas muertas: Se toman los siguientes pesos de los elementos no resistentes:

Balasto	0.40 x 1.60 = 0.64 t/m
Traviesas	2 x 0.52 = 1.04 t/m
Carriles	2 x 0.12 = 0.24 t/m
Barandillas	2 x 0.05 = 0.10 t/m
Total	2.02 t/m

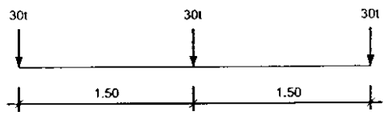
- Empuje de tierras sobre los hastiales del marco: Se considera actuando el empuje al reposo $K = 1\text{-sen}\varphi = 0.50$, y un peso específico de 2 t/m^3.

– Sobrecargas:

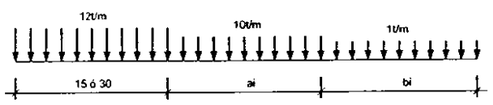
a) Norma española IPFC-75:

– Sobrecarga de 0,5 t/m^2 actuando en los paseos según la posición más desfavorable para el elemento en estudio.

– Tren tipo A:



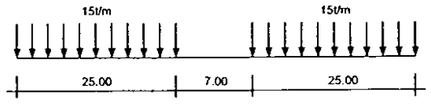
– Tren tipo B:



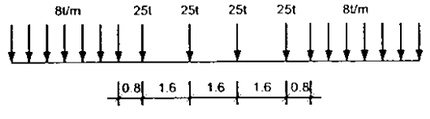
"ai" y "bi" son tales que producen los esfuerzos más desfavorables.

b) Norma U.I.C-776-1:

– Tren tipo SW/2:



– Tren tipo UIC-71:



COEFICIENTES DINAMICOS

a) Norma española IPFC-75:

$$I = \frac{144 \times \frac{L}{\quad}}{3{,}10 - 1{,}76 \times \frac{L}{L+L}} = 1{,}62$$

b) Norma U.I.C-776-1:

$$\Phi_1 = \frac{0{,}96}{\sqrt{L - 0{,}2}} + 0{,}88 = 1{,}21$$

$$\Phi_2 = \frac{1.44}{\sqrt{L - 0{,}2}} + 0{,}82 = 1{,}32$$

En función de la calidad de las lineas se tiene:

Linea de alta calidad: Φ_2 Flector

Φ_1 Cortante

Con los coeficientes de impacto anteriores, nos quedamos, para los marcos de 9,5 m de luz libre horizontal, con las cargas correspondientes al tren tipo A de la Norma española, o bien el tren tipo SW/2 de la UIC..

Para un reparto de las cargas a 45°y relleno de "H" m, tenemos un valor de la carga:

$$W_a = 1{,}32 \times \frac{15}{2 + 2 \times H} = 3{,}54 \text{ t/m}^2$$

$$W_b = 1{,}62 \times \frac{3 \times 30}{(2 + 2 \times H) \times (3 + 2 \times H)} = 3{,}94 \text{ t/m}^2$$

MODELO DE CALCULO

El modelo utilizado corresponde al de emparrillados tridimensionales con cimentación elástica asimilada a unos muelles, cuya rigidez es función del módulo de balasto y del área de influencia de cada nudo coaccionado.

El cálculo se realiza mediante el programa de ordenador "CIVILCAD", basado en la matriz de rigidez y equilibrio de nudos, y ejecutado en ordenador Pentium con más de 16 Mb de RAM.

El programa obtiene la envolvente de esfuerzos, reacciones y movimientos para cada tipo de carga, en los estados límites último y de utilización. Tras evaluar las envolventes para cada tipo de cargas, Civilcad obtiene la envolvente global y con ella la cuantía de armadura en los nodos de ambas caras de la solera, hastiales y dintel. Para obtener los esfuerzos de cálculo para armar el marco, el programa utiliza el procedimiento diseñado por Wood y Armer.

Tanto los esfuerzos como la armadura representada en los listados de ordenador son por metro de estructura.

COMBINACION DE HIPOTESIS

El programa calcula, para cada sección, la combinación pésima de hipótesis compatible entre sí y afectadas por los coeficientes de ponderación:

TIPO DE CARGA	E.L. UTILIZACION		E.L. ULTIMO	
	Coef. favorable	Coef. Desfavor	Coef. favorable	Coef. Desfavor.
PESO PROPIO	1.0	1.0	0.9	1.6
PESO DE TIERRAS	1.0	1.0	0.9	1.6
EMPUJE DE TIERRAS	1.0	1.0	0.9	1.6
SUPERESTRUCTURA	1.0	1.0	0.9	1.6
SOBRECARGA	0	1.0	0	1.6

CALCULO DEL MARCO

A continuación se presentan los listados dados por el programa de ordenador correspondientes a la geometría de la estructura, las hipótesis de cálculo que se han tenido en cuenta, los esfuerzos máximos de cada una de las hipótesis, la envolvente global de todas las cargas y las armaduras que es necesario disponer tanto en hastiales como en solera y dintel.

** CivilCAD (c) 1995 . Autores : L.M.Callis y J.M.Roig **

MODULO DE CALCULO MATRICIAL

PERGOLA

COORDENADAS NUDOS

Nodo	X	Y	Z
1	20.804	20.977	0.450
2	21.668	19.136	0.450
3	23.013	16.270	0.450
4	24.358	13.403	0.450
5	25.222	11.562	0.450
6	25.222	11.562	3.050
7	25.222	11.562	5.650
8	25.222	11.562	8.250
9	25.222	11.562	10.850
10	24.358	13.403	10.850
11	23.013	16.270	10.850
12	21.668	19.136	10.850
13	20.804	20.977	10.850
14	20.804	20.977	8.250
15	20.804	20.977	5.650
16	20.804	20.977	3.050
17	22.037	21.537	0.450
18	22.900	19.696	0.450
19	24.243	16.828	0.450
20	25.586	13.961	0.450
21	26.449	12.119	0.450
22	26.449	12.119	3.050
23	26.449	12.119	5.650
24	26.449	12.119	8.250
25	26.449	12.119	10.850
26	25.586	13.961	10.850
27	24.243	16.828	10.850
28	22.900	19.696	10.850
29	22.037	21.537	10.850
30	22.037	21.537	8.250
31	22.037	21.537	5.650
32	22.037	21.537	3.050
33	24.013	22.434	0.450
34	24.873	20.591	0.450
35	26.212	17.722	0.450
36	27.551	14.853	0.450
37	28.411	13.010	0.450
38	28.411	13.010	3.050
39	28.411	13.010	5.650
40	28.411	13.010	8.250
41	28.411	13.010	10.850
42	27.551	14.853	10.850
43	26.212	17.722	10.850
44	24.873	20.591	10.850
45	24.013	22.434	10.850
46	24.013	22.434	8.250
47	24.013	22.434	5.650
48	24.013	22.434	3.050
49	25.988	23.331	0.450
50	26.845	21.487	0.450
51	28.181	18.616	0.450
52	29.516	15.745	0.450
53	30.373	13.901	0.450
54	30.373	13.901	3.050
55	30.373	13.901	5.650
56	30.373	13.901	8.250
57	30.373	13.901	10.850
58	29.516	15.745	10.850
59	28.181	18.616	10.850
60	26.845	21.487	10.850
61	25.988	23.331	10.850
62	25.988	23.331	8.250
63	25.988	23.331	5.650
64	25.988	23.331	3.050
65	27.963	24.227	0.450
66	28.818	22.383	0.450
67	30.149	19.510	0.450
68	31.481	16.637	0.450
69	32.336	14.792	0.450
70	32.336	14.792	3.050
71	32.336	14.792	5.650
72	32.336	14.792	8.250
73	32.336	14.792	10.850
74	31.481	16.637	10.850
75	30.149	19.510	10.850
76	28.818	22.383	10.850
77	27.963	24.227	10.850
78	27.963	24.227	8.250
79	27.963	24.227	5.650
80	27.963	24.227	3.050
81	29.938	25.124	0.450
82	30.791	23.278	0.450
83	32.118	20.403	0.450
84	33.445	17.529	0.450

Nodo	X	Y	Z
85	34.298	15.683	0.450
86	34.298	15.683	3.050
87	34.298	15.683	5.650
88	34.298	15.683	8.250
89	34.298	15.683	10.850
90	33.445	17.529	10.850
91	32.118	20.403	10.850
92	30.791	23.278	10.850
93	29.938	25.124	10.850
94	29.938	25.124	8.250
95	29.938	25.124	5.650
96	29.938	25.124	3.050
97	31.914	26.021	0.450
98	32.764	24.174	0.450
99	34.087	21.297	0.450
100	35.410	18.421	0.450
101	36.260	16.573	0.450
102	36.260	16.573	3.050
103	36.260	16.573	5.650
104	36.260	16.573	8.250
105	36.260	16.573	10.850
106	35.410	18.421	10.850
107	34.087	21.297	10.850
108	32.764	24.174	10.850
109	31.914	26.021	10.850
110	31.914	26.021	8.250
111	31.914	26.021	5.650
112	31.914	26.021	3.050
113	33.889	26.918	0.450
114	34.736	25.069	0.450
115	36.056	22.191	0.450
116	37.375	19.313	0.450
117	38.222	17.464	0.450
118	38.222	17.464	3.050
119	38.222	17.464	5.650
120	38.222	17.464	8.250
121	38.222	17.464	10.850
122	37.375	19.313	10.850
123	36.056	22.191	10.850
124	34.736	25.069	10.850
125	33.889	26.918	10.850
126	33.889	26.918	8.250
127	33.889	26.918	5.650
128	33.889	26.918	3.050
129	35.864	27.815	0.450
130	36.709	25.965	0.450

Nodo	X	Y	Z
131	38.024	23.085	0.450
132	39.340	20.205	0.450
133	40.184	18.355	0.450
134	40.184	18.355	3.050
135	40.184	18.355	5.650
136	40.184	18.355	8.250
137	40.184	18.355	10.850
138	39.340	20.205	10.850
139	38.024	23.085	10.850
140	36.709	25.965	10.850
141	35.864	27.815	10.850
142	35.864	27.815	8.250
143	35.864	27.815	5.650
144	35.864	27.815	3.050
145	37.840	28.711	0.450
146	38.682	26.861	0.450
147	39.993	23.979	0.450
148	41.304	21.097	0.450
149	42.146	19.246	0.450
150	42.146	19.246	3.050
151	42.146	19.246	5.650
152	42.146	19.246	8.250
153	42.146	19.246	10.850
154	41.304	21.097	10.850
155	39.993	23.979	10.850
156	38.682	26.861	10.850
157	37.840	28.711	10.850
158	37.840	28.711	8.250
159	37.840	28.711	5.650
160	37.840	28.711	3.050
161	39.815	29.608	0.450
162	40.655	27.756	0.450
163	41.962	24.872	0.450
164	43.269	21.988	0.450
165	44.109	20.137	0.450
166	44.109	20.137	3.050
167	44.109	20.137	5.650
168	44.109	20.137	8.250
169	44.109	20.137	10.850
170	43.269	21.988	10.850
171	41.962	24.872	10.850
172	40.655	27.756	10.850
173	39.815	29.608	10.850
174	39.815	29.608	8.250
175	39.815	29.608	5.650
176	39.815	29.608	3.050

Nodo	X	Y	Z
177	41.790	30.505	0.450
178	42.627	28.652	0.450
179	43.931	25.766	0.450
180	45.234	22.880	0.450
181	46.071	21.028	0.450
182	46.071	21.028	3.050
183	46.071	21.028	5.650
184	46.071	21.028	8.250
185	46.071	21.028	10.850
186	45.234	22.880	10.850
187	43.931	25.766	10.850
188	42.627	28.652	10.850
189	41.790	30.505	10.850
190	41.790	30.505	8.250
191	41.790	30.505	5.650
192	41.790	30.505	3.050
193	43.766	31.402	0.450
194	44.600	29.548	0.450
195	45.899	26.660	0.450
196	47.199	23.772	0.450
197	48.033	21.918	0.450
198	48.033	21.918	3.050
199	48.033	21.918	5.650
200	48.033	21.918	8.250
201	48.033	21.918	10.850
202	47.199	23.772	10.850
203	45.899	26.660	10.850
204	44.600	29.548	10.850
205	43.766	31.402	10.850
206	43.766	31.402	8.250
207	43.766	31.402	5.650
208	43.766	31.402	3.050
209	45.741	32.298	0.450
210	46.573	30.443	0.450
211	47.868	27.554	0.450
212	49.163	24.664	0.450
213	49.995	22.809	0.450
214	49.995	22.809	3.050
215	49.995	22.809	5.650
216	49.995	22.809	8.250
217	49.995	22.809	10.850
218	49.163	24.664	10.850
219	47.868	27.554	10.850
220	46.573	30.443	10.850
221	45.741	32.298	10.850
222	45.741	32.298	8.250

Nodo	X	Y	Z
223	45.741	32.298	5.650
224	45.741	32.298	3.050
225	47.716	33.195	0.450
226	48.546	31.339	0.450
227	49.837	28.448	0.450
228	51.128	25.556	0.450
229	51.957	23.700	0.450
230	51.957	23.700	3.050
231	51.957	23.700	5.650
232	51.957	23.700	8.250
233	51.957	23.700	10.850
234	51.128	25.556	10.850
235	49.837	28.448	10.850
236	48.546	31.339	10.850
237	47.716	33.195	10.850
238	47.716	33.195	8.250
239	47.716	33.195	5.650
240	47.716	33.195	3.050
241	49.692	34.092	0.450
242	50.518	32.234	0.450
243	51.806	29.341	0.450
244	53.093	26.448	0.450
245	53.920	24.591	0.450
246	53.920	24.591	3.050
247	53.920	24.591	5.650
248	53.920	24.591	8.250
249	53.920	24.591	10.850
250	53.093	26.448	10.850
251	51.806	29.341	10.850
252	50.518	32.234	10.850
253	49.692	34.092	10.850
254	49.692	34.092	8.250
255	49.692	34.092	5.650
256	49.692	34.092	3.050
257	51.667	34.989	0.450
258	52.491	33.130	0.450
259	53.774	30.235	0.450
260	55.058	27.340	0.450
261	55.882	25.482	0.450
262	55.882	25.482	3.050
263	55.882	25.482	5.650
264	55.882	25.482	8.250
265	55.882	25.482	10.850
266	55.058	27.340	10.850
267	53.774	30.235	10.850
268	52.491	33.130	10.850

Nodo	X	Y	Z
269	51.667	34.989	10.850
270	51.667	34.989	8.250
271	51.667	34.989	5.650
272	51.667	34.989	3.050
273	53.642	35.886	0.450
274	54.464	34.026	0.450
275	55.743	31.129	0.450
276	57.022	28.232	0.450
277	57.844	26.372	0.450
278	57.844	26.372	3.050
279	57.844	26.372	5.650
280	57.844	26.372	8.250
281	57.844	26.372	10.850
282	57.022	28.232	10.850
283	55.743	31.129	10.850
284	54.464	34.026	10.850
285	53.642	35.886	10.850
286	53.642	35.886	8.250
287	53.642	35.886	5.650
288	53.642	35.886	3.050
289	55.618	36.782	0.450
290	56.437	34.921	0.450
291	57.712	32.023	0.450
292	58.987	29.124	0.450
293	59.806	27.263	0.450
294	59.806	27.263	3.050
295	59.806	27.263	5.650
296	59.806	27.263	8.250
297	59.806	27.263	10.850
298	58.987	29.124	10.850
299	57.712	32.023	10.850
300	56.437	34.921	10.850
301	55.618	36.782	10.850
302	55.618	36.782	8.250
303	55.618	36.782	5.650
304	55.618	36.782	3.050
305	56.851	37.342	0.450
306	57.669	35.481	0.450
307	58.942	32.581	0.450
308	60.215	29.682	0.450
309	61.033	27.820	0.450
310	61.033	27.820	3.050
311	61.033	27.820	5.650
312	61.033	27.820	8.250
313	61.033	27.820	10.850
314	60.215	29.682	10.850
315	58.942	32.581	10.850
316	57.669	35.481	10.850
317	56.851	37.342	10.850
318	56.851	37.342	8.250
319	56.851	37.342	5.650
320	56.851	37.342	3.050

RELACIONES NODALES

Barra	Nodo 1	Nodo 2	Longitud
1	1	2	2.033
2	2	3	3.167
3	3	4	3.167
4	4	5	2.033
5	5	6	2.600
6	6	7	2.600
7	7	8	2.600
8	8	9	2.600
9	9	10	2.033
10	10	11	3.167
11	11	12	3.167
12	12	13	2.033
13	13	14	2.600
14	14	15	2.600
15	15	16	2.600
16	16	1	2.600
17	17	18	2.033
18	18	19	3.167
19	19	20	3.167
20	20	21	2.033
21	21	22	2.600
22	22	23	2.600
23	23	24	2.600
24	24	25	2.600
25	25	26	2.033
26	26	27	3.167
27	27	28	3.167
28	28	29	2.033
29	29	30	2.600
30	30	31	2.600
31	31	32	2.600
32	32	17	2.600
33	33	34	2.033
34	34	35	3.167
35	35	36	3.167
36	36	37	2.033

Barra	Nodo 1	Nodo 2	Longitud
37	37	38	2.600
38	38	39	2.600
39	39	40	2.600
40	40	41	2.600
41	41	42	2.033
42	42	43	3.167
43	43	44	3.167
44	44	45	2.033
45	45	46	2.600
46	46	47	2.600
47	47	48	2.600
48	48	33	2.600
49	49	50	2.033
50	50	51	3.167
51	51	52	3.167
52	52	53	2.033
53	53	54	2.600
54	54	55	2.600
55	55	56	2.600
56	56	57	2.600
57	57	58	2.033
58	58	59	3.167
59	59	60	3.167
60	60	61	2.033
61	61	62	2.600
62	62	63	2.600
63	63	64	2.600
64	64	49	2.600
65	65	66	2.033
66	66	67	3.166
67	67	68	3.166
68	68	69	2.033
69	69	70	2.600
70	70	71	2.600
71	71	72	2.600
72	72	73	2.600
73	73	74	2.033
74	74	75	3.166
75	75	76	3.166
76	76	77	2.033
77	77	78	2.600
78	78	79	2.600
79	79	80	2.600
80	80	65	2.600
81	81	82	2.033
82	82	83	3.166

Barra	Nodo 1	Nodo 2	Longitud
83	83	84	3.166
84	84	85	2.033
85	85	86	2.600
86	86	87	2.600
87	87	88	2.600
88	88	89	2.600
89	89	90	2.033
90	90	91	3.166
91	91	92	3.166
92	92	93	2.033
93	93	94	2.600
94	94	95	2.600
95	95	96	2.600
96	96	81	2.600
97	97	98	2.033
98	98	99	3.166
99	99	100	3.166
100	100	101	2.033
101	101	102	2.600
102	102	103	2.600
103	103	104	2.600
104	104	105	2.600
105	105	106	2.033
106	106	107	3.166
107	107	108	3.166
108	108	109	2.033
109	109	110	2.600
110	110	111	2.600
111	111	112	2.600
112	112	97	2.600
113	113	114	2.033
114	114	115	3.166
115	115	116	3.166
116	116	117	2.033
117	117	118	2.600
118	118	119	2.600
119	119	120	2.600
120	120	121	2.600
121	121	122	2.033
122	122	123	3.166
123	123	124	3.166
124	124	125	2.033
125	125	126	2.600
126	126	127	2.600
127	127	128	2.600
128	128	113	2.600

Barra	Nodo 1	Nodo 2	Longitud
129	129	130	2.033
130	130	131	3.166
131	131	132	3.166
132	132	133	2.033
133	133	134	2.600
134	134	135	2.600
135	135	136	2.600
136	136	137	2.600
137	137	138	2.033
138	138	139	3.166
139	139	140	3.166
140	140	141	2.033
141	141	142	2.600
142	142	143	2.600
143	143	144	2.600
144	144	129	2.600
145	145	146	2.033
146	146	147	3.166
147	147	148	3.166
148	148	149	2.033
149	149	150	2.600
150	150	151	2.600
151	151	152	2.600
152	152	153	2.600
153	153	154	2.033
154	154	155	3.166
155	155	156	3.166
156	156	157	2.033
157	157	158	2.600
158	158	159	2.600
159	159	160	2.600
160	160	145	2.600
161	161	162	2.033
162	162	163	3.166
163	163	164	3.166
164	164	165	2.033
165	165	166	2.600
166	166	167	2.600
167	167	168	2.600
168	168	169	2.600
169	169	170	2.033
170	170	171	3.166
171	171	172	3.166
172	172	173	2.033
173	173	174	2.600
174	174	175	2.600

Barra	Nodo 1	Nodo 2	Longitud
175	175	176	2.600
176	176	161	2.600
177	177	178	2.033
178	178	179	3.166
179	179	180	3.166
180	180	181	2.033
181	181	182	2.600
182	182	183	2.600
183	183	184	2.600
184	184	185	2.600
185	185	186	2.033
186	186	187	3.166
187	187	188	3.166
188	188	189	2.033
189	189	190	2.600
190	190	191	2.600
191	191	192	2.600
192	192	177	2.600
193	193	194	2.033
194	194	195	3.166
195	195	196	3.166
196	196	197	2.033
197	197	198	2.600
198	198	199	2.600
199	199	200	2.600
200	200	201	2.600
201	201	202	2.033
202	202	203	3.166
203	203	204	3.166
204	204	205	2.033
205	205	206	2.600
206	206	207	2.600
207	207	208	2.600
208	208	193	2.600
209	209	210	2.033
210	210	211	3.166
211	211	212	3.166
212	212	213	2.033
213	213	214	2.600
214	214	215	2.600
215	215	216	2.600
216	216	217	2.600
217	217	218	2.033
218	218	219	3.166
219	219	220	3.166
220	220	221	2.033

Barra	Nodo 1	Nodo 2	Longitud
221	221	222	2.600
222	222	223	2.600
223	223	224	2.600
224	224	209	2.600
225	225	226	2.033
226	226	227	3.166
227	227	228	3.166
228	228	229	2.033
229	229	230	2.600
230	230	231	2.600
231	231	232	2.600
232	232	233	2.600
233	233	234	2.033
234	234	235	3.166
235	235	236	3.166
236	236	237	2.033
237	237	238	2.600
238	238	239	2.600
239	239	240	2.600
240	240	225	2.600
241	241	242	2.033
242	242	243	3.166
243	243	244	3.166
244	244	245	2.033
245	245	246	2.600
246	246	247	2.600
247	247	248	2.600
248	248	249	2.600
249	249	250	2.033
250	250	251	3.166
251	251	252	3.166
252	252	253	2.033
253	253	254	2.600
254	254	255	2.600
255	255	256	2.600
256	256	241	2.600
257	257	258	2.033
258	258	259	3.167
259	259	260	3.167
260	260	261	2.033
261	261	262	2.600
262	262	263	2.600
263	263	264	2.600
264	264	265	2.600
265	265	266	2.033
266	266	267	3.167
267	267	268	3.167
268	268	269	2.033
269	269	270	2.600
270	270	271	2.600
271	271	272	2.600
272	272	257	2.600
273	273	274	2.033
274	274	275	3.167
275	275	276	3.167
276	276	277	2.033
277	277	278	2.600
278	278	279	2.600
279	279	280	2.600
280	280	281	2.600
281	281	282	2.033
282	282	283	3.167
283	283	284	3.167
284	284	285	2.033
285	285	286	2.600
286	286	287	2.600
287	287	288	2.600
288	288	273	2.600
289	289	290	2.033
290	290	291	3.167
291	291	292	3.167
292	292	293	2.033
293	293	294	2.600
294	294	295	2.600
295	295	296	2.600
296	296	297	2.600
297	297	298	2.033
298	298	299	3.167
299	299	300	3.167
300	300	301	2.033
301	301	302	2.600
302	302	303	2.600
303	303	304	2.600
304	304	289	2.600
305	305	306	2.033
306	306	307	3.167
307	307	308	3.167
308	308	309	2.033
309	309	310	2.600
310	310	311	2.600
311	311	312	2.600
312	312	313	2.600

Barra	Nodo 1	Nodo 2	Longitud
313	313	314	2.033
314	314	315	3.167
315	315	316	3.167
316	316	317	2.033
317	317	318	2.600
318	318	319	2.600
319	319	320	2.600
320	320	305	2.600
321	1	17	1.355
322	17	33	2.169
323	33	49	2.169
324	49	65	2.169
325	65	81	2.169
326	81	97	2.169
327	97	113	2.169
328	113	129	2.169
329	129	145	2.169
330	145	161	2.169
331	161	177	2.169
332	177	193	2.169
333	193	209	2.169
334	209	225	2.169
335	225	241	2.169
336	241	257	2.169
337	257	273	2.169
338	273	289	2.169
339	289	305	1.355
340	2	18	1.353
341	18	34	2.167
342	34	50	2.167
343	50	66	2.167
344	66	82	2.167
345	82	98	2.167
346	98	114	2.167
347	114	130	2.167
348	130	146	2.167
349	146	162	2.167
350	162	178	2.167
351	178	194	2.167
352	194	210	2.167
353	210	226	2.167
354	226	242	2.167
355	242	258	2.167
356	258	274	2.167
357	274	290	2.167
358	290	306	1.353

Barra	Nodo 1	Nodo 2	Longitud
359	3	19	1.351
360	19	35	2.162
361	35	51	2.162
362	51	67	2.162
363	67	83	2.162
364	83	99	2.162
365	99	115	2.162
366	115	131	2.162
367	131	147	2.162
368	147	163	2.162
369	163	179	2.162
370	179	195	2.162
371	195	211	2.162
372	211	227	2.162
373	227	243	2.162
374	243	259	2.162
375	259	275	2.162
376	275	291	2.162
377	291	307	1.351
378	4	20	1.349
379	20	36	2.158
380	36	52	2.158
381	52	68	2.158
382	68	84	2.158
383	84	100	2.158
384	100	116	2.158
385	116	132	2.158
386	132	148	2.158
387	148	164	2.158
388	164	180	2.158
389	180	196	2.158
390	196	212	2.158
391	212	228	2.158
392	228	244	2.158
393	244	260	2.158
394	260	276	2.158
395	276	292	2.158
396	292	308	1.349
397	5	21	1.347
398	21	37	2.155
399	37	53	2.155
400	53	69	2.155
401	69	85	2.155
402	85	101	2.155
403	101	117	2.155
404	117	133	2.155

Barra	Nodo 1	Nodo 2	Longitud
405	133	149	2.155
406	149	165	2.155
407	165	181	2.155
408	181	197	2.155
409	197	213	2.155
410	213	229	2.155
411	229	245	2.155
412	245	261	2.155
413	261	277	2.155
414	277	293	2.155
415	293	309	1.347
416	6	22	1.347
417	22	38	2.155
418	38	54	2.155
419	54	70	2.155
420	70	86	2.155
421	86	102	2.155
422	102	118	2.155
423	118	134	2.155
424	134	150	2.155
425	150	166	2.155
426	166	182	2.155
427	182	198	2.155
428	198	214	2.155
429	214	230	2.155
430	230	246	2.155
431	246	262	2.155
432	262	278	2.155
433	278	294	2.155
434	294	310	1.347
435	7	23	1.347
436	23	39	2.155
437	39	55	2.155
438	55	71	2.155
439	71	87	2.155
440	87	103	2.155
441	103	119	2.155
442	119	135	2.155
443	135	151	2.155
444	151	167	2.155
445	167	183	2.155
446	183	199	2.155
447	199	215	2.155
448	215	231	2.155
449	231	247	2.155
450	247	263	2.155

Barra	Nodo 1	Nodo 2	Longitud
451	263	279	2.155
452	279	295	2.155
453	295	311	1.347
454	8	24	1.347
455	24	40	2.155
456	40	56	2.155
457	56	72	2.155
458	72	88	2.155
459	88	104	2.155
460	104	120	2.155
461	120	136	2.155
462	136	152	2.155
463	152	168	2.155
464	168	184	2.155
465	184	200	2.155
466	200	216	2.155
467	216	232	2.155
468	232	248	2.155
469	248	264	2.155
470	264	280	2.155
471	280	296	2.155
472	296	312	1.347
473	9	25	1.347
474	25	41	2.155
475	41	57	2.155
476	57	73	2.155
477	73	89	2.155
478	89	105	2.155
479	105	121	2.155
480	121	137	2.155
481	137	153	2.155
482	153	169	2.155
483	169	185	2.155
484	185	201	2.155
485	201	217	2.155
486	217	233	2.155
487	233	249	2.155
488	249	265	2.155
489	265	281	2.155
490	281	297	2.155
491	297	313	1.347
492	10	26	1.349
493	26	42	2.158
494	42	58	2.158
495	58	74	2.158
496	74	90	2.158

Barra	Nodo 1	Nodo 2	Longitud
497	90	106	2.158
498	106	122	2.158
499	122	138	2.158
500	138	154	2.158
501	154	170	2.158
502	170	186	2.158
503	186	202	2.158
504	202	218	2.158
505	218	234	2.158
506	234	250	2.158
507	250	266	2.158
508	266	282	2.158
509	282	298	2.158
510	298	314	1.349
511	11	27	1.351
512	27	43	2.162
513	43	59	2.162
514	59	75	2.162
515	75	91	2.162
516	91	107	2.162
517	107	123	2.162
518	123	139	2.162
519	139	155	2.162
520	155	171	2.162
521	171	187	2.162
522	187	203	2.162
523	203	219	2.162
524	219	235	2.162
525	235	251	2.162
526	251	267	2.162
527	267	283	2.162
528	283	299	2.162
529	299	315	1.351
530	12	28	1.353
531	28	44	2.167
532	44	60	2.167
533	60	76	2.167
534	76	92	2.167
535	92	108	2.167
536	108	124	2.167
537	124	140	2.167
538	140	156	2.167
539	156	172	2.167
540	172	188	2.167
541	188	204	2.167
542	204	220	2.167

Barra	Nodo 1	Nodo 2	Longitud
543	220	236	2.167
544	236	252	2.167
545	252	268	2.167
546	268	284	2.167
547	284	300	2.167
548	300	316	1.353
549	13	29	1.355
550	29	45	2.169
551	45	61	2.169
552	61	77	2.169
553	77	93	2.169
554	93	109	2.169
555	109	125	2.169
556	125	141	2.169
557	141	157	2.169
558	157	173	2.169
559	173	189	2.169
560	189	205	2.169
561	205	221	2.169
562	221	237	2.169
563	237	253	2.169
564	253	269	2.169
565	269	285	2.169
566	285	301	2.169
567	301	317	1.355
568	14	30	1.355
569	30	46	2.169
570	46	62	2.169
571	62	78	2.169
572	78	94	2.169
573	94	110	2.169
574	110	126	2.169
575	126	142	2.169
576	142	158	2.169
577	158	174	2.169
578	174	190	2.169
579	190	206	2.169
580	206	222	2.169
581	222	238	2.169
582	238	254	2.169
583	254	270	2.169
584	270	286	2.169
585	286	302	2.169
586	302	318	1.355
587	15	31	1.355
588	31	47	2.169

Barra	Nodo 1	Nodo 2	Longitud
589	47	63	2.169
590	63	79	2.169
591	79	95	2.169
592	95	111	2.169
593	111	127	2.169
594	127	143	2.169
595	143	159	2.169
596	159	175	2.169
597	175	191	2.169
598	191	207	2.169
599	207	223	2.169
600	223	239	2.169
601	239	255	2.169
602	255	271	2.169
603	271	287	2.169
604	287	303	2.169
605	303	319	1.355
606	16	32	1.355
607	32	48	2.169
608	48	64	2.169
609	64	80	2.169
610	80	96	2.169
611	96	112	2.169
612	112	128	2.169
613	128	144	2.169
614	144	160	2.169
615	160	176	2.169
616	176	192	2.169
617	192	208	2.169
618	208	224	2.169
619	224	240	2.169
620	240	256	2.169
621	256	272	2.169
622	272	288	2.169
623	288	304	2.169
624	304	320	1.355

INFORMACION BARRAS

Barra	Material	Area	I1	I2	I3
1	1	0.4859999	0.0984150	0.0328050	65.2135086
2	2	0.4859999	0.0984150	0.0328050	65.2135086
3	3	0.4859999	0.0984150	0.0328050	65.2135086
4	4	0.4859999	0.0984150	0.0328050	65.2135086
5	5	0.4859999	0.0984150	0.0328050	64.3755188
6	6	0.4859999	0.0984150	0.0328050	64.3755188
7	7	0.4859999	0.0984150	0.0328050	64.3755188
8	8	0.4859999	0.0984150	0.0328050	64.3755188
9	9	0.4859999	0.0984150	0.0328050	65.2135086
10	10	0.4859999	0.0984150	0.0328050	65.2135086
11	11	0.4859999	0.0984150	0.0328050	65.2135086
12	12	0.4859999	0.0984150	0.0328050	65.2135086
13	13	0.4859999	0.0984150	0.0328050	64.3755188
14	14	0.4859999	0.0984150	0.0328050	64.3755188
15	15	0.4859999	0.0984150	0.0328050	64.3755188
16	16	0.4859999	0.0984150	0.0328050	64.3755188
17	17	1.9510137	0.2633868	0.1316934	261.7951965
18	18	1.9477676	0.2629486	0.1314743	261.3596191
19	19	1.9438144	0.2624149	0.1312075	260.8291626
20	20	1.9405675	0.2619766	0.1309883	260.3934631
21	21	1.9394388	0.2618242	0.1309121	256.8979187
22	22	1.9394388	0.2618242	0.1309121	256.8979187
23	23	1.9394388	0.2618242	0.1309121	256.8979187
24	24	1.9394388	0.2618242	0.1309121	256.8979187
25	25	1.9405675	0.2619766	0.1309883	260.3934631
26	26	1.9438144	0.2624149	0.1312075	260.8291626
27	27	1.9477676	0.2629486	0.1314743	261.3596191
28	28	1.9510137	0.2633868	0.1316934	261.7951965
29	29	1.9524221	0.2635770	0.1317885	258.6177063
30	30	1.9524221	0.2635770	0.1317885	258.6177063
31	31	1.9524221	0.2635770	0.1317885	258.6177063
32	32	1.9524221	0.2635770	0.1317885	258.6177063
33	33	1.9510421	0.2633907	0.1316953	261.7990112
34	34	1.9477999	0.2629530	0.1314765	261.3639832
35	35	1.9438453	0.2624191	0.1312096	260.8333130
36	36	1.9406000	0.2619810	0.1309905	260.3978577
37	37	1.9394388	0.2618242	0.1309121	256.8979187
38	38	1.9394388	0.2618242	0.1309121	256.8979187
39	39	1.9394388	0.2618242	0.1309121	256.8979187
40	40	1.9394388	0.2618242	0.1309121	256.8979187
41	41	1.9406000	0.2619810	0.1309905	260.3978577
42	42	1.9438453	0.2624191	0.1312096	260.8333130
43	43	1.9477999	0.2629530	0.1314765	261.3639832
44	44	1.9510421	0.2633907	0.1316953	261.7990112
45	45	1.9524221	0.2635770	0.1317885	258.6177063
46	46	1.9524221	0.2635770	0.1317885	258.6177063
47	47	1.9524221	0.2635770	0.1317885	258.6177063
48	48	1.9524221	0.2635770	0.1317885	258.6177063
49	49	1.9510735	0.2633949	0.1316975	261.8032227
50	50	1.9478238	0.2629562	0.1314781	261.3671570
51	51	1.9438717	0.2624227	0.1312113	260.8368530

Barra	Material	Area	I1	I2	I3
52	52	1.9406271	0.2619846	0.1309923	260.4014893
53	53	1.9394388	0.2618242	0.1309121	256.8979187
54	54	1.9394388	0.2618242	0.1309121	256.8979187
55	55	1.9394388	0.2618242	0.1309121	256.8979187
56	56	1.9394388	0.2618242	0.1309121	256.8979187
57	57	1.9406271	0.2619846	0.1309923	260.4014893
58	58	1.9438717	0.2624227	0.1312113	260.8368530
59	59	1.9478238	0.2629562	0.1314781	261.3671570
60	60	1.9510735	0.2633949	0.1316975	261.8032227
61	61	1.9524221	0.2635770	0.1317885	258.6177063
62	62	1.9524221	0.2635770	0.1317885	258.6177063
63	63	1.9524221	0.2635770	0.1317885	258.6177063
64	64	1.9524221	0.2635770	0.1317885	258.6177063
65	65	1.9510933	0.2633976	0.1316988	261.8058777
66	66	1.9478481	0.2629595	0.1314797	261.3704224
67	67	1.9438949	0.2624258	0.1312129	260.8399658
68	68	1.9406501	0.2619877	0.1309939	260.4045715
69	69	1.9394388	0.2618242	0.1309121	256.8979187
70	70	1.9394388	0.2618242	0.1309121	256.8979187
71	71	1.9394388	0.2618242	0.1309121	256.8979187
72	72	1.9394388	0.2618242	0.1309121	256.8979187
73	73	1.9406501	0.2619877	0.1309939	260.4045715
74	74	1.9438949	0.2624258	0.1312129	260.8399658
75	75	1.9478481	0.2629595	0.1314797	261.3704224
76	76	1.9510933	0.2633976	0.1316988	261.8058777
77	77	1.9524221	0.2635770	0.1317885	258.6177063
78	78	1.9524221	0.2635770	0.1317885	258.6177063
79	79	1.9524221	0.2635770	0.1317885	258.6177063
80	80	1.9524221	0.2635770	0.1317885	258.6177063
81	81	1.9511139	0.2634003	0.1317002	261.8086548
82	82	1.9478661	0.2629619	0.1314809	261.3728333
83	83	1.9439142	0.2624284	0.1312142	260.8425598
84	84	1.9406679	0.2619902	0.1309951	260.4069519
85	85	1.9394388	0.2618242	0.1309121	256.8979187
86	86	1.9394388	0.2618242	0.1309121	256.8979187
87	87	1.9394388	0.2618242	0.1309121	256.8979187
88	88	1.9394388	0.2618242	0.1309121	256.8979187
89	89	1.9406679	0.2619902	0.1309951	260.4069519
90	90	1.9439142	0.2624284	0.1312142	260.8425598
91	91	1.9478661	0.2629619	0.1314809	261.3728333
92	92	1.9511139	0.2634003	0.1317002	261.8086548
93	93	1.9524221	0.2635770	0.1317885	258.6177063
94	94	1.9524221	0.2635770	0.1317885	258.6177063
95	95	1.9524221	0.2635770	0.1317885	258.6177063
96	96	1.9524221	0.2635770	0.1317885	258.6177063
97	97	1.9511261	0.2634020	0.1317010	261.8102722

Barra	Material	Area	I1	I2	I3
98	98	1.9478858	0.2629646	0.1314823	261.3754883
99	99	1.9439294	0.2624305	0.1312152	260.8446045
100	100	1.9406831	0.2619922	0.1309961	260.4089966
101	101	1.9394388	0.2618242	0.1309121	256.8979187
102	102	1.9394388	0.2618242	0.1309121	256.8979187
103	103	1.9394388	0.2618242	0.1309121	256.8979187
104	104	1.9394388	0.2618242	0.1309121	256.8979187
105	105	1.9406831	0.2619922	0.1309961	260.4089966
106	106	1.9439294	0.2624305	0.1312152	260.8446045
107	107	1.9478858	0.2629646	0.1314823	261.3754883
108	108	1.9511261	0.2634020	0.1317010	261.8102722
109	109	1.9524221	0.2635770	0.1317885	258.6177063
110	110	1.9524221	0.2635770	0.1317885	258.6177063
111	111	1.9524221	0.2635770	0.1317885	258.6177063
112	112	1.9524221	0.2635770	0.1317885	258.6177063
113	113	1.9511377	0.2634036	0.1317018	261.8118286
114	114	1.9478911	0.2629653	0.1314826	261.3762207
115	115	1.9439393	0.2624318	0.1312159	260.8459167
116	116	1.9406958	0.2619939	0.1309970	260.4107056
117	117	1.9394388	0.2618242	0.1309121	256.8979187
118	118	1.9394388	0.2618242	0.1309121	256.8979187
119	119	1.9394388	0.2618242	0.1309121	256.8979187
120	120	1.9394388	0.2618242	0.1309121	256.8979187
121	121	1.9406958	0.2619939	0.1309970	260.4107056
122	122	1.9439393	0.2624318	0.1312159	260.8459167
123	123	1.9478911	0.2629653	0.1314826	261.3762207
124	124	1.9511377	0.2634036	0.1317018	261.8118286
125	125	1.9524221	0.2635770	0.1317885	258.6177063
126	126	1.9524221	0.2635770	0.1317885	258.6177063
127	127	1.9524221	0.2635770	0.1317885	258.6177063
128	128	1.9524221	0.2635770	0.1317885	258.6177063
129	129	1.9511513	0.2634054	0.1317027	261.8136597
130	130	1.9479061	0.2629673	0.1314837	261.3782349
131	131	1.9439524	0.2624336	0.1312168	260.8476868
132	132	1.9407022	0.2619948	0.1309974	260.4115601
133	133	1.9394388	0.2618242	0.1309121	256.8979187
134	134	1.9394388	0.2618242	0.1309121	256.8979187
135	135	1.9394388	0.2618242	0.1309121	256.8979187
136	136	1.9394388	0.2618242	0.1309121	256.8979187
137	137	1.9407022	0.2619948	0.1309974	260.4115601
138	138	1.9439524	0.2624336	0.1312168	260.8476868
139	139	1.9479061	0.2629673	0.1314837	261.3782349
140	140	1.9511513	0.2634054	0.1317027	261.8136597
141	141	1.9524221	0.2635770	0.1317885	258.6177063
142	142	1.9524221	0.2635770	0.1317885	258.6177063
143	143	1.9524221	0.2635770	0.1317885	258.6177063

Barra	Material	Area	I1	I2	I3
144	144	1.9524221	0.2635770	0.1317885	258.6177063
145	145	1.9511508	0.2634054	0.1317027	261.8135986
146	146	1.9479032	0.2629669	0.1314835	261.3778076
147	147	1.9439514	0.2624334	0.1312167	260.8475342
148	148	1.9407073	0.2619955	0.1309977	260.4122620
149	149	1.9394388	0.2618242	0.1309121	256.8979187
150	150	1.9394388	0.2618242	0.1309121	256.8979187
151	151	1.9394388	0.2618242	0.1309121	256.8979187
152	152	1.9394388	0.2618242	0.1309121	256.8979187
153	153	1.9407073	0.2619955	0.1309977	260.4122620
154	154	1.9439514	0.2624334	0.1312167	260.8475342
155	155	1.9479032	0.2629669	0.1314835	261.3778076
156	156	1.9511508	0.2634054	0.1317027	261.8135986
157	157	1.9524221	0.2635770	0.1317885	258.6177063
158	158	1.9524221	0.2635770	0.1317885	258.6177063
159	159	1.9524221	0.2635770	0.1317885	258.6177063
160	160	1.9524221	0.2635770	0.1317885	258.6177063
161	161	1.9511504	0.2634053	0.1317026	261.8135376
162	162	1.9479064	0.2629673	0.1314837	261.3782349
163	163	1.9439547	0.2624339	0.1312169	260.8479919
164	164	1.9407065	0.2619954	0.1309977	260.4121399
165	165	1.9394388	0.2618242	0.1309121	256.8979187
166	166	1.9394388	0.2618242	0.1309121	256.8979187
167	167	1.9394388	0.2618242	0.1309121	256.8979187
168	168	1.9394388	0.2618242	0.1309121	256.8979187
169	169	1.9407065	0.2619954	0.1309977	260.4121399
170	170	1.9439547	0.2624339	0.1312169	260.8479919
171	171	1.9479064	0.2629673	0.1314837	261.3782349
172	172	1.9511504	0.2634053	0.1317026	261.8135376
173	173	1.9524221	0.2635770	0.1317885	258.6177063
174	174	1.9524221	0.2635770	0.1317885	258.6177063
175	175	1.9524221	0.2635770	0.1317885	258.6177063
176	176	1.9524221	0.2635770	0.1317885	258.6177063
177	177	1.9511502	0.2634053	0.1317026	261.8135071
178	178	1.9479047	0.2629671	0.1314836	261.3780212
179	179	1.9439493	0.2624331	0.1312166	260.8472900
180	180	1.9407067	0.2619954	0.1309977	260.4121704
181	181	1.9394388	0.2618242	0.1309121	256.8979187
182	182	1.9394388	0.2618242	0.1309121	256.8979187
183	183	1.9394388	0.2618242	0.1309121	256.8979187
184	184	1.9394388	0.2618242	0.1309121	256.8979187
185	185	1.9407067	0.2619954	0.1309977	260.4121704
186	186	1.9439493	0.2624331	0.1312166	260.8472900
187	187	1.9479047	0.2629671	0.1314836	261.3780212
188	188	1.9511502	0.2634053	0.1317026	261.8135071
189	189	1.9524221	0.2635770	0.1317885	258.6177063

Barra	Material	Area	I1	I2	I3
190	190	1.9524221	0.2635770	0.1317885	258.6177063
191	191	1.9524221	0.2635770	0.1317885	258.6177063
192	192	1.9524221	0.2635770	0.1317885	258.6177063
193	193	1.9511384	0.2634037	0.1317018	261.8119202
194	194	1.9478903	0.2629652	0.1314826	261.3760986
195	195	1.9439389	0.2624317	0.1312159	260.8458557
196	196	1.9406955	0.2619939	0.1309969	260.4106750
197	197	1.9394388	0.2618242	0.1309121	256.8979187
198	198	1.9394388	0.2618242	0.1309121	256.8979187
199	199	1.9394388	0.2618242	0.1309121	256.8979187
200	200	1.9394388	0.2618242	0.1309121	256.8979187
201	201	1.9406955	0.2619939	0.1309969	260.4106750
202	202	1.9439389	0.2624317	0.1312159	260.8458557
203	203	1.9478903	0.2629652	0.1314826	261.3760986
204	204	1.9511384	0.2634037	0.1317018	261.8119202
205	205	1.9524221	0.2635770	0.1317885	258.6177063
206	206	1.9524221	0.2635770	0.1317885	258.6177063
207	207	1.9524221	0.2635770	0.1317885	258.6177063
208	208	1.9524221	0.2635770	0.1317885	258.6177063
209	209	1.9511333	0.2634030	0.1317015	261.8112488
210	210	1.9478884	0.2629649	0.1314825	261.3758240
211	211	1.9439335	0.2624310	0.1312155	260.8451538
212	212	1.9406829	0.2619922	0.1309961	260.4089661
213	213	1.9394388	0.2618242	0.1309121	256.8979187
214	214	1.9394388	0.2618242	0.1309121	256.8979187
215	215	1.9394388	0.2618242	0.1309121	256.8979187
216	216	1.9394388	0.2618242	0.1309121	256.8979187
217	217	1.9406829	0.2619922	0.1309961	260.4089661
218	218	1.9439335	0.2624310	0.1312155	260.8451538
219	219	1.9478884	0.2629649	0.1314825	261.3758240
220	220	1.9511333	0.2634030	0.1317015	261.8112488
221	221	1.9524221	0.2635770	0.1317885	258.6177063
222	222	1.9524221	0.2635770	0.1317885	258.6177063
223	223	1.9524221	0.2635770	0.1317885	258.6177063
224	224	1.9524221	0.2635770	0.1317885	258.6177063
225	225	1.9511137	0.2634003	0.1317002	261.8086243
226	226	1.9478691	0.2629623	0.1314812	261.3732300
227	227	1.9439181	0.2624289	0.1312145	260.8430786
228	228	1.9406732	0.2619909	0.1309954	260.4076843
229	229	1.9394388	0.2618242	0.1309121	256.8979187
230	230	1.9394388	0.2618242	0.1309121	256.8979187
231	231	1.9394388	0.2618242	0.1309121	256.8979187
232	232	1.9394388	0.2618242	0.1309121	256.8979187
233	233	1.9406732	0.2619909	0.1309954	260.4076843
234	234	1.9439181	0.2624289	0.1312145	260.8430786
235	235	1.9478691	0.2629623	0.1314812	261.3732300

Barra	Material	Area	I1	I2	I3
236	236	1.9511137	0.2634003	0.1317002	261.8086243
237	237	1.9524221	0.2635770	0.1317885	258.6177063
238	238	1.9524221	0.2635770	0.1317885	258.6177063
239	239	1.9524221	0.2635770	0.1317885	258.6177063
240	240	1.9524221	0.2635770	0.1317885	258.6177063
241	241	1.9511017	0.2633987	0.1316994	261.8070068
242	242	1.9478524	0.2629600	0.1314800	261.3710022
243	243	1.9438968	0.2624260	0.1312130	260.8402405
244	244	1.9406523	0.2619880	0.1309940	260.4048462
245	245	1.9394388	0.2618242	0.1309121	256.8979187
246	246	1.9394388	0.2618242	0.1309121	256.8979187
247	247	1.9394388	0.2618242	0.1309121	256.8979187
248	248	1.9394388	0.2618242	0.1309121	256.8979187
249	249	1.9406523	0.2619880	0.1309940	260.4048462
250	250	1.9438968	0.2624260	0.1312130	260.8402405
251	251	1.9478524	0.2629600	0.1314800	261.3710022
252	252	1.9511017	0.2633987	0.1316994	261.8070068
253	253	1.9524221	0.2635770	0.1317885	258.6177063
254	254	1.9524221	0.2635770	0.1317885	258.6177063
255	255	1.9524221	0.2635770	0.1317885	258.6177063
256	256	1.9524221	0.2635770	0.1317885	258.6177063
257	257	1.9510735	0.2633949	0.1316975	261.8032227
258	258	1.9478275	0.2629567	0.1314783	261.3676453
259	259	1.9438766	0.2624233	0.1312117	260.8375244
260	260	1.9406314	0.2619852	0.1309926	260.4020691
261	261	1.9394388	0.2618242	0.1309121	256.8979187
262	262	1.9394388	0.2618242	0.1309121	256.8979187
263	263	1.9394388	0.2618242	0.1309121	256.8979187
264	264	1.9394388	0.2618242	0.1309121	256.8979187
265	265	1.9406314	0.2619852	0.1309926	260.4020691
266	266	1.9438766	0.2624233	0.1312117	260.8375244
267	267	1.9478275	0.2629567	0.1314783	261.3676453
268	268	1.9510735	0.2633949	0.1316975	261.8032227
269	269	1.9524221	0.2635770	0.1317885	258.6177063
270	270	1.9524221	0.2635770	0.1317885	258.6177063
271	271	1.9524221	0.2635770	0.1317885	258.6177063
272	272	1.9524221	0.2635770	0.1317885	258.6177063
273	273	1.9510478	0.2633914	0.1316957	261.7997742
274	274	1.9478084	0.2629541	0.1314771	261.3650818
275	275	1.9438537	0.2624202	0.1312101	260.8344421
276	276	1.9406048	0.2619816	0.1309908	260.3984985
277	277	1.9394388	0.2618242	0.1309121	256.8979187
278	278	1.9394388	0.2618242	0.1309121	256.8979187
279	279	1.9394388	0.2618242	0.1309121	256.8979187
280	280	1.9394388	0.2618242	0.1309121	256.8979187
281	281	1.9406048	0.2619816	0.1309908	260.3984985

Barra	Material	Area	I1	I2	I3
282	282	1.9438537	0.2624202	0.1312101	260.8344421
283	283	1.9478084	0.2629541	0.1314771	261.3650818
284	284	1.9510478	0.2633914	0.1316957	261.7997742
285	285	1.9524221	0.2635770	0.1317885	258.6177063
286	286	1.9524221	0.2635770	0.1317885	258.6177063
287	287	1.9524221	0.2635770	0.1317885	258.6177063
288	288	1.9524221	0.2635770	0.1317885	258.6177063
289	289	1.9510220	0.2633879	0.1316940	261.7963257
290	290	1.9477708	0.2629490	0.1314745	261.3600464
291	291	1.9438170	0.2624153	0.1312076	260.8295288
292	292	1.9405783	0.2619781	0.1309890	260.3949585
293	293	1.9394388	0.2618242	0.1309121	256.8979187
294	294	1.9394388	0.2618242	0.1309121	256.8979187
295	295	1.9394388	0.2618242	0.1309121	256.8979187
296	296	1.9394388	0.2618242	0.1309121	256.8979187
297	297	1.9405783	0.2619781	0.1309890	260.3949585
298	298	1.9438170	0.2624153	0.1312076	260.8295288
299	299	1.9477708	0.2629490	0.1314745	261.3600464
300	300	1.9510220	0.2633879	0.1316940	261.7963257
301	301	1.9524221	0.2635770	0.1317885	258.6177063
302	302	1.9524221	0.2635770	0.1317885	258.6177063
303	303	1.9524221	0.2635770	0.1317885	258.6177063
304	304	1.9524221	0.2635770	0.1317885	258.6177063
305	305	0.4859999	0.0984150	0.0328050	65.2135086
306	306	0.4859999	0.0984150	0.0328050	65.2135086
307	307	0.4859999	0.0984150	0.0328050	65.2135086
308	308	0.4859999	0.0984150	0.0328050	65.2135086
309	309	0.4859999	0.0984150	0.0328050	64.3755188
310	310	0.4859999	0.0984150	0.0328050	64.3755188
311	311	0.4859999	0.0984150	0.0328050	64.3755188
312	312	0.4859999	0.0984150	0.0328050	64.3755188
313	313	0.4859999	0.0984150	0.0328050	65.2135086
314	314	0.4859999	0.0984150	0.0328050	65.2135086
315	315	0.4859999	0.0984150	0.0328050	65.2135086
316	316	0.4859999	0.0984150	0.0328050	65.2135086
317	317	0.4859999	0.0984150	0.0328050	64.3755188
318	318	0.4859999	0.0984150	0.0328050	64.3755188
319	319	0.4859999	0.0984150	0.0328050	64.3755188
320	320	0.4859999	0.0984150	0.0328050	64.3755188
321	321	0.8099999	0.1093500	0.0546750	8.6178627
322	322	0.8099999	0.1093500	0.0546750	8.6178627
323	323	0.8099999	0.1093500	0.0546750	8.6178627
324	324	0.8099999	0.1093500	0.0546750	8.6178627
325	325	0.8099999	0.1093500	0.0546750	8.6178627
326	326	0.8099999	0.1093500	0.0546750	8.6178627
327	327	0.8099999	0.1093500	0.0546750	8.6178627

Barra	Material	Area	I1	I2	I3
328	328	0.8099999	0.1093500	0.0546750	8.6178627
329	329	0.8099999	0.1093500	0.0546750	8.6178627
330	330	0.8099999	0.1093500	0.0546750	8.6178627
331	331	0.8099999	0.1093500	0.0546750	8.6178627
332	332	0.8099999	0.1093500	0.0546750	8.6178627
333	333	0.8099999	0.1093500	0.0546750	8.6178627
334	334	0.8099999	0.1093500	0.0546750	8.6178627
335	335	0.8099999	0.1093500	0.0546750	8.6178627
336	336	0.8099999	0.1093500	0.0546750	8.6178627
337	337	0.8099999	0.1093500	0.0546750	8.6178627
338	338	0.8099999	0.1093500	0.0546750	8.6178627
339	339	0.8099999	0.1093500	0.0546750	8.6178627
340	340	2.8497615	0.3847178	0.1923589	30.3195744
341	341	2.8497608	0.3847177	0.1923588	30.3195667
342	342	2.8497593	0.3847175	0.1923587	30.3195534
343	343	2.8497598	0.3847176	0.1923588	30.3195572
344	344	2.8497589	0.3847174	0.1923587	30.3195457
345	345	2.8497570	0.3847172	0.1923586	30.3195248
346	346	2.8497553	0.3847170	0.1923585	30.3195095
347	347	2.8497553	0.3847170	0.1923585	30.3195095
348	348	2.8497558	0.3847170	0.1923585	30.3195133
349	349	2.8497543	0.3847168	0.1923584	30.3194981
350	350	2.8497517	0.3847165	0.1923582	30.3194714
351	351	2.8497517	0.3847165	0.1923582	30.3194714
352	352	2.8497508	0.3847164	0.1923582	30.3194618
353	353	2.8497496	0.3847162	0.1923581	30.3194485
354	354	2.8497486	0.3847161	0.1923580	30.3194389
355	355	2.8497474	0.3847159	0.1923579	30.3194256
356	356	2.8497481	0.3847160	0.1923580	30.3194313
357	357	2.8497481	0.3847160	0.1923580	30.3194313
358	358	2.8497460	0.3847157	0.1923578	30.3194084
359	359	2.8497608	0.3847177	0.1923588	30.3195667
360	360	2.8497603	0.3847176	0.1923588	30.3195629
361	361	2.8497603	0.3847176	0.1923588	30.3195629
362	362	2.8497579	0.3847173	0.1923587	30.3195362
363	363	2.8497565	0.3847171	0.1923586	30.3195210
364	364	2.8497565	0.3847171	0.1923586	30.3195210
365	365	2.8497558	0.3847170	0.1923585	30.3195133
366	366	2.8497531	0.3847167	0.1923583	30.3194866
367	367	2.8497527	0.3847166	0.1923583	30.3194790
368	368	2.8497522	0.3847165	0.1923583	30.3194752
369	369	2.8497524	0.3847165	0.1923583	30.3194771
370	370	2.8497512	0.3847164	0.1923582	30.3194656
371	371	2.8497496	0.3847162	0.1923581	30.3194485
372	372	2.8497500	0.3847162	0.1923581	30.3194523
373	373	2.8497496	0.3847162	0.1923581	30.3194485

Barra	Material	Area	I1	I2	I3
374	374	2.8497472	0.3847159	0.1923579	30.3194237
375	375	2.8497448	0.3847155	0.1923578	30.3193970
376	376	2.8497450	0.3847156	0.1923578	30.3194008
377	377	2.8497448	0.3847155	0.1923578	30.3193970
378	378	2.8497620	0.3847179	0.1923589	30.3195801
379	379	2.8497608	0.3847177	0.1923588	30.3195667
380	380	2.8497593	0.3847175	0.1923587	30.3195534
381	381	2.8497593	0.3847175	0.1923587	30.3195534
382	382	2.8497586	0.3847174	0.1923587	30.3195438
383	383	2.8497577	0.3847173	0.1923586	30.3195343
384	384	2.8497570	0.3847172	0.1923586	30.3195248
385	385	2.8497562	0.3847171	0.1923585	30.3195190
386	386	2.8497553	0.3847170	0.1923585	30.3195095
387	387	2.8497539	0.3847167	0.1923584	30.3194942
388	388	2.8497527	0.3847166	0.1923583	30.3194790
389	389	2.8497524	0.3847165	0.1923583	30.3194771
390	390	2.8497527	0.3847166	0.1923583	30.3194790
391	391	2.8497496	0.3847162	0.1923581	30.3194485
392	392	2.8497469	0.3847158	0.1923579	30.3194199
393	393	2.8497479	0.3847159	0.1923580	30.3194294
394	394	2.8497474	0.3847159	0.1923579	30.3194256
395	395	2.8497453	0.3847156	0.1923578	30.3194027
396	396	2.8497453	0.3847156	0.1923578	30.3194027
397	397	0.8099999	0.1093500	0.0546750	8.6178627
398	398	0.8099999	0.1093500	0.0546750	8.6178627
399	399	0.8099999	0.1093500	0.0546750	8.6178627
400	400	0.8099999	0.1093500	0.0546750	8.6178627
401	401	0.8099999	0.1093500	0.0546750	8.6178627
402	402	0.8099999	0.1093500	0.0546750	8.6178627
403	403	0.8099999	0.1093500	0.0546750	8.6178627
404	404	0.8099999	0.1093500	0.0546750	8.6178627
405	405	0.8099999	0.1093500	0.0546750	8.6178627
406	406	0.8099999	0.1093500	0.0546750	8.6178627
407	407	0.8099999	0.1093500	0.0546750	8.6178627
408	408	0.8099999	0.1093500	0.0546750	8.6178627
409	409	0.8099999	0.1093500	0.0546750	8.6178627
410	410	0.8099999	0.1093500	0.0546750	8.6178627
411	411	0.8099999	0.1093500	0.0546750	8.6178627
412	412	0.8099999	0.1093500	0.0546750	8.6178627
413	413	0.8099999	0.1093500	0.0546750	8.6178627
414	414	0.8099999	0.1093500	0.0546750	8.6178627
415	415	0.8099999	0.1093500	0.0546750	8.6178627
416	416	3.1050003	0.4191750	0.2095875	33.0397911
417	417	3.1050003	0.4191750	0.2095875	33.0397911
418	418	3.1050005	0.4191750	0.2095875	33.0397911
419	419	3.1050003	0.4191750	0.2095875	33.0397911

Barra	Material	Area	I1	I2	I3
420	420	3.1050005	0.4191750	0.2095875	33.0397911
421	421	3.1050003	0.4191750	0.2095875	33.0397911
422	422	3.1050005	0.4191750	0.2095875	33.0397911
423	423	3.1050003	0.4191750	0.2095875	33.0397911
424	424	3.1050005	0.4191750	0.2095875	33.0397911
425	425	3.1050003	0.4191750	0.2095875	33.0397911
426	426	3.1050005	0.4191750	0.2095875	33.0397911
427	427	3.1050003	0.4191750	0.2095875	33.0397911
428	428	3.1050005	0.4191750	0.2095875	33.0397911
429	429	3.1050000	0.4191750	0.2095875	33.0397873
430	430	3.1050000	0.4191750	0.2095875	33.0397873
431	431	3.1050000	0.4191750	0.2095875	33.0397873
432	432	3.1050005	0.4191750	0.2095875	33.0397911
433	433	3.1050003	0.4191750	0.2095875	33.0397911
434	434	3.1050003	0.4191750	0.2095875	33.0397911
435	435	2.3399997	0.3158999	0.1579500	24.8995476
436	436	2.3399994	0.3158999	0.1579500	24.8995438
437	437	2.3399992	0.3158999	0.1579499	24.8995419
438	438	2.3399994	0.3158999	0.1579500	24.8995438
439	439	2.3399992	0.3158999	0.1579499	24.8995419
440	440	2.3399994	0.3158999	0.1579500	24.8995438
441	441	2.3399992	0.3158999	0.1579499	24.8995419
442	442	2.3399994	0.3158999	0.1579500	24.8995438
443	443	2.3399992	0.3158999	0.1579499	24.8995419
444	444	2.3399994	0.3158999	0.1579500	24.8995438
445	445	2.3399992	0.3158999	0.1579499	24.8995419
446	446	2.3399994	0.3158999	0.1579500	24.8995438
447	447	2.3399992	0.3158999	0.1579499	24.8995419
448	448	2.3399999	0.3159000	0.1579500	24.8995495
449	449	2.3399994	0.3158999	0.1579500	24.8995438
450	450	2.3399999	0.3159000	0.1579500	24.8995495
451	451	2.3399992	0.3158999	0.1579499	24.8995419
452	452	2.3399994	0.3158999	0.1579500	24.8995438
453	453	2.3399999	0.3159000	0.1579500	24.8995495
454	454	3.1050005	0.4191750	0.2095875	33.0397911
455	455	3.1050007	0.4191751	0.2095875	33.0397987
456	456	3.1050007	0.4191751	0.2095875	33.0397987
457	457	3.1050007	0.4191751	0.2095875	33.0397987
458	458	3.1050007	0.4191751	0.2095875	33.0397987
459	459	3.1050007	0.4191751	0.2095875	33.0397987
460	460	3.1050007	0.4191751	0.2095875	33.0397987
461	461	3.1050007	0.4191751	0.2095875	33.0397987
462	462	3.1050007	0.4191751	0.2095875	33.0397987
463	463	3.1050007	0.4191751	0.2095875	33.0397987
464	464	3.1050007	0.4191751	0.2095875	33.0397987
465	465	3.1050007	0.4191751	0.2095875	33.0397987
466	466	3.1050007	0.4191751	0.2095875	33.0397987
467	467	3.1050000	0.4191750	0.2095875	33.0397873
468	468	3.1050005	0.4191750	0.2095875	33.0397911
469	469	3.1050000	0.4191750	0.2095875	33.0397873
470	470	3.1050007	0.4191751	0.2095875	33.0397987
471	471	3.1050007	0.4191751	0.2095875	33.0397987
472	472	3.1050000	0.4191750	0.2095875	33.0397873
473	473	0.8099999	0.1093500	0.0546750	8.6178627
474	474	0.8099999	0.1093500	0.0546750	8.6178627
475	475	0.8099999	0.1093500	0.0546750	8.6178627
476	476	0.8099999	0.1093500	0.0546750	8.6178627
477	477	0.8099999	0.1093500	0.0546750	8.6178627
478	478	0.8099999	0.1093500	0.0546750	8.6178627
479	479	0.8099999	0.1093500	0.0546750	8.6178627
480	480	0.8099999	0.1093500	0.0546750	8.6178627
481	481	0.8099999	0.1093500	0.0546750	8.6178627
482	482	0.8099999	0.1093500	0.0546750	8.6178627
483	483	0.8099999	0.1093500	0.0546750	8.6178627
484	484	0.8099999	0.1093500	0.0546750	8.6178627
485	485	0.8099999	0.1093500	0.0546750	8.6178627
486	486	0.8099999	0.1093500	0.0546750	8.6178627
487	487	0.8099999	0.1093500	0.0546750	8.6178627
488	488	0.8099999	0.1093500	0.0546750	8.6178627
489	489	0.8099999	0.1093500	0.0546750	8.6178627
490	490	0.8099999	0.1093500	0.0546750	8.6178627
491	491	0.8099999	0.1093500	0.0546750	8.6178627
492	492	2.8497620	0.3847179	0.1923589	30.3195801
493	493	2.8497608	0.3847177	0.1923588	30.3195667
494	494	2.8497593	0.3847175	0.1923587	30.3195534
495	495	2.8497593	0.3847175	0.1923587	30.3195534
496	496	2.8497586	0.3847174	0.1923587	30.3195438
497	497	2.8497577	0.3847173	0.1923586	30.3195343
498	498	2.8497570	0.3847172	0.1923586	30.3195248
499	499	2.8497562	0.3847171	0.1923585	30.3195190
500	500	2.8497553	0.3847170	0.1923585	30.3195095
501	501	2.8497539	0.3847167	0.1923584	30.3194942
502	502	2.8497527	0.3847166	0.1923583	30.3194790
503	503	2.8497524	0.3847165	0.1923583	30.3194771
504	504	2.8497527	0.3847166	0.1923583	30.3194790
505	505	2.8497496	0.3847162	0.1923581	30.3194485
506	506	2.8497469	0.3847158	0.1923579	30.3194199
507	507	2.8497479	0.3847159	0.1923580	30.3194294
508	508	2.8497474	0.3847159	0.1923579	30.3194256
509	509	2.8497453	0.3847156	0.1923578	30.3194027
510	510	2.8497453	0.3847156	0.1923578	30.3194027
511	511	2.8497608	0.3847177	0.1923588	30.3195667

Barra	Material	Area	I1	I2	I3
512	512	2.8497603	0.3847176	0.1923588	30.3195629
513	513	2.8497603	0.3847176	0.1923588	30.3195629
514	514	2.8497579	0.3847173	0.1923587	30.3195362
515	515	2.8497565	0.3847171	0.1923586	30.3195210
516	516	2.8497565	0.3847171	0.1923586	30.3195210
517	517	2.8497558	0.3847170	0.1923585	30.3195133
518	518	2.8497531	0.3847167	0.1923583	30.3194866
519	519	2.8497527	0.3847166	0.1923583	30.3194790
520	520	2.8497522	0.3847165	0.1923583	30.3194752
521	521	2.8497524	0.3847165	0.1923583	30.3194771
522	522	2.8497512	0.3847164	0.1923582	30.3194656
523	523	2.8497496	0.3847162	0.1923581	30.3194485
524	524	2.8497500	0.3847162	0.1923581	30.3194523
525	525	2.8497496	0.3847162	0.1923581	30.3194485
526	526	2.8497472	0.3847159	0.1923579	30.3194237
527	527	2.8497448	0.3847155	0.1923578	30.3193970
528	528	2.8497450	0.3847156	0.1923578	30.3194008
529	529	2.8497448	0.3847155	0.1923578	30.3193970
530	530	2.8497615	0.3847178	0.1923589	30.3195744
531	531	2.8497608	0.3847177	0.1923588	30.3195667
532	532	2.8497593	0.3847175	0.1923587	30.3195534
533	533	2.8497598	0.3847176	0.1923588	30.3195572
534	534	2.8497589	0.3847174	0.1923587	30.3195457
535	535	2.8497570	0.3847172	0.1923586	30.3195248
536	536	2.8497553	0.3847170	0.1923585	30.3195095
537	537	2.8497553	0.3847170	0.1923585	30.3195095
538	538	2.8497558	0.3847170	0.1923585	30.3195133
539	539	2.8497543	0.3847168	0.1923584	30.3194981
540	540	2.8497517	0.3847165	0.1923582	30.3194714
541	541	2.8497517	0.3847165	0.1923582	30.3194714
542	542	2.8497508	0.3847164	0.1923582	30.3194618
543	543	2.8497496	0.3847162	0.1923581	30.3194485
544	544	2.8497486	0.3847161	0.1923580	30.3194389
545	545	2.8497474	0.3847159	0.1923579	30.3194256
546	546	2.8497481	0.3847160	0.1923580	30.3194313
547	547	2.8497481	0.3847160	0.1923580	30.3194313
548	548	2.8497460	0.3847157	0.1923578	30.3194084
549	549	0.8099999	0.1093500	0.0546750	8.6178627
550	550	0.8099999	0.1093500	0.0546750	8.6178627
551	551	0.8099999	0.1093500	0.0546750	8.6178627
552	552	0.8099999	0.1093500	0.0546750	8.6178627
553	553	0.8099999	0.1093500	0.0546750	8.6178627
554	554	0.8099999	0.1093500	0.0546750	8.6178627
555	555	0.8099999	0.1093500	0.0546750	8.6178627
556	556	0.8099999	0.1093500	0.0546750	8.6178627
557	557	0.8099999	0.1093500	0.0546750	8.6178627
558	558	0.8099999	0.1093500	0.0546750	8.6178627
559	559	0.8099999	0.1093500	0.0546750	8.6178627
560	560	0.8099999	0.1093500	0.0546750	8.6178627
561	561	0.8099999	0.1093500	0.0546750	8.6178627
562	562	0.8099999	0.1093500	0.0546750	8.6178627
563	563	0.8099999	0.1093500	0.0546750	8.6178627
564	564	0.8099999	0.1093500	0.0546750	8.6178627
565	565	0.8099999	0.1093500	0.0546750	8.6178627
566	566	0.8099999	0.1093500	0.0546750	8.6178627
567	567	0.8099999	0.1093500	0.0546750	8.6178627
568	568	3.1050005	0.4191750	0.2095875	33.0397911
569	569	3.1050000	0.4191750	0.2095875	33.0397873
570	570	3.1050003	0.4191750	0.2095875	33.0397911
571	571	3.1050003	0.4191750	0.2095875	33.0397911
572	572	3.1050000	0.4191750	0.2095875	33.0397873
573	573	3.1050007	0.4191751	0.2095875	33.0397987
574	574	3.1050000	0.4191750	0.2095875	33.0397873
575	575	3.1050003	0.4191750	0.2095875	33.0397911
576	576	3.1050000	0.4191750	0.2095875	33.0397873
577	577	3.1050000	0.4191750	0.2095875	33.0397873
578	578	3.1050000	0.4191750	0.2095875	33.0397873
579	579	3.1050003	0.4191750	0.2095875	33.0397911
580	580	3.1050000	0.4191750	0.2095875	33.0397873
581	581	3.1050000	0.4191750	0.2095875	33.0397873
582	582	3.1050000	0.4191750	0.2095875	33.0397873
583	583	3.1050000	0.4191750	0.2095875	33.0397873
584	584	3.1050000	0.4191750	0.2095875	33.0397873
585	585	3.1050000	0.4191750	0.2095875	33.0397873
586	586	3.1050000	0.4191750	0.2095875	33.0397873
587	587	2.3399990	0.3158998	0.1579499	24.8995399
588	588	2.3399999	0.3159000	0.1579500	24.8995495
589	589	2.3399994	0.3158999	0.1579500	24.8995438
590	590	2.3399997	0.3158999	0.1579500	24.8995476
591	591	2.3399999	0.3159000	0.1579500	24.8995495
592	592	2.3399994	0.3158999	0.1579500	24.8995438
593	593	2.3399999	0.3159000	0.1579500	24.8995495
594	594	2.3399997	0.3158999	0.1579500	24.8995476
595	595	2.3399999	0.3159000	0.1579500	24.8995495
596	596	2.3399999	0.3159000	0.1579500	24.8995495
597	597	2.3399999	0.3159000	0.1579500	24.8995495
598	598	2.3399997	0.3158999	0.1579500	24.8995476
599	599	2.3399999	0.3159000	0.1579500	24.8995495
600	600	2.3399999	0.3159000	0.1579500	24.8995495
601	601	2.3399999	0.3159000	0.1579500	24.8995495
602	602	2.3399999	0.3159000	0.1579500	24.8995495
603	603	2.3399999	0.3159000	0.1579500	24.8995495

Barra	Material	Area	I1	I2	I3
604	604	2.3399999	0.3159000	0.1579500	24.8995495
605	605	2.3399999	0.3159000	0.1579500	24.8995495
606	606	3.1050005	0.4191750	0.2095875	33.0397911
607	607	3.1050000	0.4191750	0.2095875	33.0397873
608	608	3.1050005	0.4191750	0.2095875	33.0397911
609	609	3.1050003	0.4191750	0.2095875	33.0397911
610	610	3.1050000	0.4191750	0.2095875	33.0397873
611	611	3.1050003	0.4191750	0.2095875	33.0397911
612	612	3.1050000	0.4191750	0.2095875	33.0397873
613	613	3.1050003	0.4191750	0.2095875	33.0397911
614	614	3.1050000	0.4191750	0.2095875	33.0397873
615	615	3.1050000	0.4191750	0.2095875	33.0397873
616	616	3.1050000	0.4191750	0.2095875	33.0397873
617	617	3.1050003	0.4191750	0.2095875	33.0397911
618	618	3.1050000	0.4191750	0.2095875	33.0397873
619	619	3.1050000	0.4191750	0.2095875	33.0397873
620	620	3.1050000	0.4191750	0.2095875	33.0397873
621	621	3.1050000	0.4191750	0.2095875	33.0397873
622	622	3.1050000	0.4191750	0.2095875	33.0397873
623	623	3.1050000	0.4191750	0.2095875	33.0397873
624	624	3.1050003	0.4191750	0.2095875	33.0397911

DEFINICION EJES LOCALES

Barra	Codigo	Xaux	Yaux	Zaux
1 a 8	1	-10.589	-4.696	0.450
9 a 12	1	-10.589	-4.696	10.850
13 a 16	1	-15.244	4.612	0.450
17 a 24	1	-10.589	-4.696	0.450
25 a 28	1	-10.589	-4.696	10.850
29 a 32	1	-15.244	4.612	0.450
33 a 40	1	-10.589	-4.696	0.450
41 a 44	1	-10.589	-4.696	10.850
45 a 48	1	-15.244	4.612	0.450
49 a 56	1	-10.589	-4.696	0.450
57 a 60	1	-10.589	-4.696	10.850
61 a 64	1	-15.244	4.612	0.450
65 a 72	1	-10.589	-4.696	0.450
73 a 76	1	-10.589	-4.696	10.850
77 a 80	1	-15.244	4.612	0.450
81 a 88	1	-10.589	-4.696	0.450
89 a 92	1	-10.589	-4.696	10.850
93 a 96	1	-15.244	4.612	0.450
97 a 104	1	-10.589	-4.696	0.450
105 a 108	1	-10.589	-4.696	10.850
109 a 112	1	-15.244	4.612	0.450

Barra	Codigo	Xaux	Yaux	Zaux
113 a 120	1	-10.589	-4.696	0.450
121 a 124	1	-10.589	-4.696	10.850
125 a 128	1	-15.244	4.612	0.450
129 a 136	1	-10.589	-4.696	0.450
137 a 140	1	-10.589	-4.696	10.850
141 a 144	1	-15.244	4.612	0.450
145 a 152	1	-10.589	-4.696	0.450
153 a 156	1	-10.589	-4.696	10.850
157 a 160	1	-15.244	4.612	0.450
161 a 168	1	-10.589	-4.696	0.450
169 a 172	1	-10.589	-4.696	10.850
173 a 176	1	-15.244	4.612	0.450
177 a 184	1	-10.589	-4.696	0.450
185 a 188	1	-10.589	-4.696	10.850
189 a 192	1	-15.244	4.612	0.450
193 a 200	1	-10.589	-4.696	0.450
201 a 204	1	-10.589	-4.696	10.850
205 a 208	1	-15.244	4.612	0.450
209 a 216	1	-10.589	-4.696	0.450
217 a 220	1	-10.589	-4.696	10.850
221 a 224	1	-15.244	4.612	0.450
225 a 232	1	-10.589	-4.696	0.450
233 a 236	1	-10.589	-4.696	10.850
237 a 240	1	-15.244	4.612	0.450
241 a 248	1	-10.589	-4.696	0.450
249 a 252	1	-10.589	-4.696	10.850
253 a 256	1	-15.244	4.612	0.450
257 a 264	1	-10.589	-4.696	0.450
265 a 268	1	-10.589	-4.696	10.850
269 a 272	1	-15.244	4.612	0.450
273 a 280	1	-10.589	-4.696	0.450
281 a 284	1	-10.589	-4.696	10.850
285 a 288	1	-15.244	4.612	0.450
289 a 296	1	-10.589	-4.696	0.450
297 a 300	1	-10.589	-4.696	10.850
301 a 304	1	-15.244	4.612	0.450
305 a 312	1	-10.589	-4.696	0.450
313 a 316	1	-10.589	-4.696	10.850
317 a 320	1	-15.244	4.612	0.450
321	1	25.222	11.562	0.450
322	1	26.456	12.122	0.450
323	1	28.431	13.019	0.450
324	1	30.406	13.916	0.450
325	1	32.382	14.813	0.450
326	1	34.357	15.709	0.450
327	1	36.332	16.606	0.450

Barra	Codigo	Xaux	Yaux	Zaux
328	1	38.308	17.503	0.450
329	1	40.283	18.400	0.450
330	1	42.258	19.297	0.450
331	1	44.233	20.193	0.450
332	1	46.209	21.090	0.450
333	1	48.184	21.987	0.450
334	1	50.159	22.884	0.450
335	1	52.135	23.780	0.450
336	1	54.110	24.677	0.450
337	1	56.085	25.574	0.450
338	1	58.061	26.471	0.450
339	1	60.036	27.368	0.450
340	1	26.086	9.721	0.450
341	1	27.318	10.281	0.450
342	1	29.291	11.177	0.450
343	1	31.264	12.072	0.450
344	1	33.236	12.968	0.450
345	1	35.209	13.863	0.450
346	1	37.182	14.759	0.450
347	1	39.155	15.655	0.450
348	1	41.127	16.550	0.450
349	1	43.100	17.446	0.450
350	1	45.073	18.342	0.450
351	1	47.046	19.237	0.450
352	1	49.018	20.133	0.450
353	1	50.991	21.028	0.450
354	1	52.964	21.924	0.450
355	1	54.937	22.820	0.450
356	1	56.909	23.715	0.450
357	1	58.882	24.611	0.450
358	1	60.855	25.506	0.450
359	1	27.431	6.855	0.450
360	1	28.662	7.413	0.450
361	1	30.630	8.307	0.450
362	1	32.599	9.201	0.450
363	1	34.568	10.095	0.450
364	1	36.537	10.989	0.450
365	1	38.505	11.882	0.450
366	1	40.474	12.776	0.450
367	1	42.443	13.670	0.450
368	1	44.412	14.564	0.450
369	1	46.380	15.458	0.450
370	1	48.349	16.351	0.450
371	1	50.318	17.245	0.450
372	1	52.287	18.139	0.450
373	1	54.255	19.033	0.450

Barra	Codigo	Xaux	Yaux	Zaux
374	1	56.224	19.927	0.450
375	1	58.193	20.820	0.450
376	1	60.162	21.714	0.450
377	1	62.130	22.608	0.450
378	1	28.777	3.988	0.450
379	1	30.005	4.546	0.450
380	1	31.970	5.438	0.450
381	1	33.934	6.330	0.450
382	1	35.899	7.222	0.450
383	1	37.864	8.114	0.450
384	1	39.829	9.006	0.450
385	1	41.793	9.898	0.450
386	1	43.758	10.790	0.450
387	1	45.723	11.682	0.450
388	1	47.688	12.574	0.450
389	1	49.652	13.466	0.450
390	1	51.617	14.358	0.450
391	1	53.582	15.250	0.450
392	1	55.547	16.142	0.450
393	1	57.511	17.034	0.450
394	1	59.476	17.926	0.450
395	1	61.441	18.818	0.450
396	1	63.406	19.710	0.450
397	1	29.640	2.147	0.450
398	1	30.867	2.704	0.450
399	1	32.830	3.595	0.450
400	1	34.792	4.486	0.450
401	1	36.754	5.377	0.450
402	1	38.716	6.268	0.450
403	1	40.678	7.159	0.450
404	1	42.641	8.049	0.450
405	1	44.603	8.940	0.450
406	1	46.565	9.831	0.450
407	1	48.527	10.722	0.450
408	1	50.489	11.613	0.450
409	1	52.451	12.504	0.450
410	1	54.414	13.394	0.450
411	1	56.376	14.285	0.450
412	1	58.338	15.176	0.450
413	1	60.300	16.067	0.450
414	1	62.262	16.958	0.450
415	1	64.225	17.848	0.450
416 a 472	1	25.222	11.562	21.250
473	1	20.804	20.977	10.850
474	1	22.031	21.534	10.850
475	1	23.993	22.425	10.850

Barra	Codigo	Xaux	Yaux	Zaux
476	1	25.955	23.316	10.850
477	1	27.917	24.207	10.850
478	1	29.879	25.097	10.850
479	1	31.842	25.988	10.850
480	1	33.804	26.879	10.850
481	1	35.766	27.770	10.850
482	1	37.728	28.661	10.850
483	1	39.690	29.551	10.850
484	1	41.652	30.442	10.850
485	1	43.615	31.333	10.850
486	1	45.577	32.224	10.850
487	1	47.539	33.115	10.850
488	1	49.501	34.006	10.850
489	1	51.463	34.896	10.850
490	1	53.426	35.787	10.850
491	1	55.388	36.678	10.850
492	1	19.940	22.818	10.850
493	1	21.168	23.375	10.850
494	1	23.133	24.267	10.850
495	1	25.098	25.159	10.850
496	1	27.062	26.051	10.850
497	1	29.027	26.943	10.850
498	1	30.992	27.835	10.850
499	1	32.957	28.727	10.850
500	1	34.921	29.619	10.850
501	1	36.886	30.511	10.850
502	1	38.851	31.403	10.850
503	1	40.816	32.295	10.850
504	1	42.780	33.187	10.850
505	1	44.745	34.079	10.850
506	1	46.710	34.971	10.850
507	1	48.675	35.863	10.850
508	1	50.639	36.755	10.850
509	1	52.604	37.647	10.850
510	1	54.569	38.539	10.850
511	1	18.594	25.684	10.850
512	1	19.825	26.243	10.850
513	1	21.793	27.137	10.850
514	1	23.762	28.031	10.850
515	1	25.731	28.924	10.850
516	1	27.700	29.818	10.850
517	1	29.668	30.712	10.850
518	1	31.637	31.606	10.850
519	1	33.606	32.500	10.850
520	1	35.575	33.393	10.850
521	1	37.543	34.287	10.850

Barra	Codigo	Xaux	Yaux	Zaux
522	1	39.512	35.181	10.850
523	1	41.481	36.075	10.850
524	1	43.450	36.969	10.850
525	1	45.418	37.862	10.850
526	1	47.387	38.756	10.850
527	1	49.356	39.650	10.850
528	1	51.325	40.544	10.850
529	1	53.293	41.438	10.850
530	1	17.249	28.551	10.850
531	1	18.481	29.111	10.850
532	1	20.454	30.006	10.850
533	1	22.427	30.902	10.850
534	1	24.400	31.797	10.850
535	1	26.372	32.693	10.850
536	1	28.345	33.589	10.850
537	1	30.318	34.484	10.850
538	1	32.291	35.380	10.850
539	1	34.263	36.275	10.850
540	1	36.236	37.171	10.850
541	1	38.209	38.067	10.850
542	1	40.182	38.962	10.850
543	1	42.154	39.858	10.850
544	1	44.127	40.754	10.850
545	1	46.100	41.649	10.850
546	1	48.073	42.545	10.850
547	1	50.045	43.440	10.850
548	1	52.018	44.336	10.850
549	1	16.385	30.392	10.850
550	1	17.619	30.952	10.850
551	1	19.594	31.849	10.850
552	1	21.569	32.745	10.850
553	1	23.545	33.642	10.850
554	1	25.520	34.539	10.850
555	1	27.495	35.436	10.850
556	1	29.471	36.333	10.850
557	1	31.446	37.229	10.850
558	1	33.421	38.126	10.850
559	1	35.397	39.023	10.850
560	1	37.372	39.920	10.850
561	1	39.347	40.816	10.850
562	1	41.323	41.713	10.850
563	1	43.298	42.610	10.850
564	1	45.273	43.507	10.850
565	1	47.249	44.404	10.850
566	1	49.224	45.300	10.850
567	1	51.199	46.197	10.850

Barra	Codigo	Xaux	Yaux	Zaux
568 a 624	1	20.804	20.977	-9.950

MATERIALES

Material	E	Poisson	Densidad	C. Termico
1	3000000.000	0.200	2.50000	0.0000100
2	3000000.000	0.200	2.50000	0.0000100
3	3000000.000	0.200	2.50000	0.0000100
4	3000000.000	0.200	2.50000	0.0000100
5	3000000.000	0.200	2.50000	0.0000100
6	3000000.000	0.200	2.50000	0.0000100
7	3000000.000	0.200	2.50000	0.0000100
8	3000000.000	0.200	2.50000	0.0000100
9	3000000.000	0.200	2.50000	0.0000100
10	3000000.000	0.200	2.50000	0.0000100
11	3000000.000	0.200	2.50000	0.0000100
12	3000000.000	0.200	2.50000	0.0000100
13	3000000.000	0.200	2.50000	0.0000100
14	3000000.000	0.200	2.50000	0.0000100
15	3000000.000	0.200	2.50000	0.0000100
16	3000000.000	0.200	2.50000	0.0000100
17	3000000.000	0.200	2.50000	0.0000100
18	3000000.000	0.200	2.50000	0.0000100
19	3000000.000	0.200	2.50000	0.0000100
20	3000000.000	0.200	2.50000	0.0000100
21	3000000.000	0.200	2.50000	0.0000100
22	3000000.000	0.200	2.50000	0.0000100
23	3000000.000	0.200	2.50000	0.0000100
24	3000000.000	0.200	2.50000	0.0000100
25	3000000.000	0.200	2.50000	0.0000100
26	3000000.000	0.200	2.50000	0.0000100
27	3000000.000	0.200	2.50000	0.0000100
28	3000000.000	0.200	2.50000	0.0000100
29	3000000.000	0.200	2.50000	0.0000100
30	3000000.000	0.200	2.50000	0.0000100
31	3000000.000	0.200	2.50000	0.0000100
32	3000000.000	0.200	2.50000	0.0000100
33	3000000.000	0.200	2.50000	0.0000100
34	3000000.000	0.200	2.50000	0.0000100
35	3000000.000	0.200	2.50000	0.0000100
36	3000000.000	0.200	2.50000	0.0000100
37	3000000.000	0.200	2.50000	0.0000100
38	3000000.000	0.200	2.50000	0.0000100
39	3000000.000	0.200	2.50000	0.0000100
40	3000000.000	0.200	2.50000	0.0000100
41	3000000.000	0.200	2.50000	0.0000100
42	3000000.000	0.200	2.50000	0.0000100
43	3000000.000	0.200	2.50000	0.0000100
44	3000000.000	0.200	2.50000	0.0000100
45	3000000.000	0.200	2.50000	0.0000100
46	3000000.000	0.200	2.50000	0.0000100
47	3000000.000	0.200	2.50000	0.0000100
48	3000000.000	0.200	2.50000	0.0000100
49	3000000.000	0.200	2.50000	0.0000100
50	3000000.000	0.200	2.50000	0.0000100
51	3000000.000	0.200	2.50000	0.0000100
52	3000000.000	0.200	2.50000	0.0000100
53	3000000.000	0.200	2.50000	0.0000100
54	3000000.000	0.200	2.50000	0.0000100
55	3000000.000	0.200	2.50000	0.0000100
56	3000000.000	0.200	2.50000	0.0000100
57	3000000.000	0.200	2.50000	0.0000100
58	3000000.000	0.200	2.50000	0.0000100
59	3000000.000	0.200	2.50000	0.0000100
60	3000000.000	0.200	2.50000	0.0000100
61	3000000.000	0.200	2.50000	0.0000100
62	3000000.000	0.200	2.50000	0.0000100
63	3000000.000	0.200	2.50000	0.0000100
64	3000000.000	0.200	2.50000	0.0000100
65	3000000.000	0.200	2.50000	0.0000100
66	3000000.000	0.200	2.50000	0.0000100
67	3000000.000	0.200	2.50000	0.0000100
68	3000000.000	0.200	2.50000	0.0000100
69	3000000.000	0.200	2.50000	0.0000100
70	3000000.000	0.200	2.50000	0.0000100
71	3000000.000	0.200	2.50000	0.0000100
72	3000000.000	0.200	2.50000	0.0000100
73	3000000.000	0.200	2.50000	0.0000100
74	3000000.000	0.200	2.50000	0.0000100
75	3000000.000	0.200	2.50000	0.0000100
76	3000000.000	0.200	2.50000	0.0000100
77	3000000.000	0.200	2.50000	0.0000100
78	3000000.000	0.200	2.50000	0.0000100
79	3000000.000	0.200	2.50000	0.0000100
80	3000000.000	0.200	2.50000	0.0000100
81	3000000.000	0.200	2.50000	0.0000100
82	3000000.000	0.200	2.50000	0.0000100
83	3000000.000	0.200	2.50000	0.0000100
84	3000000.000	0.200	2.50000	0.0000100
85	3000000.000	0.200	2.50000	0.0000100
86	3000000.000	0.200	2.50000	0.0000100
87	3000000.000	0.200	2.50000	0.0000100

Material	E	Poisson	Densidad	C. Termico
88	3000000.000	0.200	2.50000	0.0000100
89	3000000.000	0.200	2.50000	0.0000100
90	3000000.000	0.200	2.50000	0.0000100
91	3000000.000	0.200	2.50000	0.0000100
92	3000000.000	0.200	2.50000	0.0000100
93	3000000.000	0.200	2.50000	0.0000100
94	3000000.000	0.200	2.50000	0.0000100
95	3000000.000	0.200	2.50000	0.0000100
96	3000000.000	0.200	2.50000	0.0000100
97	3000000.000	0.200	2.50000	0.0000100
98	3000000.000	0.200	2.50000	0.0000100
99	3000000.000	0.200	2.50000	0.0000100
100	3000000.000	0.200	2.50000	0.0000100
101	3000000.000	0.200	2.50000	0.0000100
102	3000000.000	0.200	2.50000	0.0000100
103	3000000.000	0.200	2.50000	0.0000100
104	3000000.000	0.200	2.50000	0.0000100
105	3000000.000	0.200	2.50000	0.0000100
106	3000000.000	0.200	2.50000	0.0000100
107	3000000.000	0.200	2.50000	0.0000100
108	3000000.000	0.200	2.50000	0.0000100
109	3000000.000	0.200	2.50000	0.0000100
110	3000000.000	0.200	2.50000	0.0000100
111	3000000.000	0.200	2.50000	0.0000100
112	3000000.000	0.200	2.50000	0.0000100
113	3000000.000	0.200	2.50000	0.0000100
114	3000000.000	0.200	2.50000	0.0000100
115	3000000.000	0.200	2.50000	0.0000100
116	3000000.000	0.200	2.50000	0.0000100
117	3000000.000	0.200	2.50000	0.0000100
118	3000000.000	0.200	2.50000	0.0000100
119	3000000.000	0.200	2.50000	0.0000100
120	3000000.000	0.200	2.50000	0.0000100
121	3000000.000	0.200	2.50000	0.0000100
122	3000000.000	0.200	2.50000	0.0000100
123	3000000.000	0.200	2.50000	0.0000100
124	3000000.000	0.200	2.50000	0.0000100
125	3000000.000	0.200	2.50000	0.0000100
126	3000000.000	0.200	2.50000	0.0000100
127	3000000.000	0.200	2.50000	0.0000100
128	3000000.000	0.200	2.50000	0.0000100
129	3000000.000	0.200	2.50000	0.0000100
130	3000000.000	0.200	2.50000	0.0000100
131	3000000.000	0.200	2.50000	0.0000100
132	3000000.000	0.200	2.50000	0.0000100
133	3000000.000	0.200	2.50000	0.0000100

Material	E	Poisson	Densidad	C. Termico
134	3000000.000	0.200	2.50000	0.0000100
135	3000000.000	0.200	2.50000	0.0000100
136	3000000.000	0.200	2.50000	0.0000100
137	3000000.000	0.200	2.50000	0.0000100
138	3000000.000	0.200	2.50000	0.0000100
139	3000000.000	0.200	2.50000	0.0000100
140	3000000.000	0.200	2.50000	0.0000100
141	3000000.000	0.200	2.50000	0.0000100
142	3000000.000	0.200	2.50000	0.0000100
143	3000000.000	0.200	2.50000	0.0000100
144	3000000.000	0.200	2.50000	0.0000100
145	3000000.000	0.200	2.50000	0.0000100
146	3000000.000	0.200	2.50000	0.0000100
147	3000000.000	0.200	2.50000	0.0000100
148	3000000.000	0.200	2.50000	0.0000100
149	3000000.000	0.200	2.50000	0.0000100
150	3000000.000	0.200	2.50000	0.0000100
151	3000000.000	0.200	2.50000	0.0000100
152	3000000.000	0.200	2.50000	0.0000100
153	3000000.000	0.200	2.50000	0.0000100
154	3000000.000	0.200	2.50000	0.0000100
155	3000000.000	0.200	2.50000	0.0000100
156	3000000.000	0.200	2.50000	0.0000100
157	3000000.000	0.200	2.50000	0.0000100
158	3000000.000	0.200	2.50000	0.0000100
159	3000000.000	0.200	2.50000	0.0000100
160	3000000.000	0.200	2.50000	0.0000100
161	3000000.000	0.200	2.50000	0.0000100
162	3000000.000	0.200	2.50000	0.0000100
163	3000000.000	0.200	2.50000	0.0000100
164	3000000.000	0.200	2.50000	0.0000100
165	3000000.000	0.200	2.50000	0.0000100
166	3000000.000	0.200	2.50000	0.0000100
167	3000000.000	0.200	2.50000	0.0000100
168	3000000.000	0.200	2.50000	0.0000100
169	3000000.000	0.200	2.50000	0.0000100
170	3000000.000	0.200	2.50000	0.0000100
171	3000000.000	0.200	2.50000	0.0000100
172	3000000.000	0.200	2.50000	0.0000100
173	3000000.000	0.200	2.50000	0.0000100
174	3000000.000	0.200	2.50000	0.0000100
175	3000000.000	0.200	2.50000	0.0000100
176	3000000.000	0.200	2.50000	0.0000100
177	3000000.000	0.200	2.50000	0.0000100
178	3000000.000	0.200	2.50000	0.0000100
179	3000000.000	0.200	2.50000	0.0000100

Material	E	Poisson	Densidad	C. Termico
180	3000000.000	0.200	2.50000	0.0000100
181	3000000.000	0.200	2.50000	0.0000100
182	3000000.000	0.200	2.50000	0.0000100
183	3000000.000	0.200	2.50000	0.0000100
184	3000000.000	0.200	2.50000	0.0000100
185	3000000.000	0.200	2.50000	0.0000100
186	3000000.000	0.200	2.50000	0.0000100
187	3000000.000	0.200	2.50000	0.0000100
188	3000000.000	0.200	2.50000	0.0000100
189	3000000.000	0.200	2.50000	0.0000100
190	3000000.000	0.200	2.50000	0.0000100
191	3000000.000	0.200	2.50000	0.0000100
192	3000000.000	0.200	2.50000	0.0000100
193	3000000.000	0.200	2.50000	0.0000100
194	3000000.000	0.200	2.50000	0.0000100
195	3000000.000	0.200	2.50000	0.0000100
196	3000000.000	0.200	2.50000	0.0000100
197	3000000.000	0.200	2.50000	0.0000100
198	3000000.000	0.200	2.50000	0.0000100
199	3000000.000	0.200	2.50000	0.0000100
200	3000000.000	0.200	2.50000	0.0000100
201	3000000.000	0.200	2.50000	0.0000100
202	3000000.000	0.200	2.50000	0.0000100
203	3000000.000	0.200	2.50000	0.0000100
204	3000000.000	0.200	2.50000	0.0000100
205	3000000.000	0.200	2.50000	0.0000100
206	3000000.000	0.200	2.50000	0.0000100
207	3000000.000	0.200	2.50000	0.0000100
208	3000000.000	0.200	2.50000	0.0000100
209	3000000.000	0.200	2.50000	0.0000100
210	3000000.000	0.200	2.50000	0.0000100
211	3000000.000	0.200	2.50000	0.0000100
212	3000000.000	0.200	2.50000	0.0000100
213	3000000.000	0.200	2.50000	0.0000100
214	3000000.000	0.200	2.50000	0.0000100
215	3000000.000	0.200	2.50000	0.0000100
216	3000000.000	0.200	2.50000	0.0000100
217	3000000.000	0.200	2.50000	0.0000100
218	3000000.000	0.200	2.50000	0.0000100
219	3000000.000	0.200	2.50000	0.0000100
220	3000000.000	0.200	2.50000	0.0000100
221	3000000.000	0.200	2.50000	0.0000100
222	3000000.000	0.200	2.50000	0.0000100
223	3000000.000	0.200	2.50000	0.0000100
224	3000000.000	0.200	2.50000	0.0000100
225	3000000.000	0.200	2.50000	0.0000100

Material	E	Poisson	Densidad	C. Termico
226	3000000.000	0.200	2.50000	0.0000100
227	3000000.000	0.200	2.50000	0.0000100
228	3000000.000	0.200	2.50000	0.0000100
229	3000000.000	0.200	2.50000	0.0000100
230	3000000.000	0.200	2.50000	0.0000100
231	3000000.000	0.200	2.50000	0.0000100
232	3000000.000	0.200	2.50000	0.0000100
233	3000000.000	0.200	2.50000	0.0000100
234	3000000.000	0.200	2.50000	0.0000100
235	3000000.000	0.200	2.50000	0.0000100
236	3000000.000	0.200	2.50000	0.0000100
237	3000000.000	0.200	2.50000	0.0000100
238	3000000.000	0.200	2.50000	0.0000100
239	3000000.000	0.200	2.50000	0.0000100
240	3000000.000	0.200	2.50000	0.0000100
241	3000000.000	0.200	2.50000	0.0000100
242	3000000.000	0.200	2.50000	0.0000100
243	3000000.000	0.200	2.50000	0.0000100
244	3000000.000	0.200	2.50000	0.0000100
245	3000000.000	0.200	2.50000	0.0000100
246	3000000.000	0.200	2.50000	0.0000100
247	3000000.000	0.200	2.50000	0.0000100
248	3000000.000	0.200	2.50000	0.0000100
249	3000000.000	0.200	2.50000	0.0000100
250	3000000.000	0.200	2.50000	0.0000100
251	3000000.000	0.200	2.50000	0.0000100
252	3000000.000	0.200	2.50000	0.0000100
253	3000000.000	0.200	2.50000	0.0000100
254	3000000.000	0.200	2.50000	0.0000100
255	3000000.000	0.200	2.50000	0.0000100
256	3000000.000	0.200	2.50000	0.0000100
257	3000000.000	0.200	2.50000	0.0000100
258	3000000.000	0.200	2.50000	0.0000100
259	3000000.000	0.200	2.50000	0.0000100
260	3000000.000	0.200	2.50000	0.0000100
261	3000000.000	0.200	2.50000	0.0000100
262	3000000.000	0.200	2.50000	0.0000100
263	3000000.000	0.200	2.50000	0.0000100
264	3000000.000	0.200	2.50000	0.0000100
265	3000000.000	0.200	2.50000	0.0000100
266	3000000.000	0.200	2.50000	0.0000100
267	3000000.000	0.200	2.50000	0.0000100
268	3000000.000	0.200	2.50000	0.0000100
269	3000000.000	0.200	2.50000	0.0000100
270	3000000.000	0.200	2.50000	0.0000100
271	3000000.000	0.200	2.50000	0.0000100

Material	E	Poisson	Densidad	C. Termico
272	3000000.000	0.200	2.50000	0.0000100
273	3000000.000	0.200	2.50000	0.0000100
274	3000000.000	0.200	2.50000	0.0000100
275	3000000.000	0.200	2.50000	0.0000100
276	3000000.000	0.200	2.50000	0.0000100
277	3000000.000	0.200	2.50000	0.0000100
278	3000000.000	0.200	2.50000	0.0000100
279	3000000.000	0.200	2.50000	0.0000100
280	3000000.000	0.200	2.50000	0.0000100
281	3000000.000	0.200	2.50000	0.0000100
282	3000000.000	0.200	2.50000	0.0000100
283	3000000.000	0.200	2.50000	0.0000100
284	3000000.000	0.200	2.50000	0.0000100
285	3000000.000	0.200	2.50000	0.0000100
286	3000000.000	0.200	2.50000	0.0000100
287	3000000.000	0.200	2.50000	0.0000100
288	3000000.000	0.200	2.50000	0.0000100
289	3000000.000	0.200	2.50000	0.0000100
290	3000000.000	0.200	2.50000	0.0000100
291	3000000.000	0.200	2.50000	0.0000100
292	3000000.000	0.200	2.50000	0.0000100
293	3000000.000	0.200	2.50000	0.0000100
294	3000000.000	0.200	2.50000	0.0000100
295	3000000.000	0.200	2.50000	0.0000100
296	3000000.000	0.200	2.50000	0.0000100
297	3000000.000	0.200	2.50000	0.0000100
298	3000000.000	0.200	2.50000	0.0000100
299	3000000.000	0.200	2.50000	0.0000100
300	3000000.000	0.200	2.50000	0.0000100
301	3000000.000	0.200	2.50000	0.0000100
302	3000000.000	0.200	2.50000	0.0000100
303	3000000.000	0.200	2.50000	0.0000100
304	3000000.000	0.200	2.50000	0.0000100
305	3000000.000	0.200	2.50000	0.0000100
306	3000000.000	0.200	2.50000	0.0000100
307	3000000.000	0.200	2.50000	0.0000100
308	3000000.000	0.200	2.50000	0.0000100
309	3000000.000	0.200	2.50000	0.0000100
310	3000000.000	0.200	2.50000	0.0000100
311	3000000.000	0.200	2.50000	0.0000100
312	3000000.000	0.200	2.50000	0.0000100
313	3000000.000	0.200	2.50000	0.0000100
314	3000000.000	0.200	2.50000	0.0000100
315	3000000.000	0.200	2.50000	0.0000100
316	3000000.000	0.200	2.50000	0.0000100
317	3000000.000	0.200	2.50000	0.0000100

Material	E	Poisson	Densidad	C. Termico
318	3000000.000	0.200	2.50000	0.0000100
319	3000000.000	0.200	2.50000	0.0000100
320	3000000.000	0.200	2.50000	0.0000100
321	3000000.000	0.200	2.50000	0.0000100
322	3000000.000	0.200	2.50000	0.0000100
323	3000000.000	0.200	2.50000	0.0000100
324	3000000.000	0.200	2.50000	0.0000100
325	3000000.000	0.200	2.50000	0.0000100
326	3000000.000	0.200	2.50000	0.0000100
327	3000000.000	0.200	2.50000	0.0000100
328	3000000.000	0.200	2.50000	0.0000100
329	3000000.000	0.200	2.50000	0.0000100
330	3000000.000	0.200	2.50000	0.0000100
331	3000000.000	0.200	2.50000	0.0000100
332	3000000.000	0.200	2.50000	0.0000100
333	3000000.000	0.200	2.50000	0.0000100
334	3000000.000	0.200	2.50000	0.0000100
335	3000000.000	0.200	2.50000	0.0000100
336	3000000.000	0.200	2.50000	0.0000100
337	3000000.000	0.200	2.50000	0.0000100
338	3000000.000	0.200	2.50000	0.0000100
339	3000000.000	0.200	2.50000	0.0000100
340	3000000.000	0.200	2.50000	0.0000100
341	3000000.000	0.200	2.50000	0.0000100
342	3000000.000	0.200	2.50000	0.0000100
343	3000000.000	0.200	2.50000	0.0000100
344	3000000.000	0.200	2.50000	0.0000100
345	3000000.000	0.200	2.50000	0.0000100
346	3000000.000	0.200	2.50000	0.0000100
347	3000000.000	0.200	2.50000	0.0000100
348	3000000.000	0.200	2.50000	0.0000100
349	3000000.000	0.200	2.50000	0.0000100
350	3000000.000	0.200	2.50000	0.0000100
351	3000000.000	0.200	2.50000	0.0000100
352	3000000.000	0.200	2.50000	0.0000100
353	3000000.000	0.200	2.50000	0.0000100
354	3000000.000	0.200	2.50000	0.0000100
355	3000000.000	0.200	2.50000	0.0000100
356	3000000.000	0.200	2.50000	0.0000100
357	3000000.000	0.200	2.50000	0.0000100
358	3000000.000	0.200	2.50000	0.0000100
359	3000000.000	0.200	2.50000	0.0000100
360	3000000.000	0.200	2.50000	0.0000100
361	3000000.000	0.200	2.50000	0.0000100
362	3000000.000	0.200	2.50000	0.0000100
363	3000000.000	0.200	2.50000	0.0000100

Material	E	Poisson	Densidad	C. Termico
364	3000000.000	0.200	2.50000	0.0000100
365	3000000.000	0.200	2.50000	0.0000100
366	3000000.000	0.200	2.50000	0.0000100
367	3000000.000	0.200	2.50000	0.0000100
368	3000000.000	0.200	2.50000	0.0000100
369	3000000.000	0.200	2.50000	0.0000100
370	3000000.000	0.200	2.50000	0.0000100
371	3000000.000	0.200	2.50000	0.0000100
372	3000000.000	0.200	2.50000	0.0000100
373	3000000.000	0.200	2.50000	0.0000100
374	3000000.000	0.200	2.50000	0.0000100
375	3000000.000	0.200	2.50000	0.0000100
376	3000000.000	0.200	2.50000	0.0000100
377	3000000.000	0.200	2.50000	0.0000100
378	3000000.000	0.200	2.50000	0.0000100
379	3000000.000	0.200	2.50000	0.0000100
380	3000000.000	0.200	2.50000	0.0000100
381	3000000.000	0.200	2.50000	0.0000100
382	3000000.000	0.200	2.50000	0.0000100
383	3000000.000	0.200	2.50000	0.0000100
384	3000000.000	0.200	2.50000	0.0000100
385	3000000.000	0.200	2.50000	0.0000100
386	3000000.000	0.200	2.50000	0.0000100
387	3000000.000	0.200	2.50000	0.0000100
388	3000000.000	0.200	2.50000	0.0000100
389	3000000.000	0.200	2.50000	0.0000100
390	3000000.000	0.200	2.50000	0.0000100
391	3000000.000	0.200	2.50000	0.0000100
392	3000000.000	0.200	2.50000	0.0000100
393	3000000.000	0.200	2.50000	0.0000100
394	3000000.000	0.200	2.50000	0.0000100
395	3000000.000	0.200	2.50000	0.0000100
396	3000000.000	0.200	2.50000	0.0000100
397	3000000.000	0.200	2.50000	0.0000100
398	3000000.000	0.200	2.50000	0.0000100
399	3000000.000	0.200	2.50000	0.0000100
400	3000000.000	0.200	2.50000	0.0000100
401	3000000.000	0.200	2.50000	0.0000100
402	3000000.000	0.200	2.50000	0.0000100
403	3000000.000	0.200	2.50000	0.0000100
404	3000000.000	0.200	2.50000	0.0000100
405	3000000.000	0.200	2.50000	0.0000100
406	3000000.000	0.200	2.50000	0.0000100
407	3000000.000	0.200	2.50000	0.0000100
408	3000000.000	0.200	2.50000	0.0000100
409	3000000.000	0.200	2.50000	0.0000100

Material	E	Poisson	Densidad	C. Termico
410	3000000.000	0.200	2.50000	0.0000100
411	3000000.000	0.200	2.50000	0.0000100
412	3000000.000	0.200	2.50000	0.0000100
413	3000000.000	0.200	2.50000	0.0000100
414	3000000.000	0.200	2.50000	0.0000100
415	3000000.000	0.200	2.50000	0.0000100
416	3000000.000	0.200	2.50000	0.0000100
417	3000000.000	0.200	2.50000	0.0000100
418	3000000.000	0.200	2.50000	0.0000100
419	3000000.000	0.200	2.50000	0.0000100
420	3000000.000	0.200	2.50000	0.0000100
421	3000000.000	0.200	2.50000	0.0000100
422	3000000.000	0.200	2.50000	0.0000100
423	3000000.000	0.200	2.50000	0.0000100
424	3000000.000	0.200	2.50000	0.0000100
425	3000000.000	0.200	2.50000	0.0000100
426	3000000.000	0.200	2.50000	0.0000100
427	3000000.000	0.200	2.50000	0.0000100
428	3000000.000	0.200	2.50000	0.0000100
429	3000000.000	0.200	2.50000	0.0000100
430	3000000.000	0.200	2.50000	0.0000100
431	3000000.000	0.200	2.50000	0.0000100
432	3000000.000	0.200	2.50000	0.0000100
433	3000000.000	0.200	2.50000	0.0000100
434	3000000.000	0.200	2.50000	0.0000100
435	3000000.000	0.200	2.50000	0.0000100
436	3000000.000	0.200	2.50000	0.0000100
437	3000000.000	0.200	2.50000	0.0000100
438	3000000.000	0.200	2.50000	0.0000100
439	3000000.000	0.200	2.50000	0.0000100
440	3000000.000	0.200	2.50000	0.0000100
441	3000000.000	0.200	2.50000	0.0000100
442	3000000.000	0.200	2.50000	0.0000100
443	3000000.000	0.200	2.50000	0.0000100
444	3000000.000	0.200	2.50000	0.0000100
445	3000000.000	0.200	2.50000	0.0000100
446	3000000.000	0.200	2.50000	0.0000100
447	3000000.000	0.200	2.50000	0.0000100
448	3000000.000	0.200	2.50000	0.0000100
449	3000000.000	0.200	2.50000	0.0000100
450	3000000.000	0.200	2.50000	0.0000100
451	3000000.000	0.200	2.50000	0.0000100
452	3000000.000	0.200	2.50000	0.0000100
453	3000000.000	0.200	2.50000	0.0000100
454	3000000.000	0.200	2.50000	0.0000100
455	3000000.000	0.200	2.50000	0.0000100

Material	E	Poisson	Densidad	C. Termico
456	3000000.000	0.200	2.50000	0.0000100
457	3000000.000	0.200	2.50000	0.0000100
458	3000000.000	0.200	2.50000	0.0000100
459	3000000.000	0.200	2.50000	0.0000100
460	3000000.000	0.200	2.50000	0.0000100
461	3000000.000	0.200	2.50000	0.0000100
462	3000000.000	0.200	2.50000	0.0000100
463	3000000.000	0.200	2.50000	0.0000100
464	3000000.000	0.200	2.50000	0.0000100
465	3000000.000	0.200	2.50000	0.0000100
466	3000000.000	0.200	2.50000	0.0000100
467	3000000.000	0.200	2.50000	0.0000100
468	3000000.000	0.200	2.50000	0.0000100
469	3000000.000	0.200	2.50000	0.0000100
470	3000000.000	0.200	2.50000	0.0000100
471	3000000.000	0.200	2.50000	0.0000100
472	3000000.000	0.200	2.50000	0.0000100
473	3000000.000	0.200	2.50000	0.0000100
474	3000000.000	0.200	2.50000	0.0000100
475	3000000.000	0.200	2.50000	0.0000100
476	3000000.000	0.200	2.50000	0.0000100
477	3000000.000	0.200	2.50000	0.0000100
478	3000000.000	0.200	2.50000	0.0000100
479	3000000.000	0.200	2.50000	0.0000100
480	3000000.000	0.200	2.50000	0.0000100
481	3000000.000	0.200	2.50000	0.0000100
482	3000000.000	0.200	2.50000	0.0000100
483	3000000.000	0.200	2.50000	0.0000100
484	3000000.000	0.200	2.50000	0.0000100
485	3000000.000	0.200	2.50000	0.0000100
486	3000000.000	0.200	2.50000	0.0000100
487	3000000.000	0.200	2.50000	0.0000100
488	3000000.000	0.200	2.50000	0.0000100
489	3000000.000	0.200	2.50000	0.0000100
490	3000000.000	0.200	2.50000	0.0000100
491	3000000.000	0.200	2.50000	0.0000100
492	3000000.000	0.200	2.50000	0.0000100
493	3000000.000	0.200	2.50000	0.0000100
494	3000000.000	0.200	2.50000	0.0000100
495	3000000.000	0.200	2.50000	0.0000100
496	3000000.000	0.200	2.50000	0.0000100
497	3000000.000	0.200	2.50000	0.0000100
498	3000000.000	0.200	2.50000	0.0000100
499	3000000.000	0.200	2.50000	0.0000100
500	3000000.000	0.200	2.50000	0.0000100
501	3000000.000	0.200	2.50000	0.0000100

Material	E	Poisson	Densidad	C. Termico
502	3000000.000	0.200	2.50000	0.0000100
503	3000000.000	0.200	2.50000	0.0000100
504	3000000.000	0.200	2.50000	0.0000100
505	3000000.000	0.200	2.50000	0.0000100
506	3000000.000	0.200	2.50000	0.0000100
507	3000000.000	0.200	2.50000	0.0000100
508	3000000.000	0.200	2.50000	0.0000100
509	3000000.000	0.200	2.50000	0.0000100
510	3000000.000	0.200	2.50000	0.0000100
511	3000000.000	0.200	2.50000	0.0000100
512	3000000.000	0.200	2.50000	0.0000100
513	3000000.000	0.200	2.50000	0.0000100
514	3000000.000	0.200	2.50000	0.0000100
515	3000000.000	0.200	2.50000	0.0000100
516	3000000.000	0.200	2.50000	0.0000100
517	3000000.000	0.200	2.50000	0.0000100
518	3000000.000	0.200	2.50000	0.0000100
519	3000000.000	0.200	2.50000	0.0000100
520	3000000.000	0.200	2.50000	0.0000100
521	3000000.000	0.200	2.50000	0.0000100
522	3000000.000	0.200	2.50000	0.0000100
523	3000000.000	0.200	2.50000	0.0000100
524	3000000.000	0.200	2.50000	0.0000100
525	3000000.000	0.200	2.50000	0.0000100
526	3000000.000	0.200	2.50000	0.0000100
527	3000000.000	0.200	2.50000	0.0000100
528	3000000.000	0.200	2.50000	0.0000100
529	3000000.000	0.200	2.50000	0.0000100
530	3000000.000	0.200	2.50000	0.0000100
531	3000000.000	0.200	2.50000	0.0000100
532	3000000.000	0.200	2.50000	0.0000100
533	3000000.000	0.200	2.50000	0.0000100
534	3000000.000	0.200	2.50000	0.0000100
535	3000000.000	0.200	2.50000	0.0000100
536	3000000.000	0.200	2.50000	0.0000100
537	3000000.000	0.200	2.50000	0.0000100
538	3000000.000	0.200	2.50000	0.0000100
539	3000000.000	0.200	2.50000	0.0000100
540	3000000.000	0.200	2.50000	0.0000100
541	3000000.000	0.200	2.50000	0.0000100
542	3000000.000	0.200	2.50000	0.0000100
543	3000000.000	0.200	2.50000	0.0000100
544	3000000.000	0.200	2.50000	0.0000100
545	3000000.000	0.200	2.50000	0.0000100
546	3000000.000	0.200	2.50000	0.0000100
547	3000000.000	0.200	2.50000	0.0000100

Material	E	Poisson	Densidad	C. Termico
548	3000000.000	0.200	2.50000	0.0000100
549	3000000.000	0.200	2.50000	0.0000100
550	3000000.000	0.200	2.50000	0.0000100
551	3000000.000	0.200	2.50000	0.0000100
552	3000000.000	0.200	2.50000	0.0000100
553	3000000.000	0.200	2.50000	0.0000100
554	3000000.000	0.200	2.50000	0.0000100
555	3000000.000	0.200	2.50000	0.0000100
556	3000000.000	0.200	2.50000	0.0000100
557	3000000.000	0.200	2.50000	0.0000100
558	3000000.000	0.200	2.50000	0.0000100
559	3000000.000	0.200	2.50000	0.0000100
560	3000000.000	0.200	2.50000	0.0000100
561	3000000.000	0.200	2.50000	0.0000100
562	3000000.000	0.200	2.50000	0.0000100
563	3000000.000	0.200	2.50000	0.0000100
564	3000000.000	0.200	2.50000	0.0000100
565	3000000.000	0.200	2.50000	0.0000100
566	3000000.000	0.200	2.50000	0.0000100
567	3000000.000	0.200	2.50000	0.0000100
568	3000000.000	0.200	2.50000	0.0000100
569	3000000.000	0.200	2.50000	0.0000100
570	3000000.000	0.200	2.50000	0.0000100
571	3000000.000	0.200	2.50000	0.0000100
572	3000000.000	0.200	2.50000	0.0000100
573	3000000.000	0.200	2.50000	0.0000100
574	3000000.000	0.200	2.50000	0.0000100
575	3000000.000	0.200	2.50000	0.0000100
576	3000000.000	0.200	2.50000	0.0000100
577	3000000.000	0.200	2.50000	0.0000100
578	3000000.000	0.200	2.50000	0.0000100
579	3000000.000	0.200	2.50000	0.0000100
580	3000000.000	0.200	2.50000	0.0000100
581	3000000.000	0.200	2.50000	0.0000100
582	3000000.000	0.200	2.50000	0.0000100
583	3000000.000	0.200	2.50000	0.0000100
584	3000000.000	0.200	2.50000	0.0000100
585	3000000.000	0.200	2.50000	0.0000100
586	3000000.000	0.200	2.50000	0.0000100
587	3000000.000	0.200	2.50000	0.0000100
588	3000000.000	0.200	2.50000	0.0000100
589	3000000.000	0.200	2.50000	0.0000100
590	3000000.000	0.200	2.50000	0.0000100
591	3000000.000	0.200	2.50000	0.0000100
592	3000000.000	0.200	2.50000	0.0000100
593	3000000.000	0.200	2.50000	0.0000100

Material	E	Poisson	Densidad	C. Termico
594	3000000.000	0.200	2.50000	0.0000100
595	3000000.000	0.200	2.50000	0.0000100
596	3000000.000	0.200	2.50000	0.0000100
597	3000000.000	0.200	2.50000	0.0000100
598	3000000.000	0.200	2.50000	0.0000100
599	3000000.000	0.200	2.50000	0.0000100
600	3000000.000	0.200	2.50000	0.0000100
601	3000000.000	0.200	2.50000	0.0000100
602	3000000.000	0.200	2.50000	0.0000100
603	3000000.000	0.200	2.50000	0.0000100
604	3000000.000	0.200	2.50000	0.0000100
605	3000000.000	0.200	2.50000	0.0000100
606	3000000.000	0.200	2.50000	0.0000100
607	3000000.000	0.200	2.50000	0.0000100
608	3000000.000	0.200	2.50000	0.0000100
609	3000000.000	0.200	2.50000	0.0000100
610	3000000.000	0.200	2.50000	0.0000100
611	3000000.000	0.200	2.50000	0.0000100
612	3000000.000	0.200	2.50000	0.0000100
613	3000000.000	0.200	2.50000	0.0000100
614	3000000.000	0.200	2.50000	0.0000100
615	3000000.000	0.200	2.50000	0.0000100
616	3000000.000	0.200	2.50000	0.0000100
617	3000000.000	0.200	2.50000	0.0000100
618	3000000.000	0.200	2.50000	0.0000100
619	3000000.000	0.200	2.50000	0.0000100
620	3000000.000	0.200	2.50000	0.0000100
621	3000000.000	0.200	2.50000	0.0000100
622	3000000.000	0.200	2.50000	0.0000100
623	3000000.000	0.200	2.50000	0.0000100
624	3000000.000	0.200	2.50000	0.0000100

APOYOS

Nodo	Ux Kfx	Uy Kfy	Uz Kfz	Gx Kmx	Gy Kmy	Gz Kmz
1	2	2	2	0	0	0
	121.5098	121.5098	121.5098	0.0000	0.0000	0.0000
2	2	2	2	0	0	0
	854.9965	854.9965	854.9965	0.0000	0.0000	0.0000
3	2	2	2	0	0	0
	854.9965	854.9965	854.9965	0.0000	0.0000	0.0000
4	2	2	2	0	0	0
	854.9965	854.9965	854.9965	0.0000	0.0000	0.0000
5	2	2	2	0	0	0
	121.5098	121.5098	121.5098	0.0000	0.0000	0.0000

Nodo	Ux	Uy	Uz	Gx	Gy	Gz
	Kfx	Kfy	Kfz	Kmx	Kmy	Kmz
17	2	2	2	0	0	0
	976.2087	976.2087	976.2087	0.0000	0.0000	0.0000
18	2	2	2	0	0	0
	6860.1250	6860.1250	6860.1250	0.0000	0.0000	0.0000
19	2	2	2	0	0	0
	6846.2129	6846.2129	6846.2129	0.0000	0.0000	0.0000
20	2	2	2	0	0	0
	6832.3062	6832.3062	6832.3062	0.0000	0.0000	0.0000
21	2	2	2	0	0	0
	969.7191	969.7191	969.7191	0.0000	0.0000	0.0000
33	2	2	2	0	0	0
	976.2086	976.2086	976.2086	0.0000	0.0000	0.0000
34	2	2	2	0	0	0
	6860.1265	6860.1265	6860.1265	0.0000	0.0000	0.0000
35	2	2	2	0	0	0
	6846.2153	6846.2153	6846.2153	0.0000	0.0000	0.0000
36	2	2	2	0	0	0
	6832.3052	6832.3052	6832.3052	0.0000	0.0000	0.0000
37	2	2	2	0	0	0
	969.7185	969.7185	969.7185	0.0000	0.0000	0.0000
49	2	2	2	0	0	0
	976.2151	976.2151	976.2151	0.0000	0.0000	0.0000
50	2	2	2	0	0	0
	6860.1182	6860.1182	6860.1182	0.0000	0.0000	0.0000
51	2	2	2	0	0	0
	6846.2134	6846.2134	6846.2134	0.0000	0.0000	0.0000
52	2	2	2	0	0	0
	6832.3062	6832.3062	6832.3062	0.0000	0.0000	0.0000
53	2	2	2	0	0	0
	969.7174	969.7174	969.7174	0.0000	0.0000	0.0000
65	2	2	2	0	0	0
	976.2133	976.2133	976.2133	0.0000	0.0000	0.0000
66	2	2	2	0	0	0
	6860.1201	6860.1201	6860.1201	0.0000	0.0000	0.0000
67	2	2	2	0	0	0
	6846.2075	6846.2075	6846.2075	0.0000	0.0000	0.0000
68	2	2	2	0	0	0
	6832.3071	6832.3071	6832.3071	0.0000	0.0000	0.0000
69	2	2	2	0	0	0
	969.7199	969.7199	969.7199	0.0000	0.0000	0.0000
81	2	2	2	0	0	0
	976.2112	976.2112	976.2112	0.0000	0.0000	0.0000
82	2	2	2	0	0	0
	6860.1147	6860.1147	6860.1147	0.0000	0.0000	0.0000

Nodo	Ux	Uy	Uz	Gx	Gy	Gz
	Kfx	Kfy	Kfz	Kmx	Kmy	Kmz
83	2	2	2	0	0	0
	6846.2070	6846.2070	6846.2070	0.0000	0.0000	0.0000
84	2	2	2	0	0	0
	6832.3037	6832.3037	6832.3037	0.0000	0.0000	0.0000
85	2	2	2	0	0	0
	969.7181	969.7181	969.7181	0.0000	0.0000	0.0000
97	2	2	2	0	0	0
	976.2078	976.2078	976.2078	0.0000	0.0000	0.0000
98	2	2	2	0	0	0
	6860.1270	6860.1270	6860.1270	0.0000	0.0000	0.0000
99	2	2	2	0	0	0
	6846.2153	6846.2153	6846.2153	0.0000	0.0000	0.0000
100	2	2	2	0	0	0
	6832.2896	6832.2896	6832.2896	0.0000	0.0000	0.0000
101	2	2	2	0	0	0
	969.7225	969.7225	969.7225	0.0000	0.0000	0.0000
113	2	2	2	0	0	0
	976.2106	976.2106	976.2106	0.0000	0.0000	0.0000
114	2	2	2	0	0	0
	6860.0967	6860.0967	6860.0967	0.0000	0.0000	0.0000
115	2	2	2	0	0	0
	6846.1948	6846.1948	6846.1948	0.0000	0.0000	0.0000
116	2	2	2	0	0	0
	6832.2944	6832.2944	6832.2944	0.0000	0.0000	0.0000
117	2	2	2	0	0	0
	969.7199	969.7199	969.7199	0.0000	0.0000	0.0000
129	2	2	2	0	0	0
	976.2155	976.2155	976.2155	0.0000	0.0000	0.0000
130	2	2	2	0	0	0
	6860.1289	6860.1289	6860.1289	0.0000	0.0000	0.0000
131	2	2	2	0	0	0
	6846.2163	6846.2163	6846.2163	0.0000	0.0000	0.0000
132	2	2	2	0	0	0
	6832.2954	6832.2954	6832.2954	0.0000	0.0000	0.0000
133	2	2	2	0	0	0
	969.7187	969.7187	969.7187	0.0000	0.0000	0.0000
145	2	2	2	0	0	0
	976.2170	976.2170	976.2170	0.0000	0.0000	0.0000
146	2	2	2	0	0	0
	6860.0942	6860.0942	6860.0942	0.0000	0.0000	0.0000
147	2	2	2	0	0	0
	6846.1914	6846.1914	6846.1914	0.0000	0.0000	0.0000
148	2	2	2	0	0	0
	6832.2944	6832.2944	6832.2944	0.0000	0.0000	0.0000

Nodo	Ux	Uy	Uz	Gx	Gy	Gz
	Kfx	Kfy	Kfz	Kmx	Kmy	Kmz
149	2	2	2	0	0	0
	969.7170	969.7170	969.7170	0.0000	0.0000	0.0000
161	2	2	2	0	0	0
	976.2087	976.2087	976.2087	0.0000	0.0000	0.0000
162	2	2	2	0	0	0
	6860.1084	6860.1084	6860.1084	0.0000	0.0000	0.0000
163	2	2	2	0	0	0
	6846.1978	6846.1978	6846.1978	0.0000	0.0000	0.0000
164	2	2	2	0	0	0
	6832.2861	6832.2861	6832.2861	0.0000	0.0000	0.0000
165	2	2	2	0	0	0
	969.7212	969.7212	969.7212	0.0000	0.0000	0.0000
177	2	2	2	0	0	0
	976.2065	976.2065	976.2065	0.0000	0.0000	0.0000
178	2	2	2	0	0	0
	6860.1084	6860.1084	6860.1084	0.0000	0.0000	0.0000
179	2	2	2	0	0	0
	6846.1982	6846.1982	6846.1982	0.0000	0.0000	0.0000
180	2	2	2	0	0	0
	6832.2954	6832.2954	6832.2954	0.0000	0.0000	0.0000
181	2	2	2	0	0	0
	969.7201	969.7201	969.7201	0.0000	0.0000	0.0000
193	2	2	2	0	0	0
	976.2104	976.2104	976.2104	0.0000	0.0000	0.0000
194	2	2	2	0	0	0
	6860.0771	6860.0771	6860.0771	0.0000	0.0000	0.0000
195	2	2	2	0	0	0
	6846.1826	6846.1826	6846.1826	0.0000	0.0000	0.0000
196	2	2	2	0	0	0
	6832.2803	6832.2803	6832.2803	0.0000	0.0000	0.0000
197	2	2	2	0	0	0
	969.7225	969.7225	969.7225	0.0000	0.0000	0.0000
209	2	2	2	0	0	0
	976.2125	976.2125	976.2125	0.0000	0.0000	0.0000
210	2	2	2	0	0	0
	6860.1152	6860.1152	6860.1152	0.0000	0.0000	0.0000
211	2	2	2	0	0	0
	6846.2002	6846.2002	6846.2002	0.0000	0.0000	0.0000
212	2	2	2	0	0	0
	6832.2744	6832.2744	6832.2744	0.0000	0.0000	0.0000
213	2	2	2	0	0	0
	969.7187	969.7187	969.7187	0.0000	0.0000	0.0000
225	2	2	2	0	0	0
	976.2089	976.2089	976.2089	0.0000	0.0000	0.0000

Nodo	Ux	Uy	Uz	Gx	Gy	Gz
	Kfx	Kfy	Kfz	Kmx	Kmy	Kmz
226	2	2	2	0	0	0
	6860.0898	6860.0898	6860.0898	0.0000	0.0000	0.0000
227	2	2	2	0	0	0
	6846.1890	6846.1890	6846.1890	0.0000	0.0000	0.0000
228	2	2	2	0	0	0
	6832.2847	6832.2847	6832.2847	0.0000	0.0000	0.0000
229	2	2	2	0	0	0
	969.7188	969.7188	969.7188	0.0000	0.0000	0.0000
241	2	2	2	0	0	0
	976.2111	976.2111	976.2111	0.0000	0.0000	0.0000
242	2	2	2	0	0	0
	6860.1045	6860.1045	6860.1045	0.0000	0.0000	0.0000
243	2	2	2	0	0	0
	6846.1816	6846.1816	6846.1816	0.0000	0.0000	0.0000
244	2	2	2	0	0	0
	6832.2710	6832.2710	6832.2710	0.0000	0.0000	0.0000
245	2	2	2	0	0	0
	969.7149	969.7149	969.7149	0.0000	0.0000	0.0000
257	2	2	2	0	0	0
	976.2070	976.2070	976.2070	0.0000	0.0000	0.0000
258	2	2	2	0	0	0
	6860.0801	6860.0801	6860.0801	0.0000	0.0000	0.0000
259	2	2	2	0	0	0
	6846.1792	6846.1792	6846.1792	0.0000	0.0000	0.0000
260	2	2	2	0	0	0
	6832.2788	6832.2788	6832.2788	0.0000	0.0000	0.0000
261	2	2	2	0	0	0
	969.7230	969.7230	969.7230	0.0000	0.0000	0.0000
273	2	2	2	0	0	0
	976.2112	976.2112	976.2112	0.0000	0.0000	0.0000
274	2	2	2	0	0	0
	6860.1064	6860.1064	6860.1064	0.0000	0.0000	0.0000
275	2	2	2	0	0	0
	6846.1924	6846.1924	6846.1924	0.0000	0.0000	0.0000
276	2	2	2	0	0	0
	6832.2754	6832.2754	6832.2754	0.0000	0.0000	0.0000
277	2	2	2	0	0	0
	969.7204	969.7204	969.7204	0.0000	0.0000	0.0000
289	2	2	2	0	0	0
	976.2191	976.2191	976.2191	0.0000	0.0000	0.0000
290	2	2	2	0	0	0
	6860.0732	6860.0732	6860.0732	0.0000	0.0000	0.0000
291	2	2	2	0	0	0
	6846.1611	6846.1611	6846.1611	0.0000	0.0000	0.0000

Nodo	Ux	Uy	Uz	Gx	Gy	Gz
	Kfx	Kfy	Kfz	Kmx	Kmy	Kmz
292	2	2	2	0	0	0
	6832.2778	6832.2778	6832.2778	0.0000	0.0000	0.0000
293	2	2	2	0	0	0
	969.7227	969.7227	969.7227	0.0000	0.0000	0.0000
305	2	2	2	0	0	0
	121.5087	121.5087	121.5087	0.0000	0.0000	0.0000
306	2	2	2	0	0	0
	854.9886	854.9886	854.9886	0.0000	0.0000	0.0000
307	2	2	2	0	0	0
	854.9886	854.9886	854.9886	0.0000	0.0000	0.0000
308	2	2	2	0	0	0
	854.9886	854.9886	854.9886	0.0000	0.0000	0.0000
309	2	2	2	0	0	0
	121.5091	121.5091	121.5091	0.0000	0.0000	0.0000

```
 ** CivilCAD (c) 1995 . Autores : L.M.Callis y J.M.Roig **
*********************************************************

Titulo proyecto :PERGOLA

CAJON. Modulo  2

GEOMETRIA
=========

Coord. paramento interior:
 Junta de entrada:
 x1=  446514.112 m y1= 4465369.859 m x2=  446510.076 m y2= 4465378.459 m
 Junta de salida :
 x1=  446550.425 m y1= 4465386.345 m x2=  446546.605 m y2= 4465395.043 m

Cantos:
 Solera :     0.900 m Hastiales :     0.900 m Dintel :     0.900 m

Cotas:
 Junta de entrada: Zsup.izq.   11.300 m Zsup.der.   11.300 m
 Zrasante    2.500 m Zsolera    0.000 m
 Junta de salida : Zsup.izq.   11.300 m Zsup.der.   11.300 m
 Zrasante    2.500 m Zsolera    0.000 m

Cartelas:
 Superior : Altura     0.000 m Anchura     0.000 m
 Inferior : Altura     0.000 m Anchura     0.000 m

Materiales :
 fck :  250.000 Kg/cm2
 fyk : 5100.000 Kg/cm2

Perfil de tierras según eje cajón:

 Dist.:    0.000 m Cota :   11.300 m
 Dist.:   17.500 m Cota :   11.300 m
 Dist.:   17.500 m Cota :   11.600 m
 Dist.:   80.000 m Cota :   12.200 m
 Dist.:   80.000 m Cota :   11.300 m
 Dist.:  108.000 m Cota :   11.300 m

 Azimut eje calzada superior :   87.749g
 Coef. balasto : 1000.000 T/m3
```

CARGAS

Peso Propio :

Densidad hormigón: 2.500 T/m3

Superestructura :

Altura sobre dintel : 1.700 m

Dist.: 27.000 m Carga : 0.000 T/m2

Dist.: 45.000 m Carga : 1.100 T/m2

Dist.: 36.000 m Carga : 0.000 T/m2

Tierras :

Densidad : 2.000 T/m3

Ang. rozam.: 30.000°

Sobrecarga :

Altura sobre dintel : 0.900 m

Sobre dintel : 3.940 T/m2

Interior : 7.340 T/m2

En trasdós : 1.500 T/m2

Dist.inicial sobre eje cajón : 30.000 m

Dist.final sobre eje cajón : 70.000 m

TENSIONES EN TERRENO

(valores característicos) Nodo 1 Tensión max. : 28.45 T/m2 Tensión mín. : 11.90 T/m2

Nodo 2 Tensión max. : 25.63 T/m2 Tensión mín. : 12.80 T/m2

Nodo 3 Tensión max. : 22.44 T/m2 Tensión mín. : 13.21 T/m2

Nodo 4 Tensión max. : 24.45 T/m2 Tensión mín. : 12.60 T/m2

Nodo 5 Tensión max. : 26.81 T/m2 Tensión mín. : 12.09 T/m2

Nodo 17 Tensión max. : 28.46 T/m2 Tensión mín. : 11.90 T/m2

Nodo 18 Tensión max. : 25.55 T/m2 Tensión mín. : 12.74 T/m2

Nodo 19 Tensión max. : 22.34 T/m2 Tensión mín. : 13.12 T/m2

Nodo 20 Tensión max. : 24.44 T/m2 Tensión mín. : 12.58 T/m2

Nodo 21 Tensión max. : 26.90 T/m2 Tensión mín. : 12.13 T/m2

Nodo 33 Tensión max. : 28.47 T/m2 Tensión mín. : 11.91 T/m2

Nodo 34 Tensión max. : 25.48 T/m2 Tensión mín. : 12.67 T/m2

Nodo 35 Tensión max. : 22.24 T/m2 Tensión mín. : 13.02 T/m2

Nodo 36 Tensión max. : 24.47 T/m2 Tensión mín. : 12.56 T/m2

Nodo 37 Tensión max. : 27.05 T/m2 Tensión mín. : 12.20 T/m2

Nodo 49 Tensión max. : 28.49 T/m2 Tensión mín. : 11.91 T/m2

Nodo 50 Tensión max. : 25.45 T/m2 Tensión mín. : 12.64 T/m2

Nodo 51 Tensión max. : 22.22 T/m2 Tensión mín. : 12.98 T/m2

Nodo 52 Tensión max. : 24.55 T/m2 Tensión mín. : 12.58 T/m2

Nodo 53 Tensión max. : 27.20 T/m2 Tensión mín. : 12.28 T/m2

Nodo 65 Tensión max. : 28.51 T/m2 Tensión mín. : 11.92 T/m2

Nodo 66 Tensión max. : 25.45 T/m2 Tensión mín. : 12.63 T/m2

Nodo 67 Tensión max. : 22.24 T/m2 Tensión mín. : 12.97 T/m2

Nodo 68 Tensión max. : 24.65 T/m2 Tensión mín. : 12.62 T/m2

Nodo 69 Tensión max. : 27.35 T/m2 Tensión mín. : 12.36 T/m2

Nodo 81 Tensión max. : 28.53 T/m2 Tensión mín. : 11.93 T/m2

Nodo 82 Tensión max. : 25.46 T/m2 Tensión mín. : 12.64 T/m2

Nodo 83 Tensión max. : 22.28 T/m2 Tensión mín. : 12.99 T/m2

Nodo 84 Tensión max. : 24.77 T/m2 Tensión mín. : 12.68 T/m2

Nodo 85 Tensión max. : 27.50 T/m2 Tensión mín. : 12.44 T/m2

Nodo 97 Tensión max. : 28.55 T/m2 Tensión mín. : 11.93 T/m2

Nodo 98 Tensión max. : 25.47 T/m2 Tensión mín. : 12.64 T/m2

Nodo 99 Tensión max. : 22.33 T/m2 Tensión mín. : 13.01 T/m2

Nodo 100 Tensión max. : 24.89 T/m2 Tensión mín. : 12.73 T/m2

Nodo 101 Tensión max. : 27.65 T/m2 Tensión mín. : 12.51 T/m2

Nodo 113 Tensión max. : 28.57 T/m2 Tensión mín. : 11.94 T/m2

Nodo 114 Tensión max. : 25.48 T/m2 Tensión mín. : 12.65 T/m2

Nodo 115 Tensión max. : 22.38 T/m2 Tensión mín. : 13.04 T/m2

Nodo 116 Tensión max. : 25.02 T/m2 Tensión mín. : 12.79 T/m2

Nodo 117 Tensión max. : 27.80 T/m2 Tensión mín. : 12.59 T/m2

Nodo 129 Tensión max. : 28.59 T/m2 Tensión mín. : 11.95 T/m2

Nodo 130 Tensión max. : 25.49 T/m2 Tensión mín. : 12.66 T/m2

Nodo 131 Tensión max. : 22.43 T/m2 Tensión mín. : 13.07 T/m2

Nodo 132 Tensión max. : 25.14 T/m2 Tensión mín. : 12.85 T/m2

Nodo 133 Tensión max. : 27.95 T/m2 Tensión mín. : 12.67 T/m2

Nodo 145 Tensión max. : 28.60 T/m2 Tensión mín. : 11.95 T/m2

Nodo 146 Tensión max. : 25.51 T/m2 Tensión mín. : 12.67 T/m2

Nodo 147 Tensión max. : 22.49 T/m2 Tensión mín. : 13.10 T/m2

Nodo 148 Tensión max. : 25.26 T/m2 Tensión mín. : 12.91 T/m2

Nodo 149 Tensión max. : 28.10 T/m2 Tensión mín. : 12.75 T/m2

Nodo 161 Tensión max. : 28.62 T/m2 Tensión mín. : 11.96 T/m2

Nodo 162 Tensión max. : 25.52 T/m2 Tensión mín. : 12.67 T/m2

Nodo 163 Tensión max. : 22.54 T/m2 Tensión mín. : 13.13 T/m2

Nodo 164 Tensión max. : 25.39 T/m2 Tensión mín. : 12.96 T/m2

Nodo 165 Tensión max. : 28.25 T/m2 Tensión mín. : 12.83 T/m2

Nodo 177 Tensión max. : 28.63 T/m2 Tensión mín. : 11.97 T/m2

Nodo 178 Tensión max. : 25.53 T/m2 Tensión mín. : 12.67 T/m2

Nodo 179 Tensión max. : 22.59 T/m2 Tensión mín. : 13.15 T/m2

Nodo 180 Tensión max. : 25.51 T/m2 Tensión mín. : 13.02 T/m2

Nodo 181 Tensión max. : 28.40 T/m2 Tensión mín. : 12.90 T/m2

Nodo 193 Tensión max. : 28.65 T/m2 Tensión mín. : 11.97 T/m2

Nodo 194 Tensión max. : 25.55 T/m2 Tensión mín. : 12.67 T/m2

Nodo 195 Tensión max. : 22.64 T/m2 Tensión mín. : 13.17 T/m2

Nodo 196 Tensión max. : 25.64 T/m2 Tensión mín. : 13.08 T/m2

Nodo 197 Tensión max. : 28.55 T/m2 Tensión mín. : 12.98 T/m2

Nodo 209 Tensión max. : 28.66 T/m2 Tensión mín. : 11.98 T/m2

Nodo 210 Tensión max. : 25.56 T/m2 Tensión mín. : 12.67 T/m2

Nodo 211 Tensión max. : 22.69 T/m2 Tensión mín. : 13.20 T/m2

Nodo 212 Tensión max. : 25.76 T/m2 Tensión mín. : 13.13 T/m2
Nodo 213 Tensión max. : 28.70 T/m2 Tensión mín. : 13.06 T/m2
Nodo 225 Tensión max. : 28.67 T/m2 Tensión mín. : 11.98 T/m2
Nodo 226 Tensión max. : 25.57 T/m2 Tensión mín. : 12.66 T/m2
Nodo 227 Tensión max. : 22.74 T/m2 Tensión mín. : 13.22 T/m2
Nodo 228 Tensión max. : 25.89 T/m2 Tensión mín. : 13.19 T/m2
Nodo 229 Tensión max. : 28.85 T/m2 Tensión mín. : 13.14 T/m2
Nodo 241 Tensión max. : 28.69 T/m2 Tensión mín. : 11.99 T/m2
Nodo 242 Tensión max. : 25.59 T/m2 Tensión mín. : 12.67 T/m2
Nodo 243 Tensión max. : 22.81 T/m2 Tensión mín. : 13.26 T/m2
Nodo 244 Tensión max. : 26.02 T/m2 Tensión mín. : 13.26 T/m2
Nodo 245 Tensión max. : 29.00 T/m2 Tensión mín. : 13.22 T/m2
Nodo 257 Tensión max. : 28.70 T/m2 Tensión mín. : 12.00 T/m2
Nodo 258 Tensión max. : 25.62 T/m2 Tensión mín. : 12.68 T/m2
Nodo 259 Tensión max. : 22.90 T/m2 Tensión mín. : 13.32 T/m2
Nodo 260 Tensión max. : 26.17 T/m2 Tensión mín. : 13.33 T/m2
Nodo 261 Tensión max. : 29.15 T/m2 Tensión mín. : 13.30 T/m2
Nodo 273 Tensión max. : 28.71 T/m2 Tensión mín. : 12.00 T/m2
Nodo 274 Tensión max. : 25.69 T/m2 Tensión mín. : 12.73 T/m2
Nodo 275 Tensión max. : 23.05 T/m2 Tensión mín. : 13.43 T/m2
Nodo 276 Tensión max. : 26.35 T/m2 Tensión mín. : 13.43 T/m2
Nodo 277 Tensión max. : 29.30 T/m2 Tensión mín. : 13.38 T/m2
Nodo 289 Tensión max. : 28.73 T/m2 Tensión mín. : 12.01 T/m2
Nodo 290 Tensión max. : 25.81 T/m2 Tensión mín. : 12.81 T/m2
Nodo 291 Tensión max. : 23.29 T/m2 Tensión mín. : 13.60 T/m2
Nodo 292 Tensión max. : 26.58 T/m2 Tensión mín. : 13.57 T/m2
Nodo 293 Tensión max. : 29.45 T/m2 Tensión mín. : 13.47 T/m2
Nodo 305 Tensión max. : 28.74 T/m2 Tensión mín. : 12.02 T/m2
Nodo 306 Tensión max. : 25.93 T/m2 Tensión mín. : 12.89 T/m2
Nodo 307 Tensión max. : 23.48 T/m2 Tensión mín. : 13.73 T/m2
Nodo 308 Tensión max. : 26.76 T/m2 Tensión mín. : 13.67 T/m2
Nodo 309 Tensión max. : 29.55 T/m2 Tensión mín. : 13.52 T/m2

Tensión max. : 29.55 T/m2
Tensión min. : 11.90 T/m2

ESFUERZOS MAXIMOS
==========

(esfuerzos mayorados)
Mdmax+ (mT/m) : Máximo flector positivo pml.
Mdmax- (mT/m) : Máximo flector negativo pml.
Nconc (T/m) : Axil concomitante con el máximo flector pml.
Tconc (mT/m) : Torsor concomitante con el máximo flector pml.
Qdmax (T/m) : Máximo cortante (valor absoluto) pml.

Esfuerzos por peso propio del cajón

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
1	1	-25.67	2.46	-3.29	-45.64	4.37	-5.86	37.74
1	2	38.53	4.37	-5.86	21.67	2.46	-3.29	45.06
2	2	48.19	4.44	-2.92	27.11	2.49	-1.64	7.13
2	3	88.81	4.44	-2.92	49.95	2.49	-1.64	18.53
3	3	88.65	4.44	1.14	49.87	2.50	0.64	18.28
3	4	48.81	4.44	1.14	27.45	2.50	0.64	6.88
4	4	39.61	4.39	5.57	22.28	2.47	3.14	45.93
4	5	-26.07	2.47	3.14	-46.34	4.39	5.57	38.61
5	5	-28.14	27.16	0.57	-50.04	48.29	1.01	2.78
5	6	-24.08	21.90	0.57	-42.81	38.93	1.01	2.78
6	6	-23.97	26.01	-0.12	-42.61	46.24	-0.21	4.07
6	7	-18.02	20.75	-0.12	-32.03	36.88	-0.21	4.07
7	7	-17.61	20.94	-0.22	-31.30	37.24	-0.40	4.07
7	8	-11.66	15.68	-0.22	-20.73	27.88	-0.40	4.07
8	8	-11.07	15.88	-0.23	-19.68	28.23	-0.41	4.07
8	9	-5.12	10.62	-0.23	-9.10	18.87	-0.41	4.07
9	9	-4.97	-2.52	0.02	-8.84	-4.48	0.04	18.93
9	10	22.20	-4.48	0.04	12.49	-2.52	0.02	11.61
10	10	22.36	-4.48	0.44	12.58	-2.52	0.25	11.31
10	11	40.12	-4.48	0.44	22.57	-2.52	0.25	0.09
11	11	40.20	-4.47	0.53	22.61	-2.51	0.30	0.08
11	12	21.91	-4.47	0.53	12.32	-2.51	0.30	11.48
12	12	21.62	-4.47	0.38	12.16	-2.51	0.21	11.28
12	13	-4.93	-2.51	0.21	-8.76	-4.47	0.38	18.60
13	13	-5.13	10.50	0.25	-9.13	18.66	0.45	4.07
13	14	-11.09	15.76	0.25	-19.71	28.02	0.45	4.07
14	14	-11.69	15.62	0.23	-20.78	27.77	0.41	4.02
14	15	-17.57	20.89	0.23	-31.24	37.13	0.41	4.02
15	15	-17.99	20.67	0.12	-31.99	36.75	0.21	4.02
15	16	-23.87	25.94	0.12	-42.44	46.11	0.21	4.02
16	16	-24.00	21.58	-0.61	-42.67	38.37	-1.08	2.61
16	1	-27.82	26.85	-0.61	-49.47	47.73	-1.08	2.61

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
17	17	-29.63	2.47	-1.87	-52.68	4.39	-3.32	45.23
17	18	46.78	4.39	-3.32	26.32	2.47	-1.87	52.61
18	18	47.56	4.46	-1.89	26.75	2.51	-1.06	8.02
18	19	91.20	4.47	-1.90	51.30	2.51	-1.07	19.45
19	19	91.23	4.47	0.73	51.31	2.51	0.41	19.45
19	20	47.76	4.47	0.73	26.87	2.52	0.41	8.08
20	20	47.02	4.41	3.16	26.45	2.48	1.78	52.76
20	21	-29.75	2.48	1.78	-52.89	4.41	3.17	45.51
21	21	-29.70	29.43	0.39	-52.80	52.32	0.70	3.85
21	22	-24.07	24.17	0.39	-42.79	42.96	0.70	3.85
22	22	-24.14	26.06	-0.08	-42.91	46.32	-0.14	4.24
22	23	-17.93	20.79	-0.08	-31.88	36.96	-0.14	4.24
23	23	-17.85	20.97	-0.16	-31.74	37.27	-0.28	4.40
23	24	-11.42	15.70	-0.16	-20.31	27.91	-0.28	4.40
24	24	-11.31	15.86	-0.15	-20.11	28.20	-0.27	4.40
24	25	-4.87	10.60	-0.15	-8.66	18.84	-0.27	4.40
25	25	-4.86	-2.53	0.00	-8.65	-4.50	0.01	18.84
25	26	22.19	-4.50	0.01	12.48	-2.53	0.00	11.50
26	26	22.25	-4.51	0.28	12.52	-2.53	0.16	11.40
26	27	40.22	-4.50	0.28	22.63	-2.53	0.16	0.01
27	27	40.23	-4.50	0.34	22.63	-2.53	0.19	0.05
27	28	21.97	-4.49	0.34	12.36	-2.53	0.19	11.44
28	28	21.92	-4.49	0.25	12.33	-2.52	0.14	11.43
28	29	-4.93	-2.52	0.14	-8.77	-4.48	0.25	18.73
29	29	-4.93	10.53	0.17	-8.77	18.72	0.30	4.37
29	30	-11.33	15.79	0.17	-20.14	28.08	0.30	4.37
30	30	-11.45	15.65	0.16	-20.35	27.82	0.29	4.36
30	31	-17.83	20.92	0.16	-31.69	37.18	0.29	4.36
31	31	-17.91	20.73	0.08	-31.84	36.85	0.15	4.20
31	32	-24.04	25.99	0.08	-42.75	46.21	0.15	4.20
32	32	-23.97	24.01	-0.42	-42.62	42.68	-0.74	3.80
32	17	-29.52	29.27	-0.42	-52.49	52.04	-0.74	3.80
33	33	-31.59	2.54	-1.05	-56.16	4.51	-1.86	48.45
33	34	49.86	4.51	-1.86	28.04	2.54	-1.05	55.84
34	34	48.68	4.51	-1.55	27.38	2.54	-0.87	8.46
34	35	93.71	4.52	-1.55	52.71	2.54	-0.87	19.89
35	35	93.77	4.51	0.42	52.75	2.54	0.24	20.00
35	36	48.58	4.52	0.42	27.33	2.54	0.24	8.63
36	36	49.73	4.52	1.83	27.98	2.54	1.03	55.73
36	37	-31.63	2.55	1.03	-56.23	4.53	1.83	48.48
37	37	-31.45	31.57	0.38	-55.92	56.13	0.68	4.84
37	38	-24.38	26.31	0.38	-43.34	46.77	0.68	4.84
38	38	-24.49	26.17	-0.06	-43.53	46.52	-0.11	4.49
38	39	-17.92	20.90	-0.06	-31.86	37.16	-0.11	4.49
39	39	-17.95	21.00	-0.16	-31.91	37.34	-0.29	4.51
39	40	-11.35	15.74	-0.16	-20.18	27.98	-0.29	4.51

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
40	40	-11.36	15.81	-0.15	-20.19	28.11	-0.27	4.54
40	41	-4.72	10.55	-0.15	-8.39	18.75	-0.27	4.54
41	41	-4.72	-2.56	-0.03	-8.39	-4.54	-0.05	18.74
41	42	22.25	-4.54	-0.05	12.51	-2.55	-0.03	11.40
42	42	22.27	-4.55	0.25	12.53	-2.56	0.14	11.42
42	43	40.28	-4.54	0.25	22.66	-2.55	0.14	0.01
43	43	40.26	-4.54	0.33	22.65	-2.55	0.18	0.02
43	44	22.11	-4.53	0.33	12.44	-2.55	0.18	11.40
44	44	22.10	-4.53	0.23	12.43	-2.55	0.13	11.42
44	45	-4.81	-2.55	0.13	-8.56	-4.52	0.23	18.72
45	45	-4.81	10.53	0.16	-8.55	18.72	0.29	4.50
45	46	-11.38	15.79	0.16	-20.23	28.08	0.29	4.50
46	46	-11.38	15.70	0.17	-20.23	27.91	0.30	4.48
46	47	-17.93	20.96	0.17	-31.87	37.27	0.30	4.48
47	47	-17.90	20.86	0.06	-31.81	37.08	0.11	4.46
47	48	-24.42	26.12	0.06	-43.41	46.44	0.11	4.46
48	48	-24.30	26.31	-0.40	-43.20	46.77	-0.71	4.84
48	33	-31.38	31.57	-0.40	-55.78	56.13	-0.71	4.84
49	49	-32.12	2.58	-0.50	-57.11	4.59	-0.90	49.14
49	50	50.30	4.60	-0.90	28.29	2.59	-0.50	56.52
50	50	49.30	4.56	-1.03	27.73	2.56	-0.58	8.79
50	51	95.35	4.57	-1.03	53.63	2.57	-0.58	20.21
51	51	95.37	4.56	0.02	53.64	2.57	0.01	20.33
51	52	49.14	4.57	0.02	27.64	2.57	0.01	8.96
52	52	50.13	4.61	0.91	28.20	2.59	0.51	56.41
52	53	-32.18	2.59	0.51	-57.22	4.61	0.91	49.16
53	53	-32.06	32.06	0.27	-57.00	57.00	0.49	4.95
53	54	-24.83	26.80	0.27	-44.14	47.64	0.49	4.95
54	54	-24.85	26.27	-0.01	-44.17	46.70	-0.02	4.69
54	55	-17.99	21.00	-0.01	-31.99	37.34	-0.02	4.69
55	55	-18.06	21.04	-0.13	-32.10	37.41	-0.23	4.61
55	56	-11.31	15.78	-0.13	-20.11	28.05	-0.23	4.61
56	56	-11.36	15.79	-0.13	-20.20	28.08	-0.24	4.61
56	57	-4.62	10.53	-0.13	-8.21	18.72	-0.24	4.61
57	57	-4.62	-2.58	-0.03	-8.22	-4.59	-0.06	18.72
57	58	22.36	-4.58	-0.06	12.58	-2.58	-0.03	11.38
58	58	22.36	-4.59	0.21	12.58	-2.58	0.12	11.41
58	59	40.34	-4.58	0.21	22.69	-2.58	0.12	0.00
59	59	40.33	-4.58	0.30	22.68	-2.58	0.17	0.00
59	60	22.22	-4.57	0.30	12.50	-2.57	0.17	11.39
60	60	22.23	-4.57	0.21	12.50	-2.57	0.12	11.39
60	61	-4.71	-2.57	0.12	-8.38	-4.57	0.21	18.69
61	61	-4.70	10.52	0.14	-8.36	18.69	0.25	4.58
61	62	-11.40	15.78	0.14	-20.26	28.05	0.25	4.58
62	62	-11.34	15.74	0.13	-20.16	27.99	0.24	4.58
62	63	-18.04	21.01	0.13	-32.08	37.35	0.24	4.58

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
63	63	-17.98	20.97	0.01	-31.96	37.28	0.01	4.66
63	64	-24.79	26.24	0.01	-44.08	46.64	0.01	4.66
64	64	-24.78	26.81	-0.28	-44.05	47.66	-0.51	4.93
64	49	-31.99	32.07	-0.28	-56.87	57.02	-0.51	4.93
65	65	-32.21	2.61	-0.22	-57.27	4.64	-0.39	49.19
65	66	50.25	4.65	-0.39	28.26	2.61	-0.22	56.58
66	66	49.68	4.60	-0.65	27.94	2.59	-0.37	8.89
66	67	96.07	4.61	-0.65	54.04	2.59	-0.37	20.32
67	67	96.08	4.60	-0.22	54.04	2.59	-0.12	20.43
67	68	49.51	4.61	-0.22	27.85	2.59	-0.12	9.06
68	68	50.07	4.65	0.41	28.17	2.62	0.23	56.48
68	69	-32.29	2.62	0.23	-57.40	4.66	0.41	49.23
69	69	-32.22	32.13	0.16	-57.27	57.12	0.29	4.86
69	70	-25.11	26.86	0.16	-44.64	47.76	0.29	4.86
70	70	-25.07	26.35	0.02	-44.57	46.84	0.04	4.75
70	71	-18.12	21.08	0.02	-32.21	37.48	0.04	4.75
71	71	-18.17	21.07	-0.08	-32.30	37.46	-0.14	4.69
71	72	-11.31	15.81	-0.08	-20.11	28.10	-0.14	4.69
72	72	-11.38	15.79	-0.10	-20.23	28.07	-0.18	4.67
72	73	-4.55	10.52	-0.10	-8.08	18.71	-0.18	4.67
73	73	-4.56	-2.60	-0.03	-8.10	-4.63	-0.05	18.71
73	74	22.46	-4.62	-0.05	12.64	-2.60	-0.03	11.37
74	74	22.44	-4.63	0.18	12.62	-2.60	0.10	11.40
74	75	40.40	-4.62	0.18	22.72	-2.60	0.10	0.01
75	75	40.40	-4.62	0.26	22.72	-2.60	0.15	0.01
75	76	22.31	-4.61	0.26	12.55	-2.59	0.15	11.38
76	76	22.33	-4.61	0.18	12.56	-2.60	0.10	11.38
76	77	-4.64	-2.59	0.10	-8.24	-4.61	0.18	18.68
77	77	-4.63	10.51	0.11	-8.22	18.68	0.19	4.64
77	78	-11.41	15.77	0.11	-20.29	28.04	0.19	4.64
78	78	-11.34	15.78	0.08	-20.17	28.05	0.14	4.66
78	79	-18.16	21.05	0.08	-32.28	37.41	0.14	4.66
79	79	-18.11	21.06	-0.02	-32.19	37.44	-0.04	4.73
79	80	-25.02	26.32	-0.02	-44.49	46.80	-0.04	4.73
80	80	-25.07	26.87	-0.17	-44.56	47.76	-0.30	4.83
80	65	-32.14	32.13	-0.17	-57.13	57.12	-0.30	4.83
81	81	-32.19	2.62	-0.08	-57.22	4.67	-0.15	49.13
81	82	50.18	4.67	-0.15	28.23	2.63	-0.08	56.52
82	82	49.91	4.63	-0.43	28.08	2.60	-0.24	8.89
82	83	96.30	4.63	-0.43	54.17	2.61	-0.24	20.32
83	83	96.30	4.63	-0.28	54.17	2.61	-0.16	20.43
83	84	49.74	4.64	-0.28	27.98	2.61	-0.16	9.06
84	84	50.01	4.68	0.16	28.13	2.63	0.09	56.43
84	85	-32.27	2.64	0.09	-57.37	4.69	0.16	49.18
85	85	-32.23	32.11	0.08	-57.30	57.08	0.15	4.79
85	86	-25.23	26.84	0.08	-44.86	47.72	0.15	4.79

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
86	86	-25.18	26.40	0.02	-44.77	46.94	0.04	4.76
86	87	-18.22	21.14	0.02	-32.40	37.58	0.04	4.76
87	87	-18.25	21.09	-0.04	-32.45	37.50	-0.07	4.73
87	88	-11.34	15.83	-0.04	-20.16	28.14	-0.07	4.73
88	88	-11.40	15.79	-0.07	-20.26	28.07	-0.12	4.71
88	89	-4.51	10.52	-0.07	-8.01	18.71	-0.12	4.71
89	89	-4.52	-2.62	-0.02	-8.03	-4.66	-0.04	18.71
89	90	22.54	-4.66	-0.04	12.68	-2.62	-0.02	11.37
90	90	22.51	-4.66	0.15	12.66	-2.62	0.08	11.40
90	91	40.46	-4.65	0.15	22.76	-2.61	0.08	0.01
91	91	40.46	-4.65	0.21	22.76	-2.62	0.12	0.01
91	92	22.37	-4.64	0.21	12.58	-2.61	0.12	11.38
92	92	22.40	-4.65	0.14	12.60	-2.61	0.08	11.38
92	93	-4.60	-2.61	0.08	-8.17	-4.64	0.14	18.68
93	93	-4.58	10.51	0.07	-8.15	18.68	0.12	4.68
93	94	-11.43	15.77	0.07	-20.33	28.04	0.12	4.68
94	94	-11.37	15.81	0.04	-20.22	28.11	0.07	4.70
94	95	-18.25	21.07	0.04	-32.44	37.47	0.07	4.70
95	95	-18.22	21.12	-0.03	-32.39	37.55	-0.05	4.73
95	96	-25.14	26.38	-0.03	-44.69	46.91	-0.05	4.73
96	96	-25.19	26.84	-0.09	-44.78	47.72	-0.15	4.76
96	81	-32.15	32.11	-0.09	-57.15	57.08	-0.15	4.76
97	97	-32.15	2.63	-0.02	-57.15	4.68	-0.04	49.08
97	98	50.14	4.68	-0.04	28.20	2.63	-0.02	56.47
98	98	50.03	4.65	-0.30	28.14	2.61	-0.17	8.87
98	99	96.35	4.65	-0.30	54.20	2.62	-0.17	20.30
99	99	96.35	4.65	-0.26	54.20	2.62	-0.15	20.41
99	100	49.86	4.66	-0.26	28.04	2.62	-0.15	9.04
100	100	49.96	4.69	0.06	28.10	2.64	0.03	56.38
100	101	-32.23	2.64	0.03	-57.30	4.70	0.06	49.13
101	101	-32.22	32.08	0.04	-57.27	57.03	0.07	4.75
101	102	-25.27	26.81	0.04	-44.93	47.67	0.07	4.75
102	102	-25.24	26.44	0.02	-44.86	47.00	0.03	4.75
102	103	-18.29	21.17	0.02	-32.52	37.64	0.03	4.75
103	103	-18.30	21.11	-0.02	-32.53	37.53	-0.03	4.74
103	104	-11.37	15.85	-0.02	-20.22	28.17	-0.03	4.74
104	104	-11.41	15.79	-0.04	-20.29	28.08	-0.07	4.73
104	105	-4.49	10.53	-0.04	-7.98	18.72	-0.07	4.73
105	105	-4.50	-2.64	-0.01	-8.00	-4.69	-0.02	18.72
105	106	22.58	-4.68	-0.02	12.70	-2.63	-0.01	11.38
106	106	22.55	-4.68	0.12	12.69	-2.63	0.07	11.40
106	107	40.51	-4.67	0.12	22.79	-2.63	0.07	0.01
107	107	40.51	-4.67	0.17	22.79	-2.63	0.09	0.00
107	108	22.42	-4.66	0.17	12.61	-2.62	0.09	11.38
108	108	22.45	-4.67	0.10	12.63	-2.63	0.06	11.39
108	109	-4.58	-2.62	0.06	-8.14	-4.66	0.10	18.69

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
109	109	-4.57	10.51	0.04	-8.12	18.69	0.07	4.70
109	110	-11.45	15.78	0.04	-20.35	28.05	0.07	4.70
110	110	-11.41	15.83	0.02	-20.28	28.14	0.03	4.71
110	111	-18.30	21.10	0.02	-32.53	37.50	0.03	4.71
111	111	-18.29	21.16	-0.02	-32.51	37.62	-0.03	4.72
111	112	-25.19	26.43	-0.02	-44.78	46.98	-0.03	4.72
112	112	-25.23	26.81	-0.04	-44.85	47.66	-0.07	4.72
112	97	-32.13	32.08	-0.04	-57.12	57.02	-0.07	4.72
113	113	-32.12	2.63	0.00	-57.10	4.68	-0.01	49.04
113	114	50.12	4.69	-0.01	28.19	2.64	0.00	56.43
114	114	50.08	4.66	-0.20	28.17	2.62	-0.11	8.85
114	115	96.35	4.67	-0.20	54.20	2.63	-0.11	20.28
115	115	96.35	4.67	-0.20	54.20	2.62	-0.11	20.40
115	116	49.90	4.68	-0.20	28.07	2.63	-0.11	9.03
116	116	49.94	4.70	0.01	28.09	2.64	0.01	56.34
116	117	-32.21	2.65	0.01	-57.25	4.71	0.01	49.09
117	117	-32.20	32.06	0.02	-57.24	56.99	0.03	4.73
117	118	-25.28	26.79	0.02	-44.94	47.63	0.03	4.73
118	118	-25.26	26.47	0.01	-44.90	47.05	0.02	4.74
118	119	-18.32	21.20	0.01	-32.58	37.69	0.02	4.74
119	119	-18.33	21.12	-0.01	-32.58	37.55	-0.01	4.74
119	120	-11.40	15.86	-0.01	-20.26	28.19	-0.01	4.74
120	120	-11.42	15.80	-0.02	-20.30	28.09	-0.03	4.74
120	121	-4.49	10.53	-0.02	-7.98	18.73	-0.03	4.74
121	121	-4.50	-2.65	0.00	-7.99	-4.70	0.00	18.73
121	122	22.61	-4.70	0.00	12.72	-2.64	0.00	11.39
122	122	22.58	-4.70	0.09	12.70	-2.64	0.05	11.40
122	123	40.55	-4.69	0.09	22.81	-2.64	0.05	0.01
123	123	40.55	-4.69	0.12	22.81	-2.64	0.07	0.00
123	124	22.45	-4.68	0.12	12.63	-2.63	0.07	11.39
124	124	22.47	-4.68	0.06	12.64	-2.63	0.04	11.40
124	125	-4.57	-2.63	0.04	-8.13	-4.68	0.06	18.70
125	125	-4.57	10.52	0.02	-8.12	18.70	0.03	4.71
125	126	-11.46	15.78	0.02	-20.37	28.06	0.03	4.71
126	126	-11.43	15.85	0.01	-20.33	28.17	0.01	4.71
126	127	-18.32	21.11	0.01	-32.58	37.53	0.01	4.71
127	127	-18.32	21.19	-0.01	-32.57	37.67	-0.02	4.71
127	128	-25.21	26.46	-0.01	-44.82	47.03	-0.02	4.71
128	128	-25.23	26.79	-0.02	-44.86	47.63	-0.03	4.70
128	113	-32.11	32.06	-0.02	-57.09	56.99	-0.03	4.70
129	129	-32.10	2.64	0.00	-57.07	4.69	0.00	49.02
129	130	50.11	4.69	0.00	28.18	2.64	0.00	56.41
130	130	50.10	4.67	-0.12	28.18	2.63	-0.07	8.84
130	131	96.34	4.68	-0.12	54.19	2.63	-0.07	20.27
131	131	96.34	4.67	-0.13	54.19	2.63	-0.07	20.39
131	132	49.92	4.68	-0.13	28.08	2.63	-0.07	9.02

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
132	132	49.93	4.71	0.00	28.08	2.65	0.00	56.32
132	133	-32.19	2.65	0.00	-57.22	4.71	0.00	49.07
133	133	-32.19	32.05	0.01	-57.22	56.97	0.01	4.73
133	134	-25.28	26.78	0.01	-44.93	47.61	0.01	4.73
134	134	-25.26	26.48	0.01	-44.91	47.08	0.01	4.73
134	135	-18.34	21.22	0.01	-32.60	37.72	0.01	4.73
135	135	-18.34	21.13	0.00	-32.60	37.57	0.00	4.74
135	136	-11.41	15.87	0.00	-20.29	28.21	0.00	4.74
136	136	-11.42	15.80	-0.01	-20.31	28.09	-0.01	4.74
136	137	-4.49	10.54	-0.01	-7.99	18.73	-0.01	4.74
137	137	-4.50	-2.65	0.00	-7.99	-4.71	0.00	18.73
137	138	22.62	-4.71	0.00	12.72	-2.65	0.00	11.39
138	138	22.60	-4.71	0.05	12.71	-2.65	0.03	11.41
138	139	40.57	-4.70	0.05	22.82	-2.64	0.03	0.00
139	139	40.57	-4.70	0.07	22.82	-2.64	0.04	0.00
139	140	22.46	-4.69	0.07	12.63	-2.64	0.04	11.39
140	140	22.48	-4.69	0.04	12.65	-2.64	0.02	11.40
140	141	-4.58	-2.64	0.02	-8.13	-4.69	0.04	18.70
141	141	-4.57	10.52	0.01	-8.13	18.70	0.01	4.71
141	142	-11.46	15.78	0.01	-20.38	28.06	0.01	4.71
142	142	-11.45	15.86	0.00	-20.36	28.19	0.00	4.71
142	143	-18.34	21.12	0.00	-32.60	37.55	0.00	4.71
143	143	-18.34	21.21	-0.01	-32.60	37.70	-0.01	4.70
143	144	-25.22	26.47	-0.01	-44.83	47.06	-0.01	4.70
144	144	-25.23	26.78	-0.01	-44.85	47.61	-0.01	4.70
144	129	-32.10	32.04	-0.01	-57.07	56.97	-0.01	4.70
145	145	-32.09	2.64	0.00	-57.06	4.69	0.00	49.01
145	146	50.10	4.70	0.00	28.18	2.64	0.00	56.40
146	146	50.10	4.67	-0.05	28.18	2.63	-0.03	8.84
146	147	96.33	4.68	-0.05	54.18	2.63	-0.03	20.27
147	147	96.33	4.68	-0.05	54.19	2.63	-0.03	20.38
147	148	49.93	4.69	-0.05	28.08	2.64	-0.03	9.01
148	148	49.92	4.71	0.00	28.08	2.65	0.00	56.31
148	149	-32.18	2.65	0.00	-57.21	4.71	0.00	49.06
149	149	-32.18	32.04	0.00	-57.21	56.96	0.00	4.72
149	150	-25.27	26.78	0.00	-44.93	47.60	0.00	4.72
150	150	-25.26	26.49	0.00	-44.92	47.09	0.00	4.73
150	151	-18.35	21.22	0.00	-32.61	37.73	0.00	4.73
151	151	-18.34	21.14	0.00	-32.61	37.57	0.00	4.74
151	152	-11.42	15.87	0.00	-20.30	28.21	0.00	4.74
152	152	-11.42	15.80	0.00	-20.31	28.09	0.00	4.74
152	153	-4.49	10.54	0.00	-7.99	18.73	0.00	4.74
153	153	-4.50	-2.65	0.00	-8.00	-4.72	0.00	18.73
153	154	22.62	-4.71	0.00	12.72	-2.65	0.00	11.39
154	154	22.61	-4.71	0.02	12.72	-2.65	0.01	11.41
154	155	40.58	-4.70	0.02	22.83	-2.64	0.01	0.00

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
155	155	40.58	-4.70	0.03	22.83	-2.65	0.01	0.00
155	156	22.47	-4.69	0.03	12.64	-2.64	0.01	11.39
156	156	22.48	-4.70	0.01	12.65	-2.64	0.01	11.40
156	157	-4.58	-2.64	0.01	-8.14	-4.69	0.01	18.70
157	157	-4.57	10.52	0.00	-8.13	18.70	0.00	4.71
157	158	-11.46	15.79	0.00	-20.38	28.06	0.00	4.71
158	158	-11.46	15.86	0.00	-20.37	28.20	0.00	4.71
158	159	-18.34	21.12	0.00	-32.60	37.56	0.00	4.71
159	159	-18.34	21.22	0.00	-32.61	37.72	0.00	4.70
159	160	-25.22	26.48	0.00	-44.83	47.08	0.00	4.70
160	160	-25.23	26.77	0.00	-44.85	47.60	0.00	4.70
160	145	-32.09	32.04	0.00	-57.06	56.96	0.00	4.70
161	161	-32.09	2.64	0.00	-57.06	4.69	0.00	49.01
161	162	50.10	4.70	0.00	28.18	2.64	0.00	56.40
162	162	50.10	4.67	0.03	28.18	2.63	0.02	8.84
162	163	96.33	4.68	0.03	54.18	2.63	0.02	20.27
163	163	96.33	4.68	0.03	54.19	2.63	0.02	20.38
163	164	49.93	4.69	0.03	28.08	2.64	0.02	9.01
164	164	49.92	4.71	0.00	28.08	2.65	0.00	56.31
164	165	-32.18	2.65	0.00	-57.21	4.71	0.00	49.06
165	165	-32.18	32.04	0.00	-57.21	56.96	0.00	4.72
165	166	-25.27	26.78	0.00	-44.93	47.60	0.00	4.72
166	166	-25.26	26.49	0.00	-44.92	47.09	0.00	4.73
166	167	-18.35	21.22	0.00	-32.61	37.73	0.00	4.73
167	167	-18.34	21.14	0.00	-32.61	37.57	0.00	4.74
167	168	-11.42	15.87	0.00	-20.30	28.21	0.00	4.74
168	168	-11.42	15.80	0.00	-20.31	28.09	0.00	4.74
168	169	-4.49	10.54	0.00	-7.99	18.73	0.00	4.74
169	169	-4.50	-2.65	0.00	-8.00	-4.72	0.00	18.73
169	170	22.62	-4.71	0.00	12.72	-2.65	0.00	11.39
170	170	22.61	-4.71	-0.01	12.72	-2.65	-0.01	11.41
170	171	40.58	-4.70	-0.01	22.83	-2.64	-0.01	0.00
171	171	40.58	-4.70	-0.02	22.83	-2.65	-0.01	0.00
171	172	22.47	-4.69	-0.02	12.64	-2.64	-0.01	11.39
172	172	22.48	-4.70	-0.01	12.65	-2.64	-0.01	11.40
172	173	-4.58	-2.64	-0.01	-8.14	-4.69	-0.01	18.70
173	173	-4.57	10.52	0.00	-8.13	18.70	0.00	4.71
173	174	-11.46	15.79	0.00	-20.38	28.06	0.00	4.71
174	174	-11.46	15.86	0.00	-20.37	28.20	0.00	4.71
174	175	-18.34	21.13	0.00	-32.60	37.56	0.00	4.71
175	175	-18.34	21.22	0.00	-32.61	37.72	0.00	4.70
175	176	-25.22	26.48	0.00	-44.83	47.08	0.00	4.70
176	176	-25.23	26.77	0.00	-44.85	47.60	0.00	4.70
176	161	-32.09	32.04	0.00	-57.06	56.96	0.00	4.70
177	177	-32.10	2.64	0.00	-57.07	4.69	0.00	49.02
177	178	50.11	4.69	0.00	28.18	2.64	0.00	56.41

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
178	178	50.10	4.67	0.11	28.18	2.63	0.06	8.84
178	179	96.34	4.68	0.11	54.19	2.63	0.06	20.27
179	179	96.34	4.67	0.11	54.19	2.63	0.06	20.39
179	180	49.92	4.68	0.11	28.08	2.63	0.06	9.02
180	180	49.93	4.71	0.00	28.08	2.65	0.00	56.32
180	181	-32.19	2.65	0.00	-57.22	4.71	0.00	49.07
181	181	-32.19	32.05	-0.01	-57.22	56.97	-0.01	4.73
181	182	-25.28	26.78	-0.01	-44.93	47.61	-0.01	4.73
182	182	-25.26	26.48	-0.01	-44.91	47.08	-0.01	4.73
182	183	-18.34	21.22	-0.01	-32.60	37.72	-0.01	4.73
183	183	-18.34	21.13	0.00	-32.60	37.57	0.00	4.74
183	184	-11.41	15.87	0.00	-20.29	28.21	0.00	4.74
184	184	-11.42	15.80	0.01	-20.31	28.09	0.01	4.74
184	185	-4.49	10.54	0.01	-7.99	18.73	0.01	4.74
185	185	-4.50	-2.65	0.00	-7.99	-4.71	0.00	18.73
185	186	22.62	-4.71	0.00	12.72	-2.65	0.00	11.39
186	186	22.60	-4.71	-0.05	12.71	-2.65	-0.03	11.41
186	187	40.57	-4.70	-0.05	22.82	-2.64	-0.03	0.00
187	187	40.57	-4.70	-0.06	22.82	-2.64	-0.04	0.00
187	188	22.46	-4.69	-0.06	12.63	-2.64	-0.04	11.39
188	188	22.48	-4.69	-0.03	12.65	-2.64	-0.02	11.40
188	189	-4.58	-2.64	-0.02	-8.13	-4.69	-0.03	18.70
189	189	-4.57	10.52	-0.01	-8.13	18.70	-0.01	4.71
189	190	-11.46	15.78	-0.01	-20.38	28.06	-0.01	4.71
190	190	-11.45	15.86	0.00	-20.36	28.19	0.00	4.71
190	191	-18.34	21.12	0.00	-32.60	37.55	0.00	4.71
191	191	-18.34	21.21	0.01	-32.60	37.71	0.01	4.70
191	192	-25.22	26.47	0.01	-44.83	47.07	0.01	4.70
192	192	-25.23	26.78	0.01	-44.85	47.61	0.01	4.70
192	177	-32.10	32.04	0.01	-57.06	56.97	0.01	4.70
193	193	-32.12	2.63	0.00	-57.10	4.68	0.01	49.04
193	194	50.12	4.69	0.01	28.19	2.64	0.00	56.43
194	194	50.08	4.66	0.19	28.17	2.62	0.11	8.85
194	195	96.35	4.67	0.19	54.20	2.63	0.11	20.28
195	195	96.35	4.67	0.19	54.20	2.62	0.11	20.40
195	196	49.90	4.68	0.19	28.07	2.63	0.11	9.03
196	196	49.94	4.70	-0.01	28.09	2.64	-0.01	56.34
196	197	-32.21	2.65	-0.01	-57.25	4.71	-0.01	49.09
197	197	-32.20	32.06	-0.02	-57.24	56.99	-0.03	4.73
197	198	-25.28	26.79	-0.02	-44.94	47.63	-0.03	4.73
198	198	-25.26	26.46	-0.01	-44.90	47.05	-0.02	4.74
198	199	-18.32	21.20	-0.01	-32.58	37.69	-0.02	4.74
199	199	-18.33	21.12	0.01	-32.58	37.55	0.01	4.74
199	200	-11.40	15.86	0.01	-20.26	28.19	0.01	4.74
200	200	-11.42	15.80	0.02	-20.30	28.09	0.03	4.74
200	201	-4.49	10.53	0.02	-7.98	18.73	0.03	4.74

Barra Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
201 201	-4.50	-2.65	0.00	-7.99	-4.70	0.01	18.73
201 202	22.61	-4.70	0.01	12.72	-2.64	0.00	11.39
202 202	22.58	-4.70	-0.08	12.70	-2.64	-0.04	11.40
202 203	40.55	-4.69	-0.08	22.81	-2.64	-0.04	0.01
203 203	40.55	-4.69	-0.11	22.81	-2.64	-0.06	0.00
203 204	22.45	-4.68	-0.11	12.63	-2.63	-0.06	11.39
204 204	22.47	-4.68	-0.06	12.64	-2.63	-0.03	11.40
204 205	-4.57	-2.63	-0.03	-8.13	-4.68	-0.06	18.70
205 205	-4.57	10.52	-0.02	-8.12	18.70	-0.03	4.71
205 206	-11.46	15.78	-0.02	-20.37	28.06	-0.03	4.71
206 206	-11.43	15.85	-0.01	-20.33	28.17	-0.01	4.71
206 207	-18.32	21.11	-0.01	-32.58	37.53	-0.01	4.71
207 207	-18.32	21.19	0.01	-32.57	37.67	0.02	4.71
207 208	-25.21	26.46	0.01	-44.82	47.03	0.02	4.71
208 208	-25.23	26.79	0.02	-44.86	47.63	0.03	4.70
208 193	-32.11	32.06	0.02	-57.09	56.99	0.03	4.70
209 209	-32.15	2.63	0.02	-57.15	4.68	0.04	49.08
209 210	50.14	4.68	0.04	28.20	2.63	0.03	56.47
210 210	50.03	4.65	0.28	28.14	2.61	0.16	8.87
210 211	96.35	4.65	0.29	54.20	2.62	0.16	20.30
211 211	96.35	4.65	0.25	54.20	2.62	0.14	20.41
211 212	49.85	4.66	0.25	28.04	2.62	0.14	9.04
212 212	49.96	4.69	-0.06	28.10	2.64	-0.03	56.38
212 213	-32.23	2.64	-0.03	-57.30	4.70	-0.06	49.13
213 213	-32.22	32.08	-0.04	-57.27	57.03	-0.07	4.75
213 214	-25.27	26.81	-0.04	-44.93	47.67	-0.07	4.75
214 214	-25.24	26.44	-0.02	-44.86	47.00	-0.03	4.75
214 215	-18.29	21.17	-0.02	-32.52	37.64	-0.03	4.75
215 215	-18.30	21.11	0.02	-32.53	37.53	0.03	4.74
215 216	-11.37	15.85	0.02	-20.22	28.17	0.03	4.74
216 216	-11.41	15.79	0.04	-20.29	28.08	0.07	4.73
216 217	-4.49	10.53	0.04	-7.98	18.72	0.07	4.73
217 217	-4.50	-2.64	0.01	-8.00	-4.69	0.02	18.72
217 218	22.58	-4.68	0.02	12.70	-2.63	0.01	11.38
218 218	22.55	-4.68	-0.11	12.69	-2.63	-0.06	11.40
218 219	40.51	-4.67	-0.11	22.79	-2.63	-0.06	0.01
219 219	40.51	-4.67	-0.16	22.79	-2.63	-0.09	0.00
219 220	22.42	-4.66	-0.16	12.61	-2.62	-0.09	11.38
220 220	22.45	-4.67	-0.10	12.63	-2.63	-0.05	11.39
220 221	-4.58	-2.62	-0.05	-8.14	-4.66	-0.10	18.69
221 221	-4.57	10.51	-0.04	-8.12	18.69	-0.07	4.70
221 222	-11.45	15.78	-0.04	-20.35	28.05	-0.07	4.70
222 222	-11.41	15.83	-0.02	-20.28	28.14	-0.03	4.71
222 223	-18.30	21.10	-0.02	-32.53	37.50	-0.03	4.71
223 223	-18.29	21.16	0.02	-32.51	37.62	0.03	4.72
223 224	-25.19	26.43	0.02	-44.78	46.98	0.03	4.72

Barra Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
224 224	-25.23	26.81	0.04	-44.85	47.66	0.07	4.72
224 209	-32.13	32.08	0.04	-57.12	57.02	0.07	4.72
225 225	-32.19	2.62	0.08	-57.22	4.67	0.15	49.13
225 226	50.18	4.67	0.15	28.23	2.63	0.08	56.52
226 226	49.91	4.63	0.42	28.08	2.60	0.24	8.89
226 227	96.30	4.63	0.42	54.17	2.61	0.24	20.32
227 227	96.30	4.63	0.27	54.17	2.61	0.15	20.43
227 228	49.74	4.64	0.27	27.98	2.61	0.15	9.06
228 228	50.00	4.68	-0.16	28.13	2.63	-0.09	56.43
228 229	-32.27	2.64	-0.09	-57.37	4.69	-0.16	49.18
229 229	-32.23	32.11	-0.08	-57.30	57.08	-0.15	4.79
229 230	-25.23	26.84	-0.08	-44.86	47.72	-0.15	4.79
230 230	-25.18	26.40	-0.02	-44.77	46.94	-0.04	4.76
230 231	-18.22	21.14	-0.02	-32.40	37.58	-0.04	4.76
231 231	-18.25	21.09	0.04	-32.45	37.50	0.07	4.73
231 232	-11.34	15.83	0.04	-20.16	28.14	0.07	4.73
232 232	-11.40	15.79	0.07	-20.26	28.07	0.12	4.71
232 233	-4.51	10.52	0.07	-8.01	18.71	0.12	4.71
233 233	-4.52	-2.62	0.02	-8.03	-4.66	0.04	18.71
233 234	22.54	-4.66	0.04	12.68	-2.62	0.02	11.37
234 234	22.51	-4.66	-0.14	12.66	-2.62	-0.08	11.40
234 235	40.46	-4.65	-0.14	22.76	-2.61	-0.08	0.01
235 235	40.46	-4.65	-0.21	22.76	-2.62	-0.12	0.01
235 236	22.37	-4.64	-0.21	12.58	-2.61	-0.12	11.38
236 236	22.40	-4.65	-0.14	12.60	-2.61	-0.08	11.38
236 237	-4.60	-2.61	-0.08	-8.17	-4.64	-0.14	18.68
237 237	-4.58	10.51	-0.07	-8.15	18.68	-0.12	4.68
237 238	-11.43	15.77	-0.07	-20.33	28.04	-0.12	4.68
238 238	-11.37	15.81	-0.04	-20.22	28.11	-0.07	4.70
238 239	-18.25	21.07	-0.04	-32.44	37.47	-0.07	4.70
239 239	-18.22	21.12	0.03	-32.39	37.55	0.05	4.73
239 240	-25.14	26.38	0.03	-44.69	46.91	0.05	4.73
240 240	-25.19	26.84	0.09	-44.78	47.72	0.15	4.76
240 225	-32.15	32.11	0.09	-57.15	57.08	0.15	4.76
241 241	-32.21	2.61	0.22	-57.27	4.64	0.39	49.19
241 242	50.25	4.65	0.39	28.26	2.61	0.22	56.58
242 242	49.68	4.60	0.64	27.94	2.59	0.36	8.89
242 243	96.07	4.61	0.64	54.04	2.59	0.36	20.32
243 243	96.07	4.60	0.20	54.04	2.59	0.11	20.43
243 244	49.51	4.61	0.20	27.85	2.59	0.11	9.06
244 244	50.07	4.65	-0.41	28.17	2.62	-0.23	56.48
244 245	-32.29	2.62	-0.23	-57.40	4.66	-0.41	49.23
245 245	-32.22	32.13	-0.16	-57.27	57.12	-0.29	4.86
245 246	-25.11	26.86	-0.16	-44.64	47.76	-0.29	4.86
246 246	-25.07	26.35	-0.02	-44.57	46.84	-0.04	4.75
246 247	-18.12	21.08	-0.02	-32.21	37.48	-0.04	4.75

Barra Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
247 247	-18.17	21.07	0.08	-32.30	37.46	0.14	4.69
247 248	-11.31	15.81	0.08	-20.11	28.10	0.14	4.69
248 248	-11.38	15.79	0.10	-20.23	28.07	0.18	4.67
248 249	-4.55	10.52	0.10	-8.08	18.71	0.18	4.67
249 249	-4.56	-2.60	0.03	-8.10	-4.63	0.06	18.71
249 250	22.46	-4.62	0.06	12.64	-2.60	0.03	11.37
250 250	22.44	-4.63	-0.17	12.62	-2.60	-0.10	11.40
250 251	40.40	-4.62	-0.17	22.72	-2.60	-0.10	0.01
251 251	40.39	-4.62	-0.25	22.72	-2.60	-0.14	0.01
251 252	22.31	-4.61	-0.25	12.55	-2.59	-0.14	11.38
252 252	22.33	-4.61	-0.18	12.56	-2.60	-0.10	11.38
252 253	-4.64	-2.59	-0.10	-8.24	-4.61	-0.18	18.68
253 253	-4.63	10.51	-0.11	-8.22	18.68	-0.19	4.64
253 254	-11.41	15.77	-0.11	-20.29	28.04	-0.19	4.64
254 254	-11.34	15.78	-0.08	-20.17	28.06	-0.14	4.66
254 255	-18.16	21.05	-0.08	-32.28	37.42	-0.14	4.66
255 255	-18.11	21.06	0.02	-32.19	37.44	0.04	4.73
255 256	-25.02	26.32	0.02	-44.49	46.80	0.04	4.73
256 256	-25.07	26.87	0.17	-44.56	47.76	0.30	4.83
256 241	-32.14	32.13	0.17	-57.13	57.12	0.30	4.83
257 257	-32.12	2.58	0.50	-57.11	4.59	0.90	49.13
257 258	50.30	4.60	0.90	28.29	2.59	0.51	56.52
258 258	49.30	4.56	1.01	27.73	2.56	0.57	8.79
258 259	95.35	4.57	1.02	53.63	2.57	0.57	20.21
259 259	95.37	4.56	-0.03	53.64	2.57	-0.02	20.33
259 260	49.14	4.57	-0.03	27.64	2.57	-0.02	8.96
260 260	50.13	4.61	-0.91	28.20	2.59	-0.51	56.41
260 261	-32.18	2.59	-0.51	-57.22	4.61	-0.91	49.16
261 261	-32.06	32.06	-0.27	-57.00	57.00	-0.49	4.95
261 262	-24.83	26.80	-0.27	-44.14	47.64	-0.49	4.95
262 262	-24.85	26.27	0.01	-44.17	46.70	0.02	4.69
262 263	-17.99	21.00	0.01	-31.99	37.34	0.02	4.69
263 263	-18.06	21.04	0.13	-32.10	37.40	0.23	4.61
263 264	-11.31	15.78	0.13	-20.11	28.04	0.23	4.61
264 264	-11.36	15.79	0.14	-20.20	28.08	0.24	4.61
264 265	-4.62	10.53	0.14	-8.21	18.72	0.24	4.61
265 265	-4.62	-2.58	0.04	-8.22	-4.59	0.06	18.72
265 266	22.36	-4.58	0.06	12.58	-2.58	0.04	11.38
266 266	22.36	-4.59	-0.20	12.58	-2.58	-0.12	11.41
266 267	40.33	-4.58	-0.20	22.69	-2.58	-0.11	0.01
267 267	40.33	-4.58	-0.29	22.68	-2.58	-0.16	0.00
267 268	22.22	-4.57	-0.29	12.50	-2.57	-0.16	11.39
268 268	22.22	-4.57	-0.21	12.50	-2.57	-0.12	11.39
268 269	-4.71	-2.57	-0.12	-8.38	-4.57	-0.21	18.69
269 269	-4.70	10.52	-0.14	-8.36	18.69	-0.25	4.58
269 270	-11.40	15.78	-0.14	-20.26	28.05	-0.25	4.58

Barra Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
270 270	-11.34	15.74	-0.13	-20.16	27.99	-0.24	4.58
270 271	-18.04	21.01	-0.13	-32.08	37.35	-0.24	4.58
271 271	-17.98	20.97	-0.01	-31.96	37.28	-0.01	4.66
271 272	-24.79	26.24	-0.01	-44.08	46.64	-0.01	4.66
272 272	-24.78	26.81	0.28	-44.05	47.66	0.50	4.93
272 257	-31.99	32.07	0.28	-56.87	57.02	0.50	4.93
273 273	-31.59	2.54	1.05	-56.15	4.51	1.86	48.45
273 274	49.86	4.51	1.86	28.05	2.54	1.05	55.84
274 274	48.68	4.51	1.53	27.38	2.54	0.86	8.46
274 275	93.71	4.52	1.54	52.71	2.54	0.86	19.89
275 275	93.77	4.51	-0.44	52.75	2.54	-0.25	20.00
275 276	48.58	4.52	-0.44	27.33	2.54	-0.25	8.63
276 276	49.73	4.52	-1.83	27.97	2.54	-1.03	55.73
276 277	-31.63	2.55	-1.03	-56.23	4.53	-1.83	48.48
277 277	-31.45	31.57	-0.38	-55.92	56.13	-0.68	4.84
277 278	-24.38	26.31	-0.38	-43.34	46.77	-0.68	4.84
278 278	-24.49	26.17	0.06	-43.53	46.52	0.11	4.49
278 279	-17.92	20.90	0.06	-31.86	37.16	0.11	4.49
279 279	-17.95	21.00	0.16	-31.91	37.34	0.29	4.51
279 280	-11.35	15.74	0.16	-20.18	27.98	0.29	4.51
280 280	-11.36	15.81	0.15	-20.19	28.11	0.27	4.54
280 281	-4.72	10.54	0.15	-8.39	18.75	0.27	4.54
281 281	-4.72	-2.56	0.03	-8.39	-4.55	0.05	18.74
281 282	22.25	-4.54	0.05	12.51	-2.55	0.03	11.40
282 282	22.27	-4.55	-0.24	12.53	-2.56	-0.14	11.42
282 283	40.28	-4.54	-0.24	22.66	-2.55	-0.14	0.01
283 283	40.26	-4.54	-0.32	22.65	-2.55	-0.18	0.02
283 284	22.11	-4.53	-0.32	12.44	-2.55	-0.18	11.40
284 284	22.10	-4.53	-0.23	12.43	-2.55	-0.13	11.42
284 285	-4.81	-2.54	-0.13	-8.56	-4.52	-0.23	18.72
285 285	-4.81	10.53	-0.16	-8.55	18.72	-0.29	4.50
285 286	-11.38	15.79	-0.16	-20.23	28.08	-0.29	4.50
286 286	-11.38	15.70	-0.17	-20.23	27.91	-0.30	4.48
286 287	-17.93	20.96	-0.17	-31.87	37.27	-0.30	4.48
287 287	-17.90	20.86	-0.06	-31.81	37.08	-0.11	4.46
287 288	-24.42	26.12	-0.06	-43.41	46.44	-0.11	4.46
288 288	-24.30	26.31	0.40	-43.20	46.77	0.71	4.84
288 273	-31.38	31.57	0.40	-55.78	56.13	0.71	4.84
289 289	-29.63	2.47	1.87	-52.68	4.39	3.32	45.23
289 290	46.79	4.39	3.32	26.32	2.47	1.87	52.61
290 290	47.57	4.46	1.88	26.76	2.51	1.06	8.02
290 291	91.20	4.47	1.88	51.30	2.51	1.06	19.45
291 291	91.22	4.47	-0.75	51.31	2.51	-0.42	19.45
291 292	47.76	4.47	-0.75	26.87	2.52	-0.42	8.08
292 292	47.02	4.41	-3.16	26.45	2.48	-1.78	52.76
292 293	-29.75	2.48	-1.78	-52.89	4.41	-3.17	45.50

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
293	293	-29.70	29.43	-0.39	-52.80	52.32	-0.70	3.85
293	294	-24.07	24.16	-0.39	-42.79	42.96	-0.70	3.85
294	294	-24.13	26.05	0.08	-42.91	46.32	0.14	4.24
294	295	-17.93	20.79	0.08	-31.88	36.96	0.14	4.24
295	295	-17.85	20.97	0.16	-31.74	37.27	0.28	4.40
295	296	-11.42	15.70	0.16	-20.31	27.91	0.28	4.40
296	296	-11.31	15.86	0.15	-20.10	28.20	0.27	4.40
296	297	-4.87	10.60	0.15	-8.66	18.84	0.27	4.40
297	297	-4.86	-2.53	0.00	-8.65	-4.50	0.00	18.84
297	298	22.19	-4.50	0.00	12.48	-2.53	0.00	11.50
298	298	22.25	-4.51	-0.27	12.52	-2.53	-0.15	11.41
298	299	40.22	-4.50	-0.27	22.63	-2.53	-0.15	0.01
299	299	40.23	-4.50	-0.34	22.63	-2.53	-0.19	0.05
299	300	21.97	-4.49	-0.34	12.36	-2.53	-0.19	11.44
300	300	21.92	-4.49	-0.25	12.33	-2.52	-0.14	11.43
300	301	-4.93	-2.52	-0.14	-8.77	-4.48	-0.25	18.73
301	301	-4.93	10.53	-0.17	-8.77	18.72	-0.30	4.37
301	302	-11.33	15.79	-0.17	-20.14	28.08	-0.30	4.37
302	302	-11.45	15.65	-0.16	-20.35	27.82	-0.29	4.36
302	303	-17.83	20.92	-0.16	-31.69	37.18	-0.29	4.36
303	303	-17.91	20.73	-0.08	-31.84	36.85	-0.15	4.20
303	304	-24.04	25.99	-0.08	-42.75	46.21	-0.15	4.20
304	304	-23.97	24.01	0.42	-42.62	42.68	0.74	3.80
304	289	-29.52	29.27	0.42	-52.49	52.04	0.74	3.80
305	305	-25.68	2.46	3.29	-45.65	4.37	5.85	37.75
305	306	38.55	4.37	5.85	21.68	2.46	3.29	45.07
306	306	48.20	4.44	2.90	27.11	2.49	1.63	7.12
306	307	88.80	4.44	2.90	49.95	2.49	1.63	18.52
307	307	88.66	4.44	-1.15	49.87	2.50	-0.65	18.29
307	308	48.80	4.44	-1.15	27.45	2.50	-0.65	6.89
308	308	39.60	4.39	-5.58	22.28	2.47	-3.14	45.93
308	309	-26.07	2.47	-3.14	-46.34	4.39	-5.58	38.61
309	309	-28.14	27.16	-0.57	-50.03	48.29	-1.01	2.78
309	310	-24.08	21.90	-0.57	-42.81	38.93	-1.01	2.78
310	310	-23.97	26.01	0.12	-42.61	46.24	0.21	4.07
310	311	-18.02	20.75	0.12	-32.03	36.88	0.21	4.07
311	311	-17.61	20.94	0.22	-31.30	37.23	0.40	4.07
311	312	-11.66	15.68	0.22	-20.73	27.87	0.40	4.07
312	312	-11.07	15.88	0.23	-19.68	28.23	0.41	4.07
312	313	-5.12	10.61	0.23	-9.10	18.87	0.41	4.07
313	313	-4.97	-2.52	-0.02	-8.84	-4.48	-0.04	18.92
313	314	22.20	-4.48	-0.04	12.49	-2.52	-0.02	11.60
314	314	22.35	-4.48	-0.43	12.57	-2.52	-0.24	11.31
314	315	40.12	-4.48	-0.43	22.57	-2.52	-0.24	0.09
315	315	40.20	-4.47	-0.52	22.61	-2.51	-0.29	0.08
315	316	21.91	-4.47	-0.52	12.33	-2.51	-0.29	11.48
316	316	21.62	-4.47	-0.37	12.16	-2.51	-0.21	11.28
316	317	-4.93	-2.51	-0.21	-8.77	-4.47	-0.37	18.60
317	317	-5.14	10.50	-0.25	-9.13	18.66	-0.45	4.07
317	318	-11.09	15.76	-0.25	-19.71	28.02	-0.45	4.07
318	318	-11.69	15.62	-0.23	-20.79	27.77	-0.41	4.02
318	319	-17.57	20.89	-0.23	-31.24	37.13	-0.41	4.02
319	319	-17.99	20.68	-0.12	-31.99	36.76	-0.21	4.02
319	320	-23.87	25.94	-0.12	-42.44	46.12	-0.21	4.02
320	320	-24.00	21.59	0.61	-42.67	38.37	1.08	2.62
320	305	-27.83	26.85	0.61	-49.47	47.73	1.08	2.62
321	1	-1.37	0.08	1.32	-2.44	0.14	2.34	3.61
321	17	2.45	0.14	2.34	1.38	0.08	1.32	3.61
322	17	-0.52	0.23	1.12	-0.92	0.40	1.98	0.85
322	33	0.93	0.40	1.98	0.53	0.23	1.12	0.85
323	33	-0.12	0.46	0.64	-0.21	0.81	1.14	0.20
323	49	0.23	0.81	1.14	0.13	0.46	0.64	0.20
324	49	-0.01	0.64	0.33	-0.02	1.14	0.58	0.04
324	65	0.06	1.14	0.58	0.03	0.64	0.33	0.04
325	65	0.01	1.39	0.27	0.01	0.78	0.15	0.00
325	81	0.02	1.39	0.27	0.01	0.78	0.15	0.00
326	81	0.02	1.59	0.11	0.01	0.89	0.06	0.00
326	97	0.02	1.59	0.11	0.01	0.89	0.06	0.00
327	97	0.02	1.73	0.04	0.01	0.98	0.02	0.00
327	113	0.02	1.73	0.04	0.01	0.98	0.02	0.00
328	113	0.02	1.84	0.01	0.01	1.03	0.01	0.00
328	129	0.03	1.84	0.01	0.01	1.03	0.01	0.00
329	129	0.02	1.90	0.00	0.01	1.07	0.00	0.00
329	145	0.03	1.90	0.00	0.01	1.07	0.00	0.00
330	145	0.03	1.92	0.00	0.01	1.08	0.00	0.00
330	161	0.03	1.92	0.00	0.01	1.08	0.00	0.00
331	161	0.03	1.90	0.00	0.01	1.07	0.00	0.00
331	177	0.02	1.90	0.00	0.01	1.07	0.00	0.00
332	177	0.02	1.84	-0.01	0.01	1.03	-0.01	0.00
332	193	0.02	1.84	-0.01	0.01	1.03	-0.01	0.00
333	193	0.02	1.73	-0.04	0.01	0.98	-0.02	0.00
333	209	0.02	1.73	-0.04	0.01	0.98	-0.02	0.00
334	209	0.02	1.59	-0.11	0.01	0.89	-0.06	0.00
334	225	0.02	1.59	-0.11	0.01	0.89	-0.06	0.00
335	225	0.02	1.39	-0.27	0.01	0.78	-0.15	0.00
335	241	0.01	1.39	-0.27	0.01	0.78	-0.15	0.00
336	241	0.06	1.14	-0.58	0.03	0.64	-0.33	0.04
336	257	-0.01	0.64	-0.33	-0.03	1.14	-0.58	0.04
337	257	0.23	0.81	-1.14	0.13	0.46	-0.64	0.20
337	273	-0.12	0.46	-0.64	-0.21	0.81	-1.14	0.20
338	273	0.93	0.40	-1.98	0.52	0.23	-1.11	0.85
338	289	-0.52	0.23	-1.11	-0.92	0.40	-1.98	0.85

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
339	289	2.45	0.14	-2.34	1.38	0.08	-1.32	3.60
339	305	-1.37	0.08	-1.32	-2.44	0.14	-2.34	3.60
340	2	-0.29	0.07	0.92	-0.52	0.13	1.64	2.35
340	18	2.66	0.13	1.64	1.50	0.07	0.92	2.35
341	18	1.68	0.41	2.16	0.94	0.23	1.22	0.02
341	34	1.64	0.41	2.16	0.92	0.23	1.22	0.02
342	34	1.43	0.79	1.36	0.81	0.44	0.76	0.31
342	50	0.77	0.79	1.36	0.43	0.44	0.76	0.31
343	50	0.86	1.11	0.67	0.49	0.62	0.38	0.25
343	66	0.32	1.11	0.67	0.18	0.62	0.38	0.25
344	66	0.50	1.36	0.28	0.28	0.77	0.16	0.19
344	82	0.10	1.36	0.28	0.05	0.77	0.16	0.19
345	82	0.29	1.56	0.10	0.16	0.88	0.06	0.14
345	98	0.00	0.88	0.06	0.00	1.56	0.10	0.14
346	98	0.17	1.71	0.03	0.10	0.96	0.01	0.09
346	114	-0.02	0.96	0.01	-0.03	1.71	0.03	0.09
347	114	0.11	1.81	0.00	0.06	1.02	0.00	0.06
347	130	-0.01	1.02	0.00	-0.02	1.81	0.00	0.06
348	130	0.06	1.88	0.00	0.04	1.06	0.00	0.03
348	146	0.00	1.06	0.00	0.00	1.88	0.00	0.03
349	146	0.03	1.90	0.00	0.02	1.07	0.00	0.00
349	162	0.02	1.90	0.00	0.01	1.07	0.00	0.00
350	162	0.00	1.88	0.00	0.00	1.05	0.00	0.03
350	178	0.06	1.88	0.00	0.03	1.05	0.00	0.03
351	178	-0.01	1.02	0.00	-0.02	1.81	0.00	0.06
351	194	0.10	1.81	0.00	0.06	1.02	0.00	0.06
352	194	-0.01	0.96	-0.01	-0.02	1.71	-0.03	0.09
352	210	0.17	1.71	-0.03	0.09	0.96	-0.01	0.09
353	210	0.00	1.56	-0.10	0.00	0.88	-0.06	0.13
353	226	0.29	1.56	-0.10	0.16	0.88	-0.06	0.13
354	226	0.10	1.36	-0.28	0.06	0.77	-0.16	0.18
354	242	0.50	1.36	-0.28	0.28	0.77	-0.16	0.18
355	242	0.32	1.11	-0.67	0.18	0.62	-0.38	0.25
355	258	0.86	1.11	-0.67	0.48	0.62	-0.38	0.25
356	258	0.77	0.79	-1.35	0.43	0.44	-0.76	0.30
356	274	1.43	0.79	-1.35	0.80	0.44	-0.76	0.30
357	274	1.64	0.41	-2.16	0.92	0.23	-1.22	0.01
357	290	1.67	0.41	-2.16	0.94	0.23	-1.22	0.01
358	290	2.66	0.13	-1.64	1.50	0.07	-0.92	2.35
358	306	-0.29	0.07	-0.92	-0.52	0.13	-1.64	2.35
359	3	-0.39	0.07	-0.02	-0.69	0.12	-0.03	2.71
359	19	2.97	0.12	-0.03	1.67	0.07	-0.02	2.71
360	19	1.17	0.42	-0.04	0.66	0.23	-0.02	0.91
360	35	3.15	0.42	-0.04	1.77	0.23	-0.02	0.91
361	35	1.80	0.77	-0.01	1.01	0.43	0.00	0.08
361	51	1.98	0.77	-0.01	1.11	0.43	0.00	0.08

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
362	51	1.26	1.08	0.00	0.71	0.61	0.00	0.13
362	67	0.98	1.08	0.00	0.55	0.61	0.00	0.13
363	67	0.68	1.33	0.00	0.38	0.75	0.00	0.12
363	83	0.42	1.33	0.00	0.23	0.75	0.00	0.12
364	83	0.31	1.53	0.00	0.18	0.86	0.00	0.07
364	99	0.16	1.53	0.00	0.09	0.86	0.00	0.07
365	99	0.14	1.68	0.00	0.08	0.94	0.00	0.03
365	115	0.06	1.68	0.00	0.03	0.94	0.00	0.03
366	115	0.06	1.78	0.00	0.03	1.00	0.00	0.02
366	131	0.03	1.78	0.00	0.01	1.00	0.00	0.02
367	131	0.03	1.84	0.00	0.02	1.04	0.00	0.01
367	147	0.02	1.84	0.00	0.01	1.04	0.00	0.01
368	147	0.02	1.86	0.00	0.01	1.05	0.00	0.00
368	163	0.02	1.86	0.00	0.01	1.05	0.00	0.00
369	163	0.02	1.84	0.00	0.01	1.04	0.00	0.01
369	179	0.03	1.84	0.00	0.02	1.04	0.00	0.01
370	179	0.03	1.78	0.00	0.01	1.00	0.00	0.02
370	195	0.06	1.78	0.00	0.03	1.00	0.00	0.02
371	195	0.06	1.68	0.00	0.03	0.94	0.00	0.03
371	211	0.14	1.68	0.00	0.08	0.94	0.00	0.03
372	211	0.16	1.53	0.00	0.09	0.86	0.00	0.07
372	227	0.31	1.53	0.00	0.18	0.86	0.00	0.07
373	227	0.42	1.33	0.00	0.23	0.75	0.00	0.12
373	243	0.68	1.33	0.00	0.38	0.75	0.00	0.12
374	243	0.98	1.08	0.00	0.55	0.61	0.00	0.13
374	259	1.26	1.08	0.00	0.71	0.61	0.00	0.13
375	259	1.98	0.77	0.01	1.11	0.43	0.00	0.08
375	275	1.80	0.77	0.01	1.01	0.43	0.00	0.08
376	275	3.15	0.42	0.04	1.77	0.23	0.02	0.91
376	291	1.17	0.42	0.04	0.66	0.23	0.02	0.91
377	291	2.97	0.12	0.03	1.67	0.07	0.02	2.71
377	307	-0.39	0.07	0.02	-0.69	0.12	0.03	2.71
378	4	-0.41	0.07	-0.89	-0.74	0.12	-1.58	2.56
378	20	2.72	0.12	-1.58	1.53	0.07	-0.89	2.56
379	20	1.07	0.40	-2.10	0.60	0.22	-1.18	0.41
379	36	1.95	0.40	-2.10	1.09	0.22	-1.18	0.41
380	36	0.98	0.76	-1.33	0.55	0.43	-0.75	0.07
380	52	1.13	0.76	-1.33	0.63	0.43	-0.75	0.07
381	52	0.51	1.07	-0.66	0.29	0.60	-0.37	0.06
381	68	0.64	1.07	-0.66	0.36	0.60	-0.37	0.06
382	68	0.21	1.32	-0.28	0.12	0.74	-0.16	0.07
382	84	0.36	1.32	-0.28	0.21	0.74	-0.16	0.07
383	84	0.06	1.52	-0.10	0.03	0.85	-0.06	0.07
383	100	0.21	1.52	-0.10	0.12	0.85	-0.06	0.07
384	100	0.00	0.93	-0.02	-0.01	1.66	-0.03	0.06
384	116	0.13	1.66	-0.03	0.07	0.93	-0.02	0.06

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
385	116	-0.01	0.99	0.00	-0.02	1.76	0.00	0.05
385	132	0.08	1.76	0.00	0.05	0.99	0.00	0.05
386	132	0.00	1.03	0.00	-0.01	1.82	0.00	0.03
386	148	0.05	1.82	0.00	0.03	1.03	0.00	0.03
387	148	0.01	1.84	0.00	0.01	1.04	0.00	0.00
387	164	0.02	1.84	0.00	0.01	1.04	0.00	0.00
388	164	0.04	1.82	0.00	0.02	1.03	0.00	0.02
388	180	0.00	1.03	0.00	0.00	1.82	0.00	0.02
389	180	0.08	1.76	0.00	0.04	0.99	0.00	0.04
389	196	-0.01	0.99	0.00	-0.01	1.76	0.00	0.04
390	196	0.12	1.66	0.03	0.07	0.93	0.02	0.06
390	212	0.00	0.93	0.02	0.00	0.93	0.02	0.06
391	212	0.21	1.52	0.10	0.12	0.85	0.06	0.07
391	228	0.06	1.52	0.10	0.04	0.85	0.06	0.07
392	228	0.36	1.32	0.28	0.20	0.74	0.16	0.07
392	244	0.22	1.32	0.28	0.12	0.74	0.16	0.07
393	244	0.64	1.07	0.66	0.36	0.60	0.37	0.05
393	260	0.52	1.07	0.66	0.29	0.60	0.37	0.05
394	260	1.12	0.76	1.33	0.63	0.43	0.75	0.06
394	276	0.99	0.76	1.33	0.55	0.43	0.75	0.06
395	276	1.94	0.40	2.10	1.09	0.22	1.18	0.40
395	292	1.08	0.40	2.10	0.61	0.22	1.18	0.40
396	292	2.72	0.12	1.58	1.53	0.07	0.89	2.56
396	308	-0.41	0.07	0.89	-0.73	0.12	1.58	2.56
397	5	-1.30	0.07	-1.22	-2.31	0.13	-2.17	3.43
397	21	2.32	0.13	-2.17	1.30	0.07	-1.22	3.43
398	21	-0.49	0.21	-1.06	-0.87	0.38	-1.88	0.82
398	37	0.89	0.38	-1.88	0.50	0.21	-1.06	0.82
399	37	-0.12	0.43	-0.62	-0.21	0.77	-1.11	0.20
399	53	0.23	0.77	-1.11	0.13	0.43	-0.62	0.20
400	53	-0.02	0.61	-0.32	-0.03	1.08	-0.57	0.04
400	69	0.06	1.08	-0.57	0.03	0.61	-0.32	0.04
401	69	0.01	1.32	-0.27	0.01	0.74	-0.15	0.01
401	85	0.03	1.32	-0.27	0.01	0.74	-0.15	0.01
402	85	0.02	1.51	-0.11	0.01	0.85	-0.06	0.00
402	101	0.02	1.51	-0.11	0.01	0.85	-0.06	0.00
403	101	0.02	1.65	-0.04	0.01	0.93	-0.02	0.00
403	117	0.02	1.65	-0.04	0.01	0.93	-0.02	0.00
404	117	0.02	1.75	-0.01	0.01	0.99	-0.01	0.00
404	133	0.02	1.75	-0.01	0.01	0.99	-0.01	0.00
405	133	0.02	1.81	0.00	0.01	1.02	0.00	0.00
405	149	0.02	1.81	0.00	0.01	1.02	0.00	0.00
406	149	0.02	1.83	0.00	0.01	1.03	0.00	0.00
406	165	0.02	1.83	0.00	0.01	1.03	0.00	0.00
407	165	0.02	1.81	0.00	0.01	1.02	0.00	0.00
407	181	0.02	1.81	0.00	0.01	1.02	0.00	0.00
408	181	0.02	1.75	0.01	0.01	0.99	0.01	0.00
408	197	0.02	1.75	0.01	0.01	0.99	0.01	0.00
409	197	0.02	1.65	0.04	0.01	0.93	0.02	0.00
409	213	0.02	1.65	0.04	0.01	0.93	0.02	0.00
410	213	0.02	1.51	0.11	0.01	0.85	0.06	0.00
410	229	0.02	1.51	0.11	0.01	0.85	0.06	0.00
411	229	0.03	1.32	0.27	0.01	0.74	0.15	0.01
411	245	0.01	1.32	0.27	0.01	0.74	0.15	0.01
412	245	0.06	1.08	0.57	0.03	0.61	0.32	0.04
412	261	-0.02	0.61	0.32	-0.03	1.08	0.57	0.04
413	261	0.23	0.77	1.11	0.13	0.43	0.62	0.20
413	277	-0.12	0.43	0.62	-0.21	0.77	1.11	0.20
414	277	0.89	0.38	1.88	0.50	0.21	1.06	0.82
414	293	-0.49	0.21	1.06	-0.87	0.38	1.88	0.82
415	293	2.32	0.13	2.18	1.30	0.07	1.22	3.43
415	309	-1.30	0.07	1.22	-2.31	0.13	2.18	3.43
416	6	0.19	0.00	0.03	0.11	0.00	0.02	0.20
416	22	-0.05	0.00	0.02	-0.08	0.00	0.03	0.20
417	22	0.45	0.17	-0.04	0.25	0.10	-0.02	0.45
417	38	-0.29	0.10	-0.02	-0.52	0.17	-0.04	0.45
418	38	-0.01	0.20	-0.09	-0.03	0.35	-0.16	0.23
418	54	-0.29	0.20	-0.09	-0.52	0.35	-0.16	0.23
419	54	-0.12	0.29	-0.10	-0.21	0.51	-0.18	0.07
419	70	-0.20	0.29	-0.10	-0.36	0.51	-0.18	0.07
420	70	-0.11	0.36	-0.08	-0.20	0.63	-0.14	0.00
420	86	-0.11	0.36	-0.08	-0.20	0.63	-0.14	0.00
421	86	-0.08	0.41	-0.05	-0.13	0.73	-0.09	0.02
421	102	-0.06	0.41	-0.05	-0.10	0.73	-0.09	0.02
422	102	-0.04	0.45	-0.03	-0.08	0.81	-0.05	0.02
422	118	-0.02	0.45	-0.03	-0.04	0.81	-0.05	0.02
423	118	-0.02	0.48	-0.01	-0.04	0.86	-0.02	0.01
423	134	-0.01	0.48	-0.01	-0.02	0.86	-0.02	0.01
424	134	-0.01	0.50	0.00	-0.02	0.89	-0.01	0.00
424	150	0.00	0.50	0.00	-0.01	0.89	-0.01	0.00
425	150	0.00	0.50	0.00	-0.01	0.90	0.00	0.00
425	166	0.00	0.50	0.00	-0.01	0.90	0.00	0.00
426	166	0.00	0.50	0.00	-0.01	0.89	0.01	0.00
426	182	-0.01	0.50	0.00	-0.02	0.89	0.01	0.00
427	182	-0.01	0.48	0.01	-0.02	0.86	0.02	0.01
427	198	-0.02	0.48	0.01	-0.04	0.86	0.02	0.01
428	198	-0.02	0.45	0.03	-0.04	0.81	0.05	0.02
428	214	-0.04	0.45	0.03	-0.08	0.81	0.05	0.02
429	214	-0.06	0.41	0.05	-0.10	0.73	0.09	0.02
429	230	-0.08	0.41	0.05	-0.13	0.73	0.09	0.02
430	230	-0.11	0.36	0.08	-0.20	0.63	0.14	0.00
430	246	-0.11	0.36	0.08	-0.20	0.63	0.14	0.00

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
431	246	-0.20	0.29	0.10	-0.36	0.51	0.18	0.07
431	262	-0.12	0.29	0.10	-0.21	0.51	0.18	0.07
432	262	-0.29	0.20	0.09	-0.52	0.35	0.16	0.23
432	278	-0.01	0.20	0.09	-0.03	0.35	0.16	0.23
433	278	-0.29	0.10	0.02	-0.52	0.17	0.04	0.45
433	294	0.45	0.17	0.04	0.25	0.10	0.02	0.45
434	294	-0.05	0.00	-0.02	-0.08	0.00	-0.03	0.20
434	310	0.19	0.00	-0.03	0.11	0.00	-0.02	0.20
435	7	0.04	-0.03	0.15	0.02	-0.02	0.08	0.00
435	23	0.04	-0.03	0.15	0.02	-0.02	0.08	0.00
436	23	0.15	-0.01	0.27	0.09	-0.01	0.15	0.13
436	39	-0.07	-0.01	0.15	-0.13	-0.01	0.27	0.13
437	39	0.02	-0.04	0.22	0.01	-0.02	0.13	0.15
437	55	-0.17	-0.02	0.13	-0.29	-0.04	0.22	0.15
438	55	-0.07	-0.02	0.07	-0.12	-0.04	0.13	0.09
438	71	-0.17	-0.02	0.07	-0.30	-0.04	0.13	0.09
439	71	-0.09	-0.02	0.03	-0.16	-0.04	0.05	0.03
439	87	-0.13	-0.02	0.03	-0.23	-0.04	0.05	0.03
440	87	-0.07	-0.02	0.01	-0.13	-0.04	0.02	0.00
440	103	-0.08	-0.02	0.01	-0.14	-0.04	0.02	0.00
441	103	-0.05	-0.02	0.00	-0.08	-0.04	0.00	0.00
441	119	-0.04	-0.02	0.00	-0.07	-0.04	0.00	0.00
442	119	-0.03	-0.02	0.00	-0.05	-0.04	0.00	0.01
442	135	-0.02	-0.02	0.00	-0.03	-0.04	0.00	0.01
443	135	-0.01	-0.02	0.00	-0.02	-0.04	0.00	0.00
443	151	-0.01	-0.02	0.00	-0.02	-0.04	0.00	0.00
444	151	-0.01	-0.02	0.00	-0.01	-0.04	0.00	0.00
444	167	-0.01	-0.02	0.00	-0.01	-0.04	0.00	0.00
445	167	-0.01	-0.02	0.00	-0.02	-0.04	0.00	0.00
445	183	-0.01	-0.02	0.00	-0.02	-0.04	0.00	0.00
446	183	-0.02	-0.02	0.00	-0.03	-0.04	0.00	0.01
446	199	-0.03	-0.02	0.00	-0.05	-0.04	0.00	0.01
447	199	-0.04	-0.02	0.00	-0.07	-0.04	0.00	0.00
447	215	-0.05	-0.02	0.00	-0.08	-0.04	0.00	0.00
448	215	-0.08	-0.02	-0.01	-0.14	-0.04	-0.02	0.00
448	231	-0.07	-0.02	-0.01	-0.13	-0.04	-0.02	0.00
449	231	-0.13	-0.02	-0.03	-0.23	-0.04	-0.05	0.03
449	247	-0.09	-0.02	-0.03	-0.16	-0.04	-0.05	0.03
450	247	-0.17	-0.02	-0.07	-0.30	-0.04	-0.13	0.09
450	263	-0.07	-0.02	-0.07	-0.12	-0.04	-0.13	0.09
451	263	-0.17	-0.02	-0.13	-0.29	-0.04	-0.22	0.15
451	279	0.02	-0.04	-0.22	0.01	-0.02	-0.13	0.15
452	279	-0.07	-0.01	-0.15	-0.13	-0.01	-0.27	0.13
452	295	0.15	-0.01	-0.27	0.09	-0.01	-0.15	0.13
453	295	0.04	-0.03	-0.15	0.02	-0.02	-0.08	0.00
453	311	0.04	-0.03	-0.15	0.02	-0.02	-0.08	0.00

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
454	8	0.00	-0.06	0.16	0.00	-0.03	0.09	0.00
454	24	0.00	-0.06	0.16	0.00	-0.03	0.09	0.00
455	24	0.00	-0.11	0.16	0.00	-0.20	0.29	0.00
455	40	0.00	-0.11	0.16	-0.01	-0.20	0.29	0.00
456	40	-0.01	-0.22	0.16	-0.02	-0.40	0.28	0.02
456	56	-0.04	-0.22	0.16	-0.07	-0.40	0.28	0.02
457	56	-0.03	-0.32	0.13	-0.06	-0.56	0.23	0.02
457	72	-0.06	-0.32	0.13	-0.11	-0.56	0.23	0.02
458	72	-0.05	-0.39	0.09	-0.08	-0.69	0.15	0.01
458	88	-0.06	-0.39	0.09	-0.10	-0.69	0.15	0.01
459	88	-0.04	-0.45	0.05	-0.07	-0.79	0.09	0.00
459	104	-0.04	-0.45	0.05	-0.07	-0.79	0.09	0.00
460	104	-0.03	-0.49	0.03	-0.05	-0.87	0.05	0.00
460	120	-0.03	-0.49	0.03	-0.05	-0.87	0.05	0.00
461	120	-0.02	-0.52	0.01	-0.03	-0.92	0.02	0.00
461	136	-0.01	-0.52	0.01	-0.02	-0.92	0.02	0.00
462	136	-0.01	-0.53	0.00	-0.02	-0.95	0.01	0.00
462	152	-0.01	-0.53	0.00	-0.01	-0.95	0.01	0.00
463	152	-0.01	-0.54	0.00	-0.01	-0.96	0.00	0.00
463	168	-0.01	-0.54	0.00	-0.01	-0.96	0.00	0.00
464	168	-0.01	-0.53	0.00	-0.01	-0.95	-0.01	0.00
464	184	-0.01	-0.53	0.00	-0.02	-0.95	-0.01	0.00
465	184	-0.01	-0.52	-0.01	-0.02	-0.92	-0.02	0.00
465	200	-0.02	-0.52	-0.01	-0.03	-0.92	-0.02	0.00
466	200	-0.03	-0.49	-0.03	-0.05	-0.87	-0.05	0.00
466	216	-0.03	-0.49	-0.03	-0.05	-0.87	-0.05	0.00
467	216	-0.04	-0.45	-0.05	-0.07	-0.79	-0.09	0.00
467	232	-0.04	-0.45	-0.05	-0.07	-0.79	-0.09	0.00
468	232	-0.06	-0.39	-0.09	-0.10	-0.69	-0.15	0.01
468	248	-0.05	-0.39	-0.09	-0.08	-0.69	-0.15	0.01
469	248	-0.06	-0.32	-0.13	-0.11	-0.56	-0.23	0.02
469	264	-0.03	-0.32	-0.13	-0.06	-0.56	-0.23	0.02
470	264	-0.04	-0.22	-0.16	-0.07	-0.40	-0.28	0.02
470	280	-0.01	-0.22	-0.16	-0.02	-0.40	-0.28	0.02
471	280	0.00	-0.11	-0.16	-0.01	-0.20	-0.29	0.00
471	296	0.00	-0.11	-0.16	0.00	-0.20	-0.29	0.00
472	296	0.00	-0.06	-0.16	0.00	-0.03	-0.09	0.00
472	312	0.00	-0.06	-0.16	0.00	-0.03	-0.09	0.00
473	9	0.02	-0.08	0.15	0.01	-0.04	0.09	0.03
473	25	-0.01	-0.04	0.09	-0.02	-0.08	0.15	0.03
474	25	0.02	-0.39	0.19	0.01	-0.22	0.11	0.03
474	41	-0.02	-0.22	0.11	-0.03	-0.39	0.19	0.03
475	41	0.00	-0.75	0.20	0.00	-0.42	0.11	0.01
475	57	-0.01	-0.42	0.11	-0.02	-0.75	0.20	0.01
476	57	0.00	-0.60	0.10	-0.01	-1.07	0.18	0.01
476	73	-0.01	-0.60	0.10	-0.02	-1.07	0.18	0.01

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
477	73	-0.01	-0.75	0.07	-0.01	-1.33	0.13	0.00
477	89	-0.01	-0.75	0.07	-0.02	-1.33	0.13	0.00
478	89	-0.01	-0.86	0.05	-0.02	-1.54	0.09	0.00
478	105	-0.01	-0.86	0.05	-0.02	-1.54	0.09	0.00
479	105	-0.01	-0.95	0.03	-0.02	-1.69	0.05	0.00
479	121	-0.01	-0.95	0.03	-0.02	-1.69	0.05	0.00
480	121	-0.01	-1.01	0.02	-0.02	-1.80	0.03	0.00
480	137	-0.01	-1.01	0.02	-0.02	-1.80	0.03	0.00
481	137	-0.01	-1.05	0.01	-0.02	-1.86	0.01	0.00
481	153	-0.01	-1.05	0.01	-0.02	-1.86	0.01	0.00
482	153	-0.01	-1.06	0.00	-0.02	-1.88	0.00	0.00
482	169	-0.01	-1.06	0.00	-0.02	-1.88	0.00	0.00
483	169	-0.01	-1.05	-0.01	-0.02	-1.86	-0.01	0.00
483	185	-0.01	-1.05	-0.01	-0.02	-1.86	-0.01	0.00
484	185	-0.01	-1.01	-0.02	-0.02	-1.80	-0.03	0.00
484	201	-0.01	-1.01	-0.02	-0.02	-1.80	-0.03	0.00
485	201	-0.01	-0.95	-0.03	-0.02	-1.69	-0.05	0.00
485	217	-0.01	-0.95	-0.03	-0.02	-1.69	-0.05	0.00
486	217	-0.01	-0.87	-0.05	-0.02	-1.54	-0.09	0.00
486	233	-0.01	-0.87	-0.05	-0.02	-1.54	-0.09	0.00
487	233	-0.01	-0.75	-0.08	-0.02	-1.33	-0.13	0.00
487	249	-0.01	-0.75	-0.08	-0.01	-1.33	-0.13	0.00
488	249	-0.01	-0.60	-0.10	-0.02	-1.07	-0.18	0.01
488	265	0.00	-0.60	-0.10	-0.01	-1.07	-0.18	0.01
489	265	-0.01	-0.42	-0.11	-0.02	-0.75	-0.20	0.01
489	281	0.00	-0.75	-0.20	0.00	-0.42	-0.11	0.01
490	281	-0.02	-0.22	-0.11	-0.03	-0.39	-0.20	0.03
490	297	0.02	-0.39	-0.20	0.01	-0.22	-0.11	0.03
491	297	-0.01	-0.04	-0.09	-0.02	-0.08	-0.15	0.03
491	313	0.02	-0.08	-0.15	0.01	-0.04	-0.09	0.03
492	10	-0.04	-0.04	0.02	-0.07	-0.08	0.03	0.05
492	26	0.00	-0.08	0.03	0.00	-0.04	0.02	0.05
493	26	-0.10	-0.22	0.04	-0.18	-0.40	0.07	0.12
493	42	0.07	-0.40	0.07	0.04	-0.22	0.04	0.12
494	42	-0.07	-0.42	0.05	-0.13	-0.75	0.09	0.11
494	58	0.10	-0.75	0.09	0.06	-0.42	0.05	0.11
495	58	-0.05	-0.60	0.05	-0.09	-1.07	0.09	0.09
495	74	0.10	-1.07	0.09	0.06	-0.60	0.05	0.09
496	74	-0.03	-0.75	0.04	-0.06	-1.33	0.08	0.07
496	90	0.09	-1.33	0.08	0.05	-0.75	0.04	0.07
497	90	-0.02	-0.87	0.03	-0.04	-1.54	0.06	0.05
497	106	0.06	-1.54	0.06	0.03	-0.87	0.03	0.05
498	106	-0.02	-0.95	0.02	-0.03	-1.69	0.04	0.03
498	122	0.04	-1.69	0.04	0.02	-0.95	0.02	0.03
499	122	-0.01	-1.01	0.01	-0.03	-1.80	0.02	0.02
499	138	0.02	-1.80	0.02	0.01	-1.01	0.01	0.02

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
500	138	-0.01	-1.05	0.01	-0.02	-1.87	0.01	0.01
500	154	0.00	-1.05	0.01	0.00	-1.87	0.01	0.01
501	154	-0.01	-1.06	0.00	-0.01	-1.89	0.00	0.00
501	170	-0.01	-1.06	0.00	-0.01	-1.89	0.00	0.00
502	170	0.00	-1.05	-0.01	0.00	-1.87	-0.01	0.01
502	186	-0.01	-1.05	-0.01	-0.02	-1.87	-0.01	0.01
503	186	0.01	-1.80	-0.02	0.01	-1.01	-0.01	0.02
503	202	-0.01	-1.01	-0.01	-0.02	-1.80	-0.02	0.02
504	202	0.04	-1.69	-0.04	0.02	-0.95	-0.02	0.03
504	218	-0.02	-0.95	-0.02	-0.03	-1.69	-0.04	0.03
505	218	0.06	-1.54	-0.06	0.03	-0.87	-0.03	0.04
505	234	-0.02	-0.87	-0.03	-0.04	-1.54	-0.06	0.04
506	234	0.08	-1.33	-0.08	0.05	-0.75	-0.04	0.06
506	250	-0.03	-0.75	-0.04	-0.05	-1.33	-0.08	0.06
507	250	0.10	-1.07	-0.09	0.06	-0.60	-0.05	0.09
507	266	-0.05	-0.60	-0.05	-0.09	-1.07	-0.09	0.09
508	266	0.10	-0.75	-0.09	0.05	-0.42	-0.05	0.11
508	282	-0.07	-0.42	-0.05	-0.13	-0.75	-0.09	0.11
509	282	0.07	-0.40	-0.07	0.04	-0.22	-0.04	0.12
509	298	-0.10	-0.22	-0.04	-0.18	-0.40	-0.07	0.12
510	298	0.00	-0.08	-0.03	0.00	-0.04	-0.02	0.05
510	314	-0.04	-0.04	-0.02	-0.07	-0.08	-0.03	0.05
511	11	-0.01	-0.05	0.01	-0.02	-0.08	0.01	0.00
511	27	-0.01	-0.05	0.01	-0.02	-0.08	0.01	0.00
512	27	-0.04	-0.23	0.01	-0.06	-0.41	0.02	0.03
512	43	0.00	-0.23	0.01	-0.01	-0.41	0.02	0.03
513	43	-0.03	-0.43	0.00	-0.06	-0.76	0.01	0.04
513	59	0.03	-0.76	0.01	0.02	-0.43	0.00	0.04
514	59	-0.02	-0.61	0.00	-0.03	-1.08	0.00	0.04
514	75	0.06	-1.08	0.00	0.03	-0.61	0.00	0.04
515	75	0.00	-0.76	0.00	0.00	-1.34	0.00	0.03
515	91	0.06	-1.34	0.00	0.03	-0.76	0.00	0.03
516	91	0.01	-1.55	0.00	0.01	-0.87	0.00	0.02
516	107	0.05	-1.55	0.00	0.03	-0.87	0.00	0.02
517	107	0.01	-1.71	0.00	0.01	-0.96	0.00	0.01
517	123	0.03	-1.71	0.00	0.02	-0.96	0.00	0.01
518	123	0.01	-1.82	0.00	0.00	-1.03	0.00	0.00
518	139	0.01	-1.82	0.00	0.01	-1.03	0.00	0.00
519	139	0.00	-1.06	0.00	0.00	-1.06	0.00	0.00
519	155	0.00	-1.06	0.00	0.00	-1.06	0.00	0.00
520	155	0.00	-1.07	0.00	0.00	-1.91	0.00	0.00
520	171	0.00	-1.07	0.00	0.00	-1.91	0.00	0.00
521	171	0.00	-1.06	0.00	0.00	-1.06	0.00	0.00
521	187	0.00	-1.06	0.00	0.00	-1.06	0.00	0.00
522	187	0.01	-1.82	0.00	0.01	-1.03	0.00	0.00
522	203	0.01	-1.82	0.00	0.00	-1.03	0.00	0.00

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
523	203	0.03	-1.71	0.00	0.02	-0.96	0.00	0.01
523	219	0.01	-1.71	0.00	0.01	-0.96	0.00	0.01
524	219	0.05	-1.55	0.00	0.03	-0.87	0.00	0.02
524	235	0.01	-1.55	0.00	0.01	-0.87	0.00	0.02
525	235	0.06	-1.34	0.00	0.03	-0.76	0.00	0.03
525	251	0.00	-0.76	0.00	0.00	-1.34	0.00	0.03
526	251	0.06	-1.08	0.00	0.03	-0.61	0.00	0.04
526	267	-0.02	-0.61	0.00	-0.03	-1.08	0.00	0.04
527	267	0.03	-0.76	-0.01	0.02	-0.43	0.00	0.04
527	283	-0.03	-0.43	0.00	-0.06	-0.76	-0.01	0.04
528	283	0.00	-0.23	-0.01	-0.01	-0.41	-0.02	0.03
528	299	-0.04	-0.23	-0.01	-0.06	-0.41	-0.02	0.03
529	299	-0.01	-0.05	-0.01	-0.02	-0.08	-0.01	0.00
529	315	-0.01	-0.05	-0.01	-0.02	-0.08	-0.01	0.00
530	12	0.03	-0.08	-0.05	0.01	-0.05	-0.03	0.03
530	28	-0.01	-0.05	-0.03	-0.02	-0.08	-0.05	0.03
531	28	0.04	-0.41	-0.09	0.03	-0.23	-0.05	0.04
531	44	-0.02	-0.23	-0.05	-0.03	-0.41	-0.09	0.04
532	44	0.03	-0.78	-0.10	0.02	-0.44	-0.05	0.03
532	60	-0.01	-0.44	-0.05	-0.02	-0.78	-0.10	0.03
533	60	0.04	-1.10	-0.09	0.02	-0.62	-0.05	0.02
533	76	-0.01	-0.62	-0.05	-0.01	-1.10	-0.09	0.02
534	76	0.04	-1.37	-0.08	0.02	-0.77	-0.04	0.02
534	92	0.00	-0.77	-0.04	-0.01	-1.37	-0.08	0.02
535	92	0.04	-1.58	-0.06	0.02	-0.89	-0.03	0.03
535	108	-0.01	-0.89	-0.03	-0.01	-1.58	-0.06	0.03
536	108	0.03	-1.74	-0.04	0.02	-0.98	-0.02	0.02
536	124	-0.01	-0.98	-0.02	-0.02	-1.74	-0.04	0.02
537	124	0.02	-1.85	-0.02	0.01	-1.04	-0.01	0.02
537	140	-0.01	-1.04	-0.01	-0.02	-1.85	-0.02	0.02
538	140	0.00	-1.92	-0.01	0.00	-1.08	-0.01	0.01
538	156	-0.01	-1.08	-0.01	-0.02	-1.92	-0.01	0.01
539	156	-0.01	-1.09	0.00	-0.01	-1.94	0.00	0.00
539	172	-0.01	-1.09	0.00	-0.01	-1.94	0.00	0.00
540	172	-0.01	-1.08	0.01	-0.02	-1.92	0.01	0.01
540	188	0.00	-1.08	0.01	0.00	-1.08	0.01	0.01
541	188	-0.01	-1.04	0.01	-0.02	-1.85	0.02	0.02
541	204	0.02	-1.85	0.02	0.01	-1.04	0.01	0.02
542	204	-0.01	-0.98	0.02	-0.02	-1.74	0.04	0.02
542	220	0.03	-1.74	0.04	0.02	-0.98	0.02	0.02
543	220	-0.01	-0.89	0.03	-0.01	-1.58	0.06	0.02
543	236	0.04	-1.58	0.06	0.02	-0.89	0.03	0.02
544	236	0.00	-0.77	0.04	-0.01	-1.37	0.08	0.02
544	252	0.04	-1.37	0.08	0.02	-0.77	0.04	0.02
545	252	-0.01	-0.62	0.05	-0.01	-1.10	0.09	0.02
545	268	0.03	-1.10	0.09	0.02	-0.62	0.05	0.02

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
546	268	-0.01	-0.44	0.05	-0.02	-0.78	0.10	0.02
546	284	0.03	-0.78	0.10	0.02	-0.44	0.05	0.02
547	284	-0.02	-0.23	0.05	-0.03	-0.41	0.09	0.03
547	300	0.04	-0.41	0.09	0.02	-0.23	0.05	0.03
548	300	-0.01	-0.05	0.03	-0.02	-0.08	0.05	0.03
548	316	0.02	-0.08	0.05	0.01	-0.05	0.03	0.03
549	13	-0.01	-0.05	-0.13	-0.02	-0.08	-0.22	0.03
549	29	0.02	-0.08	-0.22	0.01	-0.05	-0.13	0.03
550	29	0.00	-0.23	-0.13	0.00	-0.23	-0.13	0.01
550	45	-0.01	-0.23	-0.13	-0.01	-0.41	-0.24	0.01
551	45	0.00	-0.79	-0.22	0.00	-0.44	-0.12	0.01
551	61	-0.01	-0.44	-0.12	-0.02	-0.79	-0.22	0.01
552	61	0.00	-0.63	-0.10	0.00	-1.12	-0.18	0.01
552	77	-0.01	-0.63	-0.10	-0.02	-1.12	-0.18	0.01
553	77	-0.01	-0.79	-0.08	-0.01	-1.40	-0.14	0.01
553	93	-0.01	-0.79	-0.08	-0.02	-1.40	-0.14	0.01
554	93	-0.01	-0.91	-0.05	-0.02	-1.61	-0.09	0.00
554	109	-0.01	-0.91	-0.05	-0.02	-1.61	-0.09	0.00
555	109	-0.01	-0.99	-0.03	-0.02	-1.77	-0.05	0.00
555	125	-0.01	-0.99	-0.03	-0.02	-1.77	-0.05	0.00
556	125	-0.01	-1.06	-0.01	-0.02	-1.88	-0.03	0.00
556	141	-0.01	-1.06	-0.01	-0.02	-1.88	-0.03	0.00
557	141	-0.01	-1.09	-0.01	-0.02	-1.94	-0.01	0.00
557	157	-0.01	-1.09	-0.01	-0.03	-1.94	-0.01	0.00
558	157	-0.01	-1.11	0.00	-0.02	-1.97	0.00	0.00
558	173	-0.01	-1.11	0.00	-0.02	-1.97	0.00	0.00
559	173	-0.01	-1.09	0.01	-0.03	-1.94	0.01	0.00
559	189	-0.01	-1.09	0.01	-0.02	-1.94	0.01	0.00
560	189	-0.01	-1.06	0.02	-0.02	-1.88	0.03	0.00
560	205	-0.01	-1.06	0.02	-0.02	-1.88	0.03	0.00
561	205	-0.01	-0.99	0.03	-0.02	-1.77	0.05	0.00
561	221	-0.01	-0.99	0.03	-0.02	-1.77	0.05	0.00
562	221	-0.01	-0.90	0.05	-0.02	-1.61	0.09	0.00
562	237	-0.01	-0.90	0.05	-0.02	-1.61	0.09	0.00
563	237	-0.01	-0.79	0.08	-0.02	-1.40	0.14	0.01
563	253	-0.01	-0.79	0.08	-0.01	-1.40	0.14	0.01
564	253	-0.01	-0.63	0.10	-0.02	-1.12	0.18	0.01
564	269	0.00	-0.63	0.10	0.00	-1.12	0.18	0.01
565	269	-0.01	-0.44	0.12	-0.02	-0.79	0.22	0.01
565	285	0.00	-0.79	0.22	0.00	-0.44	0.12	0.01
566	285	-0.01	-0.23	0.13	-0.01	-0.41	0.24	0.01
566	301	0.00	-0.41	0.24	0.00	-0.23	0.13	0.01
567	301	0.02	-0.08	0.22	0.01	-0.05	0.12	0.03
567	317	-0.01	-0.05	0.12	-0.02	-0.08	0.22	0.03
568	14	0.01	-0.06	-0.17	0.00	-0.03	-0.09	0.01
568	30	0.00	-0.03	-0.09	0.00	-0.06	-0.17	0.01

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
569	30	0.00	-0.21	-0.30	0.00	-0.12	-0.17	0.01
569	46	-0.01	-0.12	-0.17	-0.02	-0.21	-0.30	0.01
570	46	-0.02	-0.24	-0.17	-0.03	-0.42	-0.30	0.02
570	62	-0.05	-0.24	-0.17	-0.08	-0.42	-0.30	0.02
571	62	-0.04	-0.33	-0.13	-0.07	-0.59	-0.24	0.02
571	78	-0.07	-0.33	-0.13	-0.12	-0.59	-0.24	0.02
572	78	-0.05	-0.41	-0.09	-0.09	-0.73	-0.16	0.01
572	94	-0.06	-0.41	-0.09	-0.11	-0.73	-0.16	0.01
573	94	-0.04	-0.47	-0.05	-0.08	-0.83	-0.09	0.00
573	110	-0.04	-0.47	-0.05	-0.08	-0.83	-0.09	0.00
574	110	-0.03	-0.51	-0.03	-0.05	-0.91	-0.05	0.00
574	126	-0.03	-0.51	-0.03	-0.05	-0.91	-0.05	0.00
575	126	-0.02	-0.54	-0.01	-0.03	-0.96	-0.02	0.00
575	142	-0.01	-0.54	-0.01	-0.02	-0.96	-0.02	0.00
576	142	-0.01	-0.56	0.00	-0.02	-1.00	-0.01	0.00
576	158	-0.01	-0.56	0.00	-0.01	-1.00	-0.01	0.00
577	158	-0.01	-0.57	0.00	-0.01	-1.01	0.00	0.00
577	174	-0.01	-0.57	0.00	-0.01	-1.01	0.00	0.00
578	174	-0.01	-0.56	0.00	-0.01	-1.00	0.01	0.00
578	190	-0.01	-0.56	0.00	-0.02	-1.00	0.01	0.00
579	190	-0.01	-0.54	0.01	-0.02	-0.96	0.02	0.00
579	206	-0.02	-0.54	0.01	-0.03	-0.96	0.02	0.00
580	206	-0.03	-0.51	0.03	-0.05	-0.91	0.05	0.00
580	222	-0.03	-0.51	0.03	-0.05	-0.91	0.05	0.00
581	222	-0.04	-0.47	0.05	-0.08	-0.83	0.09	0.00
581	238	-0.04	-0.47	0.05	-0.08	-0.83	0.09	0.00
582	238	-0.06	-0.41	0.09	-0.11	-0.73	0.16	0.01
582	254	-0.05	-0.41	0.09	-0.09	-0.73	0.16	0.01
583	254	-0.07	-0.33	0.13	-0.12	-0.59	0.24	0.02
583	270	-0.04	-0.33	0.13	-0.07	-0.59	0.24	0.02
584	270	-0.05	-0.24	0.17	-0.08	-0.42	0.30	0.02
584	286	-0.02	-0.24	0.17	-0.03	-0.42	0.30	0.02
585	286	-0.01	-0.12	0.17	-0.02	-0.21	0.30	0.01
585	302	0.00	-0.21	0.30	0.00	-0.12	0.17	0.01
586	302	0.00	-0.03	0.09	0.00	-0.06	0.17	0.01
586	318	0.01	-0.06	0.17	0.00	-0.03	0.09	0.01
587	15	0.04	-0.03	-0.16	0.02	-0.02	-0.09	0.00
587	31	0.04	-0.03	-0.16	0.02	-0.02	-0.09	0.00
588	31	0.16	-0.01	-0.27	0.09	-0.01	-0.15	0.14
588	47	-0.08	-0.01	-0.15	-0.14	-0.01	-0.27	0.14
589	47	0.02	-0.04	-0.23	0.01	-0.02	-0.13	0.15
589	63	-0.18	-0.02	-0.13	-0.32	-0.04	-0.23	0.15
590	63	-0.07	-0.03	-0.07	-0.13	-0.05	-0.13	0.09
590	79	-0.18	-0.03	-0.07	-0.32	-0.05	-0.13	0.09
591	79	-0.09	-0.03	-0.03	-0.17	-0.04	-0.05	0.03
591	95	-0.13	-0.03	-0.03	-0.23	-0.04	-0.05	0.03

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
592	95	-0.08	-0.02	-0.01	-0.13	-0.04	-0.01	0.00
592	111	-0.08	-0.02	-0.01	-0.14	-0.04	-0.01	0.00
593	111	-0.05	-0.02	0.00	-0.09	-0.04	0.00	0.01
593	127	-0.04	-0.02	0.00	-0.07	-0.04	0.00	0.01
594	127	-0.03	-0.02	0.00	-0.05	-0.04	0.00	0.01
594	143	-0.02	-0.02	0.00	-0.03	-0.04	0.00	0.01
595	143	-0.01	-0.02	0.00	-0.02	-0.04	0.00	0.00
595	159	-0.01	-0.02	0.00	-0.02	-0.04	0.00	0.00
596	159	-0.01	-0.02	0.00	-0.01	-0.04	0.00	0.00
596	175	-0.01	-0.02	0.00	-0.01	-0.04	0.00	0.00
597	175	-0.01	-0.02	0.00	-0.02	-0.04	0.00	0.00
597	191	-0.01	-0.02	0.00	-0.02	-0.04	0.00	0.00
598	191	-0.02	-0.02	0.00	-0.03	-0.04	0.00	0.01
598	207	-0.03	-0.02	0.00	-0.05	-0.04	0.00	0.01
599	207	-0.04	-0.02	0.00	-0.07	-0.04	0.00	0.01
599	223	-0.05	-0.02	0.00	-0.09	-0.04	0.00	0.01
600	223	-0.08	-0.02	0.01	-0.14	-0.04	0.01	0.00
600	239	-0.07	-0.02	0.01	-0.13	-0.04	0.01	0.00
601	239	-0.13	-0.03	0.03	-0.23	-0.04	0.05	0.03
601	255	-0.09	-0.03	0.03	-0.17	-0.04	0.05	0.03
602	255	-0.18	-0.03	0.07	-0.32	-0.05	0.13	0.09
602	271	-0.07	-0.03	0.07	-0.13	-0.05	0.13	0.09
603	271	-0.18	-0.02	0.13	-0.32	-0.04	0.23	0.15
603	287	0.02	-0.04	0.23	0.01	-0.02	0.13	0.15
604	287	-0.08	-0.01	0.15	-0.14	-0.01	0.27	0.14
604	303	0.16	-0.01	0.27	0.09	-0.01	0.15	0.14
605	303	0.04	-0.03	0.16	0.02	-0.02	0.09	0.00
605	319	0.04	-0.03	0.16	0.02	-0.02	0.09	0.00
606	16	0.20	0.00	-0.04	0.11	0.00	-0.02	0.22
606	32	-0.05	0.00	-0.02	-0.10	0.00	-0.04	0.22
607	32	0.46	0.18	0.05	0.26	0.10	0.03	0.47
607	48	-0.31	0.10	0.03	-0.56	0.18	0.05	0.47
608	48	-0.02	0.21	0.10	-0.04	0.37	0.18	0.23
608	64	-0.31	0.21	0.10	-0.55	0.37	0.18	0.23
609	64	-0.13	0.30	0.11	-0.23	0.53	0.20	0.07
609	80	-0.21	0.30	0.11	-0.37	0.53	0.20	0.07
610	80	-0.12	0.37	0.08	-0.21	0.66	0.15	0.00
610	96	-0.12	0.37	0.08	-0.21	0.66	0.15	0.00
611	96	-0.08	0.43	0.05	-0.14	0.77	0.09	0.02
611	112	-0.06	0.43	0.05	-0.10	0.77	0.09	0.02
612	112	-0.04	0.47	0.03	-0.08	0.84	0.05	0.02
612	128	-0.02	0.47	0.03	-0.04	0.84	0.05	0.02
613	128	-0.02	0.50	0.01	-0.04	0.89	0.02	0.01
613	144	-0.01	0.50	0.01	-0.02	0.89	0.02	0.01
614	144	-0.01	0.52	0.00	-0.02	0.93	0.01	0.00
614	160	0.00	0.52	0.00	0.00	0.93	0.01	0.00

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
615	160	0.00	0.53	0.00	-0.01	0.94	0.00	0.00
615	176	0.00	0.53	0.00	-0.01	0.94	0.00	0.00
616	176	0.00	0.52	0.00	0.00	0.93	-0.01	0.00
616	192	-0.01	0.52	0.00	-0.02	0.93	-0.01	0.00
617	192	-0.01	0.50	-0.01	-0.02	0.89	-0.02	0.01
617	208	-0.02	0.50	-0.01	-0.04	0.89	-0.02	0.01
618	208	-0.02	0.47	-0.03	-0.04	0.84	-0.05	0.02
618	224	-0.04	0.47	-0.03	-0.08	0.84	-0.05	0.02
619	224	-0.06	0.43	-0.05	-0.10	0.76	-0.09	0.02
619	240	-0.08	0.43	-0.05	-0.14	0.76	-0.09	0.02
620	240	-0.12	0.37	-0.08	-0.21	0.66	-0.15	0.00
620	256	-0.12	0.37	-0.08	-0.21	0.66	-0.15	0.00
621	256	-0.21	0.30	-0.11	-0.37	0.53	-0.20	0.07
621	272	-0.13	0.30	-0.11	-0.23	0.53	-0.20	0.07
622	272	-0.31	0.21	-0.10	-0.55	0.37	-0.18	0.23
622	288	-0.02	0.21	-0.10	-0.04	0.37	-0.18	0.23
623	288	-0.31	0.10	-0.03	-0.56	0.18	-0.05	0.47
623	304	0.46	0.18	-0.05	0.26	0.10	-0.03	0.47
624	304	-0.05	0.00	0.02	-0.10	0.00	0.03	0.22
624	320	0.20	0.00	0.03	0.11	0.00	0.02	0.22

Esfuerzos por peso propio de las tierras

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
1	1	-0.46	-0.72	-1.96	-0.82	-1.29	-3.49	0.57
1	2	0.33	-1.29	-3.49	0.19	-0.72	-1.96	0.57
2	2	5.91	-1.42	-1.11	3.32	-0.80	-0.63	0.50
2	3	7.50	-1.42	-1.11	4.22	-0.80	-0.63	0.50
3	3	6.78	-1.58	1.57	3.82	-0.89	0.89	0.13
3	4	6.37	-1.58	1.57	3.58	-0.89	0.89	0.13
4	4	-0.05	-1.03	2.04	-0.08	-1.84	3.62	2.17
4	5	4.32	-1.84	3.62	2.43	-1.03	2.04	2.17
5	5	1.86	2.32	0.63	1.04	1.30	0.36	3.00
5	6	-2.11	1.30	0.36	-3.74	2.32	0.63	1.64
6	6	-1.95	3.78	-0.14	-3.47	6.71	-0.25	0.82
6	7	-3.15	3.78	-0.14	-5.60	6.71	-0.25	0.82
7	7	-2.68	3.71	-0.29	-4.77	6.60	-0.51	0.88
7	8	-3.97	3.71	-0.29	-7.05	6.60	-0.51	0.88
8	8	-3.11	2.32	-0.46	-5.53	4.12	-0.81	0.78
8	9	-4.25	2.32	-0.46	-7.56	4.12	-0.81	0.78
9	9	-3.71	0.21	-0.48	-6.60	0.37	-0.86	3.67
9	10	0.87	0.37	-0.86	0.49	0.21	-0.48	3.67
10	10	2.20	0.21	0.06	1.24	0.12	0.03	3.72
10	11	11.80	0.21	0.06	6.64	0.12	0.03	1.65
11	11	10.82	0.05	0.93	6.09	0.03	0.52	1.58
11	12	8.59	0.05	0.93	4.83	0.03	0.52	3.21
12	12	6.40	-0.17	0.97	3.60	-0.10	0.54	2.92
12	13	-1.84	-0.10	0.54	-3.28	-0.17	0.97	6.68
13	13	-2.25	4.56	0.19	-3.99	8.11	0.34	0.41
13	14	-2.85	4.56	0.19	-5.06	8.11	0.34	0.41
14	14	-2.98	5.47	-0.02	-5.30	9.72	-0.03	0.30
14	15	-3.42	5.47	-0.02	-6.07	9.72	-0.03	0.30
15	15	-3.23	5.43	-0.15	-5.75	9.65	-0.26	0.35
15	16	-3.75	5.43	-0.15	-6.67	9.65	-0.26	0.35
16	16	-3.28	3.04	-0.55	-5.83	5.41	-0.99	0.46
16	1	-1.85	3.04	-0.55	-3.29	5.41	-0.99	1.82
17	17	-2.74	-0.72	-1.05	-4.87	-1.28	-1.87	5.00
17	18	5.31	-1.28	-1.87	2.99	-0.72	-1.05	5.01
18	18	5.67	-1.42	-0.69	3.19	-0.80	-0.39	1.00
18	19	8.86	-1.42	-0.70	4.98	-0.80	-0.39	1.00
19	19	8.75	-1.57	0.99	4.92	-0.88	0.55	1.06
19	20	5.39	-1.57	0.99	3.03	-0.88	0.56	1.06
20	20	4.91	-1.83	1.97	2.76	-1.03	1.11	2.48
20	21	-0.08	-1.03	1.11	-0.14	-1.83	1.97	2.48
21	21	-0.03	2.56	0.25	-0.06	4.55	0.44	2.24
21	22	-2.07	2.56	0.25	-3.68	4.55	0.44	0.88
22	22	-2.13	3.82	-0.09	-3.79	6.79	-0.16	0.64
22	23	-3.06	3.82	-0.09	-5.45	6.79	-0.16	0.64
23	23	-2.99	3.74	-0.20	-5.32	6.65	-0.35	0.48
23	24	-3.70	3.74	-0.20	-6.58	6.65	-0.35	0.48
24	24	-3.53	2.50	-0.31	-6.27	4.45	-0.56	0.37
24	25	-4.07	2.50	-0.31	-7.23	4.45	-0.56	0.37
25	25	-4.02	0.20	-0.37	-7.14	0.36	-0.66	4.47
25	26	1.95	0.36	-0.66	1.10	0.20	-0.37	4.47
26	26	2.37	0.20	0.04	1.33	0.11	0.02	3.76
26	27	11.99	0.20	0.04	6.75	0.11	0.02	1.62
27	27	11.68	0.05	0.65	6.57	0.03	0.37	1.15
27	28	7.87	0.05	0.65	4.43	0.03	0.37	3.76
28	28	7.41	-0.18	0.67	4.17	-0.10	0.38	3.84
28	29	-2.37	-0.10	0.37	-4.21	-0.18	0.67	7.68
29	29	-2.39	4.78	0.14	-4.25	8.50	0.24	0.41
29	30	-2.98	4.78	0.14	-5.30	8.50	0.24	0.41
30	30	-3.03	5.49	-0.01	-5.39	9.77	-0.02	0.28
30	31	-3.44	5.49	-0.01	-6.12	9.77	-0.02	0.28
31	31	-3.41	5.46	-0.11	-6.07	9.71	-0.19	0.14
31	32	-3.61	5.46	-0.11	-6.42	9.71	-0.19	0.14
32	32	-3.44	4.33	-0.38	-6.12	7.70	-0.67	0.02
32	17	-2.66	4.33	-0.38	-4.73	7.70	-0.67	1.38
33	33	-3.56	-0.71	-0.61	-6.34	-1.26	-1.09	6.54
33	34	6.97	-1.26	-1.09	3.92	-0.71	-0.61	6.55

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
34	34	6.39	-1.41	-0.50	3.60	-0.80	-0.28	1.27
34	35	10.43	-1.42	-0.50	5.87	-0.80	-0.28	1.27
35	35	10.44	-1.56	0.76	5.87	-0.88	0.43	1.50
35	36	5.69	-1.56	0.76	3.20	-0.88	0.43	1.51
36	36	6.24	-1.76	1.23	3.51	-0.99	0.69	4.10
36	37	-1.18	-0.99	0.69	-2.10	-1.76	1.23	4.11
37	37	-1.10	3.76	0.27	-1.96	6.68	0.48	1.69
37	38	-2.33	3.76	0.27	-4.14	6.68	0.48	0.32
38	38	-2.42	3.93	-0.07	-4.30	6.98	-0.12	0.47
38	39	-3.11	3.93	-0.07	-5.54	6.98	-0.12	0.47
39	39	-3.12	3.83	-0.21	-5.55	6.82	-0.38	0.42
39	40	-3.74	3.83	-0.21	-6.65	6.82	-0.38	0.42
40	40	-3.68	3.03	-0.34	-6.55	5.39	-0.60	0.41
40	41	-4.29	3.03	-0.34	-7.62	5.39	-0.60	0.41
41	41	-4.29	0.19	-0.43	-7.62	0.34	-0.76	5.42
41	42	2.71	0.34	-0.76	1.52	0.19	-0.43	4.39
42	42	2.74	0.19	0.00	1.54	0.10	0.00	4.80
42	43	12.19	0.18	0.00	6.86	0.10	0.00	0.96
43	43	12.25	0.04	0.70	6.89	0.02	0.40	1.03
43	44	7.72	0.04	0.70	4.34	0.02	0.40	4.10
44	44	7.59	-0.16	0.74	4.27	-0.09	0.41	4.16
44	45	-2.71	-0.09	0.41	-4.82	-0.16	0.74	8.13
45	45	-2.72	5.10	0.17	-4.84	9.06	0.31	0.29
45	46	-3.15	5.10	0.17	-5.60	9.06	0.31	0.29
46	46	-3.17	5.57	-0.01	-5.64	9.89	-0.02	0.24
46	47	-3.53	5.57	-0.01	-6.27	9.89	-0.02	0.24
47	47	-3.49	5.55	-0.14	-6.21	9.87	-0.25	0.19
47	48	-3.78	5.55	-0.14	-6.71	9.87	-0.25	0.19
48	48	-3.67	5.48	-0.38	-6.53	9.74	-0.67	0.37
48	33	-3.46	5.48	-0.38	-6.16	9.74	-0.67	0.99
49	49	-3.72	-0.71	-0.37	-6.61	-1.26	-0.66	6.89
49	50	7.41	-1.26	-0.67	4.17	-0.71	-0.37	6.90
50	50	6.97	-1.41	-0.28	3.92	-0.80	-0.15	1.42
50	51	11.50	-1.42	-0.28	6.47	-0.80	-0.16	1.42
51	51	11.51	-1.54	0.53	6.47	-0.87	0.30	1.74
51	52	6.00	-1.55	0.53	3.38	-0.87	0.30	1.75
52	52	6.43	-1.71	0.83	3.61	-0.96	0.47	4.56
52	53	-1.60	-0.96	0.47	-2.85	-1.71	0.84	4.57
53	53	-1.56	4.09	0.24	-2.77	7.27	0.42	1.62
53	54	-2.69	4.09	0.24	-4.78	7.27	0.42	0.26
54	54	-2.72	4.05	-0.04	-4.84	7.21	-0.06	0.36
54	55	-3.25	4.05	-0.04	-5.78	7.21	-0.06	0.36
55	55	-3.27	3.96	-0.21	-5.82	7.03	-0.38	0.39
55	56	-3.84	3.96	-0.21	-6.82	7.03	-0.38	0.39
56	56	-3.83	3.33	-0.34	-6.80	5.92	-0.61	0.41
56	57	-4.43	3.33	-0.34	-7.87	5.92	-0.61	0.41

