ANEJO Nº 6. ESTRUCTURAS

ANEJO Nº 6. ESTRUCTURAS

ÍNDICE

1. CUADRO RESUMEN
2. DESCRIPCIÓN (Tipología, aparatos de apoyo, juntas, impermeabilización, etc.)
3. DEFINICIÓN GEOMÉTRICA
4. CÁLCULOS
   - 4.1. VIADUCTOS DE SAN BOI DE LLOBREGAT
     1. ANTECEDENTES
     2. CÁLCULO DINÁMICO DEL VIADUCTO DE LLOBREGAT
     3. ANEXO DE CÁLCULO. CALZADA DE AVE
     4. CÁLCULOS DE PILA 4
     5. OBSERVACIONES PILA 4
     6. ESFUERZOS EN PILOTES DESPLAZADOS
     7. ESFUERZOS EN PILOTES NO DESPLAZADOS
     8. INFORME: OBSERVACIONES DE LOS CÁLCULOS DE LA MODIFICACIÓN DEL ENCEPADO DE LA PILA 2 POR EL DESPLAZAMIENTO DE UN PILOTE
     9. PRUEBA DE CARGA DEL VIADUCTO DE LLOBREGAT
   - 4.2. PASO INFERIOR DE LA RIERA DE ROSET
     1. GEOMETRÍA
     2. ACCIONES, MATERIALES, COEFICIENTES DE SEGURIDAD Y NORMATIVAS
     3. CÁLCULO DE ESFUERZOS
     4. VERIFICACIÓN DEL E.L.U. DE ROTURA POR TENSIONES NORMALES
     5. VERIFICACIÓN DEL E.L.U. DE ROTURA POR TENSIONES TANGENCIALES
     6. VERIFICACIÓN DEL E.L.S. DE SERVICIO DE FISURACIÓN
     7. CÁLCULO DE ALETAS
   - 4.3. PASO INFERIOR DE LA RIERA DE TORRELLES
     1. GEOMETRÍA
     2. ACCIONES, MATERIALES, COEFICIENTES DE SEGURIDAD Y NORMATIVAS
     3. CÁLCULO ESTRUCTURAL
     4. PRETENSADO
     5. VERIFICACIÓN DE LOS ESTADOS LÍMITE DE SERVICIO
     6. VERIFICACIÓN DEL E.L.U. DE ROTURA POR TENSIONES NORMALES
     7. VERIFICACIÓN DEL E.L.U. DE ROTURA POR TENSIONES TANGENCIALES
     8. APARATOS DE APOYO Y JUNTAS
     9. CÁLCULO DE ESTRIBO 1
     10. CÁLCULO DE ESTRIBO 2
     11. CÁLCULO DE PILAS
   - 4.4. AMPLIACIÓN DEL CANAL DE PLUVIALES DE SANT VICENÇ DELS HORTS
     1. GEOMETRÍA
     2. ACCIONES, MATERIALES, COEFICIENTES DE SEGURIDAD Y NORMATIVAS
     3. CÁLCULO DE ESFUERZOS
     4. VERIFICACIÓN DEL E.L.U. DE ROTURA POR TENSIONES NORMALES
     5. VERIFICACIÓN DEL E.L.U. DE ROTURA POR TENSIONES TANGENCIALES
     6. VERIFICACIÓN DEL E.L.S. DE SERVICIO DE FISURACIÓN
     7. CÁLCULO DE ALETAS
   - 4.5. PASO INFERIOR DE LA RIERA DE LES MALLORQUINES
     1. GEOMETRÍA
     2. ACCIONES, MATERIALES, COEFICIENTES DE SEGURIDAD Y NORMATIVAS
     3. CÁLCULO DE ESFUERZOS
     4. VERIFICACIÓN DEL E.L.U. DE ROTURA POR TENSIONES NORMALES
     5. VERIFICACIÓN DEL E.L.U. DE ROTURA POR TENSIONES TANGENCIALES
     6. VERIFICACIÓN DEL E.L.S. DE SERVICIO DE FISURACIÓN
     7. CÁLCULO DE ALETAS
   - 4.6. PASO INFERIOR DE LA RIERA DE CAN MALLOL
     1. GEOMETRÍA
     2. ACCIONES, MATERIALES, COEFICIENTES DE SEGURIDAD Y NORMATIVAS
     3. CÁLCULO DE ESFUERZOS
     4. VERIFICACIÓN DEL E.L.U. DE ROTURA POR TENSIONES NORMALES

5. VERIFICACIÓN DEL E.L.U. DE ROTURA POR TENSIONES TANGENCIALES
6. VERIFICACIÓN DEL E.L.S. DE SERVICIO DE FISURACIÓN
7. CÁLCULO DE ALETAS

4.7. PASO INFERIOR DE LA RIERA DE CAN VÍA
1. CÁLCULOS
2. CERTIFICADO

4.8. PASO INFERIOR DEL CAMINO
1. CÁLCULOS
2. CERTIFICADO
3. HIPÓTESIS COEFICIENTE DE BALASTO VERTICAL

4.9. PASO INFERIOR DE LA RIERA DE CAN JULIÁ
1. CÁLCULOS
2. CERTIFICADO
3. HIPÓTESIS COEFICIENTE DE BALASTO VERTICAL

4.10. PASO INFERIOR DEL CAMINO DEL PLA SOLER
1. CÁLCULOS
2. CERTIFICADO

4.11. MUROS
1. OBJETO DEL PRESENTE APÉNDICE
2. CÁLCULOS DE LOS MUROS

4.12. AMPLIACIÓN DEL AZUD DE SANT VICENÇ DELS HORTS

4.13. CAJÓN REPOSICIÓN A164

5. PROCESO CONSTRUCTIVO

6. CONTROL DE CALIDAD

6.1. EMPRESA CONSTRUCTORA
6.1.1. ESTRUCTURAS “IN SITU” Y PEQUEÑAS OBRAS DE FÁBRICA
6.1.2. ESTRUCTURAS PREFABRICADAS (EXPEDIENTE DE FABRICACIÓN)

6.2. ASISTENCIA TÉCNICA
6.2.1. ESTRUCTURAS “IN SITU” Y PEQUEÑAS OBRAS DE FÁBRICA
6.2.2. ESTRUCTURAS PREFABRICADAS (EXPEDIENTE DE FABRICACIÓN)

7. ACCESOS Y ELEMENTOS PARA MANTENIMIENTO

8. RECOMENDACIONES PARA LA CONSERVACIÓN Y MANTENIMIENTO

9. MOVIMIENTOS PREVISTOS EN LAS ESTRUCTURAS

1. Cuadro resumen

1. INTRODUCCIÓN

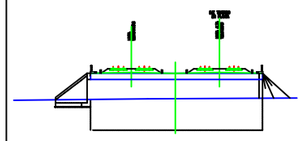
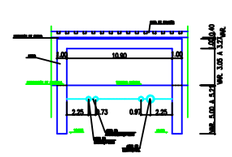
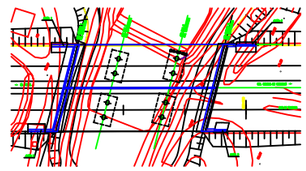
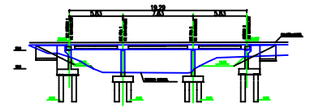
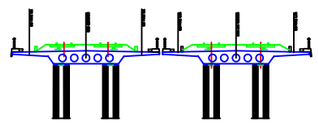
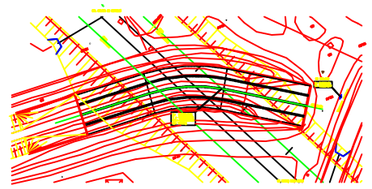
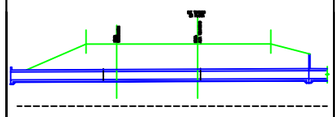
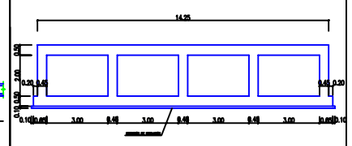
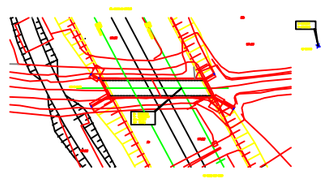
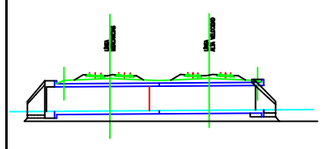
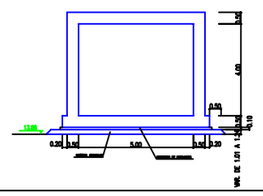
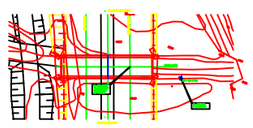
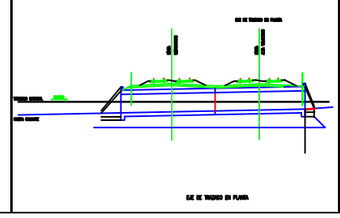
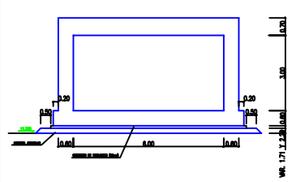
En el presente *Anejo nº 6 Estructuras* se recogen todas las estructuras correspondientes al *Proyecto de Construcción de Plataforma de la Línea de Alta Velocidad Madrid – Zaragoza – Barcelona – Frontera Francesa, Tramo: Sant Vicenç dels Horts – Santa Coloma de Cervelló.*

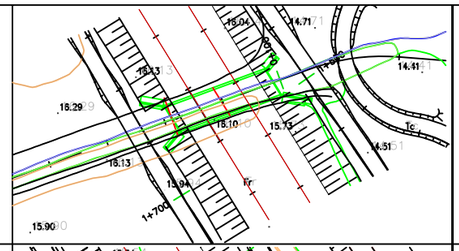
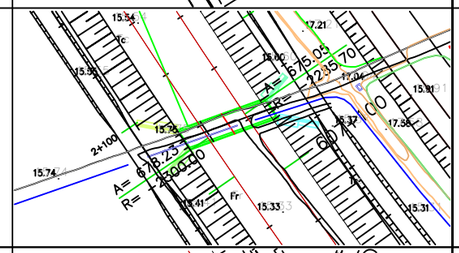
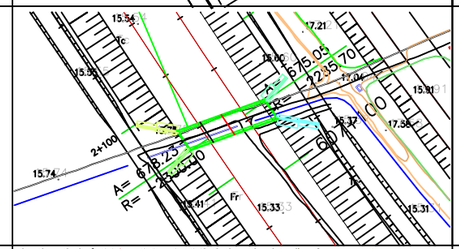
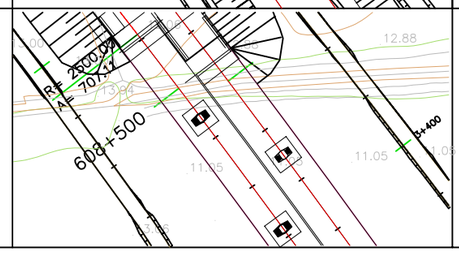
En los apéndices siguientes se adjuntan los anejos de cálculos de todas las estructuras, siendo éstas las siguientes:

1. ***Viaductos de Sant Boi de Llobregat.***
2. ***Paso Inferior de la Riera del Roset.***
3. ***Paso Inferior de la Riera de Torrelles.***
4. ***Ampliación del Canal de Pluviales de Sant Vicenç dels Horts.***
5. ***Paso Inferior de la Riera de les Mallorquines.***
6. ***Paso Inferior de la Riera de Can Mallol.***
7. ***Paso Inferior de la Riera de Can Vía.***
8. ***Paso Inferior del Camino.***
9. ***Paso Inferior de la Riera de Can Juliá.***
10. ***Paso Inferior del Camino del Pla de Soler.***
11. ***Muros.***
12. ***Ampliación del Azud de Sant Vicenç dels Horts.***
13. ***Cajon Reposición A164.***

El cuadro resumen con la localización se adjunta en las paginas siguientes.

Las descripciónes de las estructuras se encuentran en el *Apendice nº2 Descripcion*, y sus definiciones geometricas en el *Apendice nº3 Definicion Geometrica*. La nota de cálculo de las estructuras se adjunta en el *Apéndice nº 4 Calculos*.

ESTRUCTURA	P.K.	TIPOLOGÍA TABLERO	ISOSTÁTICA HIPERESTÁTICA	ESVIAJE	LUCES	CANTO TABLERO	ANCHO TABLERO	PROCEDIM. CONSTRUCTIVO	PLANTA	PERFIL	SECCIÓN
Riera de Roset	603+864,523	PÓRTICO CON HASTIALES- - PANTALLA DE H.A.	HIPERESTÁTICA	106.69 g	10.90 m	1.00 m	28.05 m	CIMBRADO			
Riera de Torelles	605+000	LOSA DE H.P.	HIPERESTÁTICA	84.087 g	14.5+19+14.5m	1.24 m	2x14 m	CIMBRADO POR FASES			
Canal de Pluviales	605+169,925	MARCO CUATRICELULAR DE H.A.	HIPERESTÁTICA	160.53 g	4x3.0x2.0 m2	0.50 m	41.68 m	CIMBRADO			
Riera de Mallorquines	605+607	MARCO RECTANGULAR DE H.A.	HIPERESTÁTICA	131.19 g	5.00 m	0.50 m	31.58 m	CIMBRADO			
Riera de Can Mallol	606+003	MARCO RECTANGULAR DE H.A.	HIPERESTÁTICA	100.28 g	6.00 m	0.70 m	27.89 m	CIMBRADO			

Riera de Can Vía	606+647	MARCO RECTANGULAR DE H.A.	HIPERESTÁTICA	77.64g	9.00 m	0.80 m	35.33 m	CIMBRADO			
Paso inferior del Camino	607+081	MARCO RECTANGULAR DE H.A.	HIPERESTÁTICA	78.02g	6.00 m	0.50 m	30.53 m	CIMBRADO			
Riera de Can Julia	607+231	MARCO RECTANGULAR DE H.A.	HIPERESTÁTICA	71.02g	10.00 m	0.80 m	33.59 m	CIMBRADO			
Paso inferior de Pla de Soler	607+990	MARCO RECTANGULAR DE H.A.	HIPERESTÁTICA	75.39g	6.00 m	0.70 m	39.24 m	CIMBRADO			
Viaductos de Sant Boi de Llobregat	608+479	CAJON DE H.P.	HIPERESTÁTICA		6.47 m	0.335 m	33+2x45+33 por AVE 38+2x45+38 por Mercancia	CIMBRADO POR FASES			

2. Descripción (Tipología, aparatos de apoyo, juntas, impermeabilización, etc.)

2. Descripción (Tipología, aparatos de apoyo, juntas, impermeabilización, etc.)

Esta información está recogida en el epígrafe “4.Cálculos” del presente Anejo y en el “Documento Nº 2 Planos”.

3. Definición geométrica

3. Definición geométrica.

Esta información está recogida en el “Documento Nº 2 Planos”.

4. Cálculos

4.1. Viaductos de San Boi de Llobregat

1. ANTECEDENTES

Con fecha 14 de Marzo de 2005, el Ente Público ADIF envió a la Agencia Catalana del Agua el apartado “Acondicionamiento hidráulico del río Llobregat” del Proyecto Modificado nº 1 que se estaba redactando del subtramo Santa Coloma de Cervelló-Sant Joan Despí de la L.A.V Madrid-Zaragoza-Barcelona-Frontera francesa. Los viaductos que se estaban proyectando para este ramal eran paralelos (un tablero correspondiente al ramal de viajeros y otro para el ramal de mercancías), con una longitud de 476 m. cada uno, divididos en nueve vanos de 45 m. de luz y dos extremos de 36 m. con los bloques técnicos de los estribos del lado Madrid situados inmediatamente después de finalizar el subtramo anterior Sant Vicenc dels Horts-Santa Coloma de Cervelló.

La Agencia Catalana del Agua manifestó que debido a la ocupación en terraplén de una parte importante de la llanura de inundación del río Llobregat, con los consiguientes problemas asociados de elevación de la lámina de agua del río en avenidas, era necesario sustituir el tramo de terraplén existente entre la riera de Can Soler y el final del subtramo Sant Vicenc dels Horts-Santa Coloma de Cervelló por dos viaductos (uno para cada línea) de unos 160 m. de longitud, con objeto de permeabilizar la plataforma ferroviaria en el caso de avenidas, que enlacen con los dos viaductos sobre el río previstos en el proyecto del subtramo siguiente Santa Coloma de Cervelló-Sant Joan Despí. Es decir, era necesario modificar la tipología de la plataforma ferroviaria en el entorno de los últimos 200 m. del subtramo, sustituyendo el terraplén previsto por dos viaductos.

Los cambios producidos en este anejo por la modificación del trazado desde el P.K. 605+886.997 al P.K. 608+630 quedan recogidos en los siguientes puntos

2. NUEVOS VIADUCTOS SOBRE EL RÍO LLOBREGAT

2.1. TIPOLOGÍA

La modificación del trazado únicamente afecta a la parte final del tramo, concretamente a partir del P.K. 607+765.417. y hasta el P.K. 608+644. Esta modificación conlleva la aparición de dos nuevas estructuras consistentes de dos viaductos sobre el río Llobregat.

Sendos viaductos se componen de 4 vanos de longitudes 33+45+45+33 para la vía del AVE y 38+45+45+38 para la vía de mercancías. El tablero está formado por secciones de cajón de hormigón pretensado, con tramos de canto variable, en una longitud de 8 metros, a un lado y otro de la pila, con transición parabólica de segundo grado. El canto máximo de la sección, en el tramo de canto constante es de 2,89 m, que llegan a 4,14 sobre las pilas.

La sección transversal de cada tablero se organiza mediante un cajón de 14 m de ancho, con sendas almas de 50 cm de espesor, rematando con voladizos de 3,123 metros de luz, de espesor variable hasta 21 cm en la punta.
La pilas, de aproximadamente 10 metros de altura, son de hormigón armado, de sección constante decagonal inscrita en una circunferencia de 3 metros de diámetro. La cimentación está constituida por cuatro pilotes de dos metros de diámetro y aproximadamente 30 m de longitud, lo que ha garantizado 10 m de empotramiento en el estrato resistente, recogidos en un encepado de 3 m de canto y un área de 103 m2 (10.30*10) para las pilas intermedias y 15 pilotes de igual diámetro para la pila-estribo que tiene 3.75 m de canto y un área de 392 m2 (28*14).

Los estribos son de hormigón armado formados por muros de 10 metros de altura aproximada y cimentados sobre encepados de 3 metros de canto con pilotes de 1,80 m de diámetro.

2.2. APARATOS DE APOYO

En sendos Viaductos se ubican aparatos de apoyo tipo POT para los tableros. En cada pila o estribo se hallan dos aparatos POT, siendo PU el de la margen izquierda (sólo permite movimientos unidireccionales y PL en de la maregen derecha (permite movimientos bidireccionales).

Los apoyos de neopreno confinado-teflón tipo “POT” son dispositivos de apoyo en estructuras, análogos a los de neopreno zunchado, pero en ellos la capacidad de desplazamiento horizontal está garantizada por la presencia de una placa de acero sobre la que se dispone una capa de teflón. Una placa de acero, dispuesta en la estructura, desliza en su contacto; con el teflón a través de una chapa de acero inoxidable. La capacidad de rotación se consigue mediante la plastificación dentro de un recinto de confinamiento de una pastilla de neopreno. Los apoyos están caracterizados por su capacidad de carga vertical, el desplazamiento máximo admisible y el tipo de movimiento permitido

Los apoyos tienen presentan un cierto decalaje en el estribo 1 y pilas 1,2 y 3 para favorecer los movimientos debidos a los esfuerzos de frenado o reológicos, siendo nulo en la pila 4 por ser la pila donde se anclan los tableros

2.3. JUNTAS

Sendos Viaductos presentan dos juntas de dilatación fijas en la pila 4 por ser dicha pila en donde se ancla el tablero y una junta móvil en el Estribo 1 para permitir el movimiento del tablero.

La junta de dilatación metálica está compuesta de dos angulares anclados en las esquinas de la losa de hormigón y cubierta por una chapa soldada a uno de los angulares. Las dimensiones se especifican en planos. Una banda de neopreno precomprimida se dispone en el hueco creado por la junta tablero-estribo no anclada.

2.4. IMPERMEABILIZACIÓN

El sistema de impermeabilización del tablero consta de:

- imprimación bituminosa del tablero.
- membrana termosoldable de betún elastómero (espesor de cuatro milímetros (4 mm) y dotación de betún de seis kilogramos por metro cuadrado (6 kg/m2)) armada con geotextil de doscientos gramos por metro cuadrado (200 g/m2) y autoprotegida en superficie por una capa de gránulos minerales de naturaleza silícea.
- además se realiza una capa superior de protección que consta de mezcla de aglomerado asfáltico de treinta milímetros (30 mm) de espesor (granulometría D-8, árido silíceo de machaqueo y filler calizo).

CÁLCULO DINÁMICO DEL VIADUCTO DEL LLOBREGAT

Modificado nº 2 del proyecto de construcción de la plataforma
L.A.V. Madrid-Zaragoza-Barcelona-Frontera Francesa
SANT VICENÇ DELS HORTS-SANTA COLOMA DE CERVELLÓ
VIADUCTO DEL LLOBREGAT

1. BASES DE CÁLCULO

Fecha: Enero de 2006

HSLM-A10		X		
Cargas		Vel. pseudo-estática (km/h)		
x (m)	Q (t)	vel (km/h)	Δt (s)	t_r (s)
0.0000	21.00	20.00	0.03	179.0
3.0000	21.00	Vel. dinámicas (km/h)		
14.0000	21.00	vel (km/h)	Δt (s)	t_r (s)
17.0000	21.00	120.00	0.03	31.0
20.5250	21.00	125.00	0.03	30.0
22.5250	21.00	130.00	0.03	29.0
44.7625	21.00	135.00	0.03	28.0
46.7625	21.00	140.00	0.03	27.0
71.7625	21.00	145.00	0.03	26.0
73.7625	21.00	150.00	0.03	25.0
98.7625	21.00	155.00	0.03	24.0
100.7625	21.00	160.00	0.03	24.0
125.7625	21.00	165.00	0.03	23.0
127.7625	21.00	170.00	0.03	22.0
152.7625	21.00	175.00	0.03	22.0
154.7625	21.00	180.00	0.03	21.0
179.7625	21.00	185.00	0.03	21.0
181.7625	21.00	190.00	0.03	20.0
206.7625	21.00	195.00	0.03	20.0
208.7625	21.00	200.00	0.03	19.0
233.7625	21.00	205.00	0.03	19.0
235.7625	21.00	210.00	0.03	18.0
260.7625	21.00	215.00	0.03	18.0
262.7625	21.00	220.00	0.03	18.0
287.7625	21.00	225.00	0.03	17.0
289.7625	21.00	230.00	0.03	17.0
314.7625	21.00	235.00	0.03	17.0
316.7625	21.00	240.00	0.03	16.0
341.7625	21.00	245.00	0.03	16.0
343.7625	21.00	250.00	0.03	16.0
366.0000	21.00	255.00	0.03	15.0
368.0000	21.00	260.00	0.03	15.0
371.5250	21.00	265.00	0.03	15.0
374.5250	21.00	270.00	0.03	15.0
385.5250	21.00	275.00	0.03	14.0
388.5250	21.00	280.00	0.03	14.0
		285.00	0.03	14.0
		290.00	0.03	14.0
		295.00	0.03	14.0
		300.00	0.03	13.0
		305.00	0.03	13.0
		310.00	0.03	13.0
		315.00	0.03	13.0
		320.00	0.03	13.0
		325.00	0.03	12.0
		330.00	0.03	12.0
		335.00	0.03	12.0
		340.00	0.03	12.0
		345.00	0.03	12.0
		350.00	0.03	12.0
		355.00	0.03	12.0
		360.00	0.03	11.0
		365.00	0.03	11.0
		370.00	0.03	11.0
		375.00	0.03	11.0
		380.00	0.03	11.0
		385.00	0.03	11.0
		390.00	0.03	11.0
		395.00	0.03	10.0
		400.00	0.03	10.0
		405.00	0.03	10.0
		410.00	0.03	10.0
		415.00	0.03	10.0
		420.00	0.03	10.0

TalgoAV		X		
Cargas		Vel. pseudo-estática (km/h)		
x (m)	Q (t)	vel (km/h	Δt (s)	t_r (s)
0.0000	17.00	20.00	0.03	179.0
2.6500	17.00	Vel. dinámicas (km/h)		
11.0000	17.00	vel (km/h	Δt (s)	t_r (s)
13.6500	17.00	120.00	0.03	31.0
19.1300	17.00	125.00	0.03	30.0
28.1000	17.00	130.00	0.03	29.0
41.2400	17.00	135.00	0.03	28.0
54.3800	17.00	140.00	0.03	27.0
67.5200	17.00	145.00	0.03	26.0
80.6600	17.00	150.00	0.03	25.0
93.8000	17.00	155.00	0.03	24.0
106.9400	17.00	160.00	0.03	24.0
120.0800	17.00	165.00	0.03	23.0
133.2200	17.00	170.00	0.03	22.0
146.3600	17.00	175.00	0.03	22.0
155.3300	17.00	180.00	0.03	21.0
160.8000	17.00	185.00	0.03	21.0
163.4500	17.00	190.00	0.03	20.0
171.8000	17.00	195.00	0.03	20.0
174.4500	17.00	200.00	0.03	19.0
182.4900	17.00	205.00	0.03	19.0
186.1400	17.00	210.00	0.03	18.0
194.4900	17.00	215.00	0.03	18.0
197.1400	17.00	220.00	0.03	18.0
202.6200	17.00	225.00	0.03	17.0
211.5900	17.00	230.00	0.03	17.0
224.7300	17.00	235.00	0.03	17.0
237.8700	17.00	240.00	0.03	16.0
251.0100	17.00	245.00	0.03	16.0
264.1500	17.00	250.00	0.03	16.0
277.2900	17.00	255.00	0.03	15.0
290.4300	17.00	260.00	0.03	15.0
303.5700	17.00	265.00	0.03	15.0
316.7100	17.00	270.00	0.03	15.0
329.8500	17.00	275.00	0.03	14.0
338.8200	17.00	280.00	0.03	14.0
344.2900	17.00	285.00	0.03	14.0
346.9400	17.00	290.00	0.03	14.0
355.2900	17.00	295.00	0.03	14.0
357.9400	17.00	300.00	0.03	13.0
		305.00	0.03	13.0
		310.00	0.03	13.0
		315.00	0.03	13.0
		320.00	0.03	13.0
		325.00	0.03	12.0
		330.00	0.03	12.0
		335.00	0.03	12.0
		340.00	0.03	12.0
		345.00	0.03	12.0
		350.00	0.03	12.0
		355.00	0.03	12.0
		360.00	0.03	11.0
		365.00	0.03	11.0
		370.00	0.03	11.0
		375.00	0.03	11.0
		380.00	0.03	11.0
		385.00	0.03	11.0
		390.00	0.03	11.0
		395.00	0.03	10.0
		400.00	0.03	10.0
		405.00	0.03	10.0
		410.00	0.03	10.0
		415.00	0.03	10.0
		420.00	0.03	10.0

HSLM-A08		X		
Cargas		Vel. pseudo-estática (km/h)		
x (m)	Q (t)	vel (km/h	Δt (s)	t_r (s)
0.0000	19.00	20.00	0.03	179.0
3.0000	19.00	Vel. dinámicas (km/h)		
14.0000	19.00	vel (km/h	Δt (s)	t_r (s)
17.0000	19.00	120.00	0.03	31.0
20.5250	19.00	125.00	0.03	30.0
23.0250	19.00	130.00	0.03	29.0
42.5125	19.00	135.00	0.03	28.0
45.0125	19.00	140.00	0.03	27.0
67.5125	19.00	145.00	0.03	26.0
70.0125	19.00	150.00	0.03	25.0
92.5125	19.00	155.00	0.03	24.0
95.0125	19.00	160.00	0.03	24.0
117.5125	19.00	165.00	0.03	23.0
120.0125	19.00	170.00	0.03	22.0
142.5125	19.00	175.00	0.03	22.0
145.0125	19.00	180.00	0.03	21.0
167.5125	19.00	185.00	0.03	21.0
170.0125	19.00	190.00	0.03	20.0
192.5125	19.00	195.00	0.03	20.0
195.0125	19.00	200.00	0.03	19.0
2..5125	19.00	205.00	0.03	19.0
2..0125	19.00	210.00	0.03	18.0
242.5125	19.00	215.00	0.03	18.0
245.0125	19.00	220.00	0.03	18.0
267.5125	19.00	225.00	0.03	17.0
270.0125	19.00	230.00	0.03	17.0
292.5125	19.00	235.00	0.03	17.0
295.0125	19.00	240.00	0.03	16.0
317.5125	19.00	245.00	0.03	16.0
320.0125	19.00	250.00	0.03	16.0
342.5125	19.00	255.00	0.03	15.0
345.0125	19.00	260.00	0.03	15.0
364.5000	19.00	265.00	0.03	15.0
367.0000	19.00	270.00	0.03	15.0
370.5250	19.00	275.00	0.03	14.0
373.5250	19.00	280.00	0.03	14.0
384.5250	19.00	285.00	0.03	14.0
387.5250	19.00	290.00	0.03	14.0
		295.00	0.03	14.0
		300.00	0.03	13.0
		305.00	0.03	13.0
		310.00	0.03	13.0
		315.00	0.03	13.0
		320.00	0.03	13.0
		325.00	0.03	12.0
		330.00	0.03	12.0
		335.00	0.03	12.0
		340.00	0.03	12.0
		345.00	0.03	12.0
		350.00	0.03	12.0
		355.00	0.03	12.0
		360.00	0.03	11.0
		365.00	0.03	11.0
		370.00	0.03	11.0
		375.00	0.03	11.0
		380.00	0.03	11.0
		385.00	0.03	11.0
		390.00	0.03	11.0
		395.00	0.03	10.0
		400.00	0.03	10.0
		405.00	0.03	10.0
		410.00	0.03	10.0
		415.00	0.03	10.0
		420.00	0.03	10.0

HSLM-A09		X		
Cargas		Vel. pseudo-estática (km/h)		
x (m)	Q (t)	vel (km/h	Δt (s)	t_r (s)
0.0000	21.00	20.00	0.03	179.0
3.0000	21.00	Vel. dinámicas (km/h)		
14.0000	21.00	vel (km/h	Δt (s)	t_r (s)
17.0000	21.00	120.00	0.03	31.0
20.5250	21.00	125.00	0.03	30.0
22.5250	21.00	130.00	0.03	29.0
43.7625	21.00	135.00	0.03	28.0
45.7625	21.00	140.00	0.03	27.0
69.7625	21.00	145.00	0.03	26.0
71.7625	21.00	150.00	0.03	25.0
95.7625	21.00	155.00	0.03	24.0
97.7625	21.00	160.00	0.03	24.0
121.7625	21.00	165.00	0.03	23.0
123.7625	21.00	170.00	0.03	22.0
147.7625	21.00	175.00	0.03	22.0
149.7625	21.00	180.00	0.03	21.0
173.7625	21.00	185.00	0.03	21.0
175.7625	21.00	190.00	0.03	20.0
199.7625	21.00	195.00	0.03	20.0
201.7625	21.00	200.00	0.03	19.0
2..7625	21.00	205.00	0.03	19.0
227.7625	21.00	210.00	0.03	18.0
251.7625	21.00	215.00	0.03	18.0
253.7625	21.00	220.00	0.03	18.0
277.7625	21.00	225.00	0.03	17.0
279.7625	21.00	230.00	0.03	17.0
303.7625	21.00	235.00	0.03	17.0
305.7625	21.00	240.00	0.03	16.0
329.7625	21.00	245.00	0.03	16.0
331.7625	21.00	250.00	0.03	16.0
353.0000	21.00	255.00	0.03	15.0
355.0000	21.00	260.00	0.03	15.0
358.5250	21.00	265.00	0.03	15.0
361.5250	21.00	270.00	0.03	15.0
372.5250	21.00	275.00	0.03	14.0
375.5250	21.00	280.00	0.03	14.0
		285.00	0.03	14.0
		290.00	0.03	14.0
		295.00	0.03	14.0
		300.00	0.03	13.0
		305.00	0.03	13.0
		310.00	0.03	13.0
		315.00	0.03	13.0
		320.00	0.03	13.0
		325.00	0.03	12.0
		330.00	0.03	12.0
		335.00	0.03	12.0
		340.00	0.03	12.0
		345.00	0.03	12.0
		350.00	0.03	12.0
		355.00	0.03	12.0
		360.00	0.03	11.0
		365.00	0.03	11.0
		370.00	0.03	11.0
		375.00	0.03	11.0
		380.00	0.03	11.0
		385.00	0.03	11.0
		390.00	0.03	11.0
		395.00	0.03	10.0
		400.00	0.03	10.0
		405.00	0.03	10.0
		410.00	0.03	10.0
		415.00	0.03	10.0
		420.00	0.03	10.0

HSLM-A06		X		
Cargas		Vel. pseudo-estática (km/h)		
x (m)	Q (t)	vel (km/h)	Δt (s)	t_r (s)
0.0000	18.00	20.00	0.03	179.0
3.0000	18.00	Vel. dinâmicas (km/h)		
14.0000	18.00	vel (km/h)	Δt (s)	t_r (s)
17.0000	18.00	120.00	0.03	31.0
20.5250	18.00	125.00	0.03	30.0
22.5250	18.00	130.00	0.03	29.0
40.7625	18.00	135.00	0.03	28.0
42.7625	18.00	140.00	0.03	27.0
63.7625	18.00	145.00	0.03	26.0
65.7625	18.00	150.00	0.03	25.0
86.7625	18.00	155.00	0.03	24.0
88.7625	18.00	160.00	0.03	24.0
109.7625	18.00	165.00	0.03	23.0
111.7625	18.00	170.00	0.03	22.0
132.7625	18.00	175.00	0.03	22.0
134.7625	18.00	180.00	0.03	21.0
155.7625	18.00	185.00	0.03	21.0
157.7625	18.00	190.00	0.03	20.0
178.7625	18.00	195.00	0.03	20.0
180.7625	18.00	200.00	0.03	19.0
2..7625	18.00	205.00	0.03	19.0
2(..7625	18.00	210.00	0.03	18.0
224.7625	18.00	215.00	0.03	18.0
226.7625	18.00	220.00	0.03	18.0
247.7625	18.00	225.00	0.03	17.0
249.7625	18.00	230.00	0.03	17.0
270.7625	18.00	235.00	0.03	17.0
272.7625	18.00	240.00	0.03	16.0
293.7625	18.00	245.00	0.03	16.0
295.7625	18.00	250.00	0.03	16.0
316.7625	18.00	255.00	0.03	15.0
318.7625	18.00	260.00	0.03	15.0
339.7625	18.00	265.00	0.03	15.0
341.7625	18.00	270.00	0.03	15.0
360.0000	18.00	275.00	0.03	14.0
362.0000	18.00	280.00	0.03	14.0
365.5250	18.00	285.00	0.03	14.0
368.5250	18.00	290.00	0.03	14.0
379.5250	18.00	295.00	0.03	14.0
3 5250	18.00	300.00	0.03	13.0
		305.00	0.03	13.0
		310.00	0.03	13.0
		315.00	0.03	13.0
		320.00	0.03	13.0
		325.00	0.03	12.0
		330.00	0.03	12.0
		335.00	0.03	12.0
		340.00	0.03	12.0
		345.00	0.03	12.0
		350.00	0.03	12.0
		355.00	0.03	12.0
		360.00	0.03	11.0
		365.00	0.03	11.0
		370.00	0.03	11.0
		375.00	0.03	11.0
		380.00	0.03	11.0
		385.00	0.03	11.0
		390.00	0.03	11.0
		395.00	0.03	10.0
		400.00	0.03	10.0
		405.00	0.03	10.0
		410.00	0.03	10.0
		415.00	0.03	10.0
		420.00	0.03	10.0

HSLM-A07		X		
Cargas		Vel. pseudo-estática (km/h)		
x (m)	Q (t)	vel (km/h)	Δt (s)	t_r (s)
0.0000	19.00	20.00	0.03	179.0
3.0000	19.00	Vel. dinâmicas (km/h)		
14.0000	19.00	vel (km/h)	Δt (s)	t_r (s)
17.0000	19.00	120.00	0.03	31.0
20.5250	19.00	125.00	0.03	30.0
22.5250	19.00	130.00	0.03	29.0
41.7625	19.00	135.00	0.03	28.0
43.7625	19.00	140.00	0.03	27.0
65.7625	19.00	145.00	0.03	26.0
67.7625	19.00	150.00	0.03	25.0
89.7625	19.00	155.00	0.03	24.0
91.7625	19.00	160.00	0.03	24.0
113.7625	19.00	165.00	0.03	23.0
115.7625	19.00	170.00	0.03	22.0
137.7625	19.00	175.00	0.03	22.0
139.7625	19.00	180.00	0.03	21.0
161.7625	19.00	185.00	0.03	21.0
163.7625	19.00	190.00	0.03	20.0
185.7625	19.00	195.00	0.03	20.0
187.7625	19.00	200.00	0.03	19.0
2..7625	19.00	205.00	0.03	19.0
211.7625	19.00	210.00	0.03	18.0
233.7625	19.00	215.00	0.03	18.0
235.7625	19.00	220.00	0.03	18.0
257.7625	19.00	225.00	0.03	17.0
259.7625	19.00	230.00	0.03	17.0
281.7625	19.00	235.00	0.03	17.0
283.7625	19.00	240.00	0.03	16.0
305.7625	19.00	245.00	0.03	16.0
307.7625	19.00	250.00	0.03	16.0
329.7625	19.00	255.00	0.03	15.0
331.7625	19.00	260.00	0.03	15.0
353.7625	19.00	265.00	0.03	15.0
355.7625	19.00	270.00	0.03	15.0
375.0000	19.00	275.00	0.03	14.0
377.0000	19.00	280.00	0.03	14.0
380.5250	19.00	285.00	0.03	14.0
383.5250	19.00	290.00	0.03	14.0
394.5250	19.00	295.00	0.03	14.0
3 5250	19.00	300.00	0.03	13.0
		305.00	0.03	13.0
		310.00	0.03	13.0
		315.00	0.03	13.0
		320.00	0.03	13.0
		325.00	0.03	12.0
		330.00	0.03	12.0
		335.00	0.03	12.0
		340.00	0.03	12.0
		345.00	0.03	12.0
		350.00	0.03	12.0
		355.00	0.03	12.0
		360.00	0.03	11.0
		365.00	0.03	11.0
		370.00	0.03	11.0
		375.00	0.03	11.0
		380.00	0.03	11.0
		385.00	0.03	11.0
		390.00	0.03	11.0
		395.00	0.03	10.0
		400.00	0.03	10.0
		405.00	0.03	10.0
		410.00	0.03	10.0
		415.00	0.03	10.0
		420.00	0.03	10.0

HSLM-A04		X		
Cargas		Vel. pseudo-estática (km/h)		
x (m)	Q (t)	vel. (km/h)	Δt (s)	t_r (s)
0.0000	19.00	20.00	0.03	179.0
3.0000	19.00	Vel. dinámicas (km/h)		
14.0000	19.00	vel. (km/h)	Δt (s)	t_r (s)
17.0000	19.00	120.00	0.03	31.0
20.5250	19.00	125.00	0.03	30.0
23.5250	19.00	130.00	0.03	29.0
38.2625	19.00	135.00	0.03	28.0
41.2625	19.00	140.00	0.03	27.0
59.2625	19.00	145.00	0.03	26.0
62.2625	19.00	150.00	0.03	25.0
80.2625	19.00	155.00	0.03	24.0
83.2625	19.00	160.00	0.03	24.0
101.2625	19.00	165.00	0.03	23.0
104.2625	19.00	170.00	0.03	22.0
122.2625	19.00	175.00	0.03	22.0
125.2625	19.00	180.00	0.03	21.0
143.2625	19.00	185.00	0.03	21.0
146.2625	19.00	190.00	0.03	20.0
164.2625	19.00	195.00	0.03	20.0
1[illegible]2625	19.00	200.00	0.03	19.0
1[illegible]2625	19.00	205.00	0.03	19.0
1[illegible]2625	19.00	210.00	0.03	18.0
206.2625	19.00	215.00	0.03	18.0
209.2625	19.00	220.00	0.03	18.0
227.2625	19.00	225.00	0.03	17.0
230.2625	19.00	230.00	0.03	17.0
248.2625	19.00	235.00	0.03	17.0
251.2625	19.00	240.00	0.03	16.0
269.2625	19.00	245.00	0.03	16.0
272.2625	19.00	250.00	0.03	16.0
290.2625	19.00	255.00	0.03	15.0
293.2625	19.00	260.00	0.03	15.0
311.2625	19.00	265.00	0.03	15.0
314.2625	19.00	270.00	0.03	15.0
332.2625	19.00	275.00	0.03	14.0
335.2625	19.00	280.00	0.03	14.0
353.2625	19.00	285.00	0.03	14.0
356.2625	19.00	290.00	0.03	14.0
37[illegible].0000	19.00	295.00	0.03	14.0
3[illegible].0000	19.00	300.00	0.03	13.0
3[illegible].5250	19.00	305.00	0.03	13.0
380.5250	19.00	310.00	0.03	13.0
391.5250	19.00	315.00	0.03	13.0
394.5250	19.00	320.00	0.03	13.0
		325.00	0.03	12.0
		330.00	0.03	12.0
		335.00	0.03	12.0
		340.00	0.03	12.0
		345.00	0.03	12.0
		350.00	0.03	12.0
		355.00	0.03	12.0
		360.00	0.03	11.0
		365.00	0.03	11.0
		370.00	0.03	11.0
		375.00	0.03	11.0
		380.00	0.03	11.0
		385.00	0.03	11.0
		390.00	0.03	11.0
		395.00	0.03	10.0
		400.00	0.03	10.0
		405.00	0.03	10.0
		410.00	0.03	10.0
		415.00	0.03	10.0
		420.00	0.03	10.0

HSLM-A05		X		
Cargas		Vel. pseudo-estática (km/h)		
x (m)	Q (t)	vel. (km/h)	Δt (s)	t_r (s)
0.0000	17.00	20.00	0.03	179.0
3.0000	17.00	Vel. dinámicas (km/h)		
14.0000	17.00	vel. (km/h)	Δt (s)	t_r (s)
17.0000	17.00	120.00	0.03	31.0
20.5250	17.00	125.00	0.03	30.0
22.5250	17.00	130.00	0.03	29.0
39.7625	17.00	135.00	0.03	28.0
41.7625	17.00	140.00	0.03	27.0
61.7625	17.00	145.00	0.03	26.0
63.7625	17.00	150.00	0.03	25.0
83.7625	17.00	155.00	0.03	24.0
85.7625	17.00	160.00	0.03	24.0
105.7625	17.00	165.00	0.03	23.0
107.7625	17.00	170.00	0.03	22.0
127.7625	17.00	175.00	0.03	22.0
129.7625	17.00	180.00	0.03	21.0
149.7625	17.00	185.00	0.03	21.0
151.7625	17.00	190.00	0.03	20.0
171.7625	17.00	195.00	0.03	20.0
1[illegible]7625	17.00	200.00	0.03	19.0
1[illegible].7625	17.00	205.00	0.03	19.0
195.7625	17.00	210.00	0.03	18.0
215.7625	17.00	215.00	0.03	18.0
217.7625	17.00	220.00	0.03	18.0
237.7625	17.00	225.00	0.03	17.0
239.7625	17.00	230.00	0.03	17.0
259.7625	17.00	235.00	0.03	17.0
261.7625	17.00	240.00	0.03	16.0
281.7625	17.00	245.00	0.03	16.0
283.7625	17.00	250.00	0.03	16.0
303.7625	17.00	255.00	0.03	15.0
305.7625	17.00	260.00	0.03	15.0
325.7625	17.00	265.00	0.03	15.0
327.7625	17.00	270.00	0.03	15.0
347.7625	17.00	275.00	0.03	14.0
349.7625	17.00	280.00	0.03	14.0
367.0000	17.00	285.00	0.03	14.0
369.0000	17.00	290.00	0.03	14.0
37[illegible].5250	17.00	295.00	0.03	14.0
3[illegible].5250	17.00	300.00	0.03	13.0
386.5250	17.00	305.00	0.03	13.0
389.5250	17.00	310.00	0.03	13.0
		315.00	0.03	13.0
		320.00	0.03	13.0
		325.00	0.03	12.0
		330.00	0.03	12.0
		335.00	0.03	12.0
		340.00	0.03	12.0
		345.00	0.03	12.0
		350.00	0.03	12.0
		355.00	0.03	12.0
		360.00	0.03	11.0
		365.00	0.03	11.0
		370.00	0.03	11.0
		375.00	0.03	11.0
		380.00	0.03	11.0
		385.00	0.03	11.0
		390.00	0.03	11.0
		395.00	0.03	10.0
		400.00	0.03	10.0
		405.00	0.03	10.0
		410.00	0.03	10.0
		415.00	0.03	10.0
		420.00	0.03	10.0

HSLM-A02		X		
Cargas		Vel. pseudo-estática (km/h)		
x (m)	Q (t)	vel (km/h)	Δt (s)	t_r (s)
0.0000	20.00	20.00	0.03	179.0
3.0000	20.00	Vel. dinámicas (km/h)		
14.0000	20.00	vel (km/h)	Δt (s)	t_r (s)
17.0000	20.00	120.00	0.03	31.0
20.5250	20.00	125.00	0.03	30.0
24.0250	20.00	130.00	0.03	29.0
36.0125	20.00	135.00	0.03	28.0
39.5125	20.00	140.00	0.03	27.0
55.0125	20.00	145.00	0.03	26.0
58.5125	20.00	150.00	0.03	25.0
74.0125	20.00	155.00	0.03	24.0
77.5125	20.00	160.00	0.03	24.0
93.0125	20.00	165.00	0.03	23.0
96.5125	20.00	170.00	0.03	22.0
112.0125	20.00	175.00	0.03	22.0
115.5125	20.00	180.00	0.03	21.0
131.0125	20.00	185.00	0.03	21.0
134.5125	20.00	190.00	0.03	20.0
150.0125	20.00	195.00	0.03	20.0
1[illegible]5125	20.00	200.00	0.03	19.0
1[illegible]0125	20.00	205.00	0.03	19.0
1[illegible]5125	20.00	210.00	0.03	18.0
188.0125	20.00	215.00	0.03	18.0
191.5125	20.00	220.00	0.03	18.0
207.0125	20.00	225.00	0.03	17.0
210.5125	20.00	230.00	0.03	17.0
226.0125	20.00	235.00	0.03	17.0
229.5125	20.00	240.00	0.03	16.0
245.0125	20.00	245.00	0.03	16.0
248.5125	20.00	250.00	0.03	16.0
264.0125	20.00	255.00	0.03	15.0
267.5125	20.00	260.00	0.03	15.0
283.0125	20.00	265.00	0.03	15.0
286.5125	20.00	270.00	0.03	15.0
302.0125	20.00	275.00	0.03	14.0
305.5125	20.00	280.00	0.03	14.0
321.0125	20.00	285.00	0.03	14.0
324.5125	20.00	290.00	0.03	14.0
3[illegible]0125	20.00	295.00	0.03	14.0
3[illegible]5125	20.00	300.00	0.03	13.0
3[illegible]0125	20.00	305.00	0.03	13.0
362.5125	20.00	310.00	0.03	13.0
374.5000	20.00	315.00	0.03	13.0
378.0000	20.00	320.00	0.03	13.0
381.5250	20.00	325.00	0.03	12.0
384.5250	20.00	330.00	0.03	12.0
395.5250	20.00	335.00	0.03	12.0
398.5250	20.00	340.00	0.03	12.0
		345.00	0.03	12.0
		350.00	0.03	12.0
		355.00	0.03	12.0
		360.00	0.03	11.0
		365.00	0.03	11.0
		370.00	0.03	11.0
		375.00	0.03	11.0
		380.00	0.03	11.0
		385.00	0.03	11.0
		390.00	0.03	11.0
		395.00	0.03	10.0
		400.00	0.03	10.0
		405.00	0.03	10.0
		410.00	0.03	10.0
		415.00	0.03	10.0
		420.00	0.03	10.0

HSLM-A03		X		
Cargas		Vel. pseudo-estática (km/h)		
x (m)	Q (t)	vel (km/h)	Δt (s)	t_r (s)
0.0000	18.00	20.00	0.03	179.0
3.0000	18.00	Vel. dinámicas (km/h)		
14.0000	18.00	vel (km/h)	Δt (s)	t_r (s)
17.0000	18.00	120.00	0.03	31.0
20.5250	18.00	125.00	0.03	30.0
22.5250	18.00	130.00	0.03	29.0
37.7625	18.00	135.00	0.03	28.0
39.7625	18.00	140.00	0.03	27.0
57.7625	18.00	145.00	0.03	26.0
59.7625	18.00	150.00	0.03	25.0
77.7625	18.00	155.00	0.03	24.0
79.7625	18.00	160.00	0.03	24.0
97.7625	18.00	165.00	0.03	23.0
99.7625	18.00	170.00	0.03	22.0
117.7625	18.00	175.00	0.03	22.0
119.7625	18.00	180.00	0.03	21.0
137.7625	18.00	185.00	0.03	21.0
139.7625	18.00	190.00	0.03	20.0
157.7625	18.00	195.00	0.03	20.0
1[illegible]7625	18.00	200.00	0.03	19.0
1[illegible]7625	18.00	205.00	0.03	19.0
179.7625	18.00	210.00	0.03	18.0
197.7625	18.00	215.00	0.03	18.0
199.7625	18.00	220.00	0.03	18.0
217.7625	18.00	225.00	0.03	17.0
219.7625	18.00	230.00	0.03	17.0
237.7625	18.00	235.00	0.03	17.0
239.7625	18.00	240.00	0.03	16.0
257.7625	18.00	245.00	0.03	16.0
259.7625	18.00	250.00	0.03	16.0
277.7625	18.00	255.00	0.03	15.0
279.7625	18.00	260.00	0.03	15.0
297.7625	18.00	265.00	0.03	15.0
299.7625	18.00	270.00	0.03	15.0
317.7625	18.00	275.00	0.03	14.0
319.7625	18.00	280.00	0.03	14.0
337.7625	18.00	285.00	0.03	14.0
339.7625	18.00	290.00	0.03	14.0
3[illegible]7625	18.00	295.00	0.03	14.0
3[illegible]7625	18.00	300.00	0.03	13.0
375.0000	18.00	305.00	0.03	13.0
377.0000	18.00	310.00	0.03	13.0
380.5250	18.00	315.00	0.03	13.0
383.5250	18.00	320.00	0.03	13.0
394.5250	18.00	325.00	0.03	12.0
397.5250	18.00	330.00	0.03	12.0
		335.00	0.03	12.0
		340.00	0.03	12.0
		345.00	0.03	12.0
		350.00	0.03	12.0
		355.00	0.03	12.0
		360.00	0.03	11.0
		365.00	0.03	11.0
		370.00	0.03	11.0
		375.00	0.03	11.0
		380.00	0.03	11.0
		385.00	0.03	11.0
		390.00	0.03	11.0
		395.00	0.03	10.0
		400.00	0.03	10.0
		405.00	0.03	10.0
		410.00	0.03	10.0
		415.00	0.03	10.0
		420.00	0.03	10.0

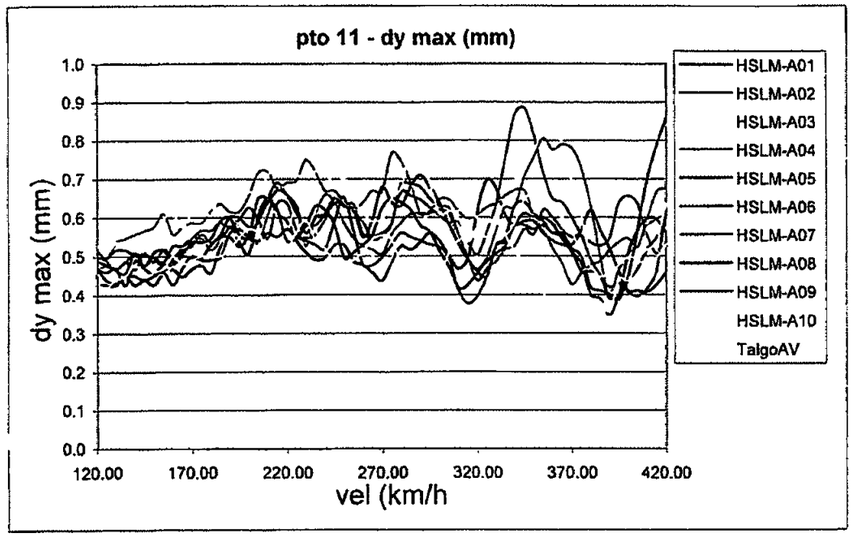
Exc. Cargas (de da sc)			Modos		Lectura hist temp						
z<0	X		n	ζ (%)	nº grafico / tren	nudo / vel	tipo vel.	tipo historia			
z>0								nudo	barra	extr.	tipo
Puntos de control			1	2.00	1						
desp.	esf.	esf.	2	2.00	TalgoAV	280.00	din	197			12
Nudos	Barra	Extr.	3	2.00	HSLM-A09	280.00	din	197			12
11	5	1	4	2.00	2						
32	16	1	5	2.00	TalgoAV	280.00	din		100	1	6
133	70	1	6	2.00	HSLM-A09	280.00	din		100	1	6
197	100	1	7	2.00	3						
203	106	1	8	2.00	TalgoAV	420.00	din	197			12
			9	2.00	HSLM-A09	420.00	din	197			12
			10	2.00	4						
			11	2.00	TalgoAV	420.00	din		100	1	6
			12	2.00	HSLM-A09	420.00	din		100	1	6
			13	2.00	5						
			14	2.00	TalgoAV	20.00	est	197			12
			15	2.00	HSLM-A09	20.00	est	197			12
			16	2.00	6						
			17	2.00	TalgoAV	20.00	est		100	1	6
			18	2.00	HSLM-A09	20.00	est		100	1	6
			19	2.00	7						
			20	2.00	TalgoAV	345.00	din	203			12
			21	2.00	HSLM-A09	345.00	din	203			12
			22	2.00	8						
			23	2.00	TalgoAV	345.00	din		106	1	6
			24	2.00	HSLM-A09	345.00	din		106	1	6
			25	2.00	9						
			26	2.00	TalgoAV	420.00	din	203			12
			27	2.00	HSLM-A09	420.00	din	203			12
			28	2.00	10						
			29	2.00	TalgoAV	420.00	din		106	1	6
			30	2.00	HSLM-A09	420.00	din		106	1	6
			31	2.00	11						
			32	2.00	TalgoAV	20.00	est	203			12
			33	2.00	HSLM-A09	20.00	est	203			12
			34	2.00	12						
			35	2.00	TalgoAV	20.00	est		106	1	6
			36	2.00	HSLM-A09	20.00	est		106	1	6
			37	2.00							
			38	2.00							
			39	2.00							
			40	2.00							
			41	2.00							
			42	2.00							
			43	2.00							
			44	2.00							
			45	2.00							
			46	2.00							
			47	2.00							
			48	2.00							
			49	2.00							
			50	2.00							
			51	2.00							
			52	2.00							
			53	2.00							
			54	2.00							
			55	2.00							
			56	2.00							
			57	2.00							
			58	2.00							
			59	2.00							
			60	2.00							
			61	2.00							
			62	2.00							
			63	2.00							
			64	2.00							

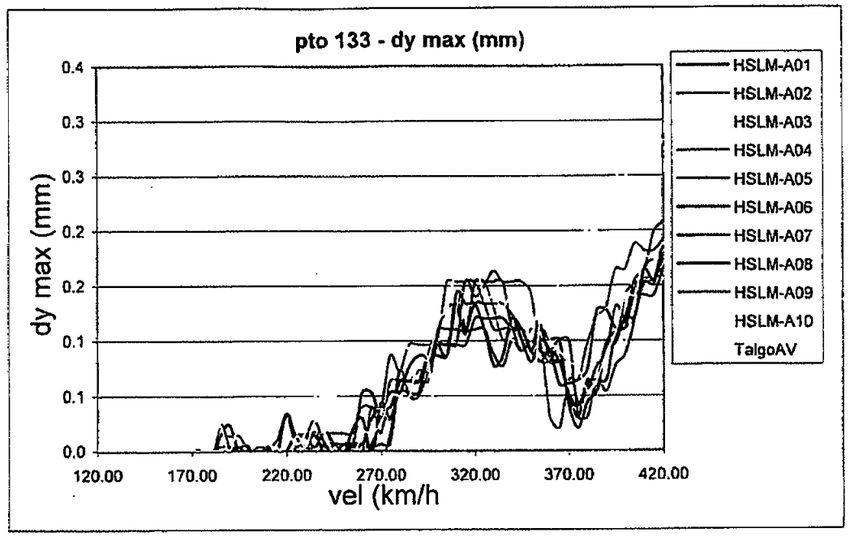
HSLM-A01		X		
Cargas		Vel. pseudo-estática (km/h)		
x (m)	Q (t)	vel (km/h)	Δt (s)	t (s)
0.0000	17.00	20.00	0.03	179.0
3.0000	17.00	Vel. dinámicas (km/h)		
14.0000	17.00	vel (km/h)	Δt (s)	t (s)
17.0000	17.00	120.00	0.03	31.0
20.5250	17.00	125.00	0.03	30.0
22.5250	17.00	130.00	0.03	29.0
35.7625	17.00	135.00	0.03	28.0
37.7625	17.00	140.00	0.03	27.0
53.7625	17.00	145.00	0.03	26.0
55.7625	17.00	150.00	0.03	25.0
71.7625	17.00	155.00	0.03	24.0
73.7625	17.00	160.00	0.03	24.0
89.7625	17.00	165.00	0.03	23.0
91.7625	17.00	170.00	0.03	22.0
107.7625	17.00	175.00	0.03	22.0
109.7625	17.00	180.00	0.03	21.0
125.7625	17.00	185.00	0.03	21.0
127.7625	17.00	190.00	0.03	20.0
143.7625	17.00	195.00	0.03	20.0
1[illegible]7625	17.00	200.00	0.03	19.0
16[illegible].7625	17.00	205.00	0.03	19.0
163.7625	17.00	210.00	0.03	18.0
179.7625	17.00	215.00	0.03	18.0
181.7625	17.00	220.00	0.03	18.0
197.7625	17.00	225.00	0.03	17.0
199.7625	17.00	230.00	0.03	17.0
215.7625	17.00	235.00	0.03	17.0
217.7625	17.00	240.00	0.03	16.0
233.7625	17.00	245.00	0.03	16.0
235.7625	17.00	250.00	0.03	16.0
251.7625	17.00	255.00	0.03	15.0
253.7625	17.00	260.00	0.03	15.0
269.7625	17.00	265.00	0.03	15.0
271.7625	17.00	270.00	0.03	15.0
287.7625	17.00	275.00	0.03	14.0
289.7625	17.00	280.00	0.03	14.0
305.7625	17.00	285.00	0.03	14.0
307.7625	17.00	290.00	0.03	14.0
32[illegible]7625	17.00	295.00	0.03	14.0
3[illegible].7625	17.00	300.00	0.03	13.0
341.7625	17.00	305.00	0.03	13.0
343.7625	17.00	310.00	0.03	13.0
359.7625	17.00	315.00	0.03	13.0
361.7625	17.00	320.00	0.03	13.0
375.0000	17.00	325.00	0.03	12.0
377.0000	17.00	330.00	0.03	12.0
380.5250	17.00	335.00	0.03	12.0
383.5250	17.00	340.00	0.03	12.0
394.5250	17.00	345.00	0.03	12.0
397.5250	17.00	350.00	0.03	12.0
		355.00	0.03	12.0
		360.00	0.03	11.0
		365.00	0.03	11.0
		370.00	0.03	11.0
		375.00	0.03	11.0
		380.00	0.03	11.0
		385.00	0.03	11.0
		390.00	0.03	11.0
		395.00	0.03	10.0
		400.00	0.03	10.0
		405.00	0.03	10.0
		410.00	0.03	10.0
		415.00	0.03	10.0
		420.00	0.03	10.0

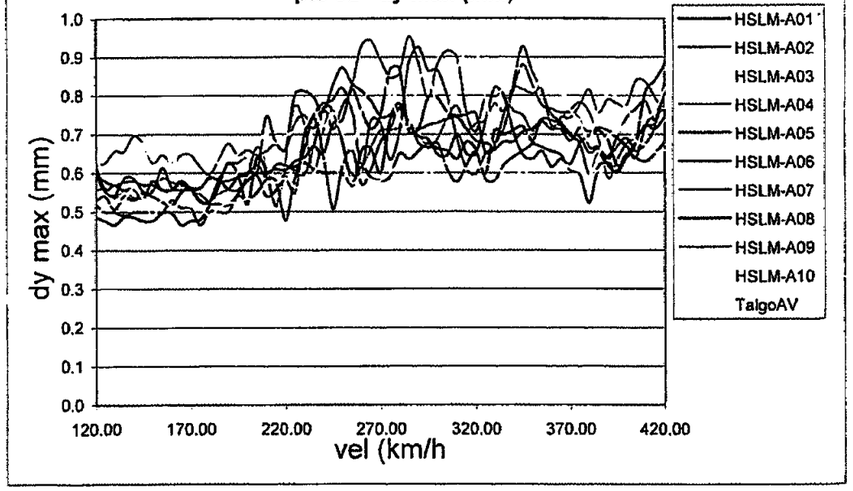
2. RESULTADOS

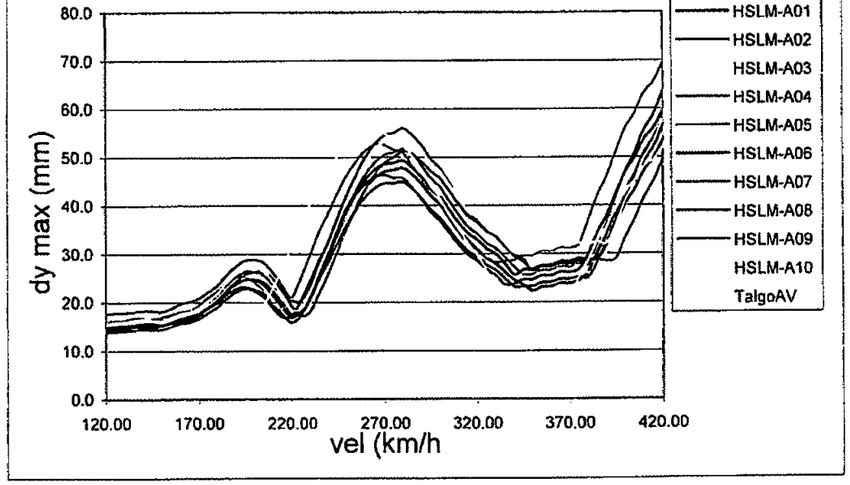
Modificado nº 2 del proyecto de construcción de la plataforma
L.A.V. Madrid-Zaragoza-Barcelona-Frontera Francesa
SANT VICENÇ DELS HORTS-SANTA COLOMA DE CERVELLÓ
VIADUCTO DEL LLOBREGAT

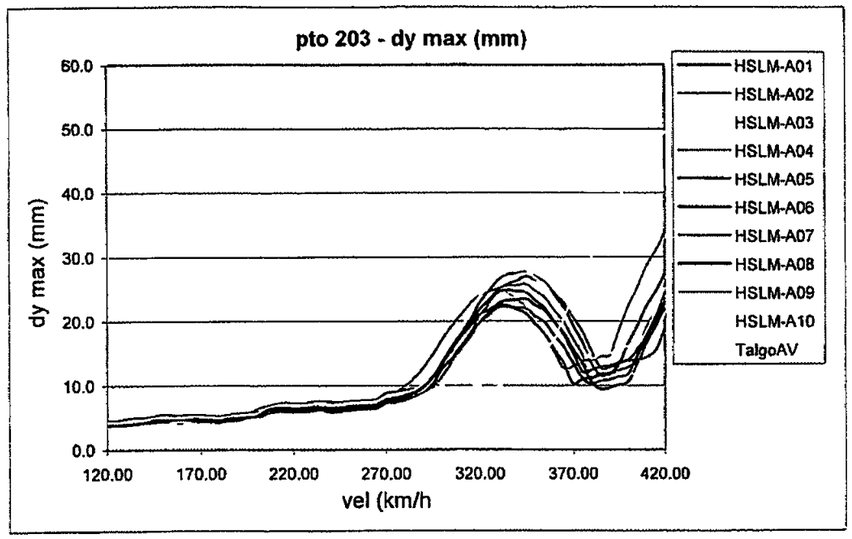
Fecha: Enero de 2006

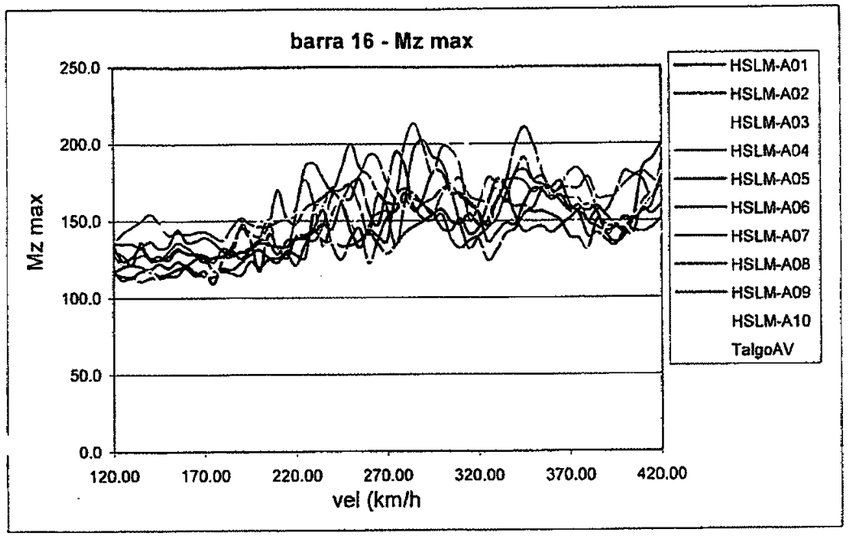

pto 11 - dy max (mm)
dy max (mm)
vel (km/h
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
120.00
170.00
220.00
270.00
320.00
370.00
420.00
HSLM-A01
HSLM-A02
HSLM-A03
HSLM-A04
HSLM-A05
HSLM-A06
HSLM-A07
HSLM-A08
HSLM-A09
HSLM-A10
TalgoAV

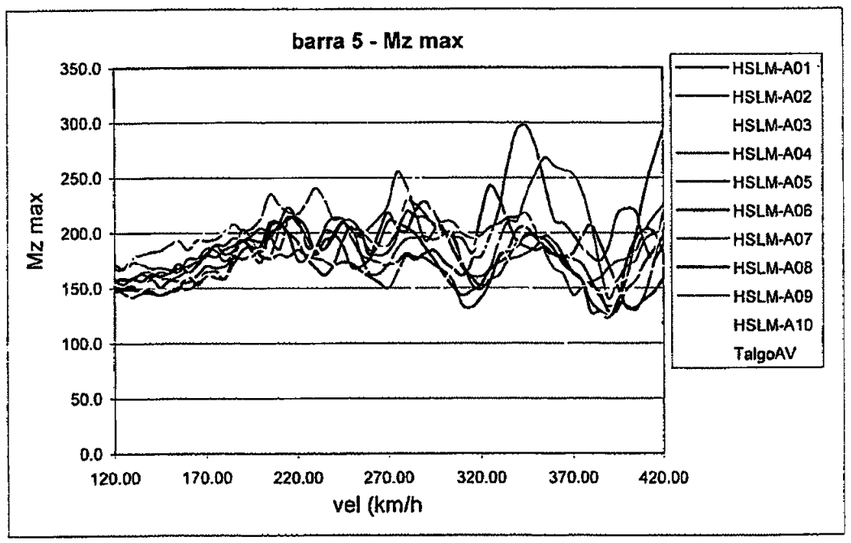

pto 133 - dy max (mm)
dy max (mm)
vel (km/h
0.4
0.3
0.3
0.2
0.2
0.1
0.1
0.0
120.00
170.00
220.00
270.00
320.00
370.00
420.00
HSLM-A01
HSLM-A02
HSLM-A03
HSLM-A04
HSLM-A05
HSLM-A06
HSLM-A07
HSLM-A08
HSLM-A09
HSLM-A10
TalgoAV

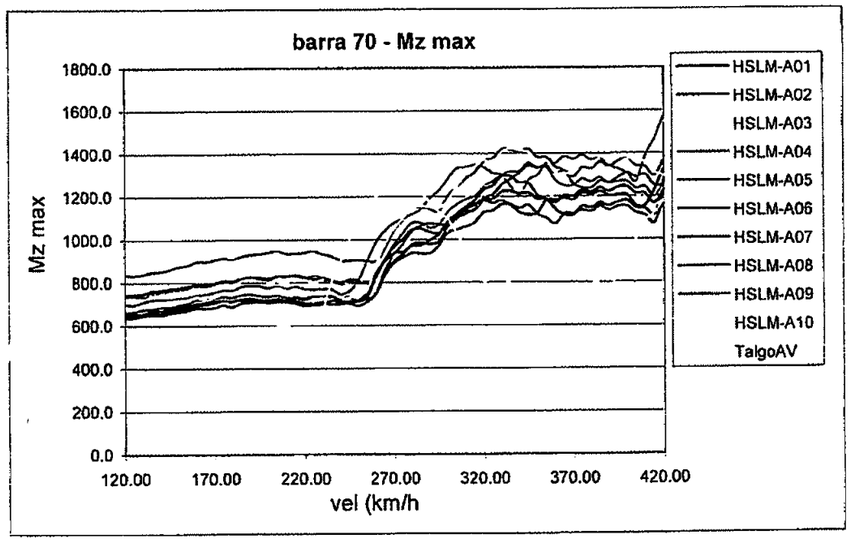

pto 32 - dy max (mm)
dy max (mm)
vel (km/h
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
120.00
170.00
220.00
270.00
320.00
370.00
420.00
HSLM-A01
HSLM-A02
HSLM-A03
HSLM-A04
HSLM-A05
HSLM-A06
HSLM-A07
HSLM-A08
HSLM-A09
HSLM-A10
TalgoAV

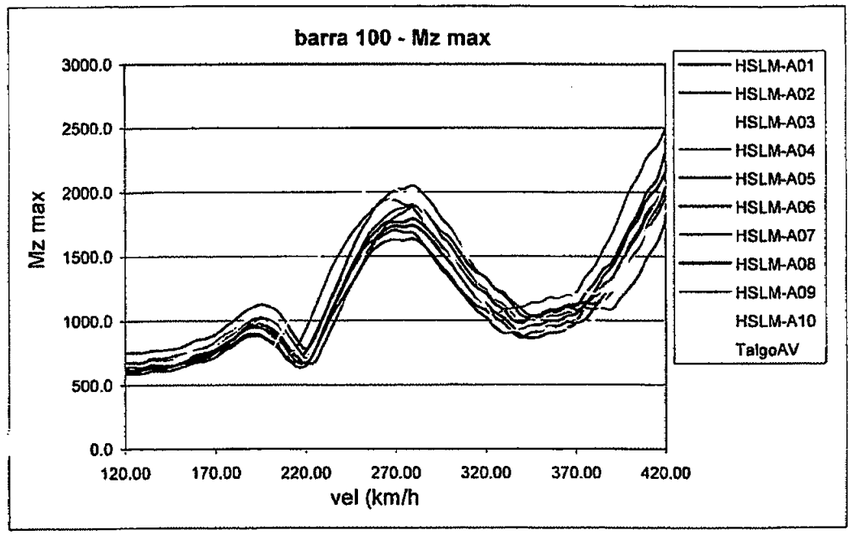

pto 197 - dy max (mm)
dy max (mm)
vel (km/h
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
120.00
170.00
220.00
270.00
320.00
370.00
420.00
HSLM-A01
HSLM-A02
HSLM-A03
HSLM-A04
HSLM-A05
HSLM-A06
HSLM-A07
HSLM-A08
HSLM-A09
HSLM-A10
TalgoAV

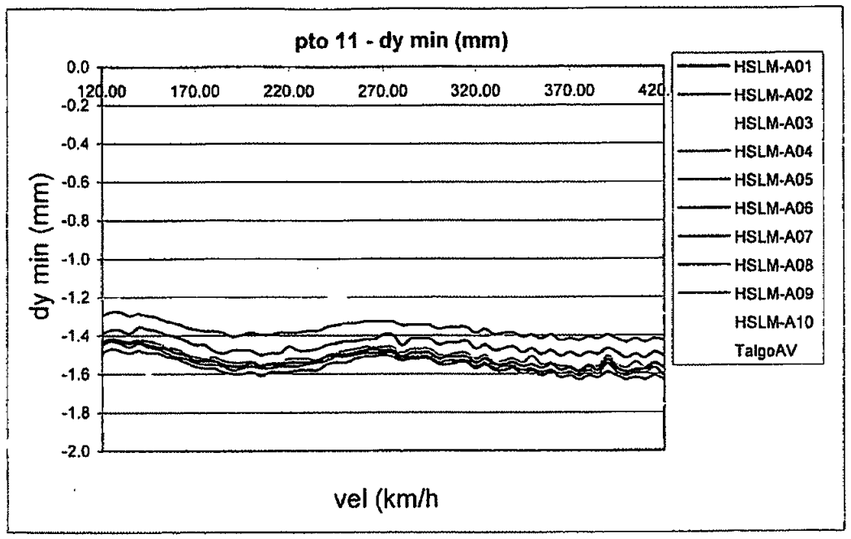

pto 203 - dy max (mm)
dy max (mm)
60.0
50.0
40.0
30.0
20.0
10.0
0.0
120.00
170.00
220.00
270.00
320.00
370.00
420.00
vel (km/h
HSLM-A01
HSLM-A02
HSLM-A03
HSLM-A04
HSLM-A05
HSLM-A06
HSLM-A07
HSLM-A08
HSLM-A09
HSLM-A10
TalgoAV

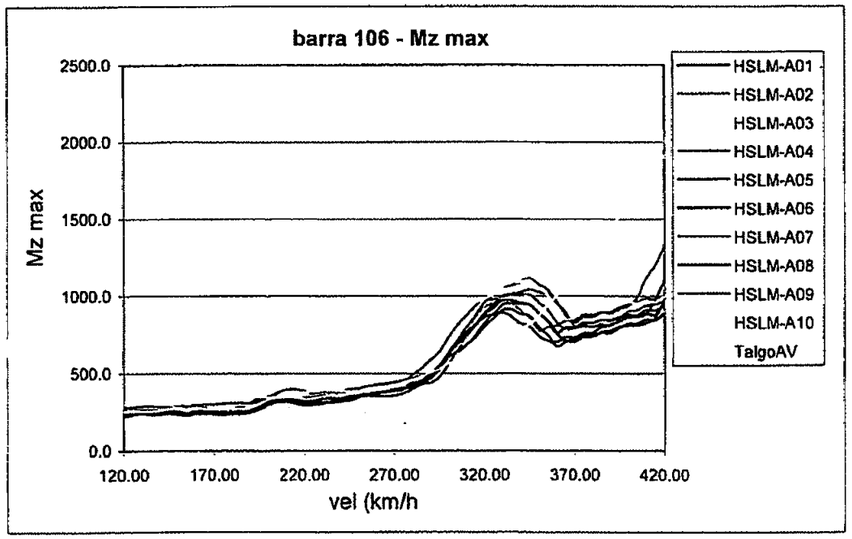

barra 16 - Mz max
Mz max
250.0
200.0
150.0
100.0
50.0
0.0
120.00
170.00
220.00
270.00
320.00
370.00
420.00
vel (km/h
HSLM-A01
HSLM-A02
HSLM-A03
HSLM-A04
HSLM-A05
HSLM-A06
HSLM-A07
HSLM-A08
HSLM-A09
HSLM-A10
TalgoAV

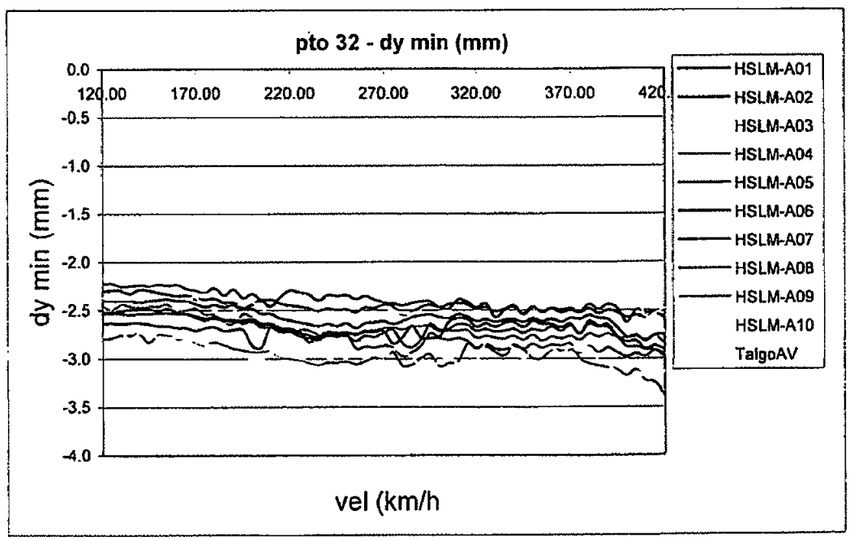

barra 5 - Mz max
Mz max
350.0
300.0
250.0
200.0
150.0
100.0
50.0
0.0
120.00
170.00
220.00
270.00
320.00
370.00
420.00
vel (km/h
HSLM-A01
HSLM-A02
HSLM-A03
HSLM-A04
HSLM-A05
HSLM-A06
HSLM-A07
HSLM-A08
HSLM-A09
HSLM-A10
TalgoAV

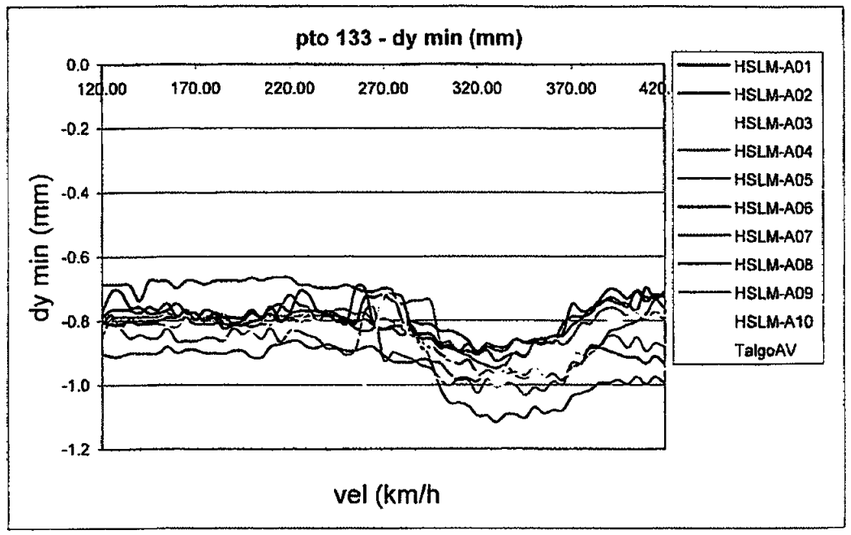

barra 70 - Mz max
Mz max
1800.0
1600.0
1400.0
1200.0
1000.0
800.0
600.0
400.0
200.0
0.0
120.00
170.00
220.00
270.00
320.00
370.00
420.00
vel (km/h
HSLM-A01
HSLM-A02
HSLM-A03
HSLM-A04
HSLM-A05
HSLM-A06
HSLM-A07
HSLM-A08
HSLM-A09
HSLM-A10
TalgoAV

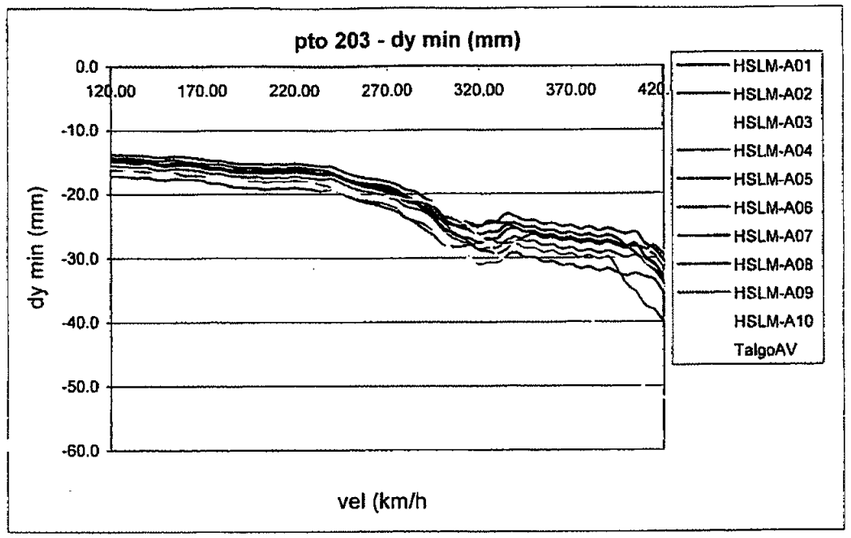

barra 100 - Mz max
Mz max
3000.0
2500.0
2000.0
1500.0
1000.0
500.0
0.0
120.00
170.00
220.00
270.00
320.00
370.00
420.00
vel (km/h
HSLM-A01
HSLM-A02
HSLM-A03
HSLM-A04
HSLM-A05
HSLM-A06
HSLM-A07
HSLM-A08
HSLM-A09
HSLM-A10
TalgoAV

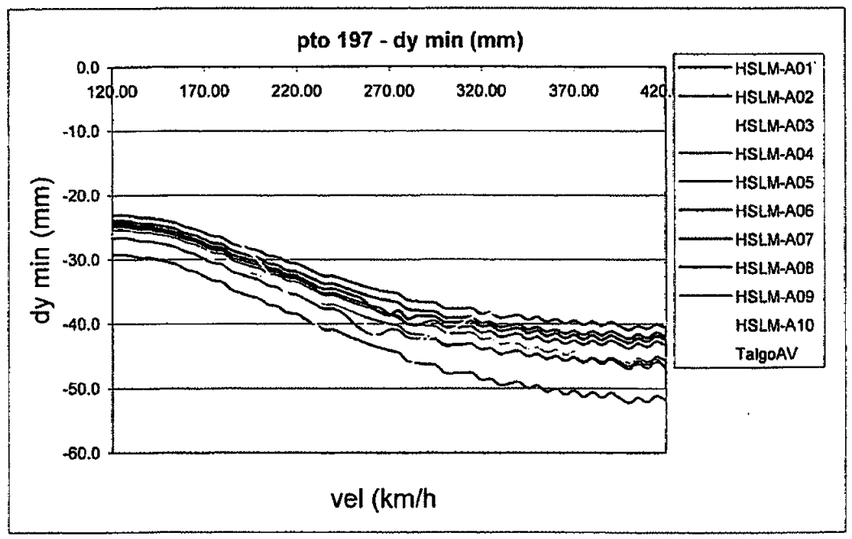

pto 11 - dy min (mm)
dy min (mm)
0.0
-0.2
-0.4
-0.6
-0.8
-1.0
-1.2
-1.4
-1.6
-1.8
-2.0
120.00
170.00
220.00
270.00
320.00
370.00
420.
vel (km/h
HSLM-A01
HSLM-A02
HSLM-A03
HSLM-A04
HSLM-A05
HSLM-A06
HSLM-A07
HSLM-A08
HSLM-A09
HSLM-A10
TalgoAV

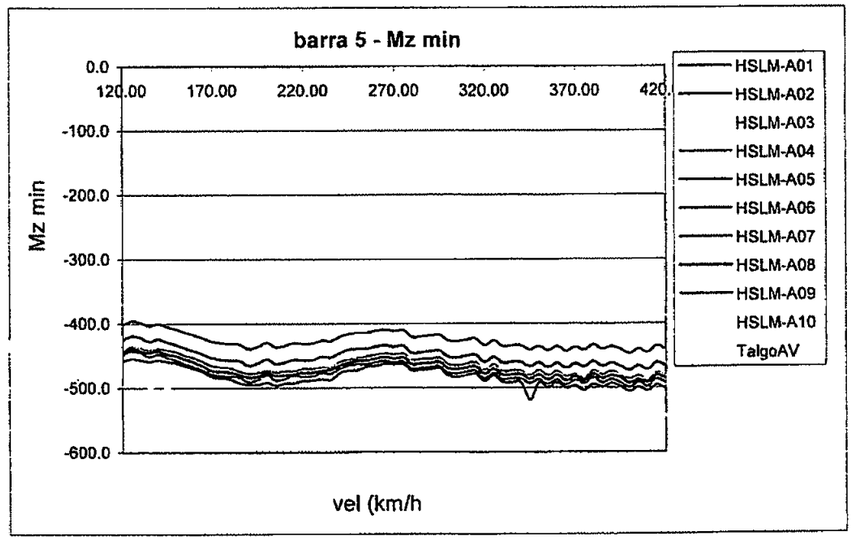

barra 106 - Mz max
Mz max
2500.0
2000.0
1500.0
1000.0
500.0
0.0
120.00
170.00
220.00
270.00
320.00
370.00
420.00
vel (km/h
HSLM-A01
HSLM-A02
HSLM-A03
HSLM-A04
HSLM-A05
HSLM-A06
HSLM-A07
HSLM-A08
HSLM-A09
HSLM-A10
TalgoAV

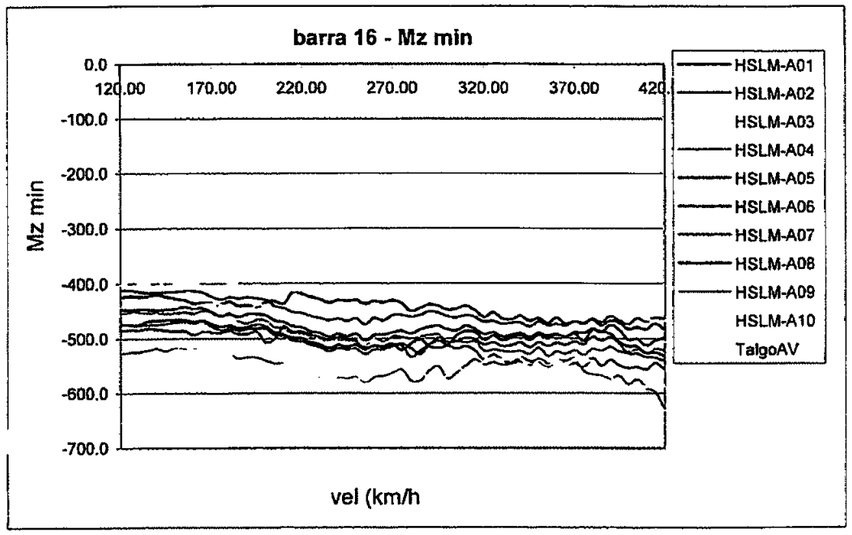

pto 32 - dy min (mm)
dy min (mm)
0.0
-0.5
-1.0
-1.5
-2.0
-2.5
-3.0
-3.5
-4.0
120.00
170.00
220.00
270.00
320.00
370.00
420.
vel (km/h
HSLM-A01
HSLM-A02
HSLM-A03
HSLM-A04
HSLM-A05
HSLM-A06
HSLM-A07
HSLM-A08
HSLM-A09
HSLM-A10
TalgoAV

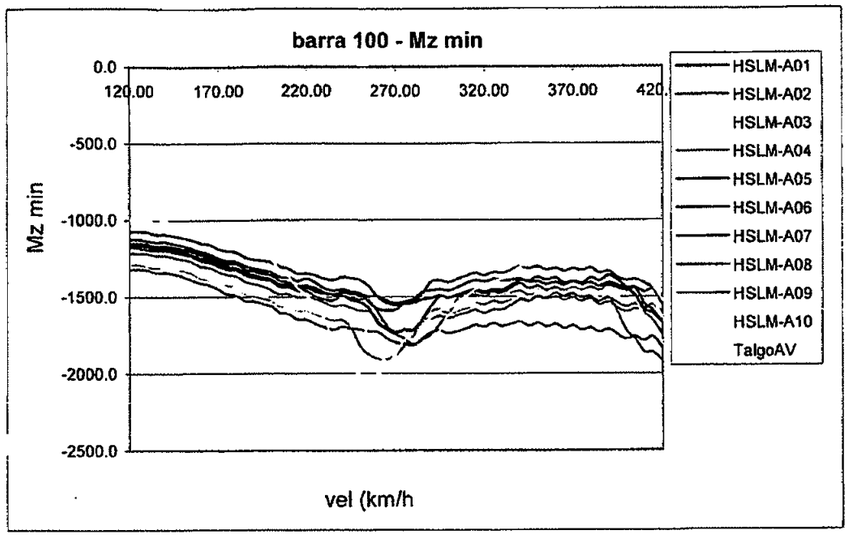

pto 133 - dy min (mm)
dy min (mm)
0.0
-0.2
-0.4
-0.6
-0.8
-1.0
-1.2
120.00
170.00
220.00
270.00
320.00
370.00
420.
vel (km/h
HSLM-A01
HSLM-A02
HSLM-A03
HSLM-A04
HSLM-A05
HSLM-A06
HSLM-A07
HSLM-A08
HSLM-A09
HSLM-A10
TalgoAV

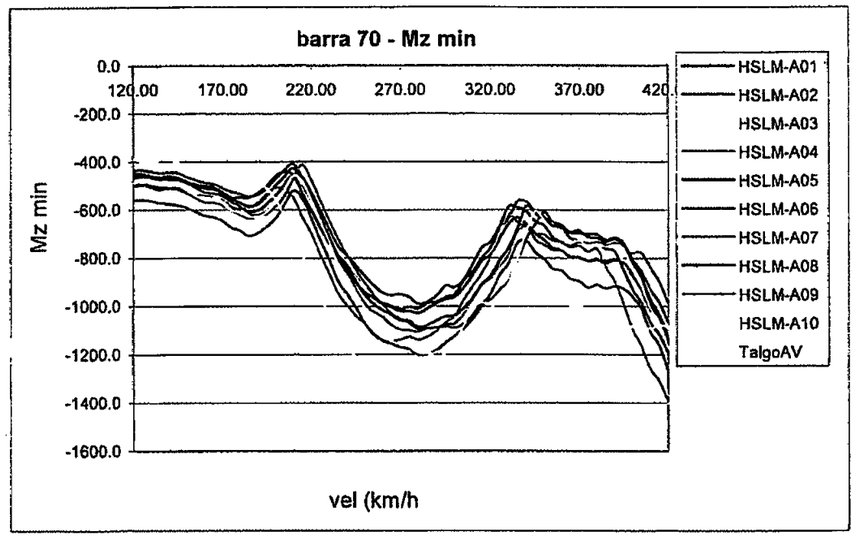

pto 203 - dy min (mm)
dy min (mm)
0.0
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
120.00
170.00
220.00
270.00
320.00
370.00
420.
vel (km/h
HSLM-A01
HSLM-A02
HSLM-A03
HSLM-A04
HSLM-A05
HSLM-A06
HSLM-A07
HSLM-A08
HSLM-A09
HSLM-A10
TalgoAV

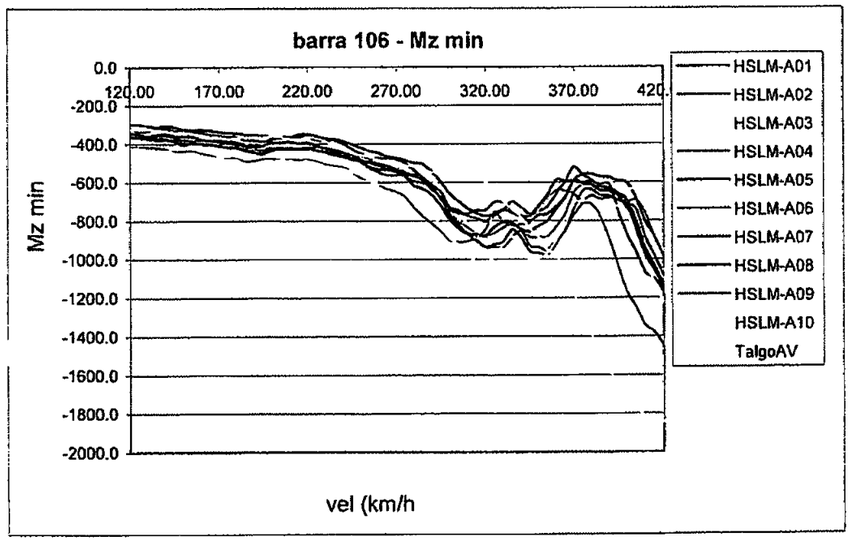

pto 197 - dy min (mm)
dy min (mm)
0.0
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
120.00
170.00
220.00
270.00
320.00
370.00
420.
vel (km/h
HSLM-A01
HSLM-A02
HSLM-A03
HSLM-A04
HSLM-A05
HSLM-A06
HSLM-A07
HSLM-A08
HSLM-A09
HSLM-A10
TalgoAV

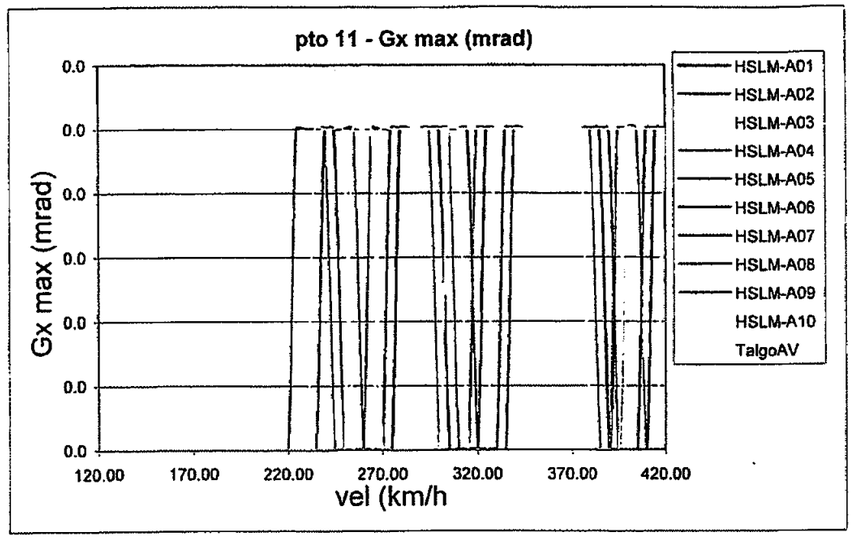

barra 5 - Mz min
Mz min
0.0
-100.0
-200.0
-300.0
-400.0
-500.0
-600.0
120.00
170.00
220.00
270.00
320.00
370.00
420.
vel (km/h
HSLM-A01
HSLM-A02
HSLM-A03
HSLM-A04
HSLM-A05
HSLM-A06
HSLM-A07
HSLM-A08
HSLM-A09
HSLM-A10
TalgoAV

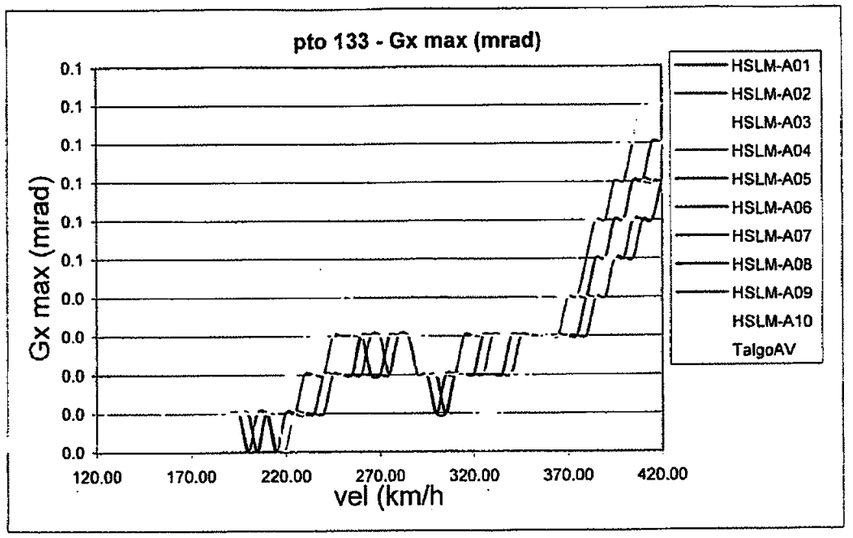

barra 16 - Mz min
Mz min
0.0
-100.0
-200.0
-300.0
-400.0
-500.0
-600.0
-700.0
120.00
170.00
220.00
270.00
320.00
370.00
420.
vel (km/h
HSLM-A01
HSLM-A02
HSLM-A03
HSLM-A04
HSLM-A05
HSLM-A06
HSLM-A07
HSLM-A08
HSLM-A09
HSLM-A10
TalgoAV

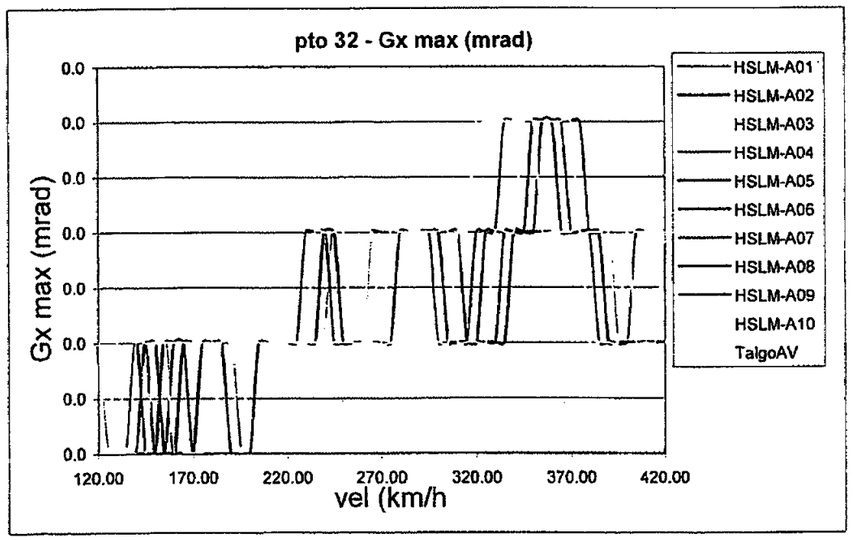

barra 100 - Mz min
Mz min
0.0
-500.0
-1000.0
-1500.0
-2000.0
-2500.0
120.00
170.00
220.00
270.00
320.00
370.00
420.
vel (km/h
HSLM-A01
HSLM-A02
HSLM-A03
HSLM-A04
HSLM-A05
HSLM-A06
HSLM-A07
HSLM-A08
HSLM-A09
HSLM-A10
TalgoAV

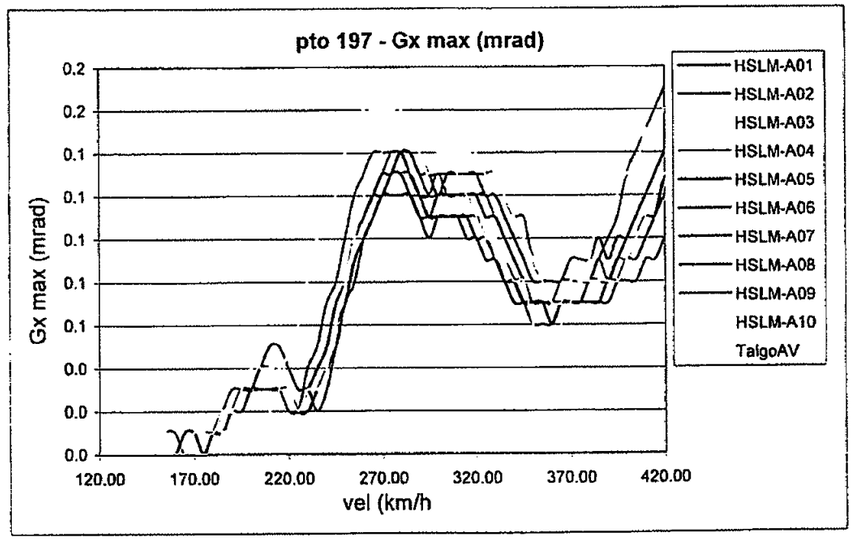

barra 70 - Mz min
Mz min
0.0
-200.0
-400.0
-600.0
-800.0
-1000.0
-1200.0
-1400.0
-1600.0
120.00
170.00
220.00
270.00
320.00
370.00
420.
vel (km/h
HSLM-A01
HSLM-A02
HSLM-A03
HSLM-A04
HSLM-A05
HSLM-A06
HSLM-A07
HSLM-A08
HSLM-A09
HSLM-A10
TalgoAV

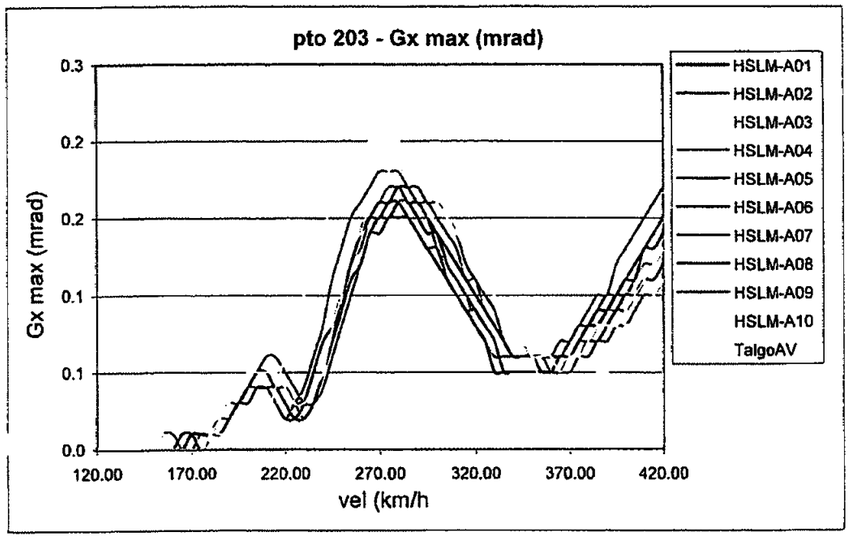

barra 106 - Mz min
Mz min
0.0
-200.0
-400.0
-600.0
-800.0
-1000.0
-1200.0
-1400.0
-1600.0
-1800.0
-2000.0
120.00
170.00
220.00
270.00
320.00
370.00
420.
vel (km/h
HSLM-A01
HSLM-A02
HSLM-A03
HSLM-A04
HSLM-A05
HSLM-A06
HSLM-A07
HSLM-A08
HSLM-A09
HSLM-A10
TalgoAV

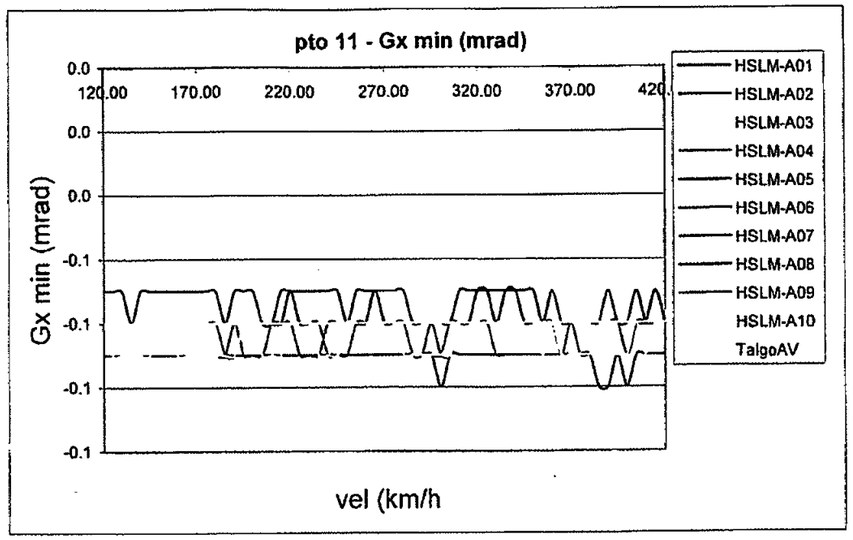

pto 11 - Gx max (mrad)
Gx max (mrad)
0.0
0.0
0.0
0.0
0.0
0.0
120.00
170.00
220.00
270.00
320.00
370.00
420.00
vel (km/h
HSLM-A01
HSLM-A02
HSLM-A03
HSLM-A04
HSLM-A05
HSLM-A06
HSLM-A07
HSLM-A08
HSLM-A09
HSLM-A10
TalgoAV

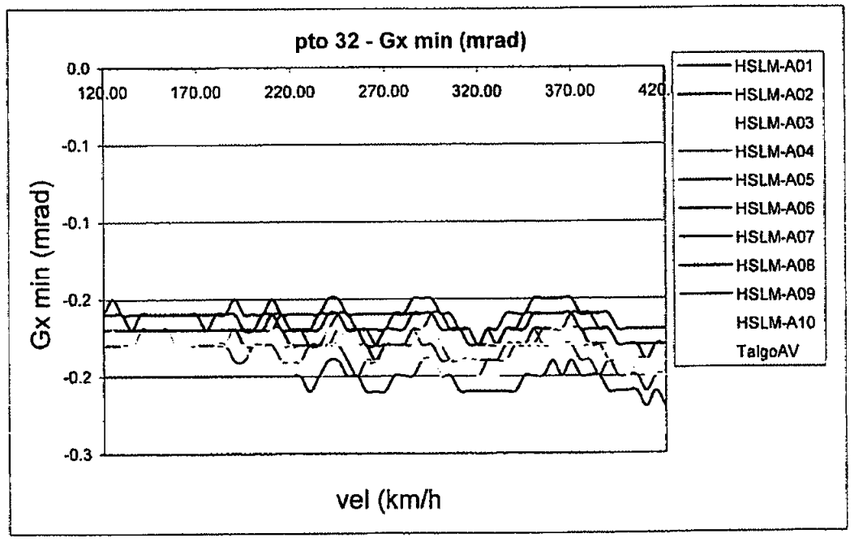

pto 133 - Gx max (mrad)
Gx max (mrad)
0.1
0.1
0.1
0.1
0.1
0.0
0.0
0.0
0.0
120.00
170.00
220.00
270.00
320.00
370.00
420.00
vel (km/h
HSLM-A01
HSLM-A02
HSLM-A03
HSLM-A04
HSLM-A05
HSLM-A06
HSLM-A07
HSLM-A08
HSLM-A09
HSLM-A10
TalgoAV

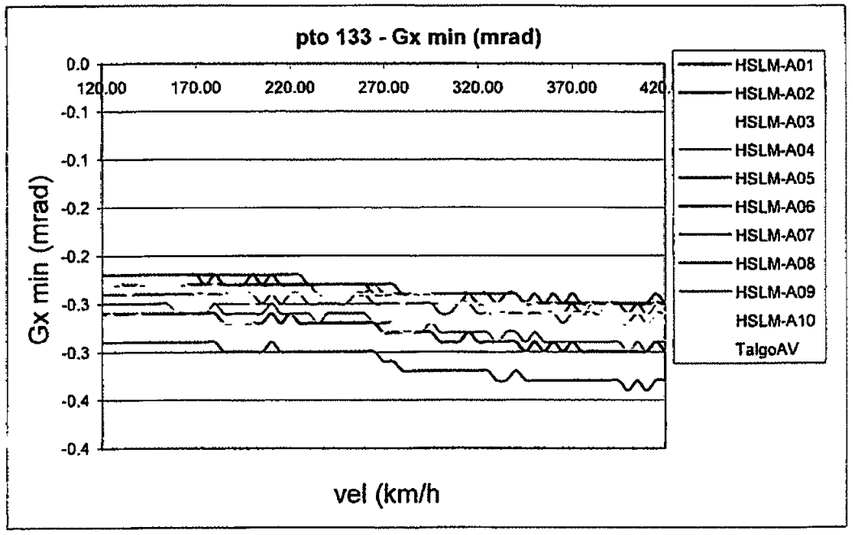

pto 32 - Gx max (mrad)
Gx max (mrad)
0.0
0.0
0.0
0.0
0.0
0.0
0.0
120.00
170.00
220.00
270.00
320.00
370.00
420.00
vel (km/h
HSLM-A01
HSLM-A02
HSLM-A03
HSLM-A04
HSLM-A05
HSLM-A06
HSLM-A07
HSLM-A08
HSLM-A09
HSLM-A10
TalgoAV

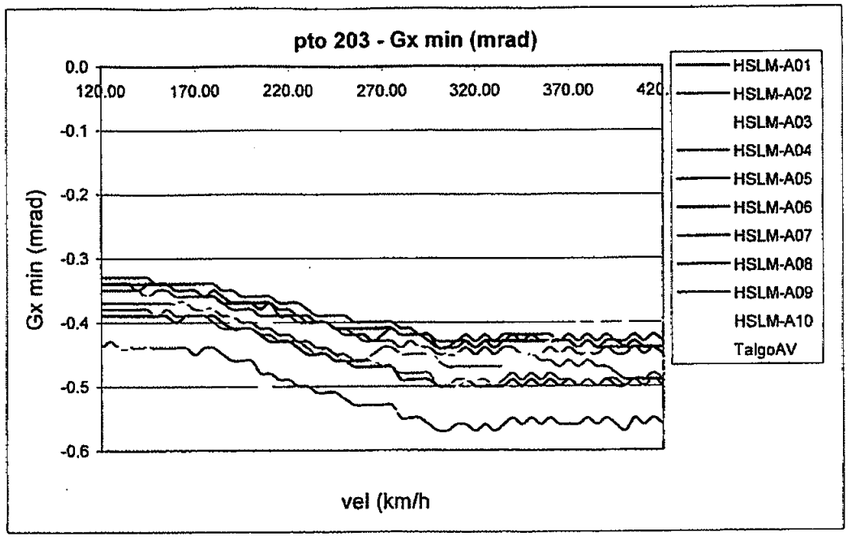

pto 197 - Gx max (mrad)
Gx max (mrad)
0.2
0.2
0.1
0.1
0.1
0.1
0.1
0.0
0.0
0.0
120.00
170.00
220.00
270.00
320.00
370.00
420.00
vel (km/h
HSLM-A01
HSLM-A02
HSLM-A03
HSLM-A04
HSLM-A05
HSLM-A06
HSLM-A07
HSLM-A08
HSLM-A09
HSLM-A10
TalgoAV

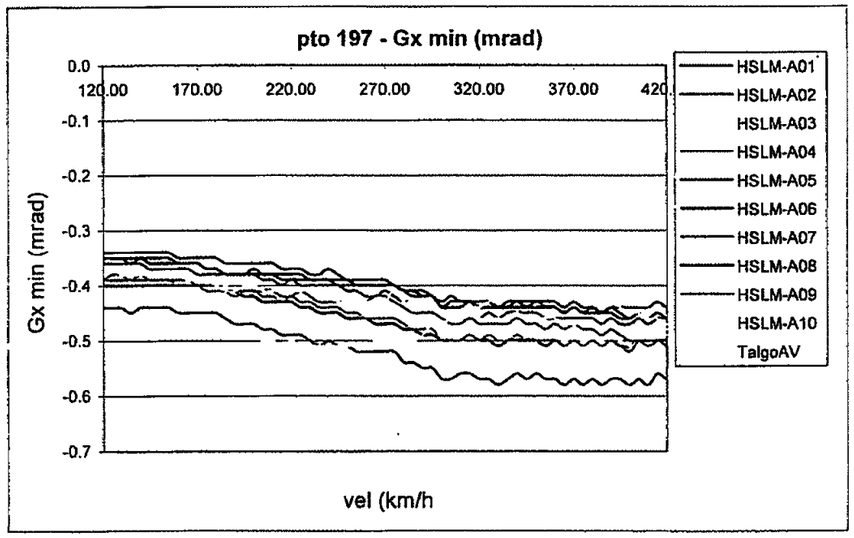

pto 203 - Gx max (mrad)
Gx max (mrad)
0.3
0.2
0.2
0.1
0.1
0.0
120.00
170.00
220.00
270.00
320.00
370.00
420.00
vel (km/h
HSLM-A01
HSLM-A02
HSLM-A03
HSLM-A04
HSLM-A05
HSLM-A06
HSLM-A07
HSLM-A08
HSLM-A09
HSLM-A10
TalgoAV

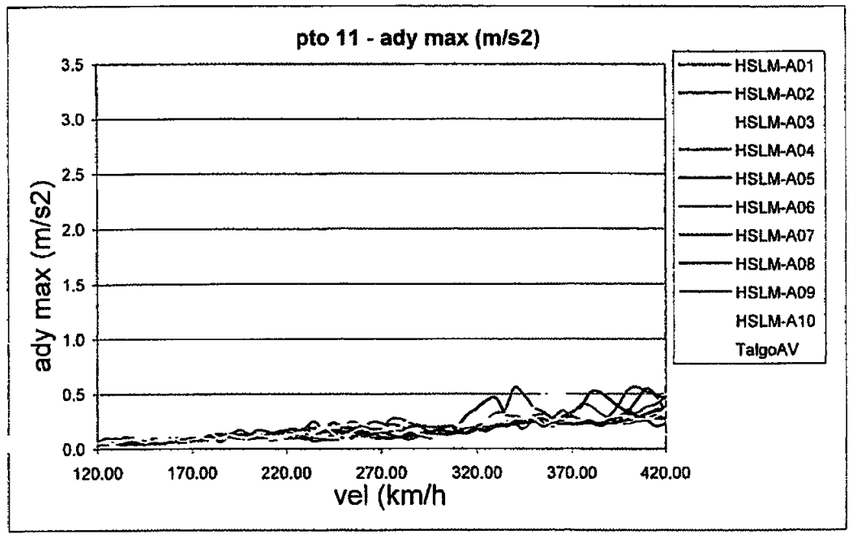

pto 11 - Gx min (mrad)
Gx min (mrad)
0.0
0.0
0.0
-0.1
-0.1
-0.1
-0.1
120.00
170.00
220.00
270.00
320.00
370.00
420.
vel (km/h
HSLM-A01
HSLM-A02
HSLM-A03
HSLM-A04
HSLM-A05
HSLM-A06
HSLM-A07
HSLM-A08
HSLM-A09
HSLM-A10
TalgoAV

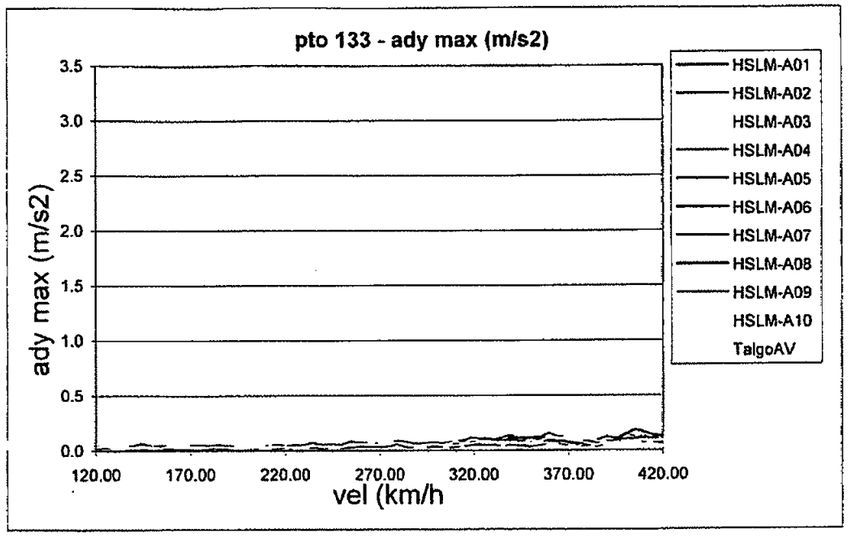

pto 32 - Gx min (mrad)
Gx min (mrad)
0.0
-0.1
-0.1
-0.2
-0.2
-0.3
120.00
170.00
220.00
270.00
320.00
370.00
420.
vel (km/h
HSLM-A01
HSLM-A02
HSLM-A03
HSLM-A04
HSLM-A05
HSLM-A06
HSLM-A07
HSLM-A08
HSLM-A09
HSLM-A10
TalgoAV

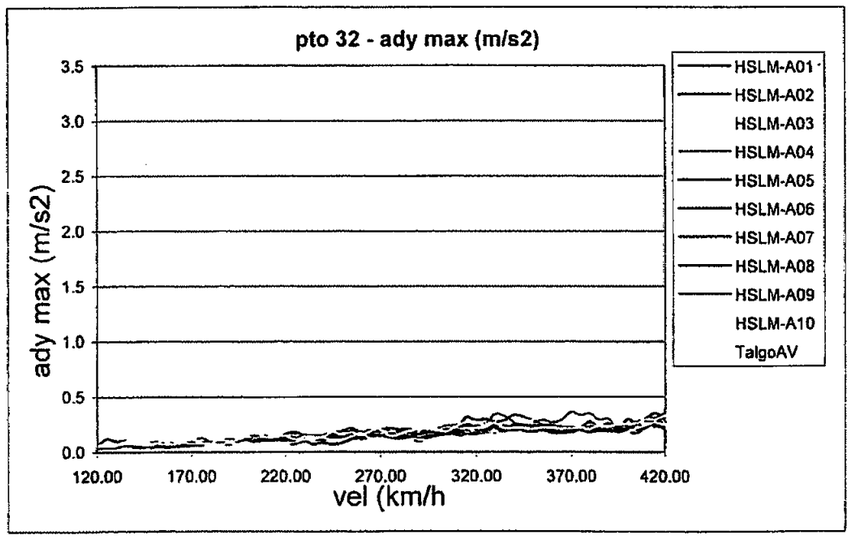

pto 133 - Gx min (mrad)
Gx min (mrad)
vel (km/h
0.0
-0.1
-0.1
-0.2
-0.2
-0.3
-0.3
-0.4
-0.4
120.00
170.00
220.00
270.00
320.00
370.00
420
HSLM-A01
HSLM-A02
HSLM-A03
HSLM-A04
HSLM-A05
HSLM-A06
HSLM-A07
HSLM-A08
HSLM-A09
HSLM-A10
TalgoAV

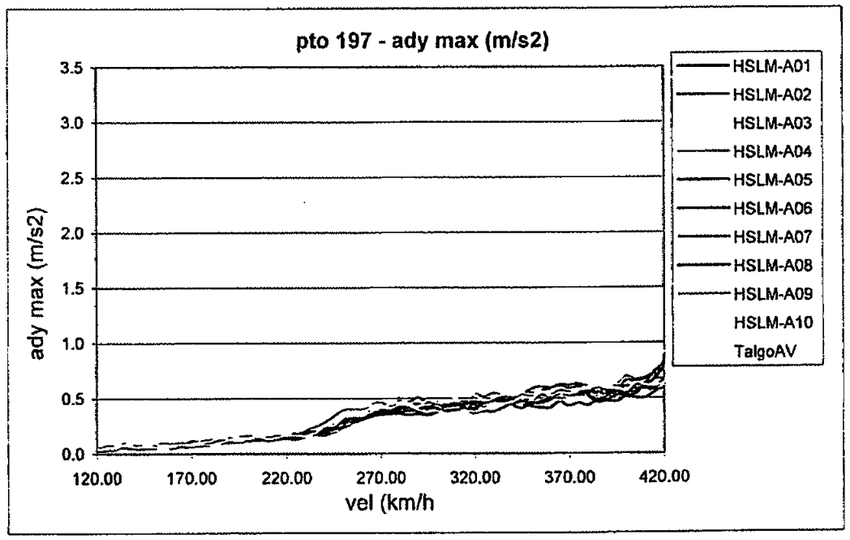

pto 203 - Gx min (mrad)
Gx min (mrad)
vel (km/h
0.0
-0.1
-0.2
-0.3
-0.4
-0.5
-0.6
120.00
170.00
220.00
270.00
320.00
370.00
420
HSLM-A01
HSLM-A02
HSLM-A03
HSLM-A04
HSLM-A05
HSLM-A06
HSLM-A07
HSLM-A08
HSLM-A09
HSLM-A10
TalgoAV

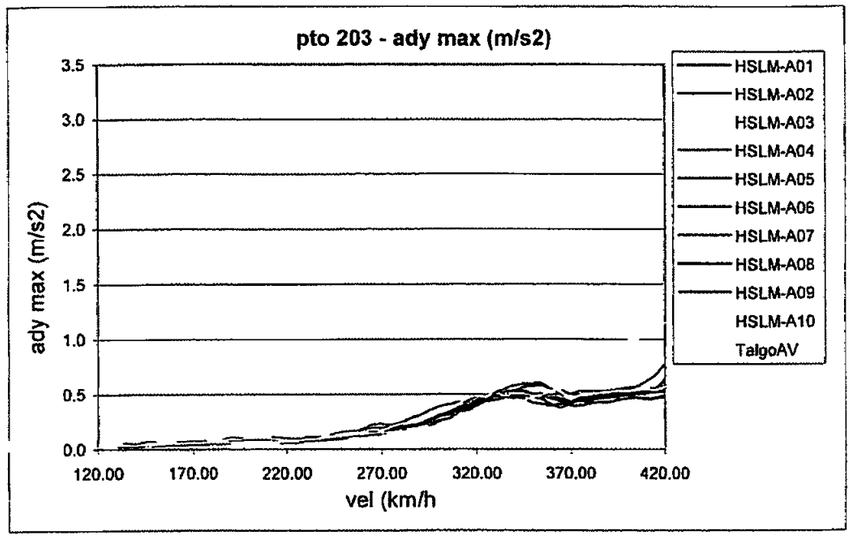

pto 197 - Gx min (mrad)
Gx min (mrad)
vel (km/h
0.0
-0.1
-0.2
-0.3
-0.4
-0.5
-0.6
-0.7
120.00
170.00
220.00
270.00
320.00
370.00
420
HSLM-A01
HSLM-A02
HSLM-A03
HSLM-A04
HSLM-A05
HSLM-A06
HSLM-A07
HSLM-A08
HSLM-A09
HSLM-A10
TalgoAV

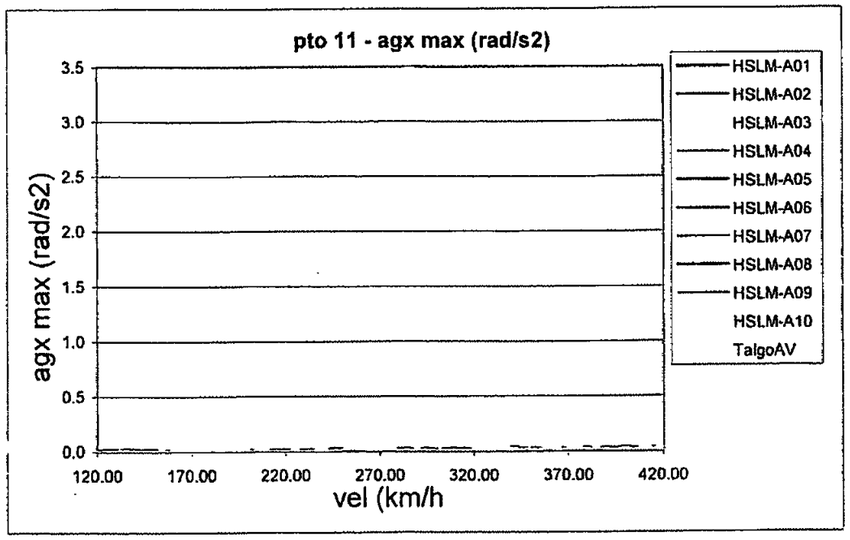

pto 11 - ady max (m/s2)
ady max (m/s2)
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
120.00
170.00
220.00
270.00
320.00
370.00
420.00
vel (km/h
HSLM-A01
HSLM-A02
HSLM-A03
HSLM-A04
HSLM-A05
HSLM-A06
HSLM-A07
HSLM-A08
HSLM-A09
HSLM-A10
TalgoAV

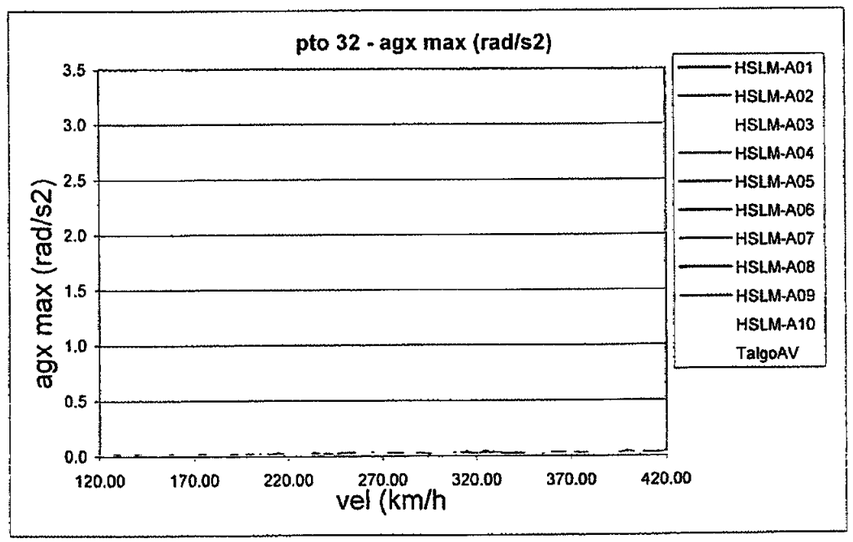

pto 133 - ady max (m/s2)
ady max (m/s2)
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
120.00
170.00
220.00
270.00
320.00
370.00
420.00
vel (km/h
HSLM-A01
HSLM-A02
HSLM-A03
HSLM-A04
HSLM-A05
HSLM-A06
HSLM-A07
HSLM-A08
HSLM-A09
HSLM-A10
TalgoAV

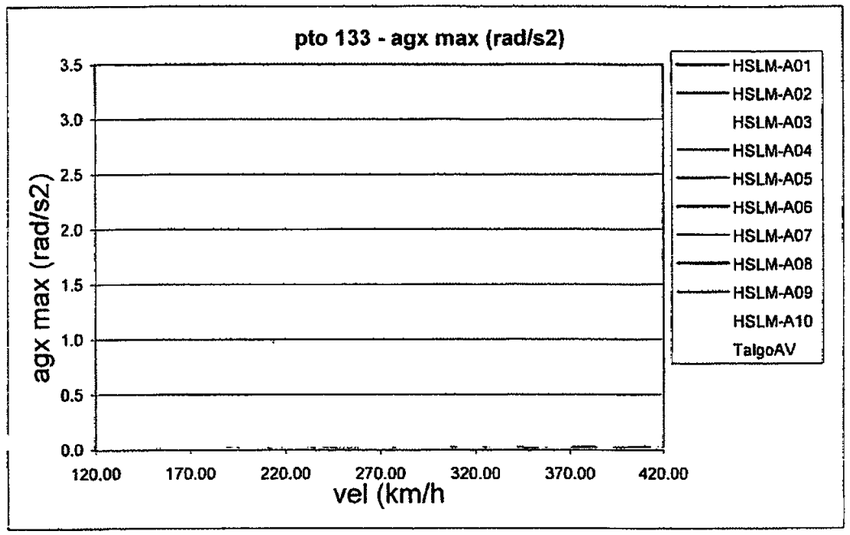

pto 32 - ady max (m/s2)
ady max (m/s2)
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
120.00
170.00
220.00
270.00
320.00
370.00
420.00
vel (km/h
HSLM-A01
HSLM-A02
HSLM-A03
HSLM-A04
HSLM-A05
HSLM-A06
HSLM-A07
HSLM-A08
HSLM-A09
HSLM-A10
TalgoAV

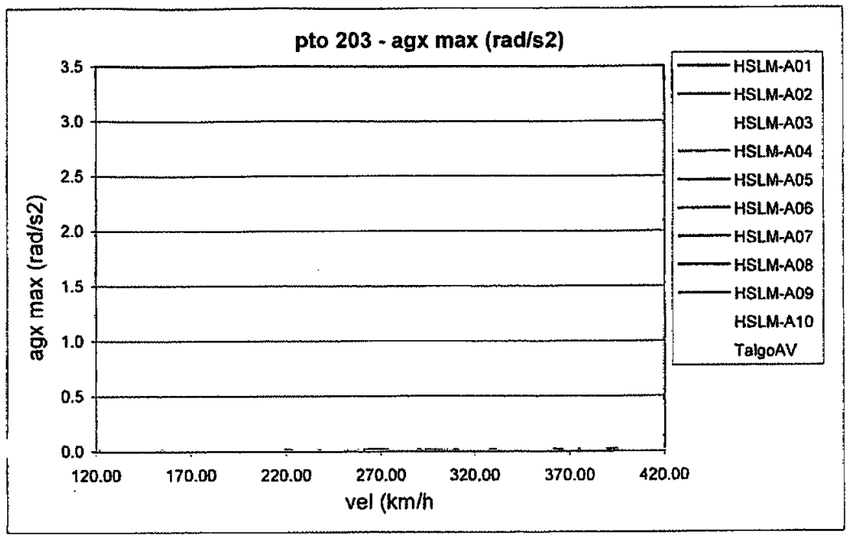

pto 197 - ady max (m/s2)
ady max (m/s2)
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
120.00
170.00
220.00
270.00
320.00
370.00
420.00
vel (km/h
HSLM-A01
HSLM-A02
HSLM-A03
HSLM-A04
HSLM-A05
HSLM-A06
HSLM-A07
HSLM-A08
HSLM-A09
HSLM-A10
TalgoAV

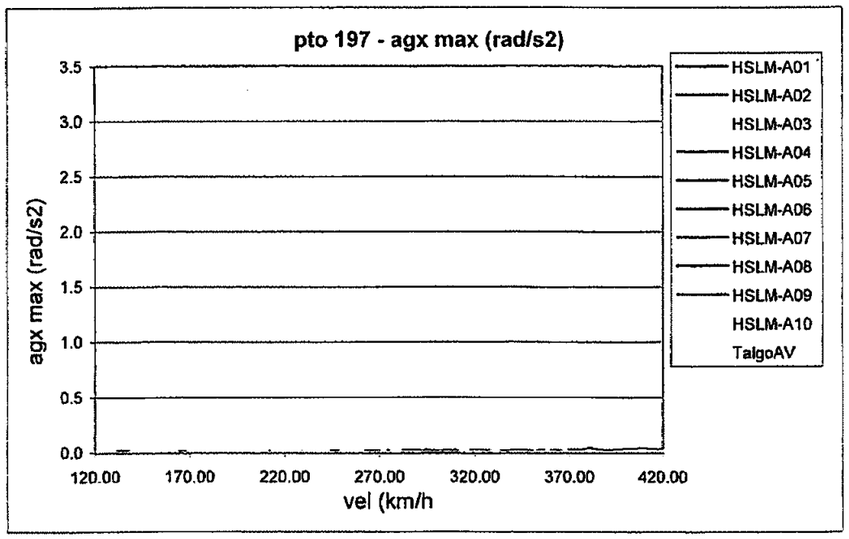

pto 203 - ady max (m/s2)
ady max (m/s2)
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
120.00
170.00
220.00
270.00
320.00
370.00
420.00
vel (km/h
HSLM-A01
HSLM-A02
HSLM-A03
HSLM-A04
HSLM-A05
HSLM-A06
HSLM-A07
HSLM-A08
HSLM-A09
HSLM-A10
TalgoAV

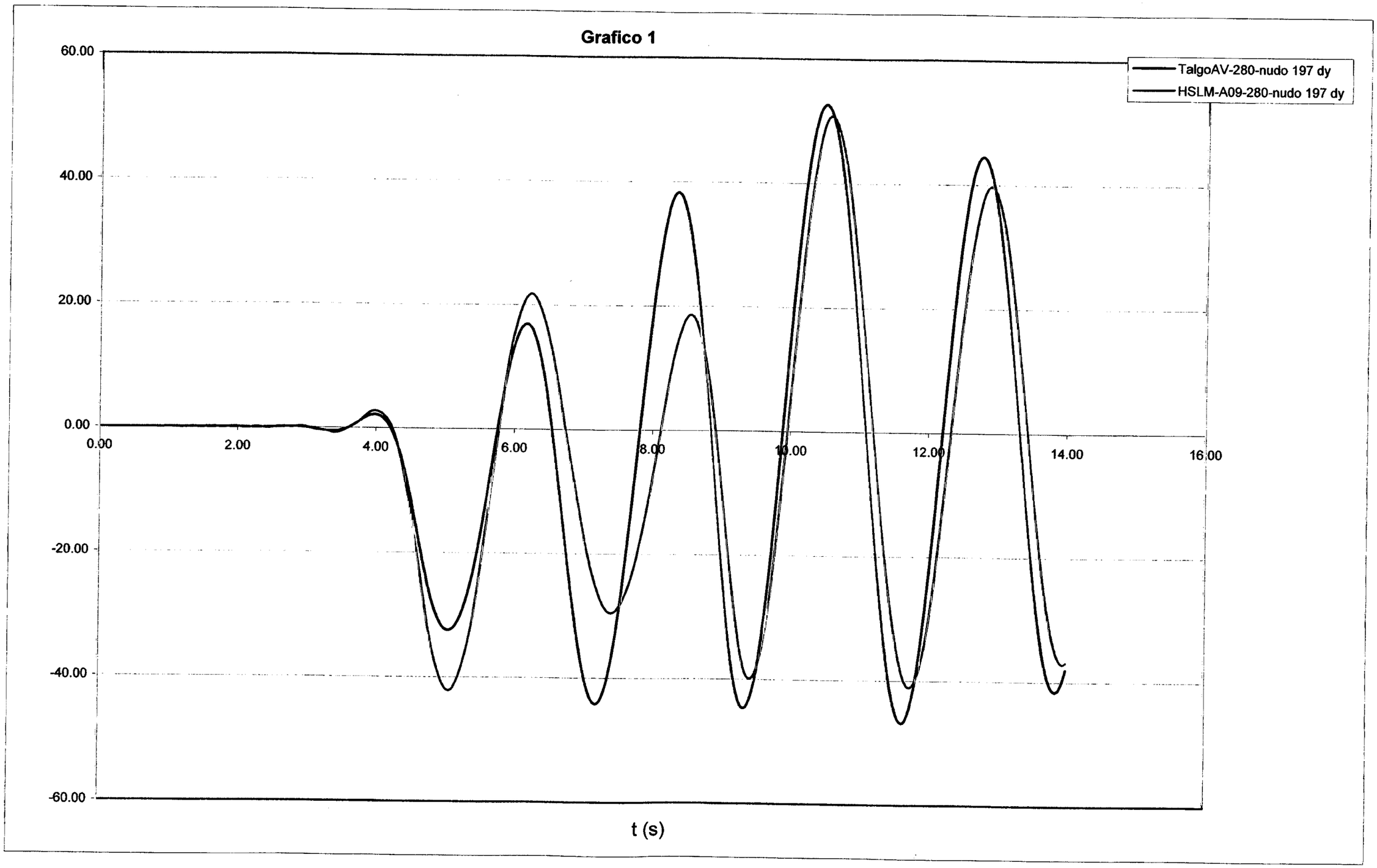

pto 11 - agx max (rad/s2)
agx max (rad/s2)
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
120.00
170.00
220.00
270.00
320.00
370.00
420.00
vel (km/h
HSLM-A01
HSLM-A02
HSLM-A03
HSLM-A04
HSLM-A05
HSLM-A06
HSLM-A07
HSLM-A08
HSLM-A09
HSLM-A10
TalgoAV

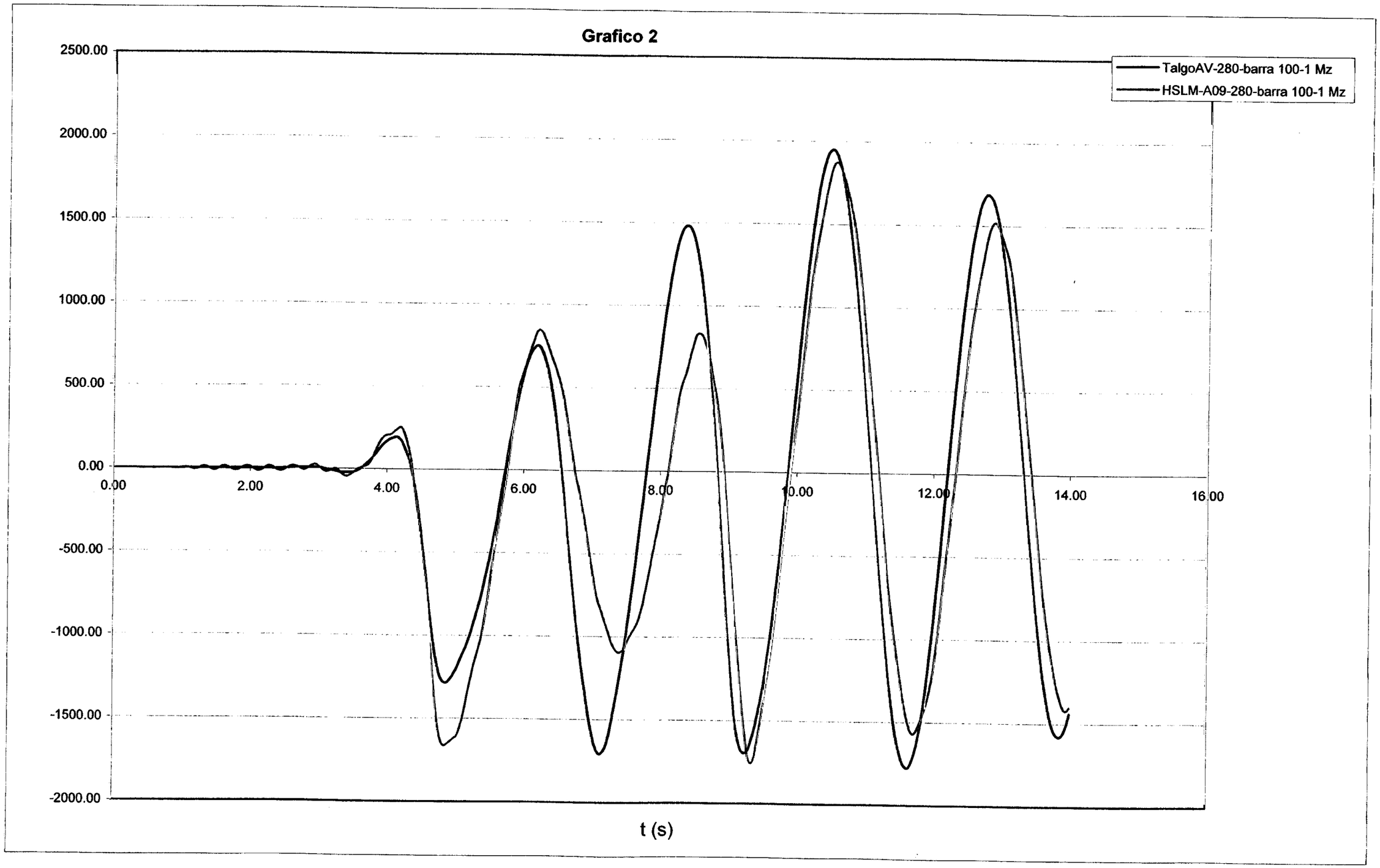

pto 32 - agx max (rad/s2)
agx max (rad/s2)
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
120.00
170.00
220.00
270.00
320.00
370.00
420.00
vel (km/h
HSLM-A01
HSLM-A02
HSLM-A03
HSLM-A04
HSLM-A05
HSLM-A06
HSLM-A07
HSLM-A08
HSLM-A09
HSLM-A10
TalgoAV

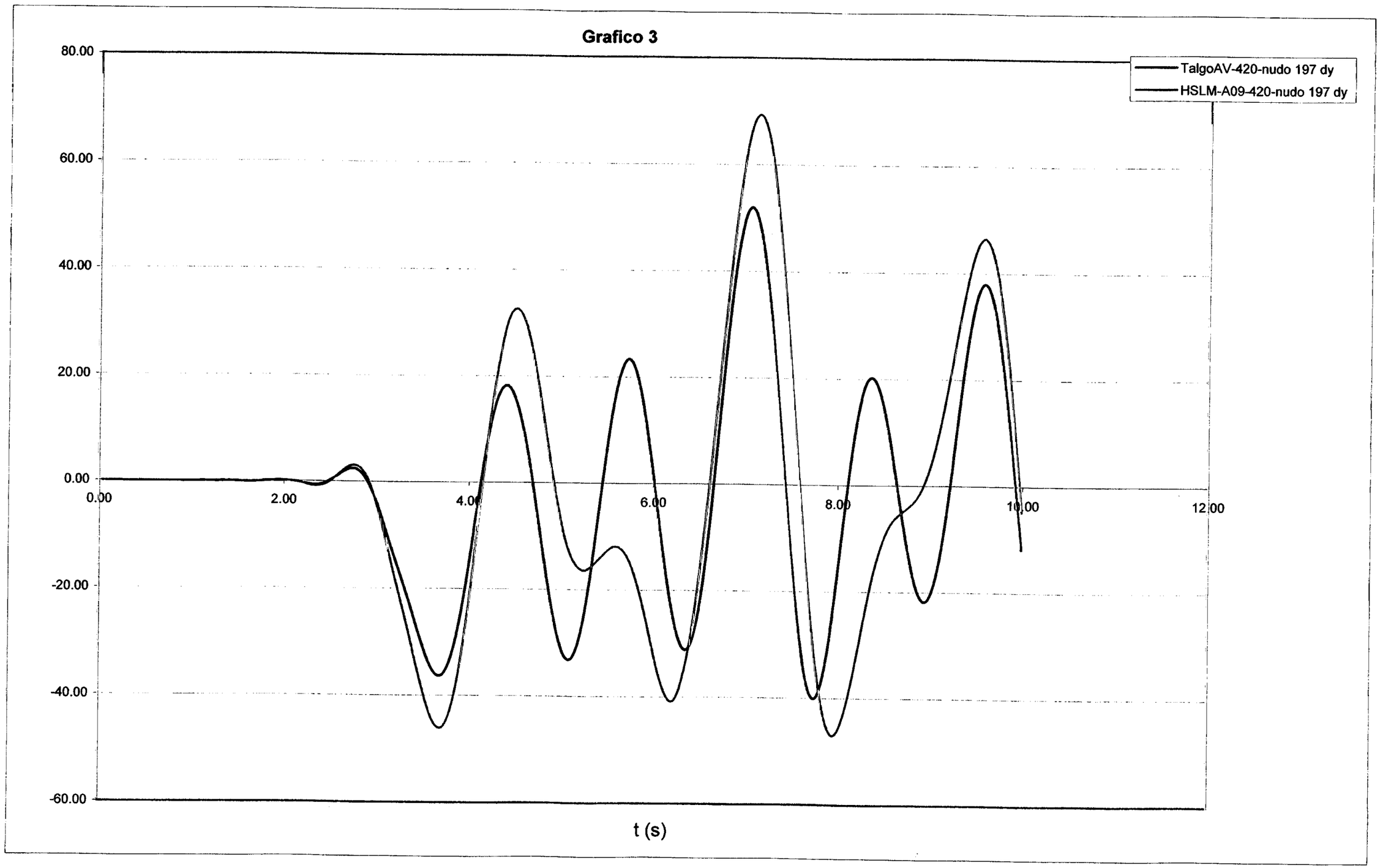

pto 133 - agx max (rad/s2)
agx max (rad/s2)
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
120.00
170.00
220.00
270.00
320.00
370.00
420.00
vel (km/h
HSLM-A01
HSLM-A02
HSLM-A03
HSLM-A04
HSLM-A05
HSLM-A06
HSLM-A07
HSLM-A08
HSLM-A09
HSLM-A10
TalgoAV

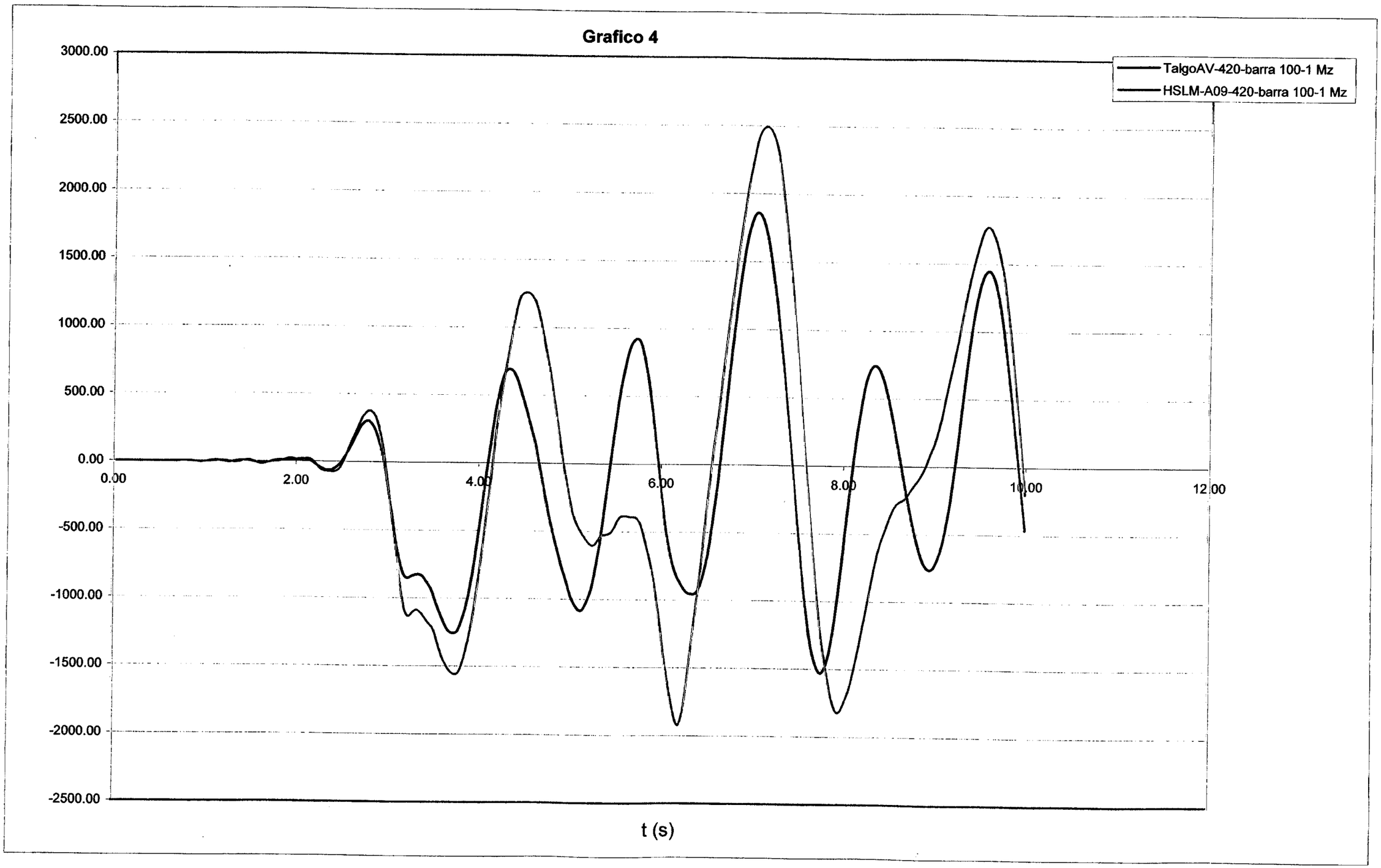

pto 203 - agx max (rad/s2)
agx max (rad/s2)
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
120.00
170.00
220.00
270.00
320.00
370.00
420.00
vel (km/h
HSLM-A01
HSLM-A02
HSLM-A03
HSLM-A04
HSLM-A05
HSLM-A06
HSLM-A07
HSLM-A08
HSLM-A09
HSLM-A10
TalgoAV

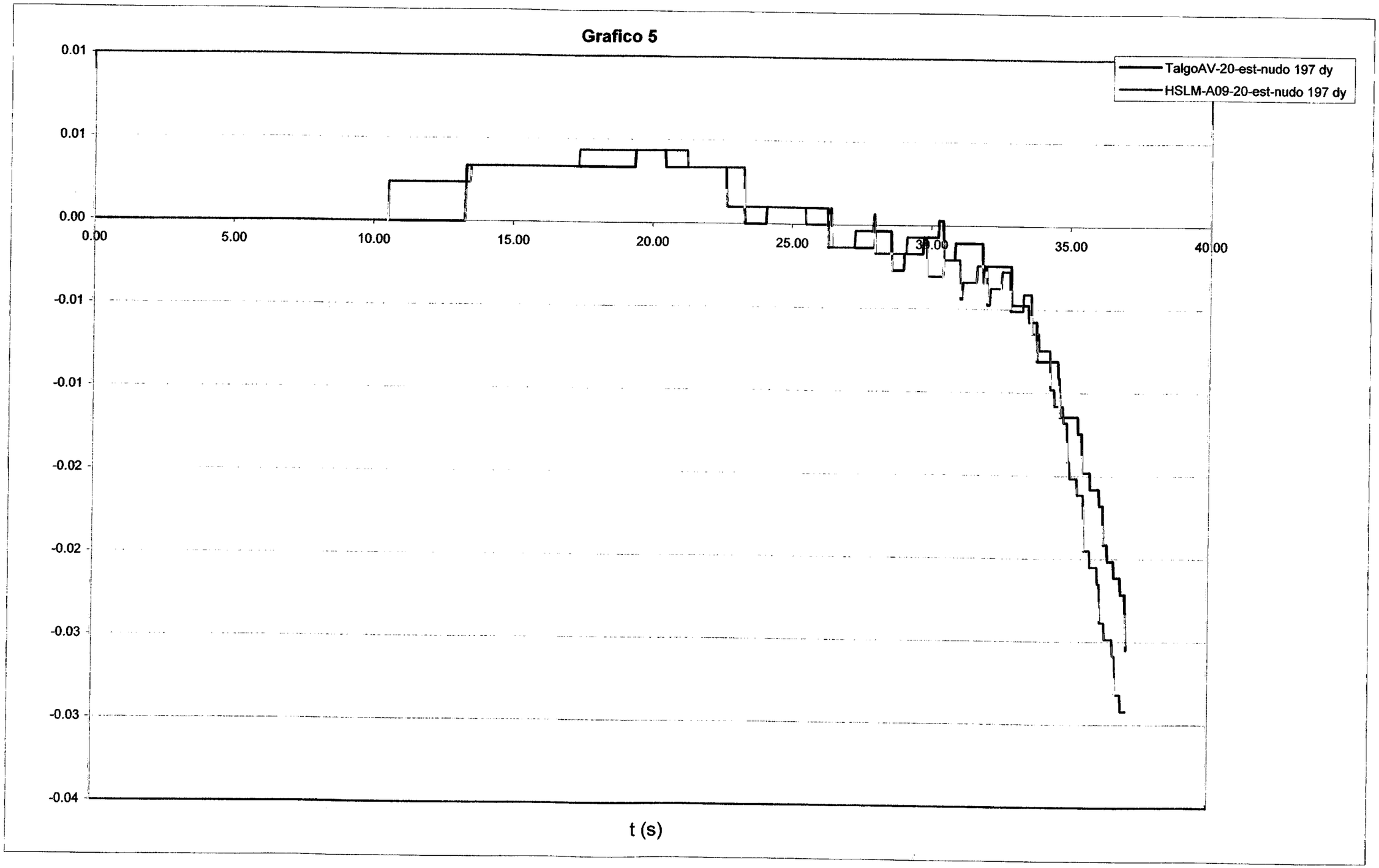

pto 197 - agx max (rad/s2)
agx max (rad/s2)
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
120.00
170.00
220.00
270.00
320.00
370.00
420.00
vel (km/h
HSLM-A01
HSLM-A02
HSLM-A03
HSLM-A04
HSLM-A05
HSLM-A06
HSLM-A07
HSLM-A08
HSLM-A09
HSLM-A10
TalgoAV


Grafico 1
60.00
40.00
20.00
0.00
-20.00
-40.00
-60.00
0.00
2.00
4.00
6.00
8.00
10.00
12.00
14.00
16.00
t (s)
TalgoAV-280-nudo 197 dy
HSLM-A09-280-nudo 197 dy


Grafico 2
TalgoAV-280-barra 100-1 Mz
HSLM-A09-280-barra 100-1 Mz
2500.00
2000.00
1500.00
1000.00
500.00
0.00
-500.00
-1000.00
-1500.00
-2000.00
0.00
2.00
4.00
6.00
8.00
10.00
12.00
14.00
16.00
t (s)


Grafico 3
80.00
60.00
40.00
20.00
0.00
-20.00
-40.00
-60.00
0.00
2.00
4.00
6.00
8.00
10.00
12.00
t (s)
TalgoAV-420-nudo 197 dy
HSLM-A09-420-nudo 197 dy


Grafico 4
TalgoAV-420-barra 100-1 Mz
HSLM-A09-420-barra 100-1 Mz
3000.00
2500.00
2000.00
1500.00
1000.00
500.00
0.00
-500.00
-1000.00
-1500.00
-2000.00
-2500.00
0.00
2.00
4.00
6.00
8.00
10.00
12.00
t (s)


Grafico 5
TalgoAV-20-est-nudo 197 dy
HSLM-A09-20-est-nudo 197 dy
0.01
0.01
0.00
-0.01
-0.01
-0.02
-0.02
-0.03
-0.03
-0.04
0.00
5.00
10.00
15.00
20.00
25.00
30.00
35.00
40.00
t (s)

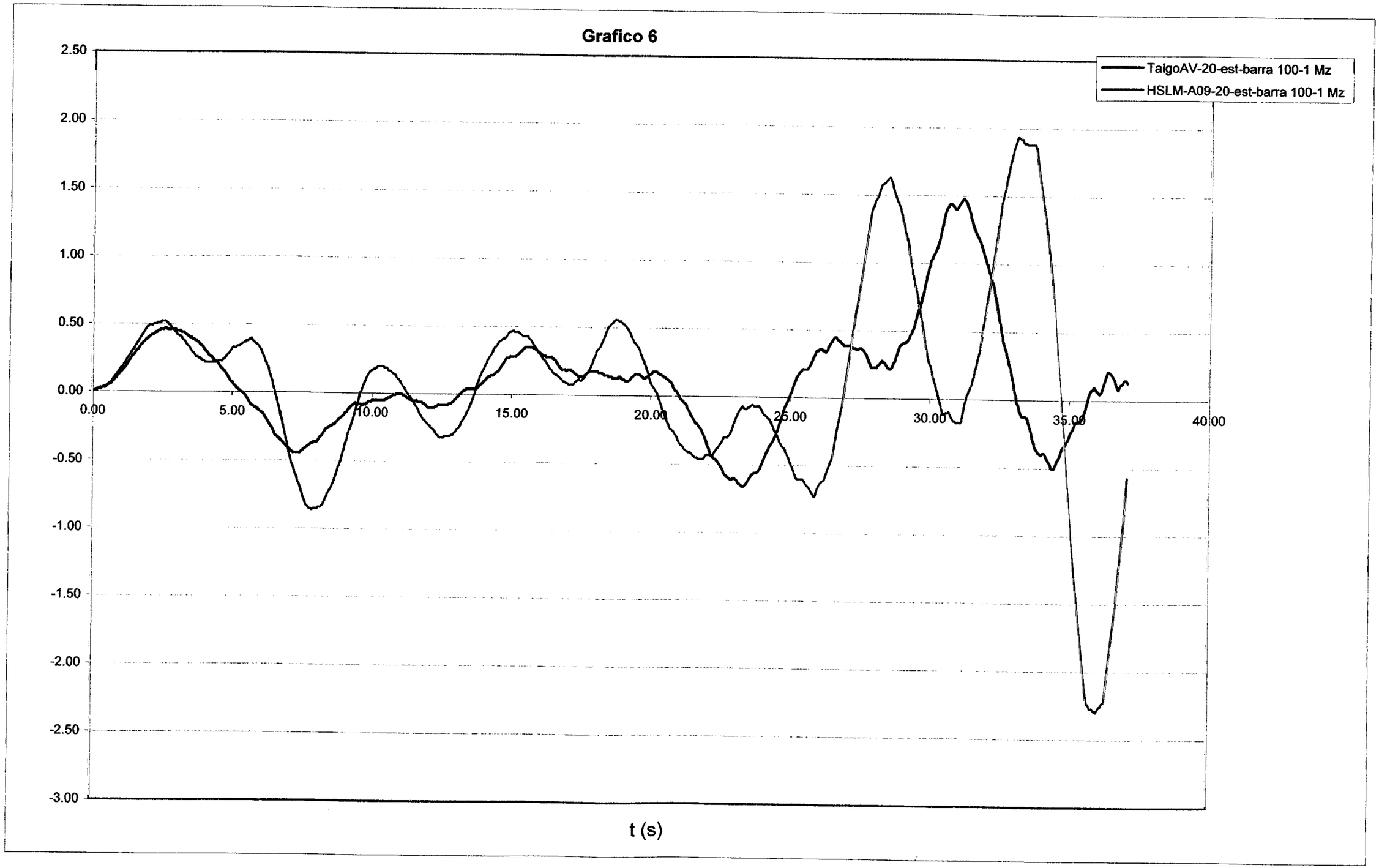

Grafico 6
TalgoAV-20-est-barra 100-1 Mz
HSLM-A09-20-est-barra 100-1 Mz
2.50
2.00
1.50
1.00
0.50
0.00
-0.50
-1.00
-1.50
-2.00
-2.50
-3.00
0.00
5.00
10.00
15.00
20.00
25.00
30.00
35.00
40.00
t (s)

Grafico 7

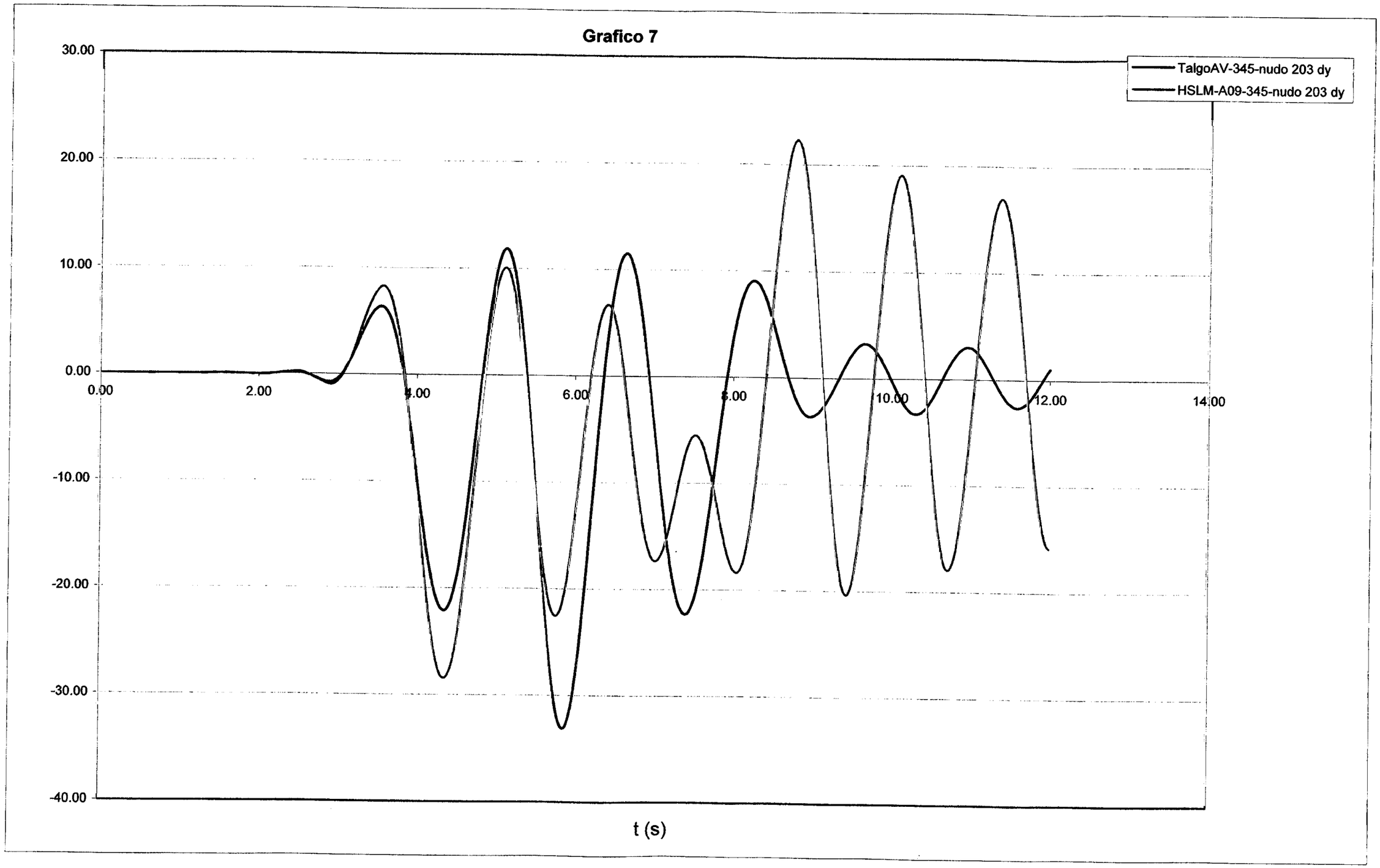
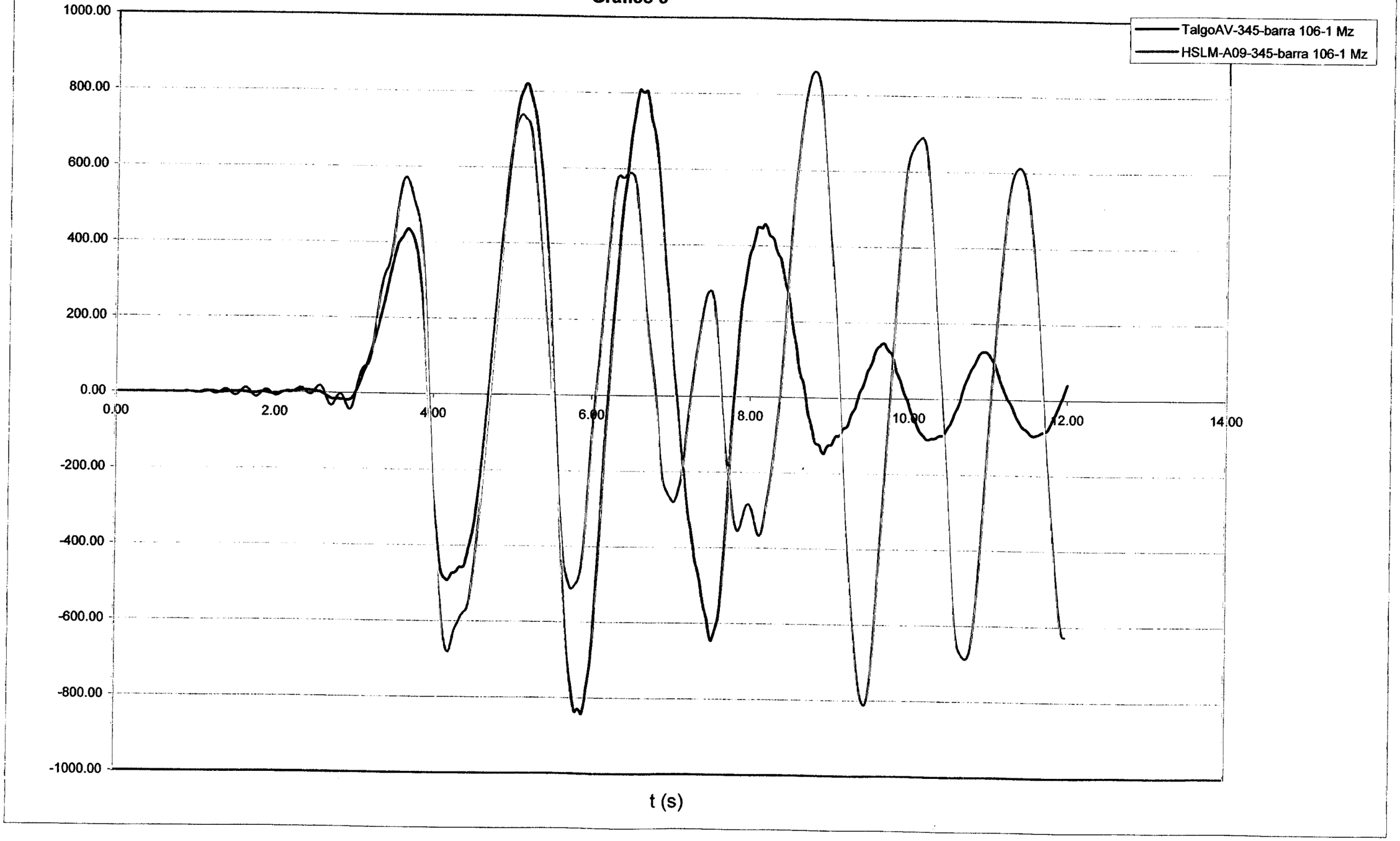

30.00
20.00
10.00
0.00
-10.00
-20.00
-30.00
-40.00
0.00
2.00
4.00
6.00
8.00
10.00
12.00
14.00
TalgoAV-345-nudo 203 dy
HSLM-A09-345-nudo 203 dy
t (s)

Grafico 8


TalgoAV-345-barra 106-1 Mz
HSLM-A09-345-barra 106-1 Mz
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
-1000.00
0.00
2.00
4.00
6.00
8.00
10.00
12.00
14.00
t (s)

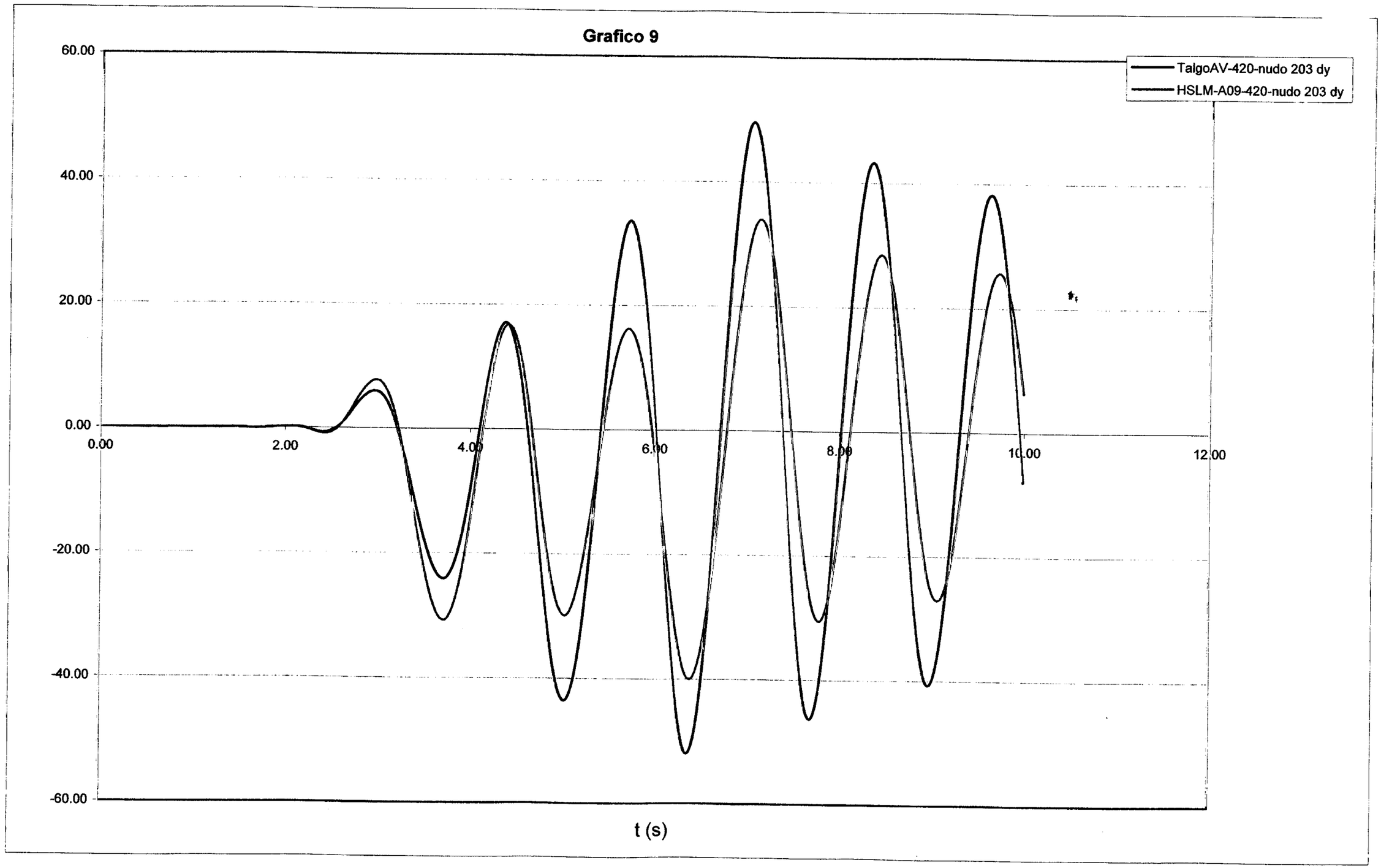
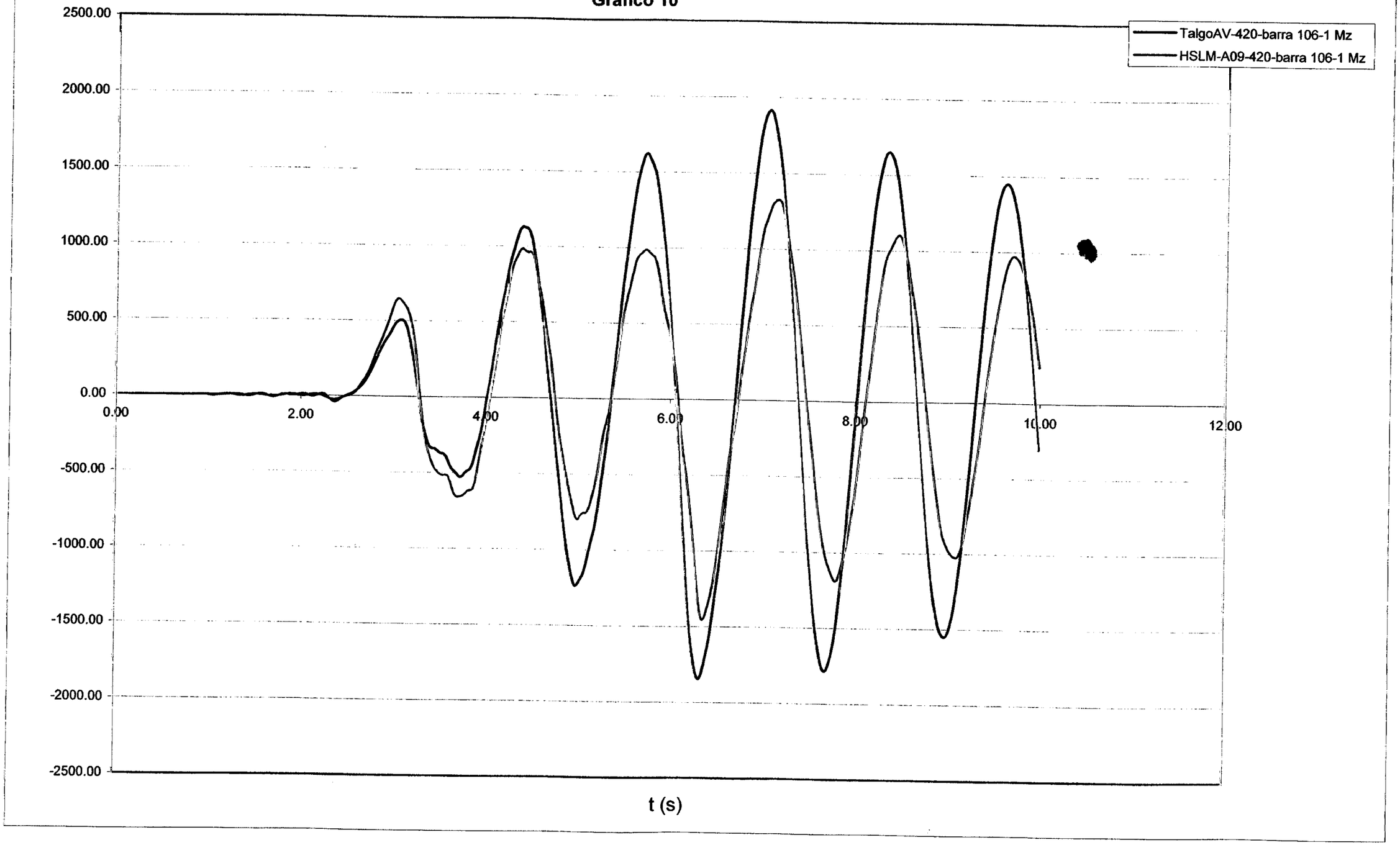

Grafico 9
TalgoAV-420-nudo 203 dy
HSLM-A09-420-nudo 203 dy
60.00
40.00
20.00
0.00
-20.00
-40.00
-60.00
0.00
2.00
4.00
6.00
8.00
10.00
12.00
t (s)

Grafico 10


TalgoAV-420-barra 106-1 Mz
HSLM-A09-420-barra 106-1 Mz
2500.00
2000.00
1500.00
1000.00
500.00
0.00
-500.00
-1000.00
-1500.00
-2000.00
-2500.00
0.00
2.00
4.00
6.00
8.00
10.00
12.00
t (s)

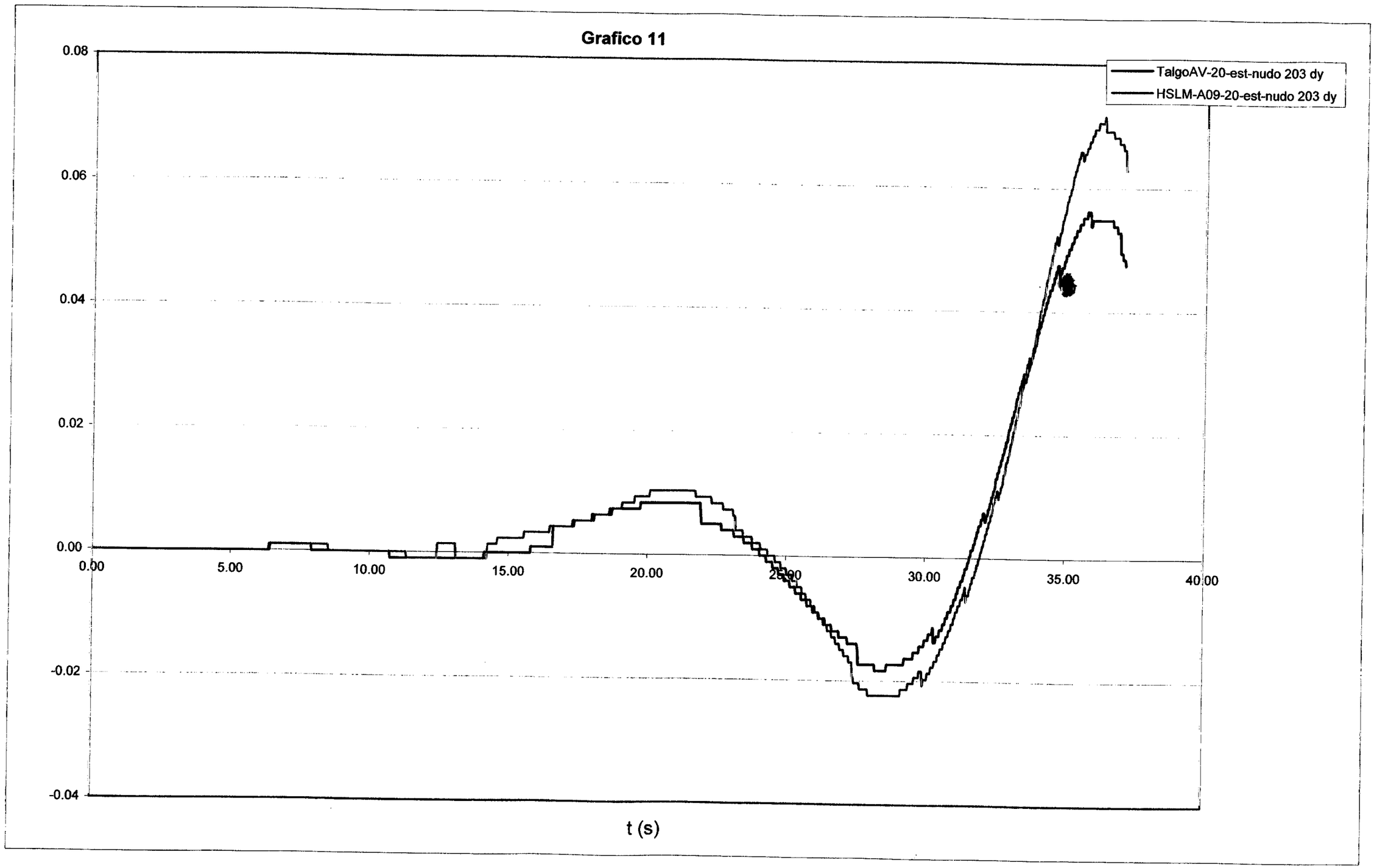
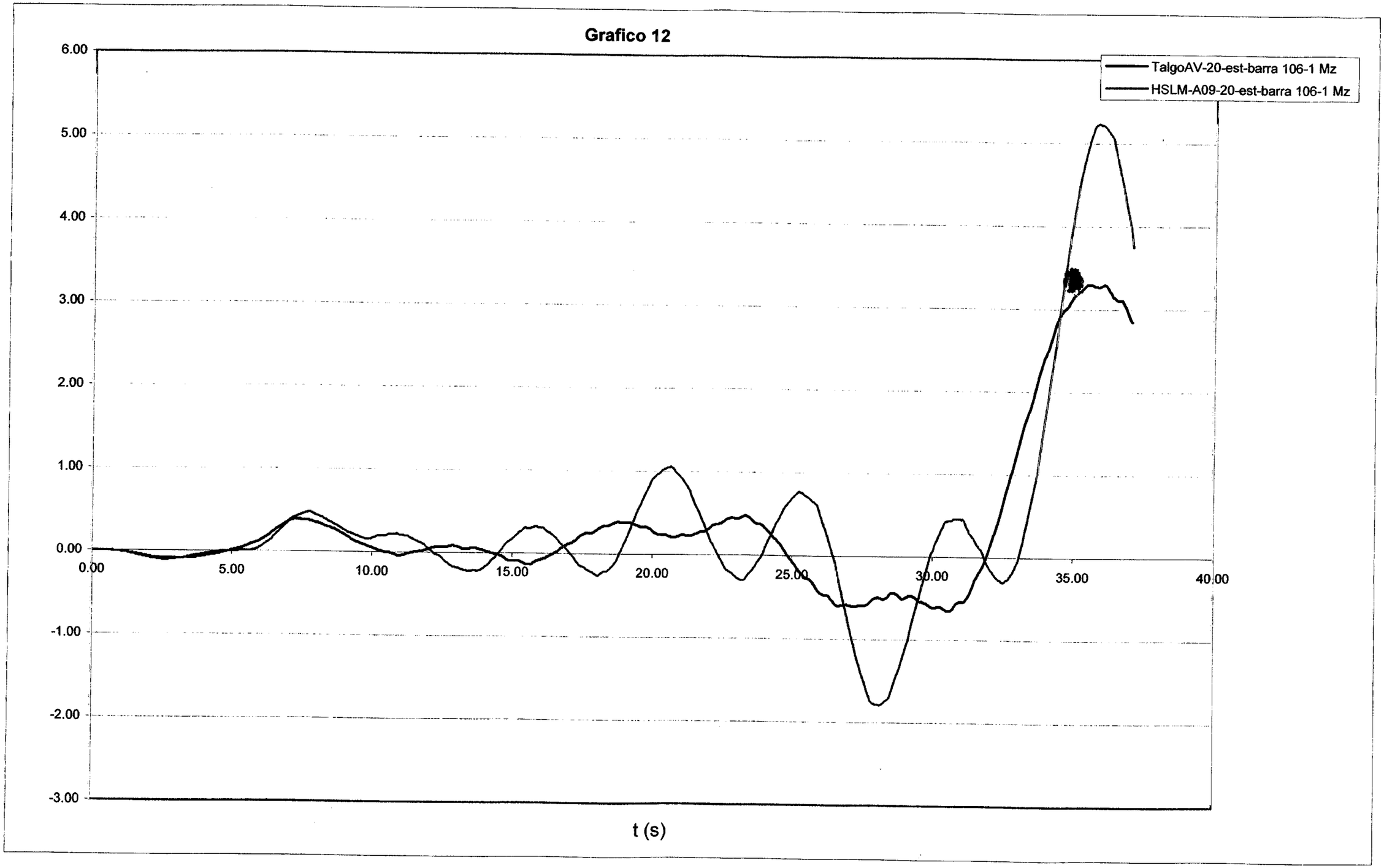

Grafico 11
TalgoAV-20-est-nudo 203 dy
HSLM-A09-20-est-nudo 203 dy
0.08
0.06
0.04
0.02
0.00
-0.02
-0.04
0.00
5.00
10.00
15.00
20.00
25.00
30.00
35.00
40.00
t (s)

Grafico 12


TalgoAV-20-est-barra 106-1 Mz
HSLM-A09-20-est-barra 106-1 Mz
6.00
5.00
4.00
3.00
2.00
1.00
0.00
-1.00
-2.00
-3.00
0.00
5.00
10.00
15.00
20.00
25.00
30.00
35.00
40.00
t (s)

I. ANEXO DE CALCULO (CALZADA AVE)

INDICE

I. ANEXO MEMORIA DE CÁLCULO

1.- NORMATIVAS Y BASES DE CÁLCULO.

2.- CÁLCULOS DEL ENCOFRADO.
- **2.1 Riostra Tipo Perfil DIPE600-15,6m**
- **2.2 Riostra Tipo Perfil DIPE600-12m**

3.- PÓRTICOS PERFILES DIPE600
- **3.1 Pórticos E1-P1**
  - 3.1.1 Perfiles DIPE600 Tipo P1.
  - 3.1.2 Perfiles DIPE600 Tipo P2.
- **3.2 Pórticos P3-P4 Transición**
  - 3.2.1 Perfiles DIPE600 Tipo P1.
  - 3.2.2 Perfiles DIPE600 Tipo P2.

4.- PÓRTICOS CERCHAS H33

5.- VERIFICACION VIGAS CARRILERA
- **5.1 Carrileras Vano E1-P1**
- **5.2 Carrileras Vano P3-P4 (Transición)**

6.- TORRES T500
- **6.1 Condiciones Generales para cálculo de torres T500.**
- **6.2 Torres T500 Vano E1-P1.**
  - 6.2.1 Comprobación de Perfiles de Castillete.
  - 6.2.2 Verificación torres T1-T2-T3.
- **6.3 Torres T500 Vano P3-P4 (Transición).**
  - 6.3.1 Comprobación de Perfiles de Castillete.
  - 6.3.2 Verificación torres T1-T2-T3.

I. ANEXO MEMORIA DE CÁLCULO

1. NORMATIVAS DE CÁLCULO

Las normativas de cálculo son las mismas que las descritas para el viaducto de mercancías, así como los materiales, las acciones previstas para el cálculo y los programas de cálculo empleados.

2. CALCULOS DEL ENCOFRADO

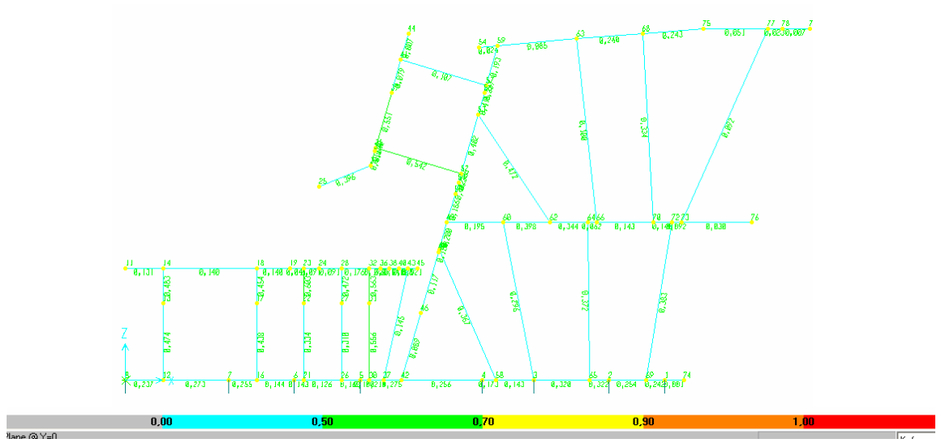
La sección de la calzada UIC-AVE es igual que la sección de la calzada UIC-Mercancias, de modo que los cálculos y verificación de los paños de encofrado están ya descritos en el proyecto y en este anejo no se adjuntan.

Únicamente se verifica la riostra del paño de 4m para la disposición de perfiles tanto para de 15,6m como para los de 12m, ya que los muelles de apoyo de la riostra cambian de valor respecto a los valores de los muelles para el primer vano del viaducto de Mercancías.

2.1 Riostra tipo perfil DIPE600-15,6m.

El valor del muelle que hace de apoyo de la riostra tiene por valor k=906kg/mm. Se adjunta el diagrama de ratios de la sección de riostra y el cuadro de las reacciones.

- **Esquema de Ratios (Cargas Mayoradas):**



Ratios < 1 valido.

CLIENTE: UTE AVE CERVELLO.
OBRA: LAV MAD-ZAR-BARC-F.F.SUBTRAMO Vib.
SUBTRAMO: SANT VICENT DEL HORTS-SANTA COLOMA DEL CERVELLO.
CÓDIGO: 101693_01 (VTO STA COLOMA. CALZADAS UIC-AVE)
FECHA: JULIO 2006

- **Reacciones para la riostra:**

Se adjuntan las reacciones de la riostra para el pórtico tipo P1 del vano E1-P1 que es el de los perfiles de 15,6m. Los paños que soportan estos perfiles son todos ellos tipo HM350.

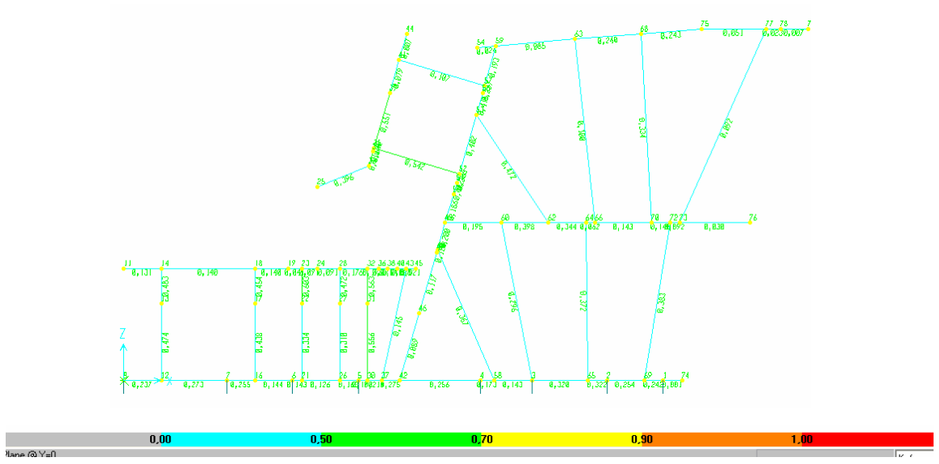
	Paño tipo HM-350	
	F1	F2
Perfil 1	1,13	2,67
Perfil 2	1,99	3,70
Perfil 3	2,36	3,81
Perfil 4	1,97	3,28
Perfil 5	1,81	3,43
Perfil 6	1,88	3,47
Perfil 7	1,74	3,46
Perfil 8	1,75	3,78

Los valores adjuntados están dados en toneladas y sin mayorar.

2.2 Riostra tipo perfil DIPE600-12m.

El valor del muelle que hace de apoyo de la riostra tiene por valor k=1980kg/mm. Se adjunta el diagrama de ratios de la sección de riostra y el cuadro de las reacciones.

- **Esquema de Ratios (Cargas Mayoradas):**



Ratio < 1 valido

- **Reacciones para la riostra:**

Se adjuntan las reacciones de la riostra para el pórtico tipo P2 del vano E1-P1 que es el de los perfiles de 12m.

	Paño tipo HM-350		Paño tipo HM-300		Paño tipo HM-250	
	F1	F2	F1	F2	F1	F2
Perfil 1	0,95	2,42	0,82	2,09	0,69	1,77
Perfil 2	2,15	4,00	1,86	3,46	1,57	2,92
Perfil 3	2,58	4,01	2,23	3,47	1,88	2,93
Perfil 4	1,80	3,01	1,56	2,61	1,32	2,20
Perfil 5	1,74	3,44	1,51	2,98	1,27	2,51
Perfil 6	1,94	3,49	1,68	3,02	1,41	2,55
Perfil 7	1,71	3,39	1,48	2,93	1,25	2,47
Perfil 8	1,77	3,90	1,53	3,38	1,29	2,85

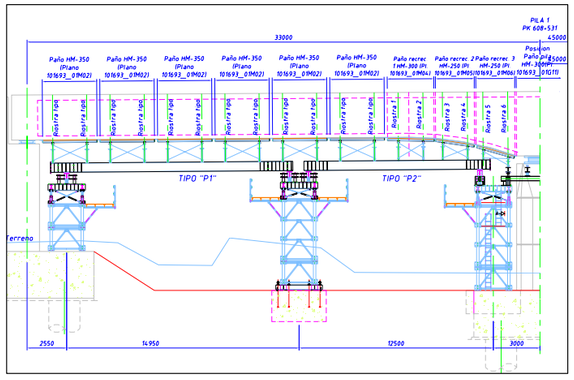
	Riostra R4		Riostra R5	
	F1	F2	F1	F2
Perfil 1	0,68	1,82	0,63	1,78
Perfil 2	1,83	3,18	1,58	3,06
Perfil 3	2,36	3,31	2,20	3,46
Perfil 4	1,53	2,32	1,72	2,91
Perfil 5	0,86	2,03	1,27	2,67
Perfil 6	1,49	2,65	1,63	2,71
Perfil 7	1,46	2,74	1,59	2,69
Perfil 8	1,53	3,16	1,72	3,10

Los valores adjuntados están dados en toneladas y sin mayorar.

3. PORTICOS PERFILES DIPE600

Se realiza la verificación de los vanos entre el estribo E1 y la pila P1, y entre la pila P3 y la pila de transición P4 al ser de menor longitud que el mismo vano para la calzada de mercancías. Del mismo modo que para el proyecto anterior se diferenciará en el vano dos tipos de pórticos, el pórtico "Tipo P1" y el pórtico "Tipo P2" como se adjunta en las figuras.

3.1 Pórticos E1-P1



Se realiza la justificación del perfil más desfavorable en cada caso, es decir, tanto en el caso "Tipo P1" como en el caso "Tipo P2", designaciones dadas según la figura adjunta.

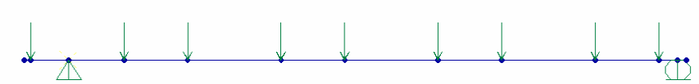
La disposición de los perfiles DIPE en sección transversal es la misma que la definida para la otra calzada.

3.1.1 Perfiles DIPE600 Tipo P1

Los perfiles Tipo P1 son DIPE600-15,6m. Se verifica el perfil más desfavorable partiendo de las cargas puntuales dadas en el apartado anterior (2.1).

- **Cargas puntuales :**

Como todos los paños sobre este perfil son iguales el valor de todas las cargas puntuales son iguales según el siguiente esquema de aplicación:



El perfil más desfavorable es el denominado P3 (misma denominación que en la calzada de mercancías). Los valores de las cargas puntuales aplicadas para este perfil son:

ENCF1 = 0,34ton
ENCF2 = 0,34ton
SC1 = 0,33ton
TOH1 = 1,70ton
TOH1H2 = 3,15ton

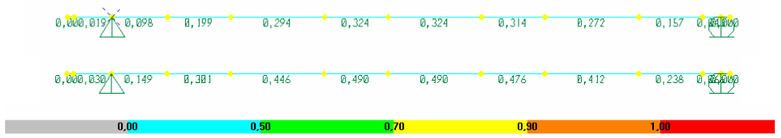
- **Calculo y verificación del perfil:**

Las combinaciones de carga realizadas son las siguientes:

	F1	FU1	F2	FU2
PP	1,00	1,35	1,00	1,35
ENCF1	1,00	1,35	0,00	0,00
ENCF2	0,00	0,00	1,00	1,35
SC1	1,00	1,50	1,00	1,50
TOH1	1,00	1,50	0,00	0,00
TOH1H2	0,00	0,00	1,00	1,50

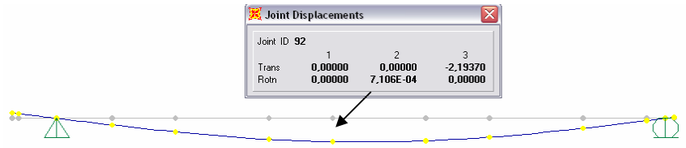
Seguidamente se adjuntan las comprobaciones de la barra según de Norma UNE-ENV 1993-1-1:1996 EUROCODIGO 3.y los esquemas de flechas, con el programa de cálculo "SAP2000 Structural análisis program versión 7.42".

- **Comprobación de secciones F1U y F2U:**

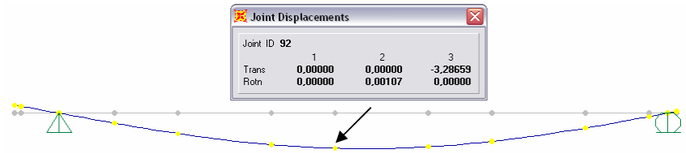


Ratio máximo 0,490 < 1 Valido (Combinación ELU2)

- **Deformaciones en servicio F1:**



- **Deformaciones en servicio F2:**



Valores en cm.

Luz máxima / Flecha máxima F1 = 1434cm / 2,19cm = 654>300 Valido.
F2 = 1434cm / 3,28cm = 437> 300 Valido.

Se colocarán calzos para hacer contraflecha.

- **Rigidizadores:**

No es necesario colocar rigidizadores en el perfil porque este perfil está ya rigidizado en las posiciones cercanas a los apoyos del mismo.

- **Reacciones en ELS para F1 (1º Hormigonado):**

	R-Estribo E1	R-Centro
P1	7,82	6,83
P2	11,96	10,42
P3	13,80	12,01
P4	11,87	10,34
P5	11,10	9,67
P6	11,43	9,96
P7	10,81	9,42
P8	10,81	9,42

Valores en toneladas sin mayorar.

CLIENTE: UTE AVE CERVELLO.
OBRA: LAV MAD-ZAR-BARC-F.F.SUBTRAMO Vib.
SUBTRAMO: SANT VICENT DEL HORTS-SANTA COLOMA DEL CERVELLO.
CÓDIGO: 101693_01 (VTO STA COLOMA. CALZADAS UIC-AVE)
FECHA: JULIO 2006

- **Reacciones en ELS para F2 (2º Hormigonado):**

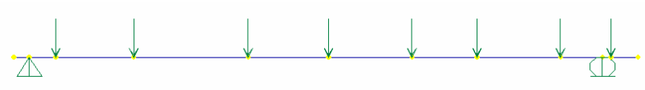
	R-Estribo E1	R-Centro
P1	15,24	13,27
P2	20,21	17,57
P3	20,79	18,07
P4	18,18	15,81
P5	18,86	16,40
P6	19,10	16,61
P7	19,10	16,61
P8	20,60	17,90

Valores en toneladas sin mayorar.

3.1.2 Perfiles DIPE600 Tipo P2

Los perfiles Tipo P2 son DIPE600-12m. Se verifica el perfil más desfavorable partiendo de las cargas puntuales dadas en el apartado anterior (2.2).

- **Cargas puntuales :**

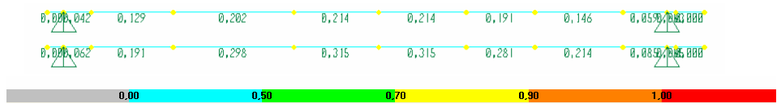


El perfil más desfavorable es el denominado P3 (misma denominación que en la calzada de mercancías). Los valores de las cargas puntuales aplicadas para este perfil son:

	R-350	R-350	R-350	R-300	R-300	R-250	R4-250	R5-250
ENCF1	0,34	0,34	0,34	0,29	0,29	0,25	0,30	0,31
ENCF2	0,33	0,33	0,33	0,29	0,29	0,24	0,30	0,30
SC1	0,34	0,34	0,34	0,29	0,29	0,25	0,24	0,24
TOH1	1,90	1,90	1,90	1,64	1,64	1,39	1,81	1,65
TOH1H2	3,34	3,34	3,34	2,89	2,89	2,44	2,77	2,92

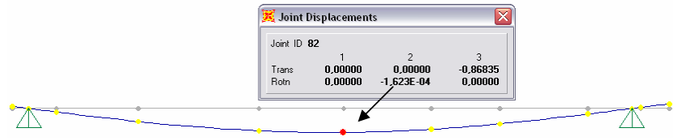
Valores de las cargas en toneladas y sin mayorar.

- **Comprobación de secciones F1U y F2U:**

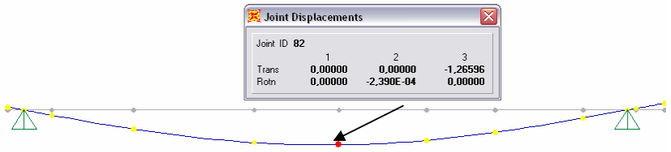


Ratio máximo 0,315 < 1 Valido (Combinación ELU2)

- **Deformaciones en servicio F1:**



- **Deformaciones en servicio F2:**



Valores en cm.

Luz máxima / Flecha máxima F1 = 1002cm / 0,86cm = 1165>300 Valido.
F2 = 1002cm / 1,26cm = 795> 300 Valido.

- **Rigidizadores:**

No es necesario colocar rigidizadores en el perfil porque este perfil está ya rigidizado en las posiciones cercanas a los apoyos del mismo.

- **Reacciones en ELS para F1 (1º Hormigonado):**

	R-Estribo E1	R-Centro
P1	4,79	5,15
P2	8,74	9,82
P3	10,18	11,88
P4	7,60	8,92
P5	7,37	7,71
P6	8,05	9,09
P7	7,30	8,50
P8	7,50	8,85

Valores en toneladas sin mayorar.

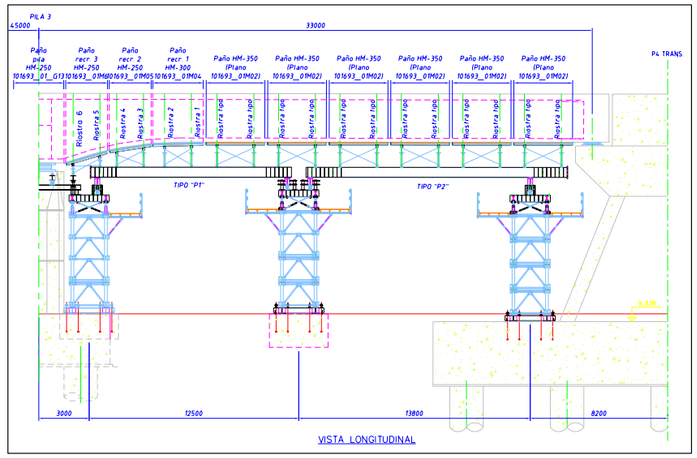
- **Reacciones en ELS para F2 (2º Hormigonado):**

	R-Estribo E1	R-Centro
P1	9,62	10,63
P2	14,85	16,68
P3	14,89	17,22
P4	11,60	13,53
P5	12,96	13,98
P6	13,16	14,71
P7	12,84	14,53
P8	14,53	16,48

Valores en toneladas sin mayorar.

CLIENTE: UTE AVE CERVELLO.
OBRA: LAV MAD-ZAR-BARC-F.F.SUBTRAMO Vib.
SUBTRAMO: SANT VICENT DEL HORTS-SANTA COLOMA DEL CERVELLO.
CÓDIGO: 101693_01 (VTO STA COLOMA. CALZADAS UIC-AVE)
FECHA: JULIO 2006

3.2 Pórticos P3-P4 (P Transición)



Se realiza la justificación del perfil más desfavorable en cada tipo de pórtico definidos como “Tipo P1” y “Tipo P2” designados así según el esquema superior.

La disposición de los perfiles en sección transversal es la misma que la definida para la otra calzada.

3.2.1 Perfiles DIPE600 Tipo P1

Los perfiles Tipo P1 son DIPE600-12m. Se verifica el perfil más desfavorable partiendo de las cargas puntuales definidas en los Cálculos de Encofrado.

Para el cálculo y verificación de estos perfiles se realizarán dos hipótesis de cálculo:

- 1ª Hipótesis:

Se considera el hormigonado hasta la junta de hormigonado que se encuentra a 9m del eje de la pila P3.

- 2ª Hipótesis:

Se considera el hormigonado del resto del vano desde la junta hasta la pila P4 de transición.

- **1ª Hipótesis de Hormigonado:**

Se adjunta la tabla con las cargas y las reacciones para las dos combinaciones de carga sin mayorar, 1º y 2º Hormigonado hasta la junta (9m). Se consideran únicamente los perfiles desde P1 hasta el P8 por simetría.

		PAÑO REC-3	PAÑO REC-2 HM-250		PAÑO REC-1 HM-300		PAÑO TIPO HM-350		
		R5	R4	R3	R2	R1	R-Tipo	Pila	Centro
P1	F1	0,63	0,65	0,62	0,71	0,76	0,34	4,36	3,26
	F2	1,78	1,75	1,69	2,14	1,23	0,32	8,46	4,33
P2	F1	1,58	1,50	1,70	1,24	0,76	0,41	7,28	3,99
	F2	3,06	2,94	3,08	3,06	1,36	0,38	12,57	5,32
P3	F1	2,20	1,95	2,40	1,65	0,59	0,34	8,98	4,08
	F2	3,46	3,16	3,51	3,11	1,07	0,33	13,35	5,20
P4	F1	1,72	1,56	2,57	2,38	1,03	0,27	8,94	4,37
	F2	2,91	2,72	3,54	3,69	1,48	0,32	13,01	5,52
P5	F1	1,27	1,70	3,51	5,25	2,80	0,32	12,13	6,60
	F2	2,67	3,06	4,68	6,94	3,43	0,43	17,13	8,19
P6	F1	1,63	1,61	2,23	3,49	1,83	0,28	9,77	5,10
	F2	2,71	2,66	3,25	4,83	2,33	0,38	13,76	6,41
P7	F1	1,59	1,35	1,34	2,29	1,13	0,24	7,65	4,00
	F2	2,69	2,40	2,44	3,66	1,65	0,38	11,77	5,45
P8	F1	1,72	1,39	1,14	2,13	0,95	0,24	7,48	3,82
	F2	3,10	2,73	2,53	3,85	1,63	0,45	12,70	5,74

Los valores adjuntados están en toneladas.

Se verifica el perfil más desfavorable que el perfil P5, comprobandose con el programa de cálculo "SAP2000 Structural Analisis Program version 7.42".

Los valores de las cargas en toneladas desglosados para este perfil son los siguientes:

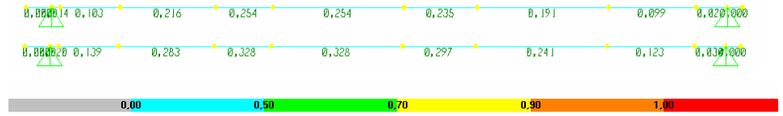
Portico DIPE600 12m P3 - Centro (hormigonado hasta 9m)

		PAÑO REC-3 HM-250	PAÑO REC-2 HM250		PAÑO REC-1 HM300		PAÑO TIPO HM350
		R5	R4	R3	R2	R1	R
PERFIL P5	ENCF1	0,28	0,30	0,30	0,32	0,31	0,32
	ENCF2	0,34	0,37	0,36	0,41	0,40	0,43
	SC1	0,06	0,07	0,06	0,09	0,09	0,00
	TOH1	0,93	1,33	3,15	4,84	2,41	0,00
	TOH1H2	2,27	2,62	4,26	6,44	2,94	0,00

- **Calculo y verificación del perfil:**

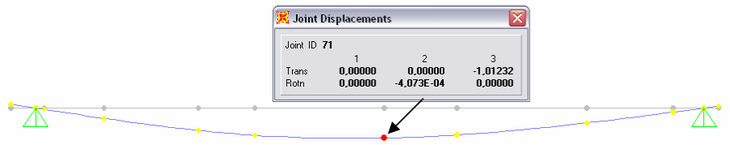
Las combinaciones de carga realizadas son las mismas que las adjuntadas para el estudio y verificación del resto de los perfiles descritos en apartados anteriores. Se adjuntan las verificaciones según la Norma UNE-ENV 1993-1-1:1996 EC-3 y las flechas de los perfiles.

- **Comprobación de secciones F1U y F2U:**

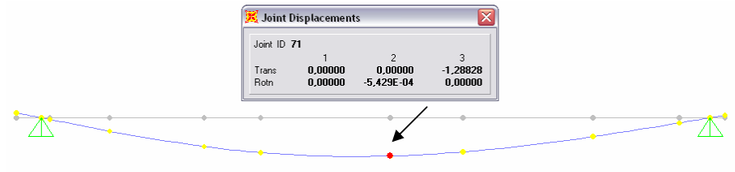


Ratio máximo 0,328 < 1 Valido (Combinación ELU2)

- **Deformaciones en servicio F1:**



- **Deformaciones en servicio F2:**



Valores en cm.

Luz máxima / Flecha máxima F1 = 1132,9cm/1,01cm = 1121>300 Valido.
F2 = 1132,9cm/1,28cm = 885> 300 Valido.

- **2ª Hipótesis de Hormigonado :**

Se adjunta la tabla con las cargas y las reacciones para las dos combinaciones de carga sin mayorar, 1º Hormigonado y 2º Hormigonado para esta segunda hipótesis de hormigonado (cuando se hormigota el resto del vano). Se consideran únicamente los perfiles desde P1 hasta el P8 por simetría.

		PAÑO REC-3	PAÑO REC-2 HM-250		PAÑO REC-1 HM-300		PAÑO TIPO HM-350		
		R5	R4	R3	R2	R1	R-Tipo	Pila	Centro
P1	F1	0,28	0,28	0,28	0,31	0,77	0,95	3,52	4,48
	F2	0,28	0,28	0,28	0,30	1,63	2,42	4,78	8,47
P2	F1	0,36	0,35	0,34	0,38	0,97	2,15	4,56	7,53
	F2	0,34	0,33	0,33	0,36	2,05	4,00	6,12	12,55
P3	F1	0,31	0,30	0,30	0,32	0,82	2,58	4,58	8,45
	F2	0,30	0,30	0,29	0,32	1,69	4,01	5,82	12,35
P4	F1	0,26	0,26	0,25	0,27	1,44	1,80	4,26	6,87
	F2	0,28	0,28	0,27	0,30	2,24	3,01	5,44	10,23
P5	F1	0,28	0,30	0,30	0,32	4,23	1,74	5,67	8,21
	F2	0,34	0,37	0,36	0,41	5,29	3,44	7,42	12,92
P6	F1	0,23	0,23	0,24	0,27	2,50	1,94	4,78	7,75
	F2	0,31	0,31	0,31	0,35	3,32	3,49	6,34	11,96
P7	F1	0,19	0,19	0,19	0,22	1,15	1,71	3,85	6,46
	F2	0,30	0,30	0,31	0,35	1,99	3,39	5,63	11,02
P8	F1	0,19	0,19	0,20	0,22	0,57	1,77	3,62	6,30
	F2	0,35	0,35	0,36	0,41	1,66	3,90	5,95	12,13

Los valores adjuntados están en toneladas.

Se verifica el perfil más desfavorable que el perfil P5, siendo los valores de las cargas en toneladas desglosados para este perfil son los siguientes:

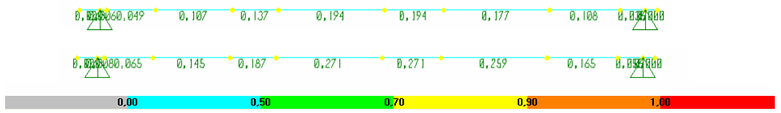
Portico DIPE600 12m P3 - Centro (hormigonado resto perfil)

		PAÑO REC-3 HM-250	PAÑO REC-2 HM250		PAÑO REC-1 HM300		PAÑO TIPO HM350
		R5	R4	R3	R2	R1	R
PERFIL P5	ENCF1	0,28	0,28	0,28	0,31	0,31	0,34
	ENCF2	0,28	0,28	0,28	0,30	0,30	0,32
	SC1	0,00	0,00	0,00	0,00	0,49	0,57
	TOH1	0,00	0,00	0,00	0,00	-0,02	0,04
	TOH1H2	0,00	0,00	0,00	0,00	0,84	1,52

- **Calculo y verificación del perfil:**

Tanto las combinaciones de carga empleadas, así como las normas para la verificación del perfil son las mismas que las dadas en el apartado anterior.

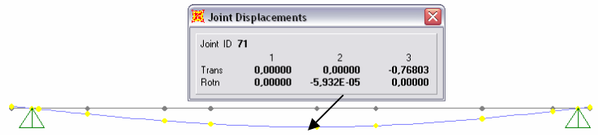
- **Comprobación de secciones F1U y F2U:**



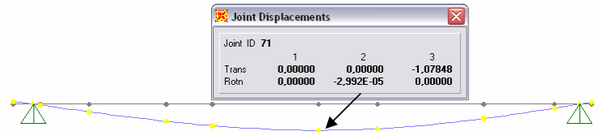
Ratio máximo 0,271 < 1 Valido (Combinación ELU2)

CLIENTE: UTE AVE CERVELLO.
OBRA: LAV MAD-ZAR-BARC-F.F.SUBTRAMO Vib.
SUBTRAMO: SANT VICENT DEL HORTS-SANTA COLOMA DEL CERVELLO.
CÓDIGO: 101693_01 (VTO STA COLOMA. CALZADAS UIC-AVE)
FECHA: JULIO 2006

- **Deformaciones en servicio F1:**



- **Deformaciones en servicio F2:**



Valores en cm.

Luz máxima / Flecha máxima F1 = 1132,9cm/0,76cm = 1490>300 Valido.
F2 = 1132,9cm/1,07cm= 1058> 300 Valido.

No es necesario colocar placas para dar las contra flechas ya que las relaciones entre luz máxima y flecha máxima tienen un coeficiente alto.

- **Rigidizadores:**

No es necesario colocar rigidizadores en el perfil, ya que el perfil esta rigidizado.

3.2.2 Perfiles DIPE600 Tipo P2

Los perfiles Tipo P2 son DIPE600-15,6m. Se verifica el perfil más desfavorable que en este caso es el P3 (misma denominación que en la calzada de mercancías)

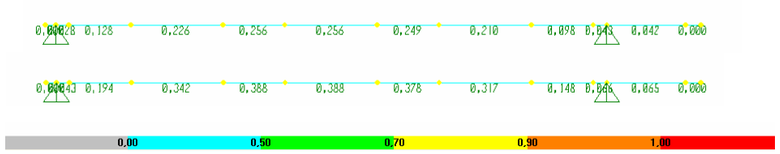
- **Cargas puntuales :**



Los valores de las cargas puntuales aplicadas para este perfil P3 son las procedentes del paño tipo HM350, y todas del mismo valor para cada tipo de carga ya que todos los paños sobre el perfil son del mismo tipo. Valores sin mayorar.

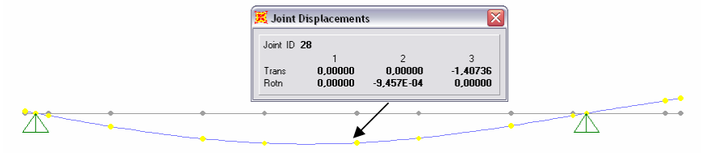
ENCF1 = 0,34ton
ENCF2 = 0,34ton
SC1 = 0,33ton
TOH1 = 1,70ton
TOH1H2 = 3,15ton

- **Comprobación de secciones F1U y F2U:**

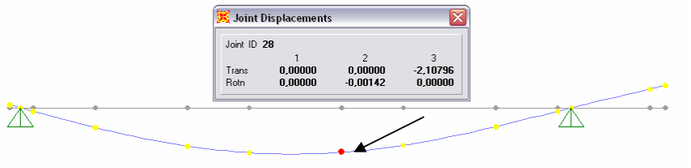


Ratio máximo 0,388 < 1 Valido (Combinación ELU2)

- **Deformaciones en servicio F1:**



- **Deformaciones en servicio F2:**



Valores en cm.

Luz máxima / Flecha máxima F1 = 1311,6cm/1,40cm = 936>300 Valido.
F2 = 1311,6cm/2,10cm = 624> 300 Valido.

- **Reacciones en ELS para F1 y F2:**

		Centro	P4
P1	F1	6,17	8,25
	F2	12,19	16,27
P2	F1	9,50	12,69
	F2	16,22	21,63
P3	F1	10,95	14,62
	F2	16,54	22,06
P4	F1	9,43	12,60
	F2	14,32	19,11
P5	F1	8,81	11,77
	F2	14,65	19,55
P6	F1	9,06	12,11
	F2	14,80	19,74
P7	F1	8,54	11,42
	F2	14,63	19,52
P8	F1	8,58	11,47
	F2	15,67	20,90

Valores en toneladas sin mayorar.

4. PORTICOS CERCHAS H33

Para los vanos entre las pilas P1-P2 y P2-P3, ambos vanos de 45m, se adopta la solución mediante cerchas H33 de 18,2m de longitud apoyadas en la zona central asi como en la zona de las pilas sobre torres tipo T500.

Los vanos que van ejecutados con cerchas H33 en esta calzada son de la misma longitud, con el mismo encofrado y la misma solución que la adoptada en la calzada de la linea de Mercancías. Así que para la justificación de los cálculos de esta solución se hace referencia a ir al apartado 4. Pórticos Cerchas H33 del proyecto de la calzada de la línea de Mercancías de

5. VERIFICACIÓN VIGAS CARRILERAS

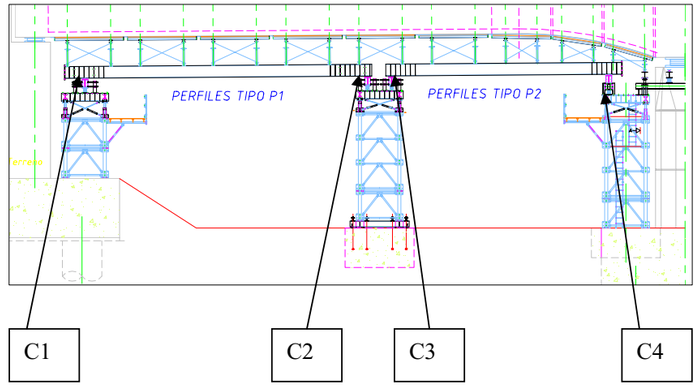
Los perfiles carrilera son aquellos que transmiten las cargas a las torres T500 en cada uno de los vanos. Tanto en los vanos realizados con pórticos de perfiles como en los vanos ejecutados con cerchas H33.

Los perfiles carrilera empleados son HEB450 que permiten el uso de empalmes según la longitud necesaria mediante una unión atornillada.

Se realiza únicamente la verificación de los perfiles carrilera de los vanos de pórtico de perfiles ya que estos son los que cambian respecto a la calzada de la línea de Mercancías.

5.1 Carrileras Vano E1-P1

Se realiza el cálculo y la verificación de los perfiles carrilera de este vano y se definen los perfiles como se adjuntan en el esquema siguiente.



- **Cargas puntuales :**

Las cargas puntuales aplicadas sobre el perfil corresponden a las reacciones en los apoyos adjuntadas en las siguientes tablas. Valores en toneladas.

a) Cargas sobre carrilera C1.

	P1	P2	P3	P4	P5	P6	P7	P8
ENCF1	4,06	4,25	4,01	3,77	3,86	3,72	3,58	3,53
ENCF2	3,96	4,11	4,01	3,96	4,35	4,25	4,25	4,49
SC1	2,89	2,65	1,59	0,77	0,53	0,87	1,21	1,49
TOH1	0,87	5,06	8,20	7,33	6,70	6,85	6,03	5,79
TOH1H2	8,39	13,45	15,19	13,45	13,98	13,98	13,64	14,61

b) Cargas sobre carrilera C2.

	P1	P2	P3	P4	P5	P6	P7	P8
ENCF1	3,57	3,74	3,53	3,32	3,40	3,28	3,15	3,11
ENCF2	3,49	3,61	3,53	3,49	3,82	3,74	3,74	3,95
SC1	2,51	2,30	1,38	0,67	0,46	0,75	1,04	1,30
TOH1	0,75	4,39	7,10	6,35	5,81	5,93	5,22	5,01
TOH1H2	7,27	11,66	13,16	11,66	12,12	12,12	11,83	12,66

c) Cargas sobre carrilera C3.

	P1	P2	P3	P4	P5	P6	P7	P8
ENCF1	2,78	3,02	2,78	2,55	2,72	2,58	2,45	2,46
ENCF2	2,72	2,92	2,76	2,71	3,08	2,92	2,92	3,15
SC1	1,88	1,94	1,12	0,39	0,33	0,62	0,83	1,08
TOH1	0,13	3,77	6,28	4,65	4,31	4,84	4,03	3,96
TOH1H2	5,01	9,99	11,02	8,49	9,55	9,62	9,10	10,30

d) Cargas sobre carrilera C4.

	P1	P2	P3	P4	P5	P6	P7	P8
ENCF1	3,07	3,40	3,12	2,86	3,02	2,84	2,67	2,70
ENCF2	3,04	3,29	3,10	3,01	3,41	3,23	3,21	3,46
SC1	2,08	2,14	1,21	0,43	0,35	0,68	0,90	1,18
TOH1	0,00	4,28	7,55	5,63	4,34	5,57	4,93	4,98
TOH1H2	5,51	11,26	12,91	10,09	10,22	10,81	10,42	11,84

- **Calculo y verificación del perfil:**

Las combinaciones de carga realizadas son las siguientes:

	ELS1	ELU1	ELS2	ELU2
PP	1,00	1,35	1,00	1,35
ENCF1	1,00	1,35	0,00	0,00
ENCF2	0,00	0,00	1,00	1,35
SC1	1,00	1,50	1,00	1,50
TOH1	1,00	1,50	0,00	0,00
TOH1H2	0,00	0,00	1,00	1,50

ENCOF1 = ENCF1 x 1 + PP x 1
ENCOF2 = ENCF2 x 1 + PP x 1

CLIENTE: UTE AVE CERVELLO.
OBRA: LAV MAD-ZAR-BARC-F.F.SUBTRAMO Vib.
SUBTRAMO: SANT VICENT DEL HORTS-SANTA COLOMA DEL CERVELLO.
CÓDIGO: 101693_01 (VTO STA COLOMA. CALZADA UIC-AVE)
FECHA: JULIO 2006

Los apoyos del perfil son muelles con constantes de rigidez con los siguientes valores:

k_{C1}=58334kg/mm
k_{C2}=18628kg/mm
k_{C3}=18605kg/mm
k_{C4}=18400kg/mm

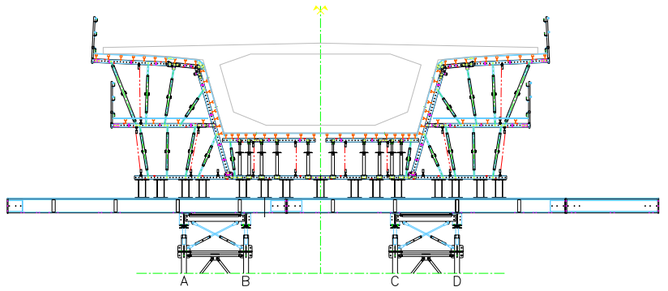
Seguidamente se adjuntan las comprobaciones de los perfiles según de Norma UNE-ENV 1993-1-1:1996 EUROCODIGO 3. y los esquemas de flechas.

El perfil es una HEB450 en acero S-275-JR con el alma reforzada, y se introduce una sección con las características de dicho perfil con los apoyos y las cargas definidas anteriormente. Se colocan los perfiles de manera que según el posicionamiento de la unión entre ellos sea donde el momento sea mínimo.

En este caso la posición de los perfiles en la sección transversal es igual.

- **Valores de las reacciones en los apoyos:**

La siguiente tabla adjunta los valores de las reacciones en los apoyos para cada una de las carrileras para cada caso de carga y para cada una de las dos combinaciones de hormigonado ELS1 y ELS2.



Los valores adjuntados en las tablas siguientes son dados en toneladas y según el esquema de postes de la figura adjuntada

a) Reacciones en las cuñas de desencofrado debido a la carrilera C1.

	A	B	C	D
ENCOF1	20,37	11,30	10,65	21,22
ENCOF2	19,67	14,12	13,47	20,52
SC1	9,65	1,60	1,60	9,65
TOH1	17,14	26,80	26,80	17,14
TOH1H2	46,84	52,55	52,55	46,84
ELS1	47,16	39,69	39,05	48,02
ELS2	76,16	68,27	67,62	77,01

b) Reacciones en las cuñas de desencofrado debido a la carrilera C2.

	A	B	C	D
ENCOF1	18,00	10,14	9,73	18,73
ENCOF2	17,53	12,46	12,05	18,26
SC1	8,06	1,70	1,70	8,06
TOH1	15,24	22,82	22,82	15,24
TOH1H2	40,82	45,33	45,33	40,82
ELS1	41,30	34,66	34,25	42,03
ELS2	66,42	59,49	59,08	67,14

c) Reacciones en las cuñas de desencofrado debido a la carrilera C3.

	A	B	C	D
ENCOF1	14,95	7,76	7,35	15,67
ENCOF2	14,58	9,62	9,21	15,31
SC1	6,28	1,37	1,37	6,28
TOH1	12,05	17,94	17,94	12,05
TOH1H2	32,20	35,73	35,73	32,20
ELS1	33,28	27,07	26,66	34,01
ELS2	53,07	46,71	46,30	53,80

d) Reacciones en las cuñas de desencofrado debido a la carrilera C3.

	A	B	C	D
ENCOF1	16,30	8,63	8,22	17,02
ENCOF2	15,94	10,68	10,27	16,66
SC1	6,92	1,46	1,46	6,92
TOH1	13,84	20,95	20,95	13,84
TOH1H2	36,74	40,40	40,40	36,74
ELS1	37,06	31,04	30,63	37,78
ELS2	59,59	52,54	52,14	60,32

Se verifica que el perfil más cargado es el perfil C1 cuya comprobación se realiza con el programa de cálculo “SAP2000 Structural análisis program versión 7.42”.

- **Comprobación de la sección en ELU1 y ELU2:**



Ratio máximo 0,400 < 1 Valido (Combinación ELU2)

CLIENTE: UTE AVE CERVELLO.
OBRA: LAV MAD-ZAR-BARC-F.F.SUBTRAMO Vib.
SUBTRAMO: SANT VICENT DEL HORTS-SANTA COLOMA DEL CERVELLO.
CÓDIGO: 101693_01 (VTO STA COLOMA. CALZADA UIC-AVE)
FECHA: JULIO 2006

- **Deformaciones ELS1:**



Flecha en carga puntual = 3,29mm
Flecha extremo perfil = 14,94mm

- **Deformaciones ELS2:**



Flecha en carga puntual = 5,36mm
Flecha extremo perfil = 23,28mm

- **Comprobación de las uniones atornilladas:**

a) <u>Unión entre perfiles HEB450-9m</u>:
Esta unión está colocada donde el momento de la viga es 20,30mton y el cortante es de valor 29,68ton. Ambos valores en ELS2. La unión es válida.

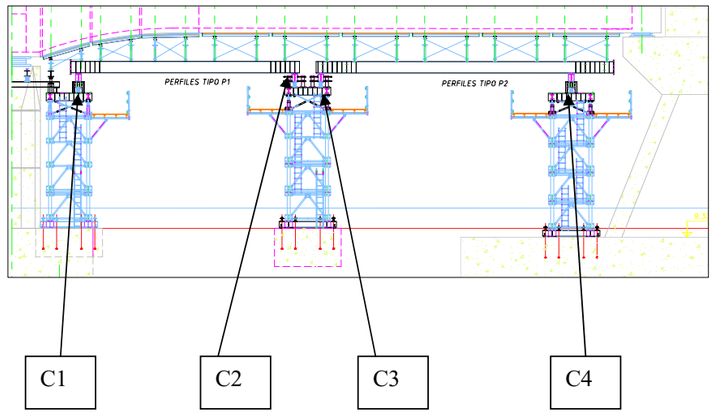
b) <u>Unión entre perfiles HEB450-9m y HEB450-3m</u>:
Esta unión está colocada fuera de los apoyos del perfil y por lo tanto no da problemas.

- **Rigidizadores:**

Los perfiles HEB450 no es necesario rigidizarlos, ya que el alma de los mismos esta reforzado con chapas de 10mm a cada lado.

5.2 Carrileras Vano P3-P4 (Transición).

Se realiza el cálculo y la verificación de los perfiles carrilera de este vano y se definen los perfiles como se adjuntan en el esquema siguiente.



- **Cargas puntuales :**

Las cargas puntuales aplicadas sobre el perfil corresponden a las reacciones en los apoyos adjuntadas en las siguientes tablas. Valores en toneladas y sin mayorar.

Para el caso de las carrileras tipo C1 y C2 hay que tener en cuenta que se realiza primero un hormigonado hasta la junta (9m desde el eje de la pila P3), y luego se hormigota el resto.

a) Cargas sobre carrilera C1 (Hormigonado de 9m)

	P1	P2	P3	P4	P5	P6	P7	P8
ENCF1	2,93	3,25	3,01	2,79	2,96	2,73	2,54	2,56
ENCF2	2,91	3,17	2,98	2,91	3,30	3,09	3,07	3,32
SC1	1,65	1,71	0,97	0,35	0,27	0,54	0,72	0,94
TOH1	-0,23	2,32	5,00	5,80	8,91	6,50	4,39	3,98
TOH1H2	3,90	7,69	9,40	9,75	13,55	10,14	7,98	8,44

b) Cargas sobre carrilera C2 (Hormigonado de 9m)

	P1	P2	P3	P4	P5	P6	P7	P8
ENCF1	2,77	3,04	2,80	2,57	2,74	2,59	2,43	2,44
ENCF2	2,73	2,95	2,78	2,72	3,11	2,93	2,92	3,17
SC1	0,56	0,58	0,33	0,12	0,10	0,18	0,24	0,32
TOH1	-0,07	0,36	0,95	1,68	3,76	2,33	1,32	1,05
TOH1H2	1,04	1,79	2,09	2,68	4,98	3,30	2,28	2,24

CLIENTE: UTE AVE CERVELLO.
OBRA: LAV MAD-ZAR-BARC-F.F.SUBTRAMO Vib.
SUBTRAMO: SANT VICENT DEL HORTS-SANTA COLOMA DEL CERVELLO.
CÓDIGO: 101693_01 (VTO STA COLOMA. CALZADA UIC-AVE)
FECHA: JULIO 2006

c) Cargas sobre carrilera C1 (Hormigonado del resto del vano)

	P1	P2	P3	P4	P5	P6	P7	P8
ENCF1	2,93	3,25	3,01	2,79	2,95	2,73	2,54	2,56
ENCF2	2,91	3,17	2,98	2,91	3,30	3,09	3,07	3,32
SC1	0,57	0,59	0,34	0,12	0,10	0,19	0,25	0,33
TOH1	0,01	0,71	1,23	1,35	2,61	1,86	1,06	0,74
TOH1H2	1,30	2,36	2,50	2,40	4,02	3,06	2,31	2,31

d) Cargas sobre carrilera C2 (Hormigonado del resto del vano)

	P1	P2	P3	P4	P5	P6	P7	P8
ENCF1	2,77	3,04	2,80	2,57	2,74	2,59	2,43	2,45
ENCF2	2,73	2,95	2,78	2,72	3,11	2,93	2,93	3,17
SC1	1,64	1,69	0,96	0,35	0,29	0,54	0,71	0,93
TOH1	0,08	2,79	4,69	3,96	5,18	4,62	3,31	2,91
TOH1H2	4,10	7,91	8,61	7,17	9,51	8,49	7,38	8,03

e) Cargas sobre carrilera C3

	P1	P2	P3	P4	P5	P6	P7	P8
ENCF1	3,17	3,32	3,12	2,95	3,00	2,89	2,77	2,74
ENCF2	3,10	3,23	3,13	3,10	3,40	3,32	3,34	3,51
SC1	2,30	2,11	1,26	0,62	0,43	0,70	0,95	1,22
TOH1	0,69	4,07	6,56	5,86	5,37	5,47	4,83	4,62
TOH1H2	6,71	10,78	12,15	10,75	11,21	11,20	10,91	11,71

e) Cargas sobre carrilera C4

	P1	P2	P3	P4	P5	P6	P7	P8
ENCF1	4,27	4,46	4,20	3,97	4,05	3,90	3,73	3,70
ENCF2	4,17	4,34	4,21	4,18	4,57	4,47	4,49	4,71
SC1	3,07	2,81	1,68	0,83	0,58	0,94	1,26	1,62
TOH1	0,92	5,41	8,74	7,80	7,15	7,27	6,43	6,15
TOH1H2	8,93	14,35	16,17	14,31	14,92	14,91	14,52	15,58

- **Calculo y verificación del perfil:**

Las combinaciones de carga realizadas son las siguientes:

	ELS1	ELU1	ELS2	ELU2
PP	1,00	1,35	1,00	1,35
ENCF1	1,00	1,35	0,00	0,00
ENCF2	0,00	0,00	1,00	1,35
SC1	1,00	1,50	1,00	1,50
TOH1	1,00	1,50	0,00	0,00
TOH1H2	0,00	0,00	1,00	1,50

ENCOF1 = ENCF1 x 1 + PP x 1
ENCOF2 = ENCF2 x 1 + PP x 1

Los apoyos del perfil son muelles con constantes de rigidez con los siguientes valores:

k_{C1}=17562kg/mm
k_{C2}=17583kg/mm
k_{C3}=17583kg/mm
k_{C4}=33173kg/mm

Seguidamente se adjuntan las comprobaciones de los perfiles según de Norma UNE-ENV 1993-1-1:1996 EUROCODIGO 3. y los esquemas de flechas.

- **Valores de las Reacciones en los Apoyos:**

El esquema de la sección transversal es idéntico al dado para el punto 5.1, adjuntándose la tabla de los valores de las reacciones en los apoyos para cada una de las cuñas de las carrileras en cada caso de carga y para cada una de las combinaciones de hormigonado ELS1 y ELS2.

Los valores adjuntados en las tablas siguientes son dados en toneladas y según el esquema de postes de la figura adjuntada en el apartado 5.1.

a) Reacciones en las cuñas carrilera C1 (Hormigonado 9m).

	A	B	C	D
ENCOF1	15,78	8,30	7,91	16,50
ENCOF2	15,45	10,23	9,84	16,17
SC1	5,50	1,18	1,18	5,50
TOH1	9,49	25,19	25,19	9,49
TOH1H2	27,85	38,78	38,78	27,85
ELS1	30,77	34,68	34,28	31,49
ELS2	48,80	50,20	49,80	49,52

b) Reacciones en las cuñas carrilera C2 (Hormigonado 9m).

	A	B	C	D
ENCOF1	14,97	7,79	7,39	15,69
ENCOF2	14,64	9,68	9,28	15,36
SC1	1,87	0,40	0,40	1,87
TOH1	1,98	8,88	8,88	1,98
TOH1H2	6,82	12,46	12,46	6,82
ELS1	18,82	17,06	16,67	19,54
ELS2	23,33	22,54	22,14	24,05

CLIENTE: UTE AVE CERVELLO.
OBRA: LAV MAD-ZAR-BARC-F.F.SUBTRAMO Vib.
SUBTRAMO: SANT VICENT DEL HORTS-SANTA COLOMA DEL CERVELLO.
CÓDIGO: 101693_01 (VTO STA COLOMA. CALZADA UIC-AVE)
FECHA: JULIO 2006

c) Reacciones en las cuñas carrilera C1 (Hormigonado resto vano).

	A	B	C	D
ENCOF1	15,78	8,29	7,90	16,50
ENCOF2	15,45	10,23	9,84	16,17
SC1	1,90	0,42	0,42	1,90
TOH1	2,63	6,57	6,57	2,63
TOH1H2	8,04	11,06	11,06	8,04
ELS1	20,31	15,29	14,89	21,03
ELS2	25,40	21,72	21,32	26,11

d) Reacciones en las cuñas carrilera C2 (Hormigonado resto vano).

	A	B	C	D
ENCOF1	14,97	7,79	7,40	15,69
ENCOF2	14,64	9,69	9,29	15,36
SC1	5,46	1,19	1,19	5,46
TOH1	9,32	16,77	16,77	9,32
TOH1H2	26,00	31,19	31,19	26,00
ELS1	29,74	25,75	25,35	30,46
ELS2	46,10	42,06	41,67	46,82

e) Reacciones en las cuñas carrilera C3.

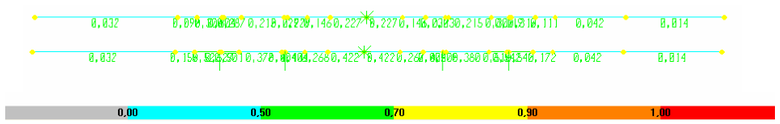
	A	B	C	D
ENCOF1	16,35	8,83	8,44	17,07
ENCOF2	15,97	11,00	10,60	16,69
SC1	7,36	1,62	1,62	7,36
TOH1	14,12	21,04	21,04	14,12
TOH1H2	37,71	41,85	41,85	37,71
ELS1	37,83	31,49	31,10	38,55
ELS2	61,05	54,47	54,07	61,76

f) Reacciones en las cuñas carrilera C4.

	A	B	C	D
ENCOF1	21,07	11,99	11,45	21,87
ENCOF2	20,44	14,98	14,43	21,24
SC1	10,10	1,88	1,88	10,10
TOH1	18,46	28,34	28,34	18,46
TOH1H2	50,00	55,90	55,90	50,00
ELS1	49,62	42,21	41,67	50,42
ELS2	80,53	72,76	72,22	81,33

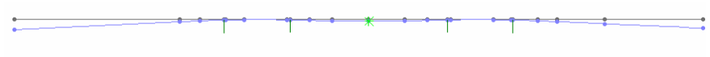
Se verifica que el perfil más cargado es el perfil C4 cuya comprobación se realiza con el programa de cálculo “SAP2000 Structural análisis program versión 7.42”.

- **Comprobación de la sección en ELU1 y ELU2:**



Ratio máximo 0,422 < 1 Valido (Combinación ELU2)

- **Deformaciones ELS1:**



Flecha en carga puntual = 4,17mm
Flecha extremo perfil = 15,64mm

- **Deformaciones ELS2:**



Flecha en carga puntual = 6,79mm
Flecha extremo perfil = 25,85mm

- **Comprobación de las uniones atornilladas:**

a) <u>Unión entre perfiles HEB450-9m</u>:
Esta unión está colocada donde el momento de la viga es 21,2mton y el cortante es de valor 31,49ton. Ambos valores en ELS2. La unión es válida.

b) <u>Unión entre perfiles HEB450-9m y HEB450-3m</u>:
Esta unión está colocada fuera de los apoyos del perfil y por lo tanto no da problemas.

- **Rigidizadores:**

Los perfiles HEB450 no es necesario rigidizarlos, ya que el alma de los mismos esta reforzado con chapas de 10mm a cada lado.

CLIENTE: UTE AVE CERVELLO.
OBRA: LAV MAD-ZAR-BARC-F.F.SUBTRAMO Vib.
SUBTRAMO: SANT VICENT DEL HORTS – SANTA COLOMA DEL CERVELLO.
CÓDIGO: 101693_01 (VTO STA COLOMA. CALZADA UIC-AVE).
FECHA: JULIO 2006

6. CALCULO TORRES T500.

La estructura metálica tanto de perfiles DIPE600 como de cerchas H33 estará soportada por las torres T500. El estudio de estas torres tiene por objeto el análisis del comportamiento ante las solicitaciones a las que se encuentren sometidas tanto antes como después de realizar el proceso de hormigonado.

Se realiza únicamente el estudio de las torres correspondientes a los vanos E1-P1 y P3-P4, ya que son los vanos que cambian respecto de la calzada de Mercancías.

6.1 Condiciones generales para el cálculo de las torres T500.

Los tipos de carga que se aplican a las torres, así como el método de cálculo de las mismas es igual que lo descrito en el mismo apartado de cálculo de torres T500 para la calzada de Mercancias.

- **<u>Combinaciones para el Calculo de las Torres:</u>**

	1ª Fase de Hormigonado						
	ELS11P	ELS12P	ELS13P	ELS14P	ELS11N	ELS12N	ELS13N
PP	1	1	1	1	1	1	1
PP500	1	1	1	1	1	1	1
ENC1	1	1	1	1	1	1	1
IMPENC1	1	1	1	0	-1	-1	-1
ENC2	0	0	0	0	0	0	0
IMPENC2	0	0	0	0	0	0	0
TOH1	0	1	1	1	0	1	1
IMPTOH1	0	1	1	0	0	-1	-1
TOH1H2	0	0	0	0	0	0	0
IMPTOH1H2	0	0	0	0	0	0	0
SC1	0	0	1	1	0	0	1
IMPSC1	0	0	1	0	0	0	-1
VIENTO	1	1	1	0	-1	-1	-1
VIENTOP	1	1	1	0	-1	-1	-1

	2ª Fase de Hormigonado						
	ELS21P	ELS22P	ELS23P	ELS24P	ELS21N	ELS22N	ELS23N
PP	1	1	1	1	1	1	1
PP500	1	1	1	1	1	1	1
ENC1	0	0	0	0	0	0	0
IMPENC1	0	0	0	0	0	0	0
ENC2	1	1	1	1	1	1	1
IMPENC2	1	1	1	0	-1	-1	-1
TOH1	0	0	0	0	0	0	0
IMPTOH1	0	0	0	0	0	0	0
TOH1H2	0	1	1	1	0	1	1
IMPTOH1H2	0	1	1	0	0	-1	-1
SC1	0	0	1	1	0	0	1
IMPSC1	0	0	1	0	0	0	-1
VIENTO	1	1	1	0	-1	-1	-1
VIENTOP	0	0	0	0	0	0	0

Tablas para los estados límites de últimos:

	1ª Fase de Hormigonado						
	ELU11P	ELU12P	ELU13P	ELU14P	ELU11N	ELU12N	ELU13N
PP	1,35	1,35	1,35	1,35	1,35	1,35	1,35
PP500	1,35	1,35	1,35	1,35	1,35	1,35	1,35
ENC1	1,35	1,35	1,35	1,35	1,35	1,35	1,35
IMPENC1	1,5	1,5	1,5	0	-1,5	-1,5	-1,5
ENC2	0	0	0	0	0	0	0
IMPENC2	0	0	0	0	0	0	0
TOH1	0	1,5	1,5	1,5	0	1,5	1,5
IMPTOH1	0	1,5	1,5	0	0	-1,5	-1,5
TOH1H2	0	0	0	0	0	0	0
IMPTOH1H2	0	0	0	0	0	0	0
SC1	0	0	1,5	1,5	0	0	1,5
IMPSC1	0	0	1,5	0	0	0	-1,5
VIENTO	1,5	1,5	1,5	0	-1,5	-1,5	-1,5
VIENTOP	1,5	1,5	1,5	0	-1,5	-1,5	-1,5

	2ª Fase de Hormigonado						
	ELU21P	ELU22P	ELU23P	ELU24P	ELU21N	ELU22N	ELU23N
PP	1,35	1,35	1,35	1,35	1,35	1,35	1,35
PP500	1,35	1,35	1,35	1,35	1,35	1,35	1,35
ENC1	0	0	0	0	0	0	0
IMPENC1	0	0	0	0	0	0	0
ENC2	1,35	1,35	1,35	1,35	1,35	1,35	1,35
IMPENC2	1,5	1,5	1,5	0	-1,5	-1,5	-1,5
TOH1	0	0	0	0	0	0	0
IMPTOH1	0	0	0	0	0	0	0
TOH1H2	0	1,5	1,5	1,5	0	1,5	1,5
IMPTOH1H2	0	1,5	1,5	0	0	-1,5	-1,5
SC1	0	0	1,5	1,5	0	0	1,5
IMPSC1	0	0	1,5	0	0	0	-1,5
VIENTO	1,5	1,5	1,5	0	-1,5	-1,5	-1,5
VIENTOP	0	0	0	0	0	0	0

Estas combinaciones son las mismas que se adjuntaron para el cálculo y verificación de torres en el proyecto de la calzada de Mercancías.

6.2 Torres T500 Vano E1-P1.

Torres T1 : Torres lado estribo E1

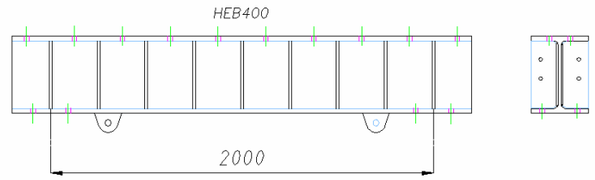
Torres T2 : Torres centrales del vano E1-P1

Torres T3 : Torres lado pila P1.

CLIENTE: UTE AVE CERVELLO.
OBRA: LAV MAD-ZAR-BARC-F.F.SUBTRAMO Vib.
SUBTRAMO: SANT VICENT DEL HORTS – SANTA COLOMA DEL CERVELLO.
CÓDIGO: 101693_01 (VTO STA COLOMA. CALZADA UIC-AVE).
FECHA: JULIO 2006

6.2.1 Comprobación de Perfiles Castillete :

Se trata de un perfil HEB400 con el alma reforzada y rigidizadores según se adjunta en el esquema siguiente.



Este perfil es de acero UNE10.025 S-275JR con las características mecánicas de la sección reforzada siguientes:

Ix = 62180 cm^4
Wx = 3109 cm^3
Av = 114 cm^2

A partir de las reacciones en ELS obtenidas en los perfiles carrilera HEB450 que se encuentran sobre los perfiles castillete estudiamos las posibilidades más desfavorables de este perfil.

Se adjuntan los valores de las cargas de estudio de los perfiles HEB400 para los distintos tipos de torres, frente a los valores que se justificaron para los mismos casos en la calzada de Mercancías.

- **Torre T1:** Poste D C1=77,01ton < 82,28ton Válido.
- **Torre T2:** Poste D C2=67,14ton < 76,90ton Válido
  Poste D C3=53,80ton < 66,36ton Válido
- **Torre T3:** Poste D C4=60,32ton < 76,27ton Válido.

6.2.2 Verificación de las Torres T1-T2-T3 :

Se adjuntan los diferentes tipos de cargas que se aplican a los postes de las torres T500 para el calculo y verificación de las mimas.

- **<u>Verificación Torre T1:</u>**

  - **Cargas verticales :**

Se trata de las cargas calculadas por el reparto debido al posicionamiento de los Perfiles Carrilera sobre los perfiles HEB400 de las torres T500.

Las cargas verticales sobre los postes de cada una de las hileras de las torres T500 tipo T1 son iguales para cada hilera al estar centrada la carrilera sobre el perfil HEB400 y de valores los adjuntados en la tabla siguiente.

	A	B	C	D
PPENC1	10,57	6,04	5,72	11,00
PPENC2	10,22	7,45	7,13	10,65
SC1	4,83	0,80	0,80	4,83
TOH1	8,57	13,40	13,40	8,57
TOH1H2	23,42	26,27	26,27	23,42

Los valores adjuntados son en toneladas y sin coeficientes de mayoración.

- **Cargas de viento :**

Viento transversal uniforme:

$$Superficie = 8 postes \times 0{,}17 m^2 / ml.poste + 4 caras \times 0{,}30 m^2 / ml.cara = 2{,}56 m^2 / ml$$

$$C\arg a.poste = \frac{2{,}56 \cdot 120}{8} = 38{,}4 kg / ml$$

Viento transversal en cabeza:

Para la sección transversal por la hilera (Ambas hileras son iguales):

Altura de encofrado =5,233+0,6 = 5,83m
Longitud de encofrado =7,475m
Superficie de encofrado = 5,83 x 7,475= 43,58m^2

$$C\arg a_cuña = \frac{120 \cdot 43{,}58}{4} \approx 1308 kg$$

Como el reparto en los postes es equitativo por la posición de la carrilera sobre las torres T500, el valor del viento puntual sobre las cabezas de las torres es de valor 1308/2 ≈ 654kg. Son cargas horizontales.

- **Cargas de imperfección :**

La descripción de como se realiza el cálculo de estas cargas de imperfección esta explicado en el proyecto de la calzada de Mercancias. Aquí únicamente se dará la tabla de los valores de las cargas de imperfección correspondientes a las cargas verticales que actúan sobre la torre.

	HILERA			
	A	**B**	**C**	**D**
IMENC1	19,88	11,50	10,94	20,70
IMENC2	19,18	14,06	13,50	20,01
IMPSC1	9,03	1,58	1,58	9,03
IMTOH1	16,30	25,23	25,23	16,30
IMTOH1H2	44,17	49,44	49,44	44,17

Valores en kg/m.

CLIENTE: UTE AVE CERVELLO.
OBRA: LAV MAD-ZAR-BARC-F.F.SUBTRAMO Vib.
SUBTRAMO: SANT VICENT DEL HORTS – SANTA COLOMA DEL CERVELLO.
CÓDIGO: 101693_01 (VTO STA COLOMA. CALZADA UIC-AVE).
FECHA: JULIO 2006

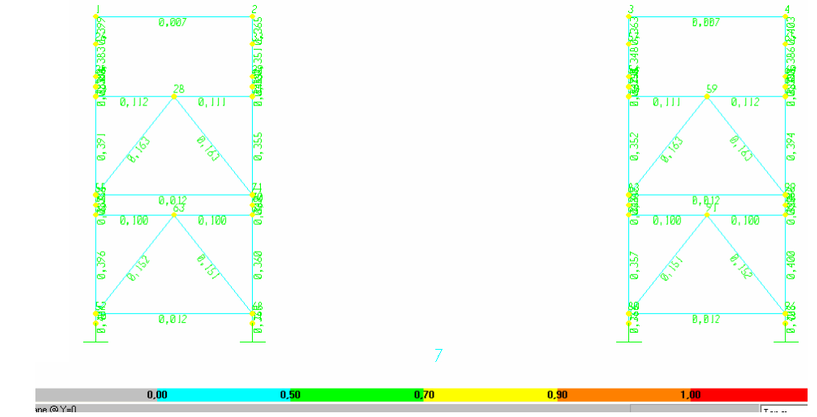
- **Esquema de aplicación de las cargas:**

Los esquemas de aplicación de las cargas son iguales que los descritos en el mismo apartado de estudio de las torres T500 para la calzada de Mercancias. De modo que no se repite aquí su descripción.

- **Combinaciones de cargas:**

Las combinaciones de carga se adjuntan en el apartado 6.1 Condiciones Generales y serán las mismas para todas las torres. De todas estas combinaciones se busca la más desfavorable en el estado límite último.

- **Esquema de Ratios:**



Estos ratios son los máximos para la combinación ELU23P. En el caso del ratio 0,379 < 1.

- **Valores de las Reacciones en Servicio (ton):**

		A	B	C	D
1Fase	**ELS11P**	8,67	9,65	3,81	14,61
	ELS12P	17,10	23,19	17,08	23,32
	ELS13P	21,89	24,03	17,84	28,19
	ELS14P	24,82	21,09	20,77	25,25
	ELS11N	14,18	4,14	9,33	9,09
	ELS12N	22,89	17,40	22,87	17,53
	ELS13N	27,76	18,16	23,71	22,32
2Fase	**ELS21P**	10,71	8,67	7,62	11,87
	ELS22P	33,82	35,25	33,58	35,60
	ELS23P	38,61	36,09	34,34	40,47
	ELS24P	39,32	35,37	35,05	39,75
	ELS21N	11,44	7,94	8,35	11,14
	ELS22N	35,17	33,90	34,93	34,25
	ELS23N	40,04	34,66	35,77	39,04

- **Verificación Torre T2:**

En esta torre apoyan dos vigas carrilera, las carrileras C2 del lado del pórtico denominado tipo P1 y las carrileras C3 del lado del pórtico denominado tipo P2. Se realiza el estudio de ambas hileras para las torres T500 tipo T2.

- **Cargas verticales :**

a) Cargas verticales para la hilera de la carrilera C2:

	A	B	C	D
PPENC1	17,89	10,16	9,75	18,62
PPENC2	17,44	12,39	11,98	18,17
SC1	7,71	1,64	1,64	7,71
TOH1	14,62	21,86	21,86	14,62
TOH1H2	39,14	43,46	43,46	39,14

Los valores adjuntados son en toneladas y sin coeficientes de mayoración.

b) Cargas verticales para la hilera de la carrilera C3:

	A	B	C	D
PPENC1	16,03	8,71	8,30	16,75
PPENC2	15,64	10,66	10,25	16,37
SC1	6,63	1,43	1,43	6,63
TOH1	12,67	18,89	18,89	12,67
TOH1H2	33,88	37,60	37,60	33,88

Los valores adjuntados son en toneladas y sin coeficientes de mayoración.

- **Cargas de Viento:**

Viento transversal uniforme:

El viento transversal uniforme se calcula del mismo modo para todas las torres obteniendo un valor de 38,4kg/m.

Viento transversal en cabeza:

Se diferencia el valor por hileras, ya que los pórticos de este vano son de diferente longitud a cada lado.

Altura de encofrado =5,233+0,6 = 5,83m
Longitud de encofrado (hilera C2) =7,475m
Longitud de encofrado (hilera C3) =6,25m

Superficie de encofrado (hilera C2) = 5,83 x 7,475 = 43,58m^2
Superficie de encofrado (hilera C3) = 5,83 x 6,25 = 36,44m^2

CLIENTE: UTE AVE CERVELLO.
OBRA: LAV MAD-ZAR-BARC-F.F.SUBTRAMO Vib.
SUBTRAMO: SANT VICENT DEL HORTS – SANTA COLOMA DEL CERVELLO.
CÓDIGO: 101693_01 (VTO STA COLOMA. CALZADA UIC-AVE).
FECHA: JULIO 2006

$$C\arg a_cuña(C2) = \frac{120 \cdot 43{,}58}{4} \approx 1308kg$$

$$C\arg a_cuña(C3) = \frac{120 \cdot 36{,}44}{4} \approx 1094kg$$

Se realiza el reparto de las cargas puntuales de viento sobre los postes de las torres tipo T2 teniendo en cuenta la posición de las carrileras sobre las mismas.

Del reparto mencionado anteriormente se tienen las siguientes cargas de viento puntual para los postes de las torres tipo T2.

Viento Puntual (hilera C2) ≈ 1267kg
Viento Puntual (hilera C3) ≈1135kg.

El valor del viento adjuntado es igual para cada uno de los postes de cada hilera, debido a que las carrileras se encuentran posicionadas de forma paralela al plano transversal de la torre.

- **Cargas de Imperfección:**

Se adjunta la tabla de los valores de las cargas de imperfección correspondientes a las cargas verticales que actúan sobre la torre.

HILERA C2

	A	B	C	D
IMENC1	21,95	13,04	12,65	22,87
IMENC2	21,34	15,52	15,14	22,27
IMPSC1	9,29	2,29	2,29	9,29
IMTOH1	18,56	26,90	26,90	18,56
IMTOH1H2	48,65	53,63	53,63	48,65

HILERA C3

	A	B	C	D
IMENC1	19,55	11,12	10,72	20,46
IMENC2	19,04	13,30	12,90	19,96
IMPSC1	7,95	1,96	1,96	7,95
IMTOH1	15,92	23,08	23,08	15,92
IMTOH1H2	41,79	46,07	46,07	41,79

Valores en kg/m.

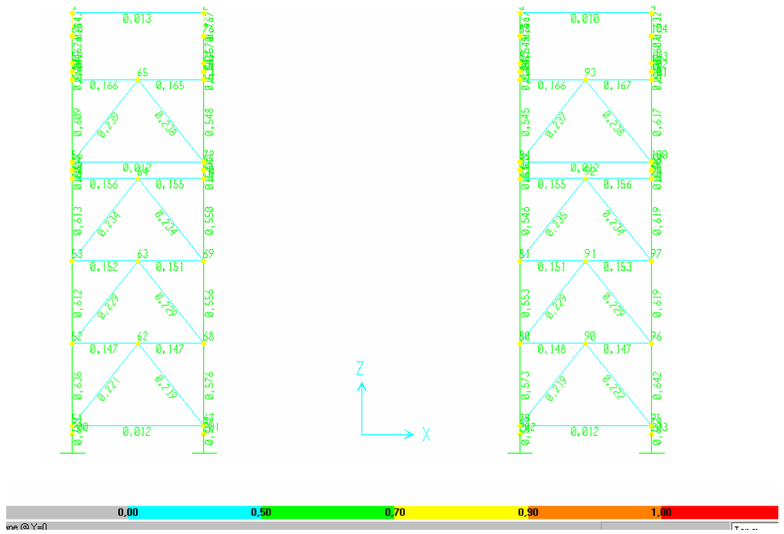
- **Esquema de aplicación de las cargas:**

Los esquemas de aplicación de las cargas son iguales que los descritos en el mismo apartado de estudio de las torres T500 para la calzada de Mercancias. De modo que no se repite aquí su descripción.

- **Combinaciones de cargas:**

Las combinaciones de carga se adjuntan en el apartado 6.1 Condiciones Generales y serán las mismas para todas las torres. De todas estas combinaciones se busca la más desfavorable en el estado límite último.

- **Esquema de Ratios:**



Estos ratios son los máximos para la combinación ELU23P para la hilera C2. En este caso el ratio es de 0,642 < 1.

- **Valores de las Reacciones en Servicio (ton):**

HILERA C2

		A	B	C	D
1Fase	ELS11P	10,21	20,15	2,07	28,62
	ELS12P	24,40	42,44	23,50	43,67
	ELS13P	32,01	44,19	25,03	51,49
	ELS14P	41,38	34,82	34,41	42,11
	ELS11N	27,89	2,48	19,75	10,94
	ELS12N	42,93	23,91	42,04	25,13
	ELS13N	50,75	25,45	43,79	32,73
2Fase	ELS21P	17,53	14,62	12,06	20,40
	ELS22P	55,71	59,04	54,56	60,51
	ELS23P	63,31	60,79	56,09	68,33
	ELS24P	65,45	58,65	58,24	66,18
	ELS21N	19,67	12,48	14,21	18,25
	ELS22N	59,77	54,98	58,64	56,43
	ELS23N	67,59	56,51	60,38	64,03

CLIENTE: UTE AVE CERVELLO.
OBRA: LAV MAD-ZAR-BARC-F.F.SUBTRAMO Vib.
SUBTRAMO: SANT VICENT DEL HORTS – SANTA COLOMA DEL CERVELLO.
CÓDIGO: 101693_01 (VTO STA COLOMA. CALZADA UIC-AVE).
FECHA: JULIO 2006

HILERA C3

		A	B	C	D
1Fase	ELS11P	9,20	17,85	1,47	25,90
	ELS12P	21,51	37,11	19,99	38,93
	ELS13P	28,04	38,63	21,33	45,66
	ELS14P	36,49	30,19	29,78	37,21
	ELS11N	25,17	1,88	17,45	9,92
	ELS12N	38,21	20,41	36,70	22,22
	ELS13N	44,93	21,74	38,23	28,76
2Fase	ELS21P	15,77	12,85	10,38	18,56
	ELS22P	48,82	51,27	47,15	53,27
	ELS23P	55,36	52,80	48,49	59,99
	ELS24P	57,31	50,85	50,44	58,04
	ELS21N	17,83	10,79	12,44	16,50
	ELS22N	52,53	47,56	50,87	49,55
	ELS23N	59,26	48,90	52,39	56,09

- **<u>Verificación Torre T3:</u>**

En esta torre apoyan las carrileras C4, así como unos perfiles HEB300-12m que transmiten la mitad de las cargas del paño de pila-ala, y unos carretes de la T125 que transmiten las cargas procedentes de la riostra R6.

Se realiza el estudio de ambas hileras para las torres T500 tipo T3.

- **Cargas verticales :**

Se trata de las cargas calculadas por el reparto debido al posicionamiento de los Perfiles Carrilera sobre los perfiles HEB400 de las torres T500.

a) Cargas verticales para la hilera de la carrilera C4:

	A	B	C	D
PPENC1	16,27	8,69	8,31	16,95
PPENC2	15,94	10,61	10,23	16,61
SC1	6,75	1,40	1,40	6,75
TOH1	13,45	20,52	20,52	13,45
TOH1H2	35,75	39,03	39,03	35,75

Los valores adjuntados son en toneladas y sin coeficientes de mayoración.

b) Cargas verticales para la hilera de la carrilera Lado de Pila:

	A	B	C	D
PPENC1	4,93	2,93	2,91	4,98
PPENC2	5,24	2,96	2,93	5,29
SC1	1,94	1,56	1,56	1,94
TOH1	7,81	9,81	9,81	7,81
TOH1H2	16,58	16,85	16,85	16,58

Los valores adjuntados son en toneladas y sin coeficientes de mayoración.

- **Cargas de viento :**

Viento transversal uniforme:

El viento transversal uniforme se calcula del mismo modo para todas las torres obteniendo un valor de 38,4kg/m.

Viento transversal en cabeza:

Se diferencia el valor por hileras, ya que los pórticos de este vano son de diferente longitud a cada lado.

Altura de encofrado =5,233+0,6 = 5,83m
Longitud de encofrado (hilera C4) =6,25m
Longitud de encofrado (hilera Lado Pila) =2,880m

Superficie de encofrado (hilera C4) = 5,83 x 6,25 = 36,44m^2
Superficie de encofrado (hilera Lado Pila) = 5,83 x 2,880 = 16,80m^2

$$C\arg a_cuña(C4) = \frac{120 \cdot 36{,}44}{4} \approx 1094kg$$

$$C\arg a(Lado - Pila) = \frac{120 \cdot 16{,}80}{4} = 504kg$$

Se realiza el reparto de las cargas puntuales de viento sobre los postes de las torres tipo T3 teniendo en cuenta la posición de las carrileras sobre las mismas, obteniéndose:

Viento Puntual (hilera C4) = 1110kg
Viento Puntual (hilera Lado-Pila) = 488kg.

El valor del viento adjuntado es igual para cada uno de los postes de cada hilera, debido a que las carrileras se encuentran posicionadas de forma paralela al plano transversal de la torre.

- **Cargas de imperfección :**

El valor de las cargas de imperfección para cada una de las hileras son las adjuntadas en las siguientes tablas:

HILERA C4

	A	B	C	D
IMENC1	20,39	11,39	11,01	21,26
IMENC2	19,93	13,61	13,23	20,81
IMPSC1	8,32	1,97	1,97	8,32
IMTOH1	17,41	25,80	25,80	17,41
IMTOH1H2	45,15	49,04	49,04	45,15

Valores en kg/m.

CLIENTE: UTE AVE CERVELLO.
OBRA: LAV MAD-ZAR-BARC-F.F.SUBTRAMO Vib.
SUBTRAMO: SANT VICENT DEL HORTS – SANTA COLOMA DEL CERVELLO.
CÓDIGO: 101693_01 (VTO STA COLOMA. CALZADA UIC-AVE).
FECHA: JULIO 2006

HILERA Lado Pila

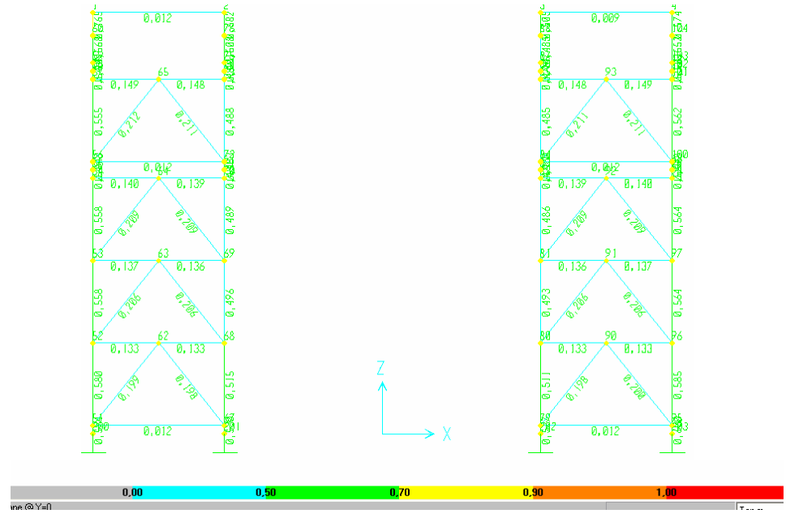
	A	B	C	D
IMENC1	5,99	3,62	3,59	6,05
IMENC2	6,37	3,66	3,63	6,43
IMPSC1	2,35	1,90	1,90	2,35
IMTOH1	9,60	11,96	11,96	9,60
IMTOH1H2	20,18	20,51	20,51	20,18

Valores en kg/m.

- **Combinaciones de cargas:**

Las combinaciones de carga se adjuntan en el apartado 6.1 Condiciones Generales y serán las mismas para todas las torres. De todas estas combinaciones se busca la más desfavorable en el estado límite último.

- **Esquema de Ratios:**



Estos ratios son los máximos para la combinación ELU23P para la hilera C4. En este caso el ratio es de 0,585 < 1.

- **Valores de las Reacciones en Servicio (ton):**

HILERA C4

		A	B	C	D
1Fase	ELS11P	9,59	17,69	1,62	25,95
	ELS12P	22,63	38,62	21,74	39,81
	ELS13P	29,28	40,11	23,04	46,66
	ELS14P	37,63	31,77	31,39	38,31
	ELS11N	25,27	2,01	17,31	10,26
	ELS12N	39,13	22,12	38,24	23,31
	ELS13N	45,97	23,42	39,74	29,96
2Fase	ELS21P	16,06	12,81	10,35	18,81
	ELS22P	50,92	52,72	48,49	55,45
	ELS23P	57,58	54,22	49,79	62,30
	ELS24P	59,60	52,20	51,82	60,27
	ELS21N	18,14	10,73	12,43	16,73
	ELS22N	54,77	48,87	52,35	51,59
	ELS23N	61,62	50,18	53,84	58,24

HILERA PILA

		A	B	C	D
1Fase	ELS11P	2,28	7,90	0,26	9,95
	ELS12P	9,88	17,91	9,86	17,96
	ELS13P	11,78	19,51	11,38	19,94
	ELS14P	15,84	15,46	15,44	15,89
	ELS11N	9,90	0,28	7,88	2,33
	ELS12N	17,91	9,88	17,89	9,93
	ELS13N	19,89	11,40	19,49	11,83
2Fase	ELS21P	5,58	4,94	3,27	7,27
	ELS22P	21,78	22,17	19,74	24,23
	ELS23P	23,68	23,77	21,26	26,21
	ELS24P	24,92	22,53	22,50	24,97
	ELS21N	7,22	3,30	4,91	5,63
	ELS22N	24,18	19,77	22,14	21,83
	ELS23N	26,16	21,29	23,74	23,73

CLIENTE: UTE AVE CERVELLO.
OBRA: LAV MAD-ZAR-BARC-F.F.SUBTRAMO Vib.
SUBTRAMO: SANT VICENT DEL HORTS – SANTA COLOMA DEL CERVELLO.
CÓDIGO: 101693_01 (VTO STA COLOMA. CALZADA UIC-AVE).
FECHA: JULIO 2006

6.3 Torres T500 Vano P3-P4 (Transición)

Torres T1 : Torres del lado pila P3.

Torres T2 : Torres centrales del vano P3-P4.

Torres T3 : Torres lado pila P4 (Pila Transición)

6.3.1 Comprobación de Perfiles Castillete :

Se trata del mismo perfil HEB400 descrito en el apartado 6.2.1 con las mismas características y se verifica en cada una de las torres el más desfavorable.

Se adjuntan los valores de las cargas de estudio de los perfiles HEB400 para los distintos tipos de torres, frente a los valores que se han justificado para alguna hipótesis.

- **Torre T1:** Poste D C1=49,52ton <56,48ton, con mismos valores de carga para carretes = 10,25ton, y para perfil = 11,94ton. Válido.
- **Torre T2:** Poste D C2=46,82ton < 82,66ton Válido
  Poste D C3=61,76ton < 88,16ton Válido
- **Torre T3:** Poste D C4=81,33ton < 82,28ton (mismo tipo de carga centrada sobre perfil).Válido

6.3.2 Verificación de las Torres T1-T2-T3:

Se adjuntan los diferentes tipos de cargas que se aplican a los postes de las torres T500 para el calculo y verificación de las mimas.

- **<u>Verificación Torre T1:</u>**

- **Cargas verticales :**

Se trata de las cargas calculadas por el reparto debido al posicionamiento de los Perfiles Carrilera sobre los perfiles HEB400 de las torres T500.

En el caso de esta torre se tienen que tener en cuenta dos hipótesis:
a) Cuando se hormigonan 9m del vano (hasta junta de hormigón).
b) Cuando se hormigona el resto del vano.

Se adjuntan las tablas de cargas verticales para cada uno de los casos contemplados para la torre T1. Los valores adjuntados son dados en toneladas y sin mayorar.

a) Hilera de Pila para hormigonado de 9m del vano:

	HILERA DE PILA (Hormigonado 9m)			
	A	B	C	D
PPENC1	7,96	4,54	4,44	8,14
PPENC2	8,20	4,93	4,83	8,39
SC1	2,90	1,77	1,77	2,90
TOH1	9,35	14,90	14,90	9,35
TOH1H2	21,32	24,16	24,16	21,32

b) Hilera de C1 para hormigonado de 9m del vano:

	HILERA C1 (Hormigonado 9m)			
	A	B	C	D
PPENC1	12,73	6,76	6,47	13,26
PPENC2	12,49	8,20	7,90	13,02
SC1	4,37	0,91	0,91	4,37
TOH1	7,57	19,66	19,66	7,57
TOH1H2	22,11	30,09	30,09	22,11

c) Hilera de Pila para hormigonado del resto del vano:

	HILERA DE PILA (Hormigonado Resto del vano)			
	A	B	C	D
PPENC1	8,29	4,43	4,33	8,47
PPENC2	8,20	4,93	4,83	8,39
SC1	0,49	0,11	0,11	0,49
TOH1	0,67	1,69	1,69	0,67
TOH1H2	2,06	2,84	2,84	2,06

d) Hilera de C1 para hormigonado del resto del vano:

	HILERA C1 (Hormigonado Resto del vano)			
	A	B	C	D
PPENC1	12,73	6,75	6,46	13,27
PPENC2	12,49	8,20	7,90	13,02
SC1	1,41	0,31	0,31	1,41
TOH1	1,95	4,89	4,89	1,95
TOH1H2	5,98	8,22	8,22	5,98

- **Cargas de viento :**

Viento transversal uniforme:

El viento transversal uniforme se calcula del mismo modo para todas las torres obteniendo un valor de 38,4kg/m.

Viento transversal en cabeza:

Altura de encofrado = 5,83m

CLIENTE: UTE AVE CERVELLO.
OBRA: LAV MAD-ZAR-BARC-F.F.SUBTRAMO Vib.
SUBTRAMO: SANT VICENT DEL HORTS – SANTA COLOMA DEL CERVELLO.
CÓDIGO: 101693_01 (VTO STA COLOMA. CALZADA UIC-AVE).
FECHA: JULIO 2006

Longitud de encofrado (hilera C1) =6,25m
Longitud de encofrado (hilera Lado Pila) =2,880m

Superficie de encofrado (hilera C1) = 5,83 x 6,25 = 36,44m^2
Superficie de encofrado (hilera Lado Pila) = 5,83 x 2,880 = 16,80m^2

$$C\arg a_cuña(C1) = \frac{120 \cdot 36{,}44}{4} \approx 1094kg$$

$$C\arg a(Lado - Pila) = \frac{120 \cdot 16{,}80}{4} = 504kg$$

Se realiza el reparto de las cargas puntuales de viento sobre los postes de las torres tipo T1 teniendo en cuenta la posición de las carrileras sobre las mismas, obteniéndose:

Viento Puntual (hilera C1) = 900kg
Viento Puntual (hilera Lado-Pila) = 698kg.

- **Cargas de imperfección :**

El valor de las cargas de imperfección para cada una de las hileras son las adjuntadas en las siguientes tablas.

Los valores están dados en kg/m y sin mayorar.

a) Hilera de Pila para hormigonado de 9m del vano:

	HILERA DE PILA (Hormigonado 9m)			
	A	B	C	D
PPENC1	9,32	5,46	5,36	9,54
PPENC2	9,62	5,91	5,81	9,84
SC1	3,37	2,09	2,09	3,37
TOH1	11,33	17,62	17,62	11,33
TOH1H2	25,33	28,54	28,54	25,33

b) Hilera de C1 para hormigonado de 9m del vano:

	HILERA DE C1 (Hormigonado 9m)			
	A	B	C	D
PPENC1	15,10	8,36	8,07	15,75
PPENC2	14,80	9,95	9,66	15,45
SC1	5,11	1,19	1,19	5,11
TOH1	9,93	23,60	23,60	9,93
TOH1H2	27,23	36,26	36,26	27,23

c) Hilera de Pila para hormigonado del resto del vano:

	HILERA DE PILA (Hormigonado Resto del vano)			
	A	B	C	D
PPENC1	9,72	5,35	5,25	9,94
PPENC2	9,62	5,91	5,81	9,84
SC1	0,56	0,13	0,13	0,56
TOH1	0,81	1,95	1,95	0,81
TOH1H2	2,43	3,31	3,31	2,43

d) Hilera de C1 para hormigonado del resto del vano:

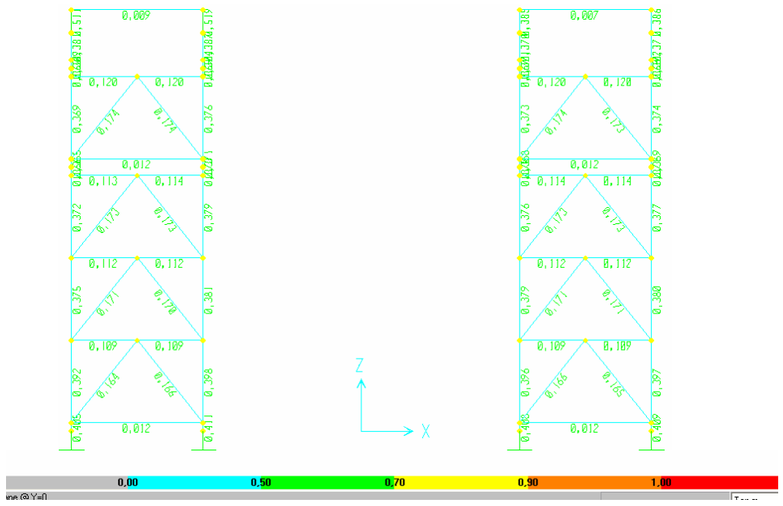
	HILERA DE CERCHAS (Hormigonado Resto del vano)			
	A	B	C	D
PPENC1	15,11	8,35	8,06	15,76
PPENC2	14,80	9,95	9,66	15,45
SC1	1,64	0,40	0,40	1,64
TOH1	2,41	5,73	5,73	2,41
TOH1H2	7,16	9,70	9,70	7,16

- **Combinaciones de cargas:**

Se adjuntan en el apartado 6.1 Condiciones generales para el cálculo de las torres T500. De todas estas combinaciones se busca la más desfavorable en ELU.

- **Esquema de Ratios:**

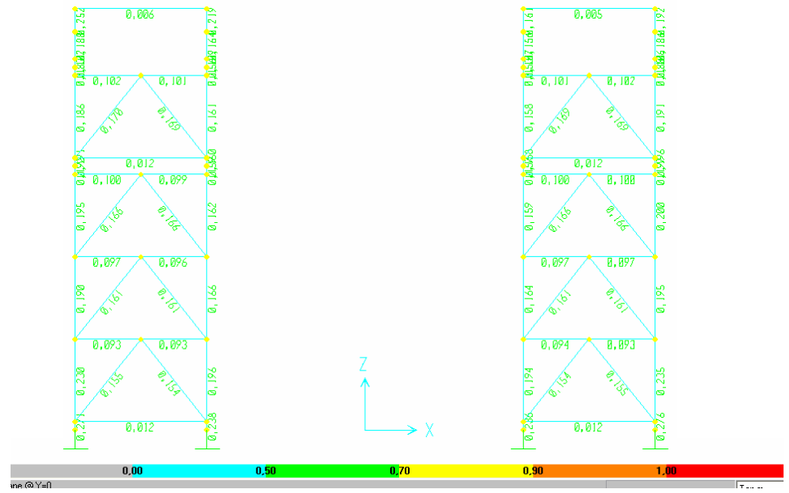
a) Hilera mas desfavorable para hormigonado de 9m del vano:



Hilera Lado de Pila: R=0,333<1 (ELU23N)
Hilera Lado de C1: R=0,397<1 (ELU23P)

CLIENTE: UTE AVE CERVELLO.
OBRA: LAV MAD-ZAR-BARC-F.F.SUBTRAMO Vib.
SUBTRAMO: SANT VICENT DEL HORTS – SANTA COLOMA DEL CERVELLO.
CÓDIGO: 101693_01 (VTO STA COLOMA. CALZADA UIC-AVE).
FECHA: JULIO 2006

b) Hilera más desfavorable para hormigonado del resto del vano:



Hilera Lado de Pila: R=0,156<1 (ELU13P)
Hilera Lado de C1: R=0,235<1 (ELU13P)

- **Valores de las Reacciones en Servicio:**

Para las combinaciones en estado límite de servicio se obtienen las reacciones en los postes de las torres T500. Los valores adjuntados en las tablas están dados en toneladas.

a) Hilera de Pila para Hormigonado de 9m del vano:

		A	B	C	D
1Fase	ELS11P	3,97	10,85	0,45	14,45
	ELS12P	13,05	26,02	15,08	24,07
	ELS13P	15,89	27,84	16,79	27,02
	ELS14P	21,37	22,37	22,27	21,55
	ELS11N	14,27	0,55	10,75	4,15
	ELS12N	23,89	15,18	25,92	13,22
	ELS13N	26,84	16,89	27,74	16,07
2Fase	ELS21P	8,49	6,96	5,12	10,42
	ELS22P	29,30	31,62	28,77	32,25
	ELS23P	32,15	33,45	30,49	35,20
	ELS24P	33,58	32,02	31,92	33,77
	ELS21N	10,23	5,22	6,86	8,68
	ELS22N	32,05	28,87	31,53	29,49
	ELS23N	35,01	30,59	33,35	32,34

Valores en toneladas y sin mayorar

b) Hilera de C1 para Hormigonado de 9m del vano:

		A	B	C	D
1Fase	ELS11P	7,42	14,39	1,15	20,90
	ELS12P	14,67	34,37	20,50	28,78
	ELS13P	18,98	35,34	21,35	33,21
	ELS14P	25,83	28,49	28,20	26,36
	ELS11N	20,36	1,45	14,10	7,94
	ELS12N	28,25	20,79	34,08	15,20
	ELS13N	32,68	21,64	35,05	19,51
2Fase	ELS21P	12,69	10,31	8,10	15,14
	ELS22P	34,21	41,00	37,59	37,84
	ELS23P	38,52	41,97	38,44	42,27
	ELS24P	40,13	40,36	40,06	40,66
	ELS21N	14,60	8,40	10,02	13,22
	ELS22N	37,31	37,90	40,71	34,73
	ELS23N	41,74	38,75	41,67	39,04

c) Hilera de Pila para Hormigonado del resto del vano:

		A	B	C	D
1Fase	ELS11P	4,30	10,74	0,33	14,78
	ELS12P	4,94	12,46	2,00	15,48
	ELS13P	5,42	12,57	2,10	15,98
	ELS14P	10,61	7,39	7,29	10,79
	ELS11N	14,60	0,44	10,64	4,47
	ELS12N	15,30	2,10	12,36	5,12
	ELS13N	15,79	2,20	12,47	5,60
2Fase	ELS21P	8,49	6,96	5,12	10,42
	ELS22P	10,50	9,85	7,90	12,53
	ELS23P	10,98	9,97	8,01	13,03
	ELS24P	11,91	9,04	8,94	12,10
	ELS21N	10,23	5,22	6,86	8,68
	ELS22N	12,34	8,01	9,75	10,68
	ELS23N	12,84	8,11	9,87	11,17

d) Hilera de C1 para Hormigonado del resto del vano:

		A	B	C	D
1Fase	ELS11P	7,42	14,38	1,14	20,91
	ELS12P	9,29	19,35	5,96	22,93
	ELS13P	10,68	19,68	6,25	24,36
	ELS14P	17,25	13,11	12,82	17,79
	ELS11N	20,36	1,44	14,09	7,95
	ELS12N	22,39	6,25	19,06	9,83
	ELS13N	23,82	6,54	19,39	11,22
2Fase	ELS21P	12,69	10,31	8,10	15,14
	ELS22P	18,51	18,69	16,16	21,28
	ELS23P	19,91	19,02	16,45	22,71
	ELS24P	21,04	17,89	17,59	21,57
	ELS21N	14,60	8,40	10,02	13,22
	ELS22N	20,74	16,46	18,40	19,04
	ELS23N	22,17	16,75	18,73	20,43

CLIENTE: UTE AVE CERVELLO.
OBRA: LAV MAD-ZAR-BARC-F.F.SUBTRAMO Vib.
SUBTRAMO: SANT VICENT DEL HORTS – SANTA COLOMA DEL CERVELLO.
CÓDIGO: 101693_01 (VTO STA COLOMA. CALZADA UIC-AVE).
FECHA: JULIO 2006

- **Verificación Torre T2:**

  - **Cargas verticales :**

Se trata de las cargas calculadas por el reparto debido al posicionamiento de los Perfiles Carrilera sobre los perfiles HEB400 de las torres T500. Se tienen en cuenta dos hipótesis.

a) Cuando se hormigonan 9m del vano (hasta junta de hormigón).
b) Cuando se hormigona el resto del vano.

Se adjuntan las tablas de cargas verticales para cada uno de los casos para la torre T2. Los valores adjuntados son dados en toneladas y sin mayorar.

a) Hilera de C2 para hormigonado de 9m del vano:

	HILERA DE C2 (Hormigonado 9m)			
	A	B	C	D
PPENC1	15,69	8,45	8,05	16,40
PPENC2	15,41	10,04	9,65	16,13
SC1	1,58	0,34	0,34	1,58
TOH1	1,67	7,48	7,48	1,67
TOH1H2	5,74	10,50	10,50	5,74

b) Hilera de C3 para hormigonado de 9m del vano:

	HILERA C3 (Hormigonado 9m)			
	A	B	C	D
PPENC1	16,63	9,17	8,77	17,35
PPENC2	16,58	9,47	9,07	17,30
SC1	0,29	0,06	0,06	0,29
TOH1	0,31	1,40	1,40	0,31
TOH1H2	1,07	1,96	1,96	1,07

c) Hilera de C2 para hormigonado del resto del vano:

	HILERA DE C2 (Hormigonado Resto del vano)			
	A	B	C	D
PPENC1	15,69	8,46	8,06	16,40
PPENC2	15,35	10,39	10,00	16,07
SC1	5,76	1,26	1,26	5,76
TOH1	10,07	17,44	17,44	10,07
TOH1H2	27,84	32,87	32,87	27,84

d) Hilera de C3 para hormigonado del resto del vano:

	HILERA C3 (Hormigonado Resto del vano)			
	A	B	C	D
PPENC1	16,63	9,17	8,77	17,35
PPENC2	16,26	11,29	10,89	16,98
SC1	7,06	1,55	1,55	7,06
TOH1	13,36	20,37	20,37	13,36
TOH1H2	35,87	40,17	40,17	35,87

- **Cargas de viento :**

Viento transversal uniforme:

El viento transversal uniforme se calcula del mismo modo para todas las torres obteniendo un valor de 38,4kg/m.

Viento transversal en cabeza:

Altura de encofrado = 5,83m
Longitud de encofrado (hilera C2) =6,25m
Longitud de encofrado (hilera C3) =6,90m
Superficie de encofrado (hilera C2) = 5,83 x 6,25 = 36,44m^2
Superficie de encofrado (hilera C3) = 5,83 x 6,90= 40,23m^2

$$C\arg a_cuña(C2) = \frac{120 \cdot 36{,}44}{4} \approx 1094kg$$

$$C\arg a_cuña(C3) = \frac{120 \cdot 40{,}23}{4} \approx 1207kg$$

Se realiza el reparto de las cargas puntuales de viento sobre los postes de las torres tipo T1 teniendo en cuenta la posición de las carrileras sobre las mismas, obteniéndose:

Viento Puntual (hilera C2) = 1112kg
Viento Puntual (hilera C3) = 1189kg.

- **Cargas de imperfección :**

Los valores están dados en kg/m y sin mayorar.

a) Hilera de C2 para hormigonado de 9m del vano:

	HILERA C2 (Hormigonado 9m)			
	A	B	C	D
PPENC1	18,13	10,27	9,91	18,98
PPENC2	17,79	11,95	11,60	18,64
SC1	1,77	0,42	0,42	1,77
TOH1	2,19	8,50	8,50	2,19
TOH1H2	6,88	12,04	12,04	6,88

b) Hilera de C3 para hormigonado de 9m del vano:

	HILERA DE C3 (Hormigonado 9m)			
	A	B	C	D
PPENC1	19,29	11,18	10,83	20,15
PPENC2	19,23	11,50	11,15	20,09
SC1	0,33	0,08	0,08	0,33
TOH1	0,39	1,57	1,57	0,39
TOH1H2	1,26	2,23	2,23	1,26

CLIENTE: UTE AVE CERVELLO.
OBRA: LAV MAD-ZAR-BARC-F.F.SUBTRAMO Vib.
SUBTRAMO: SANT VICENT DEL HORTS – SANTA COLOMA DEL CERVELLO.
CÓDIGO: 101693_01 (VTO STA COLOMA. CALZADA UIC-AVE).
FECHA: JULIO 2006

c) Hilera de C2 para hormigonado del resto del vano:

	HILERA DE C2 (Hormigonado Resto del vano)			
	A	B	C	D
PPENC1	18,13	10,27	9,92	18,98
PPENC2	17,71	12,33	11,97	18,56
SC1	6,52	1,63	1,63	6,52
TOH1	12,20	20,20	20,20	12,20
TOH1H2	32,82	38,27	38,27	32,82

d) Hilera de C3 para hormigonado del resto del vano:

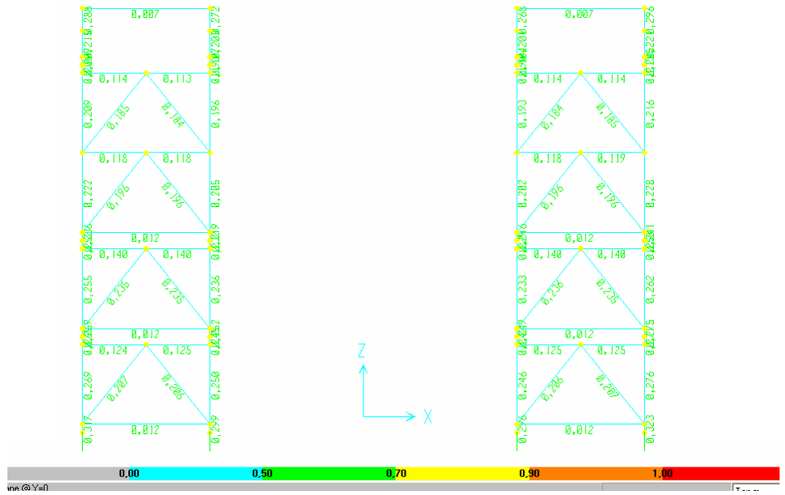
	HILERA DE C3 (Hormigonado Resto del vano)			
	A	B	C	D
PPENC1	19,29	11,18	10,83	20,15
PPENC2	18,82	13,42	13,07	19,69
SC1	8,03	2,05	2,05	8,03
TOH1	16,09	23,71	23,71	16,09
TOH1H2	42,26	46,94	46,94	42,26

- **Combinaciones de cargas:**

Se adjuntan en el apartado 6.1 Condiciones generales para el cálculo de las torres T500. De todas estas combinaciones se busca la más desfavorable en ELU.

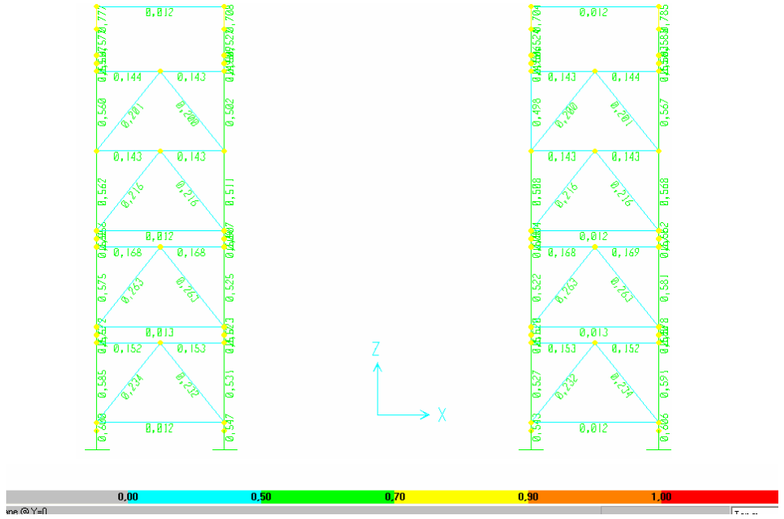
- **Esquema de Ratios:**

a) Hilera mas desfavorable para hormigonado de 9m del vano:



Hilera Lado de C2: R=0,276<1 (ELU13P)
Hilera Lado de C3: R=0,264<1 (ELU13P)

b) Hilera más desfavorable para hormigonado del resto del vano:



Hilera Lado de C2: R=0,492<1 (ELU23P)
Hilera Lado de C3: R=0,591<1 (ELU23P)

- **Valores de las Reacciones en Servicio:**

Para las combinaciones en estado límite de servicio se obtienen las reacciones en los postes de las torres T500. Los valores adjuntados en las tablas están dados en toneladas y sin mayorar.

a) Hilera de C2 para Hormigonado de 9m del vano:

		A	B	C	D
1Fase	ELS11P	8,67	17,86	1,02	25,82
	ELS12P	10,23	25,45	8,39	27,59
	ELS13P	11,78	25,81	8,71	29,20
	ELS14P	20,13	17,46	17,06	20,84
	ELS11N	25,10	1,43	17,46	9,37
	ELS12N	26,88	8,80	25,05	10,93
	ELS13N	28,48	9,11	25,42	12,49
2Fase	ELS21P	15,51	12,33	9,74	18,42
	ELS22P	21,06	23,02	20,05	24,36
	ELS23P	22,61	23,38	20,37	25,96
	ELS24P	23,92	22,07	21,68	24,64
	ELS21N	17,70	10,14	11,94	16,23
	ELS22N	23,63	20,45	22,64	21,77
	ELS23N	25,23	20,76	23,00	23,33

Valores en toneladas y sin mayorar

CLIENTE: UTE AVE CERVELLO.
OBRA: LAV MAD-ZAR-BARC-F.F.SUBTRAMO Vib.
SUBTRAMO: SANT VICENT DEL HORTS – SANTA COLOMA DEL CERVELLO.
CÓDIGO: 101693_01 (VTO STA COLOMA. CALZADA UIC-AVE).
FECHA: JULIO 2006

b) Hilera de C3 para Hormigonado de 9m del vano:

		A	B	C	D
1Fase	ELS11P	9,09	19,09	1,23	27,28
	ELS12P	9,38	20,51	2,61	27,61
	ELS13P	9,67	20,58	2,66	27,90
	ELS14P	18,42	11,82	11,42	19,14
	ELS11N	26,56	1,63	18,70	9,81
	ELS12N	26,89	3,01	20,12	10,10
	ELS13N	27,18	3,07	20,18	10,38
2Fase	ELS21P	16,67	11,77	9,15	19,60
	ELS22P	17,70	13,76	11,08	20,71
	ELS23P	17,99	13,83	11,13	21,00
	ELS24P	19,13	12,68	12,28	19,85
	ELS21N	18,88	9,56	11,37	17,38
	ELS22N	19,98	11,48	13,37	18,42
	ELS23N	20,28	11,54	13,43	18,70

c) Hilera de C2 para Hormigonado del resto del vano:

		A	B	C	D
1Fase	ELS11P	8,67	17,87	1,03	25,82
	ELS12P	18,40	35,64	18,14	36,22
	ELS13P	24,08	36,99	19,31	42,06
	ELS14P	32,71	28,35	27,95	33,42
	ELS11N	25,10	1,44	17,47	9,37
	ELS12N	35,50	18,54	35,25	19,11
	ELS13N	41,35	19,72	36,59	24,79
2Fase	ELS21P	15,45	12,68	10,09	18,36
	ELS22P	42,56	46,28	42,23	46,93
	ELS23P	48,23	47,62	43,41	52,78
	ELS24P	50,14	45,71	45,32	50,86
	ELS21N	17,64	10,49	12,29	16,16
	ELS22N	46,21	42,63	45,89	43,27
	ELS23N	52,05	43,80	47,24	48,95

d) Hilera de C3 para Hormigonado del resto del vano:

		A	B	C	D
1Fase	ELS11P	9,09	19,09	1,23	27,28
	ELS12P	22,04	39,87	21,19	41,05
	ELS13P	29,00	41,53	22,63	48,21
	ELS14P	38,24	32,28	31,88	38,96
	ELS11N	26,56	1,63	18,70	9,81
	ELS12N	40,32	21,59	39,48	22,76
	ELS13N	47,49	23,04	41,13	29,71
2Fase	ELS21P	16,33	13,60	10,96	19,30
	ELS22P	51,29	54,69	50,21	56,08
	ELS23P	58,25	56,34	51,66	63,25
	ELS24P	60,38	54,20	53,80	61,10
	ELS21N	18,57	11,36	13,21	17,05
	ELS22N	55,36	50,62	54,29	52,00
	ELS23N	62,52	52,07	55,94	58,96

- **Verificación Torre T3:**

- **Cargas verticales :**

Se trata de las cargas calculadas por el reparto debido al posicionamiento de los Perfiles Carrilera sobre los perfiles HEB400 de las torres T500.

Las cargas verticales sobre los postes de cada una de las hileras de las torres T500 tipo T3 son iguales para cada hilera al estar centrada la carrilera sobre el perfil HEB400 y de valores los adjuntados en la tabla siguiente.

	HILERA			
	A	B	C	D
PPENC1	10,93	6,40	6,12	11,33
PPENC2	10,62	7,89	7,62	11,02
SC1	5,05	0,94	0,94	5,05
TOH1	9,23	14,17	14,17	9,23
TOH1H2	25,00	27,95	27,95	25,00

Los valores adjuntados son en toneladas y sin coeficientes de mayoración.

- **Cargas de viento :**

Viento transversal uniforme:

El viento transversal uniforme se calcula del mismo modo para todas las torres obteniendo un valor de 38,4kg/m.

Viento transversal en cabeza:

Altura de encofrado = 5,83m
Longitud de encofrado =9,135m
Superficie de encofrado = 5,83 x 9,135 = 53,26m^2

$$C\arg a_cuña(C4) = \frac{120 \cdot 53{,}26}{4} \approx 1598kg$$

Como el reparto en los postes es equitativo por la posición de la carrilera sobre las torres T500, el valor del viento puntual sobre las cabezas de las torres es de valor 1598/2 ≈ 799kg. Son cargas horizontales.

- **Cargas de imperfección :**

Valores en kg/m sin mayorar.

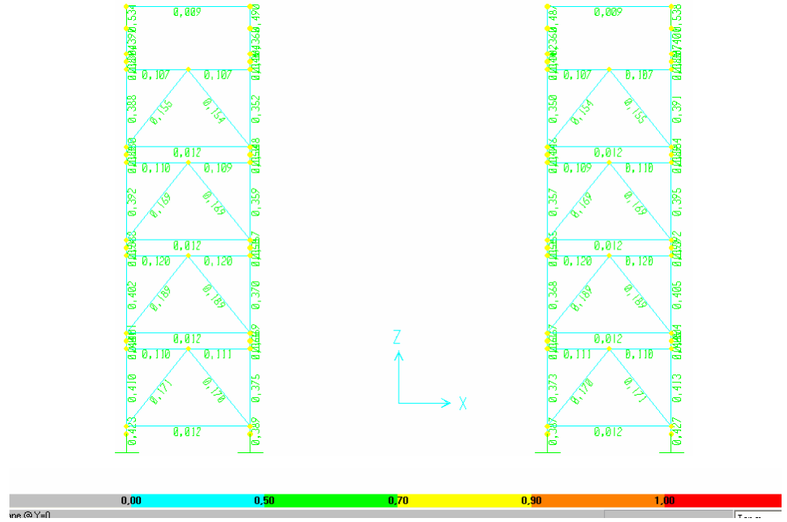
	HILERA (kg/m)			
	A	B	C	D
PPENC1	12,19	7,36	7,11	12,65
PPENC2	11,82	8,92	8,66	12,28
SC1	5,55	1,19	1,19	5,55
TOH1	10,61	15,86	15,86	10,61
TOH1H2	28,23	31,37	31,37	28,23

CLIENTE: UTE AVE CERVELLO.
OBRA: LAV MAD-ZAR-BARC-F.F.SUBTRAMO Vib.
SUBTRAMO: SANT VICENT DEL HORTS – SANTA COLOMA DEL CERVELLO.
CÓDIGO: 101693_01 (VTO STA COLOMA. CALZADA UIC-AVE).
FECHA: JULIO 2006

- **Combinaciones de cargas:**

Se adjuntan en el apartado 6.1 Condiciones generales para el cálculo de las torres T500. De todas estas combinaciones se busca la más desfavorable en ELU.

- **Esquema de Ratios:**



Hilera : R=0,413<1 (ELU23P)

- **Valores de las Reacciones en Servicio:**

Para las combinaciones en estado límite de servicio se obtienen las reacciones en los postes de las torres T500. Los valores adjuntados en las tablas están dados en toneladas y sin mayorar.

		A	B	C	D
1Fase	ELS11P	5,76	14,03	0,94	18,96
	ELS12P	14,69	28,49	14,82	28,49
	ELS13P	19,67	29,51	15,68	33,61
	ELS14P	26,44	22,74	22,46	26,84
	ELS11N	18,56	1,22	13,75	6,15
	ELS12N	28,08	15,10	28,22	15,09
	ELS13N	33,21	15,97	29,23	20,06
2Fase	ELS21P	10,77	10,20	7,76	13,33
	ELS22P	35,11	38,81	35,05	38,99
	ELS23P	40,08	39,82	35,92	44,12
	ELS24P	41,90	38,01	37,74	42,30
	ELS21N	12,93	8,04	9,93	11,16
	ELS22N	38,59	35,33	38,54	35,50
	ELS23N	43,71	36,19	39,55	40,48

SyV Sacyr Vallehermoso | Pila 4 | FECHA | HOJA

Cargas verticales

- Peso propio pila 4

Pantallas inclinadas. $2 \times 0.9 \times 5.5 \times 2.5 \times 7.5 = 186$ t

Capitel cargadero

$\frac{6.07+5.5}{2} \times 1.0 \times 11.0 \times 2.5 = 159$ t

$\frac{11.0+6.9}{2} \times 2.0 \times 5.5 \times 2.5 = 246$ t

} 405 t

Viga cajón impuesta maciza

$\left[\frac{6.07+7.57}{2} \times 2.45 + 0.40 \times 7.57 + 0.28 \times 6.42\right] \times 6.9 \times 2.5 = 371$ t

A descontar pasillos de acceso

$(1.4 \times 6.9 + 0.9 \times 3.2) \times 2.4 \times 2.5 = -75$ t

Total peso propio P4 = 887 t (701 t sin el peso de pantallas)

- Encepado pila 4

3 filas de 5 pilotes a 6.0 m con separación entre filas de 5 metros.

Canto encepado 3.75 m ; Espesor de tierra 2.0 m

Peso encepado = $14 \times 28 \times 3.75 \times 2.5 = 3675$ t

Peso tierras = $14 \times 28 \times 2.0 \times 1.8 = 1411$ t

} $\Sigma = 5086$ t

SyV Sacyr Vallehermoso | Pila 4 - (Pila - estribo) | FECHA | HOJA

Cargas permanentes

balasto 40cm bajo traviesa.

$q_k = 10 \times (0.4+0.2) \times 1.84 = 11.04$ t/m ± 30%

traviesa + carriles.

$q = 2 \times (0.52+0.12) = 1.28$ t/m

conductos, cables, muretes

$q = 2 \times (0.3+0.5 \times 0.2 \times 2.5) = 1.10$ t/m

impostas y barandillas.

$q = 2 \times (0.05+0.57) = 1.24$ t/m

impermeabilización de tablero (3cm)

$q = 1.0$ t/m

$G_{k\,imp} = 1.3 \times 11.04 + 1.28 + 1.1 + 1.24 + 1.0 = 18.97$ t/m

$G_{k\,inf} = 0.7 \times 11.04 + 1.28 + 1.1 + 1.24 + 1.0 = 12.35$ t/m

$G_k = 15.66$

Sobrecargas

Sobrecarga uniforme en vías (8 t/m)

$q_{+1} = 2 \times 8 \times 1.21 = 19.36$ t/m

Sobrecarga uniforme en andenes (0.5 t/m²)

$q_{+2} = 2 \times 1.75 \times 0.5 = 1.75$ t/m

$Q_{sco} = q_{+1} + q_{+2} = 21.1$ t/m

locomotoras

4 cargas de 30 t cada 1.6 m por vía

Acción del viento

$V_{ref} = 28$ m/s

$V_C = C_t \times C_r \times C_z \times C_g \cdot V_{ref} = 1.0 \times 1.04 \times 1.041 \times 1.509 \times 28 = 45.74$

Entorno tipo II – $K_z = 0.19$; $z_0 = 0.05$; $z_{min} = 4$ m.

$C_z = K_z \ln(z/z_0) = 0.19 \ln(12/0.05) = 1.041$

$C_g = \sqrt{\left(1 + \frac{7 K_z}{C_z C_t}\right)} = \sqrt{1 + \frac{7 \times 0.19}{1.041 \times 1.0}} = 1.509$

Presión básica

$1/2 \rho V_c^2 = 0.5 \times 1.25 \times 45.74^2 = 1308$ N/m² (0.131 t/m²)

Fuerza de viento transversal al tablero

$C_D = 2.5 - 0.3 (B/h) = 2.5 - 0.3 \times \frac{14}{4} = 1.45$ (sin sc)

$C_D = 2.5 - 0.3 \times \frac{14}{8} = 1.975$ (con sc)

$F_t = 1.45 \times 4 \times 0.131 = 0.76$ t/m (sin sc)

$F_t = 1.975 \times 8 \times 0.131 \times 0.5 = 1.03$ t/m (con sc)
(50%)

Fuerza de viento longitudinal al tablero

Se toma el 25%

$F_L = 0.25 \times 0.76 = 0.19$ t/m (sin sc)

$F_L = 0.25 \times 1.03 = 0.26$ t/m (con sc)

Fuerzas de frenado y reológicas

- Frenado

a) Tramo Coprosa; (L=522>300) → $Q_{FK} = 1.21 \times 600 = 726$ t
b) Tramo Sacyr; (L=156) → $Q_{FK} = 1.21 \times 2 \times 156 = 378$ t
} no sumables
c) Tramo Coprosa + Sacyr → $Q_{FK} = 1.21 \times 600 = 726$ t (máximo)

- arranques

a, b y c → $Q_{aK} = 1.21 \times 100 = 121$ t

- Rozamiento en apoyo de neopreno-teflón ($\mu = 0.05$)

Tramo Coprosa

$Q_{RK} = 0.05 \times (10970_{PP} + 7460_{CP}) = 921$ t

Tramo Sacyr

$Q_{RK} = 0.05 \times (3818 + 2596) = 321$ t

Coprosa + Sacyr

a) $Q_{RK} = 921 - 321 = 600$ t
$Q_{Rd} = 1.35 \times 921 - 321 = 922$ t

b) $Q_{RK} = 1.1 \times 921 - 0.9 \times 321 = 724$ t ✓
$Q_{Rd} = 1.35 \times 1.1 \times 921 - 0.9 \times 321 = 1079$ t ✓

c) $Q_{RK} = 0.05 \times (10970 + 7460) - 0.03 \times (3818 + 2596) =$
$= 921 - 192 = 729$ t
$Q_{Rd} = 1.35 \times 921 - 192 = 1051$ t

Fuerzas horizontales (cont)

Cada tramo se ancla por separado

- Fuerza de anclaje tramo Coprosa

$F_{ak} = 1.0 \times 921 + 1.0 \times 847 + 0.6 \times 0.26 \times 522 = 1849\ t$
(resb. Fre+arra. viento long.)

$F_{ad} = 1.35 \times 921 + 1.5 \times 847 + 1.5 \times 0.6 \times 0.26 \times 522 = 2636\ t$

- Fuerza de anclaje tramo Sacyr

$F_{ak} = 1.0 \times 321 + 1.0 \times 499 + 0.6 \times 0.26 \times 156 = 844\ t$
(resb. fr.+arr. vien. long.)

$F_{ad} = 1.35 \times 321 + 1.5 \times 499 + 1.5 \times 0.6 \times 0.26 \times 156 = 1218\ t$

- Fuerza horizontal total en Pila 4

$F_{ak} = 724 + 1.0 \times 847 + 0.6 \times 0.26 \times 678 = 1676\ t$
(resb. fr.+arr. viet long)

$F_{ad} = 1079 + 1.5 \times 847 + 1.5 \times 0.6 \times 0.26 \times 678 = 2508\ t$

Calculo de la pila-estribo

Al ser el punto fijo de ambos tramos, los fuerzas dominantes son las fuerza horizontales longitudinales producidas por el frenado y arranque de las sobrecargas, el rozamiento en apoyos bajo la acción de la carga permanente y el viento en sentido longitudinal. Estas fuerza se trasmiten mediante el anclaje de los tableros a la pila.

Bajo la combinación de las cargas mencionadas, las fuerzas transversales (hasta 10 t) y posible excentricidad de la sobrecarga no tienen influencia apreciable.

Para la obtención de los esfuerzos en los elementos que componen la pila se realiza un modelo espacial que discretiza los pilote, el encepado y la pila propiamente dicha.

La aplicación de importante fuerzas horizontales provoca fundamentalmente dos efectos: 1º) El vuelco de la pila y su cimentación, para lo cual, se necesita un peso importante que solo se puede incrementar en el encepados y pesos de tierra. 2º) El desplazamiento horizontal que debe ser resistido por un determinado número de pilotes trabajando a flexión.

Con estas premisas se ha proyectado un encepados de 28m x 14m x 3.75m con 15 pilotes de 2m de diámetro.

El calculo por ordenador se incluye en el anejo correspondiente y costa de 5 hipótesis:

Hipótesis 1 - Axil máximo y mínimo en pilotes (ELS)
Hipótesis 2 - N máximo con +Fx maxima (ELU)
Hipótesis 3 - N máximo con -Fx (E.L.U.)
Hipótesis 4 - N mínimo con +Fx máxima (E.L.U)
Hipótesis 5 - N mínimo con -Fx máxima (ELU)

Calculo de los pilotes

Los 15 pilotes de 2m de diametro se han discretizado en el modelo como barras de 15m de longitud empotradas en su base. Esta longitud corresponde a la longitud elástica del pilote.

$$Le = \sqrt[4]{\frac{3EI}{Es}} = \sqrt[4]{\frac{3 \times 2.7 \times 10^6 \times 0.785}{240}} = 12.8\ m$$

Los pilotes se representan por las barras 2 a 6, 9 a 13 y 16 a 20.

- Axil máximo característico en pilote
  Nmax = 945t (barra 12)
  axil mínimo
  Nmin = 101t (barra 2)
- Cabeza de pilote +5.5 respecto al terreno natural (≈11.0)
  Punta del pilote −30.0 (empotramiento en gravas. 10m)
  longitud neta del pilote l = 24.5 m.
  Peso del pilote Qp = 2.5 × 3.14 × 24.5 = 192t.
  Axil maximo total Nmax = 945 + 192 = 1137t

La carga de hundimiento mínima según los diferentes calculos realizados en las pilas restante, ha sido:

$Q_{Hmin} = 1193\ t > 1137\ t$, luego

Empotramiento en gravas 10m.

- Armadura de pilote

Se calcula a partir de las combinaciones de esfuerzos obtenidos como resultado del calculo mediante ordenador, adjunto.

Se ha dispuesto una armadura de flexión de 44 barras ϕ 32 (B-500S); ρ = 1.13%

Se acompañan las curvas resistentes de los pilotes y las comprobaciones relativas al axil máximo, axil mínimo y momento flector máximo:

Nd mínimo = −162 t; Md = 996 mt — Barra 9 (Punto 1) COMB 4

Nd máximo = 1350 t; Md = 951 mt — Barra 12 (Punto 3) COMB 2

Nd = 1292 mt; Md máximo = 1084 mt — Barra 13 (Punto 2) COMB 2

- cortante.

El esfuerzo cortante máximo se produce en la barra 13 y tiene por valor Vd = 167.8 t

$V_{cu} = 0.10 \times 1.34 \times (100 \times 0.003 \times 30)^{1/3} \times 314 = 87.5\ t$

$V_{su} = 167.8 - 87.5 = 80.3\ t$, $A_{st\,rd} = \frac{80.3}{0.9 \times 1.77} = 50.4\ t/m.$

$A_{st\,rd\,min} = 0.02 \times \frac{300}{1.5} \times 1.77 = 70.8\ t > 50.4$

$A_s = \frac{70.8}{4.0} = 17.7\ cm^2/m$

doble cerco ϕ12/0.25 (18.1 cm²) > 17.7

SyV Sacyr Vallehermoso

Pila 4

FECHA

HOJA

- Armadura de pilote ϕ 2.0 m.

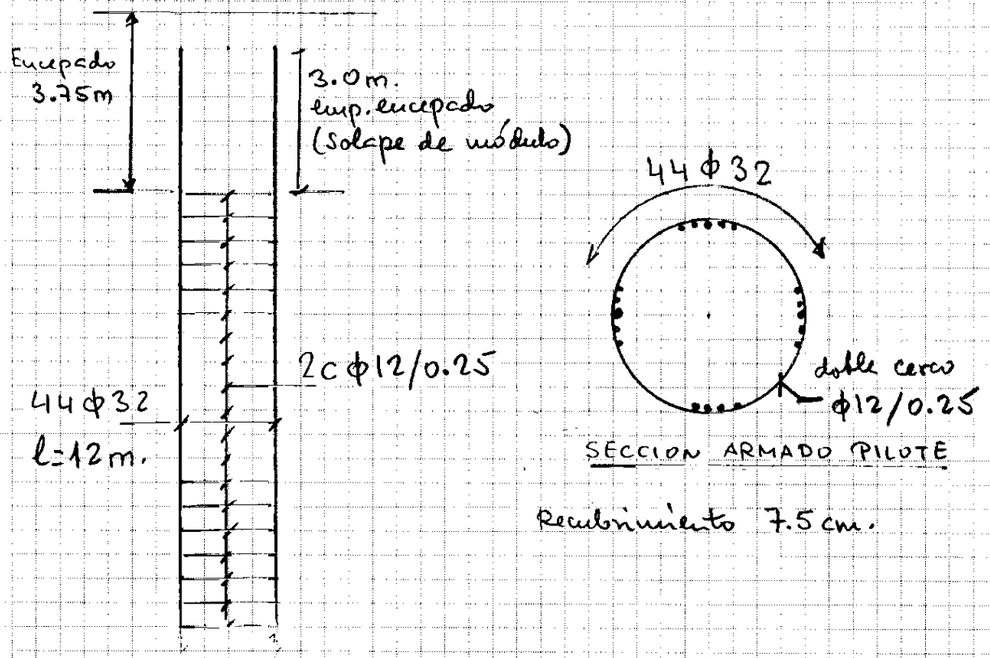
Armadura principal 44 ϕ32

cercos dobles ϕ12/0.25

Empotramiento del pilote en gravas = 10 m

Longitud teórica del pilote bajo encepado L=25 m

Empotramiento de las armaduras en el encepado y solape de las armaduras de los módulos l=3.0 m.



SECCION ARMADO PILOTE

Recubrimiento 7.5 cm.

Modulo tipo de armado

PRONTUARIO INFORMÁTICO DEL HORMIGÓN ESTRUCTURAL 3.0

Cátedra de Hormigón Estructural ETSICCPM - IECA

Obra: Sacyr
Fecha: 20/01/2006
Hora: 11:39:05

Cálculo de secciones a flexión compuesta recta

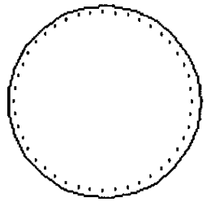
1 Datos

- Materiales

```
Tipo de hormigón : HA-30
Tipo de acero    : B-500-S
fck [MPa]        = 30.00
fyk [MPa]        = 500.00
γc               = 1.50
γs               = 1.15
```

- Sección

```
Sección : LLOBRE2.2
ϕ [m] = 2.00
r [m] = 0.075
nº barras = 44
```



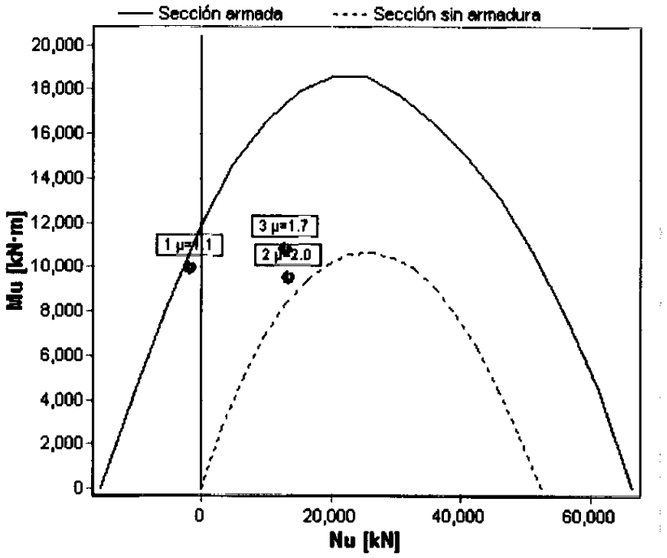
2 Diagrama

ϕ [mm] = 32

Resultados numéricos del diagrama de interacción

x [cm]	1/r [1/m] ·1.E-3	Nu [kN]	Mu [kN·m]
-9999.000	0.0	15385.6	0.0
0.175	5.7	10278.9	4281.8
0.334	6.3	5172.3	8296.8
0.453	6.8	65.6	11865.9
0.589	5.9	-5041.0	14612.5
0.732	4.8	-10147.7	16598.7
0.871	4.0	-15254.4	17934.2
1.005	3.5	-20361.0	18609.0
1.136	3.1	-25467.7	18582.6
1.258	2.8	-30574.3	17735.5
1.385	2.5	-35681.0	16528.9
1.524	2.3	-40787.7	15002.9
1.674	2.1	-45894.3	13090.5
1.843	1.9	-51001.0	10722.1
2.063	1.7	-56107.6	7826.3
2.622	1.1	-61214.3	4502.3
9999.000	0.3	-66321.0	0.0

Diagrama de interacción. Sección LLOBRE2.2 ø=32



Coeficientes de seguridad de los pares de esfuerzos de cálculo

Punto	Nd [kN]	Md [kN·m]	γ
1	-1620	9960	1.10
2	13500	9510	1.95
3	12920	10840	1.74

Encepado de pilotes

canto del encepado $h = 3.75$ m.

Por ser $V_{max} = 5.55$ menor que $2h$ el encepado es rígido.

- comprobación bielas.

axil máximo en pilotes extremos (2,9,16) ó (6,13,20)

$N_{dmax} = 1299$ t (Barra 9, COMB 3)

ángulo de la biela $tg\alpha = \frac{3.75 - 0.15}{6.0 - 0.225} = 0.623$, $\sin\alpha = 0.529$

$$\sigma_{cd} = \frac{1299}{\pi \times 0.529^2} = 1478 \text{ t/m}^2$$

$$f_{1cd} = 0.7 \times \frac{3000}{1.5} = 1400 \text{ t/m}^2$$

luego $\sigma_{cd} \simeq f_{1cd}$

se considera valido debido a que se puede descontar el peso propio debido al encepado, aprox $\frac{1.35 \times 5086}{15} = 458$ t/pilote

entonces $\sigma_{cd} = \frac{1299 - 458}{\pi \times 0.529^2} = 957 \text{ t/m}^2 < 1400$

Encepado pilotes (cont)

- armadura longitudinal inferior

Por bielas

$A_{styd} = \frac{1299 - 458}{0.623} = 1350$ t ; $A_s = \frac{1350}{4.0} = 337 \text{ cm}^2$ en banda de pilote de 2.25 m de ancho

disponemos 3 capas de 14 ϕ32 en la banda central

Total 42 ϕ32 $\simeq 338 \text{ cm}^2 > 337$ (2 capas en bandas laterales)

Entre bandas 10 ϕ32 (80.4 cm^2) $\simeq 337/4$

- armadura transversal inferior

barras (3,17) y (5,19)

$N_{dmax} = 1095$ t (Barra 3, COMB 3)

ángulo biela $tg\alpha = \frac{3.75 - 0.15}{5.0 - \frac{5.5}{6}} = 0.882$

$A_{styd} = \frac{1095 - 458}{0.882} = 722$ t ; $A_s = \frac{722}{4.0} = 181 \text{ cm}^2$

poner 2 capas de 14 ϕ32 en banda de 2.25.

28 ϕ32 $\simeq 225 \text{ cm}^2 > 181$

entre bandas 14 ϕ32 (112.6 cm^2) $> 181/4$

- cuantías

ρ long inf (178 ϕ32) $= \frac{178 \times 8.04}{1400 \times 375} = 2.7 ‰$

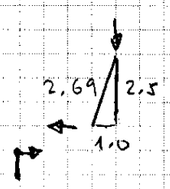
ρ trans inf (206 ϕ32) $= \frac{206 \times 8.04}{2800 \times 375} = 1.6 ‰$

Encepado pilotes (cont)

- armadura longitudinal superior

Máximo axil en la pantalla inclinada.

$N_{d\,max} = 4735$ t (Barra 201, COMB 3)



Componente horizontal

$T_d = \frac{4735}{2.69} = 1760$ t ; descontando el cortante de los 3 pilotes que están delante $T_{d1} = 1760 - 3\times160 = 1280$ t / 5.5 = 233 t/m.

2 capas $\phi 32/0.20$ (80.4) > 53

- armadura transversal superior

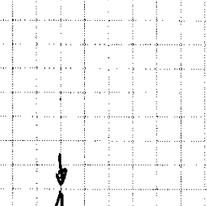
$\phi 32/0.20$ (40.2 cm²/m) (1/3 de la inferior)

- armadura vertical (armadura de cosido, cercos)

Producido por la dispersión de las bielas de compresión

$C_d = \frac{1299 - 458}{0.707} = 1190$ t

$T_d = 0.3\,C_d = 357$ t ; $A_s = \frac{357}{4} = 89$ cm²

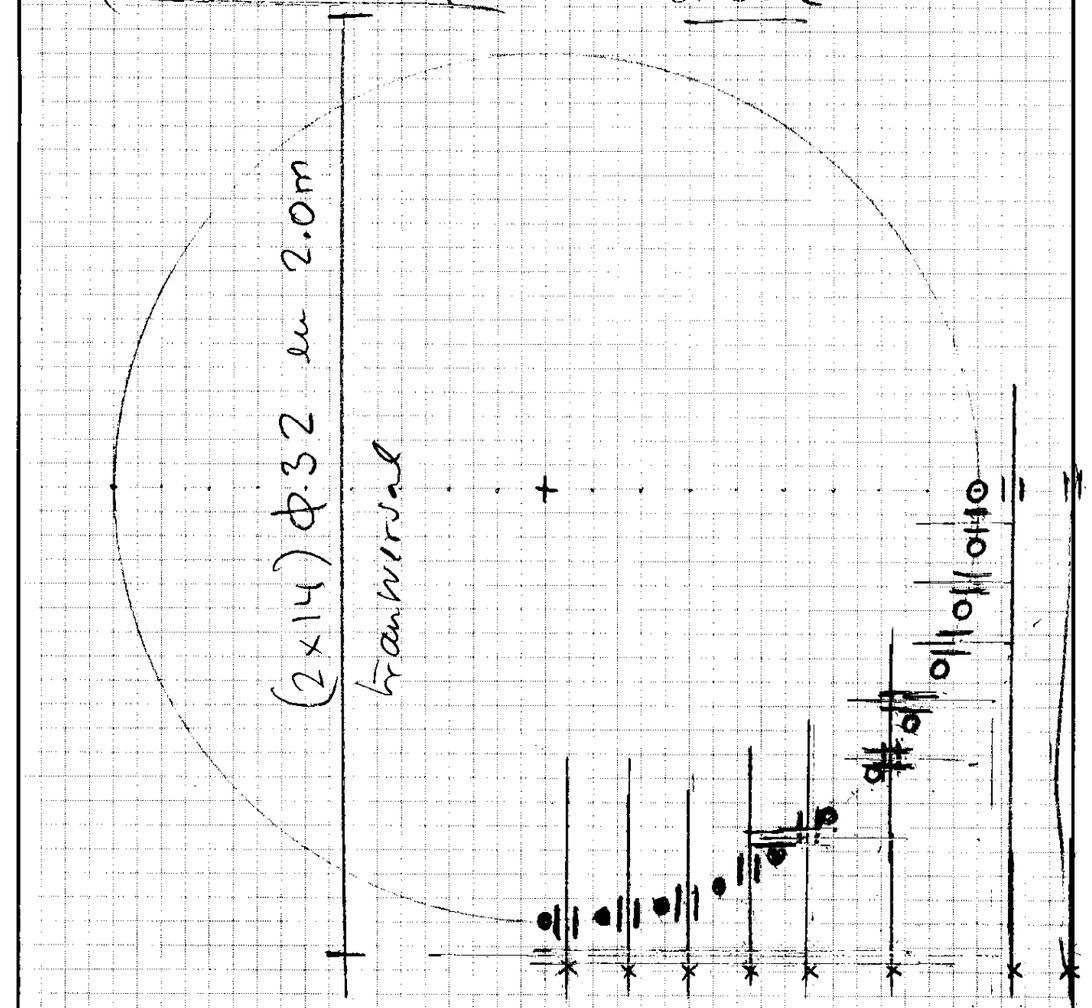


14 estribos ϕ 20 (88 cm²) ✓

ρ long. inp. (140 ϕ32) = $\frac{140\times8.04}{1400\times375}$ = 2.1 ‰

ρ trans. inp. (140 ϕ32) = $\frac{140\times8.04}{2800\times375}$ = 1.1 ‰

(armadura sobre pilotes) Detalle



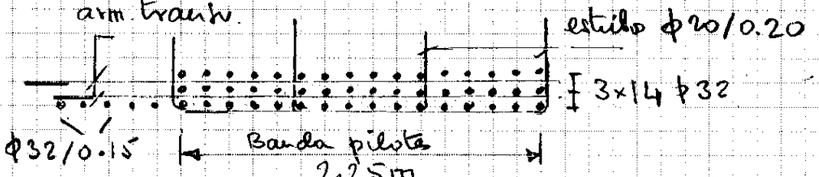
(a x b) φ d

a = nº de capas

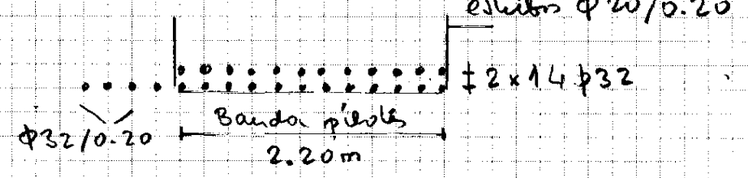
b = nº de barras

Encepado pilotes (cont)

- armadura inferior



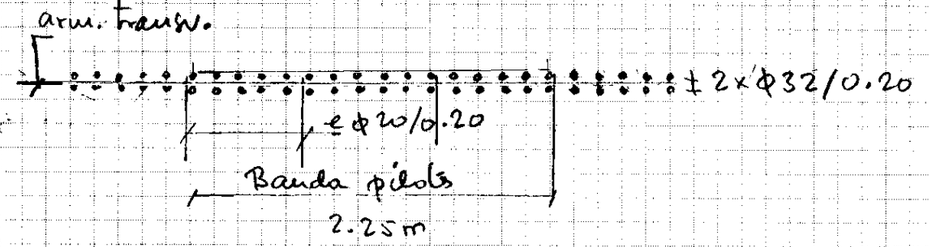
Banda sobre pilotes en sentido longitudinal
Fuera de estas bandas φ32/0.15



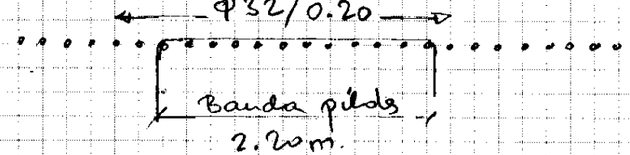
Banda sobre pilotes en sentido transversal
Fuera de estas bandas φ32/0.20

Encepado de pilotes (cont)

- armadura superior



Armadura longitudinal superior 2 capas φ32/0.20



Armadura transversal superior φ32/0.20

Pantallas inclinadas

Sección 5.50 × 0.84 (Barras 201 y 202)

Combinación de esfuerzos resultantes

Nd	-177 t	4735 t	-1480 t	3432 t
Md	1443 mt	1032 mt	1321 mt	1155 mt.

Nd	4666 t	-246 t	3401 t	-1511 t
Md	1158 mt	1318 mt	1211 mt	1264 mt

Armadura

$$A_{s\,tyd} = \frac{1321}{0.9\times 0.84} + \frac{1480}{2} = 2487\ t \Rightarrow A_s = 561\ cm^2$$

$2\phi 32/0.15 \approx 78\phi 32\ (627\ cm^2) > 561$

En caras cortas (0.84) poner $6\phi 32$/cara

$A_{s\,total} = 168\phi 32\ (1351\ cm^2)$

$$\rho = 100 \times \frac{1351}{610\times 84} = 2.6\ \%$$

A continuación se incluye la comprobación de esta armadura.

Pantallas inclinadas (cont)

- armadura a cortante

$V_d = 301\ t$, $N_d = -1480\ t$ $\Big\}$ $\varepsilon = 1 + \sqrt{\frac{200}{840}} = 1.49$; $\rho = \frac{579}{550\times 84} = 0.013$

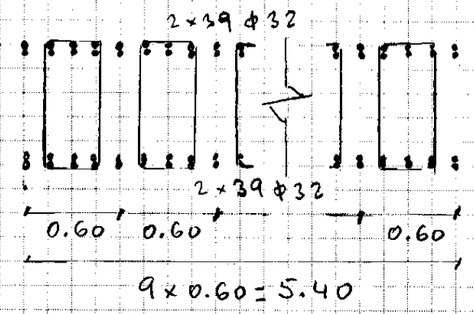
$$V_{u2} = 0.10\times 1.49\times (1.3\times 30)^{1/3}\times 5.5\times 84 - 0.15\times 1480 = 233.4 - 222 = 11.4\ t$$

Todo el cortante se resiste con armadura transversal.

$V_{su} = 301 = A_{st\,yd}\times 0.9\times 0.80$; $A_{st\,yd} = 418\ t$.

$$A_s = \frac{418}{4.0} = 105\ cm^2/m.$$

Se disponen en 5.40 m 9 estribos $\phi 12/0.60$ cada uno abarcando $2\times 3\phi 32$ más un cerco general $\phi 12$, total $10\times 2 = 20\phi 12$ con separación vertical de 0.20 m más $100\phi 12/m \approx 113\ cm^2/m > 105$



Disposición de estribos

PRONTUARIO INFORMÁTICO DEL HORMIGÓN ESTRUCTURAL 3.0
Cátedra de Hormigón Estructural ETSICCPM - IECA

Obra: Sacyr
Fecha: 13/01/2006
Hora: 11:09:48

Cálculo de secciones a flexión compuesta recta

1 Datos

- Materiales

```
Tipo de hormigón : HA-30
Tipo de acero    : B-500-S
fck [MPa]        = 30.00
fyk [MPa]        = 500.00
γc               = 1.50
γs               = 1.15
```

- Sección

```
Sección : P44
b [m] = 5.50
h [m] = 0.84
r [m] = 0.080

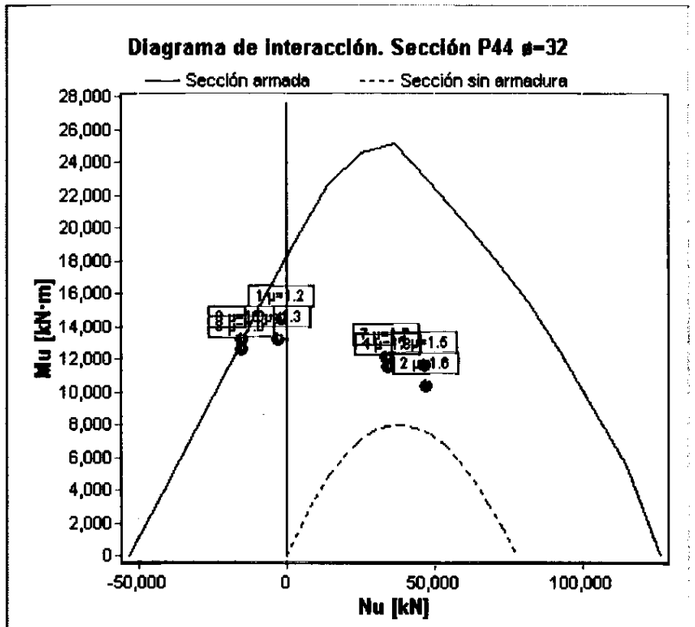
nº barras horizontales = 72
nº barras verticales   = 6
```

2 Diagrama

```
ϕ [mm] = 32
```

Resultados numéricos del diagrama de interacción

x [cm]	1/r [1/m] ·1.E-3	Nu [kN]	Mu [kN·m]
-9999.000	0.0	53150.3	0.0
-0.013	12.9	41945.3	3809.7
0.053	14.1	30740.4	7719.8
0.098	15.1	19535.4	11640.0
0.137	16.0	8330.4	15447.7
0.172	17.0	-2874.5	19121.8
0.214	16.3	-14079.5	22618.8
0.345	10.2	-25284.5	24589.8
0.471	7.4	-36489.4	25204.2
0.525	6.7	-47694.4	22922.5
0.587	6.0	-58899.4	20603.9
0.657	5.3	-70104.3	18156.1
0.736	4.8	-81309.3	15486.9
0.823	4.3	-92514.3	12471.8
0.955	3.4	-103719.2	8990.3
1.275	2.2	-114924.2	5430.1
9999.000	0.6	-126129.2	0.0



Coeficientes de seguridad de los pares de esfuerzos de cálculo

Punto	Nd [kN]	Md [kN·m]	γ
1	-1770	14430	1.22
2	47350	10320	1.62
3	-14800	13210	1.00
4	34320	11550	1.76
5	46660	11580	1.54
6	-2460	13180	1.30
7	34010	12110	1.71
8	-15110	12640	1.03

SyV Sacyr Vallehermoso

Pila 4

FECHA

HOJA

Cargadero

- Barras 401, 402 y 403

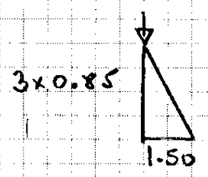
Voladizo barras 401 y 403

$M_{d\,max} = 2868$ mt

$A_{s\,fyd} = \frac{2868}{0.9 \times 3.0} = 1062$ t ; $A_s = 240$ cm²

$V_d = 1365$ t

Por bielas



$A_{s\,fyd} = 1365 \times \frac{1.50}{3 \times 0.85} = 803$ t ;

$A_s = \frac{803}{4.0} = 201$ cm² < 240 cm²

44 ϕ 32 (354 cm²) > 240

barra central pórtico (402)

$M_d^+ = 4263$ mt ; $M_d^- = -7816$ mt

$A_{s\,fyd\,inf} = \frac{4263}{0.9 \times 3} = 1579$ t ; 356 cm² / 5.5 = 65 cm²/m (57)
1386

$A_{s\,fyd\,sup} = \frac{7816}{0.9 \times 3} = 2895$ t ; 653 cm² / 5.5 = 119 cm²/m (107)

A superior 2 capas ϕ32/0.125 (128.6 cm²)

A inferior 1 capa ϕ32/0.125 (64.8 cm²)

Cargadero (cont)

esfuerzo cortante

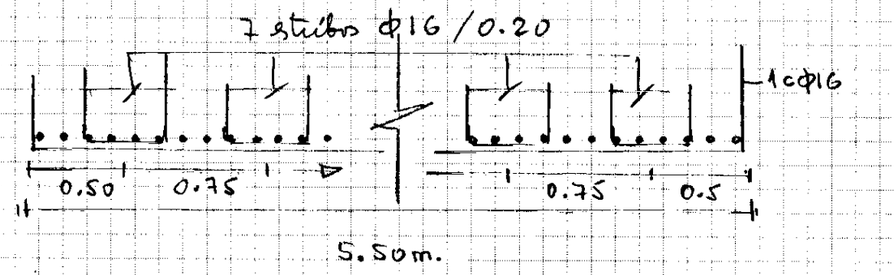
$V_{dmax} = 2176\,t$; $\xi = 1+\sqrt{\frac{200}{3000}} = 1.26$; $\rho = 0{,}0022$

$V_{cu} = 0.10 \times 1.26 \times (100 \times 0{,}0022 \times 30)^{1/3} \times 5.5 \times 300 + 345 = 735\,t$

$V_{su} = 2176 - 735 = 1441\,t$; $A_{s\,trad} = \frac{1441}{0{,}9 \times 3.0} = 534\,t/m$.

$A_s = 534 / 4.0 = 133\,cm^2/m$

$14\phi16/0.20\ (70\phi16) \geq 140\,cm^2 > 133$



- cercos horizontales

$0.20 \times 2176 = A_{sc\,fyd}$; $A_{sc} = 109\,cm^2$

armadura horizontal $\phi20/0.20$

$2 \times 5 \times 3 \times 3.14 = 94.2\,cm^2 \sim (109)$

Cargadero

- apoyo viga

$T_{d1} = 860 \times \frac{1.20}{2.70} = 382\,t$

$A_{s1} = \frac{382}{4} = 96\,cm^2$; $2\phi32/0.15$ (107)

$\sqrt{1.2^2+1.0^2} = 1.56$; $\sqrt{1.56^2+2.7^2} = 3.12$

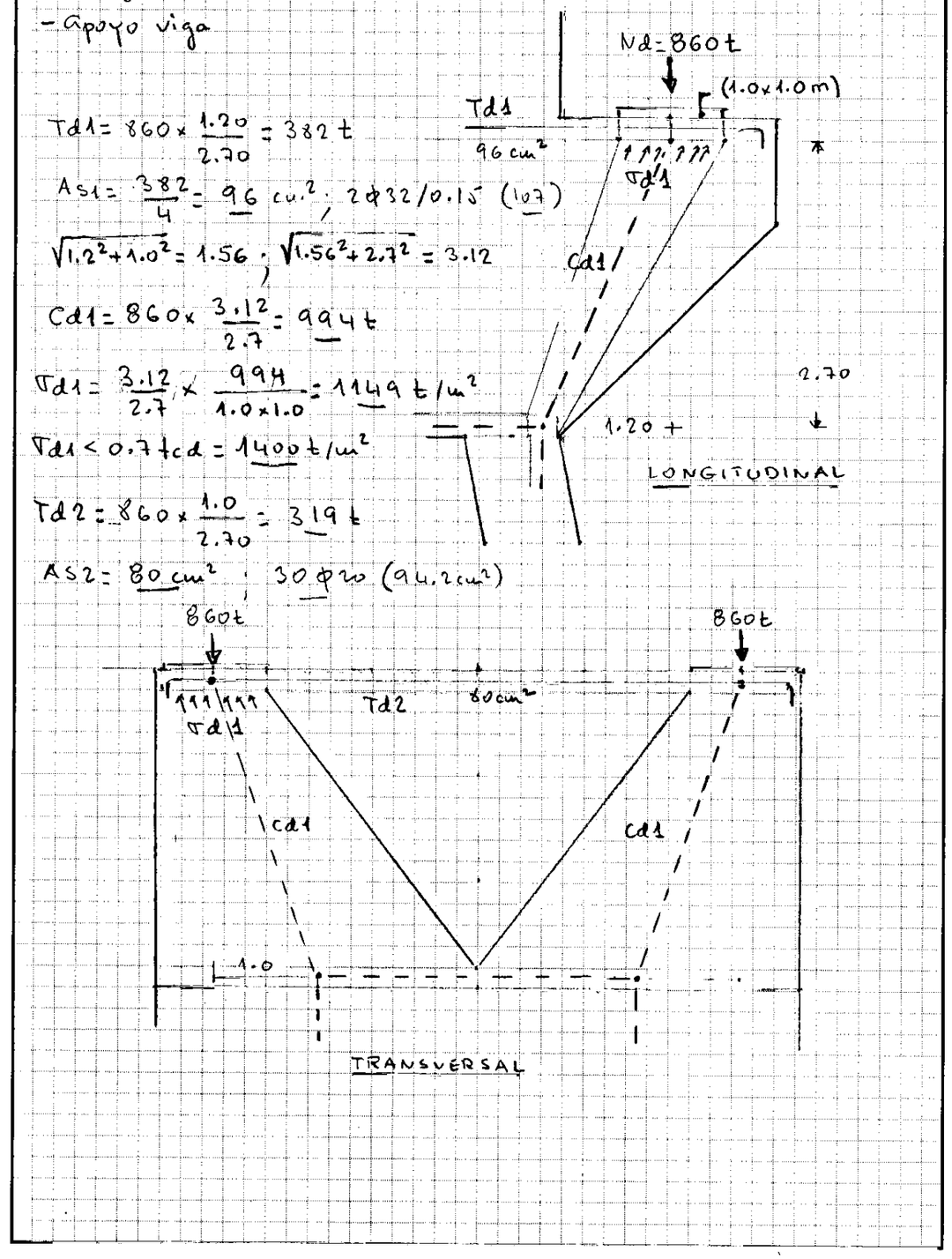
$C_{d1} = 860 \times \frac{3.12}{2.7} = 994\,t$

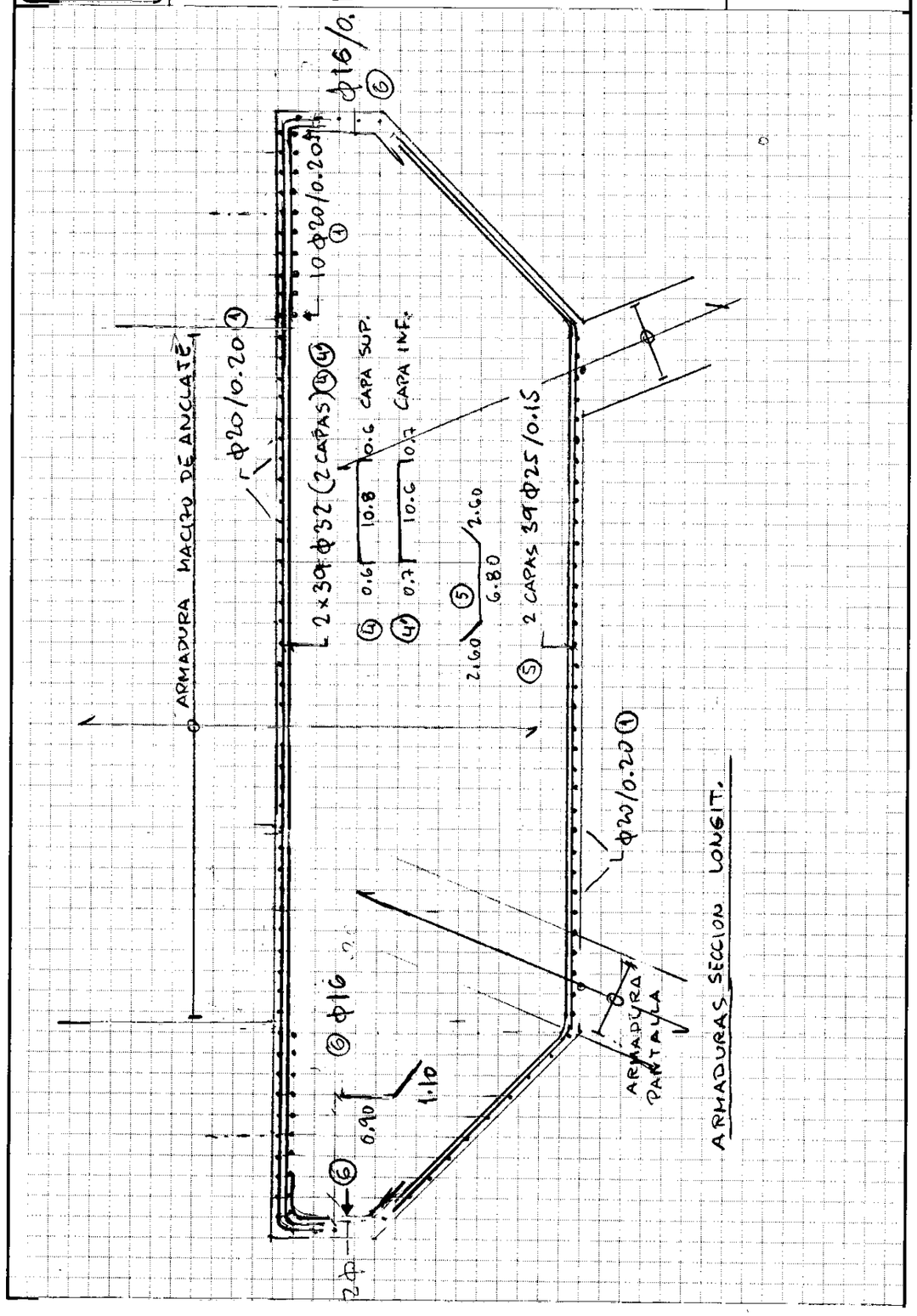
$\sigma_{d1} = \frac{3.12}{2.7} \times \frac{994}{1.0 \times 1.0} = 1149\,t/m^2$

$\sigma_{d1} < 0.7 f_{cd} = 1400\,t/m^2$

$T_{d2} = 860 \times \frac{1.0}{2.70} = 319\,t$

$A_{S2} = 80\,cm^2$; $30\phi20\ (94.2\,cm^2)$





Macizo de anclaje

- Tramo Cogwise de contratracción y anclado

$T_d = 520 \times 38 \times 0.05 \times 1.35 = 1334\ t$

altura del anclaje $h = 1.65 m$

$M_d = 1.65 \times 1334 = 2201\ mt.$

$A_{Sfyd} = \frac{2201}{0.9 \times 3.0} = 815\ t / 2 = 408\ t$ / macizo de anclaje

$A_S = \frac{408}{5.1} \times 1.15 = 92 cm^2$ $\quad 2 \times 13 \Phi 25\ (128\ cm^2) > 92$ $\quad (S = 0.125)$

armadura a cortante

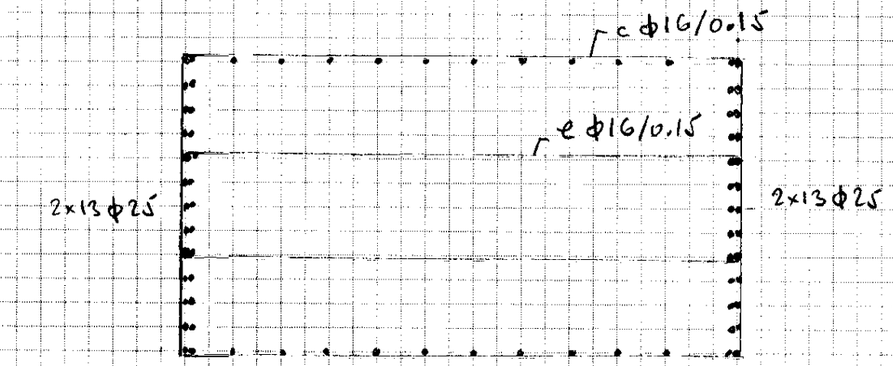
$\xi = 1 + \sqrt{\frac{200}{3000}} = 1.26$; $\quad \rho = \frac{128}{160 \times 300} = 0.0027$

$V_{cu} = 0.10 \times 1.26 \times (100 \times 0.0027 \times 30)^{1/3} \times 8.0 \times 160 = 121 t.$

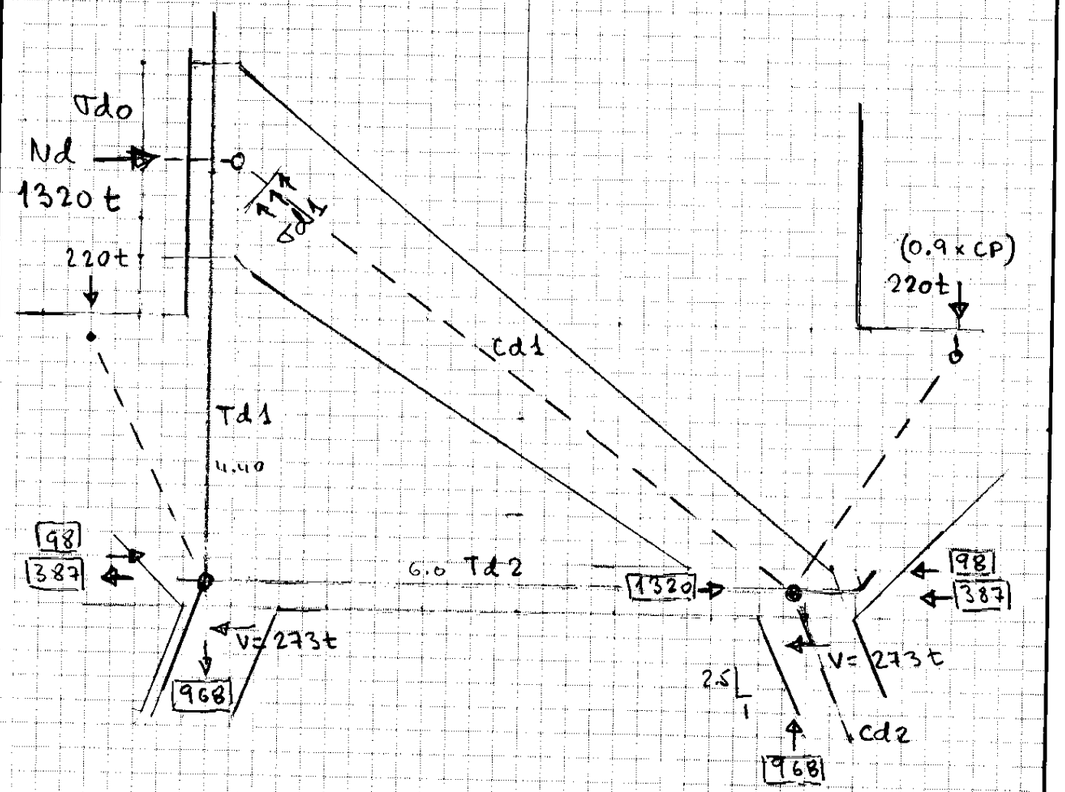
$V_{su} = 667 - 121 = 546 t$; $\quad A_{sf_{yd}} = \frac{546}{0,9 \times 3} = 202\ t/m$

$A_S = 51\ cm^2/m$

doble cerco $\Phi 16/0.15$ $\quad (26 \Phi 16), 52 cm^2 > 51$



Macizo de anclaje



$T_{d1} = 1320 \times \frac{4.4}{6.0} = 968\,t$; $A_{s1} = 968/4 = 242\,cm^2$

$C_{d1} = 1320 \times \frac{7.44}{6} = 1637\,t$; $40\Phi32\ (321.6\,cm^2) > 242$

$C_{d2} = 968 \times \frac{2.69}{2.5} = 1042\,t$;

Equilibrio de fuerzas horizontales externas

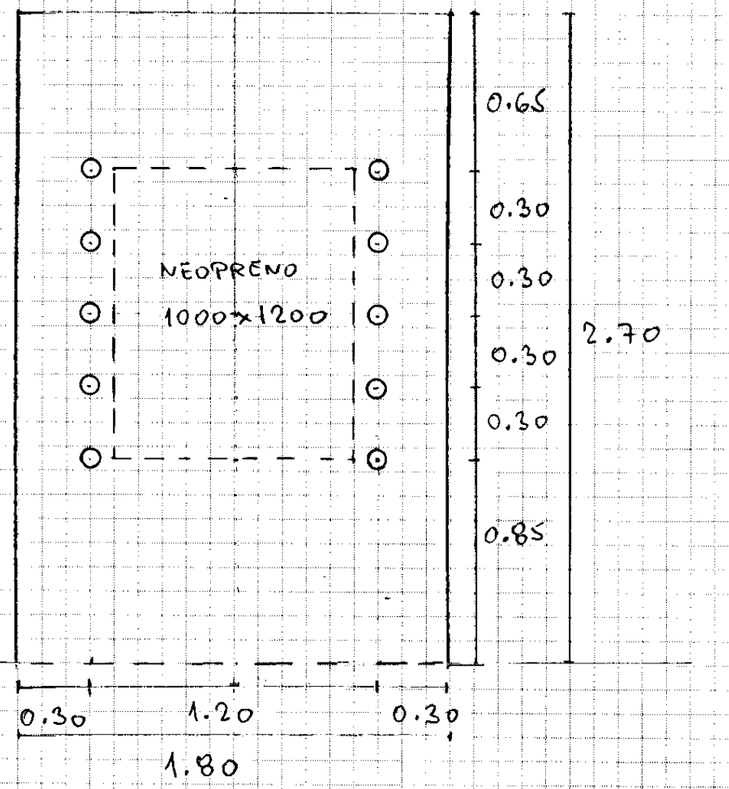
$H = 1320 - 2 \times 387 = 546\,t$.

que se equilibrará con un cortante de 273 t/pata

luego: $T_{d2} = 1320 - 98 - 387 - 273 = 562\,t$

$A_{s2} = 562/4 = 140\,cm^2\ (140/3 = 47\,cm^2/m)$ $2\Phi25/0.15$ $(65.5\,cm^2)$

$\sigma_{do} = \frac{1320}{2 \times 0.9 \times 0.9} = 815\,t/m^2$; $\sigma_{d1} = 815 \times 1.24^2 = 1253 < 1400$ ✓



MACIZO DE ANCLAJE EN PILA 4

SyV Sacyr Vallehermoso

Pila 4 - (Pila-estribo)

FECHA

HOJA

LINEA DE MERCANCIAS

(TRAMO SACYR)

FUERZAS EN APOYO DE PILA 4:

1 - Peso propio.
2 - Carga muerta característica.
3 - Máxima reacción por sobrecarga uniforme.
4 - Mínima reacción por sobrecarga uniforme.
5 - Máxima reacción locomotoras.
6 - Mínima reacción locomotoras.
7 - Viento transversal sin sobrecarga.
8 - Viento transversal con sobrecarga.

```
TRAMO MERCANCIAS SACYR
SYSTEM
L=8
JOINTS
1 X=0 Y=0 Z=0
2 X=38
3 X=83
4 X=128
5 X=166

RESTRAINTS
1,5 R=1,1,1,1,0,0

FRAME
NM=1 NL=5 Z=-1,-0.68 :PP(23T/M),CP(15.6T/M)
1 A=8.6 I=8.93,96.5 E=3E6 W=23
1 WG=0,0,-21.1
2 PLD=0.01,-60,0,1.6,-60,0,3.2,-60,0,4.8,-60,0
3 PLD=20.1,-60,0,21.7,-60,0,23.3,-60,0,24.9,-60,0
4 WG=0,0.76
5 WG=0,1.03
1,1,2 NSL=0,0,1,0,2,0,4,5 M=1 LP=-2,0
2,2,3 NSL=0,0,0,1,0,3,4,5
3,3,4 NSL=0,0,1,0,0,0,4,5
4,4,5 NSL=0,0,0,1,0,0,4,5
```

TRAMO MERCANCIAS SACYR

R E A C T I O N S A N D A P P L I E D F O R C E S

LOAD CONDITION 1 - FORCES "F" AND MOMENTS "M"

JOINT	F(Z)	M(Y)
1	331.0953	.0000
2	1065.1757	.0000
3	1025.4581	.0000
4	1065.1757	.0000
5	331.0953	.0000
TOTAL	.3818E+04	-.1376E-12

Peso Propio

TRAMO MERCANCIAS SACYR

R E A C T I O N S A N D A P P L I E D F O R C E S

LOAD CONDITION 2 - FORCES "F" AND MOMENTS "M"

JOINT	F(Z)	M(Y)
1	225.1448	.0000
2	724.3195	.0000
3	697.3115	.0000
4	724.3195	.0000
5	225.1448	.0000
TOTAL	.2596E+04	.4695E-12

Carga Muerta (G_K)

$G_{K mp} = \frac{18.97}{15.66} \times (G_K)$

$G_{K mf} = \frac{12.35}{15.66} \times (G_K)$

TRAMO MERCANCIAS SACYR

R E A C T I O N S A N D A P P L I E D F O R C E S

LOAD CONDITION 3 - FORCES "F" AND MOMENTS "M"

JOINT	F(Z)	M(Y)
1	367.4801	.0000
2	423.7082	.0000
3	470.3732	.0000
4	553.4747	.0000
5	-63.7361	.0000
TOTAL	.1751E+04	-.1091E-11

Reacc máx. sc. uniforme

TRAMO MERCANCIAS SACYR

R E A C T I O N S A N D A P P L I E D F O R C E S

LOAD CONDITION 4 - FORCES "F" AND MOMENTS "M"

JOINT	F(Z)	M(Y)
1	-63.7361	.0000
2	553.4747	.0000
3	470.3732	.0000
4	423.7082	.0000
5	367.4801	.0000
TOTAL	.1751E+04	.6101E-12

Reacción mínima sc. uniforme

TRAMO MERCANCIAS SACYR

R E A C T I O N S A N D A P P L I E D F O R C E S

LOAD CONDITION 5 - FORCES "F" AND MOMENTS "M"

JOINT	F(Z)	M(Y)
1	221.1203	.0000
2	22.8485	.0000
3	-5.0355	.0000
4	1.3362	.0000
5	-.2694	.0000
TOTAL	.2400E+03	-.4250E-14

Reacción máxima locomotora

TRAMO MERCANCIAS SACYR

R E A C T I O N S A N D A P P L I E D F O R C E S

LOAD CONDITION 6 - FORCES "F" AND MOMENTS "M"

JOINT	F(Z)	M(Y)
1	-22.6573	.0000
2	142.9379	.0000
3	143.6821	.0000
4	-30.0147	.0000
5	6.0520	.0000
TOTAL	.2400E+03	.3046E-12

Reacción mínima locomotora

TRAMO MERCANCIAS SACYR

R E A C T I O N S A N D A P P L I E D F O R C E S

LOAD CONDITION 7 - FORCES "F" AND MOMENTS "M"

JOINT	F(Y)	M(Z)
1	-10.9405	.0000
2	-35.1971	.0000
3	-33.8847	.0000
4	-35.1971	.0000
5	-10.9405	.0000
TOTAL	-.1262E+03	.5357E-13

viento transv. sin sobrecarga

TRAMO MERCANCIAS SACYR

R E A C T I O N S A N D A P P L I E D F O R C E S

LOAD CONDITION 8 - FORCES "F" AND MOMENTS "M"

JOINT	F(Y)	M(Z)
1	-14.8273	.0000
2	-47.7013	.0000
3	-45.9227	.0000
4	-47.7013	.0000
5	-14.8273	.0000
TOTAL	-.1710E+03	-.3257E-13

viento transv. con sobrecarga

SyV Sacyr Vallehermoso

Pila 4 - (Pila - estribo)

FECHA

HOJA

LINEA DE MERCANCIAS

(TRAMO COPROSA)

FUERZAS EN APOYO DE PILA 4:

1 - Peso propio
2 - Carga muerta característica
3 - Máxima reacción por sobrecarga uniforme.
4 - Mínima " " " "
5 - Máxima reacción locomotoras
6 - Mínima " "
7 - Viento transversal sin sobrecarga
8 - Viento " con " .

```
TRAMO MERCANCIAS COPROSA
SYSTEM
L=8
JOINTS
1 X=0 Y=0 Z=0
2 X=36
11 X=441 G=2,11,1
12 X=477

RESTRAINTS
1,12 R=1,1,1,1,0,0

FRAME
NM=1 NL=5 Z=-1,-0.68 :PP(23T/M),CP(15.6T/M)
1 A=8.6 I=8.93,96.5 E=3E6 W=23
1 WG=0,0,-21.1
2 PLD=0.01,-60,0,1.6,-60,0,3.2,-60,0,4.8,-60,0
3 PLD=20.1,-60,0,21.7,-60,0,23.3,-60,0,24.9,-60,0
4 WG=0,0.76
5 WG=0,1.03
1,1,2 NSL=0,0,1,0,2,0,4,5 M=1 LP=-2,0
2,2,3 NSL=0,0,0,1,0,3,4,5
3,3,4 NSL=0,0,1,0,0,0,4,5
4,4,5 NSL=0,0,0,1,0,0,4,5
5,5,6 NSL=0,0,1,0,0,0,4,5
6,6,7 NSL=0,0,0,1,0,0,4,5
7,7,8 NSL=0,0,1,0,0,0,4,5
8,8,9 NSL=0,0,0,1,0,0,4,5
9,9,10 NSL=0,0,1,0,0,0,4,5
10,10,11 NSL=0,0,0,1,0,0,4,5
11,11,12 NSL=0,0,1,0,0,0,4,5
```

TRAMO MERCANCIAS COPROSA

R E A C T I O N S A N D A P P L I E D F O R C E S

LOAD CONDITION 1 - FORCES "F" AND MOMENTS "M"

Peso Propio

JOINT	F(Z)	M(Y)
1	308.2583	.0000
2	1035.1412	.0000
3	1037.6631	.0000
4	1034.2873	.0000
5	1035.1875	.0000
6	1034.9625	.0000
7	1034.9625	.0000
8	1035.1875	.0000
9	1034.2873	.0000
10	1037.6631	.0000
11	1035.1412	.0000
12	308.2583	.0000
TOTAL	.1097E+05	-.2929E-11

TRAMO MERCANCIAS COPROSA

R E A C T I O N S A N D A P P L I E D F O R C E S

LOAD CONDITION 2 - FORCES "F" AND MOMENTS "M"

Carga muerta (G_k)

$G_{k\,mp} = \frac{18,97}{15,66} \times (G_k)$

$G_{k\,mf} = \frac{12,35}{15,66} \times (G_k)$

JOINT	F(Z)	M(Y)
1	209.6156	.0000
2	703.8960	.0000
3	705.6109	.0000
4	703.3154	.0000
5	703.9275	.0000
6	703.7745	.0000
7	703.7745	.0000
8	703.9275	.0000
9	703.3154	.0000
10	705.6109	.0000
11	703.8960	.0000
12	209.6156	.0000
TOTAL	.7460E+04	.3231E-12

TRAMO MERCANCIAS COPROSA

R E A C T I O N S A N D A P P L I E D F O R C E S

LOAD CONDITION 3 - FORCES "F" AND MOMENTS "M"

JOINT	F(Z)	M(Y)
1	353.0247	.0000
2	383.5722	.0000
3	503.9146	.0000
4	466.9454	.0000
5	476.8038	.0000
6	474.3392	.0000
7	474.3392	.0000
8	476.8038	.0000
9	466.9454	.0000
10	503.9146	.0000
11	383.5722	.0000
12	353.0247	.0000
TOTAL	.5317E+04	.1710E-11

Reacción máx. sc. uniforme

TRAMO MERCANCIAS COPROSA

R E A C T I O N S A N D A P P L I E D F O R C E S

LOAD CONDITION 4 - FORCES "F" AND MOMENTS "M"

JOINT	F(Z)	M(Y)
1	-70.2313	.0000
2	566.0574	.0000
3	448.0285	.0000
4	481.9008	.0000
5	472.8682	.0000
6	475.1264	.0000
7	475.1264	.0000
8	472.8682	.0000
9	481.9008	.0000
10	448.0285	.0000
11	566.0574	.0000
12	-70.2313	.0000
TOTAL	.4747E+04	.4073E-12

Reacción mínima sc. uniforme

TRAMO MERCANCIAS COPROSA

R E A C T I O N S A N D A P P L I E D F O R C E S

LOAD CONDITION 5 - FORCES "F" AND MOMENTS "M"

JOINT	F(Z)	M(Y)
1	220.1834	.0000
2	23.6711	.0000
3	-4.8873	.0000
4	1.3096	.0000
5	-.3509	.0000
6	.0940	.0000
7	-.0252	.0000
8	.6751E-02	.0000E+00
9	-.1809E-02	.0000E+00
10	.4860E-03	.0000E+00
11	-.1316E-03	.0000E+00
12	.2813E-04	.0000E+00
TOTAL	.2400E+03	.5301E-13

Reacción max. hormigonado

TRAMO MERCANCIAS COPROSA

R E A C T I O N S A N D A P P L I E D F O R C E S

LOAD CONDITION 6 - FORCES "F" AND MOMENTS "M"

JOINT	F(Z)	M(Y)
1	-24.5600	.0000
2	145.5097	.0000
3	142.7589	.0000
4	-30.0612	.0000
5	8.0549	.0000
6	-2.1583	.0000
7	.5783	.0000
8	-.1550	.0000
9	.0415	.0000
10	-.0112	.0000
11	.3022E-02	.0000E+00
12	-.6457E-03	.0000E+00
TOTAL	.2400E+03	-.6543E-13

Reacción mínima hormigonado

TRAMO MERCANCIAS COPROSA

R E A C T I O N S A N D A P P L I E D F O R C E S

LOAD CONDITION 7 - FORCES "F" AND MOMENTS "M"

JOINT	F(Y)	M(Z)
1	-10.1859	.0000
2	-34.2047	.0000
3	-34.2880	.0000
4	-34.1765	.0000
5	-34.2062	.0000
6	-34.1988	.0000
7	-34.1988	.0000
8	-34.2062	.0000
9	-34.1765	.0000
10	-34.2880	.0000
11	-34.2047	.0000
12	-10.1859	.0000
TOTAL	-.3625E+03	-.8411E-13

viento transv. sin sobrecarga

TRAMO MERCANCIAS COPROSA

R E A C T I O N S A N D A P P L I E D F O R C E S

LOAD CONDITION 8 - FORCES "F" AND MOMENTS "M"

JOINT	F(Y)	M(Z)
1	-13.8046	.0000
2	-46.3563	.0000
3	-46.4693	.0000
4	-46.3181	.0000
5	-46.3584	.0000
6	-46.3483	.0000
7	-46.3483	.0000
8	-46.3584	.0000
9	-46.3181	.0000
10	-46.4693	.0000
11	-46.3563	.0000
12	-13.8046	.0000
TOTAL	-.4913E+03	.4115E-13

viento transversal con sobrecarga

SyV Sacyr Vallehermoso

Pila 4 - (Pila - estribo)

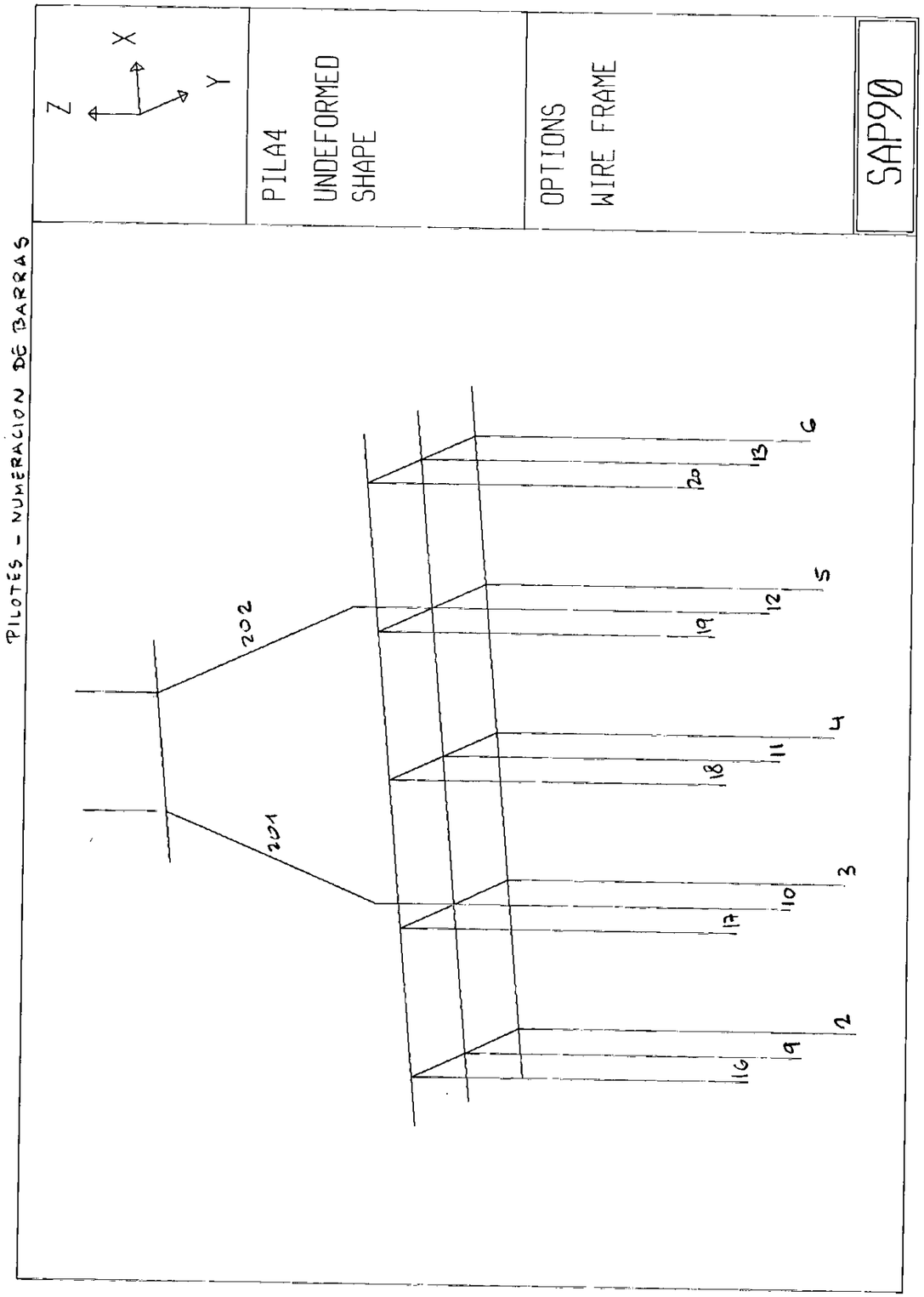
FECHA

HOJA

LINEA DE MERCANCIAS

(CALCULOS ORDENADOR)

Hipotesis 1 - Axil máximo y mínimo en pilotes (ELS)
Hipotesis 2 - Fz máximo con +Fx máximo (ELU)
Hipotesis 3 - Fz máximo con -Fx máximo (ELU)
Hipotesis 4 - Fz mínimo con +Fx máximo (ELU)
Hipotesis 5 - " " -Fx " (ELU)



```
PILA FIJA (PILA4F)
SYSTEM
L=5
JOINTS
2 X=-12 Y=-5 Z=0
6 X=12
20 Y=5
16 X=-12 Q=2,6,16,20,1,7
102 X=-12 Y=-5 Z=12.8
106 X=12
120 Y=5
116 X=-12 Q=102,106,116,120,1,7
101 X=-14 Y=-5
107 X=14
114 Y=0
121 Y=5
115 X=-14
108 Y=0
210 X=-6 Y=0 Z=16.55
212 X=6
310 X=-3 Z=24.05
312 X=3
409 X=-4.5 Z=25.55
410 X=-2.4
412 X=2.4
413 X=4.5
510 X=-2.4 Z=28.55
512 X=2.4

RESTRAINTS
1,21 R=1,1,1,1,1,1

FRAME
NM=8 Z=-1,-1.35,-1.35,-1,-1
1 A=3.14 I=0.785,0.785 E=3E6 :PILOTE
2 A=15.0 I=17.58,20.00 J=31.6 W=51.9 :BARRA (4.0X3.75) W=PP+PT
3 A=22.5 I=26.37,67.50 J=63.3 W=77.9 :BARRA (6.0X3.75) W=PP+PT
4 A=15.0 I=17.58,20.00 J=31.6 :BARRA (4.0X3.75)
5 A=30.0 I=35.16,160.0 J=97.0 :BARRA (8.0X3.75)
6 A=4.62 I=0.272,11.65 J=0.96 :BARRA (5.5X0.84)
7 A=16.5 I=12.37,41.59 J=32.7 :BARRA (5.5X3.0)
8 A=99.9 I=300.0,300.0 J=99.9 :BARRA AUXILIAR
2,2,102 G=4,1,1,1,0,0 M=1 LP=-2,0
9,9,109 G=4,1,1,1,0,0
16,16,116 G=4,1,1,1,0,0
101,101,102 G=5,1,1,1,0,0 M=2
108,108,109 G=5,1,1,1,0,0 M=3
115,115,116 G=5,1,1,1,0,0 M=2
121,102,109 G=1,1,7,7,0,0 M=4 LP=3,0
123,103,110 G=1,1,7,7,0,0 M=5
125,104,111 G=1,1,7,7,0,0 M=4
127,105,112 G=1,1,7,7,0,0 M=5
129,106,113 G=1,1,7,7,0,0 M=4
131,110,210 M=8 LP=-2,0
132,112,212
201,210,310 M=6
202,212,312
301,310,410 M=8
302,312,412
401,409,410 M=7
402,410,412
403,412,413
501,410,510
502,412,512
```

```
LOADS
410,412,2 F=0,0,-405 L=1 :PP+CP PILA
409 F=0,0,-556 :PP+CP APOYO TRAMO SACYR
413 F=0,0,-518 :PP+CP APOYO TRAMO COPROSA
410,412,2 F=0,0,-148 :SC PILA
409 F=0,0,-367 :SC TRAMO SACYR
413 F=0,0,-353 :SC TRAMO COPROSA
510,512,2 F=300 :REOLOGICAS
510,512,2 F=476 :FRENADO+ARRANQUE+VIENTO
410,412,2 F=0,0,-405*1.35 L=2 :PP+CP PILA
409 F=0,0,-604*1.35 :PP+CPS APOYO TRAMO SACYR
413 F=0,0,-562*1.35 :PP+CPS APOYO TRAMO COPROSA
410,412,2 F=0,0,-148*1.5 :SC PILA
409 F=0,0,-367*1.5 :SC TRAMO SACYR
413 F=0,0,-353*1.5 :SC TRAMO COPROSA
510,512,2 F=461 :REOLOGICAS
510,512,2 F=714 :FRENADO+ARRANQUE+VIENTO
410,412,2 F=0,0,-405*1.35 L=3 :PP+CP PILA
409 F=0,0,-604*1.35 :PP+CPS APOYO TRAMO SACYR
413 F=0,0,-562*1.35 :PP+CPS APOYO TRAMO COPROSA
410,412,2 F=0,0,-148*1.5 :SC PILA
409 F=0,0,-367*1.5 :SC TRAMO SACYR
413 F=0,0,-353*1.5 :SC TRAMO COPROSA
510,512,2 F=-461 :REOLOGICAS
510,512,2 F=-714 :FRENADO+ARRANQUE+VIENTO
410,412,2 F=0,0,-405 L=4 :PP+CP PILA
409 F=0,0,-509 :PP+CPI APOYO TRAMO SACYR
413 F=0,0,-474 :PP+CPI APOYO TRAMO COPROSA
410,412,2 F=0,0,-148*0.0 :SC PILA
409 F=0,0,-367*0.0 :SC TRAMO SACYR
413 F=0,0,-353*0.0 :SC TRAMO COPROSA
510,512,2 F=461 :REOLOGICAS
510,512,2 F=714 :FRENADO+ARRANQUE+VIENTO
410,412,2 F=0,0,-405 L=5 :PP+CP PILA
409 F=0,0,-509 :PP+CPI APOYO TRAMO SACYR
413 F=0,0,-474 :PP+CPI APOYO TRAMO COPROSA
410,412,2 F=0,0,-148*0.0 :SC PILA
409 F=0,0,-367*0.0 :SC TRAMO SACYR
413 F=0,0,-353*0.0 :SC TRAMO COPROSA
510,512,2 F=-461 :ROZAMIENTO APOYOS
510,512,2 F=-714 :FRENADO+ARRANQUE+VIENTO
```

PILA FIJA (PILA4F)

S Y S T E M D A T A

EXECUTION CODE	0
NUMBER OF LOAD CONDITIONS	5
STEADY STATE LOAD FREQUENCY	.0000E+00
NUMBER OF EIGENVALUES	0
EIGEN CONVERGENCE TOLERANCE	.1000E-03
EIGEN CUTOFF TIME PERIOD	.0000E+00

PILA FIJA (PILA4F)

G E N E R A T E D J O I N T C O O R D I N A T E S

JOINT	X	Y	Z
2	-12.000	-5.000	.000
3	-6.000	-5.000	.000
4	.000	-5.000	.000
5	6.000	-5.000	.000
6	12.000	-5.000	.000
9	-12.000	.000	.000
10	-6.000	.000	.000
11	.000	.000	.000
12	6.000	.000	.000
13	12.000	.000	.000
16	-12.000	5.000	.000
17	-6.000	5.000	.000
18	.000	5.000	.000
19	6.000	5.000	.000
20	12.000	5.000	.000
101	-14.000	-5.000	12.800
102	-12.000	-5.000	12.800
103	-6.000	-5.000	12.800
104	.000	-5.000	12.800
105	6.000	-5.000	12.800
106	12.000	-5.000	12.800
107	14.000	-5.000	12.800
108	-14.000	.000	12.800
109	-12.000	.000	12.800
110	-6.000	.000	12.800
111	.000	.000	12.800
112	6.000	.000	12.800
113	12.000	.000	12.800
114	14.000	.000	12.800
115	-14.000	5.000	12.800
116	-12.000	5.000	12.800
117	-6.000	5.000	12.800
118	.000	5.000	12.800
119	6.000	5.000	12.800
120	12.000	5.000	12.800
121	14.000	5.000	12.800
210	-6.000	.000	16.550
212	6.000	.000	16.550
310	-3.000	.000	24.050
312	3.000	.000	24.050
409	-4.500	.000	25.550
410	-2.400	.000	25.550
412	2.400	.000	25.550
413	4.500	.000	25.550
510	-2.400	.000	28.550
512	2.400	.000	28.550

PILA FIJA (PILA4F)

R E S T R A I N T D A T A

JOINT	RX	RY	RZ	RXX	RYY	RZZ
2	1	1	1	1	1	1
3	1	1	1	1	1	1
4	1	1	1	1	1	1
5	1	1	1	1	1	1
6	1	1	1	1	1	1
9	1	1	1	1	1	1
10	1	1	1	1	1	1
11	1	1	1	1	1	1
12	1	1	1	1	1	1
13	1	1	1	1	1	1
16	1	1	1	1	1	1
17	1	1	1	1	1	1
18	1	1	1	1	1	1
19	1	1	1	1	1	1
20	1	1	1	1	1	1

PILA FIJA (PILA4F)

F R A M E C O N T R O L D A T A

NUMBER OF MEMBER SECTION PROPERTIES 8
NUMBER OF SPAN LOADING PATTERNS 0

LOAD COND	GRAVITATIONAL MULTIPLIERS X	Y	Z	TEMPERATURE MULTIPLIERS	PRESTRESS MULTIPLIERS
1	.000	.000	-1.000	.000	.000
2	.000	.000	-1.350	.000	.000
3	.000	.000	-1.350	.000	.000
4	.000	.000	-1.000	.000	.000
5	.000	.000	-1.000	.000	.000

PILA FIJA (PILA4F)

S E C T I O N P R O P E R T Y D A T A

PROP ID	AREA	TORSIONAL INERTIA	MOMENTS OF INERTIA I33	MOMENTS OF INERTIA I22	SHEAR AREAS A2	SHEAR AREAS A3
1	.314E+01	.00000E+00	.78500E+00	.78500E+00	.000E+00	.000E+00
2	.150E+02	.31600E+02	.17580E+02	.20000E+02	.000E+00	.000E+00
3	.225E+02	.63300E+02	.26370E+02	.67500E+02	.000E+00	.000E+00
4	.150E+02	.31600E+02	.17580E+02	.20000E+02	.000E+00	.000E+00
5	.300E+02	.97000E+02	.35160E+02	.16000E+03	.000E+00	.000E+00
6	.462E+01	.96000E+00	.27200E+00	.11650E+02	.000E+00	.000E+00
7	.165E+02	.32700E+02	.12370E+02	.41590E+02	.000E+00	.000E+00
8	.999E+02	.99900E+02	.30000E+03	.30000E+03	.000E+00	.000E+00

PILA FIJA (PILA4F)

M A T E R I A L P R O P E R T Y D A T A

PROP ID	MODULUS OF ELASTICITY	SHEAR MODULUS	WEIGHT PER UNIT LEN	MASS PER UNIT LEN	THERMAL EXPANSION
1	.3000E+07	.1154E+07	.0000E+00	.0000E+00	.0000E+00
2	.3000E+07	.1154E+07	.5190E+02	.0000E+00	.0000E+00
3	.3000E+07	.1154E+07	.7790E+02	.0000E+00	.0000E+00
4	.3000E+07	.1154E+07	.0000E+00	.0000E+00	.0000E+00
5	.3000E+07	.1154E+07	.0000E+00	.0000E+00	.0000E+00
6	.3000E+07	.1154E+07	.0000E+00	.0000E+00	.0000E+00
7	.3000E+07	.1154E+07	.0000E+00	.0000E+00	.0000E+00
8	.3000E+07	.1154E+07	.0000E+00	.0000E+00	.0000E+00

PILA FIJA (PILA4F)

F R A M E E L E M E N T D A T A

ELT ID	JOINT END-I	JOINT END-J	LOCAL-AXIS N1	LOCAL-AXIS N2	PROPERTY-ID END-I	PROPERTY-ID END-J	VAR	REL CODES	REF TEMP	ELEMENT LENGTH
2	2	102	-2	0	1	1	0	000000	.00	12.80
3	3	103	-2	0	1	1	0	000000	.00	12.80
4	4	104	-2	0	1	1	0	000000	.00	12.80
5	5	105	-2	0	1	1	0	000000	.00	12.80
6	6	106	-2	0	1	1	0	000000	.00	12.80
9	9	109	-2	0	1	1	0	000000	.00	12.80
10	10	110	-2	0	1	1	0	000000	.00	12.80
11	11	111	-2	0	1	1	0	000000	.00	12.80
12	12	112	-2	0	1	1	0	000000	.00	12.80
13	13	113	-2	0	1	1	0	000000	.00	12.80
16	16	116	-2	0	1	1	0	000000	.00	12.80
17	17	117	-2	0	1	1	0	000000	.00	12.80
18	18	118	-2	0	1	1	0	000000	.00	12.80
19	19	119	-2	0	1	1	0	000000	.00	12.80
20	20	120	-2	0	1	1	0	000000	.00	12.80
101	101	102	-2	0	2	2	0	000000	.00	2.00
102	102	103	-2	0	2	2	0	000000	.00	6.00
103	103	104	-2	0	2	2	0	000000	.00	6.00
104	104	105	-2	0	2	2	0	000000	.00	6.00
105	105	106	-2	0	2	2	0	000000	.00	6.00
106	106	107	-2	0	2	2	0	000000	.00	2.00
108	108	109	-2	0	3	3	0	000000	.00	2.00
109	109	110	-2	0	3	3	0	000000	.00	6.00
110	110	111	-2	0	3	3	0	000000	.00	6.00
111	111	112	-2	0	3	3	0	000000	.00	6.00
112	112	113	-2	0	3	3	0	000000	.00	6.00
113	113	114	-2	0	3	3	0	000000	.00	2.00
115	115	116	-2	0	2	2	0	000000	.00	2.00
116	116	117	-2	0	2	2	0	000000	.00	6.00
117	117	118	-2	0	2	2	0	000000	.00	6.00
118	118	119	-2	0	2	2	0	000000	.00	6.00
119	119	120	-2	0	2	2	0	000000	.00	6.00
120	120	121	-2	0	2	2	0	000000	.00	2.00
121	102	109	3	0	4	4	0	000000	.00	5.00
122	109	116	3	0	4	4	0	000000	.00	5.00
123	103	110	3	0	5	5	0	000000	.00	5.00
124	110	117	3	0	5	5	0	000000	.00	5.00
125	104	111	3	0	4	4	0	000000	.00	5.00
126	111	118	3	0	4	4	0	000000	.00	5.00
127	105	112	3	0	5	5	0	000000	.00	5.00
128	112	119	3	0	5	5	0	000000	.00	5.00
129	106	113	3	0	4	4	0	000000	.00	5.00
130	113	120	3	0	4	4	0	000000	.00	5.00
131	110	210	-2	0	8	8	0	000000	.00	3.75
132	112	212	-2	0	8	8	0	000000	.00	3.75
201	210	310	-2	0	6	6	0	000000	.00	8.08
202	212	312	-2	0	6	6	0	000000	.00	8.08
301	310	410	-2	0	8	8	0	000000	.00	1.62
302	312	412	-2	0	8	8	0	000000	.00	1.62
401	409	410	-2	0	7	7	0	000000	.00	2.10
402	410	412	-2	0	7	7	0	000000	.00	4.80

PILA FIJA (PILA4F)

F R A M E E L E M E N T D A T A

ELT ID	JOINT END-I	JOINT END-J	LOCAL-AXIS N1	LOCAL-AXIS N2	PROPERTY-ID END-I	PROPERTY-ID END-J	VAR	REL CODES	REF TEMP	ELEMENT LENGTH
403	412	413	-2	0	7	7	0	000000	.00	2.10
501	410	510	-2	0	7	7	0	000000	.00	3.00
502	412	512	-2	0	7	7	0	000000	.00	3.00

PILA FIJA (PILA4F)

T O T A L W E I G H T S A N D M A S S E S

PROP	WEIGHT	MASS
1	.0000	.0000
2	2906.4000	.0000
3	2181.2000	.0000
4	.0000	.0000
5	.0000	.0000
6	.0000	.0000
7	.0000	.0000
8	.0000	.0000
TOTAL	5087.6000	.0000

PILA FIJA (PILA4F)

J O I N T L O A D S

JOINT	LOAD	FX	FY	FZ	MX	MY	MZ
410	1	.000E+00	.000E+00	-.405E+03	.000E+00	.000E+00	.000E+00
412	1	.000E+00	.000E+00	-.405E+03	.000E+00	.000E+00	.000E+00
409	1	.000E+00	.000E+00	-.556E+03	.000E+00	.000E+00	.000E+00
413	1	.000E+00	.000E+00	-.518E+03	.000E+00	.000E+00	.000E+00
410	1	.000E+00	.000E+00	-.148E+03	.000E+00	.000E+00	.000E+00
412	1	.000E+00	.000E+00	-.148E+03	.000E+00	.000E+00	.000E+00
409	1	.000E+00	.000E+00	-.367E+03	.000E+00	.000E+00	.000E+00
413	1	.000E+00	.000E+00	-.353E+03	.000E+00	.000E+00	.000E+00
510	1	.300E+03	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
512	1	.300E+03	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
510	1	.476E+03	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
512	1	.476E+03	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
410	2	.000E+00	.000E+00	-.547E+03	.000E+00	.000E+00	.000E+00
412	2	.000E+00	.000E+00	-.547E+03	.000E+00	.000E+00	.000E+00
409	2	.000E+00	.000E+00	-.815E+03	.000E+00	.000E+00	.000E+00
413	2	.000E+00	.000E+00	-.759E+03	.000E+00	.000E+00	.000E+00
410	2	.000E+00	.000E+00	-.222E+03	.000E+00	.000E+00	.000E+00
412	2	.000E+00	.000E+00	-.222E+03	.000E+00	.000E+00	.000E+00
409	2	.000E+00	.000E+00	-.551E+03	.000E+00	.000E+00	.000E+00
413	2	.000E+00	.000E+00	-.530E+03	.000E+00	.000E+00	.000E+00
510	2	.461E+03	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
512	2	.461E+03	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
510	2	.714E+03	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
512	2	.714E+03	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
410	3	.000E+00	.000E+00	-.547E+03	.000E+00	.000E+00	.000E+00
412	3	.000E+00	.000E+00	-.547E+03	.000E+00	.000E+00	.000E+00
409	3	.000E+00	.000E+00	-.815E+03	.000E+00	.000E+00	.000E+00
413	3	.000E+00	.000E+00	-.759E+03	.000E+00	.000E+00	.000E+00
410	3	.000E+00	.000E+00	-.222E+03	.000E+00	.000E+00	.000E+00
412	3	.000E+00	.000E+00	-.222E+03	.000E+00	.000E+00	.000E+00
409	3	.000E+00	.000E+00	-.551E+03	.000E+00	.000E+00	.000E+00
413	3	.000E+00	.000E+00	-.530E+03	.000E+00	.000E+00	.000E+00
510	3	-.461E+03	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
512	3	-.461E+03	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
510	3	-.714E+03	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
512	3	-.714E+03	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
410	4	.000E+00	.000E+00	-.405E+03	.000E+00	.000E+00	.000E+00
412	4	.000E+00	.000E+00	-.405E+03	.000E+00	.000E+00	.000E+00
409	4	.000E+00	.000E+00	-.509E+03	.000E+00	.000E+00	.000E+00
413	4	.000E+00	.000E+00	-.474E+03	.000E+00	.000E+00	.000E+00
410	4	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
412	4	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
409	4	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
413	4	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
510	4	.461E+03	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
512	4	.461E+03	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
510	4	.714E+03	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
512	4	.714E+03	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
410	5	.000E+00	.000E+00	-.405E+03	.000E+00	.000E+00	.000E+00
412	5	.000E+00	.000E+00	-.405E+03	.000E+00	.000E+00	.000E+00
409	5	.000E+00	.000E+00	-.509E+03	.000E+00	.000E+00	.000E+00
413	5	.000E+00	.000E+00	-.474E+03	.000E+00	.000E+00	.000E+00

PILA FIJA (PILA4F)

J O I N T L O A D S

JOINT	LOAD	FX	FY	FZ	MX	MY	MZ
410	5	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
412	5	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
409	5	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
413	5	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
510	5	-.461E+03	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
512	5	-.461E+03	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
510	5	-.714E+03	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
512	5	-.714E+03	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00

PILA FIJA (PILA4F)

O U T P U T F I L E S C R E A T E D B Y P R O G R A M

INPUT DATA ECHO	PILA4F.SAP
SOLUTION ERRORS AND WARNINGS	PILA4F.ERR
EQUATION NUMBERING	PILA4F.EQN
DISPLACEMENTS AND REACTIONS	PILA4F.SOL
FRAME ELEMENT FORCES	PILA4F.F3F

PILA FIJA (PILA4F)

J O I N T D I S P L A C E M E N T S

LOAD CONDITION 1 - DISPLACEMENTS "U" AND ROTATIONS "R"

JOINT	U(X)	U(Y)	U(Z)	R(X)	R(Y)	R(Z)
2	.000000	.000000	.000000	.000000	.000000	.000000
3	.000000	.000000	.000000	.000000	.000000	.000000
4	.000000	.000000	.000000	.000000	.000000	.000000
5	.000000	.000000	.000000	.000000	.000000	.000000
6	.000000	.000000	.000000	.000000	.000000	.000000
9	.000000	.000000	.000000	.000000	.000000	.000000
10	.000000	.000000	.000000	.000000	.000000	.000000
11	.000000	.000000	.000000	.000000	.000000	.000000
12	.000000	.000000	.000000	.000000	.000000	.000000
13	.000000	.000000	.000000	.000000	.000000	.000000
16	.000000	.000000	.000000	.000000	.000000	.000000
17	.000000	.000000	.000000	.000000	.000000	.000000
18	.000000	.000000	.000000	.000000	.000000	.000000
19	.000000	.000000	.000000	.000000	.000000	.000000
20	.000000	.000000	.000000	.000000	.000000	.000000
101	.007947	.000003	.000007	-.000005	.000072	-.000001
102	.007947	.000001	-.000138	-.000005	.000073	-.000001
103	.007958	.000000	-.000469	-.000010	.000056	-.000001
104	.007972	.000003	-.000741	-.000029	.000055	.000000
105	.007993	.000001	-.001040	-.000069	.000048	-.000005
106	.007985	-.000004	-.001048	-.000052	-.000010	-.000001
107	.007985	-.000007	-.001031	-.000052	-.000008	-.000001
108	.007951	.000000	-.000017	.000000	.000067	.000000
109	.007951	.000000	-.000151	.000000	.000068	.000000
110	.007963	.000000	-.000499	.000000	.000068	.000000
111	.007979	.000000	-.000830	.000000	.000064	.000000
112	.008013	.000000	-.001284	.000000	.000086	.000000
113	.007995	.000000	-.001219	.000000	-.000039	.000000
114	.007995	.000000	-.001143	.000000	-.000038	.000000
115	.007947	-.000003	.000007	.000005	.000072	.000001
116	.007947	-.000001	-.000138	.000005	.000073	.000001
117	.007958	-.000000	-.000469	.000010	.000056	.000001
118	.007972	-.000003	-.000741	.000029	.000055	-.000000
119	.007993	-.000001	-.001040	.000069	.000048	.000005
120	.007985	.000004	-.001048	.000052	-.000010	.000001
121	.007985	.000007	-.001031	.000052	-.000008	.000001
210	.008229	.000000	-.000500	.000000	.000073	.000000
212	.008366	.000000	-.001319	.000000	.000099	.000000
310	.016820	.000000	-.003908	.000000	-.000688	.000000
312	.016420	.000000	-.000076	.000000	-.000462	.000000
409	.015787	.000000	-.005020	.000000	-.000745	.000000
410	.015787	.000000	-.003494	.000000	-.000690	.000000
412	.015733	.000000	-.000369	.000000	-.000463	.000000
413	.015733	.000000	.000531	.000000	-.000412	.000000
510	.013905	.000000	-.003494	.000000	-.000596	.000000
512	.014531	.000000	-.000369	.000000	-.000369	.000000

PILA FIJA (PILA4F)

J O I N T D I S P L A C E M E N T S

LOAD CONDITION 2 - DISPLACEMENTS "U" AND ROTATIONS "R"

JOINT	U(X)	U(Y)	U(Z)	R(X)	R(Y)	R(Z)
2	.000000	.000000	.000000	.000000	.000000	.000000
3	.000000	.000000	.000000	.000000	.000000	.000000
4	.000000	.000000	.000000	.000000	.000000	.000000
5	.000000	.000000	.000000	.000000	.000000	.000000
6	.000000	.000000	.000000	.000000	.000000	.000000
9	.000000	.000000	.000000	.000000	.000000	.000000
10	.000000	.000000	.000000	.000000	.000000	.000000
11	.000000	.000000	.000000	.000000	.000000	.000000
12	.000000	.000000	.000000	.000000	.000000	.000000
13	.000000	.000000	.000000	.000000	.000000	.000000
16	.000000	.000000	.000000	.000000	.000000	.000000
17	.000000	.000000	.000000	.000000	.000000	.000000
18	.000000	.000000	.000000	.000000	.000000	.000000
19	.000000	.000000	.000000	.000000	.000000	.000000
20	.000000	.000000	.000000	.000000	.000000	.000000
101	.012035	.000004	.000082	-.000004	.000105	-.000001
102	.012035	.000002	-.000128	-.000004	.000107	-.000001
103	.012052	.000000	-.000613	-.000012	.000084	-.000002
104	.012071	.000004	-.001024	-.000042	.000084	.000000
105	.012102	.000001	-.001477	-.000100	.000074	-.000007
106	.012089	-.000007	-.001507	-.000077	-.000011	-.000002
107	.012089	-.000010	-.001489	-.000077	-.000009	-.000002
108	.012041	.000000	.000054	.000000	.000096	.000000
109	.012041	.000000	-.000139	.000000	.000098	.000000
110	.012059	.000000	-.000647	.000000	.000103	.000000
111	.012082	.000000	-.001150	.000000	.000097	.000000
112	.012131	.000000	-.001835	.000000	.000130	.000000
113	.012105	.000000	-.001756	.000000	-.000054	.000000
114	.012105	.000000	-.001651	.000000	-.000052	.000000
115	.012035	-.000004	.000082	.000004	.000105	.000001
116	.012035	-.000002	-.000128	.000004	.000107	.000001
117	.012052	-.000000	-.000613	.000012	.000084	.000002
118	.012071	-.000004	-.001024	.000042	.000084	-.000000
119	.012102	-.000001	-.001477	.000100	.000074	.000007
120	.012089	.000007	-.001507	.000077	-.000011	.000002
121	.012089	.000010	-.001489	.000077	-.000009	.000002
210	.012463	.000000	-.000647	.000000	.000111	.000000
212	.012665	.000000	-.001888	.000000	.000149	.000000
310	.025455	.000000	-.005733	.000000	-.001037	.000000
312	.024865	.000000	.000063	.000000	-.000702	.000000
409	.023898	.000000	-.007406	.000000	-.001121	.000000
410	.023898	.000000	-.005109	.000000	-.001040	.000000
412	.023820	.000000	-.000382	.000000	-.000705	.000000
413	.023820	.000000	.000990	.000000	-.000628	.000000
510	.021063	.000000	-.005109	.000000	-.000897	.000000
512	.021991	.000000	-.000382	.000000	-.000562	.000000

PILA FIJA (PILA4F)

J O I N T D I S P L A C E M E N T S

LOAD CONDITION 3 - DISPLACEMENTS "U" AND ROTATIONS "R"

JOINT	U(X)	U(Y)	U(Z)	R(X)	R(Y)	R(Z)
2	.000000	.000000	.000000	.000000	.000000	.000000
3	.000000	.000000	.000000	.000000	.000000	.000000
4	.000000	.000000	.000000	.000000	.000000	.000000
5	.000000	.000000	.000000	.000000	.000000	.000000
6	.000000	.000000	.000000	.000000	.000000	.000000
9	.000000	.000000	.000000	.000000	.000000	.000000
10	.000000	.000000	.000000	.000000	.000000	.000000
11	.000000	.000000	.000000	.000000	.000000	.000000
12	.000000	.000000	.000000	.000000	.000000	.000000
13	.000000	.000000	.000000	.000000	.000000	.000000
16	.000000	.000000	.000000	.000000	.000000	.000000
17	.000000	.000000	.000000	.000000	.000000	.000000
18	.000000	.000000	.000000	.000000	.000000	.000000
19	.000000	.000000	.000000	.000000	.000000	.000000
20	.000000	.000000	.000000	.000000	.000000	.000000
101	-.012090	-.000010	-.001493	-.000077	.000010	.000002
102	-.012090	-.000007	-.001514	-.000077	.000012	.000002
103	-.012103	.000001	-.001488	-.000102	-.000074	.000007
104	-.012072	.000004	-.001024	-.000042	-.000086	-.000000
105	-.012052	.000000	-.000603	-.000010	-.000085	.000002
106	-.012035	.000002	-.000122	-.000004	-.000105	.000001
107	-.012035	.000004	.000086	-.000004	-.000104	.000001
108	-.012106	.000000	-.001656	.000000	.000054	.000000
109	-.012106	.000000	-.001765	.000000	.000056	.000000
110	-.012132	.000000	-.001851	.000000	-.000130	.000000
111	-.012083	.000000	-.001150	.000000	-.000101	.000000
112	-.012060	.000000	-.000632	.000000	-.000103	.000000
113	-.012042	.000000	-.000131	.000000	-.000097	.000000
114	-.012042	.000000	.000059	.000000	-.000095	.000000
115	-.012090	.000010	-.001493	.000077	.000010	-.000002
116	-.012090	.000007	-.001514	.000077	.000012	-.000002
117	-.012103	-.000001	-.001488	.000102	-.000074	-.000007
118	-.012072	-.000004	-.001024	.000042	-.000086	.000000
119	-.012052	-.000000	-.000603	.000010	-.000085	-.000002
120	-.012035	-.000002	-.000122	.000004	-.000105	-.000001
121	-.012035	-.000004	.000086	.000004	-.000104	-.000001
210	-.012664	.000000	-.001905	.000000	-.000149	.000000
212	-.012462	.000000	-.000630	.000000	-.000111	.000000
310	-.023999	.000000	-.000343	.000000	.000567	.000000
312	-.024588	.000000	-.005327	.000000	.000902	.000000
409	-.023156	.000000	.000374	.000000	.000488	.000000
410	-.023156	.000000	-.000707	.000000	.000569	.000000
412	-.023234	.000000	-.004784	.000000	.000904	.000000
413	-.023234	.000000	-.006790	.000000	.000981	.000000
510	-.021734	.000000	-.000707	.000000	.000427	.000000
512	-.020806	.000000	-.004784	.000000	.000762	.000000

PILA FIJA (PILA4F)

J O I N T D I S P L A C E M E N T S

LOAD CONDITION 4 - DISPLACEMENTS "U" AND ROTATIONS "R"

JOINT	U(X)	U(Y)	U(Z)	R(X)	R(Y)	R(Z)
2	.000000	.000000	.000000	.000000	.000000	.000000
3	.000000	.000000	.000000	.000000	.000000	.000000
4	.000000	.000000	.000000	.000000	.000000	.000000
5	.000000	.000000	.000000	.000000	.000000	.000000
6	.000000	.000000	.000000	.000000	.000000	.000000
9	.000000	.000000	.000000	.000000	.000000	.000000
10	.000000	.000000	.000000	.000000	.000000	.000000
11	.000000	.000000	.000000	.000000	.000000	.000000
12	.000000	.000000	.000000	.000000	.000000	.000000
13	.000000	.000000	.000000	.000000	.000000	.000000
16	.000000	.000000	.000000	.000000	.000000	.000000
17	.000000	.000000	.000000	.000000	.000000	.000000
18	.000000	.000000	.000000	.000000	.000000	.000000
19	.000000	.000000	.000000	.000000	.000000	.000000
20	.000000	.000000	.000000	.000000	.000000	.000000
101	.012050	.000006	.000322	.000016	.000077	-.000001
102	.012050	.000004	.000168	.000016	.000078	-.000001
103	.012066	.000000	-.000213	.000018	.000084	-.000003
104	.012071	.000002	-.000646	-.000021	.000084	.000000
105	.012088	.000000	-.001083	-.000072	.000074	-.000006
106	.012074	-.000005	-.001215	-.000057	.000017	-.000001
107	.012074	-.000008	-.001251	-.000057	.000018	-.000001
108	.012060	.000000	.000338	.000000	.000058	.000000
109	.012060	.000000	.000221	.000000	.000060	.000000
110	.012080	.000000	-.000143	.000000	.000114	.000000
111	.012083	.000000	-.000711	.000000	.000099	.000000
112	.012111	.000000	-.001339	.000000	.000119	.000000
113	.012087	.000000	-.001401	.000000	-.000016	.000000
114	.012087	.000000	-.001370	.000000	-.000015	.000000
115	.012050	-.000006	.000322	-.000016	.000077	.000001
116	.012050	-.000004	.000168	-.000016	.000078	.000001
117	.012066	-.000000	-.000213	-.000018	.000084	.000003
118	.012071	-.000002	-.000646	.000021	.000084	-.000000
119	.012088	-.000000	-.001083	.000072	.000074	.000006
120	.012074	.000005	-.001215	.000057	.000017	.000001
121	.012074	.000008	-.001251	.000057	.000018	.000001
210	.012531	.000000	-.000127	.000000	.000125	.000000
212	.012597	.000000	-.001377	.000000	.000136	.000000
310	.025034	.000000	-.004199	.000000	-.000894	.000000
312	.024811	.000000	.001374	.000000	-.000770	.000000
409	.023693	.000000	-.005580	.000000	-.000927	.000000
410	.023693	.000000	-.003655	.000000	-.000897	.000000
412	.023660	.000000	.000894	.000000	-.000773	.000000
413	.023660	.000000	.002478	.000000	-.000745	.000000
510	.021287	.000000	-.003655	.000000	-.000754	.000000
512	.021626	.000000	.000894	.000000	-.000631	.000000

PILA FIJA (PILA4F)

J O I N T D I S P L A C E M E N T S

LOAD CONDITION 5 - DISPLACEMENTS "U" AND ROTATIONS "R"

JOINT	U(X)	U(Y)	U(Z)	R(X)	R(Y)	R(Z)
2	.000000	.000000	.000000	.000000	.000000	.000000
3	.000000	.000000	.000000	.000000	.000000	.000000
4	.000000	.000000	.000000	.000000	.000000	.000000
5	.000000	.000000	.000000	.000000	.000000	.000000
6	.000000	.000000	.000000	.000000	.000000	.000000
9	.000000	.000000	.000000	.000000	.000000	.000000
10	.000000	.000000	.000000	.000000	.000000	.000000
11	.000000	.000000	.000000	.000000	.000000	.000000
12	.000000	.000000	.000000	.000000	.000000	.000000
13	.000000	.000000	.000000	.000000	.000000	.000000
16	.000000	.000000	.000000	.000000	.000000	.000000
17	.000000	.000000	.000000	.000000	.000000	.000000
18	.000000	.000000	.000000	.000000	.000000	.000000
19	.000000	.000000	.000000	.000000	.000000	.000000
20	.000000	.000000	.000000	.000000	.000000	.000000
101	-.012074	-.000008	-.001252	-.000057	-.000018	.000001
102	-.012074	-.000005	-.001218	-.000057	-.000016	.000001
103	-.012088	.000000	-.001087	-.000072	-.000074	.000006
104	-.012072	.000002	-.000646	-.000021	-.000086	-.000000
105	-.012067	.000000	-.000208	.000019	-.000084	.000003
106	-.012051	.000004	.000170	.000016	-.000078	.000001
107	-.012051	.000006	.000324	.000016	-.000077	.000001
108	-.012087	.000000	-.001372	.000000	.000016	.000000
109	-.012087	.000000	-.001405	.000000	.000017	.000000
110	-.012111	.000000	-.001346	.000000	-.000119	.000000
111	-.012083	.000000	-.000711	.000000	-.000100	.000000
112	-.012080	.000000	-.000136	.000000	-.000113	.000000
113	-.012060	.000000	.000224	.000000	-.000059	.000000
114	-.012060	.000000	.000340	.000000	-.000058	.000000
115	-.012074	.000008	-.001252	.000057	-.000018	-.000001
116	-.012074	.000005	-.001218	.000057	-.000016	-.000001
117	-.012088	-.000000	-.001087	.000072	-.000074	-.000006
118	-.012072	-.000002	-.000646	.000021	-.000086	.000000
119	-.012067	-.000000	-.000208	-.000019	-.000084	-.000003
120	-.012051	-.000004	.000170	-.000016	-.000078	-.000001
121	-.012051	-.000006	.000324	-.000016	-.000077	-.000001
210	-.012596	.000000	-.001384	.000000	-.000135	.000000
212	-.012530	.000000	-.000119	.000000	-.000124	.000000
310	-.024420	.000000	.001191	.000000	.000710	.000000
312	-.024643	.000000	-.004016	.000000	.000833	.000000
409	-.023361	.000000	.002200	.000000	.000682	.000000
410	-.023361	.000000	.000747	.000000	.000712	.000000
412	-.023394	.000000	-.003508	.000000	.000836	.000000
413	-.023394	.000000	-.005303	.000000	.000864	.000000
510	-.021510	.000000	.000747	.000000	.000570	.000000
512	-.021172	.000000	-.003508	.000000	.000693	.000000

PILA FIJA (PILA4F)

R E A C T I O N S A N D A P P L I E D F O R C E S

LOAD CONDITION 1 - FORCES "F" AND MOMENTS "M"

JOINT	F(X)	F(Y)	F(Z)	M(X)	M(Y)	M(Z)
2	-100.7817	.3771	101.3405	-1.5673	-658.4616	.0000
3	-102.3942	.8555	345.3306	-3.6406	-665.6673	.0000
4	-102.6556	2.4796	545.0668	-10.4986	-667.1745	.0000
5	-103.5492	5.9052	765.2252	-25.1798	-671.6015	.0000
6	-108.4412	4.5874	771.4556	-19.7008	-692.2260	.0000
9	-101.2778	.0000	110.9132	.0000	-660.6964	.0000
10	-101.4251	.0000	367.5613	.0000	-661.6636	.0000
11	-101.9769	.0000	610.7960	.0000	-664.4923	.0000
12	-100.5780	.0000	944.6568	.0000	-659.4860	.0000
13	-111.0982	.0000	896.8355	.0000	-703.8644	.0000
16	-100.7817	-.3771	101.3405	1.5673	-658.4616	.0000
17	-102.3942	-.8555	345.3306	3.6406	-665.6673	.0000
18	-102.6556	-2.4796	545.0668	10.4986	-667.1745	.0000
19	-103.5492	-5.9052	765.2252	25.1798	-671.6015	.0000
20	-108.4412	-4.5874	771.4556	19.7008	-692.2260	.0000
101	.6878E-11	.0000E+00	.0000E+00	.0000E+00	.0000E+00	.0000E+00
102	.5732E-10	.2688E-11	.1292E-11	.1087E-11	-.2345E-11	-.3804E-10
103	-.2055E-09	-.2131E-11	-.2821E-11	.0000E+00	.0000E+00	.4055E-09
104	.6080E-10	-.3936E-11	.1862E-11	.3226E-11	-.1307E-11	-.1901E-10
105	.1696E-09	.0000E+00	.0000E+00	.7219E-11	.0000E+00	-.1650E-09
106	-.5409E-10	.5784E-11	-.5286E-11	.2231E-11	-.1194E-11	.3362E-10
107	.4071E-10	.0000E+00	.1546E-10	.0000E+00	-.2699E-11	-.1380E-11
108	.2217E-11	.0000E+00	.0000E+00	.0000E+00	.0000E+00	.0000E+00
109	-.2574E-11	-.5382E-11	.0000E+00	.0000E+00	-.2771E-11	-.5380E-10
110	.6412E-10	.0000E+00	-.1978E-10	.0000E+00	.4889E-10	-.2439E-09
111	.7621E-10	.1656E-10	-.1165E-11	.1592E-11	.0000E+00	-.2196E-10
112	.3533E-09	.0000E+00	.1182E-10	.2483E-11	.2892E-09	-.7285E-10
113	.5259E-10	-.5720E-11	.9038E-11	-.3411E-11	.1705E-11	.2605E-10
114	.1913E-10	.0000E+00	.0000E+00	.0000E+00	-.1629E-10	.0000E+00
115	-.1161E-10	.0000E+00	.0000E+00	.0000E+00	.0000E+00	.0000E+00
116	.7191E-10	-.4103E-11	.0000E+00	.0000E+00	.0000E+00	.4675E-10
117	-.1702E-09	.0000E+00	.0000E+00	-.3212E-11	.2956E-11	-.2596E-09
118	.3431E-10	-.2970E-11	.0000E+00	-.1080E-11	.1592E-11	-.2326E-10
119	.8862E-10	-.2499E-11	.2046E-11	-.6423E-11	.2274E-11	.1527E-09
120	.0000E+00	.3254E-11	.8527E-11	-.1606E-11	-.3070E-11	-.1803E-10
121	.0000E+00	.0000E+00	.1796E-10	.0000E+00	.2873E-11	.0000E+00
210	.9172E-10	.0000E+00	.2006E-10	.0000E+00	.1776E-09	.0000E+00
212	-.2842E-09	.0000E+00	-.3774E-10	.0000E+00	.9676E-09	.0000E+00
310	-.5190E-08	.0000E+00	.1117E-08	.0000E+00	-.3138E-09	.0000E+00
312	.1227E-07	.0000E+00	-.1437E-09	.0000E+00	.2576E-08	.0000E+00
409	.0000	.0000	-923.0000	.0000	.0000	.0000
410	.0000	.0000	-553.0000	.0000	.0000	.0000
412	.0000	.0000	-553.0000	.0000	.0000	.0000
413	.0000	.0000	-871.0000	.0000	.0000	.0000
510	776.0000	.0000	.0000	.0000	.0000	.0000
512	776.0000	.0000	.0000	.0000	.0000	.0000
TOTAL	-.6821E-12	-.1112E-13	.5088E+04	.1452E-10	-.1006E+05	-.2513E-09

PILA FIJA (PILA4F)

R E A C T I O N S A N D A P P L I E D F O R C E S

LOAD CONDITION 2 - FORCES "F" AND MOMENTS "M"

JOINT	F(X)	F(Y)	F(Z)	M(X)	M(Y)	M(Z)
2	-152.9765	.3390	94.4799	-1.3804	-998.6643	.0000
3	-155.1355	1.0085	451.3253	-4.2893	-1008.3676	.0000
4	-155.4372	3.5246	753.3239	-14.9213	-1010.2133	.0000
5	-156.6987	8.6561	1087.2222	-36.9102	-1016.4912	.0000
6	-163.8252	6.7149	1109.2156	-28.8407	-1046.5202	.0000
9	-153.7977	.0000	102.5303	.0000	-1002.3534	.0000
10	-153.5985	.0000	476.5133	.0000	-1002.0233	.0000
11	-154.4088	.0000	846.5571	.0000	-1006.1488	.0000
12	-152.2700	.0000	1350.4898	.0000	-998.4307	.0000
13	-167.7789	.0000	1292.6357	.0000	-1063.8394	.0000
16	-152.9765	-.3390	94.4799	1.3804	-998.6643	.0000
17	-155.1355	-1.0085	451.3253	4.2893	-1008.3676	.0000
18	-155.4372	-3.5246	753.3239	14.9213	-1010.2133	.0000
19	-156.6987	-8.6561	1087.2222	36.9102	-1016.4912	.0000
20	-163.8252	-6.7149	1109.2156	28.8407	-1046.5202	.0000
101	-.2248E-10	.0000E+00	.0000E+00	.0000E+00	.0000E+00	.0000E+00
102	.8193E-10	-.4555E-11	.1026E-11	.0000E+00	-.1023E-11	.1062E-10
103	-.1404E-09	-.2929E-11	-.2601E-11	.0000E+00	.0000E+00	.1039E-09
104	.5690E-10	.1026E-10	.0000E+00	-.3212E-11	.0000E+00	-.2103E-10
105	.2761E-09	.1037E-11	-.5457E-11	-.4547E-11	-.4547E-11	-.3065E-09
106	.8318E-10	.0000E+00	-.1864E-10	-.5002E-11	.2160E-11	.5539E-10
107	-.6420E-10	.0000E+00	.1477E-10	.0000E+00	.7182E-11	.0000E+00
108	-.1012E-10	.0000E+00	.0000E+00	.0000E+00	.0000E+00	.0000E+00
109	.1304E-09	.0000E+00	.0000E+00	.0000E+00	-.5706E-11	-.3411E-11
110	-.4557E-09	.0000E+00	.6366E-11	.0000E+00	-.8167E-09	.2680E-09
111	.1075E-09	.7546E-11	.3766E-11	-.4547E-11	.9905E-11	-.8018E-10
112	.4602E-09	.0000E+00	.2001E-10	.0000E+00	.8095E-09	-.2019E-09
113	.1168E-09	-.9088E-11	.1165E-10	.0000E+00	-.1160E-10	.3126E-10
114	.2791E-10	.0000E+00	.0000E+00	.0000E+00	-.4708E-11	.0000E+00
115	-.1961E-11	.0000E+00	.0000E+00	.0000E+00	.0000E+00	.0000E+00
116	.3376E-10	-.4128E-11	.0000E+00	.0000E+00	-.3503E-11	.4633E-10
117	.2655E-10	-.5789E-11	-.3439E-11	-.3325E-11	.3524E-11	.1655E-09
118	.5362E-10	.7390E-11	-.1435E-11	.5826E-11	.5372E-11	-.2785E-11
119	.9697E-10	.0000E+00	-.1364E-11	.7844E-11	.5684E-11	.3478E-09
120	.5167E-10	.2196E-11	.2291E-10	.2046E-11	-.1387E-10	-.4121E-11
121	.3033E-10	.0000E+00	.1898E-10	.0000E+00	-.2767E-10	.0000E+00
210	.3135E-09	.0000E+00	-.1496E-10	.0000E+00	-.6376E-09	.0000E+00
212	-.5598E-09	.0000E+00	-.4002E-10	.0000E+00	.6910E-09	.0000E+00
310	-.6726E-08	.0000E+00	.1713E-08	.0000E+00	.2365E-08	.0000E+00
312	-.1960E-09	.0000E+00	-.5745E-08	.0000E+00	-.1079E-07	.0000E+00
409	.0000	.0000	-1365.9000	.0000	.0000	.0000
410	.0000	.0000	-768.7500	.0000	.0000	.0000
412	.0000	.0000	-768.7500	.0000	.0000	.0000
413	.0000	.0000	-1288.2000	.0000	.0000	.0000
510	1175.0000	.0000	.0000	.0000	.0000	.0000
512	1175.0000	.0000	.0000	.0000	.0000	.0000
TOTAL	.0000E+00	-.6120E-14	.6868E+04	.1477E-10	-.1523E+05	.4090E-09

PILA FIJA (PILA4F)

R E A C T I O N S A N D A P P L I E D F O R C E S

LOAD CONDITION 3 - FORCES "F" AND MOMENTS "M"

JOINT	F(X)	F(Y)	F(Z)	M(X)	M(Y)	M(Z)
2	163.9381	6.7687	1114.0129	-29.0700	1047.0232	.0000
3	156.6831	8.7731	1094.9342	-37.4092	1016.4466	.0000
4	155.2259	3.5246	753.3239	-14.9213	1009.3339	.0000
5	155.1199	.8915	443.6133	-3.7904	1008.3229	.0000
6	153.0893	.2852	89.6826	-1.1512	999.1674	.0000
9	167.9246	.0000	1298.7327	.0000	1064.4826	.0000
10	152.2999	.0000	1361.9301	.0000	998.5800	.0000
11	154.0912	.0000	846.5571	.0000	1004.8159	.0000
12	153.6284	.0000	465.0730	.0000	1002.1726	.0000
13	153.9434	.0000	96.4332	.0000	1002.9966	.0000
16	163.9381	-6.7687	1114.0129	29.0700	1047.0232	.0000
17	156.6831	-8.7731	1094.9342	37.4092	1016.4466	.0000
18	155.2259	-3.5246	753.3239	14.9213	1009.3339	.0000
19	155.1199	-.8915	443.6133	3.7904	1008.3229	.0000
20	153.0893	-.2852	89.6826	1.1512	999.1674	.0000
101	.2629E-10	.0000E+00	-.6445E-11	.0000E+00	.3008E-11	.0000E+00
102	-.6035E-10	-.6587E-11	-.7276E-11	-.6708E-11	-.9720E-11	.1913E-10
103	-.5389E-10	-.1867E-11	-.3411E-11	-.1410E-10	-.1592E-11	.3168E-09
104	-.8981E-11	-.2785E-11	.1108E-11	.5969E-11	-.8171E-11	-.7759E-11
105	-.1788E-10	.0000E+00	-.2746E-11	-.3155E-11	-.4320E-11	-.5723E-09
106	.6921E-11	-.3453E-11	-.3271E-11	.0000E+00	.1336E-11	-.5095E-10
107	-.2046E-10	.0000E+00	.0000E+00	.0000E+00	.2512E-11	.0000E+00
108	-.1293E-10	.0000E+00	-.1730E-10	.0000E+00	.7788E-11	.0000E+00
109	-.5902E-10	.1580E-10	.3604E-10	.1364E-11	.8754E-11	.7213E-10
110	.6999E-09	.0000E+00	.1091E-10	.8038E-11	.4075E-09	.1618E-09
111	-.5258E-11	.1855E-11	-.8015E-11	.3297E-11	-.5215E-11	.6747E-10
112	-.6227E-09	.0000E+00	.0000E+00	.2649E-11	-.7572E-09	.4222E-09
113	-.6216E-10	.2032E-11	-.2003E-11	.0000E+00	.4661E-11	.6671E-10
114	.2598E-10	.0000E+00	.0000E+00	.0000E+00	.0000E+00	.0000E+00
115	.5059E-11	.0000E+00	-.2790E-11	.0000E+00	-.1172E-11	.0000E+00
116	-.4908E-10	-.5279E-11	-.1694E-10	.2586E-11	-.1290E-10	-.3180E-10
117	.2444E-10	-.4871E-11	-.1023E-10	.1091E-10	-.3183E-11	-.1930E-09
118	-.1134E-10	.3880E-11	.0000E+00	.0000E+00	.2473E-11	.3701E-10
119	.1920E-09	.0000E+00	.0000E+00	.4150E-11	.0000E+00	.6879E-09
120	-.2619E-10	-.2135E-11	.1125E-11	.0000E+00	.2814E-11	.0000E+00
121	-.1708E-10	.0000E+00	-.1290E-11	.0000E+00	.2525E-11	.0000E+00
210	-.5243E-09	.0000E+00	-.5457E-11	.0000E+00	-.2696E-09	.0000E+00
212	-.1182E-09	.0000E+00	-.3169E-11	.0000E+00	-.4006E-09	.0000E+00
310	-.3289E-08	.0000E+00	.3778E-08	.0000E+00	.4063E-09	.0000E+00
312	-.8760E-10	.0000E+00	.6098E-08	.0000E+00	-.1781E-08	.0000E+00
409	.0000	.0000	-1365.9000	.0000	.0000	.0000
410	.0000	.0000	-768.7500	.0000	.0000	.0000
412	.0000	.0000	-768.7500	.0000	.0000	.0000
413	.0000	.0000	-1288.2000	.0000	.0000	.0000
510	-1175.0000	.0000	.0000	.0000	.0000	.0000
512	-1175.0000	.0000	.0000	.0000	.0000	.0000
TOTAL	-.6821E-12	.1378E-13	.6868E+04	-.5663E-11	.1523E+05	.9952E-09

PILA FIJA (PILA4F)

R E A C T I O N S A N D A P P L I E D F O R C E S

LOAD CONDITION 4 - FORCES "F" AND MOMENTS "M"

JOINT	F(X)	F(Y)	F(Z)	M(X)	M(Y)	M(Z)
2	-155.6175	-1.4253	-123.2828	6.1833	-1010.3899	.0000
3	-155.3388	-1.5514	156.6193	6.6232	-1009.6580	.0000
4	-155.3791	1.7722	475.2548	-7.5107	-1009.9716	.0000
5	-156.4868	6.1604	796.7544	-26.2719	-1015.1763	.0000
6	-161.2462	4.9802	894.0892	-21.4030	-1035.0710	.0000
9	-157.3646	.0000	-162.4585	.0000	-1018.1046	.0000
10	-152.9884	.0000	104.9492	.0000	-1000.0203	.0000
11	-154.3216	.0000	523.0293	.0000	-1005.7826	.0000
12	-152.8965	.0000	985.2126	.0000	-1000.5157	.0000
13	-164.2920	.0000	1030.9975	.0000	-1048.4416	.0000
16	-155.6175	1.4253	-123.2828	-6.1833	-1010.3899	.0000
17	-155.3388	1.5514	156.6193	-6.6232	-1009.6580	.0000
18	-155.3791	-1.7722	475.2548	7.5107	-1009.9716	.0000
19	-156.4868	-6.1604	796.7544	26.2719	-1015.1763	.0000
20	-161.2462	-4.9802	894.0892	21.4030	-1035.0710	.0000
101	-.1106E-10	.0000E+00	-.3610E-11	.0000E+00	.0000E+00	.0000E+00
102	.4021E-10	.2970E-11	.3652E-11	.0000E+00	.6878E-11	-.6636E-11
103	-.6420E-10	.0000E+00	.0000E+00	.0000E+00	-.2387E-11	-.1166E-09
104	.4158E-10	.4153E-11	-.1577E-11	-.1862E-11	.0000E+00	-.1609E-10
105	.1879E-09	-.3170E-11	.1592E-11	.1239E-10	.2046E-11	-.1320E-09
106	.3767E-10	-.2807E-11	-.1111E-10	-.6224E-11	-.1575E-10	.1342E-10
107	-.2089E-10	-.1485E-11	.1970E-10	.0000E+00	.0000E+00	-.2953E-11
108	-.5286E-11	.0000E+00	-.2761E-11	.0000E+00	.1509E-11	.0000E+00
109	.9450E-10	-.1736E-10	-.1307E-11	.0000E+00	-.4775E-11	-.6214E-10
110	.4911E-09	.0000E+00	-.4093E-11	.1225E-11	.7376E-09	-.5039E-09
111	-.3112E-10	.1454E-10	.4718E-11	-.3411E-11	-.2728E-11	-.4255E-10
112	-.1742E-09	.0000E+00	-.1683E-10	.2867E-11	-.5448E-09	-.6067E-09
113	.6783E-10	.8605E-11	-.1219E-10	-.8868E-11	.8725E-11	-.2285E-10
114	.1549E-10	.0000E+00	-.1191E-11	.0000E+00	.9779E-11	.0000E+00
115	-.9010E-11	.0000E+00	.2335E-11	.0000E+00	-.3982E-11	.0000E+00
116	.3901E-11	.3496E-11	-.1265E-11	.0000E+00	.0000E+00	-.2005E-10
117	.2643E-10	.2059E-11	-.1080E-11	-.1194E-11	.2160E-11	.1182E-09
118	.1407E-11	-.3908E-11	.0000E+00	.1826E-11	.2743E-11	.5883E-11
119	.4275E-10	-.4622E-11	.2842E-11	-.1131E-10	-.1592E-11	.1936E-09
120	.3553E-11	.0000E+00	.2379E-10	.1897E-11	-.2461E-10	-.1900E-10
121	.1475E-10	.0000E+00	.2354E-10	.0000E+00	-.2258E-10	.0000E+00
210	-.5392E-09	.0000E+00	.1364E-11	.0000E+00	.1359E-08	.0000E+00
212	.4777E-09	.0000E+00	-.1273E-10	.0000E+00	-.3474E-09	.0000E+00
310	-.9926E-08	.0000E+00	.1281E-08	.0000E+00	-.2444E-08	.0000E+00
312	.7231E-08	.0000E+00	-.6949E-09	.0000E+00	-.6715E-08	.0000E+00
409	.0000	.0000	-509.0000	.0000	.0000	.0000
410	.0000	.0000	-405.0000	.0000	.0000	.0000
412	.0000	.0000	-405.0000	.0000	.0000	.0000
413	.0000	.0000	-474.0000	.0000	.0000	.0000
510	1175.0000	.0000	.0000	.0000	.0000	.0000
512	1175.0000	.0000	.0000	.0000	.0000	.0000
TOTAL	.0000E+00	-.1238E-13	.5088E+04	.4795E-11	-.1523E+05	-.1221E-08

PILA FIJA (PILA4F)

R E A C T I O N S A N D A P P L I E D F O R C E S

LOAD CONDITION 5 - FORCES "F" AND MOMENTS "M"

JOINT	F(X)	F(Y)	F(Z)	M(X)	M(Y)	M(Z)
2	161.2970	5.0044	896.2502	-21.5062	1035.2977	.0000
3	156.4798	6.2131	800.2282	-26.4966	1015.1562	.0000
4	155.2839	1.7722	475.2548	-7.5107	1009.5755	.0000
5	155.3318	-1.6041	153.1455	6.8480	1009.6378	.0000
6	155.6684	-1.4495	-125.4438	6.2866	1010.6165	.0000
9	164.3577	.0000	1033.7440	.0000	1048.7313	.0000
10	152.9100	.0000	990.3659	.0000	1000.5830	.0000
11	154.1785	.0000	523.0293	.0000	1005.1822	.0000
12	153.0018	.0000	99.7959	.0000	1000.0876	.0000
13	157.4302	.0000	-165.2049	.0000	1018.3944	.0000
16	161.2970	-5.0044	896.2502	21.5062	1035.2977	.0000
17	156.4798	-6.2131	800.2282	26.4966	1015.1562	.0000
18	155.2839	-1.7722	475.2548	7.5107	1009.5755	.0000
19	155.3318	1.6041	153.1455	-6.8480	1009.6378	.0000
20	155.6684	1.4495	-125.4438	-6.2866	1010.6165	.0000
101	.0000E+00	.0000E+00	-.3090E-11	.0000E+00	.8654E-11	.0000E+00
102	-.5885E-10	-.2849E-11	.2160E-11	-.2188E-11	-.5969E-11	.1921E-10
103	-.1910E-10	.2058E-11	.0000E+00	.1478E-11	.2160E-11	.5974E-10
104	-.2021E-10	-.1033E-10	.0000E+00	.2558E-11	.0000E+00	-.2240E-10
105	-.2447E-09	.0000E+00	.0000E+00	.0000E+00	-.1251E-11	.2700E-09
106	-.5294E-11	.4032E-11	-.2160E-11	.0000E+00	.1762E-11	.2272E-10
107	-.1756E-10	-.1163E-11	-.1768E-11	.0000E+00	-.1448E-11	-.2027E-11
108	-.5713E-11	.0000E+00	-.1231E-10	.0000E+00	-.1108E-10	.0000E+00
109	-.6428E-10	.6672E-11	.3496E-11	-.4093E-11	.1504E-10	.1785E-10
110	.6025E-10	.0000E+00	-.1546E-10	.6840E-11	-.3965E-09	.2601E-09
111	-.1531E-09	.6800E-11	-.1819E-11	-.1080E-11	-.5016E-11	.5144E-10
112	-.1102E-09	.0000E+00	.0000E+00	.0000E+00	.4829E-09	.4797E-09
113	-.7468E-11	-.6722E-11	.4363E-11	.0000E+00	.7617E-11	.4836E-10
114	.1253E-10	.0000E+00	.0000E+00	.0000E+00	.0000E+00	.0000E+00
115	-.2049E-10	.0000E+00	-.3424E-11	.0000E+00	.5807E-11	.0000E+00
116	-.3825E-10	.0000E+00	-.1450E-11	.2906E-11	-.7930E-11	-.2655E-10
117	.3655E-10	.0000E+00	-.6594E-11	.1125E-10	-.1705E-11	-.7464E-10
118	-.5733E-10	.0000E+00	.1691E-11	-.1876E-11	.2316E-11	.5784E-10
119	.4206E-10	.1879E-11	.0000E+00	.0000E+00	.0000E+00	.1134E-09
120	-.1024E-09	.0000E+00	-.2714E-11	.1252E-11	.2927E-11	-.6519E-10
121	.5002E-11	.0000E+00	-.9469E-11	.0000E+00	.3139E-11	.0000E+00
210	.1742E-09	.0000E+00	.8185E-11	.0000E+00	-.7117E-09	.0000E+00
212	-.9948E-10	.0000E+00	.0000E+00	.0000E+00	-.6776E-09	.0000E+00
310	.4098E-08	.0000E+00	.2294E-08	.0000E+00	.7726E-08	.0000E+00
312	-.1735E-07	.0000E+00	-.8263E-09	.0000E+00	-.1140E-07	.0000E+00
409	.0000	.0000	-509.0000	.0000	.0000	.0000
410	.0000	.0000	-405.0000	.0000	.0000	.0000
412	.0000	.0000	-405.0000	.0000	.0000	.0000
413	.0000	.0000	-474.0000	.0000	.0000	.0000
510	-1175.0000	.0000	.0000	.0000	.0000	.0000
512	-1175.0000	.0000	.0000	.0000	.0000	.0000
TOTAL	.2274E-12	-.1701E-13	.5088E+04	-.3586E-11	.1523E+05	.1209E-08

PILA FIJA (PILA4F)

F R A M E E L E M E N T F O R C E S

ELT ID	LOAD COND	DIST ENDI	1-2 PLANE SHEAR	1-2 PLANE MOMENT	AXIAL FORCE	1-3 PLANE SHEAR	1-3 PLANE MOMENT	AXIA TOR
2								
	1	.000			-101.341			
		.000	100.782	-658.462		-.377	1.567	
		12.800	100.782	631.545		-.377	-3.260	
		12.800			-101.341			
	2	.000			-94.480			
		.000	152.976	-998.664		-.339	1.380	
		12.800	152.976	959.434		-.339	-2.959	
		12.800			-94.480			
	3	.000			-1114.013			
		.000	-163.938	1047.023		-6.769	29.070	
		12.800	-163.938	-1051.384		-6.769	-57.569	
		12.800			-1114.013			
	4	.000			123.283			
		.000	155.618	-1010.390		1.425	-6.183	
		12.800	155.618	981.515		1.425	12.060	
		12.800			123.283			
	5	.000			-896.250			
		.000	-161.297	1035.298		-5.004	21.506	
		12.800	-161.297	-1029.304		-5.004	-42.550	
		12.800			-896.250			
3								
	1	.000			-345.331			
		.000	102.394	-665.667		-.856	3.641	
		12.800	102.394	644.978		-.856	-7.310	
		12.800			-345.331			
	2	.000			-451.325			
		.000	155.136	-1008.368		-1.009	4.289	
		12.800	155.136	977.367		-1.009	-8.620	
		12.800			-451.325			
	3	.000			-1094.934			
		.000	-156.683	1016.447		-8.773	37.409	
		12.800	-156.683	-989.097		-8.773	-74.886	
		12.800			-1094.934			
	4	.000			-156.619			
		.000	155.339	-1009.658		1.551	-6.623	
		12.800	155.339	978.679		1.551	13.235	
		12.800			-156.619			
	5	.000			-800.228			
		.000	-156.480	1015.156		-6.213	26.497	
		12.800	-156.480	-987.785		-6.213	-53.032	

PILA FIJA (PILA4F)

F R A M E E L E M E N T F O R C E S

ELT ID	LOAD COND	DIST ENDI	1-2 PLANE SHEAR	1-2 PLANE MOMENT	AXIAL FORCE	1-3 PLANE SHEAR	1-3 PLANE MOMENT	AXIA TOR
		12.800			-800.228			
4								
	1	.000			-545.067			
		.000	102.656	-667.174		-2.480	10.499	
		12.800	102.656	646.817		-2.480	-21.240	
		12.800			-545.067			
	2	.000			-753.324			
		.000	155.437	-1010.213		-3.525	14.921	
		12.800	155.437	979.383		-3.525	-30.193	
		12.800			-753.324			
	3	.000			-753.324			
		.000	-155.226	1009.334		-3.525	14.921	
		12.800	-155.226	-977.557		-3.525	-30.193	
		12.800			-753.324			
	4	.000			-475.255			
		.000	155.379	-1009.972		-1.772	7.511	
		12.800	155.379	978.881		-1.772	-15.174	
		12.800			-475.255			
	5	.000			-475.255			
		.000	-155.284	1009.575		-1.772	7.511	
		12.800	-155.284	-978.059		-1.772	-15.174	
		12.800			-475.255			
5								
	1	.000			-765.225			
		.000	103.549	-671.602		-5.905	25.180	
		12.800	103.549	653.829		-5.905	-50.406	
		12.800			-765.225			
	2	.000			-1087.222			
		.000	156.699	-1016.491		-8.656	36.910	
		12.800	156.699	989.252		-8.656	-73.888	
		12.800			-1087.222			
	3	.000			-443.613			
		.000	-155.120	1008.323		-.892	3.790	
		12.800	-155.120	-977.212		-.892	-7.621	
		12.800			-443.613			
	4	.000			-796.754			
		.000	156.487	-1015.176		-6.160	26.272	
		12.800	156.487	987.855		-6.160	-52.582	
		12.800			-796.754			
	5	.000			-153.145			
		.000	-155.332	1009.638		1.604	-6.848	

PILA FIJA (PILA4F)

F R A M E E L E M E N T F O R C E S

ELT ID	LOAD COND	DIST ENDI	1-2 PLANE SHEAR	1-2 PLANE MOMENT	AXIAL FORCE	1-3 PLANE SHEAR	1-3 PLANE MOMENT	AXIA TOR
		12.800	-155.332	-978.609		1.604	13.685	
		12.800			-153.145			
6								
	1	.000			-771.456			
		.000	108.441	-692.226		-4.587	19.701	
		12.800	108.441	695.821		-4.587	-39.018	
		12.800			-771.456			
	2	.000			-1109.216			
		.000	163.825	-1046.520		-6.715	28.841	
		12.800	163.825	1050.442		-6.715	-57.110	
		12.800			-1109.216			
	3	.000			-89.683			
		.000	-153.089	999.167		-.285	1.151	
		12.800	-153.089	-960.376		-.285	-2.500	
		12.800			-89.683			
	4	.000			-894.089			
		.000	161.246	-1035.071		-4.980	21.403	
		12.800	161.246	1028.880		-4.980	-42.343	
		12.800			-894.089			
	5	.000			125.444			
		.000	-155.668	1010.617		1.450	-6.287	
		12.800	-155.668	-981.939		1.450	12.267	
		12.800			125.444			
9								
	1	.000			-110.913			
		.000	101.278	-660.696		.000	.000	
		12.800	101.278	635.660		.000	.000	
		12.800			-110.913			
	2	.000			-102.530			
		.000	153.798	-1002.353		.000	.000	
		12.800	153.798	966.257		.000	.000	
		12.800			-102.530			
	3	.000			-1298.733			
		.000	-167.925	1064.483		.000	.000	
		12.800	-167.925	-1084.952		.000	.000	
		12.800			-1298.733			
	4	.000			162.458			
		.000	157.365	-1018.105		.000	.000	
		12.800	157.365	996.162		.000	.000	
		12.800			162.458			
	5	.000			-1033.744			

PILA FIJA (PILA4F)

F R A M E E L E M E N T F O R C E S

ELT ID	LOAD COND	DIST ENDI	1-2 PLANE SHEAR	1-2 PLANE MOMENT	AXIAL FORCE	1-3 PLANE SHEAR	1-3 PLANE MOMENT	AXIA TOR
		.000	-164.358	1048.731		.000	.000	
		12.800	-164.358	-1055.047		.000	.000	
		12.800			-1033.744			
10								
	1	.000			-367.561			
		.000	101.425	-661.664		.000	.000	
		12.800	101.425	636.577		.000	.000	
		12.800			-367.561			
	2	.000			-476.513			
		.000	153.598	-1002.023		.000	.000	
		12.800	153.598	964.037		.000	.000	
		12.800			-476.513			
	3	.000			-1361.930			
		.000	-152.300	998.580		.000	.000	
		12.800	-152.300	-950.858		.000	.000	
		12.800			-1361.930			
	4	.000			-104.949			
		.000	152.988	-1000.020		.000	.000	
		12.800	152.988	958.231		.000	.000	
		12.800			-104.949			
	5	.000			-990.366			
		.000	-152.910	1000.583		.000	.000	
		12.800	-152.910	-956.665		.000	.000	
		12.800			-990.366			
11								
	1	.000			-610.796			
		.000	101.977	-664.492		.000	.000	
		12.800	101.977	640.813		.000	.000	
		12.800			-610.796			
	2	.000			-846.557			
		.000	154.409	-1006.149		.000	.000	
		12.800	154.409	970.284		.000	.000	
		12.800			-846.557			
	3	.000			-846.557			
		.000	-154.091	1004.816		.000	.000	
		12.800	-154.091	-967.552		.000	.000	
		12.800			-846.557			
	4	.000			-523.029			
		.000	154.322	-1005.783		.000	.000	
		12.800	154.322	969.533		.000	.000	
		12.800			-523.029			

PILA FIJA (PILA4F)

F R A M E E L E M E N T F O R C E S

ELT ID	LOAD COND	DIST ENDI	1-2 PLANE SHEAR	1-2 PLANE MOMENT	AXIAL FORCE	1-3 PLANE SHEAR	1-3 PLANE MOMENT	AXIA TOR
	5	.000			-523.029			
		.000	-154.178	1005.182		.000	.000	
		12.800	-154.178	-968.303		.000	.000	
		12.800			-523.029			
12								
	1	.000			-944.657			
		.000	100.578	-659.486		.000	.000	
		12.800	100.578	627.913		.000	.000	
		12.800			-944.657			
	2	.000			-1350.490			
		.000	152.270	-998.431		.000	.000	
		12.800	152.270	950.625		.000	.000	
		12.800			-1350.490			
	3	.000			-465.073			
		.000	-153.628	1002.173		.000	.000	
		12.800	-153.628	-964.270		.000	.000	
		12.800			-465.073			
	4	.000			-985.213			
		.000	152.897	-1000.516		.000	.000	
		12.800	152.897	956.560		.000	.000	
		12.800			-985.213			
	5	.000			-99.796			
		.000	-153.002	1000.088		.000	.000	
		12.800	-153.002	-958.336		.000	.000	
		12.800			-99.796			
13								
	1	.000			-896.835			
		.000	111.098	-703.864		.000	.000	
		12.800	111.098	718.193		.000	.000	
		12.800			-896.835			
	2	.000			-1292.636			
		.000	167.779	-1063.839		.000	.000	
		12.800	167.779	1083.730		.000	.000	
		12.800			-1292.636			
	3	.000			-96.433			
		.000	-153.943	1002.997		.000	.000	
		12.800	-153.943	-967.479		.000	.000	
		12.800			-96.433			
	4	.000			-1030.998			
		.000	164.292	-1048.442		.000	.000	
		12.800	164.292	1054.496		.000	.000	

PILA FIJA (PILA4F)

F R A M E E L E M E N T F O R C E S

ELT ID	LOAD COND	DIST ENDI	1-2 PLANE SHEAR	1-2 PLANE MOMENT	AXIAL FORCE	1-3 PLANE SHEAR	1-3 PLANE MOMENT	AXIA TOR
		12.800			-1030.998			
	5	.000			165.205			
		.000	-157.430	1018.394		.000	.000	
		12.800	-157.430	-996.713		.000	.000	
		12.800			165.205			
16								
	1	.000			-101.341			
		.000	100.782	-658.462		.377	-1.567	
		12.800	100.782	631.545		.377	3.260	
		12.800			-101.341			
	2	.000			-94.480			
		.000	152.976	-998.664		.339	-1.380	
		12.800	152.976	959.434		.339	2.959	
		12.800			-94.480			
	3	.000			-1114.013			
		.000	-163.938	1047.023		6.769	-29.070	
		12.800	-163.938	-1051.384		6.769	57.569	
		12.800			-1114.013			
	4	.000			123.283			
		.000	155.618	-1010.390		-1.425	6.183	
		12.800	155.618	981.515		-1.425	-12.060	
		12.800			123.283			
	5	.000			-896.250			
		.000	-161.297	1035.298		5.004	-21.506	
		12.800	-161.297	-1029.304		5.004	42.550	
		12.800			-896.250			
17								
	1	.000			-345.331			
		.000	102.394	-665.667		.856	-3.641	
		12.800	102.394	644.978		.856	7.310	
		12.800			-345.331			
	2	.000			-451.325			
		.000	155.136	-1008.368		1.009	-4.289	
		12.800	155.136	977.367		1.009	8.620	
		12.800			-451.325			
	3	.000			-1094.934			
		.000	-156.683	1016.447		8.773	-37.409	
		12.800	-156.683	-989.097		8.773	74.886	
		12.800			-1094.934			
	4	.000			-156.619			
		.000	155.339	-1009.658		-1.551	6.623	

PILA FIJA (PILA4F)

F R A M E E L E M E N T F O R C E S

ELT ID	LOAD COND	DIST ENDI	1-2 PLANE SHEAR	1-2 PLANE MOMENT	AXIAL FORCE	1-3 PLANE SHEAR	1-3 PLANE MOMENT	AXIA TOR
		12.800	155.339	978.679		-1.551	-13.235	
		12.800			-156.619			
	5	.000			-800.228			
		.000	-156.480	1015.156		6.213	-26.497	
		12.800	-156.480	-987.785		6.213	53.032	
		12.800			-800.228			
18	----------							
	1	.000			-545.067			
		.000	102.656	-667.174		2.480	-10.499	
		12.800	102.656	646.817		2.480	21.240	
		12.800			-545.067			
	2	.000			-753.324			
		.000	155.437	-1010.213		3.525	-14.921	
		12.800	155.437	979.383		3.525	30.193	
		12.800			-753.324			
	3	.000			-753.324			
		.000	-155.226	1009.334		3.525	-14.921	
		12.800	-155.226	-977.557		3.525	30.193	
		12.800			-753.324			
	4	.000			-475.255			
		.000	155.379	-1009.972		1.772	-7.511	
		12.800	155.379	978.881		1.772	15.174	
		12.800			-475.255			
	5	.000			-475.255			
		.000	-155.284	1009.575		1.772	-7.511	
		12.800	-155.284	-978.059		1.772	15.174	
		12.800			-475.255			
19	----------							
	1	.000			-765.225			
		.000	103.549	-671.602		5.905	-25.180	
		12.800	103.549	653.829		5.905	50.406	
		12.800			-765.225			
	2	.000			-1087.222			
		.000	156.699	-1016.491		8.656	-36.910	
		12.800	156.699	989.252		8.656	73.888	
		12.800			-1087.222			
	3	.000			-443.613			
		.000	-155.120	1008.323		.892	-3.790	
		12.800	-155.120	-977.212		.892	7.621	
		12.800			-443.613			
	4	.000			-796.754			

PILA FIJA (PILA4F)

F R A M E E L E M E N T F O R C E S

ELT ID	LOAD COND	DIST ENDI	1-2 PLANE SHEAR	1-2 PLANE MOMENT	AXIAL FORCE	1-3 PLANE SHEAR	1-3 PLANE MOMENT	AXIA TOR
		.000	156.487	-1015.176		6.160	-26.272	
		12.800	156.487	987.855		6.160	52.582	
		12.800			-796.754			
	5	.000			-153.145			
		.000	-155.332	1009.638		-1.604	6.848	
		12.800	-155.332	-978.609		-1.604	-13.685	
		12.800			-153.145			
20	----------							
	1	.000			-771.456			
		.000	108.441	-692.226		4.587	-19.701	
		12.800	108.441	695.821		4.587	39.018	
		12.800			-771.456			
	2	.000			-1109.216			
		.000	163.825	-1046.520		6.715	-28.841	
		12.800	163.825	1050.442		6.715	57.110	
		12.800			-1109.216			
	3	.000			-89.683			
		.000	-153.089	999.167		.285	-1.151	
		12.800	-153.089	-960.376		.285	2.500	
		12.800			-89.683			
	4	.000			-894.089			
		.000	161.246	-1035.071		4.980	-21.403	
		12.800	161.246	1028.880		4.980	42.343	
		12.800			-894.089			
	5	.000			125.444			
		.000	-155.668	1010.617		-1.450	6.287	
		12.800	-155.668	-981.939		-1.450	-12.267	
		12.800			125.444			
101	----------							
	1	.000			.000			.00
		.000	.000	.000		.000	.000	
		2.000	-103.800	-103.800		.000	.000	
		2.000			.000			.00
	2	.000			.000			.00
		.000	.000	.000		.000	.000	
		2.000	-140.130	-140.130		.000	.000	
		2.000			.000			.00
	3	.000			.000			.00
		.000	.000	.000		.000	.000	
		2.000	-140.130	-140.130		.000	.000	
		2.000			.000			.00

PILA FIJA (PILA4F)

F R A M E E L E M E N T F O R C E S

ELT ID	LOAD COND	DIST ENDI	1-2 PLANE SHEAR	1-2 PLANE MOMENT	AXIAL FORCE	1-3 PLANE SHEAR	1-3 PLANE MOMENT	AXIA TOR
	4	.000			.000			.00
		.000	.000	.000		.000	.000	
		2.000	-103.800	-103.800		.000	.000	
		2.000			.000			.00
	5	.000			.000			.00
		.000	.000	.000		.000	.000	
		2.000	-103.800	-103.800		.000	.000	
		2.000			.000			.00
102								
	1	.000			85.066			-32.65
		.000	-10.105	490.479		12.664	-32.663	
		6.000	-321.505	-504.352		12.664	43.318	
		6.000			85.066			-32.65
	2	.000			128.190			-45.45
		.000	-46.748	757.213		20.297	-51.680	
		6.000	-467.138	-784.445		20.297	70.099	
		6.000			128.190			-45.45
	3	.000			-98.619			-148.27
		.000	683.389	-872.275		-66.349	142.563	
		6.000	262.999	1966.889		-66.349	-255.532	
		6.000			-98.619			-148.27
	4	.000			119.324			12.13
		.000	-159.726	740.317		33.389	-77.476	
		6.000	-471.126	-1152.239		33.389	122.856	
		6.000			119.324			12.13
	5	.000			-107.485			-90.68
		.000	570.411	-889.171		-53.257	116.768	
		6.000	259.011	1599.094		-53.257	-202.775	
		6.000			-107.485			-90.68
103								
	1	.000			102.187			-116.79
		.000	-29.596	408.123		17.871	-65.714	
		6.000	-340.996	-703.655		17.871	41.512	
		6.000			102.187			-116.79
	2	.000			145.711			-180.69
		.000	-64.468	617.857		27.854	-103.238	
		6.000	-484.858	-1030.121		27.854	63.884	
		6.000			145.711			-180.69
	3	.000			233.551			366.71
		.000	262.544	-261.488		-60.932	258.465	
		3.747	-.001	230.407		-60.932	30.144	

PILA FIJA (PILA4F)

F R A M E E L E M E N T F O R C E S

ELT ID	LOAD COND	DIST ENDI	1-2 PLANE SHEAR	1-2 PLANE MOMENT	AXIAL FORCE	1-3 PLANE SHEAR	1-3 PLANE MOMENT	AXIA TOR
		6.000	-157.846	52.605		-60.932	-107.125	
		6.000			233.551			366.71
	4	.000			36.939			-235.75
		.000	-58.432	484.041		37.307	-147.558	
		6.000	-369.832	-800.749		37.307	76.282	
		6.000			36.939			-235.75
	5	.000			124.779			311.65
		.000	268.580	-395.304		-51.479	214.145	
		5.175	-.001	299.641		-51.479	-52.255	
		6.000	-42.820	281.977		-51.479	-94.727	
		6.000			124.779			311.65
104								
	1	.000			160.271			-239.20
		.000	121.373	9.009		40.761	-71.420	
		2.339	-.001	150.930		40.761	23.905	
		6.000	-190.027	-196.952		40.761	173.148	
		6.000			160.271			-239.20
	2	.000			233.659			-358.46
		.000	152.383	49.025		60.926	-107.114	
		2.175	-.001	214.733		60.926	25.394	
		6.000	-268.007	-297.846		60.926	258.442	
		6.000			233.659			-358.46
	3	.000			145.819			188.94
		.000	479.395	-1033.700		-27.859	63.895	
		6.000	59.005	581.499		-27.859	-103.261	
		6.000			145.819			188.94
	4	.000			124.827			-307.94
		.000	40.359	280.364		51.476	-94.722	
		.778	-.001	296.057		51.476	-54.692	
		6.000	-271.041	-411.682		51.476	214.135	
		6.000			124.827			-307.94
	5	.000			36.987			239.46
		.000	367.371	-802.361		-37.309	76.287	
		6.000	55.971	467.664		-37.309	-147.568	
		6.000			36.987			239.46
105								
	1	.000			-64.649			97.57
		.000	-158.179	1296.372		44.561	-171.744	
		6.000	-469.579	-586.904		44.561	95.620	
		6.000			-64.649			97.57
	2	.000			-98.507			143.81
		.000	-259.238	1942.492		66.351	-255.544	

PILA FIJA (PILA4F)

F R A M E E L E M E N T F O R C E S

ELT ID	LOAD COND	DIST ENDI	1-2 PLANE SHEAR	1-2 PLANE MOMENT	AXIAL FORCE	1-3 PLANE SHEAR	1-3 PLANE MOMENT	AXIA TOR
		6.000	-679.628	-874.109		66.351	142.563	
		6.000			-98.507			143.81
	3	.000			128.302			40.99
		.000	470.898	-808.842		-20.295	70.087	
		6.000	50.508	755.379		-20.295	-51.680	
		6.000			128.302			40.99
	4	.000			-107.434			88.67
		.000	-257.317	1588.104		53.258	-202.780	
		6.000	-568.717	-889.998		53.258	116.768	
		6.000			-107.434			88.67
	5	.000			119.374			-14.14
		.000	472.820	-1163.229		-33.388	122.850	
		6.000	161.420	739.490		-33.388	-77.476	
		6.000			119.374			-14.14
106								
	1	.000			.000			.00
		.000	103.800	-103.800		.000	.000	
		2.000	.000	.000		.000	.000	
		2.000			.000			.00
	2	.000			.000			.00
		.000	140.130	-140.130		.000	.000	
		2.000	.000	.000		.000	.000	
		2.000			.000			.00
	3	.000			.000			.00
		.000	140.130	-140.130		.000	.000	
		2.000	.000	.000		.000	.000	
		2.000			.000			.00
	4	.000			.000			.00
		.000	103.800	-103.800		.000	.000	
		2.000	.000	.000		.000	.000	
		2.000			.000			.00
	5	.000			.000			.00
		.000	103.800	-103.800		.000	.000	
		2.000	.000	.000		.000	.000	
		2.000			.000			.00
108								
	1	.000			.000			.00
		.000	.000	.000		.000	.000	
		2.000	-155.800	-155.800		.000	.000	
		2.000			.000			.00
	2	.000			.000			.00

PILA FIJA (PILA4F)

F R A M E E L E M E N T F O R C E S

ELT ID	LOAD COND	DIST ENDI	1-2 PLANE SHEAR	1-2 PLANE MOMENT	AXIAL FORCE	1-3 PLANE SHEAR	1-3 PLANE MOMENT	AXIA TOR
		.000	.000	.000		.000	.000	
		2.000	-210.330	-210.330		.000	.000	
		2.000			.000			.00
	3	.000			.000			.00
		.000	.000	.000		.000	.000	
		2.000	-210.330	-210.330		.000	.000	
		2.000			.000			.00
	4	.000			.000			.00
		.000	.000	.000		.000	.000	
		2.000	-155.800	-155.800		.000	.000	
		2.000			.000			.00
	5	.000			.000			.00
		.000	.000	.000		.000	.000	
		2.000	-155.800	-155.800		.000	.000	
		2.000			.000			.00
109								
	1	.000			132.709			.00
		.000	-29.596	554.392		.000	.000	
		6.000	-496.996	-1025.381		.000	.000	
		6.000			132.709			.00
	2	.000			203.371			.00
		.000	-105.604	880.109		.000	.000	
		6.000	-736.594	-1646.484		.000	.000	
		6.000			203.371			.00
	3	.000			-298.563			.00
		.000	1669.391	-1933.761		.000	.000	
		6.000	1038.401	6189.613		.000	.000	
		6.000			-298.563			.00
	4	.000			229.952			.00
		.000	-452.972	1115.158		.000	.000	
		6.000	-920.372	-3004.874		.000	.000	
		6.000			229.952			.00
	5	.000			-271.982			.00
		.000	1322.023	-1698.712		.000	.000	
		6.000	854.623	4831.223		.000	.000	
		6.000			-271.982			.00
110								
	1	.000			185.480			.00
		.000	-61.088	701.071		.000	.000	
		6.000	-528.488	-1067.658		.000	.000	
		6.000			185.480			.00

PILA FIJA (PILA4F)

F R A M E E L E M E N T F O R C E S

ELT ID	LOAD COND	DIST ENDI	1-2 PLANE SHEAR	1-2 PLANE MOMENT	AXIAL FORCE	1-3 PLANE SHEAR	1-3 PLANE MOMENT	AXIA TOR
	2	.000			261.443			.00
		.000	-120.810	1069.431		.000	.000	
		6.000	-751.800	-1548.397		.000	.000	
		6.000			261.443			.00
	3	.000			550.676			.00
		.000	282.898	-592.411		.000	.000	
		2.690	-.001	-211.907		.000	.000	
		6.000	-348.092	-787.991		.000	.000	
		6.000			550.676			.00
	4	.000			28.956			.00
		.000	-65.800	863.319		.000	.000	
		6.000	-533.200	-933.684		.000	.000	
		6.000			28.956			.00
	5	.000			318.188			.00
		.000	337.908	-798.523		.000	.000	
		4.338	-.001	-65.651		.000	.000	
		6.000	-129.492	-173.278		.000	.000	
		6.000			318.188			.00
111	----------							
	1	.000			376.601			.00
		.000	247.702	-558.539		.000	.000	
		3.180	-.001	-164.723		.000	.000	
		6.000	-219.698	-474.525		.000	.000	
		6.000			376.601			.00
	2	.000			550.831			.00
		.000	326.923	-777.639		.000	.000	
		3.109	-.001	-269.491		.000	.000	
		6.000	-304.067	-709.070		.000	.000	
		6.000			550.831			.00
	3	.000			261.598			.00
		.000	730.631	-1538.046		.000	.000	
		6.000	99.641	952.772		.000	.000	
		6.000			261.598			.00
	4	.000			318.258			.00
		.000	119.957	-168.615		.000	.000	
		1.540	-.001	-76.255		.000	.000	
		6.000	-347.443	-851.072		.000	.000	
		6.000			318.258			.00
	5	.000			29.025			.00
		.000	523.665	-929.021		.000	.000	
		6.000	56.265	810.770		.000	.000	
		6.000			29.025			.00

PILA FIJA (PILA4F)

F R A M E E L E M E N T F O R C E S

ELT ID	LOAD COND	DIST ENDI	1-2 PLANE SHEAR	1-2 PLANE MOMENT	AXIAL FORCE	1-3 PLANE SHEAR	1-3 PLANE MOMENT	AXIA TOR
112	----------							
	1	.000			-198.683			.00
		.000	-669.788	4121.501		.000	.000	
		6.000	-1137.188	-1299.426		.000	.000	
		6.000			-198.683			.00
	2	.000			-298.416			.00
		.000	-1030.230	6147.362		.000	.000	
		6.000	-1661.220	-1926.987		.000	.000	
		6.000			-298.416			.00
	3	.000			203.518			.00
		.000	744.765	-1688.735		.000	.000	
		6.000	113.775	886.883		.000	.000	
		6.000			203.518			.00
	4	.000			-271.916			.00
		.000	-850.942	4812.191		.000	.000	
		6.000	-1318.342	-1695.661		.000	.000	
		6.000			-271.916			.00
	5	.000			230.019			.00
		.000	924.053	-3023.906		.000	.000	
		6.000	456.653	1118.209		.000	.000	
		6.000			230.019			.00
113	----------							
	1	.000			.000			.00
		.000	155.800	-155.800		.000	.000	
		2.000	.000	.000		.000	.000	
		2.000			.000			.00
	2	.000			.000			.00
		.000	210.330	-210.330		.000	.000	
		2.000	.000	.000		.000	.000	
		2.000			.000			.00
	3	.000			.000			.00
		.000	210.330	-210.330		.000	.000	
		2.000	.000	.000		.000	.000	
		2.000			.000			.00
	4	.000			.000			.00
		.000	155.800	-155.800		.000	.000	
		2.000	.000	.000		.000	.000	
		2.000			.000			.00
	5	.000			.000			.00
		.000	155.800	-155.800		.000	.000	
		2.000	.000	.000		.000	.000	

PILA FIJA (PILA4F)

F R A M E E L E M E N T F O R C E S

ELT ID	LOAD COND	DIST ENDI	1-2 PLANE SHEAR	1-2 PLANE MOMENT	AXIAL FORCE	1-3 PLANE SHEAR	1-3 PLANE MOMENT	AXIA TOR
		2.000			.000			.00
115								
	1	.000			.000			.00
		.000	.000	.000		.000	.000	
		2.000	-103.800	-103.800		.000	.000	
		2.000			.000			.00
	2	.000			.000			.00
		.000	.000	.000		.000	.000	
		2.000	-140.130	-140.130		.000	.000	
		2.000			.000			.00
	3	.000			.000			.00
		.000	.000	.000		.000	.000	
		2.000	-140.130	-140.130		.000	.000	
		2.000			.000			.00
	4	.000			.000			.00
		.000	.000	.000		.000	.000	
		2.000	-103.800	-103.800		.000	.000	
		2.000			.000			.00
	5	.000			.000			.00
		.000	.000	.000		.000	.000	
		2.000	-103.800	-103.800		.000	.000	
		2.000			.000			.00
116								
	1	.000			85.066			32.65
		.000	-10.105	490.479		-12.664	32.663	
		6.000	-321.505	-504.352		-12.664	-43.318	
		6.000			85.066			32.65
	2	.000			128.190			45.45
		.000	-46.748	757.213		-20.297	51.680	
		6.000	-467.138	-784.445		-20.297	-70.099	
		6.000			128.190			45.45
	3	.000			-98.619			148.27
		.000	683.389	-872.275		66.349	-142.563	
		6.000	262.999	1966.889		66.349	255.532	
		6.000			-98.619			148.27
	4	.000			119.324			-12.13
		.000	-159.726	740.317		-33.389	77.476	
		6.000	-471.126	-1152.239		-33.389	-122.856	
		6.000			119.324			-12.13
	5	.000			-107.485			90.68
		.000	570.411	-889.171		53.257	-116.768	

PILA FIJA (PILA4F)

F R A M E E L E M E N T F O R C E S

ELT ID	LOAD COND	DIST ENDI	1-2 PLANE SHEAR	1-2 PLANE MOMENT	AXIAL FORCE	1-3 PLANE SHEAR	1-3 PLANE MOMENT	AXIA TOR
		6.000	259.011	1599.094		53.257	202.775	
		6.000			-107.485			90.68
117								
	1	.000			102.187			116.79
		.000	-29.596	408.123		-17.871	65.714	
		6.000	-340.996	-703.655		-17.871	-41.512	
		6.000			102.187			116.79
	2	.000			145.711			180.69
		.000	-64.468	617.857		-27.854	103.238	
		6.000	-484.858	-1030.121		-27.854	-63.884	
		6.000			145.711			180.69
	3	.000			233.551			-366.71
		.000	262.544	-261.488		60.932	-258.465	
		3.747	-.001	230.407		60.932	-30.144	
		6.000	-157.846	52.605		60.932	107.125	
		6.000			233.551			-366.71
	4	.000			36.939			235.75
		.000	-58.432	484.041		-37.307	147.558	
		6.000	-369.832	-800.749		-37.307	-76.282	
		6.000			36.939			235.75
	5	.000			124.779			-311.65
		.000	268.580	-395.304		51.479	-214.145	
		5.175	-.001	299.641		51.479	52.255	
		6.000	-42.820	281.977		51.479	94.727	
		6.000			124.779			-311.65
118								
	1	.000			160.271			239.20
		.000	121.373	9.009		-40.761	71.420	
		2.339	-.001	150.930		-40.761	-23.905	
		6.000	-190.027	-196.952		-40.761	-173.148	
		6.000			160.271			239.20
	2	.000			233.659			358.46
		.000	152.383	49.025		-60.926	107.114	
		2.175	-.001	214.733		-60.926	-25.394	
		6.000	-268.007	-297.846		-60.926	-258.442	
		6.000			233.659			358.46
	3	.000			145.819			-188.94
		.000	479.395	-1033.700		27.859	-63.895	
		6.000	59.005	581.499		27.859	103.261	
		6.000			145.819			-188.94
	4	.000			124.827			307.94
		.000	40.359	280.364		-51.476	94.722	

PILA FIJA (PILA4F)

F R A M E E L E M E N T F O R C E S

ELT ID	LOAD COND	DIST ENDI	1-2 PLANE SHEAR	1-2 PLANE MOMENT	AXIAL FORCE	1-3 PLANE SHEAR	1-3 PLANE MOMENT	AXIA TOR
		.778	-.001	296.057		-51.476	54.692	
		6.000	-271.041	-411.682		-51.476	-214.135	
		6.000			124.827			307.94
	5	.000			36.987			-239.46
		.000	367.371	-802.361		37.309	-76.287	
		6.000	55.971	467.664		37.309	147.568	
		6.000			36.987			-239.46
119	----------							
	1	.000			-64.649			-97.57
		.000	-158.179	1296.372		-44.561	171.744	
		6.000	-469.579	-586.904		-44.561	-95.620	
		6.000			-64.649			-97.57
	2	.000			-98.507			-143.81
		.000	-259.238	1942.492		-66.351	255.544	
		6.000	-679.628	-874.109		-66.351	-142.563	
		6.000			-98.507			-143.81
	3	.000			128.302			-40.99
		.000	470.898	-808.842		20.295	-70.087	
		6.000	50.508	755.379		20.295	51.680	
		6.000			128.302			-40.99
	4	.000			-107.434			-88.67
		.000	-257.317	1588.104		-53.258	202.780	
		6.000	-568.717	-889.998		-53.258	-116.768	
		6.000			-107.434			-88.67
	5	.000			119.374			14.14
		.000	472.820	-1163.229		33.388	-122.850	
		6.000	161.420	739.490		33.388	77.476	
		6.000			119.374			14.14
120	----------							
	1	.000			.000			.00
		.000	103.800	-103.800		.000	.000	
		2.000	.000	.000		.000	.000	
		2.000			.000			.00
	2	.000			.000			.00
		.000	140.130	-140.130		.000	.000	
		2.000	.000	.000		.000	.000	
		2.000			.000			.00
	3	.000			.000			.00
		.000	140.130	-140.130		.000	.000	
		2.000	.000	.000		.000	.000	
		2.000			.000			.00

PILA FIJA (PILA4F)

F R A M E E L E M E N T F O R C E S

ELT ID	LOAD COND	DIST ENDI	1-2 PLANE SHEAR	1-2 PLANE MOMENT	AXIAL FORCE	1-3 PLANE SHEAR	1-3 PLANE MOMENT	AXIA TOR
	4	.000			.000			.00
		.000	103.800	-103.800		.000	.000	
		2.000	.000	.000		.000	.000	
		2.000			.000			.00
	5	.000			.000			.00
		.000	103.800	-103.800		.000	.000	
		2.000	.000	.000		.000	.000	
		2.000			.000			.00
121	----------							
	1	.000			-13.041			-37.26
		.000	7.646	29.396		-15.715	32.663	
		5.000	7.646	67.624		-15.715	-45.914	
		5.000			-13.041			-37.26
	2	.000			-20.636			-62.09
		.000	1.098	42.494		-24.787	51.680	
		5.000	1.098	47.983		-24.787	-72.253	
		5.000			-20.636			-62.09
	3	.000			59.580			319.23
		.000	290.494	90.703		65.319	-142.563	
		5.000	290.494	1543.173		65.319	184.034	
		5.000			59.580			319.23
	4	.000			-31.963			-137.39
		.000	-67.357	-.075		-36.294	77.476	
		5.000	-67.357	-336.859		-36.294	-103.994	
		5.000			-31.963			-137.39
	5	.000			48.253			243.93
		.000	222.039	48.134		53.812	-116.768	
		5.000	222.039	1158.330		53.812	152.293	
		5.000			48.253			243.93
122	----------							
	1	.000			-13.041			37.26
		.000	-7.646	67.624		15.715	-45.914	
		5.000	-7.646	29.396		15.715	32.663	
		5.000			-13.041			37.26
	2	.000			-20.636			62.09
		.000	-1.098	47.983		24.787	-72.253	
		5.000	-1.098	42.494		24.787	51.680	
		5.000			-20.636			62.09
	3	.000			59.580			-319.23
		.000	-290.494	1543.173		-65.319	184.034	
		5.000	-290.494	90.703		-65.319	-142.563	

PILA FIJA (PILA4F)

F R A M E E L E M E N T F O R C E S

ELT ID	LOAD COND	DIST ENDI	1-2 PLANE SHEAR	1-2 PLANE MOMENT	AXIAL FORCE	1-3 PLANE SHEAR	1-3 PLANE MOMENT	AXIA TOR
		5.000			59.580			-319.23
	4	.000			-31.963			137.39
		.000	67.357	-336.859		36.294	-103.994	
		5.000	67.357	-.075		36.294	77.476	
		5.000			-31.963			137.39
	5	.000			48.253			-243.93
		.000	-222.039	1158.330		-53.812	152.293	
		5.000	-222.039	48.134		-53.812	-116.768	
		5.000			48.253			-243.93
123								
	1	.000			-6.063			267.49
		.000	53.422	76.829		-85.274	109.032	
		5.000	53.422	343.938		-85.274	-317.337	
		5.000			-6.063			267.49
	2	.000			-8.566			424.93
		.000	48.655	126.627		-137.614	173.336	
		5.000	48.655	369.903		-137.614	-514.734	
		5.000			-8.566			424.93
	3	.000			-14.190			-1239.28
		.000	1095.389	-589.872		488.853	-513.997	
		5.000	1095.389	4887.074		488.853	1930.270	
		5.000			-14.190			-1239.28
	4	.000			-2.367			657.60
		.000	-256.075	261.124		-237.724	270.413	
		5.000	-256.075	-1019.251		-237.724	-918.206	
		5.000			-2.367			657.60
	5	.000			-7.992			-1006.61
		.000	790.659	-455.374		388.744	-416.920	
		5.000	790.659	3497.920		388.744	1526.798	
		5.000			-7.992			-1006.61
124								
	1	.000			-6.063			-267.49
		.000	-53.422	343.938		85.274	-317.337	
		5.000	-53.422	76.829		85.274	109.032	
		5.000			-6.063			-267.49
	2	.000			-8.566			-424.93
		.000	-48.655	369.903		137.614	-514.734	
		5.000	-48.655	126.627		137.614	173.336	
		5.000			-8.566			-424.93
	3	.000			-14.190			1239.28
		.000	-1095.389	4887.074		-488.853	1930.270	

PILA FIJA (PILA4F)

F R A M E E L E M E N T F O R C E S

ELT ID	LOAD COND	DIST ENDI	1-2 PLANE SHEAR	1-2 PLANE MOMENT	AXIAL FORCE	1-3 PLANE SHEAR	1-3 PLANE MOMENT	AXIA TOR
		5.000	-1095.389	-589.872		-488.853	-513.997	
		5.000			-14.190			1239.28
	4	.000			-2.367			-657.60
		.000	256.075	-1019.251		237.724	-918.206	
		5.000	256.075	261.124		237.724	270.413	
		5.000			-2.367			-657.60
	5	.000			-7.992			1006.61
		.000	-790.659	3497.920		-388.744	1526.798	
		5.000	-790.659	-455.374		-388.744	-416.920	
		5.000			-7.992			1006.61
125								
	1	.000			-25.370			65.84
		.000	82.697	101.174		-44.572	112.931	
		5.000	82.697	514.661		-44.572	-109.927	
		5.000			-25.370			65.84
	2	.000			-36.597			99.76
		.000	116.083	147.572		-67.489	170.998	
		5.000	116.083	727.987		-67.489	-166.448	
		5.000			-36.597			99.76
	3	.000			-36.597			-108.74
		.000	116.083	147.572		67.493	-171.020	
		5.000	116.083	727.987		67.493	166.446	
		5.000			-36.597			-108.74
	4	.000			-15.942			102.23
		.000	65.064	57.016		-67.490	171.004	
		5.000	65.064	382.336		-67.490	-166.448	
		5.000			-15.942			102.23
	5	.000			-15.942			-106.28
		.000	65.064	57.016		67.492	-171.014	
		5.000	65.064	382.336		67.492	166.447	
		5.000			-15.942			-106.28
126								
	1	.000			-25.370			-65.84
		.000	-82.697	514.661		44.572	-109.927	
		5.000	-82.697	101.174		44.572	112.931	
		5.000			-25.370			-65.84
	2	.000			-36.597			-99.76
		.000	-116.083	727.987		67.489	-166.448	
		5.000	-116.083	147.572		67.489	170.998	
		5.000			-36.597			-99.76
	3	.000			-36.597			108.74

PILA FIJA (PILA4F)

F R A M E E L E M E N T F O R C E S

ELT ID	LOAD COND	DIST ENDI	1-2 PLANE SHEAR	1-2 PLANE MOMENT	AXIAL FORCE	1-3 PLANE SHEAR	1-3 PLANE MOMENT	AXIA TOR
		.000	-116.083	727.987		-67.493	166.446	
		5.000	-116.083	147.572		-67.493	-171.020	
		5.000			-36.597			108.74
	4	.000			-15.942			-102.23
		.000	-65.064	382.336		67.490	-166.448	
		5.000	-65.064	57.016		67.490	171.004	
		5.000			-15.942			-102.23
	5	.000			-15.942			106.28
		.000	-65.064	382.336		-67.492	166.447	
		5.000	-65.064	57.016		-67.492	-171.014	
		5.000			-15.942			106.28
127	----------							
	1	.000			-9.705			839.49
		.000	733.378	-387.195		-328.469	344.893	
		5.000	733.378	3279.694		-328.469	-1297.451	
		5.000			-9.705			839.49
	2	.000			-14.081			1251.08
		.000	1078.454	-576.170		-488.865	513.985	
		5.000	1078.454	4816.099		-488.865	-1930.337	
		5.000			-14.081			1251.08
	3	.000			-8.456			-413.12
		.000	31.720	140.328		137.603	-173.348	
		5.000	31.720	298.927		137.603	514.666	
		5.000			-8.456			-413.12
	4	.000			-7.942			1011.93
		.000	783.030	-449.202		-388.749	416.915	
		5.000	783.030	3465.949		-388.749	-1526.828	
		5.000			-7.942			1011.93
	5	.000			-2.318			-652.28
		.000	-263.704	267.296		237.719	-270.419	
		5.000	-263.704	-1051.222		237.719	918.176	
		5.000			-2.318			-652.28
128	----------							
	1	.000			-9.705			-839.49
		.000	-733.378	3279.694		328.469	-1297.451	
		5.000	-733.378	-387.195		328.469	344.893	
		5.000			-9.705			-839.49
	2	.000			-14.081			-1251.08
		.000	-1078.454	4816.099		488.865	-1930.337	
		5.000	-1078.454	-576.170		488.865	513.985	
		5.000			-14.081			-1251.08

PILA FIJA (PILA4F)

F R A M E E L E M E N T F O R C E S

ELT ID	LOAD COND	DIST ENDI	1-2 PLANE SHEAR	1-2 PLANE MOMENT	AXIAL FORCE	1-3 PLANE SHEAR	1-3 PLANE MOMENT	AXIA TOR
	3	.000			-8.456			413.12
		.000	-31.720	298.927		-137.603	514.666	
		5.000	-31.720	140.328		-137.603	-173.348	
		5.000			-8.456			413.12
	4	.000			-7.942			-1011.93
		.000	-783.030	3465.949		388.749	-1526.828	
		5.000	-783.030	-449.202		388.749	416.915	
		5.000			-7.942			-1011.93
	5	.000			-2.318			652.28
		.000	263.704	-1051.222		-237.719	918.176	
		5.000	263.704	267.296		-237.719	-270.419	
		5.000			-2.318			652.28
129	----------							
	1	.000			39.973			-212.71
		.000	198.076	58.561		-43.792	95.620	
		5.000	198.076	1048.942		-43.792	-123.341	
		5.000			39.973			-212.71
	2	.000			59.636			-316.46
		.000	289.457	86.708		-65.319	142.563	
		5.000	289.457	1533.993		-65.319	-184.030	
		5.000			59.636			-316.46
	3	.000			-20.580			64.86
		.000	.061	38.499		24.788	-51.680	
		5.000	.061	38.804		24.788	72.257	
		5.000			-20.580			64.86
	4	.000			48.278			-242.68
		.000	221.572	46.334		-53.812	116.768	
		5.000	221.572	1154.196		-53.812	-152.291	
		5.000			48.278			-242.68
	5	.000			-31.938			138.64
		.000	-67.824	-1.875		36.294	-77.476	
		5.000	-67.824	-340.994		36.294	103.996	
		5.000			-31.938			138.64
130	----------							
	1	.000			39.973			212.71
		.000	-198.076	1048.942		43.792	-123.341	
		5.000	-198.076	58.561		43.792	95.620	
		5.000			39.973			212.71
	2	.000			59.636			316.46
		.000	-289.457	1533.993		65.319	-184.030	
		5.000	-289.457	86.708		65.319	142.563	

PILA FIJA (PILA4F)

F R A M E E L E M E N T F O R C E S

ELT ID	LOAD COND	DIST ENDI	1-2 PLANE SHEAR	1-2 PLANE MOMENT	AXIAL FORCE	1-3 PLANE SHEAR	1-3 PLANE MOMENT	AXIA TOR
		5.000			59.636			316.46
	3	.000			-20.580			-64.86
		.000	-.061	38.804		-24.788	72.257	
		5.000	-.061	38.499		-24.788	-51.680	
		5.000			-20.580			-64.86
	4	.000			48.278			242.68
		.000	-221.572	1154.196		53.812	-152.291	
		5.000	-221.572	46.334		53.812	116.768	
		5.000			48.278			242.68
	5	.000			-31.938			-138.64
		.000	67.824	-340.994		-36.294	103.996	
		5.000	67.824	-1.875		-36.294	-77.476	
		5.000			-31.938			-138.64
131	----------							
	1	.000			-38.498			.00
		.000	219.201	-1624.867		.000	.000	
		3.750	219.201	-802.863		.000	.000	
		3.750			-38.498			.00
	2	.000			41.960			.00
		.000	370.754	-2601.747		.000	.000	
		3.750	370.754	-1211.418		.000	.000	
		3.750			41.960			.00
	3	.000			-4308.211			.00
		.000	-1979.246	8309.726		.000	.000	
		3.750	-1979.246	887.555		.000	.000	
		3.750			-4308.211			.00
	4	.000			1261.772			.00
		.000	829.433	-4225.166		.000	.000	
		3.750	829.433	-1114.793		.000	.000	
		3.750			1261.772			.00
	5	.000			-3088.399			.00
		.000	-1520.567	6686.307		.000	.000	
		3.750	-1520.567	984.180		.000	.000	
		3.750			-3088.399			.00
132	----------							
	1	.000			-2861.502			.00
		.000	1332.799	-5647.103		.000	.000	
		3.750	1332.799	-649.107		.000	.000	
		3.750			-2861.502			.00
	2	.000			-4233.561			.00
		.000	1979.246	-8407.979		.000	.000	

PILA FIJA (PILA4F)

F R A M E E L E M E N T F O R C E S

ELT ID	LOAD COND	DIST ENDI	1-2 PLANE SHEAR	1-2 PLANE MOMENT	AXIAL FORCE	1-3 PLANE SHEAR	1-3 PLANE MOMENT	AXIA TOR
		3.750	1979.246	-985.808		.000	.000	
		3.750			-4233.561			.00
	3	.000			116.611			.00
		.000	-370.754	2503.494		.000	.000	
		3.750	-370.754	1113.165		.000	.000	
		3.750			116.611			.00
	4	.000			-3054.772			.00
		.000	1520.567	-6730.565		.000	.000	
		3.750	1520.567	-1028.438		.000	.000	
		3.750			-3054.772			.00
	5	.000			1295.399			.00
		.000	-829.433	4180.908		.000	.000	
		3.750	-829.433	1070.535		.000	.000	
		3.750			1295.399			.00
201	----------							
	1	.000			45.665			.00
		.000	217.821	-802.863		.000	.000	
		8.078	217.821	956.638		.000	.000	
		8.078			45.665			.00
	2	.000			176.654			.00
		.000	328.653	-1211.418		.000	.000	
		8.078	328.653	1443.360		.000	.000	
		8.078			176.654			.00
	3	.000			-4735.146			.00
		.000	-237.654	887.555		.000	.000	
		8.078	-237.654	-1032.154		.000	.000	
		8.078			-4735.146			.00
	4	.000			1479.570			.00
		.000	301.499	-1114.793		.000	.000	
		8.078	301.499	1320.636		.000	.000	
		8.078			1479.570			.00
	5	.000			-3432.231			.00
		.000	-264.809	984.180		.000	.000	
		8.078	-264.809	-1154.878		.000	.000	
		8.078			-3432.231			.00
202	----------							
	1	.000			-3151.827			.00
		.000	174.737	-649.107		.000	.000	
		8.078	174.737	762.377		.000	.000	
		8.078			-3151.827			.00
	2	.000			-4665.835			.00

PILA FIJA (PILA4F)

F R A M E E L E M E N T F O R C E S

ELT ID	LOAD COND	DIST ENDI	1-2 PLANE SHEAR	1-2 PLANE MOMENT	AXIAL FORCE	1-3 PLANE SHEAR	1-3 PLANE MOMENT	AXIA TOR
		.000	265.379	-985.808		.000	.000	
		8.078	265.379	1157.852		.000	.000	
		8.078			-4665.835			.00
	3	.000			245.965			.00
		.000	-300.929	1113.165		.000	.000	
		8.078	-300.929	-1317.661		.000	.000	
		8.078			245.965			.00
	4	.000			-3401.010			.00
		.000	277.297	-1028.438		.000	.000	
		8.078	277.297	1211.499		.000	.000	
		8.078			-3401.010			.00
	5	.000			1510.791			.00
		.000	-289.010	1070.535		.000	.000	
		8.078	-289.010	-1264.015		.000	.000	
		8.078			1510.791			.00
301	----------							
	1	.000			45.665			.00
		.000	217.821	956.638		.000	.000	
		1.616	217.821	1308.538		.000	.000	
		1.616			45.665			.00
	2	.000			176.654			.00
		.000	328.653	1443.360		.000	.000	
		1.616	328.653	1974.315		.000	.000	
		1.616			176.654			.00
	3	.000			-4735.146			.00
		.000	-237.654	-1032.154		.000	.000	
		1.616	-237.654	-1416.096		.000	.000	
		1.616			-4735.146			.00
	4	.000			1479.570			.00
		.000	301.499	1320.636		.000	.000	
		1.616	301.499	1807.721		.000	.000	
		1.616			1479.570			.00
	5	.000			-3432.231			.00
		.000	-264.809	-1154.878		.000	.000	
		1.616	-264.809	-1582.689		.000	.000	
		1.616			-3432.231			.00
302	----------							
	1	.000			-3151.827			.00
		.000	174.737	762.377		.000	.000	
		1.616	174.737	1044.674		.000	.000	
		1.616			-3151.827			.00

PILA FIJA (PILA4F)

F R A M E E L E M E N T F O R C E S

ELT ID	LOAD COND	DIST ENDI	1-2 PLANE SHEAR	1-2 PLANE MOMENT	AXIAL FORCE	1-3 PLANE SHEAR	1-3 PLANE MOMENT	AXIA TOR
	2	.000			-4665.835			.00
		.000	265.379	1157.852		.000	.000	
		1.616	265.379	1586.585		.000	.000	
		1.616			-4665.835			.00
	3	.000			245.965			.00
		.000	-300.929	-1317.661		.000	.000	
		1.616	-300.929	-1803.826		.000	.000	
		1.616			245.965			.00
	4	.000			-3401.010			.00
		.000	277.297	1211.499		.000	.000	
		1.616	277.297	1659.486		.000	.000	
		1.616			-3401.010			.00
	5	.000			1510.791			.00
		.000	-289.010	-1264.015		.000	.000	
		1.616	-289.010	-1730.925		.000	.000	
		1.616			1510.791			.00
401	----------							
	1	.000			.000			.00
		.000	-923.000	.000		.000	.000	
		2.100	-923.000	-1938.300		.000	.000	
		2.100			.000			.00
	2	.000			.000			.00
		.000	-1365.900	.000		.000	.000	
		2.100	-1365.900	-2868.390		.000	.000	
		2.100			.000			.00
	3	.000			.000			.00
		.000	-1365.900	.000		.000	.000	
		2.100	-1365.900	-2868.390		.000	.000	
		2.100			.000			.00
	4	.000			.000			.00
		.000	-509.000	.000		.000	.000	
		2.100	-509.000	-1068.900		.000	.000	
		2.100			.000			.00
	5	.000			.000			.00
		.000	-509.000	.000		.000	.000	
		2.100	-509.000	-1068.900		.000	.000	
		2.100			.000			.00
402	----------							
	1	.000			-556.799			.00
		.000	-1437.502	1698.238		.000	.000	
		4.800	-1437.502	-5201.774		.000	.000	

PILA FIJA (PILA4F)

F R A M E E L E M E N T F O R C E S

ELT ID	LOAD COND	DIST ENDI	1-2 PLANE SHEAR	1-2 PLANE MOMENT	AXIAL FORCE	1-3 PLANE SHEAR	1-3 PLANE MOMENT	AXIA TOR
		4.800			-556.799			.00
	2	.000			-804.246			.00
		.000	-2176.610	2630.925		.000	.000	
		4.800	-2176.610	-7816.805		.000	.000	
		4.800			-804.246			.00
	3	.000			-804.246			.00
		.000	2173.561	-7809.486		.000	.000	
		4.800	2173.561	2623.606		.000	.000	
		4.800			-804.246			.00
	4	.000			-345.567			.00
		.000	-2175.772	4263.821		.000	.000	
		4.800	-2175.772	-6179.886		.000	.000	
		4.800			-345.567			.00
	5	.000			-345.567			.00
		.000	2174.399	-6176.589		.000	.000	
		4.800	2174.399	4260.525		.000	.000	
		4.800			-345.567			.00
403	----------							
	1	.000			.000			.00
		.000	871.000	-1829.100		.000	.000	
		2.100	871.000	.000		.000	.000	
		2.100			.000			.00
	2	.000			.000			.00
		.000	1288.200	-2705.220		.000	.000	
		2.100	1288.200	.000		.000	.000	
		2.100			.000			.00
	3	.000			.000			.00
		.000	1288.200	-2705.220		.000	.000	
		2.100	1288.200	.000		.000	.000	
		2.100			.000			.00
	4	.000			.000			.00
		.000	474.000	-995.400		.000	.000	
		2.100	474.000	.000		.000	.000	
		2.100			.000			.00
	5	.000			.000			.00
		.000	474.000	-995.400		.000	.000	
		2.100	474.000	.000		.000	.000	
		2.100			.000			.00
501	----------							
	1	.000			.000			.00
		.000	776.000	-2328.000		.000	.000	

PILA FIJA (PILA4F)

F R A M E E L E M E N T F O R C E S

ELT ID	LOAD COND	DIST ENDI	1-2 PLANE SHEAR	1-2 PLANE MOMENT	AXIAL FORCE	1-3 PLANE SHEAR	1-3 PLANE MOMENT	AXIA TOR
		3.000	776.000	.000		.000	.000	
		3.000			.000			.00
	2	.000			.000			.00
		.000	1175.000	-3525.000		.000	.000	
		3.000	1175.000	.000		.000	.000	
		3.000			.000			.00
	3	.000			.000			.00
		.000	-1175.000	3525.000		.000	.000	
		3.000	-1175.000	.000		.000	.000	
		3.000			.000			.00
	4	.000			.000			.00
		.000	1175.000	-3525.000		.000	.000	
		3.000	1175.000	.000		.000	.000	
		3.000			.000			.00
	5	.000			.000			.00
		.000	-1175.000	3525.000		.000	.000	
		3.000	-1175.000	.000		.000	.000	
		3.000			.000			.00
502	----------							
	1	.000			.000			.00
		.000	776.000	-2328.000		.000	.000	
		3.000	776.000	.000		.000	.000	
		3.000			.000			.00
	2	.000			.000			.00
		.000	1175.000	-3525.000		.000	.000	
		3.000	1175.000	.000		.000	.000	
		3.000			.000			.00
	3	.000			.000			.00
		.000	-1175.000	3525.000		.000	.000	
		3.000	-1175.000	.000		.000	.000	
		3.000			.000			.00
	4	.000			.000			.00
		.000	1175.000	-3525.000		.000	.000	
		3.000	1175.000	.000		.000	.000	
		3.000			.000			.00
	5	.000			.000			.00
		.000	-1175.000	3525.000		.000	.000	
		3.000	-1175.000	.000		.000	.000	
		3.000			.000			.00

CONTESTACIÓN A LAS OBSERVACIONES DE LA AUDITORÍA DE LA PILA DELTA DEL VIADUCTO SOBRE EL LLOBREGAT

MODIFICACIÓN Nº 2 DEL PROYECTO DE CONSTRUCCIÓN DE PLATAFORMA L.A.V. MADRID-ZARAGOZA-BARCELONA-FRONTERA FRANCESA.

TRAMO: SANT VICENÇ DEL HORT-SANTA COLOMA DE CERVELLÓ.

AUTOR: SACYR VALLEHERMOSO.

Las contestaciones se corresponden en número y orden a las observaciones realizadas:

1. En los pilotes solamente aparecen tracciones modestas (162 t) en situación de combinación de esfuerzos con acciones ponderadas. El gran peso del encepado y las tierras es necesario para desviar a la cimentación las importantes fuerzas horizontales que soporta la pila. El encepado actúa como un macizo de anclaje de las dos patas inclinadas y las tracciones máximas (1511 t) se anulan prácticamente con el peso del encepado y no tienen un camino claro hacia un pilote determinado lo que podría dar lugar a disponer una cierta armadura según la observación.
   Además, la amplitud del encepado y el elevado número de pilotes junto con los importantes momentos flectores producidos en los nudos por las fuerzas horizontales dominantes, hacen muy difícil realizar un esquema de bielas y tirantes que responda a la realidad, salvo en algún pilote, como hemos hecho, donde la formación de la biela parece clara.
   Por lo anterior y aunque no se incluyó en los cálculos, la armadura dispuesta en el encepado se comprobó con los esfuerzos que se obtenían en el emparrillado al cual se asimiló en el modelo. Se adjunta esta comprobación.

2. Efectivamente el recubrimiento correcto de esta armadura es de 10.4 cm. Como se aprecia en los planos la sección transversal de la pata inclinada es de 6.10 x 0.84 metros y la armadura principal 78 ϕ 32 por cara, debido a una ligera modificación realizada posteriormente. Se acompaña la nueva comprobación de este elemento.

3. En esta pila las acciones mas importantes y las que mas influyen en la fisuración son las fuerzas horizontales de las que el rozamiento en apoyos pude tener una consideración de acción cuasi-permanente. Coincidiendo con la observación se supuso que esta comprobación no sería restrictiva y se cumplían las condiciones. Considerando la fisuración en estado de servicio bajo la acción del peso propio, cargas permanentes y la fuerza total del rozamiento en apoyos se ha comprobado este cumplimiento en las patas inclinadas según se adjunta.

SyV Sacyr Vallehermoso

Viaducto S/ Hobregat
Pila 4

FECHA
HOJA

- ARMADURA DE ENCEPADO -

(OBSERVACION 1)

SyV Sacyr Vallehermoso

Encepado P4

FECHA

HOJA

Armado tejún emparrillado

- Se modifica el modelo original situando el eje del encepado a la mitad de su canto.

Banda de pilotes centrales, sección 6.0 x 3.75 m.

Barras 108 a 113.

- armadura inferior

Momento positivo máximo

Md = 5027 mt (barra 109, COMB 3)

$A_{sfyd} = \frac{5027}{0.9 \times 3.75} = 1489$ t; $A_s = 336$ cm² (42 Φ32)

Se han dispuesto

3 x 14 = 42 Φ32 en banda sobre pilotes } 52 Φ32 > (42)

10 Φ32 " " intermedia }

- armadura superior

Momento negativo máximo

Md = -2550 mt (barra 112, COMB 5)

$A_{sfyd} = \frac{2550}{0.9 \times 3.75} = 756$ t; $A_s = 170$ cm² (21 Φ32)

Se han dispuesto 2 capas Φ32 / 0.20 (60 Φ32) > (21)

Armado tipo empanillado (cont)

- Bando pilotes laterales, sección 4x3.75. Barras 101 á 107

- Cuaderno inferior

Momento positivo máximo

M_d = 1756 mt (barra 102, comb 3)

$A_{s\,tyd} = \frac{1756}{0,9 \times 3,75} = 520\ t$; $A_s = 117\ cm^2$ (15 ϕ32)

La han dispuesto 2x14 = 28 ϕ32 >(15)

- Cuaderno superior

Momento negativo máximo

M_d = −1082 mt (barra 105, comb 5)

$A_{s\,tyd} = \frac{1082}{0,9 \times 3,75} = 321\ t$; $A_s = 72\ cm^2$ (9 ϕ32)

La han dispuesto 2ϕ32/0.20 (40 ϕ32) >(9.)

PILA FIJA (PILA4Y)

F R A M E E L E M E N T F O R C E S

ELT ID	LOAD COND	DIST ENDI	1-2 PLANE SHEAR	1-2 PLANE MOMENT	AXIAL FORCE	1-3 PLANE SHEAR	1-3 PLANE MOMENT	AXIA TOR
		.000	157.371	-1017.595		6.068	-25.879	
		12.800	157.371	996.756		6.068	51.795	
		12.800			-784.455			
	5	.000			-175.903			
		.000	-155.180	1007.638		-1.482	6.329	
		12.800	-155.180	-978.661		-1.482	-12.646	
		12.800			-175.903			
20	----------							
	1	.000			-717.331			
		.000	108.713	-692.490		4.149	-17.833	
		12.800	108.713	699.039		4.149	35.279	
		12.800			-717.331			
	2	.000			-1028.866			
		.000	164.204	-1046.780		6.063	-26.063	
		12.800	164.204	1055.032		6.063	51.549	
		12.800			-1028.866			
	3	.000			-103.728			
		.000	-152.102	993.607		.449	-1.848	
		12.800	-152.102	-953.295		.449	3.893	
		12.800			-103.728			
	4	.000			-832.634			
		.000	161.236	-1033.672		4.468	-19.218	
		12.800	161.236	1030.144		4.468	37.970	
		12.800			-832.634			
	5	.000			92.505			
		.000	-155.070	1006.715		-1.147	4.997	
		12.800	-155.070	-978.184		-1.147	-9.686	
		12.800			92.505			
101	----------							
	1	.000			.000			.00
		.000	.000	.000		.000	.000	
		2.000	-103.800	-103.800		.000	.000	
		2.000			.000			.00
	2	.000			.000			.00
		.000	.000	.000		.000	.000	
		2.000	-140.130	-140.130		.000	.000	
		2.000			.000			.00
	3	.000			.000			.00
		.000	.000	.000		.000	.000	
		2.000	-140.130	-140.130		.000	.000	
		2.000			.000			.00

PILA FIJA (PILA4Y)

F R A M E E L E M E N T F O R C E S

ELT ID	LOAD COND	DIST ENDI	1-2 PLANE SHEAR	1-2 PLANE MOMENT	AXIAL FORCE	1-3 PLANE SHEAR	1-3 PLANE MOMENT	AXIA TOR
	4	.000			.000			.00
		.000	.000	.000		.000	.000	
		2.000	-103.800	-103.800		.000	.000	
		2.000			.000			.00
	5	.000			.000			.00
		.000	.000	.000		.000	.000	
		2.000	-103.800	-103.800		.000	.000	
		2.000			.000			.00
102	----------							
	1	.000			84.519			-32.26
		.000	-7.280	490.404		12.546	-32.391	
		6.000	-318.680	-487.475		12.546	42.882	
		6.000			84.519			-32.26
	2	.000			127.387			-43.91
		.000	-41.866	757.856		20.122	-51.281	
		6.000	-462.256	-754.509		20.122	69.453	
		6.000			127.387			-43.91
	3	.000			-98.879			-189.12
		.000	653.527	-904.168		-66.387	142.683	
		6.000	233.137	1755.824		-66.387	-255.639	
		6.000			-98.879			-189.12
	4	.000			118.821			24.87
		.000	-147.726	749.865		33.278	-77.230	
		6.000	-459.126	-1070.689		33.278	122.437	
		6.000			118.821			24.87
	5	.000			-107.445			-120.33
		.000	547.667	-912.159		-53.231	116.734	
		6.000	236.267	1439.643		-53.231	-202.655	
		6.000			-107.445			-120.33
103	----------							
	1	.000			101.776			-127.93
		.000	-11.738	370.643		17.836	-65.477	
		6.000	-323.138	-633.983		17.836	41.539	
		6.000			101.776			-127.93
	2	.000			145.139			-196.44
		.000	-37.312	554.811		27.801	-102.889	
		6.000	-457.702	-930.233		27.801	63.920	
		6.000			145.139			-196.44
	3	.000			232.348			335.88
		.000	230.660	61.729		-60.930	258.582	
		3.292	-.001	441.404		-60.930	57.995	

PILA FIJA (PILA4Y)

F R A M E E L E M E N T F O R C E S

ELT ID	LOAD COND	DIST ENDI	1-2 PLANE SHEAR	1-2 PLANE MOMENT	AXIAL FORCE	1-3 PLANE SHEAR	1-3 PLANE MOMENT	AXIA TOR
		6.000	-189.730	184.517		-60.930	-106.997	
		6.000			232.348			335.88
	4	.000			36.847			-238.22
		.000	-29.929	346.857		37.271	-147.352	
		6.000	-341.329	-766.915		37.271	76.275	
		6.000			36.847			-238.22
	5	.000			124.055			294.09
		.000	238.043	-146.225		-51.460	214.119	
		4.587	-.001	399.677		-51.460	-21.908	
		6.000	-73.357	347.835		-51.460	-94.643	
		6.000			124.055			294.09
104	----------							
	1	.000			159.443			-218.10
		.000	142.505	99.831		40.761	-71.332	
		2.746	-.001	295.473		40.761	40.587	
		6.000	-168.895	20.661		40.761	173.232	
		6.000			159.443			-218.10
	2	.000			232.455			-327.63
		.000	184.266	180.937		60.924	-106.986	
		2.630	-.001	423.240		60.924	53.241	
		6.000	-236.124	25.363		60.924	258.559	
		6.000			232.455			-327.63
	3	.000			145.246			204.69
		.000	452.238	-933.814		-27.807	63.932	
		6.000	31.848	518.446		-27.807	-102.912	
		6.000			145.246			204.69
	4	.000			124.104			-290.38
		.000	70.895	346.223		51.458	-94.638	
		1.366	-.001	394.644		51.458	-24.346	
		6.000	-240.505	-162.606		51.458	214.108	
		6.000			124.104			-290.38
	5	.000			36.895			241.94
		.000	338.867	-768.528		-37.274	76.280	
		6.000	27.467	330.476		-37.274	-147.362	
		6.000			36.895			241.94
105	----------							
	1	.000			-64.838			125.19
		.000	-138.058	1154.084		44.589	-171.825	
		6.000	-449.458	-608.466		44.589	95.707	
		6.000			-64.838			125.19
	2	.000			-98.767			184.67
		.000	-229.376	1731.426		66.389	-255.650	

PILA FIJA (PILA4Y)

F R A M E E L E M E N T F O R C E S

ELT ID	LOAD COND	DIST ENDI	1-2 PLANE SHEAR	1-2 PLANE MOMENT	AXIAL FORCE	1-3 PLANE SHEAR	1-3 PLANE MOMENT	AXIA TOR
		6.000	-649.766	-906.002		66.389	142.683	
		6.000			-98.767			184.67
	3	.000			127.499			39.45
		.000	466.016	-778.906		-20.120	69.442	
		6.000	45.626	756.022		-20.120	-51.281	
		6.000			127.499			39.45
	4	.000			-107.394			118.32
		.000	-234.573	1428.654		53.232	-202.661	
		6.000	-545.973	-912.985		53.232	116.734	
		6.000			-107.394			118.32
	5	.000			118.872			-26.88
		.000	460.820	-1081.679		-33.277	122.431	
		6.000	149.420	749.039		-33.277	-77.230	
		6.000			118.872			-26.88
106	----------							
	1	.000			.000			.00
		.000	103.800	-103.800		.000	.000	
		2.000	.000	.000		.000	.000	
		2.000			.000			.00
	2	.000			.000			.00
		.000	140.130	-140.130		.000	.000	
		2.000	.000	.000		.000	.000	
		2.000			.000			.00
	3	.000			.000			.00
		.000	140.130	-140.130		.000	.000	
		2.000	.000	.000		.000	.000	
		2.000			.000			.00
	4	.000			.000			.00
		.000	103.800	-103.800		.000	.000	
		2.000	.000	.000		.000	.000	
		2.000			.000			.00
	5	.000			.000			.00
		.000	103.800	-103.800		.000	.000	
		2.000	.000	.000		.000	.000	
		2.000			.000			.00
108	----------							
	1	.000			.000			.00
		.000	.000	.000		.000	.000	
		2.000	-155.800	-155.800		.000	.000	
		2.000			.000			.00
	2	.000			.000			.00

PILA FIJA (PILA4Y)

F R A M E E L E M E N T F O R C E S

ELT ID	LOAD COND	DIST ENDI	1-2 PLANE SHEAR	1-2 PLANE MOMENT	AXIAL FORCE	1-3 PLANE SHEAR	1-3 PLANE MOMENT	AXIA TOR
		.000	.000	.000		.000	.000	
		2.000	-210.330	-210.330		.000	.000	
		2.000			.000			.00
	3	.000			.000			.00
		.000	.000	.000		.000	.000	
		2.000	-210.330	-210.330		.000	.000	
		2.000			.000			.00
	4	.000			.000			.00
		.000	.000	.000		.000	.000	
		2.000	-155.800	-155.800		.000	.000	
		2.000			.000			.00
	5	.000			.000			.00
		.000	.000	.000		.000	.000	
		2.000	-155.800	-155.800		.000	.000	
		2.000			.000			.00
109								
	1	.000			131.724			.00
		.000	-7.680	539.466		.000	.000	
		6.000	-475.080	-908.812		.000	.000	
		6.000			131.724			.00
	2	.000			201.922			.00
		.000	-68.417	856.796		.000	.000	
		6.000	-699.407	-1446.678		.000	.000	
		6.000			201.922			.00
	3	.000			-298.857			.00
		.000	1466.808	-1880.995		.000	.000	
		6.000	835.818	5026.882		.000	.000	
		6.000			-298.857			.00
	4	.000			229.005			.00
		.000	-368.654	1083.452		.000	.000	
		6.000	-836.054	-2530.673		.000	.000	
		6.000			229.005			.00
	5	.000			-271.774			.00
		.000	1166.571	-1654.339		.000	.000	
		6.000	699.171	3942.887		.000	.000	
		6.000			-271.774			.00
110								
	1	.000			185.378			.00
		.000	-7.412	491.280		.000	.000	
		6.000	-474.812	-955.393		.000	.000	
		6.000			185.378			.00

PILA FIJA (PILA4Y)

F R A M E E L E M E N T F O R C E S

ELT ID	LOAD COND	DIST ENDI	1-2 PLANE SHEAR	1-2 PLANE MOMENT	AXIAL FORCE	1-3 PLANE SHEAR	1-3 PLANE MOMENT	AXIA TOR
		6.000	-65.570	173.246		.000	.000	
		6.000			29.249			.00
112								
	1	.000			-198.904			.00
		.000	-533.355	3338.221		.000	.000	
		6.000	-1000.755	-1264.108		.000	.000	
		6.000			-198.904			.00
	2	.000			-298.710			.00
		.000	-827.648	4984.638		.000	.000	
		6.000	-1458.638	-1874.221		.000	.000	
		6.000			-298.710			.00
	3	.000			202.069			.00
		.000	707.577	-1488.922		.000	.000	
		6.000	76.587	863.570		.000	.000	
		6.000			202.069			.00
	4	.000			-271.707			.00
		.000	-695.491	3923.858		.000	.000	
		6.000	-1162.891	-1651.288		.000	.000	
		6.000			-271.707			.00
	5	.000			229.072			.00
		.000	839.734	-2549.702		.000	.000	
		6.000	372.334	1086.504		.000	.000	
		6.000			229.072			.00
113								
	1	.000			.000			.00
		.000	155.800	-155.800		.000	.000	
		2.000	.000	.000		.000	.000	
		2.000			.000			.00
	2	.000			.000			.00
		.000	210.330	-210.330		.000	.000	
		2.000	.000	.000		.000	.000	
		2.000			.000			.00
	3	.000			.000			.00
		.000	210.330	-210.330		.000	.000	
		2.000	.000	.000		.000	.000	
		2.000			.000			.00
	4	.000			.000			.00
		.000	155.800	-155.800		.000	.000	
		2.000	.000	.000		.000	.000	
		2.000			.000			.00
	5	.000			.000			.00

→

SyV Sacyr Vallehermoso

Viaducto s/ Henares
Pila 4

FECHA
HOJA

- ARMADURA PATA INCLINADA -

(OBSERVACION 2)

PRONTUARIO INFORMÁTICO DEL HORMIGÓN ESTRUCTURAL 3.0
Cátedra de Hormigón Estructural ETSICCPM - IECA

Obra: Sacyr
Fecha: 14/03/2006
Hora: 16:02:05

Cálculo de secciones a flexión compuesta recta

1 Datos

- Materiales

Tipo de hormigón : HA-30
Tipo de acero : B-500-S
fck [MPa] = 30.00
fyk [MPa] = 500.00
γc = 1.50
γs = 1.15

- Sección

Sección : P44
b [m] = 6.10
h [m] = 0.84
r [m] = 0.104

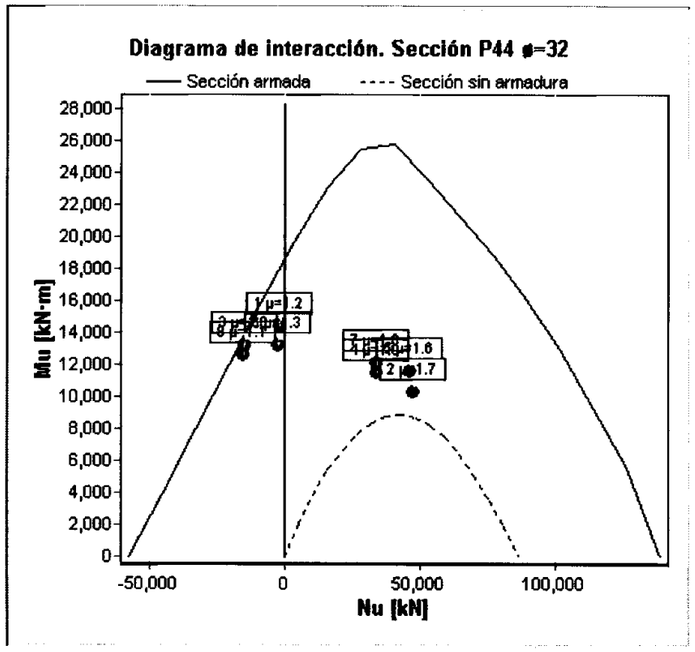
nº barras horizontales = 78
nº barras verticales = 6

2 Diagrama

ϕ [mm] = 32

Resultados numéricos del diagrama de interacción

x [cm]	1/r [1/m] ·1.E-3	Nu [kN]	Mu [kN·m]
-9999.000	0.0	57346.4	0.0
0.017	13.9	45110.5	3885.3
0.072	15.1	32874.6	7991.9
0.113	16.1	20638.8	12049.8
0.150	17.1	8402.9	15951.7
0.184	18.1	-3833.0	19707.2
0.241	14.5	-16068.9	23138.2
0.347	10.1	-28304.7	25492.2
0.463	7.6	-40540.6	25844.6
0.517	6.8	-52776.5	23579.9
0.578	6.1	-65012.3	21271.3
0.648	5.4	-77248.2	18814.7
0.727	4.8	-89484.1	16093.5
0.813	4.3	-101719.9	12978.6
0.940	3.5	-113955.8	9333.3
1.244	2.3	-126191.7	5594.2
9999.000	0.6	-138427.5	0.0



Coeficientes de seguridad de los pares de esfuerzos de cálculo

Punto	Nd [kN]	Md [kN·m]	γ
1	-1770	14430	1.25
2	47350	10320	1.73
3	-14800	13210	1.04
4	34320	11550	1.86
5	46660	11580	1.64
6	-2460	13180	1.33
7	34010	12110	1.81
8	-15110	12640	1.07

SyV Sacyr Vallehermoso

Viaducto s/ Alcobujete
Pila 4

FECHA
HOJA

- COMPROBACION FISURACION -

(OBSERVACION 3)

SyV Sacyr Vallehermoso

Pila 4.

FECHA

HOJA

Fisuración pata inclinada (6.10 x 0.84)

N = 400 t } compresión
M = 400 mt } (Barra 201)

M' = 400 + 400 x 0.32 = 526 mt.

$U_0 = 0.85 \times 6.10 \times 0.74 \times \frac{3000}{1.5} = 7674$

$U_{s1} = 7674 \times 0.0974 - 400 = 347$ t

$f_{ct,m} = 0.30 \sqrt[3]{30^2} = 2.9$ N/mm² (290 t/m²)

$M_{fis} = 6.14 \times 0.84^2 \times \frac{1}{6} \times 290 = 209$ mt

$\sigma_s = \frac{U_{s1}}{A_{s1}} = \frac{347000}{78 \times 8.04} = 553$ kg/cm²

$\sigma_{sr} = \frac{209000}{0.8 \times 0.74 \times 78 \times 8.04} = 563$ kg/cm²

$s_m = 2 \times 52 + 0.2 \times 150 + 0.4 \times 0.125 \times \frac{32 \times 260 \times 150}{804 \times 2} =$

$= 104 + 30 + 39 = 173$ mm.

$\varepsilon_{sm} = \frac{553}{2.1 \times 10^6} \left[1 - 0.5 \times \left(\frac{563}{553}\right)^2\right] = 0.127 \times 10^{-3}$

$w_k = 1.7 \times 173 \times 0.127 \times 10^{-3} = 0.04$ mm < 0.2

Método indirecto (Eurocódigo 2)

Tensión en el acero $\sigma_s = 553$ kg/cm² ≈ 55 MPa < 160 ✓ (φ32)

PILA FIJA (PILA4)

F R A M E E L E M E N T F O R C E S

ELT ID	LOAD COND	DIST ENDI	1-2 PLANE SHEAR	1-2 PLANE MOMENT	AXIAL FORCE	1-3 PLANE SHEAR	1-3 PLANE MOMENT	AXIA TOR
2								
	1	.000			-257.674			
		.000	37.145	-246.323		-1.021	4.353	
		12.800	37.145	229.136		-1.021	-8.721	
		12.800			-257.674			
3								
	1	.000			-412.844			
		.000	38.785	-253.452		-1.473	6.278	
		12.800	38.785	242.993		-1.473	-12.579	
		12.800			-412.844			
4								
	1	.000			-500.193			
		.000	39.542	-256.966		-1.995	8.459	
		12.800	39.542	249.177		-1.995	-17.079	
		12.800			-500.193			
5								
	1	.000			-564.447			
		.000	41.023	-263.650		-3.344	14.257	
		12.800	41.023	261.445		-3.344	-28.543	
		12.800			-564.447			
6								
	1	.000			-491.533			
		.000	43.558	-274.381		-2.429	10.423	
		12.800	43.558	283.168		-2.429	-20.664	
		12.800			-491.533			
9								
	1	.000			-285.445			
		.000	37.065	-246.003		.000	.000	
		12.800	37.065	228.434		.000	.000	
		12.800			-285.445			
10								
	1	.000			-455.029			
		.000	38.579	-252.569		.000	.000	
		12.800	38.579	241.247		.000	.000	
		12.800			-455.029			
11								
	1	.000			-555.444			
		.000	39.183	-255.514		.000	.000	
		12.800	39.183	246.025		.000	.000	
		12.800			-555.444			
12								
	1	.000			-665.181			

PILA FIJA (PILA4)

F R A M E E L E M E N T F O R C E S

ELT ID	LOAD COND	DIST ENDI	1-2 PLANE SHEAR	1-2 PLANE MOMENT	AXIAL FORCE	1-3 PLANE SHEAR	1-3 PLANE MOMENT	AXIA TOR
		.000	40.320	-260.927		.000	.000	
		12.800	40.320	255.174		.000	.000	
		12.800			-665.181			
13								
	1	.000			-557.119			
		.000	44.744	-279.581		.000	.000	
		12.800	44.744	293.143		.000	.000	
		12.800			-557.119			
16								
	1	.000			-257.674			
		.000	37.145	-246.323		1.021	-4.353	
		12.800	37.145	229.136		1.021	8.721	
		12.800			-257.674			
17								
	1	.000			-412.844			
		.000	38.785	-253.452		1.473	-6.278	
		12.800	38.785	242.993		1.473	12.579	
		12.800			-412.844			
18								
	1	.000			-500.193			
		.000	39.542	-256.966		1.995	-8.459	
		12.800	39.542	249.177		1.995	17.079	
		12.800			-500.193			
19								
	1	.000			-564.447			
		.000	41.023	-263.650		3.344	-14.257	
		12.800	41.023	261.445		3.344	28.543	
		12.800			-564.447			
20								
	1	.000			-491.533			
		.000	43.558	-274.381		2.429	-10.423	
		12.800	43.558	283.168		2.429	20.664	
		12.800			-491.533			
101								
	1	.000			.000			.00
		.000	.000	.000		.000	.000	
		2.000	-103.800	-103.800		.000	.000	
		2.000			.000			.00
102								
	1	.000			34.906			-31.91
		.000	113.068	132.905		.575	-4.041	
		2.179	-.001	256.070		.575	-2.788	
		6.000	-198.332	-122.885		.575	-.590	

PILA FIJA (PILA4)

F R A M E E L E M E N T F O R C E S

ELT ID	LOAD COND	DIST ENDI	1-2 PLANE SHEAR	1-2 PLANE MOMENT	AXIAL FORCE	1-3 PLANE SHEAR	1-3 PLANE MOMENT	AXIA TOR
		6.000			34.906			-31.91
103								
	1	.000			73.393			-38.31
		.000	67.546	172.549		3.877	-11.093	
		1.301	-.001	216.503		3.877	-6.047	
		6.000	-243.854	-356.377		3.877	12.170	
		6.000			73.393			-38.31
104								
	1	.000			95.712			-93.56
		.000	172.764	-73.511		18.775	-31.463	
		3.329	-.001	214.035		18.775	31.034	
		6.000	-138.636	28.870		18.775	81.186	
		6.000			95.712			-93.56
105								
	1	.000			-22.810			66.81
		.000	22.624	506.119		21.513	-83.598	
		.436	-.001	511.050		21.513	-74.220	
		6.000	-288.776	-292.338		21.513	45.482	
		6.000			-22.810			66.81
106								
	1	.000			.000			.00
		.000	103.800	-103.800		.000	.000	
		2.000	.000	.000		.000	.000	
		2.000			.000			.00
108								
	1	.000			.000			.00
		.000	.000	.000		.000	.000	
		2.000	-155.800	-155.800		.000	.000	
		2.000			.000			.00
109								
	1	.000			41.545			.00
		.000	211.256	57.495		.000	.000	
		2.712	-.001	343.946		.000	.000	
		6.000	-256.144	-77.169		.000	.000	
		6.000			41.545			.00
110								
	1	.000			145.172			.00
		.000	87.697	269.963		.000	.000	
		1.126	-.001	319.326		.000	.000	
		6.000	-379.703	-606.053		.000	.000	
		6.000			145.172			.00
111								
	1	.000			218.802			.00

PILA FIJA (PILA4)

F R A M E E L E M E N T F O R C E S

ELT ID	LOAD COND	DIST ENDI	1-2 PLANE SHEAR	1-2 PLANE MOMENT	AXIAL FORCE	1-3 PLANE SHEAR	1-3 PLANE MOMENT	AXIA TOR
		.000	342.891	-427.406		.000	.000	
		4.402	-.001	327.244		.000	.000	
		6.000	-124.509	227.742		.000	.000	
		6.000			218.802			.00
112								
	1	.000			-86.242			.00
		.000	-131.833	1554.995		.000	.000	
		6.000	-599.233	-638.203		.000	.000	
		6.000			-86.242			.00
113								
	1	.000			.000			.00
		.000	155.800	-155.800		.000	.000	
		2.000	.000	.000		.000	.000	
		2.000			.000			.00
115								
	1	.000			.000			.00
		.000	.000	.000		.000	.000	
		2.000	-103.800	-103.800		.000	.000	
		2.000			.000			.00
116								
	1	.000			34.906			31.91
		.000	113.068	132.905		-.575	4.041	
		2.179	-.001	256.070		-.575	2.788	
		6.000	-198.332	-122.885		-.575	.590	
		6.000			34.906			31.91
117								
	1	.000			73.393			38.31
		.000	67.546	172.549		-3.877	11.093	
		1.301	-.001	216.503		-3.877	6.047	
		6.000	-243.854	-356.377		-3.877	-12.170	
		6.000			73.393			38.31
118								
	1	.000			95.712			93.56
		.000	172.764	-73.511		-18.775	31.463	
		3.329	-.001	214.035		-18.775	-31.034	
		6.000	-138.636	28.870		-18.775	-81.186	
		6.000			95.712			93.56
119								
	1	.000			-22.810			-66.81
		.000	22.624	506.119		-21.513	83.598	
		.436	-.001	511.050		-21.513	74.220	
		6.000	-288.776	-292.338		-21.513	-45.482	
		6.000			-22.810			-66.81

PILA FIJA (PILA4)

F R A M E E L E M E N T F O R C E S

ELT ID	LOAD COND	DIST ENDI	1-2 PLANE SHEAR	1-2 PLANE MOMENT	AXIAL FORCE	1-3 PLANE SHEAR	1-3 PLANE MOMENT	AXIA TOR
120								
	1	.000			.000			.00
		.000	103.800	-103.800		.000	.000	
		2.000	.000	.000		.000	.000	
		2.000			.000			.00
121								
	1	.000			-1.596			7.56
		.000	40.805	23.198		-2.240	4.041	
		5.000	40.805	227.225		-2.240	-7.157	
		5.000			-1.596			7.56
122								
	1	.000			-1.596			-7.56
		.000	-40.805	227.225		2.240	-7.157	
		5.000	-40.805	23.198		2.240	4.041	
		5.000			-1.596			-7.56
123								
	1	.000			-4.775			52.44
		.000	146.967	-6.187		-.297	10.503	
		5.000	146.967	728.647		-.297	9.018	
		5.000			-4.775			52.44
124								
	1	.000			-4.775			-52.44
		.000	-146.967	728.647		.297	9.018	
		5.000	-146.967	-6.187		.297	10.503	
		5.000			-4.775			-52.44
125								
	1	.000			-16.893			33.68
		.000	83.575	38.176		-17.224	43.633	
		5.000	83.575	456.051		-17.224	-42.485	
		5.000			-16.893			33.68
126								
	1	.000			-16.893			-33.68
		.000	-83.575	456.051		17.224	-42.485	
		5.000	-83.575	38.176		17.224	43.633	
		5.000			-16.893			-33.68
127								
	1	.000			-6.082			215.80
		.000	403.187	-188.926		-159.545	164.784	
		5.000	403.187	1827.009		-159.545	-632.940	
		5.000			-6.082			215.80
128								
	1	.000			-6.082			-215.80

PILA FIJA (PILA4)

F R A M E E L E M E N T F O R C E S

ELT ID	LOAD COND	DIST ENDI	1-2 PLANE SHEAR	1-2 PLANE MOMENT	AXIAL FORCE	1-3 PLANE SHEAR	1-3 PLANE MOMENT	AXIA TOR
		.000	-403.187	1827.009		159.545	-632.940	
		5.000	-403.187	-188.926		159.545	164.784	
		5.000			-6.082			-215.80
129								
	1	.000			19.085			-94.63
		.000	98.957	46.153		-20.749	45.482	
		5.000	98.957	540.937		-20.749	-58.262	
		5.000			19.085			-94.63
130								
	1	.000			19.085			94.63
		.000	-98.957	540.937		20.749	-58.262	
		5.000	-98.957	46.153		20.749	45.482	
		5.000			19.085			94.63
131								
	1	.000			-405.121			.00
		.000	-64.454	-210.766		.000	.000	
		1.880	-64.454	-331.940		.000	.000	
		1.880			-405.121			.00
132								
	1	.000			-1478.879			.00
		.000	664.454	-1503.687		.000	.000	
		1.880	664.454	-254.513		.000	.000	
		1.880			-1478.879			.00
201								
	1	.000			-400.083			.00
		.000	90.614	-331.940		.000	.000	
		8.078	90.614	400.017		.000	.000	
		8.078			-400.083			.00
202								
	1	.000			-1619.877			.00
		.000	67.688	-254.513		.000	.000	
		8.078	67.688	292.257		.000	.000	
		8.078			-1619.877			.00
301								
	1	.000			-400.083			.00
		.000	90.614	400.017		.000	.000	
		1.616	90.614	546.408		.000	.000	
		1.616			-400.083			.00
302								
	1	.000			-1619.877			.00
		.000	67.688	292.257		.000	.000	
		1.616	67.688	401.611		.000	.000	
		1.616			-1619.877			.00

PILA FIJA (PILA4)

F R A M E E L E M E N T F O R C E S

ELT ID	LOAD COND	DIST ENDI	1-2 PLANE SHEAR	1-2 PLANE MOMENT	AXIAL FORCE	1-3 PLANE SHEAR	1-3 PLANE MOMENT	AXIA TOR
401								
	1	.000			.000			.00
		.000	-556.000	.000		.000	.000	
		2.100	-556.000	-1167.600		.000	.000	
		2.100			.000			.00
402								
	1	.000			-364.454			.00
		.000	-555.879	278.808		.000	.000	
		4.800	-555.879	-2389.411		.000	.000	
		4.800			-364.454			.00
403								
	1	.000			.000			.00
		.000	518.000	-1087.800		.000	.000	
		2.100	518.000	.000		.000	.000	
		2.100			.000			.00
501								
	1	.000			.000			.00
		.000	300.000	-900.000		.000	.000	
		3.000	300.000	.000		.000	.000	
		3.000			.000			.00
502								
	1	.000			.000			.00
		.000	300.000	-900.000		.000	.000	
		3.000	300.000	.000		.000	.000	
		3.000			.000			.00

SACYR

L O A D C O M B I N A T I O N M U L T I P L I E R S

COMBO	TYPE	CASE	FACTOR	TYPE	TITLE
ELS1P13	ADD				ELS1P13
		PP	1.0000	STATIC(DEAD)	
		ELSP32	1.0000	STATIC(DEAD)	
ELU1P13	ADD				ELU1P13
		PP	1.5000	STATIC(DEAD)	
		ELUP32	1.0000	STATIC(DEAD)	
ELS1P2	ADD				ELS1P2
		PP	1.0000	STATIC(DEAD)	
		ELSP2	1.0000	STATIC(DEAD)	
ELU1P2	ADD				ELU1P2
		PP	1.5000	STATIC(DEAD)	
		ELUP2	1.0000	STATIC(DEAD)	
ELS1P14	ADD				ELS1P14
		PP	1.0000	STATIC(DEAD)	
		ELSP42	1.0000	STATIC(DEAD)	
ELU1P14	ADD				ELU1P14
		PP	1.5000	STATIC(DEAD)	
		ELUP42	1.0000	STATIC(DEAD)	
ELS1P12	ADD				ELS1P12
		PP	1.0000	STATIC(DEAD)	
		ELSP12	1.0000	STATIC(DEAD)	
ELU1P12	ADD				ELU1P12
		PP	1.5000	STATIC(DEAD)	
		ELUP12	1.0000	STATIC(DEAD)	

SACYR

F R A M E E L E M E N T F O R C E S

FRAME	LOAD	LOC	P	V2	V3	T	M2	M3
1	ELS1P13							
		0.00	-799.67	1.09	-24.72	6.264E-01	106.09	-26.44
		5.0E-01	-779.85	1.09	-24.72	6.264E-01	118.45	-26.99
		1.00	-760.03	1.09	-24.72	6.264E-01	130.81	-27.53
1	ELU1P13							
		0.00	-1144.53	1.77	-34.84	9.261E-01	149.81	-39.51
		5.0E-01	-1114.79	1.77	-34.84	9.261E-01	167.23	-40.40
		1.00	-1085.06	1.77	-34.84	9.261E-01	184.65	-41.29
1	ELS1P2							
		0.00	-1313.48	8.03	33.12	-2.491E-01	-229.66	-51.66
		5.0E-01	-1293.66	8.03	33.13	-2.491E-01	-246.23	-55.67
		1.00	-1273.84	8.03	33.13	-2.491E-01	-262.79	-59.69
1	ELU1P2							
		0.00	-1876.87	11.44	46.74	-3.371E-01	-324.08	-72.62
		5.0E-01	-1847.14	11.44	46.75	-3.371E-01	-347.45	-78.34
		1.00	-1817.41	11.44	46.75	-3.371E-01	-370.82	-84.07
1	ELS1P14							
		0.00	-1292.70	3.29	32.95	-1.04	-227.95	-25.12
		5.0E-01	-1272.88	3.29	32.96	-1.04	-244.43	-26.77
		1.00	-1253.06	3.29	32.96	-1.04	-260.91	-28.41
1	ELU1P14							
		0.00	-1846.09	4.43	46.49	-1.51	-321.54	-33.31
		5.0E-01	-1816.36	4.43	46.49	-1.51	-344.78	-35.52
		1.00	-1786.63	4.43	46.49	-1.51	-368.03	-37.73
1	ELS1P12							
		0.00	-778.90	-3.65	-24.89	-1.686E-01	107.81	9.617E-02
		5.0E-01	-759.08	-3.65	-24.89	-1.686E-01	120.25	1.92
		1.00	-739.26	-3.65	-24.89	-1.686E-01	132.69	3.75
1	ELU1P12							
		0.00	-1113.75	-5.25	-35.10	-2.516E-01	152.35	-1.980E-01
		5.0E-01	-1084.01	-5.25	-35.09	-2.516E-01	169.89	2.43
		1.00	-1054.28	-5.25	-35.09	-2.516E-01	187.44	5.05

SACYR

L O A D C O M B I N A T I O N M U L T I P L I E R S

COMBO	TYPE	CASE	FACTOR	TYPE	TITLE
ELU1P13	ADD				ELU1P13
		PP	1.5000	STATIC(DEAD)	
		ELUP32	1.0000	STATIC(DEAD)	
ELU1P2	ADD				ELU1P2
		PP	1.5000	STATIC(DEAD)	
		ELUP2	1.0000	STATIC(DEAD)	
ELU1P14	ADD				ELU1P14
		PP	1.5000	STATIC(DEAD)	
		ELUP42	1.0000	STATIC(DEAD)	
ELU1P12	ADD				ELU1P12
		PP	1.5000	STATIC(DEAD)	
		ELUP12	1.0000	STATIC(DEAD)	

SACYR

F R A M E E L E M E N T F O R C E S

FRAME	LOAD	LOC	P	V2	V3	T	M2	M3
101	ELU1P13							
		0.00	-1904.56	4.14	-42.08	4.658E-01	-277.73	41.80
		5.0E-01	-1910.22	4.14	-42.08	4.658E-01	-256.69	39.73
		1.00	-1915.88	4.14	-42.08	4.658E-01	-235.65	37.66
101	ELU1P2							
		0.00	-1240.00	-4.55	32.65	-1.442E-01	183.43	10.31
		5.0E-01	-1245.66	-4.55	32.65	-1.442E-01	167.11	12.58
		1.00	-1251.32	-4.55	32.65	-1.442E-01	150.78	14.86
101	ELU1P14							
		0.00	-1270.84	2.41	32.82	-8.114E-01	184.09	53.25
		5.0E-01	-1276.50	2.41	32.82	-8.114E-01	167.68	52.05
		1.00	-1282.16	2.41	32.82	-8.114E-01	151.27	50.84
101	ELU1P12							
		0.00	-1935.40	11.10	-41.91	-2.014E-01	-277.07	84.74
		5.0E-01	-1941.06	11.10	-41.91	-2.014E-01	-256.12	79.19
		1.00	-1946.72	11.10	-41.91	-2.014E-01	-235.16	73.64
201	ELU1P13							
		0.00	-1797.98	-2.59	-41.61	5.534E-01	-273.15	-50.50
		5.0E-01	-1803.64	-2.59	-41.61	5.534E-01	-252.34	-49.20
		1.00	-1809.30	-2.59	-41.61	5.534E-01	-231.54	-47.91
201	ELU1P2							
		0.00	-1498.98	-10.03	32.25	-1.873E-01	178.63	-64.93
		5.0E-01	-1504.64	-10.03	32.25	-1.873E-01	162.50	-59.92
		1.00	-1510.30	-10.03	32.25	-1.873E-01	146.38	-54.90
201	ELU1P14							
		0.00	-1463.42	-3.06	32.13	-9.103E-01	177.57	-22.02
		5.0E-01	-1469.09	-3.06	32.13	-9.103E-01	161.51	-20.48
		1.00	-1474.75	-3.06	32.13	-9.103E-01	145.44	-18.95
201	ELU1P12							
		0.00	-1762.43	4.37	-41.73	-1.695E-01	-274.21	-7.58
		5.0E-01	-1768.09	4.37	-41.73	-1.695E-01	-253.34	-9.77
		1.00	-1773.75	4.37	-41.73	-1.695E-01	-232.47	-11.95
301	ELU1P13							
		0.00	-1350.00	3.43	-33.80	5.851E-01	-169.35	30.65
		5.0E-01	-1355.67	3.43	-33.80	5.851E-01	-152.45	28.93
		1.00	-1361.33	3.43	-33.80	5.851E-01	-135.54	27.22
301	ELU1P2							
		0.00	-1581.22	-4.78	40.59	-2.118E-01	287.47	7.65
		5.0E-01	-1586.89	-4.78	40.59	-2.118E-01	267.17	10.04
		1.00	-1592.55	-4.78	40.59	-2.118E-01	246.88	12.43
301	ELU1P14							
		0.00	-1616.72	1.88	40.80	-9.849E-01	288.59	48.41
		5.0E-01	-1622.38	1.88	40.80	-9.849E-01	268.19	47.48
		1.00	-1628.04	1.88	40.80	-9.849E-01	247.79	46.54
301	ELU1P12							
		0.00	-1385.50	10.08	-33.60	-1.880E-01	-168.23	71.41
		5.0E-01	-1391.16	10.08	-33.60	-1.880E-01	-151.43	66.37
		1.00	-1396.82	10.08	-33.60	-1.880E-01	-134.63	61.33

Pso. de la Castellana 83-85, 5ª Planta
28046
MADRID
Telf.: 91 54 55 000
Fax: 91 556 53 56

OFICINA TÉCNICA

Observaciones de los cálculos de la modificación del encepado de la pila 2 por el desplazamiento de un pilote.

Se adjuntan los datos del encepado de la pila 2 al desplazarse un pilote, debido a que las bielas y tirantes se modifican y por tanto la armadura.

Se han realizado todas las combinaciones de hipótesis con el viento y el rozamiento a favor y en contra, y la armadura se calcula con le máximo axíl del pilote, que es el dato que se utilizó en los cálculos enviados originariamente.

Adjunto envío la explicación de las distintas hipótesis.

Un saludo.

Soledad Llamas Tutor.
Ingeniera de Camino, C. Y P.
Ofician técnica de Sacyr.

Hipótesis de carga consideradas para el cálculo del encepado de la pila 2.

HIPÓTESIS 2. ELS2, ELU2 son las hipótesis mayoradas y sin mayorar de la pila 2 con el viento en dirección perpendicular al avance de los pks, en sentido hacia la vía del AVE y el frenado en sentido de avance de PKS.

HIPÓTESIS 12. ELS12, ELU12 son las hipótesis mayoradas y sin mayorar de la pila 2 con el viento en dirección perpendicular al avance de los pks, en sentido opuesto a la vía del AVE y el frenado en sentido contrario al avance de PKS.

HIPÓTESIS 13. ELS32, ELU32 son las hipótesis mayoradas y sin mayorar de la pila 2 con el viento en dirección perpendicular al avance de los pks, en sentido hacia la vía del AVE y el frenado en sentido de avance de PKS.

HIPÓTESIS 14. ELS42, ELU42 son las hipótesis mayoradas y sin mayorar de la pila 2 con el viento en dirección perpendicular al avance de los pks, en sentido opuesto a la vía del AVE y el frenado en sentido contrario al avance de PKS.

Con estas hipótesis de consigue los distintos valores de axiles del pilotes desplazado.

Para obtener la armadura del encepado se considera el máximo axil del pilotes ya que se obtiene mediante bielas y tirantes.

Y el mínimo se obtiene para comprobar que no se producen tracciones.

La armadura del encepado de se obtuvo por bielas y tirantes, enviada por fax el 1 de febrero, con un axil de 1880 toneladas y se puede comprobar que es lo obtenido en la hipótesis mayoradas, ELU que dan mayor axil, la hipotesis 2 y la 14.

Modificado del proyecto L.A.V. Madrid-Frontera Francesa

Sant Vicen Dels Hors - Santa Coloma De Cervelló

VIADUCTO DEL LLOBREGAT

Fecha: Enero de 2006

Modificado nº 2 del proyecto de construcción de la plataforma
L.A.V. Madrid-Zaragoza-Barcelona-Frontera Francesa
SANT VICENÇ DELS HORTS-SANTA COLOMA DE CERVELLÓ
VIADUCTO DEL LLOBREGAT

MEMORIA DE LA PRUEBA DE CARGA DEL VIADUCTO DEL LLOBREGAT

Fecha: Enero de 2006

1. INTRODUCCIÓN

1.1. Descripción de la estructura

La presente memoria de cálculo pertenece al Proyecto Modificado del Viaducto sobre el río Llobregat es un estructura dividida en dos partes por una pila-estribo que delimita el estudio de este proyecto. Es una estructura formada por dos puentes muy similares de 4 vanos siendo 38+45+45+38 y de 33+45+45+33 el de la Vía del AVE.

El tablero se organiza en secciones de cajón de hormigón pretensado, con tramos de canto variable, en una longitud de 8 metros, aun lado y otro de l apila, con transición parabólica de segundo grado. El canto máximo de la sección, en el tramo de canto constante es de 2.89 mestros , que llegan a 4.14 sobre pilas.

La sección transversal de cada tablero se organiza mediante un cajón, de 14 metros de ancho, con sendas almas de 50 cm de espesor, rematando con voladizos de 3.123 metros de luz, de espesor variable hasta 21 cm en la punta.

El tablero se construye por vanos sucesivos, hormigonando cada vano y el quinto de la luz del siguiente sobre una cimbra aporticada, tesando los cordones de pretensado del vano en cuestión.

Las pilas son de hormigón armado, de sección constante, con forma decagonal inscrita en una circunferencia de 3 metros de diámetro. Sus alturas son aproximadamente de 10 metros. La cimentación es con cuatro pilotes de dos metros de diámetro, con un encepado de 3 metros de canto.

Modificado nº 2 del proyecto de construcción de la plataforma
L.A.V. Madrid-Zaragoza-Barcelona-Frontera Francesa
SANT VICENÇ DELS HORTS-SANTA COLOMA DE CERVELLÓ
VIADUCTO DEL LLOBREGAT

Los estribos son de hormigón armado, formados por muros de aproximadamente 10 metros de altura. Se cimientan en encepados de 3 metros de canto con pilotes de 1,8 metros al igual que los muros.

1.2. Prueba de carga

La prueba de carga de recepción de una estructura es un conjunto de operaciones consistente en la reproducción de uno o varios estados de carga sobre la misma, antes de su puesta en servicio, con objeto de confirmar que el proyecto y la construcción de la obra se ha llevado a cabo de forma satisfactoria.

Con este objeto es necesario comprobar que, para unas situaciones de carga representativas de las acciones a que va estar sometida durante su vida en servicio, el comportamiento de la estructura se ajusta a las previsiones de proyecto.

Según la " **INSTRUCCIÓN SOBRE LAS ACCIONES A CONSIDERAR EN EL PROYECTO DE PUENTES DE FERROCARRIL" y la ORDEN FOM/1951/2005 de la instrucción sobre la inspección técnica en los puentes de carreteras.** se debe fijar la composición aproximada de del tren de cargas, su posición en las diferentes fases, las medidas a efectuar y los resultados esperados.

Las flechas calculadas en el centro del vano serán corregidas con las obtenidas en las zonas de apoyos para tener en cuenta las deformaciones elásticas y permanentes de los apoyos de neopreno.

Fecha: Enero de 2006

2. DIRECCIÓN Y REALIZACIÓN DE LA PRUEBA

La realización de la prueba de carga será llevada a cabo por personal cualificado, al frente del cual figurará un Ingeniero especializado en este tipo de trabajos, quien será nombrado por el Director de Obra.

El ingeniero responsable de ese cometido (Director de la prueba) deberá estar presente durante el desarrollo de la misma.

El Director de la prueba será quien dé por finalizado cada estado de carga y, una vez que considere realizada en todas sus fases, dé por terminada la prueba. Deberá, en su caso, ordenar la suspensión de la misma cuando así lo requiera el comportamiento de la estructura. El Director de la prueba será quien, a partir de los resultados de la misma, redacte el informe de la prueba.

En general será conveniente la participación del Autor del proyecto de la estructura en el proceso de prueba de carga.

Modificado nº 2 del proyecto de construcción de la plataforma
L.A.V. Madrid-Zaragoza-Barcelona-Frontera Francesa
SANT VICENÇ DELS HORTS-SANTA COLOMA DE CERVELLÓ
VIADUCTO DEL LLOBREGAT

3. PRUEBA DE CARGA ESTÁTICA

En los siguientes apartados quedan definidos todos los aspectos relativos a la realización de la prueba de carga, en lo que se refiere a:

- Trenes y estados de carga
- Instrumentación
- Valores teóricos previstos para las medidas experimentales

3.1. Sistemas de medida

Se medirán las flechas en todos los centros de vano para cada uno de los estados de carga previstos.

En cada sección se medirán las flechas tanto en el cordón izquierdo como en el derecho.

Los aparatos de medida que se utilicen deberán estar sancionados por la experiencia en pruebas similares. Deberán estar debidamente calibrados y poseer una sensibilidad mínima del orden del 5% de los valores esperados en los puntos de medida significativa.

El equipo instrumental deberá permitir el registro automático de las medidas que se efectúan y su visualización en tiempo real.

3.2. Efecto de las condiciones meteorológicas

Se intentará reducir al mínimo el tiempo de aplicación de la carga para minimizar la influencia, en la propia estructura y en los aparatos de medida, de los efectos térmicos.

Fecha: Enero de 2006

3.3. Inspección de la estructura a ensayar

Antes de realizar cualquier prueba de carga se realizará una inspección de la obra que incluirá, además de la estructura resistente, los aparatos de apoyo, juntas y otros elementos singulares.

Hay que destacar la importancia de esta inspección, pues pudiera dar lugar, en ocasiones, a modificar las condiciones en que la prueba de carga estaba concebida, además de permitir la observación de detalles que pueden ser concluyentes a la hora de interpretar los resultados de la prueba.

3.4. Materialización del tren de carga

El Jefe de Obra elegirá de entre todos los camiones disponibles en la obra aquellos que tengan las características más homogéneas posibles o se asemejen al tipo de camiones que se incluyen en el Proyecto de Prueba de Carga.

El nivel de carga alcanzado durante la prueba debe ser representativo de las acciones de proyecto. Se considera adecuado alcanzar un nivel de carga correspondiente a un periodo de retorno próximo a cinco años.

De acuerdo con esto, las solicitaciones a que de lugar el tren de cargas de la prueba están en torno al 60% de los valores teóricos de proyecto obtenidos por la aplicación del tren de cargas definido en la IAP. En ningún caso las solicitaciones originadas por el tren de carga de la prueba serán superiores al 70% de dichos esfuerzos teóricos.

Antes de comenzar el ensayo se deberá disponer de las características de todos los vehículos. Se comprobará especialmente el peso real de cada uno de los vehículos o elementos de carga, debiendo quedar garantizado que su valor se ha obtenido con una precisión no inferior al 5% y que se mantiene sensiblemente constante durante el ensayo.

Modificado nº 2 del proyecto de construcción de la plataforma
L.A.V. Madrid-Zaragoza-Barcelona-Frontera Francesa
SANT VICENÇ DELS HORTS-SANTA COLOMA DE CERVELLÓ
VIADUCTO DEL LLOBREGAT

3.5. Definición de los estados de carga

En esta prueba de carga estática se pretende comprobar cada uno de los vanos del puente, analizando las flechas en el centro de los mismos. Para ello se han dispuesto tres estados de carga, cuya definición y resultados pueden verse en el Anexo I de la presente memoria.

No se consideran representativas las flechas de la estructura en la zona de apoyos, pues su valor es de un orden bastante inferior al que se ha estimado en el centro de los vanos.

3.6. Forma de aplicación de las cargas

Una vez decidida la carga de ensayo, ésta se aplicará de forma progresiva en varias fases o escalones de manera que, mediante la medida simultánea de la respuesta de la estructura en las secciones críticas, se pueda tener conocimiento del correcto comportamiento de ésta dentro de las condiciones adecuadas de seguridad.

La carga de ensayo se aplicará en un mínimo de dos escalones.

Los movimientos de los vehículos en cualquier fase del proceso de carga o de descarga se efectuarán con la suficiente lentitud para no provocar efectos dinámicos no deseados, y se organizarán de forma que la realización de cualquier estado de carga no produzca sobre otras partes de la estructura solicitaciones superiores a las previstas.

El tiempo que se debe mantener la aplicación de la carga en un escalón intermedio antes de pasar al escalón siguiente, así como el tiempo que se debe mantener la carga total correspondiente a un cierto estado de carga, vendrá determinado por el criterio de estabilización de las medidas.

Fecha: Enero de 2006

En lo que sigue, los valores de la respuesta de la estructura (flechas, deformaciones, etc.), se obtienen en cada momento como diferencia entre las lecturas de los aparatos en ese instante y las lecturas iniciales en descarga del ciclo que se está realizando.

Una vez situado el tren de carga correspondiente, bien a un escalón intermedio o al final de cualquier estado de carga, se realizará una medida de la respuesta instantánea de la estructura, y se controlarán los aparatos de medida situados en los puntos en que se esperen las deformaciones más desfavorables desde el punto de vista de la estabilización.

Transcurridos diez minutos se realizará una nueva lectura en dichos puntos. Si las diferencias entre los nuevos valores de la respuesta y los instantáneos son inferiores al 5% de estos últimos, o bien son del mismo orden de la precisión de los aparatos de medida, se considerará estabilizado el proceso de carga y se realizará la lectura final en todos los puntos de medida.

En caso contrario se mantendrá la carga durante un nuevo intervalo de 10 minutos, y deberá cumplirse al final de los mismos que la diferencia de lecturas correspondiente a ese intervalo no supere en más de un 20% a la diferencia de lecturas correspondiente al intervalo anterior, o bien sea del orden de la precisión de los aparatos de medida. Si el criterio de estabilización siguiera sin cumplirse, se procederá, a juicio del Ingeniero Director de las pruebas, a mantener la carga durante un nuevo intervalo, a suspender dicho estado de carga o bien a reducir la carga correspondiente al escalón considerado.

Una vez alcanzada la estabilización se tomarán las lecturas finales en todos los puntos de medida.

Por otra parte, deberá comprobarse que no se detecta ningún signo o muestra de fallo o inestabilidad en alguna parte de la estructura.

Modificado nº 2 del proyecto de construcción de la plataforma
L.A.V. Madrid-Zaragoza-Barcelona-Frontera Francesa
SANT VICENÇ DELS HORTS-SANTA COLOMA DE CERVELLÓ
VIADUCTO DEL LLOBREGAT

Una vez descargada totalmente la estructura se esperará a que los valores de las medidas estén estabilizados, aplicando el mismo criterio seguido para el proceso de carga. La diferencia entre los valores estabilizados después de la descarga y los iniciales antes de cargar serán los valores remanentes correspondiente al estado considerado.

En el caso de que la diferencia entre los valores obtenidos inmediatamente después de la descarga y los obtenidos antes de cargar sea inferior al 15%, no será necesaria la comprobación del criterio de estabilización, y podrá procederse a la lectura definitiva de todos los aparatos de medida.

Fecha: Enero de 2006

4. PRUEBA DE CARGA DINÁMICA

4.1. Objeto de la prueba

El objeto de la prueba dinámica es obtener información sobre la estructura, más allá de la proporcionada por la prueba de carga estática, determinando cierto parámetros que identifican las características intrínsecas de la estructura, así como su respuesta bajo excitación externa.

Los resultados de una prueba dinámica pueden estar en el dominio del tiempo o en el dominio de la frecuencia. En general, estos resultados podrán ser:

- Líneas de influencia
- Acelerogramas
- Espectros de frecuencia
- Modos de vibración
- Impacto (amplificación dinámica)
- Amortiguamiento

Los parámetros dinámicos que se van a medir en la prueba de carga dinámica suelen ser las primeras frecuencias de vibración y el valor del amortiguamiento, como características intrínsecas de la estructura, y las aceleraciones y el coeficiente de amplificación dinámica, como respuesta de ésta frente a una excitación externa. En el Anexo II de esta memoria se adjunta un listado de los valores teóricos esperados.

Se ha realizado con un modelo de barras del viaducto.

4.2. Condiciones de ejecución

Para la realización de la prueba será imprescindible que el puente esté acabado (pavimento, aceras, pretiles, juntas de dilatación, etc), debido a la repercusión del estado de la obra en su respuesta dinámica.

Modificado nº 2 del proyecto de construcción de la plataforma
L.A.V. Madrid-Zaragoza-Barcelona-Frontera Francesa
SANT VICENÇ DELS HORTS-SANTA COLOMA DE CERVELLÓ
VIADUCTO DEL LLOBREGAT

4.3. Excitación de la estructura

La fuente de excitación será un tren de carga que recorrerá el puente a diferentes velocidades:

- Lenta: menor a 5 km/h (cuasi-estática)
- Media: entre 30 y 40 km/h
- Rápida: mayor de 60 km/h

El tren de cargas estará formado por un único camión avanzando a velocidad constante a lo largo del eje longitudinal del puente.

Para la determinación de las frecuencias propias y el amortiguamiento estructural, se dispondrá en la calzada un obstáculo transversal a la marcha del camión.

4.4. Instrumentación

Podrán medirse las mismas magnitudes que las indicadas para las pruebas estáticas, además de aceleraciones.

Además de los dispositivos empleados para las pruebas estáticas (que en este caso deberán ser capaces de proporcionar registros dinámicos), la instrumentación contará con acelerómetros cuya respuesta sea de 0 a 50 Hz en frecuencia y de ±0.5g en amplitud.

La instrumentación deberá posibilitar la obtención de registros de señales que permitan su estudio mediante un ordenador. La duración de los registros deberá ser la suficiente para que reflejen, sin interrupción, las condiciones iniciales, el desarrollo del ensayo y la zona de amortiguamiento final.

Los registros serán digitales, de 100 lecturas por segundo y punto de medida.

Fecha: Enero de 2006

En particular, el sistema de adquisición de datos deberá proporcionar el valor de la frecuencia fundamental de vibración con una precisión mínima de 0.05 Hz.

4.5. Análisis de resultados

En las pruebas dinámicas no cabe establecer con carácter general unos criterios de aceptación.

En general, la determinación de las características dinámicas intrínsecas de la estructura proporcionará unos valores de referencia que permitirán efectuar un seguimiento de la estructura a medio o largo plazo.

Será necesario efectuar una interpretación cuidadosa de los resultados y se contará con la asesoría del Autor del proyecto para evaluar la trascendencia de esos resultados.

Frecuencias.-

Las frecuencias correspondientes a los modos de excitados durante la prueba (en general, flexión de eje ortogonal a la directriz del puente), no diferirá de la calculada teóricamente en mayor medida de lo que lo hayan hecho las flechas, teniendo en cuenta que éstas son proporcionales a la rigidez del tablero mientras que la frecuencia lo es, aproximadamente, a la raíz cuadrada de la misma.

Amortiguamiento.-

El amortiguamiento suele expresarse mediante el decremento logarítmico, que se define como:

Modificado nº 2 del proyecto de construcción de la plataforma
L.A.V. Madrid-Zaragoza-Barcelona-Frontera Francesa
SANT VICENÇ DELS HORTS-SANTA COLOMA DE CERVELLÓ
VIADUCTO DEL LLOBREGAT

$$\delta = \frac{1}{n} \cdot \ln\left(\frac{A_0}{A_n}\right)$$

siendo:

n el número de ciclos del intervalo considerado, a la frecuencia fundamental
A_0 amplitud de la respuesta dinámica al inicio de dicho intervalo
A_n amplitud de la respuesta dinámica al final del intervalo

El número de ciclos deberá ser el mayor posible que permita el amortiguamiento de la estructura y la resolución de los instrumentos de medida. En general, se considera deseable un mínimo de 5 a 10 ciclos.

Las amplitudes A_0 y A_n se tomarán de la zona del registro de datos correspondiente a las vibraciones libres de la estructura, tras el paso del tren de carga. Las amplitudes serán de desplazamientos (flechas).

Fecha: Enero de 2006

5. INFORME DE LA PRUEBA DE CARGA

Una vez finalizada la prueba de carga se redactará el informe de la misma, en el que figurarán los aspectos siguientes:

- Fecha, hora de inicio y fin y asistentes a la prueba.
- Referencia al proyecto de la estructura y de la prueba de carga
- Descripción de la obra y su estado previo a la prueba
- Descripción detallada de los vehículos utilizados y los distintos estados de carga
- Descripción de las magnitudes, equipo instrumentadle toma de datos y número y situación de los puntos de medida
- Información sobre el desarrollo de la prueba
- Registro de las magnitudes medidas durante la prueba
- Comparación con los valores teóricos previstos y valoración del cumplimiento de los criterios de aceptación
- Cuestiones de interés observadas en las inspecciones de la obra antes, durante o después de la prueba
- Varios: documentación fotográfica, condiciones meteorológicas, puntos de referencia para la nivelación, incidencias, etc.

El informe estará redactado y firmado por el Ingeniero Director de la prueba. La valoración del cumplimiento de los criterios de aceptación será efectuada por el Autor del Proyecto, el cual redactará y firmará dicha parte del informe.

Modificado nº 2 del proyecto de construcción de la plataforma
L.A.V. Madrid-Zaragoza-Barcelona-Frontera Francesa
SANT VICENÇ DELS HORTS-SANTA COLOMA DE CERVELLÓ
VIADUCTO DEL LLOBREGAT

6. ACTA DE LA PRUEBA DE CARGA

Con base en el Informe, se redactará el Acta de la prueba, documento de carácter oficial que contiene una descripción resumida de los diferentes aspectos de la prueba, mencionados en el apartado anterior, y una referencia expresa al cumplimiento de los criterios de aceptación.

El Acta estará firmada al menos por el Director de la Obra, el Director de la prueba y el representante del Constructor.

Fecha: Enero de 2006

ANEXO I. PRUEBA DE CARGA ESTÁTICA

I.1. Introducción

La prueba de carga estática se realizará mediante la comprobación de tres estados de carga diferentes, que se definen en los planos siguientes.

Los trenes de carga se materializan mediante bañeras de 38 tn.

La disposición de los camiones se determina en los planos

Modificado nº 2 del proyecto de construcción de la plataforma
L.A.V. Madrid-Zaragoza-Barcelona-Frontera Francesa
SANT VICENÇ DELS HORTS-SANTA COLOMA DE CERVELLÓ
VIADUCTO DEL LLOBREGAT

I.2. Resultados teóricos

Fecha: Enero de 2006

I.2.1.Cargas de los Vano 1+ Vano3.

Estimación del número de bañeras a disponer en este estado de carga:

Vano 1

Longitud del vano	38 m
SC uniforme 8000 kg/m2 * 1.21	31.6 x 8 x 2x 1.21 = 611 tn
Locomotora 100*1.21*2	242 tn
Sobrecarga total en vano	853 tn
60% SC para Prueba de carga	511 tn
Nº de Bañeras (38 tn)	13.4 tn

Vano 2 y 3

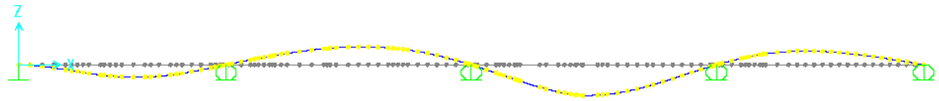
Longitud del vano	45 m
SC uniforme 8000 kg/m2 * 1.21	38.6 x 8 x 2x 1.21 = 747 tn
Locomotora 100*1.21*2	242 tn
Sobrecarga total en vano	989 tn
60% SC para Prueba de carga	593 tn
Nº de Bañeras (38 tn)	15.6 tn

Se disponen tres trios de bañeras centradas en el vano 1, cuatro tríos en el vano 3 y tres tríos en le vano (ver planos).

Modificado nº 2 del proyecto de construcción de la plataforma
L.A.V. Madrid-Zaragoza-Barcelona-Frontera Francesa
SANT VICENÇ DELS HORTS-SANTA COLOMA DE CERVELLÓ
VIADUCTO DEL LLOBREGAT

I.2.2..Estado de carga 1.

Se disponen las cargas en los vanos 1 y 3.



La deformada que adopta la estructura es la siguiente:

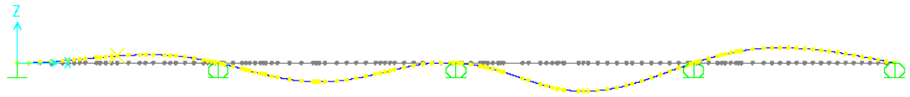
	Flechas en centro de vano (mm)				
Nudo	Vano 1	Vano 2	Vano 3	Vano 4	
Central	+3.63	-5.4	+9.19	-4.08	

+ descenso

- ascenso

I.2.2. Estado de carga nº 2.

Se disponen las cargas en los vanos 2 y 3.



La deformada que adopta la estructura es la siguiente:

	Flechas en centro de vano (mm)			
Nudo	Vano 1	Vano 2	Vano 3	Vano 4
Central	-1.33	+3.39	+5.29	-2.80

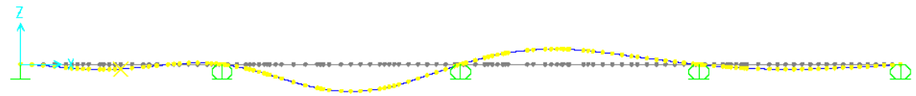
+ descenso

- ascenso

Modificado nº 2 del proyecto de construcción de la plataforma
L.A.V. Madrid-Zaragoza-Barcelona-Frontera Francesa
SANT VICENÇ DELS HORTS-SANTA COLOMA DE CERVELLÓ
VIADUCTO DEL LLOBREGAT

I.2.3. Estado de carga nº 3.

Se disponen las cargas en los vanos 1 y 2.



La deformada que adopta la estructura es la siguiente:

	Flechas en centro de vano (mm)			
Nudo	Vano 1	Vano 2	Vano 3	Vano 4
Central	+0.85	+5.04	-2.64	+0.87

ANEXO II. PRUEBA DE CARGA DINÁMICA

La fuente de excitación será un tren de carga que recorrerá el puente a diferentes velocidades, el puente esta sólo con el cajón de hormigón sin balasto, ni carriles.

El tren de cargas estará formado por un único camión avanzando a velocidad constante a lo largo del eje longitudinal del puente.

Para la determinación de las frecuencias propias y el amortiguamiento estructural, se dispondrá en la calzada un obstáculo transversal a la marcha del camión.

Resultados teóricos

Se adjunta a continuación un resumen de los modos y frecuencias de vibración de la estructura.

Con los métodos habituales de excitación es de esperar que se movilicen los modos de vibración que están relacionados con la flexión de eje ortogonal a la directriz del puente (flechas en eje Z).

En el resumen puede verse que los modos que participan en mayor porcentaje en los movimientos de eje Z son el 7, 10 y 16 (entre los 100 primeros modos calculados).

Por tanto se estima que estos modos o frecuencias serán, a priori, los teóricas a comparar con las medidas en el campo.

Modo	Frecuencia (Hz)	Porcentaje de participación modal
7	0.62	24.4 %
10	0.83	33.76 %
16	2.64	18.56 %

Modificado nº 2 del proyecto de construcción de la plataforma
L.A.V. Madrid-Zaragoza-Barcelona-Frontera Francesa
SANT VICENÇ DELS HORTS-SANTA COLOMA DE CERVELLÓ
VIADUCTO DEL LLOBREGAT

RESUMEN DE LOS PRIMEROS 18 MODOS DE VIBRACIÓN

MODE	PERIODO (SEG)	FRECUENCIA (HZ)	FACTORES DE PARTICIPACION MODAL			FACTORES DE PARTICIPACION MODAL ACUMULADOS		
			UX	UY	UZ	UX	UY	UZ
1	4.88	0.21	6.00	0.00	0.00	6.00	0.00	0.00
2	4.85	0.21	7.66	0.00	0.00	13.66	0.00	0.00
3	4.81	0.21	2.38	0.00	0.00	16.04	0.00	0.00
4	3.13	0.32	0.03	0.00	0.00	16.07	0.00	0.00
5	2.12	0.47	0.35	0.00	0.10	16.42	0.00	0.10
6	1.95	0.51	67.76	0.00	0.02	84.17	0.00	0.12
7	1.62	0.62	0.04	0.00	24.41	84.21	0.00	24.53
8	1.31	0.76	0.01	0.00	4.47	84.23	0.00	29.00
9	1.30	0.77	0.45	0.00	0.62	84.67	0.00	29.62
10	1.21	0.83	0.00	0.00	33.76	84.67	0.00	63.38
11	1.00	1.00	0.00	0.00	0.00	84.67	0.00	63.39
12	0.77	1.29	0.00	0.00	0.32	84.67	0.00	63.71
13	0.65	1.53	7.80	0.00	0.00	92.47	0.00	63.71
14	0.55	1.83	0.00	0.00	1.31	92.48	0.00	65.02
15	0.39	2.59	2.72	0.00	1.85	95.20	0.00	66.87
16	0.38	2.64	0.29	0.00	18.57	95.49	0.00	85.44
17	0.21	4.74	0.18	0.00	8.66	95.67	0.00	94.10
18	0.19	5.16	3.08	0.00	0.45	98.75	0.00	94.55

Fecha: Enero de 2006

SALIDA DE RESULTADOS DE LA PRUEBA DE CARGA ESTÁTICA

Fecha: Enero de 2006

SACYR
VIADUCTO DE LLOBREGAT

L O A D C O M B I N A T I O N M U L T I P L I E R S

COMBO	TYPE	CASE	FACTOR	TYPE	TITLE
COMB1	ADD				COMB1
		H1	1.0000	STATIC(DEAD)	
		H2	1.0000	STATIC(DEAD)	
COMB2	ADD				COMB2
		H2	1.0000	STATIC(DEAD)	
		H3	1.0000	STATIC(DEAD)	
COMB3	ADD				COMB3
		H1	1.0000	STATIC(DEAD)	
		H3	1.0000	STATIC(DEAD)	

SACYR
VIADUCTO DE LLOBREGAT

J O I N T D I S P L A C E M E N T S

JOINT	LOAD	U1	U2	U3	R1	R2	R3
1	COMB1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
1	COMB2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
1	COMB3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	COMB1	0.0000	0.0000	-4.705E-04	0.0000	1.961E-04	0.0000
2	COMB2	0.0000	0.0000	1.228E-04	0.0000	-5.358E-05	0.0000
2	COMB3	0.0000	0.0000	-2.135E-04	0.0000	8.397E-05	0.0000
3	COMB1	0.0000	0.0000	-1.497E-03	0.0000	2.644E-04	0.0000
3	COMB2	0.0000	0.0000	4.273E-04	0.0000	-8.477E-05	0.0000
3	COMB3	0.0000	0.0000	-6.023E-04	0.0000	8.697E-05	0.0000
4	COMB1	0.0000	0.0000	-2.600E-03	0.0000	2.369E-04	0.0000
4	COMB2	0.0000	0.0000	8.174E-04	0.0000	-9.356E-05	0.0000
4	COMB3	0.0000	0.0000	-8.886E-04	0.0000	4.104E-05	0.0000
5	COMB1	0.0000	0.0000	-3.369E-03	0.0000	1.513E-04	0.0000
5	COMB2	0.0000	0.0000	1.165E-03	0.0000	-8.217E-05	0.0000
5	COMB3	0.0000	0.0000	-9.313E-04	0.0000	-2.070E-05	0.0000
6	COMB1	0.0000	0.0000	-3.741E-03	0.0000	1.776E-05	0.0000
6	COMB2	0.0000	0.0000	1.452E-03	0.0000	-4.826E-05	0.0000
6	COMB3	0.0000	0.0000	-7.006E-04	0.0000	-8.326E-05	0.0000
7	COMB1	0.0000	0.0000	-3.454E-03	0.0000	-1.391E-04	0.0000
7	COMB2	0.0000	0.0000	1.542E-03	0.0000	1.445E-05	0.0000
7	COMB3	0.0000	0.0000	-2.263E-04	0.0000	-1.089E-04	0.0000
8	COMB1	0.0000	0.0000	-2.573E-03	0.0000	-2.675E-04	0.0000
8	COMB2	0.0000	0.0000	1.315E-03	0.0000	9.524E-05	0.0000
8	COMB3	0.0000	0.0000	1.790E-04	0.0000	-6.815E-05	0.0000
9	COMB1	0.0000	0.0000	-1.534E-03	0.0000	-3.283E-04	0.0000
9	COMB2	0.0000	0.0000	8.707E-04	0.0000	1.635E-04	0.0000
9	COMB3	0.0000	0.0000	2.891E-04	0.0000	1.396E-05	0.0000
10	COMB1	0.0000	0.0000	-3.682E-04	0.0000	-3.413E-04	0.0000
10	COMB2	0.0000	0.0000	2.304E-04	0.0000	2.078E-04	0.0000
10	COMB3	0.0000	0.0000	1.140E-04	0.0000	9.365E-05	0.0000
11	COMB1	0.0000	0.0000	0.0000	0.0000	-3.403E-04	0.0000
11	COMB2	0.0000	0.0000	0.0000	0.0000	2.189E-04	0.0000
11	COMB3	0.0000	0.0000	0.0000	0.0000	1.180E-04	0.0000
12	COMB1	0.0000	0.0000	3.664E-04	0.0000	-3.381E-04	0.0000
12	COMB2	0.0000	0.0000	-2.422E-04	0.0000	2.292E-04	0.0000
12	COMB3	0.0000	0.0000	-1.408E-04	0.0000	1.423E-04	0.0000
13	COMB1	0.0000	0.0000	1.517E-03	0.0000	-3.261E-04	0.0000
13	COMB2	0.0000	0.0000	-1.087E-03	0.0000	2.539E-04	0.0000
13	COMB3	0.0000	0.0000	-7.813E-04	0.0000	2.208E-04	0.0000
14	COMB1	0.0000	0.0000	1.985E-03	0.0000	-3.159E-04	0.0000
14	COMB2	0.0000	0.0000	-1.460E-03	0.0000	2.560E-04	0.0000
14	COMB3	0.0000	0.0000	-1.130E-03	0.0000	2.546E-04	0.0000
15	COMB1	0.0000	0.0000	2.599E-03	0.0000	-2.973E-04	0.0000
15	COMB2	0.0000	0.0000	-1.964E-03	0.0000	2.461E-04	0.0000
15	COMB3	0.0000	0.0000	-1.676E-03	0.0000	2.885E-04	0.0000
16	COMB1	0.0000	0.0000	2.892E-03	0.0000	-2.880E-04	0.0000
16	COMB2	0.0000	0.0000	-2.206E-03	0.0000	2.373E-04	0.0000
16	COMB3	0.0000	0.0000	-1.969E-03	0.0000	2.973E-04	0.0000
17	COMB1	0.0000	0.0000	4.054E-03	0.0000	-2.261E-04	0.0000
17	COMB2	0.0000	0.0000	-3.102E-03	0.0000	1.532E-04	0.0000
17	COMB3	0.0000	0.0000	-3.318E-03	0.0000	2.872E-04	0.0000
18	COMB1	0.0000	0.0000	4.904E-03	0.0000	-1.492E-04	0.0000
18	COMB2	0.0000	0.0000	-3.532E-03	0.0000	3.319E-05	0.0000
18	COMB3	0.0000	0.0000	-4.439E-03	0.0000	1.997E-04	0.0000
19	COMB1	0.0000	0.0000	5.374E-03	0.0000	-5.732E-05	0.0000
19	COMB2	0.0000	0.0000	-3.385E-03	0.0000	-9.620E-05	0.0000
19	COMB3	0.0000	0.0000	-5.036E-03	0.0000	6.105E-05	0.0000
20	COMB1	0.0000	0.0000	5.431E-03	0.0000	2.768E-05	0.0000
20	COMB2	0.0000	0.0000	-2.875E-03	0.0000	-1.798E-04	0.0000
20	COMB3	0.0000	0.0000	-5.037E-03	0.0000	-6.029E-05	0.0000
21	COMB1	0.0000	0.0000	5.162E-03	0.0000	1.224E-04	0.0000
21	COMB2	0.0000	0.0000	-2.120E-03	0.0000	-2.301E-04	0.0000
21	COMB3	0.0000	0.0000	-4.605E-03	0.0000	-1.755E-04	0.0000

SACYR
VIADUCTO DE LLOBREGAT

J O I N T D I S P L A C E M E N T S

JOINT	LOAD	U1	U2	U3	R1	R2	R3
22	COMB1	0.0000	0.0000	4.531E-03	0.0000	2.269E-04	0.0000
22	COMB2	0.0000	0.0000	-1.255E-03	0.0000	-2.374E-04	0.0000
22	COMB3	0.0000	0.0000	-3.780E-03	0.0000	-2.748E-04	0.0000
23	COMB1	0.0000	0.0000	3.510E-03	0.0000	3.404E-04	0.0000
23	COMB2	0.0000	0.0000	-4.792E-04	0.0000	-1.799E-04	0.0000
23	COMB3	0.0000	0.0000	-2.664E-03	0.0000	-3.356E-04	0.0000
24	COMB1	0.0000	0.0000	2.163E-03	0.0000	4.390E-04	0.0000
24	COMB2	0.0000	0.0000	-2.889E-05	0.0000	-6.905E-05	0.0000
24	COMB3	0.0000	0.0000	-1.480E-03	0.0000	-3.407E-04	0.0000
25	COMB1	0.0000	0.0000	5.447E-04	0.0000	4.973E-04	0.0000
25	COMB2	0.0000	0.0000	4.867E-05	0.0000	3.080E-05	0.0000
25	COMB3	0.0000	0.0000	-3.360E-04	0.0000	-3.159E-04	0.0000
26	COMB1	0.0000	0.0000	0.0000	0.0000	5.115E-04	0.0000
26	COMB2	0.0000	0.0000	0.0000	0.0000	5.987E-05	0.0000
26	COMB3	0.0000	0.0000	0.0000	0.0000	-3.060E-04	0.0000
27	COMB1	0.0000	0.0000	-5.598E-04	0.0000	5.248E-04	0.0000
27	COMB2	0.0000	0.0000	-8.067E-05	0.0000	8.900E-05	0.0000
27	COMB3	0.0000	0.0000	3.247E-04	0.0000	-2.953E-04	0.0000
28	COMB1	0.0000	0.0000	-2.445E-03	0.0000	5.586E-04	0.0000
28	COMB2	0.0000	0.0000	-5.712E-04	0.0000	1.873E-04	0.0000
28	COMB3	0.0000	0.0000	1.269E-03	0.0000	-2.516E-04	0.0000
29	COMB1	0.0000	0.0000	-3.266E-03	0.0000	5.650E-04	0.0000
29	COMB2	0.0000	0.0000	-8.805E-04	0.0000	2.346E-04	0.0000
29	COMB3	0.0000	0.0000	1.616E-03	0.0000	-2.239E-04	0.0000
30	COMB1	0.0000	0.0000	-4.393E-03	0.0000	5.589E-04	0.0000
30	COMB2	0.0000	0.0000	-1.408E-03	0.0000	2.894E-04	0.0000
30	COMB3	0.0000	0.0000	2.022E-03	0.0000	-1.826E-04	0.0000
31	COMB1	0.0000	0.0000	-4.948E-03	0.0000	5.500E-04	0.0000
31	COMB2	0.0000	0.0000	-1.707E-03	0.0000	3.066E-04	0.0000
31	COMB3	0.0000	0.0000	2.196E-03	0.0000	-1.649E-04	0.0000
32	COMB1	0.0000	0.0000	-8.211E-03	0.0000	3.513E-04	0.0000
32	COMB2	0.0000	0.0000	-3.982E-03	0.0000	3.017E-04	0.0000
32	COMB3	0.0000	0.0000	2.865E-03	0.0000	-3.361E-05	0.0000
33	COMB1	0.0000	0.0000	-9.363E-03	0.0000	1.561E-04	0.0000
33	COMB2	0.0000	0.0000	-5.125E-03	0.0000	1.969E-04	0.0000
33	COMB3	0.0000	0.0000	2.872E-03	0.0000	2.766E-05	0.0000
34	COMB1	0.0000	0.0000	-9.188E-03	0.0000	-9.592E-05	0.0000
34	COMB2	0.0000	0.0000	-5.286E-03	0.0000	3.589E-05	0.0000
34	COMB3	0.0000	0.0000	2.644E-03	0.0000	8.931E-05	0.0000
35	COMB1	0.0000	0.0000	-8.537E-03	0.0000	-2.601E-04	0.0000
35	COMB2	0.0000	0.0000	-5.192E-03	0.0000	-8.781E-05	0.0000
35	COMB3	0.0000	0.0000	2.266E-03	0.0000	1.168E-04	0.0000
36	COMB1	0.0000	0.0000	-7.329E-03	0.0000	-3.995E-04	0.0000
36	COMB2	0.0000	0.0000	-4.658E-03	0.0000	-2.040E-04	0.0000
36	COMB3	0.0000	0.0000	1.810E-03	0.0000	1.324E-04	0.0000
37	COMB1	0.0000	0.0000	-6.029E-03	0.0000	-4.833E-04	0.0000
37	COMB2	0.0000	0.0000	-3.942E-03	0.0000	-2.819E-04	0.0000
37	COMB3	0.0000	0.0000	1.414E-03	0.0000	1.364E-04	0.0000
38	COMB1	0.0000	0.0000	-4.164E-03	0.0000	-5.403E-04	0.0000
38	COMB2	0.0000	0.0000	-2.794E-03	0.0000	-3.472E-04	0.0000
38	COMB3	0.0000	0.0000	9.285E-04	0.0000	1.309E-04	0.0000
39	COMB1	0.0000	0.0000	-2.294E-03	0.0000	-5.307E-04	0.0000
39	COMB2	0.0000	0.0000	-1.560E-03	0.0000	-3.577E-04	0.0000
39	COMB3	0.0000	0.0000	4.967E-04	0.0000	1.172E-04	0.0000
40	COMB1	0.0000	0.0000	-5.190E-04	0.0000	-4.883E-04	0.0000
40	COMB2	0.0000	0.0000	-3.548E-04	0.0000	-3.336E-04	0.0000
40	COMB3	0.0000	0.0000	1.113E-04	0.0000	1.048E-04	0.0000
41	COMB1	0.0000	0.0000	0.0000	0.0000	-4.723E-04	0.0000
41	COMB2	0.0000	0.0000	0.0000	0.0000	-3.230E-04	0.0000
41	COMB3	0.0000	0.0000	0.0000	0.0000	1.012E-04	0.0000
42	COMB1	0.0000	0.0000	5.007E-04	0.0000	-4.550E-04	0.0000
42	COMB2	0.0000	0.0000	3.424E-04	0.0000	-3.111E-04	0.0000
42	COMB3	0.0000	0.0000	-1.073E-04	0.0000	9.748E-05	0.0000

SACYR
VIADUCTO DE LLOBREGAT

J O I N T D I S P L A C E M E N T S

JOINT	LOAD	U1	U2	U3	R1	R2	R3
43	COMB1	0.0000	0.0000	1.950E-03	0.0000	-3.840E-04	0.0000
43	COMB2	0.0000	0.0000	1.333E-03	0.0000	-2.626E-04	0.0000
43	COMB3	0.0000	0.0000	-4.178E-04	0.0000	8.226E-05	0.0000
44	COMB1	0.0000	0.0000	2.477E-03	0.0000	-3.384E-04	0.0000
44	COMB2	0.0000	0.0000	1.694E-03	0.0000	-2.314E-04	0.0000
44	COMB3	0.0000	0.0000	-5.307E-04	0.0000	7.249E-05	0.0000
45	COMB1	0.0000	0.0000	3.085E-03	0.0000	-2.699E-04	0.0000
45	COMB2	0.0000	0.0000	2.109E-03	0.0000	-1.846E-04	0.0000
45	COMB3	0.0000	0.0000	-6.609E-04	0.0000	5.782E-05	0.0000
46	COMB1	0.0000	0.0000	3.340E-03	0.0000	-2.403E-04	0.0000
46	COMB2	0.0000	0.0000	2.284E-03	0.0000	-1.643E-04	0.0000
46	COMB3	0.0000	0.0000	-7.155E-04	0.0000	5.147E-05	0.0000
47	COMB1	0.0000	0.0000	4.048E-03	0.0000	-9.433E-05	0.0000
47	COMB2	0.0000	0.0000	2.768E-03	0.0000	-6.450E-05	0.0000
47	COMB3	0.0000	0.0000	-8.673E-04	0.0000	2.021E-05	0.0000
48	COMB1	0.0000	0.0000	4.196E-03	0.0000	-3.579E-06	0.0000
48	COMB2	0.0000	0.0000	2.869E-03	0.0000	-2.447E-06	0.0000
48	COMB3	0.0000	0.0000	-8.991E-04	0.0000	0.0000	0.0000
49	COMB1	0.0000	0.0000	4.083E-03	0.0000	7.507E-05	0.0000
49	COMB2	0.0000	0.0000	2.792E-03	0.0000	5.133E-05	0.0000
49	COMB3	0.0000	0.0000	-8.747E-04	0.0000	-1.608E-05	0.0000
50	COMB1	0.0000	0.0000	3.745E-03	0.0000	1.416E-04	0.0000
50	COMB2	0.0000	0.0000	2.561E-03	0.0000	9.684E-05	0.0000
50	COMB3	0.0000	0.0000	-8.024E-04	0.0000	-3.034E-05	0.0000
51	COMB1	0.0000	0.0000	3.220E-03	0.0000	1.961E-04	0.0000
51	COMB2	0.0000	0.0000	2.202E-03	0.0000	1.341E-04	0.0000
51	COMB3	0.0000	0.0000	-6.899E-04	0.0000	-4.201E-05	0.0000
52	COMB1	0.0000	0.0000	2.546E-03	0.0000	2.384E-04	0.0000
52	COMB2	0.0000	0.0000	1.741E-03	0.0000	1.630E-04	0.0000
52	COMB3	0.0000	0.0000	-5.455E-04	0.0000	-5.108E-05	0.0000
53	COMB1	0.0000	0.0000	1.760E-03	0.0000	2.687E-04	0.0000
53	COMB2	0.0000	0.0000	1.203E-03	0.0000	1.837E-04	0.0000
53	COMB3	0.0000	0.0000	-3.770E-04	0.0000	-5.756E-05	0.0000
54	COMB1	0.0000	0.0000	8.985E-04	0.0000	2.868E-04	0.0000
54	COMB2	0.0000	0.0000	6.144E-04	0.0000	1.961E-04	0.0000
54	COMB3	0.0000	0.0000	-1.925E-04	0.0000	-6.145E-05	0.0000
55	COMB1	0.0000	0.0000	0.0000	0.0000	2.929E-04	0.0000
55	COMB2	0.0000	0.0000	0.0000	0.0000	2.003E-04	0.0000
55	COMB3	0.0000	0.0000	0.0000	0.0000	-6.275E-05	0.0000
56	COMB1	0.0000	0.0000	-1.302E-04	0.0000	1.157E-04	0.0000
56	COMB2	0.0000	0.0000	3.270E-05	0.0000	-2.959E-05	0.0000
56	COMB3	0.0000	0.0000	-6.174E-05	0.0000	5.372E-05	0.0000
57	COMB1	0.0000	0.0000	-9.475E-04	0.0000	2.440E-04	0.0000
57	COMB2	0.0000	0.0000	2.583E-04	0.0000	-7.197E-05	0.0000
57	COMB3	0.0000	0.0000	-4.067E-04	0.0000	9.334E-05	0.0000
58	COMB1	0.0000	0.0000	-2.063E-03	0.0000	2.606E-04	0.0000
58	COMB2	0.0000	0.0000	6.176E-04	0.0000	-9.196E-05	0.0000
58	COMB3	0.0000	0.0000	-7.703E-04	0.0000	6.812E-05	0.0000
59	COMB1	0.0000	0.0000	-3.066E-03	0.0000	1.957E-04	0.0000
59	COMB2	0.0000	0.0000	1.015E-03	0.0000	-8.955E-05	0.0000
59	COMB3	0.0000	0.0000	-9.421E-04	0.0000	8.236E-06	0.0000
60	COMB1	0.0000	0.0000	-3.627E-03	0.0000	8.754E-05	0.0000
60	COMB2	0.0000	0.0000	1.327E-03	0.0000	-6.801E-05	0.0000
60	COMB3	0.0000	0.0000	-8.497E-04	0.0000	-5.483E-05	0.0000
61	COMB1	0.0000	0.0000	-3.701E-03	0.0000	-5.456E-05	0.0000
61	COMB2	0.0000	0.0000	1.529E-03	0.0000	-2.290E-05	0.0000
61	COMB3	0.0000	0.0000	-4.994E-04	0.0000	-1.025E-04	0.0000
62	COMB1	0.0000	0.0000	-3.083E-03	0.0000	-2.066E-04	0.0000
62	COMB2	0.0000	0.0000	1.472E-03	0.0000	5.204E-05	0.0000
62	COMB3	0.0000	0.0000	-2.286E-06	0.0000	-9.762E-05	0.0000
63	COMB1	0.0000	0.0000	-2.080E-03	0.0000	-3.018E-04	0.0000
63	COMB2	0.0000	0.0000	1.122E-03	0.0000	1.279E-04	0.0000
63	COMB3	0.0000	0.0000	2.696E-04	0.0000	-3.416E-05	0.0000

SACYR
VIADUCTO DE LLOBREGAT

J O I N T D I S P L A C E M E N T S

JOINT	LOAD	U1	U2	U3	R1	R2	R3
64	COMB1	0.0000	0.0000	-9.565E-04	0.0000	-3.378E-04	0.0000
64	COMB2	0.0000	0.0000	5.697E-04	0.0000	1.848E-04	0.0000
64	COMB3	0.0000	0.0000	2.360E-04	0.0000	4.901E-05	0.0000
65	COMB1	0.0000	0.0000	-1.840E-04	0.0000	-3.410E-04	0.0000
65	COMB2	0.0000	0.0000	1.167E-04	0.0000	2.133E-04	0.0000
65	COMB3	0.0000	0.0000	6.029E-05	0.0000	1.054E-04	0.0000
66	COMB1	0.0000	0.0000	1.835E-04	0.0000	-3.392E-04	0.0000
66	COMB2	0.0000	0.0000	-1.197E-04	0.0000	2.243E-04	0.0000
66	COMB3	0.0000	0.0000	-6.714E-05	0.0000	1.305E-04	0.0000
67	COMB1	0.0000	0.0000	9.467E-04	0.0000	-3.326E-04	0.0000
67	COMB2	0.0000	0.0000	-6.538E-04	0.0000	2.454E-04	0.0000
67	COMB3	0.0000	0.0000	-4.271E-04	0.0000	1.868E-04	0.0000
68	COMB1	0.0000	0.0000	1.753E-03	0.0000	-3.211E-04	0.0000
68	COMB2	0.0000	0.0000	-1.273E-03	0.0000	2.560E-04	0.0000
68	COMB3	0.0000	0.0000	-9.493E-04	0.0000	2.391E-04	0.0000
69	COMB1	0.0000	0.0000	2.297E-03	0.0000	-3.069E-04	0.0000
69	COMB2	0.0000	0.0000	-1.715E-03	0.0000	2.527E-04	0.0000
69	COMB3	0.0000	0.0000	-1.394E-03	0.0000	2.741E-04	0.0000
70	COMB1	0.0000	0.0000	2.747E-03	0.0000	-2.928E-04	0.0000
70	COMB2	0.0000	0.0000	-2.086E-03	0.0000	2.420E-04	0.0000
70	COMB3	0.0000	0.0000	-1.822E-03	0.0000	2.934E-04	0.0000
71	COMB1	0.0000	0.0000	3.508E-03	0.0000	-2.589E-04	0.0000
71	COMB2	0.0000	0.0000	-2.702E-03	0.0000	2.010E-04	0.0000
71	COMB3	0.0000	0.0000	-2.650E-03	0.0000	3.032E-04	0.0000
72	COMB1	0.0000	0.0000	4.522E-03	0.0000	-1.895E-04	0.0000
72	COMB2	0.0000	0.0000	-3.385E-03	0.0000	9.657E-05	0.0000
72	COMB3	0.0000	0.0000	-3.928E-03	0.0000	2.520E-04	0.0000
73	COMB1	0.0000	0.0000	5.191E-03	0.0000	-1.051E-04	0.0000
73	COMB2	0.0000	0.0000	-3.531E-03	0.0000	-3.343E-05	0.0000
73	COMB3	0.0000	0.0000	-4.815E-03	0.0000	1.336E-04	0.0000
74	COMB1	0.0000	0.0000	5.441E-03	0.0000	-1.603E-05	0.0000
74	COMB2	0.0000	0.0000	-3.168E-03	0.0000	-1.415E-04	0.0000
74	COMB3	0.0000	0.0000	-5.091E-03	0.0000	0.0000	0.0000
75	COMB1	0.0000	0.0000	5.339E-03	0.0000	7.382E-05	0.0000
75	COMB2	0.0000	0.0000	-2.520E-03	0.0000	-2.097E-04	0.0000
75	COMB3	0.0000	0.0000	-4.873E-03	0.0000	-1.193E-04	0.0000
76	COMB1	0.0000	0.0000	4.894E-03	0.0000	1.734E-04	0.0000
76	COMB2	0.0000	0.0000	-1.691E-03	0.0000	-2.404E-04	0.0000
76	COMB3	0.0000	0.0000	-4.238E-03	0.0000	-2.284E-04	0.0000
77	COMB1	0.0000	0.0000	4.071E-03	0.0000	2.824E-04	0.0000
77	COMB2	0.0000	0.0000	-8.415E-04	0.0000	-2.181E-04	0.0000
77	COMB3	0.0000	0.0000	-3.250E-03	0.0000	-3.112E-04	0.0000
78	COMB1	0.0000	0.0000	2.879E-03	0.0000	3.888E-04	0.0000
78	COMB2	0.0000	0.0000	-2.062E-04	0.0000	-1.330E-04	0.0000
78	COMB3	0.0000	0.0000	-2.074E-03	0.0000	-3.441E-04	0.0000
79	COMB1	0.0000	0.0000	1.379E-03	0.0000	4.677E-04	0.0000
79	COMB2	0.0000	0.0000	5.308E-05	0.0000	-2.406E-05	0.0000
79	COMB3	0.0000	0.0000	-8.974E-04	0.0000	-3.319E-04	0.0000
80	COMB1	0.0000	0.0000	2.743E-04	0.0000	5.043E-04	0.0000
80	COMB2	0.0000	0.0000	2.826E-05	0.0000	4.493E-05	0.0000
80	COMB3	0.0000	0.0000	-1.667E-04	0.0000	-3.112E-04	0.0000
81	COMB1	0.0000	0.0000	-2.781E-04	0.0000	5.185E-04	0.0000
81	COMB2	0.0000	0.0000	-3.640E-05	0.0000	7.483E-05	0.0000
81	COMB3	0.0000	0.0000	1.638E-04	0.0000	-3.006E-04	0.0000
82	COMB1	0.0000	0.0000	-1.488E-03	0.0000	5.462E-04	0.0000
82	COMB2	0.0000	0.0000	-2.835E-04	0.0000	1.436E-04	0.0000
82	COMB3	0.0000	0.0000	8.159E-04	0.0000	-2.728E-04	0.0000
83	COMB1	0.0000	0.0000	-2.854E-03	0.0000	5.629E-04	0.0000
83	COMB2	0.0000	0.0000	-7.172E-04	0.0000	2.123E-04	0.0000
83	COMB3	0.0000	0.0000	1.448E-03	0.0000	-2.376E-04	0.0000
84	COMB1	0.0000	0.0000	-3.831E-03	0.0000	5.643E-04	0.0000
84	COMB2	0.0000	0.0000	-1.131E-03	0.0000	2.649E-04	0.0000
84	COMB3	0.0000	0.0000	1.830E-03	0.0000	-2.029E-04	0.0000

SACYR
VIADUCTO DE LLOBREGAT

J O I N T D I S P L A C E M E N T S

JOINT	LOAD	U1	U2	U3	R1	R2	R3
85	COMB1	0.0000	0.0000	-4.671E-03	0.0000	5.549E-04	0.0000
85	COMB2	0.0000	0.0000	-1.555E-03	0.0000	2.986E-04	0.0000
85	COMB3	0.0000	0.0000	2.111E-03	0.0000	-1.737E-04	0.0000
86	COMB1	0.0000	0.0000	-7.325E-03	0.0000	4.343E-04	0.0000
86	COMB2	0.0000	0.0000	-3.269E-03	0.0000	3.295E-04	0.0000
86	COMB3	0.0000	0.0000	2.748E-03	0.0000	-7.103E-05	0.0000
87	COMB1	0.0000	0.0000	-8.897E-03	0.0000	2.570E-04	0.0000
87	COMB2	0.0000	0.0000	-4.613E-03	0.0000	2.559E-04	0.0000
87	COMB3	0.0000	0.0000	2.903E-03	0.0000	0.0000	0.0000
88	COMB1	0.0000	0.0000	-9.268E-03	0.0000	4.148E-05	0.0000
88	COMB2	0.0000	0.0000	-5.042E-03	0.0000	1.276E-04	0.0000
88	COMB3	0.0000	0.0000	2.863E-03	0.0000	5.832E-05	0.0000
89	COMB1	0.0000	0.0000	-8.937E-03	0.0000	-1.802E-04	0.0000
89	COMB2	0.0000	0.0000	-5.296E-03	0.0000	-2.595E-05	0.0000
89	COMB3	0.0000	0.0000	2.467E-03	0.0000	1.045E-04	0.0000
90	COMB1	0.0000	0.0000	-7.997E-03	0.0000	-3.339E-04	0.0000
90	COMB2	0.0000	0.0000	-4.978E-03	0.0000	-1.479E-04	0.0000
90	COMB3	0.0000	0.0000	2.045E-03	0.0000	1.261E-04	0.0000
91	COMB1	0.0000	0.0000	-6.553E-03	0.0000	-4.548E-04	0.0000
91	COMB2	0.0000	0.0000	-4.241E-03	0.0000	-2.544E-04	0.0000
91	COMB3	0.0000	0.0000	1.566E-03	0.0000	1.358E-04	0.0000
92	COMB1	0.0000	0.0000	-5.123E-03	0.0000	-5.190E-04	0.0000
92	COMB2	0.0000	0.0000	-3.398E-03	0.0000	-3.196E-04	0.0000
92	COMB3	0.0000	0.0000	1.169E-03	0.0000	1.351E-04	0.0000
93	COMB1	0.0000	0.0000	-3.225E-03	0.0000	-5.432E-04	0.0000
93	COMB2	0.0000	0.0000	-2.182E-03	0.0000	-3.585E-04	0.0000
93	COMB3	0.0000	0.0000	7.067E-04	0.0000	1.252E-04	0.0000
94	COMB1	0.0000	0.0000	-1.388E-03	0.0000	-5.146E-04	0.0000
94	COMB2	0.0000	0.0000	-9.472E-04	0.0000	-3.498E-04	0.0000
94	COMB3	0.0000	0.0000	2.986E-04	0.0000	1.116E-04	0.0000
95	COMB1	0.0000	0.0000	-2.573E-04	0.0000	-4.807E-04	0.0000
95	COMB2	0.0000	0.0000	-1.760E-04	0.0000	-3.286E-04	0.0000
95	COMB3	0.0000	0.0000	5.514E-05	0.0000	1.030E-04	0.0000
96	COMB1	0.0000	0.0000	2.527E-04	0.0000	-4.636E-04	0.0000
96	COMB2	0.0000	0.0000	1.728E-04	0.0000	-3.170E-04	0.0000
96	COMB3	0.0000	0.0000	-5.414E-05	0.0000	9.932E-05	0.0000
97	COMB1	0.0000	0.0000	1.256E-03	0.0000	-4.186E-04	0.0000
97	COMB2	0.0000	0.0000	8.589E-04	0.0000	-2.862E-04	0.0000
97	COMB3	0.0000	0.0000	-2.691E-04	0.0000	8.968E-05	0.0000
98	COMB1	0.0000	0.0000	2.222E-03	0.0000	-3.609E-04	0.0000
98	COMB2	0.0000	0.0000	1.519E-03	0.0000	-2.468E-04	0.0000
98	COMB3	0.0000	0.0000	-4.760E-04	0.0000	7.732E-05	0.0000
99	COMB1	0.0000	0.0000	2.798E-03	0.0000	-3.036E-04	0.0000
99	COMB2	0.0000	0.0000	1.913E-03	0.0000	-2.076E-04	0.0000
99	COMB3	0.0000	0.0000	-5.995E-04	0.0000	6.504E-05	0.0000
100	COMB1	0.0000	0.0000	3.216E-03	0.0000	-2.550E-04	0.0000
100	COMB2	0.0000	0.0000	2.199E-03	0.0000	-1.743E-04	0.0000
100	COMB3	0.0000	0.0000	-6.890E-04	0.0000	5.462E-05	0.0000
101	COMB1	0.0000	0.0000	3.772E-03	0.0000	-1.644E-04	0.0000
101	COMB2	0.0000	0.0000	2.579E-03	0.0000	-1.124E-04	0.0000
101	COMB3	0.0000	0.0000	-8.082E-04	0.0000	3.522E-05	0.0000
102	COMB1	0.0000	0.0000	4.157E-03	0.0000	-4.744E-05	0.0000
102	COMB2	0.0000	0.0000	2.843E-03	0.0000	-3.244E-05	0.0000
102	COMB3	0.0000	0.0000	-8.907E-04	0.0000	1.016E-05	0.0000
103	COMB1	0.0000	0.0000	4.170E-03	0.0000	3.726E-05	0.0000
103	COMB2	0.0000	0.0000	2.851E-03	0.0000	2.548E-05	0.0000
103	COMB3	0.0000	0.0000	-8.934E-04	0.0000	-7.982E-06	0.0000
104	COMB1	0.0000	0.0000	3.940E-03	0.0000	1.099E-04	0.0000
104	COMB2	0.0000	0.0000	2.694E-03	0.0000	7.512E-05	0.0000
104	COMB3	0.0000	0.0000	-8.440E-04	0.0000	-2.354E-05	0.0000
105	COMB1	0.0000	0.0000	3.504E-03	0.0000	1.704E-04	0.0000
105	COMB2	0.0000	0.0000	2.396E-03	0.0000	1.165E-04	0.0000
105	COMB3	0.0000	0.0000	-7.506E-04	0.0000	-3.650E-05	0.0000

SACYR
VIADUCTO DE LLOBREGAT

J O I N T D I S P L A C E M E N T S

JOINT	LOAD	U1	U2	U3	R1	R2	R3
106	COMB1	0.0000	0.0000	2.900E-03	0.0000	2.188E-04	0.0000
106	COMB2	0.0000	0.0000	1.983E-03	0.0000	1.496E-04	0.0000
106	COMB3	0.0000	0.0000	-6.212E-04	0.0000	-4.687E-05	0.0000
107	COMB1	0.0000	0.0000	2.165E-03	0.0000	2.551E-04	0.0000
107	COMB2	0.0000	0.0000	1.480E-03	0.0000	1.744E-04	0.0000
107	COMB3	0.0000	0.0000	-4.637E-04	0.0000	-5.464E-05	0.0000
108	COMB1	0.0000	0.0000	1.336E-03	0.0000	2.793E-04	0.0000
108	COMB2	0.0000	0.0000	9.136E-04	0.0000	1.910E-04	0.0000
108	COMB3	0.0000	0.0000	-2.863E-04	0.0000	-5.983E-05	0.0000
109	COMB1	0.0000	0.0000	4.516E-04	0.0000	2.914E-04	0.0000
109	COMB2	0.0000	0.0000	3.088E-04	0.0000	1.992E-04	0.0000
109	COMB3	0.0000	0.0000	-9.675E-05	0.0000	-6.242E-05	0.0000
110	COMB1	0.0000	0.0000	-6.631E-04	0.0000	-3.404E-04	0.0000
110	COMB2	0.0000	0.0000	4.050E-04	0.0000	1.961E-04	0.0000
110	COMB3	0.0000	0.0000	1.846E-04	0.0000	7.008E-05	0.0000
111	COMB1	0.0000	0.0000	-2.844E-03	0.0000	-2.382E-04	0.0000
111	COMB2	0.0000	0.0000	1.405E-03	0.0000	7.294E-05	0.0000
111	COMB3	0.0000	0.0000	9.626E-05	0.0000	-8.548E-05	0.0000
112	COMB1	0.0000	0.0000	-3.515E-03	0.0000	1.204E-04	0.0000
112	COMB2	0.0000	0.0000	1.250E-03	0.0000	-7.579E-05	0.0000
112	COMB3	0.0000	0.0000	-8.997E-04	0.0000	-3.824E-05	0.0000
113	COMB1	0.0000	0.0000	-1.781E-03	0.0000	2.653E-04	0.0000
113	COMB2	0.0000	0.0000	5.205E-04	0.0000	-8.906E-05	0.0000
113	COMB3	0.0000	0.0000	-6.914E-04	0.0000	7.884E-05	0.0000
114	COMB1	0.0000	0.0000	-3.623E-03	0.0000	-9.061E-05	0.0000
114	COMB2	0.0000	0.0000	1.546E-03	0.0000	-8.128E-06	0.0000
114	COMB3	0.0000	0.0000	-3.866E-04	0.0000	-1.076E-04	0.0000
115	COMB1	0.0000	0.0000	-3.192E-03	0.0000	1.796E-04	0.0000
115	COMB2	0.0000	0.0000	1.074E-03	0.0000	-8.715E-05	0.0000
115	COMB3	0.0000	0.0000	-9.439E-04	0.0000	-2.850E-06	0.0000
116	COMB1	0.0000	0.0000	-2.338E-03	0.0000	2.512E-04	0.0000
116	COMB2	0.0000	0.0000	7.171E-04	0.0000	-9.346E-05	0.0000
116	COMB3	0.0000	0.0000	-8.367E-04	0.0000	5.552E-05	0.0000
117	COMB1	0.0000	0.0000	-8.581E-03	0.0000	3.053E-04	0.0000
117	COMB2	0.0000	0.0000	-4.311E-03	0.0000	2.808E-04	0.0000
117	COMB3	0.0000	0.0000	2.893E-03	0.0000	-1.659E-05	0.0000
118	COMB1	0.0000	0.0000	-9.158E-03	0.0000	2.073E-04	0.0000
118	COMB2	0.0000	0.0000	-4.885E-03	0.0000	2.280E-04	0.0000
118	COMB3	0.0000	0.0000	2.895E-03	0.0000	1.404E-05	0.0000
119	COMB1	0.0000	0.0000	-9.192E-03	0.0000	9.304E-05	0.0000
119	COMB2	0.0000	0.0000	-4.880E-03	0.0000	1.586E-04	0.0000
119	COMB3	0.0000	0.0000	2.921E-03	0.0000	4.445E-05	0.0000
120	COMB1	0.0000	0.0000	-9.082E-03	0.0000	-1.384E-04	0.0000
120	COMB2	0.0000	0.0000	-5.305E-03	0.0000	5.206E-06	0.0000
120	COMB3	0.0000	0.0000	2.559E-03	0.0000	9.728E-05	0.0000
121	COMB1	0.0000	0.0000	-6.816E-03	0.0000	4.706E-04	0.0000
121	COMB2	0.0000	0.0000	-2.894E-03	0.0000	3.356E-04	0.0000
121	COMB3	0.0000	0.0000	2.657E-03	0.0000	-9.145E-05	0.0000
122	COMB1	0.0000	0.0000	4.724E-03	0.0000	1.998E-04	0.0000
122	COMB2	0.0000	0.0000	-1.472E-03	0.0000	-2.408E-04	0.0000
122	COMB3	0.0000	0.0000	-4.020E-03	0.0000	-2.526E-04	0.0000
125	COMB1	0.0000	0.0000	5.039E-03	0.0000	1.476E-04	0.0000
125	COMB2	0.0000	0.0000	-1.908E-03	0.0000	-2.367E-04	0.0000
125	COMB3	0.0000	0.0000	-4.434E-03	0.0000	-2.025E-04	0.0000
126	COMB1	0.0000	0.0000	5.060E-03	0.0000	-1.276E-04	0.0000
126	COMB2	0.0000	0.0000	-3.550E-03	0.0000	0.0000	0.0000
126	COMB3	0.0000	0.0000	-4.646E-03	0.0000	1.677E-04	0.0000
127	COMB1	0.0000	0.0000	3.208E-03	0.0000	-2.739E-04	0.0000
127	COMB2	0.0000	0.0000	-2.464E-03	0.0000	2.209E-04	0.0000
127	COMB3	0.0000	0.0000	-2.308E-03	0.0000	3.033E-04	0.0000
128	COMB1	0.0000	0.0000	4.985E-03	0.0000	-1.385E-04	0.0000
128	COMB2	0.0000	0.0000	-3.546E-03	0.0000	1.647E-05	0.0000
128	COMB3	0.0000	0.0000	-4.547E-03	0.0000	1.840E-04	0.0000

SALIDA DE RESULTADOS DE LA PRUEBA DE CARGA DINÁMICA

martes, 14 de marzo de 2006
S A P 2 0 0 0 (R)

Structural Analysis Programs

Nonlinear Version 7.44

D I S P L A C E M E N T D E G R E E S O F F R E E D O M

(A) = Active DOF, equilibrium equation
(-) = Restrained DOF, reaction computed
(+) = Constrained DOF
(>) = External substructure DOF
( ) = Null DOF

JOINTS			UX	UY	UZ	RX	RY	RZ
1			-	-	-	-	-	-
2	TO	54	A		A		A	
55			A	-	-		A	
56	TO	220	A		A		A	
221			A	-	-		A	
226	TO	235	A		A		A	
236			A	-	-		A	
241	TO	250	A		A		A	
251			A	-	-		A	

A S S E M B L E D J O I N T M A S S E S

IN GLOBAL COORDINATES

JOINT	UX	UY	UZ	RX	RY	RZ
1	224.544643	224.544643	224.544643	.000000	.000000	.000000
2	449.089286	449.089286	449.089286	.000000	.000000	.000000
3	336.816964	336.816964	336.816964	.000000	.000000	.000000
4	336.816964	336.816964	336.816964	.000000	.000000	.000000
5	224.544643	224.544643	224.544643	.000000	.000000	.000000
6	449.089286	449.089286	449.089286	.000000	.000000	.000000
7	378.731964	378.731964	378.731964	.000000	.000000	.000000
8	300.063821	300.063821	300.063821	.000000	.000000	.000000
9	400.149000	400.149000	400.149000	.000000	.000000	.000000
10	178.140500	178.140500	178.140500	.000000	.000000	.000000
11	143.923500	143.923500	143.923500	.000000	.000000	.000000
12	284.319250	284.319250	284.319250	.000000	.000000	.000000
13	303.717000	303.717000	303.717000	.000000	.000000	.000000
14	225.984500	225.984500	225.984500	.000000	.000000	.000000
15	194.143750	194.143750	194.143750	.000000	.000000	.000000
16	177.404688	177.404688	177.404688	.000000	.000000	.000000
17	471.543750	471.543750	471.543750	.000000	.000000	.000000
18	294.714844	294.714844	294.714844	.000000	.000000	.000000
19	425.961187	425.961187	425.961187	.000000	.000000	.000000
20	380.378625	380.378625	380.378625	.000000	.000000	.000000
21	285.283969	285.283969	285.283969	.000000	.000000	.000000
22	284.236094	284.236094	284.236094	.000000	.000000	.000000
23	376.932938	376.932938	376.932938	.000000	.000000	.000000
24	400.149000	400.149000	400.149000	.000000	.000000	.000000
25	284.319250	284.319250	284.319250	.000000	.000000	.000000
26	143.923500	143.923500	143.923500	.000000	.000000	.000000
27	284.319250	284.319250	284.319250	.000000	.000000	.000000
28	303.717000	303.717000	303.717000	.000000	.000000	.000000

29	225.984500	225.984500	225.984500	.000000	.000000	.000000
30	194.143750	194.143750	194.143750	.000000	.000000	.000000
31	439.373437	439.373437	439.373437	.000000	.000000	.000000
32	353.657812	353.657812	353.657812	.000000	.000000	.000000
33	261.968750	261.968750	261.968750	.000000	.000000	.000000
34	404.217781	404.217781	404.217781	.000000	.000000	.000000
35	380.378625	380.378625	380.378625	.000000	.000000	.000000
36	380.378625	380.378625	380.378625	.000000	.000000	.000000
37	305.979500	305.979500	305.979500	.000000	.000000	.000000
38	376.932938	376.932938	376.932938	.000000	.000000	.000000
39	400.149000	400.149000	400.149000	.000000	.000000	.000000
40	284.319250	284.319250	284.319250	.000000	.000000	.000000
41	143.923500	143.923500	143.923500	.000000	.000000	.000000
42	284.319250	284.319250	284.319250	.000000	.000000	.000000
43	303.717000	303.717000	303.717000	.000000	.000000	.000000
44	225.984500	225.984500	225.984500	.000000	.000000	.000000
45	194.143750	194.143750	194.143750	.000000	.000000	.000000
46	284.062644	284.062644	284.062644	.000000	.000000	.000000
47	386.403251	386.403251	386.403251	.000000	.000000	.000000
48	323.718714	323.718714	323.718714	.000000	.000000	.000000
49	323.718714	323.718714	323.718714	.000000	.000000	.000000
50	323.718714	323.718714	323.718714	.000000	.000000	.000000

A S S E M B L E D J O I N T M A S S E S

IN GLOBAL COORDINATES

JOINT	UX	UY	UZ	RX	RY	RZ
51	323.718714	323.718714	323.718714	.000000	.000000	.000000
52	323.718714	323.718714	323.718714	.000000	.000000	.000000
53	323.718714	323.718714	323.718714	.000000	.000000	.000000
54	323.718714	323.718714	323.718714	.000000	.000000	.000000
55	161.859357	161.859357	161.859357	.000000	.000000	.000000
56	449.089286	449.089286	449.089286	.000000	.000000	.000000
57	449.089286	449.089286	449.089286	.000000	.000000	.000000
58	224.544643	224.544643	224.544643	.000000	.000000	.000000
59	294.901964	294.901964	294.901964	.000000	.000000	.000000
60	336.816964	336.816964	336.816964	.000000	.000000	.000000
61	336.816964	336.816964	336.816964	.000000	.000000	.000000
62	336.816964	336.816964	336.816964	.000000	.000000	.000000
63	375.583000	375.583000	375.583000	.000000	.000000	.000000
64	318.536250	318.536250	318.536250	.000000	.000000	.000000
65	143.923500	143.923500	143.923500	.000000	.000000	.000000
66	143.923500	143.923500	143.923500	.000000	.000000	.000000
67	424.715000	424.715000	424.715000	.000000	.000000	.000000
68	182.719000	182.719000	182.719000	.000000	.000000	.000000
69	269.250000	269.250000	269.250000	.000000	.000000	.000000
70	119.037500	119.037500	119.037500	.000000	.000000	.000000
71	353.657812	353.657812	353.657812	.000000	.000000	.000000
72	471.543750	471.543750	471.543750	.000000	.000000	.000000
73	353.657812	353.657812	353.657812	.000000	.000000	.000000
74	380.378625	380.378625	380.378625	.000000	.000000	.000000
75	380.378625	380.378625	380.378625	.000000	.000000	.000000
76	190.189312	190.189312	190.189312	.000000	.000000	.000000
77	378.282875	378.282875	378.282875	.000000	.000000	.000000
78	375.583000	375.583000	375.583000	.000000	.000000	.000000
79	424.715000	424.715000	424.715000	.000000	.000000	.000000
80	143.923500	143.923500	143.923500	.000000	.000000	.000000
81	143.923500	143.923500	143.923500	.000000	.000000	.000000
82	424.715000	424.715000	424.715000	.000000	.000000	.000000
83	182.719000	182.719000	182.719000	.000000	.000000	.000000
84	269.250000	269.250000	269.250000	.000000	.000000	.000000
85	119.037500	119.037500	119.037500	.000000	.000000	.000000
86	353.657813	353.657813	353.657813	.000000	.000000	.000000

87	235.771875	235.771875	235.771875	.000000	.000000	.000000
88	427.009063	427.009063	427.009063	.000000	.000000	.000000
89	285.283969	285.283969	285.283969	.000000	.000000	.000000
90	380.378625	380.378625	380.378625	.000000	.000000	.000000
91	307.027375	307.027375	307.027375	.000000	.000000	.000000
92	378.282875	378.282875	378.282875	.000000	.000000	.000000
93	375.583000	375.583000	375.583000	.000000	.000000	.000000
94	424.715000	424.715000	424.715000	.000000	.000000	.000000
95	143.923500	143.923500	143.923500	.000000	.000000	.000000
96	143.923500	143.923500	143.923500	.000000	.000000	.000000
97	424.715000	424.715000	424.715000	.000000	.000000	.000000
98	182.719000	182.719000	182.719000	.000000	.000000	.000000
99	269.250000	269.250000	269.250000	.000000	.000000	.000000
100	119.037500	119.037500	119.037500	.000000	.000000	.000000

A S S E M B L E D J O I N T M A S S E S

IN GLOBAL COORDINATES

JOINT	UX	UY	UZ	RX	RY	RZ
101	449.087789	449.087789	449.087789	.000000	.000000	.000000
102	323.718714	323.718714	323.718714	.000000	.000000	.000000
103	323.718714	323.718714	323.718714	.000000	.000000	.000000
104	323.718714	323.718714	323.718714	.000000	.000000	.000000
105	323.718714	323.718714	323.718714	.000000	.000000	.000000
106	323.718714	323.718714	323.718714	.000000	.000000	.000000
107	323.718714	323.718714	323.718714	.000000	.000000	.000000
108	323.718714	323.718714	323.718714	.000000	.000000	.000000
109	323.718714	323.718714	323.718714	.000000	.000000	.000000
110	212.357500	212.357500	212.357500	.000000	.000000	.000000
111	224.544643	224.544643	224.544643	.000000	.000000	.000000
112	224.544643	224.544643	224.544643	.000000	.000000	.000000
113	224.544643	224.544643	224.544643	.000000	.000000	.000000
114	266.459643	266.459643	266.459643	.000000	.000000	.000000
115	182.629643	182.629643	182.629643	.000000	.000000	.000000
116	224.544643	224.544643	224.544643	.000000	.000000	.000000
117	235.771875	235.771875	235.771875	.000000	.000000	.000000
118	235.771875	235.771875	235.771875	.000000	.000000	.000000
119	261.968750	261.968750	261.968750	.000000	.000000	.000000
120	190.189312	190.189312	190.189312	.000000	.000000	.000000
121	497.740625	497.740625	497.740625	.000000	.000000	.000000
122	190.189313	190.189313	190.189313	.000000	.000000	.000000
125	190.189312	190.189312	190.189312	.000000	.000000	.000000
126	176.828906	176.828906	176.828906	.000000	.000000	.000000
127	235.771875	235.771875	235.771875	.000000	.000000	.000000
128	117.885938	117.885938	117.885938	.000000	.000000	.000000
211	88.268930	88.268930	88.268930	.000000	.000000	.000000
212	176.537860	176.537860	176.537860	.000000	.000000	.000000
213	176.537860	176.537860	176.537860	.000000	.000000	.000000
214	176.537860	176.537860	176.537860	.000000	.000000	.000000
215	176.537860	176.537860	176.537860	.000000	.000000	.000000
216	176.537860	176.537860	176.537860	.000000	.000000	.000000
217	176.537860	176.537860	176.537860	.000000	.000000	.000000
218	176.537860	176.537860	176.537860	.000000	.000000	.000000
219	176.537860	176.537860	176.537860	.000000	.000000	.000000
220	176.537860	176.537860	176.537860	.000000	.000000	.000000
221	88.268930	88.268930	88.268930	.000000	.000000	.000000
226	88.268930	88.268930	88.268930	.000000	.000000	.000000
227	176.537860	176.537860	176.537860	.000000	.000000	.000000
228	176.537860	176.537860	176.537860	.000000	.000000	.000000
229	176.537860	176.537860	176.537860	.000000	.000000	.000000
230	176.537860	176.537860	176.537860	.000000	.000000	.000000
231	176.537860	176.537860	176.537860	.000000	.000000	.000000
232	176.537860	176.537860	176.537860	.000000	.000000	.000000

233	176.537860	176.537860	176.537860	.000000	.000000	.000000
234	176.537860	176.537860	176.537860	.000000	.000000	.000000
235	176.537860	176.537860	176.537860	.000000	.000000	.000000
236	88.268930	88.268930	88.268930	.000000	.000000	.000000
241	88.268930	88.268930	88.268930	.000000	.000000	.000000
242	176.537860	176.537860	176.537860	.000000	.000000	.000000

VIADUCTO DE LLOBREGAT

A S S E M B L E D J O I N T M A S S E S

IN GLOBAL COORDINATES

JOINT	UX	UY	UZ	RX	RY	RZ
243	176.537860	176.537860	176.537860	.000000	.000000	.000000
244	176.537860	176.537860	176.537860	.000000	.000000	.000000
245	176.537860	176.537860	176.537860	.000000	.000000	.000000
246	176.537860	176.537860	176.537860	.000000	.000000	.000000
247	176.537860	176.537860	176.537860	.000000	.000000	.000000
248	176.537860	176.537860	176.537860	.000000	.000000	.000000
249	176.537860	176.537860	176.537860	.000000	.000000	.000000
250	176.537860	176.537860	176.537860	.000000	.000000	.000000
251	88.268930	88.268930	88.268930	.000000	.000000	.000000

T O T A L A S S E M B L E D J O I N T M A S S E S

IN GLOBAL COORDINATES

	UX	UY	UZ	RX	RY	RZ
TOTAL	42476.791	42476.791	42476.791	.000000	.000000	.000000

T O T A L A C C E L E R A T E D M A S S A N D L O C A T I O N

TOTAL MASS ACTIVATED BY ACCELERATION LOADS, IN GLOBAL COORDINATES

	UX	UY	UZ
MASS	42252.246	.000000	41825.580
X-LOC	83.798518	.000000	83.485464
Y-LOC	.000000	.000000	.000000
Z-LOC	-0.627355	.000000	-0.570443

VIADUCTO DE LLOBREGAT

M O D A L P E R I O D S A N D F R E Q U E N C I E S

MODE	PERIOD (TIME)	FREQUENCY (CYC/TIME)	FREQUENCY (RAD/TIME)	EIGENVALUE (RAD/TIME)**2
1	4.876219	0.205077	1.288536	1.660326
2	4.853292	0.206046	1.294623	1.676050
3	4.811018	0.207856	1.305999	1.705634
4	3.130448	0.319443	2.007120	4.028530
5	2.124269	0.470750	2.957811	8.748644
6	1.945841	0.513917	3.229034	10.426658
7	1.620166	0.617221	3.878112	15.039756
8	1.312151	0.762108	4.788463	22.929378
9	1.298972	0.769840	4.837044	23.396998
10	1.208194	0.827682	5.200478	27.044968
11	0.997795	1.002210	6.297070	39.653088
12	0.772893	1.293841	8.129440	66.087798
13	0.651682	1.534491	9.641494	92.958406
14	0.545850	1.832004	11.510819	132.498961

15	0.385644	2.593066	16.292717	265.452634
16	0.379344	2.636133	16.563313	274.343346
17	0.211092	4.737274	29.765172	885.965485
18	0.193951	5.155932	32.395675	1049.480

VIADUCTO DE LLOBREGAT

M O D A L P A R T I C I P A T I O N F A C T O R S

FOR UNIT ACCELERATION LOADS IN GLOBAL COORDINATES

MODE	PERIOD	UX	UY	UZ
1	4.876219	-50.364821	.000000	-0.274919
2	4.853292	-56.875340	.000000	-0.270004
3	4.811018	31.730278	.000000	0.590290
4	3.130448	3.247424	.000000	0.430725
5	2.124269	-12.163170	.000000	-6.540176
6	1.945841	-169.198798	.000000	2.579952
7	1.620166	4.143481	.000000	101.042331
8	1.312151	2.379463	.000000	43.249819
9	1.298972	13.738182	.000000	-16.111351
10	1.208194	0.046333	.000000	118.831802
11	0.997795	0.081329	.000000	-1.228721
12	0.772893	0.168003	.000000	11.630504
13	0.651682	-57.407936	.000000	0.081513
14	0.545850	-0.752321	.000000	-23.416427
15	0.385644	-33.901044	.000000	27.812737
16	0.379344	-11.157587	.000000	-88.120828
17	0.211092	8.685924	.000000	-60.181533
18	0.193951	-36.066783	.000000	-13.764655

VIADUCTO DE LLOBREGAT

M O D A L P A R T I C I P A T I N G M A S S R A T I O S

MODE	PERIOD	INDIVIDUAL MODE (PERCENT) UX	UY	UZ	CUMULATIVE SUM (PERCENT) UX	UY	UZ
1	4.876219	6.0035	0.0000	0.0002	6.0035	0.0000	0.0002
2	4.853292	7.6559	0.0000	0.0002	13.6594	0.0000	0.0004
3	4.811018	2.3829	0.0000	0.0008	16.0423	0.0000	0.0012
4	3.130448	0.0250	0.0000	0.0004	16.0673	0.0000	0.0016
5	2.124269	0.3501	0.0000	0.1023	16.4174	0.0000	0.1039
6	1.945841	67.7555	0.0000	0.0159	84.1729	0.0000	0.1198
7	1.620166	0.0406	0.0000	24.4098	84.2136	0.0000	24.5296
8	1.312151	0.0134	0.0000	4.4723	84.2270	0.0000	29.0019
9	1.298972	0.4467	0.0000	0.6206	84.6737	0.0000	29.6225
10	1.208194	0.0000	0.0000	33.7616	84.6737	0.0000	63.3841
11	0.997795	0.0000	0.0000	0.0036	84.6737	0.0000	63.3878
12	0.772893	0.0001	0.0000	0.3234	84.6737	0.0000	63.7112
13	0.651682	7.8000	0.0000	0.0000	92.4737	0.0000	63.7112
14	0.545850	0.0013	0.0000	1.3110	92.4751	0.0000	65.0222
15	0.385644	2.7200	0.0000	1.8495	95.1951	0.0000	66.8716
16	0.379344	0.2946	0.0000	18.5659	95.4898	0.0000	85.4375
17	0.211092	0.1786	0.0000	8.6593	95.6683	0.0000	94.0968
18	0.193951	3.0787	0.0000	0.4530	98.7470	0.0000	94.5498

VIADUCTO DE LLOBREGAT

M O D A L L O A D P A R T I C I P A T I O N R A T I O S

LOAD, ACC, OR NLLINK/DEF	STATIC	DYNAMIC	EFFECTIVE

(TYPE)	(NAME)	(PERCENT)	(PERCENT)	PERIOD
LOAD	H1	99.3305	39.3956	1.827660
LOAD	CM	99.9577	-> 95.5722<- (*) SEE NOTE	1.434877
LOAD	CM2	99.9554	-> 94.3678<- (*) SEE NOTE	1.434944
LOAD	H2	99.7291	35.5603	3.044644
LOAD	H3	99.7682	33.8596	2.743926
LOAD	H4	0.0000	0.0000	-INFINITY-
ACC	UX	100.0000	98.7470	3.929299
ACC	UY	0.0000	0.0000	-INFINITY-
ACC	UZ	100.0000	94.5498	1.429883
ACC	RX	0.0000	0.0000	-INFINITY-
ACC	RY	89.7914	71.8849	2.892160
ACC	RZ	0.0000	0.0000	-INFINITY-

(*) NOTE: DYNAMIC LOAD PARTICIPATION RATIO EXCLUDES LOAD APPLIED TO NON-MASS DEGREES OF FREEDOM

G L O B A L F O R C E B A L A N C E

TOTAL FORCE AND MOMENT AT THE ORIGIN, IN GLOBAL COORDINATES

LOAD H1 ------------------

	FX	FY	FZ	MX	MY	MZ
APPLIED	.000000	.000000	-342.000000	.000000	6714.306	.000000
INERTIA	.000000	.000000	.000000	.000000	.000000	.000000
REACTNS	-8.66E-12	2.22E-13	342.000000	.000000	-6714.306	1.41E-12
TOTAL	-8.66E-12	2.22E-13	-1.55E-10	.000000	-4.59E-09	1.41E-12

LOAD CM ------------------

	FX	FY	FZ	MX	MY	MZ
APPLIED	.000000	-3.10E-29	-3155.625	.000000	262935.733	-2.75E-27
INERTIA	.000000	.000000	.000000	.000000	.000000	.000000
REACTNS	5.36E-12	6.42E-13	3155.625	.000000	-262935.733	4.89E-11
TOTAL	5.36E-12	6.42E-13	1.94E-09	.000000	-1.55E-07	4.89E-11

LOAD CM2 ------------------

	FX	FY	FZ	MX	MY	MZ
APPLIED	.000000	3.30E-30	-2578.500	.000000	216307.709	2.69E-28
INERTIA	.000000	.000000	.000000	.000000	.000000	.000000
REACTNS	4.33E-12	5.24E-13	2578.500	.000000	-216307.709	3.99E-11
TOTAL	4.33E-12	5.24E-13	1.58E-09	.000000	-1.26E-07	3.99E-11

LOAD H2 ------------------

	FX	FY	FZ	MX	MY	MZ
APPLIED	.000000	.000000	-456.000000	.000000	47413.155	.000000
INERTIA	.000000	.000000	.000000	.000000	.000000	.000000
REACTNS	-1.12E-11	-1.77E-14	456.000000	.000000	-47413.155	-6.09E-12
TOTAL	-1.12E-11	-1.77E-14	2.55E-09	.000000	-2.51E-07	-6.09E-12

LOAD H3 ------------------

	FX	FY	FZ	MX	MY	MZ
APPLIED	.000000	.000000	-342.000000	.000000	20255.970	.000000
INERTIA	.000000	.000000	.000000	.000000	.000000	.000000
REACTNS	1.19E-11	-4.87E-14	342.000000	.000000	-20255.970	1.02E-12

TOTAL	1.19E-11	-4.87E-14	-8.07E-10	.000000	1.13E-07	1.02E-12

G L O B A L F O R C E B A L A N C E

TOTAL FORCE AND MOMENT AT THE ORIGIN, IN GLOBAL COORDINATES

LOAD H4 ------------------

	FX	FY	FZ	MX	MY	MZ
APPLIED	.000000	.000000	.000000	.000000	.000000	.000000
INERTIA	.000000	.000000	.000000	.000000	.000000	.000000
REACTNS	.000000	.000000	.000000	.000000	.000000	.000000
TOTAL	.000000	.000000	.000000	.000000	.000000	.000000

MODE 1 ------------------

	FX	FY	FZ	MX	MY	MZ
APPLIED	.000000	.000000	.000000	.000000	.000000	.000000
INERTIA	-83.622000	.000000	-0.456454	.000000	622.915370	.000000
REACTNS	83.622000	2.02E-15	0.456454	.000000	-622.915372	1.90E-12
TOTAL	1.09E-07	2.02E-15	3.54E-08	.000000	-2.45E-06	1.90E-12

MODE 2 ------------------

	FX	FY	FZ	MX	MY	MZ
APPLIED	.000000	.000000	.000000	.000000	.000000	.000000
INERTIA	-95.325895	.000000	-0.452541	.000000	641.454924	.000000
REACTNS	95.325895	4.80E-15	0.452541	.000000	-641.454922	-2.73E-13
TOTAL	-9.25E-08	4.80E-15	-3.38E-08	.000000	2.36E-06	-2.73E-13

MODE 3 ------------------

	FX	FY	FZ	MX	MY	MZ
APPLIED	.000000	.000000	.000000	.000000	.000000	.000000
INERTIA	54.120242	.000000	1.006819	.000000	-359.843767	.000000
REACTNS	-54.120242	1.46E-14	-1.006819	.000000	359.843767	7.11E-13
TOTAL	2.83E-08	1.46E-14	1.61E-09	.000000	-6.10E-08	7.11E-13

MODE 4 ------------------

	FX	FY	FZ	MX	MY	MZ
APPLIED	.000000	.000000	.000000	.000000	.000000	.000000
INERTIA	13.082346	.000000	1.735187	.000000	1012.747	.000000
REACTNS	-13.082414	2.24E-14	-1.735226	.000000	-1012.744	1.50E-11
TOTAL	-6.81E-05	2.24E-14	-3.88E-05	.000000	0.002810	1.50E-11

G L O B A L F O R C E B A L A N C E

TOTAL FORCE AND MOMENT AT THE ORIGIN, IN GLOBAL COORDINATES

MODE 5 ------------------

	FX	FY	FZ	MX	MY	MZ
APPLIED	.000000	.000000	.000000	.000000	.000000	.000000

INERTIA	-106.411240	.000000	-57.217674	.000000	-16380.868	.000000
REACTNS	106.411709	-4.12E-13	57.206482	.000000	16381.722	-3.68E-11
TOTAL	0.000469	-4.12E-13	-0.011192	.000000	0.854366	-3.68E-11

MODE 6 ------------------

	FX	FY	FZ	MX	MY	MZ
APPLIED	.000000	.000000	.000000	.000000	.000000	.000000
INERTIA	-1764.178	.000000	26.900278	.000000	-2535.645	.000000
REACTNS	1764.177	3.72E-14	-26.897850	.000000	2535.457	2.18E-12
TOTAL	-0.001064	3.72E-14	0.002428	.000000	-0.187466	2.18E-12

MODE 7 ------------------

	FX	FY	FZ	MX	MY	MZ
APPLIED	.000000	.000000	.000000	.000000	.000000	.000000
INERTIA	62.316947	.000000	1519.652	.000000	-206405.803	.000000
REACTNS	-62.243462	-1.00E-13	-1519.808	.000000	206417.844	-5.68E-11
TOTAL	0.073485	-1.00E-13	-0.155769	.000000	12.040734	-5.68E-11

MODE 8 ------------------

	FX	FY	FZ	MX	MY	MZ
APPLIED	.000000	.000000	.000000	.000000	.000000	.000000
INERTIA	54.559607	.000000	991.691454	.000000	-71068.122	.000000
REACTNS	-69.571645	-2.16E-13	-972.966439	.000000	69606.932	-1.03E-11
TOTAL	-15.012037	-2.16E-13	18.725015	.000000	-1461.190	-1.03E-11

MODE 9 ------------------

	FX	FY	FZ	MX	MY	MZ
APPLIED	.000000	.000000	.000000	.000000	.000000	.000000
INERTIA	321.432220	.000000	-376.957244	.000000	35121.926	.000000
REACTNS	-320.964211	1.69E-13	375.025004	.000000	-34973.556	1.48E-11
TOTAL	0.468009	1.69E-13	-1.932240	.000000	148.370752	1.48E-11

VIADUCTO DE LLOBREGAT

G L O B A L F O R C E B A L A N C E

TOTAL FORCE AND MOMENT AT THE ORIGIN, IN GLOBAL COORDINATES

MODE 10 ------------------

	FX	FY	FZ	MX	MY	MZ
APPLIED	.000000	.000000	.000000	.000000	.000000	.000000
INERTIA	1.253066	.000000	3213.802	.000000	-168746.890	.000000
REACTNS	15.725659	-1.07E-12	-3231.552	.000000	170138.072	-2.38E-11
TOTAL	16.978726	-1.07E-12	-17.749344	.000000	1391.182	-2.38E-11

MODE 11 ------------------

	FX	FY	FZ	MX	MY	MZ
APPLIED	.000000	.000000	.000000	.000000	.000000	.000000
INERTIA	3.224949	.000000	-48.722594	.000000	-14362.633	.000000
REACTNS	4673.661	-5.36E-13	-2393.216	.000000	210978.420	-2.52E-11
TOTAL	4676.886	-5.36E-13	-2441.939	.000000	196615.788	-2.52E-11

MODE 12 ------------------

APPLIED	.000000	.000000	.000000	.000000	.000000	.000000
INERTIA	11.102975	.000000	768.634418	.000000	166615.948	.000000
REACTNS	1570.034	-9.09E-14	-207.181793	.000000	-205900.491	8.55E-11
TOTAL	1581.137	-9.09E-14	561.452625	.000000	-39284.543	8.55E-11

MODE 13 ------------------

	FX	FY	FZ	MX	MY	MZ
APPLIED	.000000	.000000	.000000	.000000	.000000	.000000
INERTIA	-5336.550	.000000	7.577355	.000000	244.182648	.000000
REACTNS	5459.694	-3.77E-15	-72.025271	.000000	4944.278	1.40E-12
TOTAL	123.143623	-3.77E-15	-64.447917	.000000	5188.461	1.40E-12

MODE 14 ------------------

	FX	FY	FZ	MX	MY	MZ
APPLIED	.000000	.000000	.000000	.000000	.000000	.000000
INERTIA	-99.681778	.000000	-3102.652	.000000	333218.359	.000000
REACTNS	2732.519	-4.79E-13	9738.907	.000000	-833343.953	-2.32E-10
TOTAL	2632.838	-4.79E-13	6636.255	.000000	-500125.594	-2.32E-10

VIADUCTO DE LLOBREGAT

G L O B A L F O R C E B A L A N C E

TOTAL FORCE AND MOMENT AT THE ORIGIN, IN GLOBAL COORDINATES

MODE 15 ------------------

	FX	FY	FZ	MX	MY	MZ
APPLIED	.000000	.000000	.000000	.000000	.000000	.000000
INERTIA	-8999.121	.000000	7382.964	.000000	-647890.393	.000000
REACTNS	6531.593	9.57E-13	-4081.510	.000000	390664.008	2.60E-11
TOTAL	-2467.528	9.57E-13	3301.455	.000000	-257226.385	2.60E-11

MODE 16 ------------------

	FX	FY	FZ	MX	MY	MZ
APPLIED	.000000	.000000	.000000	.000000	.000000	.000000
INERTIA	-3061.010	.000000	-24175.363	.000000	2.0723E+06	.000000
REACTNS	973.939638	-2.09E-12	15200.971	.000000	-1.3927E+06	-1.61E-11
TOTAL	-2087.070	-2.09E-12	-8974.392	.000000	679618.109	-1.61E-11

MODE 17 ------------------

	FX	FY	FZ	MX	MY	MZ
APPLIED	.000000	.000000	.000000	.000000	.000000	.000000
INERTIA	7695.429	.000000	-53318.761	.000000	3.9110E+06	.000000
REACTNS	-10837.734	3.48E-11	116100.500	.000000	-8.7049E+06	1.82E-09
TOTAL	-3142.305	3.48E-11	62781.740	.000000	-4.7939E+06	1.82E-09

MODE 18 ------------------

	FX	FY	FZ	MX	MY	MZ
APPLIED	.000000	.000000	.000000	.000000	.000000	.000000
INERTIA	-37851.359	.000000	-14445.727	.000000	1.1165E+06	.000000
REACTNS	61712.547	9.04E-12	29902.039	.000000	-2.2418E+06	4.65E-10

TOTAL	23861.187	9.04E-12	15456.312	.000000	-1.1253E+06	4.65E-10

COMB COMB1 ------------------ MAX

	FX	FY	FZ	MX	MY	MZ
APPLIED	.000000	.000000	-798.000000	.000000	54127.461	.000000
INERTIA	.000000	.000000	.000000	.000000	.000000	.000000
REACTNS	-1.98E-11	2.04E-13	798.000000	.000000	-54127.461	-4.68E-12
TOTAL	-1.98E-11	2.04E-13	2.39E-09	.000000	-2.55E-07	-4.68E-12

G L O B A L F O R C E B A L A N C E

TOTAL FORCE AND MOMENT AT THE ORIGIN, IN GLOBAL COORDINATES

COMB COMB1 ------------------ MIN

	FX	FY	FZ	MX	MY	MZ
APPLIED	.000000	.000000	-798.000000	.000000	54127.461	.000000
INERTIA	.000000	.000000	.000000	.000000	.000000	.000000
REACTNS	-1.98E-11	2.04E-13	798.000000	.000000	-54127.461	-4.68E-12
TOTAL	-1.98E-11	2.04E-13	2.39E-09	.000000	-2.55E-07	-4.68E-12

COMB COMB2 ------------------ MAX

	FX	FY	FZ	MX	MY	MZ
APPLIED	.000000	.000000	-798.000000	.000000	67669.125	.000000
INERTIA	.000000	.000000	.000000	.000000	.000000	.000000
REACTNS	6.98E-13	-6.64E-14	798.000000	.000000	-67669.125	-5.08E-12
TOTAL	6.98E-13	-6.64E-14	1.74E-09	.000000	-1.38E-07	-5.08E-12

COMB COMB2 ------------------ MIN

	FX	FY	FZ	MX	MY	MZ
APPLIED	.000000	.000000	-798.000000	.000000	67669.125	.000000
INERTIA	.000000	.000000	.000000	.000000	.000000	.000000
REACTNS	6.98E-13	-6.64E-14	798.000000	.000000	-67669.125	-5.08E-12
TOTAL	6.98E-13	-6.64E-14	1.74E-09	.000000	-1.38E-07	-5.08E-12

COMB COMB3 ------------------ MAX

	FX	FY	FZ	MX	MY	MZ
APPLIED	.000000	.000000	-684.000000	.000000	26970.276	.000000
INERTIA	.000000	.000000	.000000	.000000	.000000	.000000
REACTNS	3.19E-12	1.73E-13	684.000000	.000000	-26970.276	2.43E-12
TOTAL	3.19E-12	1.73E-13	-9.62E-10	.000000	1.08E-07	2.43E-12

COMB COMB3 ------------------ MIN

	FX	FY	FZ	MX	MY	MZ
APPLIED	.000000	.000000	-684.000000	.000000	26970.276	.000000
INERTIA	.000000	.000000	.000000	.000000	.000000	.000000
REACTNS	3.19E-12	1.73E-13	684.000000	.000000	-26970.276	2.43E-12
TOTAL	3.19E-12	1.73E-13	-9.62E-10	.000000	1.08E-07	2.43E-12

G L O B A L F O R C E B A L A N C E

TOTAL FORCE AND MOMENT AT THE ORIGIN, IN GLOBAL COORDINATES

COMB ENVE ------------------ MAX

	FX	FY	FZ	MX	MY	MZ
APPLIED	.000000	.000000	.000000	.000000	67669.125	.000000
INERTIA	.000000	.000000	.000000	.000000	.000000	.000000
REACTNS	3.19E-12	2.04E-13	798.000000	.000000	.000000	2.43E-12
TOTAL	3.19E-12	2.04E-13	2.39E-09	.000000	1.08E-07	2.43E-12

COMB ENVE ------------------ MIN

	FX	FY	FZ	MX	MY	MZ
APPLIED	.000000	.000000	-798.000000	.000000	.000000	.000000
INERTIA	.000000	.000000	.000000	.000000	.000000	.000000
REACTNS	-1.98E-11	-6.64E-14	.000000	.000000	-67669.125	-5.08E-12
TOTAL	-1.98E-11	-6.64E-14	-9.62E-10	.000000	-2.55E-07	-5.08E-12

4.2. Paso inferior de la riera de Roset

ANEJO DE CÁLCULO DEL PASO INFERIOR DE LA RIERA DE ROSET

ÍNDICE DEL ANEJO DE CÁLCULO DEL PASO INFERIOR DE LA RIERA DE ROSET

1 GEOMETRÍA

1.1. Geometría y esquema estructural
1.2. Sección tipo

2 ACCIONES, MATERIALES, COEFICIENTES DE SEGURIDAD Y NORMATIVAS

2.1. Acciones
2.2. Coeficientes de seguridad, materiales, niveles de control y Normativas
2.3. Ambientes, recubrimientos, fisuración y cuantías mínimas
2.4. Hipótesis de combinación de esfuerzos
2.4.1. Estados Límite Últimos
2.4.2. Estados Límite de Servicio

3 CÁLCULO DE ESFUERZOS

4 VERIFICACIÓN DEL E.L.U DE ROTURA POR TENSIONES NORMALES

5 VERIFICACIÓN DEL E.L.U DE ROTURA POR TENSIONES TANGENCIALES

5.1. Evaluación del E.L.U. de agotamiento por cortante

6 VERIFICACIÓN DEL E.L.S. DE SERVICIO DE FISURACIÓN

7 CÁLCULO DE ALETAS

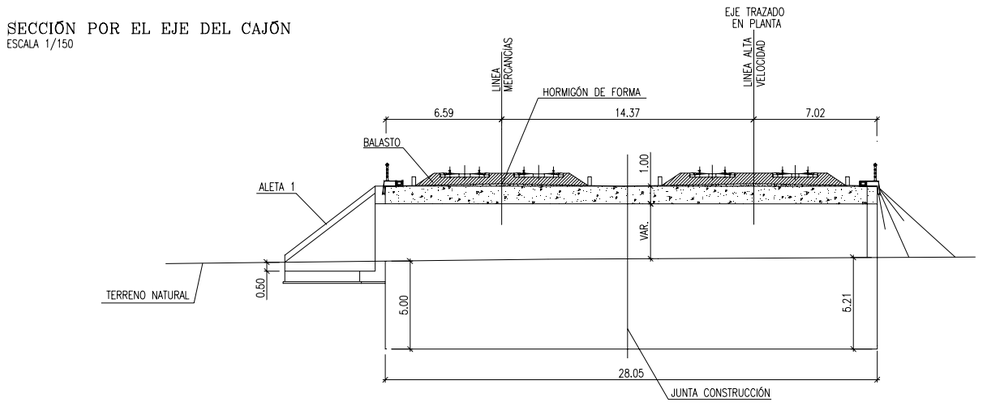
7.1. Geometría
7.2. Cálculo de esfuerzos y dimensionamiento

1 GEOMETRÍA

1.1 GEOMETRÍA Y ESQUEMA ESTRUCTURAL

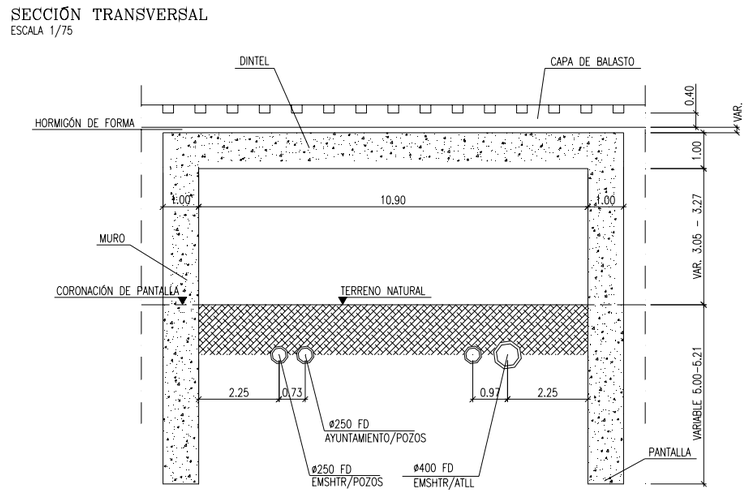
Se trata de un pórtico cimentado sobre pantallas para dejar paso a través de la plataforma de ferrocarril unas tuberías de agua existentes. El pórtico está constituido por dos hastiales y una losa superior (de ahora en adelante dintel) con un espesor de 1,00 m. Las pantallas tienen tambien un espesor de 1,00 m. El pórtico cruza de forma prácticamente perpendicular la plataforma de ferrocarril. Tanto la entrada como la salida del cajón estará formada por aletas tipo muro que sostienen las tierras del terraplén. Todas las aletas forman un ángulo de 30º respecto al eje del paso inferior excepto la aleta 4, que es paralela al eje del ferrocarril para conseguir que el terraplén no invada un camino existente.

El cajón queda levemente enterrado respecto a la superestructura de la vía, de tal forma que solamente se dispondrá la capa de balasto y subbalasto por encima del dintel (la distancia media entre la cota de carril y la cara superior de la estructura es de 1,07 m).



1.2 SECCIÓN TIPO

La sección transversal de la estructura es un pórtico construido con hormigón armado HA-25. Las dimensiones de la sección transversal se detallan en la figura adjunta.



En la figura se puede apreciar que la estructura se cimienta mediante pantallas con un empotramiento mínimo de 5,00 m.

2 ACCIONES, MATERIALES, COEFICIENTES DE SEGURIDAD Y NORMATIVAS

2.1 ACCIONES

De acuerdo con las “Instrucciones y recomendaciones para la redacción de proyectos de plataforma” del GIF se han considerado las siguientes acciones:

Acciones permanentes (g):

g1, PESO PROPIO

El peso propio de los distintos elementos se ha calculado a partir de su geometría (secciones transversales) adoptando una densidad de valor $\gamma c = 2{,}5\ T/m^3$ para los elementos de hormigón armado (solera, dintel y hastiales).

g2, PESO DEL BALASTO Y CARGAS MUERTAS

Las cargas permanentes distintas del peso propio del tablero son las siguientes:

- Balasto
- Vías y traviesas
- Conductos de cableado y paseos
- Soportes de catenarias
- Impostas y barandillas

El peso de balasto sobre el tablero se calcula a partir de la plataforma en la estructura de vía tomando como densidad $\gamma = 1{,}6\ t/m^3$.

De acuerdo con las “Instrucciones y recomendaciones para la redacción de proyectos de plataforma” del GIF se adoptarán para esta carga los siguientes valores característicos superior e inferior:

- valor inferior: (0,70 x peso medio) $g_{2,\ bal\ inf}$
- valor superior: (1,30 x peso medio) $g_{2,\ bal,\ sup}$

El caso de desbalastado se considera incluido en el intervalo indicado de variación del peso del balasto.

El peso de vías y traviesas para la plataforma es:

$g_{2,vías+traviesas} = 0{,}52 + 0{,}12 = 0{,}64$ t/m y vía.
(trav)+(carril)

El peso de los conductos para cableados y zona de paseos es:

$g_{2,conductos} = 0{,}30$ t/m

El peso de los soportes de catenarias se tienen en cuenta sólo para efectos locales de anclaje de la catenaria y armado local de losa, pero no para el cálculo general del tablero.

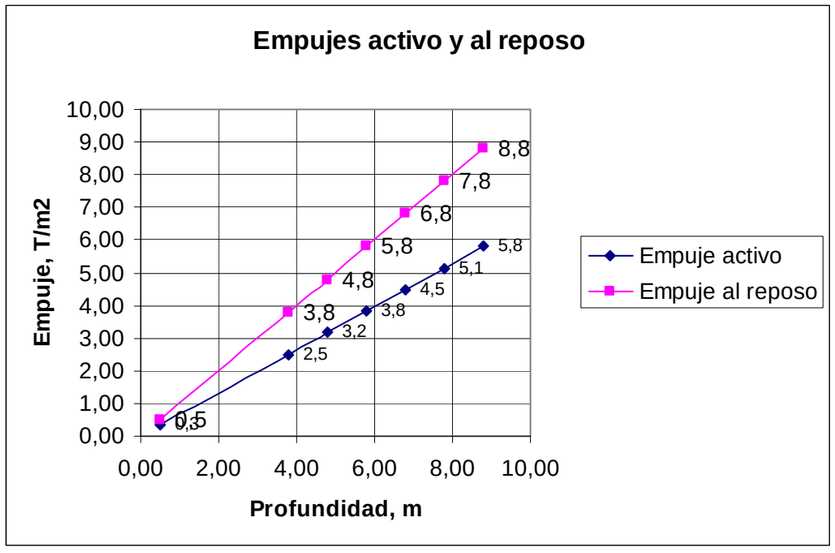
Acciones permanentes de valor no constante (G*):

EMPUJE DE TIERRAS

El empuje de tierras se calcula para la fase de servicio, al preverse que el relleno de las tierras se efectuará de forma simétrica a ambos lados de la estructura.

En la fase de servicio se considera el efecto del empuje de tierras ya con toda la altura que tendrá una vez terminada la estructura. En esta fase y debido a que la estructura no presenta un comportamiento completamente flexible o completamente rígido se consideran los empujes activo $K_a = 0,33$ y empuje al reposo $K_o = 0,50$.

De esta manera las leyes de presión del terreno quedan de la siguiente manera:



SOBRECARGAS DE USO. COMPONENTES VERTICALES.

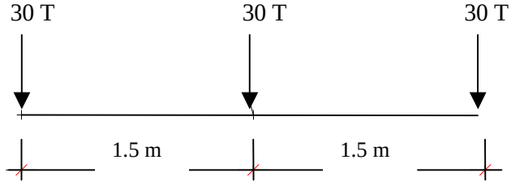
A. Sobrecarga de tráfico de tren

Se utilizará la envolvente de esfuerzos debidos a los trenes de carga de IPF-75 y de EC1-3.

Como coeficiente de impacto se adoptará en cada caso el que corresponda.

De acuerdo con la normativa IPF-75 Existen dos trenes de carga

Tipo A.- Por cada vía: P_{vp} = 3 ejes de 30 T separados 1,50 m

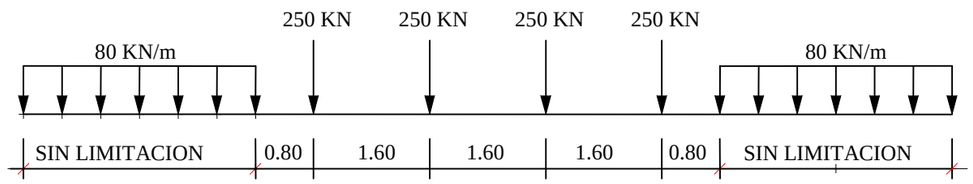


Tipo B.- Por cada vía: Sobrecarga uniforme de 12 t/m. sobre 15,0 ó 30,0 metros, más un conjunto de cuchillos de carga de 10 t/m y 1 t/m. de longitud arbitraria.

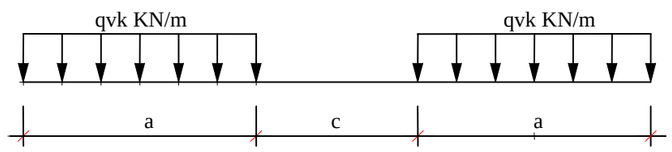
El tren tipo A puede condicionar el trabajo local de reparto de la losa y el tren tipo B condiciona el trabajo global. No se admite reducción de cargas por simultaneidad entre ambas vías. No se considera el efecto del ripado de la vía de 0,30 m porque el estudio del cajón se realiza por metro de ancho.

El tren de cargas de EC1 tiene la siguiente configuración

Tren tipo 71:



Modelo de carga SW:



Se tendrán en cuenta tres tipos de trenes según el EC-1: Tren tipo 71, SW/0, y el SW/2.

	SW0	SW2
Q_{vk}	133	150
a	15	25
c	5,3	7

Tabla 2. Tren de cargas.

Los valores de los trenes tipo 71 y SW/0 se multiplicarán por un coeficiente de clasificación α cuyo valor es igual a 1,00 tanto para las vías de ancho RENFE como para las de ancho Internacional.

B. Sobrecarga tráfico losa inferior

No existe losa inferior, por lo cual no se considera esta carga.

C. Sobrecargas en paseos

Según las “Instrucciones y recomendaciones para la redacción de proyectos de plataforma” del GIF se dispondrá una sobrecarga en los paseos laterales de valor:

$$Q_{SV} = 0{,}5\ t/m^2$$

Sólo un 50 % de dicha carga es compatible con el tráfico ferroviario.

En nuestro caso y debido a que el estudio se realiza por metro de ancho no se considera por ser más desfavorable para el dimensionamiento de los distintos elementos del marco considerar las cargas verticales del tráfico ferroviario.

D. Sobrecarga de tráfico en trasdós hastiales

Se considera la sobrecarga de tráfico en trasdós de hastiales recomendada en la normativa IFF-75 de valor igual 3 t/m^2.

Esta sobrecarga actúa en los hastiales mediante el coeficiente de empuje al reposo K_o = 0,50.

SOBRECARGAS DE USO. COMPONENTES HORIZONTALES.

A. Efectos de frenado y arranque

Se adopta la Norma EC1 ya que las acciones definidas en la IPF75 son mucho más favorables. (1/8 de la carga frente a 1/4)

Son fuerzas que actúan sobre cota superior de carril. No deben mayorarse dinámicamente.

Fuerzas de arranque (por vía)

$F_a = 33\ (KN/m) \times L(m) \leq 1.000\ KN$ LM71 y SW

Fuerzas de frenado (por vía)

$F_f = 20\ (KN/m) \times L(m) \leq 6.000\ (KN)$ LM71 y SW0
$F_f = 35\ (KN/m) \times L(m)$ SW2

VARIACIÓN UNIFORME DE TEMPERATURA

No se considera este efecto al estar la estructura enterrada prácticamente en su totalidad.

GRADIENTE TÉRMICO

No se considera este efecto al estar la estructura enterrada prácticamente en su totalidad.

ACCIONES ACCIDENTALES

ACCIÓN SÍSMICA

La aceleración sísmica básica de la zona, según la normativa vigente, es a_b= 0,04 g.

La categoría de la estructura puede considerarse de especial importancia, lo que es equivalente a un coeficiente de riesgo ρ =1,3.

La aceleración de cálculo es:

$a_c = \rho \cdot a_b$
a_b = 0,052 g

Las acciones sísmicas en puentes sólo se consideran, de acuerdo con la IAP, para aceleraciones de cálculo superiores a 0,06g, por lo tanto no es preciso realizar el análisis sísmico del cajón.

A continuación se detalla el valor de cálculo de las cargas verticales consideradas y los coeficientes de impacto.

PROYECTO: L.A.V. Madrid-Zaragoza-Barcelona-Frontera Francesa. Tramo: St. Vicenç dels Horts - Sta. Coloma de Cervelló.
O.F. : P.I. RIERA DEL ROSET

DIFUSIÓN EN SENTIDO TRANSVERSAL DE LAS CARGAS

RELLENO SOBRE ESTRUCTURA	ESPESOR	SEMIANCHO SUP.	H	V	SEMIANCHO INF.
CARRIL	0,17	0,08	-	-	0,08
TRAVIESA	0,20	0,08	1	1	0,28
BALASTO	0,40	0,28	1	4	0,38
TERRAPLÉN	0,00	0,38	1	4	0,38
HORMIGÓN POBRE O DE FORMA	0,00	0,38	1	1	0,38
HORMIGÓN ESTRUCTURAL	1,00	0,38	1	1	1,38
DIST. DE COTA DE CARRIL A EJE DINTEL	1,77				
ANCHO DE VÍA	1,435	m			
LONGITUD TOTAL DE REPARTO =	**4,19**	**m**			

DIFUSIÓN EN SENTIDO LONGITUDINAL DE LAS CARGAS

TREN TIPO A DE LA IPF-75

RELLENO SOBRE ESTRUCTURA	ESPESOR	SEMIANCHO SUP.	H	V	SEMIANCHO INF.
BALASTO	0,40	0,00	1	4	0,10
TERRAPLÉN	0,00	0,10	1	4	0,10
HORMIGÓN POBRE O DE FORMA	0,00	0,10	1	1	0,10
HORMIGÓN ESTRUCTURAL	1,00	0,10	1	1	1,10
DIST. ENTRE TRAVIESAS EXTREMAS =	3,60				
LONG. DE REPARTO TREN TIPO A =	**5,80**				

TREN TIPO 71 DEL EUROCÓDIGO

RELLENO SOBRE ESTRUCTURA	ESPESOR	SEMIANCHO SUP.	H	V	SEMIANCHO INF.	
BALASTO	0,40	0,00	1	4	0,10	
TERRAPLÉN	0,00	0,10	1	4	0,10	
HORMIGÓN POBRE O DE FORMA	0,00	0,10	1	1	0,10	
HORMIGÓN ESTRUCTURAL	1,00	0,10	1	1	1,10	> 0,45
DIST. ENTRE TRAVIESAS EXTREMAS =	4,80					
LONG. DE REPARTO TREN TIPO 71 =	**7,00**					

PROYECTO: L.A.V. Madrid-Zaragoza-Barcelona-Frontera Francesa. Tramo: St. Vicenç dels Horts - Sta. Coloma de Cervelló.
O.F. : P.I. RIERA DEL ROSET

EVALUACIÓN DE LAS CARGAS PERMANENTES

PESO DE TRAVIESAS Y CARRILES

$q_{traviesas}$ =	0,52	T/m y vía	
$q_{carriles}$ =	0,12	T/m y vía	
q_{tc} =	**0,15**	**T/m2**	

PESO DEL BALASTO

Espesor de balato =	0,40	m	
Peso específico balasto =	1,60	T/m3	
q_0 =	**0,64**	**T/m2**	
q_{s0} = 1,30·q_0 =	**0,83**	**T/m2**	
q_{i0} = 0,70·q_0 =	**0,45**	**T/m2**	

PESO DEL RELLENO SOBRE LA ESTRUCTURA

Subbalasto, capas de forma, y tierras

Espesor del relleno =	0,00	m	
Peso específico relleno =	2,00	T/m3	
q_{r1} =	0,00	T/m2	

Hormigón de forma

Espesor del relleno =	0,00	m	
Peso específico relleno =	2,40	T/m3	
q_{r2} =	0,00	T/m2	

Total peso rellenos

q_r =	**0,00**	**T/m2**	

PESO DE LOS CONDUCTOS DE CABLEADO

$q_{cond+cables}$ =	0,30	t/m y vía =	**0,07**	**T/m2**	

EVALUACIÓN DE LAS SOBRECARGAS DE USO

TREN TIPO A DE LA IPF-75

Longitud de reparto transversal =		4,19	m	
Longitud de reparto longitudinal =		5,80	m	
Suma de cargas puntuales	ΣQ =	90,00	T	
q_{TA} =		**3,71**	**T/m2**	Aplicada en una longitud de 5,8 metros.

TREN TIPO B DE LA IPF-75

Valor carga	q =	12,00	T/m y vía	
q_{TB} =		**2,87**	**T/m2**	Aplicada en 15 ó 30 metros.

TREN TIPO 71 DEL EC-1.3.

Coeficiente de clasificación	α =	1,00		
Longitud de reparto transversal =		4,19	m	
Longitud de reparto longitudinal =		7,00	m	
Tramo de cargas puntuales				
Suma de cargas puntuales	ΣQ =	100,00	T	
$q_{T71\ tramo\ puntual}$ =		**3,41**	**T/m2**	Aplicada en una longitud de 7 metros.

Tramo de carga uniformemente repartida

Valor carga	q =	8,00	T/m y vía	
$q_{T71\ tramo\ uniforme}$ =		**1,91**	**T/m2**	

TREN TIPO SW/0 DEL EC-1.3.

Valor carga	q =	13,30	T/m y vía	
q_{TSW0} =		**3,18**	**T/m2**	Aplicada en 15 m. según art. 6.3.3 del EC-1.3.

TREN TIPO SW/2 DEL EC-1.3.

Valor carga	q =	15,00	T/m y vía	
q_{TSW2} =		**3,58**	**T/m2**	Aplicada en 25 m. según art. 6.3.3 del EC-1.3.

SOBRECARGA EN PASEOS

q_{paseos} =	**0,50**	**T/m2**	

A efectos de combinación de sobrecargas sólo se considerará el 50% de q_{paseos} actuando simultáneamente con la sobrecarga ferroviaria

PROYECTO: L.A.V. Madrid-Zaragoza-Barcelona-Frontera Francesa. Tramo: St. Vicenç dels Horts - Sta. Coloma de Cervelló.
O.F. : P.I. RIERA DEL ROSET

CÁLCULO DEL COEFICIENTE DE IMPACTO PARA DINTELES DE MARCOS Y PÓRTICOS.

DINTEL

Luz (m) =	11,90
Canto (m) =	1,00
Ec (T/m2) =	2.720.000
q (T/m) =	3,170

(Cargas muertas y peso del dintel)

HASTIALES

Altura (m) =	7,00
Espesor (m) =	1,00

PARÁMETROS PARA EL CÁLCULO DE LA FRECUENCIA FUNDAMENTAL

I (m4) =	0,0833
EI =	226.667
m =	0,323

FRECUENCIA FUNDAMENTAL COMO VIGA BIAPOYADA

$\alpha_v = \pi/2$ = 1,57 f (1/s) = 9,3

FRECUENCIA FUNDAMENTAL COMO VIGA BIEMPOTRADA

α_v = 3,56 f (1/s) = 21,0

FRECUENCIA FUNDAMENTAL ESTIMADA

Rigidez del dintel (m3) =	0,0070
Rigidez del hastial (m3) =	0,0119
Coeficiente de reparto =	0,37

α_v = 2,82 f (1/s) = 16,7

COEFICIENTE DE IMPACTO SEGÚN IPF-75

v (km/h)* = 200

Para luces iguales o menores de 6 metros
l = 66,0
ϕ = 1,66

Para luces mayores de 6 metros en tramos simplemente apoyados
l = 44,0
ϕ = 1,44

En general para tramos apoyados continuos

μ = 0,504
l = 43,6
ϕ = 1,44

* La validez de las expresiones de la IPF-75 se limita a trenes con velocidades de circulación inferior a 200 km/h

COEFICIENTE DE IMPACTO SEGÚN EUROCÓDIGO 1.

DETERMINACIÓN DE Lϕ

Número de vanos del marco o pórtico = 1
n = 3
k = 1,3
Lm = 8,63
Lϕ = 11,22

Vías con grado de mantenimiento bueno
ϕ2 = 1,28

Vías con grado de mantenimiento normal
ϕ3 = 1,42

REDUCCIÓN DEL COEFICIENTE DE IMPACTO

$$\phi_{red} = \phi_0 - \frac{h-1}{10} \geq 1$$

h = Altura de la cobertura incluido el balasto hasta la parte superior de la traviesa

2.2 COEFICIENTES DE SEGURIDAD, MATERIALES, NIVELES DE CONTROL Y NORMATIVAS

HORMIGONES

- Hormigón de Limpieza..... HM-15
- Hastiales y pantallas..... HA-25 / B / 20 / IIa
- Dintel..... HA-25 / B / 20 / IIa

Control del hormigón NORMAL

γc= 1,50 (Situación persistente o transitoria)
γc= 1,30 (Situación accidental)

El módulo de elasticidad se ha evaluado en todos los casos de acuerdo a la expresión de EHE:

$$E_c = 8500 \sqrt[3]{f_{ck} + 8} \ (N/mm^2)$$

Los límites establecidos para la consistencia en la puesta en obra podrán superarse con el empleo de aditivos superfluidificantes, siempre que el valor de la relación agua-cemento cumpla los requisitos prefijados en la EHE.

ACEROS

- Acero corrugado para la armadura pasiva B500S, con f_{yk} > 500 MPa (5100 Kp/cm^2)

Control de los aceros NORMAL.

γ_s = 1,15 (Situación persistente o transitoria)
γ_s = 1,0 (Situación accidental)

CONTROL DE EJECUCIÓN

El control de ejecución será INTENSO (γ_g= 1,35 y γ_{fq}= 1,50) en hastiales, solera y dintel, de acuerdo con las especificaciones de la normativa EHE.

NORMAS UTILIZADAS

- Instrucción relativa a las acciones a considerar en el proyecto de puentes de carretera IAP, aprobada Orden de12 de febrero de 1998.
- Instrucción para el proyecto de estructuras de hormigón estructural EHE, aprobada por el Real Decreto 2661/1998 de 11 de diciembre.
- Normativa Sismoresistente NCSE-94.
- Instrucción relativa a las acciones a considerar en el proyecto de puentes de ferrocarril, aprobada por Orden Ministerial de 25 de junio de 1975.
- Eurocódigo 1. EC-1.

2.3 AMBIENTES, RECUBRIMIENTOS, FISURACIÓN Y CUANTÍAS MÍNIMAS

De acuerdo con la normativa EHE se consideran los ambientes indicados en la tabla siguiente:

Elemento	Ambiente	Recubrimiento de Armadura pasiva	Abertura máxima de fisura en mm.
Solera	IIa	30	0,3
Hastiales	IIa	30	0,3
Dintel	IIa	30	0,3

Las cuantías mínimas de armadura pasiva B500S serán las expuestas en la tabla indicada a continuación (EHE, art. 44.3.5):

Elemento	Posición	Tipo	Cuantía geométrica (‰)
Solera	Cara superior e Inferior	Transversal y Longitudinal	0,90
Hastiales	Cara interior y exterior	Horizontal	2,1 y 1,1 respectivamente
Hastiales	Cara interior y exterior	Vertical	0,90
Dintel	Cara superior e Inferior	Transversal y Longitudinal	0,90

2.4 HIPÓTESIS DE COMBINACIÓN DE ESFUERZOS

Se han considerado las combinaciones de hipótesis de las acciones recogidas en el Eurocódigo 1 y EHE, basados en la teoría de Estados Límites, para las distintas situaciones de cálculo de la estructura.

A continuación se describe la formulación de dichas combinaciones y seguidamente se detallan los valores de los coeficientes adoptados para los casos de carga considerados en los cálculos.

2.4.1 ESTADOS LÍMITE ÚLTIMOS

Las hipótesis de cálculo consideradas son:

- Situaciones persistentes o transitorias

$$\sum_{j \geq 1} \gamma_{Gj}\, G_{kj} + \sum \gamma_{Gj}\, G^*_{kj} + \gamma_{Q1}\, Q_{k1} + \sum_{i > 1} \gamma_{Qi}\, \Psi_{0i}\, Q_{ki}$$

- Situaciones accidentales

$$\sum_{j \geq 1} \gamma_{Gaj}\, G_{kj} + \sum \gamma_{Gj}\, G^*_{kj} + \gamma_A\, A_k + \Psi_{11}\, Q_{k1} + \sum_{i > 1} \gamma_{Qi}\, \Psi_{2i}\, Q_{ki}$$

- Situaciones accidentales de sismo

$$\sum_{j \geq 1} G_{kj} + \sum \gamma_{Gj}\, G^*_{kj} + \gamma_i\, A_{Ed} + \sum_{i > 1} \gamma_{Qi}\, \Psi_{2i}\, Q_{ki}$$

donde:

G = Valor característico de las cargas permanentes.
G* = Valor característico de las cargas permanentes de valor no constante.
Q_{k1} = Valor característico de la carga variable dominante.
A_k = Valor característico de la acción accidental.
A_{eq} = Valor característico de la acción sísmica, calculado según la Norma Sismorresistente.

Los coeficientes de seguridad y de combinación de acciones empleados se definen en la IAP.

2.4.2 ESTADOS LÍMITE DE SERVICIO

Las hipótesis de cálculo consideradas son:

- Combinación característica:

$$\sum_{j \geq 1} \gamma_{Gj}\, G_{kj} + \sum \gamma_{Gj}\, G^*_{kj} + \gamma_{Q1}\, Q_{k1} + \sum_{i > 1} \gamma_{Qi}\, \Psi_{0i}\, Q_{ki}$$

- Combinación frecuente:

$$\sum_{j \geq 1} \gamma_{Gaj}\, G_{kj} + \sum \gamma_{Gj}\, G^*_{kj} + \Psi_{11}\, Q_{k1} + \sum_{i > 1} \gamma_{Qi}\, \Psi_{2i}\, Q_{ki}$$

- Combinación casi permanente:

$$\sum_{j \geq 1} G_{kj} + \sum \gamma_{Gj}\, G^*_{kj} + \sum_{i > 1} \gamma_{Qi}\, \Psi_{2i}\, Q_{ki}$$

A continuación se detallan las combinaciones consideradas.

COMBINACIONES EN CÁLCULO 1 (IPF-75)

COMBINACIÓN	CASO	TIPO	CASO	COEF.	CASO	COEF.	CASO	COEF.	CASO	COEF.	CASO	COEF.	CASO	COEF.	CASO	COEF.	CASO	COEF.
ELU1	21	ELU1	1	1,35	4	1,00	5	1,00	6	1,50	8	1,50	13	1,20				
ELU2	22	ELU2	1	1,35	4	1,00	5	1,00	6	1,50	9	1,50	13	1,20				
ELU3	23	ELU3	1	1,35	4	1,00	5	1,00	6	1,50	10	1,50	13	1,20				
ELU4	24	ELU4	1	1,35	2	1,50	3	1,50	6	1,50	8	1,50	11	1,50	12	1,50		
ELU5	25	ELU5	1	1,35	2	1,50	3	1,50	6	1,50	9	1,50	11	1,50				
ELU6	26	ELU6	1	1,35	2	1,50	3	1,50	6	1,50	10	1,50	11	1,50	12	1,50		
ELU7	27	ELU7	1	1,00	2	1,50	3	1,50	7	1,00	11	1,50						
ELS FRECUENTE 1	31	ELS FRECUENTE 1	1	1,00	4	1,00	5	1,00	6	1,00	8	0,80						
ELS FRECUENTE 2	32	ELS FRECUENTE 2	1	1,00	4	1,00	5	1,00	6	1,00	9	0,80						
ELS FRECUENTE 3	33	ELS FRECUENTE 3	1	1,00	4	1,00	5	1,00	6	1,00	10	0,80						
ELS FRECUENTE 4	34	ELS FRECUENTE 4	1	1,00	2	1,00	3	1,00	6	1,00	8	0,80	11	0,80	12	0,80		
ELS FRECUENTE 5	35	ELS FRECUENTE 5	1	1,00	2	1,00	3	1,00	6	1,00	9	0,80	11	0,80				
ELS FRECUENTE 6	36	ELS FRECUENTE 6	1	1,00	2	1,00	3	1,00	6	1,00	10	0,80	11	0,80	12	0,80		
ELS FRECUENTE 7	37	ELS FRECUENTE 7	1	1,00	2	1,00	3	1,00	7	1,00	11	0,80						

COMBINACIONES EN CÁLCULO 2 (EC-1)

COMBINACIÓN	CASO	TIPO	CASO	COEF.	CASO	COEF.	CASO	COEF.	CASO	COEF.	CASO	COEF.	CASO	COEF.	CASO	COEF.	CASO	COEF.	CASO	COEF.
ELU1	21	ELU1	1	1,35	4	1,00	5	1,00	6	1,50	8	1,50	15	1,20						
ELU2	22	ELU2	1	1,35	4	1,00	5	1,00	6	1,50	9	1,50	15	1,20						
ELU3	23	ELU3	1	1,35	4	1,00	5	1,00	6	1,50	10	1,50	15	1,20						
ELU4	24	ELU4	1	1,35	2	1,50	3	1,50	6	1,50	8	1,50	11	1,50	12	1,50	13	1,50		
ELU5	25	ELU5	1	1,35	2	1,50	3	1,50	6	1,50	9	1,50	11	1,50	12	1,50	13	1,50		
ELU6	26	ELU6	1	1,35	2	1,50	3	1,50	6	1,50	10	1,50	11	1,50	12	1,50	13	1,50		
ELU7	27	ELU7	1	1,00	2	1,50	3	1,50	7	1,00	13	1,50								
ELU8	28	ELU8	1	1,00	2	1,50	3	1,50	7	1,00	8	1,50	11	1,50	12	1,50	13	1,50	15	1,20
ELU9	29	ELU9	1	1,00	2	1,50	3	1,50	7	1,00	9	1,50	11	1,50	12	1,50	13	1,50	15	1,20
ELU10	30	ELU10	1	1,00	2	1,50	3	1,50	7	1,00	10	1,50	11	1,50	12	1,50	13	1,50	15	1,20
ELS FRECUENTE 1	31	ELS FRECUENTE 1	1	1,00	4	1,00	5	1,00	6	1,00	8	0,80								
ELS FRECUENTE 2	32	ELS FRECUENTE 2	1	1,00	4	1,00	5	1,00	6	1,00	9	0,80								
ELS FRECUENTE 3	33	ELS FRECUENTE 3	1	1,00	4	1,00	5	1,00	6	1,00	10	0,80								
ELS FRECUENTE 4	34	ELS FRECUENTE 4	1	1,00	2	1,00	3	1,00	6	1,00	8	0,80	11	0,80	12	0,80	13	0,80		
ELS FRECUENTE 5	35	ELS FRECUENTE 5	1	1,00	2	1,00	3	1,00	6	1,00	9	0,80	11	0,80	12	0,80	13	0,80		
ELS FRECUENTE 6	36	ELS FRECUENTE 6	1	1,00	2	1,00	3	1,00	6	1,00	10	0,80	11	0,80	12	0,80	13	0,80		
ELS FRECUENTE 7	37	ELS FRECUENTE 7	1	1,00	2	1,00	3	1,00	7	1,00	13	0,80								
ELS FRECUENTE 8	38	ELS FRECUENTE 8	1	1,00	2	1,00	3	1,00	7	1,00	8	0,80	11	0,80	12	0,80	13	0,80		
ELS FRECUENTE 9	39	ELS FRECUENTE 9	1	1,00	2	1,00	3	1,00	7	1,00	9	0,80	11	0,80	12	0,80	13	0,80		
ELS FRECUENTE 10	40	ELS FRECUENTE 10	1	1,00	2	1,00	3	1,00	7	1,00	10	0,80	11	0,80	12	0,80	13	0,80		

3 CÁLCULO DE ESFUERZOS

En el siguiente apartado se ha calculado el paso inferior sometido a las cargas de uso. Para ello se modeló el pórtico como una estructura reticulada plana compuesta por barras.

Las acciones a las que está sometida la estructura han sido descritas en el apartado 2 del presente documento. En la dirección perpendicular al plano de cálculo, que ha sido el perpendicular al eje del cajón, se considera que el marco tiene 1 metro de profundidad.

El cálculo de esfuerzos se ha realizado bajo la hipótesis de linealidad material y geométrica, mediante el programa de cálculo de estructuras ROBOT MILLENIUM v. 14.5. Las comprobaciones y dimensionamiento de la estructura se ha efectuado de acuerdo con la instrucción EHE, y sus resultados se detallan en los apartados 4, 5 y 6 del presente anejo.

Se han realizado 2 tipos de cálculo:

Cálculo 1 o de la IPF-75.- Se ha seguido la Instrucción relativa a las acciones a considerar en el Proyecto de Puentes de Ferrocarril (IPF-75).

Cálculo 2 o del EC-1. Se ha seguido el Eurocódigo 1: Bases de proyecto y acciones en estructuras. Parte 3: Cargas de tráfico en puentes".

Cabe destacar que las barras correspondientes a las pantallas del marco están apoyadas horizontalmente sobre suelo elástico cuyo coeficiente de balasto se ha obtenido a partir del estudio geotécnico. El valor de este coeficiente de balasto representa las características elásticas de las gravas dispuestas bajo la losa inferior del cajón.

Paso Inferior Riera de Roset.

Cálculo de las características de las barras en compresión para la reacción del terreno sobre el trasdós del hastial. Zona con terraplén en trasdós.

DATOS

γ (T/m3) =	2
ϕ (º) =	30
Kp =	1,8
δ (m) =	0,025
B (m) =	1

Z (m)	Tv T/m2	Thp T/m2	Kh T/m	E/L T/m	A (cm2)	l (lado de la sección cuadrada) cm
1,82	3,64	6,55	238,49	917745	2,599	**1,61**
2,64	5,28	9,50	263,32	917745	2,869	**1,69**
3,46	6,92	12,46	360,14	917745	3,924	**1,98**

Cálculo del coeficiente de balasto horizontal. Zona bajo terreno natural.

DATOS

Ks	1	(=1 para terrenos no sumergidos; =0,60 para terrenos sumergidos)
B (m)	1	

Resultados

Z (m)	E0 (kp/cm3)	Kh (t/m3)
0,5	125	**937,5**
1,5	375	**2812,5**
2,5	625	**4687,5**
3,5	875	**6562,5**
4,5	1125	**8437,5**

4 VERIFICACIÓN DEL E.L.U DE ROTURA POR TENSIONES NORMALES

En este apartado se comprueba el Estado Límite Último de rotura por flexión transversal al eje del marco de acuerdo con los criterios de la Normativa española vigente (EHE)

Los cálculos realizados han sido los siguientes:

> Cálculo de la armadura necesaria teniendo en cuenta el efecto del axil, ya sea de compresión o de tracción. El cálculo de la armadura de flexión se realiza mediante una hoja de cálculo siguiendo las indicaciones de la normativa vigente EHE.

La flexión longitudinal no se ha considerado puesto que la flexión es predominantemente cilíndrica. La armadura correspondiente a la flexión longitudinal se dispone por cuantías mínimas indicadas en la normativa EHE.

La armadura se ha calculado mediante un programa que arma la sección de forma automática a partir de los esfuerzos calculados.

A continuación se exponen los listados de armadura necesaria en las diferentes secciones.

Programa de calculo automatico de armado desarrollado por:

PEDELTA, S.L.

ESFUERZOS DE CALCULO PARA LAS DISTINTAS HIPOTESIS DE CARGA

REFERENCIA DEL PROYECTO Paso Inferior Riera Roset. Cargas EC-1

DATOS GENERALES :

Nº de barras = 13
Nº de secciones por barra = 9
Nº de combinaciones en ELU = 7

Nº de combinaciones en ELS = 7
Nº de combinaciones en ELS (frecuente) = 7
Nº de combinaciones en ELS (poco frecuente) = 0
Nº de combinaciones en ELS (caracteristica) = 0

Resistencia a compresion del hormigon (T/m2) = 2500
Resistencia media a traccion del hormigon (T/m2) = 256.4964
Modulo de deformacion del hormigon (T/m2) = 248541.5
Resistencia a traccion del acero (T/m2) = 51000
Modulo de deformacion del acero (T/m2) = 2.1E+07

REFERENCIA DEL PROYECTO Paso Inferior Riera Roset

Elemento = 1

Sec	Hip	Nd	Vd	Md	Asf1	Asf2	ASt	8	10	12	16	20	25	32
1	1	58.6	1.9	-5.1	15.0	0.7	0.0	30	19	13	7	5	3	2
1	4	58.1	0.4	13.6	0.7	15.0	0.0	30	19	13	7	5	3	2
2	1	57.2	0.9	-4.6	15.0	0.6	0.0	30	19	13	7	5	3	2
2	4	56.7	-2.5	13.1	0.6	15.0	0.0	30	19	13	7	5	3	2
3	1	55.8	0.0	-4.4	15.0	0.6	0.0	30	19	13	7	5	3	2
3	4	55.3	-5.1	11.6	0.6	15.0	0.0	30	19	13	7	5	3	2
4	1	54.4	-0.7	-4.5	15.0	0.6	0.0	30	19	13	7	5	3	2
4	4	53.9	-7.5	9.0	0.6	15.0	0.0	30	19	13	7	5	3	2
5	1	53.0	-1.3	-4.9	15.0	0.6	0.0	30	19	13	7	5	3	2
5	4	52.5	-9.7	5.4	0.6	15.0	0.0	30	19	13	7	5	3	2
6	1	51.7	-1.9	-5.6	15.0	0.6	0.0	30	19	13	7	5	3	2
6	4	51.1	-11.7	1.0	0.6	15.0	0.0	30	19	13	7	5	3	2
7	1	50.3	-2.3	-6.5	15.0	0.6	0.0	30	19	13	7	5	3	2
7	1	50.3	-2.3	-6.5	15.0	0.6	0.0	1	1	1	0	0	0	0
8	1	48.9	-2.6	-7.5	15.0	0.6	0.0	30	19	13	7	5	3	2
8	1	48.9	-2.6	-7.5	15.0	0.6	0.0	1	1	0	0	0	0	0
2	1	47.5	-2.7	-8.6	15.0	0.5	0.0	30	19	13	7	5	3	2
2	1	47.5	-2.7	-8.6	15.0	0.5	0.0	1	1	0	0	0	0	0

Elemento = 2

Sec	Hip	Nd	Vd	Md	Asf1	Asf2	ASt	8	10	12	16	20	25	32
4	2	12.6	27.0	-40.5	15.0	0.1	0.0	30	19	13	7	5	3	2
4	1	2.7	47.5	9.3	0.0	15.0	0.0	30	19	13	7	5	3	2
2	2	12.6	20.2	-8.3	15.0	0.1	0.0	30	19	13	7	5	3	2
2	1	8.0	31.2	62.9	0.1	15.0	0.0	30	19	13	7	5	3	2
3	6	26.3	13.1	-0.9	15.0	0.3	0.0	30	19	13	7	5	3	2
3	1	13.2	15.0	94.4	0.1	21.6	0.0	43	28	19	11	7	4	3
4	4	32.1	-1.8	87.8	0.4	17.9	0.0	1	0	0	0	0	0	0
4	1	18.4	-1.3	103.7	0.2	23.4	0.0	47	30	21	12	7	5	3
5	4	37.4	-18.1	74.2	0.4	15.0	0.0	1	1	0	0	0	0	0
5	1	23.7	-17.5	90.9	0.3	19.6	0.0	39	25	17	10	6	4	2
6	7	20.6	-7.4	-1.9	15.0	0.2	0.0	30	19	13	7	5	3	2
6	1	28.9	-33.8	56.0	0.3	15.0	0.0	30	19	13	7	5	3	2
7	1	34.1	-50.0	-1.1	15.0	0.4	0.0	30	19	13	7	5	3	2
7	2	12.6	-13.5	14.7	0.1	15.0	0.0	30	19	13	7	5	3	2
8	4	53.1	-66.8	-99.2	18.6	0.6	0.0	37	24	16	9	6	4	2
8	4	53.1	-66.8	-99.2	18.6	0.6	0.0	1	1	1	0	0	0	0
5	4	58.3	-83.1	-201.3	46.2	0.7	0.0	92	59	41	23	15	9	6
5	4	58.3	-83.1	-201.3	46.2	0.7	0.0	1	1	1	0	0	0	0

REFERENCIA DEL PROYECTO Paso Inferior Riera Roset

Elemento = 3

Sec	Hip	Nd	Vd	Md	Asf1	Asf2	ASt	8	10	12	16	20	25	32
7	4	83.1	58.3	-211.2	46.9	0.9	0.0	94	60	41	23	15	10	6
7	4	83.1	58.3	-211.2	46.9	0.9	0.0	2	1	1	0	0	0	0
2	4	84.2	57.2	-187.4	39.8	0.9	0.0	80	51	35	20	13	8	5
2	4	84.2	57.2	-187.4	39.8	0.9	0.0	2	1	1	0	0	0	0
3	4	85.3	55.9	-164.0	32.9	1.0	0.0	66	42	29	16	10	7	4
3	1	85.3	44.1	-160.3	31.9	1.0	0.0	2	1	1	0	0	0	0
4	1	86.7	41.9	-142.9	26.9	1.0	0.0	54	34	24	13	9	5	3
4	1	86.7	41.9	-142.9	26.9	1.0	0.0	2	1	1	0	0	0	0
5	1	88.1	41.4	-125.8	22.1	1.0	0.0	44	28	20	11	7	4	3
5	1	88.1	41.4	-125.8	22.1	1.0	0.0	2	1	1	0	0	0	0
6	1	89.5	38.8	-109.6	17.6	1.0	0.0	35	22	16	9	6	4	2
6	1	89.5	38.8	-109.6	17.6	1.0	0.0	2	1	1	1	0	0	0
7	1	90.9	38.1	-93.8	15.0	1.0	0.0	30	19	13	7	5	3	2
7	1	90.9	38.1	-93.8	15.0	1.0	0.0	2	1	1	1	0	0	0
8	1	92.3	34.9	-79.2	15.0	1.0	0.0	30	19	13	7	5	3	2
8	6	36.0	13.5	0.5	0.4	15.0	0.0	30	19	13	7	5	3	2
8	1	93.7	33.9	-65.0	15.0	1.1	0.0	30	19	13	7	5	3	2
8	6	37.3	10.7	5.6	0.4	15.0	0.0	30	19	13	7	5	3	2

Elemento = 4

Sec	Hip	Nd	Vd	Md	Asf1	Asf2	ASt	8	10	12	16	20	25	32
1	4	58.1	0.4	-13.6	15.0	0.7	0.0	30	19	13	7	5	3	2
1	1	58.6	1.9	5.1	0.7	15.0	0.0	30	19	13	7	5	3	2
2	4	58.5	1.3	-13.5	15.0	0.7	0.0	30	19	13	7	5	3	2
2	1	59.0	2.2	5.4	0.7	15.0	0.0	30	19	13	7	5	3	2
3	4	58.9	2.3	-13.2	15.0	0.7	0.0	30	19	13	7	5	3	2
3	1	59.5	2.5	5.7	0.7	15.0	0.0	30	19	13	7	5	3	2
4	4	59.4	3.2	-12.9	15.0	0.7	0.0	30	19	13	7	5	3	2
4	1	59.9	2.9	6.0	0.7	15.0	0.0	30	19	13	7	5	3	2
5	4	59.8	4.2	-12.4	15.0	0.7	0.0	30	19	13	7	5	3	2
5	1	60.3	3.2	6.4	0.7	15.0	0.0	30	19	13	7	5	3	2
6	4	60.2	5.2	-11.9	15.0	0.7	0.0	30	19	13	7	5	3	2
6	1	60.7	3.6	6.8	0.7	15.0	0.0	30	19	13	7	5	3	2
7	4	60.6	6.3	-11.1	15.0	0.7	0.0	30	19	13	7	5	3	2
7	1	61.1	3.9	7.3	0.7	15.0	0.0	30	19	13	7	5	3	2
8	4	61.0	7.3	-10.3	15.0	0.7	0.0	30	19	13	7	5	3	2
8	1	61.6	4.3	7.8	0.7	15.0	0.0	30	19	13	7	5	3	2
9	4	61.5	8.4	-9.3	15.0	0.7	0.0	30	19	13	7	5	3	2
9	1	62.0	4.7	8.4	0.7	15.0	0.0	30	19	13	7	5	3	2

REFERENCIA DEL PROYECTO Paso Inferior Riera Roset

Elemento = 5

Sec	Hip	Nd	Vd	Md	Asf1	Asf2	ASt	8	10	12	16	20	25	32
9	4	61.5	8.4	-9.3	15.0	0.7	0.0	30	19	13	7	5	3	2
9	1	62.0	4.7	8.4	0.7	15.0	0.0	30	19	13	7	5	3	2
2	4	61.9	7.9	-8.3	15.0	0.7	0.0	30	19	13	7	5	3	2
2	1	62.4	4.0	8.9	0.7	15.0	0.0	30	19	13	7	5	3	2
3	4	62.3	7.5	-7.3	15.0	0.7	0.0	30	19	13	7	5	3	2
3	1	62.8	3.3	9.4	0.7	15.0	0.0	30	19	13	7	5	3	2
4	4	62.7	7.2	-6.4	15.0	0.7	0.0	30	19	13	7	5	3	2
4	1	63.3	2.7	9.7	0.7	15.0	0.0	30	19	13	7	5	3	2
5	4	63.2	6.9	-5.5	15.0	0.7	0.0	30	19	13	7	5	3	2
5	1	63.7	2.1	10.0	0.7	15.0	0.0	30	19	13	7	5	3	2
6	4	63.6	6.6	-4.7	15.0	0.7	0.0	30	19	13	7	5	3	2
6	1	64.1	1.6	10.3	0.7	15.0	0.0	30	19	13	7	5	3	2
7	4	64.0	6.5	-3.9	15.0	0.7	0.0	30	19	13	7	5	3	2
7	1	64.5	1.2	10.4	0.7	15.0	0.0	30	19	13	7	5	3	2
8	4	64.4	6.4	-3.1	15.0	0.7	0.0	30	19	13	7	5	3	2
8	1	64.9	0.8	10.6	0.7	15.0	0.0	30	19	13	7	5	3	2
10	4	64.8	6.3	-2.3	15.0	0.7	0.0	30	19	13	7	5	3	2
10	1	65.4	0.4	10.6	0.7	15.0	0.0	30	19	13	7	5	3	2

Elemento = 6

Sec	Hip	Nd	Vd	Md	Asf1	Asf2	ASt	8	10	12	16	20	25	32
10	4	64.8	6.3	-2.3	15.0	0.7	0.0	30	19	13	7	5	3	2
10	1	65.4	0.4	10.6	0.7	15.0	0.0	30	19	13	7	5	3	2
2	4	65.3	5.5	-1.5	15.0	0.7	0.0	30	19	13	7	5	3	2
2	1	65.8	-0.4	10.6	0.7	15.0	0.0	30	19	13	7	5	3	2
3	2	45.7	-1.7	-0.1	15.0	0.5	0.0	30	19	13	7	5	3	2
3	1	66.2	-1.2	10.5	0.7	15.0	0.0	30	19	13	7	5	3	2
4	2	46.2	-1.5	-0.3	15.0	0.5	0.0	30	19	13	7	5	3	2
4	1	66.6	-1.8	10.4	0.8	15.0	0.0	30	19	13	7	5	3	2
5	2	46.6	-1.2	-0.5	15.0	0.5	0.0	30	19	13	7	5	3	2
5	1	67.1	-2.4	10.1	0.8	15.0	0.0	30	19	13	7	5	3	2
6	2	47.0	-0.9	-0.6	15.0	0.5	0.0	30	19	13	7	5	3	2
6	1	67.5	-2.9	9.8	0.8	15.0	0.0	30	19	13	7	5	3	2
7	2	47.4	-0.7	-0.7	15.0	0.5	0.0	30	19	13	7	5	3	2
7	1	67.9	-3.4	9.4	0.8	15.0	0.0	30	19	13	7	5	3	2
8	2	47.8	-0.4	-0.8	15.0	0.5	0.0	30	19	13	7	5	3	2
8	1	68.3	-3.7	8.9	0.8	15.0	0.0	30	19	13	7	5	3	2
11	2	48.3	-0.1	-0.8	15.0	0.5	0.0	30	19	13	7	5	3	2
11	1	68.7	-4.0	8.4	0.8	15.0	0.0	30	19	13	7	5	3	2

REFERENCIA DEL PROYECTO Paso Inferior Riera Roset

Elemento = 7

Sec	Hip	Nd	Vd	Md	Asf1	Asf2	ASt	8	10	12	16	20	25	32
11	2	48.3	-0.1	-0.8	15.0	0.5	0.0	30	19	13	7	5	3	2
11	1	68.7	-4.0	8.4	0.8	15.0	0.0	30	19	13	7	5	3	2
2	2	48.7	0.0	-0.8	15.0	0.5	0.0	30	19	13	7	5	3	2
2	1	69.2	-4.5	7.9	0.8	15.0	0.0	30	19	13	7	5	3	2
3	2	49.1	0.1	-0.8	15.0	0.6	0.0	30	19	13	7	5	3	2
3	1	69.6	-4.9	7.3	0.8	15.0	0.0	30	19	13	7	5	3	2
4	2	49.5	0.3	-0.8	15.0	0.6	0.0	30	19	13	7	5	3	2
4	1	70.0	-5.2	6.7	0.8	15.0	0.0	30	19	13	7	5	3	2
5	2	50.0	0.4	-0.8	15.0	0.6	0.0	30	19	13	7	5	3	2
5	1	70.4	-5.4	6.0	0.8	15.0	0.0	30	19	13	7	5	3	2
6	2	50.4	0.5	-0.7	15.0	0.6	0.0	30	19	13	7	5	3	2
6	1	70.9	-5.5	5.3	0.8	15.0	0.0	30	19	13	7	5	3	2
7	2	50.8	0.6	-0.6	15.0	0.6	0.0	30	19	13	7	5	3	2
7	1	71.3	-5.5	4.6	0.8	15.0	0.0	30	19	13	7	5	3	2
8	2	51.2	0.7	-0.6	15.0	0.6	0.0	30	19	13	7	5	3	2
8	1	71.7	-5.4	4.0	0.8	15.0	0.0	30	19	13	7	5	3	2
12	2	51.6	0.8	-0.5	15.0	0.6	0.0	30	19	13	7	5	3	2
12	1	72.1	-5.2	3.3	0.8	15.0	0.0	30	19	13	7	5	3	2

Elemento = 8

Sec	Hip	Nd	Vd	Md	Asf1	Asf2	ASt	8	10	12	16	20	25	32
12	2	51.6	0.8	-0.5	15.0	0.6	0.0	30	19	13	7	5	3	2
12	1	72.1	-5.2	3.3	0.8	15.0	0.0	30	19	13	7	5	3	2
2	2	52.1	0.7	-0.4	15.0	0.6	0.0	30	19	13	7	5	3	2
2	1	72.5	-5.0	2.6	0.8	15.0	0.0	30	19	13	7	5	3	2
3	2	52.5	0.7	-0.3	15.0	0.6	0.0	30	19	13	7	5	3	2
3	1	73.0	-4.7	2.0	0.8	15.0	0.0	30	19	13	7	5	3	2
4	2	52.9	0.6	-0.2	15.0	0.6	0.0	30	19	13	7	5	3	2
4	1	73.4	-4.2	1.5	0.8	15.0	0.0	30	19	13	7	5	3	2
5	2	53.3	0.5	-0.1	15.0	0.6	0.0	30	19	13	7	5	3	2
5	1	73.8	-3.6	1.0	0.8	15.0	0.0	30	19	13	7	5	3	2
6	2	53.7	0.4	-0.1	15.0	0.6	0.0	30	19	13	7	5	3	2
6	1	74.2	-2.9	0.6	0.8	15.0	0.0	30	19	13	7	5	3	2
7	2	54.2	0.3	0.0	15.0	0.6	0.0	30	19	13	7	5	3	2
7	1	74.7	-2.1	0.3	0.8	15.0	0.0	30	19	13	7	5	3	2
8	2	54.6	0.1	0.0	15.0	0.6	0.0	30	19	13	7	5	3	2
8	1	75.1	-1.1	0.1	0.8	15.0	0.0	30	19	13	7	5	3	2
13	1	75.5	0.0	0.0	15.0	0.9	0.0	30	19	13	7	5	3	2
13	1	75.5	0.0	0.0	15.0	0.9	0.0	2	1	1	0	0	0	0

REFERENCIA DEL PROYECTO Paso Inferior Riera Roset

Elemento = 9

Sec	Hip	Nd	Vd	Md	Asf1	Asf2	ASt	8	10	12	16	20	25	32
8	1	93.7	33.9	-65.0	15.0	1.1	0.0	30	19	13	7	5	3	2
8	6	37.3	10.7	5.6	0.4	15.0	0.0	30	19	13	7	5	3	2
2	1	94.1	33.6	-60.8	15.0	1.1	0.0	30	19	13	7	5	3	2
2	6	37.7	9.8	6.8	0.4	15.0	0.0	30	19	13	7	5	3	2
3	1	94.5	33.3	-56.6	15.0	1.1	0.0	30	19	13	7	5	3	2
3	6	38.2	8.9	8.0	0.4	15.0	0.0	30	19	13	7	5	3	2
4	1	94.9	32.9	-52.5	15.0	1.1	0.0	30	19	13	7	5	3	2
4	6	38.6	7.9	9.1	0.4	15.0	0.0	30	19	13	7	5	3	2
5	1	95.4	32.6	-48.4	15.0	1.1	0.0	30	19	13	7	5	3	2
5	6	39.0	6.9	10.0	0.4	15.0	0.0	30	19	13	7	5	3	2
6	1	95.8	32.2	-44.3	15.0	1.1	0.0	30	19	13	7	5	3	2
6	6	39.4	5.9	10.8	0.4	15.0	0.0	30	19	13	7	5	3	2
7	1	96.2	31.8	-40.3	15.0	1.1	0.0	30	19	13	7	5	3	2
7	5	42.4	9.4	0.3	0.5	15.0	0.0	30	19	13	7	5	3	2
8	1	96.6	31.5	-36.4	15.0	1.1	0.0	30	19	13	7	5	3	2
8	5	42.8	8.7	1.5	0.5	15.0	0.0	30	19	13	7	5	3	2
14	1	97.1	31.1	-32.5	15.0	1.1	0.0	30	19	13	7	5	3	2
14	5	43.2	7.8	2.5	0.5	15.0	0.0	30	19	13	7	5	3	2

Elemento = 10

Sec	Hip	Nd	Vd	Md	Asf1	Asf2	ASt	8	10	12	16	20	25	32
14	1	97.1	31.1	-32.5	15.0	1.1	0.0	30	19	13	7	5	3	2
14	5	43.2	7.8	2.5	0.5	15.0	0.0	30	19	13	7	5	3	2
9	1	97.5	29.2	-28.7	15.0	1.1	0.0	30	19	13	7	5	3	2
9	5	43.7	7.1	3.4	0.5	15.0	0.0	30	19	13	7	5	3	2
9	1	97.9	27.5	-25.2	15.0	1.1	0.0	30	19	13	7	5	3	2
9	5	44.1	6.3	4.3	0.5	15.0	0.0	30	19	13	7	5	3	2
9	1	98.3	25.7	-21.8	15.0	1.1	0.0	30	19	13	7	5	3	2
9	5	44.5	5.5	5.0	0.5	15.0	0.0	30	19	13	7	5	3	2
9	1	98.7	24.1	-18.7	15.0	1.1	0.0	30	19	13	7	5	3	2
9	5	44.9	4.7	5.6	0.5	15.0	0.0	30	19	13	7	5	3	2
9	1	99.2	22.5	-15.8	15.0	1.1	0.0	30	19	13	7	5	3	2
9	5	45.4	3.9	6.2	0.5	15.0	0.0	30	19	13	7	5	3	2
9	1	99.6	20.9	-13.1	15.0	1.1	0.0	30	19	13	7	5	3	2
9	4	98.9	16.7	0.7	1.1	15.0	0.0	30	19	13	7	5	3	2
9	1	100.0	19.4	-10.6	15.0	1.1	0.0	30	19	13	7	5	3	2
9	4	99.3	14.8	2.7	1.1	15.0	0.0	30	19	13	7	5	3	2
15	1	100.4	17.9	-8.2	15.0	1.1	0.0	30	19	13	7	5	3	2
15	4	99.7	12.9	4.4	1.1	15.0	0.0	30	19	13	7	5	3	2

REFERENCIA DEL PROYECTO Paso Inferior Riera Roset

Elemento = 11

Sec	Hip	Nd	Vd	Md	Asf1	Asf2	ASt	8	10	12	16	20	25	32
15	1	100.4	17.9	-8.2	15.0	1.1	0.0	30	19	13	7	5	3	2
15	4	99.7	12.9	4.4	1.1	15.0	0.0	30	19	13	7	5	3	2
9	1	100.9	15.9	-6.1	15.0	1.1	0.0	30	19	13	7	5	3	2
9	4	100.1	10.8	5.9	1.1	15.0	0.0	30	19	13	7	5	3	2
9	1	101.3	14.0	-4.3	15.0	1.1	0.0	30	19	13	7	5	3	2
9	2	45.7	1.7	0.1	0.5	15.0	0.0	30	19	13	7	5	3	2
9	1	101.7	12.2	-2.6	15.0	1.1	0.0	30	19	13	7	5	3	2
9	2	46.2	1.5	0.3	0.5	15.0	0.0	30	19	13	7	5	3	2
9	1	102.1	10.5	-1.2	15.0	1.2	0.0	30	19	13	7	5	3	2
9	2	46.6	1.2	0.5	0.5	15.0	0.0	30	19	13	7	5	3	2
9	1	102.5	8.9	0.0	15.0	1.2	0.0	30	19	13	7	5	3	2
9	2	47.0	0.9	0.6	0.5	15.0	0.0	30	19	13	7	5	3	2
9	1	103.0	7.4	1.0	1.2	15.0	0.0	2	1	1	1	0	0	0
9	1	103.0	7.4	1.0	1.2	15.0	0.0	30	19	13	7	5	3	2
9	1	103.4	6.0	1.9	1.2	15.0	0.0	2	1	1	1	0	0	0
9	1	103.4	6.0	1.9	1.2	15.0	0.0	30	19	13	7	5	3	2
16	1	103.8	4.7	2.5	1.2	15.0	0.0	2	1	1	1	0	0	0
16	1	103.8	4.7	2.5	1.2	15.0	0.0	30	19	13	7	5	3	2

Elemento = 12

Sec	Hip	Nd	Vd	Md	Asf1	Asf2	ASt	8	10	12	16	20	25	32
16	1	103.8	4.7	2.5	1.2	15.0	0.0	2	1	1	1	0	0	0
16	1	103.8	4.7	2.5	1.2	15.0	0.0	30	19	13	7	5	3	2
9	1	104.2	3.2	3.0	1.2	15.0	0.0	2	1	1	1	0	0	0
9	1	104.2	3.2	3.0	1.2	15.0	0.0	30	19	13	7	5	3	2
9	1	104.7	1.9	3.4	1.2	15.0	0.0	2	2	1	1	0	0	0
9	1	104.7	1.9	3.4	1.2	15.0	0.0	30	19	13	7	5	3	2
9	1	105.1	0.7	3.5	1.2	15.0	0.0	2	2	1	1	0	0	0
9	1	105.1	0.7	3.5	1.2	15.0	0.0	30	19	13	7	5	3	2
9	1	105.5	-0.4	3.5	1.2	15.0	0.0	2	2	1	1	0	0	0
9	1	105.5	-0.4	3.5	1.2	15.0	0.0	30	19	13	7	5	3	2
9	1	105.9	-1.3	3.4	1.2	15.0	0.0	2	2	1	1	0	0	0
9	1	105.9	-1.3	3.4	1.2	15.0	0.0	30	19	13	7	5	3	2
9	1	106.3	-2.0	3.2	1.2	15.0	0.0	2	2	1	1	0	0	0
9	1	106.3	-2.0	3.2	1.2	15.0	0.0	30	19	13	7	5	3	2
9	1	106.8	-2.7	2.9	1.2	15.0	0.0	2	2	1	1	0	0	0
9	1	106.8	-2.7	2.9	1.2	15.0	0.0	30	19	13	7	5	3	2
17	1	107.2	-3.1	2.6	1.2	15.0	0.0	2	2	1	1	0	0	0
17	1	107.2	-3.1	2.6	1.2	15.0	0.0	30	19	13	7	5	3	2

REFERENCIA DEL PROYECTO Paso Inferior Riera Roset

Elemento = 13

Sec	Hip	Nd	Vd	Md	Asf1	Asf2	ASt	8	10	12	16	20	25	32
17	1	107.2	-3.1	2.6	1.2	15.0	0.0	2	2	1	1	0	0	0
17	1	107.2	-3.1	2.6	1.2	15.0	0.0	30	19	13	7	5	3	2
9	1	107.6	-3.4	2.1	1.2	15.0	0.0	2	2	1	1	0	0	0
9	1	107.6	-3.4	2.1	1.2	15.0	0.0	30	19	13	7	5	3	2
9	1	108.0	-3.5	1.7	1.2	15.0	0.0	2	2	1	1	0	0	0
9	1	108.0	-3.5	1.7	1.2	15.0	0.0	30	19	13	7	5	3	2
9	1	108.5	-3.3	1.3	1.2	15.0	0.0	2	2	1	1	0	0	0
9	1	108.5	-3.3	1.3	1.2	15.0	0.0	30	19	13	7	5	3	2
9	1	108.9	-3.0	0.9	1.2	15.0	0.0	2	2	1	1	0	0	0
9	1	108.9	-3.0	0.9	1.2	15.0	0.0	30	19	13	7	5	3	2
9	1	109.3	-2.6	0.5	1.2	15.0	0.0	2	2	1	1	0	0	0
9	1	109.3	-2.6	0.5	1.2	15.0	0.0	30	19	13	7	5	3	2
9	2	54.2	-0.3	0.0	15.0	0.6	0.0	30	19	13	7	5	3	2
9	1	109.7	-1.9	0.3	1.2	15.0	0.0	30	19	13	7	5	3	2
9	2	54.6	-0.1	0.0	15.0	0.6	0.0	30	19	13	7	5	3	2
9	1	110.1	-1.0	0.1	1.2	15.0	0.0	30	19	13	7	5	3	2
18	1	110.6	0.0	0.0	15.0	1.2	0.0	30	19	13	7	5	3	2
18	1	110.6	0.0	0.0	15.0	1.2	0.0	2	2	1	1	0	0	0

Programa de calculo automatico de armado desarrollado por:

PEDELTA, S.L.

ESFUERZOS DE CALCULO PARA LAS DISTINTAS HIPOTESIS DE CARGA

REFERENCIA DEL PROYECTO Paso Inferior Riera Roset. Cargas IPF

DATOS GENERALES :

Nº de barras = 13
Nº de secciones por barra = 9
Nº de combinaciones en ELU = 7

Nº de combinaciones en ELS = 7
Nº de combinaciones en ELS (frecuente) = 7
Nº de combinaciones en ELS (poco frecuente) = 0
Nº de combinaciones en ELS (caracteristica) = 0

Resistencia a compresion del hormigon (T/m2) = 2500
Resistencia media a traccion del hormigon (T/m2) = 256.4964
Modulo de deformacion del hormigon (T/m2) = 248541.5
Resistencia a traccion del acero (T/m2) = 51000
Modulo de deformacion del acero (T/m2) = 2.1E+07

REFERENCIA DEL PROYECTO Paso Inferior Riera Roset

Elemento = 1

Sec	Hip	Nd	Vd	Md	Asf1	Asf2	ASt	8	10	12	16	20	25	32
1	1	57.0	-9.6	-22.9	15.0	0.6	0.0	30	19	13	7	5	3	2
1	5	64.5	-6.3	3.9	0.7	15.0	0.0	30	19	13	7	5	3	2
2	1	55.6	-10.6	-27.1	15.0	0.6	0.0	30	19	13	7	5	3	2
2	5	63.1	-9.2	0.7	0.7	15.0	0.0	30	19	13	7	5	3	2
3	1	54.2	-11.5	-31.6	15.0	0.6	0.0	30	19	13	7	5	3	2
3	7	20.9	-9.3	14.3	0.2	15.0	0.0	30	19	13	7	5	3	2
4	1	52.8	-12.2	-36.5	15.0	0.6	0.0	30	19	13	7	5	3	2
4	7	19.9	-11.7	10.0	0.2	15.0	0.0	30	19	13	7	5	3	2
5	1	51.4	-12.9	-41.7	15.0	0.6	0.0	30	19	13	7	5	3	2
5	7	18.8	-13.9	4.7	0.2	15.0	0.0	30	19	13	7	5	3	2
6	1	50.0	-13.4	-47.1	15.0	0.6	0.0	30	19	13	7	5	3	2
6	2	60.5	-11.9	-41.2	15.0	0.7	0.0	1	1	1	0	0	0	0
7	1	48.6	-13.8	-52.7	15.0	0.5	0.0	30	19	13	7	5	3	2
7	2	59.1	-12.3	-46.3	15.0	0.7	0.0	1	1	1	0	0	0	0
8	1	47.2	-14.1	-58.5	15.0	0.5	0.0	30	19	13	7	5	3	2
8	2	57.7	-12.6	-51.4	15.0	0.7	0.0	1	1	1	0	0	0	0
2	1	45.8	-14.3	-64.3	15.0	0.5	0.0	30	19	13	7	5	3	2
2	2	56.3	-12.8	-56.7	15.0	0.6	0.0	1	1	1	0	0	0	0

Elemento = 2

Sec	Hip	Nd	Vd	Md	Asf1	Asf2	ASt	8	10	12	16	20	25	32
4	1	14.3	45.8	-51.7	15.0	0.2	0.0	30	19	13	7	5	3	2
4	4	27.9	45.3	-65.5	15.0	0.3	0.0	1	0	0	0	0	0	0
2	4	29.5	38.6	-8.4	15.0	0.3	0.0	30	19	13	7	5	3	2
2	1	15.8	39.1	6.2	0.2	15.0	0.0	30	19	13	7	5	3	2
3	4	31.0	30.0	39.4	0.3	15.0	0.0	1	0	0	0	0	0	0
3	1	17.4	30.5	54.6	0.2	15.0	0.0	30	19	13	7	5	3	2
4	6	33.2	7.6	70.8	0.4	15.0	0.0	1	0	0	0	0	0	0
4	3	19.6	8.1	86.7	0.2	19.0	0.0	38	24	17	9	6	4	2
5	6	35.5	-8.0	70.5	0.4	15.0	0.0	1	1	0	0	0	0	0
5	1	20.5	-5.3	88.9	0.2	19.4	0.0	39	25	17	10	6	4	2
6	7	20.6	-7.4	-1.9	15.0	0.2	0.0	30	19	13	7	5	3	2
6	1	22.0	-23.3	69.4	0.2	15.0	0.0	30	19	13	7	5	3	2
7	5	32.5	-34.6	-16.9	15.0	0.4	0.0	30	19	13	7	5	3	2
7	1	23.6	-41.2	25.5	0.3	15.0	0.0	30	19	13	7	5	3	2
8	1	25.1	-48.9	-36.4	15.0	0.3	0.0	30	19	13	7	5	3	2
8	6	42.2	-54.6	-57.4	15.0	0.5	0.0	1	1	0	0	0	0	0
5	6	44.5	-70.1	-142.4	31.0	0.5	0.0	62	39	27	15	10	6	4
5	6	44.5	-70.1	-142.4	31.0	0.5	0.0	1	1	0	0	0	0	0

REFERENCIA DEL PROYECTO Paso Inferior Riera Roset

Elemento = 3

Sec	Hip	Nd	Vd	Md	Asf1	Asf2	ASt	8	10	12	16	20	25	32
7	6	70.1	44.5	-152.6	31.2	0.8	0.0	62	40	28	16	10	6	4
7	6	70.1	44.5	-152.6	31.2	0.8	0.0	2	1	1	0	0	0	0
2	6	71.2	43.4	-134.5	26.1	0.8	0.0	52	33	23	13	8	5	3
2	6	71.2	43.4	-134.5	26.1	0.8	0.0	2	1	1	0	0	0	0
3	6	72.4	42.1	-116.8	21.2	0.8	0.0	42	27	19	11	7	4	3
3	3	72.4	30.3	-113.1	20.2	0.8	0.0	2	1	1	0	0	0	0
4	3	73.8	29.1	-101.0	16.9	0.8	0.0	34	22	15	8	5	3	2
4	3	73.8	29.1	-101.0	16.9	0.8	0.0	2	1	1	0	0	0	0
5	1	61.2	24.7	-76.5	15.0	0.7	0.0	30	19	13	7	5	3	2
5	3	75.2	28.5	-89.1	15.0	0.8	0.0	2	1	1	0	0	0	0
6	1	62.6	23.4	-66.7	15.0	0.7	0.0	30	19	13	7	5	3	2
6	3	76.6	27.0	-77.9	15.0	0.9	0.0	2	1	1	0	0	0	0
7	1	64.0	22.6	-57.3	15.0	0.7	0.0	30	19	13	7	5	3	2
7	3	78.0	26.3	-66.9	15.0	0.9	0.0	2	1	1	0	0	0	0
8	1	65.4	20.9	-48.4	15.0	0.7	0.0	30	19	13	7	5	3	2
8	3	79.3	24.3	-56.7	15.0	0.9	0.0	2	1	1	0	0	0	0
8	1	66.7	20.0	-40.0	15.0	0.8	0.0	30	19	13	7	5	3	2
8	3	80.7	23.3	-46.9	15.0	0.9	0.0	2	1	1	0	0	0	0

Elemento = 4

Sec	Hip	Nd	Vd	Md	Asf1	Asf2	ASt	8	10	12	16	20	25	32
1	5	64.5	-6.3	-3.9	15.0	0.7	0.0	30	19	13	7	5	3	2
1	1	57.0	-9.6	22.9	0.6	15.0	0.0	30	19	13	7	5	3	2
2	5	64.9	-5.4	-4.6	15.0	0.7	0.0	30	19	13	7	5	3	2
2	1	57.4	-9.3	21.7	0.6	15.0	0.0	30	19	13	7	5	3	2
3	5	65.3	-4.5	-5.2	15.0	0.7	0.0	30	19	13	7	5	3	2
3	1	57.8	-9.0	20.6	0.7	15.0	0.0	30	19	13	7	5	3	2
4	5	65.7	-3.5	-5.7	15.0	0.7	0.0	30	19	13	7	5	3	2
4	1	58.2	-8.7	19.5	0.7	15.0	0.0	30	19	13	7	5	3	2
5	4	58.1	-7.3	-0.4	15.0	0.7	0.0	30	19	13	7	5	3	2
5	1	58.7	-8.3	18.4	0.7	15.0	0.0	30	19	13	7	5	3	2
6	4	58.6	-6.3	-1.3	15.0	0.7	0.0	30	19	13	7	5	3	2
6	1	59.1	-7.9	17.4	0.7	15.0	0.0	30	19	13	7	5	3	2
7	4	59.0	-5.2	-2.0	15.0	0.7	0.0	30	19	13	7	5	3	2
7	1	59.5	-7.6	16.4	0.7	15.0	0.0	30	19	13	7	5	3	2
8	4	59.4	-4.2	-2.6	15.0	0.7	0.0	30	19	13	7	5	3	2
8	1	59.9	-7.2	15.5	0.7	15.0	0.0	30	19	13	7	5	3	2
9	4	59.8	-3.1	-3.0	15.0	0.7	0.0	30	19	13	7	5	3	2
9	1	60.3	-6.8	14.6	0.7	15.0	0.0	30	19	13	7	5	3	2

REFERENCIA DEL PROYECTO Paso Inferior Riera Roset

Elemento = 5

Sec	Hip	Nd	Vd	Md	Asf1	Asf2	ASt	8	10	12	16	20	25	32
9	4	59.8	-3.1	-3.0	15.0	0.7	0.0	30	19	13	7	5	3	2
9	1	60.3	-6.8	14.6	0.7	15.0	0.0	30	19	13	7	5	3	2
2	4	60.2	-2.7	-3.4	15.0	0.7	0.0	30	19	13	7	5	3	2
2	1	60.8	-6.7	13.8	0.7	15.0	0.0	30	19	13	7	5	3	2
3	4	60.7	-2.3	-3.7	15.0	0.7	0.0	30	19	13	7	5	3	2
3	1	61.2	-6.5	13.0	0.7	15.0	0.0	30	19	13	7	5	3	2
4	4	61.1	-1.9	-4.0	15.0	0.7	0.0	30	19	13	7	5	3	2
4	1	61.6	-6.3	12.2	0.7	15.0	0.0	30	19	13	7	5	3	2
5	4	61.5	-1.4	-4.2	15.0	0.7	0.0	30	19	13	7	5	3	2
5	1	62.0	-6.1	11.4	0.7	15.0	0.0	30	19	13	7	5	3	2
6	4	61.9	-0.9	-4.3	15.0	0.7	0.0	30	19	13	7	5	3	2
6	1	62.5	-5.9	10.6	0.7	15.0	0.0	30	19	13	7	5	3	2
7	4	62.4	-0.4	-4.4	15.0	0.7	0.0	30	19	13	7	5	3	2
7	1	62.9	-5.7	9.9	0.7	15.0	0.0	30	19	13	7	5	3	2
8	4	62.8	0.2	-4.4	15.0	0.7	0.0	30	19	13	7	5	3	2
8	1	63.3	-5.4	9.2	0.7	15.0	0.0	30	19	13	7	5	3	2
10	4	63.2	0.7	-4.4	15.0	0.7	0.0	30	19	13	7	5	3	2
10	1	63.7	-5.2	8.5	0.7	15.0	0.0	30	19	13	7	5	3	2

Elemento = 6

Sec	Hip	Nd	Vd	Md	Asf1	Asf2	ASt	8	10	12	16	20	25	32
10	4	63.2	0.7	-4.4	15.0	0.7	0.0	30	19	13	7	5	3	2
10	1	63.7	-5.2	8.5	0.7	15.0	0.0	30	19	13	7	5	3	2
2	4	63.6	0.8	-4.3	15.0	0.7	0.0	30	19	13	7	5	3	2
2	1	64.1	-5.0	7.9	0.7	15.0	0.0	30	19	13	7	5	3	2
3	4	64.0	1.0	-4.2	15.0	0.7	0.0	30	19	13	7	5	3	2
3	1	64.6	-4.9	7.3	0.7	15.0	0.0	30	19	13	7	5	3	2
4	4	64.5	1.1	-4.0	15.0	0.7	0.0	30	19	13	7	5	3	2
4	1	65.0	-4.7	6.7	0.7	15.0	0.0	30	19	13	7	5	3	2
5	4	64.9	1.3	-3.9	15.0	0.7	0.0	30	19	13	7	5	3	2
5	1	65.4	-4.5	6.1	0.7	15.0	0.0	30	19	13	7	5	3	2
6	4	65.3	1.6	-3.7	15.0	0.7	0.0	30	19	13	7	5	3	2
6	1	65.8	-4.4	5.5	0.7	15.0	0.0	30	19	13	7	5	3	2
7	4	65.7	1.8	-3.5	15.0	0.7	0.0	30	19	13	7	5	3	2
7	1	66.3	-4.1	5.0	0.7	15.0	0.0	30	19	13	7	5	3	2
8	4	66.1	2.1	-3.2	15.0	0.7	0.0	30	19	13	7	5	3	2
8	1	66.7	-3.9	4.5	0.8	15.0	0.0	30	19	13	7	5	3	2
11	4	66.6	2.4	-3.0	15.0	0.8	0.0	30	19	13	7	5	3	2
11	1	67.1	-3.7	4.0	0.8	15.0	0.0	30	19	13	7	5	3	2

REFERENCIA DEL PROYECTO Paso Inferior Riera Roset

Elemento = 7

Sec	Hip	Nd	Vd	Md	Asf1	Asf2	ASt	8	10	12	16	20	25	32
11	4	66.6	2.4	-3.0	15.0	0.8	0.0	30	19	13	7	5	3	2
11	1	67.1	-3.7	4.0	0.8	15.0	0.0	30	19	13	7	5	3	2
2	4	67.0	2.3	-2.7	15.0	0.8	0.0	30	19	13	7	5	3	2
2	1	67.5	-3.5	3.6	0.8	15.0	0.0	30	19	13	7	5	3	2
3	4	67.4	2.1	-2.4	15.0	0.8	0.0	30	19	13	7	5	3	2
3	1	67.9	-3.4	3.2	0.8	15.0	0.0	30	19	13	7	5	3	2
4	4	67.8	2.1	-2.1	15.0	0.8	0.0	30	19	13	7	5	3	2
4	1	68.4	-3.2	2.8	0.8	15.0	0.0	30	19	13	7	5	3	2
5	4	68.3	2.0	-1.9	15.0	0.8	0.0	30	19	13	7	5	3	2
5	1	68.8	-3.0	2.4	0.8	15.0	0.0	30	19	13	7	5	3	2
6	4	68.7	2.0	-1.6	15.0	0.8	0.0	30	19	13	7	5	3	2
6	1	69.2	-2.8	2.0	0.8	15.0	0.0	30	19	13	7	5	3	2
7	4	69.1	2.0	-1.4	15.0	0.8	0.0	30	19	13	7	5	3	2
7	1	69.6	-2.5	1.7	0.8	15.0	0.0	30	19	13	7	5	3	2
8	4	69.5	2.0	-1.1	15.0	0.8	0.0	30	19	13	7	5	3	2
8	1	70.1	-2.3	1.4	0.8	15.0	0.0	30	19	13	7	5	3	2
12	4	69.9	2.1	-0.9	15.0	0.8	0.0	30	19	13	7	5	3	2
12	1	70.5	-2.0	1.1	0.8	15.0	0.0	30	19	13	7	5	3	2

Elemento = 8

Sec	Hip	Nd	Vd	Md	Asf1	Asf2	ASt	8	10	12	16	20	25	32
12	4	69.9	2.1	-0.9	15.0	0.8	0.0	30	19	13	7	5	3	2
12	1	70.5	-2.0	1.1	0.8	15.0	0.0	30	19	13	7	5	3	2
2	4	70.4	1.7	-0.6	15.0	0.8	0.0	30	19	13	7	5	3	2
2	1	70.9	-1.8	0.9	0.8	15.0	0.0	30	19	13	7	5	3	2
3	4	70.8	1.4	-0.4	15.0	0.8	0.0	30	19	13	7	5	3	2
3	1	71.3	-1.6	0.7	0.8	15.0	0.0	30	19	13	7	5	3	2
4	4	71.2	1.1	-0.3	15.0	0.8	0.0	30	19	13	7	5	3	2
4	1	71.7	-1.4	0.5	0.8	15.0	0.0	30	19	13	7	5	3	2
5	4	71.6	0.8	-0.2	15.0	0.8	0.0	30	19	13	7	5	3	2
5	1	72.2	-1.2	0.3	0.8	15.0	0.0	30	19	13	7	5	3	2
6	4	72.1	0.5	-0.1	15.0	0.8	0.0	30	19	13	7	5	3	2
6	1	72.6	-0.9	0.2	0.8	15.0	0.0	30	19	13	7	5	3	2
7	4	72.5	0.3	0.0	15.0	0.8	0.0	30	19	13	7	5	3	2
7	1	73.0	-0.6	0.1	0.8	15.0	0.0	30	19	13	7	5	3	2
8	1	73.4	-0.3	0.0	15.0	0.8	0.0	30	19	13	7	5	3	2
8	2	83.9	-0.4	0.0	15.0	0.9	0.0	2	1	1	0	0	0	0
13	1	73.9	0.0	0.0	15.0	0.8	0.0	30	19	13	7	5	3	2
13	2	84.3	0.0	0.0	15.0	1.0	0.0	2	1	1	0	0	0	0

REFERENCIA DEL PROYECTO Paso Inferior Riera Roset

Elemento = 9

Sec	Hip	Nd	Vd	Md	Asf1	Asf2	ASt	8	10	12	16	20	25	32
8	1	66.7	20.0	-40.0	15.0	0.8	0.0	30	19	13	7	5	3	2
8	3	80.7	23.3	-46.9	15.0	0.9	0.0	2	1	1	0	0	0	0
2	1	67.2	19.6	-37.5	15.0	0.8	0.0	30	19	13	7	5	3	2
2	3	81.2	23.0	-44.0	15.0	0.9	0.0	2	1	1	0	0	0	0
3	1	67.6	19.3	-35.1	15.0	0.8	0.0	30	19	13	7	5	3	2
3	7	28.4	10.2	0.7	0.3	15.0	0.0	30	19	13	7	5	3	2
4	1	68.0	19.0	-32.7	15.0	0.8	0.0	30	19	13	7	5	3	2
4	7	28.7	9.6	1.9	0.3	15.0	0.0	30	19	13	7	5	3	2
5	1	68.4	18.6	-30.3	15.0	0.8	0.0	30	19	13	7	5	3	2
5	7	29.0	8.8	3.1	0.3	15.0	0.0	30	19	13	7	5	3	2
6	1	68.9	18.3	-28.0	15.0	0.8	0.0	30	19	13	7	5	3	2
6	7	29.3	8.1	4.2	0.3	15.0	0.0	30	19	13	7	5	3	2
7	1	69.3	17.9	-25.8	15.0	0.8	0.0	30	19	13	7	5	3	2
7	7	29.6	7.3	5.1	0.3	15.0	0.0	30	19	13	7	5	3	2
8	1	69.7	17.5	-23.6	15.0	0.8	0.0	30	19	13	7	5	3	2
8	7	29.9	6.6	6.0	0.3	15.0	0.0	30	19	13	7	5	3	2
14	1	70.1	17.1	-21.4	15.0	0.8	0.0	30	19	13	7	5	3	2
14	7	30.2	5.7	6.8	0.3	15.0	0.0	30	19	13	7	5	3	2

Elemento = 10

Sec	Hip	Nd	Vd	Md	Asf1	Asf2	ASt	8	10	12	16	20	25	32
14	7	30.2	5.7	6.8	0.3	15.0	0.0	30	19	13	7	5	3	2
9	1	70.5	16.2	-19.3	15.0	0.8	0.0	30	19	13	7	5	3	2
9	7	30.6	5.0	7.4	0.3	15.0	0.0	30	19	13	7	5	3	2
9	1	71.0	15.4	-17.3	15.0	0.8	0.0	30	19	13	7	5	3	2
9	7	30.9	4.3	8.0	0.3	15.0	0.0	30	19	13	7	5	3	2
9	1	71.4	14.5	-15.5	15.0	0.8	0.0	30	19	13	7	5	3	2
9	7	31.2	3.5	8.5	0.4	15.0	0.0	30	19	13	7	5	3	2
9	1	71.8	13.7	-13.7	15.0	0.8	0.0	30	19	13	7	5	3	2
9	4	71.1	10.1	1.1	0.8	15.0	0.0	30	19	13	7	5	3	2
9	1	72.2	12.8	-12.0	15.0	0.8	0.0	30	19	13	7	5	3	2
9	4	71.5	9.0	2.3	0.8	15.0	0.0	30	19	13	7	5	3	2
9	1	72.7	12.0	-10.5	15.0	0.8	0.0	30	19	13	7	5	3	2
9	4	71.9	7.8	3.3	0.8	15.0	0.0	30	19	13	7	5	3	2
9	1	73.1	11.2	-9.0	15.0	0.8	0.0	30	19	13	7	5	3	2
9	4	72.4	6.6	4.2	0.8	15.0	0.0	30	19	13	7	5	3	2
15	1	73.5	10.4	-7.7	15.0	0.8	0.0	30	19	13	7	5	3	2
15	4	72.8	5.4	5.0	0.8	15.0	0.0	30	19	13	7	5	3	2

REFERENCIA DEL PROYECTO Paso Inferior Riera Roset

Elemento = 11

Sec	Hip	Nd	Vd	Md	Asf1	Asf2	ASt	8	10	12	16	20	25	32
15	1	73.5	10.4	-7.7	15.0	0.8	0.0	30	19	13	7	5	3	2
15	4	72.8	5.4	5.0	0.8	15.0	0.0	30	19	13	7	5	3	2
9	1	73.9	9.5	-6.4	15.0	0.8	0.0	30	19	13	7	5	3	2
9	4	73.2	4.4	5.6	0.8	15.0	0.0	30	19	13	7	5	3	2
9	1	74.3	8.6	-5.3	15.0	0.8	0.0	30	19	13	7	5	3	2
9	4	73.6	3.4	6.1	0.8	15.0	0.0	30	19	13	7	5	3	2
9	1	74.8	7.7	-4.3	15.0	0.8	0.0	30	19	13	7	5	3	2
9	4	74.1	2.4	6.4	0.8	15.0	0.0	30	19	13	7	5	3	2
9	1	75.2	6.8	-3.4	15.0	0.8	0.0	30	19	13	7	5	3	2
9	4	74.5	1.4	6.7	0.8	15.0	0.0	30	19	13	7	5	3	2
9	1	75.6	6.0	-2.6	15.0	0.9	0.0	30	19	13	7	5	3	2
9	4	74.9	0.5	6.8	0.8	15.0	0.0	30	19	13	7	5	3	2
9	1	76.0	5.2	-1.9	15.0	0.9	0.0	30	19	13	7	5	3	2
9	2	65.5	3.8	0.1	0.7	15.0	0.0	30	19	13	7	5	3	2
9	1	76.5	4.5	-1.3	15.0	0.9	0.0	30	19	13	7	5	3	2
9	2	66.0	3.1	0.5	0.7	15.0	0.0	30	19	13	7	5	3	2
16	1	76.9	3.8	-0.8	15.0	0.9	0.0	30	19	13	7	5	3	2
16	2	66.4	2.4	0.8	0.7	15.0	0.0	30	19	13	7	5	3	2

Elemento = 12

Sec	Hip	Nd	Vd	Md	Asf1	Asf2	ASt	8	10	12	16	20	25	32
16	1	76.9	3.8	-0.8	15.0	0.9	0.0	30	19	13	7	5	3	2
16	2	66.4	2.4	0.8	0.7	15.0	0.0	30	19	13	7	5	3	2
9	1	77.3	3.1	-0.3	15.0	0.9	0.0	30	19	13	7	5	3	2
9	2	66.8	1.8	1.1	0.8	15.0	0.0	30	19	13	7	5	3	2
9	1	77.7	2.4	0.0	15.0	0.9	0.0	30	19	13	7	5	3	2
9	2	67.2	1.1	1.3	0.8	15.0	0.0	30	19	13	7	5	3	2
9	3	92.1	1.9	0.7	1.0	15.0	0.0	2	1	1	1	0	0	0
9	1	78.1	1.8	0.3	0.9	15.0	0.0	30	19	13	7	5	3	2
9	3	92.6	1.2	0.8	1.0	15.0	0.0	2	1	1	1	0	0	0
9	1	78.6	1.2	0.5	0.9	15.0	0.0	30	19	13	7	5	3	2
9	3	93.0	0.6	1.0	1.0	15.0	0.0	2	1	1	1	0	0	0
9	1	79.0	0.7	0.6	0.9	15.0	0.0	30	19	13	7	5	3	2
9	3	93.4	0.1	1.0	1.1	15.0	0.0	2	1	1	1	0	0	0
9	1	79.4	0.3	0.6	0.9	15.0	0.0	30	19	13	7	5	3	2
9	3	93.8	-0.4	1.0	1.1	15.0	0.0	2	1	1	1	0	0	0
9	1	79.8	-0.1	0.7	0.9	15.0	0.0	30	19	13	7	5	3	2
17	3	94.2	-0.8	0.9	1.1	15.0	0.0	2	1	1	1	0	0	0
17	1	80.3	-0.5	0.6	0.9	15.0	0.0	30	19	13	7	5	3	2

REFERENCIA DEL PROYECTO Paso Inferior Riera Roset

Elemento = 13

Sec	Hip	Nd	Vd	Md	Asf1	Asf2	ASt	8	10	12	16	20	25	32
17	3	94.2	-0.8	0.9	1.1	15.0	0.0	2	1	1	1	0	0	0
17	1	80.3	-0.5	0.6	0.9	15.0	0.0	30	19	13	7	5	3	2
9	3	94.7	-1.0	0.8	1.1	15.0	0.0	2	1	1	1	0	0	0
9	1	80.7	-0.7	0.5	0.9	15.0	0.0	30	19	13	7	5	3	2
9	3	95.1	-1.2	0.6	1.1	15.0	0.0	2	1	1	1	0	0	0
9	1	81.1	-0.8	0.5	0.9	15.0	0.0	30	19	13	7	5	3	2
9	3	95.5	-1.2	0.5	1.1	15.0	0.0	2	1	1	1	0	0	0
9	1	81.5	-0.8	0.4	0.9	15.0	0.0	30	19	13	7	5	3	2
9	3	95.9	-1.1	0.4	1.1	15.0	0.0	2	1	1	1	0	0	0
9	1	81.9	-0.8	0.2	0.9	15.0	0.0	30	19	13	7	5	3	2
9	3	96.4	-1.0	0.2	1.1	15.0	0.0	2	1	1	1	0	0	0
9	1	82.4	-0.7	0.2	0.9	15.0	0.0	30	19	13	7	5	3	2
9	3	96.8	-0.8	0.1	1.1	15.0	0.0	2	1	1	1	0	0	0
9	1	82.8	-0.5	0.1	0.9	15.0	0.0	30	19	13	7	5	3	2
9	1	83.2	-0.3	0.0	15.0	0.9	0.0	30	19	13	7	5	3	2
9	4	82.5	-0.8	0.1	0.9	15.0	0.0	30	19	13	7	5	3	2
18	1	83.6	0.0	0.0	15.0	0.9	0.0	30	19	13	7	5	3	2
18	3	97.6	0.0	0.0	15.0	1.1	0.0	2	1	1	1	0	0	0

5 VERIFICACIÓN DEL E.L.U DE ROTURA POR TENSIONES TANGENCIALES

5.1 EVALUACIÓN DEL E.L.U. DE AGOTAMIENTO POR CORTANTE

En este apartado se comprueba el Estado Límite Último de rotura por cortante de acuerdo con los criterios de la Normativa española vigente (EHE, artículo 44)

Según dicha norma:

$$V_{rd} = V_d + V_{pd} + V_{cd}$$

donde,

V_{rd} = Valor del esfuerzo cortante efectivo.
V_d = Valor de cálculo del esfuerzo cortante producido por las acciones exteriores.
V_{pd} = Valor de cálculo del esfuerzo cortante producido por el pretensado (= 0).
V_{cd} = Valor de cálculo de la componente paralela a la sección de las tensiones normales en piezas de sección variable (= 0).

- Comprobación del agotamiento por compresión oblicua en el alma.

$$V_{rd} \leq V_{u1}$$

V_{u1} = Esfuerzo cortante de agotamiento por compresión oblicua del alma.

- Comprobación del agotamiento por tracción en el alma.

$$V_{rd} \leq V_{u2}$$

V_{u2} = Esfuerzo cortante de agotamiento por tracción en el alma.

El cálculo de todos los parámetros resistentes se ha realizado de forma automática. Posteriormente se ha determinado la armadura de cortante necesaria A_{sc} por criterios resistentes y se comprueba que verifica los criterios de armadura mínima a cortante.

Estructura: P.I. Riera del Roset

Dintel y solera. Máximo cortante

D(mm)	950
fck(N/mm2)	25
Sigma_s(N/mm2)	400
Bo(mm)	1000
As(cm2)	53,62
Vrd(Tn)	83,10
N(Tn)	0

Limitación de tensión en armadura de cortante (art. 40.2 EHE)

*N<0 para compresión.

VERIFICACIÓN DE LA NECESIDAD DE ARMADURA DE CORTANTE

PSI	1,459
Roele	0,0056
Sigmaprima (N/mm2)	0,00
Vu2 (N)	401875,1

Necesita armadura de cortante

OBTENCIÓN DE LA ARMADURA DE CORTANTE NECESARIA

Theta	
Vu2	334895,88
Vsu,p	342000,00

As,c =	***14,5***	**cm2/m**
As, min=	***8,3***	**cm2/m**

2 c fi 10 p.m. a 0,20 --> 15,71 cm2/m

En 1/4 parte del dintel contigua a hastiales.

Hastiales

D(mm)	950
fck(N/mm2)	25
Sigma_s(N/mm2)	400
Bo(mm)	1000
As(cm2)	53,62
Vrd(Tn)	50,00
N(Tn)	-83,1

Limitación de tensión en armadura de cortante (art. 40.2 EHE)

(Verificación a un canto útil de la unión con dintel)

*N<0 para compresión.

VERIFICACIÓN DE LA NECESIDAD DE ARMADURA DE CORTANTE

PSI	1,459
Roele	0,0056
Sigmaprima (N/mm2)	-0,86
Vu2 (N)	524156,7

No necesita armadura de cortante

OBTENCIÓN DE LA ARMADURA DE CORTANTE NECESARIA

Theta	
Vu2	334895,88
Vsu,p	342000,00

As,c =	***0,0***	**cm2/m**
As, min=	***8,3***	**cm2/m**

6 VERIFICACIÓN DEL E.L.S DE FISURACIÓN.

En este apartado se comprueba el Estado Límite de Servicio de fisuración.

El cálculo de la abertura de fisura se hace mediante la formulación empleada en la EHE (art. 49). La comprobación de la abertura de fisura se hace para las combinaciones de carga frecuentes. Se toma como abertura de fisura máxima admisible w_k = 0,3 mm, ya que el ambiente considerado para todos los elementos de la estructura es IIa.

REFERENCIA DEL PROYECTO Paso Inferior Riera Roset

VERIFICACION DEL E.L.S. DE FISURACION

Elemento = 1

Nº de seccion = 1
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	7.0	24.3	-11.8	37.6
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44

Nº de seccion = 2
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	4.9	23.3	-14.9	36.6
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44

Nº de seccion = 3
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	2.0	22.3	-18.3	35.6
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44

Nº de seccion = 4
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-1.5	21.2	-22.1	34.5
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44

Nº de seccion = 5
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-5.6	20.2	-26.2	33.5
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44

Nº de seccion = 6
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-10.3	19.2	-30.6	32.5
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44

Nº de seccion = 7
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-15.4	18.1	-35.1	31.4
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44

Nº de seccion = 8
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-20.9	17.1	-40.3	30.1
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44

Nº de seccion = 9
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-26.8	16.1	-47.5	29.1
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44

Elemento = 2

Nº de seccion = 1
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-26.2	14.6	-42.9	17.7
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44

Nº de seccion = 2
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	10.6	16.0	-7.3	14.6
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44

Nº de seccion = 3
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	35.1	12.5	5.6	14.6
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44

Nº de seccion = 4
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	49.0	14.5	12.4	14.6
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	38 1 0.03	24 1 0.04	17 1 0.05	9 1 0.10	6 1 0.15	4 1 0.22	2 1 0.44
	38 1 0.03	24 1 0.04	17 1 0.05	9 1 0.10	6 1 0.15	4 1 0.22	2 1 0.44

Nº de seccion = 5
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	51.0	14.9	13.1	14.6
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	39 1 0.03	25 1 0.04	17 1 0.05	10 1 0.09	6 1 0.15	4 1 0.22	2 1 0.44
	39 1 0.03	25 1 0.04	17 1 0.05	10 1 0.09	6 1 0.15	4 1 0.22	2 1 0.44

Nº de seccion = 6
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	39.8	15.8	7.9	14.6
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44

Nº de seccion = 7
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	13.8	16.6	-7.3	20.1
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44

Nº de seccion = 8
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-20.7	14.6	-39.2	20.9
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44

Nº de seccion = 9
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-44.1	14.6	-84.5	26.5
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	62 2 0.03	39 1 0.03	27 1 0.04	15 1 0.06	10 1 0.09	6 1 0.15	4 1 0.22
	62 2 0.03	39 1 0.03	27 1 0.04	15 1 0.06	10 1 0.09	6 1 0.15	4 1 0.22

REFERENCIA DEL PROYECTO Paso Inferior Riera Roset

Elemento = 3

Nº de seccion = 1
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-46.0	19.4	-90.9	42.4
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	62 2 0.03	40 1 0.03	28 1 0.04	16 1 0.06	10 1 0.09	6 1 0.15	4 1 0.22
	62 2 0.03	40 1 0.03	28 1 0.04	16 1 0.06	10 1 0.09	6 1 0.15	4 1 0.22

Nº de seccion = 2
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-40.0	20.2	-80.1	43.3
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	52 2 0.03	33 1 0.03	23 1 0.04	13 1 0.07	8 1 0.11	5 1 0.18	3 1 0.30
	52 2 0.03	33 1 0.03	23 1 0.04	13 1 0.07	8 1 0.11	5 1 0.18	3 1 0.30

Nº de seccion = 3
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-34.1	21.1	-69.5	44.1
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	42 1 0.03	27 1 0.03	19 1 0.05	11 1 0.08	7 1 0.13	4 1 0.22	3 1 0.30
	42 1 0.03	27 1 0.03	19 1 0.05	11 1 0.08	7 1 0.13	4 1 0.22	3 1 0.30

Nº de seccion = 4
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-28.4	22.0	-59.5	45.2
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	34 1 0.03	22 1 0.04	15 1 0.06	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.44
	34 1 0.03	22 1 0.04	15 1 0.06	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.44

Nº de seccion = 5
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-22.9	22.9	-51.7	46.2
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44

Nº de seccion = 6
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-17.7	23.8	-44.4	47.3
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44

Nº de seccion = 7
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-12.9	24.8	-37.3	48.3
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44

Nº de seccion = 8
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-8.6	25.8	-30.8	49.3
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44

Nº de seccion = 9
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-4.8	26.8	-24.7	50.4
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44

Elemento = 4

Nº de seccion = 1
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	11.8	37.6	-7.0	24.3
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44

Nº de seccion = 2
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	10.9	38.0	-7.6	24.6
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44

Nº de seccion = 3
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	10.1	38.3	-8.0	25.0
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44

Nº de seccion = 4
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	9.3	38.6	-8.4	25.3
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44

Nº de seccion = 5
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	8.6	38.9	-8.6	25.6
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44

Nº de seccion = 6
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	7.9	39.2	-8.8	25.9
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44

Nº de seccion = 7
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	7.2	39.5	-9.0	26.2
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44

Nº de seccion = 8
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	6.7	39.8	-9.0	26.5
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44

Nº de seccion = 9
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	6.2	44.9	-9.0	26.8
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44

REFERENCIA DEL PROYECTO Paso Inferior Riera Roset

Elemento = 5

Nº de seccion = 1
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	6.2	44.9	-9.0	26.8
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8		10		12		16		20		25		32	
	Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep	
	30 1	0.03	19 1	0.05	13 1	0.07	7 1	0.13	5 1	0.18	3 1	0.30	2 1	0.44
	30 1	0.03	19 1	0.05	13 1	0.07	7 1	0.13	5 1	0.18	3 1	0.30	2 1	0.44

Nº de seccion = 2
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	5.8	45.2	-8.9	27.1
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8		10		12		16		20		25		32	
	Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep	
	30 1	0.03	19 1	0.05	13 1	0.07	7 1	0.13	5 1	0.18	3 1	0.30	2 1	0.44
	30 1	0.03	19 1	0.05	13 1	0.07	7 1	0.13	5 1	0.18	3 1	0.30	2 1	0.44

Nº de seccion = 3
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	5.4	45.5	-8.7	27.5
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8		10		12		16		20		25		32	
	Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep	
	30 1	0.03	19 1	0.05	13 1	0.07	7 1	0.13	5 1	0.18	3 1	0.30	2 1	0.44
	30 1	0.03	19 1	0.05	13 1	0.07	7 1	0.13	5 1	0.18	3 1	0.30	2 1	0.44

Nº de seccion = 4
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	5.0	45.8	-8.6	27.8
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8		10		12		16		20		25		32	
	Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep	
	30 1	0.03	19 1	0.05	13 1	0.07	7 1	0.13	5 1	0.18	3 1	0.30	2 1	0.44
	30 1	0.03	19 1	0.05	13 1	0.07	7 1	0.13	5 1	0.18	3 1	0.30	2 1	0.44

Nº de seccion = 5
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	4.6	46.1	-8.4	28.1
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8		10		12		16		20		25		32	
	Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep	
	30 1	0.03	19 1	0.05	13 1	0.07	7 1	0.13	5 1	0.18	3 1	0.30	2 1	0.44
	30 1	0.03	19 1	0.05	13 1	0.07	7 1	0.13	5 1	0.18	3 1	0.30	2 1	0.44

Nº de seccion = 6
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	4.3	46.4	-8.2	28.4
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8		10		12		16		20		25		32	
	Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep	
	30 1	0.03	19 1	0.05	13 1	0.07	7 1	0.13	5 1	0.18	3 1	0.30	2 1	0.44
	30 1	0.03	19 1	0.05	13 1	0.07	7 1	0.13	5 1	0.18	3 1	0.30	2 1	0.44

Nº de seccion = 7
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	4.0	46.7	-7.9	28.7
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8		10		12		16		20		25		32	
	Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep	
	30 1	0.03	19 1	0.05	13 1	0.07	7 1	0.13	5 1	0.18	3 1	0.30	2 1	0.44
	30 1	0.03	19 1	0.05	13 1	0.07	7 1	0.13	5 1	0.18	3 1	0.30	2 1	0.44

Nº de seccion = 8
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	3.7	47.1	-7.6	29.0
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8		10		12		16		20		25		32	
	Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep	
	30 1	0.03	19 1	0.05	13 1	0.07	7 1	0.13	5 1	0.18	3 1	0.30	2 1	0.44
	30 1	0.03	19 1	0.05	13 1	0.07	7 1	0.13	5 1	0.18	3 1	0.30	2 1	0.44

Nº de seccion = 9
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	3.4	47.4	-7.2	29.3
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8		10		12		16		20		25		32	
	Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep	
	30 1	0.03	19 1	0.05	13 1	0.07	7 1	0.13	5 1	0.18	3 1	0.30	2 1	0.44
	30 1	0.03	19 1	0.05	13 1	0.07	7 1	0.13	5 1	0.18	3 1	0.30	2 1	0.44

Elemento = 6

Nº de seccion = 1
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	3.4	47.4	-7.2	29.3
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44

Nº de seccion = 2
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	3.1	47.7	-6.9	29.6
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44

Nº de seccion = 3
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	2.9	48.0	-6.5	30.0
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44

Nº de seccion = 4
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	2.6	48.3	-6.1	30.3
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44

Nº de seccion = 5
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	2.4	48.6	-5.8	30.6
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44

Nº de seccion = 6
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	2.1	48.9	-5.4	30.9
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44

Nº de seccion = 7
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	1.9	49.2	-5.0	31.2
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44

Nº de seccion = 8
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	1.7	49.6	-4.5	31.5
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44

Nº de seccion = 9
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	1.6	49.9	-4.1	31.8
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44

REFERENCIA DEL PROYECTO Paso Inferior Riera Roset

Elemento = 7

Nº de seccion = 1
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	1.6	49.9	-4.1	31.8
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44

Nº de seccion = 2
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	1.4	50.2	-3.7	32.1
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44

Nº de seccion = 3
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	1.2	50.5	-3.3	32.5
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44

Nº de seccion = 4
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	1.1	50.8	-2.9	32.8
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44

Nº de seccion = 5
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	0.9	51.1	-2.5	33.1
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44

Nº de seccion = 6
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	0.8	51.4	-2.2	33.4
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44

Nº de seccion = 7
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	0.7	51.7	-1.8	33.7
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44

Nº de seccion = 8
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	0.5	52.1	-1.5	34.0
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44

Nº de seccion = 9
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	0.5	52.4	-1.2	34.3
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44

Elemento = 8

Nº de seccion = 1
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	0.5	52.4	-1.2	34.3
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura 8	10	12	16	20	25	32
Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44
30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44

Nº de seccion = 2
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	0.4	52.7	-0.9	34.6
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura 8	10	12	16	20	25	32
Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44
30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44

Nº de seccion = 3
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	0.3	53.0	-0.6	35.0
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura 8	10	12	16	20	25	32
Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44
30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44

Nº de seccion = 4
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	0.2	53.3	-0.4	35.3
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura 8	10	12	16	20	25	32
Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44
30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44

Nº de seccion = 5
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	0.1	48.9	-0.3	35.6
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura 8	10	12	16	20	25	32
Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44
30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44

Nº de seccion = 6
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	0.1	54.8	-0.1	48.9
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura 8	10	12	16	20	25	32
Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44
30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44

Nº de seccion = 7
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	0.0	49.5	-0.1	36.2
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura 8	10	12	16	20	25	32
Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44
30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44

Nº de seccion = 8
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	0.0	49.8	0.0	49.8
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura 8	10	12	16	20	25	32
Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44
2 1 0.46	1 1 0.91	1 1 0.91	1 1 0.90	1 1 0.90	1 1 0.89	1 1 0.89

Nº de seccion = 9
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	0.0	50.1	0.0	50.1
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura 8	10	12	16	20	25	32
Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44
2 1 0.46	1 1 0.91	1 1 0.91	1 1 0.90	1 1 0.90	1 1 0.89	1 1 0.89

REFERENCIA DEL PROYECTO Paso Inferior Riera Roset

Elemento = 9

Nº de seccion = 1
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-4.8	26.8	-24.7	50.4
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8		10		12		16		20		25		32	
	Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep	
	30 1	0.03	19 1	0.05	13 1	0.07	7 1	0.13	5 1	0.18	3 1	0.30	2 1	0.44
	30 1	0.03	19 1	0.05	13 1	0.07	7 1	0.13	5 1	0.18	3 1	0.30	2 1	0.44

Nº de seccion = 2
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-3.8	27.1	-22.9	50.7
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8		10		12		16		20		25		32	
	Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep	
	30 1	0.03	19 1	0.05	13 1	0.07	7 1	0.13	5 1	0.18	3 1	0.30	2 1	0.44
	30 1	0.03	19 1	0.05	13 1	0.07	7 1	0.13	5 1	0.18	3 1	0.30	2 1	0.44

Nº de seccion = 3
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-2.8	27.4	-21.2	51.0
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8		10		12		16		20		25		32	
	Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep	
	30 1	0.03	19 1	0.05	13 1	0.07	7 1	0.13	5 1	0.18	3 1	0.30	2 1	0.44
	30 1	0.03	19 1	0.05	13 1	0.07	7 1	0.13	5 1	0.18	3 1	0.30	2 1	0.44

Nº de seccion = 4
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-1.8	27.7	-19.5	51.3
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8		10		12		16		20		25		32	
	Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep	
	30 1	0.03	19 1	0.05	13 1	0.07	7 1	0.13	5 1	0.18	3 1	0.30	2 1	0.44
	30 1	0.03	19 1	0.05	13 1	0.07	7 1	0.13	5 1	0.18	3 1	0.30	2 1	0.44

Nº de seccion = 5
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-0.9	28.0	-17.8	51.6
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8		10		12		16		20		25		32	
	Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep	
	30 1	0.03	19 1	0.05	13 1	0.07	7 1	0.13	5 1	0.18	3 1	0.30	2 1	0.44
	30 1	0.03	19 1	0.05	13 1	0.07	7 1	0.13	5 1	0.18	3 1	0.30	2 1	0.44

Nº de seccion = 6
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-0.1	28.4	-16.2	51.9
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8		10		12		16		20		25		32	
	Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep	
	30 1	0.03	19 1	0.05	13 1	0.07	7 1	0.13	5 1	0.18	3 1	0.30	2 1	0.44
	30 1	0.03	19 1	0.05	13 1	0.07	7 1	0.13	5 1	0.18	3 1	0.30	2 1	0.44

Nº de seccion = 7
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	0.6	28.7	-14.7	52.2
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8		10		12		16		20		25		32	
	Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep	
	30 1	0.03	19 1	0.05	13 1	0.07	7 1	0.13	5 1	0.18	3 1	0.30	2 1	0.44
	30 1	0.03	19 1	0.05	13 1	0.07	7 1	0.13	5 1	0.18	3 1	0.30	2 1	0.44

Nº de seccion = 8
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	1.3	29.0	-13.1	52.5
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8		10		12		16		20		25		32	
	Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep	
	30 1	0.03	19 1	0.05	13 1	0.07	7 1	0.13	5 1	0.18	3 1	0.30	2 1	0.44
	30 1	0.03	19 1	0.05	13 1	0.07	7 1	0.13	5 1	0.18	3 1	0.30	2 1	0.44

Nº de seccion = 9
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	2.0	29.3	-11.7	52.9
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8		10		12		16		20		25		32	
	Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep	
	30 1	0.03	19 1	0.05	13 1	0.07	7 1	0.13	5 1	0.18	3 1	0.30	2 1	0.44
	30 1	0.03	19 1	0.05	13 1	0.07	7 1	0.13	5 1	0.18	3 1	0.30	2 1	0.44

```
 Elemento =   10

Nº de seccion =    1
Canto         = 1.00
                      Mmax    Nk    Mmin    Nk
Comb. frecuente         2.0   29.3  -11.7   52.9
Comb. poco frecuente    0.0    0.0    0.0    0.0
Comb. caracteristica    0.0    0.0    0.0    0.0

Armadura     8           10         12         16          20          25          32
      Nb/ncap/sep  Nb/ncap/sep  Nb/ncap/sep Nb/ncap/sep Nb/ncap/sep Nb/ncap/sep Nb/ncap/sep
     30  1  0.03   19  1  0.05  13 1  0.07   7 1  0.13   5 1  0.18   3 1  0.30   2 1  0.44
     30  1  0.03   19  1  0.05  13 1  0.07   7 1  0.13   5 1  0.18   3 1  0.30   2 1  0.44

Nº de seccion =    2
Canto         = 1.00
                      Mmax    Nk    Mmin    Nk
Comb. frecuente         2.5   29.6  -10.3   53.2
Comb. poco frecuente    0.0    0.0    0.0    0.0
Comb. caracteristica    0.0    0.0    0.0    0.0

Armadura     8           10         12         16          20          25          32
      Nb/ncap/sep  Nb/ncap/sep  Nb/ncap/sep Nb/ncap/sep Nb/ncap/sep Nb/ncap/sep Nb/ncap/sep
     30  1  0.03   19  1  0.05  13 1  0.07   7 1  0.13   5 1  0.18   3 1  0.30   2 1  0.44
     30  1  0.03   19  1  0.05  13 1  0.07   7 1  0.13   5 1  0.18   3 1  0.30   2 1  0.44

Nº de seccion =    3
Canto         = 1.00
                      Mmax    Nk    Mmin    Nk
Comb. frecuente         3.0   29.9   -9.0   53.5
Comb. poco frecuente    0.0    0.0    0.0    0.0
Comb. caracteristica    0.0    0.0    0.0    0.0

Armadura     8           10         12         16          20          25          32
      Nb/ncap/sep  Nb/ncap/sep  Nb/ncap/sep Nb/ncap/sep Nb/ncap/sep Nb/ncap/sep Nb/ncap/sep
     30  1  0.03   19  1  0.05  13 1  0.07   7 1  0.13   5 1  0.18   3 1  0.30   2 1  0.44
     30  1  0.03   19  1  0.05  13 1  0.07   7 1  0.13   5 1  0.18   3 1  0.30   2 1  0.44

Nº de seccion =    4
Canto         = 1.00
                      Mmax    Nk    Mmin    Nk
Comb. frecuente         3.5   30.2   -7.7   53.8
Comb. poco frecuente    0.0    0.0    0.0    0.0
Comb. caracteristica    0.0    0.0    0.0    0.0

Armadura     8           10         12         16          20          25          32
      Nb/ncap/sep  Nb/ncap/sep  Nb/ncap/sep Nb/ncap/sep Nb/ncap/sep Nb/ncap/sep Nb/ncap/sep
     30  1  0.03   19  1  0.05  13 1  0.07   7 1  0.13   5 1  0.18   3 1  0.30   2 1  0.44
     30  1  0.03   19  1  0.05  13 1  0.07   7 1  0.13   5 1  0.18   3 1  0.30   2 1  0.44

Nº de seccion =    5
Canto         = 1.00
                      Mmax    Nk    Mmin    Nk
Comb. frecuente         3.8   30.5   -6.6   54.1
Comb. poco frecuente    0.0    0.0    0.0    0.0
Comb. caracteristica    0.0    0.0    0.0    0.0

Armadura     8           10         12         16          20          25          32
      Nb/ncap/sep  Nb/ncap/sep  Nb/ncap/sep Nb/ncap/sep Nb/ncap/sep Nb/ncap/sep Nb/ncap/sep
     30  1  0.03   19  1  0.05  13 1  0.07   7 1  0.13   5 1  0.18   3 1  0.30   2 1  0.44
     30  1  0.03   19  1  0.05  13 1  0.07   7 1  0.13   5 1  0.18   3 1  0.30   2 1  0.44


Nº de seccion =    6
Canto         = 1.00
                      Mmax    Nk    Mmin    Nk
Comb. frecuente         4.2   30.9   -5.5   54.4
Comb. poco frecuente    0.0    0.0    0.0    0.0
Comb. caracteristica    0.0    0.0    0.0    0.0

Armadura     8           10         12         16          20          25          32
      Nb/ncap/sep  Nb/ncap/sep  Nb/ncap/sep Nb/ncap/sep Nb/ncap/sep Nb/ncap/sep Nb/ncap/sep
     30  1  0.03   19  1  0.05  13 1  0.07   7 1  0.13   5 1  0.18   3 1  0.30   2 1  0.44
     30  1  0.03   19  1  0.05  13 1  0.07   7 1  0.13   5 1  0.18   3 1  0.30   2 1  0.44

Nº de seccion =    7
  Canto         = 1.00
                        Mmax    Nk    Mmin    Nk

  Comb. frecuente         4.4   31.2   -4.5   54.7
  Comb. poco frecuente    0.0    0.0    0.0    0.0
  Comb. caracteristica    0.0    0.0    0.0    0.0

  Armadura     8           10         12         16          20          25          32
        Nb/ncap/sep  Nb/ncap/sep  Nb/ncap/sep Nb/ncap/sep Nb/ncap/sep Nb/ncap/sep Nb/ncap/sep
       30  1  0.03   19  1  0.05  13 1  0.07   7 1  0.13   5 1  0.18   3 1  0.30   2 1  0.44
       30  1  0.03   19  1  0.05  13 1  0.07   7 1  0.13   5 1  0.18   3 1  0.30   2 1  0.44

  Nº de seccion =    8
  Canto         = 1.00
                        Mmax    Nk    Mmin    Nk
  Comb. frecuente         4.6   31.5   -3.6   55.0
  Comb. poco frecuente    0.0    0.0    0.0    0.0
  Comb. caracteristica    0.0    0.0    0.0    0.0

  Armadura     8           10         12         16          20          25          32
        Nb/ncap/sep  Nb/ncap/sep  Nb/ncap/sep Nb/ncap/sep Nb/ncap/sep Nb/ncap/sep Nb/ncap/sep
       30  1  0.03   19  1  0.05  13 1  0.07   7 1  0.13   5 1  0.18   3 1  0.30   2 1  0.44
       30  1  0.03   19  1  0.05  13 1  0.07   7 1  0.13   5 1  0.18   3 1  0.30   2 1  0.44

  Nº de seccion =    9
  Canto         = 1.00
                        Mmax    Nk    Mmin    Nk
  Comb. frecuente         4.7   31.8   -2.8   55.4
  Comb. poco frecuente    0.0    0.0    0.0    0.0
  Comb. caracteristica    0.0    0.0    0.0    0.0

  Armadura     8           10         12         16          20          25          32
        Nb/ncap/sep  Nb/ncap/sep  Nb/ncap/sep Nb/ncap/sep Nb/ncap/sep Nb/ncap/sep Nb/ncap/sep
       30  1  0.03   19  1  0.05  13 1  0.07   7 1  0.13   5 1  0.18   3 1  0.30   2 1  0.44
       30  1  0.03   19  1  0.05  13 1  0.07   7 1  0.13   5 1  0.18   3 1  0.30   2 1  0.44
```

REFERENCIA DEL PROYECTO Paso Inferior Riera Roset

Elemento = 11

Nº de seccion = 1
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	4.7	31.8	-2.8	55.4
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44

Nº de seccion = 2
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	4.8	32.1	-2.1	55.7
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44

Nº de seccion = 3
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	4.8	32.4	-1.4	56.0
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44

Nº de seccion = 4
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	4.8	32.7	-0.8	56.3
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44

Nº de seccion = 5
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	4.7	33.0	-0.3	56.6
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44

Nº de seccion = 6
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	4.6	33.4	0.1	49.5
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44

Nº de seccion = 7
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	4.5	33.7	0.4	49.8
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44

Nº de seccion = 8
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	4.3	34.0	0.6	50.1
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44

Nº de seccion = 9
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	4.1	57.3	0.8	50.4
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44
	30 1 0.03	19 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44

Elemento = 12

Nº de seccion = 1
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	4.1	57.3	0.8	50.4
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura 8		10		12		16		20		25		32	
Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep	
30	1 0.03	19	1 0.05	13	1 0.07	7	1 0.13	5	1 0.18	3	1 0.30	2	1 0.44
30	1 0.03	19	1 0.05	13	1 0.07	7	1 0.13	5	1 0.18	3	1 0.30	2	1 0.44

Nº de seccion = 2
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	3.9	57.7	0.9	50.7
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura 8		10		12		16		20		25		32	
Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep	
30	1 0.03	19	1 0.05	13	1 0.07	7	1 0.13	5	1 0.18	3	1 0.30	2	1 0.44
30	1 0.03	19	1 0.05	13	1 0.07	7	1 0.13	5	1 0.18	3	1 0.30	2	1 0.44

Nº de seccion = 3
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	3.7	58.0	1.0	51.0
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura 8		10		12		16		20		25		32	
Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep	
30	1 0.03	19	1 0.05	13	1 0.07	7	1 0.13	5	1 0.18	3	1 0.30	2	1 0.44
30	1 0.03	19	1 0.05	13	1 0.07	7	1 0.13	5	1 0.18	3	1 0.30	2	1 0.44

Nº de seccion = 4
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	3.5	58.3	1.0	51.3
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura 8		10		12		16		20		25		32	
Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep	
30	1 0.03	19	1 0.05	13	1 0.07	7	1 0.13	5	1 0.18	3	1 0.30	2	1 0.44
30	1 0.03	19	1 0.05	13	1 0.07	7	1 0.13	5	1 0.18	3	1 0.30	2	1 0.44

Nº de seccion = 5
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	3.2	58.6	1.0	51.6
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura 8		10		12		16		20		25		32	
Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep	
30	1 0.03	19	1 0.05	13	1 0.07	7	1 0.13	5	1 0.18	3	1 0.30	2	1 0.44
30	1 0.03	19	1 0.05	13	1 0.07	7	1 0.13	5	1 0.18	3	1 0.30	2	1 0.44

Nº de seccion = 6
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	2.9	58.9	1.0	52.0
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura 8		10		12		16		20		25		32	
Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep	
30	1 0.03	19	1 0.05	13	1 0.07	7	1 0.13	5	1 0.18	3	1 0.30	2	1 0.44
30	1 0.03	19	1 0.05	13	1 0.07	7	1 0.13	5	1 0.18	3	1 0.30	2	1 0.44

Nº de seccion = 7
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	2.6	59.2	0.9	52.3
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura 8		10		12		16		20		25		32	
Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep	
30	1 0.03	19	1 0.05	13	1 0.07	7	1 0.13	5	1 0.18	3	1 0.30	2	1 0.44
30	1 0.03	19	1 0.05	13	1 0.07	7	1 0.13	5	1 0.18	3	1 0.30	2	1 0.44

Nº de seccion = 8
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	2.2	59.5	0.8	52.6
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura 8		10		12		16		20		25		32	
Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep	
30	1 0.03	19	1 0.05	13	1 0.07	7	1 0.13	5	1 0.18	3	1 0.30	2	1 0.44
30	1 0.03	19	1 0.05	13	1 0.07	7	1 0.13	5	1 0.18	3	1 0.30	2	1 0.44

Nº de seccion = 9
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	1.8	48.1	0.7	52.9
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura 8		10		12		16		20		25		32	
Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep	
30	1 0.03	19	1 0.05	13	1 0.07	7	1 0.13	5	1 0.18	3	1 0.30	2	1 0.44
30	1 0.03	19	1 0.05	13	1 0.07	7	1 0.13	5	1 0.18	3	1 0.30	2	1 0.44

REFERENCIA DEL PROYECTO Paso Inferior Riera Roset

Elemento = 13

Nº de seccion = 1
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	1.8	48.1	0.7	52.9
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8		10		12		16		20		25		32	
	Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep	
	30 1	0.03	19 1	0.05	13 1	0.07	7 1	0.13	5 1	0.18	3 1	0.30	2 1	0.44
	30 1	0.03	19 1	0.05	13 1	0.07	7 1	0.13	5 1	0.18	3 1	0.30	2 1	0.44

Nº de seccion = 2
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	1.5	60.2	0.6	53.2
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8		10		12		16		20		25		32	
	Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep	
	30 1	0.03	19 1	0.05	13 1	0.07	7 1	0.13	5 1	0.18	3 1	0.30	2 1	0.44
	30 1	0.03	19 1	0.05	13 1	0.07	7 1	0.13	5 1	0.18	3 1	0.30	2 1	0.44

Nº de seccion = 3
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	1.1	48.7	0.5	53.5
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8		10		12		16		20		25		32	
	Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep	
	30 1	0.03	19 1	0.05	13 1	0.07	7 1	0.13	5 1	0.18	3 1	0.30	2 1	0.44
	30 1	0.03	19 1	0.05	13 1	0.07	7 1	0.13	5 1	0.18	3 1	0.30	2 1	0.44

Nº de seccion = 4
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	0.8	49.0	0.3	53.8
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8		10		12		16		20		25		32	
	Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep	
	30 1	0.03	19 1	0.05	13 1	0.07	7 1	0.13	5 1	0.18	3 1	0.30	2 1	0.44
	30 1	0.03	19 1	0.05	13 1	0.07	7 1	0.13	5 1	0.18	3 1	0.30	2 1	0.44

Nº de seccion = 5
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	0.5	53.6	0.2	54.1
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8		10		12		16		20		25		32	
	Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep	
	30 1	0.03	19 1	0.05	13 1	0.07	7 1	0.13	5 1	0.18	3 1	0.30	2 1	0.44
	30 1	0.03	19 1	0.05	13 1	0.07	7 1	0.13	5 1	0.18	3 1	0.30	2 1	0.44

Nº de seccion = 6
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	0.3	54.0	0.1	54.5
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8		10		12		16		20		25		32	
	Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep	
	30 1	0.03	19 1	0.05	13 1	0.07	7 1	0.13	5 1	0.18	3 1	0.30	2 1	0.44
	30 1	0.03	19 1	0.05	13 1	0.07	7 1	0.13	5 1	0.18	3 1	0.30	2 1	0.44

Nº de seccion = 7
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	0.1	54.8	0.1	54.8
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8		10		12		16		20		25		32	
	Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep	
	30 1	0.03	19 1	0.05	13 1	0.07	7 1	0.13	5 1	0.18	3 1	0.30	2 1	0.44
	30 1	0.03	19 1	0.05	13 1	0.07	7 1	0.13	5 1	0.18	3 1	0.30	2 1	0.44

Nº de seccion = 8
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	0.0	55.1	0.0	55.1
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8		10		12		16		20		25		32	
	Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep	
	30 1	0.03	19 1	0.05	13 1	0.07	7 1	0.13	5 1	0.18	3 1	0.30	2 1	0.44
	30 1	0.03	19 1	0.05	13 1	0.07	7 1	0.13	5 1	0.18	3 1	0.30	2 1	0.44

Nº de seccion = 9
Canto = 1.00

	Mmax	Nk	Mmin	Nk
Comb. frecuente	0.0	55.4	0.0	55.4
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8		10		12		16		20		25		32	
	Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep	
	30 1	0.03	19 1	0.05	13 1	0.07	7 1	0.13	5 1	0.18	3 1	0.30	2 1	0.44
	2 1	0.46	1 1	0.91	1 1	0.91	1 1	0.90	1 1	0.90	1 1	0.89	1 1	0.89

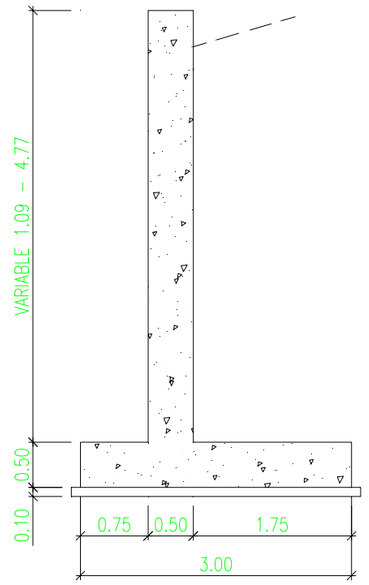
7. CÁLCULO DE ALETAS

7.1. GEOMETRÍA

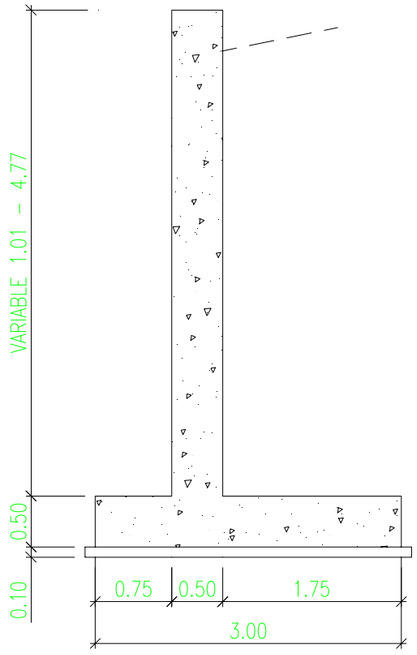
El pórtico de la Riera Roset tiene 4 aletas. Las tres primeras están orientadas de tal forma que su cara de intradós forma un ángulo 30 º en planta con el eje de la estructura. La aleta 4 transcurre paralela a la plataforma de ferrocarril para dejar espacio al camino de servicio que pasa a través de dicho pórtico.