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
57	57	-4.44	0.18	-0.38	-7.89	0.32	-0.68	5.93
57	58	3.43	0.32	-0.68	1.93	0.18	-0.38	4.84
58	58	3.40	0.18	-0.06	1.91	0.10	-0.04	4.91
58	59	12.85	0.18	-0.06	7.23	0.10	-0.04	0.86
59	59	12.91	0.05	0.68	7.26	0.03	0.38	0.92
59	60	7.70	0.05	0.68	4.33	0.03	0.38	4.42
60	60	7.67	-0.12	0.77	4.31	-0.07	0.44	4.42
60	61	-3.04	-0.07	0.43	-5.41	-0.12	0.77	8.53
61	61	-3.05	5.35	0.19	-5.42	9.50	0.34	0.21
61	62	-3.36	5.35	0.19	-5.97	9.50	0.34	0.21
62	62	-3.36	5.66	-0.02	-5.97	10.06	-0.04	0.21
62	63	-3.66	5.66	-0.02	-6.51	10.06	-0.04	0.21
63	63	-3.62	5.65	-0.19	-6.44	10.05	-0.33	0.23
63	64	-3.96	5.65	-0.19	-7.04	10.05	-0.33	0.23
64	64	-3.92	5.74	-0.34	-6.98	10.21	-0.60	0.34
64	49	-3.66	5.74	-0.34	-6.51	10.21	-0.60	1.03
65	65	-3.68	-0.72	-0.26	-6.55	-1.29	-0.47	7.00
65	66	7.69	-1.29	-0.47	4.33	-0.72	-0.26	7.01
66	66	7.47	-1.43	-0.14	4.20	-0.80	-0.08	1.47
66	67	12.15	-1.43	-0.15	6.84	-0.80	-0.08	1.47
67	67	12.16	-1.54	0.41	6.84	-0.87	0.23	1.86
67	68	6.27	-1.54	0.41	3.53	-0.87	0.23	1.87
68	68	6.48	-1.67	0.65	3.65	-0.94	0.37	4.80
68	69	-1.84	-0.94	0.37	-3.27	-1.67	0.65	4.80
69	69	-1.82	4.25	0.20	-3.23	7.56	0.36	1.64
69	70	-2.98	4.25	0.20	-5.30	7.56	0.36	0.28
70	70	-2.97	4.19	-0.02	-5.28	7.45	-0.04	0.32
70	71	-3.44	4.19	-0.02	-6.11	7.45	-0.04	0.32
71	71	-3.45	4.10	-0.20	-6.14	7.29	-0.36	0.35
71	72	-3.96	4.10	-0.20	-7.04	7.29	-0.36	0.35
72	72	-3.97	3.52	-0.33	-7.06	6.26	-0.59	0.36
72	73	-4.50	3.52	-0.33	-7.99	6.26	-0.59	0.36
73	73	-4.50	0.17	-0.36	-8.00	0.30	-0.63	6.26
73	74	3.93	0.30	-0.63	2.21	0.17	-0.36	5.09
74	74	3.89	0.18	-0.08	2.19	0.10	-0.04	5.08
74	75	13.56	0.18	-0.08	7.63	0.10	-0.04	0.82
75	75	13.58	0.06	0.65	7.64	0.04	0.36	0.84
75	76	7.77	0.06	0.65	4.37	0.04	0.36	4.71
76	76	7.78	-0.08	0.77	4.38	-0.05	0.44	4.70
76	77	-3.38	-0.05	0.44	-6.01	-0.08	0.77	8.94
77	77	-3.37	5.59	0.19	-6.00	9.95	0.34	0.15
77	78	-3.60	5.59	0.19	-6.39	9.95	0.34	0.15
78	78	-3.58	5.76	-0.04	-6.37	10.24	-0.07	0.17
78	79	-3.82	5.76	-0.04	-6.80	10.24	-0.07	0.17
79	79	-3.80	5.75	-0.21	-6.75	10.22	-0.37	0.19
79	80	-4.08	5.75	-0.21	-7.25	10.22	-0.37	0.19

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
80	80	-4.08	5.83	-0.30	-7.25	10.37	-0.53	0.23
80	65	-3.65	5.83	-0.30	-6.50	10.37	-0.53	1.14
81	81	-3.61	-0.75	-0.22	-6.42	-1.33	-0.38	7.09
81	82	8.00	-1.33	-0.39	4.50	-0.75	-0.22	7.10
82	82	7.91	-1.44	-0.08	4.45	-0.81	-0.05	1.48
82	83	12.62	-1.45	-0.08	7.10	-0.81	-0.05	1.48
83	83	12.62	-1.54	0.37	7.10	-0.87	0.21	1.94
83	84	6.48	-1.54	0.37	3.65	-0.87	0.21	1.95
84	84	6.57	-1.65	0.57	3.70	-0.93	0.32	5.01
84	85	-2.04	-0.93	0.32	-3.62	-1.65	0.57	5.02
85	85	-2.03	4.39	0.17	-3.60	7.81	0.31	1.66
85	86	-3.20	4.39	0.17	-5.70	7.81	0.31	0.29
86	86	-3.19	4.34	-0.02	-5.66	7.71	-0.04	0.30
86	87	-3.62	4.34	-0.02	-6.44	7.71	-0.04	0.30
87	87	-3.63	4.26	-0.19	-6.45	7.58	-0.34	0.31
87	88	-4.09	4.26	-0.19	-7.27	7.58	-0.34	0.31
88	88	-4.11	3.75	-0.32	-7.31	6.67	-0.57	0.31
88	89	-4.56	3.75	-0.32	-8.11	6.67	-0.57	0.31
89	89	-4.56	0.16	-0.36	-8.11	0.28	-0.63	6.59
89	90	4.45	0.28	-0.63	2.50	0.16	-0.36	5.36
90	90	4.38	0.18	-0.06	2.46	0.10	-0.03	5.24
90	91	14.23	0.18	-0.06	8.00	0.10	-0.03	0.77
91	91	14.22	0.08	0.63	8.00	0.05	0.35	0.78
91	92	7.87	0.08	0.63	4.43	0.05	0.35	4.99
92	92	7.89	-0.04	0.76	4.44	-0.02	0.43	4.98
92	93	-3.71	-0.02	0.43	-6.60	-0.04	0.76	9.36
93	93	-3.70	5.84	0.18	-6.58	10.39	0.32	0.10
93	94	-3.84	5.84	0.18	-6.83	10.39	0.32	0.10
94	94	-3.83	5.87	-0.06	-6.80	10.43	-0.10	0.11
94	95	-3.98	5.87	-0.06	-7.08	10.43	-0.10	0.11
95	95	-3.97	5.84	-0.21	-7.06	10.39	-0.37	0.12
95	96	-4.15	5.84	-0.21	-7.38	10.39	-0.37	0.12
96	96	-4.16	5.90	-0.27	-7.40	10.48	-0.49	0.13
96	81	-3.60	5.90	-0.27	-6.39	10.48	-0.49	1.24
97	97	-3.53	-0.77	-0.20	-6.28	-1.37	-0.35	7.19
97	98	8.34	-1.37	-0.35	4.69	-0.77	-0.20	7.20
98	98	8.30	-1.47	-0.06	4.67	-0.83	-0.03	1.48
98	99	13.03	-1.47	-0.06	7.33	-0.83	-0.03	1.49
99	99	13.03	-1.54	0.37	7.33	-0.87	0.21	2.02
99	100	6.65	-1.55	0.37	3.74	-0.87	0.21	2.02
100	100	6.68	-1.62	0.54	3.76	-0.91	0.30	5.24
100	101	-2.23	-0.91	0.30	-3.97	-1.63	0.54	5.24
101	101	-2.23	4.54	0.16	-3.96	8.07	0.28	1.65
101	102	-3.40	4.54	0.16	-6.04	8.07	0.28	0.28
102	102	-3.38	4.49	-0.03	-6.01	7.98	-0.05	0.28
102	103	-3.79	4.49	-0.03	-6.75	7.98	-0.05	0.28
103	103	-3.79	4.44	-0.18	-6.74	7.89	-0.33	0.29
103	104	-4.22	4.44	-0.18	-9.50	7.89	-0.33	0.29
104	104	-4.23	4.49	-0.31	-7.52	7.98	-0.55	0.31
104	105	-4.68	4.49	-0.31	-8.32	7.98	-0.55	0.31
105	105	-4.69	0.15	-0.34	-8.34	0.26	-0.61	7.61
105	106	4.85	0.26	-0.61	2.73	0.15	-0.34	5.28
106	106	4.85	0.18	-0.06	2.73	0.10	-0.03	5.40
106	107	14.84	0.18	-0.06	8.34	0.10	-0.03	0.71
107	107	14.84	0.11	0.61	8.35	0.06	0.34	0.72
107	108	7.98	0.11	0.61	4.49	0.06	0.34	5.25
108	108	8.00	0.01	0.74	4.50	0.01	0.41	5.25
108	109	-4.04	0.01	0.41	-7.19	0.01	0.74	9.77
109	109	-4.04	6.09	0.17	-7.18	10.83	0.30	0.04
109	110	-4.09	6.09	0.17	-7.27	10.83	0.30	0.04
110	110	-4.08	5.98	-0.06	-7.25	10.63	-0.11	0.04
110	111	-4.14	5.98	-0.06	-7.36	10.63	-0.11	0.04
111	111	-4.13	5.93	-0.21	-7.35	10.55	-0.37	0.05
111	112	-4.20	5.93	-0.21	-7.47	10.55	-0.37	0.05
112	112	-4.22	5.96	-0.26	-7.50	10.60	-0.46	0.05
112	97	-3.53	5.96	-0.26	-6.27	10.60	-0.46	1.32
113	113	-3.47	-0.80	-0.19	-6.16	-1.42	-0.34	7.30
113	114	8.69	-1.43	-0.34	4.89	-0.80	-0.19	7.31
114	114	8.67	-1.49	-0.04	4.88	-0.84	-0.02	1.49
114	115	13.43	-1.50	-0.04	7.55	-0.84	-0.02	1.50
115	115	13.42	-1.55	0.38	7.55	-0.87	0.21	2.10
115	116	6.79	-1.55	0.38	3.82	-0.87	0.21	2.10
116	116	6.80	-1.60	0.53	3.83	-0.90	0.30	5.48
116	117	-2.44	-0.90	0.30	-4.34	-1.61	0.53	5.48
117	117	-2.44	4.69	0.14	-4.33	8.34	0.26	1.63
117	118	-3.58	4.69	0.14	-6.37	8.34	0.26	0.27
118	118	-3.57	4.64	-0.03	-6.34	8.25	-0.06	0.26
118	119	-3.95	4.64	-0.03	-7.03	8.25	-0.06	0.26
119	119	-3.95	4.62	-0.18	-7.02	8.21	-0.32	0.27
119	120	-4.34	4.62	-0.18	-7.71	8.21	-0.32	0.27
120	120	-4.35	4.76	-0.29	-7.73	8.46	-0.52	0.28
120	121	-4.76	4.76	-0.29	-8.46	8.46	-0.52	0.28
121	121	-4.77	0.14	-0.31	-8.48	0.25	-0.56	7.99
121	122	5.35	0.25	-0.56	3.01	0.14	-0.31	5.53
122	122	5.31	0.19	-0.07	2.99	0.11	-0.04	5.55
122	123	15.44	0.19	-0.07	8.68	0.11	-0.04	0.65
123	123	15.45	0.13	0.58	8.69	0.08	0.33	0.66
123	124	8.07	0.13	0.58	4.54	0.08	0.33	5.52
124	124	8.09	0.06	0.72	4.55	0.03	0.40	5.53
124	125	-4.38	0.03	0.40	-7.78	0.06	0.71	10.18
125	125	-4.37	6.34	0.16	-7.77	11.27	0.28	0.03
125	126	-4.33	6.34	0.16	-7.70	11.27	0.28	0.03
126	126	-4.32	6.09	-0.07	-7.68	10.82	-0.12	0.03
126	127	-4.28	6.09	-0.07	-7.62	10.82	-0.12	0.03

Barra Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
127 127	-4.28	6.02	-0.21	-7.61	10.70	-0.37	0.02
127 128	-4.25	6.02	-0.21	-7.55	10.70	-0.37	0.02
128 128	-4.26	6.04	-0.25	-7.57	10.73	-0.44	0.03
128 113	-3.46	6.04	-0.25	-6.15	10.73	-0.44	1.39
129 129	-3.40	-0.83	-0.18	-6.04	-1.48	-0.33	7.41
129 130	9.04	-1.48	-0.33	5.08	-0.83	-0.18	7.42
130 130	9.03	-1.52	-0.02	5.08	-0.86	-0.01	1.51
130 131	13.82	-1.52	-0.02	7.78	-0.86	-0.01	1.51
131 131	13.82	-1.55	0.39	7.77	-0.87	0.22	2.18
131 132	6.92	-1.55	0.39	3.89	-0.87	0.22	2.19
132 132	6.92	-1.58	0.53	3.89	-0.89	0.30	5.72
132 133	-2.66	-0.89	0.30	-4.73	-1.58	0.53	5.73
133 133	-2.66	4.85	0.13	-4.72	8.61	0.24	1.61
133 134	-3.77	4.85	0.13	-6.69	8.61	0.24	0.24
134 134	-3.75	4.79	-0.04	-6.67	8.52	-0.07	0.24
134 135	-4.10	4.79	-0.04	-7.29	8.52	-0.07	0.24
135 135	-4.09	4.78	-0.18	-7.28	8.51	-0.32	0.24
135 136	-4.45	4.78	-0.18	-7.90	8.51	-0.32	0.24
136 136	-4.45	4.96	-0.28	-7.92	8.82	-0.50	0.25
136 137	-4.81	4.96	-0.28	-8.56	8.82	-0.50	0.25
137 137	-4.82	0.13	-0.29	-8.57	0.22	-0.52	8.31
137 138	5.77	0.22	-0.52	3.24	0.13	-0.29	5.71
138 138	5.73	0.19	-0.07	3.22	0.11	-0.04	5.71
138 139	16.05	0.19	-0.07	9.03	0.11	-0.04	0.60
139 139	16.04	0.16	0.55	9.03	0.09	0.31	0.61
139 140	8.16	0.16	0.55	4.59	0.09	0.31	5.79
140 140	8.18	0.11	0.70	4.60	0.06	0.39	5.79
140 141	-4.71	0.06	0.39	-8.37	0.11	0.69	10.58
141 141	-4.70	6.58	0.15	-8.36	11.70	0.27	0.09
141 142	-4.57	6.58	0.15	-8.13	11.70	0.27	0.09
142 142	-4.56	6.19	-0.07	-8.10	11.00	-0.13	0.09
142 143	-4.42	6.19	-0.07	-7.86	11.00	-0.13	0.09
143 143	-4.42	6.10	-0.20	-7.86	10.84	-0.36	0.09
143 144	-4.28	6.10	-0.20	-7.62	10.84	-0.36	0.09
144 144	-4.29	6.11	-0.24	-7.63	10.86	-0.43	0.10
144 129	-3.40	6.11	-0.24	-6.04	10.86	-0.43	1.46
145 145	-3.34	-0.86	-0.18	-5.93	-1.53	-0.32	7.53
145 146	9.39	-1.53	-0.32	5.28	-0.86	-0.18	7.54
146 146	9.38	-1.54	0.00	5.28	-0.87	0.00	1.52
146 147	14.22	-1.55	0.00	8.00	-0.87	0.00	1.52
147 147	14.22	-1.55	0.40	8.00	-0.87	0.23	2.27
147 148	7.03	-1.56	0.40	3.95	-0.88	0.23	2.28
148 148	7.03	-1.56	0.52	3.96	-0.88	0.29	5.98
148 149	-2.88	-0.88	0.30	-5.13	-1.56	0.52	5.99
149 149	-2.88	5.01	0.13	-5.12	8.90	0.23	1.58
149 150	-3.95	5.01	0.13	-7.02	8.90	0.23	0.21

Barra Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
150 150	-3.93	4.94	-0.05	-6.99	8.77	-0.09	0.21
150 151	-4.24	4.94	-0.05	-7.54	8.77	-0.09	0.21
151 151	-4.23	4.94	-0.18	-7.53	8.79	-0.32	0.21
151 152	-4.54	4.94	-0.18	-8.07	8.79	-0.32	0.21
152 152	-4.55	5.15	-0.27	-8.09	9.15	-0.48	0.21
152 153	-4.86	5.15	-0.27	-8.64	9.15	-0.48	0.21
153 153	-4.87	0.11	-0.28	-8.65	0.20	-0.49	8.61
153 154	6.16	0.20	-0.49	3.47	0.11	-0.28	5.87
154 154	6.12	0.20	-0.07	3.44	0.11	-0.04	5.88
154 155	16.63	0.20	-0.07	9.35	0.11	-0.04	0.56
155 155	16.62	0.19	0.53	9.35	0.11	0.30	0.56
155 156	8.24	0.19	0.53	4.63	0.11	0.30	6.05
156 156	8.27	0.17	0.67	4.65	0.10	0.38	6.06
156 157	-5.04	0.10	0.38	-8.96	0.17	0.67	10.98
157 157	-5.04	6.82	0.14	-8.95	12.13	0.25	0.16
157 158	-4.80	6.82	0.14	-8.54	12.13	0.25	0.16
158 158	-4.79	6.27	-0.08	-8.51	11.15	-0.14	0.16
158 159	-4.55	6.27	-0.08	-8.09	11.15	-0.14	0.16
159 159	-4.55	6.17	-0.20	-8.09	10.97	-0.36	0.16
159 160	-4.32	6.17	-0.20	-7.67	10.97	-0.36	0.16
160 160	-4.33	6.19	-0.24	-7.69	11.00	-0.42	0.16
160 145	-3.33	6.19	-0.24	-5.93	11.00	-0.42	1.53
161 161	-3.28	-0.89	-0.17	-5.83	-1.57	-0.30	7.65
161 162	9.74	-1.58	-0.30	5.48	-0.89	-0.17	7.66
162 162	9.73	-1.57	0.02	5.47	-0.88	0.01	1.53
162 163	14.62	-1.57	0.02	8.22	-0.88	0.01	1.54
163 163	14.61	-1.55	0.41	8.22	-0.87	0.23	2.37
163 164	7.13	-1.55	0.41	4.01	-0.87	0.23	2.37
164 164	7.14	-1.53	0.52	4.02	-0.86	0.29	6.23
164 165	-3.12	-0.86	0.29	-5.54	-1.53	0.52	6.24
165 165	-3.11	5.17	0.12	-5.54	9.19	0.21	1.55
165 166	-4.13	5.17	0.12	-7.35	9.19	0.21	0.18
166 166	-4.11	5.07	-0.06	-7.31	9.02	-0.10	0.18
166 167	-4.37	5.07	-0.06	-7.77	9.02	-0.10	0.18
167 167	-4.36	5.09	-0.18	-7.76	9.06	-0.33	0.18
167 168	-4.62	5.09	-0.18	-8.22	9.06	-0.33	0.18
168 168	-4.63	5.33	-0.26	-8.24	9.48	-0.47	0.18
168 169	-4.90	5.33	-0.26	-8.71	9.48	-0.47	0.18
169 169	-4.90	0.10	-0.26	-8.72	0.18	-0.46	8.90
169 170	6.56	0.18	-0.46	3.69	0.10	-0.26	6.03
170 170	6.50	0.20	-0.07	3.66	0.11	-0.04	6.04
170 171	17.19	0.20	-0.07	9.67	0.11	-0.04	0.51
171 171	17.17	0.21	0.50	9.66	0.12	0.28	0.51
171 172	8.30	0.21	0.50	4.67	0.12	0.28	6.31
172 172	8.35	0.22	0.64	4.70	0.13	0.36	6.32
172 173	-5.38	0.13	0.36	-9.56	0.22	0.64	11.38

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
173	173	-5.37	7.07	0.13	-9.54	12.56	0.22	0.23
173	174	-5.03	7.07	0.13	-8.95	12.56	0.22	0.23
174	174	-5.01	6.33	-0.08	-8.91	11.26	-0.15	0.23
174	175	-4.67	6.33	-0.08	-8.31	11.26	-0.15	0.23
175	175	-4.68	6.23	-0.20	-8.31	11.07	-0.35	0.23
175	176	-4.34	6.23	-0.20	-7.72	11.07	-0.35	0.23
176	176	-4.36	6.27	-0.23	-7.76	11.14	-0.41	0.23
176	161	-3.27	6.27	-0.23	-5.82	11.14	-0.41	1.59
177	177	-3.22	-0.91	-0.16	-5.73	-1.62	-0.28	7.77
177	178	10.09	-1.62	-0.28	5.67	-0.91	-0.16	7.78
178	178	10.06	-1.58	0.04	5.66	-0.89	0.02	1.55
178	179	15.01	-1.59	0.04	8.44	-0.89	0.02	1.55
179	179	15.00	-1.55	0.43	8.44	-0.87	0.24	2.46
179	180	7.23	-1.55	0.43	4.07	-0.87	0.24	2.46
180	180	7.24	-1.50	0.51	4.07	-0.84	0.29	6.50
180	181	-3.36	-0.85	0.29	-5.97	-1.50	0.51	6.50
181	181	-3.35	5.33	0.11	-5.96	9.48	0.19	1.51
181	182	-4.32	5.33	0.11	-7.67	9.48	0.19	0.14
182	182	-4.29	5.21	-0.07	-7.63	9.25	-0.12	0.14
182	183	-4.49	5.21	-0.07	-7.99	9.25	-0.12	0.14
183	183	-4.49	5.24	-0.18	-7.98	9.31	-0.32	0.14
183	184	-4.69	5.24	-0.18	-8.34	9.31	-0.32	0.14
184	184	-4.71	5.51	-0.25	-8.37	9.79	-0.44	0.15
184	185	-4.92	5.51	-0.25	-8.75	9.79	-0.44	0.15
185	185	-4.93	0.09	-0.24	-8.77	0.15	-0.42	9.19
185	186	6.95	0.15	-0.42	3.91	0.09	-0.24	6.19
186	186	6.87	0.19	-0.05	3.87	0.11	-0.03	6.19
186	187	17.71	0.19	-0.05	9.96	0.11	-0.03	0.45
187	187	17.68	0.23	0.47	9.94	0.13	0.27	0.47
187	188	8.33	0.23	0.47	4.69	0.13	0.26	6.57
188	188	8.42	0.28	0.59	4.73	0.16	0.33	6.58
188	189	-5.71	0.16	0.33	-10.15	0.28	0.59	11.78
189	189	-5.69	7.30	0.10	-10.12	12.98	0.18	0.31
189	190	-5.24	7.30	0.10	-9.32	12.98	0.18	0.31
190	190	-5.21	6.37	-0.09	-9.27	11.32	-0.16	0.30
190	191	-4.78	6.37	-0.09	-8.50	11.32	-0.16	0.30
191	191	-4.79	6.27	-0.19	-8.51	11.14	-0.33	0.29
191	192	-4.37	6.27	-0.19	-7.76	11.14	-0.33	0.29
192	192	-4.39	6.35	-0.22	-7.81	11.28	-0.38	0.29
192	177	-3.22	6.35	-0.22	-5.72	11.28	-0.38	1.65
193	193	-3.18	-0.93	-0.14	-5.66	-1.66	-0.25	7.90
193	194	10.43	-1.66	-0.25	5.86	-0.93	-0.14	7.91
194	194	10.38	-1.60	0.06	5.84	-0.90	0.04	1.57
194	195	15.39	-1.60	0.06	8.66	-0.90	0.04	1.57
195	195	15.38	-1.54	0.43	8.65	-0.86	0.24	2.56
195	196	7.31	-1.54	0.44	4.11	-0.87	0.24	2.56

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
196	196	7.34	-1.47	0.49	4.13	-0.82	0.28	6.76
196	197	-3.61	-0.83	0.28	-6.42	-1.47	0.49	6.77
197	197	-3.60	5.50	0.09	-6.40	9.78	0.16	1.46
197	198	-4.50	5.50	0.09	-8.00	9.78	0.16	0.10
198	198	-4.47	5.33	-0.08	-7.94	9.47	-0.14	0.09
198	199	-4.60	5.33	-0.08	-8.18	9.47	-0.14	0.09
199	199	-4.59	5.36	-0.18	-8.17	9.54	-0.32	0.10
199	200	-4.74	5.36	-0.18	-8.43	9.54	-0.32	0.10
200	200	-4.77	5.68	-0.23	-8.48	10.10	-0.41	0.11
200	201	-4.93	5.68	-0.23	-8.77	10.10	-0.41	0.11
201	201	-4.95	0.07	-0.20	-8.80	0.13	-0.36	9.47
201	202	7.35	0.13	-0.36	4.13	0.07	-0.20	6.33
202	202	7.24	0.19	-0.02	4.07	0.10	-0.01	6.34
202	203	18.18	0.19	-0.02	10.23	0.10	-0.01	0.38
203	203	18.13	0.25	0.44	10.20	0.14	0.25	0.42
203	204	8.29	0.24	0.44	4.67	0.14	0.25	6.83
204	204	8.41	0.33	0.49	4.73	0.18	0.28	6.79
204	205	-6.04	0.18	0.27	-10.73	0.32	0.49	12.12
205	205	-6.00	7.50	0.06	-10.67	13.33	0.11	0.39
205	206	-5.43	7.50	0.06	-9.65	13.33	0.11	0.39
206	206	-5.39	6.37	-0.10	-9.58	11.32	-0.17	0.36
206	207	-4.87	6.37	-0.10	-8.65	11.32	-0.17	0.36
207	207	-4.88	6.29	-0.17	-8.67	11.18	-0.31	0.34
207	208	-4.38	6.29	-0.17	-7.79	11.18	-0.31	0.34
208	208	-4.42	6.43	-0.19	-7.87	11.43	-0.34	0.34
208	193	-3.17	6.43	-0.19	-5.64	11.43	-0.34	1.71
209	209	-3.16	-0.95	-0.12	-5.61	-1.69	-0.21	8.04
209	210	10.75	-1.69	-0.21	6.05	-0.95	-0.12	8.05
210	210	10.67	-1.60	0.10	6.00	-0.90	0.05	1.60
210	211	15.76	-1.60	0.10	8.87	-0.90	0.05	1.60
211	211	15.76	-1.52	0.44	8.86	-0.86	0.24	2.66
211	212	7.36	-1.53	0.44	4.14	-0.86	0.25	2.66
212	212	7.43	-1.43	0.46	4.18	-0.80	0.26	7.04
212	213	-3.88	-0.80	0.26	-6.90	-1.43	0.46	7.05
213	213	-3.86	5.67	0.06	-6.87	10.08	0.11	1.41
213	214	-4.68	5.67	0.06	-8.32	10.08	0.11	0.04
214	214	-4.63	5.44	-0.10	-8.23	9.66	-0.17	0.04
214	215	-4.69	5.44	-0.10	-8.34	9.66	-0.17	0.04
215	215	-4.68	5.48	-0.17	-8.32	9.74	-0.31	0.06
215	216	-4.77	5.48	-0.17	-8.48	9.74	-0.31	0.06
216	216	-4.81	5.84	-0.20	-8.55	10.39	-0.35	0.08
216	217	-4.93	5.84	-0.20	-8.76	10.39	-0.35	0.08
217	217	-4.95	0.05	-0.16	-8.80	0.10	-0.28	9.73
217	218	7.75	0.10	-0.28	4.36	0.05	-0.16	6.45
218	218	7.60	0.17	0.03	4.27	0.10	0.02	6.46
218	219	18.61	0.17	0.03	10.47	0.10	0.02	0.30

Barra Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
219 219	18.56	0.25	0.43	10.44	0.14	0.24	0.32
219 220	8.08	0.25	0.43	4.54	0.14	0.24	7.14
220 220	8.13	0.37	0.31	4.57	0.21	0.17	6.81
220 221	-6.29	0.21	0.17	-11.18	0.37	0.30	12.28
221 221	-6.25	7.49	0.01	-11.10	13.32	0.01	0.46
221 222	-5.57	7.49	0.01	-9.90	13.32	0.01	0.46
222 222	-5.52	6.32	-0.10	-9.81	11.23	-0.18	0.40
222 223	-4.93	6.32	-0.10	-8.76	11.23	-0.18	0.40
223 223	-4.94	6.29	-0.15	-8.78	11.18	-0.27	0.38
223 224	-4.38	6.29	-0.15	-7.79	11.18	-0.27	0.38
224 224	-4.44	6.52	-0.16	-7.90	11.59	-0.28	0.38
224 209	-3.14	6.52	-0.16	-5.58	11.59	-0.28	1.74
225 225	-3.15	-0.96	-0.07	-5.61	-1.71	-0.12	8.20
225 226	11.07	-1.72	-0.12	6.23	-0.96	-0.07	8.21
226 226	10.91	-1.60	0.15	6.14	-0.90	0.08	1.63
226 227	16.10	-1.61	0.15	9.06	-0.90	0.08	1.63
227 227	16.10	-1.51	0.42	9.06	-0.85	0.23	2.76
227 228	7.36	-1.51	0.42	4.14	-0.85	0.23	2.77
228 228	7.52	-1.39	0.39	4.23	-0.78	0.22	7.33
228 229	-4.16	-0.78	0.22	-7.40	-1.39	0.39	7.34
229 229	-4.14	5.85	0.02	-7.35	10.41	0.03	1.33
229 230	-4.84	5.85	0.02	-8.60	10.41	0.03	0.04
230 230	-4.78	5.53	-0.12	-8.49	9.83	-0.21	0.02
230 231	-4.74	5.53	-0.12	-8.43	9.83	-0.21	0.02
231 231	-4.74	5.57	-0.16	-8.43	9.91	-0.29	0.01
231 232	-4.76	5.57	-0.16	-8.46	9.91	-0.29	0.01
232 232	-4.81	5.99	-0.15	-8.56	10.65	-0.27	0.05
232 233	-4.89	5.99	-0.15	-8.70	10.65	-0.27	0.05
233 233	-4.92	0.04	-0.09	-8.75	0.07	-0.16	9.96
233 234	8.13	0.07	-0.16	4.57	0.04	-0.09	6.55
234 234	7.92	0.16	0.09	4.45	0.09	0.05	6.58
234 235	18.96	0.16	0.09	10.66	0.09	0.05	0.20
235 235	18.94	0.26	0.36	10.65	0.14	0.20	0.22
235 236	7.80	0.26	0.36	4.39	0.14	0.20	7.45
236 236	8.12	0.40	0.17	4.57	0.22	0.10	7.79
236 237	-6.37	0.22	0.10	-11.32	0.40	0.17	10.45
237 237	-6.35	6.00	-0.06	-11.28	10.66	-0.10	0.44
237 238	-5.70	6.00	-0.06	-10.13	10.66	-0.10	0.44
238 238	-5.61	6.23	-0.12	-9.97	11.07	-0.22	0.45
238 239	-4.95	6.23	-0.12	-8.81	11.07	-0.22	0.45
239 239	-4.96	6.27	-0.13	-8.81	11.14	-0.22	0.40
239 240	-4.37	6.27	-0.13	-7.76	11.14	-0.22	0.40
240 240	-4.44	6.62	-0.11	-7.90	11.76	-0.19	0.38
240 225	-3.13	6.62	-0.11	-5.56	11.76	-0.19	1.75
241 241	-3.17	-0.98	0.02	-5.64	-1.73	0.03	8.37
241 242	11.39	-1.74	0.03	6.41	-0.98	0.02	8.38

Barra Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
242 242	11.06	-1.60	0.25	6.22	-0.90	0.14	1.66
242 243	16.35	-1.61	0.25	9.20	-0.90	0.14	1.66
243 243	16.35	-1.49	0.35	9.19	-0.84	0.20	2.87
243 244	7.29	-1.49	0.35	4.10	-0.84	0.20	2.87
244 244	7.61	-1.35	0.24	4.28	-0.76	0.14	7.64
244 245	-4.46	-0.76	0.14	-7.92	-1.35	0.24	7.65
245 245	-4.41	6.04	-0.04	-7.84	10.73	-0.08	1.22
245 246	-4.95	6.04	-0.04	-8.80	10.73	-0.08	0.15
246 246	-4.89	5.60	-0.13	-8.69	9.95	-0.24	0.09
246 247	-4.76	5.60	-0.13	-8.46	9.95	-0.24	0.09
247 247	-4.77	5.65	-0.14	-8.48	10.05	-0.25	0.03
247 248	-4.72	5.65	-0.14	-8.39	10.05	-0.25	0.03
248 248	-4.78	6.11	-0.10	-8.50	10.87	-0.17	0.03
248 249	-4.82	6.11	-0.10	-8.57	10.87	-0.17	0.03
249 249	-4.86	0.02	0.00	-8.64	0.04	0.00	10.15
249 250	8.48	0.04	0.00	4.77	0.02	0.00	6.60
250 250	8.19	0.15	0.18	4.61	0.08	0.10	6.65
250 251	19.14	0.15	0.18	10.76	0.08	0.10	0.06
251 251	19.06	0.26	0.21	10.72	0.15	0.12	0.16
251 252	7.39	0.26	0.21	4.15	0.15	0.12	7.72
252 252	7.74	0.43	0.05	4.36	0.24	0.03	7.76
252 253	-6.60	0.24	0.03	-11.74	0.43	0.05	10.49
253 253	-6.55	5.91	-0.13	-11.64	10.50	-0.24	0.57
253 254	-5.72	5.91	-0.13	-10.18	10.50	-0.24	0.57
254 254	-5.65	6.13	-0.15	-10.04	10.90	-0.27	0.49
254 255	-4.92	6.13	-0.15	-8.75	10.90	-0.27	0.49
255 255	-4.92	6.23	-0.10	-8.75	11.07	-0.18	0.42
255 256	-4.31	6.23	-0.10	-7.67	11.07	-0.18	0.42
256 256	-4.39	6.72	-0.03	-7.80	11.95	-0.06	0.35
256 241	-3.12	6.72	-0.03	-5.55	11.95	-0.06	1.72
257 257	-3.16	-0.99	0.19	-5.61	-1.76	0.34	8.51
257 258	11.71	-1.76	0.34	6.58	-0.99	0.19	8.52
258 258	11.09	-1.60	0.44	6.24	-0.90	0.25	1.64
258 259	16.32	-1.61	0.44	9.18	-0.90	0.25	1.64
259 259	16.33	-1.48	0.19	9.19	-0.83	0.10	2.92
259 260	7.11	-1.48	0.19	4.00	-0.83	0.10	2.92
260 260	7.71	-1.32	-0.05	4.34	-0.74	-0.03	7.90
260 261	-4.71	-0.74	-0.03	-8.37	-1.32	-0.05	7.91
261 261	-4.63	6.19	-0.13	-8.23	11.01	-0.23	1.08
261 262	-4.97	6.19	-0.13	-8.83	11.01	-0.23	0.29
262 262	-4.94	5.64	-0.14	-8.79	10.02	-0.24	0.14
262 263	-4.74	5.64	-0.14	-8.42	10.02	-0.24	0.14
263 263	-4.77	5.70	-0.12	-8.47	10.14	-0.20	0.07
263 264	-4.66	5.70	-0.12	-8.28	10.14	-0.20	0.07
264 264	-4.71	6.19	-0.04	-8.37	11.01	-0.07	0.01
264 265	-4.69	6.19	-0.04	-8.34	11.01	-0.07	0.01

Barra Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
265 265	-4.72	0.00	0.11	-8.40	0.00	0.20	10.26
265 266	8.81	0.00	0.20	4.96	0.00	0.11	6.58
266 266	8.49	0.13	0.35	4.78	0.08	0.20	6.64
266 267	19.05	0.13	0.35	10.72	0.08	0.20	0.16
267 267	18.81	0.26	0.10	10.58	0.15	0.06	0.17
267 268	6.85	0.26	0.10	3.85	0.15	0.06	7.92
268 268	7.35	0.45	-0.30	4.13	0.25	-0.17	7.69
268 269	-6.79	0.25	-0.17	-12.08	0.45	-0.30	10.49
269 269	-6.70	5.86	-0.23	-11.91	10.42	-0.41	0.71
269 270	-5.65	5.86	-0.23	-10.05	10.42	-0.41	0.71
270 270	-5.62	6.03	-0.17	-10.00	10.71	-0.30	0.53
270 271	-4.85	6.03	-0.17	-8.62	10.71	-0.30	0.53
271 271	-4.84	6.17	-0.08	-8.61	10.97	-0.15	0.44
271 272	-4.20	6.17	-0.08	-7.47	10.97	-0.15	0.44
272 272	-4.24	6.79	0.06	-7.54	12.08	0.11	0.28
272 257	-3.07	6.79	0.06	-5.46	12.08	0.11	1.65
273 273	-2.93	-1.02	0.52	-5.20	-1.81	0.92	8.35
273 274	11.80	-1.81	0.93	6.64	-1.02	0.52	8.37
274 274	11.00	-1.61	0.74	6.19	-0.91	0.42	1.48
274 275	15.73	-1.62	0.74	8.85	-0.91	0.42	1.49
275 275	15.78	-1.48	-0.11	8.88	-0.83	-0.06	2.83
275 276	6.82	-1.48	-0.11	3.84	-0.83	-0.06	2.84
276 276	7.62	-1.32	-0.61	4.29	-0.74	-0.34	7.90
276 277	-4.75	-0.74	-0.34	-8.45	-1.32	-0.61	7.91
277 277	-4.63	6.15	-0.22	-8.24	10.93	-0.39	1.00
277 278	-4.86	6.15	-0.22	-8.64	10.93	-0.39	0.36
278 278	-4.91	5.65	-0.11	-8.73	10.04	-0.20	0.13
278 279	-4.72	5.65	-0.11	-8.40	10.04	-0.20	0.13
279 279	-4.76	5.73	-0.09	-8.46	10.19	-0.16	0.11
279 280	-4.59	5.73	-0.09	-8.16	10.19	-0.16	0.11
280 280	-4.62	6.22	0.00	-8.21	11.06	0.00	0.10
280 281	-4.47	6.22	0.00	-7.95	11.06	0.00	0.10
281 281	-4.49	-0.02	0.21	-7.99	-0.03	0.37	10.30
281 282	9.16	-0.03	0.37	5.15	-0.02	0.21	6.48
282 282	8.99	0.13	0.58	5.06	0.07	0.33	6.47
282 283	18.69	0.13	0.58	10.51	0.07	0.33	0.54
283 283	18.37	0.26	0.11	10.34	0.15	0.06	0.05
283 284	5.68	0.26	0.11	3.20	0.15	0.06	8.26
284 284	6.11	0.45	-0.88	3.44	0.25	-0.49	6.86
284 285	-6.60	0.25	-0.49	-11.73	0.45	-0.88	9.73
285 285	-6.50	5.40	-0.31	-11.56	9.60	-0.55	0.67
285 286	-5.52	5.40	-0.31	-9.82	9.60	-0.55	0.67
286 286	-5.55	5.92	-0.17	-9.87	10.52	-0.30	0.52
286 287	-4.79	5.92	-0.17	-8.52	10.52	-0.30	0.52
287 287	-4.79	6.10	-0.09	-8.51	10.84	-0.17	0.52
287 288	-4.02	6.10	-0.09	-7.15	10.84	-0.17	0.52

Barra Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
288 288	-3.98	6.65	0.15	-7.07	11.82	0.27	0.29
288 273	-2.79	6.65	0.15	-4.97	11.82	0.27	1.66
289 289	-1.87	-1.05	1.07	-3.33	-1.87	1.91	6.77
289 290	10.45	-1.88	1.91	5.88	-1.05	1.07	6.78
290 290	10.71	-1.62	1.02	6.02	-0.91	0.57	1.16
290 291	14.40	-1.63	1.02	8.10	-0.92	0.57	1.16
291 291	14.56	-1.48	-0.41	8.19	-0.83	-0.23	2.59
291 292	6.37	-1.48	-0.41	3.58	-0.83	-0.23	2.60
292 292	6.33	-1.34	-1.52	3.56	-0.75	-0.85	6.67
292 293	-4.08	-0.75	-0.85	-7.24	-1.34	-1.52	6.68
293 293	-4.00	5.23	-0.26	-7.11	9.29	-0.46	1.37
293 294	-4.75	5.23	-0.26	-8.45	9.29	-0.46	0.00
294 294	-4.86	5.62	-0.09	-8.64	10.00	-0.16	0.09
294 295	-4.73	5.62	-0.09	-8.41	10.00	-0.16	0.09
295 295	-4.77	5.73	-0.07	-8.48	10.19	-0.13	0.17
295 296	-4.52	5.73	-0.07	-8.03	10.19	-0.13	0.17
296 296	-4.56	6.14	0.01	-8.11	10.92	0.01	0.28
296 297	-4.16	6.14	0.01	-7.39	10.92	0.01	0.28
297 297	-4.16	-0.03	0.25	-7.39	-0.06	0.45	10.19
297 298	9.39	-0.06	0.45	5.28	-0.03	0.25	6.23
298 298	9.68	0.12	0.60	5.45	0.07	0.34	6.23
298 299	18.29	0.12	0.60	10.29	0.07	0.34	0.99
299 299	18.97	0.26	0.07	10.67	0.15	0.04	1.77
299 300	5.06	0.26	0.07	2.84	0.15	0.04	5.69
300 300	4.57	0.44	-0.97	2.57	0.25	-0.55	7.30
300 301	-5.77	0.25	-0.54	-10.26	0.44	-0.97	7.29
301 301	-5.82	4.09	-0.33	-10.35	7.26	-0.58	0.29
301 302	-5.40	4.09	-0.33	-9.61	7.26	-0.58	0.29
302 302	-5.51	5.82	-0.16	-9.80	10.34	-0.29	0.53
302 303	-4.74	5.82	-0.16	-8.44	10.34	-0.29	0.53
303 303	-4.80	6.01	-0.11	-8.54	10.69	-0.19	0.67
303 304	-3.82	6.01	-0.11	-6.79	10.69	-0.19	0.67
304 304	-3.81	5.47	0.18	-6.77	9.73	0.31	0.88
304 289	-1.77	5.47	0.18	-3.14	9.73	0.31	2.24
305 305	1.22	-1.89	3.65	0.69	-1.06	2.05	2.02
305 306	5.33	-1.89	3.65	3.00	-1.06	2.05	2.02
306 306	11.40	-1.63	1.62	6.41	-0.92	0.91	0.43
306 307	12.75	-1.63	1.62	7.17	-0.92	0.91	0.43
307 307	13.44	-1.49	-0.73	7.56	-0.84	-0.41	2.17
307 308	6.58	-1.49	-0.73	3.70	-0.84	-0.41	2.17
308 308	2.01	-1.34	-3.03	1.13	-0.76	-1.71	2.77
308 309	-2.03	-0.76	-1.71	-3.61	-1.34	-3.03	2.77
309 309	-3.21	4.08	-0.40	-5.71	7.26	-0.70	1.89
309 310	-4.73	4.08	-0.40	-8.41	7.26	-0.70	0.53
310 310	-5.01	5.61	-0.13	-8.91	9.97	-0.24	0.28
310 311	-4.60	5.61	-0.13	-8.17	9.97	-0.24	0.28

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
311	311	-4.86	5.72	-0.11	-8.65	10.18	-0.19	0.32
311	312	-4.40	5.72	-0.11	-7.82	10.18	-0.19	0.32
312	312	-4.62	6.00	0.00	-8.21	10.66	0.01	0.49
312	313	-3.90	6.00	0.00	-6.93	10.66	0.01	0.49
313	313	-3.68	-0.03	0.38	-6.54	-0.06	0.68	9.47
313	314	8.72	-0.06	0.68	4.90	-0.03	0.38	5.44
314	314	10.82	0.12	0.82	6.09	0.07	0.46	5.54
314	315	17.08	0.12	0.82	9.61	0.07	0.46	1.81
315	315	19.06	0.27	0.03	10.72	0.15	0.01	2.01
315	316	4.26	0.27	0.03	2.40	0.15	0.01	6.01
316	316	2.52	0.44	-1.23	1.42	0.25	-0.69	5.67
316	317	-5.06	0.25	-0.69	-9.00	0.44	-1.23	5.67
317	317	-5.79	3.71	-0.48	-10.30	6.59	-0.85	0.53
317	318	-5.02	3.71	-0.48	-8.92	6.59	-0.85	0.53
318	318	-5.73	5.78	-0.25	-10.19	10.28	-0.44	0.85
318	319	-4.50	5.78	-0.25	-7.99	10.28	-0.44	0.85
319	319	-4.93	5.97	-0.16	-8.76	10.62	-0.29	0.88
319	320	-3.65	5.97	-0.16	-6.48	10.62	-0.29	0.88
320	320	-3.98	4.09	0.26	-7.07	7.27	0.46	1.81
320	305	-0.57	4.09	0.26	-1.02	7.27	0.46	3.18
321	1	-0.73	0.03	0.85	-1.29	0.05	1.51	1.91
321	17	1.30	0.05	1.51	0.73	0.03	0.85	1.91
322	17	-0.26	0.04	0.70	-0.46	0.08	1.24	0.43
322	33	0.47	0.08	1.24	0.26	0.04	0.70	0.43
323	33	-0.07	0.05	0.47	-0.12	0.08	0.84	0.11
323	49	0.12	0.08	0.84	0.07	0.05	0.47	0.11
324	49	-0.03	-0.01	0.34	-0.05	-0.02	0.61	0.04
324	65	0.05	-0.02	0.61	0.03	-0.01	0.34	0.04
325	65	-0.02	-0.10	0.28	-0.04	-0.18	0.50	0.03
325	81	0.03	-0.18	0.50	0.02	-0.10	0.28	0.03
326	81	-0.02	-0.22	0.25	-0.04	-0.40	0.45	0.04
326	97	0.03	-0.40	0.45	0.02	-0.22	0.25	0.04
327	97	-0.03	-0.35	0.24	-0.05	-0.62	0.43	0.04
327	113	0.03	-0.62	0.43	0.02	-0.35	0.24	0.04
328	113	-0.03	-0.48	0.23	-0.05	-0.85	0.41	0.04
328	129	0.03	-0.85	0.41	0.02	-0.48	0.23	0.04
329	129	-0.03	-0.59	0.23	-0.06	-1.04	0.40	0.04
329	145	0.03	-1.04	0.40	0.02	-0.59	0.23	0.04
330	145	-0.03	-0.67	0.22	-0.06	-1.19	0.39	0.04
330	161	0.03	-1.19	0.39	0.02	-0.67	0.22	0.04
331	161	-0.03	-0.71	0.21	-0.06	-1.27	0.37	0.04
331	177	0.03	-1.27	0.37	0.02	-0.71	0.21	0.04
332	177	-0.04	-0.70	0.20	-0.06	-1.24	0.35	0.04
332	193	0.03	-1.24	0.35	0.02	-0.70	0.20	0.04
333	193	-0.04	-0.62	0.17	-0.06	-1.11	0.30	0.05
333	209	0.04	-1.11	0.30	0.02	-0.62	0.17	0.05

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
334	209	-0.04	-0.48	0.13	-0.06	-0.85	0.23	0.05
334	225	0.04	-0.85	0.23	0.02	-0.48	0.13	0.05
335	225	-0.03	-0.31	0.06	-0.06	-0.55	0.11	0.05
335	241	0.05	-0.55	0.11	0.03	-0.31	0.06	0.05
336	241	-0.02	-0.16	-0.06	-0.04	-0.28	-0.10	0.03
336	257	0.03	-0.28	-0.10	0.02	-0.16	-0.06	0.03
337	257	0.05	-0.08	-0.45	0.03	-0.04	-0.25	0.05
337	273	-0.03	-0.04	-0.25	-0.06	-0.08	-0.45	0.05
338	273	0.47	0.02	-0.98	0.26	0.01	-0.55	0.43
338	289	-0.26	0.01	-0.55	-0.46	0.02	-0.98	0.43
339	289	1.39	0.05	-1.37	0.78	0.03	-0.77	2.05
339	305	-0.78	0.03	-0.77	-1.39	0.05	-1.37	2.05
340	2	-0.23	0.03	0.53	-0.42	0.05	0.95	0.45
340	18	3.66	0.05	0.95	2.06	0.03	0.53	6.48
341	18	2.86	0.09	1.18	1.61	0.05	0.66	5.52
341	34	2.91	0.09	1.18	1.63	0.05	0.66	5.57
342	34	2.50	0.10	0.78	1.41	0.05	0.44	5.57
342	50	2.46	0.10	0.78	1.38	0.05	0.44	5.53
343	50	2.19	0.03	0.48	1.23	0.02	0.27	5.52
343	66	2.25	0.03	0.48	1.27	0.02	0.27	5.57
344	66	2.03	-0.10	0.33	1.14	-0.06	0.19	5.49
344	82	2.16	-0.10	0.33	1.21	-0.06	0.19	5.60
345	82	1.95	-0.28	0.27	1.10	-0.16	0.15	5.47
345	98	2.12	-0.28	0.27	1.19	-0.16	0.15	5.62
346	98	1.92	-0.47	0.24	1.08	-0.26	0.14	5.46
346	114	2.10	-0.47	0.24	1.18	-0.26	0.14	5.63
347	114	1.90	-0.65	0.23	1.07	-0.37	0.13	5.45
347	130	2.10	-0.65	0.23	1.18	-0.37	0.13	5.64
348	130	1.89	-0.81	0.22	1.06	-0.45	0.13	5.45
348	146	2.11	-0.81	0.22	1.18	-0.45	0.13	5.64
349	146	1.89	-0.92	0.22	1.06	-0.52	0.12	5.44
349	162	2.11	-0.92	0.22	1.19	-0.52	0.12	5.65
350	162	1.89	-0.98	0.20	1.06	-0.55	0.11	5.44
350	178	2.12	-0.98	0.20	1.19	-0.55	0.11	5.65
351	178	1.90	-0.96	0.19	1.07	-0.54	0.11	5.44
351	194	2.13	-0.96	0.19	1.20	-0.54	0.11	5.65
352	194	1.92	-0.84	0.16	1.08	-0.47	0.09	5.43
352	210	2.16	-0.84	0.16	1.22	-0.47	0.09	5.66
353	210	1.95	-0.63	0.11	1.10	-0.36	0.06	5.43
353	226	2.21	-0.63	0.11	1.24	-0.36	0.06	5.67
354	226	2.03	-0.39	-0.01	1.14	-0.22	0.00	5.41
354	242	2.31	-0.39	-0.01	1.30	-0.22	0.00	5.68
355	242	2.17	-0.19	-0.24	1.22	-0.10	-0.13	5.39
355	258	2.51	-0.19	-0.24	1.41	-0.10	-0.13	5.70
356	258	2.44	-0.03	-0.65	1.37	-0.02	-0.37	5.35
356	274	2.87	-0.03	-0.65	1.61	-0.02	-0.37	5.74

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
357	274	2.98	0.04	-1.20	1.68	0.03	-0.68	5.44
357	290	3.22	0.04	-1.20	1.81	0.03	-0.68	5.66
358	290	3.83	0.05	-1.03	2.16	0.03	-0.58	6.56
358	306	-0.20	0.03	-0.58	-0.36	0.05	-1.03	0.37
359	3	-0.26	0.03	-0.07	-0.46	0.05	-0.13	0.18
359	19	3.97	0.05	-0.13	2.23	0.03	-0.07	6.74
360	19	2.83	0.10	-0.22	1.59	0.06	-0.12	5.16
360	35	3.63	0.10	-0.22	2.04	0.06	-0.12	5.91
361	35	2.77	0.13	-0.22	1.56	0.08	-0.12	5.46
361	51	2.94	0.13	-0.22	1.65	0.08	-0.12	5.61
362	51	2.39	0.11	-0.22	1.34	0.06	-0.12	5.49
362	67	2.48	0.11	-0.22	1.39	0.06	-0.12	5.58
363	67	2.10	0.03	-0.22	1.18	0.02	-0.12	5.46
363	83	2.26	0.03	-0.22	1.27	0.02	-0.12	5.61
364	83	1.95	-0.09	-0.22	1.09	-0.05	-0.12	5.43
364	99	2.17	-0.09	-0.22	1.22	-0.05	-0.12	5.64
365	99	1.88	-0.22	-0.23	1.06	-0.12	-0.13	5.41
365	115	2.15	-0.22	-0.23	1.21	-0.12	-0.13	5.66
366	115	1.86	-0.34	-0.23	1.05	-0.19	-0.13	5.41
366	131	2.14	-0.34	-0.23	1.20	-0.19	-0.13	5.66
367	131	1.86	-0.45	-0.23	1.05	-0.25	-0.13	5.41
367	147	2.14	-0.45	-0.23	1.20	-0.25	-0.13	5.66
368	147	1.86	-0.51	-0.24	1.05	-0.29	-0.13	5.41
368	163	2.14	-0.51	-0.24	1.21	-0.29	-0.13	5.66
369	163	1.87	-0.54	-0.24	1.05	-0.30	-0.13	5.41
369	179	2.15	-0.54	-0.24	1.21	-0.30	-0.13	5.66
370	179	1.89	-0.51	-0.24	1.06	-0.29	-0.14	5.41
370	195	2.17	-0.51	-0.24	1.22	-0.29	-0.14	5.66
371	195	1.91	-0.43	-0.24	1.08	-0.24	-0.14	5.40
371	211	2.20	-0.43	-0.24	1.24	-0.24	-0.14	5.67
372	211	1.97	-0.30	-0.25	1.11	-0.17	-0.14	5.39
372	227	2.30	-0.30	-0.25	1.29	-0.17	-0.14	5.68
373	227	2.11	-0.15	-0.25	1.19	-0.09	-0.14	5.36
373	243	2.50	-0.15	-0.25	1.40	-0.09	-0.14	5.71
374	243	2.43	-0.03	-0.25	1.36	-0.02	-0.14	5.34
374	259	2.86	-0.03	-0.25	1.61	-0.02	-0.14	5.73
375	259	3.03	0.05	-0.24	1.70	0.03	-0.14	5.41
375	275	3.29	0.05	-0.24	1.85	0.03	-0.14	5.66
376	275	3.88	0.08	-0.22	2.18	0.04	-0.12	5.83
376	291	3.25	0.08	-0.22	1.83	0.04	-0.12	5.24
377	291	4.22	0.04	-0.11	2.38	0.02	-0.06	6.88
377	307	-0.23	0.02	-0.06	-0.40	0.04	-0.11	0.04
378	4	-0.19	0.03	-0.62	-0.33	0.05	-1.10	0.61
378	20	3.50	0.05	-1.10	1.97	0.03	-0.62	6.30
379	20	2.84	0.12	-1.44	1.60	0.07	-0.81	5.54
379	36	2.81	0.12	-1.44	1.58	0.07	-0.81	5.51

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
380	36	2.48	0.19	-1.07	1.40	0.11	-0.60	5.56
380	52	2.40	0.19	-1.07	1.35	0.11	-0.60	5.49
381	52	2.20	0.21	-0.78	1.24	0.12	-0.44	5.52
381	68	2.21	0.21	-0.78	1.24	0.12	-0.44	5.53
382	68	2.05	0.18	-0.64	1.15	0.10	-0.36	5.49
382	84	2.12	0.18	-0.64	1.19	0.10	-0.36	5.55
383	84	1.98	0.11	-0.58	1.11	0.06	-0.32	5.48
383	100	2.07	0.11	-0.58	1.16	0.06	-0.32	5.57
384	100	1.95	0.03	-0.55	1.10	0.02	-0.31	5.48
384	116	2.05	0.03	-0.55	1.15	0.02	-0.31	5.57
385	116	1.95	-0.04	-0.55	1.10	-0.02	-0.31	5.48
385	132	2.04	-0.04	-0.55	1.15	-0.02	-0.31	5.57
386	132	1.95	-0.09	-0.55	1.10	-0.05	-0.31	5.48
386	148	2.04	-0.09	-0.55	1.15	-0.05	-0.31	5.57
387	148	1.96	-0.11	-0.54	1.10	-0.06	-0.31	5.49
387	164	2.04	-0.11	-0.54	1.15	-0.06	-0.31	5.56
388	164	1.96	-0.11	-0.54	1.11	-0.06	-0.30	5.49
388	180	2.04	-0.11	-0.54	1.15	-0.06	-0.30	5.56
389	180	1.98	-0.09	-0.53	1.11	-0.05	-0.30	5.50
389	196	2.04	-0.09	-0.53	1.15	-0.05	-0.30	5.55
390	196	2.00	-0.04	-0.51	1.13	-0.02	-0.28	5.50
390	212	2.06	-0.04	-0.51	1.16	-0.02	-0.28	5.55
391	212	2.04	0.02	-0.46	1.15	0.01	-0.26	5.50
391	228	2.10	0.02	-0.46	1.18	0.01	-0.26	5.55
392	228	2.12	0.09	-0.35	1.19	0.05	-0.20	5.49
392	244	2.19	0.09	-0.35	1.23	0.05	-0.20	5.56
393	244	2.27	0.14	-0.13	1.28	0.08	-0.07	5.47
393	260	2.37	0.14	-0.13	1.34	0.08	-0.07	5.57
394	260	2.54	0.15	0.27	1.43	0.09	0.15	5.45
394	276	2.70	0.15	0.27	1.52	0.09	0.15	5.60
395	276	3.04	0.12	0.81	1.71	0.07	0.46	5.54
395	292	3.00	0.12	0.81	1.69	0.07	0.46	5.51
396	292	3.75	0.06	0.78	2.11	0.03	0.44	6.52
396	308	-0.22	0.03	0.44	-0.38	0.06	0.78	0.39
397	5	-0.72	0.04	-0.82	-1.27	0.06	-1.45	1.89
397	21	1.28	0.06	-1.45	0.72	0.04	-0.82	1.89
398	21	-0.27	0.07	-0.68	-0.49	0.13	-1.21	0.45
398	37	0.49	0.13	-1.21	0.28	0.07	-0.68	0.45
399	37	-0.08	0.13	-0.48	-0.14	0.23	-0.85	0.13
399	53	0.15	0.23	-0.85	0.08	0.13	-0.48	0.13
400	53	-0.04	0.16	-0.36	-0.07	0.28	-0.64	0.07
400	69	0.08	0.28	-0.64	0.04	0.16	-0.36	0.07
401	69	-0.04	0.16	-0.30	-0.06	0.28	-0.54	0.06
401	85	0.07	0.28	-0.54	0.04	0.16	-0.30	0.06
402	85	-0.04	0.13	-0.27	-0.06	0.24	-0.48	0.06
402	101	0.07	0.24	-0.48	0.04	0.13	-0.27	0.06

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
403	101	-0.04	0.10	-0.26	-0.07	0.19	-0.46	0.06
403	117	0.07	0.19	-0.46	0.04	0.10	-0.26	0.06
404	117	-0.04	0.09	-0.25	-0.07	0.15	-0.44	0.07
404	133	0.07	0.15	-0.44	0.04	0.09	-0.25	0.07
405	133	-0.04	0.08	-0.24	-0.07	0.14	-0.43	0.07
405	149	0.07	0.14	-0.43	0.04	0.08	-0.24	0.07
406	149	-0.04	0.08	-0.24	-0.07	0.15	-0.42	0.07
406	165	0.07	0.15	-0.42	0.04	0.08	-0.24	0.07
407	165	-0.04	0.09	-0.23	-0.07	0.16	-0.41	0.07
407	181	0.07	0.16	-0.41	0.04	0.09	-0.23	0.07
408	181	-0.04	0.10	-0.22	-0.07	0.19	-0.39	0.07
408	197	0.08	0.19	-0.39	0.04	0.10	-0.22	0.07
409	197	-0.04	0.12	-0.20	-0.07	0.21	-0.36	0.07
409	213	0.08	0.21	-0.36	0.04	0.12	-0.20	0.07
410	213	-0.04	0.13	-0.17	-0.07	0.23	-0.30	0.07
410	229	0.08	0.23	-0.30	0.05	0.13	-0.17	0.07
411	229	-0.04	0.14	-0.10	-0.07	0.25	-0.19	0.07
411	245	0.08	0.25	-0.19	0.04	0.14	-0.10	0.07
412	245	-0.03	0.14	0.01	-0.06	0.25	0.01	0.06
412	261	0.07	0.25	0.01	0.04	0.14	0.01	0.06
413	261	0.03	0.23	0.34	0.01	0.13	0.19	0.02
413	277	-0.01	0.13	0.19	-0.02	0.23	0.34	0.02
414	277	0.38	0.15	0.86	0.21	0.08	0.48	0.35
414	293	-0.21	0.08	0.48	-0.37	0.15	0.86	0.35
415	293	1.17	0.07	1.23	0.66	0.04	0.69	1.73
415	309	-0.65	0.04	0.69	-1.16	0.07	1.23	1.73
416	6	0.14	0.01	0.04	0.08	0.00	0.02	0.13
416	22	-0.02	0.00	0.02	-0.03	0.01	0.04	0.13
417	22	0.34	0.09	-0.02	0.19	0.05	-0.01	0.28
417	38	-0.14	0.05	-0.01	-0.25	0.09	-0.02	0.28
418	38	0.12	0.13	-0.12	0.07	0.07	-0.07	0.18
418	54	-0.15	0.07	-0.07	-0.27	0.13	-0.12	0.18
419	54	0.03	0.15	-0.16	0.02	0.09	-0.09	0.12
419	70	-0.12	0.09	-0.09	-0.22	0.15	-0.16	0.12
420	70	0.03	0.15	-0.15	0.02	0.08	-0.08	0.09
420	86	-0.09	0.08	-0.08	-0.17	0.15	-0.15	0.09
421	86	0.05	0.12	-0.13	0.03	0.07	-0.07	0.09
421	102	-0.08	0.07	-0.07	-0.13	0.12	-0.13	0.09
422	102	0.07	0.08	-0.11	0.04	0.05	-0.06	0.09
422	118	-0.07	0.05	-0.06	-0.12	0.08	-0.11	0.09
423	118	0.08	0.06	-0.09	0.04	0.03	-0.05	0.09
423	134	-0.06	0.03	-0.05	-0.11	0.06	-0.09	0.09
424	134	0.09	0.05	-0.07	0.05	0.03	-0.04	0.09
424	150	-0.06	0.03	-0.04	-0.11	0.05	-0.07	0.09
425	150	0.09	0.05	-0.05	0.05	0.03	-0.03	0.09
425	166	-0.06	0.03	-0.03	-0.11	0.05	-0.05	0.09

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
426	166	0.08	0.06	-0.03	0.05	0.03	-0.02	0.10
426	182	-0.07	0.03	-0.02	-0.12	0.06	-0.03	0.10
427	182	0.07	0.07	0.00	0.04	0.04	0.00	0.10
427	198	-0.08	0.04	0.00	-0.14	0.07	0.00	0.10
428	198	0.05	0.07	0.04	0.03	0.04	0.02	0.10
428	214	-0.10	0.04	0.02	-0.17	0.07	0.04	0.10
429	214	0.01	0.08	0.09	0.00	0.05	0.05	0.10
429	230	-0.12	0.05	0.05	-0.21	0.08	0.09	0.10
430	230	-0.03	0.05	0.09	-0.06	0.08	0.16	0.09
430	246	-0.14	0.05	0.09	-0.26	0.08	0.16	0.09
431	246	-0.09	0.05	0.13	-0.16	0.08	0.22	0.06
431	262	-0.15	0.05	0.13	-0.27	0.08	0.22	0.06
432	262	-0.15	0.04	0.14	-0.27	0.07	0.25	0.04
432	278	-0.11	0.04	0.14	-0.19	0.07	0.25	0.04
433	278	-0.17	0.02	0.11	-0.31	0.03	0.20	0.18
433	294	0.09	0.03	0.20	0.05	0.02	0.11	0.18
434	294	-0.05	-0.01	0.04	-0.10	-0.01	0.08	0.13
434	310	0.07	-0.01	0.08	0.04	-0.01	0.04	0.13
435	7	0.05	0.00	0.17	0.03	0.00	0.10	0.01
435	23	0.07	0.00	0.17	0.04	0.00	0.10	0.01
436	23	0.23	0.04	0.28	0.13	0.02	0.16	0.12
436	39	-0.01	0.02	0.16	-0.02	0.04	0.28	0.12
437	39	0.18	0.02	0.27	0.10	0.01	0.15	0.16
437	55	-0.09	0.01	0.15	-0.16	0.02	0.27	0.16
438	55	0.10	0.01	0.23	0.06	0.01	0.13	0.14
438	71	-0.12	0.01	0.13	-0.21	0.01	0.23	0.14
439	71	0.06	0.01	0.21	0.03	0.00	0.12	0.12
439	87	-0.11	0.00	0.12	-0.19	0.01	0.21	0.12
440	87	0.06	-0.01	0.20	0.03	0.00	0.11	0.10
440	103	-0.10	0.00	0.11	-0.17	-0.01	0.20	0.10
441	103	0.06	-0.02	0.20	0.03	-0.01	0.11	0.10
441	119	-0.09	-0.01	0.11	-0.15	-0.02	0.20	0.10
442	119	0.07	-0.03	0.21	0.04	-0.02	0.12	0.09
442	135	-0.08	-0.02	0.12	-0.14	-0.03	0.21	0.09
443	135	0.07	-0.03	0.22	0.04	-0.02	0.12	0.09
443	151	-0.07	-0.02	0.12	-0.13	-0.03	0.22	0.09
444	151	0.06	-0.03	0.23	0.04	-0.02	0.13	0.09
444	167	-0.07	-0.02	0.13	-0.13	-0.03	0.23	0.09
445	167	0.05	-0.04	0.24	0.03	-0.02	0.13	0.09
445	183	-0.08	-0.02	0.13	-0.14	-0.04	0.24	0.09
446	183	0.03	-0.04	0.25	0.01	-0.02	0.14	0.09
446	199	-0.09	-0.02	0.14	-0.16	-0.04	0.25	0.09
447	199	-0.01	-0.03	0.15	-0.02	-0.05	0.26	0.08
447	215	-0.11	-0.03	0.15	-0.19	-0.05	0.26	0.08
448	215	-0.05	-0.03	0.15	-0.08	-0.05	0.27	0.07
448	231	-0.13	-0.03	0.15	-0.23	-0.05	0.27	0.07

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
449	231	-0.09	-0.03	0.15	-0.16	-0.05	0.27	0.04
449	247	-0.14	-0.03	0.15	-0.24	-0.05	0.27	0.04
450	247	-0.13	-0.03	0.14	-0.23	-0.06	0.25	0.01
450	263	-0.12	-0.03	0.14	-0.21	-0.06	0.25	0.01
451	263	-0.14	-0.03	0.12	-0.24	-0.06	0.21	0.07
451	279	-0.06	-0.03	0.12	-0.10	-0.06	0.21	0.07
452	279	-0.08	-0.02	0.09	-0.14	-0.04	0.16	0.08
452	295	0.03	-0.04	0.16	0.02	-0.02	0.09	0.08
453	295	0.00	-0.02	0.06	0.00	-0.02	0.06	0.01
453	311	0.01	-0.03	0.10	0.01	-0.02	0.06	0.01
454	8	0.05	-0.03	0.24	0.03	-0.02	0.13	0.02
454	24	0.03	-0.03	0.24	0.02	-0.02	0.13	0.02
455	24	0.16	-0.06	0.43	0.09	-0.03	0.24	0.09
455	40	-0.02	-0.03	0.24	-0.03	-0.06	0.43	0.09
456	40	0.11	-0.12	0.49	0.06	-0.07	0.28	0.09
456	56	-0.05	-0.07	0.28	-0.09	-0.12	0.49	0.09
457	56	0.06	-0.15	0.50	0.03	-0.08	0.28	0.08
457	72	-0.06	-0.08	0.28	-0.11	-0.15	0.50	0.08
458	72	0.04	-0.15	0.49	0.02	-0.08	0.27	0.07
458	88	-0.06	-0.08	0.27	-0.11	-0.15	0.49	0.07
459	88	0.04	-0.14	0.46	0.02	-0.08	0.26	0.07
459	104	-0.07	-0.08	0.26	-0.12	-0.14	0.46	0.07
460	104	0.02	-0.12	0.45	0.01	-0.07	0.25	0.06
460	120	-0.06	-0.07	0.25	-0.11	-0.12	0.45	0.06
461	120	0.02	-0.11	0.44	0.01	-0.06	0.25	0.05
461	136	-0.05	-0.06	0.25	-0.09	-0.11	0.44	0.05
462	136	0.02	-0.10	0.43	0.01	-0.06	0.24	0.05
462	152	-0.05	-0.06	0.24	-0.08	-0.10	0.43	0.05
463	152	0.02	-0.11	0.42	0.01	-0.06	0.24	0.05
463	168	-0.05	-0.06	0.24	-0.08	-0.11	0.42	0.05
464	168	0.00	-0.12	0.41	0.00	-0.07	0.23	0.04
464	184	-0.05	-0.07	0.23	-0.09	-0.12	0.41	0.04
465	184	-0.01	-0.07	0.22	-0.02	-0.13	0.39	0.04
465	200	-0.06	-0.07	0.22	-0.11	-0.13	0.39	0.04
466	200	-0.03	-0.08	0.20	-0.05	-0.14	0.36	0.03
466	216	-0.07	-0.08	0.20	-0.13	-0.14	0.36	0.03
467	216	-0.06	-0.08	0.18	-0.10	-0.15	0.32	0.02
467	232	-0.08	-0.08	0.18	-0.15	-0.15	0.32	0.02
468	232	-0.09	-0.09	0.15	-0.16	-0.15	0.26	0.00
468	248	-0.08	-0.09	0.15	-0.15	-0.15	0.26	0.00
469	248	-0.11	-0.08	0.11	-0.20	-0.15	0.19	0.04
469	264	-0.06	-0.08	0.11	-0.10	-0.15	0.19	0.04
470	264	-0.11	-0.07	0.08	-0.19	-0.13	0.14	0.08
470	280	-0.01	-0.07	0.08	-0.01	-0.13	0.14	0.08
471	280	-0.06	-0.05	0.06	-0.11	-0.08	0.11	0.09
471	296	0.08	-0.08	0.11	0.05	-0.05	0.06	0.09

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
472	296	0.00	-0.02	0.03	-0.01	-0.03	0.06	0.03
472	312	0.03	-0.03	0.06	0.02	-0.02	0.03	0.03
473	9	-0.10	-0.03	0.32	-0.18	-0.05	0.57	0.27
473	25	0.18	-0.05	0.57	0.10	-0.03	0.32	0.27
474	25	-0.13	-0.11	0.43	-0.23	-0.19	0.77	0.21
474	41	0.22	-0.19	0.77	0.12	-0.11	0.43	0.21
475	41	-0.08	-0.15	0.42	-0.14	-0.27	0.74	0.13
475	57	0.13	-0.27	0.74	0.07	-0.15	0.42	0.13
476	57	-0.06	-0.18	0.39	-0.10	-0.32	0.69	0.09
476	73	0.10	-0.32	0.69	0.05	-0.18	0.39	0.09
477	73	-0.07	-0.18	0.38	-0.12	-0.32	0.67	0.11
477	89	0.12	-0.32	0.67	0.07	-0.18	0.38	0.11
478	89	-0.19	-0.15	0.38	-0.33	-0.27	0.67	0.31
478	105	0.33	-0.27	0.67	0.18	-0.15	0.38	0.31
479	105	-0.08	-0.12	0.35	-0.14	-0.21	0.62	0.13
479	121	0.14	-0.21	0.62	0.08	-0.12	0.35	0.13
480	121	-0.06	-0.10	0.33	-0.11	-0.18	0.58	0.10
480	137	0.11	-0.18	0.58	0.06	-0.10	0.33	0.10
481	137	-0.06	-0.09	0.31	-0.11	-0.17	0.55	0.10
481	153	0.10	-0.17	0.55	0.06	-0.09	0.31	0.10
482	153	-0.06	-0.10	0.30	-0.10	-0.17	0.53	0.10
482	169	0.10	-0.17	0.53	0.06	-0.10	0.30	0.10
483	169	-0.06	-0.11	0.28	-0.10	-0.19	0.50	0.09
483	185	0.10	-0.19	0.50	0.05	-0.11	0.28	0.09
484	185	-0.05	-0.12	0.25	-0.10	-0.21	0.45	0.09
484	201	0.09	-0.21	0.45	0.05	-0.12	0.25	0.09
485	201	-0.05	-0.12	0.22	-0.09	-0.22	0.39	0.08
485	217	0.09	-0.22	0.39	0.05	-0.12	0.22	0.08
486	217	-0.05	-0.13	0.17	-0.08	-0.23	0.29	0.07
486	233	0.08	-0.23	0.29	0.04	-0.13	0.17	0.07
487	233	-0.04	-0.13	0.09	-0.07	-0.23	0.17	0.06
487	249	0.06	-0.23	0.17	0.04	-0.13	0.09	0.06
488	249	-0.03	-0.12	0.01	-0.05	-0.21	0.01	0.04
488	265	0.04	-0.21	0.01	0.02	-0.12	0.01	0.04
489	265	-0.01	-0.10	-0.08	-0.02	-0.17	-0.13	0.02
489	281	0.02	-0.17	-0.13	0.01	-0.10	-0.08	0.02
490	281	0.03	-0.10	-0.22	0.01	-0.06	-0.13	0.02
490	297	-0.01	-0.06	-0.13	-0.03	-0.10	-0.22	0.02
491	297	0.14	-0.02	-0.23	0.08	-0.01	-0.13	0.21
491	313	-0.08	-0.01	-0.13	-0.14	-0.02	-0.23	0.21
492	10	-0.09	-0.02	0.13	-0.15	-0.04	0.23	0.01
492	26	-0.09	-0.02	0.13	-0.16	-0.04	0.23	0.01
493	26	-0.36	-0.09	0.29	-0.64	-0.16	0.52	0.48
493	42	0.39	-0.16	0.52	0.22	-0.09	0.29	0.48
494	42	-0.07	-0.13	0.31	-0.13	-0.22	0.55	0.20
494	58	0.30	-0.22	0.55	0.17	-0.13	0.31	0.20

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
495	58	-0.07	-0.13	0.30	-0.12	-0.24	0.53	0.15
495	74	0.20	-0.24	0.53	0.11	-0.13	0.30	0.15
496	74	-0.10	-0.12	0.28	-0.18	-0.21	0.50	0.15
496	90	0.16	-0.21	0.50	0.09	-0.12	0.28	0.15
497	90	-0.13	-0.07	0.26	-0.23	-0.13	0.46	0.23
497	106	0.27	-0.13	0.46	0.15	-0.07	0.26	0.23
498	106	-0.06	-0.02	0.26	-0.11	-0.04	0.46	0.15
498	122	0.22	-0.04	0.46	0.12	-0.02	0.26	0.15
499	122	-0.06	0.02	0.24	-0.11	0.03	0.44	0.14
499	138	0.19	0.03	0.44	0.10	0.02	0.24	0.14
500	138	-0.07	0.05	0.23	-0.12	0.08	0.41	0.14
500	154	0.17	0.08	0.41	0.10	0.05	0.23	0.14
501	154	-0.06	0.06	0.21	-0.11	0.11	0.38	0.13
501	170	0.18	0.11	0.38	0.10	0.06	0.21	0.13
502	170	-0.05	0.06	0.19	-0.09	0.11	0.34	0.13
502	186	0.18	0.11	0.34	0.10	0.06	0.19	0.13
503	186	-0.04	0.05	0.16	-0.07	0.09	0.29	0.12
503	202	0.20	0.09	0.29	0.11	0.05	0.16	0.12
504	202	-0.02	0.03	0.12	-0.03	0.06	0.21	0.12
504	218	0.22	0.06	0.21	0.13	0.03	0.12	0.12
505	218	0.01	0.00	0.11	0.01	0.00	0.06	0.11
505	234	0.25	0.00	0.11	0.14	0.00	0.06	0.11
506	234	0.08	-0.06	-0.03	0.05	-0.03	-0.02	0.09
506	250	0.28	-0.06	-0.03	0.16	-0.03	-0.02	0.09
507	250	0.16	-0.10	-0.23	0.09	-0.06	-0.13	0.06
507	266	0.29	-0.10	-0.23	0.16	-0.06	-0.13	0.06
508	266	0.18	-0.11	-0.45	0.10	-0.06	-0.25	0.01
508	282	0.21	-0.11	-0.45	0.12	-0.06	-0.25	0.01
509	282	0.07	-0.08	-0.56	0.04	-0.04	-0.32	0.02
509	298	0.11	-0.08	-0.56	0.06	-0.04	-0.32	0.02
510	298	0.01	-0.01	-0.36	0.00	-0.01	-0.20	0.02
510	314	0.03	-0.01	-0.36	0.02	-0.01	-0.20	0.02
511	11	-0.08	-0.01	-0.09	-0.15	-0.03	-0.17	0.01
511	27	-0.08	-0.01	-0.09	-0.13	-0.03	-0.17	0.01
512	27	-0.31	-0.07	-0.21	-0.55	-0.12	-0.37	0.33
512	43	0.16	-0.12	-0.37	0.09	-0.07	-0.21	0.33
513	43	-0.18	-0.09	-0.18	-0.32	-0.15	-0.32	0.28
513	59	0.28	-0.15	-0.32	0.16	-0.09	-0.18	0.28
514	59	-0.13	-0.07	-0.16	-0.22	-0.12	-0.28	0.24
514	75	0.29	-0.12	-0.28	0.16	-0.07	-0.16	0.24
515	75	-0.12	-0.02	-0.15	-0.21	-0.04	-0.27	0.22
515	91	0.27	-0.04	-0.27	0.15	-0.02	-0.15	0.22
516	91	-0.11	0.05	-0.15	-0.20	0.09	-0.27	0.22
516	107	0.28	0.09	-0.27	0.16	0.05	-0.15	0.22
517	107	-0.10	0.13	-0.15	-0.18	0.24	-0.26	0.21
517	123	0.28	0.24	-0.26	0.16	0.13	-0.15	0.21

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
518	123	-0.09	0.21	-0.14	-0.16	0.37	-0.26	0.20
518	139	0.27	0.37	-0.26	0.15	0.21	-0.14	0.20
519	139	-0.09	0.27	-0.14	-0.16	0.47	-0.26	0.20
519	155	0.27	0.47	-0.26	0.15	0.27	-0.14	0.20
520	155	-0.08	0.31	-0.15	-0.14	0.55	-0.26	0.20
520	171	0.28	0.55	-0.26	0.16	0.31	-0.15	0.20
521	171	-0.06	0.33	-0.15	-0.11	0.58	-0.27	0.20
521	187	0.31	0.58	-0.27	0.18	0.33	-0.15	0.20
522	187	-0.02	0.32	-0.16	-0.04	0.57	-0.29	0.18
522	203	0.36	0.57	-0.29	0.20	0.32	-0.16	0.18
523	203	0.04	0.49	-0.33	0.02	0.28	-0.19	0.16
523	219	0.38	0.49	-0.33	0.22	0.28	-0.19	0.16
524	219	0.11	0.35	-0.36	0.06	0.20	-0.21	0.14
524	235	0.42	0.35	-0.36	0.24	0.20	-0.21	0.14
525	235	0.24	0.19	-0.38	0.13	0.11	-0.21	0.13
525	251	0.52	0.19	-0.38	0.29	0.11	-0.21	0.13
526	251	0.49	0.07	-0.43	0.28	0.04	-0.24	0.06
526	267	0.63	0.07	-0.43	0.36	0.04	-0.24	0.06
527	267	0.81	-0.01	-0.59	0.45	-0.01	-0.33	0.16
527	283	0.45	-0.01	-0.59	0.26	-0.01	-0.33	0.16
528	283	0.78	-0.05	-0.81	0.44	-0.03	-0.45	0.56
528	299	-0.25	-0.03	-0.45	-0.44	-0.05	-0.81	0.56
529	299	-0.05	-0.01	-0.19	-0.09	-0.01	-0.34	0.03
529	315	-0.07	-0.01	-0.19	-0.13	-0.01	-0.34	0.03
530	12	-0.01	-0.01	-0.21	-0.01	-0.02	-0.37	0.05
530	28	-0.04	-0.01	-0.21	-0.08	-0.02	-0.37	0.05
531	28	-0.05	-0.06	-0.39	-0.09	-0.11	-0.69	0.01
531	44	-0.04	-0.06	-0.39	-0.08	-0.11	-0.69	0.01
532	44	-0.06	-0.06	-0.44	-0.10	-0.10	-0.78	0.05
532	60	0.00	-0.10	-0.78	0.00	-0.06	-0.44	0.05
533	60	-0.03	-0.01	-0.45	-0.06	-0.02	-0.80	0.05
533	76	0.05	-0.02	-0.80	0.03	-0.01	-0.45	0.05
534	76	-0.02	0.07	-0.44	-0.03	0.12	-0.79	0.05
534	92	0.07	0.12	-0.79	0.04	0.07	-0.44	0.05
535	92	-0.01	0.17	-0.44	-0.02	0.31	-0.77	0.04
535	108	0.07	0.31	-0.77	0.04	0.17	-0.44	0.04
536	108	-0.01	0.29	-0.43	-0.02	0.51	-0.76	0.04
536	124	0.08	0.51	-0.76	0.04	0.29	-0.43	0.04
537	124	-0.01	0.39	-0.42	-0.02	0.70	-0.74	0.05
537	140	0.08	0.70	-0.74	0.05	0.39	-0.42	0.05
538	140	-0.01	0.49	-0.41	-0.01	0.87	-0.72	0.05
538	156	0.09	0.87	-0.72	0.05	0.49	-0.41	0.05
539	156	0.00	0.56	-0.39	-0.01	1.00	-0.70	0.05
539	172	0.11	1.00	-0.70	0.06	0.56	-0.39	0.05
540	172	0.01	1.06	-0.67	0.01	0.60	-0.37	0.06
540	188	0.14	1.06	-0.67	0.08	0.60	-0.37	0.06

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
541	188	0.06	1.05	-0.61	0.03	0.59	-0.34	0.07
541	204	0.21	1.05	-0.61	0.12	0.59	-0.34	0.07
542	204	0.18	0.94	-0.53	0.10	0.53	-0.30	0.05
542	220	0.28	0.94	-0.53	0.15	0.53	-0.30	0.05
543	220	0.36	0.71	-0.49	0.20	0.40	-0.28	0.18
543	236	-0.02	0.40	-0.28	-0.03	0.71	-0.49	0.18
544	236	0.10	0.44	-0.27	0.05	0.25	-0.15	0.05
544	252	0.21	0.44	-0.27	0.12	0.25	-0.15	0.05
545	252	0.32	0.24	-0.02	0.18	0.13	-0.01	0.08
545	268	0.48	0.24	-0.02	0.27	0.13	-0.01	0.08
546	268	0.75	0.07	0.32	0.42	0.04	0.18	0.08
546	284	0.57	0.07	0.32	0.32	0.04	0.18	0.08
547	284	1.24	-0.04	0.62	0.70	-0.02	0.35	1.04
547	300	-0.57	-0.02	0.35	-1.02	-0.04	0.62	1.04
548	300	-0.17	-0.01	0.17	-0.30	-0.02	0.29	0.06
548	316	-0.12	-0.01	0.17	-0.22	-0.02	0.29	0.06
549	13	-0.12	-0.02	-0.25	-0.22	-0.03	-0.44	0.32
549	29	0.22	-0.03	-0.44	0.12	-0.02	-0.25	0.32
550	29	-0.07	-0.06	-0.30	-0.13	-0.10	-0.54	0.12
550	45	0.13	-0.10	-0.54	0.07	-0.06	-0.30	0.12
551	45	-0.06	-0.04	-0.34	-0.11	-0.08	-0.60	0.10
551	61	0.10	-0.08	-0.60	0.06	-0.04	-0.34	0.10
552	61	-0.06	0.02	-0.35	-0.11	0.04	-0.62	0.10
552	77	0.11	0.04	-0.62	0.06	0.02	-0.35	0.10
553	77	-0.06	0.12	-0.35	-0.11	0.22	-0.62	0.10
553	93	0.11	0.22	-0.62	0.06	0.12	-0.35	0.10
554	93	-0.06	0.25	-0.34	-0.10	0.44	-0.60	0.10
554	109	0.11	0.44	-0.60	0.06	0.25	-0.34	0.10
555	109	-0.06	0.38	-0.33	-0.10	0.68	-0.58	0.10
555	125	0.12	0.68	-0.58	0.07	0.38	-0.33	0.10
556	125	-0.05	0.52	-0.32	-0.09	0.92	-0.56	0.10
556	141	0.12	0.92	-0.56	0.07	0.52	-0.32	0.10
557	141	-0.05	0.63	-0.30	-0.09	1.13	-0.54	0.09
557	157	0.11	1.13	-0.54	0.06	0.63	-0.30	0.09
558	157	-0.04	0.72	-0.29	-0.08	1.29	-0.52	0.09
558	173	0.11	1.29	-0.52	0.06	0.72	-0.29	0.09
559	173	-0.04	0.77	-0.27	-0.07	1.37	-0.48	0.08
559	189	0.10	1.37	-0.48	0.06	0.77	-0.27	0.08
560	189	-0.03	0.77	-0.22	-0.05	1.36	-0.40	0.06
560	205	0.08	1.36	-0.40	0.05	0.77	-0.22	0.06
561	205	0.04	1.23	-0.26	0.02	0.69	-0.15	0.02
561	221	-0.01	0.69	-0.15	-0.01	1.23	-0.26	0.02
562	221	0.64	0.94	-0.06	0.36	0.53	-0.04	0.58
562	237	-0.35	0.53	-0.04	-0.61	0.94	-0.06	0.58
563	237	0.07	0.60	0.03	0.04	0.34	0.02	0.06
563	253	-0.03	0.34	0.02	-0.06	0.60	0.03	0.06

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
564	253	0.05	0.34	0.25	0.03	0.19	0.14	0.04
564	269	-0.02	0.19	0.14	-0.04	0.34	0.25	0.04
565	269	0.21	0.13	0.65	0.12	0.07	0.37	0.19
565	285	-0.11	0.07	0.37	-0.20	0.13	0.65	0.19
566	285	0.54	-0.04	1.03	0.30	-0.02	0.58	0.49
566	301	-0.30	-0.02	0.58	-0.54	-0.04	1.03	0.49
567	301	0.38	-0.03	0.79	0.21	-0.02	0.44	0.56
567	317	-0.21	-0.02	0.44	-0.38	-0.03	0.79	0.56
568	14	0.06	-0.02	-0.04	0.03	-0.01	-0.02	0.02
568	30	0.03	-0.02	-0.04	0.02	-0.01	-0.02	0.02
569	30	0.20	-0.03	-0.09	0.11	-0.02	-0.05	0.10
569	46	-0.01	-0.02	-0.05	-0.02	-0.03	-0.09	0.10
570	46	0.19	-0.02	-0.12	0.11	-0.01	-0.07	0.13
570	62	-0.05	-0.01	-0.07	-0.09	-0.02	-0.12	0.13
571	62	0.15	0.03	-0.12	0.08	0.02	-0.07	0.13
571	78	-0.08	0.02	-0.07	-0.14	0.03	-0.12	0.13
572	78	0.12	0.12	-0.10	0.07	0.07	-0.06	0.13
572	94	-0.09	0.07	-0.06	-0.16	0.12	-0.10	0.13
573	94	0.11	0.23	-0.08	0.06	0.13	-0.05	0.12
573	110	-0.09	0.13	-0.05	-0.15	0.23	-0.08	0.12
574	110	0.11	0.35	-0.07	0.06	0.19	-0.04	0.12
574	126	-0.08	0.19	-0.04	-0.15	0.35	-0.07	0.12
575	126	0.11	0.46	-0.05	0.06	0.26	-0.03	0.12
575	142	-0.08	0.26	-0.03	-0.14	0.46	-0.05	0.12
576	142	0.11	0.56	-0.04	0.06	0.32	-0.02	0.12
576	158	-0.08	0.32	-0.02	-0.14	0.56	-0.04	0.12
577	158	0.10	0.63	-0.02	0.06	0.36	-0.01	0.12
577	174	-0.09	0.36	-0.01	-0.16	0.63	-0.02	0.12
578	174	0.08	0.67	0.00	0.04	0.38	0.00	0.12
578	190	-0.10	0.38	0.00	-0.18	0.67	0.00	0.12
579	190	0.03	0.65	0.04	0.02	0.37	0.02	0.11
579	206	-0.12	0.37	0.02	-0.21	0.65	0.04	0.11
580	206	-0.02	0.33	0.05	-0.03	0.58	0.08	0.09
580	222	-0.13	0.33	0.05	-0.22	0.58	0.08	0.09
581	222	-0.06	0.25	0.08	-0.10	0.45	0.14	0.05
581	238	-0.12	0.25	0.08	-0.21	0.45	0.14	0.05
582	238	-0.08	0.17	0.13	-0.14	0.30	0.24	0.05
582	254	-0.14	0.17	0.13	-0.25	0.30	0.24	0.05
583	254	-0.13	0.09	0.18	-0.23	0.16	0.32	0.01
583	270	-0.14	0.09	0.18	-0.25	0.16	0.32	0.01
584	270	-0.18	0.03	0.20	-0.32	0.05	0.36	0.11
584	286	-0.05	0.03	0.20	-0.09	0.05	0.36	0.11
585	286	-0.14	0.00	0.18	-0.25	-0.01	0.32	0.20
585	302	0.18	-0.01	0.32	0.10	0.00	0.18	0.20
586	302	0.00	-0.01	0.11	0.00	-0.02	0.20	0.05
586	318	0.06	-0.02	0.20	0.04	-0.01	0.11	0.05

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
587	15	0.05	-0.01	0.07	0.03	-0.01	0.04	0.01
587	31	0.06	-0.01	0.07	0.04	-0.01	0.04	0.01
588	31	0.21	0.03	0.11	0.12	0.02	0.06	0.11
588	47	-0.01	0.02	0.06	-0.02	0.03	0.11	0.11
589	47	0.17	0.02	0.16	0.10	0.01	0.09	0.15
589	63	-0.08	0.01	0.09	-0.15	0.02	0.16	0.15
590	63	0.09	0.02	0.22	0.05	0.01	0.12	0.13
590	79	-0.10	0.01	0.12	-0.18	0.02	0.22	0.13
591	79	0.06	0.02	0.26	0.03	0.01	0.14	0.11
591	95	-0.10	0.01	0.14	-0.17	0.02	0.26	0.11
592	95	0.06	0.02	0.27	0.03	0.01	0.15	0.10
592	111	-0.08	0.01	0.15	-0.15	0.02	0.27	0.10
593	111	0.07	0.01	0.28	0.04	0.01	0.16	0.09
593	127	-0.07	0.01	0.16	-0.13	0.01	0.28	0.09
594	127	0.07	0.01	0.28	0.04	0.01	0.16	0.09
594	143	-0.07	0.01	0.16	-0.13	0.01	0.28	0.09
595	143	0.07	0.01	0.28	0.04	0.00	0.16	0.09
595	159	-0.07	0.00	0.16	-0.13	0.01	0.28	0.09
596	159	0.06	0.00	0.28	0.03	0.00	0.16	0.09
596	175	-0.08	0.00	0.16	-0.14	0.00	0.28	0.09
597	175	0.03	-0.01	0.28	0.02	-0.01	0.16	0.09
597	191	-0.09	-0.01	0.16	-0.16	-0.01	0.28	0.09
598	191	-0.01	-0.01	0.15	-0.02	-0.02	0.27	0.08
598	207	-0.11	-0.01	0.15	-0.19	-0.02	0.27	0.08
599	207	-0.04	-0.02	0.14	-0.08	-0.03	0.26	0.07
599	223	-0.13	-0.02	0.14	-0.22	-0.03	0.26	0.07
600	223	-0.09	-0.01	0.14	-0.15	-0.01	0.24	0.05
600	239	-0.14	-0.01	0.14	-0.26	-0.01	0.24	0.05
601	239	-0.14	0.00	0.13	-0.25	0.00	0.24	0.01
601	255	-0.15	0.00	0.13	-0.27	0.00	0.24	0.01
602	255	-0.19	0.00	0.13	-0.35	-0.01	0.24	0.05
602	271	-0.13	0.00	0.13	-0.23	-0.01	0.24	0.05
603	271	-0.20	-0.01	0.14	-0.35	-0.01	0.24	0.13
603	287	-0.04	-0.01	0.14	-0.06	-0.01	0.24	0.13
604	287	-0.10	0.01	0.14	-0.17	0.02	0.25	0.13
604	303	0.11	0.02	0.25	0.06	0.01	0.14	0.13
605	303	0.02	-0.01	0.16	0.01	-0.01	0.09	0.01
605	319	0.03	-0.01	0.16	0.02	-0.01	0.09	0.01
606	16	0.11	-0.01	0.13	0.06	0.00	0.07	0.13
606	32	-0.03	0.00	0.07	-0.06	-0.01	0.13	0.13
607	32	0.24	0.05	0.32	0.14	0.03	0.18	0.22
607	48	-0.14	0.03	0.18	-0.24	0.05	0.32	0.22
608	48	0.02	0.05	0.44	0.01	0.03	0.25	0.11
608	64	-0.12	0.03	0.25	-0.22	0.05	0.44	0.11
609	64	-0.03	0.00	0.27	-0.05	0.00	0.48	0.04
609	80	-0.08	0.00	0.27	-0.15	0.00	0.48	0.04
610	80	-0.03	-0.05	0.27	-0.04	-0.09	0.48	0.02
610	96	-0.05	-0.05	0.27	-0.09	-0.09	0.48	0.02
611	96	-0.01	-0.11	0.26	-0.02	-0.19	0.46	0.02
611	112	-0.03	-0.11	0.26	-0.06	-0.19	0.46	0.02
612	112	0.00	-0.17	0.25	-0.01	-0.31	0.45	0.02
612	128	-0.03	-0.17	0.25	-0.05	-0.31	0.45	0.02
613	128	0.00	-0.42	0.44	0.00	-0.24	0.25	0.02
613	144	-0.02	-0.24	0.25	-0.04	-0.42	0.44	0.02
614	144	0.00	-0.52	0.43	0.00	-0.30	0.24	0.02
614	160	-0.03	-0.30	0.24	-0.05	-0.52	0.43	0.02
615	160	0.00	-0.34	0.23	-0.01	-0.60	0.42	0.02
615	176	-0.03	-0.34	0.23	-0.06	-0.60	0.42	0.02
616	176	-0.01	-0.36	0.22	-0.02	-0.65	0.40	0.02
616	192	-0.04	-0.36	0.22	-0.07	-0.65	0.40	0.02
617	192	-0.02	-0.36	0.20	-0.04	-0.65	0.36	0.02
617	208	-0.05	-0.36	0.20	-0.09	-0.65	0.36	0.02
618	208	-0.04	-0.33	0.18	-0.07	-0.58	0.31	0.03
618	224	-0.07	-0.33	0.18	-0.12	-0.58	0.31	0.03
619	224	-0.06	-0.25	0.14	-0.11	-0.44	0.25	0.02
619	240	-0.09	-0.25	0.14	-0.16	-0.44	0.25	0.02
620	240	-0.10	-0.16	0.09	-0.18	-0.28	0.16	0.01
620	256	-0.12	-0.16	0.09	-0.21	-0.28	0.16	0.01
621	256	-0.16	-0.09	0.04	-0.28	-0.15	0.07	0.03
621	272	-0.12	-0.09	0.04	-0.21	-0.15	0.07	0.03
622	272	-0.21	-0.03	0.02	-0.37	-0.05	0.03	0.13
622	288	-0.05	-0.03	0.02	-0.09	-0.05	0.03	0.13
623	288	-0.20	0.01	0.04	-0.36	0.02	0.08	0.28
623	304	0.23	0.02	0.08	0.13	0.01	0.04	0.28
624	304	-0.05	0.00	0.05	-0.08	-0.01	0.09	0.15
624	320	0.12	-0.01	0.09	0.07	0.00	0.05	0.15

Envolvente de esfuerzos por empuje de las tierras

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
1	1	-23.97	26.12	0.56	-63.91	69.65	1.51	3.53
1	2	-21.28	26.12	0.56	-56.73	69.65	1.51	3.53
2	2	-21.80	24.99	0.51	-58.15	66.65	1.35	5.20
2	3	-15.62	24.99	0.51	-41.66	66.65	1.35	5.20
3	3	-16.24	24.02	0.55	-43.31	64.06	1.46	2.62
3	4	-13.13	24.02	0.55	-35.01	64.06	1.46	2.62
4	4	-13.78	22.88	0.41	-36.76	61.01	1.10	2.10
4	5	-12.18	22.88	0.41	-32.49	61.01	1.10	2.10
5	5	-12.19	-0.76	-0.23	-32.51	-2.02	-0.62	59.23
5	6	67.49	-2.02	-0.62	25.31	-0.76	-0.23	19.50

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
6	6	69.55	0.01	-0.85	26.08	0.00	-0.32	19.71
6	7	80.87	0.01	-0.85	30.33	0.00	-0.32	9.20
7	7	82.65	0.63	-0.74	30.99	0.24	-0.28	9.10
7	8	33.13	0.63	-0.74	12.42	0.24	-0.28	27.19
8	8	34.57	2.04	-0.36	12.96	0.77	-0.13	27.22
8	9	-18.00	0.77	-0.13	-48.00	2.04	-0.36	34.50
9	9	-18.07	12.87	-0.04	-48.18	34.31	-0.10	2.50
9	10	-16.16	12.87	-0.04	-43.10	34.31	-0.10	2.50
10	10	-16.84	13.07	0.08	-44.91	34.85	0.21	2.10
10	11	-14.34	13.07	0.08	-38.24	34.85	0.21	2.10
11	11	-15.02	13.18	0.05	-40.05	35.15	0.12	2.02
11	12	-12.62	13.18	0.05	-33.65	35.15	0.12	2.02
12	12	-13.04	13.20	-0.10	-34.77	35.19	-0.28	2.26
12	13	-11.32	13.20	-0.10	-30.18	35.19	-0.28	2.26
13	13	-11.22	-0.73	-0.28	-29.91	-1.95	-0.76	33.93
13	14	47.85	-1.95	-0.76	17.94	-0.73	-0.28	24.08
14	14	50.02	-0.66	-0.86	18.76	-0.25	-0.32	24.16
14	15	88.31	-0.66	-0.86	33.12	-0.25	-0.32	3.49
15	15	90.02	-0.09	-0.68	33.76	-0.03	-0.25	3.52
15	16	60.59	-0.09	-0.68	22.72	-0.03	-0.25	27.96
16	16	61.84	1.95	-0.27	23.19	0.73	-0.10	28.04
16	1	-23.89	0.73	-0.10	-63.71	1.95	-0.27	70.34
17	17	-23.64	26.10	0.36	-63.03	69.60	0.95	2.79
17	18	-21.54	26.13	0.36	-57.43	69.69	0.95	2.80
18	18	-21.63	24.97	0.34	-57.68	66.58	0.91	4.96
18	19	-15.78	25.02	0.34	-42.07	66.72	0.92	4.97
19	19	-15.91	24.00	0.35	-42.42	64.01	0.94	2.09
19	20	-13.46	24.05	0.35	-35.88	64.14	0.94	2.09
20	20	-13.52	22.87	0.25	-36.06	61.00	0.68	1.20
20	21	-12.62	22.90	0.26	-33.66	61.08	0.68	1.21
21	21	-12.61	-0.67	-0.15	-33.64	-1.77	-0.41	59.94
21	22	68.22	-1.77	-0.41	25.58	-0.67	-0.15	20.21
22	22	68.65	0.02	-0.59	25.75	0.01	-0.22	20.38
22	23	81.72	0.02	-0.59	30.64	0.01	-0.22	8.53
23	23	82.00	0.63	-0.50	30.75	0.24	-0.19	8.53
23	24	33.96	0.63	-0.50	12.73	0.24	-0.19	26.62
24	24	34.15	1.72	-0.22	12.81	0.65	-0.08	26.73
24	25	-17.69	0.65	-0.08	-47.16	1.72	-0.22	34.01
25	25	-17.69	12.87	-0.02	-47.19	34.33	-0.04	1.65
25	26	-16.42	12.86	-0.02	-43.78	34.28	-0.04	1.65
26	26	-16.54	13.09	0.07	-44.10	34.90	0.18	1.57
26	27	-14.65	13.06	0.07	-39.06	34.83	0.18	1.56
27	27	-14.80	13.20	0.04	-39.45	35.20	0.11	1.58
27	28	-12.89	13.17	0.04	-34.37	35.13	0.11	1.58
28	28	-12.94	13.22	-0.07	-34.50	35.24	-0.19	1.70
28	29	-11.63	13.20	-0.07	-31.01	35.20	-0.19	1.70

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
29	29	-11.62	-0.65	-0.19	-30.98	-1.74	-0.50	34.69
29	30	48.68	-1.74	-0.50	18.26	-0.65	-0.19	24.78
30	30	49.12	-0.67	-0.59	18.42	-0.25	-0.22	24.87
30	31	89.17	-0.67	-0.59	33.44	-0.25	-0.22	4.14
31	31	89.44	-0.10	-0.46	33.54	-0.04	-0.17	4.07
31	32	61.36	-0.10	-0.46	23.01	-0.04	-0.17	27.47
32	32	61.53	1.39	-0.16	23.07	0.52	-0.06	27.63
32	17	-23.63	0.52	-0.06	-63.02	1.39	-0.16	69.98
33	33	-23.39	26.09	0.33	-62.37	69.57	0.88	2.47
33	34	-21.54	26.12	0.33	-57.44	69.66	0.89	2.47
34	34	-21.58	24.97	0.36	-57.55	66.60	0.96	4.93
34	35	-15.76	25.02	0.36	-42.03	66.73	0.96	4.94
35	35	-15.80	24.03	0.33	-42.15	64.08	0.87	1.86
35	36	-13.63	24.08	0.33	-36.34	64.21	0.87	1.86
36	36	-13.59	22.94	0.20	-36.23	61.17	0.52	0.78
36	37	-13.01	22.97	0.20	-34.70	61.25	0.52	0.78
37	37	-13.00	-0.49	-0.17	-34.66	-1.30	-0.44	60.32
37	38	68.18	-1.30	-0.44	25.57	-0.49	-0.17	20.59
38	38	68.38	0.06	-0.66	25.64	0.02	-0.25	20.58
38	39	81.97	0.06	-0.66	30.74	0.02	-0.25	8.33
39	39	82.03	0.62	-0.50	30.76	0.23	-0.19	8.36
39	40	34.43	0.62	-0.50	12.91	0.23	-0.19	26.45
40	40	34.30	1.33	-0.11	12.86	0.50	-0.04	26.47
40	41	-17.37	0.50	-0.04	-46.33	1.33	-0.11	33.75
41	41	-17.39	12.88	0.01	-46.37	34.34	0.03	1.32
41	42	-16.36	12.86	0.01	-43.64	34.29	0.03	1.32
42	42	-16.40	13.10	0.10	-43.72	34.93	0.26	1.36
42	43	-14.75	13.07	0.10	-39.34	34.86	0.26	1.36
43	43	-14.78	13.22	0.06	-39.41	35.24	0.15	1.40
43	44	-13.09	13.19	0.06	-34.90	35.17	0.15	1.40
44	44	-13.07	13.26	-0.08	-34.84	35.36	-0.23	1.41
44	45	-11.97	13.24	-0.08	-31.93	35.31	-0.23	1.41
45	45	-11.97	-0.53	-0.19	-31.91	-1.42	-0.51	35.13
45	46	48.77	-1.42	-0.51	18.29	-0.53	-0.19	25.13
46	46	48.88	-0.66	-0.65	18.33	-0.25	-0.24	25.11
46	47	89.45	-0.66	-0.65	33.54	-0.25	-0.24	4.30
47	47	89.51	-0.14	-0.47	33.56	-0.05	-0.18	4.25
47	48	61.79	-0.14	-0.47	23.17	-0.05	-0.18	27.37
48	48	61.75	0.91	-0.08	23.16	0.34	-0.03	27.41
48	33	-23.38	0.34	-0.03	-62.36	0.91	-0.08	69.86
49	49	-23.20	26.08	0.33	-61.87	69.54	0.87	2.31
49	50	-21.46	26.11	0.33	-57.24	69.63	0.87	2.32
50	50	-21.50	24.98	0.37	-57.33	66.62	0.97	4.84
50	51	-15.78	25.03	0.37	-42.08	66.76	0.98	4.85
51	51	-15.80	24.07	0.30	-42.14	64.19	0.80	1.72
51	52	-13.79	24.12	0.30	-36.77	64.32	0.80	1.72

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
52	52	-13.75	23.04	0.14	-36.67	61.43	0.37	0.56
52	53	-13.34	23.07	0.14	-35.58	61.51	0.37	0.56
53	53	-13.32	-0.39	-0.22	-35.51	-1.05	-0.58	60.56
53	54	67.94	-1.05	-0.58	25.48	-0.39	-0.22	20.83
54	54	68.21	0.12	-0.75	25.58	0.04	-0.28	20.76
54	55	82.26	0.12	-0.75	30.85	0.04	-0.28	8.15
55	55	82.28	0.62	-0.44	30.85	0.23	-0.17	8.25
55	56	34.97	0.62	-0.44	13.11	0.23	-0.17	26.34
56	56	34.70	1.15	0.05	13.01	0.43	0.02	26.39
56	57	-17.14	0.43	0.02	-45.71	1.15	0.05	33.67
57	57	-17.17	12.90	0.06	-45.78	34.40	0.16	1.15
57	58	-16.27	12.88	0.06	-43.39	34.36	0.16	1.15
58	58	-16.30	13.12	0.12	-43.47	34.99	0.33	1.22
58	59	-14.82	13.09	0.12	-39.53	34.92	0.33	1.22
59	59	-14.82	13.24	0.06	-39.51	35.31	0.16	1.27
59	60	-13.28	13.21	0.06	-35.42	35.23	0.16	1.27
60	60	-13.25	13.32	-0.09	-35.34	35.51	-0.25	1.28
60	61	-12.26	13.30	-0.09	-32.70	35.46	-0.25	1.28
61	61	-12.26	-0.48	-0.21	-32.68	-1.28	-0.55	35.42
61	62	48.65	-1.28	-0.55	18.25	-0.48	-0.21	25.34
62	62	48.71	-0.65	-0.69	18.27	-0.25	-0.26	25.31
62	63	89.70	-0.65	-0.69	33.64	-0.25	-0.26	4.41
63	63	89.72	-0.18	-0.46	33.64	-0.07	-0.17	4.39
63	64	62.24	-0.18	-0.46	23.34	-0.07	-0.17	27.33
64	64	62.19	0.73	-0.02	23.32	0.27	-0.01	27.34
64	49	-23.19	0.27	-0.01	-61.85	0.73	-0.02	69.87
65	65	-23.01	26.06	0.32	-61.37	69.51	0.86	2.17
65	66	-21.38	26.10	0.32	-57.02	69.60	0.86	2.17
66	66	-21.41	25.00	0.36	-57.09	66.66	0.97	4.74
66	67	-15.81	25.05	0.36	-42.17	66.79	0.97	4.75
67	67	-15.83	24.13	0.28	-42.22	64.33	0.75	1.58
67	68	-13.99	24.17	0.28	-37.30	64.46	0.75	1.58
68	68	-13.96	23.17	0.08	-37.23	61.79	0.21	0.35
68	69	-13.71	23.20	0.08	-36.57	61.87	0.21	0.35
69	69	-13.68	-0.31	-0.30	-36.48	-0.82	-0.81	60.88
69	70	67.82	-0.82	-0.81	25.43	-0.31	-0.30	21.16
70	70	68.16	0.20	-0.85	25.56	0.07	-0.32	20.97
70	71	82.75	0.20	-0.85	31.03	0.07	-0.32	7.94
71	71	82.76	0.63	-0.34	31.03	0.23	-0.13	8.18
71	72	35.62	0.63	-0.34	13.36	0.23	-0.13	26.27
72	72	35.30	1.02	0.28	13.24	0.38	0.11	26.45
72	73	-16.98	0.38	0.11	-45.28	1.02	0.28	33.73
73	73	-17.02	12.95	0.12	-45.37	34.53	0.32	1.01
73	74	-16.22	12.93	0.12	-43.26	34.48	0.32	1.01
74	74	-16.24	13.15	0.14	-43.32	35.07	0.38	1.11
74	75	-14.90	13.12	0.14	-39.72	35.00	0.38	1.11
75	75	-14.88	13.27	0.06	-39.68	35.39	0.16	1.16
75	76	-13.47	13.24	0.06	-35.93	35.31	0.16	1.16
76	76	-13.45	13.38	-0.10	-35.87	35.68	-0.26	1.17
76	77	-12.54	13.36	-0.10	-33.45	35.63	-0.26	1.17
77	77	-12.54	-0.44	-0.22	-33.43	-1.17	-0.59	35.71
77	78	48.53	-1.17	-0.59	18.20	-0.44	-0.22	25.54
78	78	48.57	-0.65	-0.71	18.21	-0.24	-0.27	25.52
78	79	89.97	-0.65	-0.71	33.74	-0.24	-0.27	4.53
79	79	89.98	-0.23	-0.45	33.74	-0.09	-0.17	4.52
79	80	62.72	-0.23	-0.45	23.52	-0.09	-0.17	27.29
80	80	62.69	0.57	0.02	23.51	0.21	0.01	27.30
80	65	-23.01	0.21	0.01	-61.35	0.57	0.02	69.92
81	81	-22.82	26.05	0.31	-60.84	69.46	0.82	2.01
81	82	-21.31	26.08	0.31	-56.82	69.55	0.82	2.01
82	82	-21.32	25.01	0.35	-56.86	66.70	0.94	4.63
82	83	-15.86	25.06	0.35	-42.29	66.84	0.94	4.64
83	83	-15.87	24.19	0.27	-42.32	64.51	0.71	1.41
83	84	-14.23	24.24	0.27	-37.94	64.64	0.71	1.41
84	84	-14.22	23.34	0.03	-37.92	62.24	0.08	0.07
84	85	-14.19	23.37	0.03	-37.84	62.32	0.08	0.07
85	85	-14.16	-0.19	-0.40	-37.77	-0.52	-1.07	61.45
85	86	68.01	-0.52	-1.07	25.50	-0.19	-0.40	21.72
86	86	68.23	0.29	-0.96	25.59	0.11	-0.36	21.24
86	87	83.53	0.29	-0.96	31.32	0.11	-0.36	7.67
87	87	83.53	0.64	-0.24	31.32	0.24	-0.09	8.17
87	88	36.41	0.64	-0.24	13.65	0.24	-0.09	26.27
88	88	36.20	0.96	0.54	13.57	0.36	0.20	26.75
88	89	-16.94	0.36	0.20	-45.16	0.96	0.54	34.03
89	89	-16.96	13.03	0.18	-45.24	34.74	0.47	0.95
89	90	-16.22	13.01	0.18	-43.25	34.69	0.47	0.95
90	90	-16.23	13.19	0.16	-43.27	35.18	0.42	1.04
90	91	-14.97	13.16	0.16	-39.91	35.11	0.42	1.03
91	91	-14.96	13.30	0.07	-39.89	35.48	0.18	1.07
91	92	-13.66	13.28	0.07	-36.43	35.40	0.18	1.06
92	92	-13.65	13.45	-0.10	-36.41	35.86	-0.25	1.07
92	93	-12.82	13.43	-0.10	-34.18	35.81	-0.25	1.07
93	93	-12.81	-0.40	-0.23	-34.17	-1.07	-0.61	35.99
93	94	48.42	-1.07	-0.61	18.16	-0.40	-0.23	25.73
94	94	48.44	-0.65	-0.72	18.16	-0.24	-0.27	25.72
94	95	90.27	-0.65	-0.72	33.85	-0.24	-0.27	4.65
95	95	90.27	-0.30	-0.45	33.85	-0.11	-0.17	4.64
95	96	63.23	-0.30	-0.45	23.71	-0.11	-0.17	27.25
96	96	63.21	0.39	0.04	23.71	0.15	0.01	27.26
96	81	-22.81	0.15	0.01	-60.83	0.39	0.04	69.97
97	97	-22.61	26.03	0.29	-60.30	69.41	0.76	1.85
97	98	-21.23	26.06	0.29	-56.63	69.50	0.76	1.85

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
98	98	-21.23	25.03	0.33	-56.62	66.74	0.89	4.51
98	99	-15.91	25.08	0.34	-42.42	66.87	0.89	4.52
99	99	-15.91	24.26	0.25	-42.42	64.70	0.67	1.22
99	100	-14.49	24.31	0.25	-38.64	64.83	0.67	1.22
100	100	-14.49	23.54	0.01	-38.64	62.76	0.03	0.39
100	101	-14.80	23.57	0.01	-39.48	62.84	0.03	0.39
101	101	-14.82	-0.03	-0.42	-39.52	-0.08	-1.12	62.84
101	102	68.17	-0.08	-1.12	25.56	-0.03	-0.42	21.80
102	102	68.07	0.40	-0.99	25.53	0.15	-0.37	22.22
102	103	84.22	0.40	-0.99	31.58	0.15	-0.37	8.00
103	103	84.22	0.67	-0.22	31.58	0.25	-0.08	7.57
103	104	36.96	0.67	-0.22	13.86	0.25	-0.08	26.98
104	104	37.06	1.03	0.58	13.90	0.39	0.22	26.56
104	105	-17.06	0.39	0.22	-45.50	1.03	0.58	35.15
105	105	-17.05	13.13	0.20	-45.46	35.01	0.54	1.04
105	106	-16.23	13.11	0.20	-43.29	34.96	0.54	1.04
106	106	-16.23	13.24	0.18	-43.28	35.30	0.47	0.98
106	107	-15.03	13.21	0.18	-40.09	35.22	0.47	0.98
107	107	-15.04	13.34	0.08	-40.10	35.57	0.22	0.98
107	108	-13.85	13.31	0.08	-36.93	35.49	0.22	0.98
108	108	-13.86	13.51	-0.08	-36.95	36.03	-0.22	0.98
108	109	-13.09	13.49	-0.08	-34.91	35.98	-0.22	0.98
109	109	-13.09	-0.37	-0.23	-34.91	-0.98	-0.62	36.29
109	110	48.33	-0.98	-0.62	18.12	-0.37	-0.23	25.94
110	110	48.31	-0.65	-0.72	18.12	-0.24	-0.27	25.93
110	111	90.58	-0.65	-0.72	33.97	-0.24	-0.27	4.77
111	111	90.58	-0.37	-0.45	33.97	-0.14	-0.17	4.76
111	112	63.74	-0.37	-0.45	23.90	-0.14	-0.17	27.21
112	112	63.76	0.21	0.04	23.91	0.08	0.02	27.22
112	97	-22.62	0.08	0.02	-60.31	0.21	0.04	70.02
113	113	-22.41	25.99	0.25	-59.76	69.32	0.67	1.68
113	114	-21.16	26.03	0.25	-56.42	69.41	0.67	1.68
114	114	-21.14	25.03	0.31	-56.37	66.76	0.82	4.39
114	115	-15.95	25.08	0.31	-42.55	66.89	0.82	4.40
115	115	-15.95	24.33	0.23	-42.53	64.89	0.62	1.04
115	116	-14.75	24.38	0.23	-39.32	65.02	0.62	1.04
116	116	-14.76	23.72	0.02	-39.37	63.27	0.04	0.70
116	117	-15.32	23.76	0.02	-40.85	63.35	0.04	0.70
117	117	-15.34	0.10	-0.35	-40.91	0.25	-0.93	63.52
117	118	68.42	0.25	-0.93	25.66	0.10	-0.35	22.39
118	118	68.17	0.51	-0.91	25.56	0.19	-0.34	22.55
118	119	85.07	0.51	-0.91	31.90	0.19	-0.34	7.76
119	119	85.07	0.69	-0.29	31.90	0.26	-0.11	7.55
119	120	37.76	0.69	-0.29	14.16	0.26	-0.11	27.04
120	120	38.02	0.99	0.39	14.26	0.37	0.15	26.88
120	121	-17.05	0.37	0.15	-45.48	0.99	0.39	35.55

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
121	121	-17.03	13.22	0.20	-45.41	35.25	0.52	0.99
121	122	-16.25	13.20	0.20	-43.34	35.21	0.52	0.99
122	122	-16.23	13.28	0.20	-43.27	35.41	0.52	0.92
122	123	-15.10	13.25	0.19	-40.28	35.34	0.52	0.92
123	123	-15.11	13.37	0.11	-40.31	35.64	0.29	0.89
123	124	-14.03	13.34	0.11	-37.42	35.57	0.28	0.89
124	124	-14.06	13.57	-0.06	-37.49	36.17	-0.15	0.89
124	125	-13.37	13.55	-0.06	-35.64	36.13	-0.15	0.88
125	125	-13.37	-0.33	-0.22	-35.66	-0.88	-0.60	36.58
125	126	48.24	-0.88	-0.60	18.09	-0.33	-0.22	26.15
126	126	48.18	-0.66	-0.72	18.07	-0.25	-0.27	26.14
126	127	90.87	-0.66	-0.72	34.08	-0.25	-0.27	4.90
127	127	90.88	-0.44	-0.46	34.08	-0.17	-0.17	4.89
127	128	64.25	-0.44	-0.46	24.09	-0.17	-0.17	27.18
128	128	64.31	0.03	0.02	24.12	0.01	0.01	27.19
128	113	-22.42	0.01	0.01	-59.78	0.03	0.02	70.07
129	129	-22.21	25.94	0.21	-59.22	69.18	0.55	1.52
129	130	-21.08	25.98	0.21	-56.21	69.27	0.55	1.52
130	130	-21.04	25.03	0.27	-56.12	66.74	0.73	4.28
130	131	-15.99	25.08	0.27	-42.65	66.88	0.73	4.29
131	131	-15.99	24.40	0.22	-42.64	65.06	0.59	0.88
131	132	-14.97	24.45	0.22	-39.93	65.20	0.59	0.88
132	132	-15.01	23.90	0.04	-40.02	63.73	0.09	0.94
132	133	-15.75	23.93	0.04	-41.99	63.81	0.10	0.94
133	133	-15.77	0.19	-0.28	-42.05	0.52	-0.74	64.00
133	134	68.42	0.52	-0.74	25.66	0.19	-0.28	22.78
134	134	68.18	0.62	-0.83	25.57	0.23	-0.31	22.84
134	135	85.69	0.62	-0.83	32.14	0.23	-0.31	7.56
135	135	85.69	0.72	-0.38	32.14	0.27	-0.14	7.47
135	136	38.47	0.72	-0.38	14.43	0.27	-0.14	27.05
136	136	38.72	0.88	0.19	14.52	0.33	0.07	27.00
136	137	-16.95	0.33	0.07	-45.21	0.88	0.19	35.76
137	137	-16.93	13.29	0.18	-45.14	35.45	0.47	0.88
137	138	-16.23	13.28	0.18	-43.29	35.40	0.47	0.88
138	138	-16.19	13.31	0.21	-43.17	35.50	0.55	0.83
138	139	-15.17	13.29	0.21	-40.46	35.43	0.55	0.83
139	139	-15.18	13.38	0.14	-40.47	35.69	0.37	0.79
139	140	-14.21	13.36	0.14	-37.90	35.62	0.37	0.79
140	140	-14.26	13.61	-0.01	-38.02	36.28	-0.03	0.78
140	141	-13.65	13.59	-0.01	-36.40	36.23	-0.03	0.77
141	141	-13.66	-0.29	-0.20	-36.44	-0.77	-0.53	36.89
141	142	48.14	-0.77	-0.53	18.05	-0.29	-0.20	26.37
142	142	48.00	-0.67	-0.69	18.00	-0.25	-0.26	26.36
142	143	91.13	-0.67	-0.69	34.17	-0.25	-0.26	5.02
143	143	91.14	-0.53	-0.49	34.18	-0.20	-0.19	5.01
143	144	64.72	-0.53	-0.49	24.27	-0.20	-0.19	27.14

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
144	144	64.86	-0.14	-0.04	24.32	-0.05	-0.02	27.16
144	129	-22.22	-0.05	-0.02	-59.26	-0.14	-0.04	70.12
145	145	-21.99	25.87	0.15	-58.65	68.98	0.39	1.36
145	146	-20.98	25.90	0.15	-55.95	69.07	0.39	1.36
146	146	-20.93	25.01	0.24	-55.82	66.69	0.64	4.17
146	147	-16.01	25.06	0.24	-42.69	66.83	0.64	4.18
147	147	-16.02	24.45	0.22	-42.72	65.21	0.58	0.74
147	148	-15.17	24.50	0.22	-40.45	65.34	0.58	0.74
148	148	-15.22	24.05	0.06	-40.57	64.14	0.15	1.16
148	149	-16.12	24.08	0.06	-43.00	64.22	0.15	1.17
149	149	-16.14	0.28	-0.22	-43.05	0.76	-0.59	64.36
149	150	68.26	0.76	-0.59	25.60	0.28	-0.22	23.06
150	150	68.08	0.74	-0.76	25.53	0.28	-0.28	23.08
150	151	86.13	0.74	-0.76	32.30	0.28	-0.28	7.40
151	151	86.13	0.75	-0.45	32.30	0.28	-0.17	7.36
151	152	39.07	0.75	-0.45	14.65	0.28	-0.17	27.03
152	152	39.25	0.77	0.03	14.72	0.29	0.01	27.01
152	153	-16.80	0.29	0.01	-44.81	0.77	0.03	35.86
153	153	-16.78	13.35	0.15	-44.75	35.60	0.40	0.77
153	154	-16.18	13.33	0.15	-43.14	35.55	0.40	0.77
154	154	-16.12	13.34	0.21	-42.98	35.57	0.56	0.73
154	155	-15.22	13.31	0.21	-40.58	35.49	0.55	0.73
155	155	-15.21	13.39	0.18	-40.56	35.70	0.47	0.68
155	156	-14.38	13.36	0.18	-38.33	35.63	0.47	0.68
156	156	-14.44	13.62	0.05	-38.50	36.32	0.13	0.64
156	157	-13.93	13.60	0.05	-37.14	36.28	0.13	0.64
157	157	-13.96	-0.24	-0.15	-37.22	-0.64	-0.40	37.18
157	158	48.01	-0.64	-0.40	18.00	-0.24	-0.15	26.58
158	158	47.74	-0.69	-0.64	17.90	-0.26	-0.24	26.56
158	159	91.29	-0.69	-0.64	34.24	-0.26	-0.24	5.14
159	159	91.30	-0.63	-0.56	34.24	-0.23	-0.21	5.15
159	160	65.12	-0.63	-0.56	24.42	-0.23	-0.21	27.09
160	160	65.40	-0.31	-0.17	24.53	-0.12	-0.06	27.11
160	145	-22.02	-0.12	-0.06	-58.72	-0.31	-0.17	70.17
161	161	-21.74	25.75	0.06	-57.98	68.67	0.17	1.21
161	162	-20.85	25.79	0.06	-55.59	68.76	0.17	1.21
162	162	-20.79	24.97	0.21	-55.43	66.59	0.55	4.06
162	163	-16.00	25.02	0.21	-42.66	66.72	0.55	4.07
163	163	-16.02	24.50	0.22	-42.73	65.32	0.59	0.60
163	164	-15.35	24.54	0.22	-40.92	65.45	0.59	0.60
164	164	-15.40	24.19	0.08	-41.07	64.51	0.21	1.39
164	165	-16.48	24.22	0.08	-43.95	64.59	0.21	1.39
165	165	-16.50	0.37	-0.18	-44.00	1.00	-0.48	64.68
165	166	68.03	1.00	-0.48	25.51	0.37	-0.18	23.30
166	166	67.91	0.86	-0.71	25.46	0.32	-0.27	23.31
166	167	86.43	0.86	-0.71	32.41	0.32	-0.27	7.26
167	167	86.42	0.79	-0.50	32.41	0.30	-0.19	7.24
167	168	39.58	0.79	-0.50	14.84	0.30	-0.19	26.99
168	168	39.71	0.67	-0.08	14.89	0.25	-0.03	26.97
168	169	-16.64	0.25	-0.03	-44.38	0.67	-0.08	35.91
169	169	-16.62	13.39	0.12	-44.33	35.70	0.32	0.67
169	170	-16.09	13.37	0.12	-42.91	35.66	0.32	0.67
170	170	-16.03	13.35	0.20	-42.73	35.60	0.53	0.65
170	171	-15.23	13.32	0.20	-40.60	35.53	0.53	0.65
171	171	-15.20	13.38	0.21	-40.54	35.67	0.57	0.57
171	172	-14.50	13.35	0.21	-38.67	35.60	0.56	0.57
172	172	-14.58	13.60	0.13	-38.87	36.27	0.35	0.49
172	173	-14.19	13.58	0.13	-37.83	36.22	0.35	0.49
173	173	-14.23	-0.18	-0.06	-37.95	-0.49	-0.15	37.43
173	174	47.80	-0.49	-0.15	17.93	-0.18	-0.06	26.74
174	174	47.32	-0.72	-0.53	17.75	-0.27	-0.20	26.75
174	175	91.25	-0.72	-0.53	34.22	-0.27	-0.20	5.24
175	175	91.26	-0.74	-0.68	34.22	-0.28	-0.26	5.31
175	176	65.39	-0.74	-0.68	24.52	-0.28	-0.26	27.02
176	176	65.87	-0.48	-0.41	24.70	-0.18	-0.16	27.01
176	161	-21.79	-0.18	-0.16	-58.10	-0.48	-0.41	70.15
177	177	-21.40	25.58	-0.04	-57.07	68.23	-0.11	1.05
177	178	-20.63	25.62	-0.04	-55.02	68.31	-0.11	1.05
178	178	-20.57	24.91	0.18	-54.86	66.43	0.48	3.91
178	179	-15.96	24.96	0.18	-42.56	66.56	0.48	3.92
179	179	-16.00	24.52	0.24	-42.67	65.39	0.63	0.43
179	180	-15.52	24.57	0.24	-41.39	65.53	0.63	0.43
180	180	-15.58	24.32	0.10	-41.54	64.85	0.26	1.64
180	181	-16.85	24.35	0.10	-44.92	64.93	0.26	1.64
181	181	-16.86	0.47	-0.15	-44.96	1.26	-0.41	64.98
181	182	67.74	1.26	-0.41	25.40	0.47	-0.15	23.51
182	182	67.66	0.99	-0.68	25.37	0.37	-0.26	23.53
182	183	86.64	0.99	-0.68	32.49	0.37	-0.26	7.13
183	183	86.64	0.84	-0.53	32.49	0.32	-0.20	7.11
183	184	40.02	0.84	-0.53	15.01	0.32	-0.20	26.95
184	184	40.10	0.61	-0.17	15.04	0.23	-0.06	26.93
184	185	-16.50	0.23	-0.06	-43.99	0.61	-0.17	35.95
185	185	-16.48	13.42	0.09	-43.95	35.78	0.25	0.61
185	186	-15.99	13.40	0.09	-42.65	35.73	0.25	0.61
186	186	-15.93	13.35	0.18	-42.47	35.60	0.47	0.59
186	187	-15.20	13.32	0.18	-40.52	35.53	0.47	0.59
187	187	-15.15	13.34	0.24	-40.41	35.58	0.64	0.48
187	188	-14.55	13.32	0.24	-38.81	35.51	0.64	0.48
188	188	-14.63	13.53	0.24	-39.02	36.08	0.64	0.32
188	189	-14.37	13.51	0.24	-38.31	36.03	0.64	0.32
189	189	-14.44	-0.12	0.10	-38.50	-0.33	0.27	37.53
189	190	47.41	-0.33	0.27	17.78	-0.12	0.10	26.75

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
190	190	46.67	-0.77	-0.33	17.50	-0.29	-0.12	26.88
190	191	90.84	-0.77	-0.33	34.06	-0.29	-0.12	5.29
191	191	90.84	-0.87	-0.89	34.07	-0.33	-0.33	5.53
191	192	65.43	-0.87	-0.89	24.54	-0.33	-0.33	26.88
192	192	66.18	-0.66	-0.83	24.82	-0.25	-0.31	26.76
192	177	-21.47	-0.25	-0.31	-57.25	-0.66	-0.83	69.99
193	193	-20.88	25.35	-0.16	-55.67	67.60	-0.43	0.80
193	194	-20.30	25.38	-0.16	-54.13	67.68	-0.43	0.80
194	194	-20.26	24.83	0.17	-54.01	66.21	0.44	3.69
194	195	-15.91	24.88	0.17	-42.42	66.34	0.45	3.69
195	195	-15.95	24.54	0.25	-42.55	65.43	0.68	0.24
195	196	-15.71	24.59	0.26	-41.88	65.56	0.68	0.24
196	196	-15.75	24.43	0.11	-42.00	65.15	0.30	1.90
196	197	-17.23	24.46	0.11	-45.93	65.24	0.30	1.91
197	197	-17.23	0.58	-0.13	-45.96	1.54	-0.35	65.29
197	198	67.43	1.54	-0.35	25.28	0.58	-0.13	23.73
198	198	67.38	1.13	-0.66	25.27	0.42	-0.25	23.75
198	199	86.81	1.13	-0.66	32.55	0.42	-0.25	7.00
199	199	86.81	0.91	-0.54	32.55	0.34	-0.20	6.98
199	200	40.40	0.91	-0.54	15.15	0.34	-0.20	26.91
200	200	40.45	0.59	-0.23	15.17	0.22	-0.09	26.89
200	201	-16.37	0.22	-0.09	-43.66	0.59	-0.23	36.00
201	201	-16.36	13.44	0.07	-43.63	35.84	0.19	0.59
201	202	-15.89	13.42	0.07	-42.38	35.79	0.19	0.59
202	202	-15.84	13.34	0.15	-42.23	35.57	0.41	0.57
202	203	-15.12	13.31	0.15	-40.33	35.49	0.41	0.57
203	203	-15.08	13.29	0.26	-40.21	35.43	0.69	0.46
203	204	-14.50	13.26	0.26	-38.68	35.36	0.68	0.46
204	204	-14.56	13.39	0.37	-38.82	35.70	0.98	0.21
204	205	-14.38	13.37	0.37	-38.34	35.66	0.97	0.21
205	205	-14.46	-0.09	0.34	-38.57	-0.23	0.89	37.28
205	206	46.57	-0.23	0.89	17.46	-0.09	0.34	26.41
206	206	45.69	-0.84	-0.05	17.14	-0.32	-0.02	26.91
206	207	89.80	-0.84	-0.05	33.68	-0.32	-0.02	5.22
207	207	89.81	-1.03	-1.18	33.68	-0.39	-0.44	5.87
207	208	65.16	-1.03	-1.18	24.44	-0.39	-0.44	26.63
208	208	66.05	-0.94	-1.45	24.77	-0.35	-0.54	26.14
208	193	-20.96	-0.35	-0.54	-55.89	-0.94	-1.45	69.46
209	209	-20.05	25.04	-0.26	-53.46	66.77	-0.71	0.31
209	210	-19.83	25.07	-0.27	-52.89	66.86	-0.71	0.31
210	210	-19.83	24.72	0.16	-52.88	65.93	0.43	3.36
210	211	-15.87	24.77	0.16	-42.31	66.06	0.43	3.37
211	211	-15.89	24.54	0.26	-42.38	65.43	0.70	0.01
211	212	-15.91	24.59	0.26	-42.42	65.56	0.70	0.01
212	212	-15.93	24.54	0.11	-42.47	65.44	0.30	2.19
212	213	-17.62	24.57	0.11	-46.99	65.52	0.30	2.19

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
213	213	-17.62	0.69	-0.12	-47.00	1.84	-0.32	65.60
213	214	67.09	1.84	-0.32	25.16	0.69	-0.12	23.96
214	214	67.06	1.27	-0.65	25.15	0.48	-0.24	23.96
214	215	86.94	1.27	-0.65	32.60	0.48	-0.24	6.87
215	215	86.94	0.98	-0.55	32.60	0.37	-0.21	6.86
215	216	40.74	0.98	-0.55	15.28	0.37	-0.21	26.88
216	216	40.77	0.60	-0.27	15.29	0.22	-0.10	26.87
216	217	-16.27	0.22	-0.10	-43.39	0.60	-0.27	36.07
217	217	-16.27	13.45	0.06	-43.37	35.87	0.16	0.60
217	218	-15.79	13.43	0.06	-42.11	35.83	0.16	0.60
218	218	-15.76	13.31	0.14	-42.03	35.50	0.38	0.59
218	219	-15.03	13.29	0.14	-40.08	35.43	0.38	0.59
219	219	-15.01	13.21	0.27	-40.02	35.22	0.71	0.54
219	220	-14.34	13.18	0.26	-38.23	35.15	0.71	0.54
220	220	-14.35	13.17	0.47	-38.27	35.13	1.25	0.31
220	221	-14.10	13.16	0.47	-37.60	35.09	1.25	0.31
221	221	-14.17	-0.13	0.59	-37.78	-0.34	1.58	36.37
221	222	44.89	-0.34	1.58	16.83	-0.13	0.59	25.42
222	222	44.37	-0.94	0.23	16.64	-0.35	0.09	26.76
222	223	87.99	-0.94	0.23	33.00	-0.35	0.09	4.99
223	223	87.99	-1.22	-1.47	33.00	-0.46	-0.55	6.38
223	224	64.57	-1.22	-1.47	24.21	-0.46	-0.55	26.20
224	224	65.09	-1.45	-2.13	24.41	-0.54	-0.80	24.87
224	209	-20.12	-0.54	-0.80	-53.64	-1.45	-2.13	68.27
225	225	-18.84	24.67	-0.29	-50.25	65.79	-0.78	0.64
225	226	-19.36	24.70	-0.29	-51.62	65.88	-0.78	0.64
226	226	-19.36	24.61	0.14	-51.61	65.63	0.37	2.99
226	227	-15.84	24.66	0.14	-42.24	65.76	0.37	3.00
227	227	-15.82	24.53	0.25	-42.20	65.41	0.66	0.22
227	228	-16.12	24.58	0.25	-42.97	65.54	0.66	0.22
228	228	-16.11	24.64	0.10	-42.95	65.70	0.26	2.48
228	229	-18.02	24.67	0.10	-48.06	65.79	0.26	2.49
229	229	-18.02	0.81	-0.12	-48.06	2.15	-0.31	65.92
229	230	66.74	2.15	-0.31	25.03	0.81	-0.12	24.19
230	230	66.73	1.41	-0.65	25.02	0.53	-0.24	24.18
230	231	87.07	1.41	-0.65	32.65	0.53	-0.24	6.74
231	231	87.07	1.05	-0.56	32.65	0.40	-0.21	6.74
231	232	41.07	1.05	-0.56	15.40	0.40	-0.21	26.84
232	232	41.08	0.62	-0.28	15.40	0.23	-0.11	26.85
232	233	-16.18	0.23	-0.11	-43.15	0.62	-0.28	36.13
233	233	-16.18	13.46	0.07	-43.15	35.90	0.19	0.62
233	234	-15.69	13.44	0.07	-41.83	35.85	0.19	0.62
234	234	-15.69	13.28	0.15	-41.85	35.42	0.41	0.62
234	235	-14.92	13.26	0.15	-39.79	35.35	0.41	0.62
235	235	-14.94	13.12	0.28	-39.84	34.99	0.76	0.66
235	236	-14.12	13.09	0.28	-37.66	34.92	0.76	0.66

Barra Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
236 236	-14.13	12.90	0.50	-37.67	34.41	1.32	0.87
236 237	-13.45	12.89	0.50	-35.86	34.37	1.32	0.86
237 237	-13.40	-0.31	0.61	-35.73	-0.83	1.63	33.15
237 238	43.35	-0.83	1.63	16.26	-0.31	0.61	25.87
238 238	43.73	-1.06	0.25	16.40	-0.40	0.09	24.59
238 239	86.48	-1.06	0.25	32.43	-0.40	0.09	6.49
239 239	86.48	-1.41	-1.49	32.43	-0.53	-0.56	5.17
239 240	64.67	-1.41	-1.49	24.25	-0.53	-0.56	23.75
240 240	64.29	-2.35	-2.19	24.11	-0.88	-0.82	25.04
240 225	-18.79	-0.88	-0.82	-50.11	-2.35	-2.19	64.77
241 241	-17.98	24.35	-0.24	-47.94	64.95	-0.65	1.15
241 242	-18.88	24.39	-0.25	-50.33	65.03	-0.65	1.15
242 242	-18.91	24.50	0.11	-50.43	65.34	0.29	2.65
242 243	-15.79	24.55	0.11	-42.11	65.48	0.29	2.66
243 243	-15.76	24.52	0.21	-42.02	65.38	0.56	0.44
243 244	-16.32	24.57	0.21	-43.51	65.51	0.56	0.44
244 244	-16.28	24.73	0.06	-43.42	65.94	0.16	2.77
244 245	-18.42	24.76	0.06	-49.12	66.02	0.16	2.78
245 245	-18.41	0.92	-0.12	-49.10	2.45	-0.32	66.23
245 246	66.40	2.45	-0.32	24.90	0.92	-0.12	24.41
246 246	66.40	1.54	-0.64	24.90	0.58	-0.24	24.40
246 247	87.18	1.54	-0.64	32.69	0.58	-0.24	6.60
247 247	87.18	1.12	-0.56	32.69	0.42	-0.21	6.62
247 248	41.39	1.12	-0.56	15.52	0.42	-0.21	26.80
248 248	41.39	0.64	-0.28	15.52	0.24	-0.10	26.83
248 249	-16.08	0.24	-0.10	-42.89	0.64	-0.28	36.20
249 249	-16.09	13.47	0.10	-42.90	35.91	0.27	0.64
249 250	-15.58	13.45	0.10	-41.55	35.86	0.27	0.64
250 250	-15.61	13.25	0.19	-41.64	35.34	0.52	0.65
250 251	-14.81	13.22	0.19	-39.51	35.27	0.51	0.65
251 251	-14.85	13.04	0.31	-39.61	34.77	0.84	0.75
251 252	-13.94	13.01	0.31	-37.17	34.70	0.84	0.75
252 252	-13.90	12.68	0.44	-37.08	33.81	1.18	0.98
252 253	-13.14	12.66	0.44	-35.03	33.77	1.18	0.98
253 253	-13.07	-0.36	0.39	-34.84	-0.97	1.04	32.14
253 254	41.60	-0.97	1.04	15.60	-0.36	0.39	24.86
254 254	42.36	-1.15	0.01	15.89	-0.43	0.00	24.38
254 255	84.57	-1.15	0.01	31.71	-0.43	0.00	6.28
255 255	84.57	-1.58	-1.25	31.71	-0.59	-0.47	5.66
255 256	64.04	-1.58	-1.25	24.01	-0.59	-0.47	23.25
256 256	63.27	-2.88	-1.59	23.73	-1.08	-0.60	23.74
256 241	-17.91	-1.08	-0.60	-47.75	-2.88	-1.59	63.47
257 257	-17.38	24.11	-0.18	-46.36	64.30	-0.48	1.44
257 258	-18.51	24.14	-0.18	-49.35	64.38	-0.48	1.44
258 258	-18.56	24.42	0.08	-49.49	65.11	0.23	2.41
258 259	-15.73	24.47	0.08	-41.95	65.25	0.23	2.41

Barra Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
259 259	-15.70	24.51	0.16	-41.86	65.36	0.43	0.65
259 260	-16.50	24.56	0.16	-44.01	65.49	0.43	0.65
260 260	-16.45	24.81	0.01	-43.88	66.15	0.03	3.04
260 261	-18.80	24.84	0.01	-50.12	66.24	0.03	3.04
261 261	-18.78	1.03	-0.13	-50.09	2.74	-0.34	66.53
261 262	66.08	2.74	-0.34	24.78	1.03	-0.13	24.63
262 262	66.07	1.64	-0.64	24.78	0.62	-0.24	24.61
262 263	87.30	1.64	-0.64	32.74	0.62	-0.24	6.48
263 263	87.28	1.17	-0.56	32.73	0.44	-0.21	6.49
263 264	41.71	1.17	-0.56	15.64	0.44	-0.21	26.76
264 264	41.71	0.64	-0.26	15.64	0.24	-0.10	26.79
264 265	-15.97	0.24	-0.10	-42.59	0.64	-0.26	36.25
265 265	-15.98	13.47	0.14	-42.60	35.91	0.38	0.64
265 266	-15.47	13.45	0.14	-41.25	35.86	0.38	0.64
266 266	-15.51	13.23	0.24	-41.37	35.27	0.65	0.64
266 267	-14.72	13.20	0.24	-39.25	35.20	0.65	0.64
267 267	-14.76	12.97	0.34	-39.35	34.60	0.90	0.74
267 268	-13.85	12.95	0.34	-36.93	34.53	0.90	0.74
268 268	-13.80	12.52	0.37	-36.80	33.39	0.99	0.90
268 269	-13.10	12.50	0.37	-34.93	33.35	0.99	0.90
269 269	-13.04	-0.33	0.18	-34.78	-0.89	0.48	31.74
269 270	40.63	-0.89	0.48	15.24	-0.33	0.18	24.46
270 270	41.28	-1.21	-0.24	15.48	-0.45	-0.09	24.33
270 271	83.36	-1.21	-0.24	31.26	-0.45	-0.09	6.24
271 271	83.34	-1.71	-0.99	31.25	-0.64	-0.37	6.00
271 272	63.69	-1.71	-0.99	23.88	-0.64	-0.37	22.91
272 272	63.04	-3.20	-1.05	23.64	-1.20	-0.39	23.06
272 257	-17.33	-1.20	-0.39	-46.21	-3.20	-1.05	62.78
273 273	-16.95	23.94	-0.14	-45.19	63.84	-0.36	1.65
273 274	-18.23	23.97	-0.14	-48.62	63.92	-0.36	1.66
274 274	-18.28	24.36	0.08	-48.74	64.95	0.21	2.20
274 275	-15.70	24.40	0.08	-41.87	65.08	0.21	2.20
275 275	-15.66	24.51	0.11	-41.76	65.35	0.30	0.83
275 276	-16.68	24.56	0.11	-44.49	65.48	0.30	0.83
276 276	-16.63	24.87	-0.04	-44.34	66.33	-0.11	3.27
276 277	-19.15	24.91	-0.04	-51.06	66.42	-0.11	3.28
277 277	-19.13	1.12	-0.14	-51.02	2.99	-0.37	66.84
277 278	65.83	2.99	-0.37	24.68	1.12	-0.14	24.85
278 278	65.77	1.71	-0.62	24.66	0.64	-0.23	24.82
278 279	87.42	1.71	-0.62	32.78	0.64	-0.23	6.36
279 279	87.36	1.19	-0.55	32.76	0.45	-0.20	6.35
279 280	42.03	1.19	-0.55	15.76	0.45	-0.20	26.71
280 280	42.01	0.58	-0.26	15.75	0.22	-0.10	26.71
280 281	-15.82	0.22	-0.10	-42.18	0.58	-0.26	36.25
281 281	-15.82	13.46	0.19	-42.19	35.90	0.50	0.59
281 282	-15.35	13.45	0.19	-40.94	35.85	0.50	0.59

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
282	282	-15.39	13.21	0.29	-41.03	35.22	0.77	0.59
282	283	-14.66	13.18	0.29	-39.09	35.15	0.77	0.59
283	283	-14.66	12.93	0.35	-39.09	34.48	0.94	0.65
283	284	-13.86	12.90	0.35	-36.95	34.41	0.94	0.65
284	284	-13.80	12.43	0.32	-36.81	33.14	0.85	0.73
284	285	-13.23	12.41	0.32	-35.28	33.10	0.85	0.73
285	285	-13.20	-0.27	0.04	-35.19	-0.71	0.11	31.70
285	286	40.10	-0.71	0.11	15.04	-0.27	0.04	24.42
286	286	40.47	-1.24	-0.40	15.18	-0.46	-0.15	24.39
286	287	82.71	-1.24	-0.40	31.02	-0.46	-0.15	6.30
287	287	82.64	-1.80	-0.80	30.99	-0.67	-0.30	6.23
287	288	63.59	-1.80	-0.80	23.85	-0.67	-0.30	22.69
288	288	63.14	-3.43	-0.72	23.68	-1.29	-0.27	22.67
288	273	-16.92	-1.29	-0.27	-45.12	-3.43	-0.72	62.40
289	289	-16.55	23.84	-0.13	-44.14	63.56	-0.34	1.88
289	290	-18.01	23.87	-0.13	-48.01	63.64	-0.34	1.88
290	290	-17.95	24.32	0.08	-47.87	64.85	0.22	1.84
290	291	-15.80	24.37	0.08	-42.14	64.98	0.22	1.84
291	291	-15.62	24.50	0.06	-41.66	65.35	0.17	1.03
291	292	-16.88	24.55	0.06	-45.02	65.48	0.17	1.04
292	292	-16.77	24.92	-0.09	-44.72	66.45	-0.24	3.54
292	293	-19.50	24.95	-0.09	-51.99	66.54	-0.24	3.55
293	293	-19.49	1.25	-0.15	-51.98	3.33	-0.41	67.24
293	294	65.81	3.33	-0.41	24.68	1.25	-0.15	25.16
294	294	65.43	1.75	-0.57	24.54	0.66	-0.22	25.06
294	295	87.60	1.75	-0.57	32.85	0.66	-0.22	6.20
295	295	87.33	1.20	-0.52	32.75	0.45	-0.19	6.16
295	296	42.38	1.20	-0.52	15.89	0.45	-0.19	26.61
296	296	42.12	0.34	-0.30	15.79	0.13	-0.11	26.47
296	297	-15.59	0.13	-0.11	-41.57	0.34	-0.30	36.10
297	297	-15.59	13.45	0.23	-41.57	35.88	0.61	0.38
297	298	-15.28	13.44	0.23	-40.74	35.83	0.61	0.38
298	298	-15.23	13.20	0.32	-40.62	35.19	0.84	0.46
298	299	-14.66	13.17	0.32	-39.09	35.12	0.84	0.46
299	299	-14.54	12.91	0.36	-38.77	34.42	0.95	0.47
299	300	-13.95	12.88	0.36	-37.19	34.35	0.95	0.47
300	300	-13.82	12.39	0.31	-36.84	33.03	0.82	0.41
300	301	-13.48	12.37	0.31	-35.95	32.98	0.82	0.41
301	301	-13.47	-0.13	-0.03	-35.92	-0.34	-0.09	31.89
301	302	39.87	-0.34	-0.09	14.95	-0.13	-0.03	24.61
302	302	39.85	-1.23	-0.45	14.94	-0.46	-0.17	24.54
302	303	82.47	-1.23	-0.45	30.93	-0.46	-0.17	6.45
303	303	82.19	-1.83	-0.67	30.82	-0.69	-0.25	6.45
303	304	63.71	-1.83	-0.67	23.89	-0.69	-0.25	22.46
304	304	63.09	-3.60	-0.60	23.66	-1.35	-0.22	22.27
304	289	-16.54	-1.35	-0.22	-44.10	-3.60	-0.60	61.99

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
305	305	-16.25	23.83	-0.21	-43.33	63.56	-0.55	2.33
305	306	-18.02	23.83	-0.21	-48.06	63.56	-0.55	2.33
306	306	-17.50	24.33	0.13	-46.66	64.88	0.36	1.09
306	307	-16.20	24.33	0.13	-43.21	64.88	0.36	1.09
307	307	-15.35	24.53	0.07	-40.95	65.41	0.19	1.56
307	308	-17.20	24.53	0.07	-45.88	65.41	0.19	1.56
308	308	-16.67	24.94	-0.16	-44.44	66.52	-0.43	4.11
308	309	-19.80	24.94	-0.16	-52.79	66.52	-0.43	4.11
309	309	-19.85	1.35	-0.24	-52.94	3.60	-0.64	67.90
309	310	66.48	3.60	-0.64	24.93	1.35	-0.24	25.77
310	310	64.53	1.76	-0.84	24.20	0.66	-0.31	25.74
310	311	88.41	1.76	-0.84	33.15	0.66	-0.31	5.57
311	311	86.63	1.20	-0.76	32.49	0.45	-0.29	5.55
311	312	43.21	1.20	-0.76	16.20	0.45	-0.29	26.05
312	312	41.61	0.14	-0.47	15.60	0.05	-0.18	25.95
312	313	-15.30	0.05	-0.18	-40.80	0.14	-0.47	35.64
313	313	-15.31	13.44	0.37	-40.82	35.84	0.98	0.15
313	314	-15.42	13.44	0.37	-41.12	35.84	0.98	0.15
314	314	-14.96	13.18	0.49	-39.90	35.14	1.30	0.06
314	315	-14.89	13.18	0.49	-39.71	35.14	1.30	0.06
315	315	-14.22	12.89	0.54	-37.91	34.36	1.45	0.04
315	316	-14.26	12.89	0.54	-38.02	34.36	1.45	0.04
316	316	-13.53	12.37	0.47	-36.08	33.00	1.25	0.42
316	317	-13.85	12.37	0.47	-36.93	33.00	1.25	0.42
317	317	-13.73	-0.01	-0.07	-36.61	-0.02	-0.19	32.24
317	318	40.10	-0.02	-0.19	15.04	-0.01	-0.07	24.96
318	318	39.04	-1.23	-0.68	14.64	-0.46	-0.25	25.06
318	319	83.01	-1.23	-0.68	31.13	-0.46	-0.25	6.96
319	319	81.19	-1.83	-0.95	30.44	-0.69	-0.36	7.21
319	320	64.68	-1.83	-0.95	24.26	-0.69	-0.36	21.70
320	320	62.14	-3.44	-0.89	23.30	-1.29	-0.33	21.46
320	305	-16.11	-1.29	-0.33	-42.95	-3.44	-0.89	61.19
321	1	0.32	-0.06	-0.13	0.12	-0.02	-0.05	0.48
321	17	-0.12	-0.02	-0.05	-0.33	-0.06	-0.13	0.48
322	17	0.11	-0.20	-0.16	0.04	-0.08	-0.06	0.11
322	33	-0.04	-0.08	-0.06	-0.12	-0.20	-0.16	0.11
323	33	0.06	-0.25	-0.21	0.02	-0.09	-0.08	0.06
323	49	-0.02	-0.09	-0.08	-0.06	-0.25	-0.21	0.06
324	49	0.06	-0.19	-0.27	0.02	-0.07	-0.10	0.06
324	65	-0.02	-0.07	-0.10	-0.06	-0.19	-0.27	0.06
325	65	0.06	-0.08	-0.31	0.02	-0.03	-0.12	0.06
325	81	-0.03	-0.03	-0.12	-0.07	-0.08	-0.31	0.06
326	81	0.07	0.07	-0.33	0.03	0.03	-0.13	0.07
326	97	-0.03	0.03	-0.13	-0.08	0.07	-0.33	0.07
327	97	0.08	0.24	-0.33	0.03	0.09	-0.12	0.07
327	113	-0.03	0.09	-0.12	-0.08	0.24	-0.33	0.07

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
328	113	0.08	0.43	-0.29	0.03	0.16	-0.11	0.07
328	129	-0.03	0.16	-0.11	-0.08	0.43	-0.29	0.07
329	129	0.08	0.62	-0.19	0.03	0.23	-0.07	0.08
329	145	-0.03	0.23	-0.07	-0.08	0.62	-0.19	0.08
330	145	0.08	0.77	-0.03	0.03	0.29	-0.01	0.08
330	161	-0.03	0.29	-0.01	-0.08	0.77	-0.03	0.08
331	161	0.09	0.86	0.25	0.03	0.32	0.10	0.08
331	177	-0.03	0.32	0.10	-0.09	0.86	0.25	0.08
332	177	0.11	0.83	0.68	0.04	0.31	0.26	0.10
332	193	-0.04	0.31	0.26	-0.11	0.83	0.68	0.10
333	193	0.16	0.67	1.21	0.06	0.25	0.45	0.15
333	209	-0.06	0.25	0.45	-0.16	0.67	1.21	0.15
334	209	0.24	0.35	1.63	0.09	0.13	0.61	0.23
334	225	-0.09	0.13	0.61	-0.25	0.35	1.63	0.23
335	225	0.16	0.03	1.29	0.06	0.01	0.48	0.15
335	241	-0.06	0.01	0.48	-0.16	0.03	1.29	0.15
336	241	0.10	-0.17	0.83	0.04	-0.06	0.31	0.09
336	257	-0.04	-0.06	0.31	-0.10	-0.17	0.83	0.09
337	257	0.07	-0.23	0.47	0.03	-0.09	0.18	0.07
337	273	-0.03	-0.09	0.18	-0.08	-0.23	0.47	0.07
338	273	0.05	-0.18	0.30	0.02	-0.07	0.11	0.05
338	289	-0.02	-0.07	0.11	-0.05	-0.18	0.30	0.05
339	289	-0.03	0.00	0.09	-0.09	0.01	0.23	0.13
339	305	0.09	0.01	0.23	0.03	0.00	0.09	0.13
340	2	0.03	-0.03	-0.24	0.01	-0.01	-0.09	0.09
340	18	-0.03	-0.01	-0.09	-0.09	-0.03	-0.24	0.09
341	18	-0.02	-0.04	-0.16	-0.06	-0.10	-0.41	0.06
341	34	0.06	-0.10	-0.41	0.02	-0.04	-0.16	0.06
342	34	0.01	-0.12	-0.49	0.00	-0.05	-0.18	0.04
342	50	0.11	-0.12	-0.49	0.04	-0.05	-0.18	0.04
343	50	0.03	-0.08	-0.55	0.01	-0.03	-0.21	0.03
343	66	0.09	-0.08	-0.55	0.03	-0.03	-0.21	0.03
344	66	0.02	-0.01	-0.60	0.01	0.00	-0.23	0.02
344	82	0.06	-0.01	-0.60	0.02	0.00	-0.23	0.02
345	82	-0.01	0.03	-0.23	-0.02	0.07	-0.62	0.02
345	98	0.03	0.07	-0.62	0.01	0.03	-0.23	0.02
346	98	-0.02	0.06	-0.23	-0.06	0.17	-0.62	0.03
346	114	0.00	0.06	-0.23	0.00	0.06	-0.23	0.03
347	114	-0.04	0.10	-0.22	-0.10	0.28	-0.58	0.03
347	130	-0.01	0.10	-0.22	-0.03	0.28	-0.58	0.03
348	130	-0.06	0.15	-0.20	-0.16	0.39	-0.52	0.04
348	146	-0.03	0.15	-0.20	-0.07	0.39	-0.52	0.04
349	146	-0.09	0.18	-0.16	-0.24	0.47	-0.43	0.06
349	162	-0.04	0.18	-0.16	-0.11	0.47	-0.43	0.06
350	162	-0.14	0.19	-0.12	-0.37	0.51	-0.32	0.11
350	178	-0.05	0.19	-0.12	-0.12	0.51	-0.32	0.11

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
351	178	-0.20	0.18	-0.08	-0.53	0.49	-0.21	0.22
351	194	-0.02	0.18	-0.08	-0.06	0.49	-0.21	0.22
352	194	-0.25	0.15	-0.05	-0.66	0.40	-0.13	0.38
352	210	0.17	0.40	-0.13	0.06	0.15	-0.05	0.38
353	210	-0.23	0.09	-0.04	-0.61	0.25	-0.12	0.54
353	226	0.55	0.25	-0.12	0.21	0.09	-0.04	0.54
354	226	-0.09	0.03	-0.04	-0.24	0.09	-0.11	0.40
354	242	0.63	0.09	-0.11	0.24	0.03	-0.04	0.40
355	242	-0.01	-0.01	-0.07	-0.02	-0.02	-0.17	0.24
355	258	0.51	-0.02	-0.17	0.19	-0.01	-0.07	0.24
356	258	0.03	-0.07	-0.27	0.01	-0.03	-0.10	0.14
356	274	0.34	-0.07	-0.27	0.13	-0.03	-0.10	0.14
357	274	-0.02	-0.02	-0.13	-0.05	-0.05	-0.34	0.12
357	290	0.20	-0.05	-0.34	0.08	-0.02	-0.13	0.12
358	290	-0.07	0.01	-0.09	-0.18	0.02	-0.24	0.24
358	306	0.15	0.02	-0.24	0.06	0.01	-0.09	0.24
359	3	-0.01	0.00	-0.11	-0.02	0.01	-0.28	0.17
359	19	0.22	0.01	-0.28	0.08	0.00	-0.11	0.17
360	19	0.20	0.04	-0.52	0.08	0.02	-0.20	0.01
360	35	0.18	0.04	-0.52	0.07	0.02	-0.20	0.01
361	35	0.25	0.06	-0.60	0.09	0.02	-0.22	0.06
361	51	0.12	0.06	-0.60	0.04	0.02	-0.22	0.06
362	51	0.24	0.08	-0.64	0.09	0.03	-0.24	0.08
362	67	0.06	0.08	-0.64	0.02	0.03	-0.24	0.08
363	67	0.21	0.09	-0.68	0.08	0.03	-0.25	0.10
363	83	0.00	0.03	-0.25	-0.01	0.09	-0.68	0.10
364	83	0.15	0.09	-0.70	0.05	0.03	-0.26	0.11
364	99	-0.04	0.03	-0.26	-0.10	0.09	-0.70	0.11
365	99	0.06	0.09	-0.69	0.02	0.03	-0.26	0.10
365	115	-0.06	0.03	-0.26	-0.17	0.09	-0.69	0.10
366	115	-0.01	0.04	-0.26	-0.03	0.09	-0.68	0.08
366	131	-0.08	0.04	-0.26	-0.21	0.09	-0.68	0.08
367	131	-0.04	0.04	-0.25	-0.11	0.10	-0.68	0.06
367	147	-0.09	0.04	-0.25	-0.24	0.10	-0.68	0.06
368	147	-0.07	0.03	-0.26	-0.19	0.09	-0.69	0.03
368	163	-0.10	0.03	-0.26	-0.25	0.09	-0.69	0.03
369	163	-0.11	0.03	-0.28	-0.28	0.08	-0.74	0.01
369	179	-0.09	0.03	-0.28	-0.25	0.08	-0.74	0.01
370	179	-0.13	0.02	-0.31	-0.35	0.06	-0.81	0.08
370	195	-0.07	0.02	-0.31	-0.18	0.06	-0.81	0.08
371	195	-0.13	0.02	-0.34	-0.34	0.06	-0.90	0.14
371	211	-0.01	0.02	-0.34	-0.03	0.06	-0.90	0.14
372	211	-0.08	0.03	-0.35	-0.22	0.08	-0.94	0.18
372	227	0.16	0.08	-0.94	0.06	0.03	-0.35	0.18
373	227	-0.01	0.04	-0.34	-0.03	0.11	-0.91	0.15
373	243	0.30	0.11	-0.91	0.11	0.04	-0.34	0.15

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
374	243	0.12	0.10	-0.85	0.04	0.04	-0.32	0.10
374	259	0.33	0.10	-0.85	0.12	0.04	-0.32	0.10
375	259	0.19	0.08	-0.78	0.07	0.03	-0.29	0.04
375	275	0.28	0.08	-0.78	0.11	0.03	-0.29	0.04
376	275	0.22	0.05	-0.71	0.08	0.02	-0.27	0.02
376	291	0.18	0.05	-0.71	0.07	0.02	-0.27	0.02
377	291	0.22	0.01	-0.38	0.08	0.01	-0.14	0.19
377	307	-0.01	0.01	-0.14	-0.03	0.01	-0.38	0.19
378	4	0.07	0.04	-0.30	0.02	0.01	-0.11	0.00
378	20	0.07	0.04	-0.30	0.03	0.01	-0.11	0.00
379	20	0.25	0.14	-0.42	0.09	0.05	-0.16	0.10
379	36	0.04	0.14	-0.42	0.01	0.05	-0.16	0.10
380	36	0.27	0.20	-0.34	0.10	0.07	-0.13	0.12
380	52	0.01	0.20	-0.34	0.00	0.07	-0.13	0.12
381	52	0.30	0.20	-0.27	0.11	0.08	-0.10	0.15
381	68	-0.01	0.08	-0.10	-0.03	0.20	-0.27	0.15
382	68	0.34	0.17	-0.23	0.13	0.06	-0.08	0.21
382	84	-0.04	0.06	-0.08	-0.12	0.17	-0.23	0.21
383	84	0.31	0.12	-0.21	0.12	0.05	-0.08	0.26
383	100	-0.10	0.05	-0.08	-0.26	0.12	-0.21	0.26
384	100	0.18	0.06	-0.21	0.07	0.02	-0.08	0.22
384	116	-0.11	0.02	-0.08	-0.30	0.06	-0.21	0.22
385	116	0.09	-0.03	-0.25	0.03	-0.01	-0.09	0.18
385	132	-0.11	-0.01	-0.09	-0.29	-0.03	-0.25	0.18
386	132	0.05	-0.12	-0.31	0.02	-0.05	-0.12	0.14
386	148	-0.10	-0.05	-0.12	-0.27	-0.12	-0.31	0.14
387	148	0.02	-0.21	-0.39	0.01	-0.08	-0.15	0.13
387	164	-0.09	-0.08	-0.15	-0.25	-0.21	-0.39	0.13
388	164	0.01	-0.26	-0.49	0.01	-0.10	-0.18	0.12
388	180	-0.09	-0.10	-0.18	-0.23	-0.26	-0.49	0.12
389	180	0.02	-0.27	-0.59	0.01	-0.10	-0.22	0.11
389	196	-0.08	-0.10	-0.22	-0.21	-0.27	-0.59	0.11
390	196	0.05	-0.20	-0.68	0.02	-0.08	-0.25	0.10
390	212	-0.07	-0.08	-0.25	-0.17	-0.20	-0.68	0.10
391	212	0.10	-0.07	-0.71	0.04	-0.02	-0.27	0.10
391	228	-0.05	-0.02	-0.27	-0.12	-0.07	-0.71	0.10
392	228	0.16	0.08	-0.70	0.06	0.03	-0.26	0.10
392	244	-0.03	0.03	-0.26	-0.07	0.08	-0.70	0.10
393	244	0.20	0.15	-0.64	0.08	0.06	-0.24	0.11
393	260	-0.01	0.06	-0.24	-0.04	0.15	-0.64	0.11
394	260	0.23	0.15	-0.55	0.09	0.06	-0.21	0.13
394	276	-0.01	0.06	-0.21	-0.04	0.15	-0.55	0.13
395	276	0.24	0.10	-0.45	0.09	0.04	-0.17	0.16
395	292	-0.04	0.04	-0.17	-0.10	0.10	-0.45	0.16
396	292	0.18	-0.02	-0.24	0.07	-0.01	-0.09	0.21
396	308	-0.04	-0.01	-0.09	-0.11	-0.02	-0.24	0.21

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
397	5	-0.05	0.02	0.00	-0.14	0.04	0.00	0.21
397	21	0.14	0.04	0.00	0.05	0.02	0.00	0.21
398	21	-0.04	0.07	0.02	-0.12	0.18	0.06	0.11
398	37	0.12	0.18	0.06	0.05	0.07	0.02	0.11
399	37	-0.03	0.10	0.06	-0.08	0.27	0.17	0.07
399	53	0.08	0.27	0.17	0.03	0.10	0.06	0.07
400	53	-0.03	0.10	0.13	-0.08	0.26	0.34	0.08
400	69	0.09	0.26	0.34	0.03	0.10	0.13	0.08
401	69	-0.04	0.08	0.20	-0.10	0.20	0.54	0.10
401	85	0.11	0.20	0.54	0.04	0.08	0.20	0.10
402	85	-0.05	0.05	0.27	-0.14	0.14	0.71	0.13
402	101	0.15	0.14	0.71	0.06	0.05	0.27	0.13
403	101	-0.04	0.02	0.23	-0.11	0.05	0.61	0.11
403	117	0.13	0.05	0.61	0.05	0.02	0.23	0.11
404	117	-0.04	-0.03	0.17	-0.10	-0.08	0.46	0.10
404	133	0.11	-0.08	0.46	0.04	-0.03	0.17	0.10
405	133	-0.04	-0.09	0.11	-0.10	-0.24	0.30	0.09
405	149	0.11	-0.24	0.30	0.04	-0.09	0.11	0.09
406	149	-0.04	-0.14	0.07	-0.10	-0.37	0.18	0.09
406	165	0.11	-0.37	0.18	0.04	-0.14	0.07	0.09
407	165	-0.04	-0.17	0.03	-0.10	-0.46	0.07	0.10
407	181	0.11	-0.46	0.07	0.04	-0.17	0.03	0.10
408	181	-0.04	-0.17	-0.01	-0.10	-0.45	-0.02	0.10
408	197	0.11	-0.45	-0.02	0.04	-0.17	-0.01	0.10
409	197	-0.04	-0.13	-0.03	-0.10	-0.35	-0.08	0.10
409	213	0.11	-0.35	-0.08	0.04	-0.13	-0.03	0.10
410	213	-0.04	-0.06	-0.04	-0.10	-0.15	-0.11	0.10
410	229	0.11	-0.15	-0.11	0.04	-0.06	-0.04	0.10
411	229	-0.04	0.02	-0.04	-0.09	0.05	-0.10	0.09
411	245	0.10	0.05	-0.10	0.04	0.02	-0.04	0.09
412	245	-0.03	0.06	-0.02	-0.09	0.17	-0.06	0.08
412	261	0.09	0.17	-0.06	0.03	0.06	-0.02	0.08
413	261	-0.03	0.07	0.00	-0.08	0.19	0.00	0.07
413	277	0.08	0.19	0.00	0.03	0.07	0.00	0.07
414	277	-0.03	0.05	0.03	-0.09	0.12	0.07	0.08
414	293	0.09	0.12	0.07	0.03	0.05	0.03	0.08
415	293	-0.06	-0.01	0.03	-0.15	-0.04	0.09	0.23
415	309	0.15	-0.04	0.09	0.06	-0.01	0.03	0.23
416	6	0.04	0.02	0.32	0.01	0.01	0.12	0.03
416	22	0.00	0.01	0.12	-0.01	0.02	0.32	0.03
417	22	0.10	0.10	0.59	0.04	0.04	0.22	0.14
417	38	-0.07	0.04	0.22	-0.19	0.10	0.59	0.14
418	38	-0.02	0.04	0.27	-0.05	0.12	0.72	0.13
418	54	-0.13	0.04	0.27	-0.34	0.12	0.72	0.13
419	54	-0.09	0.02	0.33	-0.23	0.06	0.89	0.09
419	70	-0.16	0.02	0.33	-0.43	0.06	0.89	0.09

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
420	70	-0.15	-0.01	0.41	-0.40	-0.02	1.09	0.03
420	86	-0.13	-0.01	0.41	-0.35	-0.02	1.09	0.03
421	86	-0.16	-0.04	0.46	-0.41	-0.12	1.23	0.32
421	102	0.29	-0.12	1.23	0.11	-0.04	0.46	0.32
422	102	0.20	-0.23	1.17	0.08	-0.08	0.44	0.06
422	118	0.34	-0.23	1.17	0.13	-0.08	0.44	0.06
423	118	0.32	-0.36	1.01	0.12	-0.13	0.38	0.04
423	134	0.24	-0.36	1.01	0.09	-0.13	0.38	0.04
424	134	0.29	-0.50	0.86	0.11	-0.19	0.32	0.07
424	150	0.14	-0.50	0.86	0.05	-0.19	0.32	0.07
425	150	0.24	-0.61	0.75	0.09	-0.23	0.28	0.08
425	166	0.06	-0.61	0.75	0.02	-0.23	0.28	0.08
426	166	0.21	-0.66	0.68	0.08	-0.25	0.25	0.09
426	182	0.01	-0.66	0.68	0.00	-0.25	0.25	0.09
427	182	0.18	-0.63	0.63	0.07	-0.24	0.24	0.10
427	198	-0.01	-0.24	0.24	-0.03	-0.63	0.63	0.10
428	198	0.16	-0.49	0.60	0.06	-0.19	0.22	0.11
428	214	-0.03	-0.19	0.22	-0.07	-0.49	0.60	0.11
429	214	0.13	-0.28	0.58	0.05	-0.10	0.22	0.11
429	230	-0.04	-0.10	0.22	-0.11	-0.28	0.58	0.11
430	230	0.10	-0.06	0.58	0.04	-0.02	0.22	0.11
430	246	-0.05	-0.02	0.22	-0.13	-0.06	0.58	0.11
431	246	0.08	0.09	0.58	0.03	0.03	0.22	0.10
431	262	-0.05	0.03	0.22	-0.13	0.09	0.58	0.10
432	262	0.05	0.14	0.57	0.02	0.05	0.22	0.09
432	278	-0.05	0.05	0.22	-0.14	0.14	0.57	0.09
433	278	0.02	0.09	0.54	0.01	0.03	0.20	0.07
433	294	-0.05	0.03	0.20	-0.13	0.09	0.54	0.07
434	294	-0.01	-0.01	0.11	-0.03	-0.01	0.31	0.00
434	310	-0.01	-0.01	0.11	-0.03	-0.01	0.31	0.00
435	7	-0.01	0.00	0.14	-0.02	0.00	0.37	0.02
435	23	-0.02	0.00	0.14	-0.05	0.00	0.37	0.02
436	23	-0.05	0.01	0.23	-0.13	0.02	0.60	0.02
436	39	-0.07	0.01	0.23	-0.18	0.02	0.60	0.02
437	39	-0.12	-0.01	0.24	-0.32	-0.02	0.65	0.00
437	55	-0.12	-0.01	0.24	-0.32	-0.02	0.65	0.00
438	55	-0.21	-0.05	0.25	-0.57	-0.13	0.67	0.08
438	71	-0.15	-0.05	0.25	-0.40	-0.13	0.67	0.08
439	71	-0.31	-0.09	0.25	-0.83	-0.25	0.67	0.27
439	87	-0.09	-0.09	0.25	-0.24	-0.25	0.67	0.27
440	87	-0.32	-0.14	0.25	-0.84	-0.37	0.67	0.69
440	103	0.65	-0.37	0.67	0.24	-0.14	0.25	0.69
441	103	0.01	-0.50	0.67	0.00	-0.19	0.25	0.34
441	119	0.74	-0.50	0.67	0.28	-0.19	0.25	0.34
442	119	0.23	-0.64	0.67	0.09	-0.24	0.25	0.17
442	135	0.58	-0.64	0.67	0.22	-0.24	0.25	0.17

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
443	135	0.22	-0.76	0.67	0.08	-0.29	0.25	0.09
443	151	0.41	-0.76	0.67	0.15	-0.29	0.25	0.09
444	151	0.16	-0.86	0.67	0.06	-0.32	0.25	0.06
444	167	0.29	-0.86	0.67	0.11	-0.32	0.25	0.06
445	167	0.11	-0.88	0.67	0.04	-0.33	0.25	0.04
445	183	0.20	-0.88	0.67	0.08	-0.33	0.25	0.04
446	183	0.07	-0.82	0.67	0.03	-0.31	0.25	0.03
446	199	0.14	-0.82	0.67	0.05	-0.31	0.25	0.03
447	199	0.04	-0.65	0.67	0.02	-0.24	0.25	0.02
447	215	0.08	-0.65	0.67	0.03	-0.24	0.25	0.02
448	215	0.00	-0.41	0.67	0.00	-0.15	0.25	0.02
448	231	0.04	-0.41	0.67	0.01	-0.15	0.25	0.02
449	231	-0.01	-0.06	0.25	-0.03	-0.16	0.67	0.02
449	247	0.01	-0.16	0.67	0.00	-0.06	0.25	0.02
450	247	-0.02	0.01	0.25	-0.06	0.02	0.66	0.03
450	263	0.01	0.02	0.66	0.00	0.01	0.25	0.03
451	263	-0.02	0.03	0.24	-0.06	0.09	0.65	0.04
451	279	0.03	0.09	0.65	0.01	0.03	0.24	0.04
452	279	-0.01	0.03	0.22	-0.03	0.07	0.60	0.04
452	295	0.06	0.07	0.60	0.02	0.03	0.22	0.04
453	295	0.01	-0.01	0.37	0.00	0.00	0.14	0.01
453	311	0.02	-0.01	0.37	0.01	0.00	0.14	0.01
454	8	-0.02	-0.01	0.08	-0.06	-0.02	0.23	0.00
454	24	-0.02	-0.01	0.08	-0.05	-0.02	0.23	0.00
455	24	-0.09	-0.02	0.13	-0.23	-0.06	0.34	0.07
455	40	-0.03	-0.02	0.13	-0.08	-0.06	0.34	0.07
456	40	-0.12	-0.06	0.10	-0.32	-0.17	0.26	0.08
456	56	-0.06	-0.06	0.10	-0.15	-0.17	0.26	0.08
457	56	-0.17	-0.12	0.04	-0.46	-0.33	0.09	0.11
457	72	-0.08	-0.12	0.04	-0.22	-0.33	0.09	0.11
458	72	-0.23	-0.18	-0.04	-0.61	-0.49	-0.11	0.22
458	88	-0.05	-0.18	-0.04	-0.14	-0.49	-0.11	0.22
459	88	-0.24	-0.24	-0.09	-0.63	-0.64	-0.24	0.52
459	104	0.49	-0.64	-0.24	0.18	-0.24	-0.09	0.52
460	104	0.00	-0.29	-0.07	-0.01	-0.77	-0.18	0.26
460	120	0.54	-0.77	-0.18	0.20	-0.29	-0.07	0.26
461	120	0.11	-0.91	-0.02	0.04	-0.34	-0.01	0.15
461	136	0.44	-0.91	-0.02	0.17	-0.34	-0.01	0.15
462	136	0.09	-1.04	0.14	0.03	-0.39	0.05	0.12
462	152	0.34	-1.04	0.14	0.13	-0.39	0.05	0.12
463	152	0.04	-1.12	0.25	0.02	-0.42	0.09	0.11
463	168	0.27	-1.12	0.25	0.10	-0.42	0.09	0.11
464	168	0.01	-1.12	0.33	0.00	-0.42	0.12	0.09
464	184	0.21	-1.12	0.33	0.08	-0.42	0.12	0.09
465	184	0.00	-0.38	0.14	-0.01	-1.02	0.38	0.08
465	200	0.17	-1.02	0.38	0.06	-0.38	0.14	0.08

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
466	200	-0.01	-0.31	0.15	-0.03	-0.82	0.41	0.07
466	216	0.12	-0.82	0.41	0.05	-0.31	0.15	0.07
467	216	-0.02	-0.20	0.16	-0.06	-0.53	0.42	0.07
467	232	0.08	-0.53	0.42	0.03	-0.20	0.16	0.07
468	232	-0.03	-0.09	0.16	-0.09	-0.23	0.43	0.07
468	248	0.07	-0.23	0.43	0.02	-0.09	0.16	0.07
469	248	-0.04	-0.01	0.16	-0.11	-0.02	0.43	0.09
469	264	0.07	-0.02	0.43	0.03	-0.01	0.16	0.09
470	264	-0.04	0.03	0.16	-0.11	0.08	0.43	0.10
470	280	0.12	0.08	0.43	0.04	0.03	0.16	0.10
471	280	-0.02	0.03	0.16	-0.06	0.07	0.42	0.10
471	296	0.16	0.07	0.42	0.06	0.03	0.16	0.10
472	296	0.03	0.00	0.25	0.01	0.00	0.09	0.02
472	312	0.05	0.00	0.25	0.02	0.00	0.09	0.02
473	9	0.18	-0.05	-0.11	0.07	-0.02	-0.04	0.27
473	25	-0.07	-0.02	-0.04	-0.19	-0.05	-0.11	0.27
474	25	0.09	-0.14	-0.15	0.04	-0.05	-0.06	0.09
474	41	-0.04	-0.05	-0.06	-0.10	-0.14	-0.15	0.09
475	41	0.05	-0.33	-0.25	0.02	-0.12	-0.09	0.05
475	57	-0.02	-0.12	-0.09	-0.06	-0.33	-0.25	0.05
476	57	0.04	-0.54	-0.42	0.02	-0.20	-0.16	0.04
476	73	-0.02	-0.20	-0.16	-0.05	-0.54	-0.42	0.04
477	73	0.03	-0.74	-0.62	0.01	-0.28	-0.23	0.03
477	89	-0.02	-0.28	-0.23	-0.04	-0.74	-0.62	0.03
478	89	0.00	-0.34	-0.30	0.00	-0.34	-0.30	0.01
478	105	-0.01	-0.34	-0.30	-0.01	-0.91	-0.79	0.01
479	105	0.03	-1.05	-0.69	0.01	-0.39	-0.26	0.03
479	121	-0.02	-0.39	-0.26	-0.04	-1.05	-0.69	0.03
480	121	0.04	-1.20	-0.52	0.02	-0.45	-0.19	0.05
480	137	-0.02	-0.45	-0.19	-0.06	-1.20	-0.52	0.05
481	137	0.05	-1.32	-0.35	0.02	-0.50	-0.13	0.05
481	153	-0.02	-0.50	-0.13	-0.06	-1.32	-0.35	0.05
482	153	0.05	-1.39	-0.21	0.02	-0.52	-0.08	0.05
482	169	-0.02	-0.52	-0.08	-0.06	-1.39	-0.21	0.05
483	169	0.04	-1.37	-0.09	0.01	-0.51	-0.03	0.04
483	185	-0.02	-0.51	-0.03	-0.05	-1.37	-0.09	0.04
484	185	0.03	-1.24	0.02	0.01	-0.47	0.01	0.03
484	201	-0.02	-0.47	0.01	-0.04	-1.24	0.02	0.03
485	201	0.02	-0.99	0.09	0.01	-0.37	0.03	0.03
485	217	-0.01	-0.37	0.03	-0.03	-0.99	0.09	0.03
486	217	0.02	-0.64	0.13	0.01	-0.24	0.05	0.02
486	233	-0.01	-0.24	0.05	-0.03	-0.64	0.13	0.02
487	233	0.02	-0.29	0.13	0.01	-0.11	0.05	0.02
487	249	-0.01	-0.11	0.05	-0.02	-0.29	0.13	0.02
488	249	0.02	-0.03	0.09	0.01	-0.01	0.04	0.02
488	265	-0.01	-0.01	0.04	-0.02	-0.03	0.09	0.02
489	265	0.03	0.10	0.06	0.01	0.04	0.02	0.03
489	281	-0.01	0.04	0.02	-0.03	0.10	0.06	0.03
490	281	0.06	0.10	0.04	0.02	0.04	0.01	0.06
490	297	-0.02	0.04	0.01	-0.06	0.10	0.04	0.06
491	297	0.12	0.01	0.02	0.04	0.01	0.01	0.17
491	313	-0.04	0.01	0.01	-0.11	0.01	0.02	0.17
492	10	-0.02	-0.01	-0.12	-0.06	-0.02	-0.31	0.07
492	26	0.03	-0.02	-0.31	0.01	-0.01	-0.12	0.07
493	26	-0.04	-0.03	-0.20	-0.12	-0.07	-0.53	0.12
493	42	0.14	-0.07	-0.53	0.05	-0.03	-0.20	0.12
494	42	-0.01	-0.07	-0.22	-0.01	-0.18	-0.58	0.09
494	58	0.19	-0.18	-0.58	0.07	-0.07	-0.22	0.09
495	58	0.07	-0.32	-0.63	0.03	-0.12	-0.24	0.04
495	74	0.16	-0.32	-0.63	0.06	-0.12	-0.24	0.04
496	74	0.13	-0.46	-0.68	0.05	-0.17	-0.25	0.02
496	90	0.07	-0.46	-0.68	0.03	-0.17	-0.25	0.02
497	90	0.11	-0.59	-0.69	0.04	-0.22	-0.26	0.09
497	106	-0.03	-0.22	-0.26	-0.08	-0.59	-0.69	0.09
498	106	-0.01	-0.27	-0.26	-0.03	-0.71	-0.69	0.05
498	122	-0.05	-0.27	-0.26	-0.13	-0.71	-0.69	0.05
499	122	-0.05	-0.31	-0.24	-0.13	-0.82	-0.64	0.00
499	138	-0.05	-0.31	-0.24	-0.13	-0.82	-0.64	0.00
500	138	-0.07	-0.34	-0.21	-0.18	-0.90	-0.57	0.04
500	154	-0.04	-0.34	-0.21	-0.11	-0.90	-0.57	0.04
501	154	-0.08	-0.36	-0.17	-0.21	-0.95	-0.46	0.06
501	170	-0.03	-0.36	-0.17	-0.09	-0.95	-0.46	0.06
502	170	-0.09	-0.35	-0.13	-0.23	-0.94	-0.34	0.07
502	186	-0.03	-0.35	-0.13	-0.07	-0.94	-0.34	0.07
503	186	-0.08	-0.32	-0.08	-0.22	-0.86	-0.22	0.09
503	202	-0.01	-0.32	-0.08	-0.04	-0.86	-0.22	0.09
504	202	-0.07	-0.26	-0.04	-0.19	-0.69	-0.12	0.10
504	218	0.02	-0.69	-0.12	0.01	-0.26	-0.04	0.10
505	218	-0.05	-0.16	-0.03	-0.13	-0.44	-0.07	0.10
505	234	0.08	-0.44	-0.07	0.03	-0.16	-0.03	0.10
506	234	-0.03	-0.07	-0.03	-0.07	-0.18	-0.08	0.10
506	250	0.14	-0.18	-0.08	0.05	-0.07	-0.03	0.10
507	250	-0.01	0.00	-0.05	-0.03	-0.01	-0.14	0.09
507	266	0.17	-0.01	-0.14	0.06	0.00	-0.05	0.09
508	266	-0.01	0.03	-0.08	-0.01	0.08	-0.22	0.09
508	282	0.17	0.08	-0.22	0.06	0.03	-0.08	0.09
509	282	-0.01	0.03	-0.11	-0.01	0.08	-0.29	0.09
509	298	0.17	0.08	-0.29	0.06	0.03	-0.11	0.09
510	298	0.01	0.02	-0.21	0.00	0.01	-0.08	0.04
510	314	0.06	0.02	-0.21	0.02	0.01	-0.08	0.04
511	11	0.01	0.01	-0.31	0.00	0.00	-0.12	0.01
511	27	0.03	0.01	-0.31	0.01	0.00	-0.12	0.01

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
512	27	0.07	0.02	-0.58	0.03	0.01	-0.22	0.00
512	43	0.08	0.02	-0.58	0.03	0.01	-0.22	0.00
513	43	0.15	0.01	-0.62	0.06	0.00	-0.23	0.03
513	59	0.09	0.01	-0.62	0.03	0.00	-0.23	0.03
514	59	0.20	-0.02	-0.61	0.07	-0.01	-0.23	0.07
514	75	0.05	-0.02	-0.61	0.02	-0.01	-0.23	0.07
515	75	0.20	-0.05	-0.58	0.08	-0.02	-0.22	0.10
515	91	-0.01	-0.02	-0.22	-0.02	-0.05	-0.58	0.10
516	91	0.15	-0.10	-0.57	0.06	-0.04	-0.21	0.12
516	107	-0.04	-0.04	-0.21	-0.12	-0.10	-0.57	0.12
517	107	0.05	-0.15	-0.58	0.02	-0.06	-0.22	0.12
517	123	-0.08	-0.06	-0.22	-0.21	-0.15	-0.58	0.12
518	123	-0.02	-0.07	-0.22	-0.05	-0.19	-0.59	0.10
518	139	-0.10	-0.07	-0.22	-0.27	-0.19	-0.59	0.10
519	139	-0.05	-0.08	-0.23	-0.15	-0.21	-0.61	0.07
519	155	-0.11	-0.08	-0.23	-0.30	-0.21	-0.61	0.07
520	155	-0.09	-0.09	-0.22	-0.25	-0.23	-0.59	0.03
520	171	-0.12	-0.09	-0.22	-0.32	-0.23	-0.59	0.03
521	171	-0.13	-0.09	-0.21	-0.35	-0.23	-0.55	0.02
521	187	-0.12	-0.09	-0.21	-0.31	-0.23	-0.55	0.02
522	187	-0.16	-0.08	-0.18	-0.42	-0.22	-0.48	0.09
522	203	-0.08	-0.08	-0.18	-0.22	-0.22	-0.48	0.09
523	203	-0.15	-0.07	-0.15	-0.41	-0.18	-0.39	0.17
523	219	-0.02	-0.07	-0.15	-0.04	-0.18	-0.39	0.17
524	219	-0.10	-0.04	-0.13	-0.27	-0.10	-0.35	0.21
524	235	0.18	-0.10	-0.35	0.07	-0.04	-0.13	0.21
525	235	-0.02	-0.01	-0.14	-0.06	-0.02	-0.38	0.18
525	251	0.33	-0.02	-0.38	0.12	-0.01	-0.14	0.18
526	251	0.11	0.02	-0.46	0.04	0.01	-0.17	0.11
526	267	0.34	0.02	-0.46	0.13	0.01	-0.17	0.11
527	267	0.17	0.04	-0.52	0.06	0.02	-0.20	0.04
527	283	0.26	0.04	-0.52	0.10	0.02	-0.20	0.04
528	283	0.14	0.04	-0.53	0.05	0.02	-0.20	0.00
528	299	0.13	0.04	-0.53	0.05	0.02	-0.20	0.00
529	299	0.05	0.01	-0.31	0.02	0.01	-0.11	0.02
529	315	0.03	0.01	-0.31	0.01	0.01	-0.11	0.02
530	12	0.07	0.02	-0.19	0.02	0.01	-0.07	0.04
530	28	0.01	0.02	-0.19	0.00	0.01	-0.07	0.04
531	28	0.21	0.07	-0.28	0.08	0.03	-0.11	0.12
531	44	-0.02	0.03	-0.11	-0.05	0.07	-0.28	0.12
532	44	0.21	0.15	-0.24	0.08	0.06	-0.09	0.13
532	60	-0.03	0.06	-0.09	-0.08	0.15	-0.24	0.13
533	60	0.21	0.24	-0.19	0.08	0.09	-0.07	0.14
533	76	-0.03	0.09	-0.07	-0.09	0.24	-0.19	0.14
534	76	0.20	0.33	-0.15	0.07	0.12	-0.06	0.15
534	92	-0.05	0.12	-0.06	-0.12	0.33	-0.15	0.15

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
535	92	0.17	0.38	-0.14	0.07	0.14	-0.05	0.15
535	108	-0.06	0.14	-0.05	-0.16	0.38	-0.14	0.15
536	108	0.14	0.43	-0.15	0.05	0.16	-0.06	0.16
536	124	-0.08	0.16	-0.06	-0.20	0.43	-0.15	0.16
537	124	0.09	0.49	-0.20	0.03	0.18	-0.08	0.16
537	140	-0.09	0.18	-0.08	-0.25	0.49	-0.20	0.16
538	140	0.03	0.54	-0.28	0.01	0.20	-0.11	0.15
538	156	-0.11	0.20	-0.11	-0.29	0.54	-0.28	0.15
539	156	-0.02	0.21	-0.15	-0.06	0.57	-0.40	0.13
539	172	-0.13	0.21	-0.15	-0.34	0.57	-0.40	0.13
540	172	-0.07	0.21	-0.20	-0.19	0.56	-0.54	0.07
540	188	-0.13	0.21	-0.20	-0.36	0.56	-0.54	0.07
541	188	-0.13	0.19	-0.25	-0.36	0.51	-0.68	0.03
541	204	-0.11	0.19	-0.25	-0.29	0.51	-0.68	0.03
542	204	-0.18	0.15	-0.29	-0.48	0.39	-0.78	0.20
542	220	-0.02	0.15	-0.29	-0.05	0.39	-0.78	0.20
543	220	-0.16	0.09	-0.30	-0.42	0.24	-0.81	0.36
543	236	0.35	0.24	-0.81	0.13	0.09	-0.30	0.36
544	236	-0.01	0.03	-0.31	-0.03	0.08	-0.82	0.22
544	252	0.44	0.08	-0.82	0.16	0.03	-0.31	0.22
545	252	0.20	-0.03	-0.76	0.07	-0.01	-0.28	0.06
545	268	0.32	-0.03	-0.76	0.12	-0.01	-0.28	0.06
546	268	0.26	-0.07	-0.67	0.10	-0.03	-0.25	0.05
546	284	0.14	-0.07	-0.67	0.05	-0.03	-0.25	0.05
547	284	0.20	-0.05	-0.57	0.08	-0.02	-0.21	0.11
547	300	-0.01	-0.02	-0.21	-0.03	-0.05	-0.57	0.11
548	300	0.06	-0.01	-0.33	0.02	0.00	-0.12	0.07
548	316	-0.01	0.00	-0.12	-0.03	-0.01	-0.33	0.07
549	13	-0.05	0.01	0.06	-0.12	0.03	0.16	0.18
549	29	0.12	0.03	0.16	0.05	0.01	0.06	0.18
550	29	-0.03	0.03	0.08	-0.08	0.08	0.21	0.07
550	45	0.08	0.08	0.21	0.03	0.03	0.08	0.07
551	45	-0.02	0.09	0.10	-0.04	0.23	0.26	0.04
551	61	0.05	0.23	0.26	0.02	0.09	0.10	0.04
552	61	-0.01	0.15	0.11	-0.04	0.40	0.30	0.04
552	77	0.05	0.40	0.30	0.02	0.15	0.11	0.04
553	77	-0.02	0.21	0.13	-0.04	0.56	0.34	0.04
553	93	0.05	0.56	0.34	0.02	0.21	0.13	0.04
554	93	-0.02	0.26	0.13	-0.04	0.70	0.36	0.04
554	109	0.05	0.70	0.36	0.02	0.26	0.13	0.04
555	109	-0.02	0.31	0.13	-0.05	0.83	0.35	0.05
555	125	0.05	0.83	0.35	0.02	0.31	0.13	0.05
556	125	-0.02	0.36	0.11	-0.05	0.95	0.30	0.05
556	141	0.06	0.95	0.30	0.02	0.36	0.11	0.05
557	141	-0.02	0.40	0.07	-0.06	1.06	0.20	0.06
557	157	0.06	1.06	0.20	0.02	0.40	0.07	0.06

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
558	157	-0.02	0.42	0.00	-0.06	1.12	0.01	0.06
558	173	0.07	1.12	0.01	0.03	0.42	0.00	0.06
559	173	-0.02	0.42	-0.11	-0.06	1.13	-0.29	0.06
559	189	0.07	1.13	-0.29	0.03	0.42	-0.11	0.06
560	189	-0.02	0.39	-0.28	-0.05	1.03	-0.74	0.05
560	205	0.05	1.03	-0.74	0.02	0.39	-0.28	0.05
561	205	0.00	0.31	-0.48	0.00	0.31	-0.48	0.00
561	221	0.00	0.81	-1.28	0.00	0.31	-0.48	0.00
562	221	0.09	0.46	-1.72	0.03	0.17	-0.64	0.08
562	237	-0.03	0.17	-0.64	-0.09	0.46	-1.72	0.08
563	237	0.01	0.10	-1.37	0.00	0.04	-0.52	0.01
563	253	0.00	0.04	-0.52	-0.01	0.10	-1.37	0.01
564	253	-0.01	-0.04	-0.34	-0.03	-0.11	-0.91	0.03
564	269	0.03	-0.11	-0.91	0.01	-0.04	-0.34	0.03
565	269	-0.02	-0.07	-0.20	-0.05	-0.20	-0.52	0.05
565	285	0.05	-0.20	-0.52	0.02	-0.07	-0.20	0.05
566	285	-0.03	-0.06	-0.11	-0.09	-0.16	-0.29	0.08
566	301	0.09	-0.16	-0.29	0.03	-0.06	-0.11	0.08
567	301	-0.07	-0.01	-0.07	-0.18	-0.03	-0.20	0.26
567	317	0.18	-0.03	-0.20	0.07	-0.01	-0.07	0.26
568	14	0.02	0.01	0.34	0.01	0.00	0.13	0.01
568	30	0.00	0.00	0.13	0.00	0.01	0.34	0.01
569	30	0.05	0.01	0.61	0.02	0.01	0.23	0.06
569	46	-0.03	0.01	0.23	-0.09	0.01	0.61	0.06
570	46	0.00	0.11	0.68	0.00	0.04	0.26	0.05
570	62	-0.04	0.04	0.26	-0.10	0.11	0.68	0.05
571	62	-0.01	0.09	0.27	-0.02	0.25	0.72	0.03
571	78	-0.03	0.09	0.27	-0.08	0.25	0.72	0.03
572	78	0.00	0.15	0.28	-0.01	0.39	0.75	0.02
572	94	-0.02	0.15	0.28	-0.05	0.39	0.75	0.02
573	94	0.02	0.54	0.76	0.01	0.20	0.28	0.01
573	110	0.00	0.20	0.28	-0.01	0.54	0.76	0.01
574	110	0.05	0.67	0.75	0.02	0.25	0.28	0.01
574	126	0.03	0.67	0.75	0.01	0.25	0.28	0.01
575	126	0.11	0.81	0.72	0.04	0.30	0.27	0.00
575	142	0.10	0.81	0.72	0.04	0.30	0.27	0.00
576	142	0.20	0.93	0.63	0.08	0.35	0.24	0.00
576	158	0.21	0.93	0.63	0.08	0.35	0.24	0.00
577	158	0.36	1.02	0.46	0.13	0.38	0.17	0.01
577	174	0.39	1.02	0.46	0.14	0.38	0.17	0.01
578	174	0.62	1.03	0.16	0.23	0.39	0.06	0.00
578	190	0.63	1.03	0.16	0.24	0.39	0.06	0.00
579	190	1.00	0.95	-0.30	0.38	0.36	-0.11	0.08
579	206	0.83	0.95	-0.30	0.31	0.36	-0.11	0.08
580	206	1.42	0.75	-0.86	0.53	0.28	-0.32	0.39
580	222	0.57	0.75	-0.86	0.22	0.28	-0.32	0.39

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
581	222	1.42	0.44	-1.18	0.53	0.16	-0.44	1.24
581	238	-0.47	0.16	-0.44	-1.26	0.44	-1.18	1.24
582	238	-0.15	0.05	-0.35	-0.39	0.12	-0.94	0.43
582	254	-0.49	0.05	-0.35	-1.32	0.12	-0.94	0.43
583	254	-0.25	-0.03	-0.17	-0.67	-0.08	-0.46	0.13
583	270	-0.35	-0.03	-0.17	-0.94	-0.08	-0.46	0.13
584	270	-0.18	-0.06	-0.02	-0.49	-0.16	-0.05	0.04
584	286	-0.22	-0.06	-0.02	-0.58	-0.16	-0.05	0.04
585	286	-0.10	-0.05	0.07	-0.26	-0.12	0.18	0.03
585	302	-0.12	-0.05	0.07	-0.32	-0.12	0.18	0.03
586	302	-0.04	0.00	0.06	-0.10	-0.01	0.17	0.01
586	318	-0.03	0.00	0.06	-0.08	-0.01	0.17	0.01
587	15	-0.01	0.00	0.13	-0.04	0.00	0.36	0.01
587	31	-0.02	0.00	0.13	-0.05	0.00	0.36	0.01
588	31	-0.06	-0.02	0.22	-0.16	-0.05	0.57	0.05
588	47	-0.02	-0.02	0.22	-0.04	-0.05	0.57	0.05
589	47	-0.07	0.00	0.23	-0.20	-0.01	0.62	0.09
589	63	0.00	0.00	0.23	-0.01	-0.01	0.62	0.09
590	63	-0.07	0.04	0.24	-0.20	0.10	0.64	0.11
590	79	0.04	0.10	0.64	0.01	0.04	0.24	0.11
591	79	-0.07	0.09	0.24	-0.18	0.23	0.64	0.12
591	95	0.08	0.23	0.64	0.03	0.09	0.24	0.12
592	95	-0.05	0.14	0.24	-0.14	0.38	0.65	0.13
592	111	0.13	0.38	0.65	0.05	0.14	0.24	0.13
593	111	-0.04	0.20	0.24	-0.09	0.52	0.65	0.14
593	127	0.20	0.52	0.65	0.07	0.20	0.24	0.14
594	127	-0.01	0.25	0.25	-0.01	0.68	0.66	0.14
594	143	0.29	0.68	0.66	0.11	0.25	0.25	0.14
595	143	0.13	0.82	0.66	0.05	0.31	0.25	0.15
595	159	0.45	0.82	0.66	0.17	0.31	0.25	0.15
596	159	0.38	0.92	0.67	0.14	0.34	0.25	0.14
596	175	0.68	0.92	0.67	0.26	0.34	0.25	0.14
597	175	0.82	0.95	0.68	0.31	0.36	0.25	0.08
597	191	0.99	0.95	0.68	0.37	0.36	0.25	0.08
598	191	1.45	0.89	0.68	0.55	0.33	0.26	0.12
598	207	1.19	0.89	0.68	0.44	0.33	0.26	0.12
599	207	2.13	0.70	0.69	0.80	0.26	0.26	0.67
599	223	0.68	0.70	0.69	0.26	0.26	0.26	0.67
600	223	2.10	0.41	0.69	0.79	0.15	0.26	1.83
600	239	-0.70	0.15	0.26	-1.87	0.41	0.69	1.83
601	239	-0.16	0.04	0.26	-0.42	0.12	0.69	0.73
601	255	-0.75	0.04	0.26	-1.99	0.12	0.69	0.73
602	255	-0.35	-0.03	0.26	-0.94	-0.07	0.69	0.20
602	271	-0.52	-0.03	0.26	-1.38	-0.07	0.69	0.20
603	271	-0.28	-0.06	0.25	-0.76	-0.15	0.67	0.00
603	287	-0.29	-0.06	0.25	-0.77	-0.15	0.67	0.00

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
604	287	-0.16	-0.04	0.23	-0.43	-0.11	0.62	0.05
604	303	-0.12	-0.04	0.23	-0.31	-0.11	0.62	0.05
605	303	-0.05	0.00	0.14	-0.13	0.00	0.38	0.05
605	319	-0.02	0.00	0.14	-0.06	0.00	0.38	0.05
606	16	-0.02	-0.01	0.07	-0.06	-0.02	0.20	0.01
606	32	-0.02	-0.01	0.07	-0.05	-0.02	0.20	0.01
607	32	-0.09	-0.04	0.11	-0.23	-0.12	0.30	0.11
607	48	0.00	-0.12	0.30	0.00	-0.04	0.11	0.11
608	48	-0.09	-0.05	0.10	-0.24	-0.12	0.28	0.13
608	64	0.05	-0.12	0.28	0.02	-0.05	0.10	0.13
609	64	-0.08	-0.02	0.09	-0.22	-0.04	0.25	0.14
609	80	0.09	-0.04	0.25	0.03	-0.02	0.09	0.14
610	80	-0.08	0.03	0.08	-0.20	0.08	0.23	0.15
610	96	0.13	0.08	0.23	0.05	0.03	0.08	0.15
611	96	-0.07	0.08	0.08	-0.18	0.22	0.22	0.16
611	112	0.16	0.22	0.22	0.06	0.08	0.08	0.16
612	112	-0.05	0.14	0.09	-0.15	0.38	0.23	0.16
612	128	0.21	0.38	0.23	0.08	0.14	0.09	0.16
613	128	-0.03	0.21	0.10	-0.09	0.55	0.27	0.17
613	144	0.28	0.55	0.27	0.10	0.21	0.10	0.17
614	144	0.00	0.27	0.14	-0.01	0.71	0.36	0.18
614	160	0.39	0.71	0.36	0.15	0.27	0.14	0.18
615	160	0.15	0.84	0.54	0.05	0.32	0.20	0.20
615	176	0.57	0.84	0.54	0.21	0.32	0.20	0.20
616	176	0.40	0.90	0.85	0.15	0.34	0.32	0.19
616	192	0.82	0.90	0.85	0.31	0.34	0.32	0.19
617	192	0.78	0.85	1.31	0.29	0.32	0.49	0.11
617	208	1.02	0.85	1.31	0.38	0.32	0.49	0.11
618	208	1.20	0.67	1.87	0.45	0.25	0.70	0.19
618	224	0.78	0.67	1.87	0.29	0.25	0.70	0.19
619	224	1.20	0.38	2.20	0.45	0.14	0.82	1.04
619	240	-0.39	0.14	0.82	-1.05	0.38	2.20	1.04
620	240	-0.23	0.03	0.74	-0.61	0.08	1.96	0.22
620	256	-0.41	0.03	0.74	-1.10	0.08	1.96	0.22
621	256	-0.33	-0.04	0.55	-0.88	-0.11	1.48	0.08
621	272	-0.26	-0.04	0.55	-0.70	-0.11	1.48	0.08
622	272	-0.25	-0.07	0.40	-0.67	-0.18	1.07	0.17
622	288	-0.11	-0.07	0.40	-0.30	-0.18	1.07	0.17
623	288	-0.13	-0.05	0.29	-0.35	-0.14	0.79	0.16
623	304	0.00	-0.14	0.79	0.00	-0.05	0.29	0.16
624	304	-0.02	0.00	0.15	-0.04	0.00	0.40	0.04
624	320	0.01	0.00	0.40	0.00	0.00	0.15	0.04

Esfuerzos por superestructura

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
1	1	-4.01	0.14	-0.25	-7.13	0.24	-0.45	5.70
1	2	4.45	0.24	-0.45	2.50	0.14	-0.25	5.70
2	2	4.89	0.06	0.00	2.75	0.03	0.00	1.98
2	3	11.17	0.06	0.00	6.28	0.03	0.00	1.98
3	3	10.39	-0.09	0.42	5.84	-0.05	0.24	0.96
3	4	7.36	-0.09	0.42	4.14	-0.05	0.24	0.96
4	4	5.76	-0.30	0.73	3.24	-0.17	0.41	3.84
4	5	-1.15	-0.17	0.41	-2.04	-0.30	0.73	3.84
5	5	-1.41	2.71	0.03	-2.51	4.81	0.05	0.68
5	6	-2.40	2.71	0.03	-4.27	4.81	0.05	0.68
6	6	-2.22	3.20	-0.13	-3.94	5.68	-0.23	0.55
6	7	-3.03	3.20	-0.13	-5.38	5.68	-0.23	0.55
7	7	-2.67	3.03	-0.21	-4.74	5.39	-0.37	0.60
7	8	-3.55	3.03	-0.21	-6.31	5.39	-0.37	0.60
8	8	-2.94	2.03	-0.29	-5.23	3.61	-0.52	0.61
8	9	-3.83	2.03	-0.29	-6.82	3.61	-0.52	0.61
9	9	-3.54	0.14	-0.24	-6.29	0.25	-0.43	3.45
9	10	0.72	0.25	-0.43	0.40	0.14	-0.24	3.45
10	10	1.39	0.08	0.16	0.78	0.05	0.09	3.38
10	11	11.35	0.08	0.16	6.38	0.05	0.09	1.88
11	11	10.28	-0.06	0.82	5.78	-0.03	0.46	1.81
11	12	8.14	-0.06	0.82	4.58	-0.03	0.46	3.17
12	12	6.46	-0.27	0.68	3.63	-0.15	0.38	2.84
12	13	-1.44	-0.15	0.38	-2.56	-0.27	0.68	6.04
13	13	-1.65	3.61	0.00	-2.93	6.42	0.00	0.73
13	14	-2.72	3.61	0.00	-4.83	6.42	0.00	0.73
14	14	-2.45	4.01	-0.15	-4.36	7.13	-0.28	0.64
14	15	-3.39	4.01	-0.15	-6.02	7.13	-0.28	0.64
15	15	-2.98	4.00	-0.20	-5.30	7.11	-0.36	0.67
15	16	-3.95	4.00	-0.20	-7.03	7.11	-0.36	0.67
16	16	-3.44	3.70	-0.24	-6.11	6.58	-0.42	0.57
16	1	-4.28	3.70	-0.24	-7.60	6.58	-0.42	0.57
17	17	-4.19	0.13	-0.14	-7.46	0.24	-0.25	6.19
17	18	5.13	0.24	-0.25	2.89	0.13	-0.14	6.19
18	18	5.16	0.05	0.00	2.90	0.03	0.00	1.87
18	19	11.11	0.05	0.00	6.25	0.03	0.00	1.88
19	19	10.97	-0.09	0.28	6.17	-0.05	0.16	1.29
19	20	6.91	-0.09	0.28	3.89	-0.05	0.16	1.29
20	20	6.69	-0.29	0.45	3.77	-0.16	0.25	4.75
20	21	-1.67	-0.17	0.25	-2.97	-0.29	0.45	4.76
21	21	-1.67	2.97	0.03	-2.98	5.28	0.05	0.48
21	22	-2.37	2.97	0.03	-4.22	5.28	0.05	0.48
22	22	-2.37	3.21	-0.08	-4.21	5.71	-0.15	0.39

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
22	23	-2.93	3.21	-0.08	-5.21	5.71	-0.15	0.39
23	23	-2.88	3.05	-0.14	-5.13	5.42	-0.25	0.32
23	24	-3.36	3.05	-0.14	-5.96	5.42	-0.25	0.32
24	24	-3.23	2.09	-0.20	-5.75	3.72	-0.36	0.28
24	25	-3.65	2.09	-0.20	-6.48	3.72	-0.36	0.28
25	25	-3.62	0.14	-0.19	-6.43	0.24	-0.33	3.74
25	26	1.17	0.24	-0.33	0.66	0.14	-0.19	3.73
26	26	1.45	0.08	0.10	0.82	0.05	0.06	3.49
26	27	11.33	0.08	0.10	6.37	0.05	0.06	1.66
27	27	11.02	-0.06	0.57	6.20	-0.03	0.32	1.39
27	28	7.52	-0.06	0.57	4.23	-0.03	0.32	3.59
28	28	7.17	-0.27	0.46	4.03	-0.15	0.26	3.59
28	29	-1.89	-0.15	0.26	-3.37	-0.27	0.46	6.78
29	29	-1.90	3.77	0.01	-3.38	6.71	0.01	0.53
29	30	-2.67	3.77	0.01	-4.75	6.71	0.01	0.53
30	30	-2.64	4.02	-0.11	-4.69	7.14	-0.19	0.42
30	31	-3.25	4.02	-0.11	-5.79	7.14	-0.19	0.42
31	31	-3.19	4.01	-0.14	-5.67	7.12	-0.25	0.38
31	32	-3.74	4.01	-0.14	-6.65	7.12	-0.25	0.38
32	32	-3.63	3.90	-0.16	-6.45	6.92	-0.28	0.38
32	17	-4.19	3.90	-0.16	-7.45	6.92	-0.28	0.38
33	33	-4.18	0.12	-0.09	-7.42	0.21	-0.15	6.39
33	34	5.57	0.21	-0.15	3.13	0.12	-0.09	6.39
34	34	5.49	0.04	0.02	3.09	0.02	0.01	1.84
34	35	11.33	0.04	0.02	6.37	0.02	0.01	1.84
35	35	11.32	-0.10	0.27	6.37	-0.05	0.15	1.41
35	36	6.86	-0.10	0.27	3.86	-0.05	0.15	1.42
36	36	6.92	-0.27	0.36	3.89	-0.15	0.20	5.14
36	37	-1.99	-0.15	0.20	-3.53	-0.27	0.36	5.14
37	37	-1.98	3.25	0.05	-3.52	5.77	0.09	0.32
37	38	-2.46	3.25	0.05	-4.37	5.77	0.09	0.32
38	38	-2.49	3.25	-0.07	-4.42	5.78	-0.13	0.33
38	39	-2.97	3.25	-0.07	-5.27	5.78	-0.13	0.33
39	39	-2.97	3.10	-0.15	-5.28	5.50	-0.26	0.28
39	40	-3.39	3.10	-0.15	-6.02	5.50	-0.26	0.28
40	40	-3.35	2.24	-0.23	-5.96	3.98	-0.41	0.22
40	41	-3.68	2.24	-0.23	-6.54	3.98	-0.41	0.22
41	41	-3.65	0.13	-0.28	-6.49	0.23	-0.49	3.96
41	42	1.56	0.23	-0.49	0.88	0.13	-0.28	3.96
42	42	1.72	0.09	0.09	0.97	0.05	0.05	3.83
42	43	11.63	0.09	0.09	6.54	0.05	0.05	1.23
43	43	11.52	-0.05	0.65	6.48	-0.03	0.37	1.14
43	44	7.24	-0.05	0.65	4.07	-0.03	0.36	3.83
44	44	7.14	-0.23	0.50	4.02	-0.13	0.28	3.87
44	45	-2.23	-0.13	0.28	-3.97	-0.23	0.49	7.06
45	45	-2.24	3.96	0.03	-3.98	7.05	0.06	0.36

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
45	46	-2.77	3.96	0.03	-4.93	7.05	0.06	0.36
46	46	-2.78	4.04	-0.11	-4.94	7.18	-0.20	0.33
46	47	-3.27	4.04	-0.11	-5.81	7.18	-0.20	0.33
47	47	-3.25	4.02	-0.16	-5.77	7.15	-0.29	0.31
47	48	-3.70	4.02	-0.16	-6.58	7.15	-0.29	0.31
48	48	-3.67	4.05	-0.16	-6.52	7.20	-0.28	0.34
48	33	-4.16	4.05	-0.16	-7.39	7.20	-0.28	0.34
49	49	-4.07	0.10	-0.05	-7.23	0.17	-0.09	6.41
49	50	5.81	0.17	-0.09	3.27	0.10	-0.05	6.42
50	50	5.74	0.02	0.05	3.23	0.01	0.03	1.83
50	51	11.55	0.02	0.05	6.49	0.01	0.03	1.83
51	51	11.55	-0.10	0.25	6.50	-0.06	0.14	1.49
51	52	6.85	-0.10	0.25	3.85	-0.06	0.14	1.49
52	52	6.91	-0.26	0.31	3.89	-0.14	0.17	5.30
52	53	-2.17	-0.14	0.17	-3.86	-0.26	0.31	5.30
53	53	-2.17	3.35	0.06	-3.85	5.96	0.11	0.29
53	54	-2.58	3.35	0.06	-4.59	5.96	0.11	0.29
54	54	-2.61	3.31	-0.06	-4.63	5.89	-0.10	0.30
54	55	-3.04	3.31	-0.06	-5.41	5.89	-0.10	0.30
55	55	-3.05	3.17	-0.15	-5.42	5.64	-0.27	0.28
55	56	-3.46	3.17	-0.15	-6.16	5.64	-0.27	0.28
56	56	-3.45	2.47	-0.25	-6.13	4.39	-0.45	0.25
56	57	-3.82	2.47	-0.25	-6.79	4.39	-0.45	0.25
57	57	-3.80	0.13	-0.33	-6.76	0.23	-0.58	4.38
57	58	2.14	0.23	-0.58	1.20	0.13	-0.33	4.37
58	58	2.14	0.10	0.10	1.20	0.05	0.06	4.35
58	59	12.01	0.10	0.10	6.75	0.05	0.06	0.86
59	59	12.00	-0.02	0.67	6.75	-0.01	0.38	0.91
59	60	7.00	-0.02	0.67	3.93	-0.01	0.38	4.06
60	60	6.98	-0.18	0.52	3.93	-0.10	0.29	4.07
60	61	-2.55	-0.10	0.29	-4.53	-0.18	0.52	7.26
61	61	-2.55	4.08	0.04	-4.53	7.26	0.08	0.26
61	62	-2.93	4.08	0.04	-5.21	7.26	0.08	0.26
62	62	-2.93	4.06	-0.12	-5.22	7.22	-0.21	0.26
62	63	-3.31	4.06	-0.12	-5.88	7.22	-0.21	0.26
63	63	-3.30	4.03	-0.17	-5.87	7.17	-0.31	0.26
63	64	-3.67	4.03	-0.17	-6.53	7.17	-0.31	0.26
64	64	-3.66	4.07	-0.15	-6.51	7.23	-0.27	0.27
64	49	-4.06	4.07	-0.15	-7.21	7.23	-0.27	0.27
65	65	-3.92	0.07	-0.03	-6.97	0.12	-0.05	6.38
65	66	6.01	0.13	-0.05	3.38	0.07	-0.03	6.39
66	66	5.97	0.00	0.08	3.36	0.00	0.05	1.81
66	67	11.71	0.00	0.08	6.59	0.00	0.05	1.81
67	67	11.71	-0.11	0.23	6.59	-0.06	0.13	1.54
67	68	6.85	-0.11	0.24	3.85	-0.06	0.13	1.54
68	68	6.89	-0.24	0.28	3.87	-0.14	0.16	5.40

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
68	69	-2.30	-0.14	0.16	-4.10	-0.24	0.28	5.41
69	69	-2.30	3.42	0.06	-4.09	6.08	0.11	0.28
69	70	-2.71	3.42	0.06	-4.82	6.08	0.11	0.28
70	70	-2.72	3.38	-0.05	-4.83	6.01	-0.09	0.29
70	71	-3.14	3.38	-0.05	-5.58	6.01	-0.09	0.29
71	71	-3.14	3.28	-0.15	-5.58	5.83	-0.27	0.29
71	72	-3.56	3.28	-0.15	-6.33	5.83	-0.27	0.29
72	72	-3.56	2.76	-0.26	-6.33	4.91	-0.47	0.29
72	73	-3.99	2.76	-0.26	-7.09	4.91	-0.47	0.29
73	73	-3.99	0.13	-0.33	-7.09	0.23	-0.58	4.91
73	74	2.89	0.23	-0.58	1.62	0.13	-0.33	4.90
74	74	2.77	0.11	0.12	1.56	0.06	0.07	4.97
74	75	12.43	0.11	0.12	6.99	0.06	0.07	0.63
75	75	12.46	0.00	0.64	7.01	0.00	0.36	0.70
75	76	6.77	0.00	0.64	3.81	0.00	0.36	4.27
76	76	6.83	-0.13	0.50	3.84	-0.07	0.28	4.27
76	77	-2.86	-0.07	0.28	-5.09	-0.13	0.50	7.45
77	77	-2.86	4.19	0.04	-5.08	7.45	0.08	0.17
77	78	-3.10	4.19	0.04	-5.52	7.45	0.08	0.17
78	78	-3.10	4.09	-0.12	-5.51	7.26	-0.21	0.18
78	79	-3.36	4.09	-0.12	-5.98	7.26	-0.21	0.18
79	79	-3.36	4.04	-0.18	-5.98	7.19	-0.32	0.19
79	80	-3.63	4.04	-0.18	-6.46	7.19	-0.32	0.19
80	80	-3.64	4.06	-0.15	-6.47	7.21	-0.26	0.19
80	65	-3.92	4.06	-0.15	-6.96	7.21	-0.26	0.19
81	81	-3.77	0.04	-0.02	-6.71	0.07	-0.04	6.35
81	82	6.20	0.07	-0.04	3.49	0.04	-0.02	6.36
82	82	6.18	-0.03	0.10	3.48	-0.02	0.06	1.78
82	83	11.84	-0.03	0.10	6.66	-0.02	0.06	1.78
83	83	11.84	-0.12	0.23	6.66	-0.07	0.13	1.58
83	84	6.84	-0.12	0.23	3.85	-0.07	0.13	1.59
84	84	6.86	-0.23	0.27	3.86	-0.13	0.15	5.50
84	85	-2.43	-0.13	0.15	-4.32	-0.23	0.27	5.50
85	85	-2.42	3.48	0.06	-4.31	6.19	0.10	0.28
85	86	-2.83	3.48	0.06	-5.04	6.19	0.10	0.28
86	86	-2.82	3.46	-0.05	-5.02	6.15	-0.09	0.29
86	87	-3.24	3.46	-0.05	-5.76	6.15	-0.09	0.29
87	87	-3.23	3.40	-0.15	-5.75	6.04	-0.27	0.30
87	88	-3.67	3.40	-0.15	-6.52	6.04	-0.27	0.30
88	88	-3.68	3.08	-0.26	-6.54	5.48	-0.46	0.31
88	89	-4.13	3.08	-0.26	-7.35	5.48	-0.46	0.31
89	89	-4.14	0.13	-0.29	-7.36	0.24	-0.52	5.47
89	90	3.72	0.24	-0.52	2.09	0.13	-0.29	5.26
90	90	3.56	0.12	0.16	2.00	0.07	0.09	5.25
90	91	12.83	0.12	0.15	7.21	0.07	0.09	0.45
91	91	12.86	0.03	0.58	7.23	0.02	0.33	0.51

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
91	92	6.58	0.03	0.58	3.70	0.02	0.33	4.46
92	92	6.67	-0.07	0.45	3.75	-0.04	0.26	4.45
92	93	-3.16	-0.04	0.26	-5.61	-0.07	0.45	7.64
93	93	-3.15	4.29	0.03	-5.59	7.63	0.06	0.09
93	94	-3.27	4.29	0.03	-5.82	7.63	0.06	0.09
94	94	-3.27	4.11	-0.12	-5.81	7.30	-0.22	0.10
94	95	-3.42	4.11	-0.12	-6.08	7.30	-0.22	0.10
95	95	-3.42	4.05	-0.18	-6.08	7.20	-0.31	0.11
95	96	-3.59	4.05	-0.18	-6.38	7.20	-0.31	0.11
96	96	-3.60	4.04	-0.14	-6.40	7.18	-0.24	0.12
96	81	-3.77	4.04	-0.14	-6.70	7.18	-0.24	0.12
97	97	-3.63	0.01	-0.01	-6.45	0.02	-0.02	6.31
97	98	6.40	0.02	-0.02	3.60	0.01	-0.01	6.32
98	98	6.38	-0.06	0.12	3.59	-0.03	0.07	1.75
98	99	11.96	-0.06	0.12	6.73	-0.04	0.07	1.76
99	99	11.96	-0.13	0.24	6.73	-0.08	0.13	1.63
99	100	6.82	-0.13	0.24	3.84	-0.08	0.13	1.63
100	100	6.84	-0.22	0.25	3.85	-0.12	0.14	5.59
100	101	-2.55	-0.12	0.14	-4.54	-0.22	0.26	5.60
101	101	-2.55	3.54	0.04	-4.53	6.30	0.08	0.27
101	102	-2.95	3.54	0.04	-5.24	6.30	0.08	0.27
102	102	-2.93	3.55	-0.06	-5.20	6.31	-0.11	0.28
102	103	-3.34	3.55	-0.06	-5.93	6.31	-0.11	0.28
103	103	-3.32	3.52	-0.15	-5.91	6.26	-0.27	0.30
103	104	-3.76	3.52	-0.15	-6.68	6.26	-0.27	0.30
104	104	-3.78	3.44	-0.24	-6.71	6.11	-0.42	0.33
104	105	-4.26	3.44	-0.24	-7.57	6.11	-0.42	0.33
105	105	-4.28	0.13	-0.24	-7.60	0.24	-0.42	6.10
105	106	4.51	0.24	-0.42	2.54	0.13	-0.24	5.20
106	106	4.33	0.14	0.18	2.44	0.08	0.10	5.28
106	107	13.13	0.14	0.18	7.38	0.08	0.10	0.29
107	107	13.18	0.06	0.51	7.41	0.04	0.29	0.36
107	108	6.41	0.06	0.51	3.61	0.04	0.29	4.61
108	108	6.52	-0.01	0.39	3.67	-0.01	0.22	4.61
108	109	-3.42	-0.01	0.22	-6.09	-0.01	0.39	7.79
109	109	-3.41	4.38	0.02	-6.06	7.79	0.03	0.02
109	110	-3.43	4.38	0.02	-6.10	7.79	0.03	0.02
110	110	-3.42	4.12	-0.12	-6.08	7.33	-0.22	0.03
110	111	-3.47	4.12	-0.12	-6.17	7.33	-0.22	0.03
111	111	-3.48	4.05	-0.17	-6.18	7.20	-0.30	0.04
111	112	-3.54	4.05	-0.17	-6.29	7.20	-0.30	0.04
112	112	-3.55	4.02	-0.13	-6.32	7.15	-0.23	0.05
112	97	-3.62	4.02	-0.13	-6.44	7.15	-0.23	0.05
113	113	-3.48	-0.02	-0.01	-6.19	-0.03	-0.01	6.28
113	114	6.59	-0.03	-0.01	3.71	-0.02	-0.01	6.29
114	114	6.58	-0.09	0.13	3.70	-0.05	0.07	1.73

Barra Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
114 115	12.06	-0.09	0.13	6.79	-0.05	0.08	1.73
115 115	12.06	-0.14	0.25	6.79	-0.08	0.14	1.67
115 116	6.79	-0.14	0.25	3.82	-0.08	0.14	1.67
116 116	6.81	-0.21	0.24	3.83	-0.12	0.14	5.69
116 117	-2.69	-0.12	0.14	-4.78	-0.21	0.24	5.70
117 117	-2.68	3.61	0.03	-4.77	6.41	0.05	0.26
117 118	-3.06	3.61	0.03	-5.44	6.41	0.05	0.26
118 118	-3.03	3.63	-0.08	-5.39	6.46	-0.14	0.27
118 119	-3.42	3.63	-0.08	-6.08	6.46	-0.14	0.27
119 119	-3.40	3.65	-0.15	-6.05	6.49	-0.27	0.29
119 120	-3.82	3.65	-0.15	-6.80	6.49	-0.27	0.29
120 120	-3.84	3.84	-0.20	-6.83	6.83	-0.36	0.34
120 121	-4.33	3.84	-0.20	-7.70	6.83	-0.36	0.34
121 121	-4.36	0.13	-0.16	-7.76	0.23	-0.28	6.83
121 122	5.09	0.23	-0.28	2.86	0.13	-0.16	5.06
122 122	4.95	0.15	0.20	2.78	0.08	0.11	5.16
122 123	13.36	0.15	0.20	7.52	0.08	0.11	0.17
123 123	13.42	0.09	0.44	7.55	0.05	0.25	0.23
123 124	6.26	0.09	0.44	3.52	0.05	0.25	4.74
124 124	6.37	0.04	0.31	3.58	0.02	0.18	4.74
124 125	-3.66	0.02	0.18	-6.50	0.04	0.31	7.92
125 125	-3.64	4.46	0.00	-6.48	7.92	0.00	0.05
125 126	-3.58	4.46	0.00	-6.36	7.92	0.00	0.05
126 126	-3.56	4.13	-0.12	-6.33	7.34	-0.22	0.03
126 127	-3.52	4.13	-0.12	-6.25	7.34	-0.22	0.03
127 127	-3.52	4.05	-0.16	-6.26	7.19	-0.29	0.02
127 128	-3.49	4.05	-0.16	-6.20	7.19	-0.29	0.02
128 128	-3.51	4.00	-0.12	-6.23	7.12	-0.21	0.02
128 113	-3.48	4.00	-0.12	-6.18	7.12	-0.21	0.02
129 129	-3.34	-0.04	0.00	-5.94	-0.07	0.00	6.25
129 130	6.78	-0.07	0.00	3.81	-0.04	0.00	6.26
130 130	6.76	-0.12	0.15	3.80	-0.06	0.08	1.70
130 131	12.17	-0.12	0.15	6.84	-0.06	0.08	1.70
131 131	12.16	-0.15	0.25	6.84	-0.08	0.14	1.72
131 132	6.74	-0.15	0.25	3.79	-0.08	0.14	1.72
132 132	6.76	-0.18	0.23	3.80	-0.10	0.13	5.80
132 133	-2.83	-0.10	0.13	-5.04	-0.18	0.23	5.81
133 133	-2.83	3.67	0.01	-5.03	6.53	0.01	0.23
133 134	-3.17	3.67	0.01	-5.63	6.53	0.01	0.23
134 134	-3.14	3.72	-0.09	-5.58	6.61	-0.17	0.24
134 135	-3.49	3.72	-0.09	-6.20	6.61	-0.17	0.24
135 135	-3.47	3.77	-0.15	-6.17	6.71	-0.27	0.26
135 136	-3.85	3.77	-0.15	-6.85	6.71	-0.27	0.26
136 136	-3.87	4.23	-0.16	-6.88	7.53	-0.29	0.31
136 137	-4.32	4.23	-0.16	-7.69	7.53	-0.29	0.31
137 137	-4.35	0.12	-0.08	-7.74	0.21	-0.14	7.55

Barra Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
137 138	5.51	0.21	-0.14	3.10	0.12	-0.08	5.00
138 138	5.39	0.15	0.20	3.03	0.09	0.11	5.07
138 139	13.54	0.15	0.20	7.62	0.09	0.11	0.09
139 139	13.59	0.12	0.36	7.64	0.07	0.20	0.13
139 140	6.11	0.12	0.36	3.44	0.07	0.20	4.84
140 140	6.21	0.09	0.24	3.49	0.05	0.14	4.84
140 141	-3.86	0.05	0.14	-6.87	0.09	0.24	8.03
141 141	-3.85	4.51	-0.02	-6.85	8.02	-0.03	0.10
141 142	-3.70	4.51	-0.02	-6.58	8.02	-0.03	0.10
142 142	-3.68	4.13	-0.12	-6.55	7.34	-0.22	0.09
142 143	-3.55	4.13	-0.12	-6.32	7.34	-0.22	0.09
143 143	-3.56	4.04	-0.15	-6.33	7.18	-0.27	0.08
143 144	-3.44	4.04	-0.15	-6.11	7.18	-0.27	0.08
144 144	-3.46	3.99	-0.11	-6.15	7.09	-0.19	0.08
144 129	-3.34	3.99	-0.11	-5.94	7.09	-0.19	0.08
145 145	-3.21	-0.07	0.01	-5.71	-0.12	0.02	6.22
145 146	6.96	-0.12	0.02	3.91	-0.07	0.01	6.23
146 146	6.94	-0.13	0.17	3.90	-0.08	0.09	1.67
146 147	12.26	-0.13	0.17	6.89	-0.08	0.09	1.68
147 147	12.26	-0.15	0.26	6.89	-0.08	0.15	1.76
147 148	6.68	-0.15	0.26	3.76	-0.08	0.15	1.77
148 148	6.70	-0.16	0.21	3.77	-0.09	0.12	5.91
148 149	-2.99	-0.09	0.12	-5.32	-0.16	0.21	5.92
149 149	-2.99	3.74	-0.01	-5.31	6.65	-0.02	0.20
149 150	-3.27	3.74	-0.01	-5.82	6.65	-0.02	0.20
150 150	-3.24	3.80	-0.11	-5.77	6.75	-0.20	0.20
150 151	-3.54	3.80	-0.11	-6.29	6.75	-0.20	0.20
151 151	-3.52	3.88	-0.15	-6.27	6.90	-0.27	0.22
151 152	-3.84	3.88	-0.15	-6.83	6.90	-0.27	0.22
152 152	-3.87	4.52	-0.13	-6.87	8.03	-0.23	0.25
152 153	-4.23	4.52	-0.13	-7.51	8.03	-0.23	0.25
153 153	-4.25	0.10	-0.02	-7.55	0.18	-0.03	8.07
153 154	5.80	0.18	-0.03	3.26	0.10	-0.02	4.97
154 154	5.71	0.15	0.21	3.21	0.09	0.12	5.01
154 155	13.66	0.15	0.21	7.69	0.08	0.12	0.03
155 155	13.69	0.14	0.30	7.70	0.08	0.17	0.05
155 156	5.96	0.14	0.30	3.35	0.08	0.17	4.92
156 156	6.06	0.13	0.18	3.41	0.07	0.10	4.92
156 157	-4.05	0.07	0.10	-7.19	0.13	0.18	8.11
157 157	-4.03	4.56	-0.04	-7.17	8.11	-0.07	0.15
157 158	-3.81	4.56	-0.04	-6.77	8.11	-0.07	0.15
158 158	-3.79	4.11	-0.13	-6.74	7.31	-0.23	0.14
158 159	-3.58	4.11	-0.13	-6.36	7.31	-0.23	0.14
159 159	-3.58	4.02	-0.15	-6.37	7.15	-0.26	0.14
159 160	-3.38	4.02	-0.15	-6.01	7.15	-0.26	0.14
160 160	-3.40	3.97	-0.09	-6.05	7.06	-0.17	0.14

Barra Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
160 145	-3.21	3.97	-0.09	-5.70	7.06	-0.17	0.14
161 161	-3.08	-0.09	0.02	-5.48	-0.15	0.04	6.20
161 162	7.12	-0.16	0.04	4.01	-0.09	0.02	6.20
162 162	7.10	-0.15	0.18	4.00	-0.08	0.10	1.65
162 163	12.34	-0.15	0.18	6.94	-0.08	0.10	1.65
163 163	12.34	-0.14	0.26	6.94	-0.08	0.15	1.82
163 164	6.61	-0.14	0.26	3.72	-0.08	0.15	1.82
164 164	6.62	-0.12	0.19	3.73	-0.07	0.11	6.02
164 165	-3.17	-0.07	0.11	-5.63	-0.12	0.19	6.03
165 165	-3.16	3.81	-0.03	-5.62	6.78	-0.05	0.15
165 166	-3.38	3.81	-0.03	-6.00	6.78	-0.05	0.15
166 166	-3.35	3.86	-0.13	-5.96	6.87	-0.22	0.15
166 167	-3.57	3.86	-0.13	-6.35	6.87	-0.22	0.15
167 167	-3.56	3.96	-0.15	-6.33	7.05	-0.27	0.16
167 168	-3.80	3.96	-0.15	-6.76	7.05	-0.27	0.16
168 168	-3.82	4.58	-0.10	-6.80	8.14	-0.17	0.18
168 169	-4.08	4.58	-0.10	-7.25	8.14	-0.17	0.18
169 169	-4.10	0.08	0.03	-7.28	0.14	0.05	8.15
169 170	6.03	0.14	0.05	3.39	0.08	0.03	4.95
170 170	5.94	0.14	0.22	3.34	0.08	0.12	4.96
170 171	13.73	0.14	0.22	7.72	0.08	0.12	0.02
171 171	13.74	0.15	0.25	7.73	0.09	0.14	0.01
171 172	5.81	0.15	0.25	3.27	0.09	0.14	4.98
172 172	5.89	0.17	0.12	3.32	0.10	0.07	4.99
172 173	-4.21	0.10	0.07	-7.49	0.17	0.12	8.17
173 173	-4.20	4.60	-0.06	-7.46	8.17	-0.10	0.21
173 174	-3.90	4.60	-0.06	-6.93	8.17	-0.10	0.21
174 174	-3.87	4.08	-0.13	-6.89	7.25	-0.23	0.20
174 175	-3.59	4.08	-0.13	-6.38	7.25	-0.23	0.20
175 175	-3.60	4.00	-0.14	-6.39	7.10	-0.24	0.19
175 176	-3.32	4.00	-0.14	-5.91	7.10	-0.24	0.19
176 176	-3.35	3.95	-0.08	-5.95	7.03	-0.14	0.18
176 161	-3.08	3.95	-0.08	-5.47	7.03	-0.14	0.18
177 177	-2.97	-0.10	0.03	-5.27	-0.19	0.06	6.17
177 178	7.28	-0.19	0.06	4.09	-0.10	0.03	6.18
178 178	7.26	-0.15	0.20	4.08	-0.09	0.11	1.62
178 179	12.42	-0.15	0.20	6.98	-0.09	0.11	1.62
179 179	12.42	-0.12	0.27	6.98	-0.07	0.15	1.87
179 180	6.52	-0.12	0.27	3.67	-0.07	0.15	1.87
180 180	6.54	-0.08	0.18	3.68	-0.05	0.10	6.14
180 181	-3.35	-0.05	0.10	-5.95	-0.08	0.18	6.15
181 181	-3.34	3.88	-0.04	-5.94	6.91	-0.08	0.09
181 182	-3.48	3.88	-0.04	-6.18	6.91	-0.08	0.09
182 182	-3.45	3.92	-0.14	-6.14	6.98	-0.24	0.09
182 183	-3.59	3.92	-0.14	-6.38	6.98	-0.24	0.09
183 183	-3.58	4.03	-0.15	-6.37	7.16	-0.26	0.10

Barra Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
183 184	-3.73	4.03	-0.15	-6.64	7.16	-0.26	0.10
184 184	-3.75	4.55	-0.07	-6.67	8.09	-0.13	0.11
184 185	-3.91	4.55	-0.07	-6.96	8.09	-0.13	0.11
185 185	-3.93	0.05	0.06	-6.98	0.10	0.11	8.10
185 186	6.22	0.10	0.11	3.50	0.05	0.06	4.89
186 186	6.14	0.13	0.24	3.45	0.07	0.14	4.90
186 187	13.74	0.13	0.24	7.73	0.07	0.14	0.08
187 187	13.72	0.16	0.21	7.72	0.09	0.12	0.07
187 188	5.62	0.16	0.21	3.16	0.09	0.12	5.04
188 188	5.71	0.21	0.05	3.21	0.12	0.03	5.03
188 189	-4.36	0.12	0.03	-7.75	0.21	0.05	8.21
189 189	-4.34	4.61	-0.08	-7.72	8.19	-0.15	0.26
189 190	-3.96	4.61	-0.08	-7.04	8.19	-0.15	0.26
190 190	-3.94	4.03	-0.13	-7.00	7.16	-0.24	0.24
190 191	-3.58	4.03	-0.13	-6.37	7.16	-0.24	0.24
191 191	-3.59	3.96	-0.12	-6.39	7.04	-0.22	0.23
191 192	-3.26	3.96	-0.12	-5.80	7.04	-0.22	0.23
192 192	-3.29	3.94	-0.06	-5.85	7.00	-0.11	0.22
192 177	-2.96	3.94	-0.06	-5.26	7.00	-0.11	0.22
193 193	-2.86	-0.12	0.04	-5.08	-0.21	0.08	6.14
193 194	7.42	-0.21	0.08	4.17	-0.12	0.04	6.15
194 194	7.40	-0.15	0.22	4.16	-0.09	0.12	1.60
194 195	12.48	-0.15	0.22	7.02	-0.09	0.12	1.60
195 195	12.48	-0.10	0.27	7.02	-0.06	0.15	1.92
195 196	6.42	-0.10	0.27	3.61	-0.06	0.15	1.92
196 196	6.44	-0.03	0.16	3.62	-0.02	0.09	6.26
196 197	-3.54	-0.02	0.09	-6.29	-0.03	0.16	6.26
197 197	-3.53	3.96	-0.06	-6.28	7.03	-0.10	0.03
197 198	-3.57	3.96	-0.06	-6.35	7.03	-0.10	0.03
198 198	-3.55	3.98	-0.15	-6.32	7.07	-0.26	0.03
198 199	-3.60	3.98	-0.15	-6.39	7.07	-0.26	0.03
199 199	-3.59	4.07	-0.15	-6.38	7.24	-0.26	0.04
199 200	-3.64	4.07	-0.15	-6.48	7.24	-0.26	0.04
200 200	-3.66	4.51	-0.05	-6.51	8.02	-0.10	0.05
200 201	-3.73	4.51	-0.05	-6.63	8.02	-0.10	0.05
201 201	-3.74	0.03	0.10	-6.65	0.05	0.17	8.02
201 202	6.40	0.05	0.17	3.60	0.03	0.10	4.82
202 202	6.3I	0.10	0.27	3.55	0.06	0.15	4.83
202 203	13.69	0.10	0.27	7.70	0.06	0.15	0.15
203 203	13.65	0.16	0.18	7.68	0.09	0.10	0.12
203 204	5.37	0.16	0.18	3.02	0.09	0.10	5.09
204 204	5.46	0.23	-0.05	3.07	0.13	-0.03	5.04
204 205	-4.49	0.13	-0.03	-7.98	0.23	-0.05	7.97
205 205	-4.46	4.46	-0.12	-7.93	7.93	-0.21	0.32
205 206	-3.99	4.46	-0.12	-7.10	7.93	-0.21	0.32
206 206	-3.97	3.96	-0.13	-7.06	7.04	-0.24	0.28

Barra Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
206 207	-3.56	3.96	-0.13	-6.33	7.04	-0.24	0.28
207 207	-3.58	3.92	-0.11	-6.36	6.97	-0.19	0.26
207 208	-3.19	3.92	-0.11	-5.68	6.97	-0.19	0.26
208 208	-3.23	3.92	-0.05	-5.73	6.97	-0.08	0.26
208 193	-2.85	3.92	-0.05	-5.07	6.97	-0.08	0.26
209 209	-2.76	-0.13	0.06	-4.91	-0.23	0.10	6.12
209 210	7.55	-0.23	0.10	4.25	-0.13	0.06	6.13
210 210	7.53	-0.15	0.23	4.23	-0.08	0.13	1.58
210 211	12.54	-0.15	0.24	7.05	-0.08	0.13	1.58
211 211	12.54	-0.07	0.27	7.05	-0.04	0.15	1.97
211 212	6.31	-0.07	0.28	3.55	-0.04	0.15	1.98
212 212	6.33	0.02	0.14	3.56	0.01	0.08	6.37
212 213	-3.73	0.01	0.08	-6.63	0.02	0.14	6.38
213 213	-3.73	4.03	-0.07	-6.62	7.16	-0.12	0.04
213 214	-3.66	4.03	-0.07	-6.52	7.16	-0.12	0.04
214 214	-3.65	4.02	-0.15	-6.48	7.14	-0.27	0.04
214 215	-3.59	4.02	-0.15	-6.38	7.14	-0.27	0.04
215 215	-3.59	4.10	-0.14	-6.37	7.29	-0.25	0.03
215 216	-3.54	4.10	-0.14	-6.29	7.29	-0.25	0.03
216 216	-3.55	4.46	-0.04	-6.32	7.93	-0.07	0.02
216 217	-3.53	4.46	-0.04	-6.27	7.93	-0.07	0.02
217 217	-3.54	0.00	0.13	-6.29	-0.01	0.23	7.93
217 218	6.58	-0.01	0.23	3.70	0.00	0.13	4.73
218 218	6.48	0.08	0.31	3.65	0.04	0.18	4.74
218 219	13.58	0.08	0.31	7.64	0.04	0.18	0.24
219 219	13.53	0.15	0.15	7.61	0.08	0.09	0.19
219 220	5.03	0.15	0.15	2.83	0.08	0.09	5.16
220 220	5.15	0.25	-0.17	2.90	0.14	-0.09	5.10
220 221	-4.53	0.14	-0.09	-8.06	0.25	-0.17	7.20
221 221	-4.50	4.05	-0.15	-8.00	7.20	-0.27	0.35
221 222	-3.99	4.05	-0.15	-7.09	7.20	-0.27	0.35
222 222	-3.97	3.87	-0.13	-7.06	6.88	-0.24	0.30
222 223	-3.53	3.87	-0.13	-6.27	6.88	-0.24	0.30
223 223	-3.54	3.87	-0.09	-6.30	6.88	-0.16	0.28
223 224	-3.13	3.87	-0.09	-5.56	6.88	-0.16	0.28
224 224	-3.16	3.91	-0.03	-5.62	6.95	-0.05	0.28
224 209	-2.76	3.91	-0.03	-4.90	6.95	-0.05	0.28
225 225	-2.68	-0.14	0.07	-4.76	-0.24	0.12	6.11
225 226	7.67	-0.24	0.12	4.31	-0.14	0.07	6.12
226 226	7.63	-0.13	0.25	4.29	-0.08	0.14	1.56
226 227	12.59	-0.14	0.26	7.08	-0.08	0.14	1.56
227 227	12.59	-0.04	0.28	7.08	-0.02	0.15	2.03
227 228	6.19	-0.04	0.28	3.48	-0.02	0.16	2.03
228 228	6.22	0.07	0.12	3.50	0.04	0.07	6.49
228 229	-3.93	0.04	0.07	-6.99	0.07	0.12	6.50
229 229	-3.92	4.10	-0.08	-6.98	7.29	-0.14	0.12

Barra Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
229 230	-3.75	4.10	-0.08	-6.67	7.29	-0.14	0.12
230 230	-3.74	4.05	-0.16	-6.65	7.20	-0.28	0.11
230 231	-3.57	4.05	-0.16	-6.35	7.20	-0.28	0.11
231 231	-3.57	4.12	-0.14	-6.35	7.32	-0.25	0.10
231 232	-3.42	4.12	-0.14	-6.08	7.32	-0.25	0.10
232 232	-3.43	4.40	-0.02	-6.10	7.81	-0.04	0.09
232 233	-3.30	4.40	-0.02	-5.87	7.81	-0.04	0.09
233 233	-3.31	-0.03	0.16	-5.89	-0.06	0.29	7.82
233 234	6.75	-0.06	0.29	3.80	-0.03	0.16	4.61
234 234	6.66	0.04	0.36	3.75	0.02	0.20	4.63
234 235	13.41	0.04	0.36	7.54	0.02	0.20	0.35
235 235	13.35	0.14	0.13	7.51	0.08	0.07	0.29
235 236	4.54	0.14	0.13	2.55	0.08	0.07	5.26
236 236	4.68	0.26	-0.29	2.63	0.15	-0.16	5.20
236 237	-4.49	0.15	-0.16	-7.98	0.26	-0.29	6.52
237 237	-4.46	3.67	-0.19	-7.93	6.52	-0.33	0.35
237 238	-3.95	3.67	-0.19	-7.03	6.52	-0.33	0.35
238 238	-3.94	3.77	-0.13	-7.00	6.70	-0.23	0.31
238 239	-3.48	3.77	-0.13	-6.19	6.70	-0.23	0.31
239 239	-3.49	3.82	-0.08	-6.21	6.79	-0.14	0.29
239 240	-3.06	3.82	-0.08	-5.45	6.79	-0.14	0.29
240 240	-3.09	3.90	-0.01	-5.49	6.94	-0.02	0.28
240 225	-2.67	3.90	-0.01	-4.75	6.94	-0.02	0.28
241 241	-2.60	-0.14	0.09	-4.62	-0.25	0.16	6.10
241 242	7.79	-0.25	0.16	4.38	-0.14	0.09	6.11
242 242	7.72	-0.12	0.28	4.34	-0.07	0.16	1.54
242 243	12.61	-0.12	0.28	7.09	-0.07	0.16	1.54
243 243	12.61	-0.01	0.27	7.09	-0.01	0.15	2.08
243 244	6.05	-0.01	0.27	3.40	-0.01	0.15	2.08
244 244	6.11	0.12	0.09	3.44	0.07	0.05	6.61
244 245	-4.13	0.07	0.05	-7.34	0.12	0.09	6.62
245 245	-4.12	4.17	-0.09	-7.32	7.42	-0.16	0.20
245 246	-3.83	4.17	-0.09	-6.81	7.42	-0.16	0.20
246 246	-3.82	4.08	-0.16	-6.80	7.25	-0.29	0.19
246 247	-3.55	4.08	-0.16	-6.30	7.25	-0.29	0.19
247 247	-3.55	4.12	-0.14	-6.31	7.33	-0.24	0.18
247 248	-3.29	4.12	-0.14	-5.85	7.33	-0.24	0.18
248 248	-3.30	4.32	-0.01	-5.86	7.68	-0.01	0.17
248 249	-3.05	4.32	-0.01	-5.43	7.68	-0.01	0.17
249 249	-3.06	-0.07	0.19	-5.44	-0.12	0.33	7.68
249 250	6.93	-0.12	0.33	3.90	-0.07	0.19	4.48
250 250	6.87	0.01	0.40	3.86	0.01	0.22	4.49
250 251	13.18	0.01	0.39	7.41	0.01	0.22	0.49
251 251	13.13	0.12	0.10	7.39	0.07	0.06	0.43
251 252	3.88	0.12	0.10	2.18	0.07	0.06	5.40
252 252	4.01	0.26	-0.39	2.26	0.15	-0.22	5.32

Barra Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
252 253	-4.37	0.15	-0.22	-7.78	0.26	-0.39	5.86
253 253	-4.36	3.30	-0.21	-7.75	5.87	-0.37	0.33
253 254	-3.88	3.30	-0.21	-6.91	5.87	-0.37	0.33
254 254	-3.88	3.67	-0.13	-6.89	6.52	-0.24	0.31
254 255	-3.43	3.67	-0.13	-6.09	6.52	-0.24	0.31
255 255	-3.43	3.77	-0.07	-6.09	6.69	-0.12	0.30
255 256	-3.00	3.77	-0.07	-5.33	6.69	-0.12	0.30
256 256	-3.01	3.89	0.01	-5.34	6.92	0.01	0.28
256 241	-2.59	3.89	0.01	-4.61	6.92	0.01	0.28
257 257	-2.51	-0.15	0.12	-4.47	-0.27	0.21	6.08
257 258	7.90	-0.27	0.21	4.44	-0.15	0.12	6.08
258 258	7.80	-0.11	0.33	4.39	-0.06	0.18	1.50
258 259	12.58	-0.11	0.33	7.08	-0.06	0.18	1.51
259 259	12.59	0.01	0.25	7.08	0.01	0.14	2.12
259 260	5.90	0.01	0.25	3.32	0.01	0.14	2.12
260 260	6.00	0.17	0.04	3.37	0.10	0.02	6.72
260 261	-4.32	0.10	0.02	-7.67	0.17	0.04	6.73
261 261	-4.30	4.24	-0.11	-7.65	7.53	-0.19	0.28
261 262	-3.89	4.24	-0.11	-6.92	7.53	-0.19	0.28
262 262	-3.90	4.09	-0.16	-6.93	7.28	-0.29	0.26
262 263	-3.52	4.09	-0.16	-6.25	7.28	-0.29	0.26
263 263	-3.53	4.12	-0.13	-6.27	7.33	-0.24	0.26
263 264	-3.15	4.12	-0.13	-5.61	7.33	-0.24	0.26
264 264	-3.16	4.24	0.00	-5.61	7.54	0.00	0.25
264 265	-2.79	4.24	0.00	-4.96	7.54	0.00	0.25
265 265	-2.79	-0.10	0.20	-4.96	-0.17	0.35	7.54
265 266	7.11	-0.17	0.35	4.00	-0.10	0.20	4.33
266 266	7.10	-0.02	0.41	3.99	-0.01	0.23	4.33
266 267	12.91	-0.02	0.41	7.26	-0.01	0.23	0.65
267 267	12.90	0.11	0.08	7.26	0.06	0.04	0.62
267 268	3.12	0.11	0.08	1.76	0.06	0.04	5.17
268 268	3.18	0.26	-0.43	1.79	0.14	-0.24	5.22
268 269	-4.22	0.14	-0.24	-7.50	0.26	-0.42	5.25
269 269	-4.22	2.96	-0.21	-7.51	5.27	-0.38	0.28
269 270	-3.81	2.96	-0.21	-6.77	5.27	-0.38	0.28
270 270	-3.81	3.58	-0.14	-6.77	6.36	-0.24	0.30
270 271	-3.37	3.58	-0.14	-5.99	6.36	-0.24	0.30
271 271	-3.36	3.71	-0.07	-5.98	6.60	-0.13	0.30
271 272	-2.92	3.71	-0.07	-5.19	6.60	-0.13	0.30
272 272	-2.91	3.88	0.02	-5.17	6.89	0.03	0.28
272 257	-2.50	3.88	0.02	-4.45	6.89	0.03	0.28
273 273	-2.37	-0.16	0.17	-4.22	-0.28	0.31	5.99
273 274	7.96	-0.28	0.31	4.48	-0.16	0.17	5.99
274 274	7.85	-0.10	0.38	4.42	-0.06	0.21	1.45
274 275	12.46	-0.10	0.38	7.01	-0.06	0.21	1.45
275 275	12.49	0.04	0.21	7.02	0.02	0.12	2.14

Barra Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
275 276	5.71	0.04	0.21	3.21	0.02	0.12	2.15
276 276	5.84	0.21	-0.05	3.28	0.12	-0.03	6.77
276 277	-4.46	0.12	-0.03	-7.94	0.21	-0.05	6.78
277 277	-4.45	4.26	-0.12	-7.90	7.58	-0.21	0.35
277 278	-3.93	4.26	-0.12	-6.98	7.58	-0.21	0.35
278 278	-3.95	4.10	-0.15	-7.03	7.29	-0.27	0.32
278 279	-3.49	4.10	-0.15	-6.20	7.29	-0.27	0.32
279 279	-3.51	4.12	-0.13	-6.24	7.32	-0.22	0.33
279 280	-3.03	4.12	-0.13	-5.38	7.32	-0.22	0.33
280 280	-3.03	4.15	-0.01	-5.39	7.37	-0.01	0.35
280 281	-2.52	4.15	-0.01	-4.48	7.37	-0.01	0.35
281 281	-2.51	-0.12	0.19	-4.47	-0.22	0.34	7.38
281 282	7.29	-0.22	0.34	4.10	-0.12	0.19	4.18
282 282	7.35	-0.04	0.39	4.13	-0.02	0.22	4.16
282 283	12.61	-0.04	0.39	7.09	-0.02	0.22	0.82
283 283	12.67	0.10	0.05	7.12	0.06	0.03	0.87
283 284	2.51	0.10	0.05	1.41	0.06	0.03	4.73
284 284	2.45	0.26	-0.38	1.38	0.14	-0.21	4.79
284 285	-4.10	0.14	-0.21	-7.28	0.26	-0.38	4.78
285 285	-4.11	2.70	-0.20	-7.30	4.80	-0.36	0.26
285 286	-3.73	2.70	-0.20	-6.63	4.80	-0.36	0.26
286 286	-3.75	3.50	-0.14	-6.67	6.23	-0.24	0.30
286 287	-3.31	3.50	-0.14	-5.89	6.23	-0.24	0.30
287 287	-3.31	3.67	-0.08	-5.88	6.52	-0.15	0.33
287 288	-2.83	3.67	-0.08	-5.02	6.52	-0.15	0.33
288 288	-2.80	3.81	0.02	-4.98	6.78	0.03	0.31
288 273	-2.35	3.81	0.02	-4.19	6.78	0.03	0.31
289 289	-2.06	-0.17	0.26	-3.66	-0.30	0.46	5.59
289 290	7.72	-0.30	0.46	4.34	-0.17	0.26	5.60
290 290	7.88	-0.10	0.41	4.43	-0.06	0.23	1.36
290 291	12.20	-0.10	0.41	6.86	-0.06	0.23	1.36
291 291	12.35	0.05	0.18	6.95	0.03	0.10	2.17
291 292	5.47	0.05	0.18	3.08	0.03	0.10	2.18
292 292	5.51	0.24	-0.17	3.10	0.13	-0.10	6.66
292 293	-4.52	0.13	-0.10	-8.03	0.24	-0.17	6.66
293 293	-4.51	4.17	-0.13	-8.02	7.42	-0.23	0.41
293 294	-3.92	4.17	-0.13	-6.97	7.42	-0.23	0.41
294 294	-4.01	4.10	-0.13	-7.13	7.29	-0.24	0.39
294 295	-3.45	4.10	-0.13	-6.13	7.29	-0.24	0.39
295 295	-3.52	4.11	-0.11	-6.25	7.31	-0.20	0.42
295 296	-2.91	4.11	-0.11	-5.17	7.31	-0.20	0.42
296 296	-2.96	4.00	-0.02	-5.26	7.11	-0.04	0.51
296 297	-2.22	4.00	-0.02	-3.95	7.11	-0.04	0.51
297 297	-2.21	-0.15	0.17	-3.93	-0.26	0.31	7.17
297 298	7.38	-0.26	0.31	4.15	-0.15	0.17	3.96
298 298	7.65	-0.05	0.33	4.31	-0.03	0.19	3.95

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
298	299	12.25	-0.05	0.33	6.89	-0.03	0.19	1.03
299	299	12.53	0.09	0.04	7.05	0.05	0.02	1.19
299	300	2.09	0.09	0.04	1.18	0.05	0.02	4.29
300	300	1.90	0.26	-0.27	1.07	0.15	-0.15	4.47
300	301	-4.04	0.15	-0.15	-7.19	0.26	-0.27	4.47
301	301	-4.06	2.51	-0.18	-7.22	4.45	-0.33	0.30
301	302	-3.63	2.51	-0.18	-6.45	4.45	-0.33	0.30
302	302	-3.73	3.46	-0.13	-6.64	6.15	-0.24	0.33
302	303	-3.25	3.46	-0.13	-5.77	6.15	-0.24	0.33
303	303	-3.29	3.63	-0.09	-5.85	6.46	-0.16	0.39
303	304	-2.72	3.63	-0.09	-4.84	6.46	-0.16	0.39
304	304	-2.74	3.53	0.01	-4.88	6.28	0.01	0.47
304	289	-2.05	3.53	0.01	-3.65	6.28	0.01	0.47
305	305	-1.52	-0.17	0.44	-2.69	-0.31	0.79	4.64
305	306	6.73	-0.31	0.79	3.79	-0.17	0.44	4.64
306	306	8.21	-0.10	0.62	4.62	-0.05	0.35	1.11
306	307	11.72	-0.10	0.62	6.59	-0.05	0.35	1.11
307	307	12.43	0.05	0.26	6.99	0.03	0.15	2.27
307	308	5.24	0.05	0.26	2.95	0.03	0.15	2.27
308	308	5.05	0.25	-0.34	2.84	0.14	-0.19	6.34
308	309	-4.41	0.14	-0.19	-7.84	0.25	-0.34	6.34
309	309	-4.61	4.02	-0.19	-8.20	7.15	-0.35	0.58
309	310	-3.76	4.02	-0.19	-6.69	7.15	-0.35	0.58
310	310	-4.22	4.10	-0.19	-7.50	7.29	-0.35	0.66
310	311	-3.26	4.10	-0.19	-5.79	7.29	-0.35	0.66
311	311	-3.66	4.11	-0.17	-6.52	7.30	-0.30	0.65
311	312	-2.72	4.11	-0.17	-4.83	7.30	-0.30	0.65
312	312	-3.04	3.88	-0.05	-5.40	6.89	-0.08	0.73
312	313	-1.98	3.88	-0.05	-3.51	6.89	-0.08	0.73
313	313	-1.84	-0.15	0.25	-3.27	-0.26	0.45	6.59
313	314	6.88	-0.26	0.45	3.87	-0.15	0.25	3.39
314	314	8.29	-0.06	0.47	4.66	-0.03	0.26	3.53
314	315	11.59	-0.06	0.47	6.52	-0.03	0.26	1.45
315	315	12.77	0.09	0.06	7.18	0.05	0.03	1.55
315	316	1.99	0.09	0.06	1.12	0.05	0.03	4.03
316	316	1.39	0.27	-0.35	0.78	0.15	-0.20	4.13
316	317	-3.94	0.15	-0.20	-7.00	0.27	-0.35	4.13
317	317	-4.22	2.43	-0.27	-7.50	4.32	-0.48	0.58
317	318	-3.37	2.43	-0.27	-5.99	4.32	-0.48	0.58
318	318	-3.92	3.44	-0.20	-6.97	6.12	-0.35	0.60
318	319	-3.04	3.44	-0.20	-5.41	6.12	-0.35	0.60
319	319	-3.40	3.62	-0.14	-6.05	6.43	-0.24	0.57
319	320	-2.57	3.62	-0.14	-4.56	6.43	-0.24	0.57
320	320	-2.81	3.24	0.00	-5.00	5.76	0.00	0.72
320	305	-1.75	3.24	0.00	-3.12	5.76	0.00	0.72
321	1	-0.11	0.00	0.16	-0.19	0.00	0.29	0.28

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
321	17	0.19	0.00	0.29	0.11	0.00	0.16	0.28
322	17	-0.03	-0.03	0.15	-0.06	-0.06	0.28	0.06
322	33	0.06	-0.06	0.28	0.03	-0.03	0.15	0.06
323	33	-0.01	-0.09	0.12	-0.01	-0.17	0.21	0.01
323	49	0.01	-0.17	0.21	0.00	-0.09	0.12	0.01
324	49	0.00	-0.18	0.10	0.00	-0.18	0.10	0.00
324	65	0.00	-0.18	0.10	-0.01	-0.31	0.17	0.00
325	65	0.00	-0.27	0.08	0.00	-0.27	0.08	0.01
325	81	-0.01	-0.27	0.08	-0.01	-0.48	0.15	0.01
326	81	0.00	-0.37	0.07	0.00	-0.65	0.13	0.01
326	97	-0.01	-0.37	0.07	-0.01	-0.65	0.13	0.01
327	97	0.00	-0.45	0.07	-0.01	-0.81	0.12	0.00
327	113	-0.01	-0.45	0.07	-0.01	-0.81	0.12	0.00
328	113	-0.01	-0.53	0.06	-0.01	-0.94	0.10	0.00
328	129	-0.01	-0.53	0.06	-0.01	-0.94	0.10	0.00
329	129	-0.01	-0.58	0.05	-0.01	-1.03	0.08	0.00
329	145	-0.01	-0.58	0.05	-0.01	-1.03	0.08	0.00
330	145	-0.01	-0.61	0.03	-0.01	-1.08	0.06	0.00
330	161	-0.01	-0.61	0.03	-0.01	-1.08	0.06	0.00
331	161	-0.01	-0.60	0.02	-0.01	-1.07	0.04	0.00
331	177	-0.01	-0.60	0.02	-0.01	-1.07	0.04	0.00
332	177	-0.01	-0.56	0.01	-0.02	-1.00	0.01	0.00
332	193	-0.01	-0.56	0.01	-0.01	-1.00	0.01	0.00
333	193	-0.01	-0.48	-0.01	-0.02	-0.85	-0.02	0.00
333	209	0.00	-0.48	-0.01	-0.01	-0.85	-0.02	0.00
334	209	-0.01	-0.37	-0.02	-0.01	-0.65	-0.04	0.00
334	225	0.00	-0.37	-0.02	0.00	-0.65	-0.04	0.00
335	225	-0.01	-0.25	-0.04	-0.01	-0.44	-0.07	0.00
335	241	0.00	-0.25	-0.04	0.00	-0.25	-0.04	0.00
336	241	0.00	-0.13	-0.06	0.00	-0.24	-0.11	0.00
336	257	0.00	-0.13	-0.06	0.00	-0.24	-0.11	0.00
337	257	0.02	-0.09	-0.16	0.01	-0.05	-0.09	0.02
337	273	-0.01	-0.05	-0.09	-0.02	-0.09	-0.16	0.02
338	273	0.11	-0.01	-0.23	0.06	-0.01	-0.13	0.10
338	289	-0.06	-0.01	-0.13	-0.11	-0.01	-0.23	0.10
339	289	0.29	0.01	-0.26	0.16	0.00	-0.15	0.43
339	305	-0.16	0.00	-0.15	-0.29	0.01	-0.26	0.43
340	2	-0.04	0.00	0.04	-0.08	-0.01	0.07	0.24
340	18	0.25	-0.01	0.07	0.14	0.00	0.04	0.24
341	18	0.07	-0.06	0.09	0.04	-0.03	0.05	0.04
341	34	0.17	-0.06	0.09	0.09	-0.03	0.05	0.04
342	34	0.05	-0.15	0.04	0.03	-0.09	0.02	0.02
342	50	0.10	-0.15	0.04	0.06	-0.09	0.02	0.02
343	50	0.00	-0.29	0.00	0.00	-0.16	0.00	0.03
343	66	0.07	-0.29	0.00	0.04	-0.16	0.00	0.03
344	66	-0.01	-0.26	-0.02	-0.02	-0.46	-0.03	0.04

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
344	82	0.06	-0.46	-0.03	0.03	-0.26	-0.02	0.04
345	82	-0.02	-0.35	-0.03	-0.04	-0.63	-0.05	0.04
345	98	0.05	-0.63	-0.05	0.03	-0.35	-0.03	0.04
346	98	-0.02	-0.44	-0.03	-0.04	-0.79	-0.06	0.04
346	114	0.05	-0.79	-0.06	0.03	-0.44	-0.03	0.04
347	114	-0.03	-0.52	-0.04	-0.05	-0.93	-0.07	0.05
347	130	0.05	-0.93	-0.07	0.03	-0.52	-0.04	0.05
348	130	-0.03	-0.58	-0.05	-0.05	-1.02	-0.08	0.05
348	146	0.06	-1.02	-0.08	0.03	-0.58	-0.05	0.05
349	146	-0.03	-0.60	-0.05	-0.05	-1.07	-0.09	0.05
349	162	0.06	-1.07	-0.09	0.03	-0.60	-0.05	0.05
350	162	-0.02	-0.60	-0.06	-0.04	-1.06	-0.11	0.05
350	178	0.06	-1.06	-0.11	0.03	-0.60	-0.06	0.05
351	178	-0.02	-0.55	-0.07	-0.04	-0.98	-0.12	0.05
351	194	0.06	-0.98	-0.12	0.03	-0.55	-0.07	0.05
352	194	-0.02	-0.47	-0.07	-0.04	-0.84	-0.13	0.05
352	210	0.06	-0.84	-0.13	0.03	-0.47	-0.07	0.05
353	210	-0.02	-0.37	-0.08	-0.03	-0.65	-0.15	0.05
353	226	0.07	-0.65	-0.15	0.04	-0.37	-0.08	0.05
354	226	-0.01	-0.25	-0.10	-0.02	-0.45	-0.17	0.05
354	242	0.08	-0.45	-0.17	0.05	-0.25	-0.10	0.05
355	242	0.00	-0.15	-0.12	0.00	-0.26	-0.21	0.05
355	258	0.11	-0.26	-0.21	0.06	-0.15	-0.12	0.05
356	258	0.04	-0.11	-0.28	0.02	-0.06	-0.16	0.06
356	274	0.17	-0.11	-0.28	0.10	-0.06	-0.16	0.06
357	274	0.12	-0.03	-0.36	0.07	-0.01	-0.20	0.04
357	290	0.21	-0.03	-0.36	0.12	-0.01	-0.20	0.04
358	290	0.25	0.00	-0.25	0.14	0.00	-0.14	0.21
358	306	-0.02	0.00	-0.14	-0.03	0.00	-0.25	0.21
359	3	-0.04	0.00	-0.08	-0.07	0.00	-0.13	0.22
359	19	0.22	0.00	-0.13	0.13	0.00	-0.08	0.22
360	19	0.03	-0.04	-0.24	0.02	-0.02	-0.13	0.10
360	35	0.24	-0.04	-0.24	0.14	-0.02	-0.13	0.10
361	35	0.07	-0.13	-0.24	0.04	-0.07	-0.14	0.04
361	51	0.17	-0.13	-0.24	0.09	-0.07	-0.14	0.04
362	51	0.03	-0.25	-0.24	0.02	-0.14	-0.14	0.03
362	67	0.10	-0.25	-0.24	0.06	-0.14	-0.14	0.03
363	67	0.00	-0.23	-0.14	0.00	-0.42	-0.24	0.03
363	83	0.07	-0.42	-0.24	0.04	-0.23	-0.14	0.03
364	83	-0.01	-0.33	-0.14	-0.02	-0.59	-0.24	0.04
364	99	0.06	-0.59	-0.24	0.03	-0.33	-0.14	0.04
365	99	-0.01	-0.43	-0.14	-0.02	-0.76	-0.24	0.04
365	115	0.05	-0.76	-0.24	0.03	-0.43	-0.14	0.04
366	115	-0.01	-0.51	-0.14	-0.02	-0.91	-0.24	0.03
366	131	0.05	-0.91	-0.24	0.03	-0.51	-0.14	0.03
367	131	-0.01	-0.57	-0.14	-0.02	-1.02	-0.25	0.03