Las dimensiones de cada una de las aletas se detallan a continuación.

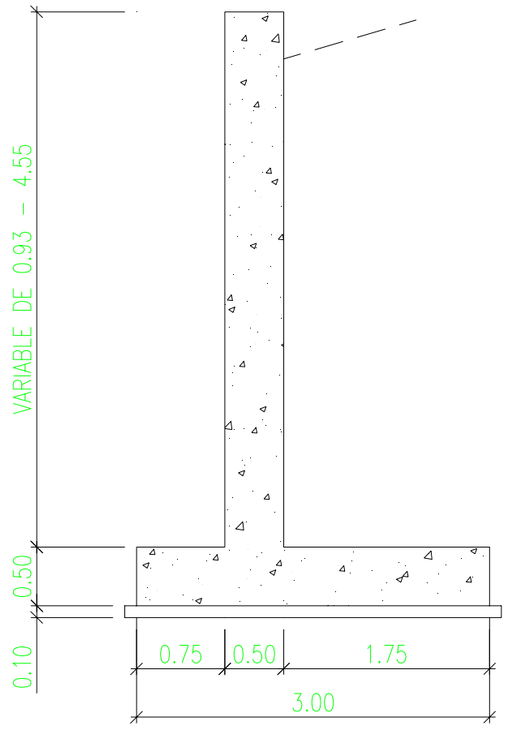
SECCIÓN ALETA 1
ESCALA 1/50



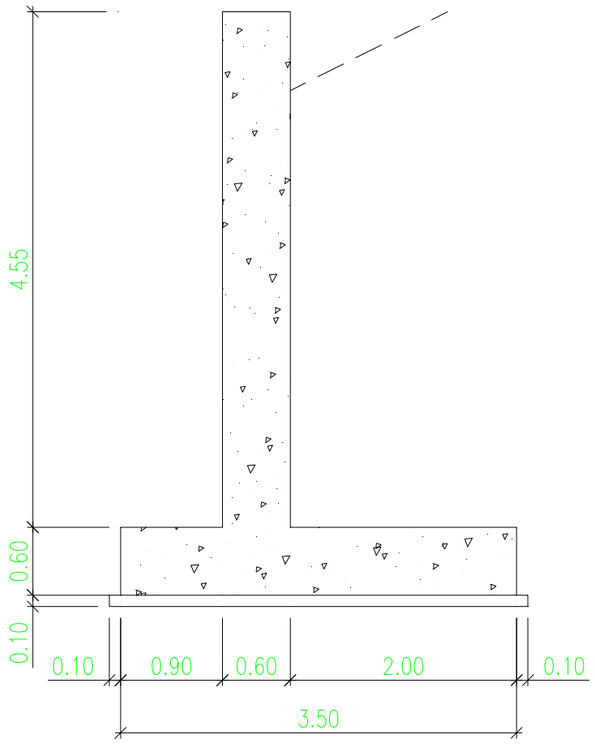
SECCIÓN ALETA 2
ESCALA 1/50



SECCIÓN ALETA 3
ESCALA 1/50



SECCIÓN ALETA 4
ESCALA 1/50



7.2 CÁLCULO DE ESFUERZOS Y DIMENSIONAMIENTO

El cálculo y dimensionamiento de las aletas se detalla en las páginas siguientes. Las hipótesis de cálculo se exponen a continuación:

1. El cálculo se realiza en la hipótesis clásica como muro con acciones en coronación debidas al sobre-empuje de 3,0 T/m^2 de tráfico ferroviario así como la consideración de una altura de tierras hasta la cota superior de vía. Los empujes del terreno se han calculado para un coeficiente de empuje K = 0,31 y una densidad del terreno de 2,1 T/m^3. No se han considerado eventuales empujes hidrostáticos al colocar un adecuado drenaje en el trasdós de las aletas.

2. En el cálculo de la seguridad de la aleta frente al vuelco, deslizamiento y tensiones máximas se han verificado las siguientes condiciones (ver resultados en listados de cálculo).

   Coeficiente de Seguridad al vuelco, $CS,v > 1,80$

   Coeficiente de Seguridad al deslizamiento $CS,d > 1,50$

   Tensión máxima del terreno en puntera $\sigma_{max} > 1,25 \cdot \sigma_{admisible}$

   Con $\sigma_{admisible}$ = 3,00 Kp/cm^2 y coeficiente de rozamiento terreno-zapata μ = 0,60 .

3. El dimensionamiento de las armaduras de flexión y cortante del muro y zapata se realiza con los criterios de la Normativa vigente para estructuras de hormigón (EHE). Los coeficientes de seguridad de las acciones corresponden con un NIVEL DE CONTROL INTENSO γ_{fg} =1,35 y γ_{fq} =1,50.

4. Las armaduras horizontales de flexión transversal se colocan de acuerdo con los valores mínimos exigidos por la Normativa EHE.

4.3. Paso inferior de la riera de Torrelles

ÍNDICE DEL ANEJO DE CÁLCULO

1 GEOMETRÍA

1.1. Geometría y esquema estructural
1.2. Sección tipo

2 ACCIONES, MATERIALES, COEFICIENTES DE SEGURIDAD Y NORMATIVAS

2.1. Acciones
2.2. Coeficientes de seguridad, materiales, niveles de control y Normativas
2.3 Ambientes, recubrimientos, fisuración y cuantías mínimas
2.4 Hipótesis de combinación de esfuerzos

3 CÁLCULO ESTRUCTURAL

3.1. Cálculo estructural con modelo de viga continua
3.1.1. Discretización y características mecánicas
3.1.2. Cálculo de esfuerzos

4 PRETENSADO

4.1. Trazado
4.2. Cálculo de pérdidas instantáneas y diferidas

5 VERIFICACIÓN DE LOS ESTADOS LÍMITES DE SERVICIO

5.1. Tensiones normales (Estado Límite de fisuración)
5.2. Estado Límite de deformaciones
5.3. Estado Límite de vibraciones

6 VERIFICACIÓN DEL E.L.U DE ROTURA POR TENSIONES NORMALES

6.1. Flexión longitudinal
6.2. Flexión transversal
6.3. Traviesas de apoyo
6.4. Introducción del Pretensazo
6.5. Evaluación del E.L.U. de Fatiga

7 VERIFICACIÓN DEL E.L.U DE ROTURA POR TENSIONES TANGENCIALES

7.1. Evaluación del E.L.U. de Cortante
7.2. Evaluación del E.L.U. de Torsión
7.3. Evaluación del E.L.U. de Rasante

8 APARATOS DE APOYO Y JUNTAS

8.1. Reacciones verticales
8.2. Reacciones horizontales
8.3. Verificación de aparatos de apoyo y movimientos en juntas

9 CÁLCULO DEL ESTRIBO 1

9.1. Geometría
9.2. Acciones en coronación
9.3. Cálculo de esfuerzos y dimensionamiento
9.4. Cálculo y dimensionamiento de las aletas

10 CÁLCULO DEL ESTRIBO 2

10.1. Geometría
10.2. Acciones en coronación
10.3. Cálculo de esfuerzos y dimensionamiento
10.4. Cálculo y dimensionamiento de las aletas

11 CÁLCULO DE PILAS

11.1. Geometría

11.2. Acciones en coronación
11.3. Cálculo de esfuerzos y dimensionamiento

12 CÁLCULO DE LOS PARÁMETROS GEOTÉCNICOS DE LOS PILOTES

13 VERIFICACIÓN DE LOS CARRILES POR LA INTERACCIÓN VÍA-ESTRUCTURA

1 GEOMETRÍA

1.1 GEOMETRÍA Y ESQUEMA ESTRUCTURAL

El paso inferior permite el cruce de la línea de alta velocidad y de la línea de mercancías sobre la riera de Torrelles, con una longitud total de 48 m. El puente está constituido por dos tableros paralelos, uno para la línea de alta velocidad y otro para la línea de mercancías, de similares características de hormigón postesado con un esquema longitudinal de tres vanos de 14,5+19+14,5 m de luz. La plataforma tiene 14 m de ancho para ubicar la capa de balasto del ferrocarril, dos canaletas para el paso de cables y las barandillas con sus impostas. El desarrollo en planta de la estructura es prácticamente recto, presentando un ligero esviaje en planta de 16^g.

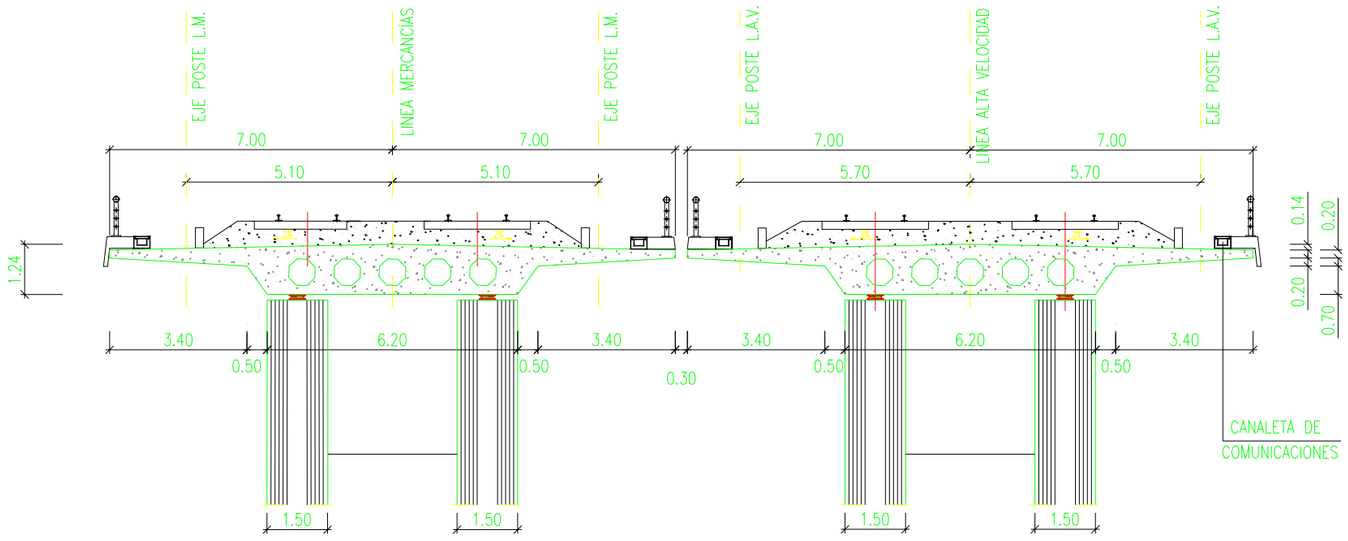
Al tratarse de un estructura de poca longitud y una altura sobre el cauce del río de unos 7 m, se ha proyectado un tablero de hormigón in situ constituido por una losa aligerada de 1,24 m de canto constante (sobre el eje del tablero). La esbeltez del tablero es L_{max}/15.3. La construcción del tablero podrá realizarse sobre cimbra apoyada en el terreno. La sección del dintel es un losa aligerada de inercia concentrada postesada longitudinalmente mediante 12 unidades de 24 ϕ 0,6".

El tablero se ancla a uno de los estribos (estribo fijo) para transmitir los eventuales empujes de frenado y arranque sobre el mismo. El resto de apoyos no toman fuerzas horizontales, salvo las inducidas por el rozamiento entre el apoyo y el tablero a través de los apoyos de neopreno tipo POT. Las pilas están constituidas por un dos fustes de sección hexagonal.

Las cargas del tablero se transmiten a los estribos mediante aparatos de apoyo tipo "POT" de neopreno confinado (fijos, unidireccionales o bidireccionales, dependiendo de su posición). Las cimentaciones son profundas mediante pilotes, dimensionadas de acuerdo con las indicaciones del estudio geotécnico.

1.2 SECCIÓN TIPO

La sección transversal del tablero tiene un ancho de plataforma de 14 m y está constituida por una sección losa aligerada de hormigón postesado e inercia concentrada con un canto constante de 1,24 m sobre el eje del tablero y con bombeo del 2 % (canto sobre el borde del tablero igual a 1,10 m).



2 ACCIONES, MATERIALES, COEFICIENTES DE SEGURIDAD Y NORMATIVAS

2.1 ACCIONES

En el cálculo de los elementos estructurales se han considerado las siguientes acciones:

Acciones permanentes (G):

g1, PESO PROPIO.

El peso propio de los distintos elementos se ha calculado a partir de su geometría (secciones transversales) adoptando una densidad de valor γ =2,5 T/m^3 para la losa de hormigón.

El peso del tablero es: Sección aligerada g1= 21,66 T/m

Sección maciza g1= 26,48 T/m

g2, PESO DEL BALASTO Y CARGAS MUERTAS

Las cargas permanentes distintas del propio peso del tablero son las siguientes:

- Balasto
- Vías y traviesas
- Conductos de cableado y paseos
- Soportes de catenarias
- Impostas y barandillas

El peso de balasto sobre el tablero se calcula a partir de la plataforma en la estructura de vía tomando como densidad γ = 1,6 t/m^3.

Para la plataforma sobre el puente se obtiene $g_{2,\ balasto}$ = 9,29 T/m.

De acuerdo a las Bases de Cálculo se adoptarán para esta carga los siguientes valores característicos superior e inferior:

valor inferior (0.70 x peso medio) $g_{2,\ bal\ inf}$ = 6,50 T/m de tablero
valor superior (1.3 x peso medio) $g_{2,\ bal,\ sup}$ = 12,08 T/m de tablero

Se consideran dos hipótesis de desbalastado.

- 50% de una vía en toda su longitud.
- 100% de una vía sobre 15 metros.

El peso de vías y traviesas para la plataforma con doble vía es:

$g_{\ 2,vías+traviesas}$ = 2 x (0,52 + 0,12) = 2 x 0,64 = 1,28 t/ml
(trav) + (carril)

El peso de los conductos para cableados y zona de paseos es:

$g_{2,conductos}$ =0,3 t/ml (peso de hormigón γ = 2,5 t/m^3) (peso de 1 canaleta)

$q_{\ paseos}$ = 0,50 t/m^2 (esta carga en paseos se ha tratado como sobrecarga y no como carga permanente pudiendo actuar en las dos zonas extremas de paseo de 1,45 m de ancho).

$q_{conductos\ +\ paseos}$ = 2 × (0,30 + 0,50 x 1,45) = 2,05 t/m

El peso de la imposta y barandilla es:

Se toma $g_{2,imposta+barandilla}$ = 1,08 T/m, de acuerdo a la sección tipo de plataforma.

El peso de los soportes de catenarias se tienen en cuenta sólo para efectos locales de anclaje de la catenaria y armado local de losa, pero no para el cálculo general del tablero.

	g2, medio (T/m)	**g2, inf (T/m)**	**g2, sup (T/m)**
Balasto	9,29	6,50	12,08
Vías y traviesas	1,28	1,28	1,28
Conductos cableado	0,60	0,60	0,60
Imposta y barandillas	1,08	1,08	1,08
TOTAL	**12,25 T/m**	**9,46 T/m**	**15,04 T/m**

Tabla 1. Carga permanente, g2

Coeficiente de envejecimiento para el hormigón a tiempo infinito χ = 0.80

Las acciones indirectas derivadas de las deformaciones impuestas se estiman de acuerdo con la rigidez de los elementos de apoyo. En los aparatos de apoyo tipo POT se considera el efecto de rozamiento de acuerdo con los criterios indicados en el apartado 8 de este anejo.

Acciones permanentes de valor no constante (G*):

PRETENSADO

Las fuerzas del pretensado se calculan para cada fase de construcción de acuerdo con las especificaciones de la normativa vigente para el proyecto con hormigón estructural (EHE).

Para la determinación de las pérdidas de pretensado se han utilizado los siguientes valores de los parámetros de cálculo:

El efecto de la relajación del acero de pretensado a 1000 horas es: $\rho_{1000horas}$= 2 % y la relajación a tiempo infinito ($\rho f=\rho_{1000000horas}$).

Tensión inicial	0.60 fmax	0.70 fmax	0.80 fmax
ρ1000horas (%)	1.0	2.0	5.5
ρf (1000000horas) (%)	2.9	5.8	16

ACCIONES REOLÓGICAS.

Las acciones reolológicas se han determinado de acuerdo con las especificaciones de la normativa vigente para hormigón (EHE) diferenciando la retracción y la fluencia del hormigón.

RETRACCIÓN

$\varepsilon cs(t,ts) = \varepsilon cso\ \beta s\ (t-ts)$

$\varepsilon cso = \beta_{HR}\ (570\text{-}5\ fck)\ 10^{-6}$ (fck en MPa)

$\beta_{HR} = -1.55\ (1-(HR/100)^3)$

$$\beta s = \sqrt{\frac{t - ts}{0.035\, e^2 + (t - ts)}} \qquad e = \frac{2\ Ac}{u}$$

t = edad del hormigón en el instante de evaluación (en días)
ts = edad del hormigón al comienzo de la retracción (en días)
εcso = coeficiente básico de retracción
HR = humedad relativa
βs = coeficiente que define la evolución de la retracción en el tiempo
e = espesor medio en mm
Ac = área de la sección transversal
u = perímetro en contacto con la atmósfera

Los valores de la sección transversal tipo del tablero son los siguientes:

En la zona de construcción de las estructuras HR= 70 %

Sección transversal tipo : Ac= 8.66 m^2 u=28.73m e=603 mm

Cálculo del valor de la retracción en el tablero:

$\beta_{H\,R}$=-1.018 εcso=3.77 10^{-4} β_s(10.000 días) = 0.66 $\varepsilon cs(t,ts)$= 2.5 10^{-4}

$$\varepsilon c(t, to) = \sigma(to)\left[\frac{1}{Eo\ ,\ to} + \frac{\varphi(t, to)}{Eo\ ,28}\right]$$

$$\varphi(t, to) = \varphi o \beta c(t - to)$$

$$\varphi o = \varphi_{HR}\,\beta(fcm)\,\beta(to)$$

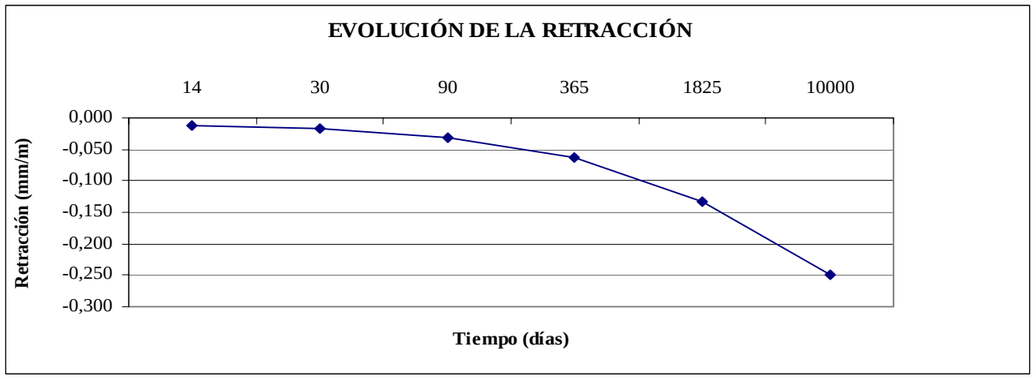
$$\varphi_{HR} = 1 + \frac{100 - HR}{9.9e^{1/3}}$$

$$\beta(fcm) = \frac{16.8}{\sqrt{fck + 8}}$$

$$\beta to = \frac{1}{0.1 + to^{0.2}}$$

$$\beta c(t - to) = \left[\frac{t - to}{\beta_H + (t - to)}\right]^{0.3}$$

$$\beta_H = 1.5e\left[1 + (0.012HR)^{18}\right] + 250 > /1500$$



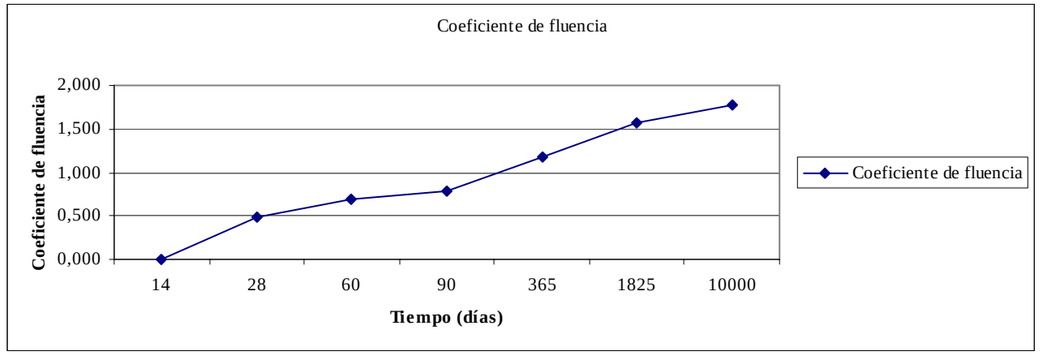
FLUENCIA

σc = tensión media en el hormigón aplicada en el tiempo to
Eo,to = módulo de deformación en el tiempo to
φ(t,to) = coeficiente de fluencia
φo = coeficiente básico de fluencia

En el caso del tablero, adoptando un valor de aplicación de la fuerza de postesado to= 14 días tenemos

un coeficiente de fluencia a tiempo infinito (10000 días) φf=1.77

φ_{HR}=1.36
β_H = 1194 $\beta_{c(}$(10000-14)=1.217 βto=0.56 β(fcm)=2.425
φo=1.835



ACCIONES DEBIDAS AL TERRENO

Carga sobre zapatas y empuje de las tierras en alzados de estribos y aletas, con una densidad 2,0 T/m^3 y un ángulo de rozamiento interno de 30 º (con presiones horizontales correspondientes a un empuje con coeficiente Ka= 0,33).

ASIENTOS DIFERENCIALES

Al estar cimentada la estructura sobre un terreno granular y mediante cimentación profunda no se prevée la existencia de asientos diferenciales significativos, por lo cual no se han tenido en cuenta en los cálculos.

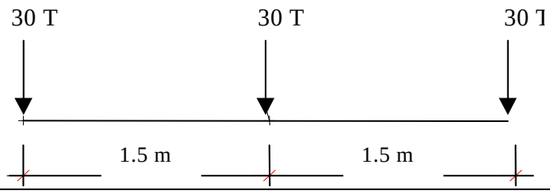
SOBRECARGAS DE USO. COMPONENTES VERTICALES.

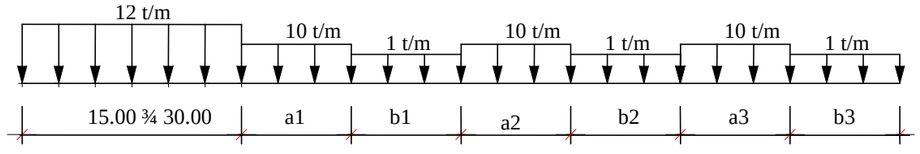
En el cálculo de esfuerzos se ha empleado la envolvente de esfuerzos debidos a los trenes de carga de IPF-75 y del Eurocódigo 1 (parte 3, acciones en puentes) EC1-3 tomando como coeficiente de impacto correspondiente en cada caso.

Los coeficientes de impacto no afectan al cálculo de apoyos, pilas y estribos, salvo aquellos casos en que la unión tablero-estructura fuera rígido. Esto conduciría a que el coeficiente de impacto afectaría a la subestructura para las fuerzas de frenado, transmitida al estribo a través del tope rígido longitudinal, y fuerza centrífuga, transmitida a través de apoyos tipo POT guiados. No obstante, la presencia del balasto supone una liberación en la rigidez de la transmisión de las fuerzas horizontales a los apoyos y topes, por lo que no se considera el coeficiente de impacto para estas acciones.

De acuerdo con la normativa IPF-75 Existen dos trenes de carga

Tipo A Por cada vía: Q_A = 3 ejes de 30 T separados 1.50 m





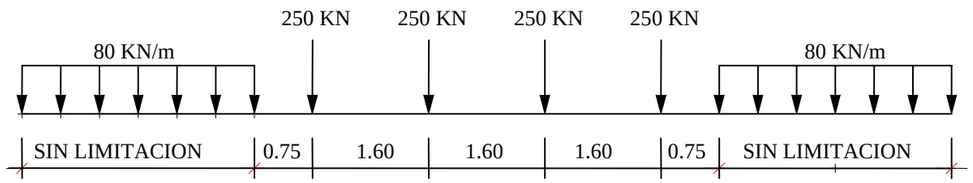
Tipo B Por cada vía: Sobrecarga uniforme de 12 T/m sobre 15 ó 30 metros, más un conjunto de cuchillos de carga de 10 T/m y 1 T/m de longitud arbitraria.

El tren tipo A suele condicionar el trabajo local de reparto de la losa y el tren tipo B condiciona el dimensionamiento general de la mayor parte de los Estados Límites Últimos o de Servicio.

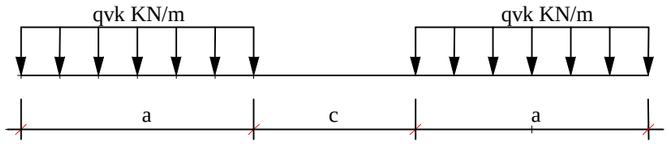
De acuerdo con las especificaciones de la IPF, no se admite reducción de cargas por simultaneidad entre ambas vías. En cualquier caso se debe contemplar la posibilidad de un ripado de la vía respecto al eje teórico de 0.30 m.

El tren de cargas de Eurocódigo 1 (parte 3, acciones en puentes) EC1-3 se define de acuerdo con las configuraciones indicadas en las 2 figuras siguientes. En ambos casos, a efectos de cálculo se contemplará un eventual ripado de la vía de 0.30 m.

Tren tipo 71



Modelo de carga SW



Se considera adicionalmente un tren pesado equivalente al siguiente esquema de cargas (SW/0) ó (SW2) en una de las vías y el tren tipo 71 en la otra vía.

	SW0	SW2
Q_{vk} (kN)	133	150
a (m)	15	25
c (m)	5,3	7

De acuerdo con la IPF-75, para algunas comprobaciones específicas asociadas a combinaciones de carga con viento transversal se considerará un tren sin carga de 12.5 KN/m.

Coeficientes de mayoración por impacto

De acuerdo con la normativa IPF75, se aplica la formulación siguiente:

$$I = 65\frac{\mu}{1 - \mu + \mu^2}$$

Para una luz de cálculo de valor L= 19,0 m se obtiene: I = 18 %

De acuerdo con el Eurocódigo EC-1, para vías de mantenimiento cuidadoso.

$$\phi_2 = \frac{1{,}44}{\sqrt{L\phi} - 0{,}20} + 0{,}82 = 1{,}15 \leq 1{,}17$$

$L\phi = K * L_m = 20{,}8$ m

Este valor se debe emplear en el cálculo longitudinal del tablero. Los coeficientes a aplicar en el cálculo local se estudiarán en el apartado correspondiente.

En las zonas del tablero destinadas a mantenimiento (zonas de paseo) se considera una sobrecarga de 0.5 T/m^2, considerándose concomitante con las sobrecargas ferroviario un 50 % de dicha carga.

SOBRECARGAS DE USO. COMPONENTES HORIZONTALES.

EFECTO LAZO

En la estructura se considerará una única fuerza transversal concomitante con la sobrecarga vertical para contemplar el efecto lazo. El valor de dicha carga (que no debe ser mayorada con el coeficiente de impacto) es el siguiente:

Según IPF-75 H_T = 5 T para el conjunto de ambas vías, aplicada a cota superior del carril.

Según EC1 H_T = 10,2 T para el conjunto de ambas vías, aplicada a cota superior del carril.

FUERZA CENTRÍFUGA

En puentes de trazado curvo en planta se debe considerar la fuerza centrífuga, cuyo valor se puede obtener mediante la expresión siguiente:

IPF 75: $Fc = Q \times \frac{V^2}{127R}$

El Eurocódigo 1 permite una reducción de la fuerza centrífuga en función de la longitud cargada. Se constata que la IPF-75 da un valor mayor de fuerza centrifuga que el EC1 y por tanto, si el puente es curvo se tomará dicho valor, combinado con el efecto del peralte. Se supondrá la carga actuando 1,80 m por encima del carril.

El puente está ubicado en una clotoide con un radio de curvatura muy alto R=13 000 a 80 000 m. Para un valor medio del radio de curvatura de 20 000 m obtenemos una fuerza centrifuga de valor 0,22 T/m.

EFECTOS DE FRENADO Y ARRANQUE

En el presente proyecto se adoptan las acciones especificadas en el Eurocódigo EC-1 más desfavorables que las propuestas por la IPF-75 (1/8 de la carga frente a 1/4). Esta fuerza se considerará actuando sobre la cota superior del carril y no se multiplica por el coeficiente de impacto.

Fuerzas de arranque (por vía) LM71 y SW

$F_a = 33\ (KN/m) \times L(m) \leq 1.000\ KN$ Se tomará Fa= 639.90 KN/vía

Fuerzas de frenado (por vía)

$F_f = 20\ (KN/m) \times L(m) \leq 6.000\ (KN)$ LM71 y SW0
$F_f = 35\ (KN/m) \times L(m)$ SW2

$$H_f = 0{,}082 L^{0{,}9} K^{0{,}4} = 279 kN$$

La parte de estas acciones que se transmite al apoyo fijo del tablero puede reducirse debido a la continuidad del carril entre las zonas sobre la estructura y en los accesos. El valor de la fuerza de frenado por vía resulta ser:

Donde:

L es la longitud del puente en metros.
K es la rigidez del estribo por metro de ancho y por vía.

Estos valores se reducirán al 50% si se consideran concomitantes con la fuerza centrífuga.

$$H_{Tf} = (0{,}34 + 0{,}013k) L_T^{0{,}9} K^{0{,}25} = 516 kN$$

ACCIONES TÉRMICAS VÍA-ESTRUCTURA

La parte de estas acciones que se transmite al apoyo fijo del tablero se calcula como:

Donde:

L_T es la longitud de cálculo a efectos térmicos en metros.
k es la resistencia plástica a rasante en el contacto entre vía y estructura.
K es la rigidez del estribo por metro de ancho y por vía.

EMPUJE SOBRE BARANDILLAS.

En el elemento superior de la barandilla se considera una fuerza horizontal de valor 1.5 kN/m actuando de modo simultáneo con la sobrecarga uniforme.

DESCARRILAMIENTO

El efecto de descarrilamiento se estudiará como una situación accidental, mayorándose las acciones por un coeficiente de seguridad γf =1,0 y minorándose los parámetros mecánicos de los materiales por los coeficientes indicados en el apartado 2.2.

Para el estudio del Estado Límite Último de estabilidad se empleará, según el Eurocódigo, una carga vertical de 80 KN/m en una longitud total de 20,00 m a una distancia máxima del eje de la vía de 1,5 veces el ancho.

Para el análisis local de elementos estructurales se tomarán 2 cargas verticales a cada lado del eje de vía de 5 T/m en 6.4 m y separadas entre sí 1.4 m

Acciones climáticas

VIENTO

Al estar la estructura ubicada junto a la población de Sant Vicenç dels Horts la velocidad de cálculo se puede determinar a partir de una velocidad de referencia de vref=28 m/s corregida con los siguientes parámetros multiplicadores:

Ct = factor de topografía

Cr = factor de riesgo (se toma un periodo de retorno de 100 años)

Cz = factor de altura (se adopta un entorno Tipo II, zona plana con algunos obstáculos)

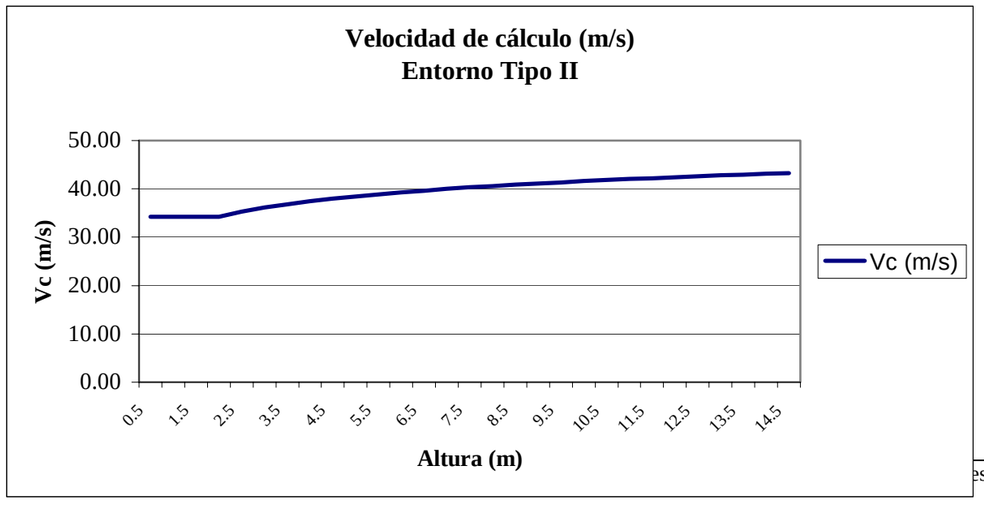
Cg = factor de ráfaga

$$Cz = Kz \ln(\frac{z}{zo}) \quad si \quad z \geq z_{min}$$

$$Cz = Kz \ln(\frac{z_{min}}{zo}) \quad si \quad z \leq z_{min}$$

$$Cg = \sqrt{\left(1 + \frac{7Kz}{CzCt}\right)}$$

Vref=28 m/s, Ct=1.0 y Cr=1.04



Para un entorno Tipo II

Kz= 0.19 zo = 0.05m zmin = 4 m

Para determinar el empuje de viento sobre el tablero, la velocidad de cálculo es:

Vc = Ct . Cr . Cz . Cg . Vref = 42.5 m/s

Esta velocidad de viento da lugar a una presión de 0.147 T/m^2.

Las situaciones consideradas han sido:

Puente sin sobrecarga
Puente con tren en una vía
Puente con trenes en ambas vías

Se tiene en cuenta en el cálculo del empuje total del viento sobre el tablero los coeficientes de ocultamiento entre zonas expuestas, obteniendose los siguientes valores:

Puente sin sobrecarga F = 0.596 T/m

Puente con tren en una vía F = 0.722 T/m

Puente con trenes en ambas vías F = 0.743 T/m

Cuando se combina con la sobrecarga se reduce en un 50% esta acción.

NIEVE

Según al IAP se debe aplicar una carga de nieve sobre la superficie de tablero en la que no se considere sobrecarga de uso. Para el cálculo del tablero se considera la posibilidad de tener sobrecarga en toda su superficie, por lo tanto no es necesario aplicar la sobrecarga de nieve.

Acciones Térmicas

VARIACIÓN UNIFORME DE TEMPERATURA

El puente está emplazado en la región climática V (Figura 7 de la IAP)

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

$$\Delta T = K \cdot z^a \cdot h^b \cdot s^c = 29{,}13 \cdot 4^{0{,}301} \cdot 1.2^{-0{,}148} \cdot 1^0 = 38.07^o = \pm 19\ ^oC$$

GRADIENTE TÉRMICO

$\nabla Tsi,ref = 12\ ^oC$

$K_1 = 0.80$

$K_3 = 1.06$

$K_4 = 1.19$

Vertical positivo $\nabla T_{SI} = (K_1\ K_3\ K_4).\ \nabla T_{SI,ref} = 7{,}30\ ^oC$

Vertical negativo $\nabla T_{SI} = 0^oC$ (tablero de hormigón con pavimento bituminoso)

Transversal $\nabla T_T = 2.5\ ^oC$ si la estructura tiene dirección Este-Oeste (+/- 25 g)

ACCIÓN SÍSMICA

La aceleración sísmica básica de la zona, según la normativa vigente, es $a_b = 0{,}04$ g.

La categoría de la estructura puede considerarse de especial importancia, lo que es equivalente a un factor de nivel de daño $\gamma_1 = 1.3$.

La aceleración de cálculo es: $a_c = \gamma_1\ a_b = 0.052$ g

Las acciones sísmicas en puentes sólo se consideran, de acuerdo con la IAP, para aceleraciones de cálculo superiores a 0.06g, por lo tanto no es preciso realizar el análisis sísmico del puente.

2.2 COEFICIENTES DE SEGURIDAD, MATERIALES, NIVELES DE CONTROL Y NORMATIVAS

HORMIGONES

- Hormigón de Limpieza..... HM-15
- Cimentaciones y estribos..... HA-25 / B / 20 / IIa
- Alzados de pilas …….... HA-25 / B / 20 / IIa
- Tablero ..... HP-40 / B / 20 / IIa

Control del hormigón ESTADÍSTICO

γc= 1.50 (Situación persistente o transitoria)
γc= 1.30 (Situación accidental)

El módulo de elasticidad se ha evaluado en todos los casos de acuerdo a la expresión de EHE:

$E_c = 8500 \sqrt[3]{f_{ck} + 8}$ (Nw/mm^2)

Los límites establecidos para la consistencia en la puesta en obra podrán superarse con el empleo de aditivos superfluidificantes, siempre que el valor de la relación agua-cemento cumpla los requisitos prefijados en EHE.

ACEROS

- Acero corrugado para la armadura pasiva B500S, con f_{yk} > 500 MPa (5100 Kp/cm^2)

- Acero de pretensado tipo 170/190 con tendones de 0,6 " (Y 1860 S7 15.2).

Control de los aceros NORMAL

γs= 1.15 (Situación persistente o transitoria)
γs= 1.0 (Situación accidental)

CONTROL DE EJECUCIÓN

El control de ejecución será INTENSO (γ_g= 1.35 y γ_{fq}= 1.5) en tablero y estribos de acuerdo con las especificaciones de la normativa EHE.

NORMAS UTILIZADAS

Para el establecimiento de acciones y las combinaciones necesarias para la obtención de las solicitaciones de cálculo que se emplearán en la comprobación de los diferentes Estados Límite se realizarán los cálculos empleando la normativa IPF-75 y los criterios especificados en los Eurocódigos, adoptándose el más desfavorable de ambos.

Cálculo según IPF-75

Para el cálculo de las acciones se utilizarán las siguientes instrucciones.

- Instrucción relativa a las acciones a considerar en el Proyecto de Puentes de Ferrocarril", correspondiente a la O.M. 25 de Junio de 1.975 (IPF-75).

- Norma de construcción Sismorresistente: Parte general y edificación (NCSE-94)" R.D. 29 de Diciembre de 1.994.

Para el cálculo de las acciones ambientales se utilizará la siguiente instrucción.

- Instrucción relativa a las acciones a considerar en el proyecto de Puentes de Carreteras I.A.P. 12 de Febrero de 1998.

Para establecer las hipótesis y combinaciones de cálculo y sus correspondientes coeficientes de ponderación se utilizarán las siguientes Instrucciones:

- Instrucción de Hormigón Estructural (EHE) R.D. 2661/1998 de 11 de Diciembre.

Cálculo según Eurocódigos y EHE

- Eurocódigo 1*: Bases de proyecto y acciones. Parte 3. Cargas de tráfico en puentes*. UNE-ENV 1991-3. Octubre 1997. (EC1.1.3.)

Para establecer las hipótesis y combinaciones de cálculo y sus correspondientes coeficientes de ponderación se utilizarán las siguientes Instrucciones:

- Eurocódigo 1: *Bases de proyecto y acciones en estructuras. Parte 1; Bases de proyecto*. UNE-ENV 1991-1, Octubre 1997 (EC1.1)

Para dimensionamiento y comprobación de secciones se actuará, en todo momento, de acuerdo con la normativa española;

- Instrucción de Hormigón Estructural EHE. R.D. 2661/1998 de 11 de Diciembre

El estudio de la fatiga de los materiales se hará de acuerdo con la siguiente norma:

- Eurocódigo 2: *Proyecto de estructuras de hormigón. Parte 2: Puentes de hormigón.* ENV 1992.2: Septiembre 1996. (EC2.2).

La comprobación de flechas, deformaciones y vibraciones se hará de acuerdo con la norma:

- Eurocódigo 1: *Bases de proyecto y acciones en estructuras. Parte 3: Cargas de tráfico en puentes* UNE-ENV 1991-3. Octubre 1997. (EC1.1.3).

Para el análisis de la interacción vía-estructura se empleará la siguiente norma:

- Norma U.I.C. Ficha 774.3 R. 1ª edición. Febrero 1999 (U.I.C. 774.3).

Subsidiariamente, y en lo no contemplado en las normas anterioriores se emplearán las siguientes:

- Norma UIC. Ficha 776.1. 3ª edición. 1 de Julio de 1.979. (U.I.C. 776.1)
- Norma UIC. Ficha 774-2. 1ª Edición. 1 de Julio de 1.974. (U.I.C. 774.2)
- Norma UIC. Ficha 702.0. 2ª Edición. 1 de Enero de 1.974. (U.I.C. 702.0)

2.3 AMBIENTES, RECUBRIMIENTOS, FISURACIÓN Y CUANTÍAS MÍNIMAS

De acuerdo con la normativa EHE se consideran los ambientes indicados en la tabla siguiente.

Elemento	Ambiente	Recubrimiento de Armadura pasiva (mm)	Límite de abertura de fisura Wmax (mm)	
			Hormigón armado	Hormigón postesado
Tablero	IIa	35	-	Descompresion bajo comb. cuasipermanente
Alzados de pilas y estribos	IIa	30	0.2	-
Cimentaciones	Iia	30	0.1	-
Pilotes/Pantallas	Iia	75	0.1	-

Para las armaduras postesas el recubrimiento es el máximo de los siguientes valores: 4 cm o el diámetro de la vaina.

Las cuantías mínimas de armadura pasiva B500S serán las expuestas en la siguiente tabla (EHE, art. 4.3.5)

Elemento	Posición	Tipo	Cuantía geométrica o/oo
Zapatas	cara superior o inferior	transversal o longitudinal	0.90
Pilotes	vertical	-	4.0
Pilas	vertical	-	4.0
Alzados de estribos y aletas (1)	horizontal	lado tierras	1.07
		lado visto	2.13
	vertical	lado tierras	0.90
		lado visto	0.30
Tablero	cara superior o inferior	transversal o longitudinal	0.90

(1) las cuantías geométricas horizontales se pueden reducir un 50 % si se colocan juntas de contracción distanciadas menos de 7,5 m.

2.4 HIPÓTESIS DE COMBINACIÓN DE ESFUERZOS

Se han considerado las combinaciones de hipótesis de las acciones recogidas en la Normativas IAP y EHE, basados en la teoría de Estados Límites, para las distintas situaciones de cálculo de la estructura.

2.4.1 ESTADOS LÍMITES ÚLTIMOS

Las hipótesis de cálculo consideradas son:

- Situaciones persistentes o transitorias

$$\underset{j \geq 1}{\Sigma}\ \gamma_{Gj}\ G_{kj}\ +\ \Sigma\ \gamma_{Gj}\ G^{*}_{kj}\ +\ \gamma_{Q1}\ Q_{k1}\ +\ \underset{i > 1}{\Sigma}\ \gamma_{Qi}\ \Psi_{0i}\ Q_{ki}$$

- Situaciones accidentales

$$\underset{j \geq 1}{\Sigma}\ \gamma_{Gaj}\ G_{kj}\ +\ \Sigma\ \gamma_{Gj}\ G^{*}_{kj}\ +\ \gamma_{A}\ A_{k}\ +\ \Psi_{11}\ Q_{k1}\ +\ \underset{i > 1}{\Sigma}\ \gamma_{Qi}\ \Psi_{2i}\ Q_{ki}$$

- Situaciones accidentales de sismo

$$\underset{j \geq 1}{\Sigma}\ G_{kj}\ +\Sigma\ \gamma_{Gj}\ G^{*}_{kj}\ +\ \gamma_{i}\ A_{Ed}\ +\ \underset{i > 1}{\Sigma}\ \gamma_{Qi}\ \Psi_{2i}\ Q_{ki}$$

donde:

G = Valor característico de las cargas permanentes.
G* = Valor característico de las cargas permanentes de valor no constante.
Q_{k1} = Valor característico de la carga variable dominante.
A_k = Valor característico de la acción accidental
A_{eq} = Valor característico de la acción sísmica, calculado según la Norma Sismorresistente.

Los coeficientes de seguridad y de combinación de acciones empleados se definen en la EHE para control de ejecución intenso.

2.4.2 ESTADOS LÍMITES DE SERVICIO

Las hipótesis de cálculo consideradas son:

- Combinación característica

$$\underset{j \geq 1}{\Sigma}\ \gamma_{Gj}\ G_{kj}\ +\ \Sigma\ \gamma_{Gj}\ G^{*}_{kj}\ +\ \gamma_{Q1}\ Q_{k1}\ +\ \underset{i > 1}{\Sigma}\ \gamma_{Qi}\ \Psi_{0i}\ Q_{ki}$$

- Combinación frecuente

$$\underset{j \geq 1}{\Sigma}\ \gamma_{Gaj}\ G_{kj}\ +\ \Sigma\ \gamma_{Gj}\ G^{*}_{kj}\ +\ \Psi_{11}\ Q_{k1}\ +\ \underset{i > 1}{\Sigma}\ \gamma_{Qi}\ \Psi_{2i}\ Q_{ki}$$

- Combinación casi permanente

$$\underset{j \geq 1}{\Sigma}\ G_{kj}\ +\Sigma\ \gamma_{Gj}\ G^{*}_{kj}\ +\ \underset{i > 1}{\Sigma}\ \gamma_{Qi}\ \Psi_{2i}\ Q_{ki}$$

3 CÁLCULO ESTRUCTURAL DEL TABLERO

3.1 CÁLCULO ESTRUCTURAL CON MODELO DE VIGA CONTINUA

3.1.1 DISCRETIZACIÓN Y CARACTERÍSTICAS MECÁNICAS

Se modela el tablero mediante un emparrillado plano constituido por dos nervios longitudinales, coincidente con los ejes de viga en planta, con 3 grados de libertad por nudo (desplazamiento vertical, giro de flexión longitudinal de la barra y giro a torsión). Los nervios longitudinales se han dividido para cada uno de los vanos del tablero en 20 barras de igual longitud asignando las características mecánicas en cada uno de los extremos de la barra. Las propiedades mecánicas de la barra se obtienen como media de las características de sus secciones extremas. En la zona de estribos se ha simulado la riostra de apoyo mediante 2 barras transversales, una a cada lado del nervio longitudinal, con su extremo final coincidente con la posición real de los apoyos de neopreno. En las barras transversales de las riostras de apoyo se ha despreciado su rigidez a torsión. En los apoyos se han prescrito únicamente los movimientos verticales del nudo.

La numeración de nudos y barras es correlativa, tomando como origen el extremo izquierdo del nervio longitudinal, en último lugar se numeran las barras y nudos que permiten simular las riostras de apoyo en los dos estribos. La discretización adoptada aparece en las hojas y esquemas adjuntos.

En los listados aparece la siguiente información:

1. Datos generales.
2. Discretización: numeración de barras y nudos, coordenadas de los nudos condiciones de vinculación.
3. Cargas en los nudos para cada hipótesis de carga.
4. Reacciones para cada hipótesis de carga.
5. Esfuerzos en extremo de barra para cada hipótesis de carga.

3.1.2 CÁLCULO DE ESFUERZOS LONGITUDINALES

El cálculo de esfuerzos longitudinales con el modelo de análisis estructural expuesto se detalla a continuación.

La notación adoptada para cada una de las hipótesis de carga es la siguiente:

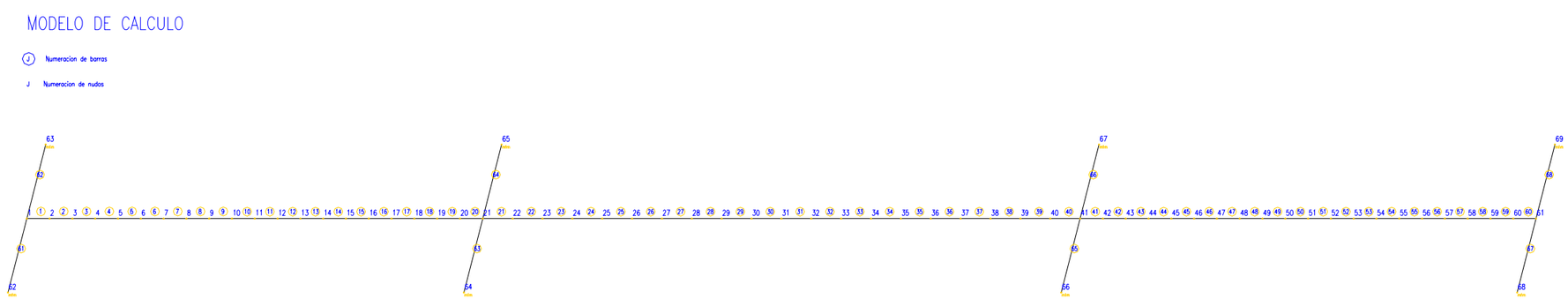
- **g_1** Peso propio de la estructura.
- **g_2** Carga permanente.
- **q** Sobrecarga uniforme de ferrocarril.
- **ΔT** Gradiente de temperatura.
- **Pii** Pretensado inicial de descimbrado (pretensado parcial con pérdidas iniciales).
- **Pi** Pretensado inicial (con pérdidas iniciales).
- **P_∞** Pretensado final (con pérdidas iniciales y diferidas).

CÁLCULO ESTRUCTURAL DEL TABLERO CON MODELO DE EMPARRILLADO

MODELO DE CALCULO

(J) Numeracion de barras

J Numeracion de nudos



PEDELTA, S.L.- INGENIERIA DE ESTRUCTURAS, BARCELONA

Referencia del Proyecto:

Paso Inferior Riera de Torrelles

DATOS GENERALES DEL EMPARRILLADO

No. de Barras = 68
No. de Nudos = 69
No. de Nudos con condiciones impuestas = 8
No. de Materiales = 3
No. de Hipotesis de carga = 1

Propiedades de barras =1, de secciones =0

TIPO DE PROPIEDADES = 0

PROPIEDADES DE LOS MATERIALES

MATERIAL/SECCION 1

Inercia a Flexion (m4) = 1.1212699
Modulo de Torsion (m4) = 2.2570000
Area a Cortante (m2) = 0.0000000
Modulo de elasticidad (T/m2) = 2850000.00
Coeficiente de Poisson = 0.16
Canto (m) = 1.24000
Vsup (m) = 0.51700
Vinf (m) = 0.72300

MATERIAL/SECCION 2

Inercia a Flexion (m4) = 1.2274500
Modulo de Torsion (m4) = 2.2570000
Area a Cortante (m2) = 0.0000000
Modulo de elasticidad (T/m2) = 2850000.00
Coeficiente de Poisson = 0.16
Canto (m) = 1.24000
Vsup (m) = 0.54800
Vinf (m) = 0.69200

PROPIEDADES DE LOS MATERIALES

MATERIAL/SECCION 3

Inercia a Flexion (m4) = 1.0000000
Modulo de Torsion (m4) = 0.0000100
Area a Cortante (m2) = 0.0000000
Modulo de elasticidad (T/m2) = 2850000.00
Coeficiente de Poisson = 0.16
Canto (m) = 1.10000
Vsup (m) = 0.55000
Vinf (m) = 0.55000

DISCRETIZACION. DATOS DE LAS BARRAS

Barra	Nudo 1	Nudo 2	No.de Secc Nud.1	No.de Secc Nud.2	No. MAT
1	1	2	2	2	1
2	2	3	2	2	1
3	3	4	1	1	2
4	4	5	1	1	2
5	5	6	1	1	2
6	6	7	1	1	2
7	7	8	1	1	2
8	8	9	1	1	2
9	9	10	1	1	2
10	10	11	1	1	2
11	11	12	1	1	2
12	12	13	1	1	2
13	13	14	1	1	2
14	14	15	1	1	2
15	15	16	1	1	2
16	16	17	1	1	2
17	17	18	1	1	2
18	18	19	1	1	2
19	19	20	2	2	1
20	20	21	2	2	1
21	21	22	2	2	1
22	22	23	2	1	3
23	23	24	1	1	2
24	24	25	1	1	2
25	25	26	1	1	2
26	26	27	1	1	2
27	27	28	1	1	2
28	28	29	1	1	2
29	29	30	1	1	2
30	30	31	1	1	2
31	31	32	1	1	2
32	32	33	1	1	2
33	33	34	1	1	2
34	34	35	1	1	2
35	35	36	1	1	2
36	36	37	1	1	2
37	37	38	1	1	2
38	38	39	1	1	2
39	39	40	1	2	3
40	40	41	2	2	1
41	41	42	2	2	1
42	42	43	2	2	1
43	43	44	1	1	2
44	44	45	1	1	2
45	45	46	1	1	2
46	46	47	1	1	2
47	47	48	1	1	2

DISCRETIZACION. DATOS DE LAS BARRAS

Barra	Nudo 1	Nudo 2	No.de Secc Nud.1	No.de Secc Nud.2	No. MAT
48	48	49	1	1	2
49	49	50	1	1	2
50	50	51	1	1	2
51	51	52	1	1	2
52	52	53	1	1	2
53	53	54	1	1	2
54	54	55	1	1	2
55	55	56	1	1	2
56	56	57	1	1	2
57	57	58	1	1	2
58	58	59	1	1	2
59	59	60	2	2	1
60	60	61	2	2	1
61	1	62	3	3	4
62	1	63	3	3	4
63	21	64	3	3	4
64	21	65	3	3	4
65	41	66	3	3	4
66	41	67	3	3	4
67	61	68	3	3	4
68	61	69	3	3	4

PROPIEDADES DE LAS BARRAS

MATERIAL 1

Inercia a Flexion	(m4)	=	1.2274500
Modulo de Torsion	(m4)	=	2.2570000
Area a Cortante	(m2)	=	0.0000000
Modulo de elasticidad	(T/m2)	=	2850000.00
Modulo de deformacion G	(T/m2)	=	1653000.00
Canto	(m)	=	1.24000
Vsup	(m)	=	0.54800
Vinf	(m)	=	0.69200

MATERIAL 2

Inercia a Flexion	(m4)	=	1.1212699
Modulo de Torsion	(m4)	=	2.2570000
Area a Cortante	(m2)	=	0.0000000
Modulo de elasticidad	(T/m2)	=	2850000.00
Modulo de deformacion G	(T/m2)	=	1653000.00
Canto	(m)	=	1.24000
Vsup	(m)	=	0.51700
Vinf	(m)	=	0.72300

MATERIAL 3

Inercia a Flexion	(m4)	=	1.1743600
Modulo de Torsion	(m4)	=	2.2570000
Area a Cortante	(m2)	=	0.0000000
Modulo de elasticidad	(T/m2)	=	2850000.00
Modulo de deformacion G	(T/m2)	=	1653000.00
Canto	(m)	=	1.24000
Vsup	(m)	=	0.53250
Vinf	(m)	=	0.70750

MATERIAL 4

Inercia a Flexion	(m4)	=	1.0000000
Modulo de Torsion	(m4)	=	0.0000100
Area a Cortante	(m2)	=	0.0000000
Modulo de elasticidad	(T/m2)	=	2850000.00
Modulo de deformacion G	(T/m2)	=	1653000.00
Canto	(m)	=	1.10000
Vsup	(m)	=	0.55000
Vinf	(m)	=	0.55000

COORDENADAS DE LOS NUDOS

Nudo	X	Y
1	0.000	0.000
2	0.725	0.000
3	1.450	0.000
4	2.175	0.000
5	2.900	0.000
6	3.625	0.000
7	4.350	0.000
8	5.075	0.000
9	5.800	0.000
10	6.525	0.000
11	7.250	0.000
12	7.975	0.000
13	8.700	0.000
14	9.425	0.000
15	10.150	0.000
16	10.875	0.000
17	11.600	0.000
18	12.325	0.000
19	13.050	0.000
20	13.775	0.000
21	14.500	0.000
22	15.450	0.000
23	16.400	0.000
24	17.350	0.000
25	18.300	0.000
26	19.250	0.000
27	20.200	0.000
28	21.150	0.000
29	22.100	0.000
30	23.050	0.000
31	24.000	0.000
32	24.950	0.000
33	25.900	0.000
34	26.850	0.000
35	27.800	0.000
36	28.750	0.000
37	29.700	0.000
38	30.650	0.000
39	31.600	0.000
40	32.550	0.000
41	33.500	0.000
42	34.225	0.000
43	34.950	0.000
44	35.675	0.000

45	36.400	0.000
46	37.125	0.000
47	37.850	0.000
48	38.575	0.000

COORDENADAS DE LOS NUDOS

Nudo	X	Y
49	39.300	0.000
50	40.025	0.000
51	40.750	0.000
52	41.475	0.000
53	42.200	0.000
54	42.925	0.000
55	43.650	0.000
56	44.375	0.000
57	45.100	0.000
58	45.825	0.000
59	46.550	0.000
60	47.275	0.000
61	48.000	0.000
62	-0.600	-2.350
63	0.600	2.350º
64	13.900	-2.350
65	15.100	2.350
66	32.900	-2.350
67	34.100	2.350
68	47.400	-2.350
69	48.600	2.350

CONDICIONES DE VINCULACION

Nudo	Codigo	RX	RZ	RY
62	0 1 0	0.000	0.000	0.000
63	0 1 0	0.000	0.000	0.000
64	0 1 0	0.000	0.000	0.000
65	0 1 0	0.000	0.000	0.000
66	0 1 0	0.000	0.000	0.000
67	0 1 0	0.000	0.000	0.000
68	0 1 0	0.000	0.000	0.000
69	0 1 0	0.000	0.000	0.000

Ancho de banda = 189

HIPOTESIS 1 PESO PROPIO

REACCIONES

Nudo	Flector	Reac_vert	Torsor
62	0.00000	62.26733	0.00000
63	0.00000	70.32077	0.00000
64	0.00000	213.22035	0.00000
65	0.00000	209.39070	0.00000
66	0.00000	209.34145	0.00000
67	0.00000	213.15686	0.00000
68	0.00000	70.28559	0.00000
69	0.00000	62.24726	0.00000

SUMA DE REACCIONES

Suma Momentos Flectores	=	0.000
Suma Reacciones Vertic.	=	1110.230
Suma Momentos Torsores	=	0.000

HIPOTESIS 1 PESO PROPIO

ESFUERZOS EN EXTREMO DE BARRA

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	-4.83	120.46	18.93	-75.55	-101.27	-18.93
2	75.55	101.26	18.93	-142.01	-82.07	-18.93
3	142.01	82.07	18.93	-195.82	-66.36	-18.93
4	195.82	66.37	18.93	-238.25	-50.66	-18.93
5	238.25	50.66	18.93	-269.28	-34.96	-18.93
6	269.28	34.98	18.93	-288.94	-19.27	-18.93
7	288.93	19.24	18.93	-297.19	-3.54	-18.93
8	297.20	3.52	18.93	-294.05	12.19	-18.93
9	294.06	-12.17	18.93	-279.55	27.87	-18.93
10	279.55	-27.89	18.93	-253.64	43.60	-18.93
11	253.65	-43.60	18.93	-216.35	59.31	-18.93
12	216.35	-59.33	18.93	-167.64	75.04	-18.93
13	167.64	-75.00	18.93	-107.57	90.70	-18.93
14	107.57	-90.72	18.93	-36.11	106.43	-18.93
15	36.11	-106.44	18.93	46.75	122.14	-18.93
16	-46.75	-122.14	18.93	141.00	137.85	-18.93
17	-140.99	-137.85	18.93	246.63	153.56	-18.93
18	-246.63	-153.56	18.93	363.66	169.27	-18.93
19	-363.66	-169.27	18.93	493.33	188.47	-18.93
20	-493.34	-188.46	18.93	636.93	207.66	-18.93
21	-634.63	214.95	9.92	442.37	-189.80	-9.92
22	-442.37	189.80	9.92	274.01	-164.65	-9.92
23	-274.00	164.64	9.92	127.37	-144.06	-9.92
24	-127.37	144.06	9.92	0.29	-123.48	-9.92

HIPOTESIS 1 PESO PROPIO

ESFUERZOS EN EXTREMO DE BARRA

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
25	-0.29	123.48	9.92	-107.25	-102.90	-9.92
26	107.25	102.92	9.92	-195.23	-82.34	-9.92
27	195.23	82.33	9.92	-263.65	-61.75	-9.92
28	263.65	61.74	9.92	-312.52	-41.16	-9.92
29	312.52	41.18	9.92	-341.87	-20.60	-9.92
30	341.87	20.58	9.92	-351.65	0.00	-9.92
31	351.65	0.01	9.92	-341.88	20.57	-9.92
32	341.88	-20.54	9.92	-312.59	41.12	-9.92
33	312.59	-41.12	9.92	-263.74	61.70	-9.92
34	263.74	-61.72	9.92	-195.33	82.30	-9.92
35	195.33	-82.31	9.92	-107.36	102.89	-9.92
36	107.37	-102.88	9.92	0.15	123.46	-9.92
37	-0.15	-123.48	9.92	127.22	144.06	-9.92
38	-127.22	-144.05	9.92	273.85	164.63	-9.92
39	-273.85	-164.63	9.92	442.19	189.78	-9.92
40	-442.19	-189.78	9.92	634.43	214.93	-9.92
41	-636.72	207.57	18.89	493.19	-188.38	-18.89
42	-493.20	188.38	18.89	363.58	-169.18	-18.89
43	-363.58	169.17	18.89	246.62	-153.47	-18.89
44	-246.62	153.48	18.89	141.04	-137.77	-18.89
45	-141.04	137.78	18.89	46.85	-122.07	-18.89
46	-46.85	122.07	18.89	-35.95	-106.37	-18.89
47	35.95	106.38	18.89	-107.37	-90.67	-18.89
48	107.37	90.69	18.89	-167.43	-74.99	-18.89
49	167.42	74.99	18.89	-216.10	-59.28	-18.89
50	216.08	59.31	18.89	-253.39	-43.61	-18.89
51	253.37	43.62	18.89	-279.30	-27.91	-18.89
52	279.27	27.90	18.89	-293.81	-12.19	-18.89
53	293.80	12.21	18.89	-296.95	3.50	-18.89
54	296.95	-3.52	18.89	-288.70	19.23	-18.89
55	288.72	-19.21	18.89	-269.10	34.92	-18.89
56	269.10	-34.92	18.89	-238.10	50.62	-18.89
57	238.09	-50.61	18.89	-195.71	66.32	-18.89
58	195.71	-66.32	18.89	-141.93	82.03	-18.89
59	141.94	-82.02	18.89	-75.52	101.21	-18.89
60	75.51	-101.21	18.89	4.82	120.40	-18.89
61	143.67	-56.20	0.00	0.00	62.27	0.00
62	163.20	-64.26	0.00	0.00	70.32	0.00
63	517.14	-213.22	0.00	0.00	213.22	0.00
64	507.85	-209.39	0.00	0.00	209.39	0.00
65	507.73	-209.34	0.00	0.00	209.34	0.00

66	516.99	-213.16	0.00	0.00	213.16	0.00
67	163.12	-64.22	0.00	0.00	70.29	0.00
68	143.62	-56.18	0.00	0.00	62.25	0.00

HIPOTESIS 1 CARGA PERMANENTE

REACCIONES

Nudo	Flector	Reac_vert	Torsor
62	0.00000	36.81569	0.00000
63	0.00000	42.33951	0.00000
64	0.00000	142.22897	0.00000
65	0.00000	139.60217	0.00000
66	0.00000	139.56870	0.00000
67	0.00000	142.18568	0.00000
68	0.00000	42.31549	0.00000
69	0.00000	36.80199	0.00000

SUMA DE REACCIONES

Suma Momentos Flectores	=	0.000
Suma Reacciones Vertic.	=	721.858
Suma Momentos Torsores	=	0.000

HIPOTESIS 1 CARGA PERMANENTE

ESFUERZOS EN EXTREMO DE BARRA

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	-3.31	79.15	12.98	-50.12	-68.25	-12.98
2	50.12	68.25	12.98	-95.65	-57.35	-12.98
3	95.65	57.35	12.98	-133.28	-46.44	-12.98
4	133.28	46.45	12.98	-163.00	-35.54	-12.98
5	163.00	35.53	12.98	-184.81	-24.63	-12.98
6	184.82	24.64	12.98	-198.73	-13.73	-12.98
7	198.72	13.74	12.98	-204.73	-2.84	-12.98
8	204.72	2.83	12.98	-202.83	8.07	-12.98
9	202.83	-8.07	12.98	-193.02	18.98	-12.98
10	193.02	-18.99	12.98	-175.30	29.89	-12.98
11	175.31	-29.89	12.98	-149.68	40.80	-12.98
12	149.68	-40.81	12.98	-116.14	51.71	-12.98
13	116.14	-51.71	12.98	-74.70	62.61	-12.98
14	74.70	-62.62	12.98	-25.35	73.52	-12.98
15	25.36	-73.53	12.98	31.90	84.43	-12.98
16	-31.90	-84.43	12.98	97.06	95.33	-12.98
17	-97.06	-95.33	12.98	170.13	106.24	-12.98
18	-170.13	-106.24	12.98	251.10	117.14	-12.98
19	-251.10	-117.14	12.98	339.98	128.04	-12.98
20	-339.99	-128.04	12.98	436.77	138.95	-12.98
21	-435.19	142.88	6.81	306.24	-128.59	-6.81
22	-306.24	128.59	6.81	190.86	-114.31	-6.81
23	-190.87	114.30	6.81	89.06	-100.02	-6.81
24	-89.06	100.01	6.81	0.84	-85.72	-6.81

HIPOTESIS 1 CARGA PERMANENTE

ESFUERZOS EN EXTREMO DE BARRA

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
25	-0.84	85.73	6.81	-73.82	-71.44	-6.81
26	73.82	71.43	6.81	-134.89	-57.15	-6.81
27	134.90	57.14	6.81	-182.40	-42.86	-6.81
28	182.39	42.88	6.81	-216.33	-28.59	-6.81
29	216.33	28.59	6.81	-236.70	-14.30	-6.81
30	236.70	14.28	6.81	-243.49	0.01	-6.81
31	243.49	0.00	6.81	-236.71	14.29	-6.81
32	236.71	-14.27	6.81	-216.36	28.56	-6.81
33	216.37	-28.55	6.81	-182.46	42.84	-6.81
34	182.46	-42.86	6.81	-134.96	57.14	-6.81
35	134.96	-57.13	6.81	-73.90	71.42	-6.81
36	73.90	-71.43	6.81	0.75	85.72	-6.81
37	-0.75	-85.72	6.81	88.96	100.01	-6.81
38	-88.96	-100.01	6.81	190.76	114.29	-6.81
39	-190.76	-114.29	6.81	306.12	128.58	-6.81
40	-306.12	-128.58	6.81	435.06	142.87	-6.81
41	-436.63	138.89	12.96	339.89	-127.98	-12.96
42	-339.89	127.99	12.96	251.05	-117.08	-12.96
43	-251.05	117.08	12.96	170.12	-106.18	-12.96
44	-170.12	106.18	12.96	97.09	-95.27	-12.96
45	-97.09	95.27	12.96	31.97	-84.37	-12.96
46	-31.97	84.37	12.96	-25.25	-73.47	-12.96
47	25.25	73.46	12.96	-74.56	-62.56	-12.96
48	74.57	62.58	12.96	-115.98	-51.68	-12.96
49	115.99	51.67	12.96	-149.50	-40.77	-12.96
50	149.51	40.78	12.96	-175.12	-29.87	-12.96
51	175.11	29.90	12.96	-192.84	-19.00	-12.96
52	192.84	18.97	12.96	-202.64	-8.07	-12.96
53	202.65	8.09	12.96	-204.56	2.82	-12.96
54	204.56	-2.80	12.96	-198.58	13.70	-12.96
55	198.58	-13.71	12.96	-184.69	24.61	-12.96
56	184.69	-24.60	12.96	-162.90	35.51	-12.96
57	162.90	-35.51	12.96	-133.20	46.42	-12.96
58	133.20	-46.40	12.96	-95.61	57.31	-12.96
59	95.60	-57.31	12.96	-50.10	68.21	-12.96
60	50.10	-68.21	12.96	3.31	79.12	-12.96
61	89.29	-36.82	0.00	0.00	36.82	0.00
62	102.69	-42.34	0.00	0.00	42.34	0.00
63	344.96	-142.23	0.00	0.00	142.23	0.00
64	338.59	-139.60	0.00	0.00	139.60	0.00
65	338.51	-139.57	0.00	0.00	139.57	0.00

66	344.86	-142.19	0.00	0.00	142.19	0.00
67	102.63	-42.32	0.00	0.00	42.32	0.00
68	89.26	-36.80	0.00	0.00	36.80	0.00

HIPOTESIS 1 GRADIENTE TERMICO, AT= 8 C

REACCIONES

Nudo	Flector	Reac_vert	Torsor
62	0.00000	13.09889	0.00000
63	0.00000	3.65886	0.00000
64	0.00000	-14.74649	0.00000
65	0.00000	-2.03953	0.00000
66	0.00000	-2.00702	0.00000
67	0.00000	-14.70539	0.00000
68	0.00000	3.67987	0.00000
69	0.00000	13.11114	0.00000

SUMA DE REACCIONES

Suma Momentos Flectores	=	0.000
Suma Reacciones Vertic.	=	0.050
Suma Momentos Torsores	=	0.000

HIPOTESIS 1 GRADIENTE TERMICO, AT= 8 C

ESFUERZOS EN EXTREMO DE BARRA

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	5.66	16.76	-22.18	-17.81	-16.76	22.18
2	17.81	16.76	-22.18	-29.96	-16.76	22.18
3	29.95	16.76	-22.18	-42.10	-16.76	22.18
4	42.10	16.75	-22.18	-54.25	-16.75	22.18
5	54.25	16.75	-22.18	-66.39	-16.75	22.18
6	66.40	16.74	-22.18	-78.53	-16.74	22.18
7	78.54	16.75	-22.18	-90.69	-16.75	22.18
8	90.69	16.76	-22.18	-102.84	-16.76	22.18
9	102.83	16.77	-22.18	-114.99	-16.77	22.18
10	114.98	16.77	-22.18	-127.13	-16.77	22.18
11	127.13	16.76	-22.18	-139.28	-16.76	22.18
12	139.28	16.77	-22.18	-151.45	-16.77	22.18
13	151.44	16.76	-22.18	-163.60	-16.76	22.18
14	163.60	16.77	-22.18	-175.75	-16.77	22.18
15	175.75	16.78	-22.18	-187.91	-16.78	22.18
16	187.91	16.77	-22.18	-200.07	-16.77	22.18
17	200.07	16.78	-22.18	-212.24	-16.78	22.18
18	212.24	16.78	-22.18	-224.40	-16.78	22.18
19	224.40	16.78	-22.18	-236.57	-16.78	22.18
20	236.57	16.77	-22.18	-248.73	-16.77	22.18
21	241.11	-0.01	7.68	-241.10	0.01	-7.68
22	241.10	-0.01	7.68	-241.09	0.01	-7.68
23	241.09	-0.01	7.68	-241.09	0.01	-7.68
24	241.09	-0.01	7.68	-241.08	0.01	-7.68

HIPOTESIS 1 GRADIENTE TERMICO, AT= 8 C

ESFUERZOS EN EXTREMO DE BARRA

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
25	241.08	-0.01	7.68	-241.07	0.01	-7.68
26	241.07	-0.01	7.68	-241.06	0.01	-7.68
27	241.06	-0.01	7.68	-241.06	0.01	-7.68
28	241.06	-0.01	7.68	-241.05	0.01	-7.68
29	241.05	-0.01	7.68	-241.04	0.01	-7.68
30	241.04	-0.01	7.68	-241.04	0.01	-7.68
31	241.04	-0.01	7.68	-241.03	0.01	-7.68
32	241.03	0.00	7.68	-241.03	0.00	-7.68
33	241.03	-0.01	7.68	-241.02	0.01	-7.68
34	241.02	0.00	7.68	-241.02	0.00	-7.68
35	241.02	-0.01	7.68	-241.01	0.01	-7.68
36	241.01	-0.01	7.68	-241.01	0.01	-7.68
37	241.01	-0.01	7.68	-241.00	0.01	-7.68
38	241.00	-0.01	7.68	-240.99	0.01	-7.68
39	240.99	-0.01	7.68	-240.99	0.01	-7.68
40	240.99	-0.01	7.68	-240.98	0.01	-7.68
41	248.60	-16.72	-22.16	-236.48	16.72	22.16
42	236.48	-16.72	-22.16	-224.36	16.72	22.16
43	224.35	-16.72	-22.16	-212.23	16.72	22.16
44	212.23	-16.73	-22.16	-200.10	16.73	22.16
45	200.10	-16.72	-22.16	-187.98	16.72	22.16
46	187.97	-16.72	-22.16	-175.85	16.72	22.16
47	175.85	-16.73	-22.16	-163.72	16.73	22.16
48	163.71	-16.74	-22.16	-151.58	16.74	22.16
49	151.58	-16.74	-22.16	-139.44	16.74	22.16
50	139.44	-16.76	-22.16	-127.29	16.76	22.16
51	127.29	-16.75	-22.16	-115.15	16.75	22.16
52	115.14	-16.76	-22.16	-102.99	16.76	22.16
53	103.00	-16.78	-22.16	-90.83	16.78	22.16
54	90.83	-16.77	-22.16	-78.67	16.77	22.16
55	78.67	-16.78	-22.16	-66.50	16.78	22.16
56	66.50	-16.76	-22.16	-54.34	16.76	22.16
57	54.34	-16.79	-22.16	-42.17	16.79	22.16
58	42.17	-16.78	-22.16	-30.00	16.78	22.16
59	30.00	-16.79	-22.16	-17.83	16.79	22.16
60	17.83	-16.79	-22.16	-5.66	16.79	22.16
61	31.77	-13.10	0.00	0.00	13.10	0.00
62	8.87	-3.66	0.00	0.00	3.66	0.00
63	-35.77	14.75	0.00	0.00	-14.75	0.00
64	-4.95	2.04	0.00	0.00	-2.04	0.00
65	-4.87	2.01	0.00	0.00	-2.01	0.00
66	-35.67	14.71	0.00	0.00	-14.71	0.00

67	8.92	-3.68	0.00	0.00	3.68	0.00
68	31.80	-13.11	0.00	0.00	13.11	0.00

HIPOTESIS 1 PRETENSADO: PRIMER TESADO

REACCIONES

Nudo	Flector	Reac_vert	Torsor
62	0.00000	43.78411	0.00000
63	0.00000	21.82740	0.00000
64	0.00000	-41.02703	0.00000
65	0.00000	-24.27980	0.00000
66	0.00000	-24.98618	0.00000
67	0.00000	-41.36550	0.00000
68	0.00000	22.30260	0.00000
69	0.00000	43.88968	0.00000

SUMA DE REACCIONES

Suma Momentos Flectores	=	0.000
Suma Reacciones Vertic.	=	0.145
Suma Momentos Torsores	=	0.000

HIPOTESIS 1 PRETENSADO: PRIMER TESADO

ESFUERZOS EN EXTREMO DE BARRA

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	-215.69	65.61	-51.60	306.57	-65.61	51.60
2	-306.57	65.62	-51.60	487.31	-65.62	51.60
3	-487.32	65.61	-51.60	560.76	-65.61	51.60
4	-560.76	65.61	-51.60	612.72	-65.61	51.60
5	-612.71	65.59	-51.60	643.28	-65.59	51.60
6	-643.28	65.60	-51.60	652.47	-65.60	51.60
7	-652.47	65.64	-51.60	640.28	-65.64	51.60
8	-640.28	65.63	-51.60	606.67	-65.63	51.60
9	-606.68	65.64	-51.60	553.73	-65.64	51.60
10	-553.73	65.64	-51.60	484.75	-65.64	51.60
11	-484.76	65.65	-51.60	399.50	-65.65	51.60
12	-399.48	65.65	-51.60	297.73	-65.65	51.60
13	-297.73	65.67	-51.60	179.17	-65.67	51.60
14	-179.19	65.64	-51.60	43.55	-65.64	51.60
15	-43.56	65.68	-51.60	-109.48	-65.68	51.60
16	109.48	65.67	-51.60	-280.17	-65.67	51.60
17	280.17	65.67	-51.60	-466.87	-65.67	51.60
18	466.87	65.67	-51.60	-751.03	-65.67	51.60
19	751.04	65.67	-51.60	-883.50	-65.67	51.60
20	883.50	65.67	-51.60	-959.20	-65.67	51.60
21	949.15	0.36	-12.24	-873.90	-0.36	12.24
22	873.90	0.37	-12.24	-559.23	-0.37	12.24
23	559.23	0.37	-12.24	-268.50	-0.37	12.24
24	268.50	0.37	-12.24	-21.22	-0.37	12.24

HIPOTESIS 1 PRETENSADO: PRIMER TESADO

ESFUERZOS EN EXTREMO DE BARRA

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
25	21.21	0.38	-12.24	182.30	-0.38	12.24
26	-182.31	0.38	-12.24	343.73	-0.38	12.24
27	-343.75	0.40	-12.24	464.95	-0.40	12.24
28	-464.96	0.38	-12.24	547.86	-0.38	12.24
29	-547.87	0.34	-12.24	594.06	-0.34	12.24
30	-594.06	0.37	-12.24	604.76	-0.37	12.24
31	-604.74	0.32	-12.24	593.38	-0.32	12.24
32	-593.37	0.31	-12.24	546.53	-0.31	12.24
33	-546.53	0.33	-12.24	462.97	-0.33	12.24
34	-462.95	0.32	-12.24	341.06	-0.32	12.24
35	-341.05	0.32	-12.24	178.99	-0.32	12.24
36	-178.98	0.33	-12.24	-25.22	-0.33	12.24
37	25.22	0.35	-12.24	-273.18	-0.35	12.24
38	273.18	0.34	-12.24	-564.01	-0.34	12.24
39	564.01	0.34	-12.24	-879.82	-0.34	12.24
40	879.82	0.34	-12.24	-955.83	-0.34	12.24
41	965.66	-66.01	-50.73	-889.75	66.01	50.73
42	889.75	-66.01	-50.73	-661.08	66.01	50.73
43	661.08	-66.00	-50.73	-473.09	66.00	50.73
44	473.09	-66.01	-50.73	-285.65	66.01	50.73
45	285.64	-66.01	-50.73	-114.69	66.01	50.73
46	114.69	-66.02	-50.73	38.59	66.02	50.73
47	-38.59	-66.04	-50.73	174.50	66.04	50.73
48	-174.51	-66.06	-50.73	293.35	66.06	50.73
49	-293.34	-66.08	-50.73	395.41	66.08	50.73
50	-395.39	-66.11	-50.73	480.99	66.11	50.73
51	-480.98	-66.13	-50.73	550.32	66.13	50.73
52	-550.31	-66.11	-50.73	603.60	66.11	50.73
53	-603.63	-66.05	-50.73	637.56	66.05	50.73
54	-637.59	-66.15	-50.73	650.16	66.15	50.73
55	-650.16	-66.20	-50.73	641.40	66.20	50.73
56	-641.39	-66.19	-50.73	611.27	66.19	50.73
57	-611.24	-66.19	-50.73	560.85	66.19	50.73
58	-560.85	-66.21	-50.73	396.61	66.21	50.73
59	-396.60	-66.18	-50.73	306.79	66.18	50.73
60	-306.78	-66.20	-50.73	215.91	66.20	50.73
61	106.19	-43.78	0.00	0.00	43.78	0.00
62	52.94	-21.83	0.00	0.00	21.83	0.00
63	-99.51	41.03	0.00	0.00	-41.03	0.00
64	-58.89	24.28	0.00	0.00	-24.28	0.00
65	-60.60	24.99	0.00	0.00	-24.99	0.00

66	-100.33	41.37	0.00	0.00	-41.37	0.00
67	54.09	-22.30	0.00	0.00	22.30	0.00
68	106.45	-43.89	0.00	0.00	43.89	0.00

HIPOTESIS 1 PRETENSADO INICIAL

REACCIONES

Nudo	Flector	Reac_vert	Torsor
62	0.00000	74.25537	0.00000
63	0.00000	35.73052	0.00000
64	0.00000	-70.12151	0.00000
65	0.00000	-39.36417	0.00000
66	0.00000	-40.54156	0.00000
67	0.00000	-70.66792	0.00000
68	0.00000	36.53395	0.00000
69	0.00000	74.42496	0.00000

SUMA DE REACCIONES

Suma Momentos Flectores	=	0.000
Suma Reacciones Vertic.	=	0.250
Suma Momentos Torsores	=	0.000

HIPOTESIS 1 PRETENSADO INICIAL

ESFUERZOS EN EXTREMO DE BARRA

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	-366.80	109.98	-90.53	522.91	-109.98	90.53
2	-522.92	110.00	-90.53	832.11	-110.00	90.53
3	-832.12	109.98	-90.53	958.42	-109.98	90.53
4	-958.43	109.96	-90.53	1048.15	-109.96	90.53
5	-1048.15	109.99	-90.53	1101.36	-109.99	90.53
6	-1101.37	109.96	-90.53	1118.19	-109.96	90.53
7	-1118.17	109.96	-90.53	1098.60	-109.96	90.53
8	-1098.58	109.97	-90.53	1042.50	-109.97	90.53
9	-1042.50	109.97	-90.53	953.55	-109.97	90.53
10	-953.54	110.03	-90.53	837.24	-110.03	90.53
11	-837.26	110.05	-90.53	693.24	-110.05	90.53
12	-693.21	110.01	-90.53	521.15	-110.01	90.53
13	-521.12	110.03	-90.53	324.25	-110.03	90.53
14	-324.26	110.06	-90.53	88.00	-110.06	90.53
15	-88.01	110.08	-90.53	-176.09	-110.08	90.53
16	176.09	110.09	-90.53	-468.10	-110.09	90.53
17	468.09	110.08	-90.53	-787.12	-110.08	90.53
18	787.12	110.08	-90.53	-1261.18	-110.08	90.53
19	1261.19	110.09	-90.53	-1482.42	-110.09	90.53
20	1482.43	110.09	-90.53	-1609.05	-110.09	90.53
21	1590.60	0.61	-18.25	-1465.17	-0.61	18.25
22	1465.17	0.61	-18.25	-940.72	-0.61	18.25
23	940.71	0.61	-18.25	-456.17	-0.61	18.25
24	456.18	0.61	-18.25	-44.03	-0.61	18.25

HIPOTESIS 1 PRETENSADO INICIAL

ESFUERZOS EN EXTREMO DE BARRA

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
25	44.04	0.59	-18.25	295.19	-0.59	18.25
26	-295.18	0.62	-18.25	564.23	-0.62	18.25
27	-564.23	0.62	-18.25	766.28	-0.62	18.25
28	-766.26	0.62	-18.25	904.45	-0.62	18.25
29	-904.44	0.56	-18.25	981.45	-0.56	18.25
30	-981.42	0.56	-18.25	999.29	-0.56	18.25
31	-999.27	0.58	-18.25	980.29	-0.58	18.25
32	-980.30	0.57	-18.25	902.21	-0.57	18.25
33	-902.23	0.51	-18.25	762.97	-0.51	18.25
34	-762.93	0.52	-18.25	559.81	-0.52	18.25
35	-559.79	0.55	-18.25	289.67	-0.55	18.25
36	-289.67	0.57	-18.25	-50.68	-0.57	18.25
37	50.68	0.55	-18.25	-463.93	-0.55	18.25
38	463.94	0.57	-18.25	-948.64	-0.57	18.25
39	948.65	0.56	-18.25	-1475.00	-0.56	18.25
40	1475.00	0.57	-18.25	-1601.68	-0.57	18.25
41	1619.76	-110.64	-89.05	-1492.80	110.64	89.05
42	1492.80	-110.64	-89.05	-1111.22	110.64	89.05
43	1111.22	-110.64	-89.05	-797.45	110.64	89.05
44	797.45	-110.64	-89.05	-477.20	110.64	89.05
45	477.20	-110.68	-89.05	-184.77	110.68	89.05
46	184.79	-110.67	-89.05	79.76	110.67	89.05
47	-79.74	-110.71	-89.05	316.45	110.71	89.05
48	-316.46	-110.70	-89.05	513.83	110.70	89.05
49	-513.81	-110.82	-89.05	686.45	110.82	89.05
50	-686.42	-110.74	-89.05	830.92	110.74	89.05
51	-830.95	-110.76	-89.05	947.81	110.76	89.05
52	-947.79	-110.86	-89.05	1037.39	110.86	89.05
53	-1037.40	-110.81	-89.05	1094.08	110.81	89.05
54	-1094.08	-110.92	-89.05	1114.34	110.92	89.05
55	-1114.34	-110.95	-89.04	1098.24	110.95	89.04
56	-1098.24	-110.91	-89.05	1045.69	110.91	89.05
57	-1045.68	-110.95	-89.05	958.64	110.95	89.05
58	-958.65	-110.93	-89.04	677.57	110.93	89.04
59	-677.57	-110.97	-89.04	523.31	110.97	89.04
60	-523.30	-110.96	-89.04	367.17	110.96	89.04
61	180.10	-74.26	0.00	0.00	74.26	0.00
62	86.66	-35.73	0.00	0.00	35.73	0.00
63	-170.07	70.12	0.00	0.00	-70.12	0.00
64	-95.47	39.36	0.00	0.00	-39.36	0.00
65	-98.33	40.54	0.00	0.00	-40.54	0.00

66	-171.40	70.67	0.00	0.00	-70.67	0.00
67	88.61	-36.53	0.00	0.00	36.53	0.00
68	180.51	-74.42	0.00	0.00	74.42	0.00

ENVOL. MAX. FLECTORES TREN TREN IPF-75 TIPO A en via 1

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	2.9586	-8.9084	-11.5887	2.7506	75.6119	203.9413
2	2.7506	75.6119	203.9413	49.1379	68.0235	193.8632
3	49.1379	68.0235	193.8632	93.2054	38.0249	114.3632
4	93.2054	38.0249	114.3632	129.0643	60.5728	182.4345
5	129.0643	60.5728	182.4345	154.2266	30.5671	102.9346
6	154.2266	30.5671	102.9346	177.9605	23.2840	90.2343
7	177.9605	23.2840	90.2343	194.8382	23.2855	90.2343
8	194.8382	23.2855	90.2343	204.3229	16.2264	76.3459
9	204.3229	16.2264	76.3459	215.3350	-13.7701	-3.1540
10	215.3350	-13.7701	-3.1540	212.4171	9.4193	61.3529
11	212.4171	9.4193	61.3529	204.9955	-20.5929	-18.1471
12	204.9955	-20.5929	-18.1471	197.7380	-27.0681	-34.1614
13	197.7380	-27.0681	-34.1614	182.4125	-3.1930	28.3867
14	182.4125	-3.1930	28.3867	160.5983	-33.1954	-51.1132
15	160.5983	-33.1954	-51.1132	138.7329	-38.9361	-68.9191
16	138.7329	-38.9361	-68.9191	113.8878	-44.2249	-87.4957
17	113.8878	-44.2249	-87.4957	82.2076	-19.0380	-27.2524
18	82.2076	-19.0380	-27.2524	51.9047	-49.0368	-106.7524
19	51.9047	-49.0368	-106.7524	25.3120	1.8965	3.3118
20	25.3120	1.8965	3.3118	27.8228	-2.4499	-1.1356
21	27.8228	-2.4499	-1.1356	22.5014	-6.7966	-5.5829
22	22.5014	-6.7966	-5.5829	21.8753	54.4686	133.6675
23	21.8753	54.4686	133.6675	63.5526	50.4267	124.8469
24	63.5526	50.4267	124.8469	103.1492	45.9644	115.6290
25	103.1492	45.9644	115.6290	139.2440	41.1558	106.0089
26	139.2440	41.1558	106.0089	170.5718	36.0408	95.9863
27	170.5718	36.0408	95.9863	196.1167	30.6996	85.5611
28	196.1167	30.6996	85.5611	215.0977	25.2080	74.7334
29	215.0977	25.2080	74.7334	227.0070	19.6137	63.5032
30	227.0070	19.6137	63.5032	231.5452	13.9856	51.8705
31	231.5452	13.9856	51.8705	231.3327	-16.0104	-27.6296
32	231.3327	-16.0104	-27.6296	224.6761	-21.6139	-39.6648
33	224.6761	-21.6139	-39.6648	210.9341	-27.1120	-52.1022
34	210.9341	-27.1120	-52.1022	190.6234	-32.4489	-64.9423
35	190.6234	-32.4489	-64.9423	164.5400	-37.5525	-78.1847
36	164.5400	-37.5525	-78.1847	133.6894	-42.3731	-91.8297
37	133.6894	-42.3731	-91.8297	99.3378	-46.8337	-105.8766
38	99.3378	-46.8337	-105.8766	62.9148	-50.8720	-120.3204
39	62.9148	-50.8720	-120.3204	27.7896	8.1628	-14.7481
40	27.7896	8.1628	-14.7481	33.2100	2.9833	-5.6054
41	33.2100	2.9833	-5.6054	29.2832	-2.1961	3.5374
42	29.2832	-2.1961	3.5374	27.6914	-2.1959	3.5374
43	27.6914	-2.1959	3.5374	40.4238	49.8586	118.7759
44	40.4238	49.8586	118.7759	76.5721	49.8610	118.7758
45	76.5721	49.8610	118.7758	109.9759	39.5780	96.5784
46	109.9759	39.5780	96.5784	138.6648	39.5825	96.5784
47	138.6648	39.5825	96.5784	165.1264	9.5980	17.0783
48	165.1264	9.5980	17.0783	189.2587	33.8605	84.2419
49	189.2587	33.8605	84.2419	205.8719	27.7611	70.9687
50	205.8719	27.7611	70.9687	218.4978	-2.2355	-8.5312
51	218.4978	-2.2355	-8.5312	231.6277	21.3470	56.6763
52	231.6277	21.3470	56.6763	229.7965	14.6796	41.2803
53	229.7965	14.6796	41.2803	227.6925	-15.3091	-38.2199
54	227.6925	-15.3091	-38.2199	220.8636	-22.1926	-54.8023
55	220.8636	-22.1926	-54.8023	204.7718	-22.1946	-54.8022
56	204.7718	-22.1946	-54.8022	185.6718	-52.2053	-134.3022
57	185.6718	-52.2053	-134.3022	162.5390	-29.2825	-72.6551
58	162.5390	-29.2825	-72.6551	126.6788	-36.5016	-91.8573
59	126.6788	-36.5016	-91.8573	91.9637	-66.5016	-171.3573
60	91.9637	-66.5016	-171.3573	49.0098	-43.8084	-112.4571

ENVOL. MIN. FLECTORES TREN TREN IPF-75 TIPO A en via 1

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	-54.2861	53.2928	133.1195	-17.8825	1.6323	-4.8257
2	-17.8825	1.6323	-4.8257	-16.6991	1.6322	-4.8257
3	-16.6991	1.6322	-4.8257	-16.8640	-9.1112	-11.5856
4	-16.8640	-9.1112	-11.5856	-23.4704	-9.1105	-11.5856
5	-23.4704	-9.1105	-11.5856	-30.0769	-9.1117	-11.5856
6	-30.0769	-9.1117	-11.5856	-36.6840	-9.1163	-11.5856
7	-36.6840	-9.1163	-11.5856	-43.2921	-9.1174	-11.5856
8	-43.2921	-9.1174	-11.5856	-49.8981	-9.1132	-11.5856
9	-49.8981	-9.1132	-11.5856	-56.5042	-9.1122	-11.5856
10	-56.5042	-9.1122	-11.5856	-63.1099	-9.1107	-11.5856
11	-63.1099	-9.1107	-11.5856	-69.7139	-9.1035	-11.5856
12	-69.7139	-9.1035	-11.5856	-76.3117	-9.1025	-11.5856
13	-76.3117	-9.1025	-11.5856	-82.9133	-9.1069	-11.5856
14	-82.9133	-9.1069	-11.5856	-89.5188	-9.1034	-11.5856
15	-89.5188	-9.1034	-11.5856	-96.1160	-9.0994	-11.5856
16	-96.1160	-9.0994	-11.5856	-102.7135	-9.1015	-11.5856
17	-102.7135	-9.1015	-11.5856	-109.3128	-9.1011	-11.5856
18	-109.3128	-9.1011	-11.5856	-115.9072	-9.0977	-11.5856
19	-115.9072	-9.0977	-11.5856	-122.5019	-9.0978	-11.5856
20	-122.5019	-9.0978	-11.5856	-150.5714	25.8437	76.9930
21	-150.5714	25.8437	76.9930	-118.9899	55.2040	154.2335
22	-118.9899	55.2040	154.2335	-104.0603	8.1650	-14.7481
23	-104.0603	8.1650	-14.7481	-96.3020	8.1656	-14.7481
24	-96.3020	8.1656	-14.7481	-88.5437	8.1665	-14.7481
25	-88.5437	8.1665	-14.7481	-80.7851	8.1668	-14.7481
26	-80.7851	8.1668	-14.7481	-73.0265	8.1651	-14.7481
27	-73.0265	8.1651	-14.7481	-65.2690	8.1661	-14.7481
28	-65.2690	8.1661	-14.7481	-57.5081	8.1669	-14.7481
29	-57.5081	8.1669	-14.7481	-49.7533	8.1656	-14.7481
30	-49.7533	8.1656	-14.7481	-41.9959	8.1653	-14.7481
31	-41.9959	8.1653	-14.7481	-42.0656	-6.7972	-5.5829
32	-42.0656	-6.7972	-5.5829	-48.5266	-6.8025	-5.5829
33	-48.5266	-6.8025	-5.5829	-54.9894	-6.8025	-5.5829
34	-54.9894	-6.8025	-5.5829	-61.4474	-6.8003	-5.5829
35	-61.4474	-6.8003	-5.5829	-67.9086	-6.7999	-5.5829
36	-67.9086	-6.7999	-5.5829	-74.3671	-6.7980	-5.5829
37	-74.3671	-6.7980	-5.5829	-80.8244	-6.7972	-5.5829
38	-80.8244	-6.7972	-5.5829	-87.2832	-6.7976	-5.5829
39	-87.2832	-6.7976	-5.5829	-93.7408	-6.7979	-5.5829
40	-93.7408	-6.7979	-5.5829	-147.8820	-22.7529	-78.6842
41	-147.8820	-22.7529	-78.6842	-152.9770	11.6076	-25.7661
42	-152.9770	11.6076	-25.7661	-144.5623	11.6076	-25.7661
43	-144.5623	11.6076	-25.7661	-136.1466	11.6067	-25.7661
44	-136.1466	11.6067	-25.7661	-127.7340	11.6082	-25.7661
45	-127.7340	11.6082	-25.7661	-119.3176	11.6037	-25.7662
46	-119.3176	11.6037	-25.7662	-110.9072	11.5981	-25.7663
47	-110.9072	11.5981	-25.7663	-102.4980	11.5948	-25.7663

48	-102.4980	11.5948	-25.7663	-94.0958	11.5869	-25.7663
49	-94.0958	11.5869	-25.7663	-85.6949	11.5816	-25.7663
50	-85.6949	11.5816	-25.7663	-77.2972	11.5783	-25.7663
51	-77.2972	11.5783	-25.7663	-68.9015	11.5778	-25.7663
52	-68.9015	11.5778	-25.7663	-60.5061	11.5756	-25.7664
53	-60.5061	11.5756	-25.7664	-52.1155	11.5714	-25.7664
54	-52.1155	11.5714	-25.7664	-43.7280	11.5624	-25.7664
55	-43.7280	11.5624	-25.7664	-35.3449	11.5594	-25.7664
56	-35.3449	11.5594	-25.7664	-26.9588	11.5634	-25.7664
57	-26.9588	11.5634	-25.7664	-18.5738	11.5642	-25.7664
58	-18.5738	11.5642	-25.7664	-10.1891	11.5646	-25.7664
59	-10.1891	11.5646	-25.7664	-1.8596	11.3597	-24.9697
60	-1.8596	11.3597	-24.9697	-0.9034	-2.1879	3.5375

ENVOL. MAX. CORTANTES TREN TREN IPF-75 TIPO A en via 1

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	-52.0697	75.6125	203.9413	2.7506	75.6119	203.9413
2	2.7506	75.6119	203.9413	49.1379	68.0235	193.8632
3	49.1379	68.0235	193.8632	85.1542	60.5697	182.4344
4	85.1542	60.5697	182.4344	129.0643	60.5728	182.4345
5	129.0643	60.5728	182.4345	149.8274	53.2870	169.7343
6	149.8274	53.2870	169.7343	161.2989	46.2251	155.8458
7	161.2989	46.2251	155.8458	164.1593	39.4308	140.8527
8	164.1593	39.4308	140.8527	192.7487	39.4190	140.8528
9	192.7487	39.4190	140.8528	183.1089	32.9448	124.8383
10	183.1089	32.9448	124.8383	166.8727	26.8116	107.8864
11	166.8727	26.8116	107.8864	186.3092	26.8063	107.8866
12	186.3092	26.8063	107.8866	160.4073	21.0680	90.0806
13	160.4073	21.0680	90.0806	130.5726	15.7807	71.5042
14	130.5726	15.7807	71.5042	98.1004	10.9683	52.2476
15	98.1004	10.9683	52.2476	106.0533	10.9669	52.2476
16	106.0533	10.9669	52.2476	68.6909	6.6797	34.7934
17	68.6909	6.6797	34.7934	31.1869	2.9314	19.5708
18	31.1869	2.9314	19.5708	23.9370	1.8962	3.3118
19	23.9370	1.8962	3.3118	25.3120	1.8965	3.3118
20	25.3120	1.8965	3.3118	-69.6350	40.7806	107.4972
21	-69.6350	40.7806	107.4972	-48.7584	80.4269	204.3469
22	-48.7584	80.4269	204.3469	-2.1869	75.9682	195.1291
23	-2.1869	75.9682	195.1291	41.5601	71.1523	185.5090
24	41.5601	71.1523	185.5090	81.0968	66.0399	175.4864
25	81.0968	66.0399	175.4864	115.2853	60.7039	165.0611
26	115.2853	60.7039	165.0611	143.2213	55.1998	154.2334
27	143.2213	55.1998	154.2334	164.2510	49.6067	143.0031
28	164.2510	49.6067	143.0031	177.9836	43.9883	131.3704
29	177.9836	43.9883	131.3704	184.2727	38.3819	119.3353
30	184.2727	38.3819	119.3353	183.1905	32.8846	106.8977
31	183.1905	32.8846	106.8977	214.4341	32.8886	106.8976
32	214.4341	32.8886	106.8976	201.2702	27.5585	94.0576
33	201.2702	27.5585	94.0576	181.8951	22.4419	80.8151
34	181.8951	22.4419	80.8151	157.1976	17.6263	67.1703
35	157.1976	17.6263	67.1703	128.3212	13.1704	53.1235
36	128.3212	13.1704	53.1235	96.5719	9.1290	38.6796
37	96.5719	9.1290	38.6796	12.2800	8.1628	-14.7481
38	12.2800	8.1628	-14.7481	20.0349	8.1627	-14.7481
39	20.0349	8.1627	-14.7481	27.7896	8.1628	-14.7481
40	27.7896	8.1628	-14.7481	-63.5115	40.9200	105.1703
41	-63.5115	40.9200	105.1703	-55.1216	79.8584	198.2761
42	-55.1216	79.8584	198.2761	2.7765	79.8589	198.2760
43	2.7765	79.8589	198.2760	33.9222	74.9424	187.5621
44	33.9222	74.9424	187.5621	63.2714	69.5849	176.0786
45	63.2714	69.5849	176.0786	89.4053	63.8268	163.7420
46	89.4053	63.8268	163.7420	135.6781	63.8421	163.7419
47	135.6781	63.8421	163.7419	152.8883	57.7494	150.4691
48	152.8883	57.7494	150.4691	164.2141	51.3296	136.1766
49	164.2141	51.3296	136.1766	168.6389	44.6615	120.7809
50	168.6389	44.6615	120.7809	201.0331	44.6718	120.7809
51	201.0331	44.6718	120.7809	192.6945	37.7609	104.1982
52	192.6945	37.7609	104.1982	175.7223	30.6838	86.3454
53	175.7223	30.6838	86.3454	197.9738	30.6958	86.3451
54	197.9738	30.6958	86.3451	166.5408	23.4834	67.1430
55	166.5408	23.4834	67.1430	125.3270	16.1883	46.5415
56	125.3270	16.1883	46.5415	-26.9588	11.5634	-25.7664
57	-26.9588	11.5634	-25.7664	-18.5738	11.5642	-25.7664
58	-18.5738	11.5642	-25.7664	-10.1891	11.5646	-25.7664
59	-10.1891	11.5646	-25.7664	-1.8048	11.5634	-25.7664
60	-1.8048	11.5634	-25.7664	6.5786	11.5621	-25.7664

ENVOL. MIN. CORTANTES TREN TREN IPF-75 TIPO A en via 1

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	2.9579	-9.1125	-11.5856	-3.6490	-9.1130	-11.5856
2	-3.6490	-9.1130	-11.5856	-10.2566	-9.1132	-11.5856
3	-10.2566	-9.1132	-11.5856	-16.8640	-9.1112	-11.5856
4	-16.8640	-9.1112	-11.5856	-23.4704	-9.1105	-11.5856
5	-23.4704	-9.1105	-11.5856	-30.0769	-9.1117	-11.5856
6	-30.0769	-9.1117	-11.5856	110.3538	-14.3854	-34.5585
7	110.3538	-14.3854	-34.5585	153.9771	-21.9848	-44.6367
8	153.9771	-21.9848	-44.6367	138.0383	-21.9852	-44.6367
9	138.0383	-21.9852	-44.6367	166.3668	-29.4384	-56.0653
10	166.3668	-29.4384	-56.0653	185.4796	-36.7222	-68.7656
11	185.4796	-36.7222	-68.7656	158.8515	-36.7234	-68.7655
12	158.8515	-36.7234	-68.7655	164.3419	-43.7863	-82.6539
13	164.3419	-43.7863	-82.6539	162.3911	-50.5909	-97.6470
14	162.3911	-50.5909	-97.6470	153.9908	-57.0859	-113.6611
15	153.9908	-57.0859	-113.6611	112.6102	-57.0817	-113.6611
16	112.6102	-57.0817	-113.6611	94.4471	-63.2091	-130.6131
17	94.4471	-63.2091	-130.6131	72.5229	-68.9432	-148.4193
18	72.5229	-68.9432	-148.4193	48.2570	-74.2328	-166.9958
19	48.2570	-74.2328	-166.9958	-5.5616	-74.2310	-166.9958
20	-5.5616	-74.2310	-166.9958	-56.3355	-36.8465	-99.5477
21	-56.3355	-36.8465	-99.5477	22.5014	-6.7966	-5.5829
22	22.5014	-6.7966	-5.5829	16.0447	-6.7969	-5.5829
23	16.0447	-6.7969	-5.5829	9.5877	-6.7965	-5.5829
24	9.5877	-6.7965	-5.5829	3.1316	-6.7957	-5.5829
25	3.1316	-6.7957	-5.5829	99.3605	-9.5738	-34.1533
26	99.3605	-9.5738	-34.1533	133.4846	-14.0307	-43.3712
27	133.4846	-14.0307	-43.3712	163.4247	-18.8489	-52.9910
28	163.4247	-18.8489	-52.9910	188.0449	-23.9544	-63.0137
29	188.0449	-23.9544	-63.0137	206.4546	-29.2901	-73.4389
30	206.4546	-29.2901	-73.4389	217.9943	-34.7865	-84.2666
31	217.9943	-34.7865	-84.2666	184.9472	-34.7877	-84.2666
32	184.9472	-34.7877	-84.2666	183.9074	-40.3711	-95.4969
33	183.9074	-40.3711	-95.4969	175.4132	-46.0022	-107.1295

34	175.4132	-46.0022	-107.1295	159.6177	-51.6021	-119.1646
35	159.6177	-51.6021	-119.1646	136.9223	-57.1113	-131.6021
36	136.9223	-57.1113	-131.6021	107.9750	-62.4472	-144.4423
37	107.9750	-62.4472	-144.4423	73.6778	-67.5596	-157.6848
38	73.6778	-67.5596	-157.6848	35.1741	-72.3740	-171.3298
39	35.1741	-72.3740	-171.3298	-6.1446	-76.8322	-185.3766
40	-6.1446	-76.8322	-185.3766	-71.7729	-36.9891	-109.6137
41	-71.7729	-36.9891	-109.6137	29.2832	-2.1961	3.5374
42	29.2832	-2.1961	3.5374	27.6914	-2.1959	3.5374
43	27.6914	-2.1959	3.5374	26.0989	-2.1960	3.5374
44	26.0989	-2.1960	3.5374	24.5070	-2.1960	3.5374
45	24.5070	-2.1960	3.5374	69.4897	-5.7021	-30.1897
46	69.4897	-5.7021	-30.1897	65.3560	-5.7009	-30.1898
47	65.3560	-5.7009	-30.1898	105.5234	-10.1250	-40.2243
48	105.5234	-10.1250	-40.2243	143.6117	-15.0310	-50.9382
49	143.6117	-15.0310	-50.9382	178.3038	-20.3797	-62.4221
50	178.3038	-20.3797	-62.4221	163.5348	-20.3748	-62.4221
51	163.5348	-20.3748	-62.4221	189.4100	-26.1135	-74.7587
52	189.4100	-26.1135	-74.7587	209.2548	-32.2208	-88.0318
53	209.2548	-32.2208	-88.0318	185.9035	-32.2155	-88.0318
54	185.9035	-32.2155	-88.0318	194.0963	-38.6199	-102.3242
55	194.0963	-38.6199	-102.3242	194.2602	-45.2993	-117.7200
56	194.2602	-45.2993	-117.7200	185.6718	-52.2053	-134.3022
57	185.6718	-52.2053	-134.3022	147.8231	-52.2012	-134.3023
58	147.8231	-52.2012	-134.3023	124.8076	-59.2817	-152.1552
59	124.8076	-59.2817	-152.1552	91.9637	-66.5016	-171.3573
60	91.9637	-66.5016	-171.3573	43.7504	-66.5014	-171.3573

ENVOL. MAX. TORSORES TREN TREN IPF-75 TIPO A en via 1

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	-52.0697	75.6125	203.9413	2.7506	75.6119	203.9413
2	2.7506	75.6119	203.9413	49.1379	68.0235	193.8632
3	49.1379	68.0235	193.8632	85.1542	60.5697	182.4344
4	85.1542	60.5697	182.4344	129.0643	60.5728	182.4345
5	129.0643	60.5728	182.4345	149.8274	53.2870	169.7343
6	149.8274	53.2870	169.7343	161.2989	46.2251	155.8458
7	161.2989	46.2251	155.8458	164.1593	39.4308	140.8527
8	164.1593	39.4308	140.8527	192.7487	39.4190	140.8528
9	192.7487	39.4190	140.8528	183.1089	32.9448	124.8383
10	183.1089	32.9448	124.8383	166.8727	26.8116	107.8864
11	166.8727	26.8116	107.8864	186.3092	26.8063	107.8866
12	186.3092	26.8063	107.8866	160.4073	21.0680	90.0806
13	160.4073	21.0680	90.0806	130.5726	15.7807	71.5042
14	130.5726	15.7807	71.5042	98.1004	10.9683	52.2476
15	98.1004	10.9683	52.2476	106.0533	10.9669	52.2476
16	106.0533	10.9669	52.2476	68.6909	6.6797	34.7934
17	68.6909	6.6797	34.7934	31.1869	2.9314	19.5708
18	31.1869	2.9314	19.5708	-5.7380	-0.2591	9.2551
19	-5.7380	-0.2591	9.2551	-5.9264	-0.2589	9.2551
20	-5.9264	-0.2589	9.2551	-69.6350	40.7806	107.4972
21	-69.6350	40.7806	107.4972	-48.7584	80.4269	204.3469
22	-48.7584	80.4269	204.3469	-2.1869	75.9682	195.1291
23	-2.1869	75.9682	195.1291	41.5601	71.1523	185.5090
24	41.5601	71.1523	185.5090	81.0968	66.0399	175.4864
25	81.0968	66.0399	175.4864	115.2853	60.7039	165.0611
26	115.2853	60.7039	165.0611	143.2213	55.1998	154.2334
27	143.2213	55.1998	154.2334	164.2510	49.6067	143.0031
28	164.2510	49.6067	143.0031	177.9836	43.9883	131.3704
29	177.9836	43.9883	131.3704	184.2727	38.3819	119.3353
30	184.2727	38.3819	119.3353	183.1905	32.8846	106.8977
31	183.1905	32.8846	106.8977	214.4341	32.8886	106.8976
32	214.4341	32.8886	106.8976	201.2702	27.5585	94.0576
33	201.2702	27.5585	94.0576	181.8951	22.4419	80.8151
34	181.8951	22.4419	80.8151	157.1976	17.6263	67.1703
35	157.1976	17.6263	67.1703	128.3212	13.1704	53.1235
36	128.3212	13.1704	53.1235	96.5719	9.1290	38.6796
37	96.5719	9.1290	38.6796	62.9269	5.5271	25.7230
38	62.9269	5.5271	25.7230	28.7389	2.3991	14.5336
39	28.7389	2.3991	14.5336	-5.1937	-0.2716	7.1739
40	-5.1937	-0.2716	7.1739	-63.5115	40.9200	105.1703
41	-63.5115	40.9200	105.1703	-55.1216	79.8584	198.2761
42	-55.1216	79.8584	198.2761	2.7765	79.8589	198.2760
43	2.7765	79.8589	198.2760	33.9222	74.9424	187.5621
44	33.9222	74.9424	187.5621	63.2714	69.5849	176.0786
45	63.2714	69.5849	176.0786	89.4053	63.8268	163.7420
46	89.4053	63.8268	163.7420	135.6781	63.8421	163.7419
47	135.6781	63.8421	163.7419	152.8883	57.7494	150.4691
48	152.8883	57.7494	150.4691	164.2141	51.3296	136.1766
49	164.2141	51.3296	136.1766	168.6389	44.6615	120.7809
50	168.6389	44.6615	120.7809	201.0331	44.6718	120.7809
51	201.0331	44.6718	120.7809	192.6945	37.7609	104.1982
52	192.6945	37.7609	104.1982	175.7223	30.6838	86.3454
53	175.7223	30.6838	86.3454	197.9738	30.6958	86.3451
54	197.9738	30.6958	86.3451	166.5408	23.4834	67.1430
55	166.5408	23.4834	67.1430	125.3270	16.1883	46.5415
56	125.3270	16.1883	46.5415	80.6907	9.5798	27.9012
57	80.6907	9.5798	27.9012	87.6355	9.5804	27.9011
58	87.6355	9.5804	27.9011	2.2691	-2.1878	3.5375
59	2.2691	-2.1878	3.5375	0.6829	-2.1879	3.5375
60	0.6829	-2.1879	3.5375	-0.9034	-2.1879	3.5375

ENVOL. MIN. TORSORES TREN TREN IPF-75 TIPO A en via 1

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	2.9586	-8.9084	-11.5887	-3.5003	-8.9090	-11.5887
2	-3.5003	-8.9090	-11.5887	-9.9599	-8.9094	-11.5887
3	-9.9599	-8.9094	-11.5887	31.4101	-3.1968	-15.5002
4	31.4101	-3.1968	-15.5002	29.0928	-3.1961	-15.5002
5	29.0928	-3.1961	-15.5002	56.4015	-6.7079	-25.8805
6	56.4015	-6.7079	-25.8805	110.3538	-14.3854	-34.5585
7	110.3538	-14.3854	-34.5585	153.9771	-21.9848	-44.6367
8	153.9771	-21.9848	-44.6367	138.0383	-21.9852	-44.6367
9	138.0383	-21.9852	-44.6367	166.3668	-29.4384	-56.0653
10	166.3668	-29.4384	-56.0653	185.4796	-36.7222	-68.7656
11	185.4796	-36.7222	-68.7656	158.8515	-36.7234	-68.7655
12	158.8515	-36.7234	-68.7655	164.3419	-43.7863	-82.6539
13	164.3419	-43.7863	-82.6539	162.3911	-50.5909	-97.6470
14	162.3911	-50.5909	-97.6470	153.9908	-57.0859	-113.6611
15	153.9908	-57.0859	-113.6611	112.6102	-57.0817	-113.6611
16	112.6102	-57.0817	-113.6611	94.4471	-63.2091	-130.6131
17	94.4471	-63.2091	-130.6131	72.5229	-68.9432	-148.4193
18	72.5229	-68.9432	-148.4193	48.2570	-74.2328	-166.9958
19	48.2570	-74.2328	-166.9958	-5.5616	-74.2310	-166.9958
20	-5.5616	-74.2310	-166.9958	-56.3355	-36.8465	-99.5477
21	-56.3355	-36.8465	-99.5477	-110.6872	8.0803	-15.1118
22	-110.6872	8.0803	-15.1118	-103.0110	8.0820	-15.1118
23	-103.0110	8.0820	-15.1118	24.4571	-1.9895	-18.6847
24	24.4571	-1.9895	-18.6847	62.3639	-5.5335	-25.3326
25	62.3639	-5.5335	-25.3326	99.3605	-9.5738	-34.1533
26	99.3605	-9.5738	-34.1533	133.4846	-14.0307	-43.3712
27	133.4846	-14.0307	-43.3712	163.4247	-18.8489	-52.9910
28	163.4247	-18.8489	-52.9910	188.0449	-23.9544	-63.0137
29	188.0449	-23.9544	-63.0137	206.4546	-29.2901	-73.4389
30	206.4546	-29.2901	-73.4389	217.9943	-34.7865	-84.2666
31	217.9943	-34.7865	-84.2666	184.9472	-34.7877	-84.2666
32	184.9472	-34.7877	-84.2666	183.9074	-40.3711	-95.4969
33	183.9074	-40.3711	-95.4969	175.4132	-46.0022	-107.1295
34	175.4132	-46.0022	-107.1295	159.6177	-51.6021	-119.1646
35	159.6177	-51.6021	-119.1646	136.9223	-57.1113	-131.6021
36	136.9223	-57.1113	-131.6021	107.9750	-62.4472	-144.4423
37	107.9750	-62.4472	-144.4423	73.6778	-67.5596	-157.6848
38	73.6778	-67.5596	-157.6848	35.1741	-72.3740	-171.3298
39	35.1741	-72.3740	-171.3298	-6.1446	-76.8322	-185.3766
40	-6.1446	-76.8322	-185.3766	-71.7729	-36.9891	-109.6137
41	-71.7729	-36.9891	-109.6137	-151.2616	11.4879	-25.9770
42	-151.2616	11.4879	-25.9770	-142.9344	11.4879	-25.9771
43	-142.9344	11.4879	-25.9771	-134.6060	11.4873	-25.9771
44	-134.6060	11.4873	-25.9771	-126.2811	11.4878	-25.9771
45	-126.2811	11.4878	-25.9771	69.4897	-5.7021	-30.1897
46	69.4897	-5.7021	-30.1897	65.3560	-5.7009	-30.1898

47	65.3560	-5.7009	-30.1898	105.5234	-10.1250	-40.2243
48	105.5234	-10.1250	-40.2243	143.6117	-15.0310	-50.9382
49	143.6117	-15.0310	-50.9382	178.3038	-20.3797	-62.4221
50	178.3038	-20.3797	-62.4221	163.5348	-20.3748	-62.4221
51	163.5348	-20.3748	-62.4221	189.4100	-26.1135	-74.7587
52	189.4100	-26.1135	-74.7587	209.2548	-32.2208	-88.0318
53	209.2548	-32.2208	-88.0318	185.9035	-32.2155	-88.0318
54	185.9035	-32.2155	-88.0318	194.0963	-38.6199	-102.3242
55	194.0963	-38.6199	-102.3242	194.2602	-45.2993	-117.7200
56	194.2602	-45.2993	-117.7200	185.6718	-52.2053	-134.3022
57	185.6718	-52.2053	-134.3022	147.8231	-52.2012	-134.3023
58	147.8231	-52.2012	-134.3023	124.8076	-59.2817	-152.1552
59	124.8076	-59.2817	-152.1552	91.9637	-66.5016	-171.3573
60	91.9637	-66.5016	-171.3573	43.7504	-66.5014	-171.3573

ENVOL. MAX. FLECTORES TREN TREN IPF-75 TIPO B Li=30 m en via 1

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	-1.9066	0.1633	-0.4826	-1.3682	8.1050	20.4235
2	-1.3682	8.1050	20.4235	9.3212	16.6296	53.7854
3	9.3212	16.6296	53.7854	20.8528	13.6306	45.8354
4	20.8528	13.6306	45.8354	30.7375	13.6571	46.1413
5	30.7375	13.6571	46.1413	38.7641	10.6591	38.1913
6	38.7641	10.6591	38.1913	45.4431	7.6572	30.2413
7	45.4431	7.6572	30.2413	50.7672	4.6576	22.2913
8	50.7672	4.6576	22.2913	54.1455	4.6606	22.2913
9	54.1455	4.6606	22.2913	55.9468	1.6579	14.3414
10	55.9468	1.6579	14.3414	56.3973	-1.3463	6.3913
11	56.3973	-1.3463	6.3913	55.4202	-1.3503	6.3913
12	55.4202	-1.3503	6.3913	52.3411	-4.3478	-1.5586
13	52.3411	-4.3478	-1.5586	47.9139	-7.3423	-9.5086
14	47.9139	-7.3423	-9.5086	42.1394	-10.3465	-17.4585
15	42.1394	-10.3465	-17.4585	34.6340	-10.3519	-17.4585
16	34.6340	-10.3519	-17.4585	25.3297	-13.3520	-25.4086
17	25.3297	-13.3520	-25.4086	14.6754	-16.3536	-33.3586
18	14.6754	-16.3536	-33.3586	2.6681	-19.3542	-41.3086
19	2.6681	-19.3542	-41.3086	0.3426	0.1634	-0.4826
20	0.3426	0.1634	-0.4826	0.3970	0.0704	-0.2318
21	0.3970	0.0704	-0.2318	0.3115	-0.0226	0.0190
22	0.3115	-0.0226	0.0190	0.2900	-0.0226	0.0190
23	0.2900	-0.0226	0.0190	0.2685	-0.0226	0.0190
24	0.2685	-0.0226	0.0190	9.6187	16.5478	48.9699
25	9.6187	16.5478	48.9699	24.6461	13.6901	40.8700
26	24.6461	13.6901	40.8700	37.0515	10.6898	32.9200
27	37.0515	10.6898	32.9200	46.7540	7.6873	24.9700
28	46.7540	7.6873	24.9700	53.8883	4.9226	16.9541
29	53.8883	4.9226	16.9541	58.6622	2.5956	8.7875
30	58.6622	2.5956	8.7875	62.1538	1.5646	-0.0538
31	62.1538	1.5646	-0.0538	63.7719	1.8512	-0.3284
32	63.7719	1.8512	-0.3284	62.8493	-0.9520	-8.6139
33	62.8493	-0.9520	-8.6139	59.3960	-3.9520	-16.5639
34	59.3960	-3.9520	-16.5639	53.2401	-6.9545	-24.5139
35	53.2401	-6.9545	-24.5139	44.3834	-9.9540	-32.4639
36	44.3834	-9.9540	-32.4639	32.8280	-12.9534	-40.4139
37	32.8280	-12.9534	-40.4139	18.5705	-15.9541	-48.3639
38	18.5705	-15.9541	-48.3639	6.4554	2.6333	-5.5397
39	6.4554	2.6333	-5.5397	8.9574	2.6335	-5.5397
40	8.9574	2.6335	-5.5397	10.6546	0.9657	-2.0031
41	10.6546	0.9657	-2.0031	9.3502	-0.7010	1.1151
42	9.3502	-0.7010	1.1151	8.8421	-0.7011	1.1151
43	8.8421	-0.7011	1.1151	8.3339	-0.7013	1.1151
44	8.3339	-0.7013	1.1151	7.8256	-0.7007	1.1151
45	7.8256	-0.7007	1.1151	7.3177	-0.7004	1.1151
46	7.3177	-0.7004	1.1151	6.8097	-0.7007	1.1151
47	6.8097	-0.7007	1.1151	7.0174	15.2519	17.4713
48	7.0174	15.2519	17.4713	17.1766	12.2533	9.5214
49	17.1766	12.2533	9.5214	25.9860	9.2544	1.5713
50	25.9860	9.2544	1.5713	32.6964	9.2544	1.5713
51	32.6964	9.2544	1.5713	37.9819	6.2554	-6.3787
52	37.9819	6.2554	-6.3787	41.9178	3.2592	-14.3289
53	41.9178	3.2592	-14.3289	44.2808	3.2622	-14.3290
54	44.2808	3.2622	-14.3290	44.6949	0.2648	-22.2790
55	44.6949	0.2648	-22.2790	43.7606	-2.7350	-30.2290
56	43.7606	-2.7350	-30.2290	41.4756	-5.7377	-38.1791
57	41.4756	-5.7377	-38.1791	37.3148	-5.7374	-38.1791
58	37.3148	-5.7374	-38.1791	31.5060	-8.7371	-46.1291
59	31.5060	-8.7371	-46.1291	24.3463	-11.7374	-54.0790
60	24.3463	-11.7374	-54.0790	15.8989	-11.6245	-54.3223

ENVOL. MIN. FLECTORES TREN TREN IPF-75 TIPO B Li=30 m en via 1

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	-17.9003	19.5890	62.1597	-5.0615	16.3779	58.3804
2	-5.0615	16.3779	58.3804	-1.6699	0.1632	-0.4826
3	-1.6699	0.1632	-0.4826	-1.5516	0.1632	-0.4826
4	-1.5516	0.1632	-0.4826	-1.4332	0.1632	-0.4826
5	-1.4332	0.1632	-0.4826	-1.3149	0.1632	-0.4826
6	-1.3149	0.1632	-0.4826	-1.1965	0.1632	-0.4826
7	-1.1965	0.1632	-0.4826	-1.0782	0.1633	-0.4826
8	-1.0782	0.1633	-0.4826	-0.9599	0.1633	-0.4826
9	-0.9599	0.1633	-0.4826	-0.8415	0.1632	-0.4826
10	-0.8415	0.1632	-0.4826	-2.5356	-3.4927	-0.7878
11	-2.5356	-3.4927	-0.7878	-5.0676	-3.4924	-0.7878
12	-5.0676	-3.4924	-0.7878	-8.2993	-4.4925	-3.4378
13	-8.2993	-4.4925	-3.4378	-11.9815	-5.4926	-6.0878
14	-11.9815	-5.4926	-6.0878	-16.1137	-6.4922	-8.7378
15	-16.1137	-6.4922	-8.7378	-20.8202	-6.4919	-8.7378
16	-20.8202	-6.4919	-8.7378	-26.1271	-7.4917	-11.3878
17	-26.1271	-7.4917	-11.3878	-31.8835	-8.4916	-14.0378
18	-31.8835	-8.4916	-14.0378	-42.3662	-22.7014	-43.8706
19	-42.3662	-22.7014	-43.8706	-58.8248	-22.7011	-43.8706
20	-58.8248	-22.7011	-43.8706	-93.3215	3.1978	12.9540
21	-93.3215	3.1978	12.9540	-80.7182	29.0966	69.7786
22	-80.7182	29.0966	69.7786	-54.2761	26.0958	61.8286
23	-54.2761	26.0958	61.8286	-31.0781	2.6348	-5.5397
24	-31.0781	2.6348	-5.5397	-28.5751	2.6348	-5.5397
25	-28.5751	2.6348	-5.5397	-26.0718	2.6349	-5.5397
26	-26.0718	2.6349	-5.5397	-23.5688	2.6346	-5.5397
27	-23.5688	2.6346	-5.5397	-21.0657	2.6344	-5.5397
28	-21.0657	2.6344	-5.5397	-18.5627	2.6346	-5.5397
29	-18.5627	2.6346	-5.5397	-16.0595	2.6340	-5.5397
30	-16.0595	2.6340	-5.5397	-13.5580	2.6335	-5.5397
31	-13.5580	2.6335	-5.5397	-11.0556	2.6331	-5.5397
32	-11.0556	2.6331	-5.5397	-8.5546	2.6328	-5.5397

33	-8.5546	2.6328	-5.5397	-6.0533	2.6314	-5.1213
34	-6.0533	2.6314	-5.1213	-3.5530	2.6321	-5.1213
35	-3.5530	2.6321	-5.1213	-1.0526	2.6326	-5.1213
36	-1.0526	2.6326	-5.1213	-0.0108	-0.0226	0.0190
37	-0.0108	-0.0226	0.0190	-9.2871	-19.1660	-44.6521
38	-9.2871	-19.1660	-44.6521	-29.4181	-22.3903	-53.4256
39	-29.4181	-22.3903	-53.4256	-52.3405	-25.3911	-61.3756
40	-52.3405	-25.3911	-61.3756	-94.0036	0.9421	-6.4986
41	-94.0036	0.9421	-6.4986	-88.7697	27.2757	48.3783
42	-88.7697	27.2757	48.3783	-68.9945	27.2758	48.3782
43	-68.9945	27.2758	48.3782	-51.4653	23.9147	39.0783
44	-51.4653	23.9147	39.0783	-44.7953	4.1013	-10.4860
45	-44.7953	4.1013	-10.4860	-41.8215	4.0990	-10.4860
46	-41.8215	4.0990	-10.4860	-38.8489	4.0992	-10.4860
47	-38.8489	4.0992	-10.4860	-35.8760	4.0989	-10.4861
48	-35.8760	4.0989	-10.4861	-32.9066	4.0968	-10.4861
49	-32.9066	4.0968	-10.4861	-29.9375	4.0958	-10.4861
50	-29.9375	4.0958	-10.4861	-26.9690	4.0929	-10.4861
51	-26.9690	4.0929	-10.4861	-24.0019	4.0917	-10.4861
52	-24.0019	4.0917	-10.4861	-21.0344	4.0901	-10.4861
53	-21.0344	4.0901	-10.4861	-18.0693	4.0890	-10.4861
54	-18.0693	4.0890	-10.4861	-15.1047	4.0889	-10.4861
55	-15.1047	4.0889	-10.4861	-12.1413	4.0900	-10.4861
56	-12.1413	4.0900	-10.4861	-9.1976	4.0445	-9.9073
57	-9.1976	4.0445	-9.9073	-6.2656	4.0447	-9.9073
58	-6.2656	4.0447	-9.9073	-3.3336	4.0443	-9.9073
59	-3.3336	4.0443	-9.9073	-0.4319	3.6845	-8.7696
60	-0.4319	3.6845	-8.7696	-0.2847	-0.6982	1.1151

ENVOL. MAX. CORTANTES TREN TREN IPF-75 TIPO B Li=30 m en via 1

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	-17.8700	19.6567	62.0413	-3.6182	19.6565	62.0413
2	-3.6182	19.6565	62.0413	9.2836	16.6572	54.0913
3	9.2836	16.6572	54.0913	20.8362	13.6572	46.1413
4	20.8362	13.6572	46.1413	30.7375	13.6571	46.1413
5	30.7375	13.6571	46.1413	38.7641	10.6591	38.1913
6	38.7641	10.6591	38.1913	45.4431	7.6572	30.2413
7	45.4431	7.6572	30.2413	50.7672	4.6576	22.2913
8	50.7672	4.6576	22.2913	54.1455	4.6606	22.2913
9	54.1455	4.6606	22.2913	55.9468	1.6579	14.3414
10	55.9468	1.6579	14.3414	-0.7232	0.1632	-0.4826
11	-0.7232	0.1632	-0.4826	-0.6048	0.1633	-0.4826
12	-0.6048	0.1633	-0.4826	-0.4863	0.1633	-0.4826
13	-0.4863	0.1633	-0.4826	-0.3679	0.1633	-0.4826
14	-0.3679	0.1633	-0.4826	-0.2496	0.1633	-0.4826
15	-0.2496	0.1633	-0.4826	-0.1311	0.1633	-0.4826
16	-0.1311	0.1633	-0.4826	-0.0127	0.1633	-0.4826
17	-0.0127	0.1633	-0.4826	0.1057	0.1633	-0.4826
18	0.1057	0.1633	-0.4826	0.2241	0.1634	-0.4826
19	0.2241	0.1634	-0.4826	0.3426	0.1634	-0.4826
20	0.3426	0.1634	-0.4826	-65.1129	9.0987	30.6412
21	-65.1129	9.0987	30.6412	-80.0576	29.1325	70.4714
22	-80.0576	29.1325	70.4714	-53.5817	26.1324	62.5214
23	-53.5817	26.1324	62.5214	-29.8064	23.1324	54.5714
24	-29.8064	23.1324	54.5714	-8.7310	20.1320	46.6214
25	-8.7310	20.1320	46.6214	9.6442	17.1300	38.6713
26	9.6442	17.1300	38.6713	25.3179	14.1294	30.7213
27	25.3179	14.1294	30.7213	38.2929	11.1300	22.7713
28	38.2929	11.1300	22.7713	48.5666	8.1328	14.8213
29	48.5666	8.1328	14.8213	56.1460	5.1336	6.8713
30	56.1460	5.1336	6.8713	-13.5580	2.6335	-5.5397
31	-13.5580	2.6335	-5.5397	-11.0556	2.6331	-5.5397
32	-11.0556	2.6331	-5.5397	-8.5546	2.6328	-5.5397
33	-8.5546	2.6328	-5.5397	-6.0533	2.6336	-5.5397
34	-6.0533	2.6336	-5.5397	-3.5514	2.6335	-5.5397
35	-3.5514	2.6335	-5.5397	-1.0500	2.6330	-5.5397
36	-1.0500	2.6330	-5.5397	1.4517	2.6332	-5.5397
37	1.4517	2.6332	-5.5397	3.9536	2.6332	-5.5397
38	3.9536	2.6332	-5.5397	6.4554	2.6333	-5.5397
39	6.4554	2.6333	-5.5397	8.9574	2.6335	-5.5397
40	8.9574	2.6335	-5.5397	-91.9648	1.2211	-5.1088
41	-91.9648	1.2211	-5.1088	-88.1130	27.3635	49.0283
42	-88.1130	27.3635	49.0283	-68.2746	27.3635	49.0282
43	-68.2746	27.3635	49.0282	-50.4613	24.3633	41.0782
44	-50.4613	24.3633	41.0782	-33.9981	21.3642	33.1282
45	-33.9981	21.3642	33.1282	-18.8840	18.3647	25.1781
46	-18.8840	18.3647	25.1781	-5.5707	18.3647	25.1781
47	-5.5707	18.3647	25.1781	6.0189	15.3647	17.2281
48	6.0189	15.3647	17.2281	16.2591	12.3652	9.2780
49	16.2591	12.3652	9.2780	25.1506	9.3657	1.3280
50	25.1506	9.3657	1.3280	31.9423	9.3661	1.3280
51	31.9423	9.3661	1.3280	37.3094	6.3677	-6.6221
52	37.3094	6.3677	-6.6221	-21.0344	4.0901	-10.4861
53	-21.0344	4.0901	-10.4861	-18.0693	4.0890	-10.4861
54	-18.0693	4.0890	-10.4861	-15.1047	4.0889	-10.4861
55	-15.1047	4.0889	-10.4861	-12.1413	4.0900	-10.4861
56	-12.1413	4.0900	-10.4861	-9.1763	4.0900	-10.4861
57	-9.1763	4.0900	-10.4861	-6.2128	4.0885	-10.4861
58	-6.2128	4.0885	-10.4861	-3.2497	4.0877	-10.4861
59	-3.2497	4.0877	-10.4861	-0.2861	4.0873	-10.4861
60	-0.2861	4.0873	-10.4861	2.6774	4.0872	-10.4861

ENVOL. MIN. CORTANTES TREN TREN IPF-75 TIPO B Li=30 m en via 1

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	-1.9066	0.1633	-0.4826	-1.7882	0.1632	-0.4826
2	-1.7882	0.1632	-0.4826	-0.6595	0.0677	-1.1822
3	-0.6595	0.0677	-1.1822	2.8374	-0.2857	-2.1472
4	2.8374	-0.2857	-2.1472	2.6302	-0.2857	-2.1472
5	2.6302	-0.2857	-2.1472	7.5113	-0.8951	-3.4265
6	7.5113	-0.8951	-3.4265	13.5049	-1.7562	-5.0665
7	13.5049	-1.7562	-5.0665	20.0993	-2.8636	-7.1112
8	20.0993	-2.8636	-7.1112	18.0222	-2.8653	-7.1112
9	18.0222	-2.8653	-7.1112	23.7517	-4.2134	-9.6014
10	23.7517	-4.2134	-9.6014	28.9653	-5.7970	-12.5754
11	28.9653	-5.7970	-12.5754	24.7634	-5.7960	-12.5754
12	24.7634	-5.7960	-12.5754	23.1167	-7.8779	-4.6945
13	23.1167	-7.8779	-4.6945	16.1316	-10.8766	-12.6445
14	16.1316	-10.8766	-12.6445	7.7952	-13.8796	-20.5945
15	7.7952	-13.8796	-20.5945	-2.2677	-13.8804	-20.5945
16	-2.2677	-13.8804	-20.5945	-14.1300	-16.8796	-28.5444
17	-14.1300	-16.8796	-28.5444	-27.3424	-19.8804	-36.4944
18	-27.3424	-19.8804	-36.4944	-41.9059	-22.8806	-44.4445

19	-41.9059	-22.8806	-44.4445	-58.4943	-22.8801	-44.4445
20	-58.4943	-22.8801	-44.4445	-32.8969	-9.8739	-27.3428
21	-32.8969	-9.8739	-27.3428	0.3115	-0.0226	0.0190
22	0.3115	-0.0226	0.0190	0.2900	-0.0226	0.0190
23	0.2900	-0.0226	0.0190	0.2685	-0.0226	0.0190
24	0.2685	-0.0226	0.0190	0.2470	-0.0226	0.0190
25	0.2470	-0.0226	0.0190	0.2255	-0.0226	0.0190
26	0.2255	-0.0226	0.0190	0.2040	-0.0226	0.0190
27	0.2040	-0.0226	0.0190	3.5727	-0.2226	-14.2709
28	3.5727	-0.2226	-14.2709	11.8983	-1.2869	-16.8876
29	11.8983	-1.2869	-16.8876	19.7457	-2.5372	-19.8719
30	19.7457	-2.5372	-19.8719	26.6926	-3.9778	-23.2373
31	26.6926	-3.9778	-23.2373	22.9133	-3.9773	-23.2374
32	22.9133	-3.9773	-23.2374	26.9831	-5.6063	-26.9971
33	26.9831	-5.6063	-26.9971	45.6636	-7.4813	-14.2654
34	45.6636	-7.4813	-14.2654	36.1553	-10.4796	-22.2154
35	36.1553	-10.4796	-22.2154	23.9501	-13.4790	-30.1654
36	23.9501	-13.4790	-30.1654	9.0419	-16.4810	-38.1154
37	9.0419	-16.4810	-38.1154	-8.5662	-19.4818	-46.0654
38	-8.5662	-19.4818	-46.0654	-28.8746	-22.4818	-54.0154
39	-28.8746	-22.4818	-54.0154	-51.8827	-25.4825	-61.9654
40	-51.8827	-25.4825	-61.9654	-48.1974	-10.4033	-41.2680
41	-48.1974	-10.4033	-41.2680	9.3502	-0.7010	1.1151
42	9.3502	-0.7010	1.1151	8.8421	-0.7011	1.1151
43	8.8421	-0.7011	1.1151	8.3339	-0.7013	1.1151
44	8.3339	-0.7013	1.1151	7.8256	-0.7007	1.1151
45	7.8256	-0.7007	1.1151	7.3177	-0.7004	1.1151
46	7.3177	-0.7004	1.1151	6.8097	-0.7007	1.1151
47	6.8097	-0.7007	1.1151	6.3017	-0.7003	1.1151
48	6.3017	-0.7003	1.1151	5.7944	-0.6998	1.1151
49	5.7944	-0.6998	1.1151	5.2870	-0.6996	1.1151
50	5.2870	-0.6996	1.1151	4.7801	-0.6995	1.1151
51	4.7801	-0.6995	1.1151	4.2729	-0.6993	1.1151
52	4.2729	-0.6993	1.1151	14.0367	-1.1830	-28.1339
53	14.0367	-1.1830	-28.1339	13.1796	-1.1823	-28.1339
54	13.1796	-1.1823	-28.1339	20.3209	-2.7731	-32.3395
55	20.3209	-2.7731	-32.3395	26.1926	-4.6129	-37.0938
56	26.1926	-4.6129	-37.0938	30.2928	-6.7094	-42.4273
57	30.2928	-6.7094	-42.4273	25.4278	-6.7109	-42.4273
58	25.4278	-6.7109	-42.4273	25.5099	-9.0749	-48.3723
59	25.5099	-9.0749	-48.3723	24.3463	-11.7374	-54.0790
60	24.3463	-11.7374	-54.0790	15.8370	-11.7370	-54.0789

ENVOL. MAX. TORSORES TREN TREN IPF-75 TIPO B Li=30 m en via 1

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	-17.9003	19.5890	62.1597	-3.6979	19.5886	62.1597
2	-3.6979	19.5886	62.1597	9.1544	16.5886	54.2097
3	9.1544	16.5886	54.2097	20.6565	13.5894	46.2597
4	20.6565	13.5894	46.2597	30.5086	13.5893	46.2597
5	30.5086	13.5893	46.2597	38.4866	10.5886	38.3097
6	38.4866	10.5886	38.3097	45.1133	7.5880	30.3597
7	45.1133	7.5880	30.3597	20.3023	3.0038	23.0326
8	20.3023	3.0038	23.0326	22.4794	3.0020	23.0326
9	22.4794	3.0020	23.0326	18.0889	0.9373	16.8073
10	18.0889	0.9373	16.8073	12.8349	-0.9611	10.9268
11	12.8349	-0.9611	10.9268	12.1379	-0.9612	10.9268
12	12.1379	-0.9612	10.9268	5.0363	-2.7010	5.4078
13	5.0363	-2.7010	5.4078	-2.3027	-4.2940	0.2655
14	-2.3027	-4.2940	0.2655	-0.2496	0.1633	-0.4826
15	-0.2496	0.1633	-0.4826	-0.1311	0.1633	-0.4826
16	-0.1311	0.1633	-0.4826	-0.0127	0.1633	-0.4826
17	-0.0127	0.1633	-0.4826	0.1057	0.1633	-0.4826
18	0.1057	0.1633	-0.4826	0.2241	0.1634	-0.4826
19	0.2241	0.1634	-0.4826	0.3426	0.1634	-0.4826
20	0.3426	0.1634	-0.4826	-65.1129	9.0987	30.6412
21	-65.1129	9.0987	30.6412	-51.4893	25.5473	72.8200
22	-51.4893	25.5473	72.8200	-29.1289	22.5157	65.2347
23	-29.1289	22.5157	65.2347	-10.6279	19.6061	57.8745
24	-10.6279	19.6061	57.8745	4.2353	16.8296	50.7480
25	4.2353	16.8296	50.7480	15.7221	14.1889	43.8609
26	15.7221	14.1889	43.8609	28.6012	11.1880	35.9109
27	28.6012	11.1880	35.9109	38.7807	8.1877	27.9608
28	38.7807	8.1877	27.9608	46.2593	5.1888	20.0108
29	46.2593	5.1888	20.0108	51.0412	2.1904	12.0608
30	51.0412	2.1904	12.0608	53.1220	-0.8080	4.1108
31	53.1220	-0.8080	4.1108	52.3534	-0.8054	4.1108
32	52.3534	-0.8054	4.1108	0.0751	-0.0226	0.0190
33	0.0751	-0.0226	0.0190	0.0537	-0.0226	0.0190
34	0.0537	-0.0226	0.0190	0.0322	-0.0226	0.0190
35	0.0322	-0.0226	0.0190	0.0107	-0.0226	0.0190
36	0.0107	-0.0226	0.0190	-0.0108	-0.0226	0.0190
37	-0.0108	-0.0226	0.0190	-0.0322	-0.0226	0.0190
38	-0.0322	-0.0226	0.0190	-0.0537	-0.0226	0.0190
39	-0.0537	-0.0226	0.0190	-0.0752	-0.0226	0.0190
40	-0.0752	-0.0226	0.0190	-0.0928	-0.0082	0.0040
41	-0.0928	-0.0082	0.0040	-86.6228	27.2502	49.2716
42	-86.6228	27.2502	49.2716	-66.8663	27.2502	49.2715
43	-66.8663	27.2502	49.2715	-49.1350	24.2504	41.3215
44	-49.1350	24.2504	41.3215	-32.7534	21.2507	33.3715
45	-32.7534	21.2507	33.3715	-17.7215	18.2508	25.4214
46	-17.7215	18.2508	25.4214	-4.4898	18.2509	25.4214
47	-4.4898	18.2509	25.4214	7.0174	15.2519	17.4713
48	7.0174	15.2519	17.4713	17.1766	12.2533	9.5214
49	17.1766	12.2533	9.5214	25.9860	9.2544	1.5713
50	25.9860	9.2544	1.5713	32.6964	9.2544	1.5713
51	32.6964	9.2544	1.5713	4.2729	-0.6993	1.1151
52	4.2729	-0.6993	1.1151	3.7661	-0.6988	1.1151
53	3.7661	-0.6988	1.1151	3.2595	-0.6987	1.1151
54	3.2595	-0.6987	1.1151	2.7529	-0.6982	1.1151
55	2.7529	-0.6982	1.1151	2.2469	-0.6983	1.1151
56	2.2469	-0.6983	1.1151	1.7403	-0.6987	1.1151
57	1.7403	-0.6987	1.1151	1.2341	-0.6984	1.1151
58	1.2341	-0.6984	1.1151	0.7278	-0.6984	1.1151
59	0.7278	-0.6984	1.1151	0.2215	-0.6982	1.1151
60	0.2215	-0.6982	1.1151	-0.2847	-0.6982	1.1151

ENVOL. MIN. TORSORES TREN TREN IPF-75 TIPO B Li=30 m en via 1

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	-1.9066	0.1633	-0.4826	-1.7882	0.1632	-0.4826
2	-1.7882	0.1632	-0.4826	-0.6595	0.0677	-1.1822
3	-0.6595	0.0677	-1.1822	2.8374	-0.2857	-2.1472
4	2.8374	-0.2857	-2.1472	2.6302	-0.2857	-2.1472
5	2.6302	-0.2857	-2.1472	7.5113	-0.8951	-3.4265

6	7.5113	-0.8951	-3.4265	13.5049	-1.7562	-5.0665
7	13.5049	-1.7562	-5.0665	20.0993	-2.8636	-7.1112
8	20.0993	-2.8636	-7.1112	18.0222	-2.8653	-7.1112
9	18.0222	-2.8653	-7.1112	23.7517	-4.2134	-9.6014
10	23.7517	-4.2134	-9.6014	28.9653	-5.7970	-12.5754
11	28.9653	-5.7970	-12.5754	24.7634	-5.7960	-12.5754
12	24.7634	-5.7960	-12.5754	27.7316	-7.6011	-16.0686
13	27.7316	-7.6011	-16.0686	29.2324	-9.6173	-20.1137
14	29.2324	-9.6173	-20.1137	28.9407	-11.8316	-24.7406
15	28.9407	-11.8316	-24.7406	20.3623	-11.8344	-24.7406
16	20.3623	-11.8344	-24.7406	16.2604	-14.2321	-29.9762
17	16.2604	-14.2321	-29.9762	-24.7955	-19.6261	-37.0194
18	-24.7955	-19.6261	-37.0194	-39.1758	-22.6271	-44.9694
19	-39.1758	-22.6271	-44.9694	-55.5807	-22.6274	-44.9694
20	-55.5807	-22.6274	-44.9694	-32.8969	-9.8739	-27.3428
21	-32.8969	-9.8739	-27.3428	-36.0834	2.6343	-5.5397
22	-36.0834	2.6343	-5.5397	-32.1380	2.5241	-6.2323
23	-32.1380	2.5241	-6.2323	-26.8353	2.2857	-7.2122
24	-26.8353	2.2857	-7.2122	-20.3477	1.9038	-8.4925
25	-20.3477	1.9038	-8.4925	-12.9118	1.3652	-10.0868
26	-12.9118	1.3652	-10.0868	-4.8241	0.6594	-12.0085
27	-4.8241	0.6594	-12.0085	3.5727	-0.2226	-14.2709
28	3.5727	-0.2226	-14.2709	11.8983	-1.2869	-16.8876
29	11.8983	-1.2869	-16.8876	19.7457	-2.5372	-19.8719
30	19.7457	-2.5372	-19.8719	26.6926	-3.9778	-23.2373
31	26.6926	-3.9778	-23.2373	22.9133	-3.9773	-23.2374
32	22.9133	-3.9773	-23.2374	26.9831	-5.6063	-26.9971
33	26.9831	-5.6063	-26.9971	29.1199	-7.4219	-31.1648
34	29.1199	-7.4219	-31.1648	28.9146	-9.4197	-35.7538
35	28.9146	-9.4197	-35.7538	25.9893	-11.5942	-40.7775
36	25.9893	-11.5942	-40.7775	20.0008	-13.9365	-46.2494
37	20.0008	-13.9365	-46.2494	10.6731	-16.4218	-52.1954
38	10.6731	-16.4218	-52.1954	-2.3047	-19.0815	-58.5650
39	-2.3047	-19.0815	-58.5650	-19.1959	-21.9018	-65.3715
40	-19.1959	-21.9018	-65.3715	-48.1974	-10.4033	-41.2680
41	-48.1974	-10.4033	-41.2680	-53.7172	4.1026	-10.4859
42	-53.7172	4.1026	-10.4859	-50.7430	4.1026	-10.4860
43	-50.7430	4.1026	-10.4860	-46.6591	4.0301	-11.3798
44	-46.6591	4.0301	-11.3798	-41.0402	3.8218	-12.6046
45	-41.0402	3.8218	-12.6046	-33.9725	3.4646	-14.1795
46	-33.9725	3.4646	-14.1795	-31.4610	3.4639	-14.1795
47	-31.4610	3.4639	-14.1795	-23.4800	2.9316	-16.1258
48	-23.4800	2.9316	-16.1258	-14.5515	2.2170	-18.4671
49	-14.5515	2.2170	-18.4671	-4.9516	1.3017	-21.2297
50	-4.9516	1.3017	-21.2297	-4.0072	1.3016	-21.2297
51	-4.0072	1.3016	-21.2297	5.1145	0.1727	-24.4417
52	5.1145	0.1727	-24.4417	14.0367	-1.1830	-28.1339
53	14.0367	-1.1830	-28.1339	13.1796	-1.1823	-28.1339
54	13.1796	-1.1823	-28.1339	20.3209	-2.7731	-32.3395
55	20.3209	-2.7731	-32.3395	26.1926	-4.6129	-37.0938
56	26.1926	-4.6129	-37.0938	30.2928	-6.7094	-42.4273
57	30.2928	-6.7094	-42.4273	25.4278	-6.7109	-42.4273
58	25.4278	-6.7109	-42.4273	25.5099	-9.0749	-48.3723
59	25.5099	-9.0749	-48.3723	22.5270	-11.7128	-54.9725
60	22.5270	-11.7128	-54.9725	14.0352	-11.7122	-54.9725

ENVOL. MAX. FLECTORES TREN TREN IPF-75 TIPO B Li=15 m en via 1

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	-1.9066	0.1633	-0.4826	-1.3682	8.1050	20.4235
2	-1.3682	8.1050	20.4235	10.3969	16.5503	54.4130
3	10.3969	16.5503	54.4130	21.8713	13.5494	46.4630
4	21.8713	13.5494	46.4630	31.6931	13.5481	46.4630
5	31.6931	13.5481	46.4630	39.6412	10.5495	38.5130
6	39.6412	10.5495	38.5130	46.2401	7.5482	30.5630
7	46.2401	7.5482	30.5630	51.4864	4.5472	22.6130
8	51.4864	4.5472	22.6130	54.7843	4.5477	22.6130
9	54.7843	4.5477	22.6130	56.5075	1.5484	14.6630
10	56.5075	1.5484	14.6630	56.8793	-1.4546	6.7131
11	56.8793	-1.4546	6.7131	55.8240	-1.4597	6.7131
12	55.8240	-1.4597	6.7131	52.6666	-4.4590	-1.2369
13	52.6666	-4.4590	-1.2369	48.1594	-7.4578	-9.1869
14	48.1594	-7.4578	-9.1869	42.3039	-10.4581	-17.1369
15	42.3039	-10.4581	-17.1369	34.7216	-10.4591	-17.1368
16	34.7216	-10.4591	-17.1368	25.3386	-13.4602	-25.0868
17	25.3386	-13.4602	-25.0868	14.6047	-16.4609	-33.0368
18	14.6047	-16.4609	-33.0368	2.5191	-19.4617	-40.9869
19	2.5191	-19.4617	-40.9869	0.3426	0.1634	-0.4826
20	0.3426	0.1634	-0.4826	0.3970	0.0704	-0.2318
21	0.3970	0.0704	-0.2318	0.3115	-0.0226	0.0190
22	0.3115	-0.0226	0.0190	0.2900	-0.0226	0.0190
23	0.2900	-0.0226	0.0190	0.2685	-0.0226	0.0190
24	0.2685	-0.0226	0.0190	9.8360	17.3045	44.6148
25	9.8360	17.3045	44.6148	25.6518	14.8075	38.9604
26	25.6518	14.8075	38.9604	39.1179	11.8061	31.0104
27	39.1179	11.8061	31.0104	49.9902	9.2350	25.0638
28	49.9902	9.2350	25.0638	58.4650	6.2373	17.1138
29	58.4650	6.2373	17.1138	64.2433	3.2380	9.1639
30	64.2433	3.2380	9.1639	67.5351	0.6285	2.9204
31	67.5351	0.6285	2.9204	68.1308	0.6305	2.9203
32	68.1308	0.6305	2.9203	66.0324	-2.3668	-5.0297
33	66.0324	-2.3668	-5.0297	61.4172	-4.9932	-11.5739
34	61.4172	-4.9932	-11.5739	54.2701	-7.9929	-19.5238
35	54.2701	-7.9929	-19.5238	44.4267	-10.9928	-27.4739
36	44.4267	-10.9928	-27.4739	32.0716	-13.6150	-34.1348
37	32.0716	-13.6150	-34.1348	17.1858	-16.6165	-42.0848
38	17.1858	-16.6165	-42.0848	6.4913	2.6487	-5.5524
39	6.4913	2.6487	-5.5524	9.0076	2.6487	-5.5524
40	9.0076	2.6487	-5.5524	10.6750	0.9751	-2.2283
41	10.6750	0.9751	-2.2283	9.3502	-0.7010	1.1151
42	9.3502	-0.7010	1.1151	8.8421	-0.7011	1.1151
43	8.8421	-0.7011	1.1151	8.3339	-0.7013	1.1151
44	8.3339	-0.7013	1.1151	7.8256	-0.7007	1.1151
45	7.8256	-0.7007	1.1151	11.6422	15.3771	32.4481
46	11.6422	15.3771	32.4481	22.7906	15.3884	32.0951
47	22.7906	15.3884	32.0951	32.2224	12.3923	24.1451
48	32.2224	12.3923	24.1451	40.3103	9.3964	16.1950
49	40.3103	9.3964	16.1950	47.0464	6.3965	8.2449
50	47.0464	6.3965	8.2449	51.6837	6.4023	8.2449
51	51.6837	6.4023	8.2449	54.8997	3.4044	0.2949
52	54.8997	3.4044	0.2949	56.7661	0.3988	-7.6551
53	56.7661	0.3988	-7.6551	57.0560	0.4020	-7.6553
54	57.0560	0.4020	-7.6553	55.4029	-2.5914	-15.6053
55	55.4029	-2.5914	-15.6053	52.3993	-5.5919	-23.5553
56	52.3993	-5.5919	-23.5553	48.0452	-8.5911	-31.5053
57	48.0452	-8.5911	-31.5053	41.8160	-8.5894	-31.5053

58	41.8160	-8.5894	-31.5053	33.9388	-11.5901	-39.4554
59	33.9388	-11.5901	-39.4554	24.7112	-14.5914	-47.4054
60	24.7112	-14.5914	-47.4054	14.1319	-14.5919	-47.4053

ENVOL. MIN. FLECTORES TREN TREN IPF-75 TIPO B Li=15 m en via 1

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	-17.7921	19.6296	61.7354	-3.5605	19.6294	61.7354
2	-3.5605	19.6294	61.7354	-1.6699	0.1632	-0.4826
3	-1.6699	0.1632	-0.4826	-1.5516	0.1632	-0.4826
4	-1.5516	0.1632	-0.4826	-1.4332	0.1632	-0.4826
5	-1.4332	0.1632	-0.4826	-1.3149	0.1632	-0.4826
6	-1.3149	0.1632	-0.4826	-1.1965	0.1632	-0.4826
7	-1.1965	0.1632	-0.4826	-1.0782	0.1633	-0.4826
8	-1.0782	0.1633	-0.4826	-0.9599	0.1633	-0.4826
9	-0.9599	0.1633	-0.4826	-2.7883	-2.8888	0.7775
10	-2.7883	-2.8888	0.7775	-5.1326	-3.8885	-1.8725
11	-5.1326	-3.8885	-1.8725	-7.9523	-3.8882	-1.8725
12	-7.9523	-3.8882	-1.8725	-11.4709	-4.8883	-4.5225
13	-11.4709	-4.8883	-4.5225	-15.4403	-5.8885	-7.1725
14	-15.4403	-5.8885	-7.1725	-19.8597	-6.8881	-9.8225
15	-19.8597	-6.8881	-9.8225	-24.8535	-6.8877	-9.8225
16	-24.8535	-6.8877	-9.8225	-30.4471	-7.8877	-12.4725
17	-30.4471	-7.8877	-12.4725	-36.4908	-8.8878	-15.1225
18	-36.4908	-8.8878	-15.1225	-42.9839	-9.8874	-17.7725
19	-42.9839	-9.8874	-17.7725	-50.1521	-9.8871	-17.7725
20	-50.1521	-9.8871	-17.7725	-69.3782	7.6755	24.8457
21	-69.3782	7.6755	24.8457	-56.4747	23.6276	63.8705
22	-56.4747	23.6276	63.8705	-34.9473	20.9997	57.3261
23	-34.9473	20.9997	57.3261	-31.2571	2.6495	-5.5523
24	-31.2571	2.6495	-5.5523	-28.7400	2.6502	-5.5524
25	-28.7400	2.6502	-5.5524	-26.2221	2.6501	-5.5524
26	-26.2221	2.6501	-5.5524	-23.7050	2.6496	-5.5524
27	-23.7050	2.6496	-5.5524	-21.1873	2.6502	-5.5524
28	-21.1873	2.6502	-5.5524	-18.6697	2.6501	-5.5524
29	-18.6697	2.6501	-5.5524	-16.1532	2.6493	-5.5524
30	-16.1532	2.6493	-5.5524	-13.6365	2.6486	-5.5524
31	-13.6365	2.6486	-5.5524	-11.1203	2.6484	-5.5524
32	-11.1203	2.6484	-5.5524	-8.6044	2.6485	-5.5524
33	-8.6044	2.6485	-5.5524	-6.0890	2.6487	-5.5524
34	-6.0890	2.6487	-5.5524	-3.5728	2.6484	-5.5524
35	-3.5728	2.6484	-5.5524	-7.2035	-5.4277	-12.4741
36	-7.2035	-5.4277	-12.4741	-13.0599	-6.4277	-15.1242
37	-13.0599	-6.4277	-15.1242	-19.8162	-7.4277	-17.7742
38	-19.8162	-7.4277	-17.7742	-27.4725	-8.4277	-20.4242
39	-27.4725	-8.4277	-20.4242	-36.0289	-9.4277	-23.0742
40	-36.0289	-9.4277	-23.0742	-57.2867	3.1491	2.8223
41	-57.2867	3.1491	2.8223	-56.7388	4.3167	-10.1996
42	-56.7388	4.3167	-10.1996	-53.6094	4.3181	-10.1996
43	-53.6094	4.3181	-10.1996	-50.4787	4.3181	-10.1996
44	-50.4787	4.3181	-10.1996	-47.3498	4.3156	-10.1996
45	-47.3498	4.3156	-10.1996	-44.2213	4.3168	-10.1996
46	-44.2213	4.3168	-10.1996	-41.0917	4.3176	-10.1996
47	-41.0917	4.3176	-10.1996	-37.9631	4.3105	-10.1997
48	-37.9631	4.3105	-10.1997	-34.8397	4.3057	-10.1997
49	-34.8397	4.3057	-10.1997	-31.7160	4.3067	-10.1997
50	-31.7160	4.3067	-10.1997	-28.5915	4.3064	-10.1997
51	-28.5915	4.3064	-10.1997	-25.4683	4.3040	-10.1997
52	-25.4683	4.3040	-10.1997	-22.3480	4.3032	-10.1997
53	-22.3480	4.3032	-10.1997	-19.2262	4.3036	-10.1997
54	-19.2262	4.3036	-10.1997	-16.1069	4.3019	-10.1997
55	-16.1069	4.3019	-10.1997	-12.9881	4.3009	-10.1997
56	-12.9881	4.3009	-10.1997	-9.8696	4.3013	-10.1997
57	-9.8696	4.3013	-10.1997	-6.7504	4.3013	-10.1997
58	-6.7504	4.3013	-10.1997	-3.6546	4.2655	-9.9147
59	-3.6546	4.2655	-9.9147	-0.5771	4.1158	-9.4270
60	-0.5771	4.1158	-9.4270	-0.2847	-0.6982	1.1151

ENVOL. MAX. CORTANTES TREN TREN IPF-75 TIPO B Li=15 m en via 1

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	-17.7921	19.6296	61.7354	-3.5605	19.6294	61.7354
2	-3.5605	19.6294	61.7354	9.3212	16.6296	53.7854
3	9.3212	16.6296	53.7854	18.4536	13.6325	47.6547
4	18.4536	13.6325	47.6547	28.3374	13.6322	47.6547
5	28.3374	13.6322	47.6547	32.2365	10.8310	40.3974
6	32.2365	10.8310	40.3974	33.5665	8.1503	33.2859
7	33.5665	8.1503	33.2859	32.6340	5.5984	26.3751
8	32.6340	5.5984	26.3751	36.6949	5.5989	26.3751
9	36.6949	5.5989	26.3751	32.0831	3.1963	19.7161
10	32.0831	3.1963	19.7161	25.9819	0.9365	13.3552
11	25.9819	0.9365	13.3552	26.6597	0.9355	13.3552
12	26.6597	0.9355	13.3552	-0.4863	0.1633	-0.4826
13	-0.4863	0.1633	-0.4826	-0.3679	0.1633	-0.4826
14	-0.3679	0.1633	-0.4826	-0.2496	0.1633	-0.4826
15	-0.2496	0.1633	-0.4826	-0.1311	0.1633	-0.4826
16	-0.1311	0.1633	-0.4826	-0.0127	0.1633	-0.4826
17	-0.0127	0.1633	-0.4826	0.1057	0.1633	-0.4826
18	0.1057	0.1633	-0.4826	0.2241	0.1634	-0.4826
19	0.2241	0.1634	-0.4826	0.3426	0.1634	-0.4826
20	0.3426	0.1634	-0.4826	-67.6293	9.2994	28.2692
21	-67.6293	9.2994	28.2692	-55.2080	26.8064	70.7605
22	-55.2080	26.8064	70.7605	-32.8838	24.2379	64.8139
23	-32.8838	24.2379	64.8139	-13.2835	21.6260	58.5704
24	-13.2835	21.6260	58.5704	3.3517	18.9997	52.0261
25	3.3517	18.9997	52.0261	16.8624	16.3800	45.3652
26	16.8624	16.3800	45.3652	27.1745	13.7908	38.7994
27	27.1745	13.7908	38.7994	34.3211	11.2531	32.3611
28	34.3211	11.2531	32.3611	38.4264	8.7946	26.0821
29	38.4264	8.7946	26.0821	39.6857	6.4180	19.9914
30	39.6857	6.4180	19.9914	38.3552	4.1553	14.1166
31	38.3552	4.1553	14.1166	42.3032	4.1540	14.1165
32	42.3032	4.1540	14.1165	-8.6044	2.6485	-5.5524
33	-8.6044	2.6485	-5.5524	-6.0890	2.6487	-5.5524
34	-6.0890	2.6487	-5.5524	-3.5728	2.6484	-5.5524
35	-3.5728	2.6484	-5.5524	-1.0574	2.6480	-5.5524
36	-1.0574	2.6480	-5.5524	1.4589	2.6486	-5.5524
37	1.4589	2.6486	-5.5524	3.9751	2.6487	-5.5524
38	3.9751	2.6487	-5.5524	6.4913	2.6487	-5.5524
39	6.4913	2.6487	-5.5524	9.0076	2.6487	-5.5524
40	9.0076	2.6487	-5.5524	-56.7223	8.4865	19.1609
41	-56.7223	8.4865	19.1609	-48.9640	24.3866	55.9452
42	-48.9640	24.3866	55.9452	-31.2835	24.3870	55.9452
43	-31.2835	24.3870	55.9452	-15.6277	21.3870	47.9951

44	-15.6277	21.3870	47.9951	-1.3216	18.3860	40.0452
45	-1.3216	18.3860	40.0452	11.6339	15.3875	32.0951
46	11.6339	15.3875	32.0951	22.7906	15.3884	32.0951
47	22.7906	15.3884	32.0951	32.2224	12.3923	24.1451
48	32.2224	12.3923	24.1451	40.3103	9.3964	16.1950
49	40.3103	9.3964	16.1950	47.0464	6.3965	8.2449
50	47.0464	6.3965	8.2449	51.6837	6.4023	8.2449
51	51.6837	6.4023	8.2449	-25.4683	4.3040	-10.1997
52	-25.4683	4.3040	-10.1997	-22.3480	4.3032	-10.1997
53	-22.3480	4.3032	-10.1997	-19.2262	4.3036	-10.1997
54	-19.2262	4.3036	-10.1997	-16.1069	4.3019	-10.1997
55	-16.1069	4.3019	-10.1997	-12.9881	4.3009	-10.1997
56	-12.9881	4.3009	-10.1997	-9.8696	4.3013	-10.1997
57	-9.8696	4.3013	-10.1997	-6.7504	4.3013	-10.1997
58	-6.7504	4.3013	-10.1997	-3.6326	4.3013	-10.1997
59	-3.6326	4.3013	-10.1997	-0.5140	4.3018	-10.1997
60	-0.5140	4.3018	-10.1997	2.6046	4.3017	-10.1997

ENVOL. MIN. CORTANTES TREN TREN IPF-75 TIPO B Li=15 m en via 1

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	-1.9066	0.1633	-0.4826	-1.7882	0.1632	-0.4826
2	-1.7882	0.1632	-0.4826	-0.6595	0.0677	-1.1822
3	-0.6595	0.0677	-1.1822	2.8374	-0.2857	-2.1472
4	2.8374	-0.2857	-2.1472	2.6302	-0.2857	-2.1472
5	2.6302	-0.2857	-2.1472	7.5113	-0.8951	-3.4265
6	7.5113	-0.8951	-3.4265	13.5049	-1.7562	-5.0665
7	13.5049	-1.7562	-5.0665	20.0993	-2.8636	-7.1112
8	20.0993	-2.8636	-7.1112	18.0222	-2.8653	-7.1112
9	18.0222	-2.8653	-7.1112	23.7517	-4.2134	-9.6014
10	23.7517	-4.2134	-9.6014	28.9653	-5.7970	-12.5754
11	28.9653	-5.7970	-12.5754	24.7634	-5.7960	-12.5754
12	24.7634	-5.7960	-12.5754	27.7316	-7.6011	-16.0686
13	27.7316	-7.6011	-16.0686	29.2324	-9.6173	-20.1137
14	29.2324	-9.6173	-20.1137	28.9407	-11.8316	-24.7406
15	28.9407	-11.8316	-24.7406	20.3623	-11.8344	-24.7406
16	20.3623	-11.8344	-24.7406	16.2604	-14.2321	-29.9762
17	16.2604	-14.2321	-29.9762	9.7519	-16.8022	-35.8450
18	9.7519	-16.8022	-35.8450	0.6941	-19.5245	-42.3684
19	0.6941	-19.5245	-42.3684	-13.4627	-19.5261	-42.3684
20	-13.4627	-19.5261	-42.3684	-32.8969	-9.8739	-27.3428
21	-32.8969	-9.8739	-27.3428	0.3115	-0.0226	0.0190
22	0.3115	-0.0226	0.0190	0.2900	-0.0226	0.0190
23	0.2900	-0.0226	0.0190	0.2685	-0.0226	0.0190
24	0.2685	-0.0226	0.0190	0.2470	-0.0226	0.0190
25	0.2470	-0.0226	0.0190	0.2255	-0.0226	0.0190
26	0.2255	-0.0226	0.0190	0.2040	-0.0226	0.0190
27	0.2040	-0.0226	0.0190	7.9212	-0.7676	-13.3219
28	7.9212	-0.7676	-13.3219	16.9597	-2.0071	-15.6356
29	16.9597	-2.0071	-15.6356	25.2504	-3.4431	-18.2930
30	25.2504	-3.4431	-18.2930	32.3025	-5.0695	-21.3172
31	32.3025	-5.0695	-21.3172	27.4861	-5.0694	-21.3171
32	27.4861	-5.0694	-21.3171	31.1100	-6.8793	-24.7322
33	31.1100	-6.8793	-24.7322	32.4241	-8.8618	-28.5638
34	32.4241	-8.8618	-28.5638	31.0441	-11.0059	-32.8391
35	31.0441	-11.0059	-32.8391	26.6604	-13.2887	-37.5864
36	26.6604	-13.2887	-37.5864	19.0351	-15.6910	-42.8352
37	19.0351	-15.6910	-42.8352	8.0159	-18.1924	-48.4897
38	8.0159	-18.1924	-48.4897	-6.4430	-20.7589	-54.4362
39	-6.4430	-20.7589	-54.4362	-24.2723	-23.3687	-60.6796
40	-24.2723	-23.3687	-60.6796	-52.5888	-10.8399	-38.7118
41	-52.5888	-10.8399	-38.7118	9.3502	-0.7010	1.1151
42	9.3502	-0.7010	1.1151	8.8421	-0.7011	1.1151
43	8.8421	-0.7011	1.1151	8.3339	-0.7013	1.1151
44	8.3339	-0.7013	1.1151	7.8256	-0.7007	1.1151
45	7.8256	-0.7007	1.1151	7.3177	-0.7004	1.1151
46	7.3177	-0.7004	1.1151	6.8097	-0.7007	1.1151
47	6.8097	-0.7007	1.1151	6.3017	-0.7003	1.1151
48	6.3017	-0.7003	1.1151	5.7944	-0.6998	1.1151
49	5.7944	-0.6998	1.1151	5.2870	-0.6996	1.1151
50	5.2870	-0.6996	1.1151	4.7801	-0.6995	1.1151
51	4.7801	-0.6995	1.1151	15.1390	-1.5112	-20.7282
52	15.1390	-1.5112	-20.7282	24.4151	-3.1659	-23.7752
53	24.4151	-3.1659	-23.7752	22.1203	-3.1665	-23.7752
54	22.1203	-3.1665	-23.7752	28.8996	-5.0378	-27.3539
55	28.8996	-5.0378	-27.3539	33.9059	-7.1330	-31.5208
56	33.9059	-7.1330	-31.5208	36.6648	-9.4447	-36.3371
57	36.6648	-9.4447	-36.3371	29.8180	-9.4436	-36.3371
58	29.8180	-9.4436	-36.3371	28.0377	-11.9636	-41.8685
59	28.0377	-11.9636	-41.8685	22.9471	-14.6831	-48.1846
60	22.9471	-14.6831	-48.1846	12.3018	-14.6831	-48.1846

ENVOL. MAX. TORSORES TREN TREN IPF-75 TIPO B Li=15 m en via 1

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	-16.5990	19.5485	62.3630	-2.4264	19.5490	62.3630
2	-2.4264	19.5490	62.3630	9.5940	16.5427	54.9978
3	9.5940	16.5427	54.9978	18.4536	13.6325	47.6547
4	18.4536	13.6325	47.6547	28.3374	13.6322	47.6547
5	28.3374	13.6322	47.6547	32.2365	10.8310	40.3974
6	32.2365	10.8310	40.3974	33.5665	8.1503	33.2859
7	33.5665	8.1503	33.2859	32.6340	5.5984	26.3751
8	32.6340	5.5984	26.3751	36.6949	5.5989	26.3751
9	36.6949	5.5989	26.3751	32.0831	3.1963	19.7161
10	32.0831	3.1963	19.7161	25.9819	0.9365	13.3552
11	25.9819	0.9365	13.3552	26.6597	0.9355	13.3552
12	26.6597	0.9355	13.3552	17.8790	-1.1699	7.3342
13	17.8790	-1.1699	7.3342	8.3938	-3.1215	1.6904
14	8.3938	-3.1215	1.6904	-0.2496	0.1633	-0.4826
15	-0.2496	0.1633	-0.4826	-0.1311	0.1633	-0.4826
16	-0.1311	0.1633	-0.4826	-0.0127	0.1633	-0.4826
17	-0.0127	0.1633	-0.4826	0.1057	0.1633	-0.4826
18	0.1057	0.1633	-0.4826	0.2241	0.1634	-0.4826
19	0.2241	0.1634	-0.4826	0.3426	0.1634	-0.4826
20	0.3426	0.1634	-0.4826	-67.6293	9.2994	28.2692
21	-67.6293	9.2994	28.2692	-55.2080	26.8064	70.7605
22	-55.2080	26.8064	70.7605	-32.8838	24.2379	64.8139
23	-32.8838	24.2379	64.8139	-13.2835	21.6260	58.5704
24	-13.2835	21.6260	58.5704	3.3517	18.9997	52.0261
25	3.3517	18.9997	52.0261	16.8624	16.3800	45.3652
26	16.8624	16.3800	45.3652	27.1745	13.7908	38.7994
27	27.1745	13.7908	38.7994	34.3211	11.2531	32.3611
28	34.3211	11.2531	32.3611	38.4264	8.7946	26.0821
29	38.4264	8.7946	26.0821	39.6857	6.4180	19.9914

30	39.6857	6.4180	19.9914	38.3552	4.1553	14.1166
31	38.3552	4.1553	14.1166	42.3032	4.1540	14.1165
32	42.3032	4.1540	14.1165	36.6445	2.0080	8.4827
33	36.6445	2.0080	8.4827	29.1579	-0.0134	3.1129
34	29.1579	-0.0134	3.1129	0.0322	-0.0226	0.0190
35	0.0322	-0.0226	0.0190	0.0107	-0.0226	0.0190
36	0.0107	-0.0226	0.0190	-0.0108	-0.0226	0.0190
37	-0.0108	-0.0226	0.0190	-0.0322	-0.0226	0.0190
38	-0.0322	-0.0226	0.0190	-0.0537	-0.0226	0.0190
39	-0.0537	-0.0226	0.0190	-0.0752	-0.0226	0.0190
40	-0.0752	-0.0226	0.0190	-56.7223	8.4865	19.1609
41	-56.7223	8.4865	19.1609	-48.9301	24.3779	56.2981
42	-48.9301	24.3779	56.2981	-31.2554	24.3771	56.2981
43	-31.2554	24.3771	56.2981	-15.6071	21.3764	48.3481
44	-15.6071	21.3764	48.3481	-1.3075	18.3765	40.3981
45	-1.3075	18.3765	40.3981	11.6422	15.3771	32.4481
46	11.6422	15.3771	32.4481	22.7906	15.3808	32.4481
47	22.7906	15.3808	32.4481	32.2179	12.3857	24.4979
48	32.2179	12.3857	24.4979	40.2983	9.3883	16.5479
49	40.2983	9.3883	16.5479	47.0285	6.3873	8.5979
50	47.0285	6.3873	8.5979	51.6599	6.3867	8.5979
51	51.6599	6.3867	8.5979	4.2729	-0.6993	1.1151
52	4.2729	-0.6993	1.1151	3.7661	-0.6988	1.1151
53	3.7661	-0.6988	1.1151	3.2595	-0.6987	1.1151
54	3.2595	-0.6987	1.1151	2.7529	-0.6982	1.1151
55	2.7529	-0.6982	1.1151	2.2469	-0.6983	1.1151
56	2.2469	-0.6983	1.1151	1.7403	-0.6987	1.1151
57	1.7403	-0.6987	1.1151	1.2341	-0.6984	1.1151
58	1.2341	-0.6984	1.1151	0.7278	-0.6984	1.1151
59	0.7278	-0.6984	1.1151	0.2215	-0.6982	1.1151
60	0.2215	-0.6982	1.1151	-0.2847	-0.6982	1.1151

ENVOL. MIN. TORSORES TREN TREN IPF-75 TIPO B Li=15 m en via 1

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	-1.9066	0.1633	-0.4826	-1.7882	0.1632	-0.4826
2	-1.7882	0.1632	-0.4826	-0.6595	0.0677	-1.1822
3	-0.6595	0.0677	-1.1822	2.8374	-0.2857	-2.1472
4	2.8374	-0.2857	-2.1472	2.6302	-0.2857	-2.1472
5	2.6302	-0.2857	-2.1472	7.5113	-0.8951	-3.4265
6	7.5113	-0.8951	-3.4265	13.5049	-1.7562	-5.0665
7	13.5049	-1.7562	-5.0665	20.0993	-2.8636	-7.1112
8	20.0993	-2.8636	-7.1112	18.0222	-2.8653	-7.1112
9	18.0222	-2.8653	-7.1112	23.7517	-4.2134	-9.6014
10	23.7517	-4.2134	-9.6014	28.9653	-5.7970	-12.5754
11	28.9653	-5.7970	-12.5754	24.7634	-5.7960	-12.5754
12	24.7634	-5.7960	-12.5754	27.7316	-7.6011	-16.0686
13	27.7316	-7.6011	-16.0686	29.2324	-9.6173	-20.1137
14	29.2324	-9.6173	-20.1137	28.9407	-11.8316	-24.7406
15	28.9407	-11.8316	-24.7406	20.3623	-11.8344	-24.7406
16	20.3623	-11.8344	-24.7406	16.2604	-14.2321	-29.9762
17	16.2604	-14.2321	-29.9762	9.7519	-16.8022	-35.8450
18	9.7519	-16.8022	-35.8450	0.6941	-19.5245	-42.3684
19	0.6941	-19.5245	-42.3684	-13.4627	-19.5261	-42.3684
20	-13.4627	-19.5261	-42.3684	-32.8969	-9.8739	-27.3428
21	-32.8969	-9.8739	-27.3428	-36.2911	2.6493	-5.5524
22	-36.2911	2.6493	-5.5524	-32.0991	2.5208	-6.2063
23	-32.0991	2.5208	-6.2063	-26.1970	2.2311	-7.0959
24	-26.1970	2.2311	-7.0959	-18.8654	1.7663	-8.2356
25	-18.8654	1.7663	-8.2356	-10.4563	1.1168	-9.6414
26	-10.4563	1.1168	-9.6414	-1.3770	0.2731	-11.3306
27	-1.3770	0.2731	-11.3306	7.9212	-0.7676	-13.3219
28	7.9212	-0.7676	-13.3219	16.9597	-2.0071	-15.6356
29	16.9597	-2.0071	-15.6356	25.2504	-3.4431	-18.2930
30	25.2504	-3.4431	-18.2930	32.3025	-5.0695	-21.3172
31	32.3025	-5.0695	-21.3172	27.4861	-5.0694	-21.3171
32	27.4861	-5.0694	-21.3171	31.1100	-6.8793	-24.7322
33	31.1100	-6.8793	-24.7322	32.4241	-8.8618	-28.5638
34	32.4241	-8.8618	-28.5638	31.0441	-11.0059	-32.8391
35	31.0441	-11.0059	-32.8391	26.6604	-13.2887	-37.5864
36	26.6604	-13.2887	-37.5864	19.0351	-15.6910	-42.8352
37	19.0351	-15.6910	-42.8352	8.0159	-18.1924	-48.4897
38	8.0159	-18.1924	-48.4897	-6.4430	-20.7589	-54.4362
39	-6.4430	-20.7589	-54.4362	-24.2723	-23.3687	-60.6796
40	-24.2723	-23.3687	-60.6796	-52.5888	-10.8399	-38.7118
41	-52.5888	-10.8399	-38.7118	-55.2990	4.2174	-10.4856
42	-55.2990	4.2174	-10.4856	-52.2417	4.2178	-10.4856
43	-52.2417	4.2178	-10.4856	-45.9621	3.9668	-11.0145
44	-45.9621	3.9668	-11.0145	-38.0322	3.5455	-11.8057
45	-38.0322	3.5455	-11.8057	-28.6499	2.9432	-12.8843
46	-28.6499	2.9432	-12.8843	-26.5161	2.9430	-12.8843
47	-26.5161	2.9430	-12.8843	-16.5228	2.1447	-14.2797
48	-16.5228	2.1447	-14.2797	-5.8109	1.1395	-16.0257
49	-5.8109	1.1395	-16.0257	5.2462	-0.0768	-18.1609
50	5.2462	-0.0768	-18.1609	5.1904	-0.0766	-18.1609
51	5.1904	-0.0766	-18.1609	15.1390	-1.5112	-20.7282
52	15.1390	-1.5112	-20.7282	24.4151	-3.1659	-23.7752
53	24.4151	-3.1659	-23.7752	22.1203	-3.1665	-23.7752
54	22.1203	-3.1665	-23.7752	28.8996	-5.0378	-27.3539
55	28.8996	-5.0378	-27.3539	33.9059	-7.1330	-31.5208
56	33.9059	-7.1330	-31.5208	36.6648	-9.4447	-36.3371
57	36.6648	-9.4447	-36.3371	29.8180	-9.4436	-36.3371
58	29.8180	-9.4436	-36.3371	28.0377	-11.9636	-41.8685
59	28.0377	-11.9636	-41.8685	22.9471	-14.6831	-48.1846
60	22.9471	-14.6831	-48.1846	12.3018	-14.6831	-48.1846

ENVOL. MAX. FLECTORES TREN TREN LM 71, EC-1 en via 1

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	1.5514	-4.7033	-6.0765	1.2648	31.0639	83.2554
2	1.2648	31.0639	83.2554	23.4023	24.3381	71.5794
3	23.4023	24.3381	71.5794	45.8026	32.5257	97.6794
4	45.8026	32.5257	97.6794	60.8426	20.3242	65.3495
5	60.8426	20.3242	65.3495	75.5767	20.3252	65.3495
6	75.5767	20.3252	65.3495	87.2430	16.4146	58.4352
7	87.2430	16.4146	58.4352	95.7840	4.2079	26.1052
8	95.7840	4.2079	26.1052	103.1572	6.5142	34.7161
9	103.1572	6.5142	34.7161	103.4557	0.4123	18.5511
10	103.4557	0.4123	18.5511	103.7880	-3.2344	10.4025
11	103.7880	-3.2344	10.4025	101.4384	-3.2399	10.4025
12	101.4384	-3.2399	10.4025	95.4492	-6.7213	1.7050
13	95.4492	-6.7213	1.7050	90.2748	-18.9182	-30.6250
14	90.2748	-18.9182	-30.6250	79.1333	-10.0064	-7.4965
15	79.1333	-10.0064	-7.4965	66.0829	-22.2076	-39.8265

16	66.0829	-22.2076	-39.8265	53.4998	-25.2709	-49.4867
17	53.4998	-25.2709	-49.4867	38.6104	-15.9004	-27.2272
18	38.6104	-15.9004	-27.2272	20.4499	-18.4601	-36.6877
19	20.4499	-18.4601	-36.6877	13.2031	0.9894	1.7292
20	13.2031	0.9894	1.7292	14.5066	-1.2778	-0.5665
21	14.5066	-1.2778	-0.5665	11.7251	-3.5450	-2.8622
22	11.7251	-3.5450	-2.8622	8.3573	-3.5450	-2.8622
23	8.3573	-3.5450	-2.8622	24.8275	28.5768	72.7760
24	24.8275	28.5768	72.7760	46.3884	25.9786	67.5379
25	46.3884	25.9786	67.5379	65.5753	13.7762	35.2079
26	65.5753	13.7762	35.2079	82.7043	11.0238	29.7516
27	82.7043	11.0238	29.7516	96.7113	8.1476	24.0770
28	96.7113	8.1476	24.0770	107.1997	5.1922	18.1842
29	107.1997	5.1922	18.1842	113.8833	2.1834	12.0731
30	113.8833	2.1834	12.0731	116.6322	-0.8354	5.7437
31	116.6322	-0.8354	5.7437	115.8382	-0.8391	5.7437
32	115.8382	-0.8391	5.7437	111.7865	-3.8354	-0.8038
33	111.7865	-3.8354	-0.8038	103.9755	-6.7794	-7.5694
34	103.9755	-6.7794	-7.5694	92.6851	-9.6306	-14.5534
35	92.6851	-9.6306	-14.5534	79.2624	-21.8307	-46.8835
36	79.2624	-21.8307	-46.8835	62.9526	-24.5639	-54.0857
37	62.9526	-24.5639	-54.0857	44.3151	-27.1271	-61.5059
38	44.3151	-27.1271	-61.5059	24.0466	-29.4931	-69.1421
39	24.0466	-29.4931	-69.1421	14.5321	4.2701	-7.8144
40	14.5321	4.2701	-7.8144	17.3558	1.5617	-2.9856
41	17.3558	1.5617	-2.9856	15.2914	-1.1467	1.8433
42	15.2914	-1.1467	1.8433	14.4602	-1.1468	1.8433
43	14.4602	-1.1468	1.8433	16.1053	30.6238	74.2977
44	16.1053	30.6238	74.2977	34.1694	27.9516	68.4086
45	34.1694	27.9516	68.4086	51.0294	25.0485	62.0993
46	51.0294	25.0485	62.0993	68.5770	12.8517	29.7694
47	68.5770	12.8517	29.7694	81.8606	21.9371	55.3230
48	81.8606	21.9371	55.3230	91.8045	18.6375	48.0345
49	91.8045	18.6375	48.0345	102.5686	6.4354	15.7045
50	102.5686	6.4354	15.7045	109.4051	15.1698	40.1884
51	109.4051	15.1698	40.1884	112.1745	2.9689	7.8583
52	112.1745	2.9689	7.8583	114.3195	2.9628	7.8583
53	114.3195	2.9628	7.8583	112.5856	-0.6422	-0.5906
54	112.5856	-0.6422	-0.5906	109.0739	-12.8383	-32.9207
55	109.0739	-12.8383	-32.9207	103.1279	-4.3685	-9.6872
56	103.1279	-4.3685	-9.6872	91.4185	-16.5713	-42.0172
57	91.4185	-16.5713	-42.0172	79.4090	-16.5681	-42.0173
58	79.4090	-16.5681	-42.0173	63.2519	-20.3951	-51.8056
59	63.2519	-20.3951	-51.8056	45.1109	-32.5938	-84.1357
60	45.1109	-32.5938	-84.1357	24.1643	-24.2929	-62.3163

ENVOL. MIN. FLECTORES TREN TREN LM 71, EC-1 en via 1

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	-27.9375	40.6278	109.4224	-7.2723	0.6637	-1.9624
2	-7.2723	0.6637	-1.9624	-6.7910	0.6638	-1.9625
3	-6.7910	0.6638	-1.9625	-8.9105	-4.8087	-6.0637
4	-8.9105	-4.8087	-6.0637	-12.3966	-4.8089	-6.0636
5	-12.3966	-4.8089	-6.0636	-15.8829	-4.8088	-6.0636
6	-15.8829	-4.8088	-6.0636	-19.3695	-4.8070	-6.0636
7	-19.3695	-4.8070	-6.0636	-22.8549	-4.8061	-6.0636
8	-22.8549	-4.8061	-6.0636	-26.3415	-4.8064	-6.0636
9	-26.3415	-4.8064	-6.0636	-29.8270	-4.8054	-6.0636
10	-29.8270	-4.8054	-6.0636	-33.3122	-4.8039	-6.0636
11	-33.3122	-4.8039	-6.0636	-36.7952	-4.8040	-6.0636
12	-36.7952	-4.8040	-6.0636	-40.2787	-4.8038	-6.0636
13	-40.2787	-4.8038	-6.0636	-43.7614	-4.8048	-6.0636
14	-43.7614	-4.8048	-6.0636	-47.2456	-4.8040	-6.0636
15	-47.2456	-4.8040	-6.0636	-50.7275	-4.8003	-6.0636
16	-50.7275	-4.8003	-6.0636	-54.2087	-4.7998	-6.0636
17	-54.2087	-4.7998	-6.0636	-57.6901	-4.7994	-6.0636
18	-57.6901	-4.7994	-6.0636	-61.1701	-4.7991	-6.0636
19	-61.1701	-4.7991	-6.0636	-64.6495	-4.7998	-6.0636
20	-64.6495	-4.7998	-6.0636	-79.6008	13.8975	41.4785
21	-79.6008	13.8975	41.4785	-62.7200	29.5894	82.8442
22	-62.7200	29.5894	82.8442	-54.4400	4.2713	-7.8144
23	-54.4400	4.2713	-7.8144	-50.3816	4.2723	-7.8144
24	-50.3816	4.2723	-7.8144	-46.3229	4.2719	-7.8144
25	-46.3229	4.2719	-7.8144	-42.2643	4.2715	-7.8144
26	-42.2643	4.2715	-7.8144	-38.2063	4.2722	-7.8144
27	-38.2063	4.2722	-7.8144	-34.1467	4.2720	-7.8144
28	-34.1467	4.2720	-7.8144	-30.0882	4.2707	-7.8144
29	-30.0882	4.2707	-7.8144	-26.0312	4.2703	-7.8144
30	-26.0312	4.2703	-7.8144	-21.9735	4.2690	-7.8144
31	-21.9735	4.2690	-7.8144	-21.9520	-3.5459	-2.8622
32	-21.9520	-3.5459	-2.8622	-25.3214	-3.5468	-2.8622
33	-25.3214	-3.5468	-2.8622	-28.6916	-3.5473	-2.8622
34	-28.6916	-3.5473	-2.8622	-32.0604	-3.5464	-2.8622
35	-32.0604	-3.5464	-2.8622	-35.4296	-3.5468	-2.8622
36	-35.4296	-3.5468	-2.8622	-38.7992	-3.5469	-2.8622
37	-38.7992	-3.5469	-2.8622	-42.1673	-3.5466	-2.8622
38	-42.1673	-3.5466	-2.8622	-45.5358	-3.5464	-2.8622
39	-45.5358	-3.5464	-2.8622	-48.9042	-3.5459	-2.8622
40	-48.9042	-3.5459	-2.8622	-77.9270	-12.5204	-42.9767
41	-77.9270	-12.5204	-42.9767	-80.9421	6.1432	-13.7238
42	-80.9421	6.1432	-13.7238	-76.4887	6.1438	-13.7239
43	-76.4887	6.1438	-13.7239	-72.0343	6.1441	-13.7239
44	-72.0343	6.1441	-13.7239	-67.5805	6.1412	-13.7239
45	-67.5805	6.1412	-13.7239	-63.1293	6.1404	-13.7239
46	-63.1293	6.1404	-13.7239	-58.6762	6.1411	-13.7239
47	-58.6762	6.1411	-13.7239	-54.2245	6.1375	-13.7239
48	-54.2245	6.1375	-13.7239	-49.7794	6.1336	-13.7239
49	-49.7794	6.1336	-13.7239	-45.3315	6.1283	-13.7240
50	-45.3315	6.1283	-13.7240	-40.8892	6.1272	-13.7240
51	-40.8892	6.1272	-13.7240	-36.4441	6.1297	-13.7240
52	-36.4441	6.1297	-13.7240	-32.0010	6.1263	-13.7240
53	-32.0010	6.1263	-13.7240	-27.5614	6.1245	-13.7240
54	-27.5614	6.1245	-13.7240	-23.1220	6.1247	-13.7240
55	-23.1220	6.1247	-13.7240	-18.6842	6.1241	-13.7240
56	-18.6842	6.1241	-13.7240	-14.2450	6.1213	-13.7240
57	-14.2450	6.1213	-13.7240	-9.8083	6.1198	-13.7240
58	-9.8083	6.1198	-13.7240	-5.3706	6.1210	-13.7240
59	-5.3706	6.1210	-13.7240	-0.9726	6.0455	-13.3582
60	-0.9726	6.0455	-13.3582	-0.4707	-1.1423	1.8433

ENVOL. MAX. CORTANTES TREN TREN LM 71, EC-1 en via 1

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	-27.9375	40.6278	109.4224	-0.0387	36.5382	103.9095

2	-0.0387	36.5382	103.9095	22.2209	32.5238	97.6794
3	22.2209	32.5238	97.6794	45.8026	32.5257	97.6794
4	45.8026	32.5257	97.6794	59.7908	28.6070	90.7651
5	59.7908	28.6070	90.7651	68.7064	24.8171	83.2110
6	68.7064	24.8171	83.2110	72.9106	21.1651	75.0625
7	72.9106	21.1651	75.0625	88.2541	21.1632	75.0625
8	88.2541	21.1632	75.0625	85.6515	17.6847	66.3649
9	85.6515	17.6847	66.3649	79.3976	14.4035	57.1633
10	79.3976	14.4035	57.1633	70.0847	11.3342	47.5032
11	70.0847	11.3342	47.5032	78.3004	11.3358	47.5032
12	78.3004	11.3358	47.5032	64.5049	8.5098	37.4326
13	64.5049	8.5098	37.4326	48.9257	5.9462	27.9723
14	48.9257	5.9462	27.9723	53.2367	5.9444	27.9724
15	53.2367	5.9444	27.9724	34.8819	3.6586	19.3078
16	34.8819	3.6586	19.3078	16.1428	1.6609	12.3307
17	16.1428	1.6609	12.3307	11.7687	0.9897	1.7292
18	11.7687	0.9897	1.7292	12.4860	0.9895	1.7292
19	12.4860	0.9895	1.7292	13.2031	0.9894	1.7292
20	13.2031	0.9894	1.7292	-51.6976	20.2923	54.5198
21	-51.6976	20.2923	54.5198	-38.6187	40.7770	105.1060
22	-38.6187	40.7770	105.1060	-12.7279	38.1779	99.8680
23	-12.7279	38.1779	99.8680	11.0323	35.4215	94.4117
24	11.0323	35.4215	94.4117	32.0152	32.5463	88.7370
25	32.0152	32.5463	88.7370	49.7147	29.5891	82.8441
26	49.7147	29.5891	82.8441	63.7547	26.5788	76.7330
27	63.7547	26.5788	76.7330	89.0027	26.5784	76.7330
28	89.0027	26.5784	76.7330	96.2663	23.5527	70.4037
29	96.2663	23.5527	70.4037	99.5484	20.5579	63.8562
30	99.5484	20.5579	63.8562	98.9014	17.6104	57.0904
31	98.9014	17.6104	57.0904	94.5242	14.7680	50.1064
32	94.5242	14.7680	50.1064	86.7437	12.0407	42.9043
33	86.7437	12.0407	42.9043	76.0216	9.4777	35.4841
34	76.0216	9.4777	35.4841	62.9238	7.1080	27.8479
35	62.9238	7.1080	27.8479	47.9466	4.9531	20.7618
36	47.9466	4.9531	20.7618	2.3622	4.2709	-7.8144
37	2.3622	4.2709	-7.8144	6.4193	4.2705	-7.8144
38	6.4193	4.2705	-7.8144	10.4755	4.2698	-7.8144
39	10.4755	4.2698	-7.8144	14.5321	4.2701	-7.8144
40	14.5321	4.2701	-7.8144	-45.4100	20.3476	53.2209
41	-45.4100	20.3476	53.2209	-38.5238	40.1520	100.7387
42	-38.5238	40.1520	100.7387	-9.4135	40.1524	100.7387
43	-9.4135	40.1524	100.7387	8.3073	37.2415	94.4294
44	8.3073	37.2415	94.4294	24.4104	34.1251	87.6531
45	24.4104	34.1251	87.6531	49.1509	34.1261	87.6531
46	49.1509	34.1261	87.6531	60.5266	30.8146	80.3645
47	60.5266	30.8146	80.3645	68.8144	27.3517	72.5186
48	68.8144	27.3517	72.5186	73.4594	23.7444	64.0699
49	73.4594	23.7444	64.0699	90.6749	23.7439	64.0697
50	90.6749	23.7439	64.0697	88.4865	20.0163	54.9730
51	88.4865	20.0163	54.9730	81.6761	16.1891	45.1848
52	81.6761	16.1891	45.1848	69.9157	12.2915	34.6733
53	69.9157	12.2915	34.6733	78.8307	12.2955	34.6732
54	78.8307	12.2955	34.6732	61.2668	8.6606	24.7924
55	61.2668	8.6606	24.7924	-18.6842	6.1241	-13.7240
56	-18.6842	6.1241	-13.7240	-14.2450	6.1213	-13.7240
57	-14.2450	6.1213	-13.7240	-9.8083	6.1198	-13.7240
58	-9.8083	6.1198	-13.7240	-5.3706	6.1210	-13.7240
59	-5.3706	6.1210	-13.7240	-0.9329	6.1197	-13.7240
60	-0.9329	6.1197	-13.7240	3.5038	6.1187	-13.7240

ENVOL. MIN. CORTANTES TREN TREN LM 71, EC-1 en via 1

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	1.5480	-4.8080	-6.0636	-1.9379	-4.8082	-6.0636
2	-1.9379	-4.8082	-6.0636	-5.4243	-4.8085	-6.0637
3	-5.4243	-4.8085	-6.0637	-8.9105	-4.8087	-6.0637
4	-8.9105	-4.8087	-6.0637	-12.3966	-4.8089	-6.0636
5	-12.3966	-4.8089	-6.0636	-15.8829	-4.8088	-6.0636
6	-15.8829	-4.8088	-6.0636	42.5033	-5.5348	-13.7346
7	42.5033	-5.5348	-13.7346	57.4726	-8.1730	-19.8975
8	57.4726	-8.1730	-19.8975	51.5472	-8.1749	-19.8975
9	51.5472	-8.1749	-19.8975	69.1482	-12.2629	-25.4105
10	69.1482	-12.2629	-25.4105	81.5419	-16.2831	-31.6404
11	81.5419	-16.2831	-31.6404	69.7374	-16.2895	-31.6404
12	69.7374	-16.2895	-31.6404	74.4191	-20.2008	-38.5547
13	74.4191	-20.2008	-38.5547	74.7430	-23.9910	-46.1087
14	74.7430	-23.9910	-46.1087	71.2035	-27.6450	-54.2572
15	71.2035	-27.6450	-54.2572	51.1597	-27.6490	-54.2572
16	51.1597	-27.6490	-54.2572	41.7971	-31.1319	-62.9550
17	41.7971	-31.1319	-62.9550	29.9174	-34.4104	-72.1566
18	29.9174	-34.4104	-72.1566	16.2421	-37.4747	-81.8167
19	16.2421	-37.4747	-81.8167	-10.9277	-37.4747	-81.8167
20	-10.9277	-37.4747	-81.8167	-38.4802	-18.4693	-49.6205
21	-38.4802	-18.4693	-49.6205	11.7251	-3.5450	-2.8622
22	11.7251	-3.5450	-2.8622	8.3573	-3.5450	-2.8622
23	8.3573	-3.5450	-2.8622	4.9896	-3.5448	-2.8622
24	4.9896	-3.5448	-2.8622	1.6224	-3.5446	-2.8622
25	1.6224	-3.5446	-2.8622	-1.7448	-3.5449	-2.8622
26	-1.7448	-3.5449	-2.8622	53.3863	-5.6150	-19.1926
27	53.3863	-5.6150	-19.1926	69.3629	-8.0223	-24.2141
28	69.3629	-8.0223	-24.2141	82.8770	-10.6243	-29.4522
29	82.8770	-10.6243	-29.4522	93.3759	-13.3716	-34.9084
30	93.3759	-13.3716	-34.9084	100.4178	-16.2447	-40.5830
31	100.4178	-16.2447	-40.5830	84.9864	-16.2440	-40.5831
32	84.9864	-16.2440	-40.5831	85.4538	-19.2081	-46.4758
33	85.4538	-19.2081	-46.4758	81.9348	-22.2126	-52.5869
34	81.9348	-22.2126	-52.5869	74.4168	-25.2334	-58.9163
35	74.4168	-25.2334	-58.9163	63.0344	-28.2356	-65.4637
36	63.0344	-28.2356	-65.4637	48.0443	-31.1818	-72.2294
37	48.0443	-31.1818	-72.2294	29.8411	-34.0350	-79.2135
38	29.8411	-34.0350	-79.2135	8.9605	-36.7633	-86.4157
39	8.9605	-36.7633	-86.4157	-13.9354	-39.3259	-93.8359
40	-13.9354	-39.3259	-93.8359	-49.5721	-18.6350	-56.5106
41	-49.5721	-18.6350	-56.5106	15.2914	-1.1467	1.8433
42	15.2914	-1.1467	1.8433	14.4602	-1.1468	1.8433
43	14.4602	-1.1468	1.8433	13.6285	-1.1467	1.8433
44	13.6285	-1.1467	1.8433	12.7971	-1.1453	1.8433
45	12.7971	-1.1453	1.8433	18.7898	-1.3975	-14.2866
46	18.7898	-1.3975	-14.2866	17.7763	-1.3956	-14.2866
47	17.7763	-1.3956	-14.2866	37.8958	-3.5469	-17.7345
48	37.8958	-3.5469	-17.7345	57.5973	-5.9645	-22.6924
49	57.5973	-5.9645	-22.6924	76.0488	-8.6308	-28.5816
50	76.0488	-8.6308	-28.5816	69.7901	-8.6315	-28.5816
51	69.7901	-8.6315	-28.5816	84.0872	-11.5279	-34.8909
52	84.0872	-11.5279	-34.8909	95.5337	-14.6546	-41.6674

53	95.5337	-14.6546	-41.6674	84.9131	-14.6483	-41.6674
54	84.9131	-14.6483	-41.6674	90.5457	-17.9464	-48.9560
55	90.5457	-17.9464	-48.9560	92.1319	-21.4145	-56.8019
56	92.1319	-21.4145	-56.8019	89.2468	-25.0303	-65.2505
57	89.2468	-25.0303	-65.2505	71.1011	-25.0333	-65.2506
58	71.1011	-25.0333	-65.2506	60.6905	-28.7673	-74.3474
59	60.6905	-28.7673	-74.3474	45.1109	-32.5938	-84.1357
60	45.1109	-32.5938	-84.1357	21.4815	-32.5926	-84.1357

ENVOL. MAX. TORSORES TREN TREN LM 71, EC-1 en via 1

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	-27.9375	40.6278	109.4224	-0.0387	36.5382	103.9095
2	-0.0387	36.5382	103.9095	22.2209	32.5238	97.6794
3	22.2209	32.5238	97.6794	45.8026	32.5257	97.6794
4	45.8026	32.5257	97.6794	59.7908	28.6070	90.7651
5	59.7908	28.6070	90.7651	68.7064	24.8171	83.2110
6	68.7064	24.8171	83.2110	72.9106	21.1651	75.0625
7	72.9106	21.1651	75.0625	88.2541	21.1632	75.0625
8	88.2541	21.1632	75.0625	85.6515	17.6847	66.3649
9	85.6515	17.6847	66.3649	79.3976	14.4035	57.1633
10	79.3976	14.4035	57.1633	70.0847	11.3342	47.5032
11	70.0847	11.3342	47.5032	78.3004	11.3358	47.5032
12	78.3004	11.3358	47.5032	64.5049	8.5098	37.4326
13	64.5049	8.5098	37.4326	48.9257	5.9462	27.9723
14	48.9257	5.9462	27.9723	53.2367	5.9444	27.9724
15	53.2367	5.9444	27.9724	34.8819	3.6586	19.3078
16	34.8819	3.6586	19.3078	16.1428	1.6609	12.3307
17	16.1428	1.6609	12.3307	-2.1449	-0.0453	6.2349
18	-2.1449	-0.0453	6.2349	-2.1779	-0.0453	6.2349
19	-2.1779	-0.0453	6.2349	-20.6175	-1.4631	1.7338
20	-20.6175	-1.4631	1.7338	-51.6976	20.2923	54.5198
21	-51.6976	20.2923	54.5198	-38.6187	40.7770	105.1060
22	-38.6187	40.7770	105.1060	-12.7279	38.1779	99.8680
23	-12.7279	38.1779	99.8680	11.0323	35.4215	94.4117
24	11.0323	35.4215	94.4117	32.0152	32.5463	88.7370
25	32.0152	32.5463	88.7370	49.7147	29.5891	82.8441
26	49.7147	29.5891	82.8441	63.7547	26.5788	76.7330
27	63.7547	26.5788	76.7330	89.0027	26.5784	76.7330
28	89.0027	26.5784	76.7330	96.2663	23.5527	70.4037
29	96.2663	23.5527	70.4037	99.5484	20.5579	63.8562
30	99.5484	20.5579	63.8562	98.9014	17.6104	57.0904
31	98.9014	17.6104	57.0904	94.5242	14.7680	50.1064
32	94.5242	14.7680	50.1064	86.7437	12.0407	42.9043
33	86.7437	12.0407	42.9043	76.0216	9.4777	35.4841
34	76.0216	9.4777	35.4841	62.9238	7.1080	27.8479
35	62.9238	7.1080	27.8479	47.9466	4.9531	20.7618
36	47.9466	4.9531	20.7618	31.7695	3.0342	14.3394
37	31.7695	3.0342	14.3394	14.9631	1.3556	9.2562
38	14.9631	1.3556	9.2562	-1.5820	-0.0575	4.8586
39	-1.5820	-0.0575	4.8586	-17.3414	-1.2167	1.6923
40	-17.3414	-1.2167	1.6923	-45.4100	20.3476	53.2209
41	-45.4100	20.3476	53.2209	-38.5238	40.1520	100.7387
42	-38.5238	40.1520	100.7387	-9.4135	40.1524	100.7387
43	-9.4135	40.1524	100.7387	8.3073	37.2415	94.4294
44	8.3073	37.2415	94.4294	24.4104	34.1251	87.6531
45	24.4104	34.1251	87.6531	49.1509	34.1261	87.6531
46	49.1509	34.1261	87.6531	60.5266	30.8146	80.3645
47	60.5266	30.8146	80.3645	68.8144	27.3517	72.5186
48	68.8144	27.3517	72.5186	73.4594	23.7444	64.0699
49	73.4594	23.7444	64.0699	90.6749	23.7439	64.0697
50	90.6749	23.7439	64.0697	88.4865	20.0163	54.9730
51	88.4865	20.0163	54.9730	81.6761	16.1891	45.1848
52	81.6761	16.1891	45.1848	69.9157	12.2915	34.6733
53	69.9157	12.2915	34.6733	78.8307	12.2955	34.6732
54	78.8307	12.2955	34.6732	61.2668	8.6606	24.7924
55	61.2668	8.6606	24.7924	82.3396	0.1046	2.3433
56	82.3396	0.1046	2.3433	2.8422	-1.1425	1.8433
57	2.8422	-1.1425	1.8433	2.0138	-1.1423	1.8433
58	2.0138	-1.1423	1.8433	1.1858	-1.1421	1.8433
59	1.1858	-1.1421	1.8433	0.3575	-1.1423	1.8433
60	0.3575	-1.1423	1.8433	-0.4707	-1.1423	1.8433

ENVOL. MIN. TORSORES TREN TREN LM 71, EC-1 en via 1

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	1.5514	-4.7033	-6.0765	-1.8588	-4.7033	-6.0765
2	-1.8588	-4.7033	-6.0765	-5.2689	-4.7035	-6.0765
3	-5.2689	-4.7035	-6.0765	11.7600	-1.1947	-6.2161
4	11.7600	-1.1947	-6.2161	10.8940	-1.1942	-6.2161
5	10.8940	-1.1942	-6.2161	27.4172	-3.2869	-8.4555
6	27.4172	-3.2869	-8.4555	42.5033	-5.5348	-13.7346
7	42.5033	-5.5348	-13.7346	57.4726	-8.1730	-19.8975
8	57.4726	-8.1730	-19.8975	51.5472	-8.1749	-19.8975
9	51.5472	-8.1749	-19.8975	69.1482	-12.2629	-25.4105
10	69.1482	-12.2629	-25.4105	81.5419	-16.2831	-31.6404
11	81.5419	-16.2831	-31.6404	69.7374	-16.2895	-31.6404
12	69.7374	-16.2895	-31.6404	74.4191	-20.2008	-38.5547
13	74.4191	-20.2008	-38.5547	74.7430	-23.9910	-46.1087
14	74.7430	-23.9910	-46.1087	71.2035	-27.6450	-54.2572
15	71.2035	-27.6450	-54.2572	51.1597	-27.6490	-54.2572
16	51.1597	-27.6490	-54.2572	41.7971	-31.1319	-62.9550
17	41.7971	-31.1319	-62.9550	29.9174	-34.4104	-72.1566
18	29.9174	-34.4104	-72.1566	16.2421	-37.4747	-81.8167
19	16.2421	-37.4747	-81.8167	-10.9277	-37.4747	-81.8167
20	-10.9277	-37.4747	-81.8167	-38.4802	-18.4693	-49.6205
21	-38.4802	-18.4693	-49.6205	-57.3437	4.1858	-7.9562
22	-57.3437	4.1858	-7.9562	-53.3674	4.1856	-7.9562
23	-53.3674	4.1856	-7.9562	-1.2333	0.1363	-9.4353
24	-1.2333	0.1363	-9.4353	17.2425	-1.5078	-11.5967
25	17.2425	-1.5078	-11.5967	35.7182	-3.4307	-14.8247
26	35.7182	-3.4307	-14.8247	53.3863	-5.6150	-19.1926
27	53.3863	-5.6150	-19.1926	69.3629	-8.0223	-24.2141
28	69.3629	-8.0223	-24.2141	82.8770	-10.6243	-29.4522
29	82.8770	-10.6243	-29.4522	93.3759	-13.3716	-34.9084
30	93.3759	-13.3716	-34.9084	100.4178	-16.2447	-40.5830
31	100.4178	-16.2447	-40.5830	84.9864	-16.2440	-40.5831
32	84.9864	-16.2440	-40.5831	85.4538	-19.2081	-46.4758
33	85.4538	-19.2081	-46.4758	81.9348	-22.2126	-52.5869
34	81.9348	-22.2126	-52.5869	74.4168	-25.2334	-58.9163
35	74.4168	-25.2334	-58.9163	63.0344	-28.2356	-65.4637
36	63.0344	-28.2356	-65.4637	48.0443	-31.1818	-72.2294
37	48.0443	-31.1818	-72.2294	29.8411	-34.0350	-79.2135
38	29.8411	-34.0350	-79.2135	8.9605	-36.7633	-86.4157

39	8.9605	-36.7633	-86.4157	-13.9354	-39.3259	-93.8359
40	-13.9354	-39.3259	-93.8359	-49.5721	-18.6350	-56.5106
41	-49.5721	-18.6350	-56.5106	-79.4976	6.0391	-13.7679
42	-79.4976	6.0391	-13.7679	-75.1194	6.0396	-13.7679
43	-75.1194	6.0396	-13.7679	-70.7406	6.0364	-13.7679
44	-70.7406	6.0364	-13.7679	-66.3642	6.0344	-13.7679
45	-66.3642	6.0344	-13.7679	18.7898	-1.3975	-14.2866
46	18.7898	-1.3975	-14.2866	17.7763	-1.3956	-14.2866
47	17.7763	-1.3956	-14.2866	37.8958	-3.5469	-17.7345
48	37.8958	-3.5469	-17.7345	57.5973	-5.9645	-22.6924
49	57.5973	-5.9645	-22.6924	76.0488	-8.6308	-28.5816
50	76.0488	-8.6308	-28.5816	69.7901	-8.6315	-28.5816
51	69.7901	-8.6315	-28.5816	84.0872	-11.5279	-34.8909
52	84.0872	-11.5279	-34.8909	95.5337	-14.6546	-41.6674
53	95.5337	-14.6546	-41.6674	84.9131	-14.6483	-41.6674
54	84.9131	-14.6483	-41.6674	90.5457	-17.9464	-48.9560
55	90.5457	-17.9464	-48.9560	92.1319	-21.4145	-56.8019
56	92.1319	-21.4145	-56.8019	89.2468	-25.0303	-65.2505
57	89.2468	-25.0303	-65.2505	71.1011	-25.0333	-65.2506
58	71.1011	-25.0333	-65.2506	60.6905	-28.7673	-74.3474
59	60.6905	-28.7673	-74.3474	45.1109	-32.5938	-84.1357
60	45.1109	-32.5938	-84.1357	21.4815	-32.5926	-84.1357

ENVOL. MAX. FLECTORES TREN TREN SW/0, EC-1 en via 1

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	2.1212	-10.6662	-8.3088	-5.6121	-10.6665	-8.3088
2	-5.6121	-10.6665	-8.3088	47.9859	72.8210	242.4688
3	47.9859	72.8210	242.4688	98.4541	59.5249	207.2238
4	98.4541	59.5249	207.2238	141.6090	59.5261	207.2240
5	141.6090	59.5261	207.2240	176.4478	46.2311	171.9790
6	176.4478	46.2311	171.9790	205.3124	32.9181	136.7340
7	205.3124	32.9181	136.7340	228.1687	19.6164	101.4890
8	228.1687	19.6164	101.4890	242.4028	19.6226	101.4892
9	242.4028	19.6226	101.4892	249.6419	6.3118	66.2442
10	249.6419	6.3118	66.2442	250.8950	-6.9948	30.9991
11	250.8950	-6.9948	30.9991	245.8188	-7.0086	30.9992
12	245.8188	-7.0086	30.9992	232.0466	-19.2720	-6.9098
13	232.0466	-19.2720	-6.9098	212.4250	-32.5727	-42.1547
14	212.4250	-32.5727	-42.1547	186.8154	-45.8899	-77.3996
15	186.8154	-45.8899	-77.3996	153.5445	-45.8941	-77.3996
16	153.5445	-45.8941	-77.3996	112.2960	-59.1909	-112.6446
17	112.2960	-59.1909	-112.6446	65.0585	-72.4982	-147.8896
18	65.0585	-72.4982	-147.8896	11.8308	-85.8003	-183.1347
19	11.8308	-85.8003	-183.1347	1.5188	0.7242	-2.1394
20	1.5188	0.7242	-2.1394	1.7600	0.3119	-1.0276
21	1.7600	0.3119	-1.0276	1.3809	-0.1003	0.0841
22	1.3809	-0.1003	0.0841	1.2857	-0.1003	0.0841
23	1.2857	-0.1003	0.0841	25.9100	76.6497	230.5130
24	25.9100	76.6497	230.5130	90.7406	63.3498	195.2679
25	90.7406	63.3498	195.2679	143.6072	50.0481	160.0228
26	143.6072	50.0481	160.0228	184.4987	36.7459	124.7778
27	184.4987	36.7459	124.7778	213.4234	23.4383	89.5328
28	213.4234	23.4383	89.5328	235.1519	28.8368	61.1441
29	235.1519	28.8368	61.1441	261.8947	15.5430	25.8991
30	261.8947	15.5430	25.8991	278.0798	5.0459	-2.9506
31	278.0798	5.0459	-2.9506	282.8907	5.0501	-2.9506
32	282.8907	5.0501	-2.9506	277.0187	-5.5786	-32.7164
33	277.0187	-5.5786	-32.7164	260.4164	-18.8776	-67.9612
34	260.4164	-18.8776	-67.9612	233.0641	-29.5796	-98.5551
35	233.0641	-29.5796	-98.5551	194.9924	-42.8788	-133.8001
36	194.9924	-42.8788	-133.8001	146.3854	-53.5970	-164.2888
37	146.3854	-53.5970	-164.2888	86.8139	-66.9026	-199.5339
38	86.8139	-66.9026	-199.5339	28.6199	11.6763	-24.5594
39	28.6199	11.6763	-24.5594	39.7111	11.6754	-24.5594
40	39.7111	11.6754	-24.5594	47.2354	4.2807	-8.8804
41	47.2354	4.2807	-8.8804	41.4525	-3.1079	4.9437
42	41.4525	-3.1079	4.9437	39.1998	-3.1080	4.9437
43	39.1998	-3.1080	4.9437	36.9464	-3.1070	4.9437
44	36.9464	-3.1070	4.9437	34.6936	-3.1052	4.9437
45	34.6936	-3.1052	4.9437	32.4423	-3.1066	4.9437
46	32.4423	-3.1066	4.9437	46.2493	67.7684	113.6581
47	46.2493	67.7684	113.6581	88.7699	57.9255	86.4815
48	88.7699	57.9255	86.4815	126.7905	44.6544	51.2365
49	126.7905	44.6544	51.2365	159.1039	33.9562	20.4387
50	159.1039	33.9562	20.4387	183.7188	33.9525	20.4385
51	183.7188	33.9525	20.4385	202.0255	20.6746	-14.8067
52	202.0255	20.6746	-14.8067	214.3607	7.3804	-50.0521
53	214.3607	7.3804	-50.0521	219.7104	7.3819	-50.0523
54	219.7104	7.3819	-50.0523	217.4446	-4.0997	-84.7132
55	217.4446	-4.0997	-84.7132	209.4931	-17.3950	-119.9583
56	209.4931	-17.3950	-119.9583	195.5425	-30.7015	-155.2034
57	195.5425	-30.7015	-155.2034	173.2830	-30.7011	-155.2035
58	173.2830	-30.7011	-155.2035	143.7157	-43.9957	-190.4486
59	143.7157	-43.9957	-190.4486	108.1603	-57.2939	-225.6934
60	108.1603	-57.2939	-225.6934	67.1329	-55.9738	-227.7006

ENVOL. MIN. FLECTORES TREN TREN SW/0, EC-1 en via 1

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	-79.2232	87.1475	275.0496	-16.0406	87.1468	275.0497
2	-16.0406	87.1468	275.0497	-13.3458	-10.6665	-8.3088
3	-13.3458	-10.6665	-8.3088	-21.0794	-10.6665	-8.3088
4	-21.0794	-10.6665	-8.3088	-28.8125	-10.6670	-8.3088
5	-28.8125	-10.6670	-8.3088	-36.5473	-10.6655	-8.3088
6	-36.5473	-10.6655	-8.3088	-44.2801	-10.6652	-8.3088
7	-44.2801	-10.6652	-8.3088	-52.0133	-10.6625	-8.3088
8	-52.0133	-10.6625	-8.3088	-59.7457	-10.6628	-8.3088
9	-59.7457	-10.6628	-8.3088	-67.4794	-10.6637	-8.3088
10	-67.4794	-10.6637	-8.3088	-75.2104	-10.6632	-8.3088
11	-75.2104	-10.6632	-8.3088	-82.9389	-10.6607	-8.3088
12	-82.9389	-10.6607	-8.3088	-90.6632	-10.6593	-8.3088
13	-90.6632	-10.6593	-8.3088	-98.3923	-10.6602	-8.3088
14	-98.3923	-10.6602	-8.3088	-106.1196	-10.6561	-8.3088
15	-106.1196	-10.6561	-8.3088	-113.8447	-10.6511	-8.3088
16	-113.8447	-10.6511	-8.3088	-136.3087	-55.4218	-97.6763
17	-136.3087	-55.4218	-97.6763	-176.4901	-55.4223	-97.6763
18	-176.4901	-55.4223	-97.6763	-222.5677	-65.4949	-119.2413
19	-222.5677	-65.4949	-119.2413	-273.3278	-75.8443	-142.4640
20	-273.3278	-75.8443	-142.4640	-383.5457	8.4519	43.1302
21	-383.5457	8.4519	43.1302	-340.6607	92.6945	223.4062
22	-340.6607	92.6945	223.4062	-255.8328	82.0232	194.0851
23	-255.8328	82.0232	194.0851	-182.0421	71.3814	166.0284
24	-182.0421	71.3814	166.0284	-126.6826	11.6794	-24.5594

25	-126.6826	11.6794	-24.5594	-115.5851	11.6781	-24.5594
26	-115.5851	11.6781	-24.5594	-104.4915	11.6798	-24.5594
27	-104.4915	11.6798	-24.5594	-93.3913	11.6861	-24.5595
28	-93.3913	11.6861	-24.5595	-82.2919	11.6824	-24.5595
29	-82.2919	11.6824	-24.5595	-71.1991	11.6752	-24.5594
30	-71.1991	11.6752	-24.5594	-60.1077	11.6763	-24.5594
31	-60.1077	11.6763	-24.5594	-49.0147	11.6782	-24.5594
32	-49.0147	11.6782	-24.5594	-37.9235	11.6755	-24.5594
33	-37.9235	11.6755	-24.5594	-26.8365	11.6754	-24.5594
34	-26.8365	11.6754	-24.5594	-15.7512	11.6670	-22.7046
35	-15.7512	11.6670	-22.7046	-15.8238	-48.6232	-111.9899
36	-15.8238	-48.6232	-111.9899	-62.1099	-59.1906	-134.6477
37	-62.1099	-59.1906	-134.6477	-118.3437	-59.1918	-134.6478
38	-118.3437	-59.1918	-134.6478	-183.8191	-69.6384	-157.1822
39	-183.8191	-69.6384	-157.1822	-249.9765	-69.6394	-157.1821
40	-249.9765	-69.6394	-157.1821	-370.1251	30.2579	54.2748
41	-370.1251	30.2579	54.2748	-332.7446	116.8590	230.4865
42	-332.7446	116.8590	230.4865	-248.0217	116.8580	230.4864
43	-248.0217	116.8580	230.4864	-206.5403	17.6698	-41.8862
44	-206.5403	17.6698	-41.8862	-193.7343	17.6677	-41.8863
45	-193.7343	17.6677	-41.8863	-180.9315	17.6701	-41.8864
46	-180.9315	17.6701	-41.8864	-168.1217	17.6627	-41.8865
47	-168.1217	17.6627	-41.8865	-155.3263	17.6395	-41.8865
48	-155.3263	17.6395	-41.8865	-142.5394	17.6296	-41.8866
49	-142.5394	17.6296	-41.8866	-129.7538	17.6378	-41.8866
50	-129.7538	17.6378	-41.8866	-116.9707	17.6448	-41.8866
51	-116.9707	17.6448	-41.8866	-104.1852	17.6259	-41.8866
52	-104.1852	17.6259	-41.8866	-91.4160	17.6063	-41.8867
53	-91.4160	17.6063	-41.8867	-78.6444	17.6041	-41.8867
54	-78.6444	17.6041	-41.8867	-65.8763	17.5968	-41.8867
55	-65.8763	17.5968	-41.8867	-53.1173	17.5966	-41.8867
56	-53.1173	17.5966	-41.8867	-40.3514	17.6018	-41.8867
57	-40.3514	17.6018	-41.8867	-27.5897	17.6021	-41.8867
58	-27.5897	17.6021	-41.8867	-14.8273	17.6026	-41.8867
59	-14.8273	17.6026	-41.8867	-2.2464	16.3256	-37.5573
60	-2.2464	16.3256	-37.5573	-1.2624	-3.0957	4.9437

ENVOL. MAX. CORTANTES TREN TREN SW/0, EC-1 en via 1

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	-79.2232	87.1475	275.0496	-16.0406	87.1468	275.0497
2	-16.0406	87.1468	275.0497	41.1580	73.8521	239.8046
3	41.1580	73.8521	239.8046	92.3732	60.5548	204.5595
4	92.3732	60.5548	204.5595	136.2708	60.5562	204.5596
5	136.2708	60.5562	204.5596	128.0105	48.2063	183.0284
6	128.0105	48.2063	183.0284	123.7019	37.4588	153.6188
7	123.7019	37.4588	153.6188	109.5667	28.1733	130.9995
8	109.5667	28.1733	130.9995	128.6377	27.7158	125.8020
9	128.6377	27.7158	125.8020	108.5584	20.8156	106.9590
10	108.5584	20.8156	106.9590	81.9308	14.2743	84.6110
11	81.9308	14.2743	84.6110	76.3950	10.0455	69.3263
12	76.3950	10.0455	69.3263	19.3878	3.5721	45.8065
13	19.3878	3.5721	45.8065	21.9780	3.5731	45.8065
14	21.9780	3.5731	45.8065	-1.1064	0.7240	-2.1394
15	-1.1064	0.7240	-2.1394	-0.5813	0.7240	-2.1394
16	-0.5813	0.7240	-2.1394	-0.0564	0.7240	-2.1394
17	-0.0564	0.7240	-2.1394	0.4686	0.7242	-2.1394
18	0.4686	0.7242	-2.1394	0.9937	0.7243	-2.1394
19	0.9937	0.7243	-2.1394	1.5188	0.7242	-2.1394
20	1.5188	0.7242	-2.1394	-196.4376	52.9517	163.9697
21	-196.4376	52.9517	163.9697	-309.7048	124.7477	314.2548
22	-309.7048	124.7477	314.2548	-220.5160	114.1102	284.4890
23	-220.5160	114.1102	284.4890	-142.6569	103.3994	253.8948
24	-142.6569	103.3994	253.8948	-76.4909	92.6910	223.4060
25	-76.4909	92.6910	223.4060	-22.0729	82.0240	194.0849
26	-22.0729	82.0240	194.0849	21.3905	71.3797	166.0282
27	21.3905	71.3797	166.0282	55.8161	60.6180	138.2847
28	55.8161	60.6180	138.2847	81.0654	49.7504	110.9435
29	81.0654	49.7504	110.9435	97.0657	38.8114	84.0724
30	97.0657	38.8114	84.0724	103.7716	27.8222	57.7202
31	103.7716	27.8222	57.7202	130.2057	27.8247	57.7201
32	130.2057	27.8247	57.7201	117.1255	16.8067	31.9174
33	117.1255	16.8067	31.9174	-26.8365	11.6754	-24.5594
34	-26.8365	11.6754	-24.5594	-15.7441	11.6758	-24.5594
35	-15.7441	11.6758	-24.5594	-4.6552	11.6753	-24.5594
36	-4.6552	11.6753	-24.5594	6.4358	11.6763	-24.5594
37	6.4358	11.6763	-24.5594	17.5270	11.6764	-24.5594
38	17.5270	11.6764	-24.5594	28.6199	11.6763	-24.5594
39	28.6199	11.6763	-24.5594	39.7111	11.6754	-24.5594
40	39.7111	11.6754	-24.5594	-370.1251	30.2579	54.2748
41	-370.1251	30.2579	54.2748	-332.7446	116.8590	230.4865
42	-332.7446	116.8590	230.4865	-248.0217	116.8580	230.4864
43	-248.0217	116.8580	230.4864	-172.2800	103.5542	195.2413
44	-172.2800	103.5542	195.2413	-102.5203	90.2549	159.9962
45	-102.5203	90.2549	159.9962	-38.7466	76.9558	124.7511
46	-38.7466	76.9558	124.7511	17.0466	76.9607	124.7509
47	17.0466	76.9607	124.7509	65.2023	63.6699	89.5057
48	65.2023	63.6699	89.5057	107.3782	50.3729	54.2607
49	107.3782	50.3729	54.2607	143.5693	37.0732	19.0154
50	143.5693	37.0732	19.0154	170.4565	37.0741	19.0154
51	170.4565	37.0741	19.0154	191.0297	23.7791	-16.2299
52	191.0297	23.7791	-16.2299	-91.4160	17.6063	-41.8867
53	-91.4160	17.6063	-41.8867	-78.6444	17.6041	-41.8867
54	-78.6444	17.6041	-41.8867	-65.8763	17.5968	-41.8867
55	-65.8763	17.5968	-41.8867	-53.1173	17.5966	-41.8867
56	-53.1173	17.5966	-41.8867	-40.3514	17.6018	-41.8867
57	-40.3514	17.6018	-41.8867	-27.5897	17.6021	-41.8867
58	-27.5897	17.6021	-41.8867	-14.8273	17.6026	-41.8867
59	-14.8273	17.6026	-41.8867	-2.0658	17.6019	-41.8866
60	-2.0658	17.6019	-41.8866	10.6946	17.6011	-41.8866

ENVOL. MIN. CORTANTES TREN TREN SW/0, EC-1 en via 1

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	2.1212	-10.6662	-8.3088	-5.6121	-10.6665	-8.3088
2	-5.6121	-10.6665	-8.3088	-13.3458	-10.6665	-8.3088
3	-13.3458	-10.6665	-8.3088	-21.0794	-10.6665	-8.3088
4	-21.0794	-10.6665	-8.3088	-28.8125	-10.6670	-8.3088
5	-28.8125	-10.6670	-8.3088	-36.5473	-10.6655	-8.3088
6	-36.5473	-10.6655	-8.3088	-44.2801	-10.6652	-8.3088
7	-44.2801	-10.6652	-8.3088	49.3040	-17.1919	-7.8363
8	49.3040	-17.1919	-7.8363	55.7182	-26.5044	-31.6077
9	55.7182	-26.5044	-31.6077	36.5031	-26.5047	-31.6077
10	36.5031	-26.5047	-31.6077	34.6860	-35.9602	-54.4660

11	34.6860	-35.9602	-54.4660	30.8647	-45.5884	-76.4659
12	30.8647	-45.5884	-76.4659	24.4137	-48.7719	-80.0539
13	24.4137	-48.7719	-80.0539	-15.7664	-55.4216	-97.6763
14	-15.7664	-55.4216	-97.6763	-32.6339	-65.4953	-119.2413
15	-32.6339	-65.4953	-119.2413	-53.3838	-75.8422	-142.4641
16	-53.3838	-75.8422	-142.4641	-108.3676	-75.8408	-142.4641
17	-108.3676	-75.8408	-142.4641	-141.5973	-86.4980	-167.6345
18	-141.5973	-86.4980	-167.6345	-180.5633	-97.4702	-194.9792
19	-180.5633	-97.4702	-194.9792	-225.9044	-108.7592	-224.6953
20	-225.9044	-108.7592	-224.6953	-145.8433	-43.7762	-121.2200
21	-145.8433	-43.7762	-121.2200	1.3809	-0.1003	0.0841
22	1.3809	-0.1003	0.0841	1.2857	-0.1003	0.0841
23	1.2857	-0.1003	0.0841	1.1904	-0.1003	0.0841
24	1.1904	-0.1003	0.0841	1.0951	-0.1002	0.0841
25	1.0951	-0.1002	0.0841	0.9999	-0.1002	0.0841
26	0.9999	-0.1002	0.0841	0.9046	-0.1003	0.0841
27	0.9046	-0.1003	0.0841	36.3223	-3.5553	-58.7599
28	36.3223	-3.5553	-58.7599	77.8410	-9.2738	-68.7121
29	77.8410	-9.2738	-68.7121	114.5541	-16.2016	-42.1688
30	114.5541	-16.2016	-42.1688	126.7489	-27.1078	-65.8400
31	126.7489	-27.1078	-65.8400	129.4727	-37.9174	-89.0869
32	129.4727	-37.9174	-89.0869	122.7421	-48.6106	-111.9899
33	122.7421	-48.6106	-111.9899	106.5882	-59.1926	-134.6478
34	106.5882	-59.1926	-134.6478	80.8084	-69.6403	-157.1818
35	80.8084	-69.6403	-157.1818	14.6522	-69.6360	-157.1820
36	14.6522	-69.6360	-157.1820	-51.5000	-69.6349	-157.1821
37	-51.5000	-69.6349	-157.1821	40.2677	-77.5545	-220.8156
38	40.2677	-77.5545	-220.8156	-18.5956	-88.0406	-249.6654
39	-18.5956	-88.0406	-249.6654	-90.5696	-98.6802	-279.4311
40	-90.5696	-98.6802	-279.4311	-209.0909	-45.9133	-176.3741
41	-209.0909	-45.9133	-176.3741	41.4525	-3.1079	4.9437
42	41.4525	-3.1079	4.9437	39.1998	-3.1080	4.9437
43	39.1998	-3.1080	4.9437	36.9464	-3.1070	4.9437
44	36.9464	-3.1070	4.9437	34.6936	-3.1052	4.9437
45	34.6936	-3.1052	4.9437	32.4423	-3.1066	4.9437
46	32.4423	-3.1066	4.9437	30.1887	-3.1068	4.9437
47	30.1887	-3.1068	4.9437	27.9375	-3.1047	4.9437
48	27.9375	-3.1047	4.9437	25.6881	-3.1023	4.9437
49	25.6881	-3.1023	4.9437	23.4402	-3.1020	4.9437
50	23.4402	-3.1020	4.9437	21.1912	-3.1028	4.9437
51	21.1912	-3.1028	4.9437	72.2113	-7.5167	-90.9659
52	72.2113	-7.5167	-90.9659	108.4500	-14.0343	-106.0576
53	108.4500	-14.0343	-106.0576	98.2733	-14.0322	-106.0576
54	98.2733	-14.0322	-106.0576	124.5893	-21.3731	-123.8284
55	124.5893	-21.3731	-123.8284	144.0187	-29.5625	-144.4998
56	144.0187	-29.5625	-144.4998	154.8088	-38.5720	-168.3033
57	154.8088	-38.5720	-168.3033	126.8473	-38.5681	-168.3036
58	126.8473	-38.5681	-168.3036	120.1144	-48.4095	-195.4803
59	120.1144	-48.4095	-195.4803	100.6163	-59.0896	-226.2780
60	100.6163	-59.0896	-226.2780	57.7727	-59.0928	-226.2780

ENVOL. MAX. TORSORES TREN TREN SW/0, EC-1 en via 1

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	-70.9045	86.1192	277.7139	-8.4672	86.1197	277.7139
2	-8.4672	86.1197	277.7139	42.6001	72.5889	245.4091
3	42.6001	72.5889	245.4091	75.7829	59.9350	213.7325
4	75.7829	59.9350	213.7325	119.2363	59.9323	213.7326
5	119.2363	59.9323	213.7326	117.7325	45.3893	183.2860
6	117.7325	45.3893	183.2860	118.2337	36.3673	156.5168
7	118.2337	36.3673	156.5168	109.5667	28.1733	130.9995
8	109.5667	28.1733	130.9995	128.6377	27.7158	125.8020
9	128.6377	27.7158	125.8020	108.5584	20.8156	106.9590
10	108.5584	20.8156	106.9590	81.9308	14.2743	84.6110
11	81.9308	14.2743	84.6110	76.3950	10.0455	69.3263
12	76.3950	10.0455	69.3263	57.8922	1.8824	46.5389
13	57.8922	1.8824	46.5389	21.9780	3.5731	45.8065
14	21.9780	3.5731	45.8065	-14.0897	-0.6394	29.7339
15	-14.0897	-0.6394	29.7339	-49.0595	-4.1284	16.1211
16	-49.0595	-4.1284	16.1211	-52.0527	-4.1282	16.1211
17	-52.0527	-4.1282	16.1211	-86.8524	-6.9323	5.1364
18	-86.8524	-6.9323	5.1364	0.9937	0.7243	-2.1394
19	0.9937	0.7243	-2.1394	1.5188	0.7242	-2.1394
20	1.5188	0.7242	-2.1394	-196.4376	52.9517	163.9697
21	-196.4376	52.9517	163.9697	-309.7048	124.7477	314.2548
22	-309.7048	124.7477	314.2548	-220.5160	114.1102	284.4890
23	-220.5160	114.1102	284.4890	-142.6569	103.3994	253.8948
24	-142.6569	103.3994	253.8948	-76.4909	92.6910	223.4060
25	-76.4909	92.6910	223.4060	-22.0729	82.0240	194.0849
26	-22.0729	82.0240	194.0849	21.3905	71.3797	166.0282
27	21.3905	71.3797	166.0282	55.8161	60.6180	138.2847
28	55.8161	60.6180	138.2847	81.0654	49.7504	110.9435
29	81.0654	49.7504	110.9435	97.0657	38.8114	84.0724
30	97.0657	38.8114	84.0724	103.7716	27.8222	57.7202
31	103.7716	27.8222	57.7202	130.2057	27.8247	57.7201
32	130.2057	27.8247	57.7201	117.1255	16.8067	31.9174
33	117.1255	16.8067	31.9174	94.7366	5.7787	6.6757
34	94.7366	5.7787	6.6757	0.1427	-0.1002	0.0841
35	0.1427	-0.1002	0.0841	0.0475	-0.1002	0.0841
36	0.0475	-0.1002	0.0841	-0.0477	-0.1002	0.0841
37	-0.0477	-0.1002	0.0841	-0.1429	-0.1002	0.0841
38	-0.1429	-0.1002	0.0841	-0.2382	-0.1002	0.0841
39	-0.2382	-0.1002	0.0841	-0.3334	-0.1002	0.0841
40	-0.3334	-0.1002	0.0841	-370.1251	30.2579	54.2748
41	-370.1251	30.2579	54.2748	-315.0299	115.5293	232.4942
42	-315.0299	115.5293	232.4942	-231.2697	115.5296	232.4940
43	-231.2697	115.5296	232.4940	-156.4892	102.2294	197.2489
44	-156.4892	102.2294	197.2489	-87.6904	88.9293	162.0038
45	-87.6904	88.9293	162.0038	-24.8759	75.6238	126.7586
46	-24.8759	75.6238	126.7586	29.9540	75.6262	126.7584
47	29.9540	75.6262	126.7584	77.1459	62.3449	91.5132
48	77.1459	62.3449	91.5132	118.3631	49.0607	56.2681
49	118.3631	49.0607	56.2681	153.5984	35.7677	21.0229
50	153.5984	35.7677	21.0229	179.5258	35.7661	21.0226
51	179.5258	35.7661	21.0226	18.9429	-3.1010	4.9437
52	18.9429	-3.1010	4.9437	16.6967	-3.0995	4.9437
53	16.6967	-3.0995	4.9437	14.4497	-3.0981	4.9437
54	14.4497	-3.0981	4.9437	12.2047	-3.0956	4.9437
55	12.2047	-3.0956	4.9437	9.9607	-3.0957	4.9437
56	9.9607	-3.0957	4.9437	7.7157	-3.0978	4.9437
57	7.7157	-3.0978	4.9437	5.4704	-3.0972	4.9437
58	5.4704	-3.0972	4.9437	3.2264	-3.0957	4.9437
59	3.2264	-3.0957	4.9437	0.9821	-3.0954	4.9437
60	0.9821	-3.0954	4.9437	-1.2624	-3.0957	4.9437

ENVOL. MIN. TORSORES TREN TREN SW/0, EC-1 en via 1

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	2.1212	-10.6662	-8.3088	-5.6121	-10.6665	-8.3088
2	-5.6121	-10.6665	-8.3088	-13.3458	-10.6665	-8.3088
3	-13.3458	-10.6665	-8.3088	12.5790	-1.2668	-9.5194
4	12.5790	-1.2668	-9.5194	11.6608	-1.2673	-9.5194
5	11.6608	-1.2673	-9.5194	33.3006	-3.9678	-15.1908
6	33.3006	-3.9678	-15.1908	59.8713	-7.7871	-22.4617
7	59.8713	-7.7871	-22.4617	89.1044	-12.7024	-31.5262
8	89.1044	-12.7024	-31.5262	55.7182	-26.5044	-31.6077
9	55.7182	-26.5044	-31.6077	105.3006	-18.6801	-42.5662
10	105.3006	-18.6801	-42.5662	128.4165	-25.6985	-55.7510
11	128.4165	-25.6985	-55.7510	30.8647	-45.5884	-76.4659
12	30.8647	-45.5884	-76.4659	24.4137	-48.7719	-80.0539
13	24.4137	-48.7719	-80.0539	-15.7664	-55.4216	-97.6763
14	-15.7664	-55.4216	-97.6763	-32.6339	-65.4953	-119.2413
15	-32.6339	-65.4953	-119.2413	-53.3838	-75.8422	-142.4641
16	-53.3838	-75.8422	-142.4641	-108.3676	-75.8408	-142.4641
17	-108.3676	-75.8408	-142.4641	-141.5973	-86.4980	-167.6345
18	-141.5973	-86.4980	-167.6345	-180.5633	-97.4702	-194.9792
19	-180.5633	-97.4702	-194.9792	-225.9044	-108.7592	-224.6953
20	-225.9044	-108.7592	-224.6953	-145.8433	-43.7762	-121.2200
21	-145.8433	-43.7762	-121.2200	-159.9703	11.6778	-24.5592
22	-159.9703	11.6778	-24.5592	-143.7633	11.2893	-27.7141
23	-143.7633	11.2893	-27.7141	-118.7337	10.1112	-31.8007
24	-118.7337	10.1112	-31.8007	-86.3063	8.0779	-36.8769
25	-86.3063	8.0779	-36.8769	-48.2543	5.1411	-43.0097
26	-48.2543	5.1411	-43.0097	-6.6277	1.2682	-50.2756
27	-6.6277	1.2682	-50.2756	36.3223	-3.5553	-58.7599
28	36.3223	-3.5553	-58.7599	77.8410	-9.2738	-68.7121
29	77.8410	-9.2738	-68.7121	114.6539	-15.7057	-80.4249
30	114.6539	-15.7057	-80.4249	145.0329	-22.8288	-94.0068
31	145.0329	-22.8288	-94.0068	123.3431	-22.8231	-94.0068
32	123.3431	-22.8231	-94.0068	122.7421	-48.6106	-111.9899
33	122.7421	-48.6106	-111.9899	106.5882	-59.1926	-134.6478
34	106.5882	-59.1926	-134.6478	80.8084	-69.6403	-157.1818
35	80.8084	-69.6403	-157.1818	117.6324	-57.4296	-169.1936
36	117.6324	-57.4296	-169.1936	85.6671	-67.3129	-193.7471
37	85.6671	-67.3129	-193.7471	40.2677	-77.5545	-220.8156
38	40.2677	-77.5545	-220.8156	-18.5956	-88.0406	-249.6654
39	-18.5956	-88.0406	-249.6654	-90.5696	-98.6802	-279.4311
40	-90.5696	-98.6802	-279.4311	-209.0909	-45.9133	-176.3741
41	-209.0909	-45.9133	-176.3741	-220.6436	16.8585	-43.5461
42	-220.6436	16.8585	-43.5461	-208.4212	16.8582	-43.5461
43	-208.4212	16.8582	-43.5461	-179.0340	15.5049	-45.4506
44	-179.0340	15.5049	-45.4506	-143.2878	13.4501	-48.5937
45	-143.2878	13.4501	-48.5937	-102.8503	10.7365	-53.2855
46	-102.8503	10.7365	-53.2855	-95.0676	10.7307	-53.2857
47	-95.0676	10.7307	-53.2857	-53.4471	7.2985	-59.6898
48	-53.4471	7.2985	-59.6898	-9.8769	3.1323	-67.9802
49	-9.8769	3.1323	-67.9802	34.3098	-1.7973	-78.3410
50	34.3098	-1.7973	-78.3410	33.0062	-1.7972	-78.3410
51	33.0062	-1.7972	-78.3410	72.2113	-7.5167	-90.9659
52	72.2113	-7.5167	-90.9659	108.4500	-14.0343	-106.0576
53	108.4500	-14.0343	-106.0576	98.2733	-14.0322	-106.0576
54	98.2733	-14.0322	-106.0576	124.5893	-21.3731	-123.8284
55	124.5893	-21.3731	-123.8284	144.0187	-29.5625	-144.4998
56	144.0187	-29.5625	-144.4998	154.8088	-38.5720	-168.3033
57	154.8088	-38.5720	-168.3033	126.8473	-38.5681	-168.3036
58	126.8473	-38.5681	-168.3036	120.1144	-48.4095	-195.4803
59	120.1144	-48.4095	-195.4803	107.7167	-55.9750	-227.7009
60	107.7167	-55.9750	-227.7009	67.1329	-55.9738	-227.7006

ENVOL. MAX. FLECTORES TREN TREN SW/2, EC-1 en via 1

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	-9.5330	0.8161	-2.4128	-6.8407	40.5245	102.1175
2	-6.8407	40.5245	102.1175	46.6050	83.1515	268.9271
3	46.6050	83.1515	268.9271	104.2662	68.1509	229.1771
4	104.2662	68.1509	229.1771	153.6900	68.2856	230.7064
5	153.6900	68.2856	230.7064	193.8216	53.2798	190.9564
6	193.8216	53.2798	190.9564	227.2133	38.2691	151.2065
7	227.2133	38.2691	151.2065	253.8365	23.2699	111.4565
8	253.8365	23.2699	111.4565	270.7242	23.2792	111.4566
9	270.7242	23.2792	111.4566	279.7344	8.2703	71.7067
10	279.7344	8.2703	71.7067	281.9860	-6.7420	31.9566
11	281.9860	-6.7420	31.9566	277.0977	-6.7452	31.9567
12	277.0977	-6.7452	31.9567	261.7098	-21.7344	-7.7930
13	261.7098	-21.7344	-7.7930	239.5774	-36.7420	-47.5428
14	239.5774	-36.7420	-47.5428	210.6873	-51.7505	-87.2928
15	210.6873	-51.7505	-87.2928	173.1718	-51.7511	-87.2928
16	173.1718	-51.7511	-87.2928	126.6485	-66.7533	-127.0428
17	126.6485	-66.7533	-127.0428	73.3797	-81.7648	-166.7927
18	73.3797	-81.7648	-166.7927	13.3392	-96.7697	-206.5427
19	13.3392	-96.7697	-206.5427	1.7129	0.8168	-2.4128
20	1.7129	0.8168	-2.4128	1.9850	0.3519	-1.1590
21	1.9850	0.3519	-1.1590	1.5574	-0.1131	0.0949
22	1.5574	-0.1131	0.0949	1.4500	-0.1131	0.0949
23	1.4500	-0.1131	0.0949	1.3425	-0.1131	0.0949
24	1.3425	-0.1131	0.0949	47.0977	89.6416	249.2441
25	47.0977	89.6416	249.2441	128.5780	75.7056	209.5358
26	128.5780	75.7056	209.5358	197.4924	60.7077	169.7859
27	197.4924	60.7077	169.7859	252.9218	45.7118	130.0359
28	252.9218	45.7118	130.0359	294.8414	30.7053	90.2856
29	294.8414	30.7053	90.2856	324.4999	17.0165	49.7971
30	324.4999	17.0165	49.7971	340.6550	1.9905	10.0473
31	340.6550	1.9905	10.0473	343.3990	3.3903	8.4982
32	343.3990	3.3903	8.4982	333.1401	-11.5984	-31.2514
33	333.1401	-11.5984	-31.2514	309.6154	-25.2695	-73.3996
34	309.6154	-25.2695	-73.3996	273.6036	-40.2720	-113.1496
35	273.6036	-40.2720	-113.1496	224.0849	-55.2739	-152.8994
36	224.0849	-55.2739	-152.8994	161.0679	-70.2864	-192.6495
37	161.0679	-70.2864	-192.6495	85.3427	-84.1541	-235.6928
38	85.3427	-84.1541	-235.6928	32.2775	13.1676	-27.6985
39	32.2775	13.1676	-27.6985	44.7871	13.1670	-27.6985
40	44.7871	13.1670	-27.6985	53.2730	4.8280	-10.0156
41	53.2730	4.8280	-10.0156	46.7509	-3.5046	5.5756
42	46.7509	-3.5046	5.5756	44.2104	-3.5049	5.5756
43	44.2104	-3.5049	5.5756	41.6694	-3.5055	5.5756
44	41.6694	-3.5055	5.5756	39.1284	-3.5050	5.5756
45	39.1284	-3.5050	5.5756	36.5891	-3.5058	5.5756
46	36.5891	-3.5058	5.5756	56.9961	83.0150	143.4522
47	56.9961	83.0150	143.4522	108.5455	68.0112	103.7018
48	108.5455	68.0112	103.7018	153.3625	53.0172	63.9516
49	153.3625	53.0172	63.9516	191.4231	38.0312	24.2013

50	191.4231	38.0312	24.2013	219.0020	38.0480	24.2010
51	219.0020	38.0480	24.2010	239.4551	23.0478	-15.5489
52	239.4551	23.0478	-15.5489	253.1657	8.0411	-55.2991
53	253.1657	8.0411	-55.2991	258.9984	8.0661	-55.2994
54	258.9984	8.0661	-55.2994	255.1133	-6.9173	-95.0497
55	255.1133	-6.9173	-95.0497	244.4666	-21.9354	-134.8000
56	244.4666	-21.9354	-134.8000	227.0642	-36.9197	-174.5500
57	227.0642	-36.9197	-174.5500	200.3060	-36.9064	-174.5501
58	200.3060	-36.9064	-174.5501	165.2896	-51.9144	-214.3003
59	165.2896	-51.9144	-214.3003	123.5251	-66.9129	-254.0500
60	123.5251	-66.9129	-254.0500	75.7800	-65.4937	-257.0667

ENVOL. MIN. FLECTORES TREN TREN SW/2, EC-1 en via 1

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	-89.5006	97.9420	310.7982	-24.8311	5.1983	72.2654
2	-24.8311	5.1983	72.2654	-21.0624	5.1983	72.2654
3	-21.0624	5.1983	72.2654	-19.9721	-1.2916	46.4676
4	-19.9721	-1.2916	46.4676	-20.9086	-1.2917	46.4676
5	-20.9086	-1.2917	46.4676	-21.8456	-1.2914	46.4677
6	-21.8456	-1.2914	46.4677	-25.5044	-7.9002	22.2917
7	-25.5044	-7.9002	22.2917	-31.2320	-7.8992	22.2917
8	-31.2320	-7.8992	22.2917	-36.9597	-7.8959	22.2919
9	-36.9597	-7.8959	22.2919	-46.4238	-14.6985	-0.3972
10	-46.4238	-14.6985	-0.3972	-57.0825	-14.6977	-0.3973
11	-57.0825	-14.6977	-0.3973	-68.8205	-21.7640	-21.7350
12	-68.8205	-21.7640	-21.7350	-84.5985	-21.7653	-21.7350
13	-84.5985	-21.7653	-21.7350	-100.3802	-21.7668	-21.7349
14	-100.3802	-21.7668	-21.7349	-121.3921	-29.1740	-41.8538
15	-121.3921	-29.1740	-41.8538	-142.8950	-36.9954	-60.8830
16	-142.8950	-36.9954	-60.8830	-169.7185	-36.9964	-60.8830
17	-169.7185	-36.9964	-60.8830	-199.3504	-45.2972	-78.9518
18	-199.3504	-45.2972	-78.9518	-232.9420	-54.1371	-97.3850
19	-232.9420	-54.1371	-97.3850	-272.1915	-54.1367	-97.3851
20	-272.1915	-54.1367	-97.3851	-434.7231	15.3097	59.7326
21	-434.7231	15.3097	59.7326	-373.3458	139.2762	327.1800
22	-373.3458	139.2762	327.1800	-252.0539	70.3985	182.5081
23	-252.0539	70.3985	182.5081	-191.0154	59.9272	152.0797
24	-191.0154	59.9272	152.0797	-142.8754	13.1763	-27.6986
25	-142.8754	13.1763	-27.6986	-130.3614	13.1765	-27.6986
26	-130.3614	13.1765	-27.6986	-117.8446	13.1772	-27.6986
27	-117.8446	13.1772	-27.6986	-105.3273	13.1770	-27.6986
28	-105.3273	13.1770	-27.6986	-92.8112	13.1718	-27.6985
29	-92.8112	13.1718	-27.6985	-80.3011	13.1669	-27.6986
30	-80.3011	13.1669	-27.6986	-67.7917	13.1693	-27.6986
31	-67.7917	13.1693	-27.6986	-55.2762	13.1683	-27.6986
32	-55.2762	13.1683	-27.6986	-42.7735	13.1655	-27.6986
33	-42.7735	13.1655	-27.6986	-30.2661	13.1585	-25.6067
34	-30.2661	13.1585	-25.6067	-17.7651	13.1606	-25.6067
35	-17.7651	13.1606	-25.6067	-5.2625	13.1612	-25.6067
36	-5.2625	13.1612	-25.6067	-0.0538	-0.1130	0.0949
37	-0.0538	-0.1130	0.0949	-21.6772	-75.0687	-205.6703
38	-21.6772	-75.0687	-205.6703	-107.3789	-98.4057	-261.7929
39	-107.3789	-98.4057	-261.7929	-210.7306	-116.4681	-306.5163
40	-210.7306	-116.4681	-306.5163	-405.9595	3.6996	-44.3546
41	-405.9595	3.6996	-44.3546	-385.7388	123.8696	217.8071
42	-385.7388	123.8696	217.8071	-299.3152	112.9999	179.4034
43	-299.3152	112.9999	179.4034	-256.6015	22.0057	-54.8586
44	-256.6015	22.0057	-54.8586	-240.6491	21.9975	-54.8586
45	-240.6491	21.9975	-54.8586	-224.7018	21.9946	-54.8587
46	-224.7018	21.9946	-54.8587	-208.7522	21.9981	-54.8589
47	-208.7522	21.9981	-54.8589	-192.8048	21.9833	-54.8589
48	-192.8048	21.9833	-54.8589	-176.8766	21.9679	-54.8589
49	-176.8766	21.9679	-54.8589	-160.9472	21.9639	-54.8589
50	-160.9472	21.9639	-54.8589	-145.0266	21.9625	-54.8590
51	-145.0266	21.9625	-54.8590	-129.1075	21.9577	-54.8591
52	-129.1075	21.9577	-54.8591	-113.1882	21.9382	-54.8591
53	-113.1882	21.9382	-54.8591	-97.2847	21.9267	-54.8591
54	-97.2847	21.9267	-54.8591	-81.3839	21.9303	-54.8591
55	-81.3839	21.9303	-54.8591	-65.4855	21.9431	-54.8591
56	-65.4855	21.9431	-54.8591	-49.5790	21.9429	-54.8591
57	-49.5790	21.9429	-54.8591	-33.6824	21.9298	-54.8591
58	-33.6824	21.9298	-54.8591	-18.0186	21.5230	-51.6656
59	-18.0186	21.5230	-51.6656	-2.4610	20.5456	-48.6976
60	-2.4610	20.5456	-48.6976	-1.4236	-3.4912	5.5756

ENVOL. MAX. CORTANTES TREN TREN SW/2, EC-1 en via 1

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	-89.3500	98.2860	310.2063	-18.0903	98.2875	310.2063
2	-18.0903	98.2875	310.2063	46.4187	83.2923	270.4563
3	46.4187	83.2923	270.4563	104.1799	68.2955	230.7064
4	104.1799	68.2955	230.7064	153.6900	68.2856	230.7064
5	153.6900	68.2856	230.7064	193.8216	53.2798	190.9564
6	193.8216	53.2798	190.9564	227.2133	38.2691	151.2065
7	227.2133	38.2691	151.2065	253.8365	23.2699	111.4565
8	253.8365	23.2699	111.4565	270.7242	23.2792	111.4566
9	270.7242	23.2792	111.4566	50.4247	11.6278	99.7461
10	50.4247	11.6278	99.7461	9.0877	5.1988	72.2655
11	9.0877	5.1988	72.2655	12.8568	5.1988	72.2656
12	12.8568	5.1988	72.2656	-2.4317	0.8167	-2.4128
13	-2.4317	0.8167	-2.4128	-1.8397	0.8167	-2.4128
14	-1.8397	0.8167	-2.4128	-1.2478	0.8166	-2.4128
15	-1.2478	0.8166	-2.4128	-0.6557	0.8167	-2.4128
16	-0.6557	0.8167	-2.4128	-0.0636	0.8167	-2.4128
17	-0.0636	0.8167	-2.4128	0.5285	0.8167	-2.4128
18	0.5285	0.8167	-2.4128	1.1207	0.8168	-2.4128
19	1.1207	0.8168	-2.4128	1.7129	0.8168	-2.4128
20	1.7129	0.8168	-2.4128	-359.7660	51.6337	163.4691
21	-359.7660	51.6337	163.4691	-363.3062	141.7054	348.1289
22	-363.3062	141.7054	348.1289	-234.6855	126.7052	308.3788
23	-234.6855	126.7052	308.3788	-119.5666	111.7074	268.6287
24	-119.5666	111.7074	268.6287	-17.9483	96.7104	228.8785
25	-17.9483	96.7104	228.8785	70.1701	81.7074	189.1284
26	70.1701	81.7074	189.1284	15.4569	70.4001	182.5078
27	15.4569	70.4001	182.5078	36.7073	59.9270	152.0796
28	36.7073	59.9270	152.0796	48.9246	50.1055	123.1711
29	48.9246	50.1055	123.1711	53.9743	40.8101	94.8793
30	53.9743	40.8101	94.8793	92.7444	25.8098	55.1294
31	92.7444	25.8098	55.1294	117.2661	25.8112	55.1293
32	117.2661	25.8112	55.1293	-42.7735	13.1655	-27.6986
33	-42.7735	13.1655	-27.6986	-30.2649	13.1667	-27.6986
34	-30.2649	13.1667	-27.6986	-17.7579	13.1659	-27.6985
35	-17.7579	13.1659	-27.6985	-5.2496	13.1651	-27.6985

36	-5.2496	13.1651	-27.6985	7.2579	13.1668	-27.6985
37	7.2579	13.1668	-27.6985	19.7680	13.1682	-27.6985
38	19.7680	13.1682	-27.6985	32.2775	13.1676	-27.6985
39	32.2775	13.1676	-27.6985	44.7871	13.1670	-27.6985
40	44.7871	13.1670	-27.6985	-346.7766	16.9004	-0.0838
41	-346.7766	16.9004	-0.0838	-359.4114	130.0056	254.3340
42	-359.4114	130.0056	254.3340	-265.1555	130.0057	254.3338
43	-265.1555	130.0057	254.3338	-181.0273	115.0033	214.5838
44	-181.0273	115.0033	214.5838	-103.6492	100.0105	174.8337
45	-103.6492	100.0105	174.8337	-33.0114	85.0072	135.0836
46	-33.0114	85.0072	135.0836	28.6103	85.0133	135.0833
47	28.6103	85.0133	135.0833	81.6295	70.0359	95.3331
48	81.6295	70.0359	95.3331	127.9002	55.0432	55.5830
49	127.9002	55.0432	55.5830	167.4344	40.0342	15.8329
50	167.4344	40.0342	15.8329	196.4534	40.0331	15.8323
51	196.4534	40.0331	15.8323	218.3611	25.0583	-23.9180
52	218.3611	25.0583	-23.9180	-113.1882	21.9382	-54.8591
53	-113.1882	21.9382	-54.8591	-97.2847	21.9267	-54.8591
54	-97.2847	21.9267	-54.8591	-81.3839	21.9303	-54.8591
55	-81.3839	21.9303	-54.8591	-65.4855	21.9431	-54.8591
56	-65.4855	21.9431	-54.8591	-49.5790	21.9429	-54.8591
57	-49.5790	21.9429	-54.8591	-33.6824	21.9298	-54.8591
58	-33.6824	21.9298	-54.8591	-17.7855	21.9221	-54.8591
59	-17.7855	21.9221	-54.8591	-1.8911	21.9216	-54.8591
60	-1.8911	21.9216	-54.8591	14.0073	21.9262	-54.8591

ENVOL. MIN. CORTANTES TREN TREN SW/2, EC-1 en via 1

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	-9.5330	0.8161	-2.4128	-8.9412	0.8162	-2.4128
2	-8.9412	0.8162	-2.4128	-19.0354	-1.2917	46.4676
3	-19.0354	-1.2917	46.4676	-8.3214	-7.9014	22.2915
4	-8.3214	-7.9014	22.2915	-14.0497	-7.9003	22.2916
5	-14.0497	-7.9003	22.2916	-3.7894	-14.7019	-0.3974
6	-3.7894	-14.7019	-0.3974	10.0967	-21.7703	-21.7351
7	10.0967	-21.7703	-21.7351	26.6944	-29.1819	-41.8540
8	26.6944	-29.1819	-41.8540	5.5378	-29.1799	-41.8540
9	5.5378	-29.1799	-41.8540	18.0592	-37.0015	-60.8832
10	18.0592	-37.0015	-60.8832	30.5466	-45.2994	-78.9521
11	30.5466	-45.2994	-78.9521	-2.2962	-45.3004	-78.9520
12	-2.2962	-45.3004	-78.9520	2.5565	-54.1390	-97.3851
13	2.5565	-54.1390	-97.3851	4.4967	-63.5662	-117.6712
14	4.4967	-63.5662	-117.6712	1.9381	-73.6281	-140.1410
15	1.9381	-73.6281	-140.1410	-51.4423	-73.6292	-140.1410
16	-51.4423	-73.6292	-140.1410	-67.8316	-84.3455	-165.1011
17	-67.8316	-84.3455	-165.1011	-103.7438	-96.7578	-176.9279
18	-103.7438	-96.7578	-176.9279	-174.6451	-111.7579	-216.6779
19	-174.6451	-111.7579	-216.6779	-255.6709	-111.7570	-216.6779
20	-255.6709	-111.7570	-216.6779	-164.4841	-49.3698	-136.7142
21	-164.4841	-49.3698	-136.7142	1.5574	-0.1131	0.0949
22	1.5574	-0.1131	0.0949	1.4500	-0.1131	0.0949
23	1.4500	-0.1131	0.0949	1.3425	-0.1131	0.0949
24	1.3425	-0.1131	0.0949	1.2351	-0.1131	0.0949
25	1.2351	-0.1131	0.0949	1.1276	-0.1131	0.0949
26	1.1276	-0.1131	0.0949	1.0202	-0.1131	0.0949
27	1.0202	-0.1131	0.0949	17.8634	-1.1131	-71.3544
28	17.8634	-1.1131	-71.3544	59.4911	-6.4368	-84.4380
29	59.4911	-6.4368	-84.4380	98.7297	-12.6880	-99.3595
30	98.7297	-12.6880	-99.3595	133.4606	-19.8885	-116.1864
31	133.4606	-19.8885	-116.1864	114.5692	-19.8878	-116.1866
32	114.5692	-19.8878	-116.1866	134.9145	-28.0280	-134.9856
33	134.9145	-28.0280	-134.9856	145.3296	-36.9929	-155.9189
34	145.3296	-36.9929	-155.9189	144.5856	-47.1244	-178.5738
35	144.5856	-47.1244	-178.5738	172.9462	-61.4105	-150.6102
36	172.9462	-61.4105	-150.6102	104.1050	-76.4190	-190.3602
37	104.1050	-76.4190	-190.3602	21.7430	-91.4254	-230.1104
38	21.7430	-91.4254	-230.1104	-74.1058	-106.4232	-269.8604
39	-74.1058	-106.4232	-269.8604	-183.4597	-121.4263	-309.6103
40	-183.4597	-121.4263	-309.6103	-260.7074	-53.7733	-203.3040
41	-260.7074	-53.7733	-203.3040	46.7509	-3.5046	5.5756
42	46.7509	-3.5046	5.5756	44.2104	-3.5049	5.5756
43	44.2104	-3.5049	5.5756	41.6694	-3.5055	5.5756
44	41.6694	-3.5055	5.5756	39.1284	-3.5050	5.5756
45	39.1284	-3.5050	5.5756	36.5891	-3.5058	5.5756
46	36.5891	-3.5058	5.5756	34.0476	-3.5054	5.5756
47	34.0476	-3.5054	5.5756	31.5082	-3.5015	5.5756
48	31.5082	-3.5015	5.5756	28.9716	-3.4981	5.5756
49	28.9716	-3.4981	5.5756	26.4359	-3.4985	5.5756
50	26.4359	-3.4985	5.5756	23.8995	-3.4969	5.5756
51	23.8995	-3.4969	5.5756	21.3643	-3.4928	5.5756
52	21.3643	-3.4928	5.5756	75.9377	-6.9962	-138.5981
53	75.9377	-6.9962	-138.5981	70.8649	-6.9941	-138.5984
54	70.8649	-6.9941	-138.5984	109.3188	-15.8587	-157.9116
55	109.3188	-15.8587	-157.9116	140.4454	-26.0950	-179.6956
56	140.4454	-26.0950	-179.6956	161.3922	-37.6725	-204.1901
57	161.3922	-37.6725	-204.1901	134.0785	-37.6762	-204.1903
58	134.0785	-37.6762	-204.1903	165.2896	-51.9144	-214.3003
59	165.2896	-51.9144	-214.3003	123.5251	-66.9129	-254.0500
60	123.5251	-66.9129	-254.0500	75.0116	-66.9126	-254.0497

ENVOL. MAX. TORSORES TREN TREN SW/2, EC-1 en via 1

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	-89.5006	97.9420	310.7982	-18.4927	97.9457	310.7982
2	-18.4927	97.9457	310.7982	45.7711	82.9470	271.0483
3	45.7711	82.9470	271.0483	103.2822	67.9485	231.2983
4	103.2822	67.9485	231.2983	152.5443	67.9429	231.2984
5	152.5443	67.9429	231.2984	192.4312	52.9315	191.5483
6	192.4312	52.9315	191.5483	90.5989	30.0678	157.4644
7	90.5989	30.0678	157.4644	69.8546	20.1692	127.3924
8	69.8546	20.1692	127.3924	84.4772	20.1702	127.3924
9	84.4772	20.1702	127.3924	50.4247	11.6278	99.7461
10	50.4247	11.6278	99.7461	9.0877	5.1988	72.2655
11	9.0877	5.1988	72.2655	12.8568	5.1988	72.2656
12	12.8568	5.1988	72.2656	-28.3947	-1.2880	46.4678
13	-28.3947	-1.2880	46.4678	-65.5833	-7.8954	22.2920
14	-65.5833	-7.8954	22.2920	-99.7023	-14.6912	-0.3970
15	-99.7023	-14.6912	-0.3970	-110.3531	-14.6924	-0.3970
16	-110.3531	-14.6924	-0.3970	-0.0636	0.8167	-2.4128
17	-0.0636	0.8167	-2.4128	0.5285	0.8167	-2.4128
18	0.5285	0.8167	-2.4128	1.1207	0.8168	-2.4128
19	1.1207	0.8168	-2.4128	1.7129	0.8168	-2.4128
20	1.7129	0.8168	-2.4128	-359.7660	51.6337	163.4691
21	-359.7660	51.6337	163.4691	-282.1307	135.7156	368.5361

22	-282.1307	135.7156	368.5361	-159.2021	120.7171	328.7860
23	-159.2021	120.7171	328.7860	-49.7710	105.7162	289.0360
24	-49.7710	105.7162	289.0360	-63.0295	93.5224	249.9835
25	-63.0295	93.5224	249.9835	-17.0652	81.5858	215.2071
26	-17.0652	81.5858	215.2071	15.4569	70.4001	182.5078
27	15.4569	70.4001	182.5078	36.7073	59.9270	152.0796
28	36.7073	59.9270	152.0796	48.9246	50.1055	123.1711
29	48.9246	50.1055	123.1711	53.9743	40.8101	94.8793
30	53.9743	40.8101	94.8793	92.7444	25.8098	55.1294
31	92.7444	25.8098	55.1294	117.2661	25.8112	55.1293
32	117.2661	25.8112	55.1293	128.2891	10.8156	15.3794
33	128.2891	10.8156	15.3794	0.2684	-0.1131	0.0949
34	0.2684	-0.1131	0.0949	0.1610	-0.1130	0.0949
35	0.1610	-0.1130	0.0949	0.0536	-0.1130	0.0949
36	0.0536	-0.1130	0.0949	-0.0538	-0.1130	0.0949
37	-0.0538	-0.1130	0.0949	-0.1612	-0.1130	0.0949
38	-0.1612	-0.1130	0.0949	-0.2686	-0.1130	0.0949
39	-0.2686	-0.1130	0.0949	-0.3760	-0.1130	0.0949
40	-0.3760	-0.1130	0.0949	-0.4642	-0.0406	0.0199
41	-0.4642	-0.0406	0.0199	-323.7292	127.9906	262.7029
42	-323.7292	127.9906	262.7029	-230.9353	127.9895	262.7028
43	-230.9353	127.9895	262.7028	-148.2695	112.9890	222.9527
44	-148.2695	112.9890	222.9527	-72.3478	97.9908	183.2023
45	-72.3478	97.9908	183.2023	-3.1830	83.0070	143.4523
46	-3.1830	83.0070	143.4523	56.9961	83.0150	143.4522
47	56.9961	83.0150	143.4522	108.5455	68.0112	103.7018
48	108.5455	68.0112	103.7018	153.3625	53.0172	63.9516
49	153.3625	53.0172	63.9516	191.4231	38.0312	24.2013
50	191.4231	38.0312	24.2013	219.0020	38.0480	24.2010
51	219.0020	38.0480	24.2010	21.3643	-3.4928	5.5756
52	21.3643	-3.4928	5.5756	18.8312	-3.4938	5.5756
53	18.8312	-3.4938	5.5756	16.2969	-3.4944	5.5756
54	16.2969	-3.4944	5.5756	13.7650	-3.4922	5.5756
55	13.7650	-3.4922	5.5756	11.2337	-3.4915	5.5756
56	11.2337	-3.4915	5.5756	8.7015	-3.4917	5.5756
57	8.7015	-3.4917	5.5756	6.1703	-3.4918	5.5756
58	6.1703	-3.4918	5.5756	3.6389	-3.4922	5.5756
59	3.6389	-3.4922	5.5756	1.1075	-3.4918	5.5756
60	1.1075	-3.4918	5.5756	-1.4236	-3.4912	5.5756

ENVOL. MIN. TORSORES TREN TREN SW/2, EC-1 en via 1

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	-9.5330	0.8161	-2.4128	-8.9412	0.8162	-2.4128
2	-8.9412	0.8162	-2.4128	-3.2977	0.3386	-5.9111
3	-3.2977	0.3386	-5.9111	14.1870	-1.4282	-10.7362
4	14.1870	-1.4282	-10.7362	13.1509	-1.4286	-10.7362
5	13.1509	-1.4286	-10.7362	37.5563	-4.4753	-17.1325
6	37.5563	-4.4753	-17.1325	67.5245	-8.7805	-25.3328
7	67.5245	-8.7805	-25.3328	26.6944	-29.1819	-41.8540
8	26.6944	-29.1819	-41.8540	5.5378	-29.1799	-41.8540
9	5.5378	-29.1799	-41.8540	18.0592	-37.0015	-60.8832
10	18.0592	-37.0015	-60.8832	30.5466	-45.2994	-78.9521
11	30.5466	-45.2994	-78.9521	-2.2962	-45.3004	-78.9520
12	-2.2962	-45.3004	-78.9520	2.5565	-54.1390	-97.3851
13	2.5565	-54.1390	-97.3851	4.4967	-63.5662	-117.6712
14	4.4967	-63.5662	-117.6712	1.9381	-73.6281	-140.1410
15	1.9381	-73.6281	-140.1410	-51.4423	-73.6292	-140.1410
16	-51.4423	-73.6292	-140.1410	-67.8316	-84.3455	-165.1011
17	-67.8316	-84.3455	-165.1011	-92.2184	-95.7197	-192.8289
18	-92.2184	-95.7197	-192.8289	-125.8884	-107.7531	-223.5710
19	-125.8884	-107.7531	-223.5710	-204.0110	-107.7514	-223.5710
20	-204.0110	-107.7514	-223.5710	-164.4841	-49.3698	-136.7142
21	-164.4841	-49.3698	-136.7142	-180.4180	13.1715	-27.6985
22	-180.4180	13.1715	-27.6985	-160.6898	12.6212	-31.1616
23	-160.6898	12.6212	-31.1616	-134.1786	11.4307	-36.0607
24	-134.1786	11.4307	-36.0607	-101.7377	9.5191	-42.4624
25	-101.7377	9.5191	-42.4624	-64.5595	6.8244	-50.4339
26	-64.5595	6.8244	-50.4339	-24.1201	3.2980	-60.0424
27	-24.1201	3.2980	-60.0424	17.8634	-1.1131	-71.3544
28	17.8634	-1.1131	-71.3544	59.4911	-6.4368	-84.4380
29	59.4911	-6.4368	-84.4380	98.7297	-12.6880	-99.3595
30	98.7297	-12.6880	-99.3595	133.4606	-19.8885	-116.1864
31	133.4606	-19.8885	-116.1864	114.5692	-19.8878	-116.1866
32	114.5692	-19.8878	-116.1866	134.9145	-28.0280	-134.9856
33	134.9145	-28.0280	-134.9856	145.3296	-36.9929	-155.9189
34	145.3296	-36.9929	-155.9189	144.5856	-47.1244	-178.5738
35	144.5856	-47.1244	-178.5738	130.0867	-58.3701	-203.0157
36	130.0867	-58.3701	-203.0157	99.4040	-70.7137	-229.3201
37	99.4040	-70.7137	-229.3201	50.4101	-84.0545	-257.5732
38	50.4101	-84.0545	-257.5732	-18.6273	-98.2850	-287.8715
39	-18.6273	-98.2850	-287.8715	-109.0009	-113.3178	-320.3215
40	-109.0009	-113.3178	-320.3215	-260.7074	-53.7733	-203.3040
41	-260.7074	-53.7733	-203.3040	-288.5121	22.0052	-54.8584
42	-288.5121	22.0052	-54.8584	-272.5584	22.0056	-54.8585
43	-272.5584	22.0056	-54.8585	-252.0947	21.7327	-59.4639
44	-252.0947	21.7327	-59.4639	-222.6463	20.6732	-65.5482
45	-222.6463	20.6732	-65.5482	-184.8203	18.7444	-73.1962
46	-184.8203	18.7444	-73.1962	-171.2229	18.7553	-73.1962
47	-171.2229	18.7553	-73.1962	-128.0512	15.8439	-82.5059
48	-128.0512	15.8439	-82.5059	-79.5028	11.9005	-93.5895
49	-79.5028	11.9005	-93.5895	-27.2108	6.8331	-106.5754
50	-27.2108	6.8331	-106.5754	-22.2558	6.8297	-106.5755
51	-22.2558	6.8297	-106.5755	27.4049	0.5563	-121.5466
52	27.4049	0.5563	-121.5466	75.9377	-6.9962	-138.5981
53	75.9377	-6.9962	-138.5981	70.8649	-6.9941	-138.5984
54	70.8649	-6.9941	-138.5984	109.3188	-15.8587	-157.9116
55	109.3188	-15.8587	-157.9116	140.4454	-26.0950	-179.6956
56	140.4454	-26.0950	-179.6956	161.3922	-37.6725	-204.1901
57	161.3922	-37.6725	-204.1901	134.0785	-37.6762	-204.1903
58	134.0785	-37.6762	-204.1903	132.5540	-50.6233	-231.6661
59	132.5540	-50.6233	-231.6661	114.0603	-64.9165	-262.4191
60	114.0603	-64.9165	-262.4191	66.9994	-64.9123	-262.4191

ENVOL. MAX. FLECTORES TREN TREN SIN CARGA, EC-1 en via 1

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	-0.7944	0.0680	-0.2011	-0.5701	3.3770	8.5098
2	-0.5701	3.3770	8.5098	3.8839	6.9290	22.4106
3	3.8839	6.9290	22.4106	8.6885	5.6790	19.0981
4	8.6885	5.6790	19.0981	12.8075	5.6902	19.2255
5	12.8075	5.6902	19.2255	16.1518	4.4406	15.9130
6	16.1518	4.4406	15.9130	18.9345	3.1909	12.6005
7	18.9345	3.1909	12.6005	21.1535	1.9405	9.2881

8	21.1535	1.9405	9.2881	22.5606	1.9402	9.2881
9	22.5606	1.9402	9.2881	23.3111	0.6891	5.9756
10	23.3111	0.6891	5.9756	23.4985	-0.5610	2.6631
11	23.4985	-0.5610	2.6631	23.0919	-0.5616	2.6631
12	23.0919	-0.5616	2.6631	21.8088	-1.8119	-0.6494
13	21.8088	-1.8119	-0.6494	19.9650	-3.0615	-3.9619
14	19.9650	-3.0615	-3.9619	17.5578	-4.3125	-7.2744
15	17.5578	-4.3125	-7.2744	14.4307	-4.3140	-7.2744
16	14.4307	-4.3140	-7.2744	10.5541	-5.5643	-10.5869
17	10.5541	-5.5643	-10.5869	6.1144	-6.8140	-13.8994
18	6.1144	-6.8140	-13.8994	1.1120	-8.0642	-17.2119
19	1.1120	-8.0642	-17.2119	0.1427	0.0681	-0.2011
20	0.1427	0.0681	-0.2011	0.1654	0.0293	-0.0966
21	0.1654	0.0293	-0.0966	0.1298	-0.0094	0.0079
22	0.1298	-0.0094	0.0079	0.1208	-0.0094	0.0079
23	0.1208	-0.0094	0.0079	0.1119	-0.0094	0.0079
24	0.1119	-0.0094	0.0079	0.1029	-0.0094	0.0079
25	0.1029	-0.0094	0.0079	3.4637	7.0503	15.3370
26	3.4637	7.0503	15.3370	10.0401	5.9455	12.6935
27	10.0401	5.9455	12.6935	15.5023	4.7053	9.4753
28	15.5023	4.7053	9.4753	19.8466	3.4547	6.1628
29	19.8466	3.4547	6.1628	23.0665	2.2042	2.8503
30	23.0665	2.2042	2.8503	25.1615	0.9553	-0.4622
31	25.1615	0.9553	-0.4622	26.0695	0.9562	-0.4622
32	26.0695	0.9562	-0.4622	25.8538	-0.2941	-3.7747
33	25.8538	-0.2941	-3.7747	24.5123	-1.5445	-7.0872
34	24.5123	-1.5445	-7.0872	22.0461	-2.7939	-10.3997
35	22.0461	-2.7939	-10.3997	18.4547	-4.0435	-13.7122
36	18.4547	-4.0435	-13.7122	13.7381	-5.2938	-17.0247
37	13.7381	-5.2938	-17.0247	7.8959	-6.5440	-20.3372
38	7.8959	-6.5440	-20.3372	2.6898	1.0973	-2.3082
39	2.6898	1.0973	-2.3082	3.7322	1.0973	-2.3082
40	3.7322	1.0973	-2.3082	4.4395	0.4023	-0.8346
41	4.4395	0.4023	-0.8346	3.8959	-0.2921	0.4646
42	3.8959	-0.2921	0.4646	3.6842	-0.2921	0.4646
43	3.6842	-0.2921	0.4646	3.4724	-0.2921	0.4646
44	3.4724	-0.2921	0.4646	3.2607	-0.2920	0.4646
45	3.2607	-0.2920	0.4646	3.0490	-0.2919	0.4646
46	3.0490	-0.2919	0.4646	2.8373	-0.2919	0.4646
47	2.8373	-0.2919	0.4646	3.6266	6.2789	7.3249
48	3.6266	6.2789	7.3249	7.8048	5.0297	4.0124
49	7.8048	5.0297	4.0124	11.4204	3.7795	0.6998
50	11.4204	3.7795	0.6998	14.1609	3.7801	0.6998
51	14.1609	3.7801	0.6998	16.3086	2.5306	-2.6127
52	16.3086	2.5306	-2.6127	17.8937	1.2807	-5.9252
53	17.8937	1.2807	-5.9252	18.8232	1.2815	-5.9253
54	18.8232	1.2815	-5.9253	18.9407	0.0328	-9.2378
55	18.9407	0.0328	-9.2378	18.4967	-1.2169	-12.5502
56	18.4967	-1.2169	-12.5502	17.4892	-2.4662	-15.8628
57	17.4892	-2.4662	-15.8628	15.7013	-2.4657	-15.8628
58	15.7013	-2.4657	-15.8628	13.2258	-3.7164	-19.1753
59	13.2258	-3.7164	-19.1753	10.1875	-4.9665	-22.4878
60	10.1875	-4.9665	-22.4878	6.5873	-4.9660	-22.4878

ENVOL. MIN. FLECTORES TREN TREN SIN CARGA, EC-1 en via 1

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	-7.4584	8.1618	25.8998	-2.1603	6.6987	24.1696
2	-2.1603	6.6987	24.1696	-0.6958	0.0680	-0.2011
3	-0.6958	0.0680	-0.2011	-0.6465	0.0680	-0.2011
4	-0.6465	0.0680	-0.2011	-0.5972	0.0680	-0.2011
5	-0.5972	0.0680	-0.2011	-0.5479	0.0680	-0.2011
6	-0.5479	0.0680	-0.2011	-0.4986	0.0680	-0.2011
7	-0.4986	0.0680	-0.2011	-0.4493	0.0680	-0.2011
8	-0.4493	0.0680	-0.2011	-0.3999	0.0680	-0.2011
9	-0.3999	0.0680	-0.2011	-0.3506	0.0680	-0.2011
10	-0.3506	0.0680	-0.2011	-0.3013	0.0680	-0.2011
11	-0.3013	0.0680	-0.2011	-0.2520	0.0680	-0.2011
12	-0.2520	0.0680	-0.2011	-0.2026	0.0680	-0.2011
13	-0.2026	0.0680	-0.2011	-0.1533	0.0680	-0.2011
14	-0.1533	0.0680	-0.2011	-0.1040	0.0680	-0.2011
15	-0.1040	0.0680	-0.2011	-1.3616	-5.8029	-8.9553
16	-1.3616	-5.8029	-8.9553	-6.3191	-7.0532	-12.2678
17	-6.3191	-7.0532	-12.2678	-11.8388	-8.3032	-15.5803
18	-11.8388	-8.3032	-15.5803	-17.9214	-9.5534	-18.8928
19	-17.9214	-9.5534	-18.8928	-24.8477	-9.5534	-18.8928
20	-24.8477	-9.5534	-18.8928	-39.4034	1.3256	5.2288
21	-39.4034	1.3256	5.2288	-34.1883	12.2049	29.3503
22	-34.1883	12.2049	29.3503	-23.0936	10.9548	26.0378
23	-23.0936	10.9548	26.0378	-13.1244	9.7048	22.7253
24	-13.1244	9.7048	22.7253	-11.9062	1.0975	-2.3082
25	-11.9062	1.0975	-2.3082	-10.8635	1.0977	-2.3082
26	-10.8635	1.0977	-2.3082	-9.8204	1.0979	-2.3082
27	-9.8204	1.0979	-2.3082	-8.7774	1.0979	-2.3082
28	-8.7774	1.0979	-2.3082	-7.7343	1.0977	-2.3082
29	-7.7343	1.0977	-2.3082	-6.6918	1.0975	-2.3082
30	-6.6918	1.0975	-2.3082	-5.6490	1.0974	-2.3082
31	-5.6490	1.0974	-2.3082	-4.6066	1.0970	-2.3082
32	-4.6066	1.0970	-2.3082	-3.5645	1.0971	-2.3082
33	-3.5645	1.0971	-2.3082	-2.5221	1.0965	-2.1339
34	-2.5221	1.0965	-2.1339	-1.4803	1.0965	-2.1339
35	-1.4803	1.0965	-2.1339	-0.4386	1.0966	-2.1339
36	-0.4386	1.0966	-2.1339	-0.0045	-0.0094	0.0079
37	-0.0045	-0.0094	0.0079	-2.9927	-7.4581	-20.9640
38	-2.9927	-7.4581	-20.9640	-10.8279	-8.7078	-24.2765
39	-10.8279	-8.7078	-24.2765	-19.7874	-9.9577	-27.5890
40	-19.7874	-9.9577	-27.5890	-36.8669	0.6602	-3.5070
41	-36.8669	0.6602	-3.5070	-35.0596	11.2782	20.5750
42	-35.0596	11.2782	20.5750	-26.8827	11.2780	20.5750
43	-26.8827	11.2780	20.5750	-19.5703	1.6811	-4.3239
44	-19.5703	1.6811	-4.3239	-18.3515	1.6812	-4.3239
45	-18.3515	1.6812	-4.3239	-17.1332	1.6813	-4.3239
46	-17.1332	1.6813	-4.3239	-15.9143	1.6808	-4.3239
47	-15.9143	1.6808	-4.3239	-14.6990	1.6737	-4.1033
48	-14.6990	1.6737	-4.1033	-13.4871	1.6731	-4.1033
49	-13.4871	1.6731	-4.1033	-12.2739	1.6737	-4.1033
50	-12.2739	1.6737	-4.1033	-11.0609	1.6722	-4.1033
51	-11.0609	1.6722	-4.1033	-9.8494	1.6710	-4.1033
52	-9.8494	1.6710	-4.1033	-8.6376	1.6712	-4.1033
53	-8.6376	1.6712	-4.1033	-7.4261	1.6707	-4.1033
54	-7.4261	1.6707	-4.1033	-6.2153	1.6698	-4.1033
55	-6.2153	1.6698	-4.1033	-5.0051	1.6702	-4.1033
56	-5.0051	1.6702	-4.1033	-3.7938	1.6701	-4.1033
57	-3.7938	1.6701	-4.1033	-2.5837	1.6695	-4.1033
58	-2.5837	1.6695	-4.1033	-1.3730	1.6695	-4.1033

59	-1.3730	1.6695	-4.1033	-0.1798	1.5347	-3.6539
60	-0.1798	1.5347	-3.6539	-0.1186	-0.2909	0.4646

ENVOL. MAX. CORTANTES TREN TREN SIN CARGA, EC-1 en via 1

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	-7.4459	8.1906	25.8505	-1.5076	8.1906	25.8505
2	-1.5076	8.1906	25.8505	3.8682	6.9409	22.5380
3	3.8682	6.9409	22.5380	8.6818	5.6908	19.2255
4	8.6818	5.6908	19.2255	12.8075	5.6902	19.2255
5	12.8075	5.6902	19.2255	16.1518	4.4406	15.9130
6	16.1518	4.4406	15.9130	18.9345	3.1909	12.6005
7	18.9345	3.1909	12.6005	21.1535	1.9405	9.2881
8	21.1535	1.9405	9.2881	22.5606	1.9402	9.2881
9	22.5606	1.9402	9.2881	23.3111	0.6891	5.9756
10	23.3111	0.6891	5.9756	-0.3013	0.0680	-0.2011
11	-0.3013	0.0680	-0.2011	-0.2520	0.0680	-0.2011
12	-0.2520	0.0680	-0.2011	-0.2026	0.0680	-0.2011
13	-0.2026	0.0680	-0.2011	-0.1533	0.0680	-0.2011
14	-0.1533	0.0680	-0.2011	-0.1040	0.0680	-0.2011
15	-0.1040	0.0680	-0.2011	-0.0547	0.0680	-0.2011
16	-0.0547	0.0680	-0.2011	-0.0053	0.0681	-0.2011
17	-0.0053	0.0681	-0.2011	0.0440	0.0681	-0.2011
18	0.0440	0.0681	-0.2011	0.0934	0.0681	-0.2011
19	0.0934	0.0681	-0.2011	0.1427	0.0681	-0.2011
20	0.1427	0.0681	-0.2011	-39.4034	1.3256	5.2288
21	-39.4034	1.3256	5.2288	-34.1883	12.2049	29.3503
22	-34.1883	12.2049	29.3503	-23.0936	10.9548	26.0378
23	-23.0936	10.9548	26.0378	-13.1244	9.7048	22.7253
24	-13.1244	9.7048	22.7253	-4.2801	8.4549	19.4128
25	-4.2801	8.4549	19.4128	3.4390	7.2046	16.1003
26	3.4390	7.2046	16.1003	10.0330	5.9549	12.7878
27	10.0330	5.9549	12.7878	15.5023	4.7053	9.4753
28	15.5023	4.7053	9.4753	19.8466	3.4547	6.1628
29	19.8466	3.4547	6.1628	23.0665	2.2042	2.8503
30	23.0665	2.2042	2.8503	-5.6490	1.0974	-2.3082
31	-5.6490	1.0974	-2.3082	-4.6066	1.0970	-2.3082
32	-4.6066	1.0970	-2.3082	-3.5645	1.0971	-2.3082
33	-3.5645	1.0971	-2.3082	-2.5221	1.0974	-2.3082
34	-2.5221	1.0974	-2.3082	-1.4797	1.0974	-2.3082
35	-1.4797	1.0974	-2.3082	-0.4374	1.0971	-2.3082
36	-0.4374	1.0971	-2.3082	0.6048	1.0970	-2.3082
37	0.6048	1.0970	-2.3082	1.6472	1.0972	-2.3082
38	1.6472	1.0972	-2.3082	2.6898	1.0973	-2.3082
39	2.6898	1.0973	-2.3082	3.7322	1.0973	-2.3082
40	3.7322	1.0973	-2.3082	-36.8669	0.6602	-3.5070
41	-36.8669	0.6602	-3.5070	-35.0596	11.2782	20.5750
42	-35.0596	11.2782	20.5750	-26.8827	11.2780	20.5750
43	-26.8827	11.2780	20.5750	-19.5498	10.0280	17.2624
44	-19.5498	10.0280	17.2624	-12.7792	8.7785	13.9499
45	-12.7792	8.7785	13.9499	-6.5710	7.5283	10.6374
46	-6.5710	7.5283	10.6374	-1.1130	7.5280	10.6374
47	-1.1130	7.5280	10.6374	3.6266	6.2789	7.3249
48	3.6266	6.2789	7.3249	7.8048	5.0297	4.0124
49	7.8048	5.0297	4.0124	11.4204	3.7795	0.6998
50	11.4204	3.7795	0.6998	14.1609	3.7801	0.6998
51	14.1609	3.7801	0.6998	16.3086	2.5306	-2.6127
52	16.3086	2.5306	-2.6127	-8.6143	1.6764	-4.3239
53	-8.6143	1.6764	-4.3239	-7.3986	1.6772	-4.3239
54	-7.3986	1.6772	-4.3239	-6.1833	1.6764	-4.3239
55	-6.1833	1.6764	-4.3239	-4.9690	1.6758	-4.3239
56	-4.9690	1.6758	-4.3239	-3.7542	1.6758	-4.3239
57	-3.7542	1.6758	-4.3239	-2.5394	1.6755	-4.3239
58	-2.5394	1.6755	-4.3239	-1.3249	1.6751	-4.3239
59	-1.3249	1.6751	-4.3239	-0.1106	1.6750	-4.3239
60	-0.1106	1.6750	-4.3239	1.1040	1.6752	-4.3239

ENVOL. MIN. CORTANTES TREN TREN SIN CARGA, EC-1 en via 1

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	-0.7944	0.0680	-0.2011	-0.7451	0.0680	-0.2011
2	-0.7451	0.0680	-0.2011	-0.2748	0.0282	-0.4926
3	-0.2748	0.0282	-0.4926	1.1823	-0.1190	-0.8947
4	1.1823	-0.1190	-0.8947	1.0959	-0.1190	-0.8947
5	1.0959	-0.1190	-0.8947	3.1297	-0.3731	-1.4277
6	3.1297	-0.3731	-1.4277	5.6270	-0.7317	-2.1111
7	5.6270	-0.7317	-2.1111	8.3745	-1.1939	-2.9630
8	8.3745	-1.1939	-2.9630	7.5093	-1.1941	-2.9630
9	7.5093	-1.1941	-2.9630	9.8967	-1.7557	-4.0006
10	9.8967	-1.7557	-4.0006	12.0690	-2.4150	-5.2397
11	12.0690	-2.4150	-5.2397	10.3182	-2.4155	-5.2397
12	10.3182	-2.4155	-5.2397	9.2589	-3.3028	-2.3303
13	9.2589	-3.3028	-2.3303	6.3336	-4.5532	-5.6428
14	6.3336	-4.5532	-5.6428	2.8452	-5.8032	-8.9553
15	2.8452	-5.8032	-8.9553	-1.3616	-5.8029	-8.9553
16	-1.3616	-5.8029	-8.9553	-6.3191	-7.0532	-12.2678
17	-6.3191	-7.0532	-12.2678	-11.8388	-8.3032	-15.5803
18	-11.8388	-8.3032	-15.5803	-17.9214	-9.5534	-18.8928
19	-17.9214	-9.5534	-18.8928	-24.8477	-9.5534	-18.8928
20	-24.8477	-9.5534	-18.8928	-13.7071	-4.1142	-11.3928
21	-13.7071	-4.1142	-11.3928	0.1298	-0.0094	0.0079
22	0.1298	-0.0094	0.0079	0.1208	-0.0094	0.0079
23	0.1208	-0.0094	0.0079	0.1119	-0.0094	0.0079
24	0.1119	-0.0094	0.0079	0.1029	-0.0094	0.0079
25	0.1029	-0.0094	0.0079	0.0940	-0.0094	0.0079
26	0.0940	-0.0094	0.0079	0.0850	-0.0094	0.0079
27	0.0850	-0.0094	0.0079	1.4886	-0.0928	-5.9462
28	1.4886	-0.0928	-5.9462	4.9575	-0.5362	-7.0365
29	4.9575	-0.5362	-7.0365	8.2274	-1.0573	-8.2800
30	8.2274	-1.0573	-8.2800	11.1218	-1.6575	-9.6822
31	11.1218	-1.6575	-9.6822	9.5473	-1.6574	-9.6822
32	9.5473	-1.6574	-9.6822	11.2430	-2.3353	-11.2488
33	11.2430	-2.3353	-11.2488	12.1332	-3.0925	-12.9853
34	12.1332	-3.0925	-12.9853	12.0475	-3.9255	-14.8974
35	12.0475	-3.9255	-14.8974	9.3021	-4.9576	-14.3390
36	9.3021	-4.9576	-14.3390	3.7168	-6.2084	-17.6515
37	3.7168	-6.2084	-17.6515	-2.9927	-7.4581	-20.9640
38	-2.9927	-7.4581	-20.9640	-10.8279	-8.7078	-24.2765
39	-10.8279	-8.7078	-24.2765	-19.7874	-9.9577	-27.5890
40	-19.7874	-9.9577	-27.5890	-19.8485	-4.3137	-17.2361
41	-19.8485	-4.3137	-17.2361	3.8959	-0.2921	0.4646
42	3.8959	-0.2921	0.4646	3.6842	-0.2921	0.4646
43	3.6842	-0.2921	0.4646	3.4724	-0.2921	0.4646
44	3.4724	-0.2921	0.4646	3.2607	-0.2920	0.4646

45	3.2607	-0.2920	0.4646	3.0490	-0.2919	0.4646
46	3.0490	-0.2919	0.4646	2.8373	-0.2919	0.4646
47	2.8373	-0.2919	0.4646	2.6258	-0.2916	0.4646
48	2.6258	-0.2916	0.4646	2.4144	-0.2914	0.4646
49	2.4144	-0.2914	0.4646	2.2029	-0.2914	0.4646
50	2.2029	-0.2914	0.4646	1.9917	-0.2912	0.4646
51	1.9917	-0.2912	0.4646	1.7805	-0.2912	0.4646
52	1.7805	-0.2912	0.4646	6.8011	-0.6696	-11.4374
53	6.8011	-0.6696	-11.4374	6.3158	-0.6691	-11.4374
54	6.3158	-0.6691	-11.4374	9.2084	-1.3438	-13.1726
55	9.2084	-1.3438	-13.1726	11.5375	-2.1161	-15.1460
56	11.5375	-2.1161	-15.1460	13.1017	-2.9880	-17.3757
57	13.1017	-2.9880	-17.3757	10.9352	-2.9876	-17.3757
58	10.9352	-2.9876	-17.3757	10.8205	-3.9610	-19.8811
59	10.8205	-3.9610	-19.8811	9.4435	-5.0373	-22.6826
60	9.4435	-5.0373	-22.6826	5.7912	-5.0373	-22.6826

ENVOL. MAX. TORSORES TREN TREN SIN CARGA, EC-1 en via 1

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	-7.4584	8.1618	25.8998	-1.5410	8.1620	25.8998
2	-1.5410	8.1620	25.8998	3.8143	6.9123	22.5873
3	3.8143	6.9123	22.5873	8.6068	5.6624	19.2748
4	8.6068	5.6624	19.2748	12.7120	5.6622	19.2748
5	12.7120	5.6622	19.2748	16.0355	4.4127	15.9624
6	16.0355	4.4127	15.9624	18.7976	3.1624	12.6499
7	18.7976	3.1624	12.6499	20.9957	1.9122	9.3374
8	20.9957	1.9122	9.3374	22.3823	1.9121	9.3374
9	22.3823	1.9121	9.3374	23.1118	0.6614	6.0249
10	23.1118	0.6614	6.0249	23.2789	-0.5890	2.7124
11	23.2789	-0.5890	2.7124	22.8516	-0.5904	2.7124
12	22.8516	-0.5904	2.7124	-0.2026	0.0680	-0.2011
13	-0.2026	0.0680	-0.2011	-0.1533	0.0680	-0.2011
14	-0.1533	0.0680	-0.2011	-0.1040	0.0680	-0.2011
15	-0.1040	0.0680	-0.2011	-0.0547	0.0680	-0.2011
16	-0.0547	0.0680	-0.2011	-0.0053	0.0681	-0.2011
17	-0.0053	0.0681	-0.2011	0.0440	0.0681	-0.2011
18	0.0440	0.0681	-0.2011	0.0934	0.0681	-0.2011
19	0.0934	0.0681	-0.2011	0.1427	0.0681	-0.2011
20	0.1427	0.0681	-0.2011	-38.8086	1.2719	5.2744
21	-38.8086	1.2719	5.2744	-33.9590	12.1278	29.3947
22	-33.9590	12.1278	29.3947	-22.9376	10.8778	26.0822
23	-22.9376	10.8778	26.0822	-13.0414	9.6279	22.7697
24	-13.0414	9.6279	22.7697	-4.2703	8.3780	19.4572
25	-4.2703	8.3780	19.4572	3.3760	7.1277	16.1447
26	3.3760	7.1277	16.1447	9.8968	5.8778	12.8322
27	9.8968	5.8778	12.8322	15.2932	4.6273	9.5197
28	15.2932	4.6273	9.5197	19.5641	3.3769	6.2072
29	19.5641	3.3769	6.2072	22.7101	2.1284	2.8947
30	22.7101	2.1284	2.8947	0.0492	-0.0094	0.0079
31	0.0492	-0.0094	0.0079	0.0403	-0.0094	0.0079
32	0.0403	-0.0094	0.0079	0.0313	-0.0094	0.0079
33	0.0313	-0.0094	0.0079	0.0224	-0.0094	0.0079
34	0.0224	-0.0094	0.0079	0.0134	-0.0094	0.0079
35	0.0134	-0.0094	0.0079	0.0045	-0.0094	0.0079
36	0.0045	-0.0094	0.0079	-0.0045	-0.0094	0.0079
37	-0.0045	-0.0094	0.0079	-0.0134	-0.0094	0.0079
38	-0.0134	-0.0094	0.0079	-0.0224	-0.0094	0.0079
39	-0.0224	-0.0094	0.0079	-0.0313	-0.0094	0.0079
40	-0.0313	-0.0094	0.0079	-0.0387	-0.0034	0.0016
41	-0.0387	-0.0034	0.0016	-35.0596	11.2782	20.5750
42	-35.0596	11.2782	20.5750	-26.8827	11.2780	20.5750
43	-26.8827	11.2780	20.5750	-19.5498	10.0280	17.2624
44	-19.5498	10.0280	17.2624	-12.7792	8.7785	13.9499
45	-12.7792	8.7785	13.9499	-6.5710	7.5283	10.6374
46	-6.5710	7.5283	10.6374	-1.1130	7.5280	10.6374
47	-1.1130	7.5280	10.6374	3.6266	6.2789	7.3249
48	3.6266	6.2789	7.3249	7.8048	5.0297	4.0124
49	7.8048	5.0297	4.0124	11.4204	3.7795	0.6998
50	11.4204	3.7795	0.6998	14.1609	3.7801	0.6998
51	14.1609	3.7801	0.6998	1.7805	-0.2912	0.4646
52	1.7805	-0.2912	0.4646	1.5693	-0.2914	0.4646
53	1.5693	-0.2914	0.4646	1.3581	-0.2914	0.4646
54	1.3581	-0.2914	0.4646	1.1470	-0.2910	0.4646
55	1.1470	-0.2910	0.4646	0.9362	-0.2909	0.4646
56	0.9362	-0.2909	0.4646	0.7251	-0.2911	0.4646
57	0.7251	-0.2911	0.4646	0.5142	-0.2909	0.4646
58	0.5142	-0.2909	0.4646	0.3033	-0.2909	0.4646
59	0.3033	-0.2909	0.4646	0.0923	-0.2910	0.4646
60	0.0923	-0.2910	0.4646	-0.1186	-0.2909	0.4646

ENVOL. MIN. TORSORES TREN TREN SIN CARGA, EC-1 en via 1

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	-0.7944	0.0680	-0.2011	-0.7451	0.0680	-0.2011
2	-0.7451	0.0680	-0.2011	-0.2748	0.0282	-0.4926
3	-0.2748	0.0282	-0.4926	1.1823	-0.1190	-0.8947
4	1.1823	-0.1190	-0.8947	1.0959	-0.1190	-0.8947
5	1.0959	-0.1190	-0.8947	3.1297	-0.3731	-1.4277
6	3.1297	-0.3731	-1.4277	5.6270	-0.7317	-2.1111
7	5.6270	-0.7317	-2.1111	8.3745	-1.1939	-2.9630
8	8.3745	-1.1939	-2.9630	7.5093	-1.1941	-2.9630
9	7.5093	-1.1941	-2.9630	9.8967	-1.7557	-4.0006
10	9.8967	-1.7557	-4.0006	12.0690	-2.4150	-5.2397
11	12.0690	-2.4150	-5.2397	10.3182	-2.4155	-5.2397
12	10.3182	-2.4155	-5.2397	11.5552	-3.1670	-6.6953
13	11.5552	-3.1670	-6.6953	12.1804	-4.0062	-8.3807
14	12.1804	-4.0062	-8.3807	12.0588	-4.9304	-10.3085
15	12.0588	-4.9304	-10.3085	8.4837	-4.9302	-10.3085
16	8.4837	-4.9302	-10.3085	6.7755	-5.9307	-12.4901
17	6.7755	-5.9307	-12.4901	-11.8388	-8.3032	-15.5803
18	-11.8388	-8.3032	-15.5803	-17.9214	-9.5534	-18.8928
19	-17.9214	-9.5534	-18.8928	-24.8477	-9.5534	-18.8928
20	-24.8477	-9.5534	-18.8928	-13.7071	-4.1142	-11.3928
21	-13.7071	-4.1142	-11.3928	-15.0348	1.0975	-2.3082
22	-15.0348	1.0975	-2.3082	-13.3908	1.0517	-2.5968
23	-13.3908	1.0517	-2.5968	-11.1815	0.9525	-3.0051
24	-11.1815	0.9525	-3.0051	-8.4781	0.7932	-3.5385
25	-8.4781	0.7932	-3.5385	-5.3800	0.5688	-4.2028
26	-5.3800	0.5688	-4.2028	-2.0100	0.2747	-5.0035
27	-2.0100	0.2747	-5.0035	1.4886	-0.0928	-5.9462
28	1.4886	-0.0928	-5.9462	4.9575	-0.5362	-7.0365
29	4.9575	-0.5362	-7.0365	8.2274	-1.0573	-8.2800
30	8.2274	-1.0573	-8.2800	11.1218	-1.6575	-9.6822

31	11.1218	-1.6575	-9.6822	9.5473	-1.6574	-9.6822
32	9.5473	-1.6574	-9.6822	11.2430	-2.3353	-11.2488
33	11.2430	-2.3353	-11.2488	12.1332	-3.0925	-12.9853
34	12.1332	-3.0925	-12.9853	12.0475	-3.9255	-14.8974
35	12.0475	-3.9255	-14.8974	10.8290	-4.8312	-16.9906
36	10.8290	-4.8312	-16.9906	8.3335	-5.8066	-19.2705
37	8.3335	-5.8066	-19.2705	4.4383	-6.8486	-21.7428
38	4.4383	-6.8486	-21.7428	-0.9559	-7.9486	-24.4129
39	-0.9559	-7.9486	-24.4129	-19.7874	-9.9577	-27.5890
40	-19.7874	-9.9577	-27.5890	-19.8485	-4.3137	-17.2361
41	-19.8485	-4.3137	-17.2361	-22.0079	1.6811	-4.3239
42	-22.0079	1.6811	-4.3239	-20.7892	1.6810	-4.3239
43	-20.7892	1.6810	-4.3239	-18.9232	1.6358	-4.6710
44	-18.9232	1.6358	-4.6710	-16.4136	1.5318	-5.1522
45	-16.4136	1.5318	-5.1522	-13.3076	1.3619	-5.7764
46	-13.3076	1.3619	-5.7764	-12.3200	1.3619	-5.7764
47	-12.3200	1.3619	-5.7764	-8.8670	1.1201	-6.5538
48	-8.8670	1.1201	-6.5538	-5.0468	0.8010	-7.4956
49	-5.0468	0.8010	-7.4956	-0.9829	0.3994	-8.6142
50	-0.9829	0.3994	-8.6142	-0.6934	0.3993	-8.6142
51	-0.6934	0.3993	-8.6142	3.1168	-0.0895	-9.9232
52	3.1168	-0.0895	-9.9232	6.8011	-0.6696	-11.4374
53	6.8011	-0.6696	-11.4374	6.3158	-0.6691	-11.4374
54	6.3158	-0.6691	-11.4374	9.2084	-1.3438	-13.1726
55	9.2084	-1.3438	-13.1726	11.5375	-2.1161	-15.1460
56	11.5375	-2.1161	-15.1460	13.1017	-2.9880	-17.3757
57	13.1017	-2.9880	-17.3757	10.9352	-2.9876	-17.3757
58	10.9352	-2.9876	-17.3757	10.8205	-3.9610	-19.8811
59	10.8205	-3.9610	-19.8811	9.4435	-5.0373	-22.6826
60	9.4435	-5.0373	-22.6826	5.7912	-5.0373	-22.6826

ENVOL. MAX. FLECTORES TREN TREN IPF-75 TIPO A en via 2

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	37.3138	44.9014	-84.6439	81.8807	67.5574	-128.8521
2	81.8807	67.5574	-128.8521	117.3618	37.5559	-67.3521
3	117.3618	37.5559	-67.3521	154.7574	30.3052	-51.4604
4	154.7574	30.3052	-51.4604	179.3622	53.1914	-98.4192
5	179.3622	53.1914	-98.4192	199.1717	23.1924	-36.9193
6	199.1717	23.1924	-36.9193	215.9836	23.1870	-36.9193
7	215.9836	23.1870	-36.9193	224.1566	16.2262	-23.6497
8	224.1566	16.2262	-23.6497	226.9298	-13.7730	37.8502
9	226.9298	-13.7730	37.8502	229.9920	-20.4862	49.9315
10	229.9920	-20.4862	49.9315	218.0204	3.0526	-0.5917
11	218.0204	3.0526	-0.5917	205.9761	-26.9592	60.9082
12	205.9761	-26.9592	60.9082	190.3934	-33.1087	70.8636
13	190.3934	-33.1087	70.8636	167.2220	-8.8904	18.3814
14	167.2220	-8.8904	18.3814	141.2718	-38.8997	79.8813
15	141.2718	-38.8997	79.8813	113.0602	-38.9057	79.8813
16	113.0602	-38.9057	79.8813	80.8291	-49.2571	95.4384
17	80.8291	-49.2571	95.4384	45.1202	-49.2590	95.4384
18	45.1202	-49.2590	95.4384	27.1978	2.1495	3.5074
19	27.1978	2.1495	3.5074	28.7565	2.1497	3.5074
20	28.7565	2.1497	3.5074	32.5052	-2.9194	-5.0696
21	32.5052	-2.9194	-5.0696	27.1061	-7.9886	-13.6467
22	27.1061	-7.9886	-13.6467	58.3020	51.2743	-91.5656
23	58.3020	51.2743	-91.5656	95.3229	47.2339	-79.7551
24	95.3229	47.2339	-79.7551	130.2644	42.7744	-68.3416
25	130.2644	42.7744	-68.3416	161.7054	37.9602	-57.3304
26	161.7054	37.9602	-57.3304	188.3820	32.8455	-46.7219
27	188.3820	32.8455	-46.7219	209.2678	27.5110	-36.5159
28	209.2678	27.5110	-36.5159	223.5969	22.0074	-26.7127
29	223.5969	22.0074	-26.7127	230.8473	16.4137	-17.3118
30	230.8473	16.4137	-17.3118	231.4483	-13.5791	44.1882
31	231.4483	-13.5791	44.1882	227.4923	-19.1994	53.1867
32	227.4923	-19.1994	53.1867	216.1793	-24.7961	61.7827
33	216.1793	-24.7961	61.7827	197.7864	-30.3085	69.9762
34	197.7864	-30.3085	69.9762	172.8286	-35.6409	77.7672
35	172.8286	-35.6409	77.7672	142.0882	-40.7459	85.1559
36	142.0882	-40.7459	85.1559	106.5860	-45.5646	92.1421
37	106.5860	-45.5646	92.1421	67.5820	-50.0219	98.7264
38	67.5820	-50.0219	98.7264	26.5078	-54.0623	104.9137
39	26.5078	-54.0623	104.9137	23.0391	6.9311	-6.5372
40	23.0391	6.9311	-6.5372	28.3640	2.4995	-1.6042
41	28.3640	2.4995	-1.6042	25.7037	-1.9318	3.3288
42	25.7037	-1.9318	3.3288	46.4852	49.6006	-80.0985
43	46.4852	49.6006	-80.0985	77.1940	19.5969	-18.5984
44	77.1940	19.5969	-18.5984	109.6256	44.8290	-64.1621
45	109.6256	44.8290	-64.1621	135.2751	39.5746	-48.9053
46	135.2751	39.5746	-48.9053	157.9927	33.8830	-34.4180
47	157.9927	33.8830	-34.4180	180.3098	3.8980	27.0820
48	180.3098	3.8980	27.0820	196.6154	27.8195	-20.7837
49	196.6154	27.8195	-20.7837	204.9024	21.3759	-8.0856
50	204.9024	21.3759	-8.0856	212.9005	-8.6157	53.4145
51	212.9005	-8.6157	53.4145	216.9863	14.6470	3.5928
52	216.9863	14.6470	3.5928	206.6015	-15.3560	65.0930
53	206.6015	-15.3560	65.0930	198.3934	-22.3627	75.6682
54	198.3934	-22.3627	75.6682	182.1871	-22.3549	75.6682
55	182.1871	-22.3549	75.6682	159.8438	-29.5911	85.0566
56	159.8438	-29.5911	85.0566	135.3840	-59.5949	146.5565
57	135.3840	-59.5949	146.5565	101.0015	-37.0049	93.1747
58	101.0015	-37.0049	93.1747	57.6710	-67.0033	154.6747
59	57.6710	-67.0033	154.6747	12.8387	-74.5636	161.4432
60	12.8387	-74.5636	161.4432	3.3425	9.3522	-13.0910

ENVOL. MIN. FLECTORES TREN TREN IPF-75 TIPO A en via 2

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	-0.8955	2.1537	3.5074	-2.0731	-11.1236	-23.4670
2	-2.0731	-11.1236	-23.4670	-10.2228	-11.2964	-24.1159
3	-10.2228	-11.2964	-24.1159	-18.4131	-11.2983	-24.1159
4	-18.4131	-11.2983	-24.1159	-26.6038	-11.2969	-24.1159
5	-26.6038	-11.2969	-24.1159	-34.7909	-11.3014	-24.1159
6	-34.7909	-11.3014	-24.1159	-42.9866	-11.2998	-24.1159
7	-42.9866	-11.2998	-24.1159	-51.1736	-11.2931	-24.1159
8	-51.1736	-11.2931	-24.1159	-59.3628	-11.2928	-24.1159
9	-59.3628	-11.2928	-24.1159	-67.5521	-11.2894	-24.1159
10	-67.5521	-11.2894	-24.1159	-75.7412	-11.2850	-24.1159
11	-75.7412	-11.2850	-24.1159	-83.9238	-11.2872	-24.1159
12	-83.9238	-11.2872	-24.1159	-92.1087	-11.2891	-24.1159
13	-92.1087	-11.2891	-24.1159	-100.2899	-11.2842	-24.1159
14	-100.2899	-11.2842	-24.1159	-108.4758	-11.2829	-24.1160
15	-108.4758	-11.2829	-24.1160	-116.6541	-11.2856	-24.1159
16	-116.6541	-11.2856	-24.1159	-124.8357	-11.2860	-24.1159

17	-124.8357	-11.2860	-24.1159	-133.0149	-11.2778	-24.1160
18	-133.0149	-11.2778	-24.1160	-141.1882	-11.2766	-24.1160
19	-141.1882	-11.2766	-24.1160	-149.3654	-11.2791	-24.1160
20	-149.3654	-11.2791	-24.1160	-148.1067	23.1175	-61.0661
21	-148.1067	23.1175	-61.0661	-95.4983	6.9326	-6.5372
22	-95.4983	6.9326	-6.5372	-88.9124	6.9335	-6.5372
23	-88.9124	6.9335	-6.5372	-82.3249	6.9349	-6.5372
24	-82.3249	6.9349	-6.5372	-75.7370	6.9359	-6.5372
25	-75.7370	6.9359	-6.5372	-69.1495	6.9344	-6.5372
26	-69.1495	6.9344	-6.5372	-62.5622	6.9334	-6.5372
27	-62.5622	6.9334	-6.5372	-55.9734	6.9323	-6.5372
28	-55.9734	6.9323	-6.5372	-49.3884	6.9338	-6.5372
29	-49.3884	6.9338	-6.5372	-42.8006	6.9355	-6.5372
30	-42.8006	6.9355	-6.5372	-41.1933	-7.9913	-13.6467
31	-41.1933	-7.9913	-13.6467	-48.7831	-7.9924	-13.6467
32	-48.7831	-7.9924	-13.6467	-56.3773	-7.9946	-13.6467
33	-56.3773	-7.9946	-13.6467	-63.9707	-7.9953	-13.6467
34	-63.9707	-7.9953	-13.6467	-71.5636	-7.9956	-13.6467
35	-71.5636	-7.9956	-13.6467	-79.1577	-7.9932	-13.6467
36	-79.1577	-7.9932	-13.6467	-86.7479	-7.9908	-13.6467
37	-86.7479	-7.9908	-13.6467	-94.3387	-7.9901	-13.6467
38	-94.3387	-7.9901	-13.6467	-101.9292	-7.9893	-13.6467
39	-101.9292	-7.9893	-13.6467	-115.2642	-54.8061	123.2826
40	-115.2642	-54.8061	123.2826	-150.3343	-25.4817	59.3738
41	-150.3343	-25.4817	59.3738	-125.7042	9.3884	-13.0910
42	-125.7042	9.3884	-13.0910	-118.8986	9.3891	-13.0910
43	-118.8986	9.3891	-13.0910	-112.0912	9.3893	-13.0910
44	-112.0912	9.3893	-13.0910	-105.2863	9.3894	-13.0910
45	-105.2863	9.3894	-13.0910	-98.4812	9.3877	-13.0910
46	-98.4812	9.3877	-13.0910	-91.6774	9.3857	-13.0911
47	-91.6774	9.3857	-13.0911	-84.8725	9.3773	-13.0911
48	-84.8725	9.3773	-13.0911	-78.0800	9.3673	-13.0911
49	-78.0800	9.3673	-13.0911	-71.2882	9.3699	-13.0911
50	-71.2882	9.3699	-13.0911	-64.4921	9.3705	-13.0911
51	-64.4921	9.3705	-13.0911	-57.6999	9.3602	-13.0911
52	-57.6999	9.3602	-13.0911	-50.9136	9.3542	-13.0911
53	-50.9136	9.3542	-13.0911	-44.1280	9.3543	-13.0911
54	-44.1280	9.3543	-13.0911	-37.3453	9.3540	-13.0911
55	-37.3453	9.3540	-13.0911	-30.5629	9.3550	-13.0911
56	-30.5629	9.3550	-13.0911	-23.7808	9.3538	-13.0911
57	-23.7808	9.3538	-13.0911	-16.9990	9.3517	-13.0911
58	-16.9990	9.3517	-13.0911	-10.2450	9.3051	-12.7286
59	-10.2450	9.3051	-12.7286	-4.7390	-52.2110	105.3118
60	-4.7390	-52.2110	105.3118	-42.5914	-52.2104	105.3112

ENVOL. MAX. CORTANTES TREN TREN IPF-75 TIPO A en via 2

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	32.8988	67.5597	-128.8521	81.8807	67.5574	-128.8521
2	81.8807	67.5574	-128.8521	116.2838	60.3004	-112.9603
3	116.2838	60.3004	-112.9603	140.8052	53.1883	-98.4191
4	140.8052	53.1883	-98.4191	179.3622	53.1914	-98.4192
5	179.3622	53.1914	-98.4192	189.3584	46.2551	-85.1497
6	189.3584	46.2551	-85.1497	190.5559	39.5174	-73.0683
7	190.5559	39.5174	-73.0683	183.6198	33.0499	-62.0917
8	183.6198	33.0499	-62.0917	207.5910	33.0569	-62.0918
9	207.5910	33.0569	-62.0918	188.8893	26.9003	-52.1362
10	188.8893	26.9003	-52.1362	164.0842	21.0998	-43.1184
11	164.0842	21.0998	-43.1184	179.3821	21.0942	-43.1185
12	179.3821	21.0942	-43.1185	145.6391	15.7050	-34.9548
13	145.6391	15.7050	-34.9548	108.4483	10.7519	-27.5616
14	108.4483	10.7519	-27.5616	69.1135	6.2766	-20.8483
15	69.1135	6.2766	-20.8483	73.6640	6.2778	-20.8483
16	73.6640	6.2778	-20.8483	31.0609	2.3101	-16.4676
17	31.0609	2.3101	-16.4676	25.6392	2.1497	3.5074
18	25.6392	2.1497	3.5074	27.1978	2.1495	3.5074
19	27.1978	2.1495	3.5074	28.7565	2.1497	3.5074
20	28.7565	2.1497	3.5074	-71.4904	37.4272	-85.0381
21	-71.4904	37.4272	-85.0381	-10.9208	77.2350	-141.2552
22	-10.9208	77.2350	-141.2552	30.9963	72.7751	-129.8418
23	30.9963	72.7751	-129.8418	70.0891	67.9604	-118.8306
24	70.0891	67.9604	-118.8306	104.9723	62.8470	-108.2220
25	104.9723	62.8470	-108.2220	134.5031	57.5113	-98.0160
26	134.5031	57.5113	-98.0160	157.7841	52.0058	-88.2126
27	157.7841	52.0058	-88.2126	174.1630	46.4090	-78.8117
28	174.1630	46.4090	-78.8117	183.2443	40.7918	-69.8133
29	183.2443	40.7918	-69.8133	184.8767	35.1834	-61.2174
30	184.8767	35.1834	-61.2174	179.1490	29.6934	-53.0238
31	179.1490	29.6934	-53.0238	207.3530	29.6935	-53.0238
32	207.3530	29.6935	-53.0238	189.5430	24.3653	-45.2327
33	189.5430	24.3653	-45.2327	165.5110	19.2507	-37.8442
34	165.5110	19.2507	-37.8442	136.1566	14.4408	-30.8580
35	136.1566	14.4408	-30.8580	102.6277	9.9795	-24.2737
36	102.6277	9.9795	-24.2737	3.2855	6.9303	-6.5372
37	3.2855	6.9303	-6.5372	9.8703	6.9309	-6.5372
38	9.8703	6.9309	-6.5372	16.4547	6.9311	-6.5372
39	16.4547	6.9311	-6.5372	23.0391	6.9311	-6.5372
40	23.0391	6.9311	-6.5372	-57.0856	37.2914	-76.3767
41	-57.0856	37.2914	-76.3767	-11.1192	74.8242	-125.6623
42	-11.1192	74.8242	-125.6623	43.1302	74.8227	-125.6622
43	43.1302	74.8227	-125.6622	68.1397	69.5721	-110.4054
44	68.1397	69.5721	-110.4054	90.8660	63.8812	-95.9182
45	90.8660	63.8812	-95.9182	109.8951	57.7931	-82.2840
46	109.8951	57.7931	-82.2840	151.7877	57.7938	-82.2840
47	151.7877	57.7938	-82.2840	161.1478	51.3620	-69.5858
48	161.1478	51.3620	-69.5858	164.1606	44.6250	-57.9075
49	164.1606	44.6250	-57.9075	159.7865	37.6208	-47.3322
50	159.7865	37.6208	-47.3322	187.0586	37.6152	-47.3322
51	187.0586	37.6152	-47.3322	169.1854	30.3842	-37.9437
52	169.1854	30.3842	-37.9437	142.1810	22.9800	-29.8256
53	142.1810	22.9800	-29.8256	158.8407	22.9823	-29.8255
54	158.8407	22.9823	-29.8255	116.6397	15.4356	-23.0569
55	116.6397	15.4356	-23.0569	-30.5629	9.3550	-13.0911
56	-30.5629	9.3550	-13.0911	-23.7808	9.3538	-13.0911
57	-23.7808	9.3538	-13.0911	-16.9990	9.3517	-13.0911
58	-16.9990	9.3517	-13.0911	-10.2191	9.3518	-13.0910
59	-10.2191	9.3518	-13.0910	-3.4381	9.3529	-13.0910
60	-3.4381	9.3529	-13.0910	3.3425	9.3522	-13.0910

ENVOL. MIN. CORTANTES TREN TREN IPF-75 TIPO A en via 2

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	6.1571	-11.2959	-24.1159	-2.0329	-11.2959	-24.1159
2	-2.0329	-11.2959	-24.1159	-10.2228	-11.2964	-24.1159

3	-10.2228	-11.2964	-24.1159	-18.4131	-11.2983	-24.1159
4	-18.4131	-11.2983	-24.1159	-26.6038	-11.2969	-24.1159
5	-26.6038	-11.2969	-24.1159	117.5894	-15.0972	38.3561
6	117.5894	-15.0972	38.3561	160.2896	-22.4407	55.6478
7	160.2896	-22.4407	55.6478	193.1454	-29.7042	71.5394
8	193.1454	-29.7042	71.5394	171.6127	-29.7076	71.5394
9	171.6127	-29.7076	71.5394	189.9012	-36.8232	86.0806
10	189.9012	-36.8232	86.0806	199.4699	-43.7709	99.3501
11	199.4699	-43.7709	99.3501	167.7347	-43.7749	99.3501
12	167.7347	-43.7749	99.3501	164.4068	-50.5032	111.4314
13	164.4068	-50.5032	111.4314	154.1283	-56.9641	122.4080
14	154.1283	-56.9641	122.4080	137.8871	-63.1129	132.3634
15	137.8871	-63.1129	132.3634	92.1245	-63.1221	132.3634
16	92.1245	-63.1221	132.3634	66.8529	-68.9051	141.3813
17	66.8529	-68.9051	141.3813	38.3066	-74.3096	149.5452
18	38.3066	-74.3096	149.5452	7.9079	-79.2587	156.9385
19	7.9079	-79.2587	156.9385	-49.5547	-79.2590	156.9384
20	-49.5547	-79.2590	156.9384	-62.7435	-40.4691	81.9974
21	-62.7435	-40.4691	81.9974	27.1061	-7.9886	-13.6467
22	27.1061	-7.9886	-13.6467	19.5172	-7.9886	-13.6467
23	19.5172	-7.9886	-13.6467	11.9280	-7.9876	-13.6467
24	11.9280	-7.9876	-13.6467	92.7204	-8.7241	31.4344
25	92.7204	-8.7241	31.4344	125.0628	-12.7702	43.2450
26	125.0628	-12.7702	43.2450	154.5356	-17.2256	54.6584
27	154.5356	-17.2256	54.6584	179.8210	-22.0442	65.6695
28	179.8210	-22.0442	65.6695	199.7897	-27.1446	76.2781
29	199.7897	-27.1446	76.2781	213.5468	-32.4854	86.4839
30	213.5468	-32.4854	86.4839	220.4263	-37.9872	96.2874
31	220.4263	-37.9872	96.2874	184.3427	-37.9818	96.2874
32	184.3427	-37.9818	96.2874	178.6595	-43.5739	105.6882
33	178.6595	-43.5739	105.6882	165.5061	-49.2018	114.6866
34	165.5061	-49.2018	114.6866	145.0603	-54.7946	123.2825
35	145.0603	-54.7946	123.2825	117.7131	-60.3044	131.4761
36	117.7131	-60.3044	131.4761	84.1117	-65.6423	139.2672
37	84.1117	-65.6423	139.2672	45.1597	-70.7496	146.6559
38	45.1597	-70.7496	146.6559	2.0058	-75.5670	153.6422
39	2.0058	-75.5670	153.6422	-43.9635	-80.0235	160.2264
40	-43.9635	-80.0235	160.2264	-69.8958	-40.3490	82.9197
41	-69.8958	-40.3490	82.9197	25.7037	-1.9318	3.3288
42	25.7037	-1.9318	3.3288	24.3036	-1.9324	3.3288
43	24.3036	-1.9324	3.3288	25.8811	-2.4251	15.2818
44	25.8811	-2.4251	15.2818	63.8658	-6.1434	28.2401
45	63.8658	-6.1434	28.2401	101.8648	-10.3967	42.9016
46	101.8648	-10.3967	42.9016	94.3253	-10.3919	42.9018
47	94.3253	-10.3919	42.9018	127.6276	-15.1612	58.8382
48	127.6276	-15.1612	58.8382	158.3652	-20.4005	74.0949
49	158.3652	-20.4005	74.0949	185.2283	-26.0900	88.5822
50	185.2283	-26.0900	88.5822	166.3130	-26.0840	88.5824
51	166.3130	-26.0840	88.5824	183.6258	-32.1640	102.2166
52	183.6258	-32.1640	102.2166	194.4261	-38.5977	114.9147
53	194.4261	-38.5977	114.9147	166.4408	-38.5917	114.9147
54	166.4408	-38.5917	114.9147	164.8558	-45.3284	126.5932
55	164.8558	-45.3284	126.5932	154.7355	-52.3438	137.1682
56	154.7355	-52.3438	137.1682	135.3840	-59.5949	146.5565
57	135.3840	-59.5949	146.5565	92.1839	-59.5858	146.5566
58	92.1839	-59.5858	146.5566	57.6710	-67.0033	154.6747
59	57.6710	-67.0033	154.6747	12.8387	-74.5636	161.4432
60	12.8387	-74.5636	161.4432	-41.2195	-74.5622	161.4432

ENVOL. MAX. TORSORES TREN TREN IPF-75 TIPO A en via 2

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	14.7828	-1.3329	3.6015	13.8167	-1.3328	3.6015
2	13.8167	-1.3328	3.6015	37.6057	-3.8073	10.0873
3	37.6057	-3.8073	10.0873	81.2953	-8.8453	22.9960
4	81.2953	-8.8453	22.9960	74.8828	-8.8467	22.9959
5	74.8828	-8.8467	22.9959	117.5894	-15.0972	38.3561
6	117.5894	-15.0972	38.3561	160.2896	-22.4407	55.6478
7	160.2896	-22.4407	55.6478	193.1454	-29.7042	71.5394
8	193.1454	-29.7042	71.5394	171.6127	-29.7076	71.5394
9	171.6127	-29.7076	71.5394	189.9012	-36.8232	86.0806
10	189.9012	-36.8232	86.0806	199.4699	-43.7709	99.3501
11	199.4699	-43.7709	99.3501	167.7347	-43.7749	99.3501
12	167.7347	-43.7749	99.3501	164.4068	-50.5032	111.4314
13	164.4068	-50.5032	111.4314	154.1283	-56.9641	122.4080
14	154.1283	-56.9641	122.4080	137.8871	-63.1129	132.3634
15	137.8871	-63.1129	132.3634	92.1245	-63.1221	132.3634
16	92.1245	-63.1221	132.3634	66.8529	-68.9051	141.3813
17	66.8529	-68.9051	141.3813	38.3066	-74.3096	149.5452
18	38.3066	-74.3096	149.5452	7.9079	-79.2587	156.9385
19	7.9079	-79.2587	156.9385	-49.5547	-79.2590	156.9384
20	-49.5547	-79.2590	156.9384	-62.7435	-40.4691	81.9974
21	-62.7435	-40.4691	81.9974	-9.9938	0.6339	4.9263
22	-9.9938	0.6339	4.9263	24.0350	-2.0114	11.3110
23	24.0350	-2.0114	11.3110	58.5877	-5.1299	20.6964
24	58.5877	-5.1299	20.6964	92.7204	-8.7241	31.4344
25	92.7204	-8.7241	31.4344	125.0628	-12.7702	43.2450
26	125.0628	-12.7702	43.2450	154.5356	-17.2256	54.6584
27	154.5356	-17.2256	54.6584	179.8210	-22.0442	65.6695
28	179.8210	-22.0442	65.6695	199.7897	-27.1446	76.2781
29	199.7897	-27.1446	76.2781	213.5468	-32.4854	86.4839
30	213.5468	-32.4854	86.4839	220.4263	-37.9872	96.2874
31	220.4263	-37.9872	96.2874	184.3427	-37.9818	96.2874
32	184.3427	-37.9818	96.2874	178.6595	-43.5739	105.6882
33	178.6595	-43.5739	105.6882	165.5061	-49.2018	114.6866
34	165.5061	-49.2018	114.6866	145.0603	-54.7946	123.2825
35	145.0603	-54.7946	123.2825	117.7131	-60.3044	131.4761
36	117.7131	-60.3044	131.4761	84.1117	-65.6423	139.2672
37	84.1117	-65.6423	139.2672	45.1597	-70.7496	146.6559
38	45.1597	-70.7496	146.6559	2.0058	-75.5670	153.6422
39	2.0058	-75.5670	153.6422	-43.9635	-80.0235	160.2264
40	-43.9635	-80.0235	160.2264	-69.8958	-40.3490	82.9197
41	-69.8958	-40.3490	82.9197	-11.7983	0.7404	6.1742
42	-11.7983	0.7404	6.1742	-11.2593	0.7421	6.1742
43	-11.2593	0.7421	6.1742	25.8811	-2.4251	15.2818
44	25.8811	-2.4251	15.2818	63.8658	-6.1434	28.2401
45	63.8658	-6.1434	28.2401	101.8648	-10.3967	42.9016
46	101.8648	-10.3967	42.9016	94.3253	-10.3919	42.9018
47	94.3253	-10.3919	42.9018	127.6276	-15.1612	58.8382
48	127.6276	-15.1612	58.8382	158.3652	-20.4005	74.0949
49	158.3652	-20.4005	74.0949	185.2283	-26.0900	88.5822
50	185.2283	-26.0900	88.5822	166.3130	-26.0840	88.5824
51	166.3130	-26.0840	88.5824	183.6258	-32.1640	102.2166
52	183.6258	-32.1640	102.2166	194.4261	-38.5977	114.9147
53	194.4261	-38.5977	114.9147	166.4408	-38.5917	114.9147
54	166.4408	-38.5917	114.9147	164.8558	-45.3284	126.5932
55	164.8558	-45.3284	126.5932	154.7355	-52.3438	137.1682

56	154.7355	-52.3438	137.1682	135.3840	-59.5949	146.5565
57	135.3840	-59.5949	146.5565	92.1839	-59.5858	146.5566
58	92.1839	-59.5858	146.5566	57.6710	-67.0033	154.6747
59	57.6710	-67.0033	154.6747	12.8387	-74.5636	161.4432
60	12.8387	-74.5636	161.4432	-41.2195	-74.5622	161.4432

ENVOL. MIN. TORSORES TREN TREN IPF-75 TIPO A en via 2

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	32.8988	67.5597	-128.8521	81.8807	67.5574	-128.8521
2	81.8807	67.5574	-128.8521	116.2838	60.3004	-112.9603
3	116.2838	60.3004	-112.9603	140.8052	53.1883	-98.4191
4	140.8052	53.1883	-98.4191	179.3622	53.1914	-98.4192
5	179.3622	53.1914	-98.4192	189.3584	46.2551	-85.1497
6	189.3584	46.2551	-85.1497	190.5559	39.5174	-73.0683
7	190.5559	39.5174	-73.0683	183.6198	33.0499	-62.0917
8	183.6198	33.0499	-62.0917	207.5910	33.0569	-62.0918
9	207.5910	33.0569	-62.0918	188.8893	26.9003	-52.1362
10	188.8893	26.9003	-52.1362	164.0842	21.0998	-43.1184
11	164.0842	21.0998	-43.1184	179.3821	21.0942	-43.1185
12	179.3821	21.0942	-43.1185	145.6391	15.7050	-34.9548
13	145.6391	15.7050	-34.9548	108.4483	10.7519	-27.5616
14	108.4483	10.7519	-27.5616	-106.9095	-11.1314	-24.1789
15	-106.9095	-11.1314	-24.1789	-114.9792	-11.1300	-24.1789
16	-114.9792	-11.1300	-24.1789	-123.0495	-11.1288	-24.1789
17	-123.0495	-11.1288	-24.1789	-131.1156	-11.1257	-24.1789
18	-131.1156	-11.1257	-24.1789	-139.1815	-11.1257	-24.1789
19	-139.1815	-11.1257	-24.1789	-147.2467	-11.1255	-24.1789
20	-147.2467	-11.1255	-24.1789	-71.4904	37.4272	-85.0381
21	-71.4904	37.4272	-85.0381	-10.9208	77.2350	-141.2552
22	-10.9208	77.2350	-141.2552	30.9963	72.7751	-129.8418
23	30.9963	72.7751	-129.8418	70.0891	67.9604	-118.8306
24	70.0891	67.9604	-118.8306	104.9723	62.8470	-108.2220
25	104.9723	62.8470	-108.2220	134.5031	57.5113	-98.0160
26	134.5031	57.5113	-98.0160	157.7841	52.0058	-88.2126
27	157.7841	52.0058	-88.2126	174.1630	46.4090	-78.8117
28	174.1630	46.4090	-78.8117	183.2443	40.7918	-69.8133
29	183.2443	40.7918	-69.8133	184.8767	35.1834	-61.2174
30	184.8767	35.1834	-61.2174	179.1490	29.6934	-53.0238
31	179.1490	29.6934	-53.0238	207.3530	29.6935	-53.0238
32	207.3530	29.6935	-53.0238	189.5430	24.3653	-45.2327
33	189.5430	24.3653	-45.2327	165.5110	19.2507	-37.8442
34	165.5110	19.2507	-37.8442	136.1566	14.4408	-30.8580
35	136.1566	14.4408	-30.8580	102.6277	9.9795	-24.2737
36	102.6277	9.9795	-24.2737	66.2289	5.9395	-18.0863
37	66.2289	5.9395	-18.0863	-92.9087	-7.8644	-13.8633
38	-92.9087	-7.8644	-13.8633	-100.3806	-7.8646	-13.8633
39	-100.3806	-7.8646	-13.8633	-107.8532	-7.8652	-13.8633
40	-107.8532	-7.8652	-13.8633	-57.0856	37.2914	-76.3767
41	-57.0856	37.2914	-76.3767	-11.1192	74.8242	-125.6623
42	-11.1192	74.8242	-125.6623	43.1302	74.8227	-125.6622
43	43.1302	74.8227	-125.6622	68.1397	69.5721	-110.4054
44	68.1397	69.5721	-110.4054	90.8660	63.8812	-95.9182
45	90.8660	63.8812	-95.9182	109.8951	57.7931	-82.2840
46	109.8951	57.7931	-82.2840	151.7877	57.7938	-82.2840
47	151.7877	57.7938	-82.2840	161.1478	51.3620	-69.5858
48	161.1478	51.3620	-69.5858	164.1606	44.6250	-57.9075
49	164.1606	44.6250	-57.9075	159.7865	37.6208	-47.3322
50	159.7865	37.6208	-47.3322	187.0586	37.6152	-47.3322
51	187.0586	37.6152	-47.3322	169.1854	30.3842	-37.9437
52	169.1854	30.3842	-37.9437	142.1810	22.9800	-29.8256
53	142.1810	22.9800	-29.8256	158.8407	22.9823	-29.8255
54	158.8407	22.9823	-29.8255	116.6397	15.4356	-23.0569
55	116.6397	15.4356	-23.0569	64.1714	7.7913	-17.6876
56	64.1714	7.7913	-17.6876	-23.7808	9.3538	-13.0911
57	-23.7808	9.3538	-13.0911	-16.9990	9.3517	-13.0911
58	-16.9990	9.3517	-13.0911	-10.2191	9.3518	-13.0910
59	-10.2191	9.3518	-13.0910	-3.4381	9.3529	-13.0910
60	-3.4381	9.3529	-13.0910	3.3425	9.3522	-13.0910

ENVOL. MAX. FLECTORES TREN TREN IPF-75 TIPO B Li=30 m en via 2

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	12.2209	12.0383	-41.7148	21.6562	16.2575	-32.5092
2	21.6562	16.2575	-32.5092	32.1435	13.3586	-25.9792
3	32.1435	13.3586	-25.9792	41.3028	10.3587	-19.8292
4	41.3028	10.3587	-19.8292	48.8136	10.3584	-19.8292
5	48.8136	10.3584	-19.8292	54.4492	7.3569	-13.6792
6	54.4492	7.3569	-13.6792	58.7329	4.3577	-7.5293
7	58.7329	4.3577	-7.5293	61.6667	1.3604	-1.3793
8	61.6667	1.3604	-1.3793	62.6548	1.3535	-1.3793
9	62.6548	1.3535	-1.3793	62.0601	-1.6500	4.7708
10	62.0601	-1.6500	4.7708	60.1188	-4.6431	10.9207
11	60.1188	-4.6431	10.9207	56.7527	-4.6476	10.9207
12	56.7527	-4.6476	10.9207	51.2796	-7.6527	17.0707
13	51.2796	-7.6527	17.0707	44.4599	-10.6481	23.2206
14	44.4599	-10.6481	23.2206	36.2922	-13.6474	29.3706
15	36.2922	-13.6474	29.3706	26.3946	-13.6483	29.3706
16	26.3946	-13.6483	29.3706	14.6997	-16.6508	35.5206
17	14.6997	-16.6508	35.5206	1.6513	-19.6533	41.6706
18	1.6513	-19.6533	41.6706	-0.2609	-0.1334	0.3602
19	-0.2609	-0.1334	0.3602	-0.3576	-0.1334	0.3602
20	-0.3576	-0.1334	0.3602	-0.4052	-0.0546	0.1678
21	-0.4052	-0.0546	0.1678	-0.3331	0.0242	-0.0245
22	-0.3331	0.0242	-0.0245	-0.3100	0.0242	-0.0245
23	-0.3100	0.0242	-0.0245	7.7436	16.9991	-37.0918
24	7.7436	16.9991	-37.0918	22.9918	13.9995	-30.9417
25	22.9918	13.9995	-30.9417	35.6395	11.1615	-24.4149
26	35.6395	11.1615	-24.4149	45.6437	8.1608	-18.2649
27	45.6437	8.1608	-18.2649	53.0110	5.4130	-11.7561
28	53.0110	5.4130	-11.7561	57.9631	2.7421	-5.2574
29	57.9631	2.7421	-5.2574	61.3807	1.7903	2.5371
30	61.3807	1.7903	2.5371	63.4659	-0.5696	9.1815
31	63.4659	-0.5696	9.1815	62.9313	-0.3760	9.3382
32	62.9313	-0.3760	9.3382	59.8741	-3.3754	15.4882
33	59.8741	-3.3754	15.4882	54.1189	-6.3730	21.6381
34	54.1189	-6.3730	21.6381	45.6639	-9.3747	27.7881
35	45.6639	-9.3747	27.7881	34.5056	-12.3748	33.9381
36	34.5056	-12.3748	33.9381	20.6493	-15.3741	40.0881
37	20.6493	-15.3741	40.0881	4.0912	-18.3770	46.2381
38	4.0912	-18.3770	46.2381	5.2428	2.2340	-1.8791
39	5.2428	2.2340	-1.8791	7.3653	2.2342	-1.8791
40	7.3653	2.2342	-1.8791	9.1101	0.8059	-0.3994
41	9.1101	0.8059	-0.3994	8.2809	-0.6225	1.0803

42	8.2809	-0.6225	1.0803	7.8295	-0.6226	1.0803
43	7.8295	-0.6226	1.0803	7.3781	-0.6224	1.0803
44	7.3781	-0.6224	1.0803	6.9269	-0.6221	1.0803
45	6.9269	-0.6221	1.0803	6.4759	-0.6221	1.0804
46	6.4759	-0.6221	1.0804	9.9325	13.9587	-15.5280
47	9.9325	13.9587	-15.5280	18.3263	10.9613	-9.3779
48	18.3263	10.9613	-9.3779	25.3745	7.9627	-3.2279
49	25.3745	7.9627	-3.2279	31.0714	4.9624	2.9221
50	31.0714	4.9624	2.9221	34.6700	4.9634	2.9221
51	34.6700	4.9634	2.9221	36.8428	1.9650	9.0722
52	36.8428	1.9650	9.0722	37.6683	-1.0322	15.2222
53	37.6683	-1.0322	15.2222	36.9199	-1.0316	15.2222
54	36.9199	-1.0316	15.2222	34.4122	-3.7203	21.4888
55	34.4122	-3.7203	21.4888	30.5902	-6.7176	27.6388
56	30.5902	-6.7176	27.6388	25.4186	-9.7171	33.7887
57	25.4186	-9.7171	33.7887	18.3717	-9.7183	33.7887
58	18.3717	-9.7183	33.7887	9.6756	-12.7192	39.9388
59	9.6756	-12.7192	39.9388	0.1738	-0.6202	1.0804
60	0.1738	-0.6202	1.0804	0.9555	2.9985	-3.7426

ENVOL. MIN. FLECTORES TREN TREN IPF-75 TIPO B Li=30 m en via 2

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	1.4783	-0.1332	0.3602	1.3817	-0.1332	0.3602
2	1.3817	-0.1332	0.3602	1.2851	-0.1332	0.3602
3	1.2851	-0.1332	0.3602	1.1885	-0.1332	0.3602
4	1.1885	-0.1332	0.3602	1.0919	-0.1332	0.3602
5	1.0919	-0.1332	0.3602	0.9954	-0.1332	0.3602
6	0.9954	-0.1332	0.3602	0.8988	-0.1332	0.3602
7	0.8988	-0.1332	0.3602	0.8022	-0.1332	0.3602
8	0.8022	-0.1332	0.3602	0.1256	-3.5432	-9.9270
9	0.1256	-3.5432	-9.9270	-2.9679	-4.5431	-7.8770
10	-2.9679	-4.5431	-7.8770	-6.5114	-5.5428	-5.8270
11	-6.5114	-5.5428	-5.8270	-10.5299	-5.5416	-5.8271
12	-10.5299	-5.5416	-5.8271	-15.2470	-6.5422	-3.7771
13	-15.2470	-6.5422	-3.7771	-20.4151	-7.5434	-1.7271
14	-20.4151	-7.5434	-1.7271	-26.0333	-8.5429	0.3229
15	-26.0333	-8.5429	0.3229	-32.2261	-8.5418	0.3229
16	-32.2261	-8.5418	0.3229	-39.0180	-9.5411	2.3729
17	-39.0180	-9.5411	2.3729	-51.3437	-23.4558	29.5644
18	-51.3437	-23.4558	29.5644	-68.6342	-26.8302	36.8855
19	-68.6342	-26.8302	36.8855	-88.0862	-26.8300	36.8855
20	-88.0862	-26.8300	36.8855	-96.9673	-0.0921	-4.2416
21	-96.9673	-0.0921	-4.2416	-58.0834	26.6458	-45.3685
22	-58.0834	26.6458	-45.3685	-33.9694	23.6452	-39.2185
23	-33.9694	23.6452	-39.2185	-26.5986	2.2350	-1.8791
24	-26.5986	2.2350	-1.8791	-24.4750	2.2347	-1.8791
25	-24.4750	2.2347	-1.8791	-22.3516	2.2342	-1.8791
26	-22.3516	2.2342	-1.8791	-20.2282	2.2343	-1.8791
27	-20.2282	2.2343	-1.8791	-18.1044	2.2341	-1.8791
28	-18.1044	2.2341	-1.8791	-15.9813	2.2343	-1.8791
29	-15.9813	2.2343	-1.8791	-13.8580	2.2341	-1.8791
30	-13.8580	2.2341	-1.8791	-11.7352	2.2335	-1.8791
31	-11.7352	2.2335	-1.8791	-9.6165	2.2243	-1.7164
32	-9.6165	2.2243	-1.7164	-7.5037	2.2240	-1.7164
33	-7.5037	2.2240	-1.7164	-5.3901	2.2244	-1.7164
34	-5.3901	2.2244	-1.7164	-3.2767	2.2242	-1.7164
35	-3.2767	2.2242	-1.7164	-1.1801	2.1193	-1.2740
36	-1.1801	2.1193	-1.2740	-7.6715	-18.7903	34.6143
37	-7.6715	-18.7903	34.6143	-27.4948	-21.9883	41.6604
38	-27.4948	-21.9883	41.6604	-50.1837	-24.9878	47.8105
39	-50.1837	-24.9878	47.8105	-75.5723	-27.9877	53.9605
40	-75.5723	-27.9877	53.9605	-90.9314	-2.3979	10.2511
41	-90.9314	-2.3979	10.2511	-59.8868	23.1935	-33.4583
42	-59.8868	23.1935	-33.4583	-43.0709	23.1943	-33.4583
43	-43.0709	23.1943	-33.4583	-37.5533	3.1291	-3.5658
44	-37.5533	3.1291	-3.5658	-35.2854	3.1287	-3.5658
45	-35.2854	3.1287	-3.5658	-33.0187	3.1273	-3.5658
46	-33.0187	3.1273	-3.5658	-30.7512	3.1270	-3.5658
47	-30.7512	3.1270	-3.5658	-28.4845	3.1255	-3.5658
48	-28.4845	3.1255	-3.5658	-26.2206	3.1242	-3.5658
49	-26.2206	3.1242	-3.5658	-23.9559	3.1221	-3.5658
50	-23.9559	3.1221	-3.5658	-21.6938	3.1209	-3.5658
51	-21.6938	3.1209	-3.5658	-19.4307	3.1220	-3.5658
52	-19.4307	3.1220	-3.5658	-17.1681	3.1196	-3.5658
53	-17.1681	3.1196	-3.5658	-14.9075	3.1179	-3.5658
54	-14.9075	3.1179	-3.5658	-12.6469	3.1182	-3.5658
55	-12.6469	3.1182	-3.5658	-10.3876	3.1185	-3.5658
56	-10.3876	3.1185	-3.5658	-8.1273	3.1185	-3.5658
57	-8.1273	3.1185	-3.5658	-5.8674	3.1175	-3.5658
58	-5.8674	3.1175	-3.5658	-3.6134	3.0219	-3.0123
59	-3.6134	3.0219	-3.0123	-2.2868	-2.2211	15.2640
60	-2.2868	-2.2211	15.2640	-13.3076	-16.0279	45.9722

ENVOL. MAX. CORTANTES TREN TREN IPF-75 TIPO B Li=30 m en via 2

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	9.7734	16.3580	-32.1292	21.6333	16.3585	-32.1292
2	21.6333	16.3585	-32.1292	32.1435	13.3586	-25.9792
3	32.1435	13.3586	-25.9792	41.3028	10.3587	-19.8292
4	41.3028	10.3587	-19.8292	48.8136	10.3584	-19.8292
5	48.8136	10.3584	-19.8292	54.4492	7.3569	-13.6792
6	54.4492	7.3569	-13.6792	58.7329	4.3577	-7.5293
7	58.7329	4.3577	-7.5293	61.6667	1.3604	-1.3793
8	61.6667	1.3604	-1.3793	62.6548	1.3535	-1.3793
9	62.6548	1.3535	-1.3793	0.6090	-0.1333	0.3602
10	0.6090	-0.1333	0.3602	0.5124	-0.1333	0.3602
11	0.5124	-0.1333	0.3602	0.4157	-0.1333	0.3602
12	0.4157	-0.1333	0.3602	0.3191	-0.1332	0.3602
13	0.3191	-0.1332	0.3602	0.2224	-0.1332	0.3602
14	0.2224	-0.1332	0.3602	0.1258	-0.1333	0.3602
15	0.1258	-0.1333	0.3602	0.0291	-0.1334	0.3602
16	0.0291	-0.1334	0.3602	-0.0676	-0.1333	0.3602
17	-0.0676	-0.1333	0.3602	-0.1642	-0.1333	0.3602
18	-0.1642	-0.1333	0.3602	-0.2609	-0.1334	0.3602
19	-0.2609	-0.1334	0.3602	-0.3576	-0.1334	0.3602
20	-0.3576	-0.1334	0.3602	-62.4284	6.7517	-23.3439
21	-62.4284	6.7517	-23.3439	-57.5425	26.7013	-45.7957
22	-57.5425	26.7013	-45.7957	-33.3763	23.7013	-39.6458
23	-33.3763	23.7013	-39.6458	-11.9108	20.7005	-33.4958
24	-11.9108	20.7005	-33.4958	6.8534	17.7003	-27.3457
25	6.8534	17.7003	-27.3457	22.9195	14.7001	-21.1957
26	22.9195	14.7001	-21.1957	36.2820	11.7018	-15.0457
27	36.2820	11.7018	-15.0457	46.9495	8.7025	-8.8957

28	46.9495	8.7025	-8.8957	54.9132	5.7007	-2.7457
29	54.9132	5.7007	-2.7457	60.1798	2.7024	3.4043
30	60.1798	2.7024	3.4043	-11.7352	2.2335	-1.8791
31	-11.7352	2.2335	-1.8791	-9.6128	2.2335	-1.8791
32	-9.6128	2.2335	-1.8791	-7.4907	2.2336	-1.8791
33	-7.4907	2.2336	-1.8791	-5.3688	2.2338	-1.8791
34	-5.3688	2.2338	-1.8791	-3.2464	2.2337	-1.8791
35	-3.2464	2.2337	-1.8791	-1.1246	2.2338	-1.8791
36	-1.1246	2.2338	-1.8791	0.9978	2.2343	-1.8791
37	0.9978	2.2343	-1.8791	3.1206	2.2341	-1.8791
38	3.1206	2.2341	-1.8791	5.2428	2.2340	-1.8791
39	5.2428	2.2340	-1.8791	7.3653	2.2342	-1.8791
40	7.3653	2.2342	-1.8791	9.1101	0.8059	-0.3994
41	9.1101	0.8059	-0.3994	-59.3733	23.2672	-33.8616
42	-59.3733	23.2672	-33.8616	-42.5041	23.2677	-33.8616
43	-42.5041	23.2677	-33.8616	-27.6604	20.2670	-27.7115
44	-27.6604	20.2670	-27.7115	-14.1669	17.2684	-21.5615
45	-14.1669	17.2684	-21.5615	-2.0216	14.2691	-15.4115
46	-2.0216	14.2691	-15.4115	8.3221	14.2684	-15.4115
47	8.3221	14.2684	-15.4115	16.9421	11.2710	-9.2615
48	16.9421	11.2710	-9.2615	24.2141	8.2738	-3.1115
49	24.2141	8.2738	-3.1115	30.1372	5.2747	3.0385
50	30.1372	5.2747	3.0385	33.9597	5.2767	3.0386
51	33.9597	5.2767	3.0386	-19.4307	3.1220	-3.5658
52	-19.4307	3.1220	-3.5658	-17.1681	3.1196	-3.5658
53	-17.1681	3.1196	-3.5658	-14.9075	3.1179	-3.5658
54	-14.9075	3.1179	-3.5658	-12.6469	3.1182	-3.5658
55	-12.6469	3.1182	-3.5658	-10.3876	3.1185	-3.5658
56	-10.3876	3.1185	-3.5658	-8.1273	3.1185	-3.5658
57	-8.1273	3.1185	-3.5658	-5.8674	3.1175	-3.5658
58	-5.8674	3.1175	-3.5658	-3.6084	3.1164	-3.5658
59	-3.6084	3.1164	-3.5658	-1.3489	3.1164	-3.5658
60	-1.3489	3.1164	-3.5658	0.9105	3.1164	-3.5658

ENVOL. MIN. CORTANTES TREN TREN IPF-75 TIPO B Li=30 m en via 2

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	1.4783	-0.1332	0.3602	1.3817	-0.1332	0.3602
2	1.3817	-0.1332	0.3602	5.0457	-0.5138	1.3689
3	5.0457	-0.5138	1.3689	10.4677	-1.1414	2.9779
4	10.4677	-1.1414	2.9779	9.6400	-1.1418	2.9779
5	9.6400	-1.1418	2.9779	15.6697	-2.0138	5.1384
6	15.6697	-2.0138	5.1384	22.2584	-3.1273	7.8037
7	22.2584	-3.1273	7.8037	28.9180	-4.4761	10.9301
8	28.9180	-4.4761	10.9301	25.6734	-4.4762	10.9301
9	25.6734	-4.4762	10.9301	30.7973	-6.0536	14.4765
10	30.7973	-6.0536	14.4765	30.0706	-8.9977	0.8347
11	30.0706	-8.9977	0.8347	23.5457	-9.0009	0.8347
12	23.5457	-9.0009	0.8347	14.9198	-12.0018	6.9847
13	14.9198	-12.0018	6.9847	4.9447	-15.0007	13.1346
14	4.9447	-15.0007	13.1346	-6.3799	-18.0002	19.2846
15	-6.3799	-18.0002	19.2846	-19.4302	-18.0006	19.2846
16	-19.4302	-18.0006	19.2846	-34.2809	-21.0009	25.4346
17	-34.2809	-21.0009	25.4346	-50.4816	-24.0011	31.5846
18	-50.4816	-24.0011	31.5846	-68.0325	-27.0013	37.7346
19	-68.0325	-27.0013	37.7346	-87.6087	-27.0013	37.7346
20	-87.6087	-27.0013	37.7346	-39.9857	-11.7134	26.1271
21	-39.9857	-11.7134	26.1271	-0.3331	0.0242	-0.0245
22	-0.3331	0.0242	-0.0245	-0.3100	0.0242	-0.0245
23	-0.3100	0.0242	-0.0245	-0.2870	0.0242	-0.0245
24	-0.2870	0.0242	-0.0245	-0.2640	0.0242	-0.0245
25	-0.2640	0.0242	-0.0245	-0.2409	0.0242	-0.0245
26	-0.2409	0.0242	-0.0245	3.0813	-0.3868	6.8762
27	3.0813	-0.3868	6.8762	10.9495	-1.3755	9.6006
28	10.9495	-1.3755	9.6006	18.4904	-2.5466	12.6586
29	18.4904	-2.5466	12.6586	25.2978	-3.9039	16.0365
30	25.2978	-3.9039	16.0365	30.9475	-5.4492	19.7212
31	30.9475	-5.4492	19.7212	25.7703	-5.4499	19.7212
32	25.7703	-5.4499	19.7212	28.1863	-7.1827	23.6991
33	28.1863	-7.1827	23.6991	37.1766	-10.0501	17.7619
34	37.1766	-10.0501	17.7619	25.2269	-13.0501	23.9119
35	25.2269	-13.0501	23.9119	10.5792	-16.0514	30.0619
36	10.5792	-16.0514	30.0619	-6.7719	-19.0531	36.2119
37	-6.7719	-19.0531	36.2119	-26.8216	-22.0529	42.3619
38	-26.8216	-22.0529	42.3619	-49.5722	-25.0526	48.5119
39	-49.5722	-25.0526	48.5119	-75.0219	-28.0523	54.6619
40	-75.0219	-28.0523	54.6619	-53.0699	-12.1240	30.5612
41	-53.0699	-12.1240	30.5612	8.2809	-0.6225	1.0803
42	8.2809	-0.6225	1.0803	7.8295	-0.6226	1.0803
43	7.8295	-0.6226	1.0803	7.3781	-0.6224	1.0803
44	7.3781	-0.6224	1.0803	6.9269	-0.6221	1.0803
45	6.9269	-0.6221	1.0803	6.4759	-0.6221	1.0804
46	6.4759	-0.6221	1.0804	6.0245	-0.6222	1.0804
47	6.0245	-0.6222	1.0804	5.5735	-0.6215	1.0804
48	5.5735	-0.6215	1.0804	5.1230	-0.6213	1.0804
49	5.1230	-0.6213	1.0804	4.0219	-0.8651	11.2671
50	4.0219	-0.8651	11.2671	3.3947	-0.8651	11.2671
51	3.3947	-0.8651	11.2671	10.5984	-2.2224	15.2639
52	10.5984	-2.2224	15.2639	17.1245	-3.8201	19.6486
53	17.1245	-3.8201	19.6486	14.3556	-3.8194	19.6486
54	14.3556	-3.8194	19.6486	18.4111	-5.6649	24.3881
55	18.4111	-5.6649	24.3881	20.6520	-7.7724	29.4466
56	20.6520	-7.7724	29.4466	20.5422	-10.1449	34.7801
57	20.5422	-10.1449	34.7801	13.1869	-10.1444	34.7801
58	13.1869	-10.1444	34.7801	8.5842	-13.0284	39.8223
59	8.5842	-13.0284	39.8223	-1.6867	-16.0276	45.9723
60	-1.6867	-16.0276	45.9723	-13.3076	-16.0279	45.9722

ENVOL. MAX. TORSORES TREN TREN IPF-75 TIPO B Li=30 m en via 2

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	1.4783	-0.1332	0.3602	1.3817	-0.1332	0.3602
2	1.3817	-0.1332	0.3602	5.0457	-0.5138	1.3689
3	5.0457	-0.5138	1.3689	10.4677	-1.1414	2.9779
4	10.4677	-1.1414	2.9779	9.6400	-1.1418	2.9779
5	9.6400	-1.1418	2.9779	15.6697	-2.0138	5.1384
6	15.6697	-2.0138	5.1384	22.2584	-3.1273	7.8037
7	22.2584	-3.1273	7.8037	28.9180	-4.4761	10.9301
8	28.9180	-4.4761	10.9301	25.6734	-4.4762	10.9301
9	25.6734	-4.4762	10.9301	30.7973	-6.0536	14.4765
10	30.7973	-6.0536	14.4765	34.9349	-7.8547	18.4049
11	34.9349	-7.8547	18.4049	29.2394	-7.8575	18.4048
12	29.2394	-7.8575	18.4048	30.5310	-9.8671	22.6796
13	30.5310	-9.8671	22.6796	29.9425	-12.0772	27.2681

14	29.9425	-12.0772	27.2681	27.1665	-14.4799	32.1406
15	27.1665	-14.4799	32.1406	16.6691	-14.4806	32.1406
16	16.6691	-14.4806	32.1406	9.5929	-17.0539	37.2699
17	9.5929	-17.0539	37.2699	-0.2242	-19.7833	42.6317
18	-0.2242	-19.7833	42.6317	-12.9020	-22.6566	48.2047
19	-12.9020	-22.6566	48.2047	-29.3289	-22.6574	48.2047
20	-29.3289	-22.6574	48.2047	-39.9857	-11.7134	26.1271
21	-39.9857	-11.7134	26.1271	-0.3331	0.0242	-0.0245
22	-0.3331	0.0242	-0.0245	-0.3100	0.0242	-0.0245
23	-0.3100	0.0242	-0.0245	-18.8823	1.5587	0.8380
24	-18.8823	1.5587	0.8380	-12.1539	1.0702	2.4814
25	-12.1539	1.0702	2.4814	-4.7343	0.4255	4.4987
26	-4.7343	0.4255	4.4987	3.0813	-0.3868	6.8762
27	3.0813	-0.3868	6.8762	10.9495	-1.3755	9.6006
28	10.9495	-1.3755	9.6006	18.4904	-2.5466	12.6586
29	18.4904	-2.5466	12.6586	25.2978	-3.9039	16.0365
30	25.2978	-3.9039	16.0365	30.9475	-5.4492	19.7212
31	30.9475	-5.4492	19.7212	25.7703	-5.4499	19.7212
32	25.7703	-5.4499	19.7212	28.1863	-7.1827	23.6991
33	28.1863	-7.1827	23.6991	28.4123	-9.1063	27.9568
34	28.4123	-9.1063	27.9568	26.0419	-11.2103	32.4809
35	26.0419	-11.2103	32.4809	20.6947	-13.4904	37.2581
36	20.6947	-13.4904	37.2581	12.0266	-15.9411	42.2747
37	12.0266	-15.9411	42.2747	-0.2813	-18.5618	47.5340
38	-0.2813	-18.5618	47.5340	-16.5353	-21.3534	53.0315
39	-16.5353	-21.3534	53.0315	-36.9792	-24.2956	58.7542
40	-36.9792	-24.2956	58.7542	-53.0699	-12.1240	30.5612
41	-53.0699	-12.1240	30.5612	8.2422	-0.6197	1.0807
42	8.2422	-0.6197	1.0807	7.7929	-0.6197	1.0807
43	7.7929	-0.6197	1.0807	7.3436	-0.6197	1.0807
44	7.3436	-0.6197	1.0807	6.8945	-0.6198	1.0807
45	6.8945	-0.6198	1.0807	-21.1370	1.9040	1.8994
46	-21.1370	1.9040	1.8994	-19.7565	1.9039	1.8994
47	-19.7565	1.9039	1.8994	-12.2936	1.1837	4.5577
48	-12.2936	1.1837	4.5577	-4.2653	0.2654	7.6889
49	-4.2653	0.2654	7.6889	4.0219	-0.8651	11.2671
50	4.0219	-0.8651	11.2671	3.3947	-0.8651	11.2671
51	3.3947	-0.8651	11.2671	10.5984	-2.2224	15.2639
52	10.5984	-2.2224	15.2639	17.1245	-3.8201	19.6486
53	17.1245	-3.8201	19.6486	14.3556	-3.8194	19.6486
54	14.3556	-3.8194	19.6486	18.4111	-5.6649	24.3881
55	18.4111	-5.6649	24.3881	20.6520	-7.7724	29.4466
56	20.6520	-7.7724	29.4466	20.5422	-10.1449	34.7801
57	20.5422	-10.1449	34.7801	13.1869	-10.1444	34.7801
58	13.1869	-10.1444	34.7801	8.2501	-12.7945	40.3420
59	8.2501	-12.7945	40.3420	-0.3714	-15.7191	46.0888
60	-0.3714	-15.7191	46.0888	-11.7674	-15.7184	46.0888

ENVOL. MIN. TORSORES TREN TREN IPF-75 TIPO B Li=30 m en via 2

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	11.3017	12.0024	-42.2151	20.0037	12.0026	-42.2151
2	20.0037	12.0026	-42.2151	24.7733	9.1731	-36.9143
3	24.7733	9.1731	-36.9143	26.9645	6.5471	-31.9354
4	26.9645	6.5471	-31.9354	31.7113	6.5474	-31.9354
5	31.7113	6.5474	-31.9354	29.9849	4.1198	-27.2536
6	29.9849	4.1198	-27.2536	26.6283	1.8805	-22.8564
7	26.6283	1.8805	-22.8564	21.9927	-0.1829	-18.7323
8	21.9927	-0.1829	-18.7323	21.8602	-0.1831	-18.7323
9	21.8602	-0.1831	-18.7323	14.9005	-2.0781	-14.8619
10	14.9005	-2.0781	-14.8619	7.4011	-3.8141	-11.2274
11	7.4011	-3.8141	-11.2274	4.6357	-3.8145	-11.2274
12	4.6357	-3.8145	-11.2274	-4.2997	-5.4028	-7.8122
13	-4.2997	-5.4028	-7.8122	-13.2000	-6.8547	-4.6008
14	-13.2000	-6.8547	-4.6008	-21.8916	-8.1825	-1.5791
15	-21.8916	-8.1825	-1.5791	-27.8230	-8.1818	-1.5791
16	-27.8230	-8.1818	-1.5791	-0.0676	-0.1333	0.3602
17	-0.0676	-0.1333	0.3602	-0.1642	-0.1333	0.3602
18	-0.1642	-0.1333	0.3602	-0.2609	-0.1334	0.3602
19	-0.2609	-0.1334	0.3602	-0.3576	-0.1334	0.3602
20	-0.3576	-0.1334	0.3602	-62.4284	6.7517	-23.3439
21	-62.4284	6.7517	-23.3439	-31.3504	22.9450	-49.8882
22	-31.3504	22.9450	-49.8882	-12.3456	20.0096	-44.4395
23	-12.3456	20.0096	-44.4395	3.0013	17.2081	-39.1856
24	3.0013	17.2081	-39.1856	14.9417	14.5495	-34.1179
25	14.9417	14.5495	-34.1179	23.7453	11.9793	-29.3126
26	23.7453	11.9793	-29.3126	34.5243	8.9782	-23.1626
27	34.5243	8.9782	-23.1626	42.6030	5.9802	-17.0126
28	42.6030	5.9802	-17.0126	47.9829	2.9825	-10.8626
29	47.9829	2.9825	-10.8626	50.6648	-0.0171	-4.7127
30	50.6648	-0.0171	-4.7127	-11.3291	2.1627	-1.9235
31	-11.3291	2.1627	-1.9235	-9.2750	2.1624	-1.9235
32	-9.2750	2.1624	-1.9235	-7.2208	2.1623	-1.9235
33	-7.2208	2.1623	-1.9235	-5.1668	2.1623	-1.9235
34	-5.1668	2.1623	-1.9235	-3.1126	2.1623	-1.9235
35	-3.1126	2.1623	-1.9235	-1.0586	2.1622	-1.9235
36	-1.0586	2.1622	-1.9235	0.9959	2.1622	-1.9235
37	0.9959	2.1622	-1.9235	3.0503	2.1621	-1.9235
38	3.0503	2.1621	-1.9235	5.1047	2.1625	-1.9235
39	5.1047	2.1625	-1.9235	7.1593	2.1628	-1.9235
40	7.1593	2.1628	-1.9235	8.2948	0.7311	-0.4489
41	8.2948	0.7311	-0.4489	-58.0365	23.0606	-34.1248
42	-58.0365	23.0606	-34.1248	-41.3172	23.0606	-34.1248
43	-41.3172	23.0606	-34.1248	-26.6231	20.0609	-27.9748
44	-26.6231	20.0609	-27.9748	-13.2782	17.0608	-21.8248
45	-13.2782	17.0608	-21.8248	-1.2837	14.0610	-15.6748
46	-1.2837	14.0610	-15.6748	8.9109	14.0624	-15.6747
47	8.9109	14.0624	-15.6747	17.3821	11.0642	-9.5247
48	17.3821	11.0642	-9.5247	-25.1535	3.0045	-3.7426
49	-25.1535	3.0045	-3.7426	-22.9753	3.0022	-3.7426
50	-22.9753	3.0022	-3.7426	-20.7976	3.0027	-3.7426
51	-20.7976	3.0027	-3.7426	-18.6196	3.0026	-3.7426
52	-18.6196	3.0026	-3.7426	-16.4427	3.0022	-3.7426
53	-16.4427	3.0022	-3.7426	-14.2663	3.0013	-3.7426
54	-14.2663	3.0013	-3.7426	-12.0914	2.9991	-3.7426
55	-12.0914	2.9991	-3.7426	-9.9173	2.9994	-3.7426
56	-9.9173	2.9994	-3.7426	-7.7420	3.0001	-3.7426
57	-7.7420	3.0001	-3.7426	-5.5673	2.9992	-3.7426
58	-5.5673	2.9992	-3.7426	-3.3931	2.9990	-3.7426
59	-3.3931	2.9990	-3.7426	-1.2187	2.9987	-3.7426
60	-1.2187	2.9987	-3.7426	0.9555	2.9985	-3.7426

ENVOL. MAX. FLECTORES TREN TREN IPF-75 TIPO B Li=15 m en via 2

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2

1	9.7734	16.3580	-32.1292	21.6333	16.3585	-32.1292
2	21.6333	16.3585	-32.1292	32.1435	13.3586	-25.9792
3	32.1435	13.3586	-25.9792	41.3028	10.3587	-19.8292
4	41.3028	10.3587	-19.8292	48.8136	10.3584	-19.8292
5	48.8136	10.3584	-19.8292	54.4492	7.3569	-13.6792
6	54.4492	7.3569	-13.6792	58.7329	4.3577	-7.5293
7	58.7329	4.3577	-7.5293	61.6667	1.3604	-1.3793
8	61.6667	1.3604	-1.3793	62.6548	1.3535	-1.3793
9	62.6548	1.3535	-1.3793	62.0601	-1.6500	4.7708
10	62.0601	-1.6500	4.7708	60.1188	-4.6431	10.9207
11	60.1188	-4.6431	10.9207	56.7527	-4.6476	10.9207
12	56.7527	-4.6476	10.9207	51.2796	-7.6527	17.0707
13	51.2796	-7.6527	17.0707	44.4599	-10.6481	23.2206
14	44.4599	-10.6481	23.2206	36.2922	-13.6474	29.3706
15	36.2922	-13.6474	29.3706	26.3946	-13.6483	29.3706
16	26.3946	-13.6483	29.3706	14.6997	-16.6508	35.5206
17	14.6997	-16.6508	35.5206	1.6513	-19.6533	41.6706
18	1.6513	-19.6533	41.6706	-0.2609	-0.1334	0.3602
19	-0.2609	-0.1334	0.3602	-0.3576	-0.1334	0.3602
20	-0.3576	-0.1334	0.3602	-0.4052	-0.0546	0.1678
21	-0.4052	-0.0546	0.1678	-0.3331	0.0242	-0.0245
22	-0.3331	0.0242	-0.0245	-0.3100	0.0242	-0.0245
23	-0.3100	0.0242	-0.0245	5.8612	17.3431	-27.7367
24	5.8612	17.3431	-27.7367	22.0178	15.0154	-22.9892
25	22.0178	15.0154	-22.9892	35.9819	12.5715	-18.0809
26	35.9819	12.5715	-18.0809	47.4156	10.0392	-13.1329
27	47.4156	10.0392	-13.1329	56.5002	7.0375	-6.9830
28	56.5002	7.0375	-6.9830	62.8847	4.0379	-0.8330
29	62.8847	4.0379	-0.8330	66.8714	1.4364	4.0522
30	66.8714	1.4364	4.0522	68.2346	-1.5626	10.2022
31	68.2346	-1.5626	10.2022	66.7513	-1.5596	10.2022
32	66.7513	-1.5596	10.2022	62.7711	-4.2053	15.0196
33	62.7711	-4.2053	15.0196	56.2257	-7.2038	21.1696
34	56.2257	-7.2038	21.1696	46.9802	-10.2042	27.3196
35	46.9802	-10.2042	27.3196	35.0554	-12.8683	32.0655
36	35.0554	-12.8683	32.0655	20.7287	-15.8706	38.2155
37	20.7287	-15.8706	38.2155	3.7011	-18.8704	44.3655
38	3.7011	-18.8704	44.3655	5.2428	2.2340	-1.8791
39	5.2428	2.2340	-1.8791	7.3653	2.2342	-1.8791
40	7.3653	2.2342	-1.8791	9.1101	0.8059	-0.3994
41	9.1101	0.8059	-0.3994	8.2809	-0.6225	1.0803
42	8.2809	-0.6225	1.0803	7.8295	-0.6226	1.0803
43	7.8295	-0.6226	1.0803	7.3781	-0.6224	1.0803
44	7.3781	-0.6224	1.0803	12.2730	14.9151	-18.5401
45	12.2730	14.9151	-18.5401	22.7129	11.9168	-12.3900
46	22.7129	11.9168	-12.3900	31.3536	11.9173	-12.3900
47	31.3536	11.9173	-12.3900	38.2691	8.9200	-6.2400
48	38.2691	8.9200	-6.2400	43.8385	5.9240	-0.0900
49	43.8385	5.9240	-0.0900	48.0612	2.9247	6.0601
50	48.0612	2.9247	6.0601	50.1812	2.9262	6.0601
51	50.1812	2.9262	6.0601	50.8800	-0.0715	12.2101
52	50.8800	-0.0715	12.2101	50.2280	-3.0689	18.3601
53	50.2280	-3.0689	18.3601	48.0058	-3.0682	18.3602
54	48.0058	-3.0682	18.3602	43.8316	-6.0678	24.5102
55	43.8316	-6.0678	24.5102	38.3132	-9.0659	30.6602
56	38.3132	-9.0659	30.6602	31.4419	-12.0677	36.8102
57	31.4419	-12.0677	36.8102	22.6945	-12.0653	36.8102
58	22.6945	-12.0653	36.8102	12.3011	-15.0616	42.9602
59	12.3011	-15.0616	42.9602	0.5559	-18.0616	49.1102
60	0.5559	-18.0616	49.1102	1.1139	3.3392	-4.3619

ENVOL. MIN. FLECTORES TREN TREN IPF-75 TIPO B Li=15 m en via 2

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	1.4783	-0.1332	0.3602	1.3817	-0.1332	0.3602
2	1.3817	-0.1332	0.3602	1.2851	-0.1332	0.3602
3	1.2851	-0.1332	0.3602	1.1885	-0.1332	0.3602
4	1.1885	-0.1332	0.3602	1.0919	-0.1332	0.3602
5	1.0919	-0.1332	0.3602	0.9954	-0.1332	0.3602
6	0.9954	-0.1332	0.3602	0.8988	-0.1332	0.3602
7	0.8988	-0.1332	0.3602	0.7931	-3.9241	-10.0522
8	0.7931	-3.9241	-10.0522	-2.0519	-3.9236	-10.0522
9	-2.0519	-3.9236	-10.0522	-5.4212	-4.9235	-8.0023
10	-5.4212	-4.9235	-8.0023	-9.2411	-5.9225	-5.9523
11	-9.2411	-5.9225	-5.9523	-13.5349	-5.9220	-5.9523
12	-13.5349	-5.9220	-5.9523	-18.5285	-6.9227	-3.9023
13	-18.5285	-6.9227	-3.9023	-23.9726	-7.9222	-1.8523
14	-23.9726	-7.9222	-1.8523	-29.8666	-8.9215	0.1977
15	-29.8666	-8.9215	0.1977	-36.3349	-8.9209	0.1977
16	-36.3349	-8.9209	0.1977	-43.4025	-9.9212	2.2477
17	-43.4025	-9.9212	2.2477	-50.9208	-10.9205	4.2977
18	-50.9208	-10.9205	4.2977	-58.8875	-11.9199	6.3477
19	-58.8875	-11.9199	6.3477	-67.5297	-11.9204	6.3476
20	-67.5297	-11.9204	6.3476	-69.7362	6.5593	-18.7677
21	-69.7362	6.5593	-18.7677	-40.5256	21.7887	-38.2804
22	-40.5256	21.7887	-38.2804	-28.7220	2.2348	-1.8791
23	-28.7220	2.2348	-1.8791	-26.5986	2.2350	-1.8791
24	-26.5986	2.2350	-1.8791	-24.4750	2.2347	-1.8791
25	-24.4750	2.2347	-1.8791	-22.3516	2.2342	-1.8791
26	-22.3516	2.2342	-1.8791	-20.2282	2.2343	-1.8791
27	-20.2282	2.2343	-1.8791	-18.1044	2.2341	-1.8791
28	-18.1044	2.2341	-1.8791	-15.9813	2.2343	-1.8791
29	-15.9813	2.2343	-1.8791	-13.8580	2.2341	-1.8791
30	-13.8580	2.2341	-1.8791	-11.7352	2.2335	-1.8791
31	-11.7352	2.2335	-1.8791	-9.6165	2.2243	-1.7164
32	-9.6165	2.2243	-1.7164	-7.5037	2.2240	-1.7164
33	-7.5037	2.2240	-1.7164	-5.3901	2.2244	-1.7164
34	-5.3901	2.2244	-1.7164	-8.0682	-5.6387	4.2875
35	-8.0682	-5.6387	4.2875	-14.1751	-6.6386	6.3375
36	-14.1751	-6.6386	6.3375	-21.1816	-7.6385	8.3875
37	-21.1816	-7.6385	8.3875	-29.0882	-8.6383	10.4375
38	-29.0882	-8.6383	10.4375	-37.8947	-9.6384	12.4875
39	-37.8947	-9.6384	12.4875	-47.6013	-10.6385	14.5375
40	-47.6013	-10.6385	14.5375	-55.7506	-10.9150	26.9110
41	-55.7506	-10.9150	26.9110	-45.3462	3.3780	-4.2476
42	-45.3462	3.3780	-4.2476	-42.8974	3.3780	-4.2477
43	-42.8974	3.3780	-4.2477	-40.4479	3.3770	-4.2477
44	-40.4479	3.3770	-4.2477	-38.0002	3.3761	-4.2477
45	-38.0002	3.3761	-4.2477	-35.5522	3.3779	-4.2477
46	-35.5522	3.3779	-4.2477	-33.1029	3.3760	-4.2477
47	-33.1029	3.3760	-4.2477	-30.6562	3.3728	-4.2477
48	-30.6562	3.3728	-4.2477	-28.2109	3.3710	-4.2477
49	-28.2109	3.3710	-4.2477	-25.7664	3.3686	-4.2477
50	-25.7664	3.3686	-4.2477	-23.3233	3.3698	-4.2477

51	-23.3233	3.3698	-4.2477	-20.8792	3.3706	-4.2477
52	-20.8792	3.3706	-4.2477	-18.4365	3.3679	-4.2477
53	-18.4365	3.3679	-4.2477	-15.9954	3.3650	-4.2477
54	-15.9954	3.3650	-4.2477	-13.5549	3.3644	-4.2477
55	-13.5549	3.3644	-4.2477	-11.1142	3.3640	-4.2477
56	-11.1142	3.3640	-4.2477	-8.6749	3.3640	-4.2477
57	-8.6749	3.3640	-4.2477	-6.2344	3.3647	-4.2477
58	-6.2344	3.3647	-4.2477	-3.7950	3.3649	-4.2477
59	-3.7950	3.3649	-4.2477	-1.7792	-2.1416	13.0489
60	-1.7792	-2.1416	13.0489	-13.9764	-18.1795	48.5897

ENVOL. MAX. CORTANTES TREN TREN IPF-75 TIPO B Li=15 m en via 2

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	9.7734	16.3580	-32.1292	21.6333	16.3585	-32.1292
2	21.6333	16.3585	-32.1292	28.5884	13.4087	-27.8006
3	28.5884	13.4087	-27.8006	33.5206	10.5676	-23.3684
4	33.5206	10.5676	-23.3684	41.1811	10.5672	-23.3684
5	41.1811	10.5672	-23.3684	41.4441	7.8333	-19.3888
6	41.4441	7.8333	-19.3888	39.3831	5.2262	-15.8020
7	39.3831	5.2262	-15.8020	35.3038	2.7496	-12.5527
8	35.3038	2.7496	-12.5527	37.2981	2.7490	-12.5527
9	37.2981	2.7490	-12.5527	29.8405	0.4175	-9.5902
10	29.8405	0.4175	-9.5902	0.5124	-0.1333	0.3602
11	0.5124	-0.1333	0.3602	0.4157	-0.1333	0.3602
12	0.4157	-0.1333	0.3602	0.3191	-0.1332	0.3602
13	0.3191	-0.1332	0.3602	0.2224	-0.1332	0.3602
14	0.2224	-0.1332	0.3602	0.1258	-0.1333	0.3602
15	0.1258	-0.1333	0.3602	0.0291	-0.1334	0.3602
16	0.0291	-0.1334	0.3602	-0.0676	-0.1333	0.3602
17	-0.0676	-0.1333	0.3602	-0.1642	-0.1333	0.3602
18	-0.1642	-0.1333	0.3602	-0.2609	-0.1334	0.3602
19	-0.2609	-0.1334	0.3602	-0.3576	-0.1334	0.3602
20	-0.3576	-0.1334	0.3602	-68.5439	7.3549	-20.2132
21	-68.5439	7.3549	-20.2132	-38.5136	25.0390	-43.8830
22	-38.5136	25.0390	-43.8830	-18.2654	22.4349	-38.9978
23	-18.2654	22.4349	-38.9978	-0.8274	19.7895	-34.1804
24	-0.8274	19.7895	-34.1804	13.5606	17.1282	-29.4345
25	13.5606	17.1282	-29.4345	24.7686	14.4769	-24.9004
26	24.7686	14.4769	-24.9004	32.7655	11.8678	-20.6912
27	32.7655	11.8678	-20.6912	37.6224	9.3236	-16.7742
28	37.6224	9.3236	-16.7742	39.4860	6.8614	-13.1180
29	39.4860	6.8614	-13.1180	38.5854	4.5019	-9.6931
30	38.5854	4.5019	-9.6931	35.2054	2.2575	-6.4723
31	35.2054	2.2575	-6.4723	37.3511	2.2583	-6.4723
32	37.3511	2.2583	-6.4723	-7.4907	2.2336	-1.8791
33	-7.4907	2.2336	-1.8791	-5.3688	2.2338	-1.8791
34	-5.3688	2.2338	-1.8791	-3.2464	2.2337	-1.8791
35	-3.2464	2.2337	-1.8791	-1.1246	2.2338	-1.8791
36	-1.1246	2.2338	-1.8791	0.9978	2.2343	-1.8791
37	0.9978	2.2343	-1.8791	3.1206	2.2341	-1.8791
38	3.1206	2.2341	-1.8791	5.2428	2.2340	-1.8791
39	5.2428	2.2340	-1.8791	7.3653	2.2342	-1.8791
40	7.3653	2.2342	-1.8791	-51.1465	6.0835	-10.3520
41	-51.1465	6.0835	-10.3520	-27.8185	20.9162	-30.8401
42	-27.8185	20.9162	-30.8401	-12.6538	20.9155	-30.8401
43	-12.6538	20.9155	-30.8401	0.4844	17.9138	-24.6901
44	0.4844	17.9138	-24.6901	12.2730	14.9151	-18.5401
45	12.2730	14.9151	-18.5401	22.7129	11.9168	-12.3900
46	22.7129	11.9168	-12.3900	31.3536	11.9173	-12.3900
47	31.3536	11.9173	-12.3900	38.2691	8.9200	-6.2400
48	38.2691	8.9200	-6.2400	43.8385	5.9240	-0.0900
49	43.8385	5.9240	-0.0900	-25.7664	3.3686	-4.2477
50	-25.7664	3.3686	-4.2477	-23.3233	3.3698	-4.2477
51	-23.3233	3.3698	-4.2477	-20.8792	3.3706	-4.2477
52	-20.8792	3.3706	-4.2477	-18.4365	3.3679	-4.2477
53	-18.4365	3.3679	-4.2477	-15.9954	3.3650	-4.2477
54	-15.9954	3.3650	-4.2477	-13.5549	3.3644	-4.2477
55	-13.5549	3.3644	-4.2477	-11.1142	3.3640	-4.2477
56	-11.1142	3.3640	-4.2477	-8.6749	3.3640	-4.2477
57	-8.6749	3.3640	-4.2477	-6.2344	3.3647	-4.2477
58	-6.2344	3.3647	-4.2477	-3.7950	3.3649	-4.2477
59	-3.7950	3.3649	-4.2477	-1.3551	3.3651	-4.2477
60	-1.3551	3.3651	-4.2477	1.0846	3.3649	-4.2477

ENVOL. MIN. CORTANTES TREN TREN IPF-75 TIPO B Li=15 m en via 2

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	1.4783	-0.1332	0.3602	1.3817	-0.1332	0.3602
2	1.3817	-0.1332	0.3602	5.0457	-0.5138	1.3689
3	5.0457	-0.5138	1.3689	10.4677	-1.1414	2.9779
4	10.4677	-1.1414	2.9779	9.6400	-1.1418	2.9779
5	9.6400	-1.1418	2.9779	15.6697	-2.0138	5.1384
6	15.6697	-2.0138	5.1384	22.2584	-3.1273	7.8037
7	22.2584	-3.1273	7.8037	28.9180	-4.4761	10.9301
8	28.9180	-4.4761	10.9301	25.6734	-4.4762	10.9301
9	25.6734	-4.4762	10.9301	30.7973	-6.0536	14.4765
10	30.7973	-6.0536	14.4765	34.9349	-7.8547	18.4049
11	34.9349	-7.8547	18.4049	29.2394	-7.8575	18.4048
12	29.2394	-7.8575	18.4048	30.5310	-9.8671	22.6796
13	30.5310	-9.8671	22.6796	29.9425	-12.0772	27.2681
14	29.9425	-12.0772	27.2681	27.1665	-14.4799	32.1406
15	27.1665	-14.4799	32.1406	16.6691	-14.4806	32.1406
16	16.6691	-14.4806	32.1406	9.5929	-17.0539	37.2699
17	9.5929	-17.0539	37.2699	-0.2242	-19.7833	42.6317
18	-0.2242	-19.7833	42.6317	-13.8045	-22.6666	47.2005
19	-13.8045	-22.6666	47.2005	-30.2374	-22.6660	47.2005
20	-30.2374	-22.6660	47.2005	-39.9857	-11.7134	26.1271
21	-39.9857	-11.7134	26.1271	-0.3331	0.0242	-0.0245
22	-0.3331	0.0242	-0.0245	-0.3100	0.0242	-0.0245
23	-0.3100	0.0242	-0.0245	-0.2870	0.0242	-0.0245
24	-0.2870	0.0242	-0.0245	-0.2640	0.0242	-0.0245
25	-0.2640	0.0242	-0.0245	-0.2409	0.0242	-0.0245
26	-0.2409	0.0242	-0.0245	7.2922	-0.8548	7.3416
27	7.2922	-0.8548	7.3416	15.9067	-1.9911	10.2116
28	15.9067	-1.9911	10.2116	23.9784	-3.3199	13.4212
29	23.9784	-3.3199	13.4212	31.0384	-4.8348	16.9491
30	31.0384	-4.8348	16.9491	36.6165	-6.5347	20.7722
31	36.6165	-6.5347	20.7722	30.4074	-6.5344	20.7722
32	30.4074	-6.5344	20.7722	32.2706	-8.4123	24.8662
33	32.2706	-8.4123	24.8662	31.6280	-10.4550	29.2056
34	31.6280	-10.4550	29.2056	28.1174	-12.6532	33.7633
35	28.1174	-12.6532	33.7633	21.4440	-14.9794	38.5108
36	21.4440	-14.9794	38.5108	11.3939	-17.4237	43.4190

37	11.3939	-17.4237	43.4190	-2.1558	-19.9582	48.3670
38	-2.1558	-19.9582	48.3670	-19.2286	-22.5615	53.2521
39	-19.2286	-22.5615	53.2521	-39.7579	-25.2078	58.0696
40	-39.7579	-25.2078	58.0696	-55.0606	-12.2923	29.4489
41	-55.0606	-12.2923	29.4489	8.2809	-0.6225	1.0803
42	8.2809	-0.6225	1.0803	7.8295	-0.6226	1.0803
43	7.8295	-0.6226	1.0803	7.3781	-0.6224	1.0803
44	7.3781	-0.6224	1.0803	6.9269	-0.6221	1.0803
45	6.9269	-0.6221	1.0803	6.4759	-0.6221	1.0804
46	6.4759	-0.6221	1.0804	6.0245	-0.6222	1.0804
47	6.0245	-0.6222	1.0804	5.5735	-0.6215	1.0804
48	5.5735	-0.6215	1.0804	4.3093	-0.7630	9.1031
49	4.3093	-0.7630	9.1031	13.7514	-2.1441	13.0488
50	13.7514	-2.1441	13.0488	12.1971	-2.1439	13.0488
51	12.1971	-2.1439	13.0488	19.9945	-3.7502	17.4024
52	19.9945	-3.7502	17.4024	26.6885	-5.5781	22.1164
53	26.6885	-5.5781	22.1164	22.6463	-5.5762	22.1164
54	22.6463	-5.5762	22.1164	26.2712	-7.6342	27.1385
55	26.2712	-7.6342	27.1385	27.6677	-9.9181	32.4123
56	27.6677	-9.9181	32.4123	26.3464	-12.4198	37.8766
57	26.3464	-12.4198	37.8766	17.3416	-12.4205	37.8766
58	17.3416	-12.4205	37.8766	11.0344	-15.1792	42.4398
59	11.0344	-15.1792	42.4398	-0.7961	-18.1796	48.5898
60	-0.7961	-18.1796	48.5898	-13.9764	-18.1795	48.5897

ENVOL. MAX. TORSORES TREN TREN IPF-75 TIPO B Li=15 m en via 2

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	1.4783	-0.1332	0.3602	1.3817	-0.1332	0.3602
2	1.3817	-0.1332	0.3602	5.0457	-0.5138	1.3689
3	5.0457	-0.5138	1.3689	10.4677	-1.1414	2.9779
4	10.4677	-1.1414	2.9779	9.6400	-1.1418	2.9779
5	9.6400	-1.1418	2.9779	15.6697	-2.0138	5.1384
6	15.6697	-2.0138	5.1384	22.2584	-3.1273	7.8037
7	22.2584	-3.1273	7.8037	28.9180	-4.4761	10.9301
8	28.9180	-4.4761	10.9301	25.6734	-4.4762	10.9301
9	25.6734	-4.4762	10.9301	30.7973	-6.0536	14.4765
10	30.7973	-6.0536	14.4765	34.9349	-7.8547	18.4049
11	34.9349	-7.8547	18.4049	29.2394	-7.8575	18.4048
12	29.2394	-7.8575	18.4048	30.5310	-9.8671	22.6796
13	30.5310	-9.8671	22.6796	29.9425	-12.0772	27.2681
14	29.9425	-12.0772	27.2681	27.1665	-14.4799	32.1406
15	27.1665	-14.4799	32.1406	16.6691	-14.4806	32.1406
16	16.6691	-14.4806	32.1406	9.5929	-17.0539	37.2699
17	9.5929	-17.0539	37.2699	-0.2242	-19.7833	42.6317
18	-0.2242	-19.7833	42.6317	-12.9020	-22.6566	48.2047
19	-12.9020	-22.6566	48.2047	-29.3289	-22.6574	48.2047
20	-29.3289	-22.6574	48.2047	-39.9857	-11.7134	26.1271
21	-39.9857	-11.7134	26.1271	-0.3331	0.0242	-0.0245
22	-0.3331	0.0242	-0.0245	-0.3100	0.0242	-0.0245
23	-0.3100	0.0242	-0.0245	-17.3779	1.4318	0.9640
24	-17.3779	1.4318	0.9640	-9.7593	0.8507	2.6998
25	-9.7593	0.8507	2.6998	-1.4065	0.0910	4.8314
26	-1.4065	0.0910	4.8314	7.2922	-0.8548	7.3416
27	7.2922	-0.8548	7.3416	15.9067	-1.9911	10.2116
28	15.9067	-1.9911	10.2116	23.9784	-3.3199	13.4212
29	23.9784	-3.3199	13.4212	31.0384	-4.8348	16.9491
30	31.0384	-4.8348	16.9491	36.6165	-6.5347	20.7722
31	36.6165	-6.5347	20.7722	30.4074	-6.5344	20.7722
32	30.4074	-6.5344	20.7722	32.2706	-8.4123	24.8662
33	32.2706	-8.4123	24.8662	31.6280	-10.4550	29.2056
34	31.6280	-10.4550	29.2056	28.1174	-12.6532	33.7633
35	28.1174	-12.6532	33.7633	21.4440	-14.9794	38.5108
36	21.4440	-14.9794	38.5108	11.3939	-17.4237	43.4190
37	11.3939	-17.4237	43.4190	-2.1558	-19.9582	48.3670
38	-2.1558	-19.9582	48.3670	-19.2286	-22.5615	53.2521
39	-19.2286	-22.5615	53.2521	-39.7579	-25.2078	58.0696
40	-39.7579	-25.2078	58.0696	-55.0606	-12.2923	29.4489
41	-55.0606	-12.2923	29.4489	8.2422	-0.6197	1.0807
42	8.2422	-0.6197	1.0807	7.7929	-0.6197	1.0807
43	7.7929	-0.6197	1.0807	7.3436	-0.6197	1.0807
44	7.3436	-0.6197	1.0807	6.8945	-0.6198	1.0807
45	6.8945	-0.6198	1.0807	-15.3344	1.3526	2.6023
46	-15.3344	1.3526	2.6023	-14.3540	1.3521	2.6023
47	-14.3540	1.3521	2.6023	-5.1881	0.3999	5.6081
48	-5.1881	0.3999	5.6081	4.3093	-0.7630	9.1031
49	4.3093	-0.7630	9.1031	13.7514	-2.1441	13.0488
50	13.7514	-2.1441	13.0488	12.1971	-2.1439	13.0488
51	12.1971	-2.1439	13.0488	19.9945	-3.7502	17.4024
52	19.9945	-3.7502	17.4024	26.6885	-5.5781	22.1164
53	26.6885	-5.5781	22.1164	22.6463	-5.5762	22.1164
54	22.6463	-5.5762	22.1164	26.2712	-7.6342	27.1385
55	26.2712	-7.6342	27.1385	27.6677	-9.9181	32.4123
56	27.6677	-9.9181	32.4123	26.3464	-12.4198	37.8766
57	26.3464	-12.4198	37.8766	17.3416	-12.4205	37.8766
58	17.3416	-12.4205	37.8766	10.8531	-15.1381	43.4658
59	10.8531	-15.1381	43.4658	0.5559	-18.0616	49.1102
60	0.5559	-18.0616	49.1102	-12.5391	-18.0618	49.1102

ENVOL. MIN. TORSORES TREN TREN IPF-75 TIPO B Li=15 m en via 2

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	8.8850	16.3447	-32.7494	20.7354	16.3448	-32.7494
2	20.7354	16.3448	-32.7494	28.5884	13.4087	-27.8006
3	28.5884	13.4087	-27.8006	33.5206	10.5676	-23.3684
4	33.5206	10.5676	-23.3684	41.1811	10.5672	-23.3684
5	41.1811	10.5672	-23.3684	41.4441	7.8333	-19.3888
6	41.4441	7.8333	-19.3888	39.3831	5.2262	-15.8020
7	39.3831	5.2262	-15.8020	35.3038	2.7496	-12.5527
8	35.3038	2.7496	-12.5527	37.2981	2.7490	-12.5527
9	37.2981	2.7490	-12.5527	29.8405	0.4175	-9.5902
10	29.8405	0.4175	-9.5902	21.1427	-1.7661	-6.8681
11	21.1427	-1.7661	-6.8681	19.8620	-1.7667	-6.8681
12	19.8620	-1.7667	-6.8681	8.7939	-3.7970	-4.3446
13	8.7939	-3.7970	-4.3446	-2.7246	-5.6730	-1.9822
14	-2.7246	-5.6730	-1.9822	-29.8666	-8.9215	0.1977
15	-29.8666	-8.9215	0.1977	-36.3349	-8.9209	0.1977
16	-36.3349	-8.9209	0.1977	-0.0676	-0.1333	0.3602
17	-0.0676	-0.1333	0.3602	-0.1642	-0.1333	0.3602
18	-0.1642	-0.1333	0.3602	-0.2609	-0.1334	0.3602
19	-0.2609	-0.1334	0.3602	-0.3576	-0.1334	0.3602
20	-0.3576	-0.1334	0.3602	-68.5439	7.3549	-20.2132
21	-68.5439	7.3549	-20.2132	-38.5136	25.0390	-43.8830
22	-38.5136	25.0390	-43.8830	-18.2654	22.4349	-38.9978

23	-18.2654	22.4349	-38.9978	-0.8274	19.7895	-34.1804
24	-0.8274	19.7895	-34.1804	13.5606	17.1282	-29.4345
25	13.5606	17.1282	-29.4345	24.7686	14.4769	-24.9004
26	24.7686	14.4769	-24.9004	32.7655	11.8678	-20.6912
27	32.7655	11.8678	-20.6912	37.6224	9.3236	-16.7742
28	37.6224	9.3236	-16.7742	39.4860	6.8614	-13.1180
29	39.4860	6.8614	-13.1180	38.5854	4.5019	-9.6931
30	38.5854	4.5019	-9.6931	35.2054	2.2575	-6.4723
31	35.2054	2.2575	-6.4723	37.3511	2.2583	-6.4723
32	37.3511	2.2583	-6.4723	29.8169	0.1438	-3.4303
33	29.8169	0.1438	-3.4303	-5.1668	2.1623	-1.9235
34	-5.1668	2.1623	-1.9235	-3.1126	2.1623	-1.9235
35	-3.1126	2.1623	-1.9235	-1.0586	2.1622	-1.9235
36	-1.0586	2.1622	-1.9235	0.9959	2.1622	-1.9235
37	0.9959	2.1622	-1.9235	3.0503	2.1621	-1.9235
38	3.0503	2.1621	-1.9235	5.1047	2.1625	-1.9235
39	5.1047	2.1625	-1.9235	7.1593	2.1628	-1.9235
40	7.1593	2.1628	-1.9235	-51.1465	6.0835	-10.3520
41	-51.1465	6.0835	-10.3520	-28.6896	20.8824	-31.7661
42	-28.6896	20.8824	-31.7661	-13.5494	20.8825	-31.7661
43	-13.5494	20.8825	-31.7661	-0.4348	17.8816	-25.6161
44	-0.4348	17.8816	-25.6161	11.3306	14.8818	-19.4661
45	11.3306	14.8818	-19.4661	21.7456	11.8826	-13.3161
46	21.7456	11.8826	-13.3161	30.3604	11.8864	-13.3160
47	30.3604	11.8864	-13.3160	37.2544	8.8897	-7.1660
48	37.2544	8.8897	-7.1660	-27.9538	3.3468	-4.3620
49	-27.9538	3.3468	-4.3620	-25.5288	3.3442	-4.3620
50	-25.5288	3.3442	-4.3620	-23.1033	3.3426	-4.3620
51	-23.1033	3.3426	-4.3620	-20.6805	3.3429	-4.3620
52	-20.6805	3.3429	-4.3620	-18.2556	3.3432	-4.3620
53	-18.2556	3.3432	-4.3620	-15.8336	3.3414	-4.3620
54	-15.8336	3.3414	-4.3620	-13.4110	3.3401	-4.3620
55	-13.4110	3.3401	-4.3620	-10.9909	3.3382	-4.3620
56	-10.9909	3.3382	-4.3620	-8.5695	3.3381	-4.3620
57	-8.5695	3.3381	-4.3620	-6.1486	3.3382	-4.3619
58	-6.1486	3.3382	-4.3619	-3.7279	3.3386	-4.3619
59	-3.7279	3.3386	-4.3619	-1.3070	3.3391	-4.3619
60	-1.3070	3.3391	-4.3619	1.1139	3.3392	-4.3619

ENVOL. MAX. FLECTORES TREN TREN LM 71, EC-1 en via 2

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	17.7749	36.2787	-69.6175	39.0573	32.3719	-61.0490
2	39.0573	32.3719	-61.0490	59.4777	20.1716	-36.0389
3	59.4777	20.1716	-36.0389	75.6564	28.5421	-53.1975
4	75.6564	28.5421	-53.1975	87.8104	16.3420	-28.1875
5	87.8104	16.3420	-28.1875	99.6565	16.3378	-28.1875
6	99.6565	16.3378	-28.1875	105.6301	12.6007	-21.0206
7	105.6301	12.6007	-21.0206	111.4118	0.4011	3.9894
8	111.4118	0.4011	3.9894	113.4913	2.8881	-1.9883
9	113.4913	2.8881	-1.9883	111.1637	-3.2109	10.5168
10	111.1637	-3.2109	10.5168	108.8396	-3.2115	10.5168
11	108.8396	-3.2115	10.5168	101.7561	-6.6744	16.4496
12	101.7561	-6.6744	16.4496	93.2458	-18.8816	41.4595
13	93.2458	-18.8816	41.4595	83.7276	-22.1736	46.8433
14	83.7276	-22.1736	46.8433	68.4789	-13.0790	26.7131
15	68.4789	-13.0790	26.7131	53.1992	-25.2819	51.7231
16	53.1992	-25.2819	51.7231	36.9074	-28.1631	56.1443
17	36.9074	-28.1631	56.1443	18.5737	-18.6050	35.1452
18	18.5737	-18.6050	35.1452	14.1914	1.1216	1.8286
19	14.1914	1.1216	1.8286	15.0047	1.1218	1.8286
20	15.0047	1.1218	1.8286	16.9663	-1.5249	-2.6687
21	16.9663	-1.5249	-2.6687	14.1515	-4.1716	-7.1658
22	14.1515	-4.1716	-7.1658	21.0111	19.2519	-32.1538
23	21.0111	19.2519	-32.1538	41.3867	17.0545	-26.1269
24	41.3867	17.0545	-26.1269	60.4881	14.6434	-19.9617
25	60.4881	14.6434	-19.9617	77.6675	12.0438	-14.0130
26	77.6675	12.0438	-14.0130	92.2713	9.2878	-8.2826
27	92.2713	9.2878	-8.2826	103.7568	6.4161	-2.7706
28	103.7568	6.4161	-2.7706	111.7187	3.4604	2.5232
29	111.7187	3.4604	2.5232	115.8850	0.4541	7.5988
30	115.8850	0.4541	7.5988	116.3127	0.4541	7.5988
31	116.3127	0.4541	7.5988	113.6689	-2.5609	12.4561
32	113.6689	-2.5609	12.4561	107.0946	-5.5703	17.0952
33	107.0946	-5.5703	17.0952	96.7574	-8.5138	21.5161
34	96.7574	-8.5138	21.5161	83.7909	-20.7147	46.5261
35	83.7909	-20.7147	46.5261	67.8795	-23.5689	50.7287
36	67.8795	-23.5689	50.7287	49.0461	-26.2904	54.7132
37	49.0461	-26.2904	54.7132	27.8859	-28.8563	58.4797
38	27.8859	-28.8563	58.4797	8.5809	3.6220	-3.3515
39	8.5809	3.6220	-3.3515	12.0220	3.6222	-3.3515
40	12.0220	3.6222	-3.3515	14.8130	1.3063	-0.8049
41	14.8130	1.3063	-0.8049	13.4307	-1.0094	1.7416
42	13.4307	-1.0094	1.7416	18.6348	18.2762	-25.7055
43	18.6348	18.2762	-25.7055	35.8711	27.8769	-42.6005
44	35.8711	27.8769	-42.6005	50.4633	25.0258	-34.4077
45	50.4633	25.0258	-34.4077	64.6416	12.8236	-9.3977
46	64.6416	12.8236	-9.3977	78.8810	9.7374	-1.6250
47	78.8810	9.7374	-1.6250	88.0322	18.6438	-19.3293
48	88.0322	18.6438	-19.3293	95.4552	6.4536	5.6807
49	95.4552	6.4536	5.6807	101.8269	2.9606	12.4741
50	101.8269	2.9606	12.4741	103.9753	2.9615	12.4742
51	103.9753	2.9615	12.4742	105.2085	-9.2376	37.4842
52	105.2085	-9.2376	37.4842	103.4892	-0.6884	18.7103
53	103.4892	-0.6884	18.7103	96.5863	-12.8845	43.7204
54	96.5863	-12.8845	43.7204	90.1356	-16.6701	49.3536
55	90.1356	-16.6701	49.3536	78.4729	-8.3918	29.3288
56	78.4729	-8.3918	29.3288	64.7424	-28.8708	74.3636
57	64.7424	-28.8708	74.3636	48.9212	-20.5858	54.3389
58	48.9212	-20.5858	54.3389	27.2845	-32.7887	79.3489
59	27.2845	-32.7887	79.3489	5.3249	-36.7990	83.6425
60	5.3249	-36.7990	83.6425	1.7501	4.9434	-6.8544

ENVOL. MIN. FLECTORES TREN TREN LM 71, EC-1 en via 2

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	-0.4668	1.1237	1.8285	-1.0897	-5.8850	-12.4431
2	-1.0897	-5.8850	-12.4431	-5.3991	-5.9768	-12.7881
3	-5.3991	-5.9768	-12.7881	-9.7325	-5.9762	-12.7881
4	-9.7325	-5.9762	-12.7881	-14.0637	-5.9753	-12.7881
5	-14.0637	-5.9753	-12.7881	-18.3960	-5.9760	-12.7881
6	-18.3960	-5.9760	-12.7881	-22.7286	-5.9767	-12.7881
7	-22.7286	-5.9767	-12.7881	-27.0602	-5.9754	-12.7881
8	-27.0602	-5.9754	-12.7881	-31.3921	-5.9741	-12.7881

9	-31.3921	-5.9741	-12.7881	-35.7235	-5.9747	-12.7881
10	-35.7235	-5.9747	-12.7881	-40.0561	-5.9735	-12.7881
11	-40.0561	-5.9735	-12.7881	-44.3843	-5.9711	-12.7881
12	-44.3843	-5.9711	-12.7881	-48.7126	-5.9688	-12.7881
13	-48.7126	-5.9688	-12.7881	-53.0406	-5.9693	-12.7881
14	-53.0406	-5.9693	-12.7881	-57.3704	-5.9690	-12.7882
15	-57.3704	-5.9690	-12.7882	-61.6973	-5.9677	-12.7882
16	-61.6973	-5.9677	-12.7882	-66.0241	-5.9684	-12.7882
17	-66.0241	-5.9684	-12.7882	-70.3510	-5.9661	-12.7882
18	-70.3510	-5.9661	-12.7882	-74.6750	-5.9636	-12.7882
19	-74.6750	-5.9636	-12.7882	-78.9991	-5.9643	-12.7882
20	-78.9991	-5.9643	-12.7882	-78.2177	12.4268	-32.7895
21	-78.2177	12.4268	-32.7895	-49.9264	3.6229	-3.3515
22	-49.9264	3.6229	-3.3515	-46.4850	3.6236	-3.3515
23	-46.4850	3.6236	-3.3515	-43.0420	3.6244	-3.3515
24	-43.0420	3.6244	-3.3515	-39.5993	3.6234	-3.3515
25	-39.5993	3.6234	-3.3515	-36.1572	3.6235	-3.3515
26	-36.1572	3.6235	-3.3515	-32.7141	3.6245	-3.3515
27	-32.7141	3.6245	-3.3515	-29.2711	3.6246	-3.3515
28	-29.2711	3.6246	-3.3515	-25.8277	3.6237	-3.3515
29	-25.8277	3.6237	-3.3515	-22.3858	3.6217	-3.3515
30	-22.3858	3.6217	-3.3515	-21.5146	-4.1743	-7.1658
31	-21.5146	-4.1743	-7.1658	-25.4797	-4.1735	-7.1658
32	-25.4797	-4.1735	-7.1658	-29.4439	-4.1728	-7.1658
33	-29.4439	-4.1728	-7.1658	-33.4092	-4.1733	-7.1658
34	-33.4092	-4.1733	-7.1658	-37.3741	-4.1743	-7.1658
35	-37.3741	-4.1743	-7.1658	-41.3403	-4.1740	-7.1658
36	-41.3403	-4.1740	-7.1658	-45.3035	-4.1728	-7.1658
37	-45.3035	-4.1728	-7.1658	-49.2674	-4.1726	-7.1658
38	-49.2674	-4.1726	-7.1658	-53.2313	-4.1728	-7.1658
39	-53.2313	-4.1728	-7.1658	-60.7828	-26.9691	62.4761
40	-60.7828	-26.9691	62.4761	-79.5067	-12.5038	30.1304
41	-79.5067	-12.5038	30.1304	-66.4653	4.9624	-6.8544
42	-66.4653	4.9624	-6.8544	-62.8679	4.9626	-6.8544
43	-62.8679	4.9626	-6.8544	-59.2696	4.9621	-6.8544
44	-59.2696	4.9621	-6.8544	-55.6717	4.9610	-6.8544
45	-55.6717	4.9610	-6.8544	-52.0753	4.9608	-6.8544
46	-52.0753	4.9608	-6.8544	-48.4790	4.9621	-6.8544
47	-48.4790	4.9621	-6.8544	-44.8829	4.9601	-6.8544
48	-44.8829	4.9601	-6.8544	-41.2900	4.9545	-6.8544
49	-41.2900	4.9545	-6.8544	-37.6998	4.9517	-6.8544
50	-37.6998	4.9517	-6.8544	-34.1099	4.9542	-6.8544
51	-34.1099	4.9542	-6.8544	-30.5184	4.9546	-6.8544
52	-30.5184	4.9546	-6.8544	-26.9301	4.9509	-6.8544
53	-26.9301	4.9509	-6.8544	-23.3427	4.9475	-6.8544
54	-23.3427	4.9475	-6.8544	-19.7573	4.9445	-6.8544
55	-19.7573	4.9445	-6.8544	-16.1723	4.9436	-6.8544
56	-16.1723	4.9436	-6.8544	-12.5884	4.9449	-6.8544
57	-12.5884	4.9449	-6.8544	-9.0022	4.9452	-6.8544
58	-9.0022	4.9452	-6.8544	-5.4187	4.9441	-6.8544
59	-5.4187	4.9441	-6.8544	-2.0034	-11.5435	40.6227
60	-2.0034	-11.5435	40.6227	-22.2679	-28.6824	62.2026

ENVOL. MAX. CORTANTES TREN TREN LM 71, EC-1 en via 2

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	17.7749	36.2787	-69.6175	39.0573	32.3719	-61.0490
2	39.0573	32.3719	-61.0490	54.9656	28.5386	-53.1975
3	54.9656	28.5386	-53.1975	75.6564	28.5421	-53.1975
4	75.6564	28.5421	-53.1975	83.6899	24.8062	-46.0304
5	83.6899	24.8062	-46.0304	86.9135	21.1960	-39.5032
6	86.9135	21.1960	-39.5032	85.6908	17.7255	-33.5703
7	85.6908	17.7255	-33.5703	98.5420	17.7221	-33.5703
8	98.5420	17.7221	-33.5703	90.9080	14.4282	-28.1866
9	90.9080	14.4282	-28.1866	79.8868	11.3256	-23.3068
10	79.8868	11.3256	-23.3068	66.0690	8.4445	-18.8855
11	66.0690	8.4445	-18.8855	72.1902	8.4445	-18.8855
12	72.1902	8.4445	-18.8855	54.2864	5.7978	-14.8747
13	54.2864	5.7978	-14.8747	35.2413	3.4118	-11.9353
14	35.2413	3.4118	-11.9353	37.7158	3.4110	-11.9353
15	37.7158	3.4110	-11.9353	16.6465	1.2971	-9.8816
16	16.6465	1.2971	-9.8816	12.5646	1.1223	1.8285
17	12.5646	1.1223	1.8285	13.3783	1.1219	1.8285
18	13.3783	1.1219	1.8285	14.1914	1.1216	1.8286
19	14.1914	1.1216	1.8286	15.0047	1.1218	1.8286
20	15.0047	1.1218	1.8286	-52.1881	18.5487	-43.3788
21	-52.1881	18.5487	-43.3788	-19.0691	39.0459	-69.9818
22	-19.0691	39.0459	-69.9818	4.2983	36.4454	-64.0331
23	4.2983	36.4454	-64.0331	25.5326	33.6935	-58.3027
24	25.5326	33.6935	-58.3027	43.9937	30.8186	-52.7907
25	43.9937	30.8186	-52.7907	59.1698	27.8594	-47.4968
26	59.1698	27.8594	-47.4968	70.6855	24.8493	-42.4212
27	70.6855	24.8493	-42.4212	94.2890	24.8480	-42.4212
28	94.2890	24.8480	-42.4212	99.0313	21.8261	-37.5639
29	99.0313	21.8261	-37.5639	99.7883	18.8286	-32.9248
30	99.7883	18.8286	-32.9248	96.6207	15.8797	-28.5039
31	96.6207	15.8797	-28.5039	89.7160	13.0345	-24.3012
32	89.7160	13.0345	-24.3012	79.4151	10.3101	-20.3167
33	79.4151	10.3101	-20.3167	66.1686	7.7463	-16.5503
34	66.1686	7.7463	-16.5503	50.5489	5.3769	-12.9998
35	50.5489	5.3769	-12.9998	-1.7418	3.6210	-3.3515
36	-1.7418	3.6210	-3.3515	1.6984	3.6213	-3.3515
37	1.6984	3.6213	-3.3515	5.1399	3.6220	-3.3515
38	5.1399	3.6220	-3.3515	8.5809	3.6220	-3.3515
39	8.5809	3.6220	-3.3515	12.0220	3.6222	-3.3515
40	12.0220	3.6222	-3.3515	-41.0858	18.3746	-37.1273
41	-41.0858	18.3746	-37.1273	-15.8587	37.2235	-59.4178
42	-15.8587	37.2235	-59.4178	11.1287	37.2220	-59.4178
43	11.1287	37.2220	-59.4178	25.3754	34.1353	-51.6451
44	25.3754	34.1353	-51.6451	37.7425	30.8358	-44.3394
45	37.7425	30.8358	-44.3394	60.0990	30.8353	-44.3394
46	60.0990	30.8353	-44.3394	67.3412	27.3397	-37.5460
47	67.3412	27.3397	-37.5460	71.2313	23.6928	-31.3099
48	71.2313	23.6928	-31.3099	71.2234	19.9022	-25.6766
49	71.2234	19.9022	-25.6766	85.6548	19.9069	-25.6765
50	85.6548	19.9069	-25.6765	78.4141	15.9886	-20.6913
51	78.4141	15.9886	-20.6913	66.2868	11.9865	-16.3976
52	66.2868	11.9865	-16.3976	48.9398	7.9096	-12.8270
53	48.9398	7.9096	-12.8270	54.6743	7.9149	-12.8270
54	54.6743	7.9149	-12.8270	40.3437	5.3433	-8.7204
55	40.3437	5.3433	-8.7204	-16.1723	4.9436	-6.8544
56	-16.1723	4.9436	-6.8544	-12.5884	4.9449	-6.8544
57	-12.5884	4.9449	-6.8544	-9.0022	4.9452	-6.8544
58	-9.0022	4.9452	-6.8544	-5.4187	4.9441	-6.8544
59	-5.4187	4.9441	-6.8544	-1.8340	4.9439	-6.8544
60	-1.8340	4.9439	-6.8544	1.7501	4.9434	-6.8544

ENVOL. MIN. CORTANTES TREN TREN LM 71, EC-1 en via 2

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	3.2649	-5.9750	-12.7881	-1.0671	-5.9755	-12.7881
2	-1.0671	-5.9755	-12.7881	-5.3991	-5.9768	-12.7881
3	-5.3991	-5.9768	-12.7881	-9.7325	-5.9762	-12.7881
4	-9.7325	-5.9762	-12.7881	-14.0637	-5.9753	-12.7881
5	-14.0637	-5.9753	-12.7881	-18.3960	-5.9760	-12.7881
6	-18.3960	-5.9760	-12.7881	63.0205	-8.8233	21.8932
7	63.0205	-8.8233	21.8932	81.1142	-12.5226	30.4224
8	81.1142	-12.5226	30.4224	72.0372	-12.5251	30.4224
9	72.0372	-12.5251	30.4224	84.0774	-16.4238	38.9909
10	84.0774	-16.4238	38.9909	91.1763	-20.2656	46.8424
11	91.1763	-20.2656	46.8424	76.4798	-20.2678	46.8423
12	76.4798	-20.2678	46.8423	76.2626	-24.0065	54.0093
13	76.2626	-24.0065	54.0093	71.9523	-27.6091	60.5366
14	71.9523	-27.6091	60.5366	64.0399	-31.0812	66.4695
15	64.0399	-31.0812	66.4695	41.5029	-31.0842	66.4695
16	41.5029	-31.0842	66.4695	28.1666	-34.3805	71.8532
17	28.1666	-34.3805	71.8532	12.5765	-37.4848	76.7331
18	12.5765	-37.4848	76.7331	-4.5413	-40.3659	81.1544
19	-4.5413	-40.3659	81.1544	-33.8067	-40.3657	81.1544
20	-33.8067	-40.3657	81.1544	-42.6442	-20.4394	42.1977
21	-42.6442	-20.4394	42.1977	14.1515	-4.1716	-7.1658
22	14.1515	-4.1716	-7.1658	10.1883	-4.1714	-7.1658
23	10.1883	-4.1714	-7.1658	6.2255	-4.1711	-7.1658
24	6.2255	-4.1711	-7.1658	2.2629	-4.1711	-7.1658
25	2.2629	-4.1711	-7.1658	50.2556	-5.1486	17.8663
26	50.2556	-5.1486	17.8663	65.5912	-7.3438	23.8931
27	65.5912	-7.3438	23.8931	79.0433	-9.7583	30.0583
28	79.0433	-9.7583	30.0583	90.0336	-12.3535	36.0069
29	90.0336	-12.3535	36.0069	98.0106	-15.1085	41.7374
30	98.0106	-15.1085	41.7374	102.5282	-17.9825	47.2494
31	102.5282	-17.9825	47.2494	85.4487	-17.9772	47.2494
32	85.4487	-17.9772	47.2494	83.3964	-20.9324	52.5432
33	83.3964	-20.9324	52.5432	77.3553	-23.9438	57.6188
34	77.3553	-23.9438	57.6188	67.3172	-26.9637	62.4761
35	67.3172	-26.9637	62.4761	53.4097	-29.9650	67.1152
36	53.4097	-29.9650	67.1152	35.8947	-32.9154	71.5361
37	35.8947	-32.9154	71.5361	15.1698	-35.7660	75.7388
38	15.1698	-35.7660	75.7388	-8.2330	-38.4935	79.7232
39	-8.2330	-38.4935	79.7232	-33.6524	-41.0569	83.4897
40	-33.6524	-41.0569	83.4897	-48.9769	-20.3960	42.5685
41	-48.9769	-20.3960	42.5685	13.4307	-1.0094	1.7416
42	13.4307	-1.0094	1.7416	12.6991	-1.0094	1.7416
43	12.6991	-1.0094	1.7416	11.9671	-1.0096	1.7416
44	11.9671	-1.0096	1.7416	17.5994	-1.7576	10.7443
45	17.5994	-1.7576	10.7443	36.8424	-3.7965	17.0439
46	36.8424	-3.7965	17.0439	34.0891	-3.7975	17.0440
47	34.0891	-3.7975	17.0440	51.3445	-6.1179	24.3147
48	51.3445	-6.1179	24.3147	67.4035	-8.7115	32.4296
49	67.4035	-8.7115	32.4296	81.7236	-11.5602	40.6225
50	81.7236	-11.5602	40.6225	73.3446	-11.5581	40.6225
51	73.3446	-11.5581	40.6225	83.1120	-14.6424	48.3951
52	83.1120	-14.6424	48.3951	89.7714	-17.9381	55.7010
53	89.7714	-17.9381	55.7010	76.7657	-17.9351	55.7010
54	76.7657	-17.9351	55.7010	77.2094	-21.4209	62.4944
55	77.2094	-21.4209	62.4944	73.3407	-25.0695	68.7303
56	73.3407	-25.0695	68.7303	64.7424	-28.8708	74.3636
57	64.7424	-28.8708	74.3636	43.8078	-28.8727	74.3636
58	43.8078	-28.8727	74.3636	27.2845	-32.7887	79.3489
59	27.2845	-32.7887	79.3489	5.3249	-36.7990	83.6425
60	5.3249	-36.7990	83.6425	-21.3560	-36.8000	83.6425

ENVOL. MAX. TORSORES TREN TREN LM 71, EC-1 en via 2

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	-0.4668	1.1237	1.8285	0.3479	1.1237	1.8285
2	0.3479	1.1237	1.8285	15.2931	-1.5483	4.1022
3	15.2931	-1.5483	4.1022	32.1266	-3.4962	9.0870
4	32.1266	-3.4962	9.0870	29.5915	-3.4964	9.0870
5	29.5915	-3.4964	9.0870	42.9786	-5.4973	13.8883
6	42.9786	-5.4973	13.8883	63.0205	-8.8233	21.8932
7	63.0205	-8.8233	21.8932	81.1142	-12.5226	30.4224
8	81.1142	-12.5226	30.4224	72.0372	-12.5251	30.4224
9	72.0372	-12.5251	30.4224	84.0774	-16.4238	38.9909
10	84.0774	-16.4238	38.9909	91.1763	-20.2656	46.8424
11	91.1763	-20.2656	46.8424	76.4798	-20.2678	46.8423
12	76.4798	-20.2678	46.8423	76.2626	-24.0065	54.0093
13	76.2626	-24.0065	54.0093	71.9523	-27.6091	60.5366
14	71.9523	-27.6091	60.5366	64.0399	-31.0812	66.4695
15	64.0399	-31.0812	66.4695	41.5029	-31.0842	66.4695
16	41.5029	-31.0842	66.4695	28.1666	-34.3805	71.8532
17	28.1666	-34.3805	71.8532	12.5765	-37.4848	76.7331
18	12.5765	-37.4848	76.7331	-4.5413	-40.3659	81.1544
19	-4.5413	-40.3659	81.1544	-33.8067	-40.3657	81.1544
20	-33.8067	-40.3657	81.1544	-42.6442	-20.4394	42.1977
21	-42.6442	-20.4394	42.1977	-16.8591	1.1845	1.2171
22	-16.8591	1.1845	1.2171	-0.6052	-0.0131	4.0110
23	-0.6052	-0.0131	4.0110	16.3888	-1.4665	8.0089
24	16.3888	-1.4665	8.0089	33.6139	-3.1838	12.5471
25	33.6139	-3.1838	12.5471	50.2556	-5.1486	17.8663
26	50.2556	-5.1486	17.8663	65.5912	-7.3438	23.8931
27	65.5912	-7.3438	23.8931	79.0433	-9.7583	30.0583
28	79.0433	-9.7583	30.0583	90.0336	-12.3535	36.0069
29	90.0336	-12.3535	36.0069	98.0106	-15.1085	41.7374
30	98.0106	-15.1085	41.7374	102.5282	-17.9825	47.2494
31	102.5282	-17.9825	47.2494	85.4487	-17.9772	47.2494
32	85.4487	-17.9772	47.2494	83.3964	-20.9324	52.5432
33	83.3964	-20.9324	52.5432	77.3553	-23.9438	57.6188
34	77.3553	-23.9438	57.6188	67.3172	-26.9637	62.4761
35	67.3172	-26.9637	62.4761	53.4097	-29.9650	67.1152
36	53.4097	-29.9650	67.1152	35.8947	-32.9154	71.5361
37	35.8947	-32.9154	71.5361	15.1698	-35.7660	75.7388
38	15.1698	-35.7660	75.7388	-8.2330	-38.4935	79.7232
39	-8.2330	-38.4935	79.7232	-33.6524	-41.0569	83.4897
40	-33.6524	-41.0569	83.4897	-48.9769	-20.3960	42.5685
41	-48.9769	-20.3960	42.5685	13.4307	-1.0094	1.7416
42	13.4307	-1.0094	1.7416	12.6991	-1.0094	1.7416
43	12.6991	-1.0094	1.7416	-1.2175	-0.0082	5.1361
44	-1.2175	-0.0082	5.1361	17.5994	-1.7576	10.7443
45	17.5994	-1.7576	10.7443	36.8424	-3.7965	17.0439
46	36.8424	-3.7965	17.0439	34.0891	-3.7975	17.0440
47	34.0891	-3.7975	17.0440	51.3445	-6.1179	24.3147

48	51.3445	-6.1179	24.3147	67.4035	-8.7115	32.4296
49	67.4035	-8.7115	32.4296	81.7236	-11.5602	40.6225
50	81.7236	-11.5602	40.6225	73.3446	-11.5581	40.6225
51	73.3446	-11.5581	40.6225	83.1120	-14.6424	48.3951
52	83.1120	-14.6424	48.3951	89.7714	-17.9381	55.7010
53	89.7714	-17.9381	55.7010	76.7657	-17.9351	55.7010
54	76.7657	-17.9351	55.7010	77.2094	-21.4209	62.4944
55	77.2094	-21.4209	62.4944	73.3407	-25.0695	68.7303
56	73.3407	-25.0695	68.7303	64.7424	-28.8708	74.3636
57	64.7424	-28.8708	74.3636	43.8078	-28.8727	74.3636
58	43.8078	-28.8727	74.3636	27.2845	-32.7887	79.3489
59	27.2845	-32.7887	79.3489	5.3249	-36.7990	83.6425
60	5.3249	-36.7990	83.6425	-21.3560	-36.8000	83.6425

ENVOL. MIN. TORSORES TREN TREN LM 71, EC-1 en via 2

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	17.7749	36.2787	-69.6175	39.0573	32.3719	-61.0490
2	39.0573	32.3719	-61.0490	54.9656	28.5386	-53.1975
3	54.9656	28.5386	-53.1975	75.6564	28.5421	-53.1975
4	75.6564	28.5421	-53.1975	83.6899	24.8062	-46.0304
5	83.6899	24.8062	-46.0304	86.9135	21.1960	-39.5032
6	86.9135	21.1960	-39.5032	85.6908	17.7255	-33.5703
7	85.6908	17.7255	-33.5703	98.5420	17.7221	-33.5703
8	98.5420	17.7221	-33.5703	90.9080	14.4282	-28.1866
9	90.9080	14.4282	-28.1866	79.8868	11.3256	-23.3068
10	79.8868	11.3256	-23.3068	66.0690	8.4445	-18.8855
11	66.0690	8.4445	-18.8855	72.1902	8.4445	-18.8855
12	72.1902	8.4445	-18.8855	54.2864	5.7978	-14.8747
13	54.2864	5.7978	-14.8747	-52.2436	-5.8899	-12.8196
14	-52.2436	-5.8899	-12.8196	-56.5122	-5.8868	-12.8196
15	-56.5122	-5.8868	-12.8196	-60.7774	-5.8850	-12.8196
16	-60.7774	-5.8850	-12.8196	-65.0450	-5.8837	-12.8196
17	-65.0450	-5.8837	-12.8196	-69.3090	-5.8814	-12.8196
18	-69.3090	-5.8814	-12.8196	-73.5740	-5.8814	-12.8196
19	-73.5740	-5.8814	-12.8196	-77.8371	-5.8814	-12.8196
20	-77.8371	-5.8814	-12.8196	-52.1881	18.5487	-43.3788
21	-52.1881	18.5487	-43.3788	-19.0691	39.0459	-69.9818
22	-19.0691	39.0459	-69.9818	4.2983	36.4454	-64.0331
23	4.2983	36.4454	-64.0331	25.5326	33.6935	-58.3027
24	25.5326	33.6935	-58.3027	43.9937	30.8186	-52.7907
25	43.9937	30.8186	-52.7907	59.1698	27.8594	-47.4968
26	59.1698	27.8594	-47.4968	70.6855	24.8493	-42.4212
27	70.6855	24.8493	-42.4212	94.2890	24.8480	-42.4212
28	94.2890	24.8480	-42.4212	99.0313	21.8261	-37.5639
29	99.0313	21.8261	-37.5639	99.7883	18.8286	-32.9248
30	99.7883	18.8286	-32.9248	96.6207	15.8797	-28.5039
31	96.6207	15.8797	-28.5039	89.7160	13.0345	-24.3012
32	89.7160	13.0345	-24.3012	79.4151	10.3101	-20.3167
33	79.4151	10.3101	-20.3167	66.1686	7.7463	-16.5503
34	66.1686	7.7463	-16.5503	50.5489	5.3769	-12.9998
35	50.5489	5.3769	-12.9998	33.3682	3.2443	-10.2190
36	33.3682	3.2443	-10.2190	15.3652	1.3663	-8.0943
37	15.3652	1.3663	-8.0943	-48.4913	-4.1049	-7.2808
38	-48.4913	-4.1049	-7.2808	-52.3912	-4.1049	-7.2808
39	-52.3912	-4.1049	-7.2808	-56.2908	-4.1052	-7.2808
40	-56.2908	-4.1052	-7.2808	-41.0858	18.3746	-37.1273
41	-41.0858	18.3746	-37.1273	-15.8587	37.2235	-59.4178
42	-15.8587	37.2235	-59.4178	11.1287	37.2220	-59.4178
43	11.1287	37.2220	-59.4178	25.3754	34.1353	-51.6451
44	25.3754	34.1353	-51.6451	37.7425	30.8358	-44.3394
45	37.7425	30.8358	-44.3394	60.0990	30.8353	-44.3394
46	60.0990	30.8353	-44.3394	67.3412	27.3397	-37.5460
47	67.3412	27.3397	-37.5460	71.2313	23.6928	-31.3099
48	71.2313	23.6928	-31.3099	71.2234	19.9022	-25.6766
49	71.2234	19.9022	-25.6766	85.6548	19.9069	-25.6765
50	85.6548	19.9069	-25.6765	78.4141	15.9886	-20.6913
51	78.4141	15.9886	-20.6913	66.2868	11.9865	-16.3976
52	66.2868	11.9865	-16.3976	48.9398	7.9096	-12.8270
53	48.9398	7.9096	-12.8270	54.6743	7.9149	-12.8270
54	54.6743	7.9149	-12.8270	40.3437	5.3433	-8.7204
55	40.3437	5.3433	-8.7204	-16.1723	4.9436	-6.8544
56	-16.1723	4.9436	-6.8544	-12.5884	4.9449	-6.8544
57	-12.5884	4.9449	-6.8544	-9.0022	4.9452	-6.8544
58	-9.0022	4.9452	-6.8544	-5.4187	4.9441	-6.8544
59	-5.4187	4.9441	-6.8544	-1.8340	4.9439	-6.8544
60	-1.8340	4.9439	-6.8544	1.7501	4.9434	-6.8544

ENVOL. MAX. FLECTORES TREN TREN SW/0, EC-1 en via 2

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	47.0613	58.0712	-184.3218	96.0108	72.0670	-144.1243
2	96.0108	72.0670	-144.1243	142.5015	59.2219	-115.1743
3	142.5015	59.2219	-115.1743	183.1111	45.9263	-87.9093
4	183.1111	45.9263	-87.9093	216.4065	45.9266	-87.9095
5	216.4065	45.9266	-87.9095	241.3889	32.6234	-60.6446
6	241.3889	32.6234	-60.6446	260.3844	19.3195	-33.3797
7	260.3844	19.3195	-33.3797	273.3939	6.0220	-6.1146
8	273.3939	6.0220	-6.1146	277.7628	6.0086	-6.1147
9	277.7628	6.0086	-6.1147	275.1407	-7.3006	21.1502
10	275.1407	-7.3006	21.1502	266.5321	-20.5997	48.4152
11	266.5321	-20.5997	48.4152	251.5941	-20.6003	48.4151
12	251.5941	-20.6003	48.4151	227.3383	-33.8860	75.6801
13	227.3383	-33.8860	75.6801	197.1129	-47.1892	102.9449
14	197.1129	-47.1892	102.9449	160.8983	-60.5250	130.2098
15	160.8983	-60.5250	130.2098	117.0112	-60.5302	130.2097
16	117.0112	-60.5302	130.2097	65.1667	-73.8161	157.4748
17	65.1667	-73.8161	157.4748	7.3214	-87.1256	184.7398
18	7.3214	-87.1256	184.7398	-1.1567	-0.5913	1.5967
19	-1.1567	-0.5913	1.5967	-1.5854	-0.5913	1.5967
20	-1.5854	-0.5913	1.5967	-1.7963	-0.2419	0.7439
21	-1.7963	-0.2419	0.7439	-1.4765	0.1074	-0.1088
22	-1.4765	0.1074	-0.1088	19.7178	74.9265	-170.4373
23	19.7178	74.9265	-170.4373	84.9019	64.9520	-148.5342
24	84.9019	64.9520	-148.5342	139.9900	54.9379	-126.8716
25	139.9900	54.9379	-126.8716	184.8605	41.6432	-99.6064
26	184.8605	41.6432	-99.6064	217.7700	28.3421	-72.3412
27	217.7700	28.3421	-72.3412	238.6974	15.0338	-45.0764
28	238.6974	15.0338	-45.0764	256.7650	18.3387	-0.8217
29	256.7650	18.3387	-0.8217	274.9889	7.8680	20.7499
30	274.9889	7.8680	20.7499	282.4656	-5.4265	48.0149
31	282.4656	-5.4265	48.0149	278.5159	-2.8393	42.1503
32	278.5159	-2.8393	42.1503	263.8561	-16.1376	69.4153

33	263.8561	-16.1376	69.4153	237.7525	-27.0606	90.0710
34	237.7525	-27.0606	90.0710	201.3999	-40.3736	117.3358
35	201.3999	-40.3736	117.3358	153.0576	-53.6771	144.6008
36	153.0576	-53.6771	144.6008	94.7597	-64.7249	164.5996
37	94.7597	-64.7249	164.5996	24.6217	-78.0322	191.8647
38	24.6217	-78.0322	191.8647	23.2432	9.9044	-8.3308
39	23.2432	9.9044	-8.3308	32.6530	9.9050	-8.3308
40	32.6530	9.9050	-8.3308	40.3879	3.5725	-1.7706
41	40.3879	3.5725	-1.7706	36.7117	-2.7599	4.7895
42	36.7117	-2.7599	4.7895	34.7110	-2.7596	4.7895
43	34.7110	-2.7596	4.7895	32.7101	-2.7592	4.7895
44	32.7101	-2.7592	4.7895	30.7094	-2.7583	4.7896
45	30.7094	-2.7583	4.7896	56.0321	51.4300	-50.3990
46	56.0321	51.4300	-50.3990	94.3730	54.6828	-55.0608
47	94.3730	54.6828	-55.0608	126.3750	41.4011	-27.7957
48	126.3750	41.4011	-27.7957	152.5639	30.4753	-4.7120
49	152.5639	30.4753	-4.7120	174.3257	17.1805	22.5532
50	174.3257	17.1805	22.5532	186.7888	17.1791	22.5534
51	186.7888	17.1791	22.5534	192.9296	3.8802	49.8184
52	192.9296	3.8802	49.8184	193.0857	-9.4030	77.0836
53	193.0857	-9.4030	77.0836	186.2778	-9.3837	77.0838
54	186.2778	-9.3837	77.0838	171.7744	-21.2125	100.4001
55	171.7744	-21.2125	100.4001	151.4138	-34.5124	127.6651
56	151.4138	-34.5124	127.6651	125.0565	-47.8156	154.9301
57	125.0565	-47.8156	154.9301	90.3984	-47.8096	154.9303
58	90.3984	-47.8096	154.9303	48.4245	-61.1094	182.1953
59	48.4245	-61.1094	182.1953	0.7701	-2.7498	4.7896
60	0.7701	-2.7498	4.7896	4.4575	13.3349	-17.4567

ENVOL. MIN. FLECTORES TREN TREN SW/0, EC-1 en via 2

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	6.5537	-0.5909	1.5967	-1.8249	-15.1430	-35.8545
2	-1.8249	-15.1430	-35.8545	-12.8045	-15.1431	-35.8545
3	-12.8045	-15.1431	-35.8545	-23.7843	-15.1423	-35.8545
4	-23.7843	-15.1423	-35.8545	-34.7634	-15.1418	-35.8545
5	-34.7634	-15.1418	-35.8545	-45.7424	-15.1401	-35.8545
6	-45.7424	-15.1401	-35.8545	-56.7230	-15.1379	-35.8545
7	-56.7230	-15.1379	-35.8545	-67.7003	-15.1357	-35.8545
8	-67.7003	-15.1357	-35.8545	-78.6783	-15.1375	-35.8545
9	-78.6783	-15.1375	-35.8545	-89.6544	-15.1453	-35.8545
10	-89.6544	-15.1453	-35.8545	-100.6356	-15.1418	-35.8545
11	-100.6356	-15.1418	-35.8545	-111.6063	-15.1327	-35.8546
12	-111.6063	-15.1327	-35.8546	-122.5714	-15.1351	-35.8546
13	-122.5714	-15.1351	-35.8546	-133.5453	-15.1374	-35.8546
14	-133.5453	-15.1374	-35.8546	-144.5154	-15.1326	-35.8547
15	-144.5154	-15.1326	-35.8547	-160.3203	-59.7895	49.7038
16	-160.3203	-59.7895	49.7038	-203.6682	-59.7887	49.7038
17	-203.6682	-59.7887	49.7038	-254.2104	-69.9026	70.1921
18	-254.2104	-69.9026	70.1921	-309.0926	-80.2140	92.3305
19	-309.0926	-80.2140	92.3305	-369.2991	-90.7508	116.6488
20	-369.2991	-90.7508	116.6488	-396.8947	7.5794	-32.9651
21	-396.8947	7.5794	-32.9651	-267.7444	83.7867	-143.7440
22	-267.7444	83.7867	-143.7440	-189.6462	72.7547	-126.4457
23	-189.6462	72.7547	-126.4457	-120.6476	61.5819	-109.9410
24	-120.6476	61.5819	-109.9410	-108.5058	9.9073	-8.3308
25	-108.5058	9.9073	-8.3308	-99.0938	9.9083	-8.3308
26	-99.0938	9.9083	-8.3308	-89.6781	9.9109	-8.3308
27	-89.6781	9.9109	-8.3308	-80.2623	9.9100	-8.3308
28	-80.2623	9.9100	-8.3308	-70.8490	9.9079	-8.3308
29	-70.8490	9.9079	-8.3308	-61.4368	9.9050	-8.3308
30	-61.4368	9.9050	-8.3308	-52.0271	9.9028	-8.3308
31	-52.0271	9.9028	-8.3308	-42.6339	9.8636	-7.6092
32	-42.6339	9.8636	-7.6092	-33.2656	9.8614	-7.6092
33	-33.2656	9.8614	-7.6092	-23.8972	9.8627	-7.6092
34	-23.8972	9.8627	-7.6092	-15.2202	-47.8576	80.5550
35	-15.2202	-47.8576	80.5550	-60.6824	-47.8568	80.5549
36	-60.6824	-47.8568	80.5549	-114.1943	-58.0633	102.2128
37	-114.1943	-58.0633	102.2128	-175.0459	-68.0414	124.1157
38	-175.0459	-68.0414	124.1157	-246.4416	-78.0502	145.7784
39	-246.4416	-78.0502	145.7784	-320.5914	-78.0522	145.7784
40	-320.5914	-78.0522	145.7784	-353.2794	17.8411	-16.6151
41	-353.2794	17.8411	-16.6151	-232.3541	100.4342	-151.7436
42	-232.3541	100.4342	-151.7436	-174.0620	13.7062	-17.3270
43	-174.0620	13.7062	-17.3270	-164.1244	13.7104	-17.3270
44	-164.1244	13.7104	-17.3270	-154.1859	13.7109	-17.3271
45	-154.1859	13.7109	-17.3271	-144.2500	13.7010	-17.3270
46	-144.2500	13.7010	-17.3270	-134.3181	13.7002	-17.3270
47	-134.3181	13.7002	-17.3270	-124.3821	13.6927	-17.3271
48	-124.3821	13.6927	-17.3271	-114.4638	13.6835	-17.3271
49	-114.4638	13.6835	-17.3271	-104.5404	13.6751	-17.3271
50	-104.5404	13.6751	-17.3271	-94.6247	13.6627	-17.3271
51	-94.6247	13.6627	-17.3271	-84.7101	13.6613	-17.3271
52	-84.7101	13.6613	-17.3271	-74.8004	13.6690	-17.3271
53	-74.8004	13.6690	-17.3271	-64.8869	13.6697	-17.3271
54	-64.8869	13.6697	-17.3271	-54.9826	13.6582	-17.3271
55	-54.9826	13.6582	-17.3271	-45.0828	13.6561	-17.3271
56	-45.0828	13.6561	-17.3271	-35.1796	13.6579	-17.3271
57	-35.1796	13.6579	-17.3271	-25.2770	13.6570	-17.3271
58	-25.2770	13.6570	-17.3271	-15.4472	13.5468	-16.4267
59	-15.4472	13.5468	-16.4267	-7.6898	-10.3562	59.5259
60	-7.6898	-10.3562	59.5259	-59.4301	-73.8126	205.5016

ENVOL. MAX. CORTANTES TREN TREN SW/0, EC-1 en via 2

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	43.3293	72.5201	-142.4394	95.9088	72.5189	-142.4394
2	95.9088	72.5189	-142.4394	142.5015	59.2219	-115.1743
3	142.5015	59.2219	-115.1743	130.9366	47.1508	-111.2372
4	130.9366	47.1508	-111.2372	165.1173	47.1460	-111.2373
5	165.1173	47.1460	-111.2373	155.8294	36.1549	-97.0362
6	155.8294	36.1549	-97.0362	135.4172	26.1254	-85.2072
7	135.4172	26.1254	-85.2072	112.8703	18.1103	-81.9423
8	112.8703	18.1103	-81.9423	118.4694	17.1044	-75.4518
9	118.4694	17.1044	-75.4518	93.6754	11.6186	-69.9820
10	93.6754	11.6186	-69.9820	57.9468	5.8677	-60.1828
11	57.9468	5.8677	-60.1828	20.2708	0.8647	-52.3387
12	20.2708	0.8647	-52.3387	1.4146	-0.5909	1.5967
13	1.4146	-0.5909	1.5967	0.9862	-0.5910	1.5967
14	0.9862	-0.5910	1.5967	0.5576	-0.5911	1.5967
15	0.5576	-0.5911	1.5967	0.1291	-0.5910	1.5967
16	0.1291	-0.5910	1.5967	-0.2994	-0.5911	1.5967
17	-0.2994	-0.5911	1.5967	-0.7280	-0.5912	1.5967
18	-0.7280	-0.5912	1.5967	-1.1567	-0.5913	1.5967
19	-1.1567	-0.5913	1.5967	-1.5854	-0.5913	1.5967

20	-1.5854	-0.5913	1.5967	-184.7534	46.5113	-135.8932
21	-184.7534	46.5113	-135.8932	-238.9406	116.8394	-203.2347
22	-238.9406	116.8394	-203.2347	-157.4687	105.9062	-182.5791
23	-157.4687	105.9062	-182.5791	-87.3445	94.8559	-162.5804
24	-87.3445	94.8559	-162.5804	-28.9576	83.7858	-143.7437
25	-28.9576	83.7858	-143.7437	17.6942	72.7512	-126.4456
26	17.6942	72.7512	-126.4456	54.8586	61.5837	-109.9409
27	54.8586	61.5837	-109.9409	81.7086	50.3812	-93.1230
28	81.7086	50.3812	-93.1230	98.3746	39.1854	-75.9030
29	98.3746	39.1854	-75.9030	105.0564	27.9903	-58.2131
30	105.0564	27.9903	-58.2131	101.9657	16.8405	-40.0039
31	101.9657	16.8405	-40.0039	117.9675	16.8432	-40.0039
32	117.9675	16.8432	-40.0039	-33.2094	9.9015	-8.3308
33	-33.2094	9.9015	-8.3308	-23.8008	9.9014	-8.3308
34	-23.8008	9.9014	-8.3308	-14.3939	9.9032	-8.3308
35	-14.3939	9.9032	-8.3308	-4.9846	9.9042	-8.3308
36	-4.9846	9.9042	-8.3308	4.4236	9.9050	-8.3308
37	4.4236	9.9050	-8.3308	13.8342	9.9053	-8.3308
38	13.8342	9.9053	-8.3308	23.2432	9.9044	-8.3308
39	23.2432	9.9044	-8.3308	32.6530	9.9050	-8.3308
40	32.6530	9.9050	-8.3308	-353.2794	17.8411	-16.6151
41	-353.2794	17.8411	-16.6151	-232.3541	100.4342	-151.7436
42	-232.3541	100.4342	-151.7436	-159.5385	100.4286	-151.7436
43	-159.5385	100.4286	-151.7436	-95.7062	87.1277	-124.4785
44	-95.7062	87.1277	-124.4785	-37.8545	73.8365	-97.2134
45	-37.8545	73.8365	-97.2134	14.0156	60.5396	-69.9485
46	14.0156	60.5396	-69.9485	57.9036	60.5400	-69.9483
47	57.9036	60.5400	-69.9483	94.1474	47.2488	-42.6831
48	94.1474	47.2488	-42.6831	124.4215	33.9542	-15.4180
49	124.4215	33.9542	-15.4180	148.7075	20.6524	11.8471
50	148.7075	20.6524	11.8471	163.6869	20.6591	11.8472
51	163.6869	20.6591	11.8472	-84.7101	13.6613	-17.3271
52	-84.7101	13.6613	-17.3271	-74.8004	13.6690	-17.3271
53	-74.8004	13.6690	-17.3271	-64.8869	13.6697	-17.3271
54	-64.8869	13.6697	-17.3271	-54.9826	13.6582	-17.3271
55	-54.9826	13.6582	-17.3271	-45.0828	13.6561	-17.3271
56	-45.0828	13.6561	-17.3271	-35.1796	13.6579	-17.3271
57	-35.1796	13.6579	-17.3271	-25.2770	13.6570	-17.3271
58	-25.2770	13.6570	-17.3271	-15.3771	13.6560	-17.3270
59	-15.3771	13.6560	-17.3270	-5.4764	13.6563	-17.3270
60	-5.4764	13.6563	-17.3270	4.4243	13.6557	-17.3270

ENVOL. MIN. CORTANTES TREN TREN SW/0, EC-1 en via 2

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	9.1542	-15.1426	-35.8546	-1.8249	-15.1430	-35.8545
2	-1.8249	-15.1430	-35.8545	-12.8045	-15.1431	-35.8545
3	-12.8045	-15.1431	-35.8545	-23.7843	-15.1423	-35.8545
4	-23.7843	-15.1423	-35.8545	-34.7634	-15.1418	-35.8545
5	-34.7634	-15.1418	-35.8545	-45.7424	-15.1401	-35.8545
6	-45.7424	-15.1401	-35.8545	60.4206	-20.7094	-22.0214
7	60.4206	-20.7094	-22.0214	61.9101	-30.3265	-5.7351
8	61.9101	-30.3265	-5.7351	61.9671	-40.0317	11.6785
9	61.9671	-40.0317	11.6785	32.9444	-40.0313	11.6784
10	32.9444	-40.0313	11.6784	24.1415	-49.8425	30.1763
11	24.1415	-49.8425	30.1763	13.0712	-59.7911	49.7041
12	13.0712	-59.7911	49.7041	-0.8090	-63.2537	56.5598
13	-0.8090	-63.2537	56.5598	-51.4895	-69.9034	70.1922
14	-51.4895	-69.9034	70.1922	-76.4720	-80.2125	92.3306
15	-76.4720	-80.2125	92.3306	-106.1207	-90.7509	116.6489
16	-106.1207	-90.7509	116.6489	-171.9146	-90.7520	116.6489
17	-171.9146	-90.7520	116.6489	-214.8221	-101.5448	142.8574
18	-214.8221	-101.5448	142.8574	-264.2933	-112.6327	170.6360
19	-264.2933	-112.6327	170.6360	-321.2235	-124.0322	199.6937
20	-321.2235	-124.0322	199.6937	-177.2700	-51.9313	115.8303
21	-177.2700	-51.9313	115.8303	-1.4765	0.1074	-0.1088
22	-1.4765	0.1074	-0.1088	-1.3745	0.1075	-0.1088
23	-1.3745	0.1075	-0.1088	-1.2724	0.1075	-0.1088
24	-1.2724	0.1075	-0.1088	-1.1703	0.1074	-0.1088
25	-1.1703	0.1074	-0.1088	-1.0682	0.1075	-0.1088
26	-1.0682	0.1075	-0.1088	33.6768	-3.9415	32.6976
27	33.6768	-3.9415	32.6976	73.5891	-9.2097	45.6580
28	73.5891	-9.2097	45.6580	113.2426	-16.1175	17.9477
29	113.2426	-16.1175	17.9477	124.8448	-26.8617	38.3512
30	124.8448	-26.8617	38.3512	127.4017	-37.4530	59.2410
31	127.4017	-37.4530	59.2410	121.1707	-47.8554	80.5551
32	121.1707	-47.8554	80.5551	106.4368	-58.0608	102.2130
33	106.4368	-58.0608	102.2130	83.5018	-68.0365	124.1158
34	83.5018	-68.0365	124.1158	50.1480	-78.0394	145.7784
35	50.1480	-78.0394	145.7784	-23.9975	-78.0432	145.7784
36	-23.9975	-78.0432	145.7784	-98.1436	-78.0486	145.7784
37	-98.1436	-78.0486	145.7784	-4.8659	-85.2200	211.6048
38	-4.8659	-85.2200	211.6048	-75.5516	-95.9464	233.0053
39	-75.5516	-95.9464	233.0053	-159.9832	-106.8790	253.6609
40	-159.9832	-106.8790	253.6609	-220.8111	-52.4778	129.5260
41	-220.8111	-52.4778	129.5260	36.7117	-2.7599	4.7895
42	36.7117	-2.7599	4.7895	34.7110	-2.7596	4.7895
43	34.7110	-2.7596	4.7895	32.7101	-2.7592	4.7895
44	32.7101	-2.7592	4.7895	30.7094	-2.7583	4.7896
45	30.7094	-2.7583	4.7896	28.7096	-2.7582	4.7896
46	28.7096	-2.7582	4.7896	26.7085	-2.7580	4.7896
47	26.7085	-2.7580	4.7896	24.7094	-2.7566	4.7896
48	24.7094	-2.7566	4.7896	30.1418	-4.7238	42.7482
49	30.1418	-4.7238	42.7482	67.4258	-10.3689	59.5256
50	67.4258	-10.3689	59.5256	59.9081	-10.3650	59.5257
51	59.9081	-10.3650	59.5257	90.0712	-16.8679	77.8927
52	90.0712	-16.8679	77.8927	115.5119	-24.2353	97.6468
53	115.5119	-24.2353	97.6468	97.9509	-24.2317	97.6469
54	97.9509	-24.2317	97.6469	110.9268	-32.4680	118.5757
55	110.9268	-32.4680	118.5757	114.9449	-41.6024	140.4571
56	114.9449	-41.6024	140.4571	108.1217	-51.6486	163.0600
57	108.1217	-51.6486	163.0600	70.6839	-51.6358	163.0601
58	70.6839	-51.6358	163.0601	43.2114	-62.5749	186.1439
59	43.2114	-62.5749	186.1439	0.4638	-74.4059	209.4603
60	0.4638	-74.4059	209.4603	-53.4793	-74.4023	209.4603

ENVOL. MAX. TORSORES TREN TREN SW/0, EC-1 en via 2

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	6.5537	-0.5909	1.5967	6.1253	-0.5908	1.5967
2	6.1253	-0.5908	1.5967	22.3692	-2.2785	6.0687
3	22.3692	-2.2785	6.0687	46.4066	-5.0610	13.2022
4	46.4066	-5.0610	13.2022	42.7372	-5.0619	13.2021
5	42.7372	-5.0619	13.2021	69.4687	-8.9262	22.7801

6	69.4687	-8.9262	22.7801	98.6768	-13.8594	34.5963
7	98.6768	-13.8594	34.5963	128.2025	-19.8401	48.4566
8	128.2025	-19.8401	48.4566	113.8186	-19.8412	48.4566
9	113.8186	-19.8412	48.4566	136.5358	-26.8430	64.1792
10	136.5358	-26.8430	64.1792	154.8762	-34.8232	81.5948
11	154.8762	-34.8232	81.5948	129.6266	-34.8246	81.5948
12	129.6266	-34.8246	81.5948	135.3557	-43.7377	100.5462
13	135.3557	-43.7377	100.5462	132.7379	-53.5418	120.8887
14	132.7379	-53.5418	120.8887	120.4334	-64.1907	142.4899
15	120.4334	-64.1907	142.4899	73.9003	-64.1867	142.4899
16	73.9003	-64.1867	142.4899	42.5300	-75.6026	165.2298
17	42.5300	-75.6026	165.2298	-0.9957	-87.7148	189.0008
18	-0.9957	-87.7148	189.0008	-57.1991	-100.4443	213.7074
19	-57.1991	-100.4443	213.7074	-130.0239	-100.4482	213.7074
20	-130.0239	-100.4482	213.7074	-177.2700	-51.9313	115.8303
21	-177.2700	-51.9313	115.8303	-1.4765	0.1074	-0.1088
22	-1.4765	0.1074	-0.1088	-1.3745	0.1075	-0.1088
23	-1.3745	0.1075	-0.1088	-79.0921	6.5221	4.1026
24	-79.0921	6.5221	4.1026	-44.6805	3.9004	11.8388
25	-44.6805	3.9004	11.8388	-6.4524	0.4248	21.3960
26	-6.4524	0.4248	21.3960	33.6768	-3.9415	32.6976
27	33.6768	-3.9415	32.6976	73.5891	-9.2097	45.6580
28	73.5891	-9.2097	45.6580	109.4162	-15.1537	59.9553
29	109.4162	-15.1537	59.9553	139.8727	-21.8054	75.5409
30	139.8727	-21.8054	75.5409	163.2313	-29.1479	92.3061
31	163.2313	-29.1479	92.3061	135.5363	-29.1449	92.3061
32	135.5363	-29.1449	92.3061	142.5797	-37.1554	110.1425
33	142.5797	-37.1554	110.1425	138.8343	-45.7703	128.9418
34	138.8343	-45.7703	128.9418	123.0566	-54.9529	148.5956
35	123.0566	-54.9529	148.5956	94.2630	-64.6377	168.9956
36	94.2630	-64.6377	168.9956	51.7441	-74.7541	190.0334
37	51.7441	-74.7541	190.0334	-4.8659	-85.2200	211.6048
38	-4.8659	-85.2200	211.6048	-75.5516	-95.9464	233.0053
39	-75.5516	-95.9464	233.0053	-159.9832	-106.8790	253.6609
40	-159.9832	-106.8790	253.6609	-220.8111	-52.4778	129.5260
41	-220.8111	-52.4778	129.5260	36.5405	-2.7474	4.7910
42	36.5405	-2.7474	4.7910	34.5488	-2.7477	4.7910
43	34.5488	-2.7477	4.7910	32.5565	-2.7471	4.7910
44	32.5565	-2.7471	4.7910	30.5652	-2.7466	4.7910
45	30.5652	-2.7466	4.7910	-48.4291	4.1189	14.7278
46	-48.4291	4.1189	14.7278	-45.4427	4.1161	14.7278
47	-45.4427	4.1161	14.7278	-7.9716	0.0958	27.7543
48	-7.9716	0.0958	27.7543	30.1418	-4.7238	42.7482
49	30.1418	-4.7238	42.7482	67.4258	-10.3689	59.5256
50	67.4258	-10.3689	59.5256	59.9081	-10.3650	59.5257
51	59.9081	-10.3650	59.5257	90.0712	-16.8679	77.8927
52	90.0712	-16.8679	77.8927	115.5119	-24.2353	97.6468
53	115.5119	-24.2353	97.6468	97.9509	-24.2317	97.6469
54	97.9509	-24.2317	97.6469	110.9268	-32.4680	118.5757
55	110.9268	-32.4680	118.5757	114.9449	-41.6024	140.4571
56	114.9449	-41.6024	140.4571	108.1217	-51.6486	163.0600
57	108.1217	-51.6486	163.0600	70.6839	-51.6358	163.0601
58	70.6839	-51.6358	163.0601	43.2114	-62.5749	186.1439
59	43.2114	-62.5749	186.1439	0.4638	-74.4059	209.4603
60	0.4638	-74.4059	209.4603	-53.4793	-74.4023	209.4603

ENVOL. MIN. TORSORES TREN TREN SW/0, EC-1 en via 2

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	47.0613	58.0712	-184.3218	88.8315	44.7691	-157.0567
2	88.8315	44.7691	-157.0567	121.2908	44.7690	-157.0565
3	121.2908	44.7690	-157.0565	125.8278	42.2445	-132.9927
4	125.8278	42.2445	-132.9927	125.8364	33.4265	-113.2180
5	125.8364	33.4265	-113.2180	150.0663	33.4334	-113.2180
6	150.0663	33.4334	-113.2180	135.0067	25.3873	-96.2793
7	135.0067	25.3873	-96.2793	112.8703	18.1103	-81.9423
8	112.8703	18.1103	-81.9423	118.4694	17.1044	-75.4518
9	118.4694	17.1044	-75.4518	93.6754	11.6186	-69.9820
10	93.6754	11.6186	-69.9820	57.9468	5.8677	-60.1828
11	57.9468	5.8677	-60.1828	20.2708	0.8647	-52.3387
12	20.2708	0.8647	-52.3387	-17.9799	-3.4223	-46.2533
13	-17.9799	-3.4223	-46.2533	-20.4618	-3.4230	-46.2534
14	-20.4618	-3.4230	-46.2534	-60.6357	-7.0196	-41.7395
15	-60.6357	-7.0196	-41.7395	-98.5038	-9.9552	-38.6190
16	-98.5038	-9.9552	-38.6190	-105.7222	-9.9555	-38.6190
17	-105.7222	-9.9555	-38.6190	-141.9921	-12.2689	-36.7241
18	-141.9921	-12.2689	-36.7241	-173.7484	-14.0020	-35.8957
19	-173.7484	-14.0020	-35.8957	-199.3337	-15.1170	-35.8546
20	-199.3337	-15.1170	-35.8546	-184.7534	46.5113	-135.8932
21	-184.7534	46.5113	-135.8932	-66.4549	94.8389	-208.6667
22	-66.4549	94.8389	-208.6667	-157.4687	105.9062	-182.5791
23	-157.4687	105.9062	-182.5791	-87.3445	94.8559	-162.5804
24	-87.3445	94.8559	-162.5804	-28.9576	83.7858	-143.7437
25	-28.9576	83.7858	-143.7437	17.6942	72.7512	-126.4456
26	17.6942	72.7512	-126.4456	54.8586	61.5837	-109.9409
27	54.8586	61.5837	-109.9409	81.7086	50.3812	-93.1230
28	81.7086	50.3812	-93.1230	98.3746	39.1854	-75.9030
29	98.3746	39.1854	-75.9030	105.0564	27.9903	-58.2131
30	105.0564	27.9903	-58.2131	101.9657	16.8405	-40.0039
31	101.9657	16.8405	-40.0039	117.9675	16.8432	-40.0039
32	117.9675	16.8432	-40.0039	94.8335	5.7646	-21.2458
33	94.8335	5.7646	-21.2458	-22.9056	9.5877	-8.5276
34	-22.9056	9.5877	-8.5276	-13.7990	9.5863	-8.5276
35	-13.7990	9.5863	-8.5276	-4.6930	9.5858	-8.5276
36	-4.6930	9.5858	-8.5276	4.4149	9.5864	-8.5276
37	4.4149	9.5864	-8.5276	13.5229	9.5863	-8.5276
38	13.5229	9.5863	-8.5276	22.6313	9.5867	-8.5276
39	22.6313	9.5867	-8.5276	31.7393	9.5875	-8.5276
40	31.7393	9.5875	-8.5276	-353.2794	17.8411	-16.6151
41	-353.2794	17.8411	-16.6151	-232.3541	100.4342	-151.7436
42	-232.3541	100.4342	-151.7436	-159.5385	100.4286	-151.7436
43	-159.5385	100.4286	-151.7436	-95.7062	87.1277	-124.4785
44	-95.7062	87.1277	-124.4785	-37.8545	73.8365	-97.2134
45	-37.8545	73.8365	-97.2134	14.0156	60.5396	-69.9485
46	14.0156	60.5396	-69.9485	57.9036	60.5400	-69.9483
47	57.9036	60.5400	-69.9483	94.1474	47.2488	-42.6831
48	94.1474	47.2488	-42.6831	-111.6321	13.3694	-17.4568
49	-111.6321	13.3694	-17.4568	-101.9477	13.3649	-17.4568
50	-101.9477	13.3649	-17.4568	-92.2617	13.3592	-17.4568
51	-92.2617	13.3592	-17.4568	-82.5805	13.3502	-17.4568
52	-82.5805	13.3502	-17.4568	-72.9016	13.3456	-17.4568
53	-72.9016	13.3456	-17.4568	-63.2235	13.3395	-17.4568
54	-63.2235	13.3395	-17.4568	-53.5544	13.3324	-17.4568
55	-53.5544	13.3324	-17.4568	-43.8869	13.3348	-17.4568
56	-43.8869	13.3348	-17.4568	-34.2141	13.3369	-17.4568
57	-34.2141	13.3369	-17.4568	-24.5456	13.3342	-17.4567

58	-24.5456	13.3342	-17.4567	-14.8785	13.3346	-17.4567
59	-14.8785	13.3346	-17.4567	-5.2106	13.3350	-17.4567
60	-5.2106	13.3350	-17.4567	4.4575	13.3349	-17.4567

ENVOL. MAX. FLECTORES TREN TREN SW/2, EC-1 en via 2

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	58.6871	64.7793	-199.1049	108.2821	81.2803	-162.5462
2	108.2821	81.2803	-162.5462	160.7166	66.7891	-129.8959
3	160.7166	66.7891	-129.8959	206.5186	51.7910	-99.1459
4	206.5186	51.7910	-99.1459	244.0679	51.7845	-99.1461
5	244.0679	51.7845	-99.1461	272.2422	36.7789	-68.3961
6	272.2422	36.7789	-68.3961	293.6657	21.7917	-37.6461
7	293.6657	21.7917	-37.6461	308.3441	6.7829	-6.8962
8	308.3441	6.7829	-6.8962	313.2617	6.7643	-6.8963
9	313.2617	6.7643	-6.8963	310.3060	-8.2199	23.8536
10	310.3060	-8.2199	23.8536	300.6039	-23.2272	54.6036
11	300.6039	-23.2272	54.6036	283.7565	-23.2460	54.6035
12	283.7565	-23.2460	54.6035	256.3979	-38.2423	85.3533
13	256.3979	-38.2423	85.3533	222.3055	-53.2468	116.1033
14	222.3055	-53.2468	116.1033	181.4594	-68.2546	146.8531
15	181.4594	-68.2546	146.8531	131.9742	-68.2481	146.8531
16	131.9742	-68.2481	146.8531	73.4960	-83.2464	177.6031
17	73.4960	-83.2464	177.6031	8.2582	-98.2615	208.3532
18	8.2582	-98.2615	208.3532	-1.3046	-0.6669	1.8008
19	-1.3046	-0.6669	1.8008	-1.7880	-0.6668	1.8008
20	-1.7880	-0.6668	1.8008	-2.0259	-0.2728	0.8390
21	-2.0259	-0.2728	0.8390	-1.6653	0.1212	-0.1227
22	-1.6653	0.1212	-0.1227	-1.5501	0.1212	-0.1227
23	-1.5501	0.1212	-0.1227	28.4235	93.1802	-170.2751
24	28.4235	93.1802	-170.2751	112.4446	78.1855	-139.5250
25	112.4446	78.1855	-139.5250	182.9691	63.1849	-108.7748
26	182.9691	63.1849	-108.7748	241.0948	49.4431	-75.5033
27	241.0948	49.4431	-75.5033	285.8140	34.4366	-44.7533
28	285.8140	34.4366	-44.7533	317.6456	20.8369	-12.0985
29	317.6456	20.8369	-12.0985	336.7041	5.8582	18.6515
30	336.7041	5.8582	18.6515	342.7617	-7.7348	50.6501
31	342.7617	-7.7348	50.6501	335.4092	-7.7236	50.6501
32	335.4092	-7.7236	50.6501	314.5850	-22.7123	81.4000
33	314.5850	-22.7123	81.4000	281.3865	-36.4394	112.6964
34	281.3865	-36.4394	112.6964	234.7542	-51.4347	143.4464
35	234.7542	-51.4347	143.4464	174.6391	-66.4393	174.1964
36	174.6391	-66.4393	174.1964	101.0063	-81.4549	204.9464
37	101.0063	-81.4549	204.9464	15.6028	11.1707	-9.3956
38	15.6028	11.1707	-9.3956	26.2142	11.1695	-9.3956
39	26.2142	11.1695	-9.3956	36.8265	11.1705	-9.3956
40	36.8265	11.1705	-9.3956	45.5501	4.0290	-1.9970
41	45.5501	4.0290	-1.9970	41.4041	-3.1127	5.4017
42	41.4041	-3.1127	5.4017	39.1479	-3.1128	5.4018
43	39.1479	-3.1128	5.4018	36.8911	-3.1128	5.4018
44	36.8911	-3.1128	5.4018	34.6348	-3.1120	5.4018
45	34.6348	-3.1120	5.4018	74.2181	62.5978	-66.7048
46	74.2181	62.5978	-66.7048	119.6037	62.6079	-66.7047
47	119.6037	62.6079	-66.7047	156.3727	47.6210	-35.9545
48	156.3727	47.6210	-35.9545	186.4018	32.6477	-5.2045
49	186.4018	32.6477	-5.2045	209.7018	17.6481	25.5456
50	209.7018	17.6481	25.5456	222.4765	17.6556	25.5456
51	222.4765	17.6556	25.5456	228.1602	2.6675	56.2958
52	228.1602	2.6675	56.2958	227.0835	-12.3371	87.0461
53	227.0835	-12.3371	87.0461	218.1436	-12.3337	87.0462
54	218.1436	-12.3337	87.0462	199.4597	-27.3282	117.7964
55	199.4597	-27.3282	117.7964	174.0342	-42.3111	148.5465
56	174.0342	-42.3111	148.5465	141.8627	-57.3103	179.2964
57	141.8627	-57.3103	179.2964	102.2204	-54.4037	177.8444
58	102.2204	-54.4037	177.8444	54.5284	-69.4034	208.5945
59	54.5284	-69.4034	208.5945	0.8687	-3.1007	5.4018
60	0.8687	-3.1007	5.4018	5.2615	16.6173	-20.6064

ENVOL. MIN. FLECTORES TREN TREN SW/2, EC-1 en via 2

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	7.3914	-0.6665	1.8008	6.9083	-0.6664	1.8008
2	6.9083	-0.6664	1.8008	6.4253	-0.6660	1.8008
3	6.4253	-0.6660	1.8008	5.9426	-0.6661	1.8008
4	5.9426	-0.6661	1.8008	5.4595	-0.6662	1.8008
5	5.4595	-0.6662	1.8008	-2.7401	-14.2838	-71.8235
6	-2.7401	-14.2838	-71.8235	-13.0974	-14.2855	-71.8236
7	-13.0974	-14.2855	-71.8236	-24.7109	-21.1744	-55.6791
8	-24.7109	-21.1744	-55.6791	-40.0607	-21.1758	-55.6792
9	-40.0607	-21.1758	-55.6792	-55.4177	-21.1769	-55.6792
10	-55.4177	-21.1769	-55.6792	-73.8959	-28.2716	-38.0658
11	-73.8959	-28.2716	-38.0658	-94.3907	-28.2716	-38.0658
12	-94.3907	-28.2716	-38.0658	-116.0960	-35.6590	-19.1190
13	-116.0960	-35.6590	-19.1190	-141.9453	-35.6626	-19.1192
14	-141.9453	-35.6626	-19.1192	-168.6097	-43.3865	1.0287
15	-168.6097	-43.3865	1.0287	-200.0638	-43.3827	1.0287
16	-200.0638	-43.3827	1.0287	-233.7485	-51.5480	22.2485
17	-233.7485	-51.5480	22.2485	-271.1210	-51.5472	22.2485
18	-271.1210	-51.5472	22.2485	-316.6459	-124.7509	165.4834
19	-316.6459	-124.7509	165.4834	-407.0905	-124.7504	165.4834
20	-407.0905	-124.7504	165.4834	-448.7980	-0.8521	-17.2479
21	-448.7980	-0.8521	-17.2479	-263.3462	126.5750	-212.5150
22	-263.3462	126.5750	-212.5150	-184.3669	59.5017	-144.3685
23	-184.3669	59.5017	-144.3685	-132.9935	11.1753	-9.3956
24	-132.9935	11.1753	-9.3956	-122.3752	11.1742	-9.3956
25	-122.3752	11.1742	-9.3956	-111.7607	11.1765	-9.3956
26	-111.7607	11.1765	-9.3956	-101.1400	11.1779	-9.3956
27	-101.1400	11.1779	-9.3956	-90.5215	11.1733	-9.3956
28	-90.5215	11.1733	-9.3956	-79.9062	11.1712	-9.3956
29	-79.9062	11.1712	-9.3956	-69.2917	11.1749	-9.3956
30	-69.2917	11.1749	-9.3956	-58.6740	11.1735	-9.3956
31	-58.6740	11.1735	-9.3956	-48.0834	11.1257	-8.5818
32	-48.0834	11.1257	-8.5818	-37.5168	11.1231	-8.5818
33	-37.5168	11.1231	-8.5818	-26.9508	11.1214	-8.5818
34	-26.9508	11.1214	-8.5818	-16.3836	11.1213	-8.5818
35	-16.3836	11.1213	-8.5818	-5.8991	10.5965	-6.3702
36	-5.8991	10.5965	-6.3702	-29.7913	-59.6461	93.6577
37	-29.7913	-59.6461	93.6577	-109.9361	-94.5148	175.4517
38	-109.9361	-94.5148	175.4517	-210.0034	-112.7830	217.5469
39	-210.0034	-112.7830	217.5469	-325.4160	-130.2957	258.4684
40	-325.4160	-130.2957	258.4684	-396.5674	-13.0298	53.7113
41	-396.5674	-13.0298	53.7113	-253.6275	99.2834	-145.2254
42	-253.6275	99.2834	-145.2254	-215.1576	16.9166	-20.0210

43	-215.1576	16.9166	-20.0210	-202.8918	16.9114	-20.0210
44	-202.8918	16.9114	-20.0210	-190.6310	16.9074	-20.0211
45	-190.6310	16.9074	-20.0211	-178.3734	16.9175	-20.0211
46	-178.3734	16.9175	-20.0211	-166.1042	16.9105	-20.0211
47	-166.1042	16.9105	-20.0211	-153.8511	16.8934	-20.0211
48	-153.8511	16.8934	-20.0211	-141.6074	16.8830	-20.0211
49	-141.6074	16.8830	-20.0211	-129.3644	16.8741	-20.0211
50	-129.3644	16.8741	-20.0211	-117.1235	16.8740	-20.0211
51	-117.1235	16.8740	-20.0211	-104.8881	16.8639	-20.0211
52	-104.8881	16.8639	-20.0211	-92.6581	16.8595	-20.0211
53	-92.6581	16.8595	-20.0211	-80.4277	16.8672	-20.0211
54	-80.4277	16.8672	-20.0211	-68.2025	16.8636	-20.0211
55	-68.2025	16.8636	-20.0211	-55.9848	16.8546	-20.0211
56	-55.9848	16.8546	-20.0211	-43.7621	16.8498	-20.0211
57	-43.7621	16.8498	-20.0211	-31.5438	16.8474	-20.0211
58	-31.5438	16.8474	-20.0211	-19.4353	16.4668	-17.4006
59	-19.4353	16.4668	-17.4006	-11.1634	-4.5577	56.6650
60	-11.1634	-4.5577	56.6650	-69.3297	-87.2980	240.7960

ENVOL. MAX. CORTANTES TREN TREN SW/2, EC-1 en via 2

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	48.8671	81.7891	-160.6460	108.1678	81.7883	-160.6460
2	108.1678	81.7883	-160.6460	160.7166	66.7891	-129.8959
3	160.7166	66.7891	-129.8959	206.5186	51.7910	-99.1459
4	206.5186	51.7910	-99.1459	244.0679	51.7845	-99.1461
5	244.0679	51.7845	-99.1461	271.6735	36.7790	-66.4760
6	271.6735	36.7790	-66.4760	293.6657	21.7917	-37.6461
7	293.6657	21.7917	-37.6461	307.7376	6.7896	-4.9760
8	307.7376	6.7896	-4.9760	312.6451	6.7794	-4.9760
9	312.6451	6.7794	-4.9760	3.0450	-0.6666	1.8008
10	3.0450	-0.6666	1.8008	2.5617	-0.6664	1.8008
11	2.5617	-0.6664	1.8008	2.0787	-0.6662	1.8008
12	2.0787	-0.6662	1.8008	1.5954	-0.6664	1.8008
13	1.5954	-0.6664	1.8008	1.1121	-0.6665	1.8008
14	1.1121	-0.6665	1.8008	0.6289	-0.6668	1.8008
15	0.6289	-0.6668	1.8008	0.1456	-0.6667	1.8008
16	0.1456	-0.6667	1.8008	-0.3378	-0.6666	1.8008
17	-0.3378	-0.6666	1.8008	-0.8211	-0.6667	1.8008
18	-0.8211	-0.6667	1.8008	-1.3046	-0.6669	1.8008
19	-1.3046	-0.6669	1.8008	-1.7880	-0.6668	1.8008
20	-1.7880	-0.6668	1.8008	-360.8833	38.1111	-114.5663
21	-360.8833	38.1111	-114.5663	-246.1960	130.0125	-223.6431
22	-246.1960	130.0125	-223.6431	-128.6806	115.0103	-192.8929
23	-128.6806	115.0103	-192.8929	-24.6754	100.0107	-162.1429
24	-24.6754	100.0107	-162.1429	65.8315	85.0142	-131.3929
25	65.8315	85.0142	-131.3929	18.7594	70.4783	-162.7982
26	18.7594	70.4783	-162.7982	41.7292	59.5025	-144.3683
27	41.7292	59.5025	-144.3683	54.6170	49.2331	-126.7197
28	54.6170	49.2331	-126.7197	59.3443	39.6509	-108.9810
29	59.3443	39.6509	-108.9810	56.3476	30.3540	-90.8422
30	56.3476	30.3540	-90.8422	85.1842	15.3533	-60.0920
31	85.1842	15.3533	-60.0920	99.7691	15.3552	-60.0919
32	99.7691	15.3552	-60.0919	-37.4548	11.1718	-9.3956
33	-37.4548	11.1718	-9.3956	-26.8416	11.1711	-9.3956
34	-26.8416	11.1711	-9.3956	-16.2338	11.1693	-9.3956
35	-16.2338	11.1693	-9.3956	-5.6216	11.1702	-9.3956
36	-5.6216	11.1702	-9.3956	4.9889	11.1711	-9.3956
37	4.9889	11.1711	-9.3956	15.6028	11.1707	-9.3956
38	15.6028	11.1707	-9.3956	26.2142	11.1695	-9.3956
39	26.2142	11.1695	-9.3956	36.8265	11.1705	-9.3956
40	36.8265	11.1705	-9.3956	45.5501	4.0290	-1.9970
41	45.5501	4.0290	-1.9970	-232.5793	110.9630	-159.6169
42	-232.5793	110.9630	-159.6169	-152.1273	110.9605	-159.6169
43	-152.1273	110.9605	-159.6169	-81.8105	95.9604	-128.8669
44	-81.8105	95.9604	-128.8669	-18.2322	80.9677	-98.1167
45	-18.2322	80.9677	-98.1167	38.5922	65.9636	-67.3666
46	38.5922	65.9636	-67.3666	86.4202	65.9560	-67.3665
47	86.4202	65.9560	-67.3665	125.6217	50.9627	-36.6165
48	125.6217	50.9627	-36.6165	158.0942	35.9751	-5.8664
49	158.0942	35.9751	-5.8664	183.8134	20.9876	24.8838
50	183.8134	20.9876	24.8838	199.0399	21.0011	24.8839
51	199.0399	21.0011	24.8839	-104.8881	16.8639	-20.0211
52	-104.8881	16.8639	-20.0211	-92.6581	16.8595	-20.0211
53	-92.6581	16.8595	-20.0211	-80.4277	16.8672	-20.0211
54	-80.4277	16.8672	-20.0211	-68.2025	16.8636	-20.0211
55	-68.2025	16.8636	-20.0211	-55.9848	16.8546	-20.0211
56	-55.9848	16.8546	-20.0211	-43.7621	16.8498	-20.0211
57	-43.7621	16.8498	-20.0211	-31.5438	16.8474	-20.0211
58	-31.5438	16.8474	-20.0211	-19.3252	16.8484	-20.0210
59	-19.3252	16.8484	-20.0210	-7.1072	16.8518	-20.0210
60	-7.1072	16.8518	-20.0210	5.1120	16.8525	-20.0210

ENVOL. MIN. CORTANTES TREN TREN SW/2, EC-1 en via 2

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	29.9013	-7.5216	-86.3637	24.4480	-7.5217	-86.3637
2	24.4480	-7.5217	-86.3637	28.3275	-14.2839	-71.8234
3	28.3275	-14.2839	-71.8234	36.7063	-21.1773	-55.6790
4	36.7063	-21.1773	-55.6790	21.3525	-21.1768	-55.6791
5	21.3525	-21.1768	-55.6791	28.6127	-28.2790	-38.0657
6	28.6127	-28.2790	-38.0657	39.0135	-35.6618	-19.1188
7	39.0135	-35.6618	-19.1188	51.6112	-43.3954	1.0292
8	51.6112	-43.3954	1.0292	20.1488	-43.3937	1.0290
9	20.1488	-43.3937	1.0290	27.8814	-51.5548	22.2488
10	27.8814	-51.5548	22.2488	34.9958	-60.2054	44.4111
11	34.9958	-60.2054	44.4111	-8.6514	-60.2043	44.4111
12	-8.6514	-60.2043	44.4111	-10.5131	-69.4005	68.2589
13	-10.5131	-69.4005	68.2589	-16.8511	-79.1898	94.3705
14	-16.8511	-79.1898	94.3705	-29.2447	-89.6017	122.4162
15	-29.2447	-89.6017	122.4162	-94.2101	-89.6064	122.4162
16	-94.2101	-89.6064	122.4162	-129.6049	-101.0178	134.3613
17	-129.6049	-101.0178	134.3613	-207.7187	-116.0218	165.1113
18	-207.7187	-116.0218	165.1113	-292.5891	-131.0251	195.8613
19	-292.5891	-131.0251	195.8613	-387.5802	-131.0240	195.8613
20	-387.5802	-131.0240	195.8613	-199.9282	-58.5668	130.6357
21	-199.9282	-58.5668	130.6357	-1.6653	0.1212	-0.1227
22	-1.6653	0.1212	-0.1227	-1.5501	0.1212	-0.1227
23	-1.5501	0.1212	-0.1227	-1.4350	0.1212	-0.1227
24	-1.4350	0.1212	-0.1227	-1.3199	0.1212	-0.1227
25	-1.3199	0.1212	-0.1227	-1.2047	0.1212	-0.1227
26	-1.2047	0.1212	-0.1227	15.4067	-1.9344	34.3810
27	15.4067	-1.9344	34.3810	54.7478	-6.8763	48.0032
28	54.7478	-6.8763	48.0032	92.4513	-12.7285	63.2928

29	92.4513	-12.7285	63.2928	126.4892	-19.5153	80.1828
30	126.4892	-19.5153	80.1828	154.7365	-27.2523	98.6060
31	154.7365	-27.2523	98.6060	128.8486	-27.2440	98.6060
32	128.8486	-27.2440	98.6060	140.9294	-35.9168	118.4955
33	140.9294	-35.9168	118.4955	142.3484	-45.6504	139.9066
34	142.3484	-45.6504	139.9066	168.1434	-58.5566	126.2070
35	168.1434	-58.5566	126.2070	101.2614	-73.5632	156.9568
36	101.2614	-73.5632	156.9568	20.8724	-88.5674	187.7068
37	20.8724	-88.5674	187.7068	-73.0174	-103.5658	218.4570
38	-73.0174	-103.5658	218.4570	-180.4091	-118.5640	249.2070
39	-180.4091	-118.5640	249.2070	-301.2962	-133.5649	279.9570
40	-301.2962	-133.5649	279.9570	-284.1084	-62.2688	153.9628
41	-284.1084	-62.2688	153.9628	41.4041	-3.1127	5.4017
42	41.4041	-3.1127	5.4017	39.1479	-3.1128	5.4018
43	39.1479	-3.1128	5.4018	36.8911	-3.1128	5.4018
44	36.8911	-3.1128	5.4018	34.6348	-3.1120	5.4018
45	34.6348	-3.1120	5.4018	32.3788	-3.1119	5.4018
46	32.3788	-3.1119	5.4018	30.1226	-3.1115	5.4018
47	30.1226	-3.1115	5.4018	27.8674	-3.1093	5.4018
48	27.8674	-3.1093	5.4018	25.6152	-3.1070	5.4018
49	25.6152	-3.1070	5.4018	21.8827	-4.5588	56.6645
50	21.8827	-4.5588	56.6645	18.5775	-4.5583	56.6646
51	18.5775	-4.5583	56.6646	58.3308	-11.9855	77.7015
52	58.3308	-11.9855	77.7015	94.2331	-20.6844	100.7754
53	94.2331	-20.6844	100.7754	79.2359	-20.6766	100.7756
54	79.2359	-20.6766	100.7756	101.5011	-30.7168	125.7055
55	101.5011	-30.7168	125.7055	174.0342	-42.3111	148.5465
56	174.0342	-42.3111	148.5465	141.8627	-57.3103	179.2964
57	141.8627	-57.3103	179.2964	100.3051	-57.3045	179.2966
58	100.3051	-57.3045	179.2966	50.5147	-72.3005	210.0467
59	50.5147	-72.3005	210.0467	-6.0361	-87.3042	240.7963
60	-6.0361	-87.3042	240.7963	-69.3297	-87.2980	240.7960

ENVOL. MAX. TORSORES TREN TREN SW/2, EC-1 en via 2

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	7.3914	-0.6665	1.8008	6.9083	-0.6664	1.8008
2	6.9083	-0.6664	1.8008	25.2281	-2.5697	6.8444
3	25.2281	-2.5697	6.8444	52.3377	-5.7085	14.8897
4	52.3377	-5.7085	14.8897	48.1997	-5.7073	14.8896
5	48.1997	-5.7073	14.8896	78.3476	-10.0679	25.6919
6	78.3476	-10.0679	25.6919	111.2897	-15.6334	39.0184
7	111.2897	-15.6334	39.0184	144.5889	-22.3754	54.6503
8	144.5889	-22.3754	54.6503	128.3665	-22.3783	54.6502
9	128.3665	-22.3783	54.6502	153.9879	-30.2790	72.3826
10	153.9879	-30.2790	72.3826	174.6691	-39.2682	92.0242
11	174.6691	-39.2682	92.0242	146.1971	-39.2755	92.0242
12	146.1971	-39.2755	92.0242	152.6590	-49.3353	113.3979
13	152.6590	-49.3353	113.3979	149.7054	-60.3836	136.3406
14	149.7054	-60.3836	136.3406	135.8301	-72.3839	160.7028
15	135.8301	-72.3839	160.7028	83.3497	-72.3960	160.7028
16	83.3497	-72.3960	160.7028	47.9665	-85.2595	186.3495
17	47.9665	-85.2595	186.3495	-1.1226	-98.9271	213.1588
18	-1.1226	-98.9271	213.1588	-64.5101	-113.2893	241.0233
19	-64.5101	-113.2893	241.0233	-146.6448	-113.2873	241.0234
20	-146.6448	-113.2873	241.0234	-199.9282	-58.5668	130.6357
21	-199.9282	-58.5668	130.6357	-1.6653	0.1212	-0.1227
22	-1.6653	0.1212	-0.1227	-1.5501	0.1212	-0.1227
23	-1.5501	0.1212	-0.1227	-94.4116	7.7951	4.1899
24	-94.4116	7.7951	4.1899	-60.7696	5.3519	12.4072
25	-60.7696	5.3519	12.4072	-23.6710	2.1273	22.4933
26	-23.6710	2.1273	22.4933	15.4067	-1.9344	34.3810
27	15.4067	-1.9344	34.3810	54.7478	-6.8763	48.0032
28	54.7478	-6.8763	48.0032	92.4513	-12.7285	63.2928
29	92.4513	-12.7285	63.2928	126.4892	-19.5153	80.1828
30	126.4892	-19.5153	80.1828	154.7365	-27.2523	98.6060
31	154.7365	-27.2523	98.6060	128.8486	-27.2440	98.6060
32	128.8486	-27.2440	98.6060	140.9294	-35.9168	118.4955
33	140.9294	-35.9168	118.4955	142.3484	-45.6504	139.9066
34	142.3484	-45.6504	139.9066	130.8192	-56.4898	162.8418
35	130.8192	-56.4898	162.8418	103.8990	-68.4059	187.2352
36	103.8990	-68.4059	187.2352	59.3144	-81.3545	213.0113
37	59.3144	-81.3545	213.0113	-4.9173	-95.2285	240.0842
38	-4.9173	-95.2285	240.0842	-90.3761	-109.9709	268.3571
39	-90.3761	-109.9709	268.3571	-198.2057	-125.4610	297.7236
40	-198.2057	-125.4610	297.7236	-284.1084	-62.2688	153.9628
41	-284.1084	-62.2688	153.9628	41.2110	-3.0986	5.4034
42	41.2110	-3.0986	5.4034	38.9648	-3.0986	5.4034
43	38.9648	-3.0986	5.4034	36.7179	-3.0981	5.4034
44	36.7179	-3.0981	5.4034	34.4720	-3.0977	5.4034
45	34.4720	-3.0977	5.4034	-116.5856	10.5636	7.6747
46	-116.5856	10.5636	7.6747	-108.9223	10.5624	7.6747
47	-108.9223	10.5624	7.6747	-68.0323	6.6476	21.4929
48	-68.0323	6.6476	21.4929	-23.8424	1.6344	37.8654
49	-23.8424	1.6344	37.8654	21.8827	-4.5588	56.6645
50	21.8827	-4.5588	56.6645	18.5775	-4.5583	56.6646
51	18.5775	-4.5583	56.6646	58.3308	-11.9855	77.7015
52	58.3308	-11.9855	77.7015	94.2331	-20.6844	100.7754
53	94.2331	-20.6844	100.7754	79.2359	-20.6766	100.7756
54	79.2359	-20.6766	100.7756	101.5011	-30.7168	125.7055
55	101.5011	-30.7168	125.7055	113.7153	-42.0972	152.2819
56	113.7153	-42.0972	152.2819	113.0253	-54.8541	180.2649
57	113.0253	-54.8541	180.2649	73.2578	-54.8482	180.2650
58	73.2578	-54.8482	180.2650	50.5147	-72.3005	210.0467
59	50.5147	-72.3005	210.0467	-6.0361	-87.3042	240.7963
60	-6.0361	-87.3042	240.7963	-69.3297	-87.2980	240.7960

ENVOL. MIN. TORSORES TREN TREN SW/2, EC-1 en via 2

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	52.0572	63.9995	-203.8877	98.4588	63.9990	-203.8876
2	98.4588	63.9990	-203.8876	118.1467	49.6509	-180.7682
3	118.1467	49.6509	-180.7682	120.8158	36.7361	-160.2298
4	120.8158	36.7361	-160.2298	147.4495	36.7393	-160.2299
5	147.4495	36.7393	-160.2299	127.8326	25.2593	-142.0157
6	127.8326	25.2593	-142.0157	98.2773	15.2028	-125.8940
7	98.2773	15.2028	-125.8940	61.6507	6.5282	-111.6592
8	61.6507	6.5282	-111.6592	66.3845	6.5281	-111.6593
9	66.3845	6.5281	-111.6593	20.0758	-0.8023	-99.1338
10	20.0758	-0.8023	-99.1338	-24.6300	-7.5178	-86.3638
11	-24.6300	-7.5178	-86.3638	-30.0791	-7.5197	-86.3638
12	-30.0791	-7.5197	-86.3638	-75.2173	-14.2748	-71.8237
13	-75.2173	-14.2748	-71.8237	-116.8132	-21.1742	-55.6795
14	-116.8132	-21.1742	-55.6795	-155.8815	-28.2657	-38.0660

15	-155.8815	-28.2657	-38.0660	-176.3732	-28.2629	-38.0660
16	-176.3732	-28.2629	-38.0660	-219.4859	-35.6510	-19.1192
17	-219.4859	-35.6510	-19.1192	-262.9738	-43.3818	1.0287
18	-262.9738	-43.3818	1.0287	-1.3046	-0.6669	1.8008
19	-1.3046	-0.6669	1.8008	-1.7880	-0.6668	1.8008
20	-1.7880	-0.6668	1.8008	-360.8833	38.1111	-114.5663
21	-360.8833	38.1111	-114.5663	-216.4613	121.8531	-248.2545
22	-216.4613	121.8531	-248.2545	-132.2025	107.9193	-224.7325
23	-132.2025	107.9193	-224.7325	-66.1213	94.6944	-202.7816
24	-66.1213	94.6944	-202.7816	-16.4722	82.2073	-182.2031
25	-16.4722	82.2073	-182.2031	18.7594	70.4783	-162.7982
26	18.7594	70.4783	-162.7982	41.7292	59.5025	-144.3683
27	41.7292	59.5025	-144.3683	54.6170	49.2331	-126.7197
28	54.6170	49.2331	-126.7197	59.3443	39.6509	-108.9810
29	59.3443	39.6509	-108.9810	56.3476	30.3540	-90.8422
30	56.3476	30.3540	-90.8422	85.1842	15.3533	-60.0920
31	85.1842	15.3533	-60.0920	99.7691	15.3552	-60.0919
32	99.7691	15.3552	-60.0919	100.8570	0.3584	-29.3421
33	100.8570	0.3584	-29.3421	-25.8345	10.8100	-9.6176
34	-25.8345	10.8100	-9.6176	-15.5627	10.8097	-9.6176
35	-15.5627	10.8097	-9.6176	-5.2927	10.8096	-9.6176
36	-5.2927	10.8096	-9.6176	4.9788	10.8121	-9.6176
37	4.9788	10.8121	-9.6176	15.2516	10.8130	-9.6176
38	15.2516	10.8130	-9.6176	25.5241	10.8125	-9.6176
39	25.5241	10.8125	-9.6176	35.7962	10.8125	-9.6176
40	35.7962	10.8125	-9.6176	41.4743	3.6553	-2.2443
41	41.4743	3.6553	-2.2443	-202.4032	108.7325	-160.6203
42	-202.4032	108.7325	-160.6203	-123.5695	108.7326	-160.6203
43	-123.5695	108.7326	-160.6203	-54.8658	93.7354	-129.8701
44	-54.8658	93.7354	-129.8701	7.0924	78.7474	-99.1201
45	7.0924	78.7474	-99.1201	62.3090	63.7413	-68.3699
46	62.3090	63.7413	-68.3699	108.5154	63.7387	-68.3699
47	108.5154	63.7387	-68.3699	146.1115	48.7441	-37.6197
48	146.1115	48.7441	-37.6197	-139.4094	16.6551	-20.6065
49	-139.4094	16.6551	-20.6065	-127.3379	16.6536	-20.6065
50	-127.3379	16.6536	-20.6065	-115.2667	16.6467	-20.6065
51	-115.2667	16.6467	-20.6065	-103.2063	16.6420	-20.6065
52	-103.2063	16.6420	-20.6065	-91.1400	16.6390	-20.6065
53	-91.1400	16.6390	-20.6065	-79.0835	16.6329	-20.6065
54	-79.0835	16.6329	-20.6065	-67.0325	16.6338	-20.6065
55	-67.0325	16.6338	-20.6065	-54.9781	16.6245	-20.6065
56	-54.9781	16.6245	-20.6065	-42.9331	16.6199	-20.6065
57	-42.9331	16.6199	-20.6065	-30.8810	16.6182	-20.6065
58	-30.8810	16.6182	-20.6065	-18.8345	16.6124	-20.6064
59	-18.8345	16.6124	-20.6064	-6.7867	16.6159	-20.6064
60	-6.7867	16.6159	-20.6064	5.2615	16.6173	-20.6064

ENVOL. MAX. FLECTORES TREN TREN SIN CARGA, EC-1 en via 2

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	5.1520	4.9068	-17.6158	9.0236	6.7732	-13.5455
2	9.0236	6.7732	-13.5455	13.3930	5.5659	-10.8246
3	13.3930	5.5659	-10.8246	17.2099	4.3160	-8.2621
4	17.2099	4.3160	-8.2621	20.3389	4.3159	-8.2622
5	20.3389	4.3159	-8.2622	22.6868	3.0659	-5.6997
6	22.6868	3.0659	-5.6997	24.4723	1.8163	-3.1372
7	24.4723	1.8163	-3.1372	25.6951	0.5664	-0.5747
8	25.6951	0.5664	-0.5747	26.1052	0.5642	-0.5747
9	26.1052	0.5642	-0.5747	25.8588	-0.6850	1.9878
10	25.8588	-0.6850	1.9878	25.0507	-1.9362	4.5503
11	25.0507	-1.9362	4.5503	23.6463	-1.9397	4.5503
12	23.6463	-1.9397	4.5503	21.3665	-3.1892	7.1128
13	21.3665	-3.1892	7.1128	18.5250	-4.4370	9.6753
14	18.5250	-4.4370	9.6753	15.1217	-5.6864	12.2378
15	15.1217	-5.6864	12.2378	10.9982	-5.6880	12.2378
16	10.9982	-5.6880	12.2378	6.1244	-6.9382	14.8003
17	6.1244	-6.9382	14.8003	0.6881	-8.1884	17.3628
18	0.6881	-8.1884	17.3628	-0.1087	-0.0556	0.1501
19	-0.1087	-0.0556	0.1501	-0.1490	-0.0556	0.1501
20	-0.1490	-0.0556	0.1501	-0.1689	-0.0227	0.0699
21	-0.1689	-0.0227	0.0699	-0.1388	0.0101	-0.0102
22	-0.1388	0.0101	-0.0102	-0.1292	0.0101	-0.0102
23	-0.1292	0.0101	-0.0102	-0.1196	0.0101	-0.0102
24	-0.1196	0.0101	-0.0102	2.8528	6.3526	-13.5321
25	2.8528	6.3526	-13.5321	9.0234	6.1833	-9.0126
26	9.0234	6.1833	-9.0126	14.6474	4.9332	-6.4500
27	14.6474	4.9332	-6.4500	19.1457	3.6831	-3.8875
28	19.1457	3.6831	-3.8875	22.5195	2.4338	-1.3251
29	22.5195	2.4338	-1.3251	24.7698	1.1841	1.2374
30	24.7698	1.1841	1.2374	25.8937	-0.0652	3.7999
31	25.8937	-0.0652	3.7999	25.8327	-0.0644	3.7999
32	25.8327	-0.0644	3.7999	24.6454	-1.3144	6.3624
33	24.6454	-1.3144	6.3624	22.3347	-2.5647	8.9249
34	22.3347	-2.5647	8.9249	18.8980	-3.8152	11.4874
35	18.8980	-3.8152	11.4874	14.3361	-5.0647	14.0499
36	14.3361	-5.0647	14.0499	8.6499	-6.3152	16.6124
37	8.6499	-6.3152	16.6124	1.8370	-7.5655	19.1749
38	1.8370	-7.5655	19.1749	2.1845	0.9309	-0.7830
39	2.1845	0.9309	-0.7830	3.0689	0.9309	-0.7830
40	3.0689	0.9309	-0.7830	3.7959	0.3357	-0.1664
41	3.7959	0.3357	-0.1664	3.4504	-0.2594	0.4501
42	3.4504	-0.2594	0.4501	3.2623	-0.2595	0.4501
43	3.2623	-0.2595	0.4501	3.0742	-0.2595	0.4501
44	3.0742	-0.2595	0.4501	2.8862	-0.2594	0.4501
45	2.8862	-0.2594	0.4501	2.6982	-0.2593	0.4501
46	2.6982	-0.2593	0.4501	4.6698	5.8208	-6.1843
47	4.6698	5.8208	-6.1843	8.1712	4.5720	-3.6218
48	8.1712	4.5720	-3.6218	11.1111	3.3228	-1.0593
49	11.1111	3.3228	-1.0593	13.4883	2.0735	1.5032
50	13.4883	2.0735	1.5032	14.9916	2.0736	1.5032
51	14.9916	2.0736	1.5032	15.9004	0.8236	4.0657
52	15.9004	0.8236	4.0657	16.2479	-0.4261	6.6283
53	16.2479	-0.4261	6.6283	15.9390	-0.4259	6.6283
54	15.9390	-0.4259	6.6283	14.8186	-1.6748	9.1908
55	14.8186	-1.6748	9.1908	13.1361	-2.9239	11.7533
56	13.1361	-2.9239	11.7533	10.8908	-4.1732	14.3158
57	10.8908	-4.1732	14.3158	7.8649	-4.1736	14.3158
58	7.8649	-4.1736	14.3158	4.1511	-5.4243	16.8783
59	4.1511	-5.4243	16.8783	0.0724	-0.2584	0.4501
60	0.0724	-0.2584	0.4501	0.3951	1.2426	-1.5477

ENVOL. MIN. FLECTORES TREN TREN SIN CARGA, EC-1 en via 2

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2

1	0.6159	-0.0555	0.1501	0.5757	-0.0555	0.1501
2	0.5757	-0.0555	0.1501	0.5354	-0.0555	0.1501
3	0.5354	-0.0555	0.1501	0.4952	-0.0555	0.1501
4	0.4952	-0.0555	0.1501	0.4550	-0.0555	0.1501
5	0.4550	-0.0555	0.1501	0.4147	-0.0555	0.1501
6	0.4147	-0.0555	0.1501	0.3745	-0.0555	0.1501
7	0.3745	-0.0555	0.1501	0.3342	-0.0555	0.1501
8	0.3342	-0.0555	0.1501	0.2940	-0.0555	0.1501
9	0.2940	-0.0555	0.1501	0.2537	-0.0555	0.1501
10	0.2537	-0.0555	0.1501	0.2135	-0.0555	0.1501
11	0.2135	-0.0555	0.1501	0.1732	-0.0556	0.1501
12	0.1732	-0.0556	0.1501	0.1329	-0.0556	0.1501
13	0.1329	-0.0556	0.1501	0.0927	-0.0555	0.1501
14	0.0927	-0.0555	0.1501	-3.1704	-7.5940	8.0091
15	-3.1704	-7.5940	8.0091	-8.6762	-7.5946	8.0091
16	-8.6762	-7.5946	8.0091	-14.9323	-8.8447	10.5716
17	-14.9323	-8.8447	10.5716	-21.7507	-10.0946	13.1341
18	-21.7507	-10.0946	13.1341	-29.1318	-11.3447	15.6966
19	-29.1318	-11.3447	15.6966	-37.3567	-11.3445	15.6966
20	-37.3567	-11.3445	15.6966	-41.0893	-0.0805	-1.7830
21	-41.0893	-0.0805	-1.7830	-24.7229	11.1836	-19.2626
22	-24.7229	11.1836	-19.2626	-14.5984	9.9334	-16.7001
23	-14.5984	9.9334	-16.7001	-11.0828	0.9312	-0.7830
24	-11.0828	0.9312	-0.7830	-10.1979	0.9310	-0.7830
25	-10.1979	0.9310	-0.7830	-9.3134	0.9312	-0.7830
26	-9.3134	0.9312	-0.7830	-8.4284	0.9313	-0.7830
27	-8.4284	0.9313	-0.7830	-7.5437	0.9315	-0.7830
28	-7.5437	0.9315	-0.7830	-6.6586	0.9313	-0.7830
29	-6.6586	0.9313	-0.7830	-5.7744	0.9310	-0.7830
30	-5.7744	0.9310	-0.7830	-4.8898	0.9311	-0.7830
31	-4.8898	0.9311	-0.7830	-4.0068	0.9272	-0.7152
32	-4.0068	0.9272	-0.7152	-3.1264	0.9267	-0.7152
33	-3.1264	0.9267	-0.7152	-2.2459	0.9267	-0.7152
34	-2.2459	0.9267	-0.7152	-1.3653	0.9268	-0.7152
35	-1.3653	0.9268	-0.7152	-0.4917	0.8830	-0.5309
36	-0.4917	0.8830	-0.5309	-3.0949	-7.3960	14.6554
37	-3.0949	-7.3960	14.6554	-10.9343	-8.6465	17.2179
38	-10.9343	-8.6465	17.2179	-19.8985	-9.8966	19.7804
39	-19.8985	-9.8966	19.7804	-29.9876	-11.1466	22.3429
40	-29.9876	-11.1466	22.3429	-35.9245	-0.7884	4.2355
41	-35.9245	-0.7884	4.2355	-23.0840	9.5698	-13.8719
42	-23.0840	9.5698	-13.8719	-16.3097	1.2827	-1.5327
43	-16.3097	1.2827	-1.5327	-15.3797	1.2826	-1.5327
44	-15.3797	1.2826	-1.5327	-14.4499	1.2820	-1.5327
45	-14.4499	1.2820	-1.5327	-13.5205	1.2820	-1.5327
46	-13.5205	1.2820	-1.5327	-12.5907	1.2824	-1.5327
47	-12.5907	1.2824	-1.5327	-11.6614	1.2819	-1.5327
48	-11.6614	1.2819	-1.5327	-10.7331	1.2812	-1.5327
49	-10.7331	1.2812	-1.5327	-9.8046	1.2806	-1.5327
50	-9.8046	1.2806	-1.5327	-8.8768	1.2803	-1.5327
51	-8.8768	1.2803	-1.5327	-7.9490	1.2801	-1.5327
52	-7.9490	1.2801	-1.5327	-7.0215	1.2797	-1.5327
53	-7.0215	1.2797	-1.5327	-6.0943	1.2793	-1.5327
54	-6.0943	1.2793	-1.5327	-5.1698	1.2740	-1.4418
55	-5.1698	1.2740	-1.4418	-4.2470	1.2735	-1.4418
56	-4.2470	1.2735	-1.4418	-3.3236	1.2731	-1.4418
57	-3.3236	1.2731	-1.4418	-2.4008	1.2729	-1.4418
58	-2.4008	1.2729	-1.4418	-1.4778	1.2731	-1.4418
59	-1.4778	1.2731	-1.4418	-0.9086	-1.0821	6.6310
60	-0.9086	-1.0821	6.6310	-5.5781	-6.7261	19.2845

ENVOL. MAX. CORTANTES TREN TREN SIN CARGA, EC-1 en via 2

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	4.0723	6.8158	-13.3872	9.0140	6.8156	-13.3872
2	9.0140	6.8156	-13.3872	13.3930	5.5659	-10.8246
3	13.3930	5.5659	-10.8246	17.2099	4.3160	-8.2621
4	17.2099	4.3160	-8.2621	20.3389	4.3159	-8.2622
5	20.3389	4.3159	-8.2622	22.6868	3.0659	-5.6997
6	22.6868	3.0659	-5.6997	24.4723	1.8163	-3.1372
7	24.4723	1.8163	-3.1372	25.6951	0.5664	-0.5747
8	25.6951	0.5664	-0.5747	26.0532	0.5642	-0.4147
9	26.0532	0.5642	-0.4147	0.2537	-0.0555	0.1501
10	0.2537	-0.0555	0.1501	0.2135	-0.0555	0.1501
11	0.2135	-0.0555	0.1501	0.1732	-0.0556	0.1501
12	0.1732	-0.0556	0.1501	0.1329	-0.0556	0.1501
13	0.1329	-0.0556	0.1501	0.0927	-0.0555	0.1501
14	0.0927	-0.0555	0.1501	0.0524	-0.0555	0.1501
15	0.0524	-0.0555	0.1501	0.0121	-0.0556	0.1501
16	0.0121	-0.0556	0.1501	-0.0281	-0.0556	0.1501
17	-0.0281	-0.0556	0.1501	-0.0684	-0.0556	0.1501
18	-0.0684	-0.0556	0.1501	-0.1087	-0.0556	0.1501
19	-0.1087	-0.0556	0.1501	-0.1490	-0.0556	0.1501
20	-0.1490	-0.0556	0.1501	-0.1689	-0.0227	0.0699
21	-0.1689	-0.0227	0.0699	-24.7229	11.1836	-19.2626
22	-24.7229	11.1836	-19.2626	-14.5984	9.9334	-16.7001
23	-14.5984	9.9334	-16.7001	-5.5996	8.6833	-14.1376
24	-5.5996	8.6833	-14.1376	2.2744	7.4335	-11.5751
25	2.2744	7.4335	-11.5751	9.0234	6.1833	-9.0126
26	9.0234	6.1833	-9.0126	14.6474	4.9332	-6.4500
27	14.6474	4.9332	-6.4500	19.1457	3.6831	-3.8875
28	19.1457	3.6831	-3.8875	22.5195	2.4338	-1.3251
29	22.5195	2.4338	-1.3251	24.7698	1.1841	1.2374
30	24.7698	1.1841	1.2374	-4.8898	0.9311	-0.7830
31	-4.8898	0.9311	-0.7830	-4.0052	0.9308	-0.7830
32	-4.0052	0.9308	-0.7830	-3.1212	0.9308	-0.7830
33	-3.1212	0.9308	-0.7830	-2.2369	0.9309	-0.7830
34	-2.2369	0.9309	-0.7830	-1.3528	0.9309	-0.7830
35	-1.3528	0.9309	-0.7830	-0.4685	0.9309	-0.7830
36	-0.4685	0.9309	-0.7830	0.4158	0.9309	-0.7830
37	0.4158	0.9309	-0.7830	1.3001	0.9309	-0.7830
38	1.3001	0.9309	-0.7830	2.1845	0.9309	-0.7830
39	2.1845	0.9309	-0.7830	3.0689	0.9309	-0.7830
40	3.0689	0.9309	-0.7830	3.7959	0.3357	-0.1664
41	3.7959	0.3357	-0.1664	-23.0840	9.5698	-13.8719
42	-23.0840	9.5698	-13.8719	-16.1459	9.5700	-13.8719
43	-16.1459	9.5700	-13.8719	-10.0514	8.3203	-11.3094
44	-10.0514	8.3203	-11.3094	-4.5194	7.0707	-8.7469
45	-4.5194	7.0707	-8.7469	0.4502	5.8207	-6.1843
46	0.4502	5.8207	-6.1843	4.6698	5.8208	-6.1843
47	4.6698	5.8208	-6.1843	8.1712	4.5720	-3.6218
48	8.1712	4.5720	-3.6218	11.1111	3.3228	-1.0593
49	11.1111	3.3228	-1.0593	13.4883	2.0735	1.5032
50	13.4883	2.0735	1.5032	14.9916	2.0736	1.5032
51	14.9916	2.0736	1.5032	-7.9490	1.2801	-1.5327
52	-7.9490	1.2801	-1.5327	-7.0215	1.2797	-1.5327
53	-7.0215	1.2797	-1.5327	-6.0943	1.2793	-1.5327

54	-6.0943	1.2793	-1.5327	-5.1674	1.2788	-1.5327
55	-5.1674	1.2788	-1.5327	-4.2410	1.2785	-1.5327
56	-4.2410	1.2785	-1.5327	-3.3142	1.2782	-1.5327
57	-3.3142	1.2782	-1.5327	-2.3879	1.2778	-1.5327
58	-2.3879	1.2778	-1.5327	-1.4616	1.2780	-1.5327
59	-1.4616	1.2780	-1.5327	-0.5350	1.2780	-1.5327
60	-0.5350	1.2780	-1.5327	0.3914	1.2777	-1.5327

ENVOL. MIN. CORTANTES TREN TREN SIN CARGA, EC-1 en via 2

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	0.6159	-0.0555	0.1501	0.5757	-0.0555	0.1501
2	0.5757	-0.0555	0.1501	2.1023	-0.2142	0.5704
3	2.1023	-0.2142	0.5704	4.3615	-0.4756	1.2408
4	4.3615	-0.4756	1.2408	4.0167	-0.4757	1.2408
5	4.0167	-0.4757	1.2408	6.5289	-0.8389	2.1410
6	6.5289	-0.8389	2.1410	9.2741	-1.3029	3.2515
7	9.2741	-1.3029	3.2515	12.0493	-1.8650	4.5542
8	12.0493	-1.8650	4.5542	10.6971	-1.8649	4.5542
9	10.6971	-1.8649	4.5542	14.4825	-2.5933	-2.2408
10	14.4825	-2.5933	-2.2408	12.2901	-3.8435	0.3216
11	12.2901	-3.8435	0.3216	9.5031	-3.8442	0.3216
12	9.5031	-3.8442	0.3216	5.8408	-5.0942	2.8841
13	5.8408	-5.0942	2.8841	1.6165	-6.3439	5.4466
14	1.6165	-6.3439	5.4466	-3.1704	-7.5940	8.0091
15	-3.1704	-7.5940	8.0091	-8.6762	-7.5946	8.0091
16	-8.6762	-7.5946	8.0091	-14.9323	-8.8447	10.5716
17	-14.9323	-8.8447	10.5716	-21.7507	-10.0946	13.1341
18	-21.7507	-10.0946	13.1341	-29.1318	-11.3447	15.6966
19	-29.1318	-11.3447	15.6966	-37.3567	-11.3445	15.6966
20	-37.3567	-11.3445	15.6966	-16.6607	-4.8808	10.8863
21	-16.6607	-4.8808	10.8863	-0.1388	0.0101	-0.0102
22	-0.1388	0.0101	-0.0102	-0.1292	0.0101	-0.0102
23	-0.1292	0.0101	-0.0102	-0.1196	0.0101	-0.0102
24	-0.1196	0.0101	-0.0102	-0.1100	0.0101	-0.0102
25	-0.1100	0.0101	-0.0102	-0.1004	0.0101	-0.0102
26	-0.1004	0.0101	-0.0102	1.2838	-0.1612	2.8651
27	1.2838	-0.1612	2.8651	4.5624	-0.5730	4.0003
28	4.5624	-0.5730	4.0003	7.7044	-1.0609	5.2744
29	7.7044	-1.0609	5.2744	10.5406	-1.6260	6.6819
30	10.5406	-1.6260	6.6819	12.8947	-2.2706	8.2172
31	12.8947	-2.2706	8.2172	10.7378	-2.2705	8.2172
32	10.7378	-2.2705	8.2172	11.7439	-2.9930	9.8746
33	11.7439	-2.9930	9.8746	11.8384	-3.7937	11.6486
34	11.8384	-3.7937	11.6486	9.2078	-4.8965	9.5304
35	9.2078	-4.8965	9.5304	3.6183	-6.1462	12.0929
36	3.6183	-6.1462	12.0929	-3.0949	-7.3960	14.6554
37	-3.0949	-7.3960	14.6554	-10.9343	-8.6465	17.2179
38	-10.9343	-8.6465	17.2179	-19.8985	-9.8966	19.7804
39	-19.8985	-9.8966	19.7804	-29.9876	-11.1466	22.3429
40	-29.9876	-11.1466	22.3429	-21.7363	-5.0188	12.7103
41	-21.7363	-5.0188	12.7103	3.4504	-0.2594	0.4501
42	3.4504	-0.2594	0.4501	3.2623	-0.2595	0.4501
43	3.2623	-0.2595	0.4501	3.0742	-0.2595	0.4501
44	3.0742	-0.2595	0.4501	2.8862	-0.2594	0.4501
45	2.8862	-0.2594	0.4501	2.6982	-0.2593	0.4501
46	2.6982	-0.2593	0.4501	2.5102	-0.2592	0.4501
47	2.5102	-0.2592	0.4501	2.3223	-0.2589	0.4501
48	2.3223	-0.2589	0.4501	2.1346	-0.2587	0.4501
49	2.1346	-0.2587	0.4501	2.7492	-0.5030	4.9409
50	2.7492	-0.5030	4.9409	2.3845	-0.5030	4.9409
51	2.3845	-0.5030	4.9409	5.3679	-1.0825	6.6309
52	5.3679	-1.0825	6.6309	8.0289	-1.7580	8.4765
53	8.0289	-1.7580	8.4765	6.7541	-1.7577	8.4765
54	6.7541	-1.7577	8.4765	8.3440	-2.5324	10.4618
55	8.3440	-2.5324	10.4618	9.1500	-3.4103	12.5696
56	9.1500	-3.4103	12.5696	8.9604	-4.3911	14.7818
57	8.9604	-4.3911	14.7818	5.7765	-4.3911	14.7818
58	5.7765	-4.3911	14.7818	3.5840	-5.4789	17.0790
59	3.5840	-5.4789	17.0790	-0.7017	-6.7264	19.2845
60	-0.7017	-6.7264	19.2845	-5.5781	-6.7261	19.2845

ENVOL. MAX. TORSORES TREN TREN SIN CARGA, EC-1 en via 2

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	0.6159	-0.0555	0.1501	0.5757	-0.0555	0.1501
2	0.5757	-0.0555	0.1501	2.1023	-0.2142	0.5704
3	2.1023	-0.2142	0.5704	4.3615	-0.4756	1.2408
4	4.3615	-0.4756	1.2408	4.0167	-0.4757	1.2408
5	4.0167	-0.4757	1.2408	6.5289	-0.8389	2.1410
6	6.5289	-0.8389	2.1410	9.2741	-1.3029	3.2515
7	9.2741	-1.3029	3.2515	12.0493	-1.8650	4.5542
8	12.0493	-1.8650	4.5542	10.6971	-1.8649	4.5542
9	10.6971	-1.8649	4.5542	12.8323	-2.5233	6.0319
10	12.8323	-2.5233	6.0319	14.5562	-3.2729	7.6687
11	14.5562	-3.2729	7.6687	12.1830	-3.2739	7.6687
12	12.1830	-3.2739	7.6687	12.7221	-4.1114	9.4498
13	12.7221	-4.1114	9.4498	12.4753	-5.0322	11.3617
14	12.4753	-5.0322	11.3617	11.3197	-6.0325	13.3919
15	11.3197	-6.0325	13.3919	6.9453	-6.0326	13.3919
16	6.9453	-6.0326	13.3919	3.9973	-7.1050	15.5291
17	3.9973	-7.1050	15.5291	-0.0933	-8.2439	17.7632
18	-0.0933	-8.2439	17.7632	-5.3758	-9.4408	20.0853
19	-5.3758	-9.4408	20.0853	-12.2204	-9.4406	20.0853
20	-12.2204	-9.4406	20.0853	-16.6607	-4.8808	10.8863
21	-16.6607	-4.8808	10.8863	-0.1388	0.0101	-0.0102
22	-0.1388	0.0101	-0.0102	-0.1292	0.0101	-0.0102
23	-0.1292	0.0101	-0.0102	-7.8677	0.6495	0.3492
24	-7.8677	0.6495	0.3492	-5.0641	0.4460	1.0339
25	-5.0641	0.4460	1.0339	-1.9726	0.1773	1.8744
26	-1.9726	0.1773	1.8744	1.2838	-0.1612	2.8651
27	1.2838	-0.1612	2.8651	4.5624	-0.5730	4.0003
28	4.5624	-0.5730	4.0003	7.7044	-1.0609	5.2744
29	7.7044	-1.0609	5.2744	10.5406	-1.6260	6.6819
30	10.5406	-1.6260	6.6819	12.8947	-2.2706	8.2172
31	12.8947	-2.2706	8.2172	10.7378	-2.2705	8.2172
32	10.7378	-2.2705	8.2172	11.7439	-2.9930	9.8746
33	11.7439	-2.9930	9.8746	11.8384	-3.7937	11.6486
34	11.8384	-3.7937	11.6486	10.8508	-4.6714	13.5337
35	10.8508	-4.6714	13.5337	8.6227	-5.6209	15.5242
36	8.6227	-5.6209	15.5242	5.0108	-6.6414	17.6145
37	5.0108	-6.6414	17.6145	-0.1073	-7.7268	19.7990
38	-0.1073	-7.7268	19.7990	-6.8306	-8.8724	22.0722
39	-6.8306	-8.8724	22.0722	-15.2307	-10.0707	24.4284

40	-15.2307	-10.0707	24.4284	-21.7363	-5.0188	12.7103
41	-21.7363	-5.0188	12.7103	3.4342	-0.2582	0.4503
42	3.4342	-0.2582	0.4503	3.2471	-0.2582	0.4503
43	3.2471	-0.2582	0.4503	3.0598	-0.2582	0.4503
44	3.0598	-0.2582	0.4503	2.8727	-0.2582	0.4503
45	2.8727	-0.2582	0.4503	-7.8724	0.7033	0.9457
46	-7.8724	0.7033	0.9457	-7.3622	0.7031	0.9457
47	-7.3622	0.7031	0.9457	-4.1518	0.3849	2.0853
48	-4.1518	0.3849	2.0853	-0.7366	-0.0155	3.4211
49	-0.7366	-0.0155	3.4211	2.7492	-0.5030	4.9409
50	2.7492	-0.5030	4.9409	2.3845	-0.5030	4.9409
51	2.3845	-0.5030	4.9409	5.3679	-1.0825	6.6309
52	5.3679	-1.0825	6.6309	8.0289	-1.7580	8.4765
53	8.0289	-1.7580	8.4765	6.7541	-1.7577	8.4765
54	6.7541	-1.7577	8.4765	8.3440	-2.5324	10.4618
55	8.3440	-2.5324	10.4618	9.1500	-3.4103	12.5696
56	9.1500	-3.4103	12.5696	8.9604	-4.3911	14.7818
57	8.9604	-4.3911	14.7818	5.7765	-4.3911	14.7818
58	5.7765	-4.3911	14.7818	3.5840	-5.4789	17.0790
59	3.5840	-5.4789	17.0790	-0.1251	-6.6740	19.4408
60	-0.1251	-6.6740	19.4408	-4.9636	-6.6738	19.4408

ENVOL. MIN. TORSORES TREN TREN SIN CARGA, EC-1 en via 2

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	5.1520	4.9068	-17.6158	8.7096	4.9068	-17.6158
2	8.7096	4.9068	-17.6158	11.7046	3.6569	-15.0533
3	11.7046	3.6569	-15.0533	14.1374	2.4068	-12.4908
4	14.1374	2.4068	-12.4908	15.8824	2.4068	-12.4908
5	15.8824	2.4068	-12.4908	16.8461	1.1574	-9.9283
6	16.8461	1.1574	-9.9283	17.2477	-0.0926	-7.3658
7	17.2477	-0.0926	-7.3658	17.0864	-1.3433	-4.8033
8	17.0864	-1.3433	-4.8033	16.1124	-1.3435	-4.8033
9	16.1124	-1.3435	-4.8033	14.4825	-2.5933	-2.2408
10	14.4825	-2.5933	-2.2408	0.2135	-0.0555	0.1501
11	0.2135	-0.0555	0.1501	0.1732	-0.0556	0.1501
12	0.1732	-0.0556	0.1501	0.1329	-0.0556	0.1501
13	0.1329	-0.0556	0.1501	0.0927	-0.0555	0.1501
14	0.0927	-0.0555	0.1501	0.0524	-0.0555	0.1501
15	0.0524	-0.0555	0.1501	0.0121	-0.0556	0.1501
16	0.0121	-0.0556	0.1501	-0.0281	-0.0556	0.1501
17	-0.0281	-0.0556	0.1501	-0.0684	-0.0556	0.1501
18	-0.0684	-0.0556	0.1501	-0.1087	-0.0556	0.1501
19	-0.1087	-0.0556	0.1501	-0.1490	-0.0556	0.1501
20	-0.1490	-0.0556	0.1501	-36.7136	-0.4767	-2.5285
21	-36.7136	-0.4767	-2.5285	-21.0645	10.1029	-21.2196
22	-21.0645	10.1029	-21.2196	-11.9666	8.8526	-18.6571
23	-11.9666	8.8526	-18.6571	-3.9945	7.6023	-16.0946
24	-3.9945	7.6023	-16.0946	2.8528	6.3526	-13.5321
25	2.8528	6.3526	-13.5321	8.5751	5.1027	-10.9695
26	8.5751	5.1027	-10.9695	13.1723	3.8527	-8.4070
27	13.1723	3.8527	-8.4070	16.6446	2.6029	-5.8446
28	16.6446	2.6029	-5.8446	18.9919	1.3530	-3.2821
29	18.9919	1.3530	-3.2821	-5.5768	0.9014	-0.8015
30	-5.5768	0.9014	-0.8015	-4.7206	0.9011	-0.8015
31	-4.7206	0.9011	-0.8015	-3.8646	0.9011	-0.8015
32	-3.8646	0.9011	-0.8015	-3.0085	0.9011	-0.8015
33	-3.0085	0.9011	-0.8015	-2.1529	0.9010	-0.8015
34	-2.1529	0.9010	-0.8015	-1.2968	0.9009	-0.8015
35	-1.2968	0.9009	-0.8015	-0.4412	0.9008	-0.8015
36	-0.4412	0.9008	-0.8015	0.4150	0.9010	-0.8015
37	0.4150	0.9010	-0.8015	1.2709	0.9010	-0.8015
38	1.2709	0.9010	-0.8015	2.1270	0.9011	-0.8015
39	2.1270	0.9011	-0.8015	2.9830	0.9011	-0.8015
40	2.9830	0.9011	-0.8015	3.4562	0.3045	-0.1870
41	3.4562	0.3045	-0.1870	-22.9785	9.5175	-14.0281
42	-22.9785	9.5175	-14.0281	-16.0784	9.5175	-14.0281
43	-16.0784	9.5175	-14.0281	-10.0217	8.2679	-11.4656
44	-10.0217	8.2679	-11.4656	-4.5274	7.0178	-8.9030
45	-4.5274	7.0178	-8.9030	0.4042	5.7677	-6.3405
46	0.4042	5.7677	-6.3405	4.5864	5.7676	-6.3405
47	4.5864	5.7676	-6.3405	8.0493	4.5186	-3.7780
48	8.0493	4.5186	-3.7780	-10.4244	1.2450	-1.5477
49	-10.4244	1.2450	-1.5477	-9.5217	1.2442	-1.5477
50	-9.5217	1.2442	-1.5477	-8.6191	1.2436	-1.5477
51	-8.6191	1.2436	-1.5477	-7.7169	1.2434	-1.5477
52	-7.7169	1.2434	-1.5477	-6.8148	1.2437	-1.5477
53	-6.8148	1.2437	-1.5477	-5.9125	1.2430	-1.5477
54	-5.9125	1.2430	-1.5477	-5.0118	1.2429	-1.5477
55	-5.0118	1.2429	-1.5477	-4.1104	1.2438	-1.5477
56	-4.1104	1.2438	-1.5477	-3.2088	1.2431	-1.5477
57	-3.2088	1.2431	-1.5477	-2.3081	1.2426	-1.5477
58	-2.3081	1.2426	-1.5477	-1.4069	1.2428	-1.5477
59	-1.4069	1.2428	-1.5477	-0.5058	1.2427	-1.5477
60	-0.5058	1.2427	-1.5477	0.3951	1.2426	-1.5477

ENVOLVENTES DE ESFUERZOS CON IMPACTO

ENVOL. MAX. FLECTORES -IPF

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	57.0045	49.1045	-225.3900	-99.8649	-168.9398	-88.6053
2	101.6952	115.3727	-46.1068	-196.4696	-124.5837	-149.2831
3	206.5036	146.7070	141.7671	-306.0442	-124.2271	-135.0235
4	306.0443	124.2250	135.0234	-390.5254	-108.8241	-130.4037
5	390.5578	108.9310	131.4536	-459.5279	-86.4519	-124.7099
6	459.5303	86.4595	124.7099	-514.1543	-63.9799	-117.9661
7	514.1534	63.9586	117.9663	-554.4072	-41.4816	-111.2227
8	554.4079	41.4788	111.2227	-578.9016	-26.0722	-106.6028
9	578.9139	26.0691	106.6027	-588.5178	-3.5868	-99.8591
10	588.5193	3.5818	99.8590	-583.7698	18.8926	-93.1153
11	583.7827	-18.9108	93.1155	-564.4874	34.3211	-88.4959
12	564.4756	-34.3314	88.4960	-529.0452	56.8156	-81.7523
13	529.0478	-56.7825	82.6737	-479.2955	79.2547	-75.9298
14	479.3013	-79.2517	75.9297	-415.2053	101.7303	-69.1860
15	415.2060	-101.7559	69.1861	-335.8465	117.1571	-64.5665
16	335.8471	-117.1587	64.5664	-241.0778	139.6419	-57.8226
17	242.4657	-129.1667	30.6619	-150.2468	80.5905	-80.4595
18	153.3069	-113.4499	-8.2975	-93.3410	55.3270	121.8291
19	97.2957	-62.5058	-78.9516	-63.8008	-4.7745	-8.0467
20	73.7134	-22.8414	-25.2322	-71.1870	6.3358	7.3221
21	73.2435	-7.1753	-40.5617	-61.6013	17.2811	19.8102
22	66.6678	10.8366	-29.8689	-94.6092	-124.7766	-49.6802
23	94.6092	124.7766	49.6802	-187.4731	-115.2395	-53.2083
24	187.4731	115.2395	53.2083	-275.4280	-104.7118	-55.7991
25	275.4280	104.7118	55.7991	-355.1203	-93.3569	-57.4406
26	355.1203	93.3569	57.4406	-465.9215	-106.1131	-97.7747
27	466.9649	107.2863	102.0119	-558.3608	-80.5324	-96.1984
28	558.4407	80.6191	96.8288	-624.7400	-53.3643	-88.6513
29	624.7426	53.3928	88.6513	-665.8821	-26.6058	-78.9815
30	665.8923	26.6001	78.9814	-681.8314	0.1959	-72.8176
31	681.8272	-0.1812	72.8178	-672.0691	20.3533	-66.7643
32	672.0710	-20.3374	66.7642	-637.0383	47.1740	-57.0143
33	637.0447	-47.1660	57.0145	-576.8505	73.9814	-50.4960
34	576.8451	-73.9922	50.4959	-491.2979	101.2504	-42.3185
35	491.3356	-101.1880	41.8531	-380.3315	128.0495	-32.0188
36	380.3922	-127.7013	29.1820	-283.5250	103.7665	-0.3686
37	283.5250	-103.7665	0.3686	-196.9654	114.2896	8.4372
38	196.9654	-114.2896	-8.4372	-105.5187	123.8225	18.1799
39	105.5187	-123.8225	-18.1799	-66.5867	46.5262	79.4795
40	90.6869	-4.4328	-59.3827	-75.4446	28.2710	59.7676
41	90.9780	4.6911	-10.0270	-87.5231	6.6717	-11.4481
42	92.8281	7.4222	-14.2622	-95.4186	0.2775	-1.5218
43	109.8632	32.8556	4.0226	-138.7890	-81.9575	-118.2094
44	145.9051	66.8492	28.1480	-219.7133	-111.7342	-64.4442
45	219.7133	111.7342	64.4442	-291.4106	-112.5995	-89.4484
46	297.3713	123.4143	120.5292	-381.2670	-108.0292	-115.4930
47	381.2634	108.0500	115.4930	-449.9479	-85.5788	-108.7493
48	449.9564	85.6335	108.7494	-504.3398	-63.1641	-102.0057
49	504.3367	63.1810	102.0057	-544.3832	-40.7029	-95.2620
50	544.3728	40.7138	95.2616	-568.3040	-25.3234	-90.6419
51	568.3095	25.3348	90.6419	-577.7334	-2.8610	-83.8982
52	577.7281	2.8703	83.8981	-572.8079	19.6122	-77.1544
53	572.8161	-19.5963	77.1548	-553.0307	34.9904	-72.5350
54	553.0346	-34.9656	72.5346	-517.5045	57.4364	-65.7909
55	517.5232	-57.3404	64.5350	-467.7208	79.8177	-57.7915
56	467.7332	-79.7683	57.0372	-403.6114	102.2484	-50.2935
57	403.6065	-102.2364	50.2929	-323.9031	117.6305	-45.6732
58	323.9040	-117.6180	45.6731	-229.1590	140.0934	-38.9292
59	229.1541	-140.1033	38.9293	-123.6668	166.4569	11.6986
60	123.6668	-166.4569	-11.6986	-61.7757	40.6583	148.1467

ENVOL. MAX CORTANTES -IPF

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	-39.6797	185.0140	153.2932	-88.8774	-169.6153	-148.6735
2	82.8635	170.1895	147.1341	-195.1976	-151.4222	-95.4654
3	195.1976	151.4222	95.4654	-266.6321	-134.2344	-99.1381
4	266.6321	134.2344	99.1381	-363.9433	-134.2417	-99.1380
5	363.9433	134.2417	99.1380	-400.2392	-117.4597	-99.8098
6	400.2392	117.4597	99.8098	-415.1886	-101.1761	-97.6774
7	415.1886	101.1761	97.6774	-410.3793	-85.5272	-92.9380
8	410.3793	85.5272	92.9380	-472.4008	-85.5216	-92.9380
9	472.4008	85.5216	92.9380	-438.9579	-70.6172	-85.7885
10	438.9579	70.6172	85.7885	-390.5291	-56.5354	-76.4262
11	390.5291	56.5354	76.4262	-431.5157	-56.5226	-76.4264
12	431.5157	56.5226	76.4264	-361.1347	-43.3921	-65.0484
13	361.1347	43.3921	65.0484	-282.0446	-31.3085	-51.8523
14	282.0446	31.3085	51.8523	-197.3124	-20.3490	-37.0512
15	197.3124	20.3490	37.0512	-212.0664	-20.3487	-37.0512
16	212.0664	20.3487	37.0512	-117.7071	-10.6080	-21.6244
17	117.7071	10.6080	21.6244	-67.0548	-5.9957	-27.2323
18	83.4358	7.2707	13.1467	-60.3391	-4.7739	-8.0467
19	72.7593	6.0018	10.6018	-63.8008	-4.7745	-8.0467
20	67.0515	5.2414	8.9212	166.5280	-92.2852	-26.5017
21	-860.8233	239.6737	100.9082	663.0703	-265.7275	-114.4660
22	-667.6338	266.0769	113.0153	427.2755	-238.8188	-104.8378
23	-440.4421	239.8569	104.3246	224.6399	-212.5980	-96.1473
24	-246.5105	214.4503	95.2639	54.4916	-187.1917	-87.0866
25	-84.7147	189.9474	85.9131	-84.3849	-162.6868	-77.7356
26	46.4693	166.4286	76.3541	-193.5746	-139.1719	-68.1768
27	148.9226	143.9595	66.6686	-259.3466	-117.5812	-60.5105
28	209.1274	123.4826	58.9571	-426.2489	-100.0405	-72.6374
29	246.4101	104.5616	48.2915	-435.5963	-86.8071	-68.5791
30	261.9084	87.0277	37.6927	-427.5606	-73.8420	-63.5712
31	427.5606	73.8420	63.5712	-497.7088	-73.8469	-63.5711
32	497.7088	73.8469	63.5711	-461.1595	-61.2701	-57.6134
33	461.1595	61.2701	57.6134	-409.9392	-49.1973	-50.7057
34	409.9392	49.1973	50.7057	-346.1579	-37.8392	-42.8485
35	104.9901	38.1843	-15.8781	-272.5197	-27.3169	-34.0428
36	91.4325	33.3002	-20.9149	-117.8317	-18.9500	-37.9280
37	80.8515	29.4726	-25.2640	-26.1374	-17.8106	25.1167
38	75.1266	26.6259	-28.8440	-43.0577	-17.8107	25.1167
39	75.7765	24.6831	-31.5735	-59.9779	-17.8108	25.1167
40	83.9185	23.5491	-33.3716	142.3046	-92.2894	-33.9764
41	-824.8375	220.0013	64.9610	730.1329	-247.1541	-67.8435
42	-733.6622	247.4366	66.4839	559.8512	-232.0380	-61.8641
43	-568.3844	232.7017	61.2638	410.0358	-210.2216	-54.5202
44	-424.1950	211.4011	53.4675	279.3414	-188.9248	-46.7238
45	-298.9598	190.6499	45.2710	167.2030	-168.1723	-38.5274
46	-191.9880	170.5020	36.7324	73.9594	-155.1021	-32.1128

47	-103.4907	158.0700	30.0398	-1.4582	-135.5940	-23.2962
48	-32.2876	139.2628	21.0146	-60.9717	-116.7877	-14.2709
49	23.6564	121.1462	11.8547	-105.7281	-98.6689	-5.1111
50	65.5986	103.7813	2.6400	-457.9482	-97.0987	-86.6695
51	457.9482	97.0987	86.6695	-427.0182	-80.4112	-78.1803
52	427.0182	80.4112	78.1803	-375.1259	-63.3233	-66.6934
53	-24.9071	69.5144	-40.2768	-421.0411	-63.3402	-66.6931
54	421.0411	63.3402	66.6931	-17.4673	-47.1110	51.2961
55	-22.5585	56.3843	-52.6494	-12.7395	-40.9838	57.2689
56	-23.9434	51.1629	-58.0821	-7.5675	-35.7645	62.7018
57	-24.5441	46.8488	-62.8574	-3.8422	-31.4507	67.4771
58	-22.4379	43.4581	-66.8512	-3.4864	-28.0595	71.4709
59	-15.6667	40.9989	-69.9346	-8.4762	-25.6006	74.5543
60	-2.2412	39.4741	-71.9750	-23.5873	-31.7742	92.3787

ENVOL. MAX. TORSORES -IPF

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	-80.5082	99.5403	312.1993	11.1318	-91.8414	-291.7956
2	-9.2073	91.6636	293.2243	-51.9186	-80.4166	-264.1298
3	48.7214	80.7229	265.9825	-100.7563	-69.5893	-236.9140
4	93.1160	70.3725	239.2564	-141.3446	-62.6726	-218.8527
5	129.9305	63.9324	221.7503	-176.7963	-62.8787	-200.2865
6	176.7963	62.8787	200.2865	-190.3327	-54.5456	-183.8980
7	190.3327	54.5456	183.8980	-193.7080	-46.5283	-166.2062
8	193.7080	46.5283	166.2062	-227.4435	-46.5144	-166.2063
9	227.4435	46.5144	166.2063	-216.0685	-38.8749	-147.3092
10	216.0685	38.8749	147.3092	-196.9098	-31.6377	-127.3059
11	196.9098	31.6377	127.3059	-219.8448	-31.6314	-127.3062
12	219.8448	31.6314	127.3062	-189.2806	-24.8602	-106.2951
13	189.2806	24.8602	106.2951	-154.0757	-18.6212	-84.3750
14	154.0757	18.6212	84.3750	-115.7585	-12.9426	-61.6522
15	115.7585	12.9426	61.6522	-125.1429	-12.9409	-61.6522
16	125.1429	12.9409	61.6522	-81.0553	-7.8820	-41.0562
17	81.0553	7.8820	41.0562	-36.8005	-3.4591	-23.0935
18	36.8005	3.4591	23.0935	6.7708	0.3057	-10.9210
19	-6.7708	-0.3057	10.9210	6.9932	0.3055	-10.9210
20	-6.9932	-0.3055	10.9210	82.1693	-48.1211	-126.8467
21	-331.9537	115.1338	332.1519	221.4931	-124.4541	-355.1871
22	-221.3556	124.4437	356.5730	110.1791	-110.7775	-320.8865
23	-114.6676	111.1169	323.1468	20.4405	-99.9781	-288.5470
24	-29.5391	100.7264	291.7206	-56.7451	-87.5384	-257.2625
25	43.2128	88.7398	261.3898	-117.3682	-75.5595	-226.7941
26	99.7337	77.2463	231.9159	-162.1327	-64.1021	-197.4324
27	140.8762	66.3173	203.5894	-192.0574	-53.2338	-169.2564
28	167.7588	56.0054	176.4893	-210.0206	-51.9062	-155.0171
29	210.0206	51.9062	155.0171	-217.4418	-45.2906	-140.8156
30	217.4418	45.2906	140.8156	-216.1648	-38.8038	-126.1393
31	216.1648	38.8038	126.1393	-253.0322	-38.8085	-126.1392
32	253.0322	38.8085	126.1392	-237.4988	-32.5190	-110.9880
33	237.4988	32.5190	110.9880	-214.6362	-26.4814	-95.3618
34	214.6362	26.4814	95.3618	-185.4932	-20.7990	-79.2610
35	185.4932	20.7990	79.2610	-151.4190	-15.5411	-62.6857
36	151.4190	15.5411	62.6857	-113.9548	-10.7722	-45.6419
37	113.9548	10.7722	45.6419	-74.2537	-6.5220	-30.3531
38	74.2537	6.5220	30.3531	-33.9119	-2.8309	-17.1496
39	33.9119	2.8309	17.1496	6.1286	0.3205	-8.4652
40	-6.1286	-0.3205	8.4652	74.9436	-48.2856	-124.1010
41	-206.3517	99.5042	263.8401	135.0669	-110.5567	-287.2584
42	-134.3801	110.4879	288.5136	57.0659	-102.7873	-268.1099
43	-59.4227	102.9266	269.9225	-10.0191	-91.6862	-240.1379
44	4.6363	92.0828	242.5298	-67.1923	-80.8434	-212.7450
45	58.8512	81.5025	215.7422	-105.4982	-75.3156	-193.2156
46	105.4982	75.3156	193.2156	-160.1002	-75.3337	-193.2154
47	160.1002	75.3337	193.2154	-180.4082	-68.1443	-177.5535
48	180.4082	68.1443	177.5535	-193.7726	-60.5689	-160.6884
49	193.7726	60.5689	160.6884	-198.9939	-52.7006	-142.5215
50	198.9939	52.7006	142.5215	-237.2190	-52.7127	-142.5215
51	237.2190	52.7127	142.5215	-227.3795	-44.5579	-122.9539
52	227.3795	44.5579	122.9539	-207.3523	-36.2069	-101.8876
53	207.3523	36.2069	101.8876	-233.6091	-36.2210	-101.8872
54	233.6091	36.2210	101.8872	-196.5181	-27.7104	-79.2287
55	196.5181	27.7104	79.2287	-147.8859	-19.1022	-54.9190
56	147.8859	19.1022	54.9190	-95.2150	-11.3042	-32.9234
57	95.2150	11.3042	32.9234	-103.4099	-11.3049	-32.9233
58	103.4099	11.3049	32.9233	-2.6775	2.5816	-4.1742
59	21.0937	-1.5149	10.5177	-0.8058	2.5817	-4.1742
60	8.0747	-2.6420	7.2083	1.0660	2.5817	-4.1742

ENVOL. MIN. FLECTORES -IPF

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	-81.3068	101.8765	316.3305	23.5476	11.1997	33.3854
2	-23.5476	-11.1997	-33.3854	31.7678	11.4038	34.1511
3	-31.7678	-11.4038	-34.1511	52.1208	28.5467	50.6389
4	-52.1218	-28.5461	-50.6389	72.8178	28.5461	50.6389
5	-72.8537	-28.6546	-51.6888	93.6278	28.6546	51.6888
6	-93.6278	-28.6567	-51.6888	114.4045	28.6567	51.6888
7	-114.4036	-28.6459	-51.6887	135.1835	33.1191	63.9753
8	-135.1830	-33.1180	-63.9753	159.1956	33.1174	63.9753
9	-159.2017	-33.1123	-63.9753	186.1259	37.8937	60.0695
10	-186.1285	-37.8948	-60.0695	214.1928	40.2532	60.7775
11	-214.1973	-40.2492	-60.7775	243.3786	40.2483	60.7775
12	-243.3711	-40.2356	-60.7775	274.1937	42.5966	61.4855
13	-274.1999	-42.6310	-62.4071	306.1100	44.9907	63.1151
14	-306.1129	-44.9946	-63.1151	339.0884	47.3533	63.8231
15	-339.0868	-47.3357	-63.8231	373.4058	47.3345	63.8231
16	-373.4061	-47.3286	-63.8231	409.1374	49.6890	64.5311
17	-410.5227	-60.1737	-37.3704	454.9166	62.5330	38.0784
18	-467.2047	-100.6100	-6.2424	551.0351	135.6835	1.7116
19	-568.4786	-182.5311	6.1955	700.8139	182.5305	-6.1955
20	-714.3174	-214.5635	-3.9689	881.4793	160.1516	-30.3382
21	-924.7810	213.9447	120.9145	669.0516	-265.9670	-112.7019
22	-674.1180	237.8510	122.7606	450.9890	-230.7694	-120.6366
23	-464.8645	195.9607	104.0267	298.6001	-143.0300	-68.5777
24	-323.8984	92.7227	52.7760	235.8104	-92.7232	-52.7759
25	-259.4897	42.7768	11.9268	218.8503	-42.7761	-11.9268
26	-237.1770	7.4433	-51.6207	230.1059	-7.4429	51.6207
27	-231.1484	6.2659	-55.8579	225.1926	-6.2664	55.8579
28	-225.2732	6.1738	-56.4884	219.4086	-6.1739	56.4884
29	-219.4078	6.1660	-56.4884	213.5497	-6.1648	56.4884
30	-213.5535	6.1650	-56.4884	207.6963	-6.1635	56.4884
31	-207.6932	6.1569	-56.4884	201.8473	-6.1458	56.2964
32	-201.8471	6.1375	-56.2964	196.0163	-6.1373	56.2964
33	-196.0184	6.1360	-56.2964	190.1886	-6.1367	56.2964
34	-190.1877	6.1425	-56.2964	190.0055	3.1363	49.2118

35	-190.0409	-3.1950	-48.7462	201.2149	13.9046	54.4948
36	-201.2739	-14.2616	-51.6580	216.4736	16.6215	52.3662
37	-231.4910	-52.5790	2.7506	282.9727	54.9388	-2.0426
38	-303.7183	-104.4980	12.0294	421.2047	141.4462	-14.0609
39	-440.7673	-183.8941	19.2178	619.3634	190.9750	-17.0938
40	-643.4666	-233.0751	-3.0029	872.3376	171.8060	-10.1749
41	-916.7181	193.6736	73.4189	735.0427	-247.2457	-66.1929
42	-740.3483	233.1539	91.9031	574.1005	-225.4554	-71.4993
43	-588.5439	192.3159	68.9987	467.3469	-141.8414	-34.3454
44	-485.1502	92.4576	5.6003	418.1205	-92.4536	-5.6003
45	-433.7421	49.6736	-43.8613	397.7273	-49.6772	43.8613
46	-403.6877	38.8631	-74.9424	375.5132	-38.8618	74.9424
47	-375.5085	38.8439	-74.9425	347.3495	-38.8318	74.9426
48	-347.3557	38.8148	-74.9425	319.2173	-38.8070	74.9425
49	-319.2198	38.7938	-74.9425	291.0917	-38.7921	74.9425
50	-291.0872	38.7814	-74.9426	262.9661	-38.7825	74.9426
51	-262.9702	38.7794	-74.9426	234.8528	-38.7775	74.9426
52	-234.8530	38.7719	-74.9426	206.7421	-38.7677	74.9426
53	-206.7483	38.7590	-74.9427	178.6477	-38.7560	74.9427
54	-178.6492	38.7422	-74.9427	150.5594	-38.7395	74.9427
55	-150.5677	38.6559	-73.6875	122.5413	-38.6542	73.6875
56	-122.5536	38.6065	-72.9326	94.5633	-38.6070	72.9326
57	-94.5615	38.6020	-72.9325	66.5722	-38.6029	72.9325
58	-66.5732	38.5982	-72.9326	38.6160	-38.5561	72.5963
59	-38.6144	38.5580	-72.5962	11.6049	-31.2810	48.2212
60	-14.7452	10.3121	23.6177	51.3239	64.1900	-128.4415

ENVOL. MIN. CORTANTES -IPF

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	10.7557	-24.0819	-42.1278	2.3842	29.4281	49.6419
2	-6.7046	-24.0825	-42.1278	4.6837	31.3263	48.4041
3	-24.1657	-24.0833	-42.1278	-4.9066	34.7608	46.1387
4	-41.6270	-24.0832	-42.1278	-7.7797	37.9706	44.1335
5	38.6592	-26.7093	-37.1378	-27.8084	43.8563	40.7177
6	63.4709	-33.5079	-33.4748	-50.9312	51.2369	36.8847
7	319.3592	-43.4548	24.8854	-409.6045	60.9930	-31.7452
8	409.6045	-60.9930	31.7452	-72.7117	66.9250	30.0879
9	365.3882	-60.9975	31.7452	-420.3962	78.1887	-35.4180
10	420.3962	-78.1887	35.4180	-454.2404	94.9819	-36.0897
11	454.2404	-94.9819	36.0897	-59.9832	101.3353	41.0926
12	100.2025	-96.0840	-34.6588	-25.4967	117.4807	22.7221
13	63.0447	-112.9953	-16.7546	27.4618	135.4714	23.4985
14	6.6640	-131.7053	-18.0771	95.4667	154.1873	24.8208
15	-65.4179	-151.1082	-20.0201	180.5557	166.5086	24.6398
16	-155.1331	-164.0748	-20.5290	283.9171	186.5532	27.2728
17	-263.5409	-184.7332	-23.9158	405.3562	207.2134	30.6596
18	-390.3275	-205.9436	-28.1147	545.5722	228.4231	34.8585
19	-536.0652	-227.6612	-33.1778	706.7017	243.0596	37.7975
20	-702.6365	-242.7335	-36.1036	755.1271	224.7455	34.2402
21	-140.5132	-91.2324	-20.7094	-58.5368	17.4465	22.6909
22	58.5368	-17.4465	-22.6909	-58.3486	18.3252	19.2970
23	41.9630	-17.4469	-22.6909	-62.8075	20.1780	18.4133
24	25.3885	-17.4452	-22.6909	-73.8612	22.9334	17.2399
25	113.1054	-18.3134	30.5048	-89.9834	26.6711	15.8584
26	264.8195	-26.3659	10.7282	-339.8638	36.8824	-13.3189
27	339.8638	-36.8824	13.3189	-405.0299	48.2539	-14.9606
28	405.0299	-48.2539	14.9606	-457.6448	60.2968	-15.6520
29	457.6448	-60.2968	15.6520	-495.6016	72.8951	-15.3931
30	495.6016	-72.8951	15.3931	-517.3363	85.8730	-14.1845
31	517.3363	-85.8730	14.1845	-238.7712	86.4365	8.3960
32	435.7621	-85.8680	14.1845	-231.7562	102.6307	7.0372
33	427.8289	-99.0551	12.0257	-204.1045	120.4106	6.3230
34	254.7300	-114.4233	-0.6800	-152.3268	139.7252	6.4003
35	197.5217	-134.8404	-1.3633	-57.2912	161.9465	8.6292
36	95.8730	-158.1247	-4.2802	68.8941	185.3871	12.4575
37	-37.8717	-182.5461	-8.8774	225.4734	209.8048	17.0548
38	-202.6749	-207.8611	-14.3256	413.9775	235.1188	22.5030
39	-399.7500	-233.9751	-20.7050	635.5060	261.2336	28.8824
40	-629.8828	-260.8130	-28.0933	804.5073	245.1160	36.4588
41	-167.1691	-91.2590	-31.4989	-87.5231	6.6717	-11.4481
42	64.8845	-4.8709	8.1021	-91.2214	7.3378	-12.0486
43	61.3541	-4.8714	8.1021	-100.0596	8.5146	-13.1013
44	61.3364	-5.4529	22.2067	-113.5087	10.2366	-14.5541
45	104.2799	-9.8405	37.4974	-202.1983	18.9966	-15.0000
46	202.1983	-18.9966	15.0000	-188.4239	18.9895	-15.0002
47	188.4239	-18.9895	15.0002	-275.1182	29.8377	-21.9644
48	275.1182	-29.8377	21.9644	-356.3327	41.8092	-27.3249
49	356.3327	-41.8092	27.3249	-428.9679	54.8342	-30.8689
50	428.9679	-54.8342	30.8689	-389.2204	54.8214	-30.8692
51	389.2204	-54.8214	30.8692	-440.1822	68.7674	-32.4003
52	440.1822	-68.7674	32.4003	-476.3434	83.5658	-31.7218
53	476.3434	-83.5658	31.7218	-415.7663	83.5525	-31.7218
54	415.7663	-83.5525	31.7218	-423.5634	99.0590	-28.6374
55	423.5634	-99.0590	28.6374	-411.8149	115.2188	-22.9489
56	411.8149	-115.2188	22.9489	-378.8458	131.9242	-14.4601
57	378.8458	-131.9242	14.4601	-283.2083	131.9087	-14.4601
58	283.2083	-131.9087	14.4601	-215.3248	149.0163	-2.9730
59	215.3248	-149.0163	2.9730	-123.6668	166.4569	11.6986
60	123.6668	-166.4569	-11.6986	8.7467	178.4322	-26.9926

ENVOL. MIN. TORSORES -IPF

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	3.4911	-10.5119	-13.6747	9.3232	12.0887	16.6689
2	-4.1304	-10.5126	-13.6747	13.6984	12.5053	19.3474
3	-11.7527	-10.5131	-13.6747	11.0568	13.7061	22.8283
4	37.0639	-3.7722	-18.2902	9.5827	14.9668	25.7259
5	34.3295	-3.7714	-18.2902	-0.0922	17.4214	30.7530
6	66.5538	-7.9153	-30.5390	-130.2175	16.9748	40.7790
7	130.2175	-16.9748	-40.7790	-181.6930	25.9421	52.6713
8	181.6930	-25.9421	-52.6713	-162.8852	25.9425	52.6713
9	162.8852	-25.9425	-52.6713	-196.3128	34.7373	66.1571
10	196.3128	-34.7373	-66.1571	-218.8659	43.3322	81.1434
11	218.8659	-43.3322	-81.1434	-187.4448	43.3336	81.1433
12	187.4448	-43.3336	-81.1433	-193.9234	51.6678	97.5316
13	193.9234	-51.6678	-97.5316	-191.6215	59.6973	115.2235
14	191.6215	-59.6973	-115.2235	-181.7091	67.3614	134.1201
15	181.7091	-67.3614	-134.1201	27.3854	71.7982	137.4331
16	132.8800	-67.3564	-134.1201	61.9728	80.8948	157.4304
17	111.4476	-74.5867	-154.1234	147.2142	93.8388	180.7428
18	-138.0041	-93.0061	-176.5519	208.4028	104.2467	206.3367

19	-201.7399	-103.6802	-203.3834	279.6994	111.3801	223.7870
20	-275.6334	-111.0532	-222.0931	312.8135	103.7036	221.6974
21	-66.4759	-43.4789	-117.4663	147.7214	-5.3907	31.7678
22	-130.6109	9.5348	-17.8319	136.1815	-4.9001	34.8304
23	-121.5530	9.5368	-17.8319	119.0018	-3.8728	39.1604
24	28.8594	-2.3476	-22.0479	96.6984	-2.2222	44.7985
25	73.5894	-6.5295	-29.8925	70.3156	0.1027	51.8015
26	117.2454	-11.2971	-40.3009	41.1414	3.1525	60.2263
27	157.5118	-16.5562	-51.1780	10.6683	6.9638	70.1287
28	192.8411	-22.2417	-62.5294	-19.4417	11.5712	81.5661
29	221.8930	-28.2662	-74.3562	-47.4190	16.9840	94.5946
30	243.6164	-34.5623	-86.6579	-71.4044	23.2261	109.2709
31	257.2332	-41.0481	-99.4346	-78.4217	28.3706	121.2149
32	107.3611	-24.0273	-107.7027	-89.0049	36.0384	138.8750
33	116.9126	-32.2840	-126.6826	-90.2575	44.5154	158.3363
34	116.3814	-41.3433	-147.5052	-80.3903	53.7897	179.6561
35	104.0566	-51.1694	-170.2265	-57.7586	63.8243	202.8904
36	78.3754	-61.7326	-194.9034	-20.8657	74.5856	228.0961
37	37.9582	-72.9869	-221.5921	31.5544	86.0085	255.3442
38	-18.3168	-84.8585	-250.3644	100.6298	98.0860	284.6163
39	-91.4226	-97.3337	-281.2005	187.2242	110.7507	315.9680
40	-182.0636	-110.3617	-314.1552	301.3698	106.8825	312.4489
41	-84.6920	-43.6471	-129.3442	283.7520	-21.6165	52.4092
42	-284.0798	29.1669	-33.8181	265.7248	-21.4673	54.2219
43	-262.8510	28.7823	-36.2102	243.4661	-20.9973	57.6685
44	-237.4405	28.0367	-40.2620	216.7221	-20.0914	62.1109
45	-207.6606	26.8418	-45.3390	185.9197	-18.7208	67.6010
46	-174.0005	25.1718	-51.4956	158.5429	-17.4714	71.8992
47	-144.0022	23.5719	-56.4945	123.2491	-15.2443	79.1949
48	-106.3887	21.0126	-64.5283	85.9180	-12.4699	87.6946
49	-67.0808	17.8678	-73.8062	47.4870	-9.0882	97.4698
50	-27.0652	14.1054	-84.4026	19.6282	-6.4057	104.8062
51	1.9360	11.0376	-92.6050	-16.7973	-2.0060	116.7988
52	39.0274	6.2249	-105.5122	-51.1312	3.0744	130.2727
53	73.5197	0.7178	-119.9516	-71.2486	6.9808	140.3552
54	93.2533	-3.6090	-131.0530	-97.2833	13.1857	156.4194
55	118.3317	-10.2503	-148.1924	-117.4083	20.1208	174.2061
56	136.9012	-17.6281	-167.1129	-130.1145	27.8014	193.8100
57	147.4390	-25.7583	-187.9135	-125.9704	33.4596	208.3172
58	140.5031	-31.8745	-203.6810	-120.4412	42.3635	231.0997
59	131.5423	-41.2413	-227.7904	-103.0941	52.0536	255.9823
60	110.1200	-51.3829	-254.0646	-70.0762	59.0817	274.4682

ENVOL. MAX. FLECTORES -EC1

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	61.0640	66.3774	-239.1664	-104.5895	-96.3469	112.9074
2	113.7297	147.9937	-2.0505	-223.2076	-150.2998	-158.6737
3	230.7187	147.7039	134.6173	-340.2237	-153.4057	-140.8979
4	340.2229	153.4052	140.8980	-431.1609	-127.6569	-182.6920
5	431.1571	127.6573	182.6918	-510.5068	-103.7259	-150.6528
6	510.5063	103.7284	150.6530	-570.5182	-75.4984	-126.8560
7	570.5162	75.4890	126.8557	-617.6812	-37.5404	-123.5782
8	617.6820	37.5348	123.5782	-644.5537	-33.7356	-130.3774
9	644.5634	33.7309	130.3774	-652.4675	-2.7868	-112.7194
10	652.4713	2.7898	112.7194	-647.7759	21.1451	-80.6803
11	647.7816	-21.1533	80.6803	-624.5575	31.8093	-101.1767
12	624.5526	-31.8097	101.1765	-582.7770	69.7555	-97.8993
13	582.7810	-69.7299	98.6975	-527.2734	97.4444	-72.8501
14	527.2752	-97.4438	72.8500	-452.5732	110.9147	-17.6612
15	452.5724	-110.9298	17.6612	-365.6393	131.4640	-57.1088
16	365.6411	-131.4612	57.1089	-271.8839	151.6374	-47.0820
17	273.0851	-142.5630	23.5530	-171.2353	134.1351	-21.0005
18	181.8802	-101.1528	-6.5788	-106.5535	94.7509	59.7745
19	121.6628	-54.1650	-66.6243	-84.6142	45.1378	26.4468
20	96.3112	-17.3890	-17.6416	-83.2813	29.7100	43.1290
21	99.6524	-9.4551	-38.7932	-83.1443	23.8461	28.6879
22	87.5335	0.5121	-37.4016	-92.1628	-9.9691	71.3818
23	104.1816	40.1194	-56.9926	-159.2056	-57.0524	-31.6781
24	181.1188	100.6334	45.3673	-265.3268	-77.3927	-41.1894
25	285.8378	120.6610	76.5765	-389.6057	-86.1587	-40.9940
26	405.4787	116.7646	96.0447	-516.3860	-92.9499	-91.1158
27	517.2905	93.9703	94.7862	-606.5153	-83.3989	-116.7764
28	606.5109	83.3977	116.7765	-682.0011	-54.0011	-95.0687
29	682.0007	54.0131	95.0685	-730.7357	-26.0737	-72.2607
30	730.7377	26.0708	72.2608	-751.3362	-0.0509	-44.4656
31	751.3334	0.0578	44.4656	-744.6819	10.5396	-66.1870
32	744.6814	-10.5319	66.1870	-710.2599	39.9697	-43.7269
33	710.2603	-39.9636	43.7269	-647.9577	67.8104	-18.2575
34	647.9546	-67.8209	18.2574	-559.9567	107.8448	-19.2234
35	559.9887	-107.7939	18.8199	-444.8160	137.0684	4.1424
36	444.8630	-136.7688	-5.3989	-302.7897	165.9029	28.6124
37	311.0174	-146.3304	-73.3777	-176.8509	154.4321	41.1286
38	194.8232	-111.4947	-49.7800	-96.2523	94.3455	134.9115
39	113.1963	-57.5672	-139.3792	-80.2554	-2.0516	-5.6517
40	92.3617	0.2452	-56.6865	-96.0937	3.2259	-15.4814
41	106.4708	11.4610	-21.8870	-98.1579	7.4545	-12.6448
42	102.7538	4.7540	-9.6278	-110.6096	-20.2621	27.5185
43	117.7953	36.6575	-54.4643	-154.6855	-83.7521	-33.6905
44	170.1082	126.5412	58.5920	-245.7949	-106.8494	-57.2393
45	259.3278	143.9081	100.0873	-350.3491	-113.1970	-117.5912
46	355.5137	122.5640	144.5162	-444.5165	-91.6486	-112.2735
47	444.5110	91.6772	112.2735	-513.1070	-99.0278	-117.2980
48	513.1116	99.0656	117.2982	-566.2345	-67.9124	-133.6759
49	566.2333	67.9213	133.6759	-609.4258	-36.5318	-100.3069
50	609.4177	36.5458	100.3066	-633.5768	-33.2514	-124.4612
51	633.5792	33.2588	124.4611	-642.3437	8.1412	-112.0409
52	642.3393	-8.1302	112.0410	-637.3253	11.6456	-86.4490
53	637.3318	-11.6293	86.4491	-612.2370	43.1405	-101.4924
54	612.2371	-43.1158	101.4927	-575.9625	74.8348	-66.7894
55	575.9727	-74.7494	65.7020	-521.2964	68.8290	-65.3900
56	521.3047	-68.7918	64.7359	-447.9774	119.7159	-75.3444
57	447.9711	-119.7035	75.3443	-364.7996	111.1348	12.5897
58	364.8015	-111.1320	-12.5896	-264.5960	149.0944	15.8674
59	264.5946	-149.0939	-15.8674	-151.4223	177.6241	42.9684
60	154.0086	-160.3917	-102.0328	-65.1760	110.7558	209.5735

ENVOL. MAX CORTANTES -EC1

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	-37.7846	211.9029	147.9955	-89.6251	-200.6226	-196.1039
2	84.4155	201.1196	194.7701	-211.3537	-172.7968	-171.7603
3	202.5089	173.6933	169.3990	-323.3304	-155.3289	-139.2781
4	304.7927	157.2990	137.9739	-403.6285	-140.0973	-155.9425
5	389.1892	141.7863	151.6951	-428.6770	-116.0865	-127.3426

6	399.6903	119.6764	125.2844	-446.6857	-98.1455	-118.7345
7	414.1242	102.5048	116.4619	-483.6053	-89.1587	-112.4599
8	448.5396	94.3120	110.0758	-467.8873	-73.1837	-102.2628
9	431.3453	79.1030	99.8647	-437.2188	-58.4216	-90.8927
10	400.1624	65.0955	88.5735	-394.4689	-44.9126	-78.5468
11	357.8299	52.3072	76.3950	-390.9127	-38.9690	-72.3930
12	355.5392	47.0770	70.4920	-331.8875	-27.4434	-59.5212
13	298.5876	36.2408	57.9499	-268.2797	-17.2087	-46.4488
14	237.7692	26.6616	45.2810	-252.2639	-13.3186	-41.2793
15	225.1717	23.3872	40.5846	-184.1547	-4.9876	-28.9801
16	161.0282	15.6616	28.8234	-137.1715	0.1768	-30.2643
17	118.4563	11.0558	30.7052	-54.1857	1.1674	-12.1196
18	101.2585	8.6966	15.6054	-49.7345	1.7803	-13.8915
19	93.7472	7.5962	13.4009	-47.6906	2.1587	-15.3174
20	90.5403	6.9381	11.9451	256.0876	-84.3405	-142.0978
21	-725.9919	235.2706	91.9933	621.4719	-290.6436	-176.7646
22	-625.4254	290.9445	175.5077	375.8630	-261.9637	-154.5531
23	-383.3791	262.5685	152.1504	159.5263	-233.4163	-130.9447
24	-170.5900	234.3739	127.4301	-27.1536	-205.0812	-105.9732
25	12.6938	206.4301	101.3814	-78.0352	-177.3976	-85.3737
26	60.4660	179.1716	79.7398	-169.7061	-154.7290	-71.2286
27	220.6474	157.4478	81.1889	-361.9127	-139.9658	-75.9448
28	318.4086	145.0771	74.5992	-405.5522	-120.6424	-67.6626
29	358.4093	126.7635	66.3481	-425.6011	-102.3923	-58.9094
30	376.1147	109.5263	57.6971	-424.4444	-85.2655	-49.7565
31	373.9853	93.4477	48.7164	-404.8940	-69.4270	-40.2739
32	354.8769	78.6564	39.4771	-370.1287	-54.9070	-30.5328
33	321.9577	65.1719	30.0495	-323.5850	-41.7961	-20.6035
34	278.6191	53.0839	20.5045	-268.9026	-30.1539	-10.5619
35	228.4177	42.4424	10.9173	-42.1093	-22.9898	37.1389
36	134.5728	33.7183	9.5004	-49.8823	-21.0347	33.3336
37	72.1993	29.6161	-27.1300	-59.7501	-19.5324	30.1822
38	50.8102	27.1951	-45.5662	-72.4938	-18.4544	27.6492
39	67.7088	26.5076	-43.6165	-88.7400	-17.7672	25.6996
40	88.2213	26.1707	-42.2151	447.6330	-54.0505	-31.1290
41	-703.7526	220.2211	65.7777	627.1606	-267.1773	-113.1602
42	-630.2180	267.4239	111.9825	438.7506	-260.7523	-125.6558
43	-444.1019	261.2029	123.5654	283.4429	-233.7306	-100.4650
44	-291.0445	234.4096	97.4810	144.6523	-206.7034	-73.8436
45	-154.4220	207.6378	69.9885	-2.1611	-187.0340	-73.2024
46	-19.3095	189.0487	71.6478	-94.0021	-174.2268	-54.7342
47	80.3710	175.7156	49.2153	-138.8477	-148.9491	-59.4273
48	109.6125	152.1104	57.4508	-177.8297	-130.2629	-50.2111
49	145.5058	134.0423	48.1178	-237.8534	-120.7070	-44.1158
50	203.0892	125.1402	41.9755	-241.7414	-103.0075	-33.2452
51	205.2658	108.1120	31.1317	-227.0134	-85.7683	-20.8110
52	189.6281	91.5793	18.8030	-194.2245	-69.0687	-6.8188
53	156.7974	75.6085	4.9999	-206.7809	-62.2792	-0.9977
54	170.2414	69.5580	-0.5441	-162.3053	-49.0805	11.1863
55	127.6299	57.1154	-12.3584	85.3760	-41.3839	80.3803
56	-36.1894	49.2137	-59.2128	68.5138	-39.4060	77.9595
57	-33.1645	45.4761	-63.3495	50.4714	-37.8117	75.9515
58	-59.3643	43.3100	-87.9765	30.3866	-36.6300	74.3030
59	-35.8110	42.5425	-86.6312	7.3842	-35.8717	72.9577
60	-8.7601	42.1974	-85.5321	-21.8391	-42.2021	85.5321

ENVOL. MAX. TORSORES -EC1

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	-102.9257	112.6333	357.4179	21.2666	-112.6376	-357.4179
2	-21.2666	112.6376	357.4179	-52.6368	-95.3890	-311.7055
3	52.6368	95.3890	311.7055	-121.0940	-83.7546	-268.8541
4	114.4747	84.4308	270.8832	-175.4259	-78.1343	-265.9932
5	175.4259	78.1343	265.9932	-190.2357	-63.3174	-221.4039
6	177.6571	64.8262	224.4511	-206.3815	-53.9564	-197.4049
7	191.6659	55.8546	201.0428	-229.7425	-49.1824	-183.3673
8	213.4393	51.4907	187.6470	-227.7140	-40.8204	-159.9693
9	210.3494	43.5183	164.9397	-217.5461	-33.0749	-136.6823
10	199.6162	36.1561	142.3899	-200.6922	-25.9564	-113.6053
11	182.6753	29.4121	120.0942	-201.5792	-22.7439	-102.4187
12	183.9118	26.5611	109.7308	-175.4343	-16.6412	-80.4741
13	158.5343	20.8142	88.6487	-146.1959	-11.1961	-60.0938
14	130.4338	15.7051	69.1679	-139.4026	-9.0330	-51.4926
15	125.1063	13.8596	61.5009	-106.6730	-4.5609	-33.8611
16	94.1288	9.7008	44.8360	-74.1437	-0.7335	-19.1368
17	63.5876	6.1591	31.1082	-43.2194	2.4731	-6.4225
18	34.8356	3.2229	19.4181	-34.7539	3.4471	-1.7426
19	28.6701	2.5016	15.7877	-1.7466	-0.8328	2.4603
20	3.1872	0.3797	8.0530	225.9032	-60.8945	-188.5651
21	-280.4608	113.7749	319.1154	324.4503	-156.0729	-423.8165
22	-324.4503	156.0729	423.8165	183.0824	-138.8247	-378.1039
23	-183.0824	138.8247	378.1039	57.2366	-121.5736	-332.3914
24	-57.2366	121.5736	332.3914	72.4839	-107.5508	-287.4810
25	-72.4839	107.5508	287.4810	19.6250	-93.8237	-247.4882
26	126.3346	84.1981	249.8037	-185.9911	-71.9962	-219.6148
27	167.5787	73.9184	224.9486	-233.6464	-65.1780	-201.7877
28	212.5974	67.5784	208.0535	-251.9612	-55.3588	-177.6138
29	228.8725	58.2672	184.8470	-258.1167	-46.0831	-154.1563
30	233.6345	49.4950	162.3922	-253.2998	-37.3653	-131.4505
31	228.1066	41.3024	140.7242	-238.9186	-29.2936	-109.5316
32	213.7259	33.7540	119.8785	-216.5588	-21.8776	-88.4351
33	192.0684	26.8558	99.8905	-187.9453	-15.1684	-68.1961
34	164.8332	20.6571	80.7954	-154.8891	-9.1919	-48.8528
35	133.7966	15.1808	62.6310	-119.0777	-3.9627	-31.3209
36	100.5737	10.4336	46.3131	-82.3194	0.5131	-15.7664
37	66.8905	6.4129	32.0083	-46.1889	4.2575	-3.0016
38	34.2168	3.0956	20.5283	0.3089	0.1300	-0.1091
39	4.2363	0.4741	11.1568	0.4324	0.1300	-0.1091
40	-21.9645	-1.5057	4.5565	425.6439	-34.7966	-62.4160
41	-172.9992	100.9243	270.1795	111.2922	-117.0294	-307.1496
42	-110.6967	116.9695	308.2370	265.5756	-147.1879	-302.1082
43	-265.5756	147.1879	302.1082	-34.1869	-100.4036	-267.2004
44	29.5234	100.7474	269.2724	-87.6164	-90.4935	-243.8040
45	80.3918	91.0611	246.4005	-143.9928	-84.3923	-228.7251
46	134.3195	85.2081	231.8712	-178.3075	-74.7299	-205.8138
47	166.3500	75.8317	209.5371	-202.7490	-65.1794	-182.8387
48	188.7341	66.5651	187.1693	-217.1126	-55.7468	-159.7779
49	201.3008	57.4269	164.7477	-240.5171	-50.7563	-147.0720
50	223.2165	52.7558	152.7161	-236.7338	-41.7990	-124.5794
51	218.3045	44.1147	130.9345	-223.3501	-33.0434	-102.0026
52	204.1770	35.7089	109.1081	-200.6265	-24.5566	-79.3443
53	181.1337	27.5769	87.2422	-198.7129	-20.9115	-69.5667
54	179.3465	24.2963	78.3008	-164.0933	-13.4461	-49.2624
55	145.3317	17.2017	58.8793	-172.3983	-0.6923	-15.3875
56	154.7407	4.8144	25.9357	-64.3044	3.2898	-7.6852
57	48.2718	1.2273	19.2162	-7.0958	4.0156	-6.4119

58	32.8698	-0.5389	14.1077	-4.1847	4.0160	-6.4119
59	18.8931	-1.9110	10.0914	-1.2736	4.0156	-6.4119
60	7.1805	-2.8882	7.2244	1.6371	4.0149	-6.4119

ENVOL. MIN. FLECTORES -EC1

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	-104.3351	116.0440	362.9391	29.1457	-1.3287	-72.2141
2	-32.1157	-14.5089	38.8728	42.6843	14.6144	-38.4760
3	-42.8401	-14.9284	37.3070	66.2202	37.1631	65.4226
4	-66.2200	-37.1634	-65.4226	93.1616	37.1626	65.4225
5	-93.1937	-37.2522	-66.3319	120.2022	37.2529	66.3319
6	-120.2025	-37.2600	-66.3320	147.2163	37.2587	66.3320
7	-147.2154	-37.2501	-66.3319	174.2194	37.2476	66.3319
8	-174.2196	-37.2453	-66.3320	201.2238	37.2441	66.3320
9	-201.2291	-37.2423	-66.3319	228.2307	37.2418	66.3319
10	-228.2319	-37.2403	-66.3319	255.2343	37.2372	66.3319
11	-255.2392	-37.2255	-66.3320	282.2257	37.2229	66.3320
12	-282.2230	-37.2147	-66.3320	309.2042	37.2118	66.3320
13	-309.2095	-37.2482	-67.1303	336.2154	37.2499	67.1303
14	-336.2180	-37.2478	-67.1304	363.2247	37.2465	67.1306
15	-363.2249	-37.2340	-67.1306	390.2178	37.2283	67.1306
16	-390.2181	-37.2271	-67.1306	425.9628	63.4494	116.6122
17	-427.1509	-72.3736	-94.3209	482.8522	81.9169	115.1000
18	-491.0354	-104.4433	-65.4412	567.6185	114.6064	86.6394
19	-574.9283	-136.1442	-43.0327	674.9392	161.1083	94.8735
20	-679.8120	-173.4570	-70.7242	924.4847	54.1502	-152.4739
21	-854.5023	114.9776	-113.3768	672.4568	-247.4146	-228.0414
22	-676.8268	231.4990	257.9580	473.9216	-165.6589	-104.8989
23	-480.3574	151.3000	130.5070	351.6920	-125.8905	-82.2008
24	-363.7567	102.8055	121.6212	276.2023	-49.0408	85.1238
25	-285.4481	29.7876	-51.2507	257.1538	-29.7880	51.2507
26	-263.1801	18.2598	-56.5742	245.8341	-18.2618	56.5742
27	-245.8609	18.2297	-55.7154	228.5446	-18.2296	55.7154
28	-228.5428	18.2293	-55.7153	218.9520	-9.4353	54.1791
29	-218.9526	9.4257	-54.1791	209.9983	-9.4230	54.1791
30	-210.0006	9.4249	-54.1791	204.0015	-0.4580	58.5656
31	-203.9982	0.4517	-58.5656	208.2074	8.5345	52.8706
32	-208.2077	-8.5404	-52.8708	216.3196	8.5406	52.8708
33	-216.3233	-8.5435	-52.8708	224.4411	8.5446	52.8708
34	-224.4381	-8.5405	-52.8708	232.5501	8.5406	52.8708
35	-232.5806	-8.5902	-52.4674	240.7425	8.5903	52.4674
36	-240.7932	-8.8977	-50.0100	249.2434	8.8964	50.0100
37	-262.2534	-40.0473	-2.2632	304.5740	93.8975	136.6682
38	-318.2678	-82.9781	6.3885	437.3735	129.8213	107.2419
39	-445.7976	-150.1393	-64.9420	592.5552	176.3562	-15.1463
40	-601.0407	-192.0732	46.4977	878.8783	91.0983	-139.0518
41	-811.3965	64.9835	-128.5289	718.6918	-223.2651	-130.4245
42	-723.2881	211.0594	152.6971	574.1591	-198.5595	-108.5329
43	-581.3450	182.1614	135.4787	494.3706	-77.5175	133.9226
44	-502.7556	56.4553	-104.2920	461.8266	-56.4446	104.2920
45	-468.3391	42.2737	-86.4409	437.6919	-42.2701	86.4410
46	-437.6928	42.2703	-86.4410	407.0428	-42.2758	86.4412
47	-407.0424	42.2734	-86.4412	376.3977	-42.2541	86.4412
48	-376.4012	42.2431	-86.4412	345.7902	-42.2189	86.4412
49	-345.7903	42.2133	-86.4412	315.1848	-42.2055	86.4412
50	-315.1806	42.1994	-86.4412	284.5915	-42.2006	86.4414
51	-284.5898	42.1999	-86.4414	253.9999	-42.1949	86.4415
52	-253.9982	42.1924	-86.4415	223.4127	-42.1657	86.4415
53	-223.4131	42.1635	-86.4415	192.8491	-42.1464	86.4415
54	-192.8496	42.1432	-86.4415	162.2925	-42.1439	86.4415
55	-162.2943	42.1371	-86.4415	131.7456	-42.1508	86.4415
56	-131.7564	42.1110	-85.7875	101.2284	-42.1123	85.7875
57	-101.2277	42.1091	-85.7875	70.7110	-42.0944	85.7875
58	-70.7113	42.0932	-85.7875	40.4661	-41.6241	82.1149
59	-40.4656	41.6253	-82.1149	10.6967	-19.2799	17.0581
60	-13.4166	1.1139	45.1752	42.0340	49.7154	-135.8658

ENVOL. MIN. CORTANTES -EC1

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	19.9733	-31.2548	-78.2324	5.1054	37.9256	64.5589
2	2.5541	-27.9150	-66.1297	20.9881	39.0845	63.8026
3	-9.6656	-29.2095	-62.7967	30.7899	41.0570	62.4987
4	-20.0191	-30.8967	-58.5494	36.2327	43.8371	60.7613
5	-9.4830	-34.0777	-54.7009	39.0259	47.4184	58.7029
6	-0.7779	-40.0865	-38.4354	-94.5790	58.1595	9.4168
7	112.9899	-54.3372	-16.4265	-136.5799	73.7847	16.0811
8	155.6825	-70.3381	-22.3862	-102.2724	77.0087	8.7127
9	121.5866	-73.9326	-14.3594	-128.5853	94.0809	12.7157
10	147.6553	-91.3548	-17.7484	-146.0740	111.9855	15.8249
11	164.4715	-109.5990	-20.2854	-120.7229	116.6039	3.7529
12	138.0543	-114.5546	-7.6806	-74.6865	135.3573	9.8222
13	90.6000	-133.6366	-13.2540	-53.7235	155.2908	15.4031
14	67.9047	-153.8664	-18.3739	-17.9123	176.1005	23.7178
15	30.0892	-174.9681	-26.2597	101.4177	184.1878	15.2577
16	-91.4653	-183.3235	-17.4008	169.5936	203.5630	23.5686
17	-162.0405	-202.9514	-25.3405	271.8372	227.4655	19.6559
18	-266.7997	-227.0836	-21.0817	423.1498	254.3170	48.0362
19	-420.6873	-254.1541	-49.1387	607.3676	260.8229	35.4652
20	-607.3682	-260.8213	-35.4652	672.9494	217.3708	36.9556
21	-203.1122	-79.8201	-139.3380	-83.1443	23.8461	28.6879
22	87.1049	-7.2705	-22.9993	-71.8945	24.7503	28.2433
23	84.0602	-8.8756	-22.2336	-67.3263	26.3550	27.4778
24	87.4713	-11.2617	-21.2174	-68.4701	28.7415	26.4614
25	96.0851	-14.5006	-20.0205	-133.7552	33.1050	-3.5225
26	168.0773	-19.7752	10.0731	-231.5211	42.1603	7.0202
27	271.5769	-29.7932	-0.4306	-282.9722	52.8182	4.3593
28	327.6166	-41.4494	2.1991	-327.5413	64.9062	2.2277
29	375.5052	-54.5591	4.2288	-361.7220	78.3667	0.6998
30	411.6485	-69.0668	5.5842	-382.1389	93.1560	-0.1532
31	432.6158	-84.8984	6.1942	-343.6670	102.3715	-0.9501
32	393.2867	-95.1500	6.6771	-330.1576	119.4372	-0.7444
33	324.2862	-116.1676	-4.5225	-260.2268	140.5400	6.8251
34	281.4521	-138.1059	-11.3196	-195.7368	162.3336	13.7308
35	214.3870	-160.3707	-17.5360	-148.2459	177.0385	5.4707
36	181.6673	-173.7237	-1.7028	-34.5292	197.9848	9.6433
37	61.4032	-195.5282	-6.5422	107.3911	219.5675	14.9848
38	-51.5217	-218.5014	-40.0347	261.4323	247.6255	63.2482
39	-257.0836	-247.2896	-64.6497	492.8270	276.2310	88.1137
40	-492.4261	-276.2021	-89.0003	700.2260	233.5819	38.1485
41	-327.9651	-80.8881	-194.2893	-98.1579	7.4545	-12.6448
42	101.4184	-1.2358	1.0617	-98.1057	7.9061	-14.7352
43	103.7838	-1.9180	4.0457	-99.9756	8.5888	-17.7192

44	108.0003	-2.8459	7.9007	-118.2070	10.8546	-24.8399
45	121.0856	-4.9027	22.9546	-163.2507	15.5038	-15.0896
46	150.9981	-8.7353	35.7182	-177.5923	18.0780	-16.8854
47	156.3408	-10.5188	42.0255	-241.0339	26.3723	-23.2583
48	271.2630	-16.7992	29.3534	-303.4297	35.9020	-28.9820
49	336.5714	-26.9946	35.1243	-362.0881	46.6770	-33.7717
50	397.4310	-38.4404	39.8868	-364.7261	51.7788	-35.8848
51	401.4923	-44.2453	41.8947	-409.0874	64.4631	-39.5755
52	446.4153	-57.6528	45.3967	-442.4217	78.3786	-42.0034
53	479.4083	-72.3109	47.5474	-422.1519	85.6402	-43.5454
54	457.8174	-80.3227	48.7195	-428.9013	101.4642	-44.1481
55	462.2422	-96.9250	48.8548	-417.3341	118.4491	-43.0013
56	447.2799	-114.7164	47.1378	-384.8245	136.5861	-39.8982
57	410.2910	-133.6402	43.3579	-308.5617	146.9860	-39.3558
58	328.4459	-144.8497	42.0267	-232.5640	166.9871	-33.2965
59	245.7234	-165.6722	35.0643	-128.9275	188.0245	-24.7434
60	135.0122	-187.4431	26.4046	5.7214	200.7827	-22.4027

ENVOL. MIN. TORSORES -EC1

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	2.4394	-12.2661	-9.5551	8.3861	16.0485	20.9348
2	-6.4539	-12.2665	-9.5551	17.2518	16.3108	22.5400
3	-15.3477	-12.2665	-9.5551	-1.0450	12.9554	24.7297
4	16.3151	-1.6424	-12.3466	-1.5379	14.0479	27.2397
5	12.7900	-8.8792	-12.6115	-23.9313	17.9558	32.8623
6	43.1897	-5.1466	-19.7024	-45.7154	22.4500	42.5712
7	61.2734	-18.0869	-29.1753	-67.5730	27.7908	53.9381
8	30.6986	-33.5592	-48.1321	-64.7930	30.4917	58.9086
9	6.3685	-33.5569	-48.1321	-87.6750	38.2761	70.9560
10	20.7681	-42.5517	-70.0157	-35.1286	52.0943	90.7949
11	35.1286	-52.0943	-90.7949	-86.4790	50.1839	91.9213
12	-2.6406	-52.0955	-90.7948	-2.9400	62.2598	111.9929
13	2.9400	-62.2598	-111.9929	-5.1712	73.1011	135.3219
14	5.1712	-73.1011	-135.3219	-2.2288	84.6723	161.1622
15	2.2288	-84.6723	-161.1622	61.3914	87.2185	163.8337
16	-61.3914	-87.2185	-163.8337	78.0063	96.9973	189.8663
17	-78.0063	-96.9973	-189.8663	106.0512	110.0777	221.7532
18	-106.0512	-110.0777	-221.7532	144.7717	123.9161	257.1067
19	-144.7717	-123.9161	-257.1067	259.7901	125.0731	258.3996
20	-259.7901	-125.0731	-258.3996	281.6110	100.9825	221.1671
21	-189.1567	-56.7753	-157.2213	207.4807	-15.1472	31.8533
22	-207.4807	15.1472	-31.8533	184.7933	-14.5144	35.8358
23	-184.7933	14.5144	-35.8358	154.3054	-13.1453	41.4698
24	-154.3054	13.1453	-41.4698	116.9984	-10.9470	48.8318
25	-116.9984	10.9470	-48.8318	74.2434	-7.8481	57.9990
26	-74.2434	7.8481	-57.9990	27.7381	-3.7927	69.0488
27	-27.7381	3.7927	-69.0488	-20.5429	1.2801	82.0576
28	20.5429	-1.2801	-82.0576	-68.4148	7.4023	97.1037
29	68.4148	-7.4023	-97.1037	-113.5392	14.5912	114.2634
30	113.5392	-14.5912	-114.2634	-153.4797	22.8718	133.6144
31	153.4797	-22.8718	-133.6144	-131.7546	22.8710	133.6146
32	131.7546	-22.8710	-133.6146	-155.1517	32.2322	155.2334
33	155.1517	-32.2322	-155.2334	-167.1290	42.5418	179.3067
34	167.1290	-42.5418	-179.3067	-166.2734	54.1931	205.3599
35	166.2734	-54.1931	-205.3599	-149.5997	67.1256	233.4680
36	149.5997	-67.1256	-233.4680	-114.3146	81.3208	263.7181
37	114.3146	-81.3208	-263.7181	-57.9716	96.6627	296.2092
38	57.9716	-96.6627	-296.2092	21.4214	113.0277	331.0522
39	-21.4214	-113.0277	-331.0522	125.3510	130.3155	368.3697
40	-125.3510	-130.3155	-368.3697	268.8126	103.3874	293.4731
41	-299.8135	-61.8393	-233.7996	331.7889	-25.3060	63.0872
42	-331.7889	25.3060	-63.0872	313.4422	-25.3064	63.0873
43	-313.4422	25.3064	-63.0873	289.9089	-24.9926	68.3835
44	-289.9089	24.9926	-68.3835	256.0432	-23.7742	75.3804
45	-256.0432	23.7742	-75.3804	212.5433	-21.5561	84.1756
46	-212.5433	21.5561	-84.1756	196.9063	-21.5686	84.1756
47	-196.9063	21.5686	-84.1756	147.2589	-18.2205	94.8818
48	-147.2589	18.2205	-94.8818	91.4282	-13.6856	107.6279
49	-91.4282	13.6856	-107.6279	31.2924	-7.8581	122.5617
50	-31.2924	7.8581	-122.5617	25.5942	-7.8542	122.5618
51	-25.5942	7.8542	-122.5618	-31.5156	-0.6397	139.7786
52	31.5156	0.6397	-139.7786	-87.3284	8.0456	159.3878
53	87.3284	-8.0456	-159.3878	-81.4946	8.0432	159.3882
54	81.4946	-8.0432	-159.3882	-125.7166	18.2375	181.5983
55	125.7166	-18.2375	-181.5983	-161.5122	30.0092	206.6499
56	161.5122	-30.0092	-206.6499	-185.6010	43.3234	234.8186
57	185.6010	-43.3234	-234.8186	-154.1903	43.3276	234.8188
58	154.1903	-43.3276	-234.8188	-152.4371	58.2168	266.4160
59	152.4371	-58.2168	-266.4160	-131.1693	74.6540	301.7820
60	131.1693	-74.6540	-301.7820	-77.0493	74.6491	301.7820

4 PRETENSADO

4.1 TRAZADO

El trazado del pretensado en alzado se define en los planos del proyecto mediante una sucesión de tramos formados por recta y parábolas con continuidad en la pendiente. En planta el trazado puede ser recto o curvo, permitiéndose variaciones del radio de curvatura.

Los 2 extremos del trazado son anclajes de tipo activo.

4.2 CÁLCULO DEL PRETENSADO

El cálculo de la fuerza de pretensado se realiza con un programa de cálculo automático que considera las pérdidas de tensión instantáneas y diferidas, de acuerdo con la normativa vigente (EHE). El programa calcula, además, un sistema de fuerzas equivalentes a la introducción del pretensado en la estructura, para su consideración en el modelo de análisis estructural del tablero.

El programa permite la determinación de las pérdidas de la fuerza de pretensado asociadas a los siguientes aspectos:

Pérdidas instantáneas
- a.- Pérdidas por rozamiento.
- b.- Pérdidas de penetración de cuña en anclajes.
- c.- Pérdidas por acortamiento elástico del hormigón.

Pérdidas diferidas
- d.- Pérdidas por retracción del hormigón.
- e.- Pérdidas por fluencia del hormigón.
- f.- Pérdidas por relajación del acero de pretensado.

CÁLCULO ESTRUCTURAL

La acción del pretensado sobre la estructura se realiza considerándolo como un sistema de fuerzas equivalentes, constituido por las fuerzas de anclaje y las de interacción (de desviación o repartidas).

Los resultados del programa de cálculo del pretensado son los siguientes:

a. Definición del trazado del pretensado, mediante su excentricidad y cotas respecto a la fibra superior e inferior del elemento.

b. Listados de tensiones en los cables y de las pérdidas instantáneas y diferidas en cada punto.

c. Longitud afectada por la penetración de las cuñas en anclajes.

d. Alargamiento de los cables al tesar.

e. Fuerzas equivalentes del pretensado en los nudos de los elementos por los que pasan los cables del pretensado.

f. Esfuerzos isostáticos de pretensado en los nudos de los elementos atravesados por el trazado.

Al igual que con cualquier estado de cargas introducido en el programa general de análisis estructural, posteriormente se obtienen las reacciones, desplazamientos, esfuerzos y tensiones en todo punto de la estructura.

```
  PEDELTA, S.L.- INGENIERIA DE ESTRUCTURAS, BARCELONA     ENERO 2002
                                                          Pag.  1

  ------------------------------------------------
    Referencia del Proyecto:

            PASO INFERIOR RIERA DE TORRELLES
  ------------------------------------------------


PROGRAMA DE CALCULO DE PRETENSADO EN NERVIOS DE UN EMPARRILLADO

DATOS GENERALES DE PRETENSADO
-----------------------------


NUMERO DE NERVIOS    =     1
NUMERO DE VANOS  =    3
NUMERO DE SECCIONES POR VANO  =   21
NUMERO DE MATERIALES =     3
LUZ DEL VANO =   1             L (m) =     14.50
LUZ DEL VANO =   2             L (m) =     19.00
LUZ DEL VANO =   3             L (m) =     14.50


COEFICIENTE DE ROZAMIENTO EN CURVA    =      0.21
COEFICIENTE DE DESV. PARASITAS        =    0.0060
RELAJACION      =       0.04
RETRACCION mm/m =     0.250
COEF. FLUENCIA  =     1.900


ACERO DE PRETENSADO (Kp/mm2)
----------------------------

LIMITE DE PROPORCIONALIDAD AL 0,2% =    170.00
TENSION DE ROTURA                  =    190.00
MODULO DE DEFORMACION              =  19000.00



HORMIGON
--------

MODULO DE DEFORMACION DURANTE TESADO (Kp/cm2) = 297000.00
MODULO DE DEFORMACION A 28 DIAS      (Kp/cm2) = 320000.00


CARACTERISTICAS MECANICAS DE LA SECCION     1
-----------------------------------------

AREA DE LA SECCION (m2)    =     8.666
INERCIA DE LA SECCION (m2) =    1.1213
V_SUP. DE LA SECCION (m2)  =      0.52
V_INF. DE LA SECCION (m2)  =      0.72
CANTO DE LA SECCION (m2)   =      1.24


CARACTERISTICAS MECANICAS DE LA SECCION     2
-----------------------------------------

AREA DE LA SECCION (m2)    =    10.590
INERCIA DE LA SECCION (m2) =    1.2275
V_SUP. DE LA SECCION (m2)  =      0.55
V_INF. DE LA SECCION (m2)  =      0.69
CANTO DE LA SECCION (m2)   =      1.24


CARACTERISTICAS MECANICAS DE LA SECCION     3
-----------------------------------------

AREA DE LA SECCION (m2)    =     1.000
INERCIA DE LA SECCION (m2) =    1.0000
V_SUP. DE LA SECCION (m2)  =      0.55
V_INF. DE LA SECCION (m2)  =      0.55
CANTO DE LA SECCION (m2)   =      1.10
```

```
DEFINICION DEL TRAZADO DEL NERVIO =    1   VANO =    1

Parametros de la parabola =     1
A =  0.00000      B =  -0.06429      C =  -0.62500
Origen =     0.00      Final =    1.20
Parametros de la parabola =     2
A =  0.00699      B =  -0.08106      C =  -0.61494
Origen =     1.20      Final =    5.80
Parametros de la parabola =     4
A =  0.00515      B =  -0.05970      C =  -0.67687
Origen =     5.80      Final =   12.50
Parametros de la parabola =     5
A = -0.01724      B =   0.50000      C =  -4.17500
Origen =    12.50      Final =   14.50
                                        (origen en inicio vano)

DEFINICION DEL TRAZADO DEL NERVIO =    1   VANO =    2

Parametros de la parabola =     2
A = -0.02763      B =   0.00000      C =  -0.55000
Origen =     0.00      Final =    2.00
Parametros de la parabola =     3
A =  0.00737      B =  -0.14000      C =  -0.41000
Origen =     2.00      Final =    9.50
Parametros de la parabola =     5
A =  0.00737      B =  -0.14000      C =  -0.41000
Origen =     9.50      Final =   17.00
Parametros de la parabola =     6
A = -0.02763      B =   1.05000      C = -10.52500
Origen =    17.00      Final =   19.00
                                        (origen en inicio vano)

DEFINICION DEL TRAZADO DEL NERVIO =    1   VANO =    3

Parametros de la parabola =     2
A = -0.01724      B =   0.00000      C =  -0.55000
Origen =     0.00      Final =    2.00
Parametros de la parabola =     3
A =  0.00515      B =  -0.08955      C =  -0.46045
Origen =     2.00      Final =    8.70
Parametros de la parabola =     5
A =  0.00699      B =  -0.12158      C =  -0.32111
Origen =     8.70      Final =   13.30
Parametros de la parabola =     6
A =  0.00000      B =   0.06429      C =  -1.55714
Origen =    13.30      Final =   14.50
                                        (origen en inicio vano)



DEFINICION DEL TRAZADO DEL NERVIO=     1

 I      S      Ysup      Yinf     EXC    ALPHA_IZ    ALPHA_DE     CURV
-------------------------------------------------------------------------
 1    0.000   -0.625    0.615   -0.077    0.0000    0.8468    0.0000
 2    0.725   -0.672    0.568   -0.124    0.0000    0.8468    0.0000
 3    1.450   -0.718    0.522   -0.201    0.0035    0.8433    0.0140
 4    2.175   -0.758    0.482   -0.241    0.0136    0.8332    0.0140
 5    2.900   -0.791    0.449   -0.274    0.0238    0.8230    0.0140
 6    3.625   -0.817    0.423   -0.300    0.0339    0.8129    0.0140
 7    4.350   -0.835    0.405   -0.318    0.0440    0.8028    0.0140
 8    5.075   -0.846    0.394   -0.329    0.0542    0.7926    0.0140
 9    5.800   -0.850    0.390   -0.333    0.0643    0.7825    0.0140
10    6.525   -0.847    0.393   -0.330    0.0718    0.7750    0.0103
11    7.250   -0.839    0.401   -0.322    0.0792    0.7676    0.0103
12    7.975   -0.826    0.414   -0.309    0.0867    0.7601    0.0103
13    8.700   -0.807    0.433   -0.290    0.0941    0.7527    0.0103
14    9.425   -0.782    0.458   -0.265    0.1016    0.7452    0.0103
15   10.150   -0.753    0.487   -0.236    0.1091    0.7377    0.0103
16   10.875   -0.717    0.523   -0.200    0.1165    0.7303    0.0103
17   11.600   -0.677    0.563   -0.160    0.1240    0.7228    0.0103
18   12.325   -0.631    0.609   -0.114    0.1315    0.7153    0.0103
19   13.050   -0.586    0.654   -0.038    0.1522    0.6945   -0.0345
20   13.775   -0.559    0.681   -0.011    0.1773    0.6695   -0.0345
21   14.500   -0.550    0.690   -0.002    0.2023    0.6445   -0.0553
22   15.450   -0.575    0.665   -0.027    0.2548    0.5920   -0.0553
23   16.400   -0.650    0.590   -0.133    0.3073    0.5395   -0.0553
24   17.350   -0.749    0.491   -0.232    0.3253    0.5215    0.0147
25   18.300   -0.836    0.404   -0.319    0.3393    0.5075    0.0147
26   19.250   -0.909    0.331   -0.392    0.3533    0.4935    0.0147
27   20.200   -0.969    0.271   -0.452    0.3673    0.4795    0.0147
28   21.150   -1.015    0.225   -0.498    0.3813    0.4654    0.0147
29   22.100   -1.048    0.192   -0.531    0.3953    0.4515    0.0147
30   23.050   -1.068    0.172   -0.551    0.4094    0.4374    0.0147
31   24.000   -1.075    0.165   -0.558    0.4233    0.4234    0.0147
32   24.950   -1.068    0.172   -0.551    0.4373    0.4095    0.0147
33   25.900   -1.048    0.192   -0.531    0.4514    0.3954    0.0147
34   26.850   -1.015    0.225   -0.498    0.4654    0.3814    0.0147
35   27.800   -0.969    0.271   -0.452    0.4793    0.3675    0.0147
36   28.750   -0.909    0.331   -0.392    0.4934    0.3534    0.0147
37   29.700   -0.836    0.404   -0.319    0.5074    0.3394    0.0147
38   30.650   -0.749    0.491   -0.232    0.5214    0.3254    0.0147
39   31.600   -0.650    0.590   -0.133    0.5395    0.3073   -0.0553
40   32.550   -0.575    0.665   -0.027    0.5920    0.2548   -0.0553
41   33.500   -0.550    0.690   -0.002    0.6445    0.2023   -0.0345
42   34.225   -0.559    0.681   -0.011    0.6695    0.1773   -0.0345
43   34.950   -0.586    0.654   -0.069    0.6945    0.1523   -0.0345
44   35.675   -0.631    0.609   -0.114    0.7153    0.1315    0.0103
45   36.400   -0.677    0.563   -0.160    0.7228    0.1240    0.0103
46   37.125   -0.717    0.523   -0.200    0.7302    0.1166    0.0103
47   37.850   -0.753    0.487   -0.236    0.7377    0.1091    0.0103
48   38.575   -0.782    0.458   -0.265    0.7452    0.1016    0.0103
49   39.300   -0.807    0.433   -0.290    0.7526    0.0942    0.0103
50   40.025   -0.826    0.414   -0.309    0.7601    0.0867    0.0103
51   40.750   -0.839    0.401   -0.322    0.7676    0.0792    0.0103
52   41.475   -0.847    0.393   -0.330    0.7750    0.0718    0.0103
53   42.200   -0.850    0.390   -0.333    0.7825    0.0643    0.0140
54   42.925   -0.846    0.394   -0.329    0.7926    0.0542    0.0140
55   43.650   -0.835    0.405   -0.318    0.8028    0.0440    0.0140
56   44.375   -0.817    0.423   -0.300    0.8129    0.0339    0.0140
57   45.100   -0.791    0.449   -0.274    0.8230    0.0238    0.0140
58   45.825   -0.758    0.482   -0.241    0.8331    0.0136    0.0140
59   46.550   -0.718    0.522   -0.170    0.8433    0.0035    0.0140
60   47.275   -0.672    0.568   -0.124    0.8468    0.0000    0.0000
61   48.000   -0.625    0.615   -0.077    0.8468    0.0000    0.0000


 SECCIONES INICIAL Y FINAL DEL TRAZADO       =    1   61
```

```
NUMERO DE VANOS INICIAL Y FINAL DEL TRAZADO =    1    3
PENDIENTE INICIAL DEL TRAZADO = -0.06429
PENDIENTE FINAL DEL TRAZADO   =  0.06429
```

ETAPA DE TESADO INICIAL

PRETENSADO EN EL NERVIO = 1

NUMERO DE CABLES = 12

TENSION EN ANCLAJE IZQUIERDO (Kp/mm2) = 142.50
TESAMOS POR LA IZQUIERDA (SI=1) = 1
TENSION EN ANCLAJE DERECHO (Kp/mm2) = 142.50
TESAMOS POR LA DERECHA (SI=1) = 1

PROPORCION DE TESADO EN LA PRIMERA FASE 0.60
AREA DE PRETENSADO (cm2) = 386.40
PENETRACION DE CUNA EN EXTREMO 1 (mm) = 5.000
PENETRACION DE CUNA EN EXTREMO 2 (mm) = 5.000

LONGITUD AFECT. POR PENETRAC. DE CUNA EXTR-1 (m) = 12.60
LONGITUD AFECT. POR PENETRAC. DE CUNA EXTR-2 (m) = 12.60

TENSION EN LOS CABLES. PERDIDAS INSTANT. (Kp/mm2)

I	X	To	P_ROZ	P_CUNA	P_ELAS	Ti
1	0.00	85.50	0.00	7.54	0.88	77.08
2	0.73	85.50	0.08	7.39	1.03	77.00
3	1.45	85.50	0.22	7.11	1.34	76.84
4	2.18	85.50	0.48	6.59	1.49	76.95
5	2.90	85.50	0.74	6.07	1.63	77.07
6	3.62	85.50	0.99	5.56	1.75	77.20
7	4.35	85.50	1.25	5.04	1.85	77.36
8	5.07	85.50	1.51	4.53	1.91	77.55
9	5.80	85.50	1.76	4.02	1.94	77.78
10	6.52	85.50	1.97	3.61	1.93	78.00
11	7.25	85.50	2.18	3.19	1.89	78.24
12	7.97	85.50	2.38	2.78	1.82	78.51
13	8.70	85.50	2.59	2.37	1.74	78.81
14	9.43	85.50	2.79	1.96	1.63	79.12
15	10.15	85.50	3.00	1.55	1.51	79.44
16	10.88	85.50	3.20	1.14	1.39	79.77
17	11.60	85.50	3.41	0.73	1.27	80.09
18	12.33	85.50	3.61	0.00	1.07	80.82
19	13.05	85.50	4.04	0.00	0.88	80.58
20	13.78	85.50	4.54	0.00	0.87	80.09
21	14.50	85.50	5.04	0.00	0.86	79.60
22	15.45	85.50	6.02	0.00	0.94	78.54
23	16.40	85.50	6.98	0.00	1.17	77.35
24	17.35	85.50	7.37	0.00	1.45	76.68
25	18.30	85.50	7.70	0.00	1.82	75.99
26	19.25	85.50	8.02	0.00	2.21	75.27
27	20.20	85.50	8.34	0.00	2.60	74.56
28	21.15	85.50	8.66	0.00	2.93	73.91
29	22.10	85.50	8.97	0.00	3.18	73.34
30	23.05	85.50	9.29	0.00	3.34	72.87
31	24.00	85.50	9.60	0.00	3.38	72.52
32	24.95	85.50	9.29	0.00	3.34	72.87
33	25.90	85.50	8.97	0.00	3.18	73.34
34	26.85	85.50	8.66	0.00	2.93	73.91
35	27.80	85.50	8.34	0.00	2.60	74.56
36	28.75	85.50	8.02	0.00	2.21	75.27
37	29.70	85.50	7.70	0.00	1.82	75.99
38	30.65	85.50	7.37	0.00	1.45	76.68
39	31.60	85.50	6.98	0.00	1.06	77.46
40	32.55	85.50	6.02	0.00	0.86	78.63
41	33.50	85.50	5.04	0.00	0.86	79.60
42	34.23	85.50	4.54	0.00	0.95	80.00
43	34.95	85.50	4.04	0.00	1.10	80.35
44	35.68	85.50	3.61	0.00	1.18	80.71
45	36.40	85.50	3.41	0.73	1.27	80.09
46	37.13	85.50	3.20	1.14	1.39	79.77
47	37.85	85.50	3.00	1.55	1.51	79.44
48	38.58	85.50	2.79	1.96	1.63	79.12
49	39.30	85.50	2.59	2.37	1.74	78.81
50	40.03	85.50	2.38	2.78	1.82	78.51
51	40.75	85.50	2.18	3.19	1.89	78.24
52	41.47	85.50	1.97	3.61	1.93	78.00
53	42.20	85.50	1.76	4.02	1.94	77.78
54	42.92	85.50	1.51	4.53	1.91	77.55
55	43.65	85.50	1.25	5.04	1.85	77.36
56	44.37	85.50	0.99	5.56	1.75	77.20
57	45.10	85.50	0.74	6.07	1.63	77.07
58	45.82	85.50	0.48	6.59	1.36	77.07
59	46.55	85.50	0.22	7.11	1.04	77.13
60	47.27	85.50	0.08	7.39	0.94	77.09
61	48.00	85.50	0.00	7.54	0.88	77.08

ALARGAMIENTO DE LOS CABLES (sobre embolo)= 204.8 mm

ETAPA DE TESADO INICIAL

TENSION EN LOS CABLES. PERDIDAS DIFERIDAS (Kp/mm2)

I	S	Ti	P_RETRA	P_FLUE	P_RELAJ.
1	0.00	77.08	0.00	0.00	0.00
2	0.73	77.00	0.00	0.00	0.00
3	1.45	76.84	0.00	0.00	0.00
4	2.18	76.95	0.00	0.00	0.00
5	2.90	77.07	0.00	0.00	0.00
6	3.62	77.20	0.00	0.00	0.00
7	4.35	77.36	0.00	0.00	0.00
8	5.07	77.55	0.00	0.00	0.00
9	5.80	77.78	0.00	0.00	0.00
10	6.52	78.00	0.00	0.00	0.00
11	7.25	78.24	0.00	0.00	0.00
12	7.97	78.51	0.00	0.00	0.00
13	8.70	78.81	0.00	0.00	0.00
14	9.43	79.12	0.00	0.00	0.00
15	10.15	79.44	0.00	0.00	0.00
16	10.88	79.77	0.00	0.00	0.00
17	11.60	80.09	0.00	0.00	0.00
18	12.33	80.82	0.00	0.00	0.00
19	13.05	80.58	0.00	0.00	0.00
20	13.78	80.09	0.00	0.00	0.00
21	14.50	79.60	0.00	0.00	0.00
22	15.45	78.54	0.00	0.00	0.00
23	16.40	77.35	0.00	0.00	0.00
24	17.35	76.68	0.00	0.00	0.00
25	18.30	75.99	0.00	0.00	0.00
26	19.25	75.27	0.00	0.00	0.00
27	20.20	74.56	0.00	0.00	0.00
28	21.15	73.91	0.00	0.00	0.00
29	22.10	73.34	0.00	0.00	0.00
30	23.05	72.87	0.00	0.00	0.00
31	24.00	72.52	0.00	0.00	0.00
32	24.95	72.87	0.00	0.00	0.00
33	25.90	73.34	0.00	0.00	0.00
34	26.85	73.91	0.00	0.00	0.00
35	27.80	74.56	0.00	0.00	0.00
36	28.75	75.27	0.00	0.00	0.00
37	29.70	75.99	0.00	0.00	0.00
38	30.65	76.68	0.00	0.00	0.00
39	31.60	77.46	0.00	0.00	0.00
40	32.55	78.63	0.00	0.00	0.00
41	33.50	79.60	0.00	0.00	0.00
42	34.23	80.00	0.00	0.00	0.00
43	34.95	80.35	0.00	0.00	0.00
44	35.68	80.71	0.00	0.00	0.00
45	36.40	80.09	0.00	0.00	0.00
46	37.13	79.77	0.00	0.00	0.00
47	37.85	79.44	0.00	0.00	0.00
48	38.58	79.12	0.00	0.00	0.00
49	39.30	78.81	0.00	0.00	0.00
50	40.03	78.51	0.00	0.00	0.00
51	40.75	78.24	0.00	0.00	0.00
52	41.47	78.00	0.00	0.00	0.00
53	42.20	77.78	0.00	0.00	0.00
54	42.92	77.55	0.00	0.00	0.00
55	43.65	77.36	0.00	0.00	0.00
56	44.37	77.20	0.00	0.00	0.00
57	45.10	77.07	0.00	0.00	0.00
58	45.82	77.07	0.00	0.00	0.00
59	46.55	77.13	0.00	0.00	0.00
60	47.27	77.09	0.00	0.00	0.00
61	48.00	77.08	0.00	0.00	0.00

ETAPA DE TESADO INICIAL

TENSION EN LOS CABLES (Kp/mm2)

I	S	To	APi	Ti	APf	Tf
1	0.00	85.50	8.42	77.08	0.00	77.08
2	0.73	85.50	8.50	77.00	0.00	77.00
3	1.45	85.50	8.66	76.84	0.00	76.84
4	2.18	85.50	8.55	76.95	0.00	76.95
5	2.90	85.50	8.43	77.07	0.00	77.07
6	3.62	85.50	8.30	77.20	0.00	77.20
7	4.35	85.50	8.14	77.36	0.00	77.36
8	5.07	85.50	7.95	77.55	0.00	77.55
9	5.80	85.50	7.72	77.78	0.00	77.78
10	6.52	85.50	7.50	78.00	0.00	78.00
11	7.25	85.50	7.26	78.24	0.00	78.24
12	7.97	85.50	6.99	78.51	0.00	78.51
13	8.70	85.50	6.69	78.81	0.00	78.81
14	9.43	85.50	6.38	79.12	0.00	79.12
15	10.15	85.50	6.06	79.44	0.00	79.44
16	10.88	85.50	5.73	79.77	0.00	79.77
17	11.60	85.50	5.41	80.09	0.00	80.09
18	12.33	85.50	4.68	80.82	0.00	80.82
19	13.05	85.50	4.92	80.58	0.00	80.58
20	13.78	85.50	5.41	80.09	0.00	80.09
21	14.50	85.50	5.90	79.60	0.00	79.60
22	15.45	85.50	6.96	78.54	0.00	78.54
23	16.40	85.50	8.15	77.35	0.00	77.35
24	17.35	85.50	8.82	76.68	0.00	76.68
25	18.30	85.50	9.51	75.99	0.00	75.99
26	19.25	85.50	10.23	75.27	0.00	75.27
27	20.20	85.50	10.94	74.56	0.00	74.56
28	21.15	85.50	11.59	73.91	0.00	73.91
29	22.10	85.50	12.16	73.34	0.00	73.34
30	23.05	85.50	12.63	72.87	0.00	72.87
31	24.00	85.50	12.98	72.52	0.00	72.52
32	24.95	85.50	12.63	72.87	0.00	72.87
33	25.90	85.50	12.16	73.34	0.00	73.34
34	26.85	85.50	11.59	73.91	0.00	73.91
35	27.80	85.50	10.94	74.56	0.00	74.56
36	28.75	85.50	10.23	75.27	0.00	75.27
37	29.70	85.50	9.51	75.99	0.00	75.99
38	30.65	85.50	8.82	76.68	0.00	76.68
39	31.60	85.50	8.04	77.46	0.00	77.46
40	32.55	85.50	6.87	78.63	0.00	78.63
41	33.50	85.50	5.90	79.60	0.00	79.60
42	34.23	85.50	5.50	80.00	0.00	80.00
43	34.95	85.50	5.15	80.35	0.00	80.35
44	35.68	85.50	4.79	80.71	0.00	80.71
45	36.40	85.50	5.41	80.09	0.00	80.09
46	37.13	85.50	5.73	79.77	0.00	79.77
47	37.85	85.50	6.06	79.44	0.00	79.44
48	38.58	85.50	6.38	79.12	0.00	79.12

49	39.30	85.50	6.69	78.81	0.00	78.81
50	40.03	85.50	6.99	78.51	0.00	78.51
51	40.75	85.50	7.26	78.24	0.00	78.24
52	41.47	85.50	7.50	78.00	0.00	78.00
53	42.20	85.50	7.72	77.78	0.00	77.78
54	42.92	85.50	7.95	77.55	0.00	77.55
55	43.65	85.50	8.14	77.36	0.00	77.36
56	44.37	85.50	8.30	77.20	0.00	77.20
57	45.10	85.50	8.43	77.07	0.00	77.07
58	45.82	85.50	8.43	77.07	0.00	77.07
59	46.55	85.50	8.37	77.13	0.00	77.13
60	47.27	85.50	8.41	77.09	0.00	77.09
61	48.00	85.50	8.42	77.08	0.00	77.08

ETAPA DE TESADO INICIAL

FUERZAS EN LOS CABLES (T, m)

I	S(m)	Pi (T)	Mpi (mT)	Upi (T/m)	Pf (T)	Mpf (mT)	Upf (T/m)
1	0.00	2978.4	229.34	0.00	2978.4	229.34	0.00
2	0.73	2975.4	367.78	0.00	2975.4	367.78	0.00
3	1.45	2968.9	596.09	41.49	2968.9	596.09	41.49
4	2.18	2973.3	717.09	41.55	2973.3	717.09	41.55
5	2.90	2977.8	816.63	41.62	2977.8	816.63	41.62
6	3.62	2983.0	894.74	41.69	2983.0	894.74	41.69
7	4.35	2989.2	951.49	41.77	2989.2	951.49	41.77
8	5.07	2996.7	986.88	41.88	2996.7	986.88	41.88
9	5.80	3005.5	1000.84	42.00	3005.5	1000.84	42.00
10	6.52	3013.9	995.48	31.02	3013.9	995.48	31.02
11	7.25	3023.4	974.06	31.12	3023.4	974.06	31.12
12	7.97	3033.8	936.40	31.23	3033.8	936.40	31.23
13	8.70	3045.2	882.23	31.34	3045.2	882.23	31.34
14	9.43	3057.2	811.29	31.47	3057.2	811.29	31.47
15	10.15	3069.7	723.25	31.60	3069.7	723.25	31.60
16	10.88	3082.3	617.82	31.73	3082.3	617.82	31.73
17	11.60	3094.7	494.73	31.85	3094.7	494.73	31.85
18	12.33	3123.1	355.64	32.15	3123.1	355.64	32.15
19	13.05	3113.5	119.09	-107.36	3113.5	119.09	-107.36
20	13.78	3094.7	34.24	-106.71	3094.7	34.24	-106.71
21	14.50	3075.7	6.15	-169.98	3075.7	6.15	-169.98
22	15.45	3034.9	81.75	-167.72	3034.9	81.75	-167.72
23	16.40	2988.9	396.77	-165.17	2988.9	396.77	-165.17
24	17.35	2962.9	687.84	43.66	2962.9	687.84	43.66
25	18.30	2936.2	935.48	43.27	2936.2	935.48	43.27
26	19.25	2908.4	1139.36	42.86	2908.4	1139.36	42.86
27	20.20	2881.2	1301.14	42.46	2881.2	1301.14	42.46
28	21.15	2856.0	1422.72	42.09	2856.0	1422.72	42.09
29	22.10	2834.0	1505.98	41.76	2834.0	1505.98	41.76
30	23.05	2815.8	1552.51	41.50	2815.8	1552.51	41.50
31	24.00	2802.0	1563.54	41.29	2802.0	1563.54	41.29
32	24.95	2815.8	1552.48	41.50	2815.8	1552.48	41.50
33	25.90	2833.9	1505.95	41.76	2833.9	1505.95	41.76
34	26.85	2856.0	1422.69	42.09	2856.0	1422.69	42.09
35	27.80	2881.1	1301.10	42.46	2881.1	1301.10	42.46
36	28.75	2908.3	1139.35	42.86	2908.3	1139.35	42.86
37	29.70	2936.2	935.46	43.27	2936.2	935.46	43.27
38	30.65	2962.9	687.83	43.66	2962.9	687.83	43.66
39	31.60	2993.0	397.33	-165.41	2993.0	397.33	-165.41
40	32.55	3038.2	81.84	-167.90	3038.2	81.84	-167.90
41	33.50	3075.7	6.15	-106.06	3075.7	6.15	-106.06
42	34.23	3091.4	34.20	-106.60	3091.4	34.20	-106.60
43	34.95	3104.9	215.01	-107.07	3104.9	215.01	-107.07
44	35.68	3118.7	355.15	32.10	3118.7	355.15	32.10
45	36.40	3094.6	494.73	31.85	3094.6	494.73	31.85
46	37.13	3082.3	617.82	31.73	3082.3	617.82	31.73
47	37.85	3069.6	723.24	31.60	3069.6	723.24	31.60
48	38.58	3057.2	811.28	31.47	3057.2	811.28	31.47
49	39.30	3045.2	882.23	31.34	3045.2	882.23	31.34
50	40.03	3033.8	936.39	31.23	3033.8	936.39	31.23
51	40.75	3023.3	974.06	31.12	3023.3	974.06	31.12
52	41.47	3013.9	995.47	31.02	3013.9	995.47	31.02
53	42.20	3005.5	1000.83	42.00	3005.5	1000.83	42.00
54	42.92	2996.6	986.87	41.88	2996.6	986.87	41.88
55	43.65	2989.2	951.48	41.77	2989.2	951.48	41.77
56	44.37	2983.0	894.74	41.69	2983.0	894.74	41.69
57	45.10	2977.8	816.62	41.62	2977.8	816.62	41.62
58	45.82	2978.0	718.24	41.62	2978.0	718.24	41.62
59	46.55	2980.3	505.99	41.65	2980.3	505.99	41.65
60	47.27	2978.8	368.20	0.00	2978.8	368.20	0.00
61	48.00	2978.4	229.33	0.00	2978.4	229.33	0.00

ETAPA DE TESADO INICIAL

FUERZAS HORIZONTALES DE DESVIACION

I	S(m)	R(m)	Ti (T)	Uh(T/m)	Tf(T)	Uh(T/m)
1	0.00	0.0	2978.39	0.00	2978.39	0.00
2	0.73	0.0	2975.36	0.00	2975.36	0.00
3	1.45	0.0	2968.92	0.00	2968.92	0.00
4	2.18	0.0	2973.29	0.00	2973.29	0.00
5	2.90	0.0	2977.84	0.00	2977.84	0.00
6	3.62	0.0	2983.03	0.00	2983.03	0.00
7	4.35	0.0	2989.21	0.00	2989.21	0.00
8	5.07	0.0	2996.65	0.00	2996.65	0.00
9	5.80	0.0	3005.52	0.00	3005.52	0.00
10	6.52	0.0	3013.90	0.00	3013.90	0.00
11	7.25	0.0	3023.36	0.00	3023.36	0.00
12	7.97	0.0	3033.82	0.00	3033.82	0.00
13	8.70	0.0	3045.15	0.00	3045.15	0.00
14	9.43	0.0	3057.20	0.00	3057.20	0.00
15	10.15	0.0	3069.66	0.00	3069.66	0.00
16	10.88	0.0	3082.26	0.00	3082.26	0.00
17	11.60	0.0	3094.66	0.00	3094.66	0.00
18	12.33	0.0	3123.05	0.00	3123.05	0.00
19	13.05	0.0	3113.48	0.00	3113.48	0.00
20	13.78	0.0	3094.73	0.00	3094.73	0.00
21	14.50	0.0	3075.75	0.00	3075.75	0.00
22	15.45	0.0	3034.88	0.00	3034.88	0.00
23	16.40	0.0	2988.86	0.00	2988.86	0.00
24	17.35	0.0	2962.93	0.00	2962.93	0.00
25	18.30	0.0	2936.22	0.00	2936.22	0.00
26	19.25	0.0	2908.38	0.00	2908.38	0.00
27	20.20	0.0	2881.18	0.00	2881.18	0.00
28	21.15	0.0	2856.00	0.00	2856.00	0.00
29	22.10	0.0	2833.99	0.00	2833.99	0.00
30	23.05	0.0	2815.83	0.00	2815.83	0.00
31	24.00	0.0	2802.04	0.00	2802.04	0.00
32	24.95	0.0	2815.78	0.00	2815.78	0.00
33	25.90	0.0	2833.93	0.00	2833.93	0.00

34	26.85	0.0	2855.95	0.00	2855.95	0.00
35	27.80	0.0	2881.10	0.00	2881.10	0.00
36	28.75	0.0	2908.35	0.00	2908.35	0.00
37	29.70	0.0	2936.17	0.00	2936.17	0.00
38	30.65	0.0	2962.86	0.00	2962.86	0.00
39	31.60	0.0	2993.05	0.00	2993.05	0.00
40	32.55	0.0	3038.16	0.00	3038.16	0.00
41	33.50	0.0	3075.75	0.00	3075.75	0.00
42	34.23	0.0	3091.39	0.00	3091.39	0.00
43	34.95	0.0	3104.90	0.00	3104.90	0.00
44	35.68	0.0	3118.71	0.00	3118.71	0.00
45	36.40	0.0	3094.65	0.00	3094.65	0.00
46	37.13	0.0	3082.27	0.00	3082.27	0.00
47	37.85	0.0	3069.64	0.00	3069.64	0.00
48	38.58	0.0	3057.18	0.00	3057.18	0.00
49	39.30	0.0	3045.16	0.00	3045.16	0.00
50	40.03	0.0	3033.79	0.00	3033.79	0.00
51	40.75	0.0	3023.34	0.00	3023.34	0.00
52	41.47	0.0	3013.88	0.00	3013.88	0.00
53	42.20	0.0	3005.51	0.00	3005.51	0.00
54	42.92	0.0	2996.63	0.00	2996.63	0.00
55	43.65	0.0	2989.18	0.00	2989.18	0.00
56	44.37	0.0	2983.01	0.00	2983.01	0.00
57	45.10	0.0	2977.81	0.00	2977.81	0.00
58	45.82	0.0	2978.03	0.00	2978.03	0.00
59	46.55	0.0	2980.33	0.00	2980.33	0.00
60	47.27	0.0	2978.76	0.00	2978.76	0.00
61	48.00	0.0	2978.36	0.00	2978.36	0.00

TESADO DEFINITIVO

PRETENSADO EN EL NERVIO = 1

NUMERO DE CABLES = 12

TENSION EN ANCLAJE IZQUIERDO (Kp/mm2) = 142.50
TESAMOS POR LA IZQUIERDA (SI=1) = 1
TENSION EN ANCLAJE DERECHO (Kp/mm2) = 142.50
TESAMOS POR LA DERECHA (SI=1) = 1

PROPORCION DE TESADO EN LA PRIMERA FASE 0.60
AREA DE PRETENSADO (cm2) = 386.40
PENETRACION DE CUNA EN EXTREMO 1 (mm) = 5.000
PENETRACION DE CUNA EN EXTREMO 2 (mm) = 5.000

LONGITUD AFECT. POR PENETRAC. DE CUNA EXTR-1 (m) = 9.82
LONGITUD AFECT. POR PENETRAC. DE CUNA EXTR-2 (m) = 9.82

TENSION EN LOS CABLES. PERDIDAS INSTANT. (Kp/mm2)

I	X	To	P_ROZ	P_CUNA	P_ELAS	Ti
1	0.00	142.50	0.00	9.69	1.49	131.32
2	0.73	142.50	0.13	9.42	1.76	131.18
3	1.45	142.50	0.36	8.96	2.28	130.90
4	2.18	142.50	0.80	8.09	2.53	131.08
5	2.90	142.50	1.23	7.23	2.77	131.27
6	3.62	142.50	1.66	6.37	2.98	131.49
7	4.35	142.50	2.08	5.52	3.14	131.75
8	5.07	142.50	2.51	4.67	3.25	132.07
9	5.80	142.50	2.93	3.82	3.30	132.45
10	6.52	142.50	3.28	3.12	3.28	132.82
11	7.25	142.50	3.63	2.43	3.21	133.23
12	7.97	142.50	3.97	1.75	3.10	133.68
13	8.70	142.50	4.31	1.06	2.96	134.17
14	9.43	142.50	4.66	0.00	2.78	135.06
15	10.15	142.50	5.00	0.00	2.57	134.93
16	10.88	142.50	5.34	0.00	2.35	134.81
17	11.60	142.50	5.68	0.00	2.14	134.68
18	12.33	142.50	6.02	0.00	1.78	134.71
19	13.05	142.50	6.73	0.00	1.47	134.29
20	13.78	142.50	7.57	0.00	1.45	133.49
21	14.50	142.50	8.40	0.00	1.43	132.67
22	15.45	142.50	10.03	0.00	1.57	130.90
23	16.40	142.50	11.64	0.00	1.94	128.92
24	17.35	142.50	12.29	0.00	2.41	127.80
25	18.30	142.50	12.83	0.00	3.03	126.65
26	19.25	142.50	13.36	0.00	3.69	125.45
27	20.20	142.50	13.89	0.00	4.33	124.27
28	21.15	142.50	14.43	0.00	4.89	123.19
29	22.10	142.50	14.95	0.00	5.31	122.24
30	23.05	142.50	15.48	0.00	5.56	121.46
31	24.00	142.50	16.01	0.00	5.63	120.86
32	24.95	142.50	15.48	0.00	5.56	121.45
33	25.90	142.50	14.96	0.00	5.31	122.24
34	26.85	142.50	14.43	0.00	4.89	123.19
35	27.80	142.50	13.90	0.00	4.33	124.27
36	28.75	142.50	13.36	0.00	3.69	125.45
37	29.70	142.50	12.83	0.00	3.03	126.65
38	30.65	142.50	12.29	0.00	2.41	127.80
39	31.60	142.50	11.64	0.00	1.76	129.10
40	32.55	142.50	10.03	0.00	1.43	131.05
41	33.50	142.50	8.40	0.00	1.43	132.67
42	34.23	142.50	7.57	0.00	1.59	133.34
43	34.95	142.50	6.74	0.00	1.84	133.92
44	35.68	142.50	6.02	0.00	1.96	134.52
45	36.40	142.50	5.68	0.00	2.14	134.68
46	37.13	142.50	5.34	0.00	2.35	134.81
47	37.85	142.50	5.00	0.00	2.57	134.93
48	38.58	142.50	4.66	0.00	2.78	135.06
49	39.30	142.50	4.31	1.06	2.96	134.17
50	40.03	142.50	3.97	1.75	3.10	133.68
51	40.75	142.50	3.63	2.43	3.21	133.22
52	41.47	142.50	3.28	3.12	3.28	132.82
53	42.20	142.50	2.94	3.81	3.30	132.45
54	42.92	142.50	2.51	4.67	3.25	132.07
55	43.65	142.50	2.08	5.52	3.14	131.75
56	44.37	142.50	1.66	6.37	2.98	131.49
57	45.10	142.50	1.23	7.23	2.77	131.27
58	45.82	142.50	0.80	8.09	2.32	131.29
59	46.55	142.50	0.36	8.96	1.78	131.40
60	47.27	142.50	0.13	9.42	1.61	131.34

```
61    48.00   142.50     0.00     9.69     1.49   131.32

 ALARGAMIENTO DE LOS CABLES (sobre embolo)=      336.2  mm
```

PRETENSADO EN EL NERVIO = 1

TENSION EN LOS CABLES. PERDIDAS DIFERIDAS (Kp/mm2)

I	S	Ti	P_RETRA	P_FLUE	P_RELAJ.
1	0.00	131.32	4.75	5.93	5.35
2	0.73	131.18	4.75	6.41	5.38
3	1.45	130.90	4.75	7.79	5.48
4	2.18	131.08	4.75	8.12	5.51
5	2.90	131.27	4.75	8.39	5.54
6	3.62	131.49	4.75	8.57	5.56
7	4.35	131.75	4.75	8.65	5.58
8	5.07	132.07	4.75	8.62	5.59
9	5.80	132.45	4.75	8.49	5.60
10	6.52	132.82	4.75	8.28	5.59
11	7.25	133.23	4.75	8.03	5.59
12	7.97	133.68	4.75	7.74	5.59
13	8.70	134.17	4.75	7.44	5.58
14	9.43	135.06	4.75	7.17	5.60
15	10.15	134.93	4.75	6.85	5.57
16	10.88	134.81	4.75	6.58	5.54
17	11.60	134.68	4.75	6.40	5.52
18	12.33	134.71	4.75	5.69	5.46
19	13.05	134.29	4.75	5.30	5.42
20	13.78	133.49	4.75	5.43	5.39
21	14.50	132.67	4.75	5.45	5.36
22	15.45	130.90	4.75	5.74	5.32
23	16.40	128.92	4.75	5.85	5.24
24	17.35	127.80	4.75	5.87	5.20
25	18.30	126.65	4.75	6.23	5.18
26	19.25	125.45	4.75	6.76	5.18
27	20.20	124.27	4.75	7.31	5.18
28	21.15	123.19	4.75	7.80	5.17
29	22.10	122.24	4.75	8.16	5.16
30	23.05	121.46	4.75	8.34	5.15
31	24.00	120.86	4.75	8.35	5.12
32	24.95	121.45	4.75	8.34	5.15
33	25.90	122.24	4.75	8.14	5.16
34	26.85	123.19	4.75	7.78	5.17
35	27.80	124.27	4.75	7.29	5.17
36	28.75	125.45	4.75	6.74	5.18
37	29.70	126.65	4.75	6.21	5.18
38	30.65	127.80	4.75	5.85	5.20
39	31.60	129.10	4.75	5.23	5.20
40	32.55	131.05	4.75	5.21	5.28
41	33.50	132.67	4.75	5.45	5.36
42	34.23	133.34	4.75	5.97	5.43
43	34.95	133.92	4.75	6.39	5.49
44	35.68	134.52	4.75	6.33	5.51
45	36.40	134.68	4.75	6.39	5.52
46	37.13	134.81	4.75	6.57	5.54
47	37.85	134.93	4.75	6.83	5.56
48	38.58	135.06	4.75	7.15	5.59
49	39.30	134.17	4.75	7.42	5.58
50	40.03	133.68	4.75	7.72	5.58
51	40.75	133.22	4.75	8.01	5.59
52	41.47	132.82	4.75	8.26	5.59
53	42.20	132.45	4.75	8.48	5.60
54	42.92	132.07	4.75	8.61	5.59
55	43.65	131.75	4.75	8.64	5.58
56	44.37	131.49	4.75	8.56	5.56
57	45.10	131.27	4.75	8.38	5.54
58	45.82	131.29	4.75	7.40	5.46
59	46.55	131.40	4.75	6.10	5.36
60	47.27	131.34	4.75	5.86	5.34
61	48.00	131.32	4.75	5.69	5.33

TENSION EN LOS CABLES (Kp/mm2)

I	S	To	APi	Ti	APf	Tf
1	0.00	142.50	11.18	131.32	16.03	115.29
2	0.73	142.50	11.32	131.18	16.54	114.64
3	1.45	142.50	11.60	130.90	18.01	112.88
4	2.18	142.50	11.42	131.08	18.38	112.70
5	2.90	142.50	11.23	131.27	18.68	112.59
6	3.62	142.50	11.01	131.49	18.88	112.61
7	4.35	142.50	10.75	131.75	18.98	112.77
8	5.07	142.50	10.43	132.07	18.96	113.11
9	5.80	142.50	10.05	132.45	18.84	113.62
10	6.52	142.50	9.68	132.82	18.62	114.19
11	7.25	142.50	9.27	133.23	18.37	114.86
12	7.97	142.50	8.82	133.68	18.08	115.60
13	8.70	142.50	8.33	134.17	17.77	116.40
14	9.43	142.50	7.44	135.06	17.52	117.54
15	10.15	142.50	7.57	134.93	17.17	117.77
16	10.88	142.50	7.69	134.81	16.87	117.94
17	11.60	142.50	7.82	134.68	16.67	118.01
18	12.33	142.50	7.79	134.71	15.91	118.80
19	13.05	142.50	8.21	134.29	15.47	118.83
20	13.78	142.50	9.01	133.49	15.57	117.91
21	14.50	142.50	9.83	132.67	15.56	117.10
22	15.45	142.50	11.60	130.90	15.81	115.10
23	16.40	142.50	13.58	128.92	15.84	113.07
24	17.35	142.50	14.70	127.80	15.82	111.98
25	18.30	142.50	15.85	126.65	16.17	110.48
26	19.25	142.50	17.05	125.45	16.69	108.76
27	20.20	142.50	18.23	124.27	17.24	107.03
28	21.15	142.50	19.31	123.19	17.72	105.47
29	22.10	142.50	20.26	122.24	18.07	104.17
30	23.05	142.50	21.04	121.46	18.24	103.22
31	24.00	142.50	21.64	120.86	18.22	102.64
32	24.95	142.50	21.05	121.45	18.23	103.22
33	25.90	142.50	20.26	122.24	18.06	104.18
34	26.85	142.50	19.31	123.19	17.70	105.48
35	27.80	142.50	18.23	124.27	17.22	107.05
36	28.75	142.50	17.05	125.45	16.66	108.78
37	29.70	142.50	15.85	126.65	16.14	110.50
38	30.65	142.50	14.70	127.80	15.80	112.00
39	31.60	142.50	13.40	129.10	15.18	113.92
40	32.55	142.50	11.45	131.05	15.24	115.80
41	33.50	142.50	9.83	132.67	15.56	117.10
42	34.23	142.50	9.16	133.34	16.15	117.19
43	34.95	142.50	8.58	133.92	16.63	117.30
44	35.68	142.50	7.98	134.52	16.59	117.93
45	36.40	142.50	7.82	134.68	16.66	118.02
46	37.13	142.50	7.69	134.81	16.86	117.96
47	37.85	142.50	7.57	134.93	17.15	117.79

48	38.58	142.50	7.44	135.06	17.50	117.56
49	39.30	142.50	8.33	134.17	17.75	116.42
50	40.03	142.50	8.82	133.68	18.06	115.62
51	40.75	142.50	9.28	133.22	18.35	114.88
52	41.47	142.50	9.68	132.82	18.61	114.21
53	42.20	142.50	10.05	132.45	18.82	113.63
54	42.92	142.50	10.43	132.07	18.95	113.12
55	43.65	142.50	10.75	131.75	18.97	112.79
56	44.37	142.50	11.01	131.49	18.87	112.62
57	45.10	142.50	11.23	131.27	18.67	112.60
58	45.82	142.50	11.21	131.29	17.62	113.67
59	46.55	142.50	11.10	131.40	16.21	115.19
60	47.27	142.50	11.16	131.34	15.95	115.39
61	48.00	142.50	11.18	131.32	15.76	115.56

FUERZAS EN LOS CABLES (T, m)

I	S(m)	Pi (T)	Mpi (mT)	Upi (T/m)	Pf (T)	Mpf (mT)	Upf (T/m)
1	0.00	5074.3	390.72	0.00	4454.9	343.03	0.00
2	0.73	5069.0	626.56	0.00	4429.8	547.56	0.00
3	1.45	5057.8	1015.49	70.68	4361.8	875.74	60.96
4	2.18	5064.9	1221.54	70.78	4354.5	1050.23	60.86
5	2.90	5072.3	1390.99	70.89	4350.5	1193.05	60.80
6	3.62	5080.8	1523.95	71.00	4351.1	1305.10	60.81
7	4.35	5090.9	1620.49	71.15	4357.6	1387.07	60.90
8	5.07	5103.3	1680.64	71.32	4370.5	1439.33	61.08
9	5.80	5118.0	1704.30	71.53	4390.1	1461.91	61.35
10	6.52	5132.0	1695.07	52.83	4412.4	1457.38	45.42
11	7.25	5147.8	1658.52	52.99	4438.2	1429.89	45.68
12	7.97	5165.4	1594.30	53.17	4466.9	1378.71	45.98
13	8.70	5184.4	1502.00	53.36	4497.6	1303.04	46.30
14	9.43	5218.8	1384.90	53.72	4541.8	1205.26	46.75
15	10.15	5213.9	1228.45	53.67	4550.6	1072.17	46.84
16	10.88	5209.2	1044.15	53.62	4557.2	913.46	46.91
17	11.60	5204.1	831.95	53.57	4559.8	728.95	46.94
18	12.33	5205.1	592.74	53.58	4590.4	522.74	47.25
19	13.05	5189.1	198.49	-178.94	4591.5	175.63	-158.33
20	13.78	5157.9	57.06	-177.86	4556.2	50.40	-157.11
21	14.50	5126.2	10.25	-283.29	4524.9	9.05	-250.06
22	15.45	5058.1	136.25	-279.53	4447.4	119.80	-245.78
23	16.40	4981.4	661.28	-275.29	4369.2	580.01	-241.46
24	17.35	4938.2	1146.41	72.77	4326.9	1004.49	63.77
25	18.30	4893.7	1559.13	72.12	4269.0	1360.10	62.91
26	19.25	4847.3	1898.93	71.43	4202.4	1646.31	61.93
27	20.20	4802.0	2168.57	70.77	4135.8	1867.72	60.95
28	21.15	4760.0	2371.19	70.15	4075.2	2030.05	60.06
29	22.10	4723.3	2509.97	69.61	4025.1	2138.96	59.32
30	23.05	4693.0	2587.51	69.16	3988.2	2198.92	58.77
31	24.00	4670.1	2605.90	68.82	3966.0	2213.04	58.45
32	24.95	4693.0	2587.47	69.16	3988.5	2199.04	58.78
33	25.90	4723.2	2509.92	69.61	4025.6	2139.18	59.32
34	26.85	4759.9	2371.15	70.15	4075.8	2030.37	60.06
35	27.80	4801.8	2168.51	70.76	4136.5	1868.05	60.96
36	28.75	4847.2	1898.91	71.43	4203.3	1646.66	61.94
37	29.70	4893.6	1559.10	72.12	4269.8	1360.36	62.92
38	30.65	4938.1	1146.38	72.77	4327.6	1004.65	63.78
39	31.60	4988.4	662.21	-275.68	4401.9	584.35	-243.26
40	32.55	5063.6	136.40	-279.83	4474.6	120.53	-247.28
41	33.50	5126.2	10.25	-176.77	4524.9	9.05	-156.03
42	34.23	5152.3	57.00	-177.67	4528.4	50.09	-156.15
43	34.95	5174.8	358.36	-178.44	4532.3	313.86	-156.29
44	35.68	5197.8	591.91	53.50	4556.9	518.92	46.91
45	36.40	5204.0	831.95	53.57	4560.3	729.04	46.94
46	37.13	5209.1	1044.14	53.62	4557.8	913.59	46.92
47	37.85	5213.8	1228.44	53.67	4551.3	1072.35	46.85
48	38.58	5218.8	1384.90	53.72	4542.7	1205.48	46.76
49	39.30	5184.4	1502.00	53.36	4498.5	1303.28	46.30
50	40.03	5165.3	1594.29	53.17	4467.7	1378.96	45.99
51	40.75	5147.8	1658.51	52.99	4438.9	1430.13	45.69
52	41.47	5132.0	1695.06	52.83	4413.1	1457.61	45.43
53	42.20	5118.0	1704.30	71.52	4390.8	1462.12	61.36
54	42.92	5103.2	1680.64	71.32	4371.1	1439.51	61.09
55	43.65	5090.9	1620.48	71.15	4358.0	1387.20	60.90
56	44.37	5080.7	1523.94	71.00	4351.5	1305.20	60.81
57	45.10	5072.2	1390.98	70.89	4350.7	1193.11	60.80
58	45.82	5073.0	1223.49	70.90	4392.3	1059.32	61.38
59	46.55	5077.3	862.00	70.96	4450.9	755.67	62.20
60	47.27	5074.8	627.28	0.00	4458.5	551.10	0.00
61	48.00	5074.2	390.71	0.00	4465.1	343.81	0.00

FUERZAS HORIZONTALES DE DESVIACION

I	S(m)	R(m)	Ti (T)	Uh(T/m)	Tf(T)	Uh(T/m)
1	0.00	0.0	5074.25	0.00	4454.95	0.00
2	0.73	0.0	5068.97	0.00	4429.81	0.00
3	1.45	0.0	5057.81	0.00	4361.75	0.00
4	2.18	0.0	5064.89	0.00	4354.55	0.00
5	2.90	0.0	5072.28	0.00	4350.49	0.00
6	3.62	0.0	5080.76	0.00	4351.14	0.00
7	4.35	0.0	5090.95	0.00	4357.61	0.00
8	5.07	0.0	5103.26	0.00	4370.53	0.00
9	5.80	0.0	5118.01	0.00	4390.11	0.00
10	6.52	0.0	5132.00	0.00	4412.36	0.00
11	7.25	0.0	5147.83	0.00	4438.17	0.00
12	7.97	0.0	5165.36	0.00	4466.87	0.00
13	8.70	0.0	5184.38	0.00	4497.62	0.00
14	9.43	0.0	5218.78	0.00	4541.83	0.00
15	10.15	0.0	5213.88	0.00	4550.59	0.00
16	10.88	0.0	5209.18	0.00	4557.16	0.00
17	11.60	0.0	5204.06	0.00	4559.76	0.00
18	12.33	0.0	5205.08	0.00	4590.42	0.00
19	13.05	0.0	5189.14	0.00	4591.51	0.00
20	13.78	0.0	5157.88	0.00	4556.17	0.00
21	14.50	0.0	5126.25	0.00	4524.86	0.00
22	15.45	0.0	5058.14	0.00	4447.36	0.00
23	16.40	0.0	4981.43	0.00	4369.21	0.00
24	17.35	0.0	4938.21	0.00	4326.92	0.00
25	18.30	0.0	4893.71	0.00	4268.98	0.00
26	19.25	0.0	4847.30	0.00	4202.44	0.00
27	20.20	0.0	4801.97	0.00	4135.77	0.00
28	21.15	0.0	4760.00	0.00	4075.17	0.00
29	22.10	0.0	4723.32	0.00	4025.13	0.00
30	23.05	0.0	4693.04	0.00	3988.25	0.00
31	24.00	0.0	4670.07	0.00	3966.02	0.00
32	24.95	0.0	4692.97	0.00	3988.46	0.00
33	25.90	0.0	4723.22	0.00	4025.56	0.00
34	26.85	0.0	4759.92	0.00	4075.82	0.00

35	27.80	0.0	4801.83	0.00	4136.51	0.00
36	28.75	0.0	4847.25	0.00	4203.34	0.00
37	29.70	0.0	4893.61	0.00	4269.82	0.00
38	30.65	0.0	4938.11	0.00	4327.60	0.00
39	31.60	0.0	4988.41	0.00	4401.86	0.00
40	32.55	0.0	5063.59	0.00	4474.60	0.00
41	33.50	0.0	5126.25	0.00	4524.87	0.00
42	34.23	0.0	5152.31	0.00	4528.35	0.00
43	34.95	0.0	5174.83	0.00	4532.29	0.00
44	35.68	0.0	5197.84	0.00	4556.89	0.00
45	36.40	0.0	5204.03	0.00	4560.34	0.00
46	37.13	0.0	5209.11	0.00	4557.82	0.00
47	37.85	0.0	5213.84	0.00	4551.35	0.00
48	38.58	0.0	5218.76	0.00	4542.65	0.00
49	39.30	0.0	5184.39	0.00	4498.48	0.00
50	40.03	0.0	5165.32	0.00	4467.66	0.00
51	40.75	0.0	5147.80	0.00	4438.93	0.00
52	41.47	0.0	5131.97	0.00	4413.07	0.00
53	42.20	0.0	5118.00	0.00	4390.75	0.00
54	42.92	0.0	5103.24	0.00	4371.08	0.00
55	43.65	0.0	5090.91	0.00	4358.04	0.00
56	44.37	0.0	5080.74	0.00	4351.47	0.00
57	45.10	0.0	5072.23	0.00	4350.70	0.00
58	45.82	0.0	5072.97	0.00	4392.25	0.00
59	46.55	0.0	5077.25	0.00	4450.94	0.00
60	47.27	0.0	5074.79	0.00	4458.49	0.00
61	48.00	0.0	5074.20	0.00	4465.06	0.00

5 VERIFICACIÓN DE LOS ESTADOS LÍMITES DE SERVICIO

5.1 TENSIONES NORMALES (ESTADO LÍMITE DE FISURACIÓN)

En el tablero se han comprobado las siguientes condiciones, de acuerdo con la EHE (artículo 49) y el Model Code del CEB de 1990:

a. Hipótesis de carga de construcción:

a.1. Considerando peso propio y el 60 % del pretensado total para el descimbrado del tablero:

$\gamma_{t,\,max} < 0$ Kp/cm^2
$\gamma_{c,max} < 0{,}60\ f_{ck,5} \approx 0{,}30$ fck = 105 Kp/cm^2

(El hormigón deberá alcanzar una resistencia a compresión antes del 1er tesado superior a 220 Kp/cm^2)

a2. Considerando peso propio y el 100 % del pretensado inicial (con su valor característico superior):

$\sigma_{t,\,max} < f_{ctk} = 23{,}35$ Kp/cm^2
$\sigma_{c,max} < 0{,}60\ f_{ck} = 210$ Kp/cm^2

b. Hipótesis de carga permanente, considerando peso propio, carga permanente y pretensado final (con su valor característico superior e inferior):

$\sigma_{t,\,max} < 0$ Kp/cm^2
$\sigma_{c,max} < 0{,}40\ f_{ck} = 140$ Kp/cm^2

c. Hipótesis de combinación frecuente:

$\sigma_{t,\,max} < f_{ctk} = 22{,}4$ Kp/cm^2

d. Hipótesis de combinación característica:

$\sigma_{c,max} < 0{,}60\ f_{ck} = 210$ Kp/cm^2

Comprobación del ELS de fisuración

$\sigma_{,\,max} < w_k = 0{,}2$ mm

COMBINACION 1 G1 + PRETII

TENSIONES CON AXIL INICIAL

Barra	TS_1	TI_1	TS_2	T1_2
1	-182.794	-405.562	-178.107	-411.480
2	-177.822	-411.193	-126.800	-475.622
3	-183.391	-565.251	-174.337	-577.912
4	-174.842	-578.416	-170.446	-584.564
5	-170.975	-585.083	-171.189	-584.784
6	-171.790	-585.379	-176.619	-578.627
7	-177.324	-579.351	-186.758	-566.158
8	-187.618	-567.015	-201.664	-547.371
9	-202.685	-548.399	-220.409	-523.613
10	-221.375	-524.581	-241.235	-496.808
11	-242.325	-497.902	-264.439	-466.976
12	-265.656	-468.170	-290.112	-433.969
13	-291.421	-435.275	-318.386	-397.565
14	-319.770	-398.964	-349.358	-357.588
15	-350.793	-359.029	-383.151	-313.778
16	-384.606	-315.230	-419.852	-265.940
17	-421.284	-267.370	-458.660	-215.101
18	-461.935	-218.379	-538.998	-110.611
19	-466.939	-75.615	-468.184	-74.043
20	-466.413	-72.273	-436.102	-110.549
21	-430.850	-113.126	-483.084	-47.166
22	-479.225	-43.306	-481.720	-166.307
23	-476.412	-160.994	-409.974	-253.904
24	-406.983	-250.911	-351.563	-328.412
25	-348.477	-325.336	-304.227	-387.217
26	-301.006	-384.016	-267.145	-431.369
27	-263.998	-428.242	-239.667	-462.268
28	-236.754	-459.372	-221.066	-481.312
29	-218.522	-478.777	-210.755	-489.639
30	-208.657	-487.547	-208.234	-488.138
31	-206.653	-486.532	-207.388	-485.504
32	-208.979	-487.083	-217.069	-475.769
33	-219.161	-477.866	-235.168	-455.482
34	-237.715	-458.015	-262.370	-423.536
35	-265.281	-426.426	-299.443	-378.652
36	-302.591	-381.791	-347.171	-319.448
37	-350.382	-322.658	-406.119	-244.712
38	-409.198	-247.793	-475.688	-154.810
39	-479.172	-158.294	-477.999	-35.917
40	-482.259	-40.176	-430.371	-105.698
41	-437.284	-105.001	-467.476	-66.876
42	-468.951	-68.354	-424.728	-124.198
43	-495.462	-166.469	-462.712	-212.269
44	-464.305	-213.864	-426.560	-266.648
45	-423.781	-263.876	-388.393	-313.364
46	-386.961	-311.940	-354.465	-357.384
47	-353.006	-355.928	-323.276	-397.505
48	-321.832	-396.076	-294.731	-433.975
49	-293.341	-432.592	-268.725	-467.017
50	-267.411	-465.708	-245.149	-496.839
51	-243.937	-495.642	-223.920	-523.635
52	-222.824	-522.550	-204.952	-547.542
53	-203.966	-546.605	-189.781	-566.442
54	-188.741	-565.438	-179.142	-578.862

COMBINACION 1 G1 + PRETII

TENSIONES CON AXIL INICIAL

Barra	TS_1	TI_1	TS_2	T1_2
55	-178.286	-577.997	-173.280	-584.999
56	-172.574	-584.277	-172.168	-584.845
57	-171.577	-584.232	-175.269	-579.069
58	-175.300	-579.088	-226.231	-507.863
59	-167.736	-424.991	-178.179	-411.804
60	-178.031	-411.656	-182.734	-405.717

COMBINACION 2 G1 + PRETII + 0.4 TEMP + SCMAX*0.05

TENSIONES CON AXIL INICIAL

Barra	TS_1	TI_1	TS_2	T1_2
1	-183.814	-404.274	-181.280	-407.473
2	-181.056	-407.109	-132.265	-468.721
3	-189.039	-557.353	-182.285	-566.797
4	-182.790	-567.301	-180.684	-570.246
5	-181.214	-570.765	-183.708	-567.276
6	-184.312	-567.869	-191.411	-557.941
7	-192.118	-558.663	-203.817	-542.302
8	-204.676	-543.160	-220.980	-520.360
9	-221.999	-521.390	-241.971	-493.460
10	-242.936	-494.429	-265.036	-463.524
11	-266.124	-464.620	-290.470	-430.574
12	-291.686	-431.768	-318.366	-394.457
13	-319.674	-395.764	-348.853	-354.958
14	-350.237	-356.358	-382.029	-311.899
15	-383.465	-313.339	-418.019	-265.016
16	-419.474	-266.469	-456.908	-214.119
17	-458.341	-215.548	-497.899	-160.228
18	-501.187	-163.487	-580.453	-52.638
19	-507.086	-24.918	-510.473	-20.642
20	-508.714	-18.857	-480.557	-54.412
21	-473.959	-58.689	-526.180	7.254
22	-522.325	11.119	-526.227	-104.067
23	-520.932	-98.735	-454.499	-191.638
24	-451.531	-188.613	-396.146	-266.066
25	-393.075	-262.967	-348.875	-324.779
26	-345.675	-321.549	-311.883	-368.806
27	-308.736	-365.678	-284.459	-399.628
28	-281.546	-396.733	-265.896	-418.618
29	-263.352	-416.084	-255.610	-426.912
30	-253.512	-424.819	-253.098	-425.398
31	-251.517	-423.792	-252.246	-422.772
32	-253.837	-424.351	-261.906	-413.066
33	-263.999	-415.163	-279.969	-392.829
34	-282.516	-395.363	-307.120	-360.955
35	-310.032	-363.844	-344.127	-316.163
36	-347.275	-319.303	-391.775	-257.072
37	-394.995	-260.269	-450.659	-182.424
38	-453.755	-185.483	-520.187	-92.580
39	-523.693	-96.034	-521.075	18.478
40	-525.350	14.238	-473.454	-51.294
41	-481.730	-48.876	-509.754	-13.488
42	-511.232	-14.964	-464.845	-73.539
43	-536.904	-108.515	-501.934	-157.420
44	-503.539	-158.997	-463.591	-214.862
45	-460.827	-212.068	-423.257	-264.608
46	-421.827	-263.182	-387.143	-311.685
47	-385.684	-310.231	-353.756	-354.880
48	-352.310	-353.454	-323.002	-394.440
49	-321.611	-393.058	-294.777	-430.584
50	-293.463	-429.275	-268.974	-463.522
51	-267.761	-462.326	-245.508	-493.445
52	-244.411	-492.361	-224.294	-520.493
53	-223.309	-519.554	-206.865	-542.550
54	-205.826	-541.545	-193.962	-558.137

COMBINACION 2 G1 + PRETII + 0.4 TEMP + SCMAX*0.05

TENSIONES CON AXIL INICIAL

Barra	TS_1	TI_1	TS_2	T1_2
55	-193.107	-557.272	-185.824	-567.456
56	-185.118	-566.735	-182.430	-570.494
57	-181.839	-569.882	-183.238	-567.925
58	-183.267	-567.946	-231.896	-499.940
59	-173.222	-418.063	-181.427	-407.702
60	-181.279	-407.554	-183.736	-404.451

COMBINACION 3 G1 + PRETII + SCMIN*0.05

TENSIONES CON AXIL INICIAL

Barra	TS_1	TI_1	TS_2	T1_2
1	-182.772	-405.589	-178.159	-411.414
2	-177.814	-411.203	-126.781	-475.646
3	-183.368	-565.283	-174.299	-577.965
4	-174.803	-578.470	-170.392	-584.639
5	-170.921	-585.159	-171.118	-584.882
6	-171.720	-585.477	-176.533	-578.746
7	-177.239	-579.470	-186.657	-566.299
8	-187.517	-567.156	-201.548	-547.535
9	-202.568	-548.562	-220.277	-523.798
10	-221.243	-524.766	-241.087	-497.015
11	-242.177	-498.109	-264.276	-467.205
12	-265.492	-468.399	-289.933	-434.219
13	-291.241	-435.526	-318.191	-397.837
14	-319.576	-399.236	-349.147	-357.882
15	-350.583	-359.323	-382.925	-314.094
16	-384.380	-315.546	-419.611	-266.278
17	-421.042	-267.708	-458.400	-215.465
18	-461.661	-218.762	-538.677	-111.060
19	-466.622	-76.016	-467.803	-74.524
20	-466.020	-72.769	-435.624	-111.152
21	-430.291	-113.832	-482.679	-47.677
22	-478.816	-43.823	-481.435	-166.706
23	-476.113	-161.412	-409.786	-254.167
24	-406.771	-251.207	-351.418	-328.616
25	-348.316	-325.561	-304.101	-387.393
26	-300.860	-384.220	-267.001	-431.571
27	-263.853	-428.444	-239.524	-462.468
28	-236.611	-459.573	-220.923	-481.510
29	-218.379	-478.976	-210.614	-489.836
30	-208.516	-487.744	-208.094	-488.333
31	-206.514	-486.727	-207.250	-485.698
32	-208.840	-487.277	-216.931	-475.961
33	-219.024	-478.058	-235.032	-455.673
34	-237.578	-458.206	-262.235	-423.725
35	-265.146	-426.615	-299.309	-378.839
36	-302.457	-381.978	-347.038	-319.634
37	-350.239	-322.857	-405.954	-244.942
38	-409.017	-248.046	-475.454	-155.137
39	-478.917	-158.651	-477.662	-36.343
40	-481.906	-40.622	-429.891	-106.305
41	-436.735	-105.694	-467.036	-67.431
42	-468.508	-68.913	-424.381	-124.636
43	-495.094	-166.984	-462.419	-212.679
44	-464.000	-214.290	-426.305	-267.005
45	-423.510	-264.255	-388.141	-313.716
46	-386.709	-312.293	-354.230	-357.713
47	-352.771	-356.257	-323.059	-397.808
48	-321.614	-396.380	-294.531	-434.254
49	-293.141	-432.871	-268.543	-467.271
50	-267.228	-465.962	-244.985	-497.069
51	-243.773	-495.871	-223.773	-523.840
52	-222.677	-522.755	-204.823	-547.723
53	-203.838	-546.784	-189.670	-566.597
54	-188.630	-565.593	-179.048	-578.993

COMBINACION 3 G1 + PRETII + SCMIN*0.05

TENSIONES CON AXIL INICIAL

Barra	TS_1	TI_1	TS_2	T1_2
55	-178.193	-578.127	-173.204	-585.104
56	-172.499	-584.383	-172.111	-584.926
57	-171.520	-584.313	-175.229	-579.125
58	-175.259	-579.144	-226.208	-507.895
59	-167.714	-425.019	-178.174	-411.810
60	-178.026	-411.662	-182.746	-405.701

COMBINACION 4 G1 + PRETI

TENSIONES CON AXIL INICIAL

Barra	TS_1	TI_1	TS_2	T1_2
1	-313.240	-688.657	-279.430	-731.352
2	-278.931	-730.854	-170.567	-867.693
3	-265.463	-1028.624	-232.036	-1075.369
4	-232.849	-1076.193	-211.046	-1106.683
5	-211.897	-1107.538	-201.673	-1121.836
6	-202.645	-1122.827	-203.956	-1120.992
7	-205.136	-1122.158	-217.970	-1104.210
8	-219.404	-1105.615	-243.810	-1071.484
9	-245.515	-1073.181	-279.836	-1025.186
10	-281.455	-1026.793	-323.132	-968.510
11	-324.951	-970.348	-374.161	-901.530
12	-376.194	-903.538	-433.070	-823.999
13	-435.278	-826.177	-498.353	-737.969
14	-502.319	-741.943	-578.302	-635.686
15	-577.730	-635.129	-661.298	-518.264
16	-660.755	-517.722	-751.938	-390.207
17	-751.345	-389.619	-849.732	-252.030
18	-849.851	-252.146	-1014.470	-21.933
19	-890.690	15.982	-931.564	67.598
20	-928.613	70.551	-921.037	60.983
21	-910.838	54.863	-940.674	92.539
22	-934.243	98.971	-891.091	-153.804
23	-882.238	-144.953	-726.439	-362.831
24	-721.456	-357.838	-590.021	-541.644
25	-584.887	-536.506	-478.065	-685.891
26	-472.708	-680.539	-389.226	-797.284
27	-383.992	-792.057	-322.382	-878.216
28	-317.548	-873.360	-276.366	-930.951
29	-272.135	-926.715	-250.161	-957.445
30	-246.680	-953.933	-242.948	-959.151
31	-240.308	-956.487	-244.557	-950.544
32	-247.193	-953.196	-269.694	-921.730
33	-273.173	-925.237	-314.861	-866.938
34	-319.113	-871.150	-381.224	-784.289
35	-386.072	-789.109	-470.057	-671.660
36	-475.298	-676.903	-582.652	-526.773
37	-588.005	-532.117	-719.948	-347.603
38	-725.090	-352.727	-880.968	-134.739
39	-886.776	-140.540	-932.126	111.197
40	-939.225	104.098	-909.960	67.143
41	-922.922	70.122	-930.321	79.465
42	-932.780	77.002	-820.296	-65.040
43	-941.871	-115.087	-851.127	-241.988
44	-853.781	-244.645	-754.803	-383.061
45	-755.518	-383.775	-664.116	-511.596
46	-664.711	-512.169	-580.912	-629.359
47	-581.468	-629.891	-505.257	-736.469
48	-505.820	-737.043	-442.513	-825.575
49	-438.546	-821.610	-381.394	-901.534
50	-379.197	-899.328	-329.772	-968.446
51	-327.726	-966.458	-285.806	-1025.082
52	-283.976	-1023.260	-249.364	-1071.662
53	-247.743	-1070.063	-223.066	-1104.573
54	-221.360	-1102.874	-208.215	-1121.256

COMBINACION 4 G1 + PRETI

TENSIONES CON AXIL INICIAL

Barra	TS_1	TI_1	TS_2	T1_2
55	-206.800	-1119.823	-205.176	-1122.093
56	-204.003	-1120.919	-213.939	-1107.024
57	-212.961	-1106.039	-233.552	-1077.244
58	-233.631	-1077.335	-338.435	-930.771
59	-240.306	-781.398	-279.522	-731.877
60	-279.292	-731.642	-313.129	-688.914

COMBINACION 5 G1 + PRETI + 0.4 TEMP

TENSIONES CON AXIL INICIAL

Barra	TS_1	TI_1	TS_2	T1_2
1	-314.252	-687.379	-282.610	-727.336
2	-282.112	-726.838	-175.916	-860.938
3	-270.987	-1020.898	-239.802	-1064.510
4	-240.614	-1065.334	-221.051	-1092.692
5	-221.902	-1093.546	-213.918	-1104.711
6	-214.891	-1105.701	-218.440	-1100.738
7	-219.621	-1101.902	-234.696	-1080.820
8	-236.129	-1082.226	-262.776	-1044.961
9	-264.480	-1046.660	-301.042	-995.530
10	-302.660	-997.139	-346.579	-935.720
11	-348.397	-937.559	-399.848	-865.607
12	-401.883	-867.614	-461.001	-784.940
13	-463.209	-787.117	-528.526	-695.773
14	-532.491	-699.749	-610.716	-590.356
15	-610.144	-589.800	-695.955	-469.798
16	-695.412	-469.256	-788.837	-338.605
17	-788.245	-338.016	-888.874	-197.291
18	-888.993	-197.407	-1055.856	35.943
19	-930.762	66.585	-973.809	120.944
20	-970.859	123.897	-965.454	117.072
21	-953.894	109.232	-983.729	146.908
22	-977.298	153.339	-935.556	-91.622
23	-926.703	-82.772	-770.902	-300.651
24	-765.919	-295.659	-634.483	-479.465
25	-629.349	-474.328	-522.525	-623.716
26	-517.168	-618.363	-433.685	-735.110
27	-428.451	-729.883	-366.840	-816.043
28	-362.006	-811.188	-320.822	-868.781
29	-316.592	-864.545	-294.617	-895.276
30	-291.135	-891.764	-287.402	-896.985
31	-284.762	-894.319	-289.010	-888.379
32	-291.646	-891.031	-314.146	-859.565
33	-317.625	-863.073	-359.312	-804.775
34	-363.564	-808.987	-425.675	-722.128
35	-430.522	-726.948	-514.507	-609.500
36	-519.747	-614.743	-627.100	-464.614
37	-632.454	-469.959	-764.395	-285.445
38	-769.537	-290.570	-925.415	-72.583
39	-931.222	-78.383	-975.160	165.539
40	-982.259	158.440	-952.993	121.484
41	-967.316	126.182	-972.550	132.791
42	-975.009	130.328	-860.360	-14.448
43	-983.249	-57.222	-890.269	-187.251
44	-892.923	-189.907	-791.708	-331.452
45	-792.423	-332.165	-698.785	-463.114
46	-699.379	-463.688	-613.344	-584.004
47	-613.899	-584.537	-535.452	-694.242
48	-536.013	-694.819	-470.469	-786.479
49	-466.501	-782.515	-407.110	-865.571
50	-404.913	-863.365	-353.249	-935.615
51	-351.201	-933.630	-307.042	-995.385
52	-305.211	-993.564	-268.360	-1045.099
53	-266.739	-1043.498	-239.817	-1081.147
54	-238.112	-1079.447	-222.725	-1100.964

COMBINACION 5 G1 + PRETI + 0.4 TEMP

TENSIONES CON AXIL INICIAL

Barra	TS_1	TI_1	TS_2	T1_2
55	-221.309	-1099.532	-217.441	-1104.941
56	-216.267	-1103.768	-223.961	-1093.009
57	-222.983	-1092.024	-241.330	-1066.367
58	-241.408	-1066.460	-343.968	-923.034
59	-245.663	-774.633	-282.705	-727.857
60	-282.476	-727.621	-314.139	-687.637

COMBINACION 6 G1 + G2 + PRETI + 0.6 TEMP

TENSIONES CON AXIL INICIAL

Barra	TS_1	TI_1	TS_2	T1_2
1	-313.278	-688.609	-306.577	-697.071
2	-306.079	-696.572	-221.294	-803.636
3	-317.853	-955.359	-305.136	-973.143
4	-305.948	-973.967	-301.210	-980.593
5	-302.061	-981.448	-305.253	-976.985
6	-306.227	-977.972	-317.310	-962.473
7	-318.490	-963.638	-337.455	-937.116
8	-338.884	-938.527	-365.777	-900.918
9	-367.480	-902.619	-400.643	-856.242
10	-402.260	-857.854	-439.129	-806.293
11	-440.950	-808.129	-481.706	-751.134
12	-483.738	-753.144	-528.514	-690.526
13	-530.721	-692.703	-578.054	-626.511
14	-582.020	-630.486	-638.612	-551.344
15	-638.041	-550.787	-698.574	-466.134
16	-698.032	-465.592	-762.535	-375.388
17	-761.942	-374.799	-830.005	-279.617
18	-830.123	-279.734	-960.772	-97.027
19	-838.696	-49.674	-843.151	-44.048
20	-840.199	-41.096	-792.673	-101.111
21	-781.135	-108.922	-868.538	1.447
22	-862.106	7.879	-869.786	-183.599
23	-860.932	-174.749	-752.070	-326.987
24	-747.086	-321.995	-656.326	-448.918
25	-651.193	-443.780	-578.792	-545.029
26	-573.433	-539.680	-518.109	-617.046
27	-512.878	-611.817	-473.170	-667.346
28	-468.330	-662.498	-442.796	-698.207
29	-438.564	-693.972	-425.978	-711.574
30	-422.500	-708.057	-421.894	-708.904
31	-419.256	-706.236	-420.375	-704.671
32	-423.015	-707.318	-436.132	-688.974
33	-439.612	-692.480	-465.665	-656.046
34	-469.917	-660.257	-510.125	-604.027
35	-514.975	-608.846	-570.804	-530.771
36	-576.046	-536.011	-648.979	-434.018
37	-654.334	-439.360	-745.600	-311.729
38	-750.743	-316.853	-859.686	-164.501
39	-865.492	-170.304	-860.015	20.137
40	-867.113	13.036	-780.284	-96.609
41	-794.586	-91.938	-841.926	-32.157
42	-844.384	-34.621	-768.314	-130.681
43	-888.185	-190.164	-831.401	-269.574
44	-834.056	-272.230	-765.394	-368.251
45	-766.108	-368.965	-701.379	-459.486
46	-701.973	-460.061	-641.201	-545.048
47	-641.756	-545.581	-584.927	-625.053
48	-585.490	-625.627	-537.924	-692.147
49	-533.957	-688.181	-488.900	-751.192
50	-486.704	-748.984	-445.727	-806.288
51	-443.679	-804.304	-406.572	-856.196
52	-404.740	-854.377	-371.287	-901.159
53	-369.673	-899.550	-342.509	-937.538
54	-340.803	-935.839	-321.539	-962.778

COMBINACION 6 G1 + G2 + PRETI + 0.6 TEMP

TENSIONES CON AXIL INICIAL

Barra	TS_1	TI_1	TS_2	T1_2
55	-320.123	-961.346	-308.729	-977.280
56	-307.554	-976.109	-304.083	-980.963
57	-303.101	-979.982	-306.634	-975.043
58	-306.712	-975.135	-390.816	-857.519
59	-291.023	-717.354	-306.665	-697.602
60	-306.435	-697.367	-313.167	-688.865

COMBINACION 7 G1 + 1.1 PRETI + 0.4 TEMP

TENSIONES CON AXIL INICIAL

Barra	TS_1	TI_1	TS_2	T1_2
1	-347.674	-753.597	-309.406	-801.919
2	-308.615	-801.678	-188.886	-952.868
3	-293.007	-1130.091	-256.207	-1181.554
4	-256.751	-1182.948	-233.196	-1215.890
5	-233.751	-1217.364	-223.398	-1231.841
6	-224.064	-1233.495	-226.867	-1229.574
7	-227.750	-1231.436	-243.709	-1209.119
8	-244.866	-1211.251	-274.036	-1170.458
9	-275.498	-1172.905	-316.060	-1116.180
10	-317.443	-1118.506	-366.590	-1049.776
11	-368.215	-1052.323	-426.143	-971.313
12	-428.037	-974.002	-494.901	-880.495
13	-497.023	-883.319	-571.210	-779.571
14	-575.309	-784.313	-664.203	-659.998
15	-663.359	-659.687	-761.113	-522.983
16	-760.352	-522.616	-866.999	-373.475
17	-866.238	-372.980	-981.331	-212.029
18	-981.410	-212.228	-1169.883	51.343
19	-1032.018	83.573	-1084.703	150.102
20	-1081.519	153.429	-1081.534	153.447
21	-1070.668	147.160	-1096.122	179.302
22	-1088.906	186.199	-1036.791	-90.045
23	-1026.838	-80.610	-849.662	-328.382
24	-843.896	-323.286	-694.287	-532.508
25	-688.294	-527.341	-566.531	-697.620
26	-560.238	-692.292	-464.932	-825.572
27	-458.729	-820.446	-388.276	-918.972
28	-382.477	-914.303	-335.295	-980.285
29	-330.140	-976.327	-304.897	-1011.628
30	-300.558	-1008.477	-296.204	-1014.567
31	-292.796	-1012.339	-298.051	-1004.990
32	-300.468	-1008.582	-326.640	-971.982
33	-330.018	-976.467	-378.146	-909.162
34	-382.422	-914.355	-453.878	-814.429
35	-458.868	-820.210	-555.253	-685.420
36	-560.744	-691.568	-683.713	-519.602
37	-689.406	-525.755	-840.308	-314.726
38	-845.852	-320.521	-1023.977	-71.422
39	-1030.339	-77.838	-1085.897	198.788
40	-1093.764	191.053	-1070.059	161.119
41	-1085.079	165.358	-1085.536	165.934
42	-1088.119	163.072	-957.242	-2.196
43	-1092.608	-47.514	-985.911	-196.724
44	-988.623	-199.937	-873.314	-361.191
45	-873.855	-362.320	-767.330	-511.289
46	-767.706	-512.311	-669.998	-648.950
47	-670.302	-649.964	-581.402	-774.288
48	-581.690	-775.383	-507.445	-879.211
49	-502.736	-875.331	-435.729	-969.038
50	-432.961	-967.103	-374.927	-1048.261
51	-372.325	-1046.566	-323.026	-1115.508
52	-320.671	-1113.982	-279.898	-1171.001
53	-277.794	-1169.690	-248.434	-1210.749
54	-246.268	-1209.285	-230.094	-1231.904

COMBINACION 7 G1 + 1.1 PRETI + 0.4 TEMP

TENSIONES CON AXIL INICIAL

Barra	TS_1	TI_1	TS_2	T1_2
55	-228.285	-1230.679	-225.285	-1234.874
56	-223.796	-1233.860	-234.023	-1219.559
57	-232.814	-1218.661	-255.274	-1187.252
58	-255.303	-1187.434	-370.919	-1025.751
59	-263.050	-861.162	-307.075	-805.568
60	-306.950	-805.148	-345.688	-756.231

COMBINACION 8 G1 + G2 + 1.1 PRETI + 0.60 TEMP

TENSIONES CON AXIL INICIAL

Barra	TS_1	TI_1	TS_2	T1_2
1	-344.818	-757.202	-331.147	-774.465
2	-330.599	-773.917	-232.011	-898.412
3	-337.852	-1067.378	-319.311	-1093.306
4	-320.204	-1094.213	-311.329	-1106.624
5	-312.266	-1107.563	-313.004	-1106.531
6	-314.076	-1107.617	-324.384	-1093.202
7	-325.681	-1094.484	-345.549	-1066.700
8	-347.122	-1068.251	-376.600	-1027.027
9	-378.474	-1028.898	-415.738	-976.786
10	-417.516	-978.558	-459.748	-919.499
11	-461.750	-921.519	-509.146	-855.237
12	-511.382	-857.447	-564.092	-783.735
13	-566.520	-786.130	-622.929	-707.245
14	-627.292	-711.616	-694.777	-617.241
15	-694.149	-616.628	-766.860	-514.946
16	-766.263	-514.350	-844.229	-405.317
17	-843.577	-404.670	-926.349	-288.918
18	-926.480	-289.046	-1078.987	-75.771
19	-944.000	-27.574	-958.331	-9.477
20	-955.085	-6.230	-913.212	-59.106
21	-900.552	-67.659	-982.354	35.640
22	-975.280	42.714	-971.529	-181.311
23	-961.789	-171.577	-830.586	-355.058
24	-825.104	-349.566	-715.342	-503.063
25	-709.695	-497.412	-621.653	-620.534
26	-615.759	-614.648	-548.030	-709.363
27	-542.276	-703.610	-493.252	-772.168
28	-487.929	-766.834	-456.022	-811.453
29	-451.368	-806.795	-435.231	-829.362
30	-431.405	-825.494	-429.975	-827.494
31	-427.074	-824.558	-429.068	-821.769
32	-431.971	-824.681	-448.689	-801.302
33	-452.517	-805.159	-484.990	-759.746
34	-489.668	-764.378	-539.242	-695.050
35	-544.576	-700.351	-612.859	-604.860
36	-618.625	-610.624	-707.251	-486.686
37	-713.141	-492.562	-823.460	-338.287
38	-829.118	-343.923	-960.409	-160.318
39	-966.796	-166.700	-972.969	56.185
40	-980.777	48.375	-899.603	-54.129
41	-915.304	-49.030	-956.976	3.593
42	-959.680	0.883	-866.575	-116.688
43	-999.135	-178.231	-927.885	-277.871
44	-930.805	-280.793	-847.377	-397.463
45	-848.163	-398.248	-769.951	-507.624
46	-770.604	-508.258	-697.635	-610.302
47	-698.245	-610.888	-630.502	-705.623
48	-631.122	-706.255	-574.455	-785.500
49	-570.093	-781.137	-517.076	-855.279
50	-514.661	-852.849	-467.022	-919.471
51	-464.770	-917.286	-422.276	-976.712
52	-420.261	-974.710	-382.677	-1027.269
53	-380.901	-1025.500	-351.123	-1067.143
54	-349.247	-1065.273	-329.049	-1093.519

COMBINACION 8 G1 + G2 + 1.1 PRETI + 0.60 TEMP

TENSIONES CON AXIL INICIAL

Barra	TS_1	TI_1	TS_2	T1_2
55	-327.491	-1091.944	-316.839	-1106.840
56	-315.547	-1105.552	-314.498	-1107.018
57	-313.420	-1105.938	-320.966	-1095.385
58	-321.051	-1095.488	-418.116	-959.748
59	-308.717	-803.495	-331.246	-775.046
60	-330.993	-774.788	-344.695	-757.484

COMBINACION 9 G1 + G2 + PRETD

TENSIONES CON AXIL FINAL

Barra	TS_1	TI_1	TS_2	T1_2
1	-273.162	-606.942	-272.279	-608.057
2	-269.906	-605.682	-204.071	-688.816
3	-282.086	-812.727	-275.480	-821.965
4	-274.649	-821.135	-273.753	-822.388
5	-273.289	-821.913	-277.673	-815.782
6	-277.753	-815.851	-287.130	-802.736
7	-287.864	-803.501	-302.053	-783.658
8	-303.534	-785.163	-322.504	-758.634
9	-324.750	-760.912	-347.338	-729.324
10	-349.897	-731.905	-374.153	-697.984
11	-377.128	-700.966	-403.424	-664.192
12	-406.746	-667.491	-435.423	-627.387
13	-438.977	-630.927	-468.962	-588.995
14	-474.064	-594.096	-511.441	-541.827
15	-512.453	-542.836	-552.740	-486.497
16	-553.502	-487.249	-596.798	-426.701
17	-597.094	-427.007	-641.499	-364.908
18	-645.035	-368.450	-745.513	-227.936
19	-642.511	-169.716	-631.560	-183.545
20	-628.221	-180.210	-570.086	-253.621
21	-561.602	-257.645	-655.786	-138.712
22	-648.469	-131.392	-668.085	-296.620
23	-659.069	-287.599	-578.135	-400.782
24	-573.260	-395.894	-508.810	-486.025
25	-502.127	-479.335	-454.403	-546.073
26	-446.724	-538.396	-413.608	-584.708
27	-405.915	-577.013	-384.759	-606.599
28	-377.767	-599.605	-365.972	-616.099
29	-360.195	-610.329	-355.701	-616.613
30	-351.435	-612.371	-352.800	-610.462
31	-350.242	-607.888	-349.292	-609.216
32	-351.877	-611.811	-356.807	-604.917
33	-361.080	-609.210	-373.308	-592.110
34	-379.107	-597.911	-400.723	-567.681
35	-407.727	-574.685	-441.306	-527.726
36	-449.017	-535.439	-497.254	-467.982
37	-504.928	-475.650	-569.887	-384.808
38	-576.558	-391.471	-656.036	-280.324
39	-664.604	-288.896	-647.951	-122.324
40	-654.819	-129.194	-561.420	-247.136
41	-571.569	-245.061	-629.651	-171.716
42	-629.979	-172.046	-578.890	-236.560
43	-679.256	-304.505	-644.075	-353.704
44	-646.915	-356.540	-600.511	-421.434
45	-600.910	-421.831	-557.401	-482.676
46	-557.111	-482.385	-516.596	-539.043
47	-515.842	-538.307	-478.258	-590.866
48	-477.249	-589.869	-447.041	-632.113
49	-441.952	-627.005	-413.040	-667.438
50	-409.483	-663.881	-382.993	-700.927
51	-379.656	-697.642	-355.219	-731.815
52	-352.211	-728.865	-329.439	-760.711
53	-326.855	-758.146	-307.684	-784.956
54	-305.409	-782.693	-291.037	-802.791

COMBINACION 9 G1 + G2 + PRETD

TENSIONES CON AXIL FINAL

Barra	TS_1	TI_1	TS_2	T1_2
55	-289.504	-801.327	-279.943	-814.697
56	-279.171	-813.959	-274.556	-820.413
57	-274.469	-820.320	-270.965	-825.221
58	-275.764	-830.013	-341.675	-737.840
59	-260.355	-622.257	-270.782	-609.091
60	-271.485	-609.816	-273.377	-607.427

COMBINACION 10 G1 + G2 + PRETD + TEMP + 0.80 SCMAX-IPF

TENSIONES CON AXIL FINAL

Barra	TS_1	TI_1	TS_2	T1_2
1	-296.178	-577.878	-315.783	-553.121
2	-315.033	-548.697	-289.463	-580.986
3	-374.036	-684.139	-410.701	-632.865
4	-409.870	-632.035	-446.544	-580.747
5	-446.095	-580.252	-482.190	-529.775
6	-482.273	-529.839	-517.923	-479.983
7	-518.660	-480.744	-553.689	-431.758
8	-555.169	-433.263	-589.027	-385.915
9	-591.273	-388.192	-623.117	-343.661
10	-625.673	-346.245	-653.750	-306.981
11	-656.728	-309.959	-681.338	-275.543
12	-684.656	-278.847	-705.558	-249.616
13	-709.112	-253.156	-725.898	-229.682
14	-731.000	-234.783	-749.745	-208.569
15	-750.757	-209.578	-766.644	-187.362
16	-767.407	-188.113	-780.476	-169.836
17	-781.292	-169.415	-796.312	-148.410
18	-801.194	-150.069	-884.514	-33.550
19	-778.624	2.164	-760.661	-20.519
20	-761.047	-12.482	-707.163	-80.525
21	-696.248	-87.617	-786.083	25.824
22	-780.642	35.512	-814.807	-91.436
23	-806.015	-82.102	-759.433	-147.244
24	-754.926	-141.842	-723.491	-185.803
25	-717.052	-178.771	-699.551	-203.246
26	-692.193	-195.119	-701.066	-182.712
27	-693.764	-174.471	-707.203	-155.677
28	-700.241	-148.640	-713.544	-130.037
29	-707.767	-124.265	-718.850	-108.766
30	-714.589	-104.518	-721.993	-94.164
31	-719.433	-91.591	-714.805	-98.064
32	-717.390	-100.659	-709.077	-112.284
33	-713.353	-116.573	-702.815	-131.309
34	-708.612	-137.113	-697.870	-152.135
35	-704.887	-159.119	-696.477	-170.880
36	-704.211	-178.563	-715.434	-162.868
37	-723.261	-170.321	-755.141	-125.738
38	-762.072	-132.038	-806.913	-69.330
39	-815.828	-77.416	-779.983	44.402
40	-795.705	48.713	-696.737	-76.262
41	-715.873	-62.837	-767.268	2.062
42	-769.526	4.171	-713.972	-65.982
43	-824.254	-101.732	-794.411	-143.466
44	-800.075	-142.354	-775.839	-176.247
45	-776.488	-176.293	-754.699	-206.765
46	-756.637	-203.357	-742.241	-223.490
47	-741.484	-222.757	-724.265	-246.837
48	-723.255	-245.841	-707.995	-267.182
49	-702.903	-262.078	-683.505	-289.205
50	-679.945	-285.653	-656.882	-317.906
51	-653.545	-314.621	-627.047	-351.677
52	-624.034	-348.733	-593.767	-391.060
53	-591.187	-388.490	-558.887	-433.661
54	-556.616	-431.393	-523.171	-478.163

COMBINACION 10 G1 + G2 + PRETD + TEMP + 0.80 SCMAX-IPF

TENSIONES CON AXIL FINAL

Barra	TS_1	TI_1	TS_2	T1_2
55	-521.643	-476.691	-487.601	-524.298
56	-486.831	-523.556	-452.318	-571.821
57	-452.227	-571.734	-412.932	-626.687
58	-417.730	-631.480	-442.159	-597.317
59	-357.650	-499.396	-323.937	-541.968
60	-324.642	-542.690	-297.835	-576.542

COMBINACION 11 G1 + G2 + PRETD + TEMP

TENSIONES CON AXIL FINAL

Barra	TS_1	TI_1	TS_2	T1_2
1	-275.691	-603.748	-280.230	-598.017
2	-277.857	-595.641	-217.445	-671.928
3	-295.897	-793.413	-294.894	-794.816
4	-294.062	-793.986	-298.763	-787.412
5	-298.302	-786.933	-308.286	-772.972
6	-308.368	-773.037	-323.339	-752.100
7	-324.076	-752.860	-343.867	-725.184
8	-345.347	-726.690	-369.920	-692.325
9	-372.162	-694.609	-400.355	-655.183
10	-402.911	-657.767	-432.771	-616.009
11	-435.744	-618.994	-467.644	-574.385
12	-470.966	-577.682	-505.250	-529.737
13	-508.804	-533.278	-544.395	-483.506
14	-549.495	-488.610	-592.477	-428.502
15	-593.488	-429.512	-639.382	-365.331
16	-640.144	-366.084	-689.046	-297.697
17	-689.342	-298.002	-739.356	-228.061
18	-742.891	-231.603	-848.978	-83.245
19	-742.693	-43.209	-737.172	-50.181
20	-733.835	-46.844	-681.129	-113.399
21	-669.241	-121.721	-763.423	-2.791
22	-756.105	4.528	-779.247	-141.166
23	-770.230	-132.145	-689.293	-245.332
24	-684.418	-240.445	-619.964	-330.581
25	-613.281	-323.891	-565.555	-390.633
26	-557.875	-382.956	-524.756	-429.273
27	-517.063	-421.578	-495.903	-451.170
28	-488.912	-444.174	-477.113	-460.674
29	-471.336	-454.904	-466.839	-461.192
30	-462.574	-456.949	-463.935	-455.046
31	-461.377	-452.470	-460.424	-453.802
32	-463.010	-456.398	-467.938	-449.506
33	-472.210	-453.800	-484.436	-436.703
34	-490.235	-442.504	-511.849	-412.277
35	-518.852	-419.281	-552.429	-372.325
36	-560.140	-380.039	-608.375	-312.585
37	-616.048	-320.253	-681.005	-229.414
38	-687.675	-236.078	-767.151	-124.935
39	-775.719	-133.506	-755.537	13.533
40	-762.405	6.663	-669.003	-111.283
41	-682.554	-104.913	-735.225	-38.401
42	-735.551	-38.733	-679.050	-110.080
43	-782.699	-159.844	-741.928	-216.861
44	-744.770	-219.695	-692.773	-292.410
45	-693.172	-292.808	-644.072	-361.471
46	-643.780	-361.182	-597.677	-425.655
47	-596.921	-424.921	-553.746	-485.300
48	-552.733	-484.309	-516.931	-534.375
49	-511.841	-529.269	-477.330	-577.531
50	-473.774	-573.974	-441.683	-618.852
51	-438.344	-615.570	-408.310	-657.570
52	-405.299	-654.624	-376.926	-694.301
53	-374.344	-691.735	-349.563	-726.391
54	-347.290	-724.125	-327.312	-752.063

COMBINACION 11 G1 + G2 + PRETD + TEMP

TENSIONES CON AXIL FINAL

Barra	TS_1	TI_1	TS_2	T1_2
55	-325.776	-750.602	-310.605	-771.817
56	-309.831	-771.082	-299.612	-785.373
57	-299.523	-785.285	-290.409	-798.029
58	-295.207	-802.823	-355.506	-718.497
59	-273.749	-605.344	-278.741	-599.040
60	-279.446	-599.764	-275.904	-604.236

COMBINACION 12 G1 + G2 + PRETD + SCMAX-IPF + 0.6 TEMP

TENSIONES CON AXIL FINAL

Barra	TS_1	TI_1	TS_2	T1_2
1	-300.288	-572.687	-321.491	-545.913
2	-321.147	-540.977	-302.118	-565.006
3	-388.046	-664.547	-431.888	-603.236
4	-431.057	-602.406	-473.485	-543.072
5	-473.038	-542.573	-513.421	-486.100
6	-513.503	-486.165	-552.086	-432.209
7	-552.821	-432.971	-589.419	-381.791
8	-590.900	-383.296	-624.837	-335.836
9	-627.086	-338.110	-657.601	-295.437
10	-660.158	-298.018	-685.547	-262.513
11	-688.528	-265.489	-709.073	-236.757
12	-712.390	-240.062	-727.704	-218.646
13	-731.259	-222.185	-741.101	-208.422
14	-746.204	-213.521	-756.649	-198.915
15	-757.660	-199.925	-763.803	-191.335
16	-764.565	-192.087	-766.434	-189.473
17	-767.380	-188.871	-771.409	-183.236
18	-776.627	-184.424	-852.011	-79.003
19	-747.534	-37.096	-724.289	-66.449
20	-725.604	-57.237	-669.254	-128.395
21	-659.944	-133.461	-748.694	-21.390
22	-743.722	-11.109	-779.233	-141.185
23	-770.496	-131.773	-732.505	-184.902
24	-728.090	-179.372	-704.912	-211.786
25	-698.534	-204.669	-688.590	-218.575
26	-681.312	-210.336	-700.684	-183.246
27	-693.479	-174.869	-715.570	-143.976
28	-708.615	-136.929	-728.195	-109.548
29	-722.419	-103.776	-737.398	-82.828
30	-733.138	-78.578	-742.054	-66.110
31	-739.493	-63.538	-733.947	-71.295
32	-736.532	-73.889	-724.911	-90.142
33	-729.186	-94.431	-712.959	-117.124
34	-718.755	-122.928	-699.925	-149.261
35	-706.946	-156.240	-688.040	-182.680
36	-695.779	-190.354	-697.750	-187.597
37	-705.616	-194.997	-729.228	-161.977
38	-736.223	-168.186	-772.407	-117.585
39	-781.409	-125.549	-743.060	-2.224
40	-760.996	4.883	-660.637	-121.848
41	-679.809	-108.379	-733.049	-41.148
42	-735.792	-38.428	-682.638	-105.550
43	-793.265	-145.069	-768.390	-179.856
44	-774.760	-177.756	-759.700	-198.816
45	-760.413	-198.774	-747.687	-216.571
46	-750.183	-212.382	-745.949	-218.303
47	-745.193	-217.571	-736.700	-229.448
48	-735.692	-228.449	-727.805	-239.479
49	-722.713	-234.374	-709.332	-253.087
50	-705.772	-249.536	-687.206	-275.500
51	-683.870	-272.213	-660.495	-304.902
52	-657.483	-301.956	-628.982	-341.814
53	-626.403	-339.243	-594.467	-383.904
54	-592.195	-381.636	-557.626	-429.979

COMBINACION 12 G1 + G2 + PRETD + SCMAX-IPF + 0.6 TEMP

TENSIONES CON AXIL FINAL

Barra	TS_1	TI_1	TS_2	T1_2
55	-556.101	-428.504	-519.585	-479.569
56	-518.817	-478.825	-480.473	-532.448
57	-480.382	-532.362	-435.785	-594.728
58	-440.584	-599.520	-458.290	-574.759
59	-373.267	-479.675	-332.052	-531.720
60	-332.757	-532.443	-302.307	-570.895

COMBINACION 13 G1 + G2 + PRETD + 0.60 SCMAX-IPF + 0.5 TEMP

TENSIONES CON AXIL FINAL

Barra	TS_1	TI_1	TS_2	T1_2
1	-289.792	-585.942	-302.920	-569.365
2	-301.763	-565.453	-264.772	-612.166
3	-347.596	-721.114	-372.043	-686.927
4	-371.211	-686.097	-397.094	-649.902
5	-396.640	-649.412	-423.407	-611.980
6	-423.489	-612.045	-451.173	-573.331
7	-451.908	-574.093	-480.326	-534.352
8	-481.807	-535.856	-510.542	-495.672
9	-512.789	-497.949	-540.918	-458.612
10	-543.475	-461.194	-569.196	-425.225
11	-572.174	-428.204	-595.805	-395.158
12	-599.123	-398.460	-620.567	-368.471
13	-624.122	-372.011	-642.806	-345.883
14	-647.909	-350.983	-669.910	-320.214
15	-670.922	-321.224	-691.508	-292.436
16	-692.270	-293.189	-711.494	-266.304
17	-712.180	-266.064	-733.145	-236.747
18	-737.690	-238.876	-823.897	-118.320
19	-719.550	-72.433	-701.983	-94.617
20	-701.437	-87.755	-645.133	-158.855
21	-635.677	-164.105	-726.600	-49.290
22	-720.690	-40.193	-750.337	-181.595
23	-741.488	-172.340	-686.319	-249.491
24	-681.720	-244.218	-642.032	-299.719
25	-635.532	-292.773	-610.476	-327.813
26	-603.038	-319.799	-601.414	-322.070
27	-594.014	-313.965	-598.806	-307.265
28	-591.836	-300.239	-598.866	-290.408
29	-593.089	-284.638	-600.279	-274.583
30	-596.016	-270.336	-601.911	-262.093
31	-599.352	-259.519	-595.643	-264.705
32	-598.229	-267.300	-593.227	-274.294
33	-597.502	-278.585	-592.656	-285.361
34	-598.454	-291.164	-595.802	-294.873
35	-602.816	-301.862	-604.904	-298.942
36	-612.632	-306.631	-633.109	-277.995
37	-640.898	-285.502	-681.048	-229.354
38	-687.913	-235.745	-741.414	-160.927
39	-750.243	-169.134	-720.078	-31.244
40	-733.587	-29.728	-636.011	-152.944
41	-652.051	-143.431	-706.471	-74.711
42	-708.247	-73.212	-655.161	-140.247
43	-762.143	-188.591	-732.363	-230.237
44	-737.321	-230.111	-708.941	-269.800
45	-709.528	-269.934	-683.706	-306.044
46	-685.088	-303.414	-665.559	-330.725
47	-664.804	-329.991	-643.891	-359.236
48	-642.882	-358.239	-625.284	-382.850
49	-620.193	-377.743	-599.816	-406.241
50	-596.257	-402.687	-573.737	-434.180
51	-570.401	-430.894	-545.818	-465.272
52	-542.807	-462.326	-515.813	-500.075
53	-513.232	-497.507	-485.617	-536.125
54	-483.344	-533.860	-456.069	-572.002

COMBINACION 13 G1 + G2 + PRETD + 0.60 SCMAX-IPF + 0.5 TEMP

TENSIONES CON AXIL FINAL

Barra	TS_1	TI_1	TS_2	T1_2
55	-454.540	-570.531	-428.021	-607.617
56	-427.251	-606.876	-401.614	-642.728
57	-401.524	-642.640	-372.579	-683.119
58	-377.378	-687.910	-413.580	-637.283
59	-329.977	-534.340	-308.658	-561.262
60	-309.363	-561.985	-291.089	-585.061

COMBINACION 14 G1 + G2 + PRETD + SCMIN-IPF

TENSIONES CON AXIL FINAL

Barra	TS_1	TI_1	TS_2	T1_2
1	-236.428	-653.329	-262.823	-619.998
2	-259.238	-619.153	-189.513	-707.200
3	-266.977	-833.856	-250.675	-856.654
4	-249.843	-855.825	-239.092	-870.859
5	-238.612	-870.407	-233.105	-878.108
6	-233.186	-878.176	-232.671	-878.895
7	-233.405	-879.659	-237.701	-873.652
8	-239.182	-875.156	-246.769	-864.546
9	-249.012	-866.829	-258.874	-853.038
10	-261.431	-855.619	-272.435	-840.231
11	-275.408	-843.216	-287.938	-825.694
12	-291.263	-828.988	-305.417	-809.194
13	-308.969	-812.738	-323.928	-791.818
14	-329.029	-796.921	-350.890	-766.349
15	-351.902	-767.358	-376.054	-733.583
16	-376.816	-734.336	-403.326	-697.263
17	-402.974	-698.474	-426.550	-665.505
18	-424.148	-677.349	-485.026	-592.215
19	-382.367	-498.220	-311.063	-588.260
20	-301.468	-592.825	-167.010	-762.616
21	-137.562	-793.111	-348.999	-526.115
22	-339.336	-521.758	-454.446	-595.384
23	-438.753	-595.701	-436.691	-598.584
24	-419.692	-610.652	-397.175	-642.141
25	-379.268	-651.147	-350.983	-690.702
26	-334.452	-695.404	-304.628	-737.111
27	-296.447	-730.099	-278.061	-755.811
28	-271.032	-748.868	-261.965	-761.548
29	-256.188	-755.777	-254.419	-758.251
30	-250.152	-754.011	-254.241	-748.293
31	-251.684	-745.716	-253.453	-743.242
32	-256.039	-745.837	-263.680	-735.150
33	-267.952	-739.444	-282.892	-718.553
34	-288.691	-724.352	-310.415	-693.973
35	-317.402	-700.999	-345.853	-661.212
36	-353.536	-668.964	-394.786	-611.279
37	-395.343	-628.899	-436.117	-571.878
38	-432.899	-592.371	-457.152	-558.454
39	-456.266	-580.246	-364.695	-480.013
40	-360.493	-500.861	-162.371	-751.045
41	-151.337	-775.720	-292.695	-597.215
42	-290.606	-600.597	-315.658	-568.962
43	-400.534	-694.284	-422.746	-663.222
44	-417.130	-677.884	-402.621	-698.173
45	-395.504	-709.082	-369.004	-746.141
46	-365.926	-749.748	-338.755	-787.744
47	-338.004	-787.005	-313.757	-820.912
48	-312.746	-819.919	-295.866	-843.524
49	-290.777	-838.417	-275.187	-860.218
50	-271.634	-856.657	-258.463	-875.076
51	-255.124	-871.794	-244.005	-887.342
52	-240.998	-884.391	-231.540	-897.617
53	-228.954	-895.057	-223.093	-903.252
54	-220.818	-900.990	-219.751	-902.482

COMBINACION 14 G1 + G2 + PRETD + SCMIN-IPF

TENSIONES CON AXIL FINAL

Barra	TS_1	TI_1	TS_2	T1_2
55	-218.214	-901.023	-221.929	-895.827
56	-221.151	-895.097	-229.796	-883.008
57	-229.709	-882.915	-239.464	-869.274
58	-244.262	-874.066	-323.417	-763.372
59	-242.678	-644.580	-265.505	-615.754
60	-264.806	-618.251	-250.704	-636.058

COMBINACION 15 G1 + G2 + PRETD + 0.60 SCMIN-IPF

TENSIONES CON AXIL FINAL

Barra	TS_1	TI_1	TS_2	T1_2
1	-251.122	-634.774	-266.605	-615.222
2	-263.505	-613.765	-195.336	-699.847
3	-273.021	-825.404	-260.597	-842.779
4	-259.766	-841.948	-252.956	-851.471
5	-252.483	-851.009	-250.932	-853.178
6	-251.012	-853.246	-254.455	-848.432
7	-255.189	-849.196	-263.442	-837.654
8	-264.923	-839.159	-277.063	-822.181
9	-279.307	-824.463	-294.260	-803.552
10	-296.818	-806.133	-313.122	-783.332
11	-316.097	-786.316	-334.132	-761.094
12	-337.456	-764.389	-357.419	-736.471
13	-360.972	-740.014	-381.942	-710.688
14	-387.043	-715.791	-415.110	-676.540
15	-416.122	-677.550	-446.729	-634.748
16	-447.491	-635.501	-480.714	-589.039
17	-480.623	-589.887	-512.530	-545.266
18	-512.503	-553.789	-589.221	-446.503
19	-486.424	-366.819	-439.262	-426.374
20	-432.169	-427.780	-328.240	-559.018
21	-307.178	-578.925	-471.714	-371.154
22	-462.989	-365.611	-539.902	-475.878
23	-526.879	-472.460	-493.268	-519.464
24	-481.119	-524.749	-441.829	-579.694
25	-428.411	-582.422	-392.351	-632.850
26	-379.360	-632.601	-348.220	-676.149
27	-340.234	-668.865	-320.740	-696.126
28	-313.726	-689.162	-303.568	-703.368
29	-297.791	-697.598	-294.932	-701.595
30	-290.665	-697.355	-293.665	-693.161
31	-291.107	-690.585	-291.789	-689.631
32	-294.374	-692.227	-300.931	-683.057
33	-305.203	-687.351	-319.058	-667.976
34	-324.857	-673.776	-346.538	-643.456
35	-353.532	-650.473	-384.034	-607.817
36	-391.729	-615.554	-435.773	-553.960
37	-439.177	-567.599	-489.625	-497.050
38	-490.362	-512.011	-536.706	-447.202
39	-539.601	-463.706	-477.997	-336.937
40	-478.224	-352.194	-321.990	-549.482
41	-319.429	-563.456	-427.478	-427.015
42	-426.355	-429.177	-420.951	-436.001
43	-512.023	-538.372	-511.277	-539.415
44	-509.044	-549.346	-481.777	-587.478
45	-477.666	-594.182	-444.363	-640.755
46	-442.400	-642.803	-409.892	-688.264
47	-409.139	-687.525	-379.557	-728.894
48	-378.547	-727.899	-356.336	-758.960
49	-351.247	-753.852	-330.328	-783.106
50	-326.774	-779.547	-308.275	-805.416
51	-304.937	-802.133	-288.491	-825.131
52	-285.483	-822.181	-270.700	-842.855
53	-268.114	-840.292	-256.930	-855.933
54	-254.655	-853.671	-248.266	-862.606

COMBINACION 15 G1 + G2 + PRETD + 0.60 SCMIN-IPF

TENSIONES CON AXIL FINAL

Barra	TS_1	TI_1	TS_2	T1_2
55	-246.729	-861.145	-245.135	-863.375
56	-244.359	-862.642	-247.700	-857.969
57	-247.613	-857.877	-252.064	-851.653
58	-256.863	-856.445	-330.720	-753.159
59	-249.749	-635.651	-267.615	-613.089
60	-267.478	-614.877	-259.773	-624.605

COMBINACION 16 G1 + G2 + PRETD + SCMAX-EC1 + 0.6 TEMP

TENSIONES CON AXIL FINAL

Barra	TS_1	TI_1	TS_2	T1_2
1	-302.101	-570.399	-323.600	-543.250
2	-326.519	-534.192	-314.055	-549.932
3	-399.211	-648.933	-447.647	-581.198
4	-446.815	-580.369	-492.221	-516.871
5	-491.758	-516.395	-536.926	-453.230
6	-537.007	-453.296	-578.074	-395.866
7	-578.808	-396.629	-618.592	-340.993
8	-620.074	-342.497	-655.107	-293.505
9	-657.355	-295.780	-687.086	-254.203
10	-689.645	-256.783	-715.059	-221.243
11	-718.036	-224.223	-736.771	-198.023
12	-740.090	-201.325	-752.478	-184.000
13	-756.034	-187.539	-763.222	-177.486
14	-768.324	-182.588	-773.878	-174.821
15	-774.889	-175.831	-777.539	-172.125
16	-778.302	-172.876	-780.638	-169.610
17	-781.497	-169.128	-781.086	-169.704
18	-789.802	-166.001	-858.103	-70.484
19	-758.413	-23.359	-733.581	-54.716
20	-735.693	-44.497	-674.653	-121.577
21	-671.734	-118.573	-758.312	-9.245
22	-753.038	0.654	-778.105	-142.762
23	-774.910	-125.601	-719.472	-203.129
24	-725.161	-183.469	-700.254	-218.299
25	-703.333	-197.957	-704.490	-196.340
26	-704.531	-177.865	-723.951	-150.707
27	-716.683	-142.419	-737.773	-112.926
28	-730.779	-105.934	-754.596	-72.626
29	-748.819	-66.856	-767.300	-41.011
30	-763.036	-36.767	-774.101	-21.294
31	-771.541	-18.721	-767.426	-24.475
32	-770.011	-27.071	-758.671	-42.930
33	-762.944	-47.223	-745.744	-71.275
34	-751.542	-77.078	-731.582	-104.991
35	-738.600	-111.974	-717.772	-141.101
36	-725.505	-148.784	-706.633	-175.175
37	-718.292	-177.270	-719.954	-174.946
38	-735.235	-169.567	-768.134	-123.560
39	-784.949	-120.599	-749.162	5.482
40	-761.743	5.827	-669.855	-110.207
41	-686.726	-99.644	-737.797	-35.153
42	-740.223	-32.833	-689.420	-96.986
43	-796.922	-139.954	-775.719	-169.605
44	-785.919	-162.150	-771.725	-181.999
45	-778.678	-173.232	-774.861	-178.569
46	-776.991	-174.893	-775.112	-177.521
47	-774.355	-176.789	-765.821	-188.723
48	-764.811	-187.727	-756.343	-199.570
49	-751.252	-194.463	-739.322	-211.148
50	-735.762	-207.596	-717.301	-233.413
51	-713.964	-230.127	-690.285	-263.241
52	-687.273	-260.296	-658.729	-300.214
53	-656.149	-297.644	-621.766	-345.728
54	-619.492	-343.464	-584.580	-392.286

COMBINACION 16 G1 + G2 + PRETD + SCMAX-EC1 + 0.6 TEMP

TENSIONES CON AXIL FINAL

Barra	TS_1	TI_1	TS_2	T1_2
55	-583.050	-390.816	-544.287	-445.024
56	-543.518	-444.282	-500.928	-503.841
57	-500.837	-503.756	-454.641	-568.359
58	-459.441	-573.149	-474.629	-551.910
59	-389.089	-459.696	-344.444	-516.073
60	-346.303	-515.338	-303.825	-568.978

COMBINACION 17 G1 + G2 + PRETD + TEMP + 0.80 SCMAX-EC1

TENSIONES CON AXIL FINAL

Barra	TS_1	TI_1	TS_2	T1_2
1	-297.628	-576.047	-317.471	-550.990
2	-319.331	-543.269	-299.012	-568.927
3	-382.968	-671.648	-423.309	-615.234
4	-422.477	-614.404	-461.533	-559.786
5	-461.071	-559.309	-500.994	-503.479
6	-501.076	-503.544	-538.714	-450.909
7	-539.450	-451.670	-577.028	-399.119
8	-578.509	-400.624	-613.243	-352.050
9	-615.489	-354.329	-646.705	-310.674
10	-649.262	-313.256	-677.359	-273.965
11	-680.335	-276.946	-703.495	-244.557
12	-706.815	-247.858	-725.377	-221.900
13	-728.932	-225.439	-743.595	-204.934
14	-748.696	-210.037	-763.529	-189.294
15	-764.540	-190.304	-777.633	-171.994
16	-778.396	-172.745	-791.839	-153.945
17	-792.586	-153.621	-804.054	-137.583
18	-811.733	-135.330	-889.387	-26.735
19	-787.327	13.153	-768.095	-11.132
20	-769.117	-2.290	-711.482	-75.070
21	-705.680	-75.707	-793.777	35.540
22	-788.094	44.923	-813.905	-92.698
23	-809.546	-77.164	-749.007	-161.825
24	-752.582	-145.121	-719.766	-191.013
25	-720.892	-173.401	-712.271	-185.458
26	-710.768	-169.143	-719.679	-156.681
27	-712.326	-148.512	-724.965	-130.837
28	-717.972	-123.844	-734.665	-100.500
29	-728.887	-94.730	-742.772	-75.313
30	-738.508	-71.069	-747.631	-58.311
31	-745.071	-55.737	-741.588	-60.608
32	-744.173	-63.205	-736.086	-74.513
33	-740.359	-78.806	-729.044	-94.630
34	-734.841	-100.433	-723.196	-116.719
35	-730.211	-123.706	-720.263	-137.618
36	-727.991	-145.306	-722.540	-152.930
37	-733.402	-156.139	-747.722	-136.113
38	-761.281	-133.143	-803.494	-74.111
39	-818.660	-73.456	-784.864	50.566
40	-796.303	49.468	-704.112	-66.949
41	-721.406	-55.850	-771.066	6.858
42	-773.072	8.648	-719.397	-59.131
43	-827.179	-97.641	-800.274	-135.267
44	-809.002	-129.870	-785.459	-162.794
45	-791.100	-155.859	-776.438	-176.363
46	-778.083	-173.366	-765.571	-190.863
47	-764.813	-190.132	-747.562	-214.257
48	-746.550	-213.264	-730.825	-235.255
49	-725.734	-230.149	-707.496	-255.654
50	-703.937	-252.101	-680.959	-284.236
51	-677.620	-280.953	-650.879	-318.349
52	-647.867	-315.404	-617.564	-357.780
53	-614.984	-355.211	-580.726	-403.120
54	-578.453	-400.854	-544.734	-448.009

COMBINACION 17 G1 + G2 + PRETD + TEMP + 0.80 SCMAX-EC1

TENSIONES CON AXIL FINAL

Barra	TS_1	TI_1	TS_2	T1_2
55	-543.202	-446.542	-507.363	-496.661
56	-506.591	-495.922	-468.683	-548.935
57	-468.591	-548.850	-428.017	-605.591
58	-432.816	-610.383	-455.230	-579.038
59	-370.307	-483.413	-333.850	-529.450
60	-335.479	-529.007	-299.049	-575.009

COMBINACION 18 G1 + G2 + PRETD + 0.60 SCMAX-EC1 + 0.5 TEMP

TENSIONES CON AXIL FINAL

Barra	TS_1	TI_1	TS_2	T1_2
1	-290.879	-584.569	-304.185	-567.767
2	-304.987	-561.383	-271.934	-603.121
3	-354.295	-711.746	-381.498	-673.704
4	-380.666	-672.874	-408.335	-634.181
5	-407.872	-633.705	-437.511	-592.257
6	-437.591	-592.324	-466.766	-551.525
7	-467.501	-552.288	-497.831	-509.872
8	-499.312	-511.378	-528.704	-470.273
9	-530.951	-472.551	-558.609	-433.872
10	-561.168	-436.452	-586.903	-400.463
11	-589.879	-403.444	-612.423	-371.918
12	-615.743	-375.218	-635.432	-347.684
13	-638.987	-351.223	-656.079	-327.321
14	-661.180	-332.423	-680.248	-305.758
15	-681.259	-306.768	-699.749	-280.911
16	-700.512	-281.662	-720.017	-254.386
17	-720.651	-254.218	-738.951	-228.627
18	-745.595	-227.822	-827.552	-113.208
19	-726.077	-64.191	-707.558	-87.577
20	-707.490	-80.112	-648.372	-154.764
21	-642.751	-155.172	-732.370	-42.003
22	-726.279	-33.136	-749.660	-182.542
23	-744.136	-168.637	-678.499	-260.427
24	-679.963	-246.676	-639.238	-303.627
25	-638.412	-288.746	-620.016	-314.472
26	-616.969	-300.316	-615.375	-302.546
27	-607.936	-294.496	-612.128	-288.635
28	-605.134	-281.642	-614.706	-268.256
29	-608.929	-262.486	-618.220	-249.493
30	-613.955	-245.250	-621.139	-235.203
31	-618.580	-232.629	-615.731	-236.613
32	-618.316	-239.210	-613.484	-245.967
33	-617.757	-250.260	-612.328	-257.852
34	-618.126	-263.654	-614.796	-268.310
35	-621.808	-275.302	-622.743	-273.995
36	-630.467	-281.690	-638.438	-270.543
37	-648.503	-274.867	-675.484	-237.135
38	-687.321	-236.574	-738.851	-164.511
39	-752.367	-166.163	-723.740	-26.620
40	-734.036	-29.161	-641.543	-145.959
41	-656.201	-138.190	-709.319	-71.114
42	-710.905	-69.854	-659.231	-135.108
43	-764.338	-185.521	-736.761	-224.087
44	-744.017	-220.748	-716.156	-259.710
45	-720.487	-254.608	-700.011	-283.243
46	-701.173	-280.921	-683.057	-306.255
47	-682.301	-305.522	-661.364	-334.801
48	-660.354	-333.806	-642.407	-358.904
49	-637.316	-353.797	-617.809	-381.077
50	-614.252	-377.522	-591.795	-408.927
51	-588.457	-405.643	-563.692	-440.277
52	-560.681	-437.329	-533.661	-475.116
53	-531.080	-472.548	-501.996	-513.220
54	-499.722	-510.956	-472.241	-549.386

COMBINACION 18 G1 + G2 + PRETD + 0.60 SCMAX-EC1 + 0.5 TEMP

TENSIONES CON AXIL FINAL

Barra	TS_1	TI_1	TS_2	T1_2
55	-470.710	-547.919	-442.842	-586.890
56	-442.071	-586.150	-413.887	-625.564
57	-413.798	-625.477	-383.893	-667.297
58	-388.692	-672.088	-423.383	-623.574
59	-339.470	-522.353	-316.093	-551.873
60	-317.490	-551.722	-291.999	-583.911

COMBINACION 19 G1 + G2 + PRETD + SCMIN-EC1

TENSIONES CON AXIL FINAL

Barra	TS_1	TI_1	TS_2	T1_2
1	-226.147	-666.311	-260.323	-623.154
2	-255.413	-623.983	-184.639	-713.355
3	-261.872	-840.995	-244.174	-865.745
4	-243.343	-864.915	-229.712	-883.977
5	-229.234	-883.522	-220.853	-895.242
6	-220.933	-895.311	-217.542	-900.052
7	-218.276	-900.816	-219.703	-898.821
8	-221.184	-900.326	-227.391	-891.645
9	-229.634	-893.928	-239.460	-880.186
10	-242.018	-882.768	-253.512	-866.694
11	-256.485	-869.680	-270.027	-850.742
12	-273.349	-854.039	-289.275	-831.768
13	-292.826	-835.312	-310.048	-811.229
14	-315.148	-816.333	-339.762	-781.912
15	-340.773	-782.922	-368.303	-744.423
16	-369.064	-745.176	-395.568	-708.112
17	-395.308	-709.196	-413.669	-683.518
18	-413.161	-692.715	-477.380	-602.907
19	-379.487	-501.856	-322.614	-573.673
20	-316.872	-573.373	-147.810	-786.860
21	-168.937	-753.492	-347.478	-528.035
22	-338.126	-523.285	-443.873	-610.171
23	-431.609	-605.690	-412.212	-632.817
24	-401.314	-636.352	-378.551	-668.185
25	-367.299	-667.884	-333.322	-715.400
26	-322.462	-712.170	-297.376	-747.252
27	-289.664	-739.585	-276.516	-757.972
28	-269.525	-750.976	-262.176	-761.253
29	-256.398	-755.483	-256.057	-755.961
30	-251.790	-751.720	-255.944	-745.911
31	-253.387	-743.334	-250.521	-747.343
32	-253.106	-749.938	-254.319	-748.241
33	-258.590	-752.537	-267.099	-740.638
34	-272.899	-746.437	-290.799	-721.405
35	-297.789	-728.428	-327.628	-686.698
36	-335.315	-694.445	-379.676	-632.408
37	-381.159	-648.734	-426.158	-585.806
38	-426.190	-601.753	-449.697	-568.879
39	-453.947	-583.489	-376.663	-464.900
40	-379.434	-476.944	-159.451	-754.732
41	-198.356	-716.345	-299.995	-587.997
42	-298.222	-590.980	-315.632	-568.995
43	-403.854	-689.642	-410.286	-680.646
44	-409.012	-689.236	-382.470	-726.355
45	-379.552	-731.390	-350.577	-771.910
46	-350.247	-771.674	-324.218	-808.074
47	-323.464	-807.338	-300.364	-839.642
48	-299.354	-838.647	-283.614	-860.658
49	-278.525	-855.550	-264.079	-875.753
50	-260.524	-872.193	-248.492	-889.020
51	-245.155	-885.734	-235.177	-899.688
52	-232.171	-896.736	-223.854	-908.366
53	-221.270	-905.802	-216.546	-912.409
54	-214.271	-910.146	-214.341	-910.047

COMBINACION 19 G1 + G2 + PRETD + SCMIN-EC1

TENSIONES CON AXIL FINAL

Barra	TS_1	TI_1	TS_2	T1_2
55	-212.807	-908.584	-217.685	-901.762
56	-216.908	-901.031	-226.722	-887.305
57	-226.636	-887.213	-237.556	-871.943
58	-242.355	-876.734	-322.564	-764.565
59	-241.851	-645.623	-265.911	-615.242
60	-265.399	-617.501	-254.851	-630.820

COMBINACION 20 G1 + G2 + PRETD + 0.60 SCMIN-EC1

TENSIONES CON AXIL FINAL

Barra	TS_1	TI_1	TS_2	T1_2
1	-244.953	-642.563	-265.106	-617.115
2	-261.210	-616.663	-192.412	-703.539
3	-269.958	-829.688	-256.697	-848.233
4	-255.865	-847.403	-247.328	-859.342
5	-246.856	-858.878	-243.581	-863.458
6	-243.661	-863.527	-245.378	-861.126
7	-246.111	-861.890	-252.643	-852.756
8	-254.124	-854.261	-265.436	-838.441
9	-267.681	-840.722	-282.612	-819.841
10	-285.170	-822.422	-301.769	-799.210
11	-304.742	-802.194	-323.386	-776.122
12	-326.708	-779.420	-347.734	-750.016
13	-351.287	-753.558	-373.614	-722.335
14	-378.714	-727.438	-408.433	-685.878
15	-409.445	-686.888	-442.077	-641.253
16	-442.840	-642.005	-476.060	-595.548
17	-476.022	-596.320	-504.801	-556.074
18	-505.911	-563.008	-584.633	-452.919
19	-484.697	-369.000	-446.193	-417.622
20	-441.412	-416.108	-316.721	-573.565
21	-326.003	-555.153	-470.801	-372.306
22	-462.264	-366.528	-533.558	-484.751
23	-522.593	-478.454	-478.581	-540.003
24	-470.092	-540.169	-430.655	-595.321
25	-421.230	-592.465	-381.755	-647.669
26	-372.167	-642.661	-343.869	-682.234
27	-336.164	-674.556	-319.812	-697.424
28	-312.822	-690.427	-303.694	-703.192
29	-297.917	-697.422	-295.914	-700.222
30	-291.648	-695.981	-294.687	-691.731
31	-292.129	-689.156	-290.029	-692.092
32	-292.615	-694.687	-295.315	-690.911
33	-299.586	-695.206	-309.583	-681.227
34	-315.382	-687.026	-334.769	-659.916
35	-341.764	-666.931	-373.099	-623.110
36	-380.796	-630.843	-426.708	-566.637
37	-430.667	-579.500	-483.649	-505.407
38	-486.337	-517.640	-532.232	-453.458
39	-538.210	-465.652	-485.178	-327.870
40	-489.588	-337.844	-320.238	-551.694
41	-347.641	-527.831	-431.858	-421.485
42	-430.925	-423.406	-420.935	-436.021
43	-514.015	-535.587	-503.802	-549.869
44	-504.174	-556.158	-469.686	-604.387
45	-468.095	-607.566	-433.306	-656.217
46	-432.993	-655.958	-401.169	-700.462
47	-400.415	-699.725	-371.521	-740.132
48	-370.512	-739.136	-348.985	-769.240
49	-343.896	-764.132	-323.663	-792.427
50	-320.108	-788.868	-302.292	-813.783
51	-298.956	-810.497	-283.194	-832.539
52	-280.187	-829.587	-266.088	-849.304
53	-263.504	-846.740	-253.001	-861.427
54	-250.726	-859.165	-245.020	-867.145

COMBINACION 20 G1 + G2 + PRETD + 0.60 SCMIN-EC1

TENSIONES CON AXIL FINAL

Barra	TS_1	TI_1	TS_2	T1_2
55	-243.485	-865.682	-242.588	-866.936
56	-241.813	-866.202	-245.856	-860.548
57	-245.770	-860.456	-250.919	-853.254
58	-255.718	-858.046	-330.208	-753.875
59	-249.253	-636.277	-267.859	-612.782
60	-267.833	-614.427	-262.262	-621.463

COMBINACION 21 G1 + G2 + 0.9 PRETD

TENSIONES CON AXIL FINAL

Barra	TS_1	TI_1	TS_2	T1_2
1	-245.482	-546.707	-250.661	-540.167
2	-248.525	-538.030	-194.274	-606.536
3	-264.836	-716.129	-263.106	-718.549
4	-262.358	-717.802	-264.878	-714.277
5	-264.461	-713.850	-270.843	-704.925
6	-270.915	-704.986	-280.903	-691.018
7	-281.562	-691.708	-294.990	-672.929
8	-296.323	-674.284	-313.164	-650.733
9	-315.186	-652.782	-334.394	-625.920
10	-336.696	-628.243	-356.515	-600.527
11	-359.193	-603.211	-379.959	-574.172
12	-382.948	-577.141	-404.965	-546.350
13	-408.164	-549.537	-430.470	-518.343
14	-435.061	-522.934	-463.131	-483.681
15	-464.041	-484.589	-493.839	-442.918
16	-494.526	-443.595	-526.142	-399.381
17	-526.409	-399.655	-558.134	-355.289
18	-561.316	-358.476	-642.617	-244.782
19	-550.815	-187.401	-531.201	-212.169
20	-528.196	-209.167	-465.144	-288.788
21	-457.681	-292.191	-556.787	-167.044
22	-550.202	-160.456	-579.843	-296.933
23	-571.728	-288.813	-510.342	-374.659
24	-505.955	-370.260	-457.877	-437.495
25	-451.862	-431.474	-417.312	-479.791
26	-410.400	-472.882	-387.468	-504.950
27	-380.544	-498.026	-366.849	-517.178
28	-360.556	-510.883	-353.759	-520.389
29	-348.559	-515.196	-346.807	-517.647
30	-342.968	-513.829	-344.960	-511.043
31	-342.658	-508.725	-341.040	-510.987
32	-343.367	-513.323	-345.515	-510.319
33	-349.361	-514.182	-356.550	-504.128
34	-361.769	-509.349	-375.879	-489.617
35	-382.183	-495.919	-405.533	-463.265
36	-412.473	-470.207	-447.487	-421.242
37	-454.394	-428.142	-502.930	-360.267
38	-508.934	-366.264	-569.011	-282.249
39	-576.722	-289.963	-549.749	-152.277
40	-555.930	-158.460	-457.532	-282.715
41	-466.493	-281.066	-529.495	-201.509
42	-529.789	-201.807	-493.562	-247.554
43	-582.991	-313.685	-560.453	-345.204
44	-563.009	-347.757	-529.480	-394.645
45	-529.839	-395.003	-498.027	-439.491
46	-497.766	-439.228	-467.758	-481.192
47	-467.079	-480.530	-438.820	-520.049
48	-437.913	-519.151	-415.404	-550.628
49	-410.824	-546.031	-388.593	-577.121
50	-385.391	-573.920	-364.451	-603.205
51	-361.446	-600.250	-341.466	-628.191
52	-338.758	-625.537	-319.384	-652.630
53	-317.059	-650.321	-300.039	-674.123
54	-297.991	-672.087	-284.401	-691.093

COMBINACION 21 G1 + G2 + 0.9 PRETD

TENSIONES CON AXIL FINAL

Barra	TS_1	TI_1	TS_2	T1_2
55	-283.021	-689.774	-272.872	-703.968
56	-272.176	-703.303	-265.590	-712.515
57	-265.511	-712.433	-259.033	-721.492
58	-263.353	-725.803	-318.459	-648.740
59	-244.924	-546.641	-249.312	-541.100
60	-249.944	-541.753	-245.676	-547.143

COMBINACION 22 G1 + G2 + 0.9 PRETD + TEMP

TENSIONES CON AXIL FINAL

Barra	TS_1	TI_1	TS_2	T1_2
1	-248.011	-543.513	-258.612	-530.126
2	-256.477	-527.989	-207.648	-589.649
3	-278.647	-696.815	-282.520	-691.400
4	-281.771	-690.653	-289.889	-679.301
5	-289.474	-678.869	-301.455	-662.115
6	-301.530	-662.172	-317.111	-640.382
7	-317.774	-641.067	-336.804	-614.454
8	-338.136	-615.810	-360.580	-584.423
9	-362.598	-586.479	-387.410	-551.780
10	-389.710	-554.106	-415.133	-518.554
11	-417.809	-521.239	-444.178	-484.364
12	-447.168	-487.332	-474.792	-448.701
13	-477.990	-451.888	-505.902	-412.854
14	-510.492	-417.448	-544.166	-370.356
15	-545.077	-371.265	-580.482	-321.753
16	-581.168	-322.430	-618.390	-270.377
17	-618.657	-270.651	-655.990	-218.442
18	-659.172	-221.629	-746.082	-100.091
19	-650.996	-60.895	-636.814	-78.805
20	-633.810	-75.802	-576.187	-148.566
21	-565.321	-156.267	-664.423	-31.123
22	-657.837	-24.536	-691.004	-141.478
23	-682.890	-133.359	-621.500	-219.210
24	-617.113	-214.811	-569.032	-282.050
25	-563.017	-276.029	-528.463	-324.350
26	-521.551	-317.442	-498.616	-349.516
27	-491.693	-342.591	-477.993	-361.749
28	-471.700	-355.454	-464.900	-364.964
29	-459.700	-359.770	-457.945	-362.225
30	-454.107	-358.406	-456.095	-355.626
31	-453.793	-353.308	-452.173	-355.574
32	-454.500	-357.909	-456.646	-354.908
33	-460.491	-358.772	-467.678	-348.721
34	-472.897	-353.943	-487.005	-334.213
35	-493.309	-340.515	-516.656	-307.865
36	-523.596	-314.807	-558.608	-265.844
37	-565.515	-272.745	-614.049	-204.873
38	-620.052	-210.870	-680.126	-126.859
39	-687.837	-134.574	-657.335	-16.421
40	-663.516	-22.604	-565.115	-146.862
41	-577.478	-140.917	-635.068	-68.194
42	-635.361	-68.493	-593.722	-121.074
43	-686.435	-169.024	-658.306	-208.361
44	-660.863	-210.912	-621.742	-265.621
45	-622.101	-265.979	-584.698	-318.285
46	-584.435	-318.026	-548.839	-367.804
47	-548.159	-367.145	-514.309	-414.482
48	-513.396	-413.591	-485.295	-452.890
49	-480.712	-448.295	-452.882	-487.215
50	-449.682	-484.013	-423.141	-521.129
51	-420.134	-518.177	-394.557	-553.946
52	-391.846	-551.296	-366.872	-586.220
53	-364.548	-583.911	-341.917	-615.559
54	-339.872	-613.520	-320.675	-640.366

COMBINACION 22 G1 + G2 + 0.9 PRETD + TEMP

TENSIONES CON AXIL FINAL

Barra	TS_1	TI_1	TS_2	T1_2
55	-319.294	-639.049	-303.534	-661.088
56	-302.837	-660.426	-290.645	-677.476
57	-290.564	-677.397	-278.478	-694.300
58	-282.796	-698.613	-332.291	-629.397
59	-258.318	-529.727	-257.271	-531.050
60	-257.905	-531.701	-248.203	-543.952

COMBINACION 23 G1 + G2 + 0.9 PRETD + SCMAX-IPF + 0.6 TEMP

TENSIONES CON AXIL FINAL

Barra	TS_1	TI_1	TS_2	T1_2
1	-272.609	-512.452	-299.874	-478.023
2	-299.767	-473.323	-292.321	-482.726
3	-370.796	-567.949	-419.514	-499.820
4	-418.765	-499.073	-464.611	-434.960
5	-464.210	-434.510	-506.590	-375.243
6	-506.665	-375.300	-545.858	-320.491
7	-546.519	-321.177	-582.356	-271.062
8	-583.689	-272.416	-615.496	-227.935
9	-617.522	-229.980	-644.656	-192.033
10	-646.958	-194.357	-667.909	-165.057
11	-670.593	-167.733	-685.608	-146.736
12	-688.592	-149.712	-697.246	-137.609
13	-700.446	-140.795	-702.609	-137.770
14	-707.202	-142.359	-708.338	-140.769
15	-709.249	-141.678	-704.902	-147.757
16	-705.589	-148.433	-695.778	-162.153
17	-696.694	-161.519	-688.043	-173.617
18	-692.908	-174.451	-749.116	-95.848
19	-655.838	-54.781	-623.930	-95.073
20	-625.580	-86.194	-564.311	-163.563
21	-556.024	-168.007	-649.694	-49.722
22	-645.454	-40.173	-690.991	-141.497
23	-683.156	-132.987	-664.713	-158.779
24	-660.785	-153.737	-653.979	-163.256
25	-648.269	-156.808	-651.498	-152.293
26	-644.988	-144.822	-674.544	-103.489
27	-668.109	-95.881	-697.661	-54.554
28	-691.404	-48.208	-715.982	-13.838
29	-710.783	-8.643	-728.504	16.139
30	-724.671	19.964	-734.214	33.310
31	-731.910	35.625	-725.694	26.934
32	-728.022	24.599	-713.618	4.456
33	-717.467	0.596	-696.201	-29.142
34	-701.417	-34.367	-675.081	-71.197
35	-681.402	-77.475	-652.267	-118.220
36	-659.235	-125.122	-647.983	-140.857
37	-655.083	-147.489	-662.272	-137.435
38	-668.600	-142.978	-685.381	-119.510
39	-693.527	-126.617	-644.857	-32.177
40	-662.106	-24.384	-556.749	-157.426
41	-574.734	-144.382	-632.892	-70.941
42	-635.602	-68.189	-597.310	-116.543
43	-697.001	-154.248	-684.768	-171.356
44	-690.853	-168.973	-688.669	-172.027
45	-689.341	-171.946	-688.312	-173.386
46	-690.838	-169.225	-697.112	-160.452
47	-696.430	-159.794	-697.262	-158.630
48	-696.356	-157.731	-696.168	-157.993
49	-691.585	-153.400	-684.885	-162.769
50	-681.679	-159.576	-668.664	-177.777
51	-665.660	-174.821	-646.742	-201.277
52	-644.030	-198.628	-618.928	-233.733
53	-616.607	-231.418	-586.822	-273.071
54	-584.777	-271.031	-550.990	-318.281

COMBINACION 23 G1 + G2 + 0.9 PRETD + SCMAX-IPF + 0.6 TEMP

TENSIONES CON AXIL FINAL

Barra	TS_1	TI_1	TS_2	T1_2
55	-549.618	-316.951	-512.513	-368.840
56	-511.823	-368.169	-471.506	-424.551
57	-471.423	-424.474	-423.854	-490.998
58	-428.173	-495.311	-435.075	-485.659
59	-357.836	-404.058	-310.582	-463.729
60	-311.217	-464.380	-274.606	-510.611

COMBINACION 24 G1 + G2 + 0.9 PRETD + TEMP + 0.80 SCMAX-IPF

TENSIONES CON AXIL FINAL

Barra	TS_1	TI_1	TS_2	T1_2
1	-268.498	-517.643	-294.166	-485.230
2	-293.653	-481.043	-279.666	-498.707
3	-356.786	-587.542	-398.327	-529.449
4	-397.579	-528.702	-437.670	-472.636
5	-437.267	-472.188	-475.359	-418.918
6	-475.435	-418.974	-511.695	-368.265
7	-512.358	-368.950	-546.626	-321.028
8	-547.958	-322.383	-579.686	-278.013
9	-581.709	-280.062	-610.172	-240.258
10	-612.473	-242.583	-636.112	-209.524
11	-638.793	-212.204	-657.872	-185.523
12	-660.857	-188.497	-675.100	-168.579
13	-678.299	-171.766	-687.406	-159.030
14	-691.998	-163.621	-701.435	-150.423
15	-702.346	-151.332	-707.744	-143.783
16	-708.430	-144.460	-709.820	-142.516
17	-710.606	-142.064	-712.947	-138.791
18	-717.475	-140.096	-781.617	-50.396
19	-686.928	-15.522	-660.303	-49.143
20	-661.022	-41.439	-602.220	-115.692
21	-592.327	-122.164	-687.084	-2.508
22	-682.374	6.449	-726.565	-91.748
23	-718.674	-83.316	-691.641	-121.121
24	-687.621	-116.208	-672.559	-137.273
25	-666.788	-130.910	-662.459	-136.964
26	-655.869	-129.605	-674.926	-102.955
27	-668.393	-95.484	-689.293	-66.256
28	-683.030	-59.919	-701.330	-34.327
29	-696.132	-29.133	-709.956	-9.799
30	-706.122	-5.975	-714.153	5.257
31	-711.850	7.572	-706.553	0.165
32	-708.880	-2.170	-697.786	-17.685
33	-701.633	-21.546	-686.058	-43.328
34	-691.274	-48.552	-673.026	-74.071
35	-679.344	-80.354	-660.704	-106.421
36	-667.667	-113.330	-665.667	-116.128
37	-672.727	-122.813	-688.185	-101.197
38	-694.448	-106.831	-719.888	-71.255
39	-727.946	-78.483	-681.780	14.448
40	-696.816	19.447	-592.849	-111.840
41	-610.798	-98.841	-667.111	-27.731
42	-669.337	-25.589	-628.643	-76.976
43	-727.989	-110.912	-710.788	-134.967
44	-716.168	-133.571	-704.808	-149.458
45	-705.417	-149.465	-695.324	-163.580
46	-697.291	-160.201	-693.403	-165.639
47	-692.721	-164.981	-684.828	-176.019
48	-683.919	-175.124	-676.358	-185.696
49	-671.775	-181.103	-659.057	-198.888
50	-655.853	-195.693	-638.340	-220.184
51	-635.335	-217.229	-613.294	-248.053
52	-610.581	-245.405	-583.712	-282.979
53	-581.392	-280.665	-551.242	-322.828
54	-549.198	-320.787	-516.535	-366.464

COMBINACION 24 G1 + G2 + 0.9 PRETD + TEMP + 0.80 SCMAX-IPF

TENSIONES CON AXIL FINAL

Barra	TS_1	TI_1	TS_2	T1_2
55	-515.160	-365.138	-480.529	-413.568
56	-479.837	-412.900	-443.351	-463.924
57	-443.269	-463.847	-401.001	-522.957
58	-405.319	-527.270	-418.944	-508.217
59	-342.218	-423.780	-302.467	-473.977
60	-303.101	-474.628	-270.134	-516.258

COMBINACION 25 G1 + G2 + 0.9 PRETD + 0.60 SCMAX-IPF + 0.5 TEMP

TENSIONES CON AXIL FINAL

Barra	TS_1	TI_1	TS_2	T1_2
1	-262.112	-525.707	-281.302	-501.475
2	-280.383	-497.800	-254.974	-529.886
3	-330.346	-624.517	-359.668	-583.511
4	-358.920	-582.764	-388.219	-541.791
5	-387.812	-541.348	-416.577	-501.122
6	-416.651	-501.181	-444.945	-461.613
7	-445.606	-462.299	-473.263	-423.622
8	-474.596	-424.976	-501.202	-387.770
9	-503.225	-389.819	-527.974	-355.208
10	-530.275	-357.532	-551.558	-327.769
11	-554.239	-330.449	-572.339	-305.137
12	-575.325	-308.110	-590.109	-287.435
13	-593.309	-290.621	-604.314	-275.230
14	-608.906	-279.820	-621.600	-262.069
15	-622.511	-262.977	-632.607	-248.858
16	-633.293	-249.535	-640.838	-238.984
17	-641.495	-238.713	-649.779	-227.128
18	-653.971	-228.903	-721.001	-135.165
19	-627.854	-90.118	-601.625	-123.240
20	-601.412	-116.712	-540.190	-194.022
21	-531.756	-198.651	-627.600	-77.622
22	-622.422	-69.257	-662.094	-181.908
23	-654.147	-173.554	-618.527	-223.368
24	-614.415	-218.584	-591.100	-251.189
25	-585.268	-244.912	-573.385	-261.530
26	-566.714	-254.284	-575.275	-242.312
27	-568.644	-234.978	-580.896	-217.844
28	-574.626	-211.518	-586.653	-194.698
29	-581.453	-189.505	-591.384	-175.617
30	-587.549	-171.794	-594.071	-162.672
31	-591.768	-160.357	-587.391	-166.477
32	-589.719	-168.812	-581.935	-179.697
33	-585.782	-183.558	-575.899	-197.380
34	-581.116	-202.603	-570.958	-216.808
35	-577.272	-223.096	-569.130	-234.482
36	-576.088	-241.399	-583.342	-231.255
37	-590.364	-237.995	-614.091	-204.813
38	-620.290	-210.537	-654.390	-162.851
39	-662.361	-170.201	-621.876	-61.197
40	-634.698	-58.994	-532.124	-188.522
41	-546.976	-179.435	-606.313	-104.505
42	-608.057	-102.972	-569.833	-151.240
43	-665.879	-197.771	-648.741	-221.738
44	-653.415	-221.328	-637.910	-243.011
45	-638.458	-243.105	-624.332	-262.859
46	-625.743	-260.258	-616.721	-272.874
47	-616.041	-272.215	-604.454	-288.418
48	-603.546	-287.520	-593.648	-301.363
49	-589.065	-296.769	-575.369	-315.923
50	-572.165	-312.727	-555.195	-336.458
51	-552.191	-333.503	-532.065	-361.648
52	-529.353	-358.998	-505.758	-391.994
53	-503.436	-389.682	-477.972	-425.293
54	-475.926	-423.254	-449.433	-460.303

COMBINACION 25 G1 + G2 + 0.9 PRETD + 0.60 SCMAX-IPF + 0.5 TEMP

TENSIONES CON AXIL FINAL

Barra	TS_1	TI_1	TS_2	T1_2
55	-448.058	-458.978	-420.950	-496.888
56	-420.257	-496.220	-392.647	-534.831
57	-392.566	-534.753	-360.648	-579.389
58	-364.967	-583.701	-390.365	-548.183
59	-314.547	-458.723	-287.188	-493.271
60	-287.822	-493.922	-263.388	-524.777

COMBINACION 26 G1 + G2 + 0.9 PRETD + SCMIN-IPF

TENSIONES CON AXIL FINAL

Barra	TS_1	TI_1	TS_2	T1_2
1	-208.748	-593.094	-241.205	-552.108
2	-237.858	-551.500	-179.716	-624.921
3	-249.727	-737.259	-238.301	-753.238
4	-237.552	-752.491	-230.217	-762.748
5	-229.784	-762.344	-226.275	-767.250
6	-226.347	-767.311	-226.443	-767.177
7	-227.103	-767.865	-230.638	-762.922
8	-231.971	-764.276	-237.428	-756.645
9	-239.447	-758.699	-245.929	-749.634
10	-248.230	-751.958	-254.797	-742.774
11	-257.474	-745.461	-264.472	-735.674
12	-267.465	-738.638	-274.959	-728.158
13	-278.155	-731.348	-285.437	-721.165
14	-290.027	-725.758	-302.580	-708.203
15	-303.491	-709.111	-317.154	-690.004
16	-317.840	-690.682	-332.669	-669.943
17	-332.289	-671.123	-343.184	-655.886
18	-340.429	-667.376	-382.130	-609.060
19	-290.670	-515.905	-210.705	-616.883
20	-201.443	-621.783	-62.067	-797.784
21	-33.641	-827.658	-249.999	-554.447
22	-241.068	-550.821	-366.204	-595.696
23	-351.412	-596.915	-368.898	-572.462
24	-352.386	-585.018	-346.242	-593.611
25	-329.004	-603.285	-313.892	-624.419
26	-298.127	-629.890	-278.489	-657.354
27	-271.077	-651.111	-260.151	-666.390
28	-253.821	-660.147	-249.752	-665.837
29	-244.553	-660.644	-245.525	-659.284
30	-241.685	-655.469	-246.401	-648.874
31	-244.100	-646.553	-245.201	-645.013
32	-247.528	-647.349	-252.389	-640.552
33	-256.233	-644.417	-266.134	-630.571
34	-271.353	-635.792	-285.571	-615.908
35	-291.858	-622.234	-310.080	-596.752
36	-316.992	-603.732	-345.019	-564.538
37	-344.809	-581.391	-369.161	-547.337
38	-365.275	-567.164	-370.127	-560.378
39	-368.384	-581.313	-266.492	-509.967
40	-261.604	-530.128	-58.483	-786.624
41	-46.261	-811.724	-192.539	-627.008
42	-190.416	-630.357	-230.330	-579.956
43	-304.270	-703.463	-339.124	-654.722
44	-333.224	-669.101	-331.591	-671.385
45	-324.432	-682.254	-309.629	-702.956
46	-306.580	-706.592	-289.918	-729.894
47	-289.241	-729.228	-274.320	-750.095
48	-273.409	-749.201	-264.230	-762.038
49	-259.648	-757.443	-250.740	-769.900
50	-247.541	-766.698	-239.921	-777.354
51	-236.914	-774.402	-230.252	-783.718
52	-227.544	-781.063	-221.486	-789.536
53	-219.158	-787.232	-215.448	-792.419
54	-213.400	-790.384	-213.115	-790.783

COMBINACION 26 G1 + G2 + 0.9 PRETD + SCMIN-IPF

TENSIONES CON AXIL FINAL

Barra	TS_1	TI_1	TS_2	T1_2
55	-211.731	-789.470	-214.857	-785.098
56	-214.157	-784.442	-220.829	-775.111
57	-220.751	-775.028	-227.533	-765.544
58	-231.852	-769.857	-300.202	-674.271
59	-227.247	-568.963	-244.035	-547.763
60	-243.265	-550.188	-223.004	-575.773

COMBINACION 27 G1 + G2 + 0.9 PRETD + 0.60 SCMIN-IPF

TENSIONES CON AXIL FINAL

Barra	TS_1	TI_1	TS_2	T1_2
1	-223.442	-574.539	-244.988	-547.331
2	-242.125	-546.112	-185.539	-617.567
3	-255.770	-728.807	-248.223	-739.362
4	-247.474	-738.615	-244.082	-743.360
5	-243.654	-742.946	-244.102	-742.320
6	-244.174	-742.381	-248.227	-736.714
7	-248.887	-737.402	-256.379	-726.925
8	-257.712	-728.279	-267.723	-714.280
9	-269.742	-716.333	-281.315	-700.148
10	-283.617	-702.472	-295.484	-685.876
11	-298.162	-688.561	-310.667	-671.073
12	-313.658	-674.040	-326.961	-655.435
13	-330.159	-658.623	-343.450	-640.036
14	-348.041	-644.629	-366.800	-618.394
15	-367.711	-619.303	-387.828	-591.170
16	-388.514	-591.847	-410.059	-561.718
17	-409.937	-562.536	-429.164	-535.647
18	-428.784	-543.817	-486.325	-463.348
19	-394.728	-384.504	-338.903	-454.998
20	-332.145	-456.737	-223.298	-594.186
21	-203.257	-613.471	-372.714	-399.486
22	-364.721	-394.675	-451.659	-476.191
23	-439.539	-473.674	-425.475	-493.341
24	-413.814	-499.115	-390.896	-531.164
25	-378.147	-534.561	-355.259	-566.568
26	-343.036	-567.087	-322.080	-596.393
27	-314.864	-589.877	-302.831	-606.705
28	-296.515	-600.442	-291.355	-607.658
29	-286.155	-602.465	-286.038	-602.629
30	-282.198	-598.812	-285.824	-593.741
31	-283.523	-591.422	-283.537	-591.403
32	-285.864	-593.738	-289.639	-588.459
33	-293.484	-592.324	-302.300	-579.994
34	-307.520	-585.214	-321.695	-565.392
35	-327.988	-571.708	-348.261	-543.357
36	-355.184	-550.322	-386.006	-507.219
37	-388.643	-520.092	-422.669	-472.509
38	-422.739	-486.803	-449.681	-449.127
39	-451.719	-464.774	-379.795	-366.891
40	-379.334	-381.461	-218.102	-585.060
41	-214.354	-599.460	-327.321	-456.809
42	-326.166	-458.937	-335.622	-446.995
43	-415.759	-547.552	-427.655	-530.916
44	-425.138	-540.564	-410.747	-560.689
45	-406.596	-567.353	-384.988	-597.570
46	-383.054	-599.647	-361.054	-630.413
47	-360.377	-629.749	-340.120	-658.077
48	-339.211	-657.181	-324.700	-677.474
49	-320.119	-672.878	-305.881	-692.789
50	-302.681	-689.587	-289.733	-707.694
51	-286.727	-704.742	-274.738	-721.507
52	-272.030	-718.853	-260.645	-734.774
53	-258.318	-732.468	-249.285	-745.101
54	-247.237	-743.065	-241.629	-750.907

COMBINACION 27 G1 + G2 + 0.9 PRETD + 0.60 SCMIN-IPF

TENSIONES CON AXIL FINAL

Barra	TS_1	TI_1	TS_2	T1_2
55	-240.247	-749.592	-238.063	-752.646
56	-237.365	-751.986	-238.733	-750.072
57	-238.655	-749.990	-240.133	-747.923
58	-244.452	-752.235	-307.505	-664.058
59	-234.318	-560.034	-246.145	-545.098
60	-245.937	-546.814	-232.073	-564.321

COMBINACION 28 G1 + G2 + 0.9 PRETD + SCMAX-EC1 + 0.6 TEMP

TENSIONES CON AXIL FINAL

Barra	TS_1	TI_1	TS_2	T1_2
1	-274.421	-510.164	-301.983	-475.359
2	-305.139	-466.539	-304.257	-467.653
3	-381.961	-552.335	-435.273	-477.782
4	-434.524	-477.035	-483.346	-408.759
5	-482.929	-408.332	-530.095	-342.372
6	-530.169	-342.431	-571.846	-284.148
7	-572.507	-284.835	-611.530	-230.264
8	-612.863	-231.618	-645.767	-185.603
9	-647.790	-187.650	-674.142	-150.799
10	-676.444	-153.122	-697.421	-123.787
11	-700.101	-126.468	-713.304	-108.003
12	-716.292	-110.975	-722.020	-102.964
13	-725.220	-106.148	-724.730	-106.834
14	-729.321	-111.426	-725.568	-116.675
15	-726.478	-117.584	-718.639	-128.547
16	-719.326	-129.223	-709.982	-142.289
17	-710.812	-141.777	-697.720	-160.085
18	-706.082	-156.028	-755.207	-87.329
19	-666.716	-41.044	-633.222	-83.339
20	-635.668	-73.455	-569.711	-156.744
21	-567.814	-153.119	-659.312	-37.577
22	-654.770	-28.410	-689.863	-143.074
23	-687.570	-126.815	-651.679	-177.006
24	-657.855	-157.834	-649.321	-169.769
25	-653.069	-150.095	-667.398	-130.057
26	-668.207	-112.351	-697.812	-70.950
27	-691.312	-63.432	-719.863	-23.505
28	-713.568	-17.213	-742.383	23.084
29	-737.183	28.276	-758.406	57.956
30	-754.569	61.775	-766.261	78.126
31	-763.957	80.442	-759.174	73.753
32	-761.501	71.417	-747.379	51.669
33	-751.225	47.805	-728.987	16.707
34	-734.204	11.483	-706.738	-26.927
35	-713.056	-33.208	-681.999	-76.641
36	-688.961	-83.552	-656.866	-128.435
37	-667.758	-129.762	-652.998	-150.404
38	-667.612	-144.359	-681.109	-125.485
39	-697.067	-121.666	-650.959	-24.472
40	-662.854	-23.439	-565.967	-145.786
41	-581.650	-135.648	-637.640	-64.946
42	-640.033	-62.593	-604.091	-107.979
43	-700.658	-149.134	-692.097	-161.106
44	-702.013	-153.367	-700.694	-155.211
45	-707.607	-146.403	-715.487	-135.383
46	-717.646	-131.736	-726.274	-119.670
47	-725.592	-119.013	-726.383	-117.906
48	-725.475	-117.009	-724.706	-118.084
49	-720.124	-113.489	-714.875	-120.830
50	-711.670	-117.635	-698.759	-135.691
51	-695.754	-132.736	-676.532	-159.617
52	-673.820	-156.968	-648.675	-192.133
53	-646.353	-189.819	-614.120	-234.896
54	-612.074	-232.858	-577.943	-280.588

COMBINACION 28 G1 + G2 + 0.9 PRETD + SCMAX-EC1 + 0.6 TEMP

TENSIONES CON AXIL FINAL

Barra	TS_1	TI_1	TS_2	T1_2
55	-576.568	-279.263	-537.216	-334.295
56	-536.523	-333.627	-491.962	-395.944
57	-491.879	-395.868	-442.710	-464.629
58	-447.030	-468.940	-451.414	-462.809
59	-373.658	-384.079	-322.973	-448.082
60	-324.762	-447.275	-276.124	-508.694

COMBINACION 29 G1 + G2 + 0.9 PRETD + TEMP + 0.80 SCMAX-EC1

TENSIONES CON AXIL FINAL

Barra	TS_1	TI_1	TS_2	T1_2
1	-269.948	-515.812	-295.853	-483.100
2	-297.951	-475.616	-289.215	-486.647
3	-365.718	-575.051	-410.934	-511.818
4	-410.186	-511.071	-452.659	-451.675
5	-452.243	-451.245	-494.163	-392.621
6	-494.237	-392.680	-532.486	-339.191
7	-533.148	-339.877	-569.965	-288.390
8	-571.297	-289.745	-603.903	-244.148
9	-605.924	-246.199	-633.760	-207.270
10	-636.062	-209.595	-659.721	-176.509
11	-662.400	-179.191	-680.029	-154.537
12	-683.017	-157.508	-694.919	-140.863
13	-698.119	-144.048	-705.103	-134.282
14	-709.693	-138.874	-715.219	-131.148
15	-716.129	-132.057	-718.733	-128.415
16	-719.420	-129.091	-721.183	-126.625
17	-721.900	-126.270	-720.689	-127.965
18	-728.014	-125.357	-786.491	-43.580
19	-695.631	-4.532	-667.736	-39.756
20	-669.093	-31.247	-606.540	-110.238
21	-601.759	-110.253	-694.778	7.208
22	-689.827	15.859	-725.663	-93.010
23	-722.205	-78.378	-681.214	-135.703
24	-685.278	-119.486	-668.833	-142.483
25	-670.628	-125.540	-675.180	-119.175
26	-674.444	-103.628	-693.540	-76.924
27	-686.956	-69.524	-707.056	-41.416
28	-700.761	-35.123	-722.452	-4.790
29	-717.252	0.403	-733.878	23.654
30	-730.041	27.475	-739.790	41.109
31	-737.488	43.426	-733.336	37.620
32	-735.663	35.284	-724.794	20.084
33	-728.639	16.221	-712.286	-6.648
34	-717.504	-11.871	-698.352	-38.655
35	-704.667	-44.940	-684.490	-73.157
36	-691.448	-80.074	-672.773	-106.190
37	-682.868	-108.632	-680.766	-111.572
38	-693.658	-107.935	-716.470	-76.035
39	-730.778	-74.523	-686.662	20.613
40	-697.414	20.201	-600.224	-102.527
41	-616.331	-91.854	-670.909	-22.935
42	-672.882	-21.113	-634.069	-70.125
43	-730.915	-106.820	-716.652	-126.767
44	-725.096	-121.086	-714.428	-136.005
45	-720.029	-129.031	-717.064	-133.177
46	-718.738	-130.209	-716.733	-133.013
47	-716.050	-132.356	-708.125	-143.440
48	-707.214	-142.546	-699.189	-153.769
49	-694.606	-149.175	-683.049	-165.337
50	-679.845	-162.140	-662.416	-186.514
51	-659.410	-183.561	-637.126	-214.724
52	-634.413	-212.077	-607.510	-249.699
53	-605.189	-247.386	-573.081	-292.288
54	-571.035	-290.249	-538.097	-336.310

COMBINACION 29 G1 + G2 + 0.9 PRETD + TEMP + 0.80 SCMAX-EC1

TENSIONES CON AXIL FINAL

Barra	TS_1	TI_1	TS_2	T1_2
55	-536.720	-334.988	-500.291	-385.932
56	-499.597	-385.267	-459.716	-441.038
57	-459.633	-440.963	-416.086	-501.862
58	-420.405	-506.174	-432.015	-489.938
59	-354.876	-407.796	-312.380	-461.459
60	-313.938	-460.943	-271.348	-514.725

COMBINACION 30 G1 + G2 + 0.9 PRETD + 0.60 SCMAX-EC1 + 0.5 TEMP

TENSIONES CON AXIL FINAL

Barra	TS_1	TI_1	TS_2	T1_2
1	-263.199	-524.334	-282.568	-499.876
2	-283.607	-493.729	-262.137	-520.842
3	-337.044	-615.149	-369.124	-570.288
4	-368.375	-569.541	-399.461	-526.070
5	-399.044	-525.641	-430.680	-481.400
6	-430.753	-481.459	-460.538	-439.807
7	-461.198	-440.495	-490.768	-399.143
8	-492.101	-400.498	-519.364	-362.371
9	-521.386	-364.421	-545.665	-330.468
10	-547.967	-332.791	-569.265	-303.007
11	-571.944	-305.689	-588.957	-281.897
12	-591.945	-284.868	-604.974	-266.647
13	-608.174	-269.833	-617.586	-256.669
14	-622.178	-261.261	-631.938	-247.612
15	-632.848	-248.521	-640.849	-237.332
16	-641.536	-238.008	-649.361	-227.065
17	-649.966	-226.867	-655.586	-219.008
18	-661.876	-217.849	-724.656	-130.053
19	-634.381	-81.876	-607.200	-116.200
20	-607.465	-109.069	-543.430	-189.931
21	-538.830	-189.719	-633.371	-70.335
22	-628.011	-62.200	-661.417	-182.854
23	-656.796	-169.851	-610.707	-234.304
24	-612.657	-221.042	-588.305	-255.097
25	-588.148	-240.885	-582.925	-248.189
26	-580.645	-234.802	-589.235	-222.790
27	-582.566	-215.508	-594.218	-199.214
28	-587.924	-192.921	-602.493	-172.546
29	-597.293	-167.353	-609.326	-150.527
30	-605.488	-146.707	-613.299	-135.783
31	-610.996	-133.466	-607.479	-138.385
32	-609.806	-140.721	-602.191	-151.369
33	-606.037	-155.233	-595.570	-169.870
34	-600.788	-175.093	-589.952	-190.246
35	-596.265	-196.536	-586.970	-209.534
36	-593.923	-216.458	-588.671	-223.803
37	-597.970	-227.359	-608.527	-212.594
38	-619.698	-211.366	-651.826	-166.436
39	-664.485	-167.231	-625.537	-56.574
40	-635.146	-58.428	-537.655	-181.538
41	-551.125	-174.195	-609.162	-100.907
42	-610.716	-99.615	-573.902	-146.102
43	-668.073	-194.702	-653.138	-215.588
44	-660.111	-211.965	-645.126	-232.921
45	-649.416	-227.780	-640.637	-240.057
46	-641.828	-237.764	-634.219	-248.405
47	-633.538	-247.746	-621.926	-263.984
48	-621.018	-263.088	-610.770	-277.418
49	-606.189	-272.823	-593.362	-290.760
50	-590.159	-287.563	-573.252	-311.206
51	-570.247	-308.251	-549.938	-336.652
52	-547.228	-334.001	-523.607	-367.034
53	-521.284	-364.722	-494.351	-402.388
54	-492.304	-400.350	-465.605	-437.688

COMBINACION 30 G1 + G2 + 0.9 PRETD + 0.60 SCMAX-EC1 + 0.5 TEMP

TENSIONES CON AXIL FINAL

Barra	TS_1	TI_1	TS_2	T1_2
55	-464.227	-436.366	-435.771	-476.161
56	-435.077	-475.495	-404.920	-517.667
57	-404.839	-517.589	-371.961	-563.567
58	-376.281	-567.879	-400.168	-534.474
59	-324.040	-446.735	-294.623	-483.882
60	-295.950	-483.659	-264.299	-523.627

COMBINACION 31 G1 + G2 + 0.9 PRETD + SCMIN-EC1

TENSIONES CON AXIL FINAL

Barra	TS_1	TI_1	TS_2	T1_2
1	-198.468	-606.076	-238.706	-555.264
2	-234.033	-556.331	-174.842	-631.075
3	-244.622	-744.398	-231.800	-762.329
4	-231.051	-761.582	-220.837	-775.866
5	-220.406	-775.458	-214.022	-784.386
6	-214.094	-784.447	-211.314	-788.334
7	-211.975	-789.022	-212.640	-788.092
8	-213.972	-789.447	-218.050	-783.744
9	-220.069	-785.798	-226.516	-776.783
10	-228.818	-779.106	-235.875	-769.237
11	-238.551	-771.924	-246.561	-760.722
12	-249.551	-763.689	-258.817	-750.732
13	-262.013	-753.922	-271.556	-740.577
14	-276.146	-745.170	-291.451	-723.766
15	-292.362	-724.675	-309.402	-700.844
16	-310.088	-701.522	-324.912	-680.792
17	-324.622	-681.845	-330.304	-673.899
18	-329.442	-682.742	-374.484	-619.753
19	-287.791	-519.541	-222.256	-602.296
20	-216.848	-602.331	-42.868	-822.027
21	-65.016	-788.039	-248.479	-556.367
22	-239.859	-552.349	-355.631	-610.482
23	-344.269	-606.905	-344.419	-606.695
24	-334.009	-610.718	-327.619	-619.655
25	-317.035	-620.023	-296.231	-649.117
26	-286.138	-646.656	-271.236	-667.496
27	-264.293	-660.598	-258.606	-668.551
28	-252.314	-662.255	-249.963	-665.543
29	-244.762	-660.351	-247.163	-656.994
30	-243.323	-653.178	-248.104	-646.491
31	-245.804	-644.171	-242.269	-649.114
32	-244.596	-651.450	-243.027	-653.643
33	-246.871	-657.510	-250.341	-652.656
34	-255.562	-657.875	-265.955	-643.341
35	-272.245	-649.662	-291.855	-622.239
36	-298.771	-629.214	-329.909	-585.668
37	-330.626	-601.226	-359.201	-561.265
38	-358.567	-576.545	-362.672	-570.804
39	-366.065	-584.557	-278.460	-494.854
40	-280.544	-506.210	-55.563	-790.311
41	-93.280	-752.349	-199.838	-617.791
42	-198.033	-620.740	-230.304	-579.989
43	-307.589	-698.821	-326.664	-672.147
44	-325.106	-680.453	-311.439	-699.566
45	-308.481	-704.562	-291.203	-728.724
46	-290.901	-728.518	-275.380	-750.224
47	-274.702	-749.561	-260.927	-768.825
48	-260.018	-767.929	-251.978	-779.172
49	-247.397	-774.576	-239.631	-785.436
50	-236.432	-782.232	-229.950	-791.298
51	-226.946	-788.342	-221.424	-796.064
52	-218.717	-793.409	-213.800	-800.285
53	-211.474	-797.977	-208.900	-801.577
54	-206.853	-799.540	-207.705	-798.349

COMBINACION 31 G1 + G2 + 0.9 PRETD + SCMIN-EC1

TENSIONES CON AXIL FINAL

Barra	TS_1	TI_1	TS_2	T1_2
55	-206.324	-797.031	-210.614	-791.033
56	-209.914	-790.375	-217.756	-779.408
57	-217.678	-779.326	-225.624	-768.213
58	-229.944	-772.525	-299.349	-675.465
59	-226.421	-570.006	-244.440	-547.252
60	-243.858	-549.439	-227.151	-570.536

COMBINACION 32 G1 + G2 + 0.9 PRETD + 0.60 SCMIN-EC1

TENSIONES CON AXIL FINAL

Barra	TS_1	TI_1	TS_2	T1_2
1	-217.273	-582.328	-243.488	-549.225
2	-239.830	-549.010	-182.615	-621.260
3	-252.707	-733.091	-244.322	-744.817
4	-243.574	-744.070	-238.454	-751.231
5	-238.027	-750.815	-236.751	-752.601
6	-236.822	-752.662	-239.150	-749.408
7	-239.810	-750.096	-245.580	-742.027
8	-246.913	-743.381	-256.096	-730.539
9	-258.116	-732.591	-269.667	-716.438
10	-271.969	-718.761	-284.130	-701.754
11	-286.808	-704.439	-299.920	-686.102
12	-302.910	-689.070	-317.276	-668.979
13	-320.473	-672.168	-335.122	-651.683
14	-339.712	-656.276	-360.123	-627.732
15	-361.033	-628.641	-383.177	-597.674
16	-383.863	-598.351	-405.404	-568.227
17	-405.337	-568.969	-421.436	-546.455
18	-422.192	-553.036	-481.737	-469.764
19	-393.000	-386.686	-345.834	-446.246
20	-341.387	-445.065	-211.778	-608.732
21	-222.082	-589.700	-371.802	-400.638
22	-363.996	-395.591	-445.316	-485.062
23	-435.253	-479.668	-410.788	-513.881
24	-402.787	-514.535	-379.722	-546.791
25	-370.966	-544.603	-344.663	-581.387
26	-335.843	-577.147	-317.729	-602.478
27	-310.794	-595.569	-301.903	-608.002
28	-295.611	-601.707	-291.481	-607.482
29	-286.281	-602.289	-287.021	-601.255
30	-283.181	-597.438	-286.847	-592.312
31	-284.545	-589.992	-281.777	-593.863
32	-284.104	-596.199	-284.022	-596.314
33	-287.867	-600.179	-292.825	-593.245
34	-298.044	-598.465	-309.925	-581.851
35	-316.220	-588.165	-337.326	-558.649
36	-344.252	-565.611	-376.941	-519.897
37	-380.133	-531.993	-416.693	-480.866
38	-418.714	-492.432	-445.208	-455.382
39	-450.327	-466.720	-386.976	-357.823
40	-390.699	-367.110	-216.350	-587.273
41	-242.565	-563.836	-331.701	-451.278
42	-330.735	-453.166	-335.607	-447.015
43	-417.750	-544.767	-420.179	-541.370
44	-420.267	-547.375	-398.655	-577.598
45	-397.024	-580.738	-373.933	-613.031
46	-373.647	-612.802	-352.331	-642.612
47	-351.653	-641.949	-332.084	-669.315
48	-331.175	-668.418	-317.349	-687.754
49	-312.768	-683.158	-299.216	-702.109
50	-296.016	-698.908	-283.750	-716.060
51	-280.746	-713.105	-269.441	-728.915
52	-266.733	-726.260	-256.034	-741.223
53	-253.708	-738.915	-245.356	-750.595
54	-243.308	-748.559	-238.383	-755.446

COMBINACION 32 G1 + G2 + 0.9 PRETD + 0.60 SCMIN-EC1

TENSIONES CON AXIL FINAL

Barra	TS_1	TI_1	TS_2	T1_2
55	-237.003	-754.128	-235.517	-756.207
56	-234.819	-755.546	-236.889	-752.651
57	-236.811	-752.568	-238.988	-749.524
58	-243.307	-753.836	-306.993	-664.774
59	-233.822	-560.660	-246.389	-544.791
60	-246.292	-546.364	-234.561	-561.179

5.2. ESTADO LÍMITE DE DEFORMACIONES

En el presente apartado se calcula el valor de la flecha máxima, comprobándose que la relación flecha/luz se encuentra por debajo del valor 1/2000.