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
367	147	0.05	-1.02	-0.25	0.03	-0.57	-0.14	0.03
368	147	-0.01	-0.60	-0.14	-0.01	-1.07	-0.25	0.03
368	163	0.04	-1.07	-0.25	0.03	-0.60	-0.14	0.03
369	163	0.00	-0.59	-0.14	-0.01	-1.05	-0.25	0.02
369	179	0.04	-1.05	-0.25	0.02	-0.59	-0.14	0.02
370	179	0.00	-0.55	-0.14	0.00	-0.97	-0.25	0.02
370	195	0.04	-0.97	-0.25	0.02	-0.55	-0.14	0.02
371	195	0.00	-0.84	-0.25	0.00	-0.47	-0.14	0.02
371	211	0.04	-0.84	-0.25	0.02	-0.47	-0.14	0.02
372	211	0.01	-0.66	-0.24	0.01	-0.37	-0.14	0.02
372	227	0.05	-0.66	-0.24	0.03	-0.37	-0.14	0.02
373	227	0.04	-0.47	-0.24	0.02	-0.27	-0.14	0.02
373	243	0.08	-0.47	-0.24	0.04	-0.27	-0.14	0.02
374	243	0.09	-0.29	-0.24	0.05	-0.17	-0.14	0.02
374	259	0.13	-0.29	-0.24	0.07	-0.17	-0.14	0.02
375	259	0.18	-0.15	-0.24	0.10	-0.08	-0.13	0.00
375	275	0.18	-0.15	-0.24	0.10	-0.08	-0.13	0.00
376	275	0.29	-0.05	-0.22	0.17	-0.03	-0.12	0.08
376	291	0.11	-0.05	-0.22	0.06	-0.03	-0.12	0.08
377	291	0.27	0.00	-0.12	0.15	0.00	-0.07	0.25
377	307	-0.04	0.00	-0.07	-0.06	0.00	-0.12	0.25
378	4	-0.03	0.00	-0.15	-0.05	0.00	-0.27	0.18
378	20	0.19	0.00	-0.27	0.11	0.00	-0.15	0.18
379	20	0.08	-0.02	-0.42	0.05	-0.01	-0.24	0.02
379	36	0.12	-0.02	-0.42	0.07	-0.01	-0.24	0.02
380	36	0.06	-0.09	-0.38	0.03	-0.05	-0.22	0.00
380	52	0.06	-0.09	-0.38	0.04	-0.05	-0.22	0.00
381	52	0.02	-0.21	-0.34	0.01	-0.12	-0.19	0.01
381	68	0.04	-0.21	-0.34	0.02	-0.12	-0.19	0.01
382	68	0.00	-0.37	-0.32	0.00	-0.21	-0.18	0.01
382	84	0.02	-0.37	-0.32	0.01	-0.21	-0.18	0.01
383	84	0.00	-0.56	-0.30	0.00	-0.31	-0.17	0.01
383	100	0.02	-0.56	-0.30	0.01	-0.31	-0.17	0.01
384	100	0.01	-0.75	-0.29	0.00	-0.42	-0.16	0.00
384	116	0.01	-0.75	-0.29	0.01	-0.42	-0.16	0.00
385	116	0.01	-0.91	-0.28	0.01	-0.51	-0.16	0.01
385	132	0.00	-0.91	-0.28	0.00	-0.51	-0.16	0.01
386	132	0.02	-1.03	-0.27	0.01	-0.58	-0.15	0.01
386	148	0.00	-0.58	-0.15	-0.01	-1.03	-0.27	0.01
387	148	0.03	-1.08	-0.25	0.02	-0.61	-0.14	0.02
387	164	-0.01	-0.61	-0.14	-0.02	-1.08	-0.25	0.02
388	164	0.03	-1.06	-0.24	0.02	-0.60	-0.14	0.03
388	180	-0.01	-0.60	-0.14	-0.02	-1.06	-0.24	0.03
389	180	0.04	-0.98	-0.23	0.02	-0.55	-0.13	0.03
389	196	-0.02	-0.55	-0.13	-0.03	-0.98	-0.23	0.03
390	196	0.05	-0.85	-0.22	0.03	-0.48	-0.12	0.04

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
390	212	-0.02	-0.48	-0.12	-0.03	-0.85	-0.22	0.04
391	212	0.06	-0.68	-0.20	0.03	-0.38	-0.11	0.04
391	228	-0.02	-0.38	-0.11	-0.03	-0.68	-0.20	0.04
392	228	0.07	-0.50	-0.18	0.04	-0.28	-0.10	0.04
392	244	-0.01	-0.28	-0.10	-0.02	-0.50	-0.18	0.04
393	244	0.10	-0.32	-0.13	0.06	-0.18	-0.08	0.04
393	260	0.01	-0.32	-0.13	0.00	-0.18	-0.08	0.04
394	260	0.15	-0.17	-0.07	0.08	-0.09	-0.04	0.05
394	276	0.05	-0.17	-0.07	0.03	-0.09	-0.04	0.05
395	276	0.23	-0.06	0.01	0.13	-0.03	0.01	0.09
395	292	0.04	-0.06	0.01	0.02	-0.03	0.01	0.09
396	292	0.28	0.00	0.03	0.16	0.00	0.02	0.28
396	308	-0.06	0.00	0.02	-0.10	0.00	0.03	0.28
397	5	-0.15	0.00	-0.16	-0.26	0.01	-0.28	0.39
397	21	0.27	0.01	-0.28	0.15	0.00	-0.16	0.39
398	21	-0.06	0.00	-0.16	-0.11	-0.01	-0.29	0.10
398	37	0.11	-0.01	-0.29	0.06	0.00	-0.16	0.10
399	37	-0.02	-0.03	-0.14	-0.04	-0.06	-0.26	0.04
399	53	0.04	-0.06	-0.26	0.02	-0.03	-0.14	0.04
400	53	-0.02	-0.10	-0.13	-0.03	-0.17	-0.24	0.02
400	69	0.02	-0.17	-0.24	0.01	-0.10	-0.13	0.02
401	69	-0.01	-0.19	-0.12	-0.03	-0.34	-0.22	0.02
401	85	0.02	-0.34	-0.22	0.01	-0.19	-0.12	0.02
402	85	-0.02	-0.30	-0.11	-0.03	-0.54	-0.20	0.02
402	101	0.01	-0.54	-0.20	0.01	-0.30	-0.11	0.02
403	101	-0.02	-0.42	-0.10	-0.03	-0.74	-0.18	0.02
403	117	0.01	-0.74	-0.18	0.01	-0.42	-0.10	0.02
404	117	-0.02	-0.52	-0.09	-0.03	-0.92	-0.16	0.02
404	133	0.01	-0.92	-0.16	0.01	-0.52	-0.09	0.02
405	133	-0.02	-0.59	-0.07	-0.04	-1.04	-0.13	0.02
405	149	0.01	-1.04	-0.13	0.01	-0.59	-0.07	0.02
406	149	-0.02	-0.62	-0.06	-0.04	-1.10	-0.10	0.02
406	165	0.01	-1.10	-0.10	0.01	-0.62	-0.06	0.02
407	165	-0.02	-0.60	-0.05	-0.04	-1.07	-0.08	0.03
407	181	0.01	-1.07	-0.08	0.01	-0.60	-0.05	0.03
408	181	-0.02	-0.56	-0.03	-0.04	-0.99	-0.06	0.03
408	197	0.02	-0.99	-0.06	0.01	-0.56	-0.03	0.03
409	197	-0.02	-0.48	-0.02	-0.04	-0.86	-0.04	0.03
409	213	0.02	-0.86	-0.04	0.01	-0.48	-0.02	0.03
410	213	-0.02	-0.39	-0.01	-0.04	-0.69	-0.02	0.03
410	229	0.02	-0.69	-0.02	0.01	-0.39	-0.01	0.03
411	229	-0.02	-0.29	0.00	-0.04	-0.51	0.01	0.03
411	245	0.02	-0.51	0.01	0.01	-0.29	0.00	0.03
412	245	-0.02	-0.19	0.02	-0.03	-0.33	0.04	0.03
412	261	0.02	-0.33	0.04	0.01	-0.19	0.02	0.03
413	261	-0.01	-0.10	0.06	-0.01	-0.17	0.10	0.01

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
413	277	0.01	-0.17	0.10	0.01	-0.10	0.06	0.01
414	277	0.04	-0.06	0.18	0.02	-0.03	0.10	0.03
414	293	-0.02	-0.03	0.10	-0.04	-0.06	0.18	0.03
415	293	0.16	0.00	0.21	0.09	0.00	0.12	0.23
415	309	-0.09	0.00	0.12	-0.15	0.00	0.21	0.23
416	6	0.04	0.01	0.05	0.02	0.00	0.03	0.02
416	22	0.02	0.01	0.05	0.01	0.00	0.03	0.02
417	22	0.14	0.03	0.06	0.08	0.01	0.03	0.08
417	38	-0.01	0.01	0.03	-0.03	0.03	0.06	0.08
418	38	0.11	0.00	0.02	0.06	0.00	0.01	0.08
418	54	-0.03	0.00	0.01	-0.05	0.00	0.02	0.08
419	54	0.08	-0.07	0.00	0.04	-0.04	0.00	0.07
419	70	-0.04	-0.04	0.00	-0.07	-0.07	0.00	0.07
420	70	0.05	-0.16	0.00	0.03	-0.09	0.00	0.06
420	86	-0.05	-0.09	0.00	-0.08	-0.16	0.00	0.06
421	86	0.04	-0.26	0.01	0.02	-0.15	0.01	0.06
421	102	-0.05	-0.15	0.01	-0.10	-0.26	0.01	0.06
422	102	0.02	-0.37	0.04	0.01	-0.21	0.02	0.06
422	118	-0.06	-0.21	0.02	-0.11	-0.37	0.04	0.06
423	118	0.01	-0.46	0.07	0.01	-0.26	0.04	0.05
423	134	-0.06	-0.26	0.04	-0.11	-0.46	0.07	0.05
424	134	0.01	-0.53	0.11	0.00	-0.30	0.06	0.05
424	150	-0.06	-0.30	0.06	-0.10	-0.53	0.11	0.05
425	150	0.01	-0.56	0.14	0.00	-0.32	0.08	0.05
425	166	-0.05	-0.32	0.08	-0.10	-0.56	0.14	0.05
426	166	0.01	-0.55	0.17	0.01	-0.31	0.10	0.05
426	182	-0.05	-0.31	0.10	-0.09	-0.55	0.17	0.05
427	182	0.01	-0.50	0.20	0.01	-0.28	0.11	0.04
427	198	-0.05	-0.28	0.11	-0.08	-0.50	0.20	0.04
428	198	0.02	-0.44	0.22	0.01	-0.25	0.12	0.04
428	214	-0.04	-0.25	0.12	-0.08	-0.44	0.22	0.04
429	214	0.02	-0.35	0.24	0.01	-0.20	0.13	0.04
429	230	-0.04	-0.20	0.13	-0.08	-0.35	0.24	0.04
430	230	0.01	-0.26	0.25	0.01	-0.15	0.14	0.04
430	246	-0.04	-0.15	0.14	-0.08	-0.26	0.25	0.04
431	246	0.00	-0.17	0.26	0.00	-0.10	0.15	0.03
431	262	-0.04	-0.10	0.15	-0.07	-0.17	0.26	0.03
432	262	-0.01	-0.05	0.15	-0.01	-0.09	0.26	0.02
432	278	-0.03	-0.05	0.15	-0.06	-0.09	0.26	0.02
433	278	-0.01	-0.02	0.13	-0.02	-0.03	0.23	0.00
433	294	-0.01	-0.02	0.13	-0.02	-0.03	0.23	0.00
434	294	-0.01	0.00	0.07	-0.02	-0.01	0.13	0.01
434	310	0.00	0.00	0.07	0.00	0.00	0.07	0.01
435	7	0.03	0.01	0.13	0.02	0.00	0.07	0.01
435	23	0.04	0.01	0.13	0.02	0.00	0.07	0.01
436	23	0.13	0.04	0.20	0.07	0.02	0.11	0.04

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
436	39	0.04	0.04	0.20	0.02	0.02	0.11	0.04
437	39	0.15	0.03	0.20	0.08	0.02	0.11	0.08
437	55	-0.01	0.02	0.11	-0.02	0.03	0.20	0.08
438	55	0.12	0.03	0.18	0.07	0.02	0.10	0.09
438	71	-0.04	0.02	0.10	-0.07	0.03	0.18	0.09
439	71	0.08	0.02	0.18	0.04	0.01	0.10	0.09
439	87	-0.06	0.01	0.10	-0.11	0.02	0.18	0.09
440	87	0.03	0.02	0.19	0.02	0.01	0.11	0.08
440	103	-0.08	0.01	0.11	-0.14	0.02	0.19	0.08
441	103	-0.01	0.00	0.11	-0.01	0.01	0.20	0.07
441	119	-0.09	0.00	0.11	-0.15	0.01	0.20	0.07
442	119	-0.02	0.00	0.13	-0.04	0.00	0.23	0.05
442	135	-0.08	0.00	0.13	-0.15	0.00	0.23	0.05
443	135	-0.03	0.00	0.14	-0.06	-0.01	0.25	0.03
443	151	-0.07	0.00	0.14	-0.12	-0.01	0.25	0.03
444	151	-0.04	-0.01	0.15	-0.06	-0.01	0.27	0.02
444	167	-0.06	-0.01	0.15	-0.10	-0.01	0.27	0.02
445	167	-0.03	-0.01	0.16	-0.06	-0.01	0.28	0.01
445	183	-0.04	-0.01	0.16	-0.07	-0.01	0.28	0.01
446	183	-0.03	-0.01	0.16	-0.06	-0.01	0.29	0.00
446	199	-0.03	-0.01	0.16	-0.06	-0.01	0.29	0.00
447	199	-0.03	0.00	0.17	-0.06	-0.01	0.30	0.01
447	215	-0.03	0.00	0.17	-0.05	-0.01	0.30	0.01
448	215	-0.03	0.00	0.17	-0.06	-0.01	0.30	0.01
448	231	-0.02	0.00	0.17	-0.03	-0.01	0.30	0.01
449	231	-0.04	0.00	0.17	-0.06	-0.01	0.31	0.02
449	247	-0.01	0.00	0.17	-0.02	-0.01	0.31	0.02
450	247	-0.03	0.00	0.17	-0.06	-0.01	0.30	0.03
450	263	0.00	-0.01	0.30	0.00	0.00	0.17	0.03
451	263	-0.02	0.00	0.16	-0.04	0.00	0.28	0.03
451	279	0.03	0.00	0.28	0.02	0.00	0.16	0.03
452	279	0.00	0.00	0.14	-0.01	0.00	0.25	0.02
452	295	0.04	0.00	0.25	0.02	0.00	0.14	0.02
453	295	0.01	-0.01	0.15	0.01	0.00	0.08	0.00
453	311	0.01	-0.01	0.15	0.01	0.00	0.08	0.00
454	8	0.02	0.00	0.17	0.01	0.00	0.09	0.00
454	24	0.02	0.00	0.17	0.01	0.00	0.09	0.00
455	24	0.09	0.01	0.30	0.05	0.00	0.17	0.02
455	40	0.04	0.01	0.30	0.02	0.00	0.17	0.02
456	40	0.13	0.04	0.34	0.07	0.02	0.19	0.06
456	56	0.00	0.02	0.19	0.00	0.04	0.34	0.06
457	56	0.11	0.10	0.35	0.06	0.06	0.20	0.08
457	72	-0.03	0.06	0.20	-0.06	0.10	0.35	0.08
458	72	0.06	0.18	0.36	0.04	0.10	0.20	0.08
458	88	-0.06	0.10	0.20	-0.10	0.18	0.36	0.08
459	88	0.02	0.29	0.35	0.01	0.16	0.20	0.07
459	104	-0.07	0.16	0.20	-0.13	0.29	0.35	0.07
460	104	-0.02	0.22	0.19	-0.03	0.39	0.33	0.05
460	120	-0.08	0.22	0.19	-0.14	0.39	0.33	0.05
461	120	-0.05	0.27	0.17	-0.08	0.48	0.31	0.02
461	136	-0.07	0.27	0.17	-0.12	0.48	0.31	0.02
462	136	-0.06	0.30	0.16	-0.11	0.54	0.29	0.01
462	152	-0.04	0.30	0.16	-0.08	0.54	0.29	0.01
463	152	-0.06	0.32	0.15	-0.11	0.56	0.26	0.03
463	168	-0.02	0.32	0.15	-0.04	0.56	0.26	0.03
464	168	-0.06	0.31	0.13	-0.10	0.55	0.24	0.04
464	184	-0.01	0.31	0.13	-0.02	0.55	0.24	0.04
465	184	-0.06	0.28	0.12	-0.10	0.51	0.22	0.05
465	200	0.00	0.28	0.12	0.00	0.51	0.22	0.05
466	200	-0.06	0.25	0.11	-0.10	0.44	0.20	0.05
466	216	0.01	0.44	0.20	0.01	0.25	0.11	0.05
467	216	-0.06	0.20	0.10	-0.11	0.36	0.18	0.06
467	232	0.02	0.36	0.18	0.01	0.20	0.10	0.06
468	232	-0.06	0.15	0.10	-0.11	0.27	0.17	0.07
468	248	0.04	0.27	0.17	0.02	0.15	0.10	0.07
469	248	-0.06	0.10	0.09	-0.10	0.18	0.16	0.08
469	264	0.07	0.18	0.16	0.04	0.10	0.09	0.08
470	264	-0.04	0.05	0.09	-0.07	0.10	0.15	0.08
470	280	0.10	0.10	0.15	0.06	0.05	0.09	0.08
471	280	-0.02	0.02	0.08	-0.03	0.03	0.15	0.07
471	296	0.12	0.03	0.15	0.07	0.02	0.08	0.07
472	296	0.02	0.00	0.09	0.01	0.00	0.05	0.01
472	312	0.03	0.00	0.09	0.02	0.00	0.05	0.01
473	9	-0.04	-0.01	0.18	-0.07	-0.02	0.31	0.10
473	25	0.07	-0.02	0.31	0.04	-0.01	0.18	0.10
474	25	-0.04	-0.02	0.25	-0.07	-0.04	0.44	0.06
474	41	0.07	-0.04	0.44	0.04	-0.02	0.25	0.06
475	41	-0.06	0.01	0.31	-0.11	0.02	0.55	0.10
475	57	0.11	0.02	0.55	0.06	0.01	0.31	0.10
476	57	-0.08	0.09	0.34	-0.14	0.16	0.60	0.13
476	73	0.14	0.16	0.60	0.08	0.09	0.34	0.13
477	73	-0.09	0.19	0.33	-0.15	0.34	0.59	0.14
477	89	0.16	0.34	0.59	0.09	0.19	0.33	0.14
478	89	-0.09	0.31	0.31	-0.17	0.55	0.55	0.16
478	105	0.18	0.55	0.55	0.10	0.31	0.31	0.16
479	105	-0.10	0.43	0.26	-0.18	0.77	0.46	0.18
479	121	0.20	0.77	0.46	0.12	0.43	0.26	0.18
480	121	-0.10	0.54	0.19	-0.18	0.96	0.33	0.18
480	137	0.20	0.96	0.33	0.11	0.54	0.19	0.18
481	137	-0.07	0.62	0.11	-0.13	1.10	0.20	0.13
481	153	0.16	1.10	0.20	0.09	0.62	0.11	0.13
482	153	-0.02	0.65	0.05	-0.03	1.15	0.09	0.04

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
482	169	0.06	1.15	0.09	0.03	0.65	0.05	0.04
483	169	0.01	1.13	0.03	0.00	0.63	0.01	0.01
483	185	0.02	1.13	0.03	0.01	0.63	0.01	0.01
484	185	0.02	1.03	-0.03	0.01	0.58	-0.02	0.00
484	201	0.01	1.03	-0.03	0.01	0.58	-0.02	0.00
485	201	0.02	0.89	-0.08	0.01	0.50	-0.04	0.01
485	217	0.00	0.50	-0.04	0.00	0.50	-0.04	0.01
486	217	0.03	0.73	-0.13	0.02	0.41	-0.07	0.02
486	233	-0.01	0.41	-0.07	-0.01	0.73	-0.13	0.02
487	233	0.03	0.54	-0.17	0.02	0.31	-0.10	0.03
487	249	-0.01	0.31	-0.10	-0.02	0.54	-0.17	0.03
488	249	0.04	0.36	-0.20	0.02	0.20	-0.11	0.03
488	265	-0.02	0.20	-0.11	-0.03	0.36	-0.20	0.03
489	265	0.04	0.20	-0.20	0.02	0.11	-0.11	0.03
489	281	-0.02	0.11	-0.11	-0.03	0.20	-0.20	0.03
490	281	0.06	0.07	-0.18	0.03	0.04	-0.10	0.06
490	297	-0.03	0.04	-0.10	-0.06	0.07	-0.18	0.06
491	297	0.12	0.01	-0.15	0.07	0.01	-0.08	0.18
491	313	-0.07	0.01	-0.08	-0.12	0.01	-0.15	0.18
492	10	-0.06	0.00	0.06	-0.10	-0.01	0.12	0.01
492	26	-0.05	0.00	0.06	-0.08	-0.01	0.12	0.01
493	26	-0.21	-0.01	0.18	-0.38	-0.01	0.31	0.18
493	42	0.00	-0.01	0.31	0.00	-0.01	0.18	0.18
494	42	-0.22	0.04	0.24	-0.39	0.06	0.43	0.26
494	58	0.17	0.06	0.43	0.10	0.04	0.24	0.26
495	58	-0.17	0.11	0.24	-0.29	0.20	0.43	0.27
495	74	0.30	0.20	0.43	0.17	0.11	0.24	0.27
496	74	-0.10	0.21	0.20	-0.18	0.37	0.36	0.23
496	90	0.32	0.37	0.36	0.18	0.21	0.20	0.23
497	90	-0.08	0.32	0.14	-0.14	0.57	0.25	0.24
497	106	0.37	0.57	0.25	0.21	0.32	0.14	0.24
498	106	-0.02	0.44	0.07	-0.04	0.78	0.13	0.19
498	122	0.37	0.78	0.13	0.21	0.44	0.07	0.19
499	122	0.04	0.96	0.03	0.02	0.54	0.02	0.12
499	138	0.30	0.96	0.03	0.17	0.54	0.02	0.12
500	138	0.06	1.08	-0.04	0.03	0.61	-0.03	0.07
500	154	0.22	1.08	-0.04	0.12	0.61	-0.03	0.07
501	154	0.06	1.14	-0.11	0.03	0.64	-0.06	0.05
501	170	0.16	1.14	-0.11	0.09	0.64	-0.06	0.05
502	170	0.04	1.11	-0.17	0.02	0.63	-0.09	0.04
502	186	0.13	1.11	-0.17	0.07	0.63	-0.09	0.04
503	186	0.04	1.03	-0.23	0.02	0.58	-0.13	0.04
503	202	0.12	1.03	-0.23	0.07	0.58	-0.13	0.04
504	202	0.05	0.89	-0.29	0.03	0.50	-0.16	0.03
504	218	0.11	0.89	-0.29	0.06	0.50	-0.16	0.03
505	218	0.06	0.71	-0.36	0.03	0.40	-0.20	0.02

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
505	234	0.10	0.71	-0.36	0.06	0.40	-0.20	0.02
506	234	0.05	0.53	-0.42	0.03	0.30	-0.23	0.01
506	250	0.07	0.53	-0.42	0.04	0.30	-0.23	0.01
507	250	0.03	0.34	-0.46	0.02	0.19	-0.26	0.00
507	266	0.03	0.34	-0.46	0.02	0.19	-0.26	0.00
508	266	0.00	0.10	-0.26	-0.01	0.18	-0.47	0.00
508	282	0.00	0.10	-0.26	-0.01	0.18	-0.47	0.00
509	282	-0.02	0.04	-0.24	-0.04	0.07	-0.43	0.02
509	298	-0.01	0.04	-0.24	-0.01	0.07	-0.43	0.02
510	298	-0.02	0.01	-0.14	-0.03	0.01	-0.24	0.02
510	314	0.01	0.01	-0.24	0.00	0.01	-0.14	0.02
511	11	-0.06	0.00	-0.10	-0.11	0.01	-0.18	0.01
511	27	-0.05	0.00	-0.10	-0.10	0.01	-0.18	0.01
512	27	-0.24	0.02	-0.22	-0.42	0.03	-0.39	0.20
512	43	0.01	0.03	-0.39	0.01	0.02	-0.22	0.20
513	43	-0.21	0.07	-0.26	-0.37	0.12	-0.46	0.26
513	59	0.20	0.12	-0.46	0.11	0.07	-0.26	0.26
514	59	-0.11	0.14	-0.26	-0.19	0.26	-0.46	0.22
514	75	0.29	0.26	-0.46	0.17	0.14	-0.26	0.22
515	75	-0.03	0.24	-0.25	-0.06	0.43	-0.44	0.18
515	91	0.33	0.43	-0.44	0.18	0.24	-0.25	0.18
516	91	0.03	0.61	-0.42	0.02	0.35	-0.24	0.14
516	107	0.33	0.61	-0.42	0.18	0.35	-0.24	0.14
517	107	0.10	0.80	-0.39	0.06	0.45	-0.22	0.09
517	123	0.30	0.80	-0.39	0.17	0.45	-0.22	0.09
518	123	0.14	0.95	-0.35	0.08	0.54	-0.19	0.05
518	139	0.26	0.95	-0.35	0.14	0.54	-0.19	0.05
519	139	0.15	1.07	-0.31	0.08	0.60	-0.18	0.03
519	155	0.20	1.07	-0.31	0.11	0.60	-0.18	0.03
520	155	0.14	1.12	-0.29	0.08	0.63	-0.16	0.01
520	171	0.16	1.12	-0.29	0.09	0.63	-0.16	0.01
521	171	0.14	1.11	-0.29	0.08	0.62	-0.16	0.00
521	187	0.15	1.11	-0.29	0.08	0.62	-0.16	0.00
522	187	0.17	1.02	-0.30	0.09	0.58	-0.17	0.01
522	203	0.14	1.02	-0.30	0.08	0.58	-0.17	0.01
523	203	0.21	0.88	-0.33	0.12	0.50	-0.18	0.03
523	219	0.14	0.88	-0.33	0.08	0.50	-0.18	0.03
524	219	0.25	0.70	-0.36	0.14	0.39	-0.20	0.06
524	235	0.11	0.70	-0.36	0.06	0.39	-0.20	0.06
525	235	0.27	0.50	-0.40	0.15	0.28	-0.22	0.11
525	251	0.04	0.50	-0.40	0.02	0.28	-0.22	0.11
526	251	0.24	0.31	-0.43	0.13	0.17	-0.24	0.15
526	267	-0.04	0.17	-0.24	-0.08	0.31	-0.43	0.15
527	267	0.15	0.15	-0.44	0.08	0.08	-0.24	0.16
527	283	-0.11	0.08	-0.24	-0.20	0.15	-0.44	0.16
528	283	0.03	0.05	-0.39	0.02	0.03	-0.22	0.13

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
528	299	-0.13	0.03	-0.22	-0.24	0.05	-0.39	0.13
529	299	-0.02	0.00	-0.11	-0.04	0.01	-0.20	0.02
529	315	-0.04	0.00	-0.11	-0.07	0.01	-0.20	0.02
530	12	0.02	0.01	-0.29	0.01	0.01	-0.16	0.06
530	28	-0.03	0.01	-0.16	-0.06	0.01	-0.29	0.06
531	28	0.02	0.06	-0.52	0.01	0.03	-0.29	0.05
531	44	-0.06	0.03	-0.29	-0.10	0.06	-0.52	0.05
532	44	0.00	0.09	-0.33	0.00	0.09	-0.33	0.03
532	60	-0.03	0.09	-0.33	-0.06	0.16	-0.59	0.03
533	60	0.04	0.31	-0.60	0.02	0.17	-0.34	0.02
533	76	0.00	0.17	-0.34	-0.01	0.31	-0.60	0.02
534	76	0.09	0.48	-0.57	0.05	0.27	-0.32	0.03
534	92	0.03	0.48	-0.57	0.02	0.27	-0.32	0.03
535	92	0.12	0.65	-0.51	0.07	0.37	-0.29	0.03
535	108	0.05	0.65	-0.51	0.03	0.37	-0.29	0.03
536	108	0.13	0.82	-0.43	0.07	0.46	-0.24	0.04
536	124	0.05	0.82	-0.43	0.03	0.46	-0.24	0.04
537	124	0.13	0.97	-0.36	0.08	0.54	-0.20	0.04
537	140	0.05	0.97	-0.36	0.03	0.54	-0.20	0.04
538	140	0.13	1.07	-0.29	0.07	0.60	-0.16	0.04
538	156	0.04	1.07	-0.29	0.02	0.60	-0.16	0.04
539	156	0.12	1.12	-0.22	0.07	0.63	-0.13	0.04
539	172	0.04	1.12	-0.22	0.02	0.63	-0.13	0.04
540	172	0.13	1.11	-0.16	0.07	0.63	-0.09	0.03
540	188	0.06	1.11	-0.16	0.03	0.63	-0.09	0.03
541	188	0.17	1.04	-0.10	0.09	0.58	-0.06	0.04
541	204	0.08	1.04	-0.10	0.05	0.58	-0.06	0.04
542	204	0.23	0.89	-0.04	0.13	0.50	-0.02	0.08
542	220	0.06	0.89	-0.04	0.04	0.50	-0.02	0.08
543	220	0.28	0.69	0.04	0.16	0.39	0.02	0.12
543	236	0.02	0.69	0.04	0.01	0.39	0.02	0.12
544	236	0.30	0.47	0.14	0.17	0.26	0.08	0.16
544	252	-0.03	0.26	0.08	-0.05	0.47	0.14	0.16
545	252	0.28	0.26	0.23	0.16	0.15	0.13	0.22
545	268	-0.11	0.15	0.13	-0.19	0.26	0.23	0.22
546	268	0.15	0.10	0.27	0.09	0.06	0.15	0.19
546	284	-0.14	0.06	0.15	-0.25	0.10	0.27	0.19
547	284	0.04	0.01	0.23	0.02	0.00	0.13	0.14
547	300	-0.15	0.00	0.13	-0.27	0.01	0.23	0.14
548	300	-0.03	0.00	0.06	-0.05	0.00	0.10	0.02
548	316	-0.04	0.00	0.06	-0.07	0.00	0.10	0.02
549	13	-0.09	0.01	-0.13	-0.16	0.01	-0.23	0.23
549	29	0.16	0.01	-0.23	0.09	0.01	-0.13	0.23
550	29	-0.04	0.03	-0.15	-0.08	0.06	-0.27	0.07
550	45	0.08	0.06	-0.27	0.04	0.03	-0.15	0.07
551	45	-0.03	0.10	-0.18	-0.05	0.18	-0.31	0.04

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
551	61	0.05	0.18	-0.31	0.03	0.10	-0.18	0.04
552	61	-0.02	0.19	-0.18	-0.04	0.34	-0.32	0.04
552	77	0.05	0.34	-0.32	0.03	0.19	-0.18	0.04
553	77	-0.02	0.29	-0.17	-0.03	0.51	-0.30	0.04
553	93	0.05	0.51	-0.30	0.03	0.29	-0.17	0.04
554	93	-0.01	0.38	-0.15	-0.02	0.68	-0.26	0.03
554	109	0.04	0.68	-0.26	0.02	0.38	-0.15	0.03
555	109	-0.01	0.47	-0.12	-0.01	0.84	-0.21	0.02
555	125	0.04	0.84	-0.21	0.02	0.47	-0.12	0.02
556	125	0.00	0.55	-0.09	0.00	0.98	-0.15	0.01
556	141	0.03	0.98	-0.15	0.02	0.55	-0.09	0.01
557	141	0.01	1.08	-0.10	0.00	0.61	-0.06	0.01
557	157	0.02	1.08	-0.10	0.01	0.61	-0.06	0.01
558	157	0.02	1.13	-0.05	0.01	0.64	-0.03	0.00
558	173	0.01	1.13	-0.05	0.01	0.64	-0.03	0.00
559	173	0.03	1.13	0.01	0.02	0.63	0.01	0.01
559	189	0.00	0.63	0.01	0.00	0.63	0.01	0.01
560	189	0.10	1.05	0.09	0.05	0.59	0.05	0.08
560	205	-0.04	0.59	0.05	-0.07	1.05	0.09	0.08
561	205	0.20	0.90	0.21	0.11	0.50	0.12	0.17
561	221	-0.10	0.50	0.12	-0.18	0.90	0.21	0.17
562	221	0.19	0.68	0.34	0.11	0.38	0.19	0.17
562	237	-0.10	0.38	0.19	-0.17	0.68	0.34	0.17
563	237	0.18	0.45	0.44	0.10	0.25	0.25	0.16
563	253	-0.09	0.25	0.25	-0.17	0.45	0.44	0.16
564	253	0.16	0.23	0.49	0.09	0.13	0.27	0.14
564	269	-0.09	0.13	0.27	-0.15	0.23	0.49	0.14
565	269	0.12	0.07	0.47	0.07	0.04	0.26	0.11
565	285	-0.07	0.04	0.26	-0.12	0.07	0.47	0.11
566	285	0.08	-0.02	0.40	0.05	-0.01	0.23	0.08
566	301	-0.05	-0.01	0.23	-0.09	-0.02	0.40	0.08
567	301	0.08	-0.02	0.30	0.04	-0.01	0.17	0.11
567	317	-0.04	-0.01	0.17	-0.08	-0.02	0.30	0.11
568	14	0.04	0.00	0.07	0.02	0.00	0.04	0.01
568	30	0.02	0.00	0.07	0.01	0.00	0.04	0.01
569	30	0.15	0.04	0.11	0.08	0.02	0.06	0.08
569	46	-0.01	0.02	0.06	-0.02	0.04	0.11	0.08
570	46	0.14	0.09	0.11	0.08	0.05	0.06	0.10
570	62	-0.04	0.05	0.06	-0.07	0.09	0.11	0.10
571	62	0.11	0.17	0.10	0.06	0.10	0.06	0.10
571	78	-0.06	0.10	0.06	-0.11	0.17	0.10	0.10
572	78	0.08	0.25	0.10	0.04	0.14	0.06	0.09
572	94	-0.07	0.14	0.06	-0.12	0.25	0.10	0.09
573	94	0.05	0.34	0.11	0.03	0.19	0.06	0.08
573	110	-0.07	0.19	0.06	-0.13	0.34	0.11	0.08
574	110	0.03	0.42	0.13	0.02	0.23	0.07	0.07

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
574	126	-0.07	0.23	0.07	-0.12	0.42	0.13	0.07
575	126	0.02	0.48	0.14	0.01	0.27	0.08	0.06
575	142	-0.06	0.27	0.08	-0.11	0.48	0.14	0.06
576	142	0.01	0.53	0.16	0.00	0.30	0.09	0.05
576	158	-0.06	0.30	0.09	-0.10	0.53	0.16	0.05
577	158	0.00	0.31	0.10	0.00	0.56	0.18	0.05
577	174	-0.06	0.31	0.10	-0.10	0.56	0.18	0.05
578	174	-0.01	0.31	0.11	-0.02	0.55	0.20	0.04
578	190	-0.06	0.31	0.11	-0.11	0.55	0.20	0.04
579	190	-0.03	0.29	0.13	-0.05	0.51	0.23	0.03
579	206	-0.06	0.29	0.13	-0.11	0.51	0.23	0.03
580	206	-0.05	0.25	0.14	-0.09	0.44	0.25	0.00
580	222	-0.05	0.25	0.14	-0.09	0.44	0.25	0.00
581	222	-0.07	0.19	0.15	-0.12	0.34	0.27	0.03
581	238	-0.03	0.19	0.15	-0.05	0.34	0.27	0.03
582	238	-0.06	0.13	0.16	-0.11	0.23	0.29	0.05
582	254	0.00	0.23	0.29	0.00	0.13	0.16	0.05
583	254	-0.05	0.07	0.17	-0.08	0.13	0.30	0.06
583	270	0.06	0.13	0.30	0.03	0.07	0.17	0.06
584	270	-0.02	0.03	0.17	-0.03	0.05	0.30	0.05
584	286	0.09	0.05	0.30	0.05	0.03	0.17	0.05
585	286	0.01	0.01	0.27	0.01	0.01	0.15	0.03
585	302	0.07	0.01	0.27	0.04	0.01	0.15	0.03
586	302	0.02	0.00	0.15	0.01	0.00	0.09	0.00
586	318	0.02	0.00	0.15	0.01	0.00	0.09	0.00
587	15	0.02	0.00	0.15	0.01	0.00	0.08	0.01
587	31	0.03	0.00	0.15	0.01	0.00	0.08	0.01
588	31	0.08	0.01	0.25	0.05	0.00	0.14	0.03
588	47	0.01	0.01	0.25	0.00	0.00	0.14	0.03
589	47	0.08	0.01	0.28	0.04	0.00	0.16	0.05
589	63	-0.02	0.00	0.16	-0.03	0.01	0.28	0.05
590	63	0.05	0.00	0.30	0.03	0.00	0.17	0.05
590	79	-0.04	0.00	0.17	-0.06	0.00	0.30	0.05
591	79	0.02	0.00	0.30	0.01	0.00	0.17	0.05
591	95	-0.04	0.00	0.17	-0.08	0.00	0.30	0.05
592	95	0.00	0.00	0.30	0.00	0.00	0.17	0.04
592	111	-0.05	0.00	0.17	-0.08	0.00	0.30	0.04
593	111	-0.01	0.00	0.16	-0.01	0.00	0.29	0.03
593	127	-0.05	0.00	0.16	-0.08	0.00	0.29	0.03
594	127	-0.01	0.00	0.16	-0.02	0.00	0.28	0.03
594	143	-0.04	0.00	0.16	-0.08	0.00	0.28	0.03
595	143	-0.02	0.00	0.15	-0.03	-0.01	0.27	0.02
595	159	-0.04	0.00	0.15	-0.08	-0.01	0.27	0.02
596	159	-0.03	0.00	0.15	-0.05	-0.01	0.26	0.01
596	175	-0.04	0.00	0.15	-0.08	-0.01	0.26	0.01
597	175	-0.04	-0.01	0.14	-0.07	-0.01	0.25	0.00

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
597	191	-0.04	-0.01	0.14	-0.08	-0.01	0.25	0.00
598	191	-0.05	-0.01	0.13	-0.09	-0.01	0.24	0.01
598	207	-0.04	-0.01	0.13	-0.08	-0.01	0.24	0.01
599	207	-0.06	0.00	0.12	-0.11	0.00	0.22	0.02
599	223	-0.04	0.00	0.12	-0.07	0.00	0.22	0.02
600	223	-0.07	0.00	0.11	-0.13	0.00	0.20	0.04
600	239	-0.02	0.00	0.11	-0.04	0.00	0.20	0.04
601	239	-0.07	0.01	0.10	-0.12	0.01	0.19	0.06
601	255	0.00	0.01	0.19	0.00	0.01	0.10	0.06
602	255	-0.05	0.01	0.10	-0.09	0.02	0.18	0.07
602	271	0.05	0.02	0.18	0.03	0.01	0.10	0.07
603	271	-0.03	0.01	0.11	-0.05	0.03	0.19	0.06
603	287	0.09	0.03	0.19	0.05	0.01	0.11	0.06
604	287	0.01	0.03	0.20	0.01	0.02	0.11	0.04
604	303	0.10	0.03	0.20	0.05	0.02	0.11	0.04
605	303	0.03	0.01	0.13	0.02	0.00	0.07	0.01
605	319	0.02	0.01	0.13	0.01	0.00	0.07	0.01
606	16	0.01	-0.01	0.14	0.01	0.00	0.08	0.01
606	32	-0.01	0.00	0.08	-0.01	-0.01	0.14	0.01
607	32	0.01	-0.03	0.27	0.00	-0.01	0.15	0.01
607	48	-0.01	-0.01	0.15	-0.01	-0.03	0.27	0.01
608	48	-0.01	-0.05	0.17	-0.02	-0.08	0.31	0.01
608	64	0.00	-0.05	0.17	-0.01	-0.08	0.31	0.01
609	64	-0.02	-0.09	0.18	-0.03	-0.16	0.32	0.01
609	80	0.00	-0.09	0.18	0.00	-0.16	0.32	0.01
610	80	-0.02	-0.14	0.18	-0.04	-0.24	0.32	0.02
610	96	0.00	-0.14	0.18	0.00	-0.24	0.32	0.02
611	96	-0.03	-0.18	0.17	-0.05	-0.33	0.30	0.02
611	112	0.00	-0.18	0.17	0.00	-0.33	0.30	0.02
612	112	-0.03	-0.23	0.16	-0.05	-0.41	0.29	0.02
612	128	0.00	-0.23	0.16	0.00	-0.41	0.29	0.02
613	128	-0.03	-0.27	0.15	-0.05	-0.48	0.27	0.02
613	144	0.00	-0.27	0.15	-0.01	-0.48	0.27	0.02
614	144	-0.03	-0.30	0.14	-0.06	-0.52	0.25	0.02
614	160	0.00	-0.30	0.14	-0.01	-0.52	0.25	0.02
615	160	-0.04	-0.31	0.12	-0.06	-0.55	0.22	0.02
615	176	-0.01	-0.31	0.12	-0.01	-0.55	0.22	0.02
616	176	-0.07	-0.31	0.11	-0.07	-0.55	0.20	0.03
616	192	-0.01	-0.31	0.11	-0.01	-0.55	0.20	0.03
617	192	-0.04	-0.29	0.09	-0.08	-0.51	0.16	0.03
617	208	-0.01	-0.29	0.09	-0.02	-0.51	0.16	0.03
618	208	-0.05	-0.24	0.07	-0.08	-0.43	0.13	0.03
618	224	-0.01	-0.24	0.07	-0.01	-0.43	0.13	0.03
619	224	-0.05	-0.18	0.05	-0.09	-0.32	0.10	0.04
619	240	0.00	-0.18	0.05	-0.01	-0.32	0.10	0.04
620	240	-0.05	-0.12	0.04	-0.08	-0.21	0.07	0.04

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
620	256	0.00	-0.21	0.07	0.00	-0.12	0.04	0.04
621	256	-0.04	-0.06	0.03	-0.08	-0.11	0.06	0.05
621	272	0.02	-0.11	0.06	0.01	-0.06	0.03	0.05
622	272	-0.04	-0.01	0.04	-0.07	-0.03	0.07	0.06
622	288	0.06	-0.03	0.07	0.03	-0.01	0.04	0.06
623	288	-0.03	0.01	0.05	-0.05	0.02	0.09	0.08
623	304	0.12	0.02	0.09	0.06	0.01	0.05	0.08
624	304	0.01	0.00	0.07	0.00	0.00	0.04	0.02
624	320	0.04	0.00	0.07	0.02	0.00	0.04	0.02

Envolvente de esfuerzos por sobrecarga

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
1	1	24.21	-3.19	-1.95	-49.69	10.06	-0.76	20.04
1	2	30.30	-1.31	-2.05	-28.09	8.19	-0.65	20.04
2	2	31.49	1.56	0.57	-26.21	4.38	-0.46	13.19
2	3	36.80	0.35	0.35	-13.50	5.60	-0.24	13.19
3	3	33.26	-0.33	1.88	-13.45	5.59	0.57	8.72
3	4	42.50	0.90	1.53	-26.21	4.36	0.92	8.72
4	4	35.81	-3.82	2.97	-27.79	8.17	1.22	11.47
4	5	24.71	-3.22	1.59	-26.34	7.57	2.59	11.47
5	5	23.54	-0.31	0.18	-27.75	12.89	0.01	9.51
5	6	12.27	-0.31	0.18	-14.47	12.89	0.01	7.18
6	6	12.52	2.40	-0.05	-12.84	15.36	-1.06	6.26
6	7	12.89	-0.03	-0.05	-17.16	17.79	-1.06	6.22
7	7	12.96	0.00	-0.03	-14.25	16.68	-1.64	6.44
7	8	14.88	-2.49	-0.02	-28.81	19.17	-1.65	6.44
8	8	14.90	-2.54	-0.01	-24.13	13.01	-2.20	6.47
8	9	10.35	-2.54	0.01	-40.38	13.01	-2.22	9.56
9	9	10.36	3.11	0.09	-38.24	4.82	-1.93	12.45
9	10	5.15	3.11	0.09	-12.92	4.82	-1.93	12.45
10	10	6.75	3.41	0.23	-11.72	3.77	-0.12	12.34
10	11	32.66	0.31	0.21	-6.47	6.87	-0.10	12.34
11	11	28.85	-0.36	3.58	-6.46	6.85	-0.10	10.89
11	12	36.74	2.75	3.56	-11.65	3.74	-0.09	10.82
12	12	28.75	1.72	3.34	-11.76	3.73	-0.16	9.43
12	13	10.27	3.11	0.06	-19.73	2.34	3.11	21.40
13	13	10.30	-2.45	-0.01	-21.59	23.30	0.09	6.84
13	14	14.94	-2.45	0.00	-21.66	23.30	0.08	3.72
14	14	14.89	-2.49	0.03	-19.58	26.96	-1.27	3.74
14	15	12.97	-0.03	0.03	-20.14	24.50	-1.27	6.26
15	15	12.90	-0.06	0.05	-16.74	24.48	-1.71	6.41
15	16	12.39	2.38	0.04	-27.20	22.05	-1.71	9.53
16	16	12.16	-0.16	-0.16	-22.88	21.22	-1.81	9.37
16	1	23.19	-0.16	-0.16	-51.28	21.22	-1.81	12.49
17	17	21.89	-3.18	-0.73	-50.01	10.02	-0.45	21.76
17	18	33.20	-1.35	-1.16	-26.59	8.20	-0.02	21.79
18	18	33.30	1.54	0.33	-26.84	4.38	-0.19	12.94
18	19	36.35	0.32	0.23	-13.08	5.61	-0.09	12.97
19	19	35.68	-0.34	1.27	-13.07	5.58	0.29	10.36
19	20	41.03	0.88	1.08	-26.72	4.37	0.49	10.38
20	20	40.09	-3.80	1.80	-26.44	8.17	0.38	14.86
20	21	22.17	-3.22	0.49	-29.30	7.59	1.69	14.88
21	21	22.34	1.89	0.11	-29.37	13.93	0.06	9.41
21	22	12.57	1.89	0.11	-14.20	13.93	0.06	6.29
22	22	12.51	2.43	-0.03	-14.08	15.44	-0.70	6.26
22	23	12.93	-0.02	-0.03	-16.35	17.88	-0.70	5.41
23	23	12.93	0.00	-0.02	-15.97	16.77	-1.12	5.15
23	24	14.90	-2.49	-0.01	-27.24	19.27	-1.13	5.15
24	24	14.90	-2.52	-0.01	-26.27	13.41	-1.51	5.06
24	25	10.33	-2.52	0.00	-38.88	13.41	-1.52	8.17
25	25	10.32	3.11	0.06	-38.67	4.80	-1.45	13.49
25	26	5.69	4.13	-1.26	-11.73	3.76	-0.13	13.47
26	26	6.84	3.42	0.11	-11.73	3.77	-0.08	12.68
26	27	33.43	0.31	0.10	-6.46	6.86	-0.06	11.22
27	27	32.33	-0.34	2.48	-6.46	6.86	-0.06	10.24
27	28	33.79	2.76	2.46	-11.67	3.74	-0.05	12.95
28	28	32.09	1.75	2.28	-11.69	3.73	-0.10	13.06
28	29	10.33	3.11	0.04	-23.59	2.37	2.13	25.00
29	29	10.33	-2.47	-0.01	-23.68	24.68	0.13	6.83
29	30	14.93	-2.47	0.00	-21.39	24.68	0.12	3.72
30	30	14.92	-2.49	0.02	-21.12	27.03	-0.87	3.72
30	31	12.94	-0.03	0.02	-19.07	24.57	-0.87	5.26
31	31	12.94	-0.04	0.02	-18.50	24.53	-1.19	5.05
31	32	12.40	2.40	0.02	-25.42	22.08	-1.19	8.17
32	32	12.46	1.96	-0.10	-24.51	21.76	-1.21	8.25
32	17	22.07	1.96	-0.10	-50.01	21.76	-1.21	11.37
33	33	21.66	-3.18	-0.18	-49.32	9.88	-0.31	22.62
33	34	35.31	-1.49	-0.74	-27.04	8.21	0.25	22.65
34	34	35.09	1.47	0.28	-27.29	4.38	0.06	12.91
34	35	37.10	0.26	0.27	-12.78	5.61	0.07	12.93
35	35	37.05	-0.36	1.24	-12.79	5.59	0.12	11.03
35	36	41.09	0.86	1.14	-27.13	4.37	0.23	11.05
36	36	41.26	-3.72	1.42	-26.92	8.17	0.09	16.69
36	37	21.81	-3.21	-0.08	-31.33	7.67	1.59	16.71
37	37	21.91	2.88	0.07	-31.36	15.30	0.26	9.33
37	38	12.48	2.88	0.07	-14.77	15.30	0.26	6.21
38	38	12.44	2.48	0.00	-15.00	15.70	-0.63	6.25
38	39	12.95	0.01	-0.01	-16.61	18.17	-0.63	5.11
39	39	12.93	0.01	-0.01	-16.62	17.08	-1.19	4.95

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
39	40	14.91	-2.49	0.00	-27.37	19.59	-1.20	4.95
40	40	14.90	-2.50	0.00	-27.11	14.07	-1.70	4.72
40	41	10.31	-2.50	0.00	-38.82	14.07	-1.70	7.83
41	41	10.30	3.11	0.06	-38.62	4.73	-2.03	14.02
41	42	6.86	4.07	-1.84	-11.75	3.76	-0.12	14.01
42	42	7.62	3.43	-0.02	-11.74	3.76	-0.07	13.66
42	43	35.91	0.32	-0.03	-6.46	6.85	-0.06	9.71
43	43	35.40	-0.29	2.81	-6.46	6.85	-0.06	9.30
43	44	32.60	2.82	2.80	-11.68	3.73	-0.05	14.33
44	44	32.03	1.93	2.51	-11.67	3.73	-0.10	14.50
44	45	10.37	3.10	0.05	-26.53	2.55	2.36	26.44
45	45	10.36	-2.50	-0.01	-26.60	26.39	0.36	6.83
45	46	14.93	-2.51	0.00	-22.29	26.39	0.36	3.72
46	46	14.94	-2.49	0.01	-22.37	27.22	-0.93	3.72
46	47	12.95	-0.02	0.01	-19.20	24.75	-0.93	4.83
47	47	12.96	-0.02	0.01	-19.02	24.64	-1.36	4.71
47	48	12.34	2.45	-0.01	-25.05	22.16	-1.35	7.83
48	48	12.38	2.84	-0.05	-24.77	22.17	-1.22	7.86
48	33	21.75	2.84	-0.05	-49.27	22.17	-1.22	10.98
49	49	21.88	-3.18	-0.04	-48.35	9.69	-0.20	22.70
49	50	36.49	-1.69	-0.50	-27.35	8.21	0.25	22.73
50	50	36.31	1.38	0.33	-27.40	4.39	0.15	12.86
50	51	37.97	0.17	0.36	-12.82	5.62	0.12	12.88
51	51	37.99	-0.39	1.18	-12.82	5.59	0.04	11.37
51	52	41.11	0.84	1.11	-27.25	4.38	0.11	11.40
52	52	41.30	-3.64	1.25	-27.23	8.17	0.06	17.42
52	53	22.00	-3.21	-0.20	-32.78	7.75	1.51	17.44
53	53	22.03	2.81	0.02	-32.80	16.05	0.40	9.34
53	54	12.38	2.81	0.02	-15.69	16.05	0.40	6.22
54	54	12.39	2.51	0.02	-15.90	16.09	-0.53	6.24
54	55	12.94	0.02	0.01	-17.19	18.58	-0.51	4.96
55	55	12.93	0.02	0.00	-17.25	17.59	-1.22	4.89
55	56	14.91	-2.50	0.00	-27.88	20.10	-1.22	4.89
56	56	14.90	-2.50	0.01	-27.74	15.21	-1.92	4.73
56	57	10.30	-2.50	0.00	-39.50	15.21	-1.91	7.85
57	57	10.30	3.11	0.06	-39.34	4.70	-2.48	15.17
57	58	8.47	4.05	-2.31	-11.75	3.76	-0.11	15.15
58	58	8.87	3.47	-0.05	-11.75	3.76	-0.07	14.97
58	59	38.69	0.36	-0.07	-6.47	6.85	-0.05	8.11
59	59	38.37	-0.19	3.00	-6.47	6.85	-0.05	8.07
59	60	31.67	2.92	2.99	-11.68	3.73	-0.04	15.57
60	60	31.47	2.17	2.69	-11.67	3.73	-0.09	15.60
60	61	10.38	3.10	0.04	-29.32	2.79	2.54	27.54
61	61	10.38	-2.51	0.00	-29.34	27.53	0.49	6.83
61	62	14.95	-2.51	-0.01	-23.71	27.53	0.49	3.73
62	62	14.95	-2.50	0.00	-23.77	27.46	-0.96	3.72

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
62	63	12.94	-0.02	0.00	-19.60	24.97	-0.95	4.45
63	63	12.96	-0.01	-0.01	-19.51	24.74	-1.48	4.41
63	64	12.31	2.48	-0.02	-24.77	22.24	-1.46	7.53
64	64	12.30	2.75	-0.01	-24.64	22.22	-1.24	7.54
64	49	21.89	2.75	-0.01	-48.31	22.22	-1.24	10.66
65	65	22.03	-3.19	-0.03	-47.20	9.47	-0.16	22.58
65	66	37.48	-1.91	-0.40	-27.45	8.21	0.21	22.61
66	66	37.38	1.27	0.40	-27.43	4.38	0.15	12.76
66	67	38.71	0.05	0.43	-12.93	5.61	0.11	12.79
67	67	38.72	-0.43	1.16	-12.93	5.59	0.03	11.62
67	68	41.10	0.79	1.10	-27.29	4.37	0.09	11.64
68	68	41.20	-3.58	1.21	-27.32	8.17	0.07	17.92
68	69	22.16	-3.22	-0.18	-33.95	7.82	1.46	17.94
69	69	22.16	2.70	-0.01	-33.97	16.64	0.47	9.36
69	70	12.38	2.70	-0.01	-16.69	16.64	0.47	6.24
70	70	12.40	2.54	0.02	-16.80	16.58	-0.44	6.24
70	71	12.93	0.03	0.01	-17.94	19.09	-0.43	4.91
71	71	12.93	0.02	0.01	-17.98	18.25	-1.23	4.89
71	72	14.90	-2.50	0.00	-28.60	20.77	-1.22	4.89
72	72	14.90	-2.50	0.01	-28.53	16.77	-2.07	4.83
72	73	10.30	-2.50	0.00	-40.52	16.77	-2.06	7.94
73	73	10.30	3.11	0.05	-40.44	4.70	-2.71	16.73
73	74	10.57	4.04	-2.56	-11.76	3.76	-0.09	16.71
74	74	10.61	3.52	0.05	-11.75	3.76	-0.06	16.51
74	75	41.37	0.41	0.03	-6.47	6.85	-0.04	6.76
75	75	41.19	-0.07	3.02	-6.47	6.85	-0.04	6.90
75	76	30.79	3.04	3.01	-11.68	3.73	-0.04	16.73
76	76	30.89	2.44	2.69	-11.68	3.73	-0.09	16.69
76	77	10.39	3.10	0.04	-32.13	3.06	2.56	28.62
77	77	10.39	-2.51	0.00	-32.09	28.61	0.52	6.83
77	78	14.96	-2.52	-0.01	-25.29	28.62	0.52	3.73
78	78	14.96	-2.51	0.00	-25.29	27.69	-0.97	3.72
78	79	12.95	-0.02	-0.01	-20.10	25.20	-0.97	4.06
79	79	12.95	-0.01	-0.01	-20.07	24.82	-1.52	4.07
79	80	12.33	2.50	-0.02	-24.43	22.31	-1.51	7.19
80	80	12.32	2.64	0.01	-24.40	22.14	-1.25	7.20
80	65	22.03	2.64	0.01	-47.18	22.14	-1.25	10.32
81	81	22.11	-3.20	-0.04	-45.99	9.23	-0.14	22.45
81	82	38.46	-2.16	-0.33	-27.48	8.21	0.16	22.48
82	82	38.40	1.14	0.46	-27.45	4.38	0.11	12.64
82	83	39.35	-0.08	0.49	-13.01	5.61	0.08	12.67
83	83	39.36	-0.48	1.16	-13.01	5.59	0.03	11.83
83	84	41.08	0.74	1.11	-27.31	4.37	0.08	11.86
84	84	41.13	-3.53	1.20	-27.35	8.17	0.08	18.38
84	85	22.23	-3.22	-0.14	-35.02	7.87	1.42	18.41
85	85	22.23	2.65	-0.01	-35.02	17.19	0.49	9.36

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
85	86	12.41	2.65	-0.01	-17.68	17.19	0.49	6.24
86	86	12.42	2.55	0.01	-17.68	17.16	-0.42	6.24
86	87	12.94	0.03	0.00	-18.77	19.68	-0.41	4.90
87	87	12.94	0.02	0.01	-18.77	19.05	-1.23	4.91
87	88	14.91	-2.51	0.00	-29.43	21.58	-1.22	4.91
88	88	14.91	-2.50	0.01	-29.42	18.62	-2.12	4.93
88	89	10.31	-2.50	0.00	-41.69	18.62	-2.11	8.05
89	89	10.31	3.11	0.04	-41.69	4.70	-2.70	18.60
89	90	13.12	4.05	-2.57	-11.76	3.76	-0.07	18.58
90	90	12.70	3.58	0.25	-11.76	3.76	-0.05	18.57
90	91	43.64	0.47	0.23	-6.47	6.85	-0.03	5.50
91	91	43.66	0.07	2.89	-6.47	6.85	-0.04	5.86
91	92	29.97	3.18	2.88	-11.69	3.74	-0.03	17.78
92	92	30.29	2.72	2.52	-11.69	3.74	-0.07	17.72
92	93	10.40	3.10	0.03	-34.84	3.34	2.41	29.65
93	93	10.40	-2.51	0.00	-34.75	29.64	0.46	6.83
93	94	14.96	-2.52	-0.01	-26.87	29.64	0.47	3.73
94	94	14.96	-2.51	0.00	-26.82	27.91	-0.98	3.73
94	95	12.95	-0.02	-0.01	-20.63	25.41	-0.97	3.73
95	95	12.95	-0.01	0.00	-20.65	24.88	-1.51	3.73
95	96	12.36	2.51	-0.01	-24.07	22.36	-1.50	6.83
96	96	12.35	2.59	0.01	-24.12	22.03	-1.22	6.85
96	81	22.10	2.59	0.01	-45.97	22.03	-1.22	9.97
97	97	22.14	-3.20	-0.05	-44.78	8.99	-0.12	22.32
97	98	39.44	-2.41	-0.28	-27.49	8.21	0.11	22.35
98	98	39.38	1.00	0.51	-27.47	4.38	0.08	12.53
98	99	39.96	-0.22	0.54	-13.05	5.61	0.06	12.55
99	99	39.95	-0.53	1.18	-13.05	5.59	0.03	12.04
99	100	41.04	0.69	1.14	-27.33	4.37	0.07	12.06
100	100	41.08	-3.49	1.19	-27.36	8.17	0.07	18.86
100	101	22.27	-3.23	-0.10	-36.06	7.92	1.37	18.88
101	101	22.26	2.63	-0.01	-36.05	17.74	0.45	9.37
101	102	12.44	2.63	-0.01	-18.66	17.74	0.45	6.25
102	102	12.45	2.56	0.01	-18.56	17.79	-0.44	6.25
102	103	12.95	0.03	0.00	-19.61	20.32	-0.44	4.90
103	103	12.95	0.02	0.01	-19.56	19.94	-1.24	4.93
103	104	14.91	-2.51	0.00	-30.26	22.48	-1.23	4.93
104	104	14.92	-2.50	0.01	-30.32	20.67	-2.06	5.00
104	105	10.32	-2.50	0.00	-42.77	20.68	-2.05	8.12
105	105	10.32	3.11	0.03	-42.85	4.70	-2.42	20.67
105	106	16.17	4.05	-2.32	-11.77	3.76	-0.06	20.64
106	106	15.45	3.64	0.46	-11.77	3.76	-0.04	20.91
106	107	45.66	0.53	0.44	-6.47	6.85	-0.03	4.64
107	107	45.77	0.22	2.64	-6.47	6.85	-0.03	4.95
107	108	29.20	3.32	2.63	-11.70	3.74	-0.03	18.69
108	108	29.66	2.99	2.24	-11.70	3.74	-0.06	18.64

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
108	109	10.41	3.10	0.03	-37.35	3.62	2.15	30.57
109	109	10.41	-2.52	0.00	-37.24	30.56	0.35	6.83
109	110	14.97	-2.52	-0.01	-28.37	30.56	0.36	3.74
110	110	14.97	-2.52	0.00	-28.28	28.07	-0.99	3.74
110	111	12.96	-0.02	-0.01	-21.15	25.57	-0.98	3.74
111	111	12.96	-0.01	0.00	-21.19	24.91	-1.47	3.74
111	112	12.39	2.51	-0.01	-23.70	22.38	-1.46	6.49
112	112	12.39	2.57	0.01	-23.80	21.92	-1.16	6.50
112	97	22.13	2.57	0.01	-44.75	21.92	-1.16	9.62
113	113	22.15	-3.20	-0.04	-43.60	8.75	-0.09	22.20
113	114	40.40	-2.66	-0.20	-27.49	8.21	0.07	22.23
114	114	40.33	0.87	0.58	-27.48	4.38	0.06	12.41
114	115	40.53	-0.35	0.60	-13.07	5.61	0.04	12.44
115	115	40.52	-0.57	1.20	-13.07	5.59	0.03	12.24
115	116	40.96	0.65	1.18	-27.35	4.37	0.06	12.27
116	116	41.01	-3.43	1.17	-27.36	8.17	0.06	19.34
116	117	22.28	-3.23	-0.07	-37.14	7.97	1.30	19.37
117	117	22.28	2.63	-0.01	-37.11	18.29	0.37	9.37
117	118	12.46	2.63	-0.01	-19.61	18.29	0.37	6.25
118	118	12.46	2.56	0.00	-19.43	18.46	-0.52	6.25
118	119	12.95	0.03	0.00	-20.39	20.99	-0.51	4.87
119	119	12.96	0.02	0.00	-20.32	20.89	-1.24	4.92
119	120	14.92	-2.51	0.00	-31.00	23.43	-1.23	4.92
120	120	14.92	-2.50	0.00	-31.12	22.79	-1.91	5.01
120	121	10.33	-2.51	0.00	-43.58	22.79	-1.91	8.12
121	121	10.33	3.11	0.03	-43.70	4.68	-2.01	22.77
121	122	19.50	4.03	-1.94	-11.78	3.76	-0.04	21.98
122	122	18.70	3.70	0.65	-11.78	3.76	-0.03	21.94
122	123	47.34	0.58	0.64	-6.47	6.86	-0.02	3.96
123	123	47.46	0.36	2.35	-6.47	6.86	-0.02	4.19
123	124	28.46	3.46	2.34	-11.71	3.74	-0.02	19.45
124	124	29.00	3.26	1.90	-11.70	3.74	-0.04	19.42
124	125	10.41	3.10	0.02	-39.62	3.89	1.83	31.35
125	125	10.41	-2.52	0.00	-39.49	31.34	0.19	7.06
125	126	14.98	-2.52	0.00	-29.75	31.34	0.20	3.97
126	126	14.97	-2.52	0.00	-29.61	28.15	-1.00	3.89
126	127	12.97	-0.02	0.00	-21.61	25.65	-0.99	3.89
127	127	12.97	-0.01	0.00	-21.66	24.89	-1.41	3.85
127	128	12.40	2.52	0.00	-23.31	22.36	-1.40	6.26
128	128	12.40	2.57	0.01	-23.46	21.81	-1.08	6.27
128	113	22.15	2.57	0.01	-43.57	21.81	-1.08	9.39
129	129	22.15	-3.21	-0.03	-42.47	8.52	-0.04	22.09
129	130	41.32	-2.88	-0.11	-27.50	8.21	0.04	22.12
130	130	41.23	0.75	0.65	-27.49	4.38	0.03	12.30
130	131	41.08	-0.47	0.66	-13.08	5.61	0.02	12.32
131	131	41.07	-0.60	1.22	-13.08	5.59	0.02	12.46

Barra Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
131 132	40.83	0.63	1.21	-27.36	4.37	0.04	12.48
132 132	40.90	-3.36	1.13	-27.36	8.17	0.04	19.84
132 133	22.29	-3.23	-0.04	-38.28	8.05	1.21	19.87
133 133	22.28	2.62	0.00	-38.24	18.85	0.24	9.37
133 134	12.47	2.62	0.00	-20.55	18.85	0.24	6.25
134 134	12.47	2.57	0.00	-20.31	19.14	-0.62	6.25
134 135	12.96	0.03	0.00	-21.08	21.68	-0.62	4.80
135 135	12.96	0.03	0.00	-20.98	21.85	-1.24	4.87
135 136	14.93	-2.51	0.00	-31.54	24.39	-1.23	4.87
136 136	14.93	-2.50	0.00	-31.70	25.11	-1.70	5.01
136 137	10.33	-2.51	0.00	-44.16	25.12	-1.69	8.12
137 137	10.33	3.11	0.02	-44.34	4.64	-1.51	25.09
137 138	22.60	3.98	-1.47	-11.78	3.76	-0.03	21.71
138 138	21.77	3.73	0.83	-11.78	3.76	-0.02	21.98
138 139	48.52	0.62	0.82	-6.48	6.86	-0.01	3.32
139 139	48.69	0.48	2.03	-6.48	6.86	-0.01	3.56
139 140	27.71	3.59	2.03	-11.71	3.74	-0.01	20.08
140 140	28.29	3.50	1.52	-11.71	3.74	-0.03	20.07
140 141	10.42	3.10	0.01	-41.64	4.14	1.48	32.00
141 141	10.42	-2.52	0.00	-41.51	31.98	0.01	7.37
141 142	14.98	-2.52	0.00	-30.95	31.98	0.01	4.28
142 142	14.98	-2.52	0.00	-30.78	28.12	-1.02	4.20
142 143	12.97	-0.02	0.00	-21.97	25.62	-1.01	4.20
143 143	12.97	-0.02	0.00	-22.03	24.82	-1.33	4.15
143 144	12.41	2.52	0.00	-22.91	22.28	-1.32	6.26
144 144	12.41	2.57	0.00	-23.10	21.71	-0.97	6.27
144 129	22.15	2.57	0.00	-42.43	21.71	-0.97	9.39
145 145	22.16	-3.21	-0.01	-41.40	8.32	0.02	21.99
145 146	42.18	-3.09	-0.01	-27.50	8.21	0.02	22.02
146 146	42.09	0.66	0.72	-27.50	4.38	0.01	12.19
146 147	41.58	-0.56	0.73	-13.08	5.61	0.01	12.21
147 147	41.58	-0.60	1.24	-13.08	5.59	0.01	12.68
147 148	40.64	0.62	1.23	-27.36	4.37	0.01	12.71
148 148	40.72	-3.25	1.08	-27.37	8.17	0.01	20.36
148 149	22.29	-3.23	-0.01	-39.52	8.15	1.11	20.38
149 149	22.29	2.62	0.00	-39.47	19.43	0.09	9.37
149 150	12.47	2.62	0.00	-21.46	19.43	0.09	6.25
150 150	12.47	2.57	0.00	-21.18	19.82	-0.76	6.25
150 151	12.96	0.03	0.00	-21.65	22.36	-0.76	4.68
151 151	12.96	0.03	0.00	-21.52	22.79	-1.24	4.77
151 152	14.93	-2.52	0.00	-31.82	25.33	-1.24	4.77
152 152	14.93	-2.50	0.00	-31.99	27.72	-1.41	4.98
152 153	10.34	-2.51	0.00	-44.37	27.73	-1.41	8.09
153 153	10.34	3.11	0.01	-44.61	4.56	-0.87	27.74
153 154	24.94	3.90	-0.85	-11.79	3.76	-0.01	21.10
154 154	24.21	3.74	0.95	-11.79	3.76	-0.01	21.47

Barra Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
154 155	49.34	0.63	0.95	-6.48	6.86	0.00	2.81
155 155	49.50	0.59	1.70	-6.48	6.86	0.00	3.05
155 156	26.91	3.69	1.70	-11.71	3.74	0.00	20.59
156 156	27.53	3.72	1.10	-11.71	3.74	-0.01	20.57
156 157	10.42	3.10	0.00	-43.44	4.36	1.08	32.50
157 157	10.42	-2.52	0.00	-43.28	32.45	-0.21	7.67
157 158	14.98	-2.52	0.00	-31.95	32.45	-0.21	4.58
158 158	14.98	-2.53	0.00	-31.76	27.97	-1.04	4.48
158 159	12.98	-0.02	0.00	-22.22	25.46	-1.04	4.48
159 159	12.98	-0.02	0.00	-22.30	24.69	-1.23	4.42
159 160	12.42	2.52	0.00	-22.48	22.15	-1.23	6.27
160 160	12.42	2.57	0.00	-22.71	21.61	-0.84	6.27
160 145	22.16	2.57	0.00	-41.35	21.61	-0.84	9.39
161 161	22.16	-3.21	0.01	-40.41	8.15	0.09	21.89
161 162	42.99	-3.26	0.11	-27.50	8.21	-0.01	21.92
162 162	42.89	0.59	0.80	-27.50	4.38	-0.01	12.08
162 163	42.05	-0.63	0.80	-13.08	5.61	-0.01	12.11
163 163	42.04	-0.57	1.25	-13.08	5.59	0.00	12.91
163 164	40.38	0.65	1.25	-27.36	4.37	-0.01	12.94
164 164	40.47	-3.12	1.01	-27.37	8.17	-0.01	20.89
164 165	22.29	-3.23	0.01	-40.86	8.29	0.99	20.92
165 165	22.29	2.62	0.00	-40.81	20.02	-0.08	9.37
165 166	12.47	2.62	0.00	-22.34	20.02	-0.08	6.25
166 166	12.47	2.57	0.00	-22.05	20.46	-0.91	6.25
166 167	12.96	0.03	0.00	-22.07	23.00	-0.91	4.51
167 167	12.96	0.03	0.00	-21.94	23.64	-1.25	4.60
167 168	14.93	-2.52	0.00	-31.79	26.18	-1.25	4.60
168 168	14.93	-2.50	0.00	-31.97	30.25	-1.09	4.81
168 169	10.34	-2.51	0.00	-43.93	30.25	-1.09	7.93
169 169	10.34	3.11	0.00	-44.19	4.43	-0.20	30.33
169 170	26.66	3.77	-0.22	-11.79	3.76	0.01	20.80
170 170	25.99	3.72	1.07	-11.79	3.76	0.00	21.07
170 171	49.84	0.61	1.07	-6.48	6.86	0.00	2.62
171 171	49.91	0.66	1.39	-6.48	6.86	0.00	2.63
171 172	26.00	3.76	1.38	-11.71	3.74	0.00	21.01
172 172	26.61	3.91	0.61	-11.71	3.74	0.01	20.90
172 173	10.42	3.10	0.00	-44.97	4.55	0.62	32.60
173 173	10.42	-2.52	0.00	-44.77	32.45	-0.48	7.96
173 174	14.98	-2.52	0.00	-32.69	32.45	-0.48	4.87
174 174	14.98	-2.53	0.00	-32.49	27.66	-1.05	4.73
174 175	12.98	-0.02	0.00	-22.32	25.15	-1.06	4.73
175 175	12.98	-0.02	0.00	-22.42	24.49	-1.11	4.64
175 176	12.42	2.52	0.00	-22.02	21.95	-1.11	6.27
176 176	12.42	2.57	0.00	-22.28	21.51	-0.69	6.27
176 161	22.16	2.57	0.00	-40.35	21.51	-0.69	9.39
177 177	22.15	-3.21	0.02	-39.50	8.01	0.17	21.81

Barra Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
177 178	43.72	-3.40	0.23	-27.50	8.21	-0.04	21.84
178 178	43.62	0.56	0.88	-27.49	4.38	-0.03	11.98
178 179	42.47	-0.66	0.87	-13.08	5.61	-0.02	12.01
179 179	42.47	-0.51	1.25	-13.08	5.59	-0.02	13.15
179 180	40.05	0.71	1.27	-27.36	4.37	-0.03	13.17
180 180	40.14	-2.94	0.94	-27.36	8.17	-0.03	21.45
180 181	22.29	-3.23	0.04	-42.31	8.46	0.87	21.47
181 181	22.28	2.62	0.00	-42.26	20.63	-0.25	9.37
181 182	12.47	2.62	0.00	-23.20	20.63	-0.25	6.25
182 182	12.47	2.57	0.00	-22.93	21.04	-1.05	6.25
182 183	12.96	0.03	0.00	-22.34	23.58	-1.06	4.27
183 183	12.96	0.03	0.00	-22.23	24.35	-1.26	4.36
183 184	14.93	-2.51	0.00	-31.45	26.89	-1.26	4.36
184 184	14.93	-2.50	0.00	-31.64	32.00	-0.78	4.51
184 185	10.33	-2.51	0.00	-42.80	32.00	-0.78	7.62
185 185	10.33	3.11	-0.01	-43.01	4.25	0.39	32.15
185 186	27.91	3.59	0.35	-11.78	3.76	0.02	20.53
186 186	27.30	3.66	1.24	-11.78	3.76	0.02	20.70
186 187	49.99	0.54	1.24	-6.48	6.86	0.01	2.98
187 187	49.93	0.69	1.12	-6.48	6.86	0.01	2.76
187 188	24.86	3.79	1.12	-11.71	3.74	0.01	21.37
188 188	25.50	4.06	0.04	-11.71	3.74	0.02	21.16
188 189	10.42	3.10	-0.01	-46.10	4.69	0.08	30.93
189 189	10.42	-2.52	0.00	-45.85	30.84	-0.78	8.21
189 190	14.98	-2.52	0.00	-33.12	30.84	-0.79	5.11
190 190	14.98	-2.52	0.00	-32.94	27.17	-1.06	4.91
190 191	12.97	-0.02	0.00	-22.28	24.67	-1.06	4.91
191 191	12.97	-0.02	0.00	-22.40	24.22	-0.97	4.82
191 192	12.41	2.52	0.00	-21.55	21.68	-0.97	6.26
192 192	12.41	2.57	0.00	-21.82	21.43	-0.53	6.27
192 177	22.15	2.57	0.00	-39.45	21.43	-0.53	9.39
193 193	22.15	-3.20	0.03	-38.70	7.90	0.25	21.75
193 194	44.38	-3.51	0.35	-27.49	8.21	-0.07	21.78
194 194	44.29	0.56	0.96	-27.48	4.38	-0.05	11.89
194 195	42.85	-0.66	0.94	-13.07	5.61	-0.04	11.92
195 195	42.85	-0.42	1.26	-13.07	5.59	-0.02	13.39
195 196	39.65	0.81	1.29	-27.35	4.37	-0.05	13.42
196 196	39.74	-2.74	0.87	-27.36	8.17	-0.05	22.02
196 197	22.28	-3.23	0.06	-43.86	8.67	0.76	22.05
197 197	22.28	2.63	0.01	-43.81	21.25	-0.40	9.37
197 198	12.46	2.63	0.01	-24.02	21.25	-0.40	6.25
198 198	12.46	2.56	0.00	-23.79	21.55	-1.18	6.25
198 199	12.95	0.03	0.00	-22.47	24.08	-1.18	3.99
199 199	12.96	0.02	0.00	-22.38	24.88	-1.24	4.05
199 200	14.92	-2.51	0.00	-30.81	27.42	-1.25	4.05
200 200	14.92	-2.50	0.00	-30.99	32.15	-0.51	4.15

Barra Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
200 201	10.33	-2.51	0.00	-41.22	32.16	-0.52	7.26
201 201	10.33	3.11	-0.02	-41.38	4.02	0.88	32.22
201 202	28.95	3.37	0.82	-11.78	3.76	0.04	20.22
202 202	28.36	3.56	1.45	-11.78	3.76	0.03	20.29
202 203	49.75	0.45	1.45	-6.47	6.86	0.02	3.39
203 203	49.60	0.68	0.91	-6.47	6.86	0.02	3.15
203 204	23.29	3.79	0.91	-11.71	3.74	0.02	21.76
204 204	23.98	4.16	-0.58	-11.70	3.74	0.04	21.50
204 205	10.41	3.10	-0.02	-46.50	4.79	-0.52	28.35
205 205	10.41	-2.52	0.00	-46.26	28.35	-1.10	8.32
205 206	14.98	-2.52	0.00	-33.25	28.35	-1.10	5.22
206 206	14.97	-2.52	0.00	-33.07	26.55	-1.05	5.03
206 207	12.97	-0.02	0.00	-22.12	24.05	-1.06	5.03
207 207	12.97	-0.01	0.00	-22.23	23.89	-0.82	4.94
207 208	12.40	2.52	0.00	-21.07	21.36	-0.83	6.26
208 208	12.40	2.57	-0.01	-21.33	21.37	-0.37	6.26
208 193	22.15	2.57	-0.01	-38.65	21.37	-0.37	9.38
209 209	22.14	-3.20	0.04	-38.00	7.82	0.32	21.71
209 210	44.98	-3.58	0.47	-27.49	8.21	-0.11	21.73
210 210	44.88	0.59	1.03	-27.47	4.38	-0.08	11.81
210 211	43.18	-0.63	1.01	-13.05	5.61	-0.06	11.83
211 211	43.18	-0.30	1.26	-13.05	5.59	-0.03	13.64
211 212	39.18	0.92	1.30	-27.33	4.37	-0.07	13.67
212 212	39.29	-2.51	0.80	-27.36	8.17	-0.07	22.60
212 213	22.27	-3.23	0.10	-45.49	8.90	0.64	22.63
213 213	22.26	2.63	0.01	-45.44	21.89	-0.53	9.49
213 214	12.44	2.63	0.01	-24.82	21.89	-0.53	6.37
214 214	12.45	2.56	-0.01	-24.63	21.98	-1.27	6.36
214 215	12.95	0.03	0.00	-22.46	24.50	-1.28	3.77
215 215	12.95	0.02	-0.01	-22.41	25.25	-1.22	3.76
215 216	14.91	-2.51	0.00	-29.93	27.79	-1.23	3.76
216 216	14.92	-2.50	-0.01	-30.09	31.71	-0.30	3.78
216 217	10.32	-2.50	0.00	-39.36	31.71	-0.31	6.90
217 217	10.32	3.11	-0.03	-39.49	3.77	1.28	31.73
217 218	29.84	3.12	1.19	-11.77	3.76	0.05	19.73
218 218	29.31	3.43	1.68	-11.77	3.76	0.04	19.79
218 219	49.13	0.32	1.69	-6.47	6.85	0.02	3.88
219 219	48.95	0.65	0.73	-6.47	6.85	0.03	3.65
219 220	21.08	3.75	0.73	-11.70	3.74	0.02	22.25
220 220	21.81	4.21	-1.19	-11.70	3.74	0.06	21.94
220 221	10.41	3.10	-0.03	-46.24	4.84	-1.10	25.81
221 221	10.41	-2.52	0.00	-46.05	25.82	-1.37	8.31
221 222	14.97	-2.52	0.01	-33.06	25.82	-1.38	5.21
222 222	14.97	-2.52	0.00	-32.91	25.85	-1.05	5.07
222 223	12.96	-0.02	0.01	-21.84	23.35	-1.06	5.07
223 223	12.96	-0.01	0.00	-21.93	23.53	-0.70	5.00

Barra Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
223 224	12.39	2.51	0.01	-20.59	21.00	-0.71	6.26
224 224	12.38	2.57	-0.01	-20.81	21.32	-0.22	6.26
224 209	22.13	2.57	-0.01	-37.95	21.32	-0.22	9.38
225 225	22.11	-3.20	0.04	-37.37	7.77	0.40	21.68
225 226	45.54	-3.63	0.59	-27.48	8.21	-0.15	21.71
226 226	45.40	0.64	1.12	-27.45	4.38	-0.11	11.73
226 227	43.47	-0.58	1.09	-13.01	5.61	-0.08	11.75
227 227	43.47	-0.17	1.26	-13.01	5.59	-0.03	13.90
227 228	38.65	1.06	1.31	-27.31	4.37	-0.08	13.92
228 228	38.80	-2.26	0.73	-27.35	8.17	-0.07	23.20
228 229	22.23	-3.22	0.14	-47.17	9.14	0.52	23.23
229 229	22.23	2.65	0.01	-47.12	22.53	-0.64	9.85
229 230	12.41	2.65	0.01	-25.57	22.53	-0.64	6.73
230 230	12.42	2.55	-0.01	-25.44	22.33	-1.34	6.71
230 231	12.94	0.03	0.00	-22.34	24.85	-1.35	3.76
231 231	12.94	0.02	-0.01	-22.31	25.48	-1.20	3.76
231 232	14.91	-2.51	0.00	-28.88	28.01	-1.21	3.76
232 232	14.91	-2.50	-0.01	-29.00	31.08	-0.13	3.76
232 233	10.31	-2.50	0.00	-37.28	31.09	-0.14	6.88
233 233	10.31	3.11	-0.04	-37.37	3.50	1.60	31.10
233 234	30.66	2.85	1.49	-11.76	3.76	0.07	19.10
234 234	30.24	3.29	1.88	-11.76	3.76	0.05	19.18
234 235	48.14	0.18	1.89	-6.47	6.85	0.03	4.49
235 235	47.99	0.59	0.52	-6.47	6.85	0.03	4.27
235 236	18.23	3.70	0.53	-11.69	3.74	0.03	22.42
236 236	18.90	4.22	-1.63	-11.69	3.74	0.07	22.53
236 237	10.40	3.10	-0.03	-45.53	4.85	-1.53	23.40
237 237	10.40	-2.51	0.00	-45.41	23.42	-1.57	8.24
237 238	14.96	-2.52	0.01	-32.62	23.43	-1.58	5.14
238 238	14.96	-2.51	0.00	-32.51	25.13	-1.06	5.06
238 239	12.95	-0.02	0.01	-21.45	22.63	-1.06	5.06
239 239	12.95	-0.01	0.00	-21.49	23.16	-0.61	5.01
239 240	12.36	2.51	0.01	-20.11	20.63	-0.62	6.26
240 240	12.35	2.59	-0.01	-20.24	21.29	-0.10	6.26
240 225	22.10	2.59	-0.01	-37.32	21.29	-0.10	9.38
241 241	22.03	-3.19	0.03	-36.77	7.72	0.50	21.67
241 242	46.08	-3.67	0.73	-27.45	8.21	-0.20	21.70
242 242	45.86	0.69	1.23	-27.43	4.38	-0.14	11.65
242 243	43.67	-0.53	1.20	-12.93	5.61	-0.11	11.67
243 243	43.67	-0.04	1.23	-12.93	5.59	-0.03	14.14
243 244	38.04	1.19	1.29	-27.29	4.37	-0.08	14.17
244 244	38.29	-2.01	0.61	-27.32	8.17	-0.06	23.81
244 245	22.16	-3.22	0.18	-48.86	9.39	0.37	23.84
245 245	22.16	2.70	0.01	-48.81	23.16	-0.73	10.23
245 246	12.38	2.70	0.01	-26.27	23.16	-0.73	7.11
246 246	12.40	2.54	-0.02	-26.21	22.60	-1.37	7.08

Barra Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
246 247	12.93	0.03	-0.01	-22.13	25.11	-1.39	3.96
247 247	12.93	0.02	-0.01	-22.15	25.61	-1.17	3.93
247 248	14.90	-2.50	0.00	-27.71	28.13	-1.18	3.75
248 248	14.90	-2.50	-0.01	-27.79	30.36	-0.02	3.75
248 249	10.30	-2.50	0.00	-35.02	30.36	-0.03	6.87
249 249	10.30	3.11	-0.05	-35.06	3.22	1.83	30.37
249 250	31.47	2.57	1.69	-11.75	3.76	0.09	18.37
250 250	31.22	3.15	2.03	-11.75	3.76	0.06	18.43
250 251	46.76	0.04	2.04	-6.47	6.85	0.04	5.23
251 251	46.61	0.53	0.34	-6.47	6.85	0.04	4.93
251 252	15.06	3.63	0.34	-11.68	3.73	0.04	21.65
252 252	15.57	4.22	-1.92	-11.68	3.73	0.08	21.30
252 253	10.39	3.10	-0.04	-44.64	4.84	-1.80	21.28
253 253	10.39	-2.51	0.00	-44.58	21.29	-1.68	8.16
253 254	14.96	-2.52	0.01	-32.00	21.30	-1.68	5.06
254 254	14.96	-2.51	0.00	-31.97	24.44	-1.07	5.02
254 255	12.95	-0.02	0.01	-21.00	21.95	-1.08	5.02
255 255	12.95	-0.01	0.01	-20.98	22.79	-0.57	5.00
255 256	12.33	2.50	0.02	-19.59	20.28	-0.59	6.25
256 256	12.32	2.64	-0.01	-19.61	21.25	-0.01	6.26
256 241	22.03	2.64	-0.01	-36.71	21.25	-0.01	9.38
257 257	21.88	-3.18	0.04	-36.06	7.67	0.66	21.63
257 258	46.62	-3.71	0.95	-27.35	8.21	-0.25	21.66
258 258	46.25	0.74	1.38	-27.40	4.38	-0.15	11.52
258 259	43.67	-0.48	1.35	-12.82	5.62	-0.12	11.54
259 259	43.69	0.09	1.15	-12.82	5.59	-0.04	14.36
259 260	37.34	1.31	1.23	-27.25	4.38	-0.11	14.39
260 260	37.74	-1.77	0.41	-27.23	8.17	-0.05	24.36
260 261	22.00	-3.21	0.20	-50.48	9.62	0.16	24.39
261 261	22.03	2.81	-0.02	-50.40	23.73	-0.80	10.61
261 262	12.38	2.81	-0.02	-26.88	23.73	-0.80	7.49
262 262	12.39	2.51	-0.02	-26.91	22.80	-1.36	7.44
262 263	12.94	0.02	-0.01	-21.87	25.30	-1.37	4.32
263 263	12.93	0.02	0.00	-21.96	25.64	-1.13	4.32
263 264	14.91	-2.50	0.00	-26.51	28.16	-1.13	3.75
264 264	14.90	-2.50	-0.01	-26.55	29.58	0.03	3.75
264 265	10.30	-2.50	0.00	-32.65	29.58	0.02	6.87
265 265	10.30	3.11	-0.06	-32.64	2.96	1.91	29.59
265 266	32.29	2.30	1.74	-11.75	3.76	0.11	17.59
266 266	32.29	3.02	2.08	-11.75	3.76	0.06	17.59
266 267	45.18	-0.09	2.09	-6.47	6.85	0.05	6.07
267 267	45.22	0.47	0.20	-6.47	6.85	0.05	5.99
267 268	12.66	3.57	0.20	-11.68	3.73	0.04	19.01
268 268	12.59	4.21	-1.95	-11.67	3.73	0.09	19.30
268 269	10.38	3.10	-0.04	-43.53	4.83	-1.82	19.27
269 269	10.38	-2.51	0.00	-43.58	19.32	-1.66	8.00

Barra Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
269 270	14.94	-2.51	0.01	-31.41	19.32	-1.67	4.90
270 270	14.95	-2.50	0.00	-31.44	23.83	-1.10	5.00
270 271	12.94	-0.02	0.00	-20.53	21.35	-1.10	5.00
271 271	12.96	-0.01	0.01	-20.47	22.45	-0.61	5.01
271 272	12.31	2.48	0.02	-19.00	19.95	-0.63	6.25
272 272	12.30	2.75	0.01	-18.91	21.16	0.03	6.24
272 257	21.89	2.75	0.01	-35.99	21.16	0.03	9.36
273 273	21.66	-3.18	0.17	-35.00	7.60	0.95	21.28
273 274	46.92	-3.78	1.37	-27.04	8.21	-0.25	21.31
274 274	46.49	0.78	1.54	-27.29	4.38	-0.05	11.26
274 275	43.30	-0.44	1.55	-12.78	5.61	-0.06	11.28
275 275	43.44	0.18	1.01	-12.79	5.59	-0.12	14.51
275 276	36.45	1.41	1.12	-27.13	4.37	-0.23	14.54
276 276	36.96	-1.57	0.02	-26.92	8.17	-0.08	24.67
276 277	21.81	-3.21	0.07	-51.88	9.82	-0.13	24.70
277 277	21.91	2.88	-0.07	-51.79	24.17	-0.87	10.97
277 278	12.48	2.88	-0.07	-27.33	24.17	-0.87	7.85
278 278	12.44	2.48	0.00	-27.50	22.94	-1.28	7.77
278 279	12.95	0.01	0.01	-21.63	25.40	-1.28	4.65
279 279	12.93	0.01	0.01	-21.82	25.62	-1.08	4.70
279 280	14.91	-2.49	0.00	-25.39	28.13	-1.07	3.76
280 280	14.90	-2.50	0.00	-25.42	28.74	-0.03	3.76
280 281	10.31	-2.50	0.00	-30.26	28.74	-0.03	6.87
281 281	10.30	3.11	-0.06	-30.19	2.72	1.82	28.78
281 282	33.10	2.06	1.63	-11.75	3.76	0.12	16.79
282 282	33.44	2.91	1.94	-11.74	3.76	0.07	16.67
282 283	43.44	-0.19	1.95	-6.46	6.85	0.06	6.99
283 283	43.79	0.42	0.11	-6.46	6.85	0.06	7.32
283 284	10.82	3.53	0.12	-11.68	3.73	0.05	17.34
284 284	10.26	4.22	-1.61	-11.67	3.73	0.10	17.74
284 285	10.36	3.10	-0.04	-42.70	4.84	-1.46	17.72
285 285	10.36	-2.50	0.01	-42.82	17.77	-1.55	7.92
285 286	14.93	-2.51	0.00	-30.86	17.78	-1.55	4.81
286 286	14.94	-2.49	-0.01	-31.03	23.35	-1.11	5.01
286 287	12.95	-0.02	-0.01	-20.09	20.88	-1.12	5.01
287 287	12.96	-0.02	-0.01	-20.07	22.15	-0.70	5.13
287 288	12.34	2.45	0.00	-18.32	19.67	-0.71	6.25
288 288	12.38	2.84	0.05	-18.17	20.79	0.00	6.22
288 273	21.75	2.84	0.05	-34.91	20.79	0.00	9.34
289 289	21.89	-3.18	0.73	-32.95	7.51	1.36	19.55
289 290	45.77	-3.86	2.07	-26.59	8.20	0.03	19.57
290 290	46.38	0.80	1.56	-26.84	4.38	0.19	10.72
290 291	42.41	-0.42	1.66	-13.08	5.61	0.09	10.74
291 291	43.10	0.25	0.89	-13.07	5.59	-0.29	14.58
291 292	35.05	1.47	1.08	-26.72	4.37	-0.48	14.61
292 292	35.31	-1.43	-0.54	-26.44	8.17	-0.38	24.16

Barra Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
292 293	22.16	-3.22	-0.50	-53.02	9.97	-0.42	24.19
293 293	22.33	1.89	-0.11	-53.00	24.38	-0.93	11.43
293 294	12.57	1.89	-0.11	-27.35	24.38	-0.93	8.31
294 294	12.51	2.43	0.03	-28.12	23.00	-1.15	8.14
294 295	12.93	-0.02	0.02	-21.28	25.44	-1.15	5.02
295 295	12.93	0.00	0.02	-21.88	25.57	-0.98	5.14
295 296	14.90	-2.49	0.01	-24.34	28.07	-0.98	3.77
296 296	14.90	-2.52	0.01	-24.79	27.43	-0.19	3.77
296 297	10.33	-2.52	0.00	-27.68	27.43	-0.18	6.88
297 297	10.33	3.11	-0.06	-27.58	2.54	1.66	27.69
297 298	33.46	1.88	1.47	-11.73	3.76	0.13	15.70
298 298	34.83	2.85	1.63	-11.73	3.77	0.08	15.61
298 299	41.44	-0.26	1.64	-6.46	6.86	0.06	8.06
299 299	42.70	0.40	0.13	-6.46	6.86	0.06	8.92
299 300	9.53	3.51	0.14	-11.67	3.74	0.05	16.11
300 300	8.60	4.26	-1.08	-11.69	3.73	0.10	16.85
300 301	10.33	3.11	-0.04	-42.58	4.88	-0.93	16.83
301 301	10.33	-2.47	0.01	-42.73	16.76	-1.42	8.19
301 302	14.93	-2.47	0.00	-30.09	16.76	-1.41	5.08
302 302	14.92	-2.49	-0.02	-30.95	23.04	-1.08	5.19
302 303	12.94	-0.03	-0.02	-19.58	20.58	-1.08	5.19
303 303	12.94	-0.04	-0.02	-19.95	21.91	-0.76	5.42
303 304	12.40	2.41	-0.02	-17.55	19.46	-0.77	6.26
304 304	12.46	1.96	0.10	-17.78	19.38	-0.11	6.27
304 289	22.07	1.96	0.10	-32.91	19.38	-0.11	9.39
305 305	24.22	-3.19	1.94	-29.67	7.50	2.26	15.70
305 306	41.49	-3.87	3.55	-28.09	8.19	0.66	15.70
306 306	47.34	0.81	2.29	-26.22	4.38	0.46	9.34
306 307	40.46	-0.41	2.51	-13.50	5.60	0.24	9.34
307 307	43.77	0.27	1.31	-13.45	5.59	-0.56	14.92
307 308	33.37	1.50	1.66	-26.21	4.36	-0.92	14.92
308 308	33.21	-1.39	-1.18	-27.79	8.17	-1.21	23.56
308 309	24.71	-3.22	-1.59	-53.52	10.00	-0.80	23.56
309 309	23.54	-0.31	-0.18	-54.42	24.24	-1.42	12.48
309 310	12.27	-0.31	-0.18	-26.02	24.24	-1.42	9.36
310 310	12.52	2.40	0.05	-29.90	23.00	-1.66	9.45
310 311	12.89	-0.03	0.05	-19.65	25.43	-1.66	6.33
311 311	12.96	-0.01	0.03	-23.16	25.55	-1.43	6.27
311 312	14.88	-2.49	0.02	-22.70	28.04	-1.42	3.80
312 312	14.90	-2.53	0.01	-25.42	26.36	-0.36	3.79
312 313	10.35	-2.54	-0.01	-25.63	26.37	-0.34	6.89
313 313	10.36	3.11	-0.09	-24.39	2.51	2.42	24.88
313 314	30.88	1.84	2.13	-11.69	3.77	0.20	12.91
314 314	37.70	2.82	2.28	-11.72	3.77	0.12	13.66
314 315	38.26	-0.28	2.30	-6.47	6.87	0.10	10.01
315 315	43.19	0.40	0.20	-6.46	6.85	0.10	10.22

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
315	316	8.93	3.51	0.22	-11.65	3.74	0.08	15.81
316	316	6.81	4.29	-1.37	-11.76	3.73	0.16	15.59
316	317	10.27	3.11	-0.06	-42.02	4.91	-1.14	15.59
317	317	10.30	-2.45	0.01	-44.06	16.27	-2.09	9.48
317	318	14.94	-2.45	0.00	-28.10	16.27	-2.07	6.36
318	318	14.89	-2.49	-0.03	-32.48	22.95	-1.59	6.42
318	319	12.97	-0.03	-0.03	-17.95	20.49	-1.59	6.42
319	319	12.90	-0.06	-0.05	-20.89	21.83	-1.15	6.28
319	320	12.39	2.38	-0.04	-16.25	19.39	-1.16	6.28
320	320	12.16	-0.17	0.16	-18.38	18.02	-0.23	7.33
320	305	23.20	-0.17	0.16	-30.92	18.02	-0.23	9.47
321	1	0.32	-0.04	-0.14	-1.82	0.05	1.73	2.70
321	17	1.83	0.05	1.73	-0.32	-0.04	-0.14	2.70
322	17	0.09	-0.14	-0.10	-0.39	-0.15	1.31	0.35
322	33	0.38	-0.15	1.31	-0.09	-0.14	-0.10	0.35
323	33	0.04	-0.15	-0.07	-0.05	-0.73	0.95	0.04
323	49	0.03	-0.73	0.95	-0.05	-0.15	-0.07	0.04
324	49	0.03	0.40	-0.05	-0.01	-2.05	0.82	0.03
324	65	0.00	0.30	0.01	-0.06	-1.95	0.76	0.03
325	65	0.01	0.46	-0.05	-0.02	-2.97	0.77	0.03
325	81	0.00	0.36	0.00	-0.06	-2.87	0.72	0.03
326	81	0.01	0.51	-0.03	-0.03	-3.86	0.72	0.02
326	97	0.00	0.41	0.00	-0.06	-3.86	0.72	0.02
327	97	0.01	0.55	-0.02	-0.05	-4.63	0.66	0.01
327	113	0.00	0.44	0.00	-0.07	-4.63	0.66	0.01
328	113	0.00	0.47	0.00	-0.06	-5.22	0.57	0.00
328	129	0.00	0.47	0.00	-0.07	-5.22	0.57	0.00
329	129	0.00	0.48	0.00	-0.07	-5.56	0.47	0.00
329	145	0.00	0.48	0.00	-0.06	-5.56	0.47	0.00
330	145	0.00	0.49	0.00	-0.08	-5.60	0.35	0.01
330	161	0.00	0.49	0.00	-0.06	-5.60	0.35	0.01
331	161	0.00	0.48	0.00	-0.09	-5.30	0.21	0.02
331	177	0.00	0.48	0.00	-0.04	-5.30	0.21	0.02
332	177	0.00	0.47	0.00	-0.09	-4.70	0.08	0.03
332	193	0.00	0.47	0.00	-0.03	-4.70	0.08	0.03
333	193	0.00	0.44	0.00	-0.08	-3.86	-0.05	0.03
333	209	0.01	0.55	0.02	-0.01	-3.86	-0.05	0.03
334	209	0.00	0.41	0.00	-0.07	-2.91	-0.17	0.04
334	225	0.01	-1.93	-0.14	0.00	-0.47	0.00	0.04
335	225	0.00	0.36	0.00	-0.06	-1.86	-0.23	0.04
335	241	0.02	-1.09	-0.23	0.00	-0.41	0.00	0.04
336	241	0.00	0.30	-0.01	-0.04	-1.02	-0.33	0.03
336	257	0.03	0.40	0.05	0.00	-0.34	0.01	0.03
337	257	0.08	-0.01	-0.60	-0.05	-0.15	0.07	0.08
337	273	0.04	-0.15	0.07	-0.09	-0.01	-0.60	0.08
338	273	0.60	0.21	-1.02	-0.09	-0.14	0.10	0.55

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
338	289	0.09	-0.14	0.10	-0.60	0.21	-1.02	0.55
339	289	2.29	0.13	-1.54	-0.32	-0.04	0.14	3.37
339	305	0.32	-0.04	0.14	-2.28	0.13	-1.54	3.37
340	2	0.14	-0.03	-0.01	-0.63	0.03	0.53	4.10
340	18	6.76	0.03	0.53	-0.39	-0.03	-0.01	13.41
341	18	5.56	-0.16	0.40	-0.09	-0.09	0.00	13.04
341	34	5.52	-0.16	0.40	-0.18	-0.09	0.00	12.70
342	34	4.82	-0.57	0.06	-0.04	-0.15	0.01	12.81
342	50	5.02	-0.57	0.06	-0.06	-0.15	0.01	12.81
343	50	4.60	-0.10	-0.06	-0.14	-1.27	-0.03	12.75
343	66	4.88	-1.17	-0.10	-0.03	-0.20	0.01	12.92
344	66	4.58	-0.14	-0.05	-0.23	-1.99	-0.10	12.74
344	82	4.86	-1.89	-0.16	-0.02	-0.25	0.01	12.97
345	82	4.58	-0.18	-0.03	-0.26	-2.73	-0.14	12.73
345	98	4.86	-2.62	-0.18	-0.02	-0.28	0.01	12.98
346	98	4.58	-0.20	-0.01	-0.26	-3.41	-0.19	12.73
346	114	4.88	-3.30	-0.20	-0.02	-0.31	0.00	12.98
347	114	4.59	-0.22	0.00	-0.25	-3.96	-0.23	12.72
347	130	4.89	-3.86	-0.24	-0.01	-0.32	0.00	12.98
348	130	4.59	-0.23	0.00	-0.23	-4.32	-0.29	12.72
348	146	4.89	-4.22	-0.29	-0.01	-0.33	0.00	12.97
349	146	4.59	0.39	0.00	-0.21	-5.06	-0.36	12.72
349	162	4.89	-4.33	-0.36	0.00	-0.34	0.00	12.95
350	162	4.60	0.39	0.00	-0.19	-4.87	-0.43	12.73
350	178	4.88	-4.76	-0.42	0.00	0.29	0.00	12.94
351	178	4.60	0.38	0.01	-0.18	-4.38	-0.50	12.73
351	194	4.87	-4.28	-0.49	0.00	0.28	0.00	12.93
352	194	4.60	0.37	0.02	-0.17	-3.67	-0.56	12.74
352	210	4.86	-3.56	-0.55	-0.01	0.26	0.00	12.92
353	210	4.60	0.34	0.04	-0.16	-2.82	-0.64	12.75
353	226	4.86	-2.72	-0.60	-0.01	0.24	0.01	12.92
354	226	4.59	0.32	0.07	-0.14	-1.95	-0.73	12.75
354	242	4.91	-1.85	-0.68	-0.02	0.21	0.01	12.94
355	242	4.59	0.28	0.08	-0.08	-1.16	-0.89	12.73
355	258	5.04	-1.06	-0.82	-0.01	0.18	0.01	12.98
356	258	4.73	-0.17	-1.09	-0.06	-0.15	-0.01	12.65
356	274	5.46	-0.17	-1.09	-0.04	-0.15	-0.01	13.08
357	274	5.35	0.07	-1.55	-0.18	-0.09	0.00	12.48
357	290	6.28	0.07	-1.55	-0.09	-0.09	0.00	13.23
358	290	6.81	0.08	-1.32	-0.39	-0.03	0.01	13.28
358	306	0.14	-0.03	0.01	-0.41	0.08	-1.32	4.10
359	3	0.03	0.00	0.13	-0.42	0.01	-0.73	3.47
359	19	6.62	0.01	-0.60	0.00	0.00	0.00	13.14
360	19	5.77	0.07	0.17	-0.11	-0.20	-1.23	13.05
360	35	5.77	-0.12	-1.22	0.00	0.00	0.16	12.79
361	35	5.15	-0.41	-1.04	-0.09	-0.01	-0.07	12.93

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
361	51	5.14	-0.43	-1.19	-0.02	0.01	0.07	12.77
362	51	4.70	0.12	0.03	-0.10	-1.02	-1.14	12.82
362	67	4.87	-0.92	-1.14	-0.03	0.02	0.03	12.85
363	67	4.59	0.13	0.02	-0.19	-1.65	-1.12	12.75
363	83	4.81	-1.54	-1.12	-0.03	0.02	0.02	12.91
364	83	4.57	0.13	0.01	-0.21	-2.33	-1.11	12.73
364	99	4.83	-2.23	-1.11	-0.03	0.03	0.01	12.93
365	99	4.57	0.14	0.01	-0.20	-3.01	-1.12	12.72
365	115	4.85	-2.90	-1.12	-0.02	0.03	0.01	12.93
366	115	4.58	0.14	0.01	-0.16	-3.61	-1.12	12.71
366	131	4.86	-3.50	-1.12	-0.02	0.03	0.01	12.91
367	131	4.58	0.14	0.00	-0.11	-4.07	-1.12	12.70
367	147	4.86	-3.96	-1.12	-0.01	0.03	0.00	12.88
368	147	4.57	0.14	0.00	-0.07	-4.31	-1.13	12.70
368	163	4.84	-4.14	-1.13	0.00	-0.03	0.00	12.85
369	163	4.58	0.07	0.00	-0.04	-4.23	-1.14	12.70
369	179	4.83	-4.12	-1.14	-0.01	-0.03	0.00	12.83
370	179	4.58	0.08	0.01	-0.02	-3.93	-1.14	12.71
370	195	4.80	-3.82	-1.14	-0.02	-0.03	0.01	12.82
371	195	4.58	-3.35	-1.13	-0.02	0.03	-0.01	12.72
371	211	4.78	-3.29	-1.14	-0.03	-0.03	0.01	12.81
372	211	4.60	-2.64	-1.12	-0.03	0.03	-0.01	12.72
372	227	4.80	-2.59	-1.14	-0.04	-0.03	0.01	12.81
373	227	4.65	-1.88	-1.12	-0.03	0.02	-0.02	12.72
373	243	4.90	-1.83	-1.15	-0.05	-0.02	0.02	12.85
374	243	4.81	-1.14	-1.10	-0.03	0.02	-0.03	12.67
374	259	5.20	-1.11	-1.16	-0.06	-0.02	0.03	12.91
375	259	5.24	-0.54	-1.05	-0.02	0.01	-0.07	12.57
375	275	5.72	-0.52	-1.20	-0.08	-0.01	0.07	12.95
376	275	6.05	-0.14	-0.88	0.00	0.00	-0.16	12.71
376	291	6.21	-0.14	-1.19	-0.10	0.00	0.16	13.05
377	291	6.91	0.01	-0.57	0.00	0.00	0.00	13.32
377	307	0.03	0.00	-0.13	-0.38	0.01	-0.44	3.47
378	4	0.10	-0.03	0.06	-0.38	0.08	-1.47	4.09
378	20	6.45	0.08	-1.47	-0.39	-0.03	0.06	12.98
379	20	5.85	0.14	-1.93	-0.20	-0.09	0.06	13.01
379	36	5.17	0.14	-1.93	-0.16	-0.09	0.06	12.39
380	36	5.04	0.09	-1.64	-0.13	-0.16	0.02	12.83
380	52	4.70	0.09	-1.64	-0.03	-0.16	0.02	12.60
381	52	4.67	-0.18	-1.47	-0.06	-0.22	0.00	12.74
381	68	4.59	-0.64	-1.46	0.00	0.25	0.00	12.69
382	68	4.57	0.40	0.06	-0.05	-1.29	-1.48	12.70
382	84	4.59	-1.19	-1.43	-0.01	0.30	0.00	12.71
383	84	4.57	0.45	0.04	-0.04	-1.95	-1.45	12.69
383	100	4.59	-1.84	-1.41	-0.01	0.34	0.01	12.71
384	100	4.57	-1.83	-1.39	-0.02	-0.33	-0.01	12.69

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
384	116	4.60	-2.53	-1.40	-0.01	0.37	0.01	12.70
385	116	4.61	-2.46	-1.36	-0.01	-0.35	0.00	12.68
385	132	4.59	-3.20	-1.37	0.00	0.39	0.00	12.67
386	132	4.65	-3.00	-1.31	-0.01	-0.36	0.00	12.70
386	148	4.57	-3.00	-1.31	0.00	-0.36	0.00	12.67
387	148	4.68	-3.39	-1.26	-0.01	-0.36	0.00	12.73
387	164	4.56	0.52	0.00	-0.02	-4.28	-1.26	12.67
388	164	4.71	-3.55	-1.20	0.00	-0.36	0.00	12.77
388	180	4.56	0.52	0.00	-0.06	-4.43	-1.19	12.67
389	180	4.74	-4.17	-1.13	0.00	0.39	0.00	12.80
389	196	4.57	0.50	-0.01	-0.10	-4.28	-1.13	12.68
390	196	4.76	-3.76	-1.08	0.00	0.37	-0.01	12.83
390	212	4.57	0.48	-0.02	-0.13	-3.86	-1.06	12.68
391	212	4.78	-3.13	-1.02	-0.01	0.34	-0.01	12.85
391	228	4.56	0.45	-0.04	-0.14	-3.23	-0.99	12.69
392	228	4.82	-2.37	-0.95	-0.01	0.30	0.00	12.86
392	244	4.57	0.40	-0.06	-0.12	-2.48	-0.89	12.70
393	244	4.90	-1.58	-0.82	0.00	0.24	0.00	12.85
393	260	4.64	0.35	-0.07	-0.06	-1.69	-0.74	12.74
394	260	5.13	-0.52	-0.50	-0.03	-0.16	-0.02	12.81
394	276	5.01	-0.52	-0.50	-0.13	-0.16	-0.02	12.83
395	276	5.70	-0.12	0.01	-0.16	-0.09	-0.06	12.72
395	292	5.66	-0.12	0.01	-0.20	-0.09	-0.06	13.00
396	292	6.89	0.03	0.36	-0.39	-0.03	-0.06	13.50
396	308	0.10	-0.03	-0.06	-0.63	0.03	0.36	4.09
397	5	0.36	-0.05	0.19	-2.21	0.14	-1.71	3.28
397	21	2.22	0.14	-1.71	-0.36	-0.05	0.19	3.28
398	21	0.11	-0.15	0.14	-0.65	0.32	-1.36	0.60
398	37	0.65	0.32	-1.36	-0.12	-0.15	0.14	0.60
399	37	0.05	-0.16	0.10	-0.20	0.34	-1.12	0.19
399	53	0.20	0.34	-1.12	-0.05	-0.16	0.10	0.19
400	53	0.03	0.50	0.04	-0.13	-0.55	-1.03	0.12
400	69	0.12	0.20	-1.07	-0.02	-0.25	0.08	0.12
401	69	0.02	0.59	0.04	-0.13	-1.06	-1.04	0.10
401	85	0.10	-0.16	-1.05	-0.01	-0.32	0.05	0.10
402	85	0.01	0.66	0.03	-0.13	-1.70	-1.02	0.10
402	101	0.09	-0.67	-1.02	0.00	-0.48	0.00	0.10
403	101	0.01	0.71	0.02	-0.14	-2.42	-0.97	0.10
403	117	0.09	-1.29	-0.97	-0.01	-0.53	0.00	0.10
404	117	0.01	0.63	0.00	-0.15	-3.14	-0.88	0.10
404	133	0.08	-1.95	-0.88	-0.01	-0.56	0.00	0.10
405	133	0.01	0.65	0.00	-0.16	-3.79	-0.77	0.11
405	149	0.08	-2.56	-0.77	-0.01	-0.58	0.00	0.11
406	149	0.01	0.66	0.00	-0.18	-4.29	-0.64	0.11
406	165	0.08	-3.05	-0.64	-0.01	-0.58	0.00	0.11
407	165	0.01	0.65	0.00	-0.19	-4.55	-0.50	0.12

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
407	181	0.09	-3.32	-0.50	-0.01	-0.58	0.00	0.12
408	181	0.01	0.63	0.00	-0.20	-4.50	-0.37	0.13
408	197	0.10	-3.31	-0.37	-0.01	-0.56	0.00	0.13
409	197	0.01	0.60	0.00	-0.20	-4.15	-0.25	0.14
409	213	0.11	-2.92	-0.26	-0.01	-0.53	0.00	0.14
410	213	0.00	0.55	0.00	-0.20	-3.56	-0.13	0.15
410	229	0.13	-2.42	-0.16	-0.01	-0.48	0.00	0.15
411	229	0.00	0.48	0.01	-0.20	-2.69	-0.07	0.15
411	245	0.14	-1.78	-0.06	-0.01	-0.43	0.00	0.15
412	245	0.00	0.40	0.02	-0.19	-1.85	0.04	0.15
412	261	0.15	-1.10	0.08	0.00	-0.35	-0.02	0.15
413	261	0.02	0.29	0.06	-0.15	-1.04	0.23	0.13
413	277	0.13	-1.04	0.23	-0.02	0.29	0.06	0.13
414	277	0.29	-0.07	0.88	-0.12	-0.15	-0.14	0.27
414	293	0.11	-0.15	-0.14	-0.29	-0.07	0.88	0.27
415	293	1.71	0.07	1.41	-0.36	-0.05	-0.19	2.53
415	309	0.36	-0.05	-0.19	-1.70	0.07	1.41	2.53
416	6	0.22	0.05	0.30	-0.01	-0.02	0.00	0.15
416	22	0.10	0.01	0.25	-0.08	0.02	0.04	0.15
417	22	0.63	0.25	0.31	-0.04	-0.06	0.02	0.37
417	38	0.05	-0.09	0.01	-0.19	0.28	0.32	0.37
418	38	0.54	-0.03	0.18	-0.08	0.23	-0.03	0.33
418	54	0.03	-0.16	0.02	-0.22	0.35	0.13	0.33
419	54	0.45	-0.22	0.05	-0.06	0.31	-0.02	0.31
419	70	0.02	-0.16	0.02	-0.24	0.24	0.01	0.31
420	70	0.36	-0.50	-0.01	-0.02	0.36	-0.01	0.30
420	86	0.02	-0.20	0.02	-0.29	0.06	-0.04	0.30
421	86	0.28	-0.80	-0.01	0.00	0.35	-0.01	0.30
421	102	0.02	0.41	0.00	-0.36	-0.85	-0.01	0.30
422	102	0.21	-0.47	0.04	0.00	-0.32	0.01	0.29
422	118	0.02	0.44	0.00	-0.43	-1.23	0.05	0.29
423	118	0.14	-0.81	0.15	0.00	-0.34	0.00	0.28
423	134	0.01	0.47	0.00	-0.48	-1.61	0.16	0.28
424	134	0.08	-1.14	0.31	0.00	-0.35	0.00	0.27
424	150	0.01	0.48	0.00	-0.51	-1.97	0.31	0.27
425	150	0.04	-1.41	0.48	-0.01	-0.35	0.00	0.25
425	166	0.01	0.48	0.00	-0.51	-2.24	0.48	0.25
426	166	0.02	-1.57	0.66	-0.01	-0.35	0.00	0.23
426	182	0.01	0.48	0.00	-0.50	-2.40	0.66	0.23
427	182	0.03	-1.58	0.83	-0.01	-0.34	0.00	0.22
427	198	0.01	0.47	0.00	-0.46	-2.38	0.83	0.22
428	198	0.05	-1.44	0.98	-0.01	-0.32	-0.01	0.21
428	214	0.01	0.44	0.00	-0.42	-2.20	0.97	0.21
429	214	0.07	-1.19	1.10	0.00	-0.29	-0.01	0.21
429	230	0.01	-0.24	-0.02	-0.38	-1.24	1.11	0.21
430	230	0.08	-1.44	1.17	0.00	0.31	0.02	0.21

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
430	246	0.01	-0.26	-0.02	-0.37	-0.87	1.20	0.21
431	246	0.08	-1.01	1.21	-0.01	0.26	0.02	0.20
431	262	0.02	-0.21	-0.02	-0.38	-0.54	1.25	0.20
432	262	0.05	-0.63	1.20	-0.06	0.23	0.03	0.16
432	278	0.02	-0.16	-0.02	-0.35	-0.25	1.24	0.16
433	278	0.05	-0.09	-0.01	-0.17	-0.05	1.10	0.09
433	294	0.03	0.10	0.01	-0.21	-0.25	1.08	0.09
434	294	0.01	-0.02	0.00	-0.14	-0.03	0.57	0.12
434	310	0.04	0.02	-0.04	-0.04	-0.06	0.61	0.12
435	7	0.12	0.04	0.61	-0.01	-0.02	0.01	0.05
435	23	0.19	0.04	0.61	-0.01	-0.02	0.01	0.05
436	23	0.54	0.19	0.94	-0.02	-0.04	0.01	0.17
436	39	0.22	0.11	0.92	-0.04	0.04	0.02	0.17
437	39	0.68	0.08	0.92	-0.03	0.08	0.00	0.31
437	55	0.05	0.08	0.92	-0.05	0.08	0.00	0.31
438	55	0.63	0.05	0.88	-0.04	0.11	-0.02	0.37
438	71	0.02	-0.07	0.01	-0.20	0.23	0.85	0.37
439	71	0.49	0.01	0.84	-0.02	0.14	-0.02	0.39
439	87	0.02	-0.09	0.00	-0.37	0.24	0.82	0.39
440	87	0.33	-0.03	0.85	0.00	0.16	-0.01	0.38
440	103	0.01	-0.10	0.00	-0.50	0.24	0.83	0.38
441	103	0.17	-0.06	0.88	0.00	0.18	-0.01	0.36
441	119	0.01	0.18	-0.01	-0.60	0.05	0.87	0.36
442	119	0.01	0.22	0.93	0.00	0.00	0.00	0.31
442	135	0.01	0.19	-0.01	-0.67	-0.09	0.94	0.31
443	135	0.01	0.20	0.00	-0.15	-0.12	1.03	0.25
443	151	0.01	0.20	0.00	-0.68	-0.12	1.03	0.25
444	151	0.01	0.20	0.00	-0.28	-0.16	1.13	0.17
444	167	0.01	0.20	0.00	-0.64	-0.16	1.13	0.17
445	167	0.01	0.20	0.00	-0.36	-0.19	1.24	0.09
445	183	0.01	0.20	0.00	-0.55	-0.19	1.24	0.09
446	183	0.01	0.19	0.01	-0.39	-0.20	1.33	0.02
446	199	0.01	0.19	0.01	-0.43	-0.08	1.33	0.02
447	199	0.01	0.18	0.01	-0.38	-0.07	1.40	0.04
447	215	0.01	-0.11	0.00	-0.30	0.11	1.41	0.04
448	215	0.01	-0.10	0.00	-0.35	0.10	1.46	0.08
448	231	0.01	-0.10	-0.01	-0.19	0.10	1.46	0.08
449	231	0.02	-0.09	0.00	-0.32	0.09	1.48	0.11
449	247	0.01	-0.09	-0.01	-0.10	0.09	1.49	0.11
450	247	0.02	-0.07	-0.01	-0.28	0.07	1.46	0.14
450	263	0.05	-0.11	1.44	-0.04	0.11	0.02	0.14
451	263	0.02	-0.05	0.00	-0.20	0.04	1.37	0.15
451	279	0.16	-0.08	1.38	-0.03	0.08	0.00	0.15
452	279	0.01	-0.03	0.01	-0.05	0.01	1.19	0.11
452	295	0.20	0.03	1.21	-0.02	-0.04	-0.01	0.11
453	295	0.06	-0.02	0.72	-0.01	-0.02	-0.01	0.01

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
453	311	0.05	-0.02	0.72	-0.01	-0.02	-0.01	0.01
454	8	0.09	-0.02	0.72	0.00	-0.02	0.01	0.00
454	24	0.09	-0.02	0.73	0.00	-0.02	0.01	0.00
455	24	0.33	0.00	1.32	-0.01	-0.05	0.02	0.06
455	40	0.21	0.00	1.32	-0.01	-0.04	0.01	0.06
456	40	0.52	0.05	1.49	-0.01	-0.07	0.01	0.20
456	56	0.11	0.05	1.49	-0.02	-0.07	0.01	0.20
457	56	0.54	0.20	1.59	-0.01	-0.07	-0.01	0.30
457	72	0.01	0.06	0.00	-0.12	0.06	1.59	0.30
458	72	0.42	0.43	1.65	-0.01	-0.08	-0.01	0.34
458	88	0.01	0.08	0.00	-0.31	0.33	1.64	0.34
459	88	0.25	0.74	1.66	0.00	-0.02	-0.01	0.32
459	104	0.01	0.03	0.00	-0.45	0.63	1.65	0.32
460	104	0.08	1.03	1.62	0.00	-0.03	-0.01	0.27
460	120	0.01	0.04	0.00	-0.52	0.96	1.61	0.27
461	120	0.01	0.04	0.00	-0.09	1.31	1.54	0.22
461	136	0.01	0.04	0.00	-0.57	1.31	1.54	0.22
462	136	0.01	0.05	0.00	-0.28	1.62	1.44	0.14
462	152	0.01	0.05	0.00	-0.57	1.62	1.44	0.14
463	152	0.01	0.05	0.00	-0.46	1.87	1.33	0.01
463	168	0.01	0.05	0.00	-0.49	1.87	1.33	0.01
464	168	0.01	0.05	0.00	-0.59	1.99	1.22	0.12
464	184	0.01	0.05	0.00	-0.32	1.99	1.22	0.12
465	184	0.01	0.04	0.00	-0.62	1.98	1.10	0.22
465	200	0.01	0.04	0.00	-0.15	1.98	1.10	0.22
466	200	0.01	0.04	0.00	-0.61	1.82	0.98	0.28
466	216	0.01	0.04	0.00	-0.01	1.82	0.98	0.28
467	216	0.01	0.03	0.00	-0.59	1.55	0.88	0.33
467	232	0.12	1.66	0.87	0.00	-0.02	0.01	0.33
468	232	0.01	0.08	0.00	-0.56	1.20	0.80	0.37
468	248	0.25	1.30	0.80	-0.01	-0.08	0.01	0.37
469	248	0.01	0.06	0.00	-0.49	0.76	0.76	0.40
469	264	0.38	0.90	0.75	-0.01	-0.08	0.01	0.40
470	264	0.01	0.05	0.00	-0.36	0.41	0.73	0.40
470	280	0.52	0.52	0.74	-0.01	-0.07	-0.01	0.40
471	280	0.00	0.02	0.01	-0.14	0.14	0.71	0.33
471	296	0.59	0.20	0.72	-0.01	-0.05	-0.02	0.33
472	296	0.09	0.01	0.43	0.00	-0.02	-0.01	0.06
472	312	0.17	0.02	0.43	0.00	-0.02	-0.01	0.06
473	9	0.01	-0.01	-0.01	-0.25	-0.07	1.28	0.37
473	25	0.25	-0.07	1.28	-0.01	-0.01	-0.01	0.37
474	25	0.00	-0.06	0.00	-0.20	-0.17	1.74	0.18
474	41	0.19	-0.17	1.74	-0.01	-0.13	0.00	0.18
475	41	0.00	0.00	0.00	-0.32	-0.19	2.16	0.29
475	57	0.32	-0.05	2.16	0.00	-0.11	0.00	0.29
476	57	0.00	0.20	0.00	-0.44	-0.06	2.50	0.40

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
476	73	0.44	0.29	2.50	0.00	-0.15	0.00	0.40
477	73	0.00	0.24	0.00	-0.52	0.39	2.67	0.49
477	89	0.53	0.82	2.67	0.00	-0.19	0.00	0.49
478	89	0.01	0.28	0.00	-0.57	0.99	2.63	0.54
478	105	0.60	1.48	2.63	0.00	-0.21	0.00	0.54
479	105	0.01	0.30	0.00	-0.59	1.69	2.42	0.56
479	121	0.64	2.22	2.42	-0.01	-0.23	0.00	0.56
480	121	0.01	0.32	0.00	-0.63	2.41	2.12	0.61
480	137	0.70	2.97	2.12	-0.01	-0.24	0.00	0.61
481	137	0.01	0.33	0.00	-0.69	3.08	1.69	0.67
481	153	0.77	3.67	1.69	-0.01	-0.25	0.00	0.67
482	153	0.01	0.33	0.00	-0.65	3.62	1.10	0.64
482	169	0.75	4.21	1.10	-0.01	-0.25	0.00	0.64
483	169	0.01	0.33	0.00	-0.45	3.92	0.48	0.46
483	185	0.56	4.51	0.48	-0.01	-0.25	0.00	0.46
484	185	0.01	0.32	0.00	-0.07	3.91	-0.02	0.11
484	201	0.18	4.47	-0.02	-0.01	-0.24	0.00	0.11
485	201	0.10	4.12	-0.41	-0.01	-0.23	0.00	0.04
485	217	0.01	4.12	-0.41	-0.01	-0.23	0.00	0.04
486	217	0.15	3.53	-0.71	0.00	-0.21	0.00	0.09
486	233	0.01	0.28	0.00	-0.06	3.04	-0.71	0.09
487	233	0.18	2.77	-0.93	0.00	-0.19	0.00	0.13
487	249	0.00	0.24	0.00	-0.11	2.34	-0.94	0.13
488	249	0.19	1.95	-1.05	0.00	-0.15	0.00	0.15
488	265	0.00	0.20	0.00	-0.14	1.59	-1.06	0.15
489	265	0.20	1.14	-1.04	0.00	-0.11	0.00	0.17
489	281	0.00	0.00	0.00	-0.17	1.00	-1.04	0.17
490	281	0.31	0.46	-0.91	-0.01	-0.13	0.00	0.28
490	297	0.00	-0.06	0.00	-0.30	0.46	-0.91	0.28
491	297	0.62	0.09	-0.74	-0.01	-0.01	0.01	0.92
491	313	0.01	-0.01	0.01	-0.62	0.09	-0.74	0.92
492	10	0.01	0.01	0.01	-0.34	-0.04	0.48	0.02
492	26	0.00	-0.02	0.00	-0.32	-0.03	0.48	0.02
493	26	0.03	0.05	0.00	-1.31	-0.19	1.27	0.56
493	42	0.01	-0.10	0.00	-0.12	-0.03	1.28	0.56
494	42	0.03	0.00	0.00	-1.41	0.01	1.81	0.79
494	58	0.31	-0.08	1.81	-0.01	0.09	0.00	0.79
495	58	0.02	0.03	-0.01	-1.29	0.36	2.11	0.91
495	74	0.68	0.36	2.11	-0.01	0.13	-0.01	0.91
496	74	0.02	0.05	-0.01	-1.15	0.88	2.16	1.05
496	90	1.12	0.88	2.16	-0.01	0.05	-0.01	1.05
497	90	0.01	0.18	-0.01	-0.85	1.52	1.89	1.06
497	106	1.43	1.52	1.89	-0.01	0.07	-0.01	1.06
498	106	0.01	0.20	-0.01	-0.50	2.10	1.40	0.87
498	122	1.39	2.22	1.40	-0.01	0.09	-0.01	0.87
499	122	0.01	0.21	0.00	-0.41	2.78	0.85	0.90

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
499	138	1.54	3.27	0.85	0.00	-0.28	0.00	0.90
500	138	0.01	0.22	0.00	-0.04	3.38	0.29	0.72
500	154	1.52	3.88	0.29	-0.01	-0.28	0.00	0.72
501	154	0.29	4.32	-0.21	-0.01	-0.28	0.00	0.46
501	170	1.28	4.32	-0.21	-0.01	-0.28	0.00	0.46
502	170	0.41	4.49	-0.66	-0.01	-0.28	0.00	0.28
502	186	1.02	4.49	-0.66	-0.01	-0.28	0.00	0.28
503	186	0.42	4.35	-1.08	-0.01	-0.28	0.00	0.17
503	202	0.79	4.35	-1.08	-0.01	-0.28	0.00	0.17
504	202	0.36	3.57	-1.50	-0.01	0.09	0.01	0.13
504	218	0.64	3.92	-1.49	-0.01	-0.27	0.00	0.13
505	218	0.32	2.95	-1.86	-0.01	0.07	0.01	0.09
505	234	0.51	3.27	-1.85	-0.01	-0.14	-0.01	0.09
506	234	0.25	2.22	-2.16	-0.01	0.05	0.01	0.05
506	250	0.34	2.40	-2.14	-0.02	-0.12	-0.01	0.05
507	250	0.12	1.47	-2.33	-0.01	0.13	0.01	0.02
507	266	0.14	1.60	-2.31	-0.02	-0.10	-0.01	0.02
508	266	0.01	-0.16	0.00	-0.09	0.97	-2.32	0.02
508	282	0.03	0.00	0.00	-0.10	0.80	-2.32	0.02
509	282	0.01	-0.10	0.00	-0.26	0.39	-2.09	0.10
509	298	0.03	0.05	0.00	-0.10	0.24	-2.08	0.10
510	298	0.00	-0.02	0.00	-0.16	0.07	-1.16	0.15
510	314	0.04	0.08	-1.16	-0.01	-0.01	0.00	0.15
511	11	0.01	0.00	-0.01	-0.60	0.03	-0.63	0.25
511	27	0.00	0.00	-0.01	-0.26	0.03	-0.63	0.25
512	27	0.04	0.01	-0.01	-1.93	0.14	-1.36	0.92
512	43	0.06	0.09	-1.37	0.00	0.00	0.00	0.92
513	43	0.04	-0.07	-0.01	-1.92	0.47	-1.69	1.20
513	59	0.68	0.38	-1.69	-0.01	0.02	-0.01	1.20
514	59	0.03	-0.08	-0.01	-1.45	0.99	-1.89	1.23
514	75	1.21	0.88	-1.89	-0.01	0.02	-0.01	1.23
515	75	0.02	-0.08	-0.01	-0.87	1.63	-2.00	1.13
515	91	1.59	1.63	-2.00	-0.01	-0.08	-0.01	1.13
516	91	0.02	-0.07	-0.01	-0.25	2.35	-1.97	0.88
516	107	1.66	2.35	-1.97	-0.01	-0.07	-0.01	0.88
517	107	0.16	3.13	-1.91	-0.01	-0.15	0.01	0.67
517	123	1.57	3.06	-1.89	-0.01	-0.07	-0.01	0.67
518	123	0.41	3.77	-1.82	-0.01	-0.15	0.01	0.51
518	139	1.50	3.69	-1.81	-0.01	-0.07	-0.01	0.51
519	139	0.67	4.26	-1.71	-0.01	-0.15	0.00	0.35
519	155	1.41	4.17	-1.70	-0.01	-0.07	0.00	0.35
520	155	0.89	4.53	-1.60	-0.01	-0.15	0.00	0.18
520	171	1.28	4.53	-1.60	-0.01	-0.15	0.00	0.18
521	171	1.06	4.44	-1.55	-0.01	-0.07	0.00	0.03
521	187	1.12	4.52	-1.54	-0.01	-0.15	0.00	0.03
522	187	1.20	4.13	-1.59	-0.01	-0.07	0.01	0.13

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
522	203	0.93	4.21	-1.58	-0.01	-0.15	-0.01	0.13
523	203	1.30	3.56	-1.69	-0.01	-0.07	0.01	0.29
523	219	0.69	3.63	-1.68	-0.01	-0.15	-0.01	0.29
524	219	1.34	2.83	-1.82	-0.01	-0.07	0.01	0.46
524	235	0.37	2.78	-1.80	-0.01	-0.03	-0.01	0.46
525	235	1.30	2.03	-1.91	-0.01	-0.08	0.01	0.62
525	251	0.02	-0.08	0.01	-0.03	2.03	-1.91	0.62
526	251	1.16	1.16	-2.01	-0.01	0.02	0.01	0.83
526	267	0.03	-0.08	0.01	-0.63	1.26	-2.01	0.83
527	267	0.70	0.54	-1.97	-0.01	0.02	0.01	0.89
527	283	0.04	-0.07	0.01	-1.22	0.63	-1.97	0.89
528	283	0.07	0.15	-1.71	0.00	0.00	0.00	0.66
528	299	0.04	0.01	0.01	-1.35	0.20	-1.72	0.66
529	299	0.00	0.00	0.01	-0.29	0.04	-0.85	0.05
529	315	0.01	0.00	0.01	-0.36	0.04	-0.85	0.05
530	12	0.05	0.05	-1.40	-0.01	0.01	0.02	0.24
530	28	0.00	0.01	0.02	-0.27	0.05	-1.40	0.24
531	28	0.03	-0.03	-0.03	-0.16	0.26	-2.53	0.16
531	44	0.01	-0.04	0.03	-0.43	0.27	-2.58	0.16
532	44	0.03	-0.15	-0.02	-0.22	0.86	-2.92	0.04
532	60	0.01	-0.05	0.02	-0.26	0.76	-2.96	0.04
533	60	0.02	-0.18	-0.01	-0.03	1.57	-3.06	0.02
533	76	0.01	0.05	0.01	-0.03	1.43	-3.08	0.02
534	76	0.25	2.10	-3.01	-0.02	0.07	0.01	0.05
534	92	0.17	2.37	-2.99	-0.02	-0.20	-0.01	0.05
535	92	0.44	2.99	-2.79	-0.01	0.07	0.01	0.09
535	108	0.27	3.18	-2.77	-0.02	-0.22	0.00	0.09
536	108	0.55	3.71	-2.47	-0.01	-0.03	0.01	0.12
536	124	0.31	3.92	-2.46	-0.02	-0.23	0.00	0.12
537	124	0.63	4.30	-2.10	-0.01	-0.02	0.01	0.14
537	140	0.34	4.52	-2.09	-0.01	-0.24	0.00	0.14
538	140	0.69	4.83	-1.70	0.00	-0.11	0.00	0.15
538	156	0.38	4.91	-1.70	-0.01	-0.24	0.00	0.15
539	156	0.79	5.05	-1.28	-0.01	-0.24	0.00	0.16
539	172	0.44	5.05	-1.28	-0.01	-0.24	0.00	0.16
540	172	0.97	4.86	-0.86	-0.01	-0.24	0.00	0.24
540	188	0.44	4.77	-0.86	0.00	-0.11	0.00	0.24
541	188	1.18	4.35	-0.42	-0.01	-0.24	0.00	0.39
541	204	0.34	4.14	-0.42	-0.01	-0.02	-0.01	0.39
542	204	1.36	3.60	0.05	-0.02	-0.23	0.00	0.58
542	220	0.12	3.40	0.06	-0.01	-0.03	-0.01	0.58
543	220	1.41	2.73	0.56	-0.02	-0.22	0.00	0.80
543	236	0.01	-0.11	0.01	-0.32	2.73	0.56	0.80
544	236	1.15	1.83	1.03	-0.02	-0.20	0.01	0.73
544	252	0.02	-0.20	0.01	-0.44	1.83	1.03	0.73
545	252	1.11	1.02	1.39	-0.01	-0.08	0.01	0.98

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
545	268	0.02	-0.18	0.01	-1.00	1.02	1.39	0.98
546	268	0.47	0.31	1.36	-0.01	-0.06	0.02	0.78
546	284	0.03	-0.15	0.02	-1.22	0.39	1.36	0.78
547	284	0.01	-0.04	-0.03	-0.06	-0.02	1.04	0.51
547	300	0.03	-0.03	0.03	-1.13	-0.03	0.99	0.51
548	300	0.00	0.01	-0.02	-0.30	-0.02	0.39	0.04
548	316	0.01	-0.01	0.02	-0.27	-0.01	0.36	0.04
549	13	0.01	0.01	0.02	-0.77	0.05	-1.14	1.14
549	29	0.77	0.05	-1.14	-0.01	0.01	0.02	1.14
550	29	0.01	0.04	0.02	-0.38	0.29	-1.42	0.36
550	45	0.39	0.29	-1.42	-0.01	-0.02	0.02	0.36
551	45	0.00	0.08	0.01	-0.25	0.90	-1.64	0.24
551	61	0.27	1.00	-1.63	0.00	0.00	0.00	0.24
552	61	0.00	0.10	0.01	-0.23	1.67	-1.75	0.23
552	77	0.27	1.92	-1.74	0.00	-0.15	-0.01	0.23
553	77	0.00	0.13	0.00	-0.20	2.52	-1.71	0.21
553	93	0.27	2.83	-1.70	0.00	-0.18	0.00	0.21
554	93	0.00	0.14	0.00	-0.15	3.36	-1.55	0.18
554	109	0.25	3.71	-1.55	0.00	-0.21	0.00	0.18
555	109	0.00	0.15	0.00	-0.10	4.09	-1.31	0.14
555	125	0.21	4.47	-1.31	0.00	-0.23	0.00	0.14
556	125	0.00	0.16	0.00	-0.05	4.66	-1.03	0.10
556	141	0.18	5.06	-1.03	0.00	-0.24	0.00	0.10
557	141	0.02	5.41	-0.70	0.00	-0.25	0.00	0.05
557	157	0.12	5.41	-0.70	0.00	-0.25	0.00	0.05
558	157	0.15	5.46	-0.31	0.00	-0.25	0.00	0.07
558	173	0.00	0.17	0.00	-0.01	5.04	-0.31	0.07
559	173	0.53	5.16	0.18	0.00	-0.25	0.00	0.42
559	189	0.00	0.17	0.00	-0.40	4.75	0.18	0.42
560	189	0.73	4.53	0.78	0.00	-0.24	0.00	0.62
560	205	0.00	0.16	0.00	-0.62	4.12	0.78	0.62
561	205	0.74	3.66	1.35	0.00	-0.23	0.00	0.63
561	221	0.00	0.16	0.00	-0.64	3.28	1.35	0.63
562	221	0.69	2.68	1.79	0.00	-0.21	0.00	0.60
562	237	0.00	0.14	0.00	-0.62	2.33	1.79	0.60
563	237	0.61	1.71	2.03	0.00	-0.18	0.00	0.54
563	253	0.00	0.13	0.00	-0.57	1.40	2.04	0.54
564	253	0.54	0.86	2.13	0.00	-0.15	0.01	0.49
564	269	0.00	0.10	-0.01	-0.52	0.60	2.14	0.49
565	269	0.41	0.15	1.97	0.00	0.00	0.00	0.38
565	285	0.00	0.08	-0.01	-0.41	0.04	1.98	0.38
566	285	0.26	-0.20	1.65	-0.01	-0.02	-0.02	0.24
566	301	0.01	0.04	-0.02	-0.27	-0.20	1.65	0.24
567	301	0.28	-0.08	1.23	-0.01	0.01	-0.02	0.41
567	317	0.01	0.01	-0.02	-0.28	-0.08	1.23	0.41
568	14	0.21	0.01	0.33	0.00	-0.02	-0.01	0.07
568	30	0.13	0.02	0.33	0.00	-0.02	-0.01	0.07
569	30	0.75	0.20	0.49	-0.01	-0.04	-0.01	0.39
569	46	0.01	0.00	0.00	-0.09	0.15	0.49	0.39
570	46	0.73	0.52	0.44	-0.01	-0.08	0.00	0.48
570	62	0.01	0.00	0.00	-0.33	0.45	0.44	0.48
571	62	0.60	0.92	0.40	-0.01	-0.09	0.01	0.50
571	78	0.01	0.00	0.00	-0.49	0.83	0.41	0.50
572	78	0.46	1.35	0.39	-0.01	-0.10	0.02	0.48
572	94	0.01	-0.01	-0.01	-0.59	1.31	0.41	0.48
573	94	0.33	1.77	0.43	0.00	-0.06	0.01	0.44
573	110	0.01	-0.06	0.00	-0.63	1.72	0.44	0.44
574	110	0.22	2.08	0.49	0.00	-0.06	0.01	0.39
574	126	0.01	-0.06	0.00	-0.64	2.08	0.50	0.39
575	126	0.12	2.35	0.58	0.00	-0.06	0.00	0.35
575	142	0.01	-0.07	0.00	-0.64	2.36	0.58	0.35
576	142	0.02	2.52	0.68	0.00	-0.06	0.00	0.30
576	158	0.00	-0.07	0.00	-0.63	2.51	0.68	0.30
577	158	0.00	-0.07	0.00	-0.12	2.52	0.81	0.24
577	174	0.00	-0.07	0.00	-0.64	2.52	0.81	0.24
578	174	0.00	-0.07	0.00	-0.27	2.38	0.93	0.15
578	190	0.00	-0.05	0.00	-0.60	2.38	0.93	0.15
579	190	0.01	-0.07	0.00	-0.43	2.09	1.05	0.02
579	206	0.00	-0.07	0.00	-0.48	2.09	1.05	0.02
580	206	0.01	-0.06	0.00	-0.52	1.68	1.16	0.10
580	222	0.00	-0.06	0.00	-0.30	1.68	1.16	0.10
581	222	0.01	-0.06	0.00	-0.51	1.23	1.25	0.19
581	238	0.00	-0.01	0.01	-0.09	1.23	1.25	0.19
582	238	0.01	-0.01	0.01	-0.42	0.78	1.32	0.24
582	254	0.12	0.82	1.33	-0.01	-0.10	-0.02	0.24
583	254	0.01	0.00	0.00	-0.28	0.34	1.34	0.27
583	270	0.31	0.43	1.35	-0.01	-0.09	-0.01	0.27
584	270	0.01	0.00	0.00	-0.07	0.07	1.32	0.20
584	286	0.38	0.15	1.32	-0.01	-0.08	0.00	0.20
585	286	0.12	0.01	1.22	-0.02	-0.06	0.01	0.08
585	302	0.27	0.00	1.22	-0.01	-0.04	0.01	0.08
586	302	0.07	-0.02	0.69	0.00	-0.02	0.01	0.01
586	318	0.08	-0.03	0.69	0.00	-0.02	0.01	0.01
587	15	0.09	0.00	0.71	-0.01	-0.02	-0.02	0.03
587	31	0.14	0.00	0.71	-0.01	-0.02	-0.02	0.03
588	31	0.41	0.07	1.18	-0.02	-0.06	-0.02	0.16
588	47	0.10	0.00	1.18	-0.04	0.02	-0.01	0.16
589	47	0.45	-0.04	1.33	-0.03	0.04	0.01	0.25
589	63	0.02	-0.08	-0.01	-0.14	0.08	1.34	0.25
590	63	0.35	-0.08	1.39	-0.03	0.06	0.02	0.27
590	79	0.01	-0.11	-0.01	-0.27	0.10	1.43	0.27
591	79	0.22	-0.12	1.41	-0.02	0.08	0.02	0.26

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
591	95	0.01	-0.14	0.00	-0.36	0.11	1.44	0.26
592	95	0.10	-0.15	1.40	0.00	0.10	0.01	0.24
592	111	0.01	0.00	0.01	-0.42	0.11	1.43	0.24
593	111	0.01	0.00	0.00	-0.01	0.10	1.39	0.21
593	127	0.01	0.00	0.00	-0.45	-0.18	1.37	0.21
594	127	0.01	0.00	0.00	-0.11	-0.21	1.34	0.17
594	143	0.01	0.11	0.01	-0.47	-0.21	1.34	0.17
595	143	0.01	0.12	0.00	-0.21	-0.23	1.29	0.13
595	159	0.01	0.12	0.00	-0.48	-0.23	1.29	0.13
596	159	0.01	0.12	0.00	-0.32	-0.24	1.22	0.07
596	175	0.01	0.12	0.00	-0.48	-0.24	1.22	0.07
597	175	0.01	0.12	0.00	-0.44	-0.23	1.14	0.01
597	191	0.01	0.12	0.00	-0.45	-0.23	1.14	0.01
598	191	0.01	0.11	-0.01	-0.53	-0.20	1.05	0.07
598	207	0.01	0.00	0.00	-0.37	-0.20	1.05	0.07
599	207	0.01	0.00	0.00	-0.57	-0.16	0.95	0.15
599	223	0.01	0.00	0.00	-0.24	0.12	0.93	0.15
600	223	0.01	0.00	-0.01	-0.54	0.14	0.86	0.22
600	239	0.00	-0.16	0.01	-0.07	0.14	0.86	0.22
601	239	0.01	-0.14	0.00	-0.46	0.15	0.82	0.26
601	255	0.12	-0.07	0.85	-0.02	0.08	-0.02	0.26
602	255	0.01	-0.11	0.01	-0.33	0.15	0.83	0.28
602	271	0.30	-0.03	0.86	-0.03	0.07	-0.02	0.28
603	271	0.02	-0.08	0.01	-0.17	0.14	0.90	0.26
603	287	0.43	0.02	0.91	-0.03	0.04	-0.01	0.26
604	287	0.09	0.06	0.93	-0.04	0.02	0.01	0.16
604	303	0.40	0.14	0.92	-0.02	-0.06	0.02	0.16
605	303	0.13	0.02	0.61	-0.01	-0.02	0.02	0.03
605	319	0.09	0.02	0.61	-0.01	-0.02	0.02	0.03
606	16	0.06	-0.03	0.64	-0.01	-0.02	0.00	0.12
606	32	0.01	-0.02	0.00	-0.10	-0.03	0.64	0.12
607	32	0.02	-0.08	1.27	-0.03	-0.06	-0.02	0.05
607	48	0.05	-0.25	1.25	-0.11	0.10	0.00	0.05
608	48	0.02	-0.16	-0.02	-0.13	-0.28	1.47	0.06
608	64	0.07	-0.62	1.43	-0.05	0.17	0.03	0.06
609	64	0.02	-0.23	-0.02	-0.14	-0.62	1.54	0.08
609	80	0.05	-1.03	1.50	-0.01	0.18	0.02	0.08
610	80	0.01	-0.28	-0.01	-0.14	-1.01	1.54	0.08
610	96	0.03	-1.01	1.54	0.00	-0.28	-0.01	0.08
611	96	0.00	0.05	-0.01	-0.17	-1.45	1.50	0.08
611	112	0.02	0.30	0.00	-0.03	-2.02	1.49	0.08
612	112	0.01	0.32	0.00	-0.22	-2.43	1.42	0.08
612	128	0.02	0.32	0.00	-0.06	-2.43	1.42	0.08
613	128	0.01	0.34	0.00	-0.26	-2.74	1.32	0.08
613	144	0.01	0.34	0.00	-0.09	-2.74	1.32	0.08
614	144	0.01	0.35	0.00	-0.31	-2.92	1.20	0.09
614	160	0.01	0.35	0.00	-0.11	-2.92	1.20	0.09
615	160	0.01	0.35	0.00	-0.35	-2.95	1.06	0.11
615	176	0.01	0.35	0.00	-0.12	-2.95	1.06	0.11
616	176	0.01	0.35	0.00	-0.38	-2.79	0.90	0.12
616	192	0.01	0.35	0.00	-0.12	-2.79	0.90	0.12
617	192	0.01	0.34	0.00	-0.40	-2.47	0.72	0.14
617	208	0.01	0.34	0.00	-0.10	-2.47	0.72	0.14
618	208	0.02	0.33	0.00	-0.39	-2.02	0.56	0.15
618	224	0.01	0.33	0.00	-0.05	-2.02	0.56	0.15
619	224	0.02	0.30	0.00	-0.36	-1.51	0.42	0.17
619	240	0.01	-1.14	0.42	0.00	0.25	-0.01	0.17
620	240	0.02	0.27	-0.01	-0.32	-1.01	0.34	0.19
620	256	0.08	-1.01	0.34	-0.02	0.27	-0.01	0.19
621	256	0.01	-0.18	0.02	-0.29	-0.15	0.28	0.21
621	272	0.17	-0.56	0.32	-0.05	0.23	-0.02	0.21
622	272	0.02	-0.16	0.02	-0.30	0.13	0.33	0.26
622	288	0.31	-0.21	0.38	-0.08	0.17	-0.03	0.26
623	288	0.03	-0.09	0.01	-0.29	0.18	0.46	0.35
623	304	0.49	0.16	0.45	-0.03	-0.06	0.02	0.35
624	304	0.05	0.00	0.33	-0.07	0.01	0.04	0.16
624	320	0.19	0.03	0.37	-0.01	-0.02	0.00	0.16

Envolvente global de esfuerzos en el cajón

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
1	1	-29.90	24.80	-6.89	-167.18	83.04	-9.04	67.56
1	2	52.35	28.13	-11.28	-60.46	79.71	-4.66	74.88
2	2	68.68	29.63	-2.95	-51.18	72.76	-1.38	28.00
2	3	128.65	28.41	-3.17	5.29	73.97	-1.16	39.40
3	3	122.84	26.47	5.56	2.77	71.20	3.79	27.10
3	4	91.89	27.69	5.21	-26.05	69.98	4.14	15.70
4	4	67.35	22.12	11.72	-39.11	69.64	9.48	59.24
4	5	-10.37	20.12	9.17	-104.78	71.64	12.03	51.92
5	5	-16.35	31.12	1.18	-111.76	65.28	0.81	69.44
5	6	51.17	23.58	0.52	-39.99	58.19	1.47	27.36
6	6	53.93	35.39	-1.29	-36.78	74.00	-2.06	29.27
6	7	69.57	27.69	-1.29	-29.85	67.07	-2.06	14.51
7	7	72.65	28.31	-1.48	-24.06	66.14	-3.20	14.74
7	8	28.83	20.56	-1.47	-50.48	59.27	-3.21	32.83
8	8	32.35	19.74	-1.35	-41.61	49.74	-4.08	32.78
8	9	-20.85	13.19	-1.11	-111.85	41.66	-4.32	43.16
9	9	-19.93	13.80	-0.64	-108.15	35.27	-3.28	41.00
9	10	12.78	12.11	-1.19	-42.63	36.96	-2.73	33.68
10	10	15.86	12.30	0.97	-42.04	36.27	0.46	32.85
10	11	81.59	9.20	0.95	-9.12	39.37	0.48	17.93
11	11	75.14	8.34	5.90	-12.02	39.48	1.30	16.25
11	12	62.76	11.45	5.88	-23.57	36.37	1.32	27.91
12	12	50.18	10.00	5.26	-27.13	36.16	0.70	25.63
12	13	-9.26	13.54	1.10	-64.51	32.62	4.86	51.87
13	13	-9.94	15.49	0.15	-67.55	54.54	0.12	37.85
13	14	46.14	19.54	-0.31	-33.31	65.12	0.58	24.87
14	14	47.79	21.94	-0.77	-31.27	71.33	-1.49	25.12
14	15	76.90	29.66	-0.77	-30.35	78.23	-1.49	9.90
15	15	78.72	29.96	-0.86	-26.02	77.97	-2.38	10.13
15	16	41.41	37.66	-0.87	-60.61	84.89	-2.37	42.53
16	16	43.29	30.12	-1.83	-54.29	72.31	-4.40	40.34
16	1	-34.65	34.16	-1.66	-175.36	82.89	-4.57	84.99
17	17	-38.31	24.80	-3.43	-178.04	82.96	-4.94	80.98
17	18	68.90	28.13	-6.25	-51.82	79.77	-2.13	88.41
18	18	70.07	29.60	-1.91	-51.68	72.71	-0.73	28.80
18	19	131.74	28.44	-2.01	7.38	74.07	-0.63	40.27
19	19	130.71	26.47	3.62	6.91	71.18	2.36	31.37
19	20	87.64	27.75	3.43	-28.82	70.09	2.56	20.03
20	20	85.19	21.36	7.62	-29.53	70.45	4.19	74.40
20	21	-21.96	20.97	3.89	-118.96	70.96	7.95	67.18
21	21	-21.69	36.18	0.63	-118.84	74.31	0.85	71.67
21	22	52.27	29.81	0.37	-39.32	66.06	1.10	29.59
22	22	52.53	35.53	-0.87	-39.24	74.26	-1.37	30.31
22	23	70.72	27.82	-0.87	-28.25	67.35	-1.37	12.58
23	23	71.20	28.39	-1.01	-27.41	66.35	-2.19	12.01
23	24	30.38	20.63	-1.00	-47.35	59.49	-2.20	30.11
24	24	30.98	19.66	-0.89	-45.59	50.43	-2.78	29.97
24	25	-19.95	13.32	-0.75	-108.42	42.15	-2.92	40.35
25	25	-19.87	13.79	-0.51	-108.08	35.23	-2.47	42.19
25	26	14.59	13.10	-2.25	-41.27	35.86	-0.72	34.82
26	26	16.38	12.28	0.60	-41.17	36.29	0.34	32.90
26	27	82.32	9.16	0.59	-9.78	39.31	0.35	16.06
27	27	80.46	8.34	4.08	-10.52	39.52	0.92	14.34
27	28	58.26	11.44	4.06	-25.03	36.33	0.93	31.14
28	28	55.65	10.03	3.59	-25.65	36.20	0.48	31.29
28	29	-10.49	13.53	0.74	-70.95	32.64	3.32	57.56
29	29	-10.51	15.96	0.12	-71.06	56.86	0.19	38.54
29	30	46.63	20.13	-0.19	-33.33	67.31	0.49	25.52
30	30	46.93	22.00	-0.53	-33.13	71.51	-1.01	25.74
30	31	77.59	29.73	-0.53	-29.23	78.41	-1.01	8.77
31	31	77.87	30.05	-0.60	-28.53	78.18	-1.66	8.24
31	32	42.36	37.77	-0.60	-58.23	85.09	-1.65	40.35
32	32	42.94	35.58	-1.21	-56.62	79.58	-2.96	40.04
32	17	-37.93	39.98	-1.11	-177.70	89.81	-3.06	84.75
33	33	-41.06	24.86	-1.59	-181.62	82.91	-2.52	86.46
33	34	76.17	28.09	-3.50	-49.38	79.82	-0.61	93.90
34	34	74.08	29.58	-1.38	-50.77	72.75	-0.12	29.40
34	35	136.81	28.42	-1.39	10.13	74.11	-0.11	40.87
35	35	136.78	26.53	3.02	10.05	71.28	1.81	33.25
35	36	88.59	27.81	2.92	-29.08	70.20	1.92	21.90
36	36	90.56	21.71	5.04	-27.78	70.74	2.53	81.37
36	37	-26.00	21.16	2.05	-127.89	71.41	5.53	74.15
37	37	-25.63	40.97	0.60	-127.43	82.57	1.05	73.35
37	38	51.50	34.89	0.32	-41.05	74.03	1.33	31.27
38	38	51.42	35.89	-0.87	-41.62	75.01	-1.25	30.87
38	39	70.92	28.15	-0.88	-28.55	68.12	-1.24	11.71
39	39	70.92	28.57	-1.03	-28.60	66.98	-2.31	11.47
39	40	30.86	20.80	-1.03	-47.31	60.13	-2.32	29.57
40	40	30.80	19.91	-0.83	-46.95	52.05	-3.02	29.26
40	41	-19.75	13.81	-0.76	-107.69	43.52	-3.09	39.66
41	41	-19.74	13.76	-0.66	-107.50	35.10	-3.30	43.47
41	42	17.01	12.97	-3.13	-40.47	35.83	-0.82	35.07
42	42	17.96	12.25	0.42	-40.43	36.29	0.38	35.06
42	43	85.26	9.13	0.41	-9.75	39.31	0.39	13.26
43	43	84.66	8.39	4.55	-9.85	39.54	1.04	12.87
43	44	56.57	11.48	4.53	-25.73	36.35	1.05	33.14
44	44	55.79	10.27	3.89	-25.80	36.32	0.50	33.42
44	45	-11.37	13.58	0.78	-75.81	32.95	3.59	59.82
45	45	-11.37	16.55	0.17	-75.87	59.79	0.50	39.06

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
45	46	46.40	20.93	-0.15	-34.76	70.05	0.82	25.96
46	46	46.49	22.14	-0.60	-34.85	71.95	-1.09	25.99
46	47	77.67	29.88	-0.60	-29.61	78.84	-1.09	8.27
47	47	77.84	30.27	-0.70	-29.25	78.68	-1.96	8.08
47	48	42.24	38.01	-0.71	-58.58	85.57	-1.95	40.17
48	48	42.50	39.59	-1.07	-57.86	86.22	-2.92	40.83
48	33	-40.64	44.28	-1.02	-180.95	96.15	-2.97	85.46
49	49	-41.23	24.87	-0.65	-181.16	82.74	-0.98	87.44
49	50	78.54	27.94	-1.82	-48.86	79.81	0.19	94.88
50	50	76.83	29.53	-0.56	-49.85	72.79	0.42	29.73
50	51	140.59	28.37	-0.53	11.70	74.16	0.40	41.21
51	51	140.61	26.60	2.28	11.65	71.42	1.29	34.29
51	52	89.31	27.88	2.21	-29.15	70.34	1.36	22.95
52	52	91.02	22.04	3.44	-28.19	71.09	1.58	83.48
52	53	-27.30	21.34	1.09	-132.28	71.91	3.93	76.27
53	53	-27.07	41.92	0.37	-131.93	85.22	0.83	73.77
53	54	50.22	36.00	0.01	-43.73	76.52	1.19	31.69
54	54	50.43	36.27	-0.83	-43.96	75.93	-0.99	31.31
54	55	70.92	28.51	-0.84	-29.51	69.06	-0.98	11.13
55	55	70.83	28.81	-0.93	-29.74	67.90	-2.26	11.21
55	56	31.26	21.03	-0.93	-47.86	61.06	-2.26	29.31
56	56	30.96	20.24	-0.68	-47.86	54.03	-3.20	29.19
56	57	-19.71	14.26	-0.71	-108.08	45.39	-3.16	39.59
57	57	-19.73	13.74	-0.62	-107.99	35.07	-3.64	45.34
57	58	20.13	12.90	-3.57	-39.43	35.85	-0.69	36.88
58	58	20.47	12.27	0.32	-39.53	36.32	0.40	36.86
58	59	89.06	9.14	0.30	-9.32	39.35	0.42	11.05
59	59	88.79	8.49	4.70	-9.28	39.59	1.04	11.18
59	60	55.30	11.58	4.69	-26.34	36.41	1.04	34.95
60	60	55.09	10.61	4.10	-26.27	36.50	0.50	35.01
60	61	-12.19	13.66	0.80	-80.35	33.38	3.80	61.54
61	61	-12.18	16.95	0.17	-80.34	61.70	0.61	39.41
61	62	45.91	21.42	-0.18	-36.91	71.87	0.96	26.22
62	62	46.03	22.31	-0.69	-36.85	72.48	-1.23	26.19
62	63	77.63	30.06	-0.70	-30.43	79.35	-1.23	7.84
63	63	77.77	30.46	-0.82	-30.13	79.17	-2.28	7.92
63	64	42.13	38.22	-0.84	-59.07	86.03	-2.26	40.01
64	64	42.13	40.09	-0.81	-58.86	87.59	-2.63	40.42
64	49	-41.00	44.90	-0.79	-180.74	97.40	-2.64	85.16
65	65	-40.80	24.83	-0.23	-179.36	82.46	-0.21	87.32
65	66	80.04	27.67	-0.99	-48.50	79.76	0.55	94.76
66	66	79.09	29.43	0.04	-49.01	72.83	0.71	29.67
66	67	142.83	28.27	0.08	12.36	74.19	0.68	41.14
67	67	142.84	26.65	1.87	12.31	71.58	1.02	34.86
67	68	89.74	27.93	1.81	-29.35	70.50	1.08	23.52
68	68	90.68	22.33	2.63	-28.86	71.50	1.04	84.46

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
68	69	-27.99	21.53	0.65	-135.29	72.43	3.01	77.25
69	69	-27.86	42.20	0.11	-135.05	86.57	0.42	74.02
69	70	49.40	36.42	-0.39	-46.01	77.73	0.92	31.94
70	70	49.80	36.65	-0.89	-45.92	76.96	-0.86	31.62
70	71	71.00	28.88	-0.90	-30.80	70.11	-0.84	10.78
71	71	70.93	29.10	-0.76	-30.97	69.06	-2.12	11.06
71	72	31.70	21.31	-0.77	-48.72	62.22	-2.12	29.16
72	72	31.29	20.60	-0.41	-48.91	56.39	-3.21	29.30
72	73	-19.71	14.69	-0.59	-108.97	47.67	-3.02	39.70
73	73	-19.75	13.76	-0.54	-109.00	35.13	-3.65	47.62
73	74	23.63	12.89	-3.71	-38.54	35.94	-0.48	39.08
74	74	23.48	12.33	0.41	-38.70	36.39	0.45	39.07
74	75	92.87	9.20	0.40	-8.84	39.41	0.46	9.31
75	75	92.74	8.65	4.63	-8.78	39.68	0.99	9.61
75	76	54.17	11.74	4.61	-26.89	36.49	0.99	36.66
76	76	54.37	10.99	4.05	-26.77	36.70	0.47	36.59
76	77	-13.03	13.75	0.76	-84.91	33.88	3.76	63.26
77	77	-13.00	17.34	0.12	-84.82	63.52	0.53	39.74
77	78	45.37	21.87	-0.26	-39.30	73.62	0.91	26.47
78	78	45.50	22.47	-0.79	-39.12	73.01	-1.38	26.43
78	79	77.57	30.23	-0.80	-31.42	79.88	-1.37	7.37
79	79	77.66	30.60	-0.86	-31.25	79.58	-2.42	7.48
79	80	42.32	38.38	-0.88	-59.10	86.43	-2.40	39.58
80	80	42.22	39.96	-0.58	-59.18	87.70	-2.33	39.75
80	65	-40.68	44.87	-0.59	-179.12	97.41	-2.32	84.62
81	81	-40.28	24.77	-0.06	-177.18	82.11	0.12	87.03
81	82	81.54	27.34	-0.60	-48.08	79.68	0.66	94.46
82	82	81.09	29.30	0.39	-48.30	72.86	0.82	29.42
82	83	144.26	28.14	0.42	12.63	74.22	0.79	40.89
83	83	144.25	26.68	1.75	12.59	71.77	0.93	35.26
83	84	89.92	27.96	1.71	-29.78	70.69	0.98	23.92
84	84	90.36	22.61	2.23	-29.58	71.98	0.72	85.30
84	85	-28.69	21.72	0.46	-138.16	72.99	2.50	78.08
85	85	-28.62	42.44	-0.10	-138.00	87.75	-0.02	74.51
85	86	49.15	36.85	-0.77	-47.77	78.72	0.65	32.43
86	86	49.46	37.04	-1.00	-47.55	78.07	-0.87	31.91
86	87	71.38	29.25	-1.01	-32.05	71.23	-0.86	10.48
87	87	71.35	29.42	-0.61	-32.09	70.40	-2.00	11.04
87	88	32.22	21.62	-0.62	-49.73	63.57	-1.99	29.13
88	88	31.92	21.08	-0.10	-49.95	59.20	-3.06	29.65
88	89	-19.83	15.22	-0.45	-110.33	50.44	-2.72	40.05
89	89	-19.88	13.81	-0.45	-110.43	35.30	-3.41	50.32
89	90	27.61	12.92	-3.58	-37.74	36.12	-0.27	41.51
90	90	26.93	12.42	0.65	-37.91	36.48	0.51	41.50
90	91	96.18	9.29	0.63	-8.40	39.51	0.52	7.75
91	91	96.24	8.84	4.38	-8.36	39.78	0.94	8.23

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
91	92	53.14	11.93	4.36	-27.41	36.59	0.94	38.21
92	92	53.61	11.41	3.78	-27.30	36.92	0.43	38.12
92	93	-13.88	13.86	0.70	-89.39	34.41	3.51	64.93
93	93	-13.85	17.73	0.06	-89.25	65.27	0.35	40.09
93	94	44.83	22.32	-0.34	-41.70	75.30	0.75	26.73
94	94	44.93	22.63	-0.85	-41.49	73.51	-1.49	26.69
94	95	77.57	30.39	-0.86	-32.38	80.37	-1.48	6.85
95	95	77.61	30.71	-0.86	-32.34	79.91	-2.41	6.94
95	96	42.71	38.49	-0.87	-58.81	86.75	-2.40	39.05
96	96	42.62	39.76	-0.44	-58.99	87.56	-2.09	39.11
96	81	-40.23	44.78	-0.47	-177.05	97.16	-2.06	84.11
97	97	-39.78	24.70	0.01	-174.97	81.72	0.23	86.74
97	98	83.09	26.98	-0.41	-47.62	79.58	0.64	94.18
98	98	82.87	29.14	0.61	-47.68	72.87	0.84	29.14
98	99	145.39	27.98	0.64	12.78	74.24	0.82	40.61
99	99	145.38	26.71	1.78	12.78	71.96	0.90	35.63
99	100	89.88	27.99	1.74	-30.35	70.88	0.94	24.30
100	100	90.08	22.90	2.06	-30.29	72.53	0.58	86.45
100	101	-29.56	21.94	0.39	-141.35	73.61	2.25	79.24
101	101	-29.55	42.77	-0.19	-141.33	89.06	-0.24	75.87
101	102	48.99	37.45	-0.89	-49.31	79.74	0.46	32.48
102	102	48.98	37.43	-1.05	-49.10	79.23	-0.94	32.90
102	103	71.74	29.64	-1.06	-33.22	72.40	-0.93	10.79
103	103	71.75	29.77	-0.56	-33.17	71.88	-1.94	10.42
103	104	32.52	21.97	-0.57	-50.80	65.05	-1.94	29.83
104	104	32.56	22.25	0.00	-50.94	63.23	-2.87	29.54
104	105	-20.17	16.34	-0.37	-112.15	54.52	-2.50	41.24
105	105	-20.19	13.89	-0.35	-112.25	35.52	-2.93	54.13
105	106	31.87	12.98	-3.17	-37.09	36.37	-0.11	43.54
106	106	30.95	12.52	0.88	-37.21	36.60	0.57	43.97
106	107	99.10	9.39	0.86	-8.05	39.63	0.58	6.62
107	107	99.26	9.06	4.01	-8.02	39.89	0.91	7.02
107	108	52.16	12.14	4.00	-27.92	36.70	0.91	39.57
108	108	52.78	11.83	3.38	-27.85	37.14	0.41	39.52
108	109	-14.73	13.97	0.63	-93.67	34.94	3.15	66.46
109	109	-14.70	18.10	0.00	-93.51	66.89	0.13	40.44
109	110	44.32	22.76	-0.40	-43.98	76.86	0.53	27.00
110	110	44.38	22.77	-0.89	-43.78	73.93	-1.56	26.98
110	111	77.63	30.53	-0.90	-33.24	80.79	-1.55	6.32
111	111	77.64	30.77	-0.85	-33.26	80.15	-2.35	6.39
111	112	43.19	38.56	-0.85	-58.34	86.98	-2.34	38.51
112	112	43.14	39.58	-0.37	-58.56	87.41	-1.90	38.53
112	97	-39.76	44.71	-0.40	-174.89	96.90	-1.88	83.66
113	113	-39.33	24.61	0.02	-172.81	81.30	0.23	86.50
113	114	84.64	26.61	-0.30	-47.13	79.44	0.55	93.94
114	114	84.52	28.98	0.78	-47.11	72.87	0.81	28.88

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
114	115	146.42	27.82	0.79	12.92	74.24	0.80	40.35
115	115	146.41	26.74	1.86	12.93	72.15	0.88	36.02
115	116	89.70	28.02	1.83	-30.96	71.07	0.91	24.68
116	116	89.80	23.19	1.98	-30.99	73.06	0.54	87.55
116	117	-30.37	22.16	0.39	-144.35	74.22	2.13	80.34
117	117	-30.38	43.08	-0.17	-144.36	90.29	-0.23	76.55
117	118	48.96	37.97	-0.75	-50.71	80.77	0.35	33.07
118	118	48.78	37.81	-1.01	-50.50	80.41	-1.04	33.24
118	119	72.33	30.01	-1.02	-34.17	73.58	-1.03	10.48
119	119	72.35	30.11	-0.63	-34.06	73.40	-1.96	10.36
119	120	33.12	22.31	-0.64	-51.61	66.58	-1.95	29.85
120	120	33.33	22.88	-0.12	-51.72	66.53	-2.68	29.83
120	121	-20.31	17.00	-0.37	-113.20	57.79	-2.43	41.62
121	121	-20.33	13.96	-0.25	-113.33	35.71	-2.33	57.30
121	122	36.30	13.01	-2.59	-36.52	36.59	0.01	44.94
122	122	35.31	12.62	1.06	-36.58	36.71	0.61	44.96
122	123	101.59	9.48	1.05	-7.74	39.74	0.62	5.70
123	123	101.76	9.26	3.59	-7.73	39.99	0.90	5.97
123	124	51.20	12.35	3.58	-28.44	36.80	0.90	40.77
124	124	51.87	12.24	2.93	-28.42	37.34	0.42	40.75
124	125	-15.56	14.07	0.58	-97.68	35.44	2.77	67.82
125	125	-15.54	18.46	-0.04	-97.53	68.34	-0.08	41.07
125	126	43.85	23.17	-0.42	-46.09	78.25	0.30	27.54
126	126	43.84	22.89	-0.90	-45.89	74.24	-1.60	27.44
126	127	77.72	30.65	-0.91	-33.97	81.09	-1.59	6.19
127	127	77.72	30.80	-0.84	-34.02	80.30	-2.26	6.13
127	128	43.70	38.60	-0.85	-57.79	87.12	-2.25	38.13
128	128	43.72	39.43	-0.36	-58.01	87.30	-1.76	38.13
128	113	-39.32	44.67	-0.37	-172.77	96.68	-1.74	83.36
129	129	-38.90	24.50	0.00	-170.75	80.84	0.19	86.29
129	130	86.16	26.23	-0.23	-46.62	79.25	0.42	93.73
130	130	86.08	28.81	0.93	-46.55	72.83	0.77	28.63
130	131	147.41	27.65	0.94	13.09	74.20	0.76	40.10
131	131	147.40	26.78	1.96	13.09	72.33	0.89	36.42
131	132	89.44	28.06	1.94	-31.52	71.25	0.91	25.08
132	132	89.50	23.48	1.93	-31.60	73.55	0.56	88.63
132	133	-31.14	22.35	0.42	-147.26	74.80	2.06	81.42
133	133	-31.16	43.39	-0.13	-147.26	91.49	-0.23	77.05
133	134	48.68	38.44	-0.60	-52.15	81.80	0.23	33.49
134	134	48.50	38.18	-0.96	-51.90	81.58	-1.17	33.55
134	135	72.73	30.37	-0.96	-35.04	74.75	-1.16	10.17
135	135	72.75	30.44	-0.72	-34.89	74.91	-1.98	10.18
135	136	33.69	22.63	-0.72	-52.15	68.09	-1.98	29.76
136	136	33.89	23.37	-0.26	-52.29	69.88	-2.43	29.89
136	137	-20.25	17.56	-0.38	-113.60	61.08	-2.31	41.76
137	137	-20.27	14.00	-0.18	-113.78	35.81	-1.70	60.56

Barra Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
137 138	40.26	12.98	-1.95	-36.01	36.76	0.07	44.70
138 138	39.30	12.69	1.22	-35.99	36.81	0.64	45.00
138 139	103.51	9.55	1.21	-7.47	39.84	0.64	4.84
139 139	103.71	9.45	3.17	-7.46	40.06	0.92	5.09
139 140	50.23	12.53	3.16	-28.95	36.88	0.92	41.80
140 140	50.91	12.62	2.48	-28.99	37.50	0.49	41.81
140 141	-16.38	14.16	0.55	-101.42	35.89	2.41	69.02
141 141	-16.37	18.81	-0.06	-101.28	69.63	-0.27	41.81
141 142	43.39	23.59	-0.39	-47.98	79.48	0.06	28.19
142 142	43.29	22.98	-0.89	-47.79	74.39	-1.62	28.09
142 143	77.80	30.75	-0.89	-34.57	81.25	-1.62	6.76
143 143	77.80	30.80	-0.86	-34.64	80.35	-2.16	6.70
143 144	44.19	38.60	-0.86	-57.20	87.17	-2.16	38.01
144 144	44.30	39.30	-0.40	-57.41	87.21	-1.62	38.02
144 129	-38.90	44.65	-0.37	-170.73	96.48	-1.65	83.34
145 145	-38.48	24.37	-0.03	-168.74	80.34	0.11	86.12
145 146	87.65	25.86	-0.16	-46.07	78.99	0.24	93.55
146 146	87.58	28.66	1.08	-45.96	72.76	0.72	28.40
146 147	148.38	27.50	1.09	13.31	74.13	0.71	39.87
147 147	148.36	26.83	2.06	13.28	72.47	0.93	36.82
147 148	89.10	28.11	2.06	-32.02	71.39	0.93	25.49
148 148	89.16	23.79	1.87	-32.13	73.99	0.58	89.72
148 149	-31.90	22.54	0.46	-150.18	75.37	1.99	82.52
149 149	-31.91	43.70	-0.11	-150.16	92.70	-0.30	77.46
149 150	48.24	38.91	-0.48	-53.63	82.87	0.07	33.81
150 150	48.12	38.52	-0.92	-53.32	82.71	-1.33	33.83
150 151	72.97	30.72	-0.92	-35.79	75.89	-1.33	9.83
151 151	72.99	30.74	-0.79	-35.62	76.33	-2.01	9.90
151 152	34.20	22.93	-0.79	-52.37	69.52	-2.01	29.57
152 152	34.34	23.73	-0.37	-52.54	73.29	-2.12	29.78
152 153	-20.05	17.99	-0.39	-113.32	64.41	-2.10	41.74
153 153	-20.06	14.02	-0.14	-113.57	35.82	-0.99	63.92
153 154	43.35	12.90	-1.23	-35.47	36.88	0.10	44.10
154 154	42.53	12.72	1.32	-35.40	36.87	0.64	44.50
154 155	105.00	9.58	1.31	-7.19	39.90	0.64	4.13
155 155	105.19	9.60	2.74	-7.15	40.10	0.95	4.34
155 156	49.21	12.68	2.73	-29.42	36.91	0.95	42.70
156 156	49.90	12.95	2.01	-29.51	37.59	0.61	42.72
156 157	-17.17	14.23	0.54	-104.87	36.25	2.07	70.06
157 157	-17.18	19.15	-0.04	-104.75	70.76	-0.42	42.52
157 158	42.92	24.01	-0.30	-49.64	80.52	-0.17	28.81
158 158	42.69	23.03	-0.84	-49.47	74.36	-1.64	28.70
158 159	77.80	30.80	-0.84	-35.04	81.21	-1.64	7.28
159 159	77.80	30.77	-0.91	-35.13	80.29	-2.06	7.22
159 160	44.62	38.57	-0.91	-56.58	87.11	-2.06	37.89
160 160	44.86	39.19	-0.50	-56.77	87.15	-1.50	37.90

Barra Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
160 145	-38.50	44.65	-0.40	-168.75	96.31	-1.61	83.31
161 161	-38.04	24.21	-0.08	-166.75	79.78	-0.01	85.97
161 162	89.11	25.49	-0.10	-45.42	78.64	0.01	93.40
162 162	89.04	28.52	1.24	-45.27	72.64	0.67	28.16
162 163	149.33	27.36	1.24	13.61	74.00	0.68	39.63
163 163	149.30	26.91	2.18	13.53	72.59	0.99	37.25
163 164	88.70	28.19	2.19	-32.48	71.51	0.98	25.91
164 164	88.76	24.13	1.80	-32.61	74.40	0.60	90.86
164 165	-32.66	22.71	0.49	-153.20	75.94	1.91	83.65
165 165	-32.67	44.02	-0.09	-153.17	93.95	-0.41	77.82
165 166	47.72	39.38	-0.39	-55.11	83.96	-0.11	34.09
166 166	47.65	38.85	-0.90	-54.77	83.76	-1.50	34.11
166 167	73.10	31.05	-0.90	-36.39	76.94	-1.51	9.43
167 167	73.12	31.01	-0.83	-36.23	77.62	-2.03	9.52
167 168	34.67	23.21	-0.83	-52.22	70.80	-2.03	29.27
168 168	34.75	23.88	-0.44	-52.43	76.21	-1.76	29.48
168 169	-19.78	18.19	-0.39	-112.27	67.27	-1.81	41.53
169 169	-19.79	14.03	-0.11	-112.52	35.74	-0.29	66.79
169 170	45.78	12.75	-0.51	-34.89	36.95	0.10	43.84
170 170	45.02	12.70	1.41	-34.80	36.90	0.61	44.12
170 171	106.11	9.56	1.41	-6.86	39.93	0.61	3.66
171 171	106.20	9.69	2.33	-6.80	40.08	0.98	3.70
171 172	48.08	12.77	2.33	-29.81	36.90	0.98	43.48
172 172	48.77	13.21	1.50	-29.92	37.59	0.78	43.43
172 173	-17.93	14.26	0.55	-107.98	36.47	1.72	70.67
173 173	-17.95	19.48	0.01	-107.86	71.40	-0.51	43.18
173 174	42.40	24.44	-0.09	-51.01	81.06	-0.42	29.39
174 174	41.97	23.03	-0.74	-50.91	74.09	-1.63	29.25
174 175	77.63	30.80	-0.74	-35.39	80.95	-1.63	7.74
175 175	77.63	30.68	-1.01	-35.51	80.10	-1.95	7.72
175 176	44.91	38.49	-1.01	-55.97	86.92	-1.95	37.75
176 176	45.35	39.09	-0.73	-56.13	87.10	-1.40	37.74
176 161	-38.08	44.65	-0.47	-166.80	96.17	-1.66	83.24
177 177	-37.54	24.00	-0.15	-164.65	79.11	-0.17	85.82
177 178	90.56	25.10	-0.04	-44.56	78.15	-0.28	93.26
178 178	90.47	28.40	1.41	-44.42	72.46	0.65	27.91
178 179	150.26	27.24	1.40	13.97	73.83	0.66	39.38
179 179	150.22	27.02	2.30	13.86	72.67	1.07	37.70
179 180	88.19	28.30	2.32	-32.94	71.59	1.06	26.36
180 180	88.27	24.50	1.72	-33.06	74.77	0.61	92.04
180 181	-33.46	22.88	0.52	-156.39	76.52	1.82	84.84
181 181	-33.46	44.36	-0.09	-156.34	95.25	-0.55	78.18
181 182	47.15	39.88	-0.35	-56.58	85.10	-0.30	34.36
182 182	47.13	39.17	-0.89	-56.24	84.72	-1.68	34.38
182 183	73.18	31.36	-0.89	-36.83	77.90	-1.68	8.97
183 183	73.19	31.26	-0.86	-36.69	78.70	-2.04	9.05

Barra Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
183 184	35.11	23.46	-0.85	-51.70	71.88	-2.04	28.89
184 184	35.14	23.97	-0.49	-51.95	78.20	-1.40	29.03
184 185	-19.49	18.32	-0.38	-110.49	69.23	-1.52	41.17
185 185	-19.50	14.02	-0.09	-110.71	35.57	0.33	68.78
185 186	47.71	12.54	0.14	-34.30	36.99	0.10	43.61
186 186	46.98	12.62	1.56	-34.23	36.89	0.57	43.79
186 187	106.81	9.49	1.56	-6.48	39.92	0.56	3.51
187 187	106.75	9.72	1.98	-6.40	40.01	1.00	3.43
187 188	46.72	12.80	1.98	-30.04	36.83	1.00	44.19
188 188	47.47	13.38	0.89	-30.14	37.45	1.01	44.05
188 189	-18.60	14.24	0.57	-110.45	36.52	1.32	69.50
189 189	-18.63	19.79	0.11	-110.32	70.39	-0.50	43.66
189 190	41.72	24.85	0.28	-52.08	79.95	-0.67	29.78
190 190	41.05	22.96	-0.56	-52.06	73.56	-1.58	29.68
190 191	77.11	30.73	-0.55	-35.68	80.41	-1.58	8.09
191 191	77.10	30.55	-1.20	-35.83	79.78	-1.84	8.22
191 192	45.00	38.35	-1.19	-55.40	86.61	-1.85	37.56
192 192	45.67	38.97	-1.11	-55.52	87.08	-1.33	37.43
192 177	-37.59	44.65	-0.59	-164.74	96.02	-1.85	83.01
193 193	-36.88	23.73	-0.22	-162.21	78.31	-0.36	85.63
193 194	92.05	24.69	0.02	-43.39	77.48	-0.60	93.07
194 194	91.90	28.30	1.59	-43.32	72.23	0.66	27.60
194 195	151.16	27.14	1.58	14.38	73.59	0.67	39.07
195 195	151.11	27.15	2.41	14.26	72.72	1.16	38.17
195 196	87.57	28.43	2.44	-33.44	71.64	1.13	26.84
196 196	87.71	24.90	1.62	-33.52	75.12	0.60	93.28
196 197	-34.30	23.04	0.53	-159.76	77.11	1.69	86.08
197 197	-34.29	44.72	-0.11	-159.69	96.60	-0.72	78.55
197 198	46.54	40.42	-0.33	-58.03	86.27	-0.50	34.64
198 198	46.57	39.46	-0.90	-57.68	85.56	-1.84	34.66
198 199	73.24	31.66	-0.90	-37.07	78.73	-1.85	8.44
199 199	73.25	31.49	-0.87	-36.96	79.55	-2.01	8.51
199 200	35.53	23.69	-0.86	-50.83	72.72	-2.02	28.44
200 200	35.52	24.08	-0.50	-51.11	78.58	-1.07	28.54
200 201	-19.20	18.44	-0.35	-108.27	69.59	-1.22	40.76
201 201	-19.22	14.00	-0.06	-108.45	35.33	0.88	69.02
201 202	49.41	12.27	0.70	-33.71	37.00	0.12	43.34
202 202	48.65	12.49	1.78	-33.69	36.85	0.54	43.43
202 203	107.05	9.36	1.78	-6.07	39.88	0.53	3.38
203 203	106.85	9.68	1.68	-6.00	39.87	0.99	3.33
203 204	44.89	12.77	1.68	-30.07	36.69	0.99	44.90
204 204	45.76	13.42	0.16	-30.09	37.12	1.23	44.64
204 205	-19.06	14.15	0.56	-111.69	36.33	0.83	67.06
205 205	-19.08	19.87	0.26	-111.56	68.07	-0.33	43.67
205 206	40.67	24.99	0.82	-52.89	77.58	-0.90	29.70
206 206	39.87	22.81	-0.29	-52.91	72.76	-1.49	29.92

Barra Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
206 207	76.02	30.57	-0.28	-36.00	79.62	-1.49	8.23
207 207	76.00	30.36	-1.45	-36.15	79.33	-1.75	8.76
207 208	44.78	38.16	-1.44	-54.92	86.16	-1.75	37.27
208 208	45.57	38.77	-1.68	-55.02	87.05	-1.31	36.78
208 193	-36.95	44.63	-0.78	-162.33	95.82	-2.22	82.44
209 209	-35.98	23.39	-0.26	-159.13	77.35	-0.45	85.26
209 210	93.59	24.25	0.14	-41.88	76.62	-0.85	92.70
210 210	93.28	28.21	1.81	-41.96	71.94	0.69	27.21
210 211	151.97	27.05	1.79	14.75	73.31	0.72	38.68
211 211	151.94	27.29	2.48	14.68	72.74	1.21	38.68
211 212	86.80	28.57	2.53	-34.02	71.66	1.17	27.34
212 212	87.09	25.32	1.46	-33.99	75.45	0.54	94.59
212 213	-35.20	23.19	0.52	-163.31	77.71	1.49	87.39
213 213	-35.17	45.10	-0.16	-163.20	98.01	-0.93	79.09
213 214	45.91	40.99	-0.35	-59.42	87.50	-0.73	35.10
214 214	46.00	39.72	-0.93	-59.06	86.26	-1.99	35.08
214 215	73.32	31.93	-0.92	-37.09	79.43	-2.00	7.98
215 215	73.32	31.69	-0.86	-37.03	80.18	-1.96	8.00
215 216	35.98	23.89	-0.85	-49.64	73.35	-1.97	28.02
216 216	35.91	24.20	-0.47	-49.95	78.33	-0.75	28.06
216 217	-18.89	18.55	-0.29	-105.77	69.34	-0.93	40.37
217 217	-18.93	13.98	0.01	-105.95	35.05	1.42	68.71
217 218	50.95	11.96	1.22	-33.12	37.00	0.20	42.88
218 218	50.17	12.32	2.05	-33.20	36.77	0.55	42.99
218 219	106.80	9.19	2.06	-5.65	39.80	0.54	3.74
219 219	106.55	9.59	1.42	-5.65	39.68	0.97	3.45
219 220	42.26	12.67	1.42	-29.95	36.49	0.97	45.74
220 220	43.18	13.33	-0.67	-29.88	36.59	1.33	45.12
220 221	-19.09	13.98	0.47	-111.21	35.88	0.19	63.85
221 221	-19.08	19.41	0.41	-111.06	64.68	-0.12	42.85
221 222	38.85	24.46	1.40	-53.58	74.26	-1.12	28.80
222 222	38.44	22.56	-0.03	-53.43	71.75	-1.41	29.89
222 223	74.20	30.32	-0.02	-36.40	78.61	-1.42	8.11
223 223	74.19	30.09	-1.69	-36.51	78.76	-1.65	9.39
223 224	44.26	37.89	-1.68	-54.52	85.59	-1.65	36.82
224 224	44.64	38.37	-2.29	-54.77	86.98	-1.28	35.48
224 209	-36.01	44.54	-0.96	-159.19	95.44	-2.61	81.24
225 225	-34.76	23.00	-0.17	-155.21	76.27	-0.23	84.88
225 226	95.11	23.79	0.44	-40.32	75.61	-0.85	92.32
226 226	94.50	28.14	2.08	-40.55	71.63	0.73	26.80
226 227	152.63	26.97	2.06	15.06	73.00	0.76	38.26
227 227	152.64	27.44	2.47	15.10	72.73	1.17	39.33
227 228	85.82	28.72	2.52	-34.68	71.65	1.13	28.00
228 228	86.44	25.74	1.17	-34.44	75.76	0.38	95.95
228 229	-36.15	23.34	0.43	-167.00	78.30	1.12	88.75
229 229	-36.08	45.52	-0.25	-166.81	99.46	-1.21	79.93

Barra Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
229 230	45.33	41.60	-0.44	-60.67	88.76	-1.01	35.86
230 230	45.46	39.94	-0.96	-60.32	86.82	-2.12	35.79
230 231	73.46	32.15	-0.95	-36.87	79.98	-2.13	7.74
231 231	73.44	31.86	-0.83	-36.89	80.61	-1.87	7.80
231 232	36.45	24.07	-0.82	-48.18	73.78	-1.88	27.90
232 232	36.34	24.30	-0.40	-48.51	77.85	-0.42	27.96
232 233	-18.57	18.64	-0.21	-103.01	68.88	-0.61	40.36
233 233	-18.62	13.96	0.12	-103.18	34.74	1.96	68.21
233 234	52.39	11.64	1.72	-32.55	36.99	0.36	42.26
234 234	51.63	12.12	2.34	-32.75	36.67	0.63	42.41
234 235	106.04	9.00	2.35	-5.30	39.70	0.62	4.51
235 235	105.80	9.46	1.08	-5.38	39.45	0.95	4.19
235 236	38.81	12.54	1.08	-29.83	36.26	0.94	46.27
236 236	39.98	13.14	-1.39	-29.56	35.90	1.25	46.57
236 237	-18.50	13.75	0.32	-108.86	35.23	-0.46	58.72
237 237	-18.40	17.34	0.30	-108.51	58.45	-0.49	39.55
237 238	37.23	22.09	1.33	-53.84	68.34	-1.52	29.17
238 238	37.77	22.23	-0.04	-53.30	70.61	-1.49	27.76
238 239	72.75	30.00	-0.03	-36.46	77.47	-1.50	9.67
239 239	72.76	29.78	-1.67	-36.48	78.10	-1.48	8.21
239 240	44.46	37.57	-1.66	-53.76	84.94	-1.49	34.35
240 240	43.92	37.60	-2.23	-54.30	86.82	-0.97	35.68
240 225	-34.64	44.33	-0.87	-154.89	94.72	-2.34	77.76
241 241	-33.93	22.66	0.11	-152.23	75.32	0.43	84.90
241 242	96.63	23.37	1.07	-38.73	74.73	-0.53	92.33
242 242	95.40	28.07	2.50	-39.35	71.34	0.80	26.39
242 243	152.91	26.90	2.48	15.28	72.71	0.84	37.85
243 243	152.94	27.58	2.26	15.38	72.71	0.99	39.96
243 244	84.57	28.86	2.32	-35.45	71.63	0.94	28.63
244 244	85.81	26.15	0.60	-34.85	76.04	0.06	97.31
244 245	-37.13	23.47	0.20	-170.65	78.85	0.46	90.11
245 245	-37.00	45.96	-0.41	-170.34	100.89	-1.58	80.83
245 246	44.89	42.23	-0.61	-61.62	89.99	-1.38	36.73
246 246	45.01	40.09	-0.98	-61.37	87.22	-2.18	36.51
246 247	73.70	32.32	-0.97	-36.41	80.36	-2.20	7.52
247 247	73.63	31.99	-0.77	-36.55	80.86	-1.74	7.61
247 248	36.97	24.20	-0.76	-46.54	74.02	-1.74	27.80
248 248	36.84	24.36	-0.29	-46.86	77.22	-0.12	27.89
248 249	-18.20	18.70	-0.10	-99.99	68.25	-0.30	40.38
249 249	-18.26	13.93	0.27	-100.14	34.42	2.49	67.55
249 250	53.76	11.31	2.18	-32.00	36.97	0.58	41.46
250 250	53.11	11.94	2.63	-32.30	36.58	0.80	41.62
250 251	104.66	8.81	2.64	-5.07	39.61	0.78	5.45
251 251	104.34	9.33	0.71	-5.25	39.24	0.91	4.99
251 252	34.69	12.41	0.72	-29.96	36.06	0.91	45.88
252 252	35.75	12.97	-2.00	-29.58	35.34	0.97	45.39

Barra Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
252 253	-18.36	13.56	0.11	-107.43	34.69	-1.14	55.94
253 253	-18.22	16.84	-0.06	-107.05	55.37	-1.43	38.57
253 254	35.53	21.50	0.60	-53.78	65.34	-2.09	28.19
254 254	36.46	21.92	-0.35	-53.18	69.48	-1.71	27.58
254 255	71.01	29.68	-0.35	-36.42	76.35	-1.72	9.49
255 255	71.06	29.46	-1.39	-36.31	77.40	-1.30	8.71
255 256	44.04	37.23	-1.38	-53.05	84.25	-1.32	33.84
256 256	43.13	37.24	-1.47	-53.60	86.80	-0.36	34.47
256 241	-33.72	44.30	-0.47	-151.75	94.36	-1.36	76.55
257 257	-33.30	22.37	0.68	-149.61	74.53	1.63	84.81
257 258	98.02	23.00	2.22	-37.38	74.03	0.09	92.25
258 258	95.88	28.00	3.24	-38.54	71.10	1.08	25.85
258 259	152.19	26.84	3.22	15.12	72.46	1.11	37.32
259 259	152.28	27.69	1.71	15.23	72.69	0.61	40.37
259 260	82.98	28.98	1.79	-36.31	71.61	0.54	29.05
260 260	85.11	26.49	-0.50	-35.20	76.27	-0.54	98.44
260 261	-38.00	23.57	-0.31	-173.86	79.32	-0.73	91.24
261 261	-37.75	46.33	-0.65	-173.37	102.01	-2.04	81.76
261 262	44.77	42.77	-0.87	-61.99	90.94	-1.83	37.63
262 262	44.77	40.16	-0.95	-62.01	87.42	-2.11	37.14
262 263	74.00	32.40	-0.94	-35.79	80.55	-2.13	7.35
263 263	73.86	32.05	-0.68	-36.08	80.95	-1.55	7.46
263 264	37.49	24.27	-0.68	-44.87	74.11	-1.55	27.73
264 264	37.38	24.36	-0.17	-45.10	76.43	0.10	27.80
264 265	-17.77	18.70	-0.01	-96.75	67.47	-0.07	40.38
265 265	-17.81	13.90	0.43	-96.81	34.11	2.91	66.74
265 266	55.10	11.00	2.50	-31.47	36.95	0.83	40.51
266 266	54.72	11.78	2.88	-31.77	36.52	1.03	40.61
266 267	102.76	8.65	2.89	-5.05	39.54	1.01	6.65
267 267	102.50	9.23	0.42	-5.29	39.08	0.89	6.24
267 268	31.00	12.31	0.42	-30.50	35.90	0.88	43.21
268 268	31.54	12.87	-2.51	-30.05	34.95	0.56	43.26
268 269	-18.45	13.44	-0.20	-106.42	34.32	-1.76	53.37
269 269	-18.29	16.50	-0.40	-106.13	52.81	-2.22	38.16
269 270	34.72	21.20	-0.10	-53.25	62.73	-2.53	27.78
270 270	35.46	21.64	-0.68	-52.89	68.44	-1.96	27.58
270 271	70.04	29.38	-0.67	-35.96	75.32	-1.97	9.49
271 271	70.11	29.13	-1.15	-35.76	76.66	-1.27	9.13
271 272	44.09	36.89	-1.13	-51.85	83.53	-1.28	33.41
272 272	43.41	37.03	-0.68	-52.03	86.59	0.28	33.91
272 257	-33.00	44.29	-0.02	-148.98	93.95	-0.38	75.99
273 273	-32.17	22.12	1.78	-145.76	73.85	3.68	83.45
273 274	98.30	22.61	4.33	-36.50	73.49	1.13	90.88
274 274	95.75	27.93	4.27	-38.04	70.90	1.65	24.85
274 275	149.50	26.76	4.29	13.92	72.27	1.64	36.31
275 275	149.82	27.76	0.79	14.09	72.67	-0.01	40.31

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
275	276	80.89	29.04	0.90	-37.23	71.59	-0.12	28.98
276	276	83.53	26.72	-2.51	-35.72	76.42	-1.60	98.34
276	277	-38.18	23.62	-1.37	-175.55	79.66	-2.74	91.15
277	277	-37.75	45.99	-0.93	-174.87	101.81	-2.51	82.43
277	278	45.14	42.59	-1.16	-61.61	90.58	-2.28	38.25
278	278	44.85	40.11	-0.82	-62.13	87.43	-1.87	37.52
278	279	74.24	32.37	-0.82	-35.30	80.54	-1.87	7.33
279	279	74.08	32.05	-0.59	-35.66	80.91	-1.37	7.33
279	280	37.97	24.28	-0.59	-43.35	74.06	-1.36	27.68
280	280	37.90	24.25	-0.12	-43.46	75.50	0.13	27.66
280	281	-17.22	18.63	0.04	-93.26	66.50	-0.03	40.32
281	281	-17.24	13.88	0.55	-93.22	33.82	3.08	65.80
281	282	56.45	10.72	2.58	-30.92	36.92	1.04	39.44
282	282	56.67	11.66	2.95	-31.05	36.47	1.25	39.31
282	283	100.37	8.54	2.96	-5.29	39.50	1.23	8.12
283	283	100.44	9.17	0.31	-5.45	38.98	0.91	7.93
283	284	27.27	12.26	0.31	-31.58	35.80	0.90	41.48
284	284	27.11	12.83	-2.77	-31.23	34.72	0.12	40.54
284	285	-18.37	13.37	-0.56	-105.54	34.12	-2.09	50.68
285	285	-18.25	15.86	-0.63	-105.41	50.17	-2.65	38.01
285	286	34.40	20.67	-0.56	-52.51	59.98	-2.71	27.63
286	286	34.73	21.39	-0.88	-52.62	67.55	-2.11	27.71
286	287	69.63	29.13	-0.88	-35.35	74.43	-2.11	9.61
287	287	69.61	28.80	-1.05	-35.29	75.91	-1.42	9.70
287	288	44.66	36.54	-1.03	-50.06	82.80	-1.43	32.92
288	288	44.44	36.18	-0.09	-49.75	84.87	0.75	33.40
288	273	-31.70	43.59	0.36	-144.96	92.09	0.30	75.48
289	289	-28.22	21.90	3.80	-136.76	73.29	6.72	76.44
289	290	92.72	22.22	7.64	-38.06	73.09	2.89	83.86
290	290	94.58	27.85	4.94	-37.50	70.77	2.28	23.09
290	291	144.40	26.69	5.06	11.04	72.13	2.18	34.55
291	291	145.62	27.78	-0.03	11.72	72.64	-0.67	39.84
291	292	77.76	29.07	0.16	-38.22	71.56	-0.86	28.51
292	292	77.40	26.80	-5.48	-38.06	76.48	-3.34	93.79
292	293	-35.68	23.60	-3.32	-173.18	79.82	-5.52	86.59
293	293	-35.37	41.97	-1.05	-172.90	96.74	-2.73	82.15
293	294	45.63	38.78	-1.31	-60.88	85.29	-2.47	37.72
294	294	44.93	39.96	-0.69	-62.26	87.27	-1.62	37.91
294	295	74.42	32.25	-0.70	-34.85	80.35	-1.62	7.41
295	295	74.12	32.01	-0.53	-35.60	80.79	-1.23	7.81
295	296	38.44	24.25	-0.54	-41.95	73.93	-1.23	27.57
296	296	38.18	23.82	-0.16	-42.48	73.79	-0.06	27.32
296	297	-16.51	18.35	0.02	-89.25	64.64	-0.23	40.06
297	297	-16.50	13.85	0.59	-89.12	33.60	3.02	64.27
297	298	57.14	10.50	2.45	-30.56	36.89	1.16	37.77
298	298	59.18	11.61	2.62	-30.09	36.46	1.29	37.65

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
298	299	97.55	8.49	2.62	-5.75	39.48	1.28	9.92
299	299	99.89	9.16	0.27	-4.88	38.94	0.89	11.75
299	300	24.70	12.25	0.28	-32.49	35.76	0.88	37.35
300	300	23.17	12.86	-2.26	-32.56	34.63	0.09	39.90
300	301	-17.90	13.35	-0.57	-104.75	34.08	-1.60	47.16
301	301	-17.96	14.52	-0.71	-105.00	46.85	-2.72	38.20
301	302	34.44	19.57	-0.77	-51.33	56.42	-2.65	27.81
302	302	34.08	21.20	-0.93	-52.79	66.88	-2.07	28.13
302	303	69.60	28.93	-0.93	-34.55	73.78	-2.07	10.04
303	303	69.12	28.50	-0.97	-35.35	75.22	-1.51	10.56
303	304	45.52	36.21	-0.97	-48.04	82.13	-1.52	32.33
304	304	45.02	31.38	0.10	-48.38	76.72	0.73	31.57
304	289	-27.81	38.90	0.47	-136.29	83.83	0.36	73.65
305	305	-18.01	21.04	9.13	-120.66	74.06	10.41	59.23
305	306	74.08	22.14	13.63	-47.68	72.97	5.90	66.55
306	306	97.66	27.84	7.56	-34.73	70.79	3.71	19.09
306	307	137.53	26.63	7.78	7.01	72.00	3.49	30.49
307	307	142.94	27.81	-0.24	10.03	72.69	-1.29	39.20
307	308	76.79	29.04	0.11	-37.98	71.46	-1.64	27.80
308	308	63.20	26.84	-10.29	-45.98	76.53	-6.67	82.70
308	309	-27.60	23.57	-6.79	-164.11	79.80	-10.18	75.38
309	309	-32.28	36.30	-1.58	-171.29	90.52	-4.12	82.68
309	310	46.17	33.28	-1.98	-59.00	78.91	-3.73	38.19
310	310	43.85	39.87	-1.00	-64.72	87.16	-2.35	40.20
310	311	75.43	32.18	-1.00	-32.49	80.23	-2.35	9.25
311	311	73.45	31.97	-0.79	-37.14	80.71	-1.81	9.23
311	312	39.32	24.21	-0.80	-39.87	73.84	-1.80	27.01
312	312	37.78	23.36	-0.27	-43.11	72.20	-0.20	26.77
312	313	-15.94	18.00	0.01	-85.97	62.93	-0.48	39.55
313	313	-15.43	13.84	0.89	-83.85	33.54	4.49	59.81
313	314	53.25	10.48	3.59	-31.56	36.91	1.79	33.29
314	314	64.19	11.59	3.63	-28.30	36.42	1.91	34.10
314	315	92.16	8.49	3.65	-7.48	39.52	1.89	13.33
315	315	101.01	9.17	0.31	-3.85	38.91	1.30	13.88
315	316	22.83	12.28	0.32	-33.84	35.79	1.28	37.36
316	316	18.81	12.90	-2.85	-33.47	34.61	0.31	37.09
316	317	-17.51	13.37	-0.70	-103.72	34.15	-1.85	44.41
317	317	-18.57	14.18	-1.06	-107.59	45.82	-4.05	40.54
317	318	35.56	19.43	-1.19	-47.69	55.20	-3.92	30.14
318	318	32.59	21.13	-1.38	-55.79	66.66	-3.05	30.67
318	319	70.86	28.85	-1.38	-31.46	73.56	-3.05	12.57
319	319	67.76	28.37	-1.42	-37.25	74.95	-2.25	12.68
319	320	46.99	36.08	-1.41	-45.48	81.87	-2.26	31.16
320	320	43.52	25.31	0.14	-49.81	68.14	0.98	29.00
320	305	-23.06	32.72	0.69	-127.48	75.35	0.42	71.08
321	1	-1.57	0.01	2.06	-5.62	0.21	5.82	8.32

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
321	17	5.65	0.21	5.82	1.57	0.01	2.06	8.32
322	17	-0.61	-0.10	1.71	-1.79	0.19	4.75	1.65
322	33	1.80	0.19	4.75	0.61	-0.10	1.71	1.65
323	33	-0.09	0.01	0.94	-0.36	-0.09	3.07	0.33
323	49	0.36	-0.09	3.07	0.09	0.01	0.94	0.33
324	49	0.04	0.66	0.45	-0.06	-1.18	2.01	0.06
324	65	0.08	1.17	1.20	-0.08	-1.83	1.33	0.06
325	65	0.07	1.40	0.28	-0.02	-2.68	1.39	0.07
325	81	0.03	1.26	0.74	-0.12	-2.75	0.99	0.07
326	81	0.08	1.57	0.07	-0.04	-3.99	1.24	0.07
326	97	0.02	1.26	0.51	-0.13	-3.77	0.83	0.07
327	97	0.07	1.71	0.00	-0.06	-5.00	1.10	0.07
327	113	0.02	1.19	0.41	-0.13	-4.58	0.70	0.07
328	113	0.07	1.73	0.01	-0.08	-5.81	0.98	0.06
328	129	0.02	1.09	0.37	-0.14	-5.18	0.62	0.06
329	129	0.07	1.83	0.08	-0.10	-6.34	0.88	0.05
329	145	0.02	0.99	0.38	-0.13	-5.50	0.58	0.05
330	145	0.07	1.90	0.23	-0.11	-6.50	0.79	0.05
330	161	0.02	0.90	0.42	-0.12	-5.50	0.60	0.05
331	161	0.07	1.92	0.49	-0.11	-6.25	0.72	0.06
331	177	0.02	0.84	0.49	-0.12	-5.17	0.72	0.06
332	177	0.09	1.88	0.87	-0.11	-5.59	0.69	0.07
332	193	0.01	0.81	0.60	-0.12	-4.53	0.96	0.07
333	193	0.14	1.74	1.33	-0.09	-4.59	0.67	0.12
333	209	0.00	0.95	0.73	-0.15	-3.69	1.29	0.12
334	209	0.23	1.50	1.63	-0.05	-3.38	0.57	0.20
334	225	-0.02	-1.42	0.57	-0.22	-0.36	1.66	0.20
335	225	0.14	1.22	1.04	-0.06	-2.05	0.13	0.12
335	241	0.02	-0.48	0.05	-0.13	-0.16	1.16	0.12
336	241	0.14	0.97	0.12	-0.02	-0.96	-0.56	0.11
336	257	0.00	0.56	-0.13	-0.12	0.23	0.09	0.11
337	257	0.46	0.40	-1.87	0.15	0.12	-0.73	0.42
337	273	-0.14	0.12	-0.73	-0.45	0.40	-1.87	0.42
338	273	2.16	0.44	-3.91	0.77	0.03	-1.59	1.98
338	289	-0.77	0.03	-1.59	-2.14	0.44	-3.91	1.98
339	289	6.39	0.34	-5.42	1.92	0.08	-1.86	9.41
339	305	-1.91	0.08	-1.86	-6.36	0.34	-5.42	9.41
340	2	-0.40	0.04	1.25	-1.64	0.19	3.10	3.53
340	18	13.30	0.19	3.10	3.22	0.04	1.25	22.45
341	18	10.14	0.25	3.68	2.44	0.06	1.52	18.54
341	34	10.29	0.18	3.42	2.49	0.13	1.78	18.36
342	34	8.82	0.04	1.75	2.21	0.21	1.05	18.65
342	50	8.45	0.04	1.75	1.85	0.21	1.05	18.23
343	50	7.69	0.65	0.53	1.60	-0.83	0.41	18.49
343	66	7.61	-0.42	0.49	1.49	0.24	0.45	18.41
344	66	7.11	0.84	-0.05	1.18	-1.74	-0.01	18.38
344	82	7.23	-1.10	-0.18	1.30	0.20	0.11	18.52
345	82	6.79	0.78	0.08	0.95	-2.56	-0.61	18.30
345	98	7.07	-2.58	-0.53	1.21	0.80	0.00	18.59
346	98	6.63	0.66	-0.01	0.82	-3.33	-0.71	18.24
346	114	7.02	-3.53	-0.24	1.17	0.76	-0.10	18.63
347	114	6.53	0.53	-0.03	0.74	-3.95	-0.76	18.20
347	130	7.02	-4.31	-0.30	1.15	0.88	-0.49	18.66
348	130	6.46	0.41	-0.02	0.67	-4.36	-0.77	18.16
348	146	7.02	-4.85	-0.35	1.14	0.90	-0.44	18.68
349	146	6.40	0.94	0.00	0.59	-5.11	-0.76	18.12
349	162	7.04	-4.25	-0.40	1.12	0.08	-0.36	18.71
350	162	6.33	0.88	0.03	0.46	-4.91	-0.74	18.09
350	178	7.07	-4.73	-0.45	1.13	0.71	-0.27	18.78
351	178	6.27	0.08	0.05	0.30	-3.60	-0.73	18.03
351	194	7.14	-4.22	-0.50	1.23	0.70	-0.17	18.90
352	194	6.24	0.16	0.04	0.19	-2.88	-0.77	17.96
352	210	7.41	-3.14	-0.68	1.40	0.43	-0.05	19.10
353	210	6.31	1.00	-0.08	0.30	-2.71	-0.90	17.87
353	226	7.98	-2.20	-0.87	1.64	0.49	-0.12	19.30
354	226	6.62	1.06	-0.36	0.80	-1.77	-1.18	17.88
354	242	8.43	-1.24	-1.25	1.84	0.54	-0.29	19.25
355	242	7.07	1.04	-1.01	1.30	-0.93	-1.79	17.85
355	258	9.04	-0.43	-2.11	2.14	0.54	-0.68	19.23
356	258	8.01	0.41	-3.64	1.78	0.18	-1.40	17.74
356	274	10.27	0.41	-3.64	2.60	0.18	-1.40	19.33
357	274	10.08	0.48	-5.41	2.45	0.10	-2.44	17.85
357	290	11.58	0.44	-5.62	2.86	0.14	-2.22	19.05
358	290	13.49	0.27	-4.34	3.23	0.10	-1.87	22.32
358	306	-0.22	0.10	-1.87	-1.27	0.27	-4.34	3.36
359	3	-0.66	0.09	-0.14	-1.66	0.18	-1.31	3.72
359	19	14.00	0.18	-1.18	4.11	0.09	-0.27	22.97
360	19	10.01	0.59	-0.85	2.23	0.09	-1.70	17.66
360	35	12.97	0.39	-2.23	4.01	0.28	-0.32	19.71
361	35	10.04	0.42	-2.11	2.62	0.45	-0.56	18.38
361	51	10.34	0.40	-2.26	2.88	0.47	-0.42	18.49
362	51	8.63	1.13	-1.07	2.06	-0.47	-1.64	18.51
362	67	8.49	0.08	-2.24	1.99	0.57	-0.47	18.35
363	67	7.57	1.34	-1.01	1.45	-1.26	-1.74	18.42
363	83	7.56	-0.56	-1.83	1.50	0.64	-0.92	18.45
364	83	6.96	1.33	-1.04	1.09	-2.08	-1.74	18.32
364	99	7.19	-1.34	-1.84	1.22	0.60	-0.95	18.53
365	99	6.64	1.26	-1.05	0.94	-2.92	-1.75	18.25
365	115	7.05	-2.17	-1.84	1.08	0.51	-0.95	18.56
366	115	6.48	1.10	-0.62	0.87	-3.62	-2.17	18.20
366	131	7.00	-2.94	-1.85	1.02	0.42	-0.94	18.57
367	131	6.42	1.00	-0.62	0.82	-4.20	-2.18	18.16

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
367	147	6.98	-3.54	-1.86	1.00	0.34	-0.94	18.55
368	147	6.38	0.92	-0.63	0.78	-4.53	-2.20	18.12
368	163	6.95	-3.82	-1.87	0.99	0.22	-0.96	18.53
369	163	6.35	0.82	-0.65	0.73	-4.47	-2.26	18.09
369	179	6.95	-3.84	-1.90	0.99	0.19	-1.01	18.54
370	179	6.36	0.82	-0.68	0.70	-4.13	-2.34	18.07
370	195	7.00	-3.51	-1.93	1.07	0.20	-1.08	18.59
371	195	6.43	-2.92	-1.95	0.75	0.32	-1.18	18.04
371	211	7.15	-2.86	-1.97	1.28	0.26	-1.16	18.67
372	211	6.66	-2.05	-1.96	0.96	0.43	-1.23	17.99
372	227	7.62	-1.95	-2.57	1.52	0.32	-0.62	18.76
373	227	7.20	-1.13	-1.95	1.38	0.52	-1.21	17.94
373	243	8.46	-1.02	-2.55	1.89	0.41	-0.60	18.85
374	243	8.42	-0.29	-2.44	1.97	0.48	-0.62	17.88
374	259	9.78	-0.26	-2.50	2.45	0.44	-0.56	18.89
375	259	10.62	0.21	-2.31	2.97	0.42	-0.63	18.05
375	275	11.27	0.23	-2.45	2.99	0.40	-0.49	18.60
376	275	13.59	0.35	-1.99	4.20	0.27	-0.65	19.56
376	291	10.92	0.36	-2.31	2.52	0.27	-0.34	17.73
377	291	14.59	0.19	-1.15	4.28	0.10	-0.26	23.34
377	307	-0.63	0.09	-0.38	-1.57	0.19	-1.02	4.03
378	4	-0.47	0.11	-1.90	-1.47	0.27	-4.53	3.27
378	20	12.93	0.30	-4.72	3.24	0.09	-1.72	22.02
379	20	10.09	0.78	-6.31	2.14	0.24	-2.33	18.40
379	36	10.08	0.78	-6.31	2.59	0.24	-2.33	18.28
380	36	8.84	1.15	-4.76	1.95	0.40	-1.67	18.48
380	52	8.29	1.15	-4.76	1.99	0.40	-1.67	18.11
381	52	7.70	1.10	-3.52	1.59	0.46	-1.10	18.37
381	68	7.46	0.51	-3.35	1.59	1.05	-1.28	18.23
382	68	7.18	1.70	-1.39	1.35	-0.59	-2.26	18.36
382	84	7.05	0.00	-2.74	1.28	1.10	-0.91	18.27
383	84	6.92	1.64	-1.15	1.22	-1.30	-2.08	18.40
383	100	6.80	-0.73	-2.47	1.03	1.06	-0.76	18.26
384	100	6.71	-1.56	-2.46	1.15	0.95	-0.59	18.35
384	116	6.68	-1.57	-2.35	0.92	0.96	-0.70	18.25
385	116	6.65	-2.45	-2.43	1.11	0.87	-0.56	18.32
385	132	6.61	-2.40	-2.29	0.90	0.82	-0.71	18.22
386	132	6.66	-3.22	-2.44	1.11	0.79	-0.57	18.33
386	148	6.56	-1.89	-2.12	0.90	-0.54	-0.88	18.20
387	148	6.70	-2.95	-2.45	1.13	-0.08	-0.60	18.36
387	164	6.51	1.57	-0.83	0.88	-4.59	-2.21	18.18
388	164	6.77	-3.16	-2.47	1.15	-0.09	-0.62	18.42
388	180	6.50	0.74	-0.86	0.83	-3.99	-2.23	18.16
389	180	6.85	-3.74	-2.48	1.18	0.68	-0.65	18.48
389	196	6.50	0.76	-0.89	0.80	-3.82	-2.24	18.15
390	196	6.98	-3.18	-2.45	1.24	0.73	-0.65	18.52

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
390	212	6.54	0.82	-0.89	0.82	-4.00	-2.22	18.14
391	212	7.19	-2.33	-2.29	1.33	0.80	-0.59	18.55
391	228	6.66	1.58	-0.78	0.92	-3.11	-2.10	18.14
392	228	7.53	-1.38	-1.89	1.49	0.84	-0.41	18.56
392	244	6.94	1.56	-0.50	1.14	-2.10	-1.80	18.16
393	244	8.11	-0.54	-1.06	1.76	0.80	-0.01	18.53
393	260	7.52	1.30	0.09	1.53	-1.04	-1.16	18.21
394	260	9.17	0.38	0.48	2.20	0.32	0.63	18.50
394	276	8.73	0.29	0.83	1.93	0.42	0.29	18.31
395	276	11.16	0.44	2.49	2.86	0.21	1.42	18.91
395	292	9.74	0.38	2.77	2.01	0.27	1.14	18.17
396	292	13.81	0.19	2.51	3.48	0.07	1.20	23.07
396	308	-0.63	0.07	1.20	-1.96	0.19	2.51	4.22
397	5	-1.86	0.08	-2.00	-6.19	0.38	-5.62	9.21
397	21	6.22	0.38	-5.62	1.86	0.08	-2.00	9.21
398	21	-0.76	0.20	-1.73	-2.23	1.00	-4.68	2.08
398	37	2.26	1.00	-4.68	0.77	0.20	-1.73	2.08
399	37	-0.20	0.47	-1.08	-0.67	1.55	-3.17	0.64
399	53	0.70	1.55	-3.17	0.22	0.47	-1.08	0.64
400	53	-0.08	1.27	-0.65	-0.34	0.89	-2.15	0.33
400	69	0.37	1.64	-2.19	0.10	0.52	-0.61	0.33
401	69	-0.06	1.95	-0.45	-0.31	-0.18	-1.41	0.29
401	85	0.33	1.31	-1.53	0.09	0.47	-0.32	0.29
402	85	-0.07	2.05	-0.20	-0.35	-1.02	-1.06	0.31
402	101	0.35	0.68	-1.11	0.11	0.25	-0.18	0.31
403	101	-0.07	2.07	-0.15	-0.34	-1.99	-1.01	0.29
403	117	0.32	-0.14	-1.03	0.10	0.11	-0.15	0.29
404	117	-0.07	1.92	-0.18	-0.34	-3.00	-1.03	0.29
404	133	0.30	-1.04	-1.04	0.10	-0.03	-0.17	0.29
405	133	-0.07	1.87	-0.20	-0.35	-3.91	-1.03	0.29
405	149	0.30	-1.89	-1.03	0.10	-0.15	-0.20	0.29
406	149	-0.07	1.82	-0.23	-0.37	-4.58	-0.99	0.30
406	165	0.30	-2.54	-0.99	0.10	-0.22	-0.23	0.30
407	165	-0.07	1.78	-0.25	-0.38	-4.89	-0.92	0.31
407	181	0.31	-2.87	-0.92	0.10	-0.24	-0.25	0.31
408	181	-0.07	1.76	-0.25	-0.39	-4.77	-0.83	0.32
408	197	0.32	-2.82	-0.82	0.10	-0.19	-0.25	0.32
409	197	-0.07	1.76	-0.21	-0.40	-4.22	-0.70	0.33
409	213	0.34	-2.26	-0.69	0.10	-0.09	-0.23	0.33
410	213	-0.07	1.74	-0.11	-0.40	-3.32	-0.49	0.34
410	229	0.35	-1.52	-0.47	0.10	0.05	-0.15	0.34
411	229	-0.07	1.67	0.14	-0.38	-2.16	-0.20	0.34
411	245	0.36	-0.67	-0.07	0.10	0.19	0.01	0.34
412	245	-0.02	1.50	0.60	-0.32	-1.16	0.35	0.29
412	261	0.31	-0.41	0.39	0.05	0.75	0.56	0.29
413	261	0.24	1.26	1.57	-0.10	-0.46	1.14	0.21

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
413	277	0.09	-0.46	1.14	-0.20	1.26	1.57	0.21
414	277	1.56	0.45	3.83	0.53	0.24	1.57	1.43
414	293	-0.52	0.24	1.57	-1.54	0.45	3.83	1.43
415	293	5.30	0.25	5.07	1.53	0.02	1.93	7.84
415	309	-1.53	0.02	1.93	-5.27	0.25	5.07	7.84
416	6	0.63	0.08	0.74	0.21	-0.01	0.19	0.53
416	22	0.05	0.03	0.47	-0.19	0.05	0.47	0.53
417	22	1.66	0.64	0.90	0.52	0.14	0.24	1.31
417	38	-0.47	0.11	0.23	-1.18	0.66	0.91	1.31
418	38	0.74	0.34	0.26	-0.03	0.77	0.47	0.95
418	54	-0.57	0.16	0.14	-1.41	0.95	0.59	0.95
419	54	0.35	0.17	0.13	-0.44	0.93	0.59	0.65
419	70	-0.50	0.20	0.16	-1.31	0.90	0.56	0.65
420	70	0.18	-0.16	0.16	-0.57	0.97	0.86	0.45
420	86	-0.36	0.14	0.26	-1.09	0.67	0.75	0.45
421	86	0.13	-0.57	0.29	-0.50	0.89	1.06	0.31
421	102	0.12	0.62	1.11	-0.59	-0.30	0.24	0.31
422	102	0.46	-0.53	1.11	0.05	0.24	0.36	0.40
422	118	0.20	0.51	1.10	-0.57	-0.79	0.37	0.40
423	118	0.53	-1.09	1.14	0.13	0.16	0.35	0.46
423	134	0.12	0.36	0.99	-0.62	-1.29	0.50	0.46
424	134	0.45	-1.62	1.20	0.14	0.08	0.34	0.48
424	150	0.03	0.21	0.88	-0.68	-1.74	0.66	0.48
425	150	0.37	-2.02	1.32	0.13	0.03	0.33	0.47
425	166	-0.05	0.09	0.80	-0.71	-2.08	0.85	0.47
426	166	0.32	-2.23	1.48	0.12	0.01	0.34	0.47
426	182	-0.11	0.04	0.76	-0.72	-2.25	1.06	0.47
427	182	0.29	-2.16	1.67	0.09	0.04	0.36	0.47
427	198	-0.15	0.46	0.36	-0.76	-2.59	1.67	0.47
428	198	0.25	-1.84	1.86	0.05	0.10	0.41	0.48
428	214	-0.20	0.51	0.39	-0.82	-2.25	1.87	0.48
429	214	0.17	-1.33	2.06	-0.04	0.18	0.48	0.48
429	230	-0.27	-0.08	0.43	-0.91	-1.06	2.11	0.48
430	230	0.05	-1.36	2.17	-0.22	0.86	0.68	0.45
430	246	-0.33	-0.02	0.51	-1.03	-0.47	2.33	0.45
431	246	-0.13	-0.76	2.28	-0.49	0.78	0.79	0.35
431	262	-0.34	0.06	0.57	-1.07	-0.04	2.50	0.35
432	262	-0.34	-0.32	2.15	-0.84	0.60	0.92	0.23
432	278	-0.19	0.08	0.57	-0.76	0.21	2.49	0.23
433	278	-0.41	0.10	0.79	-1.01	0.15	1.77	0.67
433	294	0.50	0.32	0.58	-0.06	-0.07	1.98	0.67
434	294	-0.11	-0.04	0.21	-0.37	-0.06	1.05	0.46
434	310	0.29	0.00	0.19	0.08	-0.09	1.01	0.46
435	7	0.24	0.01	1.21	0.04	-0.04	0.64	0.06
435	23	0.32	0.01	1.21	0.03	-0.04	0.64	0.06
436	23	1.00	0.27	1.91	0.14	0.02	1.03	0.48

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
436	39	0.10	0.17	1.65	-0.35	0.11	1.28	0.48
437	39	0.92	0.09	1.86	-0.15	0.06	1.04	0.69
437	55	-0.34	0.08	1.55	-0.84	0.07	1.34	0.69
438	55	0.56	0.02	1.62	-0.60	-0.03	1.02	0.66
438	71	-0.46	-0.12	0.56	-1.18	0.10	2.07	0.66
439	71	0.23	-0.08	1.52	-0.93	-0.13	0.92	0.52
439	87	-0.37	-0.19	0.50	-1.13	-0.02	1.94	0.52
440	87	0.03	-0.18	1.49	-0.93	-0.24	0.90	0.59
440	103	0.41	-0.49	0.90	-0.71	0.07	1.48	0.59
441	103	0.19	-0.60	1.87	-0.06	-0.05	0.56	0.39
441	119	0.54	-0.35	0.89	-0.70	-0.19	1.53	0.39
442	119	0.25	-0.47	1.94	0.03	-0.29	0.59	0.39
442	135	0.42	-0.48	0.91	-0.77	-0.39	1.63	0.39
443	135	0.24	-0.62	1.03	-0.12	-0.47	1.65	0.33
443	151	0.27	-0.61	0.93	-0.80	-0.49	1.75	0.33
444	151	0.19	-0.72	1.05	-0.26	-0.55	1.78	0.25
444	167	0.16	-0.71	0.95	-0.78	-0.57	1.88	0.25
445	167	0.13	-0.75	1.07	-0.37	-0.59	1.91	0.17
445	183	0.07	-0.74	0.97	-0.72	-0.61	2.01	0.17
446	183	0.06	-0.70	1.09	-0.44	-0.58	2.01	0.10
446	199	-0.01	-0.68	0.98	-0.64	-0.48	2.12	0.10
447	199	-0.03	-0.53	0.99	-0.51	-0.41	2.21	0.08
447	215	-0.09	-0.81	0.98	-0.60	-0.23	2.22	0.08
448	215	-0.14	-0.56	0.98	-0.63	-0.15	2.27	0.07
448	231	-0.18	-0.56	0.97	-0.57	-0.15	2.27	0.07
449	231	-0.25	-0.21	0.54	-0.80	-0.16	2.67	0.16
449	247	-0.21	-0.30	0.95	-0.51	-0.07	2.26	0.16
450	247	-0.34	-0.12	0.48	-0.93	-0.01	2.55	0.30
450	263	-0.12	-0.15	2.48	-0.36	0.02	0.56	0.30
451	263	-0.32	-0.07	0.39	-0.84	0.04	2.29	0.44
451	279	0.19	-0.07	2.20	-0.09	0.03	0.48	0.44
452	279	-0.15	-0.04	0.31	-0.35	0.02	1.94	0.38
452	295	0.48	0.04	1.95	0.13	-0.05	0.30	0.38
453	295	0.12	-0.08	1.15	0.03	-0.07	0.18	0.01
453	311	0.12	-0.10	1.19	0.03	-0.07	0.18	0.01
454	8	0.14	-0.11	1.38	-0.02	-0.09	0.56	0.02
454	24	0.12	-0.11	1.38	-0.03	-0.09	0.55	0.02
455	24	0.49	-0.18	2.35	-0.10	-0.33	1.06	0.14
455	40	0.20	-0.16	2.16	-0.10	-0.35	1.24	0.14
456	40	0.63	-0.32	2.58	-0.22	-0.68	1.02	0.34
456	56	-0.04	-0.28	2.22	-0.32	-0.72	1.38	0.34
457	56	0.50	-0.29	2.61	-0.44	-0.99	0.80	0.44
457	72	-0.23	-0.40	0.64	-0.62	-0.88	2.76	0.44
458	72	0.25	-0.11	2.54	-0.65	-1.25	0.50	0.41
458	88	-0.22	-0.48	0.52	-0.77	-0.82	2.53	0.41
459	88	0.03	0.20	2.43	-0.67	-1.37	0.30	0.44

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
459	104	0.32	-0.97	0.26	-0.59	-0.26	2.46	0.44
460	104	0.04	0.35	2.21	-0.09	-1.35	0.45	0.28
460	120	0.39	-1.07	0.29	-0.61	0.07	2.37	0.28
461	120	0.07	-1.23	0.61	-0.15	0.46	2.11	0.23
461	136	0.32	-1.18	0.42	-0.63	0.42	2.30	0.23
462	136	0.04	-1.33	0.73	-0.36	0.76	2.02	0.13
462	152	0.25	-1.28	0.54	-0.62	0.72	2.21	0.13
463	152	0.00	-1.40	0.82	-0.56	0.99	1.92	0.11
463	168	0.20	-1.35	0.63	-0.52	0.94	2.10	0.11
464	168	-0.04	-1.42	0.86	-0.70	1.11	1.80	0.23
464	184	0.15	-1.36	0.69	-0.37	1.06	1.98	0.23
465	184	-0.08	-0.64	0.47	-0.77	0.41	2.06	0.32
465	200	0.09	-1.29	0.71	-0.23	1.05	1.82	0.32
466	200	-0.11	-0.59	0.44	-0.84	0.43	1.90	0.38
466	216	0.04	-0.91	0.79	-0.14	0.75	1.56	0.38
467	216	-0.17	-0.49	0.40	-0.93	0.43	1.72	0.44
467	232	0.10	0.96	1.61	-0.18	-0.96	0.50	0.44
468	232	-0.23	-0.34	0.31	-1.02	0.39	1.51	0.53
468	248	0.23	0.86	1.46	-0.19	-0.86	0.38	0.53
469	248	-0.26	-0.25	0.23	-1.01	0.21	1.32	0.63
469	264	0.43	0.66	1.32	-0.11	-0.70	0.23	0.63
470	264	-0.22	-0.17	0.17	-0.80	0.05	1.17	0.69
470	280	0.72	0.40	1.24	0.05	-0.51	0.10	0.69
471	280	-0.11	-0.09	0.15	-0.35	-0.04	1.09	0.60
471	296	0.95	0.11	1.24	0.16	-0.25	0.00	0.60
472	296	0.13	-0.06	0.64	0.01	-0.08	0.11	0.11
472	312	0.28	-0.07	0.67	0.05	-0.07	0.07	0.11
473	9	0.08	-0.19	0.54	-0.42	-0.20	2.21	0.62
473	25	0.41	-0.20	2.21	-0.08	-0.19	0.54	0.62
474	25	-0.05	-0.73	0.72	-0.44	-0.68	3.00	0.40
474	41	0.42	-0.68	3.00	0.02	-0.79	0.72	0.40
475	41	-0.09	-1.22	0.67	-0.55	-0.99	3.47	0.50
475	57	0.53	-0.84	3.47	0.05	-1.33	0.67	0.50
476	57	-0.10	-1.04	0.41	-0.67	-1.50	3.82	0.61
476	73	0.65	-0.68	3.73	0.06	-1.86	0.49	0.61
477	73	-0.13	-1.24	0.16	-0.80	-1.21	3.84	0.73
477	89	0.78	-0.19	3.77	0.09	-2.26	0.23	0.73
478	89	-0.29	-0.77	0.44	-1.09	-0.61	3.65	1.01
478	105	1.09	0.56	3.61	0.25	-2.50	-0.02	1.01
479	105	-0.16	-1.39	-0.05	-0.93	0.16	3.30	0.86
479	121	0.95	1.43	3.27	0.12	-2.66	-0.03	0.86
480	121	-0.13	-1.45	0.01	-0.93	0.94	2.86	0.88
480	137	0.98	2.29	2.85	0.09	-2.80	0.02	0.88
481	137	-0.09	-1.51	0.07	-0.93	1.66	2.31	0.88
481	153	1.00	3.06	2.31	0.05	-2.91	0.08	0.88
482	153	-0.04	-1.56	0.14	-0.79	2.20	1.64	0.76
482	169	0.88	3.61	1.64	0.00	-2.97	0.14	0.76
483	169	-0.02	-1.07	0.21	-0.55	2.00	0.95	0.55
483	185	0.65	3.88	0.97	-0.01	-2.95	0.20	0.55
484	185	-0.01	-1.02	0.23	-0.16	2.02	0.39	0.18
484	201	0.25	3.83	0.39	-0.01	-2.82	0.23	0.18
485	201	0.09	2.95	-0.21	-0.09	-2.01	0.33	0.07
485	217	0.07	3.08	-0.06	-0.01	-2.53	0.21	0.07
486	217	0.14	2.62	-0.59	-0.08	-1.81	0.18	0.09
486	233	0.06	-0.65	0.22	-0.07	1.45	-0.63	0.09
487	233	0.18	2.14	-0.96	-0.07	-1.55	-0.02	0.14
487	249	0.04	-0.54	0.04	-0.13	1.13	-1.02	0.14
488	249	0.21	1.55	-1.25	-0.04	-1.25	-0.24	0.17
488	265	0.02	-0.43	-0.16	-0.17	0.73	-1.33	0.17
489	265	0.24	0.92	-1.37	-0.02	-0.89	-0.43	0.21
489	281	0.00	-0.78	-0.43	-0.22	0.77	-1.37	0.21
490	281	0.44	0.31	-1.39	0.03	-0.49	-0.41	0.41
490	297	-0.04	-0.43	-0.41	-0.43	0.31	-1.39	0.41
491	297	1.00	0.06	-1.18	0.16	-0.09	-0.35	1.47
491	313	-0.16	-0.09	-0.35	-0.99	0.06	-1.18	1.47
492	10	-0.19	-0.07	0.10	-0.72	-0.18	0.54	0.14
492	26	-0.10	-0.14	-0.09	-0.55	-0.12	0.72	0.14
493	26	-0.68	-0.30	0.32	-2.62	-0.82	1.65	1.45
493	42	0.61	-0.74	0.37	0.20	-0.38	1.59	1.45
494	42	-0.34	-0.58	0.38	-2.08	-1.08	2.30	1.45
494	58	1.06	-1.17	2.30	0.38	-0.49	0.38	1.45
495	58	-0.19	-0.92	-0.05	-1.77	-0.88	2.92	1.47
495	74	1.45	-1.08	2.53	0.39	-0.62	0.35	1.47
496	74	-0.09	-1.07	-0.16	-1.51	-0.46	2.84	1.49
496	90	1.75	-0.75	2.42	0.33	-0.78	0.27	1.49
497	90	-0.11	-1.02	-0.26	-1.22	0.21	2.40	1.54
497	106	2.10	0.21	2.40	0.31	-1.13	-0.27	1.54
498	106	-0.10	-0.60	0.09	-0.71	0.44	1.34	1.23
498	122	1.96	1.00	1.77	0.21	-1.16	-0.34	1.23
499	122	-0.08	-0.14	0.05	-0.65	0.74	0.69	1.18
499	138	1.99	2.15	1.10	0.15	-1.55	-0.37	1.18
500	138	-0.08	-0.04	-0.02	-0.33	1.30	0.12	0.97
500	154	1.87	3.66	0.44	0.11	-2.40	-0.35	0.97
501	154	0.19	4.10	-0.28	-0.32	-2.38	-0.14	0.70
501	170	1.58	4.14	-0.11	0.08	-2.42	-0.31	0.70
502	170	0.31	4.27	-0.77	-0.31	-2.35	-0.10	0.52
502	186	1.30	4.32	-0.62	0.08	-2.40	-0.25	0.52
503	186	0.35	3.31	-1.25	-0.27	-1.48	-0.07	0.41
503	202	1.08	4.14	-1.11	0.11	-2.31	-0.21	0.41
504	202	0.36	2.53	-1.75	-0.18	-1.00	-0.08	0.36
504	218	0.97	3.22	-1.70	0.16	-1.69	-0.13	0.36
505	218	0.39	1.96	-2.19	-0.07	-0.83	-0.23	0.30

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
505	234	0.92	2.68	-2.19	0.18	-1.45	-0.23	0.30
506	234	0.45	1.28	-2.71	0.05	-0.62	-0.37	0.21
506	250	0.81	1.93	-2.71	0.18	-1.27	-0.37	0.21
507	250	0.41	0.64	-3.16	0.13	-0.35	-0.57	0.11
507	266	0.57	1.23	-3.19	0.13	-1.04	-0.53	0.11
508	266	0.28	-0.90	-0.88	0.04	0.75	-3.31	0.08
508	282	0.34	-0.35	-0.98	-0.05	0.20	-3.21	0.08
509	282	0.12	-0.51	-0.97	-0.23	0.28	-3.16	0.16
509	298	0.21	-0.13	-1.13	-0.16	-0.10	-3.00	0.16
510	298	0.00	-0.09	-0.73	-0.18	0.04	-1.69	0.20
510	314	0.10	0.05	-1.98	-0.04	-0.08	-0.44	0.20
511	11	-0.13	-0.05	-0.50	-0.87	-0.07	-1.08	0.29
511	27	-0.11	-0.05	-0.50	-0.50	-0.07	-1.08	0.29
512	27	-0.47	-0.25	-1.01	-2.94	-0.35	-2.32	1.48
512	43	0.30	-0.21	-2.70	0.12	-0.45	-0.62	1.48
513	43	-0.23	-0.51	-1.07	-2.62	-0.32	-2.70	1.77
513	59	1.27	-0.41	-3.09	0.31	-0.43	-0.68	1.77
514	59	-0.02	-0.63	-1.04	-1.83	0.03	-2.86	1.71
514	75	1.90	-0.08	-3.24	0.37	-0.51	-0.66	1.71
515	75	0.07	-0.67	-1.00	-1.06	0.66	-2.93	1.52
515	91	2.24	0.66	-2.93	0.34	-0.67	-1.00	1.52
516	91	0.10	-1.07	-1.15	-0.37	1.87	-2.69	1.21
516	107	2.26	1.46	-2.87	0.23	-0.65	-0.97	1.21
517	107	0.23	2.19	-3.02	-0.10	-0.48	-0.69	0.93
517	123	2.11	2.32	-2.76	0.12	-0.61	-0.95	0.93
518	123	0.45	3.03	-2.54	-0.14	-0.46	-1.04	0.73
518	139	1.94	3.11	-2.64	0.03	-0.54	-0.94	0.73
519	139	0.67	4.45	-2.39	-0.23	-0.35	-1.03	0.54
519	155	1.76	4.58	-2.50	-0.05	-0.48	-0.93	0.54
520	155	0.85	4.80	-2.26	-0.32	-1.11	-1.02	0.37
520	171	1.60	5.04	-2.37	-0.08	-1.35	-0.90	0.37
521	171	1.01	4.73	-2.20	-0.38	-0.16	-0.98	0.24
521	187	1.46	5.06	-2.31	-0.06	-0.50	-0.87	0.24
522	187	1.19	3.57	-2.23	-0.37	-0.17	-0.93	0.28
522	203	1.36	3.89	-2.35	0.05	-0.50	-0.81	0.28
523	203	1.43	3.15	-2.50	-0.26	-0.44	-0.76	0.32
523	219	1.21	3.23	-2.48	0.25	-0.52	-0.77	0.32
524	219	1.65	2.28	-2.67	-0.05	-0.46	-0.75	0.39
524	235	1.09	2.17	-2.88	0.36	-0.36	-0.55	0.39
525	235	1.84	1.36	-2.83	0.24	-0.47	-0.81	0.61
525	251	0.90	-0.17	-1.15	0.40	1.06	-2.49	0.61
526	251	2.06	0.48	-3.33	0.47	-0.37	-0.64	0.94
526	267	0.95	-0.42	-1.12	-0.25	0.53	-2.85	0.94
527	267	1.86	-0.05	-3.53	0.61	-0.32	-0.77	1.24
527	283	0.60	-0.39	-1.35	-1.12	0.02	-2.95	1.24
528	283	1.02	-0.04	-3.45	0.50	-0.39	-0.89	1.38

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
528	299	-0.25	-0.18	-1.20	-2.05	-0.19	-3.14	1.38
529	299	-0.03	-0.03	-0.61	-0.42	-0.04	-1.52	0.12
529	315	-0.08	-0.03	-0.61	-0.57	-0.04	-1.52	0.12
530	12	0.15	-0.01	-2.14	0.03	-0.05	-0.62	0.41
530	28	-0.07	-0.02	-0.57	-0.42	-0.03	-2.18	0.41
531	28	0.25	-0.37	-1.31	-0.14	-0.02	-3.67	0.37
531	44	-0.13	-0.27	-0.81	-0.70	-0.12	-4.16	0.37
532	44	0.21	-0.73	-1.13	-0.23	0.47	-4.18	0.20
532	60	-0.06	-0.44	-1.24	-0.41	0.24	-4.33	0.20
533	60	0.27	-0.74	-1.35	0.03	1.19	-4.32	0.17
533	76	0.02	-0.32	-1.25	-0.10	0.87	-4.42	0.17
534	76	0.56	1.60	-4.25	0.10	-0.19	-1.20	0.22
534	92	0.22	2.32	-4.45	-0.09	-0.91	-1.00	0.22
535	92	0.76	2.62	-3.93	0.12	0.00	-1.14	0.28
535	108	0.32	3.39	-4.14	-0.12	-0.88	-0.92	0.28
536	108	0.85	3.51	-3.52	0.12	0.13	-1.07	0.32
536	124	0.35	4.43	-3.73	-0.17	-0.79	-0.86	0.32
537	124	0.86	4.30	-3.10	0.10	0.36	-1.02	0.33
537	140	0.36	5.32	-3.28	-0.21	-0.67	-0.84	0.33
538	140	0.84	5.00	-2.69	0.07	0.49	-0.99	0.32
538	156	0.39	5.97	-2.82	-0.25	-0.53	-0.86	0.32
539	156	0.88	5.85	-2.05	-0.02	0.01	-1.23	0.30
539	172	0.45	6.29	-2.36	-0.27	-0.43	-0.92	0.30
540	172	1.03	6.17	-1.89	-0.14	-0.38	-0.99	0.31
540	188	0.51	6.08	-1.89	-0.25	0.60	-1.00	0.31
541	188	1.27	5.58	-1.38	-0.26	-0.41	-1.05	0.37
541	204	0.54	4.56	-1.36	-0.12	0.61	-1.07	0.37
542	204	1.58	4.59	-0.79	-0.29	-0.55	-1.06	0.54
542	220	0.47	3.63	-0.76	0.15	0.41	-1.09	0.54
543	220	1.89	3.32	-0.16	-0.09	-0.78	-1.00	0.95
543	236	0.41	-0.38	-0.98	-0.18	3.02	-0.18	0.95
544	236	1.54	2.00	0.64	0.17	-0.98	-0.81	0.77
544	252	0.67	-0.79	-0.92	-0.18	1.81	0.75	0.77
545	252	1.91	0.87	0.89	0.39	-0.91	-0.06	1.12
545	268	0.75	-0.92	-0.55	-0.78	0.79	1.38	1.12
546	268	1.62	-0.02	1.33	0.57	-0.76	0.20	1.09
546	284	0.63	-0.86	-0.08	-1.08	0.08	1.61	1.09
547	284	1.48	-0.36	0.30	0.71	-0.47	1.39	1.78
547	300	-0.66	-0.48	0.37	-2.42	-0.35	1.31	1.78
548	300	-0.15	-0.06	-0.10	-0.64	-0.13	0.71	0.09
548	316	-0.14	-0.10	0.17	-0.58	-0.09	0.45	0.09
549	13	-0.26	-0.03	-0.42	-1.29	-0.02	-1.86	1.91
549	29	1.30	-0.02	-1.86	0.26	-0.03	-0.42	1.91
550	29	-0.14	-0.18	-0.49	-0.67	0.11	-2.15	0.61
550	45	0.67	0.11	-2.15	0.13	-0.42	-0.60	0.61
551	45	-0.10	-0.56	-0.62	-0.44	0.79	-2.42	0.42

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
551	61	0.46	0.90	-2.40	0.08	-0.64	-0.63	0.42
552	61	-0.10	-0.17	-0.51	-0.42	1.32	-2.58	0.40
552	77	0.46	2.07	-2.48	0.08	-0.91	-0.61	0.40
553	77	-0.10	-0.04	-0.46	-0.39	2.42	-2.43	0.39
553	93	0.46	3.34	-2.36	0.08	-0.96	-0.53	0.39
554	93	-0.09	0.13	-0.40	-0.34	3.57	-2.14	0.35
554	109	0.44	4.63	-2.10	0.08	-0.92	-0.44	0.35
555	109	-0.09	0.33	-0.34	-0.28	4.68	-1.80	0.31
555	125	0.41	5.83	-1.78	0.08	-0.83	-0.36	0.31
556	125	-0.08	0.53	-0.30	-0.22	5.62	-1.47	0.26
556	141	0.37	6.85	-1.45	0.07	-0.70	-0.32	0.26
557	141	-0.05	6.42	-1.03	-0.17	0.60	-0.41	0.20
557	157	0.31	7.57	-1.15	0.07	-0.56	-0.30	0.20
558	157	0.09	6.63	-0.64	-0.16	0.83	-0.53	0.15
558	173	0.19	2.60	-0.55	0.06	4.85	-0.62	0.15
559	173	0.48	6.39	-0.18	-0.15	0.94	-0.75	0.37
559	189	0.17	2.21	-0.75	-0.34	4.63	-0.18	0.37
560	189	0.77	5.67	0.39	-0.07	0.87	-1.06	0.64
560	205	0.09	2.09	-1.07	-0.64	4.45	0.40	0.64
561	205	0.97	5.09	0.85	0.11	-0.49	-0.45	0.83
561	221	-0.11	1.17	-1.28	-0.85	3.94	0.88	0.83
562	221	1.59	3.85	0.40	0.47	-0.73	-0.40	1.43
562	237	-0.48	0.32	-0.44	-1.51	2.79	0.44	1.43
563	237	0.85	2.08	1.20	0.12	-0.95	-0.11	0.76
563	253	-0.13	-0.03	-0.18	-0.81	1.16	1.27	0.76
564	253	0.72	0.76	2.63	0.06	-1.06	-0.30	0.66
564	269	-0.07	-0.32	-0.39	-0.71	0.02	2.72	0.66
565	269	0.71	-0.17	3.01	0.11	-0.87	0.32	0.65
565	285	-0.13	-0.79	0.31	-0.72	-0.27	3.02	0.65
566	285	0.84	-0.55	3.10	0.24	-0.62	0.73	0.78
566	301	-0.25	-0.56	0.73	-0.86	-0.55	3.10	0.78
567	301	0.68	-0.23	2.46	0.07	-0.10	0.52	1.01
567	317	-0.08	-0.10	0.52	-0.69	-0.23	2.46	1.01
568	14	0.33	-0.06	0.53	0.06	-0.06	0.05	0.12
568	30	0.18	-0.03	0.39	0.02	-0.08	0.18	0.12
569	30	1.15	0.01	0.83	0.20	-0.15	0.06	0.64
569	46	-0.06	-0.11	0.07	-0.24	-0.03	0.82	0.64
570	46	1.04	0.47	0.94	0.14	-0.42	-0.05	0.78
570	62	-0.17	-0.16	0.08	-0.68	0.21	0.81	0.78
571	62	0.81	0.88	0.52	0.04	-0.33	0.48	0.78
571	78	-0.23	-0.13	0.12	-0.95	0.68	0.88	0.78
572	78	0.60	1.46	0.59	0.00	-0.23	0.61	0.73
572	94	-0.23	-0.06	0.19	-1.03	1.35	1.00	0.73
573	94	0.46	2.40	1.16	0.01	-0.37	0.22	0.65
573	110	-0.20	-0.01	0.25	-1.00	1.99	1.13	0.65
574	110	0.38	3.00	1.28	0.04	-0.29	0.28	0.59

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
574	126	-0.13	0.53	0.76	-0.94	2.19	0.79	0.59
575	126	0.34	3.56	1.37	0.08	-0.19	0.30	0.52
575	142	-0.05	0.73	0.76	-0.88	2.64	0.92	0.52
576	142	0.32	3.98	1.43	0.12	-0.10	0.30	0.46
576	158	0.07	0.92	0.69	-0.82	2.96	1.03	0.46
577	158	0.45	1.33	0.54	0.06	2.81	1.15	0.40
577	174	0.24	1.05	0.55	-0.76	3.09	1.14	0.40
578	174	0.68	1.39	0.28	-0.03	2.70	1.20	0.31
578	190	0.46	1.11	0.28	-0.67	2.99	1.20	0.31
579	190	1.00	1.29	-0.13	-0.11	2.36	1.20	0.25
579	206	0.63	1.00	-0.14	-0.53	2.65	1.22	0.25
580	206	1.33	0.75	-0.65	-0.16	2.08	1.21	0.48
580	222	0.37	0.75	-0.65	-0.45	2.08	1.21	0.48
581	222	1.27	0.35	-0.90	-0.27	1.35	1.31	1.27
581	238	-0.66	0.13	-0.15	-1.69	1.63	0.57	1.27
582	238	-0.34	-0.07	0.04	-1.17	0.70	1.06	0.45
582	254	-0.56	0.86	1.49	-1.67	-0.28	-0.40	0.45
583	254	-0.49	-0.20	0.31	-1.38	-0.05	1.73	0.30
583	270	-0.17	0.28	1.79	-1.25	-0.53	0.26	0.30
584	270	-0.42	-0.24	0.52	-0.99	-0.41	2.22	0.37
584	286	0.18	-0.07	1.97	-0.67	-0.58	0.77	0.37
585	286	-0.12	-0.15	1.91	-0.55	-0.39	0.97	0.31
585	302	0.40	-0.26	2.19	-0.19	-0.28	0.69	0.31
586	302	0.04	-0.08	1.11	-0.10	-0.12	0.63	0.09
586	318	0.14	-0.12	1.27	-0.03	-0.08	0.47	0.09
587	15	0.19	-0.06	0.90	0.02	-0.06	0.38	0.05
587	31	0.25	-0.06	0.90	0.02	-0.06	0.38	0.05
588	31	0.79	0.08	1.48	0.07	-0.10	0.60	0.42
588	47	0.00	0.00	1.55	-0.25	-0.01	0.54	0.42
589	47	0.64	-0.06	1.77	-0.08	0.03	0.75	0.57
589	63	-0.27	-0.09	0.35	-0.65	0.06	2.18	0.57
590	63	0.35	-0.05	2.08	-0.28	0.13	0.82	0.50
590	79	-0.27	-0.03	0.84	-0.82	0.11	2.06	0.50
591	79	0.15	-0.04	2.18	-0.31	0.28	0.93	0.40
591	95	-0.18	0.08	0.92	-0.81	0.17	2.19	0.40
592	95	0.03	-0.02	2.21	-0.25	0.44	0.97	0.33
592	111	-0.06	0.36	0.97	-0.74	0.22	2.23	0.33
593	111	-0.02	0.18	0.69	-0.16	0.59	2.49	0.28
593	127	0.05	0.51	0.98	-0.67	-0.01	2.19	0.28
594	127	0.03	0.24	0.69	-0.15	0.43	2.44	0.23
594	143	0.17	0.77	0.98	-0.60	0.01	2.15	0.23
595	143	0.17	0.91	1.10	-0.18	0.04	1.97	0.18
595	159	0.33	0.91	0.98	-0.54	0.04	2.09	0.18
596	159	0.41	1.01	1.10	-0.21	0.05	1.90	0.13
596	175	0.56	1.01	0.98	-0.46	0.05	2.02	0.13
597	175	0.80	1.03	1.09	-0.20	0.07	1.80	0.07

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
597	191	0.85	1.03	0.97	-0.35	0.06	1.93	0.07
598	191	1.38	0.96	0.96	-0.13	0.06	1.81	0.21
598	207	1.01	0.84	0.97	-0.25	0.06	1.81	0.21
599	207	1.99	0.66	0.95	-0.04	0.03	1.68	0.73
599	223	0.47	0.66	0.95	-0.36	0.31	1.67	0.73
600	223	1.87	0.38	0.94	-0.17	0.24	1.57	1.86
600	239	-0.94	-0.04	0.53	-2.38	0.50	2.01	1.86
601	239	-0.48	-0.11	0.53	-1.48	0.24	1.99	0.70
601	255	-0.87	-0.04	1.46	-2.45	0.16	1.07	0.70
602	255	-0.77	-0.16	0.58	-2.03	0.04	2.07	0.41
602	271	-0.37	-0.07	1.51	-1.75	-0.05	1.14	0.41
603	271	-0.67	-0.15	0.64	-1.64	-0.04	2.24	0.61
603	287	0.22	-0.06	1.72	-0.80	-0.13	1.15	0.61
604	287	-0.24	0.05	1.65	-0.78	-0.08	1.26	0.53
604	303	0.65	0.12	1.87	-0.12	-0.15	1.04	0.53
605	303	0.18	-0.02	1.20	-0.08	-0.05	0.65	0.06
605	319	0.17	-0.02	1.20	-0.01	-0.05	0.65	0.06
606	16	0.36	-0.04	0.96	0.11	-0.04	0.33	0.47
606	32	-0.10	-0.03	0.21	-0.31	-0.05	1.08	0.47
607	32	0.65	0.08	2.02	0.14	-0.07	0.64	0.72
607	48	-0.41	-0.25	1.91	-0.93	0.26	0.75	0.72
608	48	-0.09	0.00	0.80	-0.42	-0.09	2.48	0.29
608	64	-0.32	-0.55	2.22	-0.80	0.47	1.06	0.29
609	64	-0.24	-0.03	0.63	-0.67	-0.29	2.78	0.18
609	80	-0.15	-0.86	2.31	-0.49	0.54	1.11	0.18
610	80	-0.23	-0.06	0.60	-0.64	-0.60	2.71	0.24
610	96	-0.01	-0.74	2.30	-0.26	0.09	1.01	0.24
611	96	-0.18	0.27	0.56	-0.56	-0.99	2.58	0.26
611	112	0.09	0.66	0.70	-0.14	-1.69	2.43	0.26
612	112	-0.12	0.54	0.53	-0.50	-1.92	2.43	0.27
612	128	0.17	0.78	0.67	-0.08	-2.16	2.29	0.27
613	128	-0.08	0.36	0.70	-0.45	-2.00	2.13	0.28
613	144	0.25	0.89	0.68	-0.05	-2.53	2.15	0.28
614	144	-0.03	0.32	0.71	-0.39	-2.10	2.06	0.29
614	160	0.37	1.00	0.75	-0.02	-2.78	2.02	0.29
615	160	0.11	1.07	0.90	-0.37	-2.85	1.90	0.31
615	176	0.54	1.07	0.90	0.02	-2.85	1.90	0.31
616	176	0.36	1.10	1.17	-0.32	-2.73	1.79	0.32
616	192	0.77	1.10	1.17	0.09	-2.73	1.79	0.32
617	192	0.72	1.04	1.60	-0.24	-2.41	1.72	0.26
617	208	0.95	1.04	1.60	0.14	-2.41	1.72	0.26
618	208	1.10	0.90	2.09	-0.14	-1.94	1.65	0.22
618	224	0.67	0.90	2.09	0.02	-1.94	1.65	0.22
619	224	1.05	0.68	2.34	-0.21	-1.37	1.50	1.06
619	240	-0.56	-1.00	1.39	-1.36	0.63	2.44	1.06
620	240	-0.48	0.40	0.77	-1.41	-0.75	2.38	0.23

Barra	Nodo	Mdmax+	Nconc	Tconc	Mdmax-	Nconc	Tconc	Qdmax
620	256	-0.56	-0.97	1.15	-1.53	0.62	2.00	0.23
621	256	-0.73	-0.07	0.54	-1.90	0.01	1.70	0.44
621	272	-0.31	-0.49	0.86	-1.18	0.44	1.37	0.44
622	272	-0.79	-0.07	0.38	-1.97	0.24	1.32	0.85
622	288	0.18	-0.12	0.76	-0.48	0.29	0.93	0.85
623	288	-0.65	-0.02	0.38	-1.61	0.26	1.37	1.34
623	304	1.31	0.23	1.37	0.43	0.00	0.39	1.34
624	304	-0.06	0.01	0.62	-0.29	0.01	0.60	0.59
624	320	0.55	0.04	0.96	0.20	-0.02	0.26	0.59

ARMADURA (T/m)

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Solera:

Ulong.inf : Armad. en cara inferior paralela al eje del cajón.
Ulong.sup : Armad. en cara superior paralela al eje del cajón.
Utrans.inf : Armad. en cara inferior perpendicular al eje del cajón.
Utrans.sup : Armad. en cara superior perpendicular al eje del cajón.
Ucortante : Armadura de cortante (T/m2).

Nodo	Ulong.sup.	Ulong.inf.	Utrans.sup.	Utrans.inf.	Ucortante
1	0.00	0.00	0.00	182.84	0.00
2	3.42	2.29	63.21	30.55	27.63
3	0.00	1.85	146.03	0.00	0.00
4	2.66	3.18	89.28	5.17	6.03
5	0.00	0.00	0.00	102.25	0.00
17	0.00	0.00	0.00	198.93	0.00
18	14.66	0.00	71.47	24.81	46.29
19	15.06	0.00	154.66	0.00	0.00
20	13.94	0.00	95.30	0.00	26.97
21	0.00	0.00	0.00	121.12	0.00
33	0.00	0.00	0.00	205.33	0.00
34	11.62	0.00	78.22	22.92	53.87
35	15.06	0.00	163.11	0.00	0.00
36	12.16	0.00	100.29	0.00	36.58
37	0.00	0.00	0.00	132.43	0.00
49	0.00	0.00	0.00	204.96	0.00
50	9.80	0.00	81.67	22.06	55.23
51	12.04	0.00	167.94	0.00	0.00
52	10.12	0.00	100.71	0.00	39.50
53	0.00	0.00	0.00	137.85	0.00
65	0.00	0.00	0.00	202.57	0.00
66	9.09	0.00	84.29	21.24	55.06
67	10.15	0.00	170.88	0.00	0.00
68	8.57	0.00	99.84	0.00	40.85
69	0.00	0.00	0.00	141.61	0.00
81	0.00	0.00	0.00	199.22	0.00
82	8.76	0.00	86.54	20.34	54.65
83	9.12	0.00	172.56	0.00	0.00
84	8.14	0.00	99.46	0.00	42.00
85	0.00	0.00	0.00	145.25	0.00
97	0.00	0.00	0.00	195.75	0.00
98	8.93	0.00	88.78	19.62	54.26
99	8.75	0.00	173.97	0.00	0.00
100	9.17	0.00	99.48	0.00	43.59
101	0.00	0.00	0.00	149.34	0.00
113	0.00	0.00	0.00	192.36	0.00
114	8.91	0.00	90.75	18.92	53.93
115	8.52	0.00	175.08	0.00	0.00
116	9.40	0.00	98.97	0.48	45.11
117	0.00	0.00	0.00	153.22	0.00
129	0.00	0.00	0.00	189.11	0.00
130	8.98	0.00	92.76	18.24	53.64
131	8.50	0.00	176.28	0.00	0.00
132	9.68	0.00	98.39	1.05	46.60
133	0.00	0.00	0.00	157.01	0.00
145	0.00	0.00	0.00	185.99	0.00
146	9.08	0.00	94.98	17.59	53.40
147	8.69	0.00	177.73	0.00	0.00
148	9.33	0.00	97.71	1.54	48.11
149	0.00	0.00	0.00	160.84	0.00
161	0.00	0.00	0.00	182.93	0.00
162	9.04	0.00	97.15	16.88	53.19
163	8.96	0.00	179.31	0.00	0.00
164	8.49	0.00	97.07	2.12	49.67
165	0.00	0.00	0.00	164.84	0.00
177	0.00	0.00	0.00	179.77	0.00
178	9.49	0.00	99.31	16.00	52.99
179	9.15	0.00	180.84	0.00	0.00
180	8.98	0.00	96.38	2.60	51.31
181	0.00	0.00	0.00	169.10	0.00
193	0.00	0.00	0.00	176.34	0.00
194	9.48	0.00	101.48	14.86	52.73
195	9.95	0.00	181.89	0.00	0.00
196	8.98	0.00	95.57	3.11	53.02
197	0.00	0.00	0.00	173.64	0.00
209	0.00	0.00	0.00	172.29	0.00
210	9.28	0.00	103.63	13.38	52.22
211	9.97	0.00	183.28	0.00	0.00
212	8.98	0.00	94.62	3.68	54.82
213	0.00	0.00	0.00	178.45	0.00
225	0.00	0.00	0.00	166.94	0.00
226	9.64	0.00	105.68	11.85	51.69
227	10.11	0.00	184.24	0.00	0.00
228	8.94	0.00	93.56	4.29	56.70
229	0.00	0.00	0.00	183.52	0.00
241	0.00	0.00	0.00	163.04	0.00
242	10.02	0.00	107.49	10.42	51.71
243	10.92	0.00	184.70	0.00	0.00
244	9.41	0.00	92.38	4.93	58.58
245	0.00	0.00	0.00	189.23	0.00

Nodo	Ulong.sup.	Ulong.inf.	Utrans.sup.	Utrans.inf.	Ucortante
257	0.00	0.00	0.00	159.25	0.00
258	10.50	0.00	108.37	9.11	51.60
259	12.91	0.00	183.98	0.00	0.00
260	10.41	0.00	91.02	5.59	60.14
261	0.00	0.00	0.00	194.49	0.00
273	0.00	0.00	0.00	154.28	0.00
274	12.26	0.00	108.59	8.44	49.71
275	15.66	0.00	180.61	0.00	0.00
276	12.57	0.00	88.58	6.42	60.01
277	0.00	0.00	0.00	198.08	0.00
289	0.00	0.00	0.00	142.88	0.00
290	16.08	0.00	105.28	9.14	40.02
291	16.43	0.00	174.47	0.00	0.00
292	14.31	0.00	82.05	8.69	53.73
293	0.00	0.00	0.00	195.62	0.00
305	0.00	0.00	0.00	120.68	0.00
306	5.46	1.37	99.85	13.55	16.12
307	2.22	1.75	169.58	0.00	0.00
308	1.01	3.48	73.68	14.68	38.41
309	0.00	0.00	0.00	183.65	0.00

Dintel:

Ulong.inf : Armad. en cara inferior paralela al eje del cajón.
Ulong.sup : Armad. en cara superior paralela al eje del cajón.
Utrans.inf : Armad. en cara inferior perpendicular al eje del cajón.
Utrans.sup : Armad. en cara superior perpendicular al eje del cajón.
Ucortante : Armadura de cortante (T/m2).

Nodo	Ulong.sup.	Ulong.inf.	Utrans.sup.	Utrans.inf.	Ucortante
9	0.00	0.00	119.93	0.00	0.00
10	1.60	0.00	33.08	10.65	0.00
11	1.25	2.17	0.00	94.18	0.00
12	0.04	2.62	11.63	65.51	0.00
13	0.00	0.00	63.82	0.00	0.00
25	0.00	0.00	119.57	0.00	0.00
26	2.41	0.00	31.59	11.97	0.00
27	2.83	1.24	0.00	97.24	0.00
28	1.83	2.31	13.12	65.79	0.00
29	0.00	0.00	71.41	0.00	0.00
41	0.00	0.00	119.07	0.00	0.00
42	2.26	0.97	31.13	14.68	0.00
43	2.29	1.11	0.00	101.16	0.00
44	2.61	2.57	14.30	64.91	0.00

Nodo	Ulong.sup.	Ulong.inf.	Utrans.sup.	Utrans.inf.	Ucortante
45	0.00	0.00	77.61	0.00	0.00
57	0.00	0.00	119.78	0.00	0.00
58	1.85	1.25	29.82	17.79	0.00
59	1.66	1.75	0.00	106.13	0.00
60	2.08	2.56	14.98	63.43	0.00
61	0.00	0.00	83.41	0.00	0.00
73	0.00	0.00	121.09	0.00	0.00
74	1.70	1.53	28.80	21.68	0.00
75	1.04	2.02	0.00	111.05	0.00
76	1.17	1.19	14.63	61.14	0.00
77	0.00	0.00	89.21	0.00	0.00
89	0.00	0.00	122.87	0.00	0.00
90	1.38	1.56	27.70	26.12	0.00
91	0.38	2.12	0.00	115.43	0.00
92	0.55	0.00	14.13	58.77	0.00
93	0.00	0.00	94.85	0.00	0.00
105	0.00	0.00	125.01	0.00	0.00
106	0.76	1.43	26.38	31.15	0.00
107	0.00	0.51	0.00	118.57	0.00
108	0.48	0.00	14.65	57.42	0.00
109	0.00	0.00	100.22	0.00	0.00
121	0.00	0.00	126.05	0.00	0.00
122	0.58	1.04	25.41	36.51	0.00
123	0.44	0.11	0.00	121.80	0.00
124	0.38	0.00	15.19	56.06	0.00
125	0.00	0.00	105.27	0.00	0.00
137	0.00	0.00	126.26	0.00	0.00
138	0.26	0.72	24.53	41.37	0.00
139	0.49	0.00	0.00	124.35	0.00
140	0.30	0.00	15.72	54.74	0.00
141	0.00	0.00	110.26	0.00	0.00
153	0.00	0.00	125.59	0.00	0.00
154	1.38	1.01	23.75	45.23	0.00
155	0.74	0.05	0.00	126.39	0.00
156	0.47	0.00	16.31	53.34	0.00
157	0.00	0.00	114.56	0.00	0.00
169	0.00	0.00	124.27	0.00	0.00
170	1.44	0.94	23.04	48.23	0.00
171	0.76	0.00	0.00	127.93	0.00
172	0.49	0.00	16.66	51.98	0.00
173	0.00	0.00	118.33	0.00	0.00
185	0.00	0.00	122.25	0.00	0.00
186	1.24	0.70	22.35	50.82	0.00
187	0.49	0.00	0.00	128.93	0.00
188	0.27	0.00	16.97	50.33	0.00
189	0.00	0.00	121.52	0.00	0.00

Nodo	Ulong.sup.	Ulong.inf.	Utrans.sup.	Utrans.inf.	Ucortante
201	0.00	0.00	119.77	0.00	0.00
202	1.06	0.59	21.69	53.13	0.00
203	0.37	0.40	0.00	129.43	0.00
204	0.31	0.00	17.14	48.14	0.00
205	0.00	0.00	123.46	0.00	0.00
217	0.00	0.00	116.91	0.00	0.00
218	0.79	0.47	21.08	55.28	0.00
219	0.00	1.02	0.00	129.32	0.00
220	0.21	0.00	17.18	44.95	0.00
221	0.00	0.00	122.88	0.00	0.00
233	0.00	0.00	113.43	0.00	0.00
234	0.62	0.41	20.50	57.34	0.00
235	0.00	1.84	0.00	128.70	0.00
236	0.00	1.05	17.47	41.10	0.00
237	0.00	0.00	119.60	0.00	0.00
249	0.00	0.00	109.72	0.00	0.00
250	0.50	0.58	19.95	59.37	0.00
251	0.00	2.45	0.00	126.59	0.00
252	0.53	2.04	18.21	36.26	0.00
253	0.00	0.00	117.78	0.00	0.00
265	0.00	0.00	105.60	0.00	0.00
266	0.39	0.51	19.46	60.87	0.00
267	0.21	2.71	0.00	124.33	0.00
268	1.16	2.19	19.13	31.48	0.00
269	0.00	0.00	116.97	0.00	0.00
281	0.00	0.00	101.13	0.00	0.00
282	1.05	1.21	19.32	63.69	0.00
283	0.93	2.13	0.00	121.57	0.00
284	1.70	2.38	20.95	26.81	0.00
285	0.00	0.00	115.99	0.00	0.00
297	0.00	0.00	95.85	0.00	0.00
298	0.67	0.73	17.93	65.58	0.00
299	2.21	0.25	0.00	118.58	0.00
300	3.03	0.34	22.08	22.68	0.00
301	0.00	0.00	115.30	0.00	0.00
313	0.00	0.00	89.68	0.00	0.00
314	1.14	0.62	18.06	66.30	0.00
315	0.77	0.03	0.00	115.48	0.00
316	1.71	0.69	23.34	19.02	0.00
317	0.00	0.00	114.20	0.00	0.00

Hastial izquierdo:

Ulong.int : Armad. en cara interior paralela al eje del cajón.
Ulong.ext : Armad. en cara exterior paralela al eje del cajón.
Utrans.int : Armad. en cara interior perpendicular al eje del cajón.
Utrans.ext : Armad. en cara exterior perpendicular al eje del cajón.
Ucortante : Armadura de cortante (T/m2).