5.3. ESTADO LÍMITE DE VIBRACIONES

En este apartado se comprueba que la primera frecuencia de vibración en el modo de flexión se encuentra dentro del rango de valores admitidos por el EC-1.

Se calcula asimismo el valor del coeficiente de impacto según IPF y EC-1.

6 VERIFICACIÓN DEL E.L.U DE ROTURA POR TENSIONES NORMALES

6.1 FLEXIÓN LONGITUDINAL

En este apartado se comprueba el Estado Límite Último de rotura por flexión longitudinal de acuerdo con los criterios de la Normativa española vigente (EHE)

Los cálculos realizados han sido los siguientes:

1. Cálculo de la envolvente de esfuerzos flectores longitudinales para las distintas acciones consideradas en el proyecto del tablero. Los esfuerzos de cálculo se han combinado de acuerdo con los criterios del apartado 2 de este Anejo.

   La envolvente de esfuerzos flectores positivos se muestra en las tablas y gráficos adjuntos con la notación $\mathbf{M}_{\mathbf{d,\,pos}}$. La envolvente de flectores negativos se denota como $\mathbf{M}_{\mathbf{d,neg}}$.

2. Cálculo del momento último respuesta para cada una de las secciones (nudos de las barras) en las que se ha discretizado el tablero. El momento último respuesta se ha calculado considerando las distintas capas de armado y la posible tensión previa de las mismas. El cálculo se realiza con un programa de cálculo automático que permite obtener el momento último respuesta y los diagramas momento curvatura considerando las curvas tensión-deformación no lineales de los materiales (acero y hormigón).

   Los momentos últimos de respuesta de cada sección se han calculado para un momento positivo ($\mathbf{M}_{u,pos}$) y para un momento negativo ($\mathbf{M}_{\mathbf{u,neg}}$). De un modo análogo se calculan los momentos de descompresión y de fisuración de la sección (momentos totales sobre la sección).

   Las unidades de trabajo para los momentos son (mT).

COMBINACION 33 1.35(G1+G2)+1.5(SCMAX-IPF)+ MHIPER-PRETD

ESFUERZOS EN EXTREMO DE BARRA

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	95.810	150.755	-375.672	-408.469	-291.486	-95.320
2	415.286	218.664	-100.145	-781.536	-210.574	-192.940
3	796.842	244.150	182.869	-1142.182	-218.070	-172.754
4	1142.181	218.077	172.754	-1438.343	-202.410	-165.824
5	1438.401	202.513	167.399	-1684.634	-176.058	-157.283
6	1684.650	176.126	157.283	-1882.800	-149.606	-147.168
7	1882.766	149.608	147.168	-2032.769	-123.185	-137.053
8	2032.747	123.128	137.053	-2132.453	-107.585	-130.123
9	2132.446	107.625	130.123	-2183.249	-70.116	-120.007
10	2183.231	70.033	120.007	-2185.819	-32.916	-109.892
11	2185.836	32.925	109.892	-2140.028	-6.842	-102.962
12	2140.028	6.770	102.963	-2043.344	29.451	-91.910
13	2043.359	-29.327	93.292	-1898.621	64.592	-82.238
14	1898.631	-64.589	82.238	-1705.760	100.819	-71.185
15	1705.764	-100.886	71.185	-1463.354	126.517	-63.319
16	1463.365	-126.488	63.318	-1171.255	162.921	-52.265
17	1173.359	-146.991	11.307	-858.610	74.961	-85.066
18	864.081	-121.622	-49.790	-573.001	149.480	221.025
19	579.399	-158.608	-155.616	-300.894	214.531	26.056
20	316.525	-253.985	-74.317	-55.869	384.516	48.389
21	48.932	472.021	-54.123	-464.820	-170.452	22.995
22	472.705	213.608	-36.978	-897.827	-107.147	-81.117
23	898.742	108.974	83.357	-1374.353	-80.807	-87.420
24	1375.861	83.866	91.483	-1801.313	-84.649	-94.141
25	1802.312	86.767	97.425	-2171.698	-85.512	-98.659
26	2172.999	87.830	102.723	-2545.521	-121.070	-161.996
27	2547.111	122.815	168.447	-2844.837	-94.813	-158.499
28	2844.956	94.963	159.444	-3059.342	-64.322	-145.950
29	3059.338	64.404	145.950	-3190.316	-32.947	-130.217
30	3190.313	32.916	130.217	-3237.762	-0.445	-119.743
31	3237.772	0.410	119.743	-3200.964	22.121	-109.434
32	3200.959	-21.994	109.434	-3080.580	53.516	-93.581
33	3080.570	-53.520	93.581	-2876.750	83.486	-82.575
34	2876.738	-83.542	82.575	-2589.150	112.286	-69.081
35	2589.210	-112.200	68.382	-2217.739	138.366	-52.403
36	2217.832	-137.828	48.199	-1821.886	86.141	-3.751
37	1822.520	-84.552	2.991	-1397.834	83.765	11.446
38	1398.898	-81.669	-9.783	-923.175	106.494	25.626
39	924.584	-103.737	-23.240	-481.624	267.144	116.417
40	518.809	-201.367	-83.681	-62.323	525.991	85.486
41	96.532	379.165	-49.051	-346.414	-208.312	16.838
42	354.528	230.222	-54.563	-584.287	-64.092	31.824
43	606.604	115.887	-25.473	-849.066	-73.789	-144.869
44	860.549	53.483	11.873	-1145.424	-117.695	-65.380
45	1146.446	120.313	67.098	-1403.446	-118.903	-103.667
46	1412.517	135.372	150.506	-1661.359	-109.765	-142.014
47	1661.337	109.805	142.014	-1860.763	-73.589	-130.961
48	1860.766	73.650	130.961	-2012.104	-38.395	-120.845
49	2012.113	38.353	120.845	-2115.306	-2.149	-110.730
50	2115.283	2.230	110.729	-2167.738	23.816	-103.800
51	2167.691	-23.681	103.800	-2171.835	60.791	-93.684
52	2171.767	-60.870	93.684	-2127.693	98.373	-83.569
53	2127.688	-98.349	83.569	-2034.701	113.868	-76.640
54	2034.694	-113.816	76.639	-1891.469	140.227	-66.524

ESFUERZOS EN EXTREMO DE BARRA

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
55	1891.440	-140.077	64.640	-1700.232	166.593	-54.524
56	1700.220	-166.591	53.393	-1460.855	193.049	-43.277
57	1460.849	-193.015	43.276	-1171.489	206.773	-36.347
58	1171.501	-206.790	36.347	-832.952	229.359	-26.231
59	832.931	-229.315	26.231	-449.988	294.323	49.711
60	449.968	-294.320	-49.796	-102.390	146.622	254.468

COMBINACION 34 1.35(G1+G2)+1.5(SCMIN-IPF)+ MHIPER-PRETD

ESFUERZOS EN EXTREMO DE BARRA

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	-113.659	238.619	444.748	-227.375	-29.195	79.826
2	223.306	21.633	-86.428	-430.149	-0.209	87.577
3	429.927	-0.153	-88.780	-590.538	17.440	113.512
4	590.536	-17.428	-113.512	-724.615	9.206	113.512
5	724.571	-9.426	-115.087	-832.443	1.374	115.087
6	832.455	-1.320	-115.087	-914.329	-6.668	115.087
7	914.298	6.718	-115.086	-970.149	-8.089	133.516
8	970.127	8.039	-133.516	-995.045	-16.396	133.516
9	995.008	16.449	-133.516	-989.563	-6.280	127.658
10	989.538	6.201	-127.658	-956.267	-0.046	128.720
11	956.258	0.090	-128.720	-895.307	2.087	128.720
12	895.338	-2.124	-128.720	-805.823	7.372	129.782
13	805.826	-7.350	-131.164	-688.681	11.657	132.226
14	688.677	-11.664	-132.226	-543.890	16.926	133.288
15	543.894	-16.926	-133.288	-371.020	18.666	133.288
16	371.030	-18.625	-133.288	-170.023	24.086	134.350
17	167.909	-40.033	-93.392	72.301	43.618	94.454
18	-91.622	-103.374	-44.979	418.947	270.238	38.183
19	-445.583	-342.161	-27.415	874.611	498.214	27.415
20	-895.638	-548.222	-44.319	1407.785	621.106	-7.142
21	-1489.246	815.964	202.802	661.143	-606.554	-189.255
22	-669.021	563.407	203.237	-58.186	-276.447	-200.051
23	36.468	222.372	172.897	-628.960	-130.147	-119.724
24	589.529	51.625	91.958	-1017.128	-69.234	-91.958
25	980.620	-7.804	27.400	-1290.331	-9.005	-27.400
26	1261.527	-46.250	-71.985	-1473.995	31.111	71.985
27	1472.410	-32.949	-78.437	-1638.445	19.787	78.437
28	1638.323	-19.906	-79.382	-1759.507	8.632	79.382
29	1759.501	-8.606	-79.382	-1835.986	-1.149	79.382
30	1835.961	1.126	-79.382	-1867.698	-9.881	79.382
31	1867.720	9.812	-79.382	-1854.709	-18.555	79.094
32	1854.702	18.646	-79.094	-1796.990	-28.412	79.094
33	1796.967	28.394	-79.094	-1694.537	-39.684	79.094
34	1694.534	39.654	-79.094	-1538.876	-38.912	68.467
35	1538.826	38.816	-67.769	-1321.416	-37.911	76.392
36	1321.327	37.372	-72.188	-1053.161	-50.649	73.251
37	1030.017	-4.905	10.184	-661.160	-9.160	-9.122
38	628.994	-67.243	22.439	-114.456	132.158	-25.487
39	83.696	-198.584	30.836	572.773	487.525	-27.650
40	-609.968	-553.312	-5.087	1394.939	749.243	-14.680
41	-1455.366	673.337	80.874	920.318	-599.097	-69.097
42	-928.441	577.214	106.821	446.825	-411.874	-76.216
43	-469.143	360.016	69.865	84.407	-169.343	-17.885
44	-111.914	92.942	-27.328	-163.837	-90.609	27.328
45	139.384	23.795	-103.239	-340.662	-21.881	103.239
46	331.591	5.470	-150.078	-494.908	-3.727	150.078
47	494.898	3.706	-150.078	-632.161	-1.967	150.078
48	632.143	1.918	-150.078	-743.308	-1.143	150.078
49	743.318	1.054	-150.078	-828.399	0.647	150.078
50	828.400	-0.599	-150.078	-887.476	2.769	150.078
51	887.413	-2.655	-150.078	-920.505	5.269	150.078
52	920.445	-5.372	-150.078	-927.396	8.370	150.078
53	927.369	-8.385	-150.078	-908.260	0.028	150.078
54	908.245	-0.036	-150.078	-863.069	-8.043	150.078

ESFUERZOS EN EXTREMO DE BARRA

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
55	862.999	7.922	-148.195	-791.722	-15.909	148.195
56	791.674	15.766	-147.063	-694.240	-23.817	147.063
57	694.243	23.824	-147.063	-570.755	-33.947	147.063
58	570.764	33.904	-147.063	-421.171	-45.773	146.559
59	421.160	45.835	-146.559	-242.438	-10.230	109.996
60	237.701	-21.271	-2.151	65.898	173.236	-155.084

COMBINACION 35 1.35(G1+G2)+1.5(SCMAX-EC1)+ MHIPER-PRETD

ESFUERZOS EN EXTREMO DE BARRA

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	101.899	176.664	-396.337	-415.556	-182.597	206.949
2	433.338	267.596	-34.060	-821.643	-249.149	-207.026
3	833.165	245.645	172.144	-1193.451	-261.838	-181.565
4	1193.449	261.847	181.566	-1499.296	-230.659	-244.257
5	1499.300	230.603	244.256	-1761.102	-201.969	-196.198
6	1761.114	202.030	196.198	-1967.346	-166.884	-160.503
7	1967.310	166.904	160.502	-2127.680	-117.273	-155.586
8	2127.658	117.212	155.586	-2230.931	-119.080	-165.785
9	2230.921	119.118	165.785	-2279.174	-68.916	-139.298
10	2279.159	68.845	139.298	-2281.828	-29.537	-91.239
11	2281.835	29.561	91.239	-2230.133	-10.610	-121.984
12	2230.144	10.552	121.983	-2123.941	48.861	-116.130
13	2123.959	-48.748	117.327	-1970.587	91.876	-77.619
14	1970.591	-91.877	77.619	-1761.812	114.596	6.102
15	1761.813	-114.646	-6.102	-1508.044	147.978	-52.132
16	1508.056	-147.942	52.132	-1217.464	180.914	-36.154
17	1219.288	-167.085	0.644	-890.093	155.278	4.123
18	906.941	-103.176	-47.212	-592.820	208.615	127.943
19	615.949	-146.097	-137.125	-332.114	289.399	77.796
20	350.421	-245.806	-62.931	-74.011	419.578	102.099
21	88.546	468.601	-51.470	-497.135	-160.604	36.312
22	504.004	198.122	-48.277	-894.157	65.064	100.476
23	913.101	-18.011	-76.653	-1331.952	6.474	-55.125
24	1366.330	61.957	79.722	-1786.161	-43.670	-72.226
25	1817.927	110.691	128.591	-2223.426	-74.714	-73.989
26	2248.537	122.941	160.630	-2621.218	-101.325	-152.008
27	2622.599	102.841	157.609	-2917.069	-99.113	-189.366
28	2917.061	99.131	189.366	-3145.234	-65.277	-155.576
29	3145.226	65.334	155.576	-3287.597	-32.149	-120.136
30	3287.581	32.122	120.136	-3342.019	-0.816	-77.215
31	3342.032	0.768	77.214	-3309.883	7.401	-108.568
32	3309.875	-7.286	108.568	-3190.412	42.710	-73.650
33	3190.394	-42.716	73.650	-2983.411	74.230	-34.217
34	2983.402	-74.285	34.217	-2692.139	122.178	-34.438
35	2692.190	-122.109	33.833	-2314.466	151.894	1.839
36	2314.538	-151.429	-3.672	-1850.784	179.346	39.721
37	1863.759	-148.397	-107.629	-1367.662	143.979	60.483
38	1395.684	-77.477	-71.798	-909.276	62.279	200.723
39	936.100	-4.354	-205.038	-502.127	194.278	-11.280
40	521.322	-194.350	-79.636	-93.296	488.423	-27.387
41	119.771	389.320	-66.841	-362.366	-207.137	15.043
42	369.416	226.220	-47.611	-607.074	-94.902	75.385
43	618.502	121.590	-113.204	-872.910	-76.481	-18.091
44	896.854	143.021	57.539	-1184.546	-110.367	-54.572
45	1205.868	168.574	120.563	-1491.854	-119.799	-145.881
46	1499.731	134.097	186.486	-1756.234	-85.194	-137.185
47	1756.208	85.245	137.185	-1955.501	-93.762	-143.784
48	1955.499	93.798	143.784	-2104.947	-45.517	-168.351
49	2104.958	45.463	168.350	-2212.870	4.108	-118.297
50	2212.851	-4.022	118.297	-2265.647	11.924	-154.529
51	2265.595	-11.795	154.529	-2268.750	77.294	-135.898
52	2268.684	-77.370	135.899	-2224.469	86.423	-97.511
53	2224.462	-86.399	97.511	-2123.510	126.093	-120.076
54	2123.498	-126.041	120.076	-1979.156	166.325	-68.021

ESFUERZOS EN EXTREMO DE BARRA

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
55	1979.115	-166.191	66.390	-1780.595	150.109	-65.922
56	1780.577	-150.126	64.941	-1527.404	219.250	-80.854
57	1527.396	-219.216	80.854	-1232.834	197.030	51.047
58	1232.847	-197.061	-51.047	-886.108	242.861	55.964
59	886.092	-242.801	-55.964	-491.621	311.074	96.616
60	495.481	-285.222	-185.297	-107.491	251.769	346.608

COMBINACION 36 1.35(G1+G2)+1.5(SCMIN-EC1)+ MHIPER-PRETD

ESFUERZOS EN EXTREMO DE BARRA

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	8.301	85.804	-29.748	-262.696	-45.995	29.748
2	258.628	38.433	-36.350	-477.801	-17.315	36.350
3	477.579	16.952	-37.553	-668.720	-25.380	37.553
4	668.719	25.391	-37.553	-833.842	-33.613	37.553
5	833.851	33.556	-37.554	-972.884	-41.608	37.554
6	972.897	41.665	-37.553	-1085.936	-49.653	37.553
7	1085.904	49.687	-37.553	-1172.925	-57.767	37.553
8	1172.902	57.716	-37.553	-1233.838	-66.072	37.553
9	1233.811	66.117	-37.553	-1268.752	-63.120	37.553
10	1268.731	63.043	-37.553	-1277.557	-60.426	37.553
11	1277.554	60.464	-37.553	-1260.374	-58.286	37.553
12	1260.394	58.229	-37.553	-1217.114	-56.523	37.553
13	1217.126	56.597	-37.553	-1147.845	-55.829	37.553
14	1147.846	55.827	-37.553	-1052.522	-54.104	37.553
15	1052.524	54.077	-37.553	-931.129	-52.336	37.553
16	931.139	52.367	-37.553	-783.729	-50.448	37.553
17	783.693	50.227	-37.336	-610.074	-50.181	37.336
18	609.185	47.541	-35.615	-407.606	66.713	35.615
19	407.135	-68.364	-36.708	-176.610	224.419	36.708
20	175.839	-226.377	-38.366	85.566	380.879	38.366
21	-102.075	495.047	21.430	-342.435	-207.603	-20.202
22	342.156	206.631	19.096	-734.670	69.707	-19.096
23	733.765	-71.569	16.857	-1076.861	84.398	-16.857
24	1075.377	-87.459	12.794	-1370.844	69.851	-12.794
25	1369.855	-71.969	9.510	-1618.607	55.159	-9.510
26	1617.292	-57.415	5.446	-1819.154	42.276	-5.446
27	1819.133	-42.348	5.350	-1976.234	29.186	-5.350
28	1976.233	-29.167	5.350	-2088.620	17.893	-5.350
29	2088.613	-17.855	5.350	-2156.311	8.099	-5.350
30	2156.291	-8.121	5.350	-2179.242	-0.636	-5.350
31	2179.260	0.577	5.350	-2157.479	-9.337	-5.350
32	2157.472	9.440	5.350	-2091.015	-19.206	-5.350
33	2090.995	19.190	5.350	-1979.820	-30.479	-5.350
34	1979.816	30.440	5.350	-1823.885	-43.616	-5.350
35	1823.888	43.608	5.350	-1623.238	-58.768	-5.350
36	1623.237	58.764	5.299	-1377.871	-75.582	-5.299
37	1377.253	73.963	6.058	-1085.619	-91.568	-6.058
38	1084.572	89.504	4.395	-746.263	-80.012	-4.395
39	744.847	77.257	2.009	-356.272	201.062	-2.009
40	355.232	-203.699	-0.582	86.433	491.534	0.582
41	-80.289	382.826	-29.255	-182.246	-228.229	30.192
42	182.081	227.483	-31.033	-414.326	-73.691	31.033
43	413.673	71.543	-33.633	-616.613	43.419	33.633
44	615.811	-45.744	-35.729	-791.018	48.071	35.729
45	789.997	-50.715	-37.447	-937.253	52.635	37.447
46	937.123	-52.825	-37.664	-1058.178	54.566	37.664
47	1058.161	-54.560	-37.664	-1153.185	56.280	37.664
48	1153.176	-56.304	-37.664	-1222.134	57.068	37.664
49	1222.148	-57.136	-37.665	-1265.036	58.835	37.665
50	1265.030	-58.771	-37.664	-1281.925	60.943	37.664
51	1281.869	-60.824	-37.664	-1272.785	63.436	37.664
52	1272.725	-63.530	-37.664	-1237.509	66.521	37.664
53	1237.492	-66.523	-37.664	-1176.232	58.162	37.664
54	1176.219	-58.149	-37.664	-1088.908	50.066	37.664

ESFUERZOS EN EXTREMO DE BARRA

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
55	1088.850	-50.062	-37.664	-975.534	42.073	37.664
56	975.505	-42.144	-37.664	-836.085	34.094	37.664
57	836.086	-34.079	-37.664	-670.614	23.957	37.664
58	670.623	-23.994	-37.664	-479.095	12.061	37.664
59	479.082	-12.002	-37.664	-259.845	36.691	37.664
60	259.819	-36.739	-37.578	-11.087	76.951	37.578

RESPUESTA SECCIONAL A FLEXION (mT)

Isec	Sx(is)	Mu,pos	Mu,neg	Mcr,pos	Mcr,neg	Mdec,pos	Mdec,neg
1	0.00	2468.54	-2036.06	1440.22	-1071.72	1043.46	-573.23
2	0.73	2746.06	-1783.74	1637.87	-869.55	1240.16	-371.10
3	1.45	3017.44	-1443.99	1953.67	-688.04	1603.92	-204.97
4	2.17	3258.55	-1264.41	2127.40	-521.93	1776.35	-38.31
5	2.90	3458.78	-1121.54	2272.89	-385.11	1920.64	99.13
6	3.62	3617.53	-1012.34	2390.36	-277.13	2037.08	207.72
7	4.35	3728.18	-938.67	2475.31	-201.82	2121.28	283.50
8	5.07	3796.42	-894.53	2532.08	-154.95	2177.58	330.68
9	5.80	3822.24	-878.85	2560.33	-136.64	2205.66	349.11
10	6.53	3805.20	-891.28	2557.57	-147.55	2203.03	338.10
11	7.25	3757.70	-923.92	2533.12	-179.59	2178.93	305.84
12	7.97	3679.85	-977.71	2486.44	-233.17	2132.79	251.90
13	8.70	3565.53	-1057.89	2412.23	-313.09	2059.36	171.51
14	9.43	3415.80	-1166.20	2315.31	-419.73	1963.40	64.33
15	10.15	3240.30	-1294.46	2184.22	-545.32	1833.34	-61.79
16	10.87	3023.40	-1458.52	2020.94	-701.56	1671.22	-218.50
17	11.60	2783.73	-1646.41	1839.50	-875.30	1490.91	-392.57
18	12.32	2512.21	-1871.24	1640.79	-1079.31	1293.28	-596.66
19	13.05	2247.40	-2259.66	1298.52	-1260.98	902.36	-762.24
20	13.77	2087.95	-2405.34	1172.84	-1373.50	776.99	-874.46
21	14.50	2033.91	-2452.43	1128.29	-1406.78	732.53	-907.62
22	15.45	2174.55	-2307.53	1222.92	-1284.09	826.89	-785.23
23	16.40	2611.34	-1763.34	1660.28	-971.33	1312.34	-488.68
24	17.35	3202.29	-1303.01	2076.50	-558.76	1725.75	-75.29
25	18.30	3728.65	-932.63	2436.63	-203.50	2082.57	281.84
26	19.25	4174.19	-651.52	2730.72	86.93	2373.24	574.66
27	20.20	4542.76	-443.85	2965.02	318.75	2604.30	809.01
28	21.15	4826.46	-301.64	3137.58	490.88	2774.13	983.42
29	22.10	5030.42	-209.28	3255.83	610.40	2890.27	1104.75
30	23.05	5153.95	-156.80	3322.11	679.86	2955.22	1175.38
31	24.00	5196.60	-139.38	3338.14	701.09	2970.76	1197.04
32	24.95	5153.96	-156.79	3322.25	679.91	2955.36	1175.44
33	25.90	5030.45	-209.27	3256.14	610.52	2890.58	1104.87
34	26.85	4826.50	-301.62	3138.03	491.04	2774.57	983.58
35	27.80	4542.81	-443.84	2965.50	318.90	2604.79	809.17
36	28.75	4174.25	-651.52	2731.22	87.05	2373.74	574.78
37	29.70	3728.71	-932.65	2437.05	-203.45	2082.98	281.90
38	30.65	3202.34	-1303.04	2076.77	-558.77	1726.03	-75.30
39	31.60	2613.38	-1765.70	1670.08	-974.98	1322.15	-492.33
40	32.55	2176.20	-2310.07	1227.98	-1288.90	831.96	-790.04
41	33.50	2033.91	-2452.43	1128.29	-1406.78	732.53	-907.62
42	34.22	2086.24	-2402.98	1168.10	-1368.16	772.25	-869.12
43	34.95	2243.96	-2090.98	1424.86	-1266.95	1078.19	-784.08
44	35.67	2510.17	-1868.93	1631.34	-1074.95	1283.83	-592.30
45	36.40	2783.77	-1646.45	1839.69	-875.35	1491.10	-392.62
46	37.12	3023.43	-1458.55	2021.18	-701.59	1671.46	-218.54
47	37.85	3240.34	-1294.49	2184.53	-545.33	1833.65	-61.80
48	38.58	3415.85	-1166.22	2315.66	-419.72	1963.75	64.34
49	39.30	3565.58	-1057.91	2412.62	-313.06	2059.75	171.54
50	40.03	3679.91	-977.72	2486.83	-233.13	2133.18	251.95
51	40.75	3757.75	-923.93	2533.50	-179.53	2179.30	305.89
52	41.47	3805.24	-891.29	2557.92	-147.50	2203.37	338.16
53	42.20	3822.27	-878.86	2560.64	-136.59	2205.97	349.16
54	42.92	3796.45	-894.54	2532.35	-154.91	2177.85	330.72
55	43.65	3728.21	-938.67	2475.51	-201.79	2121.49	283.52
56	44.37	3617.55	-1012.35	2390.52	-277.11	2037.25	207.73
57	45.10	3458.79	-1121.54	2272.99	-385.11	1920.75	99.13
58	45.83	3260.91	-1266.06	2142.78	-522.26	1791.73	-38.65
59	46.55	3022.94	-1547.29	1845.95	-676.12	1447.09	-177.41
60	47.28	2747.88	-1786.07	1645.89	-871.95	1248.19	-373.50
61	48.00	2469.22	-2037.09	1442.58	-1073.02	1045.82	-574.53


LEYES DE MOMENTOS FLECTORES MAYORADOS
Mu NEGATIVO
Md NEGATIVO
Md POSITIVO
Mu POSITIVO

6.2. FLEXIÓN TRANSVERSAL

La flexión transversal en el tablero se ha determinado a partir del modelo de cálculo mediante elementos finitos tipo lámina expuesto en el apartado 3.2

La armadura de flexión calculada debe sumarse a la armadura de rasante del voladizo obtenida a partir del cortante total sobre la sección y de la aplicación de la regla de cosido en el plano de unión del voladizo con el núcleo de la sección transversal.

6.3. TRAVIESAS DE APOYO

En este apartado se incluyen los resultados del cálculo de la flexión transversal que se produce en las traviesas de apoyo en estribos.

La determinación de los esfuerzos de flexión y cortante se realizan a partir de las reacciones que se han calculado en el apartado 3 de este anejo.

6.4. INTRODUCCIÓN DEL PRETENSADO

La regularización de las tensiones normales en el tablero inducidas por el pretensado produce tracciones en la zona de anclajes, cuyo efecto se puede estudiar a partir de dos análisis independientes:

- Estudio de la la introducción de una fuerza puntual en el anclaje, que permite el cálculo de los refuerzos de armadura en la zona inmediatamente detrás de la placa de anclaje.

- En las zonas de estribos la fuerza rasante se incrementa por el efecto de introducción de pretensado, cuyo valor total se reparte en planta, a efectos de cálculo, con un ángulo de aproximadamente 35 º. El efecto de esta regularización de tensiones se puede abordar a partir del método de bielas y tirantes, cuyo modelo sería análogo al que se emplea para el cálculo de vigas de gran canto.

En la hoja siguiente se detallan los cálculos de las armaduras a colocar en la zona de introducción de la fuerza de pretensado.

6.5. EVALUACIÓN DEL ELU DE FATIGA

El Estado Límite Último de Fatiga se ha calculado según las indicaciones dadas en el Eurocódigo 2 parte 2 en su artículo 4.3.7.

Se comprueba a fatiga el hormigón a compresión, el acero de armar y de pretensar no hay que comprobarlo a fatiga.

El acero de armar no se comprueba por que no hay soldaduras en los empalmes, y bajo la acción frecuente el $\Delta\sigma s$ no supera los 70 N/mm2.

Los cálculos han sido realizados con una hoja de cálculo desarrollada al efecto por los ingenieros de PEDELTA S.L.

En él, se considera que un hormigón sometido a compresión presenta una resistencia a fatiga adecuada si se verifica la siguiente expresión:

$$14 \times \frac{1 - S_{cd,max.equ}}{\sqrt{1 - R_{equ}}} \geq 6$$

Siendo:

$$R_{equ} = \frac{S_{cd,min,equ}}{S_{cd,max,equ}} \qquad S_{cd,min,equ} = \gamma_{sd} \times \frac{\sigma_{cd,min,equ}}{f_{cd,fat}} \qquad S_{cd,max,equ} = \gamma_{sd} \times \frac{\sigma_{cd,max,equ}}{f_{cd,fat}}$$

$$\sigma_{cd,max,equ} = \sigma_{c,perm} + \lambda_c \times \left(\sigma_{c,max,71} - \sigma_{c,perm}\right)$$

$$\sigma_{cd,min,equ} = \sigma_{c,perm} - \lambda_c \times \left(\sigma_{c,mperm} - \sigma_{c,min,71}\right)$$

$\sigma_{c,perm}$ Tensión de compresión en el hormigón bajo la combinación infrecuente de acciones, sin incluir el modelo de carga 71.

$\sigma_{c,max,71}$, $\sigma_{c,min,71}$ Tensión de compresión máxima o mínima bajo la combinación infrecuente de acciones, incluyendo el factor dinámico correspondiente.

λ_c Coeficiente corrector para calcular las tensiones superior e inferior del rango tensional de daño equivalente a partir de las tensiones originadas por el modelo de carga 71.

$$\lambda_c = \lambda_{c,0} \times \lambda_{c,1} \times \lambda_{c,2} \times \lambda_{c,3} \times \lambda_{c,4}$$

$\lambda_{c,0}$ Coeficiente que tiene en cuenta la influencia de la tensión permanente

$$\lambda_{c,0} = 0{,}94 + 0{,}2 \times \frac{\sigma_{c,perm}}{f_{cd,fat}} \geq 1{,}0$$

$\lambda_{c,1}$ Coeficiente que tiene en cuenta la luz del elemento y la composición del tráfico.

$\lambda c,2$ Coeficiente que tiene en cuenta el volumen anual de tráfico.

$\lambda c,3$ Coeficiente que tiene en cuenta la influencia de la vida de servicio.

$\lambda c,4$ Coeficiente que tiene en cuenta la influencia de las múltiples vías.

Se adjuntan a continuación los cálculos realizados.

7. VERIFICACIÓN DEL E.L.U DE ROTURA POR TENSIONES TANGENCIALES

7.1 EVALUACIÓN DEL E.L.U. DE CORTANTE

En este apartado se comprueba el Estado Límite Último de rotura por cortante de acuerdo con los criterios de la Normativa española vigente (EHE, artículo 44)

Los cálculos realizados han sido los siguientes:

- Cálculo de la envolvente de esfuerzos cortantes para las distintas acciones consideradas en el proyecto del tablero. Los esfuerzos de cálculo se han combinado de acuerdo con los criterios del apartado 2 de este Anejo.

  La envolvente de esfuerzos flectores positivos se muestra en los listados adjuntos con la notación $\mathbf{V_{rd}}$, conjuntamente con el esfuerzo flector y torsor concomitantes.

  Donde

  $$\mathbf{V_{rd} = V_d + V_{pd} + V_{cd}}$$

  donde,

  V_{rd} = Valor del esfuerzo cortante efectivo calculado como:
  V_d = Valor de cálculo del esfuerzo cortante producido por las acciones exteriores
  V_{pd} = Valor de cálculo del esfuerzo cortante producido por el pretensado.
  V_{cd} = Valor de cálculo del la componente paralela a la sección de las tensiones normales en piezas de sección variable

- Comprobación del agotamiento por compresión oblicua en el alma.

  $$\mathbf{V_{rd} \leq V_{u1}}$$

  V_{u1} = Esfuerzo cortante de agotamiento por compresión oblicua del alma.

- Comprobación del agotamiento por tracción en el alma.

  $$\mathbf{V_{rd} \leq V_{u2}}$$

  V_{u2} = Esfuerzo cortante de agotamiento por tracción en el alma.

- El cálculo de todos los parámetros resistentes se ha realizado de forma automática. Posteriormente se ha determinado la armadura de cortante necesaria $\mathbf{A_{sc}}$ por criterios resistentes y se comprueba que verifica los criterios de armadura mínima a cortante (el máximo de los dos valores es el que aparece en los listados).

COMBINACION 37 1.35 (G1 + G2) + 1.5 (SCVMAX-IPF) + PRETD

ESFUERZOS EN EXTREMO DE BARRA

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	-395.032	363.423	203.154	152.256	-300.516	-195.994
2	-161.511	301.382	193.669	96.626	-251.305	-115.703
3	-97.341	251.392	115.628	-31.518	-233.218	-120.941
4	30.381	233.349	120.824	-203.155	-240.795	-120.824
5	201.693	240.907	120.670	-287.237	-222.981	-121.482
6	285.508	223.254	121.299	-342.692	-206.040	-117.905
7	340.711	206.336	117.698	-371.561	-190.160	-110.394
8	369.448	190.417	110.170	-503.743	-197.971	-110.170
9	501.543	198.370	109.935	-493.491	-172.254	-99.015
10	491.271	172.576	98.775	-457.294	-148.034	-84.536
11	455.121	148.512	84.294	-552.663	-145.510	-84.294
12	550.591	145.936	84.057	-479.285	-123.738	-65.857
13	477.318	124.321	66.165	-388.835	-104.654	-45.238
14	387.010	105.202	45.601	-299.164	-86.255	-22.266
15	297.531	86.814	22.688	-358.300	-84.274	-21.751
16	356.900	84.927	22.236	-253.657	-67.608	2.006
17	252.491	68.262	-1.455	-210.190	-60.487	-5.759
18	233.779	63.081	-14.809	-347.660	55.719	23.462
19	365.747	-53.160	-18.907	-251.150	211.852	23.706
20	255.754	-210.397	-21.623	309.074	235.103	-5.261
21	-1402.921	854.629	176.115	772.663	-606.270	-195.430
22	-779.626	606.804	193.314	486.272	-288.545	-179.411
23	-506.580	290.133	178.744	262.935	-235.381	-164.841
24	-296.753	238.244	163.656	65.529	-213.931	-149.753
25	-112.323	218.197	148.175	-108.360	-193.089	-134.272
26	49.609	198.910	132.428	-256.579	-172.126	-118.525
27	187.372	179.504	116.542	-352.948	-152.065	-105.801
28	275.083	161.233	103.804	-608.710	-136.253	-122.991
29	336.142	143.476	86.590	-631.444	-125.552	-115.794
30	367.974	126.291	69.544	-628.469	-114.217	-107.222
31	625.506	114.635	107.599	-725.582	-122.374	-106.371
32	722.610	123.016	106.804	-663.350	-112.865	-96.484
33	660.465	113.449	96.978	-583.034	-105.609	-85.233
34	580.344	106.230	85.793	-492.461	-101.327	-72.623
35	128.222	102.559	-15.363	-401.427	-100.380	-58.660
36	127.605	110.142	-23.532	-208.984	-104.387	-63.565
37	151.784	120.995	-30.577	-135.864	-120.062	31.696
38	208.146	134.194	-36.374	-245.957	-110.431	32.062
39	294.265	121.678	-40.794	-352.248	167.993	32.342
40	387.839	-158.408	-43.713	272.861	344.154	-57.536
41	-1327.351	712.937	70.595	963.921	-599.079	-74.151
42	-969.269	599.520	72.165	739.719	-421.842	-64.067
43	-752.860	422.840	63.245	516.121	-273.371	-51.854
44	-537.995	275.199	50.371	353.129	-238.368	-38.981
45	-383.483	241.025	36.919	219.246	-204.601	-25.529
46	-257.632	208.231	22.978	114.736	-182.604	-14.880
47	-160.516	187.199	11.940	38.108	-150.977	-0.550
48	-90.428	156.624	-2.674	-23.260	-121.364	13.126
49	-34.614	128.069	-16.877	-57.948	-91.866	27.330
50	-4.313	99.860	-31.165	-551.919	-86.830	-95.541
51	549.710	87.254	95.305	-468.265	-58.808	-82.375
52	466.003	59.062	82.135	-349.625	-29.668	-64.708
53	-252.871	39.345	-96.623	-378.500	-37.644	-64.468
54	376.345	38.091	64.234	263.656	-21.039	113.708

COMBINACION 37 1.35 (G1 + G2) + 1.5 (SCVMAX-IPF) + PRETD

ESFUERZOS EN EXTREMO DE BARRA

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
55	-325.802	35.441	-115.811	303.786	-19.546	122.972
56	-360.717	35.254	-124.237	340.591	-19.417	131.397
57	-390.400	36.630	-131.642	379.474	-22.861	138.803
58	-420.229	41.451	-137.836	269.317	-29.498	144.997
59	-299.040	49.632	-142.618	277.679	-1.056	149.779
60	-294.326	22.554	-145.783	297.250	29.997	176.504

COMBINACION 38 1.35 (G1 + G2) + 1.5 (SCVMIN-IPF) + PRETD

ESFUERZOS EN EXTREMO DE BARRA

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	-473.134	215.803	443.772	336.038	4.040	3.288
2	-346.497	-18.980	-41.363	468.388	51.886	51.353
3	-496.776	-40.817	-43.499	471.600	82.347	202.818
4	-539.935	-65.727	-196.583	483.858	79.096	199.706
5	-436.015	-61.831	-190.293	465.715	80.284	195.920
6	-410.383	-64.182	-184.688	438.718	83.573	190.067
7	-34.298	-71.373	-97.658	-95.060	90.385	87.564
8	97.182	-89.995	-87.329	410.695	91.319	179.624
9	30.351	-81.982	-87.088	-111.015	111.565	81.775
10	113.197	-111.291	-81.533	-158.652	139.882	80.721
11	160.797	-139.529	-80.485	438.447	151.996	195.719
12	-376.027	-143.895	-185.340	497.970	178.471	168.581
13	-439.682	-171.423	-158.966	589.686	206.697	170.356
14	-536.715	-200.840	-161.630	695.291	237.073	173.020
15	-648.632	-232.296	-165.299	827.591	257.919	173.397
16	-788.082	-254.109	-166.787	1002.744	330.031	253.186
17	-972.744	-340.476	-216.744	1240.368	389.345	259.303
18	-1228.867	-421.060	-183.757	1433.547	585.065	226.944
19	-1429.279	-616.125	-161.824	1940.367	796.066	169.923
20	-1941.051	-814.047	-132.856	2610.580	800.847	-127.636
21	-1565.332	532.427	-202.501	664.882	-541.151	-329.123
22	-676.805	518.688	370.845	450.992	-141.445	-152.146
23	-484.306	122.128	184.389	347.444	-65.857	-109.982
24	-420.121	36.176	160.193	280.969	36.118	143.114
25	-234.110	-57.287	-23.246	266.689	54.043	93.985
26	-11.558	-70.041	-62.125	-106.557	71.716	59.623
27	108.835	-71.087	-57.426	-226.147	76.012	56.347
28	228.760	-75.314	-55.394	-323.519	96.212	53.754
29	326.327	-95.566	-52.849	-402.632	105.717	54.621
30	405.551	-105.181	-53.769	-453.974	130.374	63.197
31	456.981	-129.947	-62.402	-22.493	136.532	88.459
32	320.934	-135.182	-54.005	7.184	151.569	87.144
33	289.708	-145.866	-57.958	64.347	167.629	86.881
34	14.229	-158.365	-77.715	149.779	184.165	87.893
35	-79.670	-176.650	-79.158	286.790	203.181	91.539
36	-226.954	-197.698	-80.807	451.974	222.806	94.710
37	-423.044	-265.096	-20.115	708.804	370.097	240.802
38	-693.598	-350.659	-23.881	1111.354	472.319	210.855
39	-1101.495	-500.984	-147.551	1602.227	860.502	46.408
40	-1605.853	-883.386	-0.461	2618.082	997.452	-133.419
41	-1520.114	333.980	-268.035	785.034	-543.652	-187.869
42	-825.520	528.790	215.256	599.961	-351.766	-153.959
43	-654.770	331.531	186.894	473.037	-53.359	210.717
44	-542.702	27.012	-154.948	440.888	-16.698	167.355
45	-463.324	-3.429	-107.781	309.159	19.861	142.823
46	-307.867	-19.192	-141.986	321.477	21.702	142.923
47	-319.949	-21.089	-142.107	183.347	39.910	132.794
48	-181.566	-39.385	-132.579	44.141	58.901	124.734
49	-42.166	-58.453	-124.507	-78.254	80.488	119.386
50	80.340	-79.950	-119.149	-30.415	82.881	119.149
51	32.527	-82.322	-118.908	-116.183	106.682	116.806
52	118.324	-106.386	-116.566	-176.312	132.413	117.779
53	178.466	-132.057	-117.545	-92.029	124.473	117.545
54	94.104	-124.156	-117.322	-113.599	140.111	122.144

COMBINACION 38 1.35 (G1 + G2) + 1.5 (SCVMIN-IPF) + PRETD

ESFUERZOS EN EXTREMO DE BARRA

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
55	115.476	-139.904	-121.028	-108.883	156.890	129.756
56	110.593	-156.741	-129.573	-75.760	174.561	142.501
57	77.233	-174.381	-142.348	56.447	165.029	142.348
58	-55.301	-164.946	-142.231	4.393	180.185	154.148
59	-3.673	-180.049	-154.073	116.063	236.697	161.118
60	-119.188	-259.110	-84.277	402.927	422.616	-185.715

COMBINACION 39 1.35 (G1 + G2) + 1.5 (SCVMAX-IPF) + V_Pd

ESFUERZOS EN EXTREMO DE BARRA

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	-52.001	363.423	203.154	-395.300	-300.516	-195.994
2	386.045	301.382	193.669	-779.116	-251.305	-115.703
3	778.401	251.392	115.628	-1081.743	-233.218	-120.941
4	1080.606	233.349	120.824	-1396.209	-240.795	-120.824
5	1394.747	240.907	120.670	-1592.338	-222.981	-121.482
6	1590.609	223.254	121.299	-1729.758	-206.040	-117.905
7	1727.777	206.336	117.698	-1810.895	-190.160	-110.394
8	1808.782	190.417	110.170	-1965.649	-197.971	-110.170
9	1963.449	198.370	109.935	-1950.872	-172.254	-99.015
10	1948.652	172.576	98.775	-1887.179	-148.034	-84.536
11	1885.006	148.512	84.294	-1931.375	-145.510	-84.294
12	1929.303	145.936	84.057	-1782.320	-123.738	-65.857
13	1780.353	124.321	66.165	-1594.098	-104.654	-45.238
14	1592.274	105.202	45.601	-1371.337	-86.255	-22.266
15	1369.704	86.814	22.688	-1271.755	-84.274	-21.751
16	1270.354	84.927	22.236	-982.607	-67.608	2.006
17	981.441	68.262	-1.455	-732.932	-60.487	-5.759
18	756.521	63.081	-14.809	-523.286	55.719	23.462
19	541.373	-53.160	-18.907	-301.553	211.852	23.706
20	306.157	-210.397	-21.623	300.024	235.103	-5.261
21	-1393.871	854.629	176.115	652.862	-606.270	-195.430
22	-659.825	606.804	193.314	-93.741	-288.545	-179.411
23	73.433	290.133	178.744	-741.560	-235.381	-164.841
24	707.742	238.244	163.656	-1294.569	-213.931	-149.753
25	1247.775	218.197	148.175	-1754.667	-193.089	-134.272
26	1695.916	198.910	132.428	-2124.295	-172.126	-118.525
27	2055.088	179.504	116.542	-2382.996	-152.065	-105.801
28	2305.131	161.233	103.804	-2747.665	-136.253	-122.991
29	2475.097	143.476	86.590	-2830.366	-125.552	-115.794
30	2566.896	126.291	69.544	-2841.509	-114.217	-107.222
31	2838.546	114.635	107.599	-2924.617	-122.374	-106.371
32	2921.645	123.016	106.804	-2802.532	-112.865	-96.484
33	2799.647	113.449	96.978	-2613.406	-105.609	-85.233
34	2610.716	106.230	85.793	-2360.511	-101.327	-72.623
35	1996.272	102.559	-15.363	-2048.084	-100.380	-58.660
36	1774.263	110.142	-23.532	-1569.348	-104.387	-63.565
37	1512.148	120.995	-30.577	-1140.518	-120.062	31.696
38	1212.800	134.194	-36.374	-830.303	-110.431	32.062
39	878.611	121.678	-40.794	-472.782	167.993	32.342
40	508.373	-158.408	-43.713	263.811	344.154	-57.536
41	-1318.301	712.937	70.595	913.826	-599.079	-74.151
42	-919.174	599.520	72.165	425.858	-421.842	-64.067
43	-438.999	422.840	63.245	-2.804	-273.371	-51.854
44	-19.070	275.199	50.371	-375.913	-238.368	-38.981
45	345.559	241.025	36.919	-694.341	-204.601	-25.529
46	655.955	208.231	22.978	-957.616	-182.604	-14.880
47	911.836	187.199	11.940	-1167.372	-150.977	-0.550
48	1115.052	156.624	-2.674	-1326.543	-121.364	13.126
49	1268.669	128.069	-16.877	-1436.905	-91.866	27.330
50	1374.644	99.860	-31.165	-1982.050	-86.830	-95.541
51	1979.841	87.254	95.305	-1925.879	-58.808	-82.375
52	1923.617	59.062	82.135	-1811.745	-29.668	-64.708
53	1209.249	39.345	-96.623	-1818.014	-37.644	-64.468
54	1815.859	38.091	64.234	-1123.545	-21.039	113.708

COMBINACION 39 1.35 (G1 + G2) + 1.5 (SCVMAX-IPF) + V_Pd

ESFUERZOS EN EXTREMO DE BARRA

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
55	1061.399	35.441	-115.811	-1001.413	-19.546	122.972
56	944.482	35.254	-124.237	-852.521	-19.417	131.397
57	802.712	36.630	-131.642	-679.845	-22.861	138.803
58	639.090	41.451	-137.836	-486.353	-29.498	144.997
59	456.630	49.632	-142.618	-273.421	-1.056	149.779
60	256.774	22.554	-145.783	-46.559	29.997	176.504

COMBINACION 40 1.35 (G1 + G2) + 1.5 (SCVMIN-IPF) + V_Pd

ESFUERZOS EN EXTREMO DE BARRA

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	26.397	41.751	-100.626	-255.275	6.067	111.861
2	249.353	2.640	-100.551	-471.396	30.117	109.971
3	443.243	-18.587	-100.434	-677.971	26.937	106.515
4	609.636	-10.318	-100.280	-848.714	23.686	103.403
5	896.624	-6.274	-92.556	-1019.250	24.728	98.182
6	1074.583	-8.620	-86.951	-1168.496	28.011	92.329
7	1572.915	-15.819	0.079	-1794.817	34.835	-10.174
8	1796.939	-34.452	10.408	-1351.904	35.781	81.886
9	1792.958	-26.447	10.649	-1909.365	56.027	-15.963
10	1911.549	-55.756	16.204	-1969.776	84.345	-17.016
11	1971.928	-84.002	17.253	-1361.763	96.476	97.982
12	1424.177	-88.389	-87.602	-1266.792	122.971	70.843
13	1325.078	-115.907	-61.228	-1117.554	151.177	72.618
14	1170.529	-145.329	-63.892	-919.112	181.563	75.283
15	965.772	-176.803	-67.561	-668.326	202.434	75.659
16	707.836	-198.626	-69.050	-363.425	235.054	80.440
17	395.101	-232.215	-75.041	-4.602	266.768	86.431
18	27.997	-264.794	-82.333	409.214	413.555	93.723
19	-394.371	-412.370	-91.007	882.958	592.311	99.105
20	-876.571	-591.792	-96.466	1218.143	720.118	94.624
21	-271.999	346.987	-24.535	-460.326	-170.202	27.308
22	460.475	171.192	-26.151	-843.366	107.493	22.320
23	819.478	-105.251	-26.246	-1186.151	123.204	21.136
24	1131.222	-118.214	-26.368	-1494.470	109.863	19.558
25	1554.890	-102.085	53.025	-1765.969	98.841	17.715
26	2030.090	-97.553	22.772	-2343.478	99.230	-25.275
27	2345.809	-98.536	26.272	-2599.377	103.459	-27.351
28	2601.987	-102.760	28.305	-2791.655	110.597	-27.958
29	2794.464	-109.941	28.862	-2917.078	120.093	-27.091
30	2920.001	-119.559	27.943	-2973.089	131.304	-24.746
31	2976.092	-130.868	25.540	-2533.463	123.961	9.408
32	2831.904	-122.603	25.046	-2455.883	138.988	8.093
33	2752.779	-133.281	21.093	-2301.869	155.045	7.830
34	2380.442	-145.787	1.336	-2066.059	171.590	8.842
35	2136.222	-164.005	-0.673	-1719.723	190.535	13.054
36	1779.636	-184.593	-6.008	-1280.770	209.701	19.911
37	1328.980	-205.302	-14.115	-750.275	229.620	28.019
38	785.742	-226.579	-23.598	-125.915	277.991	37.502
39	148.090	-276.213	-34.583	596.992	596.452	48.486
40	-588.149	-595.784	-47.189	1293.242	861.115	60.905
41	-290.922	236.049	-81.817	-346.474	-208.311	16.888
42	312.637	211.781	-21.015	-577.965	-53.507	16.065
43	533.623	57.910	-21.074	-789.683	63.294	14.583
44	732.221	-57.974	-0.114	-982.540	68.270	12.521
45	969.641	-67.003	22.672	-1262.260	83.430	12.370
46	1263.553	-82.756	-11.533	-1362.616	85.273	12.470
47	1364.142	-84.655	-11.654	-1587.786	103.445	2.341
48	1589.571	-102.905	-2.126	-1778.768	122.390	-5.719
49	1780.744	-121.935	5.946	-1930.807	143.963	-11.067
50	1932.889	-143.416	11.304	-1888.132	146.345	-11.304
51	1890.244	-145.785	11.546	-1955.379	170.134	-13.647
52	1957.517	-169.829	13.888	-1974.016	195.815	-12.674
53	1976.171	-195.461	12.909	-1821.162	187.856	-12.908
54	1823.239	-187.532	13.132	-1744.466	203.493	-8.309

COMBINACION 40 1.35 (G1 + G2) + 1.5 (SCVMIN-IPF) + V_Pd

ESFUERZOS EN EXTREMO DE BARRA

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
55	1746.355	-203.225	8.515	-1611.856	220.231	0.213
56	1613.567	-220.087	-0.030	-1420.724	237.906	12.959
57	1422.196	-237.721	-12.805	-1108.823	228.346	12.805
58	1109.968	-228.261	-12.688	-811.731	242.798	30.114
59	812.449	-242.665	-30.039	-450.322	294.291	52.243
60	450.560	-294.289	-52.217	2.633	353.212	-5.314

COMBINACION 41 1.35 (G1 + G2) + 1.5 (SCVMAX-EC1) + PRETD

ESFUERZOS EN EXTREMO DE BARRA

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	-400.650	404.674	228.447	154.522	-347.416	-280.747
2	-162.354	348.146	278.811	75.286	-283.751	-242.628
3	-89.054	285.165	239.150	-111.046	-265.732	-206.763
4	82.474	268.776	205.066	-260.800	-249.941	-216.267
5	237.840	252.562	209.979	-326.646	-221.679	-182.763
6	281.709	227.292	180.065	-387.650	-202.205	-166.902
7	337.054	209.010	163.957	-479.771	-196.277	-155.753
8	425.232	204.233	152.722	-496.175	-180.087	-137.664
9	439.285	189.327	134.699	-490.780	-154.504	-117.903
10	433.058	164.793	115.147	-463.722	-131.101	-96.769
11	406.631	142.644	94.363	-492.659	-119.655	-86.159
12	437.530	132.197	84.230	-436.759	-100.253	-63.498
13	384.808	114.008	62.708	-369.884	-83.889	-41.316
14	322.223	98.585	41.284	-383.450	-76.056	-32.142
15	341.075	91.693	32.977	-318.489	-61.546	-11.566
16	282.260	78.179	13.368	-284.100	-51.612	-10.897
17	254.694	69.086	13.760	-190.865	-49.751	17.613
18	260.832	65.274	-10.529	-331.805	65.541	15.498
19	397.388	-50.733	-14.434	-226.923	222.255	13.780
20	290.948	-207.837	-17.043	443.800	246.842	-187.756
21	-1205.485	848.625	195.504	712.727	-643.895	-305.066
22	-718.647	644.351	303.319	411.219	-323.510	-268.765
23	-422.954	324.437	265.385	166.971	-266.842	-230.455
24	-184.494	268.355	225.497	-55.570	-240.991	-190.190
25	32.495	243.134	183.711	-96.907	-215.573	-163.636
26	68.737	218.439	155.693	-219.275	-195.892	-138.823
27	293.106	200.232	159.978	-505.376	-186.137	-147.999
28	437.675	194.099	147.186	-576.812	-167.691	-131.764
29	503.393	177.240	131.176	-616.181	-149.393	-115.002
30	539.056	160.469	114.749	-624.057	-131.813	-97.822
31	545.407	144.480	98.014	-587.120	-116.156	-80.334
32	509.096	130.615	81.081	-527.991	-103.732	-62.648
33	452.793	119.695	64.061	-455.066	-94.895	-44.877
34	384.840	112.427	47.064	-378.474	-90.173	-27.134
35	315.198	109.299	30.207	-56.168	-93.995	49.112
36	193.811	111.047	24.503	-107.520	-107.617	44.350
37	139.782	121.434	-33.038	-186.854	-122.740	40.424
38	203.133	135.184	-38.630	-290.655	-111.481	37.278
39	282.503	124.478	-59.058	-395.884	167.985	34.853
40	394.585	-154.422	-57.298	731.002	401.139	-55.421
41	-1152.113	714.175	97.530	812.462	-629.521	-155.317
42	-816.987	629.895	153.675	560.667	-465.310	-172.147
43	-568.941	465.974	169.191	328.403	-309.017	-131.934
44	-340.360	310.099	127.695	152.842	-265.435	-89.632
45	-168.356	266.891	84.146	-31.297	-233.827	-97.707
46	-1.986	236.956	96.009	-136.206	-211.670	-56.979
47	114.327	214.029	49.126	-166.301	-171.908	-69.877
48	120.830	176.788	67.780	-197.751	-142.467	-53.582
49	147.412	148.269	51.073	-256.019	-125.785	-42.869
50	201.821	132.731	40.374	-228.158	-96.593	-23.940
51	171.206	104.645	21.574	-169.566	-67.743	-2.754
52	111.158	76.675	0.641	-80.301	-39.153	20.673
53	21.832	49.313	-22.406	-59.619	-36.884	30.610
54	2.497	48.218	-31.822	43.740	-24.709	51.117

COMBINACION 41 1.35 (G1 + G2) + 1.5 (SCVMAX-EC1) + PRETD

ESFUERZOS EN EXTREMO DE BARRA

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
55	-98.039	37.201	-51.665	450.629	-20.332	158.271
56	-378.438	32.792	-126.080	454.355	-25.058	155.181
57	-402.618	34.989	-133.040	460.590	-32.564	152.638
58	-475.401	41.374	-169.966	319.806	-42.499	150.556
59	-329.094	52.075	-168.254	301.218	-16.590	148.844
60	-304.034	26.749	-166.818	299.722	14.244	166.818

COMBINACION 42 1.35 (G1 + G2) + 1.5 (SCVMIN-EC1) + PRETD

ESFUERZOS EN EXTREMO DE BARRA

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	-460.033	205.359	392.462	340.560	16.479	23.954
2	-333.296	-24.429	-74.929	493.421	63.175	72.978
3	-475.698	-48.184	-72.254	525.788	91.413	226.202
4	-508.135	-75.610	-219.204	550.533	87.476	223.917
5	-509.151	-72.431	-214.450	566.545	85.175	222.654
6	-507.117	-73.808	-191.306	374.388	93.639	150.600
7	-344.873	-87.362	-160.174	315.509	109.184	161.350
8	-284.811	-103.606	-169.905	367.321	106.031	150.496
9	-336.239	-100.952	-158.107	327.204	134.997	157.310
10	-296.456	-130.616	-164.048	303.755	164.962	162.832
11	-274.028	-161.027	-168.766	346.933	174.192	147.846
12	-318.839	-170.872	-152.636	423.829	204.874	155.677
13	-397.977	-201.977	-159.827	467.155	236.035	165.657
14	-444.064	-233.671	-169.224	524.061	269.534	179.847
15	-504.157	-267.659	-182.883	706.194	283.688	174.124
16	-689.834	-282.220	-176.677	829.299	355.108	257.838
17	-818.462	-367.360	-228.910	1037.684	419.286	254.158
18	-1041.085	-452.327	-184.428	1247.059	623.473	259.264
19	-1253.266	-655.417	-198.217	1788.098	822.263	179.745
20	-1794.893	-840.733	-145.228	2480.963	788.874	-97.912
21	-1659.611	549.661	-381.098	628.676	-531.691	-320.988
22	-634.933	534.113	373.821	431.455	-131.965	-139.312
23	-422.230	135.168	188.073	341.499	-56.769	-96.577
24	-328.107	45.659	164.829	289.889	44.631	157.268
25	-260.630	-51.347	-97.070	202.411	63.435	67.373
26	-158.093	-59.884	-63.092	57.605	79.310	95.163
27	4.637	-60.100	-81.172	-41.673	82.511	92.080
28	111.163	-64.741	-79.514	-127.308	102.742	89.183
29	202.010	-86.564	-76.951	-201.129	113.546	89.360
30	278.917	-99.029	-77.573	-250.916	140.886	96.966
31	329.644	-128.049	-85.734	-179.989	160.022	88.821
32	257.392	-148.638	-78.256	-141.082	176.342	92.171
33	135.108	-171.098	-94.541	-20.926	197.389	102.098
34	55.434	-193.444	-107.753	83.137	217.675	115.466
35	-52.794	-214.548	-119.662	147.952	225.345	111.258
36	-95.706	-220.600	-100.766	293.743	241.204	117.693
37	-270.862	-284.047	-43.302	527.837	384.226	267.766
38	-465.026	-366.375	-75.948	880.428	490.828	286.961
39	-885.285	-520.687	-228.336	1385.710	882.734	151.607
40	-1397.059	-906.201	-108.107	2456.987	979.556	-98.253
41	-1761.592	349.624	-513.727	769.262	-542.510	-189.615
42	-771.052	534.290	205.612	589.884	-350.955	-157.838
43	-591.535	336.021	181.549	473.464	-53.297	204.081
44	-473.005	30.980	-175.767	435.126	-15.947	153.847
45	-439.320	4.140	-130.094	369.482	14.331	146.333
46	-385.689	-3.629	-111.711	339.529	20.018	144.390
47	-369.022	-8.204	-102.745	236.077	34.351	136.564
48	-189.022	-19.434	-125.851	124.773	49.656	129.664
49	-73.123	-35.806	-118.965	22.924	67.806	124.332
50	32.175	-54.885	-113.762	6.828	77.854	121.967
51	50.477	-65.957	-111.648	-69.587	99.679	118.465
52	127.803	-89.145	-108.529	-126.131	124.043	116.957
53	183.894	-114.541	-107.540	-102.898	126.972	115.744
54	158.645	-118.636	-106.991	-123.710	143.046	117.186

COMBINACION 42 1.35 (G1 + G2) + 1.5 (SCVMIN-EC1) + PRETD

ESFUERZOS EN EXTREMO DE BARRA

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
55	175.815	-135.981	-108.340	-120.197	161.035	120.458
56	167.091	-155.261	-113.498	-88.777	180.785	127.695
57	128.769	-176.150	-121.878	13.471	186.844	130.082
58	17.874	-183.508	-125.581	-27.615	206.269	136.507
59	48.502	-204.120	-133.503	100.715	268.133	137.163
60	-94.470	-289.646	-57.740	390.151	455.237	-146.518

COMBINACION 43 1.35 (G1 + G2) + 1.5 (SCVMAX-EC1) + V_Pd

ESFUERZOS EN EXTREMO DE BARRA

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	-57.619	404.674	228.447	-393.034	-347.416	-280.747
2	385.202	348.146	278.811	-800.456	-283.751	-242.628
3	786.688	285.165	239.150	-1161.271	-265.732	-206.763
4	1132.699	268.776	205.066	-1453.854	-249.941	-216.267
5	1430.894	252.562	209.979	-1631.747	-221.679	-182.764
6	1586.810	227.292	180.065	-1774.716	-202.205	-166.902
7	1724.120	209.010	163.957	-1919.105	-196.277	-155.753
8	1864.566	204.233	152.722	-1958.081	-180.087	-137.664
9	1901.191	189.327	134.699	-1948.161	-154.504	-117.903
10	1890.439	164.793	115.147	-1893.607	-131.101	-96.769
11	1836.516	142.644	94.363	-1871.371	-119.655	-86.159
12	1816.242	132.197	84.230	-1739.794	-100.253	-63.498
13	1687.843	114.008	62.708	-1575.148	-83.889	-41.316
14	1527.487	98.585	41.284	-1455.623	-76.056	-32.142
15	1413.248	91.693	32.977	-1231.944	-61.546	-11.566
16	1195.715	78.179	13.368	-1013.050	-51.612	-10.897
17	983.644	69.086	13.760	-713.607	-49.751	17.613
18	783.574	65.274	-10.529	-507.431	65.541	15.498
19	573.014	-50.733	-14.434	-277.326	222.255	13.780
20	341.351	-207.837	-17.043	434.750	246.842	-187.756
21	-1196.435	848.625	195.504	592.926	-643.895	-305.066
22	-598.846	644.351	303.319	-168.794	-323.510	-268.765
23	157.059	324.437	265.385	-837.524	-266.842	-230.455
24	820.001	268.355	225.497	-1415.668	-240.990	-190.190
25	1392.593	243.134	183.711	-1743.214	-215.573	-163.636
26	1715.044	218.439	155.693	-2086.991	-195.892	-138.823
27	2160.822	200.232	159.978	-2535.424	-186.137	-147.999
28	2467.723	194.099	147.186	-2715.767	-167.691	-131.764
29	2642.348	177.240	131.176	-2815.103	-149.393	-115.002
30	2737.978	160.469	114.749	-2837.097	-131.813	-97.822
31	2758.447	144.480	98.014	-2786.155	-116.156	-80.334
32	2708.131	130.615	81.081	-2667.173	-103.732	-62.648
33	2591.975	119.695	64.061	-2485.438	-94.895	-44.877
34	2415.212	112.427	47.064	-2246.523	-90.173	-27.134
35	2183.248	109.299	30.207	-1702.826	-93.995	49.112
36	1840.469	111.047	24.503	-1467.884	-107.617	44.350
37	1500.146	121.434	-33.038	-1191.508	-122.740	40.424
38	1207.787	135.184	-38.630	-875.001	-111.481	37.278
39	866.849	124.478	-59.058	-516.418	167.985	34.853
40	515.119	-154.422	-57.298	721.952	401.139	-55.421
41	-1143.063	714.175	97.530	762.367	-629.521	-155.317
42	-766.892	629.895	153.675	246.806	-465.310	-172.147
43	-255.080	465.974	169.191	-190.522	-309.017	-131.934
44	178.565	310.099	127.695	-576.200	-265.435	-89.632
45	560.686	266.891	84.146	-944.884	-233.827	-97.707
46	911.601	236.956	96.009	-1208.557	-211.670	-56.979
47	1186.679	214.029	49.126	-1371.781	-171.908	-69.877
48	1326.310	176.788	67.780	-1501.034	-142.467	-53.582
49	1450.695	148.269	51.073	-1634.976	-125.785	-42.869
50	1580.778	132.731	40.374	-1658.289	-96.593	-23.940
51	1601.337	104.645	21.574	-1627.180	-67.743	-2.754
52	1568.772	76.675	0.641	-1542.421	-39.153	20.673
53	1483.952	49.313	-22.406	-1499.133	-36.884	30.610
54	1442.011	48.218	-31.822	-1343.461	-24.709	51.117

COMBINACION 43 1.35 (G1 + G2) + 1.5 (SCVMAX-EC1) + V_Pd

ESFUERZOS EN EXTREMO DE BARRA

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
55	1289.162	37.201	-51.665	-854.570	-20.332	158.271
56	926.761	32.792	-126.080	-738.757	-25.058	155.181
57	790.495	34.989	-133.040	-598.729	-32.564	152.638
58	583.918	41.374	-169.966	-435.864	-42.499	150.556
59	426.576	52.075	-168.254	-249.882	-16.590	148.844
60	247.066	26.749	-166.818	-44.087	14.244	166.818

COMBINACION 44 1.35 (G1 + G2) + 1.5 (SCVMIN-EC1) + V_Pd

ESFUERZOS EN EXTREMO DE BARRA

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	39.498	31.308	-151.937	-250.754	18.507	132.527
2	262.554	-2.809	-134.117	-446.362	41.406	131.596
3	464.321	-25.955	-129.188	-623.784	36.004	129.899
4	641.436	-20.200	-122.901	-782.038	32.067	127.614
5	823.488	-16.874	-116.712	-918.420	29.620	124.916
6	977.849	-18.246	-93.568	-1232.826	38.077	52.862
7	1262.340	-31.808	-62.437	-1384.249	53.634	63.612
8	1414.947	-48.063	-72.168	-1395.278	50.493	52.758
9	1426.368	-45.417	-60.369	-1471.145	79.459	59.573
10	1501.896	-75.081	-66.311	-1507.369	109.425	65.095
11	1537.104	-105.499	-71.028	-1453.277	118.672	50.108
12	1481.365	-115.365	-54.898	-1340.934	149.373	57.939
13	1366.783	-146.460	-62.089	-1240.086	180.516	67.919
14	1263.179	-178.160	-71.487	-1090.342	214.025	82.109
15	1110.247	-212.166	-85.145	-789.722	228.203	76.386
16	806.083	-226.736	-78.939	-536.871	260.131	85.091
17	549.383	-259.100	-87.206	-207.285	296.710	81.286
18	215.778	-296.061	-83.004	222.727	451.963	126.042
19	-218.358	-451.661	-127.400	730.689	618.508	108.927
20	-730.413	-618.479	-108.837	1088.526	708.145	124.349
21	-366.278	364.221	-203.131	-496.532	-160.742	35.444
22	502.347	186.617	-23.175	-862.902	116.973	35.154
23	881.554	-92.211	-22.562	-1192.096	132.292	34.540
24	1223.236	-108.731	-21.733	-1485.550	118.376	33.712
25	1528.369	-96.145	-20.800	-1830.246	108.233	-8.898
26	1883.555	-87.396	21.805	-2179.315	106.824	10.265
27	2241.611	-87.549	2.526	-2414.903	109.958	8.382
28	2484.389	-92.188	4.184	-2595.444	117.127	7.472
29	2670.146	-100.939	4.760	-2715.575	127.922	7.649
30	2793.367	-113.407	4.138	-2770.031	141.816	9.024
31	2848.755	-128.969	2.208	-2690.959	147.451	9.771
32	2768.362	-136.059	0.795	-2604.148	163.760	13.120
33	2598.180	-158.512	-15.490	-2387.143	184.805	23.047
34	2421.647	-180.866	-28.702	-2132.700	205.100	36.415
35	2163.098	-201.903	-41.177	-1858.561	212.698	32.773
36	1910.883	-207.495	-25.967	-1439.001	228.099	42.894
37	1481.162	-224.253	-37.302	-931.242	243.749	54.982
38	1014.315	-242.295	-75.666	-356.842	296.500	113.608
39	364.300	-295.917	-115.368	380.475	618.684	153.686
40	-379.355	-618.599	-154.835	1132.148	843.219	96.071
41	-532.401	251.693	-327.508	-362.247	-207.169	15.142
42	367.105	217.282	-30.658	-588.043	-52.696	12.186
43	596.858	62.399	-26.419	-789.256	63.357	7.947
44	801.918	-54.006	-20.933	-988.303	69.022	-0.986
45	993.644	-59.434	0.359	-1201.937	77.900	15.881
46	1185.730	-67.193	18.741	-1344.564	83.589	13.937
47	1315.069	-71.770	27.708	-1535.056	97.885	6.111
48	1582.115	-82.955	4.602	-1698.136	113.145	-0.789
49	1749.787	-99.288	11.488	-1829.630	131.281	-6.121
50	1884.725	-118.351	16.691	-1850.888	141.317	-8.487
51	1908.195	-129.420	18.805	-1908.783	163.132	-11.988
52	1966.996	-152.588	21.925	-1923.835	187.445	-13.497
53	1981.600	-177.945	22.913	-1832.031	190.354	-14.709
54	1887.779	-182.013	23.462	-1754.577	206.428	-13.267

COMBINACION 44 1.35 (G1 + G2) + 1.5 (SCVMIN-EC1) + V_Pd

ESFUERZOS EN EXTREMO DE BARRA

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
55	1806.694	-199.302	21.203	-1623.170	224.377	-9.085
56	1670.065	-218.607	16.045	-1433.741	244.130	-1.847
57	1473.732	-239.490	7.665	-1151.799	250.161	0.539
58	1183.143	-246.823	3.961	-843.739	268.882	12.473
59	864.625	-266.736	-9.469	-465.670	325.727	28.288
60	475.278	-324.824	-25.680	-10.143	385.833	33.884

DIMENSIONAMIENTO A CORTANTE SEGUN NORMATIVA EHE

SEC	Vd (T)	Nd (T)	Vu1 (T)	Vcu (T)	Vsu (T)	Asc (cm2/m)	Dec (m)	th	the	rho	psi	dp (m)
1	363.	4455.	2386.	322.	277.	73.9	0.6	30.6	30.6	0.02	1.57	0.61
2	301.	4430.	2206.	298.	255.	73.9	0.5	30.6	30.6	0.02	1.59	0.57
3	251.	4362.	723.	115.	137.	40.4	0.6	29.1	29.1	0.02	1.62	0.52
4	233.	4355.	1051.	163.	133.	27.2	0.9	29.1	29.1	0.02	1.51	0.76
5	241.	4350.	1097.	170.	139.	27.2	0.9	29.1	29.1	0.02	1.50	0.79
6	223.	4351.	1133.	175.	144.	27.2	0.9	29.1	29.1	0.02	1.49	0.82
7	206.	4358.	1158.	179.	147.	27.2	0.9	29.1	29.1	0.02	1.49	0.83
8	190.	4371.	1172.	182.	149.	27.2	0.8	29.0	29.0	0.02	1.49	0.85
9	198.	4390.	1177.	183.	150.	27.2	0.9	29.0	29.0	0.02	1.49	0.85
10	173.	4412.	1171.	183.	150.	27.2	0.8	29.0	29.0	0.02	1.49	0.85
11	149.	4438.	1159.	182.	149.	27.2	0.7	28.9	28.9	0.02	1.49	0.84
12	146.	4467.	1140.	181.	147.	27.2	0.7	28.9	28.9	0.02	1.49	0.83
13	171.	4498.	597.	98.	77.	27.2	0.5	28.8	28.8	0.02	1.68	0.43
14	201.	4542.	630.	104.	96.	32.0	0.6	28.7	28.7	0.02	1.66	0.46
15	232.	4551.	670.	111.	121.	37.9	0.6	28.7	28.7	0.02	1.64	0.49
16	254.	4557.	719.	119.	135.	39.4	0.6	28.7	28.7	0.02	1.62	0.52
17	340.	4560.	774.	127.	213.	57.6	0.6	28.7	28.7	0.02	1.60	0.56
18	421.	4590.	836.	138.	283.	70.5	0.7	28.6	28.6	0.02	1.57	0.61
19	616.	4592.	2526.	348.	298.	73.9	0.8	30.3	30.3	0.02	1.55	0.65
20	814.	4556.	2633.	360.	454.	108.6	0.8	30.4	30.4	0.02	1.54	0.68
21	855.	4525.	2671.	363.	492.	116.3	0.8	30.4	30.4	0.02	1.54	0.69
22	607.	4447.	2581.	346.	299.	73.9	0.8	30.6	30.6	0.02	1.55	0.67
23	290.	4369.	817.	129.	161.	42.1	0.7	29.1	29.1	0.02	1.58	0.59
24	238.	4327.	682.	108.	130.	41.1	0.6	29.1	29.1	0.02	1.64	0.49
25	218.	4269.	562.	89.	129.	49.7	0.5	29.2	29.2	0.02	1.70	0.40
26	199.	4202.	1268.	189.	158.	27.2	0.9	29.4	29.4	0.02	1.47	0.91
27	180.	4136.	1356.	199.	168.	27.2	0.8	29.5	29.5	0.02	1.45	0.97
28	161.	4075.	1424.	206.	175.	27.2	0.7	29.6	29.6	0.02	1.44	1.01
29	143.	4025.	1473.	210.	180.	27.2	0.6	29.7	29.7	0.02	1.44	1.05
30	126.	3988.	1504.	213.	183.	27.2	0.5	29.8	29.8	0.02	1.43	1.07
31	130.	3966.	1515.	213.	183.	27.2	0.5	29.9	29.9	0.02	1.43	1.08
32	135.	3988.	1504.	213.	183.	27.2	0.5	29.8	29.8	0.02	1.43	1.07
33	146.	4026.	1473.	210.	180.	27.2	0.6	29.7	29.7	0.02	1.44	1.05
34	158.	4076.	1424.	206.	175.	27.2	0.7	29.6	29.6	0.02	1.44	1.01
35	177.	4137.	379.	60.	117.	67.6	0.3	29.5	29.5	0.02	1.86	0.27
36	198.	4203.	462.	73.	125.	58.8	0.4	29.4	29.4	0.02	1.78	0.33
37	265.	4270.	562.	89.	176.	67.8	0.4	29.2	29.2	0.02	1.70	0.40
38	351.	4328.	681.	108.	243.	76.6	0.5	29.1	29.1	0.02	1.64	0.49
39	501.	4402.	816.	130.	371.	96.8	0.6	29.0	29.0	0.02	1.58	0.59
40	883.	4475.	2579.	348.	536.	131.9	0.7	30.5	30.5	0.02	1.55	0.66
41	713.	4525.	2671.	363.	350.	82.8	0.8	30.4	30.4	0.02	1.54	0.69
42	600.	4528.	2636.	358.	308.	73.9	0.8	30.4	30.4	0.02	1.54	0.68
43	423.	4532.	900.	146.	277.	64.5	0.7	28.7	28.7	0.02	1.55	0.65
44	275.	4557.	837.	137.	138.	34.5	0.7	28.7	28.7	0.02	1.57	0.61
45	241.	4560.	774.	127.	114.	30.7	0.7	28.7	28.7	0.02	1.60	0.56
46	208.	4558.	719.	119.	94.	27.2	0.7	28.7	28.7	0.02	1.62	0.52
47	187.	4551.	670.	111.	87.	27.2	0.6	28.7	28.7	0.02	1.64	0.49
48	157.	4543.	630.	105.	82.	27.2	0.6	28.7	28.7	0.02	1.66	0.46
49	128.	4498.	597.	98.	77.	27.2	0.5	28.8	28.8	0.02	1.68	0.43
50	100.	4468.	571.	94.	74.	27.2	0.4	28.9	28.9	0.02	1.70	0.41
51	87.	4439.	1159.	182.	149.	27.2	0.2	28.9	28.9	0.02	1.49	0.84
52	106.	4413.	1171.	183.	150.	27.2	0.4	29.0	29.0	0.02	1.49	0.85
53	132.	4391.	1177.	183.	150.	27.2	0.6	29.0	29.0	0.02	1.49	0.85
54	124.	4371.	1172.	182.	149.	27.2	0.5	29.0	29.0	0.02	1.49	0.85
55	140.	4358.	1157.	179.	147.	27.2	0.6	29.1	29.1	0.02	1.49	0.83
56	157.	4351.	1133.	175.	144.	27.2	0.7	29.1	29.1	0.02	1.49	0.82
57	174.	4351.	1097.	170.	139.	27.2	0.8	29.1	29.1	0.02	1.50	0.79
58	165.	4392.	667.	107.	85.	27.2	0.6	29.0	29.0	0.02	1.64	0.48
59	180.	4451.	2026.	276.	235.	73.9	0.3	30.6	30.6	0.02	1.62	0.52
60	259.	4458.	2204.	299.	256.	73.9	0.4	30.5	30.5	0.02	1.59	0.57
61	423.	4458.	2425.	327.	282.	73.9	0.6	30.5	30.5	0.02	1.57	0.62

DIMENSIONAMIENTO A CORTANTE SEGUN NORMATIVA EHE

Angulo de la biela comprimida(sex.) = 45.00

SEC	Vd (T)	Nd (T)	Vu1 (T)	Vcu (T)	Vsu (T)	Asc (cm2/m)	Dec (m)	th	the	rho	psi	dp (m)
1	363.	4455.	2726.	135.	229.	103.2	0.4	45.0	30.6	0.02	1.57	0.61
2	301.	4430.	2517.	125.	176.	86.3	0.4	45.0	30.6	0.02	1.59	0.57
3	251.	4362.	852.	44.	207.	110.2	0.3	45.0	29.1	0.02	1.62	0.52
4	233.	4355.	1237.	63.	170.	62.5	0.4	45.0	29.1	0.02	1.51	0.76
5	241.	4350.	1291.	66.	175.	61.6	0.5	45.0	29.1	0.02	1.50	0.79
6	223.	4351.	1333.	68.	156.	52.9	0.5	45.0	29.1	0.02	1.49	0.82
7	206.	4358.	1363.	69.	137.	45.7	0.5	45.0	29.1	0.02	1.49	0.83
8	190.	4371.	1381.	70.	120.	39.6	0.5	45.0	29.0	0.02	1.49	0.85
9	198.	4390.	1387.	70.	128.	41.8	0.5	45.0	29.0	0.02	1.49	0.85
10	173.	4412.	1382.	70.	102.	33.6	0.5	45.0	29.0	0.02	1.49	0.85
11	149.	4438.	1369.	70.	82.	27.2	0.5	45.0	28.9	0.02	1.49	0.84
12	146.	4467.	1348.	69.	81.	27.2	0.5	45.0	28.9	0.02	1.49	0.83
13	171.	4498.	707.	37.	134.	86.0	0.2	45.0	28.8	0.02	1.68	0.43
14	201.	4542.	747.	39.	161.	97.9	0.2	45.0	28.7	0.02	1.66	0.46
15	232.	4551.	795.	42.	190.	108.7	0.3	45.0	28.7	0.02	1.64	0.49
16	254.	4557.	854.	45.	209.	111.2	0.3	45.0	28.7	0.02	1.62	0.52
17	340.	4560.	919.	48.	293.	144.3	0.3	45.0	28.7	0.02	1.60	0.56
18	421.	4590.	994.	52.	369.	168.5	0.3	45.0	28.6	0.02	1.57	0.61
19	616.	4592.	2899.	144.	472.	200.6	0.4	45.0	30.3	0.02	1.55	0.65
20	814.	4556.	3018.	149.	665.	271.2	0.4	45.0	30.4	0.02	1.54	0.68
21	855.	4525.	3058.	151.	704.	283.4	0.4	45.0	30.4	0.02	1.54	0.69
22	607.	4447.	2947.	145.	462.	192.9	0.4	45.0	30.6	0.02	1.55	0.67
23	290.	4369.	963.	50.	240.	113.2	0.3	45.0	29.1	0.02	1.58	0.59
24	238.	4327.	801.	42.	197.	111.2	0.3	45.0	29.1	0.02	1.64	0.49
25	218.	4269.	659.	35.	184.	126.2	0.2	45.0	29.2	0.02	1.70	0.40
26	199.	4202.	1483.	74.	125.	38.1	0.6	45.0	29.4	0.02	1.47	0.91
27	180.	4136.	1581.	79.	101.	28.9	0.6	45.0	29.5	0.02	1.45	0.97
28	161.	4075.	1656.	82.	99.	27.2	0.6	45.0	29.6	0.02	1.44	1.01
29	143.	4025.	1710.	84.	103.	27.2	0.6	45.0	29.7	0.02	1.44	1.05
30	126.	3988.	1743.	85.	105.	27.2	0.6	45.0	29.8	0.02	1.43	1.07
31	130.	3966.	1754.	86.	105.	27.2	0.6	45.0	29.9	0.02	1.43	1.08
32	135.	3988.	1743.	85.	105.	27.2	0.6	45.0	29.8	0.02	1.43	1.07
33	146.	4026.	1710.	84.	103.	27.2	0.6	45.0	29.7	0.02	1.44	1.05
34	158.	4076.	1656.	82.	99.	27.2	0.6	45.0	29.6	0.02	1.44	1.01
35	177.	4137.	442.	24.	153.	156.7	0.1	45.0	29.5	0.02	1.86	0.27
36	198.	4203.	540.	29.	169.	141.9	0.2	45.0	29.4	0.02	1.78	0.33
37	265.	4270.	659.	35.	230.	158.5	0.2	45.0	29.2	0.02	1.70	0.40
38	351.	4328.	801.	42.	309.	174.8	0.2	45.0	29.1	0.02	1.64	0.49
39	501.	4402.	963.	50.	451.	212.5	0.3	45.0	29.0	0.02	1.58	0.59
40	883.	4475.	2947.	145.	738.	308.3	0.3	45.0	30.5	0.02	1.55	0.66
41	713.	4525.	3058.	151.	562.	226.3	0.4	45.0	30.4	0.02	1.54	0.69
42	600.	4528.	3018.	149.	451.	183.8	0.4	45.0	30.4	0.02	1.54	0.68
43	423.	4532.	1067.	55.	368.	156.1	0.3	45.0	28.7	0.02	1.55	0.65
44	275.	4557.	994.	52.	224.	102.0	0.3	45.0	28.7	0.02	1.57	0.61
45	241.	4560.	919.	48.	193.	95.3	0.3	45.0	28.7	0.02	1.60	0.56
46	208.	4558.	854.	45.	164.	86.8	0.3	45.0	28.7	0.02	1.62	0.52
47	187.	4551.	795.	42.	145.	82.9	0.3	45.0	28.7	0.02	1.64	0.49
48	157.	4543.	747.	39.	117.	71.1	0.3	45.0	28.7	0.02	1.66	0.46
49	128.	4498.	707.	37.	91.	58.2	0.3	45.0	28.8	0.02	1.68	0.43

50	100.	4468.	676.	36.	64.	43.0	0.3	45.0	28.9	0.02	1.70	0.41
51	87.	4439.	1369.	70.	82.	27.2	0.4	45.0	28.9	0.02	1.49	0.84
52	106.	4413.	1382.	70.	83.	27.2	0.5	45.0	29.0	0.02	1.49	0.85
53	132.	4391.	1387.	70.	83.	27.2	0.5	45.0	29.0	0.02	1.49	0.85
54	124.	4371.	1381.	70.	83.	27.2	0.5	45.0	29.0	0.02	1.49	0.85
55	140.	4358.	1363.	69.	82.	27.2	0.5	45.0	29.1	0.02	1.49	0.83
56	157.	4351.	1333.	68.	89.	30.3	0.5	45.0	29.1	0.02	1.49	0.82
57	174.	4351.	1291.	66.	109.	38.2	0.5	45.0	29.1	0.02	1.50	0.79
58	165.	4392.	787.	41.	124.	71.4	0.3	45.0	29.0	0.02	1.64	0.48
59	180.	4451.	2314.	116.	139.	73.9	0.3	45.0	30.6	0.02	1.62	0.52
60	259.	4458.	2517.	125.	151.	73.9	0.4	45.0	30.5	0.02	1.59	0.57
61	423.	4458.	2770.	137.	286.	127.0	0.4	45.0	30.5	0.02	1.57	0.62

DIMENSIONAMIENTO A CORTANTE SEGUN NORMATIVA EHE
Angulo de la biela comprimida(sex.) = 35.00

SEC	Vd (T)	Nd (T)	Vu1 (T)	Vcu (T)	Vsu (T)	Asc (cm2/m)	Dec (m)	th	the	rho	psi	dp (m)
1	363.	4455.	2561.	250.	234.	73.9	0.5	35.0	30.6	0.02	1.57	0.61
2	301.	4430.	2366.	232.	216.	73.9	0.5	35.0	30.6	0.02	1.59	0.57
3	251.	4362.	801.	82.	169.	63.1	0.4	35.0	29.1	0.02	1.62	0.52
4	233.	4355.	1162.	117.	117.	29.9	0.7	35.0	29.1	0.02	1.51	0.76
5	241.	4350.	1213.	122.	119.	29.3	0.8	35.0	29.1	0.02	1.50	0.79
6	223.	4351.	1253.	125.	114.	27.2	0.8	35.0	29.1	0.02	1.49	0.82
7	206.	4358.	1281.	128.	117.	27.2	0.8	35.0	29.1	0.02	1.49	0.83
8	190.	4371.	1297.	130.	118.	27.2	0.7	35.0	29.0	0.02	1.49	0.85
9	198.	4390.	1304.	131.	119.	27.2	0.8	35.0	29.0	0.02	1.49	0.85
10	173.	4412.	1299.	130.	118.	27.2	0.7	35.0	29.0	0.02	1.49	0.85
11	149.	4438.	1287.	129.	117.	27.2	0.7	35.0	28.9	0.02	1.49	0.84
12	146.	4467.	1267.	128.	116.	27.2	0.6	35.0	28.9	0.02	1.49	0.83
13	171.	4498.	664.	69.	102.	45.9	0.4	35.0	28.8	0.02	1.68	0.43
14	201.	4542.	702.	73.	128.	54.2	0.4	35.0	28.7	0.02	1.66	0.46
15	232.	4551.	747.	78.	155.	61.8	0.4	35.0	28.7	0.02	1.64	0.49
16	254.	4557.	802.	83.	171.	63.6	0.4	35.0	28.7	0.02	1.62	0.52
17	340.	4560.	863.	89.	251.	86.9	0.5	35.0	28.7	0.02	1.60	0.56
18	421.	4590.	934.	96.	325.	103.8	0.5	35.0	28.6	0.02	1.57	0.61
19	616.	4592.	2724.	267.	349.	103.9	0.6	35.0	30.3	0.02	1.55	0.65
20	814.	4556.	2836.	277.	537.	153.4	0.6	35.0	30.4	0.02	1.54	0.68
21	855.	4525.	2874.	280.	575.	162.0	0.6	35.0	30.4	0.02	1.54	0.69
22	607.	4447.	2770.	269.	338.	98.7	0.6	35.0	30.6	0.02	1.55	0.67
23	290.	4369.	905.	92.	198.	65.3	0.5	35.0	29.1	0.02	1.58	0.59
24	238.	4327.	753.	77.	161.	63.7	0.4	35.0	29.1	0.02	1.64	0.49
25	218.	4269.	620.	64.	154.	74.1	0.3	35.0	29.2	0.02	1.70	0.40
26	199.	4202.	1394.	138.	127.	27.2	0.8	35.0	29.4	0.02	1.47	0.91
27	180.	4136.	1486.	146.	136.	27.2	0.8	35.0	29.5	0.02	1.45	0.97
28	161.	4075.	1557.	152.	142.	27.2	0.7	35.0	29.6	0.02	1.44	1.01
29	143.	4025.	1607.	156.	147.	27.2	0.7	35.0	29.7	0.02	1.44	1.05
30	126.	3988.	1638.	159.	149.	27.2	0.6	35.0	29.8	0.02	1.43	1.07
31	130.	3966.	1649.	159.	150.	27.2	0.6	35.0	29.9	0.02	1.43	1.08
32	135.	3988.	1638.	159.	149.	27.2	0.6	35.0	29.8	0.02	1.43	1.07
33	146.	4026.	1607.	156.	147.	27.2	0.7	35.0	29.7	0.02	1.44	1.05
34	158.	4076.	1557.	152.	142.	27.2	0.7	35.0	29.6	0.02	1.44	1.01
35	177.	4137.	416.	44.	133.	95.2	0.2	35.0	29.5	0.02	1.86	0.27
36	198.	4203.	508.	53.	145.	84.9	0.3	35.0	29.4	0.02	1.78	0.33
37	265.	4270.	620.	64.	201.	96.7	0.3	35.0	29.2	0.02	1.70	0.40
38	351.	4328.	753.	77.	273.	108.3	0.4	35.0	29.1	0.02	1.64	0.49
39	501.	4402.	905.	92.	409.	134.7	0.4	35.0	29.0	0.02	1.58	0.59
40	883.	4475.	2770.	270.	614.	179.5	0.6	35.0	30.5	0.02	1.55	0.66
41	713.	4525.	2874.	280.	433.	122.1	0.6	35.0	30.4	0.02	1.54	0.69
42	600.	4528.	2836.	276.	323.	92.3	0.6	35.0	30.4	0.02	1.54	0.68
43	423.	4532.	1003.	102.	320.	95.3	0.5	35.0	28.7	0.02	1.55	0.65
44	275.	4557.	934.	96.	179.	57.3	0.5	35.0	28.7	0.02	1.57	0.61
45	241.	4560.	863.	89.	152.	52.5	0.5	35.0	28.7	0.02	1.60	0.56
46	208.	4558.	802.	83.	125.	46.6	0.5	35.0	28.7	0.02	1.62	0.52
47	187.	4551.	747.	78.	110.	43.8	0.4	35.0	28.7	0.02	1.64	0.49
48	157.	4543.	702.	73.	83.	35.4	0.4	35.0	28.7	0.02	1.66	0.46
49	128.	4498.	664.	69.	61.	27.2	0.4	35.0	28.8	0.02	1.68	0.43
50	100.	4468.	635.	66.	58.	27.2	0.4	35.0	28.9	0.02	1.70	0.41
51	87.	4439.	1287.	129.	117.	27.2	0.4	35.0	28.9	0.02	1.49	0.84
52	106.	4413.	1299.	130.	118.	27.2	0.5	35.0	29.0	0.02	1.49	0.85
53	132.	4391.	1304.	131.	119.	27.2	0.6	35.0	29.0	0.02	1.49	0.85
54	124.	4371.	1297.	130.	118.	27.2	0.6	35.0	29.0	0.02	1.49	0.85
55	140.	4358.	1281.	128.	117.	27.2	0.6	35.0	29.1	0.02	1.49	0.83
56	157.	4351.	1253.	125.	114.	27.2	0.7	35.0	29.1	0.02	1.49	0.82
57	174.	4351.	1213.	122.	111.	27.2	0.7	35.0	29.1	0.02	1.50	0.79
58	165.	4392.	739.	76.	89.	35.8	0.5	35.0	29.0	0.02	1.64	0.48
59	180.	4451.	2174.	215.	198.	73.9	0.3	35.0	30.6	0.02	1.62	0.52
60	259.	4458.	2366.	232.	216.	73.9	0.4	35.0	30.5	0.02	1.59	0.57
61	423.	4458.	2603.	254.	237.	73.9	0.6	35.0	30.5	0.02	1.57	0.62

7.2 EVALUACIÓN DEL E.L.U. DE TORSIÓN

En este apartado se comprueba el Estado Límite Último de rotura por esfuerzo torsor de acuerdo con los criterios de la Normativa española vigente (EHE artículo 45)

Los cálculos realizados han sido los siguientes:

- Cálculo de la envolvente de esfuerzos cortantes para las distintas acciones consideradas en el proyecto del tablero. Los esfuerzos de cálculo se han combinado de acuerdo con los criterios del apartado 2 de este Anejo.

- La envolvente de esfuerzos flectores positivos se muestra en los listados adjuntos con la notación $\mathbf{T_d}$, conjuntamente con el esfuerzo flector y cortante concomitantes.

- Cálculo de $\mathbf{T_{u1}}$ (esfuerzo torsor de agotamiento que pueden resistir las bielas comprimidas).

- Dimensionamiento de las armaduras transversal $\mathbf{A_{st}}$ y longitudinal $\mathbf{A_{sl}}$ requeridas para resistir el esfuerzo torsor $\mathbf{T_d}$, a partir del cálculo de $\mathbf{T_{u2}}$ (esfuerzo torsor que pueden resistir las armaduras transversales) y $\mathbf{T_{u3}}$ (esfuerzo torsor que pueden resistir las armaduras longitudinales).

- Comprobación de la interacción torsor-cortante (artículo 45.3.2.2) en cada una de las secciones en que se ha discretizado el tablero para el máximo esfuerzo cortante y el torsor concomitante y viceversa.

COMBINACION 45 1.35 (G1 + G2) + 1.5 (SCTMAX-IPF) + PRETD

ESFUERZOS EN EXTREMO DE BARRA

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	-454.474	227.995	434.545	305.414	-177.425	-403.824
2	-301.851	177.077	406.183	318.334	-139.091	-362.380
3	-322.265	139.476	365.511	226.505	-131.202	-321.748
4	-236.977	132.280	325.745	141.379	-128.954	-295.024
5	-157.392	130.655	299.983	59.257	-137.098	-267.714
6	-58.083	137.004	268.422	5.931	-132.504	-243.741
7	-4.751	132.364	244.566	-35.704	-128.404	-217.931
8	36.914	128.156	218.869	-126.354	-136.504	-218.869
9	127.553	136.331	219.919	-150.301	-121.881	-191.476
10	151.472	121.567	192.634	-159.219	-108.086	-162.532
11	160.349	107.866	163.795	-228.706	-105.668	-163.795
12	229.775	105.334	165.163	-216.099	-93.465	-133.548
13	217.058	93.242	135.016	-192.290	-83.126	-102.038
14	193.114	82.811	103.605	-172.733	-72.579	-69.424
15	173.418	72.221	71.087	-223.895	-70.468	-71.087
16	224.434	70.152	72.846	-194.219	-60.644	-41.869
17	194.576	60.279	43.721	-159.503	-53.594	-16.710
18	159.689	53.213	18.653	-240.215	66.687	-0.359
19	240.226	-67.083	2.391	-135.852	223.136	-2.391
20	135.681	-223.532	4.513	194.917	305.396	-179.035
21	-573.274	656.458	507.973	84.133	-384.028	-542.634
22	-83.473	383.983	544.918	-6.750	-87.144	-491.188
23	0.660	87.582	494.954	-53.477	-58.044	-442.839
24	40.667	59.091	448.142	-105.646	-56.915	-396.261
25	86.358	58.619	403.160	-157.741	-55.665	-351.073
26	132.445	58.113	359.627	-206.170	-53.532	-307.710
27	175.582	56.655	317.978	-246.680	-50.195	-266.288
28	211.634	54.199	278.330	-277.868	-59.304	-246.014
29	279.332	59.138	247.305	-297.380	-58.972	-225.925
30	298.866	58.714	227.364	-304.750	-57.744	-205.272
31	306.266	57.418	206.856	-352.496	-66.189	-206.856
32	353.939	65.995	208.585	-322.455	-66.323	-185.780
33	323.797	65.979	187.651	-285.254	-68.212	-164.134
34	286.481	67.814	166.144	-246.925	-72.471	-141.915
35	247.992	72.074	144.062	-215.028	-79.343	-119.121
36	215.890	78.933	121.404	-197.642	-88.593	-95.761
37	198.281	88.134	98.177	-200.921	-99.367	-75.178
38	201.308	98.915	77.726	-222.435	-83.884	-57.867
39	222.542	83.393	60.544	-239.505	199.655	-47.488
40	239.337	-200.167	50.292	190.430	415.088	-224.363
41	-361.934	521.648	363.207	40.859	-384.421	-398.440
42	-39.457	384.295	400.513	-38.527	-218.953	-369.792
43	35.485	219.094	372.830	-132.566	-87.271	-327.985
44	125.102	87.820	332.019	-180.718	-68.634	-287.173
45	168.922	69.535	292.242	-200.154	-58.324	-258.384
46	200.958	58.263	259.052	-243.784	-56.539	-259.052
47	244.656	56.439	259.839	-235.575	-43.909	-236.248
48	236.526	43.760	237.150	-226.197	-31.684	-211.755
49	227.222	31.469	212.771	-200.656	-17.942	-185.422
50	201.692	17.839	186.551	-222.973	-15.680	-186.551
51	223.966	15.611	187.790	-170.765	-0.789	-158.341
52	171.736	0.485	159.687	-99.934	15.020	-127.990
53	100.901	-15.255	129.441	-99.419	6.879	-129.441
54	100.314	-7.122	130.995	-7.294	11.801	-96.910

COMBINACION 45 1.35 (G1 + G2) + 1.5 (SCTMAX-IPF) + PRETD

ESFUERZOS EN EXTREMO DE BARRA

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
55	8.037	-12.078	98.563	98.815	17.014	-62.000
56	-98.185	-17.390	63.751	207.433	21.050	-30.661
57	-206.945	-21.365	32.505	229.406	11.239	-32.505
58	-229.118	-11.630	34.440	271.628	20.549	8.829
59	-243.935	-19.267	2.733	292.703	45.561	6.806
60	-282.040	-46.077	-0.139	341.116	86.201	4.699

COMBINACION 46 1.35 (G1 + G2) + 1.5 (SCTMIN-IPF) + PRETD

ESFUERZOS EN EXTREMO DE BARRA

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	-344.267	170.472	7.610	252.197	-123.275	-20.557
2	-247.634	125.547	26.438	305.870	-87.287	-5.852
3	-308.119	90.433	15.147	229.377	-85.062	9.425
4	-167.474	100.681	-1.503	163.093	-83.354	8.808
5	-105.592	100.684	1.847	109.355	-75.548	25.847
6	-25.383	91.439	-24.990	-126.084	-75.068	44.835
7	108.615	77.072	-44.318	-256.495	-65.031	64.989
8	237.757	67.368	-64.606	-258.666	-65.140	69.626
9	239.189	67.975	-69.325	-332.694	-41.450	95.251
10	312.996	44.559	-94.984	-381.155	-18.959	123.687
11	361.739	22.567	-123.408	-365.823	-13.713	126.142
12	347.140	17.597	-125.806	-378.098	6.469	157.084
13	360.542	-2.085	-156.649	-370.995	24.384	190.102
14	354.937	-19.733	-189.529	-385.565	39.626	220.707
15	371.349	-34.673	-219.959	-75.034	52.257	231.664
16	303.285	-40.289	-225.827	-36.369	70.456	261.340
17	286.682	-55.430	-255.245	100.644	90.486	305.357
18	-63.353	-84.299	-296.562	46.900	220.671	342.751
19	-14.814	-215.117	-337.937	256.586	387.615	368.128
20	-228.845	-382.545	-366.763	673.168	487.270	297.594
21	-546.089	540.188	-139.342	287.986	-354.648	-26.779
22	-264.640	360.545	49.831	221.516	-62.771	-13.199
23	-203.873	69.556	40.157	173.790	-33.662	3.127
24	41.678	24.383	23.228	109.653	-34.201	22.243
25	137.574	21.344	0.105	83.472	-33.351	39.012
26	187.947	17.101	-22.451	12.820	-32.246	57.507
27	309.239	13.116	-35.108	-123.839	-31.945	67.064
28	406.015	11.276	-54.331	-194.150	-26.355	87.565
29	472.836	4.108	-75.503	-253.358	-18.608	110.802
30	521.448	-4.482	-97.688	-296.800	-9.169	136.822
31	548.887	-13.781	-120.851	-288.815	-2.004	158.987
32	305.775	13.031	-137.315	-279.578	7.093	189.989
33	295.995	3.495	-170.243	-254.625	15.248	223.892
34	270.117	-5.016	-206.095	-217.702	21.975	260.741
35	231.916	-12.011	-244.917	-89.396	25.643	320.131
36	166.105	-17.153	-283.122	-77.822	26.022	355.643
37	114.229	-19.353	-341.791	-68.861	26.365	394.665
38	94.262	-20.794	-386.435	-56.475	54.519	437.149
39	67.784	-49.375	-439.285	-15.650	352.190	483.157
40	23.277	-347.391	-488.082	745.740	615.960	447.495
41	-542.787	421.115	-207.268	585.270	-388.521	71.675
42	-587.634	399.630	-42.186	499.743	-230.954	66.437
43	-498.578	241.786	-38.385	393.842	-101.412	82.802
44	-389.193	112.003	-56.214	320.914	-83.911	101.489
45	-312.913	94.188	-76.397	239.410	-69.966	105.086
46	-233.053	80.375	-79.858	189.681	-59.499	123.276
47	-175.601	69.135	-101.278	153.319	-41.722	128.231
48	-143.608	51.673	-105.548	107.295	-27.173	145.167
49	-96.195	36.851	-123.793	53.293	-15.318	162.163
50	-41.088	24.917	-142.127	44.860	-0.137	178.326
51	-31.854	9.553	-159.655	35.358	17.772	202.362
52	-21.789	-8.806	-185.089	41.283	36.991	229.480
53	-27.405	-28.186	-213.635	44.868	38.041	247.091
54	-31.048	-29.437	-232.708	64.612	45.986	277.338

COMBINACION 46 1.35 (G1 + G2) + 1.5 (SCTMIN-IPF) + PRETD

ESFUERZOS EN EXTREMO DE BARRA

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
55	-51.230	-37.671	-264.452	191.878	52.509	339.161
56	-138.544	-44.905	-317.168	193.091	57.114	367.069
57	-149.695	-50.956	-350.324	223.157	56.306	387.578
58	-206.002	-51.230	-385.983	110.259	58.369	420.800
59	-96.283	-53.665	-421.419	140.174	97.907	457.399
60	-130.009	-93.728	-460.297	216.951	145.486	491.018

COMBINACION 47 1.35 (G1 + G2) + 1.5 (SCTMAX-EC1) + PRETD

ESFUERZOS EN EXTREMO DE BARRA

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	-548.019	525.200	733.792	187.669	-463.087	-726.631
2	-196.012	463.867	724.538	24.678	-388.706	-578.003
3	-23.836	388.635	578.340	-200.914	-354.266	-533.428
4	192.139	355.166	537.124	-455.458	-353.505	-515.550
5	456.548	353.318	516.137	-559.496	-314.357	-461.204
6	541.937	316.499	466.768	-639.716	-283.775	-421.136
7	618.937	286.471	427.752	-704.539	-261.072	-392.834
8	681.381	264.266	400.576	-835.013	-256.593	-357.390
9	810.231	260.446	366.329	-811.044	-219.448	-311.355
10	785.365	223.741	321.556	-751.157	-184.684	-262.471
11	725.284	189.629	274.000	-849.290	-177.405	-246.386
12	823.861	182.779	259.302	-738.032	-146.485	-196.485
13	713.623	152.510	210.844	-604.781	-119.198	-146.421
14	581.928	125.631	162.277	-505.553	-97.464	-112.267
15	484.741	104.335	129.670	-515.808	-88.628	-86.677
16	497.461	96.002	105.674	-362.014	-66.017	-42.409
17	346.454	73.778	63.043	-271.173	-53.836	-32.809
18	283.167	63.898	33.930	-394.299	64.118	1.400
19	403.763	-53.753	26.484	-244.533	214.254	5.785
20	252.657	-214.545	14.166	660.560	147.656	-318.694
21	-1789.770	1014.282	659.890	1233.583	-830.088	-818.967
22	-1239.974	830.578	816.996	743.896	-487.480	-735.752
23	-762.987	488.970	735.374	339.011	-409.375	-654.130
24	-370.967	412.078	653.370	170.223	-367.764	-573.329
25	-214.539	371.800	572.307	-319.398	-310.771	-509.823
26	240.859	318.473	515.668	-531.449	-274.426	-455.817
27	438.221	284.287	463.052	-697.597	-244.773	-417.357
28	592.146	257.057	426.156	-980.081	-214.778	-399.017
29	677.149	225.794	375.037	-1012.011	-190.626	-357.539
30	716.255	195.820	325.379	-1002.298	-166.587	-315.979
31	966.028	172.159	332.162	-1078.640	-162.908	-283.479
32	1042.281	169.393	301.482	-983.760	-142.466	-243.331
33	948.337	149.578	263.207	-861.304	-125.242	-203.255
34	827.820	133.065	225.052	-721.603	-111.999	-163.303
35	329.160	121.100	98.457	-576.782	-103.122	-124.902
36	278.099	121.385	67.801	-328.409	-100.242	-108.519
37	250.335	125.953	41.463	-199.409	-110.046	3.628
38	255.307	133.848	20.824	-235.578	-106.155	5.524
39	293.007	116.999	4.878	-337.908	172.656	2.847
40	342.668	-166.520	-5.234	930.332	296.602	-185.046
41	-1551.808	854.249	486.055	1103.635	-765.377	-547.721
42	-1107.535	765.685	547.583	1114.575	-633.687	-514.665
43	-776.098	579.885	514.724	448.437	-416.193	-465.206
44	-475.947	418.413	467.377	209.329	-366.989	-417.053
45	-248.780	370.333	419.591	-5.865	-324.693	-381.524
46	-44.932	329.332	384.553	-159.438	-288.792	-336.638
47	98.147	294.773	340.293	-271.035	-243.370	-288.124
48	200.397	250.782	292.550	-352.892	-200.074	-239.341
49	274.250	208.908	244.700	-422.087	-163.500	-206.633
50	336.981	174.041	213.091	-910.270	-145.362	-295.923
51	883.610	148.756	307.215	-806.740	-104.512	-249.219
52	778.917	108.188	261.793	-654.376	-62.869	-198.052
53	25.770	76.432	50.877	-680.688	-65.520	-184.355
54	652.456	70.338	199.678	13.448	-37.752	23.488

COMBINACION 47 1.35 (G1 + G2) + 1.5 (SCTMAX-EC1) + PRETD

ESFUERZOS EN EXTREMO DE BARRA

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
55	-101.007	57.004	-8.572	40.894	-17.169	83.821
56	-121.922	38.214	-66.542	241.601	-10.827	101.776
57	-313.509	33.891	-81.883	368.180	-12.977	108.917
58	-368.062	35.859	-93.889	264.024	-19.428	113.023
59	-270.252	41.698	-102.744	279.187	9.274	115.665
60	-286.467	12.800	-108.167	306.517	40.658	140.209

COMBINACION 48 1.35 (G1 + G2) + 1.5 (SCTMIN-EC1) + PRETD

ESFUERZOS EN EXTREMO DE BARRA

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
1	-345.989	167.933	14.355	251.099	-117.467	-14.807
2	-251.197	123.009	33.183	311.592	-81.729	-1.593
3	-313.523	87.895	21.892	212.510	-86.410	12.755
4	-198.410	103.854	7.558	147.679	-84.975	11.769
5	-139.235	93.285	10.604	74.741	-75.006	30.229
6	-60.199	95.553	-8.493	1.890	-67.166	49.346
7	3.878	75.736	-28.019	-83.992	-62.626	69.592
8	11.413	55.906	-57.360	-110.405	-58.718	82.117
9	117.497	66.951	-63.246	-168.951	-36.538	106.537
10	49.773	32.802	-100.237	-105.606	-5.776	137.532
11	86.190	9.384	-137.252	-214.239	-3.866	147.980
12	62.045	4.414	-139.650	-216.407	16.784	179.628
13	74.058	-17.972	-177.610	-91.291	44.523	219.421
14	75.233	-39.871	-218.848	-116.284	65.624	260.343
15	102.068	-60.672	-259.595	-25.047	75.114	276.133
16	12.964	-69.787	-275.177	-12.131	94.653	309.031
17	2.390	-89.067	-307.835	39.193	114.900	365.810
18	-15.729	-109.963	-363.320	-48.201	250.232	417.694
19	70.280	-245.532	-417.324	225.027	407.881	428.078
20	-203.396	-403.302	-429.262	623.394	482.743	309.757
21	-730.134	520.228	-198.291	377.511	-369.273	-26.691
22	-379.865	368.958	28.836	294.312	-77.181	-11.754
23	-298.659	77.018	13.187	226.620	-47.557	6.498
24	-232.940	47.609	-5.756	139.977	-47.273	28.159
25	-148.192	47.546	-28.090	89.239	-45.262	48.123
26	-99.189	45.807	-48.707	-7.404	-42.646	70.496
27	31.444	43.642	-61.545	-170.767	-40.454	84.641
28	147.625	42.710	-83.177	-267.703	-32.585	110.477
29	242.663	35.394	-109.100	-352.616	-22.177	139.821
30	326.360	25.465	-138.495	-419.970	-9.675	172.754
31	393.270	13.479	-171.440	-368.848	-10.224	176.924
32	342.396	14.743	-175.586	-378.807	1.405	213.749
33	353.357	3.548	-212.349	-369.911	12.313	254.445
34	346.208	-6.844	-252.946	-346.467	22.610	298.260
35	325.175	-16.581	-296.624	-227.057	30.630	364.817
36	272.834	-25.274	-339.825	-217.854	36.154	407.742
37	228.611	-31.883	-403.675	-202.963	42.380	454.464
38	208.498	-38.540	-453.727	-175.049	76.972	505.131
39	172.535	-72.953	-512.408	-108.168	381.574	559.906
40	108.039	-377.361	-567.559	694.670	610.399	435.798
41	-865.463	393.816	-363.226	657.120	-394.039	87.583
42	-658.980	393.819	-86.082	571.114	-236.693	79.613
43	-574.247	236.550	-78.675	463.299	-107.382	98.726
44	-467.678	107.414	-98.339	379.686	-89.410	121.210
45	-385.268	89.555	-121.362	279.145	-74.190	129.722
46	-290.657	74.928	-128.733	247.035	-65.620	141.431
47	-254.756	66.095	-142.616	189.157	-46.148	151.445
48	-204.728	47.452	-150.833	115.399	-28.963	174.685
49	-132.551	30.548	-174.210	28.859	-13.443	199.345
50	-47.286	15.506	-198.971	53.692	-2.269	204.449
51	-73.035	4.746	-204.136	13.191	19.855	236.235
52	-32.976	-17.216	-235.941	-13.071	44.483	272.460
53	-6.647	-41.365	-272.143	29.481	39.667	274.878
54	-48.676	-36.138	-274.488	21.993	53.614	314.235

COMBINACION 48 1.35 (G1 + G2) + 1.5 (SCTMIN-EC1) + PRETD

ESFUERZOS EN EXTREMO DE BARRA

Barra	Momento1	Cortante1	Torsor1	Momento2	Cortante2	Torsor2
55	-40.193	-49.697	-313.726	125.801	67.389	386.838
56	-101.723	-63.522	-375.515	109.996	80.442	427.468
57	-92.605	-77.352	-419.593	181.020	71.156	426.126
58	-185.683	-68.465	-431.505	62.524	82.206	472.431
59	-65.225	-79.186	-478.028	98.399	131.866	524.607
60	-98.798	-128.697	-530.392	206.898	168.899	530.392

DIMENSIONAMIENTO A TORSION SEGUN NORMATIVA EHE

SECC	Td (mT)	Tu1 (mT)	T-V	Asl (cm2/m)	Ast (cm2/m)	theta	thetae
1	733.79	1580.12	0.28	23.74	8.27	30.55	30.55
2	724.54	1579.04	0.27	23.40	8.18	30.60	30.60
3	578.34	1615.17	0.48	19.88	6.14	29.07	29.07
4	537.12	1614.84	0.28	18.45	5.71	29.08	29.08
5	516.14	1614.65	0.26	17.72	5.48	29.09	29.09
6	466.77	1614.68	0.21	16.03	4.96	29.09	29.09
7	427.75	1614.98	0.17	14.70	4.54	29.07	29.07
8	400.58	1615.57	0.15	13.78	4.25	29.05	29.05
9	366.33	1616.46	0.13	12.62	3.88	29.01	29.01
10	321.56	1617.47	0.10	11.10	3.40	28.97	28.97
11	274.00	1618.64	0.08	9.47	2.89	28.92	28.92
12	259.30	1619.93	0.07	8.99	2.73	28.87	28.87
13	210.84	1621.30	0.12	7.32	2.21	28.81	28.81
14	218.85	1623.27	0.14	7.63	2.29	28.72	28.72
15	259.60	1623.66	0.16	9.05	2.72	28.71	28.71
16	275.18	1623.95	0.17	9.60	2.88	28.70	28.70
17	307.83	1624.06	0.25	10.74	3.22	28.69	28.69
18	363.32	1625.41	0.31	12.71	3.79	28.63	28.63
19	417.32	1585.91	0.09	13.64	4.66	30.31	30.31
20	429.26	1584.43	0.11	13.99	4.80	30.37	30.37
21	659.89	1583.10	0.34	21.46	7.40	30.43	30.43
22	817.00	1579.80	0.39	26.42	9.22	30.57	30.57
23	735.37	1615.51	0.64	25.29	7.80	29.05	29.05
24	653.37	1613.57	0.60	22.39	6.96	29.13	29.13
25	572.31	1610.89	0.63	19.52	6.12	29.25	29.25
26	515.67	1607.78	0.21	17.50	5.55	29.38	29.38
27	463.05	1604.62	0.17	15.63	5.01	29.51	29.51
28	426.16	1601.72	0.14	14.31	4.63	29.63	29.63
29	375.04	1599.29	0.11	12.54	4.09	29.74	29.74
30	325.38	1597.49	0.08	10.85	3.56	29.81	29.81
31	332.16	1596.40	0.08	11.05	3.64	29.86	29.86
32	301.48	1597.50	0.07	10.05	3.30	29.81	29.81
33	263.21	1599.31	0.05	8.80	2.87	29.74	29.74
34	252.95	1601.75	0.04	8.49	2.75	29.63	29.63
35	296.62	1604.66	0.26	10.01	3.21	29.51	29.51
36	339.83	1607.82	0.22	11.53	3.65	29.38	29.38
37	403.68	1610.93	0.26	13.77	4.32	29.24	29.24
38	453.73	1613.60	0.30	15.55	4.83	29.13	29.13
39	512.41	1616.99	0.43	17.67	5.42	28.99	28.99
40	567.56	1580.96	0.16	18.39	6.39	30.52	30.52
41	486.05	1583.10	0.21	15.81	5.45	30.43	30.43
42	547.58	1583.25	0.22	17.81	6.14	30.42	30.42
43	514.72	1622.85	0.58	17.93	5.39	28.74	28.74
44	467.38	1623.93	0.39	16.31	4.89	28.70	28.70
45	419.59	1624.09	0.35	14.65	4.39	28.69	28.69
46	384.55	1623.97	0.32	13.42	4.02	28.70	28.70
47	340.29	1623.69	0.29	11.87	3.56	28.71	28.71
48	292.55	1623.30	0.24	10.20	3.06	28.72	28.72
49	244.70	1621.34	0.18	8.50	2.57	28.81	28.81
50	213.09	1619.96	0.14	7.38	2.24	28.86	28.86
51	307.22	1618.67	0.07	10.62	3.24	28.92	28.92
52	261.79	1617.50	0.05	9.03	2.77	28.97	28.97
53	272.14	1616.49	0.04	9.37	2.88	29.01	29.01
54	274.49	1615.59	0.04	9.44	2.91	29.05	29.05
55	313.73	1615.00	0.06	10.78	3.33	29.07	29.07
56	375.51	1614.70	0.08	12.89	3.99	29.09	29.09
57	419.59	1614.66	0.10	14.41	4.46	29.09	29.09
58	431.50	1616.56	0.11	14.87	4.57	29.01	29.01
59	478.03	1579.95	0.10	15.46	5.39	30.56	30.56
60	530.39	1580.27	0.13	17.17	5.98	30.55	30.55
61	530.39	1580.27	0.13	17.17	5.98	30.55	30.55

DIMENSIONAMIENTO A TORSION SEGUN NORMATIVA EHE

Angulo de la biela comprimida(sex.) = 45.00

SECC	Td (mT)	Tu1 (mT)	T-V	Asl (cm2/m)	Ast (cm2/m)	theta	thetae
1	733.79	1256.45	0.40	14.02	14.02	45.00	30.55
2	724.54	1256.45	0.38	13.84	13.84	45.00	30.60
3	578.34	1256.45	0.49	11.05	11.05	45.00	29.07
4	537.12	1256.45	0.32	10.26	10.26	45.00	29.08
5	516.14	1256.45	0.30	9.86	9.86	45.00	29.09
6	466.77	1256.45	0.24	8.92	8.92	45.00	29.09
7	427.75	1256.45	0.20	8.17	8.17	45.00	29.07
8	400.58	1256.45	0.18	7.65	7.65	45.00	29.05
9	366.33	1256.45	0.16	7.00	7.00	45.00	29.01
10	321.56	1256.45	0.12	6.14	6.14	45.00	28.97
11	274.00	1256.45	0.09	5.23	5.23	45.00	28.92
12	259.30	1256.45	0.09	4.95	4.95	45.00	28.87
13	210.84	1256.45	0.10	4.03	4.03	45.00	28.81
14	218.85	1256.45	0.12	4.18	4.18	45.00	28.72
15	259.60	1256.45	0.13	4.96	4.96	45.00	28.71
16	275.18	1256.45	0.14	5.26	5.26	45.00	28.70
17	307.83	1256.45	0.21	5.88	5.88	45.00	28.69
18	363.32	1256.45	0.24	6.94	6.94	45.00	28.63
19	417.32	1256.45	0.13	7.97	7.97	45.00	30.31
20	429.26	1256.45	0.15	8.20	8.20	45.00	30.37
21	659.89	1256.45	0.41	12.60	12.60	45.00	30.43
22	817.00	1256.45	0.52	15.61	15.61	45.00	30.57
23	735.37	1256.45	0.68	14.05	14.05	45.00	29.05
24	653.37	1256.45	0.61	12.48	12.48	45.00	29.13
25	572.31	1256.45	0.60	10.93	10.93	45.00	29.25
26	515.67	1256.45	0.26	9.85	9.85	45.00	29.38
27	463.05	1256.45	0.21	8.84	8.84	45.00	29.51
28	426.16	1256.45	0.18	8.14	8.14	45.00	29.63
29	375.04	1256.45	0.14	7.16	7.16	45.00	29.74
30	325.38	1256.45	0.11	6.22	6.22	45.00	29.81
31	332.16	1256.45	0.11	6.34	6.34	45.00	29.86
32	301.48	1256.45	0.09	5.76	5.76	45.00	29.81
33	263.21	1256.45	0.07	5.03	5.03	45.00	29.74
34	252.95	1256.45	0.06	4.83	4.83	45.00	29.63
35	296.62	1256.45	0.20	5.67	5.67	45.00	29.51
36	339.83	1256.45	0.17	6.49	6.49	45.00	29.38
37	403.68	1256.45	0.19	7.71	7.71	45.00	29.24
38	453.73	1256.45	0.23	8.67	8.67	45.00	29.13
39	512.41	1256.45	0.33	9.79	9.79	45.00	28.99
40	567.56	1256.45	0.24	10.84	10.84	45.00	30.52
41	486.05	1256.45	0.25	9.28	9.28	45.00	30.43
42	547.58	1256.45	0.27	10.46	10.46	45.00	30.42
43	514.72	1256.45	0.53	9.83	9.83	45.00	28.74
44	467.38	1256.45	0.38	8.93	8.93	45.00	28.70
45	419.59	1256.45	0.33	8.01	8.01	45.00	28.69
46	384.55	1256.45	0.30	7.35	7.35	45.00	28.70
47	340.29	1256.45	0.26	6.50	6.50	45.00	28.71
48	292.55	1256.45	0.21	5.59	5.59	45.00	28.72
49	244.70	1256.45	0.16	4.67	4.67	45.00	28.81

50	213.09	1256.45	0.13	4.07	4.07	45.00	28.86
51	307.22	1256.45	0.10	5.87	5.87	45.00	28.92
52	261.79	1256.45	0.07	5.00	5.00	45.00	28.97
53	272.14	1256.45	0.07	5.20	5.20	45.00	29.01
54	274.49	1256.45	0.07	5.24	5.24	45.00	29.05
55	313.73	1256.45	0.08	5.99	5.99	45.00	29.07
56	375.51	1256.45	0.12	7.17	7.17	45.00	29.09
57	419.59	1256.45	0.14	8.01	8.01	45.00	29.09
58	431.50	1256.45	0.16	8.24	8.24	45.00	29.01
59	478.03	1256.45	0.16	9.13	9.13	45.00	30.56
60	530.39	1256.45	0.19	10.13	10.13	45.00	30.55
61	530.39	1256.45	0.19	10.13	10.13	45.00	30.55

DIMENSIONAMIENTO A TORSION SEGUN NORMATIVA EHE

Angulo de la biela comprimida(sex.) = 35.00

SECC	Td (mT)	Tu1 (mT)	T-V	Asl (cm2/m)	Ast (cm2/m)	theta	thetae
1	733.79	1477.99	0.31	20.02	9.81	35.00	30.55
2	724.54	1477.99	0.30	19.77	9.69	35.00	30.60
3	578.34	1477.99	0.46	15.78	7.74	35.00	29.07
4	537.12	1477.99	0.28	14.65	7.18	35.00	29.08
5	516.14	1477.99	0.26	14.08	6.90	35.00	29.09
6	466.77	1477.99	0.21	12.73	6.24	35.00	29.09
7	427.75	1477.99	0.17	11.67	5.72	35.00	29.07
8	400.58	1477.99	0.15	10.93	5.36	35.00	29.05
9	366.33	1477.99	0.14	9.99	4.90	35.00	29.01
10	321.56	1477.99	0.11	8.77	4.30	35.00	28.97
11	274.00	1477.99	0.08	7.47	3.66	35.00	28.92
12	259.30	1477.99	0.07	7.07	3.47	35.00	28.87
13	210.84	1477.99	0.10	5.75	2.82	35.00	28.81
14	218.85	1477.99	0.12	5.97	2.93	35.00	28.72
15	259.60	1477.99	0.14	7.08	3.47	35.00	28.71
16	275.18	1477.99	0.15	7.51	3.68	35.00	28.70
17	307.83	1477.99	0.22	8.40	4.12	35.00	28.69
18	363.32	1477.99	0.26	9.91	4.86	35.00	28.63
19	417.32	1477.99	0.10	11.38	5.58	35.00	30.31
20	429.26	1477.99	0.12	11.71	5.74	35.00	30.37
21	659.89	1477.99	0.35	18.00	8.83	35.00	30.43
22	817.00	1477.99	0.42	22.29	10.93	35.00	30.57
23	735.37	1477.99	0.61	20.06	9.84	35.00	29.05
24	653.37	1477.99	0.57	17.82	8.74	35.00	29.13
25	572.31	1477.99	0.58	15.61	7.65	35.00	29.25
26	515.67	1477.99	0.22	14.07	6.90	35.00	29.38
27	463.05	1477.99	0.17	12.63	6.19	35.00	29.51
28	426.16	1477.99	0.14	11.63	5.70	35.00	29.63
29	375.04	1477.99	0.11	10.23	5.02	35.00	29.74
30	325.38	1477.99	0.09	8.88	4.35	35.00	29.81
31	332.16	1477.99	0.08	9.06	4.44	35.00	29.86
32	301.48	1477.99	0.07	8.22	4.03	35.00	29.81
33	263.21	1477.99	0.06	7.18	3.52	35.00	29.74
34	252.95	1477.99	0.04	6.90	3.38	35.00	29.63
35	296.62	1477.99	0.22	8.09	3.97	35.00	29.51
36	339.83	1477.99	0.19	9.27	4.55	35.00	29.38
37	403.68	1477.99	0.22	11.01	5.40	35.00	29.24
38	453.73	1477.99	0.25	12.38	6.07	35.00	29.13
39	512.41	1477.99	0.36	13.98	6.85	35.00	28.99
40	567.56	1477.99	0.18	15.48	7.59	35.00	30.52
41	486.05	1477.99	0.21	13.26	6.50	35.00	30.43
42	547.58	1477.99	0.23	14.94	7.32	35.00	30.42
43	514.72	1477.99	0.52	14.04	6.88	35.00	28.74
44	467.38	1477.99	0.36	12.75	6.25	35.00	28.70
45	419.59	1477.99	0.32	11.45	5.61	35.00	28.69
46	384.55	1477.99	0.29	10.49	5.14	35.00	28.70
47	340.29	1477.99	0.26	9.28	4.55	35.00	28.71
48	292.55	1477.99	0.21	7.98	3.91	35.00	28.72
49	244.70	1477.99	0.16	6.68	3.27	35.00	28.81
50	213.09	1477.99	0.13	5.81	2.85	35.00	28.86
51	307.22	1477.99	0.08	8.38	4.11	35.00	28.92
52	261.79	1477.99	0.06	7.14	3.50	35.00	28.97
53	272.14	1477.99	0.05	7.42	3.64	35.00	29.01
54	274.49	1477.99	0.05	7.49	3.67	35.00	29.05
55	313.73	1477.99	0.06	8.56	4.20	35.00	29.07
56	375.51	1477.99	0.09	10.24	5.02	35.00	29.09
57	419.59	1477.99	0.11	11.45	5.61	35.00	29.09
58	431.50	1477.99	0.12	11.77	5.77	35.00	29.01
59	478.03	1477.99	0.12	13.04	6.39	35.00	30.56
60	530.39	1477.99	0.14	14.47	7.09	35.00	30.55
61	530.39	1477.99	0.14	14.47	7.09	35.00	30.55

DIMENSIONAMIENTO A RASANTE (Vd)
Y VERIFICACION DE AGOTAMIENTO DEL HORMIGON POR
TENSIONES TANGENCIALES SEGUN NORMATIVA EHE

Seccion = 1

Angulo de la biela comprimida (sex) = 30.55

Valores maximos de los esfuerzos
Vd (T) = 363.423 Td (mT) = 733.792

Corte	tau_Vu (T/m2)	tau_Tu (T/m2)	tau_Vd (T/m2)	tau_Td (T/m2)	T-V	As,ras (cm2/m)
1	700.43	840.51	1050.40	0.00	2.07	42.91

Seccion = 2

Angulo de la biela comprimida (sex) = 30.55

Valores maximos de los esfuerzos
Vd (T) = 301.382 Td (mT) = 724.538

Corte	tau_Vu (T/m2)	tau_Tu (T/m2)	tau_Vd (T/m2)	tau_Td (T/m2)	T-V	As,ras (cm2/m)
1	701.05	841.26	927.73	0.00	1.66	35.65

Seccion = 3

Angulo de la biela comprimida (sex) = 30.55

Valores maximos de los esfuerzos
Vd (T) = 251.392 Td (mT) = 578.340

Corte	tau_Vu (T/m2)	tau_Tu (T/m2)	tau_Vd (T/m2)	tau_Td (T/m2)	T-V	As,ras (cm2/m)
1	679.41	815.29	874.43	0.00	1.57	31.44

Seccion = 4

Angulo de la biela comprimida (sex) = 30.55

Valores maximos de los esfuerzos
Vd (T) = 233.349 Td (mT) = 537.124

Corte	tau_Vu (T/m2)	tau_Tu (T/m2)	tau_Vd (T/m2)	tau_Td (T/m2)	T-V	As,ras (cm2/m)
1	679.62	815.54	799.12	0.00	1.34	29.20

Seccion = 5

Angulo de la biela comprimida (sex) = 30.55

Valores maximos de los esfuerzos
Vd (T) = 240.907 Td (mT) = 516.137

Corte	tau_Vu (T/m2)	tau_Tu (T/m2)	tau_Vd (T/m2)	tau_Td (T/m2)	T-V	As,ras (cm2/m)
1	679.73	815.68	794.96	0.00	1.33	30.15

Seccion = 6

Angulo de la biela comprimida (sex) = 30.55

Valores maximos de los esfuerzos
Vd (T) = 223.254 Td (mT) = 466.768

Corte	tau_Vu (T/m2)	tau_Tu (T/m2)	tau_Vd (T/m2)	tau_Td (T/m2)	T-V	As,ras (cm2/m)
1	679.71	815.65	712.12	0.00	1.09	27.94

Seccion = 7

Angulo de la biela comprimida (sex) = 30.55

Valores maximos de los esfuerzos
Vd (T) = 206.336 Td (mT) = 427.752

Corte	tau_Vu (T/m2)	tau_Tu (T/m2)	tau_Vd (T/m2)	tau_Td (T/m2)	T-V	As,ras (cm2/m)
1	679.53	815.43	644.56	0.00	0.91	25.81

Seccion = 8

Angulo de la biela comprimida (sex) = 30.55

Valores maximos de los esfuerzos
Vd (T) = 190.417 Td (mT) = 400.576

Corte	tau_Vu (T/m2)	tau_Tu (T/m2)	tau_Vd (T/m2)	tau_Td (T/m2)	T-V	As,ras (cm2/m)
1	679.16	814.99	594.60	0.00	0.79	23.80

```
Seccion =     9


  Angulo de la biela comprimida (sex) =    30.55

  Valores maximos de los esfuerzos
  Vd (T) =   198.370   Td (mT) =   366.329


  Corte   tau_Vu  tau_Tu  tau_Vd   tau_Td      T-V      As,ras
         (T/m2)  (T/m2)  (T/m2)   (T/m2)               (cm2/m)

   1     678.61   814.33   586.00     0.00     0.77    24.75

  Seccion =    10


  Angulo de la biela comprimida (sex) =    30.55

  Valores maximos de los esfuerzos
  Vd (T) =   172.576   Td (mT) =   321.556


  Corte   tau_Vu  tau_Tu  tau_Vd   tau_Td      T-V      As,ras
         (T/m2)  (T/m2)  (T/m2)   (T/m2)               (cm2/m)

   1     677.98   813.57   503.42     0.00     0.59    21.50

  Seccion =    11


  Angulo de la biela comprimida (sex) =    30.55

  Valores maximos de los esfuerzos
  Vd (T) =   148.512   Td (mT) =   274.000


  Corte   tau_Vu  tau_Tu  tau_Vd   tau_Td      T-V      As,ras
         (T/m2)  (T/m2)  (T/m2)   (T/m2)               (cm2/m)

   1     677.25   812.70   426.67     0.00     0.44    18.46

  Seccion =    12


  Angulo de la biela comprimida (sex) =    30.55

  Valores maximos de los esfuerzos
  Vd (T) =   145.936   Td (mT) =   259.302


  Corte   tau_Vu  tau_Tu  tau_Vd   tau_Td      T-V      As,ras
         (T/m2)  (T/m2)  (T/m2)   (T/m2)               (cm2/m)

   1     676.44   811.73   411.25     0.00     0.41    18.10


  Seccion =    13


  Angulo de la biela comprimida (sex) =    30.55

  Valores maximos de los esfuerzos
  Vd (T) =   171.423   Td (mT) =   210.844


  Corte   tau_Vu  tau_Tu  tau_Vd   tau_Td      T-V      As,ras
         (T/m2)  (T/m2)  (T/m2)   (T/m2)               (cm2/m)

   1     675.57   810.69   343.15     0.00     0.36    21.21

  Seccion =    14


  Angulo de la biela comprimida (sex) =    30.55

  Valores maximos de los esfuerzos
  Vd (T) =   200.840   Td (mT) =   218.848


  Corte   tau_Vu  tau_Tu  tau_Vd   tau_Td      T-V      As,ras
         (T/m2)  (T/m2)  (T/m2)   (T/m2)               (cm2/m)

   1     674.34   809.20    89.71     0.00     0.49    24.77

  Seccion =    15


  Angulo de la biela comprimida (sex) =    30.55

  Valores maximos de los esfuerzos
  Vd (T) =   232.296   Td (mT) =   259.595


  Corte   tau_Vu  tau_Tu  tau_Vd   tau_Td      T-V      As,ras
         (T/m2)  (T/m2)  (T/m2)   (T/m2)               (cm2/m)

   1     674.09   808.91   136.51     0.00     0.63    28.63

  Seccion =    16


  Angulo de la biela comprimida (sex) =    30.55

  Valores maximos de los esfuerzos
  Vd (T) =   254.109   Td (mT) =   275.177
```

Corte	tau_Vu (T/m2)	tau_Tu (T/m2)	tau_Vd (T/m2)	tau_Td (T/m2)	T-V	As,ras (cm2/m)
1	673.91	808.69	157.02	0.00	0.74	31.30

Seccion = 17

Angulo de la biela comprimida (sex) = 30.55

Valores maximos de los esfuerzos
Vd (T) = 340.476 Td (mT) = 307.835

Corte	tau_Vu (T/m2)	tau_Tu (T/m2)	tau_Vd (T/m2)	tau_Td (T/m2)	T-V	As,ras (cm2/m)
1	673.84	808.60	200.40	0.00	1.26	41.93

Seccion = 18

Angulo de la biela comprimida (sex) = 30.55

Valores maximos de los esfuerzos
Vd (T) = 421.060 Td (mT) = 363.320

Corte	tau_Vu (T/m2)	tau_Tu (T/m2)	tau_Vd (T/m2)	tau_Td (T/m2)	T-V	As,ras (cm2/m)
1	672.98	807.58	247.42	0.00	1.85	51.73

Seccion = 19

Angulo de la biela comprimida (sex) = 30.55

Valores maximos de los esfuerzos
Vd (T) = 616.125 Td (mT) = 417.324

Corte	tau_Vu (T/m2)	tau_Tu (T/m2)	tau_Vd (T/m2)	tau_Td (T/m2)	T-V	As,ras (cm2/m)
1	697.06	836.48	491.06	0.00	2.79	72.03

Seccion = 20

Angulo de la biela comprimida (sex) = 30.55

Valores maximos de los esfuerzos
Vd (T) = 814.047 Td (mT) = 429.262

Corte	tau_Vu (T/m2)	tau_Tu (T/m2)	tau_Vd (T/m2)	tau_Td (T/m2)	T-V	As,ras (cm2/m)
1	697.93	837.52	806.60	0.00	4.59	95.41

Seccion = 21

Angulo de la biela comprimida (sex) = 30.55

Valores maximos de los esfuerzos
Vd (T) = 854.629 Td (mT) = 659.890

Corte	tau_Vu (T/m2)	tau_Tu (T/m2)	tau_Vd (T/m2)	tau_Td (T/m2)	T-V	As,ras (cm2/m)
1	698.70	838.44	2028.56	0.00	6.81	100.39

Seccion = 22

Angulo de la biela comprimida (sex) = 30.55

Valores maximos de los esfuerzos
Vd (T) = 606.804 Td (mT) = 816.996

Corte	tau_Vu (T/m2)	tau_Tu (T/m2)	tau_Vd (T/m2)	tau_Td (T/m2)	T-V	As,ras (cm2/m)
1	700.61	840.74	1661.16	0.00	4.73	71.68

Seccion = 23

Angulo de la biela comprimida (sex) = 30.55

Valores maximos de los esfuerzos
Vd (T) = 290.133 Td (mT) = 735.374

Corte	tau_Vu (T/m2)	tau_Tu (T/m2)	tau_Vd (T/m2)	tau_Td (T/m2)	T-V	As,ras (cm2/m)
1	679.20	815.04	1100.18	0.00	2.38	36.26

Seccion = 24

Angulo de la biela comprimida (sex) = 30.55

Valores maximos de los esfuerzos
Vd (T) = 238.244 Td (mT) = 653.370

Corte	tau_Vu (T/m2)	tau_Tu (T/m2)	tau_Vd (T/m2)	tau_Td (T/m2)	T-V	As,ras (cm2/m)
1	680.40	816.48	927.18	0.00	1.75	29.88

Seccion = 25

Angulo de la biela comprimida (sex) = 30.55

Valores maximos de los esfuerzos
Vd (T) = 218.197 Td (mT) = 572.307

Corte	tau_Vu (T/m2)	tau_Tu (T/m2)	tau_Vd (T/m2)	tau_Td (T/m2)	T-V	As,ras (cm2/m)
1	682.06	818.47	836.55	0.00	1.44	27.49

Seccion = 26

Angulo de la biela comprimida (sex) = 30.55

Valores maximos de los esfuerzos
Vd (T) = 198.910 Td (mT) = 515.668

Corte	tau_Vu (T/m2)	tau_Tu (T/m2)	tau_Vd (T/m2)	tau_Td (T/m2)	T-V	As,ras (cm2/m)
1	683.97	820.76	716.56	0.00	1.09	25.20

Seccion = 27

Angulo de la biela comprimida (sex) = 30.55

Valores maximos de los esfuerzos
Vd (T) = 179.504 Td (mT) = 463.052

Corte	tau_Vu (T/m2)	tau_Tu (T/m2)	tau_Vd (T/m2)	tau_Td (T/m2)	T-V	As,ras (cm2/m)
1	685.90	823.08	639.64	0.00	0.88	22.86

Seccion = 28

Angulo de la biela comprimida (sex) = 30.55

Valores maximos de los esfuerzos
Vd (T) = 161.233 Td (mT) = 426.156

Corte	tau_Vu (T/m2)	tau_Tu (T/m2)	tau_Vd (T/m2)	tau_Td (T/m2)	T-V	As,ras (cm2/m)
1	687.66	825.19	578.38	0.00	0.73	20.64

Seccion = 29

Angulo de la biela comprimida (sex) = 30.55

Valores maximos de los esfuerzos
Vd (T) = 143.476 Td (mT) = 375.037

Corte	tau_Vu (T/m2)	tau_Tu (T/m2)	tau_Vd (T/m2)	tau_Td (T/m2)	T-V	As,ras (cm2/m)
1	689.12	826.95	508.04	0.00	0.58	18.44

Seccion = 30

Angulo de la biela comprimida (sex) = 30.55

Valores maximos de los esfuerzos
Vd (T) = 126.291 Td (mT) = 325.379

Corte	tau_Vu (T/m2)	tau_Tu (T/m2)	tau_Vd (T/m2)	tau_Td (T/m2)	T-V	As,ras (cm2/m)
1	690.21	828.25	440.59	0.00	0.45	16.28

Seccion = 31

Angulo de la biela comprimida (sex) = 30.55

Valores maximos de los esfuerzos
Vd (T) = 129.947 Td (mT) = 332.162

Corte	tau_Vu (T/m2)	tau_Tu (T/m2)	tau_Vd (T/m2)	tau_Td (T/m2)	T-V	As,ras (cm2/m)
1	690.86	829.03	387.36	0.00	0.35	16.79

Seccion = 32

Angulo de la biela comprimida (sex) = 30.55

Valores maximos de los esfuerzos

Vd (T) = 135.182 Td (mT) = 301.482

Corte	tau_Vu (T/m2)	tau_Tu (T/m2)	tau_Vd (T/m2)	tau_Td (T/m2)	T-V	As,ras (cm2/m)
1	690.20	828.24	381.13	0.00	0.34	17.43

```
Seccion =    33


Angulo de la biela comprimida (sex) =    30.55

Valores maximos de los esfuerzos
Vd (T) =   145.866   Td (mT) =   263.207


Corte   tau_Vu  tau_Tu  tau_Vd   tau_Td      T-V      As,ras
        (T/m2)  (T/m2)  (T/m2)   (T/m2)               (cm2/m)

 1     689.11   826.93   336.55     0.00     0.28    18.75

Seccion =    34


Angulo de la biela comprimida (sex) =    30.55

Valores maximos de los esfuerzos
Vd (T) =   158.365   Td (mT) =   252.946


Corte   tau_Vu  tau_Tu  tau_Vd   tau_Td      T-V      As,ras
        (T/m2)  (T/m2)  (T/m2)   (T/m2)               (cm2/m)

 1     687.64   825.17    15.40     0.00     0.31    20.27

Seccion =    35


Angulo de la biela comprimida (sex) =    30.55

Valores maximos de los esfuerzos
Vd (T) =   176.650   Td (mT) =   296.624


Corte   tau_Vu  tau_Tu  tau_Vd   tau_Td      T-V      As,ras
        (T/m2)  (T/m2)  (T/m2)   (T/m2)               (cm2/m)

 1     685.88   823.05    37.31     0.00     0.37    22.50

Seccion =    36


Angulo de la biela comprimida (sex) =    30.55

Valores maximos de los esfuerzos
Vd (T) =   197.698   Td (mT) =   339.825


Corte   tau_Vu  tau_Tu  tau_Vd   tau_Td      T-V      As,ras
        (T/m2)  (T/m2)  (T/m2)   (T/m2)               (cm2/m)

 1     683.94   820.73    56.87     0.00     0.46    25.04


Seccion =    37


Angulo de la biela comprimida (sex) =    30.55

Valores maximos de los esfuerzos
Vd (T) =   265.096   Td (mT) =   403.675


Corte   tau_Vu  tau_Tu  tau_Vd   tau_Td      T-V      As,ras
        (T/m2)  (T/m2)  (T/m2)   (T/m2)               (cm2/m)

 1     682.03   818.44    71.74     0.00     0.79    33.40

Seccion =    38


Angulo de la biela comprimida (sex) =    30.55

Valores maximos de los esfuerzos
Vd (T) =   350.659   Td (mT) =   453.727


Corte   tau_Vu  tau_Tu  tau_Vd   tau_Td      T-V      As,ras
        (T/m2)  (T/m2)  (T/m2)   (T/m2)               (cm2/m)

 1     680.38   816.46    86.71     0.00     1.31    43.97

Seccion =    39


Angulo de la biela comprimida (sex) =    30.55

Valores maximos de los esfuerzos
Vd (T) =   500.984   Td (mT) =   512.408


Corte   tau_Vu  tau_Tu  tau_Vd   tau_Td      T-V      As,ras
        (T/m2)  (T/m2)  (T/m2)   (T/m2)               (cm2/m)

 1     678.27   813.93   164.14     0.00     2.50    62.45

Seccion =    40


Angulo de la biela comprimida (sex) =    30.55

Valores maximos de los esfuerzos
```

Vd (T) = 883.386 Td (mT) = 567.559

Corte	tau_Vu (T/m2)	tau_Tu (T/m2)	tau_Vd (T/m2)	tau_Td (T/m2)	T-V	As,ras (cm2/m)
1	699.94	839.93	754.72	0.00	5.29	104.15

Seccion = 41

Angulo de la biela comprimida (sex) = 30.55

Valores maximos de los esfuerzos
Vd (T) = 712.937 Td (mT) = 486.055

Corte	tau_Vu (T/m2)	tau_Tu (T/m2)	tau_Vd (T/m2)	tau_Td (T/m2)	T-V	As,ras (cm2/m)
1	698.70	838.44	1708.50	0.00	5.00	83.74

Seccion = 42

Angulo de la biela comprimida (sex) = 30.55

Valores maximos de los esfuerzos
Vd (T) = 599.520 Td (mT) = 547.583

Corte	tau_Vu (T/m2)	tau_Tu (T/m2)	tau_Vd (T/m2)	tau_Td (T/m2)	T-V	As,ras (cm2/m)
1	698.61	838.34	1531.37	0.00	4.11	70.40

Seccion = 43

Angulo de la biela comprimida (sex) = 30.55

Valores maximos de los esfuerzos
Vd (T) = 422.840 Td (mT) = 514.724

Corte	tau_Vu (T/m2)	tau_Tu (T/m2)	tau_Vd (T/m2)	tau_Td (T/m2)	T-V	As,ras (cm2/m)
1	674.60	809.52	1304.74	0.00	3.28	52.18

Seccion = 44

Angulo de la biela comprimida (sex) = 30.55

Valores maximos de los esfuerzos
Vd (T) = 275.199 Td (mT) = 467.377

Corte	tau_Vu (T/m2)	tau_Tu (T/m2)	tau_Vd (T/m2)	tau_Td (T/m2)	T-V	As,ras (cm2/m)
1	673.92	808.70	941.43	0.00	1.83	33.90

Seccion = 45

Angulo de la biela comprimida (sex) = 30.55

Valores maximos de los esfuerzos
Vd (T) = 241.025 Td (mT) = 419.591

Corte	tau_Vu (T/m2)	tau_Tu (T/m2)	tau_Vd (T/m2)	tau_Td (T/m2)	T-V	As,ras (cm2/m)
1	673.82	808.58	833.25	0.00	1.47	29.68

Seccion = 46

Angulo de la biela comprimida (sex) = 30.55

Valores maximos de los esfuerzos
Vd (T) = 208.231 Td (mT) = 384.553

Corte	tau_Vu (T/m2)	tau_Tu (T/m2)	tau_Vd (T/m2)	tau_Td (T/m2)	T-V	As,ras (cm2/m)
1	673.89	808.67	741.00	0.00	1.19	25.65

Seccion = 47

Angulo de la biela comprimida (sex) = 30.55

Valores maximos de los esfuerzos
Vd (T) = 187.199 Td (mT) = 340.293

Corte	tau_Vu (T/m2)	tau_Tu (T/m2)	tau_Vd (T/m2)	tau_Td (T/m2)	T-V	As,ras (cm2/m)
1	674.07	808.88	663.24	0.00	0.97	23.07

Seccion = 48

Angulo de la biela comprimida (sex) = 30.55

Valores maximos de los esfuerzos

Vd (T) = 156.624 Td (mT) = 292.550

Corte	tau_Vu (T/m2)	tau_Tu (T/m2)	tau_Vd (T/m2)	tau_Td (T/m2)	T-V	As,ras (cm2/m)
1	674.31	809.18	564.26	0.00	0.73	19.31

```
Seccion =    49


Angulo de la biela comprimida (sex) =    30.55

Valores maximos de los esfuerzos
Vd (T) =   128.069   Td (mT) =   244.700


Corte   tau_Vu  tau_Tu  tau_Vd   tau_Td      T-V      As,ras
        (T/m2)  (T/m2)  (T/m2)   (T/m2)               (cm2/m)

 1     675.55   810.66   470.04     0.00     0.52    15.85

Seccion =    50


Angulo de la biela comprimida (sex) =    30.55

Valores maximos de los esfuerzos
Vd (T) =    99.860   Td (mT) =   213.091


Corte   tau_Vu  tau_Tu  tau_Vd   tau_Td      T-V      As,ras
        (T/m2)  (T/m2)  (T/m2)   (T/m2)               (cm2/m)

 1     676.42   811.70   391.59     0.00     0.37    12.38

Seccion =    51


Angulo de la biela comprimida (sex) =    30.55

Valores maximos de los esfuerzos
Vd (T) =    87.254   Td (mT) =   307.215


Corte   tau_Vu  tau_Tu  tau_Vd   tau_Td      T-V      As,ras
        (T/m2)  (T/m2)  (T/m2)   (T/m2)               (cm2/m)

 1     677.23   812.67   334.70     0.00     0.28    10.85

Seccion =    52


Angulo de la biela comprimida (sex) =    30.55

Valores maximos de los esfuerzos
Vd (T) =   106.386   Td (mT) =   261.793


Corte   tau_Vu  tau_Tu  tau_Vd   tau_Td      T-V      As,ras
        (T/m2)  (T/m2)  (T/m2)   (T/m2)               (cm2/m)

 1     677.96   813.55   243.42     0.00     0.16    13.25


Seccion =    53


Angulo de la biela comprimida (sex) =    30.55

Valores maximos de los esfuerzos
Vd (T) =   132.057   Td (mT) =   272.143


Corte   tau_Vu  tau_Tu  tau_Vd   tau_Td      T-V      As,ras
        (T/m2)  (T/m2)  (T/m2)   (T/m2)               (cm2/m)

 1     678.59   814.30    93.07     0.00     0.23    16.48

Seccion =    54


Angulo de la biela comprimida (sex) =    30.55

Valores maximos de los esfuerzos
Vd (T) =   124.156   Td (mT) =   274.488


Corte   tau_Vu  tau_Tu  tau_Vd   tau_Td      T-V      As,ras
        (T/m2)  (T/m2)  (T/m2)   (T/m2)               (cm2/m)

 1     679.15   814.97    81.31     0.00     0.20    15.52

Seccion =    55


Angulo de la biela comprimida (sex) =    30.55

Valores maximos de los esfuerzos
Vd (T) =   139.904   Td (mT) =   313.726


Corte   tau_Vu  tau_Tu  tau_Vd   tau_Td      T-V      As,ras
        (T/m2)  (T/m2)  (T/m2)   (T/m2)               (cm2/m)

 1     679.52   815.42   111.82     0.00     0.25    17.50

Seccion =    56


Angulo de la biela comprimida (sex) =    30.55

Valores maximos de los esfuerzos
```

Vd (T) = 156.741 Td (mT) = 375.515

Corte	tau_Vu (T/m2)	tau_Tu (T/m2)	tau_Vd (T/m2)	tau_Td (T/m2)	T-V	As,ras (cm2/m)
1	679.70	815.64	142.92	0.00	0.31	19.62

```
 1     700.34   840.41   257.39     0.00     0.58    30.58
```

```
Seccion =    57


Angulo de la biela comprimida (sex) =    30.55

Valores maximos de los esfuerzos
Vd (T) =   174.381   Td (mT) =   419.593


Corte   tau_Vu  tau_Tu  tau_Vd   tau_Td      T-V      As,ras
        (T/m2)  (T/m2)  (T/m2)   (T/m2)               (cm2/m)

 1     679.72   815.67   174.04     0.00     0.37    21.83

Seccion =    58


Angulo de la biela comprimida (sex) =    30.55

Valores maximos de los esfuerzos
Vd (T) =   164.946   Td (mT) =   431.505


Corte   tau_Vu  tau_Tu  tau_Vd   tau_Td      T-V      As,ras
        (T/m2)  (T/m2)  (T/m2)   (T/m2)               (cm2/m)

 1     678.54   814.25   154.05     0.00     0.34    20.58

Seccion =    59


Angulo de la biela comprimida (sex) =    30.55

Valores maximos de los esfuerzos
Vd (T) =   180.049   Td (mT) =   478.028


Corte   tau_Vu  tau_Tu  tau_Vd   tau_Td      T-V      As,ras
        (T/m2)  (T/m2)  (T/m2)   (T/m2)               (cm2/m)

 1     700.53   840.63   158.37     0.00     0.30    21.26

Seccion =    60


Angulo de la biela comprimida (sex) =    30.55

Valores maximos de los esfuerzos
Vd (T) =   259.110   Td (mT) =   530.392


Corte   tau_Vu  tau_Tu  tau_Vd   tau_Td      T-V      As,ras
        (T/m2)  (T/m2)  (T/m2)   (T/m2)               (cm2/m)
```

```
Seccion =    61


Angulo de la biela comprimida (sex) =    30.55

Valores maximos de los esfuerzos
Vd (T) =   422.616   Td (mT) =   530.392


Corte   tau_Vu  tau_Tu  tau_Vd   tau_Td      T-V      As,ras
        (T/m2)  (T/m2)  (T/m2)   (T/m2)               (cm2/m)

 1     700.34   840.41   337.80     0.00     1.40    49.88
```

7.3. EVALUACIÓN DEL E.L.U. DE RASANTE

Se comprueban las secciones de arranque de voladizo a rasante según el artículo 47º de la EHE.

8 APARATOS DE APOYO Y JUNTAS

8.1. REACCIONES VERTICALES

Las reacciones verticales en los distintos apoyos se han calculado a partir de los resultados del apartado 3. Los resultados se resumen en este apartado siguiendo los criterios de numeración de nudos y designación de cargas adoptados en el mencionado apartado 3.

- **g_1** Peso propio de la estructura.
- **g_2** Carga permanente.
- **q** Sobrecarga uniforme (se ha obtenido la envolvente para distintos tipos de tren establecidos en la IPF y en el EC-1)
- **∇T (TEM)** Gradiente de temperatura.
- **Pii** Pretensado inicial de descimbrado (pretensado parcial con pérdidas iniciales).
- **Pi** Pretensado inicial (con pérdidas iniciales).
- **P_∞** Pretensado final (con pérdidas iniciales y diferidas).

  Referencia del Proyecto: Paso Inferior Riera de Torrelles

APOYO N = 62

REACCIONES	Flector	Reac_vert	Torsor
G1	0.00000	62.26733	0.00000
G2	0.00000	36.81569	0.00000
Pii	0.00000	43.78411	0.00000
Pi	0.00000	74.25537	0.00000
Pd	0.00000	64.11954	0.00000
TEMP	0.00000	13.09889	0.00000
SC peatonal(100%) Max	0.00000	1.69010	0.00000
SC peatonal(100%) Min	0.00000	-0.23443	0.00000
SC peatonal(50%) Max	0.00000	4.11179	0.00000
SC peatonal(50%) Min	0.00000	-0.00010	0.00000
IPF-75 TREN A via 1 (Max)	0.00000	0.24515	0.00000
IPF-75 TREN A via 1 (Min)	0.00000	-10.33841	0.00000
IPF-75 TREN B1 via 1 (Max)	0.00000	0.21599	0.00000
IPF-75 TREN B1 via 1 (Min)	0.00000	-18.10702	0.00000
IPF-75 TREN B2 via 1 (Max)	0.00000	0.21599	0.00000
IPF-75 TREN B2 via 1 (Min)	0.00000	-17.21713	0.00000
EC-1 TREN LM71 via 1 (Max)	0.00000	0.32869	0.00000
EC-1 TREN LM71 via 1 (Min)	0.00000	-19.17485	0.00000
EC-1 TREN SW/0 via 1 (Max)	0.00000	-0.18321	0.00000
EC-1 TREN SW/0 via 1 (Min)	0.00000	-19.57184	0.00000
EC-1 TREN SW/2 via 1 (Max)	0.00000	-0.03605	0.00000
EC-1 TREN SW/2 via 1 (Min)	0.00000	-21.46416	0.00000
EC-1 TREN 12.5 via 1 (Max)	0.00000	-0.00300	0.00000
EC-1 TREN 12.5 via 1 (Min)	0.00000	-1.87304	0.00000
IPF-75 TREN A via 2 (Max)	0.00000	68.39169	0.00000
IPF-75 TREN A via 2 (Min)	0.00000	-0.58980	0.00000
IPF-75 TREN B1 via 2 (Max)	0.00000	67.58761	0.00000
IPF-75 TREN B1 via 2 (Min)	0.00000	2.09766	0.00000
IPF-75 TREN B2 via 2 (Max)	0.00000	67.53370	0.00000
IPF-75 TREN B2 via 2 (Min)	0.00000	2.09766	0.00000
EC-1 TREN LM71 via 2 (Max)	0.00000	75.18983	0.00000
EC-1 TREN LM71 via 2 (Min)	0.00000	-0.85758	0.00000
EC-1 TREN SW/0 via 2 (Max)	0.00000	78.94758	0.00000
EC-1 TREN SW/0 via 2 (Min)	0.00000	0.04962	0.00000
EC-1 TREN SW/2 via 2 (Max)	0.00000	89.38860	0.00000
EC-1 TREN SW/2 via 2 (Min)	0.00000	13.32625	0.00000
EC-1 TREN 12.5 via 2 (Max)	0.00000	7.44906	0.00000
EC-1 TREN 12.5 via 2 (Min)	0.00000	1.11052	0.00000

COMBINACION DE REACCIONES VERTICALES

Reaccion permanente (ELS) = 163.203
Reaccion maxima (ELS) = 252.238
Reaccion minima (ELS) = 141.726
Reaccion minima (ELU) = 124.668

DESPLAZAMIENTOS	GX	FZ	GY
G1	0.00004	0.00000	0.00041
G2	0.00003	0.00000	0.00028
Pii	-0.00027	0.00000	-0.00092
Pi	-0.00047	0.00000	-0.00158
Pd	-0.00040	0.00000	-0.00135
TEMP	0.00009	0.00000	-0.00032
SC peatonal(100%) Max	0.00000	0.00000	0.00002
SC peatonal(100%) Min	0.00000	0.00000	-0.00001
SC peatonal(50%) Max	0.00000	0.00000	0.00002
SC peatonal(50%) Min	0.00000	0.00000	-0.00001
IPF-75 TREN A via 1 (Max)	0.00005	0.00000	0.00023
IPF-75 TREN A via 1 (Min)	-0.00002	0.00000	-0.00009
IPF-75 TREN B1 via 1 (Max)	0.00001	0.00000	0.00007
IPF-75 TREN B1 via 1 (Min)	0.00000	0.00000	-0.00001
IPF-75 TREN B2 via 1 (Max)	0.00001	0.00000	0.00007
IPF-75 TREN B2 via 1 (Min)	0.00000	0.00000	-0.00001
EC-1 TREN LM71 via 1 (Max)	0.00002	0.00000	0.00012
EC-1 TREN LM71 via 1 (Min)	-0.00001	0.00000	-0.00005
EC-1 TREN SW/0 via 1 (Max)	0.00006	0.00000	0.00032
EC-1 TREN SW/0 via 1 (Min)	-0.00002	0.00000	-0.00010
EC-1 TREN SW/2 via 1 (Max)	0.00006	0.00000	0.00035
EC-1 TREN SW/2 via 1 (Min)	-0.00003	0.00000	-0.00007
EC-1 TREN 12.5 via 1 (Max)	0.00000	0.00000	0.00003
EC-1 TREN 12.5 via 1 (Min)	0.00000	0.00000	0.00000
IPF-75 TREN A via 2 (Max)	0.00005	0.00000	0.00031
IPF-75 TREN A via 2 (Min)	-0.00002	0.00000	-0.00010
IPF-75 TREN B1 via 2 (Max)	0.00001	0.00000	0.00010
IPF-75 TREN B1 via 2 (Min)	0.00000	0.00000	0.00000
IPF-75 TREN B2 via 2 (Max)	0.00001	0.00000	0.00010
IPF-75 TREN B2 via 2 (Min)	0.00000	0.00000	-0.00001
EC-1 TREN LM71 via 2 (Max)	0.00003	0.00000	0.00016
EC-1 TREN LM71 via 2 (Min)	-0.00001	0.00000	-0.00005
EC-1 TREN SW/0 via 2 (Max)	0.00006	0.00000	0.00045
EC-1 TREN SW/0 via 2 (Min)	-0.00003	0.00000	-0.00013
EC-1 TREN SW/2 via 2 (Max)	0.00006	0.00000	0.00051
EC-1 TREN SW/2 via 2 (Min)	-0.00003	0.00000	-0.00004
EC-1 TREN 12.5 via 2 (Max)	0.00001	0.00000	0.00004
EC-1 TREN 12.5 via 2 (Min)	0.00000	0.00000	0.00000

COMBINACION DE GIROS DE FLEXION

Acciones permanentes (ELS) = -0.000664

```
Giro maximo          (ELS) =     0.000040
Giro minimo          (ELS) =    -0.001189
```

APOYO N = 63

REACCIONES	Flector	Reac_vert	Torsor
G1	0.00000	70.32077	0.00000
G2	0.00000	42.33951	0.00000
Pii	0.00000	21.82740	0.00000
Pi	0.00000	35.73052	0.00000
Pd	0.00000	30.69078	0.00000
TEMP	0.00000	3.65886	0.00000
SC peatonal(100%) Max	0.00000	3.24994	0.00000
SC peatonal(100%) Min	0.00000	-0.76443	0.00000
SC peatonal(50%) Max	0.00000	0.09599	0.00000
SC peatonal(50%) Min	0.00000	-2.90714	0.00000
IPF-75 TREN A via 1 (Max)	0.00000	87.05537	0.00000
IPF-75 TREN A via 1 (Min)	0.00000	-7.01378	0.00000
IPF-75 TREN B1 via 1 (Max)	0.00000	101.85627	0.00000
IPF-75 TREN B1 via 1 (Min)	0.00000	-4.74450	0.00000
IPF-75 TREN B2 via 1 (Max)	0.00000	101.77668	0.00000
IPF-75 TREN B2 via 1 (Min)	0.00000	-4.74450	0.00000
EC-1 TREN LM71 via 1 (Max)	0.00000	113.04782	0.00000
EC-1 TREN LM71 via 1 (Min)	0.00000	-10.60182	0.00000
EC-1 TREN SW/0 via 1 (Max)	0.00000	117.64799	0.00000
EC-1 TREN SW/0 via 1 (Min)	0.00000	-6.99751	0.00000
EC-1 TREN SW/2 via 1 (Max)	0.00000	131.10159	0.00000
EC-1 TREN SW/2 via 1 (Min)	0.00000	15.85209	0.00000
EC-1 TREN 12.5 via 1 (Max)	0.00000	10.92514	0.00000
EC-1 TREN 12.5 via 1 (Min)	0.00000	1.32101	0.00000
IPF-75 TREN A via 2 (Max)	0.00000	6.52760	0.00000
IPF-75 TREN A via 2 (Min)	0.00000	-10.77071	0.00000
IPF-75 TREN B1 via 2 (Max)	0.00000	8.47079	0.00000
IPF-75 TREN B1 via 2 (Min)	0.00000	-17.59998	0.00000
IPF-75 TREN B2 via 2 (Max)	0.00000	8.47079	0.00000
IPF-75 TREN B2 via 2 (Min)	0.00000	-17.53541	0.00000
EC-1 TREN LM71 via 2 (Max)	0.00000	11.44757	0.00000
EC-1 TREN LM71 via 2 (Min)	0.00000	-17.75563	0.00000
EC-1 TREN SW/0 via 2 (Max)	0.00000	7.78567	0.00000
EC-1 TREN SW/0 via 2 (Min)	0.00000	-15.18278	0.00000
EC-1 TREN SW/2 via 2 (Max)	0.00000	8.54443	0.00000
EC-1 TREN SW/2 via 2 (Min)	0.00000	-21.49344	0.00000
EC-1 TREN 12.5 via 2 (Max)	0.00000	0.71204	0.00000
EC-1 TREN 12.5 via 2 (Min)	0.00000	-1.21485	0.00000

COMBINACION DE REACCIONES VERTICALES

Reaccion permanente (ELS) = 143.351
Reaccion maxima (ELS) = 289.817
Reaccion minima (ELS) = 118.542
Reaccion minima (ELU) = 101.086

DESPLAZAMIENTOS	GX	FZ	GY
G1	0.00017	0.00000	0.00038
G2	0.00011	0.00000	0.00026
Pii	-0.00021	0.00000	-0.00095
Pi	-0.00036	0.00000	-0.00162
Pd	-0.00031	0.00000	-0.00140
TEMP	-0.00023	0.00000	-0.00023
SC peatonal(100%) Max	0.00001	0.00000	0.00002
SC peatonal(100%) Min	0.00000	0.00000	-0.00001
SC peatonal(50%) Max	0.00000	0.00000	0.00002
SC peatonal(50%) Min	0.00000	0.00000	-0.00001
IPF-75 TREN A via 1 (Max)	0.00010	0.00000	0.00022
IPF-75 TREN A via 1 (Min)	-0.00003	0.00000	-0.00009
IPF-75 TREN B1 via 1 (Max)	0.00003	0.00000	0.00007
IPF-75 TREN B1 via 1 (Min)	0.00000	0.00000	-0.00001
IPF-75 TREN B2 via 1 (Max)	0.00003	0.00000	0.00007
IPF-75 TREN B2 via 1 (Min)	0.00000	0.00000	-0.00001
EC-1 TREN LM71 via 1 (Max)	0.00005	0.00000	0.00011
EC-1 TREN LM71 via 1 (Min)	-0.00001	0.00000	-0.00005
EC-1 TREN SW/0 via 1 (Max)	0.00015	0.00000	0.00030
EC-1 TREN SW/0 via 1 (Min)	-0.00003	0.00000	-0.00010
EC-1 TREN SW/2 via 1 (Max)	0.00017	0.00000	0.00033
EC-1 TREN SW/2 via 1 (Min)	0.00001	0.00000	-0.00009
EC-1 TREN 12.5 via 1 (Max)	0.00001	0.00000	0.00003
EC-1 TREN 12.5 via 1 (Min)	0.00000	0.00000	0.00000
IPF-75 TREN A via 2 (Max)	0.00010	0.00000	0.00030
IPF-75 TREN A via 2 (Min)	-0.00003	0.00000	-0.00010
IPF-75 TREN B1 via 2 (Max)	0.00003	0.00000	0.00010
IPF-75 TREN B1 via 2 (Min)	0.00000	0.00000	0.00000
IPF-75 TREN B2 via 2 (Max)	0.00003	0.00000	0.00010
IPF-75 TREN B2 via 2 (Min)	0.00000	0.00000	-0.00001
EC-1 TREN LM71 via 2 (Max)	0.00005	0.00000	0.00016
EC-1 TREN LM71 via 2 (Min)	-0.00002	0.00000	-0.00005
EC-1 TREN SW/0 via 2 (Max)	0.00014	0.00000	0.00043
EC-1 TREN SW/0 via 2 (Min)	-0.00004	0.00000	-0.00013
EC-1 TREN SW/2 via 2 (Max)	0.00016	0.00000	0.00049
EC-1 TREN SW/2 via 2 (Min)	-0.00001	0.00000	-0.00005
EC-1 TREN 12.5 via 2 (Max)	0.00001	0.00000	0.00004
EC-1 TREN 12.5 via 2 (Min)	0.00000	0.00000	0.00000

COMBINACION DE GIROS DE FLEXION

Acciones permanentes (ELS) = -0.000758
Giro maximo (ELS) = -0.000101
Giro minimo (ELS) = -0.001189

APOYO N = 64

REACCIONES	Flector	Reac_vert	Torsor
G1	0.00000	213.22035	0.00000
G2	0.00000	142.22897	0.00000
Pii	0.00000	-41.02703	0.00000
Pi	0.00000	-70.12151	0.00000
Pd	0.00000	-60.72875	0.00000
TEMP	0.00000	-14.74649	0.00000
SC peatonal(100%) Max	0.00000	4.49852	0.00000
SC peatonal(100%) Min	0.00000	-0.16840	0.00000
SC peatonal(50%) Max	0.00000	11.13697	0.00000
SC peatonal(50%) Min	0.00000	-0.04469	0.00000
IPF-75 TREN A via 1 (Max)	0.00000	11.46781	0.00000
IPF-75 TREN A via 1 (Min)	0.00000	-4.96792	0.00000
IPF-75 TREN B1 via 1 (Max)	0.00000	12.82964	0.00000
IPF-75 TREN B1 via 1 (Min)	0.00000	-10.86102	0.00000
IPF-75 TREN B2 via 1 (Max)	0.00000	12.91229	0.00000
IPF-75 TREN B2 via 1 (Min)	0.00000	-9.98559	0.00000
EC-1 TREN LM71 via 1 (Max)	0.00000	12.93436	0.00000
EC-1 TREN LM71 via 1 (Min)	0.00000	-12.69828	0.00000
EC-1 TREN SW/0 via 1 (Max)	0.00000	12.51329	0.00000
EC-1 TREN SW/0 via 1 (Min)	0.00000	-11.16469	0.00000
EC-1 TREN SW/2 via 1 (Max)	0.00000	15.25599	0.00000
EC-1 TREN SW/2 via 1 (Min)	0.00000	-8.27711	0.00000
EC-1 TREN 12.5 via 1 (Max)	0.00000	1.27133	0.00000
EC-1 TREN 12.5 via 1 (Min)	0.00000	-0.11445	0.00000
IPF-75 TREN A via 2 (Max)	0.00000	78.70338	0.00000
IPF-75 TREN A via 2 (Min)	0.00000	-1.44521	0.00000
IPF-75 TREN B1 via 2 (Max)	0.00000	200.85255	0.00000
IPF-75 TREN B1 via 2 (Min)	0.00000	-1.09661	0.00000
IPF-75 TREN B2 via 2 (Max)	0.00000	188.07944	0.00000
IPF-75 TREN B2 via 2 (Min)	0.00000	-1.09661	0.00000
EC-1 TREN LM71 via 2 (Max)	0.00000	172.62067	0.00000
EC-1 TREN LM71 via 2 (Min)	0.00000	-1.89806	0.00000
EC-1 TREN SW/0 via 2 (Max)	0.00000	169.56804	0.00000
EC-1 TREN SW/0 via 2 (Min)	0.00000	0.70880	0.00000
EC-1 TREN SW/2 via 2 (Max)	0.00000	238.92926	0.00000
EC-1 TREN SW/2 via 2 (Min)	0.00000	0.80324	0.00000
EC-1 TREN 12.5 via 2 (Max)	0.00000	21.04850	0.00000
EC-1 TREN 12.5 via 2 (Min)	0.00000	0.06694	0.00000

COMBINACION DE REACCIONES VERTICALES

Reaccion permanente (ELS) = 294.721
Reaccion maxima (ELS) = 509.048
Reaccion minima (ELS) = 267.638
Reaccion minima (ELU) = 249.248

DESPLAZAMIENTOS	GX	FZ	GY
G1	-0.00019	0.00000	0.00015
G2	-0.00012	0.00000	0.00010
Pii	0.00001	0.00000	-0.00011
Pi	0.00002	0.00000	-0.00016
Pd	0.00002	0.00000	-0.00013
TEMP	0.00020	0.00000	0.00004
SC peatonal(100%) Max	0.00000	0.00000	0.00002
SC peatonal(100%) Min	-0.00001	0.00000	-0.00002
SC peatonal(50%) Max	0.00000	0.00000	0.00002
SC peatonal(50%) Min	-0.00001	0.00000	-0.00001
IPF-75 TREN A via 1 (Max)	0.00003	0.00000	0.00019
IPF-75 TREN A via 1 (Min)	-0.00008	0.00000	-0.00020
IPF-75 TREN B1 via 1 (Max)	0.00000	0.00000	0.00004
IPF-75 TREN B1 via 1 (Min)	-0.00003	0.00000	-0.00006
IPF-75 TREN B2 via 1 (Max)	0.00000	0.00000	0.00005
IPF-75 TREN B2 via 1 (Min)	-0.00003	0.00000	-0.00006
EC-1 TREN LM71 via 1 (Max)	0.00001	0.00000	0.00010
EC-1 TREN LM71 via 1 (Min)	-0.00004	0.00000	-0.00010
EC-1 TREN SW/0 via 1 (Max)	0.00002	0.00000	0.00023
EC-1 TREN SW/0 via 1 (Min)	-0.00013	0.00000	-0.00029
EC-1 TREN SW/2 via 1 (Max)	0.00000	0.00000	0.00027
EC-1 TREN SW/2 via 1 (Min)	-0.00014	0.00000	-0.00032
EC-1 TREN 12.5 via 1 (Max)	0.00000	0.00000	0.00000
EC-1 TREN 12.5 via 1 (Min)	-0.00001	0.00000	-0.00003
IPF-75 TREN A via 2 (Max)	0.00002	0.00000	0.00025
IPF-75 TREN A via 2 (Min)	-0.00009	0.00000	-0.00016
IPF-75 TREN B1 via 2 (Max)	0.00000	0.00000	0.00007
IPF-75 TREN B1 via 2 (Min)	-0.00003	0.00000	-0.00005
IPF-75 TREN B2 via 2 (Max)	0.00000	0.00000	0.00008
IPF-75 TREN B2 via 2 (Min)	-0.00003	0.00000	-0.00005
EC-1 TREN LM71 via 2 (Max)	0.00001	0.00000	0.00013
EC-1 TREN LM71 via 2 (Min)	-0.00005	0.00000	-0.00008
EC-1 TREN SW/0 via 2 (Max)	0.00001	0.00000	0.00034
EC-1 TREN SW/0 via 2 (Min)	-0.00015	0.00000	-0.00022
EC-1 TREN SW/2 via 2 (Max)	0.00000	0.00000	0.00042
EC-1 TREN SW/2 via 2 (Min)	-0.00017	0.00000	-0.00025
EC-1 TREN 12.5 via 2 (Max)	0.00000	0.00000	0.00002
EC-1 TREN 12.5 via 2 (Min)	-0.00001	0.00000	-0.00002

COMBINACION DE GIROS DE FLEXION

Acciones permanentes (ELS) = 0.000126
Giro maximo (ELS) = 0.000701
Giro minimo (ELS) = -0.000521

APOYO N = 65

REACCIONES	Flector	Reac_vert	Torsor
G1	0.00000	209.39070	0.00000
G2	0.00000	139.60217	0.00000
Pii	0.00000	-24.27980	0.00000
Pi	0.00000	-39.36417	0.00000
Pd	0.00000	-33.63422	0.00000
TEMP	0.00000	-2.03953	0.00000
SC peatonal(100%) Max	0.00000	9.85554	0.00000
SC peatonal(100%) Min	0.00000	-0.54855	0.00000
SC peatonal(50%) Max	0.00000	0.56820	0.00000
SC peatonal(50%) Min	0.00000	-4.13560	0.00000
IPF-75 TREN A via 1 (Max)	0.00000	89.09723	0.00000
IPF-75 TREN A via 1 (Min)	0.00000	-6.23453	0.00000
IPF-75 TREN B1 via 1 (Max)	0.00000	228.27513	0.00000
IPF-75 TREN B1 via 1 (Min)	0.00000	-5.78906	0.00000
IPF-75 TREN B2 via 1 (Max)	0.00000	214.20892	0.00000
IPF-75 TREN B2 via 1 (Min)	0.00000	-5.78906	0.00000
EC-1 TREN LM71 via 1 (Max)	0.00000	203.67578	0.00000
EC-1 TREN LM71 via 1 (Min)	0.00000	-8.33228	0.00000
EC-1 TREN SW/0 via 1 (Max)	0.00000	193.21870	0.00000
EC-1 TREN SW/0 via 1 (Min)	0.00000	0.06179	0.00000
EC-1 TREN SW/2 via 1 (Max)	0.00000	269.68799	0.00000
EC-1 TREN SW/2 via 1 (Min)	0.00000	0.06862	0.00000
EC-1 TREN 12.5 via 1 (Max)	0.00000	23.80317	0.00000
EC-1 TREN 12.5 via 1 (Min)	0.00000	0.00572	0.00000
IPF-75 TREN A via 2 (Max)	0.00000	19.22895	0.00000
IPF-75 TREN A via 2 (Min)	0.00000	-8.71345	0.00000
IPF-75 TREN B1 via 2 (Max)	0.00000	38.86764	0.00000
IPF-75 TREN B1 via 2 (Min)	0.00000	-8.79014	0.00000
IPF-75 TREN B2 via 2 (Max)	0.00000	37.26861	0.00000
IPF-75 TREN B2 via 2 (Min)	0.00000	-8.79014	0.00000
EC-1 TREN LM71 via 2 (Max)	0.00000	39.40828	0.00000
EC-1 TREN LM71 via 2 (Min)	0.00000	-12.36543	0.00000
EC-1 TREN SW/0 via 2 (Max)	0.00000	36.33532	0.00000
EC-1 TREN SW/0 via 2 (Min)	0.00000	-0.03620	0.00000
EC-1 TREN SW/2 via 2 (Max)	0.00000	47.53956	0.00000
EC-1 TREN SW/2 via 2 (Min)	0.00000	-0.04317	0.00000
EC-1 TREN 12.5 via 2 (Max)	0.00000	4.00595	0.00000
EC-1 TREN 12.5 via 2 (Min)	0.00000	-0.00360	0.00000

COMBINACION DE REACCIONES VERTICALES

Reaccion permanente (ELS) = 315.359
Reaccion maxima (ELS) = 625.021
Reaccion minima (ELS) = 298.079
Reaccion minima (ELU) = 278.511

DESPLAZAMIENTOS	GX	FZ	GY
G1	0.00023	0.00000	0.00001
G2	0.00015	0.00000	0.00001
Pii	-0.00005	0.00000	-0.00008
Pi	-0.00008	0.00000	-0.00011
Pd	-0.00007	0.00000	-0.00009
TEMP	-0.00015	0.00000	0.00015
SC peatonal(100%) Max	0.00001	0.00000	0.00002
SC peatonal(100%) Min	0.00000	0.00000	-0.00002
SC peatonal(50%) Max	0.00000	0.00000	0.00001
SC peatonal(50%) Min	0.00000	0.00000	-0.00001
IPF-75 TREN A via 1 (Max)	0.00009	0.00000	0.00016
IPF-75 TREN A via 1 (Min)	-0.00002	0.00000	-0.00021
IPF-75 TREN B1 via 1 (Max)	0.00004	0.00000	0.00003
IPF-75 TREN B1 via 1 (Min)	0.00000	0.00000	-0.00007
IPF-75 TREN B2 via 1 (Max)	0.00004	0.00000	0.00004
IPF-75 TREN B2 via 1 (Min)	0.00000	0.00000	-0.00007
EC-1 TREN LM71 via 1 (Max)	0.00005	0.00000	0.00009
EC-1 TREN LM71 via 1 (Min)	-0.00001	0.00000	-0.00011
EC-1 TREN SW/0 via 1 (Max)	0.00016	0.00000	0.00018
EC-1 TREN SW/0 via 1 (Min)	-0.00002	0.00000	-0.00032
EC-1 TREN SW/2 via 1 (Max)	0.00021	0.00000	0.00019
EC-1 TREN SW/2 via 1 (Min)	-0.00002	0.00000	-0.00035
EC-1 TREN 12.5 via 1 (Max)	0.00002	0.00000	0.00000
EC-1 TREN 12.5 via 1 (Min)	0.00000	0.00000	-0.00003
IPF-75 TREN A via 2 (Max)	0.00009	0.00000	0.00022
IPF-75 TREN A via 2 (Min)	-0.00002	0.00000	-0.00017
IPF-75 TREN B1 via 2 (Max)	0.00003	0.00000	0.00006
IPF-75 TREN B1 via 2 (Min)	-0.00001	0.00000	-0.00006
IPF-75 TREN B2 via 2 (Max)	0.00003	0.00000	0.00006
IPF-75 TREN B2 via 2 (Min)	-0.00001	0.00000	-0.00006
EC-1 TREN LM71 via 2 (Max)	0.00005	0.00000	0.00011
EC-1 TREN LM71 via 2 (Min)	-0.00001	0.00000	-0.00009
EC-1 TREN SW/0 via 2 (Max)	0.00014	0.00000	0.00029
EC-1 TREN SW/0 via 2 (Min)	-0.00002	0.00000	-0.00025
EC-1 TREN SW/2 via 2 (Max)	0.00018	0.00000	0.00034
EC-1 TREN SW/2 via 2 (Min)	-0.00003	0.00000	-0.00028
EC-1 TREN 12.5 via 2 (Max)	0.00001	0.00000	0.00001
EC-1 TREN 12.5 via 2 (Min)	0.00000	0.00000	-0.00002

COMBINACION DE GIROS DE FLEXION

Acciones permanentes (ELS) = -0.000066
Giro maximo (ELS) = 0.000465
Giro minimo (ELS) = -0.000770

APOYO N = 66

REACCIONES	Flector	Reac_vert	Torsor
G1	0.00000	209.34145	0.00000
G2	0.00000	139.56870	0.00000
Pii	0.00000	-24.98618	0.00000
Pi	0.00000	-40.54156	0.00000
Pd	0.00000	-34.62111	0.00000
TEMP	0.00000	-2.00702	0.00000
SC peatonal(100%) Max	0.00000	4.93116	0.00000
SC peatonal(100%) Min	0.00000	-0.64322	0.00000
SC peatonal(50%) Max	0.00000	10.87414	0.00000
SC peatonal(50%) Min	0.00000	-0.40192	0.00000
IPF-75 TREN A via 1 (Max)	0.00000	11.72876	0.00000
IPF-75 TREN A via 1 (Min)	0.00000	-9.07928	0.00000
IPF-75 TREN B1 via 1 (Max)	0.00000	14.64312	0.00000
IPF-75 TREN B1 via 1 (Min)	0.00000	-14.08538	0.00000
IPF-75 TREN B2 via 1 (Max)	0.00000	15.07005	0.00000
IPF-75 TREN B2 via 1 (Min)	0.00000	-14.06843	0.00000
EC-1 TREN LM71 via 1 (Max)	0.00000	14.88247	0.00000
EC-1 TREN LM71 via 1 (Min)	0.00000	-15.88224	0.00000
EC-1 TREN SW/0 via 1 (Max)	0.00000	7.93531	0.00000
EC-1 TREN SW/0 via 1 (Min)	0.00000	-14.03242	0.00000
EC-1 TREN SW/2 via 1 (Max)	0.00000	14.54237	0.00000
EC-1 TREN SW/2 via 1 (Min)	0.00000	-15.65832	0.00000
EC-1 TREN 12.5 via 1 (Max)	0.00000	0.40112	0.00000
EC-1 TREN 12.5 via 1 (Min)	0.00000	-1.30486	0.00000
IPF-75 TREN A via 2 (Max)	0.00000	79.08682	0.00000
IPF-75 TREN A via 2 (Min)	0.00000	-6.53524	0.00000
IPF-75 TREN B1 via 2 (Max)	0.00000	202.53386	0.00000
IPF-75 TREN B1 via 2 (Min)	0.00000	-8.19691	0.00000
IPF-75 TREN B2 via 2 (Max)	0.00000	190.22749	0.00000
IPF-75 TREN B2 via 2 (Min)	0.00000	-8.19691	0.00000
EC-1 TREN LM71 via 2 (Max)	0.00000	174.60225	0.00000
EC-1 TREN LM71 via 2 (Min)	0.00000	-8.85187	0.00000
EC-1 TREN SW/0 via 2 (Max)	0.00000	169.72691	0.00000
EC-1 TREN SW/0 via 2 (Min)	0.00000	-9.13156	0.00000
EC-1 TREN SW/2 via 2 (Max)	0.00000	232.48175	0.00000
EC-1 TREN SW/2 via 2 (Min)	0.00000	-10.29021	0.00000
EC-1 TREN 12.5 via 2 (Max)	0.00000	20.40857	0.00000
EC-1 TREN 12.5 via 2 (Min)	0.00000	-0.85752	0.00000

COMBINACION DE REACCIONES VERTICALES

Reaccion permanente	(ELS) =	314.289
Reaccion maxima	(ELS) =	532.446
Reaccion minima	(ELS) =	289.774
Reaccion minima	(ELU) =	266.522

DESPLAZAMIENTOS	GX	FZ	GY
G1	-0.00024	0.00000	-0.00005
G2	-0.00016	0.00000	-0.00003
Pii	0.00006	0.00000	0.00009
Pi	0.00009	0.00000	0.00013
Pd	0.00007	0.00000	0.00010
TEMP	0.00016	0.00000	-0.00013
SC peatonal(100%) Max	0.00000	0.00000	0.00002
SC peatonal(100%) Min	-0.00001	0.00000	-0.00002
SC peatonal(50%) Max	0.00000	0.00000	0.00001
SC peatonal(50%) Min	-0.00001	0.00000	-0.00001
IPF-75 TREN A via 1 (Max)	0.00002	0.00000	0.00017
IPF-75 TREN A via 1 (Min)	-0.00009	0.00000	-0.00024
IPF-75 TREN B1 via 1 (Max)	0.00001	0.00000	0.00001
IPF-75 TREN B1 via 1 (Min)	-0.00004	0.00000	-0.00008
IPF-75 TREN B2 via 1 (Max)	0.00001	0.00000	0.00003
IPF-75 TREN B2 via 1 (Min)	-0.00003	0.00000	-0.00009
EC-1 TREN LM71 via 1 (Max)	0.00001	0.00000	0.00009
EC-1 TREN LM71 via 1 (Min)	-0.00005	0.00000	-0.00013
EC-1 TREN SW/0 via 1 (Max)	0.00003	0.00000	0.00006
EC-1 TREN SW/0 via 1 (Min)	-0.00014	0.00000	-0.00037
EC-1 TREN SW/2 via 1 (Max)	0.00003	0.00000	0.00007
EC-1 TREN SW/2 via 1 (Min)	-0.00019	0.00000	-0.00045
EC-1 TREN 12.5 via 1 (Max)	0.00000	0.00000	0.00001
EC-1 TREN 12.5 via 1 (Min)	-0.00001	0.00000	-0.00003
IPF-75 TREN A via 2 (Max)	0.00002	0.00000	0.00021
IPF-75 TREN A via 2 (Min)	-0.00010	0.00000	-0.00018
IPF-75 TREN B1 via 2 (Max)	0.00000	0.00000	0.00001
IPF-75 TREN B1 via 2 (Min)	-0.00004	0.00000	-0.00006
IPF-75 TREN B2 via 2 (Max)	0.00000	0.00000	0.00005
IPF-75 TREN B2 via 2 (Min)	-0.00004	0.00000	-0.00007
EC-1 TREN LM71 via 2 (Max)	0.00001	0.00000	0.00011
EC-1 TREN LM71 via 2 (Min)	-0.00005	0.00000	-0.00010
EC-1 TREN SW/0 via 2 (Max)	0.00002	0.00000	0.00013
EC-1 TREN SW/0 via 2 (Min)	-0.00016	0.00000	-0.00027
EC-1 TREN SW/2 via 2 (Max)	0.00002	0.00000	0.00018
EC-1 TREN SW/2 via 2 (Min)	-0.00021	0.00000	-0.00033
EC-1 TREN 12.5 via 2 (Max)	0.00000	0.00000	0.00001
EC-1 TREN 12.5 via 2 (Min)	-0.00002	0.00000	-0.00003

COMBINACION DE GIROS DE FLEXION

Acciones permanentes	(ELS) =	0.000014
Giro maximo	(ELS) =	0.000352
Giro minimo	(ELS) =	-0.001027

APOYO N = 67

REACCIONES	Flector	Reac_vert	Torsor
G1	0.00000	213.15686	0.00000
G2	0.00000	142.18568	0.00000
Pii	0.00000	-41.36550	0.00000
Pi	0.00000	-70.66792	0.00000
Pd	0.00000	-61.23000	0.00000
TEMP	0.00000	-14.70539	0.00000
SC peatonal(100%) Max	0.00000	9.35709	0.00000
SC peatonal(100%) Min	0.00000	-0.13294	0.00000
SC peatonal(50%) Max	0.00000	0.02673	0.00000
SC peatonal(50%) Min	0.00000	-4.14284	0.00000
IPF-75 TREN A via 1 (Max)	0.00000	88.73616	0.00000
IPF-75 TREN A via 1 (Min)	0.00000	-1.31953	0.00000
IPF-75 TREN B1 via 1 (Max)	0.00000	226.74225	0.00000
IPF-75 TREN B1 via 1 (Min)	0.00000	-1.46571	0.00000
IPF-75 TREN B2 via 1 (Max)	0.00000	213.43692	0.00000
IPF-75 TREN B2 via 1 (Min)	0.00000	-1.46571	0.00000
EC-1 TREN LM71 via 1 (Max)	0.00000	202.52734	0.00000
EC-1 TREN LM71 via 1 (Min)	0.00000	-1.62837	0.00000
EC-1 TREN SW/0 via 1 (Max)	0.00000	200.98900	0.00000
EC-1 TREN SW/0 via 1 (Min)	0.00000	-1.57346	0.00000
EC-1 TREN SW/2 via 1 (Max)	0.00000	266.21991	0.00000
EC-1 TREN SW/2 via 1 (Min)	0.00000	-1.80131	0.00000
EC-1 TREN 12.5 via 1 (Max)	0.00000	23.52508	0.00000
EC-1 TREN 12.5 via 1 (Min)	0.00000	-0.15011	0.00000
IPF-75 TREN A via 2 (Max)	0.00000	18.53424	0.00000
IPF-75 TREN A via 2 (Min)	0.00000	-2.36847	0.00000
IPF-75 TREN B1 via 2 (Max)	0.00000	31.87258	0.00000
IPF-75 TREN B1 via 2 (Min)	0.00000	-5.24359	0.00000
IPF-75 TREN B2 via 2 (Max)	0.00000	31.18402	0.00000
IPF-75 TREN B2 via 2 (Min)	0.00000	-5.03895	0.00000
EC-1 TREN LM71 via 2 (Max)	0.00000	34.60527	0.00000
EC-1 TREN LM71 via 2 (Min)	0.00000	-4.42725	0.00000
EC-1 TREN SW/0 via 2 (Max)	0.00000	29.00928	0.00000
EC-1 TREN SW/0 via 2 (Min)	0.00000	-4.64456	0.00000
EC-1 TREN SW/2 via 2 (Max)	0.00000	35.90834	0.00000
EC-1 TREN SW/2 via 2 (Min)	0.00000	-6.37422	0.00000
EC-1 TREN 12.5 via 2 (Max)	0.00000	2.81571	0.00000
EC-1 TREN 12.5 via 2 (Min)	0.00000	-0.53118	0.00000

COMBINACION DE REACCIONES VERTICALES

Reaccion permanente (ELS) = 294.113
Reaccion maxima (ELS) = 595.430
Reaccion minima (ELS) = 272.484
Reaccion minima (ELU) = 256.774

DESPLAZAMIENTOS	GX	FZ	GY
G1	0.00019	0.00000	-0.00014
G2	0.00013	0.00000	-0.00009
Pii	-0.00001	0.00000	0.00011
Pi	-0.00003	0.00000	0.00015
Pd	-0.00002	0.00000	0.00012
TEMP	-0.00021	0.00000	-0.00005
SC peatonal(100%) Max	0.00001	0.00000	0.00002
SC peatonal(100%) Min	0.00000	0.00000	-0.00002
SC peatonal(50%) Max	0.00000	0.00000	0.00001
SC peatonal(50%) Min	0.00000	0.00000	-0.00001
IPF-75 TREN A via 1 (Max)	0.00009	0.00000	0.00016
IPF-75 TREN A via 1 (Min)	-0.00002	0.00000	-0.00025
IPF-75 TREN B1 via 1 (Max)	0.00003	0.00000	0.00001
IPF-75 TREN B1 via 1 (Min)	-0.00001	0.00000	-0.00009
IPF-75 TREN B2 via 1 (Max)	0.00003	0.00000	0.00002
IPF-75 TREN B2 via 1 (Min)	-0.00001	0.00000	-0.00010
EC-1 TREN LM71 via 1 (Max)	0.00005	0.00000	0.00008
EC-1 TREN LM71 via 1 (Min)	-0.00001	0.00000	-0.00013
EC-1 TREN SW/0 via 1 (Max)	0.00013	0.00000	0.00007
EC-1 TREN SW/0 via 1 (Min)	-0.00003	0.00000	-0.00039
EC-1 TREN SW/2 via 1 (Max)	0.00017	0.00000	0.00007
EC-1 TREN SW/2 via 1 (Min)	-0.00003	0.00000	-0.00049
EC-1 TREN 12.5 via 1 (Max)	0.00001	0.00000	0.00001
EC-1 TREN 12.5 via 1 (Min)	0.00000	0.00000	-0.00004
IPF-75 TREN A via 2 (Max)	0.00008	0.00000	0.00020
IPF-75 TREN A via 2 (Min)	-0.00003	0.00000	-0.00020
IPF-75 TREN B1 via 2 (Max)	0.00002	0.00000	0.00001
IPF-75 TREN B1 via 2 (Min)	-0.00001	0.00000	-0.00007
IPF-75 TREN B2 via 2 (Max)	0.00003	0.00000	0.00004
IPF-75 TREN B2 via 2 (Min)	-0.00001	0.00000	-0.00007
EC-1 TREN LM71 via 2 (Max)	0.00004	0.00000	0.00010
EC-1 TREN LM71 via 2 (Min)	-0.00001	0.00000	-0.00011
EC-1 TREN SW/0 via 2 (Max)	0.00010	0.00000	0.00009
EC-1 TREN SW/0 via 2 (Min)	-0.00004	0.00000	-0.00029
EC-1 TREN SW/2 via 2 (Max)	0.00013	0.00000	0.00013
EC-1 TREN SW/2 via 2 (Min)	-0.00004	0.00000	-0.00036
EC-1 TREN 12.5 via 2 (Max)	0.00001	0.00000	0.00001
EC-1 TREN 12.5 via 2 (Min)	0.00000	0.00000	-0.00003

COMBINACION DE GIROS DE FLEXION

Acciones permanentes (ELS) = -0.000114
Giro maximo (ELS) = 0.000202
Giro minimo (ELS) = -0.001151

APOYO N = 68

REACCIONES	Flector	Reac_vert	Torsor
G1	0.00000	70.28559	0.00000
G2	0.00000	42.31549	0.00000
Pii	0.00000	22.30260	0.00000
Pi	0.00000	36.53395	0.00000
Pd	0.00000	31.33892	0.00000
TEMP	0.00000	3.67987	0.00000
SC peatonal(100%) Max	0.00000	2.70746	0.00000
SC peatonal(100%) Min	0.00000	-0.99474	0.00000
SC peatonal(50%) Max	0.00000	4.61005	0.00000
SC peatonal(50%) Min	0.00000	-0.21133	0.00000
IPF-75 TREN A via 1 (Max)	0.00000	1.84683	0.00000
IPF-75 TREN A via 1 (Min)	0.00000	-11.27222	0.00000
IPF-75 TREN B1 via 1 (Max)	0.00000	2.35729	0.00000
IPF-75 TREN B1 via 1 (Min)	0.00000	-24.76811	0.00000
IPF-75 TREN B2 via 1 (Max)	0.00000	2.35729	0.00000
IPF-75 TREN B2 via 1 (Min)	0.00000	-23.11087	0.00000
EC-1 TREN LM71 via 1 (Max)	0.00000	2.54333	0.00000
EC-1 TREN LM71 via 1 (Min)	0.00000	-24.13621	0.00000
EC-1 TREN SW/0 via 1 (Max)	0.00000	2.60229	0.00000
EC-1 TREN SW/0 via 1 (Min)	0.00000	-22.75360	0.00000
EC-1 TREN SW/2 via 1 (Max)	0.00000	2.93186	0.00000
EC-1 TREN SW/2 via 1 (Min)	0.00000	-26.13928	0.00000
EC-1 TREN 12.5 via 1 (Max)	0.00000	0.24432	0.00000
EC-1 TREN 12.5 via 1 (Min)	0.00000	-2.38146	0.00000
IPF-75 TREN A via 2 (Max)	0.00000	76.42488	0.00000
IPF-75 TREN A via 2 (Min)	0.00000	-7.46880	0.00000
IPF-75 TREN B1 via 2 (Max)	0.00000	86.89921	0.00000
IPF-75 TREN B1 via 2 (Min)	0.00000	-10.91940	0.00000
IPF-75 TREN B2 via 2 (Max)	0.00000	88.53384	0.00000
IPF-75 TREN B2 via 2 (Min)	0.00000	-11.16994	0.00000
EC-1 TREN LM71 via 2 (Max)	0.00000	95.67278	0.00000
EC-1 TREN LM71 via 2 (Min)	0.00000	-11.68739	0.00000
EC-1 TREN SW/0 via 2 (Max)	0.00000	92.84087	0.00000
EC-1 TREN SW/0 via 2 (Min)	0.00000	-10.52817	0.00000
EC-1 TREN SW/2 via 2 (Max)	0.00000	108.92746	0.00000
EC-1 TREN SW/2 via 2 (Min)	0.00000	-12.69259	0.00000
EC-1 TREN 12.5 via 2 (Max)	0.00000	8.63632	0.00000
EC-1 TREN 12.5 via 2 (Min)	0.00000	-0.96497	0.00000

COMBINACION DE REACCIONES VERTICALES

Reaccion permanente (ELS) = 143.940
Reaccion maxima (ELS) = 246.678
Reaccion minima (ELS) = 108.174
Reaccion minima (ELU) = 85.210

DESPLAZAMIENTOS	GX	FZ	GY
G1	-0.00017	0.00000	-0.00038
G2	-0.00011	0.00000	-0.00026
Pii	0.00021	0.00000	0.00093
Pi	0.00035	0.00000	0.00159
Pd	0.00031	0.00000	0.00138
TEMP	0.00023	0.00000	0.00023
SC peatonal(100%) Max	0.00000	0.00000	0.00001
SC peatonal(100%) Min	-0.00001	0.00000	-0.00002
SC peatonal(50%) Max	0.00000	0.00000	0.00000
SC peatonal(50%) Min	0.00000	0.00000	-0.00001
IPF-75 TREN A via 1 (Max)	0.00003	0.00000	0.00010
IPF-75 TREN A via 1 (Min)	-0.00010	0.00000	-0.00031
IPF-75 TREN B1 via 1 (Max)	0.00001	0.00000	0.00004
IPF-75 TREN B1 via 1 (Min)	-0.00002	0.00000	-0.00006
IPF-75 TREN B2 via 1 (Max)	0.00001	0.00000	0.00004
IPF-75 TREN B2 via 1 (Min)	-0.00003	0.00000	-0.00009
EC-1 TREN LM71 via 1 (Max)	0.00002	0.00000	0.00006
EC-1 TREN LM71 via 1 (Min)	-0.00005	0.00000	-0.00016
EC-1 TREN SW/0 via 1 (Max)	0.00005	0.00000	0.00016
EC-1 TREN SW/0 via 1 (Min)	-0.00010	0.00000	-0.00033
EC-1 TREN SW/2 via 1 (Max)	0.00006	0.00000	0.00019
EC-1 TREN SW/2 via 1 (Min)	-0.00012	0.00000	-0.00040
EC-1 TREN 12.5 via 1 (Max)	0.00000	0.00000	0.00001
EC-1 TREN 12.5 via 1 (Min)	-0.00001	0.00000	-0.00003
IPF-75 TREN A via 2 (Max)	0.00003	0.00000	0.00009
IPF-75 TREN A via 2 (Min)	-0.00010	0.00000	-0.00023
IPF-75 TREN B1 via 2 (Max)	0.00001	0.00000	0.00003
IPF-75 TREN B1 via 2 (Min)	-0.00002	0.00000	-0.00004
IPF-75 TREN B2 via 2 (Max)	0.00001	0.00000	0.00003
IPF-75 TREN B2 via 2 (Min)	-0.00003	0.00000	-0.00006
EC-1 TREN LM71 via 2 (Max)	0.00002	0.00000	0.00005
EC-1 TREN LM71 via 2 (Min)	-0.00005	0.00000	-0.00012
EC-1 TREN SW/0 via 2 (Max)	0.00004	0.00000	0.00013
EC-1 TREN SW/0 via 2 (Min)	-0.00011	0.00000	-0.00023
EC-1 TREN SW/2 via 2 (Max)	0.00005	0.00000	0.00016
EC-1 TREN SW/2 via 2 (Min)	-0.00014	0.00000	-0.00027
EC-1 TREN 12.5 via 2 (Max)	0.00000	0.00000	0.00001
EC-1 TREN 12.5 via 2 (Min)	-0.00001	0.00000	-0.00002

COMBINACION DE GIROS DE FLEXION

Acciones permanentes (ELS) = 0.000733
Giro maximo (ELS) = 0.001346

```
Giro minimo          (ELS) =    -0.000064
```

APOYO N = 69

REACCIONES	Flector	Reac_vert	Torsor
G1	0.00000	62.24726	0.00000
G2	0.00000	36.80199	0.00000
Pii	0.00000	43.88968	0.00000
Pi	0.00000	74.42496	0.00000
Pd	0.00000	64.27954	0.00000
TEMP	0.00000	13.11114	0.00000
SC peatonal(100%) Max	0.00000	2.06724	0.00000
SC peatonal(100%) Min	0.00000	-0.07300	0.00000
SC peatonal(50%) Max	0.00000	0.00716	0.00000
SC peatonal(50%) Min	0.00000	-2.16532	0.00000
IPF-75 TREN A via 1 (Max)	0.00000	77.90000	0.00000
IPF-75 TREN A via 1 (Min)	0.00000	-0.40338	0.00000
IPF-75 TREN B1 via 1 (Max)	0.00000	78.39575	0.00000
IPF-75 TREN B1 via 1 (Min)	0.00000	-0.34188	0.00000
IPF-75 TREN B2 via 1 (Max)	0.00000	78.40113	0.00000
IPF-75 TREN B2 via 1 (Min)	0.00000	-0.41410	0.00000
EC-1 TREN LM71 via 1 (Max)	0.00000	91.75636	0.00000
EC-1 TREN LM71 via 1 (Min)	0.00000	-0.46872	0.00000
EC-1 TREN SW/0 via 1 (Max)	0.00000	92.05094	0.00000
EC-1 TREN SW/0 via 1 (Min)	0.00000	-0.22647	0.00000
EC-1 TREN SW/2 via 1 (Max)	0.00000	103.46690	0.00000
EC-1 TREN SW/2 via 1 (Min)	0.00000	-0.04185	0.00000
EC-1 TREN 12.5 via 1 (Max)	0.00000	8.59740	0.00000
EC-1 TREN 12.5 via 1 (Min)	0.00000	-0.00034	0.00000
IPF-75 TREN A via 2 (Max)	0.00000	5.76570	0.00000
IPF-75 TREN A via 2 (Min)	0.00000	-5.76028	0.00000
IPF-75 TREN B1 via 2 (Max)	0.00000	2.06660	0.00000
IPF-75 TREN B1 via 2 (Min)	0.00000	-9.48070	0.00000
IPF-75 TREN B2 via 2 (Max)	0.00000	2.06660	0.00000
IPF-75 TREN B2 via 2 (Min)	0.00000	-9.06388	0.00000
EC-1 TREN LM71 via 2 (Max)	0.00000	5.02970	0.00000
EC-1 TREN LM71 via 2 (Min)	0.00000	-8.28658	0.00000
EC-1 TREN SW/0 via 2 (Max)	0.00000	0.35574	0.00000
EC-1 TREN SW/0 via 2 (Min)	0.00000	-8.96901	0.00000
EC-1 TREN SW/2 via 2 (Max)	0.00000	0.40092	0.00000
EC-1 TREN SW/2 via 2 (Min)	0.00000	-11.39104	0.00000
EC-1 TREN 12.5 via 2 (Max)	0.00000	0.03341	0.00000
EC-1 TREN 12.5 via 2 (Min)	0.00000	-0.96979	0.00000

COMBINACION DE REACCIONES VERTICALES

Reaccion permanente (ELS) = 163.329
Reaccion maxima (ELS) = 285.187
Reaccion minima (ELS) = 153.278
Reaccion minima (ELU) = 141.927

DESPLAZAMIENTOS	GX	FZ	GY
G1	-0.00004	0.00000	-0.00041
G2	-0.00003	0.00000	-0.00028
Pii	0.00027	0.00000	0.00091
Pi	0.00047	0.00000	0.00156
Pd	0.00040	0.00000	0.00135
TEMP	-0.00009	0.00000	0.00031
SC peatonal(100%) Max	0.00000	0.00000	0.00001
SC peatonal(100%) Min	0.00000	0.00000	-0.00002
SC peatonal(50%) Max	0.00000	0.00000	0.00000
SC peatonal(50%) Min	0.00000	0.00000	-0.00001
IPF-75 TREN A via 1 (Max)	0.00002	0.00000	0.00011
IPF-75 TREN A via 1 (Min)	-0.00005	0.00000	-0.00033
IPF-75 TREN B1 via 1 (Max)	0.00001	0.00000	0.00004
IPF-75 TREN B1 via 1 (Min)	-0.00001	0.00000	-0.00007
IPF-75 TREN B2 via 1 (Max)	0.00001	0.00000	0.00004
IPF-75 TREN B2 via 1 (Min)	-0.00001	0.00000	-0.00009
EC-1 TREN LM71 via 1 (Max)	0.00001	0.00000	0.00006
EC-1 TREN LM71 via 1 (Min)	-0.00003	0.00000	-0.00017
EC-1 TREN SW/0 via 1 (Max)	0.00003	0.00000	0.00016
EC-1 TREN SW/0 via 1 (Min)	-0.00004	0.00000	-0.00035
EC-1 TREN SW/2 via 1 (Max)	0.00004	0.00000	0.00020
EC-1 TREN SW/2 via 1 (Min)	-0.00004	0.00000	-0.00042
EC-1 TREN 12.5 via 1 (Max)	0.00000	0.00000	0.00002
EC-1 TREN 12.5 via 1 (Min)	0.00000	0.00000	-0.00003
IPF-75 TREN A via 2 (Max)	0.00002	0.00000	0.00009
IPF-75 TREN A via 2 (Min)	-0.00005	0.00000	-0.00025
IPF-75 TREN B1 via 2 (Max)	0.00001	0.00000	0.00003
IPF-75 TREN B1 via 2 (Min)	-0.00001	0.00000	-0.00004
IPF-75 TREN B2 via 2 (Max)	0.00001	0.00000	0.00003
IPF-75 TREN B2 via 2 (Min)	-0.00001	0.00000	-0.00007
EC-1 TREN LM71 via 2 (Max)	0.00001	0.00000	0.00005
EC-1 TREN LM71 via 2 (Min)	-0.00002	0.00000	-0.00013
EC-1 TREN SW/0 via 2 (Max)	0.00003	0.00000	0.00013
EC-1 TREN SW/0 via 2 (Min)	-0.00004	0.00000	-0.00024
EC-1 TREN SW/2 via 2 (Max)	0.00003	0.00000	0.00016
EC-1 TREN SW/2 via 2 (Min)	-0.00005	0.00000	-0.00029
EC-1 TREN 12.5 via 2 (Max)	0.00000	0.00000	0.00001
EC-1 TREN 12.5 via 2 (Min)	0.00000	0.00000	-0.00002

COMBINACION DE GIROS DE FLEXION

Acciones permanentes (ELS) = 0.000657
Giro maximo (ELS) = 0.001365
Giro minimo (ELS) = -0.000181

8.2. REACCIONES HORIZONTALES

En este apartado se resumen las reacciones horizontales que actuan en cada apoyo. El cálculo del reparto de las mismas se ha efectuado de forma proporcional al area tributaria de cada elemento, pila o estribo.

En la tabla que sigue se exponen los valores característicos de las mismas.

Fuerzas horizontales en POTs

Apoyo	Reacción horizontal longitudinal Tm	Reacción horizontal transversal Tm
Estribo 2 derecho	53,7	7,0
Estribo 2 izquierdo	53,7	0
Pila 2 derecho	26,6	16,2
Pila 2 izquierdo	29,8	0
Pila 1 derecho	25,5	16,2
Pila 1 izquierdo	31,3	0
Estribo 1 derecho	12,6	7,0
Estribo 1 izquierdo	14,5	0

Acciones horizontales consideradas

- Frenado + Arranque F_x= 27.9 T/vía
- Interacción vía-estructura (efectos térmicos) =51.6 T
- Viento transversal F_{yw}= 36.39 T

8.3. VERIFICACIÓN DE APARATOS DE APOYO Y MOVIMIENTOS EN JUNTAS

Aparatos de apoyo tipo POT

En la tabla siguiente se comprueban las condiciones de trabajo de los aparatos de apoyo tipo POT. Se ha verificado la carga admisible en cada uno de ellos. Asimismo se especifica en la hoja que sigue el rango de movimientos horizontales máximos previstos.

Fuerzas verticales en POTs

Apoyo	Reacción vertical c. permanentes Tm	Reacción vertical máxima Tm
Estribo 2 derecho	143,9	246,7
Estribo 2 izquierdo	163,3	285,2
Pila 2 derecho	314,3	532,5
Pila 2 izquierdo	294,1	595,4
Pila 1 derecho	294,7	509
Pila 1 izquierdo	315,4	625
Estribo 1 derecho	163,2	252,2
Estribo 1 izquierdo	143,4	289,8

Juntas de calzada

Los movimientos en juntas coinciden con los previstos en los POTs de estribos. Durante la ejecución del tablero se deberán prever las holguras necesarias entre la junta y el muro de resguardo del estribo teniendo en cuenta que durante los primeros años se van a producir los acortamientos del puente debidos a a las acciones reológicas (retracción y fluencia). Éstas holguras dependen de la temperatura media ambiental en el momento de ejecutar las juntas de calzada.

La normativa IAP especifica los rangos máximos de variación anual de temperatura media efectiva (ΔT) en el tablero para las distintas regiones climáticas españolas. Donde:

ΔT = (Temperatura máxima-Temperatura mínima).

Los valores máximos del recorrido de la junta serán inferiores a los detallados a continuación:

Máximo acortamiento = (Temperatura mínima – To) + movimientos reológicos + (frenado/arranque)
Máximo alargamiento = (Temperatura máxima – To) + (frenado/arranque)

En el estribo 2, punto fijo del tablero respecto a movimientos longitudinales, el recorrido necesario de la junta es nulo, mientras que en el estribo 1 se precisa:

Recorrido máximo =ΔT + movimientos reológicos + (frenado/arranque) =18.2 + 88.2 + 0 = 106.4 mm

To = Temperatura media ambiental durante el montaje de la junta

En la hoja siguiente se espefican los cálculos detallados.

En este cálculo anterior se ha supuesto que la deformación elástica es anterior a la colocación de la junta.

Fecha: Feb. 2002

Proyecto: AVE El Papiol - Sant Vicenç dels Horts
Estructura: P. I. Riera de Torrelles

Movimientos longitudinales en POTs. Valores en mm.

Datos	
Area de la sección transversal, m2	8,66
Módulo de deformación del hormigón, T/m2	3,09E+05
Variación anual de la temperatura, ºC	38
Fuerza total de postesado, T	3000
Valor del coeficiente de fluencia	1,77
Deformación por retracción, mm/m	0,25
Axil medio de frenado, T	0,58

		Acortamiento elástico		Fluencia		Retracción		Frenado		Temperatura		**Totales**	
Apoyo	Distancia a punto fijo, m	Máximo	Mínimo	Máximo	Mínimo	Máximo	Mínimo	Máximo	Mínimo	Máximo	Mínimo	**Alargamiento**	**Acortamiento**
Estribo 2 derecho	0	0,0	0,0	0,0	0,0	0,0	0,0	0,000	0,000	0,0	0,0	**0,0**	**0,0**
Estribo 2 izquierdo	0	0,0	0,0	0,0	0,0	0,0	0,0	0,000	0,000	0,0	0,0	**0,0**	**0,0**
Pila 2 derecho	14,5	0,0	-16,3	0,0	-23,0	0,0	-3,6	0,003	-0,003	5,5	-5,5	**5,5**	**-48,4**
Pila 2 izquierdo	14,5	0,0	-16,3	0,0	-23,0	0,0	-3,6	0,003	-0,003	5,5	-5,5	**5,5**	**-48,4**
Pila 1 derecho	33,5	0,0	-37,6	0,0	-53,2	0,0	-8,4	0,007	-0,007	12,7	-12,7	**12,7**	**-111,9**
Pila 1 izquierdo	33,5	0,0	-37,6	0,0	-53,2	0,0	-8,4	0,007	-0,007	12,7	-12,7	**12,7**	**-111,9**
Estribo 1 derecho	48	0,0	-53,8	0,0	-76,2	0,0	-12,0	0,010	-0,010	18,2	-18,2	**18,3**	**-160,3**
Estribo 1 izquierdo	48	0,0	-53,8	0,0	-76,2	0,0	-12,0	0,010	-0,010	18,2	-18,2	**18,3**	**-160,3**

Valor positivo --> alargamiento
Valor negativo --> acortamiento

9 CÁLCULO DEL ESTRIBO 1

9.1 GEOMETRÍA

9.2 ACCIONES EN CORONACIÓN

9.3 CÁLCULO DE ESFUERZOS Y DIMENSIONAMIENTO

El cálculo y dimensionamiento de los estribos se detalla en las páginas siguientes. Las hipótesis de cálculo se exponen a continuación:

1. El cálculo se realiza en la hipótesis clásica como muro con acciones en coronación debidas a las reacciones horizontales y verticales transmitidas por el tablero. Los empujes del terreno se han calculado para un coeficiente de empuje K= 0,33 y una densidad del terreno de 2,0 T/m^3. No se han considerado eventuales empujes hidrostáticos al colocar un adecuado drenaje en el trasdós del estribo.

2. Se ha comprobado que no se supera la carga admisible por pilote, el cálculo de la cual se detalla en el apartado 12.

3. El dimensionamiento de las armaduras de flexión y cortante del muro y zapata se realiza con los criterios de la Normativa vigente para estructuras de hormigón (EHE). Los coeficientes de seguridad de las acciones corresponden con un **nivel de control intenso γ_{fg} =1,35 y γ_{fq} =1,50.**

4. Las armaduras horizontales de flexión transversal se colocan de acuerdo con los valores mínimos exigidos por la Normativa EHE.

9.4. CÁLCULO Y DIMENSIONAMIENTO DE LAS ALETAS.

El cálculo del tramo empotrado se ha realizado mediante el método de los elementos finitos, utilizando el programa ROBOT MILLENIUM para obtener los esfuerzos en servicio y de diseño necesarios para el dimensionamiento del mismo.

El dimensionamiento de las aletas tipo muro y la comprobación de la estabilidad al vuelco y el deslizamiento de las mismas se realiza mediante el programa ALE. El mismo programa proporciona los esfuerzos y la armadura necesaria en las secciones de interés de acuerdo con los criterios de la Normativa vigente para estructuras de hormigón armado (EHE). Los coeficientes de seguridad de las acciones corresponden con un nivel de control intenso.

El programa ALE utiliza el programa de cálculo de armaduras ARMA. El programa ARMA permite el cálculo automático de secciones rectangulares sometidas a flexocompresión y/o cortante para el conjunto de elementos (barras del modelo de pórtico plano) que constituyen la estructura y para todas aquellas hipótesis o combinaciones de cálculo que se hayan contemplado en el análisis estructural.

Las armaduras horizontales de flexión transversal se colocan de acuerdo con los valores mínimos exigidos por la Normativa EHE.

El cálculo de empujes se realiza con la teoría de Coulomb, asumiendo un ángulo de rozamiento tierras-muro de $\delta=21{,}3º$ en el trasdós y de $\delta=0°$ en la base del muro. El drenaje se considera eficaz y, en consecuencia, no se consideran eventuales empujes hidrostáticos en el trasdós del muro.

10 CÁLCULO DEL ESTRIBO 2

10.1 GEOMETRÍA

10.2 ACCIONES EN CORONACIÓN

10.3 CÁLCULO DE ESFUERZOS Y DIMENSIONAMIENTO

El cálculo y dimensionamiento de los estribos se detalla en las páginas siguientes. Las hipótesis de cálculo se exponen a continuación:

1. El cálculo se realiza en la hipótesis clásica como muro con acciones en coronación debidas a las reacciones horizontales y verticales transmitidas por el tablero. Los empujes del terreno se han calculado para un coeficiente de empuje K= 0,33 y una densidad del terreno de 2,0 T/m^3. No se han considerado eventuales empujes hidrostáticos al colocar un adecuado drenaje en el trasdós del estribo.

2. Se ha comprobado que no se supera la carga admisible por pilote, el cálculo de la cual se detalla en el apartado 12.

3. El dimensionamiento de las armaduras de flexión y cortante del muro y encepado se realiza con los criterios de la Normativa vigente para estructuras de hormigón (EHE). Los coeficientes de seguridad de las acciones corresponden con un **nivel de control intenso γ_{fg} =1,35 y γ_{fq} =1,50.**

4. Las armaduras horizontales de flexión transversal se colocan de acuerdo con los valores mínimos exigidos por la Normativa EHE.

10.4. CÁLCULO Y DIMENSIONAMIENTO DE LAS ALETAS.

El cálculo del tramo empotrado se ha realizado mediante el método de los elementos finitos, utilizando el programa ROBOT MILLENIUM para obtener los esfuerzos en servicio y de diseño necesarios para el dimensionamiento del mismo.

El dimensionamiento de las aletas tipo muro y la comprobación de la estabilidad al vuelco y el deslizamiento de las mismas se realiza mediante el programa ALE. El mismo programa proporciona los esfuerzos y la armadura necesaria en las secciones de interés de acuerdo con los criterios de la Normativa vigente para estructuras de hormigón armado (EHE). Los coeficientes de seguridad de las acciones corresponden con un nivel de control intenso.

El programa ALE utiliza el programa de cálculo de armaduras ARMA. El programa ARMA permite el cálculo automático de secciones rectangulares sometidas a flexocompresión y/o cortante para el conjunto de elementos (barras del modelo de pórtico plano) que constituyen la estructura y para todas aquellas hipótesis o combinaciones de cálculo que se hayan contemplado en el análisis estructural.

Las armaduras horizontales de flexión transversal se colocan de acuerdo con los valores mínimos exigidos por la Normativa EHE.

El cálculo de empujes se realiza con la teoría de Coulomb, asumiendo un ángulo de rozamiento tierras-muro de $\delta=21,3º$ en el trasdós y de $\delta=0°$ en la base del muro. El drenaje se considera eficaz y, en consecuencia, no se consideran eventuales empujes hidrostáticos en el trasdós del muro.

11 CÁLCULO DE LA PILA

11.1 GEOMETRÍA

11.2 ACCIONES EN CORONACIÓN

11.3 CÁLCULO DE ESFUERZOS Y DIMENSIONAMIENTO

El cálculo y dimensionamiento de las pilas se detalla en las páginas siguientes. Las hipótesis de cálculo se exponen a continuación:

1. El cálculo se ha realizado según especificaciones de la EHE a partir de las reacciones en coronación que se detallan.

2. Se ha comprobado que no se supera la carga admisible por pilote, el cálculo de la cual se detalla en el apartado 12 del presente anejo.

3. El dimensionamiento de las armaduras de flexión y cortante del muro y encepado se realiza con los criterios de la Normativa vigente para estructuras de hormigón (EHE). Los coeficientes de seguridad de las acciones corresponden con un **nivel de control intenso γ_{fg} =1,35 y γ_{fq} =1,50.**

12 CÁLCULO DE LOS PARÁMETROS GEOTÉCNICOS DE LOS PILOTES

A continuación se detalla el cálculo de los parámetros geotécnicos de los pilotes. En concreto se calcula la carga admisible y el coeficiente de variación del módulo de balasto horizontal con la profundidad.

13 VERIFICACIÓN DE LOS CARRILES POR LA INTERACCIÓN VÍA-ESTRUCTURA

En el presente apartado se realiza la comprobación de las tensiones en el carril por la interacción vía-estructura y el cálculo de las fuerzas horizontales en el punto fijo del tablero, ambos según el EC-1 parte 2.

Por tratarse de un puente de entre 40 y 90 m de longitud de tablero se aplica el método simplificado recogido en el Anejo G del EC-1 para la realización de estos cálculos. Los requisitos adicionales a cumplir para que sean válidas las comprobaciones que se exponen son:

- Carril UIC con una tensión última de rotura a tracción no menor de 900 N/mm^2.
- Traviesas de hormigón con un espaciamiento máximo de 0.65 m.
- Existencia de al menos un espesor de balasto consolidado de al menos 0.30 m bajo las traviesas.
- Radio en planta del trazado de la vía moyor o igual que 1 500 m.
- Longitud de expansión del tablero no mayor que 90 m para tableros de hormigón.

Todos estos requisitos se cumplen en el presente.

La comprobación de que debido a la interacción entre vía y estructura las tensiones en el carril consiste en comprobar que la longitud de expansión del tablero no supera a la máxima admisible según el gráfico G1 del EC-1.

Para $\theta = 0.000525$ rad, y H = 1.96 m obtenemos:

$\delta = \theta * H = 0.0010$ m = 1.0 mm

donde:

θ es el giro en el estribo fijo debido a la combinación característica pésima de las acciones variables.
H es la diferencia de cota entre el carril y el punto de rotación de la sección del apoyo fijo.

La rigidez del estribo por metro de ancho del tablero y vía frente a movimientos horizontales, K, es de 10 698 T/m.

Con estos valores de δ y K obtenemos una longitud de expansión máxima admisible de 85 m según la figura G1 del EC-1, superior a la real, de valor 48 m, con lo cual se cumple la condición de tensiones admisibles en el carril.

En la hoja que sigue se calculan las fuerzas horizontales en el punto fijo del puente debidas al frenado, incremento diferencial de temperatura entre la vía y el tablero y rotación del tablero en el estribo fijo. En los cálculos se ha supuesto que el carril es continuo en ambos extremos del puente (no existe aparato de dilatación de vía).

4.4. Ampliación del canal de pluviales de Sant Vicenç dels Horts

ÍNDICE DEL ANEJO DE CÁLCULO DE LA AMPLIACIÓN DEL C.P. DE SANT VICENÇ

1 GEOMETRÍA

1.1. Geometría y esquema estructural
1.2. Sección tipo

2 ACCIONES, MATERIALES, COEFICIENTES DE SEGURIDAD Y NORMATIVAS

2.1. Acciones
2.2. Coeficientes de seguridad, materiales, niveles de control y Normativas
2.3. Ambientes, recubrimientos, fisuración y cuantías mínimas
2.4. Hipótesis de combinación de esfuerzos
2.4.1. Estados Límite Últimos
2.4.2. Estados Límite de Servicio

3 CÁLCULO DE ESFUERZOS

3.1. Cálculo de esfuerzos para cargas según IPF
3.2. Cálculo de esfuerzos para cargas según EC-1

4 VERIFICACIÓN DEL E.L.U DE ROTURA POR TENSIONES NORMALES

5 VERIFICACIÓN DEL E.L.U DE ROTURA POR TENSIONES TANGENCIALES

5.1. Evaluación del E.L.U. de agotamiento por cortante

6 VERIFICACIÓN DEL E.L.S. DE SERVICIO DE FISURACIÓN

7 CÁLCULO DE ALETAS

7.1. Geometría
7.2. Cálculo de esfuerzos y dimensionamiento

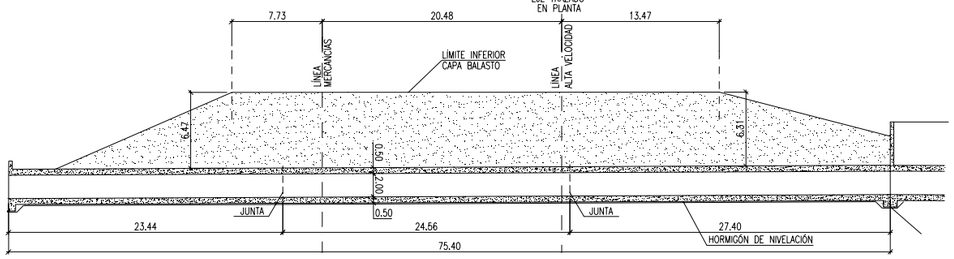
1 GEOMETRÍA

1.1 GEOMETRÍA Y ESQUEMA ESTRUCTURAL

Se trata de un marco cuatricelular para dar continuidad bajo la plataforma de ferrocarril al canal de pluviales de Sant Vicenç. El marco está constituido por hastiales, una losa inferior y una losa superior (de ahora en adelante dintel) con un espesor de 0,45, 0,50 u 0,50 m de espesor respectivamente. El marco cruza la plataforma de ferrocarril formando un ángulo variable al ser su trazado en planta poligonal no recto. La entrada de la estructura enlaza con una obra de fábrica existente con idéntica sección transversal a la del marco proyectado. A su salida se han definido dos aletas tipo muro que sostienen las tierras del terraplén y que son paralelas al eje de la estructura, consiguiéndose mediante el derrame de tierras por delante de las mismas una transición a la sección tipo del canal a cielo abierto.

El cajón queda enterrado respecto a la superestructura de la vía, de tal forma que la altura máxima de tierras sobre el dintel hasta el nivel del balasto es de 6,30 m.

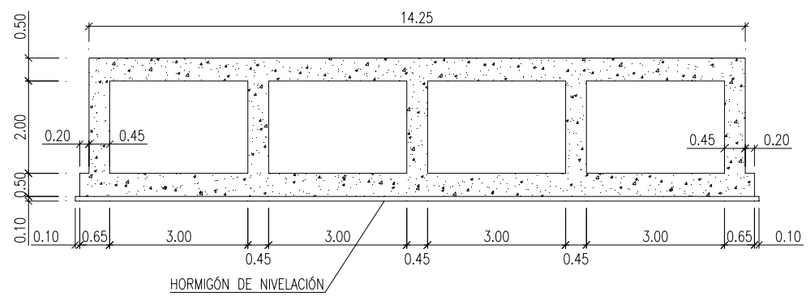
SECCIÓN EN DESARROLLO POR EL EJE DEL CAJÓN
ESCALA 1/200



1.2 SECCIÓN TIPO

La sección transversal de la estructura es un marco rectangular cuatricelular cerrado construido con ho adjunta.

SECCIÓN TRANSVERSAL
ESCALA 1/75



La solera de la estructura se apoya directamente sobre el terreno natural.

2 ACCIONES, MATERIALES, COEFICIENTES DE SEGURIDAD Y NORMATIVAS

2.1 ACCIONES

De acuerdo con las “Instrucciones y recomendaciones para la redacción de proyectos de plataforma” del GIF se han considerado las siguientes acciones:

Acciones permanentes (g):

g1, PESO PROPIO

El peso propio de los distintos elementos se ha calculado a partir de su geometría (secciones transversales) adoptando una densidad de valor $\gamma c = 2{,}5\ T/m^3$ para los elementos de hormigón armado (solera, dintel y hastiales).

g2, PESO DEL BALASTO Y CARGAS MUERTAS

Las cargas permanentes distintas del peso propio del tablero son las siguientes:

- Balasto
- Vías y traviesas
- Conductos de cableado y paseos
- Soportes de catenarias
- Impostas y barandillas

El peso de balasto sobre el tablero se calcula a partir de la plataforma en la estructura de vía tomando como densidad $\gamma = 1{,}6\ t/m^3$.

De acuerdo con las “Instrucciones y recomendaciones para la redacción de proyectos de plataforma” del GIF se adoptarán para esta carga los siguientes valores característicos superior e inferior:

- valor inferior: (0,70 x peso medio) $g_{2,\ bal\ inf}$
- valor superior: (1,30 x peso medio) $g_{2,\ bal,\ sup}$

El caso de desbalastado se considera incluido en el intervalo indicado de variación del peso del balasto.

El peso de vías y traviesas para la plataforma es:

$g_{2,vías+traviesas} = 0{,}52 + 0{,}12 = 0{,}64$ t/m y vía.
(trav)+(carril)

El peso de los conductos para cableados y zona de paseos es:

$g_{2,conductos} = 0{,}30$ t/m

El peso de los soportes de catenarias se tienen en cuenta sólo para efectos locales de anclaje de la catenaria y armado local de losa, pero no para el cálculo general del tablero.

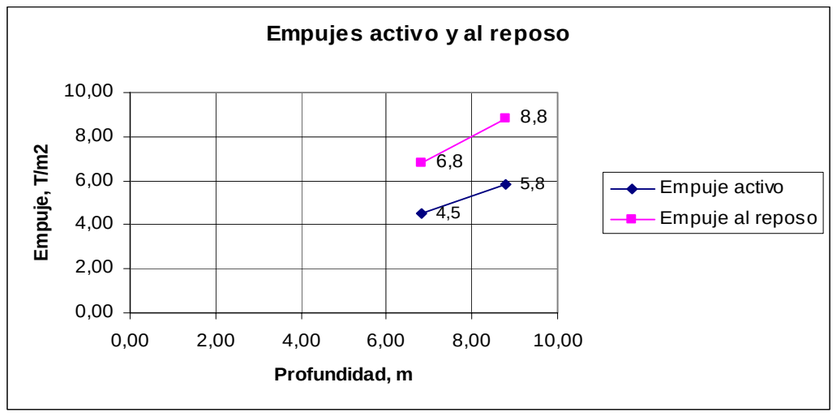
Acciones permanentes de valor no constante (G*):

EMPUJE DE TIERRAS

El empuje de tierras se calcula para la fase de servicio, al preverse que el relleno de las tierras se efectuará de forma simétrica a ambos lados de la estructura.

En la fase de servicio se considera el efecto del empuje de tierras ya con toda la altura que tendrá una vez terminada la estructura. En esta fase y debido a que la estructura no presenta un comportamiento completamente flexible o completamente rígido se consideran los empujes activo K_a = 0,33 y empuje al reposo K_o = 0,50.

De esta manera las leyes de presión del terreno quedan de la siguiente manera:



SOBRECARGAS DE USO. COMPONENTES VERTICALES.

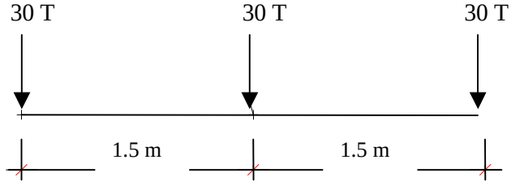
A. Sobrecarga de tráfico de tren

Se utilizará la envolvente de esfuerzos debidos a los trenes de carga de IPF-75 y de EC1-3.

Como coeficiente de impacto se adoptará en cada caso el que corresponda.

De acuerdo con la normativa IPF-75 Existen dos trenes de carga

Tipo A.- Por cada vía: P_{vp} = 3 ejes de 30 T separados 1,50 m

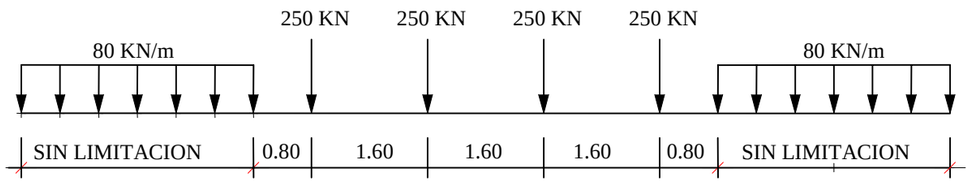


Tipo B.- Por cada vía: Sobrecarga uniforme de 12 t/m. sobre 15,0 ó 30,0 metros, más un conjunto de cuchillos de carga de 10 t/m y 1 t/m. de longitud arbitraria.

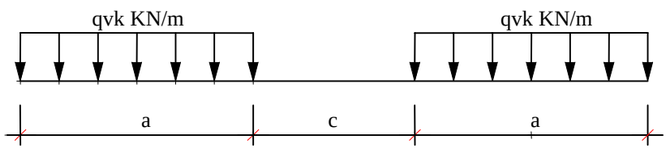
El tren tipo A puede condicionar el trabajo local de reparto de la losa y el tren tipo B condiciona el trabajo global. No se admite reducción de cargas por simultaneidad entre ambas vías. No se considera el efecto del ripado de la vía de 0,30 m porque el estudio del cajón se realiza por metro de ancho.

El tren de cargas de EC1 tiene la siguiente configuración

Tren tipo 71:



Modelo de carga SW:



Se tendrán en cuenta tres tipos de trenes según el EC-1: Tren tipo 71, SW/0, y el SW/2.

	SW0	SW2
Q_{vk}	133	150
a	15	25
c	5,3	7

Tabla 2. Tren de cargas.

Los valores de los trenes tipo 71 y SW/0 se multiplicarán por un coeficiente de clasificación α cuyo valor es igual a 1,00 tanto para las vías de ancho RENFE como para las de ancho Internacional.

B. Sobrecarga tráfico losa inferior

No existe losa inferior, por lo cual no se considera esta carga.

C. Sobrecargas en paseos

Según las “Instrucciones y recomendaciones para la redacción de proyectos de plataforma” del GIF se dispondrá una sobrecarga en los paseos laterales de valor:

$$Q_{SV} = 0{,}5\ t/m^2$$

Sólo un 50 % de dicha carga es compatible con el tráfico ferroviario.

En nuestro caso y debido a que el estudio se realiza por metro de ancho no se considera por ser más desfavorable para el dimensionamiento de los distintos elementos del marco considerar las cargas verticales del tráfico ferroviario.

D. Sobrecarga de tráfico en trasdós hastiales

Se considera la sobrecarga de tráfico en trasdós de hastiales recomendada en la normativa IFF-75 de valor igual 3 t/m^2.

Esta sobrecarga actúa en los hastiales mediante el coeficiente de empuje al reposo K_o = 0,50.

SOBRECARGAS DE USO. COMPONENTES HORIZONTALES.

A. Efectos de frenado y arranque

Se adopta la Norma EC1 ya que las acciones definidas en la IPF75 son mucho más favorables. (1/8 de la carga frente a 1/4)

Son fuerzas que actúan sobre cota superior de carril. No deben mayorarse dinámicamente.

Fuerzas de arranque (por vía)

$F_a = 33\ (KN/m) \times L(m) \leq 1.000\ KN$ LM71 y SW

Fuerzas de frenado (por vía)

$F_f = 20\ (KN/m) \times L(m) \leq 6.000\ (KN)$ LM71 y SW0
$F_f = 35\ (KN/m) \times L(m)$ SW2

VARIACIÓN UNIFORME DE TEMPERATURA

No se considera este efecto al estar la estructura enterrada prácticamente en su totalidad.

GRADIENTE TERMICO

No se considera este efecto al estar la estructura enterrada prácticamente en su totalidad.

ACCIONES ACCIDENTALES

ACCIÓN SÍSMICA

La aceleración sísmica básica de la zona, según la normativa vigente, es a_b= 0,04 g.

La categoría de la estructura puede considerarse de especial importancia, lo que es equivalente a un coeficiente de riesgo ρ =1,3.

La aceleración de cálculo es:

$a_c = \rho \cdot a_b$
a_b = 0,052 g

Las acciones sísmicas en puentes sólo se consideran, de acuerdo con la IAP, para aceleraciones de cálculo superiores a 0,06g, por lo tanto no es preciso realizar el análisis sísmico del cajón.

A continuación se detalla el valor de cálculo de las cargas verticales consideradas y los coeficientes de impacto.

PROYECTO: L.A.V. Madrid-Zaragoza-Barcelona-Frontera Francesa. Tramo: St. Vicenç dels Horts - Sta. Coloma de Cervelló.

O.F. : AMPLIACIÓN DEL CANAL DE PLUVIALES DE ST. VICENÇ DELS HORTS.

DIFUSIÓN EN SENTIDO TRANSVERSAL DE LAS CARGAS

RELLENO SOBRE ESTRUCTURA	ESPESOR	SEMIANCHO SUP.	H	V	SEMIANCHO INF.
CARRIL	0,17	0,08	-	-	0,08
TRAVIESA	0,20	0,08	1	1	0,28
BALASTO	0,35	0,28	1	4	0,36
TERRAPLÉN	6,30	0,36	1	4	1,94
HORMIGÓN POBRE O DE FORMA	0,00	1,94	1	1	1,94
HORMIGÓN ESTRUCTURAL	0,70	1,94	1	1	2,64
DIST. DE COTA DE CARRIL A EJE DINTEL	7,72				
ANCHO DE VÍA	1,435	m			
LONGITUD TOTAL DE REPARTO =	**6,71**	**m**			

DIFUSIÓN EN SENTIDO LONGITUDINAL DE LAS CARGAS

TREN TIPO A DE LA IPF-75

RELLENO SOBRE ESTRUCTURA	ESPESOR	SEMIANCHO SUP.	H	V	SEMIANCHO INF.
BALASTO	0,35	0,00	1	4	0,09
TERRAPLÉN	6,30	0,09	1	4	1,66
HORMIGÓN POBRE O DE FORMA	0,00	1,66	1	1	1,66
HORMIGÓN ESTRUCTURAL	0,70	1,66	1	1	2,36
DIST. ENTRE TRAVIESAS EXTREMAS =	3,60				
LONG. DE REPARTO TREN TIPO A =	**8,33**				

TREN TIPO 71 DEL EUROCÓDIGO

RELLENO SOBRE ESTRUCTURA	ESPESOR	SEMIANCHO SUP.	H	V	SEMIANCHO INF.	
BALASTO	0,35	0,00	1	4	0,09	
TERRAPLÉN	6,30	0,09	1	4	1,66	
HORMIGÓN POBRE O DE FORMA	0,00	1,66	1	1	1,66	
HORMIGÓN ESTRUCTURAL	0,40	1,66	1	1	2,06	> 0,45
DIST. ENTRE TRAVIESAS EXTREMAS =	4,80					
LONG. DE REPARTO TREN TIPO 71 =	**8,93**					

PROYECTO: L.A.V. Madrid-Zaragoza-Barcelona-Frontera Francesa. Tramo: St. Vicenç dels Horts - Sta. Coloma de Cervelló.
O.F. : AMPLIACIÓN DEL CANAL DE PLUVIALES DE ST. VICENÇ DELS HORTS.

EVALUACIÓN DE LAS CARGAS PERMANENTES

PESO DE TRAVIESAS Y CARRILES

$q_{traviesas}$ =	0,52	T/m y vía	
$q_{carriles}$ =	0,12	T/m y vía	
q_{tc} =	**0,10**	**T/m2**	

PESO DEL BALASTO

Espesor de balato =	0,35	m	
Peso específico balasto =	1,60	T/m3	
q_0 =	**0,56**	**T/m2**	
q_{s0} = 1,30·q_0 =	**0,73**	**T/m2**	
q_{i0} = 0,70·q_0 =	**0,39**	**T/m2**	

PESO DEL RELLENO SOBRE LA ESTRUCTURA

Subbalasto, capas de forma, y tierras

Espesor del relleno =	6,30	m	
Peso específico relleno =	2,00	T/m3	
q_{r1} =	12,60	T/m2	

Hormigón de forma

Espesor del relleno =	0,00	m	
Peso específico relleno =	2,40	T/m3	
q_{r2} =	0,00	T/m2	
Total peso rellenos			
q_r =	**12,60**	**T/m2**	

PESO DE LOS CONDUCTOS DE CABLEADO

$q_{cond+cables}$ =	0,30	t/m y vía =	**0,04**	**T/m2**

Carga total sobre la estructura **13,47** **T/m2**

EVALUACIÓN DE LAS SOBRECARGAS DE USO

TREN TIPO A DE LA IPF-75

Longitud de reparto transversal =		6,71	m	
Longitud de reparto longitudinal =		8,33	m	
Suma de cargas puntuales	ΣQ =	90,00	T	
q_{TA} =		**1,61**	**T/m2**	Aplicada en una longitud de 8,325 metros.

TREN TIPO B DE LA IPF-75

Valor carga	q =	12,00	T/m y vía	
q_{TB} =		**1,79**	**T/m2**	Aplicada en 15 ó 30 metros.

TREN TIPO 71 DEL EC-1.3.

Coeficiente de clasificación	α =	1,00		
Longitud de reparto transversal =		6,71	m	
Longitud de reparto longitudinal =		8,93	m	
Tramo de cargas puntuales				
Suma de cargas puntuales	ΣQ =	100,00	T	
$q_{T71\ tramo\ puntual}$ =		**1,67**	**T/m2**	Aplicada en una longitud de 8,925 metros.
Tramo de carga uniformemente repartida				
Valor carga	q =	8,00	T/m y vía	
$q_{T71\ tramo\ uniforme}$ =		**1,19**	**T/m2**	

TREN TIPO SW/0 DEL EC-1.3.

Valor carga	q =	13,30	T/m y vía	
q_{TSW0} =		**1,98**	**T/m2**	Aplicada en 15 m. según art. 6.3.3 del EC-1.3.

TREN TIPO SW/2 DEL EC-1.3.

Valor carga	q =	15,00	T/m y vía	
q_{TSW2} =		**2,24**	**T/m2**	Aplicada en 25 m. según art. 6.3.3 del EC-1.3.

SOBRECARGA EN PASEOS

q_{paseos} = 0,50 T/m2

A efectos de combinación de sobrecargas sólo se considerará el 50% de q_{paseos} actuando simultáneamente con la sobrecarga ferroviaria

PROYECTO: L.A.V. Madrid-Zaragoza-Barcelona-Frontera Francesa. Tramo: St. Vicenç dels Horts - Sta. Coloma de Cervelló.
O.F. : AMPLIACIÓN DEL CANAL DE PLUVIALES DE ST. VICENÇ DELS HORTS.

CÁLCULO DEL COEFICIENTE DE IMPACTO PARA DINTELES DE MARCOS Y PÓRTICOS.

DINTEL

Luz (m) =	3,45
Canto (m) =	0,50
Ec (T/m2) =	2.720.000
q (T/m) =	14,720

(Carga permanente por encima del dintel)

HASTIALES

Altura (m) =	2,50
Espesor (m) =	0,45

PARÁMETROS PARA EL CÁLCULO DE LA FRECUENCIA FUNDAMENTAL

I (m4) =	0,0104
EI =	28.333
m =	1,502

FRECUENCIA FUNDAMENTAL COMO VIGA BIAPOYADA

$\alpha_v = \pi/2$ = 1,57 f (1/s) = 18,1

FRECUENCIA FUNDAMENTAL COMO VIGA BIEMPOTRADA

α_v = 3,56 f (1/s) = 41,1

FRECUENCIA FUNDAMENTAL ESTIMADA

Rigidez del dintel (m3) =	0,0030
Rigidez del hastial (m3) =	0,0030
Coeficiente de reparto =	0,50

α_v = 2,57 f (1/s) = 29,6

COEFICIENTE DE IMPACTO SEGÚN IPF-75

v (km/h)* = 200

Para luces iguales o menores de 6 metros
l = 66,0
ϕ = 1,66

Para luces mayores de 6 metros en tramos simplemente apoyados
l = 64,5
ϕ = 1,65

En general para tramos apoyados continuos
μ = 0,978
l = 65,0
ϕ = 1,65

* La validez de las expresiones de la IPF-75 se limita a trenes con velocidades de circulación inferior a 200 km/h

COEFICIENTE DE IMPACTO SEGÚN EUROCÓDIGO 1.

DETERMINACIÓN DE Lϕ

Número de vanos del marco o pórtico = 4
n = 6
k = 1,5
Lm = 3,13
Lϕ = 4,70

Vías con grado de mantenimiento bueno
ϕ2 = 1,55

Vías con grado de mantenimiento normal
ϕ3 = 1,83

NOTA: La validez de aplicación de las fórmulas del eurocódigo se limita a trenes con velocidades de circulación inferiores a 200 km/h.

REDUCCIÓN DEL COEFICIENTE DE IMPACTO

$$\phi_{red} = \phi_0 - \frac{h-1}{10} \geq 1$$

Valor de h, m	6,75
Reducción del coeficiente de impacto	0,575
Coeficiente de impacto reducido (IPF-75)	**1,07**
Coeficiente de impacto reducido (EC-1)	**1,00**

h = Altura de la cobertura incluido el balasto hasta la parte superior de la traviesa

2.2 COEFICIENTES DE SEGURIDAD, MATERIALES, NIVELES DE CONTROL Y NORMATIVAS

HORMIGONES

- Hormigón de Limpieza..... HM-15
- Hastiales y pantallas..... HA-25 / B / 20 / IIa
- Dintel..... HA-25 / B / 20 / IIa

Control del hormigón NORMAL

γc= 1,50 (Situación persistente o transitoria)
γc= 1,30 (Situación accidental)

El módulo de elasticidad se ha evaluado en todos los casos de acuerdo a la expresión de EHE:

$$E_c = 8500 \sqrt[3]{f_{ck} + 8} \ (N/mm^2)$$

Los límites establecidos para la consistencia en la puesta en obra podrán superarse con el empleo de aditivos superfluidificantes, siempre que el valor de la relación agua-cemento cumpla los requisitos prefijados en la EHE.

ACEROS

- Acero corrugado para la armadura pasiva B500S, con f_{yk} > 500 MPa (5100 Kp/cm^2)

Control de los aceros NORMAL.

γ_s = 1,15 (Situación persistente o transitoria)
γ_s = 1,0 (Situación accidental)

CONTROL DE EJECUCIÓN

El control de ejecución será INTENSO (γ_g= 1,35 y γ_{fq}= 1,50) en hastiales, solera y dintel, de acuerdo con las especificaciones de la normativa EHE.

NORMAS UTILIZADAS

- Instrucción relativa a las acciones a considerar en el proyecto de puentes de carretera IAP, aprobada Orden de12 de febrero de 1998.
- Instrucción para el proyecto de estructuras de hormigón estructural EHE, aprobada por el Real Decreto 2661/1998 de 11 de diciembre.
- Normativa Sismoresistente NCSE-94.
- Instrucción relativa a las acciones a considerar en el proyecto de puentes de ferrocarril, aprobada por Orden Ministerial de 25 de junio de 1975.
- Eurocódigo 1. EC-1.

2.3 AMBIENTES, RECUBRIMIENTOS, FISURACIÓN Y CUANTÍAS MÍNIMAS

De acuerdo con la normativa EHE se consideran los ambientes indicados en la tabla siguiente:

Elemento	Ambiente	Recubrimiento de Armadura pasiva	Abertura máxima de fisura en mm.
Solera	IIa	30	0,3
Hastiales	IIa	30	0,3
Dintel	IIa	30	0,3

Las cuantías mínimas de armadura pasiva B500S serán las expuestas en la tabla indicada a continuación (EHE, art. 44.3.5):

Elemento	Posición	Tipo	Cuantía geométrica (‰)
Solera	Cara superior e Inferior	Transversal y Longitudinal	0,90
Hastiales	Cara interior y exterior	Horizontal	2,1 y 1,1 respectivamente
Hastiales	Cara interior y exterior	Vertical	0,90
Dintel	Cara superior e Inferior	Transversal y Longitudinal	0,90

2.4 HIPÓTESIS DE COMBINACIÓN DE ESFUERZOS

Se han considerado las combinaciones de hipótesis de las acciones recogidas en el Eurocódigo 1 y EHE, basados en la teoría de Estados Límites, para las distintas situaciones de cálculo de la estructura.

A continuación se describe la formulación de dichas combinaciones y seguidamente se detallan los valores de los coeficientes adoptados para los casos de carga considerados en los cálculos.

2.4.1 ESTADOS LÍMITE ÚLTIMOS

Las hipótesis de cálculo consideradas son:

- Situaciones persistentes o transitorias

$$\sum_{j \geq 1} \gamma_{Gj}\, G_{kj} + \sum \gamma_{Gj}\, G^*_{kj} + \gamma_{Q1}\, Q_{k1} + \sum_{i > 1} \gamma_{Qi}\, \Psi_{0i}\, Q_{ki}$$

- Situaciones accidentales

$$\sum_{j \geq 1} \gamma_{Gaj}\, G_{kj} + \sum \gamma_{Gj}\, G^*_{kj} + \gamma_A\, A_k + \Psi_{11}\, Q_{k1} + \sum_{i > 1} \gamma_{Qi}\, \Psi_{2i}\, Q_{ki}$$

- Situaciones accidentales de sismo

$$\sum_{j \geq 1} G_{kj} + \sum \gamma_{Gj}\, G^*_{kj} + \gamma_i\, A_{Ed} + \sum_{i > 1} \gamma_{Qi}\, \Psi_{2i}\, Q_{ki}$$

donde:

G = Valor característico de las cargas permanentes.
G* = Valor característico de las cargas permanentes de valor no constante.
Q_{k1} = Valor característico de la carga variable dominante.
A_k = Valor característico de la acción accidental.
A_{eq} = Valor característico de la acción sísmica, calculado según la Norma Sismorresistente.

Los coeficientes de seguridad y de combinación de acciones empleados se definen en la IAP.

2.4.2 ESTADOS LÍMITE DE SERVICIO

Las hipótesis de cálculo consideradas son:

- Combinación característica:

$$\sum_{j \geq 1} \gamma_{Gj}\, G_{kj} + \sum \gamma_{Gj}\, G^*_{kj} + \gamma_{Q1}\, Q_{k1} + \sum_{i > 1} \gamma_{Qi}\, \Psi_{0i}\, Q_{ki}$$

- Combinación frecuente:

$$\sum_{j \geq 1} \gamma_{Gaj}\, G_{kj} + \sum \gamma_{Gj}\, G^*_{kj} + \Psi_{11}\, Q_{k1} + \sum_{i > 1} \gamma_{Qi}\, \Psi_{2i}\, Q_{ki}$$

- Combinación casi permanente:

$$\sum_{j \geq 1} G_{kj} + \sum \gamma_{Gj}\, G^*_{kj} + \sum_{i > 1} \gamma_{Qi}\, \Psi_{2i}\, Q_{ki}$$

A continuación se detallan las combinaciones consideradas.

COMBINACIONES EN CÁLCULOS 1 (IPF-75) Y 2 (EC-1)

COMBINACIÓN	CASO	TIPO	CASO	COEF.	CASO	COEF.	CASO	COEF.	CASO	COEF.	CASO	COEF.	CASO	COEF.	CASO	COEF.
ELU1	21	ELU1	1	1,35	4	1,00	5	1,00	6	1,50	7	1,50				
ELU2	22	ELU2	1	1,35	4	1,00	5	1,00	6	1,50	8	1,50				
ELU1	23	ELU3	1	1,35	4	1,00	5	1,00	6	1,50	7	1,50	9	0,90		
ELU2	24	ELU4	1	1,35	4	1,00	5	1,00	6	1,50	8	1,50	9	0,90		
ELU6	25	ELU5	1	1,35	2	1,50	3	1,50	6	1,50	10	1,50	14	1,50		
ELU7	26	ELU6	1	1,35	2	1,50	3	1,50	6	1,50	12	1,50	14	1,50		
ELU8	27	ELU7	1	1,35	2	1,50	3	1,50	6	1,50	10	1,50	11	1,50	12	1,50
ELS FRECUENTE 1	31	ELS FRECUENTE 1	1	1,00	4	1,00	5	1,00	6	0,80	7	0,80				
ELS FRECUENTE 2	32	ELS FRECUENTE 2	1	1,00	4	1,00	5	1,00	6	0,80	8	0,80				
ELS FRECUENTE 3	33	ELS FRECUENTE 3	1	1,00	4	1,00	5	1,00	6	0,80	7	0,80	9	0,60		
ELS FRECUENTE 4	34	ELS FRECUENTE 4	1	1,00	4	1,00	5	1,00	6	0,80	8	0,80	9	0,60		
ELS FRECUENTE 5	35	ELS FRECUENTE 5	1	1,00	2	1,00	3	1,00	6	0,80	10	0,80	14	0,80		
ELS FRECUENTE 6	36	ELS FRECUENTE 6	1	1,00	2	1,00	3	1,00	6	0,80	12	0,80	14	0,80		
ELS FRECUENTE 6	37	ELS FRECUENTE 7	1	1,00	2	1,00	3	1,00	6	0,80	10	0,80	11	0,80	12	0,80

3 CÁLCULO DE ESFUERZOS

En el siguiente apartado se ha calculado el paso inferior sometido a las cargas de uso. Para ello se modeló el pórtico como una estructura reticulada plana compuesta por barras.

Las acciones a las que está sometida la estructura han sido descritas en el apartado 2 del presente documento. En la dirección perpendicular al plano de cálculo, que ha sido el perpendicular al eje del cajón, se considera que el marco tiene 1 metro de profundidad.

El cálculo de esfuerzos se ha realizado bajo la hipótesis de linealidad material y geométrica, mediante el programa de cálculo de estructuras ROBOT MILLENIUM v. 14.5. Las comprobaciones y dimensionamiento de la estructura se ha efectuado de acuerdo con la instrucción EHE, y sus resultados se detallan en los apartados 4, 5 y 6 del presente anejo.

Se han realizado 2 tipos de cálculo:

Cálculo 1 o de la IPF-75.- Se ha seguido la Instrucción relativa a las acciones a considerar en el Proyecto de Puentes de Ferrocarril (IPF-75).

Cálculo 2 o del EC-1. Se ha seguido el Eurocódigo 1: Bases de proyecto y acciones en estructuras. Parte 3: Cargas de tráfico en puentes".

Cabe destacar que las barras correspondientes a la solera del marco están apoyadas sobre suelo elástico cuyo coeficiente de balasto se ha obtenido a partir del estudio geotécnico.

3.1. CÁLCULO DE ESFUERZOS PARA CARGAS SEGÚN IPF

4 VERIFICACIÓN DEL E.L.U DE ROTURA POR TENSIONES NORMALES

En este apartado se comprueba el Estado Límite Último de rotura por flexión transversal al eje del marco de acuerdo con los criterios de la Normativa española vigente (EHE)

Los cálculos realizados han sido los siguientes:

> Cálculo de la armadura necesaria teniendo en cuenta el efecto del axil, ya sea de compresión o de tracción. El cálculo de la armadura de flexión se realiza mediante una hoja de cálculo siguiendo las indicaciones de la normativa vigente EHE.

La flexión longitudinal no se ha considerado puesto que la flexión es predominantemente cilíndrica. La armadura correspondiente a la flexión longitudinal se dispone por cuantías mínimas indicadas en la normativa EHE.

La armadura se ha calculado mediante un programa que arma la sección de forma automática a partir de los esfuerzos calculados.

A continuación se exponen los listados de armadura necesaria en las diferentes secciones.

Programa de calculo automatico de armado desarrollado por:

PEDELTA, S.L.

ESFUERZOS DE CALCULO PARA LAS DISTINTAS HIPOTESIS DE CARGA

REFERENCIA DEL PROYECTO Prolongación canal St. Vicenç. Cargas IPF

DATOS GENERALES :

N§ de barras = 13
N§ de secciones por barra = 9
N§ de combinaciones en ELU = 7

N§ de combinaciones en ELS = 7
N§ de combinaciones en ELS (frecuente) = 7
N§ de combinaciones en ELS (poco frecuente) = 0
N§ de combinaciones en ELS (caracteristica) = 0

Resistencia a compresion del hormigon (T/m2) = 2500
Resistencia media a traccion del hormigon (T/m2) = 256.4964
Modulo de deformacion del hormigon (T/m2) = 248541.5
Resistencia a traccion del acero (T/m2) = 51000
Modulo de deformacion del acero (T/m2) = 2.1E+07

REFERENCIA DEL PROYECTO Prolongación canal St. Vicenç

Elemento = 1

Sec	Hip	Nd	Vd	Md	Asf1	Asf2	ASt	8	10	12	16	20	25	32
27	1	4.9	27.7	-1.7	7.5	0.1	0.0	15	10	7	4	2	2	1
27	5	15.7	29.0	-4.6	7.5	0.2	0.0	0	0	0	0	0	0	0
2	5	15.7	20.3	4.7	0.2	7.5	0.0	0	0	0	0	0	0	0
2	1	4.9	19.0	7.1	0.1	7.5	0.0	15	10	7	4	2	2	1
3	5	15.7	11.6	10.6	0.2	7.5	0.0	0	0	0	0	0	0	0
3	1	4.9	10.4	12.6	0.1	7.5	0.0	15	10	7	4	2	2	1
4	5	15.7	2.9	13.4	0.2	7.5	0.0	0	0	0	0	0	0	0
4	1	4.9	1.7	14.9	0.1	7.5	0.0	15	10	7	4	2	2	1
5	5	15.7	-5.7	12.9	0.2	7.5	0.0	0	0	0	0	0	0	0
5	1	4.9	-7.0	13.9	0.1	7.5	0.0	15	10	7	4	2	2	1
6	5	15.7	-14.4	9.1	0.2	7.5	0.0	0	0	0	0	0	0	0
6	1	4.9	-15.7	9.6	0.1	7.5	0.0	15	10	7	4	2	2	1
7	5	15.7	-23.1	2.0	0.2	7.5	0.0	0	0	0	0	0	0	0
7	1	4.9	-24.3	2.1	0.1	7.5	0.0	15	10	7	4	2	2	1
8	1	4.9	-33.0	-8.6	7.5	0.1	0.0	15	10	7	4	2	2	1
8	5	15.7	-31.8	-8.2	7.5	0.2	0.0	0	0	0	0	0	0	0
26	7	15.0	-51.0	-26.9	12.2	0.2	0.0	24	16	11	6	4	2	2
26	5	15.7	-40.4	-21.8	9.3	0.2	0.0	0	0	0	0	0	0	0

Elemento = 2

Sec	Hip	Nd	Vd	Md	Asf1	Asf2	ASt	8	10	12	16	20	25	32
24	7	12.6	41.1	-24.5	11.1	0.1	0.0	22	14	10	6	4	2	1
24	5	13.9	35.7	-19.7	8.4	0.2	0.0	0	0	0	0	0	0	0
2	1	4.2	28.0	-9.4	7.5	0.0	0.0	15	10	7	4	2	2	1
2	5	13.9	27.1	-7.9	7.5	0.2	0.0	0	0	0	0	0	0	0
3	1	4.2	19.4	-0.5	7.5	0.0	0.0	15	10	7	4	2	2	1
3	5	13.9	18.4	0.6	0.2	7.5	0.0	15	10	7	4	2	2	1
4	5	13.9	9.7	5.8	0.2	7.5	0.0	0	0	0	0	0	0	0
4	1	4.2	10.7	5.1	0.0	7.5	0.0	15	10	7	4	2	2	1
5	5	13.9	1.0	7.9	0.2	7.5	0.0	0	0	0	0	0	0	0
5	1	4.2	2.0	7.5	0.0	7.5	0.0	15	10	7	4	2	2	1
6	5	13.9	-7.6	6.6	0.2	7.5	0.0	0	0	0	0	0	0	0
6	1	4.2	-6.6	6.6	0.0	7.5	0.0	15	10	7	4	2	2	1
7	5	13.9	-16.3	2.1	0.2	7.5	0.0	0	0	0	0	0	0	0
7	1	4.2	-15.3	2.5	0.0	7.5	0.0	15	10	7	4	2	2	1
8	1	4.2	-24.0	-4.9	7.5	0.0	0.0	15	10	7	4	2	2	1
8	5	13.9	-25.0	-5.6	7.5	0.2	0.0	0	0	0	0	0	0	0
23	7	12.6	-36.9	-18.3	7.8	0.1	0.0	16	10	7	4	2	2	1
23	5	13.9	-33.7	-16.6	7.5	0.2	0.0	0	0	0	0	0	0	0

REFERENCIA DEL PROYECTO Prolongación canal St. Vicenç

Elemento = 3

Sec	Hip	Nd	Vd	Md	Asf1	Asf2	ASt	8	10	12	16	20	25	32
21	7	12.6	37.4	-18.3	7.8	0.1	0.0	16	10	7	4	2	2	1
21	5	12.6	32.5	-15.1	7.5	0.1	0.0	0	0	0	0	0	0	0
2	1	4.2	24.0	-4.9	7.5	0.0	0.0	15	10	7	4	2	2	1
2	5	12.6	23.8	-4.6	7.5	0.1	0.0	0	0	0	0	0	0	0
3	5	12.6	15.2	2.8	0.1	7.5	0.0	0	0	0	0	0	0	0
3	1	4.2	15.3	2.5	0.0	7.5	0.0	15	10	7	4	2	2	1
4	5	12.6	6.5	6.8	0.1	7.5	0.0	0	0	0	0	0	0	0
4	1	4.2	6.6	6.6	0.0	7.5	0.0	15	10	7	4	2	2	1
5	5	12.6	-2.2	7.6	0.1	7.5	0.0	0	0	0	0	0	0	0
5	1	4.2	-2.0	7.5	0.0	7.5	0.0	15	10	7	4	2	2	1
6	5	12.6	-10.8	5.2	0.1	7.5	0.0	0	0	0	0	0	0	0
6	1	4.2	-10.7	5.1	0.0	7.5	0.0	15	10	7	4	2	2	1
7	1	4.2	-19.4	-0.5	7.5	0.0	0.0	15	10	7	4	2	2	1
7	6	10.4	-16.4	0.1	0.1	7.5	0.0	15	10	7	4	2	2	1
8	1	4.2	-28.0	-9.4	7.5	0.0	0.0	15	10	7	4	2	2	1
8	5	12.6	-28.2	-9.5	7.5	0.1	0.0	0	0	0	0	0	0	0
20	3	3.8	-36.8	-21.6	10.6	0.0	0.0	21	13	9	5	3	2	1
20	5	12.6	-36.9	-21.7	9.6	0.1	0.0	0	0	0	0	0	0	0

Elemento = 4

Sec	Hip	Nd	Vd	Md	Asf1	Asf2	ASt	8	10	12	16	20	25	32
18	7	14.2	46.0	-25.0	11.2	0.2	0.0	22	14	10	6	4	2	1
18	7	14.2	46.0	-25.0	11.2	0.2	0.0	0	0	0	0	0	0	0
2	1	4.9	33.0	-8.6	7.5	0.1	0.0	15	10	7	4	2	2	1
2	7	14.2	36.3	-9.6	7.5	0.2	0.0	0	0	0	0	0	0	0
3	7	14.2	26.5	2.2	0.2	7.5	0.0	0	0	0	0	0	0	0
3	1	4.9	24.3	2.1	0.1	7.5	0.0	15	10	7	4	2	2	1
4	7	14.2	16.8	10.3	0.2	7.5	0.0	0	0	0	0	0	0	0
4	1	4.9	15.7	9.6	0.1	7.5	0.0	15	10	7	4	2	2	1
5	7	14.2	7.0	14.8	0.2	7.5	0.0	0	0	0	0	0	0	0
5	1	4.9	7.0	13.9	0.1	7.5	0.0	15	10	7	4	2	2	1
6	7	14.2	-2.7	15.6	0.2	7.5	0.0	0	0	0	0	0	0	0
6	1	4.9	-1.7	14.9	0.1	7.5	0.0	15	10	7	4	2	2	1
7	7	14.2	-12.5	12.7	0.2	7.5	0.0	0	0	0	0	0	0	0
7	1	4.9	-10.4	12.6	0.1	7.5	0.0	15	10	7	4	2	2	1
8	7	14.2	-22.2	6.2	0.2	7.5	0.0	0	0	0	0	0	0	0
8	1	4.9	-19.0	7.1	0.1	7.5	0.0	15	10	7	4	2	2	1
17	1	4.9	-27.7	-1.7	7.5	0.1	0.0	15	10	7	4	2	2	1
17	7	14.2	-32.0	-4.0	7.5	0.2	0.0	0	0	0	0	0	0	0

Elemento = 5

Sec	Hip	Nd	Vd	Md	Asf1	Asf2	ASt	8	10	12	16	20	25	32
2	6	13.2	-29.6	6.6	0.1	7.5	0.0	0	0	0	0	0	0	0
2	1	5.9	-27.9	2.5	0.1	7.5	0.0	15	10	7	4	2	2	1
2	1	5.9	-19.1	-6.4	7.5	0.1	0.0	15	10	7	4	2	2	1
2	6	13.2	-20.8	-2.8	7.5	0.1	0.0	0	0	0	0	0	0	0
3	1	5.9	-10.5	-11.9	7.5	0.1	0.0	15	10	7	4	2	2	1
3	6	13.2	-12.3	-9.0	7.5	0.1	0.0	0	0	0	0	0	0	0
4	1	5.9	-2.0	-14.2	7.5	0.1	0.0	15	10	7	4	2	2	1
4	6	13.2	-4.0	-12.1	7.5	0.1	0.0	0	0	0	0	0	0	0
5	1	5.9	6.3	-13.4	7.5	0.1	0.0	15	10	7	4	2	2	1
5	6	13.2	4.1	-12.1	7.5	0.1	0.0	0	0	0	0	0	0	0
6	1	5.9	14.7	-9.5	7.5	0.1	0.0	15	10	7	4	2	2	1
6	6	13.2	12.3	-9.0	7.5	0.1	0.0	0	0	0	0	0	0	0
7	1	5.9	23.3	-2.4	7.5	0.1	0.0	15	10	7	4	2	2	1
7	6	13.2	20.5	-2.8	7.5	0.1	0.0	0	0	0	0	0	0	0
8	6	13.2	28.8	6.4	0.1	7.5	0.0	0	0	0	0	0	0	0
8	1	5.9	32.0	8.0	0.1	7.5	0.0	15	10	7	4	2	2	1
3	6	13.2	37.3	18.8	0.1	8.0	0.0	0	0	0	0	0	0	0
3	7	13.1	48.0	24.7	0.1	11.2	0.0	22	14	10	6	4	2	1

Elemento = 6

Sec	Hip	Nd	Vd	Md	Asf1	Asf2	ASt	8	10	12	16	20	25	32
5	6	15.7	-35.7	21.0	0.2	8.9	0.0	0	0	0	0	0	0	0
5	7	15.5	-45.1	26.6	0.2	12.0	0.0	24	15	11	6	4	2	1
2	6	15.7	-27.3	9.2	0.2	7.5	0.0	0	0	0	0	0	0	0
2	1	6.7	-28.9	9.5	0.1	7.5	0.0	15	10	7	4	2	2	1
3	6	15.7	-18.9	0.6	0.2	7.5	0.0	0	0	0	0	0	0	0
3	1	6.7	-19.9	0.4	0.1	7.5	0.0	15	10	7	4	2	2	1
4	1	6.7	-11.1	-5.4	7.5	0.1	0.0	15	10	7	4	2	2	1
4	6	15.7	-10.7	-5.0	7.5	0.2	0.0	0	0	0	0	0	0	0
5	1	6.7	-2.3	-8.0	7.5	0.1	0.0	15	10	7	4	2	2	1
5	6	15.7	-2.7	-7.5	7.5	0.2	0.0	0	0	0	0	0	0	0
6	1	6.7	6.4	-7.2	7.5	0.1	0.0	15	10	7	4	2	2	1
6	6	15.7	5.3	-7.0	7.5	0.2	0.0	0	0	0	0	0	0	0
7	1	6.7	15.2	-3.1	7.5	0.1	0.0	15	10	7	4	2	2	1
7	6	15.7	13.3	-3.5	7.5	0.2	0.0	0	0	0	0	0	0	0
8	6	15.7	21.2	3.0	0.2	7.5	0.0	0	0	0	0	0	0	0
8	1	6.7	24.0	4.2	0.1	7.5	0.0	15	10	7	4	2	2	1
6	6	15.7	29.2	12.4	0.2	7.5	0.0	0	0	0	0	0	0	0
6	1	6.7	32.9	14.9	0.1	7.5	0.0	15	10	7	4	2	2	1

REFERENCIA DEL PROYECTO Prolongación canal St. Vicenç

Elemento = 7

Sec	Hip	Nd	Vd	Md	Asf1	Asf2	ASt	8	10	12	16	20	25	32
8	6	16.2	-29.4	13.0	0.2	7.5	0.0	0	0	0	0	0	0	0
8	1	6.7	-32.9	14.9	0.1	7.5	0.0	15	10	7	4	2	2	1
2	6	16.2	-21.5	3.5	0.2	7.5	0.0	0	0	0	0	0	0	0
2	1	6.7	-24.0	4.2	0.1	7.5	0.0	15	10	7	4	2	2	1
3	1	6.7	-15.2	-3.1	7.5	0.1	0.0	15	10	7	4	2	2	1
3	6	16.2	-13.6	-3.1	7.5	0.2	0.0	0	0	0	0	0	0	0
4	1	6.7	-6.4	-7.2	7.5	0.1	0.0	15	10	7	4	2	2	1
4	6	16.2	-5.9	-6.7	7.5	0.2	0.0	0	0	0	0	0	0	0
5	1	6.7	2.3	-8.0	7.5	0.1	0.0	15	10	7	4	2	2	1
5	6	16.2	1.8	-7.5	7.5	0.2	0.0	0	0	0	0	0	0	0
6	1	6.7	11.1	-5.4	7.5	0.1	0.0	15	10	7	4	2	2	1
6	6	16.2	9.6	-5.3	7.5	0.2	0.0	0	0	0	0	0	0	0
7	5	15.1	19.0	-0.5	7.5	0.2	0.0	15	10	7	4	2	2	1
7	1	6.7	19.9	0.4	0.1	7.5	0.0	15	10	7	4	2	2	1
8	6	16.2	25.2	7.7	0.2	7.5	0.0	0	0	0	0	0	0	0
8	1	6.7	28.9	9.5	0.1	7.5	0.0	15	10	7	4	2	2	1
9	6	16.2	33.0	18.6	0.2	7.6	0.0	0	0	0	0	0	0	0
9	7	15.5	42.6	24.4	0.2	10.8	0.0	22	14	10	5	3	2	1

Elemento = 8

Sec	Hip	Nd	Vd	Md	Asf1	Asf2	ASt	8	10	12	16	20	25	32
11	5	15.6	-40.5	21.3	0.2	9.1	0.0	0	0	0	0	0	0	0
11	3	4.5	-40.7	21.7	0.1	10.5	0.0	21	13	9	5	3	2	1
2	5	15.6	-31.5	7.9	0.2	7.5	0.0	0	0	0	0	0	0	0
2	1	5.9	-32.0	8.0	0.1	7.5	0.0	15	10	7	4	2	2	1
3	1	5.9	-23.3	-2.4	7.5	0.1	0.0	15	10	7	4	2	2	1
3	5	15.6	-22.7	-2.3	7.5	0.2	0.0	0	0	0	0	0	0	0
4	1	5.9	-14.7	-9.5	7.5	0.1	0.0	15	10	7	4	2	2	1
4	5	15.6	-14.0	-9.2	7.5	0.2	0.0	0	0	0	0	0	0	0
5	1	5.9	-6.3	-13.4	7.5	0.1	0.0	15	10	7	4	2	2	1
5	5	15.6	-5.5	-12.9	7.5	0.2	0.0	0	0	0	0	0	0	0
6	1	5.9	2.0	-14.2	7.5	0.1	0.0	15	10	7	4	2	2	1
6	5	15.6	3.0	-13.3	7.5	0.2	0.0	0	0	0	0	0	0	0
7	1	5.9	10.5	-11.9	7.5	0.1	0.0	15	10	7	4	2	2	1
7	5	15.6	11.6	-10.6	7.5	0.2	0.0	0	0	0	0	0	0	0
8	1	5.9	19.1	-6.4	7.5	0.1	0.0	15	10	7	4	2	2	1
8	5	15.6	20.4	-4.6	7.5	0.2	0.0	0	0	0	0	0	0	0
12	5	15.6	29.4	4.7	0.2	7.5	0.0	0	0	0	0	0	0	0
12	1	5.9	27.9	2.5	0.1	7.5	0.0	15	10	7	4	2	2	1

Elemento = 9

Sec	Hip	Nd	Vd	Md	Asf1	Asf2	ASt	8	10	12	16	20	25	32
30	1	39.5	5.9	-7.3	6.0	0.4	0.0	12	8	5	3	2	1	1
30	7	50.1	13.5	-10.6	6.0	0.6	0.0	1	1	0	0	0	0	0
2	1	39.3	4.4	-6.0	6.0	0.4	0.0	12	8	5	3	2	1	1
2	7	49.8	10.1	-7.6	6.0	0.6	0.0	1	1	0	0	0	0	0
3	1	39.0	3.0	-5.0	6.0	0.4	0.0	12	8	5	3	2	1	1
3	7	49.5	6.8	-5.5	6.0	0.6	0.0	1	1	0	0	0	0	0
4	1	38.8	1.6	-4.5	6.0	0.4	0.0	12	8	5	3	2	1	1
4	7	49.3	3.6	-4.2	6.0	0.6	0.0	1	1	0	0	0	0	0
5	1	38.5	0.2	-4.3	6.0	0.4	0.0	12	8	5	3	2	1	1
5	7	49.0	0.5	-3.7	6.0	0.6	0.0	1	1	0	0	0	0	0
6	1	38.3	-1.2	-4.4	6.0	0.4	0.0	12	8	5	3	2	1	1
6	7	48.8	-2.6	-4.0	6.0	0.6	0.0	1	1	0	0	0	0	0
7	1	38.0	-2.4	-4.8	6.0	0.4	0.0	12	8	5	3	2	1	1
7	7	48.5	-5.5	-5.0	6.0	0.5	0.0	1	1	0	0	0	0	0
8	1	37.8	-3.7	-5.6	6.0	0.4	0.0	12	8	5	3	2	1	1
8	7	48.3	-8.3	-6.7	6.0	0.5	0.0	1	1	0	0	0	0	0
29	1	37.5	-4.9	-6.7	6.0	0.4	0.0	12	8	5	3	2	1	1
29	7	48.0	-11.1	-9.1	6.0	0.5	0.0	1	1	0	0	0	0	0

Elemento = 10

Sec	Hip	Nd	Vd	Md	Asf1	Asf2	ASt	8	10	12	16	20	25	32
31	2	85.8	2.1	-0.5	6.0	1.0	0.0	12	8	5	3	2	1	1
31	1	90.2	0.8	0.5	1.0	6.0	0.0	12	8	5	3	2	1	1
9	2	85.6	2.1	0.0	6.0	1.0	0.0	12	8	5	3	2	1	1
9	1	90.0	0.8	0.7	1.0	6.0	0.0	12	8	5	3	2	1	1
9	6	83.2	2.5	0.0	6.0	0.9	0.0	12	8	5	3	2	1	1
9	1	89.7	0.8	0.9	1.0	6.0	0.0	12	8	5	3	2	1	1
9	7	105.8	2.4	1.1	1.2	6.0	0.0	2	2	1	1	0	0	0
9	1	89.5	0.8	1.1	1.0	6.0	0.0	12	8	5	3	2	1	1
9	7	105.5	2.4	1.7	1.2	6.0	0.0	2	2	1	1	0	0	0
9	1	89.2	0.8	1.3	1.0	6.0	0.0	12	8	5	3	2	1	1
9	7	105.3	2.4	2.3	1.2	6.0	0.0	2	2	1	1	0	0	0
9	1	89.0	0.8	1.5	1.0	6.0	0.0	12	8	5	3	2	1	1
9	7	105.0	2.4	2.9	1.2	6.0	0.0	2	2	1	1	0	0	0
9	1	88.7	0.8	1.6	1.0	6.0	0.0	12	8	5	3	2	1	1
9	7	104.7	2.4	3.5	1.2	6.0	0.0	2	2	1	1	0	0	0
9	1	88.5	0.8	1.8	1.0	6.0	0.0	12	8	5	3	2	1	1
36	7	104.5	2.4	4.0	1.2	6.0	0.0	2	2	1	1	0	0	0
36	1	88.2	0.8	2.0	1.0	6.0	0.0	12	8	5	3	2	1	1

REFERENCIA DEL PROYECTO Prolongación canal St. Vicenç

Elemento = 11

Sec	Hip	Nd	Vd	Md	Asf1	Asf2	ASt	8	10	12	16	20	25	32
32	1	77.2	0.0	0.0	6.0	0.9	0.0	12	8	5	3	2	1	1
32	2	68.0	-0.3	0.2	0.8	6.0	0.0	12	8	5	3	2	1	1
9	1	76.9	0.0	0.0	6.0	0.9	0.0	12	8	5	3	2	1	1
9	2	67.7	-0.3	0.1	0.8	6.0	0.0	12	8	5	3	2	1	1
9	1	76.7	0.0	0.0	6.0	0.9	0.0	12	8	5	3	2	1	1
9	2	67.5	-0.3	0.1	0.8	6.0	0.0	12	8	5	3	2	1	1
9	1	76.4	0.0	0.0	6.0	0.9	0.0	12	8	5	3	2	1	1
9	7	86.7	0.0	-0.1	6.0	1.0	0.0	2	1	1	0	0	0	0
9	1	76.1	0.0	0.0	6.0	0.9	0.0	12	8	5	3	2	1	1
9	7	86.4	0.0	-0.1	6.0	1.0	0.0	2	1	1	0	0	0	0
9	1	75.9	0.0	0.0	6.0	0.9	0.0	12	8	5	3	2	1	1
9	5	76.7	1.4	0.4	0.9	6.0	0.0	12	8	5	3	2	1	1
9	1	75.6	0.0	0.0	6.0	0.9	0.0	12	8	5	3	2	1	1
9	5	76.5	1.4	0.7	0.9	6.0	0.0	12	8	5	3	2	1	1
9	1	75.4	0.0	0.0	6.0	0.9	0.0	12	8	5	3	2	1	1
9	5	76.2	1.4	1.1	0.9	6.0	0.0	12	8	5	3	2	1	1
35	1	75.1	0.0	0.0	6.0	0.8	0.0	12	8	5	3	2	1	1
35	5	76.0	1.4	1.4	0.9	6.0	0.0	12	8	5	3	2	1	1

Elemento = 12

Sec	Hip	Nd	Vd	Md	Asf1	Asf2	ASt	8	10	12	16	20	25	32
33	1	90.2	-0.8	-0.5	6.0	1.0	0.0	12	8	5	3	2	1	1
33	2	79.0	-1.7	0.7	0.9	6.0	0.0	12	8	5	3	2	1	1
9	1	90.0	-0.8	-0.7	6.0	1.0	0.0	12	8	5	3	2	1	1
9	2	78.7	-1.7	0.3	0.9	6.0	0.0	12	8	5	3	2	1	1
9	1	89.7	-0.8	-0.9	6.0	1.0	0.0	12	8	5	3	2	1	1
9	7	99.3	-1.6	-0.4	6.0	1.1	0.0	2	1	1	1	0	0	0
9	1	89.5	-0.8	-1.1	6.0	1.0	0.0	12	8	5	3	2	1	1
9	7	99.0	-1.6	-0.8	6.0	1.1	0.0	2	1	1	1	0	0	0
9	1	89.2	-0.8	-1.3	6.0	1.0	0.0	12	8	5	3	2	1	1
9	7	98.7	-1.6	-1.2	6.0	1.1	0.0	2	1	1	1	0	0	0
9	1	89.0	-0.8	-1.5	6.0	1.0	0.0	12	8	5	3	2	1	1
9	7	98.5	-1.6	-1.6	6.0	1.1	0.0	2	1	1	1	0	0	0
9	1	88.7	-0.8	-1.6	6.0	1.0	0.0	12	8	5	3	2	1	1
9	7	98.2	-1.6	-1.9	6.0	1.1	0.0	2	1	1	1	0	0	0
9	1	88.5	-0.8	-1.8	6.0	1.0	0.0	12	8	5	3	2	1	1
9	7	98.0	-1.6	-2.3	6.0	1.1	0.0	2	1	1	1	0	0	0
34	1	88.2	-0.8	-2.0	6.0	1.0	0.0	12	8	5	3	2	1	1
34	7	97.7	-1.6	-2.7	6.0	1.1	0.0	2	1	1	1	0	0	0

REFERENCIA DEL PROYECTO Prolongación canal St. Vicenç

Elemento = 13

Sec	Hip	Nd	Vd	Md	Asf1	Asf2	ASt	8	10	12	16	20	25	32
14	7	45.1	-13.5	9.7	0.5	6.0	0.0	1	1	0	0	0	0	0
14	1	39.5	-5.9	7.3	0.4	6.0	0.0	12	8	5	3	2	1	1
9	7	44.9	-10.1	6.7	0.5	6.0	0.0	1	1	0	0	0	0	0
9	1	39.3	-4.4	6.0	0.4	6.0	0.0	12	8	5	3	2	1	1
9	7	44.6	-6.7	4.6	0.5	6.0	0.0	1	1	0	0	0	0	0
9	1	39.0	-3.0	5.0	0.4	6.0	0.0	12	8	5	3	2	1	1
9	7	44.3	-3.5	3.3	0.5	6.0	0.0	1	1	0	0	0	0	0
9	1	38.8	-1.6	4.5	0.4	6.0	0.0	12	8	5	3	2	1	1
9	7	44.1	-0.4	2.9	0.5	6.0	0.0	1	1	0	0	0	0	0
9	1	38.5	-0.2	4.3	0.4	6.0	0.0	12	8	5	3	2	1	1
9	7	43.8	2.6	3.1	0.5	6.0	0.0	1	1	0	0	0	0	0
9	1	38.3	1.2	4.4	0.4	6.0	0.0	12	8	5	3	2	1	1
9	7	43.6	5.6	4.2	0.5	6.0	0.0	1	1	0	0	0	0	0
9	1	38.0	2.4	4.8	0.4	6.0	0.0	12	8	5	3	2	1	1
9	7	43.3	8.4	5.9	0.5	6.0	0.0	1	1	0	0	0	0	0
9	1	37.8	3.7	5.6	0.4	6.0	0.0	12	8	5	3	2	1	1
15	7	43.1	11.2	8.4	0.5	6.0	0.0	1	1	0	0	0	0	0
15	1	37.5	4.9	6.7	0.4	6.0	0.0	12	8	5	3	2	1	1

Programa de calculo automatico de armado desarrollado por:

PEDELTA, S.L.

ESFUERZOS DE CALCULO PARA LAS DISTINTAS HIPOTESIS DE CARGA

REFERENCIA DEL PROYECTO Prolongación canal St. Vicenç. Cargas EC-1

DATOS GENERALES :

N§ de barras = 13
N§ de secciones por barra = 9
N§ de combinaciones en ELU = 7

N§ de combinaciones en ELS = 7
N§ de combinaciones en ELS (frecuente) = 7
N§ de combinaciones en ELS (poco frecuente) = 0
N§ de combinaciones en ELS (caracteristica) = 0

Resistencia a compresion del hormigon (T/m2) = 2500
Resistencia media a traccion del hormigon (T/m2) = 256.4964
Modulo de deformacion del hormigon (T/m2) = 248541.5
Resistencia a traccion del acero (T/m2) = 51000
Modulo de deformacion del acero (T/m2) = 2.1E+07

REFERENCIA DEL PROYECTO Prolongación canal St. Vicenç

Elemento = 1

Sec	Hip	Nd	Vd	Md	Asf1	Asf2	ASt	8	10	12	16	20	25	32
27	1	5.0	28.3	-1.7	7.5	0.1	0.0	15	10	7	4	2	2	1
27	5	15.7	29.6	-4.6	7.5	0.2	0.0	0	0	0	0	0	0	0
2	5	15.7	20.7	4.8	0.2	7.5	0.0	0	0	0	0	0	0	0
2	1	5.0	19.4	7.2	0.1	7.5	0.0	15	10	7	4	2	2	1
3	5	15.7	11.8	10.9	0.2	7.5	0.0	0	0	0	0	0	0	0
3	1	5.0	10.6	12.9	0.1	7.5	0.0	15	10	7	4	2	2	1
4	5	15.7	3.0	13.7	0.2	7.5	0.0	0	0	0	0	0	0	0
4	7	15.1	3.3	18.9	0.2	7.8	0.0	16	10	7	4	2	2	1
5	5	15.7	-5.9	13.1	0.2	7.5	0.0	0	0	0	0	0	0	0
5	1	5.0	-7.1	14.2	0.1	7.5	0.0	15	10	7	4	2	2	1
6	5	15.7	-14.7	9.3	0.2	7.5	0.0	0	0	0	0	0	0	0
6	1	5.0	-16.0	9.8	0.1	7.5	0.0	15	10	7	4	2	2	1
7	5	15.7	-23.6	2.1	0.2	7.5	0.0	0	0	0	0	0	0	0
7	1	5.0	-24.8	2.2	0.1	7.5	0.0	15	10	7	4	2	2	1
8	1	5.0	-33.7	-8.8	7.5	0.1	0.0	15	10	7	4	2	2	1
8	5	15.7	-32.4	-8.4	7.5	0.2	0.0	0	0	0	0	0	0	0
26	7	15.1	-53.6	-28.2	12.9	0.2	0.0	26	16	11	6	4	3	2
26	5	15.7	-41.3	-22.2	9.5	0.2	0.0	0	0	0	0	0	0	0

Elemento = 2

Sec	Hip	Nd	Vd	Md	Asf1	Asf2	ASt	8	10	12	16	20	25	32
24	7	12.5	42.7	-25.6	11.7	0.1	0.0	23	15	10	6	4	2	1
24	5	14.0	36.5	-20.1	8.6	0.2	0.0	0	0	0	0	0	0	0
2	1	4.2	28.6	-9.6	7.5	0.0	0.0	15	10	7	4	2	2	1
2	5	14.0	27.6	-8.1	7.5	0.2	0.0	0	0	0	0	0	0	0
3	1	4.2	19.8	-0.5	7.5	0.0	0.0	15	10	7	4	2	2	1
3	5	14.0	18.8	0.6	0.2	7.5	0.0	15	10	7	4	2	2	1
4	5	14.0	9.9	6.0	0.2	7.5	0.0	0	0	0	0	0	0	0
4	1	4.2	10.9	5.2	0.0	7.5	0.0	15	10	7	4	2	2	1
5	5	14.0	1.1	8.0	0.2	7.5	0.0	0	0	0	0	0	0	0
5	1	4.2	2.1	7.7	0.0	7.5	0.0	15	10	7	4	2	2	1
6	5	14.0	-7.8	6.8	0.2	7.5	0.0	0	0	0	0	0	0	0
6	1	4.2	-6.8	6.8	0.0	7.5	0.0	15	10	7	4	2	2	1
7	5	14.0	-16.6	2.2	0.2	7.5	0.0	0	0	0	0	0	0	0
7	1	4.2	-15.6	2.6	0.0	7.5	0.0	15	10	7	4	2	2	1
8	1	4.2	-24.5	-4.9	7.5	0.0	0.0	15	10	7	4	2	2	1
8	5	14.0	-25.5	-5.7	7.5	0.2	0.0	0	0	0	0	0	0	0
23	7	12.5	-38.2	-19.0	8.2	0.1	0.0	16	10	7	4	3	2	1
23	5	14.0	-34.3	-16.9	7.5	0.2	0.0	0	0	0	0	0	0	0

REFERENCIA DEL PROYECTO Prolongación canal St. Vicenç

Elemento = 3

Sec	Hip	Nd	Vd	Md	Asf1	Asf2	ASt	8	10	12	16	20	25	32
21	7	12.6	38.8	-19.0	8.2	0.1	0.0	16	10	7	4	3	2	1
21	5	12.6	33.2	-15.4	7.5	0.1	0.0	0	0	0	0	0	0	0
2	1	4.2	24.5	-4.9	7.5	0.0	0.0	15	10	7	4	2	2	1
2	5	12.6	24.3	-4.7	7.5	0.1	0.0	0	0	0	0	0	0	0
3	5	12.6	15.5	2.8	0.1	7.5	0.0	0	0	0	0	0	0	0
3	1	4.2	15.6	2.6	0.0	7.5	0.0	15	10	7	4	2	2	1
4	5	12.6	6.6	7.0	0.1	7.5	0.0	0	0	0	0	0	0	0
4	1	4.2	6.8	6.8	0.0	7.5	0.0	15	10	7	4	2	2	1
5	5	12.6	-2.2	7.8	0.1	7.5	0.0	0	0	0	0	0	0	0
5	1	4.2	-2.1	7.7	0.0	7.5	0.0	15	10	7	4	2	2	1
6	5	12.6	-11.1	5.3	0.1	7.5	0.0	0	0	0	0	0	0	0
6	1	4.2	-10.9	5.2	0.0	7.5	0.0	15	10	7	4	2	2	1
7	1	4.2	-19.8	-0.5	7.5	0.0	0.0	15	10	7	4	2	2	1
7	6	10.2	-16.3	0.1	0.1	7.5	0.0	15	10	7	4	2	2	1
8	1	4.2	-28.6	-9.6	7.5	0.0	0.0	15	10	7	4	2	2	1
8	5	12.6	-28.8	-9.6	7.5	0.1	0.0	0	0	0	0	0	0	0
20	3	3.9	-37.5	-22.1	10.8	0.0	0.0	22	14	10	5	3	2	1
20	5	12.6	-37.6	-22.1	9.8	0.1	0.0	0	0	0	0	0	0	0

Elemento = 4

Sec	Hip	Nd	Vd	Md	Asf1	Asf2	ASt	8	10	12	16	20	25	32
18	7	14.3	47.8	-26.0	11.8	0.2	0.0	24	15	10	6	4	2	1
18	7	14.3	47.8	-26.0	11.8	0.2	0.0	0	0	0	0	0	0	0
2	1	5.0	33.7	-8.8	7.5	0.1	0.0	15	10	7	4	2	2	1
2	7	14.3	37.7	-9.9	7.5	0.2	0.0	0	0	0	0	0	0	0
3	7	14.3	27.5	2.3	0.2	7.5	0.0	0	0	0	0	0	0	0
3	1	5.0	24.8	2.2	0.1	7.5	0.0	15	10	7	4	2	2	1
4	7	14.3	17.4	10.7	0.2	7.5	0.0	0	0	0	0	0	0	0
4	1	5.0	16.0	9.8	0.1	7.5	0.0	15	10	7	4	2	2	1
5	7	14.3	7.3	15.4	0.2	7.5	0.0	0	0	0	0	0	0	0
5	1	5.0	7.1	14.2	0.1	7.5	0.0	15	10	7	4	2	2	1
6	7	14.3	-2.8	16.2	0.2	7.5	0.0	0	0	0	0	0	0	0
6	1	5.0	-1.7	15.2	0.1	7.5	0.0	15	10	7	4	2	2	1
7	7	14.3	-12.9	13.3	0.2	7.5	0.0	0	0	0	0	0	0	0
7	1	5.0	-10.6	12.9	0.1	7.5	0.0	15	10	7	4	2	2	1
8	7	14.3	-23.0	6.5	0.2	7.5	0.0	0	0	0	0	0	0	0
8	1	5.0	-19.4	7.2	0.1	7.5	0.0	15	10	7	4	2	2	1
17	1	5.0	-28.3	-1.7	7.5	0.1	0.0	15	10	7	4	2	2	1
17	7	14.3	-33.1	-4.0	7.5	0.2	0.0	0	0	0	0	0	0	0

Elemento = 5

Sec	Hip	Nd	Vd	Md	Asf1	Asf2	ASt	8	10	12	16	20	25	32
2	6	13.2	-30.0	6.7	0.1	7.5	0.0	0	0	0	0	0	0	0
2	1	5.9	-28.4	2.4	0.1	7.5	0.0	15	10	7	4	2	2	1
2	1	5.9	-19.4	-6.5	7.5	0.1	0.0	15	10	7	4	2	2	1
2	6	13.2	-21.1	-2.9	7.5	0.1	0.0	0	0	0	0	0	0	0
3	1	5.9	-10.6	-12.1	7.5	0.1	0.0	15	10	7	4	2	2	1
3	6	13.2	-12.5	-9.2	7.5	0.1	0.0	0	0	0	0	0	0	0
4	1	5.9	-2.0	-14.5	7.5	0.1	0.0	15	10	7	4	2	2	1
4	6	13.2	-4.1	-12.3	7.5	0.1	0.0	0	0	0	0	0	0	0
5	1	5.9	6.5	-13.7	7.5	0.1	0.0	15	10	7	4	2	2	1
5	6	13.2	4.2	-12.3	7.5	0.1	0.0	0	0	0	0	0	0	0
6	1	5.9	15.0	-9.6	7.5	0.1	0.0	15	10	7	4	2	2	1
6	6	13.2	12.4	-9.2	7.5	0.1	0.0	0	0	0	0	0	0	0
7	1	5.9	23.7	-2.4	7.5	0.1	0.0	15	10	7	4	2	2	1
7	6	13.2	20.7	-2.9	7.5	0.1	0.0	0	0	0	0	0	0	0
8	6	13.2	29.2	6.4	0.1	7.5	0.0	0	0	0	0	0	0	0
8	1	5.9	32.6	8.2	0.1	7.5	0.0	15	10	7	4	2	2	1
3	6	13.2	37.7	18.9	0.1	8.1	0.0	0	0	0	0	0	0	0
3	7	13.0	49.9	25.7	0.1	11.7	0.0	23	15	10	6	4	2	1

Elemento = 6

Sec	Hip	Nd	Vd	Md	Asf1	Asf2	ASt	8	10	12	16	20	25	32
5	6	15.9	-36.1	21.4	0.2	9.1	0.0	0	0	0	0	0	0	0
5	7	15.6	-46.8	27.8	0.2	12.6	0.0	25	16	11	6	4	3	2
2	6	15.9	-27.6	9.5	0.2	7.5	0.0	0	0	0	0	0	0	0
2	1	6.6	-29.4	9.7	0.1	7.5	0.0	15	10	7	4	2	2	1
3	6	15.9	-19.2	0.7	0.2	7.5	0.0	0	0	0	0	0	0	0
3	1	6.6	-20.3	0.4	0.1	7.5	0.0	15	10	7	4	2	2	1
4	1	6.6	-11.3	-5.5	7.5	0.1	0.0	15	10	7	4	2	2	1
4	6	15.9	-10.9	-4.9	7.5	0.2	0.0	0	0	0	0	0	0	0
5	1	6.6	-2.4	-8.1	7.5	0.1	0.0	15	10	7	4	2	2	1
5	6	15.9	-2.8	-7.5	7.5	0.2	0.0	0	0	0	0	0	0	0
6	1	6.6	6.5	-7.3	7.5	0.1	0.0	15	10	7	4	2	2	1
6	6	15.9	5.2	-7.1	7.5	0.2	0.0	0	0	0	0	0	0	0
7	1	6.6	15.4	-3.2	7.5	0.1	0.0	15	10	7	4	2	2	1
7	6	15.9	13.2	-3.6	7.5	0.2	0.0	0	0	0	0	0	0	0
8	6	15.9	21.2	2.9	0.2	7.5	0.0	0	0	0	0	0	0	0
8	1	6.6	24.4	4.3	0.1	7.5	0.0	15	10	7	4	2	2	1
6	6	15.9	29.3	12.3	0.2	7.5	0.0	0	0	0	0	0	0	0
6	1	6.6	33.5	15.1	0.1	7.5	0.0	15	10	7	4	2	2	1

REFERENCIA DEL PROYECTO Prolongación canal St. Vicenç

Elemento = 7

Sec	Hip	Nd	Vd	Md	Asf1	Asf2	ASt	8	10	12	16	20	25	32
8	6	16.3	-29.3	12.9	0.2	7.5	0.0	0	0	0	0	0	0	0
8	1	6.6	-33.5	15.1	0.1	7.5	0.0	15	10	7	4	2	2	1
2	6	16.3	-21.4	3.4	0.2	7.5	0.0	0	0	0	0	0	0	0
2	1	6.6	-24.4	4.3	0.1	7.5	0.0	15	10	7	4	2	2	1
3	1	6.6	-15.4	-3.2	7.5	0.1	0.0	15	10	7	4	2	2	1
3	6	16.3	-13.5	-3.2	7.5	0.2	0.0	0	0	0	0	0	0	0
4	1	6.6	-6.5	-7.3	7.5	0.1	0.0	15	10	7	4	2	2	1
4	6	16.3	-5.8	-6.8	7.5	0.2	0.0	0	0	0	0	0	0	0
5	1	6.6	2.4	-8.1	7.5	0.1	0.0	15	10	7	4	2	2	1
5	6	16.3	1.9	-7.5	7.5	0.2	0.0	0	0	0	0	0	0	0
6	1	6.6	11.3	-5.5	7.5	0.1	0.0	15	10	7	4	2	2	1
6	6	16.3	9.6	-5.4	7.5	0.2	0.0	0	0	0	0	0	0	0
7	5	15.0	19.3	-0.5	7.5	0.2	0.0	15	10	7	4	2	2	1
7	1	6.6	20.3	0.4	0.1	7.5	0.0	15	10	7	4	2	2	1
8	6	16.3	25.2	7.7	0.2	7.5	0.0	0	0	0	0	0	0	0
8	1	6.6	29.4	9.7	0.1	7.5	0.0	15	10	7	4	2	2	1
9	6	16.3	33.1	18.6	0.2	7.5	0.0	0	0	0	0	0	0	0
9	7	15.5	44.1	25.3	0.2	11.2	0.0	22	14	10	6	4	2	1

Elemento = 8

Sec	Hip	Nd	Vd	Md	Asf1	Asf2	ASt	8	10	12	16	20	25	32
11	5	15.5	-41.2	21.8	0.2	9.3	0.0	0	0	0	0	0	0	0
11	3	4.5	-41.4	22.1	0.1	10.8	0.0	22	14	10	5	3	2	1
2	5	15.5	-32.1	8.0	0.2	7.5	0.0	0	0	0	0	0	0	0
2	1	5.9	-32.6	8.2	0.1	7.5	0.0	15	10	7	4	2	2	1
3	1	5.9	-23.7	-2.4	7.5	0.1	0.0	15	10	7	4	2	2	1
3	5	15.5	-23.1	-2.3	7.5	0.2	0.0	0	0	0	0	0	0	0
4	1	5.9	-15.0	-9.6	7.5	0.1	0.0	15	10	7	4	2	2	1
4	5	15.5	-14.3	-9.3	7.5	0.2	0.0	0	0	0	0	0	0	0
5	1	5.9	-6.5	-13.7	7.5	0.1	0.0	15	10	7	4	2	2	1
5	5	15.5	-5.7	-13.1	7.5	0.2	0.0	0	0	0	0	0	0	0
6	1	5.9	2.0	-14.5	7.5	0.1	0.0	15	10	7	4	2	2	1
6	5	15.5	3.0	-13.6	7.5	0.2	0.0	0	0	0	0	0	0	0
7	1	5.9	10.6	-12.1	7.5	0.1	0.0	15	10	7	4	2	2	1
7	5	15.5	11.7	-10.8	7.5	0.2	0.0	0	0	0	0	0	0	0
8	1	5.9	19.4	-6.5	7.5	0.1	0.0	15	10	7	4	2	2	1
8	5	15.5	20.6	-4.8	7.5	0.2	0.0	0	0	0	0	0	0	0
12	5	15.5	29.8	4.6	0.2	7.5	0.0	0	0	0	0	0	0	0
12	1	5.9	28.4	2.4	0.1	7.5	0.0	15	10	7	4	2	2	1

Elemento = 9

Sec	Hip	Nd	Vd	Md	Asf1	Asf2	ASt	8	10	12	16	20	25	32
30	1	40.1	5.9	-7.3	6.0	0.5	0.0	12	8	5	3	2	1	1
30	7	51.8	13.4	-10.8	6.0	0.6	0.0	1	1	1	0	0	0	0
2	1	39.9	4.4	-6.0	6.0	0.4	0.0	12	8	5	3	2	1	1
2	7	51.6	10.0	-7.9	6.0	0.6	0.0	1	1	1	0	0	0	0
3	1	39.6	2.9	-5.1	6.0	0.4	0.0	12	8	5	3	2	1	1
3	7	51.3	6.7	-5.8	6.0	0.6	0.0	1	1	1	0	0	0	0
4	1	39.4	1.5	-4.6	6.0	0.4	0.0	12	8	5	3	2	1	1
4	7	51.1	3.5	-4.5	6.0	0.6	0.0	1	1	1	0	0	0	0
5	1	39.1	0.1	-4.4	6.0	0.4	0.0	12	8	5	3	2	1	1
5	7	50.8	0.4	-4.0	6.0	0.6	0.0	1	1	1	0	0	0	0
6	1	38.9	-1.2	-4.5	6.0	0.4	0.0	12	8	5	3	2	1	1
6	7	50.6	-2.7	-4.3	6.0	0.6	0.0	1	1	1	0	0	0	0
7	1	38.6	-2.5	-5.0	6.0	0.4	0.0	12	8	5	3	2	1	1
7	7	50.3	-5.6	-5.4	6.0	0.6	0.0	1	1	1	0	0	0	0
8	1	38.3	-3.8	-5.8	6.0	0.4	0.0	12	8	5	3	2	1	1
8	7	50.1	-8.4	-7.1	6.0	0.6	0.0	1	1	0	0	0	0	0
29	1	38.1	-5.0	-6.9	6.0	0.4	0.0	12	8	5	3	2	1	1
29	7	49.8	-11.2	-9.6	6.0	0.6	0.0	1	1	0	0	0	0	0

Elemento = 10

Sec	Hip	Nd	Vd	Md	Asf1	Asf2	ASt	8	10	12	16	20	25	32
31	2	86.7	2.3	-0.7	6.0	1.0	0.0	12	8	5	3	2	1	1
31	1	91.8	0.7	0.6	1.0	6.0	0.0	12	8	5	3	2	1	1
9	2	86.5	2.3	-0.1	6.0	1.0	0.0	12	8	5	3	2	1	1
9	1	91.6	0.7	0.7	1.0	6.0	0.0	12	8	5	3	2	1	1
9	6	84.1	2.7	0.0	6.0	0.9	0.0	12	8	5	3	2	1	1
9	1	91.3	0.7	0.9	1.0	6.0	0.0	12	8	5	3	2	1	1
9	7	109.9	2.6	1.2	1.2	6.0	0.0	2	2	1	1	0	0	0
9	1	91.1	0.7	1.1	1.0	6.0	0.0	12	8	5	3	2	1	1
9	7	109.6	2.6	1.8	1.2	6.0	0.0	2	2	1	1	0	0	0
9	1	90.8	0.7	1.3	1.0	6.0	0.0	12	8	5	3	2	1	1
9	7	109.4	2.6	2.4	1.2	6.0	0.0	2	2	1	1	0	0	0
9	1	90.6	0.7	1.5	1.0	6.0	0.0	12	8	5	3	2	1	1
9	7	109.1	2.6	3.1	1.2	6.0	0.0	2	2	1	1	0	0	0
9	1	90.3	0.7	1.7	1.0	6.0	0.0	12	8	5	3	2	1	1
9	7	108.9	2.6	3.7	1.2	6.0	0.0	2	2	1	1	0	0	0
9	1	90.1	0.7	1.8	1.0	6.0	0.0	12	8	5	3	2	1	1
36	7	108.6	2.6	4.4	1.2	6.0	0.0	2	2	1	1	0	0	0
36	1	89.8	0.7	2.0	1.0	6.0	0.0	12	8	5	3	2	1	1

REFERENCIA DEL PROYECTO Prolongación canal St. Vicenç

Elemento = 11

Sec	Hip	Nd	Vd	Md	Asf1	Asf2	ASt	8	10	12	16	20	25	32
32	1	78.5	0.0	0.0	6.0	0.9	0.0	12	8	5	3	2	1	1
32	2	68.0	-0.3	0.2	0.8	6.0	0.0	12	8	5	3	2	1	1
9	1	78.3	0.0	0.0	6.0	0.9	0.0	12	8	5	3	2	1	1
9	2	67.7	-0.3	0.1	0.8	6.0	0.0	12	8	5	3	2	1	1
9	1	78.0	0.0	0.0	6.0	0.9	0.0	12	8	5	3	2	1	1
9	2	67.5	-0.3	0.1	0.8	6.0	0.0	12	8	5	3	2	1	1
9	1	77.8	0.0	0.0	6.0	0.9	0.0	12	8	5	3	2	1	1
9	7	89.4	-0.1	-0.1	6.0	1.0	0.0	2	1	1	1	0	0	0
9	1	77.5	0.0	0.0	6.0	0.9	0.0	12	8	5	3	2	1	1
9	7	89.1	-0.1	-0.1	6.0	1.0	0.0	2	1	1	0	0	0	0
9	1	77.2	0.0	0.0	6.0	0.9	0.0	12	8	5	3	2	1	1
9	5	78.1	1.4	0.4	0.9	6.0	0.0	12	8	5	3	2	1	1
9	1	77.0	0.0	0.0	6.0	0.9	0.0	12	8	5	3	2	1	1
9	5	77.8	1.4	0.7	0.9	6.0	0.0	12	8	5	3	2	1	1
9	1	76.7	0.0	0.0	6.0	0.9	0.0	12	8	5	3	2	1	1
9	5	77.6	1.4	1.1	0.9	6.0	0.0	12	8	5	3	2	1	1
35	1	76.5	0.0	0.0	6.0	0.9	0.0	12	8	5	3	2	1	1
35	5	77.3	1.4	1.4	0.9	6.0	0.0	12	8	5	3	2	1	1

Elemento = 12

Sec	Hip	Nd	Vd	Md	Asf1	Asf2	ASt	8	10	12	16	20	25	32
33	1	91.8	-0.7	-0.6	6.0	1.0	0.0	12	8	5	3	2	1	1
33	2	79.0	-1.9	0.8	0.9	6.0	0.0	12	8	5	3	2	1	1
9	1	91.6	-0.7	-0.7	6.0	1.0	0.0	12	8	5	3	2	1	1
9	2	78.7	-1.9	0.4	0.9	6.0	0.0	12	8	5	3	2	1	1
9	1	91.3	-0.7	-0.9	6.0	1.0	0.0	12	8	5	3	2	1	1
9	7	102.5	-1.7	-0.4	6.0	1.2	0.0	2	1	1	1	0	0	0
9	1	91.1	-0.7	-1.1	6.0	1.0	0.0	12	8	5	3	2	1	1
9	7	102.2	-1.7	-0.8	6.0	1.2	0.0	2	1	1	1	0	0	0
9	1	90.8	-0.7	-1.3	6.0	1.0	0.0	12	8	5	3	2	1	1
9	7	102.0	-1.7	-1.2	6.0	1.1	0.0	2	1	1	1	0	0	0
9	1	90.6	-0.7	-1.5	6.0	1.0	0.0	12	8	5	3	2	1	1
9	7	101.7	-1.7	-1.6	6.0	1.1	0.0	2	1	1	1	0	0	0
9	1	90.3	-0.7	-1.7	6.0	1.0	0.0	12	8	5	3	2	1	1
9	7	101.5	-1.7	-2.0	6.0	1.1	0.0	2	1	1	1	0	0	0
9	1	90.1	-0.7	-1.8	6.0	1.0	0.0	12	8	5	3	2	1	1
9	7	101.2	-1.7	-2.5	6.0	1.1	0.0	2	1	1	1	0	0	0
34	1	89.8	-0.7	-2.0	6.0	1.0	0.0	12	8	5	3	2	1	1
34	7	101.0	-1.7	-2.9	6.0	1.1	0.0	2	1	1	1	0	0	0

REFERENCIA DEL PROYECTO Prolongación canal St. Vicenç

Elemento = 13

Sec	Hip	Nd	Vd	Md	Asf1	Asf2	ASt	8	10	12	16	20	25	32
14	7	46.2	-13.4	9.8	0.5	6.0	0.0	1	1	0	0	0	0	0
14	1	40.1	-5.9	7.3	0.5	6.0	0.0	12	8	5	3	2	1	1
9	7	46.0	-10.0	6.9	0.5	6.0	0.0	1	1	0	0	0	0	0
9	1	39.9	-4.4	6.0	0.4	6.0	0.0	12	8	5	3	2	1	1
9	7	45.7	-6.7	4.8	0.5	6.0	0.0	1	1	0	0	0	0	0
9	1	39.6	-2.9	5.1	0.4	6.0	0.0	12	8	5	3	2	1	1
9	7	45.5	-3.5	3.5	0.5	6.0	0.0	1	1	0	0	0	0	0
9	1	39.4	-1.5	4.6	0.4	6.0	0.0	12	8	5	3	2	1	1
9	7	45.2	-0.3	3.1	0.5	6.0	0.0	1	1	0	0	0	0	0
9	1	39.1	-0.1	4.4	0.4	6.0	0.0	12	8	5	3	2	1	1
9	7	45.0	2.7	3.4	0.5	6.0	0.0	1	1	0	0	0	0	0
9	1	38.9	1.2	4.5	0.4	6.0	0.0	12	8	5	3	2	1	1
9	7	44.7	5.6	4.4	0.5	6.0	0.0	1	1	0	0	0	0	0
9	1	38.6	2.5	5.0	0.4	6.0	0.0	12	8	5	3	2	1	1
9	7	44.5	8.5	6.2	0.5	6.0	0.0	1	1	0	0	0	0	0
9	1	38.3	3.8	5.8	0.4	6.0	0.0	12	8	5	3	2	1	1
15	7	44.2	11.2	8.6	0.5	6.0	0.0	1	1	0	0	0	0	0
15	1	38.1	5.0	6.9	0.4	6.0	0.0	12	8	5	3	2	1	1

5 VERIFICACIÓN DEL E.L.U DE ROTURA POR TENSIONES TANGENCIALES

5.1 EVALUACIÓN DEL E.L.U. DE AGOTAMIENTO POR CORTANTE

En este apartado se comprueba el Estado Límite Último de rotura por cortante de acuerdo con los criterios de la Normativa española vigente (EHE, artículo 44)

Según dicha norma:

$$V_{rd} = V_d + V_{pd} + V_{cd}$$

donde,

V_{rd} = Valor del esfuerzo cortante efectivo.
V_d = Valor de cálculo del esfuerzo cortante producido por las acciones exteriores.
V_{pd} = Valor de cálculo del esfuerzo cortante producido por el pretensado (= 0).
V_{cd} = Valor de cálculo de la componente paralela a la sección de las tensiones normales en piezas de sección variable (= 0).

- Comprobación del agotamiento por compresión oblicua en el alma.

$$V_{rd} \leq V_{u1}$$

V_{u1} = Esfuerzo cortante de agotamiento por compresión oblicua del alma.

- Comprobación del agotamiento por tracción en el alma.

$$V_{rd} \leq V_{u2}$$

V_{u2} = Esfuerzo cortante de agotamiento por tracción en el alma.

El cálculo de todos los parámetros resistentes se ha realizado de forma automática. Posteriormente se ha determinado la armadura de cortante necesaria A_{sc} por criterios resistentes y se comprueba que verifica los criterios de armadura mínima a cortante.

Estructura: **Prolongación del c.p. de Sant Vicenç dels Horts**

Dintel y solera. Máximo cortante

D(mm)	450
fck(N/mm2)	25
Sigma_s(N/mm2)	400
Bo(mm)	1000
As(cm2)	10,05
Vrd(Tn)	53,60
N(Tn)	0

Limitación de tensión en a
cortante (art. 40.2

*N<0 para compresión.

VERIFICACIÓN DE LA NECESIDAD DE ARMADURA DE CORTANTE

PSI	1,667
Roele	0,0022
Sigmaprima (N/mm2)	0,00
Vu2 (N)	159664,0

Necesita armadura de cortante

OBTENCIÓN DE LA ARMADURA DE CORTANTE NECESARIA

Theta	
Vu2	133053,34
Vsu,p	162000,00

As,c =	***24,9***	**cm2/m**
As, min=	***8,3***	**cm2/m**

2 c fi 12 p.m. a 0,15 --> 30
En el 35% del dintel a contiguo a hastiales.

Hastiales

D(mm)	400
fck(N/mm2)	25
Sigma_s(N/mm2)	400
Bo(mm)	1000
As(cm2)	7,54
Vrd(Tn)	15,10
N(Tn)	-41

Limitación de tensión en armadura de cortante (art. 40.2 EHE)

(Verificación a un canto útil de la unión con dintel)

*N<0 para compresión.

VERIFICACIÓN DE LA NECESIDAD DE ARMADURA DE CORTANTE

PSI	1,707
Roele	0,0019
Sigmaprima (N/mm2)	-1,01
Vu2 (N)	197710,1

No necesita armadura de cortante

OBTENCIÓN DE LA ARMADURA DE CORTANTE NECESARIA

Theta	
Vu2	114482,16
Vsu,p	144000,00

As,c =	***0,0***	**cm2/m**
As, min=	***8,3***	**cm2/m**

6 VERIFICACIÓN DEL E.L.S DE FISURACIÓN.

En este apartado se comprueba el Estado Límite de Servicio de fisuración.

El cálculo de la abertura de fisura se hace mediante la formulación empleada en la EHE (art. 49). La comprobación de la abertura de fisura se hace para las combinaciones de carga frecuentes. Se toma como abertura de fisura máxima admisible w_k = 0,3 mm, ya que el ambiente considerado para todos los elementos de la estructura es IIa.

REFERENCIA DEL PROYECTO Prolongación canal St. Vicenç. Cargas IPF

VERIFICACION DEL E.L.S. DE FISURACION

Elemento = 1

N§ de seccion = 1
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-1.6	4.5	-3.1	9.9
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89

N§ de seccion = 2
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	3.5	9.5	2.1	9.9
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89

N§ de seccion = 3
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	7.6	9.5	5.4	9.9
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89

N§ de seccion = 4
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	9.4	9.5	7.0	9.9
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89

N§ de seccion = 5
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	9.1	9.5	6.8	9.9
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89

N§ de seccion = 6
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	6.5	9.5	4.8	9.9
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89

N§ de seccion = 7
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	1.7	9.5	1.1	5.0
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89

N§ de seccion = 8
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-4.1	8.7	-5.3	9.5
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89

N§ de seccion = 9
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-11.3	8.7	-14.5	9.5
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	24 1 0.04	16 1 0.06	11 1 0.08	6 1 0.15	4 1 0.22	2 1 0.45	2 1 0.44
	24 1 0.04	16 1 0.06	11 1 0.08	6 1 0.15	4 1 0.22	2 1 0.45	2 1 0.44

Elemento = 2

N§ de seccion = 1
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-10.0	7.3	-13.2	8.3
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	22 1 0.04	14 1 0.06	10 1 0.09	6 1 0.15	4 1 0.22	2 1 0.45	1 1 0.89
	22 1 0.04	14 1 0.06	10 1 0.09	6 1 0.15	4 1 0.22	2 1 0.45	1 1 0.89

N§ de seccion = 2
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-4.2	9.0	-5.8	8.3
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89

N§ de seccion = 3
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	0.4	9.0	-0.6	3.7
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89

N§ de seccion = 4
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	3.3	9.0	2.1	3.7
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89

N§ de seccion = 5
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	4.3	9.0	3.2	3.7
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89

N§ de seccion = 6
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	3.7	4.4	2.8	3.7
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89

N§ de seccion = 7
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	1.4	4.4	0.7	7.3
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89

N§ de seccion = 8
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-2.7	4.6	-3.5	8.3
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89

N§ de seccion = 9
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-7.7	3.5	-10.0	8.3
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	16 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89

REFERENCIA DEL PROYECTO Prolongación canal St. Vicenç

Elemento = 3

N§ de seccion = 1
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-7.9	3.9	-10.0	8.3
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	16 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89
	16 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89

N§ de seccion = 2
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-2.5	8.2	-3.4	8.3
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89

N§ de seccion = 3
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	1.5	8.2	1.0	3.9
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89

N§ de seccion = 4
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	4.0	8.3	3.1	3.9
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89

N§ de seccion = 5
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	4.7	8.3	3.6	3.9
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89

N§ de seccion = 6
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	3.4	8.3	2.6	3.9
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89

N§ de seccion = 7
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	0.1	3.9	-0.2	8.2
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89

N§ de seccion = 8
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-4.0	3.9	-5.1	8.3
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89

N§ de seccion = 9
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-9.6	7.1	-12.4	8.3
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	21 1 0.04	13 1 0.07	9 1 0.10	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89
	21 1 0.04	13 1 0.07	9 1 0.10	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89

Elemento = 4

N§ de seccion = 1
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-10.3	7.6	-13.4	9.1
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	22 1 0.04	14 1 0.06	10 1 0.09	6 1 0.15	4 1 0.22	2 1 0.45	1 1 0.89
	22 1 0.04	14 1 0.06	10 1 0.09	6 1 0.15	4 1 0.22	2 1 0.45	1 1 0.89

N§ de seccion = 2
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-3.9	7.6	-5.1	9.1
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89

N§ de seccion = 3
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	1.2	4.7	0.9	4.8
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89

N§ de seccion = 4
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	5.5	9.1	4.2	7.6
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89

N§ de seccion = 5
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	7.8	9.1	5.9	7.6
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89

N§ de seccion = 6
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	8.2	9.1	6.0	7.6
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89

N§ de seccion = 7
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	6.5	9.1	4.6	7.6
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89

N§ de seccion = 8
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	3.1	5.0	1.6	7.6
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89

N§ de seccion = 9
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-1.5	4.5	-3.3	8.0
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89

REFERENCIA DEL PROYECTO Prolongación canal St. Vicenç

Elemento = 5

N§ de seccion = 1
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	4.2	8.8	2.0	4.9
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89

N§ de seccion = 2
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-1.0	8.8	-2.9	4.9
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89

N§ de seccion = 3
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-4.6	8.8	-6.6	8.7
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89

N§ de seccion = 4

Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-6.3	8.8	-8.6	8.7
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89

N§ de seccion = 5
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-6.4	8.1	-8.4	8.7
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89

N§ de seccion = 6
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-4.7	8.1	-6.2	8.7
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89

N§ de seccion = 7
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-1.2	4.9	-1.9	8.7
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89

N§ de seccion = 8
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	4.6	8.7	3.4	8.8
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89

N§ de seccion = 9
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	13.2	8.7	10.1	8.8
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	22 1 0.04	14 1 0.06	10 1 0.09	6 1 0.15	4 1 0.22	2 1 0.45	1 1 0.89
	22 1 0.04	14 1 0.06	10 1 0.09	6 1 0.15	4 1 0.22	2 1 0.45	1 1 0.89

Elemento = 6

N§ de seccion = 1
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	14.3	10.0	11.3	10.1
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	24 1 0.04	15 1 0.06	11 1 0.08	6 1 0.15	4 1 0.22	2 1 0.45	1 1 0.89
	24 1 0.04	15 1 0.06	11 1 0.08	6 1 0.15	4 1 0.22	2 1 0.45	1 1 0.89

N§ de seccion = 2
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	6.2	10.0	4.9	9.0
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89

N§ de seccion = 3
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	0.4	6.1	0.0	6.2
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89

N§ de seccion = 4
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-2.6	6.1	-3.5	10.0
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89

N§ de seccion = 5
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-4.0	6.1	-5.1	10.0
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89

N§ de seccion = 6
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-3.7	6.1	-4.7	10.0
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89

N§ de seccion = 7
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-1.6	5.2	-2.2	10.0
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89

N§ de seccion = 8
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	2.4	6.2	1.7	7.1
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89

N§ de seccion = 9
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	9.0	10.0	6.8	6.1
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89

REFERENCIA DEL PROYECTO Prolongación canal St. Vicenç

Elemento = 7

N§ de seccion = 1
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	9.0	10.0	6.7	6.0
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89

N§ de seccion = 2
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	2.8	9.8	1.7	7.0
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89

N§ de seccion = 3
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-1.4	9.8	-2.2	10.0
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89

N§ de seccion = 4
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-3.7	6.0	-4.7	10.0
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89

N§ de seccion = 5
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-4.0	6.0	-5.2	10.0
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89

N§ de seccion = 6
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-2.7	6.0	-3.6	10.0
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89

N§ de seccion = 7
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	0.1	5.2	-0.4	9.8
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89

N§ de seccion = 8
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	5.5	10.0	4.1	10.4
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89

N§ de seccion = 9
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	13.2	10.0	10.0	10.4
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	22 1 0.04	14 1 0.06	10 1 0.09	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89
	22 1 0.04	14 1 0.06	10 1 0.09	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89

Elemento = 8

N§ de seccion = 1
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	12.5	9.1	9.6	9.8
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura 8	10	12	16	20	25	32
Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
21 1 0.04	13 1 0.07	9 1 0.10	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89
21 1 0.04	13 1 0.07	9 1 0.10	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89

N§ de seccion = 2
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	4.5	9.1	3.4	9.8
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura 8	10	12	16	20	25	32
Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89
15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89

N§ de seccion = 3
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-1.1	5.1	-1.5	9.1
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura 8	10	12	16	20	25	32
Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89
15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89

N§ de seccion = 4
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-4.2	9.8	-5.4	9.1
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura 8	10	12	16	20	25	32
Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89
15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89

N§ de seccion = 5
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-5.7	9.8	-7.5	9.1
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura 8	10	12	16	20	25	32
Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89
15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89

N§ de seccion = 6
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-5.7	9.8	-7.6	9.1
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura 8	10	12	16	20	25	32
Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89
15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89

N§ de seccion = 7
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-4.1	9.8	-6.0	4.9
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura 8	10	12	16	20	25	32
Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89
15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89

N§ de seccion = 8
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-1.0	9.8	-2.9	4.9
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura 8	10	12	16	20	25	32
Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89
15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89

N§ de seccion = 9
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	3.8	9.1	2.0	4.9
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura 8	10	12	16	20	25	32
Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89
15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89

REFERENCIA DEL PROYECTO Prolongación canal St. Vicenç

Elemento = 9

N§ de seccion = 1
Canto = 0.40

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-4.2	22.2	-6.1	27.7
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	12 1 0.08	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89	1 1 0.89
	12 1 0.08	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89	1 1 0.89

N§ de seccion = 2
Canto = 0.40

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-3.1	22.1	-4.1	27.5
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	12 1 0.08	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89	1 1 0.89
	12 1 0.08	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89	1 1 0.89

N§ de seccion = 3
Canto = 0.40

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-1.7	22.4	-2.7	27.3
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	12 1 0.08	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89	1 1 0.89
	12 1 0.08	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89	1 1 0.89

N§ de seccion = 4
Canto = 0.40

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-0.8	22.2	-2.0	21.7
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	12 1 0.08	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89	1 1 0.89
	12 1 0.08	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89	1 1 0.89

N§ de seccion = 5
Canto = 0.40

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-0.5	22.0	-1.8	21.5
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	12 1 0.08	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89	1 1 0.89
	12 1 0.08	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89	1 1 0.89

N§ de seccion = 6
Canto = 0.40

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-0.7	21.8	-1.9	21.3
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	12 1 0.08	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89	1 1 0.89
	12 1 0.08	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89	1 1 0.89

N§ de seccion = 7
Canto = 0.40

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-1.5	21.6	-2.4	26.6
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	12 1 0.08	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89	1 1 0.89
	12 1 0.08	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89	1 1 0.89

N§ de seccion = 8
Canto = 0.40

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-2.8	21.5	-3.6	26.4
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	12 1 0.08	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89	1 1 0.89
	12 1 0.08	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89	1 1 0.89

N§ de seccion = 9
Canto = 0.40

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-3.9	20.8	-5.3	26.2
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	12 1 0.08	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89	1 1 0.89
	12 1 0.08	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89	1 1 0.89

Elemento = 10

N§ de seccion = 1
Canto = 0.40

	Mmax	Nk	Mmin	Nk
Comb. frecuente	0.3	49.0	-0.7	45.7
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	12 1 0.08	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89	1 1 0.89
	12 1 0.08	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89	1 1 0.89

N§ de seccion = 2
Canto = 0.40

	Mmax	Nk	Mmin	Nk
Comb. frecuente	0.4	48.8	-0.4	45.5
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	12 1 0.08	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89	1 1 0.89
	12 1 0.08	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89	1 1 0.89

N§ de seccion = 3
Canto = 0.40

	Mmax	Nk	Mmin	Nk
Comb. frecuente	0.5	48.6	0.0	47.6
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	12 1 0.08	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89	1 1 0.89
	12 1 0.08	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89	1 1 0.89

N§ de seccion = 4
Canto = 0.40

	Mmax	Nk	Mmin	Nk
Comb. frecuente	0.5	48.4	0.2	47.4
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	12 1 0.08	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89	1 1 0.89
	12 1 0.08	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89	1 1 0.89

N§ de seccion = 5
Canto = 0.40

	Mmax	Nk	Mmin	Nk
Comb. frecuente	0.9	57.1	0.5	47.2
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	12 1 0.08	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89	1 1 0.89
	12 1 0.08	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89	1 1 0.89

N§ de seccion = 6
Canto = 0.40

	Mmax	Nk	Mmin	Nk
Comb. frecuente	1.2	56.9	0.7	48.0
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	12 1 0.08	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89	1 1 0.89
	12 1 0.08	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89	1 1 0.89

N§ de seccion = 7
Canto = 0.40

	Mmax	Nk	Mmin	Nk
Comb. frecuente	1.5	56.7	0.8	47.8
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	12 1 0.08	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89	1 1 0.89
	12 1 0.08	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89	1 1 0.89

N§ de seccion = 8
Canto = 0.40

	Mmax	Nk	Mmin	Nk
Comb. frecuente	1.8	56.5	0.9	47.6
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	12 1 0.08	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89	1 1 0.89
	12 1 0.08	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89	1 1 0.89

N§ de seccion = 9
Canto = 0.40

	Mmax	Nk	Mmin	Nk
Comb. frecuente	2.1	56.3	0.9	47.5
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	12 1 0.08	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89	1 1 0.89
	12 1 0.08	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89	1 1 0.89

REFERENCIA DEL PROYECTO Prolongación canal St. Vicenç

Elemento = 11

N§ de seccion = 1
Canto = 0.40

	Mmax	Nk	Mmin	Nk
Comb. frecuente	0.1	37.7	-0.7	43.0
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	12 1 0.08	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89	1 1 0.89
	12 1 0.08	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89	1 1 0.89

N§ de seccion = 2
Canto = 0.40

	Mmax	Nk	Mmin	Nk
Comb. frecuente	0.1	37.5	-0.5	42.8
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	12 1 0.08	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89	1 1 0.89
	12 1 0.08	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89	1 1 0.89

N§ de seccion = 3
Canto = 0.40

	Mmax	Nk	Mmin	Nk
Comb. frecuente	0.0	42.3	-0.4	42.6
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	12 1 0.08	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89	1 1 0.89
	12 1 0.08	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89	1 1 0.89

N§ de seccion = 4
Canto = 0.40

	Mmax	Nk	Mmin	Nk
Comb. frecuente	0.0	42.1	-0.2	42.4
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	12 1 0.08	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89	1 1 0.89
	12 1 0.08	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89	1 1 0.89

N§ de seccion = 5
Canto = 0.40

	Mmax	Nk	Mmin	Nk
Comb. frecuente	0.0	41.9	0.0	41.9
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	12 1 0.08	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89	1 1 0.89
	2 1 0.46	1 1 0.91	1 1 0.91	1 1 0.90	1 1 0.90	1 1 0.89	1 1 0.89

N§ de seccion = 6
Canto = 0.40

	Mmax	Nk	Mmin	Nk
Comb. frecuente	0.2	42.0	-0.1	36.8
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	12 1 0.08	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89	1 1 0.89
	12 1 0.08	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89	1 1 0.89

N§ de seccion = 7
Canto = 0.40

	Mmax	Nk	Mmin	Nk
Comb. frecuente	0.4	41.9	-0.1	36.6
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	12 1 0.08	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89	1 1 0.89
	12 1 0.08	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89	1 1 0.89

N§ de seccion = 8
Canto = 0.40

	Mmax	Nk	Mmin	Nk
Comb. frecuente	0.6	41.7	-0.2	36.4
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	12 1 0.08	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89	1 1 0.89
	12 1 0.08	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89	1 1 0.89

N§ de seccion = 9
Canto = 0.40

	Mmax	Nk	Mmin	Nk
Comb. frecuente	0.7	41.5	-0.2	36.2
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	12 1 0.08	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89	1 1 0.89
	12 1 0.08	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89	1 1 0.89

Elemento = 12

N§ de seccion = 1
Canto = 0.40

	Mmax	Nk	Mmin	Nk
Comb. frecuente	0.4	42.9	-0.8	48.4
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	12 1 0.08	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89	1 1 0.89
	12 1 0.08	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89	1 1 0.89

N§ de seccion = 2
Canto = 0.40

	Mmax	Nk	Mmin	Nk
Comb. frecuente	0.2	42.7	-0.7	48.2
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	12 1 0.08	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89	1 1 0.89
	12 1 0.08	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89	1 1 0.89

N§ de seccion = 3
Canto = 0.40

	Mmax	Nk	Mmin	Nk
Comb. frecuente	0.0	42.6	-0.7	48.0
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	12 1 0.08	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89	1 1 0.89
	12 1 0.08	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89	1 1 0.89

N§ de seccion = 4
Canto = 0.40

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-0.3	42.4	-0.6	47.8
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	12 1 0.08	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89	1 1 0.89
	12 1 0.08	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89	1 1 0.89

N§ de seccion = 5
Canto = 0.40

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-0.4	41.6	-0.6	48.2
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	12 1 0.08	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89	1 1 0.89
	12 1 0.08	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89	1 1 0.89

N§ de seccion = 6
Canto = 0.40

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-0.5	47.4	-0.8	53.3
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	12 1 0.08	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89	1 1 0.89
	12 1 0.08	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89	1 1 0.89

N§ de seccion = 7
Canto = 0.40

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-0.4	47.3	-1.0	53.1
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	12 1 0.08	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89	1 1 0.89
	12 1 0.08	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89	1 1 0.89

N§ de seccion = 8
Canto = 0.40

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-0.3	47.1	-1.2	41.6
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	12 1 0.08	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89	1 1 0.89
	12 1 0.08	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89	1 1 0.89

N§ de seccion = 9
Canto = 0.40

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-0.3	46.9	-1.4	41.4
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	12 1 0.08	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89	1 1 0.89
	12 1 0.08	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89	1 1 0.89

REFERENCIA DEL PROYECTO Prolongación canal St. Vicenç

Elemento = 13

N§ de seccion = 1
Canto = 0.40

	Mmax	Nk	Mmin	Nk
Comb. frecuente	5.6	25.1	4.0	19.6
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	12 1 0.08	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89	1 1 0.89
	12 1 0.08	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89	1 1 0.89

N§ de seccion = 2
Canto = 0.40

	Mmax	Nk	Mmin	Nk
Comb. frecuente	3.6	24.9	2.8	20.0
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	12 1 0.08	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89	1 1 0.89
	12 1 0.08	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89	1 1 0.89

N§ de seccion = 3
Canto = 0.40

	Mmax	Nk	Mmin	Nk
Comb. frecuente	2.4	21.9	1.4	19.8
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	12 1 0.08	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89	1 1 0.89
	12 1 0.08	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89	1 1 0.89

N§ de seccion = 4
Canto = 0.40

	Mmax	Nk	Mmin	Nk
Comb. frecuente	1.9	21.7	0.6	19.6
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	12 1 0.08	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89	1 1 0.89
	12 1 0.08	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89	1 1 0.89

N§ de seccion = 5
Canto = 0.40

	Mmax	Nk	Mmin	Nk
Comb. frecuente	1.7	21.5	0.3	19.4
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	12 1 0.08	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89	1 1 0.89
	12 1 0.08	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89	1 1 0.89

N§ de seccion = 6
Canto = 0.40

	Mmax	Nk	Mmin	Nk
Comb. frecuente	1.9	21.3	0.6	19.3
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	12 1 0.08	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89	1 1 0.89
	12 1 0.08	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89	1 1 0.89

N§ de seccion = 7
Canto = 0.40

	Mmax	Nk	Mmin	Nk
Comb. frecuente	2.3	21.1	1.3	19.1
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	12 1 0.08	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89	1 1 0.89
	12 1 0.08	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89	1 1 0.89

N§ de seccion = 8
Canto = 0.40

	Mmax	Nk	Mmin	Nk
Comb. frecuente	3.2	21.6	2.4	18.3
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	12 1 0.08	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89	1 1 0.89
	12 1 0.08	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89	1 1 0.89

N§ de seccion = 9
Canto = 0.40

	Mmax	Nk	Mmin	Nk
Comb. frecuente	5.0	21.4	3.4	18.1
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

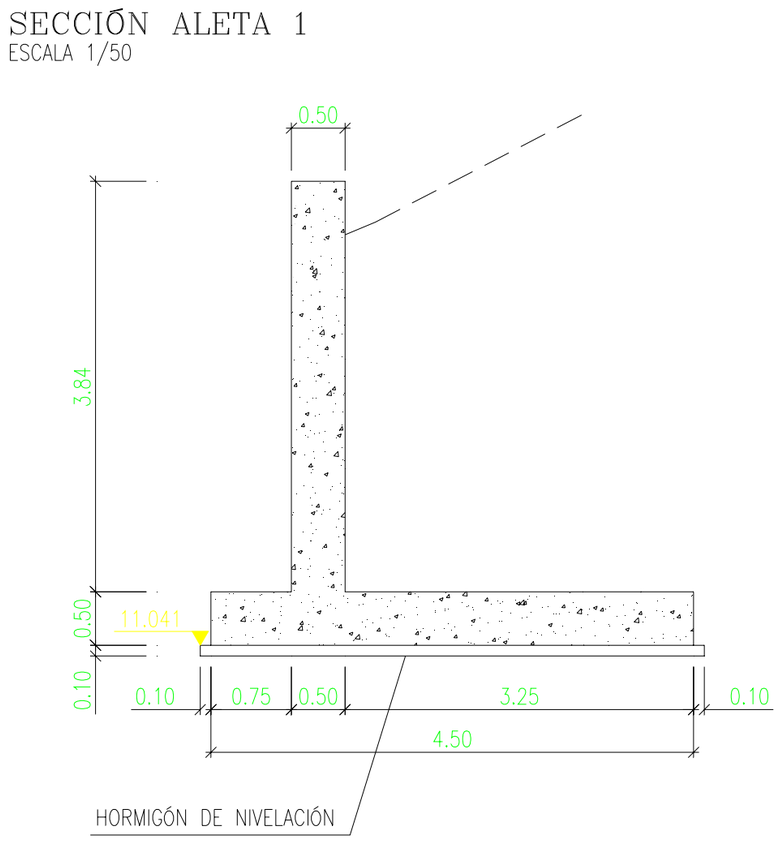
Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	12 1 0.08	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89	1 1 0.89
	12 1 0.08	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89	1 1 0.89

7. CÁLCULO DE ALETAS

7.1. GEOMETRÍA

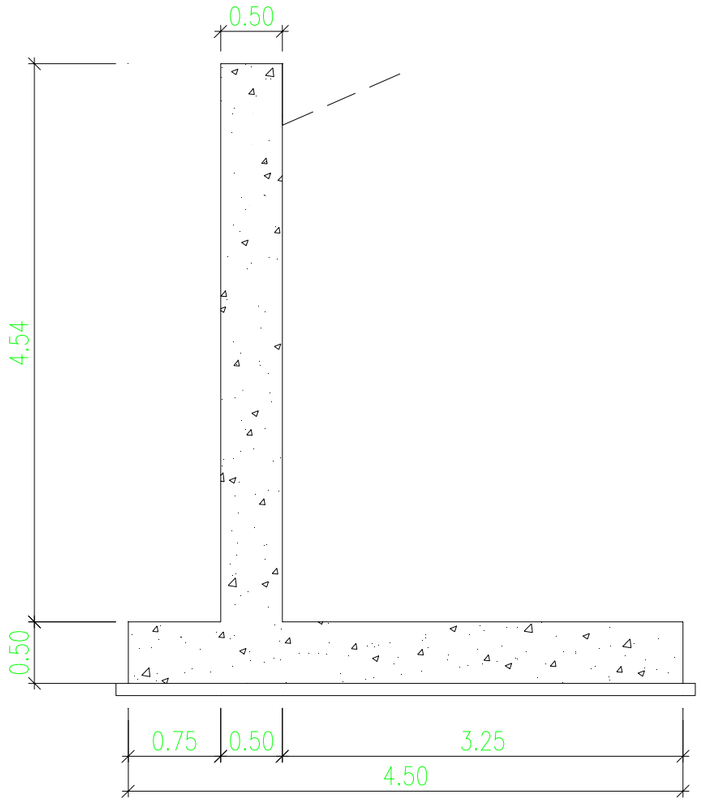
El cajón de St. Vicenç dels Horts solo tendrá dos aletas en el lado Llobregat, ya que en el borde opuesto la estructura nace como prolongación del marco existente. Cada una de las aletas está dividida en 3 módulos de 6, 7 y 7 metros de longitud. En el intradós de las aletas se dispondrá un cono de tierras que permitirá la transición hidráulica del canal de una sección rectangular a una trapecial.

Las dimensiones de las aletas se detallan a continuación:



SECCIÓN ALETA 2

ESCALA 1/50



7.2 CÁLCULO DE ESFUERZOS Y DIMENSIONAMIENTO

El cálculo y dimensionamiento de las aletas se detalla en las páginas siguientes. Las hipótesis de cálculo se exponen a continuación:

1. El cálculo se realiza en la hipótesis clásica como muro con acciones en coronación debidas al sobre-empuje de 3,0 T/m^2 de tráfico ferroviario así como la consideración de una altura de tierras hasta la cota superior de vía. Los empujes del terreno se han calculado para un coeficiente de empuje K = 0,31 y una densidad del terreno de 2,1 T/m^3. No se han considerado eventuales empujes hidrostáticos al colocar un adecuado drenaje en el trasdós de las aletas.

2. En el cálculo de la seguridad de la aleta frente al vuelco, deslizamiento y tensiones máximas se han verificado las siguientes condiciones (ver resultados en listados de cálculo).

   Coeficiente de Seguridad al vuelco, $CS,v > 1,80$

   Coeficiente de Seguridad al deslizamiento $CS,d > 1,50$

   Tensión máxima del terreno en puntera $\sigma_{max} > 1,25 \cdot \sigma_{admisible}$

   Con $\sigma_{admisible}$ = 3,00 Kp/cm^2 y coeficiente de rozamiento terreno-zapata μ = 0,60 .

3. El dimensionamiento de las armaduras de flexión y cortante del muro y zapata se realiza con los criterios de la Normativa vigente para estructuras de hormigón (EHE). Los coeficientes de seguridad de las acciones corresponden con un NIVEL DE CONTROL INTENSO γ_{fg} =1,35 y γ_{fq} =1,50.

4. Las armaduras horizontales de flexión transversal se colocan de acuerdo con los valores mínimos exigidos por la Normativa EHE.

4.5. Paso inferior de la riera de Les Mallorquines

ÍNDICE DEL ANEJO DE CÁLCULO DEL P. I. DE LA RIERA DE LOS MALLORQUINES

1 GEOMETRÍA

1.1. Geometría y esquema estructural
1.2. Sección tipo

2 ACCIONES, MATERIALES, COEFICIENTES DE SEGURIDAD Y NORMATIVAS

2.1. Acciones
2.2. Coeficientes de seguridad, materiales, niveles de control y Normativas
2.3. Ambientes, recubrimientos, fisuración y cuantías mínimas
2.4. Hipótesis de combinación de esfuerzos
2.4.1. Estados Límite Últimos
2.4.2. Estados Límite de Servicio

3 CÁLCULO DE ESFUERZOS

4 VERIFICACIÓN DEL E.L.U DE ROTURA POR TENSIONES NORMALES

4.1. Flexión longitudinal
4.2. Flexión transversal

5 VERIFICACIÓN DEL E.L.U DE ROTURA POR TENSIONES TANGENCIALES

5.1. Evaluación del E.L.U. de agotamiento por cortante

6 VERIFICACIÓN DEL E.L.S DE FISURACIÓN

7 CÁLCULO DE ALETAS

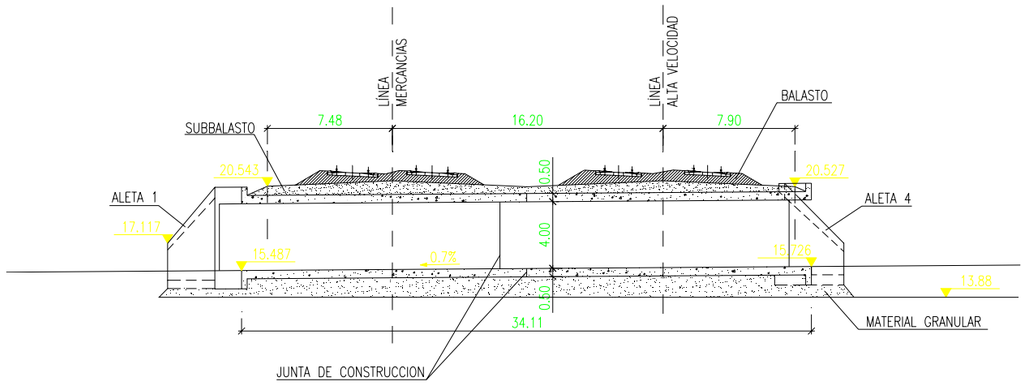
7.1. Geometría
7.2. Cálculo de esfuerzos y dimensionamiento

1 GEOMETRÍA

1.1 GEOMETRÍA Y ESQUEMA ESTRUCTURAL

Se trata de un marco cerrado para dejar paso a través de la plataforma de ferrocarril a la riera de Los Mallorquines. El cajón tiene un gálibo horizontal de 5 m. y uno vertical de 4 m. Todas sus partes estructurales (dintel, hastiales y losa inferior) tienen un espesor de 0,50 m. La orientación del cajón en planta no es perpendicular a la plataforma de ferrocarril teniendo un esviaje de 131,19g. Tanto la entrada como la salida del cajón estará formada por aletas tipo muro que sostienen las tierras del terraplén y encauzan la riera en la dirección deseada. Estas aletas forman un ángulo de 30º respecto al eje del paso inferior.

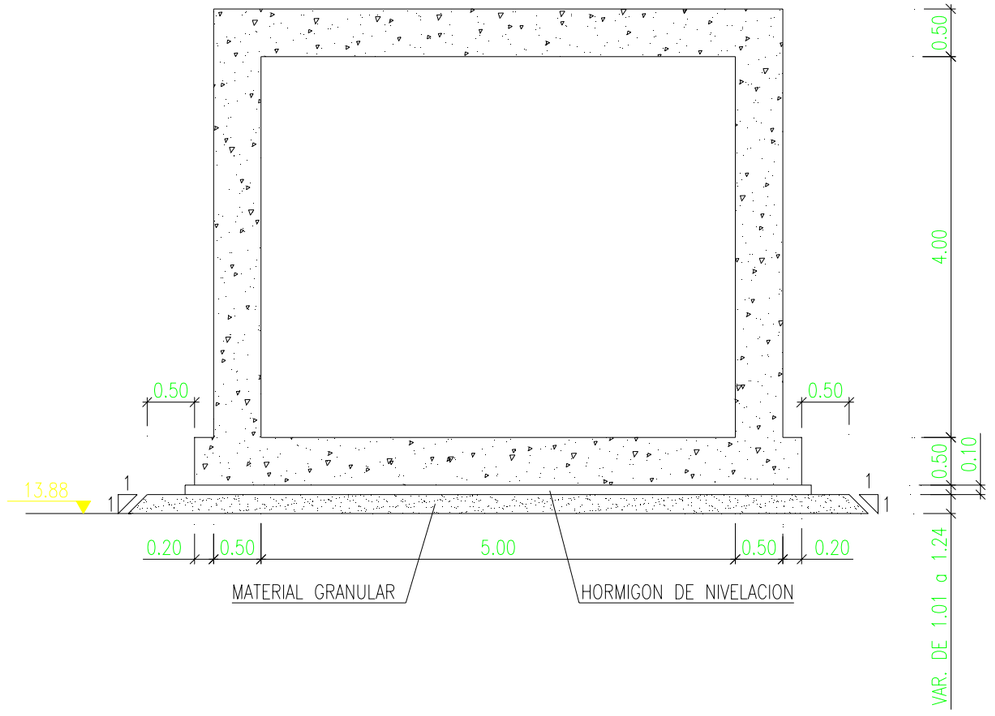
El cajón queda levemente enterrado respecto a la superestructura de la vía, de tal forma que solamente se dispondrá la capa de balasto y subbalasto por encima del dintel (la distancia media entre la cota de carril y la cara superior de la estructura es de 1,22 m).



1.2 SECCIÓN TIPO

La sección transversal de la estructura es un marco rectangular cerrado construido con hormigón armado HA-25.

Las dimensiones de la sección transversal se detallan en la figura adjunta.



En la figura se puede apreciar que la estructura va apoyada sobre una capa de material granular hasta alcanzar el estrato de cimentación competente.

2 ACCIONES, MATERIALES, COEFICIENTES DE SEGURIDAD Y NORMATIVAS

2.1 ACCIONES

De acuerdo con las “Instrucciones y recomendaciones para la redacción de proyectos de plataforma” del GIF se han considerado las siguientes acciones:

Acciones permanentes (g):

g1, PESO PROPIO

El peso propio de los distintos elementos se ha calculado a partir de su geometría (secciones transversales) adoptando una densidad de valor $\gamma c = 2{,}5\ T/m^3$ para los elementos de hormigón armado (solera, dintel y hastiales).

g2, PESO DEL BALASTO Y CARGAS MUERTAS

Las cargas permanentes distintas del peso propio del tablero son las siguientes:

- Balasto
- Vías y traviesas
- Conductos de cableado y paseos
- Soportes de catenarias
- Impostas y barandillas

El peso de balasto sobre el tablero se calcula a partir de la plataforma en la estructura de vía tomando como densidad $\gamma = 1{,}6\ t/m^3$.

De acuerdo con las “Instrucciones y recomendaciones para la redacción de proyectos de plataforma” del GIF se adoptarán para esta carga los siguientes valores característicos superior e inferior:

- valor inferior: (0,70 x peso medio) $g_{2,\ bal\ inf}$
- valor superior: (1,30 x peso medio) $g_{2,\ bal,\ sup}$

El caso de desbalastado se considera incluido en el intervalo indicado de variación del peso del balasto.

El peso de vías y traviesas para la plataforma es:

$g_{2,vías+traviesas} = 0{,}52 + 0{,}12 = 0{,}64$ t/m y vía.
(trav)+(carril)

El peso de los conductos para cableados y zona de paseos es:

$g_{2,conductos} = 0{,}30$ t/m

El peso de los soportes de catenarias se tienen en cuenta sólo para efectos locales de anclaje de la catenaria y armado local de losa, pero no para el cálculo general del tablero.

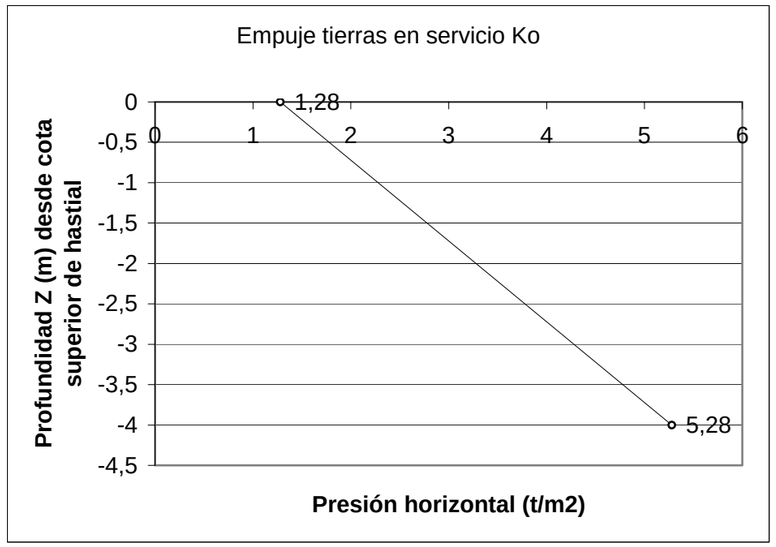
Acciones permanentes de valor no constante (G*):

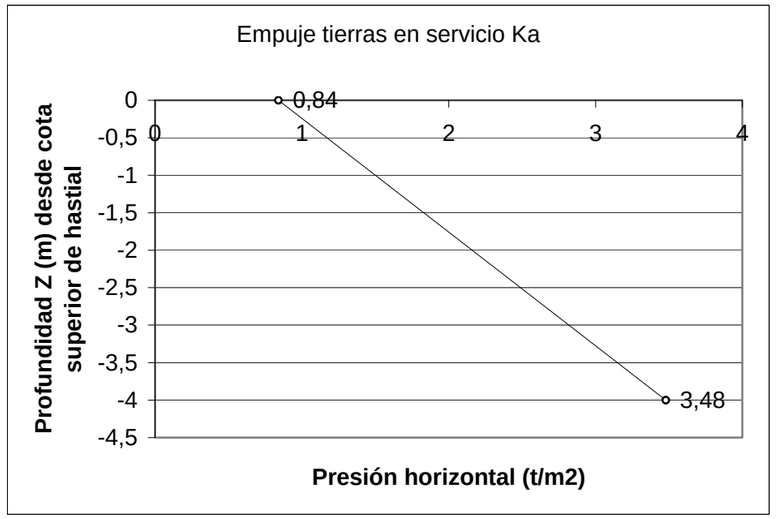
EMPUJE DE TIERRAS

El empuje de tierras se calcula para la fase de servicio, al preverse que el relleno de tierras se efectuará simétricamente a ambos lados de la estructura.

En la fase de servicio se considera el efecto del empuje de tierras ya con toda la altura que tendrá una vez terminada la estructura. En esta fase y debido a que la estructura no presenta un comportamiento completamente flexible o completamente rígido se consideran los empujes activo K_a = 0,33 y empuje al reposo K_o = 0,50.

De esta manera las leyes de presión del terreno quedan de la siguiente manera:





SOBRECARGAS DE USO. COMPONENTES VERTICALES.

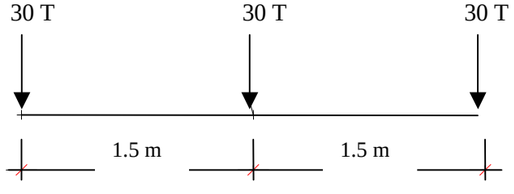
A. Sobrecarga de tráfico de tren

Se utilizará la envolvente de esfuerzos debidos a los trenes de carga de IPF-75 y de EC1-3.

Como coeficiente de impacto se adoptará en cada caso el que corresponda.

De acuerdo con la normativa IPF-75 Existen dos trenes de carga

Tipo A.- Por cada vía: P_{vp} = 3 ejes de 30 T separados 1,50 m

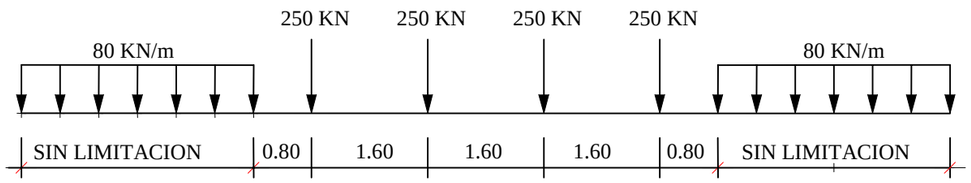


Tipo B.- Por cada vía: Sobrecarga uniforme de 12 t/m. sobre 15,0 ó 30,0 metros, más un conjunto de cuchillos de carga de 10 t/m y 1 t/m. de longitud arbitraria.

El tren tipo A puede condicionar el trabajo local de reparto de la losa y el tren tipo B condiciona el trabajo global. No se admite reducción de cargas por simultaneidad entre ambas vías. No se considera el efecto del ripado de la vía de 0,30 m porque el estudio del cajón se realiza por metro de ancho.

El tren de cargas de EC1 tiene la siguiente configuración

Tren tipo 71:



Modelo de carga SW:



Se tendrán en cuenta tres tipos de trenes según el EC-1: Tren tipo 71, SW/0, y el SW/2.

	SW0	SW2
Q_{vk}	133	150
a	15	25
c	5,3	7

Tabla 2. Tren de cargas.

Los valores de los trenes tipo 71 y SW/0 se multiplicarán por un coeficiente de clasificación α cuyo valor se toma igual a 1,00 tanto para las vías de ancho RENFE como para las de ancho Internacional.

B. Sobrecarga tráfico losa inferior

Para el paso inferior en estudio no es necesario considerar ninguna sobrecarga sobre la solera, puesto que la obra sirve como canalización de una riera y no se prevé más que la circulación esporádica de algún vehículo automóvil.

C. Sobrecargas en paseos

Según las “Instrucciones y recomendaciones para la redacción de proyectos de plataforma” del GIF se dispondrá una sobrecarga en los paseos laterales de valor:

$$Q_{SV} = 0{,}5 \text{ t/m}^2$$

Sólo un 50 % de dicha carga es compatible con el tráfico ferroviario.

En nuestro caso y debido a que el estudio se realiza por metro de ancho no se considera por ser más desfavorable para el dimensionamiento de los distintos elementos del marco considerar las cargas verticales del tráfico ferroviario.

D. Sobrecarga de tráfico en trasdós hastiales

Se considera la sobrecarga de tráfico en trasdós de hastiales recomendada en la normativa IFF-75 de valor igual 3 t/m^2.

Esta sobrecarga actúa en los hastiales mediante el coeficiente de empuje al reposo K_o = 0,50.

SOBRECARGAS DE USO. COMPONENTES HORIZONTALES.

A. Efectos de frenado y arranque

Se adopta la Norma EC1 ya que las acciones definidas en la IPF75 son mucho más favorables. (1/8 de la carga frente a 1/4)

Son fuerzas que actúan sobre cota superior de carril. No deben mayorarse dinámicamente.

Fuerzas de arranque (por vía)

$F_a = 33\ (KN/m) \times L(m) \leq 1.000\ KN$ LM71 y SW

Fuerzas de frenado (por vía)

$F_f = 20\ (KN/m) \times L(m) \leq 6.000\ (KN)$ LM71 y SW0

$Ff = 35\ (KN/m) \times L(m)$ SW2

VARIACIÓN UNIFORME DE TEMPERATURA

No se considera este efecto al estar la estructura enterrada prácticamente en su totalidad.

GRADIENTE TÉRMICO

No se considera este efecto al estar la estructura enterrada prácticamente en su totalidad.

ACCIONES ACCIDENTALES

ACCIÓN SÍSMICA

La aceleración sísmica básica de la zona, según la normativa vigente, es a_b= 0,04 g.

La categoría de la estructura puede considerarse de especial importancia, lo que es equivalente a un coeficiente de riesgo ρ =1,3.

La aceleración de cálculo es:

$a_c = \rho \cdot a_b$
$a_b = 0{,}052$ g

Las acciones sísmicas en puentes sólo se consideran, de acuerdo con la IAP, para aceleraciones de cálculo superiores a 0,06g, por lo tanto no es preciso realizar el análisis sísmico del cajón.

A continuación se detalla el valor de cálculo de las cargas verticales y los coeficientes de impacto considerados.

2.2 COEFICIENTES DE SEGURIDAD, MATERIALES, NIVELES DE CONTROL Y NORMATIVAS

HORMIGONES

- Hormigón de Limpieza..... HM-15
- Losas..... HA-25 / B / 20 / IIa
- Hastiales..... HA-25 / B / 20 / IIa
- Dintel..... HA-25 / B / 20 / IIa

Control del hormigón NORMAL

γc= 1,50 (Situación persistente o transitoria)
γc= 1,30 (Situación accidental)

El módulo de elasticidad se ha evaluado en todos los casos de acuerdo a la expresión de EHE:

$$E_c = 8500 \sqrt[3]{f_{ck} + 8} \ (N/mm^2)$$

Los límites establecidos para la consistencia en la puesta en obra podrán superarse con el empleo de aditivos superfluidificantes, siempre que el valor de la relación agua-cemento cumpla los requisitos prefijados en la EHE.

ACEROS

- Acero corrugado para la armadura pasiva B500S, con f_{yk} > 500 MPa (5100 Kp/cm^2)

Control de los aceros NORMAL.

γ_s = 1,15 (Situación persistente o transitoria)
γ_s = 1,0 (Situación accidental)

CONTROL DE EJECUCIÓN

El control de ejecución será INTENSO (γ_g= 1,35 y γ_{fq}= 1,50) en hastiales, solera y dintel, de acuerdo con las especificaciones de la normativa EHE.

NORMAS UTILIZADAS

- Instrucción relativa a las acciones a considerar en el proyecto de puentes de carretera IAP, aprobada Orden de12 de febrero de 1998.
- Instrucción para el proyecto de estructuras de hormigón estructural EHE, aprobada por el Real Decreto 2661/1998 de 11 de diciembre.
- Normativa Sismoresistente NCSE-94.
- Instrucción relativa a las acciones a considerar en el proyecto de puentes de ferrocarril, aprobada por Orden Ministerial de 25 de junio de 1975.
- Eurocódigo 1. EC-1.

2.3 AMBIENTES, RECUBRIMIENTOS, FISURACIÓN Y CUANTÍAS MÍNIMAS

De acuerdo con la normativa EHE se consideran los ambientes indicados en la tabla siguiente:

Elemento	Ambiente	Recubrimiento de Armadura pasiva	Abertura máxima de fisura en mm.
Solera	IIa	30	0,3
Hastiales	IIa	30	0,3
Dintel	IIa	30	0,3

Las cuantías mínimas de armadura pasiva B500S serán las expuestas en la tabla indicada a continuación (EHE, art. 44.3.5):

Elemento	Posición	Tipo	Cuantía geométrica (‰)
Solera	Cara superior e Inferior	Transversal y Longitudinal	0,90
Hastiales	Cara interior y exterior	Horizontal	1,6
Hastiales	Cara interior y exterior	Vertical	0,90
Dintel	Cara superior e Inferior	Transversal y Longitudinal	0,90

2.4 HIPÓTESIS DE COMBINACIÓN DE ESFUERZOS

Se han considerado las combinaciones de hipótesis de las acciones recogidas en el Eurocódigo 1 y EHE, basados en la teoría de Estados Límites, para las distintas situaciones de cálculo de la estructura.

A continuación se describe la formulación de dichas combinaciones y seguidamente se detallan los valores de los coeficientes adoptados para los casos de carga considerados en los cálculos.

2.4.1 ESTADOS LÍMITE ÚLTIMOS

Las hipótesis de cálculo consideradas son:

- Situaciones persistentes o transitorias

$$\underset{j \geq 1}{\Sigma}\ \gamma_{Gj}\ G_{kj}\ +\ \Sigma\ \gamma_{Gj}\ G^{*}_{kj}\ +\ \gamma_{Q1}\ Q_{k1}\ +\ \underset{i > 1}{\Sigma}\ \gamma_{Qi}\ \Psi_{0i}\ Q_{ki}$$

- Situaciones accidentales

$$\underset{j \geq 1}{\Sigma}\ \gamma_{Gaj}\ G_{kj}\ +\ \Sigma\ \gamma_{Gj}\ G^{*}_{kj}\ +\ \gamma_{A}\ A_{k}\ +\ \Psi_{11}\ Q_{k1}\ +\ \underset{i > 1}{\Sigma}\ \gamma_{Qi}\ \Psi_{2i}\ Q_{ki}$$

- Situaciones accidentales de sismo

$$\Sigma\ G_{kj}\ +\underset{j \geq 1}{\Sigma}\ \gamma_{Gj}\ G^{*}_{kj}\ +\ \gamma_{i}\ A_{Ed}\ +\ \underset{i > 1}{\Sigma}\ \gamma_{Qi}\ \Psi_{2i}\ Q_{ki}$$

donde:

G = Valor característico de las cargas permanentes.
G* = Valor característico de las cargas permanentes de valor no constante.
Q_{k1} = Valor característico de la carga variable dominante.
A_k = Valor característico de la acción accidental.
A_{eq} = Valor característico de la acción sísmica, calculado según la Norma Sismorresistente.

Los coeficientes de seguridad y de combinación de acciones empleados se definen en la IAP.

2.4.2 ESTADOS LÍMITE DE SERVICIO

Las hipótesis de cálculo consideradas son:

- Combinación característica:

$$\underset{j \geq 1}{\Sigma}\ \gamma_{Gj}\ G_{kj}\ +\ \Sigma\ \gamma_{Gj}\ G^{*}_{kj}\ +\ \gamma_{Q1}\ Q_{k1}\ +\ \underset{i > 1}{\Sigma}\ \gamma_{Qi}\ \Psi_{0i}\ Q_{ki}$$

- Combinación frecuente:

$$\underset{j \geq 1}{\Sigma}\ \gamma_{Gaj}\ G_{kj}\ +\ \Sigma\ \gamma_{Gj}\ G^{*}_{kj}\ +\ \Psi_{11}\ Q_{k1}\ +\ \underset{i > 1}{\Sigma}\ \gamma_{Qi}\ \Psi_{2i}\ Q_{ki}$$

- Combinación casi permanente:

$$\underset{j \geq 1}{\Sigma}\ G_{kj}\ +\Sigma\ \gamma_{Gj}\ G^{*}_{kj}\ +\ \underset{i > 1}{\Sigma}\ \gamma_{Qi}\ \Psi_{2i}\ Q_{ki}$$

3 CÁLCULO DE ESFUERZOS

En el siguiente apartado se ha calculado el paso inferior sometido a las cargas de uso. Para ello se modeló el cajón como una estructura reticulada plana compuesta por cuatro barras paralelas dos a dos que conforman el marco cerrado de la estructura.

Las acciones a las que está sometida la estructura han sido descritas en el apartado 2 del presente documento. Las dimensiones del marco son las correspondientes a un plano de corte esviado en el sentido de las vías de ferrocarril. En la dirección perpendicular al plano de cálculo se considera que el marco tiene 1 metro de profundidad.

El cálculo de esfuerzos se ha realizado bajo la hipótesis de linealidad material y geométrica, mediante el programa de cálculo de estructuras ROBOT MILLENIUM v. 14.5. Las comprobaciones y dimensionamiento de la estructura se ha efectuado de acuerdo con la instrucción EHE, y sus resultados se detallan en los apartados 4, 5 y 6 del presente anejo.

Se han realizado 2 tipos de cálculo:

Cálculo 1 o de la IPF-75.- Se ha seguido la Instrucción relativa a las acciones a considerar en el Proyecto de Puentes de Ferrocarril (IPF-75).

Cálculo 2 o del EC-1. Se ha seguido el Eurocódigo 1: Bases de proyecto y acciones en estructuras. Parte 3: Cargas de tráfico en puentes".

Cabe destacar que la barra inferior que representa la solera del marco está apoyada sobre suelo elástico cuyo coeficiente de balasto se ha obtenido a partir del estudio geotécnico. El valor de este coeficiente de balasto representa las características elásticas de las gravas dispuestas bajo la losa inferior del cajón.

4 VERIFICACIÓN DEL E.L.U DE ROTURA POR TENSIONES NORMALES

4.1 FLEXIÓN TRANSVERSAL AL EJE DEL CAJON

En este apartado se comprueba el Estado Límite Último de rotura por flexión transversal de acuerdo con los criterios de la Normativa española vigente (EHE)

El cálculo de la armadura necesaria se ha realizado mediante un programa de armado automático desarrollado al efecto por los ingenieros de PEDELTA S.L.

4.2. FLEXIÓN LONGITUDINAL

La flexión longitudinal no se ha considerado puesto que el cálculo se realiza por metro de ancho. La armadura correspondiente a la flexión longitudinal se dispone por cuantías mínimas indicadas en la normativa EHE.

Programa de calculo automatico de armado desarrollado por:

PEDELTA, S.L.

ESFUERZOS DE CALCULO PARA LAS DISTINTAS HIPOTESIS DE CARGA

REFERENCIA DEL PROYECTO P.I. LOS MALLORQUINES (IPF-75).

DATOS GENERALES :

Nº de barras = 4
Nº de secciones por barra = 9
Nº de combinaciones en ELU = 7

Nº de combinaciones en ELS = 7
Nº de combinaciones en ELS (frecuente) = 7
Nº de combinaciones en ELS (poco frecuente) = 0
Nº de combinaciones en ELS (caracteristica) = 0

Resistencia a compresion del hormigon (T/m2) = 2500
Resistencia media a traccion del hormigon (T/m2) = 256.4964
Modulo de deformacion del hormigon (T/m2) = 248541.5
Resistencia a traccion del acero (T/m2) = 51000
Modulo de deformacion del acero (T/m2) = 2.1E+07

REFERENCIA DEL PROYECTO P.I. LOS MALLORQUINES (IPF-75).

Elemento = 2

Sec	Hip	Nd	Vd	Md	Asf1	Asf2	ASt	8	10	12	16	20	25	32
9	4	11.7	44.6	-27.3	12.8	0.1	0.0	26	16	11	6	4	3	2
9	4	11.7	44.6	-27.3	12.8	0.1	0.0	0	0	0	0	0	0	0
2	7	9.8	4.8	-0.1	7.5	0.1	0.0	15	10	7	4	2	2	1
2	1	5.7	36.5	4.5	0.1	7.5	0.0	15	10	7	4	2	2	1
3	4	11.7	24.3	23.8	0.1	10.9	0.0	0	0	0	0	0	0	0
3	2	5.6	23.8	26.6	0.1	13.0	0.0	26	17	12	6	4	3	2
4	4	11.7	12.2	36.8	0.1	18.1	0.0	0	0	0	0	0	0	0
4	2	5.6	11.6	39.2	0.1	20.1	0.0	40	26	18	10	6	4	2
5	4	11.7	0.0	41.1	0.1	20.5	0.0	0	0	0	0	0	0	0
5	1	5.7	0.0	43.3	0.1	22.4	0.0	45	29	20	11	7	5	3
6	4	11.7	-12.2	36.8	0.1	18.1	0.0	0	0	0	0	0	0	0
6	1	5.7	-12.2	39.0	0.1	20.0	0.0	40	25	18	10	6	4	2
7	7	9.8	-5.3	-0.9	7.5	0.1	0.0	15	10	7	4	2	2	1
7	1	5.7	-24.3	26.1	0.1	12.8	0.0	26	16	11	6	4	3	2
8	5	9.4	-38.3	-1.0	7.5	0.1	0.0	15	10	7	4	2	2	1
8	1	5.7	-36.5	4.5	0.1	7.5	0.0	15	10	7	4	2	2	1
8	5	9.4	-42.4	-29.9	14.4	0.1	0.0	29	18	13	7	5	3	2
8	4	11.7	-44.6	-27.3	12.8	0.1	0.0	0	0	0	0	0	0	0

Elemento = 3

Sec	Hip	Nd	Vd	Md	Asf1	Asf2	ASt	8	10	12	16	20	25	32
2	7	14.4	-10.6	15.9	0.2	7.5	0.0	0	0	0	0	0	0	0
2	5	5.2	-40.7	22.9	0.1	11.1	0.0	22	14	10	6	4	2	1
2	1	3.0	-27.4	-7.4	7.5	0.0	0.0	15	10	7	4	2	2	1
2	7	14.4	-9.2	8.9	0.2	7.5	0.0	15	10	7	4	2	2	1
3	2	3.1	-16.5	-24.0	11.9	0.0	0.0	24	15	11	6	4	2	1
3	7	14.4	-7.4	3.0	0.2	7.5	0.0	15	10	7	4	2	2	1
4	2	3.1	-7.1	-32.2	16.4	0.0	0.0	33	21	14	8	5	3	2
4	7	14.4	-5.3	-1.5	7.5	0.2	0.0	0	0	0	0	0	0	0
5	1	3.0	0.0	-34.4	17.6	0.0	0.0	35	22	16	9	6	4	2
5	7	14.4	-3.1	-4.5	7.5	0.2	0.0	0	0	0	0	0	0	0
6	1	3.0	7.9	-31.6	16.1	0.0	0.0	32	20	14	8	5	3	2
6	7	14.4	-0.6	-5.8	7.5	0.2	0.0	0	0	0	0	0	0	0
7	5	5.2	13.9	-24.0	11.7	0.1	0.0	23	15	10	6	4	2	1
7	7	14.4	2.4	-5.2	7.5	0.2	0.0	0	0	0	0	0	0	0
8	1	3.0	27.4	-7.4	7.5	0.0	0.0	15	10	7	4	2	2	1
8	7	14.4	5.9	-2.3	7.5	0.2	0.0	0	0	0	0	0	0	0
3	7	14.4	10.2	3.4	0.2	7.5	0.0	0	0	0	0	0	0	0
3	4	7.4	38.5	17.6	0.1	8.0	0.0	16	10	7	4	3	2	1

REFERENCIA DEL PROYECTO P.I. LOS MALLORQUINES (IPF-75).

Elemento = 4

Sec	Hip	Nd	Vd	Md	Asf1	Asf2	ASt	8	10	12	16	20	25	32
12	5	53.6	9.7	-30.7	10.2	0.6	0.0	20	13	9	5	3	2	1
12	2	54.8	3.1	-26.4	7.6	0.6	0.0	1	1	1	0	0	0	0
2	5	52.8	7.1	-26.5	7.8	0.6	0.0	16	10	7	4	2	2	1
2	2	54.0	1.4	-25.2	7.5	0.6	0.0	1	1	1	0	0	0	0
3	1	49.7	-0.2	-24.5	7.5	0.6	0.0	15	10	7	4	2	2	1
3	7	10.5	9.5	0.3	0.1	7.5	0.0	15	10	7	4	2	2	1
4	1	48.9	-1.5	-24.9	7.5	0.6	0.0	15	10	7	4	2	2	1
4	7	9.9	5.4	4.0	0.1	7.5	0.0	15	10	7	4	2	2	1
5	1	48.0	-2.7	-26.0	8.1	0.5	0.0	16	10	7	4	3	2	1
5	7	9.3	1.6	5.7	0.1	7.5	0.0	15	10	7	4	2	2	1
6	1	47.2	-3.7	-27.6	9.1	0.5	0.0	18	12	8	5	3	2	1
6	7	8.7	-1.8	5.7	0.1	7.5	0.0	15	10	7	4	2	2	1
7	1	46.3	-4.5	-29.6	10.3	0.5	0.0	21	13	9	5	3	2	1
7	7	8.0	-4.8	4.0	0.1	7.5	0.0	15	10	7	4	2	2	1
8	1	45.5	-5.2	-32.0	11.8	0.5	0.0	24	15	10	6	4	2	1
8	7	7.4	-7.5	0.9	0.1	7.5	0.0	15	10	7	4	2	2	1
11	4	44.6	-11.7	-35.5	13.9	0.5	0.0	28	18	12	7	4	3	2
11	2	48.1	-5.6	-34.9	13.2	0.5	0.0	1	1	0	0	0	0	0

Elemento = 5

Sec	Hip	Nd	Vd	Md	Asf1	Asf2	ASt	8	10	12	16	20	25	32
5	1	51.4	-3.0	25.8	0.6	7.6	0.0	1	1	1	0	0	0	0
5	2	47.9	-3.1	25.3	0.5	7.7	0.0	15	10	7	4	2	2	1
2	7	13.6	-6.2	-0.6	7.5	0.2	0.0	15	10	7	4	2	2	1
2	1	50.5	-1.3	24.7	0.6	7.5	0.0	15	10	7	4	2	2	1
3	7	13.0	-2.8	-2.8	7.5	0.1	0.0	15	10	7	4	2	2	1
3	1	49.7	0.2	24.5	0.6	7.5	0.0	15	10	7	4	2	2	1
4	7	12.4	0.3	-3.4	7.5	0.1	0.0	15	10	7	4	2	2	1
4	1	48.9	1.5	24.9	0.6	7.5	0.0	15	10	7	4	2	2	1
5	7	11.8	2.9	-2.6	7.5	0.1	0.0	15	10	7	4	2	2	1
5	1	48.0	2.7	26.0	0.5	8.1	0.0	16	10	7	4	3	2	1
6	7	11.1	5.2	-0.6	7.5	0.1	0.0	15	10	7	4	2	2	1
6	1	47.2	3.7	27.6	0.5	9.1	0.0	18	12	8	5	3	2	1
7	1	46.3	4.5	29.6	0.5	10.3	0.0	1	1	0	0	0	0	0
7	5	44.1	7.3	29.8	0.5	10.6	0.0	21	14	9	5	3	2	1
8	1	45.5	5.2	32.0	0.5	11.8	0.0	1	1	0	0	0	0	0
8	5	43.2	8.4	33.7	0.5	13.0	0.0	26	17	11	6	4	3	2
6	1	44.6	5.7	34.8	0.5	13.5	0.0	1	1	0	0	0	0	0
6	5	42.4	9.4	38.1	0.5	15.6	0.0	31	20	14	8	5	3	2

Programa de calculo automatico de armado desarrollado por:

PEDELTA, S.L.

ESFUERZOS DE CALCULO PARA LAS DISTINTAS HIPOTESIS DE CARGA

REFERENCIA DEL PROYECTO P.I. LOS MALLORQUINES (EC-1).

DATOS GENERALES :

Nº de barras = 4
Nº de secciones por barra = 9
Nº de combinaciones en ELU = 10

Nº de combinaciones en ELS = 10
Nº de combinaciones en ELS (frecuente) = 10
Nº de combinaciones en ELS (poco frecuente) = 0
Nº de combinaciones en ELS (caracteristica) = 0

Resistencia a compresion del hormigon (T/m2) = 2500
Resistencia media a traccion del hormigon (T/m2) = 256.4964
Modulo de deformacion del hormigon (T/m2) = 248541.5
Resistencia a traccion del acero (T/m2) = 51000
Modulo de deformacion del acero (T/m2) = 2.1E+07

Elemento = 2

Sec	Hip	Nd	Vd	Md	Asf1	Asf2	ASt	8	10	12	16	20	25	32
9	1	2.1	41.6	-19.9	9.9	0.0	0.0	20	13	9	5	3	2	1
9	7	9.8	6.8	-4.2	7.5	0.1	0.0	0	0	0	0	0	0	0
2	7	9.8	4.8	-0.1	7.5	0.1	0.0	15	10	7	4	2	2	1
2	1	2.1	31.2	5.9	0.0	7.5	0.0	15	10	7	4	2	2	1
3	4	10.1	17.5	24.9	0.1	11.6	0.0	0	0	0	0	0	0	0
3	1	2.1	20.8	24.3	0.0	12.2	0.0	24	16	11	6	4	2	2
4	4	10.8	7.1	33.7	0.1	16.4	0.0	0	0	0	0	0	0	0
4	1	2.1	10.4	35.4	0.0	18.3	0.0	37	23	16	9	6	4	2
5	4	11.5	-3.3	35.0	0.1	17.1	0.0	0	0	0	0	0	0	0
5	1	2.1	0.0	39.1	0.0	20.4	0.0	41	26	18	10	6	4	3
6	4	12.2	-13.7	29.0	0.1	13.6	0.0	0	0	0	0	0	0	0
6	1	2.1	-10.4	35.4	0.0	18.3	0.0	37	23	16	9	6	4	2
7	7	9.8	-5.3	-0.9	7.5	0.1	0.0	15	10	7	4	2	2	1
7	1	2.1	-20.8	24.3	0.0	12.2	0.0	24	16	11	6	4	2	2
8	4	13.5	-34.5	-5.2	7.5	0.2	0.0	15	10	7	4	2	2	1
8	1	2.1	-31.2	5.9	0.0	7.5	0.0	15	10	7	4	2	2	1
8	4	14.2	-44.9	-33.4	15.9	0.2	0.0	32	20	14	8	5	3	2
8	4	14.2	-44.9	-33.4	15.9	0.2	0.0	0	0	0	0	0	0	0

Elemento = 3

Sec	Hip	Nd	Vd	Md	Asf1	Asf2	ASt	8	10	12	16	20	25	32
2	7	14.4	-10.6	15.9	0.2	7.5	0.0	0	0	0	0	0	0	0
2	4	12.7	-38.0	31.8	0.1	15.1	0.0	30	19	13	8	5	3	2
2	1	-3.0	-24.2	-8.3	7.5	0.0	0.0	15	10	7	4	2	2	1
2	4	12.7	-29.3	7.9	0.1	7.5	0.0	15	10	7	4	2	2	1
3	1	-3.0	-14.7	-22.0	11.6	0.0	0.0	23	15	10	6	4	2	1
3	7	14.4	-7.3	3.0	0.2	7.5	0.0	15	10	7	4	2	2	1
4	1	-3.0	-6.9	-29.6	15.6	0.0	0.0	31	20	14	8	5	3	2
4	7	14.4	-5.3	-1.5	7.5	0.2	0.0	0	0	0	0	0	0	0
5	1	-3.0	0.0	-32.0	17.0	0.0	0.0	34	22	15	8	5	3	2
5	7	14.4	-3.1	-4.5	7.5	0.2	0.0	0	0	0	0	0	0	0
6	1	-3.0	6.9	-29.6	15.6	0.0	0.0	31	20	14	8	5	3	2
6	7	14.4	-0.6	-5.8	7.5	0.2	0.0	0	0	0	0	0	0	0
7	4	12.7	11.4	-26.5	12.2	0.1	0.0	24	16	11	6	4	2	2
7	7	14.4	2.4	-5.2	7.5	0.2	0.0	0	0	0	0	0	0	0
8	1	-3.0	24.2	-8.3	7.5	0.0	0.0	15	10	7	4	2	2	1
8	7	14.4	5.9	-2.3	7.5	0.2	0.0	0	0	0	0	0	0	0
3	7	14.4	10.2	3.3	0.2	7.5	0.0	0	0	0	0	0	0	0
3	1	-3.0	35.7	12.8	0.0	7.5	0.0	15	10	7	4	2	2	1

REFERENCIA DEL PROYECTO P.I. LOS MALLORQUINES (EC-1).

Elemento = 4

Sec	Hip	Nd	Vd	Md	Asf1	Asf2	ASt	8	10	12	16	20	25	32
12	4	45.0	19.9	-36.3	14.3	0.5	0.0	29	18	13	7	5	3	2
12	1	48.4	-3.0	-22.5	7.5	0.5	0.0	1	1	0	0	0	0	0
2	4	44.2	15.0	-27.6	9.4	0.5	0.0	19	12	8	5	3	2	1
2	1	47.5	-2.5	-23.8	7.5	0.5	0.0	1	1	0	0	0	0	0
3	1	46.7	-2.0	-24.9	7.6	0.5	0.0	15	10	7	4	2	2	1
3	7	10.5	9.5	0.3	0.1	7.5	0.0	15	10	7	4	2	2	1
4	1	45.8	-1.7	-25.8	8.2	0.5	0.0	16	10	7	4	3	2	1
4	7	9.9	5.4	4.0	0.1	7.5	0.0	15	10	7	4	2	2	1
5	1	45.0	-1.5	-26.6	8.7	0.5	0.0	17	11	8	4	3	2	1
5	7	9.3	1.6	5.7	0.1	7.5	0.0	15	10	7	4	2	2	1
6	1	44.2	-1.4	-27.3	9.2	0.5	0.0	18	12	8	5	3	2	1
6	7	8.7	-1.8	5.7	0.1	7.5	0.0	15	10	7	4	2	2	1
7	1	43.3	-1.5	-28.1	9.7	0.5	0.0	19	12	9	5	3	2	1
7	7	8.0	-4.8	4.0	0.1	7.5	0.0	15	10	7	4	2	2	1
8	1	42.5	-1.7	-28.9	10.3	0.5	0.0	21	13	9	5	3	2	1
8	7	7.4	-7.5	0.9	0.1	7.5	0.0	15	10	7	4	2	2	1
11	1	41.6	-2.1	-29.8	10.9	0.5	0.0	22	14	10	5	3	2	1
11	1	41.6	-2.1	-29.8	10.9	0.5	0.0	1	1	0	0	0	0	0

Elemento = 5

Sec	Hip	Nd	Vd	Md	Asf1	Asf2	ASt	8	10	12	16	20	25	32
5	4	51.7	-5.5	15.6	0.6	7.5	0.0	1	1	1	0	0	0	0
5	1	48.4	3.0	22.5	0.5	7.5	0.0	15	10	7	4	2	2	1
2	7	13.6	-6.2	-0.6	7.5	0.2	0.0	15	10	7	4	2	2	1
2	1	47.5	2.5	23.8	0.5	7.5	0.0	15	10	7	4	2	2	1
3	7	13.0	-2.8	-2.8	7.5	0.1	0.0	15	10	7	4	2	2	1
3	1	46.7	2.0	24.9	0.5	7.6	0.0	15	10	7	4	2	2	1
4	7	12.4	0.3	-3.4	7.5	0.1	0.0	15	10	7	4	2	2	1
4	1	45.8	1.7	25.8	0.5	8.2	0.0	16	10	7	4	3	2	1
5	7	11.8	2.9	-2.6	7.5	0.1	0.0	15	10	7	4	2	2	1
5	1	45.0	1.5	26.6	0.5	8.7	0.0	17	11	8	4	3	2	1
6	7	11.1	5.2	-0.6	7.5	0.1	0.0	15	10	7	4	2	2	1
6	1	44.2	1.4	27.3	0.5	9.2	0.0	18	12	8	5	3	2	1
7	4	46.6	11.5	28.1	0.5	9.4	0.0	1	1	0	0	0	0	0
7	1	43.3	1.5	28.1	0.5	9.7	0.0	19	12	9	5	3	2	1
8	4	45.8	13.1	34.2	0.5	13.0	0.0	1	1	0	0	0	0	0
8	4	45.8	13.1	34.2	0.5	13.0	0.0	26	17	12	6	4	3	2
6	4	44.9	14.2	41.1	0.5	17.2	0.0	1	1	0	0	0	0	0
6	4	44.9	14.2	41.1	0.5	17.2	0.0	34	22	15	9	5	3	2

5 VERIFICACIÓN DEL E.L.U DE ROTURA POR TENSIONES TANGENCIALES

5.1 EVALUACIÓN DEL E.L.U. DE AGOTAMIENTO POR CORTANTE

En este apartado se comprueba el Estado Límite Último de rotura por cortante de acuerdo con los criterios de la Normativa española vigente (EHE, artículo 44)

Según dicha norma:

$$V_{rd} = V_d + V_{pd} + V_{cd}$$

donde,

V_{rd} = Valor del esfuerzo cortante efectivo.
V_d = Valor de cálculo del esfuerzo cortante producido por las acciones exteriores.
V_{pd} = Valor de cálculo del esfuerzo cortante producido por el pretensado (= 0).
V_{cd} = Valor de cálculo de la componente paralela a la sección de las tensiones normales en piezas de sección variable (= 0).

- Comprobación del agotamiento por compresión oblicua en el alma.

$$V_{rd} \leq V_{u1}$$

V_{u1} = Esfuerzo cortante de agotamiento por compresión oblicua del alma.

- Comprobación del agotamiento por tracción en el alma.

$$V_{rd} \leq V_{u2}$$

V_{u2} = Esfuerzo cortante de agotamiento por tracción en el alma.

El cálculo de todos los parámetros resistentes se ha realizado de forma automática. Posteriormente se ha determinado la armadura de cortante necesaria A_{sc} por criterios resistentes y se comprueba que verifica los criterios de armadura mínima a cortante.

6 VERIFICACIÓN DEL E.L.S DE FISURACIÓN.

En este apartado se comprueba el Estado Límite de Servicio de fisuración.

El cálculo de la abertura de fisura se hace mediante la formulación empleada en la EHE (art. 49). La comprobación de la abertura de fisura se hace para las combinaciones de carga frecuentes. Se toma como abertura de fisura máxima admisible w_k = 0,3 mm, ya que el ambiente considerado para todos los elementos de la estructura es IIa.

REFERENCIA DEL PROYECTO P.I. LOS MALLORQUINES (IPF-75).

VERIFICACION DEL E.L.S. DE FISURACION

Elemento = 2

Nº de seccion = 1
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-4.3	6.1	-16.6	8.7
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura 8	10	12	16	20	25	32
Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
26 1 0.04	16 1 0.06	11 1 0.08	6 1 0.15	4 1 0.22	3 1 0.30	2 1 0.44
26 1 0.04	16 1 0.06	11 1 0.08	6 1 0.15	4 1 0.22	3 1 0.30	2 1 0.44

Nº de seccion = 2
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	2.8	7.4	0.2	8.1
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura 8	10	12	16	20	25	32
Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89
15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89

Nº de seccion = 3
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	14.8	4.5	3.3	6.1
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura 8	10	12	16	20	25	32
Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
26 1 0.04	17 1 0.05	12 1 0.08	6 1 0.15	4 1 0.22	3 1 0.30	2 1 0.44
26 1 0.04	17 1 0.05	12 1 0.08	6 1 0.15	4 1 0.22	3 1 0.30	2 1 0.44

Nº de seccion = 4
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	22.1	4.5	5.0	6.1
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura 8	10	12	16	20	25	32
Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
40 1 0.03	26 1 0.04	18 1 0.05	10 1 0.09	6 1 0.15	4 1 0.22	2 1 0.44
40 1 0.03	26 1 0.04	18 1 0.05	10 1 0.09	6 1 0.15	4 1 0.22	2 1 0.44

Nº de seccion = 5
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	24.5	4.5	5.2	6.1
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura 8	10	12	16	20	25	32
Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
45 2 0.03	29 1 0.03	20 1 0.05	11 1 0.08	7 1 0.13	5 1 0.18	3 1 0.30
45 2 0.03	29 1 0.03	20 1 0.05	11 1 0.08	7 1 0.13	5 1 0.18	3 1 0.30

Nº de seccion = 6
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	22.0	4.5	4.0	6.1
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura 8	10	12	16	20	25	32
Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
40 1 0.03	25 1 0.04	18 1 0.05	10 1 0.09	6 1 0.15	4 1 0.22	2 1 0.44
40 1 0.03	25 1 0.04	18 1 0.05	10 1 0.09	6 1 0.15	4 1 0.22	2 1 0.44

Nº de seccion = 7
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	14.5	4.5	1.4	6.1
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura 8	10	12	16	20	25	32
Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
26 1 0.04	16 1 0.06	11 1 0.08	6 1 0.15	4 1 0.22	3 1 0.30	2 1 0.44
26 1 0.04	16 1 0.06	11 1 0.08	6 1 0.15	4 1 0.22	3 1 0.30	2 1 0.44

Nº de seccion = 8
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	2.1	4.5	-2.6	6.1
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura 8	10	12	16	20	25	32
Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89
15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89

Nº de seccion = 9
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-8.0	6.1	-18.0	7.4
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura 8	10	12	16	20	25	32
Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
29 1 0.03	18 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44
29 1 0.03	18 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44

Elemento = 3

Nº de seccion = 1
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	15.7	8.1	9.9	4.7
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	22 1 0.04	14 1 0.06	10 1 0.09	6 1 0.15	4 1 0.22	2 1 0.45	1 1 0.89
	22 1 0.04	14 1 0.06	10 1 0.09	6 1 0.15	4 1 0.22	2 1 0.45	1 1 0.89

Nº de seccion = 2
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	4.5	9.4	-4.0	4.2
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89

Nº de seccion = 3
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-0.5	9.4	-13.5	4.2
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	24 1 0.04	15 1 0.06	11 1 0.08	6 1 0.15	4 1 0.22	2 1 0.45	1 1 0.89

Nº de seccion = 4
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-3.9	9.4	-18.5	4.2
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	33 1 0.03	21 1 0.04	14 1 0.06	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.44
	33 1 0.03	21 1 0.04	14 1 0.06	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.44

Nº de seccion = 5
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-5.9	9.4	-19.9	4.1
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	35 1 0.03	22 1 0.04	16 1 0.06	9 1 0.10	6 1 0.15	4 1 0.22	2 1 0.44
	35 1 0.03	22 1 0.04	16 1 0.06	9 1 0.10	6 1 0.15	4 1 0.22	2 1 0.44

Nº de seccion = 6
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-6.2	9.4	-18.2	4.1
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	32 1 0.03	20 1 0.05	14 1 0.06	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.44
	32 1 0.03	20 1 0.05	14 1 0.06	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.44

Nº de seccion = 7
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-4.9	9.4	-13.2	8.1
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	23 1 0.04	15 1 0.06	10 1 0.09	6 1 0.15	4 1 0.22	2 1 0.45	1 1 0.89
	23 1 0.04	15 1 0.06	10 1 0.09	6 1 0.15	4 1 0.22	2 1 0.45	1 1 0.89

Nº de seccion = 8
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-0.7	9.8	-4.5	8.1
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89

Nº de seccion = 9
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	12.9	9.2	4.3	9.4
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	16 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	3 1 0.30	2 1 0.45	1 1 0.89
	16 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	3 1 0.30	2 1 0.45	1 1 0.89

REFERENCIA DEL PROYECTO P.I. LOS MALLORQUINES (IPF-75).

Elemento = 4

Nº de seccion = 1
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-10.6	12.4	-19.5	32.1
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	20 1 0.05	13 1 0.07	9 1 0.10	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89
	20 1 0.05	13 1 0.07	9 1 0.10	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89

Nº de seccion = 2
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-5.5	11.7	-15.1	31.4
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	16 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89
	16 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89

Nº de seccion = 3
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-1.9	11.1	-13.6	31.5
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89

Nº de seccion = 4
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	0.3	10.5	-13.5	30.9
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89

Nº de seccion = 5
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	1.3	9.9	-13.9	30.2
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	16 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	3 1 0.30	2 1 0.45	1 1 0.89
	16 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	3 1 0.30	2 1 0.45	1 1 0.89

Nº de seccion = 6
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	1.2	9.2	-14.9	29.6
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	18 1 0.05	12 1 0.08	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89
	18 1 0.05	12 1 0.08	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89

Nº de seccion = 7
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	0.1	8.6	-16.4	29.0
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	21 1 0.04	13 1 0.07	9 1 0.10	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89
	21 1 0.04	13 1 0.07	9 1 0.10	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89

Nº de seccion = 8
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-1.9	8.0	-18.2	28.4
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	24 1 0.04	15 1 0.06	10 1 0.09	6 1 0.15	4 1 0.22	2 1 0.45	1 1 0.89
	24 1 0.04	15 1 0.06	10 1 0.09	6 1 0.15	4 1 0.22	2 1 0.45	1 1 0.89

Nº de seccion = 9
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-4.6	7.4	-20.9	25.9
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	28 1 0.03	18 1 0.05	12 1 0.08	7 1 0.13	4 1 0.22	3 1 0.30	2 1 0.44
	28 1 0.03	18 1 0.05	12 1 0.08	7 1 0.13	4 1 0.22	3 1 0.30	2 1 0.44

Elemento = 5

Nº de seccion = 1
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	16.7	30.9	5.1	13.7
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89

Nº de seccion = 2
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	14.2	30.3	2.2	13.1
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89

Nº de seccion = 3
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	13.4	29.6	0.6	12.4
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89

Nº de seccion = 4
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	13.2	29.0	0.0	11.8
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89

Nº de seccion = 5
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	13.7	28.4	0.3	11.2
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	16 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	3 1 0.30	2 1 0.45	1 1 0.89
	16 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	3 1 0.30	2 1 0.45	1 1 0.89

Nº de seccion = 6
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	14.8	27.8	1.5	10.6
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	18 1 0.05	12 1 0.08	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89
	18 1 0.05	12 1 0.08	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89

Nº de seccion = 7
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	16.2	27.1	3.4	9.9
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	21 1 0.04	14 1 0.06	9 1 0.10	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89
	21 1 0.04	14 1 0.06	9 1 0.10	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89

Nº de seccion = 8
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	18.7	25.3	5.8	9.3
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	26 1 0.04	17 1 0.05	11 1 0.08	6 1 0.15	4 1 0.22	3 1 0.30	2 1 0.44
	26 1 0.04	17 1 0.05	11 1 0.08	6 1 0.15	4 1 0.22	3 1 0.30	2 1 0.44

Nº de seccion = 9
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	22.3	24.7	8.7	8.7
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	31 1 0.03	20 1 0.05	14 1 0.06	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.44

REFERENCIA DEL PROYECTO P.I. LOS MALLORQUINES (EC-1).

VERIFICACION DEL E.L.S. DE FISURACION

Elemento = 2

Nº de seccion = 1
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	0.8	3.8	-12.9	4.1
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	20 1 0.05	13 1 0.07	9 1 0.10	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89
	20 1 0.05	13 1 0.07	9 1 0.10	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89

Nº de seccion = 2
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	4.7	6.0	0.2	6.1
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89

Nº de seccion = 3
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	14.2	6.4	3.3	6.1
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	24 1 0.04	16 1 0.06	11 1 0.08	6 1 0.15	4 1 0.22	2 1 0.45	2 1 0.44
	24 1 0.04	16 1 0.06	11 1 0.08	6 1 0.15	4 1 0.22	2 1 0.45	2 1 0.44

Nº de seccion = 4
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	19.4	6.7	5.0	6.1
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	37 1 0.03	23 1 0.04	16 1 0.06	9 1 0.10	6 1 0.15	4 1 0.22	2 1 0.44
	37 1 0.03	23 1 0.04	16 1 0.06	9 1 0.10	6 1 0.15	4 1 0.22	2 1 0.44

Nº de seccion = 5
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	21.5	4.1	5.2	6.1
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	41 1 0.03	26 1 0.04	18 1 0.05	10 1 0.09	6 1 0.15	4 1 0.22	3 1 0.30
	41 1 0.03	26 1 0.04	18 1 0.05	10 1 0.09	6 1 0.15	4 1 0.22	3 1 0.30

Nº de seccion = 6
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	19.4	4.1	2.8	6.7
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	37 1 0.03	23 1 0.04	16 1 0.06	9 1 0.10	6 1 0.15	4 1 0.22	2 1 0.44
	37 1 0.03	23 1 0.04	16 1 0.06	9 1 0.10	6 1 0.15	4 1 0.22	2 1 0.44

Nº de seccion = 7
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	12.9	4.1	-1.1	7.3
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	24 1 0.04	16 1 0.06	11 1 0.08	6 1 0.15	4 1 0.22	2 1 0.45	2 1 0.44
	24 1 0.04	16 1 0.06	11 1 0.08	6 1 0.15	4 1 0.22	2 1 0.45	2 1 0.44

Nº de seccion = 8
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	2.1	4.1	-6.4	7.9
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89

Nº de seccion = 9
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-8.0	6.1	-19.1	8.5
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	32 1 0.03	20 1 0.05	14 1 0.06	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.44
	32 1 0.03	20 1 0.05	14 1 0.06	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.44

Elemento = 3

Nº de seccion = 1
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	18.7	8.4	9.9	4.7
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8		10		12		16		20		25		32	
	Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep	
	30 1	0.03	19 1	0.05	13 1	0.07	8 1	0.11	5 1	0.18	3 1	0.30	2 1	0.44
	30 1	0.03	19 1	0.05	13 1	0.07	8 1	0.11	5 1	0.18	3 1	0.30	2 1	0.44

Nº de seccion = 2
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	9.3	9.4	-3.0	4.5
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8		10		12		16		20		25		32	
	Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep	
	15 1	0.06	10 1	0.09	7 1	0.13	4 1	0.23	2 1	0.45	2 1	0.45	1 1	0.89
	15 1	0.06	10 1	0.09	7 1	0.13	4 1	0.23	2 1	0.45	2 1	0.45	1 1	0.89

Nº de seccion = 3
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	3.1	9.4	-11.9	4.5
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8		10		12		16		20		25		32	
	Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep	
	23 1	0.04	15 1	0.06	10 1	0.09	6 1	0.15	4 1	0.22	2 1	0.45	1 1	0.89

Nº de seccion = 4
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-2.0	9.4	-17.0	4.5
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8		10		12		16		20		25		32	
	Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep	
	31 1	0.03	20 1	0.05	14 1	0.06	8 1	0.11	5 1	0.18	3 1	0.30	2 1	0.44
	31 1	0.03	20 1	0.05	14 1	0.06	8 1	0.11	5 1	0.18	3 1	0.30	2 1	0.44

Nº de seccion = 5
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-5.9	9.4	-18.6	4.5
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8		10		12		16		20		25		32	
	Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep	
	34 1	0.03	22 1	0.04	15 1	0.06	8 1	0.11	5 1	0.18	3 1	0.30	2 1	0.44
	34 1	0.03	22 1	0.04	15 1	0.06	8 1	0.11	5 1	0.18	3 1	0.30	2 1	0.44

Nº de seccion = 6
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-6.3	9.4	-18.2	8.4
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8		10		12		16		20		25		32	
	Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep	
	31 1	0.03	20 1	0.05	14 1	0.06	8 1	0.11	5 1	0.18	3 1	0.30	2 1	0.44
	31 1	0.03	20 1	0.05	14 1	0.06	8 1	0.11	5 1	0.18	3 1	0.30	2 1	0.44

Nº de seccion = 7
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-4.9	9.4	-15.1	8.4
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8		10		12		16		20		25		32	
	Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep	
	24 1	0.04	16 1	0.06	11 1	0.08	6 1	0.15	4 1	0.22	2 1	0.45	2 1	0.44
	24 1	0.04	16 1	0.06	11 1	0.08	6 1	0.15	4 1	0.22	2 1	0.45	2 1	0.44

Nº de seccion = 8
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-1.5	9.4	-7.6	8.4
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8		10		12		16		20		25		32	
	Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep	
	15 1	0.06	10 1	0.09	7 1	0.13	4 1	0.23	2 1	0.45	2 1	0.45	1 1	0.89
	15 1	0.06	10 1	0.09	7 1	0.13	4 1	0.23	2 1	0.45	2 1	0.45	1 1	0.89

Nº de seccion = 9
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	10.6	4.5	-0.8	9.4
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8		10		12		16		20		25		32	
	Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep	
	15 1	0.06	10 1	0.09	7 1	0.13	4 1	0.23	2 1	0.45	2 1	0.45	1 1	0.89
	15 1	0.06	10 1	0.09	7 1	0.13	4 1	0.23	2 1	0.45	2 1	0.45	1 1	0.89

REFERENCIA DEL PROYECTO P.I. LOS MALLORQUINES (EC-1).

Elemento = 4

Nº de seccion = 1
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-10.6	12.4	-21.3	27.5
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	29 1 0.03	18 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44
	29 1 0.03	18 1 0.05	13 1 0.07	7 1 0.13	5 1 0.18	3 1 0.30	2 1 0.44

Nº de seccion = 2
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-5.5	11.7	-16.0	26.9
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	19 1 0.05	12 1 0.08	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89
	19 1 0.05	12 1 0.08	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89

Nº de seccion = 3
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-1.9	11.1	-12.3	28.0
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89
	15 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	2 1 0.45	2 1 0.45	1 1 0.89

Nº de seccion = 4
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	0.3	10.5	-12.0	27.4
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	16 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	3 1 0.30	2 1 0.45	1 1 0.89
	16 1 0.06	10 1 0.09	7 1 0.13	4 1 0.23	3 1 0.30	2 1 0.45	1 1 0.89

Nº de seccion = 5
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	1.6	8.1	-12.3	26.8
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	17 1 0.05	11 1 0.08	8 1 0.11	4 1 0.23	3 1 0.30	2 1 0.45	1 1 0.89
	17 1 0.05	11 1 0.08	8 1 0.11	4 1 0.23	3 1 0.30	2 1 0.45	1 1 0.89

Nº de seccion = 6
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	2.7	7.4	-13.1	26.1
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	18 1 0.05	12 1 0.08	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89
	18 1 0.05	12 1 0.08	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89

Nº de seccion = 7
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	2.7	6.8	-14.4	25.5
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	19 1 0.05	12 1 0.08	9 1 0.10	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89
	19 1 0.05	12 1 0.08	9 1 0.10	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89

Nº de seccion = 8
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	1.9	6.2	-16.0	24.9
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	21 1 0.04	13 1 0.07	9 1 0.10	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89
	21 1 0.04	13 1 0.07	9 1 0.10	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89

Nº de seccion = 9
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	0.4	5.6	-18.0	24.3
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	22 1 0.04	14 1 0.06	10 1 0.09	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89
	22 1 0.04	14 1 0.06	10 1 0.09	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89

Elemento = 5

Nº de seccion = 1
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	15.2	29.3	0.6	15.5
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8		10		12		16		20		25		32	
	Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep	
	15 1	0.06	10 1	0.09	7 1	0.13	4 1	0.23	2 1	0.45	2 1	0.45	1 1	0.89
	15 1	0.06	10 1	0.09	7 1	0.13	4 1	0.23	2 1	0.45	2 1	0.45	1 1	0.89

Nº de seccion = 2
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	13.4	28.6	-1.0	14.9
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8		10		12		16		20		25		32	
	Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep	
	15 1	0.06	10 1	0.09	7 1	0.13	4 1	0.23	2 1	0.45	2 1	0.45	1 1	0.89
	15 1	0.06	10 1	0.09	7 1	0.13	4 1	0.23	2 1	0.45	2 1	0.45	1 1	0.89

Nº de seccion = 3
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	12.3	28.0	-1.5	14.2
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8		10		12		16		20		25		32	
	Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep	
	15 1	0.06	10 1	0.09	7 1	0.13	4 1	0.23	2 1	0.45	2 1	0.45	1 1	0.89
	15 1	0.06	10 1	0.09	7 1	0.13	4 1	0.23	2 1	0.45	2 1	0.45	1 1	0.89

Nº de seccion = 4
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	12.0	27.4	-0.9	13.6
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8		10		12		16		20		25		32	
	Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep	
	16 1	0.06	10 1	0.09	7 1	0.13	4 1	0.23	3 1	0.30	2 1	0.45	1 1	0.89
	16 1	0.06	10 1	0.09	7 1	0.13	4 1	0.23	3 1	0.30	2 1	0.45	1 1	0.89

Nº de seccion = 5
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	12.3	26.8	0.3	11.2
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8		10		12		16		20		25		32	
	Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep	
	17 1	0.05	11 1	0.08	8 1	0.11	4 1	0.23	3 1	0.30	2 1	0.45	1 1	0.89
	17 1	0.05	11 1	0.08	8 1	0.11	4 1	0.23	3 1	0.30	2 1	0.45	1 1	0.89

Nº de seccion = 6
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	13.1	26.1	1.5	10.6
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8		10		12		16		20		25		32	
	Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep	
	18 1	0.05	12 1	0.08	8 1	0.11	5 1	0.18	3 1	0.30	2 1	0.45	1 1	0.89
	18 1	0.05	12 1	0.08	8 1	0.11	5 1	0.18	3 1	0.30	2 1	0.45	1 1	0.89

Nº de seccion = 7
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	15.8	27.3	3.4	9.9
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8		10		12		16		20		25		32	
	Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep	
	19 1	0.05	12 1	0.08	9 1	0.10	5 1	0.18	3 1	0.30	2 1	0.45	1 1	0.89
	19 1	0.05	12 1	0.08	9 1	0.10	5 1	0.18	3 1	0.30	2 1	0.45	1 1	0.89

Nº de seccion = 8
Canto = 0.50

	Mmax	Nk	Mmin	Nk
Comb. frecuente	19.4	26.7	5.8	9.3
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8		10		12		16		20		25		32	
	Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep	
	26 1	0.04	17 1	0.05	12 1	0.08	6 1	0.15	4 1	0.22	3 1	0.30	2 1	0.44
	26 1	0.04	17 1	0.05	12 1	0.08	6 1	0.15	4 1	0.22	3 1	0.30	2 1	0.44

Nº de seccion = 9
Canto = 0.50

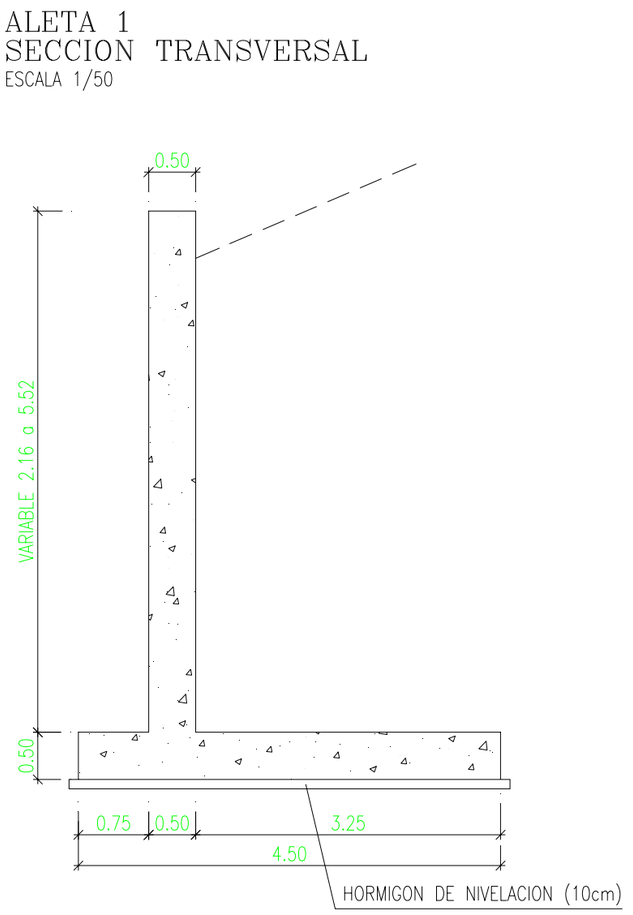
	Mmax	Nk	Mmin	Nk
Comb. frecuente	23.5	26.0	8.7	8.7
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8		10		12		16		20		25		32	
	Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep	
	34 1	0.03	22 1	0.04	15 1	0.06	9 1	0.10	5 1	0.18	3 1	0.30	2 1	0.44
	34 1	0.03	22 1	0.04	15 1	0.06	9 1	0.10	5 1	0.18	3 1	0.30	2 1	0.44

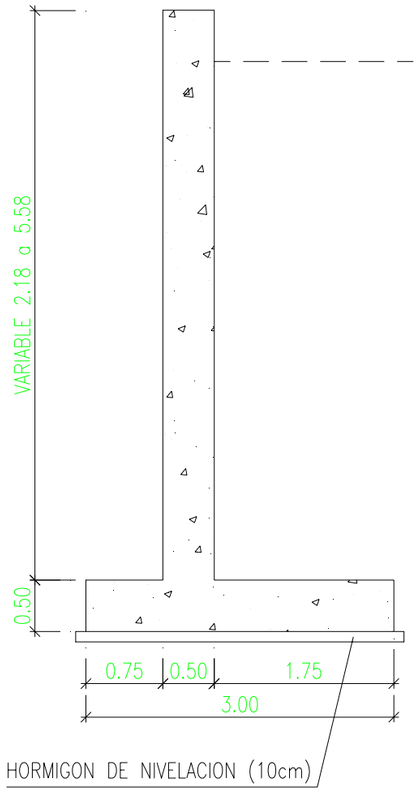
7. CÁLCULO DE ALETAS

7.1. GEOMETRÍA

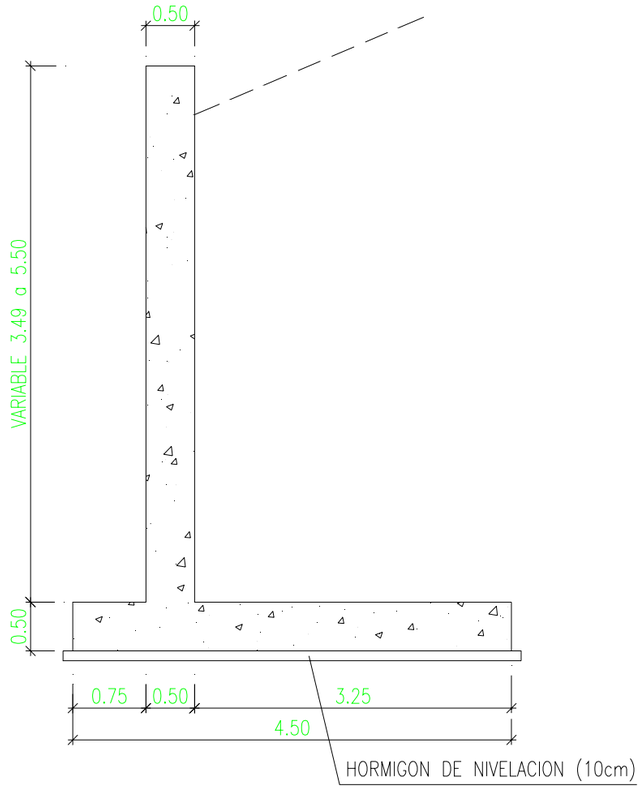
El diseño de las aletas es el mismo en las cuatro dispuestas en las salidas del cajón, situadas con un ángulo de 30º respecto al eje longitudinal del cajón. Las 4 aletas son tipo muro y están compuestas de un módulo único. A continuación se detalla la geometría de cada una de ellas.



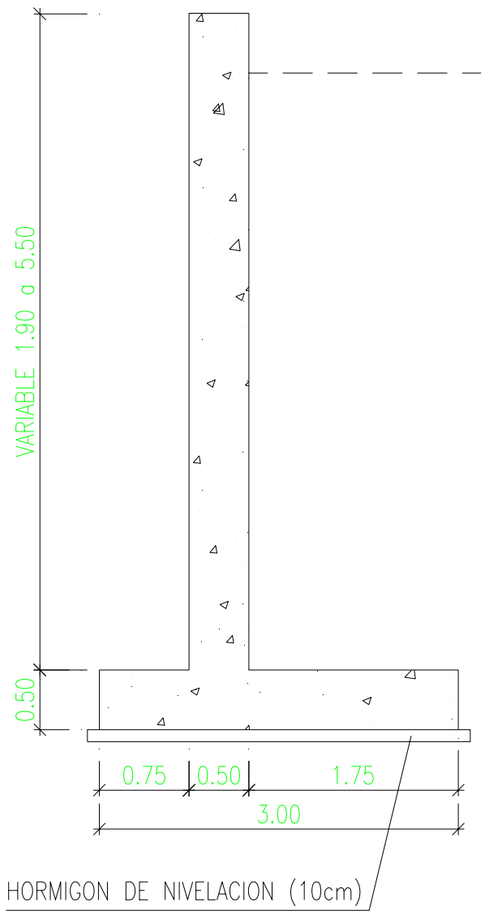
ALETA 2
SECCION TRANSVERSAL
ESCALA 1/50



ALETA 3. MODULO 1
SECCION TRANSVERSAL
ESCALA 1/50



ALETA 4.
SECCION TRANSVERSAL
ESCALA 1/50



7.2 CÁLCULO DE ESFUERZOS Y DIMENSIONAMIENTO

El cálculo y dimensionamiento de las aletas se detalla en las páginas siguientes. Las hipótesis de cálculo se exponen a continuación:

1. El cálculo se realiza en la hipótesis clásica como muro con acciones en coronación debidas al sobre-empuje de 3,0 T/m^2 de tráfico ferroviario así como la consideración de una altura de tierras hasta la cota superior de vía. Los empujes del terreno se han calculado para un coeficiente de empuje K = 0,31 y una densidad del terreno de 2,1 T/m^3. No se han considerado eventuales empujes hidrostáticos al colocar un adecuado drenaje en el trasdós de las aletas.

2. En el cálculo de la seguridad de la aleta frente al vuelco, deslizamiento y tensiones máximas se han verificado las siguientes condiciones (ver resultados en listados de cálculo).

   Coeficiente de Seguridad al vuelco, $CS,v > 1,80$

   Coeficiente de Seguridad al deslizamiento $CS,d > 1,50$

   Tensión máxima del terreno en puntera $\sigma_{max} > 1,25 \cdot \sigma_{admisible}$

   Con $\sigma_{admisible} = 3,00$ Kp/cm^2 y coeficiente de rozamiento terreno-zapata $\mu = 0,60$.

3. El dimensionamiento de las armaduras de flexión y cortante del muro y zapata se realiza con los criterios de la Normativa vigente para estructuras de hormigón (EHE). Los coeficientes de seguridad de las acciones corresponden con un NIVEL DE CONTROL INTENSO γ_{fg} =1,35 y γ_{fq} =1,50.

3. Las armaduras horizontales de flexión transversal se colocan de acuerdo con los valores mínimos exigidos por la Normativa EHE

4. .

Proyecto: L.A.V. Madrid-Zaragoza-Barcelona-Frontera Francesa. Tramo: St. Vicenç dels Horts-Sta. Coloma de Cervelló.

Obra: P.I. de la Riera de Los Mallorquines.

Referencia: Aleta 1. Aleta 3 (Módulo 1). Módulo de aleta tipo 5_3.

```
**************************************************
**                                              **
**                 PROGRAMA  MUR                **
**   CALCULO DE MUROS DE CONTENCION Y CIMENTACION   **
**                                              **
**                                              **
**                   PEDELTA SL                 **
**                                              **
**************************************************
```

CARACTERISTICAS GEOMETRICAS DE LA ESTRUCTURA
==========

ALTURA TOTAL	5.00
ALTURA DE EMPUJE PASIVO	0.00
DIMENSION DE LA BASE	4.50
CANTO DE LA ZAPATA	0.50
CANTO DEL FUSTE	0.50
ANCHO EN CORONACION	0.50
LONGITUD DE LA PUNTERA	0.75
LONGITUD DEL TALON	3.25
ALTURA DEL TACON	0.00
ANCHO DEL TACON	0.00
INCLINACION DEL TRASDOS	90.00
ANGULO DEL TALUD (OMEGA)	33.00

PROPIEDADES MECANICAS DE MATERIALES Y TIERRAS
==========

PROPIEDADES DEL HORMIGON Y DEL ACERO

resistencia caracteristica del hormigon	250.00
coeficiente de minoracion para el hormigon	1.50
limite elastico caracteristico del acero	5100.00
coeficiente de minoracion para el acero	1.15

PROPIEDADES DEl TERRENO DE RELLENO

angulo de friccion interna	35.000
densidad	2.100
cohesion	0.000
angulo friccion terreno - fuste	10.000

PROPIEDADES DEL TERRENO DE CIMENTACION

coef. de rozamiento cimiento-suelo (mu)	0.600
tension admisible:	3.000
tension ultima:	3.750

CARGAS Y COEFICIENTES DE SEGURIDAD
==========

Carga repartida (T/m*m)	3.00
Coef. de seg. al deslizamiento (servicio)	1.50
Coef. de seg. al deslizamiento (ultimo)	1.50
Coef. de seg. al vuelco	1.80
Coef. de seg. al deslizamiento o vuelco en hipotesis de accion sismica	1.20
Coef. sismico	0.00

Empuje Activo y Magnitudes Relacionadas

angulo del paramento (rad)	1.57
angulo de actuacion del sismo (rad)	0.00
angulo de rozamiento interno (rad)	0.61
Ka (coef. empuje sin sismo)	0.50
Kae (coef. empuje con sismo)	0.50
empuje activo sin sismo	20.43
empuje activo con sismo	20.43
brazo del empuje activo	1.97

Empuje Pasivo y Magnitudes Relacionadas

altura de empuje pasivo	0.00
altura de suelo sobre la puntera	0.00
brazo de empupe pasivo en zapata y fuste	0.00
brazo de empuje pasivo sobre tacon	0.00
empuje pasivo en zapata y fuste	0.00
empuje pasivo sobre tacon	0.00

Volumenes

distancia d:	0.00
volumen 1 (volumen del cimiento)	2.25
volumen 2 (volumen del alzado)	2.25
volumen 3 (suelo sobre la puntera)	0.00
volumen 4 (suelo sobre el talon)	14.63

Pesos

peso 1 (peso del cimiento)	5.62
peso 2 (peso del alzado)	5.62
peso 3 (peso del suelo sobre puntera)	0.00
peso 4 (peso del suelo sobre talon) (incluyendo sobrecarga repartida)	40.46
peso total	51.71

Brazos de Palanca

Brazo de palanca 1 (del cimiento)	2.25
Brazo de palanca 2 (del alzado)	1.00
Brazo de palanca 3 (del suelo / puntera)	0.38
Brazo de palanca 4 (del suelo / talon)	2.87

Momentos

Mto estab. 1 (de zapata)	12.66
Mto estab. 2 (del fuste)	5.62
Mto estab. 3 (del tierras sobre puntera)	0.00
Mto estab. 4 (del tierras sobre talon)	116.33
Mto estab. total	134.61

RESULTADOS DE LAS VERIFICACIONES DE ESTABILIDAD
==========

Coef. de Seg. al deslizamiento servicio: 1.52

VERIFICADA LA SEGURIDAD AL DESLIZAMIENTO EN SERVICIO

Coef. de Seg. al deslizamiento ultimo: 1.52
VERIFICADA LA SEGURIDAD AL DESLIZ. EN ESTADO ULTIMO

Coef de Seg. al vuelco: 3.34

VERIFICADA LA SEGURIDAD AL VUELCO

Tensiones Maxima, Media y Minima en Servicio:
18.01 11.49 4.98 ...T/m*m

VERIFICADA LA TENSION MAXIMA SOBRE EL TERRENO EN SERVICIO
(la tension admisible en punta es 1,25* 30.00 T/m*m)

VERIFICADA LA TENSION MEDIA SOBRE EL TERRENO EN SERVICIO

Tensiones Maxima y Minima bajo empuje mayorado:
24.01 0.00...T/m*m

VERIFICADA LA CONDICION SOBRE LA TENSION MAXIMA CON EMPUJE MAYORADO

LEY DE MOMENTOS Y ARMADURA EN FUSTE

46.26	25.43
35.56	19.08
26.58	14.00
19.19	9.96
13.24	7.12
8.60	5.29
5.13	4.50
2.67	4.50
1.09	4.50
0.25	4.50
0.00	4.50

RESULTADOS DE LOS CALCULOS RESISTENTES
==========

elemento	Md	As nec.	As min.	Vd	Vu (res.)
fuste	46.26	25.43	4.50	25.83	31.86
talon	47.15	25.97	5.00	19.61	64.55
puntera	8.15	5.07	5.00	13.42	32.27
tacon	0.00	0.00	0.00	0.00	0.00

Armaduras transversales minimas

Fuste trasdos = 6.358
Fuste intrados = 5.000
Zapata superior = 6.493
Zapata inferior = 5.000

Proyecto: L.A.V. Madrid-Zaragoza-Barcelona-Frontera Francesa. Tramo: St. Vicenç dels Horts-Sta. Coloma de Cervelló.

Obra: P.I. de la Riera de Los Mallorquines.

Referencia: Aletas 2 y 4. Módulo de aleta tipo 5_1.

****
**
** PROGRAMA MUR **
** CALCULO DE MUROS DE CONTENCION Y CIMENTACION **
**
**
** PEDELTA SL **
**
****

CARACTERISTICAS GEOMETRICAS DE LA ESTRUCTURA
==========

ALTURA TOTAL	5.00
ALTURA DE EMPUJE PASIVO	0.00
DIMENSION DE LA BASE	3.00
CANTO DE LA ZAPATA	0.50
CANTO DEL FUSTE	0.50
ANCHO EN CORONACION	0.50
LONGITUD DE LA PUNTERA	0.75
LONGITUD DEL TALON	1.75
ALTURA DEL TACON	0.00
ANCHO DEL TACON	0.00
INCLINACION DEL TRASDOS	90.00
ANGULO DEL TALUD (OMEGA)	11.00

PROPIEDADES MECANICAS DE MATERIALES Y TIERRAS
==========

PROPIEDADES DEL HORMIGON Y DEL ACERO

resistencia caracteristica del hormigon	250.00
coeficiente de minoracion para el hormigon	1.50
limite elastico caracteristico del acero	5100.00
coeficiente de minoracion para el acero	1.15

PROPIEDADES DEl TERRENO DE RELLENO

angulo de friccion interna	35.000
densidad	2.100
cohesion	0.000
angulo friccion terreno - fuste	10.000

PROPIEDADES DEL TERRENO DE CIMENTACION

coef. de rozamiento cimiento-suelo (mu)	0.600
tension admisible:	3.000
tension ultima:	3.750

CARGAS Y COEFICIENTES DE SEGURIDAD
==========

Carga repartida (T/m*m)	3.00
Coef. de seg. al deslizamiento (servicio)	1.50
Coef. de seg. al deslizamiento (ultimo)	1.50
Coef. de seg. al vuelco	1.80
Coef. de seg. al deslizamiento o vuelco en hipotesis de accion sismica	1.20
Coef. sismico	0.00

Empuje Activo y Magnitudes Relacionadas

angulo del paramento (rad)	1.57
angulo de actuacion del sismo (rad)	0.00
angulo de rozamiento interno (rad)	0.61
Ka (coef. empuje sin sismo)	0.29
Kae (coef. empuje con sismo)	0.29
empuje activo sin sismo	11.77
empuje activo con sismo	11.77
brazo del empuje activo	1.97

Empuje Pasivo y Magnitudes Relacionadas

altura de empuje pasivo	0.00
altura de suelo sobre la puntera	0.00
brazo de empupe pasivo en zapata y fuste	0.00
brazo de empuje pasivo sobre tacon	0.00
empuje pasivo en zapata y fuste	0.00
empuje pasivo sobre tacon	0.00

Volumenes

distancia d:	0.00
volumen 1 (volumen del cimiento)	1.50
volumen 2 (volumen del alzado)	2.25
volumen 3 (suelo sobre la puntera)	0.00
volumen 4 (suelo sobre el talon)	7.88

Pesos

peso 1 (peso del cimiento)	3.75
peso 2 (peso del alzado)	5.62
peso 3 (peso del suelo sobre puntera)	0.00
peso 4 (peso del suelo sobre talon) (incluyendo sobrecarga repartida)	21.79
peso total	31.16

Brazos de Palanca

Brazo de palanca 1 (del cimiento)	1.50
Brazo de palanca 2 (del alzado)	1.00
Brazo de palanca 3 (del suelo / puntera)	0.38
Brazo de palanca 4 (del suelo / talon)	2.12

Momentos

Mto estab. 1 (de zapata)	5.62
Mto estab. 2 (del fuste)	5.62
Mto estab. 3 (del tierras sobre puntera)	0.00
Mto estab. 4 (del tierras sobre talon)	46.30
Mto estab. total	57.55

RESULTADOS DE LAS VERIFICACIONES DE ESTABILIDAD
==========

Coef. de Seg. al deslizamiento servicio: 1.59

VERIFICADA LA SEGURIDAD AL DESLIZAMIENTO EN SERVICIO

Coef. de Seg. al deslizamiento ultimo: 1.59
VERIFICADA LA SEGURIDAD AL DESLIZ. EN ESTADO ULTIMO

Coef de Seg. al vuelco: 2.48

VERIFICADA LA SEGURIDAD AL VUELCO

Tensiones Maxima, Media y Minima en Servicio:
18.64 10.39 2.14 ...T/m*m

VERIFICADA LA TENSION MAXIMA SOBRE EL TERRENO EN SERVICIO
(la tension admisible en punta es 1,25* 30.00 T/m*m)

VERIFICADA LA TENSION MEDIA SOBRE EL TERRENO EN SERVICIO

Tensiones Maxima y Minima bajo empuje mayorado:
28.42 0.00...T/m*m

VERIFICADA LA CONDICION SOBRE LA TENSION MAXIMA CON EMPUJE MAYORADO

LEY DE MOMENTOS Y ARMADURA EN FUSTE

26.65	14.04
20.48	10.66
15.31	7.89
11.05	6.35
7.63	4.81
4.96	4.50
2.95	4.50
1.54	4.50
0.63	4.50
0.14	4.50
0.00	4.50

RESULTADOS DE LOS CALCULOS RESISTENTES
==========

elemento	Md	As nec.	As min.	Vd	Vu (res.)
fuste	26.65	14.04	4.50	14.88	31.42
talon	20.50	10.67	5.00	16.24	64.55
puntera	8.36	5.18	5.00	13.51	32.27
tacon	0.00	0.00	0.00	0.00	0.00

Armaduras transversales minimas

Fuste trasdos = 5.000
Fuste intrados = 5.000
Zapata superior = 5.000
Zapata inferior = 5.000

Proyecto: L.A.V. Madrid-Zaragoza-Barcelona-Frontera Francesa. Tramo: St. Vicenç dels Horts-Sta. Coloma de Cervelló.

Obra: P.I: Riera de Los Mallorquines.

Referencia: Aleta 3 (Módulo 2). Módulo de aleta tipo 3_3.

```
**************************************************
**                                              **
**                PROGRAMA  MUR                 **
**   CALCULO DE MUROS DE CONTENCION Y CIMENTACION   **
**                                              **
**                                              **
**                  PEDELTA SL                  **
**                                              **
**************************************************
```

CARACTERISTICAS GEOMETRICAS DE LA ESTRUCTURA
==========

ALTURA TOTAL	3.00
ALTURA DE EMPUJE PASIVO	0.00
DIMENSION DE LA BASE	2.95
CANTO DE LA ZAPATA	0.30
CANTO DEL FUSTE	0.30
ANCHO EN CORONACION	0.30
LONGITUD DE LA PUNTERA	0.45
LONGITUD DEL TALON	2.20
ALTURA DEL TACON	0.00
ANCHO DEL TACON	0.00
INCLINACION DEL TRASDOS	90.00
ANGULO DEL TALUD (OMEGA)	33.00

PROPIEDADES MECANICAS DE MATERIALES Y TIERRAS
==========

PROPIEDADES DEL HORMIGON Y DEL ACERO

resistencia caracteristica del hormigon	250.00
coeficiente de minoracion para el hormigon	1.50
limite elastico caracteristico del acero	5100.00
coeficiente de minoracion para el acero	1.15

PROPIEDADES DEl TERRENO DE RELLENO

angulo de friccion interna	35.000
densidad	2.100
cohesion	0.000
angulo friccion terreno - fuste	10.000

PROPIEDADES DEL TERRENO DE CIMENTACION

coef. de rozamiento cimiento-suelo (mu)	0.600
tension admisible:	3.000
tension ultima:	3.750

CARGAS Y COEFICIENTES DE SEGURIDAD
==========

Carga repartida (T/m*m)	3.00
Coef. de seg. al deslizamiento (servicio)	1.50
Coef. de seg. al deslizamiento (ultimo)	1.50
Coef. de seg. al vuelco	1.80
Coef. de seg. al deslizamiento o vuelco en hipotesis de accion sismica	1.20
Coef. sismico	0.00

Empuje Activo y Magnitudes Relacionadas

angulo del paramento (rad)	1.57
angulo de actuacion del sismo (rad)	0.00
angulo de rozamiento interno (rad)	0.61
Ka (coef. empuje sin sismo)	0.50
Kae (coef. empuje con sismo)	0.50
empuje activo sin sismo	9.14
empuje activo con sismo	9.14
brazo del empuje activo	1.24

Empuje Pasivo y Magnitudes Relacionadas

altura de empuje pasivo	0.00
altura de suelo sobre la puntera	0.00
brazo de empupe pasivo en zapata y fuste	0.00
brazo de empuje pasivo sobre tacon	0.00
empuje pasivo en zapata y fuste	0.00
empuje pasivo sobre tacon	0.00

Volumenes

distancia d:	0.00
volumen 1 (volumen del cimiento)	0.89
volumen 2 (volumen del alzado)	0.81
volumen 3 (suelo sobre la puntera)	0.00
volumen 4 (suelo sobre el talon)	5.94

Pesos

peso 1 (peso del cimiento)	2.21
peso 2 (peso del alzado)	2.03
peso 3 (peso del suelo sobre puntera)	0.00
peso 4 (peso del suelo sobre talon) (incluyendo sobrecarga repartida)	19.07
peso total	23.31

Brazos de Palanca

Brazo de palanca 1 (del cimiento)	1.48
Brazo de palanca 2 (del alzado)	0.60
Brazo de palanca 3 (del suelo / puntera)	0.23
Brazo de palanca 4 (del suelo / talon)	1.85

Momentos

Mto estab. 1 (de zapata)	3.26
Mto estab. 2 (del fuste)	1.21
Mto estab. 3 (del tierras sobre puntera)	0.00
Mto estab. 4 (del tierras sobre talon)	35.29
Mto estab. total	39.77

RESULTADOS DE LAS VERIFICACIONES DE ESTABILIDAD
==========

Coef. de Seg. al deslizamiento servicio: 1.53

VERIFICADA LA SEGURIDAD AL DESLIZAMIENTO EN SERVICIO

Coef. de Seg. al deslizamiento ultimo: 1.53
VERIFICADA LA SEGURIDAD AL DESLIZ. EN ESTADO ULTIMO

Coef de Seg. al vuelco: 3.50

VERIFICADA LA SEGURIDAD AL VUELCO

Tensiones Maxima, Media y Minima en Servicio:
12.03 7.90 3.77 ...T/m*m

VERIFICADA LA TENSION MAXIMA SOBRE EL TERRENO EN SERVICIO
(la tension admisible en punta es 1,25* 30.00 T/m*m)

VERIFICADA LA TENSION MEDIA SOBRE EL TERRENO EN SERVICIO

Tensiones Maxima y Minima bajo empuje mayorado:
15.95 0.00...T/m*m

VERIFICADA LA CONDICION SOBRE LA TENSION MAXIMA CON EMPUJE MAYORADO

LEY DE MOMENTOS Y ARMADURA EN FUSTE

13.24	13.00
10.31	9.92
7.82	7.40
5.74	5.35
4.03	4.05
2.67	3.01
1.63	2.70
0.87	2.70
0.37	2.70
0.09	2.70
0.00	2.70

RESULTADOS DE LOS CALCULOS RESISTENTES
==========

elemento	Md	As nec.	As min.	Vd	Vu (res.)
fuste	13.24	13.00	2.70	11.71	17.90
talon	13.81	13.61	3.00	8.53	38.73
puntera	1.99	3.00	3.00	5.58	19.36
tacon	0.00	0.00	0.00	0.00	0.00

Armaduras transversales minimas

Fuste trasdos = 3.251
Fuste intrados = 3.000
Zapata superior = 3.403
Zapata inferior = 3.000

4.6. Paso inferior de la riera de Can Mallol

ÍNDICE DEL ANEJO DE CÁLCULO DEL P. I. DE LA RIERA DE CAN MALLOL

1 GEOMETRÍA

1.1. Geometría y esquema estructural
1.2. Sección tipo

2 ACCIONES, MATERIALES, COEFICIENTES DE SEGURIDAD Y NORMATIVAS

2.1. Acciones
2.2. Coeficientes de seguridad, materiales, niveles de control y Normativas
2.3. Ambientes, recubrimientos, fisuración y cuantías mínimas
2.4. Hipótesis de combinación de esfuerzos
2.4.1. Estados Límite Últimos
2.4.2. Estados Límite de Servicio

3 CÁLCULO DE ESFUERZOS

4 VERIFICACIÓN DEL E.L.U DE ROTURA POR TENSIONES NORMALES

4.1. Flexión longitudinal
4.2. Flexión transversal

5 VERIFICACIÓN DEL E.L.U DE ROTURA POR TENSIONES TANGENCIALES

5.1. Evaluación del E.L.U. de agotamiento por cortante

6 VERIFICACIÓN DEL E.L.S DE FISURACIÓN

7 CÁLCULO DE ALETAS

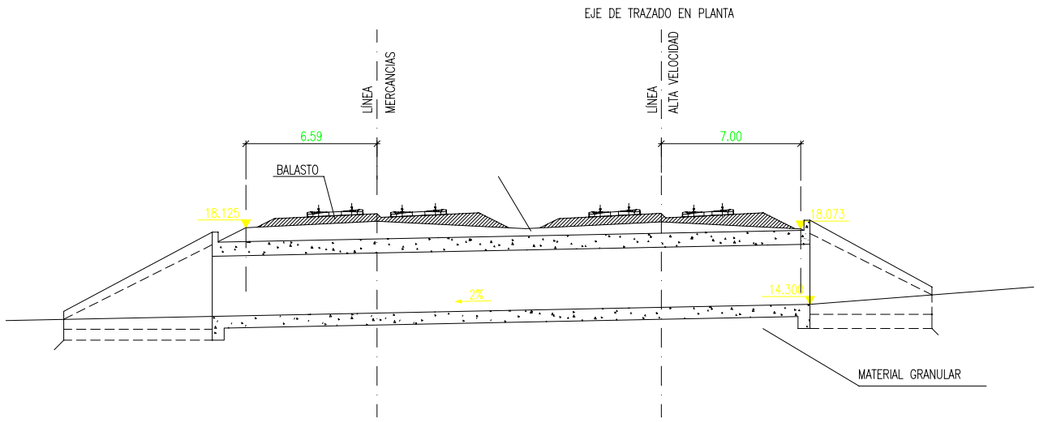
7.1. Geometría
7.2. Cálculo de esfuerzos y dimensionamiento

1 GEOMETRÍA

1.1 GEOMETRÍA Y ESQUEMA ESTRUCTURAL

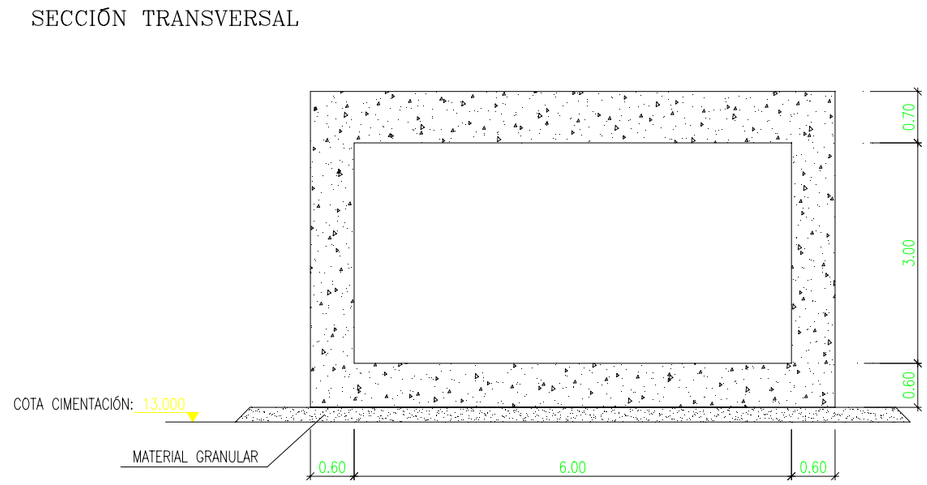
Se trata de un marco cerrado para dejar paso a través de la plataforma de ferrocarril a la riera de Can Mallol. El cajón está constituido por dos hastiales y una losa inferior (de ahora en adelante solera) con un espesor de 0,60 m., y cerrado en su parte superior por un dintel de 0,70 m. de canto. El cajón cruza de forma prácticamente perpendicular la plataforma de ferrocarril por lo que se puede considerar que su esviaje a efectos de cálculo es nulo. Tanto la entrada como la salida del cajón estará formada por aletas tipo muro que sostienen las tierras del terraplén y encauzan la riera en la dirección deseada. Estas aletas forman un ángulo de 30º respecto al eje del paso inferior.

El cajón queda levemente enterrado respecto a la superestructura de la vía, de tal forma que solamente se dispondrá la capa de balasto y subbalasto por encima del dintel (la distancia media entre la cota de carril y la cara superior de la estructura es de 1,07 m).



1.2 SECCIÓN TIPO

La sección transversal de la estructura es un marco rectangular cerrado construido con hormigón armado HA-25. Como ya se ha dicho anteriormente se puede considerar el cajón como recto. En consecuencia la sección de cálculo de la estructura coincidirá con la sección transversal del marco. Sus dimensiones se detallan en la figura adjunta.



En la figura se puede apreciar que la estructura va apoyada sobre una capa de material granular hasta alcanzar el estrato de cimentación competente.

2 ACCIONES, MATERIALES, COEFICIENTES DE SEGURIDAD Y NORMATIVAS

2.1 ACCIONES

De acuerdo con las “Instrucciones y recomendaciones para la redacción de proyectos de plataforma” del GIF se han considerado las siguientes acciones:

Acciones permanentes (g):

g1, PESO PROPIO

El peso propio de los distintos elementos se ha calculado a partir de su geometría (secciones transversales) adoptando una densidad de valor $\gamma c = 2{,}5\ T/m^3$ para los elementos de hormigón armado (solera, dintel y hastiales).

g2, PESO DEL BALASTO Y CARGAS MUERTAS

Las cargas permanentes distintas del peso propio del tablero son las siguientes:

- Balasto
- Vías y traviesas
- Conductos de cableado y paseos
- Soportes de catenarias
- Impostas y barandillas

El peso de balasto sobre el tablero se calcula a partir de la plataforma en la estructura de vía tomando como densidad $\gamma = 1{,}6\ t/m^3$.

De acuerdo con las “Instrucciones y recomendaciones para la redacción de proyectos de plataforma” del GIF se adoptarán para esta carga los siguientes valores característicos superior e inferior:

- valor inferior: (0,70 x peso medio) $g_{2,\ bal\ inf}$
- valor superior: (1,30 x peso medio) $g_{2,\ bal,\ sup}$

El caso de desbalastado se considera incluido en el intervalo indicado de variación del peso del balasto.

El peso de vías y traviesas para la plataforma es:

$g_{2,vías+traviesas} = 0{,}52 + 0{,}12 = 0{,}64$ t/m y vía.
(trav)+(carril)

El peso de los conductos para cableados y zona de paseos es:

$g_{2,conductos} = 0{,}30$ t/m

El peso de los soportes de catenarias se tienen en cuenta sólo para efectos locales de anclaje de la catenaria y armado local de losa, pero no para el cálculo general del tablero.

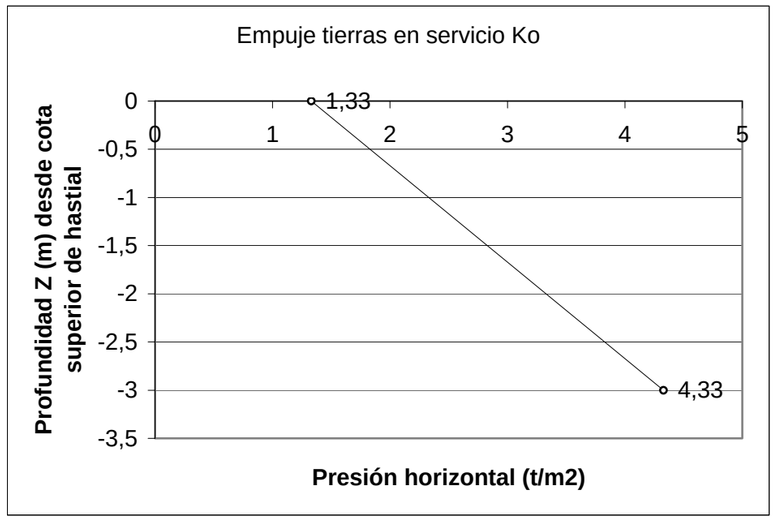
Acciones permanentes de valor no constante (G*):

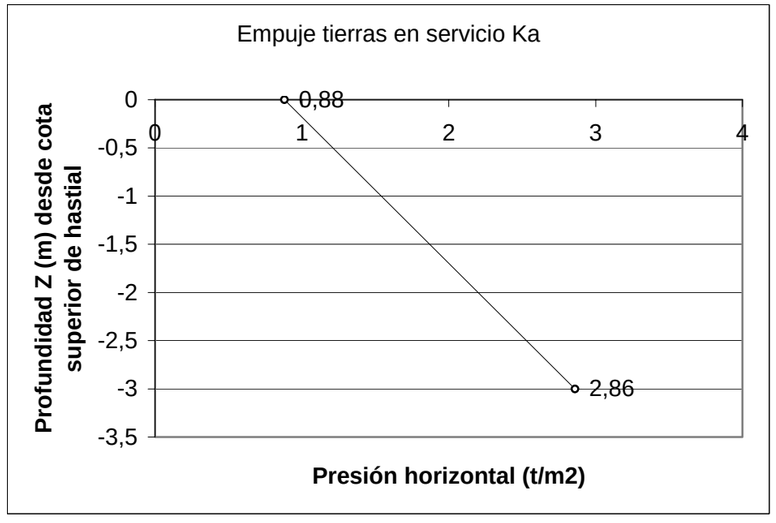
EMPUJE DE TIERRAS

El empuje de tierras se calcula para la fase de servicio, al preverse que el relleno de tierras se efectuará simétricamente a ambos lados de la estructura.

En la fase de servicio se considera el efecto del empuje de tierras ya con toda la altura que tendrá una vez terminada la estructura. En esta fase y debido a que la estructura no presenta un comportamiento completamente flexible o completamente rígido se consideran los empujes activo K_a = 0,33 y empuje al reposo K_o = 0,50.

De esta manera las leyes de presión del terreno quedan de la siguiente manera:





SOBRECARGAS DE USO. COMPONENTES VERTICALES.

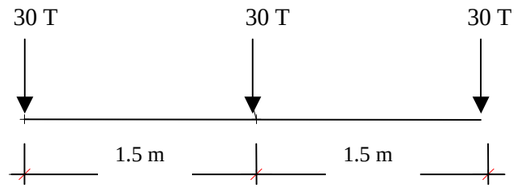
A. Sobrecarga de tráfico de tren

Se utilizará la envolvente de esfuerzos debidos a los trenes de carga de IPF-75 y de EC1-3.

Como coeficiente de impacto se adoptará en cada caso el que corresponda.

De acuerdo con la normativa IPF-75 Existen dos trenes de carga

Tipo A.- Por cada vía: P_{vp} = 3 ejes de 30 T separados 1,50 m

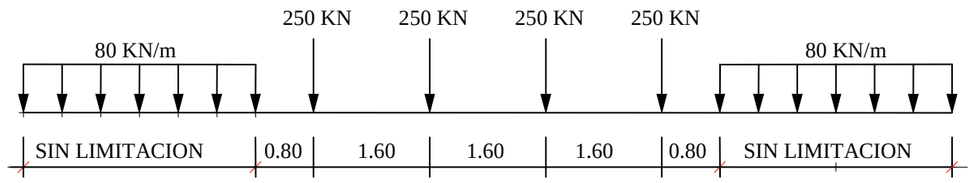


Tipo B.- Por cada vía: Sobrecarga uniforme de 12 t/m. sobre 15,0 ó 30,0 metros, más un conjunto de cuchillos de carga de 10 t/m y 1 t/m. de longitud arbitraria.

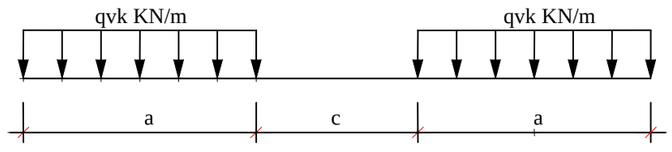
El tren tipo A puede condicionar el trabajo local de reparto de la losa y el tren tipo B condiciona el trabajo global. No se admite reducción de cargas por simultaneidad entre ambas vías. No se considera el efecto del ripado de la vía de 0,30 m porque el estudio del cajón se realiza por metro de ancho.

El tren de cargas de EC1 tiene la siguiente configuración

Tren tipo 71:



Modelo de carga SW:



Se tendrán en cuenta tres tipos de trenes según el EC-1: Tren tipo 71, SW/0, y el SW/2.

	SW0	SW2
Q_{vk}	133	150
a	15	25
c	5,3	7

Tabla 2. Tren de cargas.

Los valores de los trenes tipo 71 y SW/0 se multiplicarán por un coeficiente de clasificación α cuyo valor se toma igual a 1,00 tanto para las vías de ancho RENFE como para las de ancho Internacional.

B. Sobrecarga tráfico losa inferior

Para el paso inferior en estudio no es necesario considerar ninguna sobrecarga sobre la solera, puesto que la obra sirve como canalización de una riera y no se prevé más que la circulación esporádica de algún vehículo automóvil.

C. Sobrecargas en paseos

Según las “Instrucciones y recomendaciones para la redacción de proyectos de plataforma” del GIF se dispondrá una sobrecarga en los paseos laterales de valor:

$$Q_{sv} = 0{,}5\ t/m^2$$

Sólo un 50 % de dicha carga es compatible con el tráfico ferroviario.

En nuestro caso y debido a que el estudio se realiza por metro de ancho no se considera por ser más desfavorable para el dimensionamiento de los distintos elementos del marco considerar las cargas verticales del tráfico ferroviario.

D. Sobrecarga de tráfico en trasdós hastiales

Se considera la sobrecarga de tráfico en trasdós de hastiales recomendada en la normativa IFF-75 de valor igual 3 t/m^2.

Esta sobrecarga actúa en los hastiales mediante el coeficiente de empuje al reposo K_o = 0,50.

SOBRECARGAS DE USO. COMPONENTES HORIZONTALES.

A. Efectos de frenado y arranque

Se adopta la Norma EC1 ya que las acciones definidas en la IPF75 son mucho más favorables. (1/8 de la carga frente a 1/4)

Son fuerzas que actúan sobre cota superior de carril. No deben mayorarse dinámicamente.

Fuerzas de arranque (por vía)

$F_a = 33\ (KN/m) \times L(m) \leq 1.000\ KN$ LM71 y SW

Fuerzas de frenado (por vía)

$F_f = 20\ (KN/m) \times L(m) \leq 6.000\ (KN)$ LM71 y SW0

$Ff = 35\ (KN/m) \times L(m)$ SW2

VARIACIÓN UNIFORME DE TEMPERATURA

No se considera este efecto al estar la estructura enterrada prácticamente en su totalidad.

GRADIENTE TÉRMICO

No se considera este efecto al estar la estructura enterrada prácticamente en su totalidad.

ACCIONES ACCIDENTALES

ACCIÓN SÍSMICA

La aceleración sísmica básica de la zona, según la normativa vigente, es a_b= 0,04 g.

La categoría de la estructura puede considerarse de especial importancia, lo que es equivalente a un coeficiente de riesgo ρ =1,3.

La aceleración de cálculo es:

$a_c = \rho \cdot a_b$
a_b = 0,052 g

Las acciones sísmicas en puentes sólo se consideran, de acuerdo con la IAP, para aceleraciones de cálculo superiores a 0,06g, por lo tanto no es preciso realizar el análisis sísmico del cajón.

A continuación se detalla el valor de cálculo de las cargas verticales y los coeficientes de impacto considerados.

2.2 COEFICIENTES DE SEGURIDAD, MATERIALES, NIVELES DE CONTROL Y NORMATIVAS

HORMIGONES

- Hormigón de Limpieza..... HM-15
- Losas..... HA-25 / B / 20 / IIa
- Hastiales..... HA-25 / B / 20 / IIa
- Dintel..... HA-25 / B / 20 / IIa

Control del hormigón NORMAL

γc= 1,50 (Situación persistente o transitoria)
γc= 1,30 (Situación accidental)

El módulo de elasticidad se ha evaluado en todos los casos de acuerdo a la expresión de EHE:

$$E_c = 8500 \sqrt[3]{f_{ck} + 8} \ (N/mm^2)$$

Los límites establecidos para la consistencia en la puesta en obra podrán superarse con el empleo de aditivos superfluidificantes, siempre que el valor de la relación agua-cemento cumpla los requisitos prefijados en la EHE.

ACEROS

- Acero corrugado para la armadura pasiva B500S, con f_{yk} > 500 MPa (5100 Kp/cm^2)

Control de los aceros NORMAL.

γ_s = 1,15 (Situación persistente o transitoria)
γ_s = 1,0 (Situación accidental)

CONTROL DE EJECUCIÓN

El control de ejecución será INTENSO (γ_g= 1,35 y γ_{fq}= 1,50) en hastiales, solera y dintel, de acuerdo con las especificaciones de la normativa EHE.

NORMAS UTILIZADAS

- Instrucción relativa a las acciones a considerar en el proyecto de puentes de carretera IAP, aprobada Orden de12 de febrero de 1998.
- Instrucción para el proyecto de estructuras de hormigón estructural EHE, aprobada por el Real Decreto 2661/1998 de 11 de diciembre.
- Normativa Sismoresistente NCSE-94.
- Instrucción relativa a las acciones a considerar en el proyecto de puentes de ferrocarril, aprobada por Orden Ministerial de 25 de junio de 1975.
- Eurocódigo 1. EC-1.

2.3 AMBIENTES, RECUBRIMIENTOS, FISURACIÓN Y CUANTÍAS MÍNIMAS

De acuerdo con la normativa EHE se consideran los ambientes indicados en la tabla siguiente:

Elemento	Ambiente	Recubrimiento de Armadura pasiva	Abertura máxima de fisura en mm.
Solera	IIa	30	0,3
Hastiales	IIa	30	0,3
Dintel	IIa	30	0,3

Las cuantías mínimas de armadura pasiva B500S serán las expuestas en la tabla indicada a continuación (EHE, art. 44.3.5):

Elemento	Posición	Tipo	Cuantía geométrica (‰)
Solera	Cara superior e Inferior	Transversal y Longitudinal	0,90
Hastiales	Cara interior y exterior	Horizontal	1,6
Hastiales	Cara interior y exterior	Vertical	0,90
Dintel	Cara superior e Inferior	Transversal y Longitudinal	0,90

2.4 HIPÓTESIS DE COMBINACIÓN DE ESFUERZOS

Se han considerado las combinaciones de hipótesis de las acciones recogidas en el Eurocódigo 1 y EHE, basados en la teoría de Estados Límites, para las distintas situaciones de cálculo de la estructura.

A continuación se describe la formulación de dichas combinaciones y seguidamente se detallan los valores de los coeficientes adoptados para los casos de carga considerados en los cálculos.

2.4.1 ESTADOS LÍMITE ÚLTIMOS

Las hipótesis de cálculo consideradas son:

- Situaciones persistentes o transitorias

$$\sum_{j \geq 1} \gamma_{Gj} G_{kj} + \sum_{j \geq 1} \gamma_{Gj} G^*_{kj} + \gamma_{Q1} Q_{k1} + \sum_{i > 1} \gamma_{Qi} \Psi_{0i} Q_{ki}$$

- Situaciones accidentales

$$\sum_{j \geq 1} \gamma_{Gaj} G_{kj} + \sum_{j \geq 1} \gamma_{Gj} G^*_{kj} + \gamma_A A_k + \Psi_{11} Q_{k1} + \sum_{i > 1} \gamma_{Qi} \Psi_{2i} Q_{ki}$$

- Situaciones accidentales de sismo

$$\sum_{j \geq 1} G_{kj} + \sum_{j \geq 1} \gamma_{Gj} G^*_{kj} + \gamma_i A_{Ed} + \sum_{i > 1} \gamma_{Qi} \Psi_{2i} Q_{ki}$$

donde:

G = Valor característico de las cargas permanentes.
G* = Valor característico de las cargas permanentes de valor no constante.
Q_{k1} = Valor característico de la carga variable dominante.
A_k = Valor característico de la acción accidental.
A_{eq} = Valor característico de la acción sísmica, calculado según la Norma Sismorresistente.

Los coeficientes de seguridad y de combinación de acciones empleados se definen en la IAP.

2.4.2 ESTADOS LÍMITE DE SERVICIO

Las hipótesis de cálculo consideradas son:

- Combinación característica:

$$\sum_{j \geq 1} \gamma_{Gj} G_{kj} + \sum_{j \geq 1} \gamma_{Gj} G^*_{kj} + \gamma_{Q1} Q_{k1} + \sum_{i > 1} \gamma_{Qi} \Psi_{0i} Q_{ki}$$

- Combinación frecuente:

$$\sum_{j \geq 1} \gamma_{Gaj} G_{kj} + \sum_{j \geq 1} \gamma_{Gj} G^*_{kj} + \Psi_{11} Q_{k1} + \sum \gamma_{Qi} \Psi_{2i} Q_{ki}$$

- Combinación casi permanente:

$$\sum_{j \geq 1} G_{kj} + \sum_{j \geq 1} \gamma_{Gj} G^*_{kj} + \sum_{i > 1} \gamma_{Qi} \Psi_{2i} Q_{ki}$$

3 CÁLCULO DE ESFUERZOS

En el siguiente apartado se ha calculado el paso inferior sometido a las cargas de uso. Para ello se modeló el cajón como una estructura reticulada plana compuesta por cuatro barras paralelas dos a dos que conforman el marco cerrado de la estructura.

Las acciones a las que está sometida la estructura han sido descritas en el apartado 2 del presente documento. Las dimensiones del marco son las correspondientes a un plano de corte esviado en el sentido de las vías de ferrocarril. En la dirección perpendicular al plano de cálculo se considera que el marco tiene 1 metro de profundidad.

El cálculo de esfuerzos se ha realizado bajo la hipótesis de linealidad material y geométrica, mediante el programa de cálculo de estructuras ROBOT MILLENIUM v. 14.5. Las comprobaciones y dimensionamiento de la estructura se ha efectuado de acuerdo con la instrucción EHE, y sus resultados se detallan en los apartados 4, 5 y 6 del presente anejo.

Se han realizado 2 tipos de cálculo:

Cálculo 1 o de la IPF-75.- Se ha seguido la Instrucción relativa a las acciones a considerar en el Proyecto de Puentes de Ferrocarril (IPF-75).

Cálculo 2 o del EC-1. Se ha seguido el Eurocódigo 1: Bases de proyecto y acciones en estructuras. Parte 3: Cargas de tráfico en puentes".

Cabe destacar que la barra inferior que representa la solera del marco está apoyada sobre suelo elástico cuyo coeficiente de balasto se ha obtenido a partir del estudio geotécnico. El valor de este coeficiente de balasto representa las características elásticas de las gravas dispuestas bajo la losa inferior del cajón.

4 VERIFICACIÓN DEL E.L.U DE ROTURA POR TENSIONES NORMALES

4.1 FLEXIÓN TRANSVERSAL AL EJE DEL CAJON

En este apartado se comprueba el Estado Límite Último de rotura por flexión transversal de acuerdo con los criterios de la Normativa española vigente (EHE)

El cálculo de la armadura necesaria se ha realizado mediante un programa de armado automático desarrollado al efecto por los ingenieros de PEDELTA S.L.

4.2. FLEXIÓN LONGITUDINAL

La flexión longitudinal no se ha considerado puesto que el cálculo se realiza por metro de ancho. La armadura correspondiente a la flexión longitudinal se dispone por cuantías mínimas indicadas en la normativa EHE.

Programa de calculo automatico de armado desarrollado por:

PEDELTA, S.L.

ESFUERZOS DE CALCULO PARA LAS DISTINTAS HIPOTESIS DE CARGA

REFERENCIA DEL PROYECTO P.I. CAN MALLOL (IPF-75).

DATOS GENERALES :

Nº de barras = 4
Nº de secciones por barra = 9
Nº de combinaciones en ELU = 7

Nº de combinaciones en ELS = 7
Nº de combinaciones en ELS (frecuente) = 7
Nº de combinaciones en ELS (poco frecuente) = 0
Nº de combinaciones en ELS (caracteristica) = 0

Resistencia a compresion del hormigon (T/m2) = 2500
Resistencia media a traccion del hormigon (T/m2) = 256.4964
Modulo de deformacion del hormigon (T/m2) = 248541.5
Resistencia a traccion del acero (T/m2) = 51000
Modulo de deformacion del acero (T/m2) = 2.1E+07

REFERENCIA DEL PROYECTO P.I. CAN MALLOL (IPF-75).

Elemento = 2

Sec	Hip	Nd	Vd	Md	Asf1	Asf2	ASt	8	10	12	16	20	25	32
10	1	1.1	32.3	-15.4	10.5	0.0	0.0	21	13	9	5	3	2	1
10	4	9.0	32.3	-18.6	10.5	0.1	0.0	0	0	0	0	0	0	0
2	4	9.0	25.9	3.7	0.1	10.5	0.0	0	0	0	0	0	0	0
2	1	1.1	25.9	6.9	0.0	10.5	0.0	21	13	9	5	3	2	1
3	4	9.0	17.3	19.9	0.1	10.5	0.0	0	0	0	0	0	0	0
3	1	1.1	17.3	23.1	0.0	10.5	0.0	21	13	9	5	3	2	1
4	4	9.0	8.6	29.6	0.1	10.5	0.0	0	0	0	0	0	0	0
4	2	1.1	8.3	32.9	0.0	11.4	0.0	23	15	10	6	4	2	1
5	4	9.0	0.0	32.9	0.1	10.5	0.0	0	0	0	0	0	0	0
5	1	1.1	0.0	36.0	0.0	12.6	0.0	25	16	11	6	4	3	2
6	4	9.0	-8.6	29.6	0.1	10.5	0.0	0	0	0	0	0	0	0
6	1	1.1	-8.6	32.8	0.0	11.4	0.0	23	15	10	6	4	2	1
7	4	9.0	-17.3	19.9	0.1	10.5	0.0	0	0	0	0	0	0	0
7	1	1.1	-17.3	23.1	0.0	10.5	0.0	21	13	9	5	3	2	1
8	7	6.5	-7.5	-2.2	10.5	0.1	0.0	21	13	9	5	3	2	1
8	1	1.1	-25.9	6.9	0.0	10.5	0.0	21	13	9	5	3	2	1
11	1	1.1	-32.3	-15.4	10.5	0.0	0.0	21	13	9	5	3	2	1
11	4	9.0	-32.3	-18.6	10.5	0.1	0.0	0	0	0	0	0	0	0

Elemento = 3

Sec	Hip	Nd	Vd	Md	Asf1	Asf2	ASt	8	10	12	16	20	25	32
5	6	11.0	-26.9	17.1	0.1	9.0	0.0	0	0	0	0	0	0	0
5	1	-0.9	-27.8	14.3	0.0	9.0	0.0	18	11	8	4	3	2	1
2	1	-0.9	-19.5	-3.4	9.0	0.0	0.0	18	11	8	4	3	2	1
2	5	8.9	-22.3	1.5	0.1	9.0	0.0	18	11	8	4	3	2	1
3	1	-0.9	-12.3	-15.3	9.0	0.0	0.0	18	11	8	4	3	2	1
3	6	11.0	-12.2	-11.8	9.0	0.1	0.0	0	0	0	0	0	0	0
4	2	-0.8	-5.5	-22.5	9.4	0.0	0.0	19	12	8	5	3	2	1
4	6	11.0	-5.9	-18.5	9.0	0.1	0.0	0	0	0	0	0	0	0
5	1	-0.9	0.0	-24.3	10.2	0.0	0.0	20	13	9	5	3	2	1
5	6	11.0	0.0	-20.7	9.0	0.1	0.0	0	0	0	0	0	0	0
6	1	-0.9	5.9	-22.1	9.2	0.0	0.0	18	12	8	5	3	2	1
6	6	11.0	5.9	-18.5	9.0	0.1	0.0	0	0	0	0	0	0	0
7	1	-0.9	12.3	-15.3	9.0	0.0	0.0	18	11	8	4	3	2	1
7	6	11.0	12.2	-11.8	9.0	0.1	0.0	0	0	0	0	0	0	0
8	1	-0.9	19.5	-3.4	9.0	0.0	0.0	18	11	8	4	3	2	1
8	6	11.0	19.1	-0.1	9.0	0.1	0.0	0	0	0	0	0	0	0
6	6	11.0	26.9	17.1	0.1	9.0	0.0	0	0	0	0	0	0	0
6	1	-0.9	27.8	14.3	0.0	9.0	0.0	18	11	8	4	3	2	1

REFERENCIA DEL PROYECTO P.I. CAN MALLOL (IPF-75).

Elemento = 4

Sec	Hip	Nd	Vd	Md	Asf1	Asf2	ASt	8	10	12	16	20	25	32
7	1	38.4	-0.9	-22.9	9.0	0.4	0.0	18	11	8	4	3	2	1
7	2	40.3	-0.9	-23.2	9.0	0.5	0.0	1	1	0	0	0	0	0
2	1	37.7	-0.7	-23.2	9.0	0.4	0.0	18	11	8	4	3	2	1
2	2	39.5	-0.6	-23.5	9.0	0.4	0.0	1	1	0	0	0	0	0
3	1	36.9	-0.5	-23.4	9.0	0.4	0.0	18	11	8	4	3	2	1
3	2	38.8	-0.5	-23.7	9.0	0.4	0.0	1	1	0	0	0	0	0
4	1	36.1	-0.4	-23.6	9.0	0.4	0.0	18	11	8	4	3	2	1
4	2	38.0	-0.4	-23.8	9.0	0.4	0.0	1	1	0	0	0	0	0
5	1	35.4	-0.4	-23.7	9.0	0.4	0.0	18	11	8	4	3	2	1
5	2	37.3	-0.4	-24.0	9.0	0.4	0.0	1	1	0	0	0	0	0
6	1	34.6	-0.5	-23.9	9.0	0.4	0.0	18	11	8	4	3	2	1
6	2	36.5	-0.4	-24.1	9.0	0.4	0.0	1	1	0	0	0	0	0
7	1	33.9	-0.6	-24.1	9.0	0.4	0.0	18	11	8	4	3	2	1
7	2	35.7	-0.6	-24.3	9.0	0.4	0.0	1	1	0	0	0	0	0
8	1	33.1	-0.8	-24.4	9.0	0.4	0.0	18	11	8	4	3	2	1
8	2	35.0	-0.8	-24.5	9.0	0.4	0.0	1	1	0	0	0	0	0
8	1	32.3	-1.1	-24.7	9.0	0.4	0.0	18	11	8	4	3	2	1
8	2	34.2	-1.1	-24.9	9.0	0.4	0.0	1	0	0	0	0	0	0

Elemento = 5

Sec	Hip	Nd	Vd	Md	Asf1	Asf2	ASt	8	10	12	16	20	25	32
14	1	38.4	0.9	22.9	0.4	9.0	0.0	1	1	0	0	0	0	0
14	1	38.4	0.9	22.9	0.4	9.0	0.0	18	11	8	4	3	2	1
2	1	37.7	0.7	23.2	0.4	9.0	0.0	1	1	0	0	0	0	0
2	1	37.7	0.7	23.2	0.4	9.0	0.0	18	11	8	4	3	2	1
3	1	36.9	0.5	23.4	0.4	9.0	0.0	1	1	0	0	0	0	0
3	1	36.9	0.5	23.4	0.4	9.0	0.0	18	11	8	4	3	2	1
4	1	36.1	0.4	23.6	0.4	9.0	0.0	1	1	0	0	0	0	0
4	1	36.1	0.4	23.6	0.4	9.0	0.0	18	11	8	4	3	2	1
5	1	35.4	0.4	23.7	0.4	9.0	0.0	1	1	0	0	0	0	0
5	1	35.4	0.4	23.7	0.4	9.0	0.0	18	11	8	4	3	2	1
6	1	34.6	0.5	23.9	0.4	9.0	0.0	1	0	0	0	0	0	0
6	1	34.6	0.5	23.9	0.4	9.0	0.0	18	11	8	4	3	2	1
7	1	33.9	0.6	24.1	0.4	9.0	0.0	1	0	0	0	0	0	0
7	1	33.9	0.6	24.1	0.4	9.0	0.0	18	11	8	4	3	2	1
8	1	33.1	0.8	24.4	0.4	9.0	0.0	1	0	0	0	0	0	0
8	1	33.1	0.8	24.4	0.4	9.0	0.0	18	11	8	4	3	2	1
13	1	32.3	1.1	24.7	0.4	9.0	0.0	1	0	0	0	0	0	0
13	1	32.3	1.1	24.7	0.4	9.0	0.0	18	11	8	4	3	2	1

Programa de calculo automatico de armado desarrollado por:

PEDELTA, S.L.

ESFUERZOS DE CALCULO PARA LAS DISTINTAS HIPOTESIS DE CARGA

REFERENCIA DEL PROYECTO P.I. CAN MALLOL (IPF-75).

DATOS GENERALES :

Nº de barras = 4
Nº de secciones por barra = 9
Nº de combinaciones en ELU = 10

Nº de combinaciones en ELS = 10
Nº de combinaciones en ELS (frecuente) = 10
Nº de combinaciones en ELS (poco frecuente) = 0
Nº de combinaciones en ELS (caracteristica) = 0

Resistencia a compresion del hormigon (T/m2) = 2500
Resistencia media a traccion del hormigon (T/m2) = 256.4964
Modulo de deformacion del hormigon (T/m2) = 248541.5
Resistencia a traccion del acero (T/m2) = 51000
Modulo de deformacion del acero (T/m2) = 2.1E+07

REFERENCIA DEL PROYECTO P.I. CAN MALLOL (EC-1).

Elemento = 2

Sec	Hip	Nd	Vd	Md	Asf1	Asf2	ASt	8	10	12	16	20	25	32
10	1	1.0	41.2	-18.1	10.5	0.0	0.0	21	13	9	5	3	2	1
10	7	6.5	8.3	-4.1	10.5	0.1	0.0	0	0	0	0	0	0	0
2	7	6.5	6.0	1.2	0.1	10.5	0.0	0	0	0	0	0	0	0
2	1	1.0	30.9	8.9	0.0	10.5	0.0	21	13	9	5	3	2	1
3	7	6.5	3.8	4.9	0.1	10.5	0.0	0	0	0	0	0	0	0
3	1	1.0	20.6	28.2	0.0	10.5	0.0	21	13	9	5	3	2	1
4	7	6.5	1.5	6.9	0.1	10.5	0.0	0	0	0	0	0	0	0
4	1	1.0	10.3	39.8	0.0	14.0	0.0	28	18	12	7	4	3	2
5	4	7.1	-2.6	40.4	0.1	13.5	0.0	0	0	0	0	0	0	0
5	1	1.0	0.0	43.7	0.0	15.4	0.0	31	20	14	8	5	3	2
6	4	7.8	-12.7	34.7	0.1	11.3	0.0	0	0	0	0	0	0	0
6	1	1.0	-10.3	39.8	0.0	14.0	0.0	28	18	12	7	4	3	2
7	4	8.5	-22.8	21.3	0.1	10.5	0.0	0	0	0	0	0	0	0
7	1	1.0	-20.6	28.2	0.0	10.5	0.0	21	13	9	5	3	2	1
8	5	9.1	-29.9	-0.4	10.5	0.1	0.0	21	13	9	5	3	2	1
8	1	1.0	-30.9	8.9	0.0	10.5	0.0	21	13	9	5	3	2	1
11	1	1.0	-41.2	-18.1	10.5	0.0	0.0	21	13	9	5	3	2	1
11	4	10.0	-43.0	-28.0	10.5	0.1	0.0	0	0	0	0	0	0	0

Elemento = 3

Sec	Hip	Nd	Vd	Md	Asf1	Asf2	ASt	8	10	12	16	20	25	32
5	7	9.6	-10.3	11.5	0.1	9.0	0.0	0	0	0	0	0	0	0
5	4	9.0	-35.8	29.5	0.1	11.3	0.0	23	14	10	6	4	2	1
2	1	-0.8	-24.5	-4.1	9.0	0.0	0.0	18	11	8	4	3	2	1
2	4	9.0	-27.3	5.8	0.1	9.0	0.0	18	11	8	4	3	2	1
3	1	-0.8	-15.4	-19.0	9.0	0.0	0.0	18	11	8	4	3	2	1
3	7	9.6	-6.1	-0.8	9.0	0.1	0.0	0	0	0	0	0	0	0
4	1	-0.8	-7.4	-27.5	11.5	0.0	0.0	23	15	10	6	4	2	1
4	7	9.6	-3.9	-4.5	9.0	0.1	0.0	0	0	0	0	0	0	0
5	1	-0.8	0.0	-30.3	12.7	0.0	0.0	25	16	11	6	4	3	2
5	7	9.6	-1.7	-6.6	9.0	0.1	0.0	0	0	0	0	0	0	0
6	1	-0.8	7.4	-27.5	11.5	0.0	0.0	23	15	10	6	4	2	1
6	7	9.6	0.7	-7.0	9.0	0.1	0.0	0	0	0	0	0	0	0
7	1	-0.8	15.4	-19.0	9.0	0.0	0.0	18	11	8	4	3	2	1
7	7	9.6	3.4	-5.5	9.0	0.1	0.0	0	0	0	0	0	0	0
8	1	-0.8	24.5	-4.1	9.0	0.0	0.0	18	11	8	4	3	2	1
8	7	9.6	6.5	-1.8	9.0	0.1	0.0	0	0	0	0	0	0	0
6	7	9.6	10.1	4.5	0.1	9.0	0.0	0	0	0	0	0	0	0
6	1	-0.8	34.8	18.0	0.0	9.0	0.0	18	11	8	4	3	2	1

REFERENCIA DEL PROYECTO P.I. CAN MALLOL (EC-1).

Elemento = 4

Sec	Hip	Nd	Vd	Md	Asf1	Asf2	ASt	8	10	12	16	20	25	32
7	4	43.9	15.3	-35.6	10.2	0.5	0.0	20	13	9	5	3	2	1
7	1	47.2	-0.8	-28.7	9.0	0.5	0.0	1	1	0	0	0	0	0
2	1	46.5	-0.5	-28.9	9.0	0.5	0.0	18	11	8	4	3	2	1
2	1	46.5	-0.5	-28.9	9.0	0.5	0.0	1	1	0	0	0	0	0
3	1	45.7	-0.4	-29.1	9.0	0.5	0.0	18	11	8	4	3	2	1
3	1	45.7	-0.4	-29.1	9.0	0.5	0.0	1	1	0	0	0	0	0
4	1	45.0	-0.3	-29.2	9.0	0.5	0.0	18	11	8	4	3	2	1
4	1	45.0	-0.3	-29.2	9.0	0.5	0.0	1	1	0	0	0	0	0
5	1	44.2	-0.3	-29.3	9.0	0.5	0.0	18	11	8	4	3	2	1
5	1	44.2	-0.3	-29.3	9.0	0.5	0.0	1	1	0	0	0	0	0
6	1	43.4	-0.3	-29.4	9.0	0.5	0.0	18	11	8	4	3	2	1
6	1	43.4	-0.3	-29.4	9.0	0.5	0.0	1	1	0	0	0	0	0
7	1	42.7	-0.5	-29.5	9.0	0.5	0.0	18	11	8	4	3	2	1
7	1	42.7	-0.5	-29.5	9.0	0.5	0.0	1	1	0	0	0	0	0
8	1	41.9	-0.7	-29.8	9.0	0.5	0.0	18	11	8	4	3	2	1
8	1	41.9	-0.7	-29.8	9.0	0.5	0.0	1	1	0	0	0	0	0
8	1	41.2	-1.0	-30.1	9.0	0.5	0.0	18	11	8	4	3	2	1
8	1	41.2	-1.0	-30.1	9.0	0.5	0.0	1	1	0	0	0	0	0

Elemento = 5

Sec	Hip	Nd	Vd	Md	Asf1	Asf2	ASt	8	10	12	16	20	25	32
14	4	49.1	-2.8	23.2	0.6	9.0	0.0	1	1	0	0	0	0	0
14	1	47.2	0.8	28.7	0.5	9.0	0.0	18	11	8	4	3	2	1
2	4	48.3	-0.4	22.6	0.5	9.0	0.0	1	1	0	0	0	0	0
2	1	46.5	0.5	28.9	0.5	9.0	0.0	18	11	8	4	3	2	1
3	4	47.6	1.7	22.9	0.5	9.0	0.0	1	1	0	0	0	0	0
3	1	45.7	0.4	29.1	0.5	9.0	0.0	18	11	8	4	3	2	1
4	4	46.8	3.6	23.9	0.5	9.0	0.0	1	1	0	0	0	0	0
4	1	45.0	0.3	29.2	0.5	9.0	0.0	18	11	8	4	3	2	1
5	4	46.1	5.3	25.5	0.5	9.0	0.0	1	1	0	0	0	0	0
5	1	44.2	0.3	29.3	0.5	9.0	0.0	18	11	8	4	3	2	1
6	4	45.3	6.8	27.8	0.5	9.0	0.0	1	1	0	0	0	0	0
6	1	43.4	0.3	29.4	0.5	9.0	0.0	18	11	8	4	3	2	1
7	4	44.5	8.1	30.6	0.5	9.0	0.0	1	1	0	0	0	0	0
7	1	42.7	0.5	29.5	0.5	9.0	0.0	18	11	8	4	3	2	1
8	4	43.8	9.1	33.8	0.5	9.4	0.0	1	1	0	0	0	0	0
8	4	43.8	9.1	33.8	0.5	9.4	0.0	19	12	8	5	3	2	1
13	4	43.0	10.0	37.4	0.5	11.1	0.0	1	1	0	0	0	0	0
13	4	43.0	10.0	37.4	0.5	11.1	0.0	22	14	10	6	4	2	1

5 VERIFICACIÓN DEL E.L.U DE ROTURA POR TENSIONES TANGENCIALES

5.1 EVALUACIÓN DEL E.L.U. DE AGOTAMIENTO POR CORTANTE

En este apartado se comprueba el Estado Límite Último de rotura por cortante de acuerdo con los criterios de la Normativa española vigente (EHE, artículo 44)

Según dicha norma:

$$V_{rd} = V_d + V_{pd} + V_{cd}$$

donde,

V_{rd} = Valor del esfuerzo cortante efectivo.
V_d = Valor de cálculo del esfuerzo cortante producido por las acciones exteriores.
V_{pd} = Valor de cálculo del esfuerzo cortante producido por el pretensado (= 0).
V_{cd} = Valor de cálculo de la componente paralela a la sección de las tensiones normales en piezas de sección variable (= 0).

- Comprobación del agotamiento por compresión oblicua en el alma.

$$V_{rd} \leq V_{u1}$$

V_{u1} = Esfuerzo cortante de agotamiento por compresión oblicua del alma.

- Comprobación del agotamiento por tracción en el alma.

$$V_{rd} \leq V_{u2}$$

V_{u2} = Esfuerzo cortante de agotamiento por tracción en el alma.

El cálculo de todos los parámetros resistentes se ha realizado de forma automática. Posteriormente se ha determinado la armadura de cortante necesaria A_{sc} por criterios resistentes y se comprueba que verifica los criterios de armadura mínima a cortante.

6 VERIFICACIÓN DEL E.L.S DE FISURACIÓN.

En este apartado se comprueba el Estado Límite de Servicio de fisuración.

El cálculo de la abertura de fisura se hace mediante la formulación empleada en la EHE (art. 49). La comprobación de la abertura de fisura se hace para las combinaciones de carga frecuentes. Se toma como abertura de fisura máxima admisible w_k = 0,3 mm, ya que el ambiente considerado para todos los elementos de la estructura es IIa.

REFERENCIA DEL PROYECTO P.I. CAN MALLOL (IPF-75).

VERIFICACION DEL E.L.S. DE FISURACION

Elemento = 2

Nº de seccion = 1
Canto = 0.70

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-4.1	3.9	-11.1	5.3
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8		10		12		16		20		25		32	
	Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep	
	21	1 0.04	13	1 0.07	9	1 0.10	5	1 0.18	3	1 0.30	2	1 0.45	1	1 0.89
	21	1 0.04	13	1 0.07	9	1 0.10	5	1 0.18	3	1 0.30	2	1 0.45	1	1 0.89

Nº de seccion = 2
Canto = 0.70

	Mmax	Nk	Mmin	Nk
Comb. frecuente	3.9	2.2	1.5	3.9
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8		10		12		16		20		25		32	
	Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep	
	21	1 0.04	13	1 0.07	9	1 0.10	5	1 0.18	3	1 0.30	2	1 0.45	1	1 0.89
	21	1 0.04	13	1 0.07	9	1 0.10	5	1 0.18	3	1 0.30	2	1 0.45	1	1 0.89

Nº de seccion = 3
Canto = 0.70

	Mmax	Nk	Mmin	Nk
Comb. frecuente	13.5	2.2	5.4	3.9
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8		10		12		16		20		25		32	
	Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep	
	21	1 0.04	13	1 0.07	9	1 0.10	5	1 0.18	3	1 0.30	2	1 0.45	1	1 0.89
	21	1 0.04	13	1 0.07	9	1 0.10	5	1 0.18	3	1 0.30	2	1 0.45	1	1 0.89

Nº de seccion = 4
Canto = 0.70

	Mmax	Nk	Mmin	Nk
Comb. frecuente	19.2	2.3	7.7	3.9
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8		10		12		16		20		25		32	
	Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep	
	23	1 0.04	15	1 0.06	10	1 0.09	6	1 0.15	4	1 0.22	2	1 0.45	1	1 0.89
	23	1 0.04	15	1 0.06	10	1 0.09	6	1 0.15	4	1 0.22	2	1 0.45	1	1 0.89

Nº de seccion = 5
Canto = 0.70

	Mmax	Nk	Mmin	Nk
Comb. frecuente	21.2	2.3	8.2	3.9
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8		10		12		16		20		25		32	
	Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep	
	25	1 0.04	16	1 0.06	11	1 0.08	6	1 0.15	4	1 0.22	3	1 0.30	2	1 0.44
	25	1 0.04	16	1 0.06	11	1 0.08	6	1 0.15	4	1 0.22	3	1 0.30	2	1 0.44

```
Nº de seccion =    6
Canto         = 0.70
                       Mmax    Nk    Mmin    Nk
Comb. frecuente        19.2    2.3    7.0    3.9
Comb. poco frecuente    0.0    0.0    0.0    0.0
Comb. caracteristica    0.0    0.0    0.0    0.0

Armadura     8           10         12         16          20          25          32
      Nb/ncap/sep  Nb/ncap/sep  Nb/ncap/sep Nb/ncap/sep Nb/ncap/sep Nb/ncap/sep Nb/ncap/sep
     23  1  0.04   15  1  0.06  10 1  0.09   6 1  0.15   4 1  0.22   2 1  0.45   1 1  0.89
     23  1  0.04   15  1  0.06  10 1  0.09   6 1  0.15   4 1  0.22   2 1  0.45   1 1  0.89

Nº de seccion =    7
Canto         = 0.70
                       Mmax    Nk    Mmin    Nk
Comb. frecuente        13.3    2.3    4.2    3.9
Comb. poco frecuente    0.0    0.0    0.0    0.0
Comb. caracteristica    0.0    0.0    0.0    0.0

Armadura     8           10         12         16          20          25          32
      Nb/ncap/sep  Nb/ncap/sep  Nb/ncap/sep Nb/ncap/sep Nb/ncap/sep Nb/ncap/sep Nb/ncap/sep
     21  1  0.04   13  1  0.07   9 1  0.10   5 1  0.18   3 1  0.30   2 1  0.45   1 1  0.89
     21  1  0.04   13  1  0.07   9 1  0.10   5 1  0.18   3 1  0.30   2 1  0.45   1 1  0.89

Nº de seccion =    8
Canto         = 0.70
                       Mmax    Nk    Mmin    Nk
Comb. frecuente         3.6    2.3   -0.3    3.9
Comb. poco frecuente    0.0    0.0    0.0    0.0
Comb. caracteristica    0.0    0.0    0.0    0.0

Armadura     8           10         12         16          20          25          32
      Nb/ncap/sep  Nb/ncap/sep  Nb/ncap/sep Nb/ncap/sep Nb/ncap/sep Nb/ncap/sep Nb/ncap/sep
     21  1  0.04   13  1  0.07   9 1  0.10   5 1  0.18   3 1  0.30   2 1  0.45   1 1  0.89
     21  1  0.04   13  1  0.07   9 1  0.10   5 1  0.18   3 1  0.30   2 1  0.45   1 1  0.89

Nº de seccion =    9
Canto         = 0.70
                       Mmax    Nk    Mmin    Nk
Comb. frecuente        -6.6    3.9  -12.0    4.4
Comb. poco frecuente    0.0    0.0    0.0    0.0
Comb. caracteristica    0.0    0.0    0.0    0.0

Armadura     8           10         12         16          20          25          32
      Nb/ncap/sep  Nb/ncap/sep  Nb/ncap/sep Nb/ncap/sep Nb/ncap/sep Nb/ncap/sep Nb/ncap/sep
     21  1  0.04   13  1  0.07   9 1  0.10   5 1  0.18   3 1  0.30   2 1  0.45   1 1  0.89
     21  1  0.04   13  1  0.07   9 1  0.10   5 1  0.18   3 1  0.30   2 1  0.45   1 1  0.89
```

```
 Elemento =   3                                                
```

```
Nº de seccion =    7
Canto         = 0.60
                      Mmax    Nk    Mmin    Nk
Comb. frecuente        -5.1    6.4   -9.5    5.9
Comb. poco frecuente    0.0    0.0    0.0    0.0
Comb. caracteristica    0.0    0.0    0.0    0.0

Armadura     8           10         12         16          20          25          32
      Nb/ncap/sep  Nb/ncap/sep  Nb/ncap/sep Nb/ncap/sep Nb/ncap/sep Nb/ncap/sep Nb/ncap/sep
     18  1  0.05   11  1  0.08   8 1  0.11   4 1  0.23   3 1  0.30   2 1  0.45   1 1  0.89
     18  1  0.05   11  1  0.08   8 1  0.11   4 1  0.23   3 1  0.30   2 1  0.45   1 1  0.89

Nº de seccion =    8
Canto         = 0.60
                      Mmax    Nk    Mmin    Nk
Comb. frecuente         0.0    7.0   -2.0    5.9
Comb. poco frecuente    0.0    0.0    0.0    0.0
Comb. caracteristica    0.0    0.0    0.0    0.0

Armadura     8           10         12         16          20          25          32
      Nb/ncap/sep  Nb/ncap/sep  Nb/ncap/sep Nb/ncap/sep Nb/ncap/sep Nb/ncap/sep Nb/ncap/sep
     18  1  0.05   11  1  0.08   8 1  0.11   4 1  0.23   3 1  0.30   2 1  0.45   1 1  0.89
     18  1  0.05   11  1  0.08   8 1  0.11   4 1  0.23   3 1  0.30   2 1  0.45   1 1  0.89

Nº de seccion =    9
Canto         = 0.60
                      Mmax    Nk    Mmin    Nk
Comb. frecuente        11.6    6.8    5.2    6.4
Comb. poco frecuente    0.0    0.0    0.0    0.0
Comb. caracteristica    0.0    0.0    0.0    0.0

Armadura     8           10         12         16          20          25          32
      Nb/ncap/sep  Nb/ncap/sep  Nb/ncap/sep Nb/ncap/sep Nb/ncap/sep Nb/ncap/sep Nb/ncap/sep
     18  1  0.05   11  1  0.08   8 1  0.11   4 1  0.23   3 1  0.30   2 1  0.45   1 1  0.89
     18  1  0.05   11  1  0.08   8 1  0.11   4 1  0.23   3 1  0.30   2 1  0.45   1 1  0.89
```

REFERENCIA DEL PROYECTO P.I. CAN MALLOL (IPF-75).

Elemento = 4

Nº de seccion = 1
Canto = 0.60

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-9.6	13.1	-16.7	24.8
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8		10		12		16		20		25		32	
	Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep	
	18	1 0.05	11	1 0.08	8	1 0.11	4	1 0.23	3	1 0.30	2	1 0.45	1	1 0.89
	18	1 0.05	11	1 0.08	8	1 0.11	4	1 0.23	3	1 0.30	2	1 0.45	1	1 0.89

Nº de seccion = 2
Canto = 0.60

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-6.9	12.6	-14.3	24.6
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8		10		12		16		20		25		32	
	Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep	
	18	1 0.05	11	1 0.08	8	1 0.11	4	1 0.23	3	1 0.30	2	1 0.45	1	1 0.89
	18	1 0.05	11	1 0.08	8	1 0.11	4	1 0.23	3	1 0.30	2	1 0.45	1	1 0.89

Nº de seccion = 3
Canto = 0.60

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-4.9	12.0	-13.6	24.1
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8		10		12		16		20		25		32	
	Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep	
	18	1 0.05	11	1 0.08	8	1 0.11	4	1 0.23	3	1 0.30	2	1 0.45	1	1 0.89
	18	1 0.05	11	1 0.08	8	1 0.11	4	1 0.23	3	1 0.30	2	1 0.45	1	1 0.89

Nº de seccion = 4
Canto = 0.60

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-3.6	11.4	-13.2	23.5
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8		10		12		16		20		25		32	
	Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep	
	18	1 0.05	11	1 0.08	8	1 0.11	4	1 0.23	3	1 0.30	2	1 0.45	1	1 0.89
	18	1 0.05	11	1 0.08	8	1 0.11	4	1 0.23	3	1 0.30	2	1 0.45	1	1 0.89

Nº de seccion = 5
Canto = 0.60

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-3.0	10.9	-13.1	22.9
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8		10		12		16		20		25		32	
	Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep	
	18	1 0.05	11	1 0.08	8	1 0.11	4	1 0.23	3	1 0.30	2	1 0.45	1	1 0.89
	18	1 0.05	11	1 0.08	8	1 0.11	4	1 0.23	3	1 0.30	2	1 0.45	1	1 0.89

Nº de seccion = 6
Canto = 0.60

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-2.8	10.3	-13.3	22.4
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8		10		12		16		20		25		32	
	Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep	
	18	1 0.05	11	1 0.08	8	1 0.11	4	1 0.23	3	1 0.30	2	1 0.45	1	1 0.89
	18	1 0.05	11	1 0.08	8	1 0.11	4	1 0.23	3	1 0.30	2	1 0.45	1	1 0.89

Nº de seccion = 7
Canto = 0.60

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-3.2	9.8	-13.7	21.8
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8		10		12		16		20		25		32	
	Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep	
	18	1 0.05	11	1 0.08	8	1 0.11	4	1 0.23	3	1 0.30	2	1 0.45	1	1 0.89
	18	1 0.05	11	1 0.08	8	1 0.11	4	1 0.23	3	1 0.30	2	1 0.45	1	1 0.89

Nº de seccion = 8
Canto = 0.60

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-4.1	9.2	-14.4	21.2
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8		10		12		16		20		25		32	
	Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep	
	18	1 0.05	11	1 0.08	8	1 0.11	4	1 0.23	3	1 0.30	2	1 0.45	1	1 0.89
	18	1 0.05	11	1 0.08	8	1 0.11	4	1 0.23	3	1 0.30	2	1 0.45	1	1 0.89

Nº de seccion = 9
Canto = 0.60

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-5.4	8.6	-15.2	19.7
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8		10		12		16		20		25		32	
	Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep		Nb/ncap/sep	
	18	1 0.05	11	1 0.08	8	1 0.11	4	1 0.23	3	1 0.30	2	1 0.45	1	1 0.89
	18	1 0.05	11	1 0.08	8	1 0.11	4	1 0.23	3	1 0.30	2	1 0.45	1	1 0.89

```
 Elemento =   5                                                
```

```
Nº de seccion =    7
Canto         = 0.60
                      Mmax    Nk    Mmin    Nk
Comb. frecuente       13.6   20.8    5.6   10.6
Comb. poco frecuente   0.0    0.0    0.0    0.0
Comb. caracteristica   0.0    0.0    0.0    0.0

Armadura     8           10         12         16          20          25          32
     Nb/ncap/sep  Nb/ncap/sep  Nb/ncap/sep Nb/ncap/sep Nb/ncap/sep Nb/ncap/sep Nb/ncap/sep
     18  1  0.05   11  1  0.08   8 1  0.11   4 1  0.23   3 1  0.30   2 1  0.45   1 1  0.89
     18  1  0.05   11  1  0.08   8 1  0.11   4 1  0.23   3 1  0.30   2 1  0.45   1 1  0.89

Nº de seccion =    8
Canto         = 0.60
                      Mmax    Nk    Mmin    Nk
Comb. frecuente       14.7   19.6    6.7   10.0
Comb. poco frecuente   0.0    0.0    0.0    0.0
Comb. caracteristica   0.0    0.0    0.0    0.0

Armadura     8           10         12         16          20          25          32
     Nb/ncap/sep  Nb/ncap/sep  Nb/ncap/sep Nb/ncap/sep Nb/ncap/sep Nb/ncap/sep Nb/ncap/sep
     18  1  0.05   11  1  0.08   8 1  0.11   4 1  0.23   3 1  0.30   2 1  0.45   1 1  0.89
     18  1  0.05   11  1  0.08   8 1  0.11   4 1  0.23   3 1  0.30   2 1  0.45   1 1  0.89

Nº de seccion =    9
Canto         = 0.60
                      Mmax    Nk    Mmin    Nk
Comb. frecuente       16.2   19.1    8.0    9.4
Comb. poco frecuente   0.0    0.0    0.0    0.0
Comb. caracteristica   0.0    0.0    0.0    0.0

Armadura     8           10         12         16          20          25          32
     Nb/ncap/sep  Nb/ncap/sep  Nb/ncap/sep Nb/ncap/sep Nb/ncap/sep Nb/ncap/sep Nb/ncap/sep
     18  1  0.05   11  1  0.08   8 1  0.11   4 1  0.23   3 1  0.30   2 1  0.45   1 1  0.89
     18  1  0.05   11  1  0.08   8 1  0.11   4 1  0.23   3 1  0.30   2 1  0.45   1 1  0.89
```

31 1 0.03 20 1 0.05 14 1 0.06 8 1 0.11 5 1 0.18 3 1 0.30 2 1 0.44

REFERENCIA DEL PROYECTO P.I. CAN MALLOL (EC-1).

VERIFICACION DEL E.L.S. DE FISURACION

Elemento = 2

Nº de seccion = 1
Canto = 0.70

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-4.1	3.9	-11.4	2.2
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	21 1 0.04	13 1 0.07	9 1 0.10	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89
	21 1 0.04	13 1 0.07	9 1 0.10	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89

Nº de seccion = 2
Canto = 0.70

	Mmax	Nk	Mmin	Nk
Comb. frecuente	6.9	3.2	1.5	3.9
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	21 1 0.04	13 1 0.07	9 1 0.10	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89

Nº de seccion = 3
Canto = 0.70

	Mmax	Nk	Mmin	Nk
Comb. frecuente	17.3	3.6	5.4	3.9
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	21 1 0.04	13 1 0.07	9 1 0.10	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89
	21 1 0.04	13 1 0.07	9 1 0.10	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89

Nº de seccion = 4
Canto = 0.70

	Mmax	Nk	Mmin	Nk
Comb. frecuente	23.1	4.0	7.7	3.9
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	28 1 0.03	18 1 0.05	12 1 0.08	7 1 0.13	4 1 0.22	3 1 0.30	2 1 0.44
	28 1 0.03	18 1 0.05	12 1 0.08	7 1 0.13	4 1 0.22	3 1 0.30	2 1 0.44

Nº de seccion = 5
Canto = 0.70

	Mmax	Nk	Mmin	Nk
Comb. frecuente	25.2	2.2	8.2	3.9
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	31 1 0.03	20 1 0.05	14 1 0.06	8 1 0.11	5 1 0.18	3 1 0.30	2 1 0.44

```
Nº de seccion =    6
Canto         = 0.70
                      Mmax    Nk    Mmin    Nk
Comb. frecuente       22.9    2.2    7.0    3.9
Comb. poco frecuente   0.0    0.0    0.0    0.0
Comb. caracteristica   0.0    0.0    0.0    0.0

Armadura     8            10         12         16          20           25          32
      Nb/ncap/sep  Nb/ncap/sep  Nb/ncap/sep Nb/ncap/sep Nb/ncap/sep Nb/ncap/sep Nb/ncap/sep
     28  1  0.03   18  1  0.05  12 1  0.08   7 1  0.13   4 1  0.22   3 1  0.30   2 1  0.44
     28  1  0.03   18  1  0.05  12 1  0.08   7 1  0.13   4 1  0.22   3 1  0.30   2 1  0.44

Nº de seccion =    7
Canto         = 0.70
                      Mmax    Nk    Mmin    Nk
Comb. frecuente       16.1    2.2    4.2    3.9
Comb. poco frecuente   0.0    0.0    0.0    0.0
Comb. caracteristica   0.0    0.0    0.0    0.0

Armadura     8            10         12         16          20           25          32
      Nb/ncap/sep  Nb/ncap/sep  Nb/ncap/sep Nb/ncap/sep Nb/ncap/sep Nb/ncap/sep Nb/ncap/sep
     21  1  0.04   13  1  0.07   9 1  0.10   5 1  0.18   3 1  0.30   2 1  0.45   1 1  0.89
     21  1  0.04   13  1  0.07   9 1  0.10   5 1  0.18   3 1  0.30   2 1  0.45   1 1  0.89

Nº de seccion =    8
Canto         = 0.70
                      Mmax    Nk    Mmin    Nk
Comb. frecuente        4.6    2.2   -0.3    3.9
Comb. poco frecuente   0.0    0.0    0.0    0.0
Comb. caracteristica   0.0    0.0    0.0    0.0

Armadura     8            10         12         16          20           25          32
      Nb/ncap/sep  Nb/ncap/sep  Nb/ncap/sep Nb/ncap/sep Nb/ncap/sep Nb/ncap/sep Nb/ncap/sep
     21  1  0.04   13  1  0.07   9 1  0.10   5 1  0.18   3 1  0.30   2 1  0.45   1 1  0.89
     21  1  0.04   13  1  0.07   9 1  0.10   5 1  0.18   3 1  0.30   2 1  0.45   1 1  0.89

Nº de seccion =    9
Canto         = 0.70
                      Mmax    Nk    Mmin    Nk
Comb. frecuente       -6.6    3.9  -16.4    5.9
Comb. poco frecuente   0.0    0.0    0.0    0.0
Comb. caracteristica   0.0    0.0    0.0    0.0

Armadura     8            10         12         16          20           25          32
      Nb/ncap/sep  Nb/ncap/sep  Nb/ncap/sep Nb/ncap/sep Nb/ncap/sep Nb/ncap/sep Nb/ncap/sep
     21  1  0.04   13  1  0.07   9 1  0.10   5 1  0.18   3 1  0.30   2 1  0.45   1 1  0.89
     21  1  0.04   13  1  0.07   9 1  0.10   5 1  0.18   3 1  0.30   2 1  0.45   1 1  0.89
```

```
 Elemento =   3                                                
```

```
Nº de seccion =    7
Canto         = 0.60
                       Mmax    Nk    Mmin    Nk
Comb. frecuente        -5.1    6.4  -13.7    6.0
Comb. poco frecuente    0.0    0.0    0.0    0.0
Comb. caracteristica    0.0    0.0    0.0    0.0

Armadura     8           10         12         16          20          25          32
      Nb/ncap/sep  Nb/ncap/sep  Nb/ncap/sep Nb/ncap/sep Nb/ncap/sep Nb/ncap/sep Nb/ncap/sep
     18  1  0.05   11  1  0.08   8 1  0.11   4 1  0.23   3 1  0.30   2 1  0.45   1 1  0.89
     18  1  0.05   11  1  0.08   8 1  0.11   4 1  0.23   3 1  0.30   2 1  0.45   1 1  0.89

Nº de seccion =    8
Canto         = 0.60
                       Mmax    Nk    Mmin    Nk
Comb. frecuente        -1.1    6.4   -5.0    6.0
Comb. poco frecuente    0.0    0.0    0.0    0.0
Comb. caracteristica    0.0    0.0    0.0    0.0

Armadura     8           10         12         16          20          25          32
      Nb/ncap/sep  Nb/ncap/sep  Nb/ncap/sep Nb/ncap/sep Nb/ncap/sep Nb/ncap/sep Nb/ncap/sep
     18  1  0.05   11  1  0.08   8 1  0.11   4 1  0.23   3 1  0.30   2 1  0.45   1 1  0.89
     18  1  0.05   11  1  0.08   8 1  0.11   4 1  0.23   3 1  0.30   2 1  0.45   1 1  0.89

Nº de seccion =    9
Canto         = 0.60
                       Mmax    Nk    Mmin    Nk
Comb. frecuente        12.6    3.4    5.2    6.4
Comb. poco frecuente    0.0    0.0    0.0    0.0
Comb. caracteristica    0.0    0.0    0.0    0.0

Armadura     8           10         12         16          20          25          32
      Nb/ncap/sep  Nb/ncap/sep  Nb/ncap/sep Nb/ncap/sep Nb/ncap/sep Nb/ncap/sep Nb/ncap/sep
     18  1  0.05   11  1  0.08   8 1  0.11   4 1  0.23   3 1  0.30   2 1  0.45   1 1  0.89
     18  1  0.05   11  1  0.08   8 1  0.11   4 1  0.23   3 1  0.30   2 1  0.45   1 1  0.89
```

REFERENCIA DEL PROYECTO P.I. CAN MALLOL (EC-1).

Elemento = 4

Nº de seccion = 1
Canto = 0.60

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-9.6	13.1	-21.5	27.5
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	20 1 0.05	13 1 0.07	9 1 0.10	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89
	20 1 0.05	13 1 0.07	9 1 0.10	5 1 0.18	3 1 0.30	2 1 0.45	1 1 0.89

Nº de seccion = 2
Canto = 0.60

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-6.9	12.6	-18.4	26.9
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	18 1 0.05	11 1 0.08	8 1 0.11	4 1 0.23	3 1 0.30	2 1 0.45	1 1 0.89
	18 1 0.05	11 1 0.08	8 1 0.11	4 1 0.23	3 1 0.30	2 1 0.45	1 1 0.89

Nº de seccion = 3
Canto = 0.60

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-4.9	12.0	-16.4	27.8
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	18 1 0.05	11 1 0.08	8 1 0.11	4 1 0.23	3 1 0.30	2 1 0.45	1 1 0.89
	18 1 0.05	11 1 0.08	8 1 0.11	4 1 0.23	3 1 0.30	2 1 0.45	1 1 0.89

Nº de seccion = 4
Canto = 0.60

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-3.6	11.4	-16.1	27.2
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	18 1 0.05	11 1 0.08	8 1 0.11	4 1 0.23	3 1 0.30	2 1 0.45	1 1 0.89
	18 1 0.05	11 1 0.08	8 1 0.11	4 1 0.23	3 1 0.30	2 1 0.45	1 1 0.89

Nº de seccion = 5
Canto = 0.60

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-3.0	10.9	-16.0	26.6
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	18 1 0.05	11 1 0.08	8 1 0.11	4 1 0.23	3 1 0.30	2 1 0.45	1 1 0.89
	18 1 0.05	11 1 0.08	8 1 0.11	4 1 0.23	3 1 0.30	2 1 0.45	1 1 0.89

Nº de seccion = 6
Canto = 0.60

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-2.8	10.3	-16.1	26.1
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	18 1 0.05	11 1 0.08	8 1 0.11	4 1 0.23	3 1 0.30	2 1 0.45	1 1 0.89
	18 1 0.05	11 1 0.08	8 1 0.11	4 1 0.23	3 1 0.30	2 1 0.45	1 1 0.89

Nº de seccion = 7
Canto = 0.60

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-3.2	9.8	-16.5	25.5
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	18 1 0.05	11 1 0.08	8 1 0.11	4 1 0.23	3 1 0.30	2 1 0.45	1 1 0.89
	18 1 0.05	11 1 0.08	8 1 0.11	4 1 0.23	3 1 0.30	2 1 0.45	1 1 0.89

Nº de seccion = 8
Canto = 0.60

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-4.1	9.2	-17.1	24.9
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	18 1 0.05	11 1 0.08	8 1 0.11	4 1 0.23	3 1 0.30	2 1 0.45	1 1 0.89
	18 1 0.05	11 1 0.08	8 1 0.11	4 1 0.23	3 1 0.30	2 1 0.45	1 1 0.89

Nº de seccion = 9
Canto = 0.60

	Mmax	Nk	Mmin	Nk
Comb. frecuente	-5.4	8.6	-17.9	24.4
Comb. poco frecuente	0.0	0.0	0.0	0.0
Comb. caracteristica	0.0	0.0	0.0	0.0

Armadura	8	10	12	16	20	25	32
	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep	Nb/ncap/sep
	18 1 0.05	11 1 0.08	8 1 0.11	4 1 0.23	3 1 0.30	2 1 0.45	1 1 0.89
	18 1 0.05	11 1 0.08	8 1 0.11	4 1 0.23	3 1 0.30	2 1 0.45	1 1 0.89

```
 Elemento =   5                                                
```

```
Nº de seccion =    7
Canto         = 0.60
                       Mmax    Nk    Mmin    Nk
Comb. frecuente        18.1   26.9    5.6   10.6
Comb. poco frecuente    0.0    0.0    0.0    0.0
Comb. caracteristica    0.0    0.0    0.0    0.0

Armadura     8           10         12         16          20          25          32
      Nb/ncap/sep  Nb/ncap/sep  Nb/ncap/sep Nb/ncap/sep Nb/ncap/sep Nb/ncap/sep Nb/ncap/sep
     18  1  0.05   11  1  0.08   8 1  0.11   4 1  0.23   3 1  0.30   2 1  0.45   1 1  0.89
     18  1  0.05   11  1  0.08   8 1  0.11   4 1  0.23   3 1  0.30   2 1  0.45   1 1  0.89

Nº de seccion =    8
Canto         = 0.60
                       Mmax    Nk    Mmin    Nk
Comb. frecuente        19.9   26.3    6.7   10.0
Comb. poco frecuente    0.0    0.0    0.0    0.0
Comb. caracteristica    0.0    0.0    0.0    0.0

Armadura     8           10         12         16          20          25          32
      Nb/ncap/sep  Nb/ncap/sep  Nb/ncap/sep Nb/ncap/sep Nb/ncap/sep Nb/ncap/sep Nb/ncap/sep
     19  1  0.05   12  1  0.08   8 1  0.11   5 1  0.18   3 1  0.30   2 1  0.45   1 1  0.89
     19  1  0.05   12  1  0.08   8 1  0.11   5 1  0.18   3 1  0.30   2 1  0.45   1 1  0.89

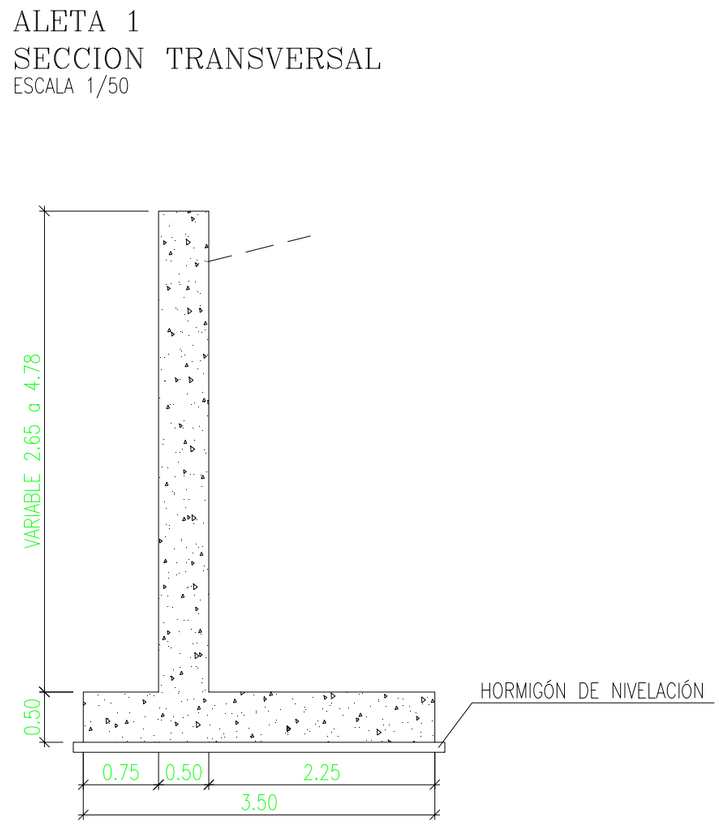
Nº de seccion =    9
Canto         = 0.60
                       Mmax    Nk    Mmin    Nk
Comb. frecuente        22.0   25.8    8.0    9.4
Comb. poco frecuente    0.0    0.0    0.0    0.0
Comb. caracteristica    0.0    0.0    0.0    0.0

Armadura     8           10         12         16          20          25          32
      Nb/ncap/sep  Nb/ncap/sep  Nb/ncap/sep Nb/ncap/sep Nb/ncap/sep Nb/ncap/sep Nb/ncap/sep
     22  1  0.04   14  1  0.06  10 1  0.09   6 1  0.15   4 1  0.22   2 1  0.45   1 1  0.89
```

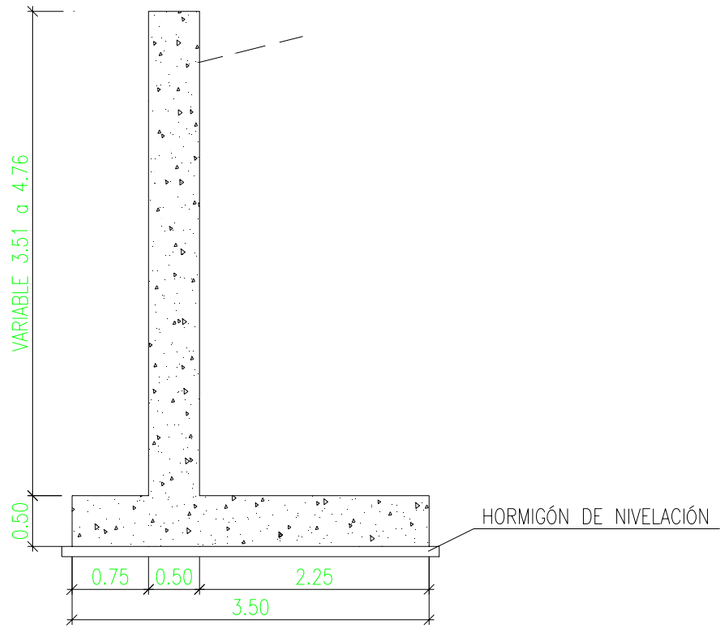
7. CÁLCULO DE ALETAS

7.1. GEOMETRÍA

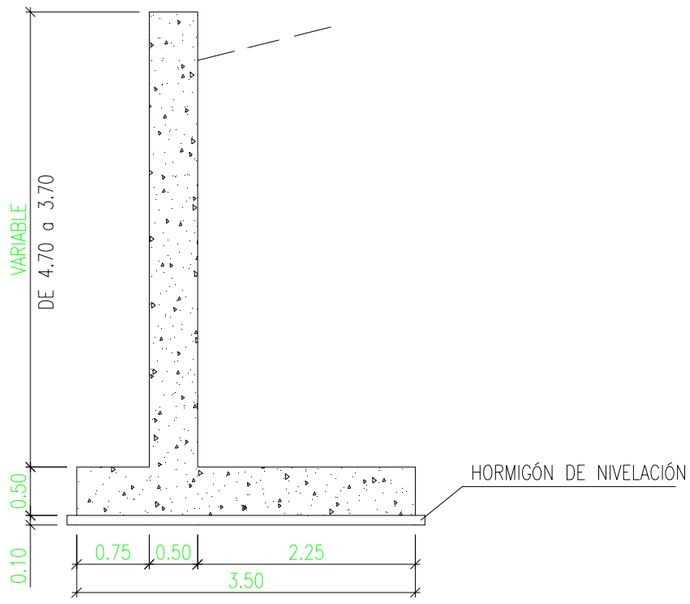
El diseño de las aletas es el mismo en las cuatro dispuestas en las salidas del cajón, situadas con un ángulo de 30º respecto al eje longitudinal del cajón. Las 4 aletas son tipo muro y están compuestas de un módulo único. A continuación se detalla la geometría de cada una de ellas.



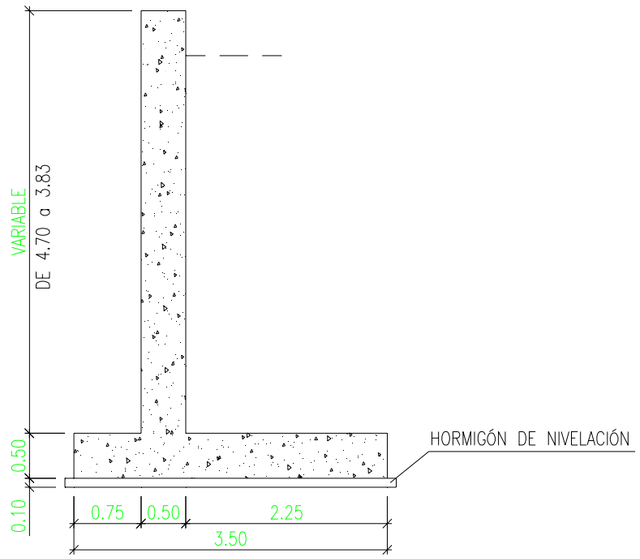
ALETA 2
SECCION TRANSVERSAL
ESCALA 1/50



ALETA 3.
SECCIÓN TRANSVERSAL
ESCALA 1/50



ALETA 4.
SECCIÓN TRANSVERSAL
ESCALA 1/50



7.2 CÁLCULO DE ESFUERZOS Y DIMENSIONAMIENTO

El cálculo y dimensionamiento de las aletas se detalla en las páginas siguientes. Las hipótesis de cálculo se exponen a continuación:

1. El cálculo se realiza en la hipótesis clásica como muro con acciones en coronación debidas al sobre-empuje de 3,0 T/m^2 de tráfico ferroviario así como la consideración de una altura de tierras hasta la cota superior de vía. Los empujes del terreno se han calculado para un coeficiente de empuje K = 0,31 y una densidad del terreno de 2,1 T/m^3. No se han considerado eventuales empujes hidrostáticos al colocar un adecuado drenaje en el trasdós de las aletas.

2. En el cálculo de la seguridad de la aleta frente al vuelco, deslizamiento y tensiones máximas se han verificado las siguientes condiciones (ver resultados en listados de cálculo).

   Coeficiente de Seguridad al vuelco, $CS,v > 1,80$

   Coeficiente de Seguridad al deslizamiento $CS,d > 1,50$

   Tensión máxima del terreno en puntera $\sigma_{max} > 1,25 \cdot \sigma_{admisible}$

   Con $\sigma_{admisible}$ = 3,00 Kp/cm^2 y coeficiente de rozamiento terreno-zapata μ = 0,60 .

3. El dimensionamiento de las armaduras de flexión y cortante del muro y zapata se realiza con los criterios de la Normativa vigente para estructuras de hormigón (EHE). Los coeficientes de seguridad de las acciones corresponden con un NIVEL DE CONTROL INTENSO γ_{fg} =1,35 y γ_{fq} =1,50.

4. Las armaduras horizontales de flexión transversal se colocan de acuerdo con los valores mínimos exigidos por la Normativa EHE.

PEDELTA, S.L.- INGENIERIA DE ESTRUCTURAS, BARCELONA

Proyecto: L.A.V. Madrid-Zaragoza-Barcelona-Frontera Francesa. Tramo: St. Vicenç dels Horts-Sta. Coloma de Cervelló.

Obra: P.I. Riera de Can Mallol.

Referencia: Aletas 1, 2, 3 y 4. Aleta tipo 5_2.

```
**************************************************
**                                              **
**                 PROGRAMA  MUR                **
**   CALCULO DE MUROS DE CONTENCION Y CIMENTACION   **
**                                              **
**                                              **
**                   PEDELTA SL                 **
**                                              **
**************************************************
```

CARACTERISTICAS GEOMETRICAS DE LA ESTRUCTURA
==========

ALTURA TOTAL	5.00
ALTURA DE EMPUJE PASIVO	0.00
DIMENSION DE LA BASE	3.50
CANTO DE LA ZAPATA	0.50
CANTO DEL FUSTE	0.50
ANCHO EN CORONACION	0.50
LONGITUD DE LA PUNTERA	0.75
LONGITUD DEL TALON	2.25
ALTURA DEL TACON	0.00
ANCHO DEL TACON	0.00
INCLINACION DEL TRASDOS	90.00
ANGULO DEL TALUD (OMEGA)	22.00

PROPIEDADES MECANICAS DE MATERIALES Y TIERRAS
==========

PROPIEDADES DEL HORMIGON Y DEL ACERO

resistencia caracteristica del hormigon	250.00
coeficiente de minoracion para el hormigon	1.50
limite elastico caracteristico del acero	5100.00
coeficiente de minoracion para el acero	1.15

PROPIEDADES DEl TERRENO DE RELLENO

angulo de friccion interna	35.000
densidad	2.100
cohesion	0.000
angulo friccion terreno - fuste	10.000

PROPIEDADES DEL TERRENO DE CIMENTACION

coef. de rozamiento cimiento-suelo (mu)	0.600
tension admisible:	3.000
tension ultima:	3.750

CARGAS Y COEFICIENTES DE SEGURIDAD
==========

Carga repartida (T/m*m)	3.00
Coef. de seg. al deslizamiento (servicio)	1.50
Coef. de seg. al deslizamiento (ultimo)	1.50
Coef. de seg. al vuelco	1.80
Coef. de seg. al deslizamiento o vuelco en hipotesis de accion sismica	1.20
Coef. sismico	0.00

Empuje Activo y Magnitudes Relacionadas

angulo del paramento (rad)	1.57
angulo de actuacion del sismo (rad)	0.00
angulo de rozamiento interno (rad)	0.61
Ka (coef. empuje sin sismo)	0.34
Kae (coef. empuje con sismo)	0.34
empuje activo sin sismo	13.99
empuje activo con sismo	13.99
brazo del empuje activo	1.97

Empuje Pasivo y Magnitudes Relacionadas

altura de empuje pasivo	0.00
altura de suelo sobre la puntera	0.00
brazo de empupe pasivo en zapata y fuste	0.00
brazo de empuje pasivo sobre tacon	0.00
empuje pasivo en zapata y fuste	0.00
empuje pasivo sobre tacon	0.00

Volumenes

distancia d:	0.00
volumen 1 (volumen del cimiento)	1.75
volumen 2 (volumen del alzado)	2.25
volumen 3 (suelo sobre la puntera)	0.00
volumen 4 (suelo sobre el talon)	10.13

Pesos

peso 1 (peso del cimiento)	4.38
peso 2 (peso del alzado)	5.62
peso 3 (peso del suelo sobre puntera)	0.00
peso 4 (peso del suelo sobre talon) (incluyendo sobrecarga repartida)	28.01
peso total	38.01

Brazos de Palanca

Brazo de palanca 1 (del cimiento)	1.75
Brazo de palanca 2 (del alzado)	1.00
Brazo de palanca 3 (del suelo / puntera)	0.38
Brazo de palanca 4 (del suelo / talon)	2.37

Momentos

Mto estab. 1 (de zapata)	7.66
Mto estab. 2 (del fuste)	5.62
Mto estab. 3 (del tierras sobre puntera)	0.00
Mto estab. 4 (del tierras sobre talon)	66.53
Mto estab. total	79.81

RESULTADOS DE LAS VERIFICACIONES DE ESTABILIDAD
==========

Coef. de Seg. al deslizamiento servicio: 1.63

VERIFICADA LA SEGURIDAD AL DESLIZAMIENTO EN SERVICIO

Coef. de Seg. al deslizamiento ultimo: 1.63
VERIFICADA LA SEGURIDAD AL DESLIZ. EN ESTADO ULTIMO

Coef de Seg. al vuelco: 2.90

VERIFICADA LA SEGURIDAD AL VUELCO

Tensiones Maxima, Media y Minima en Servicio:
  17.85   10.86   3.87 ...T/m*m

VERIFICADA LA TENSION MAXIMA SOBRE EL TERRENO EN SERVICIO
(la tension admisible en punta es 1,25* 30.00 T/m*m)

VERIFICADA LA TENSION MEDIA SOBRE EL TERRENO EN SERVICIO

Tensiones Maxima y Minima bajo empuje mayorado:
  25.04   0.00...T/m*m

VERIFICADA LA CONDICION SOBRE LA TENSION MAXIMA CON EMPUJE MAYORADO

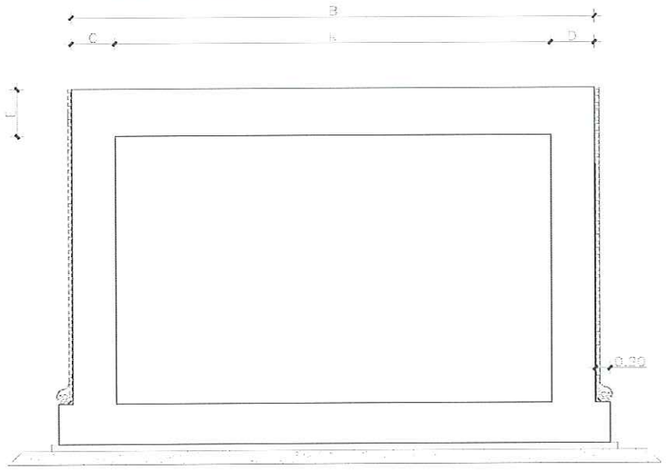
LEY DE MOMENTOS Y ARMADURA EN FUSTE

31.68	16.86
24.35	12.77
18.20	9.43
13.14	7.09
9.07	5.51
5.89	4.50
3.51	4.50
1.83	4.50
0.75	4.50
0.17	4.50
0.00	4.50

4.7. Paso inferior de la riera de Can Vía

CÁLCULO TRANVERSAL LOSA SUPERIOR

MODELO DE CÁLCULO



Sección tipo del marco

Dimensiones marco

	B	C	D	E	K
[m]	10.40	0.70	0.70	0.80	9.00

Diensiones del Emparrillado

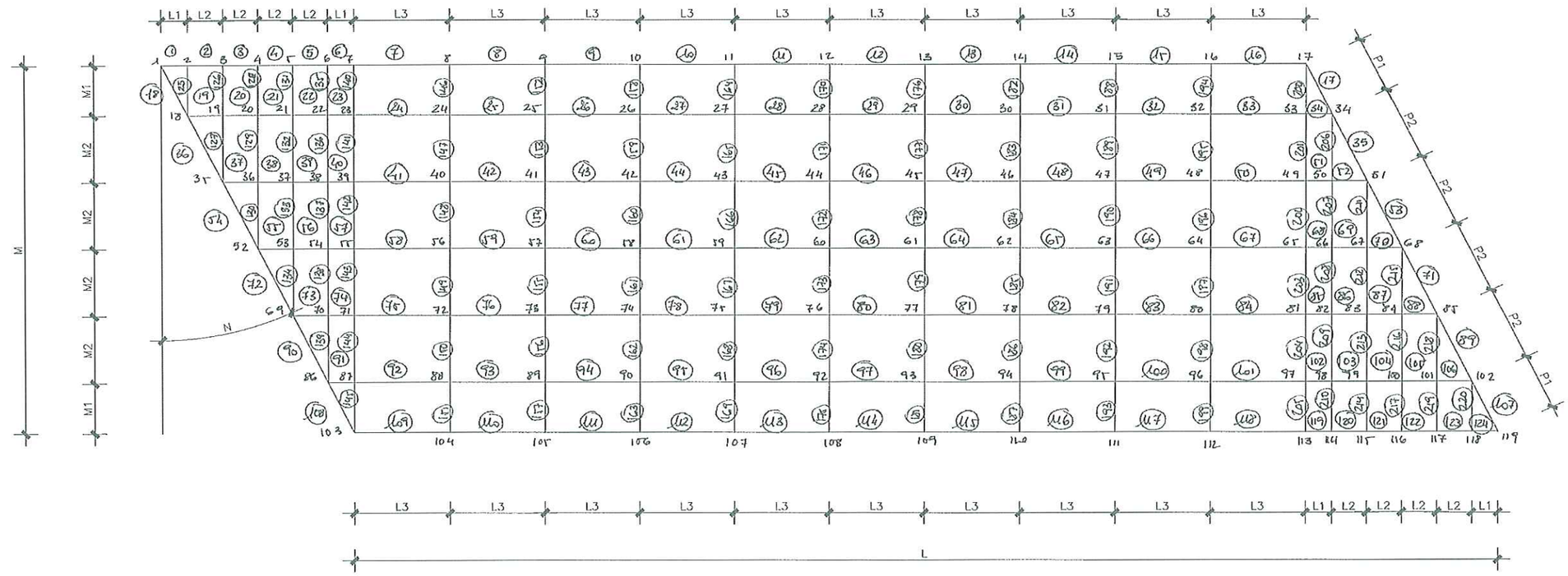
	L	M	N	L1	L2	L3	M1	M2	P1	P2
[m]	18.23	9.70	11.57	0.26	0.37	1.62	1.25	1.80	1.28	1.80

Caracteristicas mecánicas de barras tipo

	c	b	I	c/b	β	J
1	0.80	0.70	0.03	1.14	0.15	0.04
2	0.80	1.80	0.08	2.25	0.24	0.22
3	0.80	0.50	0.02	1.60	0.19	0.02
4	0.80	0.31	0.01	2.56	0.26	0.01
5	0.80	0.37	0.02	2.17	0.23	0.01
6	0.80	0.94	0.04	1.18	0.15	0.07
7	0.80	1.62	0.07	2.03	0.22	0.18

Siendo:
c y d dimensiones de la barra
I inercia a Flexión de la barra
J Inercia a Torsión

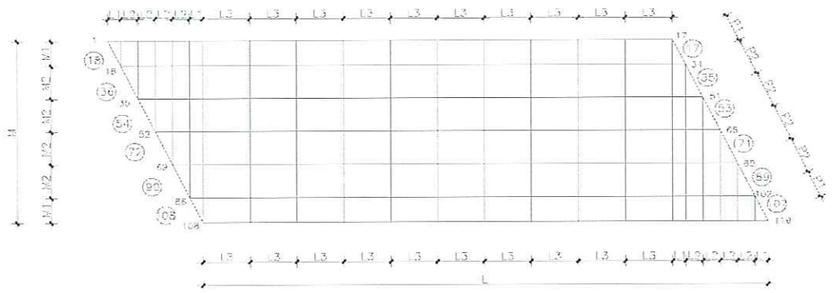
$$J = \beta \cdot c \cdot b^3$$



Modelo de Cálculo

CÁLCULO TRANVERSAL LOSA SUPERIOR

1-CÁLCULO DEL MARCO TIPO



Características del Modelo de Cálculo

L	M	N	L1	L2	L3	M1	M2	P1	P2
18.23	9.70	11.57	0.26	0.37	1.62	1.25	1.80	1.28	1.80

Características de Barras

h	b	I	J	A
0.80	0.50	0.02133	0.01880	0.40

Barra	17	18	35	36	53	54	71	72	89	90	107	108
NI	17	1	34	18	51	35	68	52	85	69	102	86
NF	34	18	51	35	68	52	85	69	102	86	119	103

CARGAS

Peso propio: 1.00 t/m

Carga permanente:

Balasto	Altura	0.56	Densidad	1.80
Tierras	Altura	1	Densidad	2.00

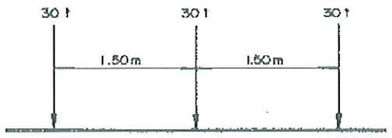
Sobrecargas verticales:

SC Terreno 3.000

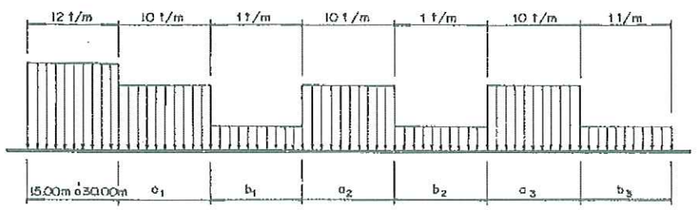
H-5	Tren A RENFE Via Izquierda	carga por carril	15 t
H-6	Tren A RENFE Via Derecha	carga por carril	15 t
H-7	Tren B RENFE Via Izquierda	carga por carril	6 T/m
H-8	Tren B RENFE Via Derecha	carga por carril	6 T/m

Coeficiente de impacto transversal= 1.6

TREN TIPO A



TREN TIPO B



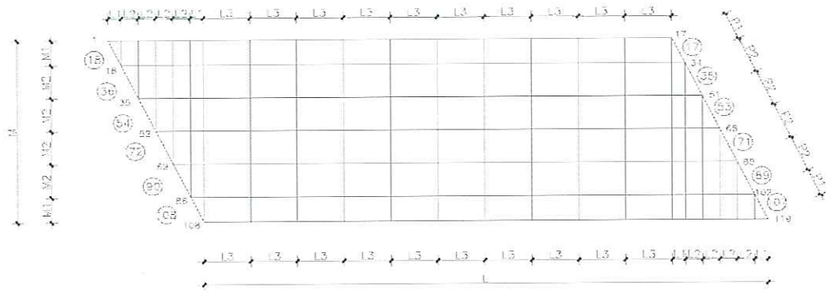
f_c 25
Ucd(t) 531.3

LOSA APOYADA
DIMENSIONAMIENTO A FLEXIÓN TRANSVERSAL

BARRA	NUDO	Md+	Md-	As,i (cm²/m)	As,s (cm²/m)
17	17	-1.11	-2.94	-	1.77
	34	34.33	15.24	21.62	-
18	1	2.14	-1.41	-	0.85
	18	27.47	7.04	17.13	-
35	34	22.02	9.77	13.63	-
	51	57.22	25.39	37.31	-
36	18	29.05	11.1	18.16	-
	35	55.08	17.18	35.79	-
53	51	44.99	19.97	28.78	-
	68	62.06	27.54	40.79	-
54	35	62.28	22.28	40.95	-
	52	70.71	21.96	47.16	-
71	68	51.23	22.73	33.09	-
	85	51.35	22.78	33.17	-
72	52	87.04	28.07	59.80	-
	69	56.85	20.21	37.05	-
89	85	40.28	17.87	25.59	-
	102	26.74	11.87	16.66	-
90	69	80.37	26.64	54.53	-
	86	25.8	11.02	16.05	-
107	102	15.51	6.88	9.52	-
	119	1.86	0.82	1.12	-
108	86	49.75	15.64	32.06	-
	103	0.27	-8.64	-	5.25

CÁLCULO TRANVERSAL LOSA SUPERIOR

1-CÁLCULO DEL MARCO TIPO



Características del Modelo de Cálculo

L	M	N	L1	L2	L3	M1	M2	P1	P2
18.23	9.70	11.57	0.26	0.37	1.62	1.25	1.80	1.28	1.80

Características de Barras

h	b	I	J	A
0.80	0.50	0.02133	0.01880	0.40

Barra	17	18	35	36	53	54	71	72	89	90	107	108
NI	17	1	34	18	51	35	68	52	85	69	102	86
NF	34	18	51	35	68	52	85	69	102	86	119	103

CARGAS

Peso propio: 1.00 t/m

Carga permanente:

Balasto	Altura	0.56	Densidad	1.80
Tierras	Altura	1	Densidad	2.00

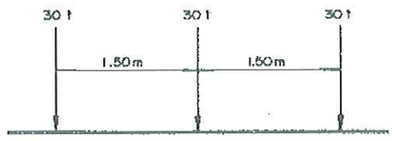
Sobrecargas verticales:

SC Terreno 3.000

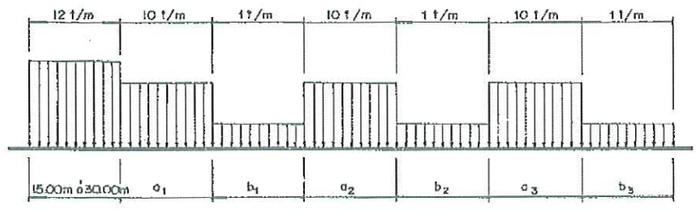
H-5	Tren A RENFE Via Izquierda	carga por carril	15 t
H-6	Tren A RENFE Via Derecha	carga por carril	15 t
H-7	Tren B RENFE Via Izquierda	carga por carril	6 T/m
H-8	Tren B RENFE Via Derecha	carga por carril	6 T/m

Coeficiente de impacto transversal= 1.6

TREN TIPO A



TREN TIPO B



f_c	25
Ucd(t)	531.3

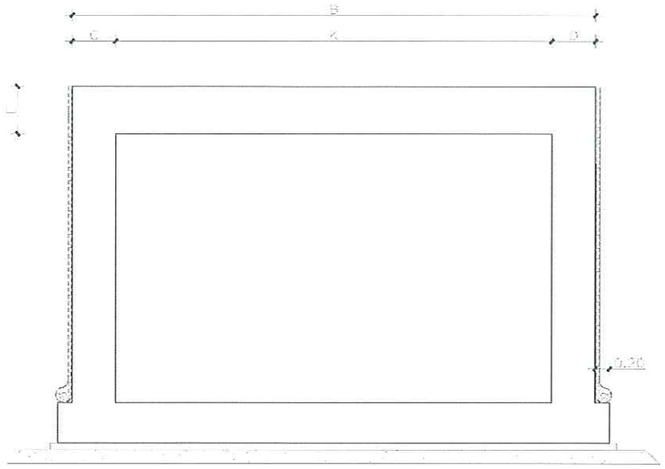
LOSA EMPOTRADA
DIMENSIONAMIENTO A FLEXIÓN TRANSVERSAL

BARRA	NUDO	Md+	Md-	As,i (cm²/m)	As,s (cm²/m)
17	17	-18.64	-42.01	-	26.75
	34	-5.87	-13.24	-	8.10
18	1	-12.56	-43.44	-	27.72
	18	-7.14	-24.16	-	15.00
35	34	-4.01	-9.03	-	5.49
	51	15.27	6.77	9.36	-
36	18	-4.96	-22.77	-	14.11
	35	14.4	1.58	8.82	-
53	51	14.78	6.56	9.06	-
	68	22.51	9.99	13.94	-
54	35	16.35	5.31	10.04	-
	52	33.53	8.34	21.09	-
71	68	18.78	8.34	11.57	-
	85	11.97	5.31	7.31	-
72	52	39	9.99	24.73	-
	69	21.12	6.56	13.06	-
89	85	6.11	2.71	3.70	-
	102	-4.96	-11.18	-	6.82
90	69	25.89	6.77	16.11	-
	86	-4.01	-20.1	-	12.41
107	102	-7.14	-16.09	-	9.88
	119	-12.58	-28.34	-	17.69
108	86	-5.87	-20.24	-	12.50
	103	-18.64	-63.66	-	41.95

CÁLCULO TRANVERSAL LOSA SUPERIOR

Se modeliza la Losa Superior de la Estructura mediante un modelo bidimensional de elementos finitos de las siguientes características:

MODELO DE CÁLCULO



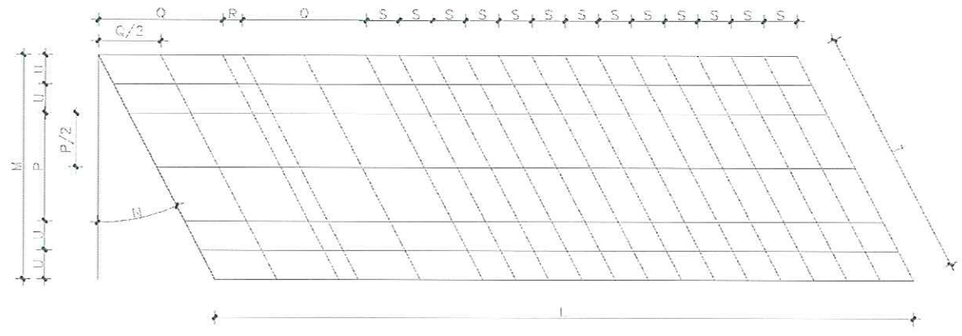
Sección tipo del marco

Dimensiones marco

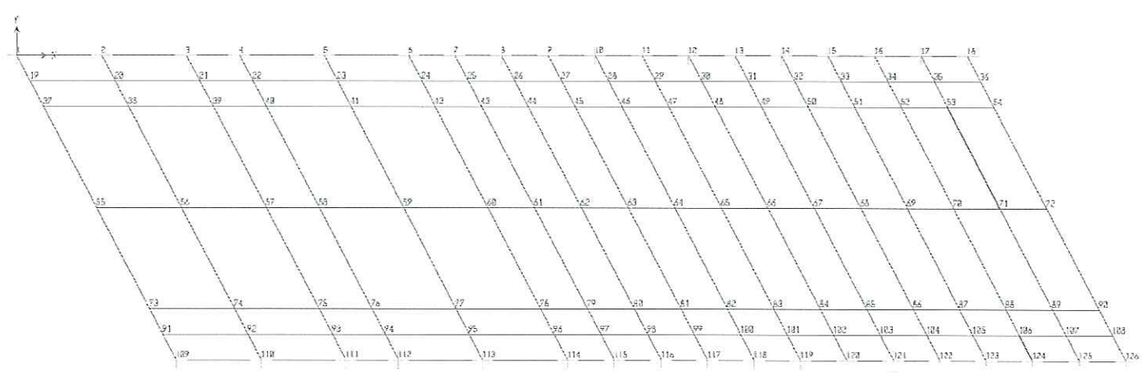
	B	C	D	E	K
[m]	10.40	0.70	0.70	0.80	9.00

Diensiones del Emparrillado

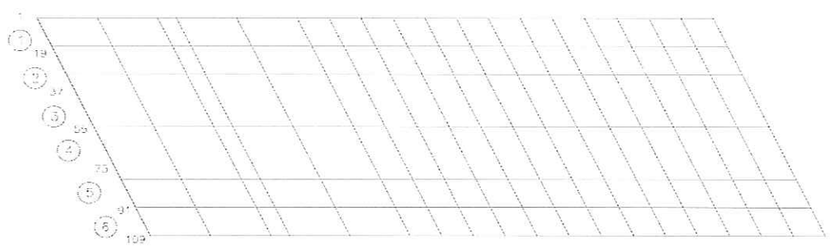
	L	M	N	O	P	Q	R	S	T
[m]	18.23	9.70	11.57	1.48	3.78	2.45	1.64	0.98	9.90



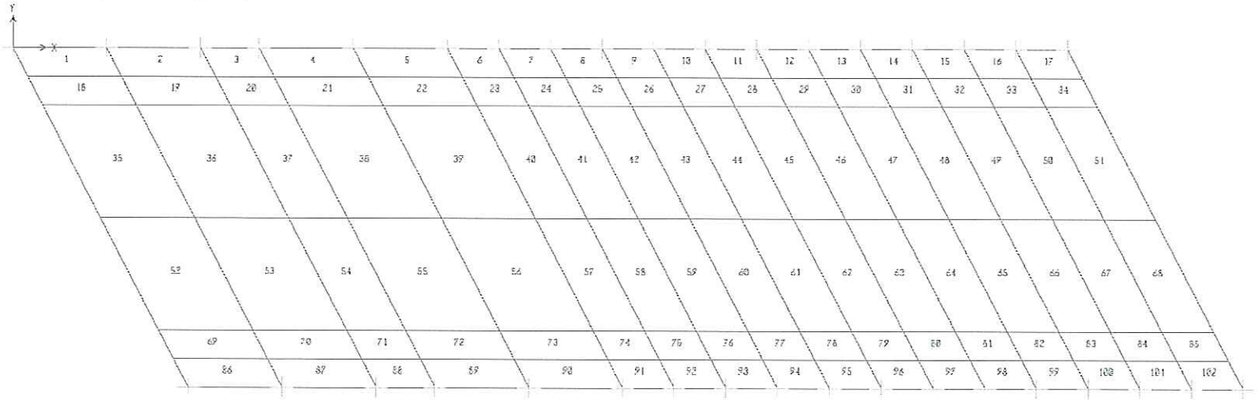
Esquema del modelo de cálculo



Numeración de nodos



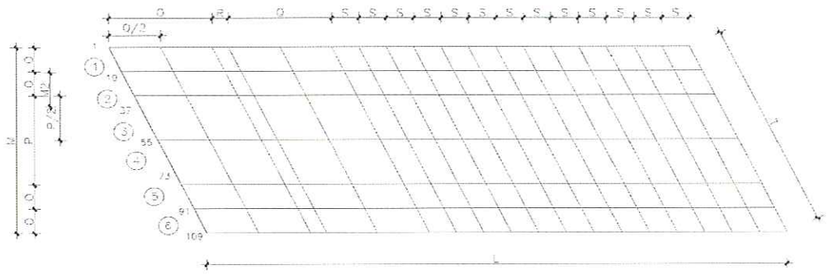
Numeración de Elementos tipo Barra



Numeración de Elementos tipo Shell

CÁLCULO TRANVERSAL LOSA SUPERIOR

1-CÁLCULO DEL MARCO TIPO



Características del Modelo de Cálculo

L	M	N	O	P	Q	R	S	T
18.23	9.70	11.57	1.48	3.78	2.45	1.64	0.98	9.90

Características de Elementos tipo barra

h	b	I	J
0.80	0.50	0.0213	0.0188

Barra	1	2	3	4	5	6
NI	1	19	37	55	73	91
NF	19	37	55	73	91	109

CARGAS

Peso propio: 2.50 t/m3

Carga permanente:

Balasto	Altura	0.56 m	Densidad	1.80 t/m^3
Tierras	Altura	1.00 m	Densidad	2.00 t/m^3

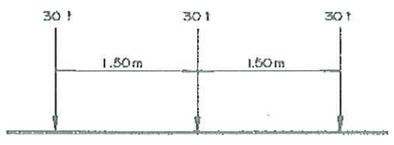
Sobrecargas verticales:

SC Terreno 3.000

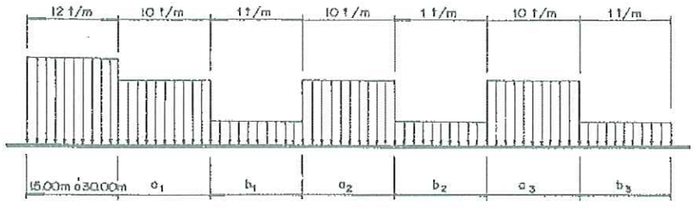
H-5	Tren A RENFE Via Izquierda	carga por carril	15 t
H-6	Tren A RENFE Via Derecha	carga por carril	15 t
H-7	Tren B RENFE Via Izquierda	carga por carril	6 t/m
H-8	Tren B RENFE Via Derecha	carga por carril	6 t/m

Coeficiente de impacto transversal= 1.6

TREN TIPO A



TREN TIPO B



f_c	25
Ucd(t)	531.3

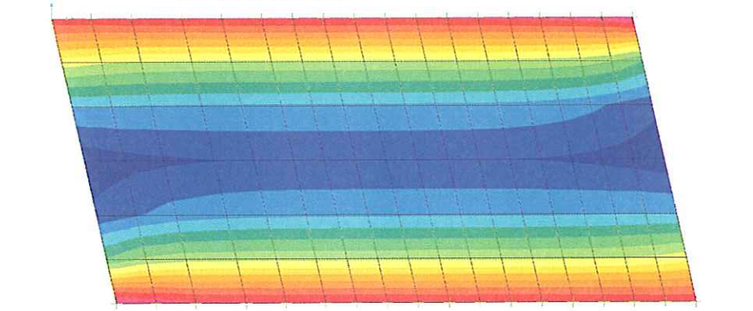
LOSA APOYADA
DIMENSIONAMIENTO A FLEXIÓN TRANSVERSAL

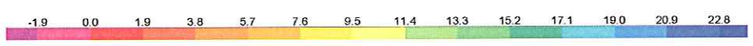
BARRA	NUDO	Md+	Md-	As,i (cm^2/m)	As,s (cm^2/m)
1	1	1.43	3.23	-	1.95
	19	31.22	10.57	19.57	-
2	19	39.19	13.44	24.85	-
	37	61.81	21.03	40.61	-
3	37	68.16	22.96	45.26	-
	55	87.02	27.92	59.78	-
4	55	88.69	28.47	61.13	-
	73	77.47	26.32	52.29	-
5	73	72.81	25.15	48.74	-
	91	48.90	18.07	31.47	-
6	91	40.41	15.00	25.68	-
	109	1.66	2.74	-	1.66

LOSA EMPOTRADA

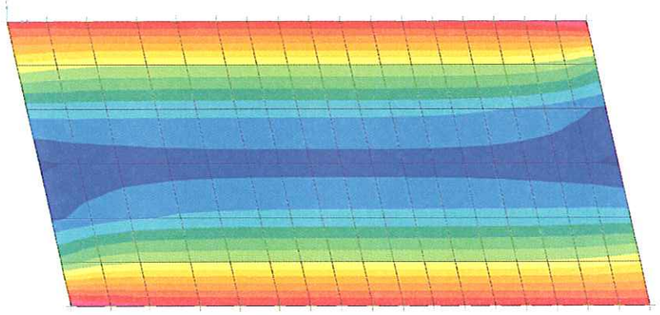
BARRA	NUDO	Md+	Md-	As,i (cm^2/m)	As,s (cm^2/m)
1	1	-11.29	-39.74	-	25.22
	18	-6.14	-23.61	-	14.64
2	18	-4.04	-16.50	-	10.14
	35	2.66	6.00	1.60	-
3	35	4.34	4.34	2.62	-
	52	34.59	8.74	21.79	-
4	52	36.31	9.19	22.93	-
	69	24.40	6.83	15.15	-
5	69	19.31	5.60	11.91	-
	86	-1.54	-7.97	-	4.84
6	86	-4.53	-18.25	-	11.24
	103	-16.65	-58.48	-	38.21

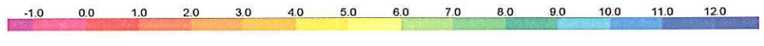
Llosa apoyada



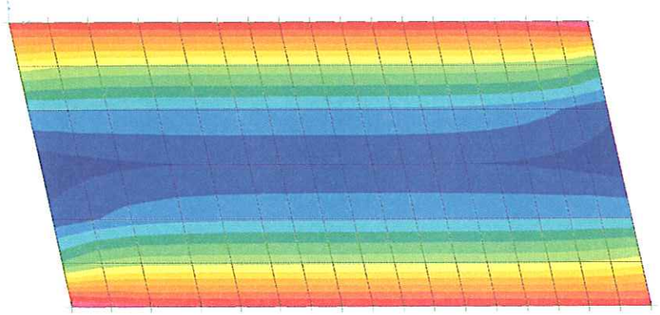


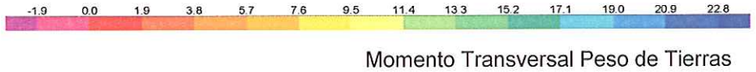
Momento Transversal PP



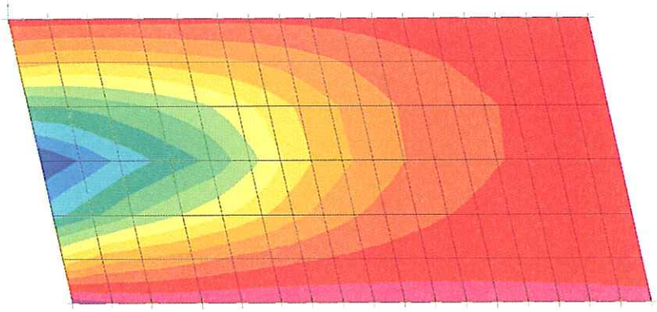


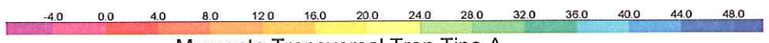
Momento Transversal Balasto



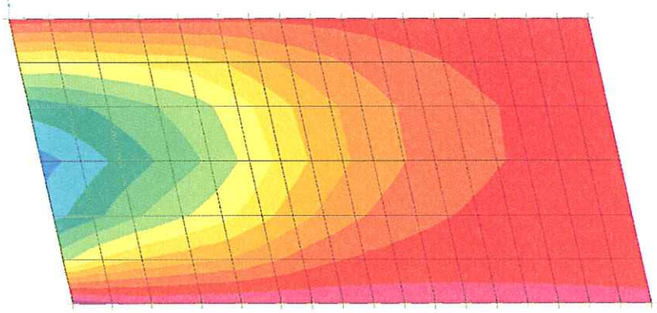


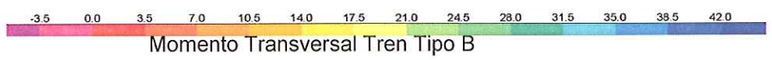
Momento Transversal Peso de Tierras



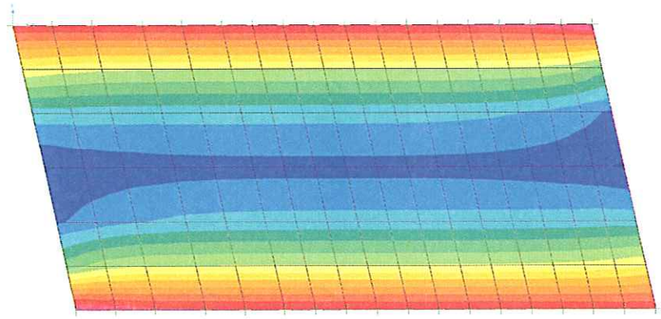


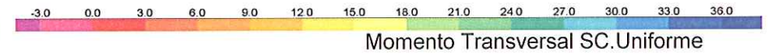
Momento Transversal Tren Tipo A



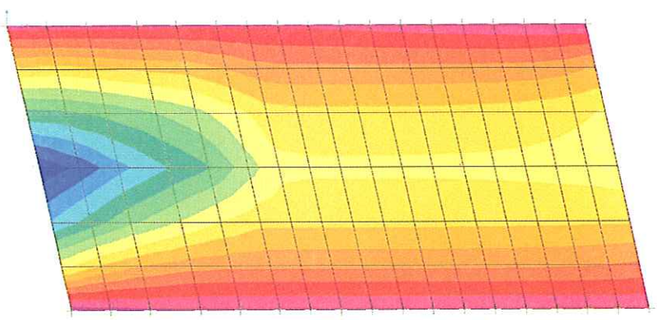


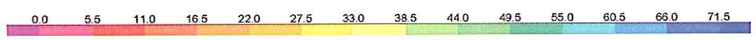
Momento Transversal Tren Tipo B



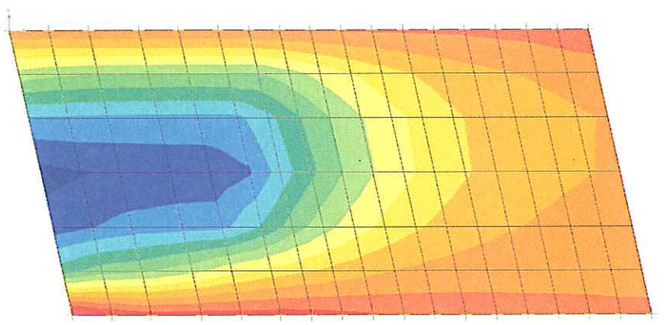


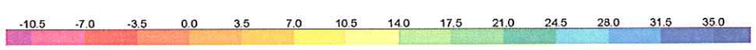
Momento Transversal SC.Uniforme





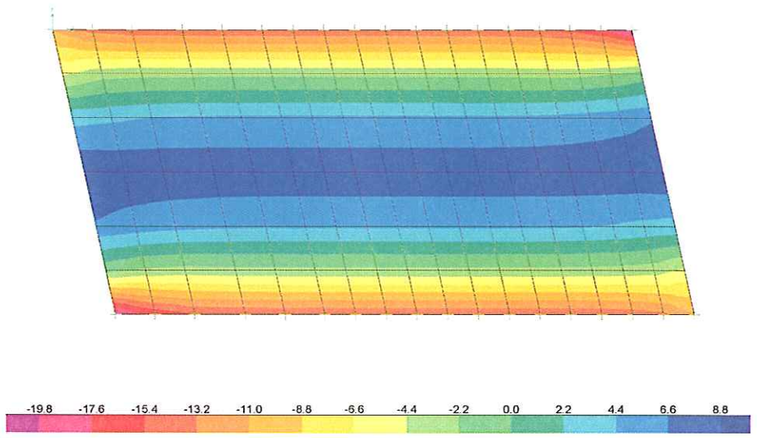
Momento Transversal Envolvente de SC(Max)



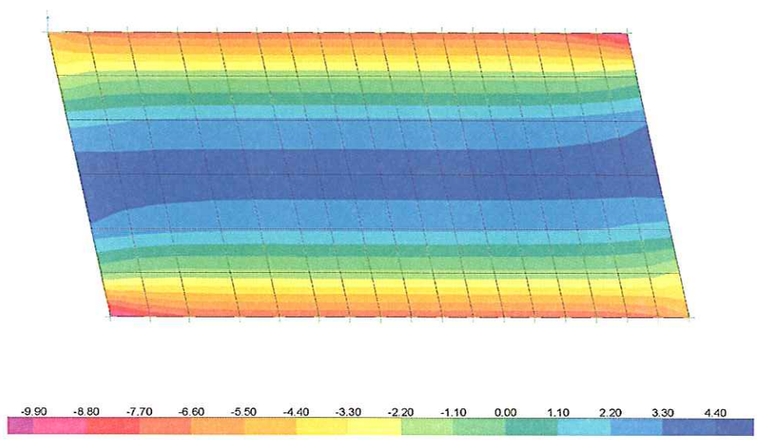


Momento Transversal Envolvente de SC(Min)

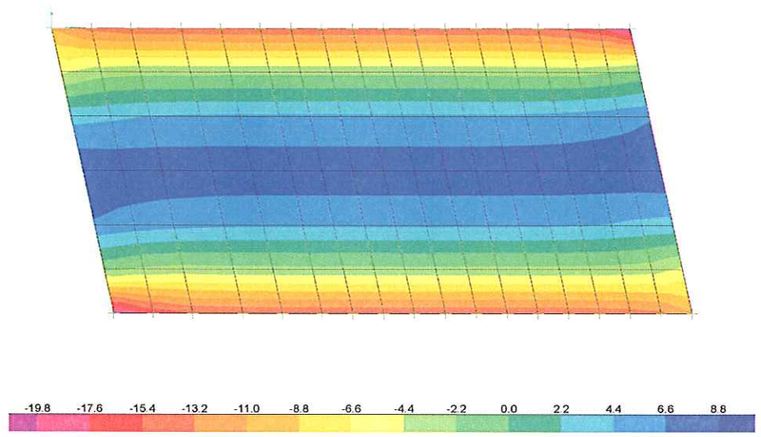
LOSA EMPOTRADA



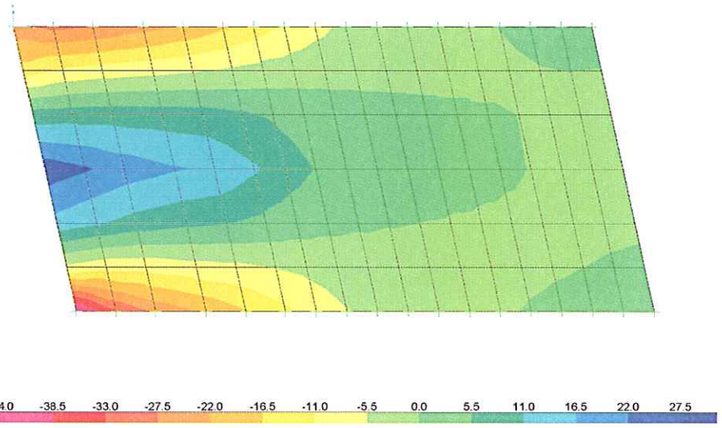
Momento Transversal PP



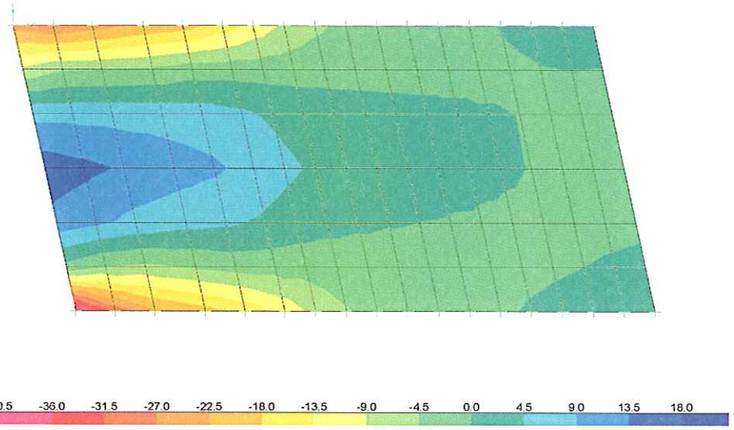
Momento Transversal Balasto



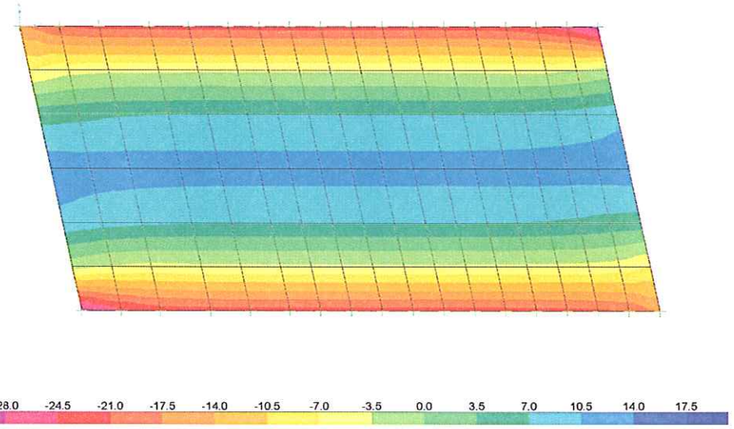
Momento Transversal Peso de Tierras



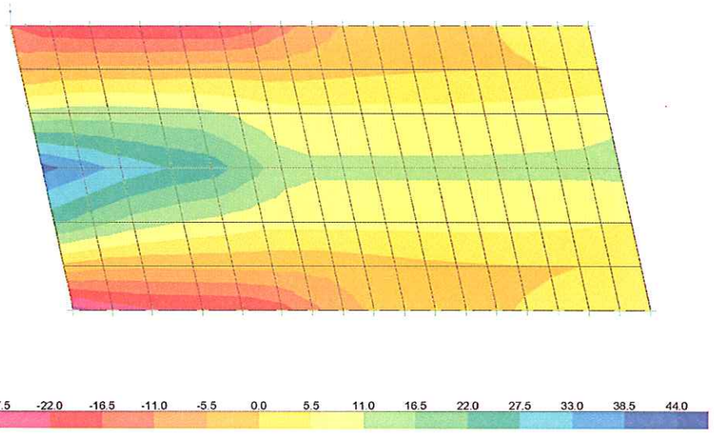
Momento Transversal Tren Tipo A



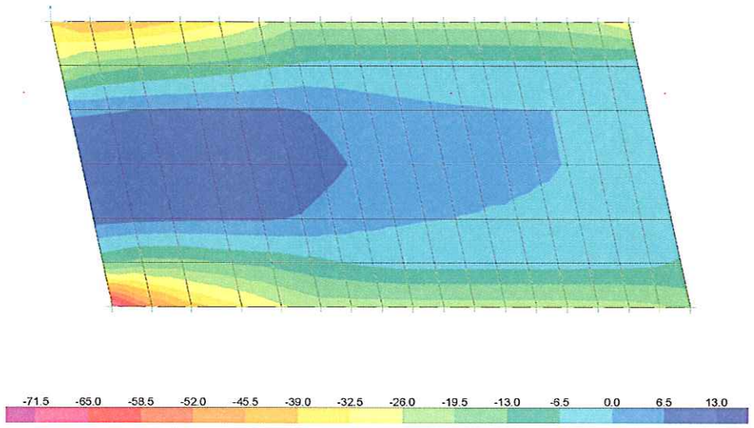
Momento Transversal Tren Tipo B



Momento Transversal SC.Uniforme



Momento Transversal Envolvente de SC(Max)



Momento Transversal Envolvente de SC(Min)

CÁLCULO TRANVERSAL LOSA SUPERIOR

MODELO DE CÁLCULO
Se arma una viga riostra de 0.50 m ancho

P.I. CAMINO PLA DE SOLER

ARMADURAS cm^2/m

	Anterior		Cálculo		Final	
MODELO DE CÁLCULO	A_I	A_S	A_I	A_S	A_I	A_S
EMPARRILLADO	46	39.5	45.92	29.05	5ϕ25	5ϕ25
SAP			38.59	24.35		

P.I. CAMINO

	Anterior		Cálculo		Final	
MODELO DE CÁLCULO	A_I	A_S	A_I	A_S	A_I	A_S
EMPARRILLADO	46.75	44.5	61.69	42.23	7ϕ25	7ϕ25
SAP			58.56	35.32		

P.I. RIERA DE CAN JULIA

	Anterior		Cálculo		Final	
MODELO DE CÁLCULO	A_I	A_S	A_I	A_S	A_I	A_S
EMPARRILLADO	98	69	73.66	54.42	8ϕ25	8ϕ25
SAP			78.23	49.16		

P.I. RIERA DE CAN VIA

	Anterior		Cálculo		Final	
MODELO DE CÁLCULO	A_I	A_S	A_I	A_S	A_I	A_S
EMPARRILLADO	64.33	32.25	59.8	41.95	7ϕ25	7ϕ25
SAP			61.13	38.21		

COMPROBACIÓN A CORTANTE

	A_I	A_S	V+	V-	h
P.I. CAMINO PLA DE SOLER	24.5	24.5	30.56	-44.05	0.7
P.I. CAMINO	34.3	34.3	15.93	-32.38	0.5
P.I. RIERA DE CAN JULIA	39.2	39.2	37.82	-53.33	0.8
P.I. RIERA DE CAN VIA	34.3	34.3	29.21	-44.21	0.8

	Aflexión					Acortante				Dispuesta
	A_I	A_S	V+	V-	h	As,t (cm^2/m)	ρ_1	ξ	Vcu(t)	As,t (cm^2/m)
P.I. CAMINO PLA DE SOLER	49	49	61.12	-88.1	0.7	25.93	0.0075	1.55	27.4	37.67
P.I. CAMINO	68.6	68.6	31.86	-64.76	0.5	24.09	0.0152	1.67	25.7	37.67
P.I. RIERA DE CAN JULIA	78.4	78.4	75.64	-106.7	0.8	26.76	0.0105	1.52	34.4	37.67
P.I. RIERA DE CAN VIA	68.6	68.6	58.42	-88.42	0.8	20.56	0.0091	1.52	32.9	36.16

SIEGRIST Y MORENO, S.L.
PROYECTOS DE INGENIERÍA

SEGRE, 20 - Esc. Izda. - 1.° E
28002 - MADRID
TELEF. 91 564 94 34
FAX: 91 564 71 83
e-mail: siemor@ciccp.es

Inscrita en el Registro Mercantil de Madrid, tomo 44 general, folio 114, hoja nº M-862, inscripción 1ª - C.I.F.: B-79379087

Siegrist y Moreno, S.L., y en su nombre **D. Guillermo Siegrist Ridruejo**, Ingeniero de Caminos, Canales y Puertos, colegiado número 16204,

CERTIFICA:

que ha realizado los cálculos y planos del Proyecto Modificado Número 1 para Obra de las siguiente estructura:

"Paso Inferior de Can Viá"

del "*Proyecto de Construcción de la Línea Ferroviaria de Alta Velocidad Madrid-Barcelona-Frontera Francesa. Tramo: Sant Vicenç del Horts – Santa Coloma de Cervelló*"

y se hace responsable de los mismos.

Los cálculos y planos de esta estructura se han realizado de acuerdo con las siguientes normativas:

1. "Instrucción de Hormigón Estructural EHE".
2. " Borrador de la Instrucción sobre las Acciones a considerar en el proyecto de Puentes de Ferrocarril - IAPF" de fecha febrero de 2003, en lo relativo a las acciones y sus combinaciones".
3. "Instrucción Relativa a las Acciones a considerar en el proyecto de Puentes de Ferrocarril - IAPF" de fecha 25 de junio de 1975.
4. "Norma de construcción sismorresistente: parte general y edificación". NCSE-02 (Real Decreto 997/2002, de 27 de septiembre, B.O.E. 11-X-2002).
5. "Eurocódigo 1: Bases de Proyecto y Acciones en Estructuras. Parte 3: Cargas de Tráfico en Puentes (EC 1.1.3) UNE-ENV 1991-3" de fecha octubre de 1997.
6. "Eurocódigo 1: Bases de Proyecto y Acciones en Estructuras. Parte 1: Bases de Proyecto (EC 1.1) UNE-ENV 1991-1".

Madrid, a 2 de Marzo de 2005
Firmado:

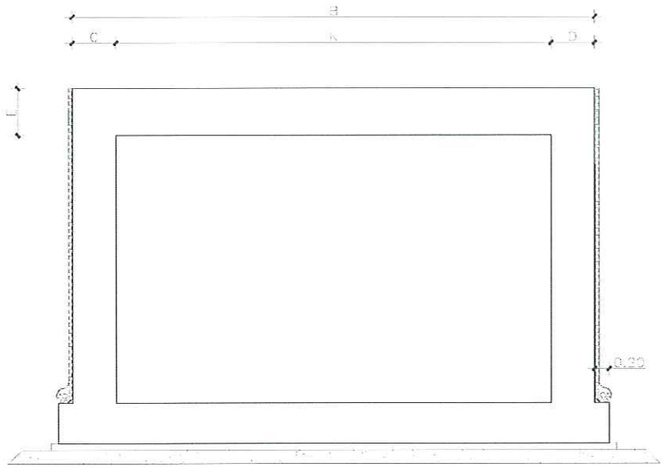
SEGRE, 20 - 28002 MADRID
SIEGRIST Y MORENO, S.L.
Telef. 91 564 94 34
C.I.F. B-79379087

Guillermo Siegrist Ridruejo
Ingeniero de Caminos, Canales y Puertos
Colegiado 16204

4.8. Paso inferior del Camino

CÁLCULO TRANVERSAL LOSA SUPERIOR

MODELO DE CÁLCULO



Sección tipo del marco

Dimensiones marco

	B	C	D	E	K
[m]	7.20	0.60	0.60	0.50	6.00

Diensiones del Emparrillado

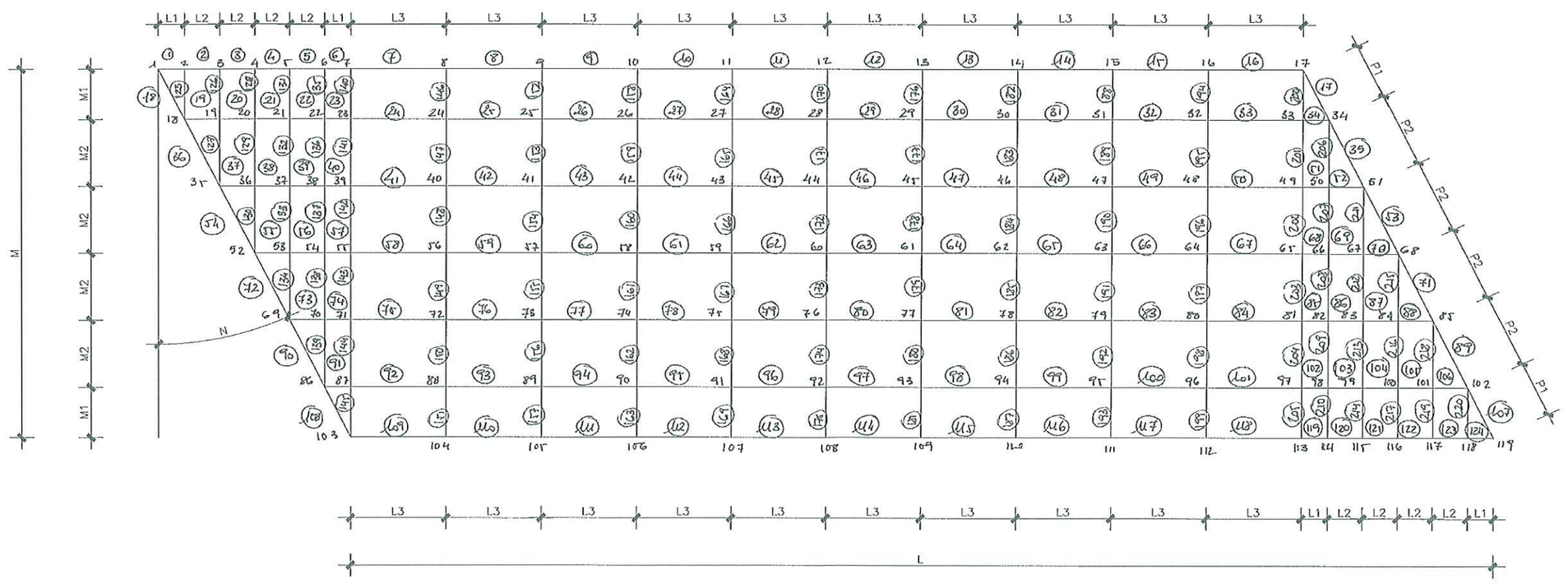
	L	M	N	L1	L2	L3	M1	M2	P1	P2
[m]	15.11	6.60	14.10	0.23	0.30	1.34	0.90	1.20	0.93	1.20

Caracteristicas mecánicas de barras tipo

	c	b	I	c/b	β	J
1	0.50	0.60	0.01	1.20	0.16	0.01
2	0.50	1.20	0.01	2.40	0.25	0.04
3	0.50	0.50	0.01	1.00	0.14	0.01
4	0.50	0.26	0.00	1.90	0.21	0.00
5	0.50	0.30	0.00	1.66	0.19	0.00
6	0.50	0.79	0.01	1.57	0.19	0.02
7	0.50	1.34	0.01	2.69	0.27	0.05

Siendo:
c y d dimensiones de la barra
I inercia a Flexión de la barra
J Inercia a Torsión

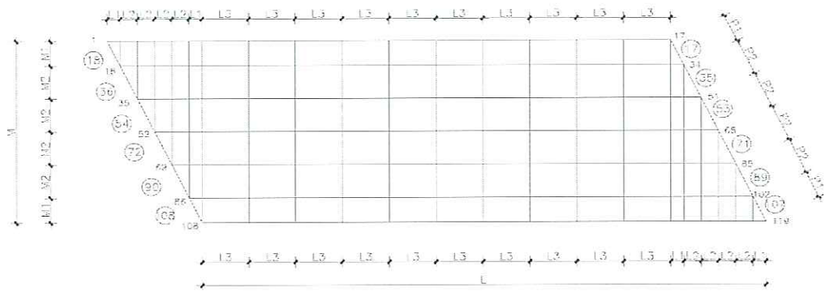
$$J = \beta \cdot c \cdot b^3$$



Modelo de Cálculo

CÁLCULO TRANVERSAL LOSA SUPERIOR

1-CÁLCULO DEL MARCO TIPO



Características del Modelo de Cálculo

L	M	N	L1	L2	L3	M1	M2	P1	P2
15.11	6.60	14.10	0.23	0.30	1.34	0.90	1.20	0.93	1.20

Características de Barras

h	b	I	J	A
0.50	0.50	0.00521	0.00875	0.25

Barra	17	18	35	36	53	54	71	72	89	90	107	108
NI	17	1	34	18	51	35	68	52	85	69	102	86
NF	34	18	51	35	68	52	85	69	102	86	119	103

CARGAS

Peso propio: 0.63 t/m

Carga permanente:

Balasto	Altura	0.56	Densidad	1.80
Tierras	Altura	0.65	Densidad	2.00

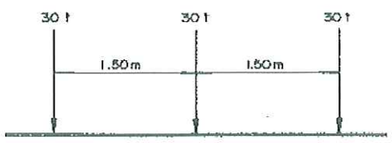
Sobrecargas verticales:

SC Terreno 3.000

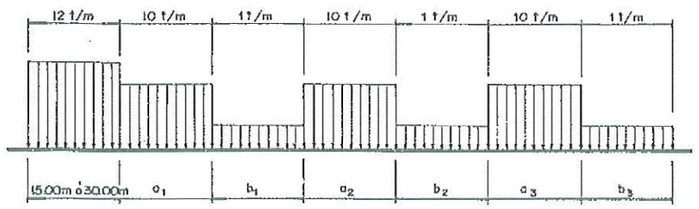
H-5	Tren A RENFE Via Izquierda	carga por carril	15 t
H-6	Tren A RENFE Via Derecha	carga por carril	15 t
H-7	Tren B RENFE Via Izquierda	carga por carril	6 T/m
H-8	Tren B RENFE Via Derecha	carga por carril	6 T/m

Coeficiente de impacto transversal= 1.6

TREN TIPO A



TREN TIPO B



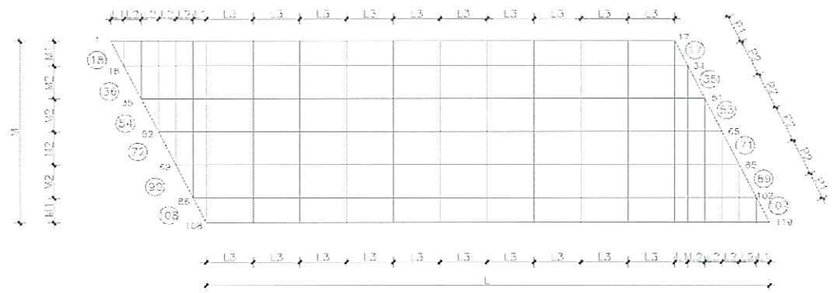
f_c	25
Ucd(t)	318.8

LOSA APOYADA
DIMENSIONAMIENTO A FLEXIÓN TRANSVERSAL

BARRA	NUDO	Md+	Md-	As,i (cm²/m)	As,s (cm²/m)
17	17	-0.05	-16.26	-	17.34
	34	8.49	-4.46	8.78	-
18	1	1.44	-10.09	1.45	10.50
	18	11.56	-6.12	12.09	-
35	34	7.31	-2.79	7.52	-
	51	14.88	6.1	15.78	-
36	18	15.22	-4.01	16.16	-
	35	30.36	2.14	34.59	-
53	51	12.59	6	13.23	-
	68	16.47	8.6	17.58	-
54	35	36.63	4.48	43.20	-
	52	39.57	7.17	47.51	-
71	68	13.21	7.17	13.91	-
	85	13.72	4.48	14.48	-
72	52	48.35	8.6	61.69	-
	69	34.24	6	39.83	-
89	85	9.51	2.14	9.87	-
	102	7.45	-4.01	7.67	-
90	69	45.9	6.1	57.50	-
	86	14.89	-2.79	15.79	-
107	102	3.19	-6.12	3.23	-
	119	0.93	-10.09	0.94	-
108	86	25.46	-4.46	28.30	-
	103	1.23	-16.26	1.24	17.34

CÁLCULO TRANVERSAL LOSA SUPERIOR

1-CÁLCULO DEL MARCO TIPO



Características del Modelo de Cálculo

L	M	N	L1	L2	L3	M1	M2	P1	P2
15.11	6.60	14.10	0.23	0.30	1.34	0.90	1.20	0.93	1.20

Características de Barras

h	b	I	J	A
0.50	0.50	0.00521	0.00875	0.25

Barra	17	18	35	36	53	54	71	72	89	90	107	108
NI	17	1	34	18	51	35	68	52	85	69	102	86
NF	34	18	51	35	68	52	85	69	102	86	119	103

CARGAS

Peso propio: 0.63 t/m

Carga permanente:

Balasto	Altura	0.56	Densidad	1.80
Tierras	Altura	0.65	Densidad	2.00

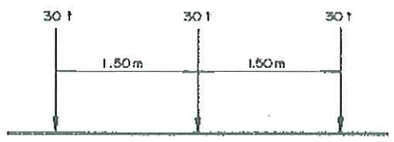
Sobrecargas verticales:

SC Terreno 3.000

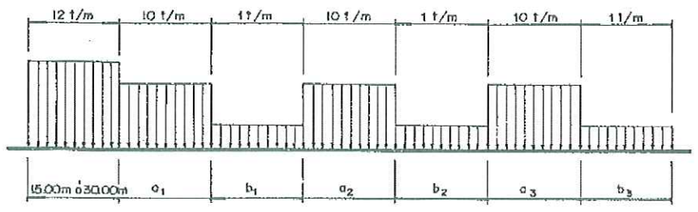
H-5	Tren A RENFE Via Izquierda	carga por carril	15 t
H-6	Tren A RENFE Via Derecha	carga por carril	15 t
H-7	Tren B RENFE Via Izquierda	carga por carril	6 T/m
H-8	Tren B RENFE Via Derecha	carga por carril	6 T/m

Coeficiente de impacto transversal= 1.6

TREN TIPO A



TREN TIPO B



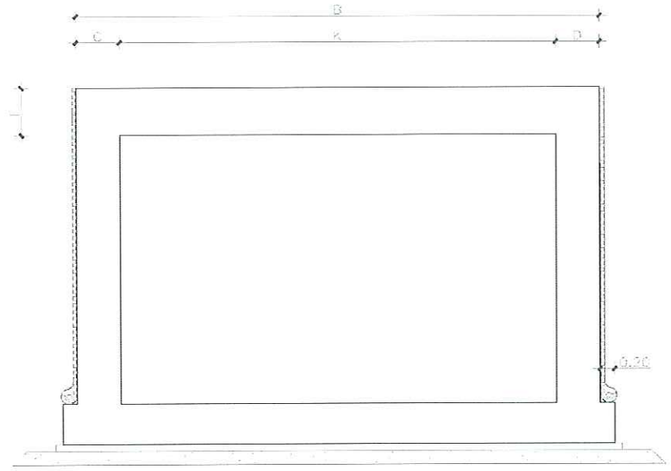
f_c	25
Ucd(t)	318.8

LOSA EMPOTRADA
DIMENSIONAMIENTO A FLEXIÓN TRANSVERSAL

BARRA	NUDO	Md+	Md-	As,i (cm²/m)	As,s (cm²/m)
17	17	-6.7	-16.26	-	17.34
	34	-1.84	-4.46	-	4.54
18	1	-4.16	-22.72	-	24.93
	18	-2.52	-13.62	-	14.37
35	34	-1.15	-2.79	-	2.82
	51	6.1	2.51	6.25	2.54
36	18	-1.65	-12.19	1.66	12.79
	35	7.69	0.25	7.93	-
53	51	6	2.47	6.14	-
	68	8.6	3.54	8.89	-
54	35	9.69	1.85	10.06	-
	52	17.96	2.96	19.29	-
71	68	7.17	2.96	7.37	-
	85	4.48	1.85	4.56	-
72	52	20.76	3.54	22.58	-
	69	13.12	2.47	13.81	-
89	85	2.14	0.88	2.16	-
	102	-1.65	-4.01	1.66	4.08
90	69	15.53	2.51	16.51	2.54
	86	-1.15	-10.06	-	10.46
107	102	-2.52	-6.12	-	6.27
	119	-4.16	-10.09	-	10.50
108	86	-1.84	-10.25	-	10.67
	103	-6.7	-35.95	-	42.23

CÁLCULO TRANVERSAL LOSA SUPERIOR

MODELO DE CÁLCULO



Sección tipo del marco

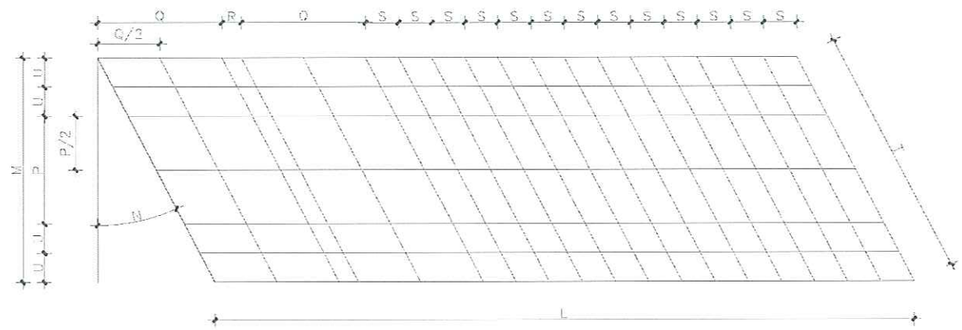
Se modeliza la Losa Superior de la Estructura mediante un modelo bidimensional de elementos finitos de las siguientes características:

Dimensiones marco

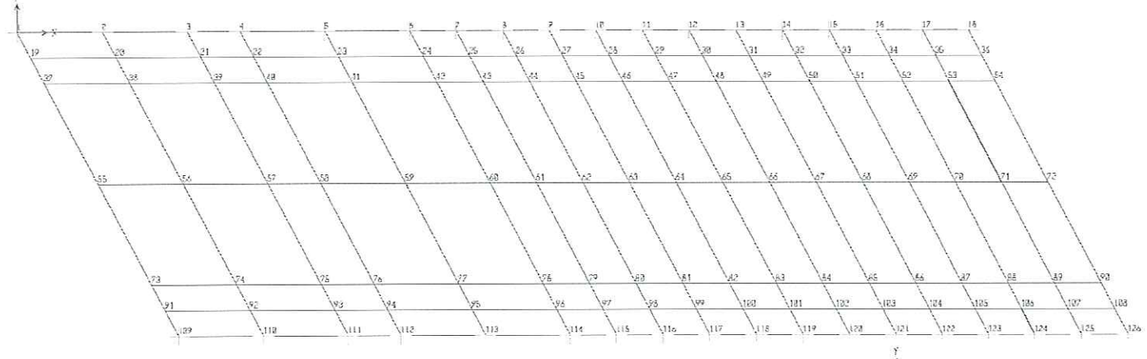
	B	C	D	E	K
[m]	7.20	0.60	0.60	0.50	6.00

Diensiones del Emparrillado

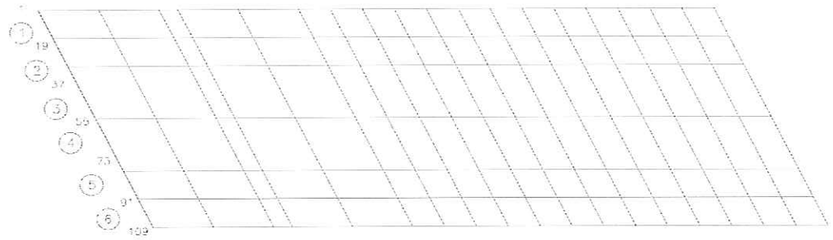
	L	M	N	O	P	Q	R	S	T
[m]	15.11	6.60	14.10	0.75	3.61	2.27	1.85	0.73	6.81



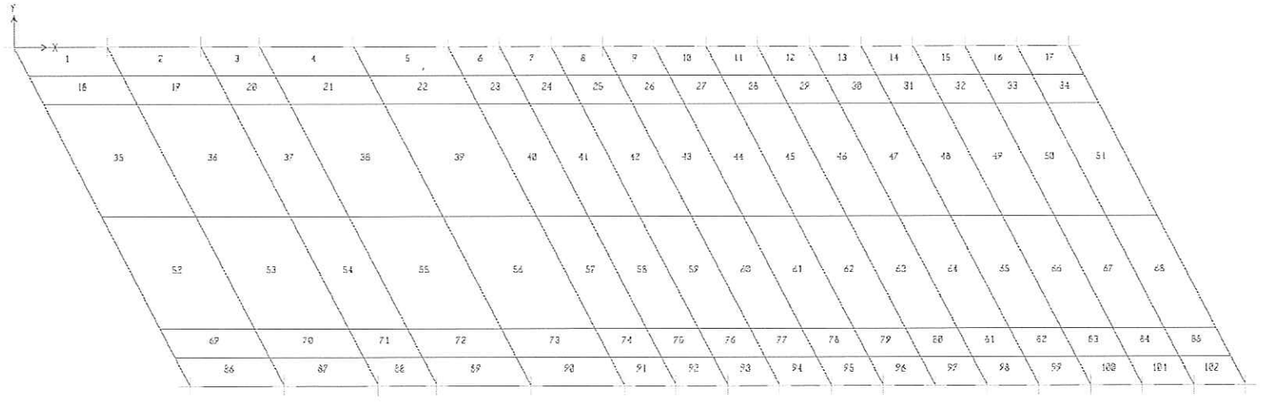
Esquema del modelo de cálculo



Numeración de nodos



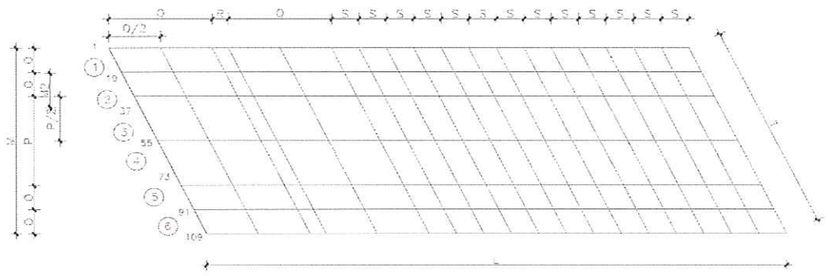
Numeración de Elementos tipo Barra



Numeración de Elementos tipo Shell

CÁLCULO TRANVERSAL LOSA SUPERIOR

1-CÁLCULO DEL MARCO TIPO



Características del Modelo de Cálculo

L	M	N	O	P	Q	R	S	T
15.11	6.60	14.10	0.75	3.61	2.27	1.85	0.73	6.81

Características de Elementos tipo barra

h	b	I	J
0.50	0.50	0.0052	0.0088

Barra	1	2	3	4	5	6
NI	1	19	37	55	73	91
NF	19	37	55	73	91	109

CARGAS

Peso propio: 2.50 t/m3

Carga permanente:

Balasto	Altura	0.56 m	Densidad	1.80 t/m^3
Tierras	Altura	0.65 m	Densidad	2.00 t/m^3

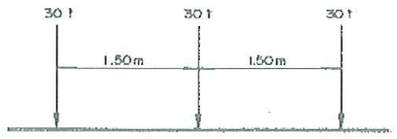
Sobrecargas verticales:

SC Terreno 3.000

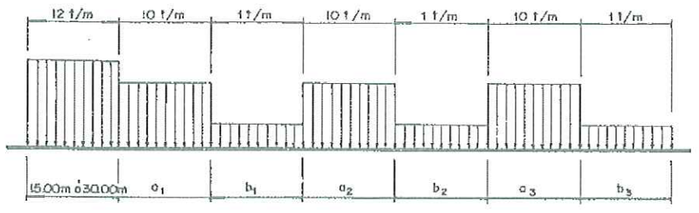
H-5	Tren A RENFE Via Izquierda	carga por carril	15 t
H-6	Tren A RENFE Via Derecha	carga por carril	15 t
H-7	Tren B RENFE Via Izquierda	carga por carril	6 t/m
H-8	Tren B RENFE Via Derecha	carga por carril	6 t/m

Coeficiente de impacto transversal= 1.6

TREN TIPO A



TREN TIPO B



f_c	25
Ucd(t)	318.8

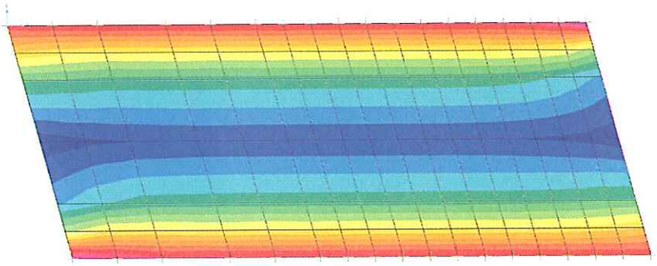
LOSA APOYADA
DIMENSIONAMIENTO A FLEXIÓN TRANSVERSAL

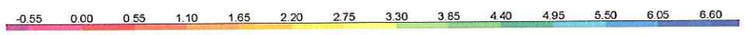
BARRA	NUDO	Md+	Md-	As,i (cm^2/m)	As,s (cm^2/m)
1	1	0.38	0.98	-	0.99
	19	10.83	2.35	11.30	-
2	19	15.00	3.25	15.92	-
	37	24.71	5.15	27.37	-
3	37	27.67	5.75	31.09	-
	55	45.39	8.87	56.66	-
4	55	46.53	9.11	58.56	-
	73	34.10	7.30	39.64	-
5	73	31.75	6.89	36.44	-
	91	21.01	4.90	22.88	-
6	91	16.11	3.86	17.17	-
	109	0.63	1.62	-	1.64

LOSA EMPOTRADA

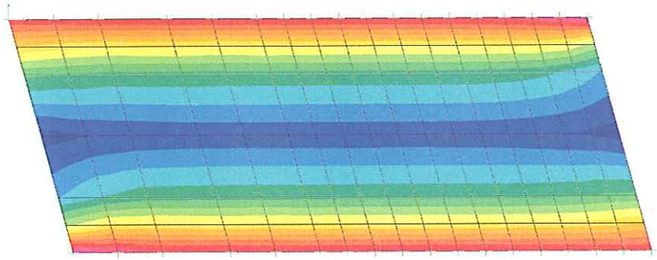
BARRA	NUDO	Md+	Md-	As,i (cm^2/m)	As,s (cm^2/m)
1	1	-3.32	-19.86	-	21.51
	18	-2.35	-14.62	-	15.49
2	18	-1.80	-11.44	-	11.96
	35	-0.32	-2.40	0.32	-
3	35	0.14	0.14	0.14	-
	52	18.10	2.81	19.45	-
4	52	19.25	3.00	20.80	-
	69	6.11	1.14	6.26	-
5	69	3.34	0.68	3.39	-
	86	-1.27	-8.52	-	8.80
6	86	-2.32	-14.45	-	15.29
	103	-5.27	-30.92	-	35.32

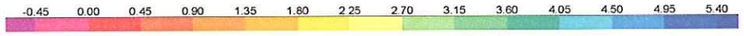
LOSA APOYADA



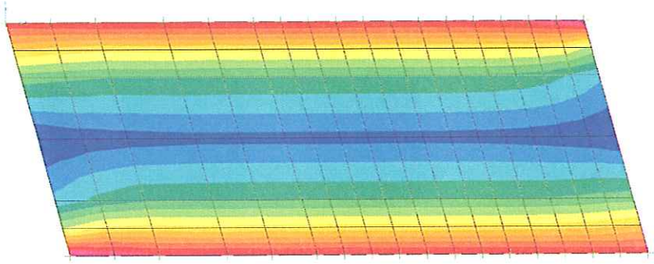


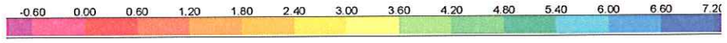
Momento Transversal PP



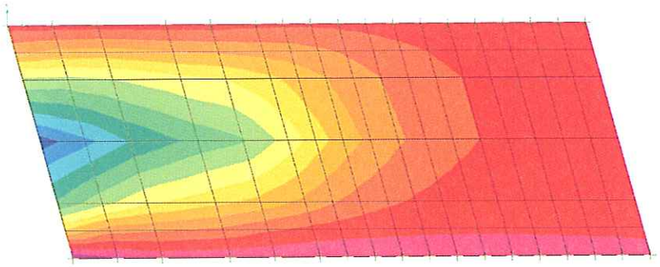


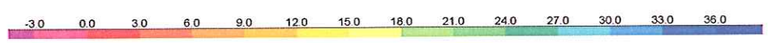
Momento Transversal Balasto



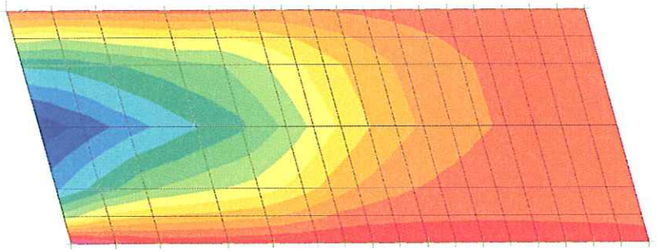


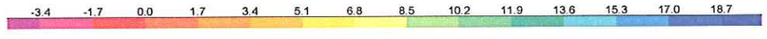
Momento Transversal Peso de Tierras



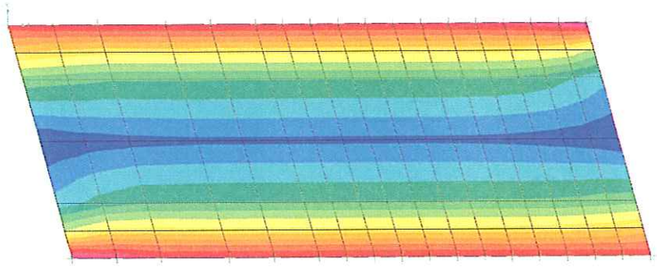


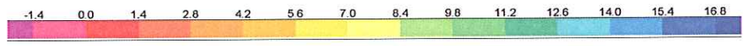
Momento Transversal Tren Tipo A



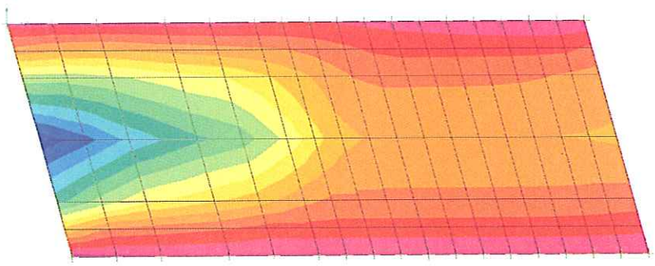


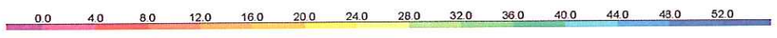
Momento Transversal Tren Tipo B



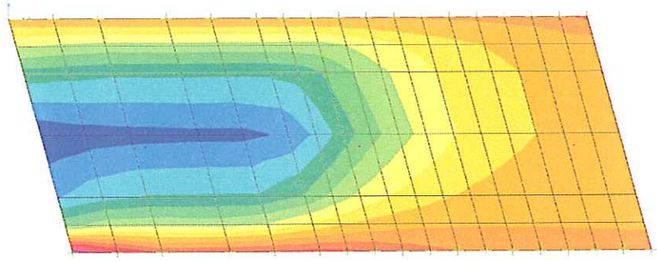


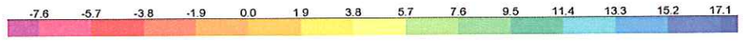
Momento Transversal SC.Uniforme





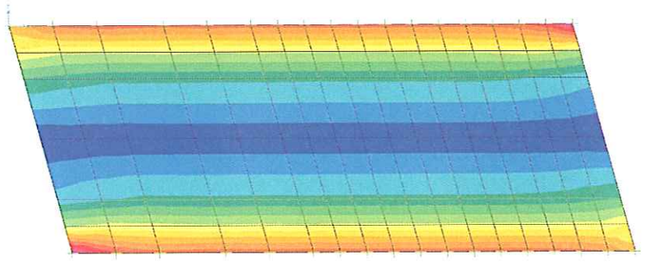
Momento Transversal Envolvente de SC(Max)

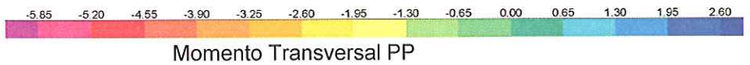




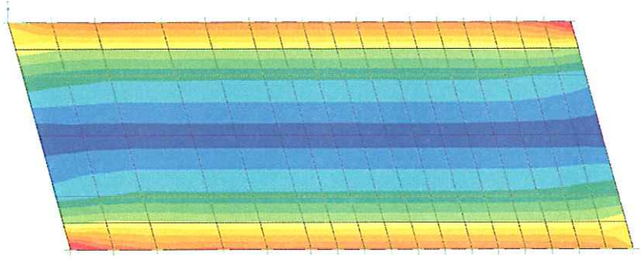
Momento Transversal Envolvente de SC(Min)

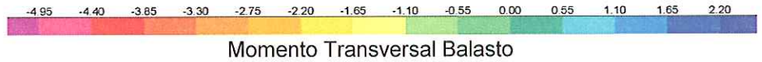
LOSA EMPOTRADA



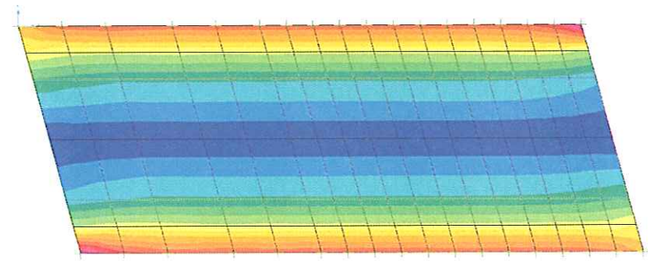


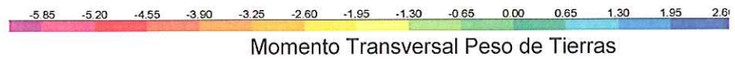
Momento Transversal PP



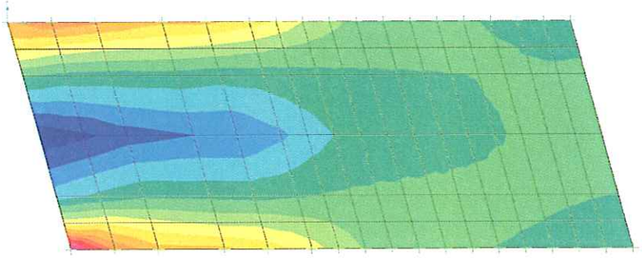


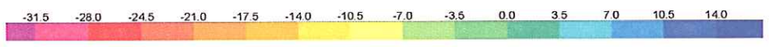
Momento Transversal Balasto



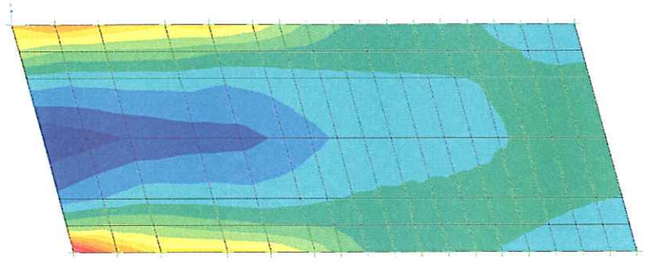


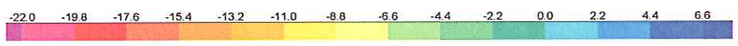
Momento Transversal Peso de Tierras



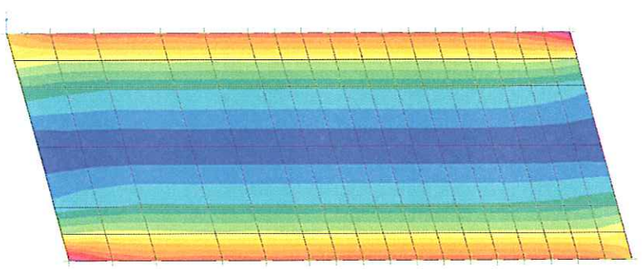


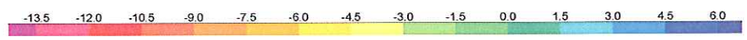
Momento Transversal Tren Tipo A



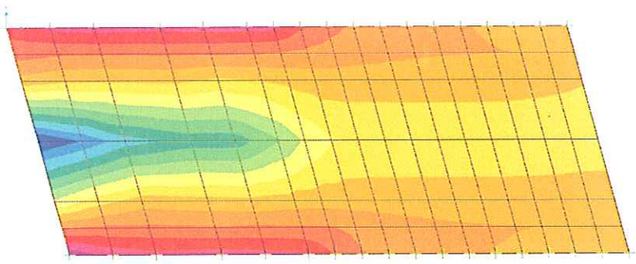


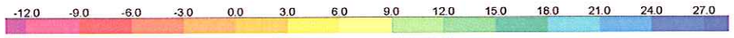
Momento Transversal Tren Tipo B



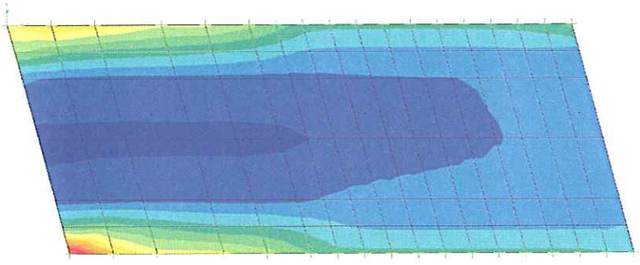


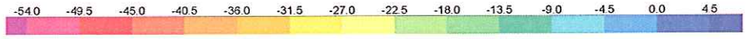
Momento Transversal SC.Uniforme





Momento Transversal Envolvente de SC(Max)





Momento Transversal Envolvente de SC(Min)

CÁLCULO TRANVERSAL LOSA SUPERIOR

MODELO DE CÁLCULO
Se arma una viga riostra de 0.50 m ancho

P.I. CAMINO PLA DE SOLER

	ARMADURAS cm²/m					
	Anterior		Cálculo		Final	
MODELO DE CÁLCULO	A_I	A_S	A_I	A_S	A_I	A_S
EMPARRILLADO	46	39.5	45.92	29.05	5ϕ25	5ϕ25
SAP			38.59	24.35		

P.I. CAMINO

	Anterior		Cálculo		Final	
MODELO DE CÁLCULO	A_I	A_S	A_I	A_S	A_I	A_S
EMPARRILLADO	46.75	44.5	61.69	42.23	7ϕ25	7ϕ25
SAP			58.56	35.32		

P.I. RIERA DE CAN JULIA

	Anterior		Cálculo		Final	
MODELO DE CÁLCULO	A_I	A_S	A_I	A_S	A_I	A_S
EMPARRILLADO	98	69	73.66	54.42	8ϕ25	8ϕ25
SAP			78.23	49.16		

P.I. RIERA DE CAN VIA

	Anterior		Cálculo		Final	
MODELO DE CÁLCULO	A_I	A_S	A_I	A_S	A_I	A_S
EMPARRILLADO	64.33	32.25	59.8	41.95	7ϕ25	7ϕ25
SAP			61.13	38.21		

COMPROBACIÓN A CORTANTE

	A_I	A_S	V+	V-	h
P.I. CAMINO PLA DE SOLER	24.5	24.5	30.56	-44.05	0.7
P.I. CAMINO	34.3	34.3	15.93	-32.38	0.5
P.I. RIERA DE CAN JULIA	39.2	39.2	37.82	-53.33	0.8
P.I. RIERA DE CAN VIA	34.3	34.3	29.21	-44.21	0.8

	Aflexión					Acortante				Dispuesta
	A_I	A_S	V+	V-	h	As,t (cm²/m)	ρ_1	ξ	Vcu(t)	As,t (cm²/m)
P.I. CAMINO PLA DE SOLER	49	49	61.12	-88.1	0.7	25.93	0.0075	1.55	27.4	37.67
P.I. CAMINO	68.6	68.6	31.86	-64.76	0.5	24.09	0.0152	1.67	25.7	37.67
P.I. RIERA DE CAN JULIA	78.4	78.4	75.64	-106.7	0.8	26.76	0.0105	1.52	34.4	37.67
P.I. RIERA DE CAN VIA	68.6	68.6	58.42	-88.42	0.8	20.56	0.0091	1.52	32.9	36.16

SIEGRIST Y MORENO, S.L.
PROYECTOS DE INGENIERÍA

SEGRE, 20 - Esc. Izda. - 1.º E
28002 - MADRID
TELEF. 91 564 94 34
FAX: 91 564 71 83
e-mail: siemor@ciccp.es

Inscrita en el Registro Mercantil de Madrid, tomo 44 general, folio 114, hoja nº M-662, inscripción 1ª - C.I.F.: B-79379087

Siegrist y Moreno, S.L., y en su nombre **D. Guillermo Siegrist Ridruejo**, Ingeniero de Caminos, Canales y Puertos, colegiado número 16204,

CERTIFICA:

que ha realizado los cálculos y planos del Proyecto Modificado Número 1 para Obra de las siguiente estructura:

"Paso Inferior de Camino"

del "*Proyecto de Construcción de la Línea Ferroviaria de Alta Velocidad Madrid-Barcelona-Frontera Francesa. Tramo: Sant Vicenç del Horts – Santa Coloma de Cervelló*"

y se hace responsable de los mismos.

Los cálculos y planos de esta estructura se han realizado de acuerdo con las siguientes normativas:

1. "Instrucción de Hormigón Estructural EHE".
2. " Borrador de la Instrucción sobre las Acciones a considerar en el proyecto de Puentes de Ferrocarril - IAPF" de fecha febrero de 2003, en lo relativo a las acciones y sus combinaciones".
3. "Instrucción Relativa a las Acciones a considerar en el proyecto de Puentes de Ferrocarril - IAPF" de fecha 25 de junio de 1975.
4. "Norma de construcción sismorresistente: parte general y edificación". NCSE-02 (Real Decreto 997/2002, de 27 de septiembre, B.O.E. 11-X-2002).
5. "Eurocódigo 1: Bases de Proyecto y Acciones en Estructuras. Parte 3: Cargas de Tráfico en Puentes (EC 1.1.3) UNE-ENV 1991-3" de fecha octubre de 1997.
6. "Eurocódigo 1: Bases de Proyecto y Acciones en Estructuras. Parte 1: Bases de Proyecto (EC 1.1) UNE-ENV 1991-1".

Madrid, a 13 de Diciembre de 2004
Firmado:

SIEGRIST Y MORENO, S.L.
SEGRE, 20 - 28002 MADRID
Telef. 91 564 94 34
C.I.F. B-79379087

Guillermo Siegrist Ridruejo
Ingeniero de Caminos, Canales y Puertos
Colegiado 16204

Siegrist y Moreno S.L.

LAV SANTA COLOMA DE CERVELLÓ
P.I. CAMINO
ENVOLVENTE DE MODELOS DE MUELLES

FECHA: 24/11/2005

RESUMEN DE ARMADO SECCION TIPO MARCO: armado losa inferior → ok

fcd(t/m2)= 1666.67
fyd(t/m2)= 4.43 ANCHO UNIDAD= 1.000

	BARRA	NUDO	HIPÓT.	As,inf(cm2/m)	FLEXION As,sup(cm2/m)	Ainf,dis	Asup,disp	CORTANTE A90	COMPROBACION Asup	Ainf	A90
*	33	1	Nmax	24.67	0.00	29.44	11.49	25.26	ok	ok	ok
			Nmin	27.98	0.00	29.44	11.49	31.06	ok	ok	ok
			Mmax	28.42	0.00	29.44	11.49	31.06	ok	ok	ok
			Mmin	17.84	0.00	29.44	11.49	29.87	ok	ok	ok
			Qmax	28.42	0.00	29.44	11.49	31.06	ok	ok	ok
			Qmin	17.84	0.00	29.44	11.49	29.87	ok	ok	ok
	x=0.22	14	Nmax	17.42	0.00	29.44	11.49	26.74	ok	ok	ok
			Nmin	19.11	0.00	29.44	11.49	32.64	ok	ok	ok
			Mmax	19.89	0.00	29.44	11.49	32.64	ok	ok	ok
			Mmin	13.53	0.00	29.44	11.49	31.36	ok	ok	ok
			Qmax	19.89	0.00	29.44	11.49	32.64	ok	ok	ok
			Qmin	13.53	0.00	29.44	11.49	31.36	ok	ok	ok
	34	14	Nmax	17.43	0.00	29.44	11.49	23.76	ok	ok	ok
			Nmin	19.13	0.00	29.44	11.49	28.39	ok	ok	ok
			Mmax	19.90	0.00	29.44	11.49	28.39	ok	ok	ok
			Mmin	13.52	0.00	29.44	11.49	27.77	ok	ok	ok
			Qmax	19.90	0.00	29.44	11.49	28.39	ok	ok	ok
			Qmin	13.52	0.00	29.44	11.49	27.77	ok	ok	ok
	x=0.44	16	Nmax	10.99	0.00	29.44	11.49	25.45	ok	ok	ok
			Nmin	11.55	0.00	29.44	11.49	30.16	ok	ok	ok
			Mmax	12.41	0.00	29.44	11.49	30.16	ok	ok	ok
			Mmin	9.59	0.00	29.44	11.49	29.47	ok	ok	ok
			Qmax	12.41	0.00	29.44	11.49	30.16	ok	ok	ok
			Qmin	9.59	0.00	29.44	11.49	29.47	ok	ok	ok
	35	16	Nmax	11.00	0.00	29.44	11.49	22.47	ok	ok	ok
			Nmin	11.55	0.00	29.44	11.49	26.05	ok	ok	ok
			Mmax	12.42	0.00	29.44	11.49	26.52	ok	ok	ok
			Mmin	9.60	0.00	29.44	11.49	26.12	ok	ok	ok
			Qmax	12.42	0.00	29.44	11.49	26.52	ok	ok	ok
			Qmin	9.60	0.00	29.44	11.49	26.12	ok	ok	ok
		18	Nmax	6.01	0.00	29.44	11.49	24.68	ok	ok	ok
			Nmin	6.01	0.00	29.44	11.49	28.28	ok	ok	ok
			Mmax	6.04	0.00	29.44	11.49	28.79	ok	ok	ok
			Mmin	6.01	0.00	29.44	11.49	25.79	ok	ok	ok
			Qmax	6.01	0.00	29.44	11.49	28.79	ok	ok	ok
			Qmin	6.01	0.00	29.44	11.49	28.20	ok	ok	ok
	36	18	Nmax	6.02	0.00	29.44	11.49	21.82	ok	ok	ok
			Nmin	6.02	0.00	29.44	11.49	24.26	ok	ok	ok
			Mmax	6.04	0.00	29.44	11.49	25.51	ok	ok	ok
			Mmin	6.02	0.00	29.44	11.49	22.92	ok	ok	ok
			Qmax	6.02	0.00	29.44	11.49	25.56	ok	ok	ok
			Qmin	6.02	0.00	29.44	11.49	25.10	ok	ok	ok
		20	Nmax	4.24	4.48	29.44	11.49	24.41	ok	ok	ok
			Nmin	4.24	1.92	29.44	11.49	27.89	ok	ok	ok
			Mmax	4.24	1.92	29.44	11.49	15.19	ok	ok	ok
			Mmin	4.24	4.70	29.44	11.49	27.28	ok	ok	ok
			Qmax	4.24	4.70	29.44	11.49	28.58	ok	ok	ok
			Qmin	4.24	1.92	29.44	11.49	25.88	ok	ok	ok
	37	20	Nmax	4.24	4.49	29.44	39.54	21.59	ok	ok	ok
			Nmin	4.24	1.92	29.44	39.54	24.05	ok	ok	ok
			Mmax	4.24	1.92	29.44	39.54	13.02	ok	ok	ok
			Mmin	4.24	4.70	29.44	39.54	24.15	ok	ok	ok

Siegrist y Moreno S.L.

LAV SANTA COLOMA DE CERVELLÓ
P.I. CAMINO
ENVOLVENTE DE MODELOS DE MUELLES

FECHA: 24/11/2005

RESUMEN DE ARMADO SECCION TIPO MARCO: armado losa inferior

fcd(t/m2)= 1666.67
fyd(t/m2)= 4.43 ANCHO UNIDAD= 1.000

BARRA	NUDO	HIPÓT.	As,inf(cm2/m)	FLEXION As,sup(cm2/m)	Ainf,dis	Asup,disp	CORTANTE A90	COMPROBACION Asup	Ainf	A90
		Qmax	4.24	4.70	29.44	39.54	25.38	ok	ok	ok
		Qmin	4.24	1.92	29.44	39.54	22.78	ok	ok	ok
	22	Nmax	2.74	9.03	29.44	39.54	18.89	ok	ok	ok
		Nmin	2.74	5.42	29.44	39.54	20.74	ok	ok	ok
		Mmax	2.74	4.71	29.44	39.54	10.97	ok	ok	ok
		Mmin	2.74	9.94	29.44	39.54	22.33	ok	ok	ok
		Qmax	2.74	9.94	29.44	39.54	22.33	ok	ok	ok
		Qmin	2.74	4.71	29.44	39.54	21.29	ok	ok	ok
38	22	Nmax	2.74	9.03	11.49	39.54	14.74	ok	ok	ok
		Nmin	2.74	5.42	11.49	39.54	15.06	ok	ok	ok
		Mmax	2.74	4.71	11.49	39.54	8.39	ok	ok	ok
		Mmin	2.74	9.95	11.49	39.54	17.68	ok	ok	ok
		Qmax	2.74	9.95	11.49	39.54	17.68	ok	ok	ok
		Qmin	2.74	4.71	11.49	39.54	16.80	ok	ok	ok
	24	Nmax	0.05	16.97	11.49	39.54	13.00	ok	ok	ok
		Nmin	0.05	13.68	11.49	39.54	13.22	ok	ok	ok
		Mmax	0.05	9.50	11.49	39.54	6.75	ok	ok	ok
		Mmin	0.05	19.17	11.49	39.54	15.79	ok	ok	ok
		Qmax	0.05	19.17	11.49	39.54	15.79	ok	ok	ok
		Qmin	0.05	9.50	11.49	39.54	15.36	ok	ok	ok
39	24	Nmax	0.05	16.97	11.49	39.54	8.08	ok	ok	ok
		Nmin	0.05	13.68	11.49	39.54	7.69	ok	ok	ok
		Mmax	0.05	9.50	11.49	39.54	3.61	ok	ok	ok
		Mmin	0.05	19.17	11.49	39.54	10.17	ok	ok	ok
		Qmax	0.05	19.17	11.49	39.54	10.17	ok	ok	ok
		Qmin	0.05	9.50	11.49	39.54	9.62	ok	ok	ok
	26	Nmax	0.00	23.29	11.49	39.54	7.32	ok	ok	ok
		Nmin	0.00	19.75	11.49	39.54	7.14	ok	ok	ok
		Mmax	0.00	13.23	11.49	39.54	3.20	ok	ok	ok
		Mmin	0.00	26.58	11.49	39.54	9.33	ok	ok	ok
		Qmax	0.00	26.58	11.49	39.54	9.33	ok	ok	ok
		Qmin	0.00	13.23	11.49	39.54	8.98	ok	ok	ok
40	26	Nmax	0.00	23.29	11.49	39.54	3.20	ok	ok	ok
		Nmin	0.00	19.75	11.49	39.54	2.32	ok	ok	ok
		Mmax	0.00	13.23	11.49	39.54	No necesita	ok	ok	ok
		Mmin	0.00	26.58	11.49	39.54	3.93	ok	ok	ok
		Qmax	0.00	26.58	11.49	39.54	3.93	ok	ok	ok
		Qmin	0.00	13.23	11.49	39.54	3.47	ok	ok	ok
	28	Nmax	0.00	27.88	11.49	39.54	2.28	ok	ok	ok
		Nmin	0.00	23.55	11.49	39.54	No necesita	ok	ok	ok
		Mmax	0.00	15.91	11.49	39.54	No necesita	ok	ok	ok
		Mmin	0.00	32.02	11.49	39.54	3.56	ok	ok	ok
		Qmax	0.00	32.02	11.49	39.54	3.56	ok	ok	ok
		Qmin	0.00	15.91	11.49	39.54	3.27	ok	ok	ok
41	28	Nmax	0.00	27.88	11.49	39.54	No necesita	ok	ok	ok
		Nmin	0.00	23.55	11.49	39.54	No necesita	ok	ok	ok
		Mmax	0.00	15.91	11.49	39.54	No necesita	ok	ok	ok
		Mmin	0.00	32.02	11.49	39.54	No necesita	ok	ok	ok
		Qmax	0.00	32.02	11.49	39.54	No necesita	ok	ok	ok
		Qmin	0.00	15.91	11.49	39.54	No necesita	ok	ok	ok
	30	Nmax	0.00	30.66	11.49	39.54	No necesita	ok	ok	ok
		Nmin	0.00	25.02	11.49	39.54	No necesita	ok	ok	ok

Siegrist y Moreno S.L.

LAV SANTA COLOMA DE CERVELLÓ
P.I. CAMINO
ENVOLVENTE DE MODELOS DE MUELLES

FECHA: 24/11/2005

RESUMEN DE ARMADO SECCION TIPO MARCO: armado losa inferior

fcd(t/m2)= 1666.67
fyd(t/m2)= 4.43
ANCHO UNIDAD= 1.000

BARRA	NUDO	HIPÓT.	As,inf(cm2/m)	FLEXION As,sup(cm2/m)	Ainf,dis	Asup,disp	CORTANTE A90	COMPROBACION Asup	Ainf	A90
		Mmax	0.00	17.64	11.49	39.54	No necesita	ok	ok	ok
		Mmin	0.00	35.33	11.49	39.54	No necesita	ok	ok	ok
		Qmax	0.00	35.33	11.49	39.54	No necesita	ok	ok	ok
		Qmin	0.00	17.64	11.49	39.54	No necesita	ok	ok	ok
42	30	Nmax	0.00	30.66	11.49	39.54	No necesita	ok	ok	ok
		Nmin	0.00	25.02	11.49	39.54	No necesita	ok	ok	ok
		Mmax	0.00	17.64	11.49	39.54	No necesita	ok	ok	ok
		Mmin	0.00	35.33	11.49	39.54	No necesita	ok	ok	ok
		Qmax	0.00	35.33	11.49	39.54	No necesita	ok	ok	ok
		Qmin	0.00	21.47	11.49	39.54	No necesita	ok	ok	ok
	32	Nmax	0.00	32.63	11.49	39.54	No necesita	ok	ok	ok
		Nmin	0.00	24.21	11.49	39.54	No necesita	ok	ok	ok
		Mmax	0.00	18.74	11.49	39.54	No necesita	ok	ok	ok
		Mmin	0.00	37.56	11.49	39.54	No necesita	ok	ok	ok
		Qmax	0.00	37.56	11.49	39.54	No necesita	ok	ok	ok
		Qmin	0.00	20.67	11.49	39.54	No necesita	ok	ok	ok
43	32	Nmax	0.00	32.63	11.49	39.54	No necesita	ok	ok	ok
		Nmin	0.00	24.20	11.49	39.54	No necesita	ok	ok	ok
		Mmax	0.00	18.74	11.49	39.54	No necesita	ok	ok	ok
		Mmin	0.00	37.55	11.49	39.54	No necesita	ok	ok	ok
		Qmax	0.00	32.63	11.49	39.54	No necesita	ok	ok	ok
		Qmin	0.00	36.47	11.49	39.54	No necesita	ok	ok	ok
	34	Nmax	0.00	32.91	11.49	39.54	No necesita	ok	ok	ok
		Nmin	0.00	21.27	11.49	39.54	No necesita	ok	ok	ok
		Mmax	0.00	18.80	11.49	39.54	No necesita	ok	ok	ok
		Mmin	0.00	37.79	11.49	39.54	No necesita	ok	ok	ok
		Qmax	0.00	32.91	11.49	39.54	No necesita	ok	ok	ok
		Qmin	0.00	35.83	11.49	39.54	No necesita	ok	ok	ok
44	34	Nmax	0.00	32.90	11.49	39.54	No necesita	ok	ok	ok
		Nmin	0.00	21.27	11.49	39.54	2.13	ok	ok	ok
		Mmax	0.00	18.80	11.49	39.54	No necesita	ok	ok	ok
		Mmin	0.00	37.78	11.49	39.54	2.13	ok	ok	ok
		Qmax	0.00	18.80	11.49	39.54	No necesita	ok	ok	ok
		Qmin	0.00	37.78	11.49	39.54	2.13	ok	ok	ok
	36	Nmax	0.00	31.24	11.49	39.54	No necesita	ok	ok	ok
		Nmin	0.00	17.76	11.49	39.54	2.49	ok	ok	ok
		Mmax	0.00	17.76	11.49	39.54	No necesita	ok	ok	ok
		Mmin	0.00	35.70	11.49	39.54	2.49	ok	ok	ok
		Qmax	0.00	17.76	11.49	39.54	No necesita	ok	ok	ok
		Qmin	0.00	35.70	11.49	39.54	2.49	ok	ok	ok
45	36	Nmax	0.00	31.24	11.49	39.54	1.64	ok	ok	ok
		Nmin	0.00	17.76	11.49	39.54	7.89	ok	ok	ok
		Mmax	0.00	17.76	11.49	39.54	1.64	ok	ok	ok
		Mmin	0.00	35.70	11.49	39.54	7.89	ok	ok	ok
		Qmax	0.00	17.76	11.49	39.54	1.64	ok	ok	ok
		Qmin	0.00	35.70	11.49	39.54	7.89	ok	ok	ok
	38	Nmax	0.00	27.59	11.49	39.54	2.25	ok	ok	ok
		Nmin	0.00	15.59	11.49	39.54	8.86	ok	ok	ok
		Mmax	0.00	15.59	11.49	39.54	2.25	ok	ok	ok
		Mmin	0.00	31.29	11.49	39.54	8.86	ok	ok	ok
		Qmax	0.00	15.59	11.49	39.54	2.25	ok	ok	ok
		Qmin	0.00	31.29	11.49	39.54	8.86	ok	ok	ok

Siegrist y Moreno S.L.

LAV SANTA COLOMA DE CERVELLÓ
P.I. CAMINO
ENVOLVENTE DE MODELOS DE MUELLES

FECHA: 24/11/2005

RESUMEN DE ARMADO SECCION TIPO MARCO: armado losa inferior

fcd(t/m2)= 1666.67
fyd(t/m2)= 4.43
ANCHO UNIDAD= 1.000

BARRA	NUDO	HIPÓT.	As,inf(cm2/m)	FLEXION As,sup(cm2/m)	Ainf,dis	Asup,disp	CORTANTE A90	COMPROBACION Asup	Ainf	A90
46	38	Nmax	0.00	27.59	11.49	39.54	5.43	ok	ok	ok
		Nmin	0.00	15.59	11.49	39.54	14.25	ok	ok	ok
		Mmax	0.00	15.59	11.49	39.54	5.43	ok	ok	ok
		Mmin	0.00	31.30	11.49	39.54	14.25	ok	ok	ok
		Qmax	0.00	15.59	11.49	39.54	6.89	ok	ok	ok
		Qmin	0.00	31.30	11.49	39.54	14.25	ok	ok	ok
	40	Nmax	0.00	21.97	11.49	39.54	7.40	ok	ok	ok
		Nmin	0.00	12.26	11.49	39.54	17.23	ok	ok	ok
		Mmax	0.00	12.26	11.49	39.54	14.94	ok	ok	ok
		Mmin	0.00	24.63	11.49	39.54	15.46	ok	ok	ok
		Qmax	0.00	12.26	11.49	39.54	7.40	ok	ok	ok
		Qmin	0.00	24.63	11.49	39.54	17.23	ok	ok	ok
47	40	Nmax	0.00	21.97	11.49	39.54	10.58	ok	ok	ok
		Nmin	0.00	12.26	11.49	39.54	22.60	ok	ok	ok
		Mmax	0.00	12.26	11.49	39.54	19.65	ok	ok	ok
		Mmin	0.00	24.63	11.49	39.54	20.53	ok	ok	ok
		Qmax	0.00	12.26	11.49	39.54	13.54	ok	ok	ok
		Qmin	0.00	24.63	11.49	39.54	22.60	ok	ok	ok
	42	Nmax	3.85	14.46	11.49	39.54	13.54	ok	ok	ok
		Nmin	8.06	7.76	11.49	39.54	19.13	ok	ok	ok
		Mmax	8.06	7.76	11.49	39.54	19.13	ok	ok	ok
		Mmin	3.85	15.82	11.49	39.54	13.53	ok	ok	ok
		Qmax	3.85	7.76	11.49	39.54	14.68	ok	ok	ok
		Qmin	8.06	15.82	11.49	39.54	19.13	ok	ok	ok
48	42	Nmax	3.85	14.46	29.44	39.54	15.30	ok	ok	ok
		Nmin	8.07	7.76	29.44	39.54	23.14	ok	ok	ok
		Mmax	8.07	7.76	29.44	39.54	23.14	ok	ok	ok
		Mmin	3.85	15.82	29.44	39.54	18.66	ok	ok	ok
		Qmax	3.85	7.76	29.44	39.54	19.59	ok	ok	ok
		Qmin	8.07	15.82	29.44	39.54	23.14	ok	ok	ok
	44	Nmax	6.88	10.00	29.44	39.54	19.59	ok	ok	ok
		Nmin	13.89	5.08	29.44	39.54	21.43	ok	ok	ok
		Mmax	13.89	5.08	29.44	39.54	21.43	ok	ok	ok
		Mmin	6.88	10.64	29.44	39.54	19.84	ok	ok	ok
		Qmax	6.88	5.08	29.44	39.54	20.68	ok	ok	ok
		Qmin	13.89	10.64	29.44	39.54	21.43	ok	ok	ok
49	44	Nmax	6.88	10.00	29.44	11.49	20.68	ok	ok	ok
		Nmin	13.89	5.08	29.44	11.49	24.12	ok	ok	ok
		Mmax	13.89	5.08	29.44	11.49	24.12	ok	ok	ok
		Mmin	6.88	10.63	29.44	11.49	23.36	ok	ok	ok
		Qmax	6.88	5.08	29.44	11.49	24.06	ok	ok	ok
		Qmin	13.89	10.63	29.44	11.49	24.12	ok	ok	ok
	46	Nmax	10.23	5.10	29.44	11.49	24.06	ok	ok	ok
		Nmin	20.46	2.25	29.44	11.49	22.67	ok	ok	ok
		Mmax	20.46	2.25	29.44	11.49	22.67	ok	ok	ok
		Mmin	10.23	5.10	29.44	11.49	24.02	ok	ok	ok
		Qmax	10.23	2.25	29.44	11.49	21.96	ok	ok	ok
		Qmin	20.46	4.98	29.44	11.49	26.05	ok	ok	ok
50	46	Nmax	10.24	5.10	29.44	11.49	26.18	ok	ok	ok
		Nmin	20.46	2.25	29.44	11.49	25.34	ok	ok	ok
		Mmax	20.46	2.25	29.44	11.49	25.34	ok	ok	ok
		Mmin	10.24	5.10	29.44	11.49	27.27	ok	ok	ok

Siegrist y Moreno S.L.

LAV SANTA COLOMA DE CERVELLÓ
P.I. CAMINO
ENVOLVENTE DE MODELOS DE MUELLES

FECHA: 24/11/2005

RESUMEN DE ARMADO SECCION TIPO MARCO: armado losa inferior

fcd(t/m2)= 1666.67
fyd(t/m2)= 4.43
ANCHO UNIDAD= 1.000

BARRA	NUDO	HIPÓT.	As,inf(cm2/m)	FLEXION As,sup(cm2/m)	Ainf,dis	Asup,disp	CORTANTE A90	COMPROBACION Asup	Ainf	A90
		Qmax	10.24	2.25	29.44	11.49	24.97	ok	ok	ok
		Qmin	20.46	4.98	29.44	11.49	29.67	ok	ok	ok
	48	Nmax	13.92	0.71	29.44	11.49	29.64	ok	ok	ok
		Nmin	27.88	0.71	29.44	11.49	24.00	ok	ok	ok
		Mmax	27.88	0.71	29.44	11.49	27.91	ok	ok	ok
		Mmin	13.92	0.71	29.44	11.49	26.81	ok	ok	ok
		Qmax	13.92	0.71	29.44	11.49	14.34	ok	ok	ok
		Qmin	27.88	0.71	29.44	11.49	29.75	ok	ok	ok
51	48	Nmax	13.92	0.71	29.44	11.49	28.94	ok	ok	ok
		Nmin	27.87	0.71	29.44	11.49	26.65	ok	ok	ok
		Mmax	27.87	0.71	29.44	11.49	31.79	ok	ok	ok
		Mmin	13.92	0.71	29.44	11.49	30.55	ok	ok	ok
		Qmax	13.92	0.71	29.44	11.49	16.64	ok	ok	ok
		Qmin	27.87	0.71	29.44	11.49	33.82	ok	ok	ok
	50	Nmax	17.98	0.00	29.44	11.49	30.55	ok	ok	ok
		Nmin	36.29	0.00	29.44	11.49	25.38	-6.85	ok	ok
		Mmax	36.29	0.00	29.44	11.49	30.16	-6.85	ok	ok
		Mmin	17.98	0.00	29.44	11.49	28.59	ok	ok	ok
		Qmax	17.98	0.00	29.44	11.49	14.08	ok	ok	ok
		Qmin	36.29	0.00	29.44	11.49	30.16	-6.85	ok	ok
52	50	Nmax	17.98	0.00	29.44	11.49	29.62	ok	ok	ok
		Nmin	36.29	0.00	29.44	11.49	27.98	-6.85	ok	ok
		Mmax	36.29	0.00	29.44	11.49	34.32	-6.85	ok	ok
		Mmin	17.98	0.00	29.44	11.49	32.67	ok	ok	ok
		Qmax	17.98	0.00	29.44	11.49	16.41	ok	ok	ok
		Qmin	36.29	0.00	29.44	11.49	34.32	-6.85	ok	ok
	52	Nmax	22.43	0.00	29.44	11.49	32.67	ok	ok	ok
		Nmin	45.90	0.00	29.44	11.49	26.74	-16.47	ok	ok
		Mmax	45.90	0.00	29.44	11.49	32.17	-16.47	ok	ok
		Mmin	22.43	0.00	29.44	11.49	31.02	ok	ok	ok
		Qmax	22.43	0.00	29.44	11.49	14.75	ok	ok	ok
		Qmin	45.90	0.00	29.44	11.49	32.17	-16.47	ok	ok

losa INFERIOR → cálculo seguro con lo previamente hormigonado.

Siegrist y Moreno S.L.

LAV SANTA COLOMA DE CERVELLÓ
P.I. CAMINO
ENVOLVENTE DE MODELOS DE MUELLES

FECHA: 24/11/2005

RESUMEN DE ARMADO SECCION TIPO MARCO: armado losa superior

fcd(t/m2)= 1666.67
fyd(t/m2)= 4.43
ANCHO UNIDAD= 1.000

	BARRA	NUDO	HIPÓT.	As,inf(cm2/m)	FLEXION As,sup(cm2/m)	Ainf,dis	Asup,disp	CORTANTE A90	COMPROBACION Ainf	Asup	A90
*	13	13	Nmax	0.00	23.86	13.40	40.27	26.32	ok	ok	ok
			Nmin	0.00	51.32	13.40	40.27	29.09	ok	-11.06	ok
			Mmax	0.00	21.24	13.40	40.27	10.81	ok	ok	ok
			Mmin	0.00	51.32	13.40	40.27	29.44	ok	-11.06	ok
			Qmax	0.00	21.24	13.40	40.27	10.81	ok	ok	ok
			Qmin	0.00	51.32	13.40	40.27	29.44	ok	-11.06	ok
		15	Nmax	0.00	17.05	13.40	40.27	25.07	ok	ok	ok
			Nmin	0.00	40.15	13.40	40.27	28.51	ok	ok	ok
			Mmax	0.00	17.05	13.40	40.27	10.44	ok	ok	ok
			Mmin	0.00	40.15	13.40	40.27	28.51	ok	ok	ok
			Qmax	0.00	17.05	13.40	40.27	10.44	ok	ok	ok
			Qmin	0.00	40.15	13.40	40.27	28.98	ok	ok	ok
	14	15	Nmax	0.00	17.05	13.40	40.27	25.07	ok	ok	ok
			Nmin	0.00	40.15	13.40	40.27	28.56	ok	ok	ok
			Mmax	0.00	17.05	13.40	40.27	10.44	ok	ok	ok
			Mmin	0.00	40.15	13.40	40.27	28.56	ok	ok	ok
			Qmax	0.00	17.05	13.40	40.27	10.44	ok	ok	ok
			Qmin	0.00	40.15	13.40	40.27	29.00	ok	ok	ok
		17	Nmax	0.00	13.26	13.40	40.27	24.07	ok	ok	ok
			Nmin	0.00	30.45	13.40	40.27	28.01	ok	ok	ok
			Mmax	0.00	13.26	13.40	40.27	10.36	ok	ok	ok
			Mmin	0.00	30.85	13.40	40.27	24.24	ok	ok	ok
			Qmax	0.00	13.26	13.40	40.27	10.36	ok	ok	ok
			Qmin	0.00	30.45	13.40	40.27	28.72	ok	ok	ok
	15	17	Nmax	0.00	13.25	46.13	40.27	24.08	ok	ok	ok
			Nmin	0.00	30.44	46.13	40.27	28.05	ok	ok	ok
			Mmax	0.00	13.25	46.13	40.27	10.37	ok	ok	ok
			Mmin	0.00	30.84	46.13	40.27	24.27	ok	ok	ok
			Qmax	0.00	13.25	46.13	40.27	10.37	ok	ok	ok
			Qmin	0.00	30.44	46.13	40.27	28.72	ok	ok	ok
		19	Nmax	0.11	9.83	46.13	40.27	23.68	ok	ok	ok
			Nmin	0.11	22.00	46.13	40.27	26.33	ok	ok	ok
			Mmax	0.11	9.83	46.13	40.27	10.84	ok	ok	ok
			Mmin	0.11	23.05	46.13	40.27	25.06	ok	ok	ok
			Qmax	0.11	9.83	46.13	40.27	10.84	ok	ok	ok
			Qmin	0.11	22.00	46.13	40.27	27.75	ok	ok	ok
	16	19	Nmax	0.10	9.83	46.13	40.27	23.73	ok	ok	ok
			Nmin	0.10	22.00	46.13	40.27	26.36	ok	ok	ok
			Mmax	0.10	9.83	46.13	40.27	10.86	ok	ok	ok
			Mmin	0.10	23.05	46.13	40.27	25.09	ok	ok	ok
			Qmax	0.10	9.83	46.13	40.27	10.86	ok	ok	ok
			Qmin	0.10	22.00	46.13	40.27	27.80	ok	ok	ok
		21	Nmax	1.24	6.73	46.13	40.27	23.11	ok	ok	ok
			Nmin	1.13	14.67	46.13	40.27	27.71	ok	ok	ok
			Mmax	1.24	6.73	46.13	40.27	23.11	ok	ok	ok
			Mmin	1.13	15.86	46.13	40.27	27.71	ok	ok	ok
			Qmax	1.13	6.73	46.13	40.27	11.19	ok	ok	ok
			Qmin	1.13	15.86	46.13	40.27	27.71	ok	ok	ok
	17	21	Nmax	1.24	6.73	46.13	40.27	23.19	ok	ok	ok
			Nmin	1.13	14.67	46.13	40.27	27.80	ok	ok	ok
			Mmax	1.24	6.73	46.13	40.27	23.19	ok	ok	ok
			Mmin	1.13	15.86	46.13	40.27	27.80	ok	ok	ok

Siegrist y Moreno S.L.

LAV SANTA COLOMA DE CERVELLÓ
P.I. CAMINO
ENVOLVENTE DE MODELOS DE MUELLES

FECHA: 24/11/2005

RESUMEN DE ARMADO SECCION TIPO MARCO: armado losa superior

fcd(t/m2)= 1666.67
fyd(t/m2)= 4.43 ANCHO UNIDAD= 1.000

				FLEXION			CORTANTE	COMPROBACION		
BARRA	NUDO	HIPÓT.	As,inf(cm2/m)	As,sup(cm2/m)	Ainf,dis	Asup,disp	A90	Ainf	Asup	A90
		Qmax	1.13	6.73	46.13	40.27	11.23	ok	ok	ok
		Qmin	1.13	15.86	46.13	40.27	27.80	ok	ok	ok
	23	Nmax	6.01	3.95	46.13	40.27	17.72	ok	ok	ok
		Nmin	4.53	8.30	46.13	40.27	27.60	ok	ok	ok
		Mmax	6.53	3.95	46.13	40.27	23.99	ok	ok	ok
		Mmin	3.42	9.19	46.13	40.27	25.56	ok	ok	ok
		Qmax	3.42	3.95	46.13	40.27	8.93	ok	ok	ok
		Qmin	4.53	9.19	46.13	40.27	27.60	ok	ok	ok
18	23	Nmax	6.01	3.95	46.13	40.27	17.72	ok	ok	ok
		Nmin	4.53	8.30	46.13	40.27	27.60	ok	ok	ok
		Mmax	6.53	3.95	46.13	40.27	23.99	ok	ok	ok
		Mmin	3.42	9.19	46.13	40.27	25.57	ok	ok	ok
		Qmax	3.42	3.95	46.13	40.27	8.93	ok	ok	ok
		Qmin	4.53	9.19	46.13	40.27	27.60	ok	ok	ok
	25	Nmax	14.56	0.00	46.13	40.27	10.16	ok	ok	ok
		Nmin	15.76	0.00	46.13	40.27	20.46	ok	ok	ok
		Mmax	16.98	0.00	46.13	40.27	20.46	ok	ok	ok
		Mmin	8.14	0.00	46.13	40.27	8.12	ok	ok	ok
		Qmax	8.14	0.00	46.13	40.27	8.12	ok	ok	ok
		Qmin	15.76	0.00	46.13	40.27	22.39	ok	ok	ok
19	25	Nmax	14.56	0.00	46.13	40.27	10.17	ok	ok	ok
		Nmin	15.76	0.00	46.13	40.27	20.46	ok	ok	ok
		Mmax	16.98	0.00	46.13	40.27	20.46	ok	ok	ok
		Mmin	8.14	0.00	46.13	40.27	8.12	ok	ok	ok
		Qmax	8.14	0.00	46.13	40.27	8.12	ok	ok	ok
		Qmin	15.76	0.00	46.13	40.27	22.40	ok	ok	ok
	27	Nmax	21.53	0.00	46.13	7.53	3.71	ok	ok	ok
		Nmin	26.12	0.00	46.13	7.53	11.00	ok	ok	ok
		Mmax	26.58	0.00	46.13	7.53	12.23	ok	ok	ok
		Mmin	11.84	0.00	46.13	7.53	2.54	ok	ok	ok
		Qmax	11.84	0.00	46.13	7.53	2.54	ok	ok	ok
		Qmin	26.12	0.00	46.13	7.53	12.23	ok	ok	ok
20	27	Nmax	21.53	0.00	46.13	7.53	3.71	ok	ok	ok
		Nmin	26.12	0.00	46.13	7.53	11.02	ok	ok	ok
		Mmax	26.58	0.00	46.13	7.53	12.24	ok	ok	ok
		Mmin	11.84	0.00	46.13	7.53	2.56	ok	ok	ok
		Qmax	11.84	0.00	46.13	7.53	2.56	ok	ok	ok
		Qmin	26.12	0.00	46.13	7.53	12.24	ok	ok	ok
	29	Nmax	26.65	0.00	46.13	7.53	No necesita	ok	ok	ok
		Nmin	34.10	0.00	46.13	7.53	3.62	ok	ok	ok
		Mmax	34.10	0.00	46.13	7.53	4.28	ok	ok	ok
		Mmin	14.45	0.00	46.13	7.53	No necesita	ok	ok	ok
		Qmax	14.45	0.00	46.13	7.53	No necesita	ok	ok	ok
		Qmin	34.10	0.00	46.13	7.53	4.28	ok	ok	ok
21	29	Nmax	26.65	0.00	46.13	7.53	No necesita	ok	ok	ok
		Nmin	34.10	0.00	46.13	7.53	3.61	ok	ok	ok
		Mmax	34.10	0.00	46.13	7.53	4.28	ok	ok	ok
		Mmin	14.45	0.00	46.13	7.53	No necesita	ok	ok	ok
		Qmax	14.45	0.00	46.13	7.53	No necesita	ok	ok	ok
		Qmin	34.10	0.00	46.13	7.53	4.28	ok	ok	ok
	31	Nmax	29.66	0.00	46.13	7.53	No necesita	ok	ok	ok
		Nmin	39.23	0.00	46.13	7.53	No necesita	ok	ok	ok

Siegrist y Moreno S.L.

LAV SANTA COLOMA DE CERVELLÓ
P.I. CAMINO
ENVOLVENTE DE MODELOS DE MUELLES

FECHA: 24/11/2005

RESUMEN DE ARMADO SECCION TIPO MARCO: armado losa superior

fcd(t/m2)= 1666.67
fyd(t/m2)= 4.43 ANCHO UNIDAD= 1.000

				FLEXION			CORTANTE	COMPROBACION		
BARRA	NUDO	HIPÓT.	As,inf(cm2/m)	As,sup(cm2/m)	Ainf,dis	Asup,disp	A90	Ainf	Asup	A90
		Mmax	39.23	0.00	46.13	7.53	No necesita	ok	ok	ok
		Mmin	16.06	0.00	46.13	7.53	No necesita	ok	ok	ok
		Qmax	16.06	0.00	46.13	7.53	No necesita	ok	ok	ok
		Qmin	39.23	0.00	46.13	7.53	No necesita	ok	ok	ok
22	31	Nmax	29.66	0.00	46.13	7.53	No necesita	ok	ok	ok
		Nmin	39.23	0.00	46.13	7.53	No necesita	ok	ok	ok
		Mmax	39.23	0.00	46.13	7.53	No necesita	ok	ok	ok
		Mmin	16.06	0.00	46.13	7.53	No necesita	ok	ok	ok
		Qmax	16.06	0.00	46.13	7.53	No necesita	ok	ok	ok
		Qmin	39.23	0.00	46.13	7.53	No necesita	ok	ok	ok
	33	Nmax	30.41	0.00	46.13	7.53	No necesita	ok	ok	ok
		Nmin	41.11	0.00	46.13	7.53	No necesita	ok	ok	ok
		Mmax	41.11	0.00	46.13	7.53	No necesita	ok	ok	ok
		Mmin	16.68	0.00	46.13	7.53	No necesita	ok	ok	ok
		Qmax	35.32	0.00	46.13	7.53	No necesita	ok	ok	ok
		Qmin	28.94	0.00	46.13	7.53	No necesita	ok	ok	ok
23	33	Nmax	30.41	0.00	46.13	7.53	No necesita	ok	ok	ok
		Nmin	41.11	0.00	46.13	7.53	No necesita	ok	ok	ok
		Mmax	41.11	0.00	46.13	7.53	No necesita	ok	ok	ok
		Mmin	16.68	0.00	46.13	7.53	No necesita	ok	ok	ok
		Qmax	35.32	0.00	46.13	7.53	No necesita	ok	ok	ok
		Qmin	34.37	0.00	46.13	7.53	No necesita	ok	ok	ok
	35	Nmax	28.84	0.00	46.13	7.53	No necesita	ok	ok	ok
		Nmin	39.23	0.00	46.13	7.53	No necesita	ok	ok	ok
		Mmax	39.23	0.00	46.13	7.53	No necesita	ok	ok	ok
		Mmin	16.06	0.00	46.13	7.53	No necesita	ok	ok	ok
		Qmax	39.23	0.00	46.13	7.53	No necesita	ok	ok	ok
		Qmin	16.06	0.00	46.13	7.53	No necesita	ok	ok	ok
24	35	Nmax	28.84	0.00	46.13	7.53	No necesita	ok	ok	ok
		Nmin	39.23	0.00	46.13	7.53	No necesita	ok	ok	ok
		Mmax	39.23	0.00	46.13	7.53	No necesita	ok	ok	ok
		Mmin	16.06	0.00	46.13	7.53	No necesita	ok	ok	ok
		Qmax	39.23	0.00	46.13	7.53	No necesita	ok	ok	ok
		Qmin	16.06	0.00	46.13	7.53	No necesita	ok	ok	ok
	37	Nmax	25.05	0.00	46.13	7.53	No necesita	ok	ok	ok
		Nmin	33.81	0.00	46.13	7.53	No necesita	ok	ok	ok
		Mmax	33.81	0.00	46.13	7.53	No necesita	ok	ok	ok
		Mmin	14.21	0.00	46.13	7.53	No necesita	ok	ok	ok
		Qmax	33.81	0.00	46.13	7.53	No necesita	ok	ok	ok
		Qmin	14.21	0.00	46.13	7.53	No necesita	ok	ok	ok
25	37	Nmax	25.05	0.00	46.13	7.53	No necesita	ok	ok	ok
		Nmin	33.82	0.00	46.13	7.53	No necesita	ok	ok	ok
		Mmax	33.82	0.00	46.13	7.53	No necesita	ok	ok	ok
		Mmin	14.22	0.00	46.13	7.53	No necesita	ok	ok	ok
		Qmax	33.82	0.00	46.13	7.53	No necesita	ok	ok	ok
		Qmin	14.22	0.00	46.13	7.53	No necesita	ok	ok	ok
	39	Nmax	19.22	0.00	46.13	7.53	5.95	ok	ok	ok
		Nmin	25.41	0.00	46.13	7.53	9.38	ok	ok	ok
		Mmax	25.86	0.00	46.13	7.53	8.13	ok	ok	ok
		Mmin	11.21	0.00	46.13	7.53	No necesita	ok	ok	ok
		Qmax	25.41	0.00	46.13	7.53	9.38	ok	ok	ok
		Qmin	11.21	0.00	46.13	7.53	No necesita	ok	ok	ok

Siegrist y Moreno S.L.

LAV SANTA COLOMA DE CERVELLÓ
P.I. CAMINO
ENVOLVENTE DE MODELOS DE MUELLES

FECHA: 24/11/2005

RESUMEN DE ARMADO SECCION TIPO MARCO: armado losa superior

fcd(t/m2)= 1666.67
fyd(t/m2)= 4.43 ANCHO UNIDAD= 1.000

			FLEXION				CORTANTE	COMPROBACION		
BARRA	NUDO	HIPÓT.	As,inf(cm2/m)	As,sup(cm2/m)	Ainf,dis	Asup,disp	A90	Ainf	Asup	A90
26	39	Nmax	19.22	0.00	46.13	7.53	5.95	ok	ok	ok
		Nmin	25.41	0.00	46.13	7.53	9.38	ok	ok	ok
		Mmax	25.86	0.00	46.13	7.53	8.13	ok	ok	ok
		Mmin	11.21	0.00	46.13	7.53	No necesita	ok	ok	ok
		Qmax	25.41	0.00	46.13	7.53	9.38	ok	ok	ok
		Qmin	11.21	0.00	46.13	7.53	No necesita	ok	ok	ok
	41	Nmax	11.66	0.00	46.13	40.27	12.68	ok	ok	ok
		Nmin	14.70	0.00	46.13	40.27	17.68	ok	ok	ok
		Mmax	15.92	0.00	46.13	40.27	15.52	ok	ok	ok
		Mmin	7.14	0.00	46.13	40.27	4.51	ok	ok	ok
		Qmax	14.70	0.00	46.13	40.27	17.68	ok	ok	ok
		Qmin	7.14	0.00	46.13	40.27	4.51	ok	ok	ok
27	41	Nmax	11.66	0.00	46.13	40.27	12.68	ok	ok	ok
		Nmin	14.71	0.00	46.13	40.27	17.67	ok	ok	ok
		Mmax	15.92	0.00	46.13	40.27	15.52	ok	ok	ok
		Mmin	7.14	0.00	46.13	40.27	4.51	ok	ok	ok
		Qmax	14.71	0.00	46.13	40.27	17.67	ok	ok	ok
		Qmin	7.14	0.00	46.13	40.27	4.51	ok	ok	ok
	43	Nmax	2.62	1.63	46.13	40.27	21.28	ok	ok	ok
		Nmin	2.26	1.85	46.13	40.27	28.67	ok	ok	ok
		Mmax	4.28	1.63	46.13	40.27	25.19	ok	ok	ok
		Mmin	2.10	3.21	46.13	40.27	24.78	ok	ok	ok
		Qmax	2.26	3.21	46.13	40.27	28.67	ok	ok	ok
		Qmin	2.10	1.63	46.13	40.27	9.93	ok	ok	ok
28	43	Nmax	2.62	1.63	46.13	40.27	21.24	ok	ok	ok
		Nmin	2.26	1.85	46.13	40.27	28.65	ok	ok	ok
		Mmax	4.28	1.63	46.13	40.27	25.14	ok	ok	ok
		Mmin	2.10	3.21	46.13	40.27	24.73	ok	ok	ok
		Qmax	2.26	3.21	46.13	40.27	28.65	ok	ok	ok
		Qmin	2.10	1.63	46.13	40.27	9.93	ok	ok	ok
	45	Nmax	0.00	3.36	46.13	40.27	23.96	ok	ok	ok
		Nmin	0.00	7.27	46.13	40.27	27.14	ok	ok	ok
		Mmax	0.00	3.36	46.13	40.27	11.26	ok	ok	ok
		Mmin	0.00	8.97	46.13	40.27	27.14	ok	ok	ok
		Qmax	0.00	8.97	46.13	40.27	27.14	ok	ok	ok
		Qmin	0.00	3.36	46.13	40.27	11.26	ok	ok	ok
29	45	Nmax	0.00	3.35	46.13	40.27	23.91	ok	ok	ok
		Nmin	0.00	7.27	46.13	40.27	27.08	ok	ok	ok
		Mmax	0.00	3.35	46.13	40.27	11.25	ok	ok	ok
		Mmin	0.00	8.97	46.13	40.27	27.08	ok	ok	ok
		Qmax	0.00	8.97	46.13	40.27	27.08	ok	ok	ok
		Qmin	0.00	3.35	46.13	40.27	11.25	ok	ok	ok
	47	Nmax	0.00	8.04	46.13	40.27	23.90	ok	ok	ok
		Nmin	0.00	14.50	46.13	40.27	25.69	ok	ok	ok
		Mmax	0.00	6.78	46.13	40.27	10.42	ok	ok	ok
		Mmin	0.00	15.12	46.13	40.27	25.69	ok	ok	ok
		Qmax	0.00	13.48	46.13	40.27	28.20	ok	ok	ok
		Qmin	0.00	6.78	46.13	40.27	10.42	ok	ok	ok
30	47	Nmax	0.00	8.05	46.13	40.27	23.92	ok	ok	ok
		Nmin	0.00	14.50	46.13	40.27	25.72	ok	ok	ok
		Mmax	0.00	6.78	46.13	40.27	10.42	ok	ok	ok
		Mmin	0.00	15.12	46.13	40.27	25.72	ok	ok	ok

Siegrist y Moreno S.L.

LAV SANTA COLOMA DE CERVELLÓ
P.I. CAMINO
ENVOLVENTE DE MODELOS DE MUELLES

FECHA: 24/11/2005

RESUMEN DE ARMADO SECCION TIPO MARCO: armado losa superior

fcd(t/m2)= 1666.67
fyd(t/m2)= 4.43 ANCHO UNIDAD= 1.000

			FLEXION				CORTANTE	COMPROBACION		
BARRA	NUDO	HIPÓT.	As,inf(cm2/m)	As,sup(cm2/m)	Ainf,dis	Asup,disp	A90	Ainf	Asup	A90
		Qmax	0.00	13.48	46.13	40.27	28.18	ok	ok	ok
		Qmin	0.00	6.78	46.13	40.27	10.42	ok	ok	ok
	49	Nmax	0.00	14.43	46.13	40.27	24.80	ok	ok	ok
		Nmin	0.00	22.71	46.13	40.27	26.02	ok	ok	ok
		Mmax	0.00	10.61	46.13	40.27	10.42	ok	ok	ok
		Mmin	0.00	22.71	46.13	40.27	24.94	ok	ok	ok
		Qmax	0.00	20.94	46.13	40.27	29.38	ok	ok	ok
		Qmin	0.00	10.61	46.13	40.27	10.42	ok	ok	ok
31	49	Nmax	0.00	14.43	13.40	40.27	24.78	ok	ok	ok
		Nmin	0.00	22.71	13.40	40.27	26.01	ok	ok	ok
		Mmax	0.00	10.61	13.40	40.27	10.43	ok	ok	ok
		Mmin	0.00	22.71	13.40	40.27	24.90	ok	ok	ok
		Qmax	0.00	20.94	13.40	40.27	29.41	ok	ok	ok
		Qmin	0.00	10.61	13.40	40.27	10.43	ok	ok	ok
	51	Nmax	0.00	21.68	13.40	40.27	25.97	ok	ok	ok
		Nmin	0.00	31.84	13.40	40.27	26.48	ok	ok	ok
		Mmax	0.00	14.87	13.40	40.27	10.70	ok	ok	ok
		Mmin	0.00	31.84	13.40	40.27	24.39	ok	ok	ok
		Qmax	0.00	31.13	13.40	40.27	29.68	ok	ok	ok
		Qmin	0.00	14.87	13.40	40.27	10.70	ok	ok	ok
32	51	Nmax	0.00	21.68	13.40	40.27	25.90	ok	ok	ok
		Nmin	0.00	31.83	13.40	40.27	26.46	ok	ok	ok
		Mmax	0.00	14.87	13.40	40.27	10.68	ok	ok	ok
		Mmin	0.00	31.83	13.40	40.27	24.37	ok	ok	ok
		Qmax	0.00	31.13	13.40	40.27	29.61	ok	ok	ok
		Qmin	0.00	14.87	13.40	40.27	10.68	ok	ok	ok
	64	Nmax	0.00	29.96	13.40	40.27	27.26	ok	ok	ok
		Nmin	0.00	42.13	13.40	40.27	27.03	ok	-1.87	ok
		Mmax	0.00	19.65	13.40	40.27	11.15	ok	ok	ok
		Mmin	0.00	43.05	13.40	40.27	30.07	ok	-2.78	ok
		Qmax	0.00	43.05	13.40	40.27	30.07	ok	-2.78	ok
		Qmin	0.00	19.65	13.40	40.27	11.15	ok	ok	ok

Siegrist y Moreno S.L.

LAV SANTA COLOMA DE CERVELLÓ
P.I. CAMINO
ENVOLVENTE DE MODELOS DE MUELLES

FECHA: 24/11/2005

RESUMEN DE ARMADO SECCION TIPO MARCO: armado de hastiales

fcd(t/m2)= 1666.67
fyd(t/m2)= 4.43 ANCHO UNIDAD= 1.000

					FLEXION			CORTANTE	COMPROBACION		
	BARRA	NUDO	HIPÓT.	As,int(cm2/m)	As,ext(cm2/m)	Aint,dis	Axt,disp	A90	Aint	Aext	A90
*	1	1	Nmax	0.00	13.66	13.40	34.60	No necesita	ok	ok	ok
			Nmin	0.00	24.98	13.40	34.60	7.36	ok	ok	
			Mmax	0.00	13.66	13.40	34.60	No necesita	ok	ok	
			Mmin	0.00	24.98	13.40	34.60	7.36	ok	ok	
			Qmax	0.00	20.20	13.40	34.60	No necesita	ok	ok	
			Qmin	0.00	24.98	13.40	34.60	7.36	ok	ok	
		2	Nmax	0.00	12.40	13.40	34.60	1.86	ok	ok	
			Nmin	0.00	23.58	13.40	34.60	9.92	ok	ok	
			Mmax	0.00	12.40	13.40	34.60	1.86	ok	ok	
			Mmin	0.00	23.58	13.40	34.60	9.92	ok	ok	
			Qmax	0.00	20.33	13.40	34.60	1.86	ok	ok	
			Qmin	0.00	21.59	13.40	34.60	13.25	ok	ok	
	2	2	Nmax	0.00	12.40	13.40	34.60	No necesita	ok	ok	
			Nmin	0.00	23.58	13.40	34.60	8.94	ok	ok	
			Mmax	0.00	12.40	13.40	34.60	No necesita	ok	ok	
			Mmin	0.00	23.58	13.40	34.60	8.94	ok	ok	
			Qmax	0.00	20.33	13.40	34.60	No necesita	ok	ok	
			Qmin	0.00	21.59	13.40	34.60	8.94	ok	ok	
		3	Nmax	0.00	12.13	13.40	34.60	2.41	ok	ok	
			Nmin	0.00	23.46	13.40	34.60	11.23	ok	ok	
			Mmax	0.00	12.13	13.40	34.60	2.41	ok	ok	
			Mmin	0.00	23.46	13.40	34.60	11.23	ok	ok	
			Qmax	0.00	20.48	13.40	34.60	2.41	ok	ok	
			Qmin	0.00	18.99	13.40	34.60	14.22	ok	ok	
	3	3	Nmax	0.00	12.13	13.40	34.60	No necesita	ok	ok	
			Nmin	0.00	23.46	13.40	34.60	9.21	ok	ok	
			Mmax	0.00	12.13	13.40	34.60	No necesita	ok	ok	
			Mmin	0.00	23.46	13.40	34.60	9.21	ok	ok	
			Qmax	0.00	20.48	13.40	34.60	No necesita	ok	ok	
			Qmin	0.00	18.99	13.40	34.60	9.21	ok	ok	
		4	Nmax	0.00	11.88	13.40	34.60	2.83	ok	ok	
			Nmin	0.00	23.37	13.40	34.60	11.26	ok	ok	
			Mmax	0.00	11.88	13.40	34.60	2.83	ok	ok	
			Mmin	0.00	23.37	13.40	34.60	9.74	ok	ok	
			Qmax	0.00	20.66	13.40	34.60	2.83	ok	ok	
			Qmin	0.00	17.09	13.40	34.60	11.26	ok	ok	
	4	4	Nmax	0.00	11.88	13.40	34.60	1.12	ok	ok	
			Nmin	0.00	23.37	13.40	34.60	8.44	ok	ok	
			Mmax	0.00	11.88	13.40	34.60	1.12	ok	ok	
			Mmin	0.00	23.37	13.40	34.60	7.61	ok	ok	
			Qmax	0.00	20.66	13.40	34.60	1.12	ok	ok	
			Qmin	0.00	15.65	13.40	34.60	8.44	ok	ok	
		5	Nmax	0.37	11.65	13.40	34.60	3.27	ok	ok	
			Nmin	1.54	23.32	13.40	34.60	9.17	ok	ok	
			Mmax	1.90	11.65	13.40	34.60	6.94	ok	ok	
			Mmin	0.37	23.32	13.40	34.60	3.27	ok	ok	
			Qmax	0.37	20.87	13.40	34.60	3.27	ok	ok	
			Qmin	1.54	14.50	13.40	34.60	9.17	ok	ok	
	5	5	Nmax	0.37	11.65	13.40	34.60	1.08	ok	ok	
			Nmin	1.54	23.32	13.40	34.60	5.59	ok	ok	
			Mmax	1.90	11.65	13.40	34.60	4.37	ok	ok	
			Mmin	0.37	23.32	13.40	34.60	1.08	ok	ok	

Siegrist y Moreno S.L.

LAV SANTA COLOMA DE CERVELLÓ
P.I. CAMINO
ENVOLVENTE DE MODELOS DE MUELLES

FECHA: 24/11/2005

RESUMEN DE ARMADO SECCION TIPO MARCO: armado de hastiales

fcd(t/m2)= 1666.67
fyd(t/m2)= 4.43 ANCHO UNIDAD= 1.000

			FLEXION			CORTANTE	COMPROBACION		
BARRA	NUDO	HIPÓT.	As,int(cm2/m)	As,ext(cm2/m)	Aint,dis	Axt,disp	A90	Aint	Aext	A90
		Qmax	0.37	20.87	13.40	34.60	1.08	ok	ok	
		Qmin	1.54	14.50	13.40	34.60	5.59	ok	ok	
	6	Nmax	2.36	11.44	13.40	24.55	No necesita	ok	ok	
		Nmin	5.21	23.30	13.40	24.55	No necesita	ok	ok	
		Mmax	5.21	11.44	13.40	24.55	No necesita	ok	ok	
		Mmin	2.36	23.30	13.40	24.55	No necesita	ok	ok	
		Qmax	2.36	21.12	13.40	24.55	No necesita	ok	ok	
		Qmin	5.21	14.07	13.40	24.55	6.86	ok	ok	
6	6	Nmax	2.36	11.44	13.40	24.55	No necesita	ok	ok	
		Nmin	5.21	23.30	13.40	24.55	No necesita	ok	ok	
		Mmax	5.21	11.44	13.40	24.55	No necesita	ok	ok	
		Mmin	2.36	23.30	13.40	24.55	No necesita	ok	ok	
		Qmax	2.36	21.12	13.40	24.55	No necesita	ok	ok	
		Qmin	5.21	11.44	13.40	24.55	No necesita	ok	ok	
	7	Nmax	3.54	11.23	13.40	24.55	No necesita	ok	ok	
		Nmin	7.25	23.30	13.40	24.55	No necesita	ok	ok	
		Mmax	7.25	11.23	13.40	24.55	No necesita	ok	ok	
		Mmin	3.54	23.30	13.40	24.55	No necesita	ok	ok	
		Qmax	3.54	21.37	13.40	24.55	No necesita	ok	ok	
		Qmin	7.25	11.23	13.40	24.55	No necesita	ok	ok	
7	7	Nmax	3.54	11.23	13.40	24.55	No necesita	ok	ok	
		Nmin	7.25	23.30	13.40	24.55	No necesita	ok	ok	
		Mmax	7.25	11.23	13.40	24.55	No necesita	ok	ok	
		Mmin	3.54	23.30	13.40	24.55	No necesita	ok	ok	
		Qmax	6.73	21.37	13.40	24.55	No necesita	ok	ok	
		Qmin	3.54	11.23	13.40	24.55	No necesita	ok	ok	
	8	Nmax	3.73	11.03	13.40	24.55	No necesita	ok	ok	
		Nmin	7.26	23.30	13.40	24.55	No necesita	ok	ok	
		Mmax	7.26	11.03	13.40	24.55	No necesita	ok	ok	
		Mmin	3.73	23.30	13.40	24.55	No necesita	ok	ok	
		Qmax	6.53	21.64	13.40	24.55	No necesita	ok	ok	
		Qmin	3.73	11.03	13.40	24.55	No necesita	ok	ok	
8	8	Nmax	3.73	11.03	13.40	24.55	No necesita	ok	ok	
		Nmin	7.26	23.30	13.40	24.55	No necesita	ok	ok	
		Mmax	7.26	11.03	13.40	24.55	No necesita	ok	ok	
		Mmin	3.73	23.30	13.40	24.55	No necesita	ok	ok	
		Qmax	6.53	21.64	13.40	24.55	No necesita	ok	ok	
		Qmin	3.73	11.03	13.40	24.55	No necesita	ok	ok	
	9	Nmax	2.75	10.82	13.40	24.55	No necesita	ok	ok	
		Nmin	4.91	23.27	13.40	24.55	No necesita	ok	ok	
		Mmax	4.91	10.82	13.40	24.55	No necesita	ok	ok	
		Mmin	2.75	23.27	13.40	24.55	No necesita	ok	ok	
		Qmax	4.14	21.87	13.40	24.55	No necesita	ok	ok	
		Qmin	2.75	10.82	13.40	24.55	No necesita	ok	ok	
9	9	Nmax	2.75	10.82	13.40	24.55	No necesita	ok	ok	
		Nmin	4.91	23.27	13.40	24.55	8.75	ok	ok	
		Mmax	4.91	10.82	13.40	24.55	8.75	ok	ok	
		Mmin	2.75	23.27	13.40	24.55	No necesita	ok	ok	
		Qmax	4.91	21.87	13.40	24.55	8.75	ok	ok	
		Qmin	2.75	10.82	13.40	24.55	No necesita	ok	ok	
	10	Nmax	0.58	10.56	13.40	34.60	1.90	ok	ok	
		Nmin	0.46	23.17	13.40	34.60	10.63	ok	ok	

Siegrist y Moreno S.L.

LAV SANTA COLOMA DE CERVELLÓ
P.I. CAMINO
ENVOLVENTE DE MODELOS DE MUELLES

FECHA: 24/11/2005

RESUMEN DE ARMADO SECCION TIPO MARCO: armado de hastiales

fcd(t/m2)= 1666.67
fyd(t/m2)= 4.43
ANCHO UNIDAD= 1.000

			FLEXION				CORTANTE	COMPROBACION		
BARRA	NUDO	HIPÓT.	As,int(cm2/m)	As,ext(cm2/m)	Aint,dis	Axt,disp	A90	Aint	Aext	A90
		Mmax	0.58	10.56	13.40	34.60	1.90	ok	ok	
		Mmin	0.46	23.17	13.40	34.60	9.86	ok	ok	
		Qmax	0.46	22.03	13.40	34.60	10.63	ok	ok	
		Qmin	0.58	10.56	13.40	34.60	1.90	ok	ok	
10	10	Nmax	0.58	10.56	13.40	34.60	6.78	ok	ok	
		Nmin	0.46	23.17	13.40	34.60	19.78	ok	ok	
		Mmax	0.58	10.56	13.40	34.60	6.78	ok	ok	
		Mmin	0.46	23.17	13.40	34.60	18.88	ok	ok	
		Qmax	0.46	22.03	13.40	34.60	19.78	ok	ok	
		Qmin	0.58	20.37	13.40	34.60	6.78	ok	ok	
	11	Nmax	0.00	10.27	13.40	34.60	4.52	ok	ok	
		Nmin	0.00	22.96	13.40	34.60	15.44	ok	ok	
		Mmax	0.00	10.27	13.40	34.60	4.52	ok	ok	
		Mmin	0.00	22.96	13.40	34.60	14.97	ok	ok	
		Qmax	0.00	22.10	13.40	34.60	15.44	ok	ok	
		Qmin	0.00	20.06	13.40	34.60	4.52	ok	ok	
11	11	Nmax	0.00	10.27	13.40	34.60	10.00	ok	ok	
		Nmin	0.00	22.96	13.40	34.60	25.57	ok	ok	
		Mmax	0.00	10.27	13.40	34.60	10.00	ok	ok	
		Mmin	0.00	22.96	13.40	34.60	23.79	ok	ok	
		Qmax	0.00	22.10	13.40	34.60	25.57	ok	ok	
		Qmin	0.00	20.06	13.40	34.60	10.00	ok	ok	
	12	Nmax	0.00	10.94	13.40	34.60	8.02	ok	ok	
		Nmin	0.00	24.81	13.40	34.60	24.69	ok	ok	
		Mmax	0.00	10.94	13.40	34.60	8.02	ok	ok	
		Mmin	0.00	24.81	13.40	34.60	24.69	ok	ok	
		Qmax	0.00	24.05	13.40	34.60	24.69	ok	ok	
		Qmin	0.00	19.59	13.40	34.60	8.02	ok	ok	
12	12	Nmax	0.00	10.94	13.40	34.60	14.47	ok	ok	
		Nmin	0.00	24.81	13.40	34.60	35.29	ok	ok	
		Mmax	0.00	10.94	13.40	34.60	14.47	ok	ok	
		Mmin	0.00	24.81	13.40	34.60	35.29	ok	ok	
		Qmax	0.00	24.05	13.40	34.60	35.29	ok	ok	
		Qmin	0.00	19.59	13.40	34.60	14.47	ok	ok	
	13	Nmax	0.00	16.91	13.40	34.60	12.82	ok	ok	
		Nmin	0.00	38.79	13.40	34.60	33.09	ok	-4.19	
		Mmax	0.00	16.91	13.40	34.60	12.82	ok	ok	
		Mmin	0.00	38.79	13.40	34.60	33.09	ok	-4.19	
		Qmax	0.00	38.79	13.40	34.60	33.09	ok	-4.19	
		Qmin	0.00	18.92	13.40	34.60	12.82	ok	ok	
* 53	52	Nmax	0.00	20.11	13.40	34.60	3.93	ok	ok	
		Nmin	0.00	40.37	13.40	34.60	22.67	ok	-5.77	
		Mmax	0.00	40.37	13.40	34.60	22.67	ok	-5.77	
		Mmin	0.00	20.11	13.40	34.60	3.93	ok	ok	
		Qmax	0.00	40.37	13.40	34.60	22.67	ok	-5.77	
		Qmin	0.00	20.11	13.40	34.60	3.93	ok	ok	
	53	Nmax	0.00	14.56	13.40	34.60	4.96	ok	ok	
		Nmin	0.00	28.26	13.40	34.60	18.26	ok	ok	
		Mmax	0.00	28.26	13.40	34.60	18.26	ok	ok	
		Mmin	0.00	14.56	13.40	34.60	4.96	ok	ok	
		Qmax	0.00	28.26	13.40	34.60	18.26	ok	ok	
		Qmin	0.00	15.66	13.40	34.60	4.96	ok	ok	

Siegrist y Moreno S.L.

LAV SANTA COLOMA DE CERVELLÓ
P.I. CAMINO
ENVOLVENTE DE MODELOS DE MUELLES

FECHA: 24/11/2005

RESUMEN DE ARMADO SECCION TIPO MARCO: armado de hastiales

fcd(t/m2)= 1666.67
fyd(t/m2)= 4.43
ANCHO UNIDAD= 1.000

			FLEXION				CORTANTE	COMPROBACION		
BARRA	NUDO	HIPÓT.	As,int(cm2/m)	As,ext(cm2/m)	Aint,dis	Axt,disp	A90	Aint	Aext	A90
54	53	Nmax	0.00	14.56	13.40	34.60	4.38	ok	ok	
		Nmin	0.00	28.26	13.40	34.60	17.06	ok	ok	
		Mmax	0.00	28.26	13.40	34.60	17.06	ok	ok	
		Mmin	0.00	14.56	13.40	34.60	4.38	ok	ok	
		Qmax	0.00	28.26	13.40	34.60	17.06	ok	ok	
		Qmin	0.00	15.66	13.40	34.60	4.38	ok	ok	
	54	Nmax	0.00	10.00	13.40	34.60	5.60	ok	ok	
		Nmin	0.00	19.10	13.40	34.60	18.69	ok	ok	
		Mmax	0.00	19.10	13.40	34.60	18.69	ok	ok	
		Mmin	0.00	10.00	13.40	34.60	5.60	ok	ok	
		Qmax	0.00	17.47	13.40	34.60	18.69	ok	ok	
		Qmin	0.00	16.50	13.40	34.60	5.60	ok	ok	
55	54	Nmax	0.00	10.00	13.40	34.60	4.48	ok	ok	
		Nmin	0.00	19.10	13.40	34.60	16.38	ok	ok	
		Mmax	0.00	19.10	13.40	34.60	16.38	ok	ok	
		Mmin	0.00	10.00	13.40	34.60	4.48	ok	ok	
		Qmax	0.00	17.47	13.40	34.60	16.38	ok	ok	
		Qmin	0.00	16.50	13.40	34.60	4.48	ok	ok	
	55	Nmax	0.00	10.72	13.40	34.60	6.06	ok	ok	
		Nmin	0.00	20.85	13.40	34.60	18.48	ok	ok	
		Mmax	0.00	20.85	13.40	34.60	18.48	ok	ok	
		Mmin	0.00	10.72	13.40	34.60	6.06	ok	ok	
		Qmax	0.00	10.72	13.40	34.60	18.48	ok	ok	
		Qmin	0.00	18.36	13.40	34.60	6.06	ok	ok	
56	55	Nmax	0.00	10.73	13.40	34.60	4.31	ok	ok	
		Nmin	0.00	20.86	13.40	34.60	14.90	ok	ok	
		Mmax	0.00	20.86	13.40	34.60	14.90	ok	ok	
		Mmin	0.00	10.73	13.40	34.60	4.31	ok	ok	
		Qmax	0.00	10.73	13.40	34.60	14.90	ok	ok	
		Qmin	0.00	18.36	13.40	34.60	4.31	ok	ok	
	56	Nmax	0.00	11.39	13.40	34.60	7.12	ok	ok	
		Nmin	0.00	22.73	13.40	34.60	18.50	ok	ok	
		Mmax	0.00	22.73	13.40	34.60	7.12	ok	ok	
		Mmin	0.28	11.39	13.40	34.60	16.37	ok	ok	
		Qmax	0.00	11.39	13.40	34.60	18.50	ok	ok	
		Qmin	0.00	20.33	13.40	34.60	7.12	ok	ok	
57	56	Nmax	0.00	11.39	13.40	34.60	4.68	ok	ok	
		Nmin	0.00	22.73	13.40	34.60	13.93	ok	ok	
		Mmax	0.00	22.73	13.40	34.60	4.68	ok	ok	
		Mmin	0.28	11.39	13.40	34.60	11.74	ok	ok	
		Qmax	0.00	11.39	13.40	34.60	13.93	ok	ok	
		Qmin	0.00	20.33	13.40	34.60	4.68	ok	ok	
	57	Nmax	2.56	11.95	13.40	24.55	3.05	ok	ok	
		Nmin	5.81	24.39	13.40	24.55	10.79	ok	ok	
		Mmax	2.56	24.39	13.40	24.55	3.05	ok	ok	
		Mmin	5.81	11.95	13.40	24.55	10.79	ok	ok	
		Qmax	5.81	11.95	13.40	24.55	10.79	ok	ok	
		Qmin	2.56	22.11	13.40	24.55	3.05	ok	ok	
58	57	Nmax	2.56	11.95	13.40	24.55	No necesita	ok	ok	
		Nmin	5.81	24.39	13.40	24.55	5.41	ok	ok	
		Mmax	2.56	24.39	13.40	24.55	No necesita	ok	ok	
		Mmin	5.81	11.95	13.40	24.55	5.41	ok	ok	

Siegrist y Moreno S.L.

LAV SANTA COLOMA DE CERVELLÓ
P.I. CAMINO
ENVOLVENTE DE MODELOS DE MUELLES

FECHA: 24/11/2005

RESUMEN DE ARMADO SECCION TIPO MARCO: armado de hastiales

fcd(t/m2)= 1666.67
fyd(t/m2)= 4.43 ANCHO UNIDAD= 1.000

BARRA	NUDO	HIPÓT.	As,int(cm2/m)	FLEXION As,ext(cm2/m)	Aint,dis	Axt,disp	CORTANTE A90	COMPROBACION Aint	Aext	A90
		Qmax	5.81	11.95	13.40	24.55	5.41	ok	ok	
		Qmin	2.56	22.11	13.40	24.55	No necesita	ok	ok	
	58	Nmax	4.85	12.38	13.40	24.55	No necesita	ok	ok	
		Nmin	10.11	25.80	13.40	24.55	No necesita	ok	-1.25	
		Mmax	4.85	25.80	13.40	24.55	No necesita	ok	-1.25	
		Mmin	10.11	12.38	13.40	24.55	No necesita	ok	ok	
		Qmax	10.11	12.38	13.40	24.55	No necesita	ok	ok	
		Qmin	4.85	23.65	13.40	24.55	No necesita	ok	ok	
59	58	Nmax	4.85	12.38	13.40	24.55	No necesita	ok	ok	
		Nmin	10.11	25.80	13.40	24.55	No necesita	ok	-1.25	
		Mmax	4.85	25.80	13.40	24.55	No necesita	ok	-1.25	
		Mmin	10.11	12.38	13.40	24.55	No necesita	ok	ok	
		Qmax	10.11	12.38	13.40	24.55	No necesita	ok	ok	
		Qmin	4.85	23.65	13.40	24.55	No necesita	ok	ok	
	59	Nmax	5.97	12.68	13.40	24.55	No necesita	ok	ok	
		Nmin	11.98	26.90	13.40	24.55	No necesita	ok	-2.35	
		Mmax	5.97	26.90	13.40	24.55	No necesita	ok	-2.35	
		Mmin	11.98	12.68	13.40	24.55	No necesita	ok	ok	
		Qmax	11.98	12.68	13.40	24.55	No necesita	ok	ok	
		Qmin	5.97	24.92	13.40	24.55	No necesita	ok	-0.37	
60	59	Nmax	5.97	12.68	13.40	24.55	No necesita	ok	ok	
		Nmin	11.98	26.90	13.40	24.55	No necesita	ok	-2.35	
		Mmax	5.97	26.90	13.40	24.55	No necesita	ok	-2.35	
		Mmin	11.98	12.68	13.40	24.55	No necesita	ok	ok	
		Qmax	5.97	12.68	13.40	24.55	No necesita	ok	ok	
		Qmin	10.92	24.92	13.40	24.55	No necesita	ok	-0.37	
	60	Nmax	5.68	12.82	13.40	24.55	No necesita	ok	ok	
		Nmin	10.93	27.67	13.40	24.55	No necesita	ok	-3.12	
		Mmax	5.68	27.67	13.40	24.55	No necesita	ok	-3.12	
		Mmin	10.93	12.82	13.40	24.55	No necesita	ok	ok	
		Qmax	5.68	12.82	13.40	24.55	No necesita	ok	ok	
		Qmin	9.69	25.90	13.40	24.55	No necesita	ok	-1.35	
61	60	Nmax	5.68	12.82	13.40	24.55	No necesita	ok	ok	
		Nmin	10.93	27.67	13.40	24.55	No necesita	ok	-3.12	
		Mmax	5.68	27.67	13.40	24.55	No necesita	ok	-3.12	
		Mmin	10.93	12.82	13.40	24.55	No necesita	ok	ok	
		Qmax	5.68	12.82	13.40	24.55	No necesita	ok	ok	
		Qmin	10.93	25.89	13.40	24.55	No necesita	ok	-1.34	
	61	Nmax	3.84	12.80	13.40	34.60	No necesita	ok	ok	
		Nmin	6.69	28.09	13.40	34.60	5.07	ok	ok	
		Mmax	3.84	28.09	13.40	34.60	No necesita	ok	ok	
		Mmin	6.69	12.80	13.40	34.60	5.07	ok	ok	
		Qmax	3.84	12.80	13.40	34.60	No necesita	ok	ok	
		Qmin	6.69	26.55	13.40	34.60	7.47	ok	ok	
62	61	Nmax	3.84	12.80	13.40	34.60	3.46	ok	ok	
		Nmin	6.69	28.08	13.40	34.60	14.79	ok	ok	
		Mmax	3.84	28.08	13.40	34.60	3.46	ok	ok	
		Mmin	6.69	12.80	13.40	34.60	14.79	ok	ok	
		Qmax	3.84	12.80	13.40	34.60	3.46	ok	ok	
		Qmin	6.69	26.55	13.40	34.60	14.79	ok	ok	
	62	Nmax	0.62	12.62	13.40	34.60	6.01	ok	ok	
		Nmin	0.31	28.13	13.40	34.60	18.06	ok	ok	

Siegrist y Moreno S.L.