Nodo	Ulong.int.	Ulong.ext.	Utrans.int.	Utrans.ext.	Ucortante
1	0.00	0.00	0.00	200.11	0.00
16	0.68	1.69	34.26	33.59	0.00
15	0.30	0.93	81.53	0.00	0.00
14	0.43	0.20	46.36	4.56	0.00
13	0.00	0.00	0.00	57.41	0.00
17	0.00	0.00	0.00	200.63	0.00
32	0.44	0.99	33.13	30.72	0.00
31	0.98	0.48	81.74	0.00	0.00
30	0.94	0.00	46.11	4.94	0.00
29	0.00	0.00	0.00	60.49	0.00
33	0.00	0.00	0.00	203.85	0.00
48	0.00	1.23	31.86	29.66	0.00
47	0.99	0.71	81.94	0.00	0.00
46	0.56	0.32	45.39	6.25	0.00
45	0.00	0.00	0.00	65.43	0.00
49	0.00	0.00	0.00	203.54	0.00
64	0.18	1.13	31.49	30.02	0.00
63	0.35	0.64	81.41	0.00	0.00
62	0.27	0.71	44.63	8.48	0.00
61	0.00	0.00	0.00	70.49	0.00
65	0.00	0.00	0.00	200.74	0.00
80	0.44	0.95	31.74	30.08	0.00
79	0.35	0.80	81.38	0.00	0.00
78	0.00	0.73	43.82	10.88	0.00
77	0.00	0.00	0.00	75.67	0.00
81	0.00	0.00	0.00	197.46	0.00
96	0.46	0.98	32.28	29.72	0.00
95	0.32	0.68	81.30	0.00	0.00
94	0.00	0.48	42.92	13.22	0.00
93	0.00	0.00	0.00	80.87	0.00
97	0.00	0.00	0.00	194.05	0.00
112	0.31	1.49	32.46	29.02	0.00
111	0.00	0.56	80.86	0.00	0.00
110	0.00	0.23	42.14	15.64	0.00
109	0.00	0.00	0.00	85.96	0.00
113	0.00	0.00	0.00	190.71	0.00
128	0.58	1.50	33.23	28.22	0.00

Nodo	Ulong.sup.	Ulong.inf.	Utrans.sup.	Utrans.inf.	Ucortante
127	0.00	0.60	80.94	0.55	0.00
126	0.00	0.04	41.55	17.89	0.00
125	0.00	0.00	0.00	90.84	0.00
129	0.00	0.00	0.00	187.52	0.00
144	0.75	1.56	33.92	27.45	0.00
143	0.00	0.55	81.11	1.14	0.00
142	0.00	0.00	40.82	20.05	0.00
141	0.00	0.00	0.00	95.20	0.00
145	0.00	0.00	0.00	184.45	0.00
160	1.05	1.76	34.61	26.63	0.00
159	0.03	0.50	81.11	1.75	0.00
158	0.00	0.00	39.78	21.97	0.00
157	0.00	0.00	0.00	99.67	0.00
161	0.00	0.00	0.00	181.47	0.00
176	1.10	1.69	35.19	25.85	0.00
175	0.36	0.43	80.89	2.32	0.00
174	0.00	0.00	38.87	23.70	0.00
173	0.00	0.00	0.00	103.99	0.00
177	0.00	0.00	0.00	178.40	0.00
192	1.09	1.48	35.55	25.16	0.00
191	0.84	0.34	80.22	2.93	0.00
190	0.26	0.00	37.83	25.50	0.00
189	0.00	0.00	0.00	107.83	0.00
193	0.00	0.00	0.00	174.88	0.00
208	0.99	1.18	35.47	24.62	0.00
207	1.42	0.22	78.87	3.63	0.00
206	0.77	0.00	36.49	27.30	0.00
205	0.00	0.00	0.00	110.06	0.00
209	0.00	0.00	0.00	170.33	0.00
224	0.72	1.01	34.69	24.31	0.00
223	1.16	0.22	76.61	4.48	0.00
222	0.72	0.00	34.63	29.11	0.00
221	0.00	0.00	0.00	110.68	0.00
225	0.00	0.00	0.00	163.75	0.00
240	0.00	2.35	34.95	24.40	0.00
239	0.00	2.38	74.88	5.20	0.00
238	0.00	1.47	34.05	31.34	0.00
237	0.00	0.00	0.00	110.00	0.00
241	0.00	0.00	0.00	158.75	0.00
256	0.00	2.45	34.06	23.54	0.00
255	0.00	2.62	72.75	5.22	0.00
254	0.00	2.61	32.81	32.57	0.00
253	0.00	0.00	0.00	109.76	0.00
257	0.00	0.00	0.00	154.40	0.00
272	0.00	2.17	34.29	21.84	0.00
271	0.00	2.06	71.67	5.03	0.00

Nodo	Ulong.sup.	Ulong.inf.	Utrans.sup.	Utrans.inf.	Ucortante
270	0.09	2.16	31.69	32.77	0.00
269	0.00	0.00	0.00	109.46	0.00
273	0.00	0.00	0.00	149.58	0.00
288	0.00	1.56	35.55	19.76	0.00
287	0.42	1.31	71.67	5.06	0.00
286	0.81	1.88	31.52	33.34	0.00
285	0.00	0.00	0.00	109.70	0.00
289	0.00	0.00	0.00	140.70	0.00
304	1.00	0.00	38.08	19.20	0.00
303	0.81	0.73	71.36	5.16	0.00
302	0.82	1.28	31.21	33.82	0.00
301	0.00	0.00	0.00	110.71	0.00
305	0.00	0.00	0.00	133.06	0.00
320	0.82	0.00	39.45	20.79	0.00
319	0.32	1.22	71.10	5.20	0.00
318	0.23	1.85	30.55	34.60	0.00
317	0.00	0.00	0.00	115.22	0.00

Hastial derecho:

Ulong.int : Armad. en cara interior paralela al eje del cajón.
Ulong.ext : Armad. en cara exterior paralela al eje del cajón.
Utrans.int : Armad. en cara interior perpendicular al eje del cajón.
Utrans.ext : Armad. en cara exterior perpendicular al eje del cajón.
Ucortante : Armadura de cortante (T/m2).

Nodo	Ulong.int.	Ulong.ext.	Utrans.int.	Utrans.ext.	Ucortante
5	0.00	0.00	0.00	114.70	0.00
6	0.91	0.00	49.29	13.08	0.00
7	0.38	1.15	73.71	0.00	0.00
8	0.24	1.89	26.34	30.46	0.00
9	0.00	0.00	0.00	123.34	0.00
21	0.00	0.00	0.00	119.22	0.00
22	1.09	0.00	47.58	12.29	0.00
23	1.07	0.47	73.75	0.00	0.00
24	0.98	1.18	26.99	29.89	0.00
25	0.00	0.00	0.00	117.70	0.00
37	0.00	0.00	0.00	127.35	0.00
38	0.05	0.76	44.79	13.15	0.00
39	1.00	0.61	73.70	0.34	0.00
40	1.46	1.37	27.40	30.09	0.00
41	0.00	0.00	0.00	115.98	0.00
53	0.00	0.00	0.00	132.41	0.00
54	0.00	1.00	43.14	15.52	0.00

Nodo	Ulong.sup.	Ulong.inf.	Utrans.sup.	Utrans.inf.	Ucortante
55	0.52	1.09	73.43	1.09	0.00
56	1.37	1.87	27.70	30.37	0.00
57	0.00	0.00	0.00	115.62	0.00
69	0.00	0.00	0.00	136.31	0.00
70	0.09	1.05	42.15	17.74	0.00
71	0.00	1.26	73.05	1.86	0.00
72	0.73	1.91	27.64	30.34	0.00
73	0.00	0.00	0.00	115.80	0.00
85	0.00	0.00	0.00	140.31	0.00
86	0.34	1.00	41.66	19.45	0.00
87	0.00	1.29	73.35	2.74	0.00
88	0.62	2.08	28.22	30.70	0.00
89	0.00	0.00	0.00	116.39	0.00
101	0.00	0.00	0.00	144.86	0.00
102	0.40	0.37	40.71	20.45	0.00
103	0.98	0.69	73.98	3.76	0.00
104	0.94	1.38	28.31	30.59	0.00
105	0.00	0.00	0.00	117.19	0.00
117	0.00	0.00	0.00	148.93	0.00
118	0.73	0.43	40.40	21.70	0.00
119	1.03	0.77	74.59	4.28	0.00
120	0.90	0.35	28.37	29.88	0.00
121	0.00	0.00	0.00	117.33	0.00
133	0.00	0.00	0.00	152.85	0.00
134	0.86	0.63	39.89	23.05	0.00
135	0.76	0.79	74.65	4.46	0.00
136	0.90	0.35	28.86	29.41	0.00
137	0.00	0.00	0.00	116.54	0.00
149	0.00	0.00	0.00	156.84	0.00
150	0.95	0.85	39.23	24.47	0.00
151	0.70	0.96	74.81	4.79	0.00
152	0.89	0.45	29.31	28.52	0.00
153	0.00	0.00	0.00	114.76	0.00
165	0.00	0.00	0.00	161.04	0.00
166	1.01	1.02	38.46	25.92	0.00
167	0.63	1.05	74.84	5.00	0.00
168	0.86	0.53	29.75	27.37	0.00
169	0.00	0.00	0.00	112.04	0.00
181	0.00	0.00	0.00	165.52	0.00
182	1.02	1.12	37.63	27.39	0.00
183	0.54	1.08	74.81	5.09	0.00
184	0.60	0.46	30.16	26.14	0.00
185	0.00	0.00	0.00	108.66	0.00
197	0.00	0.00	0.00	170.30	0.00
198	0.71	1.15	36.62	28.72	0.00
199	0.34	1.05	74.73	5.06	0.00

Nodo	Ulong.sup.	Ulong.inf.	Utrans.sup.	Utrans.inf.	Ucortante
200	0.52	0.43	30.58	24.75	0.00
201	0.00	0.00	0.00	105.18	0.00
213	0.00	0.00	0.00	175.35	0.00
214	0.54	1.16	35.72	30.13	0.00
215	0.00	0.98	74.67	4.81	0.00
216	0.00	0.48	30.98	23.12	0.00
217	0.00	0.00	0.00	101.64	0.00
229	0.00	0.00	0.00	180.59	0.00
230	0.60	0.82	34.81	31.35	0.00
231	0.00	1.16	74.75	4.47	0.00
232	0.00	0.94	31.67	21.17	0.00
233	0.00	0.00	0.00	98.14	0.00
245	0.00	0.00	0.00	185.71	0.00
246	0.28	0.94	34.05	32.31	0.00
247	0.00	1.13	74.96	3.78	0.00
248	0.01	0.93	32.23	19.09	0.00
249	0.00	0.00	0.00	94.24	0.00
261	0.00	0.00	0.00	190.00	0.00
262	0.00	1.13	33.49	32.75	0.00
263	0.17	0.93	75.66	3.01	0.00
264	0.18	0.73	32.87	17.02	0.00
265	0.00	0.00	0.00	90.12	0.00
277	0.00	0.00	0.00	192.29	0.00
278	0.00	0.98	33.74	32.51	0.00
279	0.38	0.49	75.91	2.44	0.00
280	0.48	0.33	33.52	15.22	0.00
281	0.00	0.00	0.00	85.75	0.00
293	0.00	0.00	0.00	190.29	0.00
294	0.51	0.60	35.36	33.71	0.00
295	0.92	0.64	76.35	2.68	0.00
296	0.97	0.33	34.26	14.51	0.00
297	0.00	0.00	0.00	81.24	0.00
309	0.00	0.00	0.00	190.62	0.00
310	1.10	1.14	36.84	36.61	0.00
311	0.37	1.11	76.18	2.66	0.00
312	0.45	0.52	34.40	14.21	0.00
313	0.00	0.00	0.00	77.97	0.00

CALCULO DE LAS ALETAS

INTRODUCCION

El objeto de este Anejo de Cálculo es la justificación técnica de los muros a disponer que serán tipo ménsula. Esta se efectúa mediante la realización y exposición de los cálculos correspondientes.

El muro trabaja esencialmente a flexión, siendo la compresión vertical debida a su propio peso prácticamente despreciable.

INSTRUCCIONES Y NORMAS APLICADAS

Las normas aplicadas son las vigentes en la fecha de redacción de este Anejo de Cálculo.

- Acciones: "Instrucción sobre las acciones a considerar en el Proyecto de Puentes de Carreteras" de 12 de Febrero de 1998.

- Hormigón armado: EH-91 "Instrucción para el proyecto y la ejecución de obras de hormigón en masa o armado " de 28 de Junio de 1991.

- Norma de Construcción Sismorresistente: Parte General y Edificación (NCSE-94) de 29 de Diciembre de 1994.

- Hormigón armado de P. Jiménez Montoya, A. García Meseguer y F. Morán Cabré.

NIVELES DE CONTROL DE CALIDAD ADOPTADOS.

El control de calidad se atendrá a lo especificado en la Instrucción EH-91 con los siguientes niveles de control:

- Materiales:

  Hormigón de alzados ..... Normal - Coef. minoración $\gamma_c = 1{,}50$

  Hormigón de zapatas ..... Normal - Coef. minoración $\gamma_c = 1{,}50$

  Acero de armaduras ..... Normal - Coef. minoración $\gamma_c = 1{,}15$

- Ejecución:

  Tipo de control ..... Normal Coef. mayoración $\gamma_f = 1{,}60$

  Tipo de control ..... Sismo Coef. mayoración $\gamma_f = 1{,}00$

CARACTERISTICAS DE LOS MATERIALES.

Se consideran las siguientes características en los materiales empleados en el proyecto del muro:

- La resistencia característica de los diferentes hormigones utilizados es la siguiente:

  Hormigón en Cimentación ..... H-250 $f_{ck} = 250$ Kg/cm^2

  Hormigón en Alzados ..... H-250 $f_{ck} = 250$ Kg/cm^2

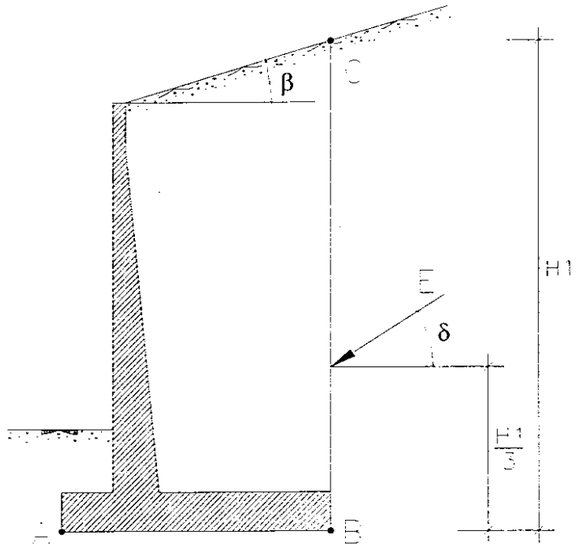
  Acero de armar ..... AEH-500 $f_{yk} = 5100$ Kg/cm^2

- Peso específico del hormigón ..... 2.50 t/m^3

CARACTERISTICAS DEL TERRENO.

Conforme a los parámetros dados en el Anejo de Geotecnia, se consideran las siguientes valores característicos del terreno:

Peso específico de las tierras (t/m^3) ..... $\gamma = 2.00$
Angulo de rozamiento interno de las tierras ..... $\Phi = 35^\circ$
Angulo de rozamiento entre tierras y muro ..... $\delta = 12^\circ$
Coeficiente de rozamiento entre tierras y cimentación ..... $\mu = 0.55$
Tensión admisible del terreno ..... $\sigma_{adm} = 2{,}5$ Kg/cm^2.



CARGAS Y SOBRECARGAS.

Se consideran como cargas actuando sobre el muro, el empuje de las tierras a contener. Además se tendrá en cuenta el peso propio del muro.

ACCIONES SISMICAS.

Según la Norma de Construcción Sismorresistente NCSE-94, las obras se hayan situadas en zona cuyo efecto sísmico no es determinante.

CALCULO DE LOS MUROS.

Cálculo del empuje del terreno sobre los muros

La presión del terreno sobre el muro está fuertemente condicionada por la deformabilidad del muro, entendiendo por tal no sólo la deformación que el muro experimenta como pieza de hormigón, sino también la que en el muro produce la deformación del terreno.

Si el muro se desplaza, permitiendo la expansión lateral del suelo se produce un fallo por corte del mismo y la cuña de rotura avanza hacia el muro y desciende. Esto origina un empuje de las tierras sobre el muro, que recibe el nombre de "Empuje activo".

El cálculo del empuje activo "K_A" de los muros se realiza mediante la Teoría de Coulomb.

Teniendo en cuenta un muro cuyo trasdós forma un ángulo "α" con la horizontal y una superficie del terreno plana , formando un talud de ángulo "β", sobre la que actúa una carga uniformemente repartida de valor "q" por metro lineal de proyección, la presión "P" del terreno sobre el muro a la profundidad "z", contada a partir de la cota superior del terreno, tiene la siguiente expresión:

$$P = (\gamma \times z + q) \times K_A$$

siendo K: coeficiente de empuje activo de Coulomb.

Seguridad frente al deslizamiento y al vuelco.

Se considera un coeficiente de seguridad frente al deslizamiento mayor o igual a 1.50, y frente a l vuelco mayor o igual a 1,80. En el caso de que haya que considerar la acción del sismo, ambos coeficientes se reducen a 1.20.

El coeficiente de seguridad al **deslizamiento** será:

$$CD = \frac{\mu \times \sum F_v}{\sum F_h}$$

siendo "μ" el coeficiente de rozamiento entre cimentación y terreno y $\sum F_v$ y $\sum F_h$, las sumas de las fuerzas verticales y horizontales respectivamente.

El coeficiente de seguridad al **vuelco** será:

$$CV = \frac{\sum M_e}{\sum M_v}$$

siendo $\sum M_e$ y $\sum M_v$ las sumas de los momentos estabilizadores y de vuelco respectivamente.

Cálculo de las tensiones sobre el terreno.

En función del valor de la excentricidad de la resultante de las cargas existentes, se considera dos tipos de distribución de las tensiones (Item 21.2-5 , P.Jiménez Montoya)

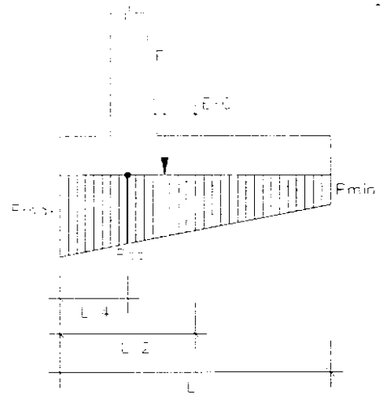
– Distribución trapecial de tensiones: se produce cuando la excentricidad "EXC" ≤L/6, siendo "L" el ancho de la zapata del muro.

En este caso el valor de las presiones máxima "P_{max}", mínima "P_{min}"y de comparación "P_{co}" producidas sobre el terreno son las siguientes:

$$P_{max} = \frac{\sum F_v}{L} \times \left(1 + \frac{6 \times EXC}{L}\right)$$

$$P_{min} = \frac{\sum F_v}{L} \times \left(1 - \frac{6 \times EXC}{L}\right)$$

$$P_{co} = \frac{\sum F_v}{L} \times \left(1 + \frac{3 \times EXC}{L}\right)$$

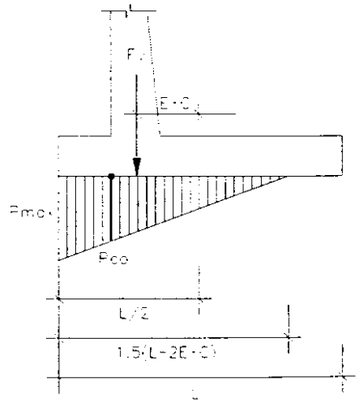


– Distribución triangular de tensiones: se produce cuando la excentricidad "EXC">L/6, siendo "L" el ancho de la zapata del muro.

$$P_{max} = \frac{4 \times \sum F_v}{3 \times (L - 2 \times EXC)}$$

$$P_{min} = 0$$

$$P_{co} = \frac{\sum F_v}{(L - 2 \times EXC)}$$



ALETA 1

DATOS DE ENTRADA

Muro ..... : Aleta 1 MURO 1

GEOMETRIA:

Longitud muro ..... :	25.00	m
Altura mínima total.....:	12.90	m
Altura máxima total.....:	13.90	m
Canto de Zapata..... :	1.70	m
Ancho coronacion ..... :	0.30	m
Talud trasdós..... :	15.00	%
Talud exterior..... :	0.00	%
Angulo muro-calzada .....:	0.00	°
Distancia muro-calzada.....:	0.00	m
Talud de terraplén (H/V)...:	0 / 2	
Angulo de talud trasdós....:	0.00	°

TERRENO:

Densidad de tierras.....:	2.00	t/m3
Angulo de rozam. interno...:	35.00	°
Roz. Muro-tierras .....:	12.00	°
Coeficiente de roz.....:	0.55	
Tensión admisible .....:	3.00	Kg/cm²
Sobrecarga terraplén..... :	3.00	t/m²
Kh inclinado .....:	0.313	
Kh horizontal.....:	0.313	
Kv inclinado .....:	0.066	
Kv horizontal.....:	0.066	

MATERIALES

Fck (Kg/cm²).....:	250	
Gc .....:	1.50	
Fyk (Kg/cm²).....:	5100	
Gs .....:	1.15	
Recubrimiento en Alzados...:	3	cms
Recubrimiento en Cimientos.:	5	cms

SEGURIDAD

Coeficiente desliz.....:	1.50
Coeficiente vuelco.....:	1.50
Coeficiente de acciones....:	1.60

CONDICIONES DE EQUILIBRIO

H = Altura (m) del alzado de la sección
Eh = Empuje Horizontal (t)
Ev = Empuje Vertical (t)
Meh = Momento (m.t) de los empujes Horizontales
Mev = Momento (m.t) de los empujes Verticales
ΣFh = Sumatorio de Fuerzas horizontales (t)
ΣFv = Sumatorio de Fuerzas verticales (t)
ΣMeh = Sumatorio de Momentos (m.t) de los empujes Horizontales
ΣMev = Sumatorio de Momentos (m.t) de los empujes Verticales

Zona		Secc	H	Eh	Ev	Meh	Mev	ΣFh	ΣFv	ΣMeh	ΣMev
0.00	1.00	0.50	11.22	64.30	13.67	303.00	102.27	64.30	177.74	303.00	871.96
1.00	2.00	1.50	11.26	64.66	13.74	305.58	102.84	64.66	178.26	305.58	874.66
2.00	3.00	2.50	11.30	65.02	13.82	308.17	103.42	65.02	178.77	308.17	877.37
3.00	4.00	3.50	11.34	65.38	13.90	310.78	103.99	65.38	179.29	310.78	880.07
4.00	5.00	4.50	11.38	65.75	13.97	313.40	104.57	65.75	179.80	313.40	882.78
5.00	6.00	5.50	11.42	66.11	14.05	316.04	105.15	66.11	180.32	316.04	885.49
6.00	7.00	6.50	11.46	66.48	14.13	318.69	112.80	66.48	208.88	318.69	1038.21
7.00	8.00	7.50	11.50	66.84	14.21	321.36	113.42	66.84	209.48	321.36	1041.35
8.00	9.00	8.50	11.54	67.21	14.29	324.04	114.05	67.21	210.08	324.04	1044.48
9.00	10.00	9.50	11.58	67.58	14.36	326.73	114.68	67.58	197.59	326.73	1021.12
10.00	11.00	10.50	11.62	67.95	14.44	329.44	115.30	67.95	198.15	329.44	1024.19
11.00	12.00	11.50	11.66	68.32	14.52	332.17	115.93	68.32	198.71	332.17	1027.27
12.00	13.00	12.50	11.70	68.70	14.60	334.91	116.56	68.70	199.27	334.91	1030.34
13.00	14.00	13.50	11.74	69.07	14.68	337.67	117.20	69.07	199.83	337.67	1033.42
14.00	15.00	14.50	11.78	69.44	14.76	340.44	117.83	69.44	200.39	340.44	1036.50
15.00	16.00	15.50	11.82	69.82	14.84	343.22	118.47	69.82	200.95	343.22	1039.58
16.00	17.00	16.50	11.86	70.19	14.92	346.02	119.11	70.19	201.51	346.02	1042.67
17.00	18.00	17.50	11.90	70.57	15.00	348.84	119.75	70.57	202.07	348.84	1045.75
18.00	19.00	18.50	11.94	70.95	15.08	351.67	120.39	70.95	202.63	351.67	1048.84
19.00	20.00	19.50	11.98	71.33	15.16	354.51	121.03	71.33	203.19	354.51	1051.93
20.00	21.00	20.50	12.02	71.71	15.24	357.37	121.68	71.71	203.75	357.37	1055.03
21.00	22.00	21.50	12.06	72.09	15.32	360.25	122.32	72.09	204.31	360.25	1058.12
22.00	23.00	22.50	12.10	72.47	15.40	363.14	122.97	72.47	204.87	363.14	1061.22
23.00	24.00	23.50	12.14	72.85	15.49	366.05	123.62	72.85	205.44	366.05	1064.32
24.00	25.00	24.50	12.18	73.24	15.57	368.97	124.27	73.24	206.00	368.97	1067.42

H = Altura (m) de la sección en estudio
Zarpa = Longitud (m) de la parte delantera de la zapata
Zap = Longitud (m) total de la zapata
Csd = Coeficiente de seguridad al Deslizamiento
Csv = Coeficiente de seguridad al Vuelco
σmáx = Tensión (Kg/cm²) punta en cota de cimentación
σmín = Tensión (Kg/cm²) mínima en cota de cimentación
σcob = Tensión (Kg/cm²) de comparación
Base = Base comprimida (m) para el caso de diagrama triangular

Zona		Secc	H	Zarpa	Zap	Csd	Csv	σmáx	σmín	σcob	Base
0.00	1.00	0.50	11.22	2.50	7.48	1.52	2.88	3.40	1.35	2.78	7.48

1.00	2.00	1.50	11.26	2.50	7.48	1.52	2.86	3.43	1.33	2.79	7.48
2.00	3.00	2.50	11.30	2.50	7.48	1.51	2.85	3.46	1.32	2.81	7.48
3.00	4.00	3.50	11.34	2.50	7.48	1.51	2.83	3.48	1.31	2.82	7.48
4.00	5.00	4.50	11.38	2.50	7.48	1.50	2.82	3.51	1.30	2.84	7.48
5.00	6.00	5.50	11.42	2.50	7.48	1.50	2.80	3.54	1.28	2.85	7.48
6.00	7.00	6.50	11.46	2.00	7.98	1.73	3.26	3.69	1.54	3.03	7.98
7.00	8.00	7.50	11.50	2.00	7.98	1.72	3.24	3.72	1.53	3.05	7.98
8.00	9.00	8.50	11.54	2.00	7.98	1.72	3.22	3.74	1.52	3.06	7.98
9.00	10.00	9.50	11.58	2.50	7.98	1.61	3.13	3.36	1.59	2.81	7.98
10.00	11.00	10.50	11.62	2.50	7.98	1.60	3.11	3.39	1.58	2.83	7.98
11.00	12.00	11.50	11.66	2.50	7.98	1.60	3.09	3.41	1.57	2.84	7.98
12.00	13.00	12.50	11.70	2.50	7.98	1.60	3.08	3.44	1.56	2.85	7.98
13.00	14.00	13.50	11.74	2.50	7.98	1.59	3.06	3.46	1.54	2.87	7.98
14.00	15.00	14.50	11.78	2.50	7.98	1.59	3.04	3.49	1.53	2.88	7.98
15.00	16.00	15.50	11.82	2.50	7.98	1.58	3.03	3.51	1.52	2.90	7.98
16.00	17.00	16.50	11.86	2.50	7.98	1.58	3.01	3.54	1.51	2.91	7.98
17.00	18.00	17.50	11.90	2.50	7.98	1.57	3.00	3.56	1.50	2.93	7.98
18.00	19.00	18.50	11.94	2.50	7.98	1.57	2.98	3.59	1.49	2.94	7.98
19.00	20.00	19.50	11.98	2.50	7.98	1.57	2.97	3.61	1.48	2.96	7.98
20.00	21.00	20.50	12.02	2.50	7.98	1.56	2.95	3.64	1.46	2.98	7.98
21.00	22.00	21.50	12.06	2.50	7.98	1.56	2.94	3.67	1.45	2.99	7.98
22.00	23.00	22.50	12.10	2.50	7.98	1.55	2.92	3.69	1.44	3.01	7.98
23.00	24.00	23.50	12.14	2.50	7.98	1.55	2.91	3.72	1.43	3.02	7.98
24.00	25.00	24.50	12.18	2.50	7.98	1.55	2.89	3.75	1.41	3.04	7.98

Coeficiente global de seg. al deslizamiento ... 1.58
Coeficiente global de seg. al vuelco 2.99
Tensión máxima en solera (Kg/cm²)..... 3.75

A R M A D U R A S EH-91

Para cada sección:

H = Altura (m) sobre cara superior de zapata
d = Canto útil (m)
Vd = Cortante de cálculo (t)
Vcu= Contribución del hormigón a cortante (t)
Md = Momento de cálculo de la sección (m.t)
Us = Capacidad necesaria (t)
As = Armadura en cm²

Z A P A T A :

Vcu= 106.51 t
d = 1.65 m

	Z A R P A D E L A N T E R A				Z A R P A T R A S E R A			
Zona	Vd	Md	Us	As	Vd	Md	Us	As
0.00 1.00	105.79	137.99	83.59	21.11	105.79	137.99	85.87	21.49
1.00 2.00	106.33	138.69	84.02	21.18	106.33	138.69	86.89	21.65
2.00 3.00	106.87	139.38	84.45	21.25	106.87	139.38	87.92	21.81
3.00 4.00	107.41	140.07	84.89	21.33	107.41	140.07	88.96	21.98
4.00 5.00	107.95	140.77	85.32	21.40	107.95	140.77	90.01	22.14
5.00 6.00	108.49	141.46	85.76	21.47	108.49	141.46	91.06	22.30
6.00 7.00	109.03	142.16	86.19	21.54	109.03	142.16	92.13	22.46
7.00 8.00	109.58	142.86	86.63	21.61	109.58	142.86	93.20	22.62
8.00 9.00	110.12	143.56	87.06	21.68	110.12	143.56	94.29	22.78
9.00 10.00	110.67	144.26	87.50	21.75	110.67	144.26	95.38	22.94
10.00 11.00	111.21	144.96	87.94	21.82	111.21	144.96	96.48	23.09
11.00 12.00	111.76	145.66	88.38	21.89	111.76	145.66	97.59	23.25
12.00 13.00	112.30	146.36	88.82	21.96	112.30	146.36	98.71	23.40
13.00 14.00	112.85	147.06	89.26	22.02	112.85	147.06	99.84	23.55
14.00 15.00	113.40	147.77	89.70	22.09	113.40	147.77	100.98	23.70
15.00 16.00	113.95	148.47	90.14	22.16	113.95	148.47	102.13	23.85
16.00 17.00	114.50	149.18	90.58	22.23	114.50	149.18	103.29	24.00
17.00 18.00	115.05	149.88	91.02	22.30	115.05	149.88	104.45	24.15
18.00 19.00	115.60	150.59	91.47	22.36	115.60	150.59	105.63	24.29
19.00 20.00	116.15	151.30	91.91	22.43	116.15	151.30	106.82	24.43
20.00 21.00	116.70	152.00	92.35	22.50	116.70	152.00	108.01	24.58
21.00 22.00	117.25	152.71	92.80	22.56	117.25	152.71	109.22	24.72
22.00 23.00	117.81	153.42	93.24	22.63	117.81	153.42	110.43	24.90
23.00 24.00	118.36	154.13	93.69	22.69	118.36	154.13	111.66	25.18
24.00 25.00	118.92	154.84	94.14	22.76	118.92	154.84	112.89	25.46

A L Z A D O S

	Sección					
Zona	H	d	Vd	Vcu	Md	Us	As

0.00	1.00	7.48	0.86	17.31	53.64	31.60	37.90	9.90
		3.74	1.42	52.68	89.85	175.48	128.93	29.07
		-0.00	1.98	79.80	126.07	329.93	172.37	38.87
1.00	2.00	7.51	0.86	17.40	53.77	31.87	38.13	9.95
		3.75	1.43	53.00	90.11	177.10	129.77	29.26
		-0.00	1.99	80.31	126.45	333.14	173.54	39.13
2.00	3.00	7.53	0.87	17.50	53.90	32.14	38.36	9.99
		3.77	1.43	53.32	90.37	178.73	130.61	29.45
		-0.00	2.00	80.82	126.84	336.36	174.72	39.40
3.00	4.00	7.56	0.87	17.59	54.03	32.40	38.60	10.04
		3.78	1.43	53.64	90.63	180.37	131.46	29.64
		-0.00	2.00	81.33	127.23	339.60	175.90	39.66
4.00	5.00	7.59	0.87	17.68	54.16	32.67	38.83	10.09
		3.79	1.44	53.96	90.89	182.02	132.31	29.83
		-0.00	2.01	81.85	127.61	342.87	177.08	39.93
5.00	6.00	7.61	0.87	17.78	54.29	32.95	39.06	10.14
		3.81	1.44	54.28	91.14	183.68	133.16	30.03
		-0.00	2.01	82.36	128.00	346.15	178.26	40.20
6.00	7.00	7.64	0.87	17.87	54.42	33.22	39.30	10.19
		3.82	1.45	54.61	91.40	185.35	134.01	30.22
		-0.00	2.02	82.88	128.39	349.45	179.46	40.47
7.00	8.00	7.67	0.88	17.97	54.54	33.49	39.53	10.24
		3.83	1.45	54.93	91.66	187.03	134.87	30.41
		-0.00	2.03	83.40	128.78	352.78	180.65	40.73
8.00	9.00	7.69	0.88	18.06	54.67	33.77	39.77	10.29
		3.85	1.45	55.26	91.92	188.72	135.73	30.61
		-0.00	2.03	83.92	129.16	356.13	181.85	41.00
9.00	10.00	7.72	0.88	18.16	54.80	34.05	40.00	10.34
		3.86	1.46	55.58	92.18	190.42	136.59	30.80
		-0.00	2.04	84.44	129.55	359.49	183.05	41.28
10.00	11.00	7.75	0.88	18.25	54.93	34.33	40.24	10.39
		3.87	1.46	55.91	92.44	192.13	137.46	31.00
		-0.00	2.04	84.97	129.94	362.88	184.26	41.55
11.00	12.00	7.77	0.88	18.35	55.06	34.61	40.48	10.44
		3.89	1.47	56.24	92.69	193.85	138.33	31.19
		-0.00	2.05	85.49	130.33	366.29	185.47	41.82
12.00	13.00	7.80	0.89	18.44	55.19	34.89	40.72	10.49
		3.90	1.47	56.57	92.95	195.58	139.20	31.39
		-0.00	2.06	86.02	130.71	369.72	186.68	42.09
13.00	14.00	7.83	0.89	18.54	55.32	35.17	40.96	10.54
		3.91	1.47	56.90	93.21	197.32	140.07	31.59
		-0.00	2.06	86.55	131.10	373.17	187.90	42.37
14.00	15.00	7.85	0.89	18.64	55.45	35.46	41.20	10.59
		3.93	1.48	57.23	93.47	199.07	140.95	31.78
		-0.00	2.07	87.08	131.49	376.65	189.12	42.65
15.00	16.00	7.88	0.89	18.73	55.58	35.75	41.44	10.64
		3.94	1.48	57.56	93.73	200.83	141.83	31.98
		-0.00	2.07	87.61	131.88	380.14	190.35	42.92
16.00	17.00	7.91	0.89	18.83	55.71	36.03	41.68	10.69
		3.95	1.49	57.89	93.98	202.60	142.71	32.18
		-0.00	2.08	88.15	132.26	383.65	191.58	43.20
17.00	18.00	7.93	0.90	18.93	55.84	36.32	41.92	10.74
		3.97	1.49	58.22	94.24	204.38	143.60	32.38
		-0.00	2.09	88.68	132.65	387.19	192.82	43.48
18.00	19.00	7.96	0.90	19.02	55.96	36.61	42.16	10.79
		3.98	1.49	58.56	94.50	206.17	144.49	32.58
		-0.00	2.09	89.22	133.04	390.75	194.05	43.76
19.00	20.00	7.99	0.90	19.12	56.09	36.91	42.40	10.84
		3.99	1.50	58.89	94.76	207.97	145.38	32.78
		-0.00	2.10	89.76	133.42	394.33	195.30	44.04
20.00	21.00	8.01	0.90	19.22	56.22	37.20	42.65	10.89
		4.01	1.50	59.23	95.02	209.78	146.27	32.98
		0.00	2.10	90.30	133.81	397.93	196.54	44.32
21.00	22.00	8.04	0.90	19.32	56.35	37.50	42.89	10.94
		4.02	1.51	59.57	95.28	211.60	147.17	33.18
		-0.00	2.11	90.84	134.20	401.55	197.80	44.60
22.00	23.00	8.07	0.91	19.41	56.48	37.79	43.14	10.99
		4.03	1.51	59.91	95.53	213.44	148.07	33.39
		-0.00	2.12	91.38	134.59	405.20	199.05	44.88
23.00	24.00	8.09	0.91	19.51	56.61	38.09	43.38	11.04
		4.05	1.51	60.25	95.79	215.28	148.97	33.59
		-0.00	2.12	91.93	134.97	408.86	200.31	45.17
24.00	25.00	8.12	0.91	19.61	56.74	38.39	43.63	11.09
		4.06	1.52	60.59	96.05	217.13	149.87	33.79
		-0.00	2.13	92.47	135.36	412.55	201.57	45.45

DATOS DE ENTRADA

Muro ..... : Aleta 1 MURO 2

GEOMETRIA:

Longitud muro ..... :	10.00	m
Altura mínima total.....:	11.20	m
Altura máxima total.....:	11.80	m
Canto de Zapata..... :	1.50	m
Ancho coronacion ..... :	0.30	m
Talud trasdós..... :	15.00	%
Talud exterior..... :	0.00	%
Angulo muro-calzada .....:	0.00	º
Distancia muro-calzada.....:	0.00	m
Talud de terraplén (H/V)...:	0 / 2	
Angulo de talud trasdós....:	0.00	º

TERRENO:

Densidad de tierras.....:	2.00	t/m3
Angulo de rozam. interno...:	35.00	º
Roz. Muro-tierras .....:	12.00	º
Coeficiente de roz.....:	0.55	
Tensión admisible .....:	3.00	Kg/cm²
Sobrecarga terraplén..... :	3.00	t/m²
Kh inclinado .....:	0.313	
Kh horizontal.....:	0.313	
Kv inclinado .....:	0.066	
Kv horizontal.....:	0.066	

MATERIALES

Fck (Kg/cm²).....:	250	
Gc .....:	1.50	
Fyk (Kg/cm²).....:	5100	
Gs .....:	1.15	
Recubrimiento en Alzados...:	3	cms
Recubrimiento en Cimientos.:	5	cms

SEGURIDAD

Coeficiente desliz.....:	1.50
Coeficiente vuelco.....:	1.50
Coeficiente de acciones....:	1.60

CONDICIONES DE EQUILIBRIO

H = Altura (m) del alzado de la sección
Eh = Empuje Horizontal (t)
Ev = Empuje Vertical (t)
Meh = Momento (m.t) de los empujes Horizontales
Mev = Momento (m.t) de los empujes Verticales
ΣFh = Sumatorio de Fuerzas horizontales (t)
ΣFv = Sumatorio de Fuerzas verticales (t)
ΣMeh = Sumatorio de Momentos (m.t) de los empujes Horizontales
ΣMev = Sumatorio de Momentos (m.t) de los empujes Verticales

Zona		Secc	H	Eh	Ev	Meh	Mev	ΣFh	ΣFv	ΣMeh	ΣMev
0.00	1.00	0.50	9.73	49.95	10.62	206.71	71.77	49.95	158.20	206.71	654.32
1.00	2.00	1.50	9.79	50.43	10.72	209.72	72.46	50.43	158.99	209.72	657.74
2.00	3.00	2.50	9.85	50.91	10.82	212.76	73.15	50.91	159.78	212.76	661.17
3.00	4.00	3.50	9.91	51.40	10.92	215.83	73.84	51.40	160.56	215.83	664.60
4.00	5.00	4.50	9.97	51.88	11.03	218.93	74.54	51.88	161.35	218.93	668.03
5.00	6.00	5.50	10.03	52.37	11.13	222.05	75.24	52.37	162.14	222.05	671.47
6.00	7.00	6.50	10.09	52.86	11.24	225.21	75.95	52.86	162.93	225.21	674.91
7.00	8.00	7.50	10.15	53.35	11.34	228.40	76.65	53.35	152.07	228.40	660.21
8.00	9.00	8.50	10.21	53.85	11.45	231.61	77.36	53.85	152.80	231.61	663.58
9.00	10.00	9.50	10.27	54.34	11.55	234.86	78.08	54.34	153.53	234.86	666.95

H = Altura (m) de la sección en estudio
Zarpa = Longitud (m) de la parte delantera de la zapata
Zap = Longitud (m) total de la zapata
Csd = Coeficiente de seguridad al Deslizamiento
Csv = Coeficiente de seguridad al Vuelco
σmáx = Tensión (Kg/cm²) punta en cota de cimentación
σmín = Tensión (Kg/cm²) mínima en cota de cimentación
σcob = Tensión (Kg/cm²) de comparación
Base = Base comprimida (m) para el caso de diagrama triangular

Zona		Secc	H	Zarpa	Zap	Csd	Csv	σmáx	σmín	σcob	Base
0.00	1.00	0.50	9.73	1.50	6.76	1.74	3.17	3.48	1.20	2.80	6.76
1.00	2.00	1.50	9.79	1.50	6.76	1.73	3.14	3.53	1.18	2.82	6.76
2.00	3.00	2.50	9.85	1.50	6.76	1.73	3.11	3.57	1.16	2.85	6.76
3.00	4.00	3.50	9.91	1.50	6.76	1.72	3.08	3.61	1.14	2.87	6.76
4.00	5.00	4.50	9.97	1.50	6.76	1.71	3.05	3.65	1.12	2.90	6.76
5.00	6.00	5.50	10.03	1.50	6.76	1.70	3.02	3.69	1.10	2.92	6.76
6.00	7.00	6.50	10.09	1.50	6.76	1.70	3.00	3.74	1.08	2.95	6.76
7.00	8.00	7.50	10.15	2.00	6.76	1.57	2.89	3.33	1.17	2.68	6.76
8.00	9.00	8.50	10.21	2.00	6.76	1.56	2.87	3.37	1.15	2.70	6.76
9.00	10.00	9.50	10.27	2.00	6.76	1.55	2.84	3.41	1.13	2.73	6.76

Coeficiente global de seg. al deslizamiento ...	1.67
Coeficiente global de seg. al vuelco	3.01
Tensión máxima en solera (Kg/cm²).....	3.74

A R M A D U R A S EH-91

Para cada sección:

H = Altura (m) sobre cara superior de zapata
d = Canto útil (m)
Vd = Cortante de cálculo (t)
Vcu= Contribución del hormigón a cortante (t)
Md = Momento de cálculo de la sección (m.t)
Us = Capacidad necesaria (t)
As = Armadura en cm²

Z A P A T A :

Vcu= 93.60 t
d = 1.45 m

		ZARPA DELANTERA				ZARPA TRASERA			
Zona		Vd	Md	Us	As	Vd	Md	Us	As
0.00	1.00	69.35	54.67	37.14	10.95	69.35	54.67	90.13	21.01
1.00	2.00	71.27	58.08	39.50	11.54	71.27	58.08	89.67	20.95
2.00	3.00	73.17	61.59	41.92	12.13	73.17	61.59	89.16	20.89
3.00	4.00	75.07	65.19	44.42	12.72	75.07	65.19	88.61	20.81
4.00	5.00	76.95	68.90	47.00	13.32	76.95	68.90	88.01	20.73
5.00	6.00	78.83	72.70	49.65	13.92	78.83	72.70	87.36	20.65
6.00	7.00	80.69	76.61	52.37	14.51	80.69	76.61	86.66	20.55
7.00	8.00	82.55	80.62	55.17	15.11	82.55	80.62	85.91	20.45
8.00	9.00	84.40	84.73	58.05	15.70	84.40	84.73	85.11	20.34
9.00	10.00	86.25	88.94	61.01	16.29	86.25	88.94	84.27	20.22

A L Z A D O S

		Sección						
Zona		H	d	Vd	Vcu	Md	Us	As
0.00	1.00	6.49	0.79	14.00	48.83	22.67	29.76	8.09
		3.24	1.27	41.48	80.24	121.82	99.57	22.45
		0.00	1.76	61.95	111.64	224.61	131.65	29.69
1.00	2.00	6.53	0.79	14.13	49.03	23.00	30.07	8.16
		3.26	1.28	41.91	80.62	123.74	100.67	22.70
		-0.00	1.77	62.63	112.22	228.34	133.18	30.03
2.00	3.00	6.57	0.79	14.26	49.22	23.32	30.39	8.23
		3.28	1.29	42.33	81.01	125.68	101.79	22.95
		0.00	1.78	63.30	112.80	232.12	134.72	30.38
3.00	4.00	6.61	0.80	14.39	49.41	23.65	30.70	8.30
		3.30	1.29	42.76	81.40	127.64	102.91	23.21
		0.00	1.79	63.99	113.38	235.94	136.27	30.73
4.00	5.00	6.65	0.80	14.51	49.61	23.99	31.01	8.37
		3.32	1.30	43.20	81.78	129.61	104.04	23.46
		-0.00	1.80	64.67	113.96	239.80	137.83	31.08
5.00	6.00	6.69	0.80	14.64	49.80	24.32	31.33	8.45
		3.34	1.30	43.63	82.17	131.61	105.17	23.72
		-0.00	1.80	65.36	114.54	243.70	139.40	31.43
6.00	7.00	6.73	0.80	14.77	49.99	24.66	31.65	8.52
		3.36	1.31	44.07	82.56	133.63	106.31	23.97
		0.00	1.81	66.06	115.12	247.64	140.98	31.79
7.00	8.00	6.77	0.81	14.90	50.19	25.00	31.96	8.59
		3.38	1.32	44.51	82.95	135.67	107.46	24.23
		0.00	1.82	66.76	115.71	251.63	142.57	32.15
8.00	9.00	6.81	0.81	15.03	50.38	25.35	32.29	8.66
		3.40	1.32	44.95	83.33	137.72	108.61	24.49
		-0.00	1.83	67.46	116.29	255.66	144.16	32.51
9.00	10.00	6.85	0.81	15.16	50.57	25.69	32.61	8.73
		3.42	1.33	45.39	83.72	139.80	109.77	24.75
		0.00	1.84	68.16	116.87	259.72	145.77	32.87

DATOS DE ENTRADA

Muro ..... : Aleta 1 MURO 3

GEOMETRIA:

Longitud muro ..... :	5.00	m
Altura mínima total.....:	8.20	m
Altura máxima total.....:	8.40	m
Canto de Zapata..... :	1.20	m
Ancho coronacion ..... :	0.30	m
Talud trasdós..... :	15.00	%
Talud exterior..... :	0.00	%
Angulo muro-calzada .....:	0.00	º
Distancia muro-calzada.....:	0.00	m
Talud de terraplén (H/V)...:	0 / 2	
Angulo de talud trasdós....:	0.00	º

TERRENO:

Densidad de tierras.....:	2.00	t/m3
Angulo de rozam. interno...:	35.00	º
Roz. Muro-tierras .....:	12.00	º
Coeficiente de roz.....:	0.55	
Tensión admisible .....:	2.00	Kg/cm²
Sobrecarga terraplén..... :	3.00	t/m²
Kh inclinado .....:	0.313	
Kh horizontal.....:	0.313	
Kv inclinado .....:	0.066	
Kv horizontal.....:	0.066	

MATERIALES

Fck (Kg/cm²).....:	250	
Gc .....:	1.50	
Fyk (Kg/cm²).....:	5100	
Gs .....:	1.15	
Recubrimiento en Alzados...:	3	cms
Recubrimiento en Cimientos.:	5	cms

SEGURIDAD

Coeficiente desliz.....:	1.50
Coeficiente vuelco.....:	1.50
Coeficiente de acciones....:	1.60

CONDICIONES DE EQUILIBRIO

H = Altura (m) del alzado de la sección
Eh = Empuje Horizontal (t)
Ev = Empuje Vertical (t)
Meh = Momento (m.t) de los empujes Horizontales
Mev = Momento (m.t) de los empujes Verticales
ΣFh = Sumatorio de Fuerzas horizontales (t)
ΣFv = Sumatorio de Fuerzas verticales (t)
ΣMeh = Sumatorio de Momentos (m.t) de los empujes Horizontales
ΣMev = Sumatorio de Momentos (m.t) de los empujes Verticales

Zona		Secc	H	Eh	Ev	Meh	Mev	ΣFh	ΣFv	ΣMeh	ΣMev
0.00	1.00	0.50	7.02	28.83	6.13	89.56	29.74	28.83	79.82	89.56	250.78
1.00	2.00	1.50	7.06	29.07	6.18	90.72	33.08	29.07	90.23	90.72	306.37
2.00	3.00	2.50	7.10	29.32	6.23	91.88	33.36	29.32	90.62	91.88	307.77
3.00	4.00	3.50	7.14	29.56	6.28	93.06	33.64	29.56	91.01	93.06	309.16
4.00	5.00	4.50	7.18	29.81	6.34	94.25	33.92	29.81	91.39	94.25	310.56

H = Altura (m) de la sección en estudio
Zarpa = Longitud (m) de la parte delantera de la zapata
Zap = Longitud (m) total de la zapata
Csd = Coeficiente de seguridad al Deslizamiento
Csv = Coeficiente de seguridad al Vuelco
σmáx = Tensión (Kg/cm²) punta en cota de cimentación
σmín = Tensión (Kg/cm²) mínima en cota de cimentación
σcob = Tensión (Kg/cm²) de comparación
Base = Base comprimida (m) para el caso de diagrama triangular

Zona		Secc	H	Zarpa	Zap	Csd	Csv	σmáx	σmín	σcob	Base
0.00	1.00	0.50	7.02	1.50	4.85	1.52	2.80	2.47	0.82	1.98	4.85
1.00	2.00	1.50	7.06	1.50	5.35	1.71	3.38	2.23	1.14	1.89	5.35
2.00	3.00	2.50	7.10	1.50	5.35	1.70	3.35	2.25	1.13	1.90	5.35
3.00	4.00	3.50	7.14	1.50	5.35	1.69	3.32	2.28	1.12	1.92	5.35
4.00	5.00	4.50	7.18	1.50	5.35	1.69	3.30	2.30	1.11	1.93	5.35

Coeficiente global de seg. al deslizamiento ...	1.66
Coeficiente global de seg. al vuelco	3.23
Tensión máxima en solera (Kg/cm²).....	2.47

A R M A D U R A S EH-91

Para cada sección:

H = Altura (m) sobre cara superior de zapata
d = Canto útil (m)
Vd = Cortante de cálculo (t)
Vcu= Contribución del hormigón a cortante (t)
Md = Momento de cálculo de la sección (m.t)
Us = Capacidad necesaria (t)
As = Armadura en cm²

Z A P A T A :

Vcu= 74.23 t
d = 1.15 m

		ZARPA DELANTERA				ZARPA TRASERA			
Zona		Vd	Md	Us	As	Vd	Md	Us	As
0.00	1.00	45.59	35.91	30.78	9.02	45.59	35.91	35.49	10.15
1.00	2.00	45.26	35.54	30.46	8.94	45.26	35.54	36.72	10.44
2.00	3.00	44.95	35.21	30.17	8.87	44.95	35.21	37.89	10.70
3.00	4.00	44.66	34.90	29.90	8.80	44.66	34.90	39.00	10.95
4.00	5.00	44.40	34.61	29.65	8.74	44.40	34.61	40.06	11.19

A L Z A D O S

		Sección						
Zona		H	d	Vd	Vcu	Md	Us	As
0.00	1.00	4.68	0.65	8.83	40.09	10.91	17.33	5.04
		2.34	1.00	24.46	62.74	54.07	55.81	13.46
		0.00	1.35	35.18	85.40	94.65	71.65	17.67
1.00	2.00	4.71	0.65	8.90	40.21	11.04	17.49	5.09
		2.35	1.01	24.68	63.00	54.83	56.37	13.56
		0.00	1.36	35.52	85.79	96.07	72.40	17.82
2.00	3.00	4.73	0.66	8.97	40.34	11.18	17.65	5.13
		2.37	1.01	24.90	63.26	55.59	56.93	13.66
		0.00	1.37	35.87	86.17	97.49	73.16	17.97
3.00	4.00	4.76	0.66	9.03	40.47	11.32	17.81	5.17
		2.38	1.01	25.12	63.52	56.35	57.49	13.76
		0.00	1.37	36.21	86.56	98.94	73.93	18.11
4.00	5.00	4.79	0.66	9.10	40.60	11.46	17.98	5.21
		2.39	1.02	25.34	63.78	57.13	58.05	13.87
		0.00	1.38	36.56	86.95	100.39	74.69	18.26

DATOS DE ENTRADA

Muro ..... : Aleta 1 MURO 4

GEOMETRIA:

Longitud muro ..... :	5.00	m
Altura mínima total.....:	6.50	m
Altura máxima total.....:	6.80	m
Canto de Zapata..... :	1.00	m
Ancho coronacion ..... :	0.30	m
Talud trasdós..... :	15.00	%
Talud exterior..... :	0.00	%
Angulo muro-calzada .....:	0.00	°
Distancia muro-calzada.....:	0.00	m
Talud de terraplén (H/V)...:	0 / 2	
Angulo de talud trasdós....:	0.00	°

TERRENO:

Densidad de tierras.....:	2.00	t/m3
Angulo de rozam. interno...:	35.00	°
Roz. Muro-tierras .....:	12.00	°
Coeficiente de roz.....:	0.55	
Tensión admisible .....:	2.00	Kg/cm²
Sobrecarga terraplén..... :	3.00	t/m²
Kh inclinado .....:	0.313	
Kh horizontal.....:	0.313	
Kv inclinado .....:	0.066	
Kv horizontal.....:	0.066	

MATERIALES

Fck (Kg/cm²).....:	250	
Gc .....:	1.50	
Fyk (Kg/cm²).....:	5100	
Gs .....:	1.15	
Recubrimiento en Alzados...:	3	cms
Recubrimiento en Cimientos.:	5	cms

SEGURIDAD

Coeficiente desliz.....:	1.50
Coeficiente vuelco.....:	1.50
Coeficiente de acciones....:	1.60

CONDICIONES DE EQUILIBRIO

H = Altura (m) del alzado de la sección
Eh = Empuje Horizontal (t)
Ev = Empuje Vertical (t)
Meh = Momento (m.t) de los empujes Horizontales
Mev = Momento (m.t) de los empujes Verticales
ΣFh = Sumatorio de Fuerzas horizontales (t)
ΣFv = Sumatorio de Fuerzas verticales (t)
ΣMeh = Sumatorio de Momentos (m.t) de los empujes Horizontales
ΣMev = Sumatorio de Momentos (m.t) de los empujes Verticales

Zona		Secc	H	Eh	Ev	Meh	Mev	ΣFh	ΣFv	ΣMeh	ΣMev
0.00	1.00	0.50	5.53	19.45	4.13	49.01	17.07	19.45	59.54	49.01	152.97
1.00	2.00	1.50	5.59	19.76	4.20	50.19	17.34	19.76	60.01	50.19	154.25
2.00	3.00	2.50	5.65	20.06	4.26	51.38	17.61	20.06	60.48	51.38	155.53
3.00	4.00	3.50	5.71	20.37	4.33	52.59	17.88	20.37	60.96	52.59	156.82
4.00	5.00	4.50	5.77	20.68	4.39	53.83	18.15	20.68	61.44	53.83	158.11

H = Altura (m) de la sección en estudio
Zarpa = Longitud (m) de la parte delantera de la zapata
Zap = Longitud (m) total de la zapata
Csd = Coeficiente de seguridad al Deslizamiento
Csv = Coeficiente de seguridad al Vuelco
σmáx = Tensión (Kg/cm²) punta en cota de cimentación
σmín = Tensión (Kg/cm²) mínima en cota de cimentación
σcob = Tensión (Kg/cm²) de comparación
Base = Base comprimida (m) para el caso de diagrama triangular

Zona		Secc	H	Zarpa	Zap	Csd	Csv	σmáx	σmín	σcob	Base
0.00	1.00	0.50	5.53	1.00	4.13	1.68	3.12	2.11	0.77	1.70	4.13
1.00	2.00	1.50	5.59	1.00	4.13	1.67	3.07	2.15	0.76	1.73	4.13
2.00	3.00	2.50	5.65	1.00	4.13	1.66	3.03	2.19	0.74	1.76	4.13
3.00	4.00	3.50	5.71	1.00	4.13	1.65	2.98	2.24	0.71	1.78	4.13
4.00	5.00	4.50	5.77	1.00	4.13	1.63	2.94	2.28	0.69	1.81	4.13

Coeficiente global de seg. al deslizamiento ...	1.66
Coeficiente global de seg. al vuelco	3.03
Tensión máxima en solera (Kg/cm²).....	2.28

A R M A D U R A S EH-91

Para cada sección:

H = Altura (m) sobre cara superior de zapata
d = Canto útil (m)
Vd = Cortante de cálculo (t)
Vcu= Contribución del hormigón a cortante (t)
Md = Momento de cálculo de la sección (m.t)
Us = Capacidad necesaria (t)
As = Armadura en cm²

Z A P A T A :

Vcu= 61.32 t
d = 0.95 m

		ZARPA DELANTERA				ZARPA TRASERA			
Zona		Vd	Md	Us	As	Vd	Md	Us	As
0.00	1.00	27.19	14.18	14.61	4.56	27.19	14.18	26.00	7.59
1.00	2.00	27.74	14.48	14.93	4.65	27.74	14.48	26.79	7.78
2.00	3.00	28.31	14.79	15.25	4.74	28.31	14.79	27.59	7.98
3.00	4.00	28.88	15.10	15.57	4.83	28.88	15.10	28.39	8.17
4.00	5.00	29.46	15.41	15.90	4.93	29.46	15.41	29.19	8.36

A L Z A D O S

		Sección						
Zona		H	d	Vd	Vcu	Md	Us	As
0.00	1.00	3.69	0.58	6.44	35.28	6.56	11.80	3.56
		1.84	0.85	16.94	53.12	30.55	36.98	9.70
		-0.00	1.13	23.59	70.97	51.14	46.26	12.36
1.00	2.00	3.73	0.58	6.53	35.47	6.71	12.01	3.62
		1.86	0.86	17.22	53.51	31.34	37.67	9.85
		0.00	1.14	24.02	71.55	52.57	47.18	12.56
2.00	3.00	3.77	0.58	6.62	35.66	6.86	12.21	3.67
		1.88	0.87	17.50	53.90	32.14	38.36	9.99
		-0.00	1.15	24.44	72.13	54.02	48.11	12.77
3.00	4.00	3.81	0.59	6.71	35.86	7.02	12.42	3.73
		1.90	0.87	17.78	54.29	32.95	39.06	10.14
		0.00	1.16	24.87	72.72	55.50	49.05	12.98
4.00	5.00	3.85	0.59	6.80	36.05	7.17	12.63	3.79
		1.92	0.88	18.06	54.67	33.77	39.77	10.29
		0.00	1.17	25.31	73.30	57.01	49.99	13.19

DATOS DE ENTRADA

Muro ..... : Aleta 1 MURO 5

GEOMETRIA:

Longitud muro ..... :	5.00	m
Altura mínima total.....:	4.80	m
Altura máxima total.....:	5.10	m
Canto de Zapata..... :	0.80	m
Ancho coronacion ..... :	0.30	m
Talud trasdós..... :	15.00	%
Talud exterior..... :	0.00	%
Angulo muro-calzada .....:	0.00	°
Distancia muro-calzada.....:	0.00	m
Talud de terraplén (H/V)...:	0 / 2	
Angulo de talud trasdós....:	0.00	°

TERRENO:

Densidad de tierras.....:	2.00	t/m3
Angulo de rozam. interno...:	35.00	°
Roz. Muro-tierras .....:	12.00	°
Coeficiente de roz.....:	0.55	
Tensión admisible .....:	2.00	Kg/cm²
Sobrecarga terraplén..... :	3.00	t/m²
Kh inclinado .....:	0.313	
Kh horizontal.....:	0.313	
Kv inclinado .....:	0.066	
Kv horizontal.....:	0.066	

MATERIALES

Fck (Kg/cm²).....:	250	
Gc .....:	1.50	
Fyk (Kg/cm²).....:	5100	
Gs .....:	1.15	
Recubrimiento en Alzados...:	3	cms
Recubrimiento en Cimientos.:	5	cms

SEGURIDAD

Coeficiente desliz.....:	1.50
Coeficiente vuelco.....:	1.50
Coeficiente de acciones....:	1.60

CONDICIONES DE EQUILIBRIO

H = Altura (m) del alzado de la sección
Eh = Empuje Horizontal (t)
Ev = Empuje Vertical (t)
Meh = Momento (m.t) de los empujes Horizontales
Mev = Momento (m.t) de los empujes Verticales
ΣFh = Sumatorio de Fuerzas horizontales (t)
ΣFv = Sumatorio de Fuerzas verticales (t)
ΣMeh = Sumatorio de Momentos (m.t) de los empujes Horizontales
ΣMev = Sumatorio de Momentos (m.t) de los empujes Verticales

Zona		Secc	H	Eh	Ev	Meh	Mev	ΣFh	ΣFv	ΣMeh	ΣMev
0.00	1.00	0.50	4.03	11.82	2.51	22.68	7.30	11.82	35.23	22.68	61.42
1.00	2.00	1.50	4.09	12.06	2.56	23.40	7.45	12.06	35.60	23.40	62.09
2.00	3.00	2.50	4.15	12.30	2.61	24.13	7.59	12.30	35.96	24.13	62.75
3.00	4.00	3.50	4.21	12.54	2.67	24.87	7.74	12.54	36.33	24.87	63.42
4.00	5.00	4.50	4.27	12.79	2.72	25.63	7.90	12.79	36.70	25.63	64.09

H = Altura (m) de la sección en estudio
Zarpa = Longitud (m) de la parte delantera de la zapata
Zap = Longitud (m) total de la zapata
Csd = Coeficiente de seguridad al Deslizamiento
Csv = Coeficiente de seguridad al Vuelco
σmáx = Tensión (Kg/cm²) punta en cota de cimentación
σmín = Tensión (Kg/cm²) mínima en cota de cimentación
σcob = Tensión (Kg/cm²) de comparación
Base = Base comprimida (m) para el caso de diagrama triangular

Zona		Secc	H	Zarpa	Zap	Csd	Csv	σmáx	σmín	σcob	Base
0.00	1.00	0.50	4.03	0.50	2.90	1.64	2.71	2.10	0.33	1.60	2.90
1.00	2.00	1.50	4.09	0.50	2.90	1.62	2.65	2.15	0.30	1.64	2.90
2.00	3.00	2.50	4.15	0.50	2.90	1.61	2.60	2.21	0.27	1.67	2.90
3.00	4.00	3.50	4.21	0.50	2.90	1.59	2.55	2.26	0.24	1.71	2.90
4.00	5.00	4.50	4.27	0.50	2.90	1.58	2.50	2.32	0.21	1.75	2.90

Coeficiente global de seg. al deslizamiento ...	1.61
Coeficiente global de seg. al vuelco	2.60
Tensión máxima en solera (Kg/cm²).....	2.32

A R M A D U R A S EH-91

Para cada sección:

H = Altura (m) sobre cara superior de zapata
d = Canto útil (m)
Vd = Cortante de cálculo (t)
Vcu= Contribución del hormigón a cortante (t)
Md = Momento de cálculo de la sección (m.t)
Us = Capacidad necesaria (t)
As = Armadura en cm²

Z A P A T A :

Vcu= 48.41 t
d = 0.75 m

		ZARPA DELANTERA				ZARPA TRASERA			
Zona		Vd	Md	Us	As	Vd	Md	Us	As
0.00	1.00	13.98	3.67	4.77	1.56	13.98	3.67	16.80	5.05
1.00	2.00	14.36	3.77	4.90	1.60	14.36	3.77	17.49	5.23
2.00	3.00	14.74	3.88	5.04	1.65	14.74	3.88	18.18	5.40
3.00	4.00	15.13	3.98	5.17	1.69	15.13	3.98	18.87	5.58
4.00	5.00	15.53	4.09	5.31	1.73	15.53	4.09	19.57	5.75

A L Z A D O S

		Sección						
Zona		H	d	Vd	Vcu	Md	Us	As
0.00	1.00	2.69	0.50	4.37	30.44	3.47	7.20	2.25
		1.34	0.70	10.69	43.44	14.79	21.74	6.17
		-0.00	0.90	14.17	56.45	23.10	26.09	7.51
1.00	2.00	2.73	0.50	4.45	30.63	3.57	7.37	2.30
		1.36	0.71	10.91	43.83	15.29	22.28	6.30
		-0.00	0.91	14.50	57.03	23.96	26.79	7.69
2.00	3.00	2.77	0.51	4.52	30.82	3.67	7.53	2.35
		1.38	0.72	11.14	44.22	15.80	22.82	6.43
		0.00	0.92	14.84	57.61	24.84	27.50	7.87
3.00	4.00	2.81	0.51	4.60	31.02	3.78	7.70	2.40
		1.40	0.72	11.37	44.60	16.31	23.37	6.57
		-0.00	0.93	15.18	58.19	25.74	28.22	8.05
4.00	5.00	2.85	0.51	4.68	31.21	3.89	7.87	2.45
		1.42	0.73	11.60	44.99	16.84	23.93	6.70
		0.00	0.94	15.53	58.77	26.66	28.95	8.24

DATOS DE ENTRADA

Muro ..... : Aleta 1 MURO 6

GEOMETRIA:

Longitud muro ..... :	5.00	m
Altura mínima total.....:	3.30	m
Altura máxima total.....:	3.50	m
Canto de Zapata..... :	0.70	m
Ancho coronacion ..... :	0.30	m
Talud trasdós..... :	15.00	%
Talud exterior..... :	0.00	%
Angulo muro-calzada .....:	0.00	°
Distancia muro-calzada.....:	0.00	m
Talud de terraplén (H/V)...:	0 / 2	
Angulo de talud trasdós....:	0.00	°

TERRENO:

Densidad de tierras.....:	2.00	t/m3
Angulo de rozam. interno...:	35.00	°
Roz. Muro-tierras .....:	12.00	°
Coeficiente de roz.....:	0.55	
Tensión admisible .....:	2.00	Kg/cm²
Sobrecarga terraplén..... :	3.00	t/m²
Kh inclinado .....:	0.313	
Kh horizontal.....:	0.313	
Kv inclinado .....:	0.066	
Kv horizontal.....:	0.066	

MATERIALES

Fck (Kg/cm²).....:	250	
Gc .....:	1.50	
Fyk (Kg/cm²).....:	5100	
Gs .....:	1.15	
Recubrimiento en Alzados...:	3	cms
Recubrimiento en Cimientos.:	5	cms

SEGURIDAD

Coeficiente desliz.....:	1.50
Coeficiente vuelco.....:	1.50
Coeficiente de acciones....:	1.60

CONDICIONES DE EQUILIBRIO

H = Altura (m) del alzado de la sección
Eh = Empuje Horizontal (t)
Ev = Empuje Vertical (t)
Meh = Momento (m.t) de los empujes Horizontales
Mev = Momento (m.t) de los empujes Verticales
ΣFh = Sumatorio de Fuerzas horizontales (t)
ΣFv = Sumatorio de Fuerzas verticales (t)
ΣMeh = Sumatorio de Momentos (m.t) de los empujes Horizontales
ΣMev = Sumatorio de Momentos (m.t) de los empujes Verticales

Zona		Secc	H	Eh	Ev	Meh	Mev	ΣFh	ΣFv	ΣMeh	ΣMev
0.00	1.00	0.50	2.62	6.56	1.39	8.98	3.06	6.56	18.93	8.98	25.96
1.00	2.00	1.50	2.66	6.68	1.42	9.25	3.11	6.68	19.11	9.25	26.21
2.00	3.00	2.50	2.70	6.80	1.45	9.52	3.17	6.80	19.28	9.52	26.46
3.00	4.00	3.50	2.74	6.93	1.47	9.79	3.23	6.93	19.46	9.79	26.71
4.00	5.00	4.50	2.78	7.05	1.50	10.07	3.29	7.05	19.63	10.07	26.97

H = Altura (m) de la sección en estudio
Zarpa = Longitud (m) de la parte delantera de la zapata
Zap = Longitud (m) total de la zapata
Csd = Coeficiente de seguridad al Deslizamiento
Csv = Coeficiente de seguridad al Vuelco
σmáx = Tensión (Kg/cm²) punta en cota de cimentación
σmín = Tensión (Kg/cm²) mínima en cota de cimentación
σcob = Tensión (Kg/cm²) de comparación
Base = Base comprimida (m) para el caso de diagrama triangular

Zona		Secc	H	Zarpa	Zap	Csd	Csv	σmáx	σmín	σcob	Base
0.00	1.00	0.50	2.62	0.50	2.19	1.59	2.89	1.34	0.39	1.06	2.19
1.00	2.00	1.50	2.66	0.50	2.19	1.57	2.83	1.37	0.37	1.08	2.19
2.00	3.00	2.50	2.70	0.50	2.19	1.56	2.78	1.40	0.36	1.10	2.19
3.00	4.00	3.50	2.74	0.50	2.19	1.55	2.73	1.44	0.34	1.12	2.19
4.00	5.00	4.50	2.78	0.50	2.19	1.53	2.68	1.47	0.32	1.14	2.19

Coeficiente global de seg. al deslizamiento ...	1.56
Coeficiente global de seg. al vuelco	2.78
Tensión máxima en solera (Kg/cm²).....	1.47

A R M A D U R A S EH-91

Para cada sección:

H = Altura (m) sobre cara superior de zapata
d = Canto útil (m)
Vd = Cortante de cálculo (t)
Vcu= Contribución del hormigón a cortante (t)
Md = Momento de cálculo de la sección (m.t)
Us = Capacidad necesaria (t)
As = Armadura en cm^2

Z A P A T A :

Vcu= 41.96 t
d = 0.65 m

		Z A R P A D E L A N T E R A				Z A R P A T R A S E R A			
Zona		Vd	Md	Us	As	Vd	Md	Us	As
0.00	1.00	8.44	2.23	3.34	1.10	8.44	2.23	5.35	1.74
1.00	2.00	8.66	2.29	3.43	1.13	8.66	2.29	5.60	1.81
2.00	3.00	8.89	2.35	3.52	1.16	8.89	2.35	5.84	1.89
3.00	4.00	9.12	2.42	3.62	1.19	9.12	2.42	6.09	1.96
4.00	5.00	9.36	2.48	3.71	1.22	9.36	2.48	6.33	2.04

A L Z A D O S

		Sección						
Zona		H	d	Vd	Vcu	Md	Us	As
0.00	1.00	1.75	0.43	2.72	25.88	1.56	3.81	1.23
		0.87	0.56	6.02	34.34	5.87	10.84	3.29
		-0.00	0.69	7.36	42.80	8.15	12.06	3.71
1.00	2.00	1.77	0.43	2.77	26.01	1.61	3.89	1.25
		0.89	0.57	6.13	34.60	6.06	11.10	3.37
		-0.00	0.70	7.53	43.18	8.45	12.39	3.80
2.00	3.00	1.80	0.44	2.81	26.14	1.65	3.97	1.28
		0.90	0.57	6.25	34.86	6.25	11.36	3.44
		-0.00	0.71	7.70	43.57	8.75	12.72	3.90
3.00	4.00	1.83	0.44	2.85	26.27	1.69	4.06	1.30
		0.91	0.57	6.37	35.12	6.44	11.63	3.51
		-0.00	0.71	7.87	43.96	9.06	13.06	3.99
4.00	5.00	1.85	0.44	2.90	26.40	1.74	4.14	1.33
		0.93	0.58	6.49	35.37	6.64	11.90	3.59
		-0.00	0.72	8.04	44.35	9.38	13.41	4.09

DATOS DE ENTRADA

Muro ..... : Aleta 1 MURO 7

GEOMETRIA:

Longitud muro ..... :	5.00	m
Altura mínima total.....:	2.20	m
Altura máxima total.....:	2.60	m
Canto de Zapata..... :	0.60	m
Ancho coronacion ..... :	0.30	m
Talud trasdós..... :	15.00	%
Talud exterior..... :	0.00	%
Angulo muro-calzada .....:	0.00	°
Distancia muro-calzada.....:	0.00	m
Talud de terraplén (H/V)...:	0 / 2	
Angulo de talud trasdós....:	0.00	°

TERRENO:

Densidad de tierras.....:	2.00	t/m3
Angulo de rozam. interno...:	35.00	°
Roz. Muro-tierras .....:	12.00	°
Coeficiente de roz.....:	0.55	
Tensión admisible .....:	2.00	Kg/cm²
Sobrecarga terraplén..... :	3.00	t/m²
Kh inclinado .....:	0.313	
Kh horizontal.....:	0.313	
Kv inclinado .....:	0.066	
Kv horizontal.....:	0.066	

MATERIALES

Fck (Kg/cm²).....:	250	
Gc .....:	1.50	
Fyk (Kg/cm²).....:	5100	
Gs .....:	1.15	
Recubrimiento en Alzados...:	3	cms
Recubrimiento en Cimientos.:	5	cms

SEGURIDAD

Coeficiente desliz.....:	1.50
Coeficiente vuelco.....:	1.50
Coeficiente de acciones....:	1.60

CONDICIONES DE EQUILIBRIO

H = Altura (m) del alzado de la sección
Eh = Empuje Horizontal (t)
Ev = Empuje Vertical (t)
Meh = Momento (m.t) de los empujes Horizontales
Mev = Momento (m.t) de los empujes Verticales
ΣFh = Sumatorio de Fuerzas horizontales (t)
ΣFv = Sumatorio de Fuerzas verticales (t)
ΣMeh = Sumatorio de Momentos (m.t) de los empujes Horizontales
ΣMev = Sumatorio de Momentos (m.t) de los empujes Verticales

Zona		Secc	H	Eh	Ev	Meh	Mev	ΣFh	ΣFv	ΣMeh	ΣMev
0.00	1.00	0.50	1.64	3.67	0.78	3.52	1.60	3.67	13.00	3.52	16.76
1.00	2.00	1.50	1.72	3.86	0.82	3.83	1.68	3.86	13.31	3.83	17.17
2.00	3.00	2.50	1.80	4.05	0.86	4.14	1.76	4.05	13.63	4.14	17.59
3.00	4.00	3.50	1.88	4.25	0.90	4.47	1.85	4.25	13.94	4.47	18.01
4.00	5.00	4.50	1.96	4.45	0.95	4.82	1.93	4.45	14.25	4.82	18.43

H = Altura (m) de la sección en estudio
Zarpa = Longitud (m) de la parte delantera de la zapata
Zap = Longitud (m) total de la zapata
Csd = Coeficiente de seguridad al Deslizamiento
Csv = Coeficiente de seguridad al Vuelco
σmáx = Tensión (Kg/cm²) punta en cota de cimentación
σmín = Tensión (Kg/cm²) mínima en cota de cimentación
σcob = Tensión (Kg/cm²) de comparación
Base = Base comprimida (m) para el caso de diagrama triangular

Zona		Secc	H	Zarpa	Zap	Csd	Csv	σmáx	σmín	σcob	Base
0.00	1.00	0.50	1.64	0.50	2.05	1.95	4.75	0.65	0.63	0.64	2.05
1.00	2.00	1.50	1.72	0.50	2.05	1.90	4.49	0.69	0.61	0.66	2.05
2.00	3.00	2.50	1.80	0.50	2.05	1.85	4.25	0.74	0.60	0.69	2.05
3.00	4.00	3.50	1.88	0.50	2.05	1.80	4.02	0.79	0.58	0.72	2.05
4.00	5.00	4.50	1.96	0.50	2.05	1.76	3.82	0.84	0.56	0.75	2.05

Coeficiente global de seg. al deslizamiento ...	1.85
Coeficiente global de seg. al vuelco	4.23
Tensión máxima en solera (Kg/cm²).....	0.84

A R M A D U R A S EH-91

Para cada sección:

H = Altura (m) sobre cara superior de zapata
d = Canto útil (m)
Vd = Cortante de cálculo (t)
Vcu= Contribución del hormigón a cortante (t)
Md = Momento de cálculo de la sección (m.t)
Us = Capacidad necesaria (t)
As = Armadura en cm²

Z A P A T A :

Vcu= 35.50 t
d = 0.55 m

		ZARPA DELANTERA				ZARPA TRASERA			
Zona		Vd	Md	Us	As	Vd	Md	Us	As
0.00	1.00	3.95	1.01	1.79	0.60	3.95	1.01	0.05	0.02
1.00	2.00	4.24	1.09	1.94	0.64	4.24	1.09	0.48	0.16
2.00	3.00	4.56	1.18	2.08	0.69	4.56	1.18	0.91	0.31
3.00	4.00	4.88	1.27	2.24	0.74	4.88	1.27	1.35	0.45
4.00	5.00	5.22	1.36	2.40	0.80	5.22	1.36	1.80	0.60

A L Z A D O S

		Sección						
Zona		H	d	Vd	Vcu	Md	Us	As
0.00	1.00	1.09	0.38	1.75	22.72	0.73	2.01	0.66
		0.55	0.46	3.46	28.01	2.35	5.28	1.68
		0.00	0.55	3.81	33.31	2.75	5.21	1.67
1.00	2.00	1.15	0.39	1.83	22.98	0.78	2.14	0.70
		0.57	0.47	3.65	28.53	2.56	5.67	1.79
		0.00	0.56	4.06	34.08	3.07	5.68	1.82
2.00	3.00	1.20	0.39	1.90	23.24	0.84	2.27	0.74
		0.60	0.48	3.84	29.05	2.79	6.07	1.91
		0.00	0.57	4.32	34.86	3.40	6.16	1.96
3.00	4.00	1.25	0.39	1.98	23.50	0.90	2.41	0.79
		0.63	0.49	4.03	29.56	3.03	6.48	2.04
		0.00	0.58	4.59	35.63	3.76	6.66	2.12
4.00	5.00	1.31	0.40	2.05	23.75	0.96	2.54	0.83
		0.65	0.50	4.23	30.08	3.29	6.91	2.16
		0.00	0.59	4.86	36.41	4.14	7.17	2.27

ALETA 2

DATOS DE ENTRADA

Muro ..... : Aleta 2

GEOMETRIA:

Longitud muro ..... :	8.00	m
Altura mínima total.....:	13.60	m
Altura máxima total.....:	14.35	m
Canto de Zapata..... :	1.80	m
Ancho coronacion ..... :	0.30	m
Talud trasdós..... :	15.00	%
Talud exterior..... :	0.00	%
Angulo muro-calzada .....:	0.00	°
Distancia muro-calzada.....:	0.00	m
Talud de terraplén (H/V)...:	0 / 2	
Angulo de talud trasdós....:	0.00	°

TERRENO:

Densidad de tierras.....:	2.00	t/m3
Angulo de rozam. interno...:	35.00	°
Roz. Muro-tierras .....:	12.00	°
Coeficiente de roz.....:	0.55	
Tensión admisible .....:	3.00	Kg/cm²
Sobrecarga terraplén..... :	1.00	t/m²
Kh inclinado .....:	0.313	
Kh horizontal.....:	0.313	
Kv inclinado .....:	0.066	
Kv horizontal.....:	0.066	

MATERIALES

Fck (Kg/cm²).....:	250	
Gc .....:	1.50	
Fyk (Kg/cm²).....:	5100	
Gs .....:	1.15	
Recubrimiento en Alzados...:	3	cms
Recubrimiento en Cimientos.:	5	cms

SEGURIDAD

Coeficiente desliz.....:	1.50
Coeficiente vuelco.....:	1.50
Coeficiente de acciones....:	1.60

CONDICIONES DE EQUILIBRIO

H = Altura (m) del alzado de la sección
Eh = Empuje Horizontal (t)
Ev = Empuje Vertical (t)
Meh = Momento (m.t) de los empujes Horizontales
Mev = Momento (m.t) de los empujes Verticales
ΣFh = Sumatorio de Fuerzas horizontales (t)
ΣFv = Sumatorio de Fuerzas verticales (t)
ΣMeh = Sumatorio de Momentos (m.t) de los empujes Horizontales
ΣMev = Sumatorio de Momentos (m.t) de los empujes Verticales

Zona		Secc	H	Eh	Ev	Meh	Mev	ΣFh	ΣFv	ΣMeh	ΣMev
0.00	1.00	0.50	11.85	62.48	13.28	293.94	100.63	62.48	191.84	293.94	907.67
1.00	2.00	1.50	11.94	63.31	13.46	299.84	101.97	63.31	180.72	299.84	889.74
2.00	3.00	2.50	12.03	64.15	13.64	305.81	103.32	64.15	181.94	305.81	896.23
3.00	4.00	3.50	12.13	64.99	13.81	311.86	104.68	64.99	183.17	311.86	902.74
4.00	5.00	4.50	12.22	65.84	14.00	318.00	106.04	65.84	184.41	318.00	909.26
5.00	6.00	5.50	12.32	66.70	14.18	324.21	107.42	66.70	185.64	324.21	915.79
6.00	7.00	6.50	12.41	67.56	14.36	330.50	108.80	67.56	186.87	330.50	922.33
7.00	8.00	7.50	12.50	68.42	14.54	336.88	110.20	68.42	188.11	336.88	928.88

H = Altura (m) de la sección en estudio
Zarpa = Longitud (m) de la parte delantera de la zapata
Zap = Longitud (m) total de la zapata
Csd = Coeficiente de seguridad al Deslizamiento
Csv = Coeficiente de seguridad al Vuelco
σmáx = Tensión (Kg/cm²) punta en cota de cimentación
σmín = Tensión (Kg/cm²) mínima en cota de cimentación
σcob = Tensión (Kg/cm²) de comparación
Base = Base comprimida (m) para el caso de diagrama triangular

Zona		Secc	H	Zarpa	Zap	Csd	Csv	σmáx	σmín	σcob	Base
0.00	1.00	0.50	11.85	2.00	7.58	1.69	3.09	3.71	1.35	3.00	7.58
1.00	2.00	1.50	11.94	2.50	7.58	1.57	2.97	3.38	1.39	2.77	7.58
2.00	3.00	2.50	12.03	2.50	7.58	1.56	2.93	3.43	1.37	2.80	7.58
3.00	4.00	3.50	12.13	2.50	7.58	1.55	2.89	3.49	1.34	2.84	7.58
4.00	5.00	4.50	12.22	2.50	7.58	1.54	2.86	3.56	1.31	2.88	7.58
5.00	6.00	5.50	12.32	2.50	7.58	1.53	2.82	3.62	1.28	2.91	7.58
6.00	7.00	6.50	12.41	2.50	7.58	1.52	2.79	3.68	1.25	2.95	7.58
7.00	8.00	7.50	12.50	2.50	7.58	1.51	2.76	3.74	1.22	2.99	7.58

Coeficiente global de seg. al deslizamiento ... 1.56
Coeficiente global de seg. al vuelco 2.88
Tensión máxima en solera (Kg/cm²)..... 3.74

A R M A D U R A S EH-91

Para cada sección:

H = Altura (m) sobre cara superior de zapata
d = Canto útil (m)
Vd = Cortante de cálculo (t)
Vcu= Contribución del hormigón a cortante (t)
Md = Momento de cálculo de la sección (m.t)
Us = Capacidad necesaria (t)
As = Armadura en cm²

Z A P A T A :

Vcu= 112.96 t
d = 1.75 m

		ZARPA DELANTERA				ZARPA TRASERA			
Zona		Vd	Md	Us	As	Vd	Md	Us	As
0.00	1.00	95.52	100.56	56.84	16.10	95.52	100.56	103.70	24.68
1.00	2.00	98.18	106.83	60.45	16.92	98.18	106.83	102.62	24.53
2.00	3.00	100.84	113.30	64.20	17.73	100.84	113.30	101.46	24.37
3.00	4.00	103.52	120.00	68.08	18.55	103.52	120.00	100.23	24.19
4.00	5.00	106.68	126.91	72.10	19.36	106.68	126.91	98.92	24.00
5.00	6.00	109.37	134.05	76.25	20.17	109.37	134.05	97.54	23.80
6.00	7.00	112.07	141.42	80.56	20.98	112.07	141.42	96.07	23.57
7.00	8.00	114.78	149.02	85.01	21.77	114.78	149.02	94.52	23.34

A L Z A D O S

		Sección						
Zona		H	d	Vd	Vcu	Md	Us	As
0.00	1.00	9.87	0.60	4.50	36.55	4.35	7.51	2.37
		7.90	0.89	13.98	55.66	24.36	27.94	7.92
		5.92	1.19	28.63	74.78	71.76	62.01	15.36
		3.95	1.48	48.43	93.90	158.27	110.27	24.87
		1.97	1.78	73.38	113.02	295.59	173.23	39.06
		0.00	2.08	76.12	132.14	312.30	154.61	34.86
1.00	2.00	9.95	0.60	4.55	36.70	4.43	7.62	2.41
		7.96	0.90	14.18	55.97	24.87	28.37	8.03
		5.97	1.20	29.04	75.24	73.32	62.99	15.55
		3.98	1.49	49.14	94.50	161.78	112.04	25.26
		1.99	1.79	74.48	113.77	302.23	176.04	39.69
		0.00	2.09	77.28	133.04	319.49	157.15	35.44
2.00	3.00	10.03	0.60	4.61	36.85	4.51	7.73	2.44
		8.02	0.90	14.37	56.27	25.38	28.81	8.13
		6.02	1.20	29.45	75.69	74.89	63.98	15.74
		4.01	1.50	49.85	95.11	165.33	113.82	25.66
		2.01	1.80	75.58	114.53	308.97	178.86	40.33
		0.00	2.11	78.45	133.95	326.79	159.71	36.01
3.00	4.00	10.11	0.60	4.66	37.00	4.60	7.85	2.47
		8.09	0.91	14.56	56.57	25.90	29.25	8.24
		6.06	1.21	29.87	76.14	76.49	64.98	15.92
		4.04	1.51	50.57	95.72	168.94	115.61	26.07
		2.02	1.82	76.69	115.29	315.81	181.71	40.97
		0.00	2.12	79.63	134.86	334.21	162.30	36.60
4.00	5.00	10.18	0.61	4.72	37.15	4.68	7.96	2.51
		8.15	0.91	14.76	56.87	26.43	29.69	8.35
		6.11	1.22	30.29	76.60	78.11	65.98	16.11
		4.07	1.52	51.30	96.32	172.60	117.42	26.48
		2.04	1.83	77.81	116.04	322.75	184.58	41.62
		0.00	2.13	80.82	135.77	341.73	164.90	37.18
5.00	6.00	10.26	0.61	4.78	37.30	4.77	8.07	2.54
		8.21	0.92	14.95	57.18	26.96	30.13	8.46
		6.16	1.22	30.71	77.05	79.76	66.99	16.30
		4.11	1.53	52.03	96.93	176.32	119.24	26.89
		2.05	1.84	78.93	116.80	329.79	187.48	42.27
		0.00	2.15	82.02	136.67	349.36	167.53	37.78
6.00	7.00	10.34	0.61	4.83	37.45	4.85	8.18	2.57
		8.27	0.92	15.15	57.48	27.50	30.58	8.57
		6.20	1.23	31.13	77.51	81.43	68.01	16.49
		4.14	1.54	52.77	97.53	180.08	121.08	27.30
		2.07	1.85	80.07	117.56	336.94	190.40	42.93
		0.00	2.16	83.23	137.58	357.11	170.18	38.37
7.00	8.00	10.42	0.61	4.89	37.61	4.94	8.30	2.61
		8.34	0.93	15.35	57.78	28.05	31.03	8.68
		6.25	1.24	31.56	77.96	83.11	69.04	16.68
		4.17	1.55	53.51	98.14	183.90	122.94	27.72
		2.08	1.86	81.21	118.31	344.18	193.34	43.60
		0.00	2.18	84.44	138.49	364.96	172.86	38.98

ALETA 3

DATOS DE ENTRADA

Muro ..... : Aleta 3

GEOMETRIA:

Longitud muro ..... :	17.80	m
Altura mínima total.....:	12.10	m
Altura máxima total.....:	14.45	m
Canto de Zapata..... :	1.80	m
Ancho coronacion ..... :	0.30	m
Talud trasdós..... :	15.00	%
Talud exterior..... :	0.00	%
Angulo muro-calzada .....:	0.00	°
Distancia muro-calzada.....:	0.00	m
Talud de terraplén (H/V)...:	0 / 2	
Angulo de talud trasdós....:	0.00	°

TERRENO:

Densidad de tierras.....:	2.00	t/m3
Angulo de rozam. interno...:	35.00	°
Roz. Muro-tierras .....:	12.00	°
Coeficiente de roz.....:	0.55	
Tensión admisible .....:	3.00	Kg/cm²
Sobrecarga terraplén..... :	1.00	t/m²
Kh inclinado .....:	0.313	
Kh horizontal.....:	0.313	
Kv inclinado .....:	0.066	
Kv horizontal.....:	0.066	

MATERIALES

Fck (Kg/cm²).....:	250	
Gc .....:	1.50	
Fyk (Kg/cm²).....:	5100	
Gs .....:	1.15	
Recubrimiento en Alzados...:	3	cms
Recubrimiento en Cimientos.:	5	cms

SEGURIDAD

Coeficiente desliz.....:	1.50
Coeficiente vuelco.....:	1.50
Coeficiente de acciones....:	1.60

CONDICIONES DE EQUILIBRIO

H = Altura (m) del alzado de la sección
Eh = Empuje Horizontal (t)
Ev = Empuje Vertical (t)
Meh = Momento (m.t) de los empujes Horizontales
Mev = Momento (m.t) de los empujes Verticales
ΣFh = Sumatorio de Fuerzas horizontales (t)
ΣFv = Sumatorio de Fuerzas verticales (t)
ΣMeh = Sumatorio de Momentos (m.t) de los empujes Horizontales
ΣMev = Sumatorio de Momentos (m.t) de los empujes Verticales

Zona		Secc	H	Eh	Ev	Meh	Mev	ΣFh	ΣFv	ΣMeh	ΣMev
0.00	1.00	0.50	10.37	50.07	10.64	210.77	67.63	50.07	139.17	210.77	567.91
1.00	2.00	1.50	10.50	51.12	10.87	217.45	69.05	51.12	140.66	217.45	574.50
2.00	3.00	2.50	10.63	52.18	11.09	224.27	76.03	52.18	155.54	224.27	675.02
3.00	4.00	3.50	10.76	53.26	11.32	231.23	77.60	53.26	157.18	231.23	682.63
4.00	5.00	4.50	10.89	54.34	11.55	238.33	79.18	54.34	158.82	238.33	690.26
5.00	6.00	5.50	11.03	55.43	11.78	245.58	80.77	55.43	160.46	245.58	697.91
6.00	7.00	6.50	11.16	56.54	12.02	252.97	82.38	56.54	162.11	252.97	705.58
7.00	8.00	7.50	11.29	57.66	12.26	260.51	90.13	57.66	177.80	260.51	819.16
8.00	9.00	8.50	11.42	58.78	12.49	268.19	91.90	58.78	179.58	268.19	827.93
9.00	10.00	9.50	11.55	59.92	12.74	276.03	93.68	59.92	181.37	276.03	836.73
10.00	11.00	10.50	11.69	61.07	12.98	284.02	95.47	61.07	183.16	284.02	845.54
11.00	12.00	11.50	11.82	62.23	13.23	292.15	97.29	62.23	172.64	292.15	830.02
12.00	13.00	12.50	11.95	63.40	13.48	300.45	99.12	63.40	174.31	300.45	838.66
13.00	14.00	13.50	12.08	64.58	13.73	308.90	107.83	64.58	203.40	308.90	991.79
14.00	15.00	14.50	12.21	65.77	13.98	317.50	109.82	65.77	192.62	317.50	976.79
15.00	16.00	15.50	12.35	66.98	14.24	326.26	111.83	66.98	194.43	326.26	986.62
16.00	17.00	16.50	12.48	68.19	14.49	335.19	113.85	68.19	196.25	335.19	996.48
17.00	17.80	17.40	12.60	69.29	14.73	343.35	115.69	69.29	197.88	343.35	1005.37

H = Altura (m) de la sección en estudio
Zarpa = Longitud (m) de la parte delantera de la zapata
Zap = Longitud (m) total de la zapata
Csd = Coeficiente de seguridad al Deslizamiento
Csv = Coeficiente de seguridad al Vuelco
σmáx = Tensión (Kg/cm²) punta en cota de cimentación
σmín = Tensión (Kg/cm²) mínima en cota de cimentación
σcob = Tensión (Kg/cm²) de comparación
Base = Base comprimida (m) para el caso de diagrama triangular

Zona		Secc	H	Zarpa	Zap	Csd	Csv	σmáx	σmín	σcob	Base
0.00	1.00	0.50	10.37	2.00	6.35	1.53	2.69	3.45	0.93	2.71	6.35
1.00	2.00	1.50	10.50	2.00	6.35	1.51	2.64	3.55	0.88	2.77	6.35
2.00	3.00	2.50	10.63	2.00	6.85	1.64	3.01	3.32	1.22	2.68	6.85
3.00	4.00	3.50	10.76	2.00	6.85	1.62	2.95	3.41	1.18	2.74	6.85
4.00	5.00	4.50	10.89	2.00	6.85	1.61	2.90	3.50	1.14	2.79	6.85
5.00	6.00	5.50	11.03	2.00	6.85	1.59	2.84	3.59	1.09	2.85	6.85
6.00	7.00	6.50	11.16	2.00	6.85	1.58	2.79	3.68	1.05	2.90	6.85
7.00	8.00	7.50	11.29	2.00	7.35	1.70	3.14	3.47	1.36	2.83	7.35

8.00	9.00	8.50	11.42	2.00	7.35	1.68	3.09	3.56	1.33	2.88	7.35
9.00	10.00	9.50	11.55	2.00	7.35	1.66	3.03	3.64	1.29	2.93	7.35
10.00	11.00	10.50	11.69	2.00	7.35	1.65	2.98	3.73	1.25	2.99	7.35
11.00	12.00	11.50	11.82	2.50	7.35	1.53	2.84	3.42	1.27	2.77	7.35
12.00	13.00	12.50	11.95	2.50	7.35	1.51	2.79	3.51	1.23	2.82	7.35
13.00	14.00	13.50	12.08	2.00	7.85	1.73	3.21	3.72	1.46	3.03	7.85
14.00	15.00	14.50	12.21	2.50	7.85	1.61	3.08	3.40	1.51	2.81	7.85
15.00	16.00	15.50	12.35	2.50	7.85	1.60	3.02	3.48	1.47	2.86	7.85
16.00	17.00	16.50	12.48	2.50	7.85	1.58	2.97	3.56	1.43	2.91	7.85
17.00	17.80	17.40	12.60	2.50	7.85	1.57	2.93	3.64	1.40	2.96	7.85

Coeficiente global de seg. al deslizamiento ... 1.61
Coeficiente global de seg. al vuelco 2.95
Tensión máxima en solera (Kg/cm²)..... 3.73

A R M A D U R A S EH-91

Para cada sección:

H = Altura (m) sobre cara superior de zapata
d = Canto útil (m)
Vd = Cortante de cálculo (t)
Vcu= Contribución del hormigón a cortante (t)
Md = Momento de cálculo de la sección (m.t)
Us = Capacidad necesaria (t)
As = Armadura en cm²

Z A P A T A :

Vcu= 112.96 t
d = 1.75 m

		ZARPA DELANTERA				ZARPA TRASERA			
Zona		Vd	Md	Us	As	Vd	Md	Us	As
0.00	1.00	83.38	88.37	49.83	14.45	83.38	88.37	60.35	16.89
1.00	2.00	85.13	91.35	51.54	14.87	85.13	91.35	62.37	17.34
2.00	3.00	86.90	94.40	53.29	15.28	86.90	94.40	64.44	17.78
3.00	4.00	88.26	97.51	55.08	15.70	88.26	97.51	66.55	18.23
4.00	5.00	90.06	100.70	56.92	16.12	90.06	100.70	68.71	18.68
5.00	6.00	91.88	103.95	58.79	16.54	91.88	103.95	70.92	19.13
6.00	7.00	93.72	107.27	60.70	16.97	93.72	107.27	73.17	19.58
7.00	8.00	95.58	110.65	62.66	17.40	95.58	110.65	75.48	20.02
8.00	9.00	97.01	114.11	64.66	17.83	97.01	114.11	77.83	20.47
9.00	10.00	98.90	117.64	66.71	18.26	98.90	117.64	80.24	20.92
10.00	11.00	100.81	121.24	68.80	18.70	100.81	121.24	82.69	21.36
11.00	12.00	102.74	124.91	70.93	19.13	102.74	124.91	85.20	21.80
12.00	13.00	104.69	128.66	73.11	19.56	104.69	128.66	87.76	22.24
13.00	14.00	106.20	132.48	75.34	20.00	106.20	132.48	90.37	22.67
14.00	15.00	108.18	136.37	77.61	20.43	108.18	136.37	93.03	23.10
15.00	16.00	110.18	140.34	79.93	20.86	110.18	140.34	95.75	23.53
16.00	17.00	112.19	144.39	82.30	21.29	112.19	144.39	98.53	23.94
17.00	17.80	113.70	148.09	84.47	21.68	113.70	148.09	101.07	24.31

A L Z A D O S

		Sección						
Zona		H	d	Vd	Vcu	Md	Us	As
0.00	1.00	8.64	0.56	3.68	34.16	3.19	5.89	1.88
		6.91	0.82	11.13	50.88	17.25	21.58	6.30
		5.18	1.08	22.53	67.61	50.03	47.60	12.44
		3.46	1.34	37.88	84.34	109.40	84.34	19.32
		1.73	1.60	57.18	101.07	203.18	132.13	29.79
		0.00	1.85	58.93	117.80	212.58	117.32	26.93

1.00	2.00	8.75	0.56	3.75	34.37	3.29	6.03	1.92
		7.00	0.82	11.37	51.31	17.82	22.11	6.44
		5.25	1.09	23.05	68.25	51.76	48.81	12.70
		3.50	1.35	38.77	85.19	113.28	86.50	19.67
		1.75	1.61	58.54	102.13	210.50	135.56	30.57
		0.00	1.87	60.37	119.08	220.45	120.43	27.44
2.00	3.00	8.86	0.57	3.82	34.58	3.38	6.17	1.97
		7.09	0.83	11.61	51.74	18.40	22.65	6.58
		5.32	1.10	23.56	68.89	53.53	50.03	12.96
		3.54	1.36	39.67	86.05	117.25	88.69	20.02
		1.77	1.63	59.92	103.20	218.00	139.03	31.35
		0.00	1.89	61.83	120.35	228.52	123.58	27.95
3.00	4.00	8.97	0.57	3.89	34.80	3.48	6.31	2.01
		7.17	0.84	11.86	52.16	18.99	23.20	6.72
		5.38	1.11	24.09	69.53	55.34	51.26	13.21
		3.59	1.38	40.58	86.90	121.31	90.92	20.50
		1.79	1.65	61.32	104.26	225.66	142.55	32.14
		0.00	1.91	63.31	121.63	236.78	126.77	28.58
4.00	5.00	9.08	0.57	3.96	35.01	3.58	6.45	2.05
		7.26	0.84	12.11	52.59	19.60	23.75	6.86
		5.45	1.12	24.62	70.17	57.19	52.51	13.47
		3.63	1.39	41.49	87.75	125.46	93.17	21.01
		1.82	1.66	62.73	105.33	233.51	146.12	32.95
		0.00	1.93	64.81	122.91	245.24	130.00	29.31
5.00	6.00	9.19	0.58	4.03	35.22	3.68	6.59	2.09
		7.35	0.85	12.36	53.02	20.22	24.31	7.01
		5.51	1.13	25.16	70.81	59.08	53.78	13.73
		3.68	1.40	42.42	88.60	129.71	95.45	21.52
		1.84	1.68	64.15	106.40	241.54	149.73	33.76
		0.00	1.95	66.32	124.19	253.90	133.28	30.05
6.00	7.00	9.30	0.58	4.11	35.43	3.78	6.73	2.14
		7.44	0.86	12.62	53.44	20.85	24.88	7.15
		5.58	1.14	25.70	71.45	61.01	55.06	13.99
		3.72	1.42	43.36	89.45	134.05	97.76	22.04
		1.86	1.69	65.60	107.46	249.75	153.39	34.59
		0.00	1.97	67.85	125.47	262.75	136.60	30.80
7.00	8.00	9.41	0.58	4.18	35.65	3.89	6.88	2.18
		7.53	0.86	12.87	53.87	21.50	25.45	7.30
		5.65	1.15	26.25	72.09	62.98	56.36	14.25
		3.76	1.43	44.31	90.31	138.49	100.09	22.57
		1.88	1.71	67.06	108.53	258.14	157.09	35.42
		0.00	1.99	69.40	126.75	271.81	139.96	31.56
8.00	9.00	9.52	0.59	4.25	35.86	3.99	7.03	2.23
		7.61	0.87	13.13	54.29	22.15	26.03	7.44
		5.71	1.16	26.80	72.73	65.00	57.68	14.52
		3.81	1.44	45.27	91.16	143.02	102.46	23.10
		1.90	1.73	68.53	109.59	266.72	160.84	36.27
		0.00	2.01	70.97	128.02	281.08	143.36	32.33
9.00	10.00	9.63	0.59	4.33	36.07	4.10	7.18	2.27
		7.70	0.88	13.39	54.72	22.83	26.62	7.59
		5.78	1.17	27.36	73.37	67.05	59.01	14.78
		3.85	1.46	46.24	92.01	147.65	104.86	23.64
		1.93	1.74	70.02	110.66	275.48	164.64	37.13
		0.00	2.03	72.55	129.30	290.55	146.81	33.10
10.00	11.00	9.74	0.59	4.41	36.29	4.21	7.33	2.32
		7.79	0.88	13.66	55.15	23.51	27.21	7.74
		5.84	1.18	27.93	74.00	69.15	60.35	15.04
		3.90	1.47	47.22	92.86	152.38	107.28	24.19
		1.95	1.76	71.53	111.72	284.43	168.49	37.99
		0.00	2.05	74.15	130.58	300.23	150.30	33.89
11.00	12.00	9.85	0.60	4.48	36.50	4.33	7.48	2.36
		7.88	0.89	13.93	55.57	24.21	27.81	7.89
		5.91	1.19	28.50	74.64	71.29	61.72	15.30
		3.94	1.48	48.21	93.71	157.21	109.74	24.74
		1.97	1.78	73.05	112.79	293.58	172.38	38.87
		0.00	2.07	75.77	131.86	310.13	153.83	34.69
12.00	13.00	9.96	0.60	4.56	36.71	4.44	7.63	2.41
		7.97	0.90	14.20	56.00	24.92	28.42	8.04
		5.98	1.20	29.08	75.28	73.48	63.09	15.57
		3.98	1.50	49.21	94.57	162.14	112.22	25.30
		1.99	1.79	74.59	113.85	302.92	176.33	39.76
		0.00	2.09	77.40	133.14	320.24	157.41	35.49
13.00	14.00	10.07	0.60	4.64	36.93	4.56	7.79	2.46
		8.05	0.90	14.47	56.42	25.64	29.03	8.19
		6.04	1.21	29.66	75.92	75.71	64.49	15.83
		4.03	1.51	50.22	95.42	167.17	114.73	25.87
		2.01	1.81	76.14	114.92	312.46	180.31	40.66
		0.00	2.11	79.06	134.41	330.57	161.03	36.31
14.00	15.00	10.18	0.61	4.72	37.14	4.67	7.95	2.50
		8.14	0.91	14.74	56.85	26.38	29.65	8.34
		6.11	1.22	30.25	76.56	77.98	65.90	16.10
		4.07	1.52	51.24	96.27	172.31	117.27	26.44
		2.04	1.83	77.72	115.98	322.19	184.35	41.57
		0.00	2.13	80.73	135.69	341.12	164.69	37.14
15.00	16.00	10.29	0.61	4.79	37.35	4.80	8.11	2.55
		8.23	0.92	15.02	57.28	27.14	30.28	8.49
		6.17	1.23	30.85	77.20	80.30	67.32	16.36
		4.12	1.53	52.27	97.12	177.55	119.84	27.02
		2.06	1.84	79.30	117.05	332.12	188.43	42.49
		-0.00	2.15	82.41	136.97	351.89	168.40	37.97
16.00	17.00	10.40	0.61	4.87	37.57	4.92	8.27	2.60
		8.32	0.92	15.30	57.70	27.90	30.91	8.65
		6.24	1.24	31.45	77.84	82.67	68.76	16.63
		4.16	1.55	53.31	97.98	182.89	122.45	27.61
		2.08	1.86	80.91	118.11	342.26	192.56	43.42
		0.00	2.17	84.12	138.25	362.88	172.15	38.82
17.00	17.80	10.50	0.61	4.95	37.76	5.03	8.41	2.64
		8.40	0.93	15.55	58.09	28.61	31.49	8.79
		6.30	1.24	31.99	78.41	84.83	70.08	16.87

4.20	1.56	54.26	98.74	187.79	124.81	28.14
2.10	1.87	82.36	119.07	351.55	196.32	44.27
0.00	2.19	85.67	139.40	372.97	175.56	39.59

ALETA 4

DATOS DE ENTRADA

Muro ..... : Aleta 4 MURO 1

GEOMETRIA:

Longitud muro ..... :	25.00	m
Altura mínima total.....:	12.85	m
Altura máxima total.....:	12.95	m
Canto de Zapata..... :	1.70	m
Ancho coronacion ..... :	0.30	m
Talud trasdós..... :	15.00	%
Talud exterior..... :	0.00	%
Angulo muro-calzada .....:	0.00	°
Distancia muro-calzada.....:	0.00	m
Talud de terraplén (H/V)...:	0 / 2	
Angulo de talud trasdós....:	0.00	°

TERRENO:

Densidad de tierras.....:	2.00	t/m3
Angulo de rozam. interno...:	35.00	°
Roz. Muro-tierras .....:	12.00	°
Coeficiente de roz.....:	0.55	
Tensión admisible .....:	3.00	Kg/cm²
Sobrecarga terraplén..... :	3.00	t/m²
Kh inclinado .....:	0.313	
Kh horizontal.....:	0.313	
Kv inclinado .....:	0.066	
Kv horizontal.....:	0.066	

MATERIALES

Fck (Kg/cm²).....:	250	
Gc .....:	1.50	
Fyk (Kg/cm²).....:	5100	
Gs .....:	1.15	
Recubrimiento en Alzados...:	3	cms
Recubrimiento en Cimientos.:	5	cms

SEGURIDAD

Coeficiente desliz.....:	1.50
Coeficiente vuelco.....:	1.50
Coeficiente de acciones....:	1.60

CONDICIONES DE EQUILIBRIO

H = Altura (m) del alzado de la sección
Eh = Empuje Horizontal (t)
Ev = Empuje Vertical (t)
Meh = Momento (m.t) de los empujes Horizontales
Mev = Momento (m.t) de los empujes Verticales
ΣFh = Sumatorio de Fuerzas horizontales (t)
ΣFv = Sumatorio de Fuerzas verticales (t)
ΣMeh = Sumatorio de Momentos (m.t) de los empujes Horizontales
ΣMev = Sumatorio de Momentos (m.t) de los empujes Verticales

Zona		Secc	H	Eh	Ev	Meh	Mev	ΣFh	ΣFv	ΣMeh	ΣMev
0.00	1.00	0.50	11.15	63.68	13.54	298.65	101.16	63.68	176.56	298.65	864.98
1.00	2.00	1.50	11.16	63.72	13.54	298.90	101.21	63.72	176.62	298.90	865.25
2.00	3.00	2.50	11.16	63.76	13.55	299.16	101.27	63.76	176.67	299.16	865.51
3.00	4.00	3.50	11.16	63.79	13.56	299.41	101.33	63.79	176.72	299.41	865.78
4.00	5.00	4.50	11.17	63.83	13.57	299.67	101.38	63.83	176.77	299.67	866.05
5.00	6.00	5.50	11.17	63.86	13.57	299.92	101.44	63.86	176.82	299.92	866.32
6.00	7.00	6.50	11.18	63.90	13.58	300.18	101.50	63.90	176.87	300.18	866.59
7.00	8.00	7.50	11.18	63.94	13.59	300.43	101.56	63.94	176.92	300.43	866.86
8.00	9.00	8.50	11.18	63.97	13.60	300.69	101.61	63.97	176.98	300.69	867.13
9.00	10.00	9.50	11.19	64.01	13.61	300.94	101.67	64.01	177.03	300.94	867.40
10.00	11.00	10.50	11.19	64.04	13.61	301.20	101.73	64.04	177.08	301.20	867.67
11.00	12.00	11.50	11.20	64.08	13.62	301.46	101.78	64.08	177.13	301.46	867.94
12.00	13.00	12.50	11.20	64.12	13.63	301.71	101.84	64.12	177.18	301.71	868.21
13.00	14.00	13.50	11.20	64.15	13.64	301.97	101.90	64.15	177.23	301.97	868.48
14.00	15.00	14.50	11.21	64.19	13.64	302.23	101.96	64.19	177.28	302.23	868.75
15.00	16.00	15.50	11.21	64.22	13.65	302.48	102.01	64.22	177.33	302.48	869.02
16.00	17.00	16.50	11.22	64.26	13.66	302.74	102.07	64.26	177.39	302.74	869.28
17.00	18.00	17.50	11.22	64.30	13.67	303.00	102.13	64.30	177.44	303.00	869.55
18.00	19.00	18.50	11.22	64.33	13.67	303.25	102.18	64.33	177.49	303.25	869.82
19.00	20.00	19.50	11.23	64.37	13.68	303.51	102.24	64.37	177.54	303.51	870.09
20.00	21.00	20.50	11.23	64.40	13.69	303.77	102.30	64.40	177.59	303.77	870.36
21.00	22.00	21.50	11.24	64.44	13.70	304.03	102.36	64.44	177.64	304.03	870.63
22.00	23.00	22.50	11.24	64.48	13.70	304.29	102.41	64.48	177.69	304.29	870.90
23.00	24.00	23.50	11.24	64.51	13.71	304.54	102.47	64.51	177.75	304.54	871.17
24.00	25.00	24.50	11.25	64.55	13.72	304.80	102.53	64.55	177.80	304.80	871.44

H = Altura (m) de la sección en estudio
Zarpa = Longitud (m) de la parte delantera de la zapata
Zap = Longitud (m) total de la zapata
Csd = Coeficiente de seguridad al Deslizamiento
Csv = Coeficiente de seguridad al Vuelco
σmáx = Tensión (Kg/cm²) punta en cota de cimentación
σmín = Tensión (Kg/cm²) mínima en cota de cimentación
σcob = Tensión (Kg/cm²) de comparación
Base = Base comprimida (m) para el caso de diagrama triangular

Zona		Secc	H	Zarpa	Zap	Csd	Csv	σmáx	σmín	σcob	Base
0.00	1.00	0.50	11.15	2.50	7.47	1.52	2.90	3.37	1.36	2.75	7.47

1.00	2.00	1.50	11.16	2.50	7.47	1.52	2.89	3.37	1.36	2.75	7.47
2.00	3.00	2.50	11.16	2.50	7.47	1.52	2.89	3.37	1.36	2.76	7.47
3.00	4.00	3.50	11.16	2.50	7.47	1.52	2.89	3.37	1.36	2.76	7.47
4.00	5.00	4.50	11.17	2.50	7.47	1.52	2.89	3.38	1.35	2.76	7.47
5.00	6.00	5.50	11.17	2.50	7.47	1.52	2.89	3.38	1.35	2.76	7.47
6.00	7.00	6.50	11.18	2.50	7.47	1.52	2.89	3.38	1.35	2.76	7.47
7.00	8.00	7.50	11.18	2.50	7.47	1.52	2.89	3.38	1.35	2.76	7.47
8.00	9.00	8.50	11.18	2.50	7.47	1.52	2.88	3.39	1.35	2.76	7.47
9.00	10.00	9.50	11.19	2.50	7.47	1.52	2.88	3.39	1.35	2.77	7.47
10.00	11.00	10.50	11.19	2.50	7.47	1.52	2.88	3.39	1.35	2.77	7.47
11.00	12.00	11.50	11.20	2.50	7.47	1.52	2.88	3.39	1.35	2.77	7.47
12.00	13.00	12.50	11.20	2.50	7.47	1.52	2.88	3.40	1.34	2.77	7.47
13.00	14.00	13.50	11.20	2.50	7.47	1.52	2.88	3.40	1.34	2.77	7.47
14.00	15.00	14.50	11.21	2.50	7.47	1.52	2.87	3.40	1.34	2.77	7.47
15.00	16.00	15.50	11.21	2.50	7.47	1.52	2.87	3.41	1.34	2.78	7.47
16.00	17.00	16.50	11.22	2.50	7.47	1.52	2.87	3.41	1.34	2.78	7.47
17.00	18.00	17.50	11.22	2.50	7.47	1.52	2.87	3.41	1.34	2.78	7.47
18.00	19.00	18.50	11.22	2.50	7.47	1.52	2.87	3.41	1.34	2.78	7.47
19.00	20.00	19.50	11.23	2.50	7.47	1.52	2.87	3.42	1.34	2.78	7.47
20.00	21.00	20.50	11.23	2.50	7.47	1.52	2.87	3.42	1.33	2.78	7.47
21.00	22.00	21.50	11.24	2.50	7.47	1.52	2.86	3.42	1.33	2.78	7.47
22.00	23.00	22.50	11.24	2.50	7.47	1.52	2.86	3.42	1.33	2.79	7.47
23.00	24.00	23.50	11.24	2.50	7.47	1.52	2.86	3.43	1.33	2.79	7.47
24.00	25.00	24.50	11.25	2.50	7.47	1.51	2.86	3.43	1.33	2.79	7.47

Coeficiente global de seg. al deslizamiento ... 1.52
Coeficiente global de seg. al vuelco 2.88
Tensión máxima en solera (Kg/cm²)..... 3.43

A R M A D U R A S EH-91

Para cada sección:

H = Altura (m) sobre cara superior de zapata
d = Canto útil (m)
Vd = Cortante de cálculo (t)
Vcu= Contribución del hormigón a cortante (t)
Md = Momento de cálculo de la sección (m.t)
Us = Capacidad necesaria (t)
As = Armadura en cm²

Z A P A T A :

Vcu= 106.51 t
d = 1.65 m

		Z A R P A D E L A N T E R A				Z A R P A T R A S E R A			
Zona		Vd	Md	Us	As	Vd	Md	Us	As
0.00	1.00	104.70	136.54	82.68	20.96	104.70	136.54	84.38	21.24
1.00	2.00	104.78	136.65	82.75	20.97	104.78	136.65	84.45	21.25
2.00	3.00	104.86	136.76	82.82	20.98	104.86	136.76	84.52	21.27
3.00	4.00	104.94	136.87	82.89	20.99	104.94	136.87	84.58	21.28
4.00	5.00	105.02	136.98	82.96	21.01	105.02	136.98	84.65	21.29
5.00	6.00	105.10	137.09	83.02	21.02	105.10	137.09	84.72	21.30
6.00	7.00	105.18	137.20	83.09	21.03	105.18	137.20	84.78	21.31
7.00	8.00	105.25	137.30	83.16	21.04	105.25	137.30	84.85	21.32
8.00	9.00	105.33	137.41	83.23	21.05	105.33	137.41	84.92	21.33
9.00	10.00	105.41	137.52	83.30	21.06	105.41	137.52	84.98	21.34
10.00	11.00	105.49	137.63	83.37	21.07	105.49	137.63	85.05	21.35
11.00	12.00	105.57	137.74	83.43	21.09	105.57	137.74	85.12	21.36
12.00	13.00	105.65	137.85	83.50	21.10	105.65	137.85	85.18	21.37
13.00	14.00	105.73	137.96	83.57	21.11	105.73	137.96	85.25	21.39
14.00	15.00	105.81	138.07	83.64	21.12	105.81	138.07	85.32	21.40
15.00	16.00	105.89	138.18	83.71	21.13	105.89	138.18	85.39	21.41
16.00	17.00	105.97	138.29	83.78	21.14	105.97	138.29	85.45	21.42
17.00	18.00	106.04	138.40	83.85	21.15	106.04	138.40	85.52	21.43
18.00	19.00	106.12	138.51	83.91	21.17	106.12	138.51	85.59	21.44
19.00	20.00	106.20	138.62	83.98	21.18	106.20	138.62	85.65	21.45
20.00	21.00	106.28	138.73	84.05	21.19	106.28	138.73	85.72	21.46
21.00	22.00	106.36	138.84	84.12	21.20	106.36	138.84	85.79	21.47
22.00	23.00	106.44	138.95	84.19	21.21	106.44	138.95	85.85	21.48
23.00	24.00	106.52	139.06	84.26	21.22	106.52	139.06	85.92	21.49
24.00	25.00	106.60	139.17	84.33	21.23	106.60	139.17	85.99	21.51

A L Z A D O S

Sección ....

Zona	H	d	Vd	Vcu	Md	Us	As

0.00	1.00	7.43	0.86	17.15	53.42	31.15	37.51	9.81
		3.72	1.42	52.14	89.41	172.75	127.50	28.75
		-0.00	1.97	78.93	125.41	324.54	170.39	38.42
1.00	2.00	7.44	0.86	17.16	53.43	31.18	37.53	9.82
		3.72	1.42	52.17	89.44	172.91	127.59	28.77
		-0.00	1.97	78.99	125.45	324.85	170.51	38.45
2.00	3.00	7.44	0.86	17.17	53.45	31.20	37.55	9.82
		3.72	1.42	52.20	89.47	173.07	127.67	28.79
		-0.00	1.97	79.04	125.48	325.17	170.63	38.47
3.00	4.00	7.44	0.86	17.18	53.46	31.23	37.58	9.83
		3.72	1.42	52.24	89.49	173.23	127.76	28.81
		-0.00	1.97	79.09	125.52	325.49	170.74	38.50
4.00	5.00	7.45	0.86	17.19	53.47	31.26	37.60	9.83
		3.72	1.42	52.27	89.52	173.39	127.84	28.83
		-0.00	1.98	79.14	125.56	325.80	170.86	38.53
5.00	6.00	7.45	0.86	17.20	53.49	31.28	37.62	9.84
		3.72	1.42	52.30	89.54	173.55	127.92	28.85
		-0.00	1.98	79.19	125.60	326.12	170.98	38.55
6.00	7.00	7.45	0.86	17.21	53.50	31.31	37.65	9.84
		3.73	1.42	52.33	89.57	173.71	128.01	28.86
		-0.00	1.98	79.24	125.64	326.44	171.09	38.58
7.00	8.00	7.45	0.86	17.22	53.51	31.34	37.67	9.85
		3.73	1.42	52.36	89.60	173.87	128.09	28.88
		-0.00	1.98	79.29	125.68	326.75	171.21	38.61
8.00	9.00	7.46	0.86	17.22	53.52	31.36	37.69	9.85
		3.73	1.42	52.39	89.62	174.03	128.17	28.90
		-0.00	1.98	79.34	125.72	327.07	171.32	38.63
9.00	10.00	7.46	0.86	17.23	53.54	31.39	37.72	9.86
		3.73	1.42	52.43	89.65	174.19	128.26	28.92
		-0.00	1.98	79.39	125.76	327.39	171.44	38.66
10.00	11.00	7.46	0.86	17.24	53.55	31.42	37.74	9.86
		3.73	1.42	52.46	89.67	174.35	128.34	28.94
		-0.00	1.98	79.44	125.79	327.70	171.56	38.68
11.00	12.00	7.46	0.86	17.25	53.56	31.44	37.76	9.87
		3.73	1.42	52.49	89.70	174.52	128.42	28.96
		-0.00	1.98	79.49	125.83	328.02	171.67	38.71
12.00	13.00	7.47	0.86	17.26	53.58	31.47	37.78	9.87
		3.73	1.42	52.52	89.72	174.68	128.51	28.98
		-0.00	1.98	79.54	125.87	328.34	171.79	38.74
13.00	14.00	7.47	0.86	17.27	53.59	31.50	37.81	9.88
		3.73	1.42	52.55	89.75	174.84	128.59	29.00
		-0.00	1.98	79.59	125.91	328.66	171.91	38.76
14.00	15.00	7.47	0.86	17.28	53.60	31.52	37.83	9.88
		3.74	1.42	52.58	89.78	175.00	128.68	29.02
		-0.00	1.98	79.65	125.95	328.98	172.02	38.79
15.00	16.00	7.47	0.86	17.29	53.61	31.55	37.85	9.89
		3.74	1.42	52.62	89.80	175.16	128.76	29.03
		-0.00	1.98	79.70	125.99	329.30	172.14	38.82
16.00	17.00	7.48	0.86	17.30	53.63	31.57	37.88	9.89
		3.74	1.42	52.65	89.83	175.32	128.84	29.05
		-0.00	1.98	79.75	126.03	329.61	172.26	38.84
17.00	18.00	7.48	0.86	17.31	53.64	31.60	37.90	9.90
		3.74	1.42	52.68	89.85	175.48	128.93	29.07
		-0.00	1.98	79.80	126.07	329.93	172.37	38.87
18.00	19.00	7.48	0.86	17.32	53.65	31.63	37.92	9.90
		3.74	1.42	52.71	89.88	175.64	129.01	29.09
		-0.00	1.98	79.85	126.10	330.25	172.49	38.89
19.00	20.00	7.49	0.86	17.33	53.67	31.65	37.95	9.91
		3.74	1.42	52.74	89.90	175.81	129.10	29.11
		-0.00	1.98	79.90	126.14	330.57	172.61	38.92
20.00	21.00	7.49	0.86	17.34	53.68	31.68	37.97	9.91
		3.74	1.42	52.78	89.93	175.97	129.18	29.13
		-0.00	1.98	79.95	126.18	330.89	172.72	38.95
21.00	22.00	7.49	0.86	17.35	53.69	31.71	37.99	9.92
		3.75	1.42	52.81	89.96	176.13	129.26	29.15
		-0.00	1.99	80.00	126.22	331.21	172.84	38.97
22.00	23.00	7.49	0.86	17.36	53.71	31.73	38.02	9.92
		3.75	1.42	52.84	89.98	176.29	129.35	29.17
		-0.00	1.99	80.05	126.26	331.53	172.96	39.00
23.00	24.00	7.50	0.86	17.36	53.72	31.76	38.04	9.93
		3.75	1.42	52.87	90.01	176.45	129.43	29.19
		-0.00	1.99	80.10	126.30	331.85	173.08	39.03
24.00	25.00	7.50	0.86	17.37	53.73	31.79	38.06	9.93
		3.75	1.42	52.90	90.03	176.62	129.52	29.20
		-0.00	1.99	80.15	126.34	332.17	173.19	39.05

DATOS DE ENTRADA

Muro ..... : Aleta 4 MURO 2

GEOMETRIA:

Longitud muro ..... :	30.00	m
Altura mínima total.....:	11.95	m
Altura máxima total.....:	12.10	m
Canto de Zapata..... :	1.50	m
Ancho coronacion ..... :	0.30	m
Talud trasdós..... :	15.00	%
Talud exterior..... :	0.00	%
Angulo muro-calzada .....:	0.00	°
Distancia muro-calzada.....:	0.00	m
Talud de terraplén (H/V)...:	0 / 2	
Angulo de talud trasdós....:	0.00	°

TERRENO:

Densidad de tierras.....:	2.00	t/m3
Angulo de rozam. interno...:	35.00	°
Roz. Muro-tierras .....:	12.00	°
Coeficiente de roz.....:	0.55	
Tensión admisible .....:	3.00	Kg/cm²
Sobrecarga terraplén..... :	3.00	t/m²
Kh inclinado .....:	0.313	
Kh horizontal.....:	0.313	
Kv inclinado .....:	0.066	
Kv horizontal.....:	0.066	

MATERIALES

Fck (Kg/cm²).....:	250	
Gc .....:	1.50	
Fyk (Kg/cm²).....:	5100	
Gs .....:	1.15	
Recubrimiento en Alzados...:	3	cms
Recubrimiento en Cimientos.:	5	cms

SEGURIDAD

Coeficiente desliz.....:	1.50
Coeficiente vuelco.....:	1.50
Coeficiente de acciones....:	1.60

CONDICIONES DE EQUILIBRIO

H = Altura (m) del alzado de la sección
Eh = Empuje Horizontal (t)
Ev = Empuje Vertical (t)
Meh = Momento (m.t) de los empujes Horizontales
Mev = Momento (m.t) de los empujes Verticales
ΣFh = Sumatorio de Fuerzas horizontales (t)
ΣFv = Sumatorio de Fuerzas verticales (t)
ΣMeh = Sumatorio de Momentos (m.t) de los empujes Horizontales
ΣMev = Sumatorio de Momentos (m.t) de los empujes Verticales

Zona		Secc	H	Eh	Ev	Meh	Mev	ΣFh	ΣFv	ΣMeh	ΣMev
0.00	1.00	0.50	10.45	55.87	11.87	244.92	81.55	55.87	158.76	244.92	698.96
1.00	2.00	1.50	10.46	55.91	11.88	245.20	81.62	55.91	158.82	245.20	699.25
2.00	3.00	2.50	10.46	55.95	11.89	245.47	81.68	55.95	158.89	245.47	699.54
3.00	4.00	3.50	10.47	55.99	11.90	245.75	81.74	55.99	158.95	245.75	699.83
4.00	5.00	4.50	10.47	56.03	11.91	246.03	81.80	56.03	159.01	246.03	700.12
5.00	6.00	5.50	10.48	56.08	11.92	246.32	81.86	56.08	159.07	246.32	700.41
6.00	7.00	6.50	10.48	56.12	11.93	246.60	81.92	56.12	159.13	246.60	700.70
7.00	8.00	7.50	10.49	56.16	11.94	246.88	81.98	56.16	159.20	246.88	700.99
8.00	9.00	8.50	10.49	56.20	11.95	247.16	82.05	56.20	159.26	247.16	701.28
9.00	10.00	9.50	10.50	56.25	11.96	247.44	82.11	56.25	159.32	247.44	701.58
10.00	11.00	10.50	10.50	56.29	11.96	247.72	82.17	56.29	159.38	247.72	701.87
11.00	12.00	11.50	10.51	56.33	11.97	248.00	82.23	56.33	159.45	248.00	702.16
12.00	13.00	12.50	10.51	56.37	11.98	248.28	82.29	56.37	159.51	248.28	702.45
13.00	14.00	13.50	10.52	56.41	11.99	248.57	82.35	56.41	159.57	248.57	702.74
14.00	15.00	14.50	10.52	56.46	12.00	248.85	82.42	56.46	159.63	248.85	703.03
15.00	16.00	15.50	10.53	56.50	12.01	249.13	82.48	56.50	159.70	249.13	703.32
16.00	17.00	16.50	10.53	56.54	12.02	249.41	82.54	56.54	159.76	249.41	703.61
17.00	18.00	17.50	10.54	56.58	12.03	249.70	82.60	56.58	159.82	249.70	703.91
18.00	19.00	18.50	10.54	56.63	12.04	249.98	82.66	56.63	159.88	249.98	704.20
19.00	20.00	19.50	10.55	56.67	12.05	250.26	82.72	56.67	159.95	250.26	704.49
20.00	21.00	20.50	10.55	56.71	12.05	250.54	82.79	56.71	160.01	250.54	704.78
21.00	22.00	21.50	10.56	56.75	12.06	250.83	82.85	56.75	160.07	250.83	705.07
22.00	23.00	22.50	10.56	56.80	12.07	251.11	82.91	56.80	160.13	251.11	705.36
23.00	24.00	23.50	10.57	56.84	12.08	251.40	82.97	56.84	160.19	251.40	705.66
24.00	25.00	24.50	10.57	56.88	12.09	251.68	83.03	56.88	160.26	251.68	705.95
25.00	26.00	25.50	10.58	56.92	12.10	251.97	83.10	56.92	160.32	251.97	706.24
26.00	27.00	26.50	10.58	56.96	12.11	252.25	83.16	56.96	160.38	252.25	706.53
27.00	28.00	27.50	10.59	57.01	12.12	252.53	83.22	57.01	160.44	252.53	706.82
28.00	29.00	28.50	10.59	57.05	12.13	252.82	83.28	57.05	160.51	252.82	707.11
29.00	30.00	29.50	10.60	57.09	12.14	253.11	83.34	57.09	160.57	253.11	707.41

H = Altura (m) de la sección en estudio
Zarpa = Longitud (m) de la parte delantera de la zapata
Zap = Longitud (m) total de la zapata
Csd = Coeficiente de seguridad al Deslizamiento
Csv = Coeficiente de seguridad al Vuelco
σmáx = Tensión (Kg/cm²) punta en cota de cimentación
σmín = Tensión (Kg/cm²) mínima en cota de cimentación
σcob = Tensión (Kg/cm²) de comparación

Base = Base comprimida (m) para el caso de diagrama triangular

Zona		Secc	H	Zarpa	Zap	Csd	Csv	σmáx	σmín	σcob	Base
0.00	1.00	0.50	10.45	2.00	6.87	1.56	2.85	3.47	1.15	2.78	6.87
1.00	2.00	1.50	10.46	2.00	6.87	1.56	2.85	3.47	1.15	2.78	6.87
2.00	3.00	2.50	10.46	2.00	6.87	1.56	2.85	3.48	1.15	2.78	6.87
3.00	4.00	3.50	10.47	2.00	6.87	1.56	2.85	3.48	1.15	2.78	6.87
4.00	5.00	4.50	10.47	2.00	6.87	1.56	2.85	3.48	1.15	2.78	6.87
5.00	6.00	5.50	10.48	2.00	6.87	1.56	2.84	3.49	1.14	2.79	6.87
6.00	7.00	6.50	10.48	2.00	6.87	1.56	2.84	3.49	1.14	2.79	6.87
7.00	8.00	7.50	10.49	2.00	6.87	1.56	2.84	3.50	1.14	2.79	6.87
8.00	9.00	8.50	10.49	2.00	6.87	1.56	2.84	3.50	1.14	2.79	6.87
9.00	10.00	9.50	10.50	2.00	6.87	1.56	2.84	3.50	1.14	2.79	6.87
10.00	11.00	10.50	10.50	2.00	6.87	1.56	2.83	3.51	1.14	2.80	6.87
11.00	12.00	11.50	10.51	2.00	6.87	1.56	2.83	3.51	1.13	2.80	6.87
12.00	13.00	12.50	10.51	2.00	6.87	1.56	2.83	3.51	1.13	2.80	6.87
13.00	14.00	13.50	10.52	2.00	6.87	1.56	2.83	3.52	1.13	2.80	6.87
14.00	15.00	14.50	10.52	2.00	6.87	1.56	2.83	3.52	1.13	2.81	6.87
15.00	16.00	15.50	10.53	2.00	6.87	1.55	2.82	3.52	1.13	2.81	6.87
16.00	17.00	16.50	10.53	2.00	6.87	1.55	2.82	3.53	1.13	2.81	6.87
17.00	18.00	17.50	10.54	2.00	6.87	1.55	2.82	3.53	1.12	2.81	6.87
18.00	19.00	18.50	10.54	2.00	6.87	1.55	2.82	3.53	1.12	2.81	6.87
19.00	20.00	19.50	10.55	2.00	6.87	1.55	2.82	3.54	1.12	2.82	6.87
20.00	21.00	20.50	10.55	2.00	6.87	1.55	2.81	3.54	1.12	2.82	6.87
21.00	22.00	21.50	10.56	2.00	6.87	1.55	2.81	3.54	1.12	2.82	6.87
22.00	23.00	22.50	10.56	2.00	6.87	1.55	2.81	3.55	1.12	2.82	6.87
23.00	24.00	23.50	10.57	2.00	6.87	1.55	2.81	3.55	1.11	2.82	6.87
24.00	25.00	24.50	10.57	2.00	6.87	1.55	2.80	3.56	1.11	2.83	6.87
25.00	26.00	25.50	10.58	2.00	6.87	1.55	2.80	3.56	1.11	2.83	6.87
26.00	27.00	26.50	10.58	2.00	6.87	1.55	2.80	3.56	1.11	2.83	6.87
27.00	28.00	27.50	10.59	2.00	6.87	1.55	2.80	3.57	1.11	2.83	6.87
28.00	29.00	28.50	10.59	2.00	6.87	1.55	2.80	3.57	1.10	2.84	6.87
29.00	30.00	29.50	10.60	2.00	6.87	1.55	2.79	3.57	1.10	2.84	6.87

Coeficiente global de seg. al deslizamiento ... 1.55
Coeficiente global de seg. al vuelco 2.82
Tensión máxima en solera (Kg/cm²)..... 3.57

A R M A D U R A S EH-91

Para cada sección:

H = Altura (m) sobre cara superior de zapata
d = Canto útil (m)
Vd = Cortante de cálculo (t)
Vcu= Contribución del hormigón a cortante (t)
Md = Momento de cálculo de la sección (m.t)
Us = Capacidad necesaria (t)
As = Armadura en cm²

Z A P A T A :

Vcu= 93.60 t
d = 1.45 m

		Z A R P A D E L A N T E R A				Z A R P A T R A S E R A			
Zona		Vd	Md	Us	As	Vd	Md	Us	As
0.00	1.00	88.32	92.42	63.46	16.77	88.32	92.42	88.43	20.79
1.00	2.00	88.41	92.52	63.53	16.78	88.41	92.52	88.53	20.80
2.00	3.00	88.50	92.62	63.59	16.79	88.50	92.62	88.63	20.82
3.00	4.00	88.58	92.71	63.66	16.81	88.58	92.71	88.73	20.83
4.00	5.00	88.67	92.81	63.73	16.82	88.67	92.81	88.83	20.84
5.00	6.00	88.76	92.90	63.80	16.83	88.76	92.90	88.93	20.86
6.00	7.00	88.85	93.00	63.86	16.84	88.85	93.00	89.03	20.87
7.00	8.00	88.93	93.10	63.93	16.86	88.93	93.10	89.13	20.88
8.00	9.00	89.02	93.19	64.00	16.87	89.02	93.19	89.23	20.89
9.00	10.00	89.11	93.29	64.07	16.88	89.11	93.29	89.33	20.91
10.00	11.00	89.20	93.39	64.14	16.90	89.20	93.39	89.43	20.92
11.00	12.00	89.29	93.48	64.20	16.91	89.29	93.48	89.53	20.93
12.00	13.00	89.37	93.58	64.27	16.92	89.37	93.58	89.63	20.95
13.00	14.00	89.46	93.68	64.34	16.93	89.46	93.68	89.73	20.96
14.00	15.00	89.55	93.77	64.41	16.95	89.55	93.77	89.82	20.97
15.00	16.00	89.64	93.87	64.48	16.96	89.64	93.87	89.92	20.98
16.00	17.00	89.73	93.97	64.55	16.97	89.73	93.97	90.02	21.00
17.00	18.00	89.82	94.06	64.61	16.99	89.82	94.06	90.12	21.01
18.00	19.00	89.91	94.16	64.68	17.00	89.91	94.16	90.22	21.02
19.00	20.00	89.99	94.26	64.75	17.01	89.99	94.26	90.32	21.04
20.00	21.00	90.08	94.36	64.82	17.02	90.08	94.36	90.42	21.05
21.00	22.00	90.17	94.45	64.89	17.04	90.17	94.45	90.52	21.06
22.00	23.00	90.26	94.55	64.96	17.05	90.26	94.55	90.62	21.07
23.00	24.00	90.35	94.65	65.03	17.06	90.35	94.65	90.72	21.09
24.00	25.00	90.44	94.75	65.09	17.08	90.44	94.75	90.82	21.10
25.00	26.00	90.53	94.84	65.16	17.09	90.53	94.84	90.92	21.11
26.00	27.00	90.62	94.94	65.23	17.10	90.62	94.94	91.02	21.12
27.00	28.00	90.71	95.04	65.30	17.11	90.71	95.04	91.12	21.14
28.00	29.00	90.79	95.14	65.37	17.13	90.79	95.14	91.22	21.15
29.00	30.00	90.88	95.23	65.44	17.14	90.88	95.23	91.32	21.16

A L Z A D O S

Sección ....

Zona		H	d	Vd	Vcu	Md	Us	As
0.00	1.00	6.97	0.82	15.57	51.16	26.77	33.59	8.95
		3.48	1.35	46.75	84.90	146.25	113.33	25.55
		-0.00	1.87	70.33	118.63	272.36	150.70	33.98
1.00	2.00	6.97	0.82	15.58	51.18	26.80	33.62	8.96
		3.49	1.35	46.79	84.93	146.43	113.43	25.58
		-0.00	1.87	70.39	118.68	272.71	150.84	34.01
2.00	3.00	6.98	0.82	15.59	51.20	26.83	33.65	8.97
		3.49	1.35	46.82	84.96	146.61	113.53	25.60
		0.00	1.87	70.45	118.73	273.06	150.97	34.04
3.00	4.00	6.98	0.82	15.60	51.21	26.86	33.68	8.97
		3.49	1.35	46.86	85.00	146.78	113.62	25.62
		0.00	1.87	70.51	118.78	273.42	151.11	34.07
4.00	5.00	6.98	0.82	15.61	51.23	26.89	33.70	8.98
		3.49	1.35	46.90	85.03	146.96	113.72	25.64
		0.00	1.87	70.57	118.83	273.77	151.25	34.10
5.00	6.00	6.98	0.82	15.62	51.24	26.92	33.73	8.99
		3.49	1.35	46.94	85.06	147.14	113.82	25.67
		0.00	1.87	70.63	118.88	274.12	151.38	34.14
6.00	7.00	6.99	0.82	15.63	51.26	26.95	33.76	8.99
		3.49	1.35	46.97	85.09	147.32	113.92	25.69
		0.00	1.87	70.69	118.92	274.48	151.52	34.17
7.00	8.00	6.99	0.82	15.64	51.28	26.98	33.79	9.00
		3.50	1.35	47.01	85.12	147.50	114.02	25.71
		-0.00	1.87	70.75	118.97	274.83	151.66	34.20
8.00	9.00	6.99	0.82	15.65	51.29	27.01	33.81	9.00
		3.50	1.35	47.05	85.16	147.68	114.12	25.73
		-0.00	1.87	70.81	119.02	275.18	151.79	34.23
9.00	10.00	7.00	0.82	15.67	51.31	27.04	33.84	9.01
		3.50	1.35	47.09	85.19	147.87	114.22	25.75
		0.00	1.87	70.87	119.07	275.54	151.93	34.26
10.00	11.00	7.00	0.83	15.68	51.33	27.07	33.87	9.02
		3.50	1.35	47.12	85.22	148.05	114.31	25.78
		0.00	1.88	70.93	119.12	275.89	152.07	34.29
11.00	12.00	7.01	0.83	15.69	51.34	27.10	33.90	9.02
		3.50	1.35	47.16	85.25	148.23	114.41	25.80
		0.00	1.88	70.99	119.17	276.25	152.21	34.32
12.00	13.00	7.01	0.83	15.70	51.36	27.13	33.92	9.03
		3.50	1.35	47.20	85.29	148.41	114.51	25.82
		0.00	1.88	71.05	119.22	276.60	152.34	34.35
13.00	14.00	7.01	0.83	15.71	51.37	27.16	33.95	9.03
		3.51	1.35	47.24	85.32	148.59	114.61	25.84
		0.00	1.88	71.11	119.26	276.96	152.48	34.38
14.00	15.00	7.01	0.83	15.72	51.39	27.19	33.98	9.04
		3.51	1.35	47.27	85.35	148.77	114.71	25.87
		-0.00	1.88	71.17	119.31	277.31	152.62	34.41
15.00	16.00	7.02	0.83	15.73	51.41	27.22	34.00	9.05
		3.51	1.35	47.31	85.38	148.95	114.81	25.89
		-0.00	1.88	71.23	119.36	277.67	152.75	34.44
16.00	17.00	7.02	0.83	15.74	51.42	27.25	34.03	9.05
		3.51	1.35	47.35	85.42	149.13	114.91	25.91
		0.00	1.88	71.29	119.41	278.03	152.89	34.48
17.00	18.00	7.03	0.83	15.75	51.44	27.28	34.06	9.06
		3.51	1.35	47.39	85.45	149.31	115.01	25.93
		0.00	1.88	71.35	119.46	278.38	153.03	34.51
18.00	19.00	7.03	0.83	15.77	51.45	27.31	34.09	9.06
		3.51	1.35	47.43	85.48	149.50	115.11	25.96
		0.00	1.88	71.41	119.51	278.74	153.17	34.54
19.00	20.00	7.03	0.83	15.78	51.47	27.34	34.11	9.07
		3.52	1.35	47.46	85.51	149.68	115.20	25.98
		0.00	1.88	71.47	119.55	279.10	153.30	34.57
20.00	21.00	7.04	0.83	15.79	51.49	27.37	34.14	9.08
		3.52	1.36	47.50	85.54	149.86	115.30	26.00
		0.00	1.88	71.53	119.60	279.45	153.44	34.60
21.00	22.00	7.04	0.83	15.80	51.50	27.40	34.17	9.08
		3.52	1.36	47.54	85.58	150.04	115.40	26.02
		-0.00	1.88	71.59	119.65	279.81	153.58	34.63
22.00	23.00	7.04	0.83	15.81	51.52	27.43	34.20	9.09
		3.52	1.36	47.58	85.61	150.22	115.50	26.04
		-0.00	1.88	71.65	119.70	280.17	153.72	34.66
23.00	24.00	7.05	0.83	15.82	51.53	27.46	34.22	9.09
		3.52	1.36	47.61	85.64	150.41	115.60	26.07
		0.00	1.89	71.71	119.75	280.53	153.86	34.69
24.00	25.00	7.05	0.83	15.83	51.55	27.49	34.25	9.10
		3.52	1.36	47.65	85.67	150.59	115.70	26.09
		0.00	1.89	71.77	119.80	280.89	153.99	34.72
25.00	26.00	7.05	0.83	15.84	51.57	27.52	34.28	9.11
		3.53	1.36	47.69	85.71	150.77	115.80	26.11
		0.00	1.89	71.83	119.84	281.25	154.13	34.75
26.00	27.00	7.06	0.83	15.85	51.58	27.55	34.31	9.11
		3.53	1.36	47.73	85.74	150.95	115.90	26.13
		0.00	1.89	71.89	119.89	281.60	154.27	34.79
27.00	28.00	7.06	0.83	15.87	51.60	27.58	34.33	9.12
		3.53	1.36	47.77	85.77	151.14	116.00	26.16

		0.00	1.89	71.95	119.94	281.96	154.41	34.82
28.00	29.00	7.06	0.83	15.88	51.62	27.61	34.36	9.13
		3.53	1.36	47.80	85.80	151.32	116.10	26.18
		-0.00	1.89	72.01	119.99	282.32	154.54	34.85
29.00	30.00	7.07	0.83	15.89	51.63	27.64	34.39	9.13
		3.53	1.36	47.84	85.83	151.50	116.20	26.20
		-0.00	1.89	72.07	120.04	282.68	154.68	34.88

DATOS DE ENTRADA

Muro ..... : Aleta 4 MURO 3

GEOMETRIA:

Longitud muro ..... :	56.00	m
Altura mínima total.....:	10.95	m
Altura máxima total.....:	11.20	m
Canto de Zapata..... :	1.50	m
Ancho coronacion ..... :	0.30	m
Talud trasdós..... :	15.00	%
Talud exterior..... :	0.00	%
Angulo muro-calzada .....:	0.00	°
Distancia muro-calzada.....:	0.00	m
Talud de terraplén (H/V)...:	0 / 2	
Angulo de talud trasdós....:	0.00	°

TERRENO:

Densidad de tierras.....:	2.00	t/m3
Angulo de rozam. interno...:	35.00	°
Roz. Muro-tierras .....:	12.00	°
Coeficiente de roz.....:	0.55	
Tensión admisible .....:	3.00	Kg/cm²
Sobrecarga terraplén..... :	3.00	t/m²
Kh inclinado .....:	0.313	
Kh horizontal.....:	0.313	
Kv inclinado .....:	0.066	
Kv horizontal.....:	0.066	

MATERIALES

Fck (Kg/cm²).....:	250	
Gc .....:	1.50	
Fyk (Kg/cm²).....:	5100	
Gs .....:	1.15	
Recubrimiento en Alzados...:	3	cms
Recubrimiento en Cimientos.:	5	cms

SEGURIDAD

Coeficiente desliz.....:	1.50
Coeficiente vuelco.....:	1.50
Coeficiente de acciones....:	1.60

CONDICIONES DE EQUILIBRIO

H = Altura (m) del alzado de la sección
Eh = Empuje Horizontal (t)
Ev = Empuje Vertical (t)
Meh = Momento (m.t) de los empujes Horizontales
Mev = Momento (m.t) de los empujes Verticales
ΣFh = Sumatorio de Fuerzas horizontales (t)
ΣFv = Sumatorio de Fuerzas verticales (t)
ΣMeh = Sumatorio de Momentos (m.t) de los empujes Horizontales
ΣMev = Sumatorio de Momentos (m.t) de los empujes Verticales

Zona		Secc	H	Eh	Ev	Meh	Mev	ΣFh	ΣFv	ΣMeh	ΣMev
0.00	1.00	0.50	9.45	47.77	10.15	193.14	63.13	47.77	140.68	193.14	542.88
1.00	2.00	1.50	9.46	47.80	10.16	193.35	63.18	47.80	140.73	193.35	543.09
2.00	3.00	2.50	9.46	47.84	10.17	193.56	63.22	47.84	140.79	193.56	543.31
3.00	4.00	3.50	9.47	47.87	10.18	193.78	63.27	47.87	140.84	193.78	543.53
4.00	5.00	4.50	9.47	47.91	10.18	193.99	63.31	47.91	140.89	193.99	543.75
5.00	6.00	5.50	9.47	47.94	10.19	194.21	63.36	47.94	140.95	194.21	543.96
6.00	7.00	6.50	9.48	47.98	10.20	194.42	63.41	47.98	141.00	194.42	544.18
7.00	8.00	7.50	9.48	48.01	10.20	194.63	63.45	48.01	141.05	194.63	544.40
8.00	9.00	8.50	9.49	48.05	10.21	194.85	63.50	48.05	141.11	194.85	544.62
9.00	10.00	9.50	9.49	48.08	10.22	195.06	63.54	48.08	141.16	195.06	544.83
10.00	11.00	10.50	9.50	48.11	10.23	195.28	63.59	48.11	141.21	195.28	545.05
11.00	12.00	11.50	9.50	48.15	10.23	195.49	63.64	48.15	141.27	195.49	545.27
12.00	13.00	12.50	9.51	48.18	10.24	195.71	63.68	48.18	141.32	195.71	545.49
13.00	14.00	13.50	9.51	48.22	10.25	195.92	63.73	48.22	141.37	195.92	545.71
14.00	15.00	14.50	9.51	48.25	10.26	196.14	63.77	48.25	141.43	196.14	545.92
15.00	16.00	15.50	9.52	48.29	10.26	196.35	63.82	48.29	141.48	196.35	546.14
16.00	17.00	16.50	9.52	48.32	10.27	196.57	63.87	48.32	141.53	196.57	546.36
17.00	18.00	17.50	9.53	48.36	10.28	196.78	63.91	48.36	141.59	196.78	546.58
18.00	19.00	18.50	9.53	48.39	10.29	197.00	63.96	48.39	141.64	197.00	546.80
19.00	20.00	19.50	9.54	48.43	10.29	197.22	64.01	48.43	141.69	197.22	547.01
20.00	21.00	20.50	9.54	48.46	10.30	197.43	64.05	48.46	141.75	197.43	547.23
21.00	22.00	21.50	9.55	48.50	10.31	197.65	64.10	48.50	141.80	197.65	547.45
22.00	23.00	22.50	9.55	48.53	10.32	197.87	64.14	48.53	141.85	197.87	547.67
23.00	24.00	23.50	9.55	48.57	10.32	198.08	64.19	48.57	141.91	198.08	547.88
24.00	25.00	24.50	9.56	48.60	10.33	198.30	64.24	48.60	141.96	198.30	548.10
25.00	26.00	25.50	9.56	48.64	10.34	198.52	64.28	48.64	142.01	198.52	548.32
26.00	27.00	26.50	9.57	48.67	10.35	198.73	64.33	48.67	142.07	198.73	548.54
27.00	28.00	27.50	9.57	48.71	10.35	198.95	64.38	48.71	142.12	198.95	548.76
28.00	29.00	28.50	9.58	48.74	10.36	199.17	64.42	48.74	142.18	199.17	548.98
29.00	30.00	29.50	9.58	48.78	10.37	199.39	64.47	48.78	142.23	199.39	549.19
30.00	31.00	30.50	9.59	48.81	10.38	199.60	64.52	48.81	142.28	199.60	549.41
31.00	32.00	31.50	9.59	48.85	10.38	199.82	64.56	48.85	142.34	199.82	549.63
32.00	33.00	32.50	9.60	48.89	10.39	200.04	64.61	48.89	142.39	200.04	549.85
33.00	34.00	33.50	9.60	48.92	10.40	200.26	64.66	48.92	142.44	200.26	550.07
34.00	35.00	34.50	9.60	48.96	10.41	200.48	64.70	48.96	142.50	200.48	550.28
35.00	36.00	35.50	9.61	48.99	10.41	200.70	64.75	48.99	142.55	200.70	550.50
36.00	37.00	36.50	9.61	49.03	10.42	200.91	64.79	49.03	142.60	200.91	550.72
37.00	38.00	37.50	9.62	49.06	10.43	201.13	64.84	49.06	142.66	201.13	550.94
38.00	39.00	38.50	9.62	49.10	10.44	201.35	70.11	49.10	155.71	201.35	640.44
39.00	40.00	39.50	9.63	49.13	10.44	201.57	70.16	49.13	155.76	201.57	640.69
40.00	41.00	40.50	9.63	49.17	10.45	201.79	70.21	49.17	155.82	201.79	640.94

41.00	42.00	41.50	9.64	49.20	10.46	202.01	70.26	49.20	155.88	202.01	641.19
42.00	43.00	42.50	9.64	49.24	10.47	202.23	70.31	49.24	155.94	202.23	641.44
43.00	44.00	43.50	9.64	49.27	10.47	202.45	70.36	49.27	156.00	202.45	641.69
44.00	45.00	44.50	9.65	49.31	10.48	202.67	70.41	49.31	156.05	202.67	641.94
45.00	46.00	45.50	9.65	49.34	10.49	202.89	70.46	49.34	156.11	202.89	642.19
46.00	47.00	46.50	9.66	49.38	10.50	203.11	70.51	49.38	156.17	203.11	642.45
47.00	48.00	47.50	9.66	49.41	10.50	203.33	70.56	49.41	156.23	203.33	642.70
48.00	49.00	48.50	9.67	49.45	10.51	203.55	70.61	49.45	156.29	203.55	642.95
49.00	50.00	49.50	9.67	49.48	10.52	203.77	70.66	49.48	156.34	203.77	643.20
50.00	51.00	50.50	9.68	49.52	10.53	203.99	70.71	49.52	156.40	203.99	643.45
51.00	52.00	51.50	9.68	49.56	10.53	204.22	70.76	49.56	156.46	204.22	643.70
52.00	53.00	52.50	9.68	49.59	10.54	204.44	70.81	49.59	156.52	204.44	643.95
53.00	54.00	53.50	9.69	49.63	10.55	204.66	70.86	49.63	156.58	204.66	644.20
54.00	55.00	54.50	9.69	49.66	10.56	204.88	70.91	49.66	156.63	204.88	644.46
55.00	56.00	55.50	9.70	49.70	10.56	205.10	70.96	49.70	156.69	205.10	644.71

H = Altura (m) de la sección en estudio
Zarpa = Longitud (m) de la parte delantera de la zapata
Zap = Longitud (m) total de la zapata
Csd = Coeficiente de seguridad al Deslizamiento
Csv = Coeficiente de seguridad al Vuelco
σmáx = Tensión (Kg/cm²) punta en cota de cimentación
σmín = Tensión (Kg/cm²) mínima en cota de cimentación
σcob = Tensión (Kg/cm²) de comparación
Base = Base comprimida (m) para el caso de diagrama triangular

Zona		Secc	H	Zarpa	Zap	Csd	Csv	σmáx	σmín	σcob	Base
0.00	1.00	0.50	9.45	1.50	6.22	1.62	2.81	3.62	0.90	2.83	6.22
1.00	2.00	1.50	9.46	1.50	6.22	1.62	2.81	3.63	0.90	2.83	6.22
2.00	3.00	2.50	9.46	1.50	6.22	1.62	2.81	3.63	0.90	2.83	6.22
3.00	4.00	3.50	9.47	1.50	6.22	1.62	2.80	3.63	0.90	2.84	6.22
4.00	5.00	4.50	9.47	1.50	6.22	1.62	2.80	3.64	0.90	2.84	6.22
5.00	6.00	5.50	9.47	1.50	6.22	1.62	2.80	3.64	0.89	2.84	6.22
6.00	7.00	6.50	9.48	1.50	6.22	1.62	2.80	3.64	0.89	2.84	6.22
7.00	8.00	7.50	9.48	1.50	6.22	1.62	2.80	3.65	0.89	2.84	6.22
8.00	9.00	8.50	9.49	1.50	6.22	1.62	2.80	3.65	0.89	2.85	6.22
9.00	10.00	9.50	9.49	1.50	6.22	1.61	2.79	3.65	0.89	2.85	6.22
10.00	11.00	10.50	9.50	1.50	6.22	1.61	2.79	3.66	0.89	2.85	6.22
11.00	12.00	11.50	9.50	1.50	6.22	1.61	2.79	3.66	0.88	2.85	6.22
12.00	13.00	12.50	9.51	1.50	6.22	1.61	2.79	3.66	0.88	2.85	6.22
13.00	14.00	13.50	9.51	1.50	6.22	1.61	2.79	3.67	0.88	2.86	6.22
14.00	15.00	14.50	9.51	1.50	6.22	1.61	2.78	3.67	0.88	2.86	6.22
15.00	16.00	15.50	9.52	1.50	6.22	1.61	2.78	3.67	0.88	2.86	6.22
16.00	17.00	16.50	9.52	1.50	6.22	1.61	2.78	3.68	0.88	2.86	6.22
17.00	18.00	17.50	9.53	1.50	6.22	1.61	2.78	3.68	0.87	2.87	6.22
18.00	19.00	18.50	9.53	1.50	6.22	1.61	2.78	3.68	0.87	2.87	6.22
19.00	20.00	19.50	9.54	1.50	6.22	1.61	2.77	3.69	0.87	2.87	6.22
20.00	21.00	20.50	9.54	1.50	6.22	1.61	2.77	3.69	0.87	2.87	6.22
21.00	22.00	21.50	9.55	1.50	6.22	1.61	2.77	3.69	0.87	2.87	6.22
22.00	23.00	22.50	9.55	1.50	6.22	1.61	2.77	3.70	0.87	2.88	6.22
23.00	24.00	23.50	9.55	1.50	6.22	1.61	2.77	3.70	0.86	2.88	6.22
24.00	25.00	24.50	9.56	1.50	6.22	1.61	2.76	3.70	0.86	2.88	6.22
25.00	26.00	25.50	9.56	1.50	6.22	1.61	2.76	3.71	0.86	2.88	6.22
26.00	27.00	26.50	9.57	1.50	6.22	1.61	2.76	3.71	0.86	2.88	6.22
27.00	28.00	27.50	9.57	1.50	6.22	1.60	2.76	3.71	0.86	2.89	6.22
28.00	29.00	28.50	9.58	1.50	6.22	1.60	2.76	3.72	0.86	2.89	6.22
29.00	30.00	29.50	9.58	1.50	6.22	1.60	2.75	3.72	0.85	2.89	6.22
30.00	31.00	30.50	9.59	1.50	6.22	1.60	2.75	3.72	0.85	2.89	6.22
31.00	32.00	31.50	9.59	1.50	6.22	1.60	2.75	3.73	0.85	2.90	6.22
32.00	33.00	32.50	9.60	1.50	6.22	1.60	2.75	3.73	0.85	2.90	6.22
33.00	34.00	33.50	9.60	1.50	6.22	1.60	2.75	3.73	0.85	2.90	6.22
34.00	35.00	34.50	9.60	1.50	6.22	1.60	2.74	3.74	0.85	2.90	6.22
35.00	36.00	35.50	9.61	1.50	6.22	1.60	2.74	3.74	0.84	2.90	6.22
36.00	37.00	36.50	9.61	1.50	6.22	1.60	2.74	3.75	0.84	2.91	6.22
37.00	38.00	37.50	9.62	1.50	6.22	1.60	2.74	3.75	0.84	2.91	6.22
38.00	39.00	38.50	9.62	1.50	6.72	1.74	3.18	3.43	1.20	2.76	6.72
39.00	40.00	39.50	9.63	1.50	6.72	1.74	3.18	3.44	1.20	2.76	6.72
40.00	41.00	40.50	9.63	1.50	6.72	1.74	3.18	3.44	1.20	2.76	6.72
41.00	42.00	41.50	9.64	1.50	6.72	1.74	3.17	3.44	1.20	2.77	6.72
42.00	43.00	42.50	9.64	1.50	6.72	1.74	3.17	3.45	1.20	2.77	6.72
43.00	44.00	43.50	9.64	1.50	6.72	1.74	3.17	3.45	1.20	2.77	6.72
44.00	45.00	44.50	9.65	1.50	6.72	1.74	3.17	3.45	1.19	2.77	6.72
45.00	46.00	45.50	9.65	1.50	6.72	1.74	3.17	3.45	1.19	2.77	6.72
46.00	47.00	46.50	9.66	1.50	6.72	1.74	3.16	3.46	1.19	2.78	6.72
47.00	48.00	47.50	9.66	1.50	6.72	1.74	3.16	3.46	1.19	2.78	6.72
48.00	49.00	48.50	9.67	1.50	6.72	1.74	3.16	3.46	1.19	2.78	6.72
49.00	50.00	49.50	9.67	1.50	6.72	1.74	3.16	3.47	1.19	2.78	6.72
50.00	51.00	50.50	9.68	1.50	6.72	1.74	3.15	3.47	1.19	2.78	6.72
51.00	52.00	51.50	9.68	1.50	6.72	1.74	3.15	3.47	1.18	2.79	6.72
52.00	53.00	52.50	9.68	1.50	6.72	1.74	3.15	3.48	1.18	2.79	6.72
53.00	54.00	53.50	9.69	1.50	6.72	1.74	3.15	3.48	1.18	2.79	6.72
54.00	55.00	54.50	9.69	1.50	6.72	1.73	3.15	3.48	1.18	2.79	6.72
55.00	56.00	55.50	9.70	1.50	6.72	1.73	3.14	3.49	1.18	2.79	6.72

Coeficiente global de seg. al deslizamiento ... 1.65
Coeficiente global de seg. al vuelco 2.90
Tensión máxima en solera (Kg/cm²)..... 3.75

A R M A D U R A S EH-91

Para cada sección:

H = Altura (m) sobre cara superior de zapata
d = Canto útil (m)
Vd = Cortante de cálculo (t)
Vcu= Contribución del hormigón a cortante (t)
Md = Momento de cálculo de la sección (m.t)
Us = Capacidad necesaria (t)
As = Armadura en cm²

Z A P A T A :

Vcu= 93.60 t
d = 1.45 m

		Z A R P A D E L A N T E R A				Z A R P A T R A S E R A			
Zona		Vd	Md	Us	As	Vd	Md	Us	As
0.00	1.00	70.07	54.91	37.31	11.00	70.07	54.91	80.00	19.59
1.00	2.00	70.03	54.87	37.28	10.99	70.03	54.87	80.18	19.62
2.00	3.00	70.00	54.84	37.26	10.98	70.00	54.84	80.37	19.65
3.00	4.00	69.97	54.81	37.24	10.98	69.97	54.81	80.56	19.68
4.00	5.00	69.94	54.78	37.22	10.97	69.94	54.78	80.75	19.71
5.00	6.00	69.91	54.74	37.19	10.97	69.91	54.74	80.94	19.74
6.00	7.00	69.87	54.71	37.17	10.96	69.87	54.71	81.12	19.76
7.00	8.00	69.84	54.68	37.15	10.96	69.84	54.68	81.31	19.79
8.00	9.00	69.81	54.65	37.13	10.95	69.81	54.65	81.50	19.82
9.00	10.00	69.78	54.62	37.11	10.94	69.78	54.62	81.68	19.85
10.00	11.00	69.75	54.58	37.08	10.94	69.75	54.58	81.87	19.87
11.00	12.00	69.72	54.55	37.06	10.93	69.72	54.55	82.06	19.90
12.00	13.00	69.69	54.52	37.04	10.93	69.69	54.52	82.24	19.93
13.00	14.00	69.66	54.49	37.02	10.92	69.66	54.49	82.43	19.96
14.00	15.00	69.63	54.46	37.00	10.92	69.63	54.46	82.61	19.98
15.00	16.00	69.60	54.43	36.98	10.91	69.60	54.43	82.80	20.01
16.00	17.00	69.57	54.40	36.96	10.91	69.57	54.40	82.98	20.04
17.00	18.00	69.54	54.37	36.94	10.90	69.54	54.37	83.17	20.06
18.00	19.00	69.51	54.34	36.91	10.90	69.51	54.34	83.35	20.09
19.00	20.00	69.48	54.31	36.89	10.89	69.48	54.31	83.53	20.12
20.00	21.00	69.45	54.28	36.87	10.89	69.45	54.28	83.72	20.14
21.00	22.00	69.43	54.25	36.85	10.88	69.43	54.25	83.90	20.17
22.00	23.00	69.40	54.22	36.83	10.88	69.40	54.22	84.08	20.19
23.00	24.00	69.37	54.19	36.81	10.87	69.37	54.19	84.26	20.22
24.00	25.00	69.34	54.16	36.79	10.87	69.34	54.16	84.45	20.25
25.00	26.00	69.31	54.13	36.77	10.86	69.31	54.13	84.63	20.27
26.00	27.00	69.28	54.11	36.75	10.86	69.28	54.11	84.81	20.30
27.00	28.00	69.26	54.08	36.73	10.85	69.26	54.08	84.99	20.32
28.00	29.00	69.23	54.05	36.71	10.85	69.23	54.05	85.17	20.35
29.00	30.00	69.20	54.02	36.70	10.84	69.20	54.02	85.35	20.37
30.00	31.00	69.18	53.99	36.68	10.84	69.18	53.99	85.53	20.40
31.00	32.00	69.15	53.97	36.66	10.83	69.15	53.97	85.71	20.42
32.00	33.00	69.12	53.94	36.64	10.83	69.12	53.94	85.89	20.45
33.00	34.00	69.10	53.91	36.62	10.82	69.10	53.91	86.07	20.47
34.00	35.00	69.07	53.88	36.60	10.82	69.07	53.88	86.25	20.50
35.00	36.00	69.04	53.86	36.58	10.81	69.04	53.86	86.43	20.52
36.00	37.00	69.02	53.83	36.56	10.81	69.02	53.83	86.61	20.55
37.00	38.00	68.99	53.80	36.55	10.80	68.99	53.80	86.79	20.57
38.00	39.00	68.97	53.78	36.53	10.80	68.97	53.78	86.97	20.59
39.00	40.00	68.94	53.75	36.51	10.79	68.94	53.75	87.15	20.62
40.00	41.00	68.91	53.72	36.49	10.79	68.91	53.72	87.33	20.64
41.00	42.00	68.89	53.70	36.47	10.78	68.89	53.70	87.50	20.67
42.00	43.00	68.86	53.67	36.46	10.78	68.86	53.67	87.68	20.69
43.00	44.00	68.84	53.65	36.44	10.78	68.84	53.65	87.86	20.71
44.00	45.00	68.81	53.62	36.42	10.77	68.81	53.62	88.03	20.74
45.00	46.00	68.79	53.60	36.40	10.77	68.79	53.60	88.21	20.76
46.00	47.00	68.77	53.57	36.39	10.76	68.77	53.57	88.39	20.78
47.00	48.00	68.74	53.55	36.37	10.76	68.74	53.55	88.56	20.81
48.00	49.00	68.72	53.52	36.35	10.75	68.72	53.52	88.74	20.83
49.00	50.00	68.69	53.50	36.33	10.75	68.69	53.50	88.91	20.85
50.00	51.00	68.67	53.47	36.32	10.75	68.67	53.47	89.09	20.88
51.00	52.00	68.65	53.45	36.30	10.74	68.65	53.45	89.27	20.90
52.00	53.00	68.62	53.42	36.28	10.74	68.62	53.42	89.44	20.92
53.00	54.00	68.60	53.40	36.27	10.73	68.60	53.40	89.61	20.94
54.00	55.00	68.58	53.38	36.25	10.73	68.58	53.38	89.79	20.97
55.00	56.00	68.55	53.35	36.23	10.72	68.55	53.35	89.96	20.99

A L Z A D O S

Zona		Sección .... H	d	Vd	Vcu	Md	Us	As
0.00	1.00	6.30	0.77	13.42	47.94	21.21	28.35	7.76
		3.15	1.25	39.54	78.44	113.20	94.51	21.31
		-0.00	1.72	58.87	108.95	207.83	124.67	28.11
1.00	2.00	6.30	0.77	13.43	47.95	21.24	28.37	7.76
		3.15	1.25	39.57	78.47	113.33	94.59	21.33
		0.00	1.72	58.92	108.99	208.09	124.78	28.14
2.00	3.00	6.31	0.77	13.44	47.96	21.26	28.39	7.77
		3.15	1.25	39.60	78.50	113.47	94.67	21.35
		0.00	1.72	58.97	109.04	208.35	124.89	28.16
3.00	4.00	6.31	0.77	13.45	47.98	21.28	28.42	7.77
		3.16	1.25	39.63	78.53	113.61	94.75	21.37
		0.00	1.72	59.01	109.08	208.62	125.00	28.19
4.00	5.00	6.31	0.77	13.46	47.99	21.31	28.44	7.78
		3.16	1.25	39.66	78.56	113.74	94.83	21.38
		-0.00	1.72	59.06	109.12	208.88	125.11	28.21
5.00	6.00	6.32	0.77	13.47	48.01	21.33	28.46	7.78
		3.16	1.25	39.69	78.59	113.88	94.91	21.40
		-0.00	1.72	59.11	109.17	209.15	125.22	28.24
6.00	7.00	6.32	0.77	13.48	48.02	21.35	28.48	7.79
		3.16	1.25	39.72	78.62	114.01	94.99	21.42

		0.00	1.72	59.16	109.21	209.41	125.33	28.26
7.00	8.00	6.32	0.77	13.49	48.04	21.38	28.51	7.80
		3.16	1.25	39.75	78.64	114.15	95.07	21.44
		0.00	1.72	59.21	109.25	209.67	125.44	28.29
8.00	9.00	6.33	0.77	13.50	48.05	21.40	28.53	7.80
		3.16	1.25	39.78	78.67	114.28	95.15	21.46
		0.00	1.72	59.26	109.30	209.94	125.55	28.31
9.00	10.00	6.33	0.77	13.51	48.07	21.42	28.55	7.81
		3.16	1.25	39.82	78.70	114.42	95.23	21.47
		0.00	1.72	59.31	109.34	210.20	125.67	28.34
10.00	11.00	6.33	0.77	13.52	48.08	21.44	28.57	7.81
		3.17	1.25	39.85	78.73	114.56	95.32	21.49
		-0.00	1.72	59.36	109.38	210.47	125.78	28.36
11.00	12.00	6.33	0.78	13.52	48.09	21.47	28.60	7.82
		3.17	1.25	39.88	78.76	114.69	95.40	21.51
		0.00	1.73	59.41	109.42	210.73	125.89	28.39
12.00	13.00	6.34	0.78	13.53	48.11	21.49	28.62	7.82
		3.17	1.25	39.91	78.79	114.83	95.48	21.53
		0.00	1.73	59.46	109.47	211.00	126.00	28.41
13.00	14.00	6.34	0.78	13.54	48.12	21.51	28.64	7.83
		3.17	1.25	39.94	78.82	114.97	95.56	21.55
		0.00	1.73	59.51	109.51	211.26	126.11	28.44
14.00	15.00	6.34	0.78	13.55	48.14	21.54	28.67	7.83
		3.17	1.25	39.97	78.85	115.10	95.64	21.57
		0.00	1.73	59.55	109.55	211.53	126.22	28.46
15.00	16.00	6.35	0.78	13.56	48.15	21.56	28.69	7.84
		3.17	1.25	40.00	78.87	115.24	95.72	21.58
		-0.00	1.73	59.60	109.60	211.80	126.33	28.49
16.00	17.00	6.35	0.78	13.57	48.17	21.58	28.71	7.84
		3.17	1.25	40.03	78.90	115.38	95.80	21.60
		-0.00	1.73	59.65	109.64	212.06	126.44	28.51
17.00	18.00	6.35	0.78	13.58	48.18	21.61	28.73	7.85
		3.18	1.25	40.06	78.93	115.51	95.88	21.62
		0.00	1.73	59.70	109.68	212.33	126.56	28.54
18.00	19.00	6.36	0.78	13.59	48.19	21.63	28.76	7.85
		3.18	1.25	40.09	78.96	115.65	95.96	21.64
		0.00	1.73	59.75	109.73	212.59	126.67	28.56
19.00	20.00	6.36	0.78	13.60	48.21	21.65	28.78	7.86
		3.18	1.25	40.13	78.99	115.79	96.04	21.66
		0.00	1.73	59.80	109.77	212.86	126.78	28.59
20.00	21.00	6.36	0.78	13.61	48.22	21.68	28.80	7.86
		3.18	1.25	40.16	79.02	115.93	96.12	21.67
		-0.00	1.73	59.85	109.81	213.13	126.89	28.61
21.00	22.00	6.36	0.78	13.62	48.24	21.70	28.82	7.87
		3.18	1.25	40.19	79.05	116.06	96.20	21.69
		-0.00	1.73	59.90	109.86	213.40	127.00	28.64
22.00	23.00	6.37	0.78	13.63	48.25	21.72	28.85	7.87
		3.18	1.26	40.22	79.08	116.20	96.28	21.71
		0.00	1.73	59.95	109.90	213.66	127.11	28.66
23.00	24.00	6.37	0.78	13.64	48.27	21.75	28.87	7.88
		3.18	1.26	40.25	79.11	116.34	96.36	21.73
		0.00	1.73	60.00	109.94	213.93	127.23	28.69
24.00	25.00	6.37	0.78	13.65	48.28	21.77	28.89	7.88
		3.19	1.26	40.28	79.13	116.48	96.45	21.75
		0.00	1.73	60.05	109.99	214.20	127.34	28.71
25.00	26.00	6.38	0.78	13.65	48.30	21.79	28.91	7.89
		3.19	1.26	40.31	79.16	116.62	96.53	21.77
		-0.00	1.73	60.10	110.03	214.47	127.45	28.74
26.00	27.00	6.38	0.78	13.66	48.31	21.82	28.94	7.90
		3.19	1.26	40.34	79.19	116.75	96.61	21.78
		-0.00	1.74	60.15	110.07	214.74	127.56	28.76
27.00	28.00	6.38	0.78	13.67	48.32	21.84	28.96	7.90
		3.19	1.26	40.37	79.22	116.89	96.69	21.80
		0.00	1.74	60.20	110.12	215.00	127.67	28.79
28.00	29.00	6.38	0.78	13.68	48.34	21.86	28.98	7.91
		3.19	1.26	40.41	79.25	117.03	96.77	21.82
		0.00	1.74	60.25	110.16	215.27	127.78	28.81
29.00	30.00	6.39	0.78	13.69	48.35	21.89	29.01	7.91
		3.19	1.26	40.44	79.28	117.17	96.85	21.84
		0.00	1.74	60.29	110.20	215.54	127.90	28.84
30.00	31.00	6.39	0.78	13.70	48.37	21.91	29.03	7.92
		3.20	1.26	40.47	79.31	117.31	96.93	21.86
		0.00	1.74	60.34	110.25	215.81	128.01	28.86
31.00	32.00	6.39	0.78	13.71	48.38	21.93	29.05	7.92
		3.20	1.26	40.50	79.34	117.44	97.01	21.88
		-0.00	1.74	60.39	110.29	216.08	128.12	28.89
32.00	33.00	6.40	0.78	13.72	48.40	21.96	29.07	7.93
		3.20	1.26	40.53	79.36	117.58	97.09	21.89
		0.00	1.74	60.44	110.33	216.35	128.23	28.92
33.00	34.00	6.40	0.78	13.73	48.41	21.98	29.10	7.93
		3.20	1.26	40.56	79.39	117.72	97.18	21.91
		0.00	1.74	60.49	110.38	216.62	128.35	28.94
34.00	35.00	6.40	0.78	13.74	48.43	22.00	29.12	7.94
		3.20	1.26	40.59	79.42	117.86	97.26	21.93
		0.00	1.74	60.54	110.42	216.89	128.46	28.97
35.00	36.00	6.41	0.78	13.75	48.44	22.03	29.14	7.94
		3.20	1.26	40.62	79.45	118.00	97.34	21.95

	0.00	1.74	60.59	110.46	217.16	128.57	28.99
36.00 37.00	6.41	0.78	13.76	48.45	22.05	29.16	7.95
	3.20	1.26	40.66	79.48	118.14	97.42	21.97
	-0.00	1.74	60.64	110.51	217.43	128.68	29.02
37.00 38.00	6.41	0.78	13.77	48.47	22.08	29.19	7.95
	3.21	1.26	40.69	79.51	118.28	97.50	21.99
	-0.00	1.74	60.69	110.55	217.70	128.80	29.04
38.00 39.00	6.41	0.78	13.78	48.48	22.10	29.21	7.96
	3.21	1.26	40.72	79.54	118.42	97.58	22.00
	0.00	1.74	60.74	110.59	217.97	128.91	29.07
39.00 40.00	6.42	0.78	13.79	48.50	22.12	29.23	7.96
	3.21	1.26	40.75	79.57	118.56	97.66	22.02
	0.00	1.74	60.79	110.64	218.25	129.02	29.09
40.00 41.00	6.42	0.78	13.79	48.51	22.15	29.26	7.97
	3.21	1.26	40.78	79.59	118.70	97.75	22.04
	0.00	1.74	60.84	110.68	218.52	129.13	29.12
41.00 42.00	6.42	0.78	13.80	48.53	22.17	29.28	7.97
	3.21	1.26	40.81	79.62	118.84	97.83	22.06
	-0.00	1.75	60.89	110.72	218.79	129.25	29.14
42.00 43.00	6.43	0.78	13.81	48.54	22.19	29.30	7.98
	3.21	1.26	40.84	79.65	118.98	97.91	22.08
	-0.00	1.75	60.94	110.76	219.06	129.36	29.17
43.00 44.00	6.43	0.78	13.82	48.55	22.22	29.32	7.99
	3.21	1.26	40.88	79.68	119.12	97.99	22.10
	0.00	1.75	60.99	110.81	219.33	129.47	29.19
44.00 45.00	6.43	0.78	13.83	48.57	22.24	29.35	7.99
	3.22	1.26	40.91	79.71	119.26	98.07	22.11
	0.00	1.75	61.04	110.85	219.60	129.58	29.22
45.00 46.00	6.44	0.78	13.84	48.58	22.26	29.37	8.00
	3.22	1.27	40.94	79.74	119.40	98.15	22.13
	0.00	1.75	61.09	110.89	219.88	129.70	29.25
46.00 47.00	6.44	0.78	13.85	48.60	22.29	29.39	8.00
	3.22	1.27	40.97	79.77	119.54	98.24	22.15
	-0.00	1.75	61.14	110.94	220.15	129.81	29.27
47.00 48.00	6.44	0.78	13.86	48.61	22.31	29.42	8.01
	3.22	1.27	41.00	79.80	119.68	98.32	22.17
	-0.00	1.75	61.19	110.98	220.42	129.92	29.30
48.00 49.00	6.44	0.78	13.87	48.63	22.34	29.44	8.01
	3.22	1.27	41.03	79.83	119.82	98.40	22.19
	0.00	1.75	61.24	111.02	220.70	130.04	29.32
49.00 50.00	6.45	0.78	13.88	48.64	22.36	29.46	8.02
	3.22	1.27	41.06	79.85	119.96	98.48	22.21
	0.00	1.75	61.29	111.07	220.97	130.15	29.35
50.00 51.00	6.45	0.78	13.89	48.66	22.38	29.48	8.02
	3.23	1.27	41.10	79.88	120.10	98.56	22.22
	0.00	1.75	61.34	111.11	221.24	130.26	29.37
51.00 52.00	6.45	0.78	13.90	48.67	22.41	29.51	8.03
	3.23	1.27	41.13	79.91	120.24	98.64	22.24
	0.00	1.75	61.39	111.15	221.52	130.37	29.40
52.00 53.00	6.46	0.78	13.91	48.68	22.43	29.53	8.03
	3.23	1.27	41.16	79.94	120.38	98.73	22.26
	-0.00	1.75	61.44	111.20	221.79	130.49	29.42
53.00 54.00	6.46	0.78	13.92	48.70	22.45	29.55	8.04
	3.23	1.27	41.19	79.97	120.52	98.81	22.28
	0.00	1.75	61.49	111.24	222.07	130.60	29.45
54.00 55.00	6.46	0.78	13.93	48.71	22.48	29.58	8.04
	3.23	1.27	41.22	80.00	120.66	98.89	22.30
	0.00	1.75	61.54	111.28	222.34	130.71	29.47
55.00 56.00	6.47	0.78	13.94	48.73	22.50	29.60	8.05
	3.23	1.27	41.25	80.03	120.80	98.97	22.32
	0.00	1.75	61.59	111.33	222.62	130.83	29.50

DATOS DE ENTRADA

Muro ..... : Aleta 4 MURO 4

GEOMETRIA:

Longitud muro ..... :	17.00	m
Altura mínima total.....:	2.75	m
Altura máxima total.....:	2.85	m
Canto de Zapata..... :	0.60	m
Ancho coronacion ..... :	0.30	m
Talud trasdós..... :	15.00	%
Talud exterior..... :	0.00	%
Angulo muro-calzada .....:	0.00	°
Distancia muro-calzada.....:	0.00	m
Talud de terraplén (H/V)...:	0 / 2	
Angulo de talud trasdós....:	0.00	°

TERRENO:

Densidad de tierras.....:	2.00	t/m3
Angulo de rozam. interno...:	35.00	°
Roz. Muro-tierras .....:	12.00	°
Coeficiente de roz.....:	0.55	
Tensión admisible .....:	3.00	Kg/cm²
Sobrecarga terraplén..... :	3.00	t/m²
Kh inclinado .....:	0.313	
Kh horizontal.....:	0.313	
Kv inclinado .....:	0.066	
Kv horizontal.....:	0.066	

MATERIALES

Fck (Kg/cm²).....:	250	
Gc .....:	1.50	
Fyk (Kg/cm²).....:	5100	
Gs .....:	1.15	
Recubrimiento en Alzados...:	3	cms
Recubrimiento en Cimientos.:	5	cms

SEGURIDAD

Coeficiente desliz.....:	1.50
Coeficiente vuelco.....:	1.50
Coeficiente de acciones....:	1.60

CONDICIONES DE EQUILIBRIO

H = Altura (m) del alzado de la sección
Eh = Empuje Horizontal (t)
Ev = Empuje Vertical (t)
Meh = Momento (m.t) de los empujes Horizontales
Mev = Momento (m.t) de los empujes Verticales
ΣFh = Sumatorio de Fuerzas horizontales (t)
ΣFv = Sumatorio de Fuerzas verticales (t)
ΣMeh = Sumatorio de Momentos (m.t) de los empujes Horizontales
ΣMev = Sumatorio de Momentos (m.t) de los empujes Verticales

Zona		Secc	H	Eh	Ev	Meh	Mev	ΣFh	ΣFv	ΣMeh	ΣMev
0.00	1.00	0.50	2.15	4.95	1.05	5.73	2.23	4.95	15.69	5.73	20.95
1.00	2.00	1.50	2.16	4.97	1.06	5.76	2.24	4.97	15.71	5.76	20.98
2.00	3.00	2.50	2.16	4.98	1.06	5.79	2.25	4.98	15.74	5.79	21.01
3.00	4.00	3.50	2.17	5.00	1.06	5.82	2.26	5.00	15.76	5.82	21.05
4.00	5.00	4.50	2.18	5.01	1.07	5.85	2.26	5.01	15.79	5.85	21.08
5.00	6.00	5.50	2.18	5.03	1.07	5.88	2.27	5.03	15.81	5.88	21.12
6.00	7.00	6.50	2.19	5.04	1.07	5.91	2.28	5.04	15.84	5.91	21.15
7.00	8.00	7.50	2.19	5.06	1.08	5.94	2.28	5.06	15.86	5.94	21.18
8.00	9.00	8.50	2.20	5.08	1.08	5.96	2.29	5.08	15.88	5.96	21.22
9.00	10.00	9.50	2.21	5.09	1.08	5.99	2.30	5.09	15.91	5.99	21.25
10.00	11.00	10.50	2.21	5.11	1.09	6.02	2.31	5.11	15.93	6.02	21.28
11.00	12.00	11.50	2.22	5.12	1.09	6.05	2.31	5.12	15.96	6.05	21.32
12.00	13.00	12.50	2.22	5.14	1.09	6.09	2.32	5.14	15.98	6.09	21.35
13.00	14.00	13.50	2.23	5.16	1.10	6.12	2.33	5.16	16.01	6.12	21.38
14.00	15.00	14.50	2.24	5.17	1.10	6.15	2.33	5.17	16.03	6.15	21.42
15.00	16.00	15.50	2.24	5.19	1.10	6.18	2.34	5.19	16.06	6.18	21.45
16.00	17.00	16.50	2.25	5.20	1.11	6.21	2.35	5.20	16.08	6.21	21.49

H = Altura (m) de la sección en estudio
Zarpa = Longitud (m) de la parte delantera de la zapata
Zap = Longitud (m) total de la zapata
Csd = Coeficiente de seguridad al Deslizamiento
Csv = Coeficiente de seguridad al Vuelco
σmáx = Tensión (Kg/cm²) punta en cota de cimentación
σmín = Tensión (Kg/cm²) mínima en cota de cimentación
σcob = Tensión (Kg/cm²) de comparación
Base = Base comprimida (m) para el caso de diagrama triangular

Zona		Secc	H	Zarpa	Zap	Csd	Csv	σmáx	σmín	σcob	Base
0.00	1.00	0.50	2.15	0.50	2.12	1.74	3.66	0.93	0.55	0.81	2.12
1.00	2.00	1.50	2.16	0.50	2.12	1.74	3.64	0.93	0.55	0.81	2.12
2.00	3.00	2.50	2.16	0.50	2.12	1.74	3.63	0.94	0.54	0.81	2.12
3.00	4.00	3.50	2.17	0.50	2.12	1.73	3.62	0.94	0.54	0.82	2.12
4.00	5.00	4.50	2.18	0.50	2.12	1.73	3.61	0.95	0.54	0.82	2.12
5.00	6.00	5.50	2.18	0.50	2.12	1.73	3.59	0.95	0.54	0.82	2.12
6.00	7.00	6.50	2.19	0.50	2.12	1.73	3.58	0.95	0.54	0.82	2.12
7.00	8.00	7.50	2.19	0.50	2.12	1.72	3.57	0.96	0.54	0.82	2.12
8.00	9.00	8.50	2.20	0.50	2.12	1.72	3.56	0.96	0.53	0.83	2.12

9.00	10.00	9.50	2.21	0.50	2.12	1.72	3.54	0.97	0.53	0.83	2.12
10.00	11.00	10.50	2.21	0.50	2.12	1.72	3.53	0.97	0.53	0.83	2.12
11.00	12.00	11.50	2.22	0.50	2.12	1.71	3.52	0.97	0.53	0.83	2.12
12.00	13.00	12.50	2.22	0.50	2.12	1.71	3.51	0.98	0.53	0.84	2.12
13.00	14.00	13.50	2.23	0.50	2.12	1.71	3.50	0.98	0.52	0.84	2.12
14.00	15.00	14.50	2.24	0.50	2.12	1.70	3.49	0.99	0.52	0.84	2.12
15.00	16.00	15.50	2.24	0.50	2.12	1.70	3.47	0.99	0.52	0.84	2.12
16.00	17.00	16.50	2.25	0.50	2.12	1.70	3.46	1.00	0.52	0.85	2.12

Coeficiente global de seg. al deslizamiento ... 1.72
Coeficiente global de seg. al vuelco 3.56
Tensión máxima en solera (Kg/cm²)..... 1.00

A R M A D U R A S EH-91

Para cada sección:

H = Altura (m) sobre cara superior de zapata
d = Canto útil (m)
Vd = Cortante de cálculo (t)
Vcu= Contribución del hormigón a cortante (t)
Md = Momento de cálculo de la sección (m.t)
Us = Capacidad necesaria (t)
As = Armadura en cm²

Z A P A T A :

Vcu= 35.50 t
d = 0.55 m

		ZARPA DELANTERA				ZARPA TRASERA			
Zona		Vd	Md	Us	As	Vd	Md	Us	As
0.00	1.00	5.89	1.54	2.72	0.90	5.89	1.54	2.60	0.86
1.00	2.00	5.92	1.55	2.73	0.90	5.92	1.55	2.63	0.87
2.00	3.00	5.94	1.55	2.75	0.91	5.94	1.55	2.67	0.88
3.00	4.00	5.97	1.56	2.76	0.91	5.97	1.56	2.71	0.89
4.00	5.00	6.00	1.57	2.77	0.91	6.00	1.57	2.74	0.90
5.00	6.00	6.02	1.57	2.79	0.92	6.02	1.57	2.78	0.92
6.00	7.00	6.05	1.58	2.80	0.92	6.05	1.58	2.82	0.93
7.00	8.00	6.08	1.59	2.81	0.93	6.08	1.59	2.85	0.94
8.00	9.00	6.10	1.60	2.82	0.93	6.10	1.60	2.89	0.95
9.00	10.00	6.13	1.60	2.84	0.93	6.13	1.60	2.93	0.96
10.00	11.00	6.16	1.61	2.85	0.94	6.16	1.61	2.97	0.98
11.00	12.00	6.19	1.62	2.86	0.94	6.19	1.62	3.00	0.99
12.00	13.00	6.21	1.63	2.88	0.95	6.21	1.63	3.04	1.00
13.00	14.00	6.24	1.63	2.89	0.95	6.24	1.63	3.08	1.01
14.00	15.00	6.27	1.64	2.90	0.96	6.27	1.64	3.11	1.02
15.00	16.00	6.30	1.65	2.92	0.96	6.30	1.65	3.15	1.04
16.00	17.00	6.32	1.66	2.93	0.96	6.32	1.66	3.19	1.05

A L Z A D O S

		Sección						
Zona		H	d	Vd	Vcu	Md	Us	As
0.00	1.00	1.44	0.41	2.24	24.38	1.12	2.89	0.94
		0.72	0.52	4.73	31.33	3.95	7.97	2.48
		0.00	0.62	5.55	38.27	5.14	8.49	2.67
1.00	2.00	1.44	0.41	2.25	24.40	1.13	2.90	0.94
		0.72	0.52	4.74	31.36	3.97	8.01	2.49
		0.00	0.62	5.57	38.33	5.18	8.53	2.68

2.00	3.00	1.44	0.41	2.26	24.41	1.13	2.91	0.95
		0.72	0.52	4.76	31.40	3.99	8.04	2.50
		0.00	0.62	5.59	38.39	5.21	8.57	2.69
3.00	4.00	1.45	0.41	2.26	24.43	1.14	2.92	0.95
		0.72	0.52	4.77	31.44	4.01	8.08	2.51
		0.00	0.63	5.61	38.45	5.24	8.61	2.70
4.00	5.00	1.45	0.41	2.27	24.45	1.14	2.93	0.95
		0.73	0.52	4.79	31.48	4.04	8.11	2.51
		0.00	0.63	5.63	38.50	5.27	8.65	2.71
5.00	6.00	1.45	0.41	2.27	24.47	1.15	2.94	0.96
		0.73	0.52	4.80	31.52	4.06	8.14	2.52
		0.00	0.63	5.66	38.56	5.31	8.70	2.73
6.00	7.00	1.46	0.41	2.28	24.49	1.15	2.96	0.96
		0.73	0.52	4.82	31.55	4.08	8.18	2.53
		0.00	0.63	5.68	38.62	5.34	8.74	2.74
7.00	8.00	1.46	0.41	2.28	24.51	1.16	2.97	0.96
		0.73	0.52	4.84	31.59	4.10	8.21	2.54
		0.00	0.63	5.70	38.67	5.37	8.78	2.75
8.00	9.00	1.47	0.41	2.29	24.53	1.16	2.98	0.97
		0.73	0.52	4.85	31.63	4.12	8.25	2.55
		0.00	0.63	5.72	38.73	5.41	8.82	2.76
9.00	10.00	1.47	0.41	2.30	24.55	1.17	2.99	0.97
		0.74	0.52	4.87	31.67	4.14	8.28	2.56
		0.00	0.63	5.74	38.79	5.44	8.86	2.78
10.00	11.00	1.47	0.41	2.30	24.57	1.17	3.00	0.97
		0.74	0.52	4.88	31.71	4.17	8.31	2.57
		0.00	0.63	5.77	38.84	5.48	8.91	2.79
11.00	12.00	1.48	0.41	2.31	24.59	1.18	3.01	0.98
		0.74	0.52	4.90	31.74	4.19	8.35	2.58
		0.00	0.63	5.79	38.90	5.51	8.95	2.80
12.00	13.00	1.48	0.41	2.31	24.60	1.18	3.02	0.98
		0.74	0.52	4.91	31.78	4.21	8.38	2.59
		0.00	0.63	5.81	38.96	5.54	8.99	2.81
13.00	14.00	1.49	0.41	2.32	24.62	1.19	3.03	0.99
		0.74	0.52	4.93	31.82	4.23	8.42	2.60
		0.00	0.63	5.83	39.01	5.58	9.03	2.83
14.00	15.00	1.49	0.41	2.33	24.64	1.19	3.04	0.99
		0.75	0.52	4.94	31.86	4.26	8.45	2.61
		0.00	0.64	5.85	39.07	5.61	9.08	2.84
15.00	16.00	1.49	0.41	2.33	24.66	1.20	3.05	0.99
		0.75	0.52	4.96	31.90	4.28	8.49	2.62
		0.00	0.64	5.87	39.13	5.65	9.12	2.85
16.00	17.00	1.50	0.41	2.34	24.68	1.20	3.07	1.00
		0.75	0.52	4.98	31.93	4.30	8.52	2.63
		0.00	0.64	5.90	39.19	5.68	9.16	2.87

DATOS DE ENTRADA

Muro ..... : Aleta 4 MURO 5

GEOMETRIA:

Longitud muro ..... :	51.00	m
Altura mínima total.....:	3.85	m
Altura máxima total.....:	4.10	m
Canto de Zapata..... :	0.70	m
Ancho coronacion ..... :	0.30	m
Talud trasdós..... :	15.00	%
Talud exterior..... :	0.00	%
Angulo muro-calzada .....:	0.00	°
Distancia muro-calzada.....:	0.00	m
Talud de terraplén (H/V)...:	0 / 2	
Angulo de talud trasdós....:	0.00	°

TERRENO:

Densidad de tierras.....:	2.00	t/m3
Angulo de rozam. interno...:	35.00	°
Roz. Muro-tierras .....:	12.00	°
Coeficiente de roz.....:	0.55	
Tensión admisible .....:	3.00	Kg/cm²
Sobrecarga terraplén..... :	3.00	t/m²
Kh inclinado .....:	0.313	
Kh horizontal.....:	0.313	
Kv inclinado .....:	0.066	
Kv horizontal.....:	0.066	

MATERIALES

Fck (Kg/cm²).....:	250	
Gc .....:	1.50	
Fyk (Kg/cm²).....:	5100	
Gs .....:	1.15	
Recubrimiento en Alzados...:	3	cms
Recubrimiento en Cimientos.:	5	cms

SEGURIDAD

Coeficiente desliz.....:	1.50
Coeficiente vuelco.....:	1.50
Coeficiente de acciones....:	1.60

CONDICIONES DE EQUILIBRIO

H = Altura (m) del alzado de la sección
Eh = Empuje Horizontal (t)
Ev = Empuje Vertical (t)
Meh = Momento (m.t) de los empujes Horizontales
Mev = Momento (m.t) de los empujes Verticales
ΣFh = Sumatorio de Fuerzas horizontales (t)
ΣFv = Sumatorio de Fuerzas verticales (t)
ΣMeh = Sumatorio de Momentos (m.t) de los empujes Horizontales
ΣMev = Sumatorio de Momentos (m.t) de los empujes Verticales

Zona		Secc	H	Eh	Ev	Meh	Mev	ΣFh	ΣFv	ΣMeh	ΣMev
0.00	1.00	0.50	3.15	8.25	1.75	12.92	4.86	8.25	27.70	12.92	46.28
1.00	2.00	1.50	3.16	8.27	1.76	12.96	4.87	8.27	27.73	12.96	46.33
2.00	3.00	2.50	3.16	8.28	1.76	13.00	4.88	8.28	27.76	13.00	46.37
3.00	4.00	3.50	3.17	8.30	1.76	13.04	4.89	8.30	27.78	13.04	46.42
4.00	5.00	4.50	3.17	8.32	1.77	13.08	4.90	8.32	27.81	13.08	46.47
5.00	6.00	5.50	3.18	8.33	1.77	13.12	4.91	8.33	27.84	13.12	46.52
6.00	7.00	6.50	3.18	8.35	1.78	13.16	4.92	8.35	27.87	13.16	46.57
7.00	8.00	7.50	3.19	8.37	1.78	13.20	4.93	8.37	27.89	13.20	46.61
8.00	9.00	8.50	3.19	8.38	1.78	13.24	4.94	8.38	27.92	13.24	46.66
9.00	10.00	9.50	3.20	8.40	1.79	13.29	4.95	8.40	27.95	13.29	46.71
10.00	11.00	10.50	3.20	8.42	1.79	13.33	4.96	8.42	27.98	13.33	46.76
11.00	12.00	11.50	3.21	8.43	1.79	13.37	4.97	8.43	28.01	13.37	46.81
12.00	13.00	12.50	3.21	8.45	1.80	13.41	4.98	8.45	28.03	13.41	46.85
13.00	14.00	13.50	3.22	8.47	1.80	13.45	4.99	8.47	28.06	13.45	46.90
14.00	15.00	14.50	3.22	8.48	1.80	13.49	5.00	8.48	28.09	13.49	46.95
15.00	16.00	15.50	3.23	8.50	1.81	13.53	5.01	8.50	28.12	13.53	47.00
16.00	17.00	16.50	3.23	8.52	1.81	13.58	5.02	8.52	28.14	13.58	47.05
17.00	18.00	17.50	3.24	8.53	1.81	13.62	5.03	8.53	28.17	13.62	47.09
18.00	19.00	18.50	3.24	8.55	1.82	13.66	5.04	8.55	28.20	13.66	47.14
19.00	20.00	19.50	3.25	8.57	1.82	13.70	5.05	8.57	28.23	13.70	47.19
20.00	21.00	20.50	3.25	8.58	1.82	13.74	5.06	8.58	28.26	13.74	47.24
21.00	22.00	21.50	3.26	8.60	1.83	13.79	5.07	8.60	28.28	13.79	47.29
22.00	23.00	22.50	3.26	8.62	1.83	13.83	5.08	8.62	28.31	13.83	47.33
23.00	24.00	23.50	3.27	8.63	1.84	13.87	5.09	8.63	28.34	13.87	47.38
24.00	25.00	24.50	3.27	8.65	1.84	13.91	5.10	8.65	28.37	13.91	47.43
25.00	26.00	25.50	3.27	8.67	1.84	13.96	5.11	8.67	28.39	13.96	47.48
26.00	27.00	26.50	3.28	8.68	1.85	14.00	5.12	8.68	28.42	14.00	47.53
27.00	28.00	27.50	3.28	8.70	1.85	14.04	5.13	8.70	28.45	14.04	47.57
28.00	29.00	28.50	3.29	8.72	1.85	14.08	5.14	8.72	28.48	14.08	47.62
29.00	30.00	29.50	3.29	8.73	1.86	14.13	5.15	8.73	28.51	14.13	47.67
30.00	31.00	30.50	3.30	8.75	1.86	14.17	5.16	8.75	28.53	14.17	47.72
31.00	32.00	31.50	3.30	8.77	1.86	14.21	5.17	8.77	28.56	14.21	47.77
32.00	33.00	32.50	3.31	8.78	1.87	14.25	5.18	8.78	28.59	14.25	47.81
33.00	34.00	33.50	3.31	8.80	1.87	14.30	5.19	8.80	28.62	14.30	47.86
34.00	35.00	34.50	3.32	8.82	1.87	14.34	5.20	8.82	28.64	14.34	47.91
35.00	36.00	35.50	3.32	8.84	1.88	14.38	5.21	8.84	28.67	14.38	47.96
36.00	37.00	36.50	3.33	8.85	1.88	14.43	5.22	8.85	28.70	14.43	48.01
37.00	38.00	37.50	3.33	8.87	1.89	14.47	5.23	8.87	28.73	14.47	48.06
38.00	39.00	38.50	3.34	8.89	1.89	14.51	5.24	8.89	28.76	14.51	48.10
39.00	40.00	39.50	3.34	8.90	1.89	14.56	5.25	8.90	28.78	14.56	48.15
40.00	41.00	40.50	3.35	8.92	1.90	14.60	5.26	8.92	28.81	14.60	48.20

41.00	42.00	41.50	3.35	8.94	1.90	14.65	5.27	8.94	28.84	14.65	48.25
42.00	43.00	42.50	3.36	8.95	1.90	14.69	5.28	8.95	28.87	14.69	48.30
43.00	44.00	43.50	3.36	8.97	1.91	14.73	5.29	8.97	28.90	14.73	48.35
44.00	45.00	44.50	3.37	8.99	1.91	14.78	5.30	8.99	28.92	14.78	48.39
45.00	46.00	45.50	3.37	9.01	1.91	14.82	5.31	9.01	28.95	14.82	48.44
46.00	47.00	46.50	3.38	9.02	1.92	14.87	5.32	9.02	28.98	14.87	48.49
47.00	48.00	47.50	3.38	9.04	1.92	14.91	5.33	9.04	29.01	14.91	48.54
48.00	49.00	48.50	3.39	9.06	1.93	14.95	5.34	9.06	29.03	14.95	48.59
49.00	50.00	49.50	3.39	9.07	1.93	15.00	5.35	9.07	29.06	15.00	48.64
50.00	51.00	50.50	3.40	9.09	1.93	15.04	5.36	9.09	29.09	15.04	48.68

H = Altura (m) de la sección en estudio
Zarpa = Longitud (m) de la parte delantera de la zapata
Zap = Longitud (m) total de la zapata
Csd = Coeficiente de seguridad al Deslizamiento
Csv = Coeficiente de seguridad al Vuelco
σmáx = Tensión (Kg/cm²) punta en cota de cimentación
σmín = Tensión (Kg/cm²) mínima en cota de cimentación
σcob = Tensión (Kg/cm²) de comparación
Base = Base comprimida (m) para el caso de diagrama triangular

Zona		Secc	H	Zarpa	Zap	Csd	Csv	σmáx	σmín	σcob	Base
0.00	1.00	0.50	3.15	0.50	2.77	1.85	3.58	1.39	0.61	1.15	2.77
1.00	2.00	1.50	3.16	0.50	2.77	1.84	3.57	1.40	0.60	1.15	2.77
2.00	3.00	2.50	3.16	0.50	2.77	1.84	3.57	1.40	0.60	1.15	2.77
3.00	4.00	3.50	3.17	0.50	2.77	1.84	3.56	1.40	0.60	1.16	2.77
4.00	5.00	4.50	3.17	0.50	2.77	1.84	3.55	1.41	0.60	1.16	2.77
5.00	6.00	5.50	3.18	0.50	2.77	1.84	3.55	1.41	0.60	1.16	2.77
6.00	7.00	6.50	3.18	0.50	2.77	1.84	3.54	1.41	0.60	1.16	2.77
7.00	8.00	7.50	3.19	0.50	2.77	1.83	3.53	1.42	0.60	1.16	2.77
8.00	9.00	8.50	3.19	0.50	2.77	1.83	3.52	1.42	0.59	1.17	2.77
9.00	10.00	9.50	3.20	0.50	2.77	1.83	3.52	1.42	0.59	1.17	2.77
10.00	11.00	10.50	3.20	0.50	2.77	1.83	3.51	1.43	0.59	1.17	2.77
11.00	12.00	11.50	3.21	0.50	2.77	1.83	3.50	1.43	0.59	1.17	2.77
12.00	13.00	12.50	3.21	0.50	2.77	1.82	3.49	1.43	0.59	1.17	2.77
13.00	14.00	13.50	3.22	0.50	2.77	1.82	3.49	1.44	0.59	1.18	2.77
14.00	15.00	14.50	3.22	0.50	2.77	1.82	3.48	1.44	0.58	1.18	2.77
15.00	16.00	15.50	3.23	0.50	2.77	1.82	3.47	1.44	0.58	1.18	2.77
16.00	17.00	16.50	3.23	0.50	2.77	1.82	3.47	1.45	0.58	1.18	2.77
17.00	18.00	17.50	3.24	0.50	2.77	1.82	3.46	1.45	0.58	1.19	2.77
18.00	19.00	18.50	3.24	0.50	2.77	1.81	3.45	1.46	0.58	1.19	2.77
19.00	20.00	19.50	3.25	0.50	2.77	1.81	3.44	1.46	0.58	1.19	2.77
20.00	21.00	20.50	3.25	0.50	2.77	1.81	3.44	1.46	0.58	1.19	2.77
21.00	22.00	21.50	3.26	0.50	2.77	1.81	3.43	1.47	0.57	1.19	2.77
22.00	23.00	22.50	3.26	0.50	2.77	1.81	3.42	1.47	0.57	1.20	2.77
23.00	24.00	23.50	3.27	0.50	2.77	1.81	3.42	1.47	0.57	1.20	2.77
24.00	25.00	24.50	3.27	0.50	2.77	1.80	3.41	1.48	0.57	1.20	2.77
25.00	26.00	25.50	3.27	0.50	2.77	1.80	3.40	1.48	0.57	1.20	2.77
26.00	27.00	26.50	3.28	0.50	2.77	1.80	3.40	1.48	0.57	1.20	2.77
27.00	28.00	27.50	3.28	0.50	2.77	1.80	3.39	1.49	0.56	1.21	2.77
28.00	29.00	28.50	3.29	0.50	2.77	1.80	3.38	1.49	0.56	1.21	2.77
29.00	30.00	29.50	3.29	0.50	2.77	1.80	3.37	1.49	0.56	1.21	2.77
30.00	31.00	30.50	3.30	0.50	2.77	1.79	3.37	1.50	0.56	1.21	2.77
31.00	32.00	31.50	3.30	0.50	2.77	1.79	3.36	1.50	0.56	1.22	2.77
32.00	33.00	32.50	3.31	0.50	2.77	1.79	3.35	1.51	0.56	1.22	2.77
33.00	34.00	33.50	3.31	0.50	2.77	1.79	3.35	1.51	0.56	1.22	2.77
34.00	35.00	34.50	3.32	0.50	2.77	1.79	3.34	1.51	0.55	1.22	2.77
35.00	36.00	35.50	3.32	0.50	2.77	1.78	3.33	1.52	0.55	1.22	2.77
36.00	37.00	36.50	3.33	0.50	2.77	1.78	3.33	1.52	0.55	1.23	2.77
37.00	38.00	37.50	3.33	0.50	2.77	1.78	3.32	1.52	0.55	1.23	2.77
38.00	39.00	38.50	3.34	0.50	2.77	1.78	3.31	1.53	0.55	1.23	2.77
39.00	40.00	39.50	3.34	0.50	2.77	1.78	3.31	1.53	0.55	1.23	2.77
40.00	41.00	40.50	3.35	0.50	2.77	1.78	3.30	1.53	0.54	1.24	2.77
41.00	42.00	41.50	3.35	0.50	2.77	1.77	3.29	1.54	0.54	1.24	2.77
42.00	43.00	42.50	3.36	0.50	2.77	1.77	3.29	1.54	0.54	1.24	2.77
43.00	44.00	43.50	3.36	0.50	2.77	1.77	3.28	1.55	0.54	1.24	2.77
44.00	45.00	44.50	3.37	0.50	2.77	1.77	3.27	1.55	0.54	1.24	2.77
45.00	46.00	45.50	3.37	0.50	2.77	1.77	3.27	1.55	0.54	1.25	2.77
46.00	47.00	46.50	3.38	0.50	2.77	1.77	3.26	1.56	0.53	1.25	2.77
47.00	48.00	47.50	3.38	0.50	2.77	1.76	3.26	1.56	0.53	1.25	2.77
48.00	49.00	48.50	3.39	0.50	2.77	1.76	3.25	1.56	0.53	1.25	2.77
49.00	50.00	49.50	3.39	0.50	2.77	1.76	3.24	1.57	0.53	1.26	2.77
50.00	51.00	50.50	3.40	0.50	2.77	1.76	3.24	1.57	0.53	1.26	2.77

Coeficiente global de seg. al deslizamiento ... 1.80
Coeficiente global de seg. al vuelco 3.40
Tensión máxima en solera (Kg/cm²)..... 1.57

A R M A D U R A S EH-91

Para cada sección:

H = Altura (m) sobre cara superior de zapata
d = Canto útil (m)
Vd = Cortante de cálculo (t)
Vcu= Contribución del hormigón a cortante (t)
Md = Momento de cálculo de la sección (m.t)
Us = Capacidad necesaria (t)
As = Armadura en cm²

Z A P A T A :

Vcu= 41.96 t
d = 0.65 m

		ZARPA DELANTERA				ZARPA TRASERA			
Zona		Vd	Md	Us	As	Vd	Md	Us	As
0.00	1.00	9.18	2.40	3.59	1.18	9.18	2.40	7.94	2.52
1.00	2.00	9.21	2.40	3.60	1.18	9.21	2.40	7.99	2.54
2.00	3.00	9.23	2.41	3.61	1.19	9.23	2.41	8.04	2.55
3.00	4.00	9.26	2.42	3.62	1.19	9.26	2.42	8.10	2.57
4.00	5.00	9.28	2.42	3.63	1.19	9.28	2.42	8.15	2.58
5.00	6.00	9.30	2.43	3.64	1.20	9.30	2.43	8.20	2.60
6.00	7.00	9.33	2.43	3.65	1.20	9.33	2.43	8.25	2.61
7.00	8.00	9.35	2.44	3.66	1.20	9.35	2.44	8.31	2.63
8.00	9.00	9.38	2.45	3.67	1.20	9.38	2.45	8.36	2.65
9.00	10.00	9.40	2.45	3.68	1.21	9.40	2.45	8.41	2.66
10.00	11.00	9.43	2.46	3.69	1.21	9.43	2.46	8.46	2.68
11.00	12.00	9.45	2.47	3.69	1.21	9.45	2.47	8.51	2.69
12.00	13.00	9.47	2.47	3.70	1.22	9.47	2.47	8.57	2.71
13.00	14.00	9.50	2.48	3.71	1.22	9.50	2.48	8.62	2.72
14.00	15.00	9.52	2.49	3.72	1.22	9.52	2.49	8.67	2.74
15.00	16.00	9.55	2.49	3.73	1.23	9.55	2.49	8.72	2.75
16.00	17.00	9.57	2.50	3.74	1.23	9.57	2.50	8.78	2.77
17.00	18.00	9.60	2.51	3.75	1.23	9.60	2.51	8.83	2.78
18.00	19.00	9.62	2.51	3.76	1.24	9.62	2.51	8.88	2.80
19.00	20.00	9.65	2.52	3.77	1.24	9.65	2.52	8.94	2.81
20.00	21.00	9.67	2.53	3.78	1.24	9.67	2.53	8.99	2.83
21.00	22.00	9.70	2.53	3.79	1.25	9.70	2.53	9.04	2.85
22.00	23.00	9.72	2.54	3.80	1.25	9.72	2.54	9.09	2.86
23.00	24.00	9.75	2.55	3.81	1.25	9.75	2.55	9.15	2.88
24.00	25.00	9.77	2.55	3.82	1.26	9.77	2.55	9.20	2.89
25.00	26.00	9.80	2.56	3.83	1.26	9.80	2.56	9.25	2.91
26.00	27.00	9.82	2.57	3.84	1.26	9.82	2.57	9.31	2.92
27.00	28.00	9.85	2.57	3.85	1.26	9.85	2.57	9.36	2.94
28.00	29.00	9.87	2.58	3.86	1.27	9.87	2.58	9.41	2.95
29.00	30.00	9.90	2.59	3.87	1.27	9.90	2.59	9.47	2.97
30.00	31.00	9.92	2.59	3.88	1.27	9.92	2.59	9.52	2.98
31.00	32.00	9.95	2.60	3.89	1.28	9.95	2.60	9.57	3.00
32.00	33.00	9.97	2.61	3.90	1.28	9.97	2.61	9.63	3.01
33.00	34.00	10.00	2.61	3.91	1.28	10.00	2.61	9.68	3.03
34.00	35.00	10.02	2.62	3.92	1.29	10.02	2.62	9.73	3.05
35.00	36.00	10.05	2.63	3.93	1.29	10.05	2.63	9.79	3.06
36.00	37.00	10.07	2.63	3.94	1.29	10.07	2.63	9.84	3.08
37.00	38.00	10.10	2.64	3.96	1.30	10.10	2.64	9.89	3.09
38.00	39.00	10.12	2.65	3.97	1.30	10.12	2.65	9.95	3.11
39.00	40.00	10.15	2.65	3.98	1.30	10.15	2.65	10.00	3.12
40.00	41.00	10.17	2.66	3.99	1.31	10.17	2.66	10.05	3.14
41.00	42.00	10.20	2.67	4.00	1.31	10.20	2.67	10.11	3.15
42.00	43.00	10.23	2.67	4.01	1.31	10.23	2.67	10.16	3.17
43.00	44.00	10.25	2.68	4.02	1.32	10.25	2.68	10.21	3.18
44.00	45.00	10.28	2.69	4.03	1.32	10.28	2.69	10.27	3.20
45.00	46.00	10.30	2.70	4.04	1.32	10.30	2.70	10.32	3.21
46.00	47.00	10.33	2.70	4.05	1.33	10.33	2.70	10.37	3.23
47.00	48.00	10.35	2.71	4.06	1.33	10.35	2.71	10.43	3.24
48.00	49.00	10.38	2.72	4.07	1.33	10.38	2.72	10.48	3.26
49.00	50.00	10.41	2.72	4.08	1.34	10.41	2.72	10.54	3.27
50.00	51.00	10.43	2.73	4.09	1.34	10.43	2.73	10.59	3.29

A L Z A D O S

		Sección						
Zona		H	d	Vd	Vcu	Md	Us	As
0.00	1.00	2.10	0.46	3.31	27.60	2.18	4.98	1.59
		1.05	0.62	7.64	37.78	8.65	14.56	4.31
		0.00	0.77	9.70	47.95	12.68	16.79	5.04
1.00	2.00	2.10	0.46	3.32	27.62	2.19	4.99	1.59
		1.05	0.62	7.66	37.81	8.68	14.59	4.32
		0.00	0.77	9.72	48.00	12.73	16.83	5.05
2.00	3.00	2.11	0.46	3.32	27.63	2.19	5.00	1.59
		1.05	0.62	7.67	37.84	8.71	14.63	4.33
		0.00	0.77	9.75	48.05	12.78	16.88	5.06
3.00	4.00	2.11	0.46	3.33	27.65	2.20	5.01	1.60
		1.06	0.62	7.69	37.87	8.74	14.67	4.34
		0.00	0.78	9.77	48.09	12.82	16.93	5.08
4.00	5.00	2.11	0.46	3.33	27.67	2.20	5.03	1.60
		1.06	0.62	7.71	37.90	8.77	14.70	4.35
		0.00	0.78	9.79	48.14	12.87	16.97	5.09
5.00	6.00	2.12	0.46	3.34	27.68	2.21	5.04	1.60
		1.06	0.62	7.72	37.94	8.80	14.74	4.36
		0.00	0.78	9.81	48.19	12.92	17.02	5.10
6.00	7.00	2.12	0.46	3.35	27.70	2.22	5.05	1.61
		1.06	0.62	7.74	37.97	8.83	14.78	4.37
		0.00	0.78	9.84	48.24	12.97	17.07	5.11
7.00	8.00	2.12	0.46	3.35	27.71	2.22	5.06	1.61
		1.06	0.62	7.75	38.00	8.85	14.81	4.38
		0.00	0.78	9.86	48.28	13.02	17.12	5.13

8.00	9.00	2.13	0.46	3.36	27.73	2.23	5.07	1.61
		1.06	0.62	7.77	38.03	8.88	14.85	4.39
		0.00	0.78	9.88	48.33	13.07	17.16	5.14
9.00	10.00	2.13	0.46	3.36	27.75	2.24	5.08	1.62
		1.07	0.62	7.78	38.06	8.91	14.89	4.40
		0.00	0.78	9.91	48.38	13.11	17.21	5.15
10.00	11.00	2.13	0.46	3.37	27.76	2.24	5.09	1.62
		1.07	0.62	7.80	38.09	8.94	14.92	4.41
		0.00	0.78	9.93	48.43	13.16	17.26	5.17
11.00	12.00	2.14	0.46	3.37	27.78	2.25	5.11	1.62
		1.07	0.62	7.82	38.13	8.97	14.96	4.42
		0.00	0.78	9.95	48.47	13.21	17.30	5.18
12.00	13.00	2.14	0.46	3.38	27.79	2.26	5.12	1.63
		1.07	0.62	7.83	38.16	9.00	15.00	4.43
		0.00	0.78	9.98	48.52	13.26	17.35	5.19
13.00	14.00	2.14	0.46	3.38	27.81	2.26	5.13	1.63
		1.07	0.62	7.85	38.19	9.03	15.04	4.44
		0.00	0.78	10.00	48.57	13.31	17.40	5.20
14.00	15.00	2.15	0.46	3.39	27.82	2.27	5.14	1.64
		1.07	0.62	7.86	38.22	9.06	15.07	4.45
		0.00	0.78	10.02	48.62	13.36	17.45	5.22
15.00	16.00	2.15	0.46	3.40	27.84	2.27	5.15	1.64
		1.08	0.62	7.88	38.25	9.09	15.11	4.46
		0.00	0.78	10.05	48.66	13.41	17.49	5.23
16.00	17.00	2.15	0.46	3.40	27.86	2.28	5.16	1.64
		1.08	0.62	7.90	38.28	9.12	15.15	4.47
		0.00	0.78	10.07	48.71	13.46	17.54	5.24
17.00	18.00	2.16	0.46	3.41	27.87	2.29	5.18	1.65
		1.08	0.62	7.91	38.32	9.15	15.18	4.48
		0.00	0.79	10.09	48.76	13.51	17.59	5.26
18.00	19.00	2.16	0.46	3.41	27.89	2.29	5.19	1.65
		1.08	0.62	7.93	38.35	9.18	15.22	4.49
		0.00	0.79	10.12	48.81	13.56	17.64	5.27
19.00	20.00	2.16	0.46	3.42	27.90	2.30	5.20	1.65
		1.08	0.62	7.94	38.38	9.21	15.26	4.50
		0.00	0.79	10.14	48.85	13.61	17.69	5.28
20.00	21.00	2.17	0.46	3.42	27.92	2.31	5.21	1.66
		1.08	0.63	7.96	38.41	9.24	15.30	4.51
		0.00	0.79	10.16	48.90	13.65	17.73	5.30
21.00	22.00	2.17	0.46	3.43	27.94	2.31	5.22	1.66
		1.09	0.63	7.98	38.44	9.27	15.33	4.52
		0.00	0.79	10.18	48.95	13.70	17.78	5.31
22.00	23.00	2.17	0.46	3.44	27.95	2.32	5.23	1.66
		1.09	0.63	7.99	38.47	9.30	15.37	4.53
		0.00	0.79	10.21	49.00	13.75	17.83	5.32
23.00	24.00	2.18	0.46	3.44	27.97	2.33	5.25	1.67
		1.09	0.63	8.01	38.51	9.33	15.41	4.54
		0.00	0.79	10.23	49.04	13.80	17.88	5.34
24.00	25.00	2.18	0.46	3.45	27.98	2.33	5.26	1.67
		1.09	0.63	8.02	38.54	9.36	15.45	4.55
		0.00	0.79	10.25	49.09	13.86	17.93	5.35
25.00	26.00	2.18	0.46	3.45	28.00	2.34	5.27	1.67
		1.09	0.63	8.04	38.57	9.39	15.48	4.56
		0.00	0.79	10.28	49.14	13.91	17.97	5.36
26.00	27.00	2.19	0.46	3.46	28.01	2.35	5.28	1.68
		1.09	0.63	8.06	38.60	9.42	15.52	4.57
		-0.00	0.79	10.30	49.19	13.96	18.02	5.37
27.00	28.00	2.19	0.46	3.46	28.03	2.35	5.29	1.68
		1.09	0.63	8.07	38.63	9.45	15.56	4.58
		-0.00	0.79	10.33	49.23	14.01	18.07	5.39
28.00	29.00	2.19	0.46	3.47	28.05	2.36	5.30	1.68
		1.10	0.63	8.09	38.66	9.48	15.60	4.59
		-0.00	0.79	10.35	49.28	14.06	18.12	5.40
29.00	30.00	2.20	0.46	3.48	28.06	2.36	5.32	1.69
		1.10	0.63	8.10	38.70	9.51	15.63	4.60
		-0.00	0.79	10.37	49.33	14.11	18.17	5.41
30.00	31.00	2.20	0.46	3.48	28.08	2.37	5.33	1.69
		1.10	0.63	8.12	38.73	9.54	15.67	4.61
		-0.00	0.79	10.40	49.38	14.16	18.22	5.43
31.00	32.00	2.20	0.47	3.49	28.09	2.38	5.34	1.70
		1.10	0.63	8.14	38.76	9.57	15.71	4.62
		0.00	0.80	10.42	49.42	14.21	18.26	5.44
32.00	33.00	2.21	0.47	3.49	28.11	2.38	5.35	1.70
		1.10	0.63	8.15	38.79	9.60	15.75	4.63
		0.00	0.80	10.44	49.47	14.26	18.31	5.45
33.00	34.00	2.21	0.47	3.50	28.13	2.39	5.36	1.70
		1.10	0.63	8.17	38.82	9.63	15.78	4.64
		0.00	0.80	10.47	49.52	14.31	18.36	5.47
34.00	35.00	2.21	0.47	3.50	28.14	2.40	5.37	1.71
		1.11	0.63	8.19	38.85	9.66	15.82	4.65
		0.00	0.80	10.49	49.57	14.36	18.41	5.48
35.00	36.00	2.22	0.47	3.51	28.16	2.40	5.39	1.71
		1.11	0.63	8.20	38.88	9.69	15.86	4.66
		0.00	0.80	10.51	49.61	14.42	18.46	5.49
36.00	37.00	2.22	0.47	3.52	28.17	2.41	5.40	1.71
		1.11	0.63	8.22	38.92	9.72	15.90	4.67
		0.00	0.80	10.54	49.66	14.47	18.51	5.51

37.00 38.00	2.22	0.47	3.52	28.19	2.42	5.41	1.72
	1.11	0.63	8.23	38.95	9.76	15.94	4.68
	0.00	0.80	10.56	49.71	14.52	18.56	5.52
38.00 39.00	2.23	0.47	3.53	28.20	2.42	5.42	1.72
	1.11	0.63	8.25	38.98	9.79	15.97	4.69
	0.00	0.80	10.58	49.76	14.57	18.61	5.53
39.00 40.00	2.23	0.47	3.53	28.22	2.43	5.43	1.72
	1.11	0.63	8.27	39.01	9.82	16.01	4.70
	0.00	0.80	10.61	49.80	14.62	18.65	5.55
40.00 41.00	2.23	0.47	3.54	28.24	2.44	5.45	1.73
	1.12	0.63	8.28	39.04	9.85	16.05	4.71
	0.00	0.80	10.63	49.85	14.67	18.70	5.56
41.00 42.00	2.24	0.47	3.54	28.25	2.44	5.46	1.73
	1.12	0.64	8.30	39.07	9.88	16.09	4.72
	0.00	0.80	10.66	49.90	14.73	18.75	5.57
42.00 43.00	2.24	0.47	3.55	28.27	2.45	5.47	1.73
	1.12	0.64	8.32	39.11	9.91	16.13	4.73
	0.00	0.80	10.68	49.95	14.78	18.80	5.59
43.00 44.00	2.24	0.47	3.56	28.28	2.46	5.48	1.74
	1.12	0.64	8.33	39.14	9.94	16.16	4.74
	0.00	0.80	10.70	49.99	14.83	18.85	5.60
44.00 45.00	2.25	0.47	3.56	28.30	2.46	5.49	1.74
	1.12	0.64	8.35	39.17	9.97	16.20	4.75
	0.00	0.81	10.73	50.04	14.88	18.90	5.61
45.00 46.00	2.25	0.47	3.57	28.31	2.47	5.51	1.75
	1.12	0.64	8.36	39.20	10.01	16.24	4.76
	0.00	0.81	10.75	50.09	14.94	18.95	5.63
46.00 47.00	2.25	0.47	3.57	28.33	2.48	5.52	1.75
	1.13	0.64	8.38	39.23	10.04	16.28	4.77
	0.00	0.81	10.78	50.14	14.99	19.00	5.64
47.00 48.00	2.26	0.47	3.58	28.35	2.48	5.53	1.75
	1.13	0.64	8.40	39.26	10.07	16.32	4.78
	0.00	0.81	10.80	50.18	15.04	19.05	5.65
48.00 49.00	2.26	0.47	3.58	28.36	2.49	5.54	1.76
	1.13	0.64	8.41	39.30	10.10	16.36	4.79
	0.00	0.81	10.82	50.23	15.09	19.10	5.67
49.00 50.00	2.26	0.47	3.59	28.38	2.50	5.55	1.76
	1.13	0.64	8.43	39.33	10.13	16.39	4.80
	0.00	0.81	10.85	50.28	15.15	19.15	5.68
50.00 51.00	2.27	0.47	3.60	28.39	2.50	5.57	1.76
	1.13	0.64	8.45	39.36	10.16	16.43	4.81
	0.00	0.81	10.87	50.33	15.20	19.20	5.69

P.B.F. 105.9

P.B.F. 105.9

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CÁLCULO

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CON MÓDULO DE BALASTO DE 1000 Mp/m^3

CON MÓDULO DE BALASTO DE 10.000 Mp/m^3

INTRODUCCION

Se trata de un paso inferior bajo ferrocarril y la solución adoptada es un marco cerrado de hormigón armado de 7.00 m de gálibo horizontal y 5.80 de vertical.

La longitud total de paso es de 34.35 m y en planta presenta un esviaje de 19.65 grados.

El espesor de la losa superior es de 0.80 m y de 0.80 m la inferior, el espesor de los hastíales es también de 0.80 m.

La altura de tierras encima de marco es de 5.25 m y los valores utilizados en el cálculo de pórtico son:

-coeficiente de empuje al reposo de 0.50.

-módulo de balasto comprendido entre 1000.00 y 10000.00 Mp/m^3 . Se realiza el cálculo para ambos valores y se toman los valores máximos de las armaduras obtenidas.

-el tren de cargas utilizado y más desfavorable corresponde al tren de 12 Mp/m de la Instrucción Española siendo el coeficiente de impacto de 1.70 y aplicando una reducción en función de la altura de tierras de:

$\Phi = (h - 1.0) / 10.0 = 0.425$

nos queda un coeficiente de impacto de 1.275 y una sobrecarga sobre el cajón de:

$Q = 12.0 * 1.275 * 2 / (2 *5.25 + 1.43) = 2.56\ Mp/m^2$

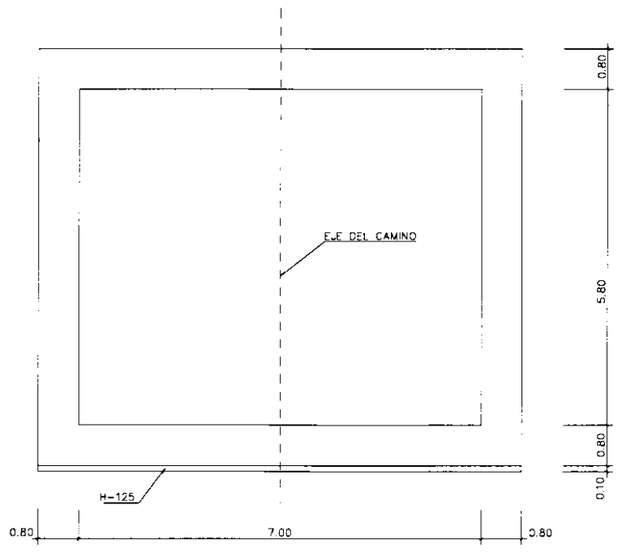
A continuación se procesa un programa de cálculo y armado de porticos cerrados.

El modelo utilizado corresponde al de pórtico plano con cimentación elástica, asimilada unos muelles, cuya rigidez es función del módulo de balasto y del área de influencia de cada nudo coaccionado.

El cálculo se realiza mediante programa de ordenador, basado en la matriz de rigidez y equilibrio de nudos, en dónde se tienen en cuenta las hipótesis básicas de la resistencia de materiales, esto es linealidad geométrica y material despreciando la deformación por esfuerzo cortante.

El cálculo se realiza por m. de estructura.

1.Definición geométrica.



2.Datos generales.

DATOS GENERALES

Modulo de elasticidad del hormigón Ec	1340000.000 T/m²
Densidad del hormigón	2.500 T/m²
Densidad de las tierras	2.000 T/m²
Altura de tierras encima del cajón	5.250 m
Coeficiente de empuje al reposo	0.500
Sobrecarga uniforme por m de tablero	2.56 T/m
Modulo de balasto	1000.000-10000.000 T/m3
Fck del hormigón	250.000 Kg/cm²
Fyk del acero	5100.000 Kg/cm²
Fyα,d del acero Kg/cm2	4200.000 Kg/cm²
Coeficiente de minoración del hormigón	1.500
Coeficiente de minoración del acero	1.150
Coeficiente de mayoración de las acciones	1.600
Recubrimiento	0.030 m

3.Hipótesis de carga.

HIPOTESIS DE CARGAS

-Peso propio

-Carga permanente sobre el dintel

-Empuje de tierras por un lado sin tierras en el dintel

-Empuje de tierras por los dos lados con tierras en el dintel

-Tren de cargas

El modelo utilizado corresponde al de pórtico plano con cimentación elástica, asimilada unos muelles, cuya rigidez es función del módulo de balasto y del área de influencia de cada nudo coaccionado.

El cálculo se realiza mediante programa de ordenador, basado en la matriz de rigidez y equilibrio de nudos, en dónde se tienen en cuenta las hipótesis básicas de la resistencia de materiales, esto es linealidad geométrica y material despreciando la deformación por esfuerzo cortante.

El cálculo se realiza por m. de estructura.

COMBINACION DE HIPOTESIS

El programa calcula, para cada sección, la combinación pésima de hipótesis

compatibles entre si y afectadas por los coeficientes de ponderación:

	Favorable	Desfavorable
Peso propio y cargas permanentes	0.90	1.60
Sobrecargas	0.00	1.60

Las dos hipótesis básicas consideradas son las siguientes:

-Peso propio y empuje de tierras por un solo lado y sin tierras encima

-Peso propio, carga permanente, empuje por los dos lados, tren de cargas en la posición más desfavorable.

ARMADO DE LAS SECCIONES

Con las combinaciones pésimas anteriormente calculadas, se procede al cálculo de las armaduras de flexión y cortante, contemplando las armaduras mínimas, y de acuerdo con la Norma EH-91

4.Resumen de armaduras.

CON MODULO DE BALASTO DE 1000 Mp/m^3

RESUMEN DE ARMADURAS

SECCION		ARMADURAS DE FLEXION				ARMADURA DE CORTANTE	
Dintel.-Empotramiento	inferior	11.58 cm²/m	superior	23.10 cm²/m	cortante	10.76 cm²/m
Dintel.-Cuartos de luz	inferior	22.05 cm²/m	superior	11.58 cm²/m	cortante	0.00 cm²/m
Dintel.-Centro de vano	inferior	37.01 cm²/m	superior	11.58 cm²/m	cortante	0.00 cm²/m
Hastial.-Empot. superior	exterior	18.27 cm²/m	interior	11.58 cm²/m	cortante	0.00 cm²/m
Hastial.-Cuarto superior	exterior	11.58 cm²/m	interior	11.58 cm²/m	cortante	0.00 cm²/m
Hastial.-Centro de vano	exterior	11.58 cm²/m	interior	11.58 cm²/m	cortante	0.00 cm²/m
Hastial.-Cuarto inferior	exterior	11.58 cm²/m	interior	11.58 cm²/m	cortante	0.00 cm²/m
Hastial.-Empotramiento inf	interior	11.58 cm²/m	exterior	21.38 cm²/m	cortante	0.00 cm²/m
Solera.-Empotramiento	inferior	26.54 cm²/m	superior	11.58 cm²/m	cortante	11.37 cm²/m
Solera.-Cuartos de luz	inferior	11.58 cm²/m	superior	24.87 cm²/m	cortante	0.00 cm²/m
Solera.-Centro de vano	inferior	11.58 cm²/m	superior	40.68 cm²/m	cortante	0.00 cm²/m

CON MODULO DE BALASTO DE 10000 Mp/m^3

RESUMEN DE ARMADURAS

SECCION		ARMADURAS DE FLEXION				ARMADURA DE CORTANTE	
Dintel.-Empotramiento	inferior	11.58 cm²/m	superior	24.11 cm²/m	cortante	10.76 cm²/m
Dintel.-Cuartos de luz	inferior	19.82 cm²/m	superior	11.58 cm²/m	cortante	0.00 cm²/m
Dintel.-Centro de vano	inferior	34.68 cm²/m	superior	11.58 cm²/m	cortante	0.00 cm²/m
Hastial.-Empot. superior	exterior	19.77 cm²/m	interior	11.58 cm²/m	cortante	0.00 cm²/m
Hastial.-Cuarto superior	exterior	11.58 cm²/m	interior	11.58 cm²/m	cortante	0.00 cm²/m
Hastial.-Centro de vano	exterior	11.58 cm²/m	interior	11.58 cm²/m	cortante	0.00 cm²/m
Hastial.-Cuarto inferior	exterior	11.58 cm²/m	interior	11.58 cm²/m	cortante	0.00 cm²/m
Hastial.-Empotramiento inf	interior	11.58 cm²/m	exterior	12.92 cm²/m	cortante	0.00 cm²/m
Solera.-Empotramiento	inferior	18.74 cm²/m	superior	11.58 cm²/m	cortante	8.01 cm²/m
Solera.-Cuartos de luz	inferior	11.58 cm²/m	superior	17.97 cm²/m	cortante	0.00 cm²/m
Solera.-Centro de vano	inferior	11.58 cm²/m	superior	20.06 cm²/m	cortante	0.00 cm²/m

5.ALETAS.