LAV SANTA COLOMA DE CERVELLÓ
P.I. CAMINO
ENVOLVENTE DE MODELOS DE MUELLES

FECHA: 24/11/2005

RESUMEN DE ARMADO SECCION TIPO MARCO: armado de hastiales

fcd(t/m2)= 1666.67
fyd(t/m2)= 4.43 ANCHO UNIDAD= 1.000

BARRA	NUDO	HIPÓT.	As,int(cm2/m)	FLEXION As,ext(cm2/m)	Aint,dis	Axt,disp	CORTANTE A90	COMPROBACION Aint	Aext	A90
		Mmax	0.31	28.13	13.40	34.60	16.58	ok	ok	
		Mmin	0.62	12.62	13.40	34.60	6.01	ok	ok	
		Qmax	0.62	12.62	13.40	34.60	6.01	ok	ok	
		Qmin	0.31	26.86	13.40	34.60	18.41	ok	ok	
63	62	Nmax	0.62	12.62	13.40	34.60	11.92	ok	ok	
		Nmin	0.31	28.13	13.40	34.60	28.46	ok	ok	
		Mmax	0.31	28.13	13.40	34.60	26.83	ok	ok	
		Mmin	0.62	12.62	13.40	34.60	11.92	ok	ok	
		Qmax	0.62	24.62	13.40	34.60	11.92	ok	ok	
		Qmin	0.31	26.86	13.40	34.60	28.46	ok	ok	
	63	Nmax	0.00	12.28	13.40	34.60	8.96	ok	ok	
		Nmin	0.00	27.85	13.40	34.60	25.57	ok	ok	
		Mmax	0.00	27.85	13.40	34.60	23.60	ok	ok	
		Mmin	0.00	12.28	13.40	34.60	8.96	ok	ok	
		Qmax	0.00	24.22	13.40	34.60	8.96	ok	ok	
		Qmin	0.00	26.86	13.40	34.60	25.57	ok	ok	
64	63	Nmax	0.00	12.28	13.40	34.60	15.72	ok	ok	
		Nmin	0.00	27.85	13.40	34.60	36.75	ok	ok	
		Mmax	0.00	27.85	13.40	34.60	34.38	ok	ok	
		Mmin	0.00	12.28	13.40	34.60	15.72	ok	ok	
		Qmax	0.00	24.22	13.40	34.60	15.72	ok	ok	
		Qmin	0.00	26.86	13.40	34.60	36.75	ok	ok	
	64	Nmax	0.00	12.70	13.40	34.60	13.61	ok	ok	
		Nmin	0.00	29.30	13.40	34.60	34.09	ok	ok	
		Mmax	0.00	29.30	13.40	34.60	34.09	ok	ok	
		Mmin	0.00	12.70	13.40	34.60	13.61	ok	ok	
		Qmax	0.00	23.53	13.40	34.60	13.61	ok	ok	
		Qmin	0.00	29.30	13.40	34.60	36.08	ok	ok	

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES EN UN SÓLO LADO

FECHA: 24/11/2005

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
1	1	Nmax	0.0	-32.0	1.000	0.600	0.550	779.17	0.00	13.66
		Nmin	0.0	-53.4	1.000	0.600	0.550	779.17	0.00	23.47
		Mmax	0.0	-32.0	1.000	0.600	0.550	779.17	0.00	13.66
		Mmin	0.0	-53.4	1.000	0.600	0.550	779.17	0.00	23.47
		Qmax	0.0	-46.3	1.000	0.600	0.550	779.17	0.00	20.13
		Qmin	0.0	-32.0	1.000	0.600	0.550	779.17	0.00	13.66
	2	Nmax	0.0	-28.9	1.000	0.600	0.550	779.17	0.00	12.28
		Nmin	0.0	-50.7	1.000	0.600	0.550	779.17	0.00	22.17
		Mmax	0.0	-28.9	1.000	0.600	0.550	779.17	0.00	12.28
		Mmin	0.0	-50.7	1.000	0.600	0.550	779.17	0.00	22.17
		Qmax	0.0	-44.1	1.000	0.600	0.550	779.17	0.00	19.13
		Qmin	0.0	-28.9	1.000	0.600	0.550	779.17	0.00	12.28
2	2	Nmax	0.0	-28.9	1.000	0.600	0.550	779.17	0.00	12.28
		Nmin	0.0	-50.7	1.000	0.600	0.550	779.17	0.00	22.17
		Mmax	0.0	-28.9	1.000	0.600	0.550	779.17	0.00	12.28
		Mmin	0.0	-50.7	1.000	0.600	0.550	779.17	0.00	22.17
		Qmax	0.0	-44.1	1.000	0.600	0.550	779.17	0.00	19.13
		Qmin	0.0	-28.9	1.000	0.600	0.550	779.17	0.00	12.28
	3	Nmax	0.0	-26.4	1.000	0.600	0.550	779.17	0.00	11.16
		Nmin	0.0	-48.5	1.000	0.600	0.550	779.17	0.00	21.16
		Mmax	0.0	-26.4	1.000	0.600	0.550	779.17	0.00	11.16
		Mmin	0.0	-48.5	1.000	0.600	0.550	779.17	0.00	21.16
		Qmax	0.0	-42.5	1.000	0.600	0.550	779.17	0.00	18.40
		Qmin	0.0	-26.4	1.000	0.600	0.550	779.17	0.00	11.16
3	3	Nmax	0.0	-26.4	1.000	0.600	0.550	779.17	0.00	11.16
		Nmin	0.0	-48.5	1.000	0.600	0.550	779.17	0.00	21.16
		Mmax	0.0	-26.4	1.000	0.600	0.550	779.17	0.00	11.16
		Mmin	0.0	-48.5	1.000	0.600	0.550	779.17	0.00	21.16
		Qmax	0.0	-42.5	1.000	0.600	0.550	779.17	0.00	18.40
		Qmin	0.0	-26.4	1.000	0.600	0.550	779.17	0.00	11.16
	4	Nmax	0.0	-24.4	1.000	0.600	0.550	779.17	0.00	10.31
		Nmin	0.0	-47.0	1.000	0.600	0.550	779.17	0.00	20.46
		Mmax	0.0	-24.4	1.000	0.600	0.550	779.17	0.00	10.31
		Mmin	0.0	-47.0	1.000	0.600	0.550	779.17	0.00	20.46
		Qmax	0.0	-41.6	1.000	0.600	0.550	779.17	0.00	17.97
		Qmin	0.0	-24.4	1.000	0.600	0.550	779.17	0.00	10.31
4	4	Nmax	0.0	-24.4	1.000	0.600	0.550	779.17	0.00	10.31
		Nmin	0.0	-47.0	1.000	0.600	0.550	779.17	0.00	20.46
		Mmax	0.0	-24.4	1.000	0.600	0.550	779.17	0.00	10.31
		Mmin	0.0	-47.0	1.000	0.600	0.550	779.17	0.00	20.46
		Qmax	0.0	-41.6	1.000	0.600	0.550	779.17	0.00	17.97
		Qmin	0.0	-24.4	1.000	0.600	0.550	779.17	0.00	10.31
	5	Nmax	0.0	-22.9	1.000	0.600	0.550	779.17	0.00	9.67
		Nmin	0.0	-46.1	1.000	0.600	0.550	779.17	0.00	20.03
		Mmax	0.0	-22.9	1.000	0.600	0.550	779.17	0.00	9.67
		Mmin	0.0	-46.1	1.000	0.600	0.550	779.17	0.00	20.03
		Qmax	0.0	-41.2	1.000	0.600	0.550	779.17	0.00	17.80
		Qmin	0.0	-22.9	1.000	0.600	0.550	779.17	0.00	9.67
5	5	Nmax	0.0	-22.9	1.000	0.600	0.550	779.17	0.00	9.67
		Nmin	0.0	-46.1	1.000	0.600	0.550	779.17	0.00	20.03
		Mmax	0.0	-22.9	1.000	0.600	0.550	779.17	0.00	9.67
		Mmin	0.0	-46.1	1.000	0.600	0.550	779.17	0.00	20.03

ARMADOCAM_2060_1000_1m.xls PI CAMINO Kv=2060 Kh=1000 24/11/2005

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES EN UN SÓLO LADO

FECHA: 24/11/2005

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
		Qmax	0.0	-41.2	1.000	0.600	0.550	779.17	0.00	17.80
		Qmin	0.0	-22.9	1.000	0.600	0.550	779.17	0.00	9.67
	6	Nmax	0.0	-22.0	1.000	0.600	0.550	779.17	0.00	9.25
		Nmin	0.0	-45.8	1.000	0.600	0.550	779.17	0.00	19.88
		Mmax	0.0	-22.0	1.000	0.600	0.550	779.17	0.00	9.25
		Mmin	0.0	-45.8	1.000	0.600	0.550	779.17	0.00	19.88
		Qmax	0.0	-41.4	1.000	0.600	0.550	779.17	0.00	17.90
		Qmin	0.0	-22.0	1.000	0.600	0.550	779.17	0.00	9.25
6	6	Nmax	0.0	-22.0	1.000	0.600	0.550	779.17	0.00	9.25
		Nmin	0.0	-45.8	1.000	0.600	0.550	779.17	0.00	19.88
		Mmax	0.0	-22.0	1.000	0.600	0.550	779.17	0.00	9.25
		Mmin	0.0	-45.8	1.000	0.600	0.550	779.17	0.00	19.88
		Qmax	0.0	-41.4	1.000	0.600	0.550	779.17	0.00	17.90
		Qmin	0.0	-22.0	1.000	0.600	0.550	779.17	0.00	9.25
	7	Nmax	0.0	-21.4	1.000	0.600	0.550	779.17	0.00	9.01
		Nmin	0.0	-46.0	1.000	0.600	0.550	779.17	0.00	19.99
		Mmax	0.0	-21.4	1.000	0.600	0.550	779.17	0.00	9.01
		Mmin	0.0	-46.0	1.000	0.600	0.550	779.17	0.00	19.99
		Qmax	0.0	-42.2	1.000	0.600	0.550	779.17	0.00	18.24
		Qmin	0.0	-21.4	1.000	0.600	0.550	779.17	0.00	9.01
7	7	Nmax	0.0	-21.4	1.000	0.600	0.550	779.17	0.00	9.01
		Nmin	0.0	-46.0	1.000	0.600	0.550	779.17	0.00	19.99
		Mmax	0.0	-21.4	1.000	0.600	0.550	779.17	0.00	9.01
		Mmin	0.0	-46.0	1.000	0.600	0.550	779.17	0.00	19.99
		Qmax	0.0	-42.2	1.000	0.600	0.550	779.17	0.00	18.24
		Qmin	0.0	-21.4	1.000	0.600	0.550	779.17	0.00	9.01
	8	Nmax	0.0	-21.3	1.000	0.600	0.550	779.17	0.00	8.95
		Nmin	0.0	-46.7	1.000	0.600	0.550	779.17	0.00	20.31
		Mmax	0.0	-21.3	1.000	0.600	0.550	779.17	0.00	8.95
		Mmin	0.0	-46.7	1.000	0.600	0.550	779.17	0.00	20.31
		Qmax	0.0	-43.4	1.000	0.600	0.550	779.17	0.00	18.79
		Qmin	0.0	-21.3	1.000	0.600	0.550	779.17	0.00	8.95
8	8	Nmax	0.0	-21.3	1.000	0.600	0.550	779.17	0.00	8.95
		Nmin	0.0	-46.7	1.000	0.600	0.550	779.17	0.00	20.32
		Mmax	0.0	-21.3	1.000	0.600	0.550	779.17	0.00	8.95
		Mmin	0.0	-46.7	1.000	0.600	0.550	779.17	0.00	20.32
		Qmax	0.0	-43.4	1.000	0.600	0.550	779.17	0.00	18.79
		Qmin	0.0	-21.3	1.000	0.600	0.550	779.17	0.00	8.95
	9	Nmax	0.0	-21.5	1.000	0.600	0.550	779.17	0.00	9.03
		Nmin	0.0	-47.8	1.000	0.600	0.550	779.17	0.00	20.85
		Mmax	0.0	-21.5	1.000	0.600	0.550	779.17	0.00	9.03
		Mmin	0.0	-47.8	1.000	0.600	0.550	779.17	0.00	20.85
		Qmax	0.0	-45.0	1.000	0.600	0.550	779.17	0.00	19.54
		Qmin	0.0	-21.5	1.000	0.600	0.550	779.17	0.00	9.03
9	9	Nmax	0.0	-21.5	1.000	0.600	0.550	779.17	0.00	9.03
		Nmin	0.0	-47.8	1.000	0.600	0.550	779.17	0.00	20.85
		Mmax	0.0	-21.5	1.000	0.600	0.550	779.17	0.00	9.03
		Mmin	0.0	-47.8	1.000	0.600	0.550	779.17	0.00	20.85
		Qmax	0.0	-45.0	1.000	0.600	0.550	779.17	0.00	19.54
		Qmin	0.0	-21.5	1.000	0.600	0.550	779.17	0.00	9.03
	10	Nmax	0.0	-21.8	1.000	0.600	0.550	779.17	0.00	9.19
		Nmin	0.0	-49.3	1.000	0.600	0.550	779.17	0.00	21.52

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES EN UN SÓLO LADO

FECHA: 24/11/2005

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
		Mmax	0.0	-21.8	1.000	0.600	0.550	779.17	0.00	9.19
		Mmin	0.0	-49.3	1.000	0.600	0.550	779.17	0.00	21.52
		Qmax	0.0	-46.9	1.000	0.600	0.550	779.17	0.00	20.42
		Qmin	0.0	-21.8	1.000	0.600	0.550	779.17	0.00	9.19
10	10	Nmax	0.0	-21.8	1.000	0.600	0.550	779.17	0.00	9.19
		Nmin	0.0	-49.3	1.000	0.600	0.550	779.17	0.00	21.52
		Mmax	0.0	-21.8	1.000	0.600	0.550	779.17	0.00	9.19
		Mmin	0.0	-49.3	1.000	0.600	0.550	779.17	0.00	21.52
		Qmax	0.0	-46.9	1.000	0.600	0.550	779.17	0.00	20.42
		Qmin	0.0	-21.8	1.000	0.600	0.550	779.17	0.00	9.19
	11	Nmax	0.0	-22.4	1.000	0.600	0.550	779.17	0.00	9.44
		Nmin	0.0	-51.0	1.000	0.600	0.550	779.17	0.00	22.31
		Mmax	0.0	-22.4	1.000	0.600	0.550	779.17	0.00	9.44
		Mmin	0.0	-51.0	1.000	0.600	0.550	779.17	0.00	22.31
		Qmax	0.0	-49.1	1.000	0.600	0.550	779.17	0.00	21.42
		Qmin	0.0	-22.4	1.000	0.600	0.550	779.17	0.00	9.44
11	11	Nmax	0.0	-22.4	1.000	0.600	0.550	779.17	0.00	9.44
		Nmin	0.0	-51.0	1.000	0.600	0.550	779.17	0.00	22.31
		Mmax	0.0	-22.4	1.000	0.600	0.550	779.17	0.00	9.44
		Mmin	0.0	-51.0	1.000	0.600	0.550	779.17	0.00	22.31
		Qmax	0.0	-49.1	1.000	0.600	0.550	779.17	0.00	21.42
		Qmin	0.0	-22.4	1.000	0.600	0.550	779.17	0.00	9.44
	12	Nmax	0.0	-23.1	1.000	0.600	0.550	779.17	0.00	9.74
		Nmin	0.0	-52.8	1.000	0.600	0.550	779.17	0.00	23.17
		Mmax	0.0	-23.1	1.000	0.600	0.550	779.17	0.00	9.74
		Mmin	0.0	-52.8	1.000	0.600	0.550	779.17	0.00	23.17
		Qmax	0.0	-51.3	1.000	0.600	0.550	779.17	0.00	22.49
		Qmin	0.0	-23.1	1.000	0.600	0.550	779.17	0.00	9.74
12	12	Nmax	0.0	-23.1	1.000	0.600	0.550	779.17	0.00	9.74
		Nmin	0.0	-52.8	1.000	0.600	0.550	779.17	0.00	23.17
		Mmax	0.0	-23.1	1.000	0.600	0.550	779.17	0.00	9.74
		Mmin	0.0	-52.8	1.000	0.600	0.550	779.17	0.00	23.17
		Qmax	0.0	-51.3	1.000	0.600	0.550	779.17	0.00	22.49
		Qmin	0.0	-23.1	1.000	0.600	0.550	779.17	0.00	9.74
	13	Nmax	0.0	-23.7	1.000	0.600	0.550	779.17	0.00	10.01
		Nmin	0.0	-54.6	1.000	0.600	0.550	779.17	0.00	24.00
		Mmax	0.0	-23.7	1.000	0.600	0.550	779.17	0.00	10.01
		Mmin	0.0	-54.6	1.000	0.600	0.550	779.17	0.00	24.00
		Qmax	0.0	-53.6	1.000	0.600	0.550	779.17	0.00	23.53
		Qmin	0.0	-23.7	1.000	0.600	0.550	779.17	0.00	10.01
13	13	Nmax	0.0	-23.7	1.000	0.500	0.450	637.50	0.00	12.43
		Nmin	0.0	-53.6	1.000	0.500	0.450	637.50	0.00	29.97
		Mmax	0.0	-23.7	1.000	0.500	0.450	637.50	0.00	12.43
		Mmin	0.0	-54.6	1.000	0.500	0.450	637.50	0.00	30.60
		Qmax	0.0	-23.7	1.000	0.500	0.450	637.50	0.00	12.43
		Qmin	0.0	-54.6	1.000	0.500	0.450	637.50	0.00	30.60
	15	Nmax	0.0	-17.0	1.000	0.500	0.450	637.50	0.00	8.78
		Nmin	0.0	-41.2	1.000	0.500	0.450	637.50	0.00	22.38
		Mmax	0.0	-17.0	1.000	0.500	0.450	637.50	0.00	8.78
		Mmin	0.0	-41.2	1.000	0.500	0.450	637.50	0.00	22.38
		Qmax	0.0	-17.0	1.000	0.500	0.450	637.50	0.00	8.78
		Qmin	0.0	-40.2	1.000	0.500	0.450	637.50	0.00	21.79

ARMADOCAM_2060_1000_1m.xls PI CAMINO Kv=2060 Kh=1000 24/11/2005

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES EN UN SÓLO LADO

FECHA: 24/11/2005

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
14	15	Nmax	0.0	-17.0	1.000	0.500	0.450	637.50	0.00	8.78
		Nmin	0.0	-41.2	1.000	0.500	0.450	637.50	0.00	22.38
		Mmax	0.0	-17.0	1.000	0.500	0.450	637.50	0.00	8.78
		Mmin	0.0	-41.2	1.000	0.500	0.450	637.50	0.00	22.38
		Qmax	0.0	-17.0	1.000	0.500	0.450	637.50	0.00	8.78
		Qmin	0.0	-40.2	1.000	0.500	0.450	637.50	0.00	21.79
	17	Nmax	0.0	-10.7	1.000	0.500	0.450	637.50	0.00	5.46
		Nmin	0.0	-29.1	1.000	0.500	0.450	637.50	0.00	15.40
		Mmax	0.0	-10.7	1.000	0.500	0.450	637.50	0.00	5.46
		Mmin	0.0	-29.1	1.000	0.500	0.450	637.50	0.00	15.40
		Qmax	0.0	-10.7	1.000	0.500	0.450	637.50	0.00	5.46
		Qmin	0.0	-26.4	1.000	0.500	0.450	637.50	0.00	13.92
15	17	Nmax	0.0	-10.7	1.000	0.500	0.450	637.50	0.00	5.46
		Nmin	0.0	-29.1	1.000	0.500	0.450	637.50	0.00	15.40
		Mmax	0.0	-10.7	1.000	0.500	0.450	637.50	0.00	5.46
		Mmin	0.0	-29.1	1.000	0.500	0.450	637.50	0.00	15.40
		Qmax	0.0	-10.7	1.000	0.500	0.450	637.50	0.00	5.46
		Qmin	0.0	-26.4	1.000	0.500	0.450	637.50	0.00	13.92
	19	Nmax	0.0	-4.9	1.000	0.500	0.450	637.50	0.00	2.47
		Nmin	0.0	-17.2	1.000	0.500	0.450	637.50	0.00	8.90
		Mmax	0.0	-4.9	1.000	0.500	0.450	637.50	0.00	2.47
		Mmin	0.0	-17.2	1.000	0.500	0.450	637.50	0.00	8.90
		Qmax	0.0	-4.9	1.000	0.500	0.450	637.50	0.00	2.47
		Qmin	0.0	-13.5	1.000	0.500	0.450	637.50	0.00	6.93
16	19	Nmax	0.0	-4.9	1.000	0.500	0.450	637.50	0.00	2.47
		Nmin	0.0	-17.2	1.000	0.500	0.450	637.50	0.00	8.90
		Mmax	0.0	-4.9	1.000	0.500	0.450	637.50	0.00	2.47
		Mmin	0.0	-17.2	1.000	0.500	0.450	637.50	0.00	8.90
		Qmax	0.0	-4.9	1.000	0.500	0.450	637.50	0.00	2.47
		Qmin	0.0	-13.5	1.000	0.500	0.450	637.50	0.00	6.93
	21	Nmax	1.0	0.0	1.000	0.500	0.450	637.50	0.51	0.00
		Nmin	0.6	-5.6	1.000	0.500	0.450	637.50	0.32	2.83
		Mmax	1.0	0.0	1.000	0.500	0.450	637.50	0.51	0.00
		Mmin	0.6	-5.6	1.000	0.500	0.450	637.50	0.32	2.83
		Qmax	1.0	0.0	1.000	0.500	0.450	637.50	0.51	0.00
		Qmin	0.6	-5.6	1.000	0.500	0.450	637.50	0.32	2.83
17	21	Nmax	1.0	0.0	1.000	0.500	0.450	637.50	0.51	0.00
		Nmin	0.6	-5.6	1.000	0.500	0.450	637.50	0.32	2.83
		Mmax	1.0	0.0	1.000	0.500	0.450	637.50	0.51	0.00
		Mmin	0.6	-5.6	1.000	0.500	0.450	637.50	0.32	2.83
		Qmax	1.0	0.0	1.000	0.500	0.450	637.50	0.51	0.00
		Qmin	0.6	-5.6	1.000	0.500	0.450	637.50	0.32	2.83
	23	Nmax	5.3	0.0	1.000	0.500	0.450	637.50	2.69	0.00
		Nmin	5.8	0.0	1.000	0.500	0.450	637.50	2.92	0.00
		Mmax	9.3	0.0	1.000	0.500	0.450	637.50	4.74	0.00
		Mmin	5.3	0.0	1.000	0.500	0.450	637.50	2.69	0.00
		Qmax	5.3	0.0	1.000	0.500	0.450	637.50	2.69	0.00
		Qmin	5.8	0.0	1.000	0.500	0.450	637.50	2.92	0.00
18	23	Nmax	5.3	0.0	1.000	0.500	0.450	637.50	2.69	0.00
		Nmin	5.8	0.0	1.000	0.500	0.450	637.50	2.92	0.00
		Mmax	9.3	0.0	1.000	0.500	0.450	637.50	4.73	0.00
		Mmin	5.3	0.0	1.000	0.500	0.450	637.50	2.69	0.00

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES EN UN SÓLO LADO

FECHA: 24/11/2005

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
		Qmax	5.3	0.0	1.000	0.500	0.450	637.50	2.69	0.00
		Qmin	5.8	0.0	1.000	0.500	0.450	637.50	2.92	0.00
	25	Nmax	13.6	0.0	1.000	0.500	0.450	637.50	7.01	0.00
		Nmin	26.0	0.0	1.000	0.500	0.450	637.50	13.68	0.00
		Mmax	27.9	0.0	1.000	0.500	0.450	637.50	14.74	0.00
		Mmin	13.6	0.0	1.000	0.500	0.450	637.50	7.01	0.00
		Qmax	13.6	0.0	1.000	0.500	0.450	637.50	7.01	0.00
		Qmin	26.0	0.0	1.000	0.500	0.450	637.50	13.68	0.00
19	25	Nmax	13.6	0.0	1.000	0.500	0.450	637.50	7.01	0.00
		Nmin	26.0	0.0	1.000	0.500	0.450	637.50	13.68	0.00
		Mmax	27.9	0.0	1.000	0.500	0.450	637.50	14.74	0.00
		Mmin	13.6	0.0	1.000	0.500	0.450	637.50	7.01	0.00
		Qmax	13.6	0.0	1.000	0.500	0.450	637.50	7.01	0.00
		Qmin	26.0	0.0	1.000	0.500	0.450	637.50	13.68	0.00
	27	Nmax	20.0	0.0	1.000	0.500	0.450	637.50	10.40	0.00
		Nmin	41.6	0.0	1.000	0.500	0.450	637.50	22.64	0.00
		Mmax	42.3	0.0	1.000	0.500	0.450	637.50	23.03	0.00
		Mmin	20.0	0.0	1.000	0.500	0.450	637.50	10.40	0.00
		Qmax	20.0	0.0	1.000	0.500	0.450	637.50	10.40	0.00
		Qmin	41.6	0.0	1.000	0.500	0.450	637.50	22.64	0.00
20	27	Nmax	20.0	0.0	1.000	0.500	0.450	637.50	10.40	0.00
		Nmin	41.6	0.0	1.000	0.500	0.450	637.50	22.64	0.00
		Mmax	42.3	0.0	1.000	0.500	0.450	637.50	23.03	0.00
		Mmin	20.0	0.0	1.000	0.500	0.450	637.50	10.40	0.00
		Qmax	20.0	0.0	1.000	0.500	0.450	637.50	10.40	0.00
		Qmin	41.6	0.0	1.000	0.500	0.450	637.50	22.64	0.00
	29	Nmax	24.5	0.0	1.000	0.500	0.450	637.50	12.83	0.00
		Nmin	52.7	0.0	1.000	0.500	0.450	637.50	29.40	0.00
		Mmax	52.7	0.0	1.000	0.500	0.450	637.50	29.40	0.00
		Mmin	24.5	0.0	1.000	0.500	0.450	637.50	12.83	0.00
		Qmax	24.5	0.0	1.000	0.500	0.450	637.50	12.83	0.00
		Qmin	52.7	0.0	1.000	0.500	0.450	637.50	29.40	0.00
21	29	Nmax	24.5	0.0	1.000	0.500	0.450	637.50	12.83	0.00
		Nmin	52.7	0.0	1.000	0.500	0.450	637.50	29.40	0.00
		Mmax	52.7	0.0	1.000	0.500	0.450	637.50	29.40	0.00
		Mmin	24.5	0.0	1.000	0.500	0.450	637.50	12.83	0.00
		Qmax	24.5	0.0	1.000	0.500	0.450	637.50	12.83	0.00
		Qmin	52.7	0.0	1.000	0.500	0.450	637.50	29.40	0.00
	31	Nmax	27.0	0.0	1.000	0.500	0.450	637.50	14.25	0.00
		Nmin	59.2	0.0	1.000	0.500	0.450	637.50	33.56	0.00
		Mmax	59.2	0.0	1.000	0.500	0.450	637.50	33.56	0.00
		Mmin	27.0	0.0	1.000	0.500	0.450	637.50	14.25	0.00
		Qmax	27.0	0.0	1.000	0.500	0.450	637.50	14.25	0.00
		Qmin	59.2	0.0	1.000	0.500	0.450	637.50	33.56	0.00
22	31	Nmax	27.0	0.0	1.000	0.500	0.450	637.50	14.25	0.00
		Nmin	59.2	0.0	1.000	0.500	0.450	637.50	33.56	0.00
		Mmax	59.2	0.0	1.000	0.500	0.450	637.50	33.56	0.00
		Mmin	27.0	0.0	1.000	0.500	0.450	637.50	14.25	0.00
		Qmax	27.0	0.0	1.000	0.500	0.450	637.50	14.25	0.00
		Qmin	59.2	0.0	1.000	0.500	0.450	637.50	33.56	0.00
	33	Nmax	27.7	0.0	1.000	0.500	0.450	637.50	14.61	0.00
		Nmin	61.1	0.0	1.000	0.500	0.450	637.50	34.82	0.00

ARMADOCAM_2060_1000_1m.xls PI CAMINO Kv=2060 Kh=1000 24/11/2005

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES EN UN SÓLO LADO

FECHA: 24/11/2005

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
		Mmax	61.1	0.0	1.000	0.500	0.450	637.50	34.82	0.00
		Mmin	27.7	0.0	1.000	0.500	0.450	637.50	14.61	0.00
		Qmax	60.1	0.0	1.000	0.500	0.450	637.50	34.15	0.00
		Qmin	27.7	0.0	1.000	0.500	0.450	637.50	14.61	0.00
23	33	Nmax	27.7	0.0	1.000	0.500	0.450	637.50	14.61	0.00
		Nmin	61.1	0.0	1.000	0.500	0.450	637.50	34.82	0.00
		Mmax	61.1	0.0	1.000	0.500	0.450	637.50	34.82	0.00
		Mmin	27.7	0.0	1.000	0.500	0.450	637.50	14.61	0.00
		Qmax	60.1	0.0	1.000	0.500	0.450	637.50	34.15	0.00
		Qmin	27.7	0.0	1.000	0.500	0.450	637.50	14.61	0.00
	35	Nmax	26.4	0.0	1.000	0.500	0.450	637.50	13.90	0.00
		Nmin	58.4	0.0	1.000	0.500	0.450	637.50	33.07	0.00
		Mmax	58.4	0.0	1.000	0.500	0.450	637.50	33.07	0.00
		Mmin	26.4	0.0	1.000	0.500	0.450	637.50	13.90	0.00
		Qmax	58.4	0.0	1.000	0.500	0.450	637.50	33.07	0.00
		Qmin	26.4	0.0	1.000	0.500	0.450	637.50	13.90	0.00
24	35	Nmax	26.4	0.0	1.000	0.500	0.450	637.50	13.90	0.00
		Nmin	58.4	0.0	1.000	0.500	0.450	637.50	33.07	0.00
		Mmax	58.4	0.0	1.000	0.500	0.450	637.50	33.07	0.00
		Mmin	26.4	0.0	1.000	0.500	0.450	637.50	13.90	0.00
		Qmax	58.4	0.0	1.000	0.500	0.450	637.50	33.07	0.00
		Qmin	26.4	0.0	1.000	0.500	0.450	637.50	13.90	0.00
	37	Nmax	23.2	0.0	1.000	0.500	0.450	637.50	12.13	0.00
		Nmin	51.2	0.0	1.000	0.500	0.450	637.50	28.45	0.00
		Mmax	51.2	0.0	1.000	0.500	0.450	637.50	28.45	0.00
		Mmin	23.2	0.0	1.000	0.500	0.450	637.50	12.13	0.00
		Qmax	51.2	0.0	1.000	0.500	0.450	637.50	28.45	0.00
		Qmin	23.2	0.0	1.000	0.500	0.450	637.50	12.13	0.00
25	37	Nmax	23.2	0.0	1.000	0.500	0.450	637.50	12.14	0.00
		Nmin	51.2	0.0	1.000	0.500	0.450	637.50	28.45	0.00
		Mmax	51.2	0.0	1.000	0.500	0.450	637.50	28.45	0.00
		Mmin	23.2	0.0	1.000	0.500	0.450	637.50	12.14	0.00
		Qmax	51.2	0.0	1.000	0.500	0.450	637.50	28.45	0.00
		Qmin	23.2	0.0	1.000	0.500	0.450	637.50	12.14	0.00
	39	Nmax	18.1	0.0	1.000	0.500	0.450	637.50	9.38	0.00
		Nmin	39.3	0.0	1.000	0.500	0.450	637.50	21.29	0.00
		Mmax	39.9	0.0	1.000	0.500	0.450	637.50	21.63	0.00
		Mmin	18.1	0.0	1.000	0.500	0.450	637.50	9.38	0.00
		Qmax	39.3	0.0	1.000	0.500	0.450	637.50	21.29	0.00
		Qmin	18.1	0.0	1.000	0.500	0.450	637.50	9.38	0.00
26	39	Nmax	18.1	0.0	1.000	0.500	0.450	637.50	9.38	0.00
		Nmin	39.3	0.0	1.000	0.500	0.450	637.50	21.29	0.00
		Mmax	39.9	0.0	1.000	0.500	0.450	637.50	21.63	0.00
		Mmin	18.1	0.0	1.000	0.500	0.450	637.50	9.38	0.00
		Qmax	39.3	0.0	1.000	0.500	0.450	637.50	21.29	0.00
		Qmin	18.1	0.0	1.000	0.500	0.450	637.50	9.38	0.00
	41	Nmax	11.1	0.0	1.000	0.500	0.450	637.50	5.65	0.00
		Nmin	22.9	0.0	1.000	0.500	0.450	637.50	11.99	0.00
		Mmax	24.8	0.0	1.000	0.500	0.450	637.50	12.99	0.00
		Mmin	11.1	0.0	1.000	0.500	0.450	637.50	5.65	0.00
		Qmax	22.9	0.0	1.000	0.500	0.450	637.50	11.99	0.00
		Qmin	11.1	0.0	1.000	0.500	0.450	637.50	5.65	0.00

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES EN UN SÓLO LADO

FECHA: 24/11/2005

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
27	41	Nmax	11.1	0.0	1.000	0.500	0.450	637.50	5.65	0.00
		Nmin	22.9	0.0	1.000	0.500	0.450	637.50	12.00	0.00
		Mmax	24.8	0.0	1.000	0.500	0.450	637.50	12.99	0.00
		Mmin	11.1	0.0	1.000	0.500	0.450	637.50	5.65	0.00
		Qmax	22.9	0.0	1.000	0.500	0.450	637.50	12.00	0.00
		Qmin	11.1	0.0	1.000	0.500	0.450	637.50	5.65	0.00
	43	Nmax	2.1	0.0	1.000	0.500	0.450	637.50	1.07	0.00
		Nmin	2.1	0.0	1.000	0.500	0.450	637.50	1.07	0.00
		Mmax	5.4	0.0	1.000	0.500	0.450	637.50	2.72	0.00
		Mmin	2.1	0.0	1.000	0.500	0.450	637.50	1.07	0.00
		Qmax	2.1	0.0	1.000	0.500	0.450	637.50	1.07	0.00
		Qmin	2.1	0.0	1.000	0.500	0.450	637.50	1.07	0.00
28	43	Nmax	2.1	0.0	1.000	0.500	0.450	637.50	1.07	0.00
		Nmin	2.1	0.0	1.000	0.500	0.450	637.50	1.07	0.00
		Mmax	5.4	0.0	1.000	0.500	0.450	637.50	2.72	0.00
		Mmin	2.1	0.0	1.000	0.500	0.450	637.50	1.07	0.00
		Qmax	2.1	0.0	1.000	0.500	0.450	637.50	1.07	0.00
		Qmin	2.1	0.0	1.000	0.500	0.450	637.50	1.07	0.00
	45	Nmax	0.0	-3.1	1.000	0.500	0.450	637.50	0.00	1.55
		Nmin	0.0	-9.8	1.000	0.500	0.450	637.50	0.00	5.00
		Mmax	0.0	-3.1	1.000	0.500	0.450	637.50	0.00	1.55
		Mmin	0.0	-9.8	1.000	0.500	0.450	637.50	0.00	5.00
		Qmax	0.0	-9.8	1.000	0.500	0.450	637.50	0.00	5.00
		Qmin	0.0	-3.1	1.000	0.500	0.450	637.50	0.00	1.55
29	45	Nmax	0.0	-3.1	1.000	0.500	0.450	637.50	0.00	1.55
		Nmin	0.0	-9.8	1.000	0.500	0.450	637.50	0.00	5.00
		Mmax	0.0	-3.1	1.000	0.500	0.450	637.50	0.00	1.55
		Mmin	0.0	-9.8	1.000	0.500	0.450	637.50	0.00	5.00
		Qmax	0.0	-9.8	1.000	0.500	0.450	637.50	0.00	5.00
		Qmin	0.0	-3.1	1.000	0.500	0.450	637.50	0.00	1.55
	47	Nmax	0.0	-8.7	1.000	0.500	0.450	637.50	0.00	4.44
		Nmin	0.0	-21.8	1.000	0.500	0.450	637.50	0.00	11.37
		Mmax	0.0	-8.7	1.000	0.500	0.450	637.50	0.00	4.44
		Mmin	0.0	-21.8	1.000	0.500	0.450	637.50	0.00	11.37
		Qmax	0.0	-18.2	1.000	0.500	0.450	637.50	0.00	9.42
		Qmin	0.0	-8.7	1.000	0.500	0.450	637.50	0.00	4.44
30	47	Nmax	0.0	-8.7	1.000	0.500	0.450	637.50	0.00	4.44
		Nmin	0.0	-21.8	1.000	0.500	0.450	637.50	0.00	11.37
		Mmax	0.0	-8.7	1.000	0.500	0.450	637.50	0.00	4.44
		Mmin	0.0	-21.8	1.000	0.500	0.450	637.50	0.00	11.37
		Qmax	0.0	-18.2	1.000	0.500	0.450	637.50	0.00	9.42
		Qmin	0.0	-8.7	1.000	0.500	0.450	637.50	0.00	4.44
	49	Nmax	0.0	-14.9	1.000	0.500	0.450	637.50	0.00	7.66
		Nmin	0.0	-34.1	1.000	0.500	0.450	637.50	0.00	18.23
		Mmax	0.0	-14.9	1.000	0.500	0.450	637.50	0.00	7.66
		Mmin	0.0	-34.1	1.000	0.500	0.450	637.50	0.00	18.23
		Qmax	0.0	-31.6	1.000	0.500	0.450	637.50	0.00	16.79
		Qmin	0.0	-14.9	1.000	0.500	0.450	637.50	0.00	7.66
31	49	Nmax	0.0	-14.9	1.000	0.500	0.450	637.50	0.00	7.66
		Nmin	0.0	-34.1	1.000	0.500	0.450	637.50	0.00	18.23
		Mmax	0.0	-14.9	1.000	0.500	0.450	637.50	0.00	7.66
		Mmin	0.0	-34.1	1.000	0.500	0.450	637.50	0.00	18.23

ARMADOCAM_2060_1000_1m.xls PI CAMINO Kv=2060 Kh=1000 24/11/2005

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES EN UN SÓLO LADO

FECHA: 24/11/2005

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
		Qmax	0.0	-31.6	1.000	0.500	0.450	637.50	0.00	16.79
		Qmin	0.0	-14.9	1.000	0.500	0.450	637.50	0.00	7.66
	51	Nmax	0.0	-21.5	1.000	0.500	0.450	637.50	0.00	11.19
		Nmin	0.0	-46.6	1.000	0.500	0.450	637.50	0.00	25.62
		Mmax	0.0	-21.5	1.000	0.500	0.450	637.50	0.00	11.19
		Mmin	0.0	-46.6	1.000	0.500	0.450	637.50	0.00	25.62
		Qmax	0.0	-45.7	1.000	0.500	0.450	637.50	0.00	25.10
		Qmin	0.0	-21.5	1.000	0.500	0.450	637.50	0.00	11.19
32	51	Nmax	0.0	-21.5	1.000	0.500	0.450	637.50	0.00	11.18
		Nmin	0.0	-46.6	1.000	0.500	0.450	637.50	0.00	25.61
		Mmax	0.0	-21.5	1.000	0.500	0.450	637.50	0.00	11.18
		Mmin	0.0	-46.6	1.000	0.500	0.450	637.50	0.00	25.61
		Qmax	0.0	-45.7	1.000	0.500	0.450	637.50	0.00	25.09
		Qmin	0.0	-21.5	1.000	0.500	0.450	637.50	0.00	11.18
	64	Nmax	0.0	-28.5	1.000	0.500	0.450	637.50	0.00	15.09
		Nmin	0.0	-59.3	1.000	0.500	0.450	637.50	0.00	33.67
		Mmax	0.0	-28.5	1.000	0.500	0.450	637.50	0.00	15.09
		Mmin	0.0	-60.5	1.000	0.500	0.450	637.50	0.00	34.43
		Qmax	0.0	-60.5	1.000	0.500	0.450	637.50	0.00	34.43
		Qmin	0.0	-28.5	1.000	0.500	0.450	637.50	0.00	15.09
33	1	Nmax	46.3	0.0	1.000	0.600	0.550	779.17	20.14	0.00
		Nmin	32.0	0.0	1.000	0.600	0.550	779.17	13.66	0.00
		Mmax	53.4	0.0	1.000	0.600	0.550	779.17	23.47	0.00
		Mmin	32.0	0.0	1.000	0.600	0.550	779.17	13.66	0.00
		Qmax	53.4	0.0	1.000	0.600	0.550	779.17	23.47	0.00
		Qmin	32.0	0.0	1.000	0.600	0.550	779.17	13.66	0.00
	14	Nmax	32.3	0.0	1.000	0.600	0.550	779.17	13.77	0.00
		Nmin	23.3	0.0	1.000	0.600	0.550	779.17	9.82	0.00
		Mmax	37.3	0.0	1.000	0.600	0.550	779.17	16.03	0.00
		Mmin	23.3	0.0	1.000	0.600	0.550	779.17	9.82	0.00
		Qmax	37.3	0.0	1.000	0.600	0.550	779.17	16.03	0.00
		Qmin	23.3	0.0	1.000	0.600	0.550	779.17	9.82	0.00
34	14	Nmax	32.3	0.0	1.000	0.600	0.550	779.17	13.77	0.00
		Nmin	23.3	0.0	1.000	0.600	0.550	779.17	9.83	0.00
		Mmax	37.3	0.0	1.000	0.600	0.550	779.17	16.03	0.00
		Mmin	23.3	0.0	1.000	0.600	0.550	779.17	9.83	0.00
		Qmax	37.3	0.0	1.000	0.600	0.550	779.17	16.03	0.00
		Qmin	23.3	0.0	1.000	0.600	0.550	779.17	9.83	0.00
	16	Nmax	19.3	0.0	1.000	0.600	0.550	779.17	8.12	0.00
		Nmin	15.2	0.0	1.000	0.600	0.550	779.17	6.35	0.00
		Mmax	22.5	0.0	1.000	0.600	0.550	779.17	9.46	0.00
		Mmin	15.2	0.0	1.000	0.600	0.550	779.17	6.35	0.00
		Qmax	22.5	0.0	1.000	0.600	0.550	779.17	9.46	0.00
		Qmin	15.2	0.0	1.000	0.600	0.550	779.17	6.35	0.00
35	16	Nmax	19.3	0.0	1.000	0.600	0.550	779.17	8.12	0.00
		Nmin	15.2	0.0	1.000	0.600	0.550	779.17	6.35	0.00
		Mmax	22.5	0.0	1.000	0.600	0.550	779.17	9.46	0.00
		Mmin	15.2	0.0	1.000	0.600	0.550	779.17	6.35	0.00
		Qmax	22.5	0.0	1.000	0.600	0.550	779.17	9.46	0.00
		Qmin	15.2	0.0	1.000	0.600	0.550	779.17	6.35	0.00
	18	Nmax	7.8	0.0	1.000	0.600	0.550	779.17	3.21	0.00
		Nmin	7.8	0.0	1.000	0.600	0.550	779.17	3.21	0.00

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES EN UN SÓLO LADO

FECHA: 24/11/2005

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
		Mmax	9.0	0.0	1.000	0.600	0.550	779.17	3.73	0.00
		Mmin	7.8	0.0	1.000	0.600	0.550	779.17	3.21	0.00
		Qmax	8.8	0.0	1.000	0.600	0.550	779.17	3.65	0.00
		Qmin	7.8	0.0	1.000	0.600	0.550	779.17	3.21	0.00
36	18	Nmax	7.8	0.0	1.000	0.600	0.550	779.17	3.21	0.00
		Nmin	7.8	0.0	1.000	0.600	0.550	779.17	3.21	0.00
		Mmax	9.0	0.0	1.000	0.600	0.550	779.17	3.73	0.00
		Mmin	7.8	0.0	1.000	0.600	0.550	779.17	3.21	0.00
		Qmax	8.8	0.0	1.000	0.600	0.550	779.17	3.65	0.00
		Qmin	7.8	0.0	1.000	0.600	0.550	779.17	3.21	0.00
	20	Nmax	2.1	-3.5	1.000	0.600	0.550	779.17	0.86	1.42
		Nmin	3.3	0.0	1.000	0.600	0.550	779.17	1.35	0.00
		Mmax	3.3	0.0	1.000	0.600	0.550	779.17	1.35	0.00
		Mmin	2.1	-3.7	1.000	0.600	0.550	779.17	0.86	1.52
		Qmax	2.1	-3.7	1.000	0.600	0.550	779.17	0.86	1.52
		Qmin	3.3	0.0	1.000	0.600	0.550	779.17	1.35	0.00
37	20	Nmax	2.1	-3.4	1.000	0.600	0.550	779.17	0.86	1.41
		Nmin	3.3	0.0	1.000	0.600	0.550	779.17	1.35	0.00
		Mmax	3.3	0.0	1.000	0.600	0.550	779.17	1.35	0.00
		Mmin	2.1	-3.7	1.000	0.600	0.550	779.17	0.86	1.51
		Qmax	2.1	-3.7	1.000	0.600	0.550	779.17	0.86	1.51
		Qmin	3.3	0.0	1.000	0.600	0.550	779.17	1.35	0.00
	22	Nmax	0.0	-13.3	1.000	0.600	0.550	779.17	0.00	5.56
		Nmin	0.2	-5.4	1.000	0.600	0.550	779.17	0.10	2.21
		Mmax	0.2	-5.4	1.000	0.600	0.550	779.17	0.10	2.21
		Mmin	0.0	-15.0	1.000	0.600	0.550	779.17	0.00	6.27
		Qmax	0.0	-15.0	1.000	0.600	0.550	779.17	0.00	6.27
		Qmin	0.2	-5.4	1.000	0.600	0.550	779.17	0.10	2.21
38	22	Nmax	0.0	-13.3	1.000	0.600	0.550	779.17	0.00	5.56
		Nmin	0.2	-5.4	1.000	0.600	0.550	779.17	0.10	2.22
		Mmax	0.2	-5.4	1.000	0.600	0.550	779.17	0.10	2.22
		Mmin	0.0	-15.0	1.000	0.600	0.550	779.17	0.00	6.27
		Qmax	0.0	-15.0	1.000	0.600	0.550	779.17	0.00	6.27
		Qmin	0.2	-5.4	1.000	0.600	0.550	779.17	0.10	2.22
	24	Nmax	0.0	-30.2	1.000	0.600	0.550	779.17	0.00	12.85
		Nmin	0.0	-16.1	1.000	0.600	0.550	779.17	0.00	6.73
		Mmax	0.0	-16.1	1.000	0.600	0.550	779.17	0.00	6.73
		Mmin	0.0	-34.3	1.000	0.600	0.550	779.17	0.00	14.68
		Qmax	0.0	-34.3	1.000	0.600	0.550	779.17	0.00	14.68
		Qmin	0.0	-16.1	1.000	0.600	0.550	779.17	0.00	6.73
39	24	Nmax	0.0	-30.2	1.000	0.600	0.550	779.17	0.00	12.85
		Nmin	0.0	-16.1	1.000	0.600	0.550	779.17	0.00	6.73
		Mmax	0.0	-16.1	1.000	0.600	0.550	779.17	0.00	6.73
		Mmin	0.0	-34.3	1.000	0.600	0.550	779.17	0.00	14.68
		Qmax	0.0	-34.3	1.000	0.600	0.550	779.17	0.00	14.68
		Qmin	0.0	-16.1	1.000	0.600	0.550	779.17	0.00	6.73
	26	Nmax	0.0	-43.4	1.000	0.600	0.550	779.17	0.00	18.80
		Nmin	0.0	-24.6	1.000	0.600	0.550	779.17	0.00	10.40
		Mmax	0.0	-24.6	1.000	0.600	0.550	779.17	0.00	10.40
		Mmin	0.0	-49.4	1.000	0.600	0.550	779.17	0.00	21.57
		Qmax	0.0	-49.4	1.000	0.600	0.550	779.17	0.00	21.57
		Qmin	0.0	-24.6	1.000	0.600	0.550	779.17	0.00	10.40

ARMADOCAM_2060_1000_1m.xls PI CAMINO Kv=2060 Kh=1000 24/11/2005

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES EN UN SÓLO LADO

FECHA: 24/11/2005

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
40	26	Nmax	0.0	-43.4	1.000	0.600	0.550	779.17	0.00	18.81
		Nmin	0.0	-24.6	1.000	0.600	0.550	779.17	0.00	10.41
		Mmax	0.0	-24.6	1.000	0.600	0.550	779.17	0.00	10.41
		Mmin	0.0	-49.4	1.000	0.600	0.550	779.17	0.00	21.57
		Qmax	0.0	-49.4	1.000	0.600	0.550	779.17	0.00	21.57
		Qmin	0.0	-24.6	1.000	0.600	0.550	779.17	0.00	10.41
	28	Nmax	0.0	-53.2	1.000	0.600	0.550	779.17	0.00	23.35
		Nmin	0.0	-31.0	1.000	0.600	0.550	779.17	0.00	13.22
		Mmax	0.0	-31.0	1.000	0.600	0.550	779.17	0.00	13.22
		Mmin	0.0	-60.5	1.000	0.600	0.550	779.17	0.00	26.84
		Qmax	0.0	-60.5	1.000	0.600	0.550	779.17	0.00	26.84
		Qmin	0.0	-31.0	1.000	0.600	0.550	779.17	0.00	13.22
41	28	Nmax	0.0	-53.2	1.000	0.600	0.550	779.17	0.00	23.35
		Nmin	0.0	-31.0	1.000	0.600	0.550	779.17	0.00	13.22
		Mmax	0.0	-31.0	1.000	0.600	0.550	779.17	0.00	13.22
		Mmin	0.0	-60.5	1.000	0.600	0.550	779.17	0.00	26.84
		Qmax	0.0	-60.5	1.000	0.600	0.550	779.17	0.00	26.84
		Qmin	0.0	-31.0	1.000	0.600	0.550	779.17	0.00	13.22
	30	Nmax	0.0	-59.5	1.000	0.600	0.550	779.17	0.00	26.39
		Nmin	0.0	-35.3	1.000	0.600	0.550	779.17	0.00	15.13
		Mmax	0.0	-35.3	1.000	0.600	0.550	779.17	0.00	15.13
		Mmin	0.0	-67.6	1.000	0.600	0.550	779.17	0.00	30.35
		Qmax	0.0	-67.6	1.000	0.600	0.550	779.17	0.00	30.35
		Qmin	0.0	-35.3	1.000	0.600	0.550	779.17	0.00	15.13
42	30	Nmax	0.0	-59.5	1.000	0.600	0.550	779.17	0.00	26.39
		Nmin	0.0	-35.3	1.000	0.600	0.550	779.17	0.00	15.13
		Mmax	0.0	-35.3	1.000	0.600	0.550	779.17	0.00	15.13
		Mmin	0.0	-67.6	1.000	0.600	0.550	779.17	0.00	30.35
		Qmax	0.0	-67.6	1.000	0.600	0.550	779.17	0.00	30.35
		Qmin	0.0	-35.3	1.000	0.600	0.550	779.17	0.00	15.13
	32	Nmax	0.0	-62.6	1.000	0.600	0.550	779.17	0.00	27.89
		Nmin	0.0	-37.6	1.000	0.600	0.550	779.17	0.00	16.14
		Mmax	0.0	-37.6	1.000	0.600	0.550	779.17	0.00	16.14
		Mmin	0.0	-71.0	1.000	0.600	0.550	779.17	0.00	32.03
		Qmax	0.0	-71.0	1.000	0.600	0.550	779.17	0.00	32.03
		Qmin	0.0	-37.6	1.000	0.600	0.550	779.17	0.00	16.14
43	32	Nmax	0.0	-62.6	1.000	0.600	0.550	779.17	0.00	27.89
		Nmin	0.0	-37.6	1.000	0.600	0.550	779.17	0.00	16.14
		Mmax	0.0	-37.6	1.000	0.600	0.550	779.17	0.00	16.14
		Mmin	0.0	-71.0	1.000	0.600	0.550	779.17	0.00	32.03
		Qmax	0.0	-37.6	1.000	0.600	0.550	779.17	0.00	16.14
		Qmin	0.0	-71.0	1.000	0.600	0.550	779.17	0.00	32.03
	34	Nmax	0.0	-62.4	1.000	0.600	0.550	779.17	0.00	27.77
		Nmin	0.0	-37.7	1.000	0.600	0.550	779.17	0.00	16.19
		Mmax	0.0	-37.7	1.000	0.600	0.550	779.17	0.00	16.19
		Mmin	0.0	-70.5	1.000	0.600	0.550	779.17	0.00	31.80
		Qmax	0.0	-37.7	1.000	0.600	0.550	779.17	0.00	16.19
		Qmin	0.0	-70.5	1.000	0.600	0.550	779.17	0.00	31.80
44	34	Nmax	0.0	-62.4	1.000	0.600	0.550	779.17	0.00	27.76
		Nmin	0.0	-37.7	1.000	0.600	0.550	779.17	0.00	16.19
		Mmax	0.0	-37.7	1.000	0.600	0.550	779.17	0.00	16.19
		Mmin	0.0	-70.5	1.000	0.600	0.550	779.17	0.00	31.80

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES EN UN SÓLO LADO

FECHA: 24/11/2005

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
		Qmax	0.0	-37.7	1.000	0.600	0.550	779.17	0.00	16.19
		Qmin	0.0	-70.5	1.000	0.600	0.550	779.17	0.00	31.80
	36	Nmax	0.0	-58.7	1.000	0.600	0.550	779.17	0.00	25.99
		Nmin	0.0	-35.7	1.000	0.600	0.550	779.17	0.00	15.28
		Mmax	0.0	-35.7	1.000	0.600	0.550	779.17	0.00	15.28
		Mmin	0.0	-66.2	1.000	0.600	0.550	779.17	0.00	29.62
		Qmax	0.0	-35.7	1.000	0.600	0.550	779.17	0.00	15.28
		Qmin	0.0	-66.2	1.000	0.600	0.550	779.17	0.00	29.62
45	36	Nmax	0.0	-58.7	1.000	0.600	0.550	779.17	0.00	25.99
		Nmin	0.0	-35.7	1.000	0.600	0.550	779.17	0.00	15.29
		Mmax	0.0	-35.7	1.000	0.600	0.550	779.17	0.00	15.29
		Mmin	0.0	-66.2	1.000	0.600	0.550	779.17	0.00	29.62
		Qmax	0.0	-35.7	1.000	0.600	0.550	779.17	0.00	15.29
		Qmin	0.0	-66.2	1.000	0.600	0.550	779.17	0.00	29.62
	38	Nmax	0.0	-51.5	1.000	0.600	0.550	779.17	0.00	22.54
		Nmin	0.0	-31.4	1.000	0.600	0.550	779.17	0.00	13.37
		Mmax	0.0	-31.4	1.000	0.600	0.550	779.17	0.00	13.37
		Mmin	0.0	-57.7	1.000	0.600	0.550	779.17	0.00	25.49
		Qmax	0.0	-31.4	1.000	0.600	0.550	779.17	0.00	13.37
		Qmin	0.0	-57.7	1.000	0.600	0.550	779.17	0.00	25.49
46	38	Nmax	0.0	-51.5	1.000	0.600	0.550	779.17	0.00	22.54
		Nmin	0.0	-31.4	1.000	0.600	0.550	779.17	0.00	13.37
		Mmax	0.0	-31.4	1.000	0.600	0.550	779.17	0.00	13.37
		Mmin	0.0	-57.7	1.000	0.600	0.550	779.17	0.00	25.49
		Qmax	0.0	-31.4	1.000	0.600	0.550	779.17	0.00	13.37
		Qmin	0.0	-57.7	1.000	0.600	0.550	779.17	0.00	25.49
	40	Nmax	0.0	-40.4	1.000	0.600	0.550	779.17	0.00	17.41
		Nmin	0.0	-24.6	1.000	0.600	0.550	779.17	0.00	10.40
		Mmax	0.0	-24.6	1.000	0.600	0.550	779.17	0.00	10.40
		Mmin	0.0	-44.8	1.000	0.600	0.550	779.17	0.00	19.43
		Qmax	0.0	-24.6	1.000	0.600	0.550	779.17	0.00	10.40
		Qmin	0.0	-44.8	1.000	0.600	0.550	779.17	0.00	19.43
47	40	Nmax	0.0	-40.4	1.000	0.600	0.550	779.17	0.00	17.41
		Nmin	0.0	-24.6	1.000	0.600	0.550	779.17	0.00	10.40
		Mmax	0.0	-24.6	1.000	0.600	0.550	779.17	0.00	10.40
		Mmin	0.0	-44.8	1.000	0.600	0.550	779.17	0.00	19.43
		Qmax	0.0	-24.6	1.000	0.600	0.550	779.17	0.00	10.40
		Qmin	0.0	-44.8	1.000	0.600	0.550	779.17	0.00	19.43
	42	Nmax	0.0	-25.2	1.000	0.600	0.550	779.17	0.00	10.63
		Nmin	0.0	-15.3	1.000	0.600	0.550	779.17	0.00	6.37
		Mmax	0.0	-15.3	1.000	0.600	0.550	779.17	0.00	6.37
		Mmin	0.0	-27.2	1.000	0.600	0.550	779.17	0.00	11.52
		Qmax	0.0	-15.3	1.000	0.600	0.550	779.17	0.00	6.37
		Qmin	0.0	-27.2	1.000	0.600	0.550	779.17	0.00	11.52
48	42	Nmax	0.0	-25.2	1.000	0.600	0.550	779.17	0.00	10.63
		Nmin	0.0	-15.3	1.000	0.600	0.550	779.17	0.00	6.37
		Mmax	0.0	-15.3	1.000	0.600	0.550	779.17	0.00	6.37
		Mmin	0.0	-27.2	1.000	0.600	0.550	779.17	0.00	11.52
		Qmax	0.0	-15.3	1.000	0.600	0.550	779.17	0.00	6.37
		Qmin	0.0	-27.2	1.000	0.600	0.550	779.17	0.00	11.52
	44	Nmax	0.0	-15.9	1.000	0.600	0.550	779.17	0.00	6.63
		Nmin	0.0	-9.5	1.000	0.600	0.550	779.17	0.00	3.94

ARMADOCAM_2060_1000_1m.xls PI CAMINO Kv=2060 Kh=1000 24/11/2005

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES EN UN SÓLO LADO

FECHA: 24/11/2005

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
		Mmax	0.0	-9.5	1.000	0.600	0.550	779.17	0.00	3.94
		Mmin	0.0	-16.5	1.000	0.600	0.550	779.17	0.00	6.89
		Qmax	0.0	-9.5	1.000	0.600	0.550	779.17	0.00	3.94
		Qmin	0.0	-16.5	1.000	0.600	0.550	779.17	0.00	6.89
49	44	Nmax	0.0	-15.9	1.000	0.600	0.550	779.17	0.00	6.63
		Nmin	0.0	-9.5	1.000	0.600	0.550	779.17	0.00	3.94
		Mmax	0.0	-9.5	1.000	0.600	0.550	779.17	0.00	3.94
		Mmin	0.0	-16.5	1.000	0.600	0.550	779.17	0.00	6.89
		Qmax	0.0	-9.5	1.000	0.600	0.550	779.17	0.00	3.94
		Qmin	0.0	-16.5	1.000	0.600	0.550	779.17	0.00	6.89
	46	Nmax	0.0	-5.6	1.000	0.600	0.550	779.17	0.00	2.30
		Nmin	0.0	-3.0	1.000	0.600	0.550	779.17	0.00	1.25
		Mmax	0.0	-3.0	1.000	0.600	0.550	779.17	0.00	1.25
		Mmin	0.0	-5.6	1.000	0.600	0.550	779.17	0.00	2.30
		Qmax	0.0	-3.0	1.000	0.600	0.550	779.17	0.00	1.25
		Qmin	0.0	-4.6	1.000	0.600	0.550	779.17	0.00	1.90
50	46	Nmax	0.0	-5.6	1.000	0.600	0.550	779.17	0.00	2.30
		Nmin	0.0	-3.0	1.000	0.600	0.550	779.17	0.00	1.25
		Mmax	0.0	-3.0	1.000	0.600	0.550	779.17	0.00	1.25
		Mmin	0.0	-5.6	1.000	0.600	0.550	779.17	0.00	2.30
		Qmax	0.0	-3.0	1.000	0.600	0.550	779.17	0.00	1.25
		Qmin	0.0	-4.6	1.000	0.600	0.550	779.17	0.00	1.90
	48	Nmax	6.3	0.0	1.000	0.600	0.550	779.17	2.59	0.00
		Nmin	4.3	0.0	1.000	0.600	0.550	779.17	1.76	0.00
		Mmax	9.0	0.0	1.000	0.600	0.550	779.17	3.73	0.00
		Mmin	4.3	0.0	1.000	0.600	0.550	779.17	1.76	0.00
		Qmax	4.3	0.0	1.000	0.600	0.550	779.17	1.76	0.00
		Qmin	9.0	0.0	1.000	0.600	0.550	779.17	3.73	0.00
51	48	Nmax	6.3	0.0	1.000	0.600	0.550	779.17	2.59	0.00
		Nmin	4.3	0.0	1.000	0.600	0.550	779.17	1.77	0.00
		Mmax	9.0	0.0	1.000	0.600	0.550	779.17	3.73	0.00
		Mmin	4.3	0.0	1.000	0.600	0.550	779.17	1.77	0.00
		Qmax	4.3	0.0	1.000	0.600	0.550	779.17	1.77	0.00
		Qmin	9.0	0.0	1.000	0.600	0.550	779.17	3.73	0.00
	50	Nmax	19.2	0.0	1.000	0.600	0.550	779.17	8.05	0.00
		Nmin	12.4	0.0	1.000	0.600	0.550	779.17	5.14	0.00
		Mmax	23.8	0.0	1.000	0.600	0.550	779.17	10.06	0.00
		Mmin	12.4	0.0	1.000	0.600	0.550	779.17	5.14	0.00
		Qmax	12.4	0.0	1.000	0.600	0.550	779.17	5.14	0.00
		Qmin	23.8	0.0	1.000	0.600	0.550	779.17	10.06	0.00
52	50	Nmax	19.2	0.0	1.000	0.600	0.550	779.17	8.06	0.00
		Nmin	12.4	0.0	1.000	0.600	0.550	779.17	5.15	0.00
		Mmax	23.9	0.0	1.000	0.600	0.550	779.17	10.07	0.00
		Mmin	12.4	0.0	1.000	0.600	0.550	779.17	5.15	0.00
		Qmax	12.4	0.0	1.000	0.600	0.550	779.17	5.15	0.00
		Qmin	23.9	0.0	1.000	0.600	0.550	779.17	10.07	0.00
	52	Nmax	33.5	0.0	1.000	0.600	0.550	779.17	14.30	0.00
		Nmin	21.3	0.0	1.000	0.600	0.550	779.17	8.96	0.00
		Mmax	40.2	0.0	1.000	0.600	0.550	779.17	17.34	0.00
		Mmin	21.3	0.0	1.000	0.600	0.550	779.17	8.96	0.00
		Qmax	21.3	0.0	1.000	0.600	0.550	779.17	8.96	0.00
		Qmin	40.2	0.0	1.000	0.600	0.550	779.17	17.34	0.00

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES EN UN SÓLO LADO

FECHA: 24/11/2005

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
53	52	Nmax	21.3	0.0	1.000	0.600	0.550	779.17	8.96	0.00
		Nmin	40.2	0.0	1.000	0.600	0.550	779.17	17.34	0.00
		Mmax	40.2	0.0	1.000	0.600	0.550	779.17	17.34	0.00
		Mmin	21.3	0.0	1.000	0.600	0.550	779.17	8.96	0.00
		Qmax	21.3	0.0	1.000	0.600	0.550	779.17	8.96	0.00
		Qmin	33.5	0.0	1.000	0.600	0.550	779.17	14.30	0.00
	53	Nmax	21.9	0.0	1.000	0.600	0.550	779.17	9.22	0.00
		Nmin	41.9	0.0	1.000	0.600	0.550	779.17	18.11	0.00
		Mmax	41.9	0.0	1.000	0.600	0.550	779.17	18.11	0.00
		Mmin	21.9	0.0	1.000	0.600	0.550	779.17	9.22	0.00
		Qmax	21.9	0.0	1.000	0.600	0.550	779.17	9.22	0.00
		Qmin	35.6	0.0	1.000	0.600	0.550	779.17	15.26	0.00
54	53	Nmax	21.9	0.0	1.000	0.600	0.550	779.17	9.22	0.00
		Nmin	41.9	0.0	1.000	0.600	0.550	779.17	18.11	0.00
		Mmax	41.9	0.0	1.000	0.600	0.550	779.17	18.11	0.00
		Mmin	21.9	0.0	1.000	0.600	0.550	779.17	9.22	0.00
		Qmax	21.9	0.0	1.000	0.600	0.550	779.17	9.22	0.00
		Qmin	35.6	0.0	1.000	0.600	0.550	779.17	15.26	0.00
	54	Nmax	22.5	0.0	1.000	0.600	0.550	779.17	9.47	0.00
		Nmin	43.6	0.0	1.000	0.600	0.550	779.17	18.88	0.00
		Mmax	43.6	0.0	1.000	0.600	0.550	779.17	18.88	0.00
		Mmin	22.5	0.0	1.000	0.600	0.550	779.17	9.47	0.00
		Qmax	22.5	0.0	1.000	0.600	0.550	779.17	9.47	0.00
		Qmin	37.8	0.0	1.000	0.600	0.550	779.17	16.23	0.00
55	54	Nmax	22.5	0.0	1.000	0.600	0.550	779.17	9.47	0.00
		Nmin	43.6	0.0	1.000	0.600	0.550	779.17	18.88	0.00
		Mmax	43.6	0.0	1.000	0.600	0.550	779.17	18.88	0.00
		Mmin	22.5	0.0	1.000	0.600	0.550	779.17	9.47	0.00
		Qmax	22.5	0.0	1.000	0.600	0.550	779.17	9.47	0.00
		Qmin	37.8	0.0	1.000	0.600	0.550	779.17	16.23	0.00
	55	Nmax	23.1	0.0	1.000	0.600	0.550	779.17	9.74	0.00
		Nmin	45.3	0.0	1.000	0.600	0.550	779.17	19.66	0.00
		Mmax	45.3	0.0	1.000	0.600	0.550	779.17	19.66	0.00
		Mmin	23.1	0.0	1.000	0.600	0.550	779.17	9.74	0.00
		Qmax	23.1	0.0	1.000	0.600	0.550	779.17	9.74	0.00
		Qmin	39.9	0.0	1.000	0.600	0.550	779.17	17.21	0.00
56	55	Nmax	23.1	0.0	1.000	0.600	0.550	779.17	9.74	0.00
		Nmin	45.3	0.0	1.000	0.600	0.550	779.17	19.66	0.00
		Mmax	45.3	0.0	1.000	0.600	0.550	779.17	19.66	0.00
		Mmin	23.1	0.0	1.000	0.600	0.550	779.17	9.74	0.00
		Qmax	23.1	0.0	1.000	0.600	0.550	779.17	9.74	0.00
		Qmin	39.9	0.0	1.000	0.600	0.550	779.17	17.21	0.00
	56	Nmax	23.7	0.0	1.000	0.600	0.550	779.17	10.00	0.00
		Nmin	47.0	0.0	1.000	0.600	0.550	779.17	20.44	0.00
		Mmax	47.0	0.0	1.000	0.600	0.550	779.17	20.44	0.00
		Mmin	23.7	0.0	1.000	0.600	0.550	779.17	10.00	0.00
		Qmax	23.7	0.0	1.000	0.600	0.550	779.17	10.00	0.00
		Qmin	42.1	0.0	1.000	0.600	0.550	779.17	18.20	0.00
57	56	Nmax	23.7	0.0	1.000	0.600	0.550	779.17	10.00	0.00
		Nmin	47.0	0.0	1.000	0.600	0.550	779.17	20.44	0.00
		Mmax	47.0	0.0	1.000	0.600	0.550	779.17	20.44	0.00
		Mmin	23.7	0.0	1.000	0.600	0.550	779.17	10.00	0.00

ARMADOCAM_2060_1000_1m.xls PI CAMINO Kv=2060 Kh=1000 24/11/2005

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES EN UN SÓLO LADO

FECHA: 24/11/2005

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
		Qmax	23.7	0.0	1.000	0.600	0.550	779.17	10.00	0.00
		Qmin	42.1	0.0	1.000	0.600	0.550	779.17	18.20	0.00
	57	Nmax	24.3	0.0	1.000	0.600	0.550	779.17	10.27	0.00
		Nmin	48.7	0.0	1.000	0.600	0.550	779.17	21.23	0.00
		Mmax	48.7	0.0	1.000	0.600	0.550	779.17	21.23	0.00
		Mmin	24.3	0.0	1.000	0.600	0.550	779.17	10.27	0.00
		Qmax	24.3	0.0	1.000	0.600	0.550	779.17	10.27	0.00
		Qmin	44.3	0.0	1.000	0.600	0.550	779.17	19.19	0.00
58	57	Nmax	24.3	0.0	1.000	0.600	0.550	779.17	10.27	0.00
		Nmin	48.7	0.0	1.000	0.600	0.550	779.17	21.23	0.00
		Mmax	48.7	0.0	1.000	0.600	0.550	779.17	21.23	0.00
		Mmin	24.3	0.0	1.000	0.600	0.550	779.17	10.27	0.00
		Qmax	24.3	0.0	1.000	0.600	0.550	779.17	10.27	0.00
		Qmin	44.3	0.0	1.000	0.600	0.550	779.17	19.19	0.00
	58	Nmax	24.9	0.0	1.000	0.600	0.550	779.17	10.52	0.00
		Nmin	50.3	0.0	1.000	0.600	0.550	779.17	22.01	0.00
		Mmax	50.3	0.0	1.000	0.600	0.550	779.17	22.01	0.00
		Mmin	24.9	0.0	1.000	0.600	0.550	779.17	10.52	0.00
		Qmax	24.9	0.0	1.000	0.600	0.550	779.17	10.52	0.00
		Qmin	46.4	0.0	1.000	0.600	0.550	779.17	20.17	0.00
59	58	Nmax	24.9	0.0	1.000	0.600	0.550	779.17	10.52	0.00
		Nmin	50.3	0.0	1.000	0.600	0.550	779.17	22.01	0.00
		Mmax	50.3	0.0	1.000	0.600	0.550	779.17	22.01	0.00
		Mmin	24.9	0.0	1.000	0.600	0.550	779.17	10.52	0.00
		Qmax	24.9	0.0	1.000	0.600	0.550	779.17	10.52	0.00
		Qmin	46.4	0.0	1.000	0.600	0.550	779.17	20.17	0.00
	59	Nmax	25.5	0.0	1.000	0.600	0.550	779.17	10.79	0.00
		Nmin	52.0	0.0	1.000	0.600	0.550	779.17	22.81	0.00
		Mmax	52.0	0.0	1.000	0.600	0.550	779.17	22.81	0.00
		Mmin	25.5	0.0	1.000	0.600	0.550	779.17	10.79	0.00
		Qmax	25.5	0.0	1.000	0.600	0.550	779.17	10.79	0.00
		Qmin	48.5	0.0	1.000	0.600	0.550	779.17	21.18	0.00
60	59	Nmax	25.5	0.0	1.000	0.600	0.550	779.17	10.79	0.00
		Nmin	52.0	0.0	1.000	0.600	0.550	779.17	22.80	0.00
		Mmax	52.0	0.0	1.000	0.600	0.550	779.17	22.80	0.00
		Mmin	25.5	0.0	1.000	0.600	0.550	779.17	10.79	0.00
		Qmax	25.5	0.0	1.000	0.600	0.550	779.17	10.79	0.00
		Qmin	48.5	0.0	1.000	0.600	0.550	779.17	21.17	0.00
	60	Nmax	26.1	0.0	1.000	0.600	0.550	779.17	11.06	0.00
		Nmin	53.7	0.0	1.000	0.600	0.550	779.17	23.61	0.00
		Mmax	53.7	0.0	1.000	0.600	0.550	779.17	23.61	0.00
		Mmin	26.1	0.0	1.000	0.600	0.550	779.17	11.06	0.00
		Qmax	26.1	0.0	1.000	0.600	0.550	779.17	11.06	0.00
		Qmin	50.7	0.0	1.000	0.600	0.550	779.17	22.19	0.00
61	60	Nmax	26.1	0.0	1.000	0.600	0.550	779.17	11.06	0.00
		Nmin	53.7	0.0	1.000	0.600	0.550	779.17	23.61	0.00
		Mmax	53.7	0.0	1.000	0.600	0.550	779.17	23.61	0.00
		Mmin	26.1	0.0	1.000	0.600	0.550	779.17	11.06	0.00
		Qmax	26.1	0.0	1.000	0.600	0.550	779.17	11.06	0.00
		Qmin	50.7	0.0	1.000	0.600	0.550	779.17	22.19	0.00
	61	Nmax	26.7	0.0	1.000	0.600	0.550	779.17	11.32	0.00
		Nmin	55.4	0.0	1.000	0.600	0.550	779.17	24.41	0.00

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES EN UN SÓLO LADO

FECHA: 24/11/2005

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
		Mmax	55.4	0.0	1.000	0.600	0.550	779.17	24.41	0.00
		Mmin	26.7	0.0	1.000	0.600	0.550	779.17	11.32	0.00
		Qmax	26.7	0.0	1.000	0.600	0.550	779.17	11.32	0.00
		Qmin	52.9	0.0	1.000	0.600	0.550	779.17	23.20	0.00
62	61	Nmax	26.7	0.0	1.000	0.600	0.550	779.17	11.32	0.00
		Nmin	55.4	0.0	1.000	0.600	0.550	779.17	24.41	0.00
		Mmax	55.4	0.0	1.000	0.600	0.550	779.17	24.41	0.00
		Mmin	26.7	0.0	1.000	0.600	0.550	779.17	11.32	0.00
		Qmax	26.7	0.0	1.000	0.600	0.550	779.17	11.32	0.00
		Qmin	52.9	0.0	1.000	0.600	0.550	779.17	23.20	0.00
	62	Nmax	27.3	0.0	1.000	0.600	0.550	779.17	11.59	0.00
		Nmin	57.1	0.0	1.000	0.600	0.550	779.17	25.22	0.00
		Mmax	57.1	0.0	1.000	0.600	0.550	779.17	25.22	0.00
		Mmin	27.3	0.0	1.000	0.600	0.550	779.17	11.59	0.00
		Qmax	27.3	0.0	1.000	0.600	0.550	779.17	11.59	0.00
		Qmin	55.0	0.0	1.000	0.600	0.550	779.17	24.22	0.00
63	62	Nmax	27.3	0.0	1.000	0.600	0.550	779.17	11.59	0.00
		Nmin	57.1	0.0	1.000	0.600	0.550	779.17	25.22	0.00
		Mmax	57.1	0.0	1.000	0.600	0.550	779.17	25.22	0.00
		Mmin	27.3	0.0	1.000	0.600	0.550	779.17	11.59	0.00
		Qmax	27.3	0.0	1.000	0.600	0.550	779.17	11.59	0.00
		Qmin	55.0	0.0	1.000	0.600	0.550	779.17	24.23	0.00
	63	Nmax	27.9	0.0	1.000	0.600	0.550	779.17	11.85	0.00
		Nmin	58.8	0.0	1.000	0.600	0.550	779.17	26.03	0.00
		Mmax	58.8	0.0	1.000	0.600	0.550	779.17	26.03	0.00
		Mmin	27.9	0.0	1.000	0.600	0.550	779.17	11.85	0.00
		Qmax	27.9	0.0	1.000	0.600	0.550	779.17	11.85	0.00
		Qmin	57.2	0.0	1.000	0.600	0.550	779.17	25.25	0.00
64	63	Nmax	27.9	0.0	1.000	0.600	0.550	779.17	11.85	0.00
		Nmin	58.8	0.0	1.000	0.600	0.550	779.17	26.03	0.00
		Mmax	58.8	0.0	1.000	0.600	0.550	779.17	26.03	0.00
		Mmin	27.9	0.0	1.000	0.600	0.550	779.17	11.85	0.00
		Qmax	27.9	0.0	1.000	0.600	0.550	779.17	11.85	0.00
		Qmin	57.2	0.0	1.000	0.600	0.550	779.17	25.25	0.00
	64	Nmax	28.5	0.0	1.000	0.600	0.550	779.17	12.12	0.00
		Nmin	60.5	0.0	1.000	0.600	0.550	779.17	26.85	0.00
		Mmax	60.5	0.0	1.000	0.600	0.550	779.17	26.85	0.00
		Mmin	28.5	0.0	1.000	0.600	0.550	779.17	12.12	0.00
		Qmax	28.5	0.0	1.000	0.600	0.550	779.17	12.12	0.00
		Qmin	59.3	0.0	1.000	0.600	0.550	779.17	26.29	0.00

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES A AMBOS LADOS

FECHA: 24/11/2005

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
1	1	Nmax	1.7	1.000	0.600	0.550	275.0	19.3	-	No necesita
		Nmin	1.7	1.000	0.600	0.550	275.0	23.8	-	No necesita
		Mmax	1.7	1.000	0.600	0.550	275.0	19.3	-	No necesita
		Mmin	1.7	1.000	0.600	0.550	275.0	23.8	-	No necesita
		Qmax	1.7	1.000	0.600	0.550	275.0	22.6	-	No necesita
		Qmin	1.7	1.000	0.600	0.550	275.0	19.3	-	No necesita
	2	Nmax	1.7	1.000	0.600	0.550	275.0	19.2	-	No necesita
		Nmin	1.7	1.000	0.600	0.550	275.0	23.8	-	No necesita
		Mmax	1.7	1.000	0.600	0.550	275.0	19.2	-	No necesita
		Mmin	1.7	1.000	0.600	0.550	275.0	23.8	-	No necesita
		Qmax	1.7	1.000	0.600	0.550	275.0	22.6	-	No necesita
		Qmin	1.7	1.000	0.600	0.550	275.0	19.2	-	No necesita
2	2	Nmax	1.7	1.000	0.600	0.550	275.0	19.2	-	No necesita
		Nmin	1.6	1.000	0.600	0.550	275.0	23.8	-	No necesita
		Mmax	1.7	1.000	0.600	0.550	275.0	19.2	-	No necesita
		Mmin	1.6	1.000	0.600	0.550	275.0	23.8	-	No necesita
		Qmax	1.6	1.000	0.600	0.550	275.0	22.6	-	No necesita
		Qmin	1.7	1.000	0.600	0.550	275.0	19.2	-	No necesita
	3	Nmax	1.7	1.000	0.600	0.550	275.0	19.1	-	No necesita
		Nmin	1.6	1.000	0.600	0.550	275.0	23.7	-	No necesita
		Mmax	1.7	1.000	0.600	0.550	275.0	19.1	-	No necesita
		Mmin	1.6	1.000	0.600	0.550	275.0	23.7	-	No necesita
		Qmax	1.6	1.000	0.600	0.550	275.0	22.7	-	No necesita
		Qmin	1.7	1.000	0.600	0.550	275.0	19.1	-	No necesita
3	3	Nmax	1.6	1.000	0.600	0.550	275.0	19.1	-	No necesita
		Nmin	1.5	1.000	0.600	0.550	275.0	23.7	-	No necesita
		Mmax	1.6	1.000	0.600	0.550	275.0	19.1	-	No necesita
		Mmin	1.5	1.000	0.600	0.550	275.0	23.7	-	No necesita
		Qmax	1.5	1.000	0.600	0.550	275.0	22.7	-	No necesita
		Qmin	1.6	1.000	0.600	0.550	275.0	19.1	-	No necesita
	4	Nmax	1.6	1.000	0.600	0.550	275.0	18.9	-	No necesita
		Nmin	1.5	1.000	0.600	0.550	275.0	23.7	-	No necesita
		Mmax	1.6	1.000	0.600	0.550	275.0	18.9	-	No necesita
		Mmin	1.5	1.000	0.600	0.550	275.0	23.7	-	No necesita
		Qmax	1.5	1.000	0.600	0.550	275.0	22.8	-	No necesita
		Qmin	1.6	1.000	0.600	0.550	275.0	18.9	-	No necesita
4	4	Nmax	1.6	1.000	0.600	0.550	275.0	18.9	-	No necesita
		Nmin	1.4	1.000	0.600	0.550	275.0	23.7	-	No necesita
		Mmax	1.6	1.000	0.600	0.550	275.0	18.9	-	No necesita
		Mmin	1.4	1.000	0.600	0.550	275.0	23.7	-	No necesita
		Qmax	1.4	1.000	0.600	0.550	275.0	22.8	-	No necesita
		Qmin	1.6	1.000	0.600	0.550	275.0	18.9	-	No necesita
	5	Nmax	1.6	1.000	0.600	0.550	275.0	18.8	-	No necesita
		Nmin	1.4	1.000	0.600	0.550	275.0	23.7	-	No necesita
		Mmax	1.6	1.000	0.600	0.550	275.0	18.8	-	No necesita
		Mmin	1.4	1.000	0.600	0.550	275.0	23.7	-	No necesita
		Qmax	1.4	1.000	0.600	0.550	275.0	22.8	-	No necesita
		Qmin	1.6	1.000	0.600	0.550	275.0	18.8	-	No necesita
5	5	Nmax	1.5	1.000	0.600	0.550	275.0	18.8	-	No necesita
		Nmin	1.3	1.000	0.600	0.550	275.0	23.7	-	No necesita
		Mmax	1.5	1.000	0.600	0.550	275.0	18.8	-	No necesita
		Mmin	1.3	1.000	0.600	0.550	275.0	23.7	-	No necesita

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES A AMBOS LADOS

FECHA: 24/11/2005

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
		Qmax	1.4	1.000	0.600	0.550	275.0	22.8	-	No necesita
		Qmin	1.5	1.000	0.600	0.550	275.0	18.8	-	No necesita
	6	Nmax	1.5	1.000	0.600	0.550	275.0	18.7	-	No necesita
		Nmin	1.3	1.000	0.600	0.550	275.0	23.7	-	No necesita
		Mmax	1.5	1.000	0.600	0.550	275.0	18.7	-	No necesita
		Mmin	1.3	1.000	0.600	0.550	275.0	23.7	-	No necesita
		Qmax	1.4	1.000	0.600	0.550	275.0	22.9	-	No necesita
		Qmin	1.5	1.000	0.600	0.550	275.0	18.7	-	No necesita
6	6	Nmax	1.5	1.000	0.600	0.550	275.0	18.7	-	No necesita
		Nmin	1.2	1.000	0.600	0.550	275.0	23.7	-	No necesita
		Mmax	1.5	1.000	0.600	0.550	275.0	18.7	-	No necesita
		Mmin	1.2	1.000	0.600	0.550	275.0	23.7	-	No necesita
		Qmax	1.5	1.000	0.600	0.550	275.0	22.9	-	No necesita
		Qmin	1.5	1.000	0.600	0.550	275.0	18.7	-	No necesita
	7	Nmax	1.5	1.000	0.600	0.550	275.0	18.6	-	No necesita
		Nmin	1.2	1.000	0.600	0.550	275.0	23.7	-	No necesita
		Mmax	1.5	1.000	0.600	0.550	275.0	18.6	-	No necesita
		Mmin	1.2	1.000	0.600	0.550	275.0	23.7	-	No necesita
		Qmax	1.5	1.000	0.600	0.550	275.0	23.0	-	No necesita
		Qmin	1.5	1.000	0.600	0.550	275.0	18.6	-	No necesita
7	7	Nmax	1.5	1.000	0.600	0.550	275.0	18.6	-	No necesita
		Nmin	1.2	1.000	0.600	0.550	275.0	23.7	-	No necesita
		Mmax	1.5	1.000	0.600	0.550	275.0	18.6	-	No necesita
		Mmin	1.2	1.000	0.600	0.550	275.0	23.7	-	No necesita
		Qmax	1.5	1.000	0.600	0.550	275.0	23.0	-	No necesita
		Qmin	1.5	1.000	0.600	0.550	275.0	18.6	-	No necesita
	8	Nmax	1.5	1.000	0.600	0.550	275.0	18.5	-	No necesita
		Nmin	1.2	1.000	0.600	0.550	275.0	23.7	-	No necesita
		Mmax	1.5	1.000	0.600	0.550	275.0	18.5	-	No necesita
		Mmin	1.2	1.000	0.600	0.550	275.0	23.7	-	No necesita
		Qmax	1.5	1.000	0.600	0.550	275.0	23.1	-	No necesita
		Qmin	1.5	1.000	0.600	0.550	275.0	18.5	-	No necesita
8	8	Nmax	1.5	1.000	0.600	0.550	275.0	18.5	-	No necesita
		Nmin	1.3	1.000	0.600	0.550	275.0	23.7	-	No necesita
		Mmax	1.5	1.000	0.600	0.550	275.0	18.5	-	No necesita
		Mmin	1.3	1.000	0.600	0.550	275.0	23.7	-	No necesita
		Qmax	1.3	1.000	0.600	0.550	275.0	23.1	-	No necesita
		Qmin	1.5	1.000	0.600	0.550	275.0	18.5	-	No necesita
	9	Nmax	1.5	1.000	0.600	0.550	275.0	18.3	-	No necesita
		Nmin	1.3	1.000	0.600	0.550	275.0	23.7	-	No necesita
		Mmax	1.5	1.000	0.600	0.550	275.0	18.3	-	No necesita
		Mmin	1.3	1.000	0.600	0.550	275.0	23.7	-	No necesita
		Qmax	1.3	1.000	0.600	0.550	275.0	23.2	-	No necesita
		Qmin	1.5	1.000	0.600	0.550	275.0	18.3	-	No necesita
9	9	Nmax	1.6	1.000	0.600	0.550	275.0	18.3	-	No necesita
		Nmin	1.5	1.000	0.600	0.550	275.0	23.7	-	No necesita
		Mmax	1.6	1.000	0.600	0.550	275.0	18.3	-	No necesita
		Mmin	1.5	1.000	0.600	0.550	275.0	23.7	-	No necesita
		Qmax	1.5	1.000	0.600	0.550	275.0	23.2	-	No necesita
		Qmin	1.6	1.000	0.600	0.550	275.0	18.3	-	No necesita
	10	Nmax	1.6	1.000	0.600	0.550	275.0	18.2	-	No necesita
		Nmin	1.5	1.000	0.600	0.550	275.0	23.6	-	No necesita

ARMADOCAM_2060_1000_2m.xls PI CAMINO Kv=2060 Kh=1000 24/11/2005

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES A AMBOS LADOS

FECHA: 24/11/2005

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
		Mmax	1.6	1.000	0.600	0.550	275.0	18.2	-	No necesita
		Mmin	1.5	1.000	0.600	0.550	275.0	23.6	-	No necesita
		Qmax	1.5	1.000	0.600	0.550	275.0	23.2	-	No necesita
		Qmin	1.6	1.000	0.600	0.550	275.0	18.2	-	No necesita
10	10	Nmax	1.8	1.000	0.600	0.550	275.0	18.2	-	No necesita
		Nmin	1.8	1.000	0.600	0.550	275.0	23.6	-	No necesita
		Mmax	1.8	1.000	0.600	0.550	275.0	18.2	-	No necesita
		Mmin	1.8	1.000	0.600	0.550	275.0	23.6	-	No necesita
		Qmax	1.8	1.000	0.600	0.550	275.0	23.2	-	No necesita
		Qmin	1.8	1.000	0.600	0.550	275.0	22.6	-	No necesita
	11	Nmax	1.8	1.000	0.600	0.550	275.0	18.0	-	No necesita
		Nmin	1.8	1.000	0.600	0.550	275.0	23.6	-	No necesita
		Mmax	1.8	1.000	0.600	0.550	275.0	18.0	-	No necesita
		Mmin	1.8	1.000	0.600	0.550	275.0	23.6	-	No necesita
		Qmax	1.8	1.000	0.600	0.550	275.0	23.3	-	No necesita
		Qmin	1.8	1.000	0.600	0.550	275.0	22.5	-	No necesita
11	11	Nmax	2.3	1.000	0.600	0.550	275.0	18.0	-	No necesita
		Nmin	2.3	1.000	0.600	0.550	275.0	23.6	-	No necesita
		Mmax	2.3	1.000	0.600	0.550	275.0	18.0	-	No necesita
		Mmin	2.3	1.000	0.600	0.550	275.0	23.6	-	No necesita
		Qmax	2.3	1.000	0.600	0.550	275.0	23.3	-	No necesita
		Mmin	2.3	1.000	0.600	0.550	275.0	23.6	-	No necesita
		Qmax	2.3	1.000	0.600	0.550	275.0	23.3	-	No necesita
		Qmin	2.7	1.000	0.600	0.550	275.0	22.5	-	No necesita
	12	Nmax	2.3	1.000	0.600	0.550	275.0	17.8	-	No necesita
		Nmin	2.3	1.000	0.600	0.550	275.0	23.4	-	No necesita
		Mmax	2.3	1.000	0.600	0.550	275.0	17.8	-	No necesita
		Mmin	2.3	1.000	0.600	0.550	275.0	23.4	-	No necesita
		Qmax	2.3	1.000	0.600	0.550	275.0	23.2	-	No necesita
		Qmin	2.7	1.000	0.600	0.550	275.0	22.4	-	No necesita
12	12	Nmax	2.9	1.000	0.600	0.550	275.0	17.8	-	No necesita
		Nmin	3.4	1.000	0.600	0.550	275.0	23.4	-	No necesita
		Mmax	2.9	1.000	0.600	0.550	275.0	17.8	-	No necesita
		Mmin	3.4	1.000	0.600	0.550	275.0	23.4	-	No necesita
		Qmax	2.9	1.000	0.600	0.550	275.0	23.2	-	No necesita
		Qmin	3.8	1.000	0.600	0.550	275.0	22.4	-	No necesita
	13	Nmax	2.9	1.000	0.600	0.550	275.0	17.5	-	No necesita
		Nmin	3.4	1.000	0.600	0.550	275.0	23.2	-	No necesita
		Mmax	2.9	1.000	0.600	0.550	275.0	17.5	-	No necesita
		Mmin	3.4	1.000	0.600	0.550	275.0	23.2	-	No necesita
		Qmax	2.9	1.000	0.600	0.550	275.0	23.1	-	No necesita
		Qmin	3.8	1.000	0.600	0.550	275.0	22.1	-	No necesita
13	13	Nmax	60.7	1.000	0.500	0.450	225.0	21.7	18.1	26.3
		Nmin	56.1	1.000	0.500	0.450	225.0	22.8	19.0	22.9
		Mmax	31.7	1.000	0.500	0.450	225.0	17.1	14.3	10.8
		Mmin	66.0	1.000	0.500	0.450	225.0	22.9	19.1	28.9
		Qmax	31.7	1.000	0.500	0.450	225.0	17.1	14.3	10.8
		Qmin	66.0	1.000	0.500	0.450	225.0	22.9	19.1	28.9
	15	Nmax	56.6	1.000	0.500	0.450	225.0	19.1	16.0	25.1
		Nmin	55.0	1.000	0.500	0.450	225.0	20.5	17.1	23.4
		Mmax	29.5	1.000	0.500	0.450	225.0	15.1	12.6	10.4
		Mmin	55.0	1.000	0.500	0.450	225.0	20.5	17.1	23.4
		Qmax	29.5	1.000	0.500	0.450	225.0	15.1	12.6	10.4
		Qmin	63.2	1.000	0.500	0.450	225.0	20.3	16.9	28.6

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES A AMBOS LADOS

FECHA: 24/11/2005

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
14	15	Nmax	56.6	1.000	0.500	0.450	225.0	19.1	16.0	25.1
		Nmin	55.0	1.000	0.500	0.450	225.0	20.5	17.1	23.4
		Mmax	29.5	1.000	0.500	0.450	225.0	15.1	12.6	10.4
		Mmin	55.0	1.000	0.500	0.450	225.0	20.5	17.1	23.4
		Qmax	29.5	1.000	0.500	0.450	225.0	15.1	12.6	10.4
		Qmin	63.2	1.000	0.500	0.450	225.0	20.3	16.9	28.6
	17	Nmax	52.4	1.000	0.500	0.450	225.0	16.1	13.4	24.1
		Nmin	53.8	1.000	0.500	0.450	225.0	17.9	14.9	24.0
		Mmax	27.4	1.000	0.500	0.450	225.0	12.7	10.6	10.4
		Mmin	53.8	1.000	0.500	0.450	225.0	17.9	14.9	24.0
		Qmax	27.4	1.000	0.500	0.450	225.0	12.7	10.6	10.4
		Qmin	60.4	1.000	0.500	0.450	225.0	17.1	14.3	28.5
15	17	Nmax	52.4	1.000	0.500	0.450	225.0	16.1	13.4	24.1
		Nmin	53.9	1.000	0.500	0.450	225.0	17.9	14.9	24.0
		Mmax	27.4	1.000	0.500	0.450	225.0	12.7	10.6	10.4
		Mmin	53.9	1.000	0.500	0.450	225.0	17.9	14.9	24.0
		Qmax	27.4	1.000	0.500	0.450	225.0	12.7	10.6	10.4
		Qmin	60.5	1.000	0.500	0.450	225.0	17.1	14.3	28.5
	19	Nmax	48.3	1.000	0.500	0.450	225.0	11.9	9.9	23.7
		Nmin	52.7	1.000	0.500	0.450	225.0	14.5	12.1	25.1
		Mmax	25.2	1.000	0.500	0.450	225.0	9.2	7.7	10.8
		Mmin	52.7	1.000	0.500	0.450	225.0	14.5	12.1	25.1
		Qmax	25.2	1.000	0.500	0.450	225.0	9.2	7.7	10.8
		Qmin	55.7	1.000	0.500	0.450	225.0	12.8	10.7	27.8
16	19	Nmax	48.4	1.000	0.500	0.450	225.0	11.9	9.9	23.7
		Nmin	52.7	1.000	0.500	0.450	225.0	14.5	12.1	25.1
		Mmax	25.3	1.000	0.500	0.450	225.0	9.2	7.7	10.9
		Mmin	52.7	1.000	0.500	0.450	225.0	14.5	12.1	25.1
		Qmax	25.3	1.000	0.500	0.450	225.0	9.2	7.7	10.9
		Qmin	55.7	1.000	0.500	0.450	225.0	12.8	10.7	27.8
	21	Nmax	44.2	1.000	0.500	0.450	225.0	8.1	6.8	23.1
		Nmin	51.5	1.000	0.500	0.450	225.0	8.0	6.6	27.7
		Mmax	44.2	1.000	0.500	0.450	225.0	8.1	6.8	23.1
		Mmin	51.5	1.000	0.500	0.450	225.0	8.0	6.6	27.7
		Qmax	23.1	1.000	0.500	0.450	225.0	7.2	6.0	10.5
		Qmin	51.5	1.000	0.500	0.450	225.0	8.0	6.6	27.7
17	21	Nmax	44.3	1.000	0.500	0.450	225.0	8.1	6.8	23.2
		Nmin	51.6	1.000	0.500	0.450	225.0	7.9	6.6	27.8
		Mmax	44.3	1.000	0.500	0.450	225.0	8.1	6.8	23.2
		Mmin	51.6	1.000	0.500	0.450	225.0	7.9	6.6	27.8
		Qmax	23.1	1.000	0.500	0.450	225.0	7.2	6.0	10.6
		Qmin	51.6	1.000	0.500	0.450	225.0	7.9	6.6	27.8
	23	Nmax	40.1	1.000	0.500	0.450	225.0	13.7	11.4	17.7
		Nmin	50.4	1.000	0.500	0.450	225.0	12.5	10.4	24.7
		Mmax	46.3	1.000	0.500	0.450	225.0	14.1	11.7	21.3
		Mmin	20.9	1.000	0.500	0.450	225.0	11.3	9.4	7.1
		Qmax	20.9	1.000	0.500	0.450	225.0	11.3	9.4	7.1
		Qmin	50.4	1.000	0.500	0.450	225.0	12.5	10.4	24.7
18	23	Nmax	40.1	1.000	0.500	0.450	225.0	13.7	11.4	17.7
		Nmin	50.5	1.000	0.500	0.450	225.0	12.5	10.4	24.7
		Mmax	46.3	1.000	0.500	0.450	225.0	14.1	11.7	21.3
		Mmin	20.9	1.000	0.500	0.450	225.0	11.3	9.4	7.1

ARMADOCAM_2060_1000_2m.xls PI CAMINO Kv=2060 Kh=1000 24/11/2005

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES A AMBOS LADOS

FECHA: 24/11/2005

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
		Qmax	20.9	1.000	0.500	0.450	225.0	11.3	9.4	7.1
		Qmin	50.5	1.000	0.500	0.450	225.0	12.5	10.4	24.7
	25	Nmax	31.8	1.000	0.500	0.450	225.0	18.4	15.3	10.2
		Nmin	40.1	1.000	0.500	0.450	225.0	18.7	15.6	15.1
		Mmax	36.7	1.000	0.500	0.450	225.0	19.2	16.0	12.8
		Mmin	16.6	1.000	0.500	0.450	225.0	14.9	12.4	2.6
		Qmax	16.6	1.000	0.500	0.450	225.0	14.9	12.4	2.6
		Qmin	40.1	1.000	0.500	0.450	225.0	18.7	15.6	15.1
19	25	Nmax	31.8	1.000	0.500	0.450	225.0	18.4	15.3	10.2
		Nmin	40.1	1.000	0.500	0.450	225.0	18.7	15.6	15.1
		Mmax	36.7	1.000	0.500	0.450	225.0	19.2	16.0	12.8
		Mmin	16.6	1.000	0.500	0.450	225.0	14.9	12.4	2.6
		Qmax	16.6	1.000	0.500	0.450	225.0	14.9	12.4	2.6
		Qmin	40.1	1.000	0.500	0.450	225.0	18.7	15.6	15.1
	27	Nmax	23.5	1.000	0.500	0.450	225.0	21.0	17.5	3.7
		Nmin	29.7	1.000	0.500	0.450	225.0	21.8	18.2	7.1
		Mmax	27.1	1.000	0.500	0.450	225.0	22.0	18.3	5.4
		Mmin	12.2	1.000	0.500	0.450	225.0	16.8	-	No necesita
		Qmax	12.2	1.000	0.500	0.450	225.0	16.8	-	No necesita
		Qmin	29.7	1.000	0.500	0.450	225.0	21.8	18.2	7.1
20	27	Nmax	23.5	1.000	0.500	0.450	225.0	21.0	17.5	3.7
		Nmin	29.7	1.000	0.500	0.450	225.0	21.8	18.2	7.1
		Mmax	27.1	1.000	0.500	0.450	225.0	22.0	18.3	5.4
		Mmin	12.2	1.000	0.500	0.450	225.0	16.8	-	No necesita
		Qmax	12.2	1.000	0.500	0.450	225.0	16.8	-	No necesita
		Qmin	29.7	1.000	0.500	0.450	225.0	21.8	18.2	7.1
	29	Nmax	15.2	1.000	0.500	0.450	225.0	22.5	-	No necesita
		Nmin	19.3	1.000	0.500	0.450	225.0	23.6	-	No necesita
		Mmax	19.3	1.000	0.500	0.450	225.0	23.6	-	No necesita
		Mmin	7.9	1.000	0.500	0.450	225.0	17.9	-	No necesita
		Qmax	7.9	1.000	0.500	0.450	225.0	17.9	-	No necesita
		Qmin	19.3	1.000	0.500	0.450	225.0	23.6	-	No necesita
21	29	Nmax	15.2	1.000	0.500	0.450	225.0	22.5	-	No necesita
		Nmin	19.3	1.000	0.500	0.450	225.0	23.6	-	No necesita
		Mmax	19.3	1.000	0.500	0.450	225.0	23.6	-	No necesita
		Mmin	7.9	1.000	0.500	0.450	225.0	17.9	-	No necesita
		Qmax	7.9	1.000	0.500	0.450	225.0	17.9	-	No necesita
		Qmin	19.3	1.000	0.500	0.450	225.0	23.6	-	No necesita
	31	Nmax	6.8	1.000	0.500	0.450	225.0	23.3	-	No necesita
		Nmin	8.9	1.000	0.500	0.450	225.0	24.6	-	No necesita
		Mmax	8.9	1.000	0.500	0.450	225.0	24.6	-	No necesita
		Mmin	3.5	1.000	0.500	0.450	225.0	18.5	-	No necesita
		Qmax	3.5	1.000	0.500	0.450	225.0	18.5	-	No necesita
		Qmin	8.9	1.000	0.500	0.450	225.0	24.6	-	No necesita
22	31	Nmax	6.8	1.000	0.500	0.450	225.0	23.3	-	No necesita
		Nmin	8.9	1.000	0.500	0.450	225.0	24.6	-	No necesita
		Mmax	8.9	1.000	0.500	0.450	225.0	24.6	-	No necesita
		Mmin	3.5	1.000	0.500	0.450	225.0	18.5	-	No necesita
		Qmax	3.5	1.000	0.500	0.450	225.0	18.5	-	No necesita
		Qmin	8.9	1.000	0.500	0.450	225.0	24.6	-	No necesita
	33	Nmax	1.5	1.000	0.500	0.450	225.0	23.5	-	No necesita
		Nmin	1.6	1.000	0.500	0.450	225.0	24.9	-	No necesita

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES A AMBOS LADOS

FECHA: 24/11/2005

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
		Mmax	1.6	1.000	0.500	0.450	225.0	24.9	-	No necesita
		Mmin	0.8	1.000	0.500	0.450	225.0	18.7	-	No necesita
		Qmax	1.7	1.000	0.500	0.450	225.0	24.7	-	No necesita
		Qmin	0.8	1.000	0.500	0.450	225.0	18.7	-	No necesita
23	33	Nmax	1.5	1.000	0.500	0.450	225.0	23.5	-	No necesita
		Nmin	1.6	1.000	0.500	0.450	225.0	24.9	-	No necesita
		Mmax	1.6	1.000	0.500	0.450	225.0	24.9	-	No necesita
		Mmin	0.8	1.000	0.500	0.450	225.0	18.7	-	No necesita
		Qmax	1.7	1.000	0.500	0.450	225.0	24.7	-	No necesita
		Qmin	0.8	1.000	0.500	0.450	225.0	18.7	-	No necesita
	35	Nmax	9.8	1.000	0.500	0.450	225.0	23.1	-	No necesita
		Nmin	11.9	1.000	0.500	0.450	225.0	24.4	-	No necesita
		Mmax	11.9	1.000	0.500	0.450	225.0	24.4	-	No necesita
		Mmin	5.2	1.000	0.500	0.450	225.0	18.4	-	No necesita
		Qmax	11.9	1.000	0.500	0.450	225.0	24.4	-	No necesita
		Qmin	5.2	1.000	0.500	0.450	225.0	18.4	-	No necesita
24	35	Nmax	9.8	1.000	0.500	0.450	225.0	23.1	-	No necesita
		Nmin	11.9	1.000	0.500	0.450	225.0	24.4	-	No necesita
		Mmax	11.9	1.000	0.500	0.450	225.0	24.4	-	No necesita
		Mmin	5.2	1.000	0.500	0.450	225.0	18.4	-	No necesita
		Qmax	11.9	1.000	0.500	0.450	225.0	24.4	-	No necesita
		Qmin	5.2	1.000	0.500	0.450	225.0	18.4	-	No necesita
	37	Nmax	18.2	1.000	0.500	0.450	225.0	22.1	-	No necesita
		Nmin	22.4	1.000	0.500	0.450	225.0	23.2	-	No necesita
		Mmax	22.4	1.000	0.500	0.450	225.0	23.2	-	No necesita
		Mmin	9.5	1.000	0.500	0.450	225.0	17.6	-	No necesita
		Qmax	22.4	1.000	0.500	0.450	225.0	23.2	-	No necesita
		Qmin	9.5	1.000	0.500	0.450	225.0	17.6	-	No necesita
25	37	Nmax	18.1	1.000	0.500	0.450	225.0	22.1	-	No necesita
		Nmin	22.3	1.000	0.500	0.450	225.0	23.2	-	No necesita
		Mmax	22.3	1.000	0.500	0.450	225.0	23.2	-	No necesita
		Mmin	9.5	1.000	0.500	0.450	225.0	17.6	-	No necesita
		Qmax	22.3	1.000	0.500	0.450	225.0	23.2	-	No necesita
		Qmin	9.5	1.000	0.500	0.450	225.0	17.6	-	No necesita
	39	Nmax	26.5	1.000	0.500	0.450	225.0	20.2	16.8	5.9
		Nmin	32.7	1.000	0.500	0.450	225.0	21.0	17.5	9.4
		Mmax	30.4	1.000	0.500	0.450	225.0	21.2	17.6	7.9
		Mmin	13.9	1.000	0.500	0.450	225.0	16.2	-	No necesita
		Qmax	32.7	1.000	0.500	0.450	225.0	21.0	17.5	9.4
		Qmin	13.9	1.000	0.500	0.450	225.0	16.2	-	No necesita
26	39	Nmax	26.5	1.000	0.500	0.450	225.0	20.2	16.8	5.9
		Nmin	32.7	1.000	0.500	0.450	225.0	21.0	17.5	9.4
		Mmax	30.4	1.000	0.500	0.450	225.0	21.2	17.6	7.9
		Mmin	13.9	1.000	0.500	0.450	225.0	16.2	-	No necesita
		Qmax	32.7	1.000	0.500	0.450	225.0	21.0	17.5	9.4
		Qmin	13.9	1.000	0.500	0.450	225.0	16.2	-	No necesita
	41	Nmax	34.8	1.000	0.500	0.450	225.0	17.1	14.3	12.7
		Nmin	43.1	1.000	0.500	0.450	225.0	17.4	14.5	17.7
		Mmax	40.0	1.000	0.500	0.450	225.0	17.8	14.9	15.5
		Mmin	18.2	1.000	0.500	0.450	225.0	13.8	11.5	4.2
		Qmax	43.1	1.000	0.500	0.450	225.0	17.4	14.5	17.7
		Qmin	18.2	1.000	0.500	0.450	225.0	13.8	11.5	4.2

ARMADOCAM_2060_1000_2m.xls PI CAMINO Kv=2060 Kh=1000 24/11/2005

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES A AMBOS LADOS

FECHA: 24/11/2005

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
27	41	Nmax	34.8	1.000	0.500	0.450	225.0	17.1	14.3	12.7
		Nmin	43.1	1.000	0.500	0.450	225.0	17.4	14.5	17.7
		Mmax	40.0	1.000	0.500	0.450	225.0	17.8	14.9	15.5
		Mmin	18.2	1.000	0.500	0.450	225.0	13.8	11.5	4.2
		Qmax	43.1	1.000	0.500	0.450	225.0	17.4	14.5	17.7
		Qmin	18.2	1.000	0.500	0.450	225.0	13.8	11.5	4.2
	43	Nmax	43.1	1.000	0.500	0.450	225.0	10.4	8.7	21.3
		Nmin	53.5	1.000	0.500	0.450	225.0	8.6	7.2	28.6
		Mmax	49.6	1.000	0.500	0.450	225.0	10.6	8.8	25.2
		Mmin	22.6	1.000	0.500	0.450	225.0	8.6	7.2	9.5
		Qmax	53.5	1.000	0.500	0.450	225.0	8.6	7.2	28.6
		Qmin	22.6	1.000	0.500	0.450	225.0	8.6	7.2	9.5
28	43	Nmax	43.1	1.000	0.500	0.450	225.0	10.4	8.7	21.2
		Nmin	53.5	1.000	0.500	0.450	225.0	8.6	7.2	28.6
		Mmax	49.5	1.000	0.500	0.450	225.0	10.6	8.8	25.1
		Mmin	22.6	1.000	0.500	0.450	225.0	8.6	7.2	9.5
		Qmax	53.5	1.000	0.500	0.450	225.0	8.6	7.2	28.6
		Qmin	22.6	1.000	0.500	0.450	225.0	8.6	7.2	9.5
	45	Nmax	47.2	1.000	0.500	0.450	225.0	10.1	8.4	24.0
		Nmin	54.7	1.000	0.500	0.450	225.0	12.9	10.7	27.1
		Mmax	24.8	1.000	0.500	0.450	225.0	7.9	6.5	11.2
		Mmin	54.7	1.000	0.500	0.450	225.0	12.9	10.7	27.1
		Qmax	54.7	1.000	0.500	0.450	225.0	12.9	10.7	27.1
		Qmin	24.8	1.000	0.500	0.450	225.0	7.9	6.5	11.2
29	45	Nmax	47.2	1.000	0.500	0.450	225.0	10.1	8.4	23.9
		Nmin	54.6	1.000	0.500	0.450	225.0	12.9	10.7	27.1
		Mmax	24.7	1.000	0.500	0.450	225.0	7.9	6.5	11.2
		Mmin	54.6	1.000	0.500	0.450	225.0	12.9	10.7	27.1
		Qmax	54.6	1.000	0.500	0.450	225.0	12.9	10.7	27.1
		Qmin	24.7	1.000	0.500	0.450	225.0	7.9	6.5	11.2
	47	Nmax	51.3	1.000	0.500	0.450	225.0	15.1	12.6	23.9
		Nmin	55.8	1.000	0.500	0.450	225.0	17.0	14.2	25.7
		Mmax	26.9	1.000	0.500	0.450	225.0	12.0	10.0	10.4
		Mmin	55.8	1.000	0.500	0.450	225.0	17.0	14.2	25.7
		Qmax	59.0	1.000	0.500	0.450	225.0	16.0	13.3	28.2
		Qmin	26.9	1.000	0.500	0.450	225.0	12.0	10.0	10.4
30	47	Nmax	51.4	1.000	0.500	0.450	225.0	15.1	12.6	23.9
		Nmin	55.8	1.000	0.500	0.450	225.0	17.0	14.2	25.7
		Mmax	26.9	1.000	0.500	0.450	225.0	12.0	10.0	10.4
		Mmin	55.8	1.000	0.500	0.450	225.0	17.0	14.2	25.7
		Qmax	59.0	1.000	0.500	0.450	225.0	16.0	13.3	28.2
		Qmin	26.9	1.000	0.500	0.450	225.0	12.0	10.0	10.4
	49	Nmax	55.5	1.000	0.500	0.450	225.0	18.4	15.3	24.8
		Nmin	57.0	1.000	0.500	0.450	225.0	19.9	16.6	24.9
		Mmax	29.0	1.000	0.500	0.450	225.0	14.6	12.2	10.4
		Mmin	57.0	1.000	0.500	0.450	225.0	19.9	16.6	24.9
		Qmax	63.8	1.000	0.500	0.450	225.0	19.4	16.2	29.4
		Qmin	29.0	1.000	0.500	0.450	225.0	14.6	12.2	10.4
31	49	Nmax	55.5	1.000	0.500	0.450	225.0	18.4	15.3	24.8
		Nmin	56.9	1.000	0.500	0.450	225.0	19.9	16.6	24.9
		Mmax	29.1	1.000	0.500	0.450	225.0	14.6	12.2	10.4
		Mmin	56.9	1.000	0.500	0.450	225.0	19.9	16.6	24.9

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES A AMBOS LADOS

FECHA: 24/11/2005

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
		Qmax	63.8	1.000	0.500	0.450	225.0	19.4	16.2	29.4
		Qmin	29.1	1.000	0.500	0.450	225.0	14.6	12.2	10.4
	51	Nmax	59.6	1.000	0.500	0.450	225.0	21.0	17.5	26.0
		Nmin	58.1	1.000	0.500	0.450	225.0	22.3	18.6	24.4
		Mmax	31.2	1.000	0.500	0.450	225.0	16.7	13.9	10.7
		Mmin	58.1	1.000	0.500	0.450	225.0	22.3	18.6	24.4
		Qmax	66.6	1.000	0.500	0.450	225.0	22.2	18.5	29.7
		Qmin	31.2	1.000	0.500	0.450	225.0	16.7	13.9	10.7
32	51	Nmax	59.5	1.000	0.500	0.450	225.0	21.0	17.5	25.9
		Nmin	58.0	1.000	0.500	0.450	225.0	22.3	18.6	24.3
		Mmax	31.1	1.000	0.500	0.450	225.0	16.7	13.9	10.7
		Mmin	58.0	1.000	0.500	0.450	225.0	22.3	18.6	24.3
		Qmax	66.5	1.000	0.500	0.450	225.0	22.2	18.5	29.6
		Qmin	31.1	1.000	0.500	0.450	225.0	16.7	13.9	10.7
	64	Nmax	63.7	1.000	0.500	0.450	225.0	23.4	19.5	27.3
		Nmin	59.2	1.000	0.500	0.450	225.0	24.4	20.4	24.0
		Mmax	33.3	1.000	0.500	0.450	225.0	18.5	15.4	11.1
		Mmin	69.3	1.000	0.500	0.450	225.0	24.7	20.5	30.1
		Qmax	69.3	1.000	0.500	0.450	225.0	24.7	20.5	30.1
		Qmin	33.3	1.000	0.500	0.450	225.0	18.5	15.4	11.1
33	1	Nmax	62.9	1.000	0.600	0.550	275.0	22.6	18.8	22.2
		Nmin	39.3	1.000	0.600	0.550	275.0	19.3	16.1	11.7
		Mmax	72.3	1.000	0.600	0.550	275.0	23.8	19.9	26.5
		Mmin	39.3	1.000	0.600	0.550	275.0	19.3	16.1	11.7
		Qmax	72.3	1.000	0.600	0.550	275.0	23.8	19.9	26.5
		Qmin	39.3	1.000	0.600	0.550	275.0	19.3	16.1	11.7
	14	Nmax	63.3	1.000	0.600	0.550	275.0	19.9	16.6	23.6
		Nmin	39.7	1.000	0.600	0.550	275.0	17.2	14.3	12.8
		Mmax	72.8	1.000	0.600	0.550	275.0	21.0	17.5	27.9
		Mmin	39.7	1.000	0.600	0.550	275.0	17.2	14.3	12.8
		Qmax	72.8	1.000	0.600	0.550	275.0	21.0	17.5	27.9
		Qmin	39.7	1.000	0.600	0.550	275.0	17.2	14.3	12.8
34	14	Nmax	58.3	1.000	0.600	0.550	275.0	19.9	16.6	21.0
		Nmin	36.4	1.000	0.600	0.550	275.0	17.2	14.3	11.1
		Mmax	67.1	1.000	0.600	0.550	275.0	21.0	17.5	25.0
		Mmin	36.4	1.000	0.600	0.550	275.0	17.2	14.3	11.1
		Qmax	67.1	1.000	0.600	0.550	275.0	21.0	17.5	25.0
		Qmin	36.4	1.000	0.600	0.550	275.0	17.2	14.3	11.1
	16	Nmax	58.7	1.000	0.600	0.550	275.0	16.8	14.0	22.6
		Nmin	36.8	1.000	0.600	0.550	275.0	14.6	12.2	12.5
		Mmax	67.5	1.000	0.600	0.550	275.0	17.7	14.8	26.6
		Mmin	36.8	1.000	0.600	0.550	275.0	14.6	12.2	12.5
		Qmax	67.5	1.000	0.600	0.550	275.0	17.7	14.8	26.6
		Qmin	36.8	1.000	0.600	0.550	275.0	14.6	12.2	12.5
35	16	Nmax	53.8	1.000	0.600	0.550	275.0	16.8	14.0	20.1
		Nmin	33.5	1.000	0.600	0.550	275.0	14.6	12.2	10.8
		Mmax	61.8	1.000	0.600	0.550	275.0	17.7	14.8	23.7
		Mmin	33.5	1.000	0.600	0.550	275.0	14.6	12.2	10.8
		Qmax	61.8	1.000	0.600	0.550	275.0	17.7	14.8	23.7
		Qmin	33.5	1.000	0.600	0.550	275.0	14.6	12.2	10.8
	18	Nmax	54.3	1.000	0.600	0.550	275.0	12.2	10.2	22.3
		Nmin	34.0	1.000	0.600	0.550	275.0	11.0	9.2	12.5

ARMADOCAM_2060_1000_2m.xls PI CAMINO Kv=2060 Kh=1000 24/11/2005

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES A AMBOS LADOS

FECHA: 24/11/2005

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
		Mmax	62.3	1.000	0.600	0.550	275.0	13.1	10.9	25.9
		Mmin	34.0	1.000	0.600	0.550	275.0	11.0	9.2	12.5
		Qmax	62.3	1.000	0.600	0.550	275.0	13.1	10.9	25.9
		Qmin	34.0	1.000	0.600	0.550	275.0	11.0	9.2	12.5
36	18	Nmax	49.4	1.000	0.600	0.550	275.0	12.2	10.2	19.8
		Nmin	30.7	1.000	0.600	0.550	275.0	11.0	9.2	10.9
		Mmax	56.7	1.000	0.600	0.550	275.0	13.1	10.9	23.1
		Mmin	30.7	1.000	0.600	0.550	275.0	11.0	9.2	10.9
		Qmax	56.7	1.000	0.600	0.550	275.0	13.1	10.9	23.1
		Qmin	30.7	1.000	0.600	0.550	275.0	11.0	9.2	10.9
	20	Nmax	49.8	1.000	0.600	0.550	275.0	9.0	7.5	21.4
		Nmin	31.2	1.000	0.600	0.550	275.0	6.5	5.4	13.0
		Mmax	31.2	1.000	0.600	0.550	275.0	6.5	5.4	13.0
		Mmin	49.8	1.000	0.600	0.550	275.0	9.0	7.5	21.4
		Qmax	57.2	1.000	0.600	0.550	275.0	8.9	7.4	25.1
		Qmin	31.2	1.000	0.600	0.550	275.0	6.5	5.4	13.0
37	20	Nmax	45.1	1.000	0.600	0.550	275.0	9.0	7.5	19.0
		Nmin	28.0	1.000	0.600	0.550	275.0	6.5	5.4	11.4
		Mmax	28.0	1.000	0.600	0.550	275.0	6.5	5.4	11.4
		Mmin	45.1	1.000	0.600	0.550	275.0	9.0	7.5	19.0
		Qmax	51.8	1.000	0.600	0.550	275.0	8.9	7.4	22.4
		Qmin	28.0	1.000	0.600	0.550	275.0	6.5	5.4	11.4
	22	Nmax	45.5	1.000	0.600	0.550	275.0	14.6	12.2	16.8
		Nmin	28.4	1.000	0.600	0.550	275.0	12.0	10.0	9.3
		Mmax	28.4	1.000	0.600	0.550	275.0	12.0	10.0	9.3
		Mmin	52.2	1.000	0.600	0.550	275.0	15.1	12.6	20.0
		Qmax	52.2	1.000	0.600	0.550	275.0	15.1	12.6	20.0
		Qmin	28.4	1.000	0.600	0.550	275.0	12.0	10.0	9.3
38	22	Nmax	38.5	1.000	0.600	0.550	275.0	14.6	12.2	13.3
		Nmin	23.8	1.000	0.600	0.550	275.0	12.0	10.0	6.9
		Mmax	23.8	1.000	0.600	0.550	275.0	12.0	10.0	6.9
		Mmin	44.2	1.000	0.600	0.550	275.0	15.1	12.6	16.0
		Qmax	44.2	1.000	0.600	0.550	275.0	15.1	12.6	16.0
		Qmin	23.8	1.000	0.600	0.550	275.0	12.0	10.0	6.9
	24	Nmax	39.4	1.000	0.600	0.550	275.0	19.4	16.2	11.7
		Nmin	24.6	1.000	0.600	0.550	275.0	16.3	13.6	5.6
		Mmax	24.6	1.000	0.600	0.550	275.0	16.3	13.6	5.6
		Mmin	45.1	1.000	0.600	0.550	275.0	20.3	16.9	14.3
		Qmax	45.1	1.000	0.600	0.550	275.0	20.3	16.9	14.3
		Qmin	24.6	1.000	0.600	0.550	275.0	16.3	13.6	5.6
39	24	Nmax	30.6	1.000	0.600	0.550	275.0	19.4	16.2	7.3
		Nmin	18.7	1.000	0.600	0.550	275.0	16.3	13.6	2.6
		Mmax	18.7	1.000	0.600	0.550	275.0	16.3	13.6	2.6
		Mmin	35.0	1.000	0.600	0.550	275.0	20.3	16.9	9.2
		Qmax	35.0	1.000	0.600	0.550	275.0	20.3	16.9	9.2
		Qmin	18.7	1.000	0.600	0.550	275.0	16.3	13.6	2.6
	26	Nmax	31.5	1.000	0.600	0.550	275.0	22.1	18.5	6.6
		Nmin	19.6	1.000	0.600	0.550	275.0	18.6	15.5	2.1
		Mmax	19.6	1.000	0.600	0.550	275.0	18.6	15.5	2.1
		Mmin	35.9	1.000	0.600	0.550	275.0	23.1	19.3	8.4
		Qmax	35.9	1.000	0.600	0.550	275.0	23.1	19.3	8.4
		Qmin	19.6	1.000	0.600	0.550	275.0	18.6	15.5	2.1

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES A AMBOS LADOS

FECHA: 24/11/2005

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
40	26	Nmax	22.9	1.000	0.600	0.550	275.0	22.1	18.5	2.3
		Nmin	13.9	1.000	0.600	0.550	275.0	18.6	-	No necesita
		Mmax	13.9	1.000	0.600	0.550	275.0	18.6	-	No necesita
		Mmin	26.2	1.000	0.600	0.550	275.0	23.1	19.3	3.5
		Qmax	26.2	1.000	0.600	0.550	275.0	23.1	19.3	3.5
		Qmin	13.9	1.000	0.600	0.550	275.0	18.6	-	No necesita
	28	Nmax	23.8	1.000	0.600	0.550	275.0	23.9	-	No necesita
		Nmin	14.8	1.000	0.600	0.550	275.0	20.0	-	No necesita
		Mmax	14.8	1.000	0.600	0.550	275.0	20.0	-	No necesita
		Mmin	27.1	1.000	0.600	0.550	275.0	25.0	20.8	3.2
		Qmax	27.1	1.000	0.600	0.550	275.0	25.0	20.8	3.2
		Qmin	14.8	1.000	0.600	0.550	275.0	20.0	-	No necesita
41	28	Nmax	15.5	1.000	0.600	0.550	275.0	23.9	-	No necesita
		Nmin	9.1	1.000	0.600	0.550	275.0	20.0	-	No necesita
		Mmax	9.1	1.000	0.600	0.550	275.0	20.0	-	No necesita
		Mmin	17.6	1.000	0.600	0.550	275.0	25.0	-	No necesita
		Qmax	17.6	1.000	0.600	0.550	275.0	25.0	-	No necesita
		Qmin	9.1	1.000	0.600	0.550	275.0	20.0	-	No necesita
	30	Nmax	16.4	1.000	0.600	0.550	275.0	24.9	-	No necesita
		Nmin	10.0	1.000	0.600	0.550	275.0	20.8	-	No necesita
		Mmax	10.0	1.000	0.600	0.550	275.0	20.8	-	No necesita
		Mmin	18.5	1.000	0.600	0.550	275.0	26.1	-	No necesita
		Qmax	18.5	1.000	0.600	0.550	275.0	26.1	-	No necesita
		Qmin	10.0	1.000	0.600	0.550	275.0	20.8	-	No necesita
42	30	Nmax	8.1	1.000	0.600	0.550	275.0	24.9	-	No necesita
		Nmin	4.5	1.000	0.600	0.550	275.0	20.8	-	No necesita
		Mmax	4.5	1.000	0.600	0.550	275.0	20.8	-	No necesita
		Mmin	9.1	1.000	0.600	0.550	275.0	26.1	-	No necesita
		Qmax	9.1	1.000	0.600	0.550	275.0	26.1	-	No necesita
		Qmin	4.5	1.000	0.600	0.550	275.0	20.8	-	No necesita
	32	Nmax	9.0	1.000	0.600	0.550	275.0	25.5	-	No necesita
		Nmin	5.4	1.000	0.600	0.550	275.0	21.3	-	No necesita
		Mmax	5.4	1.000	0.600	0.550	275.0	21.3	-	No necesita
		Mmin	9.9	1.000	0.600	0.550	275.0	26.7	-	No necesita
		Qmax	9.9	1.000	0.600	0.550	275.0	26.7	-	No necesita
		Qmin	5.4	1.000	0.600	0.550	275.0	21.3	-	No necesita
43	32	Nmax	0.6	1.000	0.600	0.550	275.0	25.5	-	No necesita
		Nmin	0.5	1.000	0.600	0.550	275.0	21.3	-	No necesita
		Mmax	0.5	1.000	0.600	0.550	275.0	21.3	-	No necesita
		Mmin	0.4	1.000	0.600	0.550	275.0	26.7	-	No necesita
		Qmax	0.6	1.000	0.600	0.550	275.0	25.5	-	No necesita
		Qmin	0.5	1.000	0.600	0.550	275.0	21.3	-	No necesita
	34	Nmax	1.5	1.000	0.600	0.550	275.0	25.6	-	No necesita
		Nmin	0.7	1.000	0.600	0.550	275.0	21.3	-	No necesita
		Mmax	0.7	1.000	0.600	0.550	275.0	21.3	-	No necesita
		Mmin	1.3	1.000	0.600	0.550	275.0	26.7	-	No necesita
		Qmax	1.5	1.000	0.600	0.550	275.0	25.6	-	No necesita
		Qmin	0.7	1.000	0.600	0.550	275.0	21.3	-	No necesita
44	34	Nmax	7.2	1.000	0.600	0.550	275.0	25.6	-	No necesita
		Nmin	5.1	1.000	0.600	0.550	275.0	21.3	-	No necesita
		Mmax	5.1	1.000	0.600	0.550	275.0	21.3	-	No necesita
		Mmin	8.5	1.000	0.600	0.550	275.0	26.7	-	No necesita

ARMADOCAM_2060_1000_2m.xls PI CAMINO Kv=2060 Kh=1000 24/11/2005

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES A AMBOS LADOS

FECHA: 24/11/2005

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
		Qmax	5.1	1.000	0.600	0.550	275.0	21.3	-	No necesita
		Qmin	8.5	1.000	0.600	0.550	275.0	26.7	-	No necesita
	36	Nmax	6.3	1.000	0.600	0.550	275.0	25.1	-	No necesita
		Nmin	4.2	1.000	0.600	0.550	275.0	20.9	-	No necesita
		Mmax	4.2	1.000	0.600	0.550	275.0	20.9	-	No necesita
		Mmin	7.6	1.000	0.600	0.550	275.0	26.2	-	No necesita
		Qmax	4.2	1.000	0.600	0.550	275.0	20.9	-	No necesita
		Qmin	7.6	1.000	0.600	0.550	275.0	26.2	-	No necesita
45	36	Nmax	15.4	1.000	0.600	0.550	275.0	25.1	-	No necesita
		Nmin	10.2	1.000	0.600	0.550	275.0	20.9	-	No necesita
		Mmax	10.2	1.000	0.600	0.550	275.0	20.9	-	No necesita
		Mmin	18.0	1.000	0.600	0.550	275.0	26.2	-	No necesita
		Qmax	10.2	1.000	0.600	0.550	275.0	20.9	-	No necesita
		Qmin	18.0	1.000	0.600	0.550	275.0	26.2	-	No necesita
	38	Nmax	14.5	1.000	0.600	0.550	275.0	24.1	-	No necesita
		Nmin	9.4	1.000	0.600	0.550	275.0	20.0	-	No necesita
		Mmax	9.4	1.000	0.600	0.550	275.0	20.0	-	No necesita
		Mmin	17.1	1.000	0.600	0.550	275.0	25.1	-	No necesita
		Qmax	9.4	1.000	0.600	0.550	275.0	20.0	-	No necesita
		Qmin	17.1	1.000	0.600	0.550	275.0	25.1	-	No necesita
46	38	Nmax	24.3	1.000	0.600	0.550	275.0	24.1	20.1	2.1
		Nmin	15.7	1.000	0.600	0.550	275.0	20.0	-	No necesita
		Mmax	15.7	1.000	0.600	0.550	275.0	20.0	-	No necesita
		Mmin	28.2	1.000	0.600	0.550	275.0	25.1	21.0	3.6
		Qmax	15.7	1.000	0.600	0.550	275.0	20.0	-	No necesita
		Qmin	28.2	1.000	0.600	0.550	275.0	25.1	21.0	3.6
	40	Nmax	23.4	1.000	0.600	0.550	275.0	22.4	18.7	2.4
		Nmin	14.9	1.000	0.600	0.550	275.0	18.5	-	No necesita
		Mmax	14.9	1.000	0.600	0.550	275.0	18.5	-	No necesita
		Mmin	27.3	1.000	0.600	0.550	275.0	23.3	19.4	4.0
		Qmax	14.9	1.000	0.600	0.550	275.0	18.5	-	No necesita
		Qmin	27.3	1.000	0.600	0.550	275.0	23.3	19.4	4.0
47	40	Nmax	34.0	1.000	0.600	0.550	275.0	22.4	18.7	7.8
		Nmin	21.7	1.000	0.600	0.550	275.0	18.5	15.4	3.2
		Mmax	21.7	1.000	0.600	0.550	275.0	18.5	15.4	3.2
		Mmin	39.2	1.000	0.600	0.550	275.0	23.3	19.4	10.0
		Qmax	21.7	1.000	0.600	0.550	275.0	18.5	15.4	3.2
		Qmin	39.2	1.000	0.600	0.550	275.0	23.3	19.4	10.0
	42	Nmax	33.1	1.000	0.600	0.550	275.0	19.5	16.3	8.5
		Nmin	20.8	1.000	0.600	0.550	275.0	15.9	13.2	3.8
		Mmax	20.8	1.000	0.600	0.550	275.0	15.9	13.2	3.8
		Mmin	38.4	1.000	0.600	0.550	275.0	20.1	16.8	10.9
		Qmax	20.8	1.000	0.600	0.550	275.0	15.9	13.2	3.8
		Qmin	38.4	1.000	0.600	0.550	275.0	20.1	16.8	10.9
48	42	Nmax	41.8	1.000	0.600	0.550	275.0	19.5	16.3	12.9
		Nmin	26.4	1.000	0.600	0.550	275.0	15.9	13.2	6.6
		Mmax	26.4	1.000	0.600	0.550	275.0	15.9	13.2	6.6
		Mmin	48.1	1.000	0.600	0.550	275.0	20.1	16.8	15.8
		Qmax	26.4	1.000	0.600	0.550	275.0	15.9	13.2	6.6
		Qmin	48.1	1.000	0.600	0.550	275.0	20.1	16.8	15.8
	44	Nmax	41.3	1.000	0.600	0.550	275.0	17.3	14.4	13.6
		Nmin	26.0	1.000	0.600	0.550	275.0	13.8	11.5	7.3

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES A AMBOS LADOS

FECHA: 24/11/2005

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
		Mmax	26.0	1.000	0.600	0.550	275.0	13.8	11.5	7.3
		Mmin	47.7	1.000	0.600	0.550	275.0	17.6	14.7	16.7
		Qmax	26.0	1.000	0.600	0.550	275.0	13.8	11.5	7.3
		Qmin	47.7	1.000	0.600	0.550	275.0	17.6	14.7	16.7
49	44	Nmax	47.3	1.000	0.600	0.550	275.0	17.3	14.4	16.6
		Nmin	29.8	1.000	0.600	0.550	275.0	13.8	11.5	9.3
		Mmax	29.8	1.000	0.600	0.550	275.0	13.8	11.5	9.3
		Mmin	54.4	1.000	0.600	0.550	275.0	17.6	14.7	20.1
		Qmax	29.8	1.000	0.600	0.550	275.0	13.8	11.5	9.3
		Qmin	54.4	1.000	0.600	0.550	275.0	17.6	14.7	20.1
	46	Nmax	46.9	1.000	0.600	0.550	275.0	13.8	11.5	17.9
		Nmin	29.4	1.000	0.600	0.550	275.0	10.2	8.5	10.5
		Mmax	29.4	1.000	0.600	0.550	275.0	10.2	8.5	10.5
		Mmin	46.9	1.000	0.600	0.550	275.0	13.8	11.5	17.9
		Qmax	29.4	1.000	0.600	0.550	275.0	10.2	8.5	10.5
		Qmin	54.0	1.000	0.600	0.550	275.0	13.7	11.4	21.5
50	46	Nmax	53.2	1.000	0.600	0.550	275.0	13.8	11.5	21.0
		Nmin	33.4	1.000	0.600	0.550	275.0	10.2	8.5	12.5
		Mmax	33.4	1.000	0.600	0.550	275.0	10.2	8.5	12.5
		Mmin	53.2	1.000	0.600	0.550	275.0	13.8	11.5	21.0
		Qmax	33.4	1.000	0.600	0.550	275.0	10.2	8.5	12.5
		Qmin	61.1	1.000	0.600	0.550	275.0	13.7	11.4	25.1
	48	Nmax	52.7	1.000	0.600	0.550	275.0	8.6	7.2	23.0
		Nmin	32.9	1.000	0.600	0.550	275.0	8.6	7.2	13.0
		Mmax	56.4	1.000	0.600	0.550	275.0	9.1	7.6	24.7
		Mmin	52.7	1.000	0.600	0.550	275.0	8.6	7.2	23.0
		Qmax	32.9	1.000	0.600	0.550	275.0	8.6	7.2	13.0
		Qmin	60.7	1.000	0.600	0.550	275.0	8.6	7.2	27.0
51	48	Nmax	59.2	1.000	0.600	0.550	275.0	8.6	7.2	26.3
		Nmin	37.1	1.000	0.600	0.550	275.0	8.6	7.2	15.1
		Mmax	63.2	1.000	0.600	0.550	275.0	9.1	7.6	28.1
		Mmin	59.2	1.000	0.600	0.550	275.0	8.6	7.2	26.3
		Qmax	37.1	1.000	0.600	0.550	275.0	8.6	7.2	15.1
		Qmin	68.0	1.000	0.600	0.550	275.0	8.6	7.2	30.7
	50	Nmax	58.8	1.000	0.600	0.550	275.0	14.7	12.3	23.5
		Nmin	36.6	1.000	0.600	0.550	275.0	13.7	11.4	12.7
		Mmax	67.5	1.000	0.600	0.550	275.0	16.1	13.4	27.3
		Mmin	36.6	1.000	0.600	0.550	275.0	13.7	11.4	12.7
		Qmax	36.6	1.000	0.600	0.550	275.0	13.7	11.4	12.7
		Qmin	67.5	1.000	0.600	0.550	275.0	16.1	13.4	27.3
52	50	Nmax	65.4	1.000	0.600	0.550	275.0	14.7	12.3	26.8
		Nmin	40.8	1.000	0.600	0.550	275.0	13.7	11.4	14.8
		Mmax	75.0	1.000	0.600	0.550	275.0	16.1	13.4	31.1
		Mmin	40.8	1.000	0.600	0.550	275.0	13.7	11.4	14.8
		Qmax	40.8	1.000	0.600	0.550	275.0	13.7	11.4	14.8
		Qmin	75.0	1.000	0.600	0.550	275.0	16.1	13.4	31.1
	52	Nmax	65.0	1.000	0.600	0.550	275.0	18.9	15.7	24.9
		Nmin	40.4	1.000	0.600	0.550	275.0	16.8	14.0	13.3
		Mmax	74.6	1.000	0.600	0.550	275.0	20.2	16.8	29.2
		Mmin	40.4	1.000	0.600	0.550	275.0	16.8	14.0	13.3
		Qmax	40.4	1.000	0.600	0.550	275.0	16.8	14.0	13.3
		Qmin	74.6	1.000	0.600	0.550	275.0	20.2	16.8	29.2

ARMADOCAM_2060_1000_2m.xls PI CAMINO Kv=2060 Kh=1000 24/11/2005

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES A AMBOS LADOS

FECHA: 24/11/2005

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
53	52	Nmax	5.2	1.000	0.600	0.550	275.0	16.8	-	No necesita
		Nmin	12.8	1.000	0.600	0.550	275.0	20.2	-	No necesita
		Mmax	12.8	1.000	0.600	0.550	275.0	20.2	-	No necesita
		Mmin	5.2	1.000	0.600	0.550	275.0	16.8	-	No necesita
		Qmax	5.2	1.000	0.600	0.550	275.0	16.8	-	No necesita
		Qmin	13.3	1.000	0.600	0.550	275.0	18.9	-	No necesita
	53	Nmax	5.2	1.000	0.600	0.550	275.0	17.3	-	No necesita
		Nmin	12.8	1.000	0.600	0.550	275.0	21.2	-	No necesita
		Mmax	12.8	1.000	0.600	0.550	275.0	21.2	-	No necesita
		Mmin	5.2	1.000	0.600	0.550	275.0	17.3	-	No necesita
		Qmax	5.2	1.000	0.600	0.550	275.0	17.3	-	No necesita
		Qmin	13.3	1.000	0.600	0.550	275.0	20.0	-	No necesita
54	53	Nmax	5.0	1.000	0.600	0.550	275.0	17.3	-	No necesita
		Nmin	12.4	1.000	0.600	0.550	275.0	21.2	-	No necesita
		Mmax	12.4	1.000	0.600	0.550	275.0	21.2	-	No necesita
		Mmin	5.0	1.000	0.600	0.550	275.0	17.3	-	No necesita
		Qmax	5.0	1.000	0.600	0.550	275.0	17.3	-	No necesita
		Qmin	13.0	1.000	0.600	0.550	275.0	20.0	-	No necesita
	54	Nmax	5.0	1.000	0.600	0.550	275.0	17.8	-	No necesita
		Nmin	12.4	1.000	0.600	0.550	275.0	22.1	-	No necesita
		Mmax	12.4	1.000	0.600	0.550	275.0	22.1	-	No necesita
		Mmin	5.0	1.000	0.600	0.550	275.0	17.8	-	No necesita
		Qmax	5.0	1.000	0.600	0.550	275.0	17.8	-	No necesita
		Qmin	13.0	1.000	0.600	0.550	275.0	21.0	-	No necesita
55	54	Nmax	4.6	1.000	0.600	0.550	275.0	17.8	-	No necesita
		Nmin	11.7	1.000	0.600	0.550	275.0	22.1	-	No necesita
		Mmax	11.7	1.000	0.600	0.550	275.0	22.1	-	No necesita
		Mmin	4.6	1.000	0.600	0.550	275.0	17.8	-	No necesita
		Qmax	4.6	1.000	0.600	0.550	275.0	17.8	-	No necesita
		Qmin	12.3	1.000	0.600	0.550	275.0	21.0	-	No necesita
	55	Nmax	4.6	1.000	0.600	0.550	275.0	18.3	-	No necesita
		Nmin	11.7	1.000	0.600	0.550	275.0	22.8	-	No necesita
		Mmax	11.7	1.000	0.600	0.550	275.0	22.8	-	No necesita
		Mmin	4.6	1.000	0.600	0.550	275.0	18.3	-	No necesita
		Qmax	4.6	1.000	0.600	0.550	275.0	18.3	-	No necesita
		Qmin	12.3	1.000	0.600	0.550	275.0	21.9	-	No necesita
56	55	Nmax	4.0	1.000	0.600	0.550	275.0	18.3	-	No necesita
		Nmin	10.6	1.000	0.600	0.550	275.0	22.8	-	No necesita
		Mmax	10.6	1.000	0.600	0.550	275.0	22.8	-	No necesita
		Mmin	4.0	1.000	0.600	0.550	275.0	18.3	-	No necesita
		Qmax	4.0	1.000	0.600	0.550	275.0	18.3	-	No necesita
		Qmin	11.3	1.000	0.600	0.550	275.0	21.9	-	No necesita
	56	Nmax	4.0	1.000	0.600	0.550	275.0	18.7	-	No necesita
		Nmin	10.6	1.000	0.600	0.550	275.0	23.5	-	No necesita
		Mmax	10.6	1.000	0.600	0.550	275.0	23.5	-	No necesita
		Mmin	4.0	1.000	0.600	0.550	275.0	18.7	-	No necesita
		Qmax	4.0	1.000	0.600	0.550	275.0	18.7	-	No necesita
		Qmin	11.3	1.000	0.600	0.550	275.0	22.6	-	No necesita
57	56	Nmax	3.4	1.000	0.600	0.550	275.0	18.7	-	No necesita
		Nmin	9.3	1.000	0.600	0.550	275.0	23.5	-	No necesita
		Mmax	9.3	1.000	0.600	0.550	275.0	23.5	-	No necesita
		Mmin	3.4	1.000	0.600	0.550	275.0	18.7	-	No necesita

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES A AMBOS LADOS

FECHA: 24/11/2005

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
		Qmax	3.4	1.000	0.600	0.550	275.0	18.7	-	No necesita
		Qmin	10.1	1.000	0.600	0.550	275.0	22.6	-	No necesita
	57	Nmax	3.4	1.000	0.600	0.550	275.0	19.0	-	No necesita
		Nmin	9.3	1.000	0.600	0.550	275.0	24.0	-	No necesita
		Mmax	9.3	1.000	0.600	0.550	275.0	24.0	-	No necesita
		Mmin	3.4	1.000	0.600	0.550	275.0	19.0	-	No necesita
		Qmax	3.4	1.000	0.600	0.550	275.0	19.0	-	No necesita
		Qmin	10.1	1.000	0.600	0.550	275.0	23.3	-	No necesita
58	57	Nmax	2.6	1.000	0.600	0.550	275.0	19.0	-	No necesita
		Nmin	7.7	1.000	0.600	0.550	275.0	24.0	-	No necesita
		Mmax	7.7	1.000	0.600	0.550	275.0	24.0	-	No necesita
		Mmin	2.6	1.000	0.600	0.550	275.0	19.0	-	No necesita
		Qmax	2.6	1.000	0.600	0.550	275.0	19.0	-	No necesita
		Qmin	8.6	1.000	0.600	0.550	275.0	23.3	-	No necesita
	58	Nmax	2.6	1.000	0.600	0.550	275.0	19.2	-	No necesita
		Nmin	7.7	1.000	0.600	0.550	275.0	24.5	-	No necesita
		Mmax	7.7	1.000	0.600	0.550	275.0	24.5	-	No necesita
		Mmin	2.6	1.000	0.600	0.550	275.0	19.2	-	No necesita
		Qmax	2.6	1.000	0.600	0.550	275.0	19.2	-	No necesita
		Qmin	8.6	1.000	0.600	0.550	275.0	23.8	-	No necesita
59	58	Nmax	1.8	1.000	0.600	0.550	275.0	19.2	-	No necesita
		Nmin	6.0	1.000	0.600	0.550	275.0	24.5	-	No necesita
		Mmax	6.0	1.000	0.600	0.550	275.0	24.5	-	No necesita
		Mmin	1.8	1.000	0.600	0.550	275.0	19.2	-	No necesita
		Qmax	1.8	1.000	0.600	0.550	275.0	19.2	-	No necesita
		Qmin	7.0	1.000	0.600	0.550	275.0	23.8	-	No necesita
	59	Nmax	1.8	1.000	0.600	0.550	275.0	19.3	-	No necesita
		Nmin	6.0	1.000	0.600	0.550	275.0	24.8	-	No necesita
		Mmax	6.0	1.000	0.600	0.550	275.0	24.8	-	No necesita
		Mmin	1.8	1.000	0.600	0.550	275.0	19.3	-	No necesita
		Qmax	1.8	1.000	0.600	0.550	275.0	19.3	-	No necesita
		Qmin	7.0	1.000	0.600	0.550	275.0	24.2	-	No necesita
60	59	Nmax	0.8	1.000	0.600	0.550	275.0	19.3	-	No necesita
		Nmin	4.2	1.000	0.600	0.550	275.0	24.8	-	No necesita
		Mmax	4.2	1.000	0.600	0.550	275.0	24.8	-	No necesita
		Mmin	0.8	1.000	0.600	0.550	275.0	19.3	-	No necesita
		Qmax	0.8	1.000	0.600	0.550	275.0	19.3	-	No necesita
		Qmin	5.3	1.000	0.600	0.550	275.0	24.2	-	No necesita
	60	Nmax	0.8	1.000	0.600	0.550	275.0	19.4	-	No necesita
		Nmin	4.2	1.000	0.600	0.550	275.0	25.1	-	No necesita
		Mmax	4.2	1.000	0.600	0.550	275.0	25.1	-	No necesita
		Mmin	0.8	1.000	0.600	0.550	275.0	19.4	-	No necesita
		Qmax	0.8	1.000	0.600	0.550	275.0	19.4	-	No necesita
		Qmin	5.3	1.000	0.600	0.550	275.0	24.5	-	No necesita
61	60	Nmax	0.8	1.000	0.600	0.550	275.0	19.4	-	No necesita
		Nmin	2.3	1.000	0.600	0.550	275.0	25.1	-	No necesita
		Mmax	2.3	1.000	0.600	0.550	275.0	25.1	-	No necesita
		Mmin	0.8	1.000	0.600	0.550	275.0	19.4	-	No necesita
		Qmax	0.8	1.000	0.600	0.550	275.0	19.4	-	No necesita
		Qmin	3.6	1.000	0.600	0.550	275.0	24.5	-	No necesita
	61	Nmax	0.8	1.000	0.600	0.550	275.0	19.4	-	No necesita
		Nmin	2.3	1.000	0.600	0.550	275.0	25.2	-	No necesita

ARMADOCAM_2060_1000_2m.xls PI CAMINO Kv=2060 Kh=1000 24/11/2005

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES A AMBOS LADOS

FECHA: 24/11/2005

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
		Mmax	2.3	1.000	0.600	0.550	275.0	25.2	-	No necesita
		Mmin	0.8	1.000	0.600	0.550	275.0	19.4	-	No necesita
		Qmax	0.8	1.000	0.600	0.550	275.0	19.4	-	No necesita
		Qmin	3.6	1.000	0.600	0.550	275.0	24.7	-	No necesita
62	61	Nmax	1.4	1.000	0.600	0.550	275.0	19.4	-	No necesita
		Nmin	1.1	1.000	0.600	0.550	275.0	25.2	-	No necesita
		Mmax	1.1	1.000	0.600	0.550	275.0	25.2	-	No necesita
		Mmin	1.4	1.000	0.600	0.550	275.0	19.4	-	No necesita
		Qmax	1.4	1.000	0.600	0.550	275.0	19.4	-	No necesita
		Qmin	1.8	1.000	0.600	0.550	275.0	24.7	-	No necesita
	62	Nmax	1.4	1.000	0.600	0.550	275.0	19.3	-	No necesita
		Nmin	1.1	1.000	0.600	0.550	275.0	25.2	-	No necesita
		Mmax	1.1	1.000	0.600	0.550	275.0	25.2	-	No necesita
		Mmin	1.4	1.000	0.600	0.550	275.0	19.3	-	No necesita
		Qmax	1.4	1.000	0.600	0.550	275.0	19.3	-	No necesita
		Qmin	1.8	1.000	0.600	0.550	275.0	24.8	-	No necesita
63	62	Nmax	2.0	1.000	0.600	0.550	275.0	19.3	-	No necesita
		Nmin	2.0	1.000	0.600	0.550	275.0	25.2	-	No necesita
		Mmax	2.0	1.000	0.600	0.550	275.0	25.2	-	No necesita
		Mmin	2.0	1.000	0.600	0.550	275.0	19.3	-	No necesita
		Qmax	2.2	1.000	0.600	0.550	275.0	24.1	-	No necesita
		Qmin	2.0	1.000	0.600	0.550	275.0	24.8	-	No necesita
	63	Nmax	2.0	1.000	0.600	0.550	275.0	19.1	-	No necesita
		Nmin	2.0	1.000	0.600	0.550	275.0	25.1	-	No necesita
		Mmax	2.0	1.000	0.600	0.550	275.0	25.1	-	No necesita
		Mmin	2.0	1.000	0.600	0.550	275.0	19.1	-	No necesita
		Qmax	2.2	1.000	0.600	0.550	275.0	24.0	-	No necesita
		Qmin	2.0	1.000	0.600	0.550	275.0	24.8	-	No necesita
64	63	Nmax	2.9	1.000	0.600	0.550	275.0	19.1	-	No necesita
		Nmin	3.4	1.000	0.600	0.550	275.0	25.1	-	No necesita
		Mmax	3.4	1.000	0.600	0.550	275.0	25.1	-	No necesita
		Mmin	2.9	1.000	0.600	0.550	275.0	19.1	-	No necesita
		Qmax	3.8	1.000	0.600	0.550	275.0	24.0	-	No necesita
		Qmin	2.9	1.000	0.600	0.550	275.0	24.8	-	No necesita
	64	Nmax	2.9	1.000	0.600	0.550	275.0	18.9	-	No necesita
		Nmin	3.4	1.000	0.600	0.550	275.0	24.9	-	No necesita
		Mmax	3.4	1.000	0.600	0.550	275.0	24.9	-	No necesita
		Mmin	2.9	1.000	0.600	0.550	275.0	18.9	-	No necesita
		Qmax	3.8	1.000	0.600	0.550	275.0	23.8	-	No necesita
		Qmin	2.9	1.000	0.600	0.550	275.0	24.7	-	No necesita

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES EN UN SÓLO LADO

FECHA: 24/11/2005

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
1	1	Nmax	0.0	-31.7	1.000	0.600	0.550	779.17	0.00	13.52
		Nmin	0.0	-56.1	1.000	0.600	0.550	779.17	0.00	24.74
		Mmax	0.0	-31.7	1.000	0.600	0.550	779.17	0.00	13.52
		Mmin	0.0	-56.1	1.000	0.600	0.550	779.17	0.00	24.74
		Qmax	0.0	-31.7	1.000	0.600	0.550	779.17	0.00	13.52
		Qmin	0.0	-56.1	1.000	0.600	0.550	779.17	0.00	24.74
	2	Nmax	0.0	-27.1	1.000	0.600	0.550	779.17	0.00	11.46
		Nmin	0.0	-49.4	1.000	0.600	0.550	779.17	0.00	21.59
		Mmax	0.0	-27.1	1.000	0.600	0.550	779.17	0.00	11.46
		Mmin	0.0	-49.4	1.000	0.600	0.550	779.17	0.00	21.59
		Qmax	0.0	-27.1	1.000	0.600	0.550	779.17	0.00	11.46
		Qmin	0.0	-49.4	1.000	0.600	0.550	779.17	0.00	21.59
2	2	Nmax	0.0	-27.1	1.000	0.600	0.550	779.17	0.00	11.46
		Nmin	0.0	-49.4	1.000	0.600	0.550	779.17	0.00	21.59
		Mmax	0.0	-27.1	1.000	0.600	0.550	779.17	0.00	11.46
		Mmin	0.0	-49.4	1.000	0.600	0.550	779.17	0.00	21.59
		Qmax	0.0	-27.1	1.000	0.600	0.550	779.17	0.00	11.46
		Qmin	0.0	-49.4	1.000	0.600	0.550	779.17	0.00	21.59
	3	Nmax	0.0	-23.2	1.000	0.600	0.550	779.17	0.00	9.80
		Nmin	0.0	-43.8	1.000	0.600	0.550	779.17	0.00	18.99
		Mmax	0.0	-23.2	1.000	0.600	0.550	779.17	0.00	9.80
		Mmin	0.0	-43.8	1.000	0.600	0.550	779.17	0.00	18.99
		Qmax	0.0	-23.2	1.000	0.600	0.550	779.17	0.00	9.80
		Qmin	0.0	-43.8	1.000	0.600	0.550	779.17	0.00	18.99
3	3	Nmax	0.0	-23.2	1.000	0.600	0.550	779.17	0.00	9.80
		Nmin	0.0	-43.8	1.000	0.600	0.550	779.17	0.00	18.99
		Mmax	0.0	-23.2	1.000	0.600	0.550	779.17	0.00	9.80
		Mmin	0.0	-43.8	1.000	0.600	0.550	779.17	0.00	18.99
		Qmax	0.0	-23.2	1.000	0.600	0.550	779.17	0.00	9.80
		Qmin	0.0	-43.8	1.000	0.600	0.550	779.17	0.00	18.99
	4	Nmax	0.0	-20.4	1.000	0.600	0.550	779.17	0.00	8.55
		Nmin	0.0	-39.7	1.000	0.600	0.550	779.17	0.00	17.09
		Mmax	0.0	-20.4	1.000	0.600	0.550	779.17	0.00	8.55
		Mmin	0.0	-39.7	1.000	0.600	0.550	779.17	0.00	17.09
		Qmax	0.0	-20.4	1.000	0.600	0.550	779.17	0.00	8.55
		Qmin	0.0	-39.7	1.000	0.600	0.550	779.17	0.00	17.09
4	4	Nmax	0.0	-20.4	1.000	0.600	0.550	779.17	0.00	8.55
		Nmin	0.0	-39.7	1.000	0.600	0.550	779.17	0.00	17.09
		Mmax	0.0	-20.4	1.000	0.600	0.550	779.17	0.00	8.55
		Mmin	0.0	-39.7	1.000	0.600	0.550	779.17	0.00	17.09
		Qmax	0.0	-20.4	1.000	0.600	0.550	779.17	0.00	8.55
		Qmin	0.0	-36.5	1.000	0.600	0.550	779.17	0.00	15.65
	5	Nmax	0.0	-18.5	1.000	0.600	0.550	779.17	0.00	7.76
		Nmin	0.0	-37.2	1.000	0.600	0.550	779.17	0.00	15.97
		Mmax	0.0	-18.5	1.000	0.600	0.550	779.17	0.00	7.76
		Mmin	0.0	-37.2	1.000	0.600	0.550	779.17	0.00	15.97
		Qmax	0.0	-18.5	1.000	0.600	0.550	779.17	0.00	7.76
		Qmin	0.0	-33.9	1.000	0.600	0.550	779.17	0.00	14.50
5	5	Nmax	0.0	-18.5	1.000	0.600	0.550	779.17	0.00	7.76
		Nmin	0.0	-37.2	1.000	0.600	0.550	779.17	0.00	15.97
		Mmax	0.0	-18.5	1.000	0.600	0.550	779.17	0.00	7.76
		Mmin	0.0	-37.2	1.000	0.600	0.550	779.17	0.00	15.97

ARMADOCAM_2060_10000_1m.xls PI CAMINO Kv=2060 Kh=10000 24/11/2005

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES EN UN SÓLO LADO

FECHA: 24/11/2005

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
		Qmax	0.0	-33.1	1.000	0.600	0.550	779.17	0.00	14.15
		Qmin	0.0	-33.9	1.000	0.600	0.550	779.17	0.00	14.50
	6	Nmax	0.0	-17.7	1.000	0.600	0.550	779.17	0.00	7.40
		Nmin	0.0	-36.4	1.000	0.600	0.550	779.17	0.00	15.62
		Mmax	0.0	-17.7	1.000	0.600	0.550	779.17	0.00	7.40
		Mmin	0.0	-36.4	1.000	0.600	0.550	779.17	0.00	15.62
		Qmax	0.0	-33.0	1.000	0.600	0.550	779.17	0.00	14.08
		Qmin	0.0	-32.9	1.000	0.600	0.550	779.17	0.00	14.07
6	6	Nmax	0.0	-17.7	1.000	0.600	0.550	779.17	0.00	7.40
		Nmin	0.0	-36.4	1.000	0.600	0.550	779.17	0.00	15.62
		Mmax	0.0	-17.7	1.000	0.600	0.550	779.17	0.00	7.40
		Mmin	0.0	-36.4	1.000	0.600	0.550	779.17	0.00	15.62
		Qmax	0.0	-33.0	1.000	0.600	0.550	779.17	0.00	14.08
		Qmin	0.0	-17.7	1.000	0.600	0.550	779.17	0.00	7.40
	7	Nmax	0.0	-17.8	1.000	0.600	0.550	779.17	0.00	7.43
		Nmin	0.0	-37.3	1.000	0.600	0.550	779.17	0.00	16.01
		Mmax	0.0	-17.8	1.000	0.600	0.550	779.17	0.00	7.43
		Mmin	0.0	-37.3	1.000	0.600	0.550	779.17	0.00	16.01
		Qmax	0.0	-34.3	1.000	0.600	0.550	779.17	0.00	14.68
		Qmin	0.0	-17.8	1.000	0.600	0.550	779.17	0.00	7.43
7	7	Nmax	0.0	-17.8	1.000	0.600	0.550	779.17	0.00	7.43
		Nmin	0.0	-37.3	1.000	0.600	0.550	779.17	0.00	16.01
		Mmax	0.0	-17.8	1.000	0.600	0.550	779.17	0.00	7.43
		Mmin	0.0	-37.3	1.000	0.600	0.550	779.17	0.00	16.01
		Qmax	0.0	-34.3	1.000	0.600	0.550	779.17	0.00	14.68
		Qmin	0.0	-17.8	1.000	0.600	0.550	779.17	0.00	7.43
	8	Nmax	0.0	-18.7	1.000	0.600	0.550	779.17	0.00	7.83
		Nmin	0.0	-39.7	1.000	0.600	0.550	779.17	0.00	17.10
		Mmax	0.0	-18.7	1.000	0.600	0.550	779.17	0.00	7.83
		Mmin	0.0	-39.7	1.000	0.600	0.550	779.17	0.00	17.10
		Qmax	0.0	-37.1	1.000	0.600	0.550	779.17	0.00	15.92
		Qmin	0.0	-18.7	1.000	0.600	0.550	779.17	0.00	7.83
8	8	Nmax	0.0	-18.7	1.000	0.600	0.550	779.17	0.00	7.83
		Nmin	0.0	-39.7	1.000	0.600	0.550	779.17	0.00	17.10
		Mmax	0.0	-18.7	1.000	0.600	0.550	779.17	0.00	7.83
		Mmin	0.0	-39.7	1.000	0.600	0.550	779.17	0.00	17.10
		Qmax	0.0	-37.1	1.000	0.600	0.550	779.17	0.00	15.92
		Qmin	0.0	-18.7	1.000	0.600	0.550	779.17	0.00	7.83
	9	Nmax	0.0	-20.2	1.000	0.600	0.550	779.17	0.00	8.50
		Nmin	0.0	-43.3	1.000	0.600	0.550	779.17	0.00	18.73
		Mmax	0.0	-20.2	1.000	0.600	0.550	779.17	0.00	8.50
		Mmin	0.0	-43.3	1.000	0.600	0.550	779.17	0.00	18.73
		Qmax	0.0	-40.9	1.000	0.600	0.550	779.17	0.00	17.67
		Qmin	0.0	-20.2	1.000	0.600	0.550	779.17	0.00	8.50
9	9	Nmax	0.0	-20.2	1.000	0.600	0.550	779.17	0.00	8.50
		Nmin	0.0	-43.3	1.000	0.600	0.550	779.17	0.00	18.73
		Mmax	0.0	-20.2	1.000	0.600	0.550	779.17	0.00	8.50
		Mmin	0.0	-43.3	1.000	0.600	0.550	779.17	0.00	18.73
		Qmax	0.0	-40.9	1.000	0.600	0.550	779.17	0.00	17.67
		Qmin	0.0	-20.2	1.000	0.600	0.550	779.17	0.00	8.50
	10	Nmax	0.0	-22.2	1.000	0.600	0.550	779.17	0.00	9.33
		Nmin	0.0	-47.6	1.000	0.600	0.550	779.17	0.00	20.76

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES EN UN SÓLO LADO

FECHA: 24/11/2005

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
		Mmax	0.0	-22.2	1.000	0.600	0.550	779.17	0.00	9.33
		Mmin	0.0	-47.6	1.000	0.600	0.550	779.17	0.00	20.76
		Qmax	0.0	-45.5	1.000	0.600	0.550	779.17	0.00	19.78
		Qmin	0.0	-22.2	1.000	0.600	0.550	779.17	0.00	9.33
10	10	Nmax	0.0	-22.2	1.000	0.600	0.550	779.17	0.00	9.33
		Nmin	0.0	-47.6	1.000	0.600	0.550	779.17	0.00	20.76
		Mmax	0.0	-22.2	1.000	0.600	0.550	779.17	0.00	9.33
		Mmin	0.0	-47.6	1.000	0.600	0.550	779.17	0.00	20.76
		Qmax	0.0	-45.5	1.000	0.600	0.550	779.17	0.00	19.78
		Qmin	0.0	-22.2	1.000	0.600	0.550	779.17	0.00	9.33
	11	Nmax	0.0	-24.2	1.000	0.600	0.550	779.17	0.00	10.20
		Nmin	0.0	-52.2	1.000	0.600	0.550	779.17	0.00	22.90
		Mmax	0.0	-24.2	1.000	0.600	0.550	779.17	0.00	10.20
		Mmin	0.0	-52.2	1.000	0.600	0.550	779.17	0.00	22.90
		Qmax	0.0	-50.3	1.000	0.600	0.550	779.17	0.00	22.01
		Qmin	0.0	-24.2	1.000	0.600	0.550	779.17	0.00	10.20
11	11	Nmax	0.0	-24.2	1.000	0.600	0.550	779.17	0.00	10.20
		Nmin	0.0	-52.2	1.000	0.600	0.550	779.17	0.00	22.90
		Mmax	0.0	-24.2	1.000	0.600	0.550	779.17	0.00	10.20
		Mmin	0.0	-52.2	1.000	0.600	0.550	779.17	0.00	22.90
		Qmax	0.0	-50.3	1.000	0.600	0.550	779.17	0.00	22.01
		Qmin	0.0	-24.2	1.000	0.600	0.550	779.17	0.00	10.20
	12	Nmax	0.0	-25.9	1.000	0.600	0.550	779.17	0.00	10.94
		Nmin	0.0	-56.2	1.000	0.600	0.550	779.17	0.00	24.81
		Mmax	0.0	-25.9	1.000	0.600	0.550	779.17	0.00	10.94
		Mmin	0.0	-56.2	1.000	0.600	0.550	779.17	0.00	24.81
		Qmax	0.0	-54.7	1.000	0.600	0.550	779.17	0.00	24.05
		Qmin	0.0	-25.9	1.000	0.600	0.550	779.17	0.00	10.94
12	12	Nmax	0.0	-25.9	1.000	0.600	0.550	779.17	0.00	10.94
		Nmin	0.0	-56.2	1.000	0.600	0.550	779.17	0.00	24.81
		Mmax	0.0	-25.9	1.000	0.600	0.550	779.17	0.00	10.94
		Mmin	0.0	-56.2	1.000	0.600	0.550	779.17	0.00	24.81
		Qmax	0.0	-54.7	1.000	0.600	0.550	779.17	0.00	24.05
		Qmin	0.0	-25.9	1.000	0.600	0.550	779.17	0.00	10.94
	13	Nmax	0.0	-26.8	1.000	0.600	0.550	779.17	0.00	11.34
		Nmin	0.0	-58.9	1.000	0.600	0.550	779.17	0.00	26.07
		Mmax	0.0	-26.8	1.000	0.600	0.550	779.17	0.00	11.34
		Mmin	0.0	-58.9	1.000	0.600	0.550	779.17	0.00	26.07
		Qmax	0.0	-57.7	1.000	0.600	0.550	779.17	0.00	25.49
		Qmin	0.0	-26.8	1.000	0.600	0.550	779.17	0.00	11.34
13	13	Nmax	0.0	-26.8	1.000	0.500	0.450	637.50	0.00	14.10
		Nmin	0.0	-57.7	1.000	0.500	0.450	637.50	0.00	32.58
		Mmax	0.0	-26.8	1.000	0.500	0.450	637.50	0.00	14.10
		Mmin	0.0	-58.9	1.000	0.500	0.450	637.50	0.00	33.38
		Qmax	0.0	-26.8	1.000	0.500	0.450	637.50	0.00	14.10
		Qmin	0.0	-58.9	1.000	0.500	0.450	637.50	0.00	33.38
	15	Nmax	0.0	-19.8	1.000	0.500	0.450	637.50	0.00	10.31
		Nmin	0.0	-45.1	1.000	0.500	0.450	637.50	0.00	24.70
		Mmax	0.0	-19.8	1.000	0.500	0.450	637.50	0.00	10.31
		Mmin	0.0	-45.1	1.000	0.500	0.450	637.50	0.00	24.70
		Qmax	0.0	-19.8	1.000	0.500	0.450	637.50	0.00	10.31
		Qmin	0.0	-44.3	1.000	0.500	0.450	637.50	0.00	24.22

ARMADOCAM_2060_10000_1m.xls PI CAMINO Kv=2060 Kh=10000 24/11/2005

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES EN UN SÓLO LADO

FECHA: 24/11/2005

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
14	15	Nmax	0.0	-19.8	1.000	0.500	0.450	637.50	0.00	10.31
		Nmin	0.0	-45.0	1.000	0.500	0.450	637.50	0.00	24.69
		Mmax	0.0	-19.8	1.000	0.500	0.450	637.50	0.00	10.31
		Mmin	0.0	-45.0	1.000	0.500	0.450	637.50	0.00	24.69
		Qmax	0.0	-19.8	1.000	0.500	0.450	637.50	0.00	10.31
		Qmin	0.0	-44.3	1.000	0.500	0.450	637.50	0.00	24.22
	17	Nmax	0.0	-13.4	1.000	0.500	0.450	637.50	0.00	6.85
		Nmin	0.0	-32.7	1.000	0.500	0.450	637.50	0.00	17.43
		Mmax	0.0	-13.4	1.000	0.500	0.450	637.50	0.00	6.85
		Mmin	0.0	-32.7	1.000	0.500	0.450	637.50	0.00	17.43
		Qmax	0.0	-13.4	1.000	0.500	0.450	637.50	0.00	6.85
		Qmin	0.0	-30.2	1.000	0.500	0.450	637.50	0.00	16.05
15	17	Nmax	0.0	-13.4	1.000	0.500	0.450	637.50	0.00	6.85
		Nmin	0.0	-32.7	1.000	0.500	0.450	637.50	0.00	17.43
		Mmax	0.0	-13.4	1.000	0.500	0.450	637.50	0.00	6.85
		Mmin	0.0	-32.7	1.000	0.500	0.450	637.50	0.00	17.43
		Qmax	0.0	-13.4	1.000	0.500	0.450	637.50	0.00	6.85
		Qmin	0.0	-30.2	1.000	0.500	0.450	637.50	0.00	16.04
	19	Nmax	0.0	-7.4	1.000	0.500	0.450	637.50	0.00	3.73
		Nmin	0.0	-20.6	1.000	0.500	0.450	637.50	0.00	10.71
		Mmax	0.0	-7.4	1.000	0.500	0.450	637.50	0.00	3.73
		Mmin	0.0	-20.6	1.000	0.500	0.450	637.50	0.00	10.71
		Qmax	0.0	-7.4	1.000	0.500	0.450	637.50	0.00	3.73
		Qmin	0.0	-17.0	1.000	0.500	0.450	637.50	0.00	8.81
16	19	Nmax	0.0	-7.3	1.000	0.500	0.450	637.50	0.00	3.72
		Nmin	0.0	-20.6	1.000	0.500	0.450	637.50	0.00	10.70
		Mmax	0.0	-7.3	1.000	0.500	0.450	637.50	0.00	3.72
		Mmin	0.0	-20.6	1.000	0.500	0.450	637.50	0.00	10.70
		Qmax	0.0	-7.3	1.000	0.500	0.450	637.50	0.00	3.72
		Qmin	0.0	-17.0	1.000	0.500	0.450	637.50	0.00	8.79
	21	Nmax	0.0	-1.8	1.000	0.500	0.450	637.50	0.00	0.92
		Nmin	0.0	-8.7	1.000	0.500	0.450	637.50	0.00	4.44
		Mmax	0.0	-1.8	1.000	0.500	0.450	637.50	0.00	0.92
		Mmin	0.0	-8.7	1.000	0.500	0.450	637.50	0.00	4.44
		Qmax	0.0	-1.8	1.000	0.500	0.450	637.50	0.00	0.92
		Qmin	0.0	-8.7	1.000	0.500	0.450	637.50	0.00	4.44
17	21	Nmax	0.0	-1.8	1.000	0.500	0.450	637.50	0.00	0.91
		Nmin	0.0	-8.7	1.000	0.500	0.450	637.50	0.00	4.44
		Mmax	0.0	-1.8	1.000	0.500	0.450	637.50	0.00	0.91
		Mmin	0.0	-8.7	1.000	0.500	0.450	637.50	0.00	4.44
		Qmax	0.0	-1.8	1.000	0.500	0.450	637.50	0.00	0.91
		Qmin	0.0	-8.7	1.000	0.500	0.450	637.50	0.00	4.44
	23	Nmax	3.2	0.0	1.000	0.500	0.450	637.50	1.63	0.00
		Nmin	3.2	0.0	1.000	0.500	0.450	637.50	1.63	0.00
		Mmax	6.2	0.0	1.000	0.500	0.450	637.50	3.16	0.00
		Mmin	3.2	0.0	1.000	0.500	0.450	637.50	1.63	0.00
		Qmax	3.2	0.0	1.000	0.500	0.450	637.50	1.63	0.00
		Qmin	3.2	0.0	1.000	0.500	0.450	637.50	1.63	0.00
18	23	Nmax	3.2	0.0	1.000	0.500	0.450	637.50	1.63	0.00
		Nmin	3.2	0.0	1.000	0.500	0.450	637.50	1.63	0.00
		Mmax	6.2	0.0	1.000	0.500	0.450	637.50	3.16	0.00
		Mmin	3.2	0.0	1.000	0.500	0.450	637.50	1.63	0.00

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES EN UN SÓLO LADO

FECHA: 24/11/2005

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
		Qmax	3.2	0.0	1.000	0.500	0.450	637.50	1.63	0.00
		Qmin	3.2	0.0	1.000	0.500	0.450	637.50	1.63	0.00
	25	Nmax	11.9	0.0	1.000	0.500	0.450	637.50	6.09	0.00
		Nmin	23.5	0.0	1.000	0.500	0.450	637.50	12.31	0.00
		Mmax	25.3	0.0	1.000	0.500	0.450	637.50	13.28	0.00
		Mmin	11.9	0.0	1.000	0.500	0.450	637.50	6.09	0.00
		Qmax	11.9	0.0	1.000	0.500	0.450	637.50	6.09	0.00
		Qmin	23.5	0.0	1.000	0.500	0.450	637.50	12.31	0.00
19	25	Nmax	11.9	0.0	1.000	0.500	0.450	637.50	6.09	0.00
		Nmin	23.5	0.0	1.000	0.500	0.450	637.50	12.31	0.00
		Mmax	25.3	0.0	1.000	0.500	0.450	637.50	13.28	0.00
		Mmin	11.9	0.0	1.000	0.500	0.450	637.50	6.09	0.00
		Qmax	11.9	0.0	1.000	0.500	0.450	637.50	6.09	0.00
		Qmin	23.5	0.0	1.000	0.500	0.450	637.50	12.31	0.00
	27	Nmax	18.6	0.0	1.000	0.500	0.450	637.50	9.65	0.00
		Nmin	39.6	0.0	1.000	0.500	0.450	637.50	21.43	0.00
		Mmax	40.1	0.0	1.000	0.500	0.450	637.50	21.72	0.00
		Mmin	18.6	0.0	1.000	0.500	0.450	637.50	9.65	0.00
		Qmax	18.6	0.0	1.000	0.500	0.450	637.50	9.65	0.00
		Qmin	39.6	0.0	1.000	0.500	0.450	637.50	21.43	0.00
20	27	Nmax	18.6	0.0	1.000	0.500	0.450	637.50	9.67	0.00
		Nmin	39.6	0.0	1.000	0.500	0.450	637.50	21.44	0.00
		Mmax	40.1	0.0	1.000	0.500	0.450	637.50	21.73	0.00
		Mmin	18.6	0.0	1.000	0.500	0.450	637.50	9.67	0.00
		Qmax	18.6	0.0	1.000	0.500	0.450	637.50	9.67	0.00
		Qmin	39.6	0.0	1.000	0.500	0.450	637.50	21.44	0.00
	29	Nmax	23.5	0.0	1.000	0.500	0.450	637.50	12.29	0.00
		Nmin	51.1	0.0	1.000	0.500	0.450	637.50	28.40	0.00
		Mmax	51.1	0.0	1.000	0.500	0.450	637.50	28.40	0.00
		Mmin	23.5	0.0	1.000	0.500	0.450	637.50	12.29	0.00
		Qmax	23.5	0.0	1.000	0.500	0.450	637.50	12.29	0.00
		Qmin	51.1	0.0	1.000	0.500	0.450	637.50	28.40	0.00
21	29	Nmax	23.5	0.0	1.000	0.500	0.450	637.50	12.29	0.00
		Nmin	51.1	0.0	1.000	0.500	0.450	637.50	28.40	0.00
		Mmax	51.1	0.0	1.000	0.500	0.450	637.50	28.40	0.00
		Mmin	23.5	0.0	1.000	0.500	0.450	637.50	12.29	0.00
		Qmax	23.5	0.0	1.000	0.500	0.450	637.50	12.29	0.00
		Qmin	51.1	0.0	1.000	0.500	0.450	637.50	28.40	0.00
	31	Nmax	26.4	0.0	1.000	0.500	0.450	637.50	13.88	0.00
		Nmin	58.0	0.0	1.000	0.500	0.450	637.50	32.81	0.00
		Mmax	58.0	0.0	1.000	0.500	0.450	637.50	32.81	0.00
		Mmin	26.4	0.0	1.000	0.500	0.450	637.50	13.88	0.00
		Qmax	26.4	0.0	1.000	0.500	0.450	637.50	13.88	0.00
		Qmin	58.0	0.0	1.000	0.500	0.450	637.50	32.81	0.00
22	31	Nmax	26.4	0.0	1.000	0.500	0.450	637.50	13.88	0.00
		Nmin	58.0	0.0	1.000	0.500	0.450	637.50	32.81	0.00
		Mmax	58.0	0.0	1.000	0.500	0.450	637.50	32.81	0.00
		Mmin	26.4	0.0	1.000	0.500	0.450	637.50	13.88	0.00
		Qmax	26.4	0.0	1.000	0.500	0.450	637.50	13.88	0.00
		Qmin	58.0	0.0	1.000	0.500	0.450	637.50	32.81	0.00
	33	Nmax	27.4	0.0	1.000	0.500	0.450	637.50	14.44	0.00
		Nmin	60.3	0.0	1.000	0.500	0.450	637.50	34.34	0.00

ARMADOCAM_2060_10000_1m.xls PI CAMINO 24/11/2005
Kv=2060 Kh=10000

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES EN UN SÓLO LADO

FECHA: 24/11/2005

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
		Mmax	60.3	0.0	1.000	0.500	0.450	637.50	34.34	0.00
		Mmin	27.4	0.0	1.000	0.500	0.450	637.50	14.44	0.00
		Qmax	27.4	0.0	1.000	0.500	0.450	637.50	14.44	0.00
		Qmin	51.9	0.0	1.000	0.500	0.450	637.50	28.94	0.00
23	33	Nmax	27.4	0.0	1.000	0.500	0.450	637.50	14.43	0.00
		Nmin	60.3	0.0	1.000	0.500	0.450	637.50	34.33	0.00
		Mmax	60.3	0.0	1.000	0.500	0.450	637.50	34.33	0.00
		Mmin	27.4	0.0	1.000	0.500	0.450	637.50	14.43	0.00
		Qmax	27.4	0.0	1.000	0.500	0.450	637.50	14.43	0.00
		Qmin	59.3	0.0	1.000	0.500	0.450	637.50	33.62	0.00
	35	Nmax	26.4	0.0	1.000	0.500	0.450	637.50	13.92	0.00
		Nmin	58.1	0.0	1.000	0.500	0.450	637.50	32.87	0.00
		Mmax	58.1	0.0	1.000	0.500	0.450	637.50	32.87	0.00
		Mmin	26.4	0.0	1.000	0.500	0.450	637.50	13.92	0.00
		Qmax	58.1	0.0	1.000	0.500	0.450	637.50	32.87	0.00
		Qmin	26.4	0.0	1.000	0.500	0.450	637.50	13.92	0.00
24	35	Nmax	26.4	0.0	1.000	0.500	0.450	637.50	13.92	0.00
		Nmin	58.1	0.0	1.000	0.500	0.450	637.50	32.87	0.00
		Mmax	58.1	0.0	1.000	0.500	0.450	637.50	32.87	0.00
		Mmin	26.4	0.0	1.000	0.500	0.450	637.50	13.92	0.00
		Qmax	58.1	0.0	1.000	0.500	0.450	637.50	32.87	0.00
		Qmin	26.4	0.0	1.000	0.500	0.450	637.50	13.92	0.00
	37	Nmax	23.6	0.0	1.000	0.500	0.450	637.50	12.36	0.00
		Nmin	51.3	0.0	1.000	0.500	0.450	637.50	28.53	0.00
		Mmax	51.3	0.0	1.000	0.500	0.450	637.50	28.53	0.00
		Mmin	23.6	0.0	1.000	0.500	0.450	637.50	12.36	0.00
		Qmax	51.3	0.0	1.000	0.500	0.450	637.50	28.53	0.00
		Qmin	23.6	0.0	1.000	0.500	0.450	637.50	12.36	0.00
25	37	Nmax	23.6	0.0	1.000	0.500	0.450	637.50	12.36	0.00
		Nmin	51.3	0.0	1.000	0.500	0.450	637.50	28.53	0.00
		Mmax	51.3	0.0	1.000	0.500	0.450	637.50	28.53	0.00
		Mmin	23.6	0.0	1.000	0.500	0.450	637.50	12.36	0.00
		Qmax	51.3	0.0	1.000	0.500	0.450	637.50	28.53	0.00
		Qmin	23.6	0.0	1.000	0.500	0.450	637.50	12.36	0.00
	39	Nmax	18.9	0.0	1.000	0.500	0.450	637.50	9.78	0.00
		Nmin	39.9	0.0	1.000	0.500	0.450	637.50	21.63	0.00
		Mmax	40.5	0.0	1.000	0.500	0.450	637.50	21.95	0.00
		Mmin	18.9	0.0	1.000	0.500	0.450	637.50	9.78	0.00
		Qmax	39.9	0.0	1.000	0.500	0.450	637.50	21.63	0.00
		Qmin	18.9	0.0	1.000	0.500	0.450	637.50	9.78	0.00
26	39	Nmax	18.8	0.0	1.000	0.500	0.450	637.50	9.77	0.00
		Nmin	39.9	0.0	1.000	0.500	0.450	637.50	21.61	0.00
		Mmax	40.5	0.0	1.000	0.500	0.450	637.50	21.94	0.00
		Mmin	18.8	0.0	1.000	0.500	0.450	637.50	9.77	0.00
		Qmax	39.9	0.0	1.000	0.500	0.450	637.50	21.61	0.00
		Qmin	18.8	0.0	1.000	0.500	0.450	637.50	9.77	0.00
	41	Nmax	12.2	0.0	1.000	0.500	0.450	637.50	6.24	0.00
		Nmin	24.0	0.0	1.000	0.500	0.450	637.50	12.56	0.00
		Mmax	25.8	0.0	1.000	0.500	0.450	637.50	13.55	0.00
		Mmin	12.2	0.0	1.000	0.500	0.450	637.50	6.24	0.00
		Qmax	24.0	0.0	1.000	0.500	0.450	637.50	12.56	0.00
		Qmin	12.2	0.0	1.000	0.500	0.450	637.50	6.24	0.00

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES EN UN SÓLO LADO

FECHA: 24/11/2005

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
27	41	Nmax	12.2	0.0	1.000	0.500	0.450	637.50	6.24	0.00
		Nmin	24.0	0.0	1.000	0.500	0.450	637.50	12.56	0.00
		Mmax	25.8	0.0	1.000	0.500	0.450	637.50	13.55	0.00
		Mmin	12.2	0.0	1.000	0.500	0.450	637.50	6.24	0.00
		Qmax	24.0	0.0	1.000	0.500	0.450	637.50	12.56	0.00
		Qmin	12.2	0.0	1.000	0.500	0.450	637.50	6.24	0.00
	43	Nmax	3.6	0.0	1.000	0.500	0.450	637.50	1.81	0.00
		Nmin	3.6	0.0	1.000	0.500	0.450	637.50	1.81	0.00
		Mmax	6.8	0.0	1.000	0.500	0.450	637.50	3.47	0.00
		Mmin	3.6	0.0	1.000	0.500	0.450	637.50	1.81	0.00
		Qmax	3.6	0.0	1.000	0.500	0.450	637.50	1.81	0.00
		Qmin	3.6	0.0	1.000	0.500	0.450	637.50	1.81	0.00
28	43	Nmax	3.6	0.0	1.000	0.500	0.450	637.50	1.81	0.00
		Nmin	3.6	0.0	1.000	0.500	0.450	637.50	1.81	0.00
		Mmax	6.8	0.0	1.000	0.500	0.450	637.50	3.47	0.00
		Mmin	3.6	0.0	1.000	0.500	0.450	637.50	1.81	0.00
		Qmax	3.6	0.0	1.000	0.500	0.450	637.50	1.81	0.00
		Qmin	3.6	0.0	1.000	0.500	0.450	637.50	1.81	0.00
	45	Nmax	0.0	-1.4	1.000	0.500	0.450	637.50	0.00	0.71
		Nmin	0.0	-8.1	1.000	0.500	0.450	637.50	0.00	4.13
		Mmax	0.0	-1.4	1.000	0.500	0.450	637.50	0.00	0.71
		Mmin	0.0	-8.1	1.000	0.500	0.450	637.50	0.00	4.13
		Qmax	0.0	-8.1	1.000	0.500	0.450	637.50	0.00	4.13
		Qmin	0.0	-8.1	1.000	0.500	0.450	637.50	0.00	4.13
29	45	Nmax	0.0	-1.4	1.000	0.500	0.450	637.50	0.00	0.71
		Nmin	0.0	-8.1	1.000	0.500	0.450	637.50	0.00	4.13
		Mmax	0.0	-1.4	1.000	0.500	0.450	637.50	0.00	0.71
		Mmin	0.0	-8.1	1.000	0.500	0.450	637.50	0.00	4.13
		Qmax	0.0	-8.1	1.000	0.500	0.450	637.50	0.00	4.13
		Qmin	0.0	-1.4	1.000	0.500	0.450	637.50	0.00	0.71
	47	Nmax	0.0	-6.9	1.000	0.500	0.450	637.50	0.00	3.50
		Nmin	0.0	-19.9	1.000	0.500	0.450	637.50	0.00	10.35
		Mmax	0.0	-6.9	1.000	0.500	0.450	637.50	0.00	3.50
		Mmin	0.0	-19.9	1.000	0.500	0.450	637.50	0.00	10.35
		Qmax	0.0	-16.3	1.000	0.500	0.450	637.50	0.00	8.40
		Qmin	0.0	-6.9	1.000	0.500	0.450	637.50	0.00	3.50
30	47	Nmax	0.0	-6.9	1.000	0.500	0.450	637.50	0.00	3.50
		Nmin	0.0	-19.9	1.000	0.500	0.450	637.50	0.00	10.35
		Mmax	0.0	-6.9	1.000	0.500	0.450	637.50	0.00	3.50
		Mmin	0.0	-19.9	1.000	0.500	0.450	637.50	0.00	10.35
		Qmax	0.0	-16.3	1.000	0.500	0.450	637.50	0.00	8.40
		Qmin	0.0	-6.9	1.000	0.500	0.450	637.50	0.00	3.50
	49	Nmax	0.0	-12.9	1.000	0.500	0.450	637.50	0.00	6.59
		Nmin	0.0	-31.9	1.000	0.500	0.450	637.50	0.00	17.01
		Mmax	0.0	-12.9	1.000	0.500	0.450	637.50	0.00	6.59
		Mmin	0.0	-31.9	1.000	0.500	0.450	637.50	0.00	17.01
		Qmax	0.0	-29.4	1.000	0.500	0.450	637.50	0.00	15.57
		Qmin	0.0	-12.9	1.000	0.500	0.450	637.50	0.00	6.59
31	49	Nmax	0.0	-12.9	1.000	0.500	0.450	637.50	0.00	6.59
		Nmin	0.0	-31.9	1.000	0.500	0.450	637.50	0.00	17.01
		Mmax	0.0	-12.9	1.000	0.500	0.450	637.50	0.00	6.59
		Mmin	0.0	-31.9	1.000	0.500	0.450	637.50	0.00	17.01

ARMADOCAM_2060_10000_1m.xls PI CAMINO Kv=2060 Kh=10000 24/11/2005

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES EN UN SÓLO LADO

FECHA: 24/11/2005

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
		Qmax	0.0	-29.4	1.000	0.500	0.450	637.50	0.00	15.57
		Qmin	0.0	-12.9	1.000	0.500	0.450	637.50	0.00	6.59
	51	Nmax	0.0	-19.3	1.000	0.500	0.450	637.50	0.00	10.01
		Nmin	0.0	-44.3	1.000	0.500	0.450	637.50	0.00	24.21
		Mmax	0.0	-19.3	1.000	0.500	0.450	637.50	0.00	10.01
		Mmin	0.0	-44.3	1.000	0.500	0.450	637.50	0.00	24.21
		Qmax	0.0	-43.4	1.000	0.500	0.450	637.50	0.00	23.67
		Qmin	0.0	-19.3	1.000	0.500	0.450	637.50	0.00	10.01
32	51	Nmax	0.0	-19.3	1.000	0.500	0.450	637.50	0.00	10.01
		Nmin	0.0	-44.3	1.000	0.500	0.450	637.50	0.00	24.21
		Mmax	0.0	-19.3	1.000	0.500	0.450	637.50	0.00	10.01
		Mmin	0.0	-44.3	1.000	0.500	0.450	637.50	0.00	24.21
		Qmax	0.0	-43.4	1.000	0.500	0.450	637.50	0.00	23.67
		Qmin	0.0	-19.3	1.000	0.500	0.450	637.50	0.00	10.01
	64	Nmax	0.0	-26.2	1.000	0.500	0.450	637.50	0.00	13.78
		Nmin	0.0	-56.8	1.000	0.500	0.450	637.50	0.00	32.02
		Mmax	0.0	-26.2	1.000	0.500	0.450	637.50	0.00	13.78
		Mmin	0.0	-57.9	1.000	0.500	0.450	637.50	0.00	32.74
		Qmax	0.0	-57.9	1.000	0.500	0.450	637.50	0.00	32.74
		Qmin	0.0	-26.2	1.000	0.500	0.450	637.50	0.00	13.78
33	1	Nmax	48.5	0.0	1.000	0.600	0.550	779.17	21.14	0.00
		Nmin	31.7	0.0	1.000	0.600	0.550	779.17	13.52	0.00
		Mmax	56.1	0.0	1.000	0.600	0.550	779.17	24.74	0.00
		Mmin	31.7	0.0	1.000	0.600	0.550	779.17	13.52	0.00
		Qmax	56.1	0.0	1.000	0.600	0.550	779.17	24.74	0.00
		Qmin	31.7	0.0	1.000	0.600	0.550	779.17	13.52	0.00
	14	Nmax	34.2	0.0	1.000	0.600	0.550	779.17	14.64	0.00
		Nmin	22.8	0.0	1.000	0.600	0.550	779.17	9.61	0.00
		Mmax	39.8	0.0	1.000	0.600	0.550	779.17	17.13	0.00
		Mmin	22.8	0.0	1.000	0.600	0.550	779.17	9.61	0.00
		Qmax	39.8	0.0	1.000	0.600	0.550	779.17	17.13	0.00
		Qmin	22.8	0.0	1.000	0.600	0.550	779.17	9.61	0.00
34	14	Nmax	34.3	0.0	1.000	0.600	0.550	779.17	14.66	0.00
		Nmin	22.8	0.0	1.000	0.600	0.550	779.17	9.62	0.00
		Mmax	39.8	0.0	1.000	0.600	0.550	779.17	17.15	0.00
		Mmin	22.8	0.0	1.000	0.600	0.550	779.17	9.62	0.00
		Qmax	39.8	0.0	1.000	0.600	0.550	779.17	17.15	0.00
		Qmin	22.8	0.0	1.000	0.600	0.550	779.17	9.62	0.00
	16	Nmax	21.1	0.0	1.000	0.600	0.550	779.17	8.88	0.00
		Nmin	14.6	0.0	1.000	0.600	0.550	779.17	6.10	0.00
		Mmax	24.7	0.0	1.000	0.600	0.550	779.17	10.44	0.00
		Mmin	14.6	0.0	1.000	0.600	0.550	779.17	6.10	0.00
		Qmax	24.7	0.0	1.000	0.600	0.550	779.17	10.44	0.00
		Qmin	14.6	0.0	1.000	0.600	0.550	779.17	6.10	0.00
35	16	Nmax	21.1	0.0	1.000	0.600	0.550	779.17	8.88	0.00
		Nmin	14.6	0.0	1.000	0.600	0.550	779.17	6.10	0.00
		Mmax	24.7	0.0	1.000	0.600	0.550	779.17	10.44	0.00
		Mmin	14.6	0.0	1.000	0.600	0.550	779.17	6.10	0.00
		Qmax	24.7	0.0	1.000	0.600	0.550	779.17	10.44	0.00
		Qmin	14.6	0.0	1.000	0.600	0.550	779.17	6.10	0.00
	18	Nmax	9.1	0.0	1.000	0.600	0.550	779.17	3.76	0.00
		Nmin	7.1	0.0	1.000	0.600	0.550	779.17	2.94	0.00

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES EN UN SÓLO LADO

FECHA: 24/11/2005

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
		Mmax	10.9	0.0	1.000	0.600	0.550	779.17	4.52	0.00
		Mmin	7.1	0.0	1.000	0.600	0.550	779.17	2.94	0.00
		Qmax	10.9	0.0	1.000	0.600	0.550	779.17	4.52	0.00
		Qmin	7.1	0.0	1.000	0.600	0.550	779.17	2.94	0.00
36	18	Nmax	9.1	0.0	1.000	0.600	0.550	779.17	3.75	0.00
		Nmin	7.1	0.0	1.000	0.600	0.550	779.17	2.93	0.00
		Mmax	10.9	0.0	1.000	0.600	0.550	779.17	4.51	0.00
		Mmin	7.1	0.0	1.000	0.600	0.550	779.17	2.93	0.00
		Qmax	10.9	0.0	1.000	0.600	0.550	779.17	4.51	0.00
		Qmin	7.1	0.0	1.000	0.600	0.550	779.17	2.93	0.00
	20	Nmax	0.6	-1.9	1.000	0.600	0.550	779.17	0.25	0.80
		Nmin	1.1	0.0	1.000	0.600	0.550	779.17	0.44	0.00
		Mmax	1.1	0.0	1.000	0.600	0.550	779.17	0.44	0.00
		Mmin	0.6	-1.9	1.000	0.600	0.550	779.17	0.25	0.80
		Qmax	0.6	-1.8	1.000	0.600	0.550	779.17	0.25	0.72
		Qmin	1.1	0.0	1.000	0.600	0.550	779.17	0.44	0.00
37	20	Nmax	0.6	-1.9	1.000	0.600	0.550	779.17	0.25	0.80
		Nmin	1.1	0.0	1.000	0.600	0.550	779.17	0.44	0.00
		Mmax	1.1	0.0	1.000	0.600	0.550	779.17	0.44	0.00
		Mmin	0.6	-1.9	1.000	0.600	0.550	779.17	0.25	0.80
		Qmax	0.6	-1.8	1.000	0.600	0.550	779.17	0.25	0.72
		Qmin	1.1	0.0	1.000	0.600	0.550	779.17	0.44	0.00
	22	Nmax	0.0	-11.9	1.000	0.600	0.550	779.17	0.00	4.95
		Nmin	0.0	-6.0	1.000	0.600	0.550	779.17	0.00	2.49
		Mmax	0.0	-6.0	1.000	0.600	0.550	779.17	0.00	2.49
		Mmin	0.0	-13.2	1.000	0.600	0.550	779.17	0.00	5.49
		Qmax	0.0	-13.2	1.000	0.600	0.550	779.17	0.00	5.49
		Qmin	0.0	-6.0	1.000	0.600	0.550	779.17	0.00	2.49
38	22	Nmax	0.0	-11.9	1.000	0.600	0.550	779.17	0.00	4.95
		Nmin	0.0	-6.0	1.000	0.600	0.550	779.17	0.00	2.49
		Mmax	0.0	-6.0	1.000	0.600	0.550	779.17	0.00	2.49
		Mmin	0.0	-13.2	1.000	0.600	0.550	779.17	0.00	5.49
		Qmax	0.0	-13.2	1.000	0.600	0.550	779.17	0.00	5.49
		Qmin	0.0	-6.0	1.000	0.600	0.550	779.17	0.00	2.49
	24	Nmax	0.0	-28.9	1.000	0.600	0.550	779.17	0.00	12.28
		Nmin	0.0	-16.7	1.000	0.600	0.550	779.17	0.00	6.97
		Mmax	0.0	-16.7	1.000	0.600	0.550	779.17	0.00	6.97
		Mmin	0.0	-32.7	1.000	0.600	0.550	779.17	0.00	13.94
		Qmax	0.0	-32.7	1.000	0.600	0.550	779.17	0.00	13.94
		Qmin	0.0	-16.7	1.000	0.600	0.550	779.17	0.00	6.97
39	24	Nmax	0.0	-28.9	1.000	0.600	0.550	779.17	0.00	12.28
		Nmin	0.0	-16.7	1.000	0.600	0.550	779.17	0.00	6.97
		Mmax	0.0	-16.7	1.000	0.600	0.550	779.17	0.00	6.97
		Mmin	0.0	-32.7	1.000	0.600	0.550	779.17	0.00	13.94
		Qmax	0.0	-32.7	1.000	0.600	0.550	779.17	0.00	13.94
		Qmin	0.0	-16.7	1.000	0.600	0.550	779.17	0.00	6.97
	26	Nmax	0.0	-42.2	1.000	0.600	0.550	779.17	0.00	18.24
		Nmin	0.0	-25.0	1.000	0.600	0.550	779.17	0.00	10.56
		Mmax	0.0	-25.0	1.000	0.600	0.550	779.17	0.00	10.56
		Mmin	0.0	-47.8	1.000	0.600	0.550	779.17	0.00	20.85
		Qmax	0.0	-47.8	1.000	0.600	0.550	779.17	0.00	20.85
		Qmin	0.0	-25.0	1.000	0.600	0.550	779.17	0.00	10.56

ARMADOCAM_2060_10000_1m.xls PI CAMINO 24/11/2005
Kv=2060 Kh=10000

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES EN UN SÓLO LADO

FECHA: 24/11/2005

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
40	26	Nmax	0.0	-42.2	1.000	0.600	0.550	779.17	0.00	18.24
		Nmin	0.0	-25.0	1.000	0.600	0.550	779.17	0.00	10.56
		Mmax	0.0	-25.0	1.000	0.600	0.550	779.17	0.00	10.56
		Mmin	0.0	-47.8	1.000	0.600	0.550	779.17	0.00	20.85
		Qmax	0.0	-47.8	1.000	0.600	0.550	779.17	0.00	20.85
		Qmin	0.0	-25.0	1.000	0.600	0.550	779.17	0.00	10.56
	28	Nmax	0.0	-51.9	1.000	0.600	0.550	779.17	0.00	22.76
		Nmin	0.0	-31.1	1.000	0.600	0.550	779.17	0.00	13.24
		Mmax	0.0	-31.1	1.000	0.600	0.550	779.17	0.00	13.24
		Mmin	0.0	-58.9	1.000	0.600	0.550	779.17	0.00	26.10
		Qmax	0.0	-58.9	1.000	0.600	0.550	779.17	0.00	26.10
		Qmin	0.0	-31.1	1.000	0.600	0.550	779.17	0.00	13.24
41	28	Nmax	0.0	-51.9	1.000	0.600	0.550	779.17	0.00	22.76
		Nmin	0.0	-31.1	1.000	0.600	0.550	779.17	0.00	13.24
		Mmax	0.0	-31.1	1.000	0.600	0.550	779.17	0.00	13.24
		Mmin	0.0	-58.9	1.000	0.600	0.550	779.17	0.00	26.10
		Qmax	0.0	-58.9	1.000	0.600	0.550	779.17	0.00	26.10
		Qmin	0.0	-31.1	1.000	0.600	0.550	779.17	0.00	13.24
	30	Nmax	0.0	-58.2	1.000	0.600	0.550	779.17	0.00	25.75
		Nmin	0.0	-35.0	1.000	0.600	0.550	779.17	0.00	15.00
		Mmax	0.0	-35.0	1.000	0.600	0.550	779.17	0.00	15.00
		Mmin	0.0	-66.1	1.000	0.600	0.550	779.17	0.00	29.59
		Qmax	0.0	-66.1	1.000	0.600	0.550	779.17	0.00	29.59
		Qmin	0.0	-35.0	1.000	0.600	0.550	779.17	0.00	15.00
42	30	Nmax	0.0	-58.2	1.000	0.600	0.550	779.17	0.00	25.75
		Nmin	0.0	-35.0	1.000	0.600	0.550	779.17	0.00	15.00
		Mmax	0.0	-35.0	1.000	0.600	0.550	779.17	0.00	15.00
		Mmin	0.0	-66.1	1.000	0.600	0.550	779.17	0.00	29.58
		Qmax	0.0	-66.1	1.000	0.600	0.550	779.17	0.00	29.58
		Qmin	0.0	-35.0	1.000	0.600	0.550	779.17	0.00	15.00
	32	Nmax	0.0	-61.2	1.000	0.600	0.550	779.17	0.00	27.20
		Nmin	0.0	-36.9	1.000	0.600	0.550	779.17	0.00	15.83
		Mmax	0.0	-36.9	1.000	0.600	0.550	779.17	0.00	15.83
		Mmin	0.0	-69.4	1.000	0.600	0.550	779.17	0.00	31.24
		Qmax	0.0	-69.4	1.000	0.600	0.550	779.17	0.00	31.24
		Qmin	0.0	-36.9	1.000	0.600	0.550	779.17	0.00	15.83
43	32	Nmax	0.0	-61.2	1.000	0.600	0.550	779.17	0.00	27.19
		Nmin	0.0	-36.9	1.000	0.600	0.550	779.17	0.00	15.83
		Mmax	0.0	-36.9	1.000	0.600	0.550	779.17	0.00	15.83
		Mmin	0.0	-69.4	1.000	0.600	0.550	779.17	0.00	31.24
		Qmax	0.0	-36.9	1.000	0.600	0.550	779.17	0.00	15.83
		Qmin	0.0	-69.4	1.000	0.600	0.550	779.17	0.00	31.24
	34	Nmax	0.0	-60.8	1.000	0.600	0.550	779.17	0.00	27.01
		Nmin	0.0	-36.6	1.000	0.600	0.550	779.17	0.00	15.72
		Mmax	0.0	-36.6	1.000	0.600	0.550	779.17	0.00	15.72
		Mmin	0.0	-68.9	1.000	0.600	0.550	779.17	0.00	30.97
		Qmax	0.0	-36.6	1.000	0.600	0.550	779.17	0.00	15.72
		Qmin	0.0	-68.9	1.000	0.600	0.550	779.17	0.00	30.97
44	34	Nmax	0.0	-60.8	1.000	0.600	0.550	779.17	0.00	27.01
		Nmin	0.0	-36.6	1.000	0.600	0.550	779.17	0.00	15.72
		Mmax	0.0	-36.6	1.000	0.600	0.550	779.17	0.00	15.72
		Mmin	0.0	-68.9	1.000	0.600	0.550	779.17	0.00	30.97

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES EN UN SÓLO LADO

FECHA: 24/11/2005

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
		Qmax	0.0	-36.6	1.000	0.600	0.550	779.17	0.00	15.72
		Qmin	0.0	-68.9	1.000	0.600	0.550	779.17	0.00	30.97
	36	Nmax	0.0	-57.1	1.000	0.600	0.550	779.17	0.00	25.20
		Nmin	0.0	-34.3	1.000	0.600	0.550	779.17	0.00	14.65
		Mmax	0.0	-34.3	1.000	0.600	0.550	779.17	0.00	14.65
		Mmin	0.0	-64.5	1.000	0.600	0.550	779.17	0.00	28.78
		Qmax	0.0	-34.3	1.000	0.600	0.550	779.17	0.00	14.65
		Qmin	0.0	-64.5	1.000	0.600	0.550	779.17	0.00	28.78
45	36	Nmax	0.0	-57.1	1.000	0.600	0.550	779.17	0.00	25.20
		Nmin	0.0	-34.3	1.000	0.600	0.550	779.17	0.00	14.65
		Mmax	0.0	-34.3	1.000	0.600	0.550	779.17	0.00	14.65
		Mmin	0.0	-64.5	1.000	0.600	0.550	779.17	0.00	28.78
		Qmax	0.0	-34.3	1.000	0.600	0.550	779.17	0.00	14.65
		Qmin	0.0	-64.5	1.000	0.600	0.550	779.17	0.00	28.78
	38	Nmax	0.0	-49.7	1.000	0.600	0.550	779.17	0.00	21.70
		Nmin	0.0	-29.6	1.000	0.600	0.550	779.17	0.00	12.59
		Mmax	0.0	-29.6	1.000	0.600	0.550	779.17	0.00	12.59
		Mmin	0.0	-55.9	1.000	0.600	0.550	779.17	0.00	24.63
		Qmax	0.0	-29.6	1.000	0.600	0.550	779.17	0.00	12.59
		Qmin	0.0	-55.9	1.000	0.600	0.550	779.17	0.00	24.63
46	38	Nmax	0.0	-49.7	1.000	0.600	0.550	779.17	0.00	21.70
		Nmin	0.0	-29.6	1.000	0.600	0.550	779.17	0.00	12.59
		Mmax	0.0	-29.6	1.000	0.600	0.550	779.17	0.00	12.59
		Mmin	0.0	-55.9	1.000	0.600	0.550	779.17	0.00	24.63
		Qmax	0.0	-29.6	1.000	0.600	0.550	779.17	0.00	12.59
		Qmin	0.0	-55.9	1.000	0.600	0.550	779.17	0.00	24.63
	40	Nmax	0.0	-38.6	1.000	0.600	0.550	779.17	0.00	16.59
		Nmin	0.0	-22.6	1.000	0.600	0.550	779.17	0.00	9.53
		Mmax	0.0	-22.6	1.000	0.600	0.550	779.17	0.00	9.53
		Mmin	0.0	-43.0	1.000	0.600	0.550	779.17	0.00	18.61
		Qmax	0.0	-22.6	1.000	0.600	0.550	779.17	0.00	9.53
		Qmin	0.0	-43.0	1.000	0.600	0.550	779.17	0.00	18.61
47	40	Nmax	0.0	-38.6	1.000	0.600	0.550	779.17	0.00	16.59
		Nmin	0.0	-22.6	1.000	0.600	0.550	779.17	0.00	9.53
		Mmax	0.0	-22.6	1.000	0.600	0.550	779.17	0.00	9.53
		Mmin	0.0	-43.0	1.000	0.600	0.550	779.17	0.00	18.61
		Qmax	0.0	-22.6	1.000	0.600	0.550	779.17	0.00	9.53
		Qmin	0.0	-43.0	1.000	0.600	0.550	779.17	0.00	18.61
	42	Nmax	0.0	-23.4	1.000	0.600	0.550	779.17	0.00	9.85
		Nmin	0.0	-13.1	1.000	0.600	0.550	779.17	0.00	5.45
		Mmax	0.0	-13.1	1.000	0.600	0.550	779.17	0.00	5.45
		Mmin	0.0	-25.4	1.000	0.600	0.550	779.17	0.00	10.76
		Qmax	0.0	-13.1	1.000	0.600	0.550	779.17	0.00	5.45
		Qmin	0.0	-25.4	1.000	0.600	0.550	779.17	0.00	10.76
48	42	Nmax	0.0	-23.3	1.000	0.600	0.550	779.17	0.00	9.84
		Nmin	0.0	-13.1	1.000	0.600	0.550	779.17	0.00	5.44
		Mmax	0.0	-13.1	1.000	0.600	0.550	779.17	0.00	5.44
		Mmin	0.0	-25.4	1.000	0.600	0.550	779.17	0.00	10.75
		Qmax	0.0	-13.1	1.000	0.600	0.550	779.17	0.00	5.44
		Qmin	0.0	-25.4	1.000	0.600	0.550	779.17	0.00	10.75
	44	Nmax	0.0	-14.1	1.000	0.600	0.550	779.17	0.00	5.87
		Nmin	0.0	-7.3	1.000	0.600	0.550	779.17	0.00	3.01

ARMADOCAM_2060_10000_1m.xls PI CAMINO 24/11/2005
Kv=2060 Kh=10000

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES EN UN SÓLO LADO

FECHA: 24/11/2005

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
		Mmax	0.0	-7.3	1.000	0.600	0.550	779.17	0.00	3.01
		Mmin	0.0	-14.8	1.000	0.600	0.550	779.17	0.00	6.16
		Qmax	0.0	-7.3	1.000	0.600	0.550	779.17	0.00	3.01
		Qmin	0.0	-14.8	1.000	0.600	0.550	779.17	0.00	6.16
49	44	Nmax	0.0	-14.1	1.000	0.600	0.550	779.17	0.00	5.87
		Nmin	0.0	-7.3	1.000	0.600	0.550	779.17	0.00	3.01
		Mmax	0.0	-7.3	1.000	0.600	0.550	779.17	0.00	3.01
		Mmin	0.0	-14.8	1.000	0.600	0.550	779.17	0.00	6.16
		Qmax	0.0	-7.3	1.000	0.600	0.550	779.17	0.00	3.01
		Qmin	0.0	-14.8	1.000	0.600	0.550	779.17	0.00	6.16
	46	Nmax	0.0	-3.8	1.000	0.600	0.550	779.17	0.00	1.56
		Nmin	0.0	-0.8	1.000	0.600	0.550	779.17	0.00	0.32
		Mmax	0.0	-0.8	1.000	0.600	0.550	779.17	0.00	0.32
		Mmin	0.0	-3.8	1.000	0.600	0.550	779.17	0.00	1.56
		Qmax	0.0	-0.8	1.000	0.600	0.550	779.17	0.00	0.32
		Qmin	0.0	-2.9	1.000	0.600	0.550	779.17	0.00	1.19
50	46	Nmax	0.0	-3.8	1.000	0.600	0.550	779.17	0.00	1.56
		Nmin	0.0	-0.8	1.000	0.600	0.550	779.17	0.00	0.32
		Mmax	0.0	-0.8	1.000	0.600	0.550	779.17	0.00	0.32
		Mmin	0.0	-3.8	1.000	0.600	0.550	779.17	0.00	1.56
		Qmax	0.0	-0.8	1.000	0.600	0.550	779.17	0.00	0.32
		Qmin	0.0	-2.9	1.000	0.600	0.550	779.17	0.00	1.19
	48	Nmax	7.8	0.0	1.000	0.600	0.550	779.17	3.24	0.00
		Nmin	6.4	0.0	1.000	0.600	0.550	779.17	2.66	0.00
		Mmax	10.5	0.0	1.000	0.600	0.550	779.17	4.35	0.00
		Mmin	6.4	0.0	1.000	0.600	0.550	779.17	2.66	0.00
		Qmax	6.4	0.0	1.000	0.600	0.550	779.17	2.66	0.00
		Qmin	10.5	0.0	1.000	0.600	0.550	779.17	4.35	0.00
51	48	Nmax	7.8	0.0	1.000	0.600	0.550	779.17	3.24	0.00
		Nmin	6.4	0.0	1.000	0.600	0.550	779.17	2.66	0.00
		Mmax	10.5	0.0	1.000	0.600	0.550	779.17	4.34	0.00
		Mmin	6.4	0.0	1.000	0.600	0.550	779.17	2.66	0.00
		Qmax	6.4	0.0	1.000	0.600	0.550	779.17	2.66	0.00
		Qmin	10.5	0.0	1.000	0.600	0.550	779.17	4.34	0.00
	50	Nmax	20.6	0.0	1.000	0.600	0.550	779.17	8.67	0.00
		Nmin	14.4	0.0	1.000	0.600	0.550	779.17	6.02	0.00
		Mmax	25.2	0.0	1.000	0.600	0.550	779.17	10.64	0.00
		Mmin	14.4	0.0	1.000	0.600	0.550	779.17	6.02	0.00
		Qmax	14.4	0.0	1.000	0.600	0.550	779.17	6.02	0.00
		Qmin	25.2	0.0	1.000	0.600	0.550	779.17	10.64	0.00
52	50	Nmax	20.6	0.0	1.000	0.600	0.550	779.17	8.67	0.00
		Nmin	14.4	0.0	1.000	0.600	0.550	779.17	6.02	0.00
		Mmax	25.2	0.0	1.000	0.600	0.550	779.17	10.64	0.00
		Mmin	14.4	0.0	1.000	0.600	0.550	779.17	6.02	0.00
		Qmax	14.4	0.0	1.000	0.600	0.550	779.17	6.02	0.00
		Qmin	25.2	0.0	1.000	0.600	0.550	779.17	10.64	0.00
	52	Nmax	34.7	0.0	1.000	0.600	0.550	779.17	14.83	0.00
		Nmin	23.2	0.0	1.000	0.600	0.550	779.17	9.77	0.00
		Mmax	41.3	0.0	1.000	0.600	0.550	779.17	17.82	0.00
		Mmin	23.2	0.0	1.000	0.600	0.550	779.17	9.77	0.00
		Qmax	23.2	0.0	1.000	0.600	0.550	779.17	9.77	0.00
		Qmin	41.3	0.0	1.000	0.600	0.550	779.17	17.82	0.00

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES EN UN SÓLO LADO

FECHA: 24/11/2005

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
53	52	Nmax	23.2	0.0	1.000	0.600	0.550	779.17	9.77	0.00
		Nmin	41.3	0.0	1.000	0.600	0.550	779.17	17.83	0.00
		Mmax	41.3	0.0	1.000	0.600	0.550	779.17	17.83	0.00
		Mmin	23.2	0.0	1.000	0.600	0.550	779.17	9.77	0.00
		Qmax	23.2	0.0	1.000	0.600	0.550	779.17	9.77	0.00
		Qmin	34.7	0.0	1.000	0.600	0.550	779.17	14.83	0.00
	53	Nmax	23.4	0.0	1.000	0.600	0.550	779.17	9.88	0.00
		Nmin	42.7	0.0	1.000	0.600	0.550	779.17	18.46	0.00
		Mmax	42.7	0.0	1.000	0.600	0.550	779.17	18.46	0.00
		Mmin	23.4	0.0	1.000	0.600	0.550	779.17	9.88	0.00
		Qmax	23.4	0.0	1.000	0.600	0.550	779.17	9.88	0.00
		Qmin	36.5	0.0	1.000	0.600	0.550	779.17	15.66	0.00
54	53	Nmax	23.4	0.0	1.000	0.600	0.550	779.17	9.88	0.00
		Nmin	42.7	0.0	1.000	0.600	0.550	779.17	18.46	0.00
		Mmax	42.7	0.0	1.000	0.600	0.550	779.17	18.46	0.00
		Mmin	23.4	0.0	1.000	0.600	0.550	779.17	9.88	0.00
		Qmax	23.4	0.0	1.000	0.600	0.550	779.17	9.88	0.00
		Qmin	36.5	0.0	1.000	0.600	0.550	779.17	15.66	0.00
	54	Nmax	23.7	0.0	1.000	0.600	0.550	779.17	10.00	0.00
		Nmin	44.1	0.0	1.000	0.600	0.550	779.17	19.10	0.00
		Mmax	44.1	0.0	1.000	0.600	0.550	779.17	19.10	0.00
		Mmin	23.7	0.0	1.000	0.600	0.550	779.17	10.00	0.00
		Qmax	23.7	0.0	1.000	0.600	0.550	779.17	10.00	0.00
		Qmin	38.4	0.0	1.000	0.600	0.550	779.17	16.50	0.00
55	54	Nmax	23.7	0.0	1.000	0.600	0.550	779.17	10.00	0.00
		Nmin	44.1	0.0	1.000	0.600	0.550	779.17	19.10	0.00
		Mmax	44.1	0.0	1.000	0.600	0.550	779.17	19.10	0.00
		Mmin	23.7	0.0	1.000	0.600	0.550	779.17	10.00	0.00
		Qmax	23.7	0.0	1.000	0.600	0.550	779.17	10.00	0.00
		Qmin	38.4	0.0	1.000	0.600	0.550	779.17	16.50	0.00
	55	Nmax	23.9	0.0	1.000	0.600	0.550	779.17	10.10	0.00
		Nmin	45.4	0.0	1.000	0.600	0.550	779.17	19.73	0.00
		Mmax	45.4	0.0	1.000	0.600	0.550	779.17	19.73	0.00
		Mmin	23.9	0.0	1.000	0.600	0.550	779.17	10.10	0.00
		Qmax	23.9	0.0	1.000	0.600	0.550	779.17	10.10	0.00
		Qmin	40.2	0.0	1.000	0.600	0.550	779.17	17.33	0.00
56	55	Nmax	23.9	0.0	1.000	0.600	0.550	779.17	10.10	0.00
		Nmin	45.4	0.0	1.000	0.600	0.550	779.17	19.73	0.00
		Mmax	45.4	0.0	1.000	0.600	0.550	779.17	19.73	0.00
		Mmin	23.9	0.0	1.000	0.600	0.550	779.17	10.10	0.00
		Qmax	23.9	0.0	1.000	0.600	0.550	779.17	10.10	0.00
		Qmin	40.2	0.0	1.000	0.600	0.550	779.17	17.33	0.00
	56	Nmax	24.2	0.0	1.000	0.600	0.550	779.17	10.21	0.00
		Nmin	46.8	0.0	1.000	0.600	0.550	779.17	20.37	0.00
		Mmax	46.8	0.0	1.000	0.600	0.550	779.17	20.37	0.00
		Mmin	24.2	0.0	1.000	0.600	0.550	779.17	10.21	0.00
		Qmax	24.2	0.0	1.000	0.600	0.550	779.17	10.21	0.00
		Qmin	42.0	0.0	1.000	0.600	0.550	779.17	18.17	0.00
57	56	Nmax	24.2	0.0	1.000	0.600	0.550	779.17	10.21	0.00
		Nmin	46.8	0.0	1.000	0.600	0.550	779.17	20.37	0.00
		Mmax	46.8	0.0	1.000	0.600	0.550	779.17	20.37	0.00
		Mmin	24.2	0.0	1.000	0.600	0.550	779.17	10.21	0.00

ARMADOCAM_2060_10000_1m.xls PI CAMINO Kv=2060 Kh=10000 24/11/2005

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES EN UN SÓLO LADO

FECHA: 24/11/2005

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
		Qmax	24.2	0.0	1.000	0.600	0.550	779.17	10.21	0.00
		Qmin	42.0	0.0	1.000	0.600	0.550	779.17	18.17	0.00
	57	Nmax	24.4	0.0	1.000	0.600	0.550	779.17	10.32	0.00
		Nmin	48.2	0.0	1.000	0.600	0.550	779.17	21.02	0.00
		Mmax	48.2	0.0	1.000	0.600	0.550	779.17	21.02	0.00
		Mmin	24.4	0.0	1.000	0.600	0.550	779.17	10.32	0.00
		Qmax	24.4	0.0	1.000	0.600	0.550	779.17	10.32	0.00
		Qmin	43.9	0.0	1.000	0.600	0.550	779.17	19.02	0.00
58	57	Nmax	24.4	0.0	1.000	0.600	0.550	779.17	10.32	0.00
		Nmin	48.2	0.0	1.000	0.600	0.550	779.17	21.02	0.00
		Mmax	48.2	0.0	1.000	0.600	0.550	779.17	21.02	0.00
		Mmin	24.4	0.0	1.000	0.600	0.550	779.17	10.32	0.00
		Qmax	24.4	0.0	1.000	0.600	0.550	779.17	10.32	0.00
		Qmin	43.9	0.0	1.000	0.600	0.550	779.17	19.01	0.00
	58	Nmax	24.7	0.0	1.000	0.600	0.550	779.17	10.42	0.00
		Nmin	49.6	0.0	1.000	0.600	0.550	779.17	21.66	0.00
		Mmax	49.6	0.0	1.000	0.600	0.550	779.17	21.66	0.00
		Mmin	24.7	0.0	1.000	0.600	0.550	779.17	10.42	0.00
		Qmax	24.7	0.0	1.000	0.600	0.550	779.17	10.42	0.00
		Qmin	45.7	0.0	1.000	0.600	0.550	779.17	19.86	0.00
59	58	Nmax	24.7	0.0	1.000	0.600	0.550	779.17	10.42	0.00
		Nmin	49.6	0.0	1.000	0.600	0.550	779.17	21.66	0.00
		Mmax	49.6	0.0	1.000	0.600	0.550	779.17	21.66	0.00
		Mmin	24.7	0.0	1.000	0.600	0.550	779.17	10.42	0.00
		Qmax	24.7	0.0	1.000	0.600	0.550	779.17	10.42	0.00
		Qmin	45.7	0.0	1.000	0.600	0.550	779.17	19.86	0.00
	59	Nmax	24.9	0.0	1.000	0.600	0.550	779.17	10.54	0.00
		Nmin	51.0	0.0	1.000	0.600	0.550	779.17	22.31	0.00
		Mmax	51.0	0.0	1.000	0.600	0.550	779.17	22.31	0.00
		Mmin	24.9	0.0	1.000	0.600	0.550	779.17	10.54	0.00
		Qmax	24.9	0.0	1.000	0.600	0.550	779.17	10.54	0.00
		Qmin	47.6	0.0	1.000	0.600	0.550	779.17	20.72	0.00
60	59	Nmax	24.9	0.0	1.000	0.600	0.550	779.17	10.54	0.00
		Nmin	51.0	0.0	1.000	0.600	0.550	779.17	22.31	0.00
		Mmax	51.0	0.0	1.000	0.600	0.550	779.17	22.31	0.00
		Mmin	24.9	0.0	1.000	0.600	0.550	779.17	10.54	0.00
		Qmax	24.9	0.0	1.000	0.600	0.550	779.17	10.54	0.00
		Qmin	47.6	0.0	1.000	0.600	0.550	779.17	20.72	0.00
	60	Nmax	25.2	0.0	1.000	0.600	0.550	779.17	10.65	0.00
		Nmin	52.4	0.0	1.000	0.600	0.550	779.17	22.96	0.00
		Mmax	52.4	0.0	1.000	0.600	0.550	779.17	22.96	0.00
		Mmin	25.2	0.0	1.000	0.600	0.550	779.17	10.65	0.00
		Qmax	25.2	0.0	1.000	0.600	0.550	779.17	10.65	0.00
		Qmin	49.4	0.0	1.000	0.600	0.550	779.17	21.58	0.00
61	60	Nmax	25.2	0.0	1.000	0.600	0.550	779.17	10.65	0.00
		Nmin	52.4	0.0	1.000	0.600	0.550	779.17	22.96	0.00
		Mmax	52.4	0.0	1.000	0.600	0.550	779.17	22.96	0.00
		Mmin	25.2	0.0	1.000	0.600	0.550	779.17	10.65	0.00
		Qmax	25.2	0.0	1.000	0.600	0.550	779.17	10.65	0.00
		Qmin	49.4	0.0	1.000	0.600	0.550	779.17	21.58	0.00
	61	Nmax	25.4	0.0	1.000	0.600	0.550	779.17	10.76	0.00
		Nmin	53.7	0.0	1.000	0.600	0.550	779.17	23.62	0.00

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES EN UN SÓLO LADO

FECHA: 24/11/2005

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
		Mmax	53.7	0.0	1.000	0.600	0.550	779.17	23.62	0.00
		Mmin	25.4	0.0	1.000	0.600	0.550	779.17	10.76	0.00
		Qmax	25.4	0.0	1.000	0.600	0.550	779.17	10.76	0.00
		Qmin	51.2	0.0	1.000	0.600	0.550	779.17	22.44	0.00
62	61	Nmax	25.4	0.0	1.000	0.600	0.550	779.17	10.76	0.00
		Nmin	53.7	0.0	1.000	0.600	0.550	779.17	23.62	0.00
		Mmax	53.7	0.0	1.000	0.600	0.550	779.17	23.62	0.00
		Mmin	25.4	0.0	1.000	0.600	0.550	779.17	10.76	0.00
		Qmax	25.4	0.0	1.000	0.600	0.550	779.17	10.76	0.00
		Qmin	51.2	0.0	1.000	0.600	0.550	779.17	22.44	0.00
	62	Nmax	25.7	0.0	1.000	0.600	0.550	779.17	10.86	0.00
		Nmin	55.1	0.0	1.000	0.600	0.550	779.17	24.27	0.00
		Mmax	55.1	0.0	1.000	0.600	0.550	779.17	24.27	0.00
		Mmin	25.7	0.0	1.000	0.600	0.550	779.17	10.86	0.00
		Qmax	25.7	0.0	1.000	0.600	0.550	779.17	10.86	0.00
		Qmin	53.1	0.0	1.000	0.600	0.550	779.17	23.31	0.00
63	62	Nmax	25.7	0.0	1.000	0.600	0.550	779.17	10.86	0.00
		Nmin	55.1	0.0	1.000	0.600	0.550	779.17	24.27	0.00
		Mmax	55.1	0.0	1.000	0.600	0.550	779.17	24.27	0.00
		Mmin	25.7	0.0	1.000	0.600	0.550	779.17	10.86	0.00
		Qmax	25.7	0.0	1.000	0.600	0.550	779.17	10.86	0.00
		Qmin	53.1	0.0	1.000	0.600	0.550	779.17	23.31	0.00
	63	Nmax	25.9	0.0	1.000	0.600	0.550	779.17	10.97	0.00
		Nmin	56.5	0.0	1.000	0.600	0.550	779.17	24.92	0.00
		Mmax	56.5	0.0	1.000	0.600	0.550	779.17	24.92	0.00
		Mmin	25.9	0.0	1.000	0.600	0.550	779.17	10.97	0.00
		Qmax	25.9	0.0	1.000	0.600	0.550	779.17	10.97	0.00
		Qmin	54.9	0.0	1.000	0.600	0.550	779.17	24.18	0.00
64	63	Nmax	25.9	0.0	1.000	0.600	0.550	779.17	10.97	0.00
		Nmin	56.5	0.0	1.000	0.600	0.550	779.17	24.92	0.00
		Mmax	56.5	0.0	1.000	0.600	0.550	779.17	24.92	0.00
		Mmin	25.9	0.0	1.000	0.600	0.550	779.17	10.97	0.00
		Qmax	25.9	0.0	1.000	0.600	0.550	779.17	10.97	0.00
		Qmin	54.9	0.0	1.000	0.600	0.550	779.17	24.18	0.00
	64	Nmax	26.2	0.0	1.000	0.600	0.550	779.17	11.08	0.00
		Nmin	57.9	0.0	1.000	0.600	0.550	779.17	25.60	0.00
		Mmax	57.9	0.0	1.000	0.600	0.550	779.17	25.60	0.00
		Mmin	26.2	0.0	1.000	0.600	0.550	779.17	11.08	0.00
		Qmax	26.2	0.0	1.000	0.600	0.550	779.17	11.08	0.00
		Qmin	56.8	0.0	1.000	0.600	0.550	779.17	25.07	0.00

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES A AMBOS LADOS

FECHA: 24/11/2005

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
1	1	Nmax	0.0	-31.2	1.000	0.600	0.550	779.17	0.00	13.28
		Nmin	0.0	-56.6	1.000	0.600	0.550	779.17	0.00	24.98
		Mmax	0.0	-31.2	1.000	0.600	0.550	779.17	0.00	13.28
		Mmin	0.0	-56.6	1.000	0.600	0.550	779.17	0.00	24.98
		Qmax	0.0	-31.2	1.000	0.600	0.550	779.17	0.00	13.28
		Qmin	0.0	-56.6	1.000	0.600	0.550	779.17	0.00	24.98
	2	Nmax	0.0	-22.0	1.000	0.600	0.550	779.17	0.00	9.27
		Nmin	0.0	-39.3	1.000	0.600	0.550	779.17	0.00	16.92
		Mmax	0.0	-22.0	1.000	0.600	0.550	779.17	0.00	9.27
		Mmin	0.0	-39.3	1.000	0.600	0.550	779.17	0.00	16.92
		Qmax	0.0	-22.0	1.000	0.600	0.550	779.17	0.00	9.27
		Qmin	0.0	-39.3	1.000	0.600	0.550	779.17	0.00	16.92
2	2	Nmax	0.0	-22.0	1.000	0.600	0.550	779.17	0.00	9.27
		Nmin	0.0	-39.3	1.000	0.600	0.550	779.17	0.00	16.92
		Mmax	0.0	-22.0	1.000	0.600	0.550	779.17	0.00	9.27
		Mmin	0.0	-39.3	1.000	0.600	0.550	779.17	0.00	16.92
		Qmax	0.0	-22.0	1.000	0.600	0.550	779.17	0.00	9.27
		Qmin	0.0	-39.3	1.000	0.600	0.550	779.17	0.00	16.92
	3	Nmax	0.0	-13.3	1.000	0.600	0.550	779.17	0.00	5.56
		Nmin	0.0	-22.9	1.000	0.600	0.550	779.17	0.00	9.66
		Mmax	0.0	-13.3	1.000	0.600	0.550	779.17	0.00	5.56
		Mmin	0.0	-22.9	1.000	0.600	0.550	779.17	0.00	9.66
		Qmax	0.0	-13.3	1.000	0.600	0.550	779.17	0.00	5.56
		Qmin	0.0	-22.9	1.000	0.600	0.550	779.17	0.00	9.66
3	3	Nmax	0.0	-13.3	1.000	0.600	0.550	779.17	0.00	5.56
		Nmin	0.0	-22.9	1.000	0.600	0.550	779.17	0.00	9.66
		Mmax	0.0	-13.3	1.000	0.600	0.550	779.17	0.00	5.56
		Mmin	0.0	-22.9	1.000	0.600	0.550	779.17	0.00	9.66
		Qmax	0.0	-13.3	1.000	0.600	0.550	779.17	0.00	5.56
		Qmin	0.0	-22.9	1.000	0.600	0.550	779.17	0.00	9.66
	4	Nmax	0.0	-5.6	1.000	0.600	0.550	779.17	0.00	2.29
		Nmin	0.0	-8.3	1.000	0.600	0.550	779.17	0.00	3.44
		Mmax	0.0	-5.6	1.000	0.600	0.550	779.17	0.00	2.29
		Mmin	0.0	-8.4	1.000	0.600	0.550	779.17	0.00	3.47
		Qmax	0.0	-5.6	1.000	0.600	0.550	779.17	0.00	2.29
		Qmin	0.0	-8.3	1.000	0.600	0.550	779.17	0.00	3.44
4	4	Nmax	0.0	-5.6	1.000	0.600	0.550	779.17	0.00	2.29
		Nmin	0.0	-8.3	1.000	0.600	0.550	779.17	0.00	3.44
		Mmax	0.0	-5.6	1.000	0.600	0.550	779.17	0.00	2.29
		Mmin	0.0	-8.4	1.000	0.600	0.550	779.17	0.00	3.47
		Qmax	0.0	-5.6	1.000	0.600	0.550	779.17	0.00	2.29
		Qmin	0.0	-8.3	1.000	0.600	0.550	779.17	0.00	3.44
	5	Nmax	0.9	0.0	1.000	0.600	0.550	779.17	0.37	0.01
		Nmin	3.7	0.0	1.000	0.600	0.550	779.17	1.54	0.00
		Mmax	4.6	0.0	1.000	0.600	0.550	779.17	1.90	0.00
		Mmin	0.9	0.0	1.000	0.600	0.550	779.17	0.37	0.01
		Qmax	0.9	0.0	1.000	0.600	0.550	779.17	0.37	0.01
		Qmin	3.7	0.0	1.000	0.600	0.550	779.17	1.54	0.00
5	5	Nmax	0.9	0.0	1.000	0.600	0.550	779.17	0.37	0.01
		Nmin	3.7	0.0	1.000	0.600	0.550	779.17	1.54	0.00
		Mmax	4.6	0.0	1.000	0.600	0.550	779.17	1.90	0.00
		Mmin	0.9	0.0	1.000	0.600	0.550	779.17	0.37	0.01

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES A AMBOS LADOS

FECHA: 24/11/2005

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
		Qmax	0.9	0.0	1.000	0.600	0.550	779.17	0.37	0.01
		Qmin	3.7	0.0	1.000	0.600	0.550	779.17	1.54	0.00
	6	Nmax	5.7	0.0	1.000	0.600	0.550	779.17	2.36	0.00
		Nmin	12.5	0.0	1.000	0.600	0.550	779.17	5.21	0.00
		Mmax	12.5	0.0	1.000	0.600	0.550	779.17	5.21	0.00
		Mmin	5.7	0.0	1.000	0.600	0.550	779.17	2.36	0.00
		Qmax	5.7	0.0	1.000	0.600	0.550	779.17	2.36	0.00
		Qmin	12.5	0.0	1.000	0.600	0.550	779.17	5.21	0.00
6	6	Nmax	5.7	0.0	1.000	0.600	0.550	779.17	2.36	0.00
		Nmin	12.5	0.0	1.000	0.600	0.550	779.17	5.21	0.00
		Mmax	12.5	0.0	1.000	0.600	0.550	779.17	5.21	0.00
		Mmin	5.7	0.0	1.000	0.600	0.550	779.17	2.36	0.00
		Qmax	5.7	0.0	1.000	0.600	0.550	779.17	2.36	0.00
		Qmin	12.5	0.0	1.000	0.600	0.550	779.17	5.21	0.00
	7	Nmax	8.6	0.0	1.000	0.600	0.550	779.17	3.54	0.00
		Nmin	17.3	0.0	1.000	0.600	0.550	779.17	7.25	0.00
		Mmax	17.3	0.0	1.000	0.600	0.550	779.17	7.25	0.00
		Mmin	8.6	0.0	1.000	0.600	0.550	779.17	3.54	0.00
		Qmax	8.6	0.0	1.000	0.600	0.550	779.17	3.54	0.00
		Qmin	17.3	0.0	1.000	0.600	0.550	779.17	7.25	0.00
7	7	Nmax	8.6	0.0	1.000	0.600	0.550	779.17	3.54	0.00
		Nmin	17.3	0.0	1.000	0.600	0.550	779.17	7.25	0.00
		Mmax	17.3	0.0	1.000	0.600	0.550	779.17	7.25	0.00
		Mmin	8.6	0.0	1.000	0.600	0.550	779.17	3.54	0.00
		Qmax	16.1	0.0	1.000	0.600	0.550	779.17	6.73	0.00
		Qmin	8.6	0.0	1.000	0.600	0.550	779.17	3.54	0.00
	8	Nmax	9.0	0.0	1.000	0.600	0.550	779.17	3.73	0.00
		Nmin	17.4	0.0	1.000	0.600	0.550	779.17	7.26	0.00
		Mmax	17.4	0.0	1.000	0.600	0.550	779.17	7.26	0.00
		Mmin	9.0	0.0	1.000	0.600	0.550	779.17	3.73	0.00
		Qmax	15.6	0.0	1.000	0.600	0.550	779.17	6.53	0.00
		Qmin	9.0	0.0	1.000	0.600	0.550	779.17	3.73	0.00
8	8	Nmax	9.0	0.0	1.000	0.600	0.550	779.17	3.73	0.00
		Nmin	17.4	0.0	1.000	0.600	0.550	779.17	7.26	0.00
		Mmax	17.4	0.0	1.000	0.600	0.550	779.17	7.26	0.00
		Mmin	9.0	0.0	1.000	0.600	0.550	779.17	3.73	0.00
		Qmax	15.6	0.0	1.000	0.600	0.550	779.17	6.53	0.00
		Qmin	9.0	0.0	1.000	0.600	0.550	779.17	3.73	0.00
	9	Nmax	6.7	0.0	1.000	0.600	0.550	779.17	2.75	0.00
		Nmin	11.8	0.0	1.000	0.600	0.550	779.17	4.91	0.00
		Mmax	11.8	0.0	1.000	0.600	0.550	779.17	4.91	0.00
		Mmin	6.7	0.0	1.000	0.600	0.550	779.17	2.75	0.00
		Qmax	10.0	0.0	1.000	0.600	0.550	779.17	4.14	0.00
		Qmin	6.7	0.0	1.000	0.600	0.550	779.17	2.75	0.00
9	9	Nmax	6.7	0.0	1.000	0.600	0.550	779.17	2.75	0.00
		Nmin	11.8	0.0	1.000	0.600	0.550	779.17	4.91	0.00
		Mmax	11.8	0.0	1.000	0.600	0.550	779.17	4.91	0.00
		Mmin	6.7	0.0	1.000	0.600	0.550	779.17	2.75	0.00
		Qmax	11.8	0.0	1.000	0.600	0.550	779.17	4.91	0.00
		Qmin	6.7	0.0	1.000	0.600	0.550	779.17	2.75	0.00
	10	Nmax	1.4	0.0	1.000	0.600	0.550	779.17	0.58	0.00
		Nmin	1.1	-0.2	1.000	0.600	0.550	779.17	0.46	0.09

ARMADOCAM_2060_10000_2m.xls PI CAMINO Kv=2060 Kh=10000 24/11/2005

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES A AMBOS LADOS

FECHA: 24/11/2005

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
		Mmax	1.4	0.0	1.000	0.600	0.550	779.17	0.58	0.00
		Mmin	1.1	-1.7	1.000	0.600	0.550	779.17	0.46	0.69
		Qmax	1.1	-0.2	1.000	0.600	0.550	779.17	0.46	0.09
		Qmin	1.4	0.0	1.000	0.600	0.550	779.17	0.58	0.00
10	10	Nmax	1.4	0.0	1.000	0.600	0.550	779.17	0.58	0.00
		Nmin	1.1	-0.2	1.000	0.600	0.550	779.17	0.46	0.09
		Mmax	1.4	0.0	1.000	0.600	0.550	779.17	0.58	0.00
		Mmin	1.1	-1.7	1.000	0.600	0.550	779.17	0.46	0.69
		Qmax	1.1	-0.2	1.000	0.600	0.550	779.17	0.46	0.09
		Qmin	1.4	0.0	1.000	0.600	0.550	779.17	0.58	0.00
	11	Nmax	0.0	-8.1	1.000	0.600	0.550	779.17	0.00	3.35
		Nmin	0.0	-19.7	1.000	0.600	0.550	779.17	0.00	8.25
		Mmax	0.0	-8.1	1.000	0.600	0.550	779.17	0.00	3.35
		Mmin	0.0	-20.2	1.000	0.600	0.550	779.17	0.00	8.49
		Qmax	0.0	-19.7	1.000	0.600	0.550	779.17	0.00	8.25
		Qmin	0.0	-8.1	1.000	0.600	0.550	779.17	0.00	3.35
11	11	Nmax	0.0	-8.1	1.000	0.600	0.550	779.17	0.00	3.35
		Nmin	0.0	-19.7	1.000	0.600	0.550	779.17	0.00	8.25
		Mmax	0.0	-8.1	1.000	0.600	0.550	779.17	0.00	3.35
		Mmin	0.0	-20.2	1.000	0.600	0.550	779.17	0.00	8.49
		Qmax	0.0	-19.7	1.000	0.600	0.550	779.17	0.00	8.25
		Qmin	0.0	-8.1	1.000	0.600	0.550	779.17	0.00	3.35
	12	Nmax	0.0	-21.4	1.000	0.600	0.550	779.17	0.00	9.00
		Nmin	0.0	-47.3	1.000	0.600	0.550	779.17	0.00	20.61
		Mmax	0.0	-21.4	1.000	0.600	0.550	779.17	0.00	9.00
		Mmin	0.0	-47.3	1.000	0.600	0.550	779.17	0.00	20.61
		Qmax	0.0	-47.3	1.000	0.600	0.550	779.17	0.00	20.61
		Qmin	0.0	-21.4	1.000	0.600	0.550	779.17	0.00	9.00
12	12	Nmax	0.0	-21.4	1.000	0.600	0.550	779.17	0.00	9.00
		Nmin	0.0	-47.3	1.000	0.600	0.550	779.17	0.00	20.61
		Mmax	0.0	-21.4	1.000	0.600	0.550	779.17	0.00	9.00
		Mmin	0.0	-47.3	1.000	0.600	0.550	779.17	0.00	20.61
		Qmax	0.0	-47.3	1.000	0.600	0.550	779.17	0.00	20.61
		Qmin	0.0	-21.4	1.000	0.600	0.550	779.17	0.00	9.00
	13	Nmax	0.0	-39.3	1.000	0.600	0.550	779.17	0.00	16.91
		Nmin	0.0	-84.2	1.000	0.600	0.550	779.17	0.00	38.79
		Mmax	0.0	-39.3	1.000	0.600	0.550	779.17	0.00	16.91
		Mmin	0.0	-84.2	1.000	0.600	0.550	779.17	0.00	38.79
		Qmax	0.0	-84.2	1.000	0.600	0.550	779.17	0.00	38.79
		Qmin	0.0	-39.3	1.000	0.600	0.550	779.17	0.00	16.91
13	13	Nmax	0.0	-39.3	1.000	0.500	0.450	637.50	0.00	21.24
		Nmin	0.0	-84.1	1.000	0.500	0.450	637.50	0.00	51.32
		Mmax	0.0	-39.3	1.000	0.500	0.450	637.50	0.00	21.24
		Mmin	0.0	-84.1	1.000	0.500	0.450	637.50	0.00	51.32
		Qmax	0.0	-39.3	1.000	0.500	0.450	637.50	0.00	21.24
		Qmin	0.0	-84.1	1.000	0.500	0.450	637.50	0.00	51.32
	15	Nmax	0.0	-32.0	1.000	0.500	0.450	637.50	0.00	17.05
		Nmin	0.0	-68.9	1.000	0.500	0.450	637.50	0.00	40.15
		Mmax	0.0	-32.0	1.000	0.500	0.450	637.50	0.00	17.05
		Mmin	0.0	-68.9	1.000	0.500	0.450	637.50	0.00	40.15
		Qmax	0.0	-32.0	1.000	0.500	0.450	637.50	0.00	17.05
		Qmin	0.0	-68.9	1.000	0.500	0.450	637.50	0.00	40.15

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES A AMBOS LADOS

FECHA: 24/11/2005

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
14	15	Nmax	0.0	-32.0	1.000	0.500	0.450	637.50	0.00	17.05
		Nmin	0.0	-68.9	1.000	0.500	0.450	637.50	0.00	40.15
		Mmax	0.0	-32.0	1.000	0.500	0.450	637.50	0.00	17.05
		Mmin	0.0	-68.9	1.000	0.500	0.450	637.50	0.00	40.15
		Qmax	0.0	-32.0	1.000	0.500	0.450	637.50	0.00	17.05
		Qmin	0.0	-68.9	1.000	0.500	0.450	637.50	0.00	40.15
	17	Nmax	0.0	-25.3	1.000	0.500	0.450	637.50	0.00	13.26
		Nmin	0.0	-54.3	1.000	0.500	0.450	637.50	0.00	30.45
		Mmax	0.0	-25.3	1.000	0.500	0.450	637.50	0.00	13.26
		Mmin	0.0	-55.0	1.000	0.500	0.450	637.50	0.00	30.85
		Qmax	0.0	-25.3	1.000	0.500	0.450	637.50	0.00	13.26
		Qmin	0.0	-54.3	1.000	0.500	0.450	637.50	0.00	30.45
15	17	Nmax	0.0	-25.2	1.000	0.500	0.450	637.50	0.00	13.25
		Nmin	0.0	-54.3	1.000	0.500	0.450	637.50	0.00	30.44
		Mmax	0.0	-25.2	1.000	0.500	0.450	637.50	0.00	13.25
		Mmin	0.0	-55.0	1.000	0.500	0.450	637.50	0.00	30.84
		Qmax	0.0	-25.2	1.000	0.500	0.450	637.50	0.00	13.25
		Qmin	0.0	-54.3	1.000	0.500	0.450	637.50	0.00	30.44
	19	Nmax	0.0	-19.0	1.000	0.500	0.450	637.50	0.00	9.83
		Nmin	0.0	-40.6	1.000	0.500	0.450	637.50	0.00	22.00
		Mmax	0.0	-19.0	1.000	0.500	0.450	637.50	0.00	9.83
		Mmin	0.0	-42.3	1.000	0.500	0.450	637.50	0.00	23.05
		Qmax	0.0	-19.0	1.000	0.500	0.450	637.50	0.00	9.83
		Qmin	0.0	-40.6	1.000	0.500	0.450	637.50	0.00	22.00
16	19	Nmax	0.0	-19.0	1.000	0.500	0.450	637.50	0.00	9.83
		Nmin	0.0	-40.6	1.000	0.500	0.450	637.50	0.00	22.00
		Mmax	0.0	-19.0	1.000	0.500	0.450	637.50	0.00	9.83
		Mmin	0.0	-42.3	1.000	0.500	0.450	637.50	0.00	23.05
		Qmax	0.0	-19.0	1.000	0.500	0.450	637.50	0.00	9.83
		Qmin	0.0	-40.6	1.000	0.500	0.450	637.50	0.00	22.00
	21	Nmax	0.0	-13.1	1.000	0.500	0.450	637.50	0.00	6.73
		Nmin	0.0	-27.8	1.000	0.500	0.450	637.50	0.00	14.67
		Mmax	0.0	-13.1	1.000	0.500	0.450	637.50	0.00	6.73
		Mmin	0.0	-29.9	1.000	0.500	0.450	637.50	0.00	15.86
		Qmax	0.0	-13.1	1.000	0.500	0.450	637.50	0.00	6.73
		Qmin	0.0	-29.9	1.000	0.500	0.450	637.50	0.00	15.86
17	21	Nmax	0.0	-13.1	1.000	0.500	0.450	637.50	0.00	6.73
		Nmin	0.0	-27.8	1.000	0.500	0.450	637.50	0.00	14.67
		Mmax	0.0	-13.1	1.000	0.500	0.450	637.50	0.00	6.73
		Mmin	0.0	-29.9	1.000	0.500	0.450	637.50	0.00	15.86
		Qmax	0.0	-13.1	1.000	0.500	0.450	637.50	0.00	6.73
		Qmin	0.0	-29.9	1.000	0.500	0.450	637.50	0.00	15.86
	23	Nmax	0.0	-7.8	1.000	0.500	0.450	637.50	0.00	3.95
		Nmin	0.0	-16.1	1.000	0.500	0.450	637.50	0.00	8.30
		Mmax	0.0	-7.8	1.000	0.500	0.450	637.50	0.00	3.95
		Mmin	0.0	-17.8	1.000	0.500	0.450	637.50	0.00	9.19
		Qmax	0.0	-7.8	1.000	0.500	0.450	637.50	0.00	3.95
		Qmin	0.0	-17.8	1.000	0.500	0.450	637.50	0.00	9.19
18	23	Nmax	0.0	-7.8	1.000	0.500	0.450	637.50	0.00	3.95
		Nmin	0.0	-16.1	1.000	0.500	0.450	637.50	0.00	8.30
		Mmax	0.0	-7.8	1.000	0.500	0.450	637.50	0.00	3.95
		Mmin	0.0	-17.8	1.000	0.500	0.450	637.50	0.00	9.19

ARMADOCAM_2060_10000_2m.xls PI CAMINO Kv=2060 Kh=10000 24/11/2005

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES A AMBOS LADOS

FECHA: 24/11/2005

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
		Qmax	0.0	-7.8	1.000	0.500	0.450	637.50	0.00	3.95
		Qmin	0.0	-17.8	1.000	0.500	0.450	637.50	0.00	9.19
	25	Nmax	1.5	0.0	1.000	0.500	0.450	637.50	0.73	0.00
		Nmin	4.1	0.0	1.000	0.500	0.450	637.50	2.08	0.00
		Mmax	4.1	0.0	1.000	0.500	0.450	637.50	2.08	0.00
		Mmin	1.5	0.0	1.000	0.500	0.450	637.50	0.73	0.00
		Qmax	1.5	0.0	1.000	0.500	0.450	637.50	0.73	0.00
		Qmin	4.0	0.0	1.000	0.500	0.450	637.50	2.00	0.00
19	25	Nmax	1.5	0.0	1.000	0.500	0.450	637.50	0.73	0.00
		Nmin	4.1	0.0	1.000	0.500	0.450	637.50	2.08	0.00
		Mmax	4.1	0.0	1.000	0.500	0.450	637.50	2.08	0.00
		Mmin	1.5	0.0	1.000	0.500	0.450	637.50	0.73	0.00
		Qmax	1.5	0.0	1.000	0.500	0.450	637.50	0.73	0.00
		Qmin	4.0	0.0	1.000	0.500	0.450	637.50	2.00	0.00
	27	Nmax	8.8	0.0	1.000	0.500	0.450	637.50	4.47	0.00
		Nmin	20.1	0.0	1.000	0.500	0.450	637.50	10.47	0.00
		Mmax	21.1	0.0	1.000	0.500	0.450	637.50	11.00	0.00
		Mmin	8.8	0.0	1.000	0.500	0.450	637.50	4.47	0.00
		Qmax	8.8	0.0	1.000	0.500	0.450	637.50	4.47	0.00
		Qmin	21.1	0.0	1.000	0.500	0.450	637.50	11.00	0.00
20	27	Nmax	8.8	0.0	1.000	0.500	0.450	637.50	4.47	0.00
		Nmin	20.1	0.0	1.000	0.500	0.450	637.50	10.47	0.00
		Mmax	21.1	0.0	1.000	0.500	0.450	637.50	11.00	0.00
		Mmin	8.8	0.0	1.000	0.500	0.450	637.50	4.47	0.00
		Qmax	8.8	0.0	1.000	0.500	0.450	637.50	4.47	0.00
		Qmin	21.1	0.0	1.000	0.500	0.450	637.50	11.00	0.00
	29	Nmax	14.2	0.0	1.000	0.500	0.450	637.50	7.31	0.00
		Nmin	31.9	0.0	1.000	0.500	0.450	637.50	16.99	0.00
		Mmax	33.7	0.0	1.000	0.500	0.450	637.50	18.02	0.00
		Mmin	14.2	0.0	1.000	0.500	0.450	637.50	7.31	0.00
		Qmax	14.2	0.0	1.000	0.500	0.450	637.50	7.31	0.00
		Qmin	33.7	0.0	1.000	0.500	0.450	637.50	18.02	0.00
21	29	Nmax	14.2	0.0	1.000	0.500	0.450	637.50	7.31	0.00
		Nmin	31.9	0.0	1.000	0.500	0.450	637.50	16.99	0.00
		Mmax	33.7	0.0	1.000	0.500	0.450	637.50	18.02	0.00
		Mmin	14.2	0.0	1.000	0.500	0.450	637.50	7.31	0.00
		Qmax	14.2	0.0	1.000	0.500	0.450	637.50	7.31	0.00
		Qmin	33.7	0.0	1.000	0.500	0.450	637.50	18.02	0.00
	31	Nmax	17.7	0.0	1.000	0.500	0.450	637.50	9.17	0.00
		Nmin	39.5	0.0	1.000	0.500	0.450	637.50	21.37	0.00
		Mmax	41.7	0.0	1.000	0.500	0.450	637.50	22.70	0.00
		Mmin	17.7	0.0	1.000	0.500	0.450	637.50	9.17	0.00
		Qmax	17.7	0.0	1.000	0.500	0.450	637.50	9.17	0.00
		Qmin	41.7	0.0	1.000	0.500	0.450	637.50	22.70	0.00
22	31	Nmax	17.7	0.0	1.000	0.500	0.450	637.50	9.17	0.00
		Nmin	39.5	0.0	1.000	0.500	0.450	637.50	21.37	0.00
		Mmax	41.7	0.0	1.000	0.500	0.450	637.50	22.69	0.00
		Mmin	17.7	0.0	1.000	0.500	0.450	637.50	9.17	0.00
		Qmax	17.7	0.0	1.000	0.500	0.450	637.50	9.17	0.00
		Qmin	41.7	0.0	1.000	0.500	0.450	637.50	22.69	0.00
	33	Nmax	19.3	0.0	1.000	0.500	0.450	637.50	10.02	0.00
		Nmin	42.9	0.0	1.000	0.500	0.450	637.50	23.37	0.00

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES A AMBOS LADOS

FECHA: 24/11/2005

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
		Mmax	45.1	0.0	1.000	0.500	0.450	637.50	24.75	0.00
		Mmin	19.3	0.0	1.000	0.500	0.450	637.50	10.02	0.00
		Qmax	19.3	0.0	1.000	0.500	0.450	637.50	10.02	0.00
		Qmin	42.9	0.0	1.000	0.500	0.450	637.50	23.37	0.00
23	33	Nmax	19.3	0.0	1.000	0.500	0.450	637.50	10.02	0.00
		Nmin	42.9	0.0	1.000	0.500	0.450	637.50	23.37	0.00
		Mmax	45.1	0.0	1.000	0.500	0.450	637.50	24.75	0.00
		Mmin	19.3	0.0	1.000	0.500	0.450	637.50	10.02	0.00
		Qmax	19.3	0.0	1.000	0.500	0.450	637.50	10.02	0.00
		Qmin	42.9	0.0	1.000	0.500	0.450	637.50	23.37	0.00
	35	Nmax	19.0	0.0	1.000	0.500	0.450	637.50	9.85	0.00
		Nmin	42.0	0.0	1.000	0.500	0.450	637.50	22.86	0.00
		Mmax	44.0	0.0	1.000	0.500	0.450	637.50	24.06	0.00
		Mmin	19.0	0.0	1.000	0.500	0.450	637.50	9.85	0.00
		Qmax	44.0	0.0	1.000	0.500	0.450	637.50	24.06	0.00
		Qmin	19.0	0.0	1.000	0.500	0.450	637.50	9.85	0.00
24	35	Nmax	19.0	0.0	1.000	0.500	0.450	637.50	9.85	0.00
		Nmin	42.0	0.0	1.000	0.500	0.450	637.50	22.85	0.00
		Mmax	44.0	0.0	1.000	0.500	0.450	637.50	24.06	0.00
		Mmin	19.0	0.0	1.000	0.500	0.450	637.50	9.85	0.00
		Qmax	44.0	0.0	1.000	0.500	0.450	637.50	24.06	0.00
		Qmin	19.0	0.0	1.000	0.500	0.450	637.50	9.85	0.00
	37	Nmax	16.7	0.0	1.000	0.500	0.450	637.50	8.64	0.00
		Nmin	36.9	0.0	1.000	0.500	0.450	637.50	19.86	0.00
		Mmax	38.3	0.0	1.000	0.500	0.450	637.50	20.67	0.00
		Mmin	16.7	0.0	1.000	0.500	0.450	637.50	8.64	0.00
		Qmax	38.3	0.0	1.000	0.500	0.450	637.50	20.67	0.00
		Qmin	16.7	0.0	1.000	0.500	0.450	637.50	8.64	0.00
25	37	Nmax	16.7	0.0	1.000	0.500	0.450	637.50	8.64	0.00
		Nmin	36.9	0.0	1.000	0.500	0.450	637.50	19.86	0.00
		Mmax	38.3	0.0	1.000	0.500	0.450	637.50	20.67	0.00
		Mmin	16.7	0.0	1.000	0.500	0.450	637.50	8.64	0.00
		Qmax	38.3	0.0	1.000	0.500	0.450	637.50	20.67	0.00
		Qmin	16.7	0.0	1.000	0.500	0.450	637.50	8.64	0.00
	39	Nmax	12.6	0.0	1.000	0.500	0.450	637.50	6.43	0.00
		Nmin	27.6	0.0	1.000	0.500	0.450	637.50	14.56	0.00
		Mmax	28.0	0.0	1.000	0.500	0.450	637.50	14.79	0.00
		Mmin	12.6	0.0	1.000	0.500	0.450	637.50	6.43	0.00
		Qmax	28.0	0.0	1.000	0.500	0.450	637.50	14.79	0.00
		Qmin	12.6	0.0	1.000	0.500	0.450	637.50	6.43	0.00
26	39	Nmax	12.6	0.0	1.000	0.500	0.450	637.50	6.43	0.00
		Nmin	27.6	0.0	1.000	0.500	0.450	637.50	14.56	0.00
		Mmax	28.0	0.0	1.000	0.500	0.450	637.50	14.77	0.00
		Mmin	12.6	0.0	1.000	0.500	0.450	637.50	6.43	0.00
		Qmax	28.0	0.0	1.000	0.500	0.450	637.50	14.77	0.00
		Qmin	12.6	0.0	1.000	0.500	0.450	637.50	6.43	0.00
	41	Nmax	6.5	0.0	1.000	0.500	0.450	637.50	3.28	0.00
		Nmin	14.1	0.0	1.000	0.500	0.450	637.50	7.23	0.00
		Mmax	14.1	0.0	1.000	0.500	0.450	637.50	7.23	0.00
		Mmin	6.5	0.0	1.000	0.500	0.450	637.50	3.28	0.00
		Qmax	13.1	0.0	1.000	0.500	0.450	637.50	6.73	0.00
		Qmin	6.5	0.0	1.000	0.500	0.450	637.50	3.28	0.00

ARMADOCAM_2060_10000_2m.xls PI CAMINO 24/11/2005
Kv=2060 Kh=10000

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES A AMBOS LADOS

FECHA: 24/11/2005

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
27	41	Nmax	6.5	0.0	1.000	0.500	0.450	637.50	3.28	0.00
		Nmin	14.1	0.0	1.000	0.500	0.450	637.50	7.23	0.00
		Mmax	14.1	0.0	1.000	0.500	0.450	637.50	7.23	0.00
		Mmin	6.5	0.0	1.000	0.500	0.450	637.50	3.28	0.00
		Qmax	13.1	0.0	1.000	0.500	0.450	637.50	6.73	0.00
		Qmin	6.5	0.0	1.000	0.500	0.450	637.50	3.28	0.00
	43	Nmax	0.0	-1.5	1.000	0.500	0.450	637.50	0.00	0.76
		Nmin	0.0	-3.7	1.000	0.500	0.450	637.50	0.00	1.85
		Mmax	0.0	-1.5	1.000	0.500	0.450	637.50	0.00	0.76
		Mmin	0.0	-6.3	1.000	0.500	0.450	637.50	0.00	3.21
		Qmax	0.0	-6.3	1.000	0.500	0.450	637.50	0.00	3.21
		Qmin	0.0	-1.5	1.000	0.500	0.450	637.50	0.00	0.76
28	43	Nmax	0.0	-1.5	1.000	0.500	0.450	637.50	0.00	0.77
		Nmin	0.0	-3.7	1.000	0.500	0.450	637.50	0.00	1.85
		Mmax	0.0	-1.5	1.000	0.500	0.450	637.50	0.00	0.77
		Mmin	0.0	-6.3	1.000	0.500	0.450	637.50	0.00	3.21
		Qmax	0.0	-6.3	1.000	0.500	0.450	637.50	0.00	3.21
		Qmin	0.0	-1.5	1.000	0.500	0.450	637.50	0.00	0.77
	45	Nmax	0.0	-6.3	1.000	0.500	0.450	637.50	0.00	3.17
		Nmin	0.0	-14.1	1.000	0.500	0.450	637.50	0.00	7.27
		Mmax	0.0	-6.3	1.000	0.500	0.450	637.50	0.00	3.17
		Mmin	0.0	-17.4	1.000	0.500	0.450	637.50	0.00	8.97
		Qmax	0.0	-17.4	1.000	0.500	0.450	637.50	0.00	8.97
		Qmin	0.0	-6.3	1.000	0.500	0.450	637.50	0.00	3.17
29	45	Nmax	0.0	-6.3	1.000	0.500	0.450	637.50	0.00	3.17
		Nmin	0.0	-14.1	1.000	0.500	0.450	637.50	0.00	7.27
		Mmax	0.0	-6.3	1.000	0.500	0.450	637.50	0.00	3.17
		Mmin	0.0	-17.4	1.000	0.500	0.450	637.50	0.00	8.97
		Qmax	0.0	-17.4	1.000	0.500	0.450	637.50	0.00	8.97
		Qmin	0.0	-6.3	1.000	0.500	0.450	637.50	0.00	3.17
	47	Nmax	0.0	-11.5	1.000	0.500	0.450	637.50	0.00	5.86
		Nmin	0.0	-25.6	1.000	0.500	0.450	637.50	0.00	13.48
		Mmax	0.0	-11.5	1.000	0.500	0.450	637.50	0.00	5.86
		Mmin	0.0	-28.6	1.000	0.500	0.450	637.50	0.00	15.12
		Qmax	0.0	-25.6	1.000	0.500	0.450	637.50	0.00	13.48
		Qmin	0.0	-11.5	1.000	0.500	0.450	637.50	0.00	5.86
30	47	Nmax	0.0	-11.5	1.000	0.500	0.450	637.50	0.00	5.86
		Nmin	0.0	-25.6	1.000	0.500	0.450	637.50	0.00	13.48
		Mmax	0.0	-11.5	1.000	0.500	0.450	637.50	0.00	5.86
		Mmin	0.0	-28.6	1.000	0.500	0.450	637.50	0.00	15.12
		Qmax	0.0	-25.6	1.000	0.500	0.450	637.50	0.00	13.48
		Qmin	0.0	-11.5	1.000	0.500	0.450	637.50	0.00	5.86
	49	Nmax	0.0	-17.1	1.000	0.500	0.450	637.50	0.00	8.85
		Nmin	0.0	-38.2	1.000	0.500	0.450	637.50	0.00	20.60
		Mmax	0.0	-17.1	1.000	0.500	0.450	637.50	0.00	8.85
		Mmin	0.0	-40.1	1.000	0.500	0.450	637.50	0.00	21.73
		Qmax	0.0	-38.2	1.000	0.500	0.450	637.50	0.00	20.60
		Qmin	0.0	-17.1	1.000	0.500	0.450	637.50	0.00	8.85
31	49	Nmax	0.0	-17.1	1.000	0.500	0.450	637.50	0.00	8.85
		Nmin	0.0	-38.2	1.000	0.500	0.450	637.50	0.00	20.60
		Mmax	0.0	-17.1	1.000	0.500	0.450	637.50	0.00	8.85
		Mmin	0.0	-40.1	1.000	0.500	0.450	637.50	0.00	21.74

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES A AMBOS LADOS

FECHA: 24/11/2005

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
		Qmax	0.0	-38.2	1.000	0.500	0.450	637.50	0.00	20.60
		Qmin	0.0	-17.1	1.000	0.500	0.450	637.50	0.00	8.85
	51	Nmax	0.0	-23.3	1.000	0.500	0.450	637.50	0.00	12.17
		Nmin	0.0	-51.5	1.000	0.500	0.450	637.50	0.00	28.69
		Mmax	0.0	-23.3	1.000	0.500	0.450	637.50	0.00	12.17
		Mmin	0.0	-51.9	1.000	0.500	0.450	637.50	0.00	28.90
		Qmax	0.0	-51.5	1.000	0.500	0.450	637.50	0.00	28.69
		Qmin	0.0	-23.3	1.000	0.500	0.450	637.50	0.00	12.17
32	51	Nmax	0.0	-23.3	1.000	0.500	0.450	637.50	0.00	12.17
		Nmin	0.0	-51.5	1.000	0.500	0.450	637.50	0.00	28.69
		Mmax	0.0	-23.3	1.000	0.500	0.450	637.50	0.00	12.17
		Mmin	0.0	-51.9	1.000	0.500	0.450	637.50	0.00	28.89
		Qmax	0.0	-51.5	1.000	0.500	0.450	637.50	0.00	28.69
		Qmin	0.0	-23.3	1.000	0.500	0.450	637.50	0.00	12.17
	64	Nmax	0.0	-29.9	1.000	0.500	0.450	637.50	0.00	15.83
		Nmin	0.0	-65.5	1.000	0.500	0.450	637.50	0.00	37.79
		Mmax	0.0	-29.9	1.000	0.500	0.450	637.50	0.00	15.83
		Mmin	0.0	-65.5	1.000	0.500	0.450	637.50	0.00	37.79
		Qmax	0.0	-65.5	1.000	0.500	0.450	637.50	0.00	37.79
		Qmin	0.0	-29.9	1.000	0.500	0.450	637.50	0.00	15.83
33	1	Nmax	31.2	0.0	1.000	0.600	0.550	779.17	13.28	0.00
		Nmin	56.6	0.0	1.000	0.600	0.550	779.17	24.98	0.00
		Mmax	56.6	0.0	1.000	0.600	0.550	779.17	24.98	0.00
		Mmin	31.2	0.0	1.000	0.600	0.550	779.17	13.28	0.00
		Qmax	56.6	0.0	1.000	0.600	0.550	779.17	24.98	0.00
		Qmin	31.2	0.0	1.000	0.600	0.550	779.17	13.28	0.00
	14	Nmax	22.1	0.0	1.000	0.600	0.550	779.17	9.29	0.00
		Nmin	39.8	0.0	1.000	0.600	0.550	779.17	17.17	0.00
		Mmax	39.8	0.0	1.000	0.600	0.550	779.17	17.17	0.00
		Mmin	22.1	0.0	1.000	0.600	0.550	779.17	9.29	0.00
		Qmax	39.8	0.0	1.000	0.600	0.550	779.17	17.17	0.00
		Qmin	22.1	0.0	1.000	0.600	0.550	779.17	9.29	0.00
34	14	Nmax	22.1	0.0	1.000	0.600	0.550	779.17	9.31	0.00
		Nmin	39.9	0.0	1.000	0.600	0.550	779.17	17.19	0.00
		Mmax	39.9	0.0	1.000	0.600	0.550	779.17	17.19	0.00
		Mmin	22.1	0.0	1.000	0.600	0.550	779.17	9.31	0.00
		Qmax	39.9	0.0	1.000	0.600	0.550	779.17	17.19	0.00
		Qmin	22.1	0.0	1.000	0.600	0.550	779.17	9.31	0.00
	16	Nmax	13.8	0.0	1.000	0.600	0.550	779.17	5.76	0.00
		Nmin	24.7	0.0	1.000	0.600	0.550	779.17	10.43	0.00
		Mmax	24.7	0.0	1.000	0.600	0.550	779.17	10.43	0.00
		Mmin	13.8	0.0	1.000	0.600	0.550	779.17	5.76	0.00
		Qmax	24.7	0.0	1.000	0.600	0.550	779.17	10.43	0.00
		Qmin	13.8	0.0	1.000	0.600	0.550	779.17	5.76	0.00
35	16	Nmax	13.8	0.0	1.000	0.600	0.550	779.17	5.76	0.00
		Nmin	24.7	0.0	1.000	0.600	0.550	779.17	10.43	0.00
		Mmax	24.7	0.0	1.000	0.600	0.550	779.17	10.43	0.00
		Mmin	13.8	0.0	1.000	0.600	0.550	779.17	5.76	0.00
		Qmax	24.7	0.0	1.000	0.600	0.550	779.17	10.43	0.00
		Qmin	13.8	0.0	1.000	0.600	0.550	779.17	5.76	0.00
	18	Nmax	6.4	0.0	1.000	0.600	0.550	779.17	2.65	0.00
		Nmin	11.1	0.0	1.000	0.600	0.550	779.17	4.59	0.00

ARMADOCAM_2060_10000_2m.xls PI CAMINO Kv=2060 Kh=10000 24/11/2005

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES A AMBOS LADOS

FECHA: 24/11/2005

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
		Mmax	11.1	0.0	1.000	0.600	0.550	779.17	4.59	0.00
		Mmin	6.4	0.0	1.000	0.600	0.550	779.17	2.65	0.00
		Qmax	11.1	0.0	1.000	0.600	0.550	779.17	4.59	0.00
		Qmin	6.4	0.0	1.000	0.600	0.550	779.17	2.65	0.00
36	18	Nmax	6.4	0.0	1.000	0.600	0.550	779.17	2.65	0.00
		Nmin	11.0	0.0	1.000	0.600	0.550	779.17	4.59	0.00
		Mmax	11.0	0.0	1.000	0.600	0.550	779.17	4.59	0.00
		Mmin	6.4	0.0	1.000	0.600	0.550	779.17	2.65	0.00
		Qmax	11.0	0.0	1.000	0.600	0.550	779.17	4.59	0.00
		Qmin	6.4	0.0	1.000	0.600	0.550	779.17	2.65	0.00
	20	Nmax	0.1	-0.2	1.000	0.600	0.550	779.17	0.03	0.08
		Nmin	0.0	-1.1	1.000	0.600	0.550	779.17	0.00	0.45
		Mmax	0.1	-0.2	1.000	0.600	0.550	779.17	0.03	0.08
		Mmin	0.0	-1.5	1.000	0.600	0.550	779.17	0.00	0.60
		Qmax	0.0	-1.1	1.000	0.600	0.550	779.17	0.00	0.45
		Qmin	0.1	-0.2	1.000	0.600	0.550	779.17	0.03	0.08
37	20	Nmax	0.1	-0.2	1.000	0.600	0.550	779.17	0.04	0.08
		Nmin	0.0	-1.1	1.000	0.600	0.550	779.17	0.00	0.44
		Mmax	0.1	-0.2	1.000	0.600	0.550	779.17	0.04	0.08
		Mmin	0.0	-1.4	1.000	0.600	0.550	779.17	0.00	0.59
		Qmax	0.0	-1.1	1.000	0.600	0.550	779.17	0.00	0.44
		Qmin	0.1	-0.2	1.000	0.600	0.550	779.17	0.04	0.08
	22	Nmax	0.0	-6.1	1.000	0.600	0.550	779.17	0.00	2.50
		Nmin	0.0	-11.8	1.000	0.600	0.550	779.17	0.00	4.91
		Mmax	0.0	-6.1	1.000	0.600	0.550	779.17	0.00	2.50
		Mmin	0.0	-11.8	1.000	0.600	0.550	779.17	0.00	4.91
		Qmax	0.0	-11.8	1.000	0.600	0.550	779.17	0.00	4.91
		Qmin	0.0	-6.1	1.000	0.600	0.550	779.17	0.00	2.50
38	22	Nmax	0.0	-6.1	1.000	0.600	0.550	779.17	0.00	2.50
		Nmin	0.0	-11.8	1.000	0.600	0.550	779.17	0.00	4.91
		Mmax	0.0	-6.1	1.000	0.600	0.550	779.17	0.00	2.50
		Mmin	0.0	-11.8	1.000	0.600	0.550	779.17	0.00	4.91
		Qmax	0.0	-11.8	1.000	0.600	0.550	779.17	0.00	4.91
		Qmin	0.0	-6.1	1.000	0.600	0.550	779.17	0.00	2.50
	24	Nmax	0.0	-15.5	1.000	0.600	0.550	779.17	0.00	6.47
		Nmin	0.0	-29.0	1.000	0.600	0.550	779.17	0.00	12.33
		Mmax	0.0	-15.5	1.000	0.600	0.550	779.17	0.00	6.47
		Mmin	0.0	-29.0	1.000	0.600	0.550	779.17	0.00	12.33
		Qmax	0.0	-29.0	1.000	0.600	0.550	779.17	0.00	12.33
		Qmin	0.0	-15.5	1.000	0.600	0.550	779.17	0.00	6.47
39	24	Nmax	0.0	-15.5	1.000	0.600	0.550	779.17	0.00	6.47
		Nmin	0.0	-29.0	1.000	0.600	0.550	779.17	0.00	12.33
		Mmax	0.0	-15.5	1.000	0.600	0.550	779.17	0.00	6.47
		Mmin	0.0	-29.0	1.000	0.600	0.550	779.17	0.00	12.33
		Qmax	0.0	-29.0	1.000	0.600	0.550	779.17	0.00	12.33
		Qmin	0.0	-15.5	1.000	0.600	0.550	779.17	0.00	6.47
	26	Nmax	0.0	-22.2	1.000	0.600	0.550	779.17	0.00	9.33
		Nmin	0.0	-41.1	1.000	0.600	0.550	779.17	0.00	17.74
		Mmax	0.0	-22.2	1.000	0.600	0.550	779.17	0.00	9.33
		Mmin	0.0	-41.1	1.000	0.600	0.550	779.17	0.00	17.74
		Qmax	0.0	-41.1	1.000	0.600	0.550	779.17	0.00	17.74
		Qmin	0.0	-22.2	1.000	0.600	0.550	779.17	0.00	9.33

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES A AMBOS LADOS

FECHA: 24/11/2005

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
40	26	Nmax	0.0	-22.2	1.000	0.600	0.550	779.17	0.00	9.33
		Nmin	0.0	-41.1	1.000	0.600	0.550	779.17	0.00	17.74
		Mmax	0.0	-22.2	1.000	0.600	0.550	779.17	0.00	9.33
		Mmin	0.0	-41.1	1.000	0.600	0.550	779.17	0.00	17.74
		Qmax	0.0	-41.1	1.000	0.600	0.550	779.17	0.00	17.74
		Qmin	0.0	-22.2	1.000	0.600	0.550	779.17	0.00	9.33
	28	Nmax	0.0	-26.3	1.000	0.600	0.550	779.17	0.00	11.12
		Nmin	0.0	-48.4	1.000	0.600	0.550	779.17	0.00	21.10
		Mmax	0.0	-26.3	1.000	0.600	0.550	779.17	0.00	11.12
		Mmin	0.0	-48.4	1.000	0.600	0.550	779.17	0.00	21.10
		Qmax	0.0	-48.4	1.000	0.600	0.550	779.17	0.00	21.10
		Qmin	0.0	-26.3	1.000	0.600	0.550	779.17	0.00	11.12
41	28	Nmax	0.0	-26.3	1.000	0.600	0.550	779.17	0.00	11.12
		Nmin	0.0	-48.4	1.000	0.600	0.550	779.17	0.00	21.10
		Mmax	0.0	-26.3	1.000	0.600	0.550	779.17	0.00	11.12
		Mmin	0.0	-48.4	1.000	0.600	0.550	779.17	0.00	21.10
		Qmax	0.0	-48.4	1.000	0.600	0.550	779.17	0.00	21.10
		Qmin	0.0	-26.3	1.000	0.600	0.550	779.17	0.00	11.12
	30	Nmax	0.0	-27.9	1.000	0.600	0.550	779.17	0.00	11.85
		Nmin	0.0	-51.1	1.000	0.600	0.550	779.17	0.00	22.39
		Mmax	0.0	-27.9	1.000	0.600	0.550	779.17	0.00	11.85
		Mmin	0.0	-51.1	1.000	0.600	0.550	779.17	0.00	22.39
		Qmax	0.0	-51.1	1.000	0.600	0.550	779.17	0.00	22.39
		Qmin	0.0	-27.9	1.000	0.600	0.550	779.17	0.00	11.85
42	30	Nmax	0.0	-27.9	1.000	0.600	0.550	779.17	0.00	11.85
		Nmin	0.0	-51.1	1.000	0.600	0.550	779.17	0.00	22.39
		Mmax	0.0	-27.9	1.000	0.600	0.550	779.17	0.00	11.85
		Mmin	0.0	-51.1	1.000	0.600	0.550	779.17	0.00	22.39
		Qmax	0.0	-27.9	1.000	0.600	0.550	779.17	0.00	11.85
		Qmin	0.0	-44.4	1.000	0.600	0.550	779.17	0.00	19.26
	32	Nmax	0.0	-27.3	1.000	0.600	0.550	779.17	0.00	11.55
		Nmin	0.0	-49.6	1.000	0.600	0.550	779.17	0.00	21.68
		Mmax	0.0	-27.3	1.000	0.600	0.550	779.17	0.00	11.55
		Mmin	0.0	-49.6	1.000	0.600	0.550	779.17	0.00	21.68
		Qmax	0.0	-27.3	1.000	0.600	0.550	779.17	0.00	11.55
		Qmin	0.0	-42.9	1.000	0.600	0.550	779.17	0.00	18.56
43	32	Nmax	0.0	-27.3	1.000	0.600	0.550	779.17	0.00	11.55
		Nmin	0.0	-49.6	1.000	0.600	0.550	779.17	0.00	21.67
		Mmax	0.0	-27.3	1.000	0.600	0.550	779.17	0.00	11.55
		Mmin	0.0	-49.6	1.000	0.600	0.550	779.17	0.00	21.67
		Qmax	0.0	-27.3	1.000	0.600	0.550	779.17	0.00	11.55
		Qmin	0.0	-49.6	1.000	0.600	0.550	779.17	0.00	21.67
	34	Nmax	0.0	-24.4	1.000	0.600	0.550	779.17	0.00	10.30
		Nmin	0.0	-44.0	1.000	0.600	0.550	779.17	0.00	19.09
		Mmax	0.0	-24.4	1.000	0.600	0.550	779.17	0.00	10.30
		Mmin	0.0	-44.0	1.000	0.600	0.550	779.17	0.00	19.09
		Qmax	0.0	-24.4	1.000	0.600	0.550	779.17	0.00	10.30
		Qmin	0.0	-44.0	1.000	0.600	0.550	779.17	0.00	19.09
44	34	Nmax	0.0	-24.4	1.000	0.600	0.550	779.17	0.00	10.30
		Nmin	0.0	-44.0	1.000	0.600	0.550	779.17	0.00	19.09
		Mmax	0.0	-24.4	1.000	0.600	0.550	779.17	0.00	10.30
		Mmin	0.0	-44.0	1.000	0.600	0.550	779.17	0.00	19.09

ARMADOCAM_2060_10000_2m.xls PI CAMINO Kv=2060 Kh=10000 24/11/2005

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES A AMBOS LADOS

FECHA: 24/11/2005

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
		Qmax	0.0	-24.4	1.000	0.600	0.550	779.17	0.00	10.30
		Qmin	0.0	-44.0	1.000	0.600	0.550	779.17	0.00	19.09
	36	Nmax	0.0	-19.4	1.000	0.600	0.550	779.17	0.00	8.14
		Nmin	0.0	-34.5	1.000	0.600	0.550	779.17	0.00	14.76
		Mmax	0.0	-19.4	1.000	0.600	0.550	779.17	0.00	8.14
		Mmin	0.0	-34.5	1.000	0.600	0.550	779.17	0.00	14.76
		Qmax	0.0	-19.4	1.000	0.600	0.550	779.17	0.00	8.14
		Qmin	0.0	-34.5	1.000	0.600	0.550	779.17	0.00	14.76
45	36	Nmax	0.0	-19.4	1.000	0.600	0.550	779.17	0.00	8.14
		Nmin	0.0	-34.5	1.000	0.600	0.550	779.17	0.00	14.76
		Mmax	0.0	-19.4	1.000	0.600	0.550	779.17	0.00	8.14
		Mmin	0.0	-34.5	1.000	0.600	0.550	779.17	0.00	14.76
		Qmax	0.0	-19.4	1.000	0.600	0.550	779.17	0.00	8.14
		Qmin	0.0	-34.5	1.000	0.600	0.550	779.17	0.00	14.76
	38	Nmax	0.0	-12.3	1.000	0.600	0.550	779.17	0.00	5.10
		Nmin	0.0	-21.1	1.000	0.600	0.550	779.17	0.00	8.86
		Mmax	0.0	-12.3	1.000	0.600	0.550	779.17	0.00	5.10
		Mmin	0.0	-21.1	1.000	0.600	0.550	779.17	0.00	8.86
		Qmax	0.0	-12.3	1.000	0.600	0.550	779.17	0.00	5.10
		Qmin	0.0	-21.1	1.000	0.600	0.550	779.17	0.00	8.86
46	38	Nmax	0.0	-12.3	1.000	0.600	0.550	779.17	0.00	5.10
		Nmin	0.0	-21.1	1.000	0.600	0.550	779.17	0.00	8.86
		Mmax	0.0	-12.3	1.000	0.600	0.550	779.17	0.00	5.10
		Mmin	0.0	-21.1	1.000	0.600	0.550	779.17	0.00	8.86
		Qmax	0.0	-12.3	1.000	0.600	0.550	779.17	0.00	5.10
		Qmin	0.0	-21.1	1.000	0.600	0.550	779.17	0.00	8.86
	40	Nmax	0.0	-3.0	1.000	0.600	0.550	779.17	0.00	1.23
		Nmin	0.0	-3.8	1.000	0.600	0.550	779.17	0.00	1.55
		Mmax	0.0	-3.0	1.000	0.600	0.550	779.17	0.00	1.23
		Mmin	0.0	-4.1	1.000	0.600	0.550	779.17	0.00	1.67
		Qmax	0.0	-3.0	1.000	0.600	0.550	779.17	0.00	1.23
		Qmin	0.0	-3.8	1.000	0.600	0.550	779.17	0.00	1.55
47	40	Nmax	0.0	-3.0	1.000	0.600	0.550	779.17	0.00	1.23
		Nmin	0.0	-3.8	1.000	0.600	0.550	779.17	0.00	1.55
		Mmax	0.0	-3.0	1.000	0.600	0.550	779.17	0.00	1.23
		Mmin	0.0	-4.1	1.000	0.600	0.550	779.17	0.00	1.67
		Qmax	0.0	-3.0	1.000	0.600	0.550	779.17	0.00	1.23
		Qmin	0.0	-3.8	1.000	0.600	0.550	779.17	0.00	1.55
	42	Nmax	8.4	0.0	1.000	0.600	0.550	779.17	3.49	0.00
		Nmin	17.4	0.0	1.000	0.600	0.550	779.17	7.30	0.00
		Mmax	17.4	0.0	1.000	0.600	0.550	779.17	7.30	0.00
		Mmin	8.4	0.0	1.000	0.600	0.550	779.17	3.49	0.00
		Qmax	8.4	0.0	1.000	0.600	0.550	779.17	3.49	0.00
		Qmin	17.4	0.0	1.000	0.600	0.550	779.17	7.30	0.00
48	42	Nmax	8.4	0.0	1.000	0.600	0.550	779.17	3.49	0.00
		Nmin	17.5	0.0	1.000	0.600	0.550	779.17	7.31	0.00
		Mmax	17.5	0.0	1.000	0.600	0.550	779.17	7.31	0.00
		Mmin	8.4	0.0	1.000	0.600	0.550	779.17	3.49	0.00
		Qmax	8.4	0.0	1.000	0.600	0.550	779.17	3.49	0.00
		Qmin	17.5	0.0	1.000	0.600	0.550	779.17	7.31	0.00
	44	Nmax	14.9	0.0	1.000	0.600	0.550	779.17	6.23	0.00
		Nmin	29.5	0.0	1.000	0.600	0.550	779.17	12.52	0.00

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES A AMBOS LADOS

FECHA: 24/11/2005

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
		Mmax	29.5	0.0	1.000	0.600	0.550	779.17	12.52	0.00
		Mmin	14.9	0.0	1.000	0.600	0.550	779.17	6.23	0.00
		Qmax	14.9	0.0	1.000	0.600	0.550	779.17	6.23	0.00
		Qmin	29.5	0.0	1.000	0.600	0.550	779.17	12.52	0.00
49	44	Nmax	14.9	0.0	1.000	0.600	0.550	779.17	6.23	0.00
		Nmin	29.5	0.0	1.000	0.600	0.550	779.17	12.53	0.00
		Mmax	29.5	0.0	1.000	0.600	0.550	779.17	12.53	0.00
		Mmin	14.9	0.0	1.000	0.600	0.550	779.17	6.23	0.00
		Qmax	14.9	0.0	1.000	0.600	0.550	779.17	6.23	0.00
		Qmin	29.5	0.0	1.000	0.600	0.550	779.17	12.53	0.00
	46	Nmax	22.0	0.0	1.000	0.600	0.550	779.17	9.24	0.00
		Nmin	42.5	0.0	1.000	0.600	0.550	779.17	18.37	0.00
		Mmax	42.5	0.0	1.000	0.600	0.550	779.17	18.37	0.00
		Mmin	22.0	0.0	1.000	0.600	0.550	779.17	9.24	0.00
		Qmax	22.0	0.0	1.000	0.600	0.550	779.17	9.24	0.00
		Qmin	42.5	0.0	1.000	0.600	0.550	779.17	18.37	0.00
50	46	Nmax	22.0	0.0	1.000	0.600	0.550	779.17	9.25	0.00
		Nmin	42.5	0.0	1.000	0.600	0.550	779.17	18.37	0.00
		Mmax	42.5	0.0	1.000	0.600	0.550	779.17	18.37	0.00
		Mmin	22.0	0.0	1.000	0.600	0.550	779.17	9.25	0.00
		Qmax	22.0	0.0	1.000	0.600	0.550	779.17	9.25	0.00
		Qmin	42.5	0.0	1.000	0.600	0.550	779.17	18.37	0.00
	48	Nmax	29.5	0.0	1.000	0.600	0.550	779.17	12.56	0.00
		Nmin	56.4	0.0	1.000	0.600	0.550	779.17	24.90	0.00
		Mmax	56.4	0.0	1.000	0.600	0.550	779.17	24.90	0.00
		Mmin	29.5	0.0	1.000	0.600	0.550	779.17	12.56	0.00
		Qmax	29.5	0.0	1.000	0.600	0.550	779.17	12.56	0.00
		Qmin	56.4	0.0	1.000	0.600	0.550	779.17	24.90	0.00
51	48	Nmax	29.5	0.0	1.000	0.600	0.550	779.17	12.56	0.00
		Nmin	56.4	0.0	1.000	0.600	0.550	779.17	24.89	0.00
		Mmax	56.4	0.0	1.000	0.600	0.550	779.17	24.89	0.00
		Mmin	29.5	0.0	1.000	0.600	0.550	779.17	12.56	0.00
		Qmax	29.5	0.0	1.000	0.600	0.550	779.17	12.56	0.00
		Qmin	56.4	0.0	1.000	0.600	0.550	779.17	24.89	0.00
	50	Nmax	37.6	0.0	1.000	0.600	0.550	779.17	16.17	0.00
		Nmin	71.3	0.0	1.000	0.600	0.550	779.17	32.19	0.00
		Mmax	71.3	0.0	1.000	0.600	0.550	779.17	32.19	0.00
		Mmin	37.6	0.0	1.000	0.600	0.550	779.17	16.17	0.00
		Qmax	37.6	0.0	1.000	0.600	0.550	779.17	16.17	0.00
		Qmin	71.3	0.0	1.000	0.600	0.550	779.17	32.19	0.00
52	50	Nmax	37.6	0.0	1.000	0.600	0.550	779.17	16.17	0.00
		Nmin	71.3	0.0	1.000	0.600	0.550	779.17	32.19	0.00
		Mmax	71.3	0.0	1.000	0.600	0.550	779.17	32.19	0.00
		Mmin	37.6	0.0	1.000	0.600	0.550	779.17	16.17	0.00
		Qmax	37.6	0.0	1.000	0.600	0.550	779.17	16.17	0.00
		Qmin	71.3	0.0	1.000	0.600	0.550	779.17	32.19	0.00
	52	Nmax	46.2	0.0	1.000	0.600	0.550	779.17	20.11	0.00
		Nmin	87.2	0.0	1.000	0.600	0.550	779.17	40.37	0.00
		Mmax	87.2	0.0	1.000	0.600	0.550	779.17	40.37	0.00
		Mmin	46.2	0.0	1.000	0.600	0.550	779.17	20.11	0.00
		Qmax	46.2	0.0	1.000	0.600	0.550	779.17	20.11	0.00
		Qmin	87.2	0.0	1.000	0.600	0.550	779.17	40.37	0.00

ARMADOCAM_2060_10000_2m.xls PI CAMINO Kv=2060 Kh=10000 24/11/2005

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES A AMBOS LADOS

FECHA: 24/11/2005

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
53	52	Nmax	46.2	0.0	1.000	0.600	0.550	779.17	20.11	0.00
		Nmin	87.2	0.0	1.000	0.600	0.550	779.17	40.37	0.00
		Mmax	87.2	0.0	1.000	0.600	0.550	779.17	40.37	0.00
		Mmin	46.2	0.0	1.000	0.600	0.550	779.17	20.11	0.00
		Qmax	87.2	0.0	1.000	0.600	0.550	779.17	40.37	0.00
		Qmin	46.2	0.0	1.000	0.600	0.550	779.17	20.11	0.00
	53	Nmax	34.0	0.0	1.000	0.600	0.550	779.17	14.56	0.00
		Nmin	63.4	0.0	1.000	0.600	0.550	779.17	28.26	0.00
		Mmax	63.4	0.0	1.000	0.600	0.550	779.17	28.26	0.00
		Mmin	34.0	0.0	1.000	0.600	0.550	779.17	14.56	0.00
		Qmax	63.4	0.0	1.000	0.600	0.550	779.17	28.26	0.00
		Qmin	34.0	0.0	1.000	0.600	0.550	779.17	14.56	0.00
54	53	Nmax	34.0	0.0	1.000	0.600	0.550	779.17	14.56	0.00
		Nmin	63.4	0.0	1.000	0.600	0.550	779.17	28.26	0.00
		Mmax	63.4	0.0	1.000	0.600	0.550	779.17	28.26	0.00
		Mmin	34.0	0.0	1.000	0.600	0.550	779.17	14.56	0.00
		Qmax	63.4	0.0	1.000	0.600	0.550	779.17	28.26	0.00
		Qmin	34.0	0.0	1.000	0.600	0.550	779.17	14.56	0.00
	54	Nmax	22.2	0.0	1.000	0.600	0.550	779.17	9.37	0.00
		Nmin	40.5	0.0	1.000	0.600	0.550	779.17	17.47	0.00
		Mmax	40.5	0.0	1.000	0.600	0.550	779.17	17.47	0.00
		Mmin	22.2	0.0	1.000	0.600	0.550	779.17	9.37	0.00
		Qmax	40.5	0.0	1.000	0.600	0.550	779.17	17.47	0.00
		Qmin	22.2	0.0	1.000	0.600	0.550	779.17	9.37	0.00
55	54	Nmax	22.2	0.0	1.000	0.600	0.550	779.17	9.37	0.00
		Nmin	40.5	0.0	1.000	0.600	0.550	779.17	17.47	0.00
		Mmax	40.5	0.0	1.000	0.600	0.550	779.17	17.47	0.00
		Mmin	22.2	0.0	1.000	0.600	0.550	779.17	9.37	0.00
		Qmax	40.5	0.0	1.000	0.600	0.550	779.17	17.47	0.00
		Qmin	22.2	0.0	1.000	0.600	0.550	779.17	9.37	0.00
	55	Nmax	11.3	0.0	1.000	0.600	0.550	779.17	4.68	0.00
		Nmin	19.3	0.0	1.000	0.600	0.550	779.17	8.10	0.00
		Mmax	19.3	0.0	1.000	0.600	0.550	779.17	8.10	0.00
		Mmin	11.3	0.0	1.000	0.600	0.550	779.17	4.68	0.00
		Qmax	19.3	0.0	1.000	0.600	0.550	779.17	8.10	0.00
		Qmin	11.3	0.0	1.000	0.600	0.550	779.17	4.68	0.00
56	55	Nmax	11.3	0.0	1.000	0.600	0.550	779.17	4.68	0.00
		Nmin	19.3	0.0	1.000	0.600	0.550	779.17	8.10	0.00
		Mmax	19.3	0.0	1.000	0.600	0.550	779.17	8.10	0.00
		Mmin	11.3	0.0	1.000	0.600	0.550	779.17	4.68	0.00
		Qmax	19.3	0.0	1.000	0.600	0.550	779.17	8.10	0.00
		Qmin	11.3	0.0	1.000	0.600	0.550	779.17	4.68	0.00
	56	Nmax	1.7	0.0	1.000	0.600	0.550	779.17	0.69	0.00
		Nmin	1.6	0.0	1.000	0.600	0.550	779.17	0.67	0.00
		Mmax	1.7	0.0	1.000	0.600	0.550	779.17	0.69	0.00
		Mmin	1.6	-0.7	1.000	0.600	0.550	779.17	0.67	0.28
		Qmax	1.6	0.0	1.000	0.600	0.550	779.17	0.67	0.00
		Qmin	1.7	0.0	1.000	0.600	0.550	779.17	0.69	0.00
57	56	Nmax	1.7	0.0	1.000	0.600	0.550	779.17	0.69	0.00
		Nmin	1.6	0.0	1.000	0.600	0.550	779.17	0.67	0.00
		Mmax	1.7	0.0	1.000	0.600	0.550	779.17	0.69	0.00
		Mmin	1.6	-0.7	1.000	0.600	0.550	779.17	0.67	0.28

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES A AMBOS LADOS

FECHA: 24/11/2005

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
		Qmax	1.6	0.0	1.000	0.600	0.550	779.17	0.67	0.00
		Qmin	1.7	0.0	1.000	0.600	0.550	779.17	0.69	0.00
	57	Nmax	0.0	-6.2	1.000	0.600	0.550	779.17	0.00	2.56
		Nmin	0.0	-13.9	1.000	0.600	0.550	779.17	0.00	5.81
		Mmax	0.0	-6.2	1.000	0.600	0.550	779.17	0.00	2.56
		Mmin	0.0	-13.9	1.000	0.600	0.550	779.17	0.00	5.81
		Qmax	0.0	-13.9	1.000	0.600	0.550	779.17	0.00	5.81
		Qmin	0.0	-6.2	1.000	0.600	0.550	779.17	0.00	2.56
58	57	Nmax	0.0	-6.2	1.000	0.600	0.550	779.17	0.00	2.56
		Nmin	0.0	-13.9	1.000	0.600	0.550	779.17	0.00	5.81
		Mmax	0.0	-6.2	1.000	0.600	0.550	779.17	0.00	2.56
		Mmin	0.0	-13.9	1.000	0.600	0.550	779.17	0.00	5.81
		Qmax	0.0	-13.9	1.000	0.600	0.550	779.17	0.00	5.81
		Qmin	0.0	-6.2	1.000	0.600	0.550	779.17	0.00	2.56
	58	Nmax	0.0	-11.7	1.000	0.600	0.550	779.17	0.00	4.85
		Nmin	0.0	-23.9	1.000	0.600	0.550	779.17	0.00	10.11
		Mmax	0.0	-11.7	1.000	0.600	0.550	779.17	0.00	4.85
		Mmin	0.0	-23.9	1.000	0.600	0.550	779.17	0.00	10.11
		Qmax	0.0	-23.9	1.000	0.600	0.550	779.17	0.00	10.11
		Qmin	0.0	-11.7	1.000	0.600	0.550	779.17	0.00	4.85
59	58	Nmax	0.0	-11.7	1.000	0.600	0.550	779.17	0.00	4.85
		Nmin	0.0	-23.9	1.000	0.600	0.550	779.17	0.00	10.11
		Mmax	0.0	-11.7	1.000	0.600	0.550	779.17	0.00	4.85
		Mmin	0.0	-23.9	1.000	0.600	0.550	779.17	0.00	10.11
		Qmax	0.0	-23.9	1.000	0.600	0.550	779.17	0.00	10.11
		Qmin	0.0	-11.7	1.000	0.600	0.550	779.17	0.00	4.85
	59	Nmax	0.0	-14.3	1.000	0.600	0.550	779.17	0.00	5.97
		Nmin	0.0	-28.2	1.000	0.600	0.550	779.17	0.00	11.98
		Mmax	0.0	-14.3	1.000	0.600	0.550	779.17	0.00	5.97
		Mmin	0.0	-28.2	1.000	0.600	0.550	779.17	0.00	11.98
		Qmax	0.0	-28.2	1.000	0.600	0.550	779.17	0.00	11.98
		Qmin	0.0	-14.3	1.000	0.600	0.550	779.17	0.00	5.97
60	59	Nmax	0.0	-14.3	1.000	0.600	0.550	779.17	0.00	5.97
		Nmin	0.0	-28.2	1.000	0.600	0.550	779.17	0.00	11.98
		Mmax	0.0	-14.3	1.000	0.600	0.550	779.17	0.00	5.97
		Mmin	0.0	-28.2	1.000	0.600	0.550	779.17	0.00	11.98
		Qmax	0.0	-14.3	1.000	0.600	0.550	779.17	0.00	5.97
		Qmin	0.0	-25.8	1.000	0.600	0.550	779.17	0.00	10.92
	60	Nmax	0.0	-13.6	1.000	0.600	0.550	779.17	0.00	5.68
		Nmin	0.0	-25.8	1.000	0.600	0.550	779.17	0.00	10.93
		Mmax	0.0	-13.6	1.000	0.600	0.550	779.17	0.00	5.68
		Mmin	0.0	-25.8	1.000	0.600	0.550	779.17	0.00	10.93
		Qmax	0.0	-13.6	1.000	0.600	0.550	779.17	0.00	5.68
		Qmin	0.0	-23.0	1.000	0.600	0.550	779.17	0.00	9.69
61	60	Nmax	0.0	-13.6	1.000	0.600	0.550	779.17	0.00	5.68
		Nmin	0.0	-25.8	1.000	0.600	0.550	779.17	0.00	10.93
		Mmax	0.0	-13.6	1.000	0.600	0.550	779.17	0.00	5.68
		Mmin	0.0	-25.8	1.000	0.600	0.550	779.17	0.00	10.93
		Qmax	0.0	-13.6	1.000	0.600	0.550	779.17	0.00	5.68
		Qmin	0.0	-25.8	1.000	0.600	0.550	779.17	0.00	10.93
	61	Nmax	0.0	-9.3	1.000	0.600	0.550	779.17	0.00	3.84
		Nmin	0.0	-16.0	1.000	0.600	0.550	779.17	0.00	6.69

ARMADOCAM_2060_10000_2m.xls PI CAMINO Kv=2060 Kh=10000 24/11/2005

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES A AMBOS LADOS

FECHA: 24/11/2005

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
		Mmax	0.0	-9.3	1.000	0.600	0.550	779.17	0.00	3.84
		Mmin	0.0	-16.0	1.000	0.600	0.550	779.17	0.00	6.69
		Qmax	0.0	-9.3	1.000	0.600	0.550	779.17	0.00	3.84
		Qmin	0.0	-16.0	1.000	0.600	0.550	779.17	0.00	6.69
62	61	Nmax	0.0	-9.3	1.000	0.600	0.550	779.17	0.00	3.84
		Nmin	0.0	-16.0	1.000	0.600	0.550	779.17	0.00	6.69
		Mmax	0.0	-9.3	1.000	0.600	0.550	779.17	0.00	3.84
		Mmin	0.0	-16.0	1.000	0.600	0.550	779.17	0.00	6.69
		Qmax	0.0	-9.3	1.000	0.600	0.550	779.17	0.00	3.84
		Qmin	0.0	-16.0	1.000	0.600	0.550	779.17	0.00	6.69
	62	Nmax	0.0	-1.5	1.000	0.600	0.550	779.17	0.00	0.62
		Nmin	2.1	-0.8	1.000	0.600	0.550	779.17	0.84	0.31
		Mmax	4.0	-0.8	1.000	0.600	0.550	779.17	1.65	0.31
		Mmin	0.0	-1.5	1.000	0.600	0.550	779.17	0.00	0.62
		Qmax	0.0	-1.5	1.000	0.600	0.550	779.17	0.00	0.62
		Qmin	2.1	-0.8	1.000	0.600	0.550	779.17	0.84	0.31
63	62	Nmax	0.0	-1.5	1.000	0.600	0.550	779.17	0.00	0.62
		Nmin	2.1	-0.8	1.000	0.600	0.550	779.17	0.84	0.31
		Mmax	4.0	-0.8	1.000	0.600	0.550	779.17	1.65	0.31
		Mmin	0.0	-1.5	1.000	0.600	0.550	779.17	0.00	0.62
		Qmax	0.0	-1.5	1.000	0.600	0.550	779.17	0.00	0.62
		Qmin	2.1	-0.8	1.000	0.600	0.550	779.17	0.84	0.31
	63	Nmax	12.2	0.0	1.000	0.600	0.550	779.17	5.06	0.00
		Nmin	29.0	0.0	1.000	0.600	0.550	779.17	12.31	0.00
		Mmax	29.5	0.0	1.000	0.600	0.550	779.17	12.54	0.00
		Mmin	12.2	0.0	1.000	0.600	0.550	779.17	5.06	0.00
		Qmax	12.2	0.0	1.000	0.600	0.550	779.17	5.06	0.00
		Qmin	29.0	0.0	1.000	0.600	0.550	779.17	12.31	0.00
64	63	Nmax	12.2	0.0	1.000	0.600	0.550	779.17	5.06	0.00
		Nmin	29.0	0.0	1.000	0.600	0.550	779.17	12.31	0.00
		Mmax	29.5	0.0	1.000	0.600	0.550	779.17	12.54	0.00
		Mmin	12.2	0.0	1.000	0.600	0.550	779.17	5.06	0.00
		Qmax	12.2	0.0	1.000	0.600	0.550	779.17	5.06	0.00
		Qmin	29.0	0.0	1.000	0.600	0.550	779.17	12.31	0.00
	64	Nmax	29.9	0.0	1.000	0.600	0.550	779.17	12.70	0.00
		Nmin	65.5	0.0	1.000	0.600	0.550	779.17	29.30	0.00
		Mmax	65.5	0.0	1.000	0.600	0.550	779.17	29.30	0.00
		Mmin	29.9	0.0	1.000	0.600	0.550	779.17	12.70	0.00
		Qmax	29.9	0.0	1.000	0.600	0.550	779.17	12.70	0.00
		Qmin	65.5	0.0	1.000	0.600	0.550	779.17	29.30	0.00

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO

FECHA: 24/11/2005

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
1	1	Nmax	0.0	-37.3	1.000	0.600	0.550	779.17	0.00	16.04
		Nmin	0.0	-57.4	1.000	0.600	0.550	779.17	0.00	25.37
		Mmax	0.0	-37.3	1.000	0.600	0.550	779.17	0.00	16.04
		Mmin	0.0	-57.4	1.000	0.600	0.550	779.17	0.00	25.37
		Qmax	0.0	-50.5	1.000	0.600	0.550	779.17	0.00	22.08
		Qmin	0.0	-37.3	1.000	0.600	0.550	779.17	0.00	16.04
	2	Nmax	0.0	-26.9	1.000	0.600	0.550	779.17	0.00	11.39
		Nmin	0.0	-48.8	1.000	0.600	0.550	779.17	0.00	21.30
		Mmax	0.0	-26.9	1.000	0.600	0.550	779.17	0.00	11.39
		Mmin	0.0	-48.8	1.000	0.600	0.550	779.17	0.00	21.30
		Qmax	0.0	-42.9	1.000	0.600	0.550	779.17	0.00	18.55
		Qmin	0.0	-26.9	1.000	0.600	0.550	779.17	0.00	11.39
2	2	Nmax	0.0	-26.9	1.000	0.600	0.550	779.17	0.00	11.39
		Nmin	0.0	-48.8	1.000	0.600	0.550	779.17	0.00	21.30
		Mmax	0.0	-26.9	1.000	0.600	0.550	779.17	0.00	11.39
		Mmin	0.0	-48.8	1.000	0.600	0.550	779.17	0.00	21.30
		Qmax	0.0	-42.9	1.000	0.600	0.550	779.17	0.00	18.55
		Qmin	0.0	-26.9	1.000	0.600	0.550	779.17	0.00	11.39
	3	Nmax	0.0	-23.3	1.000	0.600	0.550	779.17	0.00	9.83
		Nmin	0.0	-47.1	1.000	0.600	0.550	779.17	0.00	20.52
		Mmax	0.0	-23.3	1.000	0.600	0.550	779.17	0.00	9.83
		Mmin	0.0	-47.1	1.000	0.600	0.550	779.17	0.00	20.52
		Qmax	0.0	-42.1	1.000	0.600	0.550	779.17	0.00	18.22
		Qmin	0.0	-23.3	1.000	0.600	0.550	779.17	0.00	9.83
3	3	Nmax	0.0	-23.3	1.000	0.600	0.550	779.17	0.00	9.83
		Nmin	0.0	-47.1	1.000	0.600	0.550	779.17	0.00	20.52
		Mmax	0.0	-23.3	1.000	0.600	0.550	779.17	0.00	9.83
		Mmin	0.0	-47.1	1.000	0.600	0.550	779.17	0.00	20.52
		Qmax	0.0	-42.1	1.000	0.600	0.550	779.17	0.00	18.22
		Qmin	0.0	-23.3	1.000	0.600	0.550	779.17	0.00	9.83
	4	Nmax	0.0	-23.1	1.000	0.600	0.550	779.17	0.00	9.72
		Nmin	0.0	-48.8	1.000	0.600	0.550	779.17	0.00	21.27
		Mmax	0.0	-23.1	1.000	0.600	0.550	779.17	0.00	9.72
		Mmin	0.0	-48.8	1.000	0.600	0.550	779.17	0.00	21.27
		Qmax	0.0	-44.8	1.000	0.600	0.550	779.17	0.00	19.42
		Qmin	0.0	-23.1	1.000	0.600	0.550	779.17	0.00	9.72
4	4	Nmax	0.0	-23.1	1.000	0.600	0.550	779.17	0.00	9.72
		Nmin	0.0	-48.8	1.000	0.600	0.550	779.17	0.00	21.27
		Mmax	0.0	-23.1	1.000	0.600	0.550	779.17	0.00	9.72
		Mmin	0.0	-48.8	1.000	0.600	0.550	779.17	0.00	21.27
		Qmax	0.0	-44.8	1.000	0.600	0.550	779.17	0.00	19.42
		Qmin	0.0	-23.1	1.000	0.600	0.550	779.17	0.00	9.72
	5	Nmax	0.0	-23.6	1.000	0.600	0.550	779.17	0.00	9.96
		Nmin	0.0	-51.2	1.000	0.600	0.550	779.17	0.00	22.41
		Mmax	0.0	-23.6	1.000	0.600	0.550	779.17	0.00	9.96
		Mmin	0.0	-51.2	1.000	0.600	0.550	779.17	0.00	22.41
		Qmax	0.0	-48.2	1.000	0.600	0.550	779.17	0.00	21.00
		Qmin	0.0	-23.6	1.000	0.600	0.550	779.17	0.00	9.96
5	5	Nmax	0.0	-23.6	1.000	0.600	0.550	779.17	0.00	9.96
		Nmin	0.0	-51.2	1.000	0.600	0.550	779.17	0.00	22.41
		Mmax	0.0	-23.6	1.000	0.600	0.550	779.17	0.00	9.96
		Mmin	0.0	-51.2	1.000	0.600	0.550	779.17	0.00	22.41

ARMADOCAM_2060_sm.xls PI CAMINO Kv=2060 Sin Kh 24/11/2005

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO

FECHA: 24/11/2005

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
		Qmax	0.0	-48.2	1.000	0.600	0.550	779.17	0.00	21.00
		Qmin	0.0	-23.6	1.000	0.600	0.550	779.17	0.00	9.96
	6	Nmax	0.0	-24.8	1.000	0.600	0.550	779.17	0.00	10.46
		Nmin	0.0	-54.2	1.000	0.600	0.550	779.17	0.00	23.85
		Mmax	0.0	-24.8	1.000	0.600	0.550	779.17	0.00	10.46
		Mmin	0.0	-54.2	1.000	0.600	0.550	779.17	0.00	23.85
		Qmax	0.0	-52.2	1.000	0.600	0.550	779.17	0.00	22.87
		Qmin	0.0	-24.8	1.000	0.600	0.550	779.17	0.00	10.46
6	6	Nmax	0.0	-24.8	1.000	0.600	0.550	779.17	0.00	10.46
		Nmin	0.0	-54.2	1.000	0.600	0.550	779.17	0.00	23.85
		Mmax	0.0	-24.8	1.000	0.600	0.550	779.17	0.00	10.46
		Mmin	0.0	-54.2	1.000	0.600	0.550	779.17	0.00	23.85
		Qmax	0.0	-52.2	1.000	0.600	0.550	779.17	0.00	22.88
		Qmin	0.0	-24.8	1.000	0.600	0.550	779.17	0.00	10.46
	7	Nmax	0.0	-27.9	1.000	0.600	0.550	779.17	0.00	11.85
		Nmin	0.0	-59.3	1.000	0.600	0.550	779.17	0.00	26.27
		Mmax	0.0	-27.9	1.000	0.600	0.550	779.17	0.00	11.85
		Mmin	0.0	-59.3	1.000	0.600	0.550	779.17	0.00	26.27
		Qmax	0.0	-58.2	1.000	0.600	0.550	779.17	0.00	25.75
		Qmin	0.0	-27.9	1.000	0.600	0.550	779.17	0.00	11.85
7	7	Nmax	0.0	-28.0	1.000	0.500	0.450	637.50	0.00	14.77
		Nmin	0.0	-58.2	1.000	0.500	0.450	637.50	0.00	32.94
		Mmax	0.0	-28.0	1.000	0.500	0.450	637.50	0.00	14.77
		Mmin	0.0	-59.3	1.000	0.500	0.450	637.50	0.00	33.65
		Qmax	0.0	-28.0	1.000	0.500	0.450	637.50	0.00	14.77
		Qmin	0.0	-59.3	1.000	0.500	0.450	637.50	0.00	33.65
	9	Nmax	0.0	-21.0	1.000	0.500	0.450	637.50	0.00	10.93
		Nmin	0.0	-45.6	1.000	0.500	0.450	637.50	0.00	25.01
		Mmax	0.0	-21.0	1.000	0.500	0.450	637.50	0.00	10.93
		Mmin	0.0	-45.6	1.000	0.500	0.450	637.50	0.00	25.01
		Qmax	0.0	-21.0	1.000	0.500	0.450	637.50	0.00	10.93
		Qmin	0.0	-44.6	1.000	0.500	0.450	637.50	0.00	24.45
8	9	Nmax	0.0	-21.0	1.000	0.500	0.450	637.50	0.00	10.93
		Nmin	0.0	-45.6	1.000	0.500	0.450	637.50	0.00	25.01
		Mmax	0.0	-21.0	1.000	0.500	0.450	637.50	0.00	10.93
		Mmin	0.0	-45.6	1.000	0.500	0.450	637.50	0.00	25.01
		Qmax	0.0	-21.0	1.000	0.500	0.450	637.50	0.00	10.93
		Qmin	0.0	-44.6	1.000	0.500	0.450	637.50	0.00	24.45
	11	Nmax	0.0	-14.5	1.000	0.500	0.450	637.50	0.00	7.46
		Nmin	0.0	-33.2	1.000	0.500	0.450	637.50	0.00	17.73
		Mmax	0.0	-14.5	1.000	0.500	0.450	637.50	0.00	7.46
		Mmin	0.0	-33.2	1.000	0.500	0.450	637.50	0.00	17.73
		Qmax	0.0	-14.5	1.000	0.500	0.450	637.50	0.00	7.46
		Qmin	0.0	-30.6	1.000	0.500	0.450	637.50	0.00	16.25
9	11	Nmax	0.0	-14.5	1.000	0.500	0.450	637.50	0.00	7.46
		Nmin	0.0	-33.2	1.000	0.500	0.450	637.50	0.00	17.72
		Mmax	0.0	-14.5	1.000	0.500	0.450	637.50	0.00	7.46
		Mmin	0.0	-33.2	1.000	0.500	0.450	637.50	0.00	17.72
		Qmax	0.0	-14.5	1.000	0.500	0.450	637.50	0.00	7.46
		Qmin	0.0	-30.6	1.000	0.500	0.450	637.50	0.00	16.24
	13	Nmax	0.2	-8.5	1.000	0.500	0.450	637.50	0.10	4.31
		Nmin	0.2	-21.1	1.000	0.500	0.450	637.50	0.10	10.97

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO

FECHA: 24/11/2005

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
		Mmax	0.2	-8.5	1.000	0.500	0.450	637.50	0.10	4.31
		Mmin	0.2	-21.1	1.000	0.500	0.450	637.50	0.10	10.97
		Qmax	0.2	-8.5	1.000	0.500	0.450	637.50	0.10	4.31
		Qmin	0.2	-17.4	1.000	0.500	0.450	637.50	0.10	8.97
10	13	Nmax	0.2	-8.5	1.000	0.500	0.450	637.50	0.09	4.32
		Nmin	0.2	-21.1	1.000	0.500	0.450	637.50	0.09	10.98
		Mmax	0.2	-8.5	1.000	0.500	0.450	637.50	0.09	4.32
		Mmin	0.2	-21.1	1.000	0.500	0.450	637.50	0.09	10.98
		Qmax	0.2	-8.5	1.000	0.500	0.450	637.50	0.09	4.32
		Qmin	0.2	-17.4	1.000	0.500	0.450	637.50	0.09	8.98
	15	Nmax	2.0	-3.0	1.000	0.500	0.450	637.50	1.01	1.50
		Nmin	2.0	-9.2	1.000	0.500	0.450	637.50	1.01	4.70
		Mmax	2.0	-3.0	1.000	0.500	0.450	637.50	1.01	1.50
		Mmin	2.0	-9.2	1.000	0.500	0.450	637.50	1.01	4.70
		Qmax	2.0	-3.0	1.000	0.500	0.450	637.50	1.01	1.50
		Qmin	2.0	-9.2	1.000	0.500	0.450	637.50	1.01	4.70
11	15	Nmax	2.0	-3.0	1.000	0.500	0.450	637.50	1.01	1.50
		Nmin	2.0	-9.2	1.000	0.500	0.450	637.50	1.01	4.71
		Mmax	2.0	-3.0	1.000	0.500	0.450	637.50	1.01	1.50
		Mmin	2.0	-9.2	1.000	0.500	0.450	637.50	1.01	4.71
		Qmax	2.0	-3.0	1.000	0.500	0.450	637.50	1.01	1.50
		Qmin	2.0	-9.2	1.000	0.500	0.450	637.50	1.01	4.71
	17	Nmax	6.0	-0.3	1.000	0.500	0.450	637.50	3.03	0.16
		Nmin	6.3	-0.3	1.000	0.500	0.450	637.50	3.19	0.16
		Mmax	9.8	-0.3	1.000	0.500	0.450	637.50	4.99	0.16
		Mmin	6.0	-0.3	1.000	0.500	0.450	637.50	3.03	0.16
		Qmax	6.0	-0.3	1.000	0.500	0.450	637.50	3.03	0.16
		Qmin	6.3	-0.3	1.000	0.500	0.450	637.50	3.19	0.16
12	17	Nmax	6.0	-0.3	1.000	0.500	0.450	637.50	3.03	0.16
		Nmin	6.3	-0.3	1.000	0.500	0.450	637.50	3.18	0.16
		Mmax	9.8	-0.3	1.000	0.500	0.450	637.50	4.99	0.16
		Mmin	6.0	-0.3	1.000	0.500	0.450	637.50	3.03	0.16
		Qmax	6.0	-0.3	1.000	0.500	0.450	637.50	3.03	0.16
		Qmin	6.3	-0.3	1.000	0.500	0.450	637.50	3.18	0.16
	19	Nmax	14.0	0.0	1.000	0.500	0.450	637.50	7.18	0.00
		Nmin	26.2	0.0	1.000	0.500	0.450	637.50	13.81	0.00
		Mmax	28.1	0.0	1.000	0.500	0.450	637.50	14.86	0.00
		Mmin	14.0	0.0	1.000	0.500	0.450	637.50	7.18	0.00
		Qmax	14.0	0.0	1.000	0.500	0.450	637.50	7.18	0.00
		Qmin	26.2	0.0	1.000	0.500	0.450	637.50	13.81	0.00
13	19	Nmax	14.0	0.0	1.000	0.500	0.450	637.50	7.18	0.00
		Nmin	26.2	0.0	1.000	0.500	0.450	637.50	13.81	0.00
		Mmax	28.1	0.0	1.000	0.500	0.450	637.50	14.86	0.00
		Mmin	14.0	0.0	1.000	0.500	0.450	637.50	7.18	0.00
		Qmax	14.0	0.0	1.000	0.500	0.450	637.50	7.18	0.00
		Qmin	26.2	0.0	1.000	0.500	0.450	637.50	13.81	0.00
	21	Nmax	20.0	0.0	1.000	0.500	0.450	637.50	10.41	0.00
		Nmin	41.6	0.0	1.000	0.500	0.450	637.50	22.63	0.00
		Mmax	42.3	0.0	1.000	0.500	0.450	637.50	23.01	0.00
		Mmin	20.0	0.0	1.000	0.500	0.450	637.50	10.41	0.00
		Qmax	20.0	0.0	1.000	0.500	0.450	637.50	10.41	0.00
		Qmin	41.6	0.0	1.000	0.500	0.450	637.50	22.63	0.00

ARMADOCAM_2060_sm.xls PI CAMINO Kv=2060 Sin Kh 24/11/2005

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO

FECHA: 24/11/2005

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
14	21	Nmax	20.0	0.0	1.000	0.500	0.450	637.50	10.41	0.00
		Nmin	41.6	0.0	1.000	0.500	0.450	637.50	22.63	0.00
		Mmax	42.3	0.0	1.000	0.500	0.450	637.50	23.01	0.00
		Mmin	20.0	0.0	1.000	0.500	0.450	637.50	10.41	0.00
		Qmax	20.0	0.0	1.000	0.500	0.450	637.50	10.41	0.00
		Qmin	41.6	0.0	1.000	0.500	0.450	637.50	22.63	0.00
	23	Nmax	24.2	0.0	1.000	0.500	0.450	637.50	12.68	0.00
		Nmin	52.4	0.0	1.000	0.500	0.450	637.50	29.24	0.00
		Mmax	52.4	0.0	1.000	0.500	0.450	637.50	29.24	0.00
		Mmin	24.2	0.0	1.000	0.500	0.450	637.50	12.68	0.00
		Qmax	24.2	0.0	1.000	0.500	0.450	637.50	12.68	0.00
		Qmin	52.4	0.0	1.000	0.500	0.450	637.50	29.24	0.00
15	23	Nmax	24.2	0.0	1.000	0.500	0.450	637.50	12.68	0.00
		Nmin	52.4	0.0	1.000	0.500	0.450	637.50	29.24	0.00
		Mmax	52.4	0.0	1.000	0.500	0.450	637.50	29.24	0.00
		Mmin	24.2	0.0	1.000	0.500	0.450	637.50	12.68	0.00
		Qmax	24.2	0.0	1.000	0.500	0.450	637.50	12.68	0.00
		Qmin	52.4	0.0	1.000	0.500	0.450	637.50	29.24	0.00
	25	Nmax	26.7	0.0	1.000	0.500	0.450	637.50	14.07	0.00
		Nmin	58.9	0.0	1.000	0.500	0.450	637.50	33.40	0.00
		Mmax	58.9	0.0	1.000	0.500	0.450	637.50	33.40	0.00
		Mmin	26.7	0.0	1.000	0.500	0.450	637.50	14.07	0.00
		Qmax	26.7	0.0	1.000	0.500	0.450	637.50	14.07	0.00
		Qmin	58.9	0.0	1.000	0.500	0.450	637.50	33.40	0.00
16	25	Nmax	26.7	0.0	1.000	0.500	0.450	637.50	14.07	0.00
		Nmin	58.9	0.0	1.000	0.500	0.450	637.50	33.40	0.00
		Mmax	58.9	0.0	1.000	0.500	0.450	637.50	33.40	0.00
		Mmin	26.7	0.0	1.000	0.500	0.450	637.50	14.07	0.00
		Qmax	26.7	0.0	1.000	0.500	0.450	637.50	14.07	0.00
		Qmin	58.9	0.0	1.000	0.500	0.450	637.50	33.40	0.00
	27	Nmax	27.7	0.0	1.000	0.500	0.450	637.50	14.60	0.00
		Nmin	61.2	0.0	1.000	0.500	0.450	637.50	34.90	0.00
		Mmax	61.2	0.0	1.000	0.500	0.450	637.50	34.90	0.00
		Mmin	27.7	0.0	1.000	0.500	0.450	637.50	14.60	0.00
		Qmax	52.8	0.0	1.000	0.500	0.450	637.50	29.46	0.00
		Qmin	27.7	0.0	1.000	0.500	0.450	637.50	14.60	0.00
17	27	Nmax	27.7	0.0	1.000	0.500	0.450	637.50	14.60	0.00
		Nmin	61.2	0.0	1.000	0.500	0.450	637.50	34.90	0.00
		Mmax	61.2	0.0	1.000	0.500	0.450	637.50	34.90	0.00
		Mmin	27.7	0.0	1.000	0.500	0.450	637.50	14.60	0.00
		Qmax	27.7	0.0	1.000	0.500	0.450	637.50	14.60	0.00
		Qmin	52.8	0.0	1.000	0.500	0.450	637.50	29.46	0.00
	29	Nmax	26.7	0.0	1.000	0.500	0.450	637.50	14.07	0.00
		Nmin	58.9	0.0	1.000	0.500	0.450	637.50	33.40	0.00
		Mmax	58.9	0.0	1.000	0.500	0.450	637.50	33.40	0.00
		Mmin	26.7	0.0	1.000	0.500	0.450	637.50	14.07	0.00
		Qmax	58.9	0.0	1.000	0.500	0.450	637.50	33.40	0.00
		Qmin	26.7	0.0	1.000	0.500	0.450	637.50	14.07	0.00
18	29	Nmax	26.7	0.0	1.000	0.500	0.450	637.50	14.07	0.00
		Nmin	58.9	0.0	1.000	0.500	0.450	637.50	33.40	0.00
		Mmax	58.9	0.0	1.000	0.500	0.450	637.50	33.40	0.00
		Mmin	26.7	0.0	1.000	0.500	0.450	637.50	14.07	0.00

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO

FECHA: 24/11/2005

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
		Qmax	58.9	0.0	1.000	0.500	0.450	637.50	33.40	0.00
		Qmin	26.7	0.0	1.000	0.500	0.450	637.50	14.07	0.00
	31	Nmax	23.8	0.0	1.000	0.500	0.450	637.50	12.47	0.00
		Nmin	52.0	0.0	1.000	0.500	0.450	637.50	29.00	0.00
		Mmax	52.0	0.0	1.000	0.500	0.450	637.50	29.00	0.00
		Mmin	23.8	0.0	1.000	0.500	0.450	637.50	12.47	0.00
		Qmax	52.0	0.0	1.000	0.500	0.450	637.50	29.00	0.00
		Qmin	23.8	0.0	1.000	0.500	0.450	637.50	12.47	0.00
19	31	Nmax	23.8	0.0	1.000	0.500	0.450	637.50	12.48	0.00
		Nmin	52.1	0.0	1.000	0.500	0.450	637.50	29.01	0.00
		Mmax	52.1	0.0	1.000	0.500	0.450	637.50	29.01	0.00
		Mmin	23.8	0.0	1.000	0.500	0.450	637.50	12.48	0.00
		Qmax	52.1	0.0	1.000	0.500	0.450	637.50	29.01	0.00
		Qmin	23.8	0.0	1.000	0.500	0.450	637.50	12.48	0.00
	33	Nmax	19.0	0.0	1.000	0.500	0.450	637.50	9.87	0.00
		Nmin	40.6	0.0	1.000	0.500	0.450	637.50	22.03	0.00
		Mmax	41.2	0.0	1.000	0.500	0.450	637.50	22.41	0.00
		Mmin	19.0	0.0	1.000	0.500	0.450	637.50	9.87	0.00
		Qmax	40.6	0.0	1.000	0.500	0.450	637.50	22.03	0.00
		Qmin	19.0	0.0	1.000	0.500	0.450	637.50	9.87	0.00
20	33	Nmax	19.0	0.0	1.000	0.500	0.450	637.50	9.87	0.00
		Nmin	40.6	0.0	1.000	0.500	0.450	637.50	22.03	0.00
		Mmax	41.2	0.0	1.000	0.500	0.450	637.50	22.41	0.00
		Mmin	19.0	0.0	1.000	0.500	0.450	637.50	9.87	0.00
		Qmax	40.6	0.0	1.000	0.500	0.450	637.50	22.03	0.00
		Qmin	19.0	0.0	1.000	0.500	0.450	637.50	9.87	0.00
	35	Nmax	12.3	0.0	1.000	0.500	0.450	637.50	6.31	0.00
		Nmin	24.6	0.0	1.000	0.500	0.450	637.50	12.89	0.00
		Mmax	26.5	0.0	1.000	0.500	0.450	637.50	13.95	0.00
		Mmin	12.3	0.0	1.000	0.500	0.450	637.50	6.31	0.00
		Qmax	24.6	0.0	1.000	0.500	0.450	637.50	12.89	0.00
		Qmin	12.3	0.0	1.000	0.500	0.450	637.50	6.31	0.00
21	35	Nmax	12.3	0.0	1.000	0.500	0.450	637.50	6.31	0.00
		Nmin	24.6	0.0	1.000	0.500	0.450	637.50	12.90	0.00
		Mmax	26.5	0.0	1.000	0.500	0.450	637.50	13.95	0.00
		Mmin	12.3	0.0	1.000	0.500	0.450	637.50	6.31	0.00
		Qmax	24.6	0.0	1.000	0.500	0.450	637.50	12.90	0.00
		Qmin	12.3	0.0	1.000	0.500	0.450	637.50	6.31	0.00
	37	Nmax	3.7	-2.9	1.000	0.500	0.450	637.50	1.86	1.45
		Nmin	4.0	-2.9	1.000	0.500	0.450	637.50	2.00	1.45
		Mmax	7.5	-2.9	1.000	0.500	0.450	637.50	3.79	1.45
		Mmin	3.7	-2.9	1.000	0.500	0.450	637.50	1.86	1.45
		Qmax	4.0	-2.9	1.000	0.500	0.450	637.50	2.00	1.45
		Qmin	3.7	-2.9	1.000	0.500	0.450	637.50	1.86	1.45
22	37	Nmax	3.7	-2.9	1.000	0.500	0.450	637.50	1.86	1.45
		Nmin	4.0	-2.9	1.000	0.500	0.450	637.50	2.00	1.45
		Mmax	7.5	-2.9	1.000	0.500	0.450	637.50	3.79	1.45
		Mmin	3.7	-2.9	1.000	0.500	0.450	637.50	1.86	1.45
		Qmax	4.0	-2.9	1.000	0.500	0.450	637.50	2.00	1.45
		Qmin	3.7	-2.9	1.000	0.500	0.450	637.50	1.86	1.45
	39	Nmax	0.0	-5.9	1.000	0.500	0.450	637.50	0.00	2.98
		Nmin	0.0	-12.1	1.000	0.500	0.450	637.50	0.00	6.21

ARMADOCAM_2060_sm.xls PI CAMINO Kv=2060 Sin Kh 24/11/2005

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO

FECHA: 24/11/2005

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
		Mmax	0.0	-5.9	1.000	0.500	0.450	637.50	0.00	2.98
		Mmin	0.0	-12.1	1.000	0.500	0.450	637.50	0.00	6.21
		Qmax	0.0	-12.1	1.000	0.500	0.450	637.50	0.00	6.21
		Qmin	0.0	-5.9	1.000	0.500	0.450	637.50	0.00	2.98
23	39	Nmax	0.0	-5.9	1.000	0.500	0.450	637.50	0.00	2.97
		Nmin	0.0	-12.1	1.000	0.500	0.450	637.50	0.00	6.20
		Mmax	0.0	-5.9	1.000	0.500	0.450	637.50	0.00	2.97
		Mmin	0.0	-12.1	1.000	0.500	0.450	637.50	0.00	6.20
		Qmax	0.0	-12.1	1.000	0.500	0.450	637.50	0.00	6.20
		Qmin	0.0	-5.9	1.000	0.500	0.450	637.50	0.00	2.97
	41	Nmax	0.0	-11.7	1.000	0.500	0.450	637.50	0.00	5.99
		Nmin	0.0	-24.3	1.000	0.500	0.450	637.50	0.00	12.72
		Mmax	0.0	-11.7	1.000	0.500	0.450	637.50	0.00	5.99
		Mmin	0.0	-24.3	1.000	0.500	0.450	637.50	0.00	12.72
		Qmax	0.0	-20.6	1.000	0.500	0.450	637.50	0.00	10.71
		Qmin	0.0	-11.7	1.000	0.500	0.450	637.50	0.00	5.99
24	41	Nmax	0.0	-11.7	1.000	0.500	0.450	637.50	0.00	5.99
		Nmin	0.0	-24.3	1.000	0.500	0.450	637.50	0.00	12.72
		Mmax	0.0	-11.7	1.000	0.500	0.450	637.50	0.00	5.99
		Mmin	0.0	-24.3	1.000	0.500	0.450	637.50	0.00	12.72
		Qmax	0.0	-20.6	1.000	0.500	0.450	637.50	0.00	10.71
		Qmin	0.0	-11.7	1.000	0.500	0.450	637.50	0.00	5.99
	43	Nmax	0.0	-18.0	1.000	0.500	0.450	637.50	0.00	9.34
		Nmin	0.0	-36.7	1.000	0.500	0.450	637.50	0.00	19.75
		Mmax	0.0	-18.0	1.000	0.500	0.450	637.50	0.00	9.34
		Mmin	0.0	-36.7	1.000	0.500	0.450	637.50	0.00	19.75
		Qmax	0.0	-34.1	1.000	0.500	0.450	637.50	0.00	18.24
		Qmin	0.0	-18.0	1.000	0.500	0.450	637.50	0.00	9.34
25	43	Nmax	0.0	-18.0	1.000	0.500	0.450	637.50	0.00	9.34
		Nmin	0.0	-36.7	1.000	0.500	0.450	637.50	0.00	19.75
		Mmax	0.0	-18.0	1.000	0.500	0.450	637.50	0.00	9.34
		Mmin	0.0	-36.7	1.000	0.500	0.450	637.50	0.00	19.75
		Qmax	0.0	-34.1	1.000	0.500	0.450	637.50	0.00	18.24
		Qmin	0.0	-18.0	1.000	0.500	0.450	637.50	0.00	9.34
	45	Nmax	0.0	-24.9	1.000	0.500	0.450	637.50	0.00	13.04
		Nmin	0.0	-49.4	1.000	0.500	0.450	637.50	0.00	27.38
		Mmax	0.0	-24.9	1.000	0.500	0.450	637.50	0.00	13.04
		Mmin	0.0	-49.4	1.000	0.500	0.450	637.50	0.00	27.38
		Qmax	0.0	-48.5	1.000	0.500	0.450	637.50	0.00	26.80
		Qmin	0.0	-24.9	1.000	0.500	0.450	637.50	0.00	13.04
26	45	Nmax	0.0	-24.9	1.000	0.500	0.450	637.50	0.00	13.04
		Nmin	0.0	-49.4	1.000	0.500	0.450	637.50	0.00	27.38
		Mmax	0.0	-24.9	1.000	0.500	0.450	637.50	0.00	13.04
		Mmin	0.0	-49.4	1.000	0.500	0.450	637.50	0.00	27.38
		Qmax	0.0	-48.5	1.000	0.500	0.450	637.50	0.00	26.80
		Qmin	0.0	-24.9	1.000	0.500	0.450	637.50	0.00	13.04
	52	Nmax	0.0	-32.2	1.000	0.500	0.450	637.50	0.00	17.14
		Nmin	0.0	-62.4	1.000	0.500	0.450	637.50	0.00	35.71
		Mmax	0.0	-32.2	1.000	0.500	0.450	637.50	0.00	17.14
		Mmin	0.0	-63.5	1.000	0.500	0.450	637.50	0.00	36.44
		Qmax	0.0	-63.5	1.000	0.500	0.450	637.50	0.00	36.44
		Qmin	0.0	-32.2	1.000	0.500	0.450	637.50	0.00	17.14

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO

FECHA: 24/11/2005

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
27	1	Nmax	50.5	0.0	1.000	0.600	0.550	779.17	22.08	0.00
		Nmin	37.3	0.0	1.000	0.600	0.550	779.17	16.04	0.00
		Mmax	57.4	0.0	1.000	0.600	0.550	779.17	25.37	0.00
		Mmin	37.3	0.0	1.000	0.600	0.550	779.17	16.04	0.00
		Qmax	57.4	0.0	1.000	0.600	0.550	779.17	25.37	0.00
		Qmin	37.3	0.0	1.000	0.600	0.550	779.17	16.04	0.00
	8	Nmax	36.5	0.0	1.000	0.600	0.550	779.17	15.68	0.00
		Nmin	28.7	0.0	1.000	0.600	0.550	779.17	12.20	0.00
		Mmax	41.4	0.0	1.000	0.600	0.550	779.17	17.87	0.00
		Mmin	28.7	0.0	1.000	0.600	0.550	779.17	12.20	0.00
		Qmax	41.4	0.0	1.000	0.600	0.550	779.17	17.87	0.00
		Qmin	28.7	0.0	1.000	0.600	0.550	779.17	12.20	0.00
28	8	Nmax	36.5	0.0	1.000	0.600	0.550	779.17	15.68	0.00
		Nmin	28.7	0.0	1.000	0.600	0.550	779.17	12.20	0.00
		Mmax	41.4	0.0	1.000	0.600	0.550	779.17	17.87	0.00
		Mmin	28.7	0.0	1.000	0.600	0.550	779.17	12.20	0.00
		Qmax	41.4	0.0	1.000	0.600	0.550	779.17	17.87	0.00
		Qmin	28.7	0.0	1.000	0.600	0.550	779.17	12.20	0.00
	10	Nmax	23.5	0.0	1.000	0.600	0.550	779.17	9.93	0.00
		Nmin	20.6	0.0	1.000	0.600	0.550	779.17	8.67	0.00
		Mmax	26.5	0.0	1.000	0.600	0.550	779.17	11.20	0.00
		Mmin	20.6	0.0	1.000	0.600	0.550	779.17	8.67	0.00
		Qmax	26.5	0.0	1.000	0.600	0.550	779.17	11.20	0.00
		Qmin	20.6	0.0	1.000	0.600	0.550	779.17	8.67	0.00
29	10	Nmax	23.6	0.0	1.000	0.600	0.550	779.17	9.94	0.00
		Nmin	20.6	0.0	1.000	0.600	0.550	779.17	8.68	0.00
		Mmax	26.5	0.0	1.000	0.600	0.550	779.17	11.21	0.00
		Mmin	20.6	0.0	1.000	0.600	0.550	779.17	8.68	0.00
		Qmax	26.5	0.0	1.000	0.600	0.550	779.17	11.21	0.00
		Qmin	20.6	0.0	1.000	0.600	0.550	779.17	8.68	0.00
	12	Nmax	13.1	0.0	1.000	0.600	0.550	779.17	5.45	0.00
		Nmin	13.1	0.0	1.000	0.600	0.550	779.17	5.45	0.00
		Mmax	13.1	0.0	1.000	0.600	0.550	779.17	5.47	0.00
		Mmin	13.1	0.0	1.000	0.600	0.550	779.17	5.45	0.00
		Qmax	13.1	0.0	1.000	0.600	0.550	779.17	5.45	0.00
		Qmin	13.1	0.0	1.000	0.600	0.550	779.17	5.45	0.00
30	12	Nmax	13.1	0.0	1.000	0.600	0.550	779.17	5.45	0.00
		Nmin	13.1	0.0	1.000	0.600	0.550	779.17	5.45	0.00
		Mmax	13.2	0.0	1.000	0.600	0.550	779.17	5.48	0.00
		Mmin	13.1	0.0	1.000	0.600	0.550	779.17	5.45	0.00
		Qmax	13.1	0.0	1.000	0.600	0.550	779.17	5.45	0.00
		Qmin	13.1	0.0	1.000	0.600	0.550	779.17	5.45	0.00
	14	Nmax	9.3	-9.8	1.000	0.600	0.550	779.17	3.84	4.06
		Nmin	9.3	-4.2	1.000	0.600	0.550	779.17	3.84	1.75
		Mmax	9.3	-4.2	1.000	0.600	0.550	779.17	3.84	1.75
		Mmin	9.3	-10.3	1.000	0.600	0.550	779.17	3.84	4.26
		Qmax	9.3	-10.3	1.000	0.600	0.550	779.17	3.84	4.26
		Qmin	9.3	-4.2	1.000	0.600	0.550	779.17	3.84	1.75
31	14	Nmax	9.3	-9.8	1.000	0.600	0.550	779.17	3.84	4.07
		Nmin	9.3	-4.2	1.000	0.600	0.550	779.17	3.84	1.75
		Mmax	9.3	-4.2	1.000	0.600	0.550	779.17	3.84	1.75
		Mmin	9.3	-10.3	1.000	0.600	0.550	779.17	3.84	4.26

ARMADOCAM_2060_sm.xls PI CAMINO Kv=2060 Sin Kh 24/11/2005

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO

FECHA: 24/11/2005

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
		Qmax	9.3	-10.3	1.000	0.600	0.550	779.17	3.84	4.26
		Qmin	9.3	-4.2	1.000	0.600	0.550	779.17	3.84	1.75
	16	Nmax	6.0	-19.5	1.000	0.600	0.550	779.17	2.49	8.16
		Nmin	6.0	-10.3	1.000	0.600	0.550	779.17	2.49	4.27
		Mmax	6.0	-10.3	1.000	0.600	0.550	779.17	2.49	4.27
		Mmin	6.0	-21.4	1.000	0.600	0.550	779.17	2.49	8.99
		Qmax	6.0	-21.4	1.000	0.600	0.550	779.17	2.49	8.99
		Qmin	6.0	-10.3	1.000	0.600	0.550	779.17	2.49	4.27
32	16	Nmax	6.0	-19.5	1.000	0.600	0.550	779.17	2.49	8.16
		Nmin	6.0	-10.3	1.000	0.600	0.550	779.17	2.49	4.27
		Mmax	6.0	-10.3	1.000	0.600	0.550	779.17	2.49	4.27
		Mmin	6.0	-21.4	1.000	0.600	0.550	779.17	2.49	8.99
		Qmax	6.0	-21.4	1.000	0.600	0.550	779.17	2.49	8.99
		Qmin	6.0	-10.3	1.000	0.600	0.550	779.17	2.49	4.27
	18	Nmax	0.1	-35.6	1.000	0.600	0.550	779.17	0.05	15.27
		Nmin	0.1	-20.4	1.000	0.600	0.550	779.17	0.05	8.59
		Mmax	0.1	-20.4	1.000	0.600	0.550	779.17	0.05	8.59
		Mmin	0.1	-40.0	1.000	0.600	0.550	779.17	0.05	17.22
		Qmax	0.1	-40.0	1.000	0.600	0.550	779.17	0.05	17.22
		Qmin	0.1	-20.4	1.000	0.600	0.550	779.17	0.05	8.59
33	18	Nmax	0.1	-35.6	1.000	0.600	0.550	779.17	0.05	15.27
		Nmin	0.1	-20.4	1.000	0.600	0.550	779.17	0.05	8.59
		Mmax	0.1	-20.4	1.000	0.600	0.550	779.17	0.05	8.59
		Mmin	0.1	-40.0	1.000	0.600	0.550	779.17	0.05	17.22
		Qmax	0.1	-40.0	1.000	0.600	0.550	779.17	0.05	17.22
		Qmin	0.1	-20.4	1.000	0.600	0.550	779.17	0.05	8.59
	20	Nmax	0.0	-47.9	1.000	0.600	0.550	779.17	0.00	20.86
		Nmin	0.0	-28.1	1.000	0.600	0.550	779.17	0.00	11.94
		Mmax	0.0	-28.1	1.000	0.600	0.550	779.17	0.00	11.94
		Mmin	0.0	-54.0	1.000	0.600	0.550	779.17	0.00	23.76
		Qmax	0.0	-54.0	1.000	0.600	0.550	779.17	0.00	23.76
		Qmin	0.0	-28.1	1.000	0.600	0.550	779.17	0.00	11.94
34	20	Nmax	0.0	-47.9	1.000	0.600	0.550	779.17	0.00	20.86
		Nmin	0.0	-28.1	1.000	0.600	0.550	779.17	0.00	11.94
		Mmax	0.0	-28.1	1.000	0.600	0.550	779.17	0.00	11.94
		Mmin	0.0	-54.0	1.000	0.600	0.550	779.17	0.00	23.76
		Qmax	0.0	-54.0	1.000	0.600	0.550	779.17	0.00	23.76
		Qmin	0.0	-28.1	1.000	0.600	0.550	779.17	0.00	11.94
	22	Nmax	0.0	-56.4	1.000	0.600	0.550	779.17	0.00	24.90
		Nmin	0.0	-33.5	1.000	0.600	0.550	779.17	0.00	14.33
		Mmax	0.0	-33.5	1.000	0.600	0.550	779.17	0.00	14.33
		Mmin	0.0	-63.9	1.000	0.600	0.550	779.17	0.00	28.51
		Qmax	0.0	-63.9	1.000	0.600	0.550	779.17	0.00	28.51
		Qmin	0.0	-33.5	1.000	0.600	0.550	779.17	0.00	14.33
35	22	Nmax	0.0	-56.4	1.000	0.600	0.550	779.17	0.00	24.90
		Nmin	0.0	-33.5	1.000	0.600	0.550	779.17	0.00	14.33
		Mmax	0.0	-33.5	1.000	0.600	0.550	779.17	0.00	14.33
		Mmin	0.0	-63.9	1.000	0.600	0.550	779.17	0.00	28.50
		Qmax	0.0	-63.9	1.000	0.600	0.550	779.17	0.00	28.50
		Qmin	0.0	-33.5	1.000	0.600	0.550	779.17	0.00	14.33
	24	Nmax	0.0	-61.5	1.000	0.600	0.550	779.17	0.00	27.32
		Nmin	0.0	-36.7	1.000	0.600	0.550	779.17	0.00	15.74

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO

FECHA: 24/11/2005

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
		Mmax	0.0	-36.7	1.000	0.600	0.550	779.17	0.00	15.74
		Mmin	0.0	-69.7	1.000	0.600	0.550	779.17	0.00	31.37
		Qmax	0.0	-69.7	1.000	0.600	0.550	779.17	0.00	31.37
		Qmin	0.0	-36.7	1.000	0.600	0.550	779.17	0.00	15.74
36	24	Nmax	0.0	-61.5	1.000	0.600	0.550	779.17	0.00	27.32
		Nmin	0.0	-36.7	1.000	0.600	0.550	779.17	0.00	15.74
		Mmax	0.0	-36.7	1.000	0.600	0.550	779.17	0.00	15.74
		Mmin	0.0	-69.7	1.000	0.600	0.550	779.17	0.00	31.37
		Qmax	0.0	-69.7	1.000	0.600	0.550	779.17	0.00	31.37
		Qmin	0.0	-36.7	1.000	0.600	0.550	779.17	0.00	15.74
	26	Nmax	0.0	-63.2	1.000	0.600	0.550	779.17	0.00	28.14
		Nmin	0.0	-37.8	1.000	0.600	0.550	779.17	0.00	16.23
		Mmax	0.0	-37.8	1.000	0.600	0.550	779.17	0.00	16.23
		Mmin	0.0	-71.6	1.000	0.600	0.550	779.17	0.00	32.34
		Qmax	0.0	-71.6	1.000	0.600	0.550	779.17	0.00	32.34
		Qmin	0.0	-37.8	1.000	0.600	0.550	779.17	0.00	16.23
37	26	Nmax	0.0	-63.2	1.000	0.600	0.550	779.17	0.00	28.14
		Nmin	0.0	-37.8	1.000	0.600	0.550	779.17	0.00	16.23
		Mmax	0.0	-37.8	1.000	0.600	0.550	779.17	0.00	16.23
		Mmin	0.0	-71.6	1.000	0.600	0.550	779.17	0.00	32.34
		Qmax	0.0	-37.8	1.000	0.600	0.550	779.17	0.00	16.23
		Qmin	0.0	-71.6	1.000	0.600	0.550	779.17	0.00	32.34
	28	Nmax	0.0	-61.9	1.000	0.600	0.550	779.17	0.00	27.55
		Nmin	0.0	-37.1	1.000	0.600	0.550	779.17	0.00	15.95
		Mmax	0.0	-37.1	1.000	0.600	0.550	779.17	0.00	15.95
		Mmin	0.0	-70.1	1.000	0.600	0.550	779.17	0.00	31.60
		Qmax	0.0	-37.1	1.000	0.600	0.550	779.17	0.00	15.95
		Qmin	0.0	-70.1	1.000	0.600	0.550	779.17	0.00	31.60
38	28	Nmax	0.0	-61.9	1.000	0.600	0.550	779.17	0.00	27.55
		Nmin	0.0	-37.1	1.000	0.600	0.550	779.17	0.00	15.95
		Mmax	0.0	-37.1	1.000	0.600	0.550	779.17	0.00	15.95
		Mmin	0.0	-70.1	1.000	0.600	0.550	779.17	0.00	31.60
		Qmax	0.0	-37.1	1.000	0.600	0.550	779.17	0.00	15.95
		Qmin	0.0	-70.1	1.000	0.600	0.550	779.17	0.00	31.60
	30	Nmax	0.0	-58.7	1.000	0.600	0.550	779.17	0.00	26.00
		Nmin	0.0	-35.8	1.000	0.600	0.550	779.17	0.00	15.37
		Mmax	0.0	-35.8	1.000	0.600	0.550	779.17	0.00	15.37
		Mmin	0.0	-66.2	1.000	0.600	0.550	779.17	0.00	29.64
		Qmax	0.0	-35.8	1.000	0.600	0.550	779.17	0.00	15.37
		Qmin	0.0	-66.2	1.000	0.600	0.550	779.17	0.00	29.64
39	30	Nmax	0.0	-58.7	1.000	0.600	0.550	779.17	0.00	26.00
		Nmin	0.0	-35.8	1.000	0.600	0.550	779.17	0.00	15.37
		Mmax	0.0	-35.8	1.000	0.600	0.550	779.17	0.00	15.37
		Mmin	0.0	-66.2	1.000	0.600	0.550	779.17	0.00	29.63
		Qmax	0.0	-35.8	1.000	0.600	0.550	779.17	0.00	15.37
		Qmin	0.0	-66.2	1.000	0.600	0.550	779.17	0.00	29.63
	32	Nmax	0.0	-51.9	1.000	0.600	0.550	779.17	0.00	22.74
		Nmin	0.0	-32.2	1.000	0.600	0.550	779.17	0.00	13.72
		Mmax	0.0	-32.2	1.000	0.600	0.550	779.17	0.00	13.72
		Mmin	0.0	-58.0	1.000	0.600	0.550	779.17	0.00	25.67
		Qmax	0.0	-32.2	1.000	0.600	0.550	779.17	0.00	13.72
		Qmin	0.0	-58.0	1.000	0.600	0.550	779.17	0.00	25.67

ARMADOCAM_2060_sm.xls PI CAMINO Kv=2060 Sin Kh 24/11/2005

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO

FECHA: 24/11/2005

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
40	32	Nmax	0.0	-51.9	1.000	0.600	0.550	779.17	0.00	22.74
		Nmin	0.0	-32.2	1.000	0.600	0.550	779.17	0.00	13.72
		Mmax	0.0	-32.2	1.000	0.600	0.550	779.17	0.00	13.72
		Mmin	0.0	-58.0	1.000	0.600	0.550	779.17	0.00	25.67
		Qmax	0.0	-32.2	1.000	0.600	0.550	779.17	0.00	13.72
		Qmin	0.0	-58.0	1.000	0.600	0.550	779.17	0.00	25.67
	34	Nmax	0.0	-41.0	1.000	0.600	0.550	779.17	0.00	17.71
		Nmin	0.0	-25.9	1.000	0.600	0.550	779.17	0.00	10.94
		Mmax	0.0	-25.9	1.000	0.600	0.550	779.17	0.00	10.94
		Mmin	0.0	-45.4	1.000	0.600	0.550	779.17	0.00	19.70
		Qmax	0.0	-25.9	1.000	0.600	0.550	779.17	0.00	10.94
		Qmin	0.0	-45.4	1.000	0.600	0.550	779.17	0.00	19.70
41	34	Nmax	0.0	-41.0	1.000	0.600	0.550	779.17	0.00	17.71
		Nmin	0.0	-25.9	1.000	0.600	0.550	779.17	0.00	10.94
		Mmax	0.0	-25.9	1.000	0.600	0.550	779.17	0.00	10.94
		Mmin	0.0	-45.3	1.000	0.600	0.550	779.17	0.00	19.69
		Qmax	0.0	-25.9	1.000	0.600	0.550	779.17	0.00	10.94
		Qmin	0.0	-45.3	1.000	0.600	0.550	779.17	0.00	19.69
	36	Nmax	0.0	-25.9	1.000	0.600	0.550	779.17	0.00	10.97
		Nmin	0.0	-16.8	1.000	0.600	0.550	779.17	0.00	7.02
		Mmax	0.0	-16.8	1.000	0.600	0.550	779.17	0.00	7.02
		Mmin	0.0	-27.8	1.000	0.600	0.550	779.17	0.00	11.81
		Qmax	0.0	-16.8	1.000	0.600	0.550	779.17	0.00	7.02
		Qmin	0.0	-27.8	1.000	0.600	0.550	779.17	0.00	11.81
42	36	Nmax	0.0	-25.9	1.000	0.600	0.550	779.17	0.00	10.97
		Nmin	0.0	-16.8	1.000	0.600	0.550	779.17	0.00	7.02
		Mmax	0.0	-16.8	1.000	0.600	0.550	779.17	0.00	7.02
		Mmin	0.0	-27.8	1.000	0.600	0.550	779.17	0.00	11.81
		Qmax	0.0	-16.8	1.000	0.600	0.550	779.17	0.00	7.02
		Qmin	0.0	-27.8	1.000	0.600	0.550	779.17	0.00	11.81
	38	Nmax	1.8	-16.6	1.000	0.600	0.550	779.17	0.74	6.95
		Nmin	1.8	-11.1	1.000	0.600	0.550	779.17	0.74	4.61
		Mmax	1.8	-11.1	1.000	0.600	0.550	779.17	0.74	4.61
		Mmin	1.8	-17.1	1.000	0.600	0.550	779.17	0.74	7.16
		Qmax	1.8	-11.1	1.000	0.600	0.550	779.17	0.74	4.61
		Qmin	1.8	-17.1	1.000	0.600	0.550	779.17	0.74	7.16
43	38	Nmax	1.8	-16.6	1.000	0.600	0.550	779.17	0.74	6.96
		Nmin	1.8	-11.1	1.000	0.600	0.550	779.17	0.74	4.60
		Mmax	1.8	-11.1	1.000	0.600	0.550	779.17	0.74	4.60
		Mmin	1.8	-17.1	1.000	0.600	0.550	779.17	0.74	7.15
		Qmax	1.8	-11.1	1.000	0.600	0.550	779.17	0.74	4.60
		Qmin	1.8	-17.1	1.000	0.600	0.550	779.17	0.74	7.15
	40	Nmax	5.4	-6.1	1.000	0.600	0.550	779.17	2.22	2.52
		Nmin	5.4	-5.0	1.000	0.600	0.550	779.17	2.22	2.05
		Mmax	5.5	-5.0	1.000	0.600	0.550	779.17	2.25	2.05
		Mmin	5.4	-6.1	1.000	0.600	0.550	779.17	2.22	2.52
		Qmax	5.4	-5.0	1.000	0.600	0.550	779.17	2.22	2.05
		Qmin	5.4	-5.0	1.000	0.600	0.550	779.17	2.22	2.05
44	40	Nmax	5.4	-6.1	1.000	0.600	0.550	779.17	2.22	2.52
		Nmin	5.4	-5.0	1.000	0.600	0.550	779.17	2.22	2.05
		Mmax	5.4	-5.0	1.000	0.600	0.550	779.17	2.24	2.05
		Mmin	5.4	-6.1	1.000	0.600	0.550	779.17	2.22	2.52

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO

FECHA: 24/11/2005

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
		Qmax	5.4	-5.0	1.000	0.600	0.550	779.17	2.22	2.05
		Qmin	5.4	-5.0	1.000	0.600	0.550	779.17	2.22	2.05
	42	Nmax	15.8	-1.6	1.000	0.600	0.550	779.17	6.58	0.64
		Nmin	12.8	-1.6	1.000	0.600	0.550	779.17	5.35	0.64
		Mmax	18.7	-1.6	1.000	0.600	0.550	779.17	7.82	0.64
		Mmin	12.8	-1.6	1.000	0.600	0.550	779.17	5.35	0.64
		Qmax	12.8	-1.6	1.000	0.600	0.550	779.17	5.35	0.64
		Qmin	18.7	-1.6	1.000	0.600	0.550	779.17	7.82	0.64
45	42	Nmax	15.7	-1.6	1.000	0.600	0.550	779.17	6.57	0.65
		Nmin	12.8	-1.6	1.000	0.600	0.550	779.17	5.34	0.65
		Mmax	18.6	-1.6	1.000	0.600	0.550	779.17	7.81	0.65
		Mmin	12.8	-1.6	1.000	0.600	0.550	779.17	5.34	0.65
		Qmax	12.8	-1.6	1.000	0.600	0.550	779.17	5.34	0.65
		Qmin	18.6	-1.6	1.000	0.600	0.550	779.17	7.81	0.65
	44	Nmax	28.8	0.0	1.000	0.600	0.550	779.17	12.23	0.00
		Nmin	21.0	0.0	1.000	0.600	0.550	779.17	8.83	0.00
		Mmax	33.6	0.0	1.000	0.600	0.550	779.17	14.38	0.00
		Mmin	21.0	0.0	1.000	0.600	0.550	779.17	8.83	0.00
		Qmax	21.0	0.0	1.000	0.600	0.550	779.17	8.83	0.00
		Qmin	33.6	0.0	1.000	0.600	0.550	779.17	14.38	0.00
46	44	Nmax	28.8	0.0	1.000	0.600	0.550	779.17	12.22	0.00
		Nmin	21.0	0.0	1.000	0.600	0.550	779.17	8.82	0.00
		Mmax	33.6	0.0	1.000	0.600	0.550	779.17	14.37	0.00
		Mmin	21.0	0.0	1.000	0.600	0.550	779.17	8.82	0.00
		Qmax	21.0	0.0	1.000	0.600	0.550	779.17	8.82	0.00
		Qmin	33.6	0.0	1.000	0.600	0.550	779.17	14.37	0.00
	46	Nmax	43.0	0.0	1.000	0.600	0.550	779.17	18.61	0.00
		Nmin	29.8	0.0	1.000	0.600	0.550	779.17	12.69	0.00
		Mmax	49.9	0.0	1.000	0.600	0.550	779.17	21.82	0.00
		Mmin	29.8	0.0	1.000	0.600	0.550	779.17	12.69	0.00
		Qmax	29.8	0.0	1.000	0.600	0.550	779.17	12.69	0.00
		Qmin	49.9	0.0	1.000	0.600	0.550	779.17	21.82	0.00
47	46	Nmax	29.8	0.0	1.000	0.600	0.550	779.17	12.69	0.00
		Nmin	49.9	0.0	1.000	0.600	0.550	779.17	21.81	0.00
		Mmax	49.9	0.0	1.000	0.600	0.550	779.17	21.81	0.00
		Mmin	29.8	0.0	1.000	0.600	0.550	779.17	12.69	0.00
		Qmax	29.8	0.0	1.000	0.600	0.550	779.17	12.69	0.00
		Qmin	43.0	0.0	1.000	0.600	0.550	779.17	18.60	0.00
	47	Nmax	24.5	0.0	1.000	0.600	0.550	779.17	10.36	0.00
		Nmin	46.5	0.0	1.000	0.600	0.550	779.17	20.21	0.00
		Mmax	46.5	0.0	1.000	0.600	0.550	779.17	20.21	0.00
		Mmin	24.5	0.0	1.000	0.600	0.550	779.17	10.36	0.00
		Qmax	24.5	0.0	1.000	0.600	0.550	779.17	10.36	0.00
		Qmin	40.5	0.0	1.000	0.600	0.550	779.17	17.48	0.00
48	47	Nmax	24.5	0.0	1.000	0.600	0.550	779.17	10.36	0.00
		Nmin	46.5	0.0	1.000	0.600	0.550	779.17	20.21	0.00
		Mmax	46.5	0.0	1.000	0.600	0.550	779.17	20.21	0.00
		Mmin	24.5	0.0	1.000	0.600	0.550	779.17	10.36	0.00
		Qmax	24.5	0.0	1.000	0.600	0.550	779.17	10.36	0.00
		Qmin	40.5	0.0	1.000	0.600	0.550	779.17	17.48	0.00
	48	Nmax	23.3	0.0	1.000	0.600	0.550	779.17	9.83	0.00
		Nmin	47.1	0.0	1.000	0.600	0.550	779.17	20.52	0.00

ARMADOCAM_2060_sm.xls PI CAMINO Kv=2060 Sin Kh 24/11/2005

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO

FECHA: 24/11/2005

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
		Mmax	47.1	0.0	1.000	0.600	0.550	779.17	20.52	0.00
		Mmin	23.3	0.0	1.000	0.600	0.550	779.17	9.83	0.00
		Qmax	23.3	0.0	1.000	0.600	0.550	779.17	9.83	0.00
		Qmin	42.1	0.0	1.000	0.600	0.550	779.17	18.22	0.00
49	48	Nmax	23.3	0.0	1.000	0.600	0.550	779.17	9.83	0.00
		Nmin	47.1	0.0	1.000	0.600	0.550	779.17	20.52	0.00
		Mmax	47.1	0.0	1.000	0.600	0.550	779.17	20.52	0.00
		Mmin	23.3	0.0	1.000	0.600	0.550	779.17	9.83	0.00
		Qmax	23.3	0.0	1.000	0.600	0.550	779.17	9.83	0.00
		Qmin	42.1	0.0	1.000	0.600	0.550	779.17	18.22	0.00
	49	Nmax	23.1	0.0	1.000	0.600	0.550	779.17	9.72	0.00
		Nmin	48.8	0.0	1.000	0.600	0.550	779.17	21.27	0.00
		Mmax	48.8	0.0	1.000	0.600	0.550	779.17	21.27	0.00
		Mmin	23.1	0.0	1.000	0.600	0.550	779.17	9.72	0.00
		Qmax	23.1	0.0	1.000	0.600	0.550	779.17	9.72	0.00
		Qmin	44.8	0.0	1.000	0.600	0.550	779.17	19.42	0.00
50	49	Nmax	23.1	0.0	1.000	0.600	0.550	779.17	9.72	0.00
		Nmin	48.8	0.0	1.000	0.600	0.550	779.17	21.27	0.00
		Mmax	48.8	0.0	1.000	0.600	0.550	779.17	21.27	0.00
		Mmin	23.1	0.0	1.000	0.600	0.550	779.17	9.72	0.00
		Qmax	23.1	0.0	1.000	0.600	0.550	779.17	9.72	0.00
		Qmin	44.8	0.0	1.000	0.600	0.550	779.17	19.42	0.00
	50	Nmax	23.7	0.0	1.000	0.600	0.550	779.17	10.02	0.00
		Nmin	51.3	0.0	1.000	0.600	0.550	779.17	22.48	0.00
		Mmax	51.3	0.0	1.000	0.600	0.550	779.17	22.48	0.00
		Mmin	23.7	0.0	1.000	0.600	0.550	779.17	10.02	0.00
		Qmax	23.7	0.0	1.000	0.600	0.550	779.17	10.02	0.00
		Qmin	48.3	0.0	1.000	0.600	0.550	779.17	21.06	0.00
51	50	Nmax	23.7	0.0	1.000	0.600	0.550	779.17	10.02	0.00
		Nmin	51.3	0.0	1.000	0.600	0.550	779.17	22.48	0.00
		Mmax	51.3	0.0	1.000	0.600	0.550	779.17	22.48	0.00
		Mmin	23.7	0.0	1.000	0.600	0.550	779.17	10.02	0.00
		Qmax	23.7	0.0	1.000	0.600	0.550	779.17	10.02	0.00
		Qmin	48.3	0.0	1.000	0.600	0.550	779.17	21.06	0.00
	51	Nmax	27.7	0.0	1.000	0.600	0.550	779.17	11.73	0.00
		Nmin	57.1	0.0	1.000	0.600	0.550	779.17	25.22	0.00
		Mmax	57.1	0.0	1.000	0.600	0.550	779.17	25.22	0.00
		Mmin	27.7	0.0	1.000	0.600	0.550	779.17	11.73	0.00
		Qmax	27.7	0.0	1.000	0.600	0.550	779.17	11.73	0.00
		Qmin	55.1	0.0	1.000	0.600	0.550	779.17	24.24	0.00
52	51	Nmax	27.7	0.0	1.000	0.600	0.550	779.17	11.73	0.00
		Nmin	57.1	0.0	1.000	0.600	0.550	779.17	25.22	0.00
		Mmax	57.1	0.0	1.000	0.600	0.550	779.17	25.22	0.00
		Mmin	27.7	0.0	1.000	0.600	0.550	779.17	11.73	0.00
		Qmax	27.7	0.0	1.000	0.600	0.550	779.17	11.73	0.00
		Qmin	55.1	0.0	1.000	0.600	0.550	779.17	24.24	0.00
	52	Nmax	32.2	0.0	1.000	0.600	0.550	779.17	13.73	0.00
		Nmin	63.5	0.0	1.000	0.600	0.550	779.17	28.32	0.00
		Mmax	63.5	0.0	1.000	0.600	0.550	779.17	28.32	0.00
		Mmin	32.2	0.0	1.000	0.600	0.550	779.17	13.73	0.00
		Qmax	32.2	0.0	1.000	0.600	0.550	779.17	13.73	0.00
		Qmin	62.4	0.0	1.000	0.600	0.550	779.17	27.79	0.00

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES EN UN SÓLO LADO

FECHA: 24/11/2005

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
1	1	Nmax	9.1	1.000	0.600	0.550	275.0	19.8	-	No necesita
		Nmin	9.0	1.000	0.600	0.550	275.0	23.7	-	No necesita
		Mmax	9.1	1.000	0.600	0.550	275.0	19.8	-	No necesita
		Mmin	9.0	1.000	0.600	0.550	275.0	23.7	-	No necesita
		Qmax	9.0	1.000	0.600	0.550	275.0	22.6	-	No necesita
		Qmin	9.1	1.000	0.600	0.550	275.0	19.8	-	No necesita
	2	Nmax	7.6	1.000	0.600	0.550	275.0	19.1	-	No necesita
		Nmin	7.5	1.000	0.600	0.550	275.0	23.3	-	No necesita
		Mmax	7.6	1.000	0.600	0.550	275.0	19.1	-	No necesita
		Mmin	7.5	1.000	0.600	0.550	275.0	23.3	-	No necesita
		Qmax	7.5	1.000	0.600	0.550	275.0	22.2	-	No necesita
		Qmin	7.6	1.000	0.600	0.550	275.0	19.1	-	No necesita
2	2	Nmax	7.6	1.000	0.600	0.550	275.0	19.1	-	No necesita
		Nmin	7.4	1.000	0.600	0.550	275.0	23.3	-	No necesita
		Mmax	7.6	1.000	0.600	0.550	275.0	19.1	-	No necesita
		Mmin	7.4	1.000	0.600	0.550	275.0	23.3	-	No necesita
		Qmax	7.4	1.000	0.600	0.550	275.0	22.2	-	No necesita
		Qmin	7.6	1.000	0.600	0.550	275.0	19.1	-	No necesita
	3	Nmax	6.1	1.000	0.600	0.550	275.0	18.5	-	No necesita
		Nmin	6.0	1.000	0.600	0.550	275.0	22.9	-	No necesita
		Mmax	6.1	1.000	0.600	0.550	275.0	18.5	-	No necesita
		Mmin	6.0	1.000	0.600	0.550	275.0	22.9	-	No necesita
		Qmax	6.0	1.000	0.600	0.550	275.0	21.9	-	No necesita
		Qmin	6.1	1.000	0.600	0.550	275.0	18.5	-	No necesita
3	3	Nmax	6.1	1.000	0.600	0.550	275.0	18.5	-	No necesita
		Nmin	5.9	1.000	0.600	0.550	275.0	22.9	-	No necesita
		Mmax	6.1	1.000	0.600	0.550	275.0	18.5	-	No necesita
		Mmin	5.9	1.000	0.600	0.550	275.0	22.9	-	No necesita
		Qmax	5.9	1.000	0.600	0.550	275.0	21.9	-	No necesita
		Qmin	6.1	1.000	0.600	0.550	275.0	18.5	-	No necesita
	4	Nmax	4.8	1.000	0.600	0.550	275.0	18.0	-	No necesita
		Nmin	4.6	1.000	0.600	0.550	275.0	22.7	-	No necesita
		Mmax	4.8	1.000	0.600	0.550	275.0	18.0	-	No necesita
		Mmin	4.6	1.000	0.600	0.550	275.0	22.7	-	No necesita
		Qmax	4.6	1.000	0.600	0.550	275.0	21.7	-	No necesita
		Qmin	4.8	1.000	0.600	0.550	275.0	18.0	-	No necesita
4	4	Nmax	4.8	1.000	0.600	0.550	275.0	18.0	-	No necesita
		Nmin	4.5	1.000	0.600	0.550	275.0	22.7	-	No necesita
		Mmax	4.8	1.000	0.600	0.550	275.0	18.0	-	No necesita
		Mmin	4.5	1.000	0.600	0.550	275.0	22.7	-	No necesita
		Qmax	4.5	1.000	0.600	0.550	275.0	21.7	-	No necesita
		Qmin	4.8	1.000	0.600	0.550	275.0	18.0	-	No necesita
	5	Nmax	3.5	1.000	0.600	0.550	275.0	17.7	-	No necesita
		Nmin	3.2	1.000	0.600	0.550	275.0	22.5	-	No necesita
		Mmax	3.5	1.000	0.600	0.550	275.0	17.7	-	No necesita
		Mmin	3.2	1.000	0.600	0.550	275.0	22.5	-	No necesita
		Qmax	3.2	1.000	0.600	0.550	275.0	21.6	-	No necesita
		Qmin	3.5	1.000	0.600	0.550	275.0	17.7	-	No necesita
5	5	Nmax	3.6	1.000	0.600	0.550	275.0	17.7	-	No necesita
		Nmin	3.2	1.000	0.600	0.550	275.0	22.5	-	No necesita
		Mmax	3.6	1.000	0.600	0.550	275.0	17.7	-	No necesita
		Mmin	3.2	1.000	0.600	0.550	275.0	22.5	-	No necesita

ARMADOCAM_2060_1000_1m.xls PI CAMINO Kv=2060 Kh=1000 24/11/2005

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES EN UN SÓLO LADO

FECHA: 24/11/2005

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
		Qmax	3.2	1.000	0.600	0.550	275.0	21.6	-	No necesita
		Qmin	3.6	1.000	0.600	0.550	275.0	17.7	-	No necesita
	6	Nmax	2.4	1.000	0.600	0.550	275.0	17.4	-	No necesita
		Nmin	2.0	1.000	0.600	0.550	275.0	22.5	-	No necesita
		Mmax	2.4	1.000	0.600	0.550	275.0	17.4	-	No necesita
		Mmin	2.0	1.000	0.600	0.550	275.0	22.5	-	No necesita
		Qmax	2.0	1.000	0.600	0.550	275.0	21.7	-	No necesita
		Qmin	2.4	1.000	0.600	0.550	275.0	17.4	-	No necesita
6	6	Nmax	2.5	1.000	0.600	0.550	275.0	17.4	-	No necesita
		Nmin	2.0	1.000	0.600	0.550	275.0	22.5	-	No necesita
		Mmax	2.5	1.000	0.600	0.550	275.0	17.4	-	No necesita
		Mmin	2.0	1.000	0.600	0.550	275.0	22.5	-	No necesita
		Qmax	2.0	1.000	0.600	0.550	275.0	21.7	-	No necesita
		Qmin	2.5	1.000	0.600	0.550	275.0	17.4	-	No necesita
	7	Nmax	1.4	1.000	0.600	0.550	275.0	17.3	-	No necesita
		Nmin	1.4	1.000	0.600	0.550	275.0	22.5	-	No necesita
		Mmax	1.4	1.000	0.600	0.550	275.0	17.3	-	No necesita
		Mmin	1.4	1.000	0.600	0.550	275.0	22.5	-	No necesita
		Qmax	2.7	1.000	0.600	0.550	275.0	21.8	-	No necesita
		Qmin	1.4	1.000	0.600	0.550	275.0	17.3	-	No necesita
7	7	Nmax	1.6	1.000	0.600	0.550	275.0	17.3	-	No necesita
		Nmin	1.6	1.000	0.600	0.550	275.0	22.5	-	No necesita
		Mmax	1.6	1.000	0.600	0.550	275.0	17.3	-	No necesita
		Mmin	1.6	1.000	0.600	0.550	275.0	22.5	-	No necesita
		Qmax	2.9	1.000	0.600	0.550	275.0	21.8	-	No necesita
		Qmin	1.6	1.000	0.600	0.550	275.0	17.3	-	No necesita
	8	Nmax	0.6	1.000	0.600	0.550	275.0	17.2	-	No necesita
		Nmin	2.6	1.000	0.600	0.550	275.0	22.6	-	No necesita
		Mmax	0.6	1.000	0.600	0.550	275.0	17.2	-	No necesita
		Mmin	2.6	1.000	0.600	0.550	275.0	22.6	-	No necesita
		Qmax	3.9	1.000	0.600	0.550	275.0	22.0	-	No necesita
		Qmin	0.6	1.000	0.600	0.550	275.0	17.2	-	No necesita
8	8	Nmax	0.8	1.000	0.600	0.550	275.0	17.2	-	No necesita
		Nmin	2.6	1.000	0.600	0.550	275.0	22.6	-	No necesita
		Mmax	0.8	1.000	0.600	0.550	275.0	17.2	-	No necesita
		Mmin	2.6	1.000	0.600	0.550	275.0	22.6	-	No necesita
		Qmax	3.9	1.000	0.600	0.550	275.0	22.0	-	No necesita
		Qmin	0.8	1.000	0.600	0.550	275.0	17.2	-	No necesita
	9	Nmax	0.9	1.000	0.600	0.550	275.0	17.3	-	No necesita
		Nmin	3.6	1.000	0.600	0.550	275.0	22.8	-	No necesita
		Mmax	0.9	1.000	0.600	0.550	275.0	17.3	-	No necesita
		Mmin	3.6	1.000	0.600	0.550	275.0	22.8	-	No necesita
		Qmax	4.8	1.000	0.600	0.550	275.0	22.3	-	No necesita
		Qmin	0.9	1.000	0.600	0.550	275.0	17.3	-	No necesita
9	9	Nmax	0.6	1.000	0.600	0.550	275.0	17.3	-	No necesita
		Nmin	3.5	1.000	0.600	0.550	275.0	22.8	-	No necesita
		Mmax	0.6	1.000	0.600	0.550	275.0	17.3	-	No necesita
		Mmin	3.5	1.000	0.600	0.550	275.0	22.8	-	No necesita
		Qmax	4.8	1.000	0.600	0.550	275.0	22.3	-	No necesita
		Qmin	0.6	1.000	0.600	0.550	275.0	17.3	-	No necesita
	10	Nmax	1.5	1.000	0.600	0.550	275.0	17.4	-	No necesita
		Nmin	4.4	1.000	0.600	0.550	275.0	23.1	-	No necesita

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES EN UN SÓLO LADO

FECHA: 24/11/2005

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
		Mmax	1.5	1.000	0.600	0.550	275.0	17.4	-	No necesita
		Mmin	4.4	1.000	0.600	0.550	275.0	23.1	-	No necesita
		Qmax	5.6	1.000	0.600	0.550	275.0	22.7	-	No necesita
		Qmin	1.5	1.000	0.600	0.550	275.0	17.4	-	No necesita
10	10	Nmax	1.1	1.000	0.600	0.550	275.0	17.4	-	No necesita
		Nmin	4.2	1.000	0.600	0.550	275.0	23.1	-	No necesita
		Mmax	1.1	1.000	0.600	0.550	275.0	17.4	-	No necesita
		Mmin	4.2	1.000	0.600	0.550	275.0	23.1	-	No necesita
		Qmax	5.4	1.000	0.600	0.550	275.0	22.7	-	No necesita
		Qmin	1.1	1.000	0.600	0.550	275.0	17.4	-	No necesita
	11	Nmax	1.9	1.000	0.600	0.550	275.0	17.5	-	No necesita
		Nmin	4.9	1.000	0.600	0.550	275.0	23.3	-	No necesita
		Mmax	1.9	1.000	0.600	0.550	275.0	17.5	-	No necesita
		Mmin	4.9	1.000	0.600	0.550	275.0	23.3	-	No necesita
		Qmax	6.2	1.000	0.600	0.550	275.0	23.0	-	No necesita
		Qmin	1.9	1.000	0.600	0.550	275.0	17.5	-	No necesita
11	11	Nmax	1.4	1.000	0.600	0.550	275.0	17.5	-	No necesita
		Nmin	4.5	1.000	0.600	0.550	275.0	23.3	-	No necesita
		Mmax	1.4	1.000	0.600	0.550	275.0	17.5	-	No necesita
		Mmin	4.5	1.000	0.600	0.550	275.0	23.3	-	No necesita
		Qmax	5.7	1.000	0.600	0.550	275.0	23.0	-	No necesita
		Qmin	1.4	1.000	0.600	0.550	275.0	17.5	-	No necesita
	12	Nmax	2.1	1.000	0.600	0.550	275.0	17.7	-	No necesita
		Nmin	5.2	1.000	0.600	0.550	275.0	23.6	-	No necesita
		Mmax	2.1	1.000	0.600	0.550	275.0	17.7	-	No necesita
		Mmin	5.2	1.000	0.600	0.550	275.0	23.6	-	No necesita
		Qmax	6.4	1.000	0.600	0.550	275.0	23.4	-	No necesita
		Qmin	2.1	1.000	0.600	0.550	275.0	17.7	-	No necesita
12	12	Nmax	1.4	1.000	0.600	0.550	275.0	17.7	-	No necesita
		Nmin	4.5	1.000	0.600	0.550	275.0	23.6	-	No necesita
		Mmax	1.4	1.000	0.600	0.550	275.0	17.7	-	No necesita
		Mmin	4.5	1.000	0.600	0.550	275.0	23.6	-	No necesita
		Qmax	5.7	1.000	0.600	0.550	275.0	23.4	-	No necesita
		Qmin	1.4	1.000	0.600	0.550	275.0	17.7	-	No necesita
	13	Nmax	2.0	1.000	0.600	0.550	275.0	17.9	-	No necesita
		Nmin	5.1	1.000	0.600	0.550	275.0	23.9	-	No necesita
		Mmax	2.0	1.000	0.600	0.550	275.0	17.9	-	No necesita
		Mmin	5.1	1.000	0.600	0.550	275.0	23.9	-	No necesita
		Qmax	6.3	1.000	0.600	0.550	275.0	23.8	-	No necesita
		Qmin	2.0	1.000	0.600	0.550	275.0	17.9	-	No necesita
13	13	Nmax	31.8	1.000	0.500	0.450	225.0	17.5	14.6	10.6
		Nmin	56.8	1.000	0.500	0.450	225.0	23.4	19.5	23.0
		Mmax	31.8	1.000	0.500	0.450	225.0	17.5	14.6	10.6
		Mmin	66.7	1.000	0.500	0.450	225.0	23.6	19.7	29.0
		Qmax	31.8	1.000	0.500	0.450	225.0	17.5	14.6	10.6
		Qmin	66.7	1.000	0.500	0.450	225.0	23.6	19.7	29.0
	15	Nmax	29.6	1.000	0.500	0.450	225.0	15.6	13.0	10.3
		Nmin	55.6	1.000	0.500	0.450	225.0	21.3	17.7	23.4
		Mmax	29.6	1.000	0.500	0.450	225.0	15.6	13.0	10.3
		Mmin	55.6	1.000	0.500	0.450	225.0	21.3	17.7	23.4
		Qmax	29.6	1.000	0.500	0.450	225.0	15.6	13.0	10.3
		Qmin	63.9	1.000	0.500	0.450	225.0	21.1	17.6	28.6

ARMADOCAM_2060_1000_1m.xls PI CAMINO Kv=2060 Kh=1000 24/11/2005

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES EN UN SÓLO LADO

FECHA: 24/11/2005

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
14	15	Nmax	29.6	1.000	0.500	0.450	225.0	15.6	13.0	10.3
		Nmin	55.7	1.000	0.500	0.450	225.0	21.3	17.7	23.4
		Mmax	29.6	1.000	0.500	0.450	225.0	15.6	13.0	10.3
		Mmin	55.7	1.000	0.500	0.450	225.0	21.3	17.7	23.4
		Qmax	29.6	1.000	0.500	0.450	225.0	15.6	13.0	10.3
		Qmin	64.0	1.000	0.500	0.450	225.0	21.1	17.6	28.6
	17	Nmax	27.5	1.000	0.500	0.450	225.0	13.3	11.1	10.1
		Nmin	54.5	1.000	0.500	0.450	225.0	18.8	15.6	24.0
		Mmax	27.5	1.000	0.500	0.450	225.0	13.3	11.1	10.1
		Mmin	54.5	1.000	0.500	0.450	225.0	18.8	15.6	24.0
		Qmax	27.5	1.000	0.500	0.450	225.0	13.3	11.1	10.1
		Qmin	61.2	1.000	0.500	0.450	225.0	18.1	15.1	28.4
15	17	Nmax	27.5	1.000	0.500	0.450	225.0	13.3	11.1	10.1
		Nmin	54.5	1.000	0.500	0.450	225.0	18.8	15.6	24.0
		Mmax	27.5	1.000	0.500	0.450	225.0	13.3	11.1	10.1
		Mmin	54.5	1.000	0.500	0.450	225.0	18.8	15.6	24.0
		Qmax	27.5	1.000	0.500	0.450	225.0	13.3	11.1	10.1
		Qmin	61.2	1.000	0.500	0.450	225.0	18.1	15.1	28.5
	19	Nmax	25.3	1.000	0.500	0.450	225.0	10.2	8.5	10.4
		Nmin	53.4	1.000	0.500	0.450	225.0	15.6	13.0	24.9
		Mmax	25.3	1.000	0.500	0.450	225.0	10.2	8.5	10.4
		Mmin	53.4	1.000	0.500	0.450	225.0	15.6	13.0	24.9
		Qmax	25.3	1.000	0.500	0.450	225.0	10.2	8.5	10.4
		Qmin	56.4	1.000	0.500	0.450	225.0	14.4	12.0	27.4
16	19	Nmax	25.3	1.000	0.500	0.450	225.0	10.2	8.5	10.4
		Nmin	53.4	1.000	0.500	0.450	225.0	15.6	13.0	24.9
		Mmax	25.3	1.000	0.500	0.450	225.0	10.2	8.5	10.4
		Mmin	53.4	1.000	0.500	0.450	225.0	15.6	13.0	24.9
		Qmax	25.3	1.000	0.500	0.450	225.0	10.2	8.5	10.4
		Qmin	56.5	1.000	0.500	0.450	225.0	14.4	12.0	27.5
	21	Nmax	23.2	1.000	0.500	0.450	225.0	6.0	5.0	11.2
		Nmin	52.2	1.000	0.500	0.450	225.0	10.7	8.9	26.7
		Mmax	23.2	1.000	0.500	0.450	225.0	6.0	5.0	11.2
		Mmin	52.2	1.000	0.500	0.450	225.0	10.7	8.9	26.7
		Qmax	23.2	1.000	0.500	0.450	225.0	6.0	5.0	11.2
		Qmin	52.2	1.000	0.500	0.450	225.0	10.7	8.9	26.7
17	21	Nmax	23.2	1.000	0.500	0.450	225.0	6.0	5.0	11.2
		Nmin	52.3	1.000	0.500	0.450	225.0	10.7	8.9	26.8
		Mmax	23.2	1.000	0.500	0.450	225.0	6.0	5.0	11.2
		Mmin	52.3	1.000	0.500	0.450	225.0	10.7	8.9	26.8
		Qmax	23.2	1.000	0.500	0.450	225.0	6.0	5.0	11.2
		Qmin	52.3	1.000	0.500	0.450	225.0	10.7	8.9	26.8
	23	Nmax	21.0	1.000	0.500	0.450	225.0	10.5	8.7	7.6
		Nmin	51.1	1.000	0.500	0.450	225.0	10.8	9.0	26.0
		Mmax	47.1	1.000	0.500	0.450	225.0	12.7	10.6	22.5
		Mmin	21.0	1.000	0.500	0.450	225.0	10.5	8.7	7.6
		Qmax	21.0	1.000	0.500	0.450	225.0	10.5	8.7	7.6
		Qmin	51.1	1.000	0.500	0.450	225.0	10.8	9.0	26.0
18	23	Nmax	21.1	1.000	0.500	0.450	225.0	10.5	8.7	7.6
		Nmin	51.1	1.000	0.500	0.450	225.0	10.8	9.0	26.0
		Mmax	47.1	1.000	0.500	0.450	225.0	12.7	10.6	22.5
		Mmin	21.1	1.000	0.500	0.450	225.0	10.5	8.7	7.6

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES EN UN SÓLO LADO

FECHA: 24/11/2005

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
		Qmax	21.1	1.000	0.500	0.450	225.0	10.5	8.7	7.6
		Qmin	51.1	1.000	0.500	0.450	225.0	10.8	9.0	26.0
	25	Nmax	16.7	1.000	0.500	0.450	225.0	14.4	12.0	2.9
		Nmin	40.7	1.000	0.500	0.450	225.0	18.0	15.0	15.9
		Mmax	37.5	1.000	0.500	0.450	225.0	18.5	15.4	13.6
		Mmin	16.7	1.000	0.500	0.450	225.0	14.4	12.0	2.9
		Qmax	16.7	1.000	0.500	0.450	225.0	14.4	12.0	2.9
		Qmin	40.7	1.000	0.500	0.450	225.0	18.0	15.0	15.9
19	25	Nmax	16.7	1.000	0.500	0.450	225.0	14.4	12.0	2.9
		Nmin	40.8	1.000	0.500	0.450	225.0	18.0	15.0	15.9
		Mmax	37.5	1.000	0.500	0.450	225.0	18.5	15.4	13.6
		Mmin	16.7	1.000	0.500	0.450	225.0	14.4	12.0	2.9
		Qmax	16.7	1.000	0.500	0.450	225.0	14.4	12.0	2.9
		Qmin	40.8	1.000	0.500	0.450	225.0	18.0	15.0	15.9
	27	Nmax	12.4	1.000	0.500	0.450	225.0	16.5	-	No necesita
		Nmin	30.4	1.000	0.500	0.450	225.0	21.3	17.8	7.8
		Mmax	27.9	1.000	0.500	0.450	225.0	21.5	17.9	6.2
		Mmin	12.4	1.000	0.500	0.450	225.0	16.5	-	No necesita
		Qmax	12.4	1.000	0.500	0.450	225.0	16.5	-	No necesita
		Qmin	30.4	1.000	0.500	0.450	225.0	21.3	17.8	7.8
20	27	Nmax	12.4	1.000	0.500	0.450	225.0	16.5	-	No necesita
		Nmin	30.4	1.000	0.500	0.450	225.0	21.3	17.8	7.8
		Mmax	27.9	1.000	0.500	0.450	225.0	21.5	17.9	6.2
		Mmin	12.4	1.000	0.500	0.450	225.0	16.5	-	No necesita
		Qmax	12.4	1.000	0.500	0.450	225.0	16.5	-	No necesita
		Qmin	30.4	1.000	0.500	0.450	225.0	21.3	17.8	7.8
	29	Nmax	8.0	1.000	0.500	0.450	225.0	17.7	-	No necesita
		Nmin	19.9	1.000	0.500	0.450	225.0	23.3	-	No necesita
		Mmax	19.9	1.000	0.500	0.450	225.0	23.3	-	No necesita
		Mmin	8.0	1.000	0.500	0.450	225.0	17.7	-	No necesita
		Qmax	8.0	1.000	0.500	0.450	225.0	17.7	-	No necesita
		Qmin	19.9	1.000	0.500	0.450	225.0	23.3	-	No necesita
21	29	Nmax	8.0	1.000	0.500	0.450	225.0	17.7	-	No necesita
		Nmin	19.9	1.000	0.500	0.450	225.0	23.3	-	No necesita
		Mmax	19.9	1.000	0.500	0.450	225.0	23.3	-	No necesita
		Mmin	8.0	1.000	0.500	0.450	225.0	17.7	-	No necesita
		Qmax	8.0	1.000	0.500	0.450	225.0	17.7	-	No necesita
		Qmin	19.9	1.000	0.500	0.450	225.0	23.3	-	No necesita
	31	Nmax	3.6	1.000	0.500	0.450	225.0	18.3	-	No necesita
		Nmin	9.5	1.000	0.500	0.450	225.0	24.3	-	No necesita
		Mmax	9.5	1.000	0.500	0.450	225.0	24.3	-	No necesita
		Mmin	3.6	1.000	0.500	0.450	225.0	18.3	-	No necesita
		Qmax	3.6	1.000	0.500	0.450	225.0	18.3	-	No necesita
		Qmin	9.5	1.000	0.500	0.450	225.0	24.3	-	No necesita
22	31	Nmax	3.6	1.000	0.500	0.450	225.0	18.3	-	No necesita
		Nmin	9.5	1.000	0.500	0.450	225.0	24.3	-	No necesita
		Mmax	9.5	1.000	0.500	0.450	225.0	24.3	-	No necesita
		Mmin	3.6	1.000	0.500	0.450	225.0	18.3	-	No necesita
		Qmax	3.6	1.000	0.500	0.450	225.0	18.3	-	No necesita
		Qmin	9.5	1.000	0.500	0.450	225.0	24.3	-	No necesita
	33	Nmax	0.7	1.000	0.500	0.450	225.0	18.4	-	No necesita
		Nmin	0.9	1.000	0.500	0.450	225.0	24.6	-	No necesita

ARMADOCAM_2060_1000_1m.xls PI CAMINO Kv=2060 Kh=1000 24/11/2005

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES EN UN SÓLO LADO

FECHA: 24/11/2005

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
		Mmax	0.9	1.000	0.500	0.450	225.0	24.6	-	No necesita
		Mmin	0.7	1.000	0.500	0.450	225.0	18.4	-	No necesita
		Qmax	0.9	1.000	0.500	0.450	225.0	24.5	-	No necesita
		Qmin	0.7	1.000	0.500	0.450	225.0	18.4	-	No necesita
23	33	Nmax	0.7	1.000	0.500	0.450	225.0	18.4	-	No necesita
		Nmin	0.9	1.000	0.500	0.450	225.0	24.6	-	No necesita
		Mmax	0.9	1.000	0.500	0.450	225.0	24.6	-	No necesita
		Mmin	0.7	1.000	0.500	0.450	225.0	18.4	-	No necesita
		Qmax	0.9	1.000	0.500	0.450	225.0	24.5	-	No necesita
		Qmin	0.7	1.000	0.500	0.450	225.0	18.4	-	No necesita
	35	Nmax	5.1	1.000	0.500	0.450	225.0	18.1	-	No necesita
		Nmin	11.3	1.000	0.500	0.450	225.0	24.2	-	No necesita
		Mmax	11.3	1.000	0.500	0.450	225.0	24.2	-	No necesita
		Mmin	5.1	1.000	0.500	0.450	225.0	18.1	-	No necesita
		Qmax	11.3	1.000	0.500	0.450	225.0	24.2	-	No necesita
		Qmin	5.1	1.000	0.500	0.450	225.0	18.1	-	No necesita
24	35	Nmax	5.1	1.000	0.500	0.450	225.0	18.1	-	No necesita
		Nmin	11.3	1.000	0.500	0.450	225.0	24.2	-	No necesita
		Mmax	11.3	1.000	0.500	0.450	225.0	24.2	-	No necesita
		Mmin	5.1	1.000	0.500	0.450	225.0	18.1	-	No necesita
		Qmax	11.3	1.000	0.500	0.450	225.0	24.2	-	No necesita
		Qmin	5.1	1.000	0.500	0.450	225.0	18.1	-	No necesita
	37	Nmax	9.4	1.000	0.500	0.450	225.0	17.3	-	No necesita
		Nmin	21.7	1.000	0.500	0.450	225.0	23.0	-	No necesita
		Mmax	21.7	1.000	0.500	0.450	225.0	23.0	-	No necesita
		Mmin	9.4	1.000	0.500	0.450	225.0	17.3	-	No necesita
		Qmax	21.7	1.000	0.500	0.450	225.0	23.0	-	No necesita
		Qmin	9.4	1.000	0.500	0.450	225.0	17.3	-	No necesita
25	37	Nmax	9.4	1.000	0.500	0.450	225.0	17.3	-	No necesita
		Nmin	21.7	1.000	0.500	0.450	225.0	23.0	-	No necesita
		Mmax	21.7	1.000	0.500	0.450	225.0	23.0	-	No necesita
		Mmin	9.4	1.000	0.500	0.450	225.0	17.3	-	No necesita
		Qmax	21.7	1.000	0.500	0.450	225.0	23.0	-	No necesita
		Qmin	9.4	1.000	0.500	0.450	225.0	17.3	-	No necesita
	39	Nmax	13.8	1.000	0.500	0.450	225.0	15.9	-	No necesita
		Nmin	32.1	1.000	0.500	0.450	225.0	20.9	17.4	9.0
		Mmax	29.6	1.000	0.500	0.450	225.0	21.0	17.5	7.5
		Mmin	13.8	1.000	0.500	0.450	225.0	15.9	-	No necesita
		Qmax	32.1	1.000	0.500	0.450	225.0	20.9	17.4	9.0
		Qmin	13.8	1.000	0.500	0.450	225.0	15.9	-	No necesita
26	39	Nmax	13.8	1.000	0.500	0.450	225.0	15.9	-	No necesita
		Nmin	32.1	1.000	0.500	0.450	225.0	20.9	17.4	9.0
		Mmax	29.7	1.000	0.500	0.450	225.0	21.0	17.5	7.5
		Mmin	13.8	1.000	0.500	0.450	225.0	15.9	-	No necesita
		Qmax	32.1	1.000	0.500	0.450	225.0	20.9	17.4	9.0
		Qmin	13.8	1.000	0.500	0.450	225.0	15.9	-	No necesita
	41	Nmax	18.2	1.000	0.500	0.450	225.0	13.4	11.2	4.3
		Nmin	42.5	1.000	0.500	0.450	225.0	17.3	14.4	17.3
		Mmax	39.2	1.000	0.500	0.450	225.0	17.7	14.8	15.1
		Mmin	18.2	1.000	0.500	0.450	225.0	13.4	11.2	4.3
		Qmax	42.5	1.000	0.500	0.450	225.0	17.3	14.4	17.3
		Qmin	18.2	1.000	0.500	0.450	225.0	13.4	11.2	4.3

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES EN UN SÓLO LADO

FECHA: 24/11/2005

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
27	41	Nmax	18.2	1.000	0.500	0.450	225.0	13.4	11.2	4.3
		Nmin	42.5	1.000	0.500	0.450	225.0	17.3	14.4	17.3
		Mmax	39.2	1.000	0.500	0.450	225.0	17.7	14.8	15.1
		Mmin	18.2	1.000	0.500	0.450	225.0	13.4	11.2	4.3
		Qmax	42.5	1.000	0.500	0.450	225.0	17.3	14.4	17.3
		Qmin	18.2	1.000	0.500	0.450	225.0	13.4	11.2	4.3
	43	Nmax	22.5	1.000	0.500	0.450	225.0	7.7	6.4	9.9
		Nmin	52.9	1.000	0.500	0.450	225.0	7.7	6.4	28.7
		Mmax	48.8	1.000	0.500	0.450	225.0	10.5	8.8	24.7
		Mmin	22.5	1.000	0.500	0.450	225.0	7.7	6.4	9.9
		Qmax	52.9	1.000	0.500	0.450	225.0	7.7	6.4	28.7
		Qmin	22.5	1.000	0.500	0.450	225.0	7.7	6.4	9.9
28	43	Nmax	22.5	1.000	0.500	0.450	225.0	7.7	6.4	9.9
		Nmin	52.8	1.000	0.500	0.450	225.0	7.7	6.4	28.6
		Mmax	48.8	1.000	0.500	0.450	225.0	10.5	8.8	24.7
		Mmin	22.5	1.000	0.500	0.450	225.0	7.7	6.4	9.9
		Qmax	52.8	1.000	0.500	0.450	225.0	7.7	6.4	28.6
		Qmin	22.5	1.000	0.500	0.450	225.0	7.7	6.4	9.9
	45	Nmax	24.7	1.000	0.500	0.450	225.0	8.7	7.3	10.7
		Nmin	54.0	1.000	0.500	0.450	225.0	12.9	10.7	26.7
		Mmax	24.7	1.000	0.500	0.450	225.0	8.7	7.3	10.7
		Mmin	54.0	1.000	0.500	0.450	225.0	12.9	10.7	26.7
		Qmax	54.0	1.000	0.500	0.450	225.0	12.9	10.7	26.7
		Qmin	24.7	1.000	0.500	0.450	225.0	8.7	7.3	10.7
29	45	Nmax	24.6	1.000	0.500	0.450	225.0	8.7	7.3	10.7
		Nmin	53.9	1.000	0.500	0.450	225.0	12.9	10.7	26.7
		Mmax	24.6	1.000	0.500	0.450	225.0	8.7	7.3	10.7
		Mmin	53.9	1.000	0.500	0.450	225.0	12.9	10.7	26.7
		Qmax	53.9	1.000	0.500	0.450	225.0	12.9	10.7	26.7
		Qmin	24.6	1.000	0.500	0.450	225.0	8.7	7.3	10.7
	47	Nmax	26.8	1.000	0.500	0.450	225.0	12.4	10.3	10.2
		Nmin	55.1	1.000	0.500	0.450	225.0	17.0	14.1	25.3
		Mmax	26.8	1.000	0.500	0.450	225.0	12.4	10.3	10.2
		Mmin	55.1	1.000	0.500	0.450	225.0	17.0	14.1	25.3
		Qmax	58.3	1.000	0.500	0.450	225.0	15.9	13.3	27.8
		Qmin	26.8	1.000	0.500	0.450	225.0	12.4	10.3	10.2
30	47	Nmax	26.8	1.000	0.500	0.450	225.0	12.4	10.3	10.2
		Nmin	55.1	1.000	0.500	0.450	225.0	17.0	14.1	25.3
		Mmax	26.8	1.000	0.500	0.450	225.0	12.4	10.3	10.2
		Mmin	55.1	1.000	0.500	0.450	225.0	17.0	14.1	25.3
		Qmax	58.2	1.000	0.500	0.450	225.0	15.9	13.3	27.8
		Qmin	26.8	1.000	0.500	0.450	225.0	12.4	10.3	10.2
	49	Nmax	29.0	1.000	0.500	0.450	225.0	14.9	12.4	10.2
		Nmin	56.3	1.000	0.500	0.450	225.0	19.8	16.5	24.5
		Mmax	29.0	1.000	0.500	0.450	225.0	14.9	12.4	10.2
		Mmin	56.3	1.000	0.500	0.450	225.0	19.8	16.5	24.5
		Qmax	63.0	1.000	0.500	0.450	225.0	19.3	16.1	29.0
		Qmin	29.0	1.000	0.500	0.450	225.0	14.9	12.4	10.2
31	49	Nmax	28.9	1.000	0.500	0.450	225.0	14.9	12.4	10.2
		Nmin	56.3	1.000	0.500	0.450	225.0	19.8	16.5	24.5
		Mmax	28.9	1.000	0.500	0.450	225.0	14.9	12.4	10.2
		Mmin	56.3	1.000	0.500	0.450	225.0	19.8	16.5	24.5

ARMADOCAM_2060_1000_1m.xls PI CAMINO Kv=2060 Kh=1000 24/11/2005

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES EN UN SÓLO LADO

FECHA: 24/11/2005

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
		Qmax	63.0	1.000	0.500	0.450	225.0	19.3	16.1	29.0
		Qmin	28.9	1.000	0.500	0.450	225.0	14.9	12.4	10.2
	51	Nmax	31.1	1.000	0.500	0.450	225.0	16.9	14.1	10.5
		Nmin	57.5	1.000	0.500	0.450	225.0	22.2	18.5	24.0
		Mmax	31.1	1.000	0.500	0.450	225.0	16.9	14.1	10.5
		Mmin	57.5	1.000	0.500	0.450	225.0	22.2	18.5	24.0
		Qmax	65.8	1.000	0.500	0.450	225.0	22.1	18.4	29.2
		Qmin	31.1	1.000	0.500	0.450	225.0	16.9	14.1	10.5
32	51	Nmax	31.1	1.000	0.500	0.450	225.0	16.9	14.1	10.5
		Nmin	57.4	1.000	0.500	0.450	225.0	22.2	18.5	24.0
		Mmax	31.1	1.000	0.500	0.450	225.0	16.9	14.1	10.5
		Mmin	57.4	1.000	0.500	0.450	225.0	22.2	18.5	24.0
		Qmax	65.7	1.000	0.500	0.450	225.0	22.1	18.4	29.2
		Qmin	31.1	1.000	0.500	0.450	225.0	16.9	14.1	10.5
	64	Nmax	33.3	1.000	0.500	0.450	225.0	18.6	15.5	10.9
		Nmin	58.6	1.000	0.500	0.450	225.0	24.4	20.3	23.6
		Mmax	33.3	1.000	0.500	0.450	225.0	18.6	15.5	10.9
		Mmin	68.5	1.000	0.500	0.450	225.0	24.5	20.4	29.7
		Qmax	68.5	1.000	0.500	0.450	225.0	24.5	20.4	29.7
		Qmin	33.3	1.000	0.500	0.450	225.0	18.6	15.5	10.9
33	1	Nmax	63.5	1.000	0.600	0.550	275.0	22.6	18.8	22.6
		Nmin	39.4	1.000	0.600	0.550	275.0	19.8	16.5	11.6
		Mmax	73.0	1.000	0.600	0.550	275.0	23.7	19.8	26.9
		Mmin	39.4	1.000	0.600	0.550	275.0	19.8	16.5	11.6
		Qmax	73.0	1.000	0.600	0.550	275.0	23.7	19.8	26.9
		Qmin	39.4	1.000	0.600	0.550	275.0	19.8	16.5	11.6
	14	Nmax	63.9	1.000	0.600	0.550	275.0	19.9	16.6	23.9
		Nmin	39.9	1.000	0.600	0.550	275.0	17.8	14.8	12.7
		Mmax	73.4	1.000	0.600	0.550	275.0	20.9	17.4	28.3
		Mmin	39.9	1.000	0.600	0.550	275.0	17.8	14.8	12.7
		Qmax	73.4	1.000	0.600	0.550	275.0	20.9	17.4	28.3
		Qmin	39.9	1.000	0.600	0.550	275.0	17.8	14.8	12.7
34	14	Nmax	58.6	1.000	0.600	0.550	275.0	19.9	16.6	21.2
		Nmin	36.5	1.000	0.600	0.550	275.0	17.8	14.8	11.0
		Mmax	67.4	1.000	0.600	0.550	275.0	20.9	17.4	25.2
		Mmin	36.5	1.000	0.600	0.550	275.0	17.8	14.8	11.0
		Qmax	67.4	1.000	0.600	0.550	275.0	20.9	17.4	25.2
		Qmin	36.5	1.000	0.600	0.550	275.0	17.8	14.8	11.0
	16	Nmax	59.1	1.000	0.600	0.550	275.0	16.7	13.9	22.8
		Nmin	37.0	1.000	0.600	0.550	275.0	15.4	12.8	12.2
		Mmax	67.8	1.000	0.600	0.550	275.0	17.5	14.6	26.9
		Mmin	37.0	1.000	0.600	0.550	275.0	15.4	12.8	12.2
		Qmax	67.8	1.000	0.600	0.550	275.0	17.5	14.6	26.9
		Qmin	37.0	1.000	0.600	0.550	275.0	15.4	12.8	12.2
35	16	Nmax	53.9	1.000	0.600	0.550	275.0	16.7	13.9	20.2
		Nmin	33.7	1.000	0.600	0.550	275.0	15.4	12.8	10.5
		Mmax	61.9	1.000	0.600	0.550	275.0	17.5	14.6	23.9
		Mmin	33.7	1.000	0.600	0.550	275.0	15.4	12.8	10.5
		Qmax	61.9	1.000	0.600	0.550	275.0	17.5	14.6	23.9
		Qmin	33.7	1.000	0.600	0.550	275.0	15.4	12.8	10.5
	18	Nmax	54.3	1.000	0.600	0.550	275.0	12.2	10.2	22.3
		Nmin	34.1	1.000	0.600	0.550	275.0	12.2	10.2	12.1

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES EN UN SÓLO LADO

FECHA: 24/11/2005

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
		Mmax	58.0	1.000	0.600	0.550	275.0	12.9	10.7	23.9
		Mmin	34.1	1.000	0.600	0.550	275.0	12.2	10.2	12.1
		Qmax	62.3	1.000	0.600	0.550	275.0	12.8	10.6	26.1
		Qmin	34.1	1.000	0.600	0.550	275.0	12.2	10.2	12.1
36	18	Nmax	49.3	1.000	0.600	0.550	275.0	12.2	10.2	19.7
		Nmin	30.9	1.000	0.600	0.550	275.0	12.2	10.2	10.5
		Mmax	52.6	1.000	0.600	0.550	275.0	12.9	10.7	21.2
		Mmin	30.9	1.000	0.600	0.550	275.0	12.2	10.2	10.5
		Qmax	56.5	1.000	0.600	0.550	275.0	12.8	10.6	23.2
		Qmin	30.9	1.000	0.600	0.550	275.0	12.2	10.2	10.5
	20	Nmax	49.7	1.000	0.600	0.550	275.0	9.3	7.8	21.2
		Nmin	31.4	1.000	0.600	0.550	275.0	9.2	7.6	12.0
		Mmax	31.4	1.000	0.600	0.550	275.0	9.2	7.6	12.0
		Mmin	57.0	1.000	0.600	0.550	275.0	9.5	7.9	24.8
		Qmax	57.0	1.000	0.600	0.550	275.0	9.5	7.9	24.8
		Qmin	31.4	1.000	0.600	0.550	275.0	9.2	7.6	12.0
37	20	Nmax	44.7	1.000	0.600	0.550	275.0	9.3	7.8	18.7
		Nmin	28.2	1.000	0.600	0.550	275.0	9.2	7.6	10.4
		Mmax	28.2	1.000	0.600	0.550	275.0	9.2	7.6	10.4
		Mmin	51.3	1.000	0.600	0.550	275.0	9.5	7.9	21.9
		Qmax	51.3	1.000	0.600	0.550	275.0	9.5	7.9	21.9
		Qmin	28.2	1.000	0.600	0.550	275.0	9.2	7.6	10.4
	22	Nmax	45.2	1.000	0.600	0.550	275.0	14.7	12.2	16.6
		Nmin	28.6	1.000	0.600	0.550	275.0	10.8	9.0	9.9
		Mmax	28.6	1.000	0.600	0.550	275.0	10.8	9.0	9.9
		Mmin	51.7	1.000	0.600	0.550	275.0	15.3	12.7	19.7
		Qmax	51.7	1.000	0.600	0.550	275.0	15.3	12.7	19.7
		Qmin	28.6	1.000	0.600	0.550	275.0	10.8	9.0	9.9
38	22	Nmax	37.9	1.000	0.600	0.550	275.0	14.7	12.2	13.0
		Nmin	24.0	1.000	0.600	0.550	275.0	10.8	9.0	7.6
		Mmax	24.0	1.000	0.600	0.550	275.0	10.8	9.0	7.6
		Mmin	43.4	1.000	0.600	0.550	275.0	15.3	12.7	15.5
		Qmax	43.4	1.000	0.600	0.550	275.0	15.3	12.7	15.5
		Qmin	24.0	1.000	0.600	0.550	275.0	10.8	9.0	7.6
	24	Nmax	38.8	1.000	0.600	0.550	275.0	19.4	16.2	11.4
		Nmin	24.9	1.000	0.600	0.550	275.0	15.7	13.0	6.0
		Mmax	24.9	1.000	0.600	0.550	275.0	15.7	13.0	6.0
		Mmin	44.3	1.000	0.600	0.550	275.0	20.3	16.9	13.8
		Qmax	44.3	1.000	0.600	0.550	275.0	20.3	16.9	13.8
		Qmin	24.9	1.000	0.600	0.550	275.0	15.7	13.0	6.0
39	24	Nmax	29.6	1.000	0.600	0.550	275.0	19.4	16.2	6.8
		Nmin	18.9	1.000	0.600	0.550	275.0	15.7	13.0	3.0
		Mmax	18.9	1.000	0.600	0.550	275.0	15.7	13.0	3.0
		Mmin	33.8	1.000	0.600	0.550	275.0	20.3	16.9	8.5
		Qmax	33.8	1.000	0.600	0.550	275.0	20.3	16.9	8.5
		Qmin	18.9	1.000	0.600	0.550	275.0	15.7	13.0	3.0
	26	Nmax	30.5	1.000	0.600	0.550	275.0	22.1	18.4	6.1
		Nmin	19.8	1.000	0.600	0.550	275.0	18.1	15.1	2.4
		Mmax	19.8	1.000	0.600	0.550	275.0	18.1	15.1	2.4
		Mmin	34.7	1.000	0.600	0.550	275.0	23.1	19.2	7.8
		Qmax	34.7	1.000	0.600	0.550	275.0	23.1	19.2	7.8
		Qmin	19.8	1.000	0.600	0.550	275.0	18.1	15.1	2.4

ARMADOCAM_2060_1000_1m.xls PI CAMINO Kv=2060 Kh=1000 24/11/2005

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES EN UN SÓLO LADO

FECHA: 24/11/2005

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
40	26	Nmax	21.7	1.000	0.600	0.550	275.0	22.1	-	No necesita
		Nmin	14.1	1.000	0.600	0.550	275.0	18.1	-	No necesita
		Mmax	14.1	1.000	0.600	0.550	275.0	18.1	-	No necesita
		Mmin	24.7	1.000	0.600	0.550	275.0	23.1	19.2	2.8
		Qmax	24.7	1.000	0.600	0.550	275.0	23.1	19.2	2.8
		Qmin	14.1	1.000	0.600	0.550	275.0	18.1	-	No necesita
	28	Nmax	22.6	1.000	0.600	0.550	275.0	23.7	-	No necesita
		Nmin	15.0	1.000	0.600	0.550	275.0	19.6	-	No necesita
		Mmax	15.0	1.000	0.600	0.550	275.0	19.6	-	No necesita
		Mmin	25.6	1.000	0.600	0.550	275.0	24.8	20.7	2.5
		Qmax	25.6	1.000	0.600	0.550	275.0	24.8	20.7	2.5
		Qmin	15.0	1.000	0.600	0.550	275.0	19.6	-	No necesita
41	28	Nmax	14.1	1.000	0.600	0.550	275.0	23.7	-	No necesita
		Nmin	9.3	1.000	0.600	0.550	275.0	19.6	-	No necesita
		Mmax	9.3	1.000	0.600	0.550	275.0	19.6	-	No necesita
		Mmin	15.9	1.000	0.600	0.550	275.0	24.8	-	No necesita
		Qmax	15.9	1.000	0.600	0.550	275.0	24.8	-	No necesita
		Qmin	9.3	1.000	0.600	0.550	275.0	19.6	-	No necesita
	30	Nmax	15.0	1.000	0.600	0.550	275.0	24.7	-	No necesita
		Nmin	10.2	1.000	0.600	0.550	275.0	20.5	-	No necesita
		Mmax	10.2	1.000	0.600	0.550	275.0	20.5	-	No necesita
		Mmin	16.8	1.000	0.600	0.550	275.0	25.9	-	No necesita
		Qmax	16.8	1.000	0.600	0.550	275.0	25.9	-	No necesita
		Qmin	10.2	1.000	0.600	0.550	275.0	20.5	-	No necesita
42	30	Nmax	6.5	1.000	0.600	0.550	275.0	24.7	-	No necesita
		Nmin	4.6	1.000	0.600	0.550	275.0	20.5	-	No necesita
		Mmax	4.6	1.000	0.600	0.550	275.0	20.5	-	No necesita
		Mmin	7.2	1.000	0.600	0.550	275.0	25.9	-	No necesita
		Qmax	7.2	1.000	0.600	0.550	275.0	25.9	-	No necesita
		Qmin	4.6	1.000	0.600	0.550	275.0	20.5	-	No necesita
	32	Nmax	7.4	1.000	0.600	0.550	275.0	25.1	-	No necesita
		Nmin	5.5	1.000	0.600	0.550	275.0	21.0	-	No necesita
		Mmax	5.5	1.000	0.600	0.550	275.0	21.0	-	No necesita
		Mmin	8.1	1.000	0.600	0.550	275.0	26.3	-	No necesita
		Qmax	8.1	1.000	0.600	0.550	275.0	26.3	-	No necesita
		Qmin	5.5	1.000	0.600	0.550	275.0	21.0	-	No necesita
43	32	Nmax	1.0	1.000	0.600	0.550	275.0	25.1	-	No necesita
		Nmin	0.9	1.000	0.600	0.550	275.0	21.0	-	No necesita
		Mmax	0.9	1.000	0.600	0.550	275.0	21.0	-	No necesita
		Mmin	1.5	1.000	0.600	0.550	275.0	26.3	-	No necesita
		Qmax	0.9	1.000	0.600	0.550	275.0	21.0	-	No necesita
		Qmin	1.5	1.000	0.600	0.550	275.0	26.3	-	No necesita
	34	Nmax	1.2	1.000	0.600	0.550	275.0	25.1	-	No necesita
		Nmin	1.6	1.000	0.600	0.550	275.0	21.0	-	No necesita
		Mmax	1.6	1.000	0.600	0.550	275.0	21.0	-	No necesita
		Mmin	1.2	1.000	0.600	0.550	275.0	26.3	-	No necesita
		Qmax	1.6	1.000	0.600	0.550	275.0	21.0	-	No necesita
		Qmin	1.2	1.000	0.600	0.550	275.0	26.3	-	No necesita
44	34	Nmax	8.8	1.000	0.600	0.550	275.0	25.1	-	No necesita
		Nmin	5.0	1.000	0.600	0.550	275.0	21.0	-	No necesita
		Mmax	5.0	1.000	0.600	0.550	275.0	21.0	-	No necesita
		Mmin	10.4	1.000	0.600	0.550	275.0	26.3	-	No necesita

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES EN UN SÓLO LADO

FECHA: 24/11/2005

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
		Qmax	5.0	1.000	0.600	0.550	275.0	21.0	-	No necesita
		Qmin	10.4	1.000	0.600	0.550	275.0	26.3	-	No necesita
	36	Nmax	7.9	1.000	0.600	0.550	275.0	24.6	-	No necesita
		Nmin	4.2	1.000	0.600	0.550	275.0	20.6	-	No necesita
		Mmax	4.2	1.000	0.600	0.550	275.0	20.6	-	No necesita
		Mmin	9.5	1.000	0.600	0.550	275.0	25.7	-	No necesita
		Qmax	4.2	1.000	0.600	0.550	275.0	20.6	-	No necesita
		Qmin	9.5	1.000	0.600	0.550	275.0	25.7	-	No necesita
45	36	Nmax	16.9	1.000	0.600	0.550	275.0	24.6	-	No necesita
		Nmin	10.2	1.000	0.600	0.550	275.0	20.6	-	No necesita
		Mmax	10.2	1.000	0.600	0.550	275.0	20.6	-	No necesita
		Mmin	19.8	1.000	0.600	0.550	275.0	25.7	-	No necesita
		Qmax	10.2	1.000	0.600	0.550	275.0	20.6	-	No necesita
		Qmin	19.8	1.000	0.600	0.550	275.0	25.7	-	No necesita
	38	Nmax	16.1	1.000	0.600	0.550	275.0	23.4	-	No necesita
		Nmin	9.3	1.000	0.600	0.550	275.0	19.7	-	No necesita
		Mmax	9.3	1.000	0.600	0.550	275.0	19.7	-	No necesita
		Mmin	18.9	1.000	0.600	0.550	275.0	24.4	-	No necesita
		Qmax	9.3	1.000	0.600	0.550	275.0	19.7	-	No necesita
		Qmin	18.9	1.000	0.600	0.550	275.0	24.4	-	No necesita
46	38	Nmax	25.7	1.000	0.600	0.550	275.0	23.4	19.5	3.1
		Nmin	15.8	1.000	0.600	0.550	275.0	19.7	-	No necesita
		Mmax	15.8	1.000	0.600	0.550	275.0	19.7	-	No necesita
		Mmin	29.7	1.000	0.600	0.550	275.0	24.4	20.3	4.7
		Qmax	15.8	1.000	0.600	0.550	275.0	19.7	-	No necesita
		Qmin	29.7	1.000	0.600	0.550	275.0	24.4	20.3	4.7
	40	Nmax	24.8	1.000	0.600	0.550	275.0	21.5	17.9	3.5
		Nmin	14.9	1.000	0.600	0.550	275.0	18.1	-	No necesita
		Mmax	14.9	1.000	0.600	0.550	275.0	18.1	-	No necesita
		Mmin	28.8	1.000	0.600	0.550	275.0	22.3	18.6	5.2
		Qmax	14.9	1.000	0.600	0.550	275.0	18.1	-	No necesita
		Qmin	28.8	1.000	0.600	0.550	275.0	22.3	18.6	5.2
47	40	Nmax	35.0	1.000	0.600	0.550	275.0	21.5	17.9	8.6
		Nmin	21.7	1.000	0.600	0.550	275.0	18.1	15.1	3.4
		Mmax	21.7	1.000	0.600	0.550	275.0	18.1	15.1	3.4
		Mmin	40.4	1.000	0.600	0.550	275.0	22.3	18.6	11.0
		Qmax	21.7	1.000	0.600	0.550	275.0	18.1	15.1	3.4
		Qmin	40.4	1.000	0.600	0.550	275.0	22.3	18.6	11.0
	42	Nmax	34.1	1.000	0.600	0.550	275.0	18.2	15.2	9.6
		Nmin	20.8	1.000	0.600	0.550	275.0	15.4	12.8	4.1
		Mmax	20.8	1.000	0.600	0.550	275.0	15.4	12.8	4.1
		Mmin	39.5	1.000	0.600	0.550	275.0	18.7	15.6	12.1
		Qmax	20.8	1.000	0.600	0.550	275.0	15.4	12.8	4.1
		Qmin	39.5	1.000	0.600	0.550	275.0	18.7	15.6	12.1
48	42	Nmax	42.5	1.000	0.600	0.550	275.0	18.2	15.2	13.8
		Nmin	26.4	1.000	0.600	0.550	275.0	15.4	12.8	6.9
		Mmax	26.4	1.000	0.600	0.550	275.0	15.4	12.8	6.9
		Mmin	48.9	1.000	0.600	0.550	275.0	18.7	15.6	16.8
		Qmax	26.4	1.000	0.600	0.550	275.0	15.4	12.8	6.9
		Qmin	48.9	1.000	0.600	0.550	275.0	18.7	15.6	16.8
	44	Nmax	42.0	1.000	0.600	0.550	275.0	15.6	13.0	14.7
		Nmin	26.0	1.000	0.600	0.550	275.0	13.1	10.9	7.6

ARMADOCAM_2060_1000_1m.xls PI CAMINO Kv=2060 Kh=1000 24/11/2005

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES EN UN SÓLO LADO

FECHA: 24/11/2005

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
		Mmax	26.0	1.000	0.600	0.550	275.0	13.1	10.9	7.6
		Mmin	48.5	1.000	0.600	0.550	275.0	15.8	13.1	17.8
		Qmax	26.0	1.000	0.600	0.550	275.0	13.1	10.9	7.6
		Qmin	48.5	1.000	0.600	0.550	275.0	15.8	13.1	17.8
49	44	Nmax	47.8	1.000	0.600	0.550	275.0	15.6	13.0	17.6
		Nmin	29.8	1.000	0.600	0.550	275.0	13.1	10.9	9.5
		Mmax	29.8	1.000	0.600	0.550	275.0	13.1	10.9	9.5
		Mmin	55.0	1.000	0.600	0.550	275.0	15.8	13.1	21.1
		Qmax	29.8	1.000	0.600	0.550	275.0	13.1	10.9	9.5
		Qmin	55.0	1.000	0.600	0.550	275.0	15.8	13.1	21.1
	46	Nmax	47.3	1.000	0.600	0.550	275.0	10.9	9.1	19.3
		Nmin	29.4	1.000	0.600	0.550	275.0	8.9	7.4	11.1
		Mmax	29.4	1.000	0.600	0.550	275.0	8.9	7.4	11.1
		Mmin	47.3	1.000	0.600	0.550	275.0	10.9	9.1	19.3
		Qmax	29.4	1.000	0.600	0.550	275.0	8.9	7.4	11.1
		Qmin	54.6	1.000	0.600	0.550	275.0	10.3	8.6	23.2
50	46	Nmax	53.3	1.000	0.600	0.550	275.0	10.9	9.1	22.3
		Nmin	33.3	1.000	0.600	0.550	275.0	8.9	7.4	13.1
		Mmax	33.3	1.000	0.600	0.550	275.0	8.9	7.4	13.1
		Mmin	53.3	1.000	0.600	0.550	275.0	10.9	9.1	22.3
		Qmax	33.3	1.000	0.600	0.550	275.0	8.9	7.4	13.1
		Qmin	61.3	1.000	0.600	0.550	275.0	10.3	8.6	26.6
	48	Nmax	52.8	1.000	0.600	0.550	275.0	11.4	9.5	21.9
		Nmin	32.9	1.000	0.600	0.550	275.0	10.0	8.3	12.4
		Mmax	60.8	1.000	0.600	0.550	275.0	12.9	10.7	25.3
		Mmin	32.9	1.000	0.600	0.550	275.0	10.0	8.3	12.4
		Qmax	32.9	1.000	0.600	0.550	275.0	10.0	8.3	12.4
		Qmin	60.8	1.000	0.600	0.550	275.0	12.9	10.7	25.3
51	48	Nmax	59.1	1.000	0.600	0.550	275.0	11.4	9.5	25.0
		Nmin	37.0	1.000	0.600	0.550	275.0	10.0	8.4	14.5
		Mmax	67.8	1.000	0.600	0.550	275.0	12.9	10.7	28.8
		Mmin	37.0	1.000	0.600	0.550	275.0	10.0	8.4	14.5
		Qmax	37.0	1.000	0.600	0.550	275.0	10.0	8.4	14.5
		Qmin	67.8	1.000	0.600	0.550	275.0	12.9	10.7	28.8
	50	Nmax	58.6	1.000	0.600	0.550	275.0	16.6	13.9	22.6
		Nmin	36.5	1.000	0.600	0.550	275.0	14.3	11.9	12.4
		Mmax	67.4	1.000	0.600	0.550	275.0	17.9	14.9	26.5
		Mmin	36.5	1.000	0.600	0.550	275.0	14.3	11.9	12.4
		Qmax	36.5	1.000	0.600	0.550	275.0	14.3	11.9	12.4
		Qmin	67.4	1.000	0.600	0.550	275.0	17.9	14.9	26.5
52	50	Nmax	65.0	1.000	0.600	0.550	275.0	16.6	13.9	25.8
		Nmin	40.8	1.000	0.600	0.550	275.0	14.3	11.9	14.6
		Mmax	74.5	1.000	0.600	0.550	275.0	17.9	14.9	30.1
		Mmin	40.8	1.000	0.600	0.550	275.0	14.3	11.9	14.6
		Qmax	40.8	1.000	0.600	0.550	275.0	14.3	11.9	14.6
		Qmin	74.5	1.000	0.600	0.550	275.0	17.9	14.9	30.1
	52	Nmax	64.5	1.000	0.600	0.550	275.0	20.1	16.8	24.1
		Nmin	40.3	1.000	0.600	0.550	275.0	17.2	14.4	13.1
		Mmax	74.1	1.000	0.600	0.550	275.0	21.5	17.9	28.4
		Mmin	40.3	1.000	0.600	0.550	275.0	17.2	14.4	13.1
		Qmax	40.3	1.000	0.600	0.550	275.0	17.2	14.4	13.1
		Qmin	74.1	1.000	0.600	0.550	275.0	21.5	17.9	28.4

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES EN UN SÓLO LADO

FECHA: 24/11/2005

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
53	52	Nmax	1.6	1.000	0.600	0.550	275.0	17.2	-	No necesita
		Nmin	4.6	1.000	0.600	0.550	275.0	21.5	-	No necesita
		Mmax	4.6	1.000	0.600	0.550	275.0	21.5	-	No necesita
		Mmin	1.6	1.000	0.600	0.550	275.0	17.2	-	No necesita
		Qmax	1.6	1.000	0.600	0.550	275.0	17.2	-	No necesita
		Qmin	5.8	1.000	0.600	0.550	275.0	20.1	-	No necesita
	53	Nmax	1.6	1.000	0.600	0.550	275.0	17.4	-	No necesita
		Nmin	4.6	1.000	0.600	0.550	275.0	21.8	-	No necesita
		Mmax	4.6	1.000	0.600	0.550	275.0	21.8	-	No necesita
		Mmin	1.6	1.000	0.600	0.550	275.0	17.4	-	No necesita
		Qmax	1.6	1.000	0.600	0.550	275.0	17.4	-	No necesita
		Qmin	5.8	1.000	0.600	0.550	275.0	20.6	-	No necesita
54	53	Nmax	1.6	1.000	0.600	0.550	275.0	17.4	-	No necesita
		Nmin	4.6	1.000	0.600	0.550	275.0	21.8	-	No necesita
		Mmax	4.6	1.000	0.600	0.550	275.0	21.8	-	No necesita
		Mmin	1.6	1.000	0.600	0.550	275.0	17.4	-	No necesita
		Qmax	1.6	1.000	0.600	0.550	275.0	17.4	-	No necesita
		Qmin	5.8	1.000	0.600	0.550	275.0	20.6	-	No necesita
	54	Nmax	1.6	1.000	0.600	0.550	275.0	17.5	-	No necesita
		Nmin	4.6	1.000	0.600	0.550	275.0	22.1	-	No necesita
		Mmax	4.6	1.000	0.600	0.550	275.0	22.1	-	No necesita
		Mmin	1.6	1.000	0.600	0.550	275.0	17.5	-	No necesita
		Qmax	1.6	1.000	0.600	0.550	275.0	17.5	-	No necesita
		Qmin	5.8	1.000	0.600	0.550	275.0	21.0	-	No necesita
55	54	Nmax	1.6	1.000	0.600	0.550	275.0	17.5	-	No necesita
		Nmin	4.6	1.000	0.600	0.550	275.0	22.1	-	No necesita
		Mmax	4.6	1.000	0.600	0.550	275.0	22.1	-	No necesita
		Mmin	1.6	1.000	0.600	0.550	275.0	17.5	-	No necesita
		Qmax	1.6	1.000	0.600	0.550	275.0	17.5	-	No necesita
		Qmin	5.8	1.000	0.600	0.550	275.0	21.0	-	No necesita
	55	Nmax	1.6	1.000	0.600	0.550	275.0	17.7	-	No necesita
		Nmin	4.6	1.000	0.600	0.550	275.0	22.4	-	No necesita
		Mmax	4.6	1.000	0.600	0.550	275.0	22.4	-	No necesita
		Mmin	1.6	1.000	0.600	0.550	275.0	17.7	-	No necesita
		Qmax	1.6	1.000	0.600	0.550	275.0	17.7	-	No necesita
		Qmin	5.8	1.000	0.600	0.550	275.0	21.4	-	No necesita
56	55	Nmax	1.6	1.000	0.600	0.550	275.0	17.7	-	No necesita
		Nmin	4.6	1.000	0.600	0.550	275.0	22.4	-	No necesita
		Mmax	4.6	1.000	0.600	0.550	275.0	22.4	-	No necesita
		Mmin	1.6	1.000	0.600	0.550	275.0	17.7	-	No necesita
		Qmax	1.6	1.000	0.600	0.550	275.0	17.7	-	No necesita
		Qmin	5.8	1.000	0.600	0.550	275.0	21.4	-	No necesita
	56	Nmax	1.6	1.000	0.600	0.550	275.0	17.9	-	No necesita
		Nmin	4.6	1.000	0.600	0.550	275.0	22.7	-	No necesita
		Mmax	4.6	1.000	0.600	0.550	275.0	22.7	-	No necesita
		Mmin	1.6	1.000	0.600	0.550	275.0	17.9	-	No necesita
		Qmax	1.6	1.000	0.600	0.550	275.0	17.9	-	No necesita
		Qmin	5.8	1.000	0.600	0.550	275.0	21.8	-	No necesita
57	56	Nmax	1.6	1.000	0.600	0.550	275.0	17.9	-	No necesita
		Nmin	4.6	1.000	0.600	0.550	275.0	22.7	-	No necesita
		Mmax	4.6	1.000	0.600	0.550	275.0	22.7	-	No necesita
		Mmin	1.6	1.000	0.600	0.550	275.0	17.9	-	No necesita

ARMADOCAM_2060_1000_1m.xls PI CAMINO Kv=2060 Kh=1000 24/11/2005

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES EN UN SÓLO LADO

FECHA: 24/11/2005

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
		Qmax	1.6	1.000	0.600	0.550	275.0	17.9	-	No necesita
		Qmin	5.8	1.000	0.600	0.550	275.0	21.8	-	No necesita
	57	Nmax	1.6	1.000	0.600	0.550	275.0	18.0	-	No necesita
		Nmin	4.6	1.000	0.600	0.550	275.0	23.0	-	No necesita
		Mmax	4.6	1.000	0.600	0.550	275.0	23.0	-	No necesita
		Mmin	1.6	1.000	0.600	0.550	275.0	18.0	-	No necesita
		Qmax	1.6	1.000	0.600	0.550	275.0	18.0	-	No necesita
		Qmin	5.8	1.000	0.600	0.550	275.0	22.2	-	No necesita
58	57	Nmax	1.6	1.000	0.600	0.550	275.0	18.0	-	No necesita
		Nmin	4.6	1.000	0.600	0.550	275.0	23.0	-	No necesita
		Mmax	4.6	1.000	0.600	0.550	275.0	23.0	-	No necesita
		Mmin	1.6	1.000	0.600	0.550	275.0	18.0	-	No necesita
		Qmax	1.6	1.000	0.600	0.550	275.0	18.0	-	No necesita
		Qmin	5.8	1.000	0.600	0.550	275.0	22.2	-	No necesita
	58	Nmax	1.6	1.000	0.600	0.550	275.0	18.2	-	No necesita
		Nmin	4.6	1.000	0.600	0.550	275.0	23.2	-	No necesita
		Mmax	4.6	1.000	0.600	0.550	275.0	23.2	-	No necesita
		Mmin	1.6	1.000	0.600	0.550	275.0	18.2	-	No necesita
		Qmax	1.6	1.000	0.600	0.550	275.0	18.2	-	No necesita
		Qmin	5.8	1.000	0.600	0.550	275.0	22.6	-	No necesita
59	58	Nmax	1.6	1.000	0.600	0.550	275.0	18.2	-	No necesita
		Nmin	4.6	1.000	0.600	0.550	275.0	23.2	-	No necesita
		Mmax	4.6	1.000	0.600	0.550	275.0	23.2	-	No necesita
		Mmin	1.6	1.000	0.600	0.550	275.0	18.2	-	No necesita
		Qmax	1.6	1.000	0.600	0.550	275.0	18.2	-	No necesita
		Qmin	5.8	1.000	0.600	0.550	275.0	22.6	-	No necesita
	59	Nmax	1.6	1.000	0.600	0.550	275.0	18.3	-	No necesita
		Nmin	4.6	1.000	0.600	0.550	275.0	23.5	-	No necesita
		Mmax	4.6	1.000	0.600	0.550	275.0	23.5	-	No necesita
		Mmin	1.6	1.000	0.600	0.550	275.0	18.3	-	No necesita
		Qmax	1.6	1.000	0.600	0.550	275.0	18.3	-	No necesita
		Qmin	5.8	1.000	0.600	0.550	275.0	22.9	-	No necesita
60	59	Nmax	1.6	1.000	0.600	0.550	275.0	18.3	-	No necesita
		Nmin	4.6	1.000	0.600	0.550	275.0	23.5	-	No necesita
		Mmax	4.6	1.000	0.600	0.550	275.0	23.5	-	No necesita
		Mmin	1.6	1.000	0.600	0.550	275.0	18.3	-	No necesita
		Qmax	1.6	1.000	0.600	0.550	275.0	18.3	-	No necesita
		Qmin	5.8	1.000	0.600	0.550	275.0	22.9	-	No necesita
	60	Nmax	1.6	1.000	0.600	0.550	275.0	18.5	-	No necesita
		Nmin	4.6	1.000	0.600	0.550	275.0	23.8	-	No necesita
		Mmax	4.6	1.000	0.600	0.550	275.0	23.8	-	No necesita
		Mmin	1.6	1.000	0.600	0.550	275.0	18.5	-	No necesita
		Qmax	1.6	1.000	0.600	0.550	275.0	18.5	-	No necesita
		Qmin	5.8	1.000	0.600	0.550	275.0	23.3	-	No necesita
61	60	Nmax	1.6	1.000	0.600	0.550	275.0	18.5	-	No necesita
		Nmin	4.6	1.000	0.600	0.550	275.0	23.8	-	No necesita
		Mmax	4.6	1.000	0.600	0.550	275.0	23.8	-	No necesita
		Mmin	1.6	1.000	0.600	0.550	275.0	18.5	-	No necesita
		Qmax	1.6	1.000	0.600	0.550	275.0	18.5	-	No necesita
		Qmin	5.8	1.000	0.600	0.550	275.0	23.3	-	No necesita
	61	Nmax	1.6	1.000	0.600	0.550	275.0	18.6	-	No necesita
		Nmin	4.6	1.000	0.600	0.550	275.0	24.1	-	No necesita