10-16-1998

DATOS DE ENTRADA

Proyecto : E1059

Muro ... : Aletas 1 y 4

Longitud muro .... :	10.700 m	Ancho coronacion . :	0.400 m
Talud trasdos .... :	10.000 %	Talud param. ext...:	0.000 %
Sobrecarga terrapl.:	3.000 Tm/m2		
Canto zapata ..... :	1.250 m	Cota solera zapata :	0.000 m
Cota sup. arranque :	4.650 m	Cota sup. extremo :	8.100 m
Cota cono t. arr. :	0.000 m	Cota cono t. extr. :	0.000 m
Coef. roz. zap/terr:	0.550	Tensi¢n cob. adm. :	25.000 Tm/m2
Coef. seg. desliz. :	1.500	Coef. seg. vuelco :	1.500
Densidad tierras . :	2.000 Tm/m3	Ang. talud trasdos :	20.870 deg
Angulo roz. terr.. :	35.000 deg	Ang. roz. hor/terr :	12.000 deg
Kh inclinado ..... :	0.389	Kv inclinado ..... :	0.083
Kh horizontal..... :	0.291	Kv horizontal..... :	0.062
Ang. muro-calz.sup.:	0.000 deg	Dist. mur-calz arrq:	0.000 m
Fck (Kg/cm2)..... :	250.000	Fyk (Kg/cm2)..... :	5100.000
Coef. seg. Horm... :	1.500	Coef. seg. Acero.. :	1.150
Coef. seg. Acciones:	1.500		

ZONA ENTRE 0.00 m Y 1.00 m

RESULTADOS

Secc. de calculo ... :	0.500 m	Altura del alzado .. :	3.561 m
Ancho zarpa delant . :	1.250 m	Ancho total zapata . :	3.400 m
Empuje horizontal .. :	11.877 Tm	Empuje vertical .... :	2.524 Tm
Momento emp. horiz . :	20.217 m*Tm	Momento emp. vertic. :	8.583 m*Tm
Resultante F horiz . :	11.877 Tm	Resultante F vertic. :	32.785 Tm
Resultante M horiz . :	35.063 m*Tm	Resultante M vertic. :	78.434 m*Tm
Coef. seg. desliz. . :	1.518	Coef. seg. vuelco .. :	2.237
Tension cobaric..... :	12.391 Tm/m2		
Sigma max. solera .. :	16.059 Tm/m2	Sigma min. solera .. :	3.226 Tm/m2

ZONA ENTRE 1.00 m Y 2.00 m

RESULTADOS

Secc. de calculo ... :	1.500 m	Altura del alzado .. :	3.884 m
Ancho zarpa delant . :	1.250 m	Ancho total zapata . :	3.600 m
Empuje horizontal .. :	13.713 Tm	Empuje vertical .... :	2.915 Tm
Momento emp. horiz . :	25.314 m*Tm	Momento emp. vertic. :	10.494 m*Tm
Resultante F horiz . :	13.713 Tm	Resultante F vertic. :	37.747 Tm
Resultante M horiz . :	42.456 m*Tm	Resultante M vertic. :	94.485 m*Tm
Coef. seg. desliz. . :	1.514	Coef. seg. vuelco .. :	2.225
Tension cobaric..... :	13.692 Tm/m2		
Sigma max. solera .. :	17.853 Tm/m2	Sigma min. solera .. :	3.117 Tm/m2

ZONA ENTRE 2.00 m Y 3.00 m

RESULTADOS

Secc. de calculo ... :	2.500 m	Altura del alzado .. :	4.206 m
Ancho zarpa delant . :	1.250 m	Ancho total zapata . :	3.800 m
Empuje horizontal .. :	15.674 Tm	Empuje vertical .... :	3.332 Tm
Momento emp. horiz . :	31.168 m*Tm	Momento emp. vertic. :	12.660 m*Tm
Resultante F horiz . :	15.674 Tm	Resultante F vertic. :	43.028 Tm
Resultante M horiz . :	50.760 m*Tm	Resultante M vertic. :	112.455 m*Tm
Coef. seg. desliz. . :	1.510	Coef. seg. vuelco .. :	2.215
Tension cobaric..... :	15.005 Tm/m2		
Sigma max. solera .. :	19.658 Tm/m2	Sigma min. solera .. :	2.988 Tm/m2

ZONA ENTRE 3.00 m Y 4.00 m

RESULTADOS

Secc. de calculo ... :	3.500 m	Altura del alzado .. :	4.529 m
Ancho zarpa delant . :	1.250 m	Ancho total zapata . :	4.000 m
Empuje horizontal .. :	17.757 Tm	Empuje vertical .... :	3.774 Tm
Momento emp. horiz . :	37.829 m*Tm	Momento emp. vertic. :	15.098 m*Tm
Resultante F horiz . :	17.757 Tm	Resultante F vertic. :	48.630 Tm
Resultante M horiz . :	60.025 m*Tm	Resultante M vertic. :	132.451 m*Tm
Coef. seg. desliz. . :	1.506	Coef. seg. vuelco .. :	2.207
Tension cobaric..... :	16.326 Tm/m2		
Sigma max. solera .. :	21.471 Tm/m2	Sigma min. solera .. :	2.844 Tm/m2

ZONA ENTRE 4.00 m Y 5.00 m

RESULTADOS

Secc. de calculo ... :	4.500 m	Altura del alzado .. :	4.851 m
Ancho zarpa delant . :	1.250 m	Ancho total zapata . :	4.200 m
Empuje horizontal .. :	19.965 Tm	Empuje vertical .... :	4.244 Tm
Momento emp. horiz . :	45.344 m*Tm	Momento emp. vertic. :	17.823 m*Tm
Resultante F horiz . :	19.965 Tm	Resultante F vertic. :	54.552 Tm
Resultante M horiz . :	70.300 m*Tm	Resultante M vertic. :	154.577 m*Tm
Coef. seg. desliz. . :	1.503	Coef. seg. vuelco .. :	2.199
Tension cobaric..... :	17.655 Tm/m2		
Sigma max. solera .. :	23.288 Tm/m2	Sigma min. solera .. :	2.689 Tm/m2

ZONA ENTRE 5.00 m Y 6.00 m

RESULTADOS

Secc. de calculo ... :	5.500 m	Altura del alzado .. :	5.173 m
Ancho zarpa delant . :	1.250 m	Ancho total zapata . :	4.600 m
Empuje horizontal .. :	22.755 Tm	Empuje vertical .... :	4.837 Tm
Momento emp. horiz . :	55.482 m*Tm	Momento emp. vertic. :	22.249 m*Tm
Resultante F horiz . :	22.755 Tm	Resultante F vertic. :	64.620 Tm
Resultante M horiz . :	83.926 m*Tm	Resultante M vertic. :	197.119 m*Tm
Coef. seg. desliz. . :	1.562	Coef. seg. vuelco .. :	2.349
Tension cobaric..... :	18.445 Tm/m2		
Sigma max. solera .. :	24.095 Tm/m2	Sigma min. solera .. :	4.001 Tm/m2

ZONA ENTRE 6.00 m Y 7.00 m

RESULTADOS

Secc. de calculo ... :	6.500 m	Altura del alzado .. :	5.496 m
Ancho zarpa delant . :	1.250 m	Ancho total zapata . :	4.800 m
Empuje horizontal .. :	25.233 Tm	Empuje vertical .... :	5.363 Tm
Momento emp. horiz . :	65.044 m*Tm	Momento emp. vertic. :	25.745 m*Tm
Resultante F horiz . :	25.233 Tm	Resultante F vertic. :	71.346 Tm
Resultante M horiz . :	96.586 m*Tm	Resultante M vertic. :	225.468 m*Tm
Coef. seg. desliz. . :	1.555	Coef. seg. vuelco .. :	2.334
Tension cobaric..... :	19.748 Tm/m2		
Sigma max. solera .. :	25.892 Tm/m2	Sigma min. solera .. :	3.836 Tm/m2

ZONA ENTRE 7.00 m Y 8.00 m

RESULTADOS

Secc. de calculo ... :	7.500 m	Altura del alzado .. :	5.818 m
Ancho zarpa delant . :	1.250 m	Ancho total zapata . :	5.000 m
Empuje horizontal .. :	27.835 Tm	Empuje vertical .... :	5.916 Tm
Momento emp. horiz . :	75.619 m*Tm	Momento emp. vertic. :	29.582 m*Tm
Resultante F horiz . :	27.835 Tm	Resultante F vertic. :	78.392 Tm
Resultante M horiz . :	110.412 m*Tm	Resultante M vertic. :	256.336 m*Tm
Coef. seg. desliz. . :	1.549	Coef. seg. vuelco .. :	2.322
Tension cobaric..... :	21.056 Tm/m2		
Sigma max. solera .. :	27.692 Tm/m2	Sigma min. solera .. :	3.665 Tm/m2

ZONA ENTRE 8.00 m Y 9.00 m

RESULTADOS

Secc. de calculo ... :	8.500 m	Altura del alzado .. :	6.141 m
Ancho zarpa delant . :	1.250 m	Ancho total zapata . :	5.200 m
Empuje horizontal .. :	30.560 Tm	Empuje vertical .... :	6.496 Tm
Momento emp. horiz . :	87.256 m*Tm	Momento emp. vertic. :	33.777 m*Tm
Resultante F horiz . :	30.560 Tm	Resultante F vertic. :	85.757 Tm
Resultante M horiz . :	125.455 m*Tm	Resultante M vertic. :	289.828 m*Tm
Coef. seg. desliz. . :	1.543	Coef. seg. vuelco .. :	2.310
Tension cobaric..... :	22.371 Tm/m2		
Sigma max. solera .. :	29.494 Tm/m2	Sigma min. solera .. :	3.490 Tm/m2

ZONA ENTRE 9.00 m Y 10.00 m

RESULTADOS

Secc. de calculo ... :	9.500 m	Altura del alzado .. :	6.463 m
Ancho zarpa delant . :	1.250 m	Ancho total zapata . :	5.600 m
Empuje horizontal .. :	33.967 Tm	Empuje vertical .... :	7.220 Tm
Momento emp. horiz . :	102.572 m*Tm	Momento emp. vertic. :	40.431 m*Tm
Resultante F horiz . :	33.967 Tm	Resultante F vertic. :	97.959 Tm
Resultante M horiz . :	145.031 m*Tm	Resultante M vertic. :	352.320 m*Tm
Coef. seg. desliz. . :	1.586	Coef. seg. vuelco .. :	2.429
Tension cobaric..... :	23.146 Tm/m2		
Sigma max. solera .. :	30.311 Tm/m2	Sigma min. solera .. :	4.675 Tm/m2

ZONA ENTRE 10.00 m Y 10.70 m

RESULTADOS

Secc. de calculo ... :	10.350 m	Altura del alzado .. :	6.737 m
Ancho zarpa delant . :	1.250 m	Ancho total zapata . :	6.000 m
Empuje horizontal .. :	37.177 Tm	Empuje vertical .... :	7.902 Tm
Momento emp. horiz . :	117.741 m*Tm	Momento emp. vertic. :	47.413 m*Tm
Resultante F horiz . :	37.177 Tm	Resultante F vertic. :	110.277 Tm
Resultante M horiz . :	164.212 m*Tm	Resultante M vertic. :	420.543 m*Tm
Coef. seg. desliz. . :	1.631	Coef. seg. vuelco .. :	2.561
Tension cobaric..... :	23.721 Tm/m2		
Sigma max. solera .. :	30.796 Tm/m2	Sigma min. solera .. :	5.963 Tm/m2

RESULTADOS

Coeficiente global de seg. al deslizamiento ...	1.6
Coeficiente global de seg. al vuelco	2.4
Tension maxima en solera (Tm/m2)	30.8

ZONA ENTRE 0.00 m Y 1.00 m

RESULTADOS

Secc. de calculo ... :	0.500 m	Altura del alzado .. :	3.561 m
Ancho zarpa delant . :	1.250 m	Ancho total zapata . :	3.521 m
Resultante F horiz . :	12.084 Tm	Resultante F vertic. :	34.606 Tm
Resultante M horiz . :	35.876 m*Tm	Resultante M vertic. :	85.047 m*Tm
Coef. seg. desliz. . :	1.575	Coef. seg. vuelco .. :	2.371
Tension cobaric..... :	12.178 Tm/m2		
Tension max. solera :	15.518 Tm/m2	Tension min. solera :	4.136 Tm/m2

NOTA: Los momentos estan referidos al vertice inferior de la zarpa delantera de la zapata

ARMADURA ZARPA DELANTERA

Vd	19.651 Tm	Md	13.090	m*Tm
Vcuo	77.460 Tm	Us	10.639	Tm
		As	3.439	cm2/m

ARMADURA ZARPA TRASERA

Vd	14.164 Tm	Md	15.432	m*Tm
Vcuo	77.460 Tm	Us	12.554	Tm
		As	4.024	cm2/m

ARMADURA ALZADO MURO

SECCION H = 2.67 M (D=0.49 M) :

Vd	4.841 Tm	Md	3.260	m*Tm
Vcuo	28.985 Tm	Us	7.111	Tm
		As	2.215	cm2/m

SECCION H = 1.78 M (D=0.58 M) :

Vd	9.456 Tm	Md	10.171	m*Tm
Vcuo	34.732 Tm	Us	18.722	Tm
		As	5.231	cm2/m

SECCION H = 0.89 M (D=0.67 M) :

Vd	15.189 Tm	Md	22.149	m*Tm
Vcuo	40.479 Tm	Us	35.418	Tm
		As	8.597	cm2/m

SECCION H = 0.00 M (D=0.76 M) :

Vd	16.921 Tm	Md	26.373	m*Tm
Vcuo	46.225 Tm	Us	36.825	Tm
		As	9.253	cm2/m

ZONA ENTRE 1.00 m Y 2.00 m

RESULTADOS

Secc. de calculo ... :	1.500 m	Altura del alzado .. :	3.884 m
Ancho zarpa delant . :	1.250 m	Ancho total zapata . :	3.764 m
Resultante F horiz . :	14.014 Tm	Resultante F vertic. :	40.350 Tm
Resultante M horiz . :	43.700 m*Tm	Resultante M vertic. :	104.557 m*Tm
Coef. seg. desliz. . :	1.584	Coef. seg. vuelco .. :	2.393
Tension cobaric..... :	13.377 Tm/m2		
Tension max. solera :	17.109 Tm/m2	Tension min. solera :	4.329 Tm/m2

NOTA: Los momentos estan referidos al vertice inferior de la zarpa delantera de la zapata

ARMADURA ZARPA DELANTERA

Vd	22.466 Tm	Md	14.890	m*Tm
Vcuo	77.460 Tm	Us	12.111	Tm
		As	3.890	cm2/m

ARMADURA ZARPA TRASERA

Vd	16.406 Tm	Md	20.743	m*Tm
Vcuo	77.460 Tm	Us	16.912	Tm
		As	5.317	cm2/m

ARMADURA ALZADO MURO

SECCION H = 2.91 M (D=0.50 M) :

Vd	5.413 Tm	Md	3.887	m*Tm
Vcuo	29.505 Tm	Us	8.340	Tm
		As	2.564	cm2/m

SECCION H = 1.94 M (D=0.59 M) :

Vd	10.727 Tm	Md	12.388	m*Tm
Vcuo	35.772 Tm	Us	22.208	Tm
		As	6.006	cm2/m

SECCION H = 0.97 M (D=0.69 M) :

Vd	17.370 Tm	Md	27.275	m*Tm
Vcuo	42.040 Tm	Us	42.190	Tm
		As	9.648	cm2/m

SECCION H = 0.00 M (D=0.79 M) :

Vd	19.617 Tm	Md	33.183	m*Tm
Vcuo	48.307 Tm	Us	44.540	Tm
		As	10.582	cm2/m

ZONA ENTRE 2.00 m Y 3.00 m

RESULTADOS

Secc. de calculo ... :	2.500 m	Altura del alzado .. :	4.206 m
Ancho zarpa delant . :	1.250 m	Ancho total zapata . :	4.007 m
Resultante F horiz . :	16.077 Tm	Resultante F vertic. :	46.487 Tm
Resultante M horiz . :	52.521 m*Tm	Resultante M vertic. :	126.656 m*Tm
Coef. seg. desliz. . :	1.590	Coef. seg. vuelco .. :	2.412
Tension cobaric..... :	14.575 Tm/m2		
Tension max. solera :	18.703 Tm/m2	Tension min. solera :	4.497 Tm/m2

NOTA: Los momentos estan referidos al vertice inferior de la zarpa delantera de la zapata

ARMADURA ZARPA DELANTERA

Vd	25.302 Tm	Md	16.700	m*Tm
Vcuo	77.460 Tm	Us	13.593	Tm
		As	4.337	cm2/m

ARMADURA ZARPA TRASERA

Vd	18.748 Tm	Md	27.098	m*Tm
Vcuo	77.460 Tm	Us	22.152	Tm
		As	6.801	cm2/m

ARMADURA ALZADO MURO

SECCION H = 3.15 M (D=0.51 M) :

Vd	6.015 Tm	Md	4.587	m*Tm
Vcuo	30.025 Tm	Us	9.688	Tm
		As	2.936	cm2/m

SECCION H = 2.10 M (D=0.61 M) :

Vd	12.075 Tm	Md	14.900	m*Tm
Vcuo	36.813 Tm	Us	26.040	Tm
		As	6.797	cm2/m

SECCION H = 1.05 M (D=0.72 M) :

Vd	19.694 Tm	Md	33.124	m*Tm
Vcuo	43.600 Tm	Us	49.640	Tm
		As	11.193	cm2/m

SECCION H = 0.00 M (D=0.82 M) :

Vd	22.507 Tm	Md	41.054	m*Tm
Vcuo	50.388 Tm	Us	53.077	Tm
		As	11.968	cm2/m

ZONA ENTRE 3.00 m Y 4.00 m

RESULTADOS

Secc. de calculo ... :	3.500 m	Altura del alzado .. :	4.529 m
Ancho zarpa delant . :	1.250 m	Ancho total zapata . :	4.250 m
Resultante F horiz . :	18.275 Tm	Resultante F vertic. :	53.015 Tm
Resultante M horiz . :	62.392 m*Tm	Resultante M vertic. :	151.501 m*Tm
Coef. seg. desliz. . :	1.596	Coef. seg. vuelco .. :	2.428
Tension cobaric..... :	15.771 Tm/m2		
Tension max. solera :	20.298 Tm/m2	Tension min. solera :	4.648 Tm/m2

NOTA: Los momentos estan referidos al vertice inferior de la zarpa delantera de la zapata

ARMADURA ZARPA DELANTERA

Vd	28.154 Tm	Md	18.517	m*Tm
Vcuo	77.460 Tm	Us	15.083	Tm
		As	4.781	cm2/m

ARMADURA ZARPA TRASERA

Vd	21.182 Tm	Md	34.582	m*Tm
Vcuo	77.460 Tm	Us	28.357	Tm
		As	8.458	cm2/m

ARMADURA ALZADO MURO

SECCION H = 3.40 M (D=0.51 M) :

Vd	6.649 Tm	Md	5.366	m*Tm
Vcuo	30.546 Tm	Us	11.158	Tm
		As	3.329	cm2/m

SECCION H = 2.26 M (D=0.63 M) :

Vd	13.500 Tm	Md	17.726	m*Tm
Vcuo	37.854 Tm	Us	30.227	Tm
		As	7.589	cm2/m

SECCION H = 1.13 M (D=0.74 M) :

Vd	22.159 Tm	Md	39.744	m*Tm
Vcuo	45.161 Tm	Us	57.786	Tm
		As	13.030	cm2/m

SECCION H = 0.00 M (D=0.85 M) :

Vd	25.590 Tm	Md	50.062	m*Tm
Vcuo	52.469 Tm	Us	62.456	Tm
		As	14.083	cm2/m

ZONA ENTRE 4.00 m Y 5.00 m

RESULTADOS

Secc. de calculo ... :	4.500 m	Altura del alzado .. :	4.851 m
Ancho zarpa delant . :	1.250 m	Ancho total zapata . :	4.493 m
Resultante F horiz . :	20.606 Tm	Resultante F vertic. :	59.936 Tm
Resultante M horiz . :	73.372 m*Tm	Resultante M vertic. :	179.249 m*Tm
Coef. seg. desliz. . :	1.600	Coef. seg. vuelco .. :	2.443
Tension cobaric..... :	16.965 Tm/m2		
Tension max. solera :	21.892 Tm/m2	Tension min. solera :	4.785 Tm/m2

NOTA: Los momentos estan referidos al vertice inferior de la zarpa delantera de la zapata

ARMADURA ZARPA DELANTERA

Vd	31.019 Tm	Md	20.339	m*Tm
Vcuo	77.460 Tm	Us	16.580	Tm
		As	5.220	cm2/m

ARMADURA ZARPA TRASERA

Vd	23.706 Tm	Md	43.280	m*Tm
Vcuo	77.460 Tm	Us	35.615	Tm
		As	10.259	cm2/m

ARMADURA ALZADO MURO

SECCION H = 3.64 M (D=0.52 M) :

Vd	7.313 Tm	Md	6.228	m*Tm
Vcuo	31.066 Tm	Us	12.754	Tm
		As	3.742	cm2/m

SECCION H = 2.43 M (D=0.64 M) :

Vd	15.003 Tm	Md	20.883	m*Tm
Vcuo	38.894 Tm	Us	34.778	Tm
		As	8.368	cm2/m

SECCION H = 1.21 M (D=0.76 M) :

Vd	24.768 Tm	Md	47.181	m*Tm
Vcuo	46.722 Tm	Us	66.644	Tm
		As	15.028	cm2/m

SECCION H = 0.00 M (D=0.89 M) :

Vd	28.866 Tm	Md	60.281	m*Tm
Vcuo	54.551 Tm	Us	72.695	Tm
		As	16.392	cm2/m

ZONA ENTRE 5.00 m Y 6.00 m

RESULTADOS

Secc. de calculo ... :	5.500 m	Altura del alzado .. :	5.173 m
Ancho zarpa delant . :	1.250 m	Ancho total zapata . :	4.736 m
Resultante F horiz . :	23.072 Tm	Resultante F vertic. :	67.249 Tm
Resultante M horiz . :	85.514 m*Tm	Resultante M vertic. :	210.056 m*Tm
Coef. seg. desliz. . :	1.603	Coef. seg. vuelco .. :	2.456
Tension cobaric..... :	18.156 Tm/m2		
Tension max. solera :	23.484 Tm/m2	Tension min. solera :	4.913 Tm/m2

NOTA: Los momentos estan referidos al vertice inferior de la zarpa delantera de la zapata

ARMADURA ZARPA DELANTERA

Vd	33.893 Tm	Md	22.164	m*Tm
Vcuo	77.460 Tm	Us	18.081	Tm
		As	5.655	cm2/m

ARMADURA ZARPA TRASERA

Vd	26.314 Tm	Md	53.274	m*Tm
Vcuo	77.460 Tm	Us	44.019	Tm
		As	12.158	cm2/m

ARMADURA ALZADO MURO

SECCION H = 3.88 M (D=0.53 M) :

Vd	8.008 Tm	Md	7.175	m*Tm
Vcuo	31.586 Tm	Us	14.479	Tm
		As	4.173	cm2/m

SECCION H = 2.59 M (D=0.66 M) :

Vd	16.583 Tm	Md	24.389	m*Tm
Vcuo	39.935 Tm	Us	39.702	Tm
		As	9.120	cm2/m

SECCION H = 1.29 M (D=0.79 M) :

Vd	27.518 Tm	Md	55.482	m*Tm
Vcuo	48.283 Tm	Us	76.229	Tm
		As	17.189	cm2/m

SECCION H = 0.00 M (D=0.92 M) :

Vd	32.335 Tm	Md	71.787	m*Tm
Vcuo	56.632 Tm	Us	83.810	Tm
		As	18.898	cm2/m

ZONA ENTRE 6.00 m Y 7.00 m

RESULTADOS

Secc. de calculo ... :	6.500 m	Altura del alzado .. :	5.496 m
Ancho zarpa delant . :	1.250 m	Ancho total zapata . :	4.979 m
Resultante F horiz . :	25.671 Tm	Resultante F vertic. :	74.954 Tm
Resultante M horiz . :	98.874 m*Tm	Resultante M vertic. :	244.080 m*Tm
Coef. seg. desliz. . :	1.606	Coef. seg. vuelco .. :	2.469
Tension cobaric..... :	19.345 Tm/m2		
Tension max. solera :	25.073 Tm/m2	Tension min. solera :	5.033 Tm/m2

NOTA: Los momentos estan referidos al vertice inferior de la zarpa delantera de la zapata

ARMADURA ZARPA DELANTERA

Vd	36.774 Tm	Md	23.990	m*Tm
Vcuo	77.460 Tm	Us	19.586	Tm
		As	6.084	cm2/m

ARMADURA ZARPA TRASERA

Vd	29.004 Tm	Md	64.648	m*Tm
Vcuo	77.460 Tm	Us	53.665	Tm
		As	14.093	cm2/m

ARMADURA ALZADO MURO

SECCION H = 4.12 M (D=0.54 M) :

Vd	8.733 Tm	Md	8.213	m*Tm
Vcuo	32.107 Tm	Us	16.336	Tm
		As	4.618	cm2/m

SECCION H = 2.75 M (D=0.67 M) :

Vd	18.241 Tm	Md	28.263	m*Tm
Vcuo	40.975 Tm	Us	45.005	Tm
		As	10.148	cm2/m

SECCION H = 1.37 M (D=0.81 M) :

Vd	30.411 Tm	Md	64.694	m*Tm
Vcuo	49.844 Tm	Us	86.558	Tm
		As	19.518	cm2/m

SECCION H = 0.00 M (D=0.95 M) :

Vd	35.998 Tm	Md	84.655	m*Tm
Vcuo	58.713 Tm	Us	95.821	Tm
		As	21.607	cm2/m

ZONA ENTRE 7.00 m Y 8.00 m

RESULTADOS

Secc. de calculo ... :	7.500 m	Altura del alzado .. :	5.818 m
Ancho zarpa delant . :	1.250 m	Ancho total zapata . :	5.222 m
Resultante F horiz . :	28.404 Tm	Resultante F vertic. :	83.051 Tm
Resultante M horiz . :	113.509 m*Tm	Resultante M vertic. :	281.478 m*Tm
Coef. seg. desliz. . :	1.608	Coef. seg. vuelco .. :	2.480
Tension cobaric..... :	20.532 Tm/m2		
Tension max. solera :	26.659 Tm/m2	Tension min. solera :	5.147 Tm/m2

NOTA: Los momentos estan referidos al vertice inferior de la zarpa delantera de la zapata

ARMADURA ZARPA DELANTERA

Vd	39.660 Tm	Md	25.817	m*Tm
Vcuo	77.460 Tm	Us	21.094	Tm
		As	6.508	cm2/m

ARMADURA ZARPA TRASERA

Vd	31.739 Tm	Md	77.484	m*Tm
Vcuo	77.460 Tm	Us	64.655	Tm
		As	15.977	cm2/m

ARMADURA ALZADO MURO

SECCION H = 4.36 M (D=0.55 M) :

Vd	9.490 Tm	Md	9.346	m*Tm
Vcuo	32.627 Tm	Us	18.329	Tm
		As	5.075	cm2/m

SECCION H = 2.91 M (D=0.69 M) :

Vd	19.976 Tm	Md	32.522	m*Tm
Vcuo	42.016 Tm	Us	50.698	Tm
		As	11.432	cm2/m

SECCION H = 1.45 M (D=0.84 M) :

Vd	33.447 Tm	Md	74.865	m*Tm
Vcuo	51.405 Tm	Us	97.646	Tm
		As	22.018	cm2/m

SECCION H = 0.00 M (D=0.98 M) :

Vd	39.854 Tm	Md	98.960	m*Tm
Vcuo	60.794 Tm	Us	108.744	Tm
		As	24.521	cm2/m

ZONA ENTRE 8.00 m Y 9.00 m

RESULTADOS

Secc. de calculo ... :	8.500 m	Altura del alzado .. :	6.141 m
Ancho zarpa delant . :	1.250 m	Ancho total zapata . :	5.465 m
Resultante F horiz . :	31.271 Tm	Resultante F vertic. :	91.539 Tm
Resultante M horiz . :	129.473 m*Tm	Resultante M vertic. :	322.406 m*Tm
Coef. seg. desliz. . :	1.610	Coef. seg. vuelco .. :	2.490
Tension cobaric..... :	21.716 Tm/m2		
Tension max. solera :	28.242 Tm/m2	Tension min. solera :	5.256 Tm/m2

NOTA: Los momentos estan referidos al vertice inferior de la zarpa delantera de la zapata

ARMADURA ZARPA DELANTERA

Vd	42.550 Tm	Md	27.645	m*Tm
Vcuo	77.460 Tm	Us	22.604	Tm
		As	6.925	cm2/m

ARMADURA ZARPA TRASERA

Vd	34.577 Tm	Md	91.863	m*Tm
Vcuo	77.460 Tm	Us	77.098	Tm
		As	17.700	cm2/m

ARMADURA ALZADO MURO

SECCION H = 4.61 M (D=0.55 M) :

Vd	10.277 Tm	Md	10.577	m*Tm
Vcuo	33.147 Tm	Us	20.460	Tm
		As	5.542	cm2/m

SECCION H = 3.07 M (D=0.71 M) :

Vd	21.789 Tm	Md	37.185	m*Tm
Vcuo	43.057 Tm	Us	56.787	Tm
		As	12.805	cm2/m

SECCION H = 1.54 M (D=0.86 M) :

Vd	36.624 Tm	Md	86.040	m*Tm
Vcuo	52.966 Tm	Us	109.509	Tm
		As	24.693	cm2/m

SECCION H = 0.00 M (D=1.01 M) :

Vd	43.904 Tm	Md	114.778	m*Tm
Vcuo	62.876 Tm	Us	122.595	Tm
		As	27.644	cm2/m

ZONA ENTRE 9.00 m Y 10.00 m

RESULTADOS

Secc. de calculo ... :	9.500 m	Altura del alzado .. :	6.463 m
Ancho zarpa delant . :	1.250 m	Ancho total zapata . :	5.708 m
Resultante F horiz . :	34.272 Tm	Resultante F vertic. :	100.420 Tm
Resultante M horiz . :	146.822 m*Tm	Resultante M vertic. :	367.023 m*Tm
Coef. seg. desliz. . :	1.612	Coef. seg. vuelco .. :	2.500
Tension cobaric..... :	22.898 Tm/m2		
Tension max. solera :	29.821 Tm/m2	Tension min. solera :	5.362 Tm/m2

NOTA: Los momentos estan referidos al vertice inferior de la zarpa delantera de la zapata

ARMADURA ZARPA DELANTERA

Vd	45.442 Tm	Md	29.472	m*Tm
Vcuo	77.460 Tm	Us	24.116	Tm
		As	7.337	cm2/m

ARMADURA ZARPA TRASERA

Vd	37.490 Tm	Md	107.868	m*Tm
Vcuo	77.460 Tm	Us	91.112	Tm
		As	20.545	cm2/m

ARMADURA ALZADO MURO

SECCION H = 4.85 M (D=0.56 M) :

Vd	11.095 Tm	Md	11.911	m*Tm
Vcuo	33.668 Tm	Us	22.733	Tm
		As	6.013	cm2/m

SECCION H = 3.23 M (D=0.72 M) :

Vd	23.679 Tm	Md	42.270	m*Tm
Vcuo	44.097 Tm	Us	63.280	Tm
		As	14.269	cm2/m

SECCION H = 1.62 M (D=0.88 M) :

Vd	39.945 Tm	Md	98.267	m*Tm
Vcuo	54.527 Tm	Us	122.163	Tm
		As	27.546	cm2/m

SECCION H = 0.00 M (D=1.05 M) :

Vd	48.146 Tm	Md	132.184	m*Tm
Vcuo	64.957 Tm	Us	137.393	Tm
		As	30.981	cm2/m

ZONA ENTRE 10.00 m Y 10.70 m

RESULTADOS

Secc. de calculo ... :	10.350 m	Altura del alzado .. :	6.737 m
Ancho zarpa delant . :	1.250 m	Ancho total zapata . :	5.915 m
Resultante F horiz . :	36.928 Tm	Resultante F vertic. :	108.278 Tm
Resultante M horiz . :	162.699 m*Tm	Resultante M vertic. :	407.964 m*Tm
Coef. seg. desliz. . :	1.613	Coef. seg. vuelco .. :	2.507
Tension cobaric..... :	23.901 Tm/m2		
Tension max. solera :	31.162 Tm/m2	Tension min. solera :	5.450 Tm/m2

NOTA: Los momentos estan referidos al vertice inferior de la zarpa delantera de la zapata

ARMADURA ZARPA DELANTERA

Vd	47.901 Tm	Md	31.025	m*Tm
Vcuo	77.460 Tm	Us	25.403	Tm
		As	7.683	cm2/m

ARMADURA ZARPA TRASERA

Vd	40.016 Tm	Md	122.810	m*Tm
Vcuo	77.460 Tm	Us	104.351	Tm
		As	23.530	cm2/m

ARMADURA ALZADO MURO

SECCION H = 5.05 M (D=0.57 M) :

Vd	11.815 Tm	Md	13.128	m*Tm
Vcuo	34.110 Tm	Us	24.778	Tm
		As	6.416	cm2/m

SECCION H = 3.37 M (D=0.74 M) :

Vd	25.346 Tm	Md	46.937	m*Tm
Vcuo	44.982 Tm	Us	69.123	Tm
		As	15.587	cm2/m

SECCION H = 1.68 M (D=0.91 M) :

Vd	42.879 Tm	Md	109.521	m*Tm
Vcuo	55.854 Tm	Us	133.551	Tm
		As	30.114	cm2/m

SECCION H = 0.00 M (D=1.07 M) :

Vd	51.905 Tm	Md	148.283	m*Tm
Vcuo	66.726 Tm	Us	150.728	Tm
		As	33.988	cm2/m

10-16-1998

DATOS DE ENTRADA

Proyecto : E1059

Muro ... : Aletas 2 y 3

Longitud muro .... :	8.250 m	Ancho coronacion . :	0.400 m
Talud trasdos .... :	10.000 %	Talud param. ext...:	0.000 %
Sobrecarga terrapl.:	3.000 Tm/m2		
Canto zapata ..... :	0.800 m	Cota solera zapata :	0.000 m
Cota sup. arranque :	3.600 m	Cota sup. extremo :	7.650 m
Cota cono t. arr. :	0.000 m	Cota cono t. extr. :	0.000 m
Coef. roz. zap/terr:	0.550	Tensi¢n cob. adm. :	25.000 Tm/m2
Coef. seg. desliz. :	1.500	Coef. seg. vuelco :	1.500
Densidad tierras . :	2.000 Tm/m3	Ang. talud trasdos :	5.110 deg
Angulo roz. terr.. :	35.000 deg	Ang. roz. hor/terr :	12.000 deg
Kh inclinado ..... :	0.308	Kv inclinado ..... :	0.065
Kh horizontal..... :	0.291	Kv horizontal..... :	0.062
Ang. muro-calz.sup.:	0.000 deg	Dist. mur-calz arrq:	0.000 m
Fck (Kg/cm2)..... :	250.000	Fyk (Kg/cm2)..... :	5100.000
Coef. seg. Horm... :	1.500	Coef. seg. Acero.. :	1.150
Coef. seg. Acciones:	1.500		

ZONA ENTRE 0.00 m Y 1.00 m

RESULTADOS

Secc. de calculo ... :	0.500 m	Altura del alzado .. :	3.045 m
Ancho zarpa delant . :	1.000 m	Ancho total zapata . :	2.400 m
Empuje horizontal .. :	5.921 Tm	Empuje vertical .... :	1.258 Tm
Momento emp. horiz . :	7.701 m*Tm	Momento emp. vertic. :	3.020 m*Tm
Resultante F horiz . :	5.921 Tm	Resultante F vertic. :	16.916 Tm
Resultante M horiz . :	12.438 m*Tm	Resultante M vertic. :	29.441 m*Tm
Coef. seg. desliz. . :	1.571	Coef. seg. vuelco .. :	2.367
Tension cobaric..... :	8.415 Tm/m2		
Sigma max. solera .. :	10.482 Tm/m2	Sigma min. solera .. :	3.615 Tm/m2

ZONA ENTRE 1.00 m Y 2.00 m

RESULTADOS

Secc. de calculo ... :	1.500 m	Altura del alzado .. :	3.536 m
Ancho zarpa delant . :	1.000 m	Ancho total zapata . :	2.600 m
Empuje horizontal .. :	7.452 Tm	Empuje vertical .... :	1.584 Tm
Momento emp. horiz . :	11.097 m*Tm	Momento emp. vertic. :	4.119 m*Tm
Resultante F horiz . :	7.452 Tm	Resultante F vertic. :	21.249 Tm
Resultante M horiz . :	17.059 m*Tm	Resultante M vertic. :	39.255 m*Tm
Coef. seg. desliz. . :	1.568	Coef. seg. vuelco .. :	2.301
Tension cobaric..... :	10.171 Tm/m2		
Sigma max. solera .. :	12.990 Tm/m2	Sigma min. solera .. :	3.355 Tm/m2

ZONA ENTRE 2.00 m Y 3.00 m

RESULTADOS

Secc. de calculo ... :	2.500 m	Altura del alzado .. :	4.027 m
Ancho zarpa delant . :	1.000 m	Ancho total zapata . :	2.800 m
Empuje horizontal .. :	9.143 Tm	Empuje vertical .... :	1.943 Tm
Momento emp. horiz . :	15.312 m*Tm	Momento emp. vertic. :	5.442 m*Tm
Resultante F horiz . :	9.143 Tm	Resultante F vertic. :	26.028 Tm
Resultante M horiz . :	22.627 m*Tm	Resultante M vertic. :	50.846 m*Tm
Coef. seg. desliz. . :	1.566	Coef. seg. vuelco .. :	2.247
Tension cobaric..... :	12.003 Tm/m2		
Sigma max. solera .. :	15.586 Tm/m2	Sigma min. solera .. :	3.005 Tm/m2

ZONA ENTRE 3.00 m Y 4.00 m

RESULTADOS

Secc. de calculo ... :	3.500 m	Altura del alzado .. :	4.518 m
Ancho zarpa delant . :	1.000 m	Ancho total zapata . :	3.000 m
Empuje horizontal .. :	10.994 Tm	Empuje vertical .... :	2.337 Tm
Momento emp. horiz . :	20.428 m*Tm	Momento emp. vertic. :	7.010 m*Tm
Resultante F horiz . :	10.994 Tm	Resultante F vertic. :	31.252 Tm
Resultante M horiz . :	29.223 m*Tm	Resultante M vertic. :	64.356 m*Tm
Coef. seg. desliz. . :	1.564	Coef. seg. vuelco .. :	2.202
Tension cobaric..... :	13.900 Tm/m2		
Sigma max. solera .. :	18.248 Tm/m2	Sigma min. solera .. :	2.587 Tm/m2

ZONA ENTRE 4.00 m Y 5.00 m

RESULTADOS

Secc. de calculo ... :	4.500 m	Altura del alzado .. :	5.009 m
Ancho zarpa delant . :	1.000 m	Ancho total zapata . :	3.200 m
Empuje horizontal .. :	13.004 Tm	Empuje vertical .... :	2.764 Tm
Momento emp. horiz . :	26.527 m*Tm	Momento emp. vertic. :	8.845 m*Tm
Resultante F horiz . :	13.004 Tm	Resultante F vertic. :	36.923 Tm
Resultante M horiz . :	36.930 m*Tm	Resultante M vertic. :	79.927 m*Tm
Coef. seg. desliz. . :	1.562	Coef. seg. vuelco .. :	2.164
Tension cobaric..... :	15.853 Tm/m2		
Sigma max. solera .. :	20.960 Tm/m2	Sigma min. solera .. :	2.117 Tm/m2

ZONA ENTRE 5.00 m Y 6.00 m

RESULTADOS

Secc. de calculo ... :	5.500 m	Altura del alzado .. :	5.500 m
Ancho zarpa delant . :	1.000 m	Ancho total zapata . :	3.400 m
Empuje horizontal .. :	15.173 Tm	Empuje vertical .... :	3.225 Tm
Momento emp. horiz . :	33.688 m*Tm	Momento emp. vertic. :	10.965 m*Tm
Resultante F horiz . :	15.173 Tm	Resultante F vertic. :	43.039 Tm
Resultante M horiz . :	45.827 m*Tm	Resultante M vertic. :	97.700 m*Tm
Coef. seg. desliz. . :	1.560	Coef. seg. vuelco .. :	2.132
Tension cobaric..... :	17.854 Tm/m2		
Sigma max. solera .. :	23.710 Tm/m2	Sigma min. solera .. :	1.607 Tm/m2

ZONA ENTRE 6.00 m Y 7.00 m

RESULTADOS

Secc. de calculo ... :	6.500 m	Altura del alzado .. :	5.991 m
Ancho zarpa delant . :	1.000 m	Ancho total zapata . :	3.600 m
Empuje horizontal .. :	17.501 Tm	Empuje vertical .... :	3.720 Tm
Momento emp. horiz . :	41.994 m*Tm	Momento emp. vertic. :	13.392 m*Tm
Resultante F horiz . :	17.501 Tm	Resultante F vertic. :	49.601 Tm
Resultante M horiz . :	55.995 m*Tm	Resultante M vertic. :	117.817 m*Tm
Coef. seg. desliz. . :	1.559	Coef. seg. vuelco .. :	2.104
Tension cobaric..... :	19.898 Tm/m2		
Sigma max. solera .. :	26.491 Tm/m2	Sigma min. solera .. :	1.065 Tm/m2

ZONA ENTRE 7.00 m Y 8.00 m

RESULTADOS

Secc. de calculo ... :	7.500 m	Altura del alzado .. :	6.482 m
Ancho zarpa delant . :	1.000 m	Ancho total zapata . :	3.800 m
Empuje horizontal .. :	19.989 Tm	Empuje vertical .... :	4.249 Tm
Momento emp. horiz . :	51.525 m*Tm	Momento emp. vertic. :	16.146 m*Tm
Resultante F horiz . :	19.989 Tm	Resultante F vertic. :	56.609 Tm
Resultante M horiz . :	67.517 m*Tm	Resultante M vertic. :	140.420 m*Tm
Coef. seg. desliz. . :	1.558	Coef. seg. vuelco .. :	2.080
Tension cobaric..... :	21.978 Tm/m2		
Sigma max. solera .. :	29.296 Tm/m2	Sigma min. solera .. :	0.498 Tm/m2

ZONA ENTRE 8.00 m Y 8.25 m

RESULTADOS

Secc. de calculo ... :	8.125 m	Altura del alzado .. :	6.789 m
Ancho zarpa delant . :	1.000 m	Ancho total zapata . :	4.000 m
Empuje horizontal .. :	21.660 Tm	Empuje vertical .... :	4.604 Tm
Momento emp. horiz . :	58.285 m*Tm	Momento emp. vertic. :	18.416 m*Tm
Resultante F horiz . :	21.660 Tm	Resultante F vertic. :	62.650 Tm
Resultante M horiz . :	75.614 m*Tm	Resultante M vertic. :	161.903 m*Tm
Coef. seg. desliz. . :	1.591	Coef. seg. vuelco .. :	2.141
Tension cobaric..... :	22.744 Tm/m2		
Sigma max. solera .. :	30.292 Tm/m2	Sigma min. solera .. :	1.033 Tm/m2

RESULTADOS

Coeficiente global de seg. al deslizamiento ...	1.6
Coeficiente global de seg. al vuelco	2.2
Tension maxima en solera (Tm/m2)	30.3

ZONA ENTRE 0.00 m Y 1.00 m

RESULTADOS

Secc. de calculo ... :	0.500 m	Altura del alzado .. :	3.045 m
Ancho zarpa delant . :	1.000 m	Ancho total zapata . :	2.497 m
Resultante F horiz . :	5.945 Tm	Resultante F vertic. :	18.015 Tm
Resultante M horiz . :	12.509 m*Tm	Resultante M vertic. :	32.254 m*Tm
Coef. seg. desliz. . :	1.667	Coef. seg. vuelco .. :	2.578
Tension cobaric..... :	8.218 Tm/m2		
Tension max. solera :	9.858 Tm/m2	Tension min. solera :	4.571 Tm/m2

NOTA: Los momentos estan referidos al vertice inferior de la zarpa delantera de la zapata

ARMADURA ZARPA DELANTERA

Vd	10.331 Tm	Md	5.438	m*Tm
Vcuo	48.412 Tm	Us	7.074	Tm
		As	2.280	cm2/m

ARMADURA ZARPA TRASERA

Vd	5.266 Tm	Md	2.989	m*Tm
Vcuo	48.412 Tm	Us	3.878	Tm
		As	1.278	cm2/m

ARMADURA ALZADO MURO

SECCION H = 2.28 M (D=0.48 M) :

Vd	2.469 Tm	Md	1.372	m*Tm
Vcuo	28.152 Tm	Us	3.064	Tm
		As	1.000	cm2/m

SECCION H = 1.52 M (D=0.55 M) :

Vd	4.956 Tm	Md	4.436	m*Tm
Vcuo	33.067 Tm	Us	8.486	Tm
		As	2.632	cm2/m

SECCION H = 0.76 M (D=0.63 M) :

Vd	8.090 Tm	Md	9.855	m*Tm
Vcuo	37.982 Tm	Us	16.523	Tm
		As	4.804	cm2/m

SECCION H = -0.00 M (D=0.70 M) :

Vd	8.818 Tm	Md	11.317	m*Tm
Vcuo	42.896 Tm	Us	16.772	Tm
		As	4.957	cm2/m

ZONA ENTRE 1.00 m Y 2.00 m

RESULTADOS

Secc. de calculo ... :	1.500 m	Altura del alzado .. :	3.536 m
Ancho zarpa delant . :	1.000 m	Ancho total zapata . :	2.691 m
Resultante F horiz . :	7.478 Tm	Resultante F vertic. :	22.372 Tm
Resultante M horiz . :	17.140 m*Tm	Resultante M vertic. :	42.370 m*Tm
Coef. seg. desliz. . :	1.645	Coef. seg. vuelco .. :	2.472
Tension cobaric..... :	9.919 Tm/m2		
Tension max. solera :	12.350 Tm/m2	Tension min. solera :	4.278 Tm/m2

NOTA: Los momentos estan referidos al vertice inferior de la zarpa delantera de la zapata

ARMADURA ZARPA DELANTERA

Vd	13.438 Tm	Md	7.105	m*Tm
Vcuo	48.412 Tm	Us	9.259	Tm
		As	2.938	cm2/m

ARMADURA ZARPA TRASERA

Vd	7.386 Tm	Md	4.927	m*Tm
Vcuo	48.412 Tm	Us	6.406	Tm
		As	2.074	cm2/m

ARMADURA ALZADO MURO

SECCION H = 2.65 M (D=0.49 M) :

Vd	2.855 Tm	Md	1.753	m*Tm
Vcuo	28.945 Tm	Us	3.811	Tm
		As	1.234	cm2/m

SECCION H = 1.77 M (D=0.58 M) :

Vd	5.939 Tm	Md	5.959	m*Tm
Vcuo	34.651 Tm	Us	10.901	Tm
		As	3.313	cm2/m

SECCION H = 0.88 M (D=0.67 M) :

Vd	9.897 Tm	Md	13.589	m*Tm
Vcuo	40.358 Tm	Us	21.522	Tm
		As	6.027	cm2/m

SECCION H = -0.00 M (D=0.75 M) :

Vd	11.098 Tm	Md	16.305	m*Tm
Vcuo	46.065 Tm	Us	22.588	Tm
		As	6.431	cm2/m

ZONA ENTRE 2.00 m Y 3.00 m

RESULTADOS

Secc. de calculo ... :	2.500 m	Altura del alzado .. :	4.027 m
Ancho zarpa delant . :	1.000 m	Ancho total zapata . :	2.885 m
Resultante F horiz . :	9.170 Tm	Resultante F vertic. :	27.163 Tm
Resultante M horiz . :	22.717 m*Tm	Resultante M vertic. :	54.238 m*Tm
Coef. seg. desliz. . :	1.629	Coef. seg. vuelco .. :	2.387
Tension cobaric..... :	11.704 Tm/m2		
Tension max. solera :	14.938 Tm/m2	Tension min. solera :	3.893 Tm/m2

NOTA: Los momentos estan referidos al vertice inferior de la zarpa delantera de la zapata

ARMADURA ZARPA DELANTERA

Vd	16.731 Tm	Md	8.859	m*Tm
Vcuo	48.412 Tm	Us	11.566	Tm
		As	3.610	cm2/m

ARMADURA ZARPA TRASERA

Vd	9.894 Tm	Md	7.591	m*Tm
Vcuo	48.412 Tm	Us	9.897	Tm
		As	3.127	cm2/m

ARMADURA ALZADO MURO

SECCION H = 3.02 M (D=0.50 M) :

Vd	3.261 Tm	Md	2.191	m*Tm
Vcuo	29.737 Tm	Us	4.642	Tm
		As	1.491	cm2/m

SECCION H = 2.01 M (D=0.60 M) :

Vd	6.999 Tm	Md	7.769	m*Tm
Vcuo	36.236 Tm	Us	13.623	Tm
		As	4.049	cm2/m

SECCION H = 1.01 M (D=0.70 M) :

Vd	11.869 Tm	Md	18.113	m*Tm
Vcuo	42.735 Tm	Us	27.196	Tm
		As	7.309	cm2/m

SECCION H = 0.00 M (D=0.80 M) :

Vd	13.616 Tm	Md	22.503	m*Tm
Vcuo	49.234 Tm	Us	29.283	Tm
		As	8.003	cm2/m

ZONA ENTRE 3.00 m Y 4.00 m

RESULTADOS

Secc. de calculo ... :	3.500 m	Altura del alzado .. :	4.518 m
Ancho zarpa delant . :	1.000 m	Ancho total zapata . :	3.079 m
Resultante F horiz . :	11.021 Tm	Resultante F vertic. :	32.387 Tm
Resultante M horiz . :	29.322 m*Tm	Resultante M vertic. :	67.989 m*Tm
Coef. seg. desliz. . :	1.616	Coef. seg. vuelco .. :	2.319
Tension cobaric..... :	13.564 Tm/m2		
Tension max. solera :	17.602 Tm/m2	Tension min. solera :	3.437 Tm/m2

NOTA: Los momentos estan referidos al vertice inferior de la zarpa delantera de la zapata

ARMADURA ZARPA DELANTERA

Vd	20.182 Tm	Md	10.684	m*Tm
Vcuo	48.412 Tm	Us	13.975	Tm
		As	4.286	cm2/m

ARMADURA ZARPA TRASERA

Vd	12.710 Tm	Md	11.097	m*Tm
Vcuo	48.412 Tm	Us	14.522	Tm
		As	4.436	cm2/m

ARMADURA ALZADO MURO

SECCION H = 3.39 M (D=0.51 M) :

Vd	3.689 Tm	Md	2.690	m*Tm
Vcuo	30.529 Tm	Us	5.557	Tm
		As	1.769	cm2/m

SECCION H = 2.26 M (D=0.63 M) :

Vd	8.134 Tm	Md	9.889	m*Tm
Vcuo	37.820 Tm	Us	16.654	Tm
		As	4.832	cm2/m

SECCION H = 1.13 M (D=0.74 M) :

Vd	14.005 Tm	Md	23.496	m*Tm
Vcuo	45.111 Tm	Us	33.553	Tm
		As	8.625	cm2/m

SECCION H = 0.00 M (D=0.85 M) :

Vd	16.373 Tm	Md	30.032	m*Tm
Vcuo	52.403 Tm	Us	36.865	Tm
		As	9.638	cm2/m

ZONA ENTRE 4.00 m Y 5.00 m

RESULTADOS

Secc. de calculo ... :	4.500 m	Altura del alzado .. :	5.009 m
Ancho zarpa delant . :	1.000 m	Ancho total zapata . :	3.273 m
Resultante F horiz . :	13.030 Tm	Resultante F vertic. :	38.045 Tm
Resultante M horiz . :	37.036 m*Tm	Resultante M vertic. :	83.759 m*Tm
Coef. seg. desliz. . :	1.606	Coef. seg. vuelco .. :	2.262
Tension cobaric..... :	15.489 Tm/m2		
Tension max. solera :	20.325 Tm/m2	Tension min. solera :	2.924 Tm/m2

NOTA: Los momentos estan referidos al vertice inferior de la zarpa delantera de la zapata

ARMADURA ZARPA DELANTERA

Vd	23.765 Tm	Md	12.567	m*Tm
Vcuo	48.412 Tm	Us	16.472	Tm
		As	4.959	cm2/m

ARMADURA ZARPA TRASERA

Vd	15.880 Tm	Md	15.558	m*Tm
Vcuo	48.412 Tm	Us	20.455	Tm
		As	5.975	cm2/m

ARMADURA ALZADO MURO

SECCION H = 3.76 M (D=0.53 M) :

Vd	4.138 Tm	Md	3.253	m*Tm
Vcuo	31.321 Tm	Us	6.557	Tm
		As	2.068	cm2/m

SECCION H = 2.50 M (D=0.65 M) :

Vd	9.346 Tm	Md	12.340	m*Tm
Vcuo	39.405 Tm	Us	19.997	Tm
		As	5.656	cm2/m

SECCION H = 1.25 M (D=0.78 M) :

Vd	16.306 Tm	Md	29.808	m*Tm
Vcuo	47.488 Tm	Us	40.601	Tm
		As	9.943	cm2/m

SECCION H = 0.00 M (D=0.90 M) :

Vd	19.369 Tm	Md	39.012	m*Tm
Vcuo	55.571 Tm	Us	45.344	Tm
		As	11.298	cm2/m

ZONA ENTRE 5.00 m Y 6.00 m

RESULTADOS

Secc. de calculo ... :	5.500 m	Altura del alzado .. :	5.500 m
Ancho zarpa delant . :	1.000 m	Ancho total zapata . :	3.467 m
Resultante F horiz . :	15.199 Tm	Resultante F vertic. :	44.136 Tm
Resultante M horiz . :	45.938 m*Tm	Resultante M vertic. :	101.680 m*Tm
Coef. seg. desliz. . :	1.597	Coef. seg. vuelco .. :	2.213
Tension cobaric..... :	17.473 Tm/m2		
Tension max. solera :	23.096 Tm/m2	Tension min. solera :	2.367 Tm/m2

NOTA: Los momentos estan referidos al vertice inferior de la zarpa delantera de la zapata

ARMADURA ZARPA DELANTERA

Vd	27.461 Tm	Md	14.500	m*Tm
Vcuo	48.412 Tm	Us	19.044	Tm
		As	5.624	cm2/m

ARMADURA ZARPA TRASERA

Vd	19.331 Tm	Md	21.086	m*Tm
Vcuo	48.412 Tm	Us	27.884	Tm
		As	7.678	cm2/m

ARMADURA ALZADO MURO

SECCION H = 4.13 M (D=0.54 M) :

Vd	4.608 Tm	Md	3.883	m*Tm
Vcuo	32.113 Tm	Us	7.642	Tm
		As	2.386	cm2/m

SECCION H = 2.75 M (D=0.68 M) :

Vd	10.634 Tm	Md	15.145	m*Tm
Vcuo	40.989 Tm	Us	23.656	Tm
		As	6.511	cm2/m

SECCION H = 1.38 M (D=0.81 M) :

Vd	18.772 Tm	Md	37.118	m*Tm
Vcuo	49.865 Tm	Us	48.346	Tm
		As	11.235	cm2/m

SECCION H = 0.00 M (D=0.95 M) :

Vd	22.602 Tm	Md	49.565	m*Tm
Vcuo	58.740 Tm	Us	54.731	Tm
		As	12.945	cm2/m

ZONA ENTRE 6.00 m Y 7.00 m

RESULTADOS

Secc. de calculo ... :	6.500 m	Altura del alzado .. :	5.991 m
Ancho zarpa delant . :	1.000 m	Ancho total zapata . :	3.661 m
Resultante F horiz . :	17.527 Tm	Resultante F vertic. :	50.660 Tm
Resultante M horiz . :	56.111 m*Tm	Resultante M vertic. :	121.887 m*Tm
Coef. seg. desliz. . :	1.590	Coef. seg. vuelco .. :	2.172
Tension cobaric..... :	19.509 Tm/m2		
Tension max. solera :	25.905 Tm/m2	Tension min. solera :	1.774 Tm/m2

NOTA: Los momentos estan referidos al vertice inferior de la zarpa delantera de la zapata

ARMADURA ZARPA DELANTERA

Vd	31.252 Tm	Md	16.475	m*Tm
Vcuo	48.412 Tm	Us	21.682	Tm
		As	6.274	cm2/m

ARMADURA ZARPA TRASERA

Vd	23.105 Tm	Md	27.792	m*Tm
Vcuo	48.412 Tm	Us	37.010	Tm
		As	9.429	cm2/m

ARMADURA ALZADO MURO

SECCION H = 4.49 M (D=0.55 M) :

Vd	5.100 Tm	Md	4.583	m*Tm
Vcuo	32.906 Tm	Us	8.813	Tm
		As	2.723	cm2/m

SECCION H = 3.00 M (D=0.70 M) :

Vd	11.998 Tm	Md	18.324	m*Tm
Vcuo	42.573 Tm	Us	27.631	Tm
		As	7.388	cm2/m

SECCION H = 1.50 M (D=0.85 M) :

Vd	21.402 Tm	Md	45.495	m*Tm
Vcuo	52.241 Tm	Us	56.799	Tm
		As	12.808	cm2/m

SECCION H = 0.00 M (D=1.00 M) :

Vd	26.075 Tm	Md	61.812	m*Tm
Vcuo	61.909 Tm	Us	65.035	Tm
		As	14.665	cm2/m

ZONA ENTRE 7.00 m Y 8.00 m

RESULTADOS

Secc. de calculo ... :	7.500 m	Altura del alzado .. :	6.482 m
Ancho zarpa delant . :	1.000 m	Ancho total zapata . :	3.855 m
Resultante F horiz . :	20.014 Tm	Resultante F vertic. :	57.618 Tm
Resultante M horiz . :	67.634 m*Tm	Resultante M vertic. :	144.512 m*Tm
Coef. seg. desliz. . :	1.583	Coef. seg. vuelco .. :	2.137
Tension cobaric..... :	21.591 Tm/m2		
Tension max. solera :	28.746 Tm/m2	Tension min. solera :	1.150 Tm/m2

NOTA: Los momentos estan referidos al vertice inferior de la zarpa delantera de la zapata

ARMADURA ZARPA DELANTERA

Vd	35.126 Tm	Md	18.485	m*Tm
Vcuo	48.412 Tm	Us	24.379	Tm
		As	6.906	cm2/m

ARMADURA ZARPA TRASERA

Vd	27.146 Tm	Md	35.786	m*Tm
Vcuo	48.412 Tm	Us	48.050	Tm
		As	11.046	cm2/m

ARMADURA ALZADO MURO

SECCION H = 4.86 M (D=0.56 M) :

Vd	5.613 Tm	Md	5.357	m*Tm
Vcuo	33.698 Tm	Us	10.071	Tm
		As	3.078	cm2/m

SECCION H = 3.24 M (D=0.72 M) :

Vd	13.438 Tm	Md	21.901	m*Tm
Vcuo	44.158 Tm	Us	31.926	Tm
		As	8.279	cm2/m

SECCION H = 1.62 M (D=0.89 M) :

Vd	24.197 Tm	Md	55.008	m*Tm
Vcuo	54.618 Tm	Us	65.968	Tm
		As	14.875	cm2/m

SECCION H = 0.00 M (D=1.05 M) :

Vd	29.785 Tm	Md	75.873	m*Tm
Vcuo	65.078 Tm	Us	76.269	Tm
		As	17.198	cm2/m

ZONA ENTRE 8.00 m Y 8.25 m

RESULTADOS

Secc. de calculo ... :	8.125 m	Altura del alzado .. :	6.789 m
Ancho zarpa delant . :	1.000 m	Ancho total zapata . :	3.976 m
Resultante F horiz . :	21.649 Tm	Resultante F vertic. :	62.186 Tm
Resultante M horiz . :	75.558 m*Tm	Resultante M vertic. :	159.941 m*Tm
Coef. seg. desliz. . :	1.580	Coef. seg. vuelco .. :	2.117
Tension cobaric..... :	22.914 Tm/m2		
Tension max. solera :	30.535 Tm/m2	Tension min. solera :	0.748 Tm/m2

NOTA: Los momentos estan referidos al vertice inferior de la zarpa delantera de la zapata

ARMADURA ZARPA DELANTERA

Vd	37.585 Tm	Md	19.757	m*Tm
Vcuo	48.412 Tm	Us	26.091	Tm
		As	7.290	cm2/m

ARMADURA ZARPA TRASERA

Vd	29.819 Tm	Md	41.484	m*Tm
Vcuo	48.412 Tm	Us	56.027	Tm
		As	12.633	cm2/m

ARMADURA ALZADO MURO

SECCION H = 5.09 M (D=0.57 M) :

Vd	5.944 Tm	Md	5.879	m*Tm
Vcuo	34.193 Tm	Us	10.901	Tm
		As	3.308	cm2/m

SECCION H = 3.39 M (D=0.74 M) :

Vd	14.376 Tm	Md	24.347	m*Tm
Vcuo	45.148 Tm	Us	34.774	Tm
		As	8.838	cm2/m

SECCION H = 1.70 M (D=0.91 M) :

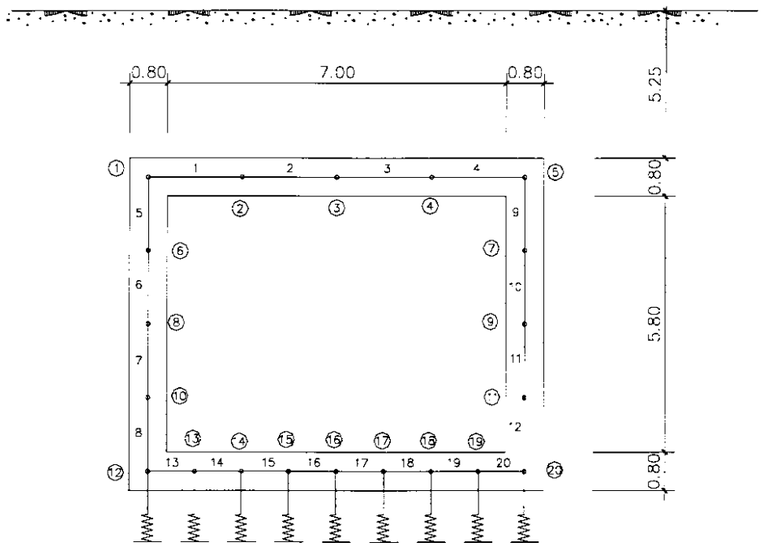
Vd	26.027 Tm	Md	61.562	m*Tm
Vcuo	56.103 Tm	Us	72.065	Tm
		As	16.250	cm2/m

SECCION H = 0.00 M (D=1.08 M) :

Vd	32.225 Tm	Md	85.636	m*Tm
Vcuo	67.058 Tm	Us	83.767	Tm
		As	18.889	cm2/m

6. LISTADOS DE ORDENADOR.

PORTICO. DEFINICION



CON MODULO DE BALASTO DE 1000 Mp/m^3

DATOS GENERALES DE LA ESTRUCTURA

COORDENADAS DE NUDOS

Nudo	X	Y
1	0.400	7.000
2	2.350	7.000
3	4.300	7.000
4	6.250	7.000
5	8.200	7.000
6	0.400	5.350
7	8.200	5.350
8	0.400	3.700
9	8.200	3.700
10	0.400	2.050
11	8.200	2.050
12	0.400	0.400
13	1.375	0.400
14	2.350	0.400
15	3.325	0.400
16	4.300	0.400
17	5.275	0.400
18	6.250	0.400
19	7.225	0.400
20	8.200	0.400

DATOS GENERALES DE LA ESTRUCTURA

CARACTERISTICAS DE BARRAS

Barra	i	j	If.i	Area.i
1	1	2	0.04267	0.800
2	2	3	0.04267	0.800
3	3	4	0.04267	0.800
4	4	5	0.04267	0.800
5	1	6	0.04267	0.800
6	6	8	0.04267	0.800
7	8	10	0.04267	0.800
8	10	12	0.04267	0.800
9	5	7	0.04267	0.800
10	7	9	0.04267	0.800
11	9	11	0.04267	0.800
12	11	20	0.04267	0.800
13	12	13	0.04267	0.800
14	13	14	0.04267	0.800
15	14	15	0.04267	0.800
16	15	16	0.04267	0.800
17	16	17	0.04267	0.800
18	17	18	0.04267	0.800
19	18	19	0.04267	0.800
20	19	20	0.04267	0.800

RESULTADOS DE PESO PROPIO

HIPOTESIS DE CARGA N° 1

Barra	P1	P2	D1	Longitud	Angulo	Tipo
1	2.000	0.000	0.000	1.950	-90.000	2
2	2.000	0.000	0.000	1.950	-90.000	2
3	2.000	0.000	0.000	1.950	-90.000	2
4	2.000	0.000	0.000	1.950	-90.000	2
5	2.000	0.000	0.000	1.650	-90.000	2
6	2.000	0.000	0.000	1.650	-90.000	2
7	2.000	0.000	0.000	1.650	-90.000	2
8	2.000	0.000	0.000	1.650	-90.000	2
9	2.000	0.000	0.000	1.650	-90.000	2
10	2.000	0.000	0.000	1.650	-90.000	2
11	2.000	0.000	0.000	1.650	-90.000	2
12	2.000	0.000	0.000	1.650	-90.000	2
13	2.000	0.000	0.000	0.975	-90.000	2
14	2.000	0.000	0.000	0.975	-90.000	2
15	2.000	0.000	0.000	0.975	-90.000	2
16	2.000	0.000	0.000	0.975	-90.000	2
17	2.000	0.000	0.000	0.975	-90.000	2
18	2.000	0.000	0.000	0.975	-90.000	2
19	2.000	0.000	0.000	0.975	-90.000	2
20	2.000	0.000	0.000	0.975	-90.000	2

RESULTADOS DE PESO PROPIO

DESPLAZAMIENTOS DE NUDOS

Nudo	Direc. x	Direc. y	Giro
1	-0.00001	-0.00877	0.00044
2	0.00000	-0.00959	0.00035
3	0.00000	-0.00995	0.00000
4	0.00000	-0.00959	-0.00035
5	0.00001	-0.00877	-0.00044
6	-0.00061	-0.00875	0.00029
7	0.00061	-0.00875	-0.00029
8	-0.00091	-0.00873	0.00005
9	0.00091	-0.00873	-0.00005
10	-0.00075	-0.00871	-0.00026
11	0.00075	-0.00871	0.00026
12	0.00001	-0.00868	-0.00066
13	0.00000	-0.00795	-0.00078
14	0.00000	-0.00724	-0.00065
15	0.00000	-0.00674	-0.00036
16	0.00000	-0.00656	0.00000
17	0.00000	-0.00674	0.00036
18	0.00000	-0.00724	0.00065
19	0.00000	-0.00795	0.00078
20	-0.00001	-0.00868	0.00066

RESULTADOS DE PESO PROPIO

ESFUERZOS EN BARRAS

Barra	i	j	Axil i	Corte.i	Momto.i	Axil j	Corte.j	Momto.j
1	1	2	1.753	-7.800	-3.740	1.753	-3.900	-7.667
2	2	3	1.753	-3.900	7.667	1.753	0.000	-11.470
3	3	4	1.753	0.000	11.470	1.753	3.900	-7.667
4	4	5	1.753	3.900	7.667	1.753	7.800	3.740
5	1	6	-7.800	-1.753	3.740	-11.100	-1.753	-6.633
6	6	8	-11.100	-1.753	6.633	-14.400	-1.753	-9.525
7	8	10	-14.400	-1.753	9.525	-17.700	-1.753	-12.418
8	10	12	-17.700	-1.753	12.418	-21.000	-1.753	-15.310
9	5	7	-7.800	1.753	-3.740	-11.100	1.753	6.633
10	7	9	-11.100	1.753	-6.633	-14.400	1.753	9.525
11	9	11	-14.400	1.753	-9.525	-17.700	1.753	12.418
12	11	20	-17.700	1.753	-12.418	-21.000	1.753	15.310
13	12	13	-1.753	16.770	15.310	-1.753	18.720	1.991
14	13	14	-1.753	10.969	-1.991	-1.753	12.919	13.637
15	14	15	-1.753	5.863	-13.637	-1.753	7.813	20.304
16	15	16	-1.753	1.246	-20.304	-1.753	3.196	22.470
17	16	17	-1.753	-3.196	-22.470	-1.753	-1.246	20.304
18	17	18	-1.753	-7.813	-20.304	-1.753	-5.863	13.637
19	18	19	-1.753	-12.919	-13.637	-1.753	-10.969	1.991
20	19	20	-1.753	-18.720	-1.991	-1.753	-16.770	-15.310

RESULTADOS DE CARGA PERMANENTE

HIPOTESIS DE CARGA N° 2

Barra	P1	P2	D1	Longitud	Angulo	Tipo
1	10.500	0.000	0.000	1.950	-90.000	2
2	10.500	0.000	0.000	1.950	-90.000	2
3	10.500	0.000	0.000	1.950	-90.000	2
4	10.500	0.000	0.000	1.950	-90.000	2
5	0.000	0.000	0.000	0.000	0.000	0
6	0.000	0.000	0.000	0.000	0.000	0
7	0.000	0.000	0.000	0.000	0.000	0
8	0.000	0.000	0.000	0.000	0.000	0
9	0.000	0.000	0.000	0.000	0.000	0
10	0.000	0.000	0.000	0.000	0.000	0
11	0.000	0.000	0.000	0.000	0.000	0
12	0.000	0.000	0.000	0.000	0.000	0
13	0.000	0.000	0.000	0.000	0.000	0
14	0.000	0.000	0.000	0.000	0.000	0
15	0.000	0.000	0.000	0.000	0.000	0
16	0.000	0.000	0.000	0.000	0.000	0
17	0.000	0.000	0.000	0.000	0.000	0
18	0.000	0.000	0.000	0.000	0.000	0
19	0.000	0.000	0.000	0.000	0.000	0
20	0.000	0.000	0.000	0.000	0.000	0

RESULTADOS DE CARGA PERMANENTE

DESPLAZAMIENTOS DE NUDOS

Nudo	Direc. x	Direc. y	Giro
1	0.00000	-0.01360	0.00163
2	0.00000	-0.01698	0.00149
3	0.00000	-0.01855	0.00000
4	0.00000	-0.01698	-0.00149
5	0.00000	-0.01360	-0.00163
6	-0.00199	-0.01354	0.00079
7	0.00199	-0.01354	-0.00079
8	-0.00263	-0.01348	-0.00002
9	0.00263	-0.01348	0.00002
10	-0.00195	-0.01341	-0.00080
11	0.00195	-0.01341	0.00080
12	0.00000	-0.01335	-0.00156
13	0.00000	-0.01171	-0.00171
14	0.00000	-0.01016	-0.00139
15	0.00000	-0.00909	-0.00077
16	0.00000	-0.00871	0.00000
17	0.00000	-0.00909	0.00077
18	0.00000	-0.01016	0.00139
19	0.00000	-0.01171	0.00171
20	0.00000	-0.01335	0.00156

RESULTADOS DE CARGA PERMANENTE

ESFUERZOS EN BARRAS

Barra	i	j	Axil i	Corte.i	Momto.i	Axil j	Corte.j	Momto.j
1	1	2	-0.531	-40.950	-29.366	-0.531	-20.475	-30.523
2	2	3	-0.531	-20.475	30.523	-0.531	0.000	-50.486
3	3	4	-0.531	0.000	50.486	-0.531	20.475	-30.523
4	4	5	-0.531	20.475	30.523	-0.531	40.950	29.366
5	1	6	-40.950	0.531	29.366	-40.950	0.531	-28.490
6	6	8	-40.950	0.531	28.490	-40.950	0.531	-27.614
7	8	10	-40.950	0.531	27.614	-40.950	0.531	-26.738
8	10	12	-40.950	0.531	26.738	-40.950	0.531	-25.862
9	5	7	-40.950	-0.531	-29.366	-40.950	-0.531	28.490
10	7	9	-40.950	-0.531	-28.490	-40.950	-0.531	27.614
11	9	11	-40.950	-0.531	-27.614	-40.950	-0.531	26.738
12	11	20	-40.950	-0.531	-26.738	-40.950	-0.531	25.862
13	12	13	0.531	34.441	25.862	0.531	34.441	7.718
14	13	14	0.531	23.025	-7.718	0.531	23.025	30.166
15	14	15	0.531	13.114	-30.166	0.531	13.114	42.953
16	15	16	0.531	4.248	-42.953	0.531	4.248	47.095
17	16	17	0.531	-4.248	-47.095	0.531	-4.248	42.953
18	17	18	0.531	-13.114	-42.953	0.531	-13.114	30.166
19	18	19	0.531	-23.025	-30.166	0.531	-23.025	7.718
20	19	20	0.531	-34.441	-7.718	0.531	-34.441	-25.862

RESULTADOS DE EMPUJE POR UN SOLO LADO SIN TIERRAS ENCIMA

HIPOTESIS DE CARGA N° 3

Barra	P1	P2	D1	Longitud	Angulo	Tipo
1	0.000	0.000	0.000	0.000	0.000	0
2	0.000	0.000	0.000	0.000	0.000	0
3	0.000	0.000	0.000	0.000	0.000	0
4	0.000	0.000	0.000	0.000	0.000	0
5	-1.900	-3.550	0.000	1.650	0.000	3
6	-3.550	-5.200	0.000	1.650	0.000	3
7	-5.200	-6.850	0.000	1.650	0.000	3
8	-6.850	-8.500	0.000	1.650	0.000	3
9	0.000	0.000	0.000	0.000	0.000	0
10	0.000	0.000	0.000	0.000	0.000	0
11	0.000	0.000	0.000	0.000	0.000	0
12	0.000	0.000	0.000	0.000	0.000	0
13	0.000	0.000	0.000	0.000	0.000	0
14	0.000	0.000	0.000	0.000	0.000	0
15	0.000	0.000	0.000	0.000	0.000	0
16	0.000	0.000	0.000	0.000	0.000	0
17	0.000	0.000	0.000	0.000	0.000	0
18	0.000	0.000	0.000	0.000	0.000	0
19	0.000	0.000	0.000	0.000	0.000	0
20	0.000	0.000	0.000	0.000	0.000	0

RESULTADOS DE EMPUJE POR UN SOLO LADO SIN TIERRAS ENCIMA

DESPLAZAMIENTOS DE NUDOS

Nudo	Direc. x	Direc. y	Giro
1	0.02222	0.00957	0.00246
2	0.02221	0.00510	0.00217
3	0.02219	0.00091	0.00217
4	0.02218	-0.00354	0.00245
5	0.02217	-0.00882	0.00301
6	0.01779	0.00956	0.00295
7	0.01680	-0.00881	0.00345
8	0.01244	0.00955	0.00353
9	0.01097	-0.00880	0.00357
10	0.00628	0.00955	0.00386
11	0.00521	-0.00880	0.00337
12	0.00010	0.00954	0.00346
13	0.00008	0.00644	0.00290
14	0.00005	0.00386	0.00240
15	0.00003	0.00170	0.00205
16	0.00000	-0.00019	0.00188
17	0.00001	-0.00202	0.00191
18	0.00001	-0.00397	0.00212
19	0.00002	-0.00619	0.00246
20	0.00002	-0.00879	0.00286

RESULTADOS DE EMPUJE POR UN SOLO LADO SIN TIERRAS ENCIMA

ESFUERZOS EN BARRAS

Barra	i	j	Axil i	Corte.i	Momto.i	Axil j	Corte.j	Momto.j
1	1	2	-6.640	4.251	12.546	-6.640	4.251	-4.256
2	2	3	-6.640	4.251	4.256	-6.640	4.251	4.034
3	3	4	-6.640	4.251	-4.034	-6.640	4.251	12.324
4	4	5	-6.640	4.251	-12.324	-6.640	4.251	20.614
5	1	6	4.251	6.640	-12.546	4.251	2.144	20.168
6	6	8	4.251	2.144	-20.168	4.251	-5.075	18.125
7	8	10	4.251	-5.075	-18.125	4.251	-15.016	1.924
8	10	12	4.251	-15.016	-1.924	4.251	-27.680	-32.925
9	5	7	-4.251	-6.640	-20.614	-4.251	-6.640	9.658
10	7	9	-4.251	-6.640	-9.658	-4.251	-6.640	-1.299
11	9	11	-4.251	-6.640	1.299	-4.251	-6.640	-12.255
12	11	20	-4.251	-6.640	12.255	-4.251	-6.640	-23.212
13	12	13	-27.680	0.399	32.925	-27.680	0.399	-32.536
14	13	14	-27.680	6.676	32.536	-27.680	6.676	-26.027
15	14	15	-27.680	10.439	26.027	-27.680	10.439	-15.850
16	15	16	-27.680	12.100	15.850	-27.680	12.100	-4.052
17	16	17	6.640	11.913	4.052	6.640	11.913	7.564
18	17	18	6.640	9.943	-7.564	6.640	9.943	17.258
19	18	19	6.640	6.073	-17.258	6.640	6.073	23.179
20	19	20	6.640	0.033	-23.179	6.640	0.033	23.212

RESULTADOS DE EMPUJE POR LOS DOS LADOS CON TIERRAS ENCIMA

HIPOTESIS DE CARGA N° 4

Barra	P1	P2	D1	Longitud	Angulo	Tipo
1	0.000	0.000	0.000	0.000	0.000	0
2	0.000	0.000	0.000	0.000	0.000	0
3	0.000	0.000	0.000	0.000	0.000	0
4	0.000	0.000	0.000	0.000	0.000	0
5	-7.150	-8.800	0.000	1.650	0.000	3
6	-8.800	-10.450	0.000	1.650	0.000	3
7	-10.450	-12.100	0.000	1.650	0.000	3
8	-12.100	-13.750	0.000	1.650	0.000	3
9	7.150	8.800	0.000	1.650	0.000	3
10	8.800	10.450	0.000	1.650	0.000	3
11	10.450	12.100	0.000	1.650	0.000	3
12	12.100	13.750	0.000	1.650	0.000	3
13	0.000	0.000	0.000	0.000	0.000	0
14	0.000	0.000	0.000	0.000	0.000	0
15	0.000	0.000	0.000	0.000	0.000	0
16	0.000	0.000	0.000	0.000	0.000	0
17	0.000	0.000	0.000	0.000	0.000	0
18	0.000	0.000	0.000	0.000	0.000	0
19	0.000	0.000	0.000	0.000	0.000	0
20	0.000	0.000	0.000	0.000	0.000	0

RESULTADOS DE EMPUJE POR LOS DOS LADOS CON TIERRAS ENCIMA

DESPLAZAMIENTOS DE NUDOS

Nudo	Direc. x	Direc. y	Giro
1	0.00011	0.00147	-0.00114
2	0.00006	0.00313	-0.00057
3	0.00000	0.00369	0.00000
4	-0.00006	0.00313	0.00057
5	-0.00011	0.00147	0.00114
6	0.00203	0.00147	-0.00099
7	-0.00203	0.00147	0.00099
8	0.00294	0.00147	-0.00003
9	-0.00294	0.00147	0.00003
10	0.00211	0.00147	0.00099
11	-0.00211	0.00147	-0.00099
12	0.00014	0.00147	0.00118
13	0.00010	0.00048	0.00086
14	0.00007	-0.00021	0.00056
15	0.00003	-0.00062	0.00027
16	0.00000	-0.00075	0.00000
17	-0.00003	-0.00062	-0.00027
18	-0.00007	-0.00021	-0.00056
19	-0.00010	0.00048	-0.00086
20	-0.00014	0.00147	-0.00118

RESULTADOS DE EMPUJE POR LOS DOS LADOS CON TIERRAS ENCIMA

ESFUERZOS EN BARRAS

Barra	i	j	Axil i	Corte.i	Momto.i	Axil j	Corte.j	Momto.j
1	1	2	-30.506	0.000	-16.703	-30.506	0.000	16.703
2	2	3	-30.506	0.000	-16.703	-30.506	0.000	16.703
3	3	4	-30.506	0.000	-16.703	-30.506	0.000	16.703
4	4	5	-30.506	0.000	-16.703	-30.506	0.000	16.703
5	1	6	0.000	30.506	16.703	0.000	17.347	23.150
6	6	8	0.000	17.347	-23.150	0.000	1.466	39.046
7	8	10	0.000	1.466	-39.046	0.000	-17.138	26.492
8	10	12	0.000	-17.138	-26.492	0.000	-38.464	-19.005
9	5	7	0.000	-30.506	-16.703	0.000	-17.347	-23.150
10	7	9	0.000	-17.347	23.150	0.000	-1.466	-39.046
11	9	11	0.000	-1.466	39.046	0.000	17.138	-26.492
12	11	20	0.000	17.138	26.492	0.000	38.464	19.005
13	12	13	-38.464	0.716	19.005	-38.464	0.716	-18.307
14	13	14	-38.464	1.179	18.307	-38.464	1.179	-17.158
15	14	15	-38.464	0.970	17.158	-38.464	0.970	-16.212
16	15	16	-38.464	0.366	16.212	-38.464	0.366	-15.855
17	16	17	-38.464	-0.366	15.855	-38.464	-0.366	-16.212
18	17	18	-38.464	-0.970	16.212	-38.464	-0.970	-17.158
19	18	19	-38.464	-1.179	17.158	-38.464	-1.179	-18.307
20	19	20	-38.464	-0.716	18.307	-38.464	-0.716	-19.005

RESULTADOS DE SOBRECARGA UNIFORME

HIPOTESIS DE CARGA N° 5

Barra	P1	P2	D1	Longitud	Angulo	Tipo
1	2.560	0.000	0.000	1.950	-90.000	2
2	2.560	0.000	0.000	1.950	-90.000	2
3	2.560	0.000	0.000	1.950	-90.000	2
4	2.560	0.000	0.000	1.950	-90.000	2
5	0.000	0.000	0.000	0.000	0.000	0
6	0.000	0.000	0.000	0.000	0.000	0
7	0.000	0.000	0.000	0.000	0.000	0
8	0.000	0.000	0.000	0.000	0.000	0
9	0.000	0.000	0.000	0.000	0.000	0
10	0.000	0.000	0.000	0.000	0.000	0
11	0.000	0.000	0.000	0.000	0.000	0
12	0.000	0.000	0.000	0.000	0.000	0
13	0.000	0.000	0.000	0.000	0.000	0
14	0.000	0.000	0.000	0.000	0.000	0
15	0.000	0.000	0.000	0.000	0.000	0
16	0.000	0.000	0.000	0.000	0.000	0
17	0.000	0.000	0.000	0.000	0.000	0
18	0.000	0.000	0.000	0.000	0.000	0
19	0.000	0.000	0.000	0.000	0.000	0
20	0.000	0.000	0.000	0.000	0.000	0

RESULTADOS DE SOBRECARGA UNIFORME

DESPLAZAMIENTOS DE NUDOS

Nudo	Direc. x	Direc. y	Giro
1	0.00000	-0.00332	0.00040
2	0.00000	-0.00414	0.00036
3	0.00000	-0.00452	0.00000
4	0.00000	-0.00414	-0.00036
5	0.00000	-0.00332	-0.00040
6	-0.00049	-0.00330	0.00019
7	0.00049	-0.00330	-0.00019
8	-0.00064	-0.00329	0.00000
9	0.00064	-0.00329	0.00000
10	-0.00048	-0.00327	-0.00020
11	0.00048	-0.00327	0.00020
12	0.00000	-0.00326	-0.00038
13	0.00000	-0.00285	-0.00042
14	0.00000	-0.00248	-0.00034
15	0.00000	-0.00222	-0.00019
16	0.00000	-0.00212	0.00000
17	0.00000	-0.00222	0.00019
18	0.00000	-0.00248	0.00034
19	0.00000	-0.00285	0.00042
20	0.00000	-0.00326	0.00038

RESULTADOS DE SOBRECARGA UNIFORME

ESFUERZOS EN BARRAS

Barra	i	j	Axil i	Corte.i	Momto.i	Axil j	Corte.j	Momto.j
1	1	2	-0.129	-9.984	-7.160	-0.129	-4.992	-7.442
2	2	3	-0.129	-4.992	7.442	-0.129	0.000	-12.309
3	3	4	-0.129	0.000	12.309	-0.129	4.992	-7.442
4	4	5	-0.129	4.992	7.442	-0.129	9.984	7.160
5	1	6	-9.984	0.129	7.160	-9.984	0.129	-6.946
6	6	8	-9.984	0.129	6.946	-9.984	0.129	-6.733
7	8	10	-9.984	0.129	6.733	-9.984	0.129	-6.519
8	10	12	-9.984	0.129	6.519	-9.984	0.129	-6.306
9	5	7	-9.984	-0.129	-7.160	-9.984	-0.129	6.946
10	7	9	-9.984	-0.129	-6.946	-9.984	-0.129	6.733
11	9	11	-9.984	-0.129	-6.733	-9.984	-0.129	6.519
12	11	20	-9.984	-0.129	-6.519	-9.984	-0.129	6.306
13	12	13	0.129	8.397	6.306	0.129	8.397	1.882
14	13	14	0.129	5.614	-1.882	0.129	5.614	7.355
15	14	15	0.129	3.197	-7.355	0.129	3.197	10.472
16	15	16	0.129	1.036	-10.472	0.129	1.036	11.482
17	16	17	0.129	-1.036	-11.482	0.129	-1.036	10.472
18	17	18	0.129	-3.197	-10.472	0.129	-3.197	7.355
19	18	19	0.129	-5.614	-7.355	0.129	-5.614	1.882
20	19	20	0.129	-8.397	-1.882	0.129	-8.397	-6.306

Calculo de la armadura a cortante

El esfuerzo cortante de agotamiento por tracción en el alma vale:

$$Vu2 = Vsu + Vcu$$

donde :

Vsu = contribución de la armadura transversal del alma a la resistencia a esfuerzo cortante.

Vcu = contribución del hormigón a la resistencia a esfuerzo cortante.

a)calculo de vsu

$$V_{su} = \sum A_{\alpha} * f_{y\alpha d} * 0{,}9 * d * \text{sen}\alpha * (\text{cotg}\alpha + \text{cotg}\theta)$$

$f_{y\alpha d}$ = resistencia de calculo de las armaduras transversales ≤ 4200 kp/cm^2

b)calculo de V_{cu}

en general el término Vcu de cálculo se tomará igual a:

$$V_{cu} = f_{cv} * b_w * d$$

siendo :

d = canto útil de la sección.

bw = anchura del alma de la viga.

f_{cv} = resistencia virtual de calculo del hormigón a esfuerzo cortante, dada en kp/cm² por

$$f_{cv} = 0{,}5 * \sqrt{f_{cd}}$$

donde:

f_{cd} = resistencia de calculo del hormigón expresada en kp/cm².

a continuación se adjunta salida de resultados de las secciones estudiadas con las características de las mismas así como los valores del esfuerzo cortante de calculo y armadura a disponer si fuera necesario.

SECCION Dintel.-Empotramiento

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-Armadura inferior

El momento máximo corresponde a la hipótesis 1 y su valor es el siguiente :

Md = HIP 1 * 0.9 + HIP 3 * 1.6

Md = 20.05 m Mp/m

Nd = 9.05 Mp/m

Us2 = 0,05 * 9.046 = 0.45 Mp/m

$$Uc = \frac{2500.00}{1,5} * 1,0 * 0.77 = 1283.33 \text{ Mp/m}$$

$$Us1 = 1283.33 \left(1 - SQRT\left(1 - 2 * \frac{20.05 - 0.45 * 0.74}{1283.33 * 0.77}\right)\right) +$$

$$+ 0.45 - 9.05 = 17.28 \text{ Mp/m}$$

$$As1 = \frac{1,15}{5,1} * 17.28 = 3.90 \text{ cm}^2/\text{m}$$

Se dispone armadura mínima 11.58 cm²/m

-Armadura superior

El momento máximo corresponde a la hipótesis 2 y su valor es el siguiente :

Md = HIP 1 * 1.6 + HIP 2 * 1.6 + HIP 4 * 1.6 + HIP 5 * 1.6

Md = 108.56 m Mp/m

Nd = 47.06 Mp/m

Us2 = 0,05 * 47.061 = 2.35 Mp/m

$$Uc = \frac{2500.00}{1,5} * 1,0 * 0.77 = 1283.33 \text{ Mp/m}$$

$$Us1 = 1283.33 \left(1 - SQRT\left(1 - 2 * \frac{108.56 - 2.35 * 0.74}{1283.33 * 0.77}\right)\right) +$$

$$+ 2.35 - 47.06 = 102.46 \text{ Mp/m}$$

$$As1 = \frac{1,15}{5,1} * 102.46 = 23.10 \text{ cm}^2/\text{m}$$

SECCION Dintel.-Empotramiento

==========

-Armadura de cortante

El cortante máximo corresponde a la hipótesis 2 y su valor es el siguiente :

Vd = HIP 1 * 1.6 + HIP 2 * 1.6 + HIP 4 * 1.6 + HIP 5 * 1.6

Vd = 93.97 Mp/m

fcv = 0,5 * SQRT(166.667) = 6.45 kp/m²

Vcu = 10 * 6.455 * 0.77 = 49.70 Mp/m

Vsu = 44.27 Mp/m

Se disponen barras a 45°. La armadura total a disponer es :

As = 10.76 cm²/m

SECCION Dintel.-Cuartos de luz

-Armadura inferior

El momento máximo corresponde a la hipótesis 2 y su valor es el siguiente :

Md = HIP 1 * 1.6 + HIP 2 * 1.6 + HIP 5 * 1.6

Md = 73.66 m Mp/m

Nd = 1.75 Mp/m

Us2 = 0,05 * 1.749 = 0.09 Mp/m

$$Uc = \frac{2500.00}{1,5} * 1,0 * 0.77 = 1283.33 \text{ Mp/m}$$

$$Us1 = 1283.33 \left(1 - SQRT\left(1 - 2 * \frac{73.66 - 0.09 * 0.74}{1283.33 * 0.77}\right)\right) +$$

$$+ 0.09 - 1.75 = 97.77 \text{ Mp/m}$$

$$As1 = \frac{1,15}{5,1} * 97.77 = 22.05 \text{ cm}^2/\text{m}$$

-Armadura superior

Armadura mínima 11.58 cm²/m

-Armadura de cortante

El cortante máximo corresponde a la hipótesis 2 y su valor es el siguiente :

Vd = HIP 1 * 1.6 + HIP 2 * 1.6 + HIP 4 * 1.6 + HIP 5 * 1.6

Vd = 46.99 Mp/m

fcv = 0,5 * SQRT(166.667) = 6.45 kp/m²

Vcu = 10 * 6.455 * 0.77 = 49.70 Mp/m

Vcu > Vd. No precisa armadura a cortante

SECCION Dintel.-Centro de vano

-Armadura inferior

El momento máximo corresponde a la hipótesis 2 y su valor es el siguiente :

Md = HIP 1 * 1.6 + HIP 2 * 1.6 + HIP 5 * 1.6

Md = 119.47 m Mp/m

Nd = 1.75 Mp/m

Us2 = 0,05 * 1.749 = 0.09 Mp/m

$$Uc = \frac{2500.00}{1,5} * 1,0 * 0.77 = 1283.33 \text{ Mp/m}$$

$$Us1 = 1283.33 \left(1 - SQRT\left(1 - 2 * \frac{119.47 - 0.09 * 0.74}{1283.33 * 0.77}\right)\right) +$$

$$+ 0.09 - 1.75 = 164.12 \text{ Mp/m}$$

$$As1 = \frac{1,15}{5,1} * 164.12 = 37.01 \text{ cm}^2/\text{m}$$

-Armadura superior

Armadura mínima 11.58 cm²/m

-Armadura de cortante

El cortante máximo corresponde a la hipótesis 1 y su valor es el siguiente :

Vd = HIP 1 * 0.9 + HIP 3 * 1.6

Vd = 6.80 Mp/m

fcv = 0,5 * SQRT(166.667) = 6.45 kp/m²

Vcu = 10 * 6.455 * 0.77 = 49.70 Mp/m

Vcu > Vd. No precisa armadura a cortante

SECCION Hastial.-Empot. superior

-Armadura exterior

El momento máximo corresponde a la hipótesis 2 y su valor es el siguiente :

Md = HIP 1 * 1.6 + HIP 2 * 1.6 + HIP 4 * 1.6 + HIP 5 * 1.6

Md = 125.92 m Mp/m

Nd = 93.97 Mp/m

Us2 = 0,05 * 93.974 = 4.70 Mp/m

$$Uc = \frac{2500.00}{1,5} * 1,0 * 0.77 = 1283.33 \text{ Mp/m}$$

$$Us1 = 1283.33 \left(1 - SQRT\left(1 - 2 * \frac{125.92 - 4.70 * 0.74}{1283.33 * 0.77}\right)\right) +$$

$$+ 4.70 - 93.97 = 81.04 \text{ Mp/m}$$

$$As1 = \frac{1,15}{5,1} * 81.04 = 18.27 \text{ cm}^2/\text{m}$$

-Armadura interior

El momento máximo corresponde a la hipótesis 1 y su valor es el siguiente :

Md = HIP 1 * 0.9 + HIP 3 * 1.6

Md = 16.79 m Mp/m

Nd = 0.22 Mp/m

Us2 = 0,05 * 0.218 = 0.01 Mp/m

$$Uc = \frac{2500.00}{1,5} * 1,0 * 0.77 = 1283.33 \text{ Mp/m}$$

$$Us1 = 1283.33 \left(1 - SQRT\left(1 - 2 * \frac{16.79 - 0.01 * 0.74}{1283.33 * 0.77}\right)\right) +$$

$$+ 0.01 - 0.22 = 21.77 \text{ Mp/m}$$

$$As1 = \frac{1,15}{5,1} * 21.77 = 4.91 \text{ cm}^2/\text{m}$$

Se dispone armadura mínima 11.58 cm²/m

SECCION Hastial.-Empot. superior

-Armadura de cortante

El cortante máximo corresponde a la hipótesis 2 y su valor es el siguiente :

Vd = HIP 1 * 0.9 + HIP 2 * 1.6 + HIP 4 * 1.6 + HIP 5 * 1.6

Vd = 48.29 Mp/m

fcv = 0,5 * SQRT(166.667) = 6.45 kp/m²

Vcu = 10 * 6.455 * 0.77 = 49.70 Mp/m

Vcu > Vd. No precisa armadura a cortante

SECCION Hastial.-Cuarto superior

-Armadura exterior

El momento máximo corresponde a la hipótesis 2 y su valor es el siguiente :

Md = HIP 1 * 1.6 + HIP 2 * 1.6 + HIP 5 * 1.6

Md = 104.03 m Mp/m

Nd = 99.25 Mp/m

Us2 = 0,05 * 99.254 = 4.96 Mp/m

$$Uc = \frac{2500.00}{1,5} * 1,0 * 0.77 = 1283.33 \text{ Mp/m}$$

$$Us1 = 1283.33 \left(1 - SQRT\left(1 - 2 * \frac{104.03 - 4.96 * 0.74}{1283.33 * 0.77}\right)\right) +$$

$$+ 4.96 - 99.25 = 43.44 \text{ Mp/m}$$

$$As1 = \frac{1,15}{5,1} * 43.44 = 9.80 \text{ cm}^2/\text{m}$$

Se dispone armadura mínima 11.58 cm²/m

-Armadura interior

El momento máximo corresponde a la hipótesis 1 y su valor es el siguiente :

Md = HIP 1 * 0.9 + HIP 3 * 1.6

Md = 27.48 m Mp/m

Nd = 3.19 Mp/m

Us2 = 0,05 * 3.188 = 0.16 Mp/m

$$Uc = \frac{2500.00}{1,5} * 1,0 * 0.77 = 1283.33 \text{ Mp/m}$$

$$Us1 = 1283.33 \left(1 - SQRT\left(1 - 2 * \frac{27.48 - 0.16 * 0.74}{1283.33 * 0.77}\right)\right) +$$

$$+ 0.16 - 3.19 = 33.01 \text{ Mp/m}$$

$$As1 = \frac{1,15}{5,1} * 33.01 = 7.44 \text{ cm}^2/\text{m}$$

Se dispone armadura mínima 11.58 cm²/m

SECCION Hastial.-Cuarto superior

-Armadura de cortante

El cortante máximo corresponde a la hipótesis 2 y su valor es el siguiente :

Vd = HIP 1 * 0.9 + HIP 2 * 1.6 + HIP 4 * 1.6 + HIP 5 * 1.6

Vd = 27.23 Mp/m

fcv = 0,5 * SQRT(166.667) = 6.45 kp/m²

Vcu = 10 * 6.455 * 0.77 = 49.70 Mp/m

Vcu > Vd. No precisa armadura a cortante

SECCION Hastial.-Centro de vano

-Armadura exterior

El momento máximo corresponde a la hipótesis 2 y su valor es el siguiente :

Md = HIP 1 * 1.6 + HIP 2 * 1.6 + HIP 5 * 1.6

Md = 108.87 m Mp/m

Nd = 104.53 Mp/m

Us2 = 0,05 * 104.534 = 5.23 Mp/m

$$Uc = \frac{2500.00}{1,5} * 1,0 * 0.77 = 1283.33 \text{ Mp/m}$$

$$Us1 = 1283.33 \left(1 - \sqrt{1 - 2 * \frac{108.87 - 5.23 * 0.74}{1283.33 * 0.77}}\right) +$$

$$+ 5.23 - 104.53 = 45.20 \text{ Mp/m}$$

$$As1 = \frac{1,15}{5,1} * 45.20 = 10.19 \text{ cm}^2/\text{m}$$

Se dispone armadura mínima 11.58 cm²/m

-Armadura interior

El momento máximo corresponde a la hipótesis 2 y su valor es el siguiente :

Md = HIP 1 * 0.9 + HIP 2 * 0.9 + HIP 4 * 1.6

Md = 47.48 m Mp/m

Nd = 49.81 Mp/m

Us2 = 0,05 * 49.815 = 2.49 Mp/m

$$Uc = \frac{2500.00}{1,5} * 1,0 * 0.77 = 1283.33 \text{ Mp/m}$$

$$Us1 = 1283.33 \left(1 - \sqrt{1 - 2 * \frac{47.48 - 2.49 * 0.74}{1283.33 * 0.77}}\right) +$$

$$+ 2.49 - 49.81 = 13.38 \text{ Mp/m}$$

$$As1 = \frac{1,15}{5,1} * 13.38 = 3.02 \text{ cm}^2/\text{m}$$

Se dispone armadura mínima 11.58 cm²/m

SECCION Hastial.-Centro de vano

-Armadura de cortante

El cortante máximo corresponde a la hipótesis 1 y su valor es el siguiente :

Vd = HIP 1 * 1.6 + HIP 3 * 1.6

Vd = 10.92 Mp/m

fcv = 0,5 * SQRT(166.667) = 6.45 kp/m²

Vcu = 10 * 6.455 * 0.77 = 49.70 Mp/m

Vcu > Vd. No precisa armadura a cortante

SECCION Hastial.-Cuarto inferior

-Armadura exterior

El momento máximo corresponde a la hipótesis 2 y su valor es el siguiente :

Md = HIP 1 * 1.6 + HIP 2 * 1.6 + HIP 5 * 1.6

Md = 113.71 m Mp/m

Nd = 109.81 Mp/m

Us2 = 0,05 * 109.814 = 5.49 Mp/m

$$Uc = \frac{2500.00}{1,5} * 1,0 * 0.77 = 1283.33 \text{ Mp/m}$$

$$Us1 = 1283.33 \left(1 - SQRT\left(1 - 2 * \frac{113.71 - 5.49 * 0.74}{1283.33 * 0.77}\right)\right) +$$

$$+ 5.49 - 109.81 = 47.00 \text{ Mp/m}$$

$$As1 = \frac{1,15}{5,1} * 47.00 = 10.60 \text{ cm}^2/\text{m}$$

Se dispone armadura mínima 11.58 cm²/m

-Armadura interior

El momento máximo corresponde a la hipótesis 2 y su valor es el siguiente :

Md = HIP 1 * 0.9 + HIP 2 * 0.9 + HIP 4 * 1.6

Md = 26.68 m Mp/m

Nd = 52.78 Mp/m

Us2 = 0,05 * 52.785 = 2.64 Mp/m

$$Uc = \frac{2500.00}{1,5} * 1,0 * 0.77 = 1283.33 \text{ Mp/m}$$

$$Us1 = 1283.33 \left(1 - SQRT\left(1 - 2 * \frac{26.68 - 2.64 * 0.74}{1283.33 * 0.77}\right)\right) +$$

$$+ 2.64 - 52.78 = 0.00 \text{ Mp/m}$$

$$As1 = \frac{1,15}{5,1} * 0.00 = 0.00 \text{ cm}^2/\text{m}$$

Se dispone armadura mínima 11.58 cm²/m

SECCION Hastial.-Cuarto inferior

-Armadura de cortante

El cortante máximo corresponde a la hipótesis 2 y su valor es el siguiente :

Vd = HIP 1 * 1.6 + HIP 2 * 0.9 + HIP 4 * 1.6

Vd = 29.75 Mp/m

fcv = 0,5 * SQRT(166.667) = 6.45 kp/m²

Vcu = 10 * 6.455 * 0.77 = 49.70 Mp/m

Vcu > Vd. No precisa armadura a cortante

SECCION Hastial.-Empotramiento inferior

-Armadura interior

Armadura mínima 11.58 cm²/m

-Armadura exterior

El momento máximo corresponde a la hipótesis 2 y su valor es el siguiente :

Md = HIP 1 * 1.6 + HIP 2 * 1.6 + HIP 4 * 1.6 + HIP 5 * 1.6

Md = 148.96 m Mp/m

Nd = 115.09 Mp/m

Us2 = 0,05 * 115.094 = 5.75 Mp/m

$$Uc = \frac{2500.00}{1,5} * 1,0 * 0.77 = 1283.33 \text{ Mp/m}$$

$$Us1 = 1283.33 \left(1 - SQRT\left(1 - 2 * \frac{148.96 - 5.75 * 0.74}{1283.33 * 0.77}\right)\right) +$$

$$+ 5.75 - 115.09 = 94.82 \text{ Mp/m}$$

$$As1 = \frac{1,15}{5,1} * 94.82 = 21.38 \text{ cm²/m}$$

-Armadura de cortante

El cortante máximo corresponde a la hipótesis 2 y su valor es el siguiente :

Vd = HIP 1 * 1.6 + HIP 2 * 0.9 + HIP 4 * 1.6

Vd = 63.87 Mp/m

Si despreciamos las cargas que actuan dentro de la seccion a 45 grados el cortante es

Vd = 63.87 - 1.60 * 13.60 = 42.12

fcv = 0,5 * SQRT(166.667) = 6.45 kp/m²

Vcu = 10 * 6.455 * 0.77 = 49.70 Mp/m

Vcu > Vd. No precisa armadura a cortante

SECCION Solera.-Empotramiento

-Armadura inferior

El momento máximo corresponde a la hipótesis 2 y su valor es el siguiente :

Md = HIP 1 * 1.6 + HIP 2 * 1.6 + HIP 4 * 1.6 + HIP 5 * 1.6

Md = 129.79 m Mp/m

Nd = 63.29 Mp/m

Us2 = 0,05 * 63.291 = 3.16 Mp/m

$$Uc = \frac{2500.00}{1,5} * 1,0 * 0.77 = 1283.33 \text{ Mp/m}$$

$$Us1 = 1283.33 \left(1 - SQRT\left(1 - 2 * \frac{129.79 - 3.16 * 0.74}{1283.33 * 0.77}\right)\right) +$$

$$+ 3.16 - 63.29 = 117.71 \text{ Mp/m}$$

$$As1 = \frac{1,15}{5,1} * 117.71 = 26.54 \text{ cm²/m}$$

-Armadura superior

Armadura mínima 11.58 cm²/m

-Armadura de cortante

El cortante máximo corresponde a la hipótesis 2 y su valor es el siguiente :

Vd = HIP 1 * 1.6 + HIP 2 * 1.6 + HIP 4 * 1.6 + HIP 5 * 1.6

Vd = 96.52 Mp/m

fcv = 0,5 * SQRT(166.667) = 6.45 kp/m²

Vcu = 10 * 6.455 * 0.77 = 49.70 Mp/m

Vsu = 46.82 Mp/m

Se disponen barras a 45°. La armadura total a disponer es :

As = 11.37 cm²/m

SECCION Solera.-Cuartos de luz

-Armadura inferior

El momento máximo corresponde a la hipótesis 1 y su valor es el siguiente :

Md = HIP 1 * 0.9 + HIP 3 * 1.6

Md = 46.34 m Mp/m

Nd = 45.87 Mp/m

Us2 = 0,05 * 45.866 = 2.29 Mp/m

$$Uc = \frac{2500.00}{1,5} * 1,0 * 0.77 = 1283.33 \text{ Mp/m}$$

$$Us1 = 1283.33 \left(1 - \sqrt{1 - 2 * \frac{46.34 - 2.29 * 0.74}{1283.33 * 0.77}}\right) +$$

$$+ 2.29 - 45.87 = 15.78 \text{ Mp/m}$$

$$As1 = \frac{1,15}{5,1} * 15.78 = 3.56 \text{ cm}^2/\text{m}$$

Se dispone armadura mínima 11.58 cm²/m

-Armadura superior

El momento máximo corresponde a la hipótesis 2 y su valor es el siguiente :

Md = HIP 1 * 1.6 + HIP 2 * 1.6 + HIP 5 * 1.6

Md = 82.50 m Mp/m

Nd = 1.75 Mp/m

Us2 = 0,05 * 1.749 = 0.09 Mp/m

$$Uc = \frac{2500.00}{1,5} * 1,0 * 0.77 = 1283.33 \text{ Mp/m}$$

$$Us1 = 1283.33 \left(1 - \sqrt{1 - 2 * \frac{82.50 - 0.09 * 0.74}{1283.33 * 0.77}}\right) +$$

$$+ 0.09 - 1.75 = 110.28 \text{ Mp/m}$$

$$As1 = \frac{1,15}{5,1} * 110.28 = 24.87 \text{ cm}^2/\text{m}$$

SECCION Solera.-Cuartos de luz

-Armadura de cortante

El cortante máximo corresponde a la hipótesis 2 y su valor es el siguiente :

Vd = HIP 1 * 1.6 + HIP 2 * 1.6 + HIP 4 * 1.6 + HIP 5 * 1.6

Vd = 37.03 Mp/m

fcv = 0,5 * SQRT(166.667) = 6.45 kp/m²

Vcu = 10 * 6.455 * 0.77 = 49.70 Mp/m

Vcu > Vd. No precisa armadura a cortante

SECCION Solera.-Centro de vano

-Armadura inferior

Armadura mínima 11.58 cm²/m

-Armadura superior

El momento máximo corresponde a la hipótesis 2 y su valor es el siguiente :

Md = HIP 1 * 1.6 + HIP 2 * 1.6 + HIP 5 * 1.6

Md = 130.32 m Mp/m

Nd = 1.75 Mp/m

Us2 = 0,05 * 1.749 = 0.09 Mp/m

$$Uc = \frac{2500.00}{1,5} * 1,0 * 0.77 = 1283.33 \text{ Mp/m}$$

$$Us1 = 1283.33 \left(1 - SQRT\left(1 - 2 * \frac{130.32 - 0.09 * 0.74}{1283.33 * 0.77}\right)\right) + 0.09 - 1.75 = 180.42 \text{ Mp/m}$$

$$As1 = \frac{1,15}{5,1} * 180.42 = 40.68 \text{ cm²/m}$$

-Armadura de cortante

El cortante máximo corresponde a la hipótesis 1 y su valor es el siguiente :

Vd = HIP 1 * 0.9 + HIP 3 * 1.6

Vd = 16.18 Mp/m

fcv = 0,5 * SQRT(166.667) = 6.45 kp/m²

Vcu = 10 * 6.455 * 0.77 = 49.70 Mp/m

Vcu > Vd. No precisa armadura a cortante

REACCIONES Y TENSIONES MAXIMAS EN SOLERA

NUDO	REACCION	TENSION
12	11.61 Mp	13.08 Mp/m²
13	21.49 Mp	22.04 Mp/m²
14	19.59 Mp	20.09 Mp/m²
15	18.20 Mp	18.67 Mp/m²
16	17.69 Mp	18.15 Mp/m²
17	18.20 Mp	18.67 Mp/m²
18	19.59 Mp	20.09 Mp/m²
19	21.49 Mp	22.04 Mp/m²
20	11.61 Mp	13.08 Mp/m²

CON MODULO DE BALASTO DE 10000 Mp/m^3

DATOS GENERALES DE LA ESTRUCTURA

COORDENADAS DE NUDOS

Nudo	X	Y
1	0.400	7.000
2	2.350	7.000
3	4.300	7.000
4	6.250	7.000
5	8.200	7.000
6	0.400	5.350
7	8.200	5.350
8	0.400	3.700
9	8.200	3.700
10	0.400	2.050
11	8.200	2.050
12	0.400	0.400
13	1.375	0.400
14	2.350	0.400
15	3.325	0.400
16	4.300	0.400
17	5.275	0.400
18	6.250	0.400
19	7.225	0.400
20	8.200	0.400

DATOS GENERALES DE LA ESTRUCTURA

CARACTERISTICAS DE BARRAS

Barra	i	j	If.i	Area.i
1	1	2	0.04267	0.800
2	2	3	0.04267	0.800
3	3	4	0.04267	0.800
4	4	5	0.04267	0.800
5	1	6	0.04267	0.800
6	6	8	0.04267	0.800
7	8	10	0.04267	0.800
8	10	12	0.04267	0.800
9	5	7	0.04267	0.800
10	7	9	0.04267	0.800
11	9	11	0.04267	0.800
12	11	20	0.04267	0.800
13	12	13	0.04267	0.800
14	13	14	0.04267	0.800
15	14	15	0.04267	0.800
16	15	16	0.04267	0.800
17	16	17	0.04267	0.800
18	17	18	0.04267	0.800
19	18	19	0.04267	0.800
20	19	20	0.04267	0.800

RESULTADOS DE PESO PROPIO

HIPOTESIS DE CARGA N° 1

Barra	P1	P2	D1	Longitud	Angulo	Tipo
1	2.000	0.000	0.000	1.950	-90.000	2
2	2.000	0.000	0.000	1.950	-90.000	2
3	2.000	0.000	0.000	1.950	-90.000	2
4	2.000	0.000	0.000	1.950	-90.000	2
5	2.000	0.000	0.000	1.650	-90.000	2
6	2.000	0.000	0.000	1.650	-90.000	2
7	2.000	0.000	0.000	1.650	-90.000	2
8	2.000	0.000	0.000	1.650	-90.000	2
9	2.000	0.000	0.000	1.650	-90.000	2
10	2.000	0.000	0.000	1.650	-90.000	2
11	2.000	0.000	0.000	1.650	-90.000	2
12	2.000	0.000	0.000	1.650	-90.000	2
13	2.000	0.000	0.000	0.975	-90.000	2
14	2.000	0.000	0.000	0.975	-90.000	2
15	2.000	0.000	0.000	0.975	-90.000	2
16	2.000	0.000	0.000	0.975	-90.000	2
17	2.000	0.000	0.000	0.975	-90.000	2
18	2.000	0.000	0.000	0.975	-90.000	2
19	2.000	0.000	0.000	0.975	-90.000	2
20	2.000	0.000	0.000	0.975	-90.000	2

RESULTADOS DE PESO PROPIO

DESPLAZAMIENTOS DE NUDOS

Nudo	Direc. x	Direc. y	Giro
1	0.00000	-0.00165	0.00037
2	0.00000	-0.00238	0.00031
3	0.00000	-0.00270	0.00000
4	0.00000	-0.00238	-0.00031
5	0.00000	-0.00165	-0.00037
6	-0.00048	-0.00164	0.00021
7	0.00048	-0.00164	-0.00021
8	-0.00068	-0.00162	0.00002
9	0.00068	-0.00162	-0.00002
10	-0.00054	-0.00159	-0.00020
11	0.00054	-0.00159	0.00020
12	0.00000	-0.00156	-0.00046
13	0.00000	-0.00107	-0.00051
14	0.00000	-0.00063	-0.00038
15	0.00000	-0.00034	-0.00020
16	0.00000	-0.00025	0.00000
17	0.00000	-0.00034	0.00020
18	0.00000	-0.00063	0.00038
19	0.00000	-0.00107	0.00051
20	0.00000	-0.00156	0.00046

RESULTADOS DE PESO PROPIO

ESFUERZOS EN BARRAS

Barra	i	j	Axil i	Corte.i	Momto.i	Axil j	Corte.j	Momto.j
1	1	2	0.723	-7.800	-4.770	0.723	-3.900	-6.637
2	2	3	0.723	-3.900	6.637	0.723	0.000	-10.440
3	3	4	0.723	0.000	10.440	0.723	3.900	-6.637
4	4	5	0.723	3.900	6.637	0.723	7.800	4.770
5	1	6	-7.800	-0.723	4.770	-11.100	-0.723	-5.963
6	6	8	-11.100	-0.723	5.963	-14.400	-0.723	-7.155
7	8	10	-14.400	-0.723	7.155	-17.700	-0.723	-8.347
8	10	12	-17.700	-0.723	8.347	-21.000	-0.723	-9.540
9	5	7	-7.800	0.723	-4.770	-11.100	0.723	5.963
10	7	9	-11.100	0.723	-5.963	-14.400	0.723	7.155
11	9	11	-14.400	0.723	-7.155	-17.700	0.723	8.347
12	11	20	-17.700	0.723	-8.347	-21.000	0.723	9.540
13	12	13	-0.723	13.381	9.540	-0.723	15.331	4.457
14	13	14	-0.723	4.870	-4.457	-0.723	6.820	10.156
15	14	15	-0.723	0.665	-10.156	-0.723	2.615	11.755
16	15	16	-0.723	-0.746	-11.755	-0.723	1.204	11.979
17	16	17	-0.723	-1.204	-11.979	-0.723	0.746	11.755
18	17	18	-0.723	-2.615	-11.755	-0.723	-0.665	10.156
19	18	19	-0.723	-6.820	-10.156	-0.723	-4.870	4.457
20	19	20	-0.723	-15.331	-4.457	-0.723	-13.381	-9.540

RESULTADOS DE CARGA PERMANENTE

HIPOTESIS DE CARGA N° 2

Barra	P1	P2	D1	Longitud	Angulo	Tipo
1	10.500	0.000	0.000	1.950	-90.000	2
2	10.500	0.000	0.000	1.950	-90.000	2
3	10.500	0.000	0.000	1.950	-90.000	2
4	10.500	0.000	0.000	1.950	-90.000	2
5	0.000	0.000	0.000	0.000	0.000	0
6	0.000	0.000	0.000	0.000	0.000	0
7	0.000	0.000	0.000	0.000	0.000	0
8	0.000	0.000	0.000	0.000	0.000	0
9	0.000	0.000	0.000	0.000	0.000	0
10	0.000	0.000	0.000	0.000	0.000	0
11	0.000	0.000	0.000	0.000	0.000	0
12	0.000	0.000	0.000	0.000	0.000	0
13	0.000	0.000	0.000	0.000	0.000	0
14	0.000	0.000	0.000	0.000	0.000	0
15	0.000	0.000	0.000	0.000	0.000	0
16	0.000	0.000	0.000	0.000	0.000	0
17	0.000	0.000	0.000	0.000	0.000	0
18	0.000	0.000	0.000	0.000	0.000	0
19	0.000	0.000	0.000	0.000	0.000	0
20	0.000	0.000	0.000	0.000	0.000	0

RESULTADOS DE CARGA PERMANENTE

DESPLAZAMIENTOS DE NUDOS

Nudo	Direc. x	Direc. y	Giro
1	0.00001	-0.00313	0.00147
2	0.00001	-0.00629	0.00142
3	0.00000	-0.00778	0.00000
4	-0.00001	-0.00629	-0.00142
5	-0.00001	-0.00313	-0.00147
6	-0.00171	-0.00307	0.00063
7	0.00171	-0.00307	-0.00063
8	-0.00214	-0.00301	-0.00009
9	0.00214	-0.00301	0.00009
10	-0.00150	-0.00295	-0.00067
11	0.00150	-0.00295	0.00067
12	-0.00001	-0.00288	-0.00112
13	-0.00001	-0.00176	-0.00112
14	-0.00001	-0.00080	-0.00082
15	0.00000	-0.00020	-0.00042
16	0.00000	0.00000	0.00000
17	0.00000	-0.00020	0.00042
18	0.00001	-0.00080	0.00082
19	0.00001	-0.00176	0.00112
20	0.00001	-0.00288	0.00112

RESULTADOS DE CARGA PERMANENTE

ESFUERZOS EN BARRAS

Barra	i	j	Axil i	Corte.i	Momto.i	Axil j	Corte.j	Momto.j
1	1	2	-2.783	-40.950	-31.617	-2.783	-20.475	-28.272
2	2	3	-2.783	-20.475	28.272	-2.783	0.000	-48.235
3	3	4	-2.783	0.000	48.235	-2.783	20.475	-28.272
4	4	5	-2.783	20.475	28.272	-2.783	40.950	31.617
5	1	6	-40.950	2.783	31.617	-40.950	2.783	-27.026
6	6	8	-40.950	2.783	27.026	-40.950	2.783	-22.434
7	8	10	-40.950	2.783	22.434	-40.950	2.783	-17.843
8	10	12	-40.950	2.783	17.843	-40.950	2.783	-13.252
9	5	7	-40.950	-2.783	-31.617	-40.950	-2.783	27.026
10	7	9	-40.950	-2.783	-27.026	-40.950	-2.783	22.434
11	9	11	-40.950	-2.783	-22.434	-40.950	-2.783	17.843
12	11	20	-40.950	-2.783	-17.843	-40.950	-2.783	13.252
13	12	13	2.783	26.897	13.252	2.783	26.897	12.973
14	13	14	2.783	9.759	-12.973	2.783	9.759	22.488
15	14	15	2.783	1.935	-22.488	2.783	1.935	24.375
16	15	16	2.783	-0.013	-24.375	2.783	-0.013	24.362
17	16	17	2.783	0.013	-24.362	2.783	0.013	24.375
18	17	18	2.783	-1.935	-24.375	2.783	-1.935	22.488
19	18	19	2.783	-9.759	-22.488	2.783	-9.759	12.973
20	19	20	2.783	-26.897	-12.973	2.783	-26.897	-13.252

RESULTADOS DE EMPUJE POR UN SOLO LADO SIN TIERRAS ENCIMA

HIPOTESIS DE CARGA N° 3

Barra	P1	P2	D1	Longitud	Angulo	Tipo
1	0.000	0.000	0.000	0.000	0.000	0
2	0.000	0.000	0.000	0.000	0.000	0
3	0.000	0.000	0.000	0.000	0.000	0
4	0.000	0.000	0.000	0.000	0.000	0
5	-1.900	-3.550	0.000	1.650	0.000	3
6	-3.550	-5.200	0.000	1.650	0.000	3
7	-5.200	-6.850	0.000	1.650	0.000	3
8	-6.850	-8.500	0.000	1.650	0.000	3
9	0.000	0.000	0.000	0.000	0.000	0
10	0.000	0.000	0.000	0.000	0.000	0
11	0.000	0.000	0.000	0.000	0.000	0
12	0.000	0.000	0.000	0.000	0.000	0
13	0.000	0.000	0.000	0.000	0.000	0
14	0.000	0.000	0.000	0.000	0.000	0
15	0.000	0.000	0.000	0.000	0.000	0
16	0.000	0.000	0.000	0.000	0.000	0
17	0.000	0.000	0.000	0.000	0.000	0
18	0.000	0.000	0.000	0.000	0.000	0
19	0.000	0.000	0.000	0.000	0.000	0
20	0.000	0.000	0.000	0.000	0.000	0

RESULTADOS DE EMPUJE POR UN SOLO LADO SIN TIERRAS ENCIMA

DESPLAZAMIENTOS DE NUDOS

Nudo	Direc. x	Direc. y	Giro
1	0.00883	0.00168	0.00048
2	0.00882	0.00107	0.00019
3	0.00881	0.00075	0.00018
4	0.00880	0.00018	0.00045
5	0.00879	-0.00117	0.00099
6	0.00768	0.00167	0.00095
7	0.00676	-0.00117	0.00141
8	0.00564	0.00167	0.00151
9	0.00430	-0.00116	0.00153
10	0.00284	0.00166	0.00180
11	0.00188	-0.00115	0.00135
12	0.00010	0.00166	0.00135
13	0.00008	0.00062	0.00079
14	0.00005	0.00008	0.00034
15	0.00003	-0.00011	0.00007
16	0.00000	-0.00011	-0.00004
17	0.00001	-0.00008	0.00001
18	0.00001	-0.00017	0.00019
19	0.00002	-0.00049	0.00049
20	0.00002	-0.00115	0.00086

RESULTADOS DE EMPUJE POR UN SOLO LADO SIN TIERRAS ENCIMA

ESFUERZOS EN BARRAS

Barra	i	j	Axil i	Corte.i	Momto.i	Axil j	Corte.j	Momto.j
1	1	2	-6.366	4.132	12.356	-6.366	4.132	-4.298
2	2	3	-6.366	4.132	4.298	-6.366	4.132	3.760
3	3	4	-6.366	4.132	-3.760	-6.366	4.132	11.818
4	4	5	-6.366	4.132	-11.818	-6.366	4.132	19.877
5	1	6	4.132	6.366	-12.356	4.132	1.870	19.526
6	6	8	4.132	1.870	-19.526	4.132	-5.349	17.030
7	8	10	4.132	-5.349	-17.030	4.132	-15.290	0.378
8	10	12	4.132	-15.290	-0.378	4.132	-27.954	-34.924
9	5	7	-4.132	-6.366	-19.877	-4.132	-6.366	9.372
10	7	9	-4.132	-6.366	-9.372	-4.132	-6.366	-1.132
11	9	11	-4.132	-6.366	1.132	-4.132	-6.366	-11.637
12	11	20	-4.132	-6.366	11.637	-4.132	-6.366	-22.141
13	12	13	-27.954	3.939	34.924	-27.954	3.939	-31.083
14	13	14	-27.954	9.954	31.083	-27.954	9.954	-21.378
15	14	15	-27.954	10.721	21.378	-27.954	10.721	-10.925
16	15	16	-27.954	9.685	10.925	-27.954	9.685	-1.482
17	16	17	6.366	8.646	1.482	6.366	8.646	6.948
18	17	18	6.366	7.869	-6.948	6.366	7.869	14.620
19	18	19	6.366	6.251	-14.620	6.366	6.251	20.715
20	19	20	6.366	1.463	-20.715	6.366	1.463	22.141

RESULTADOS DE EMPUJE POR LOS DOS LADOS CON TIERRAS ENCIMA

HIPOTESIS DE CARGA N° 4

Barra	P1	P2	D1	Longitud	Angulo	Tipo
1	0.000	0.000	0.000	0.000	0.000	0
2	0.000	0.000	0.000	0.000	0.000	0
3	0.000	0.000	0.000	0.000	0.000	0
4	0.000	0.000	0.000	0.000	0.000	0
5	-7.150	-8.800	0.000	1.650	0.000	3
6	-8.800	-10.450	0.000	1.650	0.000	3
7	-10.450	-12.100	0.000	1.650	0.000	3
8	-12.100	-13.750	0.000	1.650	0.000	3
9	7.150	8.800	0.000	1.650	0.000	3
10	8.800	10.450	0.000	1.650	0.000	3
11	10.450	12.100	0.000	1.650	0.000	3
12	12.100	13.750	0.000	1.650	0.000	3
13	0.000	0.000	0.000	0.000	0.000	0
14	0.000	0.000	0.000	0.000	0.000	0
15	0.000	0.000	0.000	0.000	0.000	0
16	0.000	0.000	0.000	0.000	0.000	0
17	0.000	0.000	0.000	0.000	0.000	0
18	0.000	0.000	0.000	0.000	0.000	0
19	0.000	0.000	0.000	0.000	0.000	0
20	0.000	0.000	0.000	0.000	0.000	0

RESULTADOS DE EMPUJE POR LOS DOS LADOS CON TIERRAS ENCIMA

DESPLAZAMIENTOS DE NUDOS

Nudo	Direc. x	Direc. y	Giro
1	0.00011	0.00099	-0.00107
2	0.00005	0.00255	-0.00053
3	0.00000	0.00307	0.00000
4	-0.00005	0.00255	0.00053
5	-0.00011	0.00099	0.00107
6	0.00189	0.00099	-0.00092
7	-0.00189	0.00099	0.00092
8	0.00271	0.00099	0.00000
9	-0.00271	0.00099	0.00000
10	0.00189	0.00099	0.00092
11	-0.00189	0.00099	-0.00092
12	0.00014	0.00099	0.00097
13	0.00011	0.00025	0.00058
14	0.00007	-0.00017	0.00029
15	0.00004	-0.00036	0.00012
16	0.00000	-0.00042	0.00000
17	-0.00004	-0.00036	-0.00012
18	-0.00007	-0.00017	-0.00029
19	-0.00011	0.00025	-0.00058
20	-0.00014	0.00099	-0.00097

RESULTADOS DE EMPUJE POR LOS DOS LADOS CON TIERRAS ENCIMA

ESFUERZOS EN BARRAS

Barra	i	j	Axil i	Corte.i	Momto.i	Axil j	Corte.j	Momto.j
1	1	2	-29.434	0.000	-15.631	-29.434	0.000	15.631
2	2	3	-29.434	0.000	-15.631	-29.434	0.000	15.631
3	3	4	-29.434	0.000	-15.631	-29.434	0.000	15.631
4	4	5	-29.434	0.000	-15.631	-29.434	0.000	15.631
5	1	6	0.000	29.434	15.631	0.000	16.275	22.453
6	6	8	0.000	16.275	-22.453	0.000	0.394	36.579
7	8	10	0.000	0.394	-36.579	0.000	-18.210	22.255
8	10	12	0.000	-18.210	-22.255	0.000	-39.536	-25.011
9	5	7	0.000	-29.434	-15.631	0.000	-16.275	-22.453
10	7	9	0.000	-16.275	22.453	0.000	-0.394	-36.579
11	9	11	0.000	-0.394	36.579	0.000	18.210	-22.255
12	11	20	0.000	18.210	22.255	0.000	39.536	25.011
13	12	13	-39.536	4.846	25.011	-39.536	4.846	-20.287
14	13	14	-39.536	7.245	20.287	-39.536	7.245	-13.222
15	14	15	-39.536	5.579	13.222	-39.536	5.579	-7.782
16	15	16	-39.536	2.034	7.782	-39.536	2.034	-5.799
17	16	17	-39.536	-2.034	5.799	-39.536	-2.034	-7.782
18	17	18	-39.536	-5.579	7.782	-39.536	-5.579	-13.222
19	18	19	-39.536	-7.245	13.222	-39.536	-7.245	-20.287
20	19	20	-39.536	-4.846	20.287	-39.536	-4.846	-25.011

RESULTADOS DE SOBRECARGA UNIFORME

HIPOTESIS DE CARGA N° 5

Barra	P1	P2	D1	Longitud	Angulo	Tipo
1	2.560	0.000	0.000	1.950	-90.000	2
2	2.560	0.000	0.000	1.950	-90.000	2
3	2.560	0.000	0.000	1.950	-90.000	2
4	2.560	0.000	0.000	1.950	-90.000	2
5	0.000	0.000	0.000	0.000	0.000	0
6	0.000	0.000	0.000	0.000	0.000	0
7	0.000	0.000	0.000	0.000	0.000	0
8	0.000	0.000	0.000	0.000	0.000	0
9	0.000	0.000	0.000	0.000	0.000	0
10	0.000	0.000	0.000	0.000	0.000	0
11	0.000	0.000	0.000	0.000	0.000	0
12	0.000	0.000	0.000	0.000	0.000	0
13	0.000	0.000	0.000	0.000	0.000	0
14	0.000	0.000	0.000	0.000	0.000	0
15	0.000	0.000	0.000	0.000	0.000	0
16	0.000	0.000	0.000	0.000	0.000	0
17	0.000	0.000	0.000	0.000	0.000	0
18	0.000	0.000	0.000	0.000	0.000	0
19	0.000	0.000	0.000	0.000	0.000	0
20	0.000	0.000	0.000	0.000	0.000	0

RESULTADOS DE SOBRECARGA UNIFORME

DESPLAZAMIENTOS DE NUDOS

Nudo	Direc. x	Direc. y	Giro
1	0.00000	-0.00076	0.00036
2	0.00000	-0.00153	0.00035
3	0.00000	-0.00190	0.00000
4	0.00000	-0.00153	-0.00035
5	0.00000	-0.00076	-0.00036
6	-0.00042	-0.00075	0.00015
7	0.00042	-0.00075	-0.00015
8	-0.00052	-0.00073	-0.00002
9	0.00052	-0.00073	0.00002
10	-0.00037	-0.00072	-0.00016
11	0.00037	-0.00072	0.00016
12	0.00000	-0.00070	-0.00027
13	0.00000	-0.00043	-0.00027
14	0.00000	-0.00020	-0.00020
15	0.00000	-0.00005	-0.00010
16	0.00000	0.00000	0.00000
17	0.00000	-0.00005	0.00010
18	0.00000	-0.00020	0.00020
19	0.00000	-0.00043	0.00027
20	0.00000	-0.00070	0.00027

RESULTADOS DE SOBRECARGA UNIFORME

ESFUERZOS EN BARRAS

Barra	i	j	Axil i	Corte.i	Momto.i	Axil j	Corte.j	Momto.j
1	1	2	-0.678	-9.984	-7.709	-0.678	-4.992	-6.893
2	2	3	-0.678	-4.992	6.893	-0.678	0.000	-11.760
3	3	4	-0.678	0.000	11.760	-0.678	4.992	-6.893
4	4	5	-0.678	4.992	6.893	-0.678	9.984	7.709
5	1	6	-9.984	0.678	7.709	-9.984	0.678	-6.589
6	6	8	-9.984	0.678	6.589	-9.984	0.678	-5.470
7	8	10	-9.984	0.678	5.470	-9.984	0.678	-4.350
8	10	12	-9.984	0.678	4.350	-9.984	0.678	-3.231
9	5	7	-9.984	-0.678	-7.709	-9.984	-0.678	6.589
10	7	9	-9.984	-0.678	-6.589	-9.984	-0.678	5.470
11	9	11	-9.984	-0.678	-5.470	-9.984	-0.678	4.350
12	11	20	-9.984	-0.678	-4.350	-9.984	-0.678	3.231
13	12	13	0.678	6.558	3.231	0.678	6.558	3.163
14	13	14	0.678	2.379	-3.163	0.678	2.379	5.483
15	14	15	0.678	0.472	-5.483	0.678	0.472	5.943
16	15	16	0.678	-0.003	-5.943	0.678	-0.003	5.940
17	16	17	0.678	0.003	-5.940	0.678	0.003	5.943
18	17	18	0.678	-0.472	-5.943	0.678	-0.472	5.483
19	18	19	0.678	-2.379	-5.483	0.678	-2.379	3.163
20	19	20	0.678	-6.558	-3.163	0.678	-6.558	-3.231

Calculo de la armadura a cortante

El esfuerzo cortante de agotamiento por tracción en el alma vale:

$$Vu2 = Vsu + Vcu$$

donde :

Vsu = contribución de la armadura transversal del alma a la resistencia a esfuerzo cortante.

Vcu = contribución del hormigón a la resistencia a esfuerzo cortante.

a)calculo de vsu

$$V_{su} = \sum A_{\alpha} * f_{y\alpha d} * 0{,}9 * d * \text{sen}\alpha * (\text{cotg}\alpha + \text{cotg}\theta)$$

$f_{y\alpha d}$ = resistencia de calculo de las armaduras transversales ≤ 4200 kp/cm^2

b)calculo de V_{cu}

en general el término Vcu de cálculo se tomará igual a:

$$V_{cu} = f_{cv} * b_w * d$$

siendo :

d = canto útil de la sección.

bw = anchura del alma de la viga.

f_{cv} = resistencia virtual de calculo del hormigón a esfuerzo cortante, dada en kp/cm² por

$$f_{cv} = 0{,}5 * \sqrt{f_{cd}}$$

donde:

f_{cd} = resistencia de calculo del hormigón expresada en kp/cm².

a continuación se adjunta salida de resultados de las secciones estudiadas con las características de las mismas así como los valores del esfuerzo cortante de calculo y armadura a disponer si fuera necesario.

SECCION Dintel.-Empotramiento

-Armadura inferior

El momento máximo corresponde a la hipótesis 1 y su valor es el siguiente :

Md = HIP 1 * 0.9 + HIP 3 * 1.6

Md = 19.00 m Mp/m

Nd = 9.53 Mp/m

Us2 = 0,05 * 9.535 = 0.48 Mp/m

$$Uc = \frac{2500.00}{1,5} * 1,0 * 0.77 = 1283.33 \text{ Mp/m}$$

$$Us1 = 1283.33 \left(1 - SQRT\left(1 - 2 * \frac{19.00 - 0.48 * 0.74}{1283.33 * 0.77}\right)\right) +$$

$$+ 0.48 - 9.53 = 15.40 \text{ Mp/m}$$

$$As1 = \frac{1,15}{5,1} * 15.40 = 3.47 \text{ cm}^2/\text{m}$$

Se dispone armadura mínima 11.58 cm²/m

-Armadura superior

El momento máximo corresponde a la hipótesis 2 y su valor es el siguiente :

Md = HIP 1 * 1.6 + HIP 2 * 1.6 + HIP 4 * 1.6 + HIP 5 * 1.6

Md = 114.61 m Mp/m

Nd = 51.48 Mp/m

Us2 = 0,05 * 51.475 = 2.57 Mp/m

$$Uc = \frac{2500.00}{1,5} * 1,0 * 0.77 = 1283.33 \text{ Mp/m}$$

$$Us1 = 1283.33 \left(1 - SQRT\left(1 - 2 * \frac{114.61 - 2.57 * 0.74}{1283.33 * 0.77}\right)\right) +$$

$$+ 2.57 - 51.48 = 106.93 \text{ Mp/m}$$

$$As1 = \frac{1,15}{5,1} * 106.93 = 24.11 \text{ cm}^2/\text{m}$$

SECCION Dintel.-Empotramiento

-Armadura de cortante

El cortante máximo corresponde a la hipótesis 2 y su valor es el siguiente :

Vd = HIP 1 * 1.6 + HIP 2 * 1.6 + HIP 4 * 1.6 + HIP 5 * 1.6

Vd = 93.97 Mp/m

fcv = 0,5 * SQRT(166.667) = 6.45 kp/m²

Vcu = 10 * 6.455 * 0.77 = 49.70 Mp/m

Vsu = 44.27 Mp/m

Se disponen barras a 45°. La armadura total a disponer es :

As = 10.76 cm²/m

SECCION Dintel.-Cuartos de luz

-Armadura inferior

El momento máximo corresponde a la hipótesis 2 y su valor es el siguiente :

Md = HIP 1 * 1.6 + HIP 2 * 1.6 + HIP 5 * 1.6

Md = 68.50 m Mp/m

Nd = 4.38 Mp/m

Us2 = 0,05 * 4.381 = 0.22 Mp/m

$$Uc = \frac{2500.00}{1,5} * 1,0 * 0.77 = 1283.33 \text{ Mp/m}$$

$$Us1 = 1283.33 \left(1 - SQRT\left(1 - 2 * \frac{68.50 - 0.22 * 0.74}{1283.33 * 0.77}\right)\right) +$$

$$+ 0.22 - 4.38 = 87.90 \text{ Mp/m}$$

$$As1 = \frac{1,15}{5,1} * 87.90 = 19.82 \text{ cm}^2/\text{m}$$

-Armadura superior

Armadura mínima 11.58 cm²/m

-Armadura de cortante

El cortante máximo corresponde a la hipótesis 2 y su valor es el siguiente :

Vd = HIP 1 * 1.6 + HIP 2 * 1.6 + HIP 4 * 1.6 + HIP 5 * 1.6

Vd = 46.99 Mp/m

fcv = 0,5 * SQRT(166.667) = 6.45 kp/m²

Vcu = 10 * 6.455 * 0.77 = 49.70 Mp/m

Vcu > Vd. No precisa armadura a cortante

SECCION Dintel.-Centro de vano

-Armadura inferior

El momento máximo corresponde a la hipótesis 2 y su valor es el siguiente :

Md = HIP 1 * 1.6 + HIP 2 * 1.6 + HIP 5 * 1.6

Md = 114.32 m Mp/m

Nd = 4.38 Mp/m

Us2 = 0,05 * 4.381 = 0.22 Mp/m

$$Uc = \frac{2500.00}{1,5} * 1,0 * 0.77 = 1283.33 \text{ Mp/m}$$

$$Us1 = 1283.33 \left(1 - SQRT\left(1 - 2 * \frac{114.32 - 0.22 * 0.74}{1283.33 * 0.77}\right)\right) +$$

$$+ 0.22 - 4.38 = 153.81 \text{ Mp/m}$$

$$As1 = \frac{1,15}{5,1} * 153.81 = 34.68 \text{ cm}^2/\text{m}$$

-Armadura superior

Armadura mínima 11.58 cm²/m

-Armadura de cortante

El cortante máximo corresponde a la hipótesis 1 y su valor es el siguiente :

Vd = HIP 1 * 0.9 + HIP 3 * 1.6

Vd = 6.61 Mp/m

fcv = 0,5 * SQRT(166.667) = 6.45 kp/m²

Vcu = 10 * 6.455 * 0.77 = 49.70 Mp/m

Vcu > Vd. No precisa armadura a cortante

SECCION Hastial.-Empot. superior

-Armadura exterior

El momento máximo corresponde a la hipótesis 2 y su valor es el siguiente :

Md = HIP 1 * 1.6 + HIP 2 * 1.6 + HIP 4 * 1.6 + HIP 5 * 1.6

Md = 130.33 m Mp/m

Nd = 93.97 Mp/m

Us2 = 0,05 * 93.974 = 4.70 Mp/m

$$Uc = \frac{2500.00}{1,5} * 1,0 * 0.77 = 1283.33 \text{ Mp/m}$$

$$Us1 = 1283.33 \left(1 - SQRT\left(1 - 2 * \frac{130.33 - 4.70 * 0.74}{1283.33 * 0.77}\right)\right) +$$

$$+ 4.70 - 93.97 = 87.67 \text{ Mp/m}$$

$$As1 = \frac{1,15}{5,1} * 87.67 = 19.77 \text{ cm}^2/\text{m}$$

-Armadura interior

El momento máximo corresponde a la hipótesis 1 y su valor es el siguiente :

Md = HIP 1 * 0.9 + HIP 3 * 1.6

Md = 15.63 m Mp/m

Nd = 0.41 Mp/m

Us2 = 0,05 * 0.409 = 0.02 Mp/m

$$Uc = \frac{2500.00}{1,5} * 1,0 * 0.77 = 1283.33 \text{ Mp/m}$$

$$Us1 = 1283.33 \left(1 - SQRT\left(1 - 2 * \frac{15.63 - 0.02 * 0.74}{1283.33 * 0.77}\right)\right) +$$

$$+ 0.02 - 0.41 = 20.05 \text{ Mp/m}$$

$$As1 = \frac{1,15}{5,1} * 20.05 = 4.52 \text{ cm}^2/\text{m}$$

Se dispone armadura mínima 11.58 cm²/m

SECCION Hastial.-Empot. superior

-Armadura de cortante

El cortante máximo corresponde a la hipótesis 2 y su valor es el siguiente :

Vd = HIP 1 * 0.9 + HIP 2 * 1.6 + HIP 4 * 1.6 + HIP 5 * 1.6

Vd = 51.98 Mp/m

fcv = 0,5 * SQRT(166.667) = 6.45 kp/m²

Vcu = 10 * 6.455 * 0.77 = 49.70 Mp/m

Si despreciamos las cargas que actuan dentro de la seccion a 45 grados resulta que :

Vcu > Vd. No precisa armadura a cortante

SECCION Hastial.-Cuarto superior

-Armadura exterior

El momento máximo corresponde a la hipótesis 2 y su valor es el siguiente :

Md = HIP 1 * 1.6 + HIP 2 * 1.6 + HIP 5 * 1.6

Md = 100.05 m Mp/m

Nd = 99.25 Mp/m

Us2 = 0,05 * 99.254 = 4.96 Mp/m

$$Uc = \frac{2500.00}{1,5} * 1,0 * 0.77 = 1283.33 \text{ Mp/m}$$

$$Us1 = 1283.33 \left(1 - SQRT\left(1 - 2 * \frac{100.05 - 4.96 * 0.74}{1283.33 * 0.77}\right)\right) +$$

$$+ 4.96 - 99.25 = 37.66 \text{ Mp/m}$$

$$As1 = \frac{1,15}{5,1} * 37.66 = 8.49 \text{ cm}^2/\text{m}$$

Se dispone armadura mínima 11.58 cm²/m

-Armadura interior

El momento máximo corresponde a la hipótesis 1 y su valor es el siguiente :

Md = HIP 1 * 0.9 + HIP 3 * 1.6

Md = 27.13 m Mp/m

Nd = 3.38 Mp/m

Us2 = 0,05 * 3.379 = 0.17 Mp/m

$$Uc = \frac{2500.00}{1,5} * 1,0 * 0.77 = 1283.33 \text{ Mp/m}$$

$$Us1 = 1283.33 \left(1 - SQRT\left(1 - 2 * \frac{27.13 - 0.17 * 0.74}{1283.33 * 0.77}\right)\right) +$$

$$+ 0.17 - 3.38 = 32.35 \text{ Mp/m}$$

$$As1 = \frac{1,15}{5,1} * 32.35 = 7.29 \text{ cm}^2/\text{m}$$

Se dispone armadura mínima 11.58 cm²/m

SECCION Hastial.-Cuarto superior

-Armadura de cortante

El cortante máximo corresponde a la hipótesis 2 y su valor es el siguiente :

Vd = HIP 1 * 0.9 + HIP 2 * 1.6 + HIP 4 * 1.6 + HIP 5 * 1.6

Vd = 30.93 Mp/m

fcv = 0,5 * SQRT(166.667) = 6.45 kp/m²

Vcu = 10 * 6.455 * 0.77 = 49.70 Mp/m

Vcu > Vd. No precisa armadura a cortante

SECCION Hastial.-Centro de vano

-Armadura exterior

El momento máximo corresponde a la hipótesis 2 y su valor es el siguiente :

Md = HIP 1 * 1.6 + HIP 2 * 1.6 + HIP 5 * 1.6

Md = 94.77 m Mp/m

Nd = 104.53 Mp/m

Us2 = 0,05 * 104.534 = 5.23 Mp/m

$$Uc = \frac{2500.00}{1,5} * 1,0 * 0.77 = 1283.33 \text{ Mp/m}$$

$$Us1 = 1283.33 \left(1 - SQRT\left(1 - 2 * \frac{94.77 - 5.23 * 0.74}{1283.33 * 0.77}\right)\right) +$$

$$+ 5.23 - 104.53 = 24.75 \text{ Mp/m}$$

$$As1 = \frac{1,15}{5,1} * 24.75 = 5.58 \text{ cm}^2/\text{m}$$

Se dispone armadura mínima 11.58 cm²/m

-Armadura interior

El momento máximo corresponde a la hipótesis 2 y su valor es el siguiente :

Md = HIP 1 * 0.9 + HIP 2 * 0.9 + HIP 4 * 1.6

Md = 50.33 m Mp/m

Nd = 49.81 Mp/m

Us2 = 0,05 * 49.815 = 2.49 Mp/m

$$Uc = \frac{2500.00}{1,5} * 1,0 * 0.77 = 1283.33 \text{ Mp/m}$$

$$Us1 = 1283.33 \left(1 - SQRT\left(1 - 2 * \frac{50.33 - 2.49 * 0.74}{1283.33 * 0.77}\right)\right) +$$

$$+ 2.49 - 49.81 = 17.27 \text{ Mp/m}$$

$$As1 = \frac{1,15}{5,1} * 17.27 = 3.89 \text{ cm}^2/\text{m}$$

Se dispone armadura mínima 11.58 cm²/m

SECCION Hastial.-Centro de vano

-Armadura de cortante

El cortante máximo corresponde a la hipótesis 1 y su valor es el siguiente :

Vd = HIP 1 * 1.6 + HIP 3 * 1.6

Vd = 9.72 Mp/m

fcv = 0,5 * SQRT(166.667) = 6.45 kp/m²

Vcu = 10 * 6.455 * 0.77 = 49.70 Mp/m

Vcu > Vd. No precisa armadura a cortante

SECCION Hastial.-Cuarto inferior

-Armadura exterior

El momento máximo corresponde a la hipótesis 2 y su valor es el siguiente :

Md = HIP 1 * 1.6 + HIP 2 * 1.6 + HIP 5 * 1.6

Md = 89.50 m Mp/m

Nd = 109.81 Mp/m

Us2 = 0,05 * 109.814 = 5.49 Mp/m

$$Uc = \frac{2500.00}{1,5} * 1,0 * 0.77 = 1283.33 \text{ Mp/m}$$

$$Us1 = 1283.33 \left(1 - SQRT\left(1 - 2 * \frac{89.50 - 5.49 * 0.74}{1283.33 * 0.77}\right)\right) + 5.49 - 109.81 = 11.89 \text{ Mp/m}$$

$$As1 = \frac{1,15}{5,1} * 11.89 = 2.68 \text{ cm}^2/\text{m}$$

Se dispone armadura mínima 11.58 cm²/m

-Armadura interior

El momento máximo corresponde a la hipótesis 2 y su valor es el siguiente :

Md = HIP 1 * 0.9 + HIP 2 * 0.9 + HIP 4 * 1.6

Md = 31.57 m Mp/m

Nd = 52.78 Mp/m

Us2 = 0,05 * 52.785 = 2.64 Mp/m

$$Uc = \frac{2500.00}{1,5} * 1,0 * 0.77 = 1283.33 \text{ Mp/m}$$

$$Us1 = 1283.33 \left(1 - SQRT\left(1 - 2 * \frac{31.57 - 2.64 * 0.74}{1283.33 * 0.77}\right)\right) + 2.64 - 52.78 = 0.00 \text{ Mp/m}$$

$$As1 = \frac{1,15}{5,1} * 0.00 = 0.00 \text{ cm}^2/\text{m}$$

Se dispone armadura mínima 11.58 cm²/m

SECCION Hastial.-Cuarto inferior

-Armadura de cortante

El cortante máximo corresponde a la hipótesis 2 y su valor es el siguiente :

Vd = HIP 1 * 1.6 + HIP 2 * 0.9 + HIP 4 * 1.6

Vd = 27.79 Mp/m

fcv = 0,5 * SQRT(166.667) = 6.45 kp/m²

Vcu = 10 * 6.455 * 0.77 = 49.70 Mp/m

Vcu > Vd. No precisa armadura a cortante

SECCION Hastial.-Empotramiento inferior

-Armadura interior

Armadura mínima 11.58 cm²/m

-Armadura exterior

El momento máximo corresponde a la hipótesis 2 y su valor es el siguiente :

Md = HIP 1 * 1.6 + HIP 2 * 1.6 + HIP 4 * 1.6 + HIP 5 * 1.6

Md = 124.24 m Mp/m

Nd = 115.09 Mp/m

Us2 = 0,05 * 115.094 = 5.75 Mp/m

$$Uc = \frac{2500.00}{1,5} * 1,0 * 0.77 = 1283.33 \text{ Mp/m}$$

$$Us1 = 1283.33 \left(1 - SQRT\left(1 - 2 * \frac{124.24 - 5.75 * 0.74}{1283.33 * 0.77}\right)\right) + 5.75 - 115.09 = 57.30 \text{ Mp/m}$$

$$As1 = \frac{1,15}{5,1} * 57.30 = 12.92 \text{ cm²/m}$$

-Armadura de cortante

El cortante máximo corresponde a la hipótesis 2 y su valor es el siguiente :

Vd = HIP 1 * 1.6 + HIP 2 * 0.9 + HIP 4 * 1.6

Vd = 61.91 Mp/m

Si despreciamos las cargas que actuan dentro de la seccion a 45 grados el cortante es

Vd = 61.91 - 1.60 * 13.78 = 39.86

fcv = 0,5 * SQRT(166.667) = 6.45 kp/m²

Vcu = 10 * 6.455 * 0.77 = 49.70 Mp/m

Vcu > Vd. No precisa armadura a cortante

SECCION Solera.-Empotramiento

-Armadura inferior

El momento máximo corresponde a la hipótesis 2 y su valor es el siguiente :

Md = HIP 1 * 1.6 + HIP 2 * 1.6 + HIP 4 * 1.6 + HIP 5 * 1.6

Md = 103.44 m Mp/m

Nd = 58.88 Mp/m

Us2 = 0,05 * 58.877 = 2.94 Mp/m

$$Uc = \frac{2500.00}{1,5} * 1,0 * 0.77 = 1283.33 \text{ Mp/m}$$

$$Us1 = 1283.33 \left(1 - SQRT\left(1 - 2 * \frac{103.44 - 2.94 * 0.74}{1283.33 * 0.77}\right)\right) + 2.94 - 58.88 = 83.11 \text{ Mp/m}$$

$$As1 = \frac{1,15}{5,1} * 83.11 = 18.74 \text{ cm²/m}$$

-Armadura superior

Armadura mínima 11.58 cm²/m

-Armadura de cortante

El cortante máximo corresponde a la hipótesis 2 y su valor es el siguiente :

Vd = HIP 1 * 1.6 + HIP 2 * 1.6 + HIP 4 * 1.6 + HIP 5 * 1.6

Vd = 82.69 Mp/m

fcv = 0,5 * SQRT(166.667) = 6.45 kp/m²

Vcu = 10 * 6.455 * 0.77 = 49.70 Mp/m

Vsu = 32.99 Mp/m

Se disponen barras a 45°. La armadura total a disponer es :

As = 8.01 cm²/m

SECCION Solera.-Cuartos de luz

-Armadura inferior

El momento máximo corresponde a la hipótesis 1 y su valor es el siguiente :

Md = HIP 1 * 0.9 + HIP 3 * 1.6

Md = 41.85 m Mp/m

Nd = 45.38 Mp/m

Us2 = 0,05 * 45.377 = 2.27 Mp/m

$$Uc = \frac{2500.00}{1,5} * 1,0 * 0.77 = 1283.33 \text{ Mp/m}$$

$$Us1 = 1283.33 \left(1 - \sqrt{1 - 2 * \frac{41.85 - 2.27 * 0.74}{1283.33 * 0.77}}\right) + 2.27 - 45.38 = 10.17 \text{ Mp/m}$$

$$As1 = \frac{1,15}{5,1} * 10.17 = 2.29 \text{ cm}^2/\text{m}$$

Se dispone armadura mínima 11.58 cm²/m

-Armadura superior

El momento máximo corresponde a la hipótesis 2 y su valor es el siguiente :

Md = HIP 1 * 1.6 + HIP 2 * 1.6 + HIP 5 * 1.6

Md = 62.62 m Mp/m

Nd = 4.38 Mp/m

Us2 = 0,05 * 4.381 = 0.22 Mp/m

$$Uc = \frac{2500.00}{1,5} * 1,0 * 0.77 = 1283.33 \text{ Mp/m}$$

$$Us1 = 1283.33 \left(1 - \sqrt{1 - 2 * \frac{62.62 - 0.22 * 0.74}{1283.33 * 0.77}}\right) + 0.22 - 4.38 = 79.70 \text{ Mp/m}$$

$$As1 = \frac{1,15}{5,1} * 79.70 = 17.97 \text{ cm}^2/\text{m}$$

SECCION Solera.-Cuartos de luz

-Armadura de cortante

El cortante máximo corresponde a la hipótesis 1 y su valor es el siguiente :

Vd = HIP 1 * 1.6 + HIP 3 * 1.6

Vd = 18.22 Mp/m

fcv = 0,5 * SQRT(166.667) = 6.45 kp/m²

Vcu = 10 * 6.455 * 0.77 = 49.70 Mp/m

Vcu > Vd. No precisa armadura a cortante

SECCION Solera.-Centro de vano

-Armadura inferior

Armadura mínima 11.58 cm²/m

-Armadura superior

El momento máximo corresponde a la hipótesis 2 y su valor es el siguiente :

Md = HIP 1 * 1.6 + HIP 2 * 1.6 + HIP 5 * 1.6

Md = 69.27 m Mp/m

Nd = 4.38 Mp/m

Us2 = 0,05 * 4.381 = 0.22 Mp/m

$$Uc = \frac{2500.00}{1,5} * 1,0 * 0.77 = 1283.33 \text{ Mp/m}$$

$$Us1 = 1283.33 \left(1 - SQRT\left(1 - 2 * \frac{69.27 - 0.22 * 0.74}{1283.33 * 0.77}\right)\right) +$$

+ 0.22 - 4.38 = 88.97 Mp/m

$$As1 = \frac{1,15}{5,1} * 88.97 = 20.06 \text{ cm²/m}$$

-Armadura de cortante

El cortante máximo corresponde a la hipótesis 1 y su valor es el siguiente :

Vd = HIP 1 * 0.9 + HIP 3 * 1.6

Vd = 12.75 Mp/m

fcv = 0,5 * SQRT(166.667) = 6.45 kp/m²

Vcu = 10 * 6.455 * 0.77 = 49.70 Mp/m

Vcu > Vd. No precisa armadura a cortante

REACCIONES Y TENSIONES MAXIMAS EN SOLERA

NUDO	REACCION	TENSION
12	20.25 Mp	22.82 Mp/m²
13	29.38 Mp	30.13 Mp/m²
14	17.55 Mp	18.00 Mp/m²
15	9.33 Mp	9.57 Mp/m²
16	6.44 Mp	6.61 Mp/m²
17	9.33 Mp	9.57 Mp/m²
18	17.55 Mp	18.00 Mp/m²
19	29.38 Mp	30.13 Mp/m²
20	20.25 Mp	22.82 Mp/m²

P.B.F. 107.0

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CARGAS ACTUANTES

.)**PESO PROPIO:** Se considera un peso específico del hormigón de 2.50 t/m3

.)**CARGAS MUERTAS:** Se toman los siguientes pesos de los elementos no resistentes

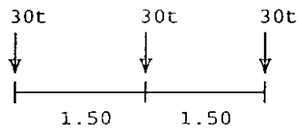
Balasto	0.40x1.60	=	0.64 t/m²
Traviesas	2x0.52	=	1.04 t/m
Carriles	2x0.12	=	0.24 t/m
Barandillas	2x0.05	=	0.10 t/m
Hormigón de forma	2x0.59	=	1.18 t/m
		Σ	3.20 t/m

SOBRECARGAS:

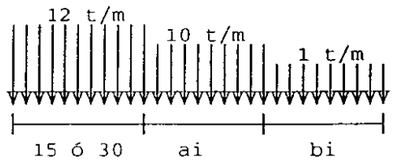
b) Norma española IPFC-75

- Sobrecarga de 0.50 t/m² actuando en los paseos según la posición mas desfavorable para el elemento en estudio.

- Tren tipo A:



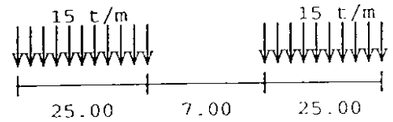
- Tren tipo B:



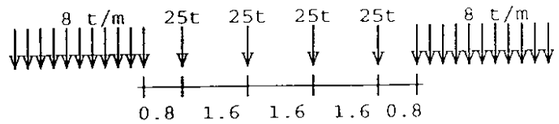
ai y bi son tales que producen los efectos mas desfavorables.

a) Norma U.I.C-776-1

- Tren tipo SW/2



- Tren tipo UIC-71



COEFICIENTES DINAMICOS

a) Norma U.I.C-776-1

$$\Phi 1 = \frac{0.96}{\sqrt{L} - 0.2} + 0.88$$

$$\Phi 2 = \frac{1.44}{\sqrt{L} - 0.2} + 0.82$$

en función de la calidad de las líneas se tiene:

Líneas de alta calidad	: Φ2	Flector
	: Φ1	Cortante

b) Norma española IPFC-75

$$I = \frac{144\sqrt{L}}{3,10 - 1,76\sqrt{L} + L}$$

Para las estructuras enterradas se puede tomar el coeficiente reducido:

$$\Phi r = \Phi - \frac{h - 1,0}{10,0}$$

Para la luz de los pasos inferiores de 7 y 8 m resultan los siguientes valores:

Norma U.I.C-776-1

$$\Phi 1 = \frac{0.96}{\sqrt{L} - 0.2} + 0.88 = \begin{cases} 1.27 \ (7\ m) \\ 1.25 \ (8\ m) \end{cases}$$

$$\Phi 2 = \frac{1.44}{\sqrt{L} - 0.2} + 0.82 = \begin{cases} 1.41 \ (7\ m) \\ 1.37 \ (8\ m) \end{cases}$$

Norma española IPFC-75

$$I = \frac{144\sqrt{L}}{3,10 - 1,76\sqrt{L} + L} = \begin{cases} 1.70 \ (7\ m) \\ 1.67 \ (8\ m) \end{cases}$$

Con los coeficientes de impacto anteriores nos quedamos para los marcos de luz 7 m con las cargas correspondientes al vehículo tipo A de la Norma española, o bien al Tren tipo SW/2 de la UIC , mientras que para el marco de 8 m tomamos los de la Norma española.

Para un reparto de las cargas a 45° y relleno de H m tenemos un valor de carga:

$$Wa = \frac{15}{(2+2*H)}$$

$$Wb = \frac{3*30}{(2+2*H)(3+2*H)}$$

Para H < 2.25 m resulta mas limitativo Wb que es para nuestro caso PI-107.0 tomamos la altura H=1 m por lo que $Wb = 4.5\ t/m^2$ y con el coeficiente de impacto 1.70 resulta la carga de cálculo $Wb = 7.65\ t/m^2$

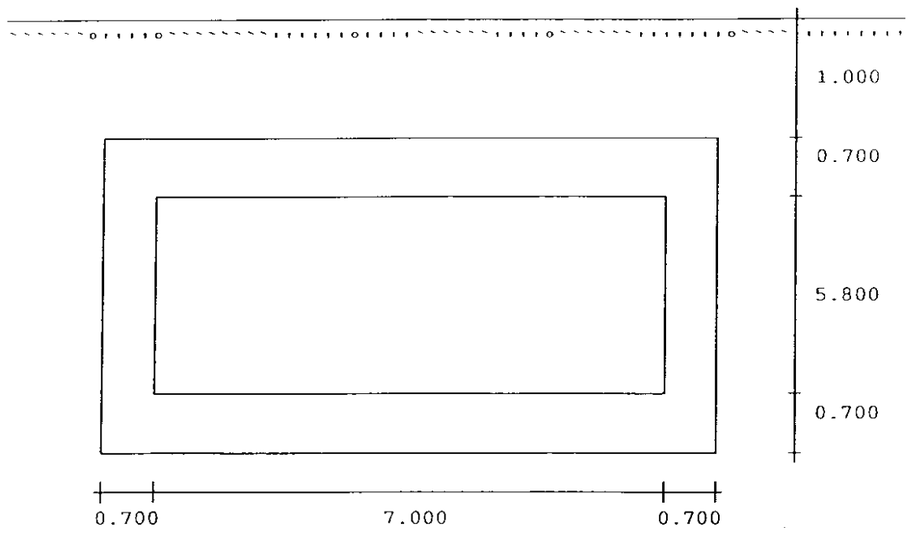
EMPUJE DEL TERRENO:

Para éste caso de estructuras se considera actuando el empuje al reposo $K = 1-\text{sen}\ \Phi$, tomamos K=0.50

Peso específico 2 tn/m3

- M A R C O :

PI-107.0 DEFINICION SECCION (m.):



RELLENO

Peso específico (tn/m3) .....:	2.00
Coeficiente de empuje al reposo ....:	0.50
Módulo de balasto (t/m3) .....:	1000

HORMIGON:

Fck (Kg/cm²) .....:	250
Módulo de elasticidad (Kg/cm²).....:	300000
Peso específico (tn/m3) .....:	2.50
Coeficiente de minoración .....:	1.50

ACERO:

Fyk (Kg/cm²) .....:	5100
Fyα,d (Kg/cm²) .....:	4200
Coeficiente de minoración .....:	1.15
Recubrimiento de armaduras (cms) ...:	3.0

SOBRECARGAS

Sobrecarga uniforme (t/m²).....:	7.65

H I P O T E S I S D E C A R G A S

-(1) Peso propio

-(2) Carga permanente sobre el dintel

-(3) Empuje de tierras por un lado hasta altura del dintel y actuando una sobrecarga de construcción de 1.00 t/m²

-(4) Empuje de tierras por los dos lados hasta altura total

-(5) Sobrecarga uniforme de 7.65 t/m²

M O D E L O D E C A L C U L O

El modelo utilizado corresponde al de pórtico plano con cimentación elástica asimilada a unos muelles, cuya rigidez es función del módulo de balasto y del área de influencia de cada nudo coaccionado.

El cálculo se efectúa mediante programa de ordenador, basado en la matriz de rigidez y equilibrio de nudos, suponiendo comportamiento elástico y lineal, desarrollado por personal del Departamento de Estructuras de AEPO.SA y ejecutado en ordenador Pentium con mas de 16 Mb de memoria RAM.

El cálculo se entiende por m. de estructura.

En el apartado "Cálculos realizados con ordenador" se puede ver la modelización de la estructura con los resultados obtenidos.

C O M B I N A C I O N D E H I P O T E S I S

El programa calcula , para cada sección , la combinación pésima de hipótesis compatibles entre si y afectadas por los coeficientes de ponderación:

	Favorable	Desfavorable
Peso propio y cargas permanentes.....	0.90	1.60
Sobrecargas	0.00	1.60

A R M A D O D E L A S S E C C I O N E S

Con las combinaciones pésimas anteriormente calculadas, se procede al cálculo de las armaduras de flexión y cortante, contemplando las armaduras mínimas de acuerdo con la Norma EH-91

CARACTERISTICAS MECANICAS:

Uc = Capacidad mecánica de la sección = fcd * b * d

Vcu = Contribución del hormigón a la resistencia a esfuerzo cortante de valor = fcv * b * d

Vu1 = Esfuerzo cortante de agotamiento por compresión oblícua del hormigón del alma, que para el caso de barras levantadas o estribos normales al eje de la pieza vale = 0.30 * fcd * b * d

d = Canto útil de la sección.

b = Anchura del elemento. (en nuestro caso 1.00 m)

fcd = Resistencia de cálculo del hormigón = 166.67 Kg/cm² =1666.67 t/m²

fcv = Resistencia virtual de cálculo del hormigón a esfuerzo cortante dada en kp/cm² = 0,5 * √fcd = 6.45 Kg/cm² = 64.55 t/m²

fyd = Resistencia de cálculo de las armaduras = 4.43 t/cm²

fyα,d = Resistencia de cálculo de las armaduras transversales con la limitación ≤ 4200 Kg/cm² , en nuestro caso = 4.20 t/cm²

Sección	Canto	d(m)	Uc(t/m)	Vcu(t/m)	Vu1(t/m)
Dintel	0.70	0.67	1116.7	43.25	335.00
Hastial	0.70	0.67	1116.7	43.25	335.00
Solera	0.70	0.67	1116.7	43.25	335.00

ARMADURA DE FLEXION:

Se emplean la fórmulas del método de cálculo del Momento Tope definidas en el Anejo 7 de la Norma EH-91 y cuya expresión toma el valor:

$$Us1 = Uc * \left[1 - \left| 1 - 2 \frac{Md - Us2 * (d-d')}{Uc * d} \right|^{1/2} \right] + Us2 \geq 0.04 * Uc$$

y la armadura necesaria será:

As1= Us1/fyd (cm²)

ARMADURA DE CORTANTE

Se procede al armado según la regla del cosido. (Norma EH-91 art. 39)

El esfuerzo cortante de agotamiento por tracción en el alma vale:

Vu2 = Vsu + Vcu

Vsu = contribución de la armadura transversal del alma a esfuerzo cortante.

a) Cálculo de Vsu

$$Vsu = \Sigma A\alpha * fy\alpha,d * 0,9 * d * (sen\alpha + cos\alpha)$$

A continuación se adjuntan, para cada sección analizada, las combinaciones mas desfavorables de cada esfuerzo en estudio.

DINTEL: Empotramiento

Armadura inferior

El momento máximo corresponde a la combinación:
Md = 0.9*Hip(1) + 1.6*Hip(3)

Md = 12.73 m.t/m
Nd = 6.27 t/m

Us2 = 0,05 x Nd = 0.31 t/m

Us1 = 12.91 t/m <-- Armadura mínima 5.25 cm²/m

Armadura superior

El momento máximo corresponde a la combinación:
Md = 1.6*Hip(1) + 1.6*Hip(2) + 1.6*Hip(4) + 1.6*Hip(5) + 1.6*Hip(6)

Md = 65.18 m.t/m
Nd = 18.58 t/m

Us2 = 0,05 x Nd = 0.93 t/m

Us1 = 83.30 t/m <-- As1 = 18.78 cm²/m

Armadura de Cortante

El cortante máximo corresponde a la combinación:
Vd = 1.6*Hip(1) + 1.6*Hip(2) + 1.6*Hip(4) + 1.6*Hip(5) + 1.6*Hip(6)

Vd = 70.22 t/m Vu1 = 335.00 t/m
Vcu = 43.25 t/m

Vsu = 26.98 t/m

Se disponen barras a 45°. La armadura total a disponer es :

As = 7.53 cm²/m

DINTEL: Cuartos de luz

Armadura inferior

El momento máximo corresponde a la combinación:
Md = 1.6*Hip(1) + 1.6*Hip(2) + 1.6*Hip(5)

Md = 55.09 m.t/m
Nd = 1.97 t/m

Us2 = 0,05 x Nd = 0.10 t/m

Us1 = 83.52 t/m <-- As1 = 18.83 cm²/m

Armadura superior

El momento máximo corresponde a la combinación:
Md = 0.9*Hip(1) + 0.9*Hip(2) + 1.6*Hip(4) + 1.6*Hip(6)

Md = 7.39 m.t/m
Nd = 19.20 t/m

Us2 = 0,05 x Nd = 0.96 t/m

Us1 = -8.07 t/m <-- Armadura mínima 5.25 cm²/m

Armadura de Cortante

El cortante máximo corresponde a la combinación:
Vd = 1.6*Hip(1) + 1.6*Hip(2) + 1.6*Hip(4) + 1.6*Hip(5) + 1.6*Hip(6)

Vd = 35.11 t/m Vu1 = 335.00 t/m
Vcu = 43.25 t/m

Vcu > Vd No precisa armadura a cortante

DINTEL: Centro de vano

Armadura inferior

El momento máximo corresponde a la combinación:
Md = 1.6*Hip(1) + 1.6*Hip(2) + 1.6*Hip(5)

Md = 88.88 m.t/m
Nd = 1.97 t/m

Us2 = 0,05 x Nd = 0.10 t/m

Us1 =139.67 t/m <-- As1 = 31.49 cm²/m

Armadura superior

Armadura mínima 5.25 cm²/m

Armadura de Cortante

El cortante máximo corresponde a la combinación:
Vd = 0.9*Hip(1) + 1.6*Hip(3)

Vd = 4.79 t/m Vu1 = 335.00 t/m
Vcu = 43.25 t/m

Vcu > Vd No precisa armadura a cortante

HASTIAL: Empot. superior

Armadura exterior

El momento máximo corresponde a la combinación:
Md = 1.6*Hip(1) + 1.6*Hip(2) + 1.6*Hip(4) + 1.6*Hip(5)

Md = 81.70 m.t/m
Nd = 70.22 t/m

Us2 = 0,05 x Nd = 3.51 t/m

Us1 = 58.94 t/m <-- As1 = 13.29 cm²/m

Armadura interior

El momento máximo corresponde a la combinación:
Md = 0.9*Hip(1) + 1.6*Hip(3)

Md = 11.14 m.t/m
Nd = 1.28 t/m

Us2 = 0,05 x Nd = 0.06 t/m

Us1 = 15.47 t/m <-- Armadura mínima 5.25 cm²/m

Armadura de Cortante

El cortante máximo corresponde a la combinación:
Vd = 0.9*Hip(1) + 1.6*Hip(2) + 1.6*Hip(4) + 1.6*Hip(5)

Vd = 19.69 t/m Vu1 = 335.00 t/m
Vcu = 43.25 t/m

Vcu > Vd No precisa armadura a cortante

HASTIAL: Cuarto superior

Armadura exterior

El momento máximo corresponde a la combinación:
Md = 1.6*Hip(1) + 1.6*Hip(2) + 1.6*Hip(5)

Md = 74.06 m.t/m
Nd = 74.77 t/m

Us2 = 0,05 x Nd = 3.74 t/m

Us1 = 41.61 t/m <-- As1 = 9.38 cm²/m

Armadura interior

El momento máximo corresponde a la combinación:
Md = 0.9*Hip(1) + 1.6*Hip(3)

Md = 19.20 m.t/m
Nd = 3.84 t/m

Us2 = 0,05 x Nd = 0.19 t/m

Us1 = 25.20 t/m <-- As1 = 5.68 cm²/m

Armadura de Cortante

El cortante máximo corresponde a la combinación:
Vd = 0.9*Hip(1) + 1.6*Hip(2) + 1.6*Hip(4) + 1.6*Hip(5)

Vd = 12.77 t/m Vu1 = 335.00 t/m
Vcu = 43.25 t/m

Vcu > Vd No precisa armadura a cortante

HASTIAL: Centro de vano

Armadura exterior

El momento máximo corresponde a la combinación:
Md = 1.6*Hip(1) + 1.6*Hip(2) + 1.6*Hip(5)

Md = 78.71 m.t/m
Nd = 79.32 t/m

Us2 = 0,05 x Nd = 3.97 t/m

Us1 = 44.80 t/m <-- As1 = 10.10 cm²/m

Armadura interior

El momento máximo corresponde a la combinación:
Md = 0.9*Hip(1) + 0.9*Hip(2) + 1.6*Hip(4) + 1.6*Hip(6)

Md = 23.39 m.t/m
Nd = 18.11 t/m

Us2 = 0,05 x Nd = 0.91 t/m

Us1 = 17.38 t/m <-- Armadura mínima 5.25 cm²/m

Armadura de Cortante

El cortante máximo corresponde a la combinación:
Vd = 1.6*Hip(1) + 1.6*Hip(3)

Vd = 7.71 t/m Vu1 = 335.00 t/m
Vcu = 43.25 t/m

Vcu > Vd No precisa armadura a cortante

HASTIAL: Cuarto inferior

Armadura exterior

El momento máximo corresponde a la combinación:
Md = 1.6*Hip(1) + 1.6*Hip(2) + 1.6*Hip(5)

Md = 83.37 m.t/m
Nd = 83.87 t/m

Us2 = 0,05 x Nd = 4.19 t/m

Us1 = 48.05 t/m <-- As1 = 10.84 cm²/m

Armadura interior

El momento máximo corresponde a la combinación:
Md = 0.9*Hip(1) + 0.9*Hip(2) + 1.6*Hip(4) + 1.6*Hip(6)

Md = 14.13 m.t/m
Nd = 20.67 t/m

Us2 = 0,05 x Nd = 1.03 t/m

Us1 = 0.65 t/m <-- Armadura mínima 5.25 cm²/m

Armadura de Cortante

El cortante máximo corresponde a la combinación:
Vd = 1.6*Hip(1) + 1.6*Hip(3)

Vd = 20.48 t/m Vu1 = 335.00 t/m
Vcu = 43.25 t/m

Vcu > Vd No precisa armadura a cortante

HASTIAL: Empot. inferior

Armadura interior

Armadura mínima 5.25 cm²/m

Armadura exterior

El momento máximo corresponde a la combinación:
Md = 1.6*Hip(1) + 1.6*Hip(2) + 1.6*Hip(4) + 1.6*Hip(5) + 1.6*Hip(6)

Md = 102.50 m.t/m
Nd = 88.42 t/m

Us2 = 0,05 x Nd = 4.42 t/m

Us1 = 76.26 t/m <-- As1 = 17.20 cm²/m

Armadura de Cortante

El cortante máximo corresponde a la combinación:
Vd = 1.6*Hip(1) + 1.6*Hip(3)

Vd = 37.48 t/m Vu1 = 335.00 t/m
Vcu = 43.25 t/m

Vcu > Vd No precisa armadura a cortante

SOLERA: Empotramiento

Armadura inferior

El momento máximo corresponde a la combinación:
Md = 1.6*Hip(1) + 1.6*Hip(2) + 1.6*Hip(4) + 1.6*Hip(5)

Md = 85.23 m.t/m
Nd = 34.46 t/m

Us2 = 0,05 x Nd = 1.72 t/m

Us1 =100.82 t/m <-- As1 = 22.73 cm²/m

Armadura superior

Armadura mínima 5.25 cm²/m

Armadura de Cortante

El cortante máximo corresponde a la combinación:
Vd = 1.6*Hip(1) + 1.6*Hip(2) + 1.6*Hip(4) + 1.6*Hip(5)

Vd = 74.52 t/m Vu1 = 335.00 t/m
Vcu = 43.25 t/m

Vsu = 31.27 t/m

Se disponen barras a 45°. La armadura total a disponer es :

As = 8.73 cm²/m

SOLERA: Cuartos de luz

Armadura inferior

El momento máximo corresponde a la combinación:
Md = 0.9*Hip(1) + 1.6*Hip(3)

Md = 31.71 m.t/m
Nd = 36.37 t/m

Us2 = 0,05 x Nd = 1.82 t/m

Us1 = 12.01 t/m <-- Armadura mínima 5.25 cm²/m

Armadura superior

El momento máximo corresponde a la combinación:
Md = 1.6*Hip(1) + 1.6*Hip(2) + 1.6*Hip(5) + 1.6*Hip(6)

Md = 63.41 m.t/m
Nd = 1.97 t/m

Us2 = 0,05 x Nd = 0.10 t/m

Us1 = 97.06 t/m <-- As1 = 21.89 cm²/m

Armadura de Cortante

El cortante máximo corresponde a la combinación:
Vd = 1.6*Hip(1) + 1.6*Hip(2) + 1.6*Hip(4) + 1.6*Hip(5)

Vd = 29.26 t/m Vu1 = 335.00 t/m
Vcu = 43.25 t/m

Vcu > Vd No precisa armadura a cortante

SOLERA: Centro de vano

Armadura inferior

Armadura mínima 5.25 cm²/m

Armadura superior

El momento máximo corresponde a la combinación:
Md = 1.6*Hip(1) + 1.6*Hip(2) + 1.6*Hip(5) + 1.6*Hip(6)

Md = 101.89 m.t/m
Nd = 1.97 t/m

Us2 = 0,05 x Nd = 0.10 t/m

Us1 =162.16 t/m <-- As1 = 36.57 cm²/m

Armadura de Cortante

El cortante máximo corresponde a la combinación:
Vd = 0.9*Hip(1) + 1.6*Hip(3)

Vd = 11.51 t/m Vu1 = 335.00 t/m
Vcu = 43.25 t/m

Vcu > Vd No precisa armadura a cortante

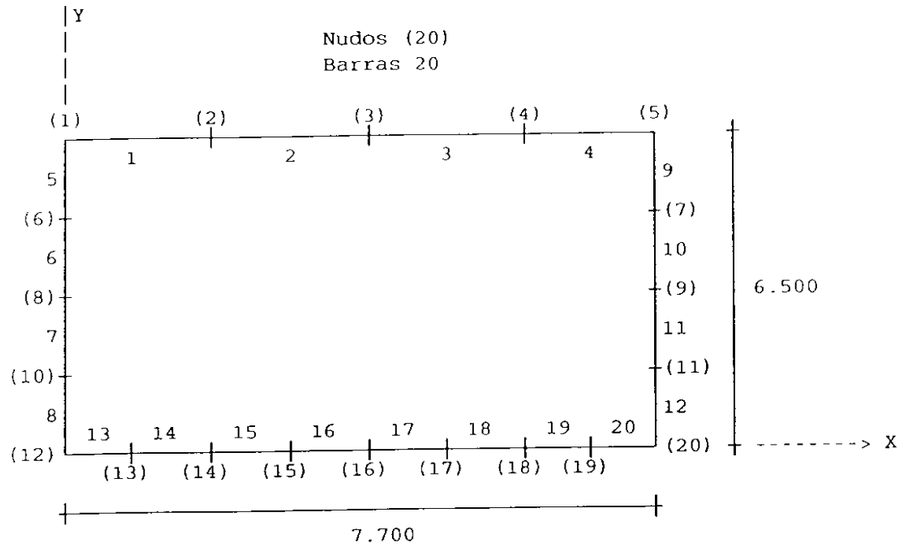
RESUMEN DE ARMADURAS (cm²/m)

Sección		Armaduras de Flexión		Cortante
DINTEL:		inferior	superior	
	Empotramiento	5.25	18.78	7.53
	Cuartos de Luz	18.83	5.25	0.00
	Centro de Vano	31.49	5.25	0.00
HASTIAL:		exterior	interior	
	Empotra.Superior	13.29	5.25	0.00
	Cuarto Superior	9.38	5.68	0.00
	Centro de Vano	10.10	5.25	0.00
	Cuarto Inferior	10.84	5.25	0.00
	Empotra.Inferior	17.20	5.25	0.00
SOLERA:		inferior	superior	
	Empotramiento	22.73	5.25	8.73
	Cuartos de Luz	5.25	21.89	0.00
	Centro de Vano	5.25	36.57	0.00

Reacciones y Tensiones Máximas en Solera

Solera	Reacción (tns)	Tensión (Kg/cm²)
0	8.69	1.05
L/8	16.36	1.70
L/4	15.30	1.59
3L/8	14.53	1.51
L/2	14.26	1.48
5L/8	14.53	1.51
3L/4	15.30	1.59
7L/8	16.36	1.70
L	8.69	1.05

M O D E L O D E C A L C U L O



COORDENADAS DE NUDOS

Nudo	X	Y
1	0.000	6.500
2	1.925	6.500
3	3.850	6.500
4	5.775	6.500
5	7.700	6.500
6	0.000	4.875
7	7.700	4.875
8	0.000	3.250
9	7.700	3.250
10	0.000	1.625
11	7.700	1.625
12	0.000	0.000
13	0.963	0.000
14	1.925	0.000
15	2.888	0.000
16	3.850	0.000
17	4.813	0.000
18	5.775	0.000
19	6.738	0.000
20	7.700	0.000

CARACTERISTICAS DE BARRAS

Barra	i	j	Inercia	Area
1	1	2	0.02858	0.700
2	2	3	0.02858	0.700
3	3	4	0.02858	0.700
4	4	5	0.02858	0.700
5	1	6	0.02858	0.700
6	6	8	0.02858	0.700
7	8	10	0.02858	0.700
8	10	12	0.02858	0.700
9	5	7	0.02858	0.700
10	7	9	0.02858	0.700
11	9	11	0.02858	0.700
12	11	20	0.02858	0.700
13	12	13	0.02858	0.700
14	13	14	0.02858	0.700
15	14	15	0.02858	0.700
16	15	16	0.02858	0.700
17	16	17	0.02858	0.700
18	17	18	0.02858	0.700
19	18	19	0.02858	0.700
20	19	20	0.02858	0.700

CARGAS EN BARRAS

Tipos de carga: (2)=Uniforme (3)=Trapecial

Las cargas son positivas según los ejes globales de la estructura.

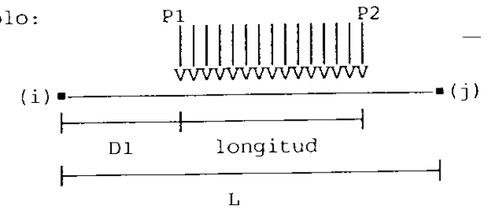
D1 es la distancia, del origen de la carga, respecto al origen de la barra.

Longitud es la extensión de dicha carga.

P1 es el valor de la carga en el origen, P2 es el incremento de carga en el final.

Angulo, es el ángulo de la carga respecto al eje de la barra.

ejemplo:



PESO PROPIO: Hipótesis N° 1

Barra	P1	P2	D1	Longitud	Angulo	Tipo
1	1.750	0.000	0.000	1.925	-90.000	2
2	1.750	0.000	0.000	1.925	-90.000	2
3	1.750	0.000	0.000	1.925	-90.000	2
4	1.750	0.000	0.000	1.925	-90.000	2
5	1.750	0.000	0.000	1.625	-90.000	2
6	1.750	0.000	0.000	1.625	-90.000	2
7	1.750	0.000	0.000	1.625	-90.000	2
8	1.750	0.000	0.000	1.625	-90.000	2
9	1.750	0.000	0.000	1.625	-90.000	2
10	1.750	0.000	0.000	1.625	-90.000	2
11	1.750	0.000	0.000	1.625	-90.000	2
12	1.750	0.000	0.000	1.625	-90.000	2
13	1.750	0.000	0.000	0.963	-90.000	2
14	1.750	0.000	0.000	0.962	-90.000	2
15	1.750	0.000	0.000	0.962	-90.000	2
16	1.750	0.000	0.000	0.963	-90.000	2
17	1.750	0.000	0.000	0.962	-90.000	2
18	1.750	0.000	0.000	0.963	-90.000	2
19	1.750	0.000	0.000	0.963	-90.000	2
20	1.750	0.000	0.000	0.963	-90.000	2

ESFUERZOS EN BARRAS

Barra	i	j	Axil i	Corte.i	Momto.i	Axil j	Corte.j	Momto.j
1	1	2	1.58	-6.74	-3.14	1.58	-3.37	-6.59
2	2	3	1.58	-3.37	6.59	1.58	0.00	-9.83
3	3	4	1.58	0.00	9.83	1.58	3.37	-6.59
4	4	5	1.58	3.37	6.59	1.58	6.74	3.14
5	1	6	-6.74	-1.58	3.14	-9.58	-1.58	-5.70
6	6	8	-9.58	-1.58	5.70	-12.43	-1.58	-8.26
7	8	10	-12.43	-1.58	8.26	-15.27	-1.58	-10.82
8	10	12	-15.27	-1.58	10.82	-18.11	-1.58	-13.38
9	5	7	-6.74	1.58	-3.14	-9.58	1.58	5.70
10	7	9	-9.58	1.58	-5.70	-12.43	1.58	8.26
11	9	11	-12.43	1.58	-8.26	-15.27	1.58	10.82
12	11	20	-15.27	1.58	-10.82	-18.11	1.58	13.38
13	12	13	-1.58	14.65	13.38	-1.58	16.34	1.53
14	13	14	-1.58	9.82	-1.53	-1.58	11.50	11.79
15	14	15	-1.58	5.37	-11.79	-1.58	7.05	17.77
16	15	16	-1.58	1.20	-17.77	-1.58	2.88	19.73
17	16	17	-1.58	-2.88	-19.73	-1.58	-1.20	17.77
18	17	18	-1.58	-7.05	-17.77	-1.58	-5.37	11.79
19	18	19	-1.58	-11.50	-11.79	-1.58	-9.82	1.53
20	19	20	-1.58	-16.34	-1.53	-1.58	-14.65	-13.38

CARGA PERMANENTE: Hipótesis N° 2

Barra	P1	P2	D1	Longitud	Angulo	Tipo
1	2.000	0.000	0.000	1.925	-90.000	2
2	2.000	0.000	0.000	1.925	-90.000	2
3	2.000	0.000	0.000	1.925	-90.000	2
4	2.000	0.000	0.000	1.925	-90.000	2

No hay mas barras cargadas para ésta hipótesis

ESFUERZOS EN BARRAS

Barra	i	j	Axil i	Corte.i	Momto.i	Axil j	Corte.j	Momto.j
1	1	2	-0.07	-7.70	-5.43	-0.07	-3.85	-5.69
2	2	3	-0.07	-3.85	5.69	-0.07	0.00	-9.39
3	3	4	-0.07	0.00	9.39	-0.07	3.85	-5.69
4	4	5	-0.07	3.85	5.69	-0.07	7.70	5.43
5	1	6	-7.70	0.07	5.43	-7.70	0.07	-5.31
6	6	8	-7.70	0.07	5.31	-7.70	0.07	-5.20
7	8	10	-7.70	0.07	5.20	-7.70	0.07	-5.08
8	10	12	-7.70	0.07	5.08	-7.70	0.07	-4.96
9	5	7	-7.70	-0.07	-5.43	-7.70	-0.07	5.31
10	7	9	-7.70	-0.07	-5.31	-7.70	-0.07	5.20
11	9	11	-7.70	-0.07	-5.20	-7.70	-0.07	5.08
12	11	20	-7.70	-0.07	-5.08	-7.70	-0.07	4.96
13	12	13	0.07	6.57	4.96	0.07	6.57	1.36
14	13	14	0.07	4.50	-1.36	0.07	4.50	5.69
15	14	15	0.07	2.61	-5.69	0.07	2.61	8.20
16	15	16	0.07	0.86	-8.20	0.07	0.86	9.03
17	16	17	0.07	-0.86	-9.03	0.07	-0.86	8.20
18	17	18	0.07	-2.61	-8.20	0.07	-2.61	5.69
19	18	19	0.07	-4.50	-5.69	0.07	-4.50	1.36
20	19	20	0.07	-6.57	-1.36	0.07	-6.57	-4.96

EMPUJE POR UN LADO, HASTA ALTURA DE DINTEL: Hipótesis N° 3

Barra	P1	P2	D1	Longitud	Angulo	Tipo
5	-0.850	-2.475	0.000	1.625	0.000	3
6	-2.475	-4.100	0.000	1.625	0.000	3
7	-4.100	-5.725	0.000	1.625	0.000	3
8	-5.725	-7.350	0.000	1.625	0.000	3

No hay mas barras cargadas para ésta hipótesis

ESFUERZOS EN BARRAS

Barra	i	j	Axil i	Corte.i	Momto.i	Axil j	Corte.j	Momto.j
1	1	2	-4.80	2.99	8.47	-4.80	2.99	-2.71
2	2	3	-4.80	2.99	2.71	-4.80	2.99	3.04
3	3	4	-4.80	2.99	-3.04	-4.80	2.99	8.80
4	4	5	-4.80	2.99	-8.80	-4.80	2.99	14.56
5	1	6	2.99	4.80	-8.47	2.99	2.10	14.44
6	6	8	2.99	2.10	-14.44	2.99	-3.24	13.87
7	8	10	2.99	-3.24	-13.87	2.99	-11.22	2.48
8	10	12	2.99	-11.22	-2.48	2.99	-21.85	-24.03
9	5	7	-2.99	-4.80	-14.56	-2.99	-4.80	6.75
10	7	9	-2.99	-4.80	-6.75	-2.99	-4.80	-1.05
11	9	11	-2.99	-4.80	1.05	-2.99	-4.80	-8.86
12	11	20	-2.99	-4.80	8.86	-2.99	-4.80	-16.67
13	12	13	-21.85	0.25	24.03	-21.85	0.25	-23.79
14	13	14	-21.85	4.79	23.79	-21.85	4.79	-19.18
15	14	15	-21.85	7.61	19.18	-21.85	7.61	-11.86
16	15	16	-21.85	8.91	11.86	-21.85	8.91	-3.28
17	16	17	4.80	8.82	3.28	4.80	8.82	5.21
18	17	18	4.80	7.36	-5.21	4.80	7.36	12.29
19	18	19	4.80	4.48	-12.29	4.80	4.48	16.60
20	19	20	4.80	0.07	-16.60	4.80	0.07	16.67

EMPUJE POR AMBOS LADOS HASTA ALTURA TOTAL: Hipótesis N° 4

Barra	P1	P2	D1	Longitud	Angulo	Tipo
5	-1.850	-3.475	0.000	1.625	0.000	3
6	-3.475	-5.100	0.000	1.625	0.000	3
7	-5.100	-6.725	0.000	1.625	0.000	3
8	-6.725	-8.350	0.000	1.625	0.000	3
9	1.850	3.475	0.000	1.625	0.000	3
10	3.475	5.100	0.000	1.625	0.000	3
11	5.100	6.725	0.000	1.625	0.000	3
12	6.725	8.350	0.000	1.625	0.000	3

No hay mas barras cargadas para ésta hipótesis

ESFUERZOS EN BARRAS

Barra	i	j	Axil i	Corte.i	Momto.i	Axil j	Corte.j	Momto.j
1	1	2	-12.85	0.00	-7.69	-12.85	0.00	7.69
2	2	3	-12.85	0.00	-7.69	-12.85	0.00	7.69
3	3	4	-12.85	0.00	-7.69	-12.85	0.00	7.69
4	4	5	-12.85	0.00	-7.69	-12.85	0.00	7.69
5	1	6	0.00	12.85	7.69	0.00	8.52	10.03
6	6	8	0.00	8.52	-10.03	0.00	1.55	18.57
7	8	10	0.00	1.55	-18.57	0.00	-8.06	13.64
8	10	12	0.00	-8.06	-13.64	0.00	-20.31	-9.05
9	5	7	0.00	-12.85	-7.69	0.00	-8.52	-10.03
10	7	9	0.00	-8.52	10.03	0.00	-1.55	-18.57
11	9	11	0.00	-1.55	18.57	0.00	8.06	-13.64
12	11	20	0.00	8.06	13.64	0.00	20.31	9.05
13	12	13	-20.31	0.23	9.05	-20.31	0.23	-8.83
14	13	14	-20.31	0.38	8.83	-20.31	0.38	-8.46
15	14	15	-20.31	0.31	8.46	-20.31	0.31	-8.16
16	15	16	-20.31	0.12	8.16	-20.31	0.12	-8.05
17	16	17	-20.31	-0.12	8.05	-20.31	-0.12	-8.16
18	17	18	-20.31	-0.31	8.16	-20.31	-0.31	-8.46
19	18	19	-20.31	-0.38	8.46	-20.31	-0.38	-8.83
20	19	20	-20.31	-0.23	8.83	-20.31	-0.23	-9.05

SOBRECARGA UNIFORME: Hipótesis N° 5

Barra	P1	P2	D1	Longitud	Angulo	Tipo
1	7.650	0.000	0.000	1.925	-90.000	2
2	7.650	0.000	0.000	1.925	-90.000	2
3	7.650	0.000	0.000	1.925	-90.000	2
4	7.650	0.000	0.000	1.925	-90.000	2

No hay mas barras cargadas para ésta hipótesis

ESFUERZOS EN BARRAS

Barra	i	j	Axil i	Corte.i	Momto.i	Axil j	Corte.j	Momto.j
1	1	2	-0.27	-29.45	-20.77	-0.27	-14.73	-21.76
2	2	3	-0.27	-14.73	21.76	-0.27	0.00	-35.93
3	3	4	-0.27	0.00	35.93	-0.27	14.73	-21.76
4	4	5	-0.27	14.73	21.76	-0.27	29.45	20.77
5	1	6	-29.45	0.27	20.77	-29.45	0.27	-20.32
6	6	8	-29.45	0.27	20.32	-29.45	0.27	-19.88
7	8	10	-29.45	0.27	19.88	-29.45	0.27	-19.43
8	10	12	-29.45	0.27	19.43	-29.45	0.27	-18.99
9	5	7	-29.45	-0.27	-20.77	-29.45	-0.27	20.32
10	7	9	-29.45	-0.27	-20.32	-29.45	-0.27	19.88
11	9	11	-29.45	-0.27	-19.88	-29.45	-0.27	19.43
12	11	20	-29.45	-0.27	-19.43	-29.45	-0.27	18.99
13	12	13	0.27	25.12	18.99	0.27	25.12	5.19
14	13	14	0.27	17.21	-5.19	0.27	17.21	21.76
15	14	15	0.27	10.00	-21.76	0.27	10.00	31.38
16	15	16	0.27	3.27	-31.38	0.27	3.27	34.53
17	16	17	0.27	-3.27	-34.53	0.27	-3.27	31.38
18	17	18	0.27	-10.00	-31.38	0.27	-10.00	21.76
19	18	19	0.27	-17.21	-21.76	0.27	-17.21	5.19
20	19	20	0.27	-25.12	-5.19	0.27	-25.12	-18.99

CALCULO DE LAS ALETAS

INTRODUCCION

El objeto de este Anejo de Cálculo es la justificación técnica de los muros a disponer que serán tipo ménsula. Esta se efectúa mediante la realización y exposición de los cálculos correspondientes.

El muro trabaja esencialmente a flexión, siendo la compresión vertical debida a su propio peso prácticamente despreciable.

INSTRUCCIONES Y NORMAS APLICADAS

Las normas aplicadas son las vigentes en la fecha de redacción de este Anejo de Cálculo.

- Acciones: "Instrucción sobre las acciones a considerar en el Proyecto de Puentes de Carreteras" de 12 de Febrero de 1998.

- Hormigón armado: EH-91 "Instrucción para el proyecto y la ejecución de obras de hormigón en masa o armado " de 28 de Junio de 1991.

- Norma de Construcción Sismorresistente: Parte General y Edificación (NCSE-94) de 29 de Diciembre de 1994.

- Hormigón armado de P. Jiménez Montoya, A. García Meseguer y F. Morán Cabré.

NIVELES DE CONTROL DE CALIDAD ADOPTADOS.

El control de calidad se atendrá a lo especificado en la Instrucción EH-91 con los siguientes niveles de control:

- Materiales:

Hormigón de alzados ..... Normal - Coef. minoración $\gamma_c = 1,50$

Hormigón de zapatas ..... Normal - Coef. minoración $\gamma_c = 1,50$

Acero de armaduras ..... Normal - Coef. minoración $\gamma_c = 1,15$

- Ejecución:

Tipo de control ..... Normal Coef. mayoración $\gamma_f = 1,60$

Tipo de control ..... Sismo Coef. mayoración $\gamma_f = 1,00$

CARACTERISTICAS DE LOS MATERIALES.

Se consideran las siguientes características en los materiales empleados en el proyecto del muro:

- La resistencia característica de los diferentes hormigones utilizados es la siguiente:

Hormigón en Cimentación ..... H-250 $f_{ck} = 250$ Kg/cm^2

Hormigón en Alzados ..... H-250 $f_{ck} = 250$ Kg/cm^2

Acero de armar ..... AEH-500 $f_{yk} = 5100$ Kg/cm^2

- Peso específico del hormigón ..... 2.50 t/m^2

CARACTERISTICAS DEL TERRENO.

Conforme a los parámetros dados en el Anejo de Geotecnia, se consideran las siguientes valores característicos del terreno:

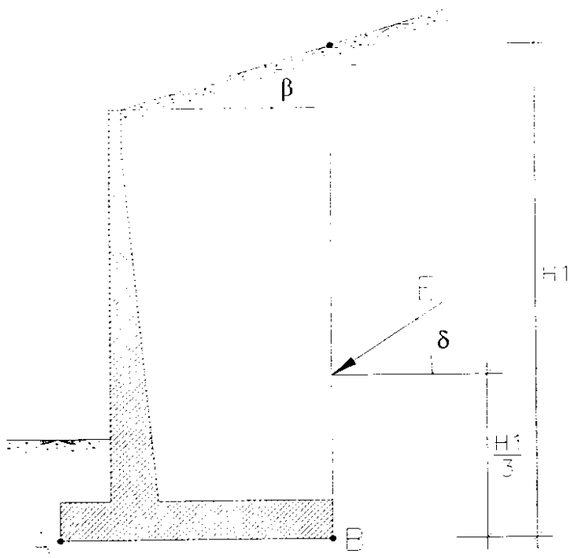
Peso específico de las tierras (t/m^3) ..... $\gamma = 2.00$

Angulo de rozamiento interno de las tierras ..... $\Phi = 35^\circ$

Angulo de rozamiento entre tierras y muro ..... $\delta = 12^\circ$

Coeficiente de rozamiento entre tierras y cimentación ..... $\mu = 0.55$

Tensión admisible del terreno ..... $\sigma_{adm} = 2,5$ Kg/cm^2.



CARGAS Y SOBRECARGAS.

Se consideran como cargas actuando sobre el muro, el empuje de las tierras a contener. Además se tendrá en cuenta el peso propio del muro.

ACCIONES SISMICAS.

Según la Norma de Construcción Sismorresistente NCSE-94, las obras se hayan situadas en zona cuyo efecto sísmico no es determinante.

CALCULO DE LOS MUROS.

Cálculo del empuje del terreno sobre los muros

La presión del terreno sobre el muro está fuertemente condicionada por la deformabilidad del muro, entendiendo por tal no sólo la deformación que el muro experimenta como pieza de hormigón, sino también la que en el muro produce la deformación del terreno.

Si el muro se desplaza, permitiendo la expansión lateral del suelo se produce un fallo por corte del mismo y la cuña de rotura avanza hacia el muro y desciende. Esto origina un empuje de las tierras sobre el muro, que recibe el nombre de "Empuje activo".

El cálculo del empuje activo "K_A" de los muros se realiza mediante la Teoría de Coulomb.

Teniendo en cuenta un muro cuyo trasdós forma un ángulo "α" con la horizontal y una superficie del terreno plana , formando un talud de ángulo "β", sobre la que actúa una carga uniformemente repartida de valor "q" por metro lineal de proyección, la presión "P" del terreno sobre el muro a la profundidad "z", contada a partir de la cota superior del terreno, tiene la siguiente expresión:

$$P = (\gamma \times z + q) \times K_A$$

siendo K: coeficiente de empuje activo de Coulomb.

Seguridad frente al deslizamiento y al vuelco.

Se considera un coeficiente de seguridad frente al deslizamiento mayor o igual a 1.50, y frente a l vuelco mayor o igual a 1,80. En el caso de que haya que considerar la acción del sismo, ambos coeficientes se reducen a 1.20.

El coeficiente de seguridad al **deslizamiento** será:

$$CD = \frac{\mu \times \sum F_v}{\sum F_h}$$

siendo "μ" el coeficiente de rozamiento entre cimentación y terreno y $\sum F_v$ y $\sum F_h$, las sumas de las fuerzas verticales y horizontales respectivamente.

El coeficiente de seguridad al **vuelco** será:

$$CV = \frac{\sum M_e}{\sum M_v}$$

siendo $\sum M_e$ y $\sum M_v$ las sumas de los momentos estabilizadores y de vuelco respectivamente.

<u>Cálculo de las tensiones sobre el terreno.</u>

En función del valor de la excentricidad de la resultante de las cargas existentes, se considera dos tipos de distribución de las tensiones (Item 21.2-5 , P.Jiménez Montoya)

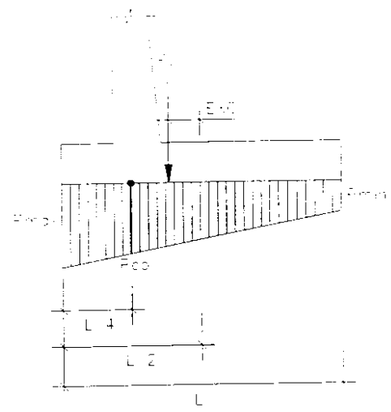
– Distribución trapecial de tensiones: se produce cuando la excentricidad "EXC" ≤L/6, siendo "L" el ancho de la zapata del muro.

En este caso el valor de las presiones máxima "P_{max}", mínima "P_{min}"y de comparación "P_{co}" producidas sobre el terreno son las siguientes:

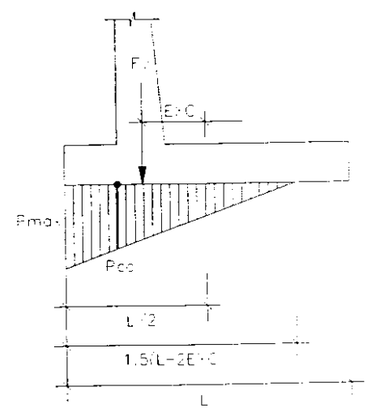
$$P_{max} = \frac{\sum F_v}{L} \times \left(1 + \frac{6 \times EXC}{L}\right)$$

$$P_{min} = \frac{\sum F_v}{L} \times \left(1 - \frac{6 \times EXC}{L}\right)$$

$$P_{co} = \frac{\sum F_v}{L} \times \left(1 + \frac{3 \times EXC}{L}\right)$$



– Distribución triangular de tensiones: se produce cuando la excentricidad "EXC">L/6, siendo "L" el ancho de la zapata del muro.



$$P_{max} = \frac{4 \times \sum F_v}{3 \times (L - 2 \times EXC)}$$

$$P_{min} = 0$$

$$P_{co} = \frac{\sum F_v}{(L - 2 \times EXC)}$$

DATOS DE ENTRADA

Muro ..... : Aleta 1 PI-107.0

GEOMETRIA:

Longitud muro ..... :	8.61	m
Altura mínima total.....:	3.20	m
Altura máxima total.....:	7.30	m
Canto de Zapata..... :	0.80	m
Ancho coronacion ..... :	0.40	m
Talud trasdós..... :	10.00	%
Talud exterior..... :	0.00	%
Angulo muro-calzada .....:	-66.05	°
Distancia muro-calzada.....:	0.00	m
Talud de terraplén (H/V)...:	2 / 1	
Angulo de talud trasdós....:	11.47	°

TERRENO:

Densidad de tierras.....:	2.00	t/m3
Angulo de rozam. interno...:	35.00	°
Roz. Muro-tierras .....:	12.00	°
Coeficiente de roz.....:	0.55	
Tensión admisible .....:	2.50	Kg/cm²
Sobrecarga terraplén..... :	3.00	t/m²
Kh inclinado .....:	0.334	
Kh horizontal.....:	0.291	
Kv inclinado .....:	0.071	
Kv horizontal.....:	0.062	

MATERIALES

Fck (Kg/cm²).....:	250	
Gc .....:	1.50	
Fyk (Kg/cm²).....:	5100	
Gs .....:	1.15	
Recubrimiento en Alzados...:	3	cms
Recubrimiento en Cimientos.:	5	cms

SEGURIDAD

Coeficiente desliz.....:	1.50
Coeficiente vuelco.....:	1.50
Coeficiente de acciones....:	1.60

CONDICIONES DE EQUILIBRIO

H = Altura (m) de la sección en estudio
Eh = Empuje Horizontal (t)
Ev = Empuje Vertical (t)
Meh = Momento (m.t) de los empujes Horizontales
Mev = Momento (m.t) de los empujes Verticales
Fh = Fuerza horizontal (t)
Fv = Fuerza vertical (t)
ΣFh = Sumatorio de Fuerzas horizontales (t)
ΣFv = Sumatorio de Fuerzas verticales (t)
ΣMeh = Sumatorio de Momentos (m.t) de los empujes Horizontales
ΣMev = Sumatorio de Momentos (m.t) de los empujes Verticales

Zona		Secc	H	Eh	Ev	Meh	Mev	ΣFh	ΣFv	ΣMeh	ΣMev
0.00	1.00	0.50	2.64	5.51	1.17	6.55	2.01	5.51	15.58	10.96	16.63
1.00	2.00	1.50	3.11	7.16	1.52	9.94	3.07	7.16	20.89	15.67	25.67
2.00	3.00	2.50	3.59	9.00	1.91	14.28	4.43	9.00	26.87	21.48	37.32
3.00	4.00	3.50	4.07	10.80	2.30	18.99	5.77	10.80	29.71	27.62	46.73
4.00	5.00	4.50	4.54	12.91	2.75	25.11	7.72	12.91	35.38	35.44	62.71
5.00	6.00	5.50	5.02	15.21	3.23	32.37	10.07	15.21	41.50	44.53	81.87
6.00	7.00	6.50	5.50	17.89	3.80	41.58	13.36	17.89	51.28	55.89	112.14
7.00	8.00	7.50	5.97	20.88	4.44	52.77	17.81	20.88	63.79	69.47	156.38
8.00	8.61	8.31	6.35	23.56	5.01	63.53	22.61	23.56	76.54	82.38	207.83

H = Altura (m) de la sección en estudio
Zarpa = Longitud (m) de la parte delantera de la zapata
Zap = Longitud (m) total de la zapata
Csd = Coeficiente de seguridad al Deslizamiento
Csv = Coeficiente de seguridad al Vuelco
σmáx = Tensión (Kg/cm²) punta en cota de cimentación
σmín = Tensión (Kg/cm²) mínima en cota de cimentación
σcob = Tensión (Kg/cm²) de comparación
Base = Base comprimida (m) para el caso de diagrama triangular

Zona		Secc	H	Zarpa	Zap	Csd	Csv	σmáx	σmín	σcob	Base
0.00	1.00	0.50	2.64	0.35	1.71	1.55	1.52	2.85	0.00	2.14	1.09
1.00	2.00	1.50	3.11	0.35	2.01	1.60	1.64	2.91	0.00	2.18	1.44
2.00	3.00	2.50	3.59	0.35	2.31	1.64	1.74	3.04	0.00	2.28	1.77
3.00	4.00	3.50	4.07	0.55	2.51	1.51	1.69	3.08	0.00	2.31	1.93
4.00	5.00	4.50	4.54	0.65	2.81	1.51	1.77	3.06	0.00	2.29	2.31
5.00	6.00	5.50	5.02	0.75	3.11	1.50	1.84	3.07	0.00	2.31	2.70
6.00	7.00	6.50	5.50	0.75	3.51	1.58	2.01	3.12	0.00	2.34	3.29
7.00	8.00	7.50	5.97	0.75	4.01	1.68	2.25	3.12	0.06	2.34	4.01
8.00	8.61	8.31	6.35	0.75	4.51	1.79	2.52	3.09	0.30	2.33	4.51

Coeficiente global de seg. al deslizamiento ...	1.62
Coeficiente global de seg. al vuelco	2.06
Tensión máxima en solera (Kg/cm²).....	3.12

A R M A D U R A S EH-91

Para cada sección:

H = Altura (m) sobre cara superior de zapata
d = Canto útil (m)
Vd = Cortante de cálculo (t)
Vcu= Contribución del hormigón a cortante (t)
Md = Momento de cálculo de la sección (m.t)
Us = Capacidad necesaria (t)
As = Armadura en cm²

Z A P A T A :

Vcu= 48.41 t
d = 0.75 m

Zona		ZARPA DELANTERA Vd	Md	Us	As	ZARPA TRASERA Vd	Md	Us	As
0.00	1.00	10.82	2.15	2.78	0.92	10.82	2.15	7.14	2.30
1.00	2.00	12.64	2.84	3.68	1.22	12.64	2.84	11.76	3.67
2.00	3.00	15.00	3.69	4.79	1.57	15.00	3.69	17.67	5.27
3.00	4.00	17.61	4.71	6.13	1.99	17.61	4.71	25.06	7.06
4.00	5.00	20.10	5.92	7.70	2.47	20.10	5.92	34.12	8.92
5.00	6.00	23.16	7.32	9.54	3.02	23.16	7.32	45.09	10.67
6.00	7.00	26.41	8.92	11.65	3.63	26.41	8.92	58.24	13.13
7.00	8.00	29.47	10.74	14.05	4.31	29.47	10.74	73.88	16.66
8.00	8.61	32.38	12.38	16.22	4.89	32.38	12.38	88.48	19.95

A L Z A D O S

Zona		Sección .... H	d	Vd	Vcu	Md	Us	As
0.00	1.00	1.76	0.49	3.51	29.56	2.20	4.70	1.51
		0.88	0.58	7.17	35.24	7.29	13.15	3.91
		-0.00	0.66	8.66	40.91	9.93	15.42	4.58
1.00	2.00	2.08	0.50	4.21	30.58	2.97	6.13	1.94
		1.04	0.61	8.92	37.29	10.34	17.68	5.06
		0.00	0.71	11.21	43.99	14.96	21.71	6.17
2.00	3.00	2.39	0.52	4.96	31.61	3.88	7.77	2.42
		1.20	0.64	10.84	39.33	14.09	22.93	6.30
		-0.00	0.76	14.06	47.06	21.38	29.14	7.89
3.00	4.00	2.71	0.54	5.77	32.63	4.96	9.63	2.95
		1.36	0.67	12.94	41.38	18.61	28.93	7.58
		-0.00	0.81	17.21	50.13	29.35	37.73	9.66
4.00	5.00	3.03	0.55	6.64	33.66	6.21	11.70	3.51
		1.51	0.70	15.20	43.43	23.99	35.68	8.87
		0.00	0.85	20.66	53.21	39.02	47.50	11.44
5.00	6.00	3.35	0.57	7.55	34.68	7.64	14.00	4.12
		1.67	0.73	17.64	45.48	30.27	43.20	10.13
		-0.00	0.90	24.41	56.28	50.55	58.48	13.19
6.00	7.00	3.66	0.58	8.53	35.71	9.26	16.54	4.76
		1.83	0.77	20.26	47.53	37.54	51.50	11.61
		0.00	0.95	28.46	59.36	64.10	70.70	15.94
7.00	8.00	3.98	0.60	9.55	36.73	11.09	19.30	5.42
		1.99	0.80	23.05	49.58	45.85	60.61	13.67
		-0.00	1.00	32.81	62.43	79.83	84.17	18.98
8.00	8.61	4.24	0.61	10.42	37.56	12.73	21.70	5.97
		2.12	0.82	25.42	51.23	53.36	68.53	15.45
		0.00	1.04	36.53	64.90	94.18	95.94	21.63

DATOS DE ENTRADA

Muro ..... : Aleta 2 PI-107.0

GEOMETRIA:

Longitud muro ..... :	8.81	m
Altura mínima total.....:	3.75	m
Altura máxima total.....:	7.30	m
Canto de Zapata..... :	0.80	m
Ancho coronacion ..... :	0.40	m
Talud trasdós..... :	10.00	%
Talud exterior..... :	0.00	%
Angulo muro-calzada .....:	-53.69	°
Distancia muro-calzada.....:	0.00	m
Talud de terraplén (H/V)...:	2 / 1	
Angulo de talud trasdós....:	16.49	°

TERRENO:

Densidad de tierras.....:	2.00	t/m3
Angulo de rozam. interno...:	35.00	°
Roz. Muro-tierras .....:	12.00	°
Coeficiente de roz.....:	0.55	
Tensión admisible .....:	2.50	Kg/cm²
Sobrecarga terraplén..... :	3.00	t/m²
Kh inclinado .....:	0.359	
Kh horizontal.....:	0.291	
Kv inclinado .....:	0.076	
Kv horizontal.....:	0.062	

MATERIALES

Fck (Kg/cm²).....:	250	
Gc .....:	1.50	
Fyk (Kg/cm²).....:	5100	
Gs .....:	1.15	
Recubrimiento en Alzados...:	3	cms
Recubrimiento en Cimientos.:	5	cms

SEGURIDAD

Coeficiente desliz.....:	1.50
Coeficiente vuelco.....:	1.50
Coeficiente de acciones....:	1.60

CONDICIONES DE EQUILIBRIO

H = Altura (m) de la sección en estudio
Eh = Empuje Horizontal (t)
Ev = Empuje Vertical (t)
Meh = Momento (m.t) de los empujes Horizontales
Mev = Momento (m.t) de los empujes Verticales
Fh = Fuerza horizontal (t)
Fv = Fuerza vertical (t)
ΣFh = Sumatorio de Fuerzas horizontales (t)
ΣFv = Sumatorio de Fuerzas verticales (t)
ΣMeh = Sumatorio de Momentos (m.t) de los empujes Horizontales
ΣMev = Sumatorio de Momentos (m.t) de los empujes Verticales

Zona		Secc	H	Eh	Ev	Meh	Mev	ΣFh	ΣFv	ΣMeh	ΣMev
0.00	1.00	0.50	3.15	8.43	1.79	12.33	3.88	8.43	23.28	19.07	30.71
1.00	2.00	1.50	3.55	10.19	2.17	16.62	5.34	10.19	28.07	24.78	42.59
2.00	3.00	2.50	3.96	12.23	2.60	22.13	7.19	12.23	34.47	31.92	57.89
3.00	4.00	3.50	4.36	14.31	3.04	28.26	9.32	14.31	40.12	39.71	75.41
4.00	5.00	4.50	4.76	16.54	3.52	35.38	11.83	16.54	46.16	48.62	96.03
5.00	6.00	5.50	5.17	18.93	4.02	43.58	14.75	18.93	52.59	58.72	120.00
6.00	7.00	6.50	5.57	21.80	4.63	54.19	18.84	21.80	62.84	71.63	156.95
7.00	8.00	7.50	5.97	25.05	5.33	67.08	24.31	25.05	75.81	87.13	209.70
8.00	8.81	8.41	6.34	28.47	6.05	81.59	31.25	28.47	91.43	104.36	282.30

H = Altura (m) de la sección en estudio
Zarpa = Longitud (m) de la parte delantera de la zapata
Zap = Longitud (m) total de la zapata
Csd = Coeficiente de seguridad al Deslizamiento
Csv = Coeficiente de seguridad al Vuelco
σmáx = Tensión (Kg/cm²) punta en cota de cimentación
σmín = Tensión (Kg/cm²) mínima en cota de cimentación
σcob = Tensión (Kg/cm²) de comparación
Base = Base comprimida (m) para el caso de diagrama triangular

Zona		Secc	H	Zarpa	Zap	Csd	Csv	σmáx	σmín	σcob	Base
0.00	1.00	0.50	3.15	0.35	2.17	1.52	1.61	3.11	0.00	2.33	1.50
1.00	2.00	1.50	3.55	0.45	2.47	1.51	1.72	2.95	0.00	2.21	1.90
2.00	3.00	2.50	3.96	0.45	2.77	1.55	1.81	3.05	0.00	2.29	2.26
3.00	4.00	3.50	4.36	0.55	3.07	1.54	1.90	3.01	0.00	2.25	2.67
4.00	5.00	4.50	4.76	0.65	3.37	1.53	1.98	3.00	0.00	2.25	3.08
5.00	6.00	5.50	5.17	0.75	3.67	1.53	2.04	3.01	0.00	2.26	3.50
6.00	7.00	6.50	5.57	0.75	4.07	1.59	2.19	3.09	0.01	2.31	4.07
7.00	8.00	7.50	5.97	0.75	4.57	1.66	2.41	3.11	0.21	2.34	4.57
8.00	8.81	8.41	6.34	0.75	5.17	1.77	2.71	3.08	0.46	2.35	5.17

Coeficiente global de seg. al deslizamiento ...	1.60
Coeficiente global de seg. al vuelco	2.21
Tensión máxima en solera (Kg/cm²).....	3.11

A R M A D U R A S EH-91

Para cada sección:

H = Altura (m) sobre cara superior de zapata
d = Canto útil (m)
Vd = Cortante de cálculo (t)
Vcu= Contribución del hormigón a cortante (t)
Md = Momento de cálculo de la sección (m.t)
Us = Capacidad necesaria (t)
As = Armadura en cm²

Z A P A T A :

Vcu= 48.41 t
d = 0.75 m

Zona		ZARPA DELANTERA Vd	Md	Us	As	ZARPA TRASERA Vd	Md	Us	As
0.00	1.00	13.23	2.58	3.35	1.11	13.23	2.58	16.83	5.05
1.00	2.00	14.80	3.27	4.24	1.39	14.80	3.27	24.03	6.83
2.00	3.00	16.99	4.10	5.33	1.74	16.99	4.10	32.60	8.63
3.00	4.00	19.04	5.08	6.61	2.14	19.04	5.08	42.78	10.34
4.00	5.00	21.66	6.23	8.11	2.60	21.66	6.23	54.77	12.35
5.00	6.00	24.06	7.54	9.83	3.11	24.06	7.54	68.88	15.53
6.00	7.00	27.01	9.02	11.78	3.67	27.01	9.02	85.41	19.26
7.00	8.00	30.12	10.68	13.97	4.28	30.12	10.68	104.64	23.59
8.00	8.81	32.85	12.35	16.18	4.88	32.85	12.35	124.65	28.11

A L Z A D O S

Zona		Sección .... H	d	Vd	Vcu	Md	Us	As
0.00	1.00	2.10	0.51	4.99	30.66	3.63	7.49	2.33
		1.05	0.61	10.39	37.45	12.37	21.14	5.85
		0.00	0.72	13.03	44.23	17.87	25.87	7.10
1.00	2.00	2.37	0.52	5.80	31.53	4.62	9.27	2.84
		1.18	0.64	12.35	39.18	16.23	26.63	7.03
		-0.00	0.76	15.89	46.83	24.37	33.50	8.71
2.00	3.00	2.64	0.53	6.66	32.40	5.76	11.29	3.39
		1.32	0.66	14.48	40.91	20.81	32.83	8.23
		0.00	0.80	19.01	49.43	32.25	42.21	10.34
3.00	4.00	2.91	0.55	7.59	33.27	7.07	13.53	3.98
		1.45	0.69	16.77	42.65	26.15	39.78	9.40
		0.00	0.84	22.41	52.03	41.63	52.03	11.92
4.00	5.00	3.18	0.56	8.57	34.13	8.57	16.01	4.60
		1.59	0.72	19.22	44.38	32.32	47.47	10.70
		-0.00	0.88	26.07	54.63	52.64	62.99	14.20
5.00	6.00	3.44	0.57	9.60	35.00	10.26	18.73	5.24
		1.72	0.74	21.83	46.12	39.38	55.94	12.61
		-0.00	0.92	30.01	57.23	65.40	75.12	16.94
6.00	7.00	3.71	0.59	10.70	35.87	12.15	21.71	5.91
		1.86	0.77	24.60	47.85	47.38	65.20	14.70
		-0.00	0.96	34.22	59.83	80.04	88.44	19.94
7.00	8.00	3.98	0.60	11.85	36.73	14.25	24.94	6.59
		1.99	0.80	27.54	49.58	56.38	75.27	16.97
		0.00	1.00	38.69	62.43	96.69	102.98	23.22
8.00	8.81	4.22	0.61	12.94	37.52	16.36	28.09	7.20
		2.11	0.82	30.33	51.15	65.43	85.10	19.19
		-0.00	1.03	42.98	64.79	113.59	117.20	26.43

DATOS DE ENTRADA

Muro ..... : Aleta 3 PI-107.0

GEOMETRIA:

Longitud muro ..... :	7.05	m
Altura mínima total.....:	4.05	m
Altura máxima total.....:	7.30	m
Canto de Zapata..... :	0.80	m
Ancho coronacion ..... :	0.40	m
Talud trasdós..... :	10.00	%
Talud exterior..... :	0.00	%
Angulo muro-calzada .....:	-66.30	º
Distancia muro-calzada.....:	0.00	m
Talud de terraplén (H/V)...:	2 / 1	
Angulo de talud trasdós....:	11.36	º

TERRENO:

Densidad de tierras.....:	2.00	t/m3
Angulo de rozam. interno...:	35.00	º
Roz. Muro-tierras .....:	12.00	º
Coeficiente de roz.....:	0.55	
Tensión admisible .....:	2.50	Kg/cm²
Sobrecarga terraplén..... :	3.00	t/m²
Kh inclinado .....:	0.333	
Kh horizontal.....:	0.291	
Kv inclinado .....:	0.071	
Kv horizontal.....:	0.062	

MATERIALES

Fck (Kg/cm²).....:	250	
Gc .....:	1.50	
Fyk (Kg/cm²).....:	5100	
Gs .....:	1.15	
Recubrimiento en Alzados...:	3	cms
Recubrimiento en Cimientos.:	5	cms

SEGURIDAD

Coeficiente desliz.....:	1.50
Coeficiente vuelco.....:	1.50
Coeficiente de acciones....:	1.60

CONDICIONES DE EQUILIBRIO

H = Altura (m) de la sección en estudio
Eh = Empuje Horizontal (t)
Ev = Empuje Vertical (t)
Meh = Momento (m.t) de los empujes Horizontales
Mev = Momento (m.t) de los empujes Verticales
Fh = Fuerza horizontal (t)
Fv = Fuerza vertical (t)
ΣFh = Sumatorio de Fuerzas horizontales (t)
ΣFv = Sumatorio de Fuerzas verticales (t)
ΣMeh = Sumatorio de Momentos (m.t) de los empujes Horizontales
ΣMev = Sumatorio de Momentos (m.t) de los empujes Verticales

Zona		Secc	H	Eh	Ev	Meh	Mev	ΣFh	ΣFv	ΣMeh	ΣMev
0.00	1.00	0.50	3.48	8.43	1.79	12.89	3.94	8.43	23.77	19.64	32.43
1.00	2.00	1.50	3.94	10.35	2.20	17.78	5.49	10.35	30.01	26.06	45.77
2.00	3.00	2.50	4.40	12.36	2.63	23.47	7.35	12.36	35.61	33.35	61.39
3.00	4.00	3.50	4.86	14.54	3.09	30.20	9.57	14.54	41.65	41.83	80.12
4.00	5.00	4.50	5.32	16.88	3.59	38.07	12.19	16.88	48.12	51.57	102.21
5.00	6.00	5.50	5.79	19.60	4.17	47.93	15.83	19.60	58.38	63.62	136.44
6.00	7.00	6.50	6.25	22.75	4.83	60.24	21.26	22.75	73.29	78.43	194.49
7.00	7.05	7.03	6.49	24.47	5.20	67.37	24.43	24.47	81.35	86.95	228.75

H = Altura (m) de la sección en estudio
Zarpa = Longitud (m) de la parte delantera de la zapata
Zap = Longitud (m) total de la zapata
Csd = Coeficiente de seguridad al Deslizamiento
Csv = Coeficiente de seguridad al Vuelco
σmáx = Tensión (Kg/cm²) punta en cota de cimentación
σmín = Tensión (Kg/cm²) mínima en cota de cimentación
σcob = Tensión (Kg/cm²) de comparación
Base = Base comprimida (m) para el caso de diagrama triangular

Zona		Secc	H	Zarpa	Zap	Csd	Csv	σmáx	σmín	σcob	Base
0.00	1.00	0.50	3.48	0.45	2.20	1.55	1.65	2.94	0.00	2.21	1.61
1.00	2.00	1.50	3.94	0.45	2.50	1.59	1.76	3.05	0.00	2.28	1.97
2.00	3.00	2.50	4.40	0.55	2.80	1.58	1.84	3.02	0.00	2.26	2.36
3.00	4.00	3.50	4.86	0.65	3.10	1.58	1.92	3.02	0.00	2.27	2.76
4.00	5.00	4.50	5.32	0.75	3.40	1.57	1.98	3.05	0.00	2.29	3.16
5.00	6.00	5.50	5.79	0.75	3.80	1.64	2.14	3.12	0.00	2.34	3.74
6.00	7.00	6.50	6.25	0.75	4.40	1.77	2.48	3.07	0.27	2.31	4.40
7.00	7.05	7.03	6.49	0.75	4.70	1.83	2.63	3.07	0.39	2.33	4.70

Coeficiente global de seg. al deslizamiento ... 1.67
Coeficiente global de seg. al vuelco 2.20
Tensión máxima en solera (Kg/cm²)..... 3.12

A R M A D U R A S EH-91

Para cada sección:

H = Altura (m) sobre cara superior de zapata
d = Canto útil (m)
Vd = Cortante de cálculo (t)
Vcu= Contribución del hormigón a cortante (t)
Md = Momento de cálculo de la sección (m.t)
Us = Capacidad necesaria (t)
As = Armadura en cm²

Z A P A T A :

Vcu= 48.41 t
d = 0.75 m

Zona		ZARPA DELANTERA Vd	Md	Us	As	ZARPA TRASERA Vd	Md	Us	As
0.00	1.00	15.47	3.84	4.98	1.63	15.47	3.84	15.12	4.60
1.00	2.00	17.36	4.68	6.09	1.98	17.36	4.68	22.24	6.41
2.00	3.00	19.53	5.70	7.42	2.39	19.53	5.70	30.81	8.28
3.00	4.00	21.92	6.89	8.98	2.86	21.92	6.89	41.08	10.09
4.00	5.00	24.85	8.25	10.76	3.38	24.85	8.25	53.37	12.04
5.00	6.00	27.58	9.77	12.77	3.95	27.58	9.77	67.97	15.33
6.00	7.00	30.46	11.48	15.04	4.58	30.46	11.48	85.16	19.20
7.00	7.05	32.00	12.46	16.33	4.92	32.00	12.46	95.34	21.50

A L Z A D O S

Zona		Sección .... H	d	Vd	Vcu	Md	Us	As
0.00	1.00	2.32	0.52	4.74	31.37	3.62	7.29	2.28
		1.16	0.63	10.30	38.86	13.03	21.44	5.96
		-0.00	0.75	13.27	46.35	19.59	27.07	7.43
1.00	2.00	2.63	0.53	5.52	32.36	4.62	9.05	2.78
		1.31	0.66	12.30	40.84	17.23	27.10	7.20
		-0.00	0.79	16.27	49.33	26.93	35.13	9.15
2.00	3.00	2.93	0.55	6.35	33.36	5.79	11.02	3.33
		1.47	0.69	14.47	42.83	22.23	33.48	8.47
		-0.00	0.84	19.55	52.30	35.86	44.34	10.89
3.00	4.00	3.24	0.56	7.24	34.35	7.14	13.21	3.91
		1.62	0.72	16.81	44.81	28.08	40.61	9.72
		0.00	0.89	23.12	55.28	46.52	54.70	12.59
4.00	5.00	3.55	0.58	8.18	35.34	8.67	15.63	4.53
		1.77	0.75	19.32	46.80	34.85	48.49	10.93
		0.00	0.93	26.98	58.25	59.06	66.24	14.94
5.00	6.00	3.86	0.59	9.18	36.33	10.40	18.27	5.18
		1.93	0.79	21.99	48.78	42.62	57.15	12.89
		-0.00	0.98	31.14	61.23	73.63	78.99	17.81
6.00	7.00	4.16	0.61	10.23	37.32	12.33	21.15	5.85
		2.08	0.82	24.84	50.76	51.43	66.60	15.02
		0.00	1.02	35.58	64.20	90.38	92.97	20.96
7.00	7.05	4.33	0.62	10.80	37.84	13.44	22.75	6.20
		2.16	0.83	26.40	51.81	56.50	71.88	16.21
		-0.00	1.05	38.02	65.77	100.09	100.81	22.73

DATOS DE ENTRADA

Muro ..... : Aleta 4 PI-107.0

GEOMETRIA:

Longitud muro ..... :	7.58	m
Altura mínima total.....:	4.10	m
Altura máxima total.....:	7.30	m
Canto de Zapata..... :	0.80	m
Ancho coronacion ..... :	0.40	m
Talud trasdós..... :	10.00	%
Talud exterior..... :	0.00	%
Angulo muro-calzada .....:	-53.95	°
Distancia muro-calzada.....:	0.00	m
Talud de terraplén (H/V)...:	2 / 1	
Angulo de talud trasdós....:	16.40	°

TERRENO:

Densidad de tierras.....:	2.00	t/m3
Angulo de rozam. interno...:	35.00	°
Roz. Muro-tierras .....:	12.00	°
Coeficiente de roz.....:	0.55	
Tensión admisible .....:	2.50	Kg/cm²
Sobrecarga terraplén..... :	3.00	t/m²
Kh inclinado .....:	0.359	
Kh horizontal.....:	0.291	
Kv inclinado .....:	0.076	
Kv horizontal.....:	0.062	

MATERIALES

Fck (Kg/cm²).....:	250	
Gc .....:	1.50	
Fyk (Kg/cm²).....:	5100	
Gs .....:	1.15	
Recubrimiento en Alzados...:	3	cms
Recubrimiento en Cimientos.:	5	cms

SEGURIDAD

Coeficiente desliz.....:	1.50
Coeficiente vuelco.....:	1.50
Coeficiente de acciones....:	1.60

CONDICIONES DE EQUILIBRIO

H = Altura (m) de la sección en estudio
Eh = Empuje Horizontal (t)
Ev = Empuje Vertical (t)
Meh = Momento (m.t) de los empujes Horizontales
Mev = Momento (m.t) de los empujes Verticales
Fh = Fuerza horizontal (t)
Fv = Fuerza vertical (t)
ΣFh = Sumatorio de Fuerzas horizontales (t)
ΣFv = Sumatorio de Fuerzas verticales (t)
ΣMeh = Sumatorio de Momentos (m.t) de los empujes Horizontales
ΣMev = Sumatorio de Momentos (m.t) de los empujes Verticales

Zona		Secc	H	Eh	Ev	Meh	Mev	ΣFh	ΣFv	ΣMeh	ΣMev
0.00	1.00	0.50	3.51	10.15	2.16	16.53	5.40	10.15	29.43	24.65	44.11
1.00	2.00	1.50	3.93	12.01	2.55	21.53	6.90	12.01	33.40	31.15	54.95
2.00	3.00	2.50	4.36	14.16	3.01	27.82	9.03	14.16	39.10	39.15	72.15
3.00	4.00	3.50	4.78	16.47	3.50	35.18	11.56	16.47	45.21	48.36	92.50
4.00	5.00	4.50	5.20	18.95	4.03	43.70	14.51	18.95	51.72	58.86	116.25
5.00	6.00	5.50	5.62	22.10	4.70	55.37	19.27	22.10	63.91	73.05	160.84
6.00	7.00	6.50	6.04	25.66	5.45	69.66	25.64	25.66	79.10	90.19	224.52
7.00	7.58	7.29	6.38	28.71	6.10	82.72	31.74	28.71	92.55	105.68	287.51

H = Altura (m) de la sección en estudio
Zarpa = Longitud (m) de la parte delantera de la zapata
Zap = Longitud (m) total de la zapata
Csd = Coeficiente de seguridad al Deslizamiento
Csv = Coeficiente de seguridad al Vuelco
σmáx = Tensión (Kg/cm²) punta en cota de cimentación
σmín = Tensión (Kg/cm²) mínima en cota de cimentación
σcob = Tensión (Kg/cm²) de comparación
Base = Base comprimida (m) para el caso de diagrama triangular

Zona		Secc	H	Zarpa	Zap	Csd	Csv	σmáx	σmín	σcob	Base
0.00	1.00	0.50	3.51	0.35	2.50	1.59	1.79	2.97	0.00	2.23	1.98
1.00	2.00	1.50	3.93	0.45	2.70	1.53	1.76	3.12	0.00	2.34	2.14
2.00	3.00	2.50	4.36	0.55	3.00	1.52	1.84	3.09	0.00	2.32	2.53
3.00	4.00	3.50	4.78	0.65	3.30	1.51	1.91	3.09	0.00	2.32	2.93
4.00	5.00	4.50	5.20	0.75	3.60	1.50	1.98	3.11	0.00	2.33	3.33
5.00	6.00	5.50	5.62	0.75	4.10	1.59	2.20	3.10	0.01	2.33	4.10
6.00	7.00	6.50	6.04	0.75	4.70	1.70	2.49	3.08	0.28	2.33	4.70
7.00	7.58	7.29	6.38	0.75	5.20	1.77	2.72	3.09	0.47	2.36	5.20

Coeficiente global de seg. al deslizamiento ...	1.61
Coeficiente global de seg. al vuelco	2.23
Tensión máxima en solera (Kg/cm²).....	3.12

A R M A D U R A S EH-91

Para cada sección:

H = Altura (m) sobre cara superior de zapata
d = Canto útil (m)
Vd = Cortante de cálculo (t)
Vcu= Contribución del hormigón a cortante (t)
Md = Momento de cálculo de la sección (m.t)
Us = Capacidad necesaria (t)
As = Armadura en cm²

Z A P A T A :

Vcu= 48.41 t
d = 0.75 m

Zona		Z A R P A D E L A N T E R A Vd	Md	Us	As	Z A R P A T R A S E R A Vd	Md	Us	As
0.00	1.00	13.52	2.67	3.46	1.14	13.52	2.67	24.39	6.91
1.00	2.00	15.65	3.53	4.59	1.50	15.65	3.53	33.18	8.74
2.00	3.00	18.38	4.58	5.95	1.93	18.38	4.58	43.68	10.47
3.00	4.00	20.96	5.81	7.56	2.43	20.96	5.81	56.14	12.66
4.00	5.00	23.71	7.24	9.44	2.99	23.71	7.24	70.90	15.99
5.00	6.00	27.04	8.88	11.60	3.62	27.04	8.88	88.26	19.90
6.00	7.00	30.13	10.75	14.06	4.31	30.13	10.75	108.56	24.48
7.00	7.58	32.72	12.39	16.24	4.90	32.72	12.39	126.91	28.62

A L Z A D O S

Zona		Sección .... H	d	Vd	Vcu	Md	Us	As
0.00	1.00	2.34	0.52	5.74	31.44	4.53	9.12	2.80
		1.17	0.63	12.18	38.99	15.86	26.13	6.93
		0.00	0.75	15.62	46.55	23.71	32.77	8.57
1.00	2.00	2.62	0.53	6.63	32.35	5.71	11.21	3.37
		1.31	0.66	14.39	40.81	20.59	32.56	8.18
		-0.00	0.79	18.86	49.27	31.84	41.79	10.27
2.00	3.00	2.90	0.55	7.60	33.25	7.08	13.54	3.98
		1.45	0.69	16.77	42.63	26.15	39.79	9.40
		-0.00	0.84	22.40	52.00	41.61	52.03	11.91
3.00	4.00	3.19	0.56	8.62	34.16	8.64	16.14	4.63
		1.59	0.72	19.33	44.44	32.61	47.84	10.79
		-0.00	0.88	26.24	54.72	53.14	63.50	14.32
4.00	5.00	3.47	0.57	9.70	35.07	10.42	18.99	5.30
		1.73	0.75	22.07	46.26	40.04	56.74	12.79
		0.00	0.92	30.36	57.45	66.59	76.24	17.19
5.00	6.00	3.75	0.59	10.85	35.98	12.42	22.12	6.00
		1.87	0.77	24.98	48.08	48.51	66.49	14.99
		-0.00	0.96	34.78	60.17	82.11	90.28	20.36
6.00	7.00	4.03	0.60	12.06	36.89	14.65	25.53	6.71
		2.01	0.80	28.06	49.89	58.07	77.12	17.39
		-0.00	1.00	39.50	62.90	99.83	105.65	23.82
7.00	7.58	4.25	0.61	13.06	37.61	16.59	28.42	7.27
		2.13	0.83	30.63	51.33	66.44	86.16	19.43
		0.00	1.04	43.43	65.05	115.48	118.74	26.78

P.B.F. 107.9

P.B.F. 107.9

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1. PROGRAMA DE CÁLCULO
2. DISCRETIZACIÓN DE LA ESTRUCTURA
3. HIPÓTESIS CONSIDERADAS
4. CARACTERÍSTICAS DE LOS MATERIALES

DISCRETIZACIÓN DE LA ESTRUCTURA
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- CROQUIS DE BARRAS

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- EMPUJE DE TIERRAS

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- BALASTO
- TREN RENFE
- EMPUJE DE TIERRAS

GRÁFICOS ESFUERZOS FLECTORES
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2. DATOS DE CARGA
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ESTRIBOS Y ALETAS PREFABRICADOS

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PLANOS

1.- PROGRAMA DE CÁLCULO :

Los cálculos del Emparrillado se han desarrollado mediante el programa **AVwin98** ***"Structural Analysis and Design Software"***

2.- DISCRETIZACIÓN DE LA ESTRUCTURA :

La pérgola se ha resuelto por un emparrillado tridimensional formado por :
336 Nudos y 648 Barras.
Se han considerado apoyos elásticos sobre el terreno .

3.- HIPÓTESIS CONSIDERADAS

Se han considerado las siguientes hipótesis de cálculo:

Balasto : Se ha considerado un espesor de 0.60 m.

Empuje de Tierras : Se ha considerado el empuje lateral de las tierras al reposo y una sobrecarga de 2.00 Tn/m² sobre el terreno.

Tren Renfe : Se ha considerado el Tren Tipo A de la norma mayorado por el coeficiente de impacto Ki = 1.452485

4.- CARACTERÍSTICAS DE LOS MATERIALES

HORMIGONES :

Prefabricados :
- Relleno Losa HA-25 / B / 17 / II b + H
- Pretensados HP-50 / B / 17 / II b + H

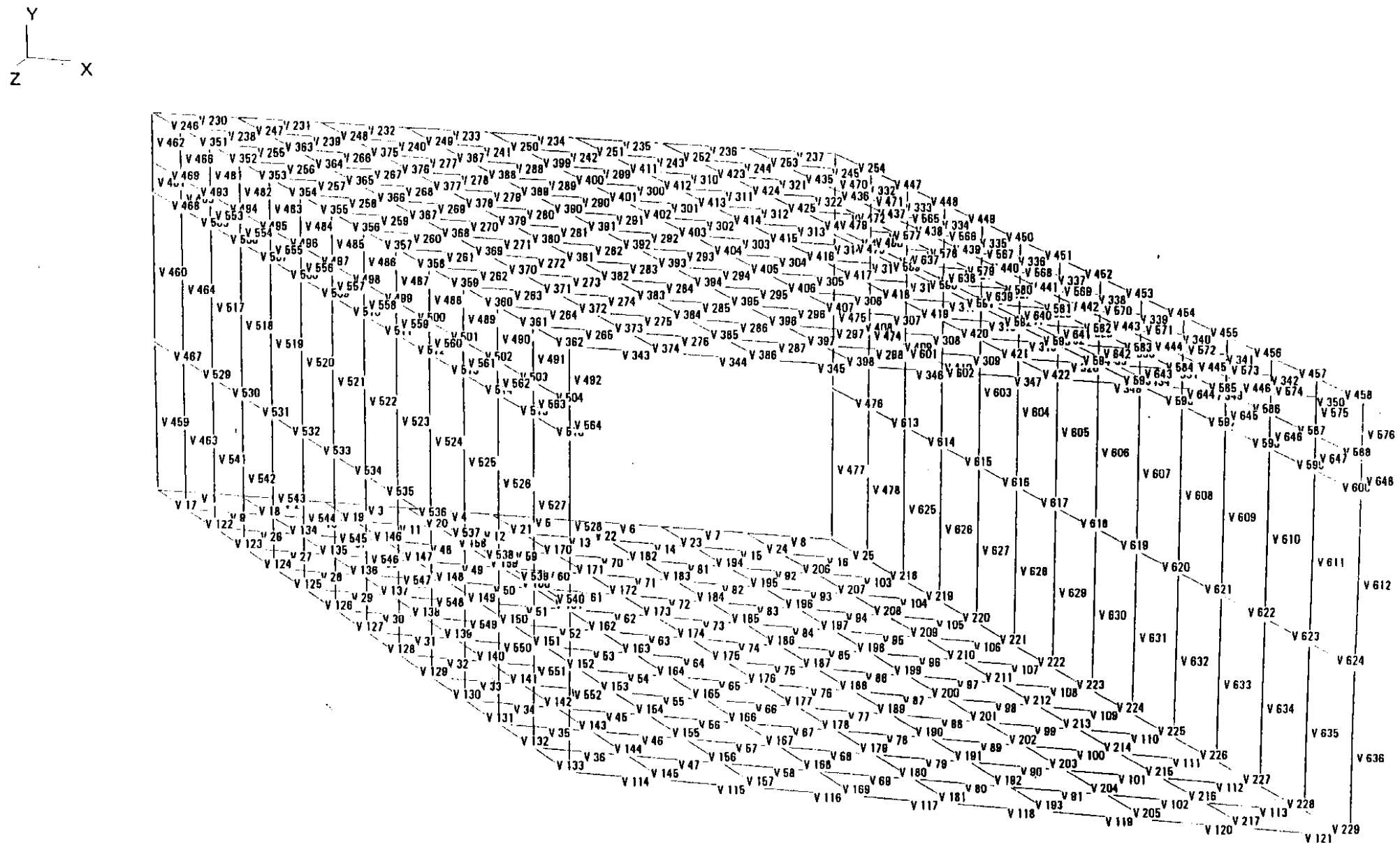
ACEROS :

Elementos prefabricados :
Acero pasivo : B 500 S
Acero activo
Cordones : Y 186057

DISCRETIZACIÓN DE LA ESTRUCTURA

CROQUIS DE NUDOS

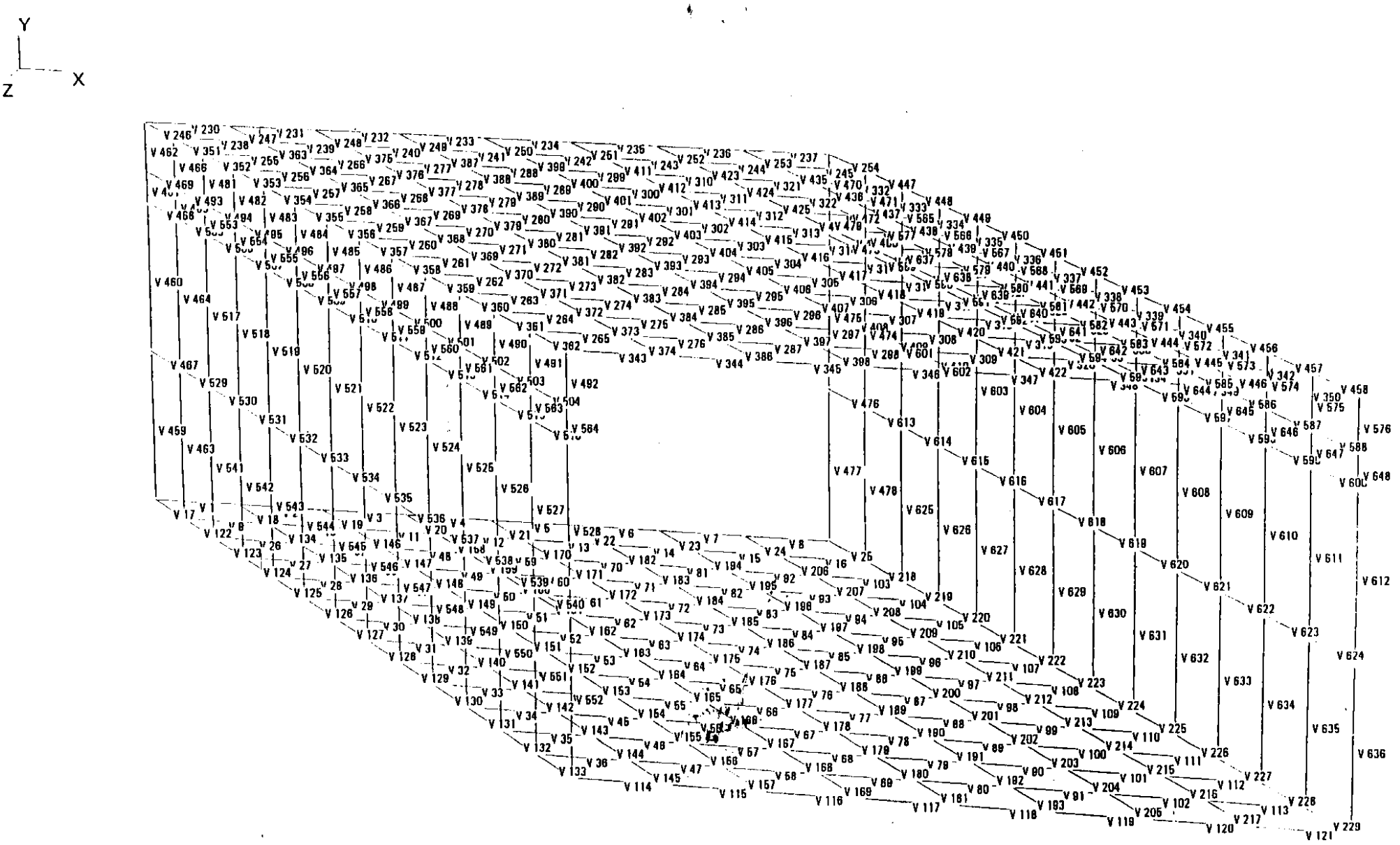
CROQUIS DE BARRAS



ESQUEMA NUDOS ESTRUCTURA ESPACIAL

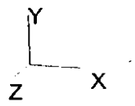
N° de Nudos : 336

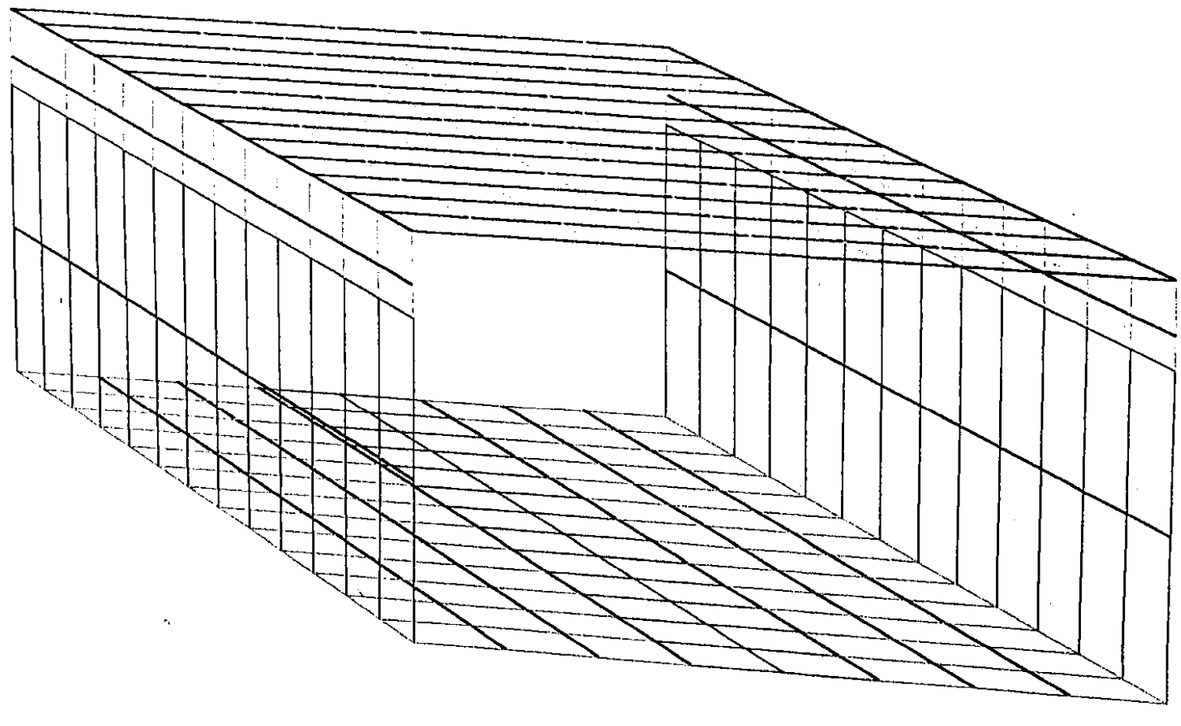
AVwin Archivo: CORSAN-107-9.AVW Fecha: 02/11/99 Hora: 13:16:36 Estado: EM=Empuje
Análisis: 1er orden



ESQUEMA BARRAS ESTRUCTURA ESPACIAL

N° de Barras : 648





TIPOLOGÍA DE LAS BARRAS

Nº de Barras = 648

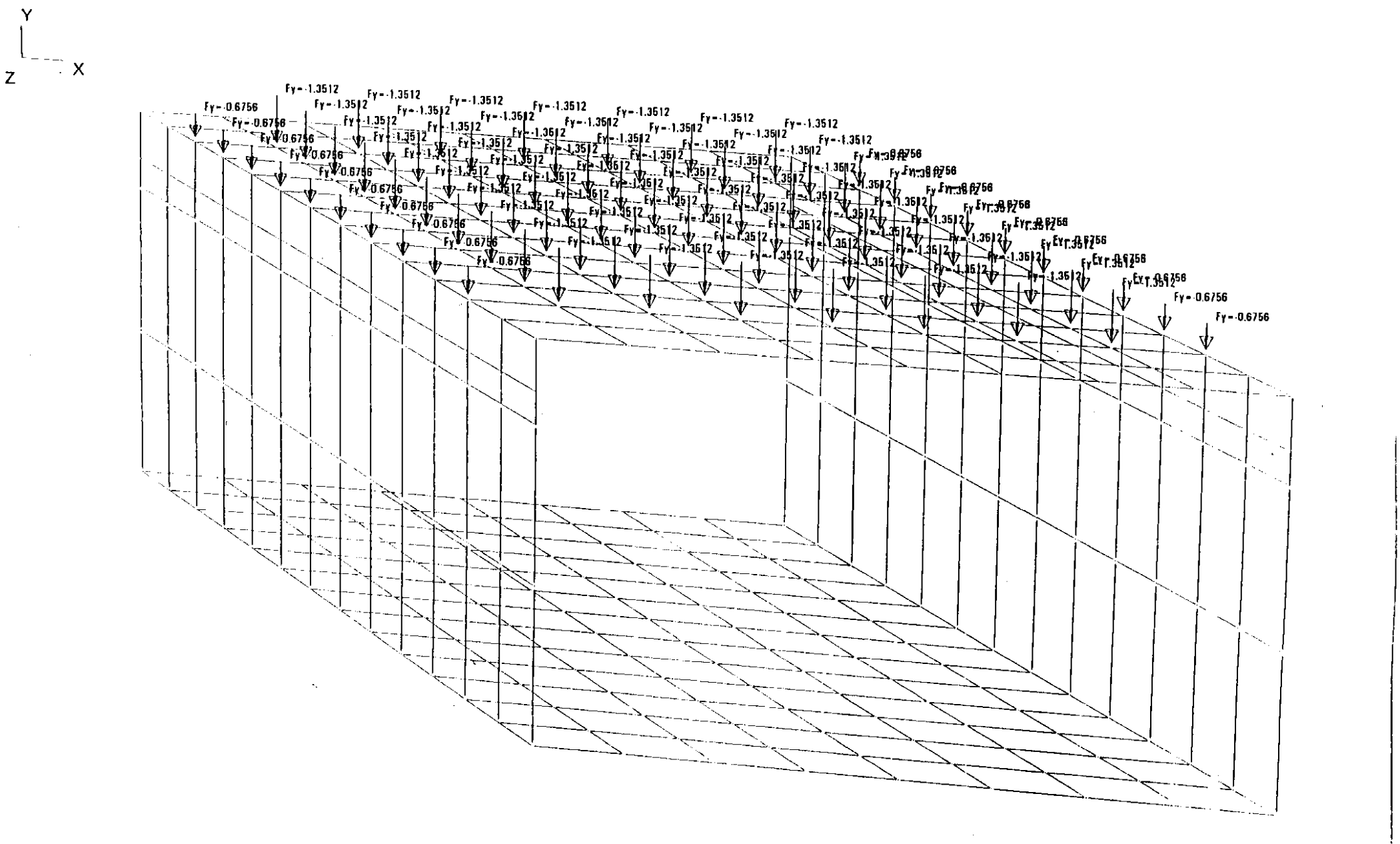
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BALASTO

TREN RENFE

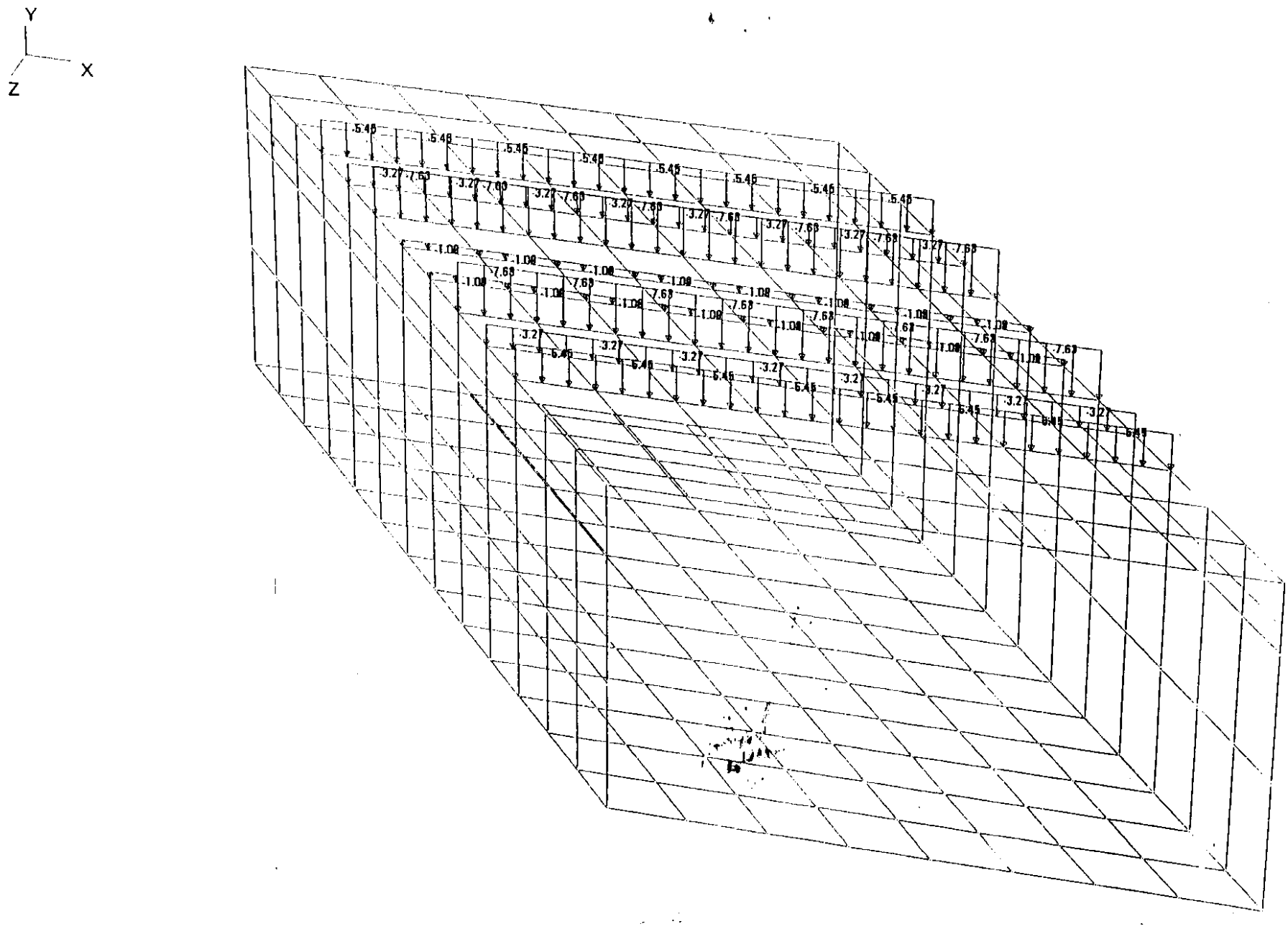
EMPUJE DE TIERRAS

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Análisis: 1er orden

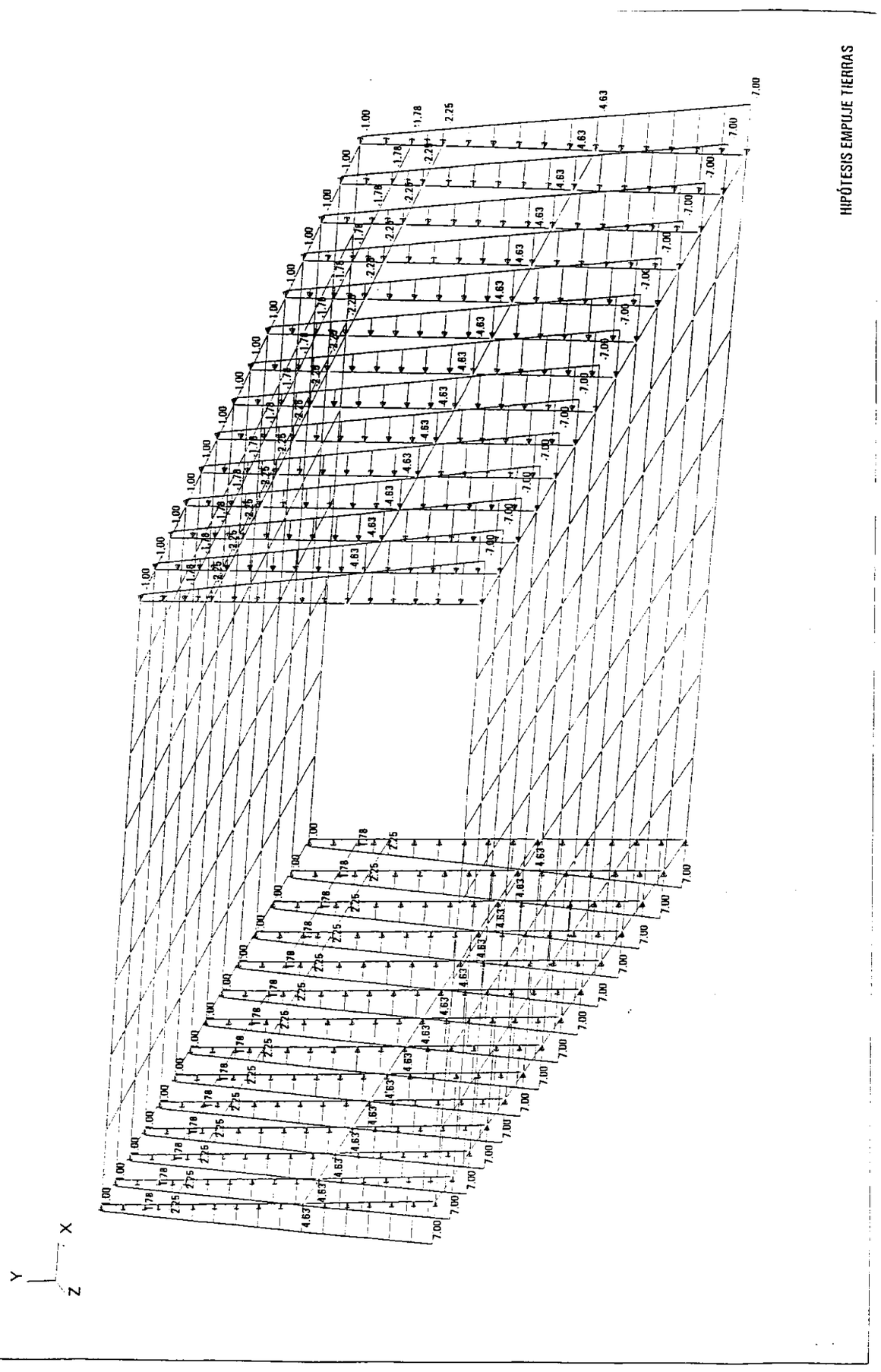


HIPÓTESIS BALASTO

AVwin Archivo: CORSAN-107-9.AVW Fecha: 02/11/99 Hora: 13:22:06 Estado: T1 = Tren Renfe
Análisis: 1er orden



HIPÓTESIS TREN RENFE



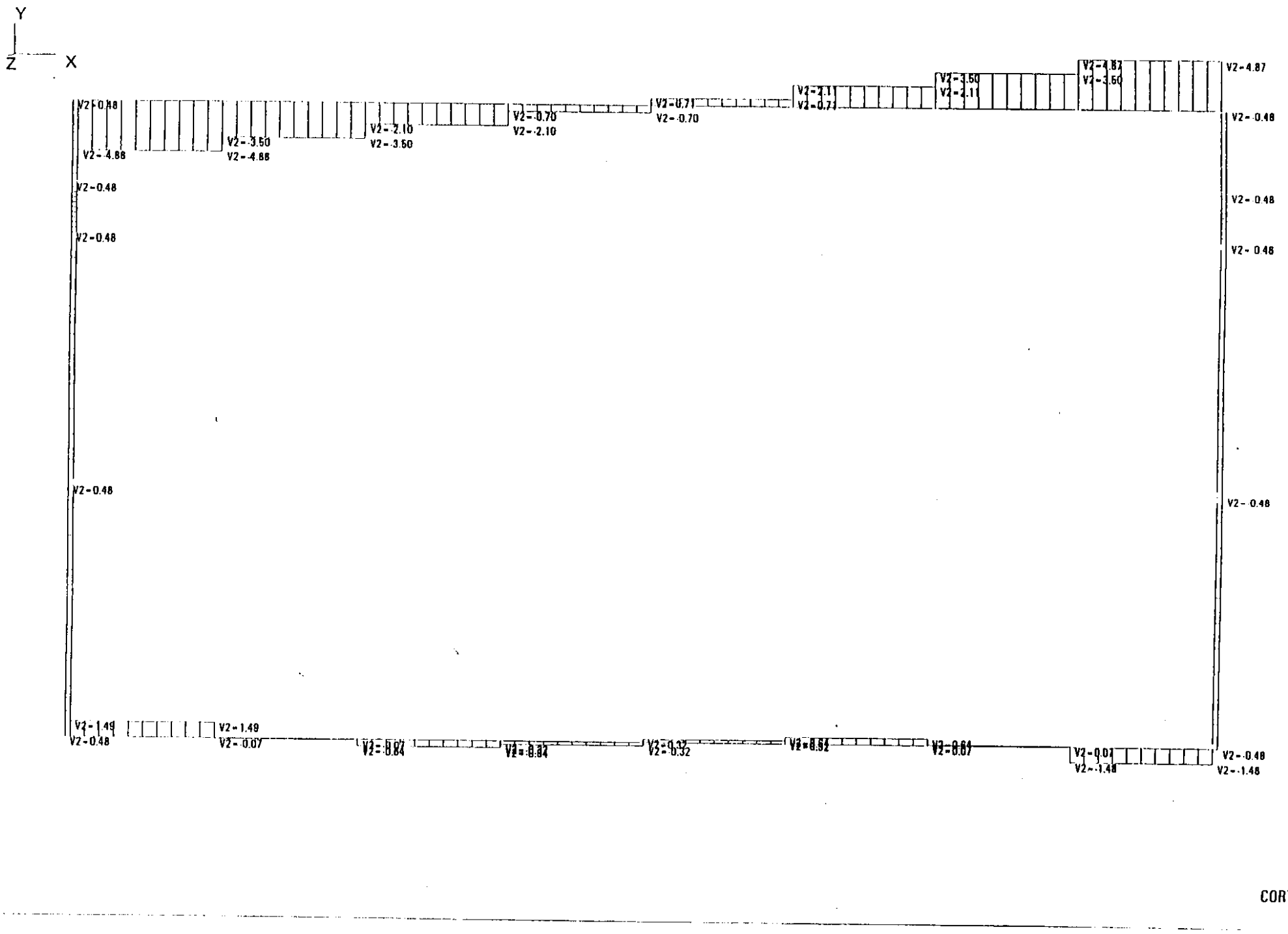
GRÁFICOS ESFUERZOS CORTANTES

BALASTO

TREN RENFE

EMPUJE DE TIERRAS

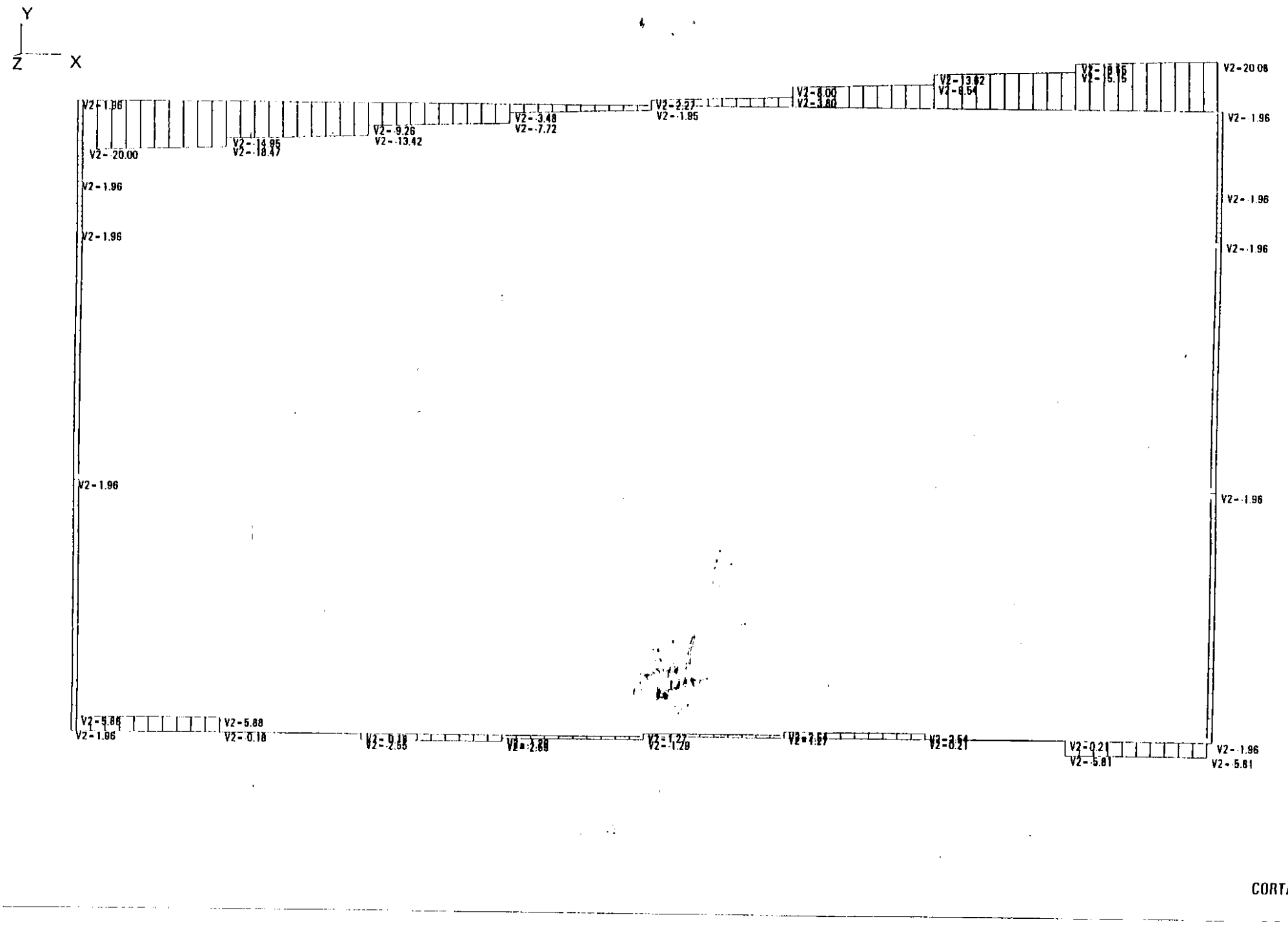
Estado: Ba = Balasto



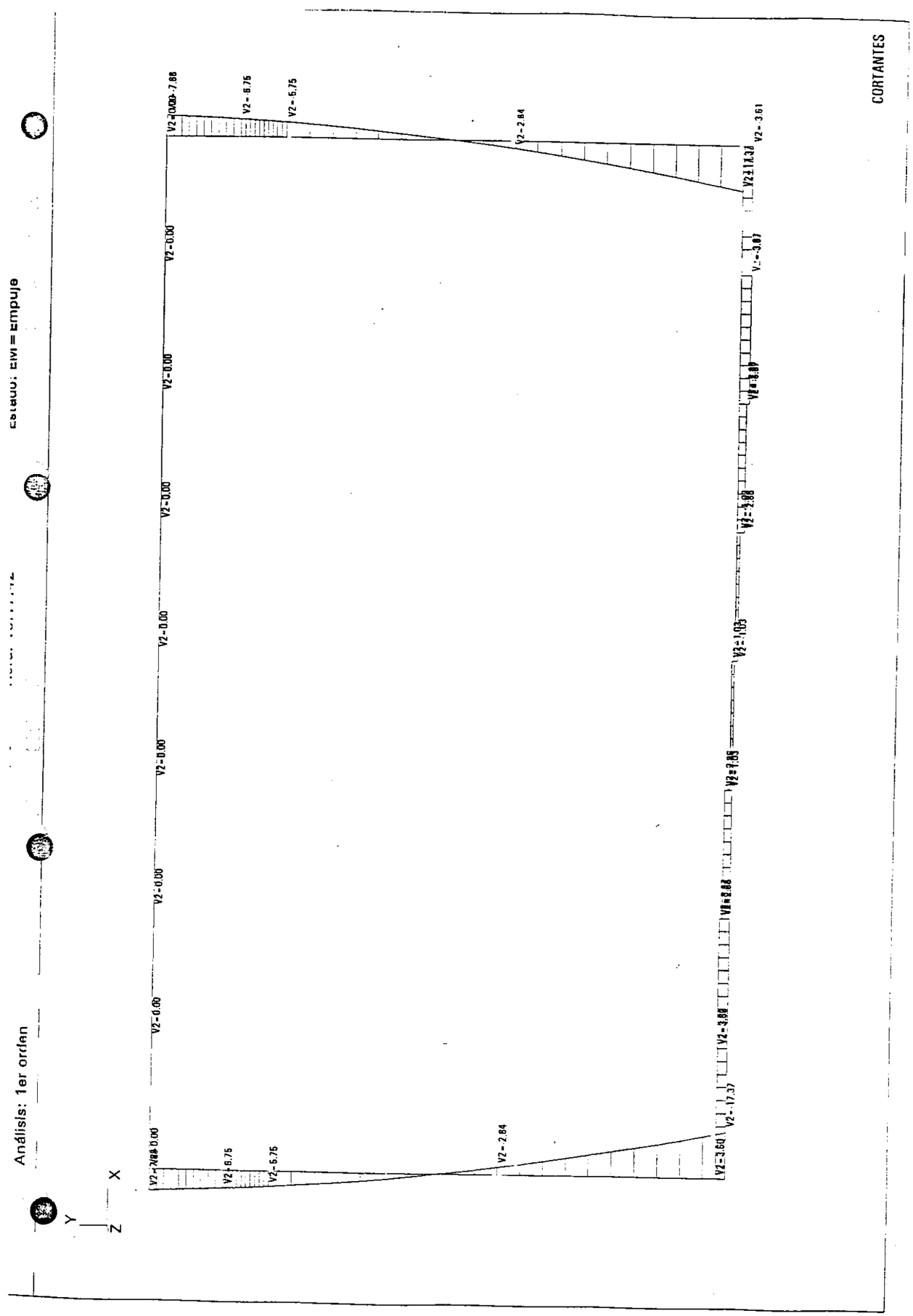
CORTANTES

AVWin Archivo: CORSAN-107-9.AVW Fecha: 02/11/99 Hora: 10:18:00 Estado: T1 = Tren Renfe

Aná 1er



CORTANTES



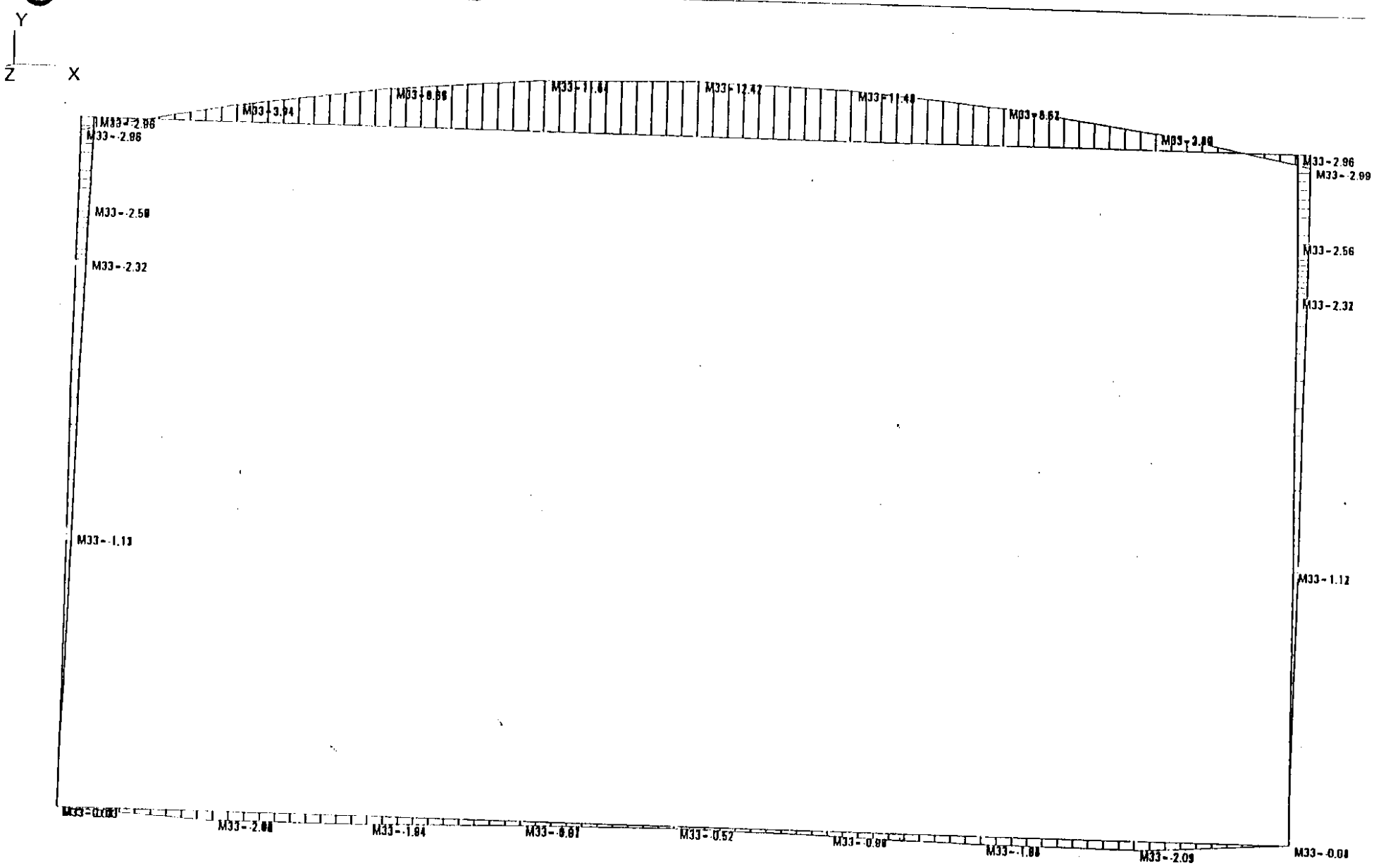
GRÁFICOS MOMENTOS FLECTORES

BALASTO

TREN RENFE

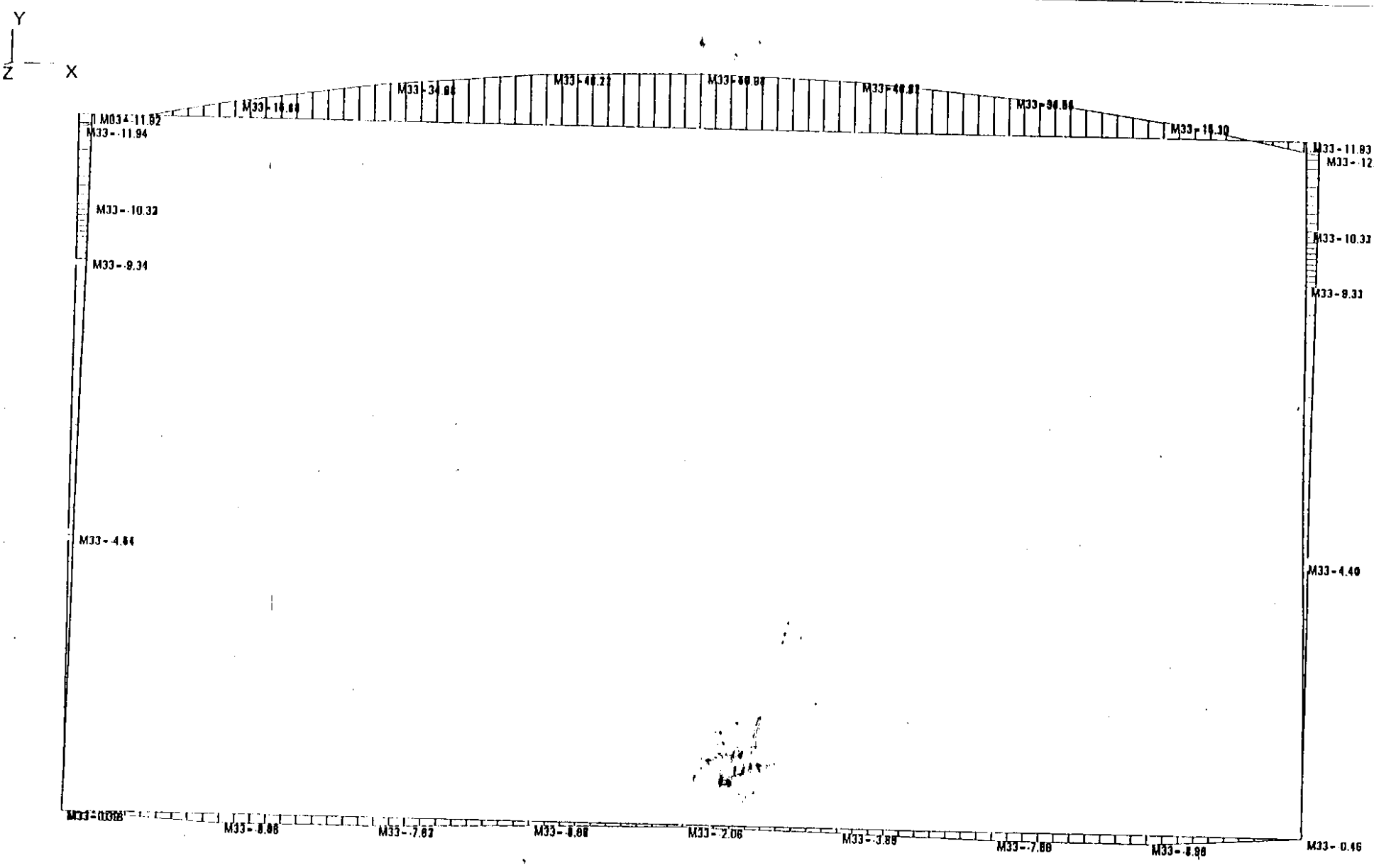
EMPUJE DE TIERRAS

Análisis: 1er orden Fecha: 02/11/99 Hora: 10:17:01 Estado: Ba – Plastc

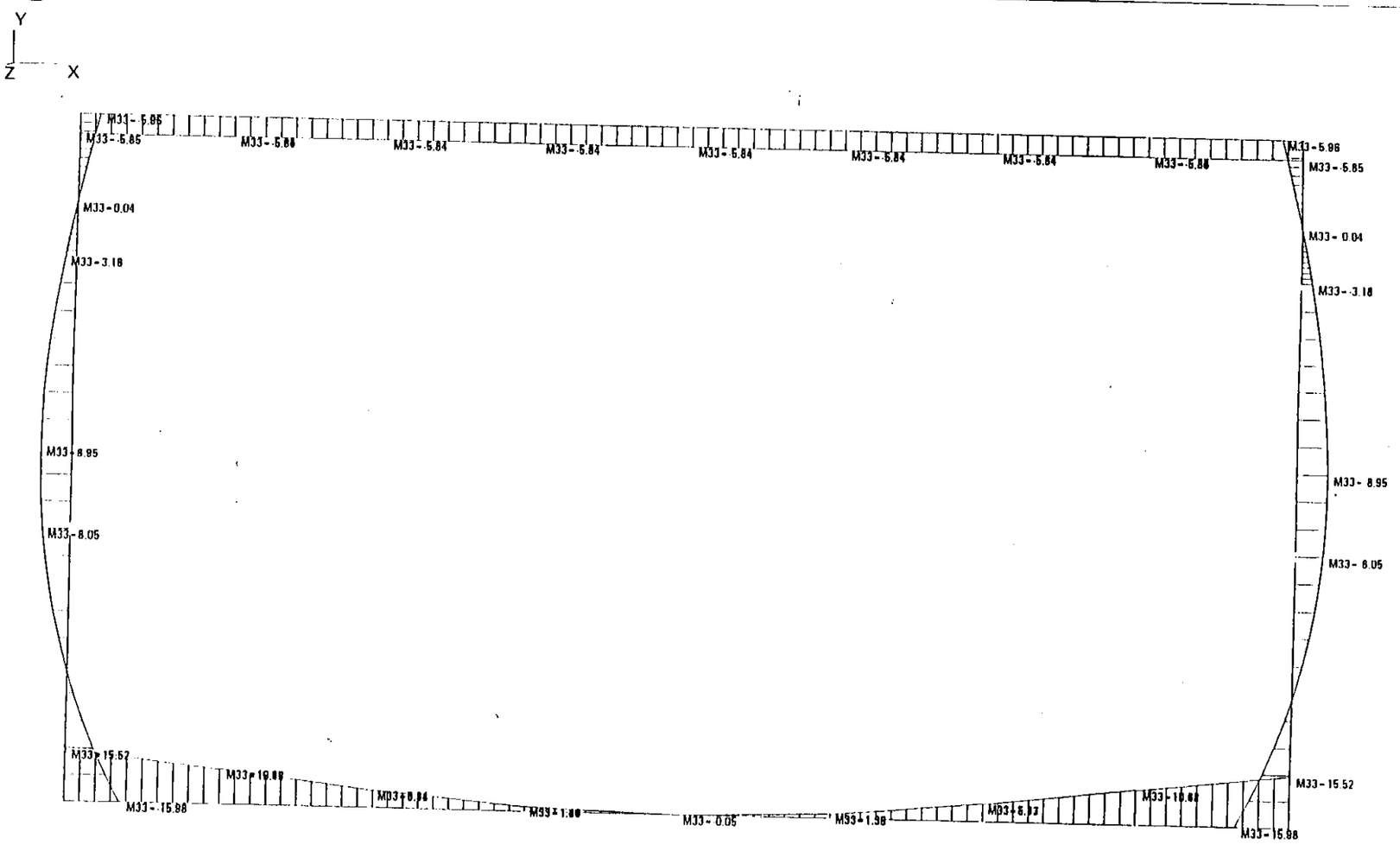


FLECTORES

Fecha: 02/11/99 Hora: 10:17:10 Estado: T1 = Tren Renfe



FLECTORES



FLECTORES

ANEJO CÁLCULOS VIGA

ANEJO DE CALCULOS DE TABLERO DE PUENTE PARA FERROCARRIL

1.- Programa de cálculo :

Los cálculos del tablero se han desarrollado mediante el programa **"Puente Losa FC"** en una Red Local, compuesta de varios ordenadores Personales (PCs) con memoria RAM de 32 Mb. y disco duro en cada uno de ellos.-

2.- Datos de cargas :

Se consideran los siguientes pesos específicos para la evaluación de las cargas permanentes y pesos propios:

Hormigón armado ó pretensado : 2,50 Tn/m^3
Hormigón en masa : 2,40 Tn/m^3
Balasto : 1,60 Tn/m^3

La carga permanente de aceras, barreras y barandillas se introduce en los cálculos como cargas lineales situadas longitudinalmente en el C. de G. de cada acera.

La sobrecarga considerada es la especificada en la "Instrucción relativa a las acciones a considerar en el proyecto de puentes de Ferrocarril" (**Orden del M.O.P. de 25 de Junio de 1.975**)

3.- Desarrollo del Cálculo :

Para la obtención de los esfuerzos en cada viga se aplica la teoría de la losa ortótropa equivalente, deduciendo los valores de coeficiente de excentricidad Kα mediante la fórmula que lo expresa directamente, sin interpolaciones.

Por aplicación de estos coeficientes se hallan los momentos flectores y las tensiones correspondientes en las vigas de borde e intermedia, con el fin de estudiar la más desfavorable.

Se estudian a continuación las tensiones producidas por el pretensado tanto durante la fabricación (en el instante de la transferencia) como a largo plazo, considerando respectivamente unas pérdidas del 5% y 20%.

La adición de estas tensiones a las producidas por las cargas exteriores conduce a las tensiones reales (en fibra superior e inferior de la viga, y fibra superior de la losa) que aparecen en las distintas fases, fabricación, servicio bajo cargas permanentes, y servicio bajo máxima sobrecarga.

Se comprueba que las tracciones (si existen) son admisibles en función de la clase de comportamiento de la estructura y se obtiene la resistencia característica del hormigón en cada fase para soportar las compresiones existentes.

Para el cálculo de la armadura pasiva transversal y comprobación del hormigón frente a esfuerzos cortantes se sigue la **NORMA "EP-93"** distinguiendo entre zona AB y zona C Comprobado posteriormente el cumplimiento de la **EHE**.

Los esfuerzos rasantes entre viga y losa se resisten exclusivamente con armadura pasiva, sin contar con la colaboración del hormigón.

La flexión transversal de la losa de reparto se obtiene evaluando la que corresponde a la deformación transversal general del tablero, **con 7 términos del desarrollo en serie de la carga**, y la local por efecto de las cargas puntuales.(**Método de Westergaard**) .

4.- Notación utilizada :

Para poder interpretar la salida de la impresora debe tenerse en cuenta la siguiente notación :

Datos Geométricos

B = Ancho real del tablero
B_o = Ancho eficaz del tablero
B_1 = Anchura de cada acera
D_1 = Distancia del eje de la última viga al borde del tablero.

Cargas

P_1 = Peso propio de la viga
P_2 = Peso de la losa correspondiente a una viga
P_3 = Peso del pavimento, por viga
P_3' = Carga permanente de 1 acera (Exceso sobre la carga de pavimento)
COEF. IMP. = Coeficiente de impacto.

Caracteristísticas Mecánicas

Va_i = Distancia fibra superior viga a fibra neutra en sección inicial homogeneizada
Vb_i = Distancia fibra inferior viga a fibra neutra en sección inicial homogeneizada
Va_f = Distancia fibra superior viga a fibra neutra en sección final homogeneizada
Vb_f = Distancia fibra inferior viga a fibra neutra en sección final homogeneizada
Vc_f = Distancia fibra inferior Losa a fibra neutra en sección final homogeneizada

A = Area de la sección inicial homogeneizada
I = Inercia de la sección inicial homogeneizada
If = Inercia de la sección final homogeneizada

$K(Rasante) = \frac{SR}{IF}$: SR = Momento estático (en m^3.) de la losa respecto a la Fibra neutra de la sección final homogeneizada.

Reparto Transversal

K (FLEXION) = Parámetro de flexión θ

K (TORSION) = Parámetro de torsión $\sqrt{\alpha}$

$Y(1) = \frac{Y3}{Bo/2}$: Y3 = Distancia al eje del Tablero desde la carga lineal de una acera

$Y(2) = \frac{Y4}{Bo/2}$: Y4 = Distancia al eje del Tablero desde la carga lineal de otra acera

$Y(3) = \frac{Y1}{Bo/2}$: Y1 = Distancia al eje del Tablero desde un cuchillo de cargas puntuales

$Y(4) = \frac{Y2}{Bo/2}$: Y2 = Distancia al eje del Tablero desde otro cuchillo de cargas puntules

Bo = Semiancho efectivo del Tablero

Esfuerzos Longitudinales

M_1 = Momento en el centro de la luz de la viga producido por p.p. de la viga.
M_2 = Momento en el centro de la luz de la viga producido por peso de la losa.
M_3 = Momento en el centro de la luz de la viga producido por la carga de balasto, traviesas y carril.
M_3' = Momento en el centro de la luz de la viga producido por la carga de aceras
M_4 = Momento en el centro de la luz de la viga producido por sobrecarga puntual móvil

Cálculo de Tensiones

SA = Tensión en fibra superior de la viga
SB = Tensión en fibra inferior de la viga
SC = Tensión en fibra superior de la losa

Pretensado

N = Esfuerzo axil de pretensado inicial, en bancada.
Exc. = Excentridad del esfuerzo de pretensado con respecto a la fibra neutra de la sección inicial homogeneizada de la viga.
PA = Tensión en fibra superior de viga, producida por el pretensado.
PB = Tensión en fibra inferior de viga, producida por el pretensado.

Cálculo armadura cortantes

FY = Límite elástico del acero pasivo
FCT'K = Resistencia a tracción del hormigón
U = Cortante máximo en la sección considerada
URD = Cortante mayorado
SIGMA CL. D = Tensión normal en fibra extrema más traccionada o menos comprimida, bajo la actuación de los esfuerzos normales de cálculo más desfavorables.

Armadura Rasante

ESF. RAS.: Esfuerzo cortante producido por las cargas que actúan exclusivamente sobre la sección final.
CAP. MEC. NEC. : Capacidad mecánica necesaria de armadura de conexión.
CAP. MEC. EXIST. ESTRIBOS DE CORTANTE : Capacidad mecánica de los estribos de cortante que se dejan vistos en la viga.
CAP. MEC. SUPL. : Capacidad mecánica de la armadura suplementaria a disponer.

Armadura de la Losa

RES. CARAC : Resistencia característica del hormigón de la losa de reparto
REC. : Recubrimiento de las armaduras de la losa de reparto.
ARM. MIN. : Capacidad mecánica mínima de armadura.
ARM. PRAL. : Armadura principal (Transversal a las vigas)
ARM. REP. : Armadura de reparto (Longitudinal)

-- PUENTE LOSA FERROCARRIL (*) --

Cliente ..... : U.T.E. CORSAN - CORVIAM
Lugar de la Obra : P.I. 107.9
Fecha ..... : 02/11/99

(*) En el cálculo de características finales no se considera el hormigón del relleno con tracciones superiores a la resis - tencia del hormigón a tracción.

DATOS GEOMETRICOS

SOLUCION ..... = 29 PL- 55
Ancho del Tablero .....[m] = 14.7
Ancho de Aceras .....[m] = 1.5
Ancho Eficaz [B0] .....[m] = 14.70471
Dis. eje V.Borde a Ex.Tablero [m] = .25
Luz de Calculo .....[m] = 11.26
Angulo de Esviaje .....[g] = 56.18
Intereje .....[m] = .507
Espesor de la Losa .....[m] = .08
Canto Total .....[m] = .63
Ancho de la Via ..... = RENFE
Número de Vias ..... = 2
Dis. 1 Carga al Eje Tablero ..[m] = 3.425
Peralte .....[%] = 0
Coeficiente de Impacto ..... = 1.452
Espesor del Balasto .....[cm] = 60
Distancia entre las Vias .....[m] = 2.75
Peso aceras y Barandillas [Tn/ml] = 2.16
Radio de la Curva ..... = 1E+15
Velocidad del Tren ..... [Km/h] = 200
Res. Tracc. Horm. Relleno [Tn/m²] = 200

CARGAS [Tn/ml]

P1 = .347
P2 = .4515251
P3 = .4867201
P3'= 0

CARACTERISTICAS MECANICAS

INICIALES
VaI .....[m] = .2829
VbI .....[m] = .2671
AREA ...[m²] = .1455
INERCIA [m4] = 4.93077E-03

FINALES

Viga N° 1
VaF ..... [m] = .201087
VbF ..... [m] = .348913
VcF ..... [m] = .281087
INER.FIN. [m4] = 8.943323E-03

Viga Centro
VaF .....[m] = .2013279
VbF .....[m] = .3486722
VcF .....[m] = .2813279
INER.FIN. [m4] = 8.930001E-03

PUENTE LOSA FERROCARRIL
(c) Oficina Técnica ALVISA

ESFUERZOS LONGITUDINALES [Mtn.]

VIGA DE BORDE — VIGA N° 14

M1 = 5.4994 — 5.499
M2 = 7.1560 — 7.156
M3 = 6.2970 — 6.297
M3'= 0.0000 — 0.000
M5 = 25.3900 — 25.390

TENSIONES

TENSIONES DE FLEXION [Cargas Exteriores] [Tn/m²]

Sobre Sección Inicial

SA= 726.0953 — 726.0953
SB= 685.5428- — 685.5428-

Sobre Sección Final

SA= 712.4693 — 714.3869
SB=1236.2302- — 1237.2198-
SC= 995.9165 — 998.2570

Totales

SA=1438.5647 — 1440.4822
SB=1921.7729- — 1922.7626-
SC= 995.9165 — 998.2570

PRETENSADO

FILA	N° CABLES	TIPO	COTA
1	7	0.6	4
2	4	3/8	51

N [Tn] = 169.84
Exc.[m] = .142

TENSIONES DE PRETENSADO [Tn/m²]

Iniciales

Pa= 207.4495-
Pb=2351.7717

Finales

Pa= 174.6943-
Pb=1980.4395

RESUMEN DE TENSIONES [Tn/m²]

En fabricación (Extremo viga)

SA= 207.4495-
SB=2351.7717

En servicio con cargas permanentes (Centro Viga)

SA= 693.3675
SB=1049.0299

Con cargas máximas

SA=1265.7880
SB= 57.6766
SC= 998.2570

RESISTENCIA DE LOS HORMIGONES [Tn/m2]

AL DESTESAR .. = 3563.29
A LOS 28 DIAS = 2025.26 se dispone hormigón de 5000
EN LOSA ..... = 1597.21 '' '' '' '' 2500

ARMADURA DE CORTANTES [EP-93]

Acero Fy .....[Kg/cm²] >=5100
Espesor del Alma .. [Cm] = 40
Fct'k ..... [Kg/cm²] = 28.3482
Vcuo ..... [Tn] = 21.1786
Armadura Mínima [Cm²/ml] = 2.0100

ARMADURAS DE CORTANTES

PTO	X	U	URD	SIGMA	COTAG	Z	VCU	A90	Diam	S
1	0	19.29	30.87	-198.05	1.77	AB	21.17	2.48	6	20
	1.12	18.39	29.43	-87.3	1.89	AB	21.17	2.01	6	25
3	2.25	9.02	14.43	-1.16	1.98	AB	21.17	2.01	6	25
	3.37	7.3	11.68	60.37	2.03	C	17.28	2.01	6	25
5	4.5	4.08	6.53	97.29	2.07	C	19	2.01	6	25

S I M B O L O G I A

PTO = Punto número
X = Distancia al apoyo en m.
U = Cortante en sección considerada en Tn.
URD = Cortante mayorado en Tn.
SIGMA = Tensión normal en fibra extrema en Kg/cm² (Art. 48.1.3.3)
COTAG = Cotangente (Art. 48.1.2)
Z = Zona de comprobación (Art. 48.1.3.3)
VCU = Contri. horm. resistencia esfu. cortante (Art. 48.1.3.4)
A90 = Area necesaria en estribos por metro lineal en Cm²/ml.
Diam. = Diametro de la barra en estribos en mm.
S = Separación entre estribos en cm.

FLEXION TRANSVERSAL LOSA REPARTO

M O M E N T O S

	POSITIVOS [MTn.]	NEGATIVOS [MTn]
B A L A S T O	1.7200	-0.1700
T R E N R E N F E	11.3300	-0.8000
T O T A L E S	13.0500	-0.9700

DEFORMACION TRANSVERSAL : Obtenida por Emparrillado.

PUENTE LOSA FERROCARRIL

(c) Oficina Técnica ALVISA

ARMADO LOSA

Res. Caracte. Hormigón ... [Tn/m²]	=	2500
Res. Acero de la Losa .... [Tn/m²]	=	51000
Recubrimiento Superior ..... [cm]	=	4
Recubrimiento Inferior ..... [cm]	=	12
Armadura Mínima ..... [Tn]	=	39.3330

CARA SUPERIOR

Armadura Principal	se dispone	5	10	por ml (mini
Armadura Reparto	se dispone	5	10	por ml (mini

CARA INFERIOR

Armadura Principal	se dispone	2	20	por ml

PUENTE LOSA FERROCARRIL

(c) Oficina Técnica ALVISA

CALCULO A ROTURA (EHE-98)

Pasiva en Tracción	[Tn]	= 0
Armadura Activa	[Tn]	= 152.3452
Capacidad total Tracción N	[Tn]	= 152.3452
Pasiva en Compresión	[Tn]	= 0
Recub. Pasiva Compresión ..	[cm]	= 0
ZONA		= II
Ancho Eficaz	[cm]	= 50.7
Capa de Compresión	[cm]	= 8
Ancho Cabeza Superior	[cm]	= 30
Profundidad	[cm]	= 22
Dis. Cdg Compres. Fibra Sup	[cm]	= 9.08
Profundidad de Compresiones	[cm]	= 16.3
Dis. Cdg Tracción Fibra Inf	[cm]	= 4
Canto Resistente	[cm]	= 0.4992
MR [+]	[MTn]	= 76.06
[Ma] = 1.35 x (M1+M2+M3)..	[MTn]	= 25.5838
[Mb] = 1.50 x (M5)	[MTn]	= 38.0850
[Mt] = Momento Total	[MTn]	= 63.6688

MR+ > Mt (Admisible)

M1 ...	[MTn]	= 5.499
M2 ...	[MTn]	= 7.155
M3 ...	[MTn]	= 6.297
M3'...	[MTn]	= 0
M5 ...	[MTn]	= 25.39
M TOTAL	[MTn]	= 44.342

[COEFICIENTE DE SEGURIDAD A ROTURA = 1.72 (ADMISIBLE)]

Obra : CORSAN - CORVIAM AVE P.I. 107.9
Fecha: 22/11/1999
Hora : 16:46

CALCULO DE SECCIONES RECTANGULARES A FLEXION SIMPLE

1. Datos

- Materiales

fck [kp/cm²] = 250
fyk [kp/cm²] = 5100
τc = 1.50
τs = 1.15

- Sección

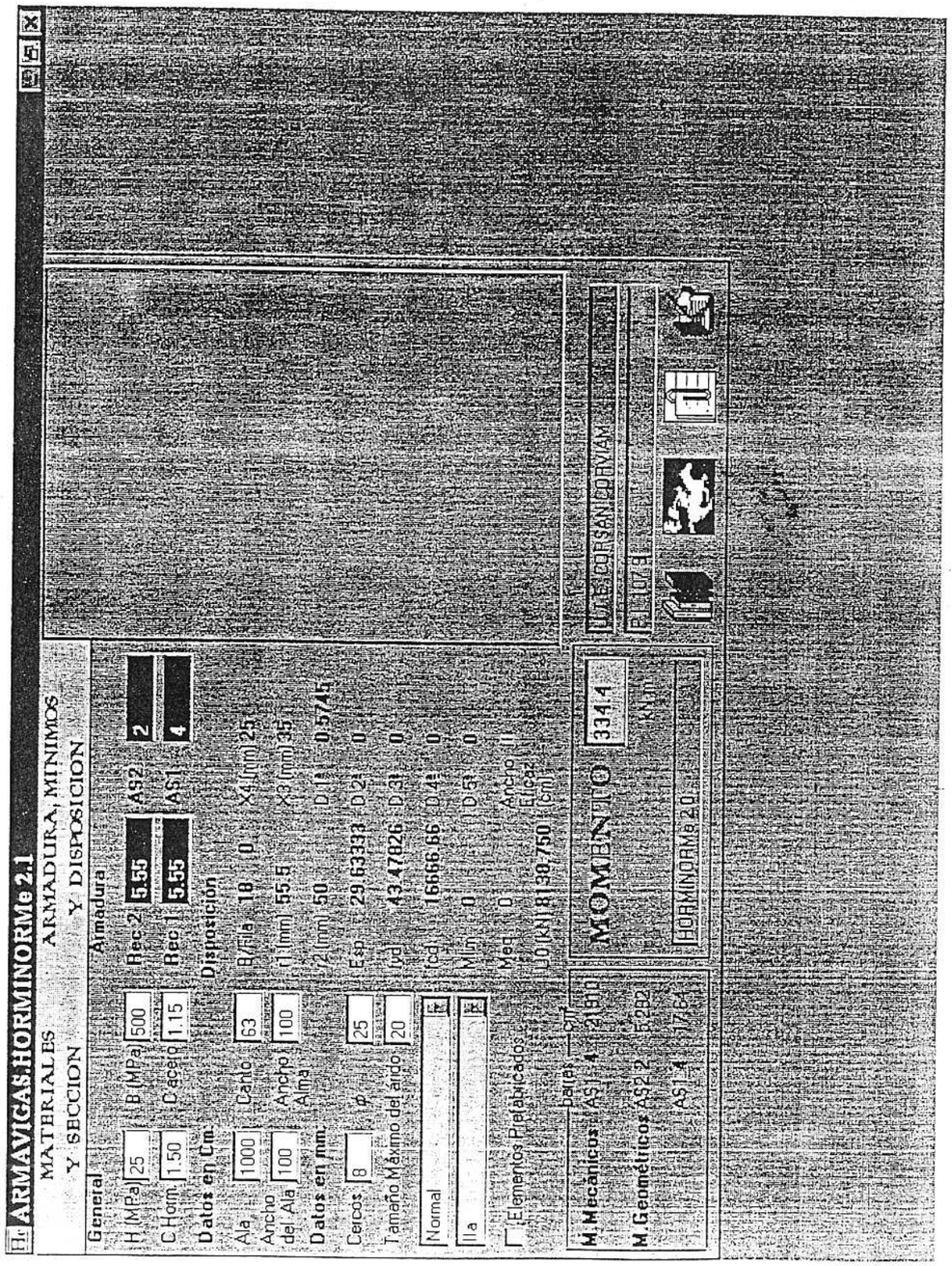
b [cm] = 100.0
h [cm] = 63.0
r [cm] = 6.0

2. Dimensionamiento

Md [m·Mp] = 33.44

At_est [cm²] = 17.64 Cuantía mínima geométrica

ϕ [mm]	12	16	20	25
n° ϕ	16	9	6	4
n° capas	1	1	1	1
At [cm²]	18.09	18.09	18.84	19.62
wk	0.00	0.00	0.00	0.00



ALVIWALL

LAV MADRID - ZARAGOZA SUBTRAMO I

PASO INFERIOR 107.9

ESTRIBOS Y ALETAS PREFABRICADOS

1.-GENERALIDADES

1.1 OBJETO DE ESTA NOTA DE CALCULO

El objeto de esta Nota de Cálculo es la justificación de la solución adoptada.

Esta justificación técnica se efectúa mediante la realización y exposición de los cálculos correspondientes.

1.2 DESCRIPCION DE LA SOLUCION

AlviWall es una solución de estribo y muro de contención prefabricado. Los alzados se componen de unos contrafuertes prefabricados en el trasdós del muro solidarios a una pantalla, todo ello de hormigón armado, con lo que se da una apariencia externa continua. El ancho estándar del panel es de 2.40 m con dos contrafuertes en cada uno separados 1.20 m entre ejes. La sección horizontal del paramento consiste en una T cuyo nervio es el citado contrafuerte y cuyas alas son la propia pantalla, que actúa como cabeza de compresión de la sección. Las dimensiones del contrafuerte en cuanto a canto y espesor son función de la altura del muro o estribo y de las cargas aplicadas.

Estos elementos están anclados a una cimentación realizada "in situ", mediante unas esperas de acero que se dejan salientes del contrafuerte.

1.3. INSTRUCCIONES Y NORMAS APLICADAS

Las normas aplicadas son las vigentes en la fecha de redacción de este Anejo de Cálculo.

- Hormigón armado: EHE "Instrucción de hormigón estructural".
- IPF-75. Instrucción relativa a las acciones a considerar en el Proyecto de Puentes de Ferrocarril (1975).

1.4. NIVELES DE CONTROL DE CALIDAD ADOPTADOS Y COEFICIENTES DE SEGURIDAD

El control de calidad se atenderá a lo especificado en la Instrucción EHE y con los siguientes niveles de control:

Materiales:

Hormigón prefabricado:	Intenso-Coef. Minoración	$\gamma c = 1,50$
Hormigón "in situ":	Normal-Coef. Minoración	$\gamma c = 1,50$
Acero en piezas prefabr.:	Intenso-Coef. Minoración	$\gamma s = 1,15$
Acero "in situ":	Intenso-Coef. Minoración	$\gamma s = 1,15$

Ejecución:

Tipo de control: Intenso
Tipo de acción :

Permanente	$\gamma fd = 1,35$ $\gamma ff = 1,00$
Permanente de valor no constante	$\gamma fd = 1,50$ $\gamma ff = 1,00$
Variable	$\gamma fd = 1,50$ $\gamma ff = 0$

Coeficientes de seguridad:

Vuelco:	1.8
Deslizamiento:	1.5
Tensión en punta de la zapata:	1.25 x σadm

1.5. CARACTERISTICAS DE LOS MATERIALES

- Hormigón armado prefabricado:	HA-35/P/IIa	fck = 35 N/mm^2
- Hormigón armado en cargadero:	HA-25/P/IIa	fck = 20 N/mm^2
- Hormigón armado en zapatas:	HA-25/P/IIa	fck = 20 N/mm^2
- Acero en elementos prefabricados:	B 500 S	fyk = 510 N/mm^2
- Acero en cargadero:	B 500 S	fyk = 510 N/mm^2
- Acero en zapatas:	B 500 S	fyk = 510 N/mm^2

2. CARGAS ACTUANTES Y SOBRECARGAS

a) Peso propio de la estructura
b) Cargas de tráfico
c) Peso del relleno
   Peso específico del relleno = 20 kN/m^3
d) Empuje del relleno
e) Sobrecarga de tráfico s/ relleno = 30 kN/m2

3. SISTEMA DE CALCULO

Estabilidad global

Se calcula para cada una de las fases que se exponen a continuación, las siguientes comprobaciones:

- Vuelco
- Deslizamiento por la base
- Tensión transmitida por la zapata al terreno de cimentación

Para este cálculo se sigue la Teoría del "trasdós virtual vertical" en el borde interior de la zapata, tal como se expone en el Code of Practice "Earth Retaining Structures" británico.
Para las dos primeras comprobaciones anteriores se comprueba que el coeficiente de seguridad calculado como fuerza o momento resistente dividido entre la fuerza o momento solicitante, es menor o igual al valor límite definido en los apartados anteriores.
En cuanto a la tensión transmitida por la cimentación al terreno subyacente, se comprueba que es menor o igual al valor de la tensión admisible del terreno.

Cálculo de la cimentación

En primer lugar se obtienen los esfuerzos solicitantes de cálculo, a partir de los esfuerzos transmitidos por el panel prefabricado a la cimentación, del peso del relleno sobre la zapata y de la ley de tensiones bajo la misma.
Una vez determinadas las leyes de cargas anteriores, se calcula el máximo momento y cortante en todo el ancho de la zapata, para los cuales se dimensiona la misma como elemento de hormigón armado y sección rectangular.

Esquema resistente del panel prefabricado

El conjunto pantalla + contrafuerte funciona en el plano transversal del muro como una ménsula anclada a la cimentación, y solicitada por todas las cargas actuantes. La sección transversal de dicha ménsula es una sección "T" cuya alma es el contrafuerte. Las alas de la T que forman la cabeza de compresión son la propia pantalla.
En el plano del estribo, la estructura funciona como un pórtico cuyo dintel superior es la viga cargadero y los pilares son los contrafuertes, que transmiten las cargas verticales a la zapata.

Fases de cálculo

- Manejo de las piezas. Se estudian los esfuerzos producidos en el muro tanto en el acopio como en el traslado y manejo.
- Etapa de construcción, previa a la realización del tablero. Se calcula el muro o estribo para el empuje del relleno. No existen todavía cargas transmitidas por el tablero.
- Estado de servicio con cargas máximas vertical y horizontal transmitidas por el tablero
- Estado de servicio con cargas mínima vertical y horizontal correspondiente transmitidas por el tablero

18 ABR 2000

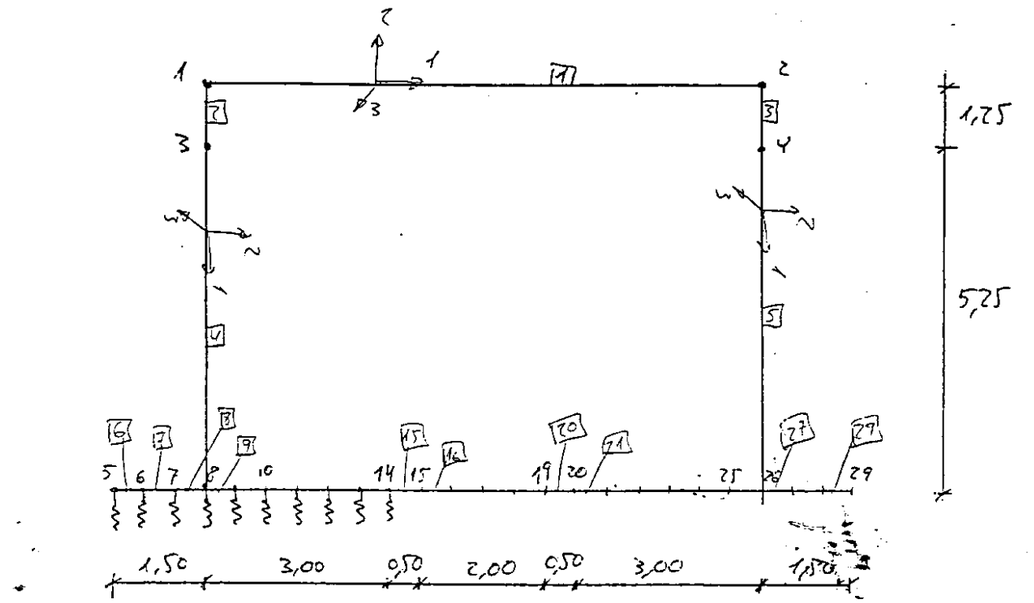
ALVARO HUELAS RODRIGUEZ

COLEGIADO Nº 10.936

CALCULOS

CALCULOS
ESTRIBOS PREFABRICADOS

ALVISA / SPESR Prefabricados y Suelos Reforzados, S.A.	Asunto: AVE SUBTRAMO I P.I. 107.9 CORSAN - CORVIAM	Proyecto Nº:
		Fecha:
		Hoja Nº: 1



(Distancias corregidas con el esviaje : $\alpha = 50,36°$)

Secciones tipo zapata:

- Canto mayor (1m) → $A = 1m^2$ $I_{33} = 0,0833 m^4$ $I_{22} = 0,0833 m^4$.
- Canto mín (0,5m) – canto : $A = 0,5 m^2$ $I_{33} = 0,01042 m^4$ $I_{22} = 0,04167 m^4$.

Coeficiente balasto cimentación : $4.000 T/m^3$.

Ck nelle nodes { centrales : $k = 2000 T/m$; extremos : $k = 1000 T/m$.

Sección tipo tablero (0,08+0,55):

$A = 0,63\ m^2$

$I_{33} = 0,0208\ m^4$
$I_{22} = 0,0575\ m^4$.

Cajeado:

$A = 0,38\ m^2$

$I_{33} = 0,00457\ m^4$
$I_{22} = 0,03167\ m^4$.

Contrafuertes:

Sección mínima (superior): $A = 0,17\ m^2/m$.

$I_{33} = 0,0035\ m^4/m$.
$I_{22} = 0,0123\ m^4/m$.

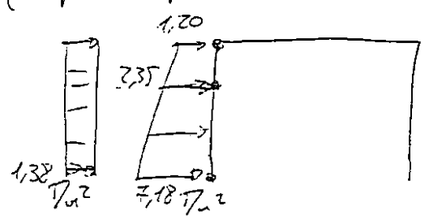
Sección máxima (inferior): $A = 0,26\ m^2/m$.

$I_{33} = 0,0289\ m^4/m$
$I_{22} = 0,0125\ m^4/m$

Acciones s/ el pórtico:

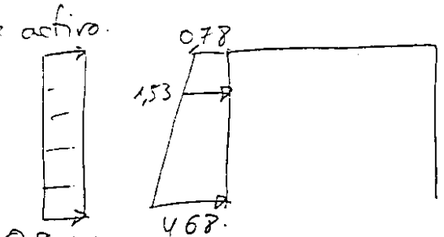
- Balasto, subbalasto y capa fina = $2\ T/m^2$.
- Sobrecarga vial (IAF-73): $3,5\ T/m^2$
- Empuje tierras (reparto por ambos lados):

$\lambda = 0,46$.



Si fuera empuje activo.

$\lambda = 0,30$



Hipótesis de carga:

1) Balasto
2) Tren RENFE
3) Emp. tierras ambos lados
4) Emp. tierras lado izdo
5) Emp. tierras lado dcho.
6) SC en vía inferior
7) Frenado + reológico del tablero.

Combinación de acciones ya mayoradas:

1) Emp tierras $\times 1,4$
2) Emp tierras $\times 1,6$ + SC izdo $\times 1,6$ + (bal + sc) $\times 1,6$
3) " + " + bal $\times 1$.
4) " + SC ambos $\times 1,6$ + (bal + sc) $\times 1,6$
5) " + " + bal $\times 1$.
6) " $\times 1,6$ + (bal + sc) $\times 1,6$
7) SC en vía inferior $\times 1,6$
8) (Frenado + reológico) $\times 1,6$.

```
PORTICO PARA CAJON EMPOTRADO. AVE CORSAN P.I. 107.9

SYSTEM
N=29   L=6   : 29 NUDOS, 6 HIPOTESIS

JOINTS
1       X=1.95      Y=6.5       Z=0.0
2       X=13.65     Y=6.5
3       X=1.95      Y=5.25
4       X=13.65     Y=5.25
5       X=0.0       Y=0.0
29      X=15.6      Y=0.0                G=5,29,1

RESTRAINTS
1   4   1   R=0,0,1,1,1,0
5           R=1,0,1,1,1,0
6   29  1   R=0,0,1,1,1,0

SPRINGS
5   29  24  K=0,1300,0,0,0,0
6   28  1   K=0,2600,0,0,0,0

FRAME
NM=6   NL=11   :  6 SECCIONES TIPO,  11 MODELOS DE CARGA
1   A=0.63   I=0.0208,0.0525   E=3000000  G=1250000   : TABLERO
2   A=0.38   I=0.0046,0.0317   E=2250000  G=937500    : CARGADERO
c 3   A=0.27   I=0.0329,0.0125  E=3000000  G=1250000   : CONTRAF. Canto cte
3   A=0.17   I=0.0035,0.0123   E=3000000  G=1250000   : CONTRAF. SUP
4   A=0.26   I=0.0289,0.0125   E=3000000  G=1250000   : CONTRAF. INF
5   A=1.00   I=0.0833,0.0833   E=2250000  G=937500    : ZAPATA (Canto máx)
6   A=0.50   I=0.0104,0.0417   E=2250000  G=937500    : ZAPATA (Canto mín)
1  WG=0,-2.0,0                : BALASTO
C 2  PLD=2.22,-6,0,3.88,-6,0,6.62,-6,0,8.28,-6,0   : TREN TIPO B (Cargas puntuales)
 2  WG=0,-3.5,0                : TREN TIPO B (Carga repartida)
 3  TRAP=0,1.2,0,-1,2.35,0     : EMPUJE REPOSO DE TIERRAS EN CARGADERO (Lado izdo)
 4  TRAP=0,2.35,0,-1,7.18,0    : EMPUJE REPOSO DE TIERRAS EN CONTRAFUERTE (Lado izdo)
 5  TRAP=0,-1.2,0,-1,-2.35,0   : EMPUJE REPOSO DE TIERRAS EN CARGADERO (Lado dcho)
 6  TRAP=0,-2.35,0,-1,-7.18,0  : EMPUJE REPOSO DE TIERRAS EN CONTRAFUERTE (Lado dcho)
 7  WL=0,1.38,0                : EMPUJE REPOSO DE LA SOBRECARGA USO (lado izdo)
 8  WL=0,-1.38,0               : EMPUJE REPOSO DE LA SOBRECARGA USO (lado dcho)
 9  WG=0,-15.6,0               : PESO DEL RELLENO (TRASDÓS)
10 WG=0,-3,0                  : SOBRECARGA USO EN RELLENO (TRASDÓS)
11 WG=0,-6,0                  : TRAFICO (CTRA) EN CAMINO INFERIOR
c  DEFINICION DE BARRAS
1       1       2       M=1,1    LP=1,0   NSL=1,2,0,0,0,0
2       1       3       M=2,2    LP=1,0   NSL=0,0,3,7,0,0
3       2       4       M=2,2    LP=1,0   NSL=0,0,5,0,8,0
4       3       8       M=3,4,3  LP=1,0   NSL=0,0,4,7,0,0
5       4      26       M=3,4,3  LP=1,0   NSL=0,0,6,0,8,0
6       5       6       M=5,5    LP=1,0   NSL=0,0,9,10,0,0    G=2,1,1,1
9       8       9       M=5,5    LP=1,0   NSL=0,0,0,0,0,0     G=5,1,1,1
15     14      15       M=5,6,3  LP=1,0   NSL=0,0,0,0,0,11
16     15      16       M=6,6    LP=1,0   NSL=0,0,0,0,0,11     G=3,1,1,1
20     19      20       M=6,5,3  LP=1,0   NSL=0,0,0,0,0,11
21     20      21       M=5,5    LP=1,0   NSL=0,0,0,0,0,0     G=5,1,1,1
27     26      27       M=5,5    LP=1,0   NSL=0,0,9,0,10,0    G=2,1,1,1

COMBO
1   C=0,0,1.4,0,0,0
2   C=1.6,1.6,1.6,1.6,0,0
3   C=1,0,1.6,1.6,0,0
4   C=1.6,1.6,1.6,1.6,1.6,0
5   C=1,0,1.6,1.6,1.6,0
6   C=1.6,1.6,1.6,0,0,0
7   C=0,0,0,0,0,1.6
```

Empuje al reposo en ambos lados.

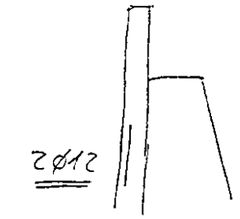
PORTICO PARA CAJON EMPOTRADO. AVE CORSAN P.I. 107.9

Cálculo con empujes al reposo (Hoja completa: rellenando después de empotrar).

Fichero AVE1079

FRAME ELEMENT FORCES

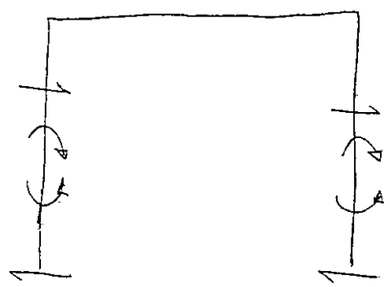
ELT	LOAD ID	COMB	DIST ENDI	1-2 PLANE SHEAR	1-2 PLANE MOMENT	AXIAL FORCE	1-3 PLANE SHEAR	1-3 PLANE MOMENT	AXIAL TORQ
4									
	1		.000			.000			
			.000	-4.698	-3.799				
			1.163	.000	-6.699				
			5.250	30.325	47.943				
			5.250			.000			
	2		.000			-50.834			
			.000	-15.062	20.421				
			2.020	.000	4.195				
			5.250	36.556	59.094				
			5.250			-50.834			
	3		.000			-11.054			
			.000	-7.471	-1.832				
			1.102	.000	-6.113				
			5.250	44.147	76.694				
			5.250			-11.054			
	4		.000			-51.480			
			.000	-17.725	22.234				
			2.311	.000	.236				
			5.250	33.893	46.924				
			5.250			-51.480			
	5		.000			-11.700			
			.000	-10.134	-.019				
			1.442	.000	(-7.692)				
			5.250	41.484	64.524				
			5.250			-11.700			
	6		.000			-51.480			
			.000	-15.193	24.457				
			2.658	.000	1.965				
			5.250	24.833	32.015				
			5.250			-51.480			
	7		.000			.000			
			.000	-.942	-.219				
			5.250	-.942	-5.162				
			5.250			.000			
5									
	1		.000			.000			
			.000	4.698	3.799				
			1.163	.000	6.699				
			5.250	-30.325	-47.943				
			5.250			.000			
	2		.000			-52.126			
			.000	(17.822)	-26.255				
			2.990	.000	3.667				
			5.250	-22.204	-20.008				
			5.250			-52.126			
	3		.000			-12.346			
			.000	10.231	-4.001				
			1.965	.000	6.981				
			5.250	-29.795	-37.609				
			5.250			-12.346			
	4		.000			-51.480			
			.000	17.725	-22.234				
			2.311	.000	-.236				
			5.250	-33.893	-46.924				
			5.250			-51.480			
	5		.000			-11.700			
			.000	10.134	.019				
			1.442	.000	7.692				
			5.250	-41.484	-64.524				
			5.250			-11.700			
	6		.000			-51.480			
			.000	15.193	-24.457				
			2.658	.000	-1.965				
			5.250	-24.833	-32.015				
			5.250			-51.480			
	7		.000			.000			
			.000	.942	.219				
			5.250	.942	5.162				
			5.250			.000			



$M_d = 7{,}7 \times 1{,}2 = 9{,}24$ mT.

$N_d = \frac{11{,}7 \times 1{,}70}{1{,}6} + 7 \times 1{,}20 = 17{,}7$ T

Criterio de signos positivo: (+)



```
PORTICO PARA CAJON EMPOTRADO. AVE CORSAN P.I. 107.9

SYSTEM
N=29   L=7   : 29 NUDOS, 7 HIPOTESIS

JOINTS
1       X=1.95     Y=6.5      Z=0.0
2       X=13.65    Y=6.5
3       X=1.95     Y=5.25
4       X=13.65    Y=5.25
5       X=0.0      Y=0.0
29      X=15.6     Y=0.0                G=5,29,1

RESTRAINTS
1   4    1   R=0,0,1,1,1,0
5            R=1,0,1,1,1,0
6   29   1   R=0,0,1,1,1,0

SPRINGS
5   29  24   K=0,1300,0,0,0,0
6   28   1   K=0,2600,0,0,0,0

FRAME
NM=6   NL=11   :  6 SECCIONES TIPO,  11 MODELOS DE CARGA
1   A=0.63   I=0.0208,0.0525   E=3000000  G=1250000   : TABLERO
2   A=0.38   I=0.0046,0.0317   E=2250000  G=937500    : CARGADERO
c 3   A=0.27   I=0.0329,0.0125  E=3000000  G=1250000   : CONTRAF. Canto cte
3   A=0.17   I=0.0035,0.0123   E=3000000  G=1250000   : CONTRAF. SUP
4   A=0.26   I=0.0289,0.0125   E=3000000  G=1250000   : CONTRAF. INF
5   A=1.00   I=0.0833,0.0833   E=2250000  G=937500    : ZAPATA (Canto máx)
6   A=0.50   I=0.0104,0.0417   E=2250000  G=937500    : ZAPATA (Canto mín)
1  WG=0,-2.0,0                : BALASTO
C 2  PLD=2.22,-6,0,3.88,-6,0,6.62,-6,0,8.28,-6,0   : TREN TIPO B (Cargas puntuales)
2  WG=0,-3.5,0                : TREN TIPO B (Carga repartida)
3  TRAP=0,1.2,0,-1,2.35,0     : EMPUJE REPOSO DE TIERRAS EN CARGADERO (Lado izdo)
4  TRAP=0,2.35,0,-1,7.18,0    : EMPUJE REPOSO DE TIERRAS EN CONTRAPUERTE (Lado izdo)
5  TRAP=0,-0.78,0,-1,-1.53,0  : EMPUJE ~~REPOSO~~ DE TIERRAS EN CARGADERO (Lado dcho)  ACTIVO
6  TRAP=0,-1.53,0,-1,-4.68,0  : EMPUJE ~~REPOSO~~ DE TIERRAS EN CONTRAPUERTE (Lado dcho) ACTIVO.
7  WL=0,1.38,0                : EMPUJE REPOSO DE LA SOBRECARGA USO (lado izdo)
8  WL=0,-0.9,0                : EMPUJE REPOSO DE LA SOBRECARGA USO (lado dcho)
9  WG=0,-15.6,0               : PESO DEL RELLENO (TRASDÓS)
10 WG=0,-3,0                  : SOBRECARGA USO EN RELLENO (TRASDÓS)
11 WG=0,-6,0                  : TRAFICO (CTRA) EN CAMINO INFERIOR
c  DEFINICION DE BARRAS
1       1       2       M=1,1    LP=1,0   NSL=1,2,0,0,0,0,0
2       1       3       M=2,2    LP=1,0   NSL=0,0,3,7,0,0,0
3       2       4       M=2,2    LP=1,0   NSL=0,0,5,0,8,0,0
4       3       8       M=3,4,3  LP=1,0   NSL=0,0,4,7,0,0,0
5       4      28       M=3,4,3  LP=1,0   NSL=0,0,6,0,8,0,0
6       5       6       M=5,5    LP=1,0   NSL=0,0,9,10,0,0,0    G=2,1,1,1
9       8       9       M=5,5    LP=1,0   NSL=0,0,0,0,0,0,0     G=5,1,1,1
15     14      15       M=5,6,3  LP=1,0   NSL=0,0,0,0,0,11,0
16     15      16       M=6,6    LP=1,0   NSL=0,0,0,0,0,11,0    G=3,1,1,1
20     19      20       M=6,5,3  LP=1,0   NSL=0,0,0,0,0,11,0
21     20      21       M=5,5    LP=1,0   NSL=0,0,0,0,0,0,0     G=5,1,1,1
27     26      27       M=5,5    LP=1,0   NSL=0,0,9,0,10,0,0    G=2,1,1,1

LOADS
1  L=7   F=3,0,0,0,0,0    :FRENADO TREN + REOLOGICO
2  L=7   F=-1,0,0,0,0,0   :REOLOGICO
```

Empuje al reposo bdb izdb y activo en bdb dcho.

```
COMBO
1   C=0,0,1.4,0,0,0,0
2   C=1.6,1.6,1.6,1.6,0,0,0
3   C=1,0,1.6,1.6,0,0,0
4   C=1.6,1.6,1.6,1.6,1.6,0,0
5   C=1,0,1.6,1.6,1.6,0,0
6   C=1.6,1.6,1.6,0,0,0,0
7   C=0,0,0,0,0,1.6,0
8   C=0,0,0,0,0,0,1.6
```

PORTICO PARA CAJON EMPOTRADO. AVE CORSAN P.I. 107.9

Cálculo con empuje reposo a la izda y activo a la dcha (Marco completo: relleno después de empotrar)

Ficha AVE10796

FRAME ELEMENT FORCES

ELT	LOAD ID COMB	DIST ENDI	1-2 PLANE SHEAR	1-2 PLANE MOMENT	AXIAL FORCE	1-3 PLANE SHEAR	1-3 PLANE MOMENT	AXIAL TORQ
4								
	1	.000			.379			
		.000	-2.752	-4.928				
		.732	.000	-5.976				
		5.250	32.271	57.030				
		5.250			.379			
	2	.000			-50.401			
		.000	-12.838	19.131				
		1.766	.000	7.117				
		5.250	38.780	69.479				
		5.250			-50.401			
	3	.000			-10.621			
		.000	-5.247	-3.123				
		.800	.000	-5.284				
		5.250	46.371	87.080				
		5.250			-10.621			
	4	.000			-50.815			
		.000	-14.450	20.304				
		1.952	.000	5.292				
		5.250	37.168	62.188				
		5.250			-50.815			
	5	.000			-11.035			
		.000	-6.859	-1.950				
		1.021	.000	-5.581				
		5.250	44.759	79.788				
		5.250			-11.035			
	6	.000			-51.047			
		.000	-12.969	23.167				
		2.359	.000	6.257				
		5.250	27.057	42.400				
		5.250			-51.047			
	7	.000			.000			
		.000	-.942	-.219				
		5.250	-.942	-5.162				
		5.250			.000			
	8	.000			.541			
		.000	1.611	-1.171				
		5.250	1.611	7.289				
		5.250			.541			
5								
	1	.000			-.379			
		.000	3.837	1.096				
		1.404	.000	3.583				
		5.250	-18.985	-28.540				
		5.250			-.379			

→ 6Ø25

$N_d = \frac{10,1 \times 1,20}{1,6} + 7 \times 1,20 = 16,0\ T$

$M_d = (87,1 + 7,3) \times 1,2 + 16 \times 1,6 \times 0,25 = 119,7\ mT$

(Frenado + reb.)

2	.000			-52.559	
	.000	16.838	-29.344		
	3.898	.000	8.216		
	5.250	-9.244	2.166		
	5.250			-52.559	
3	.000			-12.779	
	.000	9.247	-7.090		
	2.526	.000	5.878		
	5.250	-16.835	-15.435		
	5.250			-12.779	
4	.000			-52.145	
	.000	16.650	-26.790		
	3.098	.000	1.377		
	5.250	-16.992	-16.111		
	5.250			-52.145	
5	.000			-12.365	
	.000	9.059	-4.536		
	1.889	.000	4.561		
	5.250	-24.583	-33.711		
	5.250			-12.365	
6	.000			-51.913	
	.000	14.209	-27.547		
	3.459	.000	.334		
	5.250	-11.873	-9.840		
	5.250			-51.913	
7	.000			.000	
	.000	.942	.219		
	5.250	.942	5.162		
	5.250			.000	
8	.000			-.541	
	.000	1.589	-1.160		
	5.250	1.589	7.182		
	5.250			-.541	

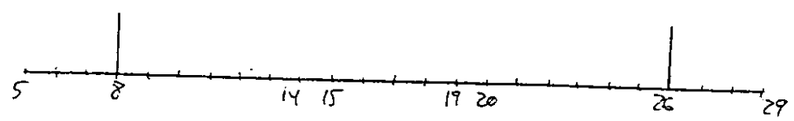
→ 2Ø25

$N_d = \frac{(52,6 + 0,5) \times 1,20}{1,6} + 7 \times 1,20 = 48,2\ T$

$M_d = 30,5 \times 1,2 + 48,2 \times 1,6 \times 0,2 = 52,0\ mT$

(Frenado + reb.)

Zapata: Envolvente de esfuerzos mayorados:



Nudo	M_d^- max	Hip	M_d^+ max	Hip
5	-		-	
6	-2,2	3	-	
7	-8,7	3	65,5	2
8	-19,7	3	42,9	2
9	-		27,2	3
10	-		16,4	3
11	-		7,9	3
12	-10,6	4	1,2	3
13	-15,1	4	-	
14	-18,3	4		
15	-20,8	4		
16	-22,1	4		
17	-22,5	4		
18	-23,1	2		
19	-23,5	2		
20	-22,8	2		
21				
22				
23				
24				
25				
26				
27				
28				
29				

Anuedros zapata de estribo:

- Flexión:

Canto 1,00 m:

M_d^+ máx = 65,5 mT/m → Ø20/0,15 (como en 107.0)
N_d = 15 T/m
d=0,90 HA-25 B-500 γ_c=1,5 γ_s=1,15.

M_d^- máx = -20 mT/m → Ø20/0,20 (mínimos 0,04 U_0)
(23,6) - envuelta. (como en 107.0)

Canto 0,50 m:

M_d^+ máx = 7 mT/m (solo el tráfico: muy desfavorable).
mínimos → Ø16/0,20 (como en 107.0)

M_d^- máx = -25,5 (-24,4)-envuelta. → Ø20/0,20 "
(N_d = 15 T/m)

- Cortante:

Canto 1,00 m:

Q_d = 45,2 (45,9) T/m → cercos Ø10/0,20 (mínimos, como en 107.0.

Canto 0,50 m:

Q_d = 11,2 T/m → mínimos Ø10/0,20 ".

CALCULOS
ALETAS PREFABRICADAS

ALVIWALL

CALCULO DE MURO PREFABRICADO

DATOS GENERALES

OBRA: AVE SUBTRAMO I. P.I. 107.9. Zapata tipo 2
CLIENTE: CORSAN CORVIAM

DATOS DEL TERRENO

Densidad:	2.0 T/m3
Angulo de rozamiento interno:	33.0 °
Angulo de talud:	0.0 °
Tensión admisible:	3.0 Kp/cm2

DATOS GEOMETRICOS DEL MURO

Altura sobre cota de cimentación:	7.20 m
Resguardo mínimo en coronación:	0.20 m
Sobrecarga móvil:	3.0 T/m2
Sobrecarga fija:	0.0 T/m2

DATOS DE LA ZAPATA

Base de la zapata:	3.75 m
Canto de la zapata:	0.80 m
Vuelo de la zapata:	0.70 m

COMPROBACION DE LA ESTABILIDAD GENERAL

Peso total actuante (terreno + muro):	47.41 T/m
Sobrecarga vertical fija:	0.00 T/m
Componente vertical del empuje:	5.57 T/m
Componente horizontal del empuje:	18.81 T/m
Momento estabilizador total:	118.77 mT/m
Momento volcador total:	51.78 mT/m
Coeficiente de rozamiento:	0.58
Coeficiente seguridad deslizamiento:	1.63
Coeficiente seguridad vuelco:	2.29

Ley triangular de tensiones (L = 3.69 m)

Tensiones:	Máxima:	3.3 Kp/cm2
	mínima:	0.0 Kp/cm2

ESFUERZOS EN BASE DEL CONTRAFUERTE

Momento de servicio:	50.93 mt
Axil de servicio:	7.89 T
Cortante de servicio:	19.62 T

CALCULO DE LAS ARMADURAS DE LA ZAPATA

Características de los materiales:

MATERIALES:

Hormigón	HA - 25	Coef. min.: 1.50
Acero	B 500 S	Coef. min.: 1.15

EJECUCION:

Coeficiente ponderación de acciones: 1.50

Cálculo a Flexión:

TALON:	Momento mayorado:	-57.01 mt
	Distancia al extremo:	2.16 m
	Armadura superior:	ø20 /0.15
	Reparto (longitudinal):	15 ø16 (Sep. 0.21 m)
PUNTERA:	Momento mayorado:	11.12 mt
	Distancia al extremo:	0.72 m
	Armadura inferior:	ø16 /0.15
	Reparto (longitudinal):	17 ø16 (Sep. 0.23 m)

Cálculo a Cortante:

TALON:	Cortante de Cálculo:	-25.76 T
	Distancia al extremo:	1.38 m

$V_{cu} = [0.10\xi(100\rho\ fck)^{1/3} - 0.15\sigma'cd]b_0d = 26.08$

$\xi = 1 + (200/d)^{1/2} = 1.516$

$\rho = 0.00279$

Como $V_{cu} > Qd \Rightarrow$ NO NECESARIA ARMADURA DE CORTANTE

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CALCULO DE MURO PREFABRICADO

DATOS GENERALES

OBRA: AVE SUBTRAMO I. P.I. 107.9 Zapata tipo 2
CLIENTE: CORSAN CORVIAM

DATOS DEL TERRENO

Densidad:	2.0 T/m3
Angulo de rozamiento interno:	33.0 °
Angulo de talud:	20.0 °
Altura de tierras s/ coronación:	0.8 m
Tensión admisible:	3.0 Kp/cm2

DATOS GEOMETRICOS DEL MURO

Altura sobre cota de cimentación:	6.60 m
Resguardo mínimo en coronación:	0.10 m
Sobrecarga móvil:	3.0 T/m2
Sobrecarga fija:	0.0 T/m2

DATOS DE LA ZAPATA

Base de la zapata:	3.75 m
Canto de la zapata:	0.80 m
Vuelo de la zapata:	0.70 m

COMPROBACION DE LA ESTABILIDAD GENERAL

Peso total actuante (terreno + muro):	46.61 T/m
Sobrecarga vertical fija:	0.00 T/m
Componente vertical del empuje:	5.84 T/m
Componente horizontal del empuje:	19.71 T/m
Momento estabilizador total:	119.38 mT/m
Momento volcador total:	55.63 mT/m
Coeficiente de rozamiento:	0.58
Coeficiente seguridad deslizamiento:	1.54
Coeficiente seguridad vuelco:	2.15

Ley trapecial de tensiones

Tensiones:	Máxima:	2.6 Kp/cm2
	mínima:	0.3 Kp/cm2

ESFUERZOS EN BASE DEL CONTRAFUERTE

Momento de servicio:	39.69 mt
Axil de servicio:	8.39 T
Cortante de servicio:	16.67 T

CALCULO DE LAS ARMADURAS DE LA ZAPATA

Características de los materiales:

MATERIALES:

Hormigón	HA - 25	Coef. min.: 1.50
Acero	B 500 S	Coef. min.: 1.15

EJECUCION:

Coeficiente ponderación de acciones: 1.50

Cálculo a Flexión:

TALON:	Momento mayorado:	-48.71 mt
	Distancia al extremo:	2.18 m
	Armadura superior:	ø20 /0.20
	Reparto (longitudinal):	12 ø16 (Sep. 0.25 m)
PUNTERA:	Momento mayorado:	8.79 mt
	Distancia al extremo:	0.71 m
	Armadura inferior:	ø16 /0.15
	Reparto (longitudinal):	17 ø16 (Sep. 0.23 m)

Cálculo a Cortante:

TALON:	Cortante de Cálculo:	-22.23 T
	Distancia al extremo:	1.44 m

$V_{cu} = [0.10\xi(100\rho\, fck)^{1/3} - 0.15\sigma'cd]b_0d = 26.08$

$\xi = 1 + (200/d)^{1/2} = 1.516$

$\rho = 0.00279$

Como $V_{cu} > Qd \Rightarrow$ NO NECESARIA ARMADURA DE CORTANTE

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CALCULO DE MURO PREFABRICADO

DATOS GENERALES

OBRA: AVE SUBTRAMO I. P.I. 107.9 Zapata tipo 3
CLIENTE: CORSAN CORVIAM

DATOS DEL TERRENO

Densidad:	2.0 T/m3
Angulo de rozamiento interno:	33.0 °
Angulo de talud:	0.0 °
Tensión admisible:	3.0 Kp/cm2

DATOS GEOMETRICOS DEL MURO

Altura sobre cota de cimentación:	5.00 m
Resguardo mínimo en coronación:	0.30 m
Sobrecarga móvil:	3.0 T/m2
Sobrecarga fija:	0.0 T/m2

DATOS DE LA ZAPATA

Base de la zapata:	2.90 m
Canto de la zapata:	0.50 m
Vuelo de la zapata:	0.40 m

COMPROBACION DE LA ESTABILIDAD GENERAL

Peso total actuante (terreno + muro):	26.66 T/m
Sobrecarga vertical fija:	0.00 T/m
Componente vertical del empuje:	3.03 T/m
Componente horizontal del empuje:	10.24 T/m
Momento estabilizador total:	50.30 mT/m
Momento volcador total:	20.28 mT/m
Coeficiente de rozamiento:	0.58
Coeficiente seguridad deslizamiento:	1.67
Coeficiente seguridad vuelco:	2.48

Ley trapecial de tensiones

Tensiones:	Máxima:	2.4 Kp/cm2
	mínima:	0.1 Kp/cm2

ESFUERZOS EN BASE DEL CONTRAFUERTE

Momento de servicio:	21.05 mt
Axil de servicio:	4.72 T
Cortante de servicio:	11.06 T

CALCULO DE LAS ARMADURAS DE LA ZAPATA

Características de los materiales:

MATERIALES:

Hormigón	HA - 25	Coef. min.: 1.50
Acero	B 500 S	Coef. min.: 1.15

EJECUCION:

Coeficiente ponderación de acciones: 1.50

Cálculo a Flexión:

TALON:	Momento mayorado:	-26.29 mt
	Distancia al extremo:	1.78 m
	Armadura superior:	ø20 /0.20
	Reparto (longitudinal):	12 ø12 (Sep. 0.21 m)
PUNTERA:	Momento mayorado:	2.72 mt
	Distancia al extremo:	0.41 m
	Armadura inferior:	ø12 /0.15
	Reparto (longitudinal):	14 ø12 (Sep. 0.21 m)

Cálculo a Cortante:

TALON:	Cortante de Cálculo:	-14.83 T
	Distancia al extremo:	1.37 m

$V_{cu} = [0.10\xi(100\rho\, fck)^{1/3} - 0.15\sigma'cd]b_0d = 20.39$

$\xi = 1 + (200/d)^{1/2} = 1.667$

$\rho = 0.00465$

Como $V_{cu} > Qd \Rightarrow$ NO NECESARIA ARMADURA DE CORTANTE

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CALCULO DE MURO PREFABRICADO

DATOS GENERALES

OBRA: AVE SUBTRAMO I. P.I. 107.9. Zapata tipo 3
CLIENTE: CORSAN CORVIAM

DATOS DEL TERRENO

Densidad:	2.0 T/m3
Angulo de rozamiento interno:	33.0 °
Angulo de talud:	20.0 °
Altura de tierras s/ coronación:	1.5 m
Tensión admisible:	3.0 Kp/cm2

DATOS GEOMETRICOS DEL MURO

Altura sobre cota de cimentación:	5.50 m
Resguardo mínimo en coronación:	0.30 m
Sobrecarga móvil:	3.0 T/m2
Sobrecarga fija:	0.0 T/m2

DATOS DE LA ZAPATA

Base de la zapata:	2.90 m
Canto de la zapata:	0.50 m
Vuelo de la zapata:	0.40 m

COMPROBACION DE LA ESTABILIDAD GENERAL

Peso total actuante (terreno + muro):	31.33 T/m
Sobrecarga vertical fija:	0.00 T/m
Componente vertical del empuje:	4.94 T/m
Componente horizontal del empuje:	13.57 T/m
Momento estabilizador total:	63.64 mT/m
Momento volcador total:	28.83 mT/m
Coeficiente de rozamiento:	0.58
Coeficiente seguridad deslizamiento:	1.54
Coeficiente seguridad vuelco:	2.21

Ley triangular de tensiones (L = 2.42 m)

Tensiones:	Máxima:	2.9 Kp/cm2
	mínima:	0.0 Kp/cm2

ESFUERZOS EN BASE DEL CONTRAFUERTE

Momento de servicio:	27.31 mt
Axil de servicio:	6.51 T
Cortante de servicio:	13.09 T

CALCULO DE LAS ARMADURAS DE LA ZAPATA

Características de los materiales:

MATERIALES:

Hormigón	HA - 25	Coef. min.: 1.50
Acero	B 500 S	Coef. min.: 1.15

EJECUCION:

Coeficiente ponderación de acciones: 1.50

Cálculo a Flexión:

TALON:	Momento mayorado:	-33.54 mt
	Distancia al extremo:	1.76 m
	Armadura superior:	ø20 /0.15
	Reparto (longitudinal):	12 ø12 (Sep. 0.21 m)
PUNTERA:	Momento mayorado:	3.28 mt
	Distancia al extremo:	0.41 m
	Armadura inferior:	ø12 /0.15
	Reparto (longitudinal):	14 ø12 (Sep. 0.21 m)

Cálculo a Cortante:

TALON:	Cortante de Cálculo:	-19.72 T
	Distancia al extremo:	1.32 m

$V_{cu} = [0.10\xi(100\rho\ fck)^{1/3} - 0.15\sigma'cd]b_0d = 20.39$

$\xi = 1 + (200/d)^{1/2} = 1.667$

$\rho = 0.00465$

Como $V_{cu} > Qd \Rightarrow$ NO NECESARIA ARMADURA DE CORTANTE

P.K. 107.0 y 107.9

Calculo de las secciones del contrafuerte: CN-300

H(m)	Canto(m)	N° Capas As	Mserv(mT)	Nserv1(T)	Nserv2(T)	Mu(mT)	Coef.seg.
0.50	0.300	1	0.41	0.52	0.37	3.64	8.85
1.00	0.350	1	1.15	0.97	0.71	4.26	3.72
1.50	0.400	2	2.35	1.57	1.11	7.84	3.33
2.00	0.450	2	4.11	2.29	1.59	8.92	2.17
2.50	0.500	2	6.50	3.14	2.14	10.07	1.55
3.00	0.550	3	9.61	4.11	2.75	15.00	1.56

H(m)	Qserv(T)	A90 Q(cm2)	A90 ras(cm2)	As Colg(cm2)	A90 tot(cm2)	Cercos
0.50	0.98	0.00	2.51	0.51	3.02	ø 8 / 0.25
1.00	1.80	0.26	2.51	0.56	3.07	ø 8 / 0.25
1.50	2.78	0.77	2.51	0.66	3.17	ø 8 / 0.25
2.00	3.92	1.56	2.51	0.76	3.27	ø 8 / 0.25
2.50	5.23	2.33	2.51	0.87	3.37	ø 8 / 0.25
3.00	6.69	2.89	2.51	0.92	3.80	ø 8 / 0.25

Despiece de armaduras del contrafuerte:

Capas	Armaduras	Long. barras (m)
1	2 ø 12	4.71
2	2 ø 10	4.22
3	2 ø 10	2.87

Disposición de cercos	Longitud armada (m)	Total Kg
ø 8 / 0.25	3.00	7.81

P.K. 107.0 y 107.9

Calculo de las secciones del contrafuerte: CN-325

H(m)	Canto(m)	N° Capas As	Mserv(mT)	Nserv1(T)	Nserv2(T)	Mu(mT)	Coef.seg.
0.50	0.300	1	0.41	0.52	0.37	3.64	8.86
1.00	0.350	1	1.15	0.97	0.71	4.26	3.72
1.50	0.400	2	2.35	1.57	1.11	9.10	3.87
2.00	0.450	2	4.11	2.29	1.59	10.34	2.52
2.50	0.500	2	6.50	3.14	2.14	11.64	1.79
3.00	0.550	3	9.61	4.11	2.75	16.20	1.74
3.25	0.575	3	11.46	4.66	3.09	17.59	1.54

H(m)	Qserv(T)	A90 Q(cm2)	A90 ras(cm2)	As Colg(cm2)	A90 tot(cm2)	Cercos
0.50	0.98	0.00	2.63	0.51	3.14	Ø 8 / 0.25
1.00	1.80	0.26	2.63	0.56	3.19	Ø 8 / 0.25
1.50	2.78	0.66	2.63	0.66	3.29	Ø 8 / 0.25
2.00	3.92	1.46	2.63	0.76	3.39	Ø 8 / 0.25
2.50	5.23	2.24	2.63	0.87	3.49	Ø 8 / 0.25
3.00	6.69	2.81	2.63	0.94	3.75	Ø 8 / 0.25
3.25	7.49	3.19	2.63	0.99	4.18	Ø 8 / 0.20

Despiece de armaduras del contrafuerte:

Capas	Armaduras	Long. barras (m)
1	2 Ø 12	4.99
2	2 Ø 12	4.57
3	2 Ø 10	3.14

Disposición de cercos	Longitud armada (m)	Total Kg
Ø 8 / 0.20	0.25	0.76
Ø 8 / 0.25	3.00	7.81

P.K. 107.0 y 107.9

Calculo de las secciones del contrafuerte: CN-350

H(m)	Canto(m)	N° Capas As	Mserv(mT)	Nserv1(T)	Nserv2(T)	Mu(mT)	Coef.seg.
0.50	0.300	1	0.41	0.52	0.37	3.64	8.86
1.00	0.350	1	1.15	0.97	0.71	4.26	3.72
1.50	0.400	2	2.35	1.57	1.11	9.10	3.87
2.00	0.450	2	4.11	2.29	1.59	10.34	2.52
2.50	0.500	2	6.50	3.14	2.14	11.64	1.79
3.00	0.550	3	9.61	4.11	2.75	18.30	1.91
3.50	0.600	3	13.51	5.24	3.44	20.26	1.50

H(m)	Qserv(T)	A90 Q(cm2)	A90 ras(cm2)	As Colg(cm2)	A90 tot(cm2)	Cercos
0.50	0.98	0.00	2.75	0.51	3.26	Ø 8 / 0.25
1.00	1.80	0.26	2.75	0.56	3.31	Ø 8 / 0.25
1.50	2.78	0.66	2.75	0.66	3.41	Ø 8 / 0.25
2.00	3.92	1.46	2.75	0.76	3.51	Ø 8 / 0.25
2.50	5.23	2.24	2.75	0.87	3.62	Ø 8 / 0.25
3.00	6.69	2.75	2.75	0.97	3.72	Ø 8 / 0.25
3.50	8.32	3.49	2.75	1.02	4.51	Ø 8 / 0.20

Despiece de armaduras del contrafuerte:

Capas	Armaduras	Long. barras (m)
1	2 Ø 12	5.27
2	2 Ø 12	4.85
3	2 Ø 12	3.49

Disposición de cercos	Longitud armada (m)	Total Kg
Ø 8 / 0.20	0.50	1.54
Ø 8 / 0.25	3.00	7.81

P.K. 107.0 y 107.9

Calculo de las secciones del contrafuerte: CN-375

H(m)	Canto(m)	N° Capas As	Mserv(mT)	Nserv1(T)	Nserv2(T)	Mu(mT)	Coef.seg.
0.50	0.300	1	0.41	0.52	0.37	6.32	15.38
1.00	0.350	1	1.15	0.97	0.71	7.31	6.39
1.50	0.400	1	2.35	1.57	1.11	8.40	3.57
2.00	0.450	1	4.11	2.29	1.59	9.52	2.32
2.50	0.500	1	6.50	3.14	2.14	10.71	1.65
3.00	0.550	2	9.61	4.11	2.75	21.83	2.27
3.50	0.600	2	13.51	5.24	3.44	24.06	1.78
3.75	0.625	2	15.79	5.86	3.81	25.21	1.60

H(m)	Qserv(T)	A90 Q(cm2)	A90 ras(cm2)	As Colg(cm2)	A90 tot(cm2)	Cercos
1.00	1.80	0.00	2.87	0.56	3.43	Ø 8 / 0.25
1.50	2.78	0.74	2.87	0.66	3.53	Ø 8 / 0.25
2.00	3.92	1.54	2.87	0.76	3.63	Ø 8 / 0.25
2.50	5.23	2.30	2.87	0.87	3.74	Ø 8 / 0.25
3.00	6.69	2.63	2.87	0.97	3.84	Ø 8 / 0.25
3.50	8.32	3.39	2.87	1.04	4.43	Ø 8 / 0.20
3.75	9.19	3.76	2.87	1.09	4.85	Ø 8 / 0.20

Despiece de armaduras del contrafuerte:

Capas	Armaduras	Long. barras (m)
1	2 Ø 16	5.54
2	2 Ø 16	3.91

Disposición de cercos	Longitud armada (m)	Total Kg
Ø 8 / 0.20	0.75	3.12
Ø 8 / 0.25	3.00	7.81

P.K. 107.0 y 107.9

Calculo de las secciones del contrafuerte: CN-400

H(m)	Canto(m)	N° Capas As	Mserv(mT)	Nserv1(T)	Nserv2(T)	Mu(mT)	Coef.seg.
0.50	0.300	1	0.41	0.52	0.37	6.32	15.38
1.00	0.350	1	1.15	0.97	0.71	7.31	6.39
1.50	0.400	1	2.35	1.57	1.11	8.40	3.57
2.00	0.450	1	4.11	2.29	1.59	9.52	2.32
2.50	0.500	1	6.50	3.14	2.14	10.71	1.65
3.00	0.550	2	9.61	4.11	2.75	17.56	1.83
3.50	0.600	3	13.51	5.24	3.44	25.12	1.86
4.00	0.650	3	18.30	6.50	4.20	27.55	1.51

H(m)	Qserv(T)	A90 Q(cm2)	A90 ras(cm2)	As Colg(cm2)	A90 tot(cm2)	Cercos
0.50	0.98	0.00	2.99	0.51	3.50	Ø 8 / 0.25
1.00	1.80	0.00	2.99	0.56	3.55	Ø 8 / 0.25
1.50	2.78	0.74	2.99	0.66	3.65	Ø 8 / 0.25
2.00	3.92	1.54	2.99	0.76	3.75	Ø 8 / 0.25
2.50	5.23	2.30	2.99	0.87	3.85	Ø 8 / 0.25
3.00	6.69	2.79	2.99	0.97	3.96	Ø 8 / 0.25
3.50	8.32	3.35	2.99	1.07	4.41	Ø 8 / 0.20
4.00	10.11	4.08	2.99	1.12	5.20	Ø 8 / 0.15

Despiece de armaduras del contrafuerte:

Capas	Armaduras	Long. barras (m)
1	2 Ø 16	5.82
2	2 Ø 12	4.04
3	2 Ø 12	3.59

Disposición de cercos	Longitud armada (m)	Total Kg
Ø 8 / 0.15	0.50	2.43
Ø 8 / 0.20	0.50	1.54
Ø 8 / 0.25	3.00	7.81

P.K. 107.0 y 107.9

Calculo de las secciones del contrafuerte: CN-425

H(m)	Canto(m)	N° Capas As	Mserv(mT)	Nserv1(T)	Nserv2(T)	Mu(mT)	Coef.seg.
0.50	0.300	1	0.41	0.52	0.37	6.32	15.38
1.00	0.350	1	1.15	0.97	0.71	7.33	6.39
1.50	0.400	1	2.35	1.57	1.11	8.40	3.57
2.00	0.450	1	4.11	2.29	1.59	9.52	2.32
2.50	0.500	1	6.50	3.14	2.14	10.71	1.65
3.00	0.550	2	9.61	4.11	2.75	21.84	2.27
3.50	0.600	2	13.51	5.24	3.44	24.07	1.78
4.00	0.650	3	18.30	6.50	4.20	30.66	1.68
4.25	0.675	3	21.05	7.18	4.60	32.03	1.52

H(m)	Qserv(T)	A90 Q(cm2)	A90 ras(cm2)	As Colg(cm2)	A90 tot(cm2)	Cercos
0.50	0.98	0.00	3.11	0.51	3.62	Ø 8 / 0.25
1.00	1.80	0.00	3.11	0.56	3.67	Ø 8 / 0.25
1.50	2.78	0.74	3.11	0.66	3.77	Ø 8 / 0.25
2.00	3.92	1.54	3.11	0.76	3.87	Ø 8 / 0.25
2.50	5.23	2.30	3.11	0.87	3.97	Ø 8 / 0.25
3.00	6.69	2.63	3.11	0.97	4.07	Ø 8 / 0.25
3.50	8.32	3.39	3.11	1.07	4.45	Ø 8 / 0.20
4.00	10.11	4.01	3.11	1.14	5.15	Ø 8 / 0.20
4.25	11.06	4.37	3.11	1.19	5.57	Ø 8 / 0.15

Despiece de armaduras del contrafuerte:

Capas	Armaduras	Long. barras (m)
1	2 Ø 16	6.10
2	2 Ø 16	4.47
3	2 Ø 10	3.34

Disposición de cercos	Longitud armada (m)	Total Kg
Ø 8 / 0.15	0.25	1.68
Ø 8 / 0.20	1.00	3.95
Ø 8 / 0.25	3.00	7.81

P.K. 107.0 y 107.9

Calculo de las secciones del contrafuerte: CN-450

H(m)	Canto(m)	N° Capas As	Mserv(mT)	Nserv1(T)	Nserv2(T)	Mu(mT)	Coef.seg.
0.50	0.300	1	0.41	0.52	0.37	6.32	15.38
1.00	0.350	1	1.15	0.97	0.71	7.33	6.39
1.50	0.400	1	2.35	1.57	1.11	8.40	3.57
2.00	0.450	1	4.11	2.29	1.59	9.52	2.32
2.50	0.500	1	6.50	3.14	2.14	10.71	1.65
3.00	0.550	2	9.61	4.11	2.75	21.84	2.27
3.50	0.600	2	13.51	5.24	3.44	24.07	1.78
4.00	0.650	3	18.30	6.50	4.20	32.53	1.78
4.50	0.700	3	24.05	7.90	5.01	35.43	1.47

H(m)	Qserv(T)	A90 Q(cm2)	A90 ras(cm2)	As Colg(cm2)	A90 tot(cm2)	Cercos
0.50	0.98	0.00	3.23	0.51	3.74	Ø 8 / 0.25
1.00	1.80	0.00	3.23	0.56	3.79	Ø 8 / 0.25
1.50	2.78	0.74	3.23	0.66	3.89	Ø 8 / 0.25
2.00	3.92	1.54	3.23	0.76	3.99	Ø 8 / 0.25
2.50	5.23	2.30	3.23	0.87	4.09	Ø 8 / 0.25
3.00	6.69	2.63	3.23	0.97	4.19	Ø 8 / 0.20
3.50	8.32	3.39	3.23	1.07	4.45	Ø 8 / 0.20
4.00	10.11	3.96	3.23	1.17	5.14	Ø 8 / 0.20
4.50	12.08	4.71	3.23	1.23	5.94	Ø 8 / 0.15

Despiece de armaduras del contrafuerte:

Capas	Armaduras	Long. barras (m)
1	2 Ø 16	6.37
2	2 Ø 16	4.74
3	2 Ø 12	3.69

Disposición de cercos	Longitud armada (m)	Total Kg
Ø 8 / 0.15	0.50	2.55
Ø 8 / 0.20	1.50	5.39
Ø 8 / 0.25	2.50	6.31

P.K. 107.0 y 107.9

Calculo de las secciones del contrafuerte: CN-475

H(m)	Canto(m)	N° Capas As	Mserv(mT)	Nserv1(T)	Nserv2(T)	Mu(mT)	Coef.seg.
0.50	0.300	1	0.41	0.52	0.37	6.32	15.38
1.00	0.350	1	1.15	0.97	0.71	7.33	6.39
1.50	0.400	1	2.35	1.57	1.11	8.40	3.57
2.00	0.450	1	4.11	2.29	1.59	9.52	2.32
2.50	0.500	1	6.50	3.14	2.14	10.71	1.65
3.00	0.550	2	9.61	4.11	2.75	21.84	2.27
3.50	0.600	2	13.51	5.24	3.44	24.07	1.78
4.00	0.650	3	18.30	6.50	4.20	37.24	2.03
4.50	0.700	3	24.05	7.90	5.01	40.53	1.69
4.75	0.725	3	27.31	8.64	5.43	42.21	1.55

H(m)	Qserv(T)	A90 Q(cm2)	A90 ras(cm2)	As Colg(cm2)	A90 tot(cm2)	Cercos
0.50	0.98	0.00	3.34	0.51	3.86	Ø 8 / 0.25
1.00	1.80	0.00	3.34	0.56	3.91	Ø 8 / 0.25
1.50	2.78	0.74	3.34	0.66	4.01	Ø 8 / 0.25
2.00	3.92	1.54	3.34	0.75	4.09	Ø 8 / 0.25
2.50	5.23	2.30	3.34	0.87	4.21	Ø 8 / 0.20
3.00	6.69	2.63	3.34	0.97	4.31	Ø 8 / 0.20
3.50	8.32	3.39	3.34	1.07	4.45	Ø 8 / 0.20
4.00	10.11	3.85	3.34	1.17	5.01	Ø 8 / 0.20
4.50	12.08	4.60	3.34	1.27	5.87	Ø 8 / 0.15
4.75	13.15	4.98	3.34	1.34	6.32	Ø 10 / 0.25

Despiece de armaduras del contrafuerte:

Capas	Armaduras	Long. barras (m)
1	2 Ø 16	6.65
2	2 Ø 16	5.02
3	2 Ø 16	4.11

Disposición de cercos	Longitud armada (m)	Total Kg
Ø 10 / 0.25	0.25	1.37
Ø 8 / 0.15	0.50	2.55
Ø 8 / 0.20	2.50	8.76
Ø 8 / 0.25	1.50	3.55

P.K. 107.9

Calculo de las secciones del contrafuerte: CN-500

H(m)	Canto(m)	N° Capas As	Mserv(mT)	Nserv1(T)	Nserv2(T)	Mu(mT)	Coef.seg.
0.50	0.300	1	0.41	0.52	0.37	9.69	23.60
1.00	0.350	1	1.15	0.97	0.71	11.21	9.77
1.50	0.400	1	2.35	1.57	1.11	12.77	5.43
2.00	0.450	1	4.11	2.29	1.59	14.41	3.50
2.50	0.500	1	6.50	3.14	2.14	16.08	2.47
3.00	0.550	1	9.61	4.11	2.75	17.85	1.86
3.50	0.600	2	13.51	5.24	3.44	36.14	2.67
4.00	0.650	2	18.30	6.50	4.20	39.45	2.16
4.50	0.700	2	24.05	7.90	5.01	42.85	1.78
5.00	0.750	2	30.85	9.42	5.87	46.33	1.50

H(m)	Qserv(T)	A90 Q(cm2)	A90 ras(cm2)	As Colg(cm2)	A90 tot(cm2)	Cercos
0.50	0.98	0.00	3.46	0.51	3.97	Ø 8 / 0.25
1.00	1.80	0.00	3.46	0.56	4.02	Ø 8 / 0.25
1.50	2.78	0.44	3.46	0.66	4.12	Ø 8 / 0.20
2.00	3.92	1.25	3.46	0.76	4.23	Ø 8 / 0.20
2.50	5.23	2.03	3.46	0.87	4.33	Ø 8 / 0.20
3.00	6.69	2.79	3.46	0.97	4.43	Ø 8 / 0.20
3.50	8.32	3.07	3.46	1.07	4.53	Ø 8 / 0.20
4.00	10.11	3.82	3.46	1.17	5.00	Ø 8 / 0.20
4.50	12.08	4.57	3.46	1.30	5.87	Ø 8 / 0.15
5.00	14.26	5.33	3.46	1.36	6.70	Ø 10 / 0.20

Despiece de armaduras del contrafuerte:

Capas	Armaduras	Long. barras (m)
1	2 Ø 20	6.92
2	2 Ø 20	4.99

Disposición de cercos	Longitud armada (m)	Total Kg
Ø 10 / 0.20	0.50	2.77
Ø 8 / 0.15	0.50	2.55
Ø 8 / 0.20	3.00	10.65
Ø 8 / 0.25	1.00	2.29

P.K. 107.0 y 107.9

Calculo de las secciones del contrafuerte: CN-525

H(m)	Canto(m)	N° Capas As	Mserv(mT)	Nserv1(T)	Nserv2(T)	Mu(mT)	Coef.seg.
0.50	0.300	1	0.41	0.52	0.37	9.69	23.60
1.00	0.350	1	1.15	0.97	0.71	11.21	9.77
1.50	0.400	1	2.35	1.57	1.11	12.77	5.43
2.00	0.450	1	4.11	2.29	1.59	14.40	3.50
2.50	0.500	1	6.50	3.14	2.14	16.08	2.47
3.00	0.550	1	9.61	4.11	2.75	17.85	1.86
3.50	0.600	2	13.51	5.24	3.44	30.29	2.24
4.00	0.650	2	18.30	6.50	4.20	33.10	1.81
4.50	0.700	3	24.05	7.90	5.01	47.60	1.98
5.00	0.750	3	30.85	9.42	5.87	51.47	1.67
5.25	0.775	3	34.67	10.22	6.28	53.42	1.54

H(m)	Qserv(T)	A90 Q(cm2)	A90 ras(cm2)	As Colg(cm2)	A90 tot(cm2)	Cercos
0.50	0.98	0.00	3.58	0.51	4.09	Ø 8 / 0.25
1.00	1.80	0.00	3.58	0.56	4.14	Ø 8 / 0.20
1.50	2.78	0.44	3.58	0.66	4.24	Ø 8 / 0.20
2.00	3.92	1.25	3.58	0.76	4.34	Ø 8 / 0.20
2.50	5.23	2.03	3.58	0.87	4.44	Ø 8 / 0.20
3.00	6.69	2.79	3.58	0.97	4.54	Ø 8 / 0.20
3.50	8.32	3.22	3.58	1.07	4.64	Ø 8 / 0.20
4.00	10.11	3.96	3.58	1.17	5.14	Ø 8 / 0.20
4.50	12.08	4.48	3.58	1.30	5.78	Ø 8 / 0.15
5.00	14.26	5.24	3.58	1.47	6.71	Ø 10 / 0.20
5.25	15.60	5.71	3.58	1.67	7.39	Ø 10 / 0.20

Despiece de armaduras del contrafuerte:

Capas	Armaduras	Long. barras (m)
1	2 Ø 20	7.20
2	2 Ø 16	5.12
3	2 Ø 16	4.21

Disposición de cercos	Longitud armada (m)	Total Kg
Ø 10 / 0.20	0.75	5.61
Ø 8 / 0.15	0.50	2.55
Ø 8 / 0.20	4.00	13.81

P.K. 107.9

Calculo de las secciones del contrafuerte: CN-550

H(m)	Canto(m)	N° Capas As	Mserv(mT)	Nserv1(T)	Nserv2(T)	Mu(mT)	Coef.seg.
0.50	0.300	1	0.41	0.52	0.52	9.74	23.71
1.00	0.350	1	1.15	0.93	0.93	11.28	9.83
1.50	0.400	1	2.35	1.38	1.38	12.87	5.47
2.00	0.450	1	4.11	1.88	1.88	14.51	3.53
2.50	0.500	1	6.50	2.43	2.43	16.21	2.49
3.00	0.550	1	9.61	3.02	3.02	17.97	1.87
3.50	0.600	2	13.51	3.66	3.66	36.25	2.68
4.00	0.650	2	18.30	4.35	4.35	39.53	2.16
4.50	0.700	2	24.05	5.09	5.09	42.89	1.78
5.00	0.750	2	30.85	5.88	5.88	46.34	1.50
5.50	0.800	3	38.78	6.71	6.71	57.34	1.48

H(m)	Qserv(T)	A90 Q(cm2)	A90 ras(cm2)	As Colg(cm2)	A90 tot(cm2)	Cercos
0.50	0.98	0.00	3.56	0.51	4.07	Ø 8 / 0.25
1.00	1.80	0.00	3.56	0.56	4.12	Ø 8 / 0.20
1.50	2.78	0.44	3.56	0.66	4.22	Ø 8 / 0.20
2.00	3.92	1.25	3.56	0.76	4.33	Ø 8 / 0.20
2.50	5.23	2.03	3.56	0.87	4.43	Ø 8 / 0.20
3.00	6.69	2.79	3.56	0.97	4.53	Ø 8 / 0.20
3.50	8.32	3.07	3.56	1.07	4.63	Ø 8 / 0.20
4.00	10.11	3.82	3.56	1.17	4.99	Ø 8 / 0.20
4.50	12.05	4.56	3.56	1.27	5.83	Ø 8 / 0.15
5.00	14.16	5.28	3.56	1.37	6.65	Ø 10 / 0.20
5.50	16.43	5.89	3.56	1.42	7.31	Ø 10 / 0.20

Despiece de armaduras del contrafuerte:

Capas	Armaduras	Long. barras (m)
1	2 Ø 20	7.48
2	2 Ø 20	5.54
3	2 Ø 12	3.44

Disposición de cercos	Longitud armada (m)	Total Kg
Ø 10 / 0.20	1.00	7.09
Ø 8 / 0.15	0.50	2.55
Ø 8 / 0.20	4.00	13.81

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Calculo de las secciones del contrafuerte: CN-575

H(m)	Canto(m)	N° Capas As	Mserv(mT)	Nserv1(T)	Nserv2(T)	Mu(mT)	Coef.seg.
0.50	0.300	1	0.41	0.52	0.37	14.83	36.11
1.00	0.350	1	1.15	0.97	0.71	17.13	14.93
1.50	0.400	1	2.35	1.57	1.11	19.47	8.28
2.00	0.450	1	4.11	2.29	1.59	21.87	5.32
2.50	0.500	1	6.50	3.14	2.14	24.34	3.74
3.00	0.550	1	9.61	4.11	2.75	26.88	2.80
3.50	0.600	1	13.51	5.24	3.44	29.50	2.18
4.00	0.650	1	18.30	6.50	4.20	32.21	1.76
4.50	0.700	2	24.05	7.90	5.01	53.75	2.23
5.00	0.750	2	30.85	9.42	5.87	58.01	1.88
5.50	0.800	2	38.78	11.05	6.71	62.32	1.61
5.75	0.825	2	43.19	11.91	7.14	64.51	1.49

H(m)	Qserv(T)	A90 Q(cm2)	A90 ras(cm2)	As Colg(cm2)	A90 tot(cm2)	Cercos
0.50	0.98	0.00	3.81	0.51	4.32	Ø 8 / 0.20
1.00	1.80	0.00	3.81	0.56	4.37	Ø 8 / 0.20
1.50	2.78	0.08	3.81	0.66	4.47	Ø 8 / 0.20
2.00	3.92	0.92	3.81	0.76	4.57	Ø 8 / 0.20
2.50	5.23	1.72	3.81	0.87	4.67	Ø 8 / 0.20
3.00	6.69	2.50	3.81	0.97	4.77	Ø 8 / 0.20
3.50	8.32	3.25	3.81	1.07	4.87	Ø 8 / 0.20
4.00	10.11	3.99	3.81	1.17	5.17	Ø 8 / 0.15
4.50	12.08	4.39	3.81	1.30	5.69	Ø 8 / 0.15
5.00	14.26	5.16	3.81	1.55	6.71	Ø 10 / 0.20
5.50	17.03	6.12	3.81	1.78	7.90	Ø 10 / 0.20
5.75	18.52	6.61	3.81	1.87	8.48	Ø 10 / 0.15

Despiece de armaduras del contrafuerte:

Capas	Armaduras	Long. barras (m)
1	2 Ø 25	7.75
2	2 Ø 20	4.91

Disposición de cercos	Longitud armada (m)	Total Kg
Ø 10 / 0.15	0.25	2.99
Ø 10 / 0.20	1.00	7.09
Ø 8 / 0.15	1.00	5.80
Ø 8 / 0.20	3.50	11.40

P.K. 107.9

Calculo de las secciones del contrafuerte: CN-600

H(m)	Canto(m)	N° Capas As	Mserv(mT)	Nserv1(T)	Nserv2(T)	Mu(mT)	Coef.seg.
0.50	0.300	1	0.41	0.52	0.52	14.87	36.21
1.00	0.350	1	1.15	0.93	0.93	17.20	14.99
1.50	0.400	1	2.35	1.38	1.38	19.56	8.32
2.00	0.450	1	4.11	1.88	1.88	21.98	5.35
2.50	0.500	1	6.50	2.43	2.43	24.46	3.76
3.00	0.550	1	9.61	3.02	3.02	27.00	2.81
3.50	0.600	1	13.51	3.66	3.66	29.61	2.19
4.00	0.650	1	18.30	4.35	4.35	32.29	1.76
4.50	0.700	2	24.05	5.09	5.09	47.12	1.96
5.00	0.750	2	30.85	5.88	5.88	50.84	1.65
5.50	0.800	3	38.78	6.71	6.71	67.71	1.75
6.00	0.850	3	47.91	7.59	7.59	72.50	1.51

H(m)	Qserv(T)	A90 Q(cm2)	A90 ras(cm2)	As Colg(cm2)	A90 tot(cm2)	Cercos
0.50	0.98	0.00	3.78	0.51	4.29	Ø 8 / 0.20
1.00	1.80	0.00	3.78	0.56	4.34	Ø 8 / 0.20
1.50	2.78	0.08	3.78	0.66	4.44	Ø 8 / 0.20
2.00	3.92	0.92	3.78	0.76	4.54	Ø 8 / 0.20
2.50	5.23	1.72	3.78	0.87	4.64	Ø 8 / 0.20
3.00	6.69	2.50	3.78	0.97	4.74	Ø 8 / 0.20
3.50	8.32	3.25	3.78	1.07	4.84	Ø 8 / 0.20
4.00	10.11	3.99	3.78	1.17	5.16	Ø 8 / 0.15
4.50	12.05	4.49	3.78	1.27	5.76	Ø 8 / 0.15
5.00	14.16	5.22	3.78	1.37	6.59	Ø 10 / 0.20
5.50	16.43	5.76	3.78	1.47	7.23	Ø 10 / 0.20
6.00	18.86	6.47	3.78	1.52	7.99	Ø 10 / 0.20

Despiece de armaduras del contrafuerte:

Capas	Armaduras	Long. barras (m)
1	2 Ø 25	8.03
2	2 Ø 16	5.04
3	2 Ø 16	4.14

Disposición de cercos	Longitud armada (m)	Total Kg
Ø 10 / 0.20	1.50	10.14
Ø 8 / 0.15	1.00	5.80
Ø 8 / 0.20	3.50	11.40

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culo de las secciones del contrafuerte: CN-625

H(m)	Canto(m)	N° Capas As	Mserv(mT)	Nserv1(T)	Nserv2(T)	Mu(mT)	Coef.seg.
0.50	0.300	1	0.41	0.52	0.37	14.83	36.11
1.00	0.350	1	1.15	0.97	0.71	17.13	14.93
1.50	0.400	1	2.35	1.57	1.11	19.47	8.28
2.00	0.450	1	4.11	2.29	1.59	21.87	5.32
2.50	0.500	1	6.50	3.14	2.14	24.34	3.74
3.00	0.550	1	9.61	4.11	2.75	26.88	2.80
3.50	0.600	1	13.51	5.24	3.44	29.50	2.18
4.00	0.650	1	18.30	6.50	4.20	32.21	1.76
4.50	0.700	2	24.05	7.90	5.01	64.04	2.66
5.00	0.750	2	30.85	9.42	5.87	69.08	2.24
5.50	0.800	2	38.78	11.05	6.71	74.17	1.91
6.00	0.850	2	47.91	12.19	7.59	79.34	1.66
6.25	0.875	2	52.96	12.88	8.04	81.97	1.55

H(m)	Qserv(T)	A90 Q(cm2)	A90 ras(cm2)	As Colg(cm2)	A90 tot(cm2)	Cercos
0.50	0.98	0.00	4.01	0.51	4.53	Ø 8 / 0.20
1.00	1.80	0.00	4.01	0.56	4.58	Ø 8 / 0.20
1.50	2.78	0.08	4.01	0.66	4.68	Ø 8 / 0.20
2.00	3.92	0.92	4.01	0.76	4.78	Ø 8 / 0.20
2.50	5.23	1.72	4.01	0.87	4.88	Ø 8 / 0.20
3.00	6.69	2.50	4.01	0.97	4.98	Ø 8 / 0.20
3.50	8.32	3.25	4.01	1.07	5.08	Ø 8 / 0.20
4.00	10.11	3.99	4.01	1.17	5.19	Ø 8 / 0.15
4.50	12.08	4.24	4.01	1.30	5.54	Ø 8 / 0.15
5.00	14.26	5.01	4.01	1.55	6.56	Ø 10 / 0.20
5.50	17.03	5.98	4.01	1.82	7.79	Ø 10 / 0.20
6.00	20.08	6.96	4.01	1.93	8.89	Ø 10 / 0.15
6.25	21.67	7.44	4.01	2.00	9.44	Ø 12 / 0.20

piece de armaduras del contrafuerte:

Capas	Armaduras	Long. barras (m)
1	2 Ø 25	8.31
2	2 Ø 25	5.79

Disposición de cercos	Longitud armada (m)	Total Kg
Ø 12 / 0.20	0.25	2.24
Ø 10 / 0.15	0.50	4.53
Ø 10 / 0.20	1.00	7.09
Ø 8 / 0.15	1.00	5.80
Ø 8 / 0.20	3.50	11.40

ARMADURA EN PANTALLA MUROS ALVIWALL

Características de los materiales:

Datos del relleno:

densidad	2
Coef. Emp.	0,26
Sobrecarga	3
gammaf	1,5

Hormigón:

canto útil	0,065
fck	350
gammaC	1,5
Uc=	151,67

Acero:

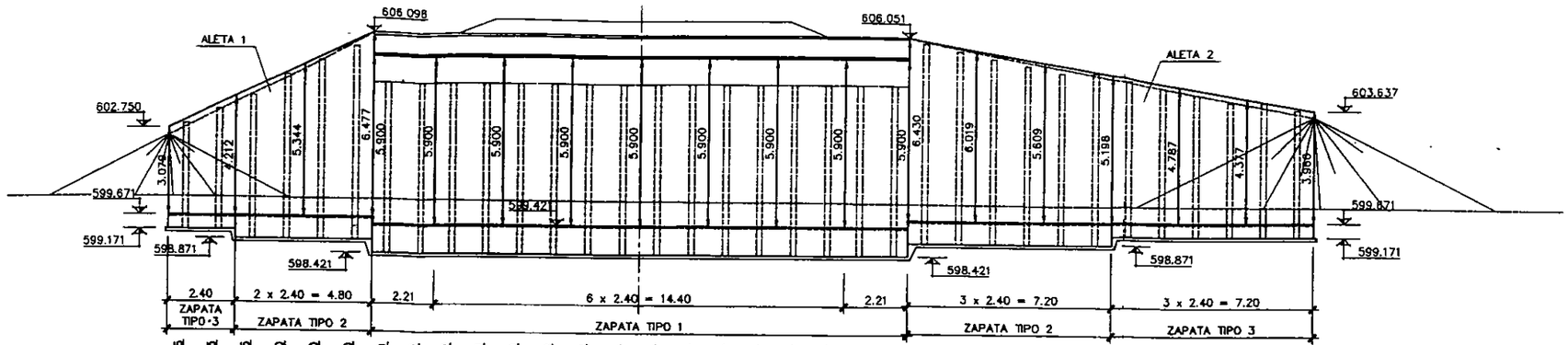
fyk	5100
gammaS	1,15

ARMADURA PANTALLA CARA TIERRAS

h	Ph	Md	Us	As	Redondo 8	Redondo 10
2	1,56	0,35	5,55	1,25	0,30	0,30
2,5	1,82	0,41	6,49	1,46	0,30	0,30
3	2,08	0,47	7,44	1,68	0,30	0,30
3,5	2,34	0,53	8,40	1,89	0,26	0,30
4	2,6	0,59	9,36	2,11	0,24	0,30
4,5	2,86	0,65	10,33	2,33	0,21	0,30
5	3,12	0,71	11,31	2,55	0,20	0,30
5,5	3,38	0,77	12,30	2,77	0,18	0,28
6	3,64	0,83	13,29	3,00	0,17	0,26
6,5	3,9	0,88	14,29	3,22	0,16	0,25
7	4,16	0,94	15,29	3,45	0,15	0,23
7,5	4,42	1,00	16,30	3,68	0,14	0,21
8	4,68	1,06	17,32	3,91	0,13	0,20
8,5	4,94	1,12	18,35	4,14	0,12	0,19
9	5,2	1,18	19,39	4,37	0,11	0,18
9,5	5,46	1,24	20,43	4,61	0,11	0,17
10	5,72	1,30	21,49	4,85	0,10	0,16
10,5	5,98	1,36	22,55	5,08	0,10	0,16
11	6,24	1,42	23,62	5,33	0,09	0,15

ARMADURA PANTALLA CARA VISTA (Voladizos de 0,60)

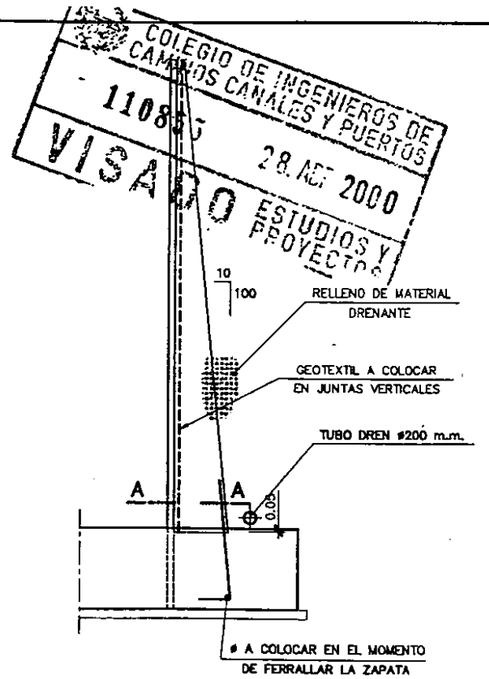
h	Ph	Md	Us	As	Redondo 8	Redondo 10
2	1,56	0,14	2,18	0,49	0,30	0,30
2,5	1,82	0,16	2,54	0,57	0,30	0,30
3	2,08	0,19	2,91	0,66	0,30	0,30
3,5	2,34	0,21	3,28	0,74	0,30	0,30
4	2,6	0,23	3,64	0,82	0,30	0,30
4,5	2,86	0,26	4,01	0,90	0,30	0,30
5	3,12	0,28	4,38	0,99	0,30	0,30
5,5	3,38	0,30	4,75	1,07	0,30	0,30
6	3,64	0,33	5,13	1,16	0,30	0,30
6,5	3,9	0,35	5,50	1,24	0,30	0,30
7	4,16	0,37	5,87	1,32	0,30	0,30
7,5	4,42	0,40	6,25	1,41	0,30	0,30
8	4,68	0,42	6,62	1,49	0,30	0,30
8,5	4,94	0,44	7,00	1,58	0,30	0,30
9	5,2	0,47	7,38	1,66	0,30	0,30
9,5	5,46	0,49	7,76	1,75	0,29	0,30
10	5,72	0,51	8,14	1,84	0,27	0,30
10,5	5,98	0,54	8,52	1,92	0,26	0,30
11	6,24	0,56	8,90	2,01	0,25	0,30



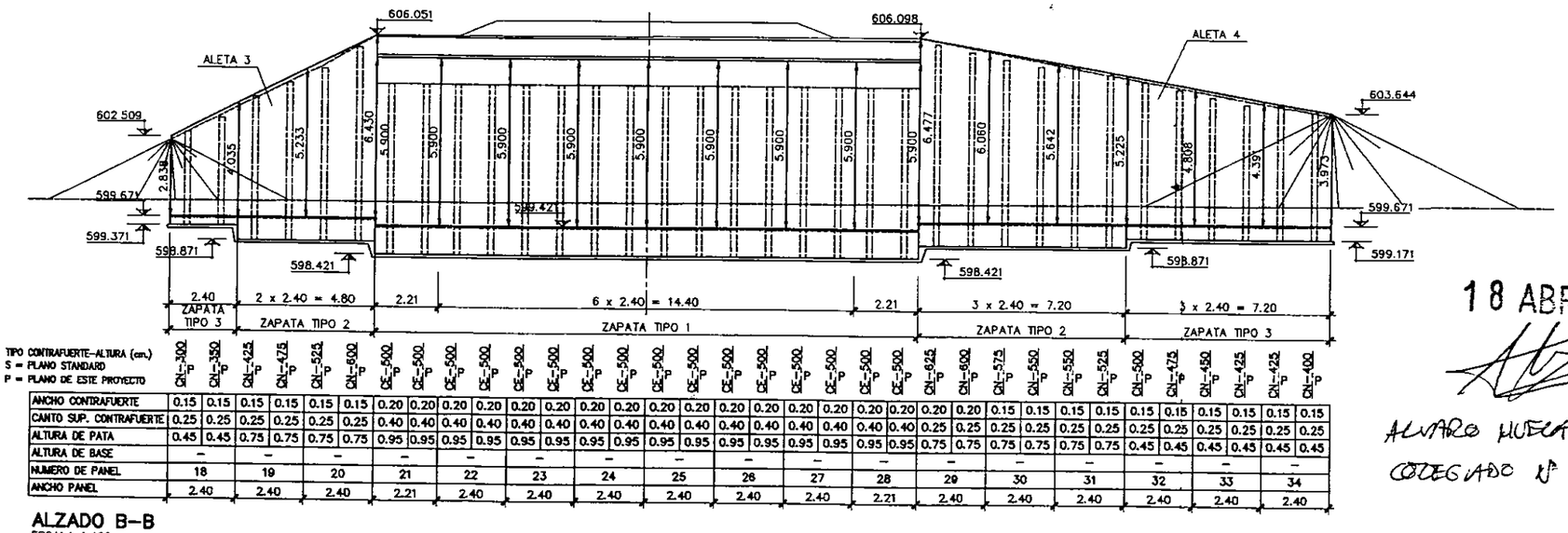
TIPO CONTRAFUERTE-ALTURA (cm.)
S = PLANO STANDARD
P = PLANO DE ESTE PROYECTO

	CN-325 P	CN-375 P	CN-425 P	CN-500 P	CN-550 P	CN-600 P	CE-500 P	CE-500 P	CE-500 P	CE-500 P	CE-500 P	CE-500 P	CE-500 P	CE-500 P	CE-500 P	CE-500 P	CE-500 P	CE-500 P	CE-500 P	CE-500 P	CE-500 P	CN-625 P	CN-600 P	CN-575 P	CN-550 P	CN-525 P	CN-500 P	CN-475 P	CN-450 P	CN-425 P	CN-400 P
ANCHO CONTRAFUERTE	0.15	0.15	0.15	0.15	0.15	0.15	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
CANTO SUP. CONTRAFUERTE	0.25	0.25	0.25	0.25	0.25	0.25	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
ALTURA DE PATA	0.45	0.45	0.75	0.75	0.75	0.75	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.75	0.75	0.75	0.75	0.75	0.75	0.45	0.45	0.45	0.45	0.45	0.45
ALTURA DE BASE	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
NUMERO DE PANEL	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17																
ANCHO PANEL	2.40	2.40	2.40	2.21	2.40	2.40	2.40	2.40	2.40	2.40	2.21	2.40	2.40	2.40	2.40	2.40	2.40																

ALZADO A–A
ESCALA 1:100



SECCION TIPO ZONA ALETAS
S/E



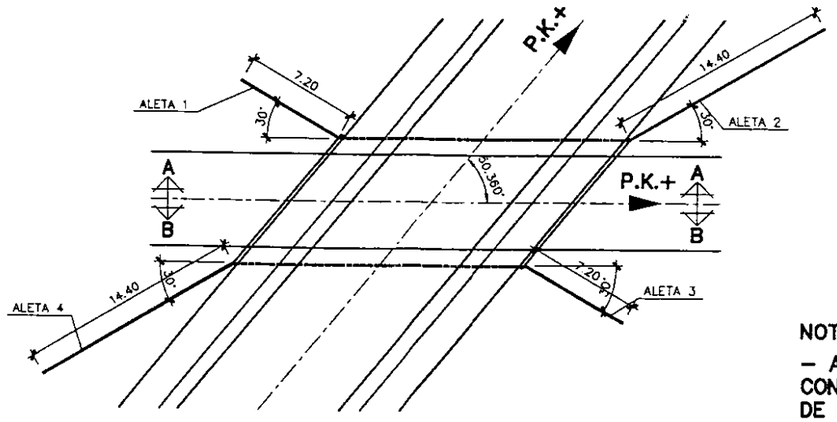
TIPO CONTRAFUERTE-ALTURA (cm.)
S = PLANO STANDARD
P = PLANO DE ESTE PROYECTO

	CN-300 P	CN-350 P	CN-425 P	CN-475 P	CN-525 P	CN-600 P	CE-500 P	CE-500 P	CE-500 P	CE-500 P	CE-500 P	CE-500 P	CE-500 P	CE-500 P	CE-500 P	CE-500 P	CE-500 P	CE-500 P	CE-500 P	CE-500 P	CE-500 P	CN-625 P	CN-600 P	CN-575 P	CN-550 P	CN-525 P	CN-500 P	CN-475 P	CN-450 P	CN-425 P	CN-400 P
ANCHO CONTRAFUERTE	0.15	0.15	0.15	0.15	0.15	0.15	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
CANTO SUP. CONTRAFUERTE	0.25	0.25	0.25	0.25	0.25	0.25	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
ALTURA DE PATA	0.45	0.45	0.75	0.75	0.75	0.75	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.75	0.75	0.75	0.75	0.75	0.75	0.45	0.45	0.45	0.45	0.45	0.45
ALTURA DE BASE	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
NUMERO DE PANEL	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34																
ANCHO PANEL	2.40	2.40	2.40	2.21	2.40	2.40	2.40	2.40	2.40	2.40	2.21	2.40	2.40	2.40	2.40	2.40	2.40																

ALZADO B–B
ESCALA 1:100

18 ABR 2000

ALVARO HUECAS RODRIGUEZ
COLEGIADO Nº 10.836



PLANTA
ESCALA 1:200

HIPÓTESIS DE CALCULO CONSIDERADAS:

- DENSIDAD DE LAS TIERRAS $\sigma = 2\ T/m^3$
- ANGULO DE ROZAMIENTO DE RELLENO $\varphi = 33°$
- TENSION ADMISIBLE DEL TERRENO $\sigma = 3\ Kg/cm^2$
- EN EL CALCULO SE CONSIDERA LA NO EXISTENCIA DE EMPUJES HIDROSTATICOS

CONTROL DE CALIDAD

MATERIALES	ELEMENTOS	HORMIGON			ACERO			
		CALIDAD	CONTROL	COEF.MIN.	RECUBR.	CALIDAD	CONTROL	COEF.MIN.
	MURO PREF.	HA-35	INTENSO	1.5	2 cm.	B 500 S	INTENSO	1.15
	NIVELACION	HM-15	NORMAL	1.5	–	–	NORMAL	–
	CIMENTACION	HA-25	NORMAL	1.5	3 cm.	B 500 S	NORMAL	1.15

EJECUCION	CONTROL	DAÑOS PREVISIBLES	COEF. MAYORACION
	INTENSO	MEDIOS	1.5

NOTA:

– A EFECTOS DE MEDICION, LA ALTURA DE PANEL A CONSIDERAR SERA LA DE LA PANTALLA MAS LA ALTURA DE LA PATA.

– LOS PANELES 4, 5, 6, 7, 8, 9, 10, 11, 21, 22, 23, 24, 25, 26, 27, Y 28, LLEVARAN ARMADURA DE PANEL TIPO CE.

SECCION TIPO ZONA CARGADERO
S/E

ED.	FECHA	OBSERVACIONES
C	03-11-99	ACORTAR ALETAS
B	21-10-98	PLANO DE FABRICACION

P.S.R. Prefabricados y Suelos Reforzados, S.A.
c/ ORENSE, 10 1º
28020 MADRID
TEF. (91)555.62.66
FAX. (91)556.59.63

TITULO DE PROYECTO:
LINEA ALTA VELOCIDAD. MADRID–BARCELONA F. FRANCESA
TRAMO: MADRID–ZARAGOZA. SUBTRAMO 1

TITULO DEL PLANO:
PASO INFERIOR 107.9
PLANTA Y ALZADOS

Nº DE PLANO
0708M–S/99–06.1C

HOJA 1 DE 1

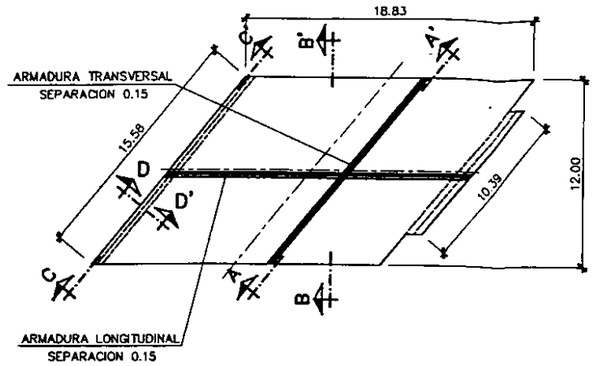
CLIENTE:
UTE CORSAN–CORVIAM

FECHA:
03–11–1999

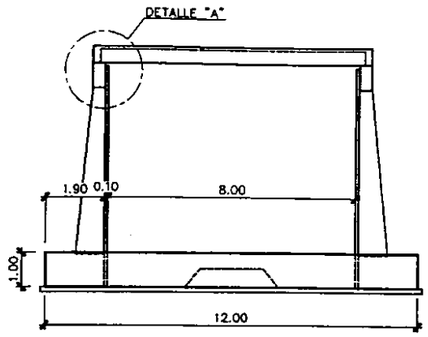
ESCALA:
INDICADAS

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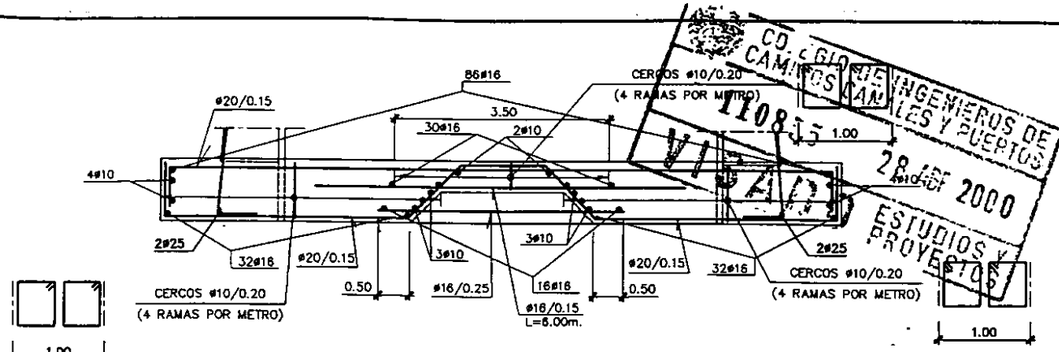
COLEGIO DE INGENIEROS DE CAMINOS CANALES Y PUERTOS
110855
28 ABR 2000
VISADO ESTUDIOS Y PROYECTOS



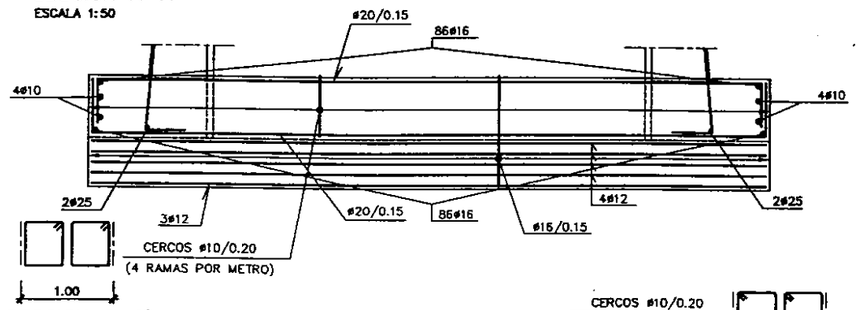
PLANTA ESQUEMATICA DE ZAPATA
ESCALA 1:200



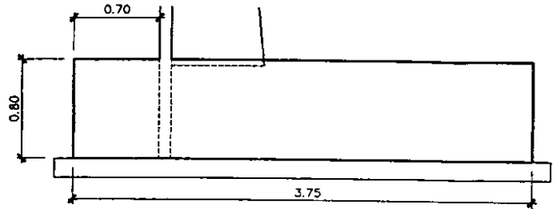
SECCION B–B'
ESCALA 1:100



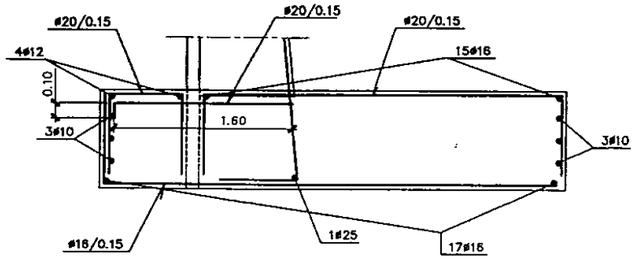
SECCION A–A'
ESCALA 1:50



SECCION C–C'
ESCALA 1:50



ZAPATA TIPO 2
ESCALA 1:25



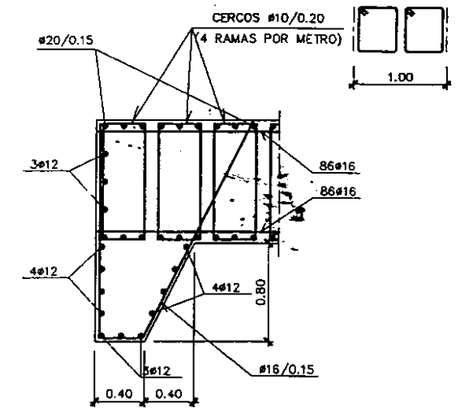
ZAPATA TIPO 2
ESCALA 1:25

18 ABR 2000

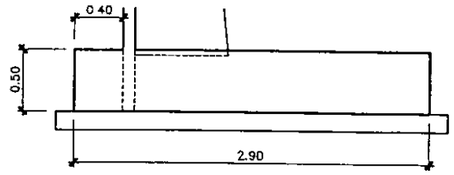
ALVARO HUELAS RODRIGUEZ
COLEGIADO Nº 10.936

FASES DE EJECUCION:

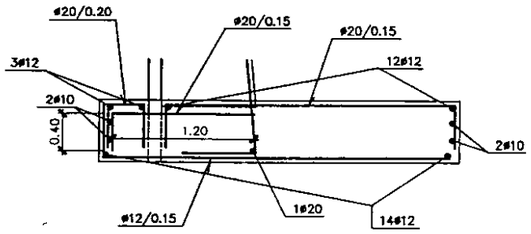
1.– COLOCACION DE ESTRIBOS PREFABRICADOS.
2.– EJECUCION DE ZAPATA CORRIDA.
3.– RELLENO DEL TRASDOS DE LOS ESTRIBOS HASTA COTA INFERIOR DE LA 1ª FASE DEL CARGADERO.
4.– EJECUCION DE LA 1ª FASE DEL CARGADERO.
5.– RELLENO DEL TRASDOS DE LOS ESTRIBOS HASTA COTA INFERIOR DE LA 2ª FASE DEL CARGADERO.
6.– COLOCACION DE LAS VIGAS PREFABRICADAS EN EL CARGADERO (1ª FASE).
7.– HORMIGONADO DE LA LOSA SUPERIOR DEL TABLERO Y DE LA 2ª FASE DEL CARGADERO.
8.– TERRAPLENADO DEL RESTO DEL RELLENO SOBRE EL MARCO.



SECCION D–D'
ESCALA 1:25



ZAPATA TIPO 3
ESCALA 1:25



ZAPATA TIPO 3
ESCALA 1:25

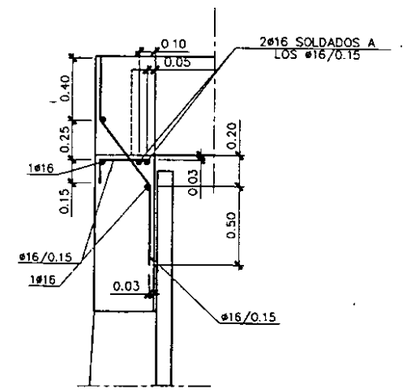
HIPOTESIS DE CALCULO CONSIDERADAS:

- DENSIDAD DE LAS TIERRAS $\delta = 2\ T/m^3$
- ANGULO DE ROZAMIENTO DE RELLENO $\varphi = 33°$
- TENSION ADMISIBLE DEL TERRENO $\sigma = 3\ Kg/cm^2$
- EN EL CALCULO SE CONSIDERA LA NO EXISTENCIA DE EMPUJES HIDROSTATICOS

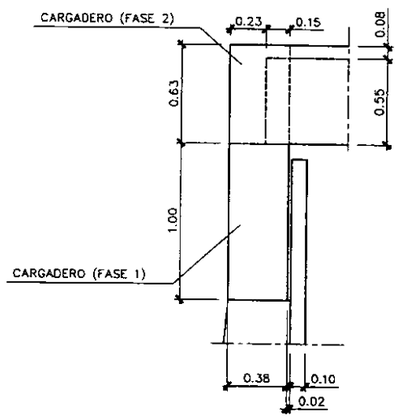
CONTROL DE CALIDAD

	ELEMENTOS	HORMIGON			ACERO			
		CALIDAD	CONTROL	COEF.MIN.	RECUBR.	CALIDAD	CONTROL	COEF.MIN.
MATERIALES	MURO PREF.	HA–35	INTENSO	1.5	2 cm.	B 500 S	INTENSO	1.15
	NIVELACION	HM–15	NORMAL	1.5	–	–	NORMAL	–
	CIMENTACION	HA–25	NORMAL	1.5	3 cm.	B 500 S	NORMAL	1.15
	CARGADERO	HA–25	NORMAL	1.5	3 cm.	B 500 S	NORMAL	1.15

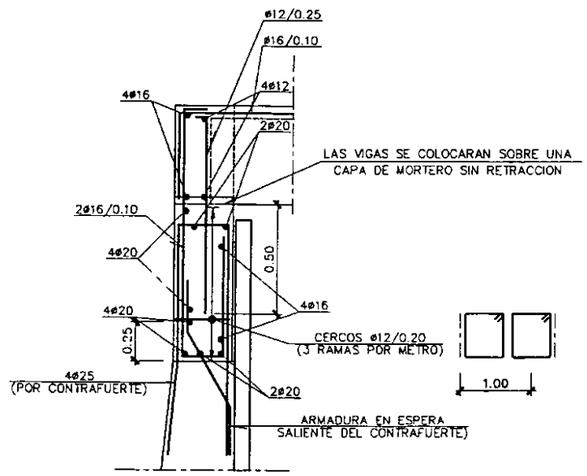
EJECUCION	CONTROL	DAÑOS PREVISIBLES	COEF. MAYORACION
	INTENSO	MEDIOS	1.5



DETALLE DE REFUERZO BAJO APOYO DE VIGA
ESCALA 1:20



DETALLE DE CARGADERO
ESCALA 1:20



DETALLE DE CARGADERO. ARMADURAS
ESCALA 1:20

Nº	FECHA	OBSERVACIONES
E	17-2-00	CAMBIO ZAPATA ESTRIBO
D	21-12-99	CAMBIO DEFINICION DE ARMADURAS
C	3-11-99	CAMBIO DEFINICION DE ZAPATAS
B	23-10-99	PLANO DE FABRICACION

COLEGIO DE INGENIEROS DE CAMINOS, CANALES Y PUERTOS
T1081
28 ABR 2000
ESTUDIOS Y PROYECTOS

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TITULO DE PROYECTO:
LINEA ALTA VELOCIDAD. MADRID–BARCELONA-F. FRANCESA
TRAMO: MADRID–ZARAGOZA. SUBTRAMO 1

TITULO DEL PLANO:
PASO INFERIOR 107.9
CIMENTACION

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HOJA 1 DE 1
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CLIENTE:
UTE CORSAN–CORVIAM

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3. ESTRUCTURA E-20 (M-45)

ESTRUCTURA E-20

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CÁLCULO DEL VANO TIPO

CÁLCULO DE ESFUERZOS

1. PLANTEAMIENTO DE CÁLCULO
2. DESCRIPCIÓN DEL MODELO DE ELEMENTOS FINITOS
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    - 2.2. MODELO ESTRUCTURAL
    - 2.3 CARACTERÍSTICAS DE LOS MATERIALES
3. HIPÓTESIS DE CARGA
4. RESULTADOS DEL ANÁLISIS

DIMENSIONAMIENTO Y COMPROBACIÓN

ARMADURA TRANSVERSAL DE LOSA DEL TABLERO

1.- INTRODUCCIÓN

El objeto del presente Informe es el cálculo de la subestructura correspondiente a la Ampliación de la Estructura E-20 Viaducto sobre el río Manzanares, actualmente en construcción, de la Nueva Carretera M-45 en el tramo eje O´Donnell – N-IV.

La actual Estructura se encuentra formada por dos viaductos paralelos, uno para cada sentido de circulación, con 15 vanos isostáticos de longitudes totales 26+41+40+11x41+30 m. El presente Proyecto consta de la ampliación del vano lateral, pasando de 26.00 a 39,08 m. así como de dos vanos más de longitudes totales 38,08 y 40,25 m manteniendo la misma disposición anterior esto es, dos calzadas separadas una para cada sentido de circulación.

La sección transversal del tablero se mantiene, estando formada por dos Vigas Artesas prefabricadas de 2.40 m. de canto separadas 9 m. entre ejes, y una losa superior de un espesor medio de 0.325 m. y 18.1 m. de anchura.

La plataforma superior está formada por 4 carriles de 3.50 m. dos arcenes de 1.0 m. de anchura, y dos zonas laterales donde se colocan las barreras, una de 0,50 m. y otra de 1,60 m. con una acera lateral.

Cada una de las pilas de la estructura está compuesta por dos fustes de sección circular de 1.70 m. de diámetro. Dichos fustes están separados 9 m. entre ejes. La cabeza de los fustes termina en un ensanche del capitel que permita la colocación de los aparatos de apoyo del tipo Neopreno-Zunchado sobre los que se sustentará el tablero.

La cimentación de las pilas se realizará mediante la ejecución de dos zapatas.

2.- MATERIALES Y COEFICIENTES DE SEGURIDAD.

Los materiales en los fustes de las Pilas, Encepados, Riostra y Cargaderos de Estribos siguiendo la nomenclatura de la EH-91 son:

CARACTERÍSTICAS DE MATERIALES/COEFICIENTES DE SEGURIDAD SEGÚN EH-91.			
MATERIALES	**CALIDAD**	**NIVEL DE CONTROL**	**COEF. SEGURIDAD**
Hormigón limpieza	H-125	----	$\gamma_c = 1.5$
Hormigón en pilas	H-250	Normal	$\gamma_c = 1.5$
Hormigón en zapatas	H-250	Normal	$\gamma_c = 1.5$
Acero pasivo	AEH-500	Normal	$\gamma_c = 1.5$

Adicionalmente los hormigones de las cimentaciones que se encuentren en contacto con terrenos yesíferos, deberán ser resistentes a los sulfatos.

Recubrimientos geométricos:

- Pilas: 3.5 cm
- Zapatas: 3.5 cm

Coeficientes de mayoración de acciones, según IAP-98.

- Acciones permanentes: γ_f=1.35.

Peso Propio
Cargas Muertas
Acciones Reológicas

- Acciones Variables. γ_f=1.5.

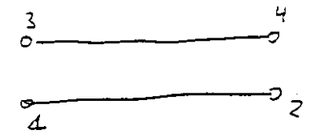
Sobrecargas de uso
Acciones climáticas

3.- ACCIONES A CONSIDERAR.

3.1.- ACCIONES VERTICALES.

Reacciones Verticales . Obtenidas del cálculo de ALVISA

Vano de 41 m



	En Tn			S.C. unif.		
Apoyo	Peso Viga	Peso losa	C M	Sc Vmín	Sc Mmáx	Sc Vmáx
1	66'93	149'54	65'34	72'9	72'9	-9'113
2	66'93	149'54	65'34	72'9	72'9	-9'113
3	66'93	149'54	48'49	72'9	0	45'563
4	66'93	149'54	48'49	72'9	0	45'563

Valores Pando

Apoyo	VP Vmáx, Mmáx	VP Vmín
1	115'28	-10'321
2	15'383	-7'012
3	-5'157	-65'38
4	-5'509	+11'949

Vmáx regina = 469'69 T

Vmín reginas = 245'57 T

Reacciones Verticales

Vano de 38'03 m.

Apoyo	Peso Viga	Peso losa	C M	Sc Vmín	Sc Mmáx	Sc Vmáx
1	62'3	139'2	60'9	67'9	57'9	-8'5
2	62'3	139'2	60'8	67'9	57'9	-8'5
3	62'3	139'2	45'2	67'9	0	42'42
4	62'3	139'2	45'2	67'9	0	42'42

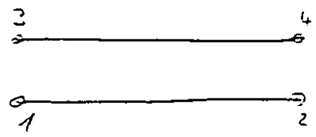
Valores Pando (Mantenemos los valores del vano de 41 m del lado de izq. de 2)

Apoyo	VP Vmáx, Mmáx	VP Vmín
1	115'28	-10'321
2	15'383	-7'012
3	-5'157	65'38
4	-5'509	+11'949

Vmáx = 445'48 T

Vmín = 227'87 T

Reacciones Verticales V= 30 T.



Apoyo	Pm Vi=	Pm Vmax	Carga Muerta	Sc Vmax	Sc Vmin	Sc Vmin
1	50'3	117'5	49'36	55'26	5 5'26	—
2	50'3	117'5	49'36	"	55'26	—
3	50'3	117'5	36'94	"	0	—
4	50'3	117'5	36'94	55'26	0	—

Apoyo	VP Vmax	VP Vmin
1	117'77	-10'27
2	10'239	-7'08
3	-3'8	57'25
4	-4'72	10'38

Vmax = 395'19 T

Vmin = 189'47 T

A303 54

3.2.- ACCIONES HORIZONTALES.

ACCIONES

Las acciones a distribuir entre pilas son:

1) Fuerza longitudinal. $158 + 123 + 123 + 123 + 153$

Tramo 1 ⇒ $\frac{1}{20}(0'4 \times 18 \times 158 + 2 \times 60) = 62'88\,T < 60 \cdot b = 1080\,NK \Rightarrow 72\,T$

Se usarán 62'88 T en el tramo 1 ⇒ 0'398 T/ml

Tramo 2, 3 y 4 ⇒ $\frac{1}{20}(\ldots) = 50\,T \Rightarrow$ 0'406 T/ml

Tramo 5 ⇒ $\frac{1}{20}(15 \cdot 0'4 \cdot 18 + 2 \times 60) = 61'08\,T \Rightarrow$ 0'399 T/ml

2) Fuerza centrífuga. Transmitida al tablero.

$F_c = K \cdot M \cdot \frac{V_t^2}{R}$ con $K = \frac{731}{Ve' + 731}$ con $Ve = 110\,km/h$

$V_t = \frac{120}{3'6} = \ldots\,m/seg$ y $R = 2800\,m$

$K = 0'172$

$M = \left(0'4 \times 18 + \frac{120}{41}\right) \times 1000 = 10126'83\,Kgr/m$

$F_c = 0'172 \cdot 10126'83 \cdot \left(\frac{\ldots^2}{2800}\,Nw\right) \ldots$ 0'07 T/m actuando en todo el distal.

Se supondrá que actúa en todo el tablero aunque haya una zona con doloide, y el radio asumido. Todo siempre del lado de la curvidad.

Cuando actúe la l.c. se aplicará ada sobrecarga de $V_t = 3'72$ (según IAP-98)

Acciones por deformaciones impuestas.

- Efectos térmicos.

Según la IAP ⇒

$$\Delta T = K \cdot z^a \cdot h^b \cdot S^c$$

Donde es la zona de estudio ⇒ Zona V. ⇒ T = 5

y con tablero tipo viguetas prefabricadas

$K = 26'9$

$a = 0'3$

$b = -0'087$

$c = 0'057$

$h_{min} = 1\,m$; $h_{max} = 7'5\,(m)$

S ⇒ Superficie del eje de vigas $S = 9 \Rightarrow T = \ldots \Rightarrow$

En nuestro caso $h = 2'7\,m$ ⇒ Como $h < h_{max}$ ⇒

$h = 2'5\,m$

$\Delta T = 26'9 \cdot 5^{0'3} \cdot 2'5^{-0'087} \cdot 3'5^{0'057} = 43'19\,^\circ C$

Con $\alpha = 1 \cdot 10^{-5} \cdot C^{-1}$ ⇒

Este valor de ΔT es la variación anual de temperatura ⇒ O sea la diferencia entre los valores medios mínimos y máximos anuales.

Como en valor es el caso mínimo, se supone que se construye la estructura en una temperatura media.

Luego para el cálculo se tomará una deformación impuesta por temperatura de valor →

$$\varepsilon = \alpha \cdot \Delta_2^T = 1\cdot10^{-5} \cdot \frac{43'19}{2} = \underline{\underline{21'6\cdot10^{-5}\ m/m}}$$

4) Efecto de Fluencia y Retracción del tablero

Al tratarse de elemento prefabricado →

En ambiente medio →

Ecbra →

$$e = \alpha \cdot \frac{2\cdot A}{u}$$

Con $e \simeq 0'2$ m → $\varepsilon_{02} = 0'25$

$\varepsilon_{01} = 32\cdot10^{-5}$; $\beta_c = 1$

$\varepsilon_{ret} = \underline{\underline{2\cdot10^{-3}}}$

Si: $\varphi_{tablero} = 2'0$ →

$$\varepsilon_{ret\cdot fl} = \varepsilon_{ret} + \varphi \cdot \frac{\sigma_c}{E_c}$$

Si: admitimos que tenemos tensiones bajo carga permanente del orden de $\sigma_c = 45\ kp/cm^2$ y $E_c = 2'2\cdot10^6\ T/m^2$

Con $\varepsilon_{fl} = \varphi \frac{\sigma_c}{E_c} = 2'3\cdot10^{-4}$

$\varepsilon_{ret\cdot fl} \simeq 50\cdot10^{-5}$ → Usando $\varepsilon = \underline{\underline{50\cdot10^{-5}}}$ m/m como deformación impuesta por retracción + fluencia.

Acciones viento.

- Viento transversal al tablero.

Se calcula según la IAP según se detalla a continuación

- Viento con sobrecarga (Reducido 50%)

q_T tablero = $\underline{\underline{0'72\ T/m}}$ a tablero

En fuste q_T fuste = $Cd \cdot A \cdot \left(\frac{1}{2}\rho \cdot Vc'\right)^2$ Sección $\square$ I_T $Cd = 2'1$

q_T fuste = $2'1 \cdot 0'2 \left(\frac{1}{2}\cdot1'2\cdot\frac{43'1^2}{9'11}\cdot10^{-3}\right) \simeq \underline{\underline{0'55\ T/m}}$

- Viento transversal sin sobrecarga

q_T tablero = $\underline{\underline{0'55\ T/m}}$

q_T fuste = $\underline{\underline{0'55\ T/m}}$

- Viento longitudinal (= 25% del transversal)

- Viento longitudinal con sobrecarga

q_L tablero = $\underline{\underline{0'18\ T/m}}$

q_L fuste = $\underline{\underline{0'1375}}$ = 25% q_T

- Viento longitudinal sin sobrecarga

q_L tablero = $\underline{\underline{0'1375\ T/m}}$

q_L fuste = $\boxed{\underline{\underline{0'1375\ T/m}}}$

ACCION DEL VIENTO EN TABLEROS

Velocidad de cálculo: $Vc=Ct \times Cr \times Cz \times Cg \times Vref$

Vref (según mapa de isotacas): 24,0 m/sg
Ct: factor de topografía: 1,0
1 en casos normales
1.1 si es un valle encauzado
Cr: factor de riesgo: 1,0
Periodo de retorno: 100 años
Cz: factor de altura: 1,2
Altura del tablero sobre el suelo: 14,0 m.
Tipo de entorno: I

Tipo de entorno	Kz	Zo	Zmin
I	0,17	0,01	2,00
II	0,19	0,05	4,00
III	0,22	0,30	8,00
IV	0,24	1,00	16,00

Tipo I: orilla del mar o lago, o zona rural plana sin obstáculos
Tipo II: Zona rural con algunos obstáculos aislados
Tipo III: Zona suburbana, forestal o industrial.
Tipo IV: Zona urbana con 15% superficie edificada y altura media de edificios mayor que 15.00 m.
Cg: factor de ráfaga: 1,4

Velocidad de cálculo: 43,1 m/sg

Empuje del viento:

$F=Cd \times A \times (1/2 \times rho \times Vc^2)$

Datos del tablero:
Canto del tablero: 2,70 m.
Altura de la barrera: 1,00 m.
Ancho total de tablero: 18,40 m.
Zonas de canto de tablero:

Zona	Canto	Angulo
1	1,2	0,0
2	0,1	88,1
3	2,4	0,0
4	0,0	0,0

Tablero:

Caso I: sin sobrecarga
Cd: coeficiente de arrastre: 1,29
A: Area neta total del elemento expuesta al viento 3,70 m²/m.
rho: masa especifica del aire: 1,25 kg/m³

F= **0,55 T/m.**

Caso II: con sobrecarga
Cd: coeficiente de arrastre: 1,32
A: Area neta total del elemento expuesta al viento 4,70 m²/m.
rho: masa especifica del aire: 1,25 kg/m³

F= **0,36 T/m.** $\times 2 = 0'72$ T/_

50% Concomitante con sobrecarga

4.1.- MODELOS DE REPARTO DE ACCIONES HORIZONTALES

En el presente apartado se desarrollan los modelos de reparto de acciones horizontales, para proceder al cálculo de pilas y estribos.

La estructura se modeliza mediante la discretización del tablero como una barra continua con sus constantes estáticas reales, mientras que las pilas y estribos se discretizan asimilándolos a unas barras equivalentes, tal que su rigidez longitudinal y transversal, del conjunto pila o estribo y apoyo, sea idéntica a la real.

Para la obtención de la rigidez de las pilas pilotadas se ha reproducido con exactitud cada una de ellas, obteniendo el desplazamiento en cabeza frente a una acción unitaria, obteniendo la rigidez del conjunto pila más cimentación.

Una vez conocida la rigidez de las pilas con su cimentación se obtiene la rigidez de los aparatos de apoyo, y la rigidez conjunta equivalente en cada caso. Las características de las barras se detallan en el conjunto del apartado.

Para el reparto de cada tipo de acción se realiza un modelo diferente. Para las acciones reológicas de fluencia y retracción el modelo de cálculo se realizará considerando el módulo de elasticidad del hormigón a tiempo infinito, y el módulo de deformación transversal del material elastomérico a tiempo infinito.

Para los efectos de la temperatura se considera que es una acción lenta para los neoprenos pero rápida para el hormigón, por lo que el módulo de elasticidad del hormigón será el instantáneo, mientras que si se considera el módulo de deformación transversal del material elastomérico a tiempo infinito.

Para el modelo de reparto de acciones instantáneas como el frenado, la fuerza centrífuga, y el viento transversal, se consideran ambos módulos instantáneos.

Del desarrollo de estos modelos de reparto de fuerzas salen las acciones longitudinales y transversales en cabeza de cada pila y estribo.

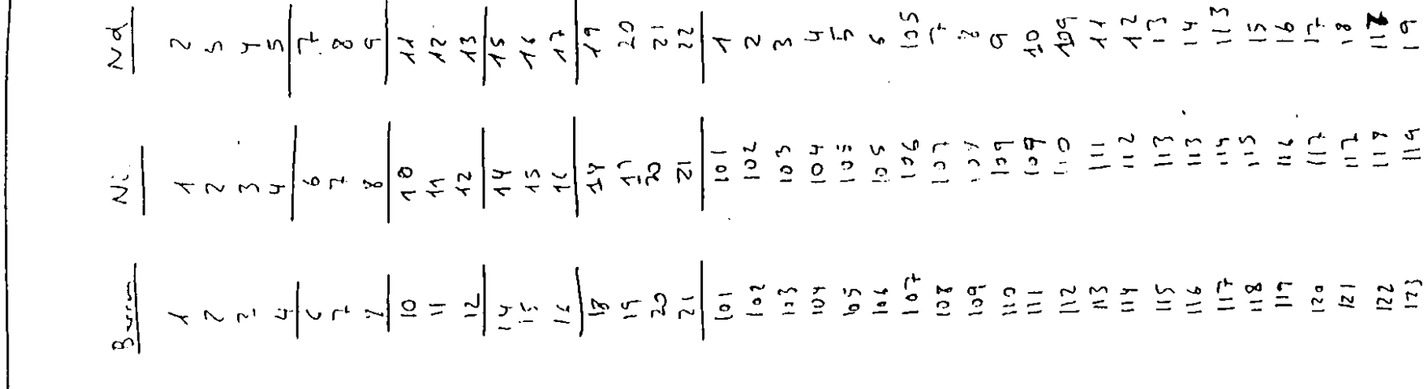
Una vez obtenidas las acciones en cabeza de pila se procede al cálculo de las mismas realizando las combinaciones de esfuerzos pésimos mayorándolos según marca la IAP-98.

Se obtienen los esfuerzos de primer y segundo orden en base de pilas con los coeficientes de pandeo previamente obtenidos de los modelos de reparto de acciones horizontales.

Una vez obtenidos los esfuerzos de cálculo se arma a flexo-compresión esviada las pilas y se comprueba el comportamiento frente a esfuerzos transversales armando a cortante.

Con las acciones de segundo orden en la base de las pilas se procede a calcular las cimentaciones. En el caso de las pilas pilotas se ha añadido una excentricidad de las acciones de 0.15 m., de acuerdo con el informe geotécnico realizado por la empresa EPSA., reproduciendo un cierto descentramiento de los pilotes respecto de las pilas.

Nudo	X	Y	Apoyo	Barra	Nudo	Nudo
1	0	0		1	1	2
2	41			2	2	3
3	79			3	3	4
4	118			4	4	5
5	159			5	6	7
6	197			6	7	8
7	199			7	8	9
8	240			10	10	11
9	281			11	11	12
10	281			12	12	13
11	322			13	14	15
12	363			14	15	16
13	404			15	16	17
14	404			16	17	18
15	445			17	18	19
16	486			18	19	20
17	527			19	20	21
18	527			20	21	22
19	568			21	22	1
20	609			101	101	2
21	650			102	102	3
22	650	0		103	103	4
101	0	-1	X	104	104	5
102	41	-1	X	105	105	6
103	79	-1	X	106	106	135
104	118	-1	X	107	107	7
105	159	-1		108	108	8
106	159	-2	X	109	109	9
107	197	-1	X	110	110	10
108	240	-1	X	111	111	136
109	281	-2	X	112	112	11
110	281	-2	X	113	113	12
111	322	-1	X	114	114	13
112	363	-1	X	115	115	14
113	404	-1		116	116	113
114	404	-2	X	117	117	15
115	445	-1	X	118	118	16
116	486	-1	X	119	119	17
117	527	-1	X	120	120	18
118	527	-2	X	121	121	19
119	568	-2	X	122	122	20
120	609	-1	X	123	123	21
121	609	-1	X	124	124	22
122	650	-1	X	125	125	1
				126	126	2

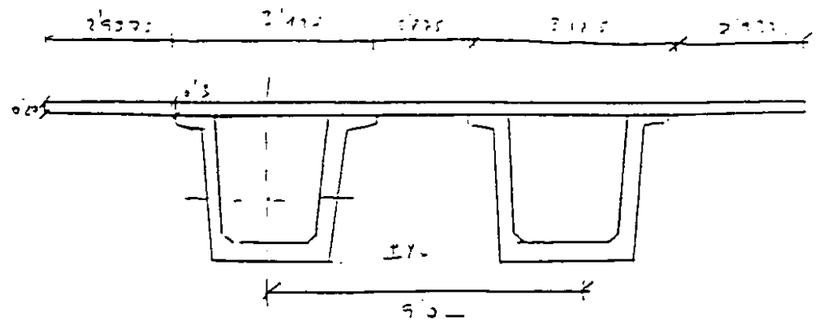


Los pilares sin junta se calculan en cabeza de la barra equivalente

Los pilares con juntas se calculan en el nudo de unión de barra equivalente del neopreno a barra equivalente del pilar.

SECCIONES TRANSVERSALES

Sección tablero



Caja → Area = 1'3769 m^2

I_{xG} = 0'9478 m^4
I_{yG} = 0'968266 m^4 ; Y_G = 0'75097 m

Losa → Homogeneizando a H-400 →

Losa H-250 → E_c = 300416'3 T/m^2
Caja H-400 → E_c = 350.000 T/m^2 → $n = \frac{E_{c,H-400}}{E_{c,H-250}}$ = 1'2649

Homogeneizando →

losa equivalente de 18/n = 14'2 m

$I_{yG} = \frac{1}{12}\, 0'2\, 14'2^3$ = 72'036 m^4

$I_{xG} = \frac{1}{12} \cdot 14'2\, 0'2^3$ = 0'09201 m^4

Area = 4'269 m^2

Sección total homogeneizada →

Area total = 2 × 1'3769 + 4'269 = 6'9228 m^2

$Y_{GT} = \frac{0'752 \cdot 2 \cdot 1'69 + 4'269 \cdot (1'69 + 0'1)}{6'9228}$ = 1'8603 m

$I_{y,TOTAL}$ = 72'036 m^4 + 2(0'96826 + 1'3769 · 4'5²) = 127'22 m^4

Abad SA

4.1.1- Cálculo de rigideces de pilas.

B-cm

102, 103, 104, 108, 109, 113, 114, 118, 119, 123, 124, 125 → Pilares sin junta

Longitudinalmente



——— con P total = Σ reacc. de pilares

$K_{pilar} = \frac{P}{\delta}$

$N_{equiv} \rightarrow \delta = \frac{P \cdot e}{G \cdot A} \rightarrow K_{muelle} = \frac{P}{\delta} = \frac{G \cdot A}{e_{tot}}$ muelle

$K_{transv} = \frac{1}{\frac{1}{K_{muelle}} + \frac{1}{K_{pilar}}}$

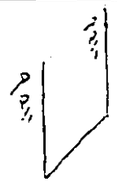
Barra equivalente: 

$L_{equiv} = L_{tot}$ $E_{equiv} = 1\ T/m^2$

$K_{equiv} = \frac{3 E_{equiv} I_{equiv}}{L_{equiv}^3}$; $L = 1$; $E = 1$ →

$\boxed{I_{equiv} = K_{transv}/3}$ → $K = T/m$ y $I_{equiv} = m^4$

Transversalmente



$K_{pilar} = \frac{P}{\delta}$

$K_{muelle} = \frac{P}{\delta} = \frac{G \cdot A}{e_{tot}}$ muelle

$K_{transv} = \frac{1}{\frac{1}{K_{muelle}} + \frac{1}{K_{pilar}}}$

Equivale a 

$\delta = \frac{P \cdot L_{equiv}}{E_{equiv} \cdot A_{equiv}}$ Si $L_{equiv} = 1$ m y $E_{equiv} = 1\ T/m^2$

Mod S4

Para Pilares P-1 y P-2 al ser con cimentación directa se suponen empotrados en la base → luego $K_L = \frac{3 E I_L}{L^3}$; $K_T = \frac{3 E I_T}{L^3}$ en la pila

Mod S4

RIGIDEZ DE PILAS Y NEOPRENOS. RIGIDEZ EQUIVALENTE.

Eo(T/m2):	3000000
Einf(T/m2):	1000000

				Neoprenos														
				Go(t/m2):		200												
				Ginf(t/m2):		100	Knsup(T/m)		Kpila(T/m)				Ktotal(T/m)					
	H (m)	I I (m4)	I (m4)	N°	a (m)	b (m)	t (m)	Ko	Kinf	Ko,lon	Kinf,lon	Ko,tra	Kinf,tr	Ko, l	Kinf,l	K Temp,l	Ko, tr	Kinf,tr	K Temp,tr
P-1	12,29	0,82	0,82	4	0,5	0,65	0,065	4000,0	2000,0	3975,4	1325,1	3975,4	1325,1	1993,8	797,0	1330,6	1993,8	797,0	1330,6
P-2	14,39	0,82	0,82	4	0,5	0,65	0,05	5200,0	2600,0	2476,6	825,5	2476,6	825,5	1677,6	626,6	1268,4	1677,6	626,6	1268,4

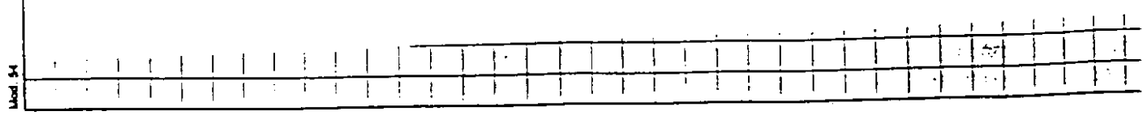
RIGIDEZ DE PILAS Y NEOPRENOS. RIGIDEZ EQUIVALENTE.

	Acelones Rápidas		Fluencia+Retracc		Efectos Térmicos	
	A equiv	I equiv	A equiv	I equiv	A equiv	I equiv
	(m2)	(m4)	(m2)	(m4)	(m2)	(m4)
P-1	1993,8	664,6	797,0	265,7	1330,6	443,5
P-2	1677,6	559,2	626,6	208,9	1268,4	422,8

Predimensionamiento de Neoprenos

P-1 4 x 500 x 650 x 90 (65)

P-2 " x 20 (50)



4.1.2.- Acciones debidas a Fluencia y Retracción.

Nomb. arch.: ft+r.DIM	Fecha 2-03-1999 16:22	RC6OT V6 v. 4.1

RO6OT

PORtico PLAno

NUMeración DIScontinua

NUDos 40 ELEmentos 39

UNIdades
 Longitud=m FUErzas=T

NUDos

N°	X	Y
1	0	0
2	41	0
3	79	0
4	118	0
5	159	0
6	159	0
7	199	0
8	240	0
9	281	0
10	281	0
11	322	0
12	363	0
13	404	0
14	404	0
15	445	0
16	486	0
17	527	0
18	527	0
19	568	0
20	609	0
21	650	0
22	680	0
101	0	-1
102	41	-1
103	79	-1
104	118	-1
105	159	-1
106	159	-2
107	199	-1
108	240	-1
109	281	-1
110	281	-2
111	322	-1
112	363	-1
113	404	-1
114	404	-2
115	445	-1
116	486	-1
117	527	-1
118	527	-2
119	568	-1
120	609	-1
121	650	-1
122	680	-1

ELEmentos

N°	OR	FI
1	1	2
2	2	3
3	3	4
4	4	5
6	6	7
7	7	8
8	8	9
10	10	11
11	11	12
12	12	13
14	14	15
15	15	16
16	16	17
18	18	19
19	19	20
20	20	21
21	21	22
101	101	1
102	102	2
103	103	3
104	104	4
105	105	5
106	106	105
107	105	6
108	107	7
109	108	8
110	109	9
111	110	109
112	109	10
113	111	11
114	112	12
115	113	13
116	114	113
117	113	14
118	115	15
119	116	16
120	117	17
121	118	117
122	117	18
123	119	19
124	120	20
125	121	21
126	122	22

CARActerísticas
 "N-400"
  RO=2.50136
  1A4 6A8 10A12 14A16 18A21 SX=6.9228 IZ=127.72
 CHICLE
  101 SX=650 IZ=216.7
  102 SX=797.0 IZ=265.7
  103 SX=626.6 IZ=208.9
  104 SX=592.4 IZ=145.5
  105 SX=650 IZ=216.7
  106 SX=772.3 IZ=126.3
  107 SX=684.2 IZ=228.1
  108 SX=468.2 IZ=91.1
  109 SX=483.9 IZ=100.7
  110 SX=684.2 IZ=228.1
  111 SX=809.6 IZ=139.9
  112 SX=684.2 IZ=228.1
  113 SX=525.7 IZ=97.8
  114 SX=610.6 IZ=118.7
  115 SX=684.2 IZ=228.1
  116 SX=890.4 IZ=150.0
  117 SX=684.2 IZ=228.1
  118 SX=705.52 IZ=134.2
  119 SX=731.2 IZ=138.9
  120 SX=684.2 IZ=228.1
  121 SX=970.7 IZ=160.2
  122 SX=650.0 IZ=216.7
  123 SX=711.6 IZ=126.7
  124 SX=659.0 IZ=141.8
  125 SX=862.3 IZ=150.9
  126 SX=650 IZ=216.7

```
APOyos
' Etiqueta          - móvil
' Ninguna etiqueta - fijo

 101 102 103 104 106 107 108 110 111 112 114 115 116 118 119 120 121 122

RELajaciones
' Etiqueta          - móvil
' Ninguna etiqueta - fijo

ELE 101 102 103 104 106 108 109 111 113 114 116 118 119 121 123 124 125 126 FIn RZ
ELE 105 107 110 112 115 117 120 122 ORigen RZ

CARGamento

CASo # 1 Fluencia+Retraccion
  ELEmentos
   1A4 6A8 10A12 14A16 18A21 DILatación=0.00050 RElativo

FIN
```

Desplazamiento de nudos

Resultados individuales

Caso 1
1

Nudo todo
1A122

Caso	Nudo	UX (m)	UY (m)	RZ (Deg)
Nombre del c.		FLUENCIA+RETRACCION		
1	1	-0.0364	0.0002	-0.0001137
1	2	-0.0160	0.0001	-0.0001254
1	3	0.0030	0.0000	-0.0001636
1	4	0.0224	-0.0001	-0.0002376
1	5	0.0629	-0.0003	-0.0003456
1	6	-0.0287	-0.0002	0.0002369
1	7	-0.0087	0.0000	0.0001289
1	8	0.0117	0.0000	0.0000203
1	9	0.0323	0.0000	-0.0000858
1	10	-0.0311	0.0000	0.0001555
1	11	-0.0106	0.0000	0.0000531
1	12	0.0098	0.0000	-0.0000469
1	13	-0.0303	0.0000	-0.0001480
1	14	-0.0321	0.0000	0.0001005
1	15	-0.0117	0.0000	-0.0000038
1	16	0.0088	0.0000	-0.0001101
1	17	-0.0293	-0.0001	-0.0002187
1	18	-0.0410	-0.0003	0.0003270
1	19	-0.0206	-0.0001	0.0002213
1	20	-0.0001	0.0000	0.0001476
1	21	0.0203	0.0001	0.0001133
1	22	-0.0353	0.0002	0.0001078
1	101	0.0	0.0	0.0
1	102	0.0	0.0	0.0
1	103	0.0	0.0	0.0
1	104	0.0	0.0	0.0
1	105	0.0048	-0.0002	0.0
1	106	0.0	0.0	0.0
1	107	0.0	0.0	0.0
1	108	0.0	0.0	0.0
1	109	0.0004	0.0000	0.0
1	110	0.0	0.0	0.0
1	111	0.0	0.0	0.0
1	112	0.0	0.0	0.0
1	113	-0.0007	0.0000	0.0
1	114	0.0	0.0	0.0
1	115	0.0	0.0	0.0
1	116	0.0	0.0	0.0
1	117	-0.0037	-0.0001	0.0
1	118	0.0	0.0	0.0
1	119	0.0	0.0	0.0
1	120	0.0	0.0	0.0
1	121	0.0	0.0	0.0
1	122	0.0	0.0	0.0

Especificación de reacciones

Resultados individuales

Caso 1
1
Nudo 101A104 106A108 110A112 114A116 118A122
1A122

Caso	Nudo	FX (T)	FY (T)	MZ (Tm)
Nombre del c.		FLUENCIA+RETRACCION		
1	101	23.68	-0.12	-23.68
1	102	12.73	-0.08	-12.73
1	103	-1.87	0.00	1.87
1	104	-9.79	0.08	9.79
1	106	-1.83	0.12	1.83
1	107	2.38	0.02	-2.38
1	108	-3.55	-0.01	3.55
1	110	-0.18	0.01	0.18
1	111	3.12	-0.02	-3.12
1	112	-3.50	-0.02	3.50
1	114	0.31	0.01	-0.31
1	115	4.69	-0.02	-4.69
1	116	-3.67	0.01	3.67
1	118	1.76	0.12	-1.76
1	119	7.82	0.08	-7.82
1	120	0.05	-0.01	-0.05
1	121	-9.20	-0.09	9.20
1	122	-22.95	-0.10	22.95
Suma de val.		0.00	0.00	0.00

4.1.3.- Acciones debidas a efectos Térmicos.

Hora: 12:34:28

Nomb. arch.: term.DIM	Fecha 4-03-1999 12:11	ROBOT V6 v. 4.1

ROBOT

PORtico PLAno

NUMeración DIScontinua

NUDos 40 ELEmentos 39

UNIdades
 Longitud=m FUErzas=T

NUDos

Nº	X	Y
1	0	0
2	41	0
3	79	0
4	118	0
5	159	0
6	159	0
7	199	0
8	240	0
9	281	0
10	281	0
11	322	0
12	363	0
13	404	0
14	404	0
15	445	0
16	486	0
17	527	0
18	527	0
19	568	0
20	609	0
21	650	0
22	680	0
101	0	-1
102	41	-1
103	79	-1
104	118	-1
105	159	-1
106	159	-2
107	199	-1
108	240	-1
109	281	-1
110	281	-2
111	322	-1
112	363	-1
113	404	-1
114	404	-2
115	445	-1
116	486	-1
117	527	-1
118	527	-2
119	568	-1
120	609	-1
121	650	-1
122	680	-1

ELEmentos

Nº	CR	FI
1	1	2
2	2	3
3	3	4
4	4	5
6	6	7
7	7	8
8	8	9
10	10	11
11	11	12
12	12	13
14	14	15
15	15	16
16	16	17
18	18	19
19	19	20
20	20	21
21	21	22
101	101	1
102	102	2
103	103	3
104	104	4
105	105	5
106	106	105
107	105	6
108	107	7
109	108	8
110	109	9
111	110	109
112	109	10
113	111	11
114	112	12
115	113	13
116	114	113
117	113	14
118	115	15
119	116	16
120	117	17
121	118	117
122	117	18
123	119	19
124	120	20
125	121	21
126	122	22

CARActerísticas
 "H-400"
  RO=2.50136
  1A4 6A8 10A12 14A16 18A21 SX=6.9228 IZ=127.72
CHICLE
  101 SX=650 IZ=216.7
  102 SX=1330.6 IZ=443.5
  103 SX=1268.4 IZ=422.8
  104 SX=1116.1 IZ=303.8
  105 SX=650 IZ=216.7
  106 SX=2316.9 IZ=378.8
  107 SX=684.2 IZ=228.1
  108 SX=1032.8 IZ=225.8
  109 SX=1057.9 IZ=245.1
  110 SX=684.2 IZ=228.1
  111 SX=2428.9 IZ=419.7
  112 SX=684.2 IZ=228.1
  113 SX=1122.9 IZ=239.5
  114 SX=1246.4 IZ=279.5
  115 SX=684.2 IZ=228.1
  116 SX=2671.3 IZ=449.9
  117 SX=684.2 IZ=228.1
  118 SX=1372.0 IZ=307.4
  119 SX=1404.0 IZ=315.5
  120 SX=684.2 IZ=228.1
  121 SX=2912.0 IZ=480.5
  122 SX=650.0 IZ=216.7
  123 SX=1247.3 IZ=275.3
  124 SX=1551.7 IZ=320.5
  125 SX=1389.1 IZ=311.6

```
  126 SX=650 IZ=216.7

APOyos
' Etiqueta          - móvil
' Ninguna etiqueta - fijo

 101 102 103 104 106 107 108 110 111 112 114 115 116 118 119 120 121 122

RELajaciones
' Etiqueta          - móvil
' Ninguna etiqueta - fijo

ELE 101 102 103 104 106 108 109 111 113 114 116 118 119 121 123 124 125 126 FIn RZ
ELE 105 107 110 112 115 117 120 122 ORigen RZ

CARGamento

CASo # 1 TEMPERATURA
  ELEmentos
   1A4 6A8 10A12 14A16 18A21 DILatación=0.0002142 RELativo

FIN
```

Desplazamiento de nudos

Resultados individuales

Caso 1
1

Nudo todo
1A122

Caso	Nudo	UX (m)	UY (m)	RZ (Deg)
Nombre del c.		TEMPERATURA		
1	1	-0.0161	0.0001	-0.0000325
1	2	-0.0073	0.0000	-0.0000364
1	3	0.0008	0.0000	-0.0000509
1	4	0.0091	0.0000	-0.0000820
1	5	0.0179	-0.0001	-0.0001292
1	6	-0.0128	0.0000	0.0000793
1	7	-0.0042	0.0000	0.0000349
1	8	0.0045	0.0000	-0.0000091
1	9	-0.0133	0.0000	-0.0000528
1	10	-0.0134	0.0000	0.0000656
1	11	-0.0046	0.0000	0.0000226
1	12	0.0042	0.0000	-0.0000191
1	13	0.0129	0.0000	-0.0000614
1	14	-0.0134	0.0000	0.0000557
1	15	-0.0046	0.0000	0.0000123
1	16	0.0041	0.0000	-0.0000310
1	17	0.0129	0.0000	-0.0000759
1	18	-0.0175	-0.0001	0.0001249
1	19	-0.0088	0.0000	0.0000781
1	20	0.0000	0.0000	0.0000465
1	21	0.0087	0.0000	0.0000331
1	22	-0.0152	0.0001	0.0000313
1	101	0.0	0.0	0.0
1	102	0.0	0.0	0.0
1	103	0.0	0.0	0.0
1	104	0.0	0.0	0.0
1	105	0.0012	0.0000	0.0
1	106	0.0	0.0	0.0
1	107	0.0	0.0	0.0
1	108	0.0	0.0	0.0
1	109	0.0000	0.0000	0.0
1	110	0.0	0.0	0.0
1	111	0.0	0.0	0.0
1	112	0.0	0.0	0.0
1	113	-0.0001	0.0000	0.0
1	114	0.0	0.0	0.0
1	115	0.0	0.0	0.0
1	116	0.0	0.0	0.0
1	117	-0.0009	0.0000	0.0
1	118	0.0	0.0	0.0
1	119	0.0	0.0	0.0
1	120	0.0	0.0	0.0
1	121	0.0	0.0	0.0
1	122	0.0	0.0	0.0

Especificación de reacciones

Resultados individuales

Caso 1
1

Nudo 101A104 106A108 110A112 114A116 118A122
1A122

Caso	Nudo	FX (T)	FY (T)	MZ (Tm)
Nombre del c.		TEMPERATURA		
1	101	10.46	-0.04	-10.46
1	102	9.73	-0.05	-9.73
1	103	-1.01	-0.01	1.01
1	104	-8.31	0.04	8.31
1	106	-1.32	0.06	1.32
1	107	2.88	0.00	-2.88
1	108	-3.32	-0.01	3.32
1	110	0.02	0.02	-0.02
1	111	3.30	-0.01	-3.30
1	112	-3.50	-0.01	3.50
1	114	0.16	0.02	-0.16
1	115	4.27	-0.01	-4.27
1	116	-3.91	0.00	3.91
1	118	1.33	0.06	-1.33
1	119	7.24	0.04	-7.24
1	120	0.01	-0.01	-0.01
1	121	-8.18	-0.05	8.18
1	122	-9.86	-0.03	9.86
Suma de val.		0.00	0.00	0.00

4.1.4.- Acciones instantáneas.

Nomb. arch.: inst.DIM	Fecha 2-03-1999 17:38	ROBOT V6 v. 4.1

ROBOT

PORtico PLAno

NUMeración DIScontinua

NUDos 40 ELEmentos 39

UNIdades
 Longitud=m FUErzas=T

NUDos

N°	X	Y
1	0	0
2	41	0
3	79	0
4	118	0
5	159	0
6	159	0
7	199	0
8	240	0
9	281	0
10	281	0
11	322	0
12	363	0
13	404	0
14	404	0
15	445	0
16	486	0
17	527	0
18	527	0
19	568	0
20	609	0
21	650	0
22	680	0
101	0	-1
102	41	-1
103	79	-1
104	118	-1
105	159	-1
106	159	-2
107	199	-1
108	240	-1
109	281	-1
110	281	-2
111	322	-1
112	363	-1
113	404	-1
114	404	-2
115	445	-1
116	486	-1
117	527	-1
118	527	-2
119	568	-1
120	609	-1
121	650	-1
122	680	-1

ELEmentos

N°	OR	FI
1	1	2
2	2	3
3	3	4
4	4	5
6	6	7
7	7	8
8	8	9
10	10	11
11	11	12
12	12	13
14	14	15
15	15	16
16	16	17
18	18	19
19	19	20
20	20	21
21	21	22
101	101	1
102	102	2
103	103	3
104	104	4
105	105	5
106	106	105
107	105	6
108	107	7
109	108	8
110	109	9
111	110	109
112	109	10
113	111	11
114	112	12
115	113	13
116	114	113
117	113	14
118	115	15
119	116	16
120	117	17
121	118	117
122	117	18
123	119	19
124	120	20
125	121	21
126	122	22

CARActeristicas
 "H-400"
  RO=2.50136
  1A4 6A8 10A12 14A16 18A21 SX=6.9228 IZ=127.72
 CHICLE
  101 SX=1300 IZ=433.3
  102 SX=1993.8 IZ=664.6
  103 SX=1677.6 IZ=559.2
  104 SX=1548.0 IZ=393.5
  105 SX=1300 IZ=433.3
  106 SX=2316.9 IZ=378.8
  107 SX=1368.4 IZ=456.1
  108 SX=1288.7 IZ=259.7
  109 SX=1328.1 IZ=285.4
  110 SX=1368.4 IZ=456.1
  111 SX=2428.9 IZ=419.7
  112 SX=1368.4 IZ=456.1
  113 SX=1432.2 IZ=277.9
  114 SX=1639.3 IZ=333.2
  115 SX=1368.4 IZ=456.1
  116 SX=2671.3 IZ=449.9
  117 SX=1368.4 IZ=456.1
  118 SX=1863.7 IZ=373.7
  119 SX=1923.2 IZ=385.7
  120 SX=1368.4 IZ=456.1
  121 SX=2912.0 IZ=480.5
  122 SX=1300 IZ=347.0
  123 SX=1812.4 IZ=347.0
  124 SX=2211.6 IZ=393.3

```
  125 SX=2128.1 IZ=406.6
  126 SX=1300 IZ=433.3

APOyos
' Etiqueta          - móvil
' Ninguna etiqueta - fijo

 101 102 103 104 106 107 108 110 111 112 114 115 116 118 119 120 121 122

RELajaciones
' Etiqueta          - móvil
' Ninguna etiqueta - fijo

ELE 101 102 103 104 106 108 109 111 113 114 116 118 119 121 123 124 125 126 Fin RZ
ELE 105 107 110 112 115 117 120 122 ORigen RZ

CARGamento

CASo # 1 FRENADO
  ELEmentos
   1 2 3 4 PX=0.398
   6 7 8 10 11 12 14 15 16 PX=0.406
   18 19 20 21 PX=0.399

CASo # 2 F.CENTRIFUGA
  ELEmentos
   1A4 6A8 10A12 14A16 18A21 PY=0.07

CASo # 3 VIENTO TRANSVERSAL SIN S.C.
  ELEmentos
   1A4 6A8 10A12 14A16 18A21 PY=0.55

CASo # 4 VIENTO TRANSVERSAL CON S.C.
  ELEmentos
   1A4 6A8 10A12 14A16 18A21 PY=0.72

FIN
```

Especificación de reacciones

Resultados individuales

Caso 1A4
1A4

Nudo 101A104 106A108 110A112 114A116 118A122
1A122

Caso	Nudo	FX (T)	FY (T)	MZ (Tm)
Nombre del c.		FRENADO		
1	101	-13.31	0.01	13.31
1	102	-20.43	0.00	20.43
1	103	-17.21	-0.01	17.21
1	104	-12.13	-0.02	12.13
1	106	-11.51	-0.11	11.51
1	107	-14.34	-0.06	14.34
1	108	-15.76	0.04	15.76
1	110	-15.70	0.02	15.70
1	111	-15.02	-0.04	15.02
1	112	-18.00	0.04	18.00
1	114	-15.10	0.01	15.10
1	115	-17.27	-0.04	17.27
1	116	-17.82	0.05	17.82
1	118	-12.62	0.06	12.62
1	119	-12.65	0.01	12.65
1	120	-14.32	0.01	14.32
1	121	-14.79	0.01	14.79
1	122	-15.74	0.01	15.74
Suma de val.		-273.74	0.00	273.74
Nombre del c.		F.CENTRIFUGA		
2	101	0.00	-1.38	0.00
2	102	0.00	-2.74	0.00
2	103	0.00	-2.76	0.00
2	104	0.00	-2.95	0.00
2	106	0.00	-2.69	0.00
2	107	0.00	-2.83	0.00
2	108	0.00	-2.91	0.00
2	110	0.00	-2.74	0.00
2	111	0.00	-2.89	0.00
2	112	0.00	-3.14	0.00
2	114	0.00	-2.38	0.00
2	115	0.00	-3.15	0.00
2	116	0.00	-3.21	0.00
2	118	0.00	-2.45	0.00
2	119	0.00	-2.96	0.00
2	120	0.00	-3.02	0.00
2	121	0.00	-2.29	0.00
2	122	0.00	-1.10	0.00
Suma de val.		0.00	-47.60	0.00
Nombre del c.		VIENTO TRANSVERSAL SIN S.C.		
3	101	0.01	-10.87	-0.01
3	102	0.01	-21.55	-0.01
3	103	0.01	-21.65	-0.01
3	104	0.01	-23.15	-0.01
3	106	-0.02	-21.13	0.02
3	107	0.00	-22.26	0.00
3	108	0.00	-22.88	0.00
3	110	0.00	-21.52	0.00
3	111	-0.01	-22.71	0.01
3	112	-0.01	-24.69	0.01
3	114	0.01	-18.68	-0.01
3	115	0.00	-24.78	0.00
3	116	0.00	-25.25	0.00

Especificación de reacciones

Caso	Nudo	FX (T)	FY (T)	MZ (Tm)
3	118	0.02	-19.26	-0.02
3	119	-0.01	-23.22	0.01
3	120	-0.01	-23.72	0.01
3	121	-0.01	-18.01	0.01
3	122	-0.01	-8.66	0.01
Suma de val.		0.00	-374.00	0.00
Nombre del c.		VIENTO TRANSVERSAL CON S.C.		
4	101	0.01	-14.23	-0.01
4	102	0.01	-28.21	-0.01
4	103	0.01	-28.34	-0.01
4	104	0.01	-30.31	-0.01
4	106	-0.03	-27.66	0.03
4	107	-0.01	-29.14	0.01
4	108	-0.01	-29.95	0.01
4	110	0.01	-28.17	-0.01
4	111	-0.01	-29.73	0.01
4	112	-0.01	-32.32	0.01
4	114	0.01	-24.46	-0.01
4	115	0.01	-32.45	-0.01
4	116	0.01	-33.06	-0.01
4	118	0.03	-25.22	-0.03
4	119	-0.01	-30.40	0.01
4	120	-0.01	-31.06	0.01
4	121	-0.01	-23.57	0.01
4	122	-0.01	-11.34	0.01
Suma de val.		0.00	-489.60	0.00

Desplazamiento de nudos

Resultados individuales

Caso 1A4
1A4

Nudo todo
1A122

Caso	Nudo	UX (m)	UY (m)	RZ (Deg)
Nombre del c.		FRENADO		
1	1	0.0102	0.0000	0.0000086
1	2	0.0102	0.0000	0.0000096
1	3	0.0103	0.0000	0.0000122
1	4	0.0103	0.0000	0.0000159
1	5	0.0103	0.0000	0.0000173
1	6	0.0184	0.0001	-0.0001611
1	7	0.0184	0.0000	-0.0001202
1	8	0.0184	0.0000	-0.0001105
1	9	0.0184	-0.0001	-0.0001349
1	10	0.0180	0.0001	-0.0000965
1	11	0.0180	0.0000	-0.0000724
1	12	0.0180	0.0000	-0.0000774
1	13	0.0180	-0.0001	-0.0001105
1	14	0.0154	0.0001	-0.0000855
1	15	0.0154	0.0000	-0.0000685
1	16	0.0154	0.0000	-0.0000776
1	17	0.0154	-0.0001	-0.0001117
1	18	0.0122	0.0000	-0.0000210
1	19	0.0122	0.0000	-0.0000074
1	20	0.0121	0.0000	-0.0000004
1	21	0.0121	0.0000	0.0000020
1	22	0.0121	0.0000	0.0000023
1	101	0.0	0.0	0.0
1	102	0.0	0.0	0.0
1	103	0.0	0.0	0.0
1	104	0.0	0.0	0.0
1	105	0.0101	0.0000	0.0
1	106	0.0	0.0	0.0
1	107	0.0	0.0	0.0
1	108	0.0	0.0	0.0
1	109	0.0125	0.0000	0.0
1	110	0.0	0.0	0.0
1	111	0.0	0.0	0.0
1	112	0.0	0.0	0.0
1	113	0.0112	0.0000	0.0
1	114	0.0	0.0	0.0
1	115	0.0	0.0	0.0
1	116	0.0	0.0	0.0
1	117	0.0088	0.0000	0.0
1	118	0.0	0.0	0.0
1	119	0.0	0.0	0.0
1	120	0.0	0.0	0.0
1	121	0.0	0.0	0.0
1	122	0.0	0.0	0.0
Nombre del c.		F.CENTRIFUGA		
2	1	0.0000	0.0011	0.0004569
2	2	0.0000	0.0014	0.0004146
2	3	0.0000	0.0016	0.0003926
2	4	0.0000	0.0019	0.0003756
2	5	0.0000	0.0022	0.0003414
2	6	0.0000	0.0022	0.0000568
2	7	0.0000	0.0022	0.0000139
2	8	0.0000	0.0022	-0.0000295
2	9	0.0000	0.0022	-0.0000743
2	10	0.0000	0.0021	-0.0000941
2	11	0.0000	0.0020	-0.0001312

Desplazamiento de nudos

Caso	Nudo	UX (m)	UY (m)	RZ (Deg)
2	12	0.0000	0.0019	-0.0001497
2	13	0.0000	0.0018	-0.0001785
2	14	0.0000	0.0017	-0.0000197
2	15	0.0000	0.0017	-0.0000370
2	16	0.0000	0.0017	-0.0000221
2	17	0.0000	0.0017	-0.0000374
2	18	0.0000	0.0019	-0.0003187
2	19	0.0000	0.0016	-0.0003568
2	20	0.0000	0.0014	-0.0003848
2	21	0.0000	0.0011	-0.0004259
2	22	0.0000	0.0008	-0.0004473
2	101	0.0	0.0	0.0
2	102	0.0	0.0	0.0
2	103	0.0	0.0	0.0
2	104	0.0	0.0	0.0
2	105	0.0000	0.0012	0.0
2	106	0.0	0.0	0.0
2	107	0.0	0.0	0.0
2	108	0.0	0.0	0.0
2	109	0.0000	0.0011	0.0
2	110	0.0	0.0	0.0
2	111	0.0	0.0	0.0
2	112	0.0	0.0	0.0
2	113	0.0000	0.0009	0.0
2	114	0.0	0.0	0.0
2	115	0.0	0.0	0.0
2	116	0.0	0.0	0.0
2	117	0.0000	0.0008	0.0
2	118	0.0	0.0	0.0
2	119	0.0	0.0	0.0
2	120	0.0	0.0	0.0
2	121	0.0	0.0	0.0
2	122	0.0	0.0	0.0
Nombre del c.		VIENTO TRANSVERSAL SIN S.C.		
3	1	0.0000	0.0084	0.0035901
3	2	0.0000	0.0108	0.0032573
3	3	0.0000	0.0129	0.0030844
3	4	0.0000	0.0150	0.0029512
3	5	0.0000	0.0170	0.0026821
3	6	0.0000	0.0171	0.0004461
3	7	0.0000	0.0173	0.0001095
3	8	0.0000	0.0172	-0.0002321
3	9	0.0000	0.0169	-0.0005836
3	10	0.0000	0.0165	-0.0007393
3	11	0.0000	0.0159	-0.0010310
3	12	0.0000	0.0151	-0.0011762
3	13	0.0000	0.0142	-0.0014024
3	14	0.0000	0.0135	-0.0001548
3	15	0.0000	0.0133	-0.0002905
3	16	0.0000	0.0131	-0.0001735
3	17	0.0000	0.0130	-0.0002937
3	18	0.0000	0.0147	-0.0025038
3	19	0.0000	0.0128	-0.0028035
3	20	0.0000	0.0107	-0.0030233
3	21	0.0000	0.0085	-0.0033463
3	22	0.0000	0.0067	-0.0035142
3	101	0.0	0.0	0.0
3	102	0.0	0.0	0.0
3	103	0.0	0.0	0.0
3	104	0.0	0.0	0.0
3	105	0.0000	0.0091	0.0
3	106	0.0	0.0	0.0
3	107	0.0	0.0	0.0
3	108	0.0	0.0	0.0
3	109	0.0000	0.0089	0.0

Desplazamiento de nudos

Caso	Nudo	UX (m)	-UY (m)	RZ (Deg)
2	12	0.0000	0.0019	-0.0001497
2	13	0.0000	0.0018	-0.0001785
2	14	0.0000	0.0017	-0.0000197
2	15	0.0000	0.0017	-0.0000370
2	16	0.0000	0.0017	-0.0000221
2	17	0.0000	0.0017	-0.0000374
2	18	0.0000	0.0019	-0.0003187
2	19	0.0000	0.0016	-0.0003568
2	20	0.0000	0.0014	-0.0003848
2	21	0.0000	0.0011	-0.0004259
2	22	0.0000	0.0008	-0.0004473
2	101	0.0	0.0	0.0
2	102	0.0	0.0	0.0
2	103	0.0	0.0	0.0
2	104	0.0	0.0	0.0
2	105	0.0000	0.0012	0.0
2	106	0.0	0.0	0.0
2	107	0.0	0.0	0.0
2	108	0.0	0.0	0.0
2	109	0.0000	0.0011	0.0
2	110	0.0	0.0	0.0
2	111	0.0	0.0	0.0
2	112	0.0	0.0	0.0
2	113	0.0000	0.0009	0.0
2	114	0.0	0.0	0.0
2	115	0.0	0.0	0.0
2	116	0.0	0.0	0.0
2	117	0.0000	0.0008	0.0
2	118	0.0	0.0	0.0
2	119	0.0	0.0	0.0
2	120	0.0	0.0	0.0
2	121	0.0	0.0	0.0
2	122	0.0	0.0	0.0
Nombre del c.		VIENTO TRANSVERSAL SIN S.C.		
3	1	0.0000	0.0084	0.0035901
3	2	0.0000	0.0108	0.0032573
3	3	0.0000	0.0129	0.0030844
3	4	0.0000	0.0150	0.0029512
3	5	0.0000	0.0170	0.0026821
3	6	0.0000	0.0171	0.0004461
3	7	0.0000	0.0173	0.0001095
3	8	0.0000	0.0172	-0.0002321
3	9	0.0000	0.0169	-0.0005836
3	10	0.0000	0.0165	-0.0007393
3	11	0.0000	0.0159	-0.0010310
3	12	0.0000	0.0151	-0.0011762
3	13	0.0000	0.0142	-0.0014024
3	14	0.0000	0.0135	-0.0001548
3	15	0.0000	0.0133	-0.0002905
3	16	0.0000	0.0131	-0.0001735
3	17	0.0000	0.0130	-0.0002937
3	18	0.0000	0.0147	-0.0025038
3	19	0.0000	0.0128	-0.0028035
3	20	0.0000	0.0107	-0.0030233
3	21	0.0000	0.0085	-0.0033463
3	22	0.0000	0.0067	-0.0035142
3	101	0.0	0.0	0.0
3	102	0.0	0.0	0.0
3	103	0.0	0.0	0.0
3	104	0.0	0.0	0.0
3	105	0.0000	0.0091	0.0
3	106	0.0	0.0	0.0
3	107	0.0	0.0	0.0
3	108	0.0	0.0	0.0
3	109	0.0000	0.0089	0.0

Desplazamiento de nudos

Caso	Nudo	UX (m)	UY (m)	RZ (Deg)
3	110	0.0	0.0	0.0
3	111	0.0	0.0	0.0
3	112	0.0	0.0	0.0
3	113	0.0000	0.0070	0.0
3	114	0.0	0.0	0.0
3	115	0.0	0.0	0.0
3	116	0.0	0.0	0.0
3	117	0.0000	0.0066	0.0
3	118	0.0	0.0	0.0
3	119	0.0	0.0	0.0
3	120	0.0	0.0	0.0
3	121	0.0	0.0	0.0
3	122	0.0	0.0	0.0
Nombre del c.		VIENTO TRANSVERSAL CON S.C.		
4	1	0.0000	0.0109	0.0046998
4	2	0.0000	0.0141	0.0042642
4	3	0.0000	0.0169	0.0040378
4	4	0.0000	0.0196	0.0038634
4	5	0.0000	0.0222	0.0035111
4	6	0.0000	0.0224	0.0005840
4	7	0.0000	0.0226	0.0001433
4	8	0.0000	0.0226	-0.0003038
4	9	0.0000	0.0222	-0.0007640
4	10	0.0000	0.0216	-0.0009678
4	11	0.0000	0.0208	-0.0013497
4	12	0.0000	0.0197	-0.0015397
4	13	0.0000	0.0185	-0.0018359
4	14	0.0000	0.0177	-0.0002026
4	15	0.0000	0.0174	-0.0003802
4	16	0.0000	0.0172	-0.0002271
4	17	0.0000	0.0170	-0.0003845
4	18	0.0000	0.0193	-0.0032777
4	19	0.0000	0.0168	-0.0036701
4	20	0.0000	0.0140	-0.0039578
4	21	0.0000	0.0111	-0.0043806
4	22	0.0000	0.0087	-0.0046005
4	101	0.0	0.0	0.0
4	102	0.0	0.0	0.0
4	103	0.0	0.0	0.0
4	104	0.0	0.0	0.0
4	105	0.0000	0.0119	0.0
4	106	0.0	0.0	0.0
4	107	0.0	0.0	0.0
4	108	0.0	0.0	0.0
4	109	0.0000	0.0116	0.0
4	110	0.0	0.0	0.0
4	111	0.0	0.0	0.0
4	112	0.0	0.0	0.0
4	113	0.0000	0.0092	0.0
4	114	0.0	0.0	0.0
4	115	0.0	0.0	0.0
4	116	0.0	0.0	0.0
4	117	0.0000	0.0087	0.0
4	118	0.0	0.0	0.0
4	119	0.0	0.0	0.0
4	120	0.0	0.0	0.0
4	121	0.0	0.0	0.0
4	122	0.0	0.0	0.0

REPARTO DE FUERZAS LONGITUDINALES Y TRANSVERSALES.

Por elemento (T)

	Frenado	F.Centrífuga	Vt.sin sc	Vt.con sc(ya 50%)	Flue+retrac	Térmico
P-1	20,43	2,74	21,55	14,11	12,73	9,73
P-2	17,21	2,76	21,65	14,17	1,87	1,01

Por fuste en pilas y en estribo total(T)

	Frenado	F.Centrífuga	Vt.sin sc	Vt.con sc(ya 50%)	Flue+retrac	Térmico
P-1	10,22	1,37	10,78	7,05	6,37	4,87
P-2	8,61	1,38	10,83	7,09	0,94	0,51

REPARTO DE FUERZAS LONGITUDINALES Y TRANSVERSALES.

Por fuste en pilas y en estribo total(T)

	Frenado	Flue+retrac	Térmico	F.Centrifuga	Vt.con sc	Vt.sin sc	Vl.con sc	Vl.sin sc
P-1	10,22	6,37	4,87	1,37	7,05	10,78	1,76	2,69
P-2	8,61	0,94	0,51	1,38	7,09	10,83	1,77	2,71

Por apoyo(T)

	Frenado	F.Centrifuga	Vt.sin sc	con sc(ya 50	Ft con sc	Ft sin sc
P-1	5,11	0,69	5,39	3,53	4,21	5,39
P-2	4,30	0,69	5,41	3,54	4,23	5,41

REPARTO DE FUERZAS LONGITUDINALES Y TRANSVERSALES.

Movimientos de Juntas

TOTAL(lento)	Frenado	Total	Apertura	Cierre	Carrera	JUNTA
52.5	10.2	62.7	62.7	26.3	**89.0**	→ 90
54.8	0.2	55.0	55.0	16.9	71.9	
48.0	8.3	56.3	56.3	22.8	79.1	
					151.0	→ 180
45.5	5.9	51.4	51.4	19.2	70.6	
44.9	5.5	50.4	50.4	18.9	69.3	
					139.9	→ 180
44.0	6.8	50.8	50.8	19.8	70.6	
44.7	4.2	48.9	48.9	17.5	66.4	
					137.0	→ 180
46.8	6.6	53.4	53.4	20.4	73.8	
53.9	3.4	57.3	57.3	20	77.3	
					151.1	→ 180
50.5	12.1	62.6	62.6	27.3	**89.9**	→ 90

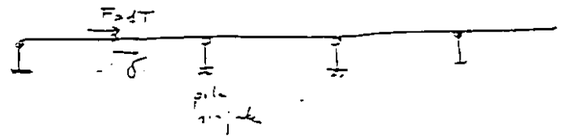
4.1.5.-Cálculo de longitudes de pandeo.

Cálculo de longitudes de pandeo.

Se elimina el elemento pila - neopreno equivalente, del modelo de cálculo para acciones instantáneas.

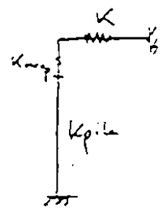
Se introduce una carga de 1 T y se calcula el movimiento δ en ese nudo

Pilas con Neopreno

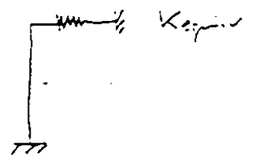


Se calcula δ →

$K = \frac{F}{\delta}$ Rigidez del resto de la estructura que se opone al movimiento de la pila



Como lo que se busca →



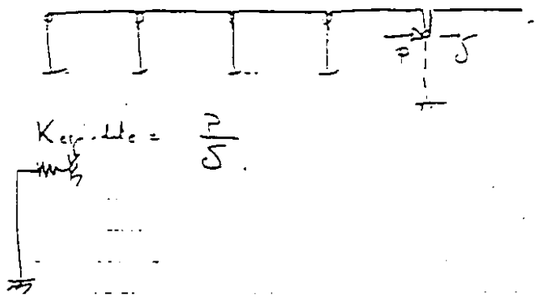
Una pila con K neop se calcula

$$K_{equiv} = \frac{1}{\frac{1}{K_{resto}} + \frac{1}{K_{neop.}}}$$

Cálculo de constante de rigidez en cabeza de pila.

en pilas con junta

La carga se introduce directamente en la cabeza de la pila → hep. ya se obtiene el δ y la K red.



CALCULO DE COEFICIENTES DE PANDEO

Los coeficientes de pandeo longitudinal y transversal se calculan según la ecuación de Euler que rige el comportamiento de una ménsula apoyada elásticamente en cabeza.

$$\frac{E \cdot I}{K \cdot L^3}\left(\frac{\pi}{\beta}\right)^3 - \left(\frac{\pi}{\beta}\right) + tg\left(\frac{\pi}{\beta}\right) = 0$$

Donde: E es el módulo de elasticidad de la pila(T/m2)
I es la inercia longitudinal o transversal de la pila(m4)
K es el la rigidez del muelle de cabeza de la pila longitudinal o transversal (T/ml)
L es la altura de la pila(m.)
β es el coeficiente de pandeo longitudinal o transversal.

E (t/m2)	H (m)	I long (m4)	I trans (m4)	K long (T/m)	K trans (T/m)	β long	β trans	Lp long (m)	Lp trans (m)
3000000	12,29	0,41	0,41	1524,00	1098,90	1,51	1,61	18,56	19,79
3000000	14,39	0,41	0,41	1741,00	1537,70	1,30	1,34	18,71	19,28

Del lado de la seguridad se usarán los valores:

h_L = 1,40 en P-2
1,60 en P-1

h_T = 1,40 en P-2
1,70 en P-1

Nomb. arch.: LP1.DIM	Fecha 2-03-1999 17:38	ROBOT V6 v. 4.1

ROBOT

PORtico PLAno

NUMeración DIScontínua

NUDos 40 ELEmentos 39

UNIdades
 Longitud=m FUErzas=T

NUDos

Nº	X	Y	
1	0	0	
2	41	0	
3	79	0	
4	118	0	
5	159	0	
6	159	0	
7	199	0	
8	240	0	
9	281	0	
10	281	0	
11	322	0	
12	363	0	
13	404	0	
14	404	0	
15	445	0	
16	486	0	
17	527	0	
18	527	0	
19	568	0	
20	609	0	
21	650	0	
22	680	0	
101	0	-1	
102	41	-1	
103	79	-1	
104	118	-1	
105	159	-1	
106	159	-2	
107	199	-1	
108	240	-1	
109	281	-1	
110	281	-2	
111	322	-1	
112	363	-1	
113	404	-1	
114	404	-2	
115	445	-1	
116	486	-1	
117	527	-1	
118	527	-2	
119	568	-1	
120	609	-1	
121	650	-1	
122	680	-1	

ELEmentos

Nº	OR	FI
1	1	2
2	2	3
3	3	4
4	4	5
6	6	7
7	7	8
8	8	9
10	10	11
11	11	12
12	12	13
14	14	15
15	15	16
16	16	17
18	18	19
19	19	20
20	20	21
21	21	22
101	101	1
102	102	2
103	103	3
104	104	4
105	105	5
106	106	105
107	105	6
108	107	7
109	108	8
110	109	9
111	110	109
112	109	10
113	111	11
114	112	12
115	113	13
116	114	113
117	113	14
118	115	15
119	116	16
120	117	17
121	118	117
122	117	18
123	119	19
124	120	20
125	121	21
126	122	22

CARActeristicas
 "H-400"
  RO=2.50136
  1A4 6A8 10A12 14A16 18A21 SX=6.9228 IZ=127.72
CHICLE
  101 SX=1300 IZ=433.3
  102 SX=1993.8 IZ=664.6
  103 SX=1677.6 IZ=559.2
  104 SX=1548.0 IZ=393.5
  105 SX=1300 IZ=433.3
  106 SX=2316.9 IZ=378.8
  107 SX=1368.4 IZ=456.1
  108 SX=1288.7 IZ=259.7
  109 SX=1328.1 IZ=285.4
  110 SX=1368.4 IZ=456.1
  111 SX=2428.9 IZ=419.7
  112 SX=1368.4 IZ=456.1
  113 SX=1432.2 IZ=277.9
  114 SX=1639.3 IZ=333.2
  115 SX=1368.4 IZ=456.1
  116 SX=2671.3 IZ=449.9
  117 SX=1368.4 IZ=456.1
  118 SX=1863.7 IZ=373.7
  119 SX=1923.2 IZ=385.7
  120 SX=1368.4 IZ=456.1
  121 SX=2912.0 IZ=480.5
  122 SX=1300 IZ=347.0
  123 SX=1812.4 IZ=347.0
  124 SX=2211.6 IZ=393.3
  125 SX=2128.1 IZ=406.6

```
  126 SX=1300 IZ=433.3

APOyos
' Etiqueta          - móvil
' Ninguna etiqueta - fijo

 101 102 103 104 106 107 108 110 111 112 114 115 116 118 119 120 121 122

RELajaciones
' Etiqueta          - móvil
' Ninguna etiqueta - fijo

ELE 101 103 104 106 108 109 111 113 114 116 118 119 121 123 124 125 126 FIn RZ
ELE 105 107 110 112 115 117 120 122 ORigen RZ

CARGamento

CASo # 1 Fza Longitudinal N2
   2 FX=100

CASo # 2 Fza Transversal N2
     2 FY=100

FIN
```


Desplazamiento de nudos

Resultados individuales

Caso 1 2
1 2

Nudo todo
1A122

Caso	Nudo	UX (m)	UY (m)	RZ (Deg)
Nombre del c.		FZA LONGITUDINAL N2		
1	1	0.0203	0.0001	-0.0000213
1	2	0.0203	0.0001	-0.0000302
1	3	0.0202	0.0000	-0.0000544
1	4	0.0202	0.0000	-0.0000988
1	5	0.0201	-0.0001	-0.0001669
1	6	0.0028	-0.0001	0.0000891
1	7	0.0028	0.0000	0.0000589
1	8	0.0028	0.0000	0.0000358
1	9	0.0028	0.0000	0.0000211
1	10	0.0004	0.0000	0.0000039
1	11	0.0004	0.0000	0.0000001
1	12	0.0004	0.0000	-0.0000021
1	13	0.0004	0.0000	-0.0000037
1	14	0.0000	0.0000	0.0000012
1	15	0.0000	0.0000	0.0000006
1	16	0.0000	0.0000	0.0000003
1	17	0.0000	0.0000	0.0000001
1	18	0.0000	0.0000	0.0000001
1	19	0.0000	0.0000	0.0000000
1	20	0.0000	0.0000	0.0000000
1	21	0.0000	0.0000	0.0000000
1	22	0.0000	0.0000	0.0000000
1	101	0.0	0.0	0.0
1	102	0.0	0.0	0.0
1	103	0.0	0.0	0.0
1	104	0.0	0.0	0.0
1	105	0.0079	-0.0001	0.0
1	106	0.0	0.0	0.0
1	107	0.0	0.0	0.0
1	108	0.0	0.0	0.0
1	109	0.0011	0.0000	0.0
1	110	0.0	0.0	0.0
1	111	0.0	0.0	0.0
1	112	0.0	0.0	0.0
1	113	0.0001	0.0000	0.0
1	114	0.0	0.0	0.0
1	115	0.0	0.0	0.0
1	116	0.0	0.0	0.0
1	117	0.0000	0.0000	0.0
1	118	0.0	0.0	0.0
1	119	0.0	0.0	0.0
1	120	0.0	0.0	0.0
1	121	0.0	0.0	0.0
1	122	0.0	0.0	0.0
Nombre del c.		FZA TRANSVERSAL N2		
2	1	0.0001	0.0368	-0.0078548
2	2	0.0001	0.0330	-0.0129944
2	3	0.0001	0.0221	-0.0184127
2	4	0.0001	0.0094	-0.0187622
2	5	0.0001	-0.0039	-0.0184225
2	6	0.0000	-0.0009	0.0006579
2	7	0.0000	-0.0005	0.0006150
2	8	0.0000	-0.0001	0.0005436
2	9	0.0000	0.0003	0.0005165
2	10	0.0000	0.0001	-0.0000505
2	11	0.0000	0.0000	-0.0000468

Desplazamiento de nudos

Caso	Nudo	UX (m)	UY (m)	RZ (Deg)
2	12	0.0000	0.0000	-0.0000409
2	13	0.0000	0.0000	-0.0000386
2	14	0.0000	0.0000	0.0000036
2	15	0.0000	0.0000	0.0000033
2	16	0.0000	0.0000	0.0000029
2	17	0.0000	0.0000	0.0000027
2	18	0.0000	0.0000	-0.0000002
2	19	0.0000	0.0000	-0.0000002
2	20	0.0000	0.0000	-0.0000001
2	21	0.0000	0.0000	-0.0000001
2	22	0.0000	0.0000	-0.0000001
2	101	0.0	0.0	0.0
2	102	0.0	0.0	0.0
2	103	0.0	0.0	0.0
2	104	0.0	0.0	0.0
2	105	-0.0001	-0.0013	0.0
2	106	0.0	0.0	0.0
2	107	0.0	0.0	0.0
2	108	0.0	0.0	0.0
2	109	0.0000	0.0001	0.0
2	110	0.0	0.0	0.0
2	111	0.0	0.0	0.0
2	112	0.0	0.0	0.0
2	113	0.0000	0.0000	0.0
2	114	0.0	0.0	0.0
2	115	0.0	0.0	0.0
2	116	0.0	0.0	0.0
2	117	0.0000	0.0000	0.0
2	118	0.0	0.0	0.0
2	119	0.0	0.0	0.0
2	120	0.0	0.0	0.0
2	121	0.0	0.0	0.0
2	122	0.0	0.0	0.0

Nomb. arch.: LP2.DIM	Fecha 2-03-1999 17:38	ROBOT V6 v. 4.1

ROBOT

PORtico PLAno

NUMeración DISContinua

NUDos 40 ELEmentos 39

UNIdades
 Longitud=m FUErzas=T

NUDos

N°	X	Y
1	0	0
2	41	0
3	79	0
4	118	0
5	159	0
6	159	0
7	199	0
8	240	0
9	281	0
10	281	0
11	322	0
12	363	0
13	404	0
14	404	0
15	445	0
16	486	0
17	527	0
18	527	0
19	568	0
20	609	0
21	650	0
22	680	0
101	0	-1
102	41	-1
103	79	-1
104	118	-1
105	159	-1
106	159	-2
107	199	-1
108	240	-1
109	281	-1
110	281	-2
111	322	-1
112	363	-1
113	404	-1
114	404	-2
115	445	-1
116	486	-1
117	527	-1
118	527	-2
119	568	-1
120	609	-1
121	650	-1
122	680	-1

ELEmentos

N°	CR	FI
1	1	2
2	2	3
3	3	4

```
 4          4          5
      6          6          7
      7          7          8
 8          8          9
      10         10         11
      11         11         12
      12    12             13
 14        14         15
      15         15         16
 16        16         17
      18         18         19
      19         19         20
      20 20         21
 21        21         22
 101       101        1
 102       102        2
           103        103      3
 104       104        4
 105       105        5
 106       106        105
 107       105        6
 108       107        7
 109       108        8
 110       109        9
 111       110        109
 112       109        10
 113       111        11
 114       112        12
 115       113        13
 116       114        113
 117       113        14
 118       115        15
 119       116        16
 120       117        17
 121       118        117
 122       117        18
 123       119        19
 124       120        20
 125       121        21
 126       122        22

CARActerísticas
 "M-400"
  RO=2.50136
  1A4 6A8 10A12 14A16 18A21 SX=6.9228 IZ=127.72
CHICLE
  101 SX=1300 IZ=433.3
  102 SX=1993.8 IZ=664.6
  103 SX=1677.6 IZ=559.2
  104 SX=1548.0 IZ=393.5
  105 SX=1300 IZ=433.3
  106 SX=2316.9 IZ=378.8
  107 SX=1368.4 IZ=456.1
  108 SX=1288.7 IZ=259.7
  109 SX=1328.1 IZ=285.4
  110 SX=1368.4 IZ=456.1
  111 SX=2428.9 IZ=419.7
  112 SX=1368.4 IZ=456.1
  113 SX=1432.2 IZ=277.9
  114 SX=1639.3 IZ=333.2
  115 SX=1368.4 IZ=456.1
  116 SX=2671.3 IZ=449.9
  117 SX=1368.4 IZ=456.1
  118 SX=1863.7 IZ=373.7
  119 SX=1923.2 IZ=385.7
  120 SX=1368.4 IZ=456.1
  121 SX=2912.0 IZ=480.5
  122 SX=1300 IZ=347.0
  123 SX=1812.4 IZ=347.0
  124 SX=2211.6 IZ=393.3
  125 SX=2128.1 IZ=406.6
  126 SX=1300 IZ=433.3

APOyos
' Etiqueta          - móvil
' Ninguna etiqueta - fijo

 101 102 103 104 106 107 108 110 111 112 114 115 116 118 119 120 121 122

RELajaciones
' Etiqueta          - móvil
' Ninguna etiqueta - fijo

ELE 101 102 104 106 108 109 111 113 114 116 118 119 121 123 124 125 126 Fin RZ
ELE 105 107 110 112 115 117 120 122 ORigen RZ

CARGamento

CASo # 1 Fza Longitudinal N3
  3 FX=100

CASo # 2 Fza Transversal N3
  3 FY=100

FIN
```

Desplazamiento de nudos

Resultados individuales

Caso 1 2
1 2

Nudo todo
1A122

Caso	Nudo	UX (m)	UY (m)	RZ (Deg)
Nombre del c.		FZA LONGITUDINAL N3		
1	1	0.0190	0.0000	-0.0000136
1	2	0.0190	0.0000	-0.0000193
1	3	0.0190	0.0000	-0.0000401
1	4	0.0190	0.0000	-0.0000831
1	5	0.0190	-0.0001	-0.0001478
1	6	0.0027	-0.0001	0.0000832
1	7	0.0027	0.0000	0.0000548
1	8	0.0026	0.0000	0.0000330
1	9	0.0026	0.0000	0.0000192
1	10	0.0003	0.0000	0.0000037
1	11	0.0003	0.0000	0.0000002
1	12	0.0003	0.0000	-0.0000019
1	13	0.0003	0.0000	-0.0000034
1	14	0.0000	0.0000	0.0000011
1	15	0.0000	0.0000	0.0000006
1	16	0.0000	0.0000	0.0000003
1	17	0.0000	0.0000	0.0000001
1	18	0.0000	0.0000	0.0000001
1	19	0.0000	0.0000	0.0000000
1	20	0.0000	0.0000	0.0000000
1	21	0.0000	0.0000	0.0000000
1	22	0.0000	0.0000	0.0000000
1	101	0.0	0.0	0.0
1	102	0.0	0.0	0.0
1	103	0.0	0.0	0.0
1	104	0.0	0.0	0.0
1	105	0.0075	0.0000	0.0
1	106	0.0	0.0	0.0
1	107	0.0	0.0	0.0
1	108	0.0	0.0	0.0
1	109	0.0010	0.0000	0.0
1	110	0.0	0.0	0.0
1	111	0.0	0.0	0.0
1	112	0.0	0.0	0.0
1	113	0.0001	0.0000	0.0
1	114	0.0	0.0	0.0
1	115	0.0	0.0	0.0
1	116	0.0	0.0	0.0
1	117	0.0000	0.0000	0.0
1	118	0.0	0.0	0.0
1	119	0.0	0.0	0.0
1	120	0.0	0.0	0.0
1	121	0.0	0.0	0.0
1	122	0.0	0.0	0.0
Nomore del c.		FZA TRANSVERSAL N3		
2	1	0.0000	0.0110	0.0109024
2	2	0.0000	0.0185	0.0094811
2	3	0.0000	0.0229	0.0024845
2	4	0.0000	0.0217	-0.0047892
2	5	0.0000	0.0175	-0.0063081
2	6	0.0000	0.0042	-0.0029559
2	7	0.0000	0.0022	-0.0027614
2	8	0.0000	0.0003	-0.0024397
2	9	0.0000	-0.0013	-0.0023171
2	10	0.0000	-0.0003	0.0002260
2	11	0.0000	-0.0002	0.0002097

Desplazamiento de nudos

Caso	Nudo	UX (m)	UY (m)	RZ (Deg)
2	12	0.0000	0.0000	0.0001834
2	13	0.0000	0.0001	0.0001735
2	14	0.0000	0.0000	-0.0000163
2	15	0.0000	0.0000	-0.0000150
2	16	0.0000	0.0000	-0.0000128
2	17	0.0000	0.0000	-0.0000120
2	18	0.0000	0.0000	0.0000009
2	19	0.0000	0.0000	0.0000008
2	20	0.0000	0.0000	0.0000006
2	21	0.0000	0.0000	0.0000004
2	22	0.0000	0.0000	0.0000004
2	101	0.0	0.0	0.0
2	102	0.0	0.0	0.0
2	103	0.0	0.0	0.0
2	104	0.0	0.0	0.0
2	105	0.0000	0.0057	0.0
2	106	0.0	0.0	0.0
2	107	0.0	0.0	0.0
2	108	0.0	0.0	0.0
2	109	0.0000	-0.0004	0.0
2	110	0.0	0.0	0.0
2	111	0.0	0.0	0.0
2	112	0.0	0.0	0.0
2	113	0.0000	0.0000	0.0
2	114	0.0	0.0	0.0
2	115	0.0	0.0	0.0
2	116	0.0	0.0	0.0
2	117	0.0000	0.0000	0.0
2	118	0.0	0.0	0.0
2	119	0.0	0.0	0.0
2	120	0.0	0.0	0.0
2	121	0.0	0.0	0.0
2	122	0.0	0.0	0.0

Constantes equivalentes de rigidez en cabeza de pila.



	$K_{L_{eq}}$ (T/m)	K_T (T/m)	K_L (T/m)	K_T (T/m)
P1	24633	1511	1531	10977
P2	26178	2133	1741	15372

4.2.- DIMENSIONAMIENTO DE APARATOS DE APOYO.

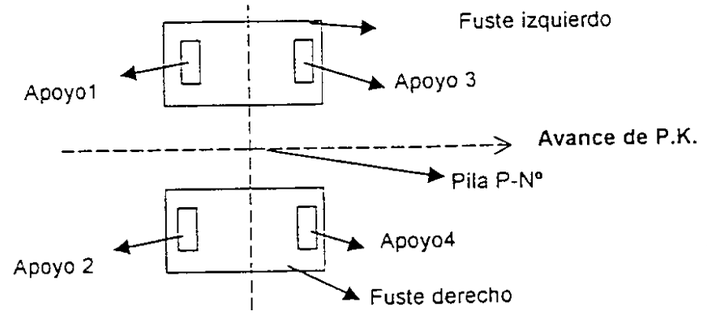
Dimensionamiento de Neoprenos

P-1 4 x 500 x 650 x 90 (65)

P-2 " " 70 (50)

Aparatos de apoyo

Estribo ó pila	Apoyo	Tipo de apoyo		Esp. Neto(mm.)	nº capas neopreno 15mm.	nº capas acero 5mm.
P-1	1,2,3 y 4	Neopreno-Zunchado	4x500x650x90	65	4	5
P-2	1,2,3 y 4	Neopreno-Zunchado	4x500x650x70	50	3	4



Título: Neoprenos de P-2

APOYOS DE NEOPRENO ZUNCHADOS

1.- GEOMETRÍA DEL APOYO Y CARACTERÍSTICAS DEL MATERIAL ELASTOMÉRICO.

Módulo de deformación transversal:

$G_{diferido}$ = 10 kp/cm²

$G_{instantaneo}$ = 20 kp/cm²

Tensiones admisibles:

Máxima $\sigma_{max,adm}$ = 150 kp/cm²

Mínima $\sigma_{min,adm}$ = 20 kp/cm²

Geometria del Apoyo:

Dimensiones en Planta: a= 500 mm.
b= 650 mm.

Espesor de las capas de Neopreno e= 15 mm.

Nº de capas de Neopreno: 3 capas

Espesor de las chapas de Acero e_t= 5 mm.

Limite elástico del Acero: σ_e= 2400 kp/cm²

Espesor neto de Neopreno Tipo A en= 50 mm.

Espesor bruto de Neopreno Tipo A eb= 70 mm.

2.- ACCIONES CARACTERÍSTICAS SOBRE EL APOYO

Hipótesis 1: Vmáx		Hipótesis 2: Vmín		Hipótesis 3: Hlong,máx		Hipótesis 4: Htrans,máx	
Vmáx=	470	Vmín=	246	V,con=	470	V,con=	246
Flong,con=	4.5	Flong,con=	0	Flong,máx=	4.5	Flong,con=	0
Ftrans,con=	4.83	Ftrans,con=	6.17	Ftrans,con=	4.83	Ftrans,máx=	6.17
αlong=	0	αlong=	0	αlong=	0	αlong=	0
αtrans=	0	αtrans=	0	αtrans=	0	αtrans=	0

Unidades: fuerzas en tn, giros en radianes * 10^{-3}

Desplazamientos impuestos por Efectos Térmicos y Reológicos.

Longitudinal: δlong= 2 mm.

Transversal: δtran= mm.

3. COMPROBACIONES DEL APARATO DE APOYO

3.1 Tensiones Normales.

3.1.1.- Compresiones Máximas.

No se puede superar la tensión máxima admisible: $\sigma_{max,adm} \geq \sigma_{n,max} = \frac{V_{max}}{An}$

Donde: V,máx= 470 tn

An= 3250 cm²

La compresion máxima es : $\sigma_{n,max}$ = 144.62 kp/cm²

Cumple la condición de compresiones máximas

3.1.2.- Compresiones mínimas.

La tensión mínima debe ser mayor que la admisible: $\sigma_{min,adm} \leq \sigma_{n,min} = \frac{V_{min}}{An}$

Donde: V,mín= 246 tn

An= 3250 cm²

La compresion mínima es : $\sigma_{n,min}$ = 75.69 kp/cm²

Cumple la condición de compresiones mínimas

Además se comprobará que bajo las hipótesis de carga mínima vertical o máximo esfuerzo horizontal, el apoyo no repta.

El Coeficiente de Rozamiento será el siguiente:

Contacto Neopreno-Hormigón. $f_t = 0.1 + 6/\sigma$ Con σ en kp/cm²

Hipótesis de máximo esfuero horizontal.

Se debe cumplir que $H_{max} < f * V_{conc}$

Donde Hmáx es el máximo de:

$\sqrt{H_{long,max}^2 + H_{trans,conc}^2}$ ó $\sqrt{H_{trans,max}^2 + H_{long,conc}^2}$

De donde resulta: H_{max} = 6.60 tn

f= 0.141

V_{conc}= 470.00 tn

$f * V_{conc}$= 66.50 tn

La fuerza horizontal cumple al no producir la reptación del apoyo

Hipótesis de mínima carga vertical.

Se debe cumplir que $H_{conc} < f * V_{min}$ Con $H_{conc} = \sqrt{H_{trans,max}^2 + H_{trans,conc}^2}$

De donde resulta: H_{con} = 6.17 tn

f= 0.179

V_{min}= 246.00 tn

$f * V_{min}$= 44.10 tn

La fuerza horizontal cumple al no producir la reptación del apoyo

3.2.- Comprobación de estabilidad.

El espesor neto en de neopreno debe cumplir lo siguiente, siendo a la menor dimensión en planta:

$50 = \frac{a}{10} \leq e_n \leq \frac{a}{5} = 100$ Donde: e_n= 50 mm.

a= 500 mm.

El apoyo es estable

3.3.- Comprobación de la distorsión angular.

3.3.1.-Distorsión angular producida por movimiento lentos.

Bajo los movimientos impuestos por las acciones Reológicas y los efectos Térmicos se debe de cumplir:

$$tg\ \gamma = \frac{\delta}{e_n} \le 0.5 \qquad \text{Con: } \delta = \sqrt{\delta^2_{long} + \delta^2_{tran}} \qquad \delta = \quad 2 \text{ mm.}$$

Resulta: tg γ= 0.04

La distorsión angular es inferior a la admisible

3.3.2.-Distorsión angular instantánea.

Bajo los movimientos impuestos y las acciones exteriores se debe de cumplir:

$$tg\ \gamma = \frac{\delta}{e_n} \le 0.7 \qquad \text{Con: } \delta = \sqrt{\delta^2_{long} + \delta^2_{tran}}$$

Donde $\delta_{long} = \delta_{F,long} + \delta_{mov,long}$ y $\delta_{tran} = \delta_{F,tran} + \delta_{mov,tra}$

$$\delta_{F,lon} = \frac{F_{long} \cdot e_n}{G_{inst} \cdot A_n} \qquad \text{y} \qquad \delta_{F,tran} = \frac{F_{tran} \cdot e_n}{G_{inst} \cdot A_n}$$

Hipótesis 1: Vmax		Hipótesis 2: Vmin		Hipótesis 3: Elong,max		Hipótesis 4: Etrans,max	
δlong=	5.46	δlong=	2.00	δlong=	5.46	δlong=	2.00
δtran=	3.72	δtran=	4.75	δtran=	3.72	δtran=	4.75
δ=	6.61	δ=	5.15	δ=	6.61	δ=	5.15

Nota: Unidades en mm.

Resulta: tg γ= 0.13

La distorsión angular es inferior a la admisible

3.4.- Comprobación de tensiones tangenciales.

3.4.1.- Tensión tangencial producida por Fuerzas Verticales.

La Tensión tangencial debida a esfuerzos verticales es : $\tau_N = \frac{3}{2} \cdot \frac{\sigma_m}{S}$ con $S = \frac{a \cdot b}{2 \cdot (a+b) \cdot e}$

Y su valor debe ser inferior a 3G= 30 kp/cm²

Hipótesis 1: Vmax		Hipótesis 2: Vmin		Hipótesis 3: Elong,max		Hipótesis 4: Etrans,max	
τn=	23.03	τn=	12.05	τn=	23.03	τn=	12.05

Nota: Unidades en kp/cm²

La tensión tangencial cumple al ser menor que 3G

3.4.2.- Tensión tangencial producida por Giros.

La Tensión tangencial debida a Giros entre neopreno y cahpa es: $\tau_\alpha = \sqrt{\tau^2_{\alpha,long} + \tau^2_{\alpha,tran}}$

con $\tau_{\alpha,lon} = \frac{G}{2} \cdot \frac{\alpha_{lon}}{n} \cdot \left(\frac{a}{e}\right)^2$ y $\tau_{\alpha,tra} = \frac{G}{2} \cdot \frac{\alpha_{tra}}{n} \cdot \left(\frac{b}{e}\right)^2$

Y su valor debe ser inferior a 1.5G= 15 kp/cm²

Hipótesis 1: Vmax		Hipótesis 2: Vmin		Hipótesis 3: Elong,max		Hipótesis 4: Etrans,max	
$\tau_{\alpha,long}$=	0.00	$\tau_{\alpha,long}$=	0.00	$\tau_{\alpha,long}$=	0.00	$\tau_{\alpha,long}$=	0.00
$\tau_{\alpha,tra}$=	0.00	$\tau_{\alpha,tra}$=	0.00	$\tau_{\alpha,tra}$=	0.00	$\tau_{\alpha,tra}$=	0.00
τ_α=	0.00	τ_α=	0.00	τ_α=	0.00	τ_α=	0.00

Nota: Unidades en kp/cm²

La tensión tangencial cumple al ser menor que 1.5*G

3.4.3.- Tensión tangencial producida por Fuerzas Horiontales y Deformaciones Impuestas.

La Tensión tangencial debida a Esfuerzos Horizontales y Deformaciones de Acciones Reológicas y Térmicas es:

$$\tau = \sqrt{\left(\tau_{F,l} + \tau_{\delta,l}\right)^2 + \left(\tau_{F,t} + \tau_{\delta,t}\right)^2}$$

Con: $\tau_{F,i} = \frac{F_i}{2 \cdot A_n}$ y $\tau_{\delta,i} = \frac{\delta_i \cdot G}{e_n}$

Y su límita superior debe ser de 0.7G= 7 kp/cm²

Hipótesis 1: Vmax		Hipótesis 2: Vmin		Hipótesis 3: Elong,max		Hipótesis 4: Etrans,max	
$\tau_{F,long}$=	0.69	$\tau_{F,long}$=	0.00	$\tau_{F,long}$=	0.69	$\tau_{F,long}$=	0.00
$\tau_{F,tran}$=	0.74	$\tau_{F,tran}$=	0.95	$\tau_{F,tran}$=	0.74	$\tau_{F,tran}$=	0.95
$\tau_{\delta,lon}$=	0.40	$\tau_{\delta,lon}$=	0.40	$\tau_{\delta,lon}$=	0.40	$\tau_{\delta,lon}$=	0.40
$\tau_{\delta,tra}$=	0.00	$\tau_{\delta,tra}$=	0.00	$\tau_{\delta,tra}$=	0.00	$\tau_{\delta,tra}$=	0.00
τ=	1.32	τ=	1.03	τ=	1.32	τ=	1.03

Nota: Unidades en kp/cm²

La tensión tangencial cumple al ser menor que 0.7*G

3.4.4.- Tensiones Tangenciales Totales.

El total de tensiones tangenciales debe cumplir lo siguiente: $\tau_{total} < 5*G$= 50 kp/cm²

Hipótesis 1: Vmax		Hipótesis 2: Vmin		Hipótesis 3: Elong,max		Hipótesis 4: Etrans,max	
τ=	24.35	τ=	13.08	τ=	24.35	τ=	13.08

Nota: Unidades en kp/cm²

La tensión tangencial cumple al ser menor que 5*G

3.5.- Comprobación de Rotación Máxima Admisible.

La condición a cumplir es: $\alpha_{total} \le \alpha_{adm} = \sqrt{\alpha^2_{adm,long} + \alpha^2_{adm,tran}}$

Con: $\alpha_{adm,lon} = \frac{3 \cdot n}{S} \cdot \frac{\sigma_m}{G} \cdot \left(\frac{e}{a}\right)^2$ y $\alpha_{adm,tran} = \frac{3 \cdot n}{S} \cdot \frac{\sigma_m}{G} \cdot \left(\frac{e}{b}\right)^2$

Hipótesis 1: Vmax		Hipótesis 2: Vmin		Hipótesis 3: Elong,max		Hipótesis 4: Etrans,max	
αtotal=	0.00	αtotal=	0.00	αtotal=	0.00	αtotal=	0.00
αadm,lon=	12.43	αadm,lon=	6.51	αadm,lon=	12.43	αadm,lon=	6.51
αadm,t=	0.07	αadm,t=	0.00	αadm,t=	0.07	αadm,t=	0.00
αadm=	12.43	αadm=	6.51	αadm=	12.43	αadm=	6.51

Unidades:Giros en radianes*10^{-3}

Cumple la condición de giros.

3.6.- Comprobación de Espesor de Chapas de Acero

Llos espesores de la chapas de acero deben ser sueriores a : $e_s \geq \frac{a \cdot \sigma_m}{S \cdot \sigma_e}$

Donde : σ_e= 2400 kp/cm² Es el límite elástico del acero.

y $S = \frac{a \cdot b}{2 \cdot (a + b) \cdot e}$

El espesor mínimo que resulta es de : e_s= 5 > 3.20 mm.

El espesor de las chapas de acero es suficiente

Título: Neoprenos de P1

APOYOS DE NEOPRENO ZUNCHADOS

1.- GEOMETRÍA DEL APOYO Y CARACTERÍSTICAS DEL MATERIAL ELASTOMÉRICO.

Módulo de deformación transversal:

$G_{difendo}$= 10 kp/cm²

$G_{instantaneo}$= 20 kp/cm²

Tensiones admisibles:

Máxima $\sigma_{máx,adm}$= 150 kp/cm²

Mínima $\sigma_{min,adm}$= 20 kp/cm²

Geometría del Apoyo:

Dimensiones en Planta: a= 500 mm.
b= 650 mm.

Espesor de las capas de Neopreno e= 15 mm.

N° de capas de Neopreno: 4 capas

Espesor de las chapas de Acero e_s= 5 mm.

Límite elástico del Acero: σ_e= 2400 kp/cm²

Espesor neto de Neopreno Tipo A en= 65 mm.

Espesor bruto de Neopreno Tipo A eb= 90 mm.

2.- ACCIONES CARACTERÍSTICAS SOBRE EL APOYO

Hipótesis 1: Vmáx		Hipótesis 2: Vmín		Hipótesis 3: Flong,máx		Hipótesis 4: [illegible]	
Vmáx=	470	Vmín=	246	V,con=	470	V,con=	246
Flong,con=	5.11	Flong,con=	0	Flong,máx=	5.11	Flong,con=	0
Ftrans,con=	4.21	Ftrans,con=	5.39	Ftrans,con=	4.21	Ftrans,máx=	5.39
αlong=	0	αlong=	0	αlong=	0	αlong=	0
αtrans=	0	αtrans=	0	αtrans=	0	αtrans=	0

Unidades: fuerzas en tn, giros en radianes*10^{-3}

Desplazamientos impuestos por Efectos Térmicos y Reológicos.

Longitudinal: δlong= 5.6 mm.

Transversal: δtran= mm.

3. COMPROBACIONES DEL APARATO DE APOYO

3.1 Tensiones Normales.

3.1.1.- Compresiones Máximas.

No se puede superar la tensión máxima admisible: $\sigma_{máx,adm} \geq \sigma_{n,máx} = \frac{V_{max}}{An}$

Donde: V,máx= 470 tn

An= 3250 cm²

La compresion máxima es : $\sigma_{n,máx}$ = 144.62 kp/cm²

Cumple la condición de compresiones máximas

3.1.2.- Compresiones mínimas.

La tensión mínima debe ser mayor que la admisible: $\sigma_{min,cal} \le \sigma_{n,min} = \frac{V_{min}}{An}$

Donde: V.min= 246 tn

An= 3250 cm²

La compresion mínima es : $\sigma_{n,min}$ = 75.69 kp/cm²

Cumple la condición de compresiones mínimas

Además se comprobará que bajo las hipótesis de carga mínima vertical o máximo esfuerzo horizontal, el apoyo no repta.

El Coeficiente de Rozamiento será el siguiente:

Contacto Neopreno-Hormigón. $f_r = 0.1 \div 6/\sigma$ Con σ en kp/cm²

Hipótesis de máximo esfuero horizontal.

Se debe cumplir que $H_{max} < f * V_{conc}$

Donde Hmáx es el máximo de:

$$\sqrt{H_{long,max}^2 + H_{trans,conc}^2} \quad \text{ó} \quad \sqrt{H_{trans,max}^2 + H_{long,conc}^2}$$

De donde resulta:

H_{max} = 6.62 tn

f= 0.141

V_{conc}= 470.00 tn

$f * V_{conc}$= 66.50 tn

La fuerza horizontal cumple al no producir la reptación del apoyo

Hipótesis de mínima carga vertical.

Se debe cumplir que $H_{conc} < f * V_{min}$ Con $H_{conc} = \sqrt{H_{long}^2 + H_{trans}^2}$

De donde resulta:

H_{con} = 5.39 tn

f= 0.179

V_{min}= 246.00 tn

$f * V_{min}$= 44.10 tn

La fuerza horizontal cumple al no producir la reptación del apoyo

3.2.- Comprobación de estabilidad.

El espesor neto en de neopreno debe cumplir lo siguiente, siendo a la menor dimensión en planta:

$$50 = \frac{a}{10} \le e_n \le \frac{a}{5} = 100 \quad \text{Donde:} \quad e_n = 65 \text{ mm.}, \quad a = 500 \text{ mm.}$$

El apoyo es estable

3.3.- Comprobación de la distorsión angular.

3.3.1.-Distorsión angular producida por movimiento lentos.

Bajo los movimientos impuestos por las acciones Reológicas y los efectos Térmicos se debe de cumplir:

$$tg\,\gamma = \frac{\delta}{e_n} \le 0.5 \qquad \text{Con: } \delta = \sqrt{\delta^2_{long} + \delta^2_{tran}} \qquad \delta = 5.6 \text{ mm.}$$

Resulta: tg γ= 0.09

La distorsión angular es inferior a la admisible

3.3.2.-Distorsión angular inatantánea.

Bajo los movimientos impuestos y las acciones exteriores se debe de cumplir:

$$tg\,\gamma = \frac{\delta}{e_n} \le 0.7 \qquad \text{Con: } \delta = \sqrt{\delta^2_{long} + \delta^2_{tran}}$$

Donde $\delta_{long} = \delta_{F,long} + \delta_{mov,long}$ y $\delta_{tran} = \delta_{F,tran} + \delta_{mov,tra}$

$$\delta_{F,lon} = \frac{F_{long} \cdot e_n}{G_{inst} \cdot A_n} \qquad y \qquad \delta_{F,tran} = \frac{F_{tran} \cdot e_n}{G_{inst} \cdot A_n}$$

Hipótesis 1 :Vmáx		Hipótesis 2 :Vmín		Hipótesis 3 :Flong,máx		Hipótesis 4 :Ftran,máx	
δlong=	10.71	δlong=	5.60	δlong=	10.71	δlong=	5.60
δtran=	4.21	δtran=	5.39	δtran=	4.21	δtran=	5.39
δ=	11.51	δ=	7.77	δ=	11.51	δ=	7.77

Nota: Unidades en mm.

Resulta: tg γ= 0.18

La distorsión angular es inferior a la admisible

3.4.- Comprobación de tensiones tangenciales.

3.4.1.- Tensión tangencial producida por Fuerzas Verticales.

La Tensión tangencial debida a esfuerzos verticales es : $\tau_N = \frac{3}{2} \cdot \frac{\sigma_m}{S}$ con $S = \frac{a \cdot b}{2 \cdot (a+b) \cdot e}$

Y su valor debe ser inferior a 3G= 30 kp/cm²

Hipótesis 1 :Vmáx		Hipótesis 2 :Vmín		Hipótesis 3 :Flong,máx		Hipótesis 4 :Ftran,máx	
τn=	23.03	τn=	12.05	τn=	23.03	τn=	12.05

Nota: Unidades en kp/cm²

La tensión tangencial cumple al ser menor que 3G

3.4.2.- Tensión tangencial producida por Giros.

La Tensión tangencial debida a Giros entre neopreno y cahpa es: $\tau_\alpha = \sqrt{\tau^2_{\alpha,long} + \tau^2_{\alpha,tran}}$

con $\tau_{\alpha,lon} = \frac{G}{2} \cdot \frac{\alpha_{lon}}{n} \cdot \left(\frac{a}{e}\right)^2$ y $\tau_{\alpha,tra} = \frac{G}{2} \cdot \frac{\alpha_{tra}}{n} \cdot \left(\frac{b}{e}\right)^2$

Y su valor debe ser inferior a 1.5G= 15 kp/cm²

Hipótesis 1 Vmax		Hipótesis 2 Vmin		Hipótesis 3 Hlongmax		Hipótesis 4 Htransmax	
$\tau_{\alpha,long}$=	0.00	$\tau_{\alpha,long}$=	0.00	$\tau_{\alpha,long}$=	0.00	$\tau_{\alpha,long}$=	0.00
$\tau_{\alpha,tra}$=	0.00	$\tau_{\alpha,tra}$=	0.00	$\tau_{\alpha,tra}$=	0.00	$\tau_{\alpha,tra}$=	0.00
τ_{α}=	0.00	τ_{α}=	0.00	τ_{α}=	0.00	τ_{α}=	0.00

Nota: Unidades en kp/cm^2

La tensión tangencial cumple al ser menor que 1.5*G

3.4.3.- Tensión tangencial producida por Fuerzas Horiontales y Deformaciones Impuestas.

La Tensión tangencial debida a Esfuerzos Horizontales y Deformaciones de Acciones Reológicas y Térmicas es:

$$\tau = \sqrt{\left(\tau_{F,l} + \tau_{\delta,l}\right)^2 + \left(\tau_{F,t} + \tau_{\delta,t}\right)^2}$$

Con: $\tau_{F,i} = \frac{F_i}{2 \cdot A_n}$ y $\tau_{\delta,i} = \frac{\delta_i \cdot G}{e_n}$

Y su limita superior debe ser de 0.7G= 7 kp/cm^2

Hipótesis 1 Vmax		Hipótesis 2 Vmin		Hipótesis 3 Hlongmax		Hipótesis 4 Htransmax	
$\tau_{F,long}$=	0.79	$\tau_{F,long}$=	0.00	$\tau_{F,long}$=	0.79	$\tau_{F,long}$=	0.00
$\tau_{F,tran}$=	0.65	$\tau_{F,tran}$=	0.83	$\tau_{F,tran}$=	0.65	$\tau_{F,tran}$=	0.83
$\tau_{\delta,lon}$=	0.86	$\tau_{\delta,lon}$=	0.86	$\tau_{\delta,lon}$=	0.86	$\tau_{\delta,lon}$=	0.86
$\tau_{\delta,tra}$=	0.00	$\tau_{\delta,tra}$=	0.00	$\tau_{\delta,tra}$=	0.00	$\tau_{\delta,tra}$=	0.00
τ=	1.77	τ=	1.20	τ=	1.77	τ=	1.20

Nota: Unidades en kp/cm^2

La tensión tangencial cumple al ser menor que 0.7*G

3.4.4.- Tensiones Tangenciales Totales.

El total de tensiones tangenciales debe cumplir lo siguiente: $\tau_{total} < 5*G$= 50 kp/cm^2

Hipótesis 1 Vmax		Hipótesis 2 Vmin		Hipótesis 3 Hlongmax		Hipótesis 4 Htransmax	
τ=	24.80	τ=	13.25	τ=	24.80	τ=	13.25

Nota: Unidades en kp/cm^2

La tensión tangencial cumple al ser menor que 5*G

3.5.- Comprobación de Rotación Máxima Admisible.

La condición a cumplir es: $\alpha_{total} \le \alpha_{adm} = \sqrt{\alpha^2_{admlong} + \alpha^2_{admtran}}$

Con: $\alpha_{adm,lon} = \frac{3 \cdot n}{S} \cdot \frac{\sigma_m}{G} \cdot \left(\frac{e}{a}\right)^2$ y $\alpha_{adm,tran} = \frac{3 \cdot n}{S} \cdot \frac{\sigma_m}{G} \cdot \left(\frac{e}{b}\right)^2$

Hipótesis 1 Vmax		Hipótesis 2 Vmin		Hipótesis 3 Hlongmax		Hipótesis 4 Htransmax	
αtotal=	0.00	αtotal=	0.00	αtotal=	0.00	αtotal=	0.00
αadm,lon=	16.58	αadm,lon=	8.68	αadm,lon=	16.58	αadm,lon=	8.68
αadm,t=	0.11	αadm,t=	0.00	αadm,t=	0.11	αadm,t=	0.00
αadm=	16.58	αadm=	8.68	αadm=	16.58	αadm=	8.68

Unidades:Giros en radianes*10^{-3}

Cumple la condición de giros.

3.6.- Comprobación de Espesor de Chapas de Acero

Llos espesores de la chapas de acero deben ser sueriores a : $e_s \ge \frac{a \cdot \sigma_m}{S \cdot \sigma_e}$

Donde : σ_e= 2400 kp/cm^2 Es el límite elástico del acero.

y $S = \frac{a \cdot b}{2 \cdot (a + b) \cdot e}$

El espesor mínimo que resulta es de : e_s= 5 > 3.20 mm.

El espesor de las chapas de acero es suficiente

4.3.- CALCULO DE PILAS .

4.3.1.- Acciones en cabeza de pilas.

Acciones en cabeza de pilas.

REACCIONES VERTICALES

ACCIONES EN CABEZA DE P-1

	Valores característicos		Valores cálculo	
	R(kN)	R(kN)	R(kN)	R(kN)
	216.470	216.470	201.500	201.500
	65.340	48.490	60.800	45.200
1	281.810	264.960	262.300	246.700
2	72.900	72.900	67.900	67.900
3	72.900	72.900	0.000	0.000
4	72.900	0.000	67.900	0.000
5	-9.113	45.563	-8.500	42.420
6	115.280	-5.157	0.000	0.000
7	-10.321	65.380	0.000	0.000

	FUSTE 1					FUSTE 2				
	N(kN)	M(kNm)	M(kNm)	H(kN)	H(kN)	N(kN)	M(kNm)	M(kNm)	H(kN)	H(kN)
	417.970	11.228				417.970	11.228			
	126.140	3.405				93.690	2.468			
1	544.110	14.633				511.660	13.695			
2	140.800	3.750				140.800	3.750			
3	72.900	54.675				72.900	54.675			
4	140.800	3.750				0.000	0.000			
5	17.619	10.460				87.983	12.957			
6	115.280	86.460				5.157	3.868			
7	10.321	7.741				65.380	49.035			
8				10.220					10.220	
9				6.370					6.370	
10				4.870					4.870	
11					1.370					1.370
12					7.050					7.050
13					10.830					10.830
14				1.763					1.763	
15				2.708					2.708	

REACCIONES VERTICALES

ACCIONES EN CABEZA DE PILA P-2

	Valores característicos		Valores cálculo	
	R(kN)	R(kN)	R(kN)	R(kN)
	201.500	201.500	201.500	201.500
	60.800	45.200	60.800	45.200
1	262.300	246.700	262.300	246.700
2	67.900	67.900	67.900	67.900
3	67.900	67.900	0.000	0.000
4	67.900	0.000	67.900	0.000
5	-8.500	42.420	-8.500	42.420
6	115.280	-5.157	0.000	0.000
7	-10.321	65.380	0.000	0.000

	FUSTE 1					FUSTE 2				
	N(kN)	M(kNm)	M(kNm)	H(kN)	H(kN)	N(kN)	M(kNm)	M(kNm)	H(kN)	H(kN)
	403.000	0.000				403.000	0.000			
	121.600	0.000				90.400	0.000			
1	524.600	0.000				493.400	0.000			
2	135.800	0.000				135.800	0.000			
3	67.900	50.925				67.900	50.925			
4	135.800	0.000				0.000	0.000			
5	17.000	0.000				84.840	0.000			
6	115.280	86.460				5.157	3.868			
7	10.321	7.741				65.380	49.035			
8				8.610					8.610	
9				0.940					0.940	
10				0.510					0.510	
11					1.380					1.380
12					7.090					7.090
13					10.830					10.830
14				1.773					1.773	
15				2.708					2.708	

4.3.2.- Esfuerzos en E.L.U. de primer y segundo orden en base de pilas.

CALCULO DE PILAS

Debido a la colocación de apoyo único en cada alma aparecen reacciones horizontales transversales de las cargas muertas y sobrecargas. Este efecto no había tenido en cuenta, por lo que se añade a continuación.

Reacción horizontal por apoyo.

Carga muerta $1'579 \times 2$

SC uso $0'275$

VP $0'57$

Total a Pila = $3'913$

$$Fd_{,T} = 1'5 \times (1'579 \times 7) + 1'5\,(0'275 + 0'57) = 51'53\ T$$

Cabeza incluida en Md = 553 · Haila

Acciones en base de Pilas.Estado Límite de Servicio.

Acciones por fuste

gi,Tm	gi,Tm	gi,Tm	gi,Tm
0,07	0,14	0,28	0,55

Viento (+Y)				Viento (-Y)			
con Nieve	sin Nieve	con Nieve	sin Nieve	con Nieve	sin Nieve	con Nieve	sin Nieve
γf	γf	γf	γf	γf	γf	γf	γf
1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
10,72	8,37	1,76	2,69	7,05	10,78	1,37	
8,61	0,94	1,77	2,71	7,00	10,83	1,38	

	h (m)	λ (m/s)
p-1	12,50	2,27
p-2	14,50	2,27

Pi	1,00	Ec Lim V max								Ec Lim V min							
	Fuste 1		Fuste 2				Fuste 1		Fuste 2				Fuste 1		Fuste 2		
	V	Mf	V	Mf			V	Mf	V	Mf			V	Mf	V	Mf	
p-1	140,80	3,75	0,00	0,00			-17,61	-0,48	87,96	2,36			115,28	88,46	-5,16	-3,87	
p-2	135,80	0,00	0,00	0,00			-17,00	0,00	84,84	0,00			115,28	88,46	-5,16	-3,87	

Pi	1,00	Ec Lim Mf max								Vit Máx							
	Fuste 1		Fuste 2				Fuste 1		Fuste 2				Fuste 1		Fuste 2		
	V	Mf	V	Mf			V	Mf	V	Mf			V	Mf	V	Mf	
p-1	140,80	3,75	0,00	0,00			-10,32	-7,74	65,36	49,04							
p-2	135,80	0,00	0,00	0,00			-10,02	-7,74	65,36	49,04							

Pi	1,00	Q Perm								Ec Lim Mf max							
	Fuste 1		Fuste 2				Fuste 1		Fuste 2				Fuste 1		Fuste 2		
	V	Mf	V	Mf			V	Mf	V	Mf			V	Mf	V	Mf	
p-1	544,11	14,63	511,66	13,70			140,80	3,75	140,80	3,75			72,00	54,68	72,00	54,68	
p-2	524,60	0,00	493,40	0,00			135,80	0,00	135,80	0,00			67,00	50,03	67,00	50,03	

Pi	1,00	Ec Lim V max								Vit Máx							
	Fuste 1		Fuste 2				Fuste 1		Fuste 2				Fuste 1		Fuste 2		
	V	Mf	V	Mf			V	Mf	V	Mf			V	Mf	V	Mf	
p-1	140,80	3,75	0,00	0,00			-10,32	-7,74	65,36	49,04							
p-2	135,80	0,00	0,00	0,00			-10,02	-7,74	65,36	49,04							

Ya añadido el efecto de la fuerza transversal de 4 03 T

HIP.V.max

	Fuste 1					Fuste 2				
	Vd(t)	Md,x(mt)	Md,y(mt)	Fd,x(t)	Fd,y(t)	Vd(t)	Md,x(mt)	Md,x(mt)	Fd,x(t)	Fd,y(t)
p-1	871,12	405,69	177,16	24,07	15,89	718,23	309,05	177,16	24,07	15,89
p-2	857,96	272,25	210,06	12,81	16,48	706,32	174,70	210,06	12,81	16,48
p-3	#¡REF!	#¡REF!	#¡REF!	#¡REF!	#¡REF!	#¡REF!	#¡REF!	#¡REF!	#¡REF!	#¡REF!
p-4	#¡REF!	#¡REF!	#¡REF!	#¡REF!	#¡REF!	#¡REF!	#¡REF!	#¡REF!	#¡REF!	#¡REF!

HIP.Mt.max

	Fuste 1					Fuste 2				
	Vd(t)	Md,x(mt)	Md,y(mt)	Fd,x(t)	Fd,y(t)	Vd(t)	Md,x(mt)	Md,y(mt)	Fd,x(t)	Fd,y(t)
p-1	803,22	451,24	177,16	24,07	15,89	650,33	359,98	177,16	24,07	15,89
p-2	790,06	315,95	210,06	12,81	16,48	838,42	225,62	210,06	12,81	16,48
p-3	#¡REF!	#¡REF!	#¡REF!	#¡REF!	#¡REF!	#¡REF!	#¡REF!	#¡REF!	#¡REF!	#¡REF!
p-4	#¡REF!	#¡REF!	#¡REF!	#¡REF!	#¡REF!	#¡REF!	#¡REF!	#¡REF!	#¡REF!	#¡REF!

HIP.Mt.max(Pil.Ref)

	Fuste 1					Fuste 2				
	Vd(t)	Md,x(mt)	Md,y(mt)	Fd,x(t)	Fd,y(t)	Vd(t)	Md,x(mt)	Md,x(mt)	Fd,x(t)	Fd,y(t)
p-1	615,04	310,11	217,13	24,07	20,81	582,59	309,17	217,13	24,07	20,81
p-2	606,88	178,56	260,57	12,81	21,96	575,68	178,56	260,57	12,81	21,96
p-3	#¡REF!	#¡REF!	#¡REF!	#¡REF!	#¡REF!	#¡REF!	#¡REF!	#¡REF!	#¡REF!	#¡REF!

HIP.V.m/n

	Fuste 1					Fuste 2				
	Vd(t)	Md,x(mt)	Md,y(mt)	Fd,x(t)	Fd,y(t)	Vd(t)	Md,x(mt)	Md,y(mt)	Fd,x(t)	Fd,y(t)
p-1	587,11	301,91	177,16	24,07	15,89	735,95	360,56	177,16	24,07	15,89
p-2	579,56	170,82	210,06	12,81	16,48	725,90	227,60	210,06	12,81	16,48
p-3	#¡REF!	#¡REF!	#¡REF!	#¡REF!	#¡REF!	#¡REF!	#¡REF!	#¡REF!	#¡REF!	#¡REF!

CALCULO DE ESFUERZOS DE SEGUNDO ORDEN SEGUN EH-91.ELS.

	Altura Pila			Longitudes Pandeo		Radio Giro		Canto		Esbelt mec.		Esfuerzos Mayorados			Pandeo Longitudinal			Pandeo Transversal			ESFUERZOS RESULTANTES Pandeo Longitudinal				Pandeo Transversal		
	(m)			(m)	(m)	long	transv	long	tran	long	Tans	(t)	(mt)	(ml)	(m)	(m)	(m)	(m)	(m)	(m)	(t)	(ml)	(mt)	(ml)	(t)	(ml)	(ml)
pila	L pila	β,l	β,t	L p,l	L p,v	l,l	l,t	d,l	d,t	λ l	λ lr	Nd	Md,t0	Md,T0	e0	ea	e1,l	e0	ea	e1,t	Nd	Md,l	Md,T0	Md,Tot	Nd	Md,t0	Md,T
P-1	12,50	1,60	1,70	20,0	21,3	0,43	0,43	1,70	1,70	47,06	50,00	871,12	405,69	177,16	0,47	0,20	0,66	0,20	0,20	0,40	871,12	578,93	177,16	606,43	871,12	405,69	351,53
P-1	12,50	1,60	1,70	20,0	21,3	0,43	0,43	1,70	1,70	47,06	50,00	803,22	451,24	177,16	0,56	0,20	0,76	0,22	0,20	0,42	803,22	614,22	177,16	639,26	803,22	451,24	340,02
P-1	12,50	1,60	1,70	20,0	21,3	0,43	0,43	1,70	1,70	47,06	50,00	615,04	310,11	217,13	0,50	0,20	0,70	0,35	0,22	0,57	615,04	433,50	217,13	484,04	615,04	310,11	350,62
P-1	12,50	1,60	1,70	20,0	21,3	0,43	0,43	1,70	1,70	47,06	50,00	587,11	301,91	177,16	0,51	0,20	0,72	0,30	0,21	0,51	587,11	419,94	177,16	465,78	587,11	301,91	301,90
P-1	12,50	1,60	1,70	20,0	21,3	0,43	0,43	1,70	1,70	47,06	50,00	718,23	309,05	177,16	0,43	0,20	0,63	0,25	0,21	0,45	718,23	450,59	177,16	484,17	718,23	309,05	325,33
P-1	12,50	1,60	1,70	20,0	21,3	0,43	0,43	1,70	1,70	47,06	50,00	650,33	359,98	177,16	0,55	0,20	0,76	0,27	0,21	0,48	650,33	491,73	177,16	522,67	650,33	359,98	313,32
P-1	12,50	1,60	1,70	20,0	21,3	0,43	0,43	1,70	1,70	47,06	50,00	582,59	309,17	217,13	0,53	0,20	0,73	0,37	0,22	0,59	582,59	426,69	217,13	476,76	582,59	309,17	344,47
P-1	12,50	1,60	1,70	20,0	21,3	0,43	0,43	1,70	1,70	47,06	50,00	735,95	360,56	177,16	0,49	0,20	0,69	0,24	0,21	0,45	735,95	507,75	177,16	537,77	735,95	360,56	328,42
P-2	14,50	1,40	1,40	20,3	20,3	0,43	0,43	1,70	1,70	47,76	47,76	857,96	272,25	210,06	0,32	0,20	0,51	0,24	0,19	0,43	857,96	439,78	210,06	487,37	857,96	272,25	371,40
P-2	14,50	1,40	1,40	20,3	20,3	0,43	0,43	1,70	1,70	47,76	47,76	790,06	315,95	210,06	0,40	0,20	0,60	0,27	0,19	0,46	790,06	474,94	210,06	519,32	790,06	315,95	360,48
P-2	14,50	1,40	1,40	20,3	20,3	0,43	0,43	1,70	1,70	47,76	47,76	606,88	178,56	260,57	0,29	0,19	0,49	0,43	0,20	0,63	606,88	295,82	260,57	394,22	606,88	178,56	383,75
P-2	14,50	1,40	1,40	20,3	20,3	0,43	0,43	1,70	1,70	47,76	47,76	579,56	170,82	210,06	0,29	0,19	0,49	0,36	0,20	0,56	579,56	282,83	210,06	352,30	579,56	170,82	325,25
P-2	14,50	1,40	1,40	20,3	20,3	0,43	0,43	1,70	1,70	47,76	47,76	706,32	174,70	210,06	0,25	0,19	0,44	0,30	0,19	0,49	706,32	307,73	210,06	372,69	706,32	174,70	346,73
P-2	14,50	1,40	1,40	20,3	20,3	0,43	0,43	1,70	1,70	47,76	47,76	638,42	225,62	210,06	0,35	0,20	0,55	0,33	0,20	0,53	638,42	352,09	210,06	410,00	638,42	225,62	335,34
P-2	14,50	1,40	1,40	20,3	20,3	0,43	0,43	1,70	1,70	47,76	47,76	575,68	178,56	260,57	0,31	0,19	0,50	0,45	0,20	0,66	575,68	290,62	260,57	380,33	575,68	178,56	378,14
P-2	14,50	1,40	1,40	20,3	20,3	0,43	0,43	1,70	1,70	47,76	47,76	725,90	227,60	210,06	0,31	0,19	0,51	0,29	0,19	0,48	725,90	369,10	210,06	424,89	725,90	227,60	349,98

Acciones por fuste

	H(m)	δ(m2)
p-1	12,50	2,270
p-2	14,50	2,270

				qt T/m	qt T/m	qt T/m	qt T/m	
				0,07	0,14	0,28	0,55	
				Viento long(t)		Viento tran(t)		Fra (t)
	Fxa(t)	Rxa(t)	Tza(t)	con sc	sin sc	con sc	sin sc	Centr.
	Tf	Tf	Tf	Tf	Tf	Tf	Tf	Tf
	1,50	1,35	1,50	1,50	1,60	1,50	1,50	1,60
	10,22	6,37	4,87	1,76	2,69	7,05	10,78	1,37
	8,61	0,94	0,51	1,77	2,71	7,09	10,83	1,38

	Tf	1,35	Tf	1,50	Tf	1,50	Tf	1,50	Tf	1,50	Tf	1,60	Tf	1,60
	C.Perm		SC Unif V max		SC Unif Mi max		SC Unif Mt max		SC Unif V min		Vp máx		Vp Min	
	Fuste 1		Fuste 1		Fuste 1		Fuste 1		Fuste 1		Fuste 1		Fuste 1	
	V	Mt	V	Mt	V	Mt	V	Mt	V	Mt	V	Mt	V	Mt
p-1	544,11	14,63	140,80	3,75	72,90	54,68	140,80	3,75	-17,61	-0,46	115,28	86,46	-10,32	-7,74
p-2	524,60	0,00	135,80	0,00	67,90	50,93	135,80	0,00	-17,00	0,00	115,28	86,46	-10,32	-7,74

	C.Perm		SC Unif V max		SC Unif Mi max		SC Unif Mt max		SC Unif V min		Vp máx		Vp Min	
	Fuste 2		Fuste 2		Fuste 2		Fuste 2		Fuste 2		Fuste 2		Fuste 2	
	V	Mt	V	Mt	V	Mt	V	Mt	V	Mt	V	Mt	V	Mt
p-1	511,66	13,70	140,80	3,75	72,90	54,68	0,00	0,00	87,98	2,36	115,28	86,46	-5,16	-3,87
p-2	493,40	0,00	135,80	0,00	67,90	50,93	0,00	0,00	84,84	0,00	115,28	86,46	-5,16	-3,87

	Vp máx		Vp Min	
	Fuste 2		Fuste 2	
	V	Mt	V	Mt
p-1	85,38	49,04	85,38	49,04
p-2	85,38	49,04	85,38	49,04

Ya añadido el efecto de la fuerza transversal de 5 53 T ya mayoradas

	HIP V max									
	Fuste 1					Fuste 2				
	Vd(t)	Md,x(mt)	Md,y(mt)	Fd,x(t)	Fd,y(t)	Vd(t)	Md,x(mt)	Md,x(mt)	Fd,x(t)	Fd,y(t)
p-1	1214,43	594,40	259,30	35,15	23,32	989,96	449,59	259,30	35,15	23,32
p-2	1195,91	406,34	307,62	19,08	24,21	973,13	260,01	307,62	19,08	24,21

	HIP Mi max									
	Fuste 1					Fuste 2				
	Vd(t)	Md,x(mt)	Md,y(mt)	Fd,x(t)	Fd,y(t)	Vd(t)	Md,x(mt)	Md,x(mt)	Fd,x(t)	Fd,y(t)
p-1	1112,58	662,73	259,30	35,15	23,32	888,11	525,97	259,30	35,15	23,32
p-2	1094,06	471,89	307,62	19,08	24,21	871,28	338,40	307,62	19,08	24,21

	HIP Mi min (en kc)									
	Fuste 1					Fuste 2				
	Vd(t)	Md,x(mt)	Md,y(mt)	Fd,x(t)	Fd,y(t)	Vd(t)	Md,x(mt)	Md,x(mt)	Fd,x(t)	Fd,y(t)
p-1	830,31	451,03	319,78	37,83	30,74	786,50	449,78	319,78	35,15	30,74
p-2	819,29	265,81	383,99	21,98	32,46	777,17	265,81	383,99	19,08	32,46

	HIP Vmin									
	Fuste 1					Fuste 2				
	Vd(t)	Md,x(mt)	Md,y(mt)	Fd,x(t)	Fd,y(t)	Vd(t)	Md,x(mt)	Md,x(mt)	Fd,x(t)	Fd,y(t)
p-1	788,40	438,73	259,30	35,15	23,32	1016,54	526,85	259,30	35,15	23,32
p-2	778,31	254,20	307,62	19,08	24,21	1002,50	339,37	307,62	19,08	24,21

CALCULO DE ESFUERZOS DE SEGUNDO ORDEN SEGUN EH-91.ELU.

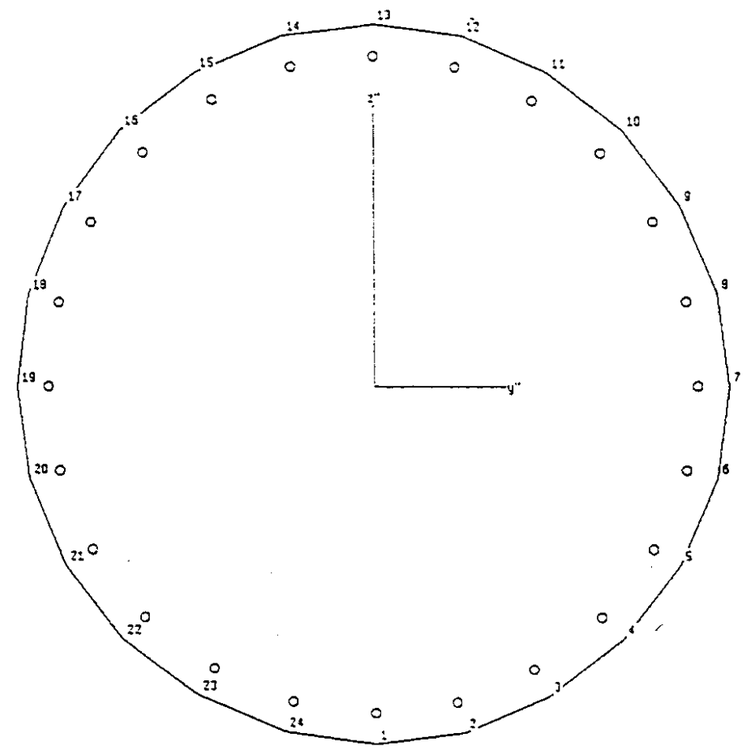
	Altura Pila			Longitudes Pandeo		Radio Giro		Canto		Esbelt mec		Esfuerzos Mayorados			Pandeo Longitudinal			Pandeo Transversal			ESFUERZOS RESULTANTES Pandeo Longitudinal				Pandeo Transversal			
	(m)			(m)	(m)	(m)	(m)	(m)	(m)			(t)	(mt)	(mt)	(m)	(m)	(m)	(m)	(m)	(m)	(t)	(mt)	(mt)	(mt)	(t)	(mt)	(mt)	(mt)
Pila	L.pila	D.1	D.t	L.p.l	L.p.tr	J.l	J.t	d.l	d.t	L.l	L.V	Nd	Md.l0	Md.T0	e0	e1	e1.t	e0	e1	e1.t	Nd	Md.l	Md.T0	Md.Tot	Nd	Md.l0	Md.T	Md.Tot
P-1	12,50	1,60	1,70	20,0	21,3	0,43	0,43	1,70	1,70	47,06	50,00	1214,43	594,40	259,30	0,49	0,20	0,69	0,21	0,20	0,42	1214,43	837,26	259,30	876,80	1214,43	594,40	504,28	779,60
P-1	12,50	1,60	1,70	20,0	21,3	0,43	0,43	1,70	1,70	47,06	50,00	1112,58	662,73	259,30	0,60	0,20	0,80	0,23	0,20	0,44	1112,58	889,79	259,30	926,81	1112,58	662,73	486,84	822,33
P-1	12,50	1,60	1,70	20,0	21,3	0,43	0,43	1,70	1,70	47,06	50,00	830,31	451,03	319,78	0,54	0,20	0,75	0,39	0,22	0,60	830,31	618,93	319,78	696,65	830,31	451,03	502,01	674,87
P-1	12,50	1,60	1,70	20,0	21,3	0,43	0,43	1,70	1,70	47,06	50,00	788,40	438,73	259,30	0,56	0,20	0,76	0,33	0,22	0,54	788,40	598,55	259,30	682,30	788,40	438,73	428,82	613,49
P-1	12,50	1,60	1,70	20,0	21,3	0,43	0,43	1,70	1,70	47,06	50,00	989,96	449,59	259,30	0,45	0,20	0,65	0,26	0,21	0,47	989,96	645,90	259,30	696,01	989,96	449,59	465,38	647,07
P-1	12,50	1,60	1,70	20,0	21,3	0,43	0,43	1,70	1,70	47,06	50,00	888,11	525,97	259,30	0,59	0,20	0,80	0,29	0,21	0,50	888,11	707,12	259,30	753,17	888,11	525,97	447,12	690,94
P-1	12,50	1,60	1,70	20,0	21,3	0,43	0,43	1,70	1,70	47,06	50,00	786,50	449,76	319,78	0,57	0,20	0,78	0,41	0,22	0,63	786,50	609,63	319,78	688,41	786,50	449,76	493,56	667,76
P-1	12,50	1,60	1,70	20,0	21,3	0,43	0,43	1,70	1,70	47,06	50,00	1016,54	528,85	259,30	0,52	0,20	0,72	0,26	0,21	0,46	1016,54	731,40	259,30	776,01	1016,54	528,85	470,08	706,00
P-2	14,50	1,40	1,40	20,3	20,3	0,43	0,43	1,70	1,70	47,76	47,76	1195,91	406,34	307,62	0,34	0,20	0,54	0,26	0,19	0,45	1195,91	642,03	307,62	711,92	1195,91	406,34	534,19	671,16
P-2	14,50	1,40	1,40	20,3	20,3	0,43	0,43	1,70	1,70	47,76	47,76	1094,06	471,89	307,62	0,43	0,20	0,63	0,28	0,19	0,47	1094,06	694,07	307,62	759,19	1094,06	471,89	517,63	700,44
P-2	14,50	1,40	1,40	20,3	20,3	0,43	0,43	1,70	1,70	47,76	47,76	819,29	265,81	383,99	0,32	0,20	0,52	0,47	0,21	0,67	819,29	426,27	383,99	573,72	819,29	265,81	551,97	612,84
P-2	14,50	1,40	1,40	20,3	20,3	0,43	0,43	1,70	1,70	47,76	47,76	778,31	254,20	307,62	0,33	0,20	0,52	0,40	0,20	0,60	778,31	406,77	307,62	610,00	778,31	254,20	464,02	529,01
P-2	14,50	1,40	1,40	20,3	20,3	0,43	0,43	1,70	1,70	47,76	47,76	973,13	260,01	307,62	0,27	0,19	0,46	0,32	0,20	0,51	973,13	445,42	307,62	641,12	973,13	260,01	497,54	561,30
P-2	14,50	1,40	1,40	20,3	20,3	0,43	0,43	1,70	1,70	47,76	47,76	871,28	336,40	307,62	0,39	0,20	0,59	0,35	0,20	0,55	871,28	510,97	307,62	686,42	871,28	336,40	480,20	588,31
P-2	14,50	1,40	1,40	20,3	20,3	0,43	0,43	1,70	1,70	47,76	47,76	777,17	265,81	383,99	0,34	0,20	0,54	0,49	0,21	0,70	777,17	419,11	383,99	588,42	777,17	265,81	544,27	606,71
P-2	14,50	1,40	1,40	20,3	20,3	0,43	0,43	1,70	1,70	47,76	47,76	1002,50	339,37	307,62	0,34	0,20	0,54	0,31	0,19	0,50	1002,50	536,84	307,62	619,73	1002,50	339,37	502,46	608,33

4.3.3.- Dimensionamiento por Flexión.

Armado por Flexión. P.1a

	A_s cm²/ml		
φ-1	204'2	→	42φ25
2	122'81	→	40φ20

Escala 1 : 15.0



Sección :"PILA" Armadura :"B1"
Tipo : tipo pila/ Círculo/tubo Unidades :[cm]
Material :"H25O"

Diámetro exterior = 170.000 cm

Características mecánicas de la sección:
Area : Ax= 2.244 [m2]
Momentos de inercia : Iy= 0.400718 [m4] Iz= 0.400718 [m4]
Inercia a torsión : Ix= 0.819966 [m4]

Posición del centro de gravedad: ys= 0.000 [m] zs= 0.850000 [m]

	I:	R=dist.borde [m]	W=I/R [m3]	W/Ax [m]
izq.	Iz	-0.850	-0.471432	0.210
dch.	Iz	0.850	0.471432	-0.210
abajo	Iy	-0.850	-0.471432	0.210
arriba	Iy	0.850	0.471432	-0.210

Armadura: "B1"

Nº	Nom.mat	Cod.dim.	Area [cm2]	y1 [cm]	z1 [cm]	y2 [cm]	z2 [cm]
1	AEH500	(1)	3.78	0.00	7.45		
2	AEH500	(1)	3.78	20.07	10.09		
3	AEH500	(1)	3.78	38.78	17.84		

Mod 54

	AEH500	(1)	3.78	54.84	30.16
5	AEH500	(1)	3.78	67.16	46.22
6	AEH500	(1)	3.78	74.91	64.93
7	AEH500	(1)	3.78	77.55	85.00
8	AEH500	(1)	3.78	74.91	105.07
9	AEH500	(1)	3.78	67.16	123.78
10	AEH500	(1)	3.78	54.84	139.84
11	AEH500	(1)	3.78	38.78	152.16
12	AEH500	(1)	3.78	20.07	159.91
13	AEH500	(1)	3.78	0.00	162.55
14	AEH500	(1)	3.78	-20.07	159.91
15	AEH500	(1)	3.78	-38.78	152.16
16	AEH500	(1)	3.78	-54.84	139.84
17	AEH500	(1)	3.78	-67.16	123.78
18	AEH500	(1)	3.78	-74.91	105.07
19	AEH500	(1)	3.78	-77.55	85.00
20	AEH500	(1)	3.78	-74.91	64.93
21	AEH500	(1)	3.78	-67.16	46.22
22	AEH500	(1)	3.78	-54.84	30.16
	AEH500	(1)	3.78	-38.78	17.84
24	AEH500	(1)	3.78	-20.07	10.09

Total: 90.79 Cuantía de armadura: 0.405 [o/o]

Cód. dimensionamiento: (0) = As constante
Cód. dimensionamiento: (1) = Aumentar As en zonas comprimida y traccionada
Cód. dimensionamiento: (2) = Aumentar As solo en zona traccionada

¡No se han definido valores para el cálculo a cortante!

Características del material:

Nom.Mat.	Módulo E [t/m2]	0.85*fcd,fyd [t/m2]	eps-fc [o/oo]	fct [t/m2]	fcv [t/m2]	fcw,min [t/m2]
"H250"	3.00E+06	-1416.000	-2.000	0.0	64.600	2500.000
"AEH500"	2.10E+07	44347.0				

Leyenda:
fcd,fyd resistencia de cálculo del hormigón,acero
eps-fc deformación al final de la parábola (fig.2.3, cap.2.2)
fct resistencia de cálculo a tracción del hormigón
fcv resistencia virtual de cálculo del hormigón a esfuerzo cortante

Dimensionamiento : Pila "PILA"/"B1"

Esfuerzos (Rotura) Unidades : [tm]

N	Vy	Vz	Mx	My	Mz	Alpha
-1112.580				926.810		45.0

Armadura Longitudinal:		y1 [cm]	z1 [cm]	y2 [cm]	z2 [cm]	dado [cm2]	dimens. [cm2]	As-nuevo [cm2]
1	"AEH500"	0.0	7.4			3.78	8.51	8.51
2	"AEH500"	20.1	10.1			3.78	8.51	8.51
3	"AEH500"	38.8	17.8			3.78	8.51	8.51
4	"AEH500"	54.8	30.2			3.78	8.51	8.51
5	"AEH500"	67.2	46.2			3.78	8.51	8.51
6	"AEH500"	74.9	64.9			3.78	8.51	8.51
7	"AEH500"	77.6	85.0			3.78	8.51	8.51
	"AEH500"	74.9	105.1			3.78	8.51	8.51
9	"AEH500"	67.2	123.8			3.78	8.51	8.51
10	"AEH500"	54.8	139.8			3.78	8.51	8.51
11	"AEH500"	38.8	152.2			3.78	8.51	8.51
12	"AEH500"	20.1	159.9			3.78	8.51	8.51
13	"AEH500"	0.0	162.6			3.78	8.51	8.51
14	"AEH500"	-20.1	159.9			3.78	8.51	8.51
15	"AEH500"	-38.8	152.2			3.78	8.51	8.51
16	"AEH500"	-54.8	139.8			3.78	8.51	8.51
17	"AEH500"	-67.2	123.8			3.78	8.51	8.51
18	"AEH500"	-74.9	105.1			3.78	8.51	8.51
19	"AEH500"	-77.6	85.0			3.78	8.51	8.51
20	"AEH500"	-74.9	64.9			3.78	8.51	8.51
21	"AEH500"	-67.2	46.2			3.78	8.51	8.51
22	"AEH500"	-54.8	30.2			3.78	8.51	8.51
23	"AEH500"	-38.8	17.8			3.78	8.51	8.51
24	"AEH500"	-20.1	10.1			3.78	8.51	8.51

Cuantía arm. 0.91 [o/o] Suma 204.20

Deformaciones y tensiones extremas (Rotura):

1	Coordenadas y [cm]	z [cm]	Eps [o/oo]	Estado-II [t/m2]	
Hormigón-Min	0.00	170.00	-3.500	-1416.000	"H250"
Armadura-Min	0.00	162.55	-3.180	-44347.0	"AEH500"
Hormigón-Max	0.00	0.00	3.792	0.000	"H250"
Armadura-Max	-0.00	7.45	3.473	44347.0	"AEH500"

Fibra neutra zn 88.41 cm yn -0.00 cm Angulo 0.0
Ancho zona comprim. 81.59 cm Zona comprimida/Canto útil 0.58

4.3.4.- Comprobación frente a Esfuerzos Transversales.

Primer orden -ELU

	Vd(t)	Md,l(mt)	Md,t(mt)	Fd,l(t)	Fd,t(t)
P-1	-1214 43	837 26	259 30	35 15	23 32
	-1112 58	889 79	259 30	35 15	23 32
	-830 31	618 93	319 78	37 83	30 74
	-788 40	598 55	259 30	35 15	23 32
P-2	-1195 91	642 03	307 62	19 08	24 21
	-1094 06	694 07	307 62	19 08	24 21
	-819 29	265 81	551 97	21 98	32 46
	-778 31	254 20	464 02	19 08	24 21

	Vd(t)	Md,l(mt)	Md,t(mt)	Fd,l(t)	Fd,t(t)
F2	-989 96	645 90	259 30	35 15	23 32
	-888 11	707 12	259 30	35 15	23 32
	-786 50	609 63	319 78	35 15	30 74
	-1016 54	731 40	259 30	35 15	23 32
	-973 13	260 01	497 54	19 08	24 21
	871 28	510 97	307 62	19 08	24 21
	-777 17	265 81	544 27	19 08	32 46
	-1002 50	536 84	307 62	19 08	24 21

2º orden -ELU

Vd(t)	Md,l(mt)	Md,t(mt)	Fd,l(t)	Fd,t(t)
1214 43	837 26	259 30	35 15	23 32
1112 58	889 79	259 30	35 15	23 32
830 31	618 93	319 78	37 83	30 74
788 40	598 55	259 30	35 15	23 32
1195 91	642 03	307 62	19 08	24 21
1094 06	694 07	307 62	19 08	24 21
819 29	426 27	383 99	21 98	32 46
778 31	406 77	307 62	19 08	24 21

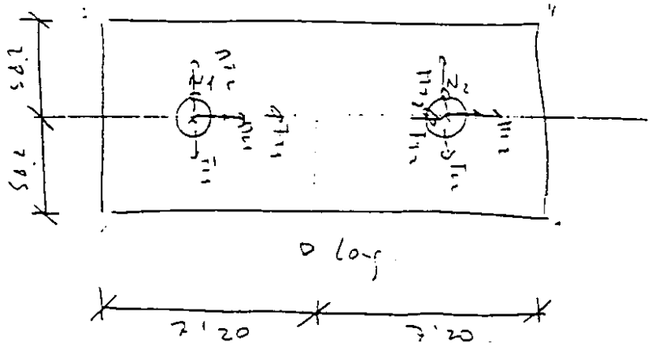
	Vd(t)	Md,l(mt)	Md,t(mt)	Fd,l(t)	Fd,t(t)
F2	989 96	645 90	259 30	35 15	23 32
	888 11	707 12	259 30	35 15	23 32
	786 50	609 63	319 78	35 15	30 74
	1016 54	731 40	259 30	35 15	23 32
	973 13	445 42	307 62	19 08	24 21
	871 28	510 97	307 62	19 08	24 21
	777 17	419 11	383 99	19 08	32 46
	1002 50	536 84	307 62	19 08	24 21

En total Primer + 2º ELU (tablas en papel)

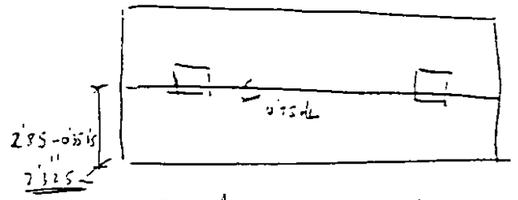
	Vd(t)	Md,l(mt)	Md,t(mt)	Fd,l(t)	Fd,t(t)
P-1	2204 39	1481 17	1528 69	70 29	46 64
	2000 69	1596 92	1528 69	70 29	46 64
	1616 80	1228 56	896 69	72 98	61 48
	1804 95	1329 95	1545 23	70 29	46 64
P-2	2169 04	1087 45	1617 74	38 16	48 41
	1965 34	1205 04	1617 74	38 16	48 41
	1596 46	845 38	957 52	41 06	64 93
	1780 81	943 61	1624 11	38 16	48 41

CALCULO DE ESFUERZOS DE SEGUNDO ORDEN SEGUN EHE-91 EH-91.

Altura Pila		Longitudes Pandeo			Radio Giro		Canto		Esbelt mec		Esfuerzos Mayorados			Pandeo Longitudinal		Pandeo Transversal		
					long	transv	long	tran	long	Tans	(t)	(mt)	(mt)	(m)	(m)	(mt)	(mt)	(mt)
Pila	Lt pila	(m)	L p,l	L p,t	ll	lt	d,l	d,t	λ l	λ tr	Nd	Md,T0	Md,0	e0	e,l	Md,T	Md,0	Md,Tot
P-1	12.50	1.60	1.70	20.0	21.3	0.43	0.43	1.70	1.70	47.06	50.00	1214.43	594.40	0.49	0.20	0.69	504.28	670.901
P-1	12.50	1.60	1.70	20.0	21.3	0.43	0.43	1.70	1.70	47.06	50.00	1112.58	662.73	0.60	0.20	0.80	486.84	672.559
P-1	12.50	1.60	1.70	20.0	21.3	0.43	0.43	1.70	1.70	47.06	50.00	830.31	451.03	0.54	0.20	0.75	502.01	667.784
P-1	12.50	1.60	1.70	20.0	21.3	0.43	0.43	1.70	1.70	47.06	50.00	788.40	438.73	0.56	0.20	0.76	428.82	613.241
P-1	12.50	1.60	1.70	20.0	21.3	0.43	0.43	1.70	1.70	47.06	50.00	989.96	449.59	0.45	0.20	0.65	465.38	677.072
P-1	12.50	1.60	1.70	20.0	21.3	0.43	0.43	1.70	1.70	47.06	50.00	888.11	525.97	0.59	0.20	0.80	447.12	690.576
P-1	12.50	1.60	1.70	20.0	21.3	0.43	0.43	1.70	1.70	47.06	50.00	786.50	449.76	0.57	0.20	0.78	493.56	691.772
P-1	12.50	1.60	1.70	20.0	21.3	0.43	0.43	1.70	1.70	47.06	50.00	1016.54	526.85	0.52	0.20	0.72	470.08	706.316
P-1	12.50	1.60	1.70	20.0	21.3	0.43	0.43	1.70	1.70	47.06	50.00	1195.91	406.34	0.34	0.20	0.54	534.19	671.381
P-2	14.50	1.40	1.40	20.3	20.3	0.43	0.43	1.70	1.70	47.76	47.76	1094.06	471.89	0.43	0.20	0.63	517.63	676.445
P-2	14.50	1.40	1.40	20.3	20.3	0.43	0.43	1.70	1.70	47.76	47.76	819.29	265.81	0.32	0.20	0.52	551.97	681.341
P-2	14.50	1.40	1.40	20.3	20.3	0.43	0.43	1.70	1.70	47.76	47.76	778.31	254.20	0.33	0.20	0.52	464.02	672.160
P-2	14.50	1.40	1.40	20.3	20.3	0.43	0.43	1.70	1.70	47.76	47.76	973.13	260.01	0.27	0.19	0.46	497.54	667.384
P-2	14.50	1.40	1.40	20.3	20.3	0.43	0.43	1.70	1.70	47.76	47.76	871.28	336.40	0.39	0.20	0.59	480.20	666.317
P-2	14.50	1.40	1.40	20.3	20.3	0.43	0.43	1.70	1.70	47.76	47.76	777.17	265.81	0.34	0.20	0.54	544.27	666.715
P-2	14.50	1.40	1.40	20.3	20.3	0.43	0.43	1.70	1.70	47.76	47.76	1002.50	339.37	0.34	0.20	0.54	502.46	666.335



Sección de cálculo longitudinal



Con un diámetro equivalente de
1'70 + 1'50 = 3'20.

En la pila hipostática ⇒

$Md_{Long} = 1903'54\ mT/m \cdot 1'7\ m = 129'49\ mT/m$

Si se desconoce el peso de la zapata ⇒

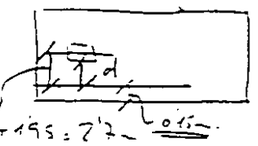
$-2 \cdot 2'5 \cdot 1'35 \cdot \frac{2'32^2}{2} = -19'27\ mT/m$

$Md_L = 111'74\ mT/m$ → As normal = 13'37 cm²/m.

Cálculo longitudinal

$Vd_L = \frac{111'49}{1'7}\ mT - 2 \cdot 2'5 \cdot 1'35\,(0'15) = 6'711\ T/m$ → Cumple de sobra.

Al canto útil del bordo.



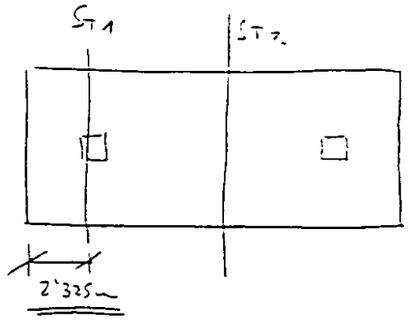
Cuantía mínima →

Losa → 1'8‰ ⇒ 18 cm²/ml en cada cara

Se colocan Ø16 a 0'10 en cada cara como mínimo

St.o en transversal superior → Ø20 a 0'10.

Cálculo de secciones transversales



La ST1 → Esfuerzo de flexión positivo →

$Md = 619'51 \text{ mT} / 2'325 \text{ m} = \underline{\underline{107'67 \text{ T/ml}}}$

Sin el peso de la Viga → $-2'7 \cdot 1'35 \cdot \frac{2'325^2}{2} = \underline{\underline{-12'72 \text{ T/ml}}}$

$Md = 90'44 \text{ mT/ml} \rightarrow As_{inf} = \underline{\underline{10'83 \text{ cm}^2/\text{ml}}}$

Vd Transversal → Cuelo de sobre.

Sección ST1 ⇒.

$Md = \frac{590'71}{2'325} - 2'7 \cdot 1'35 \cdot \frac{(4'37)^2}{2} = 857'90 \text{ mT/ml}$

Si se desea el efecto de la carga variable de sobrecarga. Para el caso de Norma del Lado de la seguridad

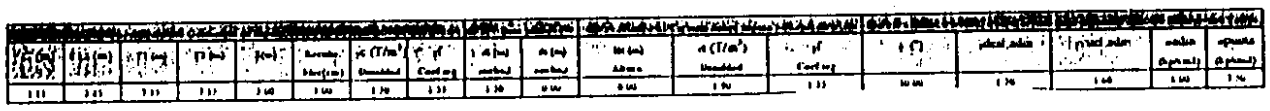
$Vd = 270'31 \text{ T}$.

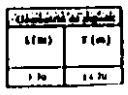
$Md = -270'31 \cdot 4'5 / 2'325 = -614'45 \text{ T/ml}$

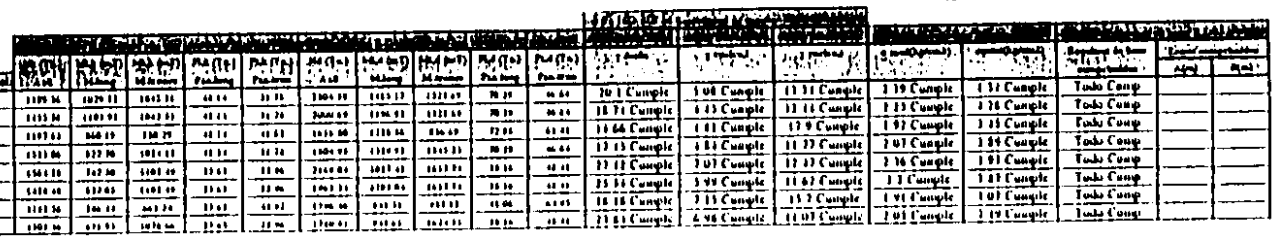
$Md_{total} = 857'9 - 614'45 = 238'4 \text{ mT/ml} \Rightarrow As_{necesario} = \underline{\underline{28'43 \text{ cm}^2/\text{ml}}}$

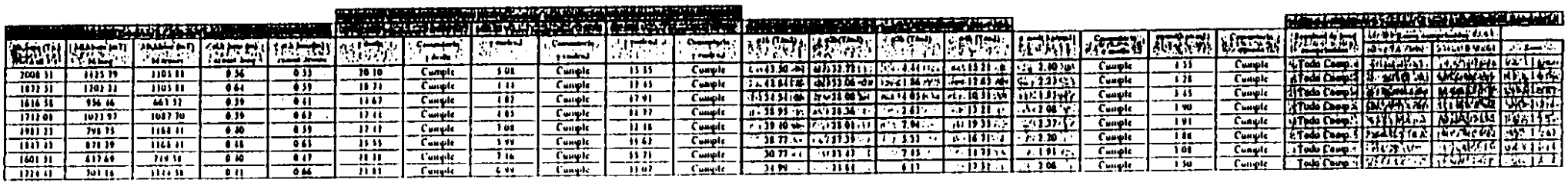
En el cuelo ⇒ $Vd = \frac{1171'4}{2'325} - 2'7 \cdot 1'35 \cdot (4'37/2) - \frac{270'31}{2'325} = \underline{\underline{19'35 \text{ T/ml}}}$

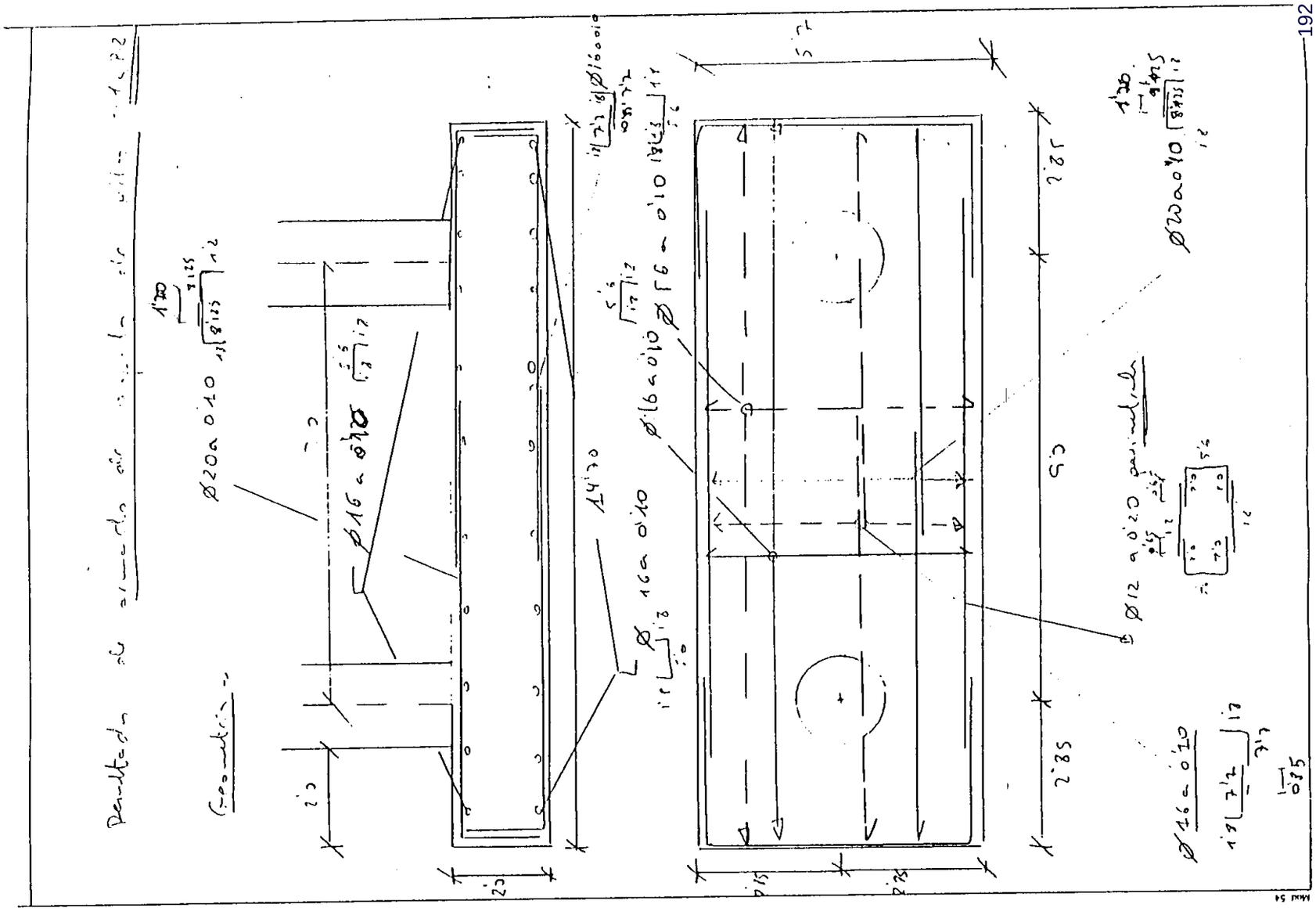
cuelo simple











Dimensionamiento : Pila "PILA"/"S1"

Esfuerzos (Rotura) Unidades : [tm]

N	Vy	Vz	Mx	My	Mz	Alpha
-1094.060				759.190		45.0

Armadura Longitudinal:	y1 [cm]	z1 [cm]	y2 [cm]	z2 [cm]	dado [cm2]	dimens. [cm2]	As-nuevo [cm2]
1 "AEH500"	0.0	7.4			3.78	5.12	5.12
2 "AEH500"	20.1	10.1			3.78	5.12	5.12
3 "AEH500"	38.8	17.8			3.78	5.12	5.12
4 "AEH500"	54.8	30.2			3.78	5.12	5.12
5 "AEH500"	67.2	46.2			3.78	5.12	5.12
6 "AEH500"	74.9	64.9			3.78	5.12	5.12
7 "AEH500"	77.6	85.0			3.78	5.12	5.12
"AEH500"	74.9	105.1			3.78	5.12	5.12
9 "AEH500"	67.2	123.8			3.78	5.12	5.12
10 "AEH500"	54.8	139.8			3.78	5.12	5.12
11 "AEH500"	38.8	152.2			3.78	5.12	5.12
12 "AEH500"	20.1	159.9			3.78	5.12	5.12
13 "AEH500"	0.0	162.6			3.78	5.12	5.12
14 "AEH500"	-20.1	159.9			3.78	5.12	5.12
15 "AEH500"	-38.8	152.2			3.78	5.12	5.12
16 "AEH500"	-54.8	139.8			3.78	5.12	5.12
17 "AEH500"	-67.2	123.8			3.78	5.12	5.12
18 "AEH500"	-74.9	105.1			3.78	5.12	5.12
19 "AEH500"	-77.6	85.0			3.78	5.12	5.12
20 "AEH500"	-74.9	64.9			3.78	5.12	5.12
21 "AEH500"	-67.2	46.2			3.78	5.12	5.12
22 "AEH500"	-54.8	30.2			3.78	5.12	5.12
23 "AEH500"	-38.8	17.8			3.78	5.12	5.12
24 "AEH500"	-20.1	10.1			3.78	5.12	5.12

Cuantía arm. 0.55 [o/o] Suma 122.81

Deformaciones y tensiones extremas (Rotura):

1	Coordenadas y [cm]	z [cm]	Eps [o/oo]	Estado-II [t/m2]	
Hormigón-Min	-0.00	170.00	-3.500	-1416.000	"H250"
Armadura-Min	-0.00	162.55	-3.175	-44347.0	"AEH500"
Hormigón-Max	-0.00	0.00	3.915	0.000	"H250"
Armadura-Max	-0.00	7.45	3.590	44347.0	"AEH500"

Fibra neutra zn 89.75 cm yn -0.00 cm Angulo 0.0
Ancho zona comprim. 80.25 cm Zona comprimida/Canto útil 0.57

4.4. Pilas con cimentación superficial.

primer orden.ELS

	Fuste 1					Fuste 2				
	Vk(t)	Mk,t(mt)	Mk,t(mt)	Fk,t(t)	Fk,t(t)	Vk(t)	Mk,t(mt)	Mk,t(mt)	Fk,t(t)	Fk,t(t)
p-1	871.12	405 69	177 16	24 07	15 89	718 23	309 05	177 16	24 07	15 89
p-1	803 22	451 24	177 16	24 07	15 89	650 33	359 98	177 16	24 07	15 89
p-1	615 04	310 11	217 13	24 07	20 81	582 59	309.17	217 13	24.07	20 81
p-1	587 11	301 91	177 16	24 07	15 89	735 95	360 56	177 16	24 07	15 89
p-2	857 96	272 25	210 06	12 81	16 48	706 32	174 70	210 06	12 81	16 48
p-2	790 06	315 95	210 06	12 81	16 48	638 42	225 62	210 06	12 81	16 48
p-2	606 88	178 56	260 57	12 81	21 96	575 68	178.56	260 57	12 81	21 96
p-2	579 56	170 82	210 06	12 81	16 48	725 90	227 60	210 06	12 81	16 48

2° orden ELS

	Fuste 1					Fuste 2				
	Vk(t)	Mk,t(mt)	Mk,t(mt)	Fk,t(t)	Fk,t(t)	Vk(t)	Mk,t(mt)	Mk,t(mt)	Fk,t(t)	Fk,t(t)
p-1	871.12	578 93	177 16	24 07	15 89	718 23	450 59	177 16	24 07	15 89
p-1	803 22	614 22	177 16	24 07	15 89	650 33	491 73	177 16	24 07	15 89
p-1	615 04	433 50	217 13	24 07	20 81	582 59	426.69	217 13	24 07	20 81
p-1	587 11	419 94	177 16	24 07	15 89	735 95	507 75	177 16	24 07	15 89
p-2	857 96	439 78	210 06	12 81	16 48	706 32	307 73	210 06	12 81	16 48
p-2	790 06	474 94	210 06	12 81	16 48	638 42	352 09	210 06	12 81	16 48
p-2	606 88	295 82	260 57	12 81	21 96	575 68	290 62	260 57	12 81	21 96
p-2	579 56	282 83	210 06	12 81	16 48	725 90	369 10	210 06	12 81	16 48

En total

	Vk(t)	Mk,t(mt)	Mk,t(mt)	Fk,t(t)	Fk,t(t)
P-1	1589 36	1029 52	1042 31	48 14	31 78
	1453 56	1105 95	1042 31	48 14	31 78
	1197 63	860.19	580 29	48 14	41 62
	1323 06	927 70	1024 13	48 14	31 78

	Vk(t)	Mk,t(mt)	Mk,t(mt)	Fk,t(t)	Fk,t(t)
p-2	1564 28	747 50	1102 49	25 63	32 96
	1428 48	827 03	1102 49	25 63	32 96
	1182 56	586.44	661 54	25 63	43 92
	1305 46	651.93	1078 66	25 63	32 96

Acciones en estado límite de servicio

CALCULO DE ESFUERZOS DE SEGUNDO ORDEN SEGUN EH-91.ELS.

	Altura Pila			Longitudes Pandeo		Radio Giro		Canto		Esbelt mec		Esfuerzos Mayorados			Pandeo Longitudinal			Pandeo Transversal			Pandeo Longitudinal				Pandeo Transversal			
	(m)			(m)	(m)	long (m)	transv (m)	long (m)	tran (m)	long	Tans	(t)	(mt)	(mt)	(m)	(m)	(m)	(m)	(m)	(m)	(t)	(mt)	(mt)	(mt)	(t)	(mt)	(mt)	(mt)
Pilas	c Pipila	β,l	β,t	L p,l	L p,tr	l,l	l,t	d,l	d,t	λ l	λ tr	Nd	Md,l0	Md,T0	e0	ea	et,t	e0	ea	et,t	Nd	Md,l	Md,T0	Md,Tot	Nd	Md,t0	Md,Tot	
P-1	12.50	1.60	1.70	20 0	21 3	0 43	0.43	1.70	1.70	47.06	50 00	871.12	405.69	177.16	0.47	0 20	0.66	0 20	0 20	0.40	871.12	578.93	177.16	1005.43	871.12	405.69	351.53	463.80
P-1	12.50	1 60	1.70	20 0	21 3	0 43	0 43	1.70	1.70	47.06	50 00	803 22	451.24	177.16	0 56	0 20	0 76	0 22	0 20	0 42	803.22	614 22	177.16	1039.28	803.22	451 24	340 02	468.01
P-1	12.50	1 60	1 70	20 0	21.3	0 43	0 43	1.70	1.70	47.06	50 00	615 04	310.11	217.13	0 50	0 20	0 70	0 35	0 22	0 57	615.04	433 50	217.13	748.91	615.04	310.11	350 82	466.06
P-1	12.50	1.60	1 70	20 0	21.3	0 43	0 43	1.70	1.70	47.06	50 00	587.11	301 91	177.16	0 51	0 20	0 72	0 30	0 21	0 51	587.11	419 94	177.16	1006.78	587.11	301 91	301 90	422.98
P-1	12.50	1.60	1.70	20 0	21.3	0 43	0 43	1.70	1.70	47.06	50 00	718.23	309 05	177.16	0 43	0 20	0 63	0 25	0 21	0 45	718.23	450 59	177.16	1084.17	718.23	309 05	325 33	434.21
P-1	12.50	1 60	1.70	20 0	21.3	0 43	0 43	1.70	1.70	47.06	50 00	650 33	359 98	177.16	0 55	0 20	0 76	0 27	0 21	0 48	650.33	491 73	177.16	1022.67	650.33	359 98	313 32	427.23
P-1	12.50	1 60	1.70	20 0	21.3	0 43	0 43	1.70	1.70	47 06	50 00	582 59	309.17	217.13	0 53	0 20	0 73	0 37	0 22	0 59	582.59	426 69	217.13	1470.78	582.59	309.17	344 47	462.82
P-1	12.50	1 60	1.70	20 0	21.3	0 43	0 43	1 70	1.70	47 06	50 00	735 95	360 56	177.16	0 49	0 20	0 69	0 24	0 21	0 45	735.95	507.75	177.16	1635.86	735.95	360 56	328 42	441.01
P-2	14.50	1.40	1.40	20 3	20 3	0 43	0 43	1 70	1.70	47.76	47.76	857.96	272 25	210.06	0 32	0.20	0 51	0 24	0.19	0 43	857.96	439.78	210.06	2487.37	857.96	272.25	371.40	498.61
P-2	14.50	1.40	1.40	20 3	20 3	0 43	0 43	1.70	1 70	47.76	47.76	790 06	315.95	210 06	0 40	0 20	0 60	0 27	0 19	0 46	790.06	474.94	210 06	2519.32	790.06	315 95	360 48	483.71
P-2	14.50	1.40	1.40	20 3	20 3	0 43	0 43	1.70	1.70	47 76	47 76	606 88	178 56	260 57	0.29	0 19	0 49	0 43	0 20	0 63	606.88	295.82	260.57	6364.22	606.88	178 56	383 75	514.98
P-2	14.50	1.40	1.40	20.3	20 3	0 43	0 43	1.70	1.70	47 76	47.76	579 56	170 82	210 06	0 29	0 19	0 49	0 36	0 20	0 56	579.56	282.83	210 06	3362.30	579.56	170 82	325 25	436.57
P-2	14.50	1.40	1.40	20 3	20 3	0 43	0 43	1.70	1.70	47.76	47.76	706 32	174 70	210 06	0 25	0 19	0 44	0 30	0.19	0 49	706.32	307.73	210 06	2372.69	706.32	174 70	346 73	465.39
P-2	14.50	1.40	1.40	20 3	20 3	0 43	0 43	1.70	1.70	47.76	47.76	638 42	225 62	210.06	0.35	0 20	0.55	0 33	0 20	0 53	638.42	352 09	210 06	2410.007	638.42	225 62	335 34	450.17
P-2	14 50	1.40	1.40	20.3	20 3	0 43	0 43	1 70	1.70	47 76	47 76	575 68	178 56	260 57	0 31	0 19	0 50	0 45	0 20	0 66	575.68	290 62	260 57	3390.331	575.68	178 56	378 14	507.61
P-2	14.50	1 40	1.40	20 3	20 3	0 43	0 43	1 70	1.70	47 76	47 76	725 90	227 60	210 06	0 31	0 19	0 51	0 29	0 19	0 48	725.90	369 10	210 06	3424.69	725.90	227 60	349 98	469.97

Armadura de cuarta Pila

$V_{u1} = 0'3\, f_{cd}\, 0'75\, A_c = 0'3 \cdot \frac{2500 \cdot 0'7}{1'5} \cdot 0'75\, 1'2\, \eta = 756\ T$

$V_d < V_{u1}$

$V_{cu} = 5 \cdot \sqrt{\frac{750 \cdot 0'4}{1'5}} \cdot 1'7 \cdot 1'60 = 166\ T$

$V_d < V_{cu} \Rightarrow$ Armadura mínima

$A_{s2} = \frac{0'02 \cdot f_{cd} \cdot b}{f_{yd}} = \frac{0'02 \cdot \frac{2500 \cdot 0'4}{1'5} \cdot 1'2}{4'2} = 11'4\ cm^2/m$

$\Rightarrow$ C ϕ12a 0'15 = 15'07 cm^2/m

ANEXO: CÁLCULO DEL TABLERO.

ESTRUCTURA E-20

EN AQUELLOS VANOS DE LUCES MENORES A LA DEL VANO TIPO SE MANTIENE LA MISMA ARMADURA ACTIVA Y PASIVA EN LOS EXTREMOS DE MODO QUE QUEDEN DEL LADO DE LA SEGURIDAD.

QUEDAN POR TANTO ARMADAS LAS VIGAS DE LOS VANOS DE LUCES MENORES CON EL ARMADO DEL TIPO.

ALVI, S.A.

Fdo: JAVIER MARIA LOPEZ GARCIA
INGENIERO DE CAMINOS

ESTRUCTURA E-20. M-45 VANO TIPO :

EJE O'DONELL – N-IV.

CÁLCULO DE ESFUERZOS Y DIMENSIONAMIENTO

CÁLCULO DEL VANO TIPO.



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OFICINA TÉCNICA MADRID

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CÁLCULO DE ESFUERZOS

1. Planteamiento de cálculo.

Se ha empleado el programa de cálculo por el método de los elementos finitos ANSYS 5.5 para analizar el tablero. La modelización se ha realizado a partir de un vano tipo de 39.50 m de luz de cálculo, coaccionando mediante muelles que simulan los apoyos de neopreno.

El objetivo del estudio es dimensionar y armar la viga prefabricada sometida a las cargas de proyecto, analizando en las vigas los esfuerzos y flexiones transversales en la losa. Todas las vigas se fabricarán con este armado obtenido.

2. Descripción del modelo de elementos finitos.

2.1. Elementos utilizados.

Los elementos empleados para simular el tablero del puente son tipo sólido estructural de 20 nodos (SOLID95) con tres grados de libertad por nodo. Se eligieron estos elementos para representar con exactitud la variación de espesores de la losa y así afinar el cálculo de esfuerzos de flexión transversal.

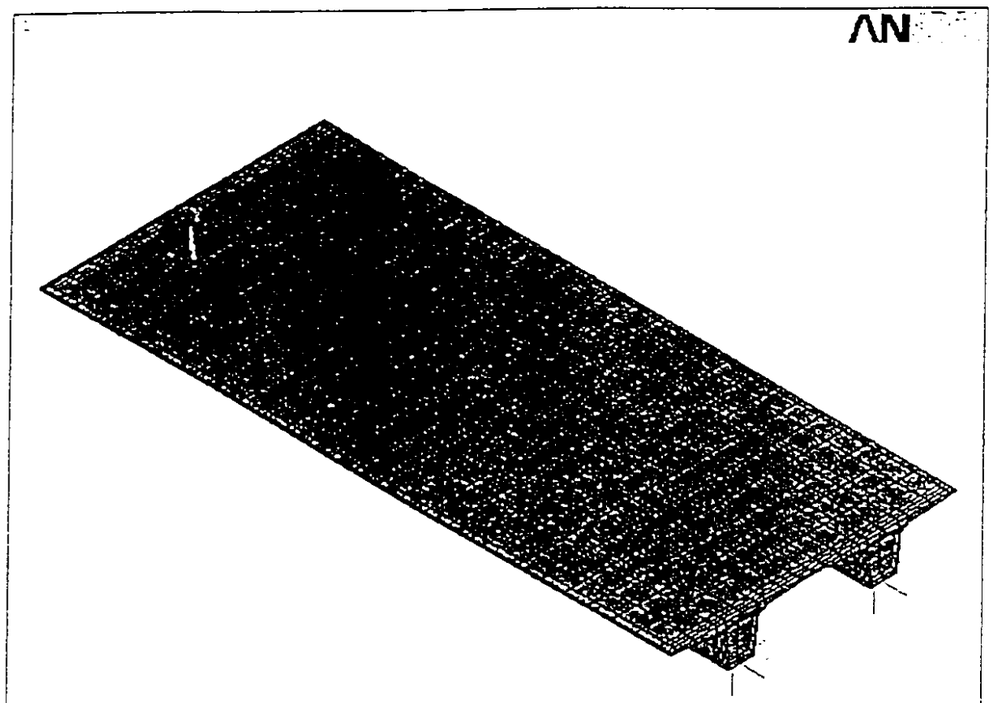
Los elementos empleados para simular los apoyos de neopreno son muelles unidireccionales (COMBIN14).

2.2. Modelo estructural.

La estructura modelizada corresponde a un vano de 39.50 m de luz de cálculo, formado por 2 vigas tipo C-240 de 2.40 m de canto separadas 9.00 m entre ejes. La longitud total de las vigas es de

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40.50 m. El ancho total del tablero es de 18.00 m. con losa de compresión in situ de espesor variable entre 0.20 m y 0.40 m. Los voladizos extremos son de 2.94 m de luz libre.



PERSPECTIVA DEL MODELO

En los extremos de las vigas se disponen diafragmas de 0.50 m de espesor.

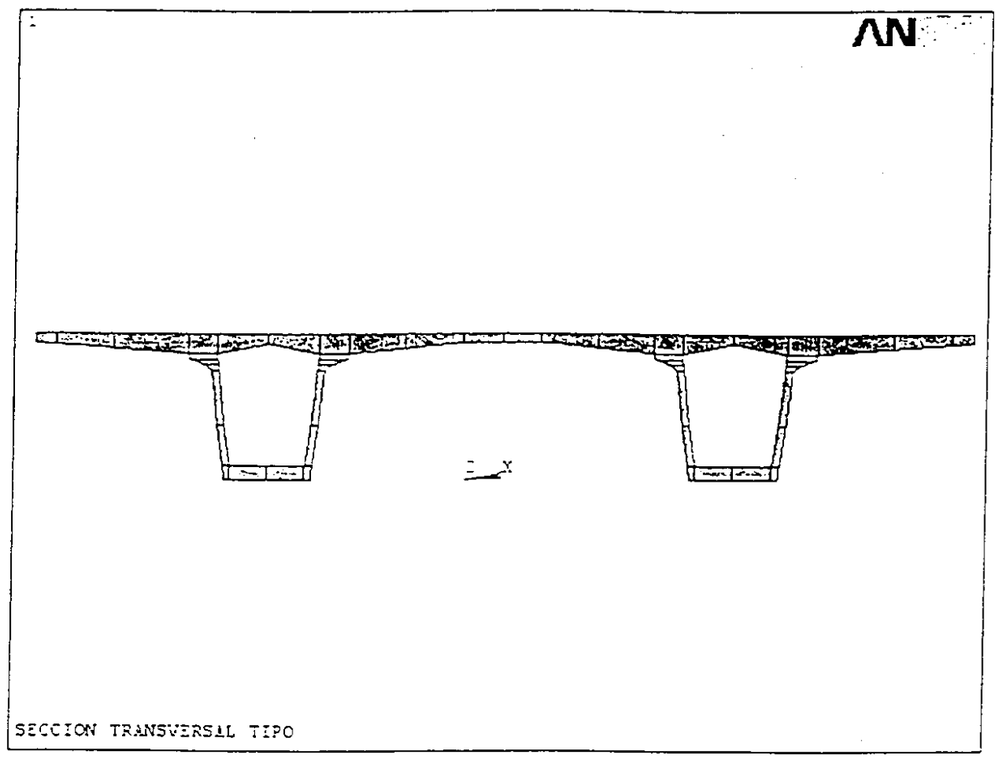
La disposición longitudinal de elementos es la siguiente :

Nº elementos	Longitud (m)	Comentarios
2	0.25	Representan la entrega de las vigas
1	0.25	
13	1.5	Representa el resto de tablero hasta centro de vano
TOTAL X 2 = 32 ELEMENTOS	TOTAL X 2 = 40.50 M	

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La disposición transversal en planta es de 6 elementos entre vigas, 3 elementos de voladizo.2 elementos entre almas de viga y 2 elementos en losa inferior y almas.

La sección transversal tipo está formada por 48 elementos.

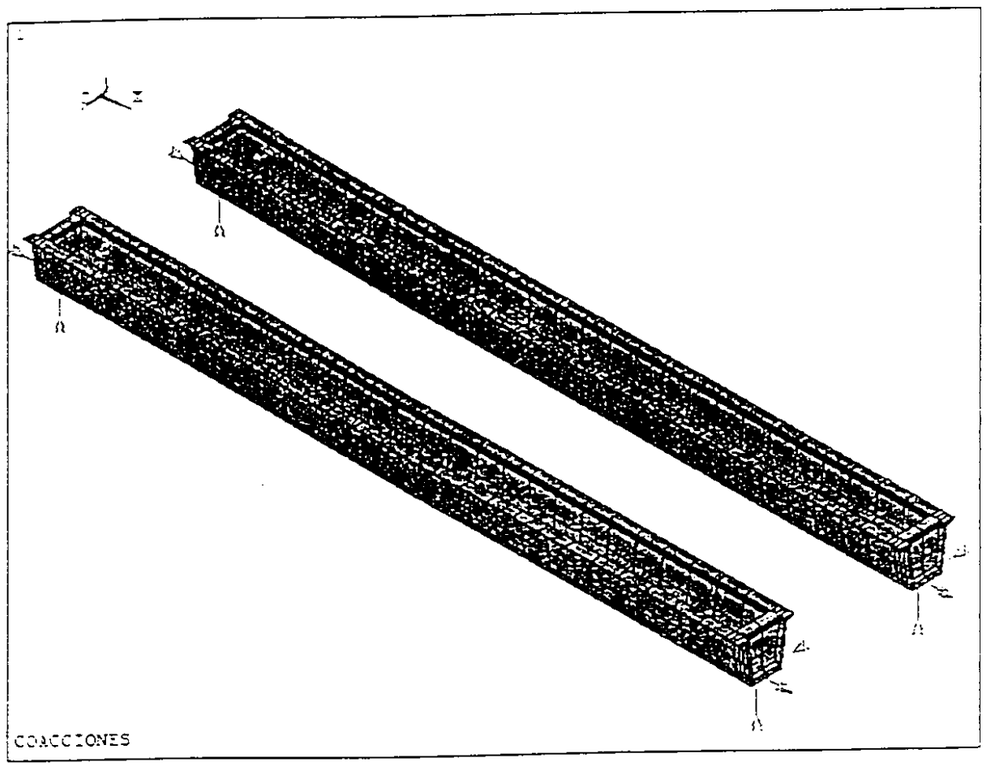


SECCION TRANSVERSAL TIPO

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Los apoyos de neopreno se han simulado mediante tres muelles por apoyo, dispuestos en las tres direcciones ortogonales X, Y, Z, con las rigideces correspondientes a neoprenos de dimensiones 700 x 700 x 135 mm.



COACCIONES

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2.3. Características de los materiales.

Las características del hormigón y de los neoprenos que se han introducido en el modelo definitivo son las siguientes :

Unidades T, m

```
 EVALUATE MATERIAL PROPERTIES FOR MATERIALS      1 TO      2 IN INCREMENTS OF
1

 MATERIAL NUMBER =      1 EVALUATED AT TEMPERATURE OF   0.0000     HORMIGÓN VIGA
  EX    =  0.35000E+07
  NUXY  =  0.20000
  DENS  =   2.5000

 MATERIAL NUMBER =      2 EVALUATED AT TEMPERATURE OF   0.0000     HORMIGÓN LOSA
  EX    =  0.30000E+07
  NUXY  =  0.20000
  DENS  =   2.5000
```

```
 ***** ANSYS - ENGINEERING ANALYSIS SYSTEM  RELEASE 5.5.1   *****
1
 ANSYS/Mechanical U
1
1
 LIST REAL SETS       1 TO       4 BY       1

 REAL CONSTANT SET       2  ITEMS   1 TO   6          K MUELLE LONGITUDINAL X
    258.00       0.0000       0.0000       0.0000       0.0000       0.0000

 REAL CONSTANT SET       3  ITEMS   1 TO   6          K MUELLE LONGITUDINAL Y

  0.150000E-06   0.0000       0.0000       0.0000       0.0000       0.0000

 REAL CONSTANT SET       4  ITEMS   1 TO   6          K MUELLE LONGITUDINAL Z

 258.00    0.0000    0.0000    0.0000    0.0000    0.0000
```

3. Hipótesis de carga.

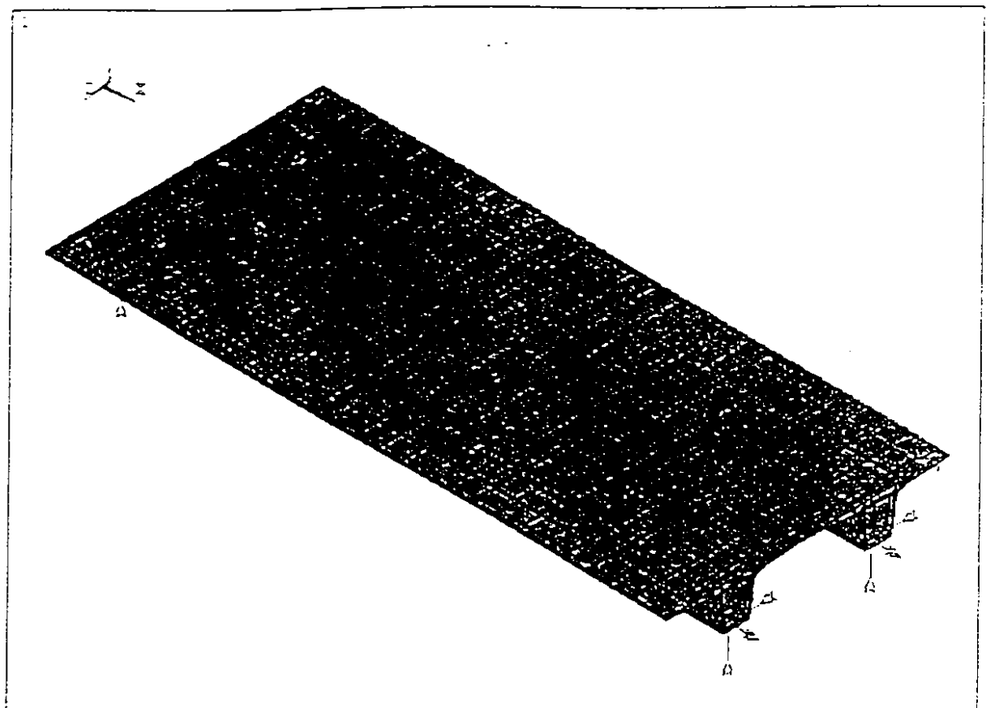
Se han considerado 18 hipótesis de carga para obtener los esfuerzos pésimos en las secciones escogidas para el dimensionamiento y la comprobación. La identificación de las mismas, así como los valores introducidos son los siguientes:

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0) El peso propio de las vigas y de la losa de compresión ejecutada in situ se consideran con su valor isostático por viga. (p.p. viga = 3.2736 t/m ; p. losa s/viga = 2.5x0.325x9.8 = 7.3175
1) Cargas muertas, considerando como tales 10 cm de pavimento y las aceras y barreras de proyecto. Los valores considerados son:
   - Barrera metálica + imposta en borde izquierdo sobre viga 1 : 0.5225 t/m, ancho 0.40 m
   - Barrera metálica + imposta en borde derecho sobre viga 2 : 0.5225 t/m
   - Acera de 1.50 m en borde derecho : 0.375 t/m^2
   - Barrera metálica a 1.50 m del borde derecho : 0.15 t/m
   - Densidad del pavimento de 10 cm de espesor : 2.4 t/m^3
2) Sobrecarga extendida a todo el tablero de 0.4 t/m^2.
3) Sobrecarga extendida a medio tablero de 0.4 t/m^2.
4) Sobrecarga extendida a centro del tablero de 0.4 t/m^2.
5) Sobrecarga extendida a media viga de 0.4 t/m^2.
6) Vehículo de 60 t con eje en centro de vano y carga extrema a 0.5 m del extremo de la barrera de 0.40 m (CARRO 1).
7) Vehículo de 60 t con eje en centro de vano y carga extrema a 4.5 m del extremo de voladizo izquierdo(CARRO 2).
8) Vehículo de 60 t con eje en centro de vano y carga extrema a 7 m del extremo de voladizo izquierdo(CARRO 3).
9) Vehículo de 60 t con eje en centro de vano y carga extrema a 3 m del extremo de voladizo izquierdo(CARRO 4).
10) Vehículo de 60 t con eje en centro de vano y carga extrema a 11 m del extremo de voladizo izquierdo(CARRO 5).
11) Vehículo de 60 t con eje en centro de vano y carga extrema a 0.5 m del extremo de la barrera de 1.50 m (CARRO 6).
12) Cargas muertas con 7 cm de pavimento.
13) Vehículo de 60 t con eje en sección 3.25 m y carga extrema a 0.5 m del extremo de la barrera de 0.40 m (CARRO 7).
14) Vehículo de 60 t con eje en sección 3.25 m y carga extrema a 4.5 m del extremo de voladizo izquierdo(CARRO 8).
15) Vehículo de 60 t con eje en sección 3.25 m y carga extrema a 7 m del extremo de voladizo izquierdo(CARRO 9).
16) Vehículo de 60 t con eje en sección 3.25 m y carga extrema a 11 m del extremo de voladizo izquierdo(CARRO 10).
17) Vehículo de 60 t con eje en sección 9.25 m y carga extrema a 0.5 m del extremo de la barrera de 0.40 m (CARRO 11).
18) Vehículo de 60 t con eje en sección 6.25 m y carga extrema a 0.5 m del extremo de la barrera de 0.40 m (CARRO 12).

A continuación se muestran los gráficos de alguna de las hipótesis.

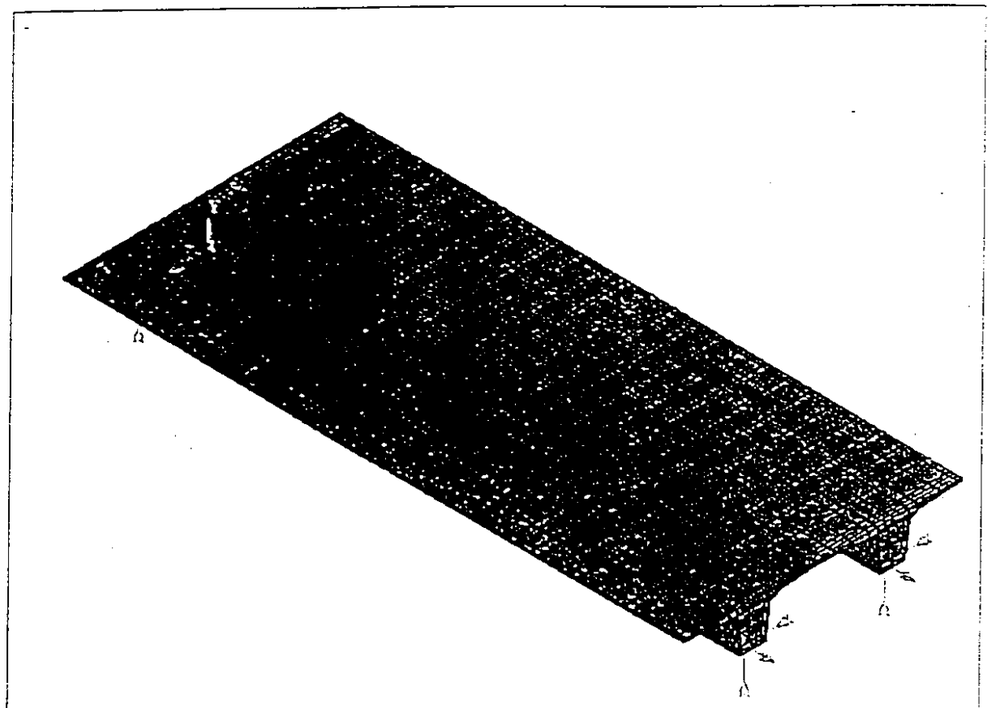
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CARGAS MUERTAS

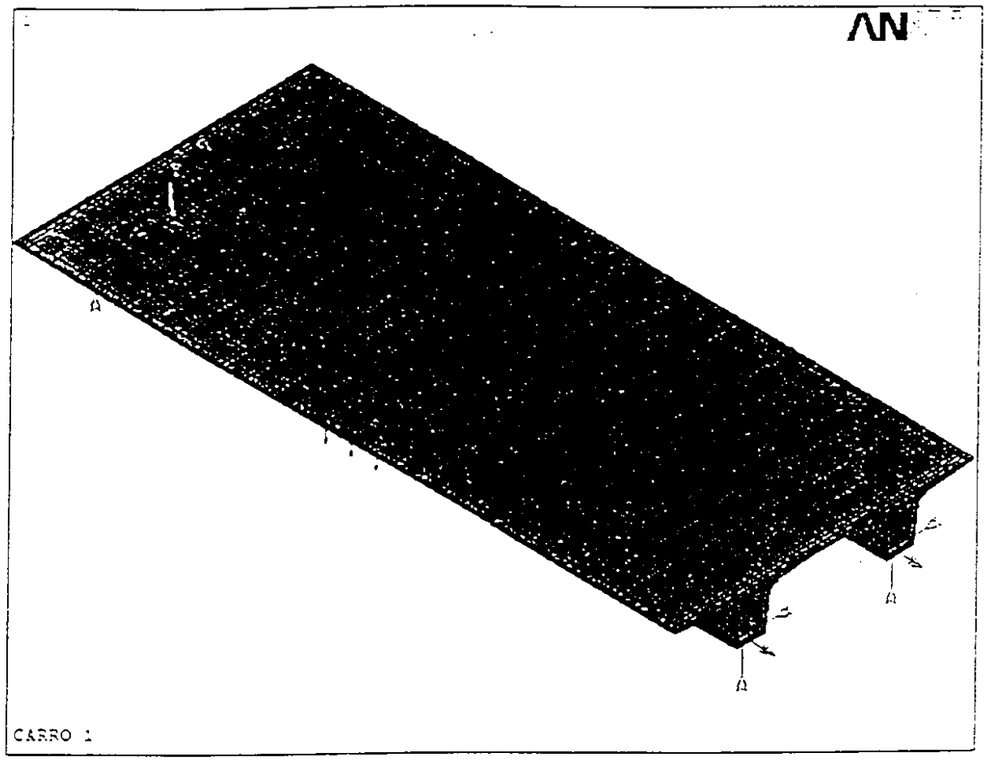
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SOBRECARGA MEDIO TABLERO

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4. Resultados del análisis.

A continuación se presentan los listados de reacciones.esfuerzos longitudinales y transversales de flexión obtenidos en cada hipótesis. La identificación de los apoyos verticales es la siguiente :

- 11066 : apoyo viga 1 sección x=0 m.
- 11067 : apoyo viga 1 sección x=39.50 m.
- 11068 : apoyo viga 2 sección x=0 m.
- 11069 : apoyo viga 2 sección x=39.50 m.

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CASO DE CARGA..... 1.

***** POST1 TOTAL REACTION SOLUTION LISTING *****

LOAD STEP= 1 SUBSTEP= 1
TIME= 1.0000 LOAD CASE= 0

THE FOLLOWING X,Y,Z SOLUTIONS ARE IN GLOBAL COORDINATES

NODE	FX	FY	FZ
11066		48.492	
11067		48.492	
11068		65.344	
11069		65.344	
11070	-0.299		
11071	-0.374		
11072			1.579
11073			-1.579
11074			1.579
11075			-1.579
11076	0.299		
11077	0.374		

TOTAL VALUES
VALUE 0.000 227.671 0.000

CASO DE CARGA..... 2.

***** POST1 TOTAL REACTION SOLUTION LISTING *****

LOAD STEP= 2 SUBSTEP= 1
TIME= 2.0000 LOAD CASE= 0

THE FOLLOWING X,Y,Z SOLUTIONS ARE IN GLOBAL COORDINATES

NODE	FX	FY	FZ
11066		72.900	
11067		72.900	
11068		72.900	
11069		72.900	
11070	-0.428		
11071	-0.428		
11072			0.275
11073			-0.275
11074			0.275
11075			-0.275
11076	0.428		
11077	0.428		

TOTAL VALUES
VALUE 0.000 291.600 0.000

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CASO DE CARGA..... 3.

LOAD STEP= 3 SUBSTEP= 1
TIME= 3.0000 LOAD CASE= 0

THE FOLLOWING X,Y,Z SOLUTIONS ARE IN GLOBAL COORDINATES

NODE	FX	FY	FZ
11066		72.900	
11067		72.900	
11068		0.000	
11069		0.000	
11070	-0.378		
11071	-0.049		
11072			0.137
11073			-0.137
11074			0.137
11075			-0.137
11076	0.378		
11077	0.049		

TOTAL VALUES
VALUE 0.000 145.800 0.000

CASO DE CARGA..... 4.

***** POST1 TOTAL REACTION SOLUTION LISTING *****

LOAD STEP= 4 SUBSTEP= 1
TIME= 4.0000 LOAD CASE= 0

THE FOLLOWING X,Y,Z SOLUTIONS ARE IN GLOBAL COORDINATES

NODE	FX	FY	FZ
11066		23.794	
11067		23.794	
11068		23.794	
11069		23.794	
11070	-0.137		
11071	-0.137		
11072			-1.587
11073			1.587
11074			-1.587
11075			1.587
11076	0.137		
11077	0.137		

TOTAL VALUES
VALUE 0.000 95.175 0.000

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CASO DE CARGA..... 5.

LOAD STEP= 5 SUBSTEP= 1
TIME= 5.0000 LOAD CASE= 0

THE FOLLOWING X,Y,Z SOLUTIONS ARE IN GLOBAL COORDINATES

NODE	FX	FY	FZ
11066		45.563	
11067		45.562	
11068		-9.113	
11069		-9.112	
11070	-0.031		
11071	0.014		
11072			1.056
11073			-1.056
11074			1.056
11075			-1.056
11076	0.031		
11077	-0.014		

TOTAL VALUES
VALUE 0.000 72.900 0.000

CASO DE CARGA..... 6.

***** POST1 TOTAL REACTION SOLUTION LISTING *****

LOAD STEP= 6 SUBSTEP= 1
TIME= 6.0000 LOAD CASE= 0

THE FOLLOWING X,Y,Z SOLUTIONS ARE IN GLOBAL COORDINATES

NODE	FX	FY	FZ
11066		38.667	
11067		38.667	
11068		-8.667	
11069		-8.667	
11070	-0.278		
11071	- 0.006		
11072			0.988
11073			-0.988
11074			0.988
11075			-0.988
11076	0.278		
11077	-0.006		

TOTAL VALUES
VALUE 0.000 60.000 0.000

ALVISA

CASO DE CARGA..... 7.

***** POST1 TOTAL REACTION SOLUTION LISTING *****

LOAD STEP= 7 SUBSTEP= 1
TIME= 7.0000 LOAD CASE= 0

THE FOLLOWING X,Y,Z SOLUTIONS ARE IN GLOBAL COORDINATES

NODE	FX	FY	FZ
11066		26.667	
11067		26.667	
11068		3.333	
11069		3.333	
11070	-0.219		
11071	-0.049		
11072			-0.351
11073			0.351
11074			-0.351
11075			0.351
11076	0.219		
11077	0.049		

TOTAL VALUES
VALUE 0.000 60.000 0.000

CASO DE CARGA..... 8.

***** POST1 TOTAL REACTION SOLUTION LISTING *****

LOAD STEP= 8 SUBSTEP= 1
TIME= 8.0000 LOAD CASE= 0

THE FOLLOWING X,Y,Z SOLUTIONS ARE IN GLOBAL COORDINATES

NODE	FX	FY	FZ
11066		18.333	
11067		18.333	
11068		11.667	
11069		11.667	
11070	-0.161		
11071	-0.106		
11072			-1.035
11073			1.035
11074			-1.035
11075			1.035
11076	0.161		
11077	0.106		

TOTAL VALUES
VALUE 0.000 60.000 0.000

ALVISA

CASO DE CARGA..... 9.

***** POST1 TOTAL REACTION SOLUTION LISTING *****

LOAD STEP= 9 SUBSTEP= 1
TIME= 9.0000 LOAD CASE= 0

THE FOLLOWING X,Y,Z SOLUTIONS ARE IN GLOBAL COORDINATES

NODE	FX	FY	FZ
11066		31.709	
11067		31.709	
11068		-1.709	
11069		-1.709	
11070	-0.245		
11071	-0.024		
11072			0.194
11073			-0.194
11074			0.194
11075			-0.194
11076	0.245		
11077	0.024		

TOTAL VALUES
VALUE 0.000 60.000 0.000

CASO DE CARGA..... 10.

***** POST1 TOTAL REACTION SOLUTION LISTING *****

LOAD STEP= 10 SUBSTEP= 1
TIME= 10.000 LOAD CASE= 0

THE FOLLOWING X,Y,Z SOLUTIONS ARE IN GLOBAL COORDINATES

NODE	FX	FY	FZ
11066		4.999	
11067		4.999	
11068		25.001	
11069		25.001	
11070	-0.068		
11071	-0.209		
11072			-0.819
11073			0.819
11074			-0.819
11075			0.819
11076	0.068		
11077	0.209		

TOTAL VALUES
VALUE 0.000 60.000 0.000

ALVISA

CASO DE CARGA..... 11.

***** POST1 TOTAL REACTION SOLUTION LISTING *****

LOAD STEP= 11 SUBSTEP= 1
TIME= 11.000 LOAD CASE= 0

THE FOLLOWING X,Y,Z SOLUTIONS ARE IN GLOBAL COORDINATES

NODE	FX	FY	FZ
11066		-4.999	
11067		-4.999	
11068		34.999	
11069		34.999	
11070	-0.009		
11071	-0.261		
11072			0.566
11073			-0.566
11074			0.566
11075			-0.566
11076	0.009		
11077	0.261		

TOTAL VALUES

VALUE	0.000	60.000	0.000

CASO DE CARGA..... 12.

***** POST1 TOTAL REACTION SOLUTION LISTING *****

LOAD STEP= 12 SUBSTEP= 1
TIME= 12.000 LOAD CASE= 0

THE FOLLOWING X,Y,Z SOLUTIONS ARE IN GLOBAL COORDINATES

NODE	FX	FY	FZ
11066		35.320	
11067		35.320	
11068		55.041	
11069		55.041	
11070	-0.224		
11071	-0.311		
11072			1.668
11073			-1.669
11074			1.668
11075			-1.669
11076	0.224		
11077	0.311		

TOTAL VALUES

VALUE	0.000	180.723	0.000

ALVISA

CASO DE CARGA..... 13.

***** POST1 TOTAL REACTION SOLUTION LISTING *****

LOAD STEP= 13 SUBSTEP= 1
TIME= 13.000 LOAD CASE= 0

THE FOLLOWING X,Y,Z SOLUTIONS ARE IN GLOBAL COORDINATES

NODE	FX	FY	FZ
11066		65.384	
11067		11.949	
11068		-10.321	
11069		-7.012	
11070	-0.122		
11071	0.038		
11072			0.897
11073			-0.902
11074			1.147
11075			-1.142
11076	0.100		
11077	-0.016		

TOTAL VALUES

VALUE	0.000	60.000	0.000

CASO DE CARGA..... 14.

***** POST1 TOTAL REACTION SOLUTION LISTING *****

LOAD STEP= 14 SUBSTEP= 1
TIME= 14.000 LOAD CASE= 0

THE FOLLOWING X,Y,Z SOLUTIONS ARE IN GLOBAL COORDINATES

NODE	FX	FY	FZ
11066		49.900	
11067		3.434	
11068		5.164	
11069		1.503	
11070	-0.052		
11071	-0.029		
11072			-0.327
11073			0.331
11074			-0.424
11075			0.420
11076	0.069		
11077	0.011		

TOTAL VALUES

VALUE	0.000	60.000	0.000

ALVISA

CASO DE CARGA..... 15.

***** POST1 TOTAL REACTION SOLUTION LISTING *****

LOAD STEP= 15 SUBSTEP= 1
TIME= 15.000 LOAD CASE= 0

THE FOLLOWING X,Y,Z SOLUTIONS ARE IN GLOBAL COORDINATES

NODE	FX	FY	FZ
11066		34.849	
11067		1.813	
11068		20.209	
11069		3.124	
11070	-0.035		
11071	-0.043		
11072			-0.969
11073			0.972
11074			-1.255
11075			1.252
11076	0.047		
11077	0.031		

TOTAL VALUES
VALUE 0.000 59.994 0.000

CASO DE CARGA..... 16.

***** POST1 TOTAL REACTION SOLUTION LISTING *****

LOAD STEP= 16 SUBSTEP= 1
TIME= 16.000 LOAD CASE= 0

THE FOLLOWING X,Y,Z SOLUTIONS ARE IN GLOBAL COORDINATES

NODE	FX	FY	FZ
11066		7.709	
11067		2.289	
11068		47.354	
11069		2.647	
11070	-0.035		
11071	-0.045		
11072			-0.489
11073			0.494
11074			-0.623
11075			0.627
11076	0.015		
11077	0.064		

TOTAL VALUES
VALUE 0.000 60.000 0.000

ALVISA

CASO DE CARGA..... 17.

***** POST1 TOTAL REACTION SOLUTION LISTING *****

LOAD STEP= 17 SUBSTEP= 1
TIME= 17.000 LOAD CASE= 0

THE FOLLOWING X,Y,Z SOLUTIONS ARE IN GLOBAL COORDINATES

NODE	FX	FY	FZ
11066		55.493	
11067		21.840	
11068		-9.544	
11069		-7.790	
11070	-0.211		
11071	0.015		
11072			0.926
11073			-0.926
11074			1.084
11075			-1.084
11076	0.212		
11077	-0.016		

TOTAL VALUES
VALUE 0.000 60.000 0.000

CASO DE CARGA..... 18.

***** POST1 TOTAL REACTION SOLUTION LISTING *****

LOAD STEP= 18 SUBSTEP= 1
TIME= 18.000 LOAD CASE= 0

THE FOLLOWING X,Y,Z SOLUTIONS ARE IN GLOBAL COORDINATES

NODE	FX	FY	FZ
11066		60.398	
11067		16.938	
11068		-9.892	
11069		-7.441	
11070	-0.171		
11071	0.024		
11072			0.912
11073			-0.913
11074			1.116
11075			-1.115
11076	0.164		
11077	-0.018		

TOTAL VALUES
VALUE 0.000 60.000 0.000

ALVISA

CASO CARGA : CARGAS MUERTAS

MOMENTOS FLECTORES

SECCION	TOTAL	VIGA 1	MEDIA VIGA 1 EXT	MEDIA VIGA 1 INT	VIGA 2	MEDIA VIGA 2 EXT	MEDIA VIGA 2 INT
0	-1.98	-0.62	-0.58	-0.04	-1.36	-0.68	-0.69
0.25	-25.60	-11.30	-5.58	-5.72	-14.30	-7.66	-6.65
1.75	-183.71	-80.47	-40.51	-39.96	-103.24	-52.93	-50.30
3.25	-329.16	-145.16	-72.54	-72.62	-184.00	-93.96	-90.04
4.75	-461.97	-204.67	-101.77	-102.91	-257.30	-131.25	-126.04
7.75	-689.64	-307.49	-152.38	-155.11	-382.15	-194.65	-187.49
10.75	-866.72	-388.21	-192.39	-195.83	-478.50	-243.34	-235.16
12.25	-936.28	-420.13	-208.28	-211.85	-516.16	-262.30	-253.85
13.75	-993.20	-446.32	-221.36	-224.96	-546.88	-277.75	-269.13
15.25	-1037.47	-466.75	-231.60	-235.16	-570.72	-289.72	-281.01
16.75	-1069.09	-481.38	-238.95	-242.43	-587.72	-298.22	-289.50
18.25	-1088.06	-490.17	-243.39	-246.78	-597.90	-303.27	-294.62
19.75	-1094.39	-493.10	-244.91	-248.20	-601.28	-304.89	-296.39

CORTANTES

SECCION	TOTAL	VIGA 1	MEDIA VIGA 1 EXT	MEDIA VIGA 1 INT	VIGA 2	MEDIA VIGA 2 EXT	MEDIA VIGA 2 INT
0	-110.94	-47.67	-23.95	-23.72	-63.28	-32.90	-30.37
0.25	109.70	47.12	24.36	22.76	62.58	33.07	29.51
1.75	101.69	43.93	22.16	21.77	57.76	30.91	26.85
3.25	93.26	40.70	20.03	20.67	52.56	28.56	24.00
4.75	84.83	37.30	17.99	19.31	47.53	26.21	21.31
7.75	67.96	30.23	14.15	16.07	37.74	21.34	16.40
10.75	51.10	22.88	10.48	12.40	28.21	16.26	11.95
12.25	42.67	19.14	8.69	10.45	23.53	13.67	9.86
13.75	34.24	15.36	6.91	8.45	18.88	11.06	7.82
15.25	25.80	11.55	5.15	6.40	14.26	8.42	5.83
16.75	17.37	7.71	3.39	4.32	9.66	5.78	3.88
18.25	8.94	3.86	1.65	2.21	5.08	3.12	1.96
19.75	0.50	0.00	-0.09	0.08	0.51	0.46	0.05

TORSORES

SECCION	TOTAL	VIGA 1	MEDIA VIGA 1 EXT	MEDIA VIGA 1 INT	VIGA 2	MEDIA VIGA 2 EXT	MEDIA VIGA 2 INT
0	-73.23	2.62	16.20	-13.58	-5.61	-21.64	16.03
0.25	73.76	-2.31	-241.76	20.17	6.50	31.51	-25.02
1.75	71.78	0.17	-223.81	24.52	9.39	36.56	-27.17
3.25	66.16	2.35	-200.96	23.06	10.42	32.91	-22.50
4.75	60.55	3.62	-179.85	21.53	10.91	30.04	-19.12
7.75	49.31	4.82	-140.32	17.77	10.69	24.09	-13.40
10.75	38.08	4.81	-103.19	13.65	9.28	18.27	-8.99
12.25	32.46	4.46	-85.20	11.49	8.27	15.41	-7.15
13.75	26.84	3.92	-67.52	9.26	7.10	12.57	-5.47
15.25	21.23	3.23	-50.03	6.96	5.80	9.71	-3.91
16.75	15.60	2.43	-32.72	4.60	4.41	6.84	-2.43
18.25	9.98	1.54	-15.53	2.21	2.95	3.96	-1.01
19.75	4.37	0.61	1.60	-0.21	1.46	1.08	0.38

ALVISA

CASO CARGA : SOBRECARGA TOTAL

MOMENTOS FLECTORES

SECCION	TOTAL	VIGA 1	MEDIA VIGA 1 EXT	MEDIA VIGA 1 INT	VIGA 2	MEDIA VIGA 2 EXT	MEDIA VIGA 2 INT
0	-2.53	-1.26	-0.67	-0.59	-1.26	-0.67	-0.59
0.25	-32.80	-16.40	-8.19	-8.21	-16.40	-8.19	-8.21
1.75	-235.30	-117.65	-58.71	-58.94	-117.65	-58.71	-58.94
3.25	-421.60	-210.80	-105.14	-105.66	-210.80	-105.14	-105.66
4.75	-591.70	-295.85	-147.63	-148.22	-295.85	-147.63	-148.22
7.75	-883.30	-441.65	-220.76	-220.90	-441.65	-220.76	-220.89
10.75	-1110.10	-555.05	-277.80	-277.25	-555.05	-277.80	-277.25
12.25	-1199.20	-599.60	-300.23	-299.37	-599.60	-300.23	-299.37
13.75	-1272.10	-636.05	-318.59	-317.46	-636.05	-318.59	-317.46
15.25	-1328.80	-664.40	-332.87	-331.53	-664.40	-332.87	-331.53
16.75	-1369.30	-684.65	-343.07	-341.58	-684.65	-343.07	-341.58
18.25	-1393.60	-696.80	-349.19	-347.60	-696.80	-349.19	-347.61
19.75	-1401.70	-700.85	-351.23	-349.61	-700.85	-351.24	-349.61

CORTANTES

SECCION	TOTAL	VIGA 1	MEDIA VIGA 1 EXT	MEDIA VIGA 1 INT	VIGA 2	MEDIA VIGA 2 EXT	MEDIA VIGA 2 INT
0	-142.20	-71.10	-35.68	-35.42	-71.10	-35.68	-35.42
0.25	140.40	70.20	35.30	34.90	70.20	35.30	34.90
1.75	129.60	64.80	32.60	32.20	64.80	32.60	32.20
3.25	118.80	59.40	29.90	29.50	59.40	29.90	29.50
4.75	108.00	54.00	27.20	26.80	54.00	27.20	26.80
7.75	86.40	43.20	21.77	21.43	43.20	21.77	21.43
10.75	64.80	32.40	16.34	16.07	32.40	16.33	16.06
12.25	54.00	27.00	13.61	13.39	27.00	13.61	13.39
13.75	43.20	21.60	10.89	10.71	21.60	10.89	10.71
15.25	32.40	16.20	8.17	8.03	16.20	8.17	8.03
16.75	21.60	10.80	5.45	5.35	10.80	5.45	5.35
18.25	10.80	5.40	2.72	2.67	5.40	2.72	2.67
19.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00

TORSORES

SECCION	TOTAL	VIGA 1	MEDIA VIGA 1 EXT	MEDIA VIGA 1 INT	VIGA 2	MEDIA VIGA 2 EXT	MEDIA VIGA 2 INT
0	0.00	1.49	21.71	-20.22	-1.49	-21.71	20.22
0.25	0.00	-1.63	-348.16	28.83	1.63	30.46	-28.83
1.75	0.00	-1.67	-328.09	33.05	1.67	34.72	-33.05
3.25	0.01	-1.10	-299.15	28.94	1.10	30.04	-28.94
4.75	0.00	-0.62	-271.50	26.10	0.62	26.71	-26.09
7.75	0.00	-0.03	-216.67	20.67	0.03	20.71	-20.67
10.75	-0.01	0.15	-162.16	15.29	-0.15	15.14	-15.29
12.25	0.01	0.17	-134.97	12.63	-0.17	12.46	-12.63
13.75	0.02	0.16	-107.83	9.98	-0.16	9.82	-9.98
15.25	0.00	0.13	-80.74	7.33	-0.13	7.21	-7.33
16.75	0.00	0.09	-53.63	4.69	-0.09	4.60	-4.69
18.25	0.00	0.05	-26.53	2.06	-0.05	2.01	-2.06
19.75	-0.01	0.01	0.55	-0.57	-0.01	-0.58	0.57

ALVISA

CASO CARGA : SOBRECARGA MEDIO TABLERO

MOMENTOS FLECTORES

SECCION	TOTAL	VIGA 1	MEDIA VIGA 1 EXT	MEDIA VIGA 1 INT	VIGA 2	MEDIA VIGA 2 EXT	MEDIA VIGA 2 INT
0	-1.26	-2.10	-0.53	-1.57	0.84	-0.14	0.98
0.25	-16.40	-14.93	-8.56	-6.37	-1.47	0.37	-1.84
1.75	-117.65	-109.13	-56.31	-52.83	-8.52	-2.40	-6.12
3.25	-210.80	-191.51	-99.22	-92.29	-19.30	-5.92	-13.37
4.75	-295.85	-264.61	-138.16	-126.45	-31.24	-9.47	-21.77
7.75	-441.65	-386.11	-203.00	-183.10	-55.55	-17.75	-37.79
10.75	-555.05	-477.17	-250.88	-226.29	-77.88	-26.92	-50.96
12.25	-599.60	-512.09	-268.98	-243.11	-87.51	-31.25	-56.26
13.75	-636.05	-540.28	-283.46	-256.82	-95.77	-35.13	-60.64
15.25	-664.40	-561.97	-294.48	-267.50	-102.43	-38.40	-64.03
16.75	-684.65	-577.33	-302.17	-275.16	-107.32	-40.91	-66.41
18.25	-696.80	-586.48	-306.62	-279.86	-110.32	-42.58	-67.75
19.75	-700.85	-589.49	-307.89	-281.60	-111.36	-43.35	-68.02

CORTANTES

SECCION	TOTAL	VIGA 1	MEDIA VIGA 1 EXT	MEDIA VIGA 1 INT	VIGA 2	MEDIA VIGA 2 EXT	MEDIA VIGA 2 INT
0	-71.10	-69.71	-37.28	-32.43	-1.39	1.59	-2.99
0.25	70.20	68.52	36.17	32.35	1.68	-0.87	2.55
1.75	64.80	61.36	34.00	27.37	3.44	-1.40	4.84
3.25	59.40	54.52	32.15	22.37	4.88	-2.24	7.13
4.75	54.00	48.27	30.08	18.18	5.73	-2.88	8.62
7.75	43.20	36.92	25.15	11.77	6.28	-3.37	9.66
10.75	32.40	26.69	19.43	7.26	5.71	-3.09	8.80
12.25	27.00	21.90	16.38	5.52	5.10	-2.77	7.87
13.75	21.60	17.27	13.24	4.04	4.33	-2.35	6.67
15.25	16.20	12.79	10.02	2.76	3.41	-1.85	5.27
16.75	10.80	8.40	6.75	1.65	2.40	-1.30	3.70
18.25	5.40	4.09	3.44	0.65	1.31	-0.71	2.02
19.75	0.00	-0.19	0.10	-0.29	0.19	-0.10	0.29

TORSORES

SECCION	TOTAL	VIGA 1	MEDIA VIGA 1 EXT	MEDIA VIGA 1 INT	VIGA 2	MEDIA VIGA 2 EXT	MEDIA VIGA 2 INT
0	319.95	7.01	22.51	-15.50	5.53	0.80	4.73
0.25	-315.90	-8.37	-357.79	23.89	-6.74	-1.80	-4.94
1.75	-291.60	-16.30	-343.93	21.65	-14.63	-3.24	-11.40
3.25	-267.30	-22.52	-324.75	12.91	-21.43	-5.39	-16.03
4.75	-242.99	-26.10	-304.46	7.60	-25.48	-6.99	-18.49
7.75	-194.40	-28.30	-255.46	0.81	-28.26	-8.40	-19.86
10.75	-145.80	-25.62	-197.97	-2.50	-25.77	-7.98	-17.79
12.25	-121.50	-22.87	-167.10	-3.18	-23.04	-7.23	-15.81
13.75	-97.20	-19.39	-135.16	-3.37	-19.54	-6.19	-13.35
15.25	-72.90	-15.30	-102.34	-3.17	-15.42	-4.93	-10.50
16.75	-48.60	-10.74	-68.83	-2.66	-10.84	-3.48	-7.36
18.25	-24.30	-5.88	-34.85	-1.96	-5.93	-1.91	-4.02
19.75	0.00	-0.84	-0.63	-1.15	-0.85	-0.27	-0.58

ALVISA

CASO CARGA : SOBRECARGA CENTRADA

MOMENTOS FLECTORES

SECCION	TOTAL	VIGA 1	MEDIA VIGA 1 EXT	MEDIA VIGA 1 INT	VIGA 2	MEDIA VIGA 2 EXT	MEDIA VIGA 2 INT
0	-0.82	-0.41	-0.04	-0.37	-0.41	-0.03	-0.37
0.25	-10.71	-5.36	-2.38	-2.98	-5.36	-2.38	-2.98
1.75	-76.81	-38.40	-17.85	-20.55	-38.40	-17.85	-20.55
3.25	-137.61	-68.81	-32.62	-36.18	-68.81	-32.62	-36.18
4.75	-193.13	-96.57	-46.41	-50.15	-96.57	-46.41	-50.15
7.75	-288.31	-144.15	-70.44	-73.71	-144.15	-70.44	-73.71
10.75	-362.33	-181.17	-89.32	-91.85	-181.17	-89.32	-91.85
12.25	-391.41	-195.71	-96.74	-98.97	-195.71	-96.74	-98.97
13.75	-415.21	-207.60	-102.81	-104.79	-207.60	-102.81	-104.79
15.25	-433.71	-216.86	-107.53	-109.33	-216.86	-107.53	-109.32
16.75	-446.93	-223.47	-110.91	-112.56	-223.47	-110.90	-112.56
18.25	-454.86	-227.43	-112.94	-114.50	-227.43	-112.94	-114.50
19.75	-457.51	-228.75	-113.63	-115.13	-228.75	-113.63	-115.13

CORTANTES

SECCION	TOTAL	VIGA 1	MEDIA VIGA 1 EXT	MEDIA VIGA 1 INT	VIGA 2	MEDIA VIGA 2 EXT	MEDIA VIGA 2 INT
0	-46.41	-23.21	-10.87	-12.34	-23.21	-10.87	-12.34
0.25	45.83	22.91	9.99	12.93	22.91	9.99	12.93
1.75	42.30	21.15	9.58	11.57	21.15	9.58	11.57
3.25	38.77	19.39	8.94	10.45	19.39	8.94	10.45
4.75	35.25	17.63	8.20	9.43	17.63	8.20	9.43
7.75	28.20	14.10	6.60	7.50	14.10	6.60	7.50
10.75	21.15	10.57	4.97	5.60	10.58	4.97	5.60
12.25	17.62	8.81	4.16	4.65	8.81	4.16	4.65
13.75	14.10	7.05	3.35	3.70	7.05	3.35	3.70
15.25	10.57	5.29	2.55	2.74	5.29	2.55	2.74
16.75	7.05	3.52	1.74	1.78	3.53	1.74	1.78
18.25	3.52	1.76	0.94	0.83	1.76	0.94	0.83
19.75	0.00	0.00	0.13	-0.13	0.00	0.13	-0.13

TORSORES

SECCION	TOTAL	VIGA 1	MEDIA VIGA 1 EXT	MEDIA VIGA 1 INT	VIGA 2	MEDIA VIGA 2 EXT	MEDIA VIGA 2 INT
0	0.00	-3.46	4.94	-8.40	3.46	-4.94	8.40
0.25	0.00	3.20	-97.09	10.40	-3.20	7.20	-10.40
1.75	0.00	-2.30	-95.27	11.37	-2.30	9.07	-11.37
3.25	0.00	2.17	-88.02	9.71	-2.17	7.54	-9.71
4.75	0.00	2.16	-80.45	8.82	-2.17	6.66	-8.82
7.75	0.00	1.94	-64.69	7.26	-1.94	5.32	-7.26
10.75	0.00	1.36	-48.80	5.41	-1.37	4.05	-5.41
12.25	0.00	1.02	-40.86	4.42	-1.02	3.40	-4.42
13.75	0.00	0.65	-32.92	3.40	-0.65	2.75	-3.40
15.25	0.00	0.28	-25.01	2.38	-0.28	2.10	-2.38
16.75	0.00	-0.09	-17.11	1.35	0.09	1.44	-1.35
18.25	0.00	-0.46	-9.21	0.32	0.46	0.77	-0.32
19.75	0.00	-0.83	-1.32	-0.72	0.83	0.11	0.72

ALVISA

CASO CARGA : SOBRECARGA MEDIA VIGA

MOMENTOS FLECTORES

SECCION	TOTAL	VIGA 1	MEDIA VIGA 1 EXT	MEDIA VIGA 1 INT	VIGA 2	MEDIA VIGA 2 EXT	MEDIA VIGA 2 INT
0	-0.64	-1.48	-0.50	-0.97	0.84	-0.09	0.93
0.25	-8.19	-9.07	-5.59	-3.47	0.87	1.15	-0.27
1.75	-58.82	-66.80	-35.89	-30.91	7.98	4.86	3.13
3.25	-105.39	-116.62	-62.49	-54.13	11.23	7.75	3.48
4.75	-147.92	-160.58	-86.33	-74.25	12.66	10.26	2.40
7.75	-220.82	-233.18	-125.43	-107.75	12.36	13.06	-0.69
10.75	-277.52	-287.13	-153.81	-133.32	9.61	13.26	-3.66
12.25	-299.80	-307.67	-164.42	-143.25	7.88	12.80	-4.92
13.75	-318.02	-324.21	-172.87	-151.34	6.19	12.17	-5.99
15.25	-332.20	-336.89	-179.26	-157.62	4.69	11.50	-6.81
16.75	-342.32	-345.84	-183.69	-162.15	3.52	10.89	-7.37
18.25	-348.39	-351.16	-186.23	-164.93	2.77	10.40	-7.63
19.75	-350.42	-352.91	-186.90	-166.01	2.48	10.08	-7.60

CORTANTES

SECCION	TOTAL	VIGA 1	MEDIA VIGA 1 EXT	MEDIA VIGA 1 INT	VIGA 2	MEDIA VIGA 2 EXT	MEDIA VIGA 2 INT
0	-35.55	-43.31	-24.05	-19.26	7.76	5.25	2.51
0.25	35.10	42.57	23.87	18.70	-7.47	-4.29	-3.18
1.75	32.40	37.92	22.13	15.79	-5.52	-4.56	-0.96
3.25	29.70	33.43	20.86	12.57	-3.73	-4.98	1.24
4.75	27.00	29.42	19.55	9.87	-2.42	-5.19	2.77
7.75	21.60	22.29	16.42	5.87	-0.69	-4.97	4.29
10.75	16.20	16.00	12.71	3.29	0.20	-4.16	4.36
12.25	13.50	13.09	10.71	2.39	0.41	-3.61	4.02
13.75	10.80	10.32	8.64	1.68	0.48	-3.00	3.48
15.25	8.10	7.64	6.51	1.13	0.46	-2.33	2.79
16.75	5.40	5.04	4.34	0.70	0.36	-1.62	1.98
18.25	2.70	2.49	2.14	0.35	0.21	-0.88	1.09
19.75	0.00	-0.03	-0.08	0.05	0.03	-0.12	0.16

TORSORES

SECCION	TOTAL	VIGA 1	MEDIA VIGA 1 EXT	MEDIA VIGA 1 INT	VIGA 2	MEDIA VIGA 2 EXT	MEDIA VIGA 2 INT
0	239.96	7.75	15.80	-8.04	2.40	2.20	0.20
0.25	-236.93	-8.48	-237.56	14.25	-3.29	-3.84	0.55
1.75	-218.70	-13.69	-225.14	12.26	-9.50	-5.68	-3.82
3.25	-200.48	-18.41	-212.47	6.30	-14.81	-6.77	-8.04
4.75	-182.25	-21.08	-199.61	2.58	-17.85	-7.66	-10.19
7.75	-145.80	-22.45	-168.12	-2.08	-19.98	-8.25	-11.73
10.75	-109.35	-19.93	-130.42	-3.87	-18.33	-7.46	-10.87
12.25	-91.12	-17.59	-110.00	-3.97	-16.43	-6.66	-9.77
13.75	-72.91	-14.69	-88.77	-3.67	-13.97	-5.64	-8.32
15.25	-54.67	-11.33	-66.87	-3.07	-11.04	-4.45	-6.59
16.75	-36.45	-7.64	-44.46	-2.24	-7.77	-3.13	-4.64
18.25	-18.22	-3.71	-21.70	-1.25	-4.25	-1.71	-2.54
19.75	0.00	0.33	1.25	-0.18	-0.61	-0.25	-0.36

ALVISA

CASO CARGA : CARRO MAX POSITIVO TAPE CDV (2)

MOMENTOS FLECTORES

SECCION	TOTAL	VIGA 1	MEDIA VIGA 1 EXT	MEDIA VIGA 1 INT	VIGA 2	MEDIA VIGA 2 EXT	MEDIA VIGA 2 INT
0	-0.51	-0.82	-0.25	-0.57	0.31	-0.09	0.40
0.25	-6.99	-5.58	-2.99	-2.59	-1.41	-0.06	-1.34
1.75	-51.99	-42.63	-21.61	-21.03	-9.36	-3.76	-5.60
3.25	-96.99	-78.09	-40.03	-38.06	-18.90	-7.88	-11.02
4.75	-141.99	-112.96	-58.55	-54.41	-29.03	-11.95	-17.08
7.75	-231.99	-182.35	-95.66	-86.68	-49.64	-20.37	-29.27
10.75	-321.99	-252.78	-133.30	-119.47	-69.21	-28.69	-40.52
12.25	-366.99	-288.93	-152.40	-136.54	-78.06	-32.40	-45.66
13.75	-411.99	-326.03	-171.46	-154.58	-85.96	-35.58	-50.38
15.25	-456.99	-364.36	-190.05	-174.30	-92.63	-38.09	-54.54
16.75	-501.99	-404.24	-207.60	-196.63	-97.75	-39.87	-57.89
18.25	-546.99	-446.03	-223.40	-222.63	-100.97	-40.94	-60.03
19.75	-561.99	-459.93	-229.00	-230.93	-102.06	-41.40	-60.66

CORTANTES

SECCION	TOTAL	VIGA 1	MEDIA VIGA 1 EXT	MEDIA VIGA 1 INT	VIGA 2	MEDIA VIGA 2 EXT	MEDIA VIGA 2 INT
0	-30.00	-26.06	-13.43	-12.63	-3.94	-0.47	-3.47
0.25	30.00	25.94	13.17	12.77	4.06	0.74	3.32
1.75	30.00	25.20	13.31	11.89	4.80	0.42	4.38
3.25	30.00	24.60	13.45	11.16	5.40	-0.14	5.54
4.75	30.00	24.27	13.48	10.79	5.73	-0.62	6.35
7.75	30.00	24.17	13.18	10.99	5.83	-1.17	7.00
10.75	30.00	24.72	12.48	12.23	5.28	-1.29	6.57
12.25	30.00	25.20	11.97	13.23	4.80	-1.23	6.04
13.75	30.00	25.80	11.29	14.51	4.20	-1.12	5.32
15.25	30.00	26.52	10.43	16.10	3.48	-0.94	4.42
16.75	30.00	27.36	9.44	17.92	2.64	-0.71	3.34
18.25	30.00	28.45	8.53	19.93	1.55	-0.40	1.95
19.75	10.00	9.77	2.69	7.08	0.23	-0.05	0.28

TORSORES

SECCION	TOTAL	VIGA 1	MEDIA VIGA 1 EXT	MEDIA VIGA 1 INT	VIGA 2	MEDIA VIGA 2 EXT	MEDIA VIGA 2 INT
0	105.00	1.59	7.40	-5.80	3.85	0.15	3.70
0.25	-105.00	-1.99	-128.98	8.48	-4.55	-0.46	-4.09
1.75	-105.00	-4.17	-133.15	9.16	-9.00	-1.20	-7.80
3.25	-105.00	-5.60	-133.90	7.26	-12.97	-2.70	-10.26
4.75	-105.00	-5.98	-134.06	6.79	-15.58	-3.71	-11.87
7.75	-105.00	-4.64	-130.76	7.51	-17.79	-4.52	-13.26
10.75	-105.00	-0.93	-123.07	9.79	-16.61	-4.14	-12.47
12.25	-105.00	1.68	-117.51	11.47	-14.91	-3.60	-11.32
13.75	-105.00	4.75	-110.48	13.57	-12.54	-2.88	-9.66
15.25	-105.00	8.34	-101.85	16.34	-9.62	-2.09	-7.53
16.75	-105.00	12.82	-92.66	20.49	-6.54	-1.32	-5.22
18.25	-105.00	19.50	-82.90	25.68	-3.42	-0.65	-2.77
19.75	-35.00	8.39	-25.15	9.34	-0.47	-0.09	-0.38

ALVISA

CASO CARGA : CARRO MAX POSITIVO ENTRE VIGAS CDV (3)

MOMENTOS FLECTORES

SECCION	TOTAL	VIGA 1	MEDIA VIGA 1 EXT	MEDIA VIGA 1 INT	VIGA 2	MEDIA VIGA 2 EXT	MEDIA VIGA 2 INT
0	-1.98	-0.42	-0.28	-0.13	-0.09	-0.18	0.09
0.25	-6.99	-4.09	-1.49	-2.60	-2.90	-0.78	-2.12
1.75	-51.99	-30.84	-14.70	-16.13	-21.16	-9.65	-11.51
3.25	-96.99	-57.21	-28.25	-28.96	-39.78	-18.93	-20.85
4.75	-141.99	-83.52	-41.88	-41.65	-58.47	-28.16	-30.31
7.75	-231.99	-136.40	-69.77	-66.63	-95.59	-46.78	-48.82
10.75	-321.99	-190.15	-98.72	-91.43	-131.84	-65.25	-66.59
12.25	-366.99	-217.54	-113.10	-104.43	-149.46	-73.83	-75.62
13.75	-411.99	-245.36	-126.64	-118.72	-166.63	-81.35	-85.28
15.25	-456.99	-273.77	-138.37	-135.40	-183.23	-87.22	-96.01
16.75	-501.99	-303.02	-147.41	-155.61	-198.97	-91.11	-107.87
18.25	-546.99	-333.68	-153.31	-180.38	-213.31	-93.20	-120.11
19.75	-561.99	-343.81	-155.79	-188.02	-218.18	-94.05	-124.13

CORTANTES

SECCION	TOTAL	VIGA 1	MEDIA VIGA 1 EXT	MEDIA VIGA 1 INT	VIGA 2	MEDIA VIGA 2 EXT	MEDIA VIGA 2 INT
0	-30.00	-18.18	-7.61	-10.58	-11.82	-4.15	-7.67
0.25	30.00	18.16	7.59	10.57	11.84	4.18	7.67
1.75	30.00	18.00	7.38	10.62	12.00	3.85	8.14
3.25	30.00	17.90	6.82	11.09	12.10	3.17	8.93
4.75	30.00	17.88	6.19	11.69	12.12	2.48	9.64
7.75	30.00	18.03	4.89	13.14	11.97	1.28	10.68
10.75	30.00	18.41	3.51	14.90	11.59	0.29	11.30
12.25	30.00	18.68	2.68	15.99	11.32	-0.19	11.52
13.75	30.00	19.01	1.68	17.32	10.99	-0.69	11.69
15.25	30.00	19.41	0.54	18.87	10.59	-1.14	11.73
16.75	30.00	19.94	-0.40	20.34	10.07	-1.30	11.37
18.25	30.00	20.89	-0.54	21.42	9.11	-0.92	10.03
19.75	10.00	7.25	0.06	7.20	2.75	-0.06	2.81

TORSORES

SECCION	TOTAL	VIGA 1	MEDIA VIGA 1 EXT	MEDIA VIGA 1 INT	VIGA 2	MEDIA VIGA 2 EXT	MEDIA VIGA 2 INT
0	30.00	-3.10	3.17	-6.27	4.45	-1.20	5.65
0.25	-30.00	3.48	-72.75	7.92	-5.08	1.63	-6.71
1.75	-30.00	6.19	-71.37	11.11	-9.16	1.28	-10.44
3.25	-30.00	9.19	-64.16	11.99	-13.06	-0.87	-12.19
4.75	-30.00	12.18	-57.06	13.53	-16.22	-2.32	-13.91
7.75	-30.00	17.90	-43.21	17.06	-20.61	-4.00	-16.61
10.75	-30.00	23.06	-29.24	20.70	-22.40	-4.34	-18.06
12.25	-30.00	25.18	-21.38	22.42	-22.10	-3.93	-18.17
13.75	-30.00	26.80	-12.21	23.87	-20.75	-3.17	-17.59
15.25	-30.00	28.21	-1.89	25.25	-18.50	-2.23	-16.28
16.75	-30.00	31.46	6.41	28.67	-17.04	-1.35	-15.69
18.25	-30.00	43.58	6.78	41.65	-20.61	-0.63	-19.98
19.75	-10.00	19.33	-0.24	19.06	-9.03	-0.06	-8.97

ALVISA

CASO CARGA : CARRO SOBRE ALMA VIGA CDV (4)

MOMENTOS FLECTORES

SECCION	TOTAL	VIGA 1	MEDIA VIGA 1 EXT	MEDIA VIGA 1 INT	VIGA 2	MEDIA VIGA 2 EXT	MEDIA VIGA 2 INT
0	-0.51	-1.05	-0.13	-0.92	0.54	-0.09	0.63
0.25	-6.99	-6.48	-4.15	-2.33	-0.51	0.44	-0.95
1.75	-51.99	-49.55	-25.96	-23.59	-2.44	-0.31	-2.13
3.25	-96.99	-90.03	-47.11	-42.92	-6.96	-1.64	-5.32
4.75	-141.99	-129.35	-68.27	-61.08	-12.64	-3.06	-9.58
7.75	-231.99	-206.31	-109.54	-96.77	-25.68	-6.99	-18.69
10.75	-321.99	-282.85	-149.50	-133.35	-39.14	-11.91	-27.23
12.25	-366.99	-321.61	-169.42	-152.19	-45.38	-14.34	-31.04
13.75	-411.99	-361.04	-189.66	-171.38	-50.95	-16.56	-34.39
15.25	-456.99	-401.41	-210.64	-190.77	-55.58	-18.44	-37.14
16.75	-501.99	-442.96	-232.83	-210.13	-59.03	-19.90	-39.13
18.25	-546.99	-485.85	-256.74	-229.11	-61.14	-20.88	-40.26
19.75	-561.99	-500.11	-264.26	-235.84	-61.88	-21.35	-40.53

CORTANTES

SECCION	TOTAL	VIGA 1	MEDIA VIGA 1 EXT	MEDIA VIGA 1 INT	VIGA 2	MEDIA VIGA 2 EXT	MEDIA VIGA 2 INT
0	-30.00	-30.76	-17.48	-13.28	0.76	1.90	-1.13
0.25	30.00	30.57	16.92	13.65	-0.57	-1.33	0.77
1.75	30.00	29.31	17.33	11.98	0.69	-1.65	2.34
3.25	30.00	28.21	18.07	10.14	1.79	-2.18	3.97
4.75	30.00	27.47	18.69	8.79	2.53	-2.57	5.10
7.75	30.00	26.75	19.38	7.37	3.25	-2.82	6.07
10.75	30.00	26.81	19.55	7.27	3.19	-2.53	5.71
12.25	30.00	27.08	19.53	7.56	2.92	-2.24	5.16
13.75	30.00	27.49	19.49	8.00	2.51	-1.89	4.41
15.25	30.00	28.00	19.46	8.54	2.00	-1.49	3.49
16.75	30.00	28.59	19.43	9.16	1.41	-1.04	2.44
18.25	30.00	29.23	19.13	10.10	0.77	-0.57	1.33
19.75	10.00	9.89	6.16	3.73	0.11	-0.08	0.19

TORSORES

SECCION	TOTAL	VIGA 1	MEDIA VIGA 1 EXT	MEDIA VIGA 1 INT	VIGA 2	MEDIA VIGA 2 EXT	MEDIA VIGA 2 INT
0	150.38	5.11	10.44	-5.32	3.40	1.00	2.40
0.25	-150.38	-6.11	-167.14	8.78	-4.18	-1.87	-2.31
1.75	-150.38	-12.20	-175.53	7.40	-9.40	-3.06	-6.34
3.25	-150.38	-17.46	-183.29	3.20	-14.06	-4.42	-9.64
4.75	-150.38	-21.10	-190.14	0.84	-17.02	-5.40	-11.62
7.75	-150.38	-25.21	-197.96	-1.68	-19.42	-6.15	-13.27
10.75	-150.38	-25.97	-199.95	-1.94	-18.10	-5.65	-12.46
12.25	-150.38	-25.33	-199.75	-1.32	-16.30	-5.03	-11.27
13.75	-150.39	-24.14	-199.39	-0.16	-13.86	-4.24	-9.62
15.25	-150.38	-22.49	-199.34	1.66	-10.89	-3.31	-7.58
16.75	-150.39	-20.48	-199.77	4.41	-7.56	-2.30	-5.25
18.25	-150.39	-18.21	-197.25	6.67	-4.07	-1.25	-2.82
19.75	-50.13	-5.54	-63.40	2.44	-0.58	-0.18	-0.40

ALVISA

CASO CARGA : CARRO COMBIN 3 CDV (5)

MOMENTOS FLECTORES

SECCION	TOTAL	VIGA 1	MEDIA VIGA 1 EXT	MEDIA VIGA 1 INT	VIGA 2	MEDIA VIGA 2 EXT	MEDIA VIGA 2 INT
0	-0.51	0.23	-0.10	0.33	-0.74	-0.28	-0.46
0.25	-6.99	-1.70	-0.22	-1.49	-5.29	-2.64	-2.65
1.75	-51.99	-11.67	-4.91	-6.76	-40.32	-20.18	-20.13
3.25	-96.99	-22.94	-10.01	-12.93	-74.05	-37.67	-36.38
4.75	-141.99	-34.64	-15.02	-19.62	-107.35	-55.28	-52.08
7.75	-231.99	-58.09	-25.19	-32.90	-173.90	-90.82	-83.07
10.75	-321.99	-80.24	-35.02	-45.22	-241.75	-127.34	-114.41
12.25	-366.99	-90.34	-39.39	-50.95	-276.65	-145.91	-130.74
13.75	-411.99	-99.50	-43.10	-56.40	-312.49	-164.31	-148.18
15.25	-456.99	-107.46	-45.99	-61.48	-349.53	-181.85	-167.68
16.75	-501.99	-113.82	-47.96	-65.86	-388.17	-197.63	-190.54
18.25	-546.99	-117.99	-49.11	-68.88	-429.00	-210.51	-218.49
19.75	-561.99	-119.46	-49.59	-69.87	-442.53	-215.36	-227.17

CORTANTES

SECCION	TOTAL	VIGA 1	MEDIA VIGA 1 EXT	MEDIA VIGA 1 INT	VIGA 2	MEDIA VIGA 2 EXT	MEDIA VIGA 2 INT
0	-30.00	-5.50	-1.22	-4.29	-24.50	-12.15	-12.34
0.25	30.00	5.60	1.42	4.18	24.40	11.97	12.43
1.75	30.00	6.19	1.09	5.10	23.81	12.04	11.77
3.25	30.00	6.65	0.51	6.15	23.35	11.99	11.35
4.75	30.00	6.89	-0.01	6.90	23.11	11.85	11.26
7.75	30.00	6.84	-0.68	7.53	23.15	11.28	11.88
10.75	30.00	6.22	-0.96	7.18	23.78	10.35	13.42
12.25	30.00	5.72	-0.99	6.71	24.28	9.70	14.58
13.75	30.00	5.09	-0.97	6.06	24.91	8.85	16.06
15.25	30.00	4.34	-0.88	5.22	25.66	7.73	17.93
16.75	30.00	3.43	-0.70	4.13	26.57	6.48	20.09
18.25	30.00	2.08	-0.42	2.50	27.92	5.16	22.76
19.75	10.00	0.31	-0.05	0.36	9.69	1.38	8.31

TORSORES

SECCION	TOTAL	VIGA 1	MEDIA VIGA 1 EXT	MEDIA VIGA 1 INT	VIGA 2	MEDIA VIGA 2 EXT	MEDIA VIGA 2 INT
0	-90.01	-4.01	0.12	-4.13	-0.51	-6.45	5.95
0.25	90.01	4.69	-12.73	4.66	0.72	9.12	-8.39
1.75	90.01	9.00	-9.16	8.32	1.73	11.42	-9.69
3.25	90.01	12.85	-2.29	10.58	2.04	10.51	-8.47
4.75	90.01	15.48	3.43	12.14	1.51	10.06	-8.55
7.75	90.01	17.86	10.40	13.62	-1.25	8.91	-10.17
10.75	90.01	16.99	12.56	13.06	-5.96	7.18	-13.15
12.25	90.01	15.43	12.33	12.04	-8.94	6.18	-15.12
13.75	90.01	13.14	11.39	10.47	-12.29	5.15	-17.44
15.25	90.01	10.22	9.79	8.37	-16.17	4.22	-20.39
16.75	90.01	7.16	7.43	6.06	-21.28	3.71	-24.99
18.25	90.01	3.82	4.26	3.31	-30.08	2.90	-32.99
19.75	30.00	0.51	0.50	0.45	-12.70	0.44	-13.14

ALVISA

CASO CARGA : CARRO EXC ACERA 1.50 CDV (6)

MOMENTOS FLECTORES

SECCION	TOTAL	VIGA 1	MEDIA VIGA 1 EXT	MEDIA VIGA 1 INT	VIGA 2	MEDIA VIGA 2 EXT	MEDIA VIGA 2 INT
0	-0.51	0.69	-0.11	0.79	-1.20	-0.03	-1.17
0.25	-6.99	0.07	0.78	-0.71	-7.06	-4.94	-2.12
1.75	-51.99	2.02	1.92	0.11	-54.01	-28.80	-25.21
3.25	-96.99	0.70	2.33	-1.64	-97.68	-51.68	-46.00
4.75	-141.99	-2.24	2.52	-4.76	-139.75	-74.49	-65.26
7.75	-231.99	-10.81	1.17	-11.98	-221.18	-118.22	-102.96
10.75	-321.99	-21.07	-2.06	-19.02	-300.91	-159.25	-141.67
12.25	-366.99	-26.18	-3.95	-22.23	-340.81	-179.41	-161.40
13.75	-411.99	-30.90	-5.80	-25.10	-381.08	-200.07	-181.01
15.25	-456.99	-34.98	-7.46	-27.51	-422.01	-222.13	-199.88
16.75	-501.99	-38.12	-8.81	-29.31	-463.86	-246.79	-217.07
18.25	-546.99	-40.13	-9.76	-30.36	-506.86	-275.61	-231.25
19.75	-561.99	-40.87	-10.25	-30.61	-521.12	-284.17	-236.95

CORTANTES

SECCION	TOTAL	VIGA 1	MEDIA VIGA 1 EXT	MEDIA VIGA 1 INT	VIGA 2	MEDIA VIGA 2 EXT	MEDIA VIGA 2 INT
0	-30.00	3.82	3.48	0.34	-33.82	-20.21	-13.60
0.25	30.00	-3.57	-2.71	-0.86	33.57	19.42	14.15
1.75	30.00	-1.94	-3.03	1.09	31.93	20.01	11.93
3.25	30.00	-0.46	-3.54	3.08	30.46	21.18	9.28
4.75	30.00	0.57	-3.89	4.46	29.43	22.22	7.21
7.75	30.00	1.80	-3.97	5.77	28.20	23.62	4.58
10.75	30.00	2.16	-3.44	5.60	27.84	24.41	3.43
12.25	30.00	2.08	-3.03	5.11	27.92	24.74	3.18
13.75	30.00	1.86	-2.54	4.40	28.14	25.10	3.04
15.25	30.00	1.51	-1.99	3.51	28.49	25.52	2.96
16.75	30.00	1.08	-1.39	2.47	28.92	25.86	3.06
18.25	30.00	0.60	-0.76	1.35	29.40	26.14	3.27
19.75	10.00	0.09	-0.11	0.19	9.91	8.80	1.11

TORSORES

SECCION	TOTAL	VIGA 1	MEDIA VIGA 1 EXT	MEDIA VIGA 1 INT	VIGA 2	MEDIA VIGA 2 EXT	MEDIA VIGA 2 INT
0	-179.99	-3.14	-1.60	-1.54	-7.51	-12.51	5.00
0.25	179.99	4.00	27.22	1.14	8.90	17.89	-8.99
1.75	179.99	9.86	31.63	5.46	17.72	23.89	-6.18
3.25	179.99	15.15	37.61	9.42	25.68	26.07	-0.39
4.75	179.99	18.49	41.76	11.73	31.66	28.34	3.31
7.75	179.99	21.37	43.26	13.80	39.82	31.67	8.15
10.75	180.00	20.29	38.01	13.27	44.14	33.88	10.27
12.25	179.99	18.51	33.61	12.19	45.20	34.77	10.43
13.75	179.99	16.01	28.29	10.61	45.69	35.74	9.95
15.25	179.99	12.84	22.21	8.56	45.77	37.18	8.59
16.75	180.00	9.12	15.54	6.10	45.60	39.73	5.87
18.25	179.99	5.02	8.47	3.36	45.33	42.75	2.58
19.75	60.00	0.72	1.20	0.49	15.05	14.68	0.36

ALVISA

CASO CARGA : CARRO EXCENTRICO ACERA 0.40 M SECCION 1.75 M (7)

MOMENTOS FLECTORES

SECCION	TOTAL	VIGA 1	MEDIA VIGA 1 EXT	MEDIA VIGA 1 INT	VIGA 2	MEDIA VIGA 2 EXT	MEDIA VIGA 2 INT
0	-0.16	-1.01	-1.78	0.77	0.85	-0.06	0.91
0.25	-13.61	-14.76	-6.25	-8.51	1.16	1.22	-0.07
1.75	-96.20	-106.11	-66.01	-40.10	9.91	6.07	3.84
3.25	-148.80	-163.95	-101.26	-62.69	15.15	10.12	5.03
4.75	-171.39	-190.88	-112.05	-78.83	19.49	13.80	5.69
7.75	-156.58	-183.48	-90.71	-92.77	26.90	19.20	7.70
10.75	-141.77	-173.62	-82.94	-90.68	31.85	22.16	9.69
12.25	-134.37	-167.69	-80.87	-86.82	33.32	22.93	10.39
13.75	-126.96	-161.22	-78.88	-82.33	34.26	23.35	10.91
15.25	-119.56	-154.32	-76.61	-77.71	34.76	23.47	11.29
16.75	-112.15	-147.10	-73.90	-73.20	34.95	23.38	11.57
18.25	-104.75	-139.63	-70.77	-68.86	34.88	23.11	11.78
19.75	-97.34	-131.97	-67.29	-64.68	34.63	22.70	11.93

CORTANTES

SECCION	TOTAL	VIGA 1	MEDIA VIGA 1 EXT	MEDIA VIGA 1 INT	VIGA 2	MEDIA VIGA 2 EXT	MEDIA VIGA 2 INT
0	-55.06	-64.17	-28.52	-35.65	9.10	5.63	3.48
0.25	55.06	63.90	33.79	30.11	-8.83	-4.74	-4.09
1.75	55.06	62.07	34.81	27.26	-7.01	-4.97	-2.04
3.25	35.06	40.42	13.84	26.58	-5.35	-5.28	-0.07
4.75	15.06	19.21	-6.93	26.14	-4.15	-5.42	1.27
7.75	-4.94	-2.53	-26.14	23.61	-2.41	-5.17	2.77
10.75	-4.94	-3.73	-23.92	20.18	-1.20	-4.53	3.32
12.25	-4.94	-4.18	-22.92	18.74	-0.76	-4.12	3.37
13.75	-4.94	-4.54	-22.05	17.50	-0.39	-3.68	3.28
15.25	-4.94	-4.83	-21.28	16.44	-0.11	-3.20	3.09
16.75	-4.94	-5.06	-20.56	15.50	0.12	-2.70	2.82
18.25	-4.94	-5.24	-19.86	14.61	0.31	-2.17	2.48
19.75	-4.94	-5.40	-19.16	13.77	0.46	-1.64	2.10

TORSORES

SECCION	TOTAL	VIGA 1	MEDIA VIGA 1 EXT	MEDIA VIGA 1 INT	VIGA 2	MEDIA VIGA 2 EXT	MEDIA VIGA 2 INT
0	340.68	8.76	26.92	-18.16	2.21	2.40	-0.19
0.25	-340.68	-10.25	-344.12	29.77	-3.16	-4.09	0.94
1.75	-340.68	-20.43	-369.10	35.39	-9.38	-6.00	-3.37
3.25	-198.68	20.82	-140.94	37.19	-13.54	-6.92	-6.61
4.75	-56.68	63.48	84.82	41.00	-15.07	-7.67	-7.40
7.75	85.32	100.31	291.99	43.57	-15.56	-8.13	-7.43
10.75	85.32	88.93	253.77	40.42	-14.99	-7.70	-7.29
12.25	85.32	84.24	251.99	38.50	-14.34	-7.27	-7.07
13.75	85.32	80.03	241.79	36.67	-13.38	-6.71	-6.67
15.25	85.32	76.19	232.69	34.97	-12.14	-6.05	-6.09
16.75	85.32	72.64	224.26	33.37	-10.65	-5.29	-5.35
18.25	85.32	69.30	216.17	31.85	-8.96	-4.46	-4.50
19.75	85.32	66.10	208.20	30.36	-7.14	-3.57	-3.57

ALVISA

CASO CARGA : CARRO MAX POSITIVO TAPE SECCION 1.75 M (8)

MOMENTOS FLECTORES

SECCION	TOTAL	VIGA 1	MEDIA VIGA 1 EXT	MEDIA VIGA 1 INT	VIGA 2	MEDIA VIGA 2 EXT	MEDIA VIGA 2 INT
0	-0.15	-0.18	0.62	-0.80	0.03	0.03	0.00
0.25	-13.61	-12.29	-6.62	-5.67	-1.32	-0.63	-0.69
1.75	-96.21	-87.34	-37.98	-49.36	-8.87	-3.55	-5.32
3.25	-148.80	-133.00	-56.95	-74.05	-15.80	-6.12	-9.68
4.75	-171.40	-149.66	-69.60	-80.06	-21.74	-8.61	-13.13
7.75	-156.59	-126.35	-67.59	-58.76	-30.24	-13.13	-17.11
10.75	-141.78	-107.06	-59.36	-47.70	-34.72	-16.20	-18.52
12.25	-134.37	-98.54	-54.52	-44.02	-35.83	-17.10	-18.73
13.75	-126.97	-90.61	-49.77	-40.84	-36.35	-17.63	-18.73
15.25	-119.56	-83.21	-45.29	-37.92	-36.35	-17.84	-18.52
16.75	-112.16	-76.27	-41.15	-35.12	-35.89	-17.76	-18.12
18.25	-104.75	-69.75	-37.34	-32.41	-35.00	-17.45	-17.55
19.75	-97.35	-63.61	-33.85	-29.76	-33.74	-16.92	-16.82

CORTANTES

SECCION	TOTAL	VIGA 1	MEDIA VIGA 1 EXT	MEDIA VIGA 1 INT	VIGA 2	MEDIA VIGA 2 EXT	MEDIA VIGA 2 INT
0	-30.00	-49.96	-25.29	-23.67	-5.10	-2.77	-2.34
0.25	55.06	50.00	23.83	26.17	5.06	2.40	2.65
1.75	55.06	50.43	23.12	27.31	4.63	2.38	2.25
3.25	35.06	31.18	17.91	13.27	3.88	2.45	1.43
4.75	15.06	11.98	12.50	-0.51	3.08	2.52	0.56
7.75	-4.94	-6.86	6.03	-12.89	1.93	2.55	-0.62
10.75	-4.94	-6.06	4.68	-10.74	1.12	2.48	-1.36
12.25	-4.94	-5.69	4.16	-9.86	0.76	2.43	-1.67
13.75	-4.94	-5.35	3.72	-9.07	0.41	2.38	-1.97
15.25	-4.94	-5.03	3.31	-8.34	0.09	2.33	-2.24
16.75	-4.94	-4.73	2.93	-7.66	-0.21	2.27	-2.47
18.25	-4.94	-4.45	2.55	-7.01	-0.48	2.19	-2.68
19.75	-4.94	-4.20	2.19	-6.39	-0.74	2.11	-2.85

TORSORES

SECCION	TOTAL	VIGA 1	MEDIA VIGA 1 EXT	MEDIA VIGA 1 INT	VIGA 2	MEDIA VIGA 2 EXT	MEDIA VIGA 2 INT
0	105.00	-0.49	14.55	-15.04	-0.06	-1.71	1.64
0.25	-201.30	0.60	-234.41	20.51	0.36	2.59	-2.23
1.75	-201.30	2.89	-233.41	28.21	1.91	3.75	-1.84
3.25	-131.31	-11.22	-180.97	8.56	2.76	3.87	-1.10
4.75	-61.30	-24.39	-127.91	-8.95	3.15	3.77	-0.62
7.75	8.69	-35.45	-67.50	-22.23	4.60	3.57	1.02
10.75	8.69	-30.53	-54.55	-18.10	6.92	3.82	3.09
12.25	8.69	-28.20	-49.09	-16.58	7.87	4.02	3.65
13.75	8.70	-25.88	-44.18	-15.17	8.64	4.20	4.44
15.25	8.69	-23.59	-39.59	-13.83	9.24	4.34	4.90
16.75	8.70	-21.36	-35.16	-12.56	9.70	4.43	5.27
18.25	8.70	-19.20	-30.83	-11.36	10.03	4.47	5.56
19.75	8.69	-17.13	-26.58	-10.22	10.23	4.47	5.77

ALVISA

CASO CARGA : CARRO MAX POSITIVO ENTRE VIGAS SECCION 1.75 M (9)

MOMENTOS FLECTORES

SECCION	TOTAL	VIGA 1	MEDIA VIGA 1 EXT	MEDIA VIGA 1 INT	VIGA 2	MEDIA VIGA 2 EXT	MEDIA VIGA 2 INT
0	-0.15	-0.07	0.97	-1.05	-0.07	0.41	-0.48
0.25	-13.62	-8.69	-5.24	-3.45	-4.93	-2.96	-1.97
1.75	-96.20	-61.98	-21.15	-40.83	-34.22	-12.08	-22.14
3.25	-148.79	-94.43	-33.29	-61.15	-54.36	-19.36	-35.00
4.75	-171.38	-106.38	-42.72	-63.66	-65.00	-26.20	-38.81
7.75	-156.58	-90.02	-51.35	-38.67	-66.56	-36.19	-30.37
10.75	-141.77	-76.98	-48.20	-28.78	-64.79	-38.68	-26.11
12.25	-134.36	-71.10	-44.41	-26.70	-63.26	-37.84	-25.42
13.75	-126.96	-65.57	-40.29	-25.28	-61.39	-36.33	-25.06
15.25	-119.56	-60.33	-36.30	-24.03	-59.22	-34.53	-24.70
16.75	-112.15	-55.38	-32.63	-22.74	-56.77	-32.61	-24.16
18.25	-104.75	-50.67	-29.33	-21.34	-54.08	-30.67	-23.41
19.75	-97.34	-46.18	-26.36	-19.82	-51.16	-28.72	-22.43

CORTANTES

SECCION	TOTAL	VIGA 1	MEDIA VIGA 1 EXT	MEDIA VIGA 1 INT	VIGA 2	MEDIA VIGA 2 EXT	MEDIA VIGA 2 INT
0	-30.00	-35.05	-20.46	-14.60	-20.00	-12.13	-7.87
0.25	55.06	35.14	16.32	18.82	19.91	9.83	10.08
1.75	55.06	35.90	15.75	20.16	19.15	9.85	9.30
3.25	35.06	22.22	16.91	5.31	12.84	10.96	1.88
4.75	15.06	8.55	17.80	-9.25	6.51	11.95	-5.43
7.75	-4.94	-4.90	16.95	-21.85	-0.04	12.23	-12.27
10.75	-4.94	-4.20	14.77	-18.96	-0.74	11.16	-11.89
12.25	-4.94	-3.94	13.80	-17.73	-1.00	10.56	-11.56
13.75	-4.94	-3.71	12.93	-16.64	-1.23	9.98	-11.21
15.25	-4.94	-3.50	12.14	-15.64	-1.43	9.41	-10.85
16.75	-4.94	-3.32	11.37	-14.68	-1.62	8.84	-10.46
18.25	-4.94	-3.15	10.60	-13.75	-1.79	8.26	-10.05
19.75	-4.94	-3.00	9.84	-12.84	-1.94	7.67	-9.60

TORSORES

SECCION	TOTAL	VIGA 1	MEDIA VIGA 1 EXT	MEDIA VIGA 1 INT	VIGA 2	MEDIA VIGA 2 EXT	MEDIA VIGA 2 INT
0	65.88	-1.39	11.56	-12.95	-0.46	-7.23	6.76
0.25	-65.88	1.48	-164.32	18.89	1.17	11.22	-10.05
1.75	-65.88	7.30	-165.72	31.28	2.20	16.05	-13.84
3.25	-45.88	-20.43	-178.92	6.32	16.74	17.97	-1.23
4.75	-25.89	-45.03	-189.62	-15.63	28.32	19.23	9.09
7.75	-5.89	-71.16	-183.54	-40.17	43.41	20.35	23.07
10.75	-5.89	-66.69	-163.01	-36.57	45.22	20.98	24.24
12.25	-5.90	-63.90	-153.45	-34.60	44.77	20.94	23.84
13.75	-5.90	-60.64	-144.56	-32.47	43.59	20.55	23.03
15.25	-5.89	-57.12	-136.00	-30.33	41.92	19.87	22.05
16.75	-5.89	-53.48	-127.51	-28.25	39.95	18.96	20.99
18.25	-5.89	-49.82	-118.99	-26.25	37.79	17.90	19.89
19.75	-5.89	-46.21	-110.42	-24.34	35.52	16.76	18.77

ALVISA

CASO CARGA : CARRO COMBIN 3 CDV SECCION 1.75 M (10)

MOMENTOS FLECTORES

SECCION	TOTAL	VIGA 1	MEDIA VIGA 1 EXT	MEDIA VIGA 1 INT	VIGA 2	MEDIA VIGA 2 EXT	MEDIA VIGA 2 INT
0	-0.15	-0.01	0.07	-0.08	-0.14	0.94	-1.08
0.25	-13.61	-1.89	-0.99	-0.90	-11.72	-6.49	-5.23
1.75	-96.21	-12.65	-5.07	-7.57	-83.57	-33.35	-50.22
3.25	-148.81	-21.90	-8.59	-13.32	-126.90	-52.14	-74.76
4.75	-171.40	-29.20	-11.99	-17.21	-142.20	-62.88	-79.32
7.75	-156.59	-38.43	-17.89	-20.54	-118.16	-64.40	-53.76
10.75	-141.78	-42.79	-21.42	-21.36	-98.99	-56.64	-42.35
12.25	-134.37	-43.78	-22.28	-21.50	-90.60	-51.64	-38.96
13.75	-126.97	-44.14	-22.66	-21.48	-82.83	-46.69	-36.13
15.25	-119.56	-43.95	-22.68	-21.27	-75.62	-42.07	-33.55
16.75	-112.16	-43.25	-22.38	-20.87	-68.91	-37.85	-31.06
18.25	-104.75	-42.11	-21.84	-20.27	-62.65	-34.04	-28.60
19.75	-97.35	-40.56	-21.08	-19.48	-56.79	-30.60	-26.18

CORTANTES

SECCION	TOTAL	VIGA 1	MEDIA VIGA 1 EXT	MEDIA VIGA 1 INT	VIGA 2	MEDIA VIGA 2 EXT	MEDIA VIGA 2 INT
0	-30.00	-7.53	-4.28	-3.25	-47.54	-25.55	-21.98
0.25	55.06	7.44	3.64	3.80	47.62	22.00	25.62
1.75	55.06	6.65	3.64	3.01	48.41	20.77	27.64
3.25	35.06	5.30	3.84	1.45	29.77	17.68	12.09
4.75	15.06	3.90	4.02	-0.13	11.17	14.35	-3.19
7.75	-4.94	2.11	4.10	-1.99	-7.05	9.77	-16.82
10.75	-4.94	1.10	3.90	-2.80	-6.04	7.87	-13.91
12.25	-4.94	0.68	3.77	-3.09	-5.62	7.16	-12.78
13.75	-4.94	0.30	3.63	-3.34	-5.23	6.56	-11.80
15.25	-4.94	-0.06	3.49	-3.55	-4.88	6.03	-10.90
16.75	-4.94	-0.39	3.33	-3.72	-4.55	5.52	-10.07
18.25	-4.94	-0.68	3.16	-3.85	-4.25	5.03	-9.28
19.75	-4.94	-0.96	2.98	-3.93	-3.98	4.54	-8.52

TORSORES

SECCION	TOTAL	VIGA 1	MEDIA VIGA 1 EXT	MEDIA VIGA 1 INT	VIGA 2	MEDIA VIGA 2 EXT	MEDIA VIGA 2 INT
0	-178.40	0.28	2.55	-2.27	1.36	-13.97	15.33
0.25	178.40	-0.76	-36.71	3.18	-1.67	19.48	-21.15
1.75	178.39	-3.58	-38.46	2.11	-5.94	25.19	-31.13
3.25	118.39	-5.90	-40.64	0.14	14.16	22.54	-8.38
4.75	58.39	-7.36	-42.31	-1.26	33.02	20.86	12.17
7.75	-1.62	-9.91	-42.96	-3.84	49.51	19.85	29.65
10.75	-1.62	-12.60	-41.56	-6.17	43.12	18.49	24.63
12.25	-1.62	-13.45	-40.58	-6.83	40.19	17.47	22.71
13.75	-1.62	-14.01	-39.45	-7.27	37.26	16.35	20.91
15.25	-1.62	-14.32	-38.16	-7.56	34.38	15.16	19.22
16.75	-1.62	-14.45	-36.69	-7.75	31.57	13.95	17.61
18.25	-1.62	-14.41	-35.03	-7.84	28.84	12.74	16.10
19.75	-1.62	-14.23	-33.19	-7.85	26.23	11.56	14.67

ALVISA

CASO CARGA : CARRO EXCENTRICO ACERA 0.40 M SECCION 7.75 M (11)

MOMENTOS FLECTORES

SECCION	TOTAL	VIGA 1	MEDIA VIGA 1 EXT	MEDIA VIGA 1 INT	VIGA 2	MEDIA VIGA 2 EXT	MEDIA VIGA 2 INT
0	-0.37	-1.33	-0.83	-0.49	0.96	-0.07	1.02
0.25	-11.12	-11.90	-6.14	-5.76	0.78	1.17	-0.39
1.75	-80.04	-87.60	-42.41	-45.20	7.56	4.85	2.71
3.25	-148.96	-158.77	-78.50	-80.27	9.81	7.57	2.24
4.75	-217.89	-227.88	-116.85	-111.03	9.99	9.87	0.12
7.75	-355.74	-363.35	-203.94	-159.41	7.61	12.29	-4.68
10.75	-403.58	-408.88	-225.93	-182.94	5.29	12.56	-7.27
12.25	-382.51	-387.43	-203.20	-184.23	4.93	12.36	-7.44
13.75	-361.43	-366.48	-186.29	-180.19	5.04	12.12	-7.08
15.25	-340.36	-345.84	-173.31	-172.54	5.49	11.92	-6.43
16.75	-319.28	-325.42	-162.74	-162.68	6.14	11.79	-5.65
18.25	-298.20	-305.17	-153.34	-151.83	6.96	11.74	-4.78
19.75	-277.13	-285.08	-144.31	-140.77	7.95	11.78	-3.83

CORTANTES

SECCION	TOTAL	VIGA 1	MEDIA VIGA 1 EXT	MEDIA VIGA 1 INT	VIGA 2	MEDIA VIGA 2 EXT	MEDIA VIGA 2 INT
0	-45.95	-54.04	-29.05	-24.98	8.09	5.54	2.55
0.25	45.95	53.72	29.13	24.59	-7.77	-4.54	-3.23
1.75	45.95	51.63	30.34	21.29	-5.68	-4.87	-0.81
3.25	45.95	49.71	32.21	17.51	-3.76	-5.36	1.59
4.75	45.95	48.34	33.97	14.36	-2.39	-5.62	3.23
7.75	45.95	46.64	35.11	11.53	-0.69	-5.41	4.72
10.75	5.95	5.94	-6.81	12.75	0.01	-4.54	4.54
12.25	-14.05	-14.19	-27.21	13.02	0.14	-3.97	4.11
13.75	-14.05	-14.23	-26.92	12.69	0.18	-3.36	3.54
15.25	-14.05	-14.22	-26.30	12.08	0.17	-2.71	2.89
16.75	-14.05	-14.17	-25.63	11.46	0.12	-2.05	2.17
18.25	-14.05	-14.09	-25.03	10.94	0.04	-1.38	1.42
19.75	-14.05	-14.00	-24.51	10.50	-0.05	-0.70	0.65

TORSORES

SECCION	TOTAL	VIGA 1	MEDIA VIGA 1 EXT	MEDIA VIGA 1 INT	VIGA 2	MEDIA VIGA 2 EXT	MEDIA VIGA 2 INT
0	292.66	9.98	20.07	-10.09	3.11	2.37	0.75
0.25	-292.67	-11.72	-291.03	17.13	-4.21	-4.14	-0.07
1.75	-292.66	-22.95	-311.18	15.14	-11.81	-6.21	-5.60
3.25	-292.67	-33.73	-331.69	8.09	-18.28	-7.60	-10.68
4.75	-292.67	-42.54	-352.77	4.47	-21.85	-8.71	-13.14
7.75	-292.66	-56.66	-379.14	6.49	-23.00	-9.32	-13.67
10.75	-8.66	36.71	78.41	19.59	-18.66	-8.24	-10.42
12.25	133.34	84.55	304.29	25.11	-15.67	-7.31	-8.36
13.75	133.33	81.11	295.33	28.07	-12.63	-6.23	-6.40
15.25	133.33	78.26	285.74	29.20	-9.69	-5.06	-4.62
16.75	133.33	75.84	277.14	29.40	-6.82	-3.85	-2.97
18.25	133.33	73.70	269.79	29.20	-3.98	-2.60	-1.38
19.75	133.33	71.69	263.43	28.80	-1.16	-1.35	0.19

ALVISA

CASO CARGA : CARRO EXCENTRICO ACERA 0.40 M SECCION 4.75 M (12)

MOMENTOS FLECTORES

SECCION	TOTAL	VIGA 1	MEDIA VIGA 1 EXT	MEDIA VIGA 1 INT	VIGA 2	MEDIA VIGA 2 EXT	MEDIA VIGA 2 INT
0	-0.28	-1.22	-1.87	0.65	0.94	-0.05	0.99
0.25	-12.35	-13.25	-5.33	-7.92	0.90	1.17	-0.27
1.75	-88.11	-96.44	-48.96	-47.48	8.33	5.34	2.99
3.25	-163.87	-175.35	-94.74	-80.62	11.48	8.62	2.87
4.75	-239.63	-252.75	-145.15	-107.60	13.12	11.51	1.61
7.75	-301.15	-316.44	-176.54	-139.90	15.29	15.33	-0.04
10.75	-272.67	-290.15	-145.58	-144.56	17.48	17.03	0.46
12.25	-258.42	-276.86	-136.59	-140.27	18.44	17.39	1.05
13.75	-244.18	-263.38	-129.79	-133.59	19.20	17.55	1.65
15.25	-229.94	-249.73	-123.94	-125.78	19.78	17.57	2.21
16.75	-215.70	-235.95	-118.29	-117.66	20.25	17.49	2.75
18.25	-201.46	-222.12	-112.45	-109.67	20.65	17.36	3.29
19.75	-187.22	-208.27	-106.29	-101.98	21.05	17.19	3.86

CORTANTES

SECCION	TOTAL	VIGA 1	MEDIA VIGA 1 EXT	MEDIA VIGA 1 INT	VIGA 2	MEDIA VIGA 2 EXT	MEDIA VIGA 2 INT
0	-50.51	-59.04	-28.62	-30.42	8.53	5.55	2.98
0.25	50.51	58.74	31.23	27.51	-8.23	-4.62	-3.61
1.75	50.51	56.75	32.96	23.79	-6.25	-4.91	-1.33
3.25	50.51	54.96	34.16	20.80	-4.45	-5.32	0.87
4.75	50.51	53.68	34.53	19.15	-3.18	-5.52	2.34
7.75	10.51	12.06	-6.62	18.68	-1.55	-5.26	3.70
10.75	-9.49	-8.84	-26.18	17.33	-0.65	-4.47	3.83
12.25	-9.49	-9.14	-25.34	16.20	-0.35	-3.99	3.63
13.75	-9.49	-9.36	-24.49	15.13	-0.14	-3.46	3.33
15.25	-9.49	-9.50	-23.73	14.23	0.01	-2.91	2.92
16.75	-9.49	-9.60	-23.08	13.49	0.10	-2.32	2.43
18.25	-9.49	-9.65	-22.50	12.85	0.16	-1.72	1.88
19.75	-9.49	-9.68	-21.93	12.25	0.19	-1.11	1.30

TORSORES

SECCION	TOTAL	VIGA 1	MEDIA VIGA 1 EXT	MEDIA VIGA 1 INT	VIGA 2	MEDIA VIGA 2 EXT	MEDIA VIGA 2 INT
0	292.66	9.40	22.36	-12.95	2.85	2.36	0.50
0.25	-316.31	-11.01	-313.61	21.51	-3.92	-4.09	0.16
1.75	-316.31	-21.62	-339.82	21.55	-11.18	-6.09	-5.09
3.25	-316.31	-32.25	-357.04	17.34	-16.74	-7.28	-9.46
4.75	-316.31	-41.30	-370.36	18.28	-19.15	-8.21	-10.94
7.75	-32.31	47.81	79.25	28.17	-18.86	-8.65	-10.22
10.75	109.69	88.73	290.12	34.18	-15.92	-7.81	-8.11
12.25	109.69	84.41	278.09	34.33	-14.25	-7.13	-7.12
13.75	109.69	80.69	267.37	33.70	-12.48	-6.33	-6.15
15.25	109.69	77.45	258.23	32.81	-10.57	-5.44	-5.13
16.75	109.69	74.53	250.41	31.86	-8.49	-4.47	-4.02
18.25	109.69	71.83	243.40	30.90	-6.28	-3.45	-2.83
19.75	109.69	69.24	236.70	29.91	-3.97	-2.38	-1.58

ALVISA

Aclaración a la obtención de esfuerzos :

- Según el cuadro denominado COMPARACIÓN DE ESFUERZOS VIGA 1 Y 2 , se observa que es indiferente considerar una u otra viga a efectos de dimensionamiento, ya que la mayor carga permanente de una se compensa con un menor esfuerzo debido al vehículo pesado.

- En la mayoración de acciones se ha aplicado un coeficiente para cargas permanentes de 1.35 y de 1.50 para sobrecargas.

ALVISA

COMPARACIÓN ESFUERZOS EN VIGA 1 Y VIGA 2

CDV FLEXION			
VIGA 1	TIPO	VALOR	TOTAL
CM		496.4	1094.39
SC PES	TOT	702.46	1401.7
CARRO P	EXC 1	603.32	561.98
CARRO P CCOM	M+ 2	461.86	561.98

Ed :	3321.6

CORTANTE AP			
VIGA 1	TIPO	VALOR	TOTAL
CM		47.67	110.94
SC PES	TOT	71.1	142.2
CARRO P	EXC 1	64.17	55
CARRO P CCOM	M+ 2	50	55

Ed :	342.2595

CDV FLEXION			
VIGA 2	TIPO	VALOR	TOTAL
CM		609.78	1094.39
SC PES	TOT	702.46	1401.7
CARRO P	EXC 6	568.34	561.98
CARRO P CCOM	3 SIM	376.04	561.98

Ed :	3293.463

CORTANTE AP			
VIGA 2	TIPO	VALOR	TOTAL
CM		63.28	110.94
SC PES	TOT	71.1	142.2
CARRO P	EXC2	64	
CARRO P CCOM	3 SIM	35	

Ed :	340.578

ALVISA

ENVOLVENTE

MOMENTOS TRANSVERSALES TOTALES
(mt)

CASO CARGA	1	2	3	4	5	6	7	8	9	10	11	12	13	14
CM	-1.26	-3.52	-2.82	-3.22	-4.02	-5.26	-4.30	-3.88	-5.89	-8.21	-5.57	-4.04	-4.09	-5.13
SC +	0.41	0.33	0.34	1.10	3.87	5.60	4.28	5.13	4.28	5.60	3.87	1.10	0.32	0.41
SC -	-1.36	-2.89	-2.58	-2.95	-6.24	-9.42	-6.63	-2.87	-6.63	-9.42	-6.24	-2.95	-2.58	-2.89
CARRO +	0.10	0.49	0.56	3.40	2.50	3.62	6.43	11.85	6.54	4.07	2.79	1.33	0.51	0.49
CCOM +	0.03	0.19	0.37	0.00	2.19	3.25	0.31	3.03	1.15	3.57	2.51	0.00	0.41	0.45
CARRO -	-3.61	-13.20	-11.90	-7.67	-6.72	-9.72	-6.77	-3.22	-4.70	-6.90	-4.56	-1.49	-5.76	-6.13
CCOM -	-0.05	-0.46	-1.78	-2.10	-4.19	-3.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL + mayorado (mt/m)	-0.60	-2.16	-1.27	1.60	4.94	7.74	7.15	16.52	6.67	5.85	4.16	-1.21	-2.44	-3.27
TOTAL – mayorado (mt/m)	-6.07	-19.07	-16.65	-13.52	-14.39	-20.62	-16.96	-6.55	-15.48	-20.14	-13.31	-8.08	-11.62	-13.19

1: VUELO IZQUIERDO 1.50 M
2 : VUELO IZQUIERDO ARRANQUE (14)
3: LOSA INTERIOR VIGA 1 ARRANQUE IZQUIERDO (13)
4: LOSA INTERIOR VIGA 1 CENTRO (12)
5: LOSA INTERIOR VIGA 1 ARRANQUE DERECHO (11)
6: LOSA ENTRE VIGAS ARRANQUE IZQUIERDO (10)
7: LOSA ENTRE VIGAS A 1.85 CENTRO (9)
8: LOSA ENTRE VIGAS CENTRO
9,10,11,12,13,14,15 SIMÉTRICOS

Espesor:	0.302
Espesor:	0.4
Espesor:	0.4
Espesor:	0.21
Espesor:	0.4
Espesor:	0.4
Espesor:	0.3
Espesor:	0.2

⇒ el canto para el 0.35m
⇒ a la vista de los resultados de flexión transversal se pone el canto definitivo a 0.35m

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IOMENTOS TRANSVERSALES TOTALES

ASO CARGA	1	2	3	4	5	6	7	8	9	10	11	12	13	14
CM	-1.26	-3.52	-2.82	-3.22	-4.02	-5.26	-4.30	-3.88	-5.89	-8.21	-5.57	-4.04	-4.09	-5.13
SC +	0.41	0.33	0.34	1.10	3.87	5.60	4.28	5.13	4.28	5.60	3.87	1.10	0.32	0.41
SC -	-1.36	-2.89	-2.58	-2.95	-6.24	-9.42	-6.63	-2.87	-6.63	-9.42	-6.24	-2.95	-2.58	-2.89
ARRO +	0.10	0.49	0.56	3.40	2.50	3.62	6.43	11.85	6.54	4.07	2.79	1.33	0.51	0.49
CCOM +	0.03	0.19	0.37	0.00	2.19	3.25	0.31	3.03	1.15	3.57	2.51	0.00	0.41	0.45
ARRO -	-3.61	-13.20	-11.90	-7.67	-6.72	-9.72	-6.77	-3.22	-4.70	-6.90	-4.56	-1.49	-5.76	-6.13
CCOM -	-0.05	-0.46	-1.78	-2.10	-4.19	-3.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL +	-0.60	-2.16	-1.27	1.60	4.94	7.74	7.15	16.52	6.67	5.85	4.16	-1.21	-2.44	-3.27
TOTAL -	-6.07	-19.07	-16.65	-13.52	-14.39	-20.62	-16.96	-6.55	-15.48	-20.14	-13.31	-8.08	-11.62	-13.19

mt/m
mt/m

VUELO IZQUIERDO 1.50 M
VUELO IZQUIERDO ARRANQUE (14)
LOSA INTERIOR VIGA 1 ARRANQUE IZQUIERDO (13)
LOSA INTERIOR VIGA 1 CENTRO (12)
LOSA INTERIOR VIGA 1 ARRANQUE DERECHO (11)
LOSA ENTRE VIGAS ARRANQUE IZQUIERDO (10)
LOSA ENTRE VIGAS A 1.85 CENTRO (9)
LOSA ENTRE VIGAS CENTRO
0,11,12,13,14,15 SIMÉTRICOS

Espesor:	0.302
Espesor:	0.4
Espesor:	0.4
Espesor:	0.21
Espesor:	0.4
Espesor:	0.4
Espesor:	0.35
Espesor:	0.25

		h=0.30	h=0.40	h=0.40	h=0.21	h=0.40	h=0.40	h=0.35	h=0.25	h=0.35	h=0.40	h=0.40	h=0.21	h=0.40	h=0.40	
ω^+_{TOTAL}		–	–	–	2.17	3.14	4.96	5.34	21.05	4.97	3.73	2.63	–	–	–	cm²/m
ω^-_{TOTAL}		5.44	12.64	10.95	22.65	9.40	13.74	13.22	7.45	11.99	13.39	8.66	12.07	7.52	8.59	cm²/m
		8φ16	8φ16	12φ16	12φ16	12φ16	8φ16	8φ16	8φ16	1φ16	8φ16	12φ16	12φ16	12φ16	8φ16	

Recubrimiento mecánico = 0.04m H-25 f_{yk} = 5100 γ_c = 1.50 γ_s = 1.15

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VIGA 1	TIPO	VALOR	TOTAL
CM		496.4	1094.39
SC PES	TOT	702.46	1401.7
CARRO P	EXC 1	603.32	561.98
CARRO P CCOM	M+ 2	461.86	561.98

Ed : 3321.6

VIGA 1	TIPO	VALOR	T[illegible]AL
CM		0	
SC PES	TOT	0	0
CARRO P	EXC 1	29.47	10
CARRO P CCOM	M + 2	28.45	10

Ed : 86.88

VIGA 1	TIPO	VA[illegible]R	TOTAL
CM		0.0	0
SC PES	TOT	0	0
CARRO P	EXC 1	76.15	71
CARRO P CCOM	M + 2	-8.39	35

Ed : 102.5

7.75 M FLEXION PESIMA

VIGA 1	TIPO	VALOR	TOTAL
CM		310.22	689.64
SC PES	TOT	441.8	883.3
CARRO P	EXC 1	451.86	403.58
CARRO P CCOM	M+ 2	292.38	355.74

Ed : 2197.857

CORTANTE CCOM

VIGA 1	TIPO	VALOR	TOTAL
CM		30.23	67.96
SC PES	TOT	43.2	86.4
CARRO P	EXC 1	49.71	45.95
CARRO P CCOM	M+ 2	30	45.95

Ed : 225.176

TORSOR CCOM

VIGA 1	TIPO	VALOR	TOTAL
CM		4.82	449.31
SC PES	TOT	0	0
CARRO P	EXC 1	56.66	292.66
CARRO P CCOM	M + 2	0	0

Ed : 91.5

7.75 M FLEXION CCOM

VIGA 1	TIPO	VALOR	TOTAL
CM		310.22	67.96
SC PES	MED	406	441.65
CARRO P	EXC	451.86	403.58
CARRO P CCOM			

Ed : 1705.587

CORTANTE CCOM

VIGA 1	TIPO	VALOR	TOTAL
CM		30.23	67.96
SC PES	MED	36.92	86.4
CARRO P	EXC	49.71	45.95
CARRO P CCOM			

Ed : 170.756

7.75 M TORSOR PESIMO

VIGA 1	TIPO	VALOR	TOTAL
CM		4.82	
SC PES	MED	28.3	
CARRO P	EXC	56.66	
CARRO P CCOM			

Ed : 133.9

4.75 M FLEXION PESIMA

VIGA 1	TIPO	VALOR	TOTAL
CM		205.82	461.97
SC PES	TOT	296.44	591.7
CARRO P	EXC 1	353.08	301.15
CARRO P CCOM	M+ 2	247.75	301.15

Ed : 1623.762

CORTANTE CCOM

VIGA 1	TIPO	VALOR	TOTAL
CM		37.3	84.83
SC PES	TOT	54	108
CARRO P	EXC 1	54.96	50.51
CARRO P CCOM	M+ 2		

Ed : 213.795

TORSOR CCOM

VIGA 1	TIPO	VALOR	TOTAL
CM		3.62	60.55
SC PES	TOT	0	0
CARRO P	EXC 1	88.73	316.31
CARRO P CCOM	M + 2		

Ed : 138

4.75 M FLEXION CCOM

VIGA 1	TIPO	VALOR	TOTAL
CM		205.82	461.97
SC PES	MED	276.32	295.85
CARRO P	EXC	353.08	301.15
CARRO P CCOM			

Ed : 1221.957

CORTANTE CCOM

VIGA 1	TIPO	VALOR	TOTAL
CM		37.3	84.83
SC PES	MED	48.27	54
CARRO P	EXC	54.96	50.51
CARRO P CCOM			

Ed : 205.2

7.75 M TORSOR PESIMO

VIGA 1	TIPO	VALOR	TOTAL
CM		3.62	
SC PES	MED	26.1	242.99
CARRO P	EXC	88.73	316.31
CARRO P CCOM			

Ed : 177.1

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VIGA 1	TIPO	VALOR	TOTAL
CM		47.67	110.94
SC PES	TOT	71.1	142.2
CARRO P	EXC	64.17	55
CARRO P CCOM	M+ 2	50	55

Ed : 342.2595

TORSOR CCOM

VIGA 1	TIPO	VALOR	TO[illegible]AL
CM		2.62	73.23
SC PES	TOT	1.67	0
CARRO P	EXC	20.82	340.68
CARRO P CCOM	M+ 2	0	0

Ed : 37.272

CORTANTE CCOM

VIGA 1	TIPO	VALOR	TOTAL
CM		47.67	84.83
SC PES	MED	69.71	54
CARRO P	EXC	64.17	50.51
CARRO P CCOM	M+ 2	50	55

Ed : 340.1745

TORSOR MAX APOYO

VIGA 1	TIPO	VALOR	TOTAL
CM		2.62	73.23
SC PES	MED	22.52	291.6
CARRO P	EXC	20.82	340.68
CARRO P CCOM	M+ 2	11.22	131.31

Ed : 85.377

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ALVISA

DIMENSIONAMIENTO Y COMPROBACIÓN

DATOS GENERALES

OBRA :	M-45
TIPO VIGA (N/H/F/C):	C
ACERO :	O-240-16F30
LUZ (M):	39.6
ANCHO (M) :	13
Nº SECCIONES :	6
INTEREJE (M):	7.3125
ESPESOR LOSA (M):	0.4
ENTREGA (M) :	0.7
ACERA IZQ (M) :	0.4
ACERA DCH. (M) :	1.6
ESPESOR PAV (M) :	0.1
Nº APOYOS A DIMENSIONAR :	2
Nº CORTES FLEX. TRANSV:	2
PESO ACERAS + BARRERAS(T/M)	-
T (M):	-
AMBIENTE (II o III):	II

COEFICIENTES DE MINORACIÓN

IRMIGON VIGA			
encia a los 28 días (t/m2) :	5500	Resistencia a tracción (t/m2):	303.71
asticidad 28 días (t/m2) :	3500000	Tensión máx. admisible compresión (t/m2):	3437.5
eficiente de minoración en rotura γ_{cv} :	1.5		

IRMIGON LOSA			
sistencia a los 28 días (t/m2) :	2500	Resistencia a tracción (t/m2):	179.55
dulo elasticidad 28 días (t/m2) :	3207534	Tensión máx. admisible compresión (t/m2):	1562.5
eficiente de minoración en rotura γ_{cl} :	1.5		

ERO ACTIVO PRETESO VIGA	
sistencia máxima (t/m2) :	190000
ite elástico (t/m2) :	171000
dulo de elasticidad (t/m2) :	20000000
eficiente de minoración en rotura γ_p :	1.15
lajación clase acero 0.7fmáx:	2
nsión de tesado (t/m2) :	140000

O PASIVO VIGA	
ia característica (t/m2) :	51000
dulo de elasticidad (t/m2) :	21000000
eficiente de minoración en rotura γ_s :	1.15

ACERO PASIVO LOSA	
Resistencia característica (t/m2) :	51000
Módulo de elasticidad (t/m2) :	21000000
Coeficiente de minoración en rotura γ_s :	1.15

ERO ACTIVO POSTESO VIGA	
sistencia máxima (t/m2) :	190000
ite elástico (t/m2) :	171000
dulo de elasticidad (t/m2) :	20000000
eficiente de minoración en rotura γ_p :	1.15
ajación clase acero 0.7fmáx:	2
nsión inicial de tesado (t/m2) :	150000
nsión tras pérdidas instantáneas (t/m2)	144000

Modelo : C-240-15F30

CARACTERISTICAS BRUTAS	
Área (m²) :	1.309177
cia (m⁴) :	0.947781
Via (m) :	1.420879
Vib (m) :	0.979121
Canto (m) :	2.400000
Fondo (m) :	1.700
Peso (t/m) :	3.2729425
Alma (m) :	0.300
Perimetro (m) :	13.8144
Ancho sup. (m):	3.125
Ancho inf. int.(m):	1.472
Ancho sup.int.(m):	1.998
Espesor fondo(m):	0.300

CARACTERISTICAS HOMOGENEIZADAS	
Área (m²) :	1.382677
Inercia (m⁴) :	1.005165
Via (m) :	1.461247
Vib (m) :	0.938753
Canto (m) :	2.4
Fondo (m) :	1.7
Peso (t/m) :	3.2729425
Alma (m) :	0.3
Perimetro (m) :	13.8144

BLOQUES COMPRESIÓN

Nº	Base inferior	Base superior	Espesor (m)
1	1.620	1.710	0.040
2	1.710	1.775	0.260
3	0.442	0.302	0.070
4	0.302	0.302	1.731
5	0.302	0.577	0.100
6	0.577	1.122	0.100
7	1.122	1.127	0.100

SECCION :	1	X :	19.75				
ARM. PRETE VIGA							
Nº filas :	5						
Fila	Nº cables	Diámetro (")	Cota (m)	Tensión tesado(t/m2)			
1	29	0.60	0.04	140000			
2	16	0.60	0.09	140000			
3	16	0.60	0.14	140000			
4	16	0.60	0.19	140000			
5	6	0.60	2.36	140000			
ARMADURA PASIVA VIGA							
Nº filas :	3						
Fila	Área (m2)	Cota (m)					
1	0.000707	0.15					
2	0.001212	1.20					
3	0.000303	2.36					
ARMADURA POSTESA VIGA							
Nº fases:	1						
Fase	1	Nº filas :	1.00				
Fila	Área(m2)	Área vainas(m2)	Cota(m)	Tensión tesado(t/m2)			
1	0.00672	0.01767	0.10	144000			

Hoja nº 4

SECCION :	2	X :	7.75				
ARM. PRETE VIGA							
Nº filas :	5						
Fila	Nº cables	Diámetro (")	Cota (m)	Tensión tesado(t/m2)			
1	29	0.60	0.04	140000			
2	16	0.60	0.09	140000			
3	16	0.60	0.14	140000			
4	16	0.60	0.19	140000			
5	6	0.60	2.36	140000			
ARMADURA PASIVA VIGA							
Nº filas :	3						
Fila	Área (m2)	Cota (m)					
1	0.000707	0.15					
2	0.001212	1.20					
3	0.000303	2.36					
ARMADURA POSTESA VIGA							
Nº fases:	1						
Fase	1	Nº filas :	1.00				
Fila	Área(m2)	Área vainas(m2)	Cota(m)	Tensión tesado(t/m2)			
1	0.00672	0.01767	0.40	144000			

Hoja nº 5

ECCION :	3	X :	7.75					
ARM. PRETESA VIGA								
Nº filas :	5							
ila	Nº cables	Diámetro (")	Cota (m)	Tensión tesado(t/m2)				
1	29	0.60	0.04	140000				
2	16	0.60	0.09	140000				
3	16	0.60	0.14	140000				
4	16	0.60	0.19	140000				
5	6	0.60	2.36	140000				
RMADURA PASIVA VIGA								
º filas :	3							
ila	Area (m2)	Cota (m)						
1	0.000707	0.15						
2	0.001212	1.20						
3	0.000303	2.36						
RMADURA POSTESA VIGA								
º fases:	1							
ase	1	Nº filas :	1.00					
ila	Área(m2)	Área vainas(m2)	Cota(m)	Tensión tesado(t/m2)				
1	0.00336	0.00884	0.10	144000				

Hoja n: 6

ECCION :	4	X :	4.75					
ARM. PRETESA VIGA								
Nº filas :	5							
ila	Nº cables	Diámetro (")	Cota (m)	Tensión tesado(t/m2)				
1	29	0.60	0.04	140000				
2	16	0.60	0.09	140000				
3	16	0.60	0.14	140000				
4	16	0.60	0.19	140000				
5	6	0.60	2.36	140000				
RMADURA PASIVA VIGA								
º filas :	3							
ila	Área (m2)	Cota (m)						
1	0.000707	0.15						
2	0.001212	1.20						
3	0.000303	2.36						
RMADURA POSTESA VIGA								
fases:	1							
ase	1	Nº filas :	1.00					
ila	Área(m2)	Área vainas(m2)	Cota(m)	Tensión tesado(t/m2)				
1	0.00336	0.00884	0.40	144000				

Hoja n: 7

RM. PRETESA VIGA

° filas :	5			
ila	N° cables	Diámetro (")	Cota (m)	Tensión tesado(t/m2)
1	29	0.60	0.04	140000
2	16	0.60	0.09	140000
3	16	0.60	0.14	140000
4	16	0.60	0.19	140000
5	6	0.60	2.36	140000

RMADURA PASIVA VIGA

° filas :	3	
la	Área (m2)	Cota (m)
1	0.000707	0.15
2	0.001212	1.20
3	0.000303	2.36

Hoja n:8

ECCION : 6 X : 0.00

RM. PRETE. VIGA

° filas :	4			
ila	N° cables	Diámetro (")	Cota (m)	Tensión tesado(t/m2)
1	29	0.60	0.04	140000
2	16	0.60	0.09	140000
3	16	0.60	0.14	140000
4	6	0.60	2.36	140000

RMADURA PASIVA VIGA

° filas :	3	
ila	Area (m2)	Cota (m)
1	0.0025	0.15
2	0.00467	1.20
3	0.002413	2.36

Hoja n:9

	P. propio	Transferencia	Postesado	Inyección	Previo 1ª fase	1ªfase	Previ .M.	C.M.	10000 d.	T. Infinito	Recarga
EDADES(días)	3	3		9	29	29	59	59	10000	20000	20000
ESFUERZOS											
(t)	0.00	-1793.55	-1064.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
(mt)	638.32	-1313.14	-955.54	0.00	0.00	1426.17	0.00	496.40	0.00	0.00	353.53
TENSIONES EN HORMIGÓN (t/m2)											
. inferior	-614.52	1862.10	3305.15	3225.80	3054.97	1801.43	2129.51	1838.88	1124.18	1217.40	1009.05
. superior viga	925.70	442.10	-88.82	-59.62	-1.02	2067.20	850.35	912.55	1515.82	1250.66	1293.10
. inferior losa	0.00	0.00	0.00	0.00	0.00	0.00	119.04	167.47	248.98	159.00	193.21
. superior losa	0.00	0.00	0.00	0.00	0.00	0.00	139.77	233.98	59.70	197.96	265.86
TENSIONES ACERO ACTIVO (t/m2)											
.PRETESAS VIGA											
ibra1	-3828.96	-133262.25	-118470.30	-116220.46	-110104.00	-116558.48	-115560.70	-116937.52	-99625.13	-99775.48	-100685.37
ibra2	-3620.31	-133454.61	-118095.54	-116803.79	-110796.83	-116894.75	-115879.95	-117221.24	-99986.78	-100101.25	-100987.86
ibra3	-3411.66	-133646.98	-119520.80	-117387.13	-111489.67	-117231.03	-116199.22	-117504.97	-100348.45	-100427.02	-101290.34
ibra4	-3203.01	-133839.34	-120046.03	-117970.44	-112182.49	-117567.30	-116518.48	-117788.68	-100710.09	-100752.78	-101592.82
ibra5	5852.39	-142187.97	-142841.59	-143286.73	-142251.33	-132161.58	-130374.36	-130102.05	-116406.03	-114891.20	-114720.70
.POSTESAS VIGA											
ase1											
ibra1	0.00	0.00	-158400.00	-154700.20	-147951.88	-153978.48	-152776.41	-154110.59	-135476.27	-135283.59	-136165.55
DEF.A.PRETESAS VIGA											
ibra1	-0.00735	-0.00675	-0.00603	-0.00664	-0.00647	-0.00708	-0.00672	-0.00682	-0.00610	-0.00680	-0.00680
ibra2	-0.00735	-0.00676	-0.00606	-0.00665	-0.00648	-0.00707	-0.00673	-0.00683	-0.00611	-0.00681	-0.00681
ibra3	-0.00735	-0.00677	-0.00608	-0.00667	-0.00650	-0.00706	-0.00674	-0.00684	-0.00613	-0.00682	-0.00681
ibra4	-0.00735	-0.00678	-0.00611	-0.00668	-0.00651	-0.00705	-0.00674	-0.00684	-0.00614	-0.00683	-0.00682
ibra5	-0.00735	-0.00720	-0.00725	-0.00722	-0.00717	-0.00669	-0.00713	-0.00718	-0.00675	-0.00717	-0.00719
DEF.A.POSTESAS VIGA											
ase 1											
ibra1	0.00000	0.00000	-0.00792	-0.00781	-0.00754	-0.00784	-0.00780	-0.00787	-0.00722	-0.00727	-0.00731
DEFORMACIÓN EN LAS FIBRAS DE HORMIGÓN											
superior viga	0.00030	0.00014	0.00008	0.00005	0.00007	0.00059	0.00066	0.00068	0.00113	0.00115	0.00116
inferior viga	-0.00020	0.00061	0.00134	0.00145	0.00174	0.00141	0.00144	0.00137	0.00203	0.00198	0.00193
ro sección (rad)	-0.00021	0.00019	0.00053	0.00058	0.00070	0.00034	0.00032	0.00029	0.00038	0.00034	0.00032

Hoja N° 10

CCIÓN :	2	X :	7.75								
	P. propio	Transferencia	Postesado	yección	Previo 1ª fase	1ªfase	Previo C.M.	C.M.	10000 d.	T. Infinito	Sobrecarga
ADES(días)	3	3	8	9	29	29	59	59	10000	20000	20000
FUERZOS											
(t)	0.00	-1793.55	-1064.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
(mt)	402.68	-1305.70	-631.79	0.00	0.00	899.67	0.00	310.22	0.00	0.00	237.21
NSIONES EN HORMIGÓN (t/m2)											
inferior	-383.21	2073.31	3212.77	3155.16	3001.28	2214.89	2382.65	2200.09	1509.93	1584.56	1444.16
superior viga	581.17	116.03	67.03	79.72	113.34	1423.67	666.75	705.68	1210.51	1000.28	1028.79
inferior losa	0.00	0.00	0.00	0.00	0.00	0.00	84.78	115.09	193.25	103.21	126.20
superior losa	0.00	0.00	0.00	0.00	0.00	0.00	77.92	136.98	-24.40	102.58	148.26
NSIONES ACERO ACTIVO (t/m2)											
PRETESAS VIGA											
ra1	-2387.32	-131947.09	-118347.16	-116440.01	-110493.69	-114608.55	-112818.27	-113683.19	-94781.77	-94970.87	-95584.02
ra2	-2256.68	-132212.25	-118083.08	-117014.23	-111166.48	-115054.91	-113268.73	-114111.33	-95331.06	-95483.16	-96080.63
ra3	-2126.03	-132477.39	-119418.98	-117588.42	-111839.26	-115501.24	-113719.16	-114539.45	-95880.33	-95995.43	-96577.22
ra4	-1995.39	-132742.55	-119954.89	-118162.63	-112512.04	-115947.58	-114169.59	-114967.56	-96429.59	-96507.70	-97073.80
ra5	3674.50	-144250.06	-143213.19	-143083.06	-141710.61	-135318.63	-133718.38	-133547.97	-120267.81	-118740.23	-118625.70
OSTESAS VIGA											
se1											
ra1	0.00	0.00	-158400.00	-155249.97	-149259.64	-151744.13	-149809.16	-150513.42	-131182.09	-130829.98	-131330.22
F.A.PRETESAS VIGA											
ra1	-0.00735	-0.00669	-0.00602	-0.00659	-0.00641	-0.00689	-0.00661	-0.00673	-0.00595	-0.00674	-0.00672
ra2	-0.00735	-0.00670	-0.00605	-0.00661	-0.00643	-0.00689	-0.00663	-0.00674	-0.00597	-0.00675	-0.00673
ra3	-0.00735	-0.00671	-0.00608	-0.00662	-0.00645	-0.00690	-0.00664	-0.00675	-0.00599	-0.00676	-0.00674
ra4	-0.00735	-0.00673	-0.00610	-0.00664	-0.00647	-0.00690	-0.00665	-0.00677	-0.00601	-0.00677	-0.00675
ra5	-0.00735	-0.00730	-0.00727	-0.00730	-0.00726	-0.00698	-0.00724	-0.00729	-0.00688	-0.00728	-0.00730
F.A.POSTESAS VIGA											
se 1											
ra1	0.00000	0.00000	-0.00792	-0.00784	-0.00760	-0.00773	-0.00765	-0.00769	-0.00700	-0.00704	-0.00706
FORMACIÓN EN LAS FIBRAS DE HORMIGÓN											
superior viga	0.00019	0.00004	0.00006	0.00006	0.00010	0.00043	0.00049	0.00050	0.00092	0.00094	0.00095
nferior viga	-0.00012	0.00067	0.00135	0.00144	0.00172	0.00151	0.00158	0.00154	0.00228	0.00223	0.00220
o sección (rad)	-0.00013	0.00027	0.00054	0.00058	0.00068	0.00045	0.00045	0.00043	0.00057	0.00054	0.00052

Hoja N° 11

	P. propio	Transferencia	Postesado	Inyección	Previo 1ª fase	1ªfase	Prev. C.M.	C.M.	10000 d.	T. Infinito	Sobrecarga
EDADES(días	3	3		9	29	29	59	59	10000	20000	20000
ESFUERZOS											
N (t)	0.00	-1793.55	-532.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
M (mt)	402.68	-1302.09	-474.49	0.00	0.00	899.67	0.00	310.22	0.00	0.00	237.21
TENSIONES EN HORMIGÓN (t/m2)											
. inferior	-382.95	2061.74	2773.26	2732.84	2600.83	1743.93	1919.35	1735.95	1131.88	1218.39	1077.46
. superior viga	582.42	109.35	-134.58	-121.47	-84.40	1223.38	501.94	540.76	1163.19	892.41	920.85
. inferior losa	0.00	0.00	0.00	0.00	0.00	0.00	76.38	106.61	155.40	88.57	111.49
. superior losa	0.00	0.00	0.00	0.00	0.00	0.00	78.31	137.37	-18.04	100.02	145.70
TENSIONES ACERO ACTIVO (t/m2)											
A.PRETESAS VIGA											
fibra1	-2385.53	-132021.81	-121398.52	-120145.19	-115081.38	-119198.95	-117769.96	-118638.83	-101527.08	-101427.84	-102043.34
fibra2	-2254.75	-132286.30	-121894.33	-120671.71	-115696.80	-119588.14	-118156.59	-119003.08	-101978.45	-101847.70	-102447.48
fibra3	-2123.97	-132550.78	-122390.15	-121198.24	-116312.23	-119977.34	-118543.22	-119367.32	-102429.80	-102267.54	-102851.59
fibra4	-1993.19	-132815.28	-122885.98	-121724.79	-116927.67	-120366.55	-118929.86	-119731.59	-102881.19	-102687.41	-103255.73
fibra5	3682.53	-144294.03	-144404.55	-144576.19	-143637.14	-137257.77	-135709.80	-135540.00	-122470.50	-120909.07	-120794.91
A.POSTESAS VIGA											
base1											
fibra1	0.00	0.00	-158400.00	-155664.83	-149951.48	-153797.58	-152189.67	-153031.67	-134713.36	-134299.80	-134896.44
DEF.A.PRETESAS VIGA											
fibra1	-0.00735	-0.00669	-0.00618	-0.00663	-0.00646	-0.00690	-0.00664	-0.00673	-0.00605	-0.00673	-0.00672
fibra2	-0.00735	-0.00670	-0.00620	-0.00664	-0.00648	-0.00690	-0.00665	-0.00675	-0.00607	-0.00674	-0.00673
fibra3	-0.00735	-0.00672	-0.00623	-0.00666	-0.00650	-0.00690	-0.00666	-0.00676	-0.00609	-0.00675	-0.00675
fibra4	-0.00735	-0.00673	-0.00625	-0.00667	-0.00651	-0.00690	-0.00667	-0.00677	-0.00610	-0.00676	-0.00676
fibra5	-0.00735	-0.00730	-0.00733	-0.00731	-0.00728	-0.00698	-0.00725	-0.00730	-0.00689	-0.00728	-0.00730
DEF.A.POSTESAS VIGA											
base 1											
fibra1	0.00000	0.00000	-0.00792	-0.00786	-0.00764	-0.00783	-0.00777	-0.00782	-0.00718	-0.00722	-0.00725
DEFORMACIÓN EN LAS FIBRAS DE HORMIGÓN											
. superior viga	0.00019	0.00004	0.00000	-0.00001	0.00001	0.00033	0.00039	0.00040	0.00081	0.00083	0.00084
. inferior viga	-0.00012	0.00067	0.00119	0.00126	0.00149	0.00128	0.00133	0.00129	0.00193	0.00189	0.00186
Giro sección (rad)	-0.00013	0.00026	0.00050	0.00053	0.00062	0.00039	0.00039	0.00037	0.00047	0.00044	0.00042

Hoja nº 12

SECCION : 4	P. propio	X : Transferencia	4.7 Postesado	Inyección	Previo 1ª fase	1ªfase	Prev. C.M.	C.M.	10000 d.	T. Infinito	Sobrecarga
EDADES(días)	3	3	8	9	29	29	59	59	10000	20000	20000
ESFUERZOS											
N (t)	0.00	-1793.55	-532.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
M (mt)	270.13	-1298.39	-313.73	0.00	0.00	603.51	0.00	205.82	0.00	0.00	179.45
TENSIONES EN HORMIGÓN (t/m2)											
. inferior	-255.42	2179.43	2728.84	2696.30	2575.28	1997.45	2084.68	1962.69	1364.57	1444.85	1337.99
. superior viga	389.77	-74.20	-80.06	-73.48	-46.84	832.35	374.66	400.44	991.22	738.36	759.89
. inferior losa	0.00	0.00	0.00	0.00	0.00	0.00	56.91	76.98	122.45	56.54	73.90
. superior losa	0.00	0.00	0.00	0.00	0.00	0.00	42.42	81.67	-68.98	44.42	79.02
TENSIONES ACERO ACTIVO (t/m2)											
A.PRETESAS VIGA											
fibra1	-1590.97	-131289.20	-121205.72	-120128.57	-115142.48	-117919.29	-116013.38	-116591.35	-98507.09	-98431.21	-98897.87
fibra2	-1503.56	-131594.50	-121714.08	-120657.62	-115755.62	-118380.16	-116484.23	-117047.32	-99076.15	-98968.05	-99422.79
fibra3	-1416.16	-131899.80	-122222.45	-121186.67	-116368.77	-118841.03	-116955.09	-117503.29	-99645.20	-99504.90	-99947.72
fibra4	-1328.76	-132205.09	-122730.80	-121715.73	-116981.91	-119301.91	-117425.95	-117959.26	-100214.25	-100041.73	-100472.63
fibra5	2464.53	-145454.86	-144793.58	-144676.47	-143592.27	-139303.72	-137060.84	-137748.11	-124910.90	-123340.41	-123254.00
A.POSTESAS VIGA											
base1											
fibra1	0.00	0.00	-158400.00	-155954.09	-150826.94	-152507.41	-150506.06	-150976.86	-132499.77	-131938.70	-132319.53
DEF.A.PRETESAS VIGA											
fibra1	-0.00735	-0.00665	-0.00617	-0.00660	-0.00643	-0.00679	-0.00657	-0.00668	-0.00596	-0.00669	-0.00668
fibra2	-0.00735	-0.00667	-0.00619	-0.00662	-0.00645	-0.00680	-0.00659	-0.00670	-0.00598	-0.00671	-0.00669
fibra3	-0.00735	-0.00668	-0.00622	-0.00663	-0.00647	-0.00681	-0.00661	-0.00671	-0.00600	-0.00672	-0.00671
fibra4	-0.00735	-0.00670	-0.00624	-0.00665	-0.00649	-0.00682	-0.00662	-0.00673	-0.00602	-0.00673	-0.00672
fibra5	-0.00735	-0.00736	-0.00735	-0.00736	-0.00734	-0.00715	-0.00731	-0.00736	-0.00697	-0.00734	-0.00736
DEF.A.POSTESAS VIGA											
base 1											
fibra1	0.00000	0.00000	-0.00792	-0.00788	-0.00768	-0.00776	-0.00769	-0.00771	-0.00707	-0.00709	-0.00711
DEFORMACIÓN EN LAS FIBRAS DE HORMIGÓN											
. superior viga	0.00013	-0.00002	-0.00002	-0.00001	0.00001	0.00023	0.00028	0.00029	0.00068	0.00070	0.00071
. inferior viga	-0.00008	0.00071	0.00120	0.00126	0.00149	0.00134	0.00142	0.00139	0.00209	0.00205	0.00203
Giro sección (rad)	-0.00009	0.00031	0.00051	0.00053	0.00062	0.00046	0.00048	0.00046	0.00059	0.00056	0.00055

Hoja nº 13

	P. propio	Transferencia	Previo 1ª fas	1ªfase	Previo C.M.	C.M.	1000	T. Infinito	Sobrecarga
EDADES(días	3	3		29	59	59	10000	20000	20000
ESFUERZOS									
N (t)	0.00	-1793.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00
M (mt)	270.13	-1291.18	0.00	603.51	0.00	205.82	0.00	0.00	179.45
TENSIONES EN HORMIGÓN (t/m2)									
. inferior	-253.81	2159.73	1950.35	1369.12	1486.95	1364.08	901.90	972.13	864.63
. superior viga	389.68	-73.13	-18.12	861.28	376.73	402.45	967.69	732.17	753.66
. inferior losa	0.00	0.00	0.00	0.00	49.82	69.84	100.48	47.94	65.26
. superior losa	0.00	0.00	0.00	0.00	53.71	93.02	-42.18	55.41	90.06
TENSIONES ACERO ACTIVO (t/m2)									
A.PRETESAS VIGA									
ibra1	-1580.65	-131415.02	-120541.40	-123334.97	-122131.89	-122714.05	-106724.25	-106330.46	-106799.94
ibra2	-1493.48	-131717.50	-121037.09	-123678.02	-122470.97	-123038.16	-107120.51	-106700.93	-107158.44
ibra3	-1406.31	-132019.98	-121532.79	-124021.07	-122810.05	-123362.28	-107516.77	-107071.39	-107516.92
ibra4	-1319.13	-132322.47	-122028.49	-124364.13	-123149.13	-123686.39	-107913.02	-107441.84	-107875.40
ibra5	2464.15	-145450.16	-143541.66	-139252.39	-137865.13	-137752.73	-125110.42	-123519.75	-123433.56
DEF.A.PRETESAS VIGA									
ibra1	-0.00735	-0.00666	-0.00616	-0.00680	-0.00662	-0.00669	-0.00608	-0.00669	-0.00668
ibra2	-0.00735	-0.00668	-0.00618	-0.00681	-0.00663	-0.00670	-0.00610	-0.00670	-0.00670
ibra3	-0.00735	-0.00669	-0.00621	-0.00681	-0.00665	-0.00672	-0.00612	-0.00671	-0.00671
ibra4	-0.00735	-0.00671	-0.00623	-0.00682	-0.00666	-0.00673	-0.00614	-0.00673	-0.00673
ibra5	-0.00735	-0.00736	-0.00731	-0.00715	-0.00731	-0.00736	-0.00698	-0.00734	-0.00736
DEFORMACIÓN EN LAS FIBRAS DE HORMIGÓN									
. superior viga	0.00013	-0.00002	0.00002	0.00024	0.00029	0.00029	0.00067	0.00070	0.00071
. inferior viga	-0.00008	0.00070	0.00121	0.00106	0.00111	0.00108	0.00166	0.00163	0.00161
Giro sección (rad)	-0.00009	0.00030	0.00050	0.00035	0.00034	0.00033	0.00041	0.00039	0.00038

Hoja nº 14

ECCION :	6	X :	0.00						
	P. propio	Transferencia	Previo 1ª fas	1ªfase	Previo C.M.	C.M.	10000 ...	T. infinito	Sobrecarga
DADES(días)	3	3	29	29	59	59	10000	20000	20000
SFUERZOS									
(t)	0.00	-1447.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00
(mt)	0.00	-1011.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ENSIONES EN HORMIGÓN (t/m2)									
inferior	0.00	1917.49	1726.28	1726.28	1653.61	1653.61	1130.19	1227.94	1227.94
superior viga	0.00	-343.21	-304.24	-304.24	-185.56	-185.56	540.36	212.97	212.97
inferior losa	0.00	0.00	0.00	0.00	-0.04	-0.04	-18.15	-44.67	-44.67
superior losa	0.00	0.00	0.00	0.00	-24.76	-24.76	-162.62	-71.80	-71.80
ENSIONES ACERO ACTIVO (t/m2)									
.PRETESAS VIGA									
bra1	0.00	-132993.22	-123170.58	-123170.58	-121229.08	-121229.08	-104793.77	-104438.83	-104438.83
bra2	0.00	-133299.47	-123676.62	-123676.62	-121752.91	-121752.91	-105414.67	-105032.77	-105032.77
bra3	0.00	-133605.72	-124182.65	-124182.65	-122276.74	-122276.74	-106035.58	-105626.72	-105626.72
bra4	0.00	-147203.34	-146650.67	-146650.67	-145534.94	-145534.94	-133603.92	-131998.06	-131998.06
EF.A.PRETESAS VIGA									
bra1	-0.00735	-0.00674	-0.00629	-0.00674	-0.00666	-0.00674	-0.00614	-0.00677	-0.00674
bra2	-0.00735	-0.00675	-0.00632	-0.00675	-0.00667	-0.00675	-0.00616	-0.00678	-0.00675
bra3	-0.00735	-0.00677	-0.00634	-0.00677	-0.00669	-0.00677	-0.00618	-0.00679	-0.00677
bra4	-0.00735	-0.00745	-0.00747	-0.00745	-0.00741	-0.00745	-0.00712	-0.00743	-0.00745
EFORMACIÓN EN LAS FIBRAS DE HORMIGÓN									
superior viga	0.00000	-0.00011	-0.00014	-0.00014	-0.00011	-0.00011	0.00022	0.00025	0.00025
inferior viga	0.00000	0.00062	0.00108	0.00108	0.00116	0.00116	0.00177	0.00174	0.00174
iro sección (rad)	0.00000	0.00031	0.00051	0.00051	0.00053	0.00053	0.00064	0.00062	0.00062

Hoja nº 15

	P. propio	Transferencia	Postesado	yección	Previo 1ª fase	1ªfase	Pr .M.	C.M.	10000 d.	T. infinito	arga
DADES(días)	3	3		9	29	29	59	59	10000	20000	20000
SFUERZOS											
(t)	0.00	-1545.46	-870.91	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
(mt)	638.32	-1131.51	-781.81	0.00	0.00	1426.17	0.00	496.40	0.00	0.00	353.53
NSIONES EN HORMIGÓN (t/m2)											
inferior	-614.52	1518.29	2802.81	2730.35	2563.19	1219.65	1572.26	1281.64	701.43	764.78	556.43
superior viga	925.70	509.24	73.39	97.22	144.73	2212.95	963.71	1025.91	1474.97	1297.27	1339.70
inferior losa	0.00	0.00	0.00	0.00	0.00	0.00	115.92	164.35	233.61	155.05	189.26
superior losa	0.00	0.00	0.00	0.00	0.00	0.00	148.43	242.64	106.00	215.66	283.56
NSIONES ACERO ACTIVO (t/m2)											
PRETESAS VIGA											
bra1	-3828.96	-121623.23	-109436.09	-107588.41	-102477.74	-108932.22	-108406.45	-109783.27	-95204.05	-95240.35	-96150.24
bra2	-3620.31	-121759.92	-109835.73	-108035.02	-103008.46	-109106.38	-108554.89	-109896.18	-95350.76	-95355.89	-96242.50
bra3	-3411.66	-121896.61	-110235.36	-108481.64	-103539.18	-109280.54	-108703.34	-110009.09	-95497.47	-95471.43	-96334.75
bra4	-3203.01	-122033.30	-110634.99	-108928.26	-104069.89	-109454.70	-108851.78	-110121.98	-95644.17	-95586.97	-96427.01
bra5	5852.39	-127965.81	-127979.16	-128311.60	-127103.16	-117013.42	-115294.55	-115022.24	-102011.51	-100601.54	-100431.05
POSTESAS VIGA											
se1											
bra1	0.00	0.00	-129600.00	-126569.52	-120982.40	-127009.01	-126335.52	-127669.70	-112418.68	-112273.09	-113155.05
EF.A.PRETESAS VIGA											
bra1	-0.00665	-0.00616	-0.00557	-0.00607	-0.00593	-0.00648	-0.00615	-0.00623	-0.00563	-0.00620	-0.00621
bra2	-0.00665	-0.00617	-0.00559	-0.00608	-0.00594	-0.00647	-0.00616	-0.00624	-0.00564	-0.00621	-0.00621
bra3	-0.00665	-0.00618	-0.00561	-0.00609	-0.00595	-0.00646	-0.00616	-0.00624	-0.00565	-0.00621	-0.00622
bra4	-0.00665	-0.00618	-0.00563	-0.00610	-0.00596	-0.00645	-0.00617	-0.00625	-0.00566	-0.00622	-0.00622
bra5	-0.00665	-0.00648	-0.00650	-0.00650	-0.00644	-0.00597	-0.00641	-0.00647	-0.00604	-0.00645	-0.00647
EF.A.POSTESAS VIGA											
se 1											
bra1	0.00000	0.00000	-0.00648	-0.00639	-0.00616	-0.00646	-0.00645	-0.00652	-0.00599	-0.00603	-0.00607
EFORMACIÓN EN LAS FIBRAS DE HORMIGÓN											
superior viga	0.00030	0.00017	0.00014	0.00012	0.00015	0.00067	0.00074	0.00076	0.00120	0.00123	0.00123
inferior viga	-0.00020	0.00049	0.00110	0.00119	0.00143	0.00109	0.00110	0.00103	0.00156	0.00152	0.00148
iro sección (rad)	-0.00021	0.00014	0.00040	0.00045	0.00053	0.00018	0.00015	0.00012	0.00015	0.00012	0.00010

Hoja nº 16

ECCION :	2	X :	7.75								
	P. propio	Transferencia	Postesado	yección	Previo 1ª fase	1ªfase	Pr C.M.	C.M.	10000 d.	T. infinito	Sobrecarga
DADES(días)	3	3		9	29	29	59	59	10000	20000	20000
SFUERZOS											
(t)	0.00	-1545.46	-870.91	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
(mt)	402.68	-1125.09	-516.92	0.00	0.00	899.67	0.00	310.22	0.00	0.00	237.21
ENSIONES EN HORMIGÓN (t/m2)											
inferior	-383.21	1732.28	2742.64	2687.06	2540.47	1684.07	1870.49	1687.92	1103.14	1159.44	1019.04
superior viga	581.17	180.60	140.29	150.64	178.20	1488.53	713.55	752.49	1167.20	1009.10	1037.61
inferior losa	0.00	0.00	0.00	0.00	0.00	0.00	80.60	110.91	172.79	96.61	119.59
superior losa	0.00	0.00	0.00	0.00	0.00	0.00	85.01	144.07	13.39	116.73	162.41
ENSIONES ACERO ACTIVO (t/m2)											
PRETESAS VIGA											
ibra1	-2387.32	-120290.52	-108973.43	-107403.26	-102379.02	-106493.89	-105164.91	-106029.83	-89785.84	-89883.12	-90496.27
ibra2	-2256.68	-120500.72	-109401.70	-107862.55	-102916.63	-106805.05	-105471.80	-106314.40	-90149.14	-90213.58	-90811.05
ibra3	-2126.03	-120710.92	-109829.96	-108321.84	-103454.23	-107116.22	-105778.68	-106598.97	-90512.44	-90544.04	-91125.83
ibra4	-1995.39	-120921.13	-110258.23	-108781.14	-103991.84	-107427.38	-106085.55	-106883.53	-90875.73	-90874.49	-91440.59
ibra5	3674.50	-130043.98	-128844.93	-128714.44	-127323.93	-120931.95	-119404.20	-119233.80	-106642.80	-105216.45	-105101.92
POSTESAS VIGA											
ase1											
ibra1	0.00	0.00	-129600.00	-127014.77	-121983.31	-124467.80	-122998.35	-123702.61	-107392.06	-107125.76	-107625.99
EF.A.PRETESAS VIGA											
ibra1	-0.00665	-0.00610	-0.00554	-0.00602	-0.00586	-0.00630	-0.00604	-0.00614	-0.00547	-0.00614	-0.00613
ibra2	-0.00665	-0.00611	-0.00557	-0.00603	-0.00588	-0.00630	-0.00605	-0.00615	-0.00549	-0.00615	-0.00614
ibra3	-0.00665	-0.00612	-0.00559	-0.00604	-0.00589	-0.00630	-0.00606	-0.00616	-0.00550	-0.00616	-0.00615
ibra4	-0.00665	-0.00613	-0.00561	-0.00605	-0.00591	-0.00630	-0.00607	-0.00617	-0.00552	-0.00617	-0.00616
ibra5	-0.00665	-0.00658	-0.00654	-0.00658	-0.00654	-0.00626	-0.00652	-0.00657	-0.00617	-0.00656	-0.00658
EF.A.POSTESAS VIGA											
ase 1											
ibra1	0.00000	0.00000	-0.00648	-0.00641	-0.00621	-0.00634	-0.00628	-0.00632	-0.00573	-0.00576	-0.00579
EFORMACIÓN EN LAS FIBRAS DE HORMIGÓN											
superior viga	0.00019	0.00006	0.00009	0.00010	0.00014	0.00047	0.00053	0.00054	0.00095	0.00098	0.00098
inferior viga	-0.00012	0.00056	0.00112	0.00120	0.00143	0.00122	0.00127	0.00123	0.00185	0.00181	0.00178
iro sección (rad)	-0.00013	0.00021	0.00043	0.00046	0.00054	0.00031	0.00031	0.00029	0.00038	0.00035	0.00033

Hoja nº 17

SECCION :	3	X :	7.7								
	P. propio	Transferencia	Postesado	Inyección	Previo 1ª fase	1ªfase	Previo C.M.	C.M.	10000 d.	T. Infinito	Sobrecarga
EDADES(días)	3	3		9	29	29	59	59	10000	20000	20000
ESFUERZOS											
N (t)	0.00	-1545.46	-435.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
M (mt)	402.68	-1121.98	-308.22	0.00	0.00	899.67	0.00	310.22	0.00	0.00	237.21
TENSIONES EN HORMIGÓN (t/m2)											
F. inferior	-382.95	1722.36	2300.83	2267.52	2155.73	1298.83	1491.32	1307.92	796.26	862.01	721.07
F. superior viga	582.42	175.02	-24.78	-14.07	16.46	1324.24	578.85	617.66	1127.98	920.75	949.19
F. inferior losa	0.00	0.00	0.00	0.00	0.00	0.00	73.64	103.87	141.98	84.72	107.64
F. superior losa	0.00	0.00	0.00	0.00	0.00	0.00	85.21	144.27	18.46	114.48	160.16
TENSIONES ACERO ACTIVO (t/m2)											
A.PRETESAS VIGA											
Fibra1	-2385.53	-120354.61	-111474.66	-110439.27	-106135.51	-110253.07	-109219.12	-110087.98	-95298.09	-95153.73	-95769.23
Fibra2	-2254.75	-120564.22	-111870.07	-110859.50	-106626.17	-110517.51	-109473.84	-110320.33	-95581.53	-95408.92	-96008.70
Fibra3	-2123.97	-120773.84	-112265.48	-111279.74	-107116.84	-110781.95	-109728.58	-110552.68	-95864.98	-95664.13	-96248.18
Fibra4	-1993.19	-120983.45	-112660.89	-111699.97	-107607.50	-111046.38	-109983.30	-110785.02	-96148.40	-95919.30	-96487.63
Fibra5	3682.53	-130080.73	-129821.72	-129938.16	-128902.45	-122523.09	-121038.61	-120868.81	-108449.49	-106994.67	-106880.51
A.POSTESAS VIGA											
Fase1											
Fibra1	0.00	0.00	-129600.00	-127355.91	-122563.80	-126409.89	-125253.32	-126095.33	-110728.22	-110421.96	-111018.59
DEF.A.PRETESAS VIGA											
Fibra1	-0.00665	-0.00610	-0.00567	-0.00605	-0.00590	-0.00630	-0.00606	-0.00614	-0.00556	-0.00613	-0.00613
Fibra2	-0.00665	-0.00611	-0.00569	-0.00606	-0.00592	-0.00630	-0.00607	-0.00615	-0.00557	-0.00614	-0.00614
Fibra3	-0.00665	-0.00612	-0.00571	-0.00607	-0.00593	-0.00630	-0.00608	-0.00616	-0.00558	-0.00615	-0.00615
Fibra4	-0.00665	-0.00613	-0.00573	-0.00608	-0.00595	-0.00630	-0.00609	-0.00617	-0.00560	-0.00616	-0.00616
Fibra5	-0.00665	-0.00658	-0.00659	-0.00659	-0.00656	-0.00627	-0.00653	-0.00658	-0.00618	-0.00656	-0.00658
DEF.A.POSTESAS VIGA											
Fase 1											
Fibra1	0.00000	0.00000	-0.00648	-0.00643	-0.00624	-0.00643	-0.00640	-0.00644	-0.00590	-0.00593	-0.00596
DEFORMACIÓN EN LAS FIBRAS DE HORMIGÓN											
F. superior viga	0.00019	0.00006	0.00005	0.00004	0.00006	0.00039	0.00045	0.00046	0.00086	0.00089	0.00089
F. inferior viga	-0.00012	0.00056	0.00100	0.00105	0.00124	0.00103	0.00107	0.00102	0.00156	0.00153	0.00150
Giro sección (rad)	-0.00013	0.00021	0.00040	0.00042	0.00049	0.00027	0.00026	0.00024	0.00029	0.00027	0.00025

Hoja nº 18

COMPROBACIÓN EN SERVICIO PF ...r. minorado + 0.2SC

SECCION :	4	X :	4..								
	P. propio	Transferencia	Postesado	Inyección	Previo 1ª fase	1ªfase	Previo C.M.	C.M.	10000 d.	T. Infinito	Sobrecarga
EDADES(días)	3	3	8	9	29	29	59	59	10000	20000	20000
ESFUERZOS											
N (t)	0.00	-1545.46	-435.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
M (mt)	270.13	-1118.80	-256.69	0.00	0.00	603.51	0.00	205.82	0.00	0.00	179.45
TENSIONES EN HORMIGÓN (t/m2)											
F. inferior	-255.42	1841.41	2286.13	2259.25	2155.84	1578.01	1679.44	1557.44	1038.08	1103.13	996.27
F. superior viga	389.77	-9.79	-14.12	-8.74	13.44	892.63	418.36	444.13	954.58	747.74	769.27
F. inferior losa	0.00	0.00	0.00	0.00	0.00	0.00	53.63	73.70	106.45	51.32	68.67
F. superior losa	0.00	0.00	0.00	0.00	0.00	0.00	48.49	87.73	-36.89	56.96	91.56
TENSIONES ACERO ACTIVO (t/m2)											
A.PRETESAS VIGA											
Fibra1	-1590.97	-119613.41	-111117.00	-110224.08	-105953.61	-108730.42	-107212.43	-107790.40	-91985.16	-91874.14	-92340.80
Fibra2	-1503.56	-119864.18	-111533.75	-110657.59	-106455.41	-109079.95	-107565.00	-108128.09	-92400.88	-92260.66	-92715.40
Fibra3	-1416.16	-120114.96	-111950.52	-111091.10	-106957.22	-109429.48	-107917.56	-108465.77	-92816.58	-92647.18	-93090.00
Fibra4	-1328.76	-120365.73	-112367.27	-111524.61	-107459.02	-109779.02	-108270.13	-108803.45	-93232.28	-93033.69	-93464.59
Fibra5	2464.53	-131249.48	-130454.52	-130339.08	-129237.39	-124948.85	-123571.59	-123458.86	-111273.98	-109808.40	-109721.98
A.POSTESAS VIGA											
Fase1											
Fibra1	0.00	0.00	-129600.00	-127589.96	-123245.59	-124926.05	-123325.67	-123796.47	-107993.45	-107561.79	-107942.63
DEF.A.PRETESAS VIGA											
Fibra1	-0.00665	-0.00606	-0.00565	-0.00602	-0.00587	-0.00620	-0.00600	-0.00609	-0.00547	-0.00609	-0.00608
Fibra2	-0.00665	-0.00607	-0.00567	-0.00603	-0.00588	-0.00621	-0.00601	-0.00610	-0.00548	-0.00611	-0.00610
Fibra3	-0.00665	-0.00609	-0.00569	-0.00605	-0.00590	-0.00621	-0.00603	-0.00611	-0.00550	-0.00612	-0.00611
Fibra4	-0.00665	-0.00610	-0.00571	-0.00606	-0.00592	-0.00621	-0.00604	-0.00613	-0.00552	-0.00613	-0.00612
Fibra5	-0.00665	-0.00664	-0.00662	-0.00664	-0.00661	-0.00643	-0.00659	-0.00664	-0.00626	-0.00662	-0.00664
DEF.A.POSTESAS VIGA											
Fase 1											
Fibra1	0.00000	0.00000	-0.00648	-0.00644	-0.00628	-0.00636	-0.00630	-0.00632	-0.00576	-0.00578	-0.00580
DEFORMACIÓN EN LAS FIBRAS DE HORMIGÓN											
F. superior viga	0.00013	0.00000	0.00001	0.00002	0.00004	0.00026	0.00032	0.00032	0.00071	0.00073	0.00074
F. inferior viga	-0.00008	0.00060	0.00102	0.00106	0.00125	0.00111	0.00117	0.00114	0.00174	0.00171	0.00168
Giro sección (rad)	-0.00009	0.00025	0.00042	0.00043	0.00050	0.00035	0.00036	0.00034	0.00043	0.00041	0.00039

Hoja nº 19

	P. propio	Transferencia	Previo 1ª fase	1ª fase	Previo C.M.	C.M.	10000 d	T.Infinito	Sobrecarga
EDADES(días)	3	3	2	29	59	59	10000	20000	20000
ESFUERZOS									
N (t)	0.00	-1545.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00
M (mt)	270.13	-1112.58	0.00	603.51	0.00	205.82	0.00	0.00	179.45
TENSIONES EN HORMIGÓN (t/m2)									
s. Inferior	-253.81	1824.67	1644.36	1063.13	1189.59	1066.72	661.66	718.27	610.77
s. superior viga	389.68	-8.88	37.03	916.42	420.02	445.74	935.40	742.72	764.21
s. Inferior losa	0.00	0.00	0.00	0.00	47.68	67.71	88.78	44.35	61.67
s. superior losa	0.00	0.00	0.00	0.00	57.88	97.19	-15.29	65.86	100.51
TENSIONES ACERO ACTIVO (t/m2)									
s.PRETESAS VIGA									
Fibra1	-1580.65	-119720.31	-110354.70	-113148.27	-112217.37	-112799.53	-98696.27	-98318.20	-98787.67
Fibra2	-1493.48	-119968.70	-110760.80	-113401.72	-112462.20	-113029.39	-98970.88	-98569.00	-99026.51
Fibra3	-1406.31	-120217.09	-111166.90	-113655.18	-112707.04	-113259.27	-99245.51	-98819.83	-99265.36
Fibra4	-1319.13	-120465.48	-111572.99	-113908.63	-112951.87	-113489.13	-99520.13	-99070.64	-99504.20
Fibra5	2464.15	-131245.50	-129197.56	-124908.30	-123577.63	-123465.23	-111438.63	-109955.92	-109869.73
DEF.A.PRETESAS VIGA									
Fibra1	-0.00665	-0.00607	-0.00564	-0.00621	-0.00604	-0.00610	-0.00556	-0.00609	-0.00609
Fibra2	-0.00665	-0.00608	-0.00566	-0.00621	-0.00605	-0.00611	-0.00558	-0.00610	-0.00610
Fibra3	-0.00665	-0.00609	-0.00568	-0.00622	-0.00606	-0.00612	-0.00560	-0.00611	-0.00611
Fibra4	-0.00665	-0.00610	-0.00570	-0.00622	-0.00607	-0.00613	-0.00561	-0.00612	-0.00613
Fibra5	-0.00665	-0.00664	-0.00658	-0.00643	-0.00659	-0.00664	-0.00626	-0.00662	-0.00664
DEFORMACIÓN EN LAS FIBRAS DE HORMIGÓN									
s superior viga	0.00013	0.00000	0.00005	0.00027	0.00032	0.00033	0.00070	0.00073	0.00074
s inferior viga	-0.00008	0.00059	0.00103	0.00088	0.00091	0.00088	0.00139	0.00136	0.00134
giro sección (rad)	-0.00009	0.00025	0.00041	0.00026	0.00025	0.00023	0.00029	0.00026	0.00025

Hoja nº 20

COMPROBACIÓN EN SERVICIO P.T. minorado + 0.2SC

SECCION :	6	X :	0.00						
	P. propio	Transferencia	Previo 1ª fase	1ª fase	Previo C.M.	C.M.	10000 d	T.Infinito	Sobrecarga
EDADES(días)	3	3	29	29	59	59	10000	20000	20000
ESFUERZOS									
N (t)	0.00	-1247.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00
M (mt)	0.00	-871.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TENSIONES EN HORMIGÓN (t/m2)									
s. Inferior	0.00	1651.29	1483.95	1483.95	1418.27	1418.27	941.00	1028.41	1028.41
s. superior viga	0.00	-295.56	-262.93	-262.93	-153.40	-153.40	515.82	220.89	220.89
s. Inferior losa	0.00	0.00	0.00	0.00	-1.68	-1.68	-27.41	-47.29	-47.29
s. superior losa	0.00	0.00	0.00	0.00	-21.46	-21.46	-141.37	-63.45	-63.45
TENSIONES ACERO ACTIVO (t/m2)									
s.PRETESAS VIGA									
Fibra1	0.00	-120859.98	-112251.94	-112251.94	-110531.52	-110531.52	-95688.90	-95365.34	-95365.34
Fibra2	0.00	-121123.72	-112687.54	-112687.54	-110981.28	-110981.28	-96214.11	-95865.23	-95865.23
Fibra3	0.00	-121387.46	-113123.15	-113123.15	-111431.05	-111431.05	-96739.31	-96365.12	-96365.12
Fibra4	0.00	-133097.39	-132463.91	-132463.91	-131400.42	-131400.42	-120058.31	-118559.85	-118559.85
DEF.A.PRETESAS VIGA									
Fibra1	-0.00665	-0.00612	-0.00573	-0.00612	-0.00605	-0.00612	-0.00558	-0.00615	-0.00612
Fibra2	-0.00665	-0.00614	-0.00576	-0.00614	-0.00607	-0.00614	-0.00560	-0.00616	-0.00614
Fibra3	-0.00665	-0.00615	-0.00578	-0.00615	-0.00608	-0.00615	-0.00562	-0.00617	-0.00615
Fibra4	-0.00665	-0.00674	-0.00675	-0.00674	-0.00670	-0.00674	-0.00641	-0.00671	-0.00674
DEFORMACIÓN EN LAS FIBRAS DE HORMIGÓN									
s superior viga	0.00000	-0.00010	-0.00012	-0.00012	-0.00008	-0.00008	0.00025	0.00027	0.00027
s inferior viga	0.00000	0.00054	0.00093	0.00093	0.00101	0.00101	0.00155	0.00153	0.00153
giro sección (rad)	0.00000	0.00026	0.00044	0.00044	0.00045	0.00045	0.00054	0.00052	0.00052

Hoja nº 21

COMPROBACION COMPRESIONES EN SERVICIO

CCIÓN 1 X:19.75 m	FASES DE EJECUCIÓN				
	Destesado	Postesado	Ejecución	Permanentes	SC max
máx. Sa (t/m2)	509.24	73.39	2212.95	1025.91	1487.95
ión máx. Sb (t/m2)	1862.10	3305.15	1801.43	1838.88	-
stencia necesaria en viga (t/m2)	2979.37	5288.24	3540.72	2942.21	2380.72
stencia exigida en viga (t/m2)	3000.00	5300.00	5300.00	5300.00	5300.00
presión máx. en losa Sc (t/m2)	0.00	0.00	0.00	242.64	548.07
stencia necesaria en losa (t/m2)	0.00	0.00	0.00	388.22	876.91
stencia exigida en losa (t/m2)	0.00	0.00	0.00	400.00	1100.00

CCIÓN 2 X:7.75 m	FASES DE EJECUCIÓN				
	Destesado	Postesado	Ejecución	Permanentes	SC max
presión máx. Sa (t/m2)	180.60	140.29	1486.53	752.49	1149.08
presión máx. Sb (t/m2)	2073.31	3212.77	2214.89	2200.09	625.86
stencia necesaria en viga (t/m2)	3317.30	5140.43	3543.82	3520.14	1838.53
stencia exigida en viga (t/m2)	3400.00	5200.00	5200.00	5200.00	5200.00
presión máx. en losa Sc (t/m2)	0.00	0.00	0.00	144.07	339.91
stencia necesaria en losa (t/m2)	0.00	0.00	0.00	230.52	543.86
stencia exigida en losa (t/m2)	0.00	0.00	0.00	300.00	700.00

CCIÓN 3 X:7.75 m	FASES DE EJECUCIÓN				
	Destesado	Postesado	Ejecución	Permanentes	SC max
presión máx. Sa (t/m2)	175.02	-	1324.24	617.66	1050.53
presión máx. Sb (t/m2)	2061.74	2773.26	1743.93	1735.95	290.75
stencia necesaria en viga (t/m2)	3298.79	4437.22	2790.29	2777.52	1680.85
stencia exigida en viga (t/m2)	3300.00	4500.00	4500.00	4500.00	4500.00
presión máx. en losa Sc (t/m2)	0.00	0.00	0.00	144.27	337.52
stencia necesaria en losa (t/m2)	0.00	0.00	0.00	230.84	540.03
stencia exigida en losa (t/m2)	0.00	0.00	0.00	300.00	700.00

:CIÓN 4 X:4.75 m	FASES DE EJECUCIÓN				
	Destesado	Postesado	Ejecución	Permanentes	SC max
presión máx. Sa (t/m2)	-	-	892.63	444.13	852.47
presión máx. Sb (t/m2)	2179.43	2728.64	1997.45	1962.69	694.67
stencia necesaria en viga (t/m2)	3487.08	4366.14	3195.92	3140.30	1363.95
encia exigida en viga (t/m2)	3500.00	4400.00	4400.00	4400.00	4400.00
máx. en losa Sc (t/m2)	0.00	0.00	0.00	87.73	225.64
tencia necesaria en losa (t/m2)	0.00	0.00	0.00	140.37	361.02
tencia exigida en losa (t/m2)	0.00	0.00	0.00	200.00	500.00

CIÓN 5 X:4.75 m	FASES DE EJECUCIÓN				
	Destesado		Ejecución	Permanentes	SC max
presión máx. Sa (t/m2)	-		916.42	445.74	846.66
presión máx. Sb (t/m2)	2159.73		1369.12	1364.08	261.81
tencia necesaria en viga (t/m2)	3455.57		2190.59	2182.53	1354.66
tencia exigida en viga (t/m2)	3500.00		4400.00	4400.00	4400.00
presión máx. en losa Sc (t/m2)	0.00		0.00	97.19	235.85
tencia necesaria en losa (t/m2)	0.00		0.00	155.51	377.36
tencia exigida en losa (t/m2)	0.00		0.00	200.00	500.00

CIÓN 6 X:0 m	FASES DE EJECUCIÓN				
	Destesado		Ejecución	Permanentes	SC max
esión máx. Sa (t/m2)	-295.56		-	-	218.26
res máx. Sb (t/m2)	1917.49		1726.28	1653.61	1092.08
tencia necesaria en viga (t/m2)	3067.98		2752.04	2645.78	1747.33
tencia exigida en viga (t/m2)	3100.00		4400.00	4400.00	4400.00
resión máx. en losa Sc (t/m2)	0.00		0.00	-	-
tencia necesaria en losa (t/m2)	0.00		0.00	0.00	0.00
tencia exigida en losa (t/m2)	0.00		0.00	0.00	0.00

COMPROBACION FISURACION AMBIENTE II

SECCIÓN 1 X:19.75 m	*Fisuración*	*Descompresión*
	0.5 SC	0.2 SC
ión máx. Sb (t/m2)	473.56	784.03
ncremento tensión acero (t/m2)	3828.21	
ncremento tensión 0.2 mm (t/m2)	20000.00	

SECCIÓN 2 X:7.75 m	*Fisuración*	*Descompresión*
	0.5 SC	0.2 SC
racción máx. Sb (t/m2)	1156.36	1365.76
ncremento tensión acero (t/m2)	2518.29	
ncremento tensión 0.2 mm (t/m2)	20000.00	

SECCIÓN 3 X:7.75 m	*Fisuración*	*Descompresión*
	0.5 SC	0.2 SC
racción máx. Sb (t/m2)	773.94	984.29
ncremento tensión acero (t/m2)	2529.80	
ncremento tensión 0.2 mm (t/m2)	20000.00	

ECCIÓN 4 X:4.75 m	*Fisuración*	*Descompresión*
	0.5 SC	0.2 SC
acción máx. Sb (t/m2)	1169.53	1329.08
cremento tensión acero (t/m2)	1837.79	
cremento tensión 0.2 mm (t/m2)	20000.00	

ECCIÓN 5 X:4.75 m	*Fisuración*	*Descompresión*
	0.5 SC	0.2 SC
acción máx. Sb (t/m2)	392.92	554.16
cremento tensión acero (t/m2)	1173.69	
cremento tensión 0.2 mm (t/m2)	20000.00	

CCIÓN 6 X:0 m	*Fisuración*	*Descompresión*
	0.5 SC	0.2 SC
ción máx. Sb (t/m2)	941.00	941.00
ren to tensión acero (t/m2)	0.00	
remento tensión 0.2 mm (t/m2)	20000.00	

Hoja n:23

ECCION :	1	X(m) :	19.75	
CCION	FLECTOR	CORTANTE	TORSOR	AXIL
Propio	638.32	0.00	0.00	0.00
a	1426.17	0.00	0.00	0.00
argas muertas	496.40	0.00	0.00	0.00
obrecarga	702.46	0.00	0.00	0.00
arro instrucción	1065.18	0.00	0.00	0.00

ECCION :	2.00	X(m) :	7.75	
CCION	FLECTOR	CORTANTE	TORSOR	AXIL
eso Propio	402.68	39.28	0.00	0.00
.P. Losa	899.67	87.50	0.00	0.00
argas muertas	310.22	30.23	4.82	0.00
obrecarga	441.80	43.20	0.00	0.00
arro instrucción	744.24	79.71	56.66	0.00

ECCION :	3.00	X(m) :	7.75	
CCION	FLECTOR	CORTANTE	TORSOR	AXIL
eso Propio	402.68	39.28	0.00	0.00
.P. Losa	899.67	87.50	0.00	0.00
as muertas	310.22	30.23	4.82	0.00
arga	441.80	43.20	0.00	0.00
arro instrucción	744.24	79.71	56.66	0.00

ECCION :	4.00	X(m) :	4.75	
CCION	FLECTOR	CORTANTE	TORSOR	AXIL
eso Propio	270.13	49.10	0.00	0.00
.P. Losa	603.51	109.69	0.00	0.00
argas muertas	205.82	37.30	3.62	0.00
obrecarga	296.44	54.00	0.62	0.00
arro instrucción	600.83	54.96	88.73	0.00

ECCION :	5.00	X(m) :	4.75	
CCION	FLECTOR	CORTANTE	TORSOR	AXIL
eso Propio	270.13	49.10	0.00	0.00
P. Losa	603.51	109.69	0.00	0.00
argas muertas	205.82	37.30	3.62	0.00
obrecarga	296.44	54.00	0.62	0.00
nstrucción	600.83	54.96	88.73	0.00

ECCION :	6.00	X(m) :	0.00	
CCION	FLECTOR	CORTANTE	TORSOR	AXIL
eso Propio	0.00	64.64	0.00	0.00
P. Losa	0.00	144.42	0.00	0.00
argas muertas	0.00	47.67	2.62	0.00
obrecarga	0.00	71.10	1.67	0.00
arro instrucción	0.00	114.17	31.65	0.00

Hoja n: 24

SECCION	X(m)	fn (m)	d(m)	sxd(t/m2)	clgd	clgEP93	clgc	A90 + At(cm2/m)	Vsu(t)	Vcu(t)	Rho	Bela	Vu(t)	Vd(t)	Adisp(cm2/m)	Adisp	T(t)	sd(m)
2	7.75	1.99	2.70	1529.75	1.81	2.46	2.13	9.26	162.74	233.59	0.02	0.97	712.96	396.32	20.94	2E∮10/0.15	570.07	3.49
3	7.75	1.99	2.70	1389.23	1.77	2.36	2.05	11.16	191.80	204.53	0.02	0.99	762.67	396.32	20.94	2E∮10/0.15	531.75	3.26
4	4.75	1.99	2.70	1143.87	1.37	2.18	1.91	21.00	279.38	148.78	0.02	0.72	847.87	428.15	30.16	2E∮12/0.15	395.20	2.24
5	4.75	1.99	2.70	1062.20	1.37	2.12	1.86	22.52	299.68	128.47	0.02	0.76	847.87	428.15	30.16	2E∮12/0.15	381.29	2.16
6	0.00	1.99	2.72	112.46	1.12	1.17	1.12	43.49	477.01	147.45	0.02	1.00	892.08	624.49	60.31	4E∮12/0.15	432.28	1.69

Hoja n: 25

SECCION	X (m)	Td(mt)	Ae(m2)	ue(m)	he(m)	clg	Tu1(mt)	Tu2(mt)	Tu3(mt)	As	Al(cm2/m)	Adisp(cm2/m)	gmaflxtort
2.00	7.75	91.50	4.58	8.67	0.15	1.81	959.61	91.50	91.50	1.38	4.52	6.67	1152.92
3.00	7.75	91.50	4.58	8.67	0.15	1.77	970.92	91.50	91.50	1.41	4.42	6.67	1054.74
4.00	4.75	138.91	4.58	8.67	0.15	1.37	1079.60	138.91	138.91	2.77	5.19	6.67	864.30
5.00	4.75	138.91	4.58	8.67	0.15	1.37	1079.60	138.91	138.91	2.77	5.19	6.67	858.56
6.00	0.00	53.52	4.58	8.67	0.15	1.12	1126.30	53.52	53.52	1.30	1.64	6.67	225.00

ESFUERZOS CARACTERISTICOS (Flector máximo y cortante concomitante)

ECCION :	1	X(m) :	19.75	
CCION	FLECTOR	CORTANTE	TORSOR	AXIL
o Propio	638.32	0.00	0.00	0.00
P. Losa	1426.17	0.00	0.00	0.00
rgas muertas	496.40	0.00	0.00	0.00
obrecarga	702.46	0.00	0.00	0.00
rro instrucción	1065.18	0.00	0.00	0.00

ECCION :	2.00	X(m) :	7.75	
CCION	FLECTOR	CORTANTE	TORSOR	AXIL
so Propio	402.68	39.28	0.00	0.00
P. Losa	699.67	87.50	0.00	0.00
rgas muertas	310.22	30.23	4.82	0.00
obrecarga	406.00	36.92	28.30	0.00
rro instrucción	451.86	49.71	56.66	0.00

ECCION :	3.00	X(m) :	7.75	
CCION	FLECTOR	CORTANTE	TORSOR	AXIL
so Propio	402.68	39.28	0.00	0.00
P. Losa	899.67	87.50	0.00	0.00
s muertas	310.22	30.23	4.82	0.00
b. arga	406.00	36.92	28.30	0.00
rro instrucción	451.86	49.71	56.66	0.00

ECCION :	4.00	X(m) :	4.75	
CCION	FLECTOR	CORTANTE	TORSOR	AXIL
so Propio	270.13	49.10	0.00	0.00
P. Losa	603.51	109.69	0.00	0.00
rgas muertas	205.82	37.30	3.62	0.00
brecarga	276.32	48.27	26.10	0.00
rro instrucción	353.08	54.96	88.73	0.00

ECCION :	5.00	X(m) :	4.75	
CCION	FLECTOR	CORTANTE	TORSOR	AXIL
so Propio	270.13	49.10	0.00	0.00
P. Losa	603.51	109.69	0.00	0.00
rgas muertas	205.82	37.30	3.62	0.00
brecarga	276.32	48.27	26.10	0.00
nstrucción	353.08	54.96	88.73	0.00

CCION :	6.00	X(m) :	0.00	
CION	FLECTOR	CORTANTE	TORSOR	AXIL
so Propio	0.00	64.64	0.00	0.00
P. Losa	0.00	144.42	0.00	0.00
rgas muertas	0.00	47.67	2.62	0.00
brecarga	0.00	69.71	22.52	0.00
rro instrucción	0.00	114.17	31.65	0.00

'clk(t/m2) :	03.71
clm(t/m2) :	433.87
\min (cm2/m) :	5.50
:	1.27

SECCIÓN	X(m)	fn (m)	d(m)	sxd(t/m2)	ctge	ctgEP93	ctgd	Vd(t)	Vu1(t)	Beta	Rhol	Vcu(t)	Vsu(t)	A90 + At(cm2/m)	Aprop (cm2/m)	Adisp(cm2/m)	Adisp	T(t)	sd(m)
2	7.75	1.99	2.70	1529.75	2.13	2.46	1.81	341.90	712.96	0.97	0.02	233.59	108.32	6.16	8.18	20.94	2E∮10/0.15	520.82	3.70
3	7.75	1.99	2.70	1389.23	2.05	2.36	1.77	341.90	762.67	0.99	0.02	204.53	137.38	7.99	10.06	20.94	2E∮10/0.15	483.59	3.43
4	4.75	1.99	2.70	1143.87	1.91	2.18	1.37	419.56	847.87	0.72	0.02	148.78	270.78	20.35	23.88	30.16	2E∮12/0.15	389.31	2.25
5	4.75	1.99	2.70	1062.20	1.86	2.12	1.37	419.56	847.87	0.76	0.02	128.47	291.09	21.88	25.41	30.16	2E∮12/0.15	375.40	2.17
6	0.00	1.99	2.72	112.46	1.12	1.17	1.12	622.41	892.08	1.00	0.02	147.45	474.96	43.30	45.36	30.16	4E∮12/0.15	431.12	1.70

Hoja n: 28

TORSOR

SECCIÓN	X (m)	Td(mt)	Ae(m2)	ue(m)	he(m)	clg	Tu1(mt)	Tu2(mt)	Tu3(mt)	At(cm2/m)	Al(cm2/m)	Adisp(cm2/m)	gmallxtor(t/m
2.00	7.75	133.95	4.58	8.67	0.15	1.81	959.61	133.95	133.95	2.02	6.62	6.67	1118.13
3.00	7.75	133.95	4.58	8.67	0.15	1.77	970.92	133.95	133.95	2.07	6.47	6.67	1020.50
4.00	4.75	177.13	4.58	8.67	0.15	1.37	1079.60	177.13	177.13	3.53	6.62	6.67	840.11
5.00	4.75	177.13	4.58	8.67	0.15	1.37	1079.60	177.13	177.13	3.53	6.62	6.67	834.50
6.00	0.00	84.79	4.58	8.67	0.15	1.12	1126.30	84.79	84.79	2.07	2.59	6.67	234.50

Hoja n: 29

ension de calculo acero (t/cm2)	2.50
RMADURA DE ANCLAJE INFERIOR	
n :	1088.33
Armadura (cm2) :	17.41
RMADURA DE ANCLAJE SUPERIOR	
otal (t) :	117.69
Armadura (cm2) :	1.88
RMADURA DE EXFOLIACION	
olumenes de traccion	
a 1(t):	399.48
a 2(t):	542.05
a 3(t):	688.87
a 4(t):	130.94
uerza transversal de tracción (t) :	206.66
madura (cm2) :	82.66
OMPROBACION EN UN CANTO	
Estricta (cm2):	
Anclaje	82.66
Cortante	73.41
TOTAL	156.1
Dispuesta (cm2):	
TOTAL	212.12
	1-Es16
	11-Es12

ARMADURA DE [illegible]SIDO RASANTE FONDO

fondo :	1.00
u1(t/m):	220.00
asante total (t/m):	120.07
rm. total necesaria (cm2):	592.84

TRAMO	DE	A	Nº total barras	Diámetro(mm)	Separación (m)	Área (cm2)	Área acum.(cm2)
1.00	0.00	4.75	8.00	12.00	0.15	286.51	286.51
2.00	4.75	7.75	4.00	12.00	0.15	90.48	376.99
3.00	7.75	19.75	4.00	10.00	0.15	251.33	628.32
						TOTAL(cm2)	628.32

ARMADURA DE COSIDO ENTRE LOSA Y VIGA

uperficie de contacto(m2/m):	0.83
esistencia de cálculo a tracción (t/m2):	119.70
ela :	0.40
u :	0.90
umd(t/m2) :	144.66
u1(t/m2) :	416.67
min(cm2/m) :	0.07
rmadura total necesaria (cm2)	440.70

TRAMO	DE	A	Nº total barras	Diámetro(mm)	Separación (m)	Área (cm2)	Área acum.(cm2)
1.00	0.00	4.75	8.00	12.00	0.15	286.51	286.51
2.00	4.75	7.75	4.00	12.00	0.15	90.48	376.99
3.00	7.75	19.75	4.00	10.00	0.15	251.33	628.32
						TOTAL(cm2)	628.32

COMPROBACION A ROTURA

CCION :	1.00 X :	19.75			
dura pasiva (t):	0.00				
de compresión (t):	0.00	DEF. ARMADURA PRETESA			
f. bloque de compresiones (m):	0.251	Fibra1	-0.00628	-0.02013	-0.02641
5*Mcp (mt) :	3457.20	Fibra2	-0.00630	-0.01970	-0.02601
*Msc (mt) :	2651.46	Fibra3	-0.00632	-0.01928	-0.02560
(mt) :	6108.66	Fibra4	-0.00634	-0.01886	-0.02520
(mt) :	6695.30	Fibra5	-0.00713		
/Mk :	1.55	DEF ARMADURA POSTESA			
reduc. (mt) :	0.00	Fase1			
		Fibra1	-0.00580	-0.01962	-0.02542
CCION :	2.00 X :	7.75			
adura pasiva (t):	0.00				
adura de compresión (t):	0.00	DEF. ARMADURA PRETESA			
f. bloque de compresiones (m):	0.251	Fibra1	-0.00629	-0.02013	-0.02642
5*Mcp (mt) :	2176.97	Fibra2	-0.00631	-0.01970	-0.02601
Msc (mt) :	1779.06	Fibra3	-0.00633	-0.01928	-0.02561
(mt) :	3956.03	Fibra4	-0.00634	-0.01886	-0.02520
/mt) :	6395.53	Fibra5	-0.00712		
	2.29	DEF ARMADURA POSTESA			
reduc. (mt) :	0.00	Fase1			
		Fibra1	-0.00598	-0.01709	-0.02306
CCION :	3.00 X :	7.75			
adura pasiva (t):	0.00				
adura de compresión (t):	0.00	DEF. ARMADURA PRETESA			
f. bloque de compresiones (m):	0.203	Fibra1	-0.00529	-0.02566	-0.03196
*Mcp (mt) :	2176.97	Fibra2	-0.00531	-0.02514	-0.03145
Msc (mt) :	1779.06	Fibra3	-0.00533	-0.02452	-0.03095
(mt) :	3956.03	Fibra4	-0.00535	-0.02410	-0.03044
(mt) :	5459.79	Fibra5	-0.00713		
Mk :	1.95	DEF ARMADURA POSTESA			
reduc. (mt) :	0.00	Fase1			
		Fibra1	-0.00602	-0.02504	-0.03106
CION :	4.00 X :	4.75			
dura pasiva (t):	0.00				
de compresión (t):	0.00	DEF. ARMADURA PRETESA			
bloque de compresiones (m):	0.203	Fibra1	-0.00630	-0.02566	-0.03196
Mcp (mt) :	1457.26	Fibra2	-0.00631	-0.02514	-0.03146
Msc (mt) :	1345.91	Fibra3	-0.00633	-0.02462	-0.03095
mt) :	2803.17	Fibra4	-0.00635	-0.02410	-0.03045
mt) :	5309.90	Fibra5	-0.00712		
ik :	2.69	DEF ARMADURA POSTESA			
educ. (mt) :	0.00	Fase1			
		Fibra1	-0.00615	-0.02190	-0.02805
CION :	5.00 X :	4.75			
dura pasiva (t):	0.00				
dura de compresión (t):	0.00	DEF. ARMADURA PRETESA			
bloque de compresiones (m):	0.155	Fibra1	-0.00630	-0.03465	-0.04096
Mcp (mt) :	1457.26	Fibra2	-0.00632	-0.03397	-0.04029
sc (mt) :	1345.91	Fibra3	-0.00634	-0.03328	-0.03962
nt) :	2803.17	Fibra4	-0.00636	-0.03260	-0.03895
t) :	4200.18	Fibra5	-0.00712		
:	2.12				
duc. (mt) :	0.00				
ION :	6.00 X :	0.00			
dura pasiva (t):	0.00				

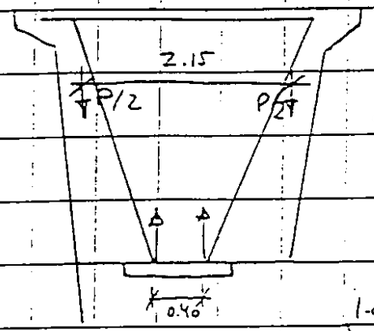
madura de compresión (t):	0.00	DEF. ARMADURA PRETESA			
of. bloque de compresiones (m):	0.123	Fibra1	-0.00645	-0.04458	-0.05102
35*Mcp (mt) :	0.00	Fibra2	-0.00646	-0.04371	-0.05017
5*Msc (mt) :	0.00	Fibra3	-0.00647	-0.04285	-0.04932
t) :	0.00	Fibra4	-0.00709	-0.00443	-0.01152
(mt) :	3377.02				
u/Mk :					
u reduc. (mt) :	2960.98				

Hoja n°33

DIAFRAGMA DE VIGA

TIMANTE S. FINAL

TIMANTE S. INICIAL

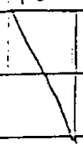


a). SECCION INICIAL

$P_{INICIAL} = 66.9 + 145.9 = 212.8\ t$

$P_i/2 = 106.4\ t$

1.07 T (DEL LADO DE VA REGUNDAO)



TIMANTE S. INICIAL

$T = 106.4 \times \frac{1.07}{2.30} = 49.7\ t$

$Td = 1.35 \times 49.7 = 67.1\ t$

$\omega = \frac{67.1}{7.0} = 16.80\ cm^2$

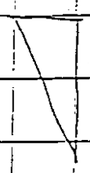
DISPONEMOS 6 ϕ20 = 18.84 cm² 2.0 ⌐ 0.80

ARMADURA SECUNDARIA = ϕ16c/0.15 (x2)

b) SECCIÓN FINAL

$P_f = 236.7\ t$ $P_f/2 = 118.4\ t$

1.07 T



TIRANTE SECCIÓN FINAL

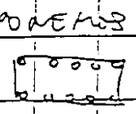
$T = 118.4 \times \frac{1.07}{12.70} = 47.14\ t$

$Td = 1.00 \times 47.14 = 70.7\ t$

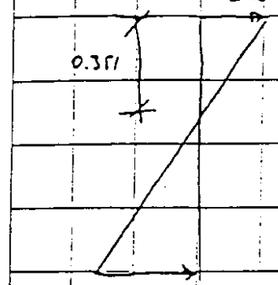
$\omega = \frac{70.7}{4} = 17.8\ cm^2$

DISPONEMOS 2 CAPAS DE 5ϕ20 + 5ϕ20

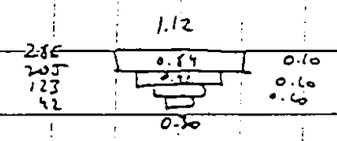
Eϕ10c/0.15



VOLUMEN DE TRACCIONES EN EXTREMO



$0.55\ P_0$



DEL LADO DE LA REGUNDAD:

$V_{TRACCIONES} = 2.86 \times 0.10 \times 1.12 + 20.5 \times 0.54 \times 0.60 + 1.23 \times 0.41 \times 0.60 + 42 \times 0.10 \times 0.30$

$32\ t + 17.2\ t + 5.04\ t + 1.26\ t$

$V_{TRACCIONES} = 55.6\ t$

$\frac{55.6}{2.0} = 27.8\ cm^2$

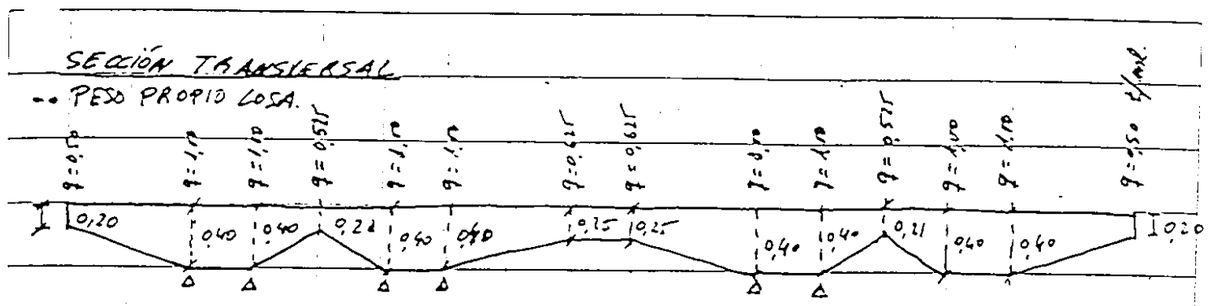
DISPONEMOS 5ϕ20 + 5ϕ20 = 31.4 cm²

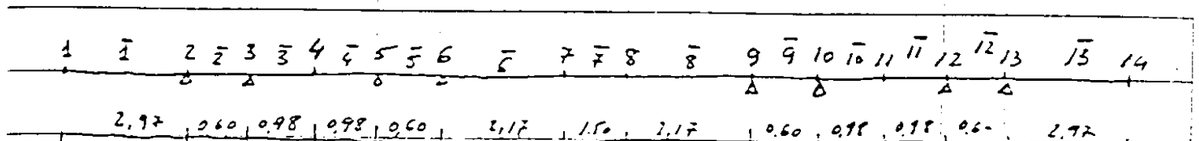
ARMADURA TRANSVERSAL DE

LOSA DE TABLERO

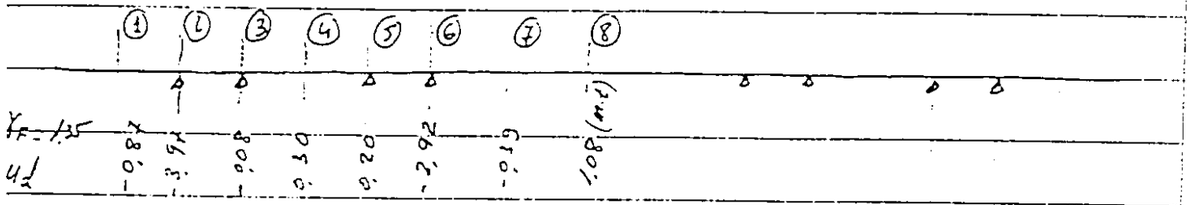
SECCIÓN TRANSVERSAL

- PESO PROPIO LOSA.





- RESUMEN DE ESFUERZOS MAYORADOS



PROGRAMA ESTRUC

CALCULO DE ESTRUCTURAS PLANAS

VERSION Nº 2 FECHA : 15/01/1995

Copyright : J.Diaz del Valle, 1986

E.T.S. de I.C.C. y P. de Santander

DATOS DE PROYECTO DE LA ESTRUCTURA

PROYECTO : E20M45

REFERENCIA : E20

FECHA DEL CALCULO : 23-11-1999

DATOS DE LA ESTRUCTURA

E20M45

DATOS GENERALES

NUMERO DE NUDOS ..... = 14
NUMERO DE BARRAS ..... = 13
NUMERO DE NUDOS COACCIONADOS ..... = 8
NUMERO DE SECCIONES POR BARRA ..... = 3
MODULO DE ELASTICIDAD ..... = 3.0000E+06
PESO ESPECIFICO DEL MATERIAL ... = 0.0000E+00
COEFICIENTE DE DILATACION ..... = 0.0000E+00

DATOS EN LOS NUDOS

NUDO	X	Y	U	V	G
1	0.0000E+00	0.0000E+00	-	-	-
2	2.9700E+00	0.0000E+00	0.0000E+00	0.0000E+00	-
3	5.5700E+00	0.0000E+00	-	0.0000E+00	-
4	7.5500E+00	0.0000E+00	-	-	-
5	5.5300E+00	0.0000E+00	-	0.0000E+00	-
6	6.1300E+00	0.0000E+00	-	0.0000E+00	-
7	8.3000E+00	0.0000E+00	-	-	-
8	9.8000E+00	0.0000E+00	-	-	-
9	1.1970E+01	0.0000E+00	-	0.0000E+00	-
10	1.2570E+01	0.0000E+00	-	0.0000E+00	-
11	1.3550E+01	0.0000E+00	-	-	-
12	1.4530E+01	0.0000E+00	-	0.0000E+00	-
13	1.5130E+01	0.0000E+00	-	0.0000E+00	-
14	1.8100E+01	0.0000E+00	-	-	-

DEFINICION DE LAS BARRAS

BARRA	NUDO I	NUDO J	INERCIA	AREA
1	1	2	2.2500OE-03	3.000000E-01
2	2	3	5.3333OE-03	4.000000E-01
3	3	4	2.3640OE-03	3.050000E-01
4	4	5	2.3640OE-03	3.050000E-01
5	5	6	5.3333OE-03	4.000000E-01
6	6	7	2.8600OE-03	3.250000E-01
7	7	8	1.3020OE-03	2.500000E-01
8	8	9	2.8600OE-03	3.250000E-01
9	9	10	5.3333OE-03	4.000000E-01
10	10	11	2.3640OE-03	3.050000E-01
11	11	12	2.3640OE-03	3.050000E-01
12	12	13	5.3333OE-03	4.000000E-01
13	13	14	2.2500OE-03	3.000000E-01

CARGAS ACTUANTES EN LA HIPOTESIS Nº 1

PP

CARGAS EN LAS BARRAS

BARRA	TIPO	PAR1	PAR2	PAR3	PAR4	PAR5
1	7	0.500	1.000	0.000	0.000	GRAV.
2	1	1.000	0.000	0.000	0.000	GRAV.
3	7	1.000	0.525	0.000	0.000	GRAV.
4	7	0.525	1.000	0.000	0.000	GRAV.
5	1	1.000	0.000	0.000	0.000	GRAV.
6	7	1.000	0.625	0.000	0.000	GRAV.
7	1	0.625	0.000	0.000	0.000	GRAV.
8	7	0.625	1.000	0.000	0.000	GRAV.
9	1	1.000	0.000	0.000	0.000	GRAV.
10	7	1.000	0.525	0.000	0.000	GRAV.
11	7	0.525	1.000	0.000	0.000	GRAV.
12	1	1.000	0.000	0.000	0.000	GRAV.
13	7	1.000	0.500	0.000	0.000	GRAV.

RESULTADOS DE LA HIPOTESIS Nº 1

pp

DESPLAZAMIENTOS

NUDO	u	v	Giro
1	0.00000E+00	-1.02123E-03	4.40878E-04
2	0.00000E+00	0.00000E+00	3.65861E-05
3	0.00000E+00	0.00000E+00	-1.86006E-05
4	0.00000E+00	-1.17945E-05	9.56197E-07
5	0.00000E+00	0.00000E+00	1.47759E-05
6	0.00000E+00	0.00000E+00	-2.73795E-05
7	0.00000E+00	-3.09373E-04	-1.41687E-04
8	0.00000E+00	-3.09373E-04	1.41687E-04
9	0.00000E+00	0.00000E+00	2.73795E-05
10	0.00000E+00	0.00000E+00	-1.47759E-05
11	0.00000E+00	-1.17945E-05	-9.56177E-07
12	0.00000E+00	0.00000E+00	1.86006E-05
13	0.00000E+00	0.00000E+00	-3.65861E-05
14	0.00000E+00	-1.02123E-03	-4.40877E-04

REACCIONES EN APOYOS

NUDO	Rx	Ry	Mz
2	0.00000E+00	7.32333E+00	1.66893E-06
3	0.00000E+00	-3.79094E+00	6.55651E-07
5	0.00000E+00	-2.27116E+00	-4.91738E-07
6	0.00000E+00	5.89264E+00	-4.76837E-07
9	0.00000E+00	5.89264E+00	0.00000E+00
10	0.00000E+00	-2.27116E+00	-4.32134E-07
12	0.00000E+00	-3.79093E+00	-4.76837E-07
13	0.00000E+00	7.32332E+00	-7.15256E-07

≤ 14.3 + 22

LEYES DE ESFUERZOS EN LAS BARRAS

BARRA Nº 1 DE NUDOS Nº 1 Y Nº 2

X	AXIL	CORTANTE	FLECTOR
0.000	0.000	-0.000	-0.000
1.485	0.000	-3.928	-0.643
2.970	0.000	-2.227	-2.940

BARRA Nº 2 DE NUDOS Nº 2 Y Nº 3

X	AXIL	CORTANTE	FLECTOR
0.000	0.000	5.096	-2.940
0.300	0.000	4.796	-1.457
0.600	0.000	4.496	-0.063

BARRA Nº 3 DE NUDOS Nº 3 Y Nº 4

X	AXIL	CORTANTE	FLECTOR
0.000	0.000	0.795	-0.063
0.490	0.000	0.275	0.172
0.980	0.000	-0.042	0.224

BARRA Nº 4 DE NUDOS Nº 4 Y Nº 5

X	AXIL	CORTANTE	FLECTOR
0.000	0.000	-0.042	0.224
0.490	0.000	-0.355	0.131
0.980	0.000	-0.790	-0.146

BARRA Nº 5 DE NUDOS Nº 5 Y Nº 6

X	AXIL	CORTANTE	FLECTOR

0.000	0.000	-3.061	-0.146
0.300	0.000	-3.361	-1.109
0.600	0.000	-3.661	-2.162

BARRA Nº 6 DE NUDOS Nº 6 Y Nº 7

X	AXIL	CORTANTE	FLECTOR
0.000	0.000	2.232	-2.162
1.085	0.000	1.249	-0.293
2.170	0.000	0.469	0.621

BARRA Nº 7 DE NUDOS Nº 7 Y Nº 8

X	AXIL	CORTANTE	FLECTOR
0.000	0.000	0.469	0.621
0.750	0.000	-0.000	0.796
1.500	0.000	-0.469	0.621

BARRA Nº 8 DE NUDOS Nº 8 Y Nº 9

X	AXIL	CORTANTE	FLECTOR
0.000	0.000	-0.469	0.621
1.085	0.000	-1.249	-0.293
2.170	0.000	-2.232	-2.162

BARRA Nº 9 DE NUDOS Nº 9 Y Nº 10

X	AXIL	CORTANTE	FLECTOR
0.000	0.000	3.661	-2.162
0.300	0.000	3.361	-1.109
0.600	0.000	3.061	-0.146

BARRA Nº 10 DE NUDOS Nº 10 Y Nº 11

X	AXIL	CORTANTE	FLECTOR
0.000	0.000	0.790	-0.146
0.490	0.000	0.358	0.131
0.980	0.000	0.042	0.224

BARRA Nº 11 DE NUDOS Nº 11 Y Nº 12

X	AXIL	CORTANTE	FLECTOR
0.000	0.000	0.042	0.224
0.490	0.000	-0.275	0.172
0.980	0.000	-0.705	-0.063

BARRA Nº 12 DE NUDOS Nº 12 Y Nº 13

X	AXIL	CORTANTE	FLECTOR
0.000	0.000	-4.496	-0.063
0.300	0.000	-4.796	-1.457
0.600	0.000	-5.096	-2.940

BARRA Nº 13 DE NUDOS Nº 13 Y Nº 14

X	AXIL	CORTANTE	FLECTOR
0.000	0.000	2.227	-2.940
1.485	0.000	0.928	-0.643
2.970	0.000	-0.000	-0.000

OMENTOS TRANSVERSALES TOTALES

ASO CARGA		2	3	4	5	6	7	8	9	10	11	12	13	14	
CM	-1.26	-3.52	-2.82	-3.22	-4.02	-5.26	-4.30	-3.88	-5.89	-8.21	-5.57	-4.04	-4.09	-5.13	
SC +	0.41	0.33	0.34	1.10	3.87	5.60	4.28	5.13	4.28	5.60	3.87	1.10	0.32	0.41	
SC -	-1.36	-2.89	-2.58	-2.95	-6.24	-9.42	-6.63	-2.87	-6.63	-9.42	-6.24	-2.95	-2.58	-2.89	
CARRO +	0.10	0.49	0.56	3.40	2.50	3.62	6.43	11.85	6.54	4.07	2.79	1.33	0.51	0.49	
CCOM +	0.03	0.19	0.37	0.00	2.19	3.25	0.31	3.03	1.15	3.57	2.51	0.00	0.41	0.45	
CARRO -	-3.61	-13.20	-11.90	-7.67	-6.72	-9.72	-6.77	-3.22	-4.70	-6.90	-4.56	-1.49	-5.76	-6.13	
CCOM -	-0.05	-0.46	-1.78	-2.10	-4.19	-3.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
TOTAL M⁺	-0.60	-2.16	-1.27	1.60	4.94	7.74	7.15	16.52	6.67	5.85	4.16	-1.21	-2.44	-3.27	mt/m
TOTAL M⁻	-6.15	-19.72	-18.80	-15.62	-20.77	-27.52	-17.27	-9.58	-16.63	-23.71	-15.82	-8.08	-12.03	-13.64	mt/m

VUELO IZQUIERDO 1.50 M — Espesor: 0.302
VUELO IZQUIERDO ARRANQUE (14) — Espesor: 0.4
LOSA INTERIOR VIGA 1 ARRANQUE IZQUIERDO (13) — Espesor: 0.4
LOSA INTERIOR VIGA 1 CENTRO (12) — Espesor: 0.21
LOSA INTERIOR VIGA 1 ARRANQUE DERECHO (11) — Espesor: 0.4
LOSA ENTRE VIGAS ARRANQUE IZQUIERDO (10) — Espesor: 0.4
LOSA ENTRE VIGAS A 1.85 CENTRO (9) — Espesor: 0.35
LOSA ENTRE VIGAS CENTRO — Espesor: 0.25
10,11,12,13,14,15 SIMÉTRICOS

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
PP Losa Md	-0,87	-3,97	-0,08	0,30	-0,20	-2,92	-0,39	1,08	-0,39	-2,92	-0,20	0,30	-0,08	-3,97	m.t/m
Total Md+	-	-	-	1,90	4,74	4,82	6,76	17,60	6,18	2,93	3,96	-	-	-	m t/m
Total Md-	-7,02	-23,69	-18,88	-15,32	-20,97	-30,44	-17,66	-8,50	-17,02	-26,63	-16,02	-7,78	-12,11	-17,61	m t/m
h	0,30	0,40	0,40	0,21	0,40	0,40	0,35	0,25	0,35	0,40	0,40	0,21	0,40	0,40	m
U+ TOTAL	-	-	-	2,59	3,01	3,05	5,04	22,75	4,68	1,85	2,51	-	-	-	cm²/ml.
ISPUESTO	5φ12	5φ12	5φ12	5φ12	5φ20	5φ20	5φ20	5φ20|5φ16	5φ20	5φ10	5φ20	5φ12	5φ12	5φ12	φ.m.l.
U- TOTAL	6,33	15,94	12,51	27,04	13,98	20,98	13,80	9,84	13,17	18,10	10,52	11,54	7,86	11,61	cm²/ml.
ISPUESTO	5φ20	7φ20	9φ20	9φ20	9φ10	7φ20	5φ20	5φ20	5φ20	7φ20	9φ20	9φ20	9φ20	7φ20	φ.m.l.

RECUBRIMIENTO MECÁNICO r = 0,04 m. H-25 f_{yk} = 5100 γ_c = 1.50 γ_s = 1.15

TIPO DE ACCIÓN	NIVEL DE CONTROL INTENSO
PERMANENTE	γ = 1.35
VARIABLE	γ = 1.50

5. Proceso constructivo

PROCESO CONSTRUCTIVO

INDICE

G401	Perforación y hormigonado de pilotes
G402	Muros de suelo reforzado
G403/A403	Hormigonado de estructuras y obras de fábrica
G404/A404	Encofrados en estructuras y obras de fábrica
G407	Cimbras para encofrados de losas y tableros en puentes
G408	Armaduras pasivas
G40A	Apoyos de neopreno zunchado
G40D/A40D	Juntas de dilatación en pasos superiores
G40F	Impermeabilización y drenaje con geotextil de trasdós de muros y de estribos
G40H	Impermeabilización de tableros de pasos superiores de carretera
G40J	Sumidero en tablero de puentes
G40K	Barandillas de acero
G40L	Barreras de seguridad con perfiles bionda en pasos superiores
G40M	Puesta a tierra de elementos metálicos y armaduras en viaductos y puentes para ferrocarril
G40P	Valla metálica antivandalismo en pasos superiores
G40Q	Pruebas de carga en pasos superiores de carretera
A40S	Aceras
G40T	Marcos, vigas y muros prefabricados armados o pretensados de la forma y luz especificada en cada caso.
G40U	Montaje de elementos prefabricados.
G40V	Placas de encofrado perdido

G401 PERFORACIÓN Y HORMIGONADO DE PILOTES

1.- Definición y condiciones generales

Definición:

Se definen como cimentaciones por pilotes de hormigón armado moldeados "in situ", las realizadas mediante pilotes de hormigón armado cuya ejecución se efectúa perforando previamente el terreno y rellenando la excavación con hormigón fresco y las correspondientes armaduras.

Se define como diámetro del pilote construido "in situ", el diámetro interior de la excavación o, en su caso, de la entubación recuperable. El posible ensanchamiento del fuste del pilote, por apisonado o compresión del hormigonado, no se tendrá en cuenta para admitir un aumento de la carga admisible del mismo, considerado como elemento estructural.

La unidad de obra comprende, en el caso más general, las siguientes operaciones:

- Perforación del terreno.
- Entubación, si procede.
- Fabricación, manipulación y regeneración de los lodos.
- Suministro de hormigón
- Suministro y colocación de armaduras.
- Hormigonado del pilote y extracción de los lodos.
- Descabezado del pilote.
- Retirada de las tierras de la excavación

Eventualmente, también las operaciones siguientes:

- Ensayo sónico en pilotes
- Junta de grava en punta de pilotes
- Perforación en punta de pilotes

Condiciones generales:

Equipo necesario

El equipo necesario para la fabricación, colocación del hormigón y ejecución de los pilotes, será el adecuado para el número, diámetro y longitud de pilotes que señalen los planos del Proyecto, y ofrecerá garantías suficientes en relación a la calidad del hormigón, precisión en la hinca de la entubación, mínima perturbación del terreno y, sobre todo, continuidad de los pilotes.

El Contratista someterá a la aprobación de la Dirección de Obra, con la antelación suficiente, el tipo de pilotaje, equipo y plan de trabajo que tenga previsto aplicar, modificando lo que la Dirección de Obra ordene hasta conseguir su aceptación, lo cual no exime al Contratista de su responsabilidad.

Características del hormigón

El hormigón tendrá la resistencia característica indicada en los planos. En el caso de hormigonado bajo el agua, la mezcla deberá contener no menos de cuatrocientos kilogramos de cemento por cada metro cúbico (400 Kg/m^3) de hormigón.

El cemento será el adecuado para la agresividad del agua o del terreno.

La consistencia del hormigón será de dieciséis a veinte centímetros (16 a 20 cm.) para pilotes hormigonados en agua o lodos, y de diez a quince centímetros (10 a 15 cm.) para el resto de los pilotes.

El recubrimiento mínimo de armaduras será de 4 cm, colocándose espaciadores que tengan una resistencia a la corrosión, al menos, igual a la del hormigón empleado.

Características de los lodos tixotrópicos

Tipo de suspensión Homogénea y estable

Dosificación < 10%

Densidad > 1,02 g/cm^3

< 1,10 g/cm^3

Viscosidad normal (medida en cono de Marsh) 32 s <= V <= 45 s (antes de hormigonar)

pH 8 <= pH <= 11

Formación de cake mediante filtro prensa 2 - 8 mm

Contenido de arena en lodo viejo <= 1% (antes de hormigonar)

<= 2% (en gravas)

<= 5% (arenas o terrenos más finos durante perforación)

Tolerancias geométricas:

- Replanteo de los ejes ± 10% D
- Profundidad de la perforación - 0

  + 1% L
- Aplomado ± 2% L
- Posición de las armaduras Nula
- Recubrimiento de las armaduras Nula
- Nivel de la cabeza del pilote ±10 mm

2.- Condiciones del proceso de ejecución

Todos los días antes de empezar los trabajos se han de revisar los aparatos de elevación, los dispositivos de manejo y de perforación.

Se han de tomar las medidas necesarias para no producir daños a las construcciones, instalaciones o otros elementos existentes en la zona.

Para la construcción del pilote se ha de disponer una superficie de trabajo sensiblemente horizontal, libre de obstáculos y de anchura suficiente para el trabajo de la maquinaria.

No se permite apilar, en las proximidades del pilote, materiales el peso de los cuales ponga en peligro la estabilidad del terreno.

El material procedente de la perforación se ha de cargar y transportar a vertedero a medida que se extraiga, no estando permitida su colocación sobre la plataforma de trabajo.

En el caso de utilizar lodos tixotrópicos queda prohibido el vertido de los mismos a las cloacas y colectores.

El sistema de transporte que se utilice será el adecuado para no producir pérdidas ni suciedad en los viales del trayecto.

Si algún pilote perforado es desechado, deberá ser rellenado siempre con hormigón.

El pilote se empotrará en el terreno competente en la longitud indicada en los planos, medida a partir de la cota real de aparición de dicho sustrato portante.

Según la agresividad del terreno, la D.O. puede exigir la utilización de cementos puzolánicos o cementos Pórtland con características especiales para la elaboración del hormigón.

El proceso de hormigonado no se puede suspender en ningún momento ni en ninguna circunstancia.

- Limpieza y tratamientos de fondo

Una vez terminada la excavación se procederá a la extracción del detritus que haya podido almacenarse en el fondo de la cavidad. En pilotes en seco de gran diámetro será conveniente el descenso de un operario para comprobar dicha limpieza.

Cuando no pueda garantizarse la eliminación de los detritus se preverán dispositivos para inyectar la punta del pilote, una vez terminado, eventualmente con lavado previo a presión.

En los casos de apoyo sobre terreno potencialmente karstificado se dejarán tubos en el pilote para sondear por debajo de la punta o, en caso contrario, se sondeará todo el pilote penetrando en el terreno un mínimo de 5 diámetros. Si se apreciaran indicios claros de karstificación se procederá a inyectar el terreno en la longitud indicada y se revisará el diseño de los pilotes adyacentes para atravesar dicha zona.

- Colocación de armaduras

La armadura llevará los elementos necesarios para su izado y colocación, así como para evitar su movimiento durante el hormigonado.

Para pilotes profundos se podrá dividir la armadura vertical en dos o más partes que se introducirán en la perforación manteniéndolas suspendidas y centradas durante las operaciones de soldadura de todas las barras.

Las barras formarán una jaula de armadura, que se introducirá en la perforación de tal forma, que no se pueda mover durante el hormigonado ni podrá ser extraída al levantar la entubación. Las armaduras deberán quedar suspendidas durante todo el proceso de hormigonado, de forma que no se produzca pandeo de las barras ni abombamientos del conjunto de la jaula. Para ello, se fijarán de forma sólida a la coronación de la excavación.

La armadura se ajustará al tipo de acero y diámetro de barras indicados en los planos del Proyecto.

La armadura quedará a una distancia mínima de veinte centímetros (20 cm) en fondo de perforación y máxima de cincuenta centímetros (50 cm).

La longitud será tal que, después del descabezado, sobresalga la longitud de anclaje que figure en los planos, que como mínimo será de un (1) diámetro del pilote construido.

- Hormigonado

Antes de comenzar la excavación se verificará que el movimiento de tierras efectuado para la plataforma de trabajo no altera las hipótesis de cálculo del pilote.

No se permitirá la perforación de un pilote a menos de tres diámetros (3 Ø) de distancia del centro de otro pilote que lleve menos de cuarenta y ocho horas (48 h) hormigonado.

El tiempo transcurrido entre el inicio de colocación de armaduras y vertido de hormigón será el menor posible.

El hormigonado se realizará sin interrupción, mediante tubería cuyo diámetro estará comprendido entre quince y treinta centímetros (15 y 30 cm.) y que estará centrada en el pilote e introducida hasta el fondo de la perforación, de forma que no se produzcan disgregaciones ni huecos en su masa.

En el hormigonado de los pilotes se pondrá el mayor cuidado en conseguir que el pilote quede en toda su longitud con su sección completa, sin vacíos, bolsadas de aire o agua, coqueras ni cortes o estrangulamientos. Tampoco se olvidará reducir al máximo el deslavado por segregación de los áridos. En ningún caso se admitirá la caída libre del hormigón.

Las armaduras, así como la fabricación, transporte y puesta en obra del hormigón, se ajustarán a lo prescrito en los Artículos correspondientes, del presente Pliego.

Se hormigonarán las cabezas hasta una altura superior a la teórica de Proyecto en 0,5 D (si es bajo el nivel freático 1,5 D) que se demolerán después. El Contratista no percibirá ninguna compensación por este exceso del hormigonado ni por su demolición posterior.

Si al efectuar la demolición se observa que el descabezado no ha sido suficiente para eliminar todo el hormigón deslavado y de mala calidad, se proseguirá la demolición reemplazando el hormigón demolido por hormigón nuevo bien adherido al anterior. Todas estas operaciones serán por cuenta del Contratista.

El hormigonado de un pilote se hará, en todo caso, sin interrupción, de modo que entre la introducción de dos masas sucesivas no pase tiempo suficiente para la iniciación del fraguado; si por alguna avería o accidente esta prescripción no se cumpliera, la Dirección de Obra decidirá si el pilote puede terminarse y considerarse válido o no. El pilote que haya sido rechazado por el motivo indicado habrá de ser rellenado, sin embargo, en toda su longitud abierta en el terreno, sin que el Contratista perciba pago alguno por ello. La parte de relleno, después de rechazado el pilote, podrá ejecutarse con hormigón pobre, pero su ejecución se hará con los mismos cuidados que si se tratara de un pilote que hubiera de ser sometido a cargas.

La posición de los pilotes en planta, después de construidos, no deberá diferir en más del 10% del diámetro del pilote. La desviación respecto a la vertical no será superior al 2% de la longitud del pilote indicada en los Planos.

Perforación con entubación recuperable

Se tratará de conseguir una bajada de la entubación tan continua como sea posible y llevada a la par con la extracción de la tierra; en ningún caso, la extracción debe adelantarse sobre la bajada del tubo.

En caso de penetrar por debajo de la capa freática, no se admitirá bombeo durante la ejecución del pilote.

En caso de encontrar afluencias de agua, se puede admitir un bombeo previo para limpiar el tubo, siempre que la afluencia de agua sea menor que una décima de litro por segundo (0,1 l/s); en caso contrario, se proscribe la aplicación de bombeo durante la ejecución del pilote.

En los casos en que exista riesgo importante de deslavado del hormigón (por ejemplo, gravas con flujo de agua) se colocará dentro de la entubación una camisa metálica que quedará perdida.

La entubación debe llegar hasta el final del pilote. La superficie interior de los tubos debe ser completamente lisa. Las juntas serán roscadas o soldadas y habrán de ser impermeables.

El avance de la entubación se llevará a cabo de tal forma que el suelo por el que ésta atraviesa vaya desplazándose hacia los lados, compactándolo al mismo tiempo, sin que se produzca ninguna extracción de material. Si se encontraran obstáculos durante la hinca o perforación se podrá utilizar trépano guiado o técnicas especiales de excavación.

La entubación será de acero, recta y ha de llegar hasta el final del pilote. La superficie interior de los tubos será completamente lisa. Las juntas serán roscadas o soldadas y serán impermeables.

Tanto el tubo como las juntas han de poder resistir los esfuerzos que se producen al clavar el tubo, sin sufrir deformaciones.

Durante el hormigonado de los pilotes de entubación recuperable, se ha de ir elevando la citada entubación de forma que quede siempre un tapón de hormigón en el fondo de la misma, que impida la entrada del terreno circundante. Este tapón no será demasiado alto, ya que podría adherirse a la entubación, ocasionando el corte del pilote, por lo que su altura ha de estar comprendida entre dos veces y tres veces y media el diámetro del mismo.

La citada altura se habrá de comprobar continuamente, por medida directa y por comparación entre el volumen del hormigón colocado y el calculado para la altura hormigonada.

El hormigonado se hará en seco o bien con el tubo lleno de agua hasta el nivel freático debiendo elegirse uno u otro procedimiento según la naturaleza del terreno. Será preferible el hormigonado con tubo lleno de agua en cuanto haya capas de terrenos socavables, siendo necesario en este caso colocar el hormigón en obra por medio de una cuchara, tubo, bomba o cualquier artificio que dificulte su deslavado. Cuando no haya terrenos socavables será aconsejable el hormigonado en seco, que podrá conseguirse, aún en terrenos de cierta permeabilidad, sellando inicialmente el fondo de la excavación con un hormigón muy seco.

En terrenos muy blandos o susceptibles de sifonamiento, durante la excavación, se ha de mantener el nivel de agua en el interior de entubación.

En los pilotes con camisa perdida, realizada la excavación y antes del hormigonado, se ha de introducir la camisa en la entubación.

Se ha de mantener suspendida desde la boca de la perforación, hasta la finalización de las operaciones de hormigonado.

Perforación con lodos tixotrópicos:

En el caso de utilizar lodos tixotrópicos, se ha de sustituir el lodo y se ha de regenerar cuando su contenido en arena o cuando la viscosidad superen los valores especificados.

La tubería que coloca el hormigón ha de ir introducida siempre 5 m., como mínimo, dentro del hormigón anteriormente vertido.

A medida que se inyecta el hormigón se han de recuperar los lodos sobrantes.

El hormigonado se ha de realizar por sistema ascendente, es decir, de abajo hacia arriba desalojando el lodo a medida que penetre el hormigón.

Control de ejecución de los pilotes

El Contratista confeccionará un parte de trabajo de cada pilote en el que figurará, al menos: la fecha y la hora de comienzo y fin de la introducción de la tubería; la profundidad total alcanzada por la entubación, la descripción de los terrenos atravesados y el espesor de las distintas capas; la profundidad hasta la que se ha introducido la armadura y la longitud y constitución de la misma; la profundidad del nivel de la superficie del agua al comienzo del hormigonado; y la fecha y la hora del comienzo y terminación del hormigonado. Los datos de las distintas capas de terrenos atravesados deberán contrastarse con los que sirvieron para el dimensionamiento de la cimentación.

Por cada cincuenta metros cúbicos (50 m^3) de hormigón, se tomarán dos (2) probetas que se curarán en cámara y se determinará su resistencia característica a siete (7) días, estimando la resistencia a los veintiocho (28) días para poder tomar las medidas necesarias en caso de que no se prevea alcanzar las resistencias de diseño.

Transcurridos veintiocho (28) días después del hormigonado se realizarán, en aquellos casos que indique la D.O. las pruebas de integridad del pilote a través de los tubos dejados a tal efecto.

En cada pilote se habrán instalado cuatro tubos metálicos, de 75 mm. de diámetro interior, en toda la longitud de la perforación hasta 20 cm. por encima del fondo de la misma, con el fin de controlar la punta del pilote. Se sujetarán con puntos de soldadura y estarán dispuestos según los vértices de un cuadrado inscrito en la armadura. Estarán obturados en su parte inferior.

Una vez fraguado el hormigón, se efectuarán, a través de los tubos mencionados, cuatro (4) perforaciones verticales en el substrato, bajo el extremo inferior del pilote, con una longitud mínima tal que cada perforación alcance los cinco (5) metros por debajo del pilote. Si entre 4 y 5 metros, las referidas perforaciones detectaran intercalaciones blandas en el substrato, se prolongarán de modo que, el espesor de tierra firme atravesado bajo la última intercalación blanda no sea inferior a un (1) metro.

Al objeto de eliminar parcialmente el material blando intercalado entre estratos de consistencia firme, y sustituirlo por la inyección de mortero que ha de formar el puente resistente, se seleccionarán dos perforaciones diagonalmente opuestas. Sucesiva o simultáneamente se inyectará agua a presión (quedando, específicamente prohibida la inyección de aire) a través de dichas perforaciones, obturando a nivel del hormigón del pilote, hasta alcanzar un máximo de 5 atmósferas de presión de agua a nivel de extremo inferior de pilote y 3 atmósferas a nivel de rasante, salvo que antes de alcanzar dicha presión ascendiera el agua por los otros dos taladros. La circulación en este caso, deberá mantenerse hasta que el agua salga prácticamente limpia.

Esta operación deberá repetirse de igual forma en las otras dos perforaciones diagonalmente opuestas.

A continuación se comenzará la inyección de mortero por uno de los tubos (previamente obturados con tubos pasantes dotados de llave de paso). Si se produjera ascensión de mortero por alguno de los restantes taladros se cerrará la llave de los correspondientes al mismo, continuándose la inyección. Deberá alcanzarse una presión de 2 atmósferas en boca superior del tubo de inyección (nivel de rasante) y mantener dicha presión durante un tiempo mínimo de 15 minutos.

Seguidamente, y previo cierre de la llave de paso del tubo inyectado, se desplazará la inyección a un tubo en que no se hubiera producido comunicación de lechada.

El proceso se repetirá sucesivamente (cambiando la inyección, si ello fuera posible, a tubos diagonalmente opuestos) hasta asegurar que el tratamiento a presión de los cuatro taladros de pié de pilote hubiera sido completado.

Se empleará mortero 1,5-2:1 (arena: cemento), con una relación agua/cemento de 0,35 y adicionándole 4,5 gr. de expansivo por kilogramo de cemento.

Ensayo sónico en pilotes

El control de la continuidad y compacidad de los pilotes se efectuará, a juicio de la D.O., mediante el procedimiento de “transparencia sónica” (diagrafía) que consiste en obtener perfiles transversales sónicos (entre parejas de tubos) del estado y continuidad del hormigón. Para ello se utilizarán 4 tubos embebidos en el hormigón, diametralmente opuestos, que se hacen solidarios a la armadura según se va bajando ésta en la perforación.

Se obtienen seis perfiles 1-2, 1-3, 1-4, 2-3, 2-4, 3-4 (ver planos), que permiten observar el estado del pilote hormigonado, asegurando su continuidad y detectando posibles defectos, para poder tratarlos en su caso (huecos, cavidades, zonas lavadas, etc.).

Respecto a los cuatro tubos que deben instalarse, su diámetro se adoptará al del instrumento a utilizar para la diagrafía previendo que se puedan utilizar los taladros la consolidación en punta del terreno, mediante la inyección de lechada de cemento en la jaula de grava.

La interpretación de los ensayos será competencia de la D.O. que en los pilotes diagrafiados, si le ofrecieran dudas sobre la calidad portante de los pilotes, podrá ordenar las medidas de reparación de los pilotes defectuosos, pudiendo llegar incluso, al rechazo del pilote ejecutado.

Pruebas de carga

A efectos de ser ensayado independiente, se ejecutarán pilotes de prueba, si así lo decidiera la D.O. hasta la carga de servicio, o bien hasta su rotura o asentamiento.

En este caso, dicho pilote no podrá ejecutarse en la misma zona de cimentación, pero sí en sus proximidades, debiendo estar en iguales condiciones en lo que se refiere a características del suelo y de profundidad que los pilotes definitivos.

En todo caso, al efectuar los ensayos de carga sobre los pilotes de prueba y sobre los de trabajo, se seguirán las instrucciones de la Dirección de Obra, quién podrá variar el número y la forma de realizarlos.

Durante el tiempo que duren las pruebas de carga no podrá haber ninguna clase de trepidaciones, ni las producidas por tráfico, maquinaria o trabajos de hinca. No se realizará más de una prueba a la vez.

En la prueba habrá de tenerse muy en cuenta el que la sobrecarga coincida con el eje del pilote y que durante el asentamiento no oscile dicha carga para evitar que bascule.

Al tratarse de una prueba de carga con destino a comprobar hipótesis de proyecto, el programa de ensayo ha de adaptarse a las variaciones de carga previstas en servicio de la obra, tales como la reproducción de distintos ciclos de carga-descarga.

El sistema utilizado para conseguir la reacción necesaria, para la prueba de carga, debe ser tal que no influya en el pilote de prueba alterando su resultado.

Para la realización de pruebas de carga y el estudio de los resultados se podrá seguir la Norma DIN 1054.

En el caso de que las pruebas de carga sobre pilotes de trabajo produjesen asientos excesivos o cuando la ejecución de un pilote de trabajo fuese defectuosa por negligencia del Contratista, la Dirección de Obra podrá ordenar la ejecución de tres (3) pruebas de carga suplementarias sobre pilotes de trabajo por cada pilote defectuoso que se haya encontrado o se vaya encontrando, debiendo limitarse estas pruebas suplementarias a aplicar sobre el pilote una carga máxima del ciento treinta por ciento (130%) de la de trabajo. El coste de estas pruebas suplementarias, realizadas sobre pilotes de trabajo no será abonado al Contratista.

3.- Medición y abono

Ejecución de pilotes

- M pilote de diámetro 0,80 m, excluidas armaduras incluso parte proporcional de descabezado. Precio A4010001.

No será de abono la longitud del pilote correspondiente al descabezado.

No se abonará el exceso de hormigón en las cabezas de los pilotes, ni las sobreexcavaciones, ni las sobreperforaciones que sobrepasen los valores definidos en el Proyecto

El precio incluye las siguientes operaciones y materiales:

- Transporte a la obra y traslado de equipos de excavación, grúas, grupos electrógenos, tubos de hormigonado, equipos de fabricación de lodos, entubaciones, medios auxiliares y maquinaria necesaria.

- Replanteo y montaje de equipos.

- Entubaciones recuperables, en su caso.

- Suministro, fabricación, recuperación y regeneración de lodos.

- Excavación con entubación o sin ella, con lodos o sin ellos.

- Utilización del taladro cuando sea necesario.

- Suministro y colocación de armaduras.

- Suministro y colocación del hormigón.

- Suministro y colocación de tubos para ensayo sónico.

- Trabajos en jornada diurna o nocturna o reducida para el tránsito.

- Energía y agua consumidas.

- Carga y transporte a vertedero de los productos de la excavación.

- Canon de vertido y mantenimiento del vertedero.

- Descabezado del pilote y hormigonado de la parte demolida.

- Cualquier otro material auxiliar y operación, necesarios para la total y correcta ejecución de la unidad.

Se considera incluido en el precio de abono, todos los costes de auscultación, excepto los ensayos sónicos.

Cuando se realicen pilotes para pruebas de carga se han de medir y abonar según lo dicho en esta unidad, pero quedando incluido en el precio la prueba de carga.

4.- Normativa de obligado cumplimiento

EH-91 "Instrucción para el Proyecto y la Ejecución de Obras de Hormigón en Masa o Armado."

PG 3/75 "Pliego de Prescripciones Técnicas Generales para Obras de Carreteras y Puentes." con las enmiendas aprobadas por las Órdenes del MOPTMA: O.M. del 31.7.86 (BOE núm. 213 del 5.9), O.M. del 21.1.88 (BOE núm. 29 del 3.2), O.M. del 8.5.89 (BOE núm. 118 del 18.5) y O.M. del 28.9.89 (BOE núm. 242 del 9.10).

NTE-CPI/1977 "Norma tecnológica de la Edificación. Pilotes in situ."

A402 MUROS DE SUELO REFORZADO

1.- Definición y condiciones generales

Definición

Se definen como obras de sustentación tipo "Suelo reforzado" aquéllas realizadas a base de familias de armaduras metálicas intercaladas entre capas de relleno granular seleccionado. Las armaduras se disponen horizontalmente, perpendicularmente a placas flexibles, formadas por elementos prefabricados de hormigón en masa o ligeramente armado, unidos entre sí de forma no rígida, que constituyen los paramentos exteriores de las obras de sustentación.

Dentro de los elementos metálicos para obras de suelo reforzado se encuentran incluidas las armaduras en todos los casos y los enganches de las armaduras en las placas de hormigón.

Las armaduras son flejes de acero de bajo contenido en carbono, galvanizados, obtenidos en general por el corte longitudinal en taller de chapa de las mismas características. Van provistas de uno, o dos, agujeros para tornillos, en un extremo, para establecer la unión con las placas de hormigón.

Los enganches son flejes de las mismas características y material que las armaduras, conformados en forma de U y que se introducen, dejando los extremos fuera, en las placas de hormigón para permitir el enganche de las armaduras. Llevan sus extremos igualmente agujereados.

Los enganches no serán doblados con radios menores de veinte (20) mm.

El acero de la chapa, o de los flejes, será del tipo A-37 en su grado "a" definido en la norma UNE 36080-73. Todas las características y condiciones exigidas se ajustarán a las indicadas en dicha Norma.

Condiciones generales.

El fabricante ha de garantizar que los elementos cumplan las características exigidas en el Proyecto

No se admitirá, salvo decisión expresa por parte de la Dirección de Obra, ninguna modificación de las cuantías, resistencias de los materiales, detalles o proceso constructivo definidos en Proyecto aunque podrá someterse, por parte del Contratista, a la aprobación de la Dirección de Obra, siempre que esté justificada técnicamente y no suponga menoscabo alguno en la calidad y durabilidad de la obra.

La justificación técnica y económica de estos elementos ha de ser aprobada por la D.O.

El director de las obras podrá ordenar la toma de muestras de materiales para su ensayo, y la Inspección de los procesos de fabricación, siempre que lo considere necesario.

2.- Condiciones del proceso de ejecución

A). Idoneidad de la empresa fabricadora

Los elementos prefabricados de hormigón serán fabricados por una empresa especializada en suministrar productos y servicios normalmente asociados con la construcción prefabricada estructural pesada, dotada de instalaciones fijas con reconocida experiencia en este tipo de prefabricados.

El fabricante debe evidenciar la realización de trabajos similares y comparables, y demostrar la capacidad de sus equipos técnico, de fabricación y de servicios, para la realización de los trabajos de acuerdo con las presentes especificaciones.

B). Condiciones generales

Con objeto de evitar asientos postconstructivos en los muros de suelo reforzado de apoyo de los estribos se realizarán las siguientes actuaciones:

- Realizar los muros con al menos 1 mes de antelación a la colocación de la losa
- Dejar inicialmente el relleno del trasdós del muro con su altura total (incluso la correspondiente al cargadero y canto de la losa). El material sobrante se eliminará justo antes de la colocación del cargadero.
- Emplear un relleno en el muro con características de suelo seleccionado, compactado al 105 % P.N.. y por el lado húmedo.
- Realizar un seguimiento de asientos en la cabecera de los muros entre su construcción y la colocación de la losa, la cual no se realizará si no se comprueba que se han estabilizado los asientos.

Se prohíbe el empleo de áridos que contengan piritas u otro tipo de sulfuros. Se emplearán áridos procedentes de roca caliza preferentemente.

***Limitación de tamaño:** El tamaño máximo del árido utilizado no excederá del menor de un medio del espesor mínimo de la pieza que se hormigona.*

Se admite que el 10% en peso del árido utilizado sea de tamaño superior al anteriormente citado.

***Almacenamiento:** Con el fin de evitar el empleo de áridos excesivamente calientes durante el verano, o saturados de humedad en invierno o en época de lluvia, se recomienda almacenarlos bajo techado, en recintos convenientemente protegidos y aislados.*

***Empleo de áridos calientes:** Cuando el hormigonado se realice en ambiente frío con riesgos de heladas, podrán utilizarse áridos previamente calentados. En estos casos se tendrá en cuenta lo establecido al hablar del empleo de agua caliente.*

***Información que debe suministrar el fabricante de las armaduras:** Cada rollo llevará una etiqueta en la que figurarán los datos siguientes:*

a) Nombre del fabricante.

b) Número del rollo.

c) Número de la colada.

d) Tensión y carga de rotura garantizada.

C). Materiales a emplear

En particular los materiales empleados en estos elementos son de aplicación las siguientes especificaciones que recogen básicamente las indicaciones de las Instrucciones EP-93 y EH-91.

Cemento

Cementos utilizables: *El conglomerante empleado en la fabricación de los elementos objeto de estas recomendaciones cumplirá las condiciones establecidas en el vigente "Pliego General de Condiciones para la Recepción de Conglomerantes Hidráulicos", y será necesariamente de la clase CEM I 42,52 UNE 80301:96. No se utilizarán mezclas de cemento de distintas procedencias ni, a ser posible, mezclas de distintas partidas, aunque sean de la misma procedencia.*

Suministro y almacenamiento: *El cemento no se empleará en fábrica a temperatura superior a setenta grados centígrados, salvo que se compruebe, mediante el ensayo correspondiente, que no tiene tendencia a experimentar el fenómeno de falso fraguado.*

El almacenamiento se llevará a cabo en silos, debidamente acondicionados, que aíslen el cemento de la humedad. Si el suministro se realiza en sacos se recibirá el cemento en los mismos envases cerrados en que fue pedido a origen y se almacenará en sitio ventilado y defendido, tanto de la intemperie como de la humedad del suelo y de las paredes.

Agua

Aguas utilizables*: Como norma general, podrán ser utilizadas, tanto para el amasado, como para el curado del hormigón todas las aguas que, empleadas en casos análogos, no hayan producido eflorescencias ni originado perturbaciones en el proceso de fraguado y endurecimiento de los hormigones con ellas fabricados.*

Expresamente se prohíbe el empleo de agua de mar.

Empleo de agua caliente*: Cuando el hormigonado se realice en ambiente frío, con riesgo de heladas podrá utilizarse para el amasado, sin necesidad de adoptar precaución especial alguna, agua calentada hasta una temperatura de 40º C.*

Cuando, excepcionalmente, se utilice agua calentada a temperatura superior a la antes indicada, se cuidará que el cemento, durante el amasado, no entre en contacto con ella mientras su temperatura sea superior a los 40º C.

Áridos

Normalmente se emplearán dos tipos de árido, arena y grava. Se entiende por "arena" o "árido fino", el árido o fracción del mismo que pasa por un tamiz de 5 mm. de luz de malla (tamiz 5 UNE 7 050) y por "grava" o "árido grueso" el que resulte retenido por dicho tamiz.

Condiciones generales: *La naturaleza de los áridos y su preparación serán tales que permitan garantizar la adecuada resistencia y durabilidad del hormigón. En elementos estructurales se exige que los áridos provengan del machaqueo de rocas.*

Además, el fabricante de las armaduras enviará las certificaciones del control realizado sobre aquella partida de su producción a la que pertenezca el lote enviado. En dicho certificado se mencionarán todas las probetas ensayadas, con indicación del número de colada y rollo de proveniencia, y se harán constar, para cada probeta, los resultados completos del ensayo.
Aditivos

Podrá autorizarse el empleo de todo tipo de aditivos siempre que se justifique que la sustancia agregada en las proporciones previstas y disuelta en agua, produce el efecto deseado sin perturbar las demás características del hormigón.
Armaduras pasivas

Todas las armaduras pasivas de las piezas prefabricadas presentarán un límite elástico característico igual o superior a 5100 Kg/cm^2.

Cumplirán lo especificado para ellas en la "Instrucción para el proyecto y la ejecución de obras de hormigón en masa o armado" (EH-91), para acero AEH-500-S.

El fabricante de las armaduras pasivas enviará al de los elementos prefabricados las certificaciones del control realizado sobre aquellas partidas de su producción a la que pertenece el lote enviado.

Se emplearán exclusivamente armaduras pasivas cuyo fabricante esté en posesión del sello CIETSID.

Las armaduras destinadas a ser soldadas a chapas serán de acero natural y sufrirán las pruebas de actitud para soldeo fijadas en las normas EH-91.

Condiciones de transporte y almacenamiento: *Los alambres o cables suministrados, ya sea en forma de rollos, carretes o cortados a medida, deberán ser convenientemente protegidos de la humedad durante el transporte. Los locales de almacenamiento de los mismos, deberán estar secos, bien ventilados y exentos de polvo y/o atmósferas corrosivas.*

Se evitará en lo posible el contacto directo de las armaduras con el suelo.

Igual trato deberá darse a las partidas de armaduras pasivas.

D). Instalaciones de fabricación

Locales y almacenes

Condiciones generales: *El almacenamiento de materias primas se organizará de tal manera que no quepan confusiones entre partidas controladas y pendientes de control.*

Almacén de cemento: *Se deberá disponer de silos adecuados para almacenar el cemento a granel o locales cubiertos donde se almacene el cemento en las condiciones estipuladas en el apartado correspondiente del presente texto.*

Almacén de áridos: *Es conveniente almacenar los áridos bajo cobertizos que los defiendan de la intemperie, especialmente cuando no se corrija, diariamente, la dosificación del agua de amasado, con arreglo a los resultados obtenidos en el ensayo de determinación de la cantidad de agua contenida en los áridos.*

Almacén de aceros: *En el recinto de almacenamiento y en sus proximidades se prohíbe la realización de operaciones de soldadura o análogas, que pudieran afectar por calentamiento, a las características de los aceros.*

Naves de hormigonado y moldeo: *Se exige que las instalaciones de hormigonado y moldeo se*

encuentren protegidas de la intemperie.

Instalación de dosificación

Instalación de dosificación: *La instalación de dosificación que debe existir siempre, para la preparación de las mezclas destinadas a la fabricación del hormigón, suministrará las cantidades necesarias de cada material con una tolerancia máxima en peso, del 2%.*

Comprobación de los aparatos de medida: *Al menos semanalmente se comprobará que no se han descorregido los aparatos de medida utilizados para dosificar los diversos componentes. Estas comprobaciones deberán intensificarse si se observan anomalías en las resistencias de los hormigones obtenidos.*

Aparatos para el amasado

Máquinas de amasado: *El amasado se efectuará en máquinas adecuadas que proporcionen un mezclado íntimo de la masa, lo más homogéneo posible. La homogeneidad de la masa deberá mantenerse a lo largo de la descarga de la amasadora.*

Instalaciones de curado

Condiciones que deben cumplir: *Se deberá prever las instalaciones necesarias para el curado de los elementos, con objeto de que éstos alcancen, en los plazos previstos las oportunas características resistentes.*

E). Proceso de fabricación

Estado de la superficie de las armaduras: *Las armaduras se colocarán limpias de grasa, óxido no adherido, o de cualquier otra sustancia que pueda perjudicar su adherencia, debiendo rechazarse todas aquellas en las que se aprecien síntomas de corrosión.*

En particular se prohíbe el uso de alambres que presenten jaboncillo de trefilación en su superficie, a menos que utilice un método eficaz de limpieza antes de su colocación.

No se colocarán armaduras en cuya superficie aparezcan defectos de trefilado, tales como rayas longitudinales o grietas transversales.

Serán de aplicación las prescripciones de la Instrucción EP-93.

Colocación de armaduras pasivas

Las armaduras pasivas, sin pretensar, se colocarán cumpliendo las prescripciones de la Instrucción EH-91. Dejando, en las zonas a rellenar "in situ", la armadura saliente necesaria para el solapado por soldaduras que habrá de realizarse "in situ" al disponer la correspondiente armadura.

Hormigonado

Las clase de hormigón a utilizar se especifican en los planos.

Métodos de dosificación: *La dosificación de los distintos materiales que componen el hormigón se hará preferiblemente en peso, admitiéndose también procedimientos automáticos en volumen, siempre que se cumplan las condiciones prescritas en el apartado correspondiente de la norma EH-91.*

Precauciones que deben adoptarse para el amasado: *Antes de iniciar el amasado con una nueva partida de conglomerante, y al finalizar la jornada, deberá limpiarse perfectamente la mezcladora.*

Precauciones que deben adoptarse en el caso de temperaturas extremas: *Se adoptarán las precauciones necesarias para evitar que la temperatura de los moldes, por soleamiento u otras causas, sea excesiva en el momento de proceder a su llenado.*

Cuando el hormigonado se realice en ambiente frío, con riesgo de heladas, con objeto de favorecer el proceso de fraguado y endurecimiento del hormigón, podrá recurrirse al calentamiento del agua y/o de los áridos.
Defectos del hormigón fresco: *No se permitirá la colocación de masas frescas que acusen un principio de fraguado o disgregación de sus componentes.*

Antiadherentes para los moldes: *Se recomienda, para facilitar el desmoldeo, pintar los moldes con barnices antiadherentes compuestos de siliconas o preparados a base de aceites solubles en el agua, o grasa diluida, evitando el uso del gasoil, grasa corriente o cualquier otro producto análogo.*

Vibrado

Obligatoriedad del vibrado: *La consolidación del hormigón se hará utilizando vibradores. Entre ellos se consideran incluidas las mesas vibratorias y las baterías con vibración de todo el conjunto.*

Condiciones de vibrado: *Salvo aprobación expresa de la D. Facultativa la vibración será siempre externa aplicada sobre el molde metálico. La vibración interna o de superficie será siempre de complemento de la externa.*

Vibradores internos: *Cuando se utilicen vibradores internos deberán aplicarse introduciéndolos verticalmente en la masa, con movimiento lento, a una velocidad del orden de 8 cm./segundo y sin que la aguja sufra movimientos horizontales de traslación. En ningún caso deberán vibrarse espesores de hormigón superiores a la longitud de la aguja.*

Vibradores de superficie: *Cuando se emplean vibradores de superficie (bandeja o patín), éstos se aplicarán también con movimiento lento hasta conseguir, en toda la superficie, una humectación brillante.*

Duración del vibrado: *En todo caso, la duración e intensidad del vibrado será la suficiente para que, con su efecto, se consiga una humectación brillante de la superficie.*

Con el fin de evitar la separación de los componentes del hormigón, o disgregación de la masa, la operación de vibrado no deberá prolongarse excesivamente.
Curado

Curado inicial: *Se recomienda que, a partir de las primeras horas después del hormigonado, se recubra la cara superior de las piezas con arpilleras humedecidas que no sean de esparto. Pasadas 24 horas se procederá a regar las piezas para impedir la evaporación.*

Curado al vapor: *Puede comenzarse este proceso a las dos horas de vibrada la masa, elevándose la temperatura, a partir de este momento, de forma gradual hasta alcanzar la temperatura límite. Esta temperatura límite podrá mantenerse constante durante cierto tiempo, finalizado el cual se hará descender la temperatura, de forma continua, hasta llegar a la temperatura ambiente.*

La presión del vapor será lo más uniforme posible en todos los puntos, y los orificios para la salida de los chorros de vapor estarán suficientemente próximos unos a otros, con el fin de conseguir una temperatura constante a lo largo de la pieza. Es imprescindible que la atmósfera del recinto curado se mantenga, en todo momento, saturada de humedad.

Curado por calor: *Se aconseja el curado por calor, si las temperaturas alcanzadas son aceptables y las piezas se mantienen recubiertas y en ambiente húmedo, con el fin de impedir la desecación de las mismas. Los procesos más indicados son a base de agua o aceite caliente.*

3.- Medición y abono

- M^2 muro de suelo reforzado de hasta 14 m de altura. Precio: A402N003.

  El precio incluye el suministro del elemento completo, montaje con maquinaria adecuada y medios auxiliares para la correcta y total ejecución de la unidad, incluso los materiales y trabajos de terminación necesarios para su integración en la obra.

  También incluye todos los transportes y permisos necesarios, no siendo de abono los elementos que presenten defectos o irregularidades como las citadas anteriormente.

4.- Normativa de obligado cumplimiento

PG 3/75 "Pliego de Prescripciones Técnicas Generales para Obra de Carreteras y Puentes. Con las modificaciones aprobadas por las Ordenes del MOPTMA: O.M. del 31.7.86 (BOE nº 213 del 5.9), O.M. del 21.1.88 (BOE nº 29 del 3.2), O.M. del 8.5.89 (BOE nº 118 del 18.5) y O.M. del 28.8.89 (BOE nº 242 del 9.10)".

G403/A403 HORMIGONADO DE ESTRUCTURAS Y OBRAS DE FÁBRICA

1.- Definición y condiciones generales

Definición:

Ejecución del hormigonado en estructuras de hormigón en masa, armado o pretensado, comprendiendo las operaciones de vertido de hormigón para rellenar cualquier estructura, cimiento, muro, losa, etc., en la cual el hormigón quede contenido por el terreno y/o por encofrados.

La ejecución de la unidad de obra incluye las operaciones siguientes:

- Suministro del hormigón
- Comprobación de la plasticidad del hormigón
- Preparación de los juntas de hormigonado con los materiales que se hayan de utilizar.
- Vertido y compactación del hormigón.
- Curado del hormigón

Se entiende por hormigón la mezcla de cemento, agua, árido grueso, árido fino y, eventualmente, productos de adición, que al fraguar y endurecer adquiere la resistencia deseada.

Condiciones generales:

Materiales

- Cemento

  En vigas y elementos pretensados se usará cemento tipo CEM II-42,5 o II-42,5R. En zapatas, pilotes, cimientos y, en general, elementos enterrados se utilizará cemento puzolánico CEM-32,5. Los restantes hormigones se realizarán con cemento II-35 o II-35A. En todos los elementos en contacto con el suelo o agua se emplearán cementos sulforresistentes.

- Agua

  Si el hormigonado se realizara en ambiente frío, con riesgo de heladas, podrá utilizarse para el amasado, sin necesidad de adoptar precaución especial alguna, agua calentada hasta una temperatura de cuarenta grados centígrados (40º C).

- Aditivos

  Podrá autorizarse el empleo de todo tipo de aditivos siempre que se justifique, al Director de la Obra, que la sustancia agregada en las proporciones previstas produce el efecto deseado sin perturbar las demás características del hormigón.

  En los hormigones destinados a la fabricación de elementos pretensados no podrán utilizarse, como aditivos, el cloruro cálcico, cualquier otro tipo de cloruro ni, en general, acelerantes en cuya composición intervengan dichos cloruros u otros compuestos químicos que puedan ocasionar o favorecer la corrosión de las armaduras.

Tipos de hormigón

De acuerdo con su resistencia característica y empleo se establecen los siguientes tipos de hormigones:

Tipo	Resistencia característica Clase (kg/cm^2)	Empleo	
H-150	150	En masa	Rellenos. Regularización y limpieza de cimientos. Capas de nivelación.
H-200	200	En masa	Soleras, rellenos, encauzamientos, cimientos de pequeñas obras de fábrica, protección de tubos de hormigón y de taludes de estructuras, cunetas revestidas, arquetas, pozos, rasanteo de tableros, hitos y cimentación de señales, valla de cerramiento, aceras.
			Alzados y bóvedas de pequeñas obras de fábrica. Cimientos de barreras de seguridad. Bordillos prefabricados.
H-250	250	Armado	Cimentaciones, pilotes, pantallas y encepados.
			Marcos, estribos, embocaduras, aletas y muros.
			Losas de compresión y aceras de estructuras. Impostas y defensas rígidas.
H-300	300	Armado	Alzados de pilas, cabeceros y riostras. Tableros armados.
H-400	400	Pretensado	Tableros "in situ" para pretensar.
H-450	450	Pretensado	Vigas prefabricadas.

Dosificación del Hormigón

La dosificación de los diferentes materiales destinados a la fabricación del hormigón se hará siempre por peso.

Para establecer las dosificaciones se deberá recurrir a ensayos previos de laboratorio, con objeto de conseguir que el hormigón resultante satisfaga las condiciones exigidas.

Las operaciones a realizar para la determinación de estas cuantías serán las siguientes:

a) Áridos.- Con muestras representativas de los áridos que vayan a ser empleados en el hormigón se harán las siguientes operaciones:

1. Se calculará su curva granulométrica.
2. Se procederá a dividirlos en tamaños según los siguientes tipos:
   - Tipo I. Áridos con tamaños comprendidos entre cinco milímetros (5 mm) y dos centímetros (2,00 cm).
   - Tipo II. Áridos con tamaños comprendidos entre dos centímetros (2,00 cm) y cuatro centímetros (4,00 cm).
   - Tipo III. Áridos con tamaños comprendidos entre cuatro centímetros (4 cm) y seis centímetros (6,00 cm).
3. Se mezclarán diversas proporciones de los distintos tipos de áridos que entran en cada tipo de hormigón, para obtener, por tanteos, las preparaciones de cada uno de ellos que den la máxima compacidad a la mezcla.
   Con el fin de facilitar los tanteos se puede empezar con las proporciones, cuya curva granulométrica resultante se ajuste mejor a la curva de Fuller.
4. Con los resultados obtenidos se fijarán las proporciones de los distintos tipos de áridos que deben entrar a formar parte de cada hormigón y se tomará la curva granulométrica empleada como curva "inicial".

b) Agua cemento.

Su proporción exacta se determinará mediante la ejecución de diversas masas de hormigón de prueba y se elegirá aquella que proporcione a éste la máxima resistencia especificada sin perjudicar su facilidad de puesta en obra. Se ejecutarán con ellas probetas de hormigón de las que se estudiarán las curvas de endurecimiento en función de la variación de sus componentes. Es aconsejable, dentro de los criterios señalados, reducir lo mas posible la cantidad de agua, lo cual puede obligar al uso de plastificantes para facilitar la puesta en obra del hormigón. Estos se ensayarán en las masas de prueba para asegurar que no alteren las demás condiciones del hormigón. Se prohíbe la utilización de aditivos que contengan cloruro cálcico y en general aquellos en cuya composición intervengan cloruros, sulfuros, sulfitos u otros productos químicos que pueden ocasionar o favorecer la corrosión de las armaduras. Antes de hacer el hormigonado definitivo se deberán realizar ensayos adicionales que reproduzcan lo mas fielmente posible las condiciones de puesta en obra: empleo de aditivos, amasadas, condiciones de transporte y vertido.

Como resultado de los ensayos previos y característicos se elaborará un dossier que defina perfectamente las características fundamentales de cada hormigón. En particular, se deberán recoger los siguientes datos:

- Nombre del fabricante.
- Tipo y ubicación de la planta.
- Procedencia y tipo de cemento.
- Procedencia y tipo de los áridos.
- Tamaño máximo de áridos.
- Huso granulométrico de cada fracción de áridos y de la dosificación conjunta.
- Tipo y cantidad de las adiciones, si existen.
- Tipo y cantidad de los aditivos. En particular, caso de usarse fluidificante o superfluidificante, o cualquier otro producto similar, se definirán las cantidades a añadir en central y en obra, con su rango de tolerancias.
- Relación agua/cemento.
- Tiempo máximo de uso del hormigón fresco.

La central deberá disponer de control de humedad de los áridos, de forma que se compense para mantener la relación agua canto de la dosificación establecida.

2.- Condiciones del proceso de ejecución

Hormigonado

El contratista ha de presentar al inicio de los trabajos un plan de hormigonado para cada estructura, que ha de ser aprobado por la D.O.

El plan de hormigonado consiste en la explicitación de la forma, medios y proceso que el contratista ha de seguir para la buena colocación del hormigón.

En el plan ha de constar:

- Descomposición de la obra en unidades de hormigonado, indicando el volumen de hormigón a utilizar en cada unidad.

- Forma de tratamiento de las juntas de hormigonado.
  Para cada unidad ha de constar:

- Sistema de hormigonado (mediante bomba, con grúa y cubilote, canaleta, vertido directo,...).

- Características de los medios mecánicos.

- Personal.

- Vibradores (características y nombre de éstos, indicando los de recambio por posible avería).

- Secuencia de relleno de los moldes.

- Medios por evitar defectos de hormigonado por efecto del movimiento de las persones (pasarelas, andamios, tablones u otros).

- Medidas que garanticen la seguridad de los operarios y personal de control.

- Sistema de curado del hormigón.

No se ha de hormigonar sin la conformidad de la D.O., un vez haya revisado la posición de las armaduras y demás elementos ya colocados, el encofrado, la limpieza de fondos y costeros, y haya aprobado la dosificación, método de transporte y puesta en obra del hormigón.
La compactación se ha de hacer por vibrado.

El vibrado ha de hacerse más intenso en las zonas de alta densidad de armaduras, en las esquinas y en los paramentos.

Curado

Durante el fraguado y hasta conseguir el 70% de la resistencia prevista, se han de mantener húmedas las superficies del hormigón. Este proceso ha de ser como mínimo de:

- 7 días en tiempo húmedo y condiciones normales

- 15 días en tiempo caluroso y seco, o cuando la superficie del elemento esté en contacto con aguas o filtraciones agresivas

El curado con agua no se ha de ejecutar con riegos esporádicos del hormigón, sino que se ha de garantizar la constante humedad del elemento con recintos que mantengan una lámina de agua, materiales tipo arpillera o geotextil permanentemente empapados con agua, sistema de riego continuo o cubrición completa mediante plásticos.

En el caso de que se utilicen productos filmógenos, autorizados por la D.O., se han de cumplir las especificaciones de su pliego de condiciones.

Durante el fraguado se han de evitar sobrecargas y vibraciones que puedan provocar la fisuración del elemento.

En todas las unidades de obra donde se utilice cemento puzolánico se cuidará especialmente el curado de los hormigones, atendiendo a evitar la desecación de los mismos durante el periodo de endurecimiento, para lo cual se tomarán las medidas oportunas en cada caso.
Control de calidad

En los planos se indica el tipo de control que debe realizarse en cada elemento de obra.
Para hormigones de resistencia característica mayor de doscientos cincuenta kilopondios por centímetro cuadrado (> 250 kp/cm^2) será preceptivo la realización de los ensayos previos y característicos del hormigón según EH-91 (artc. 67 y 68) y EP-93 (artc. 64 y 65), que permitan establecer la dosificación necesaria para la resistencia requerida.

En los hormigones de resistencia mayor a igual a trescientos cincuenta kilopondios por centímetro cuadrado (≥ 350 kp/cm^2) los ensayos previos y característicos incluirán además de la resistencia, estudios del módulo de deformación, realizándose un mínimo de 3 ensayos a 28 días para los previos y 3 a cada edad de 3, 7, 9, 14, 28 y 90 días (total 18) para los característicos. Además, al inicio de la Dirección de las Obras podrán realizarse ensayos de fluencia y retracción.

En cuanto a la toma de muestras y fabricación de probetas de hormigón fresco queda prohibido el uso de morteros de azufre para refrentado de las probetas.

Cuando la resistencia característica estimada sea inferior a la resistencia característica prescrita, se procederá conforme se prescribe en el Apartado 69.4 de la EH-91.

En caso de resultados desfavorables en los ensayos de información, podrá el Director de las Obras ordenar pruebas de carga, por cuenta del Contratista, antes de decidir la demolición o aceptación.

Si decidiera la aceptación, quedará a juicio del Director de las Obras una penalización consistente en la reducción del precio de abono en porcentaje doble de la disminución de resistencia del hormigón.

Cualquier reparación necesaria del elemento será realizada sin percibir el Contratista ningún abono por ello.

3.- Medición y abono

Se medirá el volumen de hormigón según los Planos del Proyecto y con aquellas modificaciones y singularidades aceptadas previamente y expresamente por la D.O.

La medición es realizará por tipo de hormigón y lugar de colocación, según las distintas unidades que se hayan definido en el Proyecto

El hormigón utilizado en rellenos se medirá por diferencia entre los estados anterior y

posterior a la ejecución de las obras, entendiendo el estado anterior como el correspondiente a los mediciones utilizados para el abono de la excavación.

Los precios incluyen el suministro, manipulación y colocación de todos los materiales necesarios, maquinaria, equipos de vertido, mano de obra, compactación, tratamientos superficiales, formación de juntas, curado y limpieza total.

También incluyen la obtención de la fórmula de trabajo y los ensayos necesarios.

No incluyen las armaduras y el encofrado.

Cuando sea necesario el empleo de cemento resistente a aguas agresivas, según instrucciones del Proyecto o de la D.O., el precio del m^3 de hormigón incluye este tipo de cemento.

No son objeto de medición el hormigón o mortero empleado en las nivelaciones de aparatos de apoyo de las estructuras.

Precios de aplicación:

- M^3 hormigones en masa H-200 en cimientos, soleras y pequeñas obras de fábrica. Precio G4030002.
- M^3 hormigón para armar H-250 en cimentaciones, pilote, pantallas y encepados. Precio G4030003.
- M^3 hormigón para armar H-250 en marcos, losas, muros y estribos. Precio: G4030004.
- M^3 hormigón para armar H-300 en alzados de pilas, cabeceros y tableros. Precio: G4030005.
- M^3 hormigón para pretensar H-400 en vigas y tableros. Precio G4030006.
- M^3 hormigón en masa H-125 en capa de nivelación, rellenos y limpieza. Precio: A4030001.
- M^3 hormigón en masa H-150 en alzados. Precio: A4030002.
- M^3 hormigón para armar H-200 en alzados. Precio: A4030003.

4.- Normativa de obligado cumplimiento

Normativa general:

EH-91 "Instrucción para el Proyecto y la Ejecución de Obras de Hormigón en Masa o Armado."

PG 3/75 "Pliego de Prescripciones Técnicas Generales para Obras de Carreteras y Puentes."

Con las enmiendas aprobadas por las Órdenes del MOPTMA: O.M. del 31.7.86 (BOE núm. 213 del 5.9), O.M. del 21.1.88 (BOE núm. 29 del 3.2), O.M. del 8.5.89 (BOE núm. 118 del 18.5) y O.M. del 28.9.89 (BOE núm. 242 del 9.10).

Estructuras pretensadas:

EP-93 “Instrucción para el Proyecto y la Ejecución de Obras de Hormigón Pretensado”.

G404/A404 ENCOFRADOS EN ESTRUCTURAS Y OBRAS DE FÁBRICA

1.- Definición y condiciones generales

Definición:

Elementos destinados al moldeo de los hormigones en las estructuras y obras de fábrica.

La ejecución de la unidad de obra comprende las operaciones siguientes:

- Montaje del encofrado, con preparación de superficie de apoyo, si es preciso
- Preparado de las superficies interiores del encofrado con desencofrante
- Tapado de juntas entre piezas
- Apuntalamiento del encofrado
- Desmontaje y retirada del encofrado y todo el material auxiliar, un vez la pieza estructural esté en disposición de soportar los esfuerzos previstos

Condiciones generales:

Los elementos que forman el encofrado y sus uniones han de ser suficientemente rígidos y resistentes para soportar, sin deformaciones superiores a las admisibles, las acciones estáticas y dinámicas que comporta su hormigonado. Adoptarán las formas, planas o curvas, de los elementos a hormigonar, de acuerdo con lo indicado en los Planos.

Cuando el acabado superficial es para dejar el hormigón visto:

- Las superficies del encofrado en contacto con las caras que han de quedar vistas, han de ser lisas, sin rebabas ni irregularidades.
- Se debe conseguir, mediante la colocación de angulares en las aristas exteriores del encofrado o cualquier otro procedimiento eficaz, que las aristas vivas del hormigón resulten bien acabadas.

En general, las superficies interiores habrán de ser suficientemente uniformes y lisas para conseguir que los paramentos de hormigón no presenten defectos, abombamientos, resaltes o rebabas de más de 5 milímetros. No se aceptarán en los aplomos y alineaciones errores mayores de un centímetro (1 cm).

Los encofrados de madera estarán formados por tablas, bien montadas "in situ" o bien formando paneles, si éstos dan una calidad análoga a la tarima hecha "in situ". Deberán ser desecadas al aire, sin presentar signos de putrefacción, carcoma o ataque de hongos.

Antes de proceder al vertido del hormigón se regarán suficientemente para evitar la absorción de agua contenida en el hormigón, y se limpiarán, especialmente los fondos, dejándose aberturas provisionales para facilitar esta labor.

En los encofrados metálicos se deberá cuidar que estén suficientemente arriostrados para impedir movimientos relativos entre distintos paneles de un elemento, que puedan ocasionar variaciones en los recubrimientos de las armaduras o desajustes en los espesores de paredes de las piezas a construir con los mismos.

Los enlaces entre los distintos elementos o paños de los moldes serán sólidos y sencillos, de modo que su montaje y desmontaje se realice con facilidad, sin requerir golpes ni tirones. Los moldes ya usados que hayan de servir para unidades repetidas serán cuidadosamente rectificados y limpiados antes de cada empleo.

2.- Condiciones del proceso de ejecución

Los encofrados, con sus ensambles, soportes o cimbras, tendrán la rigidez y resistencias necesarias para soportar el hormigonado sin movimientos de conjunto superiores a la milésima de la luz.

Los apoyos estarán dispuestos de modo que en ningún momento se produzcan sobre la parte de obra ya ejecutada esfuerzos superiores al tercio de su resistencia.

El Ingeniero Director podrá exigir del Constructor los croquis y cálculos de los encofrados y cimbras que aseguren el cumplimiento de estas condiciones.

El sistema de encofrado para pilas de viaductos y pasos superiores deberá ser previamente aprobado por la D.O.

Tanto las superficies de los encofrados, como los productos que a ellas se puedan aplicar, no deberán contener sustancias perjudiciales para el hormigón.

En el caso de hormigón pretensado, se pondrá especial cuidado en la rigidez de los encofrados junto a las zonas de anclaje, para que los ejes de los tendones sean exactamente normales a los anclajes.

Los encofrados de fondo de los elementos rectos o planos de más de seis metros (6 m) de luz libre, se dispondrán con la contraflecha necesaria para que, una vez desencofrado y cargado el elemento, éste conserve una ligera concavidad en el intradós.

Las juntas del encofrado no dejarán rendijas de más de dos milímetros (2 mm) para evitar la pérdida de lechada; pero deberán dejar el hueco necesario para evitar que por efecto de la humedad durante el hormigonado o durante el curado se compriman y deformen los tableros.

En el caso de las juntas verticales de construcción el cierre frontal de la misma se hará mediante un encofrado provisto de todos los taladros necesarios para el paso de las armaduras activas y pasivas.

El desencofrado deberá realizarse tan pronto como sea posible, sin peligro para el hormigón, y siempre informando al Director de las Obras.

Los productos utilizados para facilitar el desencofrado deberán estar aprobados por el Director de las Obras, sin que ello exima al Contratista de su responsabilidad.

Los dispositivos empleados para el anclaje del encofrado habrán de ser retirados inmediatamente después de efectuado el desencofrado.

Los alambres y anclajes del encofrado que no puedan quitarse fácilmente (será permitido únicamente en casos excepcionales y con la autorización del Director de las Obras) habrán de cortarse a golpe de cincel. No está permitido el empleo de soplete para cortar los salientes de los anclajes. Los agujeros de anclaje habrán de cincelarse limpiamente, o prever conos de material plástico o blando, que una vez efectuado el desencofrado, puedan quitarse fácilmente. Dichos agujeros se rellenarán con hormigón del mismo color que el empleado en la obra de fábrica. Es

imprescindible, en todo caso, disponer los anclajes en líneas y equidistantes. Allí donde sea posible se emplearán apuntalamientos exteriores.

3.- Medición y abono

Se medirá la superficie según los Planos del Proyecto y que se encuentre en contacto con el hormigón:

- M^2 encofrado en paramentos ocultos. Precio: G4040001.
- M^2 encofrado en paramentos vistos. Precio: G4040002.
- M^2 encofrado curvo visto. Precio: A4040001.
- M^2 encofrado curvo oculto. Precio A4040002.

Incluyen los materiales de encofrado y su amortización, el desencofrante, el montaje y desmontaje del encofrado, los apuntalamientos previos, así como la recogida, limpieza y acondicionado de los elementos utilizados, y todos los transportes necesarios tanto para su utilización como para su almacenaje.

En caso de existencia de huecos, estos se han de deducir según los criterios que fije el Proyecto.

Los precios incluyen todas las operaciones necesarias para materializar formas especiales como berenjenos, cajetines remates singulares definidos en los planos, etc., así como la colocación y anclajes de latiguillos y otros medios auxiliares.

También incluyen los precios el material y colocación de puntales, cimbras o cualquier otro tipo de estructura auxiliar necesaria para los correctos aplomo, nivelación y rasanteo de superficies. El cimbrado será objeto de abono independiente, según el Artículo correspondiente del presente Pliego, únicamente para alturas superiores a cuatro (4) metros.

4.- Normativa de obligado cumplimiento

EH-91 "Instrucción para el Proyecto y la Ejecución de Obras de Hormigón en Masa o Armado."

PG 3/75 "Pliego de Prescripciones Técnicas Generales para Obras de Carreteras y Puentes." con las enmiendas aprobadas por las Órdenes del MOPTMA: O.M. del 31.7.86 (BOE núm. 213 del 5.9), O.M. del 21.1.88 (BOE núm. 29 del 3.2), O.M. del 8.5.89 (BOE núm. 118 del 18.5) y O.M. del 28.9.89 (BOE núm. 242 del 9.10).

EP-93 "Instrucción para el proyecto y la ejecución de obras de hormigón pretensado."

G407 CIMBRAS PARA ENCOFRADOS DE LOSAS Y TABLEROS EN PUENTES

1. Definición y condiciones generales

Definición:

Se define como cimbra la estructura provisional que tiene por objeto sustentar el peso propio de los encofrados y del hormigón fresco y las sobrecargas de construcción, ajustándose a la forma principal de la estructura, hasta que el proceso de endurecimiento del hormigón se haya desarrollado de forma tal que la estructura descimbrada sea capaz de resistir por si misma las citadas acciones. También quedan incluidas en la definición las cimbras que actúen directamente de encofrados.

La ejecución de la unidad de obra comprende las operaciones siguientes:

- Proyecto de la cimbra y cálculos de su capacidad portante
- Preparación y ejecución del cimiento de la cimbra
- Montaje de apuntalamientos y cimbras
- Pintado de las superficies interiores del encofrado, con un producto desencofrante, cuando la cimbra actúe de encofrado
- Tapado de las juntas entre piezas, en su caso
- Nivelación de la cimbra
- Pruebas de carga de apuntalamientos y cimbras, cuando proceda
- Descimbrado y retirada de todos los elementos de la cimbra y de los elementos de cimiento que puedan perjudicar al resto de la obra

Condiciones generales:

El proyecto de la cimbra ha de especificar la naturaleza, características, dimensiones y capacidad resistente de cada un de sus elementos y del conjunto.

La D.O. ha de aprobar el proyecto de la cimbra.

Los elementos que forman la cimbra han de ser suficientemente rígidos y resistentes para soportar, sin deformaciones superioras a las admisibles, las acciones estáticas y dinámicas que comporta el hormigonado.

En las obras de hormigón pretensado, la disposición de la cimbra ha de permitir las deformaciones que se derivan del tesado de las armaduras activas y ha de resistir la subsiguiente redistribución del peso propio del elemento hormigonado.

Cuando la estructura de la cimbra sea metálica, sus diferentes elementos han de estar sujetos con tornillos o bien soldados.

Las presiones transmitidas al terreno no han de producir asentamientos perjudiciales para el sistema de hormigonado previsto.

Los arriostrados han de tener la menor rigidez posible, compatible con la estabilidad de la cimbra, y se han de retirar los que se puedan antes del tesado de las armaduras, si la estructura se ha de pretensar.

La cimbra ha de tener una carrera suficiente para poder realizar las operaciones del descimbrado.

Tolerancias de deformaciones para el hormigonado:

- Movimientos locales de la cimbra .....<= 5 mm
- Movimientos del conjunto (L=luz) .....<= L/1000

2- Condiciones del proceso de ejecución

Si la estructura puede ser afectada por una corriente fluvial, se han de tomar las precauciones necesarias contra las avenidas.

El montaje de la cimbra se ha de efectuar por personal especializado. Una vez montada la cimbra, se ha de comprobar que los puntos de apoyo del encofrado de la cara inferior de la estructura se ajustan en cota a los cálculos con las tolerancias establecidas.

La D.O. puede ordenar, si lo considera necesario, una prueba de carga de la cimbra hasta un 20% superior al peso que habrá de soportar.

Las pruebas de sobrecarga de la cimbra se han de efectuar de manera uniforme y pausada. Se ha de observar el comportamiento general de la cimbra siguiendo sus deformaciones.

El descimbrado se hará de forma suave y uniforme sin producir golpes ni sacudidas.

No se ha de descimbrar sin la autorización de la D.O.

En los elementos que se hayan de hormigonar a contraflecha, se ha de tener en cuenta ésta en la ejecución de la cimbra.

El desmontaje se ha de efectuar de conformidad con el programa previsto en el Proyecto

Si no lo contraindica el sistema estático de la estructura, el descenso de la cimbra se ha de empezar para el centro del tramo y continuar hacia a los extremos.

El orden, el recorrido del descenso de los apoyos en cada fase del descimbrado, la forma de ejecución y los medios a utilizar en cada caso, se han de ajustar a lo indicado por la D.O.

No se ha de descimbrar hasta que el hormigón haya adquirido la resistencia adecuada. Para conocer el momento de desenganchado de la cimbra se han de realizar los ensayos informativos correspondientes sobre probetas de hormigón.

Cuando los elementos sean de cierta importancia, al descimbrar la cimbra es recomendable utilizar cuñas, cajas de arena, gatos u otros dispositivos similares.

Si la estructura es de cierta importancia y cuando la D.O. lo estime conveniente las cimbras se han de mantener despegadas dos o tres centímetros durante 12 horas, antes de retirarlas completamente.

En el caso de elementos pretensados, el proceso de desmontaje de la cimbra ha de tener en cuenta el tesado del elemento, evitando que la estructura queda sometida, aunque sólo sea temporalmente, a tensiones perjudiciales no previstas.

3.- Medición y abono

- M^3 cimbra. Precio: G4070001.

Este criterio incluye la amortización o alquiler de la cimbra y todas las unidades descritas en la unidad de obra o que aparezcan en su descomposición.

La unidad incluye el proyecto de apuntalamientos y cimbras, preparaciones y ejecución de su cimiento, pruebas de carga, transportes, nivelación y todos los materiales, operaciones y medios auxiliares necesarios para su construcción, montaje y retirada.

La unidad no será de abono independiente cuando la altura de la cimbra sea inferior a cuatro metros (4 m). En este caso se considerará incluida en la unidad correspondiente a los encofrados.

4.- Normativa de obligado cumplimiento

EH-91 "Instrucción para el Proyecto y la Ejecución de Obras de Hormigón en Masa o Armado."

PG 3/75 "Pliego de Prescripciones Técnicas Generales para Obras de Carreteras y Puentes." con las enmiendas aprobadas por las Órdenes del MOPTMA: O.M. del 31.7.86 (BOE núm. 213 del 5.9), O.M. del 21.1.88 (BOE núm. 29 del 3.2), O.M. del 8.5.89 (BOE núm. 118 del 18.5) y O.M. del 28.9.89 (BOE núm. 242 del 9.10).

EP-93 "Instrucción para el proyecto y la ejecución de obras de hormigón pretensado."

G408 ARMADURAS PASIVAS

1.- Definición y condiciones generales

Definición:

Se definen como armaduras pasivas las utilizadas para armar el hormigón, formadas por barras de acero corrugadas y/o mallas electrosoldadas, cumpliendo lo especificado en el Pliego PG-3 y la Instrucción EH-91.

La ejecución de la unidad de obra incluye las operaciones siguientes:

- Despiece de las armaduras
- Cortado y doblado de las armaduras
- Colocación de separadores
- Colocación de las armaduras
- Atado o soldado de las armaduras, en su caso

Condiciones generales:

Las armaduras se ajustarán al tipo de acero indicado en los planos del Proyecto.

La composición del acero debe de cumplir lo especificado en los Artículos 240, 241 y 242 del PG-3, el Contratista deberá aportar certificados del suministrador de cada partida que llegue a obra, en los que se garanticen las características del material.

Para el transporte de barras de diámetros hasta diez (10) milímetros, podrán utilizarse rollos de un diámetro mínimo interior igual a cincuenta (50) veces el diámetro de la barra.
Las barras de diámetros superiores, se suministrarán sin curvatura alguna, o bien dobladas ya en forma precisa para su colocación.

Para la puesta en obra, la forma y dimensiones de las armaduras serán las señaladas en los Planos. Cuando en éstos no aparezcan especificados los empalmes o solapes de algunas barras, su distribución se hará de forma que el número de empalmes o solapes sea mínimo, debiendo el Contratista, en cualquier caso, realizar y entregar al Director de las obras los correspondientes esquemas de despiece.

Se almacenarán de forma que no estén expuestas a una oxidación excesiva, separados del suelo y de forma que no se manchen de grasa, ligante, aceite o cualquier otro producto que pueda perjudicar la adherencia de las barras al hormigón.

El doblado se realizará según lo especificado en el Artículo 600 del PG-3, así como en la EH-91.

2.- Condiciones del proceso de ejecución

El contratista ha de presentar a la D.O. para su aprobación, y con suficiente antelación, una propuesta de despiece de las armaduras de todos los elementos a hormigonar.

El despiece ha de contener la forma y medidas exactas de las armaduras definidas en el Proyecto

Ha de indicar claramente el lugar donde se producen los empalmes y el número y longitud de éstos.

Ha de detallar y despiezar todas las armaduras auxiliares.

Todas y cada una de las figuras han de estar numeradas en la hoja de despiece, en correspondencia con el Proyecto

En la hoja de despiece han de ser expresados los pesos totales de cada figura.

Las armaduras se colocarán limpias y exentas de toda suciedad y óxido adherente. Se dispondrán de acuerdo con las indicaciones de los Planos y se fijarán entre sí mediante las oportunas sujeciones, manteniéndose mediante piezas adecuadas la distancia al encofrado, de modo que quede impedido todo movimiento de las armaduras durante el vertido y compactación del hormigón.

El control de calidad se realizará a nivel normal mediante ensayos no sistemáticos.

Se realizarán dos (2) ensayos de doblado-desdoblado cada veinte (20) t de acero colocado, verificándose asimismo la sección equivalente. Cada cincuenta (50) t se realizarán ensayos para determinar las características mecánicas (límite elástico y rotura).

Salvo otras instrucciones que consten en los Planos, el recubrimiento mínimo de las armaduras será el siguiente:

- Paramentos expuestos a la intemperie: 2,5 cm
- Paramentos en contacto con tierras, impermeabilizados: 3,5 cm
- Paramentos en contacto con tierras, sin impermeabilizar: 4,0 cm

Caso de tratar las superficies vistas del hormigón por abujardado o cincelado, el recubrimiento de la armadura se aumentará en un centímetro (1 cm). Este aumento se realizará en el espesor de hormigón sin variar la disposición de la armadura.

Los espaciadores entre las armaduras y los encofrados o moldes serán de hormigón suficientemente resistente con alambre de atadura empotrado en él, o bien de otro material adecuado. Las muestras de los mismos se someterán al Director de las Obras antes de su utilización, y su coste se incluye en los precios unitarios de la armadura.
En los cruces de barras y zonas críticas se prepararán con antelación, planos exactos a escala de las armaduras, detallando los distintos redondos que se entrecruzan.

Las características mecánicas a utilizar serán las especificadas en cada plano.

Antes de comenzar las operaciones de hormigonado, el Contratista deberá obtener del Director de Obra o la persona en quien delegue la aprobación por escrito de las armaduras colocadas.

3.- Medición y abono

- Kg acero en barras para armar. Precio G4080001.

Se medirá según las especificaciones del Proyecto, de acuerdo con los despieces señalados en Planos o aprobados por la D.O.

El precio incluye las pérdidas y los incrementos de material correspondientes a recortes, ataduras, empalmes, separadores, y todos los medios necesarios para llevar el hierro a corte de obra, así como la maquinaria necesaria.

4.- Normativa de obligado cumplimiento

EH-91 "Instrucción para el Proyecto y la Ejecución de Obras de Hormigón en Masa o Armado."

EF-88 "Instrucción para el Proyecto y la Ejecución de Forjados Unidireccionales de Hormigón Armado o Pretensado."

PG 3/75 "Pliego de Prescripciones Técnicas Generales para Obras de Carreteras y Puentes." con las enmiendas aprobadas por las Órdenes del MOPTMA: O.M. del 31.7.86 (BOE núm. 213 del 5.9), O.M. del 21.1.88 (BOE núm. 29 del 3.2), O.M. del 8.5.89 (BOE núm. 118 del 18.5) y O.M. del 28.9.89 (BOE núm. 242 del 9.10).

G40A APOYOS DE NEOPRENO ZUNCHADO

1.- Definición y condiciones generales

Definición:

Se definen así los aparatos de apoyo constituidos por capas alternativas de material elastomérico y acero, capaces de absorber las deformaciones y giros impuestos por la estructura que soportan.

Sus formas y dimensiones varían según los esfuerzos que han de transmitir, tal como se define en los planos.

Condiciones generales:

Material elastomérico

El material elastomérico estará constituido por caucho clorado completamente sintético (cloropreno, neopreno), cuyas características deberán cumplir las especificaciones siguientes:

- Dureza Shore a (ASTM D-676) 60 +/- 3
- Resistencia mínima a tracción 170 kg/cm^2
- Alargamiento en rotura. 350 %

Las variaciones máximas admisibles de estos valores para probeta envejecida en estufa en setenta (70) horas y a cien (100 = grados centígrados con las siguientes):

- Cambio en dureza Shore a + 10 %
- Cambio en resistencia a tracción 15 %
- Cambio en alargamiento - 40 %
- Deformación remanente 35 %

El módulo de deformación transversal no será inferior a ciento diez kilogramos por centímetro cuadrado (110 kg/cm^2).

Zunchos de acero

Las placas de acero empleadas en zunchos tendrán un límite elástico mínimo de dos mil cuatrocientos kilogramos centímetro cuadrado (2.400 kg/cm^2) y una carga en rotura mínima de cuatro mil doscientos kilogramos por centímetro cuadrado (4.200 kg/cm^2).

La carga tangencial mínima capaz de resistir la unión al material elastomérico será en servicio de ochenta kilogramos por centímetro cuadrado (80 kg/cm^2), siendo la deformación tangencial correspondiente de siete décimas (0,7).

2.- Condiciones del proceso de ejecución

La base de nivelación para asiento del apoyo de neopreno zunchado se ejecutará al mismo tiempo que el hormigonado del dintel de la pila o estribo del puente, y tendrá unas dimensiones

superiores a las del propio apoyo elastomérico entre 5 y 10 cm.

Del mismo modo deberá ejecutarse la cuña de nivelación correspondiente al elemento estructural (viga o tablero) que ha de asentarse sobre el apoyo. Cuando este elemento sea prefabricado, la cuña de nivelación se podrá adherir al mismo con resina epoxy.

No se hormigonará o colocará el elemento estructural superior, sin la aprobación por la D.O. del replanteo y cotas de las bases de nivelación. No deberá haber restos del encofrado que sirvió para hormigonar estas bases, y la superficie deberá estar perfectamente limpia.

Deberá quedar altura libre suficiente para la inspección y sustitución del apoyo, si llega el caso.

3.- Medición y abono

- Dm^3 apoyo de neopreno zunchado. Precio: G40A0001

Se medirá de los diferentes tipos y dimensiones definidos en los Planos y colocados en obra.

El precio incluye la realización de las bases de asentamiento, todos los accesorios del soporte y elementos para el correcto funcionamiento del apoyo.

4.- Normativa de obligado cumplimiento

“Recomendaciones para el proyecto y puesta en obra de los apoyos elastoméricos para puentes de carretera."

PG 3/75 "Pliego de Prescripciones Técnicas Generales para Obras de Carreteras y Puentes." con las enmiendas aprobadas por las Órdenes del MOPTMA: O.M. del 31.7.86 (BOE núm. 213 del 5.9), O.M. del 21.1.88 (BOE núm. 29 del 3.2), O.M. del 8.5.89 (BOE núm. 118 del 18.5) y O.M. del 28.9.89 (BOE núm. 242 del 9.10).

UIC 772-1-R-87.”Principios generales de empleo de los aparatos de apoyo en materiales diversos para los puentes de ferrocarril.”

UIC 772-2-R-89.”Directrices para la utilización de los aparatos de apoyo de caucho en los puentes de ferrocarril”.

G40D/A40D JUNTAS DE DILATACION EN PASOS SUPERIORES

1.- Definición y condiciones generales

Definición:

Se definen como juntas de tablero los dispositivos que enlazan los bordes de los tableros contiguos, o de un tablero y un estribo, de forma que permitan los movimientos por cambios de temperatura, y deformaciones de la estructura. Al tiempo que presentan una superficie lo más continua posible a la rodadura.

La ejecución de la unidad de obra incluye las operaciones siguientes:

- Corte y demolición del pavimento en el ancho ocupado por la junta
- Colocación y anclaje de los elementos de la junta
- Sellado del perímetro de la junta con resina epoxy, enrasando con el pavimento

Condiciones generales:

El Contratista someterá a la Dirección de Obra las características precisas de la junta que propone utilizar.

Cumplirá lo especificado en el Artículo 694 del PG-3.

Las juntas estarán constituidas por bandas de materiales elastoméricos y en su caso perfiles metálicos y deberán ser capaces de absorber deformaciones en tres direcciones perpendiculares entre si, si bien su función principal es la de recoger los movimientos impuestos por la temperatura y las acciones reológicas, cuando éstas afectan a los tableros de los puentes.

Las características básicas que debe cumplir este tipo de juntas son:

- Elasticidad para seguir los movimientos sin agrietarse o introducir esfuerzos inadmisibles en los tableros. El movimiento total admisible será el indicado en los Planos.
- Estanqueidad en caso de lluvia, nieves, fuertes condensaciones, inundaciones, etc., evitando cualquier filtración.
- Posibilidad de deslizamiento de cualquiera de los bordes en las tres direcciones básicas fundamentales en relación con los ejes de simetría de las juntas.
  - Resistencia al desgaste producido por el paso de vehículos en número correspondiente a la intensidad media prevista y a los efectos accidentales de frenado y arranque de los mismos.
  - Conservación de las características mecánico elásticas de los materiales de la junta y bordes, dentro de las temperaturas extremas a que van a ser sometidas.
  - No ocasionar, en cualquier situación de trabajo, resaltes o hundimientos que se traduzcan en golpeteos molestos al paso de los vehículos.

2.- Condiciones del proceso de ejecución

La junta se montará de acuerdo con las instrucciones del fabricante, poniendo especial

atención a su anclaje al tablero y a su enrase con la superficie del pavimento.

Antes de montar la junta, se ajustará su abertura inicial, en función de la temperatura media de la estructura en ese momento y de los acortamientos diferidos previstos.

3.- Medición y abono

- M junta de dilatación para Pasos Superiores. Precio G40D001.
- M junta de dilatación en marco. Precio A40D0001.
- M junta de dilatación para pasos superiores de 50 mm de recorrido. Precio A40D0002.

Se medirá por metro colocado según características definidas en Planos.

El precio incluye el replanteo, corte y demolición de pavimento, suministro y colocación de la junta, fijaciones, sellado, rellenos de mástico y materiales especiales en su caso.

También incluye la limpieza, transportes necesarios y todos los materiales y operaciones necesarias para la total y correcta ejecución de la unidad de obra.

4.- Normativa de cumplimiento obligatorio

PG 3/75 "Pliego de Prescripciones Técnicas Generales para Obras de Carreteras y Puentes." Con las modificaciones aprobadas por las Órdenes del MOPTMA: O.M. del 31.7.86 (BOE nº 213 del 5.9), O.M. del 21.1.88 (BOE nº 29 del 3.2), O.M. del 8.5.89 (BOE nº 118 del 18.5) y O.M. del 28.9.89 (BOE nº 242 del 9.10).

G40F IMPERMEABILIZACIÓN Y DRENAJE CON GEOTEXTIL DE TRASDÓS DE MUROS Y DE ESTRIBOS

1.- Definición y condiciones generales

Consiste en la extensión y fijación al trasdós de los muros y estribos de una lámina drenante que, conectada a un sistema longitudinal constituido por un tubo también drenante, evacue las posibles aguas de filtración que puedan incidir sobre las obras a proteger.

La ejecución de unidad comprende las operaciones siguientes:

- Nivelación de la solera donde se colocará el tubo drenante
- Colocación y sujeción del tubo drenante
- Impermeabilización del muro
- Colocación y fijación al muro de la lámina drenante
- Relleno con material filtrante
- Relleno y compactación trasdós del muro

Condiciones generales

La impermeabilización estará constituida por una capa de producto asfáltico aplicada sobre la cara de trasdós del muro, previamente tratada con una imprimación también asfáltica.

La lámina drenante estará compuesta de dos telas filtrantes que cubren al núcleo drenante intermedio. Éste esta formado por monofilamentos de poliamida con un índice de huecos del orden del noventa y cinco por ciento (95%) (±1%). Las dos telas filtrantes son de geotextil no tejido a base de hilos de poliéster recubiertos de poliamida unidos por soldadura.

Las telas filtrantes sobresalen. por cada lado del núcleo drenante para poder solapar la unión de una pieza con la contigua, recubriendo el muro en su totalidad.

El Director de Obra podrá autorizar la utilización de láminas filtrantes en la que una de las telas (la que queda adosada al muro) sea impermeable. En este caso podrá suprimirse la impermeabilización aplicada en el paramento del muro.

El espesor de la lámina filtrante será como mínimo de quince milímetros (15 mm.) y su peso por metro cuadrado no será inferior a seiscientos gramos por metro cuadrado (600 gr/m^2). El geotextil en contacto con el terreno tendrá un peso mínimo de ciento cincuenta gramos por metro (150 gr/m^2). La capacidad de evacuación de agua será superior a un litro por segundo y metro (1 l/s*m).

El Director de Obra podrá autorizar el empleo de láminas filtrantes que utilicen otros procedimientos diferentes para mantener la separación entre láminas, previa acreditación por parte del Contratista de que el producto ha sido empleado, con resultados satisfactorios en obras similares.

2.- Condiciones del proceso de ejecución

La colocación de la lámina drenante y su fijación al muro se hará de acuerdo con las

instrucciones del fabricante del producto pero siguiendo las siguientes fases:

- Nivelación de la solera donde se colocará el tubo drenante.
- Colocación y sujeción del tubo drenante en la situación indicada en los planos.
- Impermeabilización del muro.
- Colocación y fijación al muro de la lámina drenante.
- Relleno con material filtro, tal como se indica en los planos, de la zona donde va ubicado el dren.
- Por último, relleno y compactación con el material adecuado, del trasdós del muro.

Las láminas de geotextil se protegerán del paso sobre ellas de personas, equipos o materiales.

3.- Medición y abono

- M^2 impermeabilización asfáltica. Precio G40F0001.
- M^2 lámina drenante fijada al trasdós de muros y estribos. Precio G40F0002.

El precio incluye la imprimación previa.

Se medirá la superficie realmente aplicada, de acuerdo con Planos. Los precios incluyen el suministro de los materiales de impermeabilización y lámina drenante, y su colocación en obra.

El suministro y colocación del material granular filtrante y del tubo poroso, serán de abono independiente, según las unidades respectivas.

4.- Normativa de cumplimiento obligatorio

PG-3/75 “Pliego de Prescripciones Técnicas Generales para Obras de Carreteras y Puentes” con las modificaciones aprobadas por las Ordenes del MOPTMA: O.M. del 31-7-86 (B.O.E. nº 213 del 5.9), O.M. del 21-1-88 /B.O.E. nº 29 del 3.2.), O.M. del 8.5.89 (B.O.E. nº 118 del 18-5) y O.M. del 28-9-89 (B.O.E. nº 242 del 9.-10).

5.1-IC 1965 “Instrucción de Carreteras. Drenaje”.

5.2-IC 1990 “Instrucción de Carreteras. Drenaje superficial”.

G40H IMPERMEABILIZACIÓN DE TABLEROS DE PASOS SUPERIORES DE CARRETERA

1.- Definición y condiciones generales

Definición

Ejecución de una capa de impermeabilización en los tableros de hormigón en los Pasos Superiores para carretera, a fin de evitar la penetración del agua infiltrada a través del pavimento.

Condiciones generales

Se dispondrá una impermeabilización mediante mástic bituminoso, constituida por:

- Un riego de adherencia con emulsión ECR-1 y dotación de quinientos gramos por metro cuadro (0,5 kg/m²) de betún residual.

- Mástic bituminoso de un centímetro (1,0 cm), con la composición siguiente:

Emulsión asfáltica	22-30%
Arena, contenido 20/25 de filler	72-80%
Polvo de amianto de fibra corta	2/4%

2.- Condiciones del proceso de ejecución

La superficie del hormigón del tablero estará limpia y perfectamente seca, sin ningún elemento suelto.

No presentará huecos ni resaltes de más de 20 mm. En caso contrario, se corregirán las irregularidades utilizando mortero epoxy para rellenar las cavidades.
Sobre el riego de adherencia ejecutado, se aplicará el mástic bituminoso en dos capas hasta alcanzar su espesor total.

3.- Medición y abono

- M^2 impermeabilización de tableros con mástic bituminoso. Precio: G40H0001.

Se medirá la superficie realmente ejecutada, de acuerdo con lo realizado en los Planos.

El precio incluye el suministro y aplicación de todos los materiales, hasta la terminación de la unidad de obra.

G40J SUMIDERO EN TABLERO DE PUENTES

1.- Definición y condiciones generales

Se define como sumidero la boca de desagüe, generalmente protegido por una rejilla, que sirve para vaciar el agua de lluvia de los tableros de las obras de fábrica, y que se dispone de forma que la entrada del agua sea en sentido sensiblemente vertical.

Los desagües de tableros de estructuras y los dispuestos en sus estribos tendrán la forma, dimensiones y características definidas en los Planos.

2.- Condiciones del proceso de ejecución

Después de la terminación de cada unidad se procederá a su limpieza total, eliminando todas las acumulaciones de limo, residuos o materias extrañas de cualquier tipo, debiendo mantenerse libres de tales acumulaciones hasta la recepción definitiva de las obras.

3.- Medición y abono

- U sumidero en tablero de puentes. Precio G40J0001.

  Se medirá realmente ejecutado según indicaciones de los planos del Proyecto

  El precio incluye el suministro de todos los materiales necesarios, y su colocación según Planos, hasta la total terminación de la Unidad de Obra.

4.- Normativa de obligado cumplimiento.

No existe normativa de obligado cumplimiento.

G40K BARANDILLAS DE ACERO

1.- Definición y condiciones generales

Definición:

Barandillas unidas mediante soldadura, a las placas de anclaje sobre tableros de puentes y viaductos.

La ejecución de la unidad de obra incluye las operaciones siguientes:

- Replanteo y alineación de los elementos que forman la barandilla
- Suministro de la barandilla
- Suministro de la placa de anclaje, en su caso
- Ejecución de los dados de anclaje
- Montaje y colocación de la barandilla
- Limpieza y recogida de tierras y restos de obra.
- Pintura de la barandilla

Condiciones generales:

La barandilla tipo, que se representa en los Planos, está formada por montantes de perfiles laminados y elementos horizontales tubulares.

Los elementos que forman la barandilla cumplirán los Artículos 250, 251 y 640 del PG-3.

Todas las secciones fijas de la barandilla se realizarán por soldadura continua, uniforme e impecable.

2.- Condiciones del proceso de ejecución

A excepción de aquellas partes de los postes que queden empotradas las demás superficies de las barandillas se suministrarán provistas de dos manos de pintura antioxidante (minio o cianamida de plomo).

Una vez instalada la barandilla y antes de su fijación definitiva, se procederá a una minuciosa alineación de la misma y aprobación del replanteo por la D.O.

El hueco de los cajetines se rellenará con mortero de cemento. Alrededor de los postes y placas de sujeción, se formará una junta de masilla bituminosa de dos por tres (2 x 3) cm.

La barandilla irá pintada en el color que ordene el Director de las Obras, con doble capa de pintura de primera calidad. En las proximidades de las juntas de construcción del tablero se dispondrán también en las barandillas juntas de dilatación.

3.- Medición y abono

- M barandilla. Precio: G40K0001.

El precio incluye la barandilla y su colocación, el material para recibido de los apoyos, el pintado de la barandilla y su mantenimiento hasta recepción de la obra.

4.- Normativa de cumplimiento obligatorio

Se aplicará la normativa vigente en el momento de ejecución de las obras.

G40L BARRERAS DE SEGURIDAD CON PERFILES BIONDA EN PASOS SUPERIORES

1.- Definición y condiciones generales

Definición:

Consiste esta unidad en el suministro de los elementos y ejecución de las operaciones necesarias para instalar estos dispositivos de seguridad en los lugares y forma que indiquen los Planos o las instrucciones de la D.O.

La ejecución de la unidad de obra comprende las siguientes operaciones:

- Replanteo y colocación de los soportes

- Colocación de todos los elementos para sujeción del perfil bionda y terminales en cola de pez.

Condiciones generales:

El tipo de acero galvanizado empleado en la fabricación de elementos metálicos será el F-622 de la Norma UNE 36082.

Los elementos metálicos deberán cumplir, asimismo, las especificaciones de los Artículos 620 y siguientes del PG-3.

El hormigón a utilizar en las cimentaciones de piezas terminales que lo requieran, postes, etc., será del tipo H-200. Todos los elementos metálicos que constituyen la barrera de seguridad serán galvanizados en caliente, satisfaciendo las condiciones especificadas por el PG-3.

2.- Condiciones del proceso de ejecución

Los soportes estarán situados cada 4 m, en caso de estar anclados a dados de hormigón o clavados al terreno, y cada 2 m si están soldados o colocados sobre obra de fábrica.

La altura del soporte por encima del terreno permitirá la colocación de la banda o bandas a la altura sobre el firme o tablero de la estructura que indica el Proyecto

Las fijaciones se realizarán con tornillos y tuercas de acero galvanizado.

La ejecución de esta unidad se hará de acuerdo con las Normas para Barreras de Seguridad, de la Dirección General de Carreteras.

3.- Medición y abono

- M barrera de seguridad. Precio G40L0001.

El precio incluye el suministro del perfil, postes y pequeño material, su colocación en obra y la p.p. correspondiente a piezas terminales, tramos curvados, etc.

4.- Normativa de cumplimiento obligatorio

Se aplicará la normativa vigente en el momento de ejecución de las obras.

G40M PUESTA A TIERRA DE ELEMENTOS METÁLICOS Y ARMADURAS EN VIADUCTOS Y PUENTES PARA FERROCARRIL.

1.- Definición y condiciones generales

Definición

La puesta a tierra de las armaduras, barandillas, postes y todos los elementos metálicos en viaductos y puentes de los ferrocarriles, tiene por objeto proteger a las personas e instalaciones de los efectos derivados de la diferencia de potencial causados por el propio sistema de tracción eléctrica en condiciones normales y en condiciones anormales (fallos, cortocircuitos, descargas atmosféricas etc.).

Esta unidad consiste en la puesta a tierra de las partes metálicas y armaduras de acero (salvo los cables de tesado) de los puentes y viaductos del ferrocarril, a fin de conseguir que estos elementos se encuentren unidos equipotencialmente.

Todos los elementos metálicos (incluido señales, barandillas, postes, etc.), deben ponerse a tierra a través del sistema global que se describe.

Los cables para las conexiones de puesta a tierra tendrán un diámetro igual o superior a 13 milímetros.

Condiciones generales

Los cables para las conexiones a tierra deben ser, en todos los casos, resistentes a descargas atmosféricas y a las intensidades de cortocircuito.

La colocación de los cables y pletinas de puesta a tierra se realizará según el detalle que figura en Planos.

2.- Condiciones del proceso de ejecución

En todos los pilares y estribos se realizará una puesta a tierra de las armaduras. La continuidad eléctrica se obtendrá conectando la armadura del tablero con la armadura del pilar o estribo y con la de la cimentación, y ésta con una puesta a tierra, construida previamente mediante pletinas de acero galvanizado o malla de cables de cobre. Para poder realizar la medición de la tierra, se colocará 1 pica de acero-cobre unida al extremo del cable de toma de tierra, e irá alojada en una arqueta prefabricada de 0,40 x 0,4 x 0,6 m. En la cabeza de la pila o estribo se habrá dejado un terminal de conexión para su unión a la armadura del tablero.

Las puestas a tierra en la cimentación, tanto de pilares como de estribos, deberán tener una resistencia de difusión $\leq 10\ \Omega$.

La armadura del tablero estará unida (salvo los cables de tesado), tanto transversal como longitudinalmente para conseguir la continuidad eléctrica, y se conexionará a los carriles exteriores en cada pila y estribo, con cable de acero galvanizado o de cobre de $\varnothing \geq 13$ mm.

Se dejarán terminales en el tablero (a ambos lados de las vías), a la altura de cada pila y estribo, para las siguientes conexiones:

- Con el carril exterior
- Con el cable de retorno (a través del poste de electrificación)
- Con la armadura de la pila o estribo.

La conexión al cable de retorno se realizará a través del poste de electrificación más próximo a la pila o estribo.

En el caso particular del tablero solidarizado a los apoyos laterales (caso de pórticos o marcos cerrados), se dará continuidad al conjunto de toda la armadura hasta la puesta a tierra en la cimentación.

En caso que la armadura del tablero no este unida de la forma indicada anteriormente, se colocará longitudinalmente en ambos lados de las vías, una pletina de acero galvanizado de 30 mm x 4 mm. o bien cable de cobre de $\varnothing \geq 13$ mm. que se unirá a los redondos de la armadura y a los carriles exteriores en cada pila y estribo, debiéndose conectar al sistema de puesta a tierra descrito anteriormente.

En las juntas de dilatación del tablero deberán montarse las correspondientes conexiones de puenteo de las armaduras.

Cualquier otro elemento metálico situado en viaductos o puentes, se conectará al carril, bien directamente o a través del cable de retorno o poste de electrificación.

3.- Medición y abono

- Ud. de puesta a tierra de armaduras y elementos metálicos en apoyo de un fuste o estribos de puentes y viaductos de ferrocarril. La medición se realizará por unidad de pila o estribo. Precio : G40M0001

El precio incluye todos los materiales, preparación y montaje de la puesta a tierra, totalmente acabado, incluido medición y parte proporcional de conexiones en juntas de dilatación.

4.- Normativa de obligado cumplimiento

EN 50122-1”Aplicaciones ferroviarias. Instalaciones fijas. Parte 1ª provisión de protecciones relacionadas con la seguridad eléctrica y la puesta a tierra”.

MIE-RAT “Reglamento de Alta Tensión: Art.12-6 Conexión de los apoyos a tierra. Art.26 Resistencia de difusión máxima de puesta a tierra”.

G40P VALLA METÁLICA ANTIVANDALISMO EN PASOS SUPERIORES

1.- Definición y condiciones generales.

Definición:

Enrejado de 2,5 m. de altura, con malla y postes de tubo, o malla, bastidor y postes, colocados con soldadura sobre la placa de anclaje de la barandilla, en los lugares y forma que indiquen los planos o las instrucciones de la D.O.

La unidad de obra comprende las operaciones siguientes:

- Replanteo y alineación de los elementos que forman la valla.
- Suministro de la valla.
- Colocación de los elementos que forman el enrejado.

Condiciones generales:

Los elementos de la valla serán de acero galvanizado y cumplirán las especificaciones del Articulo 620 y siguientes del PG-3.

La reja quedará bien fijada al soporte. Estará aplomada y con los ángulos y niveles previstos.

2.- Condiciones del proceso de ejecución

La D.O. aprobará el replanteo antes de la fijación de la valla.

Durante todo el proceso constructivo, se garantizará la protección de la valla contra los empujes e impactos mediante los anclajes oportunos y se mantendrá el aplomado con ayuda de elementos auxiliares.

3.- Medición y abono

- M valla metálica antivandalismo en pasos superiores. Precio: G40P0001.

El precio incluye la valla y su colocación en obra, el material para recibido de los apoyos y las operaciones auxiliares hasta total terminación de la unidad de obra.

4.- Normativa de cumplimiento obligatorio.

Se aplicará la normativa vigente en el momento de ejecución de las obras.

G40Q PRUEBAS DE CARGA EN PASOS SUPERIORES DE CARRETERA

1.- Definición y condiciones generales

Definición

Se define como prueba de carga en puentes de carretera, al conjunto de operaciones de control, cuya realización es preceptiva antes de su apertura al tráfico, a fin de comprobar la adecuada concepción, la estabilidad y el buen comportamiento de la obra.

La ejecución de la unidad de obra comprende las operaciones siguientes:

- Inspección previa de todos los elementos de la estructura.
- Marcado de posiciones de los camiones.
- Colocación y nivelación de flexímetros y demás aparatos de medida.
- Ejecución de las fases de carga y medición de flechas.
- Informe de resultados.

Condiciones generales

El Contratista deberá presentar a la D.O. el proyecto correspondiente para la realización de la prueba de carga.

La prueba se realizará mediante camiones, según se describe en el Proyecto

Se tendrán en cuenta las directrices generales incluidas en las “Recomendaciones para el Proyecto y Ejecución de Pruebas de Carga en Puentes de Carretera”, MOPU 1988.

Los camiones a utilizar en la prueba de carga cumplirán los requisitos establecidos en las citadas Recomendaciones, de forma que las solicitaciones teóricas elegidas sean prácticamente idénticas a las producidas por los vehículos previstos.

Los equipos de medida cumplirán lo especificado en dicha Recomendación, y serán manipulados por personal adecuadamente formado, de manera que los datos y resultados respondan fehacientemente a la respuesta de la estructura en las diferentes fases de carga.

Se utilizarán, al menos, los siguientes aparatos de medida:

Flexímetros, para medida de deformaciones verticales: serán adecuados en cada puente a las posibilidades de observación existente, pero en ningún caso tendrán menos de 5 cm. de recorrido y 0,01 mm. de precisión.

Si las condiciones físicas del puente, no permiten utilizar flexímetros se usarán picas o elementos topográficos que garanticen una sensibilidad de lectura adecuada.

Lupas graduadas para observar y medir la formación de fisuras: permitirán observar décimas de milímetro

2.- Condiciones del proceso de ejecución.

- **Cargas de los ensayos.**

En ningún caso las acciones del tren de cargas a utilizar y las solicitaciones a que aquéllas den lugar, podrán ser más desfavorables que las del tren de cargas de la "Instrucción de Acciones", estimándose como suficiente si tales esfuerzos oscilan entre el 70 y el 80% de los máximos producidos por el citado tren de la Instrucción.

El tren de cargas estará compuesto por un conjunto de camiones con el peso total, por unidad, adoptado en el cálculo de la prueba, pesados los ejes de cada camión por separado, y colocados en sucesivas filas.

La carga de prueba será estática, es decir, una vez colocados los camiones como se indica en el apartado "Pruebas de carga" del Anejo de Estructuras y en el punto 2 siguiente, se harán las mediciones correspondientes.

En el momento de iniciarse las pruebas, el hormigón de cualquier elemento resistente de la obra deberá tener una edad mínima de 90 días.

Se comprobará, asimismo, que los elementos auxiliares de acceso a las zonas de control y trabajo estén correctamente adaptados con el fin de no retrasar o entorpecer el proceso de ensayo.

Se controlarán especialmente las condiciones generales del ambiente, especialmente los cambios climatológicos y de las situaciones de soleamiento, previo y durante el proceso de ensayo, determinando claramente los aspectos específicos de estos cambios.

- Mediciones mínimas a realizar

1. Para cada estado de cargas se medirán, al menos, los siguientes datos de las secciones indicadas:
   a. Sección central: Flecha en sus bordes y punto medio.
   b. Secciones de apoyos: Deformaciones verticales.

2. En cada una de las secciones antes definidas, se harán las mediciones indicadas en cada uno de los siguientes estados:
   a. Descargado el tablero
   b. Cargada la mitad del tablero longitudinalmente
   c. Cargado todo el tablero
   d. Después de retirar la mitad de la carga total

3. Los camiones se colocarán en la posición de carga en cada caso, manteniéndolos en ella 10 minutos, descargando después el tablero y dejando otros 10 minutos antes de empezar un escalón de carga.
Las flechas se medirán:
   a. Antes de empezar la prueba de carga.
   b. A los 10 minutos de colocados los camiones de cada escalón de carga.
   c. 10 minutos después de retirados los camiones en cada escalón de carga.

- Preparación de la prueba de carga

1 Cálculo.

El proyecto de la prueba de carga definirá, con los tipos de camiones y cargas elegidos, un croquis en planta de la situación exacta de cada camión y eje en el tablero.

Este croquis servirá para reflejar en el tablero mediante señales adecuadas para la correcta situación de cada camión.

Una vez definido el croquis de cargas y situaciones, se calcularán los esfuerzos y las flechas correspondientes en cada punto y sección antes indicados y para cada escalón de carga antes definido.

2 Referencias fijas y mediciones precisas.

Antes de proceder a la realización de las pruebas se nivelarán los puntos de medición ya indicados en el apartado 1, referidos a puntos de referencia fijos fuera del puente y no afectados por la prueba de carga de forma que sea lo más sencillo posible referir a éstos las deformaciones de un punto cualquiera de cada escalón de carga.

3 Observación previa del tablero.

Antes de comenzar las pruebas se recorrerán detenidamente las estructuras, observando concienzudamente las fisuras que existan, midiendo su tamaño con lupas y marcando los puntos en que se hagan estas medidas para realizar posteriores mediciones en cada escalón de carga.

4 Resultados y tolerancias.

En todo lo que sigue, y a efectos de flechas en centro de vano se considera como tal, la diferencia entre la lectura correspondiente a ese centro de vano y la media de las lecturas correspondientes a las secciones de apoyo del vano.

Las flechas estabilizadas obtenidas para cada escalón, se compararán con las teóricas obtenidas para esa misma fase.

Se considerarán aceptables estos resultados si la diferencia entre ambos valores es inferior, en valor absoluto, al 10% de la flecha teórica.

Del cálculo teórico de las flechas debidas a las sobrecargas y de las flechas medidas, se deducirá el coeficiente de elasticidad medio del hormigón, comprobándose si dicho coeficiente tiene un valor razonable, habida cuenta de las características del hormigón empleado.

Asimismo, se obtendrá la flecha remanente por diferencia entre las lecturas correspondientes a los estados anterior y posterior a la prueba. Como orden de magnitud para valores aceptables de las flechas remanentes, pueden indicarse los siguientes:

a. Del orden del 20% de la flecha teórica máxima, si la edad de la obra es inferior a seis meses.

b. Del orden del 10% de la flecha teórica máxima, si la edad de la obra es superior a seis meses.

Si en la primera carga se obtienen flechas remanentes elevadas, se procederá a un segundo ciclo de carga y si tampoco se obtuviesen resultados satisfactorios, la D.O. suspenderá la prueba y adoptará las medidas convenientes.

- Desarrollo de la prueba

1. Antes de comenzar la prueba de carga:

a). Se marcarán sobre el tablero las posiciones exactas que han de tener los ejes longitudinales de los camiones y los transversales de los ejes en estas posiciones, durante la prueba.

b). Se pesarán cada uno de los ejes de los camiones, comprobando su coincidencia con

las teorías de la prueba.

c). Se habrán colocado y nivelado o tarado los flexímetros y demás aparatos de medida, en las secciones y puntos antes indicados.

d). Se harán las nivelaciones, observación y medición de fisuras previstas en la preparación de la prueba.

e). Medición de flechas en el tablero descargado.

2. *Durante la realización de la prueba de carga.*

a) Se colocará primero un camión en su posición exacta antes de entrar el siguiente de la misma fila y así sucesivamente hasta completar ésta.
Durante esta operación, se observarán en todo momento los aparatos de medida, anotando los resultados más importantes, aunque no figurarán en el informe, ni tengan valor para deducir el comportamiento de la estructura mientras se actúe con cargas parciales.

Una vez colocada toda la fila, se harán las medidas en las secciones y puntos previstos.
Se continuará cargando con las mismas precauciones antes citadas en cada uno de los escalones indicados.

b) Se deberá medir con especial cuidado los descensos de los apoyos.

c) Se anotarán siempre los datos siguientes:

- Hora exacta de las sucesivas operaciones efectuadas.
- Lista y matrícula de los vehículos utilizados, con sus pesos por ejes.
- Posiciones de los vehículos en cada escalón de carga.
- Resultados en cada medición de cada aparato.
- Comprobación de flechas calculadas y medidas.
- Datos que permitan el fácil reencuentro de las referencias de nivelación.
- Comienzo y progresión de fisuras.
- Cualquier otro dato que pueda parecer útil (vibraciones, etc.)

3. *Una vez terminada la prueba se hará un informe, que constará como mínimo de:*

a). Croquis de situación de camiones, indicando posiciones y cargas por eje.
b). Croquis de situación de todos los aparatos de medida.
c). Croquis de situación de puntos de referencias fijos.
d). Lecturas realizadas en todos los aparatos de medida en escalón o estado de carga.
e). Flechas que se deducen de las anteriores lecturas.
f). Diagrama de flechas reales (tanto longitudinalmente como transversales), descontando el descenso de los apoyos.
g). Diagrama de los descensos de los apoyos.
h). Porcentajes de recuperación registrados en flechas.
i). Registros de fisuras.
j). Incidencias que se presentaron durante la realización de la prueba.
k). Conclusiones.

En las conclusiones figurarán expresamente la aceptación o no del puente ensayado con las exigencias de nuevas pruebas de carga, puesta en servicio provisional o definitiva, refuerzo, etc.

3.- Medición y abono

- U prueba de carga. Precio: G40Q0001.

En todos los casos, el precio incluye el coste de andamiaje para la inspección antes y durante la ejecución de la prueba, vehículos, equipo humano de ensayos y amortización de flexímetros y otros aparatos de medida, accesorios y material fungible, así como el informe correspondiente.

El proyecto de la prueba de carga será realizado por el Contratista en todo caso, tres meses antes de la fecha prevista para la terminación del puente. Dicho proyecto deberá ser aprobado por la D.O.. En caso de no merecer aprobación, el adjudicatario lo modificará cuantas veces sean necesario, hasta ajustarlo a las directrices marcadas por el Director de la Obra.

El proyecto contendrá como mínimo, los cálculos de aquellos valores a medir que se indican en este artículo.

4.- Normativa de obligado cumplimiento

Recomendaciones para la Realización de Pruebas de Carga en Puentes de Carretera (MOPU 1988).

A40S ACERAS

1.- Definición

Se entiende por acera, el recubrimiento del suelo o solado formado con baldosa hidráulica.

2.- Condiciones del proceso de actuación

Para el solado con baldosa hidráulica se emplearán piezas de veinte (20) por veinte (20) por dos y medio (2,5) centímetros, del modelo que figura en los planos del Proyecto.

Las baldosas se saturarán de agua mediante su inmersión de este líquido una (1) hora antes, cuanto menos, de su colocación.

Se colocarán asentadas sobre una capa de mortero de cemento y arena en la proporción uno (1) a tres (3), cuyo espesor será, como mínimo de veinte (20) milímetros. La capa de mortero se colocará sobre otra de arena limpia, con espesor mínimo de treinta (30) milímetros cuya superficie estará nivelada perfectamente.

El mortero de agarre debe formar una superficie continua. Las baldosas al asentarse, se macearán hasta que queden totalmente a hueso, formando planos que tendrán el despiece y las inclinaciones que indiquen los documentos del Proyecto.

Una vez terminada la colocación de las baldosas se comprobarán las superficies con regla de tres (3) metros, no debiendo existir huecos de más de medio (0,5) centímetros cualquiera que sea la dirección en que se coloque la regla.

Terminada la colocación de las baldosas se verterá sobre ellas una lechada de cemento y arena fina y limpia en la proporción uno (1) a dos (2). La lechada se extenderá con cepillo de cerdas hasta que penetre en las juntas y las rellene. Pasadas cuarenta y ocho (48) horas, se repetirá la operación para asegurar su impermeabilización.

Se impedirá el paso sobre los solados durante los cuatro días siguientes al de colocación y primer rejuntado de las baldas. Si fuera imprescindible permitir el tránsito se hará con las precauciones necesarias para evitar el movimiento de las baldosas.

3.- Medición y abono

- M^2 acera en pasos superiores. Precio A40S0001.

Los solados y pavimentos se abonarán por los metros cuadrados realmente colocados en obra y a los precios correspondientes según su clase.

G40T MARCOS, VIGAS y MUROS PREFABRICADOS ARMADOS O PRETENSADOS DE LA FORMA Y LUZ ESPECIFICADA EN CADA CASO.

Se consideran como elementos prefabricados de hormigón armado o pretensado, los que constituyen productos estándar ejecutados en instalaciones industriales fijas que, por tanto, no son realizados “in situ”.

En cada elemento prefabricado deberá anotarse, de manera bien legible, el fabricante y la fecha de fabricación. En el caso de los muros de hormigón prefabricados, se marcará, si la posición y cuantía de las armaduras así lo requiriesen, la zona de comprensión para que no se confunda con la zona de tracción durante la puesta en obra.

Elementos prefabricados en los que se hayan podido apreciar defectos esenciales, no se deberán colocar en obra aunque estos defectos hayan sido corregidos posteriormente. La utilización de tales elementos requerirá la aprobación expresa del Director de las Obras, el cual podrá ordenar la ejecución de una prueba de carga o bien solicitar que el Contratista presente una comprobación especial de la resistencia de tales elementos.

Los elementos prefabricados se almacenarán y transportarán de forma que no sean sobresolicitados o dañados. Los procedimientos de transporte y puesta en obra necesitarán el consentimiento previo del Director.

En el caso particular de vigas prefabricadas de hormigón pretensado, serán de aplicación las prescripciones contenidas en el Artículo del PLIEGO DE PRESCRIPCIONES TÉCNICAS GENERALES PARA OBRAS DE CARRETERAS Y PUENTES, del M.O.P.U. (PG-3).

Para el resto de las prescripciones técnicas de esta unidad se estará a lo dispuesto en este pliego particular en las unidades de: G403/A403 Hormigonado de estructuras y obras de fábrica, G404/A404 Encofrados de estructuras y obras de fábrica, G408 Armaduras pasivas, G409 Tendones para armaduras activas para pretensado y G40A Apoyos de neopreno zunchado.

1.MEDICIÓN Y ABONO

En el caso las vigas prefabricadas de hormigón armado o pretensado se medirán por metro lineal de los distintos tipos que haya en proyecto y en el caso de los muros prefabricados se medirán por metro cuadrado, abonándose ambos a los precios correspondientes del Cuadro de Precios núm. 1.

Los precios a utilizar serán los siguientes:

- M marco prefabricado 2.5 x 2.25 h<7m hormigón armado. Precio PN000004
- M marco prefabricado 2.0x2.25 pareado. Precio PN000005.
- M imposta prefabricada de hormigón armado. Precio PN000011.
- M barrera de seguridad rígida New YERSEY. Precio PN000012.
- M bóveda prefabricada triarticulada de hormigón armado. Precio PNE00001.
- M terminal bóveda pico de flauta. Precio PNE00003.
- M viga prefabricada tipo PL-45 de hormigón armado. Precio PNE00004.
- M viga prefabricada tipo PL-55 de hormigón armado. Precio PNE00005.
- M vigas tipo N-80 prefabricadas de hormigón armado. Precio PNE00008 .
- M viga prefabricada N-120 hormigón armado. Precio PNE00009.
- M bóveda triarticulada de hormigón armado para reposición de tubería de abastecimiento. Precio PNE00011.

- M2 muro-estribo prefabricado altura máx. 11M. Precio PNEE0001.
- M2 muro-estribo prefabricado altura máx. . Precio PNEE0002.
- M2 muro prefabricado altura 0-3 M. Precio PNEM0001.
- M2 muro prefabricado altura 3-6 M. Precio PNEM0002.
- M2 muro prefabricado altura 6-9 M. Precio PNEM0003.
- M2 muro prefabricado altura 9-12 M. Precio PNEM0004.

G40U MONTAJE DE ELEMENTOS PREFABRICADOS.

1. EJECUCIÓN. Montaje de vigas y muros prefabricados

Los vehículos de transporte y los dispositivos de montaje elegidos por el Contratista deberán ser aprobados siempre por el Director de las obras. Habrán de ser dimensionados, como mínimo, para la capacidad portante requerida para el transporte y colocación de las vigas.

Los cálculos estáticos y los planos de construcción correspondientes (en especial para el equipo de montaje) deberán ser presentados a la aprobación del Director de las obras con la suficiente antelación al comienzo de los trabajos de colocación.

La superficie de apoyo de los elementos sobre los vehículos de transporte, deberá configurarse de tal forma que se excluya con toda seguridad cualquier daño de los elementos prefabricados durante la carga y descarga y durante el transporte.

Los distintos tipos de elementos prefabricados se colocarán en sus respectivos lugares de emplazamiento, de acuerdo con las siguientes instrucciones:

En las operaciones de elevación y descenso de los elementos, para su transporte y colocación, éstas se sujetarán únicamente en los dispositivos previstos a tal fin en sus extremos.

Durante el transporte, almacenamiento, etc., los elementos prefabricados sólo deberán apoyarse en los puntos indicados en los Planos del Proyecto. Cuando vayan sobre vehículos de transporte se asegurarán de tal forma que no puedan volcar o estar expuestos a solicitaciones imprevistas por giro o golpes.

Si el transporte se realiza por carretera, las vías de obra entre la fábrica de vigas y el lugar de colocación habrán de acondicionarse para asegurar un transporte sin sacudidas, golpes o peligros de cualquier clase.

En el momento de colocar las vigas, los hechos de mortero de los aparatos de apoyo deberán haber alcanzado la resistencia a compresión exigida.

Se pondrá especial cuidado en la colocación correcta de las vigas sobre aparatos de apoyo.

Si en el curso de estos trabajos quedase dañado algún aparato de apoyo, será sustituido inmediatamente por otro en perfectas condiciones, sin que para ello fuesen necesarias órdenes especiales de Director de la Obra.

Tanto el transporte como la colocación de los elementos se realizarán solamente a las órdenes y bajo control de un Ingeniero con experiencia en el lanzamiento de elementos prefabricados.

El Contratista presentará a la aprobación del Director de las obras un programa detallado para el lanzamiento de los elementos, en el cual figurarán el desarrollo temporal de los trabajos, así como el personal y la maquinaria que intervendrán en esta operación. Asimismo, habrá de comunicarse al Director de las obras con la suficiente antelación (como mínimo 24 horas) cualquier montaje o lanzamiento de elementos prefabricados.

2. MEDICIÓN Y ABONO

Con el precio del elemento prefabricado viene incluido el transporte, aparatos de apoyo, montaje y colocación de las distintas unidades con todos los trabajos, maquinaria e instalaciones auxiliares necesarias para una ejecución correcta de las obras.

G40V PLACAS DE ENCOFRADO PERDIDO

1. Definición

Se definen como placas de encofrado perdido a aquellos elementos prefabricados de hormigón cuya función es la de servir como encofrado inferior de las losas de tableros de vigas para puentes.

Estos elementos son productos estándar ejecutados en instalaciones industriales y que, por lo tanto, no son fabricados en obra.

El contratista presentará a la aprobación del Director de las obras las placas de encofrado perdido que, ateniéndose a las dimensiones previstas en cuanto a la luz y canto, sirvan al fin propuesto.

2. Materiales

2.1. Hormigón

El hormigón a utilizar en la fabricación de las prelosas será del tipo H-200 o superior.

2.2. Armaduras pasivas

Será de aplicación las especificaciones contenidas en el artículo G408 Armaduras pasivas del Pliego de Prescripciones técnicas particulares de la obra.

3. Condiciones de almacenamiento y recepción

Las placas se almacenarán en superficies regulares, con el paramento visto hacia el suelo, en pilas de 6 placas como máximo. La placa inferior de cada apilamiento se debe proteger del contacto con el con el terreno.

Las placas no presentarán superficies deslavadas o aristas descantilladas o armaduras visibles.

El Director de las obras podrá ordenar la comprobación de las características mecánicas, y en particular, del módulo de flecha, momentos de fisuración y rotura, y esfuerzo de cortante de rotura sobre un cierto número de placas.

4. Medición y abono

Las placas prefabricadas de encofrado perdido para ejecución de los tableros de los puentes serán objeto de abono, por metros cuadrados (m2) de encofrado realmente colocado, medido sobre Planos, al precio que figura en El Cuadro de Precios nº 1 para la unidad:

En el precio se consideran incluidos fabricación, transporte, almacenamiento y el montaje de las placas. El precio a utilizar es el siguiente:

- M2 placa de encofrado perdido en pasos superiores. Precio PNE00010.

6. Resumen del control de calidad

6. RESUMEN DEL CONTROL DE CALIDAD

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EMPRESA CONSTRUCTURA

ASISTENCIA TÉCNICA

Empresa constructora

RESUMEN DE HORMIGONES

AVE SUBTRAMO I UTE — **OBRA: LINEA A. V. MADRID-ZARAGOZA-BARCELONA-F. FRANCESA.**

TIPO DE HORMIGÓN: **H-250** — **Paso superior 101.7 (101+666)** — **Estructuras**

EST 1017

60 Días R/L	Fecha	Albarán Código	HORMIGON	TIPO HORMIGON R1	R2	RM	R1	R2	R3	RM	7 Días Consist	28 Días Fest	R	Albarán
							L01							
609	20/12/99	EST/1017/ES2/Z01/L01	250/B/40	251	263	**257**	317	315	317	**317**	6,5	**285,3**	337	PIONEER(A/018
633	22/12/99	EST/1017/PL2/Z01/L01	250/B/40	265	269	**267**	331	302	325	**319**	7,5		368	PIONEER (A/01
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
							L02							
674	13/01/00	EST/1017/ES1/A01/L02	250/B/20	190	204	**197**	337	332	324	**331**	8	**297,9**	348	PIONEER (A/02
675	13/01/00	EST/1017/PL1/Z01/L02	250/B/20	230	255	**242**	383	320	367	**357**	7,5		369	PIONEER (A/02
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
							L03							
686	18/01/00	EST/1017/PL2/A02/L03	250/B/20	207	205	**206**	319	255	266	**280**	8	**243,9**		PIONEER (A/02
721	25/01/00	EST/1017/PL1/A02/L03	250/B/20	199	194	**196**	277	271	265	**271**	19		328	PIONEER (A/02
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
							L04							
742	28/01/00	EST/1017/ES1/A02/L04	250/B/20	261	252	**256**	381	354	369	**368**	8	**251,1**	427	PIONEER (A/03
763	3/02/00	EST/1017/PL2/L01/L04	250/B/20	227	222	**224**	244	271	321	**279**	8		320	PIONEER (A/03
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
							L05							
792	10/02/00	EST/1017/ES2/A01/L05	250/B/20	280	267	**274**	290	278	303	**291**	8	**261,9**	360	PIONEER (A/03
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
							L06							
903	2/03/00	EST/1017/TB/N01/L06	250/B/20	252	230	**241**	352	345	334	**344**	8	**306,9**	384	PIONEER (A/04
904	2/03/00	EST/1017/TB/N01/L06	250/B/20	231	256	**244**	340	350	334	**341**	8		377	PIONEER (A/04
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
							L07							
2177	13/09/00	EST/1017/LS1//L07	250/B/20	173	154	**164**	284	290	316	**297**	8,5	**267,3**		PIONEER (A/14
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		

RESUMEN DE HORMIGONES

AVE SUBTRAMO I UTE — OBRA: LINEA A. V. MADRID-ZARAGOZA-BARCELONA-F. FRANCESA.

TIPO DE HORMIGÓN: **H-250** — **Paso superior 103.7 (103+700)** — **Estructuras**

EST 1037

60 Días R/L	Fecha	Albarán Código	HORMIGON	TIPO HORMIGON R1	R2	RM	R1	R2	R3	RM	7 Días Consist	28 Días Fest	R	Albarán
							L01							
556	30/11/99	EST/1037/PL1/P01/L01	250/F/20	197	211	**204**	377	336	358	**357**	12	**272,7**	380	PIONEER (A/01
557	30/11/99	EST/1037/PL1/P01/L01	250/F/20	185	191	**188**	293	302	314	**303**	17		321	PIONEER (A/01
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
							L02							
681	18/01/00	EST/1037/PL2/P01/L02	250/L/20				252	256	263	**257**	23	**231,3**		PIONEER (A/02
682	18/01/00	EST/1037/PL2/P01/L02	250/L/20	254	234	**244**	342	291	314	**316**	22			PIONEER (A/02
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
							L03							
683	18/01/00	EST/1037/PL2/P01/L03	250/L/20				277	244	247	**256**	26	**230,4**		PIONEER (A/02
684	18/01/00	EST/1037/PL2/P01/L03	250/L/20	207	209	**208**	317	333		**325**	18			PIONEER (A/02
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
							L04							
685	18/01/00	EST/1037/PL2/P01/L04	250/L/20				351	370	291	**338**	23	**304,2**		PIONEER (A/02
687	19/01/00	EST/1037/PL2/P02/L04	250/L/20	362		**362**	453	492	460	**468**	22			PIONEER (A/02
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
							L05							
688	19/01/00	EST/1037/PL2/P02/L05	250/L/20	328	289	**308**	333	346	338	**339**	17	**305,1**		PIONEER (A/02
711	21/01/00	EST/1037/PL2/P03/L05	250/L/20	369	357	**363**	447	485	434	**455**	20			PIONEER (A/02
712	21/01/00	EST/1037/PL2/P03/L05	250/L/20	380	349	**365**	475	505	455	**479**	22			PIONEER (A/02
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
							L06							
796	10/02/00	EST/1037/PL1/Z01/L06	250/B/40	286	259	**272**	360	316	386	**354**	7	**318,6**	396	PIONEER (A/03
810	16/02/00	EST/1037/PL2/Z01/L06	250/B/40	239	289	**264**	370	331	361	**354**	5		394	PIONEER (A/03
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
							L07							
905	2/03/00	EST/1037/PL1/A01/L07	250/B/20	269	229	**249**	376	352	374	**367**	7	**326,7**	394	PIONEER (A/04
928	7/03/00	EST/1037/PL2/A01/L07	250/B/20	288	285	**287**	349	368	372	**363**	5,5		377	PIONEER (A/04
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
							L08							
1070	29/03/00	EST/1037/PL1/L01/L08	250/B/20	208	230	**219**	321	310	347	**326**	5	**293,4**	370	PIONEER (A/05
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
							L09							
1813	19/07/00	EST/1037/ES1/A01/L09	250/B/20	250	254	**252**	272	263	301	**279**	7,5	**251,1**	307	PIONEER (A/11
1832	24/07/00	EST/1037/ES2/Z01/L09	250/B/20	182	182	**182**	299	346	346	**330**	7		352	PIONEER (A/11
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
							L10							
1847	25/07/00	EST/1037/ES2/A01/L10	250/B/20	218	207	**212,5**	346	307	321	**325**	8,5	**292,5**	347	PIONEER (A/11
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		

RESUMEN DE HORMIGONES

AVE SUBTRAMO I UTE — **OBRA: LINEA A. V. MADRID-ZARAGOZA-BARCELONA-F. FRANCESA.**

TIPO DE HORMIGÓN: **H-250** — **Paso superior 103.7 (103+700)** — **Estructuras**

EST 1037

60 Días R/L	Fecha	Albarán Código	HORMIGON	TIPO HORMIGON R1	R2	RM	R1	R2	R3	RM	7 Días Consist	28 Días Fest	R	Albarán
							L11							
1948	9/08/00	EST/1037/TB//L11	250/B/20	209	209	**209**	260	271	261	**264**	12	**237,6**	273	PIONER (A/12
1949	9/08/00	EST/1037/TB//L11	250/B/20	233	237	**235**	285	303	307	**298**	5		389	PIONER (A/12
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
							L12							
1950	9/08/00	EST/1037/TB//L12	250/B/20	245	254	**249**	304	317	328	**316**	5,5	**284,4**	324	PIONER (A/12
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
							L13							
2113	5/09/00	EST/1037/LS1//L13	250/B/20	247	235	**241**	289	347	347	**328**	8	**0,0**	340	PIONEER (A/13
2143	7/09/00	EST/1037/LS2//L13	250/B/20	219	235	**227**				**0**	6			PIONEER (A/13
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**PENDIENTE**		

RESUMEN DE HORMIGONES

AVE SUBTRAMO I UTE — **OBRA: LINEA A. V. MADRID-ZARAGOZA-BARCELONA-F. FRANCESA.**

TIPO DE HORMIGÓN: **H-250** — **Paso superior 104.6 (104+660)** — **Estructuras**

EST 1046

60 Días R/L	Fecha	Albarán Código	HORMIGON	TIPO HORMIGON R1	R2	RM	R1	R2	R3	RM	7 Días Consist	28 Días Fest	R	Albarán
							L01							
809	16/02/00	EST/1046/ES2/Z01/L01	250/B/40	230	259	**244**	296	321	336	**318**	5	**286,2**	411	PIONEER (A/03
845	22/02/00	EST/1046/PL2/Z01/L01	250/B/20	231	224	**228**	319	355	299	**324**	11		360	PIONEER (A/03
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
							L02							
927	7/03/00	EST/1046/ES2/A01/L02	250/B/20	215	256	**236**	314	297	312	**308**	7	**277,2**	320	PIONEER (A/04
937	9/03/00	EST/1046/PL1/Z01/L02	250/B/20	214	236	**225**	326	287	322	**312**	7,5		339	PIONEER (A/04
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
							L03							
938	9/03/00	EST/1046/PL1/Z01/L03	250/B/20	195	214	**205**	266	284	259	**270**	10	**243,0**	342	PIONEER (A/04
985	14/03/00	EST/1046/ES1/Z01/L03	250/B/20	271	253	**262**	329	288	316	**311**	9		390	PIONEER (A/04
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
							L04							
1002	15/03/00	EST/1046/PL2/A01/L04	250/B/20	271	265	**268**	308	281	285	**291**	6,5	**261,9**	350	PIONEER (A/04
1010	16/03/00	EST/1046/PL2/A01/L04	250/B/20	238	231	**235**	353	330	333	**339**	6,5		351	PIONEER (A/47
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
							L05							
1025	18/03/00	EST/1046/PL1/A01/L05	250/B/20	225	210	**218**	259	267	258	**261**		**234,9**		HORMIGONES
1031	20/03/00	EST/1046/PL1/A01/L05	250/B/20	261	225	**243**	284	348	309	**314**	6,5		345	PIONEER (A/04
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
							L06							
1093	5/04/00	EST/1046/ES1/A01/L06	250/B/20	250	255	**252**	311	306	315	**311**	7	**271,8**	336	PIONEER (A/0
1094	5/04/00	EST/1046/PL2/L01/L06	250/B/20	263	231	**247**	300	301	306	**302**	6		342	PIONEER (A/05
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
							L07							
1100	6/04/00	EST/1046/PL1/L01/L07	250/B/20	293	257	**275**	384	369	393	**382**	6	**343,8**	422	PIONEER (A/05
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
							L08							
1251	12/05/00	EST/1046/ES1/C01/L08	250/B/20	218	245	**232**	249	257	286	**264**	8	**237,6**		PIONEER (A/07
1284	19/05/00	EST/1046/ES2/C01/L08	250/B/20	193	195	**194**	269	262	261	**264**	7		294	PIONEER (A/07
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
							L09							
1507	13/06/00	EST/1046/TB/N01/L09	250/B/20	263	237	**250**	337	322	335	**331**	5	**282,6**	367	PIONEER (A/09
1508	13/06/00	EST/1046/TB/N01/L09	250/B/20	279	268	**273**	328	321	294	**314**	7		321	PIONEER (A/09
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
							L10							
1509	13/06/00	EST/1046/TB/N01/L10	250/B/20	226	225	**225**	314	318	310	**314**	10	**282,6**	320	PIONEER (A/09
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		

RESUMEN DE HORMIGONES

AVE SUBTRAMO I UTE — **OBRA: LINEA A. V. MADRID-ZARAGOZA-BARCELONA-F. FRANCESA.**

TIPO DE HORMIGÓN: **H-250** — **Paso inferior 101.1 (101+112) Obras de Fábrica de Hormigón**

OFM 1011

60 Días R/L	Fecha	Albarán Código	HORMIGON	TIPO R1	TIPO R2	TIPO RM	HORMIGON R1	HORMIGON R2	HORMIGON R3	HORMIGON RM	7 Días Consist	28 Días Fest	R	Albarán
						L01								
689	19/01/00	OFM/1011/ZP//L01	250/B/20	298		**298**	346	357	349	**350**	8,5	**306,0**		PIONEER (A/02
690	19/01/00	OFM/1011/ZP//L01	250/B/20	285		**285**	366	290	364	**340**	7			PIONEER (A/02
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
						L02								
691	19/01/00	OFM/1011/ZP//L02	250/B/20	243		**243**	355	329	319	**334**	5,5	**300,6**		PIONEER (A/02
692	19/01/00	OFM/1011/ZP//L02	250/B/20	264		**264**	358	350	349	**352**	9			PIONEER (A/02
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
						L03								
693	19/01/00	OFM/1011/ZP//L03	250/B/20	235		**235**	397	388	390	**392**	10	**351,9**		PIONEER (A/02
694	19/01/00	OFM/1011/ZP//L03	250/B/20	228		**228**	396	400	377	**391**	7			PIONEER (A/02
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
						L04								
695	19/01/00	OFM/1011/ZP//L04	250/B/20	221		**221**	291	278	294	**288**	13	**259,2**		PIONEER (A/02
696	19/01/00	OFM/1011/ZP//L04	250/B/20	304		**304**	381	394	350	**375**	9			PIONEER (A/02
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
						L05								
697	19/01/00	OFM/1011/ZP//L05	250/B/20	224		**224**	306	363	335	**335**	14	**290,7**		PIONEER (A/02
698	19/01/00	OFM/1011/ZP//L05	250/B/20	200		**200**	312	344	314	**323**	6			PIONEER (A/02
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
						L06								
699	19/01/00	OFM/1011/ZP//L06	250/B/20	252		**252**	322	334	283	**313**	3,5	**281,7**		PIONEER (A/02
700	19/01/00	OFM/1011/ZP//L06	250/B/20	315		**315**	431	398	417	**416**	5,5			PIONEER (A/02
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
						L07								
701	19/01/00	OFM/1011/ZP//L07	250/B/20	271		**271**	340	406	372	**373**	7	**279,0**		PIONEER (A/02
702	19/01/00	OFM/1011/ZP//L07	250/B/20	244		**244**	311	318	300	**310**	6			PIONEER (A/02
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
						L08								
918	6/03/00	OFM/1011/AL2/Z01/L08	250/B/20	273	266	**269**	329	326	336	**330**	6,5	**237,6**	338	PIONEER (A/04
936	9/03/00	OFM/1011/AL1/Z01/L08	250/B/20	203	233	**214**	251	284	255	**264**	7		348	PIONEER (A/04
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
						L09								
1037	22/03/00	OFM/1011/AL1/Z01/L09	250/B/20	295	303	**299**	397	392	392	**394**	7	**354,6**	401	PIONEER (A/04
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		

RESUMEN DE HORMIGONES

AVE SUBTRAMO I UTE — **OBRA: LINEA A. V. MADRID-ZARAGOZA-BARCELONA-F. FRANCESA.**

TIPO DE HORMIGÓN: **H-350** — **Paso inferior 101.1 (101+112) Obras de Fábrica de Hormigón**

OFM 1011

60 Días R/L	Fecha	Albarán Código	HORMIGON	TIPO R1	TIPO R2	TIPO RM	HORMIGON R1	HORMIGON R2	HORMIGON R3	HORMIGON RM	7 Días Consist	28 Días Fest	R	Albarán
						L01								
509	24/11/99	OFM/1011/BV/BO1/L01	350/P/20	512	489	**501**	613	584	611	**603**	0	**542,7**	697	ALVISA
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		

RESUMEN DE HORMIGONES

AVE SUBTRAMO I UTE — **OBRA: LINEA A. V. MADRID-ZARAGOZA-BARCELONA-F. FRANCESA.**

TIPO DE HORMIGÓN: **H-250** — **Paso inferior 102.1 (102+140) Obras de Fábrica de Hormigón**

OFM 1021

60 Días R/L	Fecha	Albarán Código	HORMIGON	TIPO HORMIGON R1	R2	RM	R1	R2	R3	RM	7 Días Consist	28 Días Fest	R	Albarán
							L01							
487	23/11/99	OFM/1021/ZP//L01	250/B/20	246	235	**241**	367	394	372	**377**	8	**262,8**		PIONEER(A/009
488	23/11/99	OFM/1021/ZP//L01	250/B/20	187	194	**190**	293	312	272	**292**	13			PIONEER(A/009
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
							L02							
489	23/11/99	OFM/1021/ZP//L02	250/B/20	235	221	**228**	306	304	310	**307**	6	**276,3**		PIONEER(A/010
490	23/11/99	OFM/1021/ZP//L02	250/B/20	253	264	**258**	307	349	333	**330**	6			PIONEER(A/010
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
							I03							
491	23/11/99	OFM/1021/ZP//L03	250/B/20	237	233	**235**	317	337	319	**324**	6	**291,6**		PIONEER(A/010
492	23/11/99	OFM/1021/ZP//L03	250/B/20	281	291	**286**	390	385		**388**	5		445	PIONEER(A/010
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
							L04							
493	23/11/99	OFM/1021/ZP//L04	250/B/20	281	301	**291**	360	375		**368**	7	**331,2**	449	PIONEER(A/010
494	23/11/99	OFM/1021/ZP//L04	250/B/20	255	275	**265**	379	356		**368**	7		391	PIONEER(A/010
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
							L05							
495	23/11/99	OFM/1021/ZP//L05	250/B/20	238	257	**248**	363	350		**357**	8	**321,3**	390	PIONEER(A/010
496	23/11/99	OFM/1021/ZP//L05	250/B/20	287	272	**280**	376	397		**387**	5		406	PIONEER(A/010
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
							L06							
497	23/11/99	OFM/1021/ZP//L06	250/B/20	253	248	**251**	368	364	375	**369**	6	**290,7**		PIONEER(A/010
498	23/11/99	OFM/1021/ZP//L06	250/B/20	234	231	**233**	325	321		**323**	8		394	PIONEER(A/010
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
							L07							
584	13/12/99	OFM/1021/AL1/Z01/L07	250/B/20	251	231	**241**	321	331	332	**328**	5	**277,2**	361	PIONEER (A/01
585	13/12/99	OFM/1021/AL2/Z02/L07	250/B/20	217	239	**228**	333	284	308	**308**	6,5		354	PIONEER (A/01
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
							L08							
595	15/12/99	OFM/1021/AL2/Z03/L08	250/B/40	256	219	**238**	295	589	303	**296**	5	**266,4**	355	PIONEER (A/01
641	27/12/99	OFM/1021/AL1/Z04/L08	250/B/40	278	280	**279**	353	322	331	**335**	5		397	PIONEER (A/02
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
							L09							
753	1/02/00	OFM/1021/AL1/Z05/L09	250/B/20	299	338	**319**	371	314	358	**347**	5	**312,3**	385	PIONEER (A/03
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		

RESUMEN DE HORMIGONES

AVE SUBTRAMO I UTE — **OBRA: LINEA A. V. MADRID-ZARAGOZA-BARCELONA-F. FRANCESA.**

TIPO DE HORMIGÓN: **H-250** — **Paso inferior 102.5 (102+563) Obras de Fábrica de Hormigón**

OFM 1025

60 Días R/L	Fecha	Albarán Código	HORMIGON	TIPO HORMIGON R1	R2	RM	R1	R2	R3	RM	7 Días Consist	28 Días Fest	R	Albarán
							L01							
1144	17/04/00	OFM/1025/ZP//L01	250/B/20	220	204	**212**	247	257	249	**251**	7	**225,9**		PIONEER (A/06
1145	17/04/00	OFM/1025/ZP//L01	250/B/20	201		**201**	255	245	261	**254**	7,5		278	PIONEER (A/06
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
							L02							
1146	17/04/00	OFM/1025/ZP//L02	250/B/20	191	241	**216**	248	256	277	**260**	7,5	**230,4**		PIONEER (A/06
1147	17/04/00	OFM/1025/ZP//L02	250/B/20	210		**210**	252	251	265	**256**	6		298	PIONEER (A/41
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
							L03							
1148	17/04/00	OFM/1025/ZP//L03	250/B/20	212	247	**229**	303	291	317	**304**	8	**273,6**		PIONEER (A/06
1149	17/04/00	OFM/1025/ZP//L03	250/B/20	259		**259**	332	328	356	**339**	6,5		388	PIONEER (A/06
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
							L04							
1150	17/04/00	OFM/1025/ZP//L04	250/B/20	238	231	**235**	375	340	358	**358**	5,5	**281,7**		PIONEER (A411
1151	17/04/00	OFM/1025/ZP//L04	250/B/20	269		**269**	314	337	288	**313**	6		367	PIONEER (A411
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
							L05							
1152	17/04/00	OFM/1025/ZP//L05	250/B/20	201	235	**218**	270	265	262	**266**	6	**239,4**		PIONEER (A411
1153	17/04/00	OFM/1025/ZP//L05	250/B/20	200		**200**	308	314	313	**312**	6,5		341	PIONEER (A/06
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
							L06							
1174	25/04/00	OFM/1025/ZP//L06	250/B/20	194	206	**200**	261	252	250	**254**	8,5	**228,6**		PIONEER (A/06
1175	25/04/00	OFM/1025/ZP//L06	250/B/20	207		**207**	267	251	260	**259**	5		308	PIONEER (A/06
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
							L07							
1176	25/04/00	OFM/1025/ZP//L07	250/B/20	214	204	**209**	250	255	255	**253**	7	**227,7**		PIONEER (A/41
1177	25/04/00	OFM/1025/ZP//L07	250/B/20	226		**226**	323	292	302	**306**	5		332	PIONEER (A/06
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
							L08							
1178	25/04/00	OFM/1025/ZP//L08	250/B/20	235	245	**240**	331	312	265	**303**	5	**272,7**		PIONEER (A/41
1179	25/04/00	OFM/1025/ZP//L08	250/B/20	251		**251**	341	352	358	**350**	6,5		381	PIONEER (A/06
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
							L09							
1180	25/04/00	OFM/1025/ZP//L09	250/B/20	239	235	**237**	351	328	331	**336**	8	**268,2**		PIONEER (A/06
1181	25/04/00	OFM/1025/ZP//L09	250/B/20	241		**241**	298	294	303	**298**	9		343	PIONEER (A/41
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
							L10							
1182	25/04/00	OFM/1025/ZP//L10	250/B/20	238	234	**236**	353	360	336	**350**	4,5	**286,2**		PIONEER (A/41
1183	25/04/00	OFM/1025/ZP//L10	250/B/20	212		**212**	325	328	302	**318**	8		342	PIONEER (A/41
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		

RESUMEN DE HORMIGONES

AVE SUBTRAMO I UTE — **OBRA: LINEA A. V. MADRID-ZARAGOZA-BARCELONA-F. FRANCESA.**

TIPO DE HORMIGÓN: **H-250** — **Paso inferior 102.5 (102+563) Obras de Fábrica de Hormigón**

OFM 1025

60 Días R/L	Fecha	Albarán Código	HORMIGON	TIPO HORMIGON R1	R2	RM	R1	R2	R3	RM	7 Días Consist	28 Días Fest	R	Albarán
						L11								
1184	25/04/00	OFM/1025/ZP//L11	250/B/20	220	225	**223**	339	345	337	**340**	6	**306,0**		PIONEER (A/41
1185	25/04/00	OFM/1025/ZP//L11	250/B/20	222		**222**	387	356	362	**368**	5		375	PIONEER (A/41
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
						L12								
1186	25/04/00	OFM/1025/ZP//L12	250/B/20	208	200	**204**	263	274	263	**267**	5	**240,3**		PIONEER (A/41
1205	3/05/00	OFM/1025/ZP//L12	250/B/20	230	213	**222**	317	295	293	**302**	9			PIONEER (A/41
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
						L13								
1206	3/05/00	OFM/1025/ZP//L13	250/B/20	233		**233**	304	333	323	**320**	9	**288,0**	335	PIONEER (A/06
1207	3/05/00	OFM/1025/ZP//L13	250/B/20	215	225	**220**	325	328	331	**328**	10			PIONEER (A/06
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
						L14								
1208	3/05/00	OFM/1025/ZP//L14	250/B/20	257		**257**	317	301	309	**309**	5	**238,5**	336	PIONEER (A/06
1209	3/05/00	OFM/1025/ZP//L14	250/B/20	216	239	**228**	252	280	264	**265**	7			PIONEER (A/06
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
						L15								
1210	3/05/00	OFM/1025/ZP//L15	250/B/20	251		**251**	264	270	292	**275**	6	**247,5**	362	PIONEER (A/06
1211	3/05/00	OFM/1025/ZP//L15	250/B/20	200	204	**202**	280	309	321	**303**	7,5			PIONEER (A/06
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
						L16								
1212	5/05/00	OFM/1025/ZP//L16	250/B/20	230	221	**226**	326	320	299	**315**	8,5	**282,6**		PIONEER (A/06
1213	5/05/00	OFM/1025/ZP//L16	250/B/20	227		**227**	332	306	304	**314**	7		320	PIONEER (A/06
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
						L17								
1214	5/05/00	OFM/1025/ZP//L17	250/B/20	270	268	**269**	317	332	345	**331**	6	**297,9**		PIONEER (A/06
1215	5/05/00	OFM/1025/ZP//L17	250/B/20	289		**289**	326	355	372	**351**	7		386	PIONEER (A/06
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
						L18								
1216	5/05/00	OFM/1025/ZP//L18	250/B/20	204	216	**210**	296	320	391	**303**	7	**272,7**		PIONEER (A/06
1217	5/05/00	OFM/1025/ZP//L18	250/B/20	238		**238**	353	321	341	**338**	7		375	PIONEER (A/06
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
						L19								
1218	5/05/00	OFM/1025/ZP//L19	250/B/20	241	229	**235**	314	327	310	**317**	6	**241,2**		PIONEER (A/06
1277	18/05/00	OFM/1025/ZP//L19	250/B/20	188	201	**194**	277	267	259	**268**	9		272	PIONEER (A/07
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
						L20								
1278	18/05/00	OFM/1025/ZP//L20	250/B/20	198	184	**191**	261	257	241	**253**	9,5	**227,7**	314	PIONEER (A/07
1279	18/05/00	OFM/1025/ZP//L20	250/B/20	199	191	**195**	270	265	264	**266**	6,5		296	PIONEER (A/07
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		

RESUMEN DE HORMIGONES

AVE SUBTRAMO I UTE — OBRA: LINEA A. V. MADRID-ZARAGOZA-BARCELONA-F. FRANCESA.

TIPO DE HORMIGÓN: H-250 — Paso inferior 102.5 (102+563) Obras de Fábrica de Hormigón

OFM 1025

60 Días R/L	Fecha	Albarán Código	HORMIGON	TIPO HORMIGON R1	R2	RM	R1	R2	R3	RM	7 Días Consist	28 Días Fest	R	Albarán
						L21								
1280	18/05/00	OFM/1025/ZP//L21	250/B/20	201	201	**201**	263	275	271	**270**	9	**243,0**	294	PIONEER (A/07
1281	18/05/00	OFM/1025/ZP//L21	250/B/20	212	205	**209**	284	257	281	**274**	6,5		295	PIONEER (A/07
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
						L22								
1282	18/05/00	OFM/1025/ZP//L22	250/B/20	196	200	**198**	289	266	279	**278**	7	**237,6**	295	PIONEER (A/07
1283	18/05/00	OFM/1025/ZP//L22	250/B/20	182	202	**192**	263	271	257	**264**	7		306	PIONEER (A/07
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
						L23								
1330	25/05/00	OFM/1025/ZP//L23	250/B/20	204	190	**197**	295	276	273	**281**	6	**226,8**		PIONEER (A/07
1331	25/05/00	OFM/1025/ZP//L23	250/B/20	216		**216**	250	250	255	**252**	7,5		334	PIONEER (A/07
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
						L24								
1332	25/05/00	OFM/1025/ZP//L24	250/B/20	214	194	**204**	253	269	281	**268**	7	**232,2**		PIONEER (A/07
1333	25/05/00	OFM/1025/ZP//L24	250/B/20	191		**191**	256	268	251	**258**	6		268	PIONEER (A/07
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
						L25								
1334	25/05/00	OFM/1025/ZP//L25	250/B/20	186	197	**192**	255	267	244	**255**	6,5	**229,5**		PIONEER (A/07
1335	25/05/00	OFM/1025/ZP//L25	250/B/20	195		**195**	282	280	281	**281**	6		291	PIONEER (A/07
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
						I26								
1336	25/05/00	OFM/1025/ZP//L26	250/B/20	219	207	**213**	252	257	273	**261**	5	**234,9**		PIONEER (A/07
1337	25/05/00	OFM/1025/ZP//L26	250/B/20	211		**211**	297	262	250	**270**	8		297	PIONEER (A/07
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
						I27								
1338	25/05/00	OFM/1025/ZP//L27	250/B/20	199	204	**201**	276	262	265	**268**	9	**237,6**		PIONEER (A/07
1339	25/05/00	OFM/1025/ZP//L27	250/B/20	211		**211**	274	261	258	**264**	8		338	PIONEER (A/07
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
						L28								
1340	25/05/00	OFM/1025/ZP//L28	250/B/20	205	205	**205**	250	262	265	**259**	9,5	**233,1**		PIONEER (A/07
1341	25/05/00	OFM/1025/ZP//L28	250/B/20	231		**231**	294	281	255	**277**	7		369	PIONEER (A/07
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
						I29								
1342	25/05/00	OFM/1025/ZP//L29	250/B/20	210	235	**222**	276	279	282	**279**	8	**243,9**		PIONEER (A/08
1408	1/06/00	OFM/1025/AL4/Z02/L29	250/B/20	202	225	**214**	267	249	297	**271**	12,			PIONEER (A/08
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
						L30								
1409	1/06/00	OFM/1025/AL4/Z02/L30	250/B/20	259		**259**	259	268	254	**261**	5	**234,9**	319	PIONEER (A/08
1410	1/06/00	OFM/1025/AL4/Z02/L30	250/B/20	233	229	**231**	262	267	255	**261**	7			PIONEER (A/08
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		

RESUMEN DE HORMIGONES

AVE SUBTRAMO I UTE — OBRA: LINEA A. V. MADRID-ZARAGOZA-BARCELONA-F. FRANCESA.

TIPO DE HORMIGÓN: **H-250** — Paso inferior 102.5 (102+563) Obras de Fábrica de Hormigón

OFM 1025

60 Días R/L	Fecha	Albarán Código	HORMIGON	TIPO R1	TIPO R2	TIPO RM	HORMIGON R1	HORMIGON R2	HORMIGON R3	HORMIGON RM	7 Días Consist	28 Días Fest	R	Albarán
						L31								
1411	1/06/00	OFM/1025/AL4/Z02/L31	250/B/20	212		**212**	247	250	254	**250**	6,5	**225,0**	338	PIONEER (A/08
1412	1/06/00	OFM/1025/AL4/Z03/L31	250/B/20	203	216	**209**	256	254	251	**254**	10			PIONEER (A/08
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
						L32								
1413	1/06/00	OFM/1025/AL4/Z03/L32	250/B/20	209		**209**	250	255	276	**260**	6	**230,4**	311	PIONEER (A/08
1414	1/06/00	OFM/1025/AL4/Z03/L32	250/B/20	219	213	**216**	258	261	249	**256**	6			PIONEER (A/08
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
						L33								
1415	1/06/00	OFM/1025/AL4/Z03/L33	250/B/20	202		**202**	271	264	249	**262**	6	**235,8**	364	PIONEER (A/08
1447	7/06/00	OFM/1025/AL4/Z04/L33	250/B/20	241	245	**243**	299	262	275	**279**	7		284	PIONEER (A/08
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
						L34								
1448	7/06/00	OFM/1025/AL4/Z04/L34	250/B/20	263	236	**249**	373	337	329	**347**	7,5	**298,8**	374	PIONEER (A/08
1449	7/06/00	OFM/1025/AL4/Z04/L34	250/B/20	259	231	**245**	343	317	337	**332**	5		331	PIONEER (A/08
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
						L35								
1450	7/06/00	OFM/1025/AL4/Z05/L35	250/B/20	208	194	**201**	295	279	276	**283**	6	**254,7**	298	PIONEER (A/08
1451	7/06/00	OFM/1025/AL4/Z06/L35	250/B/20	266	242	**254**	331	316	328	**325**	6		390	PIONEER (A/08
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
						L36								
1605	22/06/00	OFM/1025/AL3/Z02/L36	250/B/20	233	277	**255**	290	290	310	**297**	8	**267,3**	310	PIONEER (A/09
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
						L37								
1857	26/07/00	OFM/1025/TB/V01/L37	250/B/20	277	260	**268,5**	356	371	368	**365**	9	**303,3**	397	PIONEER (A/11
1885	28/07/00	OFM/1025/TB/V01/L37	250/B/20	290	273	**281**	312	354	345	**337**	5		365	PIONER (A/11
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
						L38								
1931	4/08/00	OFM/1025/TB/V01/L38	250/B/20	241	258	**249**	342	371	365	**359**	6	**278,1**	388	PIONER (A/12
1932	4/08/00	OFM/1025/TB/V01/L38	250/B/20	212	200	**206**	295	308	323	**309**	8		317	PIONER (A/12
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
						L39								
1960	11/08/00	OFM/1025/TB/V02/L39	250/B/20	303	278	**290**	342	359	353	**351**	6	**225,9**	394	PIONER (A/12
1961	11/08/00	OFM/1025/TB/V02/L39	250/B/20	202	197	**200**	260	243	249	**251**	10		284	PIONER (A/12
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
						L40								
2086	31/08/00	OFM/1025/TB/N01/L40	250/B/20	237	231	**234**	276	282	309	**289**	9	**260,1**		PIONEER (A/13
2087	31/08/00	OFM/1025/TB/N01/L40	250/B/20	215	221	**218**	276	309	303	**296**	8			PIONEER (A/13
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		

RESUMEN DE HORMIGONES

AVE SUBTRAMO I UTE — OBRA: LINEA A. V. MADRID-ZARAGOZA-BARCELONA-F. FRANCESA.

TIPO DE HORMIGÓN: **H-250** — Paso inferior 102.5 (102+563) Obras de Fábrica de Hormigón

OFM 1025

60 Días R/L	Fecha	Albarán Código	HORMIGON	TIPO R1	TIPO R2	TIPO RM	HORMIGON R1	HORMIGON R2	HORMIGON R3	HORMIGON RM	7 Días Consist	28 Días Fest	R	Albarán
						L41								
2088	31/08/00	OFM/1025/TB/N01/L41	250/B/20	245	255	**250**	344	329	319	**331**	5	**266,4**		PIONEER (A/13
2089	31/08/00	OFM/1025/TB/N01/L41	250/B/20	217	229	**223**	321	303	265	**296**	9			PIONER (A/13
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
						L42								
2120	6/09/00	OFM/1025/TB/N02/L42	250/B/20	203	218	**210**	348	281	311	**313**	8	**281,7**		PIONER (A/13
2121	6/09/00	OFM/1025/TB/N02/L42	250/B/20	238	273	**255**	344	319	338	**334**	8			PIONER (A/13
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
						L43								
2122	6/09/00	OFM/1025/TB/N02/L43	250/B/20	223	234	**228**	307	276	267	**283**	8	**254,7**		PIONER (A/13
2123	6/09/00	OFM/1025/TB/N02/L43	250/B/20	249	256	**252**	308	317	299	**308**	7			PIONER (A/13
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
						L44								
2124	6/09/00	OFM/1025/TB/N02/L44	250/B/20	252	246	**249**	340	320	283	**314**	8	**282,6**		PIONER (A/13
2125	6/09/00	OFM/1025/TB/N02/L44	250/B/20	249	236	**242**	329	317	310	**319**	6			PIONER (A/13
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
						L45								
2126	6/09/00	OFM/1025/TB/N02/L45	250/B/20	241	242	**241**	294	324	339	**319**	4,5	**287,1**		PIONER (A/13
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		

RESUMEN DE HORMIGONES

AVE SUBTRAMO I UTE — **OBRA: LINEA A. V. MADRID-ZARAGOZA-BARCELONA-F. FRANCESA.**

TIPO DE HORMIGÓN: **H-250** — **Paso inferior 105.9 (105+906) Obras de Fábrica de Hormigón**

OFM 1059

60 Días R/L	Fecha	Albarán Código	HORMIGON	TIPO R1	TIPO R2	TIPO RM	HORMIGON R1	HORMIGON R2	HORMIGON R3	HORMIGON RM	7 Días Consist	28 Días Fest	R	Albarán
						L01								
382	19/10/99	OFM/1059/ZP//L01	250/B/20	233	235	**234**	293	289	297	**293**	6	**263,7**	311	PIONEER (A/00
383	19/10/99	OFM/1059/ZP//L01	250/B/20	236	241	**238**	321	328	324	**325**	8		351	PIONEER (A/00
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
						L02								
384	19/10/99	OFM/1059/ZP//L02	250/B/20	263	266	**264**	359	363	366	**363**	7	**312,3**	391	PIONEER (A/00
385	19/10/99	OFM/1059/ZP//L02	250/B/20	265	269	**267**	347	342	351	**347**	9		371	PIONEER (A/00
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
						L03								
386	19/10/99	OFM/1059/ZP//L03	250/B/20	248	252	**250**	326	321	329	**325**	8	**270,0**	349	PIONEER (A/00
387	19/10/99	OFM/1059/ZP//L03	250/B/20	239	242	**241**	304	301	296	**300**	6		314	PIONEER (A/00
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
						L04								
505	24/11/99	OFM/1059/MR2/A02/L04	250/B/20	181	188	**184**	290	310	338	**313**	7	**281,7**	355	PIONEER(A/011
506	24/11/99	OFM/1059/MR2/A02/L04	250/B/20	240	217	**229**	357	336	380	**358**	4		370	PIONEER(A/011
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
						L05								
507	24/11/99	OFM/1059/MR2/A02/L05	250/B/20	238	218	**228**	356	375	350	**360**	7	**322,2**	370	PIONEER(A/011
508	24/11/99	OFM/1059/MR2/A02/L05	250/B/20	273	240	**256**	351	368	356	**358**	6		394	PIONEER(A/011
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
						L06								
568	2/12/99	OFM/1059/MR1/A03/L06	250/B/20	204	217	**211**	331	366		**349**	6,5	**298,8**	363	PIONEER (A/01
569	2/12/99	OFM/1059/MR1/A03/L06	250/B/20	205	198	**201**	332	321	342	**332**	6,5		351	PIONEER (A/01
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
						L07								
570	2/12/99	OFM/1059/MR1/A03/L07	250/B/20	238	232	**235**	362	364	354	**360**	5	**307,8**	363	PIONEER (A/01
571	2/12/99	OFM/1059/MR1/A03/L07	250/B/20	197	184	**191**	357	329	341	**342**	8		365	PIONEER (A/01
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
						L08								
626	21/12/99	OFM/1059/AL1/Z01/L08	250/B/40	289	287	**288**	337	288	322	**316**	7	**261,9**	407	PIONEER (A/01
627	21/12/99	OFM/1059/AL2/Z02/L08	250/B/40	242	218	**230**	284	282	306	**291**	5		338	PIONEER (A/01
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
						L09								
639	23/12/99	OFM/1059/AL2/Z03/L09	250/B/40	254	238	**246**	334	348	311	**331**	7	**297,9**	369	PIONEER (A/02
640	23/12/99	OFM/1059/AL2/Z04/L09	250/B/40	311	328	**319**	363	359	340	**354**	5,5		366	PIONEER (A/02
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
						L10								
665	11/01/00	OFM/1059/AL1/A01/L10	250/B/20	237	272	**254**	367	371	349	**362**	7,5	**325,8**	378	PIONEER (A/02
666	11/01/00	OFM/1059/AL2/A01/L10	250/B/20	289	282	**286**	382	379	389	**383**	9,5		412	PIONEER (A/02
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		

RESUMEN DE HORMIGONES

AVE SUBTRAMO I UTE — **OBRA: LINEA A. V. MADRID-ZARAGOZA-BARCELONA-F. FRANCESA.**

TIPO DE HORMIGÓN: **H-250** — **Paso inferior 105.9 (105+906) Obras de Fábrica de Hormigón**

OFM 1059**

60 Días R/L	Fecha	Albarán Código	HORMIGON	TIPO R1	TIPO R2	TIPO RM	HORMIGON R1	HORMIGON R2	HORMIGON R3	HORMIGON RM	7 Días Consist	28 Días Fest	R	Albarán
						L11								
709	21/01/00	OFM/1059/AL1/A03/L11	250/B/20	218	205	**212**	350	338	343	**344**	9,5	**301,5**	401	PIONEER (A/02
710	21/01/00	OFM/1059/AL2/A04/L11	250/B/20	250	228	**239**	344	368	293	**335**	9,5		463	PIONEER (A/02
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
						L12								
731	27/01/00	OFM/1059/DT//L12	250/B/20	224	229	**226**	345	325	325	**332**	8,5	**298,8**		PIONEER (A/02
732	27/01/00	OFM/1059/DT//L12	250/B/20	265		**265**	346	407	343	**365**	7,5		421	PIONEER (A/02
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
						L13								
733	27/01/00	OFM/1059/DT//L13	250/B/20	200	193	**196**	330	327	310	**322**	8,5	**289,8**		PIONEER (A/02
734	27/01/00	OFM/1059/DT//L13	250/B/20	297		**297**	396	440	364	**400**	5,5		446	PIONEER (A/02
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
						L14								
735	27/01/00	OFM/1059/DT//L14	250/B/20	233	235	**234**	284	347	349	**327**	6,5	**274,5**		PIONEER (A/02
736	27/01/00	OFM/1059/DT//L14	250/B/20	242		**242**	265	321	328	**305**	7		401	PIONEER (A/37
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		

RESUMEN DE HORMIGONES

AVE SUBTRAMO I UTE — **OBRA: LINEA A. V. MADRID-ZARAGOZA-BARCELONA-F. FRANCESA.**

TIPO DE HORMIGÓN: **H-250** — **Paso inferior 107.0 (106+968) Obras de Fábrica de Hormigón**

OFM 1070

60 Días R/L	Fecha	Albarán Código	HORMIGON	TIPO R1	TIPO R2	TIPO RM	HORMIGON R1	HORMIGON R2	HORMIGON R3	HORMIGON RM	7 Días Consist	28 Días Fest	R	Albarán
						L01								
727	27/01/00	OFM/1070/ZP//L01	250/B/20	217	248	**233**	336	326	346	**336**	7	**285,3**		PIONEER (A/02
728	27/01/00	OFM/1070/ZP//L01	250/B/20	212		**212**	375	257	317	**317**	8,5		367	PIONEER (A/02
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
						L02								
729	27/01/00	OFM/1070/ZP//L02	250/B/20	203	178	**191**	280	280	290	**283**	11	**254,7**		PIONEER (A/37
730	27/01/00	OFM/1070/ZP//L02	250/B/20	213	229	**221**	307	373	286	**322**	10		372	PIONEER (A/02
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
						L03								
1158	19/04/00	OFM/1070/ES1/C01/L03	250/B/20	268	280	**274**	351	341	355	**349**	8	**314,1**	358	PIONEER (A/06
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
						L04								
1543	16/06/00	OFM/1070/TB/N01/L04	250/B/20	215	185	**200**	283	286	288	**286**	8	**257,4**	290	PIONEER (A/09
1544	16/06/00	OFM/1070/TB/N01/L04	250/B/20	257	255	**256**	295	333	333	**320**	5		329	PIONEER (A/09
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		

RESUMEN DE HORMIGONES

AVE SUBTRAMO I UTE — **OBRA: LINEA A. V. MADRID-ZARAGOZA-BARCELONA-F. FRANCESA.**

TIPO DE HORMIGÓN: **H-250** — **Paso inferior 107.9 (107+939) Obras de Fábrica de Hormigón**

OFM 1079

60 Días R/L	Fecha	Albarán Código	HORMIGON	TIPO R1	TIPO R2	TIPO RM	HORMIGON R1	HORMIGON R2	HORMIGON R3	HORMIGON RM	7 Días Consist	28 Días Fest	R	Albarán
						L01								
995	15/03/00	OFM/1079/ZP//L01	250/B/20	242	229	**235**	250	259	257	**255**	7,5	**229,5**		PIONEER (A/04
996	15/03/00	OFM/1079/ZP//L01	250/B/20	284	290	**287**	314	320	329	**321**	5		397	PIONEER (A/04
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
						L02								
997	15/03/00	OFM/1079/ZP//L02	250/B/20	272	255	**264**	267	322	282	**290**	5,5	**252,9**		PIONEER (A/04
998	15/03/00	OFM/1079/ZP//L02	250/B/20	222	212	**217**	273	286	284	**281**	5		331	PIONEER (A/04
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
						L03								
999	15/03/00	OFM/1079/ZP//L03	250/B/20	277	264	**270**	301	334	317	**317**	5	**264,6**		PIONEER (A/04
1000	15/03/00	OFM/1079/ZP//L03	250/B/20	221	247	**234**	290	279	314	**294**	10		342	PIONEER (A/04
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
						L04								
1001	15/03/00	OFM/1079/ZP//L04	250/B/20	281	239	**260**	286	302	329	**306**	5	**275,4**		PIONEER (A/04
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		
						L05								
1981	17/08/00	OFM/1079/TB//L05	250/B/20	231	226	**228**	301	313	263	**292**	5,5	**252,0**		PIONEER (A/12
1982	17/08/00	OFM/1079/TB//L05	250/B/20	209	203	**206**	259	310	272	**280**	6		346	PIONEER (A/12
CALIFICACION DEL LOTE (ACEPTADO/RECHAZADO)												**ACEPTADO**		

AVE SUBTRAMO I UTE

RESUMEN DE ENSAYOS: ACERO

OBRA: LINEA A. V. MADRID-ZARAGOZA-BARCELONA-F. FRANCESA.

Fecha: 19/06/01

R/L	Código	Fecha	Tipo acero	Procedencia	Marca	Diametro	Carac.Ponderales							Carac. Geome.		Carac. Mecánicas								
							Sec.nomin.	D.mín.	D.máx.	Dif.diam.	Secc. equi.	Toler.	Masa lineal	Alt.corr.	Sep.corr.	Carg.l. elas.	Lim.elas.	Car.rotura	Car.unita.	Alarga.	Rel.fs/fy	For.rotur.	Dobla.	Desdo.
00860	**SMR/ACERO///860**	2/11/99	B-500-S	ARMACENTRO	CELSAFER	**10**	78,5	9,67	9,88	0,21	80,0	1,87	0,63	0,74	7,42	4.526	5.766	5.259	6.699	31,66	1,16	irregular	satisfactorio	satistactorio
01139	**SMR/ACERO///1139**	17/04/00	B-500-S	ARMACENTRO	NERVACERO	**10**	78,5	9,55	9,74	0,19	80,1	1,96	0,63	0,71	6,73	4.380	5.580	4.790	6.102	24,60	1,09	irregular	satisfactorio	satisfactorio
02128	**SMR/ACERO///2128**	7/09/00	B-500-S	ARMACENTRO	NERVACERO	**10**	78,5	9,46	9,81	0,35	79,3	1,06	0,62	0,67	8,14	4.340	5.529	5.256	6.696	22,54	1,21	irregular	satisfactorio	satisfactorio
02129	**SMR/ACERO///2129**	7/09/00	B-500-S	ARMACENTRO	NERVACERO	**10**	78,5	9,42	9,80	0,38	79,1	0,72	0,62	0,67	8,14	4.185	5.331	5.383	6.857	24,04	1,29	irregular	satisfactorio	satisfactorio
00861	**SMR/ACERO///861**	2/11/99	B-500-S	ARMACENTRO	NERVACERO	**12**	113,1	11,41	11,70	0,29	117,5	3,77	0,92	1,06	7,28	6.885	6.088	8.115	7.175	19,35	1,18	irregular	satisfactorio	satistactorio
01140	**SMR/ACERO///1140**	17/04/00	B-500-S	ARMACENTRO	NERVACERO	**12**	113,1	11,30	11,56	0,26	110,5	-2,36	0,87	0,89	7,40	6.210	5.491	6.900	6.101	25,33	1,11	irregular	satisfactorio	satisfactorio
02130	**SMR/ACERO///2130**	7/09/00	B-500-S	ARMACENTRO	NERVACERO	**12**	113,1	11,08	11,34	0,26	111,2	-1,71	0,87	1,03	7,48	3.182	5.466	7.356	6.504	21,63	1,19	irregular	satisfactorio	satisfactorio
02131	**SMR/ACERO///2131**	7/09/00	B-500-S	ARMACENTRO	NERVACERO	**12**	113,1	11,04	11,38	0,34	111,1	-1,83	0,87	1,02	7,49	6.130	5.420	7.243	6.404	18,92	1,18	irregular	satisfactorio	satisfactorio
00862	**SMR/ACERO///862**	2/11/99	B-500-S	ARMACENTRO	NERVACERO	**16**	201,1	14,67	15,43	0,76	198,6	-1,23	1,56	1,52	9,53	11.851	5.893	14.048	6.986	17,96	1,19	irregular	satisfactorio	satistactorio

AVE SUBTRAMO I UTE

RESUMEN DE ENSAYOS: ACERO

OBRA: LINEA A. V. MADRID-ZARAGOZA-BARCELONA-F. FRANCESA.

Fecha: 19/06/01

R/L	Código	Fecha	Tipo acero	Procedencia	Marca	Diametro	Carac.Ponderales							Carac. Geome.		Carac. Mecánicas								
							Sec.nomin.	D.mín.	D.máx.	Dif.diam.	Secc. equi.	Toler.	Masa lineal	Alt.corr.	Sep.corr.	Carg.l. elas.	Lim.elas.	Car.rotura	Car.unita.	Alarga.	Rel.fs/fy	For.rotur.	Dobla.	Desdo.
00867	**SMR/ACERO///867**	14/01/00	B-500-S	ARMACENTRO	NERVACERO	**16**	201,1	15,01	15,27	0,26	198,0	-1,56	1,55	1,42	9,12	11.938	5.936	13.901	6.912	21,96	1,16	irregular	satisfactorio	satistactorio
01141	**SMR/ACERO///1141**	17/04/00	B-500-S	ARMACENTRO	NERVACERO	**16**	201,1	15,09	15,60	0,51	204,0	1,43	1,60	1,33	9,51	20.710	5.326	11.620	5.778	25,25	1,08	irregular	satisfactorio	satisfactorio
02132	**SMR/ACERO///2132**	7/09/00	B-500-S	ARMACENTRO	NERVACERO	**16**	201,1	15,28	15,54	0,26	201,9	0,39	1,58	1,20	11,24	11.090	5.515	13.429	6.678	22,76	1,21	irregular	satisfactorio	satisfactorio
02133	**SMR/ACERO///2133**	7/09/00	B-500-S	ARMACENTRO	NERVACERO	**16**	201,1	15,25	15,48	0,23	202,5	0,68	1,59	1,18	11,28	11.273	5.606	13.260	6.594	16,63	1,18	irregular	satisfactorio	satisfactorio
00863	**SMR/ACERO///863**	2/11/99	B-500-S	ARMACENTRO	NERVACERO	**20**	314,2	18,93	19,14	0,21	306,2	-2,60	2,40	1,67	11,73	17.153	5.459	20.552	6.541	18,58	1,20	irregular	satisfactorio	satistactorio
00866	**OFM/1021/BV/ACERO/866**	24/11/99	B-500-S	ALVISA	ALTRES	**20**	314,2	18,73	19,30	0,57	315,5	0,42	2,48	1,76	11,64	17.871	5.688	20.508	6.527	25,84	1,15	irregular	satisfactorio	satistactorio
00868	**SMR/ACERO///868**	14/01/00	B-500-S	ARMACENTRO	NERVACERO	**20**	314,2	18,99	19,15	0,16	317,3	0,99	2,49	1,76	12,34	17.856	5.683	21.431	6.821	20,18	1,20	irregular	satisfactorio	satistactorio
01142	**SMR/ACERO///1142**	17/04/00	B-500-S	ARMACENTRO	NERVACERO	**20**	314,2	18,92	19,09	0,17	308,0	-2,03	2,42	1,81	12,20	16.510	5.255	18.190	5.789	22,50	1,10	irregular	satisfactorio	satisfactorio
01143	**SMR/ACERO///1143**	17/04/00	B-500-S	ARMACENTRO	NERVACERO	**20**	314,2	18,72	19,02	0,30	310,1	-1,32	2,43	1,89	12,25	16.600	5.283	18.300	5.824	22,30	1,10	irregular	satisfactorio	satisfactorio

AVE SUBTRAMO I UTE

RESUMEN DE ENSAYOS: ACERO

OBRA: LINEA A. V. MADRID-ZARAGOZA-BARCELONA-F. FRANCESA.

Fecha: 19/06/01

R/L	Código	Fecha	Tipo acero	Procedencia	Marca	Diametro	Carac.Ponderales							Carac. Geome.		Carac. Mecánicas								
							Sec.nomin.	D.mín.	D.máx.	Dif.diam.	Secc. equi.	Toler.	Masa lineal	Alt.corr.	Sep.corr.	Carg.l. elas.	Lim.elas.	Car.rotura	Car.unita.	Alarga.	Rel.fs/fy	For.rotur.	Dobla.	Desdo.
02134	**SMR/ACERO///2134**	7/09/00	B-500-S	ARMACENTRO	NERVACERO	**20**	314,2	18,90	19,46	0,56	316,3	0,67	2,48	1,58	11,28	17.009	5.413	21.842	6.952	18,70	1,28	irregular	satisfactorio	satisfactorio
02135	**SMR/ACERO///2135**	7/09/00	B-500-S	ARMACENTRO	NERVACERO	**20**	314,2	18,88	19,42	0,54	313,6	-0,18	2,46	1,70	13,74	16.769	5.337	21.039	6.696	17,59	1,25	irregular	satisfactorio	satisfactorio
02136	**SMR/ACERO///2136**	7/09/00	B-500-S	ARMACENTRO	NERVACERO	**20**	314,2	18,95	19,47	0,52	315,0	0,25	2,47	1,67	13,77	16.149	5.140	21.124	6.723	19,62	1,31	irregular	satisfactorio	satisfactorio
00864	**SMR/ACERO///864**	2/11/99	B-500-S	ARMACENTRO	NERVACERO	**25**	490,9	23,12	23,99	0,88	482,2	-1,80	3,79	2,07	14,76	28.330	5.771	34.219	6.971	21,70	1,21	irregular	satisfactorio	satistactorio
00869	**SMR/ACERO///869**	14/01/00	B-500-S	ARMACENTRO	CELSAFER	**25**	490,9	23,77	24,41	0,64	487,5	-0,70	3,83	1,70	17,17	27.290	5.559	31.641	6.446	20,06	1,16	irregular	satisfactorio	satistactorio
00870	**SMR/ACERO///870**	14/01/00	B-500-S	ARMACENTRO	CELSAFER	**25**	490,9	24,01	24,51	0,50	496,1	1,05	3,89	1,72	17,10	28.330	5.771	32.637	6.648	22,48	1,15	irregular	satisfactorio	satistactorio
02137	**SMR/ACERO///2137**	7/09/00	B-500-S	ARMACENTRO	NERVACERO	**25**	490,9	23,34	24,68	1,34	189,2	-0,34	3,84	1,58	18,10	28.351	5.775	35.258	7.182	20,85	1,24	irregular	satisfactorio	satisfactorio
02138	**SMR/ACERO///2138**	7/09/00	B-500-S	ARMACENTRO	NERVACERO	**25**	490,9	23,51	24,57	1,06	481,6	-1,93	3,78	1,41	17,91	28.576	5.821	33.116	6.746	21,58	1,16	irregular	satisfactorio	satisfactorio
02139	**SMR/ACERO///2139**	7/09/00	B-500-S	ARMACENTRO	NERVACERO	**25**	490,9	23,37	24,60	1,23	477,1	-2,89	3,75	1,47	17,82	28.409	5.787	34.483	7.024	20,23	1,21	irregular	satisfactorio	satisfactorio

AVE SUBTRAMO I UTE

RESUMEN DE ENSAYOS: ACERO

OBRA: LINEA A. V. MADRID-ZARAGOZA-BARCELONA-F. FRANCESA.

Fecha: 19/06/01

R/L	Código	Fecha	Tipo acero	Procedencia	Marca	Diametro	Carac.Ponderales							Carac. Geome.		Carac. Mecánicas								
							Sec.nomin.	D.mín.	D.máx.	Dif.diam.	Secc. equi.	Toler.	Masa lineal	Alt.corr.	Sep.corr.	Carg.l. elas.	Lim.elas.	Car.rotura	Car.unita.	Alarga.	Rel.fs/fy	For.rotur.	Dobla.	Desdo.
02140	SMR/ACERO///2140	7/09/00	B-500-S	ARMACENTRO	NERVACERO	25	490,9	23,48	24,51	1,03	483,6	-1,52	3,80	1,67	17,74	28.071	5.718	35.117	7.154	22,89	1,25	irregular	satisfactorio	satisfactorio
02141	SMR/ACERO///2141	7/09/00	B-500-S	ARMACENTRO	NERVACERO	25	490,9	23,36	24,42	1,06	183,7	-1,49	3,80	1,51	18,19	27.141	5.529	35.385	7.208	21,78	1,30	irregular	satisfactorio	satisfactorio
02142	SMR/ACERO///2142	7/09/00	B-500-S	ARMACENTRO	NERVACERO	25	490,9	23,96	24,59	0,63	482,9	-1,67	3,79	1,70	18,21	27.604	5.623	32.763	6.674	20,86	1,19	irregular	satisfactorio	satisfactorio

AUTOCONTROL
M-45 U.T.E. TRAMO II

UTE M-45. 27 de junio de 2001

ESTRUCTURA 20.
(TAV A BARCELONA).
TABLERO IZQUIERDO

20 jun 01 30 may 01 29 may 01

FECHA TOMA	OBRA	F_{ck} Kg/cm²	ESTRUCTURA	LOCALIZACIÓN	SERIE	LOTE	PLANTA	HORA FABRIC.	HORA TOMA	ALBARÁN	CONO cm	TAM ÁRIDO mm	TIPO CEMENTO	ADITIVO	MEDIA 7 Kg/cm²	MEDIA 28 Kg/cm²	DENSIDAD g/cm³	CONSISTENCIA cm	90 DÍAS	OBSERVACIONES
25/04/2001	UTE M-45 TRAMO II	250	E-20	LOSA CALZADA IZQDA. 51ª PUESTA CARRO	1	TE20-I51	HAT	8,37	9,50	28499	15	20	CEM II/A-V 42,5 R	EUCOBET 710 + MELMENT L240 (0,6%)	290	346	2,34	BLANDA		EL LOTE CUMPLE
25/04/2001	UTE M-45 TRAMO II	250	E-20	LOSA CALZADA IZQDA 51ª PUESTA CARRO	2	TE20-I51	HAT	10,12	11,20	28510	16	20	CEM II/A-V 42,5 R	EUCOBET 710 + MELMENT L240 (0,6%)	276	328	2,35	BLANDA		EL LOTE CUMPLE
26/04/2001	UTE M-45 TRAMO II	250	E-20	LOSA CALZADA IZQDA 52ª PUESTA CARRO	1	TE20-I52	HAT	19,17	20,20	28645	15	20	CEM II/A-V 42,5 R	EUCOBET 710 + MELMENT L240 (0,6%)	359	389	2,34	BLANDA		EL LOTE CUMPLE
26/04/2001	UTE M-45 TRAMO II	250	E-20	LOSA CALZADA IZQDA 52ª PUESTA CARRO	2	TE20-I52	HAT	19,52	21,25	28649	16	20	CEM II/A-V 42,5 R	EUCOBET 710 + MELMENT L240 (0,6%)	275	314	2,30	BLANDA		EL LOTE CUMPLE
7/05/2001	UTE M-45 TRAMO II	250	E-20	LOSA CALZADA IZQDA 53ª PUESTA CARRO	1	TE20-I53	HAT	16,14	17,05	28871	15	20	CEM II/A-V 42,5 R	EUCOBET 710 + MELMENT L240 (0,6%)	290	333	2,37	BLANDA		EL LOTE CUMPLE
7/05/2001	UTE M-45 TRAMO II	250	E-20	LOSA CALZADA IZQDA 53ª PUESTA CARRO	2	TE20-I53	HAT	16,33	17,45	28874	16	20	CEM II/A-V 42,5 R	EUCOBET 710 + MELMENT L240 (0,6%)	310	377	2,37	BLANDA		EL LOTE CUMPLE
9/05/2001	UTE M-45 TRAMO II	250	E-20	LOSA CALZADA IZQDA 54ª PUESTA CARRO	1	TE20-I54	HAT	10,06	11,25	28988	15	20	CEM II/A-V 42,5 R	EUCOBET 710 + MELMENT L240 (0,6%)	314	388	2,37	BLANDA		EL LOTE CUMPLE
9/05/2001	UTE M-45 TRAMO II	250	E-20	LOSA CALZADA IZQDA 54ª PUESTA CARRO	2	TE20-I54	HAT	10,45	11,40	28989	16	20	CEM II/A-V 42,5 R	EUCOBET 710 + MELMENT L240 (0,6%)	302	352	2,36	BLANDA		EL LOTE CUMPLE
11/05/2001	UTE M-45 TRAMO II	250	E-20	LOSA CALZADA IZQDA 55ª PUESTA CARRO	1	TE20-I55	HAT	8,28	9,45	29091	17	20	CEM II/A-V 42,5 R	EUCOBET 710 + MELMENT L240 (0,6%)	293	352	2,36	BLANDA		EL LOTE CUMPLE
11/05/2001	UTE M-45 TRAMO II	250	E-20	LOSA CALZADA IZQDA 55ª PUESTA CARRO	2	TE20-I55	HAT	9,58	11,00	29101	15	20	CEM II/A-V 42,5 R	EUCOBET 710 + MELMENT L240 (0,6%)	313	396	2,39	BLANDA		EL LOTE CUMPLE
16/05/2001	UTE M-45 TRAMO II	250	E-20	LOSA CALZADA IZQDA 56ª PUESTA CARRO	1	TE20-I56	HAT	18,27	19,35	29259	17	20	CEM II/A-V 42,5 R	EUCOBET 710 + MELMENT L240 (0,6%)	251	304	2,36	BLANDA		EL LOTE CUMPLE
16/05/2001	UTE M-45 TRAMO II	250	E-20	LOSA CALZADA IZQDA 56ª PUESTA CARRO	2	TE20-I56	HAT	19,04	20,15	29263	15	20	CEM II/A-V 42,5 R	EUCOBET 710 + MELMENT L240 (0,6%)	306	371	2,37	BLANDA		EL LOTE CUMPLE
18/05/2001	UTE M-45 TRAMO II	250	E-20	LOSA CALZADA IZQDA 57ª PUESTA CARRO	1	TE20-I57	HAT	17,44	18,45	29392	15	20	CEM II/A-V 42,5 R	EUCOBET 710 + MELMENT L240 (0,6%)	350	384	2,37	BLANDA		EL LOTE CUMPLE
18/05/2001	UTE M-45 TRAMO II	250	E-20	LOSA CALZADA IZQDA 57ª PUESTA CARRO	2	TE20-I57	HAT	18,16	19,40	29397	16	20	CEM II/A-V 42,5 R	EUCOBET 710 + MELMENT L240 (0,6%)	317	362	2,36	BLANDA		EL LOTE CUMPLE
22/05/2001	UTE M-45 TRAMO II	250	E-20	LOSA CALZADA IZQDA 58ª PUESTA CARRO	1	TE20-I58	HAT	9,54	10,55	29476	16	20	CEM II/A-V 42,5 R	EUCOBET 710 + MELMENT L240 (0,6%)	280	332	2,34	BLANDA		EL LOTE CUMPLE
22/05/2001	UTE M-45 TRAMO II	250	E-20	LOSA CALZADA IZQDA 58ª PUESTA CARRO	2	TE20-I58	HAT	11,25	12,40	29488	15	20	CEM II/A-V 42,5 R	EUCOBET 710 + MELMENT L240 (0,6%)	280	328	2,34	BLANDA		EL LOTE CUMPLE

AUTOCONTROL
M-45 U.T.E. TRAMO II

UTE M-45. 27 de junio de 2001

ESTRUCTURA 20.
(TAV A BARCELONA).
TABLERO DERECHO

20 jun 01 30 may 01 29 may 01

FECHA TOMA	OBRA	F_{ck} Kg/cm²	ESTRUCTURA	LOCALIZACIÓN	SERIE	LOTE	PLANTA	HORA FABRIC.	HORA TOMA	ALBARÁN	CONO cm	TAM ÁRIDO mm	TIPO CEMENTO	ADITIVO	MEDIA 7 Kg/cm²	MEDIA 28 Kg/cm²	DENSIDAD g/cm³	CONSISTENCIA cm	90 DÍAS	OBSERVACIONES
20/04/2001	UTE M-45 TRAMO II	250	E-20	LOSA CALZADA DCHA 51ª PUESTA CARRO	1	TE20-D51	HAT	15,21	16,30	28353	16	20	CEM II/A-V 42,5 R	EUCOBET 710 + MELMENT L240 (0,6%)	252	308	2,34	BLANDA		EL LOTE CUMPLE
20/04/2001	UTE M-45 TRAMO II	250	E-20	LOSA CALZADA DCHA. 51ª PUESTA CARRO	2	TE20-D51	HAT	16,09	17,30	28358	15	20	CEM II/A-V 42,5 R	EUCOBET 710 + MELMENT L240 (0,6%)	284	342	2,36	BLANDA		EL LOTE CUMPLE
24/04/2001	UTE M-45 TRAMO II	250	E-20	LOSA CALZADA DCHA. 52ª PUESTA CARRO	1	TE20-D52	HAT	9,10	10,15	28437	14	20	CEM II/A-V 42,5 R	EUCOBET 710 + MELMENT L240 (0,6%)	335	409	2,37	BLANDA		EL LOTE CUMPLE
24/04/2001	UTE M-45 TRAMO II	250	E-20	LOSA CALZADA DCHA 52ª PUESTA CARRO	2	TE20-D52	HAT	9,51	11,05	28441	16	20	CEM II/A-V 42,5 R	EUCOBET 710 + MELMENT L240 (0,6%)	297	356	2,37	BLANDA		EL LOTE CUMPLE
25/04/2001	UTE M-45 TRAMO II	250	E-20	LOSA CALZADA DCHA. 53ª PUESTA CARRO	1	TE20-D53	HAT	19,11	20,25	28559	16	20	CEM II/A-V 42,5 R	EUCOBET 710 + MELMENT L240 (0,6%)	253	295	2,36	BLANDA		EL LOTE CUMPLE
25/04/2001	UTE M-45 TRAMO II	250	E-20	LOSA CALZADA DCHA 53ª PUESTA CARRO	2	TE20-D53	HAT	20,29	21,35	28569	15	20	CEM II/A-V 42,5 R	EUCOBET 710 + MELMENT L240 (0,6%)	251	302	2,33	BLANDA		EL LOTE CUMPLE
27/04/2001	UTE M-45 TRAMO II	250	E-20	LOSA CALZADA DCHA 54ª PUESTA CARRO	1	TE20-D54	HAT	17,23	18,30	28715	13	20	CEM II/A-V 42,5 R	EUCOBET 710 + MELMENT L240 (0,6%)	296	353	2,33	BLANDA		EL LOTE CUMPLE
27/04/2001	UTE M-45 TRAMO II	250	E-20	LOSA CALZADA DCHA 54ª PUESTA CARRO	2	TE20-D54	HAT	18,26	19,25	28720	14	20	CEM II/A-V 42,5 R	EUCOBET 710 + MELMENT L240 (0,6%)	336	397	2,35	BLANDA		EL LOTE CUMPLE
8/05/2001	UTE M-45 TRAMO II	250	E-20	LOSA CALZADA DCHA 55ª PUESTA CARRO	1	TE20-D55	HAT	9,06	10,15	28807	15	20	CEM II/A-V 42,5 R	EUCOBET 710 + MELMENT L240 (0,6%)	271	335	2,35	BLANDA		EL LOTE CUMPLE
8/05/2001	UTE M-45 TRAMO II	250	E-20	LOSA CALZADA DCHA 55ª PUESTA CARRO	2	TE20-D55	HAT	10,42	11,40	28818	16	20	CEM II/A-V 42,5 R	EUCOBET 710 + MELMENT L240 (0,6%)	324	374	2,34	BLANDA		EL LOTE CUMPLE
10/05/2001	UTE M-45 TRAMO II	250	E-20	LOSA CALZADA DCHA 56ª PUESTA CARRO	1	TE20-D56	HAT	8,14	9,25	29037	17	20	CEM II/A-V 42,5 R	EUCOBET 710 + MELMENT L240 (0,6%)	329	375	2,38	BLANDA		EL LOTE CUMPLE
10/05/2001	UTE M-45 TRAMO II	250	E-20	LOSA CALZADA DCHA 56ª PUESTA CARRO	2	TE20-D56	HAT	9,27	10,35	29048	15	20	CEM II/A-V 42,5 R	EUCOBET 710 + MELMENT L240 (0,6%)	315	369	2,38	BLANDA		EL LOTE CUMPLE
11/05/2001	UTE M-45 TRAMO II	250	E-20	LOSA CALZADA DCHA 57ª PUESTA CARRO	1	TE20-D57	HAT	16,05	17,10	29124	15	20	CEM II/A-V 42,5 R	EUCOBET 710 + MELMENT L240 (0,6%)	214	267	2,30	BLANDA	F	EL LOTE CUMPLE
11/05/2001	UTE M-45 TRAMO II	250	E-20	LOSA CALZADA DCHA 57ª PUESTA CARRO	2	TE20-D57	HAT	17,10	18,20	29142	14	20	CEM II/A-V 42,5 R	EUCOBET 710 + MELMENT L240 (0,6%)	211	268	2,29	BLANDA		EL LOTE CUMPLE
18/05/2001	UTE M-45 TRAMO II	250	E-20	LOSA CALZADA DCHA 58ª PUESTA CARRO	1	TE20-D58	HAT	9,39	10,55	29335	16	20	CEM II/A-V 42,5 R	EUCOBET 710 + MELMENT L240 (0,6%)	280	313	2,37	BLANDA		EL LOTE CUMPLE
18/05/2001	UTE M-45 TRAMO II	250	E-20	LOSA CALZADA DCHA 58ª PUESTA CARRO	2	TE20-D58	HAT	11,43	13,00	29353	15	20	CEM II/A-V 42,5 R	EUCOBET 710 + MELMENT L240 (0,6%)	288	311	2,35	BLANDA		EL LOTE CUMPLE

AUTOCONTROL M-45 U.T.E. TRAMO II

UTE M-45. 27 de junio de 2001

ESTRUCTURA 20. (TAV A BARCELONA). ZAPATA PILAS 1 Y 2

20 jun 01 30 may 01 29 mar 01

FECHA TOMA	OBRA	F_{ck} Kg/cm²	ESTRUCTURA	LOCALIZACIÓN	SERIE	LOTE	PLANTA	HORA FABRIC.	HORA TOMA	ALBARÁN	CONO cm	TAM.ÁRIDO mm	TIPO CEMENTO	ADITIVO	MEDIA 7 Kg/cm²	MEDIA 28 Kg/cm²	DENSIDAD g/cm³	CONSISTENCIA cm	90 DIAS	OBSERVACIONES
13/09/2000	UTE M-45 TRAMO II	250	E-20	ZAPATA PILA Nº 1 CALZADA DERECHA	1	ZE20LD1	HYMPSA	8,32	9,20	104187	6	20	CEM I 42,5 R/SR	PLASTIFICANTE	312	337	2,33	BLANDA	451	EL LOTE CUMPLE
13/09/2000	UTE M-45 TRAMO II	250	E-20	ZAPATA PILA Nº 1 CALZADA DERECHA	2	ZE20LD1	HYMPSA	10,57	11,35	104208	7	20	CEM I 42,5 R/SR	PLASTIFICANTE	290	312	2,33	BLANDA	430	EL LOTE CUMPLE
13/09/2000	UTE M-45 TRAMO II	250	E-20	ZAPATA PILA Nº 1 CALZADA DERECHA	3	ZE20LD1	HYMPSA	11,20	11,50	104212	8	20	CEM I 42,5 R/SR	PLASTIFICANTE	261	283	2,32	BLANDA	316	EL LOTE CUMPLE
13/09/2000	UTE M-45 TRAMO II	250	E-20	ZAPATA PILA Nº 1 CALZADA DERECHA	4	ZE20LD1	HYMPSA	12,06	12,50	104221	7	20	CEM I 42,5 R/SR	PLASTIFICANTE	282	312	2,31	BLANDA	394	EL LOTE CUMPLE
22/09/2000	UTE M-45 TRAMO II	250	E-20	ZAPATA PILA Nº 2 CALZADA DERECHA	1	ZE20LD2	HYMPSA	16,46	17,40	104872	7	20	CEM I 42,5 R/SR	PLASTIFICANTE	303	349	2,34	BLANDA	392	EL LOTE CUMPLE
22/09/2000	UTE M-45 TRAMO II	250	E-20	ZAPATA PILA Nº 2 CALZADA DERECHA	2	ZE20LD2	HYMPSA	17,25	18,20	104876	6	20	CEM I 42,5 R/SR	PLASTIFICANTE	310	352	2,34	BLANDA	431	EL LOTE CUMPLE
22/09/2000	UTE M-45 TRAMO II	250	E-20	ZAPATA PILA Nº 2 CALZADA DERECHA	3	ZE20LD2	HYMPSA	17,51	19,17	64130	6	20	CEM I 42,5 R/SR	PLASTIFICANTE	278	323	2,33	BLANDA	396	EL LOTE CUMPLE
22/09/2000	UTE M-45 TRAMO II	250	E-20	ZAPATA PILA Nº 2 CALZADA DERECHA	4	ZE20LD2	HYMPSA	18,41	20,00	104883	7	20	CEM I 42,5 R/SR	PLASTIFICANTE	306	365	2,32	BLANDA	409	EL LOTE CUMPLE
11/09/2000	UTE M-45 TRAMO II	250	E-20	ZAPATA PILA Nº 1 CALZADA IZQUIERDA	1	ZE20LI1	HYMPSA	16,12	16,55	104095	8	20	CEM I 42,5 R/SR	PLASTIFICANTE	295	322	2,35	BLANDA	426	EL LOTE CUMPLE
11/09/2000	UTE M-45 TRAMO II	250	E-20	ZAPATA PILA Nº 1 CALZADA IZQUIERDA	2	ZE20LI1	HYMPSA	17,45	18,30	104105	8	20	CEM I 42,5 R/SR	PLASTIFICANTE	255	288	2,34	BLANDA	375	EL LOTE CUMPLE
11/09/2000	UTE M-45 TRAMO II	250	E-20	ZAPATA PILA Nº 1 CALZADA IZQUIERDA	3	ZE20LI1	HYMPSA	18,42	17,30	104113	8	20	CEM I 42,5 R/SR	PLASTIFICANTE	313	348	2,35	BLANDA	460	EL LOTE CUMPLE
11/09/2000	UTE M-45 TRAMO II	250	E-20	ZAPATA PILA Nº 1 CALZADA IZQUIERDA	4	ZE20LI1	HYMPSA	19,39	20,30	104122	7	20	CEM I 42,5 R/SR	PLASTIFICANTE	301	335	2,35	BLANDA	441	EL LOTE CUMPLE
18/09/2000	UTE M-45 TRAMO II	250	E-20	ZAPATA PILA Nº 2 CALZADA IZQUIERDA	1	ZE20LI2	HYMPSA	15,18	15,55	104500	11	20	CEM I 42,5 R/SR	PLASTIFICANTE	232	297	2,33	BLANDA	341	EL LOTE CUMPLE
18/09/2000	UTE M-45 TRAMO II	250	E-20	ZAPATA PILA Nº 2 CALZADA IZQUIERDA	2	ZE20LI2	HYMPSA	16,15	16,55	104512	10	20	CEM I 42,5 R/SR	PLASTIFICANTE	271	328	2,31	BLANDA	388	EL LOTE CUMPLE
18/09/2000	UTE M-45 TRAMO II	250	E-20	ZAPATA PILA Nº 2 CALZADA IZQUIERDA	3	ZE20LI2	HYMPSA	17,25	18,15	104525	9	20	CEM I 42,5 R/SR	PLASTIFICANTE	214	282	2,32	BLANDA	308	EL LOTE CUMPLE
18/09/2000	UTE M-45 TRAMO II	250	E-20	ZAPATA PILA Nº 2 CALZADA IZQUIERDA	4	ZE20LI2	HYMPSA	18,14	19,05	104533	6	20	CEM I 42,5 R/SR	PLASTIFICANTE	315	405	2,33	BLANDA	432	EL LOTE CUMPLE

AUTOCONTROL M-45 U.T.E. TRAMO II

UTE M-45 27 de junio de 2001

ESTRUCTURA 20. (TAV A BARCELONA). ESTRIBO 1

20 jun 01 30 may 01 29 mar 01

FECHA TOMA	OBRA	F_{ck} Kg/cm²	ESTRUCTURA	LOCALIZACIÓN	SERIE	LOTE	PLANTA	HORA FABRIC.	HORA TOMA	ALBARÁN	CONO cm	TAM.ÁRIDO mm	TIPO CEMENTO	ADITIVO	MEDIA 7 Kg/cm²	MEDIA 28 Kg/cm²	DENSIDAD g/cm³	CONSISTENCIA cm	90 DIAS	OBSERVACIONES
30/08/2000	UTE M-45 TRAMO II	250	E-20	ENCEPADO ESTRIBO 1 CALZADA DERECHA	1	A20DE11	HYMPSA	16,06	16,35	103504	8	20	CEM I 42,5 R/SR	PLASTIFICANTE	305	359	2,32	BLANDA	404	EL LOTE CUMPLE
30/08/2000	UTE M-45 TRAMO II	250	E-20	ENCEPADO ESTRIBO 1 CALZADA DERECHA	2	A20DE11	HYMPSA	17,10	17,50	103515	9	20	CEM I 42,5 R/SR	PLASTIFICANTE	293	347	2,32	BLANDA	381	EL LOTE CUMPLE
6/06/2001	UTE M-45 TRAMO II	250	E-20	DADO ESTRIBO 1 CALZADA DERECHA	1	A20DE12	HAT	18,40	19,40	30204	8	20	CEM II/A V 42,5 R	EUCOBET 710	250	#N/A	2,35	BLANDA	F	CUMPLE A 7 DÍAS
11/09/2000	UTE M-45 TRAMO II	250	E-20	ESPALDÓN ESTRIBO 1 CALZADA DERECHA	2	A20DE12	HYMPSA	9,39	11,20	104050	7	20	CEM II/A-M 42,5 R	PLASTIFICANTE	199	245	2,31	BLANDA	333	EL LOTE CUMPLE
5/09/2000	UTE M-45 TRAMO II	250	E-20	ENCEPADO ESTRIBO 1 CALZADA IZQUIERDA	1	A20IE11	HYMPSA	10,17	10,55	103758	7	20	CEM I 42,5 R/SR	PLASTIFICANTE	311	343	2,37	BLANDA	415	EL LOTE CUMPLE
5/09/2000	UTE M-45 TRAMO II	250	E-20	ENCEPADO ESTRIBO 1 CALZADA IZQUIERDA	2	A20IE11	HYMPSA	11,21	12,00	103771	9	20	CEM I 42,5 R/SR	PLASTIFICANTE	301	343	2,33	BLANDA	423	EL LOTE CUMPLE
20/09/2000	UTE M-45 TRAMO II	250	E-20	ESPALDÓN ESTRIBO 1 CALZADA IZQUIERDA	1	A20IE12	HYMPSA	15,05	16,00	104685	9	20	CEM II/A-M 42,5 R	PLASTIFICANTE	267	330	2,33	BLANDA	409	EL LOTE CUMPLE
7/06/2001	UTE M-45 TRAMO II	250	E-20	DADO ESTRIBO 1 CALZADA IZQUIERDA	2	A20IE12	HAT	18,44	19,35	30260	8	20	CEM II/A-V 42,5 R	EUCOBET 710	236	#N/A	2,34	BLANDA	F	CUMPLE A 7 DÍAS

Asistencia Técnica

MINISTERIO DE FOMENTO

G.I.F.

Línea de alta velocidad. Tramo: Madrid-Zaragoza
Subtramo I. Plataforma

** P.A.C. **
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SECTOR : VG
SUB-SECTOR : T-2

OBRA ELEMENTAL : ES
UNIDAD O. ELEMENT.: PI/101+112

* ENSAYOS DE HORMIGON *

IDENTIFICACION DE LA MUESTRA			LOCALIZACION DE LA MUESTRA		HORMIGONES			RESISTENCIAS 7 DIAS		28 DIAS		60 DIAS		M3 VERT	FINAL DEL HORMIGON DEL LOTE	CEMENTO TIPO	RESIST. ESTIMADA	OBSERVACIONES
LOTE	SERIE	FECHA	PARTE	ELEMENTO	TIPO	CONO ABRAMS	CONSIS-TENCIA	Nº. Prob.	REST. MEDIA	Nº. Prob.	REST. MEDIA	Nº. Prob.	REST. MEDIA				f est	
RM-11L-25	RM-11-51	18/01/00	MARCO	LOSA INFERIOR	H-250	8,5	BLANDA			4	349					I/A42,5 R/SR		
	RM-11-52	18/01/00	MARCO	LOSA INFERIOR	H-250	6,5	BLANDA			4	365			100	19/01/00	I/A42,5 R/SR	307,12	
RM-11L-27	RM-11-55	19/01/00	MARCO	LOSA INFERIOR	H-250	15	FLUIDA			4	349					I/A42,5 R/SR		
	RM-11-56	19/01/00	MARCO	LOSA INFERIOR	H-250	8,5	BLANDA			4	373			100	19/01/00	I/A42,5 R/SR	307,12	
RM-11L-28	RM-11-57	19/01/00	MARCO	LOSA INFERIOR	H-250	6,5	BLANDA			4	454					I/A42,5 R/SR		
	RM-11-58	19/01/00	MARCO	LOSA INFERIOR	H-250	10,5	BLANDA			4	339			100	19/01/00	I/A42,5 R/SR	298,32	
RM-11L-29	RM-11-59	19/01/00	MARCO	LOSA INFERIOR	H-250	14	FLUIDA			4	304					I/A42,5 R/SR		
	RM-11-60	19/01/00	MARCO	LOSA INFERIOR	H-250	14,5	FLUIDA			4	371			100	19/01/00	I/A42,5 R/SR	267,52	
RM-11L-30	RM-11-61	19/01/00	MARCO	LOSA INFERIOR	H-250	12	FLUIDA			4	377					I/A42,5 R/SR		
	RM-11-62	19/01/00	MARCO	LOSA INFERIOR	H-250	5	BLANDA			4	366			100	19/01/00	I/A42,5 R/SR	322,08	
RM-11L-31	RM-11-63	19/01/00	MARCO	LOSA INFERIOR	H-250	4	PLASTICA			4	379					I/A42,5 R/SR		
	RM-11-64	19/01/00	MARCO	LOSA INFERIOR	H-250	9	BLANDA			4	389			100	19/01/00	I/A42,5 R/SR	333,52	
RM-11L-32	RM-11-65	19/01/00	MARCO	LOSA INFERIOR	H-250	3,5	PLASTICA			4	373					I/A42,5 R/SR		
	RM-11-66	19/01/00	MARCO	LOSA INFERIOR	H-250	6,5	BLANDA			4	347			100	19/01/00	I/A42,5 R/SR	305,36	
RM-11L-44	RM-11-89	6/03/00	ALETAS	ZAPATA 2d2	H-250	6,5	BLANDA			4	338					I/A42,5 R/SR		
	RM-11-90	7/03/00	PS 103.7		H-250					4	386			67,5	7/03/00	I/A42,5 R/SR	297,44	
RM-11L-45	RM-11-91	9/03/00	ALETAS	ZAPATA 1d3	H-250	7,5	BLANDA			4	324					I/A42,5 R/SR		
	RM-11-92	9/03/00	PS 104.6		H-250					4	290			83,17	9/03/00	I/A42,5 R/SR	255,2	

FECHA: 20/06/01

FIRMA:

NOMBRE J.Ignacio Lorenzo Giménez

CARGO: I.T. Asistencia Técnica

Línea de alta velocidad. Tramo: Madrid-Zaragoza
Subtramo I. Plataforma

** P.A.C. **
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* ENSAYOS DE HORMIGON *

SECTOR : VG
SUB-SECTOR : D-4

OBRA ELEMENTAL : ES
UNIDAD O. ELEMENT.: PI/102+563

IDENTIFICACION DE LA MUESTRA			LOCALIZACION DE LA MUESTRA		HORMIGONES			RESISTENCIAS 7 DIAS		RESISTENCIAS 28 DIAS		RESISTENCIAS 60 DIAS		M3 VERT	FINAL DEL HORMIGON DEL LOTE	CEMENTO TIPO	RESIST. ESTIMADA fest	OBSERVACIONES
LOTE	SERIE	FECHA	PARTE	ELEMENTO	TIPO	CONO ABRAMS	CONSIS-TENCIA	Nº. Prob.	REST. MEDIA	Nº. Prob.	REST. MEDIA	Nº. Prob.	REST. MEDIA					
RM-11L-52	RM-11-106	17/04/00	ALETA 1	ZAPATA 11	H-250	5,5	BLANDA			4	338					I/A42,5 R/MR		
	RM-11-105	5/04/00	PS 104.6		H-250					4	321			100	17/04/00	I/A42,5 R/SR	297,44	
RM-11L-53	RM-11-107	17/04/00	ALETA 1	ZAPATA 11	H-250	6,5	BLANDA			4	319					I/A42,5 R/MR		
	RM-11-108	17/04/00	ALETA 1	ZAPATA 11	H-250	6	BLANDA			4	353			100	17/04/00	I/A42,5 R/SR	280,72	
RM-11L-54	RM-11-109	17/04/00	ALETA 1	ZAPATA 11	H-250	9	BLANDA			4	295					I/A42,5 R/SR		
	RM-11-110	17/04/00	ALETA 1	ZAPATA 13	H-250	6,5	BLANDA			4	341			100	17/04/00	I/A42,5 R/SR	259,6	
RM-11L-55	RM-11-111	17/04/00	ALETA 1	ZAPATA 13	H-250	9	BLANDA			4	358					I/A42,5 R/SR		
	RM-11-112	17/04/00	ALETA 1	ZAPATA 13	H-250	7,5	BLANDA			4	362			100	17/04/00	I/A42,5 R/SR	315,04	
RM-11L-56	RM-11-113	17/04/00	ALETA 1	ZAPATA 13	H-250	7	BLANDA			4	348					I/A42,5 R/SR		
	RM-11-114	17/04/00	ALETA 1	ZAPATA 13	H-250	5,5	BLANDA			4	339			100	17/04/00	I/A42,5 R/SR	298,32	
RM-11L-57	RM-11-115	17/04/00	ALETA 1	ZAPATA 13	H-250	6	BLANDA			4	332					I/A42,5 R/SR		
	RM-11-116	17/04/00	ALETA 1	ZAPATA 13	H-250	5	BLANDA			4	334			72,47	17/04/00	I/A42,5 R/SR	292,16	
RM-11L-58	RM-11-117	25/04/00	ALETA 2	ZAPATA 13	H-250	8,5	BLANDA			4	259					I/A42,5 R/SR		
	RM-11-118	25/04/00	ALETA 2	ZAPATA 13	H-250	3	PLASTICA			4	289			99,95	25/04/00	I/A42,5 R/SR	227,92	
RM-11L-59	RM-11-119	25/04/00	ZAPATA 1	ESCALON 1	H-250	4,5	BLANDA			4	274					I/A42,5 R/SR		
	RM-11-120	25/04/00	ZAPATA 1	ESCALON 1	H-250	7,5	BLANDA			4	300			100	25/04/00	I/A42,5 R/SR	241,12	
RM-11L-60	RM-11-121	25/04/00	ZAPATA 1	ESCALON 1	H-250	4,5	BLANDA			4	317					I/A42,5 R/SR		
	RM-11-122	25/04/00	ZAPATA 1	ESCALON 1	H-250	10	BLANDA			4	283			100	25/04/00	I/A42,5 R/SR	249,04	
RM-11L-61	RM-11-123	25/04/00	ZAPATA 1	ESCALON 1	H-250	8,5	BLANDA			4	327					I/A42,5 R/SR		
	RM-11-124	25/04/00	ZAPATA 1	ESCALON 1	H-250	7,5	BLANDA			4	332			100	25/04/00	I/A42,5 R/SR	287,76	
RM-11L-62	RM-11-125	25/04/00	ZAPATA 1	ESCALON 1	H-250	7	BLANDA			4	326					I/A42,5 R/SR		
	RM-11-126	25/04/00	ZAPATA 1	ESCALON 1	H-250	4	PLASTICA			4	322			100	25/04/00	I/A42,5 R/SR	283,36	
RM-11L-63	RM-11-127	25/04/00	ZAPATA 1	ESCALON 1	H-250	8,5	BLANDA			4	295					I/A42,5 R/SR		
	RM-11-128	25/04/00	ZAPATA 1	ESCALON 1	H-250	4,5	BLANDA			4	333			94,2	25/04/00	I/A42,5 R/SR	259,6	
RM-11L-64	RM-11-129	3/05/00	ZAPATA 1	ESCALON 2	H-250	6	BLANDA			4	316					I/A42,5 R/SR		
	RM-11-130	3/05/00	ZAPATA 1	ESCALON 2	H-250	10	BLANDA			4	276			100	3/05/00	I/A42,5 R/SR	242,88	
RM-11L-65	RM-11-131	3/05/00	ZAPATA 1	ESCALON 2	H-250	6,5	BLANDA			4	292					I/A42,5 R/SR		
	RM-11-132	3/05/00	ZAPATA 1	ESCALON 2	H-250	6,5	BLANDA			4	270			100	3/05/00	I/A42,5 R/SR	237,6	
RM-11L-66	RM-11-133	3/05/00	ZAPATA 1	ESCALON 2	H-250	8,5	BLANDA			4	271					I/A42,5 R/SR		
	RM-11-134	3/05/00	ZAPATA 1	ESCALON 2	H-250	7	BLANDA			4	304			100	3/05/00	I/A42,5 R/SR	238,48	
RM-11L-67	RM-11-135	3/05/00	ALETA 2	TIPO 11	H-250	8,5	BLANDA			4	304					I/A42,5 R/SR		
	RM-11-136	3/05/00	ALETA 2	TIPO 11	H-250	7,5	BLANDA			4	315			37,87	3/05/00	I/A42,5 R/SR	267,52	
RM-11L-68	RM-11-137	5/05/00	ZAPATA 1	ESCALON 3	H-250	8	BLANDA			4	357					I/A42,5 R/SR		
	RM-11-138	5/05/00	ZAPATA 1	ESCALON 3	H-250	5,5	BLANDA			4	349			100	5/05/00	I/A42,5 R/SR	307,12	
RM-11L-69	RM-11-139	5/05/00	ZAPATA 1	ESCALON 3	H-250	6	BLANDA			4	354					I/A42,5 R/SR		
	RM-11-140	5/05/00	ZAPATA 1	ESCALON 3	H-250	8,5	BLANDA			4	333			100	5/05/00	I/A42,5 R/SR	293,04	
RM-11L-70	RM-11-141	5/05/00	ZAPATA 1	ESCALON 3	H-250	10	BLANDA			4	315					I/A42,5 R/SR		
	RM-11-142	5/05/00	ZAPATA 1	ESCALON 3	H-250	9	BLANDA			4	328			100	5/05/00	I/A42,5 R/SR	277,2	
RM-11L-71	RM-11-143	5/05/00	ZAPATA 1	ESCALON 3	H-250	10	BLANDA			4	312					I/A42,5 R/SR		
	RM-11-144	5/05/00	ZAPATA 1	ESCALON 3	H-250	8	BLANDA			4	304			88,87	19/05/00	I/A42,5 R/SR	274,56	
RM-11L-72	RM-11-145	18/05/00	ZAPATA 1	ESCALON 4	H-250	10	BLANDA			4	283					I/A42,5 R/SR		
	RM-11-146	18/05/00	ZAPATA 1	ESCALON 4	H-250	6	BLANDA			4	275			100	18/05/00	I/A42,5 R/SR	242	
RM-11L-73	RM-11-147	18/05/00	ZAPATA 1	ESCALON 4	H-250	6	BLANDA			4	255					I/A42,5 R/SR		
	RM-11-148	18/05/00	ZAPATA 1	ESCALON 4	H-250	6	BLANDA			4	325			100	18/05/00	I/A42,5 R/SR	225	
RM-11L-74	RM-11-149	18/05/00	ZAPATA 1	ESCALON 4	H-250	6	BLANDA			4	272					I/A42,5 R/SR		
	RM-11-150	18/05/00	ZAPATA 1	ESCALON 4	H-250	7	BLANDA			4	297			100	18/05/00	I/A42,5 R/SR	239,36	

FECHA: 20/06/01

FIRMA:

NOMBRE J.Ignacio Lorenzo Giménez

CARGO: I.T. Asistencia Técnica

Línea de alta velocidad. Tramo: Madrid-Zaragoza
Subtramo I. Plataforma

** P.A.C. **
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* ENSAYOS DE HORMIGON *

SECTOR : VG
SUB-SECTOR : T-3

OBRA ELEMENTAL : ES
UNIDAD O. ELEMENT.: PI/102+140

IDENTIFICACION DE LA MUESTRA			LOCALIZACION DE LA MUESTRA		HORMIGONES			RESISTENCIAS 7 DIAS		RESISTENCIAS 28 DIAS		RESISTENCIAS 60 DIAS		M3 VERT	FINAL DEL HORMIGON DEL LOTE	CEMENTO TIPO	RESIST. ESTIMADA fest	OBSERVACIONES
LOTE	SERIE	FECHA	PARTE	ELEMENTO	TIPO	CONO ABRAMS	CONSIS-TENCIA	Nº. Prob.	REST. MEDIA	Nº. Prob.	REST. MEDIA	Nº. Prob.	REST. MEDIA					
RM-11L-7	RM-11-13	23/11/99	ZAPATA	LOSA	H-250	16	FLUIDA	1	257	3	340					I/A42,5 SR/MR		
	RM-11-14	23/11/99	ZAPATA	LOSA	H-250	13,5	FLUIDA	1	132	1	288	2	319	100	23/11/99	I/A42,5 SR/MR		
RM-11L-8	RM-11-15	23/11/99	ZAPATA	LOSA	H-250	19	LIQUIDA	1	260	3	345					I/A42,5 SR/MR		
	RM-11-16	23/11/99	ZAPATA	LOSA	H-250	6,5	BLANDA	1	319	3	383			100	23/11/99	I/A42,5 SR/MR	303,6	
RM-11L-9	RM-11-17	23/11/99	ZAPATA	LOSA	H-250	6,5	BLANDA	1	231	3	294					I/A42,5 SR/MR		
	RM-11-18	23/11/99	ZAPATA	LOSA	H-250	6,5	BLANDA	1	290	3	340			100	23/11/99	I/A42,5 SR/MR	258,72	
RM-11L-10	RM-11-19	23/11/99	ZAPATA	LOSA	H-250	9	BLANDA	1	261	3	345					I/A42,5 SR/MR		
	RM-11-20	23/11/99	ZAPATA	LOSA	H-250	12	FLUIDA	1	265	3	353			100	23/11/99	I/A42,5 SR/MR	303,6	
RM-11L-11	RM-11-21	23/11/99	ZAPATA	LOSA	H-250	7,5	BLANDA	1	279	3	363					I/A42,5 SR/MR		
	RM-11-22	23/11/99	ZAPATA	LOSA	H-250	7,5	BLANDA	1	240	3	318			100	23/11/99	I/A42,5 SR/MR	279,84	
RM-11L-12	RM-11-23	23/11/99	ZAPATA	LOSA	H-250	9	BLANDA	1	222	3	319					I/A42,5 SR/MR		
	RM-11-24	23/11/99	ZAPATA	LOSA	H-250	9,5	BLANDA	1	248	3	336			44	23/11/99	I/A42,5 SR/MR	280,72	
RM-11L-15	RM-11-29	30/11/99	P.S.103.7		H-250			1	248	3	356					I/A42,5 SR/MR		
	RM-11-34	13/12/99	ALETAS	ZAPATA 2d	H-250	9	BLANDA			4	337			91,45	13/12/99	I/A42,5 SR/MR	296,56	
RM-11L-18	RM-11-35	15/12/99	ALETAS	ZAPATA 2i	H-250	5	BLANDA			4	306					I/A42,5 SR/MR		
	RM-11-36	20/12/99	PS 101.7		H-250					4	329			99,63	20/12/99	I/A42,5 SR/MR	269,28	
RM-11L-20	RM-11-39	21/12/99	PI 105.9		H-250					4	322					I/42.5R/SR		
	RM-11-40	27/12/99	ALETAS	ZAPATA 1 I	H-250	6,5	BLANDA			4	357			99,46	27/12/99	I/42.5R/SR	283,36	
RM-11L-21	RM-11-41	27/12/99	ALETAS	ZAPATA 1 I	H-250	4,5	PLASTICA			4	338					I/42.5R/SR		
	RM-11-42	28/12/99	ODT 4		H-250					4	376			42,1	28/12/99	I/42.5R/SR	297,44	

FECHA: 20/06/01

FIRMA:

NOMBRE J.Ignacio Lorenzo Giménez

CARGO: I.T. Asistencia Técnica

MINISTERIO DE FOMENTO

G.I.F.

Linea de alta velocidad. Tramo: Madrid-Zaragoza
Subtramo I. Plataforma

** P.A.C. **
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* ENSAYOS DE HORMIGON *

SECTOR : VG
SUB-SECTOR : T-8

OBRA ELEMENTAL : ES
UNIDAD O. ELEMENT.: PI/105+905

IDENTIFICACION DE LA MUESTRA			LOCALIZACION DE LA MUESTRA		HORMIGONES			RESISTENCIAS 7 DIAS		RESISTENCIAS 28 DIAS		RESISTENCIAS 90 DIAS		M3 VERT	FINAL DEL HORMIGON DEL LOTE	CEMENTO TIPO	RESIST. ESTIMADA	OBSERVACIONES
LOTE	SERIE	FECHA	PARTE	ELEMENTO	TIPO	CONO ABRAMS	CONSIS-TENCIA	Nº. Prob.	REST. MEDIA	Nº. Prob.	REST. MEDIA	Nº. Prob.	REST. MEDIA				f est	
RM-11L-1	RM-11-1	6/10/99	ODT12					2	153	3	223							Informe de disconformidad nº26
	RM-11-2	19/10/99	ZAPATA	LOSA	H-250	6	BLANDA			3	368			100	19/10/99	I/A42.5SR/MR	196,24	
RM-11L-2	RM-11-3	19/10/99	ZAPATA	LOSA	H-250	7	BLANDA			3	317					I/A42.5SR/MR		
	RM-11-4	19/10/99	ZAPATA	LOSA	H-250	6	BLANDA			3	336			100	19/10/99	I/A42.5SR/MR	278,96	
RM-11L-3	RM-11-5	19/10/99	ZAPATA	LOSA	H-250	7	BLANDA			3	313					I/A42.5SR/MR		
	RM-11-6	19/10/99	ZAPATA	LOSA	H-250	5	BLANDA			3	309			81,12	19/10/99	I/A42.5SR/MR	271,92	
RM-11L-13	RM-11-25	24/11/99	MARCO	ALZADO 2	H-250	7,5	BLANDA	1	259	3	358					I/A42.5SR/MR		
	RM-11-26	24/11/99	MARCO	ALZADO 2	H-250	4,5	PLASTICA	1	221	3	325			100	24/11/99	I/A42.5SR/MR	286	
RM-11L-14	RM-11-27	24/11/99	MARCO	ALZADO 2	H-250	5	BLANDA	1	265	3	348					I/A42.5SR/MR		
	RM-11-28	24/11/99	MARCO	ALZADO 2	H-250	5	BLANDA	1	255	3	332			60	24/11/99	I/A42.5SR/MR	292,16	
RM-11L-16	RM-11-30	2/12/99	MARCO	ALZADO 1	H-250	9	BLANDA	1(1dla)	46	3	357					I/A42.5SR/MR		
	RM-11-31	2/12/99	MARCO	ALZADO 1	H-250	7,5	BLANDA	1	248	3	344			100	2/12/99	I/A42.5SR/MR	302,72	
RM-11L-17	RM-11-32	2/12/99	MARCO	ALZADO 1	H-250	9,5	BLANDA	1	251	3	336					I/A42.5SR/MR		
	RM-11-33	2/12/99	MARCO	ALZADO 1	H-250	7,5	BLANDA	1	250	3	337			97,72	13/12/99	I/A42.5SR/MR	295,68	
RM-11L-19	RM-11-37	21/12/99	ALETAS	ZAPATA 1d	H-250	9,5	BLANDA			4	336					I/A42.5SR/MR		
	RM-11-38	21/12/99	ALETAS	ZAPATA 1d	H-250	5	BLANDA			4	367			78,12	21/12/99	I/A42.5SR/MR	295,68	
RM-11L-20	RM-11-39	21/12/99	ALETAS	ZAPATA 2d	H-250	13	FLUIDA			4	322					I/A42.5SR/MR		
	RM-11-40	27/12/99	PI 102.1		H-250					4	367			99,46	27/12/99	I/A42.5SR/MR	283,36	
RM-11L-22	RM-11-43	11/01/00	ALETAS	Alzado 1d	H-250	5,5	BLANDA			4	376					I/A42.5SR/MR		
	RM-11-44	11/01/00	ALETAS	Alzado 1d	H-250	11	FLUIDA			4	313			86,04	12/01/00	I/A42.5SR/MR	275,44	
RM-11L-33	RM-11-67	21/01/00	ALETAS	Alzado 2i	H-250	9,5	BLANDA			2	128	1	159			I/A42.5SR/MR		PRE-AVISO Nº 84
	RM-11-70	25/01/00	PS 101.7		H-250					2	231	1	315	94,45	26/01/00		112,64	
RM-11L-37	RM-11-75	27/01/00	MARCO	LOSA SUPERIOR	H-250	5,5	BLANDA	1(5dias)	258	3	403							
	RM-11-76	27/01/00	MARCO	LOSA SUPERIOR	H-250	6,5	BLANDA	1(5dias)	240	3	359			100	27/01/00	I42.5R/SR	315,92	
RM-11L-38	RM-11-77	27/01/00	MARCO	LOSA SUPERIOR	H-250	8,5	BLANDA	1(5dias)	271	3	322							
	RM-11-78	27/01/00	MARCO	LOSA SUPERIOR	H-250	5,5	BLANDA	1(5dias)	273	3	408			100	27/01/00	I42.5R/SR	283,36	
RM-11L-39	RM-11-79	27/01/00	MARCO	LOSA SUPERIOR	H-250	8,5	BLANDA	1(5dias)	217	3	355							
	RM-11-80	27/01/00	MARCO	LOSA SUPERIOR	H-250	9	BLANDA	1(5dias)	264	3	349			99,8	27/01/00	I42.5R/SR	307,12	

FECHA: 20/06/01 FIRMA: NOMBRE J.Ignacio Lorenzo Giménez

CARGO: I.T. Asistencia Técnica

MINISTERIO DE FOMENTO

G.I.F.

Linea de alta velocidad. Tramo: Madrid-Zaragoza
Subtramo I. Plataforma

** P.A.C. **
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* ENSAYOS DE HORMIGON *

SECTOR : VG
SUB-SECTOR : D-4

OBRA ELEMENTAL : ES
UNIDAD O. ELEMENT.: PI/102+563

IDENTIFICACION DE LA MUESTRA			LOCALIZACION DE LA MUESTRA		HORMIGONES			RESISTENCIAS 7 DIAS		RESISTENCIAS 28 DIAS		RESISTENCIAS 60 DIAS		M3 VERT	FINAL DEL HORMIGON DEL LOTE	CEMENTO TIPO	RESIST. ESTIMADA	OBSERVACIONES
LOTE	SERIE	FECHA	PARTE	ELEMENTO	TIPO	CONO ABRAMS	CONSIS-TENCIA	Nº. Prob.	REST. MEDIA	Nº. Prob.	REST. MEDIA	Nº. Prob.	REST. MEDIA				f est	
RM-11L-75	RM-11-151	25/05/00	ZAPATA 1	ESCALON 5	H-250	6	BLANDA			4	272					I/A42,5 R/SR		
	RM-11-152	25/05/00	ZAPATA 1	ESCALON 5	H-250	7	BLANDA			4	297			100	25/05/00	I/A42,5 R/SR	225	
RM-11L-76	RM-11-153	25/05/00	ZAPATA 1	ESCALON 5	H-250	5	BLANDA			4	259					I/A42,5 R/SR		
	RM-11-154	25/05/00	ZAPATA 1	ESCALON 5	H-250	7	BLANDA			4	304			100	25/05/00	I/A42,5 R/SR	228	
RM-11L-77	RM-11-155	25/05/00	ZAPATA 1	ESCALON 5	H-250	9,5	BLANDA			4	292					I/A42,5 R/SR		
	RM-11-157	25/05/00	ZAPATA 1	ESCALON 5	H-250	9	BLANDA			4	274			98,55	25/05/00	I/A42,5 R/SR	241	
RM-11L-78	RM-11-159	25/05/00	ALETA 4	TIPO 12	H-250	9	BLANDA			4	267					I/A42,5 R/SR		
	RM-11-160	25/05/00	ALETA 4	TIPO 12	H-250	9	BLANDA			4	304			100	25/05/00	I/A42,5 R/SR	235	
RM-11L-79	RM-11-161	25/05/00	ALETA 4	TIPO 12	H-250	9	BLANDA			4	305					I/A42,5 R/SR		
	RM-11-162	25/05/00	ALETA 4	TIPO 12	H-250	6	BLANDA			4	291			100	25/05/00	I/A42,5 R/SR	256	
RM-11L-80	RM-11-156	25/05/00	ALETA 3	TIPO 13	H-250	10	BLANDA			4	276					I/A42,5 R/SR		
	RM-11-158	25/05/00	ALETA 3	TIPO 13	H-250	8	BLANDA			4	263			66,82	25/05/00	I/A42,5 R/SR	231	
RM-11L-81	RM-11-163	30/05/00	ODT C-1		H-250					4	309					I/A42,5 R/SR		
	RM-11-164	1/06/00	ALETA 4	TIPO 11	H-250	6	BLANDA			4	275			90,4	1/06/00	I/A42,5 R/SR	242	
RM-11L-82	RM-11-165	1/06/00	ALETA 4	TIPO 11	H-250	10	BLANDA			4	241					I/A42,5 R/SR		
	RM-11-166	1/06/00	ALETA 4	TIPO 11	H-250	8	BLANDA			4	261			100	1/06/00	I/A42,5 R/SR	212	PRE-AVISO 141
RM-11L-83	RM-11-167	1/06/00	ALETA 4	TIPO 11	H-250	8	BLANDA			4	250					I/A42,5 R/SR		
	RM-11-168	1/06/00	ALETA 4	TIPO 11	H-250	8	BLANDA			3	273			100	1/06/00	I/A42,5 R/SR	220	PRE-AVISO 141
RM-11L-84	RM-11-169	1/06/00	ALETA 4	TIPO 11	H-250	7	BLANDA			4	273					I/A42,5 R/SR		
	RM-11-170	1/06/00	ALETA 4	TIPO 11	H-250	8	BLANDA			4	279			100	1/06/00	I/A42,5 R/SR	240	
RM-11L-85	RM-11-171	1/06/00	ALETA 4	TIPO 11	H-250	6	BLANDA			3	261					I/A42,5 R/SR		
	RM-11-172	1/06/00	ALETA 4	TIPO 11	H-250	7	BLANDA			4	266			100	1/06/00	I/A42,5 R/SR	230	
RM-11L-86	RM-11-173	7/06/00	ALETA 4	TIPO 9	H-250	10	BLANDA			4	270					I/A42,5 R/SR		
	RM-11-174	7/06/00	ALETA 4	TIPO 9	H-250	7	BLANDA			4	294			100	7/06/00	I/A42,5 R/SR	238	
RM-11L-87	RM-11-175	7/06/00	ALETA 4	TIPO 9	H-250	5	BLANDA			4	340					I/A42,5 R/SR		
	RM-11-176	7/06/00	ALETA 4	TIPO 7	H-250	5	BLANDA			4	352			100	7/06/00	I/A42,5 R/SR	299	
RM-11L-88	RM-11-177	7/06/00	ALETA 4	TIPO 7	H-250	8	BLANDA			4	308					I/A42,5 R/SR		
	RM-11-178	7/06/00	ALETA 4	TIPO 7	H-250	8	BLANDA			4	308			36,68	7/06/00	I/A42,5 R/SR	271	
RM-11L-89	RM-11-179	7/06/00	ALETA 4	TIPO 6	H-250	7	BLANDA			4	301					I/A42,5 R/SR		
	RM-11-180	7/06/00	ALETA 4	TIPO 6	H-250	7	BLANDA			4	317			67,12	12/06/00	I/A42,5 R/SR	265	
RM-11L-93	RM-11-187	25/07/00	PS 103.7		H-250					4	315					I/A42,5 R/SR		
	RM-11-188	26/07/00	ESTRIBO 1	CARGADERO	H-250	9	BLANDA			4	347			94,8	28/07/00	I/A42,5 R/SR	277,2	
RM-11L-94	RM-11-189	4/08/00	ESTRIBO 1	CARGADERO	H-250	6	BLANDA			4	324					I/A42,5 R/SR		
	RM-11-192	11/08/00	ESTRIBO 2	CARGADERO	H-250	7	BLANDA			4	299			100	11/08/00	I/A42,5 R/SR	263,12	
RM-11L-97	RM-11-195	31/08/00	LOSA SUPERIOR	CENTRO	H-250	8	BLANDA			4	301					I/A42.5SR/MR		
	RM-11-196	31/08/00	LOSA SUPERIOR	CENTRO	H-250	8	BLANDA			4	284			100	31/08/00	I/A42.5SR/MR	249,92	
RM-11L-98	RM-11-197	31/08/00	LOSA SUPERIOR	CENTRO	H-250	5	BLANDA			4	329					I/A42.5SR/MR		
	RM-11-198	5/09/00	PS 103.7		H-250					4	296			100	13/09/00	I/A42.5SR/MR	260,48	
RM-11L-99	RM-11-199	5/09/00	LOSA SUPERIOR	LATERAL	H-250	9	BLANDA			4	318					I/A42.5SR/MR		
	RM-11-200	5/09/00	LOSA SUPERIOR	LATERAL	H-250	10	BLANDA			4	277			100	6/09/00	I/A42.5SR/MR	243,76	
RM-11L-99	RM-11-201	5/09/00	LOSA SUPERIOR	LATERAL	H-250	8	BLANDA			4	290					I/A42.5SR/MR		
	RM-11-202	5/09/00	LOSA SUPERIOR	LATERAL	H 250	9	BLANDA			4	284			100	6/09/00	I/A42.5SR/MR	249,92	
RM-11L-99	RM-11-203	5/09/00	LOSA SUPERIOR	LATERAL	H-250	8	BLANDA			4	348					I/A42.5SR/MR		
	RM-11-204	5/09/00	LOSA SUPERIOR	LATERAL	H-250	7	BLANDA			4	334			98,7	6/09/00	I/A42.5SR/MR	293,92	

FECHA: 20/06/01 FIRMA: NOMBRE J.Ignacio Lorenzo Giménez

CARGO: I.T. Asistencia Técnica

MINISTERIO DE FOMENTO

G.I.F.

Linea de alta velocidad. Tramo: Madrid-Zaragoza
Subtramo I. Plataforma

** P.A.C. **
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SECTOR : VG
SUB-SECTOR : T-11

OBRA ELEMENTAL : ES
UNIDAD O. ELEMENT.: PI/107+900

* ENSAYOS DE HORMIGON *

IDENTIFICACION DE LA MUESTRA			LOCALIZACION DE LA MUESTRA		HORMIGONES			RESISTENCIAS 7 DIAS		28 DIAS		90 DIAS		M3 VERT	FINAL DEL HORMIGON DEL LOTE	CEMENTO TIPO	RESIST. ESTIMADA	OBSERVACIONES
LOTE	SERIE	FECHA	PARTE	ELEMENTO	TIPO	CONO ABRAMS	CONSIS-TENCIA	Nº. Prob.	REST. MEDIA	Nº. Prob.	REST. MEDIA	Nº. Prob.	REST. MEDIA				f est	
RM-11L-47	RM-11-95	15/03/00	LOSA INFERIOR	ZAPATA	H-250	5	BLANDA			4	388					II/A42.5SR/MR		
	RM-11-96	15/03/00	LOSA INFERIOR	ZAPATA	H-250	5,5	BLANDA			4	340			100	15/03/00	II/A42.5SR/MR	299,2	
RM-11L-48	RM-11-97	15/03/00	LOSA INFERIOR	ZAPATA	H-250	5	BLANDA			4	348					II/A42.5SR/MR		
	RM-11-98	15/03/00	LOSA INFERIOR	ZAPATA	H-250	5	BLANDA			4	348			100	15/03/00	II/A42.5SR/MR	306,24	
RM-11L-49	RM-11-99	15/03/00	LOSA INFERIOR	ZAPATA	H-250	10	BLANDA			4	288					II/A42.5SR/MR		
	RM-11-100	15/03/00	LOSA INFERIOR	ZAPATA	H-250	10	BLANDA			4	302			100	15/03/00	II/A42.5SR/MR	253,44	
RM-11L-50	RM-11-101	15/03/00	LOSA INFERIOR	ZAPATA	H-250	5	BLANDA			4	350					II/A42.5SR/MR		
	RM-11-102	15/03/00	LOSA INFERIOR	ZAPATA	H-250	6	BLANDA			4	347			40,76	15/03/00	II/A42.5SR/MR	305,36	
RM-11L-96	RM-11-193	17/08/00	LOSA SUPERIOR		H-250	6	BLANDA			4	310					II/A42.5SR/MR		
	RM-11-194	17/08/00	LOSA SUPERIOR		H-250	8	BLANDA			4	279			82	17/08/00	II/A42.5SR/MR	245,52	

FECHA: 20/06/01 FIRMA:

NOMBRE J.Ignacio Lorenzo Giménez

CARGO: I.T. Asistencia Técnica

MINISTERIO DE FOMENTO

G.I.F.

Linea de alta velocidad. Tramo: Madrid-Zaragoza
Subtramo I. Plataforma

** P.A.C. **
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SECTOR : VG
SUB-SECTOR : T-9

OBRA ELEMENTAL : ES
UNIDAD O. ELEMENT.: PI/106+970

* ENSAYOS DE HORMIGON *

IDENTIFICACION DE LA MUESTRA			LOCALIZACION DE LA MUESTRA		HORMIGONES			RESISTENCIAS 7 DIAS		28 DIAS		90 DIAS		M3 VERT	FINAL DEL HORMIGON DEL LOTE	CEMENTO TIPO	RESIST. ESTIMADA	OBSERVACIONES
LOTE	SERIE	FECHA	PARTE	ELEMENTO	TIPO	CONO ABRAMS	CONSIS-TENCIA	Nº. Prob.	REST. MEDIA	Nº. Prob.	REST. MEDIA	Nº. Prob.	REST. MEDIA				f est	
RM-11L-35	RM-11-71	27/01/00	ZAPATA	LOSA INF. Y ALETAS	H-250	8	BLANDA			4	345							
	RM-11-72	27/01/00	ZAPATA	LOSA INF. Y ALETAS	H-250	8	BLANDA			4	343			100	27/01/010	II/A42.5S/SR	301,84	
RM-11L-36	RM-11-73	27/01/00	ZAPATA	LOSA INF. Y ALETAS	H-250	11,5	FLUIDA			4	267							
	RM-11-74	27/01/00	ZAPATA	LOSA INF. Y ALETAS	H-250	10	BLANDA			4	338			100	27/01/010	II/A42.5S/SR	234,90	
RM-11L-92	RM-11-185	16/06/00	LOSA SUPERIOR	TABLERO	H-250	10	BLANDA			4	311							
	RM-11-186	16/06/00	LOSA SUPERIOR	TABLERO	H-250	5	BLANDA			4	353			88,72	22/06/00	II/A42.5S/SR	273,68	

FECHA: 20/06/01 FIRMA:

NOMBRE J.Ignacio Lorenzo Giménez

CARGO. I.T. Asistencia Técnica

MINISTERIO DE FOMENTO

G.I.F.

Linea de alta velocidad. Tramo: Madrid-Zaragoza
Subtramo I. Plataforma

** P.A.C. **
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* ENSAYOS DE HORMIGON *

SECTOR : VG
SUB-SECTOR : D-7

OBRA ELEMENTAL : ES
UNIDAD O. ELEMENT.: PS/103+700

IDENTIFICACION DE LA MUESTRA			LOCALIZACION DE LA MUESTRA		HORMIGONES			RESISTENCIAS 7 DIAS		RESISTENCIAS 28 DIAS		RESISTENCIAS 60 DIAS		M3 VERT	FINAL DEL HORMIGON DEL LOTE	CEMENTO TIPO	RESIST. ESTIMADA	OBSERVACIONES
LOTE	SERIE	FECHA	PARTE	ELEMENTO	TIPO	CONO ABRAMS	CONSIS-TENCIA	Nº. Prob.	REST. MEDIA	Nº. Prob.	REST. MEDIA	Nº. Prob.	REST. MEDIA				f est	
RM-11L-15	RM-11-29	30/11/99	PILA 1	PILOTES	H-250	15	FLUIDA	1(9dias)	248	3	356					II/A42,5 SR/MR		
	RM-11-30	13/12/99	P.I.102.1											91,45	13/12/99	II/A42,5 SR/MR	296,56	
RM-11L-24	RM-11-47	18/01/00	PILA 2	PILOTE 1	H-250	23	LIQUIDA	1(8 dias)	251	2	320							PRE-AVISO Nº 68 Y 69
	RM-11-48	18/01/00	PILA 2	PILOTE 1	H-250	26	LIQUIDA	1(8 dias)	207	3	300							PRE-AVISO Nº 68 Y 69
	RM-11-49	18/01/00	PILA 2	PILOTE 1	H-250	21,5	LIQUIDA	1(8 dias)	240	2	273							PRE-AVISO Nº 68 Y 69
	RM-11-50	18/01/00	PILA 2	PILOTE 1	H-250	22,5	LIQUIDA	1(8 dias)	176	3	277			253,89	18/01/00	I42,5R/SR	253,89	PRE-AVISO Nº 68 Y 69
RM-11L-26	RM-11-53	19/01/00	PILA 2	PILOTE 3	H-250	21,5	LIQUIDA	1(7 dias)	240	3	294							PRE-AVISO Nº 69
	RM-11-54	19/01/00	PILA 2	PILOTE 3	H-250	22,5	LIQUIDA	1(7 dias)	176	3	252			38,65	19/01/00	I42,5R/SR	221,76	PRE-AVISO Nº 69 Y 85
RM-11L-34	RM-11-68	21/01/00	PILA 2	PILOTE 2	H-250	23,5	LIQUIDA			3	282							
	RM-11-69	21/01/00	PILA 2	PILOTE 2	H-250	23	LIQUIDA			3	339			38,65	21/01/00	I42,5R/SR	248,16	
RM-11L-40	RM-11-81	3/02/00	PS 101.7		H-250					4	413							
	RM-11-82	10/02/00	PILA 1	ENCEPADO	H-250	7	BLANDA			4	337			99,78	10/02/00	I42,5R/SR	296,56	
RM-11L-44	RM-11-89	6/03/00	PI 101.1		H-250					4	338					II/A42,5 R/SR		
	RM-11-90	7/03/00	PILA	FUSTES 2	H-250	5	BLANDA			4	386			67,5	7/03/00	II/A42,5 R/SR	297,44	
RM-11L-51	RM-11-103	29/03/00	PILA	DINTELES	H-250	5	BLANDA			4	342					II/A42,5 R/SR		
	RM-11-104	29/03/00	PILA	DINTELES	H-250	8,5	BLANDA			4	320			83,92	29/03/00	II/A42,5 R/SR	281,6	
RM-11L-93	RM-11-187	25/07/00	ESTRIBO 2	ALETAS	H-250	9	BLANDA			4	315					II/A42,5 R/SR		
	RM-11-188	26/07/00	PI 102.5		H-250					4	347			94,8	28/07/00	II/A42,5 R/SR	277,2	
RM-11L-95	RM-11-190	9/08/00	TABLERO		H-250	6	BLANDA			4	311					II/A42,5 R/SR		
	RM-11-191	9/08/00	TABLERO		H-250	7	BLANDA			4	319			100	9/08/00	II/A42,5 R/SR	273,68	
RM-11L-98	RM-11-197	31/08/00	PI 102.5		H-250					4	329					II/A42 5SR/MR		
	RM-11-198	5/09/00	LOSA TRANSICIÓN	IZDA	H-250	8	BLANDA			4	296			100	13/09/00	II/A42.5SR/MR	260,48	

FECHA: 20/06/01 FIRMA: NOMBRE J.Ignacio Lorenzo Giménez

CARGO: I.T. Asistencia Técnica

MINISTERIO DE FOMENTO

G.I.F.

Linea de alta velocidad. Tramo: Madrid-Zaragoza
Subtramo I. Plataforma

** P.A.C. **
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* ENSAYOS DE HORMIGON *

SECTOR : VG
SUB-SECTOR : D-3

OBRA ELEMENTAL : ES
UNIDAD O. ELEMENT.: PS/101+690

IDENTIFICACION DE LA MUESTRA			LOCALIZACION DE LA MUESTRA		HORMIGONES			RESISTENCIAS 7 DIAS		RESISTENCIAS 28 DIAS		RESISTENCIAS 90 DIAS		M3 VERT	FINAL DEL HORMIGON DEL LOTE	CEMENTO TIPO	RESIST. ESTIMADA	OBSERVACIONES
LOTE	SERIE	FECHA	PARTE	ELEMENTO	TIPO	CONO ABRAMS	CONSIS-TENCIA	Nº. Prob.	REST. MEDIA	Nº. Prob.	REST. MEDIA	Nº. Prob.	REST. MEDIA				f est	
RM-11L-18	RM-11-35	15/12/99	PI 102.1		H-250					4	306							
	RM-11-36	20/12/99	ESTRIBO 2	ZAPATA	H-250	5	BLANDA			4	329			99,63	20/12/99	II/A42,5 SR/MR	269,28	
RM-11L-23	RM-11-45	13/01/00	ESTRIBO 1	ALZADO	H-250	8	BLANDA			4	305							
	RM-11-46	13/01/00	ESTRIBO 2	ALZADO	H-250	4,5	PLASTICA			4	335			93,06	13/01/00	II/A42,5 SR/MR	268,4	
RM-11L-33	RM-11-67	21/01/00	PI 105.9		H-250					2	128	1	159					PRE-AVISO Nº 84
	RM-11-70	25/01/00	PILA 1	FUSTES	H-250	23	LIQUIDA			2	231	1	315	94,45	26/01/00	II/A42.5SR/MR	112,64	
RM-11L-40	RM-11-81	3/02/00	PILAS	DINTELES	H-250	12	FLUIDA			4	413					II/A42.5 R/SR		
	RM-11-82	10/02/00	PS 103 7		H-250					4	337			99,78	10/02/00		296,56	
RM-11L-42	RM-11-85	22/02/00	PS 104.6		H-250					4	398							
	RM-11-86	2/03/00	TABLERO	LOSA	H-250	8,5	BLANDA			4	336			40	2/03/00	II/A42,5 R/SR	295,68	
RM-11L-43	RM-11-87	2/03/00	TABLERO	LOSA	H-250	8	BLANDA			4	323							
	RM-11-88	2/03/00	TABLERO	LOSA	H-250	6,5	BLANDA			4	347			85	2/03/00	II/A42,5 R/SR	284,24	

FECHA: 20/06/01 FIRMA: NOMBRE J.Ignacio Lorenzo Giménez

CARGO: I.T. Asistencia Técnica

MINISTERIO DE FOMENTO

G.I.F.

Línea de alta velocidad. Tramo: Madrid-Zaragoza
Subtramo I. Plataforma

** P.A.C. **
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* ENSAYOS DE HORMIGON *

SECTOR : VG
SUB-SECTOR : D-1

OBRA ELEMENTAL : DR
UNIDAD O. ELEMENT.: DT

IDENTIFICACION DE LA MUESTRA			LOCALIZACION DE LA MUESTRA		HORMIGONES			RESISTENCIAS 7 DIAS		RESISTENCIAS 28 DIAS		RESISTENCIAS 90 DIAS		M3 VERT	FINAL DEL HORMIGON DEL LOTE	CEMENTO TIPO	RESIST. ESTIMADA	OBSERVACIONES
LOTE	SERIE	FECHA	PARTE	ELEMENTO	TIPO	CONO ABRAMS	CONSIS-TENCIA	Nº. Prob.	REST. MEDIA	Nº. Prob.	REST. MEDIA	Nº. Prob.	REST. MEDIA				f est	
RM-11L-106	RM-11-211	25/01/01	EMBOCADURA	ZAPATA	H-250					4	388					I/A42,5 R/SR		No se ha podido completar el lote con la segunda serie al no cumplirse la previsión de los trabajos de hormigonado

FECHA: 20/06/01 FIRMA: NOMBRE J.Ignacio Lorenzo Giménez

CARGO: I.T. Asistencia Técnica

PS 104.6

MINISTERIO DE FOMENTO

G.I.F.

Línea de alta velocidad. Tramo: Madrid-Zaragoza
Subtramo I. Plataforma

** P.A.C. **
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* ENSAYOS DE HORMIGON *

SECTOR : VG
SUB-SECTOR : D-7

OBRA ELEMENTAL : ES
UNIDAD O. ELEMENT.: PS/104+600

IDENTIFICACION DE LA MUESTRA			LOCALIZACION DE LA MUESTRA		HORMIGONES			RESISTENCIAS 7 DIAS		RESISTENCIAS 28 DIAS		RESISTENCIAS 60 DIAS		M3 VERT	FINAL DEL HORMIGON DEL LOTE	CEMENTO TIPO	RESIST. ESTIMADA	OBSERVACIONES
LOTE	SERIE	FECHA	PARTE	ELEMENTO	TIPO	CONO ABRAMS	CONSIS-TENCIA	Nº. Prob.	REST. MEDIA	Nº. Prob.	REST. MEDIA	Nº. Prob.	REST. MEDIA				f est	
RM-11L-41	RM-11-83	16/02/00	ESTRIBO 2	ZAPATA	H-250	4,5	BLANDA			4	305					I/A42,5 R/SR		
	RM-11-84	22/02/00	PILA 2	ZAPATA	H-250	16	FLUIDA			4	354			99,41	22/02/00	I/A42,5 R/SR	268,4	
RM-11L-42	RM-11-85	22/02/00	PILA 2	ZAPATA	H-250	6	BLANDA			4	398					I/A42,5 R/SR		
	RM-11-86	2/03/00	PS 101.7		H-250					4	336			40	2/03/00		295,68	
RM-11L-45	RM-11-91	9/03/00	PI 101.1		H-250					4	324					I/A42,5 R/SR		
	RM-11-92	9/03/00	PILA 1	ZAPATA	H-250	10	BLANDA			4	290			83,17	9/03/00	I/A42,5 R/SR	255,2	
RM-11L-46	RM-11-93	9/03/00	ESTRIBO 1	ZAPATA	H-250	9,5	BLANDA			4	318					I/A42,5 R/SR		
	RM-11-94	9/03/00	ESTRIBO 1	ZAPATA	H-250	10	BLANDA			4	329			49,84	14/03/00	I/A42,5 R/SR	279,84	
RM-11L-52	RM-11-105	5/04/00	ESTRIBO 1	ALZADO	H-250	7	BLANDA			4	321					I/A42,5 R/SR		
	RM-11-106	17/04/00	PI 102.5		H-250					4	329			100	17/04/00	I/A42,5 R/SR	297,44	
RM-11L-90	RM-11-181	13/06/00	LOSA SUPERIOR	TABLERO	H-250	5	BLANDA			4	290					I/A42,5 R/SR		
	RM-11-182	13/06/00	LOSA SUPERIOR	TABLERO	H-250	10	BLANDA			4	283			100	13/06/00	I/A42,5 R/SR	297,44	
RM-11L-91	RM-11-183	13/06/00	LOSA SUPERIOR	TABLERO	H-250	5	BLANDA			3	306					I/A42,5 R/SR		
	RM-11-184	13/06/00	LOSA SUPERIOR	TABLERO	H-250	10	BLANDA			3	249			32,05	13/06/00	I/A42,5 R/SR	219,2	PRE AVISO 143

FECHA: 20/06/01 FIRMA: NOMBRE J.Ignacio Lorenzo Giménez

CARGO: I.T. Asistencia Técnica

MINISTERIO DE FOMENTO

G.I.F.

Línea de alta velocidad. Tramo: Madrid-Zaragoza
Subtramo I. Plataforma

** P.A.C. **
* ENSAYOS DE HORMIGON *

SECTOR : VG
SUB-SECTOR : D-1

OBRA ELEMENTAL : DR
UNIDAD O. ELEMENT.: DT

IDENTIFICACION DE LA MUESTRA			LOCALIZACION DE LA MUESTRA		HORMIGONES			RESISTENCIAS 7 DIAS		28 DIAS		90 DIAS		M3 VERT	FINAL DEL HORMIGON DEL LOTE	CEMENTO TIPO	RESIST. ESTIMADA	OBSERVACIONES
LOTE	SERIE	FECHA	PARTE	ELEMENTO	TIPO	CONO ABRAMS	CONSIS-TENCIA	Nº. Prob.	REST. MEDIA	Nº. Prob.	REST. MEDIA	Nº. Prob.	REST. MEDIA				f est	
RM-11L-81	RM-11-163	25/05/00	ODT C-1	ZAPATA A-3	H-250	12	FLUIDA			4	309					I/A42,5 R/SR		
	RM-11-164	25/05/00	PI 102.5		H-250					4	275			90,4	1/06/00	I/A42,5 R/SR	242	
RM-11L-103	RM-11-207	22/09/00	ALETAS	ALZADOS	H-250	9	BLANDA			4	336			12	22/09/00	I/A42,5 R/SR	295,68	No se ha podido completar el lote con la segunda serie al no cumplirse la previsión de los trabajos de hormigonado

FECHA: 20/06/01 FIRMA: NOMBRE J.Ignacio Lorenzo Giménez

CARGO: I.T. Asistencia Técnica

MINISTERIO DE FOMENTO

G.I.F.

Línea de alta velocidad. Tramo: Madrid-Zaragoza
Subtramo I. Plataforma

** P.A.C. **
* ENSAYOS DE HORMIGON *

SECTOR : VG
SUB-SECTOR : D-1

OBRA ELEMENTAL : DR
UNIDAD O. ELEMENT.: DT

IDENTIFICACION DE LA MUESTRA			LOCALIZACION DE LA MUESTRA		HORMIGONES			RESISTENCIAS 7 DIAS		28 DIAS		90 DIAS		M3 VERT	FINAL DEL HORMIGON DEL LOTE	CEMENTO TIPO	RESIST. ESTIMADA	OBSERVACIONES
LOTE	SERIE	FECHA	PARTE	ELEMENTO	TIPO	CONO ABRAMS	CONSIS-TENCIA	Nº. Prob.	REST. MEDIA	Nº. Prob.	REST. MEDIA	Nº. Prob.	REST. MEDIA				f est	
RM-11L-107	RM-11-212	20/02/01	ALETA 1D	ALZADO	H-250					4	322			11,36	20/02/01	I/A42,5 R/SR	283	No se ha podido completar el lote con la segunda serie al no cumplirse la previsión de los trabajos de hormigonado

FECHA: 20/06/01 FIRMA: NOMBRE J.Ignacio Lorenzo Giménez

CARGO: I.T. Asistencia Técnica

MINISTERIO DE FOMENTO

G.I.F.

Linea de alta velocidad. Tramo: Madrid-Zaragoza
Subtramo I. Plataforma

** P.A.C. **

SECTOR : VG
SUB-SECTOR : T-3

OBRA ELEMENTAL : DR
UNIDAD O. ELEMENT.: DT /101+836

* ENSAYOS DE HORMIGON *

IDENTIFICACION DE LA MUESTRA			LOCALIZACION DE LA MUESTRA		HORMIGONES			RESISTENCIAS 7 DIAS		28 DIAS		90 DIAS		M3 VERT	FINAL DEL HORMIGON DEL LOTE	CEMENTO TIPO	RESIST. ESTIMADA fest	OBSERVACIONES
LOTE	SERIE	FECHA	PARTE	ELEMENTO	TIPO	CONO ABRAMS	CONSIS-TENCIA	Nº. Prob.	REST. MEDIA	Nº. Prob.	REST. MEDIA	Nº. Prob.	REST. MEDIA					
RM-11L-6	RM-11-11	17/11/99	ODT10							3	305							
	RM-11-12	22/11/99	Aletas 1i,2i	Zapatas	H-250	7,5	BLANDA	1	193	3	277			35,11	29/11/99	I/A42.5 SR/MR	243,76	

FECHA: 20/06/01 FIRMA: NOMBRE J.Ignacio Lorenzo Giménez

CARGO: I.T. Asistencia Técnica

ODT-4

MINISTERIO DE FOMENTO

G.I.F.

Linea de alta velocidad. Tramo: Madrid-Zaragoza
Subtramo I. Plataforma

** P.A.C. **

SECTOR : VG
SUB-SECTOR : T-1

OBRA ELEMENTAL : DR
UNIDAD O. ELEMENT.: DT /100+900

* ENSAYOS DE HORMIGON *

IDENTIFICACION DE LA MUESTRA			LOCALIZACION DE LA MUESTRA		HORMIGONES			RESISTENCIAS 7 DIAS		28 DIAS		90 DIAS		M3 VERT	FINAL DEL HORMIGON DEL LOTE	CEMENTO TIPO	RESIST. ESTIMADA fest	OBSERVACIONES
LOTE	SERIE	FECHA	PARTE	ELEMENTO	TIPO	CONO ABRAMS	CONSIS-TENCIA	Nº. Prob.	REST. MEDIA	Nº. Prob.	REST. MEDIA	Nº. Prob.	REST. MEDIA					
RM-11L-21	RM-11-41	27/12/99	PI 102.1		H-250					4	338							
	RM-11-42	28/12/99	ALETAS	ZAPATA 2d	H-250	4,5	FLUIDA			4	376			42,1	28/12/99	I/42.5R/SR I/42.5R/SR	297,44	

FECHA: 20/06/01 FIRMA: NOMBRE J.Ignacio Lorenzo Giménez

CARGO: I.T. Asistencia Técnica

MINISTERIO DE FOMENTO

G.I.F.

Linea de alta velocidad. Tramo: Madrid-Zaragoza
Subtramo I. Plataforma

** P.A.C. **
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* ENSAYOS DE HORMIGON *

SECTOR : VG
SUB-SECTOR : T-9

OBRA ELEMENTAL : DR
UNIDAD O. ELEMENT.: DT /106+700

IDENTIFICACION DE LA MUESTRA			LOCALIZACION DE LA MUESTRA		HORMIGONES			RESISTENCIAS 7 DIAS		RESISTENCIAS 28 DIAS		RESISTENCIAS 90 DIAS		M3 VERT	FINAL DEL HORMIGON DEL LOTE	CEMENTO TIPO	RESIST. ESTIMADA fest	OBSERVACIONES
LOTE	SERIE	FECHA	PARTE	ELEMENTO	TIPO	CONO ABRAMS	CONSIS-TENCIA	Nº. Prob.	REST. MEDIA	Nº. Prob.	REST. MEDIA	Nº. Prob	REST. MEDIA					
RM-11L-1	RM-11-1	6/10/99	ALETAS	ZAPATA	H-250	6	BLANDA	2	153	3	223					I/A42,5 SR/MR		Informe de disconformidad nº 26
	RM-11-2	19/10/99	PI 105.9							3	368			100	19/10/99	I/A42,5 SR/MR	196,24	

FECHA: 20/06/01 FIRMA: NOMBRE: J.Ignacio Lorenzo Giménez

CARGO: I.T. Asistencia Técnica

MINISTERIO DE FOMENTO

G.I.F.

Linea de alta velocidad. Tramo: Madrid-Zaragoza
Subtramo I. Plataforma

** P.A.C. **
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* ENSAYOS DE HORMIGON *

SECTOR : VG
SUB-SECTOR : T-5/DP

OBRA ELEMENTAL : DR
UNIDAD O. ELEMENT.: DT /103+100

IDENTIFICACION DE LA MUESTRA			LOCALIZACION DE LA MUESTRA		HORMIGONES			RESISTENCIAS 7 DIAS		RESISTENCIAS 28 DIAS		RESISTENCIAS 90 DIAS		M3 VERT	FINAL DEL HORMIGON DEL LOTE	CEMENTO TIPO	RESIST. ESTIMADA fest	OBSERVACIONES
LOTE	SERIE	FECHA	PARTE	ELEMENTO	TIPO	CONO ABRAMS	CONSIS-TENCIA	Nº. Prob.	REST. MEDIA	Nº. Prob.	REST. MEDIA	Nº. Prob.	REST. MEDIA					
RM-11L-4	RM-11-8	2/11/99	Tubo 1500	Refuerzo	H-150	2,5	PLASTICA			3	242					I/A42.5 SR/MR		
	RM-11-9	2/11/99	Tubo 1500	Refuerzo	H-150	6	BLANDA			3	223				2/11/99	I/A42.5 SR/MR	196,24	
RM-11L-5	RM-11-7	2/11/99	Aletas 1d, 2d	Zapatas	H-250	6	BLANDA			2	182	1	214			I/A42.5 SR/MR		PRE AVISO Nº45
	RM-11-10	11/11/99	ODT13							3	271			58,16	11/11/99	I/A42.5 SR/MR		
RM-11L-6	RM-11-11	17/11/99	Canal de unión	Muros	H-250	15	FLUIDA			3	305	1	354			I/A42.5 SR/MR		
	RM-11-12	22/11/99	ODT6					1	193	3	277			35,11	29/11/99	I/A42.5 SR/MR	243,76	

FECHA: 20/06/01 FIRMA: NOMBRE J.Ignacio Lorenzo Giménez

CARGO: I.T. Asistencia Técnica

MINISTERIO DE FOMENTO

G.I.F.

Línea de alta velocidad. Tramo: Madrid-Zaragoza
Subtramo I. Plataforma

SECTOR : VG
SUB-SECTOR : T-11

OBRA ELEMENTAL : DR
UNIDAD O. ELEMENT.: DT /108+150

** P.A.C. **
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* ENSAYOS DE HORMIGON *

IDENTIFICACION DE LA MUESTRA			LOCALIZACION DE LA MUESTRA		HORMIGONES			RESISTENCIAS 7 DIAS		28 DIAS		90 DIAS		M3 VERT	FINAL DEL HORMIGON DEL LOTE	CEMENTO TIPO	RESIST. ESTIMADA	OBSERVACIONES
LOTE	SERIE	FECHA	PARTE	ELEMENTO	TIPO	CONO ABRAMS	CONSIS-TENCIA	Nº. Prob.	REST. MEDIA	Nº. Prob.	REST. MEDIA	Nº. Prob.	REST. MEDIA				f est	
RM-11L-104	RM-11-208	6/11/00	ALETAS 1 Y 2	ZAPATAS	H-250	10	BLANDO			4	293				8/11/00	I/A42,5 SR/MR		
	RM-11-209	8/11/01	MUROS 1 Y 2	ALZADOS	H-250	5	BLANDO			4	312				8/11/00	I/A42,5 SR/MR	258	

FECHA: 20/06/01 FIRMA: NOMBRE J.Ignacio Lorenzo Giménez

CARGO: I.T. Asistencia Técnica

MINISTERIO DE FOMENTO

G.I.F.

Línea de alta velocidad. Tramo: Madrid-Zaragoza
Subtramo I. Plataforma

SECTOR : VG
SUB-SECTOR : T-9

OBRA ELEMENTAL : DR
UNIDAD O. ELEMENT.: DT /107+058

** P.A.C. **
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* ENSAYOS DE HORMIGON *

IDENTIFICACION DE LA MUESTRA			LOCALIZACION DE LA MUESTRA		HORMIGONES			RESISTENCIAS 7 DIAS		28 DIAS		90 DIAS		M3 VERT	FINAL DEL HORMIGON DEL LOTE	CEMENTO TIPO	RESIST. ESTIMADA	OBSERVACIONES
LOTE	SERIE	FECHA	PARTE	ELEMENTO	TIPO	CONO ABRAMS	CONSIS-TENCIA	Nº. Prob.	REST. MEDIA	Nº. Prob.	REST. MEDIA	Nº. Prob.	REST. MEDIA				f est	
RM-11L-5	RM-11-7	2/11/99	ODT10							2	182	1						
	RM-11-10	11/11/99	CANAL UNIÓN	ZAPATAS	H-250	17	LIQUIDA			3	271			58,16	11/11/99	I/A42,5 SR/MR		DISCONFORMIDAD Nº 25

FECHA: 20/06/01 FIRMA: NOMBRE J.Ignacio Lorenzo Giménez

CARGO: I.T. Asistencia Técnica

MINISTERIO DE FOMENTO

G.I.F.

Línea de alta velocidad. Tramo: Madrid-Zaragoza
Subtramo I. Plataforma

** P.A.C. **
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SECTOR : VG
SUB-SECTOR : T-11

OBRA ELEMENTAL : DR
UNIDAD O. ELEMENT.: DT /108+150

* ENSAYOS DE HORMIGON *

IDENTIFICACION DE LA MUESTRA			LOCALIZACION DE LA MUESTRA		HORMIGONES			RESISTENCIAS 7 DIAS		RESISTENCIAS 28 DIAS		RESISTENCIAS 90 DIAS		M3 VERT	FINAL DEL HORMIGON DEL LOTE	CEMENTO TIPO	RESIST. ESTIMADA f est	OBSERVACIONES
LOTE	SERIE	FECHA	PARTE	ELEMENTO	TIPO	CONO ABRAMS	CONSIS-TENCIA	Nº. Prob.	REST. MEDIA	Nº. Prob.	REST. MEDIA	Nº. Prob.	REST. MEDIA					
RM-11L-185	RM-11-210	16/11/00	ARQUETA	ZAPATA	H-250	8	BLANDO			4	339				24/11/00	I/A42,5 SR/MR	298	No se puede completar el lote por falta de hormigonados en el plazo

FECHA: 20/06/01 FIRMA: NOMBRE: J.Ignacio Lorenzo Giménez

CARGO: I.T. Asistencia Técnica

MINISTERIO DE FOMENTO

G.I.F.

Línea de alta velocidad. Tramo: Madrid-Zaragoza
Subtramo I. Plataforma

** P.A.C. **
=======

SECTOR : V
SUB-SECTOR : EC-18

OBRA ELEMENTAL : DR
UNIDAD O. ELEMENT.: DT

* ENSAYOS DE HORMIGON *

IDENTIFICACION DE LA MUESTRA			LOCALIZACION DE LA MUESTRA		HORMIGONES			RESISTENCIAS 7 DIAS		RESISTENCIAS 28 DIAS		RESISTENCIAS 90 DIAS		M3 VERT	FINAL DEL HORMIGON DEL LOTE	CEMENTO TIPO	RESIST. ESTIMADA f est	OBSERVACIONES
LOTE	SERIE	FECHA	PARTE	ELEMENTO	TIPO	CONO ABRAMS	CONSIS-TENCIA	Nº. Prob.	REST. MEDIA	Nº. Prob.	REST. MEDIA	Nº. Prob.	REST. MEDIA					
RM-11L-81	RM-11-163	25/05/00	ODT C-1	ZAPATA A-3	H-250	12	FLUIDA			4	309			90,4	1/06/00	I/A42,5 R/SR	242	
	RM-11-164	25/05/00	PI 102.5		H-250					4	275					I/A42,5 R/SR		

FECHA: 20/06/01 FIRMA: NOMBRE: J.Ignacio Lorenzo Giménez

CARGO: I.T. Asistencia Técnica

MINISTERIO DE FOMENTO

G.I.F.

Linea de alta velocidad. Tramo: Madrid-Zaragoza
Subtramo I. Plataforma

** P.A.C. **
=======

* ENSAYOS DE HORMIGON *

SECTOR : VG
SUB-SECTOR : T-11

OBRA ELEMENTAL : SA
UNIDAD O. ELEMENT.: VA/Paso Peatonal 106+120

IDENTIFICACION DE LA MUESTRA			LOCALIZACION DE LA MUESTRA		HORMIGONES			RESISTENCIAS 7 DIAS		RESISTENCIAS 28 DIAS		RESISTENCIAS 60 DIAS		M3 VERT	FINAL DEL HORMIGON DEL LOTE	CEMENTO TIPO	RESIST. ESTIMADA	OBSERVACIONES
LOTE	SERIE	FECHA	PARTE	ELEMENTO	TIPO	CONO ABRAMS	CONSIS-TENCIA	Nº. Prob.	REST. MEDIA	Nº. Prob.	REST. MEDIA	Nº. Prob.	REST. MEDIA				f est	
	RM-11-213	18/01/00	ALETA 1D		H-250	10	BLANDA			3	197					II/A42,5 R/SR		Se guarda una probeta a 60 dias. No se puede constituir lote por falta de hormigonados.

FECHA: 20/06/01 FIRMA: NOMBRE J.Ignacio Lorenzo Giménez

CARGO: I.T. Asistencia Técnica

CUNETAS

MINISTERIO DE FOMENTO

G.I.F.

Linea de alta velocidad. Tramo: Madrid-Zaragoza
Subtramo I. Plataforma

** P.A.C. **
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* ENSAYOS DE HORMIGON *

SECTOR : VG
SUB-SECTOR : VARIOS

OBRA ELEMENTAL : DR
UNIDAD O. ELEMENT.: LP

IDENTIFICACION DE LA MUESTRA			LOCALIZACION DE LA MUESTRA		HORMIGONES			RESISTENCIAS 7 DIAS		RESISTENCIAS 28 DIAS		RESISTENCIAS 90 DIAS		M3 VERT	FINAL DEL HORMIGON DEL LOTE	CEMENTO TIPO	RESIST. ESTIMADA	OBSERVACIONES
LOTE	SERIE	FECHA	PARTE	ELEMENTO	TIPO	CONO ABRAMS	CONSIS-TENCIA	Nº. Prob.	REST. MEDIA	Nº. Prob.	REST. MEDIA	Nº. Prob.	REST. MEDIA				f est	
RM-11L-102	RM-11-205	12/09/00	PK 106+300	DERECHA	H-150	4	PLASTICA			4	208					II/A42,5 R/SR		
	RM-11-206	22/09/00	PK 101+180	DERECHA	H-150	3	PLASTICA			4	339			100	22/09/00	II/A42,5 R/SR	183,04	

FECHA: 20/06/01 FIRMA: NOMBRE J.Ignacio Lorenzo Giménez

CARGO: I.T. Asistencia Técnica

Línea de alta velocidad. Tramo: Madrid-Zaragoza
Subtramo I. Plataforma

** P.A.C. **

* ENSAYOS NORMATIVOS DE BARRAS ACERO CORRUGADAS PARA ARMADURAS *

* RESULTADOS DE LOS ENSAYOS *

IDENTIFICACION DE LA MUESTRA			MARCA Y TIPO		Ø Nominal (mm)	Sección Media (cm2)	Tolerancia en la Sección %	Especif >95%	ENSAYOS DE TRACCION								CARACTERIS. GEOMETRICAS DEL CORRUGADO	ENSAYO DOBLADO SIMPLE	ENSAYO DOBLADO-DESDOBLADO	OBSERVACION
									Límite Elást. (Kp/cm2)	Especif. >5100	Carga U.Rotura (Kp/cm2)	Especif. >5600	% Alarga. Rotura	Especif. >12	fs/fy	Especif. >1,05				
REGISTRO	FECHA	CLAVE	MARCA	TIPO																
RM-14-1(1)	4/02/00	9658-1	NERVACERO	B 500 S	10	81,24	1,03	SI	5740	SI	6646	SI	F/T	-	1,16	SI	CONFORME	SATISFACTORIO	-	CONFORME
RM-14-1(2)	4/02/00	9658-2	NERVACERO	B 500 S	10	82,13	1,05	SI	6064	SI	6939	SI	F/T	-	1,14	SI	CONFORME	-	SATISFACTORIO	CONFORME
RM-14-2(1)	4/02/00	9659-1	NERVACERO	B 500 S	12	112,40	0,99	SI	6043	SI	6817	SI	F/T	-	1,13	SI	CONFORME	SATISFACTORIO	-	CONFORME
RM-14-2(2)	4/02/00	9659-2	NERVACERO	B 500 S	12	112,14	0,99	SI	5863	SI	6685	SI	26,8	SI	1,14	SI	CONFORME	-	SATISFACTORIO	CONFORME
RM-14-3(1)	4/02/00	9660-1	NERVACERO	B 500 S	16	200,85	1,00	SI	5713	SI	6704	SI	22,9	SI	1,17	SI	CONFORME	SATISFACTORIO	-	CONFORME
RM-14-3(2)	4/02/00	9660-2	NERVACERO	B 500 S	16	200,69	1,00	SI	5685	SI	6709	SI	23,8	SI	1,18	SI	CONFORME	-	SATISFACTORIO	CONFORME
RM-14-4(1)	4/02/00	9661-1	NERVACERO	B 500 S	25	492,34	1,00	SI	6124	SI	7303	SI	16,3	SI	1,19	SI	CONFORME	SATISFACTORIO	-	CONFORME
RM-14-4(2)	4/02/00	9661-2	NERVACERO	B 500 S	25	491,37	1,00	SI	6147	SI	7293	SI	F/T	-	1,19	SI	CONFORME	-	SATISFACTORIO	CONFORME
RM-14-5(1)	4/02/00	9668-1	ARES (FR)	B 500 S	20	314,17	1,00	SI	5704	SI	6525	SI	26,8	SI	1,13	SI	CONFORME	SATISFACTORIO	-	CONFORME
RM-14-5(2)	4/02/00	9668-2	ARES (FR)	B 500 S	20	315,39	1,00	SI	5839	SI	6621	SI	24	SI	1,13	SI	CONFORME	-	SATISFACTORIO	CONFORME
RM-14-6(1)	31/03/00	9749-1	NERVACERO	B 500 S	25	488,17	0,99	SI	-	-	-	-	-	-	-	-	CONFORME	SATISFACTORIO	-	CONFORME
RM-14-6(2)	31/03/00	9749-2	NERVACERO	B 500 S	25	-	-	-	-	-	-	-	-	-	-	-	CONFORME	-	SATISFACTORIO	CONFORME
RM-14-7(1)	31/03/00	9750-1	NERVACERO	B 500 S	20	316,99	1,01	SI	-	-	-	-	-	-	-	-	CONFORME	SATISFACTORIO	-	CONFORME
RM-14-7(2)	31/03/00	9750-2	NERVACERO	B 500 S	20	316,67	1,01	SI	-	-	-	-	-	-	-	-	CONFORME	-	SATISFACTORIO	CONFORME
RM-14-8(1)	31/03/00	9751-1	NERVACERO	B 500 S	16	199,00	0,98	SI	-	-	-	-	-	-	-	-	CONFORME	SATISFACTORIO	-	CONFORME
RM-14-8(2)	31/03/00	9751-2	NERVACERO	B 500 S	16	199,31	0,98	SI	-	-	-	-	-	-	-	-	NO CONFORME	-	SATISFACTORIO	Separación entre corrugas fuera de tolerancia
RM-14-9(1)	31/03/00	9752-1	CELSA	B 500 S	12	113,31	1,00	SI	-	-	-	-	-	-	-	-	NO CONFORME	SATISFACTORIO	-	Separación entre corrugas fuera de tolerancia
RM-14-9(2)	31/03/00	9752-2	CELSA	B 500 S	12	113,09	1,00	SI	-	-	-	-	-	-	-	-	CONFORME	-	SATISFACTORIO	CONFORME
RM-14-10(1)	31/03/00	9753-1	NERVACERO	B 500 S	10	81,55	1,04	SI	-	-	-	-	-	-	-	-	CONFORME	SATISFACTORIO	-	CONFORME
RM-14-10(2)	31/03/00	9753-2	NERVACERO	B 500 S	10	81,55	1,04	SI	-	-	-	-	-	-	-	-	CONFORME	-	SATISFACTORIO	CONFORME
RM-14-11(1)	28/04/00	10125-1	NERVACERO	B 500 S	25	474,13	0,97	SI	-	-	-	-	-	-	-	-	CONFORME	SATISFACTORIO	-	CONFORME
RM-14-11(2)	28/04/00	10125-2	NERVACERO	B 500 S	25	474,13	0,97	SI	-	-	-	-	-	-	-	-	CONFORME	-	SATISFACTORIO	CONFORME
RM-14-12(1)	28/04/00	10126-1	NERVACERO	B 500 S	20	312,59	0,99	SI	-	-	-	-	-	-	-	-	CONFORME	SATISFACTORIO	-	CONFORME
RM-14-12(2)	28/04/00	10126-2	NERVACERO	B 500 S	20	318,25	1,01	SI	-	-	-	-	-	-	-	-	CONFORME	-	SATISFACTORIO	CONFORME
RM-14-13(1)	28/04/00	10127-1	NERVACERO	B 500 S	20	318,36	1,01	SI	-	-	-	-	-	-	-	-	CONFORME	SATISFACTORIO	-	CONFORME
RM-14-13(2)	28/04/00	10127-2	NERVACERO	B 500 S	20	309,15	0,98	SI	-	-	-	-	-	-	-	-	CONFORME	-	SATISFACTORIO	CONFORME
RM-14-14(1)	28/04/00	10128-1	NERVACERO	B 500 S	20	310,08	0,99	SI	-	-	-	-	-	-	-	-	CONFORME	SATISFACTORIO	-	CONFORME
RM-14-14(2)	28/04/00	10128-2	NERVACERO	B 500 S	20	300,79	0,96	SI	-	-	-	-	-	-	-	-	CONFORME	-	SATISFACTORIO	CONFORME
RM-14-15(1)	28/04/00	10129-1	NERVACERO	B 500 S	16	201,31	1,00	SI	-	-	-	-	-	-	-	-	CONFORME	SATISFACTORIO	-	CONFORME
RM-14-15(2)	28/04/00	10129-2	NERVACERO	B 500 S	16	201,31	1,00	SI	-	-	-	-	-	-	-	-	CONFORME	-	SATISFACTORIO	CONFORME
RM-14-16(1)	28/04/00	10130-1	NERVACERO	B 500 S	16	202,57	1,01	SI	-	-	-	-	-	-	-	-	CONFORME	SATISFACTORIO	-	CONFORME
RM-14-16(2)	28/04/00	10130-2	NERVACERO	B 500 S	16	202,82	1,01	SI	-	-	-	-	-	-	-	-	CONFORME	-	SATISFACTORIO	CONFORME
RM-14-17(1)	28/04/00	10131-1	NERVACERO	B 500 S	12	111,59	0,99	SI	-	-	-	-	-	-	-	-	CONFORME	SATISFACTORIO	-	CONFORME
RM-14-17(2)	28/04/00	10131-2	NERVACERO	B 500 S	12	110,84	0,98	SI	-	-	-	-	-	-	-	-	CONFORME	-	SATISFACTORIO	CONFORME
RM-14-18(1)	28/04/00	10132-1	NERVACERO	B 500 S	12	112,15	0,99	SI	-	-	-	-	-	-	-	-	CONFORME	SATISFACTORIO	-	CONFORME
RM-14-18(2)	28/04/00	10132-2	NERVACERO	B 500 S	12	112,72	1,00	SI	-	-	-	-	-	-	-	-	CONFORME	-	SATISFACTORIO	CONFORME
RM-14-19(1)	28/04/00	10133-1	NERVACERO	B 500 S	10	79,48	1,01	SI	-	-	-	-	-	-	-	-	CONFORME	SATISFACTORIO	-	CONFORME
RM-14-19(2)	28/04/00	10133-2	NERVACERO	B 500 S	10	82,03	1,04	SI	-	-	-	-	-	-	-	-	CONFORME	-	SATISFACTORIO	CONFORME
RM-14-20(1)	28/04/00	10134-1	NERVACERO	B 500 S	10	79,64	1,01	SI	-	-	-	-	-	-	-	-	CONFORME	SATISFACTORIO	-	CONFORME
RM-14-20(2)	28/04/00	10134-2	NERVACERO	B 500 S	10	79,48	1,01	SI	-	-	-	-	-	-	-	-	CONFORME	-	SATISFACTORIO	CONFORME
RM-14-21(1)	19/05/00	10224-1	NERVACERO	B 500 S	25	485,00	0,99	SI	-	-	-	-	-	-	-	-	CONFORME	SATISFACTORIO	-	CONFORME
RM-14-21(2)	19/05/00	10224-2	NERVACERO	B 500 S	25	489,30	1,00	SI	-	-	-	-	-	-	-	-	CONFORME	-	SATISFACTORIO	CONFORME
RM-14-22(1)	19/05/00	10225-1	NERVACERO	B 500 S	25	486,56	0,99	SI	-	-	-	-	-	-	-	-	CONFORME	SATISFACTORIO	-	CONFORME
RM-14-22(2)	19/05/00	10225-2	NERVACERO	B 500 S	25	484,61	0,99	SI	-	-	-	-	-	-	-	-	CONFORME	-	SATISFACTORIO	CONFORME
RM-14-23(1)	19/05/00	10226-1	NERVACERO	B 500 S	25	485,00	0,99	SI	-	-	-	-	-	-	-	-	CONFORME	SATISFACTORIO	-	CONFORME
RM-14-23(2)	19/05/00	10226-2	NERVACERO	B 500 S	25	485,39	0,99	SI	-	-	-	-	-	-	-	-	CONFORME	-	SATISFACTORIO	CONFORME
RM-14-24(1)	19/05/00	10227-1	NERVACERO	B 500 S	25	485,78	0,99	SI	-	-	-	-	-	-	-	-	CONFORME	SATISFACTORIO	-	CONFORME
RM-14-24(2)	19/05/00	10227-2	NERVACERO	B 500 S	25	485,78	0,99	SI	-	-	-	-	-	-	-	-	CONFORME	-	SATISFACTORIO	CONFORME
RM-14-25(1)	19/05/00	10228-1	NERVACERO	B 500 S	25	486,17	0,99	SI	-	-	-	-	-	-	-	-	CONFORME	SATISFACTORIO	-	CONFORME
RM-14-25(2)	19/05/00	10228-2	NERVACERO	B 500 S	25	487,73	0,99	SI	-	-	-	-	-	-	-	-	CONFORME	-	SATISFACTORIO	CONFORME

FECHA: 20/06/01 FIRMA:

NOMBRE: J. Ignacio Lorenzo Giménez

CARGO: I.T. Asistencia Técnica

Línea de alta velocidad. Tramo: Madrid-Zaragoza
Subtramo I. Plataforma

** P.A.C. **

* ENSAYOS NORMATIVOS DE BARRAS ACERO CORRUGADAS PARA ARMADURAS *

* RESULTADOS DE LOS ENSAYOS *

IDENTIFICACION DE LA MUESTRA			MARCA Y TIPO		Ø Nominal (mm)	Sección Media (cm2)	Tolerancia en la Sección %	Especif >95%	ENSAYOS DE TRACCION								CARACTERIS. GEOMETRICAS DEL CORRUGADO	ENSAYO DOBLADO SIMPLE	ENSAYO DOBLADO-DESDOBLADO	OBSERVACION
									Límite Elást. (Kp/cm2)	Especif. >5100	Carga U.Rotura (Kp/cm2)	Especif. >5600	% Alarga. Rotura	Especif. >12	fs/fy	Especif >1,05				
REGISTRO	FECHA	CLAVE	MARCA	TIPO																
RM-14-51(1)	12/09/00	10591-1	NERVACERO	B 500 SD	10	79,01	1,01	SI	-	-	-	-	-	-	-	-	CONFORME	SATISFACTORIO	-	CONFORME
RM-14-51(2)	12/09/00	10591-2	NERVACERO	B 500 SD	10	80,59	1,03	SI	-	-	-	-	-	-	-	-	CONFORME	-	SATISFACTORIO	CONFORME
RM-14-52(1)	12/09/00	10592-1	NERVACERO	B 500 SD	10	79,05	1,02	SI	-	-	-	-	-	-	-	-	CONFORME	SATISFACTORIO	-	CONFORME
RM-14-52(2)	12/09/00	10592-2	NERVACERO	B 500 SD	10	79,80	1,02	SI	-	-	-	-	-	-	-	-	CONFORME	-	SATISFACTORIO	CONFORME

FECHA: 20/06/01 FIRMA: NOMBRE: J. Ignacio Lorenzo Giménez

CARGO: I.T. Asistencia Técnica

Línea de alta velocidad. Tramo: Madrid-Zaragoza
Subtramo I. Plataforma

** P.A.C. **

* ENSAYOS NORMATIVOS DE BARRAS ACERO CORRUGADAS PARA ARMADURAS *

* RESULTADOS DE LOS ENSAYOS *

IDENTIFICACION DE LA MUESTRA			MARCA Y TIPO		Ø Nominal (mm)	Sección Media (cm2)	Tolerancia en la Sección %	Especif >95%	ENSAYOS DE TRACCION								CARACTERIS. GEOMETRICAS DEL CORRUGADO	ENSAYO DOBLADO SIMPLE	ENSAYO DOBLADO-DESDOBLADO	OBSERVACION
									Límite Elást. (Kp/cm2)	Especif. >5100	Carga U.Rotura (Kp/cm2)	Especif. >5600	% Alarga. Rotura	Especif. >12	fs/fy	Especif >1,05				
REGISTRO	FECHA	CLAVE	MARCA	TIPO																
RM-14-26(1)	19/05/00	10229-1	NERVACERO	B 500 S	25	485	0,09	SI	-	-	-	-	-	-	-	-	CONFORME	SATISFACTORIO	-	CONFORME
RM-14-26(2)	19/05/00	10229-2	NERVACERO	B 500 S	25	486,78	0,09	SI	-	-	-	-	-	-	-	-	CONFORME	-	SATISFACTORIO	CONFORME
RM-14-27(1)	19/05/00	10230-1	NERVACERO	B 500 SD	20	309,46	0,98	SI	-	-	-	-	-	-	-	-	CONFORME	SATISFACTORIO	-	CONFORME
RM-14-27(2)	19/05/00	10230-2	NERVACERO	B 500 SD	20	309,46	0,98	SI	-	-	-	-	-	-	-	-	CONFORME	-	SATISFACTORIO	CONFORME
RM-14-28(1)	19/05/00	10231-1	NERVACERO	B 500 SD	20	309,77	0,98	SI	-	-	-	-	-	-	-	-	CONFORME	SATISFACTORIO	-	CONFORME
RM-14-28(2)	19/05/00	10231-2	NERVACERO	B 500 SD	20	308,84	0,98	SI	-	-	-	-	-	-	-	-	CONFORME	-	SATISFACTORIO	CONFORME
RM-14-29(1)	19/05/00	10232-1	NERVACERO	B 500 SD	20	308,84	0,98	SI	-	-	-	-	-	-	-	-	CONFORME	SATISFACTORIO	-	CONFORME
RM-14-29(2)	19/05/00	10232-2	NERVACERO	B 500 SD	20	309,46	0,98	SI	-	-	-	-	-	-	-	-	CONFORME	-	SATISFACTORIO	CONFORME
RM-14-30(1)	19/05/00	10233-1	NERVACERO	B 500 SD	20	307,28	0,98	SI	-	-	-	-	-	-	-	-	CONFORME	SATISFACTORIO	-	CONFORME
RM-14-30(2)	19/05/00	10233-2	NERVACERO	B 500 SD	20	309,15	0,98	SI	-	-	-	-	-	-	-	-	CONFORME	-	SATISFACTORIO	CONFORME
RM-14-31(1)	19/05/00	10233-1	NERVACERO	B 500 SD	20	318,25	1,01	SI	-	-	-	-	-	-	-	-	CONFORME	SATISFACTORIO	-	CONFORME
RM-14-31(2)	19/05/00	10233-2	NERVACERO	B 500 SD	20	323,33	1,03	SI	-	-	-	-	-	-	-	-	CONFORME	-	SATISFACTORIO	CONFORME
RM-14-32(1)	19/05/00	10234-1	NERVACERO	B 500 S	16	199,05	0,99	SI	-	-	-	-	-	-	-	-	CONFORME	SATISFACTORIO	-	CONFORME
RM-14-32(2)	19/05/00	10234-2	NERVACERO	B 500 S	16	199,30	0,99	SI	-	-	-	-	-	-	-	-	CONFORME	-	SATISFACTORIO	CONFORME
RM-14-33(1)	19/05/00	10235-1	NERVACERO	B 500 S	16	200,31	1,00	SI	-	-	-	-	-	-	-	-	CONFORME	SATISFACTORIO	-	CONFORME
RM-14-33(2)	19/05/00	10235-2	NERVACERO	B 500 S	16	196,81	0,98	SI	-	-	-	-	-	-	-	-	CONFORME	-	SATISFACTORIO	CONFORME
RM-14-34(1)	19/05/00	10236-1	NERVACERO	B 500 S	16	199,30	0,99	SI	-	-	-	-	-	-	-	-	CONFORME	SATISFACTORIO	-	CONFORME
RM-14-34(2)	19/05/00	10236-2	NERVACERO	B 500 S	16	199,80	0,99	SI	-	-	-	-	-	-	-	-	CONFORME	-	SATISFACTORIO	CONFORME
RM-14-35(1)	19/05/00	10237-1	NERVACERO	B 500 S	16	197,31	0,98	SI	-	-	-	-	-	-	-	-	CONFORME	SATISFACTORIO	-	CONFORME
RM-14-35(2)	19/05/00	10237-2	NERVACERO	B 500 S	16	199,30	0,99	SI	-	-	-	-	-	-	-	-	CONFORME	-	SATISFACTORIO	CONFORME
RM-14-36(1)	19/05/00	10238-1	NERVACERO	B 500 S	16	197,06	0,98	SI	-	-	-	-	-	-	-	-	CONFORME	SATISFACTORIO	-	CONFORME
RM-14-36(2)	19/05/00	10238-2	NERVACERO	B 500 S	16	199,80	0,99	SI	-	-	-	-	-	-	-	-	CONFORME	-	SATISFACTORIO	CONFORME
RM-14-37(1)	19/05/00	10239-1	NERVACERO	B 500 S	12	111,22	0,98	SI	-	-	-	-	-	-	-	-	CONFORME	SATISFACTORIO	-	CONFORME
RM-14-37(2)	19/05/00	10239-2	NERVACERO	B 500 S	12	111,22	0,98	SI	-	-	-	-	-	-	-	-	CONFORME	-	SATISFACTORIO	CONFORME
RM-14-38(1)	19/05/00	10240-1	NERVACERO	B 500 S	12	112,72	1,00	SI	-	-	-	-	-	-	-	-	CONFORME	SATISFACTORIO	-	CONFORME
RM-14-38(2)	19/05/00	10240-2	NERVACERO	B 500 S	12	111,41	0,99	SI	-	-	-	-	-	-	-	-	CONFORME	-	SATISFACTORIO	CONFORME
RM-14-39(1)	12/09/00	10579-1	NERVACERO	B 500 SD	25	487,73	0,99	SI	-	-	-	-	-	-	-	-	CONFORME	SATISFACTORIO	-	CONFORME
RM-14-39(2)	12/09/00	10579-2	NERVACERO	B 500 SD	25	497,96	1,01	SI	-	-	-	-	-	-	-	-	CONFORME	-	SATISFACTORIO	CONFORME
RM-14-40(1)	12/09/00	10580-1	NERVACERO	B 500 SD	25	489,30	1,00	SI	-	-	-	-	-	-	-	-	CONFORME	SATISFACTORIO	-	CONFORME
RM-14-40(2)	12/09/00	10580-2	NERVACERO	B 500 SD	25	488,91	1,00	SI	-	-	-	-	-	-	-	-	CONFORME	-	SATISFACTORIO	CONFORME
RM-14-41(1)	12/09/00	10581-1	NERVACERO	B 500 SD	25	481,88	0,98	SI	-	-	-	-	-	-	-	-	CONFORME	SATISFACTORIO	-	CONFORME
RM-14-41(2)	12/09/00	10581-2	NERVACERO	B 500 SD	25	481,88	0,98	SI	-	-	-	-	-	-	-	-	CONFORME	-	SATISFACTORIO	CONFORME
RM-14-42(1)	12/09/00	10582-1	NERVACERO	B 500 SD	25	488,91	1,00	SI	-	-	-	-	-	-	-	-	CONFORME	SATISFACTORIO	-	CONFORME
RM-14-42(2)	12/09/00	10582-2	NERVACERO	B 500 SD	25	488,91	1,00	SI	-	-	-	-	-	-	-	-	CONFORME	-	SATISFACTORIO	CONFORME
RM-14-43(1)	12/09/00	10583-1	NERVACERO	B 500 SD	20	312,27	0,99	SI	-	-	-	-	-	-	-	-	CONFORME	SATISFACTORIO	-	CONFORME
RM-14-43(2)	12/09/00	10583-2	NERVACERO	B 500 SD	20	310,41	0,99	SI	-	-	-	-	-	-	-	-	CONFORME	-	SATISFACTORIO	CONFORME
RM-14-44(1)	12/09/00	10584-1	NERVACERO	B 500 SD	20	317,62	1,01	SI	-	-	-	-	-	-	-	-	CONFORME	SATISFACTORIO	-	CONFORME
RM-14-44(2)	12/09/00	10584-2	NERVACERO	B 500 SD	20	317,31	1,01	SI	-	-	-	-	-	-	-	-	CONFORME	-	SATISFACTORIO	CONFORME
RM-14-45(1)	12/09/00	10585-1	NERVACERO	B 500 SD	20	314,60	1,00	SI	-	-	-	-	-	-	-	-	CONFORME	SATISFACTORIO	-	CONFORME
RM-14-45(2)	12/09/00	10585-2	NERVACERO	B 500 SD	20	310,08	0,99	SI	-	-	-	-	-	-	-	-	CONFORME	-	SATISFACTORIO	CONFORME
RM-14-46(1)	12/09/00	10586-1	NERVACERO	B 500 SD	20	314,60	1,00	SI	-	-	-	-	-	-	-	-	CONFORME	SATISFACTORIO	-	CONFORME
RM-14-46(2)	12/09/00	10586-2	NERVACERO	B 500 SD	20	313,53	1,00	SI	-	-	-	-	-	-	-	-	CONFORME	-	SATISFACTORIO	CONFORME
RM-14-47(1)	12/09/00	10587-1	NERVACERO	B 500 SD	16	202,07	1,01	SI	-	-	-	-	-	-	-	-	CONFORME	SATISFACTORIO	-	CONFORME
RM-14-47(2)	12/09/00	10587-2	NERVACERO	B 500 SD	16	202,32	1,01	SI	-	-	-	-	-	-	-	-	CONFORME	-	SATISFACTORIO	CONFORME
RM-14-48(1)	12/09/00	10588-1	NERVACERO	B 500 SD	16	200,05	0,99	SI	-	-	-	-	-	-	-	-	CONFORME	SATISFACTORIO	-	CONFORME
RM-14-48(2)	12/09/00	10588-2	NERVACERO	B 500 SD	16	199,81	0,99	SI	-	-	-	-	-	-	-	-	CONFORME	-	SATISFACTORIO	CONFORME
RM-14-49(1)	12/09/00	10589-1	NERVACERO	B 500 SD	16	199,81	0,99	SI	-	-	-	-	-	-	-	-	CONFORME	SATISFACTORIO	-	CONFORME
RM-14-49(2)	12/09/00	10589-2	NERVACERO	B 500 SD	16	205,86	1,02	SI	-	-	-	-	-	-	-	-	CONFORME	-	SATISFACTORIO	CONFORME
RM-14-50(1)	12/09/00	10590-1	NERVACERO	B 500 SD	16	204,34	1,02	SI	-	-	-	-	-	-	-	-	CONFORME	SATISFACTORIO	-	CONFORME
RM-14-50(2)	12/09/00	10590-2	NERVACERO	B 500 SD	16	200,05	0,99	SI	-	-	-	-	-	-	-	-	CONFORME	-	SATISFACTORIO	CONFORME

FECHA: 20/06/01 FIRMA: NOMBRE: J. Ignacio Lorenzo Giménez

CARGO: I.T. Asistencia Técnica

AUTOCONTROL M-45 U.T.E. TRAMO II — ACS, ferrovial agromán

UTE M-45.

27 de junio de 2001

ESTRUCTURA 20.
(TAV A BARCELONA).
PILAS 1 Y 2

20 jun 01 — 30 may 01 — 29 may 01

FECHA TOMA	OBRA	f_{ck} Kg/cm²	ESTRUCTURA	LOCALIZACION	SERIE	LOTE	PLANTA	HORA FABRIC.	HORA TOMA	ALBARÁN	CONO cm	TAM. ÁRIDO mm	TIPO CEMENTO	ADITIVO	MEDIA 7 Kg/cm² PROBETAS ROBADAS	MEDIA 28 Kg/cm²	DENSIDAD g/cm³	CONSISTENCIA A cm	90 DIAS	OBSERVACIONES
25/09/2000	UTE M-45 TRAMO II	250	E-20	CALZADA DERECHA PILA 01 FUSTE 3	1	PIE.20L01	HYMPSA	15:11	15:50	104977	9	20	CEM I 42,5 R/SR	PLASTIFICANTE	278	335	2,29	BLANDA		PROBETAS ROBADAS
16/10/2000	UTE M-45 TRAMO II	250	E-20	CALZADA DERECHA PILA 02 FUSTE 4	1	PIE.20L02	HAT	15:58	16:45	28036	8	20	CEMENTO M 42,5 R	EUCONET 710	243	321	2,34	BLANDA	382	EL LOTE CUMPLE
20/10/2000	UTE M-45 TRAMO II	250	E-20	CALZADA DERECHA PILA 02 FUSTE 3	2	PIE.20L02	HYMPSA	18:34	19:05	106146	8	20	CEMENTO M 42,5 R	PLASTIFICANTE	223	296	2,37	PLASTICA	388	EL LOTE CUMPLE
24/10/2000	UTE M-45 TRAMO II	250	E-20	CALZADA DERECHA PILA 02 CAPITEL 3	3	PIE.20L02	HYMPSA	14:35	15:35	106268	5	20	CEMENTO M 42,5 R	PLASTIFICANTE	265	310	2,34	BLANDA	338	EL LOTE CUMPLE
22/09/2000	UTE M-45 TRAMO II	250	E-20	CALZADA IZQUIERDA PILA 01 FUSTE 2	1	PIE.20L01	HYMPSA	16:22	17:00	104868	8	20	CEMENTO M 42,5 R	PLASTIFICANTE	240	343	2,31	BLANDA	408	EL LOTE CUMPLE
9/10/2000	UTE M-45 TRAMO II	250	E-20	CALZADA IZQUIERDA PILA 01 FUSTE 1	2	PIE.20L01	HYMPSA	16:07	19:00	105464	8	20	CEMENTO M 42,5 R	PLASTIFICANTE	290	373		BLANDA	394	EL LOTE CUMPLE
5/10/2000	UTE M-45 TRAMO II	250	E-20	CALZADA IZQUIERDA PILA 01 CAPITEL 2	3	PIE.20L01	HYMPSA	16:00	16:40	105297	6	20	CEM I 42,5 R/SR	PLASTIFICANTE	286	383	2,33	BLANDA	393	EL LOTE CUMPLE
23/10/2000	UTE M-45 TRAMO II	250	E-20	CALZADA IZQUIERDA PILA 02 FUSTE 2	1	PIE.20L02	HYMPSA	17:06	17:40	106220	8	20	CEMENTO M 42,5 R	PLASTIFICANTE	349	384	2,36	BLANDA	401	EL LOTE CUMPLE
25/10/2000	UTE M-45 TRAMO II	250	E-20	CALZADA IZQUIERDA PILA 02 FUSTE 1	2	PIE.20L02	HYMPSA	17:58	18:35	106357	8	20	CEM I 42,5 R/SR	PLASTIFICANTE	385	440	2,37	BLANDA	412	EL LOTE CUMPLE
26/10/2000	UTE M-45 TRAMO II	250	E-20	CALZADA IZQUIERDA PILA 02 CAPITEL 7	3	PIE.20L02	HYMPSA	17:05	18:00	106442	15	20	CEMENTO M 42,5 R	PLASTIFICANTE	373	455	2,38	BLANDA		EL LOTE CUMPLE
26/10/2000	UTE M-45 TRAMO II	250	E-20	CALZADA IZQUIERDA PILA 02 CAPITEL 2	4	PIE.20L02	HYMPSA	17:34	18:20	106447	7	20	CEMENTO M 42,5 R	PLASTIFICANTE	369	436	2,37	PLASTICA		EL LOTE CUMPLE
26/10/2000	UTE M-45 TRAMO II	250	E-20	CALZADA IZQUIERDA PILA 02 CAPITEL 7	5	PIE.20L02	HYMPSA	18:27	19:20	106455	11	20	CEMENTO M 42,5 R	PLASTIFICANTE				PLASTICA		EL LOTE CUMPLE

CONTROL DE HORMIGONES

SEGUN NORMAS UNE 83300, UNE 83301, UNE 83303, UNE 83304, UNE 83313

GEO TECO

DENOMINACION: Nueva carretera M-45. Tramo II - eje O'Donnell a carretera N-IV. UTE M-45

DATOS DE LA AMASADA

LOCALIZACION: Estructura nº 20. Pila 1, fuste 3, calzada derecha. PI2O-L1D-1

MUESTRA Nº	HORMIGON	FABRICANTE	ALBARAN Nº	ARIDO
E2253	H-250	HYMPSA	104977	20

HORA DE CARGA	CONSISTENCIA	CEMENTO	ADITIVO
15:11	Blanda	I 42,5R/SR	Plastificante

RESULTADOS OBTENIDOS

FECHA FABRICACION	HORA FABRICACION	CONO	TIEMPO - Tª
26-sep-00	15:50	9	Nublado

PROBETA Nº	FECHA DE ENSAYO	EDAD DIAS	FUERZA DE ROTURA (kN)	RESISTENCIA (Kp/cm2)	RESISTENCIA (MPa)
1	03-oct-00	7			
2	03-oct-00	7			
3	24-oct-00	28			
4	24-oct-00	28			
5	25-dic-00	90			

OBSERVACIONES: Probetas desaparecidas en obra

GEO TECO CONTROL DE CALIDAD DE OBRAS
ESTUDIOS GEOTECNICOS
GEOTEYCO, S.A.
POLIG. IND. VALDONIRE C/ Selva, 7
26560 HUMANES DE MADRID - TELF 91 690 11 50 - 91 690 21 62

9083687 — Fecha: 21-Octubre-1997 — Revision:2 — Clave: I-HORM-3

CONTROL DE HORMIGONES

SEGUN NORMAS UNE 83300, UNE 83301, UNE 83303, UNE 83304, UNE 83313

DENOMINACION: M-45. Tramo II: Prolongación Eje O´Donnell a N-IV

DATOS DE LA AMASADA

LOCALIZACION: Estructura nº 20. Pila 2, fuste 4. PIE20-LD2/4

MUESTRA Nº	HORMIGON	FABRICANTE	ALBARAN Nº	ARIDO
E2470	HA-25	HAT	28036	20

HORA DE CARGA	CONSISTENCIA	CEMENTO	ADITIVO
15:58	Blanda	I 42,5R/SR	Eucobet 710

RESULTADOS OBTENIDOS

FECHA FABRICACION	HORA FABRICACION	CONO	TIEMPO - Tª
16-oct-00	16:45	8	Soleado

PROBETA Nº	FECHA DE ENSAYO	EDAD DIAS	FUERZA DE ROTURA (kN)	RESISTENCIA (Kp/cm2)	RESISTENCIA (MPa)
1	23-oct-00	7	491,40	284	27,8
2	23-oct-00	7	471,20	272	26,7
3	13-nov-00	28	588,00	340	33,3
4	13-nov-00	28	571,40	330	32,3
5	14-ene-01	90	661,90	382	37,5

OBSERVACIONES: Densidad: 2,292 g/cm3 (valor obtenido con probetas recién sacadas de cámara húmeda).

CONTROL DE HORMIGONES

SEGUN NORMAS UNE 83300, UNE 83301, UNE 83303, UNE 83304, UNE 83313

DENOMINACION: Nueva carretera M-45. Tramo II - eje O'Donnell a carretera N-IV. UTE M-45

DATOS DE LA AMASADA

LOCALIZACION: Estructura nº 20. Pila 2, fuste 3, calzada derecha. PIE20-LD2/2

MUESTRA Nº	HORMIGON	FABRICANTE	ALBARAN Nº	ARIDO
E2575	H-250	HYMPSA	106146	20

HORA DE CARGA	CONSISTENCIA	CEMENTO	ADITIVO
18:34	Blanda	CEM II/A-M 42,5R	Plastificante

RESULTADOS OBTENIDOS

FECHA FABRICACION	HORA FABRICACION	CONO	TIEMPO - Tª
20-oct-00	19:05	8	Nublado

PROBETA Nº	FECHA DE ENSAYO	EDAD DIAS	FUERZA DE ROTURA (kN)	RESISTENCIA (Kp/cm2)	RESISTENCIA (MPa)
1	27-oct-00	7	421,80	244 ✓	23,9
2	27-oct-00	7	419,90	242 ✓	23,8
3	17-nov-00	28	544,50	314 ✓	30,8
4	17-nov-00	28	566,50	327 ✓	32,1
5	18-ene-01	90	672,80	388 ✓	38,1

OBSERVACIONES: Densidad: 2,339 g/cm³ (valor obtenido con probetas recién sacadas de cámara húmeda).

SERVICIO DE CONTROL DE CALIDAD DE OBRAS
GEOTECNICOS ESTUDIO DE TECNICOS
GEOTECO
Polg. Ind. VALDONAIRE - C/ Sevilla, 7
28560 RIVAS-VACIAMADRID - Telf. [illegible]

7. Accesos y elementos para mantenimiento

Tanto los pasos superiores como los inferiores, normalmente, están justificados por la reposición de los viales de distintos tipos que atraviesan el trazado. Por lo que estas estructuras están perfectamente accesibles por medio de los caminos y carreteras que comunican.

Hay otras estructuras cuya función puede ser salvar accidentes geográficos, zonas de alta protección medioambiental, o simplemente de paso de fauna.

8. Recomendaciones para la conservación y mantenimiento

En cuanto a las recomendaciones para la conservación y el mantenimiento de las estructuras, simplemente decir que, por la ubicación de las mismas, no existe peligro de descalces en las cimentaciones de aquellas, por posibles riadas u otros eventos de erosión rápida.

Los trabajos de conservación de las estructuras serán mínimos y se deberán principalmente al mantenimiento de los elementos que se deterioran con el paso del tiempo.

Se pondrá especial atención en la buena eliminación de aguas de la superficie de las mismas, del perfecto estado de bajantes de aguas a las cunetas de la plataforma y en el trabajo de juntas.

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La aumentación relativa a este apartado se encuentra recogida en el presente anejo dentro del punto 4. Cálculos