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES EN UN SÓLO LADO

FECHA: 24/11/2005

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
		Mmax	4.6	1.000	0.600	0.550	275.0	24.1	-	No necesita
		Mmin	1.6	1.000	0.600	0.550	275.0	18.6	-	No necesita
		Qmax	1.6	1.000	0.600	0.550	275.0	18.6	-	No necesita
		Qmin	5.8	1.000	0.600	0.550	275.0	23.7	-	No necesita
62	61	Nmax	1.6	1.000	0.600	0.550	275.0	18.6	-	No necesita
		Nmin	4.6	1.000	0.600	0.550	275.0	24.1	-	No necesita
		Mmax	4.6	1.000	0.600	0.550	275.0	24.1	-	No necesita
		Mmin	1.6	1.000	0.600	0.550	275.0	18.6	-	No necesita
		Qmax	1.6	1.000	0.600	0.550	275.0	18.6	-	No necesita
		Qmin	5.8	1.000	0.600	0.550	275.0	23.7	-	No necesita
	62	Nmax	1.6	1.000	0.600	0.550	275.0	18.8	-	No necesita
		Nmin	4.6	1.000	0.600	0.550	275.0	24.3	-	No necesita
		Mmax	4.6	1.000	0.600	0.550	275.0	24.3	-	No necesita
		Mmin	1.6	1.000	0.600	0.550	275.0	18.8	-	No necesita
		Qmax	1.6	1.000	0.600	0.550	275.0	18.8	-	No necesita
		Qmin	5.8	1.000	0.600	0.550	275.0	24.0	-	No necesita
63	62	Nmax	1.6	1.000	0.600	0.550	275.0	18.8	-	No necesita
		Nmin	4.6	1.000	0.600	0.550	275.0	24.3	-	No necesita
		Mmax	4.6	1.000	0.600	0.550	275.0	24.3	-	No necesita
		Mmin	1.6	1.000	0.600	0.550	275.0	18.8	-	No necesita
		Qmax	1.6	1.000	0.600	0.550	275.0	18.8	-	No necesita
		Qmin	5.8	1.000	0.600	0.550	275.0	24.0	-	No necesita
	63	Nmax	1.6	1.000	0.600	0.550	275.0	18.9	-	No necesita
		Nmin	4.6	1.000	0.600	0.550	275.0	24.6	-	No necesita
		Mmax	4.6	1.000	0.600	0.550	275.0	24.6	-	No necesita
		Mmin	1.6	1.000	0.600	0.550	275.0	18.9	-	No necesita
		Qmax	1.6	1.000	0.600	0.550	275.0	18.9	-	No necesita
		Qmin	5.8	1.000	0.600	0.550	275.0	24.3	-	No necesita
64	63	Nmax	1.6	1.000	0.600	0.550	275.0	18.9	-	No necesita
		Nmin	4.6	1.000	0.600	0.550	275.0	24.6	-	No necesita
		Mmax	4.6	1.000	0.600	0.550	275.0	24.6	-	No necesita
		Mmin	1.6	1.000	0.600	0.550	275.0	18.9	-	No necesita
		Qmax	1.6	1.000	0.600	0.550	275.0	18.9	-	No necesita
		Qmin	5.8	1.000	0.600	0.550	275.0	24.3	-	No necesita
	64	Nmax	1.6	1.000	0.600	0.550	275.0	19.0	-	No necesita
		Nmin	4.6	1.000	0.600	0.550	275.0	24.8	-	No necesita
		Mmax	4.6	1.000	0.600	0.550	275.0	24.8	-	No necesita
		Mmin	1.6	1.000	0.600	0.550	275.0	19.0	-	No necesita
		Qmax	1.6	1.000	0.600	0.550	275.0	19.0	-	No necesita
		Qmin	5.8	1.000	0.600	0.550	275.0	24.7	-	No necesita

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES A AMBOS LADOS

FECHA: 24/11/2005

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
1	1	Nmax	0.0	-29.8	1.000	0.600	0.550	779.17	0.00	12.67
		Nmin	0.0	-54.0	1.000	0.600	0.550	779.17	0.00	23.73
		Mmax	0.0	-29.8	1.000	0.600	0.550	779.17	0.00	12.67
		Mmin	0.0	-54.0	1.000	0.600	0.550	779.17	0.00	23.73
		Qmax	0.0	-46.4	1.000	0.600	0.550	779.17	0.00	20.20
		Qmin	0.0	-29.8	1.000	0.600	0.550	779.17	0.00	12.67
	2	Nmax	0.0	-29.2	1.000	0.600	0.550	779.17	0.00	12.40
		Nmin	0.0	-53.7	1.000	0.600	0.550	779.17	0.00	23.58
		Mmax	0.0	-29.2	1.000	0.600	0.550	779.17	0.00	12.40
		Mmin	0.0	-53.7	1.000	0.600	0.550	779.17	0.00	23.58
		Qmax	0.0	-46.7	1.000	0.600	0.550	779.17	0.00	20.33
		Qmin	0.0	-29.2	1.000	0.600	0.550	779.17	0.00	12.40
2	2	Nmax	0.0	-29.2	1.000	0.600	0.550	779.17	0.00	12.40
		Nmin	0.0	-53.7	1.000	0.600	0.550	779.17	0.00	23.58
		Mmax	0.0	-29.2	1.000	0.600	0.550	779.17	0.00	12.40
		Mmin	0.0	-53.7	1.000	0.600	0.550	779.17	0.00	23.58
		Qmax	0.0	-46.7	1.000	0.600	0.550	779.17	0.00	20.33
		Qmin	0.0	-29.2	1.000	0.600	0.550	779.17	0.00	12.40
	3	Nmax	0.0	-28.6	1.000	0.600	0.550	779.17	0.00	12.13
		Nmin	0.0	-53.4	1.000	0.600	0.550	779.17	0.00	23.46
		Mmax	0.0	-28.6	1.000	0.600	0.550	779.17	0.00	12.13
		Mmin	0.0	-53.4	1.000	0.600	0.550	779.17	0.00	23.46
		Qmax	0.0	-47.1	1.000	0.600	0.550	779.17	0.00	20.48
		Qmin	0.0	-28.6	1.000	0.600	0.550	779.17	0.00	12.13
3	3	Nmax	0.0	-28.6	1.000	0.600	0.550	779.17	0.00	12.13
		Nmin	0.0	-53.4	1.000	0.600	0.550	779.17	0.00	23.46
		Mmax	0.0	-28.6	1.000	0.600	0.550	779.17	0.00	12.13
		Mmin	0.0	-53.4	1.000	0.600	0.550	779.17	0.00	23.46
		Qmax	0.0	-47.1	1.000	0.600	0.550	779.17	0.00	20.48
		Qmin	0.0	-28.6	1.000	0.600	0.550	779.17	0.00	12.13
	4	Nmax	0.0	-28.0	1.000	0.600	0.550	779.17	0.00	11.88
		Nmin	0.0	-53.2	1.000	0.600	0.550	779.17	0.00	23.37
		Mmax	0.0	-28.0	1.000	0.600	0.550	779.17	0.00	11.88
		Mmin	0.0	-53.2	1.000	0.600	0.550	779.17	0.00	23.37
		Qmax	0.0	-47.4	1.000	0.600	0.550	779.17	0.00	20.66
		Qmin	0.0	-28.0	1.000	0.600	0.550	779.17	0.00	11.88
4	4	Nmax	0.0	-28.0	1.000	0.600	0.550	779.17	0.00	11.88
		Nmin	0.0	-53.2	1.000	0.600	0.550	779.17	0.00	23.37
		Mmax	0.0	-28.0	1.000	0.600	0.550	779.17	0.00	11.88
		Mmin	0.0	-53.2	1.000	0.600	0.550	779.17	0.00	23.37
		Qmax	0.0	-47.4	1.000	0.600	0.550	779.17	0.00	20.66
		Qmin	0.0	-28.0	1.000	0.600	0.550	779.17	0.00	11.88
	5	Nmax	0.0	-27.5	1.000	0.600	0.550	779.17	0.00	11.65
		Nmin	0.0	-53.1	1.000	0.600	0.550	779.17	0.00	23.32
		Mmax	0.0	-27.5	1.000	0.600	0.550	779.17	0.00	11.65
		Mmin	0.0	-53.1	1.000	0.600	0.550	779.17	0.00	23.32
		Qmax	0.0	-47.9	1.000	0.600	0.550	779.17	0.00	20.87
		Qmin	0.0	-27.5	1.000	0.600	0.550	779.17	0.00	11.65
5	5	Nmax	0.0	-27.5	1.000	0.600	0.550	779.17	0.00	11.65
		Nmin	0.0	-53.1	1.000	0.600	0.550	779.17	0.00	23.32
		Mmax	0.0	-27.5	1.000	0.600	0.550	779.17	0.00	11.65
		Mmin	0.0	-53.1	1.000	0.600	0.550	779.17	0.00	23.32

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES A AMBOS LADOS

FECHA: 24/11/2005

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
		Qmax	0.0	-47.9	1.000	0.600	0.550	779.17	0.00	20.87
		Qmin	0.0	-27.5	1.000	0.600	0.550	779.17	0.00	11.65
	6	Nmax	0.0	-27.0	1.000	0.600	0.550	779.17	0.00	11.44
		Nmin	0.0	-53.1	1.000	0.600	0.550	779.17	0.00	23.30
		Mmax	0.0	-27.0	1.000	0.600	0.550	779.17	0.00	11.44
		Mmin	0.0	-53.1	1.000	0.600	0.550	779.17	0.00	23.30
		Qmax	0.0	-48.4	1.000	0.600	0.550	779.17	0.00	21.12
		Qmin	0.0	-27.0	1.000	0.600	0.550	779.17	0.00	11.44
6	6	Nmax	0.0	-27.0	1.000	0.600	0.550	779.17	0.00	11.44
		Nmin	0.0	-53.1	1.000	0.600	0.550	779.17	0.00	23.30
		Mmax	0.0	-27.0	1.000	0.600	0.550	779.17	0.00	11.44
		Mmin	0.0	-53.1	1.000	0.600	0.550	779.17	0.00	23.30
		Qmax	0.0	-48.4	1.000	0.600	0.550	779.17	0.00	21.12
		Qmin	0.0	-27.0	1.000	0.600	0.550	779.17	0.00	11.44
	7	Nmax	0.0	-26.5	1.000	0.600	0.550	779.17	0.00	11.23
		Nmin	0.0	-53.1	1.000	0.600	0.550	779.17	0.00	23.30
		Mmax	0.0	-26.5	1.000	0.600	0.550	779.17	0.00	11.23
		Mmin	0.0	-53.1	1.000	0.600	0.550	779.17	0.00	23.30
		Qmax	0.0	-49.0	1.000	0.600	0.550	779.17	0.00	21.37
		Qmin	0.0	-26.5	1.000	0.600	0.550	779.17	0.00	11.23
7	7	Nmax	0.0	-26.5	1.000	0.600	0.550	779.17	0.00	11.23
		Nmin	0.0	-53.1	1.000	0.600	0.550	779.17	0.00	23.30
		Mmax	0.0	-26.5	1.000	0.600	0.550	779.17	0.00	11.23
		Mmin	0.0	-53.1	1.000	0.600	0.550	779.17	0.00	23.30
		Qmax	0.0	-49.0	1.000	0.600	0.550	779.17	0.00	21.37
		Qmin	0.0	-26.5	1.000	0.600	0.550	779.17	0.00	11.23
	8	Nmax	0.0	-26.1	1.000	0.600	0.550	779.17	0.00	11.03
		Nmin	0.0	-53.1	1.000	0.600	0.550	779.17	0.00	23.30
		Mmax	0.0	-26.1	1.000	0.600	0.550	779.17	0.00	11.03
		Mmin	0.0	-53.1	1.000	0.600	0.550	779.17	0.00	23.30
		Qmax	0.0	-49.5	1.000	0.600	0.550	779.17	0.00	21.64
		Qmin	0.0	-26.1	1.000	0.600	0.550	779.17	0.00	11.03
8	8	Nmax	0.0	-26.1	1.000	0.600	0.550	779.17	0.00	11.03
		Nmin	0.0	-53.1	1.000	0.600	0.550	779.17	0.00	23.30
		Mmax	0.0	-26.1	1.000	0.600	0.550	779.17	0.00	11.03
		Mmin	0.0	-53.1	1.000	0.600	0.550	779.17	0.00	23.30
		Qmax	0.0	-49.5	1.000	0.600	0.550	779.17	0.00	21.64
		Qmin	0.0	-26.1	1.000	0.600	0.550	779.17	0.00	11.03
	9	Nmax	0.0	-25.6	1.000	0.600	0.550	779.17	0.00	10.82
		Nmin	0.0	-53.0	1.000	0.600	0.550	779.17	0.00	23.27
		Mmax	0.0	-25.6	1.000	0.600	0.550	779.17	0.00	10.82
		Mmin	0.0	-53.0	1.000	0.600	0.550	779.17	0.00	23.27
		Qmax	0.0	-50.0	1.000	0.600	0.550	779.17	0.00	21.87
		Qmin	0.0	-25.6	1.000	0.600	0.550	779.17	0.00	10.82
9	9	Nmax	0.0	-25.6	1.000	0.600	0.550	779.17	0.00	10.82
		Nmin	0.0	-53.0	1.000	0.600	0.550	779.17	0.00	23.27
		Mmax	0.0	-25.6	1.000	0.600	0.550	779.17	0.00	10.82
		Mmin	0.0	-53.0	1.000	0.600	0.550	779.17	0.00	23.27
		Qmax	0.0	-50.0	1.000	0.600	0.550	779.17	0.00	21.87
		Qmin	0.0	-25.6	1.000	0.600	0.550	779.17	0.00	10.82
	10	Nmax	0.0	-25.0	1.000	0.600	0.550	779.17	0.00	10.56
		Nmin	0.0	-52.8	1.000	0.600	0.550	779.17	0.00	23.17

ARMADOCAM_2060_1000_2m.xls PI CAMINO Kv=2060 Kh=1000 24/11/2005

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES A AMBOS LADOS

FECHA: 24/11/2005

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
		Mmax	0.0	-25.0	1.000	0.600	0.550	779.17	0.00	10.56
		Mmin	0.0	-52.8	1.000	0.600	0.550	779.17	0.00	23.17
		Qmax	0.0	-50.4	1.000	0.600	0.550	779.17	0.00	22.03
		Qmin	0.0	-25.0	1.000	0.600	0.550	779.17	0.00	10.56
10	10	Nmax	0.0	-25.0	1.000	0.600	0.550	779.17	0.00	10.56
		Nmin	0.0	-52.8	1.000	0.600	0.550	779.17	0.00	23.17
		Mmax	0.0	-25.0	1.000	0.600	0.550	779.17	0.00	10.56
		Mmin	0.0	-52.8	1.000	0.600	0.550	779.17	0.00	23.17
		Qmax	0.0	-50.4	1.000	0.600	0.550	779.17	0.00	22.03
		Qmin	0.0	-46.8	1.000	0.600	0.550	779.17	0.00	20.37
	11	Nmax	0.0	-24.3	1.000	0.600	0.550	779.17	0.00	10.27
		Nmin	0.0	-52.4	1.000	0.600	0.550	779.17	0.00	22.96
		Mmax	0.0	-24.3	1.000	0.600	0.550	779.17	0.00	10.27
		Mmin	0.0	-52.4	1.000	0.600	0.550	779.17	0.00	22.96
		Qmax	0.0	-50.5	1.000	0.600	0.550	779.17	0.00	22.10
		Qmin	0.0	-46.1	1.000	0.600	0.550	779.17	0.00	20.06
11	11	Nmax	0.0	-24.3	1.000	0.600	0.550	779.17	0.00	10.27
		Nmin	0.0	-52.4	1.000	0.600	0.550	779.17	0.00	22.96
		Mmax	0.0	-24.3	1.000	0.600	0.550	779.17	0.00	10.27
		Mmin	0.0	-52.4	1.000	0.600	0.550	779.17	0.00	22.96
		Qmax	0.0	-50.5	1.000	0.600	0.550	779.17	0.00	22.10
		Qmin	0.0	-46.1	1.000	0.600	0.550	779.17	0.00	20.06
	12	Nmax	0.0	-23.4	1.000	0.600	0.550	779.17	0.00	9.89
		Nmin	0.0	-51.6	1.000	0.600	0.550	779.17	0.00	22.59
		Mmax	0.0	-23.4	1.000	0.600	0.550	779.17	0.00	9.89
		Mmin	0.0	-51.6	1.000	0.600	0.550	779.17	0.00	22.59
		Qmax	0.0	-50.3	1.000	0.600	0.550	779.17	0.00	22.01
		Qmin	0.0	-45.1	1.000	0.600	0.550	779.17	0.00	19.59
12	12	Nmax	0.0	-23.4	1.000	0.600	0.550	779.17	0.00	9.89
		Nmin	0.0	-51.6	1.000	0.600	0.550	779.17	0.00	22.59
		Mmax	0.0	-23.4	1.000	0.600	0.550	779.17	0.00	9.89
		Mmin	0.0	-51.6	1.000	0.600	0.550	779.17	0.00	22.59
		Qmax	0.0	-50.3	1.000	0.600	0.550	779.17	0.00	22.01
		Qmin	0.0	-45.1	1.000	0.600	0.550	779.17	0.00	19.59
	13	Nmax	0.0	-22.3	1.000	0.600	0.550	779.17	0.00	9.41
		Nmin	0.0	-50.3	1.000	0.600	0.550	779.17	0.00	21.98
		Mmax	0.0	-22.3	1.000	0.600	0.550	779.17	0.00	9.41
		Mmin	0.0	-50.3	1.000	0.600	0.550	779.17	0.00	21.98
		Qmax	0.0	-49.7	1.000	0.600	0.550	779.17	0.00	21.71
		Qmin	0.0	-43.7	1.000	0.600	0.550	779.17	0.00	18.92
13	13	Nmax	0.0	-43.7	1.000	0.500	0.450	637.50	0.00	23.86
		Nmin	0.0	-49.7	1.000	0.500	0.450	637.50	0.00	27.54
		Mmax	0.0	-22.3	1.000	0.500	0.450	637.50	0.00	11.67
		Mmin	0.0	-50.3	1.000	0.500	0.450	637.50	0.00	27.89
		Qmax	0.0	-22.3	1.000	0.500	0.450	637.50	0.00	11.67
		Qmin	0.0	-50.3	1.000	0.500	0.450	637.50	0.00	27.89
	15	Nmax	0.0	-30.8	1.000	0.500	0.450	637.50	0.00	16.35
		Nmin	0.0	-37.5	1.000	0.500	0.450	637.50	0.00	20.19
		Mmax	0.0	-15.6	1.000	0.500	0.450	637.50	0.00	8.05
		Mmin	0.0	-37.5	1.000	0.500	0.450	637.50	0.00	20.19
		Qmax	0.0	-15.6	1.000	0.500	0.450	637.50	0.00	8.05
		Qmin	0.0	-36.1	1.000	0.500	0.450	637.50	0.00	19.37

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES A AMBOS LADOS

FECHA: 24/11/2005

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
14	15	Nmax	0.0	-30.8	1.000	0.500	0.450	637.50	0.00	16.35
		Nmin	0.0	-37.5	1.000	0.500	0.450	637.50	0.00	20.19
		Mmax	0.0	-15.6	1.000	0.500	0.450	637.50	0.00	8.05
		Mmin	0.0	-37.5	1.000	0.500	0.450	637.50	0.00	20.19
		Qmax	0.0	-15.6	1.000	0.500	0.450	637.50	0.00	8.05
		Qmin	0.0	-36.1	1.000	0.500	0.450	637.50	0.00	19.38
	17	Nmax	0.0	-18.8	1.000	0.500	0.450	637.50	0.00	9.75
		Nmin	0.0	-25.5	1.000	0.500	0.450	637.50	0.00	13.41
		Mmax	0.0	-9.4	1.000	0.500	0.450	637.50	0.00	4.77
		Mmin	0.0	-25.5	1.000	0.500	0.450	637.50	0.00	13.41
		Qmax	0.0	-9.4	1.000	0.500	0.450	637.50	0.00	4.77
		Qmin	0.0	-22.5	1.000	0.500	0.450	637.50	0.00	11.74
15	17	Nmax	0.0	-18.8	1.000	0.500	0.450	637.50	0.00	9.75
		Nmin	0.0	-25.5	1.000	0.500	0.450	637.50	0.00	13.41
		Mmax	0.0	-9.4	1.000	0.500	0.450	637.50	0.00	4.77
		Mmin	0.0	-25.5	1.000	0.500	0.450	637.50	0.00	13.41
		Qmax	0.0	-9.4	1.000	0.500	0.450	637.50	0.00	4.77
		Qmin	0.0	-22.5	1.000	0.500	0.450	637.50	0.00	11.74
	19	Nmax	0.0	-7.7	1.000	0.500	0.450	637.50	0.00	3.92
		Nmin	0.0	-13.8	1.000	0.500	0.450	637.50	0.00	7.08
		Mmax	0.0	-3.6	1.000	0.500	0.450	637.50	0.00	1.81
		Mmin	0.0	-13.8	1.000	0.500	0.450	637.50	0.00	7.08
		Qmax	0.0	-3.6	1.000	0.500	0.450	637.50	0.00	1.81
		Qmin	0.0	-9.7	1.000	0.500	0.450	637.50	0.00	4.95
16	19	Nmax	0.0	-7.7	1.000	0.500	0.450	637.50	0.00	3.91
		Nmin	0.0	-13.8	1.000	0.500	0.450	637.50	0.00	7.08
		Mmax	0.0	-3.6	1.000	0.500	0.450	637.50	0.00	1.81
		Mmin	0.0	-13.8	1.000	0.500	0.450	637.50	0.00	7.08
		Qmax	0.0	-3.6	1.000	0.500	0.450	637.50	0.00	1.81
		Qmin	0.0	-9.7	1.000	0.500	0.450	637.50	0.00	4.94
	21	Nmax	2.5	0.0	1.000	0.500	0.450	637.50	1.24	0.00
		Nmin	1.7	-2.3	1.000	0.500	0.450	637.50	0.87	1.17
		Mmax	2.5	0.0	1.000	0.500	0.450	637.50	1.24	0.00
		Mmin	1.7	-2.3	1.000	0.500	0.450	637.50	0.87	1.17
		Qmax	1.7	0.0	1.000	0.500	0.450	637.50	0.87	0.00
		Qmin	1.7	-2.3	1.000	0.500	0.450	637.50	0.87	1.17
17	21	Nmax	2.5	0.0	1.000	0.500	0.450	637.50	1.24	0.00
		Nmin	1.7	-2.3	1.000	0.500	0.450	637.50	0.87	1.16
		Mmax	2.5	0.0	1.000	0.500	0.450	637.50	1.24	0.00
		Mmin	1.7	-2.3	1.000	0.500	0.450	637.50	0.87	1.16
		Qmax	1.7	0.0	1.000	0.500	0.450	637.50	0.87	0.00
		Qmin	1.7	-2.3	1.000	0.500	0.450	637.50	0.87	1.16
	23	Nmax	11.8	0.0	1.000	0.500	0.450	637.50	6.01	0.00
		Nmin	8.9	0.0	1.000	0.500	0.450	637.50	4.53	0.00
		Mmax	12.7	0.0	1.000	0.500	0.450	637.50	6.53	0.00
		Mmin	6.6	0.0	1.000	0.500	0.450	637.50	3.34	0.00
		Qmax	6.6	0.0	1.000	0.500	0.450	637.50	3.34	0.00
		Qmin	8.9	0.0	1.000	0.500	0.450	637.50	4.53	0.00
18	23	Nmax	11.8	0.0	1.000	0.500	0.450	637.50	6.01	0.00
		Nmin	8.9	0.0	1.000	0.500	0.450	637.50	4.53	0.00
		Mmax	12.7	0.0	1.000	0.500	0.450	637.50	6.53	0.00
		Mmin	6.6	0.0	1.000	0.500	0.450	637.50	3.34	0.00

ARMADOCAM_2060_1000_2m.xls PI CAMINO Kv=2060 Kh=1000 24/11/2005

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES A AMBOS LADOS

FECHA: 24/11/2005

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
		Qmax	6.6	0.0	1.000	0.500	0.450	637.50	3.34	0.00
		Qmin	8.9	0.0	1.000	0.500	0.450	637.50	4.53	0.00
	25	Nmax	27.6	0.0	1.000	0.500	0.450	637.50	14.56	0.00
		Nmin	28.8	0.0	1.000	0.500	0.450	637.50	15.26	0.00
		Mmax	31.0	0.0	1.000	0.500	0.450	637.50	16.48	0.00
		Mmin	14.9	0.0	1.000	0.500	0.450	637.50	7.64	0.00
		Qmax	14.9	0.0	1.000	0.500	0.450	637.50	7.64	0.00
		Qmin	28.8	0.0	1.000	0.500	0.450	637.50	15.26	0.00
19	25	Nmax	27.6	0.0	1.000	0.500	0.450	637.50	14.56	0.00
		Nmin	28.8	0.0	1.000	0.500	0.450	637.50	15.25	0.00
		Mmax	31.0	0.0	1.000	0.500	0.450	637.50	16.47	0.00
		Mmin	14.9	0.0	1.000	0.500	0.450	637.50	7.64	0.00
		Qmax	14.9	0.0	1.000	0.500	0.450	637.50	7.64	0.00
		Qmin	28.8	0.0	1.000	0.500	0.450	637.50	15.25	0.00
	27	Nmax	39.8	0.0	1.000	0.500	0.450	637.50	21.53	0.00
		Nmin	44.2	0.0	1.000	0.500	0.450	637.50	24.16	0.00
		Mmax	45.1	0.0	1.000	0.500	0.450	637.50	24.70	0.00
		Mmin	21.2	0.0	1.000	0.500	0.450	637.50	11.05	0.00
		Qmax	21.2	0.0	1.000	0.500	0.450	637.50	11.05	0.00
		Qmin	44.2	0.0	1.000	0.500	0.450	637.50	24.16	0.00
20	27	Nmax	39.8	0.0	1.000	0.500	0.450	637.50	21.53	0.00
		Nmin	44.2	0.0	1.000	0.500	0.450	637.50	24.16	0.00
		Mmax	45.0	0.0	1.000	0.500	0.450	637.50	24.68	0.00
		Mmin	21.2	0.0	1.000	0.500	0.450	637.50	11.05	0.00
		Qmax	21.2	0.0	1.000	0.500	0.450	637.50	11.05	0.00
		Qmin	44.2	0.0	1.000	0.500	0.450	637.50	24.16	0.00
	29	Nmax	48.3	0.0	1.000	0.500	0.450	637.50	26.65	0.00
		Nmin	54.9	0.0	1.000	0.500	0.450	637.50	30.83	0.00
		Mmax	54.9	0.0	1.000	0.500	0.450	637.50	30.83	0.00
		Mmin	25.6	0.0	1.000	0.500	0.450	637.50	13.47	0.00
		Qmax	25.6	0.0	1.000	0.500	0.450	637.50	13.47	0.00
		Qmin	54.9	0.0	1.000	0.500	0.450	637.50	30.83	0.00
21	29	Nmax	48.3	0.0	1.000	0.500	0.450	637.50	26.65	0.00
		Nmin	54.9	0.0	1.000	0.500	0.450	637.50	30.83	0.00
		Mmax	54.9	0.0	1.000	0.500	0.450	637.50	30.83	0.00
		Mmin	25.6	0.0	1.000	0.500	0.450	637.50	13.47	0.00
		Qmax	25.6	0.0	1.000	0.500	0.450	637.50	13.47	0.00
		Qmin	54.9	0.0	1.000	0.500	0.450	637.50	30.83	0.00
	31	Nmax	53.1	0.0	1.000	0.500	0.450	637.50	29.66	0.00
		Nmin	61.1	0.0	1.000	0.500	0.450	637.50	34.85	0.00
		Mmax	61.1	0.0	1.000	0.500	0.450	637.50	34.85	0.00
		Mmin	28.2	0.0	1.000	0.500	0.450	637.50	14.88	0.00
		Qmax	28.2	0.0	1.000	0.500	0.450	637.50	14.88	0.00
		Qmin	61.1	0.0	1.000	0.500	0.450	637.50	34.85	0.00
22	31	Nmax	53.1	0.0	1.000	0.500	0.450	637.50	29.66	0.00
		Nmin	61.1	0.0	1.000	0.500	0.450	637.50	34.85	0.00
		Mmax	61.1	0.0	1.000	0.500	0.450	637.50	34.85	0.00
		Mmin	28.2	0.0	1.000	0.500	0.450	637.50	14.88	0.00
		Qmax	28.2	0.0	1.000	0.500	0.450	637.50	14.88	0.00
		Qmin	61.1	0.0	1.000	0.500	0.450	637.50	34.85	0.00
	33	Nmax	54.3	0.0	1.000	0.500	0.450	637.50	30.41	0.00
		Nmin	62.7	0.0	1.000	0.500	0.450	637.50	35.92	0.00

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES A AMBOS LADOS

FECHA: 24/11/2005

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
		Mmax	62.7	0.0	1.000	0.500	0.450	637.50	35.92	0.00
		Mmin	28.7	0.0	1.000	0.500	0.450	637.50	15.21	0.00
		Qmax	61.8	0.0	1.000	0.500	0.450	637.50	35.32	0.00
		Qmin	28.7	0.0	1.000	0.500	0.450	637.50	15.21	0.00
23	33	Nmax	54.3	0.0	1.000	0.500	0.450	637.50	30.41	0.00
		Nmin	62.7	0.0	1.000	0.500	0.450	637.50	35.92	0.00
		Mmax	62.7	0.0	1.000	0.500	0.450	637.50	35.92	0.00
		Mmin	28.7	0.0	1.000	0.500	0.450	637.50	15.21	0.00
		Qmax	61.8	0.0	1.000	0.500	0.450	637.50	35.32	0.00
		Qmin	28.7	0.0	1.000	0.500	0.450	637.50	15.21	0.00
	35	Nmax	51.8	0.0	1.000	0.500	0.450	637.50	28.84	0.00
		Nmin	59.8	0.0	1.000	0.500	0.450	637.50	33.96	0.00
		Mmax	59.8	0.0	1.000	0.500	0.450	637.50	33.96	0.00
		Mmin	27.4	0.0	1.000	0.500	0.450	637.50	14.47	0.00
		Qmax	59.8	0.0	1.000	0.500	0.450	637.50	33.96	0.00
		Qmin	27.4	0.0	1.000	0.500	0.450	637.50	14.47	0.00
24	35	Nmax	51.8	0.0	1.000	0.500	0.450	637.50	28.84	0.00
		Nmin	59.8	0.0	1.000	0.500	0.450	637.50	33.96	0.00
		Mmax	59.8	0.0	1.000	0.500	0.450	637.50	33.96	0.00
		Mmin	27.4	0.0	1.000	0.500	0.450	637.50	14.47	0.00
		Qmax	59.8	0.0	1.000	0.500	0.450	637.50	33.96	0.00
		Qmin	27.4	0.0	1.000	0.500	0.450	637.50	14.47	0.00
	37	Nmax	45.6	0.0	1.000	0.500	0.450	637.50	25.05	0.00
		Nmin	52.2	0.0	1.000	0.500	0.450	637.50	29.12	0.00
		Mmax	52.2	0.0	1.000	0.500	0.450	637.50	29.12	0.00
		Mmin	24.2	0.0	1.000	0.500	0.450	637.50	12.68	0.00
		Qmax	52.2	0.0	1.000	0.500	0.450	637.50	29.12	0.00
		Qmin	24.2	0.0	1.000	0.500	0.450	637.50	12.68	0.00
25	37	Nmax	45.6	0.0	1.000	0.500	0.450	637.50	25.05	0.00
		Nmin	52.2	0.0	1.000	0.500	0.450	637.50	29.12	0.00
		Mmax	52.2	0.0	1.000	0.500	0.450	637.50	29.12	0.00
		Mmin	24.2	0.0	1.000	0.500	0.450	637.50	12.68	0.00
		Qmax	52.2	0.0	1.000	0.500	0.450	637.50	29.12	0.00
		Qmin	24.2	0.0	1.000	0.500	0.450	637.50	12.68	0.00
	39	Nmax	35.8	0.0	1.000	0.500	0.450	637.50	19.22	0.00
		Nmin	40.1	0.0	1.000	0.500	0.450	637.50	21.73	0.00
		Mmax	40.7	0.0	1.000	0.500	0.450	637.50	22.06	0.00
		Mmin	19.0	0.0	1.000	0.500	0.450	637.50	9.87	0.00
		Qmax	40.1	0.0	1.000	0.500	0.450	637.50	21.73	0.00
		Qmin	19.0	0.0	1.000	0.500	0.450	637.50	9.87	0.00
26	39	Nmax	35.8	0.0	1.000	0.500	0.450	637.50	19.22	0.00
		Nmin	40.1	0.0	1.000	0.500	0.450	637.50	21.73	0.00
		Mmax	40.7	0.0	1.000	0.500	0.450	637.50	22.06	0.00
		Mmin	19.0	0.0	1.000	0.500	0.450	637.50	9.87	0.00
		Qmax	40.1	0.0	1.000	0.500	0.450	637.50	21.73	0.00
		Qmin	19.0	0.0	1.000	0.500	0.450	637.50	9.87	0.00
	41	Nmax	22.3	0.0	1.000	0.500	0.450	637.50	11.66	0.00
		Nmin	23.4	0.0	1.000	0.500	0.450	637.50	12.25	0.00
		Mmax	25.2	0.0	1.000	0.500	0.450	637.50	13.21	0.00
		Mmin	11.9	0.0	1.000	0.500	0.450	637.50	6.11	0.00
		Qmax	23.4	0.0	1.000	0.500	0.450	637.50	12.25	0.00
		Qmin	11.9	0.0	1.000	0.500	0.450	637.50	6.11	0.00

ARMADOCAM_2060_1000_2m.xls PI CAMINO 24/11/2005
Kv=2060 Kh=1000

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES A AMBOS LADOS

FECHA: 24/11/2005

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
27	41	Nmax	22.3	0.0	1.000	0.500	0.450	637.50	11.66	0.00
		Nmin	23.4	0.0	1.000	0.500	0.450	637.50	12.25	0.00
		Mmax	25.2	0.0	1.000	0.500	0.450	637.50	13.21	0.00
		Mmin	11.9	0.0	1.000	0.500	0.450	637.50	6.11	0.00
		Qmax	23.4	0.0	1.000	0.500	0.450	637.50	12.25	0.00
		Qmin	11.9	0.0	1.000	0.500	0.450	637.50	6.11	0.00
	43	Nmax	5.2	0.0	1.000	0.500	0.450	637.50	2.62	0.00
		Nmin	3.0	0.0	1.000	0.500	0.450	637.50	1.50	0.00
		Mmax	5.4	0.0	1.000	0.500	0.450	637.50	2.75	0.00
		Mmin	3.0	0.0	1.000	0.500	0.450	637.50	1.50	0.00
		Qmax	3.0	0.0	1.000	0.500	0.450	637.50	1.50	0.00
		Qmin	3.0	0.0	1.000	0.500	0.450	637.50	1.50	0.00
28	43	Nmax	5.2	0.0	1.000	0.500	0.450	637.50	2.62	0.00
		Nmin	3.0	0.0	1.000	0.500	0.450	637.50	1.50	0.00
		Mmax	5.4	0.0	1.000	0.500	0.450	637.50	2.75	0.00
		Mmin	3.0	0.0	1.000	0.500	0.450	637.50	1.50	0.00
		Qmax	3.0	0.0	1.000	0.500	0.450	637.50	1.50	0.00
		Qmin	3.0	0.0	1.000	0.500	0.450	637.50	1.50	0.00
	45	Nmax	0.0	-4.8	1.000	0.500	0.450	637.50	0.00	2.41
		Nmin	0.0	-9.8	1.000	0.500	0.450	637.50	0.00	4.98
		Mmax	0.0	-2.3	1.000	0.500	0.450	637.50	0.00	1.13
		Mmin	0.0	-9.8	1.000	0.500	0.450	637.50	0.00	4.98
		Qmax	0.0	-9.8	1.000	0.500	0.450	637.50	0.00	4.98
		Qmin	0.0	-2.3	1.000	0.500	0.450	637.50	0.00	1.13
29	45	Nmax	0.0	-4.8	1.000	0.500	0.450	637.50	0.00	2.41
		Nmin	0.0	-9.8	1.000	0.500	0.450	637.50	0.00	4.99
		Mmax	0.0	-2.3	1.000	0.500	0.450	637.50	0.00	1.13
		Mmin	0.0	-9.8	1.000	0.500	0.450	637.50	0.00	4.99
		Qmax	0.0	-9.8	1.000	0.500	0.450	637.50	0.00	4.99
		Qmin	0.0	-2.3	1.000	0.500	0.450	637.50	0.00	1.13
	47	Nmax	0.0	-15.6	1.000	0.500	0.450	637.50	0.00	8.04
		Nmin	0.0	-21.9	1.000	0.500	0.450	637.50	0.00	11.43
		Mmax	0.0	-7.9	1.000	0.500	0.450	637.50	0.00	4.02
		Mmin	0.0	-21.9	1.000	0.500	0.450	637.50	0.00	11.43
		Qmax	0.0	-18.5	1.000	0.500	0.450	637.50	0.00	9.56
		Qmin	0.0	-7.9	1.000	0.500	0.450	637.50	0.00	4.02
30	47	Nmax	0.0	-15.6	1.000	0.500	0.450	637.50	0.00	8.05
		Nmin	0.0	-21.9	1.000	0.500	0.450	637.50	0.00	11.44
		Mmax	0.0	-7.9	1.000	0.500	0.450	637.50	0.00	4.02
		Mmin	0.0	-21.9	1.000	0.500	0.450	637.50	0.00	11.44
		Qmax	0.0	-18.5	1.000	0.500	0.450	637.50	0.00	9.57
		Qmin	0.0	-7.9	1.000	0.500	0.450	637.50	0.00	4.02
	49	Nmax	0.0	-27.4	1.000	0.500	0.450	637.50	0.00	14.43
		Nmin	0.0	-34.3	1.000	0.500	0.450	637.50	0.00	18.37
		Mmax	0.0	-14.1	1.000	0.500	0.450	637.50	0.00	7.23
		Mmin	0.0	-34.3	1.000	0.500	0.450	637.50	0.00	18.37
		Qmax	0.0	-32.0	1.000	0.500	0.450	637.50	0.00	17.03
		Qmin	0.0	-14.1	1.000	0.500	0.450	637.50	0.00	7.23
31	49	Nmax	0.0	-27.4	1.000	0.500	0.450	637.50	0.00	14.43
		Nmin	0.0	-34.3	1.000	0.500	0.450	637.50	0.00	18.37
		Mmax	0.0	-14.1	1.000	0.500	0.450	637.50	0.00	7.23
		Mmin	0.0	-34.3	1.000	0.500	0.450	637.50	0.00	18.37

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES A AMBOS LADOS

FECHA: 24/11/2005

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
		Qmax	0.0	-32.0	1.000	0.500	0.450	637.50	0.00	17.03
		Qmin	0.0	-14.1	1.000	0.500	0.450	637.50	0.00	7.23
	51	Nmax	0.0	-40.0	1.000	0.500	0.450	637.50	0.00	21.68
		Nmin	0.0	-47.0	1.000	0.500	0.450	637.50	0.00	25.86
		Mmax	0.0	-20.7	1.000	0.500	0.450	637.50	0.00	10.78
		Mmin	0.0	-47.0	1.000	0.500	0.450	637.50	0.00	25.86
		Qmax	0.0	-46.3	1.000	0.500	0.450	637.50	0.00	25.45
		Qmin	0.0	-20.7	1.000	0.500	0.450	637.50	0.00	10.78
32	51	Nmax	0.0	-40.0	1.000	0.500	0.450	637.50	0.00	21.68
		Nmin	0.0	-47.0	1.000	0.500	0.450	637.50	0.00	25.86
		Mmax	0.0	-20.7	1.000	0.500	0.450	637.50	0.00	10.78
		Mmin	0.0	-47.0	1.000	0.500	0.450	637.50	0.00	25.86
		Qmax	0.0	-46.3	1.000	0.500	0.450	637.50	0.00	25.45
		Qmin	0.0	-20.7	1.000	0.500	0.450	637.50	0.00	10.78
	64	Nmax	0.0	-53.6	1.000	0.500	0.450	637.50	0.00	29.96
		Nmin	0.0	-59.9	1.000	0.500	0.450	637.50	0.00	34.03
		Mmax	0.0	-27.8	1.000	0.500	0.450	637.50	0.00	14.67
		Mmin	0.0	-61.2	1.000	0.500	0.450	637.50	0.00	34.93
		Qmax	0.0	-61.2	1.000	0.500	0.450	637.50	0.00	34.93
		Qmin	0.0	-27.8	1.000	0.500	0.450	637.50	0.00	14.67
33	1	Nmax	46.4	0.0	1.000	0.600	0.550	779.17	20.20	0.00
		Nmin	29.8	0.0	1.000	0.600	0.550	779.17	12.67	0.00
		Mmax	54.0	0.0	1.000	0.600	0.550	779.17	23.73	0.00
		Mmin	29.8	0.0	1.000	0.600	0.550	779.17	12.67	0.00
		Qmax	54.0	0.0	1.000	0.600	0.550	779.17	23.73	0.00
		Qmin	29.8	0.0	1.000	0.600	0.550	779.17	12.67	0.00
	14	Nmax	32.5	0.0	1.000	0.600	0.550	779.17	13.89	0.00
		Nmin	21.1	0.0	1.000	0.600	0.550	779.17	8.88	0.00
		Mmax	38.0	0.0	1.000	0.600	0.550	779.17	16.34	0.00
		Mmin	21.1	0.0	1.000	0.600	0.550	779.17	8.88	0.00
		Qmax	38.0	0.0	1.000	0.600	0.550	779.17	16.34	0.00
		Qmin	21.1	0.0	1.000	0.600	0.550	779.17	8.88	0.00
34	14	Nmax	32.5	0.0	1.000	0.600	0.550	779.17	13.89	0.00
		Nmin	21.1	0.0	1.000	0.600	0.550	779.17	8.88	0.00
		Mmax	38.0	0.0	1.000	0.600	0.550	779.17	16.34	0.00
		Mmin	21.1	0.0	1.000	0.600	0.550	779.17	8.88	0.00
		Qmax	38.0	0.0	1.000	0.600	0.550	779.17	16.34	0.00
		Qmin	21.1	0.0	1.000	0.600	0.550	779.17	8.88	0.00
	16	Nmax	19.7	0.0	1.000	0.600	0.550	779.17	8.26	0.00
		Nmin	13.1	0.0	1.000	0.600	0.550	779.17	5.44	0.00
		Mmax	23.2	0.0	1.000	0.600	0.550	779.17	9.79	0.00
		Mmin	13.1	0.0	1.000	0.600	0.550	779.17	5.44	0.00
		Qmax	23.2	0.0	1.000	0.600	0.550	779.17	9.79	0.00
		Qmin	13.1	0.0	1.000	0.600	0.550	779.17	5.44	0.00
35	16	Nmax	19.7	0.0	1.000	0.600	0.550	779.17	8.27	0.00
		Nmin	13.1	0.0	1.000	0.600	0.550	779.17	5.45	0.00
		Mmax	23.2	0.0	1.000	0.600	0.550	779.17	9.80	0.00
		Mmin	13.1	0.0	1.000	0.600	0.550	779.17	5.45	0.00
		Qmax	23.2	0.0	1.000	0.600	0.550	779.17	9.80	0.00
		Qmin	13.1	0.0	1.000	0.600	0.550	779.17	5.45	0.00
	18	Nmax	7.8	0.0	1.000	0.600	0.550	779.17	3.22	0.00
		Nmin	5.6	0.0	1.000	0.600	0.550	779.17	2.33	0.00

ARMADOCAM_2060_1000_2m.xls PI CAMINO Kv=2060 Kh=1000 24/11/2005

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES A AMBOS LADOS

FECHA: 24/11/2005

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
		Mmax	9.6	0.0	1.000	0.600	0.550	779.17	3.97	0.00
		Mmin	5.6	0.0	1.000	0.600	0.550	779.17	2.33	0.00
		Qmax	9.6	0.0	1.000	0.600	0.550	779.17	3.97	0.00
		Qmin	5.6	0.0	1.000	0.600	0.550	779.17	2.33	0.00
36	18	Nmax	7.8	0.0	1.000	0.600	0.550	779.17	3.22	0.00
		Nmin	5.6	0.0	1.000	0.600	0.550	779.17	2.33	0.00
		Mmax	9.6	0.0	1.000	0.600	0.550	779.17	3.96	0.00
		Mmin	5.6	0.0	1.000	0.600	0.550	779.17	2.33	0.00
		Qmax	9.6	0.0	1.000	0.600	0.550	779.17	3.96	0.00
		Qmin	5.6	0.0	1.000	0.600	0.550	779.17	2.33	0.00
	20	Nmax	0.0	-3.1	1.000	0.600	0.550	779.17	0.00	1.29
		Nmin	0.0	-1.2	1.000	0.600	0.550	779.17	0.00	0.48
		Mmax	0.0	-1.2	1.000	0.600	0.550	779.17	0.00	0.48
		Mmin	0.0	-3.1	1.000	0.600	0.550	779.17	0.00	1.29
		Qmax	0.0	-3.0	1.000	0.600	0.550	779.17	0.00	1.22
		Qmin	0.0	-1.2	1.000	0.600	0.550	779.17	0.00	0.48
37	20	Nmax	0.0	-3.1	1.000	0.600	0.550	779.17	0.00	1.29
		Nmin	0.0	-1.2	1.000	0.600	0.550	779.17	0.00	0.48
		Mmax	0.0	-1.2	1.000	0.600	0.550	779.17	0.00	0.48
		Mmin	0.0	-3.1	1.000	0.600	0.550	779.17	0.00	1.29
		Qmax	0.0	-3.0	1.000	0.600	0.550	779.17	0.00	1.22
		Qmin	0.0	-1.2	1.000	0.600	0.550	779.17	0.00	0.48
	22	Nmax	0.0	-13.1	1.000	0.600	0.550	779.17	0.00	5.46
		Nmin	0.0	-7.4	1.000	0.600	0.550	779.17	0.00	3.05
		Mmax	0.0	-7.4	1.000	0.600	0.550	779.17	0.00	3.05
		Mmin	0.0	-14.4	1.000	0.600	0.550	779.17	0.00	6.01
		Qmax	0.0	-14.4	1.000	0.600	0.550	779.17	0.00	6.01
		Qmin	0.0	-7.4	1.000	0.600	0.550	779.17	0.00	3.05
38	22	Nmax	0.0	-13.1	1.000	0.600	0.550	779.17	0.00	5.46
		Nmin	0.0	-7.4	1.000	0.600	0.550	779.17	0.00	3.05
		Mmax	0.0	-7.4	1.000	0.600	0.550	779.17	0.00	3.05
		Mmin	0.0	-14.4	1.000	0.600	0.550	779.17	0.00	6.01
		Qmax	0.0	-14.4	1.000	0.600	0.550	779.17	0.00	6.01
		Qmin	0.0	-7.4	1.000	0.600	0.550	779.17	0.00	3.05
	24	Nmax	0.0	-30.3	1.000	0.600	0.550	779.17	0.00	12.88
		Nmin	0.0	-18.0	1.000	0.600	0.550	779.17	0.00	7.55
		Mmax	0.0	-18.0	1.000	0.600	0.550	779.17	0.00	7.55
		Mmin	0.0	-34.1	1.000	0.600	0.550	779.17	0.00	14.57
		Qmax	0.0	-34.1	1.000	0.600	0.550	779.17	0.00	14.57
		Qmin	0.0	-18.0	1.000	0.600	0.550	779.17	0.00	7.55
39	24	Nmax	0.0	-30.3	1.000	0.600	0.550	779.17	0.00	12.88
		Nmin	0.0	-18.0	1.000	0.600	0.550	779.17	0.00	7.55
		Mmax	0.0	-18.0	1.000	0.600	0.550	779.17	0.00	7.55
		Mmin	0.0	-34.1	1.000	0.600	0.550	779.17	0.00	14.57
		Qmax	0.0	-34.1	1.000	0.600	0.550	779.17	0.00	14.57
		Qmin	0.0	-18.0	1.000	0.600	0.550	779.17	0.00	7.55
	26	Nmax	0.0	-43.9	1.000	0.600	0.550	779.17	0.00	19.04
		Nmin	0.0	-26.4	1.000	0.600	0.550	779.17	0.00	11.20
		Mmax	0.0	-26.4	1.000	0.600	0.550	779.17	0.00	11.20
		Mmin	0.0	-49.7	1.000	0.600	0.550	779.17	0.00	21.70
		Qmax	0.0	-49.7	1.000	0.600	0.550	779.17	0.00	21.70
		Qmin	0.0	-26.4	1.000	0.600	0.550	779.17	0.00	11.20

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES A AMBOS LADOS

FECHA: 24/11/2005

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
40	26	Nmax	0.0	-43.9	1.000	0.600	0.550	779.17	0.00	19.04
		Nmin	0.0	-26.4	1.000	0.600	0.550	779.17	0.00	11.20
		Mmax	0.0	-26.4	1.000	0.600	0.550	779.17	0.00	11.20
		Mmin	0.0	-49.7	1.000	0.600	0.550	779.17	0.00	21.70
		Qmax	0.0	-49.7	1.000	0.600	0.550	779.17	0.00	21.70
		Qmin	0.0	-26.4	1.000	0.600	0.550	779.17	0.00	11.20
	28	Nmax	0.0	-54.2	1.000	0.600	0.550	779.17	0.00	23.84
		Nmin	0.0	-32.8	1.000	0.600	0.550	779.17	0.00	13.98
		Mmax	0.0	-32.8	1.000	0.600	0.550	779.17	0.00	13.98
		Mmin	0.0	-61.4	1.000	0.600	0.550	779.17	0.00	27.28
		Qmax	0.0	-61.4	1.000	0.600	0.550	779.17	0.00	27.28
		Qmin	0.0	-32.8	1.000	0.600	0.550	779.17	0.00	13.98
41	28	Nmax	0.0	-54.2	1.000	0.600	0.550	779.17	0.00	23.84
		Nmin	0.0	-32.8	1.000	0.600	0.550	779.17	0.00	13.98
		Mmax	0.0	-32.8	1.000	0.600	0.550	779.17	0.00	13.98
		Mmin	0.0	-61.4	1.000	0.600	0.550	779.17	0.00	27.28
		Qmax	0.0	-61.4	1.000	0.600	0.550	779.17	0.00	27.28
		Qmin	0.0	-32.8	1.000	0.600	0.550	779.17	0.00	13.98
	30	Nmax	0.0	-61.2	1.000	0.600	0.550	779.17	0.00	27.20
		Nmin	0.0	-37.0	1.000	0.600	0.550	779.17	0.00	15.87
		Mmax	0.0	-37.0	1.000	0.600	0.550	779.17	0.00	15.87
		Mmin	0.0	-69.3	1.000	0.600	0.550	779.17	0.00	31.18
		Qmax	0.0	-69.3	1.000	0.600	0.550	779.17	0.00	31.18
		Qmin	0.0	-37.0	1.000	0.600	0.550	779.17	0.00	15.87
42	30	Nmax	0.0	-61.2	1.000	0.600	0.550	779.17	0.00	27.20
		Nmin	0.0	-37.0	1.000	0.600	0.550	779.17	0.00	15.87
		Mmax	0.0	-37.0	1.000	0.600	0.550	779.17	0.00	15.87
		Mmin	0.0	-69.3	1.000	0.600	0.550	779.17	0.00	31.18
		Qmax	0.0	-69.3	1.000	0.600	0.550	779.17	0.00	31.18
		Qmin	0.0	-37.0	1.000	0.600	0.550	779.17	0.00	15.87
	32	Nmax	0.0	-65.0	1.000	0.600	0.550	779.17	0.00	29.04
		Nmin	0.0	-39.1	1.000	0.600	0.550	779.17	0.00	16.85
		Mmax	0.0	-39.1	1.000	0.600	0.550	779.17	0.00	16.85
		Mmin	0.0	-73.5	1.000	0.600	0.550	779.17	0.00	33.28
		Qmax	0.0	-73.5	1.000	0.600	0.550	779.17	0.00	33.28
		Qmin	0.0	-39.1	1.000	0.600	0.550	779.17	0.00	16.85
43	32	Nmax	0.0	-65.0	1.000	0.600	0.550	779.17	0.00	29.04
		Nmin	0.0	-39.1	1.000	0.600	0.550	779.17	0.00	16.85
		Mmax	0.0	-39.1	1.000	0.600	0.550	779.17	0.00	16.85
		Mmin	0.0	-73.5	1.000	0.600	0.550	779.17	0.00	33.27
		Qmax	0.0	-65.0	1.000	0.600	0.550	779.17	0.00	29.04
		Qmin	0.0	-39.1	1.000	0.600	0.550	779.17	0.00	16.85
	34	Nmax	0.0	-65.5	1.000	0.600	0.550	779.17	0.00	29.27
		Nmin	0.0	-39.2	1.000	0.600	0.550	779.17	0.00	16.90
		Mmax	0.0	-39.2	1.000	0.600	0.550	779.17	0.00	16.90
		Mmin	0.0	-73.9	1.000	0.600	0.550	779.17	0.00	33.48
		Qmax	0.0	-65.5	1.000	0.600	0.550	779.17	0.00	29.27
		Qmin	0.0	-39.2	1.000	0.600	0.550	779.17	0.00	16.90
44	34	Nmax	0.0	-65.4	1.000	0.600	0.550	779.17	0.00	29.26
		Nmin	0.0	-39.2	1.000	0.600	0.550	779.17	0.00	16.90
		Mmax	0.0	-39.2	1.000	0.600	0.550	779.17	0.00	16.90
		Mmin	0.0	-73.9	1.000	0.600	0.550	779.17	0.00	33.47

ARMADOCAM_2060_1000_2m.xls PI CAMINO Kv=2060 Kh=1000 24/11/2005

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES A AMBOS LADOS

FECHA: 24/11/2005

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
		Qmax	0.0	-39.2	1.000	0.600	0.550	779.17	0.00	16.90
		Qmin	0.0	-73.9	1.000	0.600	0.550	779.17	0.00	33.47
	36	Nmax	0.0	-62.5	1.000	0.600	0.550	779.17	0.00	27.82
		Nmin	0.0	-37.2	1.000	0.600	0.550	779.17	0.00	15.98
		Mmax	0.0	-37.2	1.000	0.600	0.550	779.17	0.00	15.98
		Mmin	0.0	-70.3	1.000	0.600	0.550	779.17	0.00	31.69
		Qmax	0.0	-37.2	1.000	0.600	0.550	779.17	0.00	15.98
		Qmin	0.0	-70.3	1.000	0.600	0.550	779.17	0.00	31.69
45	36	Nmax	0.0	-62.5	1.000	0.600	0.550	779.17	0.00	27.82
		Nmin	0.0	-37.2	1.000	0.600	0.550	779.17	0.00	15.98
		Mmax	0.0	-37.2	1.000	0.600	0.550	779.17	0.00	15.98
		Mmin	0.0	-70.3	1.000	0.600	0.550	779.17	0.00	31.69
		Qmax	0.0	-37.2	1.000	0.600	0.550	779.17	0.00	15.98
		Qmin	0.0	-70.3	1.000	0.600	0.550	779.17	0.00	31.69
	38	Nmax	0.0	-55.9	1.000	0.600	0.550	779.17	0.00	24.64
		Nmin	0.0	-32.9	1.000	0.600	0.550	779.17	0.00	14.04
		Mmax	0.0	-32.9	1.000	0.600	0.550	779.17	0.00	14.04
		Mmin	0.0	-62.6	1.000	0.600	0.550	779.17	0.00	27.87
		Qmax	0.0	-32.9	1.000	0.600	0.550	779.17	0.00	14.04
		Qmin	0.0	-62.6	1.000	0.600	0.550	779.17	0.00	27.87
46	38	Nmax	0.0	-55.9	1.000	0.600	0.550	779.17	0.00	24.65
		Nmin	0.0	-32.9	1.000	0.600	0.550	779.17	0.00	14.05
		Mmax	0.0	-32.9	1.000	0.600	0.550	779.17	0.00	14.05
		Mmin	0.0	-62.6	1.000	0.600	0.550	779.17	0.00	27.88
		Qmax	0.0	-32.9	1.000	0.600	0.550	779.17	0.00	14.05
		Qmin	0.0	-62.6	1.000	0.600	0.550	779.17	0.00	27.88
	40	Nmax	0.0	-45.4	1.000	0.600	0.550	779.17	0.00	19.71
		Nmin	0.0	-26.1	1.000	0.600	0.550	779.17	0.00	11.07
		Mmax	0.0	-26.1	1.000	0.600	0.550	779.17	0.00	11.07
		Mmin	0.0	-50.4	1.000	0.600	0.550	779.17	0.00	22.05
		Qmax	0.0	-26.1	1.000	0.600	0.550	779.17	0.00	11.07
		Qmin	0.0	-50.4	1.000	0.600	0.550	779.17	0.00	22.05
47	40	Nmax	0.0	-45.4	1.000	0.600	0.550	779.17	0.00	19.71
		Nmin	0.0	-26.1	1.000	0.600	0.550	779.17	0.00	11.07
		Mmax	0.0	-26.1	1.000	0.600	0.550	779.17	0.00	11.07
		Mmin	0.0	-50.4	1.000	0.600	0.550	779.17	0.00	22.05
		Qmax	0.0	-26.1	1.000	0.600	0.550	779.17	0.00	11.07
		Qmin	0.0	-50.4	1.000	0.600	0.550	779.17	0.00	22.05
	42	Nmax	0.0	-30.6	1.000	0.600	0.550	779.17	0.00	13.04
		Nmin	0.0	-16.8	1.000	0.600	0.550	779.17	0.00	7.02
		Mmax	0.0	-16.8	1.000	0.600	0.550	779.17	0.00	7.02
		Mmin	0.0	-33.3	1.000	0.600	0.550	779.17	0.00	14.25
		Qmax	0.0	-16.8	1.000	0.600	0.550	779.17	0.00	7.02
		Qmin	0.0	-33.3	1.000	0.600	0.550	779.17	0.00	14.25
48	42	Nmax	0.0	-30.6	1.000	0.600	0.550	779.17	0.00	13.04
		Nmin	0.0	-16.8	1.000	0.600	0.550	779.17	0.00	7.02
		Mmax	0.0	-16.8	1.000	0.600	0.550	779.17	0.00	7.02
		Mmin	0.0	-33.3	1.000	0.600	0.550	779.17	0.00	14.25
		Qmax	0.0	-16.8	1.000	0.600	0.550	779.17	0.00	7.02
		Qmin	0.0	-33.3	1.000	0.600	0.550	779.17	0.00	14.25
	44	Nmax	0.0	-21.5	1.000	0.600	0.550	779.17	0.00	9.04
		Nmin	0.0	-11.0	1.000	0.600	0.550	779.17	0.00	4.58

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES A AMBOS LADOS

FECHA: 24/11/2005

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
		Mmax	0.0	-11.0	1.000	0.600	0.550	779.17	0.00	4.58
		Mmin	0.0	-22.8	1.000	0.600	0.550	779.17	0.00	9.61
		Qmax	0.0	-11.0	1.000	0.600	0.550	779.17	0.00	4.58
		Qmin	0.0	-22.8	1.000	0.600	0.550	779.17	0.00	9.61
49	44	Nmax	0.0	-21.5	1.000	0.600	0.550	779.17	0.00	9.04
		Nmin	0.0	-11.0	1.000	0.600	0.550	779.17	0.00	4.58
		Mmax	0.0	-11.0	1.000	0.600	0.550	779.17	0.00	4.58
		Mmin	0.0	-22.8	1.000	0.600	0.550	779.17	0.00	9.60
		Qmax	0.0	-11.0	1.000	0.600	0.550	779.17	0.00	4.58
		Qmin	0.0	-22.8	1.000	0.600	0.550	779.17	0.00	9.60
	46	Nmax	0.0	-11.1	1.000	0.600	0.550	779.17	0.00	4.62
		Nmin	0.0	-4.5	1.000	0.600	0.550	779.17	0.00	1.86
		Mmax	0.0	-4.5	1.000	0.600	0.550	779.17	0.00	1.86
		Mmin	0.0	-11.1	1.000	0.600	0.550	779.17	0.00	4.62
		Qmax	0.0	-4.5	1.000	0.600	0.550	779.17	0.00	1.86
		Qmin	0.0	-10.9	1.000	0.600	0.550	779.17	0.00	4.52
50	46	Nmax	0.0	-11.1	1.000	0.600	0.550	779.17	0.00	4.62
		Nmin	0.0	-4.5	1.000	0.600	0.550	779.17	0.00	1.86
		Mmax	0.0	-4.5	1.000	0.600	0.550	779.17	0.00	1.86
		Mmin	0.0	-11.1	1.000	0.600	0.550	779.17	0.00	4.62
		Qmax	0.0	-4.5	1.000	0.600	0.550	779.17	0.00	1.86
		Qmin	0.0	-10.9	1.000	0.600	0.550	779.17	0.00	4.52
	48	Nmax	2.7	0.0	1.000	0.600	0.550	779.17	1.13	0.00
		Nmin	2.7	0.0	1.000	0.600	0.550	779.17	1.13	0.00
		Mmax	3.2	0.0	1.000	0.600	0.550	779.17	1.31	0.00
		Mmin	2.7	0.0	1.000	0.600	0.550	779.17	1.13	0.00
		Qmax	2.7	0.0	1.000	0.600	0.550	779.17	1.13	0.00
		Qmin	2.7	0.0	1.000	0.600	0.550	779.17	1.13	0.00
51	48	Nmax	2.7	0.0	1.000	0.600	0.550	779.17	1.13	0.00
		Nmin	2.7	0.0	1.000	0.600	0.550	779.17	1.13	0.00
		Mmax	3.2	0.0	1.000	0.600	0.550	779.17	1.31	0.00
		Mmin	2.7	0.0	1.000	0.600	0.550	779.17	1.13	0.00
		Qmax	2.7	0.0	1.000	0.600	0.550	779.17	1.13	0.00
		Qmin	2.7	0.0	1.000	0.600	0.550	779.17	1.13	0.00
	50	Nmax	13.5	0.0	1.000	0.600	0.550	779.17	5.61	0.00
		Nmin	10.9	0.0	1.000	0.600	0.550	779.17	4.51	0.00
		Mmax	17.4	0.0	1.000	0.600	0.550	779.17	7.28	0.00
		Mmin	10.9	0.0	1.000	0.600	0.550	779.17	4.51	0.00
		Qmax	10.9	0.0	1.000	0.600	0.550	779.17	4.51	0.00
		Qmin	17.4	0.0	1.000	0.600	0.550	779.17	7.28	0.00
52	50	Nmax	13.5	0.0	1.000	0.600	0.550	779.17	5.61	0.00
		Nmin	10.9	0.0	1.000	0.600	0.550	779.17	4.51	0.00
		Mmax	17.4	0.0	1.000	0.600	0.550	779.17	7.28	0.00
		Mmin	10.9	0.0	1.000	0.600	0.550	779.17	4.51	0.00
		Qmax	10.9	0.0	1.000	0.600	0.550	779.17	4.51	0.00
		Qmin	17.4	0.0	1.000	0.600	0.550	779.17	7.28	0.00
	52	Nmax	27.8	0.0	1.000	0.600	0.550	779.17	11.81	0.00
		Nmin	19.8	0.0	1.000	0.600	0.550	779.17	8.31	0.00
		Mmax	33.9	0.0	1.000	0.600	0.550	779.17	14.48	0.00
		Mmin	19.8	0.0	1.000	0.600	0.550	779.17	8.31	0.00
		Qmax	19.8	0.0	1.000	0.600	0.550	779.17	8.31	0.00
		Qmin	33.9	0.0	1.000	0.600	0.550	779.17	14.48	0.00

ARMADOCAM_2060_1000_2m.xls PI CAMINO Kv=2060 Kh=1000 24/11/2005

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES A AMBOS LADOS

FECHA: 24/11/2005

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
53	52	Nmax	19.8	0.0	1.000	0.600	0.550	779.17	8.31	0.00
		Nmin	33.9	0.0	1.000	0.600	0.550	779.17	14.48	0.00
		Mmax	33.9	0.0	1.000	0.600	0.550	779.17	14.48	0.00
		Mmin	19.8	0.0	1.000	0.600	0.550	779.17	8.31	0.00
		Qmax	19.8	0.0	1.000	0.600	0.550	779.17	8.31	0.00
		Qmin	27.8	0.0	1.000	0.600	0.550	779.17	11.81	0.00
	53	Nmax	21.7	0.0	1.000	0.600	0.550	779.17	9.15	0.00
		Nmin	38.7	0.0	1.000	0.600	0.550	779.17	16.66	0.00
		Mmax	38.7	0.0	1.000	0.600	0.550	779.17	16.66	0.00
		Mmin	21.7	0.0	1.000	0.600	0.550	779.17	9.15	0.00
		Qmax	21.7	0.0	1.000	0.600	0.550	779.17	9.15	0.00
		Qmin	32.9	0.0	1.000	0.600	0.550	779.17	14.03	0.00
54	53	Nmax	21.7	0.0	1.000	0.600	0.550	779.17	9.15	0.00
		Nmin	38.7	0.0	1.000	0.600	0.550	779.17	16.66	0.00
		Mmax	38.7	0.0	1.000	0.600	0.550	779.17	16.66	0.00
		Mmin	21.7	0.0	1.000	0.600	0.550	779.17	9.15	0.00
		Qmax	21.7	0.0	1.000	0.600	0.550	779.17	9.15	0.00
		Qmin	32.9	0.0	1.000	0.600	0.550	779.17	14.03	0.00
	54	Nmax	23.6	0.0	1.000	0.600	0.550	779.17	9.96	0.00
		Nmin	43.4	0.0	1.000	0.600	0.550	779.17	18.80	0.00
		Mmax	43.4	0.0	1.000	0.600	0.550	779.17	18.80	0.00
		Mmin	23.6	0.0	1.000	0.600	0.550	779.17	9.96	0.00
		Qmax	23.6	0.0	1.000	0.600	0.550	779.17	9.96	0.00
		Qmin	37.8	0.0	1.000	0.600	0.550	779.17	16.24	0.00
55	54	Nmax	23.6	0.0	1.000	0.600	0.550	779.17	9.96	0.00
		Nmin	43.4	0.0	1.000	0.600	0.550	779.17	18.80	0.00
		Mmax	43.4	0.0	1.000	0.600	0.550	779.17	18.80	0.00
		Mmin	23.6	0.0	1.000	0.600	0.550	779.17	9.96	0.00
		Qmax	23.6	0.0	1.000	0.600	0.550	779.17	9.96	0.00
		Qmin	37.8	0.0	1.000	0.600	0.550	779.17	16.24	0.00
	55	Nmax	25.4	0.0	1.000	0.600	0.550	779.17	10.72	0.00
		Nmin	47.8	0.0	1.000	0.600	0.550	779.17	20.85	0.00
		Mmax	47.8	0.0	1.000	0.600	0.550	779.17	20.85	0.00
		Mmin	25.4	0.0	1.000	0.600	0.550	779.17	10.72	0.00
		Qmax	25.4	0.0	1.000	0.600	0.550	779.17	10.72	0.00
		Qmin	42.4	0.0	1.000	0.600	0.550	779.17	18.36	0.00
56	55	Nmax	25.4	0.0	1.000	0.600	0.550	779.17	10.73	0.00
		Nmin	47.9	0.0	1.000	0.600	0.550	779.17	20.86	0.00
		Mmax	47.9	0.0	1.000	0.600	0.550	779.17	20.86	0.00
		Mmin	25.4	0.0	1.000	0.600	0.550	779.17	10.73	0.00
		Qmax	25.4	0.0	1.000	0.600	0.550	779.17	10.73	0.00
		Qmin	42.5	0.0	1.000	0.600	0.550	779.17	18.36	0.00
	56	Nmax	26.9	0.0	1.000	0.600	0.550	779.17	11.39	0.00
		Nmin	51.9	0.0	1.000	0.600	0.550	779.17	22.73	0.00
		Mmax	51.9	0.0	1.000	0.600	0.550	779.17	22.73	0.00
		Mmin	26.9	0.0	1.000	0.600	0.550	779.17	11.39	0.00
		Qmax	26.9	0.0	1.000	0.600	0.550	779.17	11.39	0.00
		Qmin	46.7	0.0	1.000	0.600	0.550	779.17	20.33	0.00
57	56	Nmax	26.9	0.0	1.000	0.600	0.550	779.17	11.39	0.00
		Nmin	51.9	0.0	1.000	0.600	0.550	779.17	22.73	0.00
		Mmax	51.9	0.0	1.000	0.600	0.550	779.17	22.73	0.00
		Mmin	26.9	0.0	1.000	0.600	0.550	779.17	11.39	0.00

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES A AMBOS LADOS

FECHA: 24/11/2005

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
		Qmax	26.9	0.0	1.000	0.600	0.550	779.17	11.39	0.00
		Qmin	46.7	0.0	1.000	0.600	0.550	779.17	20.33	0.00
	57	Nmax	28.2	0.0	1.000	0.600	0.550	779.17	11.95	0.00
		Nmin	55.4	0.0	1.000	0.600	0.550	779.17	24.39	0.00
		Mmax	55.4	0.0	1.000	0.600	0.550	779.17	24.39	0.00
		Mmin	28.2	0.0	1.000	0.600	0.550	779.17	11.95	0.00
		Qmax	28.2	0.0	1.000	0.600	0.550	779.17	11.95	0.00
		Qmin	50.5	0.0	1.000	0.600	0.550	779.17	22.11	0.00
58	57	Nmax	28.2	0.0	1.000	0.600	0.550	779.17	11.95	0.00
		Nmin	55.4	0.0	1.000	0.600	0.550	779.17	24.39	0.00
		Mmax	55.4	0.0	1.000	0.600	0.550	779.17	24.39	0.00
		Mmin	28.2	0.0	1.000	0.600	0.550	779.17	11.95	0.00
		Qmax	28.2	0.0	1.000	0.600	0.550	779.17	11.95	0.00
		Qmin	50.5	0.0	1.000	0.600	0.550	779.17	22.11	0.00
	58	Nmax	29.1	0.0	1.000	0.600	0.550	779.17	12.38	0.00
		Nmin	58.3	0.0	1.000	0.600	0.550	779.17	25.80	0.00
		Mmax	58.3	0.0	1.000	0.600	0.550	779.17	25.80	0.00
		Mmin	29.1	0.0	1.000	0.600	0.550	779.17	12.38	0.00
		Qmax	29.1	0.0	1.000	0.600	0.550	779.17	12.38	0.00
		Qmin	53.8	0.0	1.000	0.600	0.550	779.17	23.65	0.00
59	58	Nmax	29.1	0.0	1.000	0.600	0.550	779.17	12.38	0.00
		Nmin	58.3	0.0	1.000	0.600	0.550	779.17	25.80	0.00
		Mmax	58.3	0.0	1.000	0.600	0.550	779.17	25.80	0.00
		Mmin	29.1	0.0	1.000	0.600	0.550	779.17	12.38	0.00
		Qmax	29.1	0.0	1.000	0.600	0.550	779.17	12.38	0.00
		Qmin	53.8	0.0	1.000	0.600	0.550	779.17	23.65	0.00
	59	Nmax	29.8	0.0	1.000	0.600	0.550	779.17	12.68	0.00
		Nmin	60.6	0.0	1.000	0.600	0.550	779.17	26.90	0.00
		Mmax	60.6	0.0	1.000	0.600	0.550	779.17	26.90	0.00
		Mmin	29.8	0.0	1.000	0.600	0.550	779.17	12.68	0.00
		Qmax	29.8	0.0	1.000	0.600	0.550	779.17	12.68	0.00
		Qmin	56.5	0.0	1.000	0.600	0.550	779.17	24.92	0.00
60	59	Nmax	29.8	0.0	1.000	0.600	0.550	779.17	12.68	0.00
		Nmin	60.6	0.0	1.000	0.600	0.550	779.17	26.90	0.00
		Mmax	60.6	0.0	1.000	0.600	0.550	779.17	26.90	0.00
		Mmin	29.8	0.0	1.000	0.600	0.550	779.17	12.68	0.00
		Qmax	29.8	0.0	1.000	0.600	0.550	779.17	12.68	0.00
		Qmin	56.5	0.0	1.000	0.600	0.550	779.17	24.92	0.00
	60	Nmax	30.1	0.0	1.000	0.600	0.550	779.17	12.82	0.00
		Nmin	62.2	0.0	1.000	0.600	0.550	779.17	27.67	0.00
		Mmax	62.2	0.0	1.000	0.600	0.550	779.17	27.67	0.00
		Mmin	30.1	0.0	1.000	0.600	0.550	779.17	12.82	0.00
		Qmax	30.1	0.0	1.000	0.600	0.550	779.17	12.82	0.00
		Qmin	58.5	0.0	1.000	0.600	0.550	779.17	25.90	0.00
61	60	Nmax	30.1	0.0	1.000	0.600	0.550	779.17	12.82	0.00
		Nmin	62.2	0.0	1.000	0.600	0.550	779.17	27.67	0.00
		Mmax	62.2	0.0	1.000	0.600	0.550	779.17	27.67	0.00
		Mmin	30.1	0.0	1.000	0.600	0.550	779.17	12.82	0.00
		Qmax	30.1	0.0	1.000	0.600	0.550	779.17	12.82	0.00
		Qmin	58.5	0.0	1.000	0.600	0.550	779.17	25.89	0.00
	61	Nmax	30.1	0.0	1.000	0.600	0.550	779.17	12.80	0.00
		Nmin	63.0	0.0	1.000	0.600	0.550	779.17	28.09	0.00

ARMADOCAM_2060_1000_2m.xls PI CAMINO Kv=2060 Kh=1000 24/11/2005

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES A AMBOS LADOS

FECHA: 24/11/2005

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
		Mmax	63.0	0.0	1.000	0.600	0.550	779.17	28.09	0.00
		Mmin	30.1	0.0	1.000	0.600	0.550	779.17	12.80	0.00
		Qmax	30.1	0.0	1.000	0.600	0.550	779.17	12.80	0.00
		Qmin	59.9	0.0	1.000	0.600	0.550	779.17	26.55	0.00
62	61	Nmax	30.1	0.0	1.000	0.600	0.550	779.17	12.80	0.00
		Nmin	63.0	0.0	1.000	0.600	0.550	779.17	28.08	0.00
		Mmax	63.0	0.0	1.000	0.600	0.550	779.17	28.08	0.00
		Mmin	30.1	0.0	1.000	0.600	0.550	779.17	12.80	0.00
		Qmax	30.1	0.0	1.000	0.600	0.550	779.17	12.80	0.00
		Qmin	59.9	0.0	1.000	0.600	0.550	779.17	26.55	0.00
	62	Nmax	29.7	0.0	1.000	0.600	0.550	779.17	12.62	0.00
		Nmin	63.1	0.0	1.000	0.600	0.550	779.17	28.13	0.00
		Mmax	63.1	0.0	1.000	0.600	0.550	779.17	28.13	0.00
		Mmin	29.7	0.0	1.000	0.600	0.550	779.17	12.62	0.00
		Qmax	29.7	0.0	1.000	0.600	0.550	779.17	12.62	0.00
		Qmin	60.5	0.0	1.000	0.600	0.550	779.17	26.86	0.00
63	62	Nmax	29.7	0.0	1.000	0.600	0.550	779.17	12.62	0.00
		Nmin	63.1	0.0	1.000	0.600	0.550	779.17	28.13	0.00
		Mmax	63.1	0.0	1.000	0.600	0.550	779.17	28.13	0.00
		Mmin	29.7	0.0	1.000	0.600	0.550	779.17	12.62	0.00
		Qmax	55.8	0.0	1.000	0.600	0.550	779.17	24.62	0.00
		Qmin	60.5	0.0	1.000	0.600	0.550	779.17	26.86	0.00
	63	Nmax	28.9	0.0	1.000	0.600	0.550	779.17	12.28	0.00
		Nmin	62.5	0.0	1.000	0.600	0.550	779.17	27.85	0.00
		Mmax	62.5	0.0	1.000	0.600	0.550	779.17	27.85	0.00
		Mmin	28.9	0.0	1.000	0.600	0.550	779.17	12.28	0.00
		Qmax	55.0	0.0	1.000	0.600	0.550	779.17	24.22	0.00
		Qmin	60.5	0.0	1.000	0.600	0.550	779.17	26.86	0.00
64	63	Nmax	28.9	0.0	1.000	0.600	0.550	779.17	12.28	0.00
		Nmin	62.5	0.0	1.000	0.600	0.550	779.17	27.85	0.00
		Mmax	62.5	0.0	1.000	0.600	0.550	779.17	27.85	0.00
		Mmin	28.9	0.0	1.000	0.600	0.550	779.17	12.28	0.00
		Qmax	55.0	0.0	1.000	0.600	0.550	779.17	24.22	0.00
		Qmin	60.5	0.0	1.000	0.600	0.550	779.17	26.86	0.00
	64	Nmax	27.8	0.0	1.000	0.600	0.550	779.17	11.79	0.00
		Nmin	61.2	0.0	1.000	0.600	0.550	779.17	27.22	0.00
		Mmax	61.2	0.0	1.000	0.600	0.550	779.17	27.22	0.00
		Mmin	27.8	0.0	1.000	0.600	0.550	779.17	11.79	0.00
		Qmax	53.6	0.0	1.000	0.600	0.550	779.17	23.53	0.00
		Qmin	59.9	0.0	1.000	0.600	0.550	779.17	26.55	0.00

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES EN UN SÓLO LADO

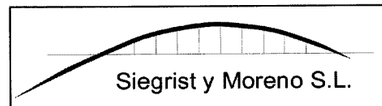
FECHA: 24/11/2005

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
1	1	Nmax	13.0	1.000	0.600	0.550	275.0	19.8	-	No necesita
		Nmin	18.4	1.000	0.600	0.550	275.0	24.2	-	No necesita
		Mmax	13.0	1.000	0.600	0.550	275.0	19.8	-	No necesita
		Mmin	18.4	1.000	0.600	0.550	275.0	24.2	-	No necesita
		Qmax	13.0	1.000	0.600	0.550	275.0	19.8	-	No necesita
		Qmin	18.4	1.000	0.600	0.550	275.0	24.2	-	No necesita
	2	Nmax	11.5	1.000	0.600	0.550	275.0	18.7	-	No necesita
		Nmin	16.9	1.000	0.600	0.550	275.0	23.1	-	No necesita
		Mmax	11.5	1.000	0.600	0.550	275.0	18.7	-	No necesita
		Mmin	16.9	1.000	0.600	0.550	275.0	23.1	-	No necesita
		Qmax	11.5	1.000	0.600	0.550	275.0	18.7	-	No necesita
		Qmin	16.9	1.000	0.600	0.550	275.0	23.1	-	No necesita
2	2	Nmax	10.8	1.000	0.600	0.550	275.0	18.7	-	No necesita
		Nmin	15.5	1.000	0.600	0.550	275.0	23.1	-	No necesita
		Mmax	10.8	1.000	0.600	0.550	275.0	18.7	-	No necesita
		Mmin	15.5	1.000	0.600	0.550	275.0	23.1	-	No necesita
		Qmax	10.8	1.000	0.600	0.550	275.0	18.7	-	No necesita
		Qmin	15.5	1.000	0.600	0.550	275.0	23.1	-	No necesita
	3	Nmax	9.4	1.000	0.600	0.550	275.0	17.7	-	No necesita
		Nmin	14.0	1.000	0.600	0.550	275.0	22.1	-	No necesita
		Mmax	9.4	1.000	0.600	0.550	275.0	17.7	-	No necesita
		Mmin	14.0	1.000	0.600	0.550	275.0	22.1	-	No necesita
		Qmax	9.4	1.000	0.600	0.550	275.0	17.7	-	No necesita
		Qmin	14.0	1.000	0.600	0.550	275.0	22.1	-	No necesita
3	3	Nmax	8.2	1.000	0.600	0.550	275.0	17.7	-	No necesita
		Nmin	11.6	1.000	0.600	0.550	275.0	22.1	-	No necesita
		Mmax	8.2	1.000	0.600	0.550	275.0	17.7	-	No necesita
		Mmin	11.6	1.000	0.600	0.550	275.0	22.1	-	No necesita
		Qmax	8.2	1.000	0.600	0.550	275.0	17.7	-	No necesita
		Qmin	11.6	1.000	0.600	0.550	275.0	22.1	-	No necesita
	4	Nmax	6.9	1.000	0.600	0.550	275.0	17.0	-	No necesita
		Nmin	10.2	1.000	0.600	0.550	275.0	21.4	-	No necesita
		Mmax	6.9	1.000	0.600	0.550	275.0	17.0	-	No necesita
		Mmin	10.2	1.000	0.600	0.550	275.0	21.4	-	No necesita
		Qmax	6.9	1.000	0.600	0.550	275.0	17.0	-	No necesita
		Qmin	10.2	1.000	0.600	0.550	275.0	21.4	-	No necesita
4	4	Nmax	5.5	1.000	0.600	0.550	275.0	17.0	-	No necesita
		Nmin	7.2	1.000	0.600	0.550	275.0	21.4	-	No necesita
		Mmax	5.5	1.000	0.600	0.550	275.0	17.0	-	No necesita
		Mmin	7.2	1.000	0.600	0.550	275.0	21.4	-	No necesita
		Qmax	5.5	1.000	0.600	0.550	275.0	17.0	-	No necesita
		Qmin	7.4	1.000	0.600	0.550	275.0	20.7	-	No necesita
	5	Nmax	4.3	1.000	0.600	0.550	275.0	16.4	-	No necesita
		Nmin	6.0	1.000	0.600	0.550	275.0	20.9	-	No necesita
		Mmax	4.3	1.000	0.600	0.550	275.0	16.4	-	No necesita
		Mmin	6.0	1.000	0.600	0.550	275.0	20.9	-	No necesita
		Qmax	4.3	1.000	0.600	0.550	275.0	16.4	-	No necesita
		Qmin	6.2	1.000	0.600	0.550	275.0	20.2	-	No necesita
5	5	Nmax	2.8	1.000	0.600	0.550	275.0	16.4	-	No necesita
		Nmin	2.8	1.000	0.600	0.550	275.0	20.9	-	No necesita
		Mmax	2.8	1.000	0.600	0.550	275.0	16.4	-	No necesita
		Mmin	2.8	1.000	0.600	0.550	275.0	20.9	-	No necesita

ARMADOCAM_2060_10000_1m.xls PI CAMINO Kv=2060 Kh=10000 24/11/2005



AVE CERVELLÓ
PI CAMINO
MUELLES EN UN SÓLO LADO

FECHA: 24/11/2005

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
		Qmax	2.8	1.000	0.600	0.550	275.0	20.1	-	No necesita
		Qmin	3.2	1.000	0.600	0.550	275.0	20.2	-	No necesita
	6	Nmax	1.6	1.000	0.600	0.550	275.0	16.2	-	No necesita
		Nmin	1.6	1.000	0.600	0.550	275.0	20.7	-	No necesita
		Mmax	1.6	1.000	0.600	0.550	275.0	16.2	-	No necesita
		Mmin	1.6	1.000	0.600	0.550	275.0	20.7	-	No necesita
		Qmax	1.6	1.000	0.600	0.550	275.0	20.0	-	No necesita
		Qmin	2.0	1.000	0.600	0.550	275.0	20.0	-	No necesita
6	6	Nmax	0.9	1.000	0.600	0.550	275.0	16.2	-	No necesita
		Nmin	2.0	1.000	0.600	0.550	275.0	20.7	-	No necesita
		Mmax	0.9	1.000	0.600	0.550	275.0	16.2	-	No necesita
		Mmin	2.0	1.000	0.600	0.550	275.0	20.7	-	No necesita
		Qmax	3.2	1.000	0.600	0.550	275.0	20.0	-	No necesita
		Qmin	0.9	1.000	0.600	0.550	275.0	16.2	-	No necesita
	7	Nmax	0.8	1.000	0.600	0.550	275.0	16.2	-	No necesita
		Nmin	3.1	1.000	0.600	0.550	275.0	20.9	-	No necesita
		Mmax	0.8	1.000	0.600	0.550	275.0	16.2	-	No necesita
		Mmin	3.1	1.000	0.600	0.550	275.0	20.9	-	No necesita
		Qmax	4.3	1.000	0.600	0.550	275.0	20.3	-	No necesita
		Qmin	0.8	1.000	0.600	0.550	275.0	16.2	-	No necesita
7	7	Nmax	1.9	1.000	0.600	0.550	275.0	16.2	-	No necesita
		Nmin	5.8	1.000	0.600	0.550	275.0	20.9	-	No necesita
		Mmax	1.9	1.000	0.600	0.550	275.0	16.2	-	No necesita
		Mmin	5.8	1.000	0.600	0.550	275.0	20.9	-	No necesita
		Qmax	6.7	1.000	0.600	0.550	275.0	20.3	-	No necesita
		Qmin	1.9	1.000	0.600	0.550	275.0	16.2	-	No necesita
	8	Nmax	2.9	1.000	0.600	0.550	275.0	16.5	-	No necesita
		Nmin	6.8	1.000	0.600	0.550	275.0	21.4	-	No necesita
		Mmax	2.9	1.000	0.600	0.550	275.0	16.5	-	No necesita
		Mmin	6.8	1.000	0.600	0.550	275.0	21.4	-	No necesita
		Qmax	7.7	1.000	0.600	0.550	275.0	20.9	-	No necesita
		Qmin	2.9	1.000	0.600	0.550	275.0	16.5	-	No necesita
8	8	Nmax	3.6	1.000	0.600	0.550	275.0	16.5	-	No necesita
		Nmin	9.0	1.000	0.600	0.550	275.0	21.4	-	No necesita
		Mmax	3.6	1.000	0.600	0.550	275.0	16.5	-	No necesita
		Mmin	9.0	1.000	0.600	0.550	275.0	21.4	-	No necesita
		Qmax	9.7	1.000	0.600	0.550	275.0	20.9	-	No necesita
		Qmin	3.6	1.000	0.600	0.550	275.0	16.5	-	No necesita
	9	Nmax	4.5	1.000	0.600	0.550	275.0	16.9	-	No necesita
		Nmin	9.9	1.000	0.600	0.550	275.0	22.0	-	No necesita
		Mmax	4.5	1.000	0.600	0.550	275.0	16.9	-	No necesita
		Mmin	9.9	1.000	0.600	0.550	275.0	22.0	-	No necesita
		Qmax	10.7	1.000	0.600	0.550	275.0	21.6	-	No necesita
		Qmin	4.5	1.000	0.600	0.550	275.0	16.9	-	No necesita
9	9	Nmax	4.7	1.000	0.600	0.550	275.0	16.9	-	No necesita
		Nmin	11.1	1.000	0.600	0.550	275.0	22.0	-	No necesita
		Mmax	4.7	1.000	0.600	0.550	275.0	16.9	-	No necesita
		Mmin	11.1	1.000	0.600	0.550	275.0	22.0	-	No necesita
		Qmax	11.7	1.000	0.600	0.550	275.0	21.6	-	No necesita
		Qmin	4.7	1.000	0.600	0.550	275.0	16.9	-	No necesita
	10	Nmax	5.5	1.000	0.600	0.550	275.0	17.5	-	No necesita
		Nmin	11.9	1.000	0.600	0.550	275.0	22.8	-	No necesita

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES EN UN SÓLO LADO

FECHA: 24/11/2005

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
		Mmax	5.5	1.000	0.600	0.550	275.0	17.5	-	No necesita
		Mmin	11.9	1.000	0.600	0.550	275.0	22.8	-	No necesita
		Qmax	12.5	1.000	0.600	0.550	275.0	22.4	-	No necesita
		Qmin	5.5	1.000	0.600	0.550	275.0	17.5	-	No necesita
10	10	Nmax	4.9	1.000	0.600	0.550	275.0	17.5	-	No necesita
		Nmin	11.7	1.000	0.600	0.550	275.0	22.8	-	No necesita
		Mmax	4.9	1.000	0.600	0.550	275.0	17.5	-	No necesita
		Mmin	11.7	1.000	0.600	0.550	275.0	22.8	-	No necesita
		Qmax	12.3	1.000	0.600	0.550	275.0	22.4	-	No necesita
		Qmin	4.9	1.000	0.600	0.550	275.0	17.5	-	No necesita
	11	Nmax	5.7	1.000	0.600	0.550	275.0	18.0	-	No necesita
		Nmin	12.4	1.000	0.600	0.550	275.0	23.5	-	No necesita
		Mmax	5.7	1.000	0.600	0.550	275.0	18.0	-	No necesita
		Mmin	12.4	1.000	0.600	0.550	275.0	23.5	-	No necesita
		Qmax	13.0	1.000	0.600	0.550	275.0	23.2	-	No necesita
		Qmin	5.7	1.000	0.600	0.550	275.0	18.0	-	No necesita
11	11	Nmax	4.1	1.000	0.600	0.550	275.0	18.0	-	No necesita
		Nmin	10.3	1.000	0.600	0.550	275.0	23.5	-	No necesita
		Mmax	4.1	1.000	0.600	0.550	275.0	18.0	-	No necesita
		Mmin	10.3	1.000	0.600	0.550	275.0	23.5	-	No necesita
		Qmax	11.1	1.000	0.600	0.550	275.0	23.2	-	No necesita
		Qmin	4.1	1.000	0.600	0.550	275.0	18.0	-	No necesita
	12	Nmax	4.8	1.000	0.600	0.550	275.0	18.4	-	No necesita
		Nmin	11.0	1.000	0.600	0.550	275.0	24.2	-	No necesita
		Mmax	4.8	1.000	0.600	0.550	275.0	18.4	-	No necesita
		Mmin	11.0	1.000	0.600	0.550	275.0	24.2	-	No necesita
		Qmax	11.7	1.000	0.600	0.550	275.0	23.9	-	No necesita
		Qmin	4.8	1.000	0.600	0.550	275.0	18.4	-	No necesita
12	12	Nmax	2.1	1.000	0.600	0.550	275.0	18.4	-	No necesita
		Nmin	6.6	1.000	0.600	0.550	275.0	24.2	-	No necesita
		Mmax	2.1	1.000	0.600	0.550	275.0	18.4	-	No necesita
		Mmin	6.6	1.000	0.600	0.550	275.0	24.2	-	No necesita
		Qmax	7.6	1.000	0.600	0.550	275.0	23.9	-	No necesita
		Qmin	2.1	1.000	0.600	0.550	275.0	18.4	-	No necesita
	13	Nmax	2.7	1.000	0.600	0.550	275.0	18.6	-	No necesita
		Nmin	7.2	1.000	0.600	0.550	275.0	24.6	-	No necesita
		Mmax	2.7	1.000	0.600	0.550	275.0	18.6	-	No necesita
		Mmin	7.2	1.000	0.600	0.550	275.0	24.6	-	No necesita
		Qmax	8.2	1.000	0.600	0.550	275.0	24.4	-	No necesita
		Qmin	2.7	1.000	0.600	0.550	275.0	18.6	-	No necesita
13	13	Nmax	32.7	1.000	0.500	0.450	225.0	18.2	15.2	10.8
		Nmin	57.9	1.000	0.500	0.450	225.0	24.1	20.1	23.4
		Mmax	32.7	1.000	0.500	0.450	225.0	18.2	15.2	10.8
		Mmin	67.9	1.000	0.500	0.450	225.0	24.3	20.2	29.4
		Qmax	32.7	1.000	0.500	0.450	225.0	18.2	15.2	10.8
		Qmin	67.9	1.000	0.500	0.450	225.0	24.3	20.2	29.4
	15	Nmax	30.5	1.000	0.500	0.450	225.0	16.4	13.7	10.4
		Nmin	56.7	1.000	0.500	0.450	225.0	22.0	18.3	23.7
		Mmax	30.5	1.000	0.500	0.450	225.0	16.4	13.7	10.4
		Mmin	56.7	1.000	0.500	0.450	225.0	22.0	18.3	23.7
		Qmax	30.5	1.000	0.500	0.450	225.0	16.4	13.7	10.4
		Qmin	65.1	1.000	0.500	0.450	225.0	21.8	18.2	28.9

ARMADOCAM_2060_10000_1m.xls PI CAMINO Kv=2060 Kh=10000 24/11/2005

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES EN UN SÓLO LADO

FECHA: 24/11/2005

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
14	15	Nmax	30.5	1.000	0.500	0.450	225.0	16.4	13.7	10.4
		Nmin	56.8	1.000	0.500	0.450	225.0	22.0	18.3	23.7
		Mmax	30.5	1.000	0.500	0.450	225.0	16.4	13.7	10.4
		Mmin	56.8	1.000	0.500	0.450	225.0	22.0	18.3	23.7
		Qmax	30.5	1.000	0.500	0.450	225.0	16.4	13.7	10.4
		Qmin	65.1	1.000	0.500	0.450	225.0	21.8	18.2	29.0
	17	Nmax	28.3	1.000	0.500	0.450	225.0	14.3	11.9	10.1
		Nmin	55.6	1.000	0.500	0.450	225.0	19.6	16.3	24.2
		Mmax	28.3	1.000	0.500	0.450	225.0	14.3	11.9	10.1
		Mmin	55.6	1.000	0.500	0.450	225.0	19.6	16.3	24.2
		Qmax	28.3	1.000	0.500	0.450	225.0	14.3	11.9	10.1
		Qmin	62.3	1.000	0.500	0.450	225.0	19.0	15.9	28.7
15	17	Nmax	28.3	1.000	0.500	0.450	225.0	14.3	11.9	10.1
		Nmin	55.6	1.000	0.500	0.450	225.0	19.6	16.3	24.3
		Mmax	28.3	1.000	0.500	0.450	225.0	14.3	11.9	10.1
		Mmin	55.6	1.000	0.500	0.450	225.0	19.6	16.3	24.3
		Qmax	28.3	1.000	0.500	0.450	225.0	14.3	11.9	10.1
		Qmin	62.4	1.000	0.500	0.450	225.0	19.0	15.8	28.7
	19	Nmax	26.2	1.000	0.500	0.450	225.0	11.7	9.7	10.1
		Nmin	54.4	1.000	0.500	0.450	225.0	16.6	13.9	25.1
		Mmax	26.2	1.000	0.500	0.450	225.0	11.7	9.7	10.1
		Mmin	54.4	1.000	0.500	0.450	225.0	16.6	13.9	25.1
		Qmax	26.2	1.000	0.500	0.450	225.0	11.7	9.7	10.1
		Qmin	57.6	1.000	0.500	0.450	225.0	15.6	13.0	27.5
16	19	Nmax	26.2	1.000	0.500	0.450	225.0	11.7	9.7	10.2
		Nmin	54.5	1.000	0.500	0.450	225.0	16.6	13.8	25.1
		Mmax	26.2	1.000	0.500	0.450	225.0	11.7	9.7	10.2
		Mmin	54.5	1.000	0.500	0.450	225.0	16.6	13.8	25.1
		Qmax	26.2	1.000	0.500	0.450	225.0	11.7	9.7	10.2
		Qmin	57.6	1.000	0.500	0.450	225.0	15.6	13.0	27.5
	21	Nmax	24.0	1.000	0.500	0.450	225.0	7.3	6.1	11.1
		Nmin	53.3	1.000	0.500	0.450	225.0	12.4	10.3	26.5
		Mmax	24.0	1.000	0.500	0.450	225.0	7.3	6.1	11.1
		Mmin	53.3	1.000	0.500	0.450	225.0	12.4	10.3	26.5
		Qmax	24.0	1.000	0.500	0.450	225.0	7.3	6.1	11.1
		Qmin	53.3	1.000	0.500	0.450	225.0	12.4	10.3	26.5
17	21	Nmax	24.0	1.000	0.500	0.450	225.0	7.3	6.1	11.1
		Nmin	53.3	1.000	0.500	0.450	225.0	12.4	10.3	26.5
		Mmax	24.0	1.000	0.500	0.450	225.0	7.3	6.1	11.1
		Mmin	53.3	1.000	0.500	0.450	225.0	12.4	10.3	26.5
		Qmax	24.0	1.000	0.500	0.450	225.0	7.3	6.1	11.1
		Qmin	53.3	1.000	0.500	0.450	225.0	12.4	10.3	26.5
	23	Nmax	21.9	1.000	0.500	0.450	225.0	8.9	7.4	8.9
		Nmin	52.1	1.000	0.500	0.450	225.0	8.9	7.4	27.6
		Mmax	48.1	1.000	0.500	0.450	225.0	11.1	9.2	24.0
		Mmin	21.9	1.000	0.500	0.450	225.0	8.9	7.4	8.9
		Qmax	21.9	1.000	0.500	0.450	225.0	8.9	7.4	8.9
		Qmin	52.1	1.000	0.500	0.450	225.0	8.9	7.4	27.6
18	23	Nmax	21.9	1.000	0.500	0.450	225.0	8.9	7.4	8.9
		Nmin	52.1	1.000	0.500	0.450	225.0	8.9	7.4	27.6
		Mmax	48.1	1.000	0.500	0.450	225.0	11.1	9.2	24.0
		Mmin	21.9	1.000	0.500	0.450	225.0	8.9	7.4	8.9

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES EN UN SÓLO LADO

FECHA: 24/11/2005

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
		Qmax	21.9	1.000	0.500	0.450	225.0	8.9	7.4	8.9
		Qmin	52.1	1.000	0.500	0.450	225.0	8.9	7.4	27.6
	25	Nmax	17.5	1.000	0.500	0.450	225.0	13.8	11.5	3.7
		Nmin	41.7	1.000	0.500	0.450	225.0	17.4	14.5	16.8
		Mmax	38.5	1.000	0.500	0.450	225.0	17.9	14.9	14.6
		Mmin	17.5	1.000	0.500	0.450	225.0	13.8	11.5	3.7
		Qmax	17.5	1.000	0.500	0.450	225.0	13.8	11.5	3.7
		Qmin	41.7	1.000	0.500	0.450	225.0	17.4	14.5	16.8
19	25	Nmax	17.5	1.000	0.500	0.450	225.0	13.8	11.5	3.7
		Nmin	41.7	1.000	0.500	0.450	225.0	17.4	14.5	16.8
		Mmax	38.5	1.000	0.500	0.450	225.0	17.9	14.9	14.6
		Mmin	17.5	1.000	0.500	0.450	225.0	13.8	11.5	3.7
		Qmax	17.5	1.000	0.500	0.450	225.0	13.8	11.5	3.7
		Qmin	41.7	1.000	0.500	0.450	225.0	17.4	14.5	16.8
	27	Nmax	13.2	1.000	0.500	0.450	225.0	16.1	-	No necesita
		Nmin	31.3	1.000	0.500	0.450	225.0	20.9	17.5	8.6
		Mmax	28.9	1.000	0.500	0.450	225.0	21.0	17.5	7.0
		Mmin	13.2	1.000	0.500	0.450	225.0	16.1	-	No necesita
		Qmax	13.2	1.000	0.500	0.450	225.0	16.1	-	No necesita
		Qmin	31.3	1.000	0.500	0.450	225.0	20.9	17.5	8.6
20	27	Nmax	13.2	1.000	0.500	0.450	225.0	16.1	-	No necesita
		Nmin	31.3	1.000	0.500	0.450	225.0	21.0	17.5	8.6
		Mmax	28.9	1.000	0.500	0.450	225.0	21.0	17.5	7.0
		Mmin	13.2	1.000	0.500	0.450	225.0	16.1	-	No necesita
		Qmax	13.2	1.000	0.500	0.450	225.0	16.1	-	No necesita
		Qmin	31.3	1.000	0.500	0.450	225.0	21.0	17.5	8.6
	29	Nmax	8.8	1.000	0.500	0.450	225.0	17.4	-	No necesita
		Nmin	20.9	1.000	0.500	0.450	225.0	23.0	-	No necesita
		Mmax	20.9	1.000	0.500	0.450	225.0	23.0	-	No necesita
		Mmin	8.8	1.000	0.500	0.450	225.0	17.4	-	No necesita
		Qmax	8.8	1.000	0.500	0.450	225.0	17.4	-	No necesita
		Qmin	20.9	1.000	0.500	0.450	225.0	23.0	-	No necesita
21	29	Nmax	8.8	1.000	0.500	0.450	225.0	17.4	-	No necesita
		Nmin	20.9	1.000	0.500	0.450	225.0	23.0	-	No necesita
		Mmax	20.9	1.000	0.500	0.450	225.0	23.0	-	No necesita
		Mmin	8.8	1.000	0.500	0.450	225.0	17.4	-	No necesita
		Qmax	8.8	1.000	0.500	0.450	225.0	17.4	-	No necesita
		Qmin	20.9	1.000	0.500	0.450	225.0	23.0	-	No necesita
	31	Nmax	4.4	1.000	0.500	0.450	225.0	18.1	-	No necesita
		Nmin	10.5	1.000	0.500	0.450	225.0	24.1	-	No necesita
		Mmax	10.5	1.000	0.500	0.450	225.0	24.1	-	No necesita
		Mmin	4.4	1.000	0.500	0.450	225.0	18.1	-	No necesita
		Qmax	4.4	1.000	0.500	0.450	225.0	18.1	-	No necesita
		Qmin	10.5	1.000	0.500	0.450	225.0	24.1	-	No necesita
22	31	Nmax	4.4	1.000	0.500	0.450	225.0	18.1	-	No necesita
		Nmin	10.5	1.000	0.500	0.450	225.0	24.1	-	No necesita
		Mmax	10.5	1.000	0.500	0.450	225.0	24.1	-	No necesita
		Mmin	4.4	1.000	0.500	0.450	225.0	18.1	-	No necesita
		Qmax	4.4	1.000	0.500	0.450	225.0	18.1	-	No necesita
		Qmin	10.5	1.000	0.500	0.450	225.0	24.1	-	No necesita
	33	Nmax	0.1	1.000	0.500	0.450	225.0	18.4	-	No necesita
		Nmin	0.1	1.000	0.500	0.450	225.0	24.5	-	No necesita

ARMADOCAM_2060_10000_1m.xls PI CAMINO Kv=2060 Kh=10000 24/11/2005

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES EN UN SÓLO LADO

FECHA: 24/11/2005

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
		Mmax	0.1	1.000	0.500	0.450	225.0	24.5	-	No necesita
		Mmin	0.1	1.000	0.500	0.450	225.0	18.4	-	No necesita
		Qmax	0.1	1.000	0.500	0.450	225.0	18.4	-	No necesita
		Qmin	0.1	1.000	0.500	0.450	225.0	23.2	-	No necesita
23	33	Nmax	0.1	1.000	0.500	0.450	225.0	18.4	-	No necesita
		Nmin	0.1	1.000	0.500	0.450	225.0	24.5	-	No necesita
		Mmax	0.1	1.000	0.500	0.450	225.0	24.5	-	No necesita
		Mmin	0.1	1.000	0.500	0.450	225.0	18.4	-	No necesita
		Qmax	0.1	1.000	0.500	0.450	225.0	18.4	-	No necesita
		Qmin	0.2	1.000	0.500	0.450	225.0	24.3	-	No necesita
	35	Nmax	4.3	1.000	0.500	0.450	225.0	18.1	-	No necesita
		Nmin	10.3	1.000	0.500	0.450	225.0	24.2	-	No necesita
		Mmax	10.3	1.000	0.500	0.450	225.0	24.2	-	No necesita
		Mmin	4.3	1.000	0.500	0.450	225.0	18.1	-	No necesita
		Qmax	10.3	1.000	0.500	0.450	225.0	24.2	-	No necesita
		Qmin	4.3	1.000	0.500	0.450	225.0	18.1	-	No necesita
24	35	Nmax	4.3	1.000	0.500	0.450	225.0	18.1	-	No necesita
		Nmin	10.3	1.000	0.500	0.450	225.0	24.2	-	No necesita
		Mmax	10.3	1.000	0.500	0.450	225.0	24.2	-	No necesita
		Mmin	4.3	1.000	0.500	0.450	225.0	18.1	-	No necesita
		Qmax	10.3	1.000	0.500	0.450	225.0	24.2	-	No necesita
		Qmin	4.3	1.000	0.500	0.450	225.0	18.1	-	No necesita
	37	Nmax	8.6	1.000	0.500	0.450	225.0	17.4	-	No necesita
		Nmin	20.7	1.000	0.500	0.450	225.0	23.0	-	No necesita
		Mmax	20.7	1.000	0.500	0.450	225.0	23.0	-	No necesita
		Mmin	8.6	1.000	0.500	0.450	225.0	17.4	-	No necesita
		Qmax	20.7	1.000	0.500	0.450	225.0	23.0	-	No necesita
		Qmin	8.6	1.000	0.500	0.450	225.0	17.4	-	No necesita
25	37	Nmax	8.6	1.000	0.500	0.450	225.0	17.4	-	No necesita
		Nmin	20.7	1.000	0.500	0.450	225.0	23.0	-	No necesita
		Mmax	20.7	1.000	0.500	0.450	225.0	23.0	-	No necesita
		Mmin	8.6	1.000	0.500	0.450	225.0	17.4	-	No necesita
		Qmax	20.7	1.000	0.500	0.450	225.0	23.0	-	No necesita
		Qmin	8.6	1.000	0.500	0.450	225.0	17.4	-	No necesita
	39	Nmax	13.0	1.000	0.500	0.450	225.0	16.1	-	No necesita
		Nmin	31.1	1.000	0.500	0.450	225.0	21.0	17.5	8.4
		Mmax	28.6	1.000	0.500	0.450	225.0	21.1	17.6	6.8
		Mmin	13.0	1.000	0.500	0.450	225.0	16.1	-	No necesita
		Qmax	31.1	1.000	0.500	0.450	225.0	21.0	17.5	8.4
		Qmin	13.0	1.000	0.500	0.450	225.0	16.1	-	No necesita
26	39	Nmax	13.0	1.000	0.500	0.450	225.0	16.1	-	No necesita
		Nmin	31.1	1.000	0.500	0.450	225.0	21.0	17.5	8.4
		Mmax	28.6	1.000	0.500	0.450	225.0	21.1	17.6	6.8
		Mmin	13.0	1.000	0.500	0.450	225.0	16.1	-	No necesita
		Qmax	31.1	1.000	0.500	0.450	225.0	21.0	17.5	8.4
		Qmin	13.0	1.000	0.500	0.450	225.0	16.1	-	No necesita
	41	Nmax	17.3	1.000	0.500	0.450	225.0	13.9	11.6	3.6
		Nmin	41.5	1.000	0.500	0.450	225.0	17.5	14.6	16.6
		Mmax	38.2	1.000	0.500	0.450	225.0	18.0	15.0	14.3
		Mmin	17.3	1.000	0.500	0.450	225.0	13.9	11.6	3.6
		Qmax	41.5	1.000	0.500	0.450	225.0	17.5	14.6	16.6
		Qmin	17.3	1.000	0.500	0.450	225.0	13.9	11.6	3.6

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES EN UN SÓLO LADO

FECHA: 24/11/2005

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
27	41	Nmax	17.3	1.000	0.500	0.450	225.0	13.9	11.6	3.6
		Nmin	41.5	1.000	0.500	0.450	225.0	17.5	14.6	16.6
		Mmax	38.2	1.000	0.500	0.450	225.0	18.0	15.0	14.3
		Mmin	17.3	1.000	0.500	0.450	225.0	13.9	11.6	3.6
		Qmax	41.5	1.000	0.500	0.450	225.0	17.5	14.6	16.6
		Qmin	17.3	1.000	0.500	0.450	225.0	13.9	11.6	3.6
	43	Nmax	21.7	1.000	0.500	0.450	225.0	9.2	7.7	8.7
		Nmin	51.9	1.000	0.500	0.450	225.0	9.2	7.7	27.3
		Mmax	47.8	1.000	0.500	0.450	225.0	11.4	9.5	23.6
		Mmin	21.7	1.000	0.500	0.450	225.0	9.2	7.7	8.7
		Qmax	51.9	1.000	0.500	0.450	225.0	9.2	7.7	27.3
		Qmin	21.7	1.000	0.500	0.450	225.0	9.2	7.7	8.7
28	43	Nmax	21.7	1.000	0.500	0.450	225.0	9.2	7.7	8.6
		Nmin	51.8	1.000	0.500	0.450	225.0	9.2	7.7	27.3
		Mmax	47.7	1.000	0.500	0.450	225.0	11.4	9.5	23.6
		Mmin	21.7	1.000	0.500	0.450	225.0	9.2	7.7	8.6
		Qmax	51.8	1.000	0.500	0.450	225.0	9.2	7.7	27.3
		Qmin	21.7	1.000	0.500	0.450	225.0	9.2	7.7	8.6
	45	Nmax	23.8	1.000	0.500	0.450	225.0	6.7	5.6	11.3
		Nmin	53.0	1.000	0.500	0.450	225.0	12.1	10.1	26.5
		Mmax	23.8	1.000	0.500	0.450	225.0	6.7	5.6	11.3
		Mmin	53.0	1.000	0.500	0.450	225.0	12.1	10.1	26.5
		Qmax	53.0	1.000	0.500	0.450	225.0	12.1	10.1	26.5
		Qmin	23.8	1.000	0.500	0.450	225.0	6.7	5.6	11.3
29	45	Nmax	23.8	1.000	0.500	0.450	225.0	6.7	5.6	11.2
		Nmin	53.0	1.000	0.500	0.450	225.0	12.1	10.1	26.5
		Mmax	23.8	1.000	0.500	0.450	225.0	6.7	5.6	11.2
		Mmin	53.0	1.000	0.500	0.450	225.0	12.1	10.1	26.5
		Qmax	53.0	1.000	0.500	0.450	225.0	12.1	10.1	26.5
		Qmin	23.8	1.000	0.500	0.450	225.0	6.7	5.6	11.2
	47	Nmax	26.0	1.000	0.500	0.450	225.0	11.5	9.5	10.2
		Nmin	54.2	1.000	0.500	0.450	225.0	16.4	13.7	25.0
		Mmax	26.0	1.000	0.500	0.450	225.0	11.5	9.5	10.2
		Mmin	54.2	1.000	0.500	0.450	225.0	16.4	13.7	25.0
		Qmax	57.3	1.000	0.500	0.450	225.0	15.3	12.8	27.5
		Qmin	26.0	1.000	0.500	0.450	225.0	11.5	9.5	10.2
30	47	Nmax	26.0	1.000	0.500	0.450	225.0	11.5	9.5	10.1
		Nmin	54.1	1.000	0.500	0.450	225.0	16.4	13.7	25.0
		Mmax	26.0	1.000	0.500	0.450	225.0	11.5	9.5	10.1
		Mmin	54.1	1.000	0.500	0.450	225.0	16.4	13.7	25.0
		Qmax	57.2	1.000	0.500	0.450	225.0	15.3	12.8	27.4
		Qmin	26.0	1.000	0.500	0.450	225.0	11.5	9.5	10.1
	49	Nmax	28.2	1.000	0.500	0.450	225.0	14.1	11.8	10.1
		Nmin	55.3	1.000	0.500	0.450	225.0	19.4	16.2	24.2
		Mmax	28.2	1.000	0.500	0.450	225.0	14.1	11.8	10.1
		Mmin	55.3	1.000	0.500	0.450	225.0	19.4	16.2	24.2
		Qmax	62.0	1.000	0.500	0.450	225.0	18.8	15.7	28.6
		Qmin	28.2	1.000	0.500	0.450	225.0	14.1	11.8	10.1
31	49	Nmax	28.1	1.000	0.500	0.450	225.0	14.1	11.8	10.1
		Nmin	55.3	1.000	0.500	0.450	225.0	19.4	16.2	24.1
		Mmax	28.1	1.000	0.500	0.450	225.0	14.1	11.8	10.1
		Mmin	55.3	1.000	0.500	0.450	225.0	19.4	16.2	24.1

ARMADOCAM_2060_10000_1m.xls PI CAMINO Kv=2060 Kh=10000 24/11/2005

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES EN UN SÓLO LADO

FECHA: 24/11/2005

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
		Qmax	62.0	1.000	0.500	0.450	225.0	18.8	15.7	28.6
		Qmin	28.1	1.000	0.500	0.450	225.0	14.1	11.8	10.1
	51	Nmax	30.3	1.000	0.500	0.450	225.0	16.3	13.5	10.3
		Nmin	56.5	1.000	0.500	0.450	225.0	21.8	18.2	23.6
		Mmax	30.3	1.000	0.500	0.450	225.0	16.3	13.5	10.3
		Mmin	56.5	1.000	0.500	0.450	225.0	21.8	18.2	23.6
		Qmax	64.8	1.000	0.500	0.450	225.0	21.7	18.0	28.8
		Qmin	30.3	1.000	0.500	0.450	225.0	16.3	13.5	10.3
32	51	Nmax	30.3	1.000	0.500	0.450	225.0	16.3	13.5	10.3
		Nmin	56.4	1.000	0.500	0.450	225.0	21.8	18.2	23.6
		Mmax	30.3	1.000	0.500	0.450	225.0	16.3	13.5	10.3
		Mmin	56.4	1.000	0.500	0.450	225.0	21.8	18.2	23.6
		Qmax	64.7	1.000	0.500	0.450	225.0	21.7	18.0	28.8
		Qmin	30.3	1.000	0.500	0.450	225.0	16.3	13.5	10.3
	64	Nmax	32.5	1.000	0.500	0.450	225.0	18.1	15.1	10.7
		Nmin	57.6	1.000	0.500	0.450	225.0	23.9	20.0	23.2
		Mmax	32.5	1.000	0.500	0.450	225.0	18.1	15.1	10.7
		Mmin	67.5	1.000	0.500	0.450	225.0	24.1	20.1	29.2
		Qmax	67.5	1.000	0.500	0.450	225.0	24.1	20.1	29.2
		Qmin	32.5	1.000	0.500	0.450	225.0	18.1	15.1	10.7
33	1	Nmax	64.4	1.000	0.600	0.550	275.0	22.9	19.1	22.9
		Nmin	40.1	1.000	0.600	0.550	275.0	19.8	16.5	12.0
		Mmax	74.0	1.000	0.600	0.550	275.0	24.2	20.1	27.2
		Mmin	40.1	1.000	0.600	0.550	275.0	19.8	16.5	12.0
		Qmax	74.0	1.000	0.600	0.550	275.0	24.2	20.1	27.2
		Qmin	40.1	1.000	0.600	0.550	275.0	19.8	16.5	12.0
	14	Nmax	64.9	1.000	0.600	0.550	275.0	20.3	16.9	24.2
		Nmin	40.6	1.000	0.600	0.550	275.0	17.6	14.7	13.1
		Mmax	74.5	1.000	0.600	0.550	275.0	21.4	17.8	28.6
		Mmin	40.6	1.000	0.600	0.550	275.0	17.6	14.7	13.1
		Qmax	74.5	1.000	0.600	0.550	275.0	21.4	17.8	28.6
		Qmin	40.6	1.000	0.600	0.550	275.0	17.6	14.7	13.1
34	14	Nmax	59.5	1.000	0.600	0.550	275.0	20.3	16.9	21.5
		Nmin	37.1	1.000	0.600	0.550	275.0	17.6	14.7	11.3
		Mmax	68.3	1.000	0.600	0.550	275.0	21.4	17.8	25.5
		Mmin	37.1	1.000	0.600	0.550	275.0	17.6	14.7	11.3
		Qmax	68.3	1.000	0.600	0.550	275.0	21.4	17.8	25.5
		Qmin	37.1	1.000	0.600	0.550	275.0	17.6	14.7	11.3
	16	Nmax	60.0	1.000	0.600	0.550	275.0	17.2	14.3	23.1
		Nmin	37.5	1.000	0.600	0.550	275.0	15.1	12.6	12.6
		Mmax	68.8	1.000	0.600	0.550	275.0	18.1	15.1	27.1
		Mmin	37.5	1.000	0.600	0.550	275.0	15.1	12.6	12.6
		Qmax	68.8	1.000	0.600	0.550	275.0	18.1	15.1	27.1
		Qmin	37.5	1.000	0.600	0.550	275.0	15.1	12.6	12.6
35	16	Nmax	54.6	1.000	0.600	0.550	275.0	17.2	14.3	20.3
		Nmin	34.0	1.000	0.600	0.550	275.0	15.1	12.6	10.8
		Mmax	62.7	1.000	0.600	0.550	275.0	18.1	15.1	24.0
		Mmin	34.0	1.000	0.600	0.550	275.0	15.1	12.6	10.8
		Qmax	62.7	1.000	0.600	0.550	275.0	18.1	15.1	24.0
		Qmin	34.0	1.000	0.600	0.550	275.0	15.1	12.6	10.8
	18	Nmax	55.0	1.000	0.600	0.550	275.0	12.9	10.7	22.4
		Nmin	34.5	1.000	0.600	0.550	275.0	11.9	9.9	12.4

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES EN UN SÓLO LADO

FECHA: 24/11/2005

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
		Mmax	63.1	1.000	0.600	0.550	275.0	13.7	11.4	26.1
		Mmin	34.5	1.000	0.600	0.550	275.0	11.9	9.9	12.4
		Qmax	63.1	1.000	0.600	0.550	275.0	13.7	11.4	26.1
		Qmin	34.5	1.000	0.600	0.550	275.0	11.9	9.9	12.4
36	18	Nmax	49.8	1.000	0.600	0.550	275.0	12.9	10.7	19.7
		Nmin	31.1	1.000	0.600	0.550	275.0	11.9	9.9	10.7
		Mmax	57.1	1.000	0.600	0.550	275.0	13.7	11.4	23.1
		Mmin	31.1	1.000	0.600	0.550	275.0	11.9	9.9	10.7
		Qmax	57.1	1.000	0.600	0.550	275.0	13.7	11.4	23.1
		Qmin	31.1	1.000	0.600	0.550	275.0	11.9	9.9	10.7
	20	Nmax	50.3	1.000	0.600	0.550	275.0	7.7	6.4	22.1
		Nmin	31.5	1.000	0.600	0.550	275.0	6.3	5.3	13.3
		Mmax	31.5	1.000	0.600	0.550	275.0	6.3	5.3	13.3
		Mmin	50.3	1.000	0.600	0.550	275.0	7.7	6.4	22.1
		Qmax	57.6	1.000	0.600	0.550	275.0	7.4	6.2	25.9
		Qmin	31.5	1.000	0.600	0.550	275.0	6.3	5.3	13.3
37	20	Nmax	45.2	1.000	0.600	0.550	275.0	7.7	6.4	19.6
		Nmin	28.2	1.000	0.600	0.550	275.0	6.3	5.3	11.6
		Mmax	28.2	1.000	0.600	0.550	275.0	6.3	5.3	11.6
		Mmin	45.2	1.000	0.600	0.550	275.0	7.7	6.4	19.6
		Qmax	51.8	1.000	0.600	0.550	275.0	7.4	6.2	23.0
		Qmin	28.2	1.000	0.600	0.550	275.0	6.3	5.3	11.6
	22	Nmax	45.6	1.000	0.600	0.550	275.0	14.1	11.8	17.1
		Nmin	28.6	1.000	0.600	0.550	275.0	11.2	9.4	9.7
		Mmax	28.6	1.000	0.600	0.550	275.0	11.2	9.4	9.7
		Mmin	52.2	1.000	0.600	0.550	275.0	14.6	12.2	20.2
		Qmax	52.2	1.000	0.600	0.550	275.0	14.6	12.2	20.2
		Qmin	28.6	1.000	0.600	0.550	275.0	11.2	9.4	9.7
38	22	Nmax	38.2	1.000	0.600	0.550	275.0	14.1	11.8	13.3
		Nmin	23.7	1.000	0.600	0.550	275.0	11.2	9.4	7.3
		Mmax	23.7	1.000	0.600	0.550	275.0	11.2	9.4	7.3
		Mmin	43.8	1.000	0.600	0.550	275.0	14.6	12.2	16.0
		Qmax	43.8	1.000	0.600	0.550	275.0	14.6	12.2	16.0
		Qmin	23.7	1.000	0.600	0.550	275.0	11.2	9.4	7.3
	24	Nmax	39.1	1.000	0.600	0.550	275.0	19.1	15.9	11.7
		Nmin	24.6	1.000	0.600	0.550	275.0	15.8	13.2	5.8
		Mmax	24.6	1.000	0.600	0.550	275.0	15.8	13.2	5.8
		Mmin	44.7	1.000	0.600	0.550	275.0	20.0	16.6	14.2
		Qmax	44.7	1.000	0.600	0.550	275.0	20.0	16.6	14.2
		Qmin	24.6	1.000	0.600	0.550	275.0	15.8	13.2	5.8
39	24	Nmax	29.7	1.000	0.600	0.550	275.0	19.1	15.9	7.0
		Nmin	18.4	1.000	0.600	0.550	275.0	15.8	13.2	2.6
		Mmax	18.4	1.000	0.600	0.550	275.0	15.8	13.2	2.6
		Mmin	34.0	1.000	0.600	0.550	275.0	20.0	16.6	8.8
		Qmax	34.0	1.000	0.600	0.550	275.0	20.0	16.6	8.8
		Qmin	18.4	1.000	0.600	0.550	275.0	15.8	13.2	2.6
	26	Nmax	30.6	1.000	0.600	0.550	275.0	21.8	18.2	6.3
		Nmin	19.3	1.000	0.600	0.550	275.0	18.2	15.2	2.1
		Mmax	19.3	1.000	0.600	0.550	275.0	18.2	15.2	2.1
		Mmin	34.9	1.000	0.600	0.550	275.0	22.8	19.0	8.0
		Qmax	34.9	1.000	0.600	0.550	275.0	22.8	19.0	8.0
		Qmin	19.3	1.000	0.600	0.550	275.0	18.2	15.2	2.1

ARMADOCAM_2060_10000_1m.xls PI CAMINO Kv=2060 Kh=10000 24/11/2005

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES EN UN SÓLO LADO

FECHA: 24/11/2005

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
40	26	Nmax	21.7	1.000	0.600	0.550	275.0	21.8	-	No necesita
		Nmin	13.4	1.000	0.600	0.550	275.0	18.2	-	No necesita
		Mmax	13.4	1.000	0.600	0.550	275.0	18.2	-	No necesita
		Mmin	24.8	1.000	0.600	0.550	275.0	22.8	19.0	2.9
		Qmax	24.8	1.000	0.600	0.550	275.0	22.8	19.0	2.9
		Qmin	13.4	1.000	0.600	0.550	275.0	18.2	-	No necesita
	28	Nmax	22.6	1.000	0.600	0.550	275.0	23.5	-	No necesita
		Nmin	14.3	1.000	0.600	0.550	275.0	19.6	-	No necesita
		Mmax	14.3	1.000	0.600	0.550	275.0	19.6	-	No necesita
		Mmin	25.7	1.000	0.600	0.550	275.0	24.6	20.5	2.6
		Qmax	25.7	1.000	0.600	0.550	275.0	24.6	20.5	2.6
		Qmin	14.3	1.000	0.600	0.550	275.0	19.6	-	No necesita
41	28	Nmax	13.9	1.000	0.600	0.550	275.0	23.5	-	No necesita
		Nmin	8.5	1.000	0.600	0.550	275.0	19.6	-	No necesita
		Mmax	8.5	1.000	0.600	0.550	275.0	19.6	-	No necesita
		Mmin	15.9	1.000	0.600	0.550	275.0	24.6	-	No necesita
		Qmax	15.9	1.000	0.600	0.550	275.0	24.6	-	No necesita
		Qmin	8.5	1.000	0.600	0.550	275.0	19.6	-	No necesita
	30	Nmax	14.8	1.000	0.600	0.550	275.0	24.5	-	No necesita
		Nmin	9.4	1.000	0.600	0.550	275.0	20.4	-	No necesita
		Mmax	9.4	1.000	0.600	0.550	275.0	20.4	-	No necesita
		Mmin	16.7	1.000	0.600	0.550	275.0	25.6	-	No necesita
		Qmax	16.7	1.000	0.600	0.550	275.0	25.6	-	No necesita
		Qmin	9.4	1.000	0.600	0.550	275.0	20.4	-	No necesita
42	30	Nmax	6.3	1.000	0.600	0.550	275.0	24.5	-	No necesita
		Nmin	3.8	1.000	0.600	0.550	275.0	20.4	-	No necesita
		Mmax	3.8	1.000	0.600	0.550	275.0	20.4	-	No necesita
		Mmin	7.1	1.000	0.600	0.550	275.0	25.6	-	No necesita
		Qmax	7.1	1.000	0.600	0.550	275.0	25.6	-	No necesita
		Qmin	3.8	1.000	0.600	0.550	275.0	20.4	-	No necesita
	32	Nmax	7.2	1.000	0.600	0.550	275.0	24.9	-	No necesita
		Nmin	4.7	1.000	0.600	0.550	275.0	20.8	-	No necesita
		Mmax	4.7	1.000	0.600	0.550	275.0	20.8	-	No necesita
		Mmin	8.0	1.000	0.600	0.550	275.0	26.1	-	No necesita
		Qmax	8.0	1.000	0.600	0.550	275.0	26.1	-	No necesita
		Qmin	4.7	1.000	0.600	0.550	275.0	20.8	-	No necesita
43	32	Nmax	1.3	1.000	0.600	0.550	275.0	24.9	-	No necesita
		Nmin	1.0	1.000	0.600	0.550	275.0	20.8	-	No necesita
		Mmax	1.0	1.000	0.600	0.550	275.0	20.8	-	No necesita
		Mmin	1.7	1.000	0.600	0.550	275.0	26.1	-	No necesita
		Qmax	1.0	1.000	0.600	0.550	275.0	20.8	-	No necesita
		Qmin	1.7	1.000	0.600	0.550	275.0	26.1	-	No necesita
	34	Nmax	0.4	1.000	0.600	0.550	275.0	24.9	-	No necesita
		Nmin	0.3	1.000	0.600	0.550	275.0	20.8	-	No necesita
		Mmax	0.3	1.000	0.600	0.550	275.0	20.8	-	No necesita
		Mmin	0.8	1.000	0.600	0.550	275.0	26.0	-	No necesita
		Qmax	0.3	1.000	0.600	0.550	275.0	20.8	-	No necesita
		Qmin	0.8	1.000	0.600	0.550	275.0	26.0	-	No necesita
44	34	Nmax	9.0	1.000	0.600	0.550	275.0	24.9	-	No necesita
		Nmin	5.9	1.000	0.600	0.550	275.0	20.8	-	No necesita
		Mmax	5.9	1.000	0.600	0.550	275.0	20.8	-	No necesita
		Mmin	10.6	1.000	0.600	0.550	275.0	26.0	-	No necesita

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES EN UN SÓLO LADO

FECHA: 24/11/2005

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
		Qmax	5.9	1.000	0.600	0.550	275.0	20.8	-	No necesita
		Qmin	10.6	1.000	0.600	0.550	275.0	26.0	-	No necesita
	36	Nmax	8.2	1.000	0.600	0.550	275.0	24.3	-	No necesita
		Nmin	5.0	1.000	0.600	0.550	275.0	20.3	-	No necesita
		Mmax	5.0	1.000	0.600	0.550	275.0	20.3	-	No necesita
		Mmin	9.7	1.000	0.600	0.550	275.0	25.4	-	No necesita
		Qmax	5.0	1.000	0.600	0.550	275.0	20.3	-	No necesita
		Qmin	9.7	1.000	0.600	0.550	275.0	25.4	-	No necesita
45	36	Nmax	17.2	1.000	0.600	0.550	275.0	24.3	-	No necesita
		Nmin	11.0	1.000	0.600	0.550	275.0	20.3	-	No necesita
		Mmax	11.0	1.000	0.600	0.550	275.0	20.3	-	No necesita
		Mmin	19.9	1.000	0.600	0.550	275.0	25.4	-	No necesita
		Qmax	11.0	1.000	0.600	0.550	275.0	20.3	-	No necesita
		Qmin	19.9	1.000	0.600	0.550	275.0	25.4	-	No necesita
	38	Nmax	16.3	1.000	0.600	0.550	275.0	23.1	-	No necesita
		Nmin	10.1	1.000	0.600	0.550	275.0	19.3	-	No necesita
		Mmax	10.1	1.000	0.600	0.550	275.0	19.3	-	No necesita
		Mmin	19.0	1.000	0.600	0.550	275.0	24.1	-	No necesita
		Qmax	10.1	1.000	0.600	0.550	275.0	19.3	-	No necesita
		Qmin	19.0	1.000	0.600	0.550	275.0	24.1	-	No necesita
46	38	Nmax	25.8	1.000	0.600	0.550	275.0	23.1	19.3	3.3
		Nmin	16.4	1.000	0.600	0.550	275.0	19.3	-	No necesita
		Mmax	16.4	1.000	0.600	0.550	275.0	19.3	-	No necesita
		Mmin	29.8	1.000	0.600	0.550	275.0	24.1	20.1	4.9
		Qmax	16.4	1.000	0.600	0.550	275.0	19.3	-	No necesita
		Qmin	29.8	1.000	0.600	0.550	275.0	24.1	20.1	4.9
	40	Nmax	24.9	1.000	0.600	0.550	275.0	21.1	17.6	3.7
		Nmin	15.5	1.000	0.600	0.550	275.0	17.6	-	No necesita
		Mmax	15.5	1.000	0.600	0.550	275.0	17.6	-	No necesita
		Mmin	28.9	1.000	0.600	0.550	275.0	22.0	18.3	5.3
		Qmax	15.5	1.000	0.600	0.550	275.0	17.6	-	No necesita
		Qmin	28.9	1.000	0.600	0.550	275.0	22.0	18.3	5.3
47	40	Nmax	35.0	1.000	0.600	0.550	275.0	21.1	17.6	8.8
		Nmin	22.1	1.000	0.600	0.550	275.0	17.6	14.6	3.8
		Mmax	22.1	1.000	0.600	0.550	275.0	17.6	14.6	3.8
		Mmin	40.3	1.000	0.600	0.550	275.0	22.0	18.3	11.1
		Qmax	22.1	1.000	0.600	0.550	275.0	17.6	14.6	3.8
		Qmin	40.3	1.000	0.600	0.550	275.0	22.0	18.3	11.1
	42	Nmax	34.1	1.000	0.600	0.550	275.0	17.8	14.8	9.7
		Nmin	21.2	1.000	0.600	0.550	275.0	14.6	12.2	4.6
		Mmax	21.2	1.000	0.600	0.550	275.0	14.6	12.2	4.6
		Mmin	39.4	1.000	0.600	0.550	275.0	18.3	15.3	12.2
		Qmax	21.2	1.000	0.600	0.550	275.0	14.6	12.2	4.6
		Qmin	39.4	1.000	0.600	0.550	275.0	18.3	15.3	12.2
48	42	Nmax	42.2	1.000	0.600	0.550	275.0	17.8	14.8	13.8
		Nmin	26.5	1.000	0.600	0.550	275.0	14.6	12.2	7.3
		Mmax	26.5	1.000	0.600	0.550	275.0	14.6	12.2	7.3
		Mmin	48.7	1.000	0.600	0.550	275.0	18.3	15.3	16.9
		Qmax	26.5	1.000	0.600	0.550	275.0	14.6	12.2	7.3
		Qmin	48.7	1.000	0.600	0.550	275.0	18.3	15.3	16.9
	44	Nmax	41.7	1.000	0.600	0.550	275.0	15.0	12.5	14.8
		Nmin	26.1	1.000	0.600	0.550	275.0	12.0	10.0	8.1

ARMADOCAM_2060_10000_1m.xls PI CAMINO Kv=2060 Kh=10000 24/11/2005

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES EN UN SÓLO LADO

FECHA: 24/11/2005

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
		Mmax	26.1	1.000	0.600	0.550	275.0	12.0	10.0	8.1
		Mmin	48.2	1.000	0.600	0.550	275.0	15.2	12.7	18.0
		Qmax	26.1	1.000	0.600	0.550	275.0	12.0	10.0	8.1
		Qmin	48.2	1.000	0.600	0.550	275.0	15.2	12.7	18.0
49	44	Nmax	47.4	1.000	0.600	0.550	275.0	15.0	12.5	17.6
		Nmin	29.7	1.000	0.600	0.550	275.0	12.0	10.0	10.0
		Mmax	29.7	1.000	0.600	0.550	275.0	12.0	10.0	10.0
		Mmin	54.6	1.000	0.600	0.550	275.0	15.2	12.7	21.2
		Qmax	29.7	1.000	0.600	0.550	275.0	12.0	10.0	10.0
		Qmin	54.6	1.000	0.600	0.550	275.0	15.2	12.7	21.2
	46	Nmax	46.9	1.000	0.600	0.550	275.0	9.6	8.0	19.7
		Nmin	29.3	1.000	0.600	0.550	275.0	5.7	4.7	12.4
		Mmax	29.3	1.000	0.600	0.550	275.0	5.7	4.7	12.4
		Mmin	46.9	1.000	0.600	0.550	275.0	9.6	8.0	19.7
		Qmax	29.3	1.000	0.600	0.550	275.0	5.7	4.7	12.4
		Qmin	54.1	1.000	0.600	0.550	275.0	8.8	7.3	23.6
50	46	Nmax	52.7	1.000	0.600	0.550	275.0	9.6	8.0	22.6
		Nmin	33.0	1.000	0.600	0.550	275.0	5.7	4.7	14.3
		Mmax	33.0	1.000	0.600	0.550	275.0	5.7	4.7	14.3
		Mmin	52.7	1.000	0.600	0.550	275.0	9.6	8.0	22.6
		Qmax	33.0	1.000	0.600	0.550	275.0	5.7	4.7	14.3
		Qmin	60.6	1.000	0.600	0.550	275.0	8.8	7.3	26.9
	48	Nmax	52.3	1.000	0.600	0.550	275.0	12.3	10.2	21.2
		Nmin	32.6	1.000	0.600	0.550	275.0	11.5	9.6	11.6
		Mmax	60.2	1.000	0.600	0.550	275.0	13.5	11.3	24.7
		Mmin	32.6	1.000	0.600	0.550	275.0	11.5	9.6	11.6
		Qmax	32.6	1.000	0.600	0.550	275.0	11.5	9.6	11.6
		Qmin	60.2	1.000	0.600	0.550	275.0	13.5	11.3	24.7
51	48	Nmax	58.4	1.000	0.600	0.550	275.0	12.3	10.2	24.3
		Nmin	36.5	1.000	0.600	0.550	275.0	11.5	9.6	13.6
		Mmax	67.1	1.000	0.600	0.550	275.0	13.5	11.3	28.2
		Mmin	36.5	1.000	0.600	0.550	275.0	11.5	9.6	13.6
		Qmax	36.5	1.000	0.600	0.550	275.0	11.5	9.6	13.6
		Qmin	67.1	1.000	0.600	0.550	275.0	13.5	11.3	28.2
	50	Nmax	57.9	1.000	0.600	0.550	275.0	17.0	14.2	22.1
		Nmin	36.1	1.000	0.600	0.550	275.0	15.1	12.6	11.9
		Mmax	66.6	1.000	0.600	0.550	275.0	18.2	15.2	26.0
		Mmin	36.1	1.000	0.600	0.550	275.0	15.1	12.6	11.9
		Qmax	36.1	1.000	0.600	0.550	275.0	15.1	12.6	11.9
		Qmin	66.6	1.000	0.600	0.550	275.0	18.2	15.2	26.0
52	50	Nmax	64.0	1.000	0.600	0.550	275.0	17.0	14.2	25.2
		Nmin	40.0	1.000	0.600	0.550	275.0	15.1	12.6	13.9
		Mmax	73.5	1.000	0.600	0.550	275.0	18.2	15.2	29.4
		Mmin	40.0	1.000	0.600	0.550	275.0	15.1	12.6	13.9
		Qmax	40.0	1.000	0.600	0.550	275.0	15.1	12.6	13.9
		Qmin	73.5	1.000	0.600	0.550	275.0	18.2	15.2	29.4
	52	Nmax	63.6	1.000	0.600	0.550	275.0	20.4	17.0	23.5
		Nmin	39.6	1.000	0.600	0.550	275.0	17.7	14.8	12.5
		Mmax	73.1	1.000	0.600	0.550	275.0	21.7	18.0	27.8
		Mmin	39.6	1.000	0.600	0.550	275.0	17.7	14.8	12.5
		Qmax	39.6	1.000	0.600	0.550	275.0	17.7	14.8	12.5
		Qmin	73.1	1.000	0.600	0.550	275.0	21.7	18.0	27.8

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES EN UN SÓLO LADO

FECHA: 24/11/2005

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
53	52	Nmax	0.7	1.000	0.600	0.550	275.0	17.7	-	No necesita
		Nmin	3.7	1.000	0.600	0.550	275.0	21.7	-	No necesita
		Mmax	3.7	1.000	0.600	0.550	275.0	21.7	-	No necesita
		Mmin	0.7	1.000	0.600	0.550	275.0	17.7	-	No necesita
		Qmax	0.7	1.000	0.600	0.550	275.0	17.7	-	No necesita
		Qmin	5.0	1.000	0.600	0.550	275.0	20.4	-	No necesita
	53	Nmax	0.7	1.000	0.600	0.550	275.0	17.8	-	No necesita
		Nmin	3.7	1.000	0.600	0.550	275.0	21.9	-	No necesita
		Mmax	3.7	1.000	0.600	0.550	275.0	21.9	-	No necesita
		Mmin	0.7	1.000	0.600	0.550	275.0	17.8	-	No necesita
		Qmax	0.7	1.000	0.600	0.550	275.0	17.8	-	No necesita
		Qmin	5.0	1.000	0.600	0.550	275.0	20.7	-	No necesita
54	53	Nmax	0.7	1.000	0.600	0.550	275.0	17.8	-	No necesita
		Nmin	3.7	1.000	0.600	0.550	275.0	21.9	-	No necesita
		Mmax	3.7	1.000	0.600	0.550	275.0	21.9	-	No necesita
		Mmin	0.7	1.000	0.600	0.550	275.0	17.8	-	No necesita
		Qmax	0.7	1.000	0.600	0.550	275.0	17.8	-	No necesita
		Qmin	5.0	1.000	0.600	0.550	275.0	20.7	-	No necesita
	54	Nmax	0.7	1.000	0.600	0.550	275.0	17.9	-	No necesita
		Nmin	3.7	1.000	0.600	0.550	275.0	22.2	-	No necesita
		Mmax	3.7	1.000	0.600	0.550	275.0	22.2	-	No necesita
		Mmin	0.7	1.000	0.600	0.550	275.0	17.9	-	No necesita
		Qmax	0.7	1.000	0.600	0.550	275.0	17.9	-	No necesita
		Qmin	5.0	1.000	0.600	0.550	275.0	21.1	-	No necesita
55	54	Nmax	0.7	1.000	0.600	0.550	275.0	17.9	-	No necesita
		Nmin	3.7	1.000	0.600	0.550	275.0	22.2	-	No necesita
		Mmax	3.7	1.000	0.600	0.550	275.0	22.2	-	No necesita
		Mmin	0.7	1.000	0.600	0.550	275.0	17.9	-	No necesita
		Qmax	0.7	1.000	0.600	0.550	275.0	17.9	-	No necesita
		Qmin	5.0	1.000	0.600	0.550	275.0	21.1	-	No necesita
	55	Nmax	0.7	1.000	0.600	0.550	275.0	17.9	-	No necesita
		Nmin	3.7	1.000	0.600	0.550	275.0	22.4	-	No necesita
		Mmax	3.7	1.000	0.600	0.550	275.0	22.4	-	No necesita
		Mmin	0.7	1.000	0.600	0.550	275.0	17.9	-	No necesita
		Qmax	0.7	1.000	0.600	0.550	275.0	17.9	-	No necesita
		Qmin	5.0	1.000	0.600	0.550	275.0	21.5	-	No necesita
56	55	Nmax	0.7	1.000	0.600	0.550	275.0	17.9	-	No necesita
		Nmin	3.7	1.000	0.600	0.550	275.0	22.4	-	No necesita
		Mmax	3.7	1.000	0.600	0.550	275.0	22.4	-	No necesita
		Mmin	0.7	1.000	0.600	0.550	275.0	17.9	-	No necesita
		Qmax	0.7	1.000	0.600	0.550	275.0	17.9	-	No necesita
		Qmin	4.9	1.000	0.600	0.550	275.0	21.5	-	No necesita
	56	Nmax	0.7	1.000	0.600	0.550	275.0	18.0	-	No necesita
		Nmin	3.7	1.000	0.600	0.550	275.0	22.6	-	No necesita
		Mmax	3.7	1.000	0.600	0.550	275.0	22.6	-	No necesita
		Mmin	0.7	1.000	0.600	0.550	275.0	18.0	-	No necesita
		Qmax	0.7	1.000	0.600	0.550	275.0	18.0	-	No necesita
		Qmin	4.9	1.000	0.600	0.550	275.0	21.8	-	No necesita
57	56	Nmax	0.7	1.000	0.600	0.550	275.0	18.0	-	No necesita
		Nmin	3.7	1.000	0.600	0.550	275.0	22.6	-	No necesita
		Mmax	3.7	1.000	0.600	0.550	275.0	22.6	-	No necesita
		Mmin	0.7	1.000	0.600	0.550	275.0	18.0	-	No necesita

ARMADOCAM_2060_10000_1m.xls PI CAMINO Kv=2060 Kh=10000 24/11/2005

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES EN UN SÓLO LADO

FECHA: 24/11/2005

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
		Qmax	0.7	1.000	0.600	0.550	275.0	18.0	-	No necesita
		Qmin	5.0	1.000	0.600	0.550	275.0	21.8	-	No necesita
	57	Nmax	0.7	1.000	0.600	0.550	275.0	18.1	-	No necesita
		Nmin	3.7	1.000	0.600	0.550	275.0	22.9	-	No necesita
		Mmax	3.7	1.000	0.600	0.550	275.0	22.9	-	No necesita
		Mmin	0.7	1.000	0.600	0.550	275.0	18.1	-	No necesita
		Qmax	0.7	1.000	0.600	0.550	275.0	18.1	-	No necesita
		Qmin	5.0	1.000	0.600	0.550	275.0	22.1	-	No necesita
58	57	Nmax	0.7	1.000	0.600	0.550	275.0	18.1	-	No necesita
		Nmin	3.7	1.000	0.600	0.550	275.0	22.9	-	No necesita
		Mmax	3.7	1.000	0.600	0.550	275.0	22.9	-	No necesita
		Mmin	0.7	1.000	0.600	0.550	275.0	18.1	-	No necesita
		Qmax	0.7	1.000	0.600	0.550	275.0	18.1	-	No necesita
		Qmin	5.0	1.000	0.600	0.550	275.0	22.1	-	No necesita
	58	Nmax	0.7	1.000	0.600	0.550	275.0	18.1	-	No necesita
		Nmin	3.7	1.000	0.600	0.550	275.0	23.1	-	No necesita
		Mmax	3.7	1.000	0.600	0.550	275.0	23.1	-	No necesita
		Mmin	0.7	1.000	0.600	0.550	275.0	18.1	-	No necesita
		Qmax	0.7	1.000	0.600	0.550	275.0	18.1	-	No necesita
		Qmin	5.0	1.000	0.600	0.550	275.0	22.5	-	No necesita
59	58	Nmax	0.7	1.000	0.600	0.550	275.0	18.1	-	No necesita
		Nmin	3.7	1.000	0.600	0.550	275.0	23.1	-	No necesita
		Mmax	3.7	1.000	0.600	0.550	275.0	23.1	-	No necesita
		Mmin	0.7	1.000	0.600	0.550	275.0	18.1	-	No necesita
		Qmax	0.7	1.000	0.600	0.550	275.0	18.1	-	No necesita
		Qmin	4.9	1.000	0.600	0.550	275.0	22.5	-	No necesita
	59	Nmax	0.7	1.000	0.600	0.550	275.0	18.2	-	No necesita
		Nmin	3.7	1.000	0.600	0.550	275.0	23.3	-	No necesita
		Mmax	3.7	1.000	0.600	0.550	275.0	23.3	-	No necesita
		Mmin	0.7	1.000	0.600	0.550	275.0	18.2	-	No necesita
		Qmax	0.7	1.000	0.600	0.550	275.0	18.2	-	No necesita
		Qmin	4.9	1.000	0.600	0.550	275.0	22.8	-	No necesita
60	59	Nmax	0.7	1.000	0.600	0.550	275.0	18.2	-	No necesita
		Nmin	3.7	1.000	0.600	0.550	275.0	23.3	-	No necesita
		Mmax	3.7	1.000	0.600	0.550	275.0	23.3	-	No necesita
		Mmin	0.7	1.000	0.600	0.550	275.0	18.2	-	No necesita
		Qmax	0.7	1.000	0.600	0.550	275.0	18.2	-	No necesita
		Qmin	5.0	1.000	0.600	0.550	275.0	22.8	-	No necesita
	60	Nmax	0.7	1.000	0.600	0.550	275.0	18.2	-	No necesita
		Nmin	3.7	1.000	0.600	0.550	275.0	23.6	-	No necesita
		Mmax	3.7	1.000	0.600	0.550	275.0	23.6	-	No necesita
		Mmin	0.7	1.000	0.600	0.550	275.0	18.2	-	No necesita
		Qmax	0.7	1.000	0.600	0.550	275.0	18.2	-	No necesita
		Qmin	5.0	1.000	0.600	0.550	275.0	23.1	-	No necesita
61	60	Nmax	0.7	1.000	0.600	0.550	275.0	18.2	-	No necesita
		Nmin	3.7	1.000	0.600	0.550	275.0	23.6	-	No necesita
		Mmax	3.7	1.000	0.600	0.550	275.0	23.6	-	No necesita
		Mmin	0.7	1.000	0.600	0.550	275.0	18.2	-	No necesita
		Qmax	0.7	1.000	0.600	0.550	275.0	18.2	-	No necesita
		Qmin	5.0	1.000	0.600	0.550	275.0	23.1	-	No necesita
	61	Nmax	0.7	1.000	0.600	0.550	275.0	18.3	-	No necesita
		Nmin	3.7	1.000	0.600	0.550	275.0	23.8	-	No necesita

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES EN UN SÓLO LADO

FECHA: 24/11/2005

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
		Mmax	3.7	1.000	0.600	0.550	275.0	23.8	-	No necesita
		Mmin	0.7	1.000	0.600	0.550	275.0	18.3	-	No necesita
		Qmax	0.7	1.000	0.600	0.550	275.0	18.3	-	No necesita
		Qmin	5.0	1.000	0.600	0.550	275.0	23.4	-	No necesita
62	61	Nmax	0.7	1.000	0.600	0.550	275.0	18.3	-	No necesita
		Nmin	3.7	1.000	0.600	0.550	275.0	23.8	-	No necesita
		Mmax	3.7	1.000	0.600	0.550	275.0	23.8	-	No necesita
		Mmin	0.7	1.000	0.600	0.550	275.0	18.3	-	No necesita
		Qmax	0.7	1.000	0.600	0.550	275.0	18.3	-	No necesita
		Qmin	5.0	1.000	0.600	0.550	275.0	23.4	-	No necesita
	62	Nmax	0.7	1.000	0.600	0.550	275.0	18.4	-	No necesita
		Nmin	3.7	1.000	0.600	0.550	275.0	24.0	-	No necesita
		Mmax	3.7	1.000	0.600	0.550	275.0	24.0	-	No necesita
		Mmin	0.7	1.000	0.600	0.550	275.0	18.4	-	No necesita
		Qmax	0.7	1.000	0.600	0.550	275.0	18.4	-	No necesita
		Qmin	5.0	1.000	0.600	0.550	275.0	23.7	-	No necesita
63	62	Nmax	0.7	1.000	0.600	0.550	275.0	18.4	-	No necesita
		Nmin	3.7	1.000	0.600	0.550	275.0	24.0	-	No necesita
		Mmax	3.7	1.000	0.600	0.550	275.0	24.0	-	No necesita
		Mmin	0.7	1.000	0.600	0.550	275.0	18.4	-	No necesita
		Qmax	0.7	1.000	0.600	0.550	275.0	18.4	-	No necesita
		Qmin	5.0	1.000	0.600	0.550	275.0	23.7	-	No necesita
	63	Nmax	0.7	1.000	0.600	0.550	275.0	18.4	-	No necesita
		Nmin	3.7	1.000	0.600	0.550	275.0	24.2	-	No necesita
		Mmax	3.7	1.000	0.600	0.550	275.0	24.2	-	No necesita
		Mmin	0.7	1.000	0.600	0.550	275.0	18.4	-	No necesita
		Qmax	0.7	1.000	0.600	0.550	275.0	18.4	-	No necesita
		Qmin	5.0	1.000	0.600	0.550	275.0	24.0	-	No necesita
64	63	Nmax	0.7	1.000	0.600	0.550	275.0	18.4	-	No necesita
		Nmin	3.7	1.000	0.600	0.550	275.0	24.2	-	No necesita
		Mmax	3.7	1.000	0.600	0.550	275.0	24.2	-	No necesita
		Mmin	0.7	1.000	0.600	0.550	275.0	18.4	-	No necesita
		Qmax	0.7	1.000	0.600	0.550	275.0	18.4	-	No necesita
		Qmin	5.0	1.000	0.600	0.550	275.0	24.0	-	No necesita
	64	Nmax	0.7	1.000	0.600	0.550	275.0	18.5	-	No necesita
		Nmin	3.7	1.000	0.600	0.550	275.0	24.4	-	No necesita
		Mmax	3.7	1.000	0.600	0.550	275.0	24.4	-	No necesita
		Mmin	0.7	1.000	0.600	0.550	275.0	18.5	-	No necesita
		Qmax	0.7	1.000	0.600	0.550	275.0	18.5	-	No necesita
		Qmin	5.0	1.000	0.600	0.550	275.0	24.3	-	No necesita

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES A AMBOS LADOS

FECHA: 24/11/2005

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
1	1	Nmax	24.2	1.000	0.600	0.550	275.0	25.7	-	No necesita
		Nmin	45.7	1.000	0.600	0.550	275.0	35.4	31.1	7.4
		Mmax	24.2	1.000	0.600	0.550	275.0	25.7	-	No necesita
		Mmin	45.7	1.000	0.600	0.550	275.0	35.4	31.1	7.4
		Qmax	24.2	1.000	0.600	0.550	275.0	25.7	-	No necesita
		Qmin	45.7	1.000	0.600	0.550	275.0	35.4	31.1	7.4
	2	Nmax	24.2	1.000	0.600	0.550	275.0	23.4	20.5	1.9
		Nmin	45.7	1.000	0.600	0.550	275.0	32.4	26.0	9.9
		Mmax	24.2	1.000	0.600	0.550	275.0	23.4	20.5	1.9
		Mmin	45.7	1.000	0.600	0.550	275.0	32.4	26.0	9.9
		Qmax	24.2	1.000	0.600	0.550	275.0	23.4	20.5	1.9
		Qmin	45.7	1.000	0.600	0.550	275.0	27.2	19.5	13.2
2	2	Nmax	22.9	1.000	0.600	0.550	275.0	23.4	-	No necesita
		Nmin	43.2	1.000	0.600	0.550	275.0	32.4	25.5	8.9
		Mmax	22.9	1.000	0.600	0.550	275.0	23.4	-	No necesita
		Mmin	43.2	1.000	0.600	0.550	275.0	32.4	25.5	8.9
		Qmax	22.9	1.000	0.600	0.550	275.0	23.4	-	No necesita
		Qmin	43.2	1.000	0.600	0.550	275.0	32.4	25.5	8.9
	3	Nmax	22.9	1.000	0.600	0.550	275.0	20.5	18.1	2.4
		Nmin	43.2	1.000	0.600	0.550	275.0	28.6	20.9	11.2
		Mmax	22.9	1.000	0.600	0.550	275.0	20.5	18.1	2.4
		Mmin	43.2	1.000	0.600	0.550	275.0	28.6	20.9	11.2
		Qmax	22.9	1.000	0.600	0.550	275.0	20.5	18.1	2.4
		Qmin	43.2	1.000	0.600	0.550	275.0	23.5	15.0	14.2
3	3	Nmax	20.5	1.000	0.600	0.550	275.0	20.5	-	No necesita
		Nmin	38.5	1.000	0.600	0.550	275.0	28.6	20.2	9.2
		Mmax	20.5	1.000	0.600	0.550	275.0	20.5	-	No necesita
		Mmin	38.5	1.000	0.600	0.550	275.0	28.6	20.2	9.2
		Qmax	20.5	1.000	0.600	0.550	275.0	20.5	-	No necesita
		Qmin	38.5	1.000	0.600	0.550	275.0	28.6	20.2	9.2
	4	Nmax	20.5	1.000	0.600	0.550	275.0	16.7	14.8	2.8
		Nmin	38.5	1.000	0.600	0.550	275.0	23.4	16.2	11.3
		Mmax	20.5	1.000	0.600	0.550	275.0	16.7	14.8	2.8
		Mmin	35.5	1.000	0.600	0.550	275.0	22.6	16.2	9.7
		Qmax	20.5	1.000	0.600	0.550	275.0	16.7	14.8	2.8
		Qmin	38.5	1.000	0.600	0.550	275.0	18.2	16.2	11.3
4	4	Nmax	17.1	1.000	0.600	0.550	275.0	16.7	14.8	1.1
		Nmin	31.8	1.000	0.600	0.550	275.0	23.4	15.1	8.4
		Mmax	17.1	1.000	0.600	0.550	275.0	16.7	14.8	1.1
		Mmin	29.4	1.000	0.600	0.550	275.0	22.6	14.3	7.6
		Qmax	17.1	1.000	0.600	0.550	275.0	16.7	14.8	1.1
		Qmin	31.8	1.000	0.600	0.550	275.0	23.4	15.1	8.4
	5	Nmax	17.1	1.000	0.600	0.550	275.0	11.6	10.6	3.3
		Nmin	31.8	1.000	0.600	0.550	275.0	20.3	13.6	9.2
		Mmax	27.9	1.000	0.600	0.550	275.0	19.6	14.2	6.9
		Mmin	17.1	1.000	0.600	0.550	275.0	11.6	10.6	3.3
		Qmax	17.1	1.000	0.600	0.550	275.0	11.6	10.6	3.3
		Qmin	31.8	1.000	0.600	0.550	275.0	15.2	13.6	9.2
5	5	Nmax	12.7	1.000	0.600	0.550	275.0	11.6	10.6	1.1
		Nmin	23.2	1.000	0.600	0.550	275.0	20.3	12.1	5.6
		Mmax	20.0	1.000	0.600	0.550	275.0	19.6	11.4	4.4
		Mmin	12.7	1.000	0.600	0.550	275.0	11.6	10.6	1.1

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES A AMBOS LADOS

FECHA: 24/11/2005

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
		Qmax	12.7	1.000	0.600	0.550	275.0	11.6	10.6	1.1
		Qmin	23.2	1.000	0.600	0.550	275.0	20.3	12.1	5.6
	6	Nmax	12.7	1.000	0.600	0.550	275.0	16.6	-	No necesita
		Nmin	23.2	1.000	0.600	0.550	275.0	25.0	-	No necesita
		Mmax	23.2	1.000	0.600	0.550	275.0	25.0	-	No necesita
		Mmin	12.7	1.000	0.600	0.550	275.0	16.6	-	No necesita
		Qmax	12.7	1.000	0.600	0.550	275.0	16.6	-	No necesita
		Qmin	23.2	1.000	0.600	0.550	275.0	19.9	9.6	6.9
6	6	Nmax	7.5	1.000	0.600	0.550	275.0	16.6	-	No necesita
		Nmin	12.7	1.000	0.600	0.550	275.0	25.0	-	No necesita
		Mmax	12.7	1.000	0.600	0.550	275.0	25.0	-	No necesita
		Mmin	7.5	1.000	0.600	0.550	275.0	16.6	-	No necesita
		Qmax	7.5	1.000	0.600	0.550	275.0	16.6	-	No necesita
		Qmin	12.7	1.000	0.600	0.550	275.0	25.0	-	No necesita
	7	Nmax	7.5	1.000	0.600	0.550	275.0	18.1	-	No necesita
		Nmin	12.7	1.000	0.600	0.550	275.0	26.6	-	No necesita
		Mmax	12.7	1.000	0.600	0.550	275.0	26.6	-	No necesita
		Mmin	7.5	1.000	0.600	0.550	275.0	18.1	-	No necesita
		Qmax	7.5	1.000	0.600	0.550	275.0	18.1	-	No necesita
		Qmin	12.7	1.000	0.600	0.550	275.0	21.5	-	No necesita
7	7	Nmax	1.4	1.000	0.600	0.550	275.0	18.0	-	No necesita
		Nmin	1.2	1.000	0.600	0.550	275.0	26.6	-	No necesita
		Mmax	1.2	1.000	0.600	0.550	275.0	26.6	-	No necesita
		Mmin	1.4	1.000	0.600	0.550	275.0	18.0	-	No necesita
		Qmax	1.3	1.000	0.600	0.550	275.0	24.8	-	No necesita
		Qmin	1.4	1.000	0.600	0.550	275.0	18.0	-	No necesita
	8	Nmax	1.4	1.000	0.600	0.550	275.0	18.2	-	No necesita
		Nmin	1.2	1.000	0.600	0.550	275.0	26.5	-	No necesita
		Mmax	1.2	1.000	0.600	0.550	275.0	26.5	-	No necesita
		Mmin	1.4	1.000	0.600	0.550	275.0	18.2	-	No necesita
		Qmax	1.3	1.000	0.600	0.550	275.0	24.5	-	No necesita
		Qmin	1.4	1.000	0.600	0.550	275.0	18.2	-	No necesita
8	8	Nmax	6.1	1.000	0.600	0.550	275.0	18.2	-	No necesita
		Nmin	14.6	1.000	0.600	0.550	275.0	26.5	-	No necesita
		Mmax	14.6	1.000	0.600	0.550	275.0	26.5	-	No necesita
		Mmin	6.1	1.000	0.600	0.550	275.0	18.2	-	No necesita
		Qmax	14.9	1.000	0.600	0.550	275.0	24.5	-	No necesita
		Qmin	6.1	1.000	0.600	0.550	275.0	18.2	-	No necesita
	9	Nmax	6.1	1.000	0.600	0.550	275.0	16.8	-	No necesita
		Nmin	14.6	1.000	0.600	0.550	275.0	24.4	-	No necesita
		Mmax	14.6	1.000	0.600	0.550	275.0	24.4	-	No necesita
		Mmin	6.1	1.000	0.600	0.550	275.0	16.8	-	No necesita
		Qmax	14.9	1.000	0.600	0.550	275.0	22.2	-	No necesita
		Qmin	6.1	1.000	0.600	0.550	275.0	16.8	-	No necesita
9	9	Nmax	14.6	1.000	0.600	0.550	275.0	16.8	-	No necesita
		Nmin	31.7	1.000	0.600	0.550	275.0	24.4	14.4	8.8
		Mmax	31.7	1.000	0.600	0.550	275.0	24.4	14.4	8.8
		Mmin	14.6	1.000	0.600	0.550	275.0	16.8	-	No necesita
		Qmax	31.7	1.000	0.600	0.550	275.0	24.4	14.4	8.8
		Qmin	14.6	1.000	0.600	0.550	275.0	16.8	-	No necesita
	10	Nmax	14.6	1.000	0.600	0.550	275.0	12.0	10.8	1.9
		Nmin	31.7	1.000	0.600	0.550	275.0	16.6	10.6	10.6

ARMADOCAM_2060_10000_2m.xls PI CAMINO Kv=2060 Kh=10000 24/11/2005

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES A AMBOS LADOS

FECHA: 24/11/2005

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
		Mmax	14.6	1.000	0.600	0.550	275.0	12.0	10.8	1.9
		Mmin	30.7	1.000	0.600	0.550	275.0	16.1	11.2	9.9
		Qmax	31.7	1.000	0.600	0.550	275.0	16.6	10.6	10.6
		Qmin	14.6	1.000	0.600	0.550	275.0	12.0	10.8	1.9
10	10	Nmax	24.3	1.000	0.600	0.550	275.0	12.0	10.9	6.8
		Nmin	51.2	1.000	0.600	0.550	275.0	16.6	12.0	19.8
		Mmax	24.3	1.000	0.600	0.550	275.0	12.0	10.9	6.8
		Mmin	48.8	1.000	0.600	0.550	275.0	16.1	11.4	18.9
		Qmax	51.2	1.000	0.600	0.550	275.0	16.6	12.0	19.8
		Qmin	24.3	1.000	0.600	0.550	275.0	12.0	10.9	6.8
	11	Nmax	24.3	1.000	0.600	0.550	275.0	17.4	15.3	4.5
		Nmin	51.2	1.000	0.600	0.550	275.0	26.9	20.6	15.4
		Mmax	24.3	1.000	0.600	0.550	275.0	17.4	15.3	4.5
		Mmin	48.8	1.000	0.600	0.550	275.0	25.6	19.2	15.0
		Qmax	51.2	1.000	0.600	0.550	275.0	26.9	20.6	15.4
		Qmin	24.3	1.000	0.600	0.550	275.0	17.4	15.3	4.5
11	11	Nmax	35.1	1.000	0.600	0.550	275.0	17.4	15.3	10.0
		Nmin	73.1	1.000	0.600	0.550	275.0	26.9	22.4	25.6
		Mmax	35.1	1.000	0.600	0.550	275.0	17.4	15.3	10.0
		Mmin	69.1	1.000	0.600	0.550	275.0	25.6	22.0	23.8
		Qmax	73.1	1.000	0.600	0.550	275.0	26.9	22.4	25.6
		Qmin	35.1	1.000	0.600	0.550	275.0	17.4	15.3	10.0
	12	Nmax	35.1	1.000	0.600	0.550	275.0	22.1	19.2	8.0
		Nmin	73.1	1.000	0.600	0.550	275.0	32.7	24.2	24.7
		Mmax	35.1	1.000	0.600	0.550	275.0	22.1	19.2	8.0
		Mmin	73.1	1.000	0.600	0.550	275.0	32.7	24.2	24.7
		Qmax	73.1	1.000	0.600	0.550	275.0	32.7	24.2	24.7
		Qmin	35.1	1.000	0.600	0.550	275.0	22.1	19.2	8.0
12	12	Nmax	47.1	1.000	0.600	0.550	275.0	22.1	18.4	14.5
		Nmin	97.2	1.000	0.600	0.550	275.0	32.7	27.3	35.3
		Mmax	47.1	1.000	0.600	0.550	275.0	22.1	18.4	14.5
		Mmin	97.2	1.000	0.600	0.550	275.0	32.7	27.3	35.3
		Qmax	97.2	1.000	0.600	0.550	275.0	32.7	27.3	35.3
		Qmin	47.1	1.000	0.600	0.550	275.0	22.1	18.4	14.5
	13	Nmax	47.1	1.000	0.600	0.550	275.0	26.0	21.7	12.8
		Nmin	97.2	1.000	0.600	0.550	275.0	38.0	31.6	33.1
		Mmax	47.1	1.000	0.600	0.550	275.0	26.0	21.7	12.8
		Mmin	97.2	1.000	0.600	0.550	275.0	38.0	31.6	33.1
		Qmax	97.2	1.000	0.600	0.550	275.0	38.0	31.6	33.1
		Qmin	47.1	1.000	0.600	0.550	275.0	26.0	21.7	12.8
13	13	Nmax	34.0	1.000	0.500	0.450	225.0	20.9	17.4	10.2
		Nmin	70.5	1.000	0.500	0.450	225.0	28.0	23.4	29.1
		Mmax	34.0	1.000	0.500	0.450	225.0	20.9	17.4	10.2
		Mmin	70.5	1.000	0.500	0.450	225.0	28.0	23.4	29.1
		Qmax	34.0	1.000	0.500	0.450	225.0	20.9	17.4	10.2
		Qmin	70.5	1.000	0.500	0.450	225.0	28.0	23.4	29.1
	15	Nmax	31.8	1.000	0.500	0.450	225.0	19.4	16.2	9.7
		Nmin	67.7	1.000	0.500	0.450	225.0	25.8	21.5	28.5
		Mmax	31.8	1.000	0.500	0.450	225.0	19.4	16.2	9.7
		Mmin	67.7	1.000	0.500	0.450	225.0	25.8	21.5	28.5
		Qmax	31.8	1.000	0.500	0.450	225.0	19.4	16.2	9.7
		Qmin	67.7	1.000	0.500	0.450	225.0	25.8	21.5	28.5

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES A AMBOS LADOS

FECHA: 24/11/2005

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
14	15	Nmax	31.8	1.000	0.500	0.450	225.0	19.4	16.2	9.7
		Nmin	67.8	1.000	0.500	0.450	225.0	25.8	21.5	28.6
		Mmax	31.8	1.000	0.500	0.450	225.0	19.4	16.2	9.7
		Mmin	67.8	1.000	0.500	0.450	225.0	25.8	21.5	28.6
		Qmax	31.8	1.000	0.500	0.450	225.0	19.4	16.2	9.7
		Qmin	67.8	1.000	0.500	0.450	225.0	25.8	21.5	28.6
	17	Nmax	29.7	1.000	0.500	0.450	225.0	17.9	14.9	9.1
		Nmin	65.0	1.000	0.500	0.450	225.0	23.6	19.6	28.0
		Mmax	29.7	1.000	0.500	0.450	225.0	17.9	14.9	9.1
		Mmin	58.0	1.000	0.500	0.450	225.0	23.7	19.7	23.7
		Qmax	29.7	1.000	0.500	0.450	225.0	17.9	14.9	9.1
		Qmin	65.0	1.000	0.500	0.450	225.0	23.6	19.6	28.0
15	17	Nmax	29.7	1.000	0.500	0.450	225.0	17.8	14.9	9.2
		Nmin	65.1	1.000	0.500	0.450	225.0	23.5	19.6	28.0
		Mmax	29.7	1.000	0.500	0.450	225.0	17.8	14.9	9.2
		Mmin	58.1	1.000	0.500	0.450	225.0	23.7	19.7	23.7
		Qmax	29.7	1.000	0.500	0.450	225.0	17.8	14.9	9.2
		Qmin	65.1	1.000	0.500	0.450	225.0	23.5	19.6	28.0
	19	Nmax	27.5	1.000	0.500	0.450	225.0	16.2	13.5	8.7
		Nmin	60.3	1.000	0.500	0.450	225.0	21.1	17.6	26.3
		Mmax	27.5	1.000	0.500	0.450	225.0	16.2	13.5	8.7
		Mmin	56.9	1.000	0.500	0.450	225.0	21.5	17.9	24.1
		Qmax	27.5	1.000	0.500	0.450	225.0	16.2	13.5	8.7
		Qmin	60.3	1.000	0.500	0.450	225.0	21.1	17.6	26.3
16	19	Nmax	27.5	1.000	0.500	0.450	225.0	16.2	13.5	8.7
		Nmin	60.3	1.000	0.500	0.450	225.0	21.1	17.6	26.4
		Mmax	27.5	1.000	0.500	0.450	225.0	16.2	13.5	8.7
		Mmin	56.9	1.000	0.500	0.450	225.0	21.5	17.9	24.1
		Qmax	27.5	1.000	0.500	0.450	225.0	16.2	13.5	8.7
		Qmin	60.3	1.000	0.500	0.450	225.0	21.1	17.6	26.4
	21	Nmax	25.4	1.000	0.500	0.450	225.0	14.2	11.9	8.3
		Nmin	55.5	1.000	0.500	0.450	225.0	18.5	15.4	24.8
		Mmax	25.4	1.000	0.500	0.450	225.0	14.2	11.9	8.3
		Mmin	55.7	1.000	0.500	0.450	225.0	19.0	15.8	24.7
		Qmax	25.4	1.000	0.500	0.450	225.0	14.2	11.9	8.3
		Qmin	55.7	1.000	0.500	0.450	225.0	19.0	15.8	24.7
17	21	Nmax	25.4	1.000	0.500	0.450	225.0	14.2	11.9	8.3
		Nmin	55.5	1.000	0.500	0.450	225.0	18.5	15.4	24.8
		Mmax	25.4	1.000	0.500	0.450	225.0	14.2	11.9	8.3
		Mmin	55.8	1.000	0.500	0.450	225.0	19.0	15.8	24.7
		Qmax	25.4	1.000	0.500	0.450	225.0	14.2	11.9	8.3
		Qmin	55.8	1.000	0.500	0.450	225.0	19.0	15.8	24.7
	23	Nmax	23.2	1.000	0.500	0.450	225.0	11.9	9.9	8.2
		Nmin	50.7	1.000	0.500	0.450	225.0	15.3	12.7	23.4
		Mmax	23.2	1.000	0.500	0.450	225.0	11.9	9.9	8.2
		Mmin	54.6	1.000	0.500	0.450	225.0	15.8	13.2	25.6
		Qmax	23.2	1.000	0.500	0.450	225.0	11.9	9.9	8.2
		Qmin	54.6	1.000	0.500	0.450	225.0	15.8	13.2	25.6
18	23	Nmax	23.2	1.000	0.500	0.450	225.0	11.9	9.9	8.2
		Nmin	50.8	1.000	0.500	0.450	225.0	15.3	12.7	23.5
		Mmax	23.2	1.000	0.500	0.450	225.0	11.9	9.9	8.2
		Mmin	54.6	1.000	0.500	0.450	225.0	15.8	13.2	25.6

ARMADOCAM_2060_10000_2m.xls PI CAMINO Kv=2060 Kh=10000 24/11/2005

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES A AMBOS LADOS

FECHA: 24/11/2005

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
		Qmax	23.2	1.000	0.500	0.450	225.0	11.9	9.9	8.2
		Qmin	54.6	1.000	0.500	0.450	225.0	15.8	13.2	25.6
	25	Nmax	18.8	1.000	0.500	0.450	225.0	6.8	5.7	8.1
		Nmin	41.2	1.000	0.500	0.450	225.0	9.6	8.0	20.5
		Mmax	41.2	1.000	0.500	0.450	225.0	9.6	8.0	20.5
		Mmin	18.8	1.000	0.500	0.450	225.0	6.8	5.7	8.1
		Qmax	18.8	1.000	0.500	0.450	225.0	6.8	5.7	8.1
		Qmin	44.2	1.000	0.500	0.450	225.0	9.5	7.9	22.4
19	25	Nmax	18.8	1.000	0.500	0.450	225.0	6.8	5.7	8.1
		Nmin	41.2	1.000	0.500	0.450	225.0	9.6	8.0	20.5
		Mmax	41.2	1.000	0.500	0.450	225.0	9.6	8.0	20.5
		Mmin	18.8	1.000	0.500	0.450	225.0	6.8	5.7	8.1
		Qmax	18.8	1.000	0.500	0.450	225.0	6.8	5.7	8.1
		Qmin	44.2	1.000	0.500	0.450	225.0	9.5	7.9	22.4
	27	Nmax	14.5	1.000	0.500	0.450	225.0	12.4	10.4	2.5
		Nmin	31.6	1.000	0.500	0.450	225.0	16.5	13.7	11.0
		Mmax	33.8	1.000	0.500	0.450	225.0	16.8	14.0	12.2
		Mmin	14.5	1.000	0.500	0.450	225.0	12.4	10.4	2.5
		Qmax	14.5	1.000	0.500	0.450	225.0	12.4	10.4	2.5
		Qmin	33.8	1.000	0.500	0.450	225.0	16.8	14.0	12.2
20	27	Nmax	14.5	1.000	0.500	0.450	225.0	12.4	10.4	2.6
		Nmin	31.6	1.000	0.500	0.450	225.0	16.5	13.7	11.0
		Mmax	33.8	1.000	0.500	0.450	225.0	16.8	14.0	12.2
		Mmin	14.5	1.000	0.500	0.450	225.0	12.4	10.4	2.6
		Qmax	14.5	1.000	0.500	0.450	225.0	12.4	10.4	2.6
		Qmin	33.8	1.000	0.500	0.450	225.0	16.8	14.0	12.2
	29	Nmax	10.2	1.000	0.500	0.450	225.0	14.6	-	No necesita
		Nmin	22.0	1.000	0.500	0.450	225.0	19.4	16.2	3.6
		Mmax	23.4	1.000	0.500	0.450	225.0	19.8	16.5	4.3
		Mmin	10.2	1.000	0.500	0.450	225.0	14.6	-	No necesita
		Qmax	10.2	1.000	0.500	0.450	225.0	14.6	-	No necesita
		Qmin	23.4	1.000	0.500	0.450	225.0	19.8	16.5	4.3
21	29	Nmax	10.2	1.000	0.500	0.450	225.0	14.6	-	No necesita
		Nmin	22.0	1.000	0.500	0.450	225.0	19.4	16.2	3.6
		Mmax	23.4	1.000	0.500	0.450	225.0	19.8	16.5	4.3
		Mmin	10.2	1.000	0.500	0.450	225.0	14.6	-	No necesita
		Qmax	10.2	1.000	0.500	0.450	225.0	14.6	-	No necesita
		Qmin	23.4	1.000	0.500	0.450	225.0	19.8	16.5	4.3
	31	Nmax	5.8	1.000	0.500	0.450	225.0	15.8	-	No necesita
		Nmin	12.4	1.000	0.500	0.450	225.0	20.9	-	No necesita
		Mmax	13.0	1.000	0.500	0.450	225.0	21.4	-	No necesita
		Mmin	5.8	1.000	0.500	0.450	225.0	15.8	-	No necesita
		Qmax	5.8	1.000	0.500	0.450	225.0	15.8	-	No necesita
		Qmin	13.0	1.000	0.500	0.450	225.0	21.4	-	No necesita
22	31	Nmax	5.8	1.000	0.500	0.450	225.0	15.8	-	No necesita
		Nmin	12.4	1.000	0.500	0.450	225.0	20.9	-	No necesita
		Mmax	13.0	1.000	0.500	0.450	225.0	21.4	-	No necesita
		Mmin	5.8	1.000	0.500	0.450	225.0	15.8	-	No necesita
		Qmax	5.8	1.000	0.500	0.450	225.0	15.8	-	No necesita
		Qmin	13.0	1.000	0.500	0.450	225.0	21.4	-	No necesita
	33	Nmax	1.4	1.000	0.500	0.450	225.0	16.3	-	No necesita
		Nmin	2.8	1.000	0.500	0.450	225.0	21.6	-	No necesita

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES A AMBOS LADOS

FECHA: 24/11/2005

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
		Mmax	2.6	1.000	0.500	0.450	225.0	22.0	-	No necesita
		Mmin	1.4	1.000	0.500	0.450	225.0	16.3	-	No necesita
		Qmax	1.4	1.000	0.500	0.450	225.0	16.3	-	No necesita
		Qmin	2.8	1.000	0.500	0.450	225.0	21.6	-	No necesita
23	33	Nmax	1.4	1.000	0.500	0.450	225.0	16.3	-	No necesita
		Nmin	2.8	1.000	0.500	0.450	225.0	21.6	-	No necesita
		Mmax	2.6	1.000	0.500	0.450	225.0	22.0	-	No necesita
		Mmin	1.4	1.000	0.500	0.450	225.0	16.3	-	No necesita
		Qmax	1.4	1.000	0.500	0.450	225.0	16.3	-	No necesita
		Qmin	2.8	1.000	0.500	0.450	225.0	21.6	-	No necesita
	35	Nmax	2.9	1.000	0.500	0.450	225.0	16.2	-	No necesita
		Nmin	6.8	1.000	0.500	0.450	225.0	21.4	-	No necesita
		Mmax	7.8	1.000	0.500	0.450	225.0	21.8	-	No necesita
		Mmin	2.9	1.000	0.500	0.450	225.0	16.2	-	No necesita
		Qmax	7.8	1.000	0.500	0.450	225.0	21.8	-	No necesita
		Qmin	2.9	1.000	0.500	0.450	225.0	16.2	-	No necesita
24	35	Nmax	2.9	1.000	0.500	0.450	225.0	16.2	-	No necesita
		Nmin	6.8	1.000	0.500	0.450	225.0	21.4	-	No necesita
		Mmax	7.8	1.000	0.500	0.450	225.0	21.8	-	No necesita
		Mmin	2.9	1.000	0.500	0.450	225.0	16.2	-	No necesita
		Qmax	7.8	1.000	0.500	0.450	225.0	21.8	-	No necesita
		Qmin	2.9	1.000	0.500	0.450	225.0	16.2	-	No necesita
	37	Nmax	7.3	1.000	0.500	0.450	225.0	15.5	-	No necesita
		Nmin	16.4	1.000	0.500	0.450	225.0	20.4	-	No necesita
		Mmax	18.2	1.000	0.500	0.450	225.0	20.7	-	No necesita
		Mmin	7.3	1.000	0.500	0.450	225.0	15.5	-	No necesita
		Qmax	18.2	1.000	0.500	0.450	225.0	20.7	-	No necesita
		Qmin	7.3	1.000	0.500	0.450	225.0	15.5	-	No necesita
25	37	Nmax	7.3	1.000	0.500	0.450	225.0	15.5	-	No necesita
		Nmin	16.3	1.000	0.500	0.450	225.0	20.4	-	No necesita
		Mmax	18.2	1.000	0.500	0.450	225.0	20.7	-	No necesita
		Mmin	7.3	1.000	0.500	0.450	225.0	15.5	-	No necesita
		Qmax	18.2	1.000	0.500	0.450	225.0	20.7	-	No necesita
		Qmin	7.3	1.000	0.500	0.450	225.0	15.5	-	No necesita
	39	Nmax	11.6	1.000	0.500	0.450	225.0	14.0	-	No necesita
		Nmin	25.9	1.000	0.500	0.450	225.0	18.4	15.3	6.5
		Mmax	28.6	1.000	0.500	0.450	225.0	18.5	15.4	8.1
		Mmin	11.6	1.000	0.500	0.450	225.0	14.0	-	No necesita
		Qmax	28.6	1.000	0.500	0.450	225.0	18.5	15.4	8.1
		Qmin	11.6	1.000	0.500	0.450	225.0	14.0	-	No necesita
26	39	Nmax	11.6	1.000	0.500	0.450	225.0	14.0	-	No necesita
		Nmin	25.9	1.000	0.500	0.450	225.0	18.4	15.3	6.5
		Mmax	28.6	1.000	0.500	0.450	225.0	18.5	15.4	8.1
		Mmin	11.6	1.000	0.500	0.450	225.0	14.0	-	No necesita
		Qmax	28.6	1.000	0.500	0.450	225.0	18.5	15.4	8.1
		Qmin	11.6	1.000	0.500	0.450	225.0	14.0	-	No necesita
	41	Nmax	16.0	1.000	0.500	0.450	225.0	11.2	9.3	4.1
		Nmin	35.5	1.000	0.500	0.450	225.0	14.6	12.2	14.4
		Mmax	35.5	1.000	0.500	0.450	225.0	14.6	12.2	14.4
		Mmin	16.0	1.000	0.500	0.450	225.0	11.2	9.3	4.1
		Qmax	39.0	1.000	0.500	0.450	225.0	14.2	11.9	16.7
		Qmin	16.0	1.000	0.500	0.450	225.0	11.2	9.3	4.1

ARMADOCAM_2060_10000_2m.xls PI CAMINO Kv=2060 Kh=10000 24/11/2005

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES A AMBOS LADOS

FECHA: 24/11/2005

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
27	41	Nmax	16.0	1.000	0.500	0.450	225.0	11.2	9.3	4.1
		Nmin	35.5	1.000	0.500	0.450	225.0	14.6	12.2	14.4
		Mmax	35.5	1.000	0.500	0.450	225.0	14.6	12.2	14.4
		Mmin	16.0	1.000	0.500	0.450	225.0	11.2	9.3	4.1
		Qmax	39.0	1.000	0.500	0.450	225.0	14.2	11.9	16.7
		Qmin	16.0	1.000	0.500	0.450	225.0	11.2	9.3	4.1
	43	Nmax	20.4	1.000	0.500	0.450	225.0	6.9	5.7	9.0
		Nmin	45.1	1.000	0.500	0.450	225.0	9.3	7.7	23.1
		Mmax	20.4	1.000	0.500	0.450	225.0	6.9	5.7	9.0
		Mmin	49.4	1.000	0.500	0.450	225.0	11.1	9.3	24.8
		Qmax	49.4	1.000	0.500	0.450	225.0	11.1	9.3	24.8
		Qmin	20.4	1.000	0.500	0.450	225.0	6.9	5.7	9.0
28	43	Nmax	20.3	1.000	0.500	0.450	225.0	6.9	5.8	9.0
		Nmin	45.1	1.000	0.500	0.450	225.0	9.3	7.7	23.1
		Mmax	20.3	1.000	0.500	0.450	225.0	6.9	5.8	9.0
		Mmin	49.3	1.000	0.500	0.450	225.0	11.1	9.3	24.7
		Qmax	49.3	1.000	0.500	0.450	225.0	11.1	9.3	24.7
		Qmin	20.3	1.000	0.500	0.450	225.0	6.9	5.8	9.0
	45	Nmax	22.5	1.000	0.500	0.450	225.0	11.1	9.2	8.2
		Nmin	49.9	1.000	0.500	0.450	225.0	14.6	12.2	23.3
		Mmax	22.5	1.000	0.500	0.450	225.0	11.1	9.2	8.2
		Mmin	50.5	1.000	0.500	0.450	225.0	15.7	13.1	23.1
		Qmax	50.5	1.000	0.500	0.450	225.0	15.7	13.1	23.1
		Qmin	22.5	1.000	0.500	0.450	225.0	11.1	9.2	8.2
29	45	Nmax	22.5	1.000	0.500	0.450	225.0	11.1	9.2	8.2
		Nmin	49.9	1.000	0.500	0.450	225.0	14.6	12.2	23.3
		Mmax	22.5	1.000	0.500	0.450	225.0	11.1	9.2	8.2
		Mmin	50.6	1.000	0.500	0.450	225.0	15.7	13.1	23.1
		Qmax	50.6	1.000	0.500	0.450	225.0	15.7	13.1	23.1
		Qmin	22.5	1.000	0.500	0.450	225.0	11.1	9.2	8.2
	47	Nmax	24.7	1.000	0.500	0.450	225.0	13.6	11.3	8.2
		Nmin	54.6	1.000	0.500	0.450	225.0	17.9	15.0	24.5
		Mmax	24.7	1.000	0.500	0.450	225.0	13.6	11.3	8.2
		Mmin	51.7	1.000	0.500	0.450	225.0	18.7	15.5	22.3
		Qmax	54.6	1.000	0.500	0.450	225.0	17.9	15.0	24.5
		Qmin	24.7	1.000	0.500	0.450	225.0	13.6	11.3	8.2
30	47	Nmax	24.7	1.000	0.500	0.450	225.0	13.6	11.3	8.2
		Nmin	54.6	1.000	0.500	0.450	225.0	17.9	15.0	24.5
		Mmax	24.7	1.000	0.500	0.450	225.0	13.6	11.3	8.2
		Mmin	51.7	1.000	0.500	0.450	225.0	18.7	15.5	22.3
		Qmax	54.6	1.000	0.500	0.450	225.0	17.9	15.0	24.5
		Qmin	24.7	1.000	0.500	0.450	225.0	13.6	11.3	8.2
	49	Nmax	26.9	1.000	0.500	0.450	225.0	15.6	13.0	8.6
		Nmin	59.4	1.000	0.500	0.450	225.0	20.7	17.2	26.0
		Mmax	26.9	1.000	0.500	0.450	225.0	15.6	13.0	8.6
		Mmin	52.9	1.000	0.500	0.450	225.0	21.0	17.5	21.8
		Qmax	59.4	1.000	0.500	0.450	225.0	20.7	17.2	26.0
		Qmin	26.9	1.000	0.500	0.450	225.0	15.6	13.0	8.6
31	49	Nmax	26.8	1.000	0.500	0.450	225.0	15.6	13.0	8.5
		Nmin	59.4	1.000	0.500	0.450	225.0	20.7	17.2	26.0
		Mmax	26.8	1.000	0.500	0.450	225.0	15.6	13.0	8.5
		Mmin	52.9	1.000	0.500	0.450	225.0	21.1	17.5	21.8

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES A AMBOS LADOS

FECHA: 24/11/2005

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
		Qmax	59.4	1.000	0.500	0.450	225.0	20.7	17.2	26.0
		Qmin	26.8	1.000	0.500	0.450	225.0	15.6	13.0	8.5
	51	Nmax	29.0	1.000	0.500	0.450	225.0	17.3	14.5	9.0
		Nmin	62.1	1.000	0.500	0.450	225.0	23.1	19.2	26.5
		Mmax	29.0	1.000	0.500	0.450	225.0	17.3	14.5	9.0
		Mmin	54.0	1.000	0.500	0.450	225.0	23.1	19.3	21.4
		Qmax	62.1	1.000	0.500	0.450	225.0	23.1	19.2	26.5
		Qmin	29.0	1.000	0.500	0.450	225.0	17.3	14.5	9.0
32	51	Nmax	29.0	1.000	0.500	0.450	225.0	17.3	14.5	9.0
		Nmin	62.1	1.000	0.500	0.450	225.0	23.1	19.2	26.5
		Mmax	29.0	1.000	0.500	0.450	225.0	17.3	14.5	9.0
		Mmin	54.0	1.000	0.500	0.450	225.0	23.1	19.3	21.4
		Qmax	62.1	1.000	0.500	0.450	225.0	23.1	19.2	26.5
		Qmin	29.0	1.000	0.500	0.450	225.0	17.3	14.5	9.0
	64	Nmax	31.2	1.000	0.500	0.450	225.0	18.9	15.8	9.5
		Nmin	64.9	1.000	0.500	0.450	225.0	25.3	21.1	27.0
		Mmax	31.2	1.000	0.500	0.450	225.0	18.9	15.8	9.5
		Mmin	64.9	1.000	0.500	0.450	225.0	25.3	21.1	27.0
		Qmax	64.9	1.000	0.500	0.450	225.0	25.3	21.1	27.0
		Qmin	31.2	1.000	0.500	0.450	225.0	18.9	15.8	9.5
33	1	Nmax	41.1	1.000	0.600	0.550	275.0	19.6	16.4	12.5
		Nmin	76.0	1.000	0.600	0.550	275.0	24.2	20.2	28.2
		Mmax	76.0	1.000	0.600	0.550	275.0	24.2	20.2	28.2
		Mmin	41.1	1.000	0.600	0.550	275.0	19.6	16.4	12.5
		Qmax	76.0	1.000	0.600	0.550	275.0	24.2	20.2	28.2
		Qmin	41.1	1.000	0.600	0.550	275.0	19.6	16.4	12.5
	14	Nmax	41.5	1.000	0.600	0.550	275.0	17.4	14.5	13.6
		Nmin	76.4	1.000	0.600	0.550	275.0	21.4	17.8	29.6
		Mmax	76.4	1.000	0.600	0.550	275.0	21.4	17.8	29.6
		Mmin	41.5	1.000	0.600	0.550	275.0	17.4	14.5	13.6
		Qmax	76.4	1.000	0.600	0.550	275.0	21.4	17.8	29.6
		Qmin	41.5	1.000	0.600	0.550	275.0	17.4	14.5	13.6
34	14	Nmax	37.3	1.000	0.600	0.550	275.0	17.4	14.5	11.5
		Nmin	68.8	1.000	0.600	0.550	275.0	21.4	17.8	25.7
		Mmax	68.8	1.000	0.600	0.550	275.0	21.4	17.8	25.7
		Mmin	37.3	1.000	0.600	0.550	275.0	17.4	14.5	11.5
		Qmax	68.8	1.000	0.600	0.550	275.0	21.4	17.8	25.7
		Qmin	37.3	1.000	0.600	0.550	275.0	17.4	14.5	11.5
	16	Nmax	37.7	1.000	0.600	0.550	275.0	14.9	12.4	12.8
		Nmin	69.2	1.000	0.600	0.550	275.0	18.1	15.1	27.3
		Mmax	69.2	1.000	0.600	0.550	275.0	18.1	15.1	27.3
		Mmin	37.7	1.000	0.600	0.550	275.0	14.9	12.4	12.8
		Qmax	69.2	1.000	0.600	0.550	275.0	18.1	15.1	27.3
		Qmin	37.7	1.000	0.600	0.550	275.0	14.9	12.4	12.8
35	16	Nmax	33.5	1.000	0.600	0.550	275.0	14.9	12.4	10.7
		Nmin	61.8	1.000	0.600	0.550	275.0	18.1	15.1	23.6
		Mmax	61.8	1.000	0.600	0.550	275.0	18.1	15.1	23.6
		Mmin	33.5	1.000	0.600	0.550	275.0	14.9	12.4	10.7
		Qmax	61.8	1.000	0.600	0.550	275.0	18.1	15.1	23.6
		Qmin	33.5	1.000	0.600	0.550	275.0	14.9	12.4	10.7
	18	Nmax	34.0	1.000	0.600	0.550	275.0	11.5	9.6	12.3
		Nmin	62.3	1.000	0.600	0.550	275.0	13.8	11.5	25.6

ARMADOCAM_2060_10000_2m.xls PI CAMINO Kv=2060 Kh=10000 24/11/2005

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES A AMBOS LADOS

FECHA: 24/11/2005

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
		Mmax	62.3	1.000	0.600	0.550	275.0	13.8	11.5	25.6
		Mmin	34.0	1.000	0.600	0.550	275.0	11.5	9.6	12.3
		Qmax	62.3	1.000	0.600	0.550	275.0	13.8	11.5	25.6
		Qmin	34.0	1.000	0.600	0.550	275.0	11.5	9.6	12.3
36	18	Nmax	29.9	1.000	0.600	0.550	275.0	11.5	9.6	10.2
		Nmin	55.0	1.000	0.600	0.550	275.0	13.8	11.5	22.0
		Mmax	55.0	1.000	0.600	0.550	275.0	13.8	11.5	22.0
		Mmin	29.9	1.000	0.600	0.550	275.0	11.5	9.6	10.2
		Qmax	55.0	1.000	0.600	0.550	275.0	13.8	11.5	22.0
		Qmin	29.9	1.000	0.600	0.550	275.0	11.5	9.6	10.2
	20	Nmax	30.3	1.000	0.600	0.550	275.0	3.6	3.0	13.8
		Nmin	55.4	1.000	0.600	0.550	275.0	6.4	5.3	25.3
		Mmax	30.3	1.000	0.600	0.550	275.0	3.6	3.0	13.8
		Mmin	48.2	1.000	0.600	0.550	275.0	7.0	5.8	21.4
		Qmax	55.4	1.000	0.600	0.550	275.0	6.4	5.3	25.3
		Qmin	30.3	1.000	0.600	0.550	275.0	3.6	3.0	13.8
37	20	Nmax	26.4	1.000	0.600	0.550	275.0	3.5	3.0	11.8
		Nmin	48.5	1.000	0.600	0.550	275.0	6.3	5.3	21.8
		Mmax	26.4	1.000	0.600	0.550	275.0	3.5	3.0	11.8
		Mmin	42.0	1.000	0.600	0.550	275.0	6.9	5.8	18.3
		Qmax	48.5	1.000	0.600	0.550	275.0	6.3	5.3	21.8
		Qmin	26.4	1.000	0.600	0.550	275.0	3.5	3.0	11.8
	22	Nmax	26.8	1.000	0.600	0.550	275.0	11.3	9.4	8.8
		Nmin	48.9	1.000	0.600	0.550	275.0	14.1	11.7	18.8
		Mmax	26.8	1.000	0.600	0.550	275.0	11.3	9.4	8.8
		Mmin	48.9	1.000	0.600	0.550	275.0	14.1	11.7	18.8
		Qmax	48.9	1.000	0.600	0.550	275.0	14.1	11.7	18.8
		Qmin	26.8	1.000	0.600	0.550	275.0	11.3	9.4	8.8
38	22	Nmax	21.0	1.000	0.600	0.550	275.0	11.3	9.4	5.9
		Nmin	38.7	1.000	0.600	0.550	275.0	14.1	11.7	13.6
		Mmax	21.0	1.000	0.600	0.550	275.0	11.3	9.4	5.9
		Mmin	38.7	1.000	0.600	0.550	275.0	14.1	11.7	13.6
		Qmax	38.7	1.000	0.600	0.550	275.0	14.1	11.7	13.6
		Qmin	21.0	1.000	0.600	0.550	275.0	11.3	9.4	5.9
	24	Nmax	21.9	1.000	0.600	0.550	275.0	15.5	12.9	4.6
		Nmin	39.6	1.000	0.600	0.550	275.0	19.2	16.0	11.9
		Mmax	21.9	1.000	0.600	0.550	275.0	15.5	12.9	4.6
		Mmin	39.6	1.000	0.600	0.550	275.0	19.2	16.0	11.9
		Qmax	39.6	1.000	0.600	0.550	275.0	19.2	16.0	11.9
		Qmin	21.9	1.000	0.600	0.550	275.0	15.5	12.9	4.6
39	24	Nmax	14.7	1.000	0.600	0.550	275.0	15.5	-	No necesita
		Nmin	27.0	1.000	0.600	0.550	275.0	19.2	16.0	5.6
		Mmax	14.7	1.000	0.600	0.550	275.0	15.5	-	No necesita
		Mmin	27.0	1.000	0.600	0.550	275.0	19.2	16.0	5.6
		Qmax	27.0	1.000	0.600	0.550	275.0	19.2	16.0	5.6
		Qmin	14.7	1.000	0.600	0.550	275.0	15.5	-	No necesita
	26	Nmax	15.6	1.000	0.600	0.550	275.0	17.5	-	No necesita
		Nmin	27.9	1.000	0.600	0.550	275.0	21.6	18.0	5.0
		Mmax	15.6	1.000	0.600	0.550	275.0	17.5	-	No necesita
		Mmin	27.9	1.000	0.600	0.550	275.0	21.6	18.0	5.0
		Qmax	27.9	1.000	0.600	0.550	275.0	21.6	18.0	5.0
		Qmin	15.6	1.000	0.600	0.550	275.0	17.5	-	No necesita

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES A AMBOS LADOS

FECHA: 24/11/2005

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
40	26	Nmax	8.8	1.000	0.600	0.550	275.0	17.5	-	No necesita
		Nmin	16.1	1.000	0.600	0.550	275.0	21.6	-	No necesita
		Mmax	8.8	1.000	0.600	0.550	275.0	17.5	-	No necesita
		Mmin	16.1	1.000	0.600	0.550	275.0	21.6	-	No necesita
		Qmax	16.1	1.000	0.600	0.550	275.0	21.6	-	No necesita
		Qmin	8.8	1.000	0.600	0.550	275.0	17.5	-	No necesita
	28	Nmax	9.7	1.000	0.600	0.550	275.0	18.5	-	No necesita
		Nmin	17.0	1.000	0.600	0.550	275.0	22.9	-	No necesita
		Mmax	9.7	1.000	0.600	0.550	275.0	18.5	-	No necesita
		Mmin	17.0	1.000	0.600	0.550	275.0	22.9	-	No necesita
		Qmax	17.0	1.000	0.600	0.550	275.0	22.9	-	No necesita
		Qmin	9.7	1.000	0.600	0.550	275.0	18.5	-	No necesita
41	28	Nmax	3.3	1.000	0.600	0.550	275.0	18.5	-	No necesita
		Nmin	5.8	1.000	0.600	0.550	275.0	22.9	-	No necesita
		Mmax	3.3	1.000	0.600	0.550	275.0	18.5	-	No necesita
		Mmin	5.8	1.000	0.600	0.550	275.0	22.9	-	No necesita
		Qmax	5.8	1.000	0.600	0.550	275.0	22.9	-	No necesita
		Qmin	3.3	1.000	0.600	0.550	275.0	18.5	-	No necesita
	30	Nmax	4.2	1.000	0.600	0.550	275.0	18.9	-	No necesita
		Nmin	6.7	1.000	0.600	0.550	275.0	23.4	-	No necesita
		Mmax	4.2	1.000	0.600	0.550	275.0	18.9	-	No necesita
		Mmin	6.7	1.000	0.600	0.550	275.0	23.4	-	No necesita
		Qmax	6.7	1.000	0.600	0.550	275.0	23.4	-	No necesita
		Qmin	4.2	1.000	0.600	0.550	275.0	18.9	-	No necesita
42	30	Nmax	1.9	1.000	0.600	0.550	275.0	18.9	-	No necesita
		Nmin	3.9	1.000	0.600	0.550	275.0	23.4	-	No necesita
		Mmax	1.9	1.000	0.600	0.550	275.0	18.9	-	No necesita
		Mmin	3.9	1.000	0.600	0.550	275.0	23.4	-	No necesita
		Qmax	1.9	1.000	0.600	0.550	275.0	18.9	-	No necesita
		Qmin	3.9	1.000	0.600	0.550	275.0	22.2	-	No necesita
	32	Nmax	1.0	1.000	0.600	0.550	275.0	18.7	-	No necesita
		Nmin	3.0	1.000	0.600	0.550	275.0	23.1	-	No necesita
		Mmax	1.0	1.000	0.600	0.550	275.0	18.7	-	No necesita
		Mmin	3.0	1.000	0.600	0.550	275.0	23.1	-	No necesita
		Qmax	1.0	1.000	0.600	0.550	275.0	18.7	-	No necesita
		Qmin	3.0	1.000	0.600	0.550	275.0	22.0	-	No necesita
43	32	Nmax	7.0	1.000	0.600	0.550	275.0	18.7	-	No necesita
		Nmin	13.1	1.000	0.600	0.550	275.0	23.1	-	No necesita
		Mmax	7.0	1.000	0.600	0.550	275.0	18.7	-	No necesita
		Mmin	13.1	1.000	0.600	0.550	275.0	23.1	-	No necesita
		Qmax	7.0	1.000	0.600	0.550	275.0	18.7	-	No necesita
		Qmin	13.1	1.000	0.600	0.550	275.0	23.1	-	No necesita
	34	Nmax	6.1	1.000	0.600	0.550	275.0	18.0	-	No necesita
		Nmin	12.2	1.000	0.600	0.550	275.0	22.2	-	No necesita
		Mmax	6.1	1.000	0.600	0.550	275.0	18.0	-	No necesita
		Mmin	12.2	1.000	0.600	0.550	275.0	22.2	-	No necesita
		Qmax	6.1	1.000	0.600	0.550	275.0	18.0	-	No necesita
		Qmin	12.2	1.000	0.600	0.550	275.0	22.2	-	No necesita
44	34	Nmax	11.9	1.000	0.600	0.550	275.0	18.0	-	No necesita
		Nmin	22.1	1.000	0.600	0.550	275.0	22.2	-	No necesita
		Mmax	11.9	1.000	0.600	0.550	275.0	18.0	-	No necesita
		Mmin	22.1	1.000	0.600	0.550	275.0	22.2	-	No necesita

ARMADOCAM_2060_10000_2m.xls PI CAMINO Kv=2060 Kh=10000 24/11/2005

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES A AMBOS LADOS

FECHA: 24/11/2005

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
		Qmax	11.9	1.000	0.600	0.550	275.0	18.0	-	No necesita
		Qmin	22.1	1.000	0.600	0.550	275.0	22.2	-	No necesita
	36	Nmax	11.0	1.000	0.600	0.550	275.0	16.7	-	No necesita
		Nmin	21.3	1.000	0.600	0.550	275.0	20.3	17.0	2.2
		Mmax	11.0	1.000	0.600	0.550	275.0	16.7	-	No necesita
		Mmin	21.3	1.000	0.600	0.550	275.0	20.3	17.0	2.2
		Qmax	11.0	1.000	0.600	0.550	275.0	16.7	-	No necesita
		Qmin	21.3	1.000	0.600	0.550	275.0	20.3	17.0	2.2
45	36	Nmax	16.7	1.000	0.600	0.550	275.0	16.7	13.9	1.4
		Nmin	31.0	1.000	0.600	0.550	275.0	20.3	17.0	7.1
		Mmax	16.7	1.000	0.600	0.550	275.0	16.7	13.9	1.4
		Mmin	31.0	1.000	0.600	0.550	275.0	20.3	17.0	7.1
		Qmax	16.7	1.000	0.600	0.550	275.0	16.7	13.9	1.4
		Qmin	31.0	1.000	0.600	0.550	275.0	20.3	17.0	7.1
	38	Nmax	15.8	1.000	0.600	0.550	275.0	14.3	11.9	2.0
		Nmin	30.1	1.000	0.600	0.550	275.0	17.2	14.3	8.0
		Mmax	15.8	1.000	0.600	0.550	275.0	14.3	11.9	2.0
		Mmin	30.1	1.000	0.600	0.550	275.0	17.2	14.3	8.0
		Qmax	15.8	1.000	0.600	0.550	275.0	14.3	11.9	2.0
		Qmin	30.1	1.000	0.600	0.550	275.0	17.2	14.3	8.0
46	38	Nmax	21.5	1.000	0.600	0.550	275.0	14.3	11.9	4.9
		Nmin	39.8	1.000	0.600	0.550	275.0	17.2	14.3	12.9
		Mmax	21.5	1.000	0.600	0.550	275.0	14.3	11.9	4.9
		Mmin	39.8	1.000	0.600	0.550	275.0	17.2	14.3	12.9
		Qmax	21.5	1.000	0.600	0.550	275.0	14.3	11.9	4.9
		Qmin	39.8	1.000	0.600	0.550	275.0	17.2	14.3	12.9
	40	Nmax	20.6	1.000	0.600	0.550	275.0	8.9	7.4	6.7
		Nmin	38.9	1.000	0.600	0.550	275.0	9.6	8.0	15.6
		Mmax	34.2	1.000	0.600	0.550	275.0	8.9	7.4	13.5
		Mmin	35.9	1.000	0.600	0.550	275.0	9.8	8.2	14.0
		Qmax	20.6	1.000	0.600	0.550	275.0	8.9	7.4	6.7
		Qmin	38.9	1.000	0.600	0.550	275.0	9.6	8.0	15.6
47	40	Nmax	26.4	1.000	0.600	0.550	275.0	8.9	7.4	9.6
		Nmin	48.6	1.000	0.600	0.550	275.0	9.6	8.0	20.5
		Mmax	42.7	1.000	0.600	0.550	275.0	8.9	7.4	17.8
		Mmin	45.0	1.000	0.600	0.550	275.0	9.8	8.2	18.6
		Qmax	26.4	1.000	0.600	0.550	275.0	8.9	7.4	9.6
		Qmin	48.6	1.000	0.600	0.550	275.0	9.6	8.0	20.5
	42	Nmax	25.5	1.000	0.600	0.550	275.0	12.6	10.5	7.6
		Nmin	47.7	1.000	0.600	0.550	275.0	16.1	13.4	17.3
		Mmax	47.7	1.000	0.600	0.550	275.0	16.1	13.4	17.3
		Mmin	25.5	1.000	0.600	0.550	275.0	12.6	10.5	7.6
		Qmax	25.5	1.000	0.600	0.550	275.0	12.6	10.5	7.6
		Qmin	47.7	1.000	0.600	0.550	275.0	16.1	13.4	17.3
48	42	Nmax	29.8	1.000	0.600	0.550	275.0	12.6	10.5	9.7
		Nmin	54.9	1.000	0.600	0.550	275.0	16.1	13.4	21.0
		Mmax	54.9	1.000	0.600	0.550	275.0	16.1	13.4	21.0
		Mmin	29.8	1.000	0.600	0.550	275.0	12.6	10.5	9.7
		Qmax	29.8	1.000	0.600	0.550	275.0	12.6	10.5	9.7
		Qmin	54.9	1.000	0.600	0.550	275.0	16.1	13.4	21.0
	44	Nmax	29.3	1.000	0.600	0.550	275.0	15.3	12.7	8.4
		Nmin	54.5	1.000	0.600	0.550	275.0	19.3	16.0	19.4

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES A AMBOS LADOS

FECHA: 24/11/2005

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
		Mmax	54.5	1.000	0.600	0.550	275.0	19.3	16.0	19.4
		Mmin	29.3	1.000	0.600	0.550	275.0	15.3	12.7	8.4
		Qmax	29.3	1.000	0.600	0.550	275.0	15.3	12.7	8.4
		Qmin	54.5	1.000	0.600	0.550	275.0	19.3	16.0	19.4
49	44	Nmax	32.2	1.000	0.600	0.550	275.0	15.3	12.7	9.8
		Nmin	59.3	1.000	0.600	0.550	275.0	19.3	16.0	21.8
		Mmax	59.3	1.000	0.600	0.550	275.0	19.3	16.0	21.8
		Mmin	32.2	1.000	0.600	0.550	275.0	15.3	12.7	9.8
		Qmax	32.2	1.000	0.600	0.550	275.0	15.3	12.7	9.8
		Qmin	59.3	1.000	0.600	0.550	275.0	19.3	16.0	21.8
	46	Nmax	31.8	1.000	0.600	0.550	275.0	17.4	14.5	8.7
		Nmin	58.9	1.000	0.600	0.550	275.0	21.9	18.2	20.5
		Mmax	58.9	1.000	0.600	0.550	275.0	21.9	18.2	20.5
		Mmin	31.8	1.000	0.600	0.550	275.0	17.4	14.5	8.7
		Qmax	31.8	1.000	0.600	0.550	275.0	17.4	14.5	8.7
		Qmin	58.9	1.000	0.600	0.550	275.0	21.9	18.2	20.5
50	46	Nmax	34.6	1.000	0.600	0.550	275.0	17.4	14.5	10.2
		Nmin	63.7	1.000	0.600	0.550	275.0	21.9	18.2	22.9
		Mmax	63.7	1.000	0.600	0.550	275.0	21.9	18.2	22.9
		Mmin	34.6	1.000	0.600	0.550	275.0	17.4	14.5	10.2
		Qmax	34.6	1.000	0.600	0.550	275.0	17.4	14.5	10.2
		Qmin	63.7	1.000	0.600	0.550	275.0	21.9	18.2	22.9
	48	Nmax	34.2	1.000	0.600	0.550	275.0	19.3	16.1	9.1
		Nmin	63.2	1.000	0.600	0.550	275.0	24.2	20.2	21.7
		Mmax	63.2	1.000	0.600	0.550	275.0	24.2	20.2	21.7
		Mmin	34.2	1.000	0.600	0.550	275.0	19.3	16.1	9.1
		Qmax	34.2	1.000	0.600	0.550	275.0	19.3	16.1	9.1
		Qmin	63.2	1.000	0.600	0.550	275.0	24.2	20.2	21.7
51	48	Nmax	37.0	1.000	0.600	0.550	275.0	19.3	16.1	10.6
		Nmin	68.0	1.000	0.600	0.550	275.0	24.2	20.2	24.2
		Mmax	68.0	1.000	0.600	0.550	275.0	24.2	20.2	24.2
		Mmin	37.0	1.000	0.600	0.550	275.0	19.3	16.1	10.6
		Qmax	37.0	1.000	0.600	0.550	275.0	19.3	16.1	10.6
		Qmin	68.0	1.000	0.600	0.550	275.0	24.2	20.2	24.2
	50	Nmax	36.6	1.000	0.600	0.550	275.0	21.0	17.5	9.6
		Nmin	67.6	1.000	0.600	0.550	275.0	26.4	22.0	23.0
		Mmax	67.6	1.000	0.600	0.550	275.0	26.4	22.0	23.0
		Mmin	36.6	1.000	0.600	0.550	275.0	21.0	17.5	9.6
		Qmax	36.6	1.000	0.600	0.550	275.0	21.0	17.5	9.6
		Qmin	67.6	1.000	0.600	0.550	275.0	26.4	22.0	23.0
52	50	Nmax	39.4	1.000	0.600	0.550	275.0	21.0	17.5	11.1
		Nmin	72.2	1.000	0.600	0.550	275.0	26.4	22.0	25.4
		Mmax	72.2	1.000	0.600	0.550	275.0	26.4	22.0	25.4
		Mmin	39.4	1.000	0.600	0.550	275.0	21.0	17.5	11.1
		Qmax	39.4	1.000	0.600	0.550	275.0	21.0	17.5	11.1
		Qmin	72.2	1.000	0.600	0.550	275.0	26.4	22.0	25.4
	52	Nmax	39.0	1.000	0.600	0.550	275.0	22.5	18.8	10.2
		Nmin	71.8	1.000	0.600	0.550	275.0	28.4	23.7	24.3
		Mmax	71.8	1.000	0.600	0.550	275.0	28.4	23.7	24.3
		Mmin	39.0	1.000	0.600	0.550	275.0	22.5	18.8	10.2
		Qmax	39.0	1.000	0.600	0.550	275.0	22.5	18.8	10.2
		Qmin	71.8	1.000	0.600	0.550	275.0	28.4	23.7	24.3

ARMADOCAM_2060_10000_2m.xls PI CAMINO Kv=2060 Kh=10000 24/11/2005

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES A AMBOS LADOS

FECHA: 24/11/2005

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

	BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
*	53	52	Nmax	32.2	1.000	0.600	0.550	275.0	28.2	24.5	3.9
			Nmin	62.8	1.000	0.600	0.550	275.0	38.8	17.9	22.7
			Mmax	62.8	1.000	0.600	0.550	275.0	38.8	17.9	22.7
			Mmin	32.2	1.000	0.600	0.550	275.0	28.2	24.5	3.9
			Qmax	62.8	1.000	0.600	0.550	275.0	38.8	17.9	22.7
			Qmin	32.2	1.000	0.600	0.550	275.0	28.2	24.5	3.9
		53	Nmax	32.2	1.000	0.600	0.550	275.0	25.8	22.4	5.0
			Nmin	62.8	1.000	0.600	0.550	275.0	35.5	26.6	18.3
			Mmax	62.8	1.000	0.600	0.550	275.0	35.5	26.6	18.3
			Mmin	32.2	1.000	0.600	0.550	275.0	25.8	22.4	5.0
			Qmax	62.8	1.000	0.600	0.550	275.0	35.5	26.6	18.3
			Qmin	32.2	1.000	0.600	0.550	275.0	25.8	22.4	5.0
	54	53	Nmax	31.1	1.000	0.600	0.550	275.0	25.8	22.4	4.4
			Nmin	60.4	1.000	0.600	0.550	275.0	35.5	26.6	17.1
			Mmax	60.4	1.000	0.600	0.550	275.0	35.5	26.6	17.1
			Mmin	31.1	1.000	0.600	0.550	275.0	25.8	22.4	4.4
			Qmax	60.4	1.000	0.600	0.550	275.0	35.5	26.6	17.1
			Qmin	31.1	1.000	0.600	0.550	275.0	25.8	22.4	4.4
		54	Nmax	31.1	1.000	0.600	0.550	275.0	22.9	20.0	5.6
			Nmin	60.4	1.000	0.600	0.550	275.0	31.7	23.4	18.7
			Mmax	60.4	1.000	0.600	0.550	275.0	31.7	23.4	18.7
			Mmin	31.1	1.000	0.600	0.550	275.0	22.9	20.0	5.6
			Qmax	60.4	1.000	0.600	0.550	275.0	31.7	23.4	18.7
			Qmin	31.1	1.000	0.600	0.550	275.0	22.9	20.0	5.6
	55	54	Nmax	28.9	1.000	0.600	0.550	275.0	22.9	20.0	4.5
			Nmin	55.8	1.000	0.600	0.550	275.0	31.7	23.4	16.4
			Mmax	55.8	1.000	0.600	0.550	275.0	31.7	23.4	16.4
			Mmin	28.9	1.000	0.600	0.550	275.0	22.9	20.0	4.5
			Qmax	55.8	1.000	0.600	0.550	275.0	31.7	23.4	16.4
			Qmin	28.9	1.000	0.600	0.550	275.0	22.9	20.0	4.5
		55	Nmax	28.9	1.000	0.600	0.550	275.0	19.2	16.9	6.1
			Nmin	55.8	1.000	0.600	0.550	275.0	26.7	19.2	18.5
			Mmax	55.8	1.000	0.600	0.550	275.0	26.7	19.2	18.5
			Mmin	28.9	1.000	0.600	0.550	275.0	19.2	16.9	6.1
			Qmax	55.8	1.000	0.600	0.550	275.0	26.7	19.2	18.5
			Qmin	28.9	1.000	0.600	0.550	275.0	19.2	16.9	6.1
	56	55	Nmax	25.4	1.000	0.600	0.550	275.0	19.2	16.9	4.3
			Nmin	48.7	1.000	0.600	0.550	275.0	26.7	19.2	14.9
			Mmax	48.7	1.000	0.600	0.550	275.0	26.7	19.2	14.9
			Mmin	25.4	1.000	0.600	0.550	275.0	19.2	16.9	4.3
			Qmax	48.7	1.000	0.600	0.550	275.0	26.7	19.2	14.9
			Qmin	25.4	1.000	0.600	0.550	275.0	19.2	16.9	4.3
		56	Nmax	25.4	1.000	0.600	0.550	275.0	12.6	11.3	7.1
			Nmin	48.7	1.000	0.600	0.550	275.0	17.2	12.1	18.5
			Mmax	25.4	1.000	0.600	0.550	275.0	12.6	11.3	7.1
			Mmin	43.7	1.000	0.600	0.550	275.0	15.8	11.3	16.4
			Qmax	48.7	1.000	0.600	0.550	275.0	17.2	12.1	18.5
			Qmin	25.4	1.000	0.600	0.550	275.0	12.6	11.3	7.1
	57	56	Nmax	20.6	1.000	0.600	0.550	275.0	12.6	11.3	4.7
			Nmin	38.9	1.000	0.600	0.550	275.0	17.2	11.3	13.9
			Mmax	20.6	1.000	0.600	0.550	275.0	12.6	11.3	4.7
			Mmin	34.5	1.000	0.600	0.550	275.0	15.8	11.3	11.7

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES A AMBOS LADOS

FECHA: 24/11/2005

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
		Qmax	38.9	1.000	0.600	0.550	275.0	17.2	11.3	13.9
		Qmin	20.6	1.000	0.600	0.550	275.0	12.6	11.3	4.7
	57	Nmax	20.6	1.000	0.600	0.550	275.0	16.5	14.6	3.0
		Nmin	38.9	1.000	0.600	0.550	275.0	24.8	17.5	10.8
		Mmax	20.6	1.000	0.600	0.550	275.0	16.5	14.6	3.0
		Mmin	38.9	1.000	0.600	0.550	275.0	24.8	17.5	10.8
		Qmax	38.9	1.000	0.600	0.550	275.0	24.8	17.5	10.8
		Qmin	20.6	1.000	0.600	0.550	275.0	16.5	14.6	3.0
58	57	Nmax	14.4	1.000	0.600	0.550	275.0	16.5	-	No necesita
		Nmin	26.4	1.000	0.600	0.550	275.0	24.8	15.7	5.4
		Mmax	14.4	1.000	0.600	0.550	275.0	16.5	-	No necesita
		Mmin	26.4	1.000	0.600	0.550	275.0	24.8	15.7	5.4
		Qmax	26.4	1.000	0.600	0.550	275.0	24.8	15.7	5.4
		Qmin	14.4	1.000	0.600	0.550	275.0	16.5	-	No necesita
	58	Nmax	14.4	1.000	0.600	0.550	275.0	19.1	-	No necesita
		Nmin	26.4	1.000	0.600	0.550	275.0	27.7	-	No necesita
		Mmax	14.4	1.000	0.600	0.550	275.0	19.1	-	No necesita
		Mmin	26.4	1.000	0.600	0.550	275.0	27.7	-	No necesita
		Qmax	26.4	1.000	0.600	0.550	275.0	27.7	-	No necesita
		Qmin	14.4	1.000	0.600	0.550	275.0	19.1	-	No necesita
		Qmax	26.4	1.000	0.600	0.550	275.0	27.7	-	No necesita
		Qmin	14.4	1.000	0.600	0.550	275.0	19.1	-	No necesita
59	58	Nmax	7.0	1.000	0.600	0.550	275.0	19.1	-	No necesita
		Nmin	11.3	1.000	0.600	0.550	275.0	27.7	-	No necesita
		Mmax	7.0	1.000	0.600	0.550	275.0	19.1	-	No necesita
		Mmin	11.3	1.000	0.600	0.550	275.0	27.7	-	No necesita
		Qmax	11.3	1.000	0.600	0.550	275.0	27.7	-	No necesita
		Qmin	7.0	1.000	0.600	0.550	275.0	19.1	-	No necesita
	59	Nmax	7.0	1.000	0.600	0.550	275.0	20.0	-	No necesita
		Nmin	11.3	1.000	0.600	0.550	275.0	28.6	-	No necesita
		Mmax	7.0	1.000	0.600	0.550	275.0	20.0	-	No necesita
		Mmin	11.3	1.000	0.600	0.550	275.0	28.6	-	No necesita
		Qmax	11.3	1.000	0.600	0.550	275.0	28.6	-	No necesita
		Qmin	7.0	1.000	0.600	0.550	275.0	20.0	-	No necesita
60	59	Nmax	1.8	1.000	0.600	0.550	275.0	20.0	-	No necesita
		Nmin	6.2	1.000	0.600	0.550	275.0	28.6	-	No necesita
		Mmax	1.8	1.000	0.600	0.550	275.0	20.0	-	No necesita
		Mmin	6.2	1.000	0.600	0.550	275.0	28.6	-	No necesita
		Qmax	1.8	1.000	0.600	0.550	275.0	20.0	-	No necesita
		Qmin	7.4	1.000	0.600	0.550	275.0	26.7	-	No necesita
	60	Nmax	1.8	1.000	0.600	0.550	275.0	19.6	-	No necesita
		Nmin	6.2	1.000	0.600	0.550	275.0	27.9	-	No necesita
		Mmax	1.8	1.000	0.600	0.550	275.0	19.6	-	No necesita
		Mmin	6.2	1.000	0.600	0.550	275.0	27.9	-	No necesita
		Qmax	1.8	1.000	0.600	0.550	275.0	19.6	-	No necesita
		Qmin	7.4	1.000	0.600	0.550	275.0	22.5	-	No necesita
61	60	Nmax	11.6	1.000	0.600	0.550	275.0	19.6	-	No necesita
		Nmin	25.9	1.000	0.600	0.550	275.0	27.9	-	No necesita
		Mmax	11.6	1.000	0.600	0.550	275.0	19.6	-	No necesita
		Mmin	25.9	1.000	0.600	0.550	275.0	27.9	-	No necesita
		Qmax	11.6	1.000	0.600	0.550	275.0	19.6	-	No necesita
		Qmin	25.9	1.000	0.600	0.550	275.0	27.9	-	No necesita
	61	Nmax	11.6	1.000	0.600	0.550	275.0	17.7	-	No necesita
		Nmin	25.9	1.000	0.600	0.550	275.0	25.0	15.9	5.1

ARMADOCAM_2060_10000_2m.xls PI CAMINO Kv=2060 Kh=10000 24/11/2005

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO
MUELLES A AMBOS LADOS

FECHA: 24/11/2005

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
		Mmax	11.6	1.000	0.600	0.550	275.0	17.7	-	No necesita
		Mmin	25.9	1.000	0.600	0.550	275.0	25.0	15.9	5.1
		Qmax	11.6	1.000	0.600	0.550	275.0	17.7	-	No necesita
		Qmin	25.9	1.000	0.600	0.550	275.0	20.3	11.1	7.5
62	61	Nmax	22.4	1.000	0.600	0.550	275.0	17.7	15.5	3.5
		Nmin	47.6	1.000	0.600	0.550	275.0	25.0	18.3	14.8
		Mmax	22.4	1.000	0.600	0.550	275.0	17.7	15.5	3.5
		Mmin	47.6	1.000	0.600	0.550	275.0	25.0	18.3	14.8
		Qmax	22.4	1.000	0.600	0.550	275.0	17.7	15.5	3.5
		Qmin	47.6	1.000	0.600	0.550	275.0	25.0	18.3	14.8
	62	Nmax	22.4	1.000	0.600	0.550	275.0	11.7	10.5	6.0
		Nmin	47.6	1.000	0.600	0.550	275.0	17.1	11.8	18.1
		Mmax	45.6	1.000	0.600	0.550	275.0	17.8	12.8	16.6
		Mmin	22.4	1.000	0.600	0.550	275.0	11.7	10.5	6.0
		Qmax	22.4	1.000	0.600	0.550	275.0	11.7	10.5	6.0
		Qmin	47.6	1.000	0.600	0.550	275.0	12.4	11.1	18.4
63	62	Nmax	34.1	1.000	0.600	0.550	275.0	11.7	10.5	11.9
		Nmin	71.1	1.000	0.600	0.550	275.0	17.1	14.7	28.5
		Mmax	67.3	1.000	0.600	0.550	275.0	17.8	14.1	26.8
		Mmin	34.1	1.000	0.600	0.550	275.0	11.7	10.5	11.9
		Qmax	34.1	1.000	0.600	0.550	275.0	11.7	10.5	11.9
		Qmin	71.1	1.000	0.600	0.550	275.0	17.1	14.7	28.5
	63	Nmax	34.1	1.000	0.600	0.550	275.0	18.7	16.3	9.0
		Nmin	71.1	1.000	0.600	0.550	275.0	28.3	20.4	25.6
		Mmax	67.3	1.000	0.600	0.550	275.0	27.1	20.5	23.6
		Mmin	34.1	1.000	0.600	0.550	275.0	18.7	16.3	9.0
		Qmax	34.1	1.000	0.600	0.550	275.0	18.7	16.3	9.0
		Qmin	71.1	1.000	0.600	0.550	275.0	23.6	20.4	25.6
64	63	Nmax	46.7	1.000	0.600	0.550	275.0	18.7	15.6	15.7
		Nmin	96.4	1.000	0.600	0.550	275.0	28.3	23.6	36.7
		Mmax	90.7	1.000	0.600	0.550	275.0	27.1	22.6	34.4
		Mmin	46.7	1.000	0.600	0.550	275.0	18.7	15.6	15.7
		Qmax	46.7	1.000	0.600	0.550	275.0	18.7	15.6	15.7
		Qmin	96.4	1.000	0.600	0.550	275.0	28.3	23.6	36.7
	64	Nmax	46.7	1.000	0.600	0.550	275.0	23.7	19.8	13.6
		Nmin	96.4	1.000	0.600	0.550	275.0	34.7	28.9	34.1
		Mmax	96.4	1.000	0.600	0.550	275.0	34.7	28.9	34.1
		Mmin	46.7	1.000	0.600	0.550	275.0	23.7	19.8	13.6
		Qmax	46.7	1.000	0.600	0.550	275.0	23.7	19.8	13.6
		Qmin	96.4	1.000	0.600	0.550	275.0	29.9	24.9	36.1

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO

FECHA: 24/11/2005

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
1	1	Nmax	17.3	1.000	0.600	0.550	275.0	20.9	-	No necesita
		Nmin	17.1	1.000	0.600	0.550	275.0	24.4	-	No necesita
		Mmax	17.3	1.000	0.600	0.550	275.0	20.9	-	No necesita
		Mmin	17.1	1.000	0.600	0.550	275.0	24.4	-	No necesita
		Qmax	17.1	1.000	0.600	0.550	275.0	23.3	-	No necesita
		Qmin	17.3	1.000	0.600	0.550	275.0	20.9	-	No necesita
	2	Nmax	11.9	1.000	0.600	0.550	275.0	18.7	-	No necesita
		Nmin	11.8	1.000	0.600	0.550	275.0	23.0	-	No necesita
		Mmax	11.9	1.000	0.600	0.550	275.0	18.7	-	No necesita
		Mmin	11.8	1.000	0.600	0.550	275.0	23.0	-	No necesita
		Qmax	11.8	1.000	0.600	0.550	275.0	22.0	-	No necesita
		Qmin	11.9	1.000	0.600	0.550	275.0	18.7	-	No necesita
2	2	Nmax	11.9	1.000	0.600	0.550	275.0	18.7	-	No necesita
		Nmin	11.8	1.000	0.600	0.550	275.0	23.0	-	No necesita
		Mmax	11.9	1.000	0.600	0.550	275.0	18.7	-	No necesita
		Mmin	11.8	1.000	0.600	0.550	275.0	23.0	-	No necesita
		Qmax	11.8	1.000	0.600	0.550	275.0	22.0	-	No necesita
		Qmin	11.9	1.000	0.600	0.550	275.0	18.7	-	No necesita
	3	Nmax	7.2	1.000	0.600	0.550	275.0	17.8	-	No necesita
		Nmin	7.1	1.000	0.600	0.550	275.0	22.7	-	No necesita
		Mmax	7.2	1.000	0.600	0.550	275.0	17.8	-	No necesita
		Mmin	7.1	1.000	0.600	0.550	275.0	22.7	-	No necesita
		Qmax	7.1	1.000	0.600	0.550	275.0	21.8	-	No necesita
		Qmin	7.2	1.000	0.600	0.550	275.0	17.8	-	No necesita
3	3	Nmax	7.2	1.000	0.600	0.550	275.0	17.8	-	No necesita
		Nmin	7.1	1.000	0.600	0.550	275.0	22.7	-	No necesita
		Mmax	7.2	1.000	0.600	0.550	275.0	17.8	-	No necesita
		Mmin	7.1	1.000	0.600	0.550	275.0	22.7	-	No necesita
		Qmax	7.1	1.000	0.600	0.550	275.0	21.8	-	No necesita
		Qmin	7.2	1.000	0.600	0.550	275.0	17.8	-	No necesita
	4	Nmax	3.1	1.000	0.600	0.550	275.0	17.7	-	No necesita
		Nmin	3.0	1.000	0.600	0.550	275.0	23.0	-	No necesita
		Mmax	3.1	1.000	0.600	0.550	275.0	17.7	-	No necesita
		Mmin	3.0	1.000	0.600	0.550	275.0	23.0	-	No necesita
		Qmax	4.3	1.000	0.600	0.550	275.0	22.3	-	No necesita
		Qmin	3.1	1.000	0.600	0.550	275.0	17.7	-	No necesita
4	4	Nmax	3.1	1.000	0.600	0.550	275.0	17.7	-	No necesita
		Nmin	3.0	1.000	0.600	0.550	275.0	23.0	-	No necesita
		Mmax	3.1	1.000	0.600	0.550	275.0	17.7	-	No necesita
		Mmin	3.0	1.000	0.600	0.550	275.0	23.0	-	No necesita
		Qmax	4.3	1.000	0.600	0.550	275.0	22.3	-	No necesita
		Qmin	3.1	1.000	0.600	0.550	275.0	17.7	-	No necesita
	5	Nmax	4.0	1.000	0.600	0.550	275.0	17.8	-	No necesita
		Nmin	6.5	1.000	0.600	0.550	275.0	23.4	-	No necesita
		Mmax	4.0	1.000	0.600	0.550	275.0	17.8	-	No necesita
		Mmin	6.5	1.000	0.600	0.550	275.0	23.4	-	No necesita
		Qmax	7.8	1.000	0.600	0.550	275.0	22.9	-	No necesita
		Qmin	4.0	1.000	0.600	0.550	275.0	17.8	-	No necesita
5	5	Nmax	4.0	1.000	0.600	0.550	275.0	17.8	-	No necesita
		Nmin	6.5	1.000	0.600	0.550	275.0	23.4	-	No necesita
		Mmax	4.0	1.000	0.600	0.550	275.0	17.8	-	No necesita
		Mmin	6.5	1.000	0.600	0.550	275.0	23.4	-	No necesita
		Qmax	7.8	1.000	0.600	0.550	275.0	22.9	-	No necesita

ARMADOCAM_2060_sm.xls PI CAMINO Kv=2060 Sin Kh 24/11/2005

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO

FECHA: 24/11/2005

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
		Qmin	4.0	1.000	0.600	0.550	275.0	17.8	-	No necesita
	6	Nmax	6.9	1.000	0.600	0.550	275.0	18.1	-	No necesita
		Nmin	9.4	1.000	0.600	0.550	275.0	23.9	-	No necesita
		Mmax	6.9	1.000	0.600	0.550	275.0	18.1	-	No necesita
		Mmin	9.4	1.000	0.600	0.550	275.0	23.9	-	No necesita
		Qmax	10.6	1.000	0.600	0.550	275.0	23.5	-	No necesita
		Qmin	6.9	1.000	0.600	0.550	275.0	18.1	-	No necesita
6	6	Nmax	6.9	1.000	0.600	0.550	275.0	18.1	-	No necesita
		Nmin	9.4	1.000	0.600	0.550	275.0	23.9	-	No necesita
		Mmax	6.9	1.000	0.600	0.550	275.0	18.1	-	No necesita
		Mmin	9.4	1.000	0.600	0.550	275.0	23.9	-	No necesita
		Qmax	10.6	1.000	0.600	0.550	275.0	23.5	-	No necesita
		Qmin	6.9	1.000	0.600	0.550	275.0	18.1	-	No necesita
	7	Nmax	9.1	1.000	0.600	0.550	275.0	18.9	-	No necesita
		Nmin	11.6	1.000	0.600	0.550	275.0	24.6	-	No necesita
		Mmax	9.1	1.000	0.600	0.550	275.0	18.9	-	No necesita
		Mmin	11.6	1.000	0.600	0.550	275.0	24.6	-	No necesita
		Qmax	12.9	1.000	0.600	0.550	275.0	24.5	-	No necesita
		Qmin	9.1	1.000	0.600	0.550	275.0	18.9	-	No necesita
7	7	Nmax	32.8	1.000	0.500	0.450	225.0	18.5	15.4	10.7
		Nmin	58.0	1.000	0.500	0.450	225.0	24.2	20.1	23.4
		Mmax	32.8	1.000	0.500	0.450	225.0	18.5	15.4	10.7
		Mmin	68.0	1.000	0.500	0.450	225.0	24.3	20.3	29.4
		Qmax	32.8	1.000	0.500	0.450	225.0	18.5	15.4	10.7
		Qmin	68.0	1.000	0.500	0.450	225.0	24.3	20.3	29.4
	9	Nmax	30.6	1.000	0.500	0.450	225.0	16.7	13.9	10.3
		Nmin	56.8	1.000	0.500	0.450	225.0	22.1	18.4	23.7
		Mmax	30.6	1.000	0.500	0.450	225.0	16.7	13.9	10.3
		Mmin	56.8	1.000	0.500	0.450	225.0	22.1	18.4	23.7
		Qmax	30.6	1.000	0.500	0.450	225.0	16.7	13.9	10.3
		Qmin	65.2	1.000	0.500	0.450	225.0	21.9	18.2	29.0
8	9	Nmax	30.6	1.000	0.500	0.450	225.0	16.7	13.9	10.3
		Nmin	56.9	1.000	0.500	0.450	225.0	22.1	18.4	23.7
		Mmax	30.6	1.000	0.500	0.450	225.0	16.7	13.9	10.3
		Mmin	56.9	1.000	0.500	0.450	225.0	22.1	18.4	23.7
		Qmax	30.6	1.000	0.500	0.450	225.0	16.7	13.9	10.3
		Qmin	65.2	1.000	0.500	0.450	225.0	21.9	18.2	29.0
	11	Nmax	28.4	1.000	0.500	0.450	225.0	14.7	12.3	9.9
		Nmin	55.7	1.000	0.500	0.450	225.0	19.7	16.4	24.2
		Mmax	28.4	1.000	0.500	0.450	225.0	14.7	12.3	9.9
		Mmin	55.7	1.000	0.500	0.450	225.0	19.7	16.4	24.2
		Qmax	28.4	1.000	0.500	0.450	225.0	14.7	12.3	9.9
		Qmin	62.4	1.000	0.500	0.450	225.0	19.1	15.9	28.7
9	11	Nmax	28.4	1.000	0.500	0.450	225.0	14.7	12.3	9.9
		Nmin	55.6	1.000	0.500	0.450	225.0	19.7	16.4	24.2
		Mmax	28.4	1.000	0.500	0.450	225.0	14.7	12.3	9.9
		Mmin	55.6	1.000	0.500	0.450	225.0	19.7	16.4	24.2
		Qmax	28.4	1.000	0.500	0.450	225.0	14.7	12.3	9.9
		Qmin	62.4	1.000	0.500	0.450	225.0	19.1	15.9	28.7
	13	Nmax	26.2	1.000	0.500	0.450	225.0	12.3	10.2	9.9
		Nmin	54.5	1.000	0.500	0.450	225.0	16.8	14.0	25.0
		Mmax	26.2	1.000	0.500	0.450	225.0	12.3	10.2	9.9
		Mmin	54.5	1.000	0.500	0.450	225.0	16.8	14.0	25.0

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO

FECHA: 24/11/2005

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
		Qmax	26.2	1.000	0.500	0.450	225.0	12.3	10.2	9.9
		Qmin	57.7	1.000	0.500	0.450	225.0	15.7	13.1	27.5
10	13	Nmax	26.1	1.000	0.500	0.450	225.0	12.3	10.2	9.8
		Nmin	54.4	1.000	0.500	0.450	225.0	16.8	14.0	25.0
		Mmax	26.1	1.000	0.500	0.450	225.0	12.3	10.2	9.8
		Mmin	54.4	1.000	0.500	0.450	225.0	16.8	14.0	25.0
		Qmax	26.1	1.000	0.500	0.450	225.0	12.3	10.2	9.8
		Qmin	57.5	1.000	0.500	0.450	225.0	15.7	13.1	27.4
	15	Nmax	24.0	1.000	0.500	0.450	225.0	8.6	7.2	10.3
		Nmin	53.2	1.000	0.500	0.450	225.0	12.6	10.5	26.3
		Mmax	24.0	1.000	0.500	0.450	225.0	8.6	7.2	10.3
		Mmin	53.2	1.000	0.500	0.450	225.0	12.6	10.5	26.3
		Qmax	24.0	1.000	0.500	0.450	225.0	8.6	7.2	10.3
		Qmin	53.2	1.000	0.500	0.450	225.0	12.6	10.5	26.3
11	15	Nmax	24.0	1.000	0.500	0.450	225.0	8.6	7.2	10.4
		Nmin	53.2	1.000	0.500	0.450	225.0	12.6	10.5	26.3
		Mmax	24.0	1.000	0.500	0.450	225.0	8.6	7.2	10.4
		Mmin	53.2	1.000	0.500	0.450	225.0	12.6	10.5	26.3
		Qmax	24.0	1.000	0.500	0.450	225.0	8.6	7.2	10.4
		Qmin	53.2	1.000	0.500	0.450	225.0	12.6	10.5	26.3
	17	Nmax	21.8	1.000	0.500	0.450	225.0	10.9	9.1	7.8
		Nmin	52.0	1.000	0.500	0.450	225.0	11.1	9.2	26.4
		Mmax	48.0	1.000	0.500	0.450	225.0	12.9	10.7	23.0
		Mmin	21.8	1.000	0.500	0.450	225.0	10.9	9.1	7.8
		Qmax	21.8	1.000	0.500	0.450	225.0	10.9	9.1	7.8
		Qmin	52.0	1.000	0.500	0.450	225.0	11.1	9.2	26.4
12	17	Nmax	21.8	1.000	0.500	0.450	225.0	10.9	9.1	7.8
		Nmin	52.0	1.000	0.500	0.450	225.0	11.1	9.2	26.4
		Mmax	48.0	1.000	0.500	0.450	225.0	12.9	10.7	23.0
		Mmin	21.8	1.000	0.500	0.450	225.0	10.9	9.1	7.8
		Qmax	21.8	1.000	0.500	0.450	225.0	10.9	9.1	7.8
		Qmin	52.0	1.000	0.500	0.450	225.0	11.1	9.2	26.4
	19	Nmax	17.4	1.000	0.500	0.450	225.0	14.6	12.1	3.3
		Nmin	41.6	1.000	0.500	0.450	225.0	18.1	15.1	16.4
		Mmax	38.4	1.000	0.500	0.450	225.0	18.5	15.5	14.2
		Mmin	17.4	1.000	0.500	0.450	225.0	14.6	12.1	3.3
		Qmax	17.4	1.000	0.500	0.450	225.0	14.6	12.1	3.3
		Qmin	41.6	1.000	0.500	0.450	225.0	18.1	15.1	16.4
13	19	Nmax	17.4	1.000	0.500	0.450	225.0	14.6	12.1	3.3
		Nmin	41.6	1.000	0.500	0.450	225.0	18.1	15.1	16.4
		Mmax	38.4	1.000	0.500	0.450	225.0	18.5	15.5	14.2
		Mmin	17.4	1.000	0.500	0.450	225.0	14.6	12.1	3.3
		Qmax	17.4	1.000	0.500	0.450	225.0	14.6	12.1	3.3
		Qmin	41.6	1.000	0.500	0.450	225.0	18.1	15.1	16.4
	21	Nmax	13.1	1.000	0.500	0.450	225.0	16.5	-	No necesita
		Nmin	31.2	1.000	0.500	0.450	225.0	21.3	17.8	8.3
		Mmax	28.8	1.000	0.500	0.450	225.0	21.5	17.9	6.7
		Mmin	13.1	1.000	0.500	0.450	225.0	16.5	-	No necesita
		Qmax	13.1	1.000	0.500	0.450	225.0	16.5	-	No necesita
		Qmin	31.2	1.000	0.500	0.450	225.0	21.3	17.8	8.3
14	21	Nmax	13.1	1.000	0.500	0.450	225.0	16.5	-	No necesita
		Nmin	31.2	1.000	0.500	0.450	225.0	21.3	17.8	8.3
		Mmax	28.8	1.000	0.500	0.450	225.0	21.5	17.9	6.7

ARMADOCAM_2060_sm.xls PI CAMINO Kv=2060 Sin Kh 24/11/2005

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO

FECHA: 24/11/2005

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
		Mmin	13.1	1.000	0.500	0.450	225.0	16.5	-	No necesita
		Qmax	13.1	1.000	0.500	0.450	225.0	16.5	-	No necesita
		Qmin	31.2	1.000	0.500	0.450	225.0	21.3	17.8	8.3
	23	Nmax	8.7	1.000	0.500	0.450	225.0	17.6	-	No necesita
		Nmin	20.8	1.000	0.500	0.450	225.0	23.2	-	No necesita
		Mmax	20.8	1.000	0.500	0.450	225.0	23.2	-	No necesita
		Mmin	8.7	1.000	0.500	0.450	225.0	17.6	-	No necesita
		Qmax	8.7	1.000	0.500	0.450	225.0	17.6	-	No necesita
		Qmin	20.8	1.000	0.500	0.450	225.0	23.2	-	No necesita
15	23	Nmax	8.7	1.000	0.500	0.450	225.0	17.6	-	No necesita
		Nmin	20.8	1.000	0.500	0.450	225.0	23.2	-	No necesita
		Mmax	20.8	1.000	0.500	0.450	225.0	23.2	-	No necesita
		Mmin	8.7	1.000	0.500	0.450	225.0	17.6	-	No necesita
		Qmax	8.7	1.000	0.500	0.450	225.0	17.6	-	No necesita
		Qmin	20.8	1.000	0.500	0.450	225.0	23.2	-	No necesita
	25	Nmax	4.4	1.000	0.500	0.450	225.0	18.2	-	No necesita
		Nmin	10.4	1.000	0.500	0.450	225.0	24.3	-	No necesita
		Mmax	10.4	1.000	0.500	0.450	225.0	24.3	-	No necesita
		Mmin	4.4	1.000	0.500	0.450	225.0	18.2	-	No necesita
		Qmax	4.4	1.000	0.500	0.450	225.0	18.2	-	No necesita
		Qmin	10.4	1.000	0.500	0.450	225.0	24.3	-	No necesita
16	25	Nmax	4.4	1.000	0.500	0.450	225.0	18.2	-	No necesita
		Nmin	10.4	1.000	0.500	0.450	225.0	24.3	-	No necesita
		Mmax	10.4	1.000	0.500	0.450	225.0	24.3	-	No necesita
		Mmin	4.4	1.000	0.500	0.450	225.0	18.2	-	No necesita
		Qmax	4.4	1.000	0.500	0.450	225.0	18.2	-	No necesita
		Qmin	10.4	1.000	0.500	0.450	225.0	24.3	-	No necesita
	27	Nmax	1.5	1.000	0.500	0.450	225.0	18.4	-	No necesita
		Nmin	1.5	1.000	0.500	0.450	225.0	24.6	-	No necesita
		Mmax	1.5	1.000	0.500	0.450	225.0	24.6	-	No necesita
		Mmin	1.5	1.000	0.500	0.450	225.0	18.4	-	No necesita
		Qmax	1.5	1.000	0.500	0.450	225.0	23.3	-	No necesita
		Qmin	1.5	1.000	0.500	0.450	225.0	18.4	-	No necesita
17	27	Nmax	1.5	1.000	0.500	0.450	225.0	18.4	-	No necesita
		Nmin	1.5	1.000	0.500	0.450	225.0	24.6	-	No necesita
		Mmax	1.5	1.000	0.500	0.450	225.0	24.6	-	No necesita
		Mmin	1.5	1.000	0.500	0.450	225.0	18.4	-	No necesita
		Qmax	1.5	1.000	0.500	0.450	225.0	18.4	-	No necesita
		Qmin	1.5	1.000	0.500	0.450	225.0	23.3	-	No necesita
	29	Nmax	5.8	1.000	0.500	0.450	225.0	18.2	-	No necesita
		Nmin	11.9	1.000	0.500	0.450	225.0	24.3	-	No necesita
		Mmax	11.9	1.000	0.500	0.450	225.0	24.3	-	No necesita
		Mmin	5.8	1.000	0.500	0.450	225.0	18.2	-	No necesita
		Qmax	11.9	1.000	0.500	0.450	225.0	24.3	-	No necesita
		Qmin	5.8	1.000	0.500	0.450	225.0	18.2	-	No necesita
18	29	Nmax	5.8	1.000	0.500	0.450	225.0	18.2	-	No necesita
		Nmin	11.9	1.000	0.500	0.450	225.0	24.3	-	No necesita
		Mmax	11.9	1.000	0.500	0.450	225.0	24.3	-	No necesita
		Mmin	5.8	1.000	0.500	0.450	225.0	18.2	-	No necesita
		Qmax	11.9	1.000	0.500	0.450	225.0	24.3	-	No necesita
		Qmin	5.8	1.000	0.500	0.450	225.0	18.2	-	No necesita
	31	Nmax	10.2	1.000	0.500	0.450	225.0	17.5	-	No necesita
		Nmin	22.3	1.000	0.500	0.450	225.0	23.2	-	No necesita

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO

FECHA: 24/11/2005

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
		Mmax	22.3	1.000	0.500	0.450	225.0	23.2	-	No necesita
		Mmin	10.2	1.000	0.500	0.450	225.0	17.5	-	No necesita
		Qmax	22.3	1.000	0.500	0.450	225.0	23.2	-	No necesita
		Qmin	10.2	1.000	0.500	0.450	225.0	17.5	-	No necesita
19	31	Nmax	10.2	1.000	0.500	0.450	225.0	17.5	-	No necesita
		Nmin	22.3	1.000	0.500	0.450	225.0	23.2	-	No necesita
		Mmax	22.3	1.000	0.500	0.450	225.0	23.2	-	No necesita
		Mmin	10.2	1.000	0.500	0.450	225.0	17.5	-	No necesita
		Qmax	22.3	1.000	0.500	0.450	225.0	23.2	-	No necesita
		Qmin	10.2	1.000	0.500	0.450	225.0	17.5	-	No necesita
	33	Nmax	14.6	1.000	0.500	0.450	225.0	16.2	-	No necesita
		Nmin	32.7	1.000	0.500	0.450	225.0	21.1	17.6	9.3
		Mmax	30.3	1.000	0.500	0.450	225.0	21.3	17.7	7.7
		Mmin	14.6	1.000	0.500	0.450	225.0	16.2	-	No necesita
		Qmax	32.7	1.000	0.500	0.450	225.0	21.1	17.6	9.3
		Qmin	14.6	1.000	0.500	0.450	225.0	16.2	-	No necesita
20	33	Nmax	14.6	1.000	0.500	0.450	225.0	16.2	-	No necesita
		Nmin	32.7	1.000	0.500	0.450	225.0	21.1	17.6	9.3
		Mmax	30.3	1.000	0.500	0.450	225.0	21.3	17.7	7.7
		Mmin	14.6	1.000	0.500	0.450	225.0	16.2	-	No necesita
		Qmax	32.7	1.000	0.500	0.450	225.0	21.1	17.6	9.3
		Qmin	14.6	1.000	0.500	0.450	225.0	16.2	-	No necesita
	35	Nmax	18.9	1.000	0.500	0.450	225.0	13.9	11.6	4.5
		Nmin	43.1	1.000	0.500	0.450	225.0	17.7	14.7	17.5
		Mmax	39.9	1.000	0.500	0.450	225.0	18.2	15.1	15.3
		Mmin	18.9	1.000	0.500	0.450	225.0	13.9	11.6	4.5
		Qmax	43.1	1.000	0.500	0.450	225.0	17.7	14.7	17.5
		Qmin	18.9	1.000	0.500	0.450	225.0	13.9	11.6	4.5
21	35	Nmax	18.9	1.000	0.500	0.450	225.0	13.9	11.6	4.5
		Nmin	43.1	1.000	0.500	0.450	225.0	17.7	14.7	17.5
		Mmax	39.9	1.000	0.500	0.450	225.0	18.2	15.1	15.3
		Mmin	18.9	1.000	0.500	0.450	225.0	13.9	11.6	4.5
		Qmax	43.1	1.000	0.500	0.450	225.0	17.7	14.7	17.5
		Qmin	18.9	1.000	0.500	0.450	225.0	13.9	11.6	4.5
	37	Nmax	23.3	1.000	0.500	0.450	225.0	9.3	7.7	9.6
		Nmin	53.5	1.000	0.500	0.450	225.0	9.5	7.9	28.1
		Mmax	49.4	1.000	0.500	0.450	225.0	11.8	9.8	24.5
		Mmin	23.3	1.000	0.500	0.450	225.0	9.3	7.7	9.6
		Qmax	53.5	1.000	0.500	0.450	225.0	9.5	7.9	28.1
		Qmin	23.3	1.000	0.500	0.450	225.0	9.3	7.7	9.6
22	37	Nmax	23.3	1.000	0.500	0.450	225.0	9.3	7.7	9.6
		Nmin	53.5	1.000	0.500	0.450	225.0	9.5	7.9	28.1
		Mmax	49.4	1.000	0.500	0.450	225.0	11.8	9.8	24.4
		Mmin	23.3	1.000	0.500	0.450	225.0	9.3	7.7	9.6
		Qmax	53.5	1.000	0.500	0.450	225.0	9.5	7.9	28.1
		Qmin	23.3	1.000	0.500	0.450	225.0	9.3	7.7	9.6
	39	Nmax	25.4	1.000	0.500	0.450	225.0	10.8	9.0	10.1
		Nmin	54.7	1.000	0.500	0.450	225.0	13.9	11.6	26.6
		Mmax	25.4	1.000	0.500	0.450	225.0	10.8	9.0	10.1
		Mmin	54.7	1.000	0.500	0.450	225.0	13.9	11.6	26.6
		Qmax	54.7	1.000	0.500	0.450	225.0	13.9	11.6	26.6
		Qmin	25.4	1.000	0.500	0.450	225.0	10.8	9.0	10.1
23	39	Nmax	25.5	1.000	0.500	0.450	225.0	10.8	9.0	10.1

ARMADOCAM_2060_sm.xls PI CAMINO Kv=2060 Sin Kh 24/11/2005

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO

FECHA: 24/11/2005

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
		Nmin	54.7	1.000	0.500	0.450	225.0	13.9	11.5	26.6
		Mmax	25.5	1.000	0.500	0.450	225.0	10.8	9.0	10.1
		Mmin	54.7	1.000	0.500	0.450	225.0	13.9	11.5	26.6
		Qmax	54.7	1.000	0.500	0.450	225.0	13.9	11.5	26.6
		Qmin	25.5	1.000	0.500	0.450	225.0	10.8	9.0	10.1
	41	Nmax	27.7	1.000	0.500	0.450	225.0	13.7	11.4	10.0
		Nmin	55.9	1.000	0.500	0.450	225.0	17.6	14.7	25.5
		Mmax	27.7	1.000	0.500	0.450	225.0	13.7	11.4	10.0
		Mmin	55.9	1.000	0.500	0.450	225.0	17.6	14.7	25.5
		Qmax	59.1	1.000	0.500	0.450	225.0	16.6	13.9	27.9
		Qmin	27.7	1.000	0.500	0.450	225.0	13.7	11.4	10.0
24	41	Nmax	27.7	1.000	0.500	0.450	225.0	13.7	11.4	10.1
		Nmin	56.0	1.000	0.500	0.450	225.0	17.6	14.7	25.5
		Mmax	27.7	1.000	0.500	0.450	225.0	13.7	11.4	10.1
		Mmin	56.0	1.000	0.500	0.450	225.0	17.6	14.7	25.5
		Qmax	59.2	1.000	0.500	0.450	225.0	16.6	13.9	28.0
		Qmin	27.7	1.000	0.500	0.450	225.0	13.7	11.4	10.1
	43	Nmax	29.9	1.000	0.500	0.450	225.0	15.9	13.2	10.3
		Nmin	57.2	1.000	0.500	0.450	225.0	20.4	17.0	24.8
		Mmax	29.9	1.000	0.500	0.450	225.0	15.9	13.2	10.3
		Mmin	57.2	1.000	0.500	0.450	225.0	20.4	17.0	24.8
		Qmax	63.9	1.000	0.500	0.450	225.0	19.9	16.5	29.2
		Qmin	29.9	1.000	0.500	0.450	225.0	15.9	13.2	10.3
25	43	Nmax	29.9	1.000	0.500	0.450	225.0	15.9	13.2	10.3
		Nmin	57.2	1.000	0.500	0.450	225.0	20.4	17.0	24.8
		Mmax	29.9	1.000	0.500	0.450	225.0	15.9	13.2	10.3
		Mmin	57.2	1.000	0.500	0.450	225.0	20.4	17.0	24.8
		Qmax	64.0	1.000	0.500	0.450	225.0	19.9	16.5	29.3
		Qmin	29.9	1.000	0.500	0.450	225.0	15.9	13.2	10.3
	45	Nmax	32.1	1.000	0.500	0.450	225.0	17.8	14.8	10.7
		Nmin	58.4	1.000	0.500	0.450	225.0	22.7	18.9	24.4
		Mmax	32.1	1.000	0.500	0.450	225.0	17.8	14.8	10.7
		Mmin	58.4	1.000	0.500	0.450	225.0	22.7	18.9	24.4
		Qmax	66.8	1.000	0.500	0.450	225.0	22.6	18.8	29.6
		Qmin	32.1	1.000	0.500	0.450	225.0	17.8	14.8	10.7
26	45	Nmax	32.1	1.000	0.500	0.450	225.0	17.8	14.8	10.7
		Nmin	58.4	1.000	0.500	0.450	225.0	22.7	18.9	24.4
		Mmax	32.1	1.000	0.500	0.450	225.0	17.8	14.8	10.7
		Mmin	58.4	1.000	0.500	0.450	225.0	22.7	18.9	24.4
		Qmax	66.8	1.000	0.500	0.450	225.0	22.6	18.8	29.6
		Qmin	32.1	1.000	0.500	0.450	225.0	17.8	14.8	10.7
	52	Nmax	34.3	1.000	0.500	0.450	225.0	19.4	16.2	11.2
		Nmin	59.6	1.000	0.500	0.450	225.0	24.8	20.7	24.0
		Mmax	34.3	1.000	0.500	0.450	225.0	19.4	16.2	11.2
		Mmin	69.6	1.000	0.500	0.450	225.0	25.0	20.8	30.1
		Qmax	69.6	1.000	0.500	0.450	225.0	25.0	20.8	30.1
		Qmin	34.3	1.000	0.500	0.450	225.0	19.4	16.2	11.2
27	1	Nmax	64.3	1.000	0.600	0.550	275.0	23.3	19.4	22.7
		Nmin	40.1	1.000	0.600	0.550	275.0	20.9	17.4	11.4
		Mmax	73.9	1.000	0.600	0.550	275.0	24.4	20.3	27.1
		Mmin	40.1	1.000	0.600	0.550	275.0	20.9	17.4	11.4
		Qmax	73.9	1.000	0.600	0.550	275.0	24.4	20.3	27.1
		Qmin	40.1	1.000	0.600	0.550	275.0	20.9	17.4	11.4

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO

FECHA: 24/11/2005

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
	8	Nmax	64.8	1.000	0.600	0.550	275.0	20.8	17.3	24.0
		Nmin	40.5	1.000	0.600	0.550	275.0	19.1	15.9	12.4
		Mmax	74.4	1.000	0.600	0.550	275.0	21.7	18.1	28.4
		Mmin	40.5	1.000	0.600	0.550	275.0	19.1	15.9	12.4
		Qmax	74.4	1.000	0.600	0.550	275.0	21.7	18.1	28.4
		Qmin	40.5	1.000	0.600	0.550	275.0	19.1	15.9	12.4
28	8	Nmax	59.1	1.000	0.600	0.550	275.0	20.8	17.3	21.1
		Nmin	36.9	1.000	0.600	0.550	275.0	19.1	15.9	10.6
		Mmax	67.9	1.000	0.600	0.550	275.0	21.7	18.1	25.2
		Mmin	36.9	1.000	0.600	0.550	275.0	19.1	15.9	10.6
		Qmax	67.9	1.000	0.600	0.550	275.0	21.7	18.1	25.2
		Qmin	36.9	1.000	0.600	0.550	275.0	19.1	15.9	10.6
	10	Nmax	59.6	1.000	0.600	0.550	275.0	17.8	14.9	22.6
		Nmin	37.3	1.000	0.600	0.550	275.0	17.0	14.2	11.7
		Mmax	68.3	1.000	0.600	0.550	275.0	18.6	15.5	26.7
		Mmin	37.3	1.000	0.600	0.550	275.0	17.0	14.2	11.7
		Qmax	68.3	1.000	0.600	0.550	275.0	18.6	15.5	26.7
		Qmin	37.3	1.000	0.600	0.550	275.0	17.0	14.2	11.7
29	10	Nmax	54.3	1.000	0.600	0.550	275.0	17.8	14.9	19.9
		Nmin	34.1	1.000	0.600	0.550	275.0	17.0	14.2	10.0
		Mmax	62.3	1.000	0.600	0.550	275.0	18.6	15.5	23.7
		Mmin	34.1	1.000	0.600	0.550	275.0	17.0	14.2	10.0
		Qmax	62.3	1.000	0.600	0.550	275.0	18.6	15.5	23.7
		Qmin	34.1	1.000	0.600	0.550	275.0	17.0	14.2	10.0
	12	Nmax	54.8	1.000	0.600	0.550	275.0	14.6	12.2	21.5
		Nmin	34.5	1.000	0.600	0.550	275.0	14.6	12.2	11.3
		Mmax	58.4	1.000	0.600	0.550	275.0	14.6	12.2	23.4
		Mmin	54.8	1.000	0.600	0.550	275.0	14.6	12.2	21.5
		Qmax	62.8	1.000	0.600	0.550	275.0	14.6	12.2	25.6
		Qmin	34.5	1.000	0.600	0.550	275.0	14.6	12.2	11.3
30	12	Nmax	49.9	1.000	0.600	0.550	275.0	14.6	12.2	19.1
		Nmin	31.6	1.000	0.600	0.550	275.0	14.6	12.2	9.8
		Mmax	53.3	1.000	0.600	0.550	275.0	14.6	12.2	20.8
		Mmin	49.9	1.000	0.600	0.550	275.0	14.6	12.2	19.1
		Qmax	57.2	1.000	0.600	0.550	275.0	14.6	12.2	22.7
		Qmin	31.6	1.000	0.600	0.550	275.0	14.6	12.2	9.8
	14	Nmax	50.4	1.000	0.600	0.550	275.0	13.2	11.0	19.9
		Nmin	32.1	1.000	0.600	0.550	275.0	13.0	10.8	10.7
		Mmax	32.1	1.000	0.600	0.550	275.0	13.0	10.8	10.7
		Mmin	57.6	1.000	0.600	0.550	275.0	13.4	11.2	23.5
		Qmax	57.6	1.000	0.600	0.550	275.0	13.4	11.2	23.5
		Qmin	32.1	1.000	0.600	0.550	275.0	13.0	10.8	10.7
31	14	Nmax	45.5	1.000	0.600	0.550	275.0	13.2	11.0	17.4
		Nmin	29.1	1.000	0.600	0.550	275.0	13.0	10.8	9.3
		Mmax	29.1	1.000	0.600	0.550	275.0	13.0	10.8	9.3
		Mmin	52.1	1.000	0.600	0.550	275.0	13.4	11.2	20.6
		Qmax	52.1	1.000	0.600	0.550	275.0	13.4	11.2	20.6
		Qmin	29.1	1.000	0.600	0.550	275.0	13.0	10.8	9.3
	16	Nmax	46.0	1.000	0.600	0.550	275.0	16.7	13.9	16.2
		Nmin	29.6	1.000	0.600	0.550	275.0	13.5	11.2	9.3
		Mmax	29.6	1.000	0.600	0.550	275.0	13.5	11.2	9.3
		Mmin	52.5	1.000	0.600	0.550	275.0	17.2	14.4	19.3
		Qmax	52.5	1.000	0.600	0.550	275.0	17.2	14.4	19.3

ARMADOCAM_2060_sm.xls PI CAMINO Kv=2060 Sin Kh 24/11/2005

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO

FECHA: 24/11/2005

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
		Qmin	29.6	1.000	0.600	0.550	275.0	13.5	11.2	9.3
32	16	Nmax	38.9	1.000	0.600	0.550	275.0	16.7	13.9	12.6
		Nmin	25.2	1.000	0.600	0.550	275.0	13.5	11.2	7.1
		Mmax	25.2	1.000	0.600	0.550	275.0	13.5	11.2	7.1
		Mmin	44.4	1.000	0.600	0.550	275.0	17.2	14.4	15.2
		Qmax	44.4	1.000	0.600	0.550	275.0	17.2	14.4	15.2
		Qmin	25.2	1.000	0.600	0.550	275.0	13.5	11.2	7.1
	18	Nmax	39.8	1.000	0.600	0.550	275.0	20.6	17.1	11.5
		Nmin	26.1	1.000	0.600	0.550	275.0	17.0	14.1	6.1
		Mmax	26.1	1.000	0.600	0.550	275.0	17.0	14.1	6.1
		Mmin	45.3	1.000	0.600	0.550	275.0	21.4	17.8	13.9
		Qmax	45.3	1.000	0.600	0.550	275.0	21.4	17.8	13.9
		Qmin	26.1	1.000	0.600	0.550	275.0	17.0	14.1	6.1
33	18	Nmax	30.8	1.000	0.600	0.550	275.0	20.6	17.1	6.9
		Nmin	20.5	1.000	0.600	0.550	275.0	17.0	14.1	3.2
		Mmax	20.5	1.000	0.600	0.550	275.0	17.0	14.1	3.2
		Mmin	35.0	1.000	0.600	0.550	275.0	21.4	17.8	8.7
		Qmax	35.0	1.000	0.600	0.550	275.0	21.4	17.8	8.7
		Qmin	20.5	1.000	0.600	0.550	275.0	17.0	14.1	3.2
	20	Nmax	31.7	1.000	0.600	0.550	275.0	22.8	19.0	6.4
		Nmin	21.4	1.000	0.600	0.550	275.0	19.0	15.8	2.8
		Mmax	21.4	1.000	0.600	0.550	275.0	19.0	15.8	2.8
		Mmin	35.9	1.000	0.600	0.550	275.0	23.8	19.9	8.1
		Qmax	35.9	1.000	0.600	0.550	275.0	23.8	19.9	8.1
		Qmin	21.4	1.000	0.600	0.550	275.0	19.0	15.8	2.8
34	20	Nmax	23.0	1.000	0.600	0.550	275.0	22.8	19.0	2.0
		Nmin	15.8	1.000	0.600	0.550	275.0	19.0	-	No necesita
		Mmax	15.8	1.000	0.600	0.550	275.0	19.0	-	No necesita
		Mmin	26.0	1.000	0.600	0.550	275.0	23.8	19.9	3.1
		Qmax	26.0	1.000	0.600	0.550	275.0	23.8	19.9	3.1
		Qmin	15.8	1.000	0.600	0.550	275.0	19.0	-	No necesita
	22	Nmax	23.9	1.000	0.600	0.550	275.0	24.2	-	No necesita
		Nmin	16.7	1.000	0.600	0.550	275.0	20.1	-	No necesita
		Mmax	16.7	1.000	0.600	0.550	275.0	20.1	-	No necesita
		Mmin	26.9	1.000	0.600	0.550	275.0	25.3	21.1	2.9
		Qmax	26.9	1.000	0.600	0.550	275.0	25.3	21.1	2.9
		Qmin	16.7	1.000	0.600	0.550	275.0	20.1	-	No necesita
35	22	Nmax	15.4	1.000	0.600	0.550	275.0	24.2	-	No necesita
		Nmin	11.2	1.000	0.600	0.550	275.0	20.1	-	No necesita
		Mmax	11.2	1.000	0.600	0.550	275.0	20.1	-	No necesita
		Mmin	17.2	1.000	0.600	0.550	275.0	25.3	-	No necesita
		Qmax	17.2	1.000	0.600	0.550	275.0	25.3	-	No necesita
		Qmin	11.2	1.000	0.600	0.550	275.0	20.1	-	No necesita
	24	Nmax	16.3	1.000	0.600	0.550	275.0	25.0	-	No necesita
		Nmin	12.1	1.000	0.600	0.550	275.0	20.8	-	No necesita
		Mmax	12.1	1.000	0.600	0.550	275.0	20.8	-	No necesita
		Mmin	18.1	1.000	0.600	0.550	275.0	26.2	-	No necesita
		Qmax	18.1	1.000	0.600	0.550	275.0	26.2	-	No necesita
		Qmin	12.1	1.000	0.600	0.550	275.0	20.8	-	No necesita
36	24	Nmax	7.9	1.000	0.600	0.550	275.0	25.0	-	No necesita
		Nmin	6.5	1.000	0.600	0.550	275.0	20.8	-	No necesita
		Mmax	6.5	1.000	0.600	0.550	275.0	20.8	-	No necesita
		Mmin	8.5	1.000	0.600	0.550	275.0	26.2	-	No necesita

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO

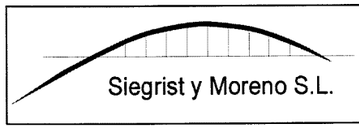
FECHA: 24/11/2005

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
		Qmax	8.5	1.000	0.600	0.550	275.0	26.2	-	No necesita
		Qmin	6.5	1.000	0.600	0.550	275.0	20.8	-	No necesita
	26	Nmax	8.8	1.000	0.600	0.550	275.0	25.2	-	No necesita
		Nmin	7.4	1.000	0.600	0.550	275.0	21.0	-	No necesita
		Mmax	7.4	1.000	0.600	0.550	275.0	21.0	-	No necesita
		Mmin	9.3	1.000	0.600	0.550	275.0	26.4	-	No necesita
		Qmax	9.3	1.000	0.600	0.550	275.0	26.4	-	No necesita
		Qmin	7.4	1.000	0.600	0.550	275.0	21.0	-	No necesita
37	26	Nmax	4.3	1.000	0.600	0.550	275.0	25.2	-	No necesita
		Nmin	3.1	1.000	0.600	0.550	275.0	21.0	-	No necesita
		Mmax	3.1	1.000	0.600	0.550	275.0	21.0	-	No necesita
		Mmin	4.9	1.000	0.600	0.550	275.0	26.4	-	No necesita
		Qmax	3.1	1.000	0.600	0.550	275.0	21.0	-	No necesita
		Qmin	4.9	1.000	0.600	0.550	275.0	26.4	-	No necesita
	28	Nmax	3.7	1.000	0.600	0.550	275.0	25.0	-	No necesita
		Nmin	3.7	1.000	0.600	0.550	275.0	20.9	-	No necesita
		Mmax	3.7	1.000	0.600	0.550	275.0	20.9	-	No necesita
		Mmin	4.0	1.000	0.600	0.550	275.0	26.2	-	No necesita
		Qmax	3.7	1.000	0.600	0.550	275.0	20.9	-	No necesita
		Qmin	4.0	1.000	0.600	0.550	275.0	26.2	-	No necesita
38	28	Nmax	12.1	1.000	0.600	0.550	275.0	25.0	-	No necesita
		Nmin	7.8	1.000	0.600	0.550	275.0	20.9	-	No necesita
		Mmax	7.8	1.000	0.600	0.550	275.0	20.9	-	No necesita
		Mmin	13.8	1.000	0.600	0.550	275.0	26.2	-	No necesita
		Qmax	7.8	1.000	0.600	0.550	275.0	20.9	-	No necesita
		Qmin	13.8	1.000	0.600	0.550	275.0	26.2	-	No necesita
	30	Nmax	11.2	1.000	0.600	0.550	275.0	24.6	-	No necesita
		Nmin	6.9	1.000	0.600	0.550	275.0	20.6	-	No necesita
		Mmax	6.9	1.000	0.600	0.550	275.0	20.6	-	No necesita
		Mmin	12.9	1.000	0.600	0.550	275.0	25.7	-	No necesita
		Qmax	6.9	1.000	0.600	0.550	275.0	20.6	-	No necesita
		Qmin	12.9	1.000	0.600	0.550	275.0	25.7	-	No necesita
39	30	Nmax	20.1	1.000	0.600	0.550	275.0	24.6	-	No necesita
		Nmin	12.8	1.000	0.600	0.550	275.0	20.6	-	No necesita
		Mmax	12.8	1.000	0.600	0.550	275.0	20.6	-	No necesita
		Mmin	23.0	1.000	0.600	0.550	275.0	25.7	-	No necesita
		Qmax	12.8	1.000	0.600	0.550	275.0	20.6	-	No necesita
		Qmin	23.0	1.000	0.600	0.550	275.0	25.7	-	No necesita
	32	Nmax	19.2	1.000	0.600	0.550	275.0	23.5	-	No necesita
		Nmin	12.0	1.000	0.600	0.550	275.0	19.8	-	No necesita
		Mmax	12.0	1.000	0.600	0.550	275.0	19.8	-	No necesita
		Mmin	22.1	1.000	0.600	0.550	275.0	24.5	-	No necesita
		Qmax	12.0	1.000	0.600	0.550	275.0	19.8	-	No necesita
		Qmin	22.1	1.000	0.600	0.550	275.0	24.5	-	No necesita
40	32	Nmax	28.5	1.000	0.600	0.550	275.0	23.5	19.6	4.5
		Nmin	18.1	1.000	0.600	0.550	275.0	19.8	-	No necesita
		Mmax	18.1	1.000	0.600	0.550	275.0	19.8	-	No necesita
		Mmin	32.6	1.000	0.600	0.550	275.0	24.5	20.4	6.2
		Qmax	18.1	1.000	0.600	0.550	275.0	19.8	-	No necesita
		Qmin	32.6	1.000	0.600	0.550	275.0	24.5	20.4	6.2
	34	Nmax	27.6	1.000	0.600	0.550	275.0	21.6	18.0	4.8
		Nmin	17.2	1.000	0.600	0.550	275.0	18.4	-	No necesita
		Mmax	17.2	1.000	0.600	0.550	275.0	18.4	-	No necesita

ARMADOCAM_2060_sm.xls PI CAMINO Kv=2060 Sin Kh 24/11/2005



AVE CERVELLÓ
PI CAMINO

FECHA: 24/11/2005

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
		Mmin	31.8	1.000	0.600	0.550	275.0	22.4	18.7	6.6
		Qmax	17.2	1.000	0.600	0.550	275.0	18.4	-	No necesita
		Qmin	31.8	1.000	0.600	0.550	275.0	22.4	18.7	6.6
41	34	Nmax	37.4	1.000	0.600	0.550	275.0	21.6	18.0	9.8
		Nmin	23.7	1.000	0.600	0.550	275.0	18.4	15.3	4.2
		Mmax	23.7	1.000	0.600	0.550	275.0	18.4	15.3	4.2
		Mmin	42.9	1.000	0.600	0.550	275.0	22.4	18.7	12.2
		Qmax	23.7	1.000	0.600	0.550	275.0	18.4	15.3	4.2
		Qmin	42.9	1.000	0.600	0.550	275.0	22.4	18.7	12.2
	36	Nmax	36.5	1.000	0.600	0.550	275.0	18.4	15.4	10.7
		Nmin	22.8	1.000	0.600	0.550	275.0	15.9	13.2	4.8
		Mmax	22.8	1.000	0.600	0.550	275.0	15.9	13.2	4.8
		Mmin	42.0	1.000	0.600	0.550	275.0	18.9	15.7	13.3
		Qmax	22.8	1.000	0.600	0.550	275.0	15.9	13.2	4.8
		Qmin	42.0	1.000	0.600	0.550	275.0	18.9	15.7	13.3
42	36	Nmax	44.3	1.000	0.600	0.550	275.0	18.4	15.4	14.6
		Nmin	27.9	1.000	0.600	0.550	275.0	15.9	13.2	7.4
		Mmax	27.9	1.000	0.600	0.550	275.0	15.9	13.2	7.4
		Mmin	50.8	1.000	0.600	0.550	275.0	18.9	15.7	17.7
		Qmax	27.9	1.000	0.600	0.550	275.0	15.9	13.2	7.4
		Qmin	50.8	1.000	0.600	0.550	275.0	18.9	15.7	17.7
	38	Nmax	43.9	1.000	0.600	0.550	275.0	15.8	13.2	15.5
		Nmin	27.5	1.000	0.600	0.550	275.0	13.8	11.5	8.1
		Mmax	27.5	1.000	0.600	0.550	275.0	13.8	11.5	8.1
		Mmin	50.4	1.000	0.600	0.550	275.0	16.0	13.3	18.7
		Qmax	27.5	1.000	0.600	0.550	275.0	13.8	11.5	8.1
		Qmin	50.4	1.000	0.600	0.550	275.0	16.0	13.3	18.7
43	38	Nmax	49.3	1.000	0.600	0.550	275.0	15.8	13.2	18.2
		Nmin	31.0	1.000	0.600	0.550	275.0	13.8	11.5	9.8
		Mmax	31.0	1.000	0.600	0.550	275.0	13.8	11.5	9.8
		Mmin	56.5	1.000	0.600	0.550	275.0	16.0	13.3	21.8
		Qmax	31.0	1.000	0.600	0.550	275.0	13.8	11.5	9.8
		Qmin	56.5	1.000	0.600	0.550	275.0	16.0	13.3	21.8
	40	Nmax	48.8	1.000	0.600	0.550	275.0	11.3	9.4	19.9
		Nmin	30.5	1.000	0.600	0.550	275.0	10.8	9.0	10.9
		Mmax	52.2	1.000	0.600	0.550	275.0	10.9	9.1	21.8
		Mmin	48.8	1.000	0.600	0.550	275.0	11.3	9.4	19.9
		Qmax	30.5	1.000	0.600	0.550	275.0	10.8	9.0	10.9
		Qmin	56.0	1.000	0.600	0.550	275.0	10.8	9.0	23.7
44	40	Nmax	54.2	1.000	0.600	0.550	275.0	11.3	9.4	22.6
		Nmin	34.1	1.000	0.600	0.550	275.0	10.8	9.0	12.7
		Mmax	58.0	1.000	0.600	0.550	275.0	10.9	9.0	24.7
		Mmin	54.2	1.000	0.600	0.550	275.0	11.3	9.4	22.6
		Qmax	34.1	1.000	0.600	0.550	275.0	10.8	9.0	12.7
		Qmin	62.3	1.000	0.600	0.550	275.0	10.8	9.0	26.9
	42	Nmax	53.8	1.000	0.600	0.550	275.0	15.5	12.9	20.6
		Nmin	33.6	1.000	0.600	0.550	275.0	14.5	12.1	10.9
		Mmax	61.8	1.000	0.600	0.550	275.0	16.5	13.7	24.3
		Mmin	33.6	1.000	0.600	0.550	275.0	14.5	12.1	10.9
		Qmax	33.6	1.000	0.600	0.550	275.0	14.5	12.1	10.9
		Qmin	61.8	1.000	0.600	0.550	275.0	16.5	13.7	24.3
45	42	Nmax	59.8	1.000	0.600	0.550	275.0	15.5	12.9	23.6
		Nmin	37.6	1.000	0.600	0.550	275.0	14.5	12.1	12.9

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO

FECHA: 24/11/2005

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
		Mmax	68.5	1.000	0.600	0.550	275.0	16.5	13.7	27.7
		Mmin	37.6	1.000	0.600	0.550	275.0	14.5	12.1	12.9
		Qmax	37.6	1.000	0.600	0.550	275.0	14.5	12.1	12.9
		Qmin	68.5	1.000	0.600	0.550	275.0	16.5	13.7	27.7
	44	Nmax	59.3	1.000	0.600	0.550	275.0	19.1	15.9	21.9
		Nmin	37.1	1.000	0.600	0.550	275.0	17.1	14.3	11.5
		Mmax	68.1	1.000	0.600	0.550	275.0	20.2	16.8	25.9
		Mmin	37.1	1.000	0.600	0.550	275.0	17.1	14.3	11.5
		Qmax	37.1	1.000	0.600	0.550	275.0	17.1	14.3	11.5
		Qmin	68.1	1.000	0.600	0.550	275.0	20.2	16.8	25.9
46	44	Nmax	65.9	1.000	0.600	0.550	275.0	19.1	15.9	25.2
		Nmin	41.6	1.000	0.600	0.550	275.0	17.1	14.3	13.8
		Mmax	75.4	1.000	0.600	0.550	275.0	20.2	16.8	29.6
		Mmin	41.6	1.000	0.600	0.550	275.0	17.1	14.3	13.8
		Qmax	41.6	1.000	0.600	0.550	275.0	17.1	14.3	13.8
		Qmin	75.4	1.000	0.600	0.550	275.0	20.2	16.8	29.6
	46	Nmax	65.4	1.000	0.600	0.550	275.0	22.0	18.3	23.8
		Nmin	41.2	1.000	0.600	0.550	275.0	19.3	16.1	12.7
		Mmax	75.0	1.000	0.600	0.550	275.0	23.2	19.3	28.1
		Mmin	41.2	1.000	0.600	0.550	275.0	19.3	16.1	12.7
		Qmax	41.2	1.000	0.600	0.550	275.0	19.3	16.1	12.7
		Qmin	75.0	1.000	0.600	0.550	275.0	23.2	19.3	28.1
47	46	Nmax	14.4	1.000	0.600	0.550	275.0	19.3	-	No necesita
		Nmin	14.2	1.000	0.600	0.550	275.0	23.2	-	No necesita
		Mmax	14.2	1.000	0.600	0.550	275.0	23.2	-	No necesita
		Mmin	14.4	1.000	0.600	0.550	275.0	19.3	-	No necesita
		Qmax	14.4	1.000	0.600	0.550	275.0	19.3	-	No necesita
		Qmin	14.2	1.000	0.600	0.550	275.0	22.0	-	No necesita
	47	Nmax	9.1	1.000	0.600	0.550	275.0	18.1	-	No necesita
		Nmin	8.9	1.000	0.600	0.550	275.0	22.6	-	No necesita
		Mmax	8.9	1.000	0.600	0.550	275.0	22.6	-	No necesita
		Mmin	9.1	1.000	0.600	0.550	275.0	18.1	-	No necesita
		Qmax	9.1	1.000	0.600	0.550	275.0	18.1	-	No necesita
		Qmin	8.9	1.000	0.600	0.550	275.0	21.5	-	No necesita
48	47	Nmax	9.1	1.000	0.600	0.550	275.0	18.1	-	No necesita
		Nmin	8.9	1.000	0.600	0.550	275.0	22.6	-	No necesita
		Mmax	8.9	1.000	0.600	0.550	275.0	22.6	-	No necesita
		Mmin	9.1	1.000	0.600	0.550	275.0	18.1	-	No necesita
		Qmax	9.1	1.000	0.600	0.550	275.0	18.1	-	No necesita
		Qmin	8.9	1.000	0.600	0.550	275.0	21.5	-	No necesita
	48	Nmax	4.3	1.000	0.600	0.550	275.0	17.8	-	No necesita
		Nmin	4.2	1.000	0.600	0.550	275.0	22.7	-	No necesita
		Mmax	4.2	1.000	0.600	0.550	275.0	22.7	-	No necesita
		Mmin	4.3	1.000	0.600	0.550	275.0	17.8	-	No necesita
		Qmax	4.3	1.000	0.600	0.550	275.0	17.8	-	No necesita
		Qmin	5.2	1.000	0.600	0.550	275.0	21.8	-	No necesita
49	48	Nmax	4.3	1.000	0.600	0.550	275.0	17.8	-	No necesita
		Nmin	4.2	1.000	0.600	0.550	275.0	22.7	-	No necesita
		Mmax	4.2	1.000	0.600	0.550	275.0	22.7	-	No necesita
		Mmin	4.3	1.000	0.600	0.550	275.0	17.8	-	No necesita
		Qmax	4.3	1.000	0.600	0.550	275.0	17.8	-	No necesita
		Qmin	5.2	1.000	0.600	0.550	275.0	21.8	-	No necesita
	49	Nmax	3.2	1.000	0.600	0.550	275.0	17.7	-	No necesita

ARMADOCAM_2060_sm.xls PI CAMINO Kv=2060 Sin Kh 24/11/2005

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI CAMINO

FECHA: 24/11/2005

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
		Nmin	5.7	1.000	0.600	0.550	275.0	23.0	-	No necesita
		Mmax	5.7	1.000	0.600	0.550	275.0	23.0	-	No necesita
		Mmin	3.2	1.000	0.600	0.550	275.0	17.7	-	No necesita
		Qmax	3.2	1.000	0.600	0.550	275.0	17.7	-	No necesita
		Qmin	7.0	1.000	0.600	0.550	275.0	22.3	-	No necesita
50	49	Nmax	3.2	1.000	0.600	0.550	275.0	17.7	-	No necesita
		Nmin	5.7	1.000	0.600	0.550	275.0	23.0	-	No necesita
		Mmax	5.7	1.000	0.600	0.550	275.0	23.0	-	No necesita
		Mmin	3.2	1.000	0.600	0.550	275.0	17.7	-	No necesita
		Qmax	3.2	1.000	0.600	0.550	275.0	17.7	-	No necesita
		Qmin	7.0	1.000	0.600	0.550	275.0	22.3	-	No necesita
	50	Nmax	4.6	1.000	0.600	0.550	275.0	17.9	-	No necesita
		Nmin	7.1	1.000	0.600	0.550	275.0	23.4	-	No necesita
		Mmax	7.1	1.000	0.600	0.550	275.0	23.4	-	No necesita
		Mmin	4.6	1.000	0.600	0.550	275.0	17.9	-	No necesita
		Qmax	4.6	1.000	0.600	0.550	275.0	17.9	-	No necesita
		Qmin	8.4	1.000	0.600	0.550	275.0	22.9	-	No necesita
51	50	Nmax	4.6	1.000	0.600	0.550	275.0	17.9	-	No necesita
		Nmin	7.1	1.000	0.600	0.550	275.0	23.4	-	No necesita
		Mmax	7.1	1.000	0.600	0.550	275.0	23.4	-	No necesita
		Mmin	4.6	1.000	0.600	0.550	275.0	17.9	-	No necesita
		Qmax	4.6	1.000	0.600	0.550	275.0	17.9	-	No necesita
		Qmin	8.4	1.000	0.600	0.550	275.0	22.9	-	No necesita
	51	Nmax	6.9	1.000	0.600	0.550	275.0	18.8	-	No necesita
		Nmin	9.3	1.000	0.600	0.550	275.0	24.3	-	No necesita
		Mmax	9.3	1.000	0.600	0.550	275.0	24.3	-	No necesita
		Mmin	6.9	1.000	0.600	0.550	275.0	18.8	-	No necesita
		Qmax	6.9	1.000	0.600	0.550	275.0	18.8	-	No necesita
		Qmin	10.6	1.000	0.600	0.550	275.0	24.0	-	No necesita
52	51	Nmax	6.9	1.000	0.600	0.550	275.0	18.8	-	No necesita
		Nmin	9.3	1.000	0.600	0.550	275.0	24.3	-	No necesita
		Mmax	9.3	1.000	0.600	0.550	275.0	24.3	-	No necesita
		Mmin	6.9	1.000	0.600	0.550	275.0	18.8	-	No necesita
		Qmax	6.9	1.000	0.600	0.550	275.0	18.8	-	No necesita
		Qmin	10.6	1.000	0.600	0.550	275.0	24.0	-	No necesita
	52	Nmax	9.1	1.000	0.600	0.550	275.0	19.9	-	No necesita
		Nmin	11.6	1.000	0.600	0.550	275.0	25.3	-	No necesita
		Mmax	11.6	1.000	0.600	0.550	275.0	25.3	-	No necesita
		Mmin	9.1	1.000	0.600	0.550	275.0	19.9	-	No necesita
		Qmax	9.1	1.000	0.600	0.550	275.0	19.9	-	No necesita
		Qmin	12.9	1.000	0.600	0.550	275.0	25.1	-	No necesita

Siegrist y Moreno S.L.

LAV SANTA COLOMA DE CERVELLÓ
P.I. CAMINO
ENVOLVENTE DE MODELOS DE MUELLES

FECHA: 24/11/2005

RESUMEN DE ARMADO SECCION TIPO MARCO: armado losa inferior

fcd(t/m2)= 1666.67
fyd(t/m2)= 4.43
ANCHO UNIDAD= 1.000

				FLEXION			CORTANTE	COMPROBACION		
BARRA	NUDO	HIPÓT.	As,inf(cm2/m)	As,sup(cm2/m)	Ainf,dis	Asup,disp	A90	Asup	Ainf	A90
* 33	1	Nmax	24.67	0.00	29.44	11.49	22.88	ok	ok	ok
		Nmin	24.98	0.00	29.44	11.49	28.16	ok	ok	ok
		Mmax	28.42	0.00	29.44	11.49	28.16	ok	ok	ok
		Mmin	17.84	0.00	29.44	11.49	27.07	ok	ok	ok
		Qmax	28.42	0.00	29.44	11.49	28.16	ok	ok	ok
		Qmin	17.84	0.00	29.44	11.49	27.07	ok	ok	ok
	14	Nmax	17.42	0.00	29.44	11.49	24.22	ok	ok	ok
		Nmin	17.17	0.00	29.44	11.49	29.58	ok	ok	ok
		Mmax	19.89	0.00	29.44	11.49	29.58	ok	ok	ok
		Mmin	13.53	0.00	29.44	11.49	28.43	ok	ok	ok
		Qmax	19.89	0.00	29.44	11.49	29.58	ok	ok	ok
		Qmin	13.53	0.00	29.44	11.49	28.43	ok	ok	ok
34	14	Nmax	17.43	0.00	29.44	11.49	21.51	ok	ok	ok
		Nmin	17.19	0.00	29.44	11.49	25.72	ok	ok	ok
		Mmax	19.90	0.00	29.44	11.49	25.72	ok	ok	ok
		Mmin	13.52	0.00	29.44	11.49	25.16	ok	ok	ok
		Qmax	19.90	0.00	29.44	11.49	25.72	ok	ok	ok
		Qmin	13.52	0.00	29.44	11.49	25.16	ok	ok	ok
	16	Nmax	10.99	0.00	29.44	11.49	23.05	ok	ok	ok
		Nmin	10.43	0.00	29.44	11.49	27.33	ok	ok	ok
		Mmax	12.41	0.00	29.44	11.49	27.33	ok	ok	ok
		Mmin	9.59	0.00	29.44	11.49	26.70	ok	ok	ok
		Qmax	12.41	0.00	29.44	11.49	27.33	ok	ok	ok
		Qmin	9.59	0.00	29.44	11.49	26.70	ok	ok	ok
35	16	Nmax	11.00	0.00	29.44	11.49	20.34	ok	ok	ok
		Nmin	10.43	0.00	29.44	11.49	23.59	ok	ok	ok
		Mmax	12.42	0.00	29.44	11.49	24.02	ok	ok	ok
		Mmin	9.60	0.00	29.44	11.49	23.66	ok	ok	ok
		Qmax	12.42	0.00	29.44	11.49	24.02	ok	ok	ok
		Qmin	9.60	0.00	29.44	11.49	23.66	ok	ok	ok
	18	Nmax	6.01	0.00	29.44	11.49	22.36	ok	ok	ok
		Nmin	6.01	0.00	29.44	11.49	25.64	ok	ok	ok
		Mmax	6.04	0.00	29.44	11.49	26.10	ok	ok	ok
		Mmin	6.01	0.00	29.44	11.49	23.36	ok	ok	ok
		Qmax	6.01	0.00	29.44	11.49	26.10	ok	ok	ok
		Qmin	6.01	0.00	29.44	11.49	25.56	ok	ok	ok
36	18	Nmax	6.02	0.00	29.44	11.49	19.77	ok	ok	ok
		Nmin	6.02	0.00	29.44	11.49	21.98	ok	ok	ok
		Mmax	6.04	0.00	29.44	11.49	23.12	ok	ok	ok
		Mmin	6.02	0.00	29.44	11.49	20.76	ok	ok	ok
		Qmax	6.02	0.00	29.44	11.49	23.17	ok	ok	ok
		Qmin	6.02	0.00	29.44	11.49	22.74	ok	ok	ok
	20	Nmax	4.24	4.48	29.44	11.49	22.15	ok	ok	ok
		Nmin	4.24	1.92	29.44	11.49	25.32	ok	ok	ok
		Mmax	4.24	1.92	29.44	11.49	13.79	ok	ok	ok
		Mmin	4.24	4.70	29.44	11.49	24.75	ok	ok	ok
		Qmax	4.24	4.70	29.44	11.49	25.94	ok	ok	ok
		Qmin	4.24	1.92	29.44	11.49	23.45	ok	ok	ok
37	20	Nmax	4.24	4.49	29.44	39.54	19.58	ok	ok	ok
		Nmin	4.24	1.92	29.44	39.54	21.83	ok	ok	ok
		Mmax	4.24	1.92	29.44	39.54	11.82	ok	ok	ok
		Mmin	4.24	4.70	29.44	39.54	21.90	ok	ok	ok

Siegrist y Moreno S.L.

LAV SANTA COLOMA DE CERVELLÓ
P.I. CAMINO
ENVOLVENTE DE MODELOS DE MUELLES

FECHA: 24/11/2005

RESUMEN DE ARMADO SECCION TIPO MARCO: armado losa inferior

fcd(t/m2)= 1666.67
fyd(t/m2)= 4.43
ANCHO UNIDAD= 1.000

				FLEXION			CORTANTE	COMPROBACION		
BARRA	NUDO	HIPÓT.	As,inf(cm2/m)	As,sup(cm2/m)	Ainf,dis	Asup,disp	A90	Asup	Ainf	A90
		Qmax	4.24	4.70	29.44	39.54	23.04	ok	ok	ok
		Qmin	4.24	1.92	29.44	39.54	20.64	ok	ok	ok
	22	Nmax	2.74	9.03	29.44	39.54	17.10	ok	ok	ok
		Nmin	2.74	4.91	29.44	39.54	18.78	ok	ok	ok
		Mmax	2.74	4.71	29.44	39.54	9.91	ok	ok	ok
		Mmin	2.74	9.94	29.44	39.54	20.23	ok	ok	ok
		Qmax	2.74	9.94	29.44	39.54	20.23	ok	ok	ok
		Qmin	2.74	4.71	29.44	39.54	19.27	ok	ok	ok
38	22	Nmax	2.74	9.03	11.49	39.54	13.32	ok	ok	ok
		Nmin	2.74	4.91	11.49	39.54	13.61	ok	ok	ok
		Mmax	2.74	4.71	11.49	39.54	7.57	ok	ok	ok
		Mmin	2.74	9.95	11.49	39.54	15.99	ok	ok	ok
		Qmax	2.74	9.95	11.49	39.54	15.99	ok	ok	ok
		Qmin	2.74	4.71	11.49	39.54	15.19	ok	ok	ok
	24	Nmax	0.05	16.97	11.49	39.54	11.73	ok	ok	ok
		Nmin	0.05	12.33	11.49	39.54	11.93	ok	ok	ok
		Mmax	0.05	9.50	11.49	39.54	6.05	ok	ok	ok
		Mmin	0.05	19.17	11.49	39.54	14.26	ok	ok	ok
		Qmax	0.05	19.17	11.49	39.54	14.26	ok	ok	ok
		Qmin	0.05	9.50	11.49	39.54	13.88	ok	ok	ok
39	24	Nmax	0.05	16.97	11.49	39.54	7.26	ok	ok	ok
		Nmin	0.05	12.33	11.49	39.54	6.91	ok	ok	ok
		Mmax	0.05	9.50	11.49	39.54	3.20	ok	ok	ok
		Mmin	0.05	19.17	11.49	39.54	9.16	ok	ok	ok
		Qmax	0.05	19.17	11.49	39.54	9.16	ok	ok	ok
		Qmin	0.05	9.50	11.49	39.54	8.66	ok	ok	ok
	26	Nmax	0.00	23.29	11.49	39.54	6.57	ok	ok	ok
		Nmin	0.00	17.74	11.49	39.54	6.41	ok	ok	ok
		Mmax	0.00	13.23	11.49	39.54	2.82	ok	ok	ok
		Mmin	0.00	26.58	11.49	39.54	8.40	ok	ok	ok
		Qmax	0.00	26.58	11.49	39.54	8.40	ok	ok	ok
		Qmin	0.00	13.23	11.49	39.54	8.09	ok	ok	ok
40	26	Nmax	0.00	23.29	11.49	39.54	2.82	ok	ok	ok
		Nmin	0.00	17.74	11.49	39.54	2.03	ok	ok	ok
		Mmax	0.00	13.23	11.49	39.54	No necesita	ok	ok	ok
		Mmin	0.00	26.58	11.49	39.54	3.49	ok	ok	ok
		Qmax	0.00	26.58	11.49	39.54	3.49	ok	ok	ok
		Qmin	0.00	13.23	11.49	39.54	3.08	ok	ok	ok
	28	Nmax	0.00	27.88	11.49	39.54	No necesita	ok	ok	ok
		Nmin	0.00	21.10	11.49	39.54	No necesita	ok	ok	ok
		Mmax	0.00	15.91	11.49	39.54	No necesita	ok	ok	ok
		Mmin	0.00	32.02	11.49	39.54	3.17	ok	ok	ok
		Qmax	0.00	32.02	11.49	39.54	3.17	ok	ok	ok
		Qmin	0.00	15.91	11.49	39.54	2.90	ok	ok	ok
41	28	Nmax	0.00	27.88	11.49	39.54	No necesita	ok	ok	ok
		Nmin	0.00	21.10	11.49	39.54	No necesita	ok	ok	ok
		Mmax	0.00	15.91	11.49	39.54	No necesita	ok	ok	ok
		Mmin	0.00	32.02	11.49	39.54	No necesita	ok	ok	ok
		Qmax	0.00	32.02	11.49	39.54	No necesita	ok	ok	ok
		Qmin	0.00	15.91	11.49	39.54	No necesita	ok	ok	ok
	30	Nmax	0.00	30.66	11.49	39.54	No necesita	ok	ok	ok
		Nmin	0.00	22.39	11.49	39.54	No necesita	ok	ok	ok

Siegrist y Moreno S.L.

LAV SANTA COLOMA DE CERVELLÓ
P.I. CAMINO
ENVOLVENTE DE MODELOS DE MUELLES

FECHA: 24/11/2005

RESUMEN DE ARMADO SECCION TIPO MARCO: armado losa inferior

fcd(t/m2)= 1666.67
fyd(t/m2)= 4.43
ANCHO UNIDAD= 1.000

			FLEXION				CORTANTE	COMPROBACION		
BARRA	NUDO	HIPÓT.	As,inf(cm2/m)	As,sup(cm2/m)	Ainf,dis	Asup,disp	A90	Asup	Ainf	A90
		Mmax	0.00	17.50	11.49	39.54	No necesita	ok	ok	ok
		Mmin	0.00	35.33	11.49	39.54	No necesita	ok	ok	ok
		Qmax	0.00	35.33	11.49	39.54	No necesita	ok	ok	ok
		Qmin	0.00	17.50	11.49	39.54	No necesita	ok	ok	ok
42	30	Nmax	0.00	30.66	11.49	39.54	No necesita	ok	ok	ok
		Nmin	0.00	22.39	11.49	39.54	No necesita	ok	ok	ok
		Mmax	0.00	17.50	11.49	39.54	No necesita	ok	ok	ok
		Mmin	0.00	35.33	11.49	39.54	No necesita	ok	ok	ok
		Qmax	0.00	35.33	11.49	39.54	No necesita	ok	ok	ok
		Qmin	0.00	19.26	11.49	39.54	No necesita	ok	ok	ok
	32	Nmax	0.00	31.61	11.49	39.54	No necesita	ok	ok	ok
		Nmin	0.00	21.68	11.49	39.54	No necesita	ok	ok	ok
		Mmax	0.00	18.05	11.49	39.54	No necesita	ok	ok	ok
		Mmin	0.00	36.47	11.49	39.54	No necesita	ok	ok	ok
		Qmax	0.00	36.47	11.49	39.54	No necesita	ok	ok	ok
		Qmin	0.00	18.56	11.49	39.54	No necesita	ok	ok	ok
43	32	Nmax	0.00	31.61	11.49	39.54	No necesita	ok	ok	ok
		Nmin	0.00	21.67	11.49	39.54	No necesita	ok	ok	ok
		Mmax	0.00	18.05	11.49	39.54	No necesita	ok	ok	ok
		Mmin	0.00	36.47	11.49	39.54	No necesita	ok	ok	ok
		Qmax	0.00	29.04	11.49	39.54	No necesita	ok	ok	ok
		Qmin	0.00	36.47	11.49	39.54	No necesita	ok	ok	ok
	34	Nmax	0.00	30.92	11.49	39.54	No necesita	ok	ok	ok
		Nmin	0.00	19.09	11.49	39.54	No necesita	ok	ok	ok
		Mmax	0.00	17.73	11.49	39.54	No necesita	ok	ok	ok
		Mmin	0.00	35.60	11.49	39.54	No necesita	ok	ok	ok
		Qmax	0.00	29.27	11.49	39.54	No necesita	ok	ok	ok
		Qmin	0.00	35.60	11.49	39.54	No necesita	ok	ok	ok
44	34	Nmax	0.00	30.92	11.49	39.54	No necesita	ok	ok	ok
		Nmin	0.00	19.09	11.49	39.54	No necesita	ok	ok	ok
		Mmax	0.00	17.73	11.49	39.54	No necesita	ok	ok	ok
		Mmin	0.00	35.60	11.49	39.54	No necesita	ok	ok	ok
		Qmax	0.00	17.73	11.49	39.54	No necesita	ok	ok	ok
		Qmin	0.00	35.60	11.49	39.54	No necesita	ok	ok	ok
	36	Nmax	0.00	29.15	11.49	39.54	No necesita	ok	ok	ok
		Nmin	0.00	17.08	11.49	39.54	2.17	ok	ok	ok
		Mmax	0.00	17.08	11.49	39.54	No necesita	ok	ok	ok
		Mmin	0.00	33.33	11.49	39.54	2.17	ok	ok	ok
		Qmax	0.00	17.08	11.49	39.54	No necesita	ok	ok	ok
		Qmin	0.00	33.33	11.49	39.54	2.17	ok	ok	ok
45	36	Nmax	0.00	29.15	11.49	39.54	1.41	ok	ok	ok
		Nmin	0.00	17.08	11.49	39.54	7.09	ok	ok	ok
		Mmax	0.00	17.08	11.49	39.54	1.41	ok	ok	ok
		Mmin	0.00	33.32	11.49	39.54	7.09	ok	ok	ok
		Qmax	0.00	17.08	11.49	39.54	1.41	ok	ok	ok
		Qmin	0.00	33.32	11.49	39.54	7.09	ok	ok	ok
	38	Nmax	0.00	25.41	11.49	39.54	1.97	ok	ok	ok
		Nmin	0.00	15.22	11.49	39.54	7.97	ok	ok	ok
		Mmax	0.00	15.22	11.49	39.54	1.97	ok	ok	ok
		Mmin	0.00	28.77	11.49	39.54	7.97	ok	ok	ok
		Qmax	0.00	15.22	11.49	39.54	1.97	ok	ok	ok
		Qmin	0.00	28.77	11.49	39.54	7.97	ok	ok	ok

Siegrist y Moreno S.L.

LAV SANTA COLOMA DE CERVELLÓ
P.I. CAMINO
ENVOLVENTE DE MODELOS DE MUELLES

FECHA: 24/11/2005

RESUMEN DE ARMADO SECCION TIPO MARCO: armado losa inferior

fcd(t/m2)= 1666.67
fyd(t/m2)= 4.43
ANCHO UNIDAD= 1.000

			FLEXION				CORTANTE	COMPROBACION		
BARRA	NUDO	HIPÓT.	As,inf(cm2/m)	As,sup(cm2/m)	Ainf,dis	Asup,disp	A90	Asup	Ainf	A90
46	38	Nmax	0.00	25.41	11.49	39.54	4.86	ok	ok	ok
		Nmin	0.00	15.22	11.49	39.54	12.87	ok	ok	ok
		Mmax	0.00	15.22	11.49	39.54	4.86	ok	ok	ok
		Mmin	0.00	28.77	11.49	39.54	12.87	ok	ok	ok
		Qmax	0.00	15.22	11.49	39.54	6.19	ok	ok	ok
		Qmin	0.00	28.77	11.49	39.54	12.87	ok	ok	ok
	40	Nmax	0.00	19.72	11.49	39.54	6.68	ok	ok	ok
		Nmin	0.00	12.12	11.49	39.54	15.61	ok	ok	ok
		Mmax	0.00	12.12	11.49	39.54	13.53	ok	ok	ok
		Mmin	0.00	22.05	11.49	39.54	14.00	ok	ok	ok
		Qmax	0.00	12.12	11.49	39.54	6.68	ok	ok	ok
		Qmin	0.00	22.05	11.49	39.54	15.61	ok	ok	ok
47	40	Nmax	0.00	19.72	11.49	39.54	9.57	ok	ok	ok
		Nmin	0.00	12.12	11.49	39.54	20.49	ok	ok	ok
		Mmax	0.00	12.12	11.49	39.54	17.81	ok	ok	ok
		Mmin	0.00	22.05	11.49	39.54	18.60	ok	ok	ok
		Qmax	0.00	12.12	11.49	39.54	12.23	ok	ok	ok
		Qmin	0.00	22.05	11.49	39.54	20.49	ok	ok	ok
	42	Nmax	3.49	13.04	11.49	39.54	12.23	ok	ok	ok
		Nmin	7.30	7.75	11.49	39.54	17.31	ok	ok	ok
		Mmax	7.30	7.75	11.49	39.54	17.31	ok	ok	ok
		Mmin	3.49	14.25	11.49	39.54	12.21	ok	ok	ok
		Qmax	3.49	7.75	11.49	39.54	13.26	ok	ok	ok
		Qmin	7.30	14.25	11.49	39.54	17.31	ok	ok	ok
48	42	Nmax	3.49	13.04	29.44	39.54	13.82	ok	ok	ok
		Nmin	7.31	7.75	29.44	39.54	20.96	ok	ok	ok
		Mmax	7.31	7.75	29.44	39.54	20.96	ok	ok	ok
		Mmin	3.49	14.25	29.44	39.54	16.88	ok	ok	ok
		Qmax	3.49	7.75	29.44	39.54	17.72	ok	ok	ok
		Qmin	7.31	14.25	29.44	39.54	20.96	ok	ok	ok
	44	Nmax	6.23	9.04	29.44	39.54	17.72	ok	ok	ok
		Nmin	12.52	5.08	29.44	39.54	19.40	ok	ok	ok
		Mmax	12.52	5.08	29.44	39.54	19.40	ok	ok	ok
		Mmin	6.23	9.61	29.44	39.54	17.95	ok	ok	ok
		Qmax	6.23	5.08	29.44	39.54	18.72	ok	ok	ok
		Qmin	12.52	9.61	29.44	39.54	19.40	ok	ok	ok
49	44	Nmax	6.23	9.04	29.44	11.49	18.72	ok	ok	ok
		Nmin	12.53	5.08	29.44	11.49	21.84	ok	ok	ok
		Mmax	12.53	5.08	29.44	11.49	21.84	ok	ok	ok
		Mmin	6.23	9.60	29.44	11.49	21.16	ok	ok	ok
		Qmax	6.23	5.08	29.44	11.49	21.79	ok	ok	ok
		Qmin	12.53	9.60	29.44	11.49	21.84	ok	ok	ok
	46	Nmax	9.24	4.62	29.44	11.49	21.79	ok	ok	ok
		Nmin	18.37	2.25	29.44	11.49	20.52	ok	ok	ok
		Mmax	18.37	2.25	29.44	11.49	20.52	ok	ok	ok
		Mmin	9.24	4.62	29.44	11.49	21.78	ok	ok	ok
		Qmax	9.24	2.25	29.44	11.49	19.90	ok	ok	ok
		Qmin	18.37	4.52	29.44	11.49	23.63	ok	ok	ok
50	46	Nmax	9.25	4.62	29.44	11.49	23.74	ok	ok	ok
		Nmin	18.37	2.25	29.44	11.49	22.95	ok	ok	ok
		Mmax	18.37	2.25	29.44	11.49	22.95	ok	ok	ok
		Mmin	9.25	4.62	29.44	11.49	24.73	ok	ok	ok

Siegrist y Moreno S.L.

LAV SANTA COLOMA DE CERVELLÓ
P.I. CAMINO
ENVOLVENTE DE MODELOS DE MUELLES

FECHA: 24/11/2005

RESUMEN DE ARMADO SECCION TIPO MARCO: armado losa inferior

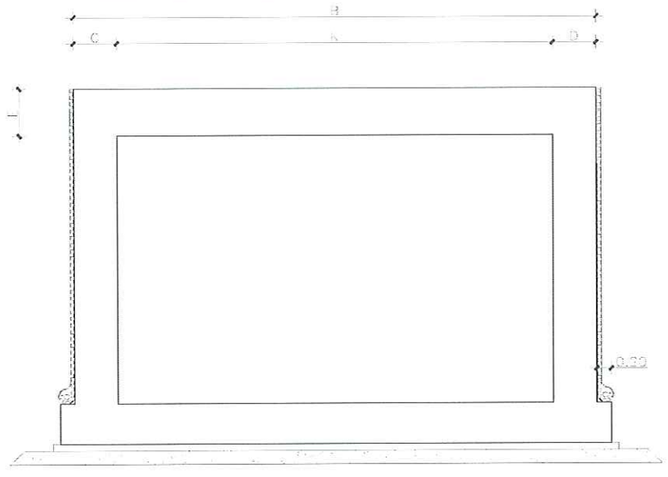
fcd(t/m2)= 1666.67
fyd(t/m2)= 4.43 ANCHO UNIDAD= 1.000

			FLEXION				CORTANTE	COMPROBACION		
BARRA	NUDO	HIPÓT.	As,inf(cm2/m)	As,sup(cm2/m)	Ainf,dis	Asup,disp	A90	Asup	Ainf	A90
		Qmax	9.25	2.25	29.44	11.49	22.64	ok	ok	ok
		Qmin	18.37	4.52	29.44	11.49	26.92	ok	ok	ok
	48	Nmax	12.56	0.71	29.44	11.49	26.89	ok	ok	ok
		Nmin	24.90	0.71	29.44	11.49	21.74	ok	ok	ok
		Mmax	24.90	0.71	29.44	11.49	25.30	ok	ok	ok
		Mmin	12.56	0.71	29.44	11.49	24.29	ok	ok	ok
		Qmax	12.56	0.71	29.44	11.49	12.98	ok	ok	ok
		Qmin	24.90	0.71	29.44	11.49	27.00	ok	ok	ok
51	48	Nmax	12.56	0.71	29.44	11.49	26.26	ok	ok	ok
		Nmin	24.89	0.71	29.44	11.49	24.15	ok	ok	ok
		Mmax	24.89	0.71	29.44	11.49	28.83	ok	ok	ok
		Mmin	12.56	0.71	29.44	11.49	27.69	ok	ok	ok
		Qmax	12.56	0.71	29.44	11.49	15.08	ok	ok	ok
		Qmin	24.89	0.71	29.44	11.49	30.70	ok	ok	ok
	50	Nmax	16.17	0.00	29.44	11.49	27.69	ok	ok	ok
		Nmin	32.19	0.00	29.44	11.49	23.01	-2.76	ok	ok
		Mmax	32.19	0.00	29.44	11.49	27.34	-2.76	ok	ok
		Mmin	16.17	0.00	29.44	11.49	25.90	ok	ok	ok
		Qmax	16.17	0.00	29.44	11.49	12.72	ok	ok	ok
		Qmin	32.19	0.00	29.44	11.49	27.34	-2.76	ok	ok
52	50	Nmax	16.17	0.00	29.44	11.49	26.85	ok	ok	ok
		Nmin	32.19	0.00	29.44	11.49	25.38	-2.76	ok	ok
		Mmax	32.19	0.00	29.44	11.49	31.12	-2.76	ok	ok
		Mmin	16.17	0.00	29.44	11.49	29.61	ok	ok	ok
		Qmax	16.17	0.00	29.44	11.49	14.85	ok	ok	ok
		Qmin	32.19	0.00	29.44	11.49	31.12	-2.76	ok	ok
	52	Nmax	20.73	0.00	29.44	11.49	29.61	ok	ok	ok
		Nmin	40.37	0.00	29.44	11.49	24.28	-10.93	ok	ok
		Mmax	40.37	0.00	29.44	11.49	29.16	-10.93	ok	ok
		Mmin	20.11	0.00	29.44	11.49	28.12	ok	ok	ok
		Qmax	20.11	0.00	29.44	11.49	13.32	ok	ok	ok
		Qmin	40.37	0.00	29.44	11.49	29.16	-10.93	ok	ok

4.9. Paso inferior de la riera de Can Juliá

CÁLCULO TRANVERSAL LOSA SUPERIOR

MODELO DE CÁLCULO



Sección tipo del marco

Dimensiones marco

	B	C	D	E	K
[m]	11.40	0.70	0.70	0.80	10.00

Diensiones del Emparrillado

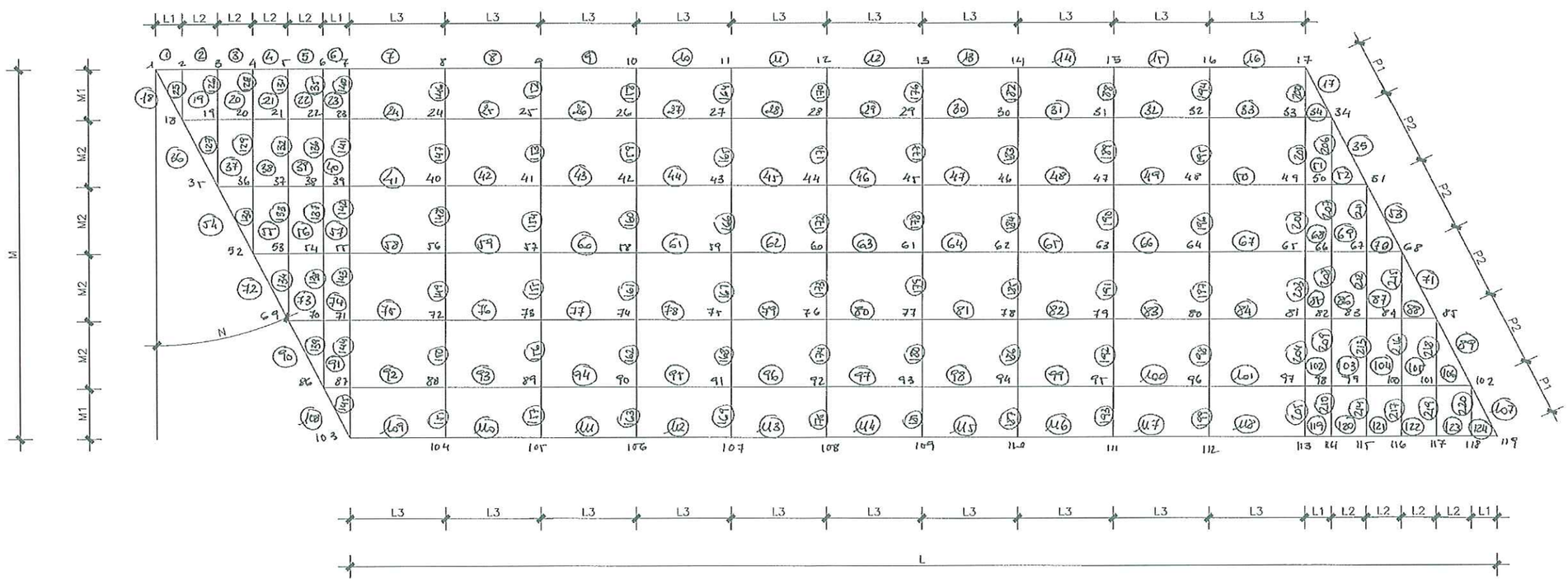
	L	M	N	L1	L2	L3	M1	M2	P1	P2
[m]	16.86	10.70	11.88	0.28	0.42	1.46	1.35	2.00	1.38	2.04

Caracteristicas mecánicas de barras tipo

	c	b	I	c/b	β	J
1	0.80	0.70	0.03	1.14	0.15	0.04
2	0.80	2.00	0.09	2.50	0.26	0.27
3	0.80	0.50	0.02	1.60	0.19	0.02
4	0.80	0.35	0.02	2.27	0.24	0.01
5	0.80	0.42	0.02	1.90	0.21	0.01
6	0.80	0.87	0.04	1.09	0.15	0.07
7	0.80	1.46	0.06	1.83	0.21	0.16

Siendo:
c y d dimensiones de la barra
I inercia a Flexión de la barra
J Inercia a Torsión

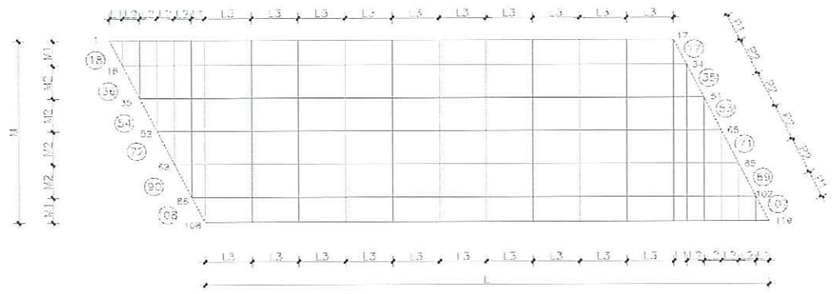
$$J = \beta \cdot c \cdot b^3$$



Modelo de Cálculo

CÁLCULO TRANVERSAL LOSA SUPERIOR

1-CÁLCULO DEL MARCO TIPO



Características del Modelo de Cálculo

L	M	N	L1	L2	L3	M1	M2	P1	P2
16.86	10.70	11.88	0.28	0.42	1.46	1.35	2.00	1.38	2.00

Características de Barras

h	b	I	J	A
0.80	0.50	0.02133	0.01880	0.40

Barra	17	18	35	36	53	54	71	72	89	90	107	108
NI	17	1	34	18	51	35	68	52	85	69	102	86
NF	34	18	51	35	68	52	85	69	102	86	119	103

CARGAS

Peso propio: 1.00 t/m

Carga permanente:

Balasto	Altura	0.56	Densidad	1.80
Tierras	Altura	1.41	Densidad	2.00

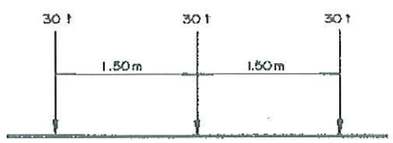
Sobrecargas verticales:

SC Terreno 3.000

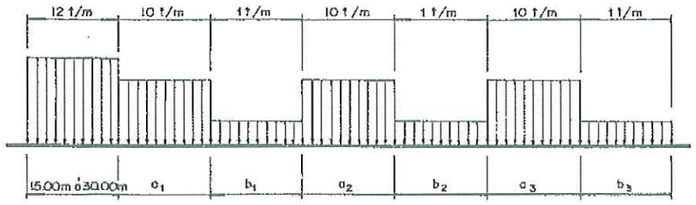
H-5	Tren A RENFE Via Izquierda	carga por carril	15 t
H-6	Tren A RENFE Via Derecha	carga por carril	15 t
H-7	Tren B RENFE Via Izquierda	carga por carril	6 T/m
H-8	Tren B RENFE Via Derecha	carga por carril	6 T/m

Coeficiente de impacto transversal= 1.6

TREN TIPO A



TREN TIPO B



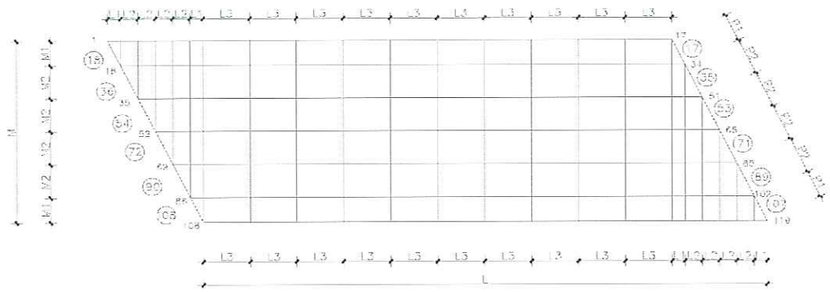
f_c	25	
Ucd(t)	531.3	

LOSA APOYADA
DIMENSIONAMIENTO A FLEXIÓN TRANSVERSAL

BARRA	NUDO	Md+	Md-	As,i (cm²/m)	As,s (cm²/m)
17	17	-2.79	-6.1	-	3.70
	34	46.07	21.4	29.52	-
18	1	1.92	-1.83	-	1.10
	18	34.67	10.18	21.84	-
35	34	24.24	11.26	15.05	-
	51	73.51	34.14	49.27	-
36	18	33.27	14.04	20.92	-
	35	66.84	23.36	44.28	-
53	51	57.55	26.73	37.55	-
	68	80.22	37.26	54.42	-
54	35	74.79	29.85	50.24	-
	52	83.06	29.58	56.64	-
71	68	67.89	31.53	45.06	-
	85	66.87	31.06	44.31	-
72	52	103.67	38.61	73.66	-
	69	66.79	27.27	44.25	-
89	85	54.02	25.09	35.05	-
	102	34.45	16	21.70	-
90	69	98.42	37.34	69.16	-
	86	30.94	14.37	19.39	-
107	102	20.99	9.75	12.97	-
	119	2.25	0.93	1.36	-
108	86	64.25	22.31	42.38	-
	103	-0.92	-10.67	-	6.50

CÁLCULO TRANVERSAL LOSA SUPERIOR

1-CÁLCULO DEL MARCO TIPO



Características del Modelo de Cálculo

L	M	N	L1	L2	L3	M1	M2	P1	P2
16.86	10.70	11.88	0.28	0.42	1.46	1.35	2.00	1.38	2.00

Características de Barras

h	b	I	J	A
0.80	0.50	0.02133	0.01880	0.40

Barra	17	18	35	36	53	54	71	72	89	90	107	108
NI	17	1	34	18	51	35	68	52	85	69	102	86
NF	34	18	51	35	68	52	85	69	102	86	119	103

CARGAS

Peso propio: 1.00 t/m

Carga permanente:

Balasto	Altura	0.56	Densidad	1.80
Tierras	Altura	1.41	Densidad	2.00

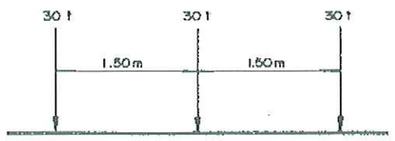
Sobrecargas verticales:

SC Terreno 3.000

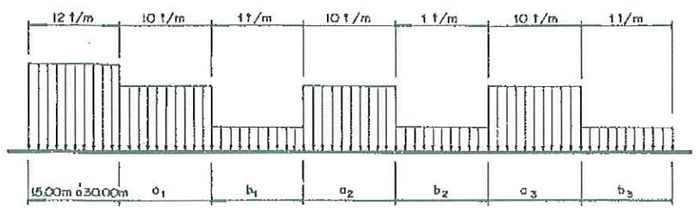
H-5	Tren A RENFE Via Izquierda	carga por carril	15 t
H-6	Tren A RENFE Via Derecha	carga por carril	15 t
H-7	Tren B RENFE Via Izquierda	carga por carril	6 T/m
H-8	Tren B RENFE Via Derecha	carga por carril	6 T/m

Coeficiente de impacto transversal= 1.6

TREN TIPO A



TREN TIPO B



f_c	25
Ucd(t)	531.3

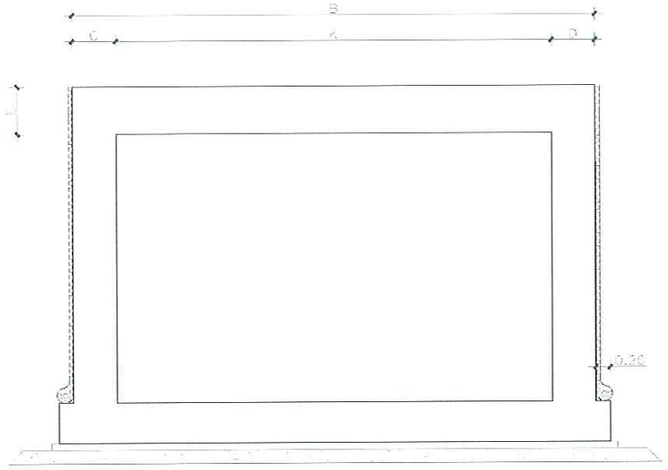
LOSA EMPOTRADA
DIMENSIONAMIENTO A FLEXIÓN TRANSVERSAL

BARRA	NUDO	Md+	Md-	As,i (cm²/m)	As,s (cm²/m)
17	17	-27.06	-58.26	-	38.05
	34	-8.54	-18.39	-	11.33
18	1	-18.11	-55.08	-	35.79
	18	-10.35	-29.91	-	18.72
35	34	-6.06	-13.05	-	7.98
	51	21.06	9.78	13.02	-
36	18	-7.36	-27.63	-	17.23
	35	16.93	3.06	10.41	-
53	51	20.12	9.35	12.42	-
	68	30.66	14.24	19.21	-
54	35	20.25	7.45	12.50	-
	52	40.55	11.96	25.77	-
71	68	25.73	11.95	16.01	-
	85	16.03	7.45	9.84	-
72	52	46.94	14.26	30.12	-
	69	25.61	9.35	15.93	-
89	85	8.37	3.89	5.09	-
	102	-7.36	-15.84	-	9.72
90	69	31.38	9.78	19.68	-
	86	-6.07	-24.47	-	15.20
107	102	-10.35	-22.29	-	13.80
	119	-18.11	-38.99	-	24.72
108	86	-8.54	-24.55	-	15.25
	103	-27.06	-80.23	-	54.42

CÁLCULO TRANVERSAL LOSA SUPERIOR

Se modeliza la Losa Superior de la Estructura mediante un modelo bidimensional de elementos finitos de las siguientes características:

MODELO DE CÁLCULO



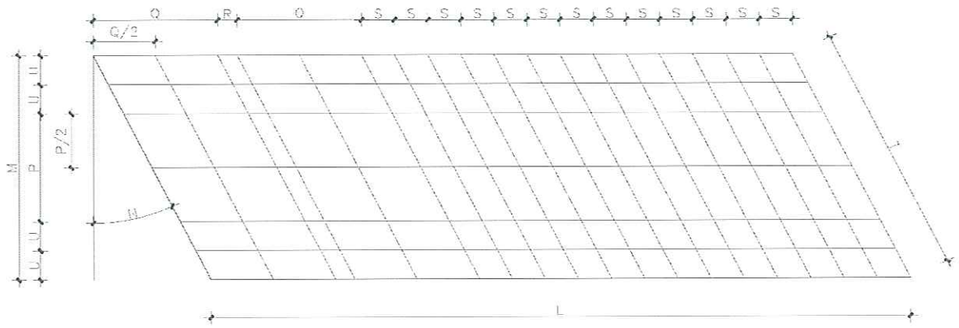
Sección tipo del marco

Dimensiones marco

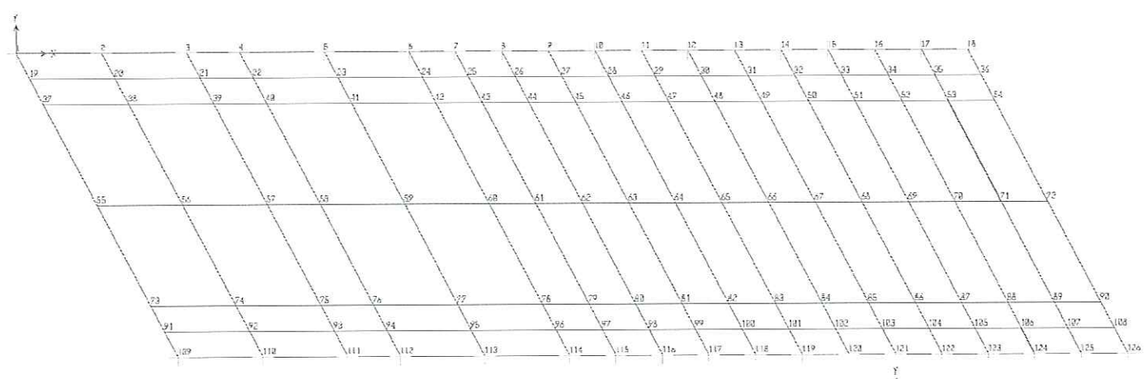
	B	C	D	E	K
[m]	11.40	0.70	0.70	0.80	10.00

Diensiones del Emparrillado

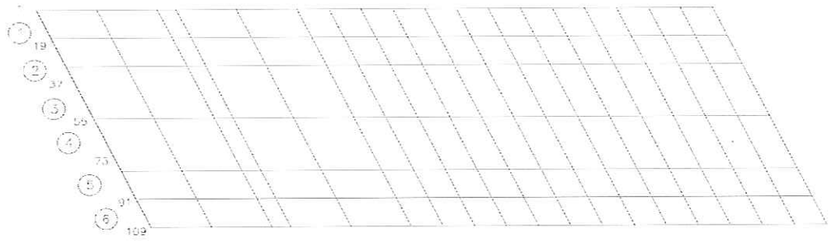
	L	M	N	O	P	Q	R	S	T
[m]	16.86	10.70	11.88	1.68	3.99	2.65	1.43	0.84	10.93



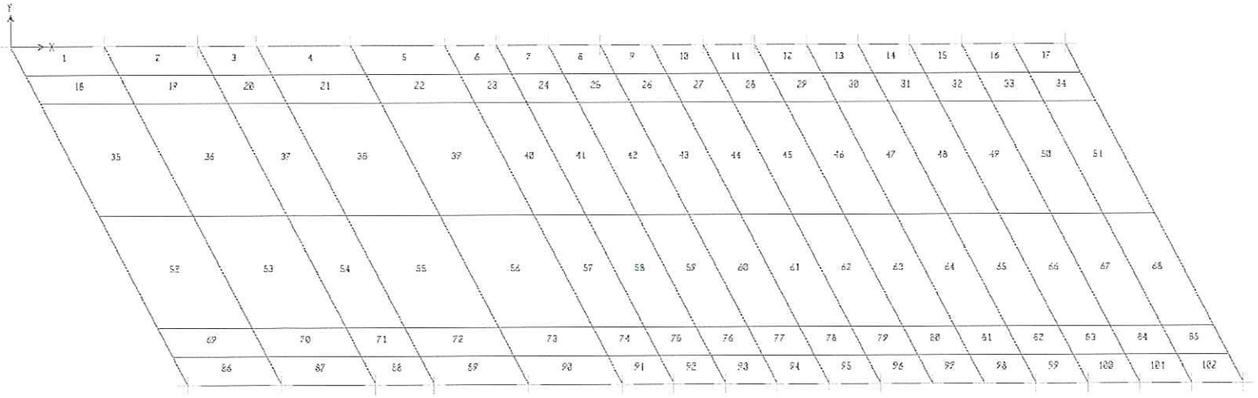
Esquema del modelo de cálculo



Numeración de nodos



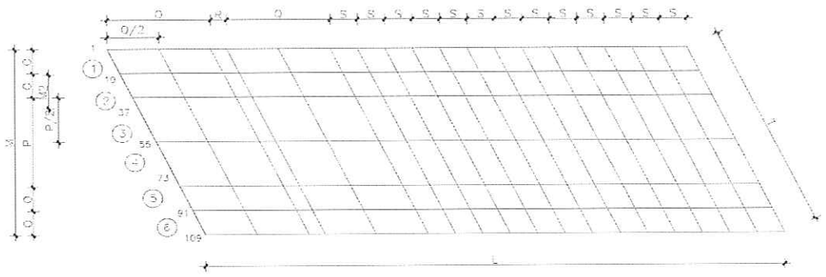
Numeración de Elementos tipo Barra



Numeración de Elementos tipo Shell

CÁLCULO TRANVERSAL LOSA SUPERIOR

1-CÁLCULO DEL MARCO TIPO



Características del Modelo de Cálculo

L	M	N	O	P	Q	R	S	T
16.86	10.70	11.88	1.68	3.99	2.65	1.43	0.84	10.93

Características de Elementos tipo barra

h	b	I	J
0.80	0.50	0.0213	0.0188

Barra	1	2	3	4	5	6
NI	1	19	37	55	73	91
NF	19	37	55	73	91	109

CARGAS

Peso propio: 2.50 t/m3

Carga permanente:

Balasto	Altura	0.56 m	Densidad	1.80 t/m^3
Tierras	Altura	1.41 m	Densidad	2.00 t/m^3

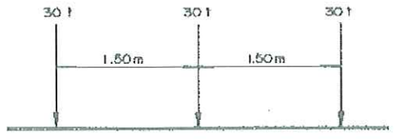
Sobrecargas verticales:

SC Terreno 3.000

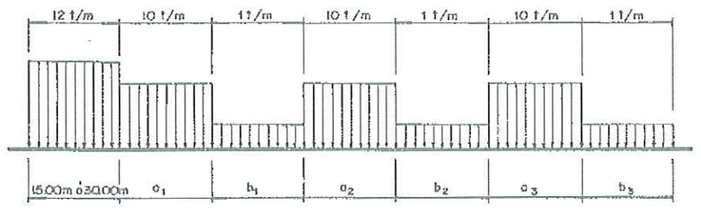
H-5	Tren A RENFE Via Izquierda	carga por carril	15 t
H-6	Tren A RENFE Via Derecha	carga por carril	15 t
H-7	Tren B RENFE Via Izquierda	carga por carril	6 t/m
H-8	Tren B RENFE Via Derecha	carga por carril	6 t/m

Coeficiente de impacto transversal= 1.6

TREN TIPO A



TREN TIPO B



f_c	25
Ucd(t)	531.3

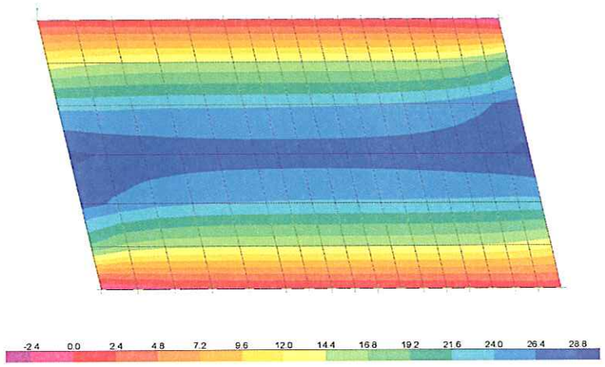
LOSA APOYADA
DIMENSIONAMIENTO A FLEXIÓN TRANSVERSAL

BARRA	NUDO	Md+	Md-	As,i (cm^2/m)	As,s (cm^2/m)
1	1	1.74	3.75	-	2.27
	19	41.84	15.63	26.64	-
2	19	50.75	19.16	32.75	-
	37	79.04	30.56	53.50	-
3	37	85.16	32.96	58.30	-
	55	106.86	39.63	76.46	-
4	55	108.85	40.37	78.23	-
	73	96.99	37.77	67.96	-
5	73	92.34	36.44	64.10	-
	91	64.24	25.99	42.38	-
6	91	55.01	22.34	35.74	-
	109	1.77	2.17	-	1.31

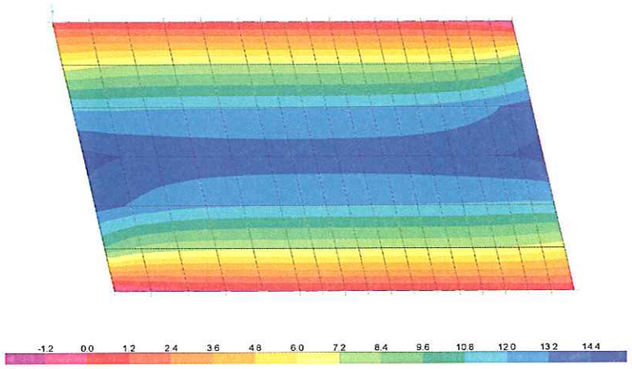
LOSA EMPOTRADA

BARRA	NUDO	Md+	Md-	As,i (cm^2/m)	As,s (cm^2/m)
1	1	-16.29	-48.61	-	31.27
	18	-8.36	-27.38	-	17.07
2	18	-5.70	-19.78	-	12.20
	35	4.51	9.71	2.73	-
3	35	6.60	6.60	4.00	-
	52	41.98	12.56	26.73	-
4	52	43.98	13.17	28.10	-
	69	31.35	10.25	19.65	-
5	69	26.33	8.84	16.39	-
	86	-1.83	-8.40	-	5.11
6	86	-5.45	-18.99	-	11.70
	103	-24.56	-73.37	-	49.16

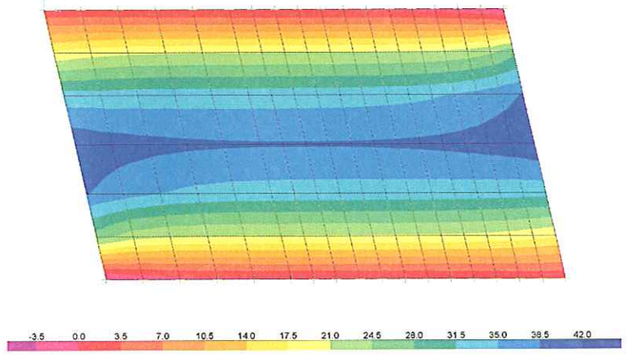
LOSA APOYADA



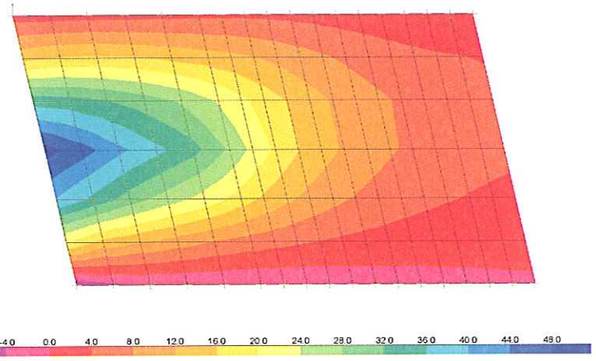
Momento Transversal PP



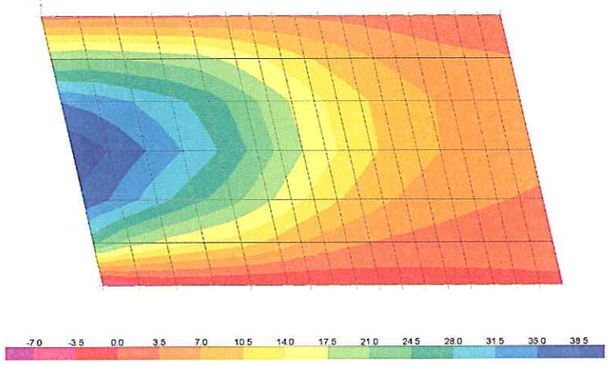
Momento Transversal Balasto



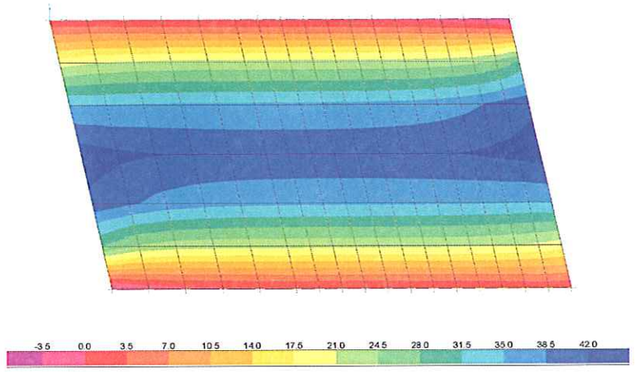
Momento Transversal Peso de Tierras



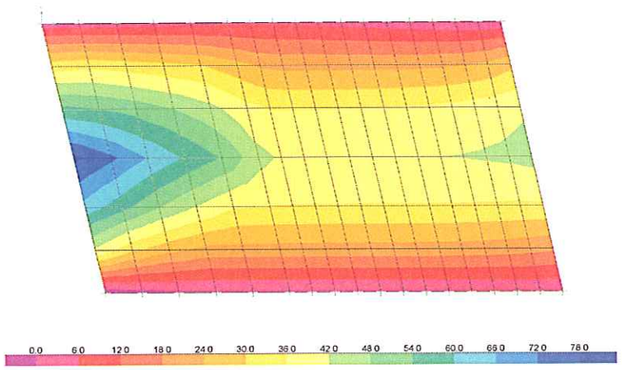
Momento Transversal Tren Tipo A



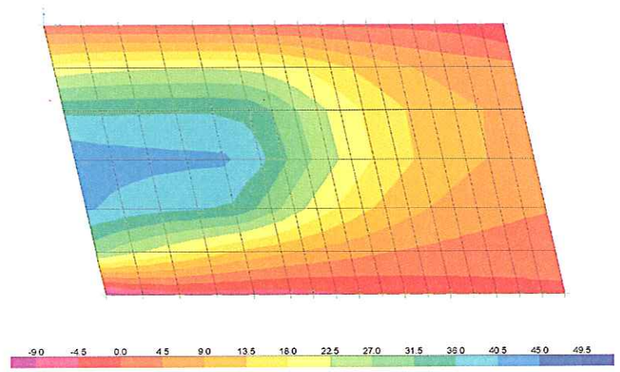
Momento Transversal Tren Tipo B



Momento Transversal SC.Uniforme

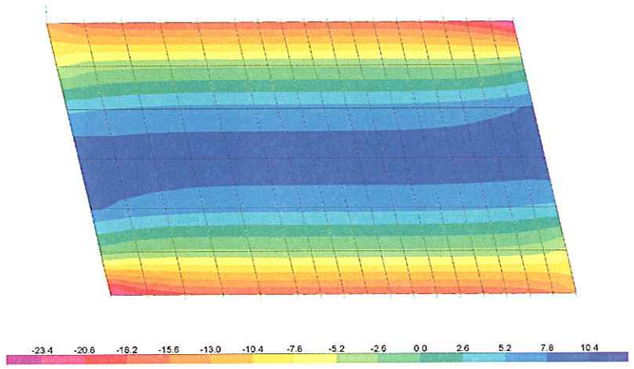


Momento Transversal Envolvente de SC(Max)

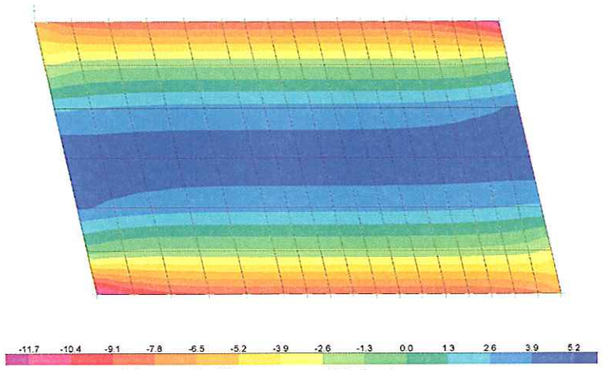


Momento Transversal Envolvente de SC(Min)

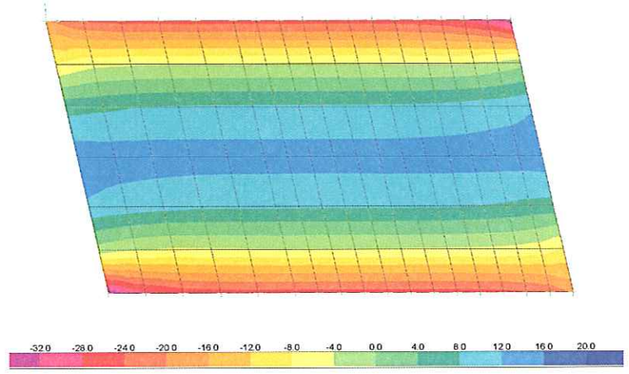
LOSA EMPOTRADA



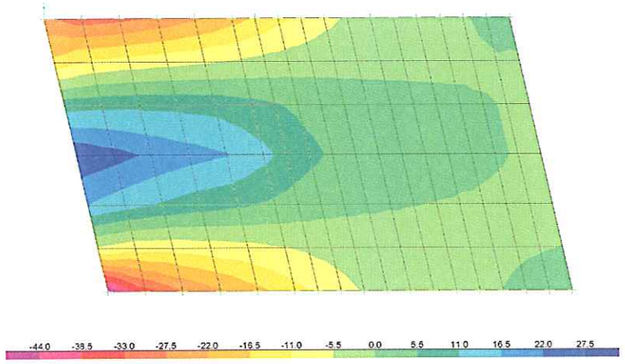
Momento Transversal PP



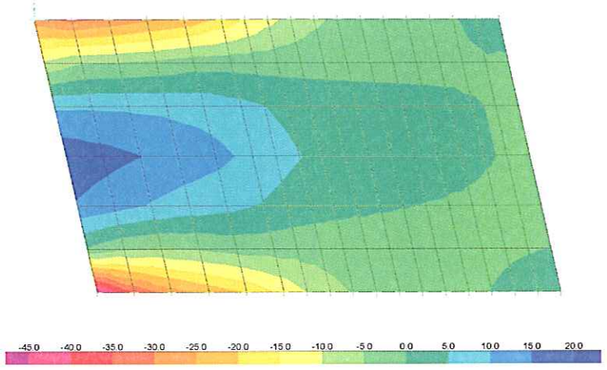
Momento Transversal Balasto



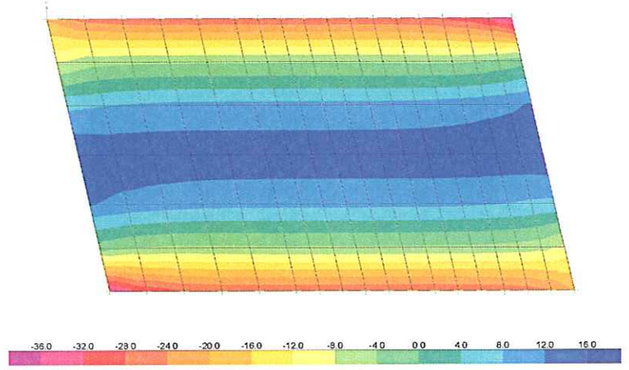
Momento Transversal Peso de Tierras



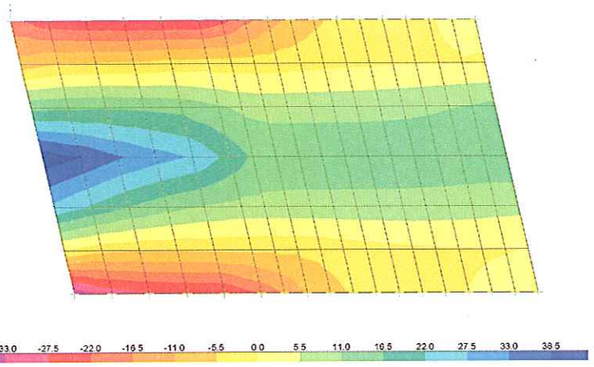
Momento Transversal Tren Tipo A



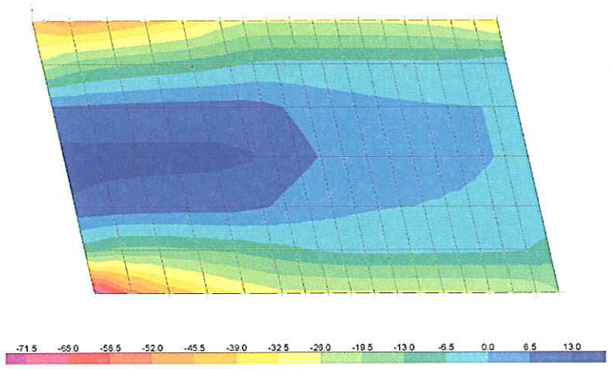
Momento Transversal Tren Tipo B



Momento Transversal SC.Uniforme



Momento Transversal Envolvente de SC(Max)



Momento Transversal Envolvente de SC(Min)

CÁLCULO TRANVERSAL LOSA SUPERIOR

MODELO DE CÁLCULO
Se arma una viga riostra de 0.50 m ancho

P.I. CAMINO PLA DE SOLER

	ARMADURAS cm^2/m					
	Anterior		Cálculo		Final	
MODELO DE CÁLCULO	A_I	A_S	A_I	A_S	A_I	A_S
EMPARRILLADO	46	39.5	45.92	29.05	5ϕ25	5ϕ25
SAP			38.59	24.35		

P.I. CAMINO

	Anterior		Cálculo		Final	
MODELO DE CÁLCULO	A_I	A_S	A_I	A_S	A_I	A_S
EMPARRILLADO	46.75	44.5	61.69	42.23	7ϕ25	7ϕ25
SAP			58.56	35.32		

P.I. RIERA DE CAN JULIA

	Anterior		Cálculo		Final	
MODELO DE CÁLCULO	A_I	A_S	A_I	A_S	A_I	A_S
EMPARRILLADO	98	69	73.66	54.42	8ϕ25	8ϕ25
SAP			78.23	49.16		

P.I. RIERA DE CAN VIA

	Anterior		Cálculo		Final	
MODELO DE CÁLCULO	A_I	A_S	A_I	A_S	A_I	A_S
EMPARRILLADO	64.33	32.25	59.8	41.95	7ϕ25	7ϕ25
SAP			61.13	38.21		

COMPROBACIÓN A CORTANTE

	A_I	A_S	V+	V-	h
P.I. CAMINO PLA DE SOLER	24.5	24.5	30.56	-44.05	0.7
P.I. CAMINO	34.3	34.3	15.93	-32.38	0.5
P.I. RIERA DE CAN JULIA	39.2	39.2	37.82	-53.33	0.8
P.I. RIERA DE CAN VIA	34.3	34.3	29.21	-44.21	0.8

	Aflexión					Acortante				Dispuesta
	A_I	A_S	V+	V-	h	As,t (cm^2/m)	ρ_1	ξ	Vcu(t)	As,t (cm^2/m)
P.I. CAMINO PLA DE SOLER	49	49	61.12	-88.1	0.7	25.93	0.0075	1.55	27.4	37.67
P.I. CAMINO	68.6	68.6	31.86	-64.76	0.5	24.09	0.0152	1.67	25.7	37.67
P.I. RIERA DE CAN JULIA	78.4	78.4	75.64	-106.7	0.8	26.76	0.0105	1.52	34.4	37.67
P.I. RIERA DE CAN VIA	68.6	68.6	58.42	-88.42	0.8	20.56	0.0091	1.52	32.9	36.16

SIEGRIST Y MORENO, S.L.
PROYECTOS DE INGENIERÍA

SEGRE, 20 - Esc. Izda. - 1.º E
28002 - MADRID
TELEF. 91 564 94 34
FAX: 91 564 71 83
e-mail: siemor@ciccp.es

Inscrita en el Registro Mercantil de Madrid, tomo 44 general, folio 114, hoja nº M-862, inscripción 1ª - C.I.F.: B-79379087

Siegrist y Moreno, S.L., y en su nombre **D. Guillermo Siegrist Ridruejo**, Ingeniero de Caminos, Canales y Puertos, colegiado número 16204,

CERTIFICA:

que ha realizado los cálculos y planos del Proyecto Modificado Número 1 para Obra de las siguiente estructura:

"Paso Inferior Riera de Can Juliá"

del "*Proyecto de Construcción de la Línea Ferroviaria de Alta Velocidad Madrid-Barcelona-Frontera Francesa. Tramo: Sant Vicenç del Horts – Santa Coloma de Cervelló*"

y se hace responsable de los mismos.

Los cálculos y planos de esta estructura se han realizado de acuerdo con las siguientes normativas:

1. "Instrucción de Hormigón Estructural EHE".
2. " Borrador de la Instrucción sobre las Acciones a considerar en el proyecto de Puentes de Ferrocarril - IAPF" de fecha febrero de 2003, en lo relativo a las acciones y sus combinaciones".
3. "Instrucción Relativa a las Acciones a considerar en el proyecto de Puentes de Ferrocarril - IAPF" de fecha 25 de junio de 1975.
4. "Norma de construcción sismorresistente: parte general y edificación". NCSE-02 (Real Decreto 997/2002, de 27 de septiembre, B.O.E. 11-X-2002).
5. "Eurocódigo 1: Bases de Proyecto y Acciones en Estructuras. Parte 3: Cargas de Tráfico en Puentes (EC 1.1.3) UNE-ENV 1991-3" de fecha octubre de 1997.
6. "Eurocódigo 1: Bases de Proyecto y Acciones en Estructuras. Parte 1: Bases de Proyecto (EC 1.1) UNE-ENV 1991-1".

Madrid, a 13 de Diciembre de 2004
Firmado:

SIEGRIST Y MORENO, S.L.
Teléf. 91 564 94 34
C.I.F. B-79379087

Guillermo Siegrist Ridruejo
Ingeniero de Caminos, Canales y Puertos
Colegiado 16204

Siegrist y Moreno S.L.

LAV SANTA COLOMA DE CERVELLÓ
P.I. RIERA DE CAN JULIA
ENVOLVENTE DE MODELOS DE MUELLES

FECHA: 28/02/2006

RESUMEN DE ARMADO SECCION TIPO MARCO: armado losa inferior

fcd(t/m2)= 1666.67
fyd(t/m2)= 4.43 ANCHO UNIDAD= 1.000

	BARRA	NUDO	HIPÓT.	FLEXION As,inf(cm2/m)	FLEXION As,sup(cm2/m)	FLEXION Ainf,dis	FLEXION Asup,disp	CORTANTE A90	COMPROBACION Ainf	COMPROBACION Asup	COMPROBACION A90
*	33	1	Nmax	58.62	0.00	59.15	31.42	37.06	ok	ok	ok
			Nmin	76.77	0.00	59.15	31.42	38.10	-17.62	ok	ok
			Mmax	76.77	0.00	59.15	31.42	39.43	-17.62	ok	ok
			Mmin	45.00	0.00	59.15	31.42	38.72	ok	ok	ok
			Qmax	76.77	0.00	59.15	31.42	39.43	-17.62	ok	ok
			Qmin	45.00	0.00	59.15	31.42	38.72	ok	ok	ok
		14	Nmax	40.14	0.00	59.15	31.42	39.06	ok	ok	ok
			Nmin	54.77	0.00	59.15	31.42	39.91	ok	ok	ok
			Mmax	54.77	0.00	59.15	31.42	41.46	ok	ok	ok
			Mmin	33.11	0.00	59.15	31.42	40.62	ok	ok	ok
			Qmax	54.77	0.00	59.15	31.42	41.46	ok	ok	ok
			Qmin	33.11	0.00	59.15	31.42	40.62	ok	ok	ok
	34	14	Nmax	40.14	0.00	59.15	31.42	33.00	ok	ok	ok
			Nmin	54.76	0.00	59.15	31.42	34.40	ok	ok	ok
			Mmax	54.76	0.00	59.15	31.42	35.13	ok	ok	ok
			Mmin	33.11	0.00	59.15	31.42	34.47	ok	ok	ok
			Qmax	54.76	0.00	59.15	31.42	35.13	ok	ok	ok
			Qmin	33.11	0.00	59.15	31.42	34.47	ok	ok	ok
		16	Nmax	25.25	0.00	59.15	31.42	35.26	ok	ok	ok
			Nmin	37.41	0.00	59.15	31.42	36.21	ok	ok	ok
			Mmax	37.41	0.00	59.15	31.42	37.37	ok	ok	ok
			Mmin	23.08	0.00	59.15	31.42	36.47	ok	ok	ok
			Qmax	37.41	0.00	59.15	31.42	37.37	ok	ok	ok
			Qmin	23.08	0.00	59.15	31.42	36.47	ok	ok	ok
	35	16	Nmax	25.25	0.00	59.15	31.42	29.57	ok	ok	ok
			Nmin	37.41	0.00	59.15	31.42	30.93	ok	ok	ok
			Mmax	37.41	0.00	59.15	31.42	31.44	ok	ok	ok
			Mmin	23.08	0.00	59.15	31.42	30.71	ok	ok	ok
			Qmax	37.41	0.00	59.15	31.42	31.44	ok	ok	ok
			Qmin	23.08	0.00	59.15	31.42	30.71	ok	ok	ok
		18	Nmax	14.53	0.00	59.15	31.42	32.77	ok	ok	ok
			Nmin	23.23	0.00	59.15	31.42	32.86	ok	ok	ok
			Mmax	23.23	0.00	59.15	31.42	34.51	ok	ok	ok
			Mmin	14.53	0.00	59.15	31.42	33.08	ok	ok	ok
			Qmax	23.23	0.00	59.15	31.42	34.51	ok	ok	ok
			Qmin	14.53	0.00	59.15	31.42	33.08	ok	ok	ok
	36	18	Nmax	14.53	0.00	59.15	31.42	27.52	ok	ok	ok
			Nmin	23.24	0.00	59.15	31.42	27.80	ok	ok	ok
			Mmax	23.24	0.00	59.15	31.42	29.01	ok	ok	ok
			Mmin	14.53	0.00	59.15	31.42	27.93	ok	ok	ok
			Qmax	23.24	0.00	59.15	31.42	29.01	ok	ok	ok
			Qmin	14.53	0.00	59.15	31.42	27.93	ok	ok	ok
		20	Nmax	7.25	5.42	59.15	31.42	29.81	ok	ok	ok
			Nmin	11.51	3.02	59.15	31.42	30.08	ok	ok	ok
			Mmax	11.51	3.02	59.15	31.42	31.45	ok	ok	ok
			Mmin	7.25	5.42	59.15	31.42	27.43	ok	ok	ok
			Qmax	11.51	4.73	59.15	31.42	31.45	ok	ok	ok
			Qmin	7.25	3.02	59.15	31.42	30.32	ok	ok	ok
	37	20	Nmax	7.25	5.42	59.15	31.42	25.27	ok	ok	ok
			Nmin	11.51	3.02	59.15	31.42	25.28	ok	ok	ok
			Mmax	11.51	3.02	59.15	31.42	26.68	ok	ok	ok
			Mmin	7.25	5.42	59.15	31.42	22.54	ok	ok	ok

Siegrist y Moreno S.L.

LAV SANTA COLOMA DE CERVELLÓ
P.I. RIERA DE CAN JULIA
ENVOLVENTE DE MODELOS DE MUELLES

FECHA: 28/02/2006

RESUMEN DE ARMADO SECCION TIPO MARCO: armado losa inferior

fcd(t/m2)= 1666.67
fyd(t/m2)= 4.43 ANCHO UNIDAD= 1.000

BARRA	NUDO	HIPÓT.	FLEXION As,inf(cm2/m)	FLEXION As,sup(cm2/m)	FLEXION Ainf,dis	FLEXION Asup,disp	CORTANTE A90	COMPROBACION Ainf	COMPROBACION Asup	COMPROBACION A90
		Qmax	11.51	4.72	59.15	31.42	26.68	ok	ok	ok
		Qmin	7.25	3.02	59.15	31.42	25.54	ok	ok	ok
	22	Nmax	1.43	14.01	10.05	31.42	24.22	ok	ok	ok
		Nmin	1.76	8.76	10.05	31.42	29.06	ok	ok	ok
		Mmax	1.98	8.76	10.05	31.42	27.20	ok	ok	ok
		Mmin	1.43	14.01	10.05	31.42	24.22	ok	ok	ok
		Qmax	1.76	13.82	10.05	31.42	29.06	ok	ok	ok
		Qmin	1.43	8.76	10.05	31.42	23.72	ok	ok	ok
38	22	Nmax	1.43	14.01	10.05	31.42	17.90	ok	ok	ok
		Nmin	1.76	8.76	10.05	31.42	22.27	ok	ok	ok
		Mmax	1.98	8.76	10.05	31.42	20.74	ok	ok	ok
		Mmin	1.43	14.01	10.05	31.42	17.90	ok	ok	ok
		Qmax	1.76	13.82	10.05	31.42	22.27	ok	ok	ok
		Qmin	1.43	8.76	10.05	31.42	17.05	ok	ok	ok
	24	Nmax	0.00	28.32	10.05	55.97	15.63	ok	ok	ok
		Nmin	0.00	18.15	10.05	55.97	19.04	ok	ok	ok
		Mmax	0.00	18.15	10.05	55.97	10.66	ok	ok	ok
		Mmin	0.00	29.06	10.05	55.97	19.04	ok	ok	ok
		Qmax	0.00	29.06	10.05	55.97	19.04	ok	ok	ok
		Qmin	0.00	18.15	10.05	55.97	15.53	ok	ok	ok
39	24	Nmax	0.00	28.32	10.05	55.97	8.58	ok	ok	ok
		Nmin	0.00	18.15	10.05	55.97	11.07	ok	ok	ok
		Mmax	0.00	18.15	10.05	55.97	5.29	ok	ok	ok
		Mmin	0.00	29.06	10.05	55.97	11.07	ok	ok	ok
		Qmax	0.00	29.06	10.05	55.97	11.07	ok	ok	ok
		Qmin	0.00	18.15	10.05	55.97	8.02	ok	ok	ok
	26	Nmax	0.00	38.99	10.05	55.97	7.80	ok	ok	ok
		Nmin	0.00	26.45	10.05	55.97	10.00	ok	ok	ok
		Mmax	0.00	24.96	10.05	55.97	4.49	ok	ok	ok
		Mmin	0.00	40.50	10.05	55.97	10.00	ok	ok	ok
		Qmax	0.00	40.50	10.05	55.97	10.00	ok	ok	ok
		Qmin	0.00	24.96	10.05	55.97	7.55	ok	ok	ok
40	26	Nmax	0.00	38.99	10.05	55.97	3.32	ok	ok	ok
		Nmin	0.00	26.45	10.05	55.97	3.05	ok	ok	ok
		Mmax	0.00	24.96	10.05	55.97	No necesita	ok	ok	ok
		Mmin	0.00	40.50	10.05	55.97	3.05	ok	ok	ok
		Qmax	0.00	40.50	10.05	55.97	3.05	ok	ok	ok
		Qmin	0.00	24.96	10.05	55.97	No necesita	ok	ok	ok
	28	Nmax	0.00	46.27	10.05	55.97	No necesita	ok	ok	ok
		Nmin	0.00	35.25	10.05	55.97	2.81	ok	ok	ok
		Mmax	0.00	29.50	10.05	55.97	No necesita	ok	ok	ok
		Mmin	0.00	48.36	10.05	55.97	2.81	ok	ok	ok
		Qmax	0.00	48.36	10.05	55.97	2.81	ok	ok	ok
		Qmin	0.00	29.50	10.05	55.97	No necesita	ok	ok	ok
41	28	Nmax	0.00	46.27	10.05	55.97	No necesita	ok	ok	ok
		Nmin	0.00	35.25	10.05	55.97	No necesita	ok	ok	ok
		Mmax	0.00	29.50	10.05	55.97	No necesita	ok	ok	ok
		Mmin	0.00	48.36	10.05	55.97	No necesita	ok	ok	ok
		Qmax	0.00	48.36	10.05	55.97	No necesita	ok	ok	ok
		Qmin	0.00	29.50	10.05	55.97	No necesita	ok	ok	ok
	30	Nmax	0.00	50.43	10.05	55.97	No necesita	ok	ok	ok
		Nmin	0.00	40.55	10.05	55.97	No necesita	ok	ok	ok

Siegrist y Moreno S.L.

LAV SANTA COLOMA DE CERVELLÓ
P.I. RIERA DE CAN JULIA
ENVOLVENTE DE MODELOS DE MUELLES

FECHA: 28/02/2006

RESUMEN DE ARMADO SECCION TIPO MARCO: armado losa inferior

fcd(t/m2)= 1666.67
fyd(t/m2)= 4.43
ANCHO UNIDAD= 1.000

				FLEXION			CORTANTE	COMPROBACION		
BARRA	NUDO	HIPÓT.	As,inf(cm2/m)	As,sup(cm2/m)	Ainf,dis	Asup,disp	A90	Ainf	Asup	A90
		Mmax	0.00	32.03	10.05	55.97	No necesita	ok	ok	ok
		Mmin	0.00	52.88	10.05	55.97	No necesita	ok	ok	ok
		Qmax	0.00	52.88	10.05	55.97	No necesita	ok	ok	ok
		Qmin	0.00	32.03	10.05	55.97	No necesita	ok	ok	ok
42	30	Nmax	0.00	50.43	10.05	55.97	No necesita	ok	ok	ok
		Nmin	0.00	40.55	10.05	55.97	No necesita	ok	ok	ok
		Mmax	0.00	32.03	10.05	55.97	No necesita	ok	ok	ok
		Mmin	0.00	52.88	10.05	55.97	No necesita	ok	ok	ok
		Qmax	0.00	52.88	10.05	55.97	No necesita	ok	ok	ok
		Qmin	0.00	32.03	10.05	55.97	No necesita	ok	ok	ok
	32	Nmax	0.00	51.68	10.05	55.97	No necesita	ok	ok	ok
		Nmin	0.00	42.35	10.05	55.97	No necesita	ok	ok	ok
		Mmax	0.00	32.75	10.05	55.97	No necesita	ok	ok	ok
		Mmin	0.00	54.25	10.05	55.97	No necesita	ok	ok	ok
		Qmax	0.00	54.25	10.05	55.97	No necesita	ok	ok	ok
		Qmin	0.00	32.75	10.05	55.97	No necesita	ok	ok	ok
43	32	Nmax	0.00	51.68	10.05	55.97	No necesita	ok	ok	ok
		Nmin	0.00	42.35	10.05	55.97	No necesita	ok	ok	ok
		Mmax	0.00	32.75	10.05	55.97	No necesita	ok	ok	ok
		Mmin	0.00	54.25	10.05	55.97	No necesita	ok	ok	ok
		Qmax	0.00	50.41	10.05	55.97	No necesita	ok	ok	ok
		Qmin	0.00	54.25	10.05	55.97	No necesita	ok	ok	ok
	34	Nmax	0.00	50.60	10.05	55.97	No necesita	ok	ok	ok
		Nmin	0.00	40.67	10.05	55.97	No necesita	ok	ok	ok
		Mmax	0.00	32.07	10.05	55.97	No necesita	ok	ok	ok
		Mmin	0.00	53.04	10.05	55.97	No necesita	ok	ok	ok
		Qmax	0.00	50.60	10.05	55.97	No necesita	ok	ok	ok
		Qmin	0.00	53.04	10.05	55.97	No necesita	ok	ok	ok
44	34	Nmax	0.00	50.60	10.05	55.97	No necesita	ok	ok	ok
		Nmin	0.00	40.67	10.05	55.97	No necesita	ok	ok	ok
		Mmax	0.00	32.07	10.05	55.97	No necesita	ok	ok	ok
		Mmin	0.00	53.04	10.05	55.97	No necesita	ok	ok	ok
		Qmax	0.00	32.07	10.05	55.97	No necesita	ok	ok	ok
		Qmin	0.00	53.04	10.05	55.97	No necesita	ok	ok	ok
	36	Nmax	0.00	47.74	10.05	55.97	No necesita	ok	ok	ok
		Nmin	0.00	35.48	10.05	55.97	No necesita	ok	ok	ok
		Mmax	0.00	30.26	10.05	55.97	No necesita	ok	ok	ok
		Mmin	0.00	49.81	10.05	55.97	No necesita	ok	ok	ok
		Qmax	0.00	30.26	10.05	55.97	No necesita	ok	ok	ok
		Qmin	0.00	49.81	10.05	55.97	No necesita	ok	ok	ok
45	36	Nmax	0.00	47.74	10.05	55.97	No necesita	ok	ok	ok
		Nmin	0.00	35.48	10.05	55.97	2.80	ok	ok	ok
		Mmax	0.00	30.26	10.05	55.97	No necesita	ok	ok	ok
		Mmin	0.00	49.81	10.05	55.97	2.80	ok	ok	ok
		Qmax	0.00	30.26	10.05	55.97	No necesita	ok	ok	ok
		Qmin	0.00	49.81	10.05	55.97	2.80	ok	ok	ok
	38	Nmax	0.00	41.54	10.05	55.97	No necesita	ok	ok	ok
		Nmin	0.00	26.78	10.05	55.97	3.04	ok	ok	ok
		Mmax	0.00	26.42	10.05	55.97	No necesita	ok	ok	ok
		Mmin	0.00	43.01	10.05	55.97	3.04	ok	ok	ok
		Qmax	0.00	26.42	10.05	55.97	No necesita	ok	ok	ok
		Qmin	0.00	43.01	10.05	55.97	3.04	ok	ok	ok

Siegrist y Moreno S.L.

LAV SANTA COLOMA DE CERVELLÓ
P.I. RIERA DE CAN JULIA
ENVOLVENTE DE MODELOS DE MUELLES

FECHA: 28/02/2006

RESUMEN DE ARMADO SECCION TIPO MARCO: armado losa inferior

fcd(t/m2)= 1666.67
fyd(t/m2)= 4.43
ANCHO UNIDAD= 1.000

				FLEXION			CORTANTE	COMPROBACION		
BARRA	NUDO	HIPÓT.	As,inf(cm2/m)	As,sup(cm2/m)	Ainf,dis	Asup,disp	A90	Ainf	Asup	A90
46	38	Nmax	0.00	41.54	10.05	55.97	5.31	ok	ok	ok
		Nmin	0.00	26.78	10.05	55.97	10.02	ok	ok	ok
		Mmax	0.00	26.42	10.05	55.97	4.53	ok	ok	ok
		Mmin	0.00	43.01	10.05	55.97	10.02	ok	ok	ok
		Qmax	0.00	26.42	10.05	55.97	6.12	ok	ok	ok
		Qmin	0.00	43.01	10.05	55.97	10.02	ok	ok	ok
	40	Nmax	0.00	31.66	10.05	55.97	6.12	ok	ok	ok
		Nmin	0.00	20.13	10.05	55.97	11.10	ok	ok	ok
		Mmax	0.00	20.13	10.05	55.97	5.32	ok	ok	ok
		Mmin	0.00	32.33	10.05	55.97	11.10	ok	ok	ok
		Qmax	0.00	20.13	10.05	55.97	6.47	ok	ok	ok
		Qmin	0.00	32.33	10.05	55.97	11.10	ok	ok	ok
47	40	Nmax	0.00	31.66	10.05	55.97	13.07	ok	ok	ok
		Nmin	0.00	20.13	10.05	55.97	19.05	ok	ok	ok
		Mmax	0.00	20.13	10.05	55.97	10.68	ok	ok	ok
		Mmin	0.00	32.33	10.05	55.97	19.05	ok	ok	ok
		Qmax	0.00	20.13	10.05	55.97	14.26	ok	ok	ok
		Qmin	0.00	32.33	10.05	55.97	19.05	ok	ok	ok
	42	Nmax	1.11	17.81	10.05	31.42	14.47	ok	ok	ok
		Nmin	1.82	11.05	10.05	31.42	22.52	ok	ok	ok
		Mmax	1.91	11.05	10.05	31.42	22.52	ok	ok	ok
		Mmin	1.11	17.81	10.05	31.42	14.47	ok	ok	ok
		Qmax	1.11	11.05	10.05	31.42	14.07	ok	ok	ok
		Qmin	1.82	17.54	10.05	31.42	22.52	ok	ok	ok
48	42	Nmax	1.11	17.81	10.05	31.42	21.07	ok	ok	ok
		Nmin	1.82	11.05	10.05	31.42	29.33	ok	ok	ok
		Mmax	1.91	11.05	10.05	31.42	29.33	ok	ok	ok
		Mmin	1.11	17.81	10.05	31.42	21.07	ok	ok	ok
		Qmax	1.11	11.05	10.05	31.42	20.72	ok	ok	ok
		Qmin	1.82	17.53	10.05	31.42	29.33	ok	ok	ok
	44	Nmax	7.30	9.33	59.15	31.42	22.99	ok	ok	ok
		Nmin	11.57	5.37	59.15	31.42	25.27	ok	ok	ok
		Mmax	11.57	5.37	59.15	31.42	25.27	ok	ok	ok
		Mmin	7.30	9.33	59.15	31.42	22.99	ok	ok	ok
		Qmax	7.30	5.37	59.15	31.42	22.14	ok	ok	ok
		Qmin	11.57	8.53	59.15	31.42	25.27	ok	ok	ok
49	44	Nmax	7.30	9.33	59.15	31.42	27.79	ok	ok	ok
		Nmin	11.57	5.37	59.15	31.42	30.08	ok	ok	ok
		Mmax	11.57	5.37	59.15	31.42	30.08	ok	ok	ok
		Mmin	7.30	9.33	59.15	31.42	27.79	ok	ok	ok
		Qmax	7.30	5.37	59.15	31.42	26.93	ok	ok	ok
		Qmin	11.57	8.53	59.15	31.42	30.08	ok	ok	ok
	46	Nmax	14.58	0.69	59.15	31.42	29.08	ok	ok	ok
		Nmin	23.30	0.69	59.15	31.42	27.77	ok	ok	ok
		Mmax	23.30	0.69	59.15	31.42	30.25	ok	ok	ok
		Mmin	14.58	0.69	59.15	31.42	28.72	ok	ok	ok
		Qmax	14.58	0.69	59.15	31.42	18.49	ok	ok	ok
		Qmin	23.30	0.69	59.15	31.42	30.25	ok	ok	ok
50	46	Nmax	14.58	0.69	59.15	31.42	34.22	ok	ok	ok
		Nmin	23.30	0.69	59.15	31.42	32.83	ok	ok	ok
		Mmax	23.30	0.69	59.15	31.42	35.99	ok	ok	ok
		Mmin	14.58	0.69	59.15	31.42	34.22	ok	ok	ok

Siegrist y Moreno S.L.

LAV SANTA COLOMA DE CERVELLÓ
P.I. RIERA DE CAN JULIA
ENVOLVENTE DE MODELOS DE MUELLES

FECHA: 28/02/2006

RESUMEN DE ARMADO SECCION TIPO MARCO: armado losa inferior

fcd(t/m2)= 1666.67
fyd(t/m2)= 4.43 ANCHO UNIDAD= 1.000

				FLEXION			CORTANTE	COMPROBACION		
BARRA	NUDO	HIPÓT.	As,inf(cm2/m)	As,sup(cm2/m)	Ainf,dis	Asup,disp	A90	Ainf	Asup	A90
		Qmax	14.58	0.69	59.15	31.42	22.30	ok	ok	ok
		Qmin	23.30	0.69	59.15	31.42	35.99	ok	ok	ok
	48	Nmax	23.14	0.00	59.15	31.42	33.90	ok	ok	ok
		Nmin	37.48	0.00	59.15	31.42	30.88	ok	ok	ok
		Mmax	37.48	0.00	59.15	31.42	31.73	ok	ok	ok
		Mmin	23.14	0.00	59.15	31.42	31.18	ok	ok	ok
		Qmax	23.14	0.00	59.15	31.42	18.65	ok	ok	ok
		Qmin	37.48	0.00	59.15	31.42	31.73	ok	ok	ok
51	48	Nmax	23.14	0.00	59.15	31.42	35.86	ok	ok	ok
		Nmin	37.49	0.00	59.15	31.42	36.21	ok	ok	ok
		Mmax	37.49	0.00	59.15	31.42	37.90	ok	ok	ok
		Mmin	23.14	0.00	59.15	31.42	37.14	ok	ok	ok
		Qmax	23.14	0.00	59.15	31.42	22.75	ok	ok	ok
		Qmin	37.49	0.00	59.15	31.42	37.90	ok	ok	ok
	50	Nmax	33.16	0.00	59.15	31.42	37.14	ok	ok	ok
		Nmin	54.85	0.00	59.15	31.42	34.39	ok	ok	ok
		Mmax	54.85	0.00	59.15	31.42	35.43	ok	ok	ok
		Mmin	33.16	0.00	59.15	31.42	35.00	ok	ok	ok
		Qmax	33.16	0.00	59.15	31.42	20.63	ok	ok	ok
		Qmin	54.85	0.00	59.15	31.42	35.43	ok	ok	ok
52	50	Nmax	33.17	0.00	59.15	31.42	39.74	ok	ok	ok
		Nmin	54.86	0.00	59.15	31.42	39.94	ok	ok	ok
		Mmax	54.86	0.00	59.15	31.42	42.08	ok	ok	ok
		Mmin	33.17	0.00	59.15	31.42	41.61	ok	ok	ok
		Qmax	33.17	0.00	59.15	31.42	25.03	ok	ok	ok
		Qmin	54.86	0.00	59.15	31.42	42.08	ok	ok	ok
*	52	Nmax	50.16	0.00	59.15	31.42	41.61	ok	ok	ok
		Nmin	76.86	0.00	59.15	31.42	38.13	-17.71	ok	ok
		Mmax	76.86	0.00	59.15	31.42	39.95	-17.71	ok	ok
		Mmin	45.06	0.00	59.15	31.42	39.63	ok	ok	ok
		Qmax	45.06	0.00	59.15	31.42	23.22	ok	ok	ok
		Qmin	76.86	0.00	59.15	31.42	39.95	-17.71	ok	ok

Siegrist y Moreno S.L.

LAV SANTA COLOMA DE CERVELLÓ
P.I. RIERA DE CAN JULIA
ENVOLVENTE DE MODELOS DE MUELLES

FECHA: 28/02/2006

RESUMEN DE ARMADO SECCION TIPO MARCO: armado losa superior

fcd(t/m2)= 1666.67
fyd(t/m2)= 4.43 ANCHO UNIDAD= 1.000

					FLEXION			CORTANTE	COMPROBACION		
	BARRA	NUDO	HIPÓT.	As,inf(cm2/m)	As,sup(cm2/m)	Ainf,dis	Asup,disp	A90	Ainf	Asup	A90
*	13	13	Nmax	0.00	35.37	49.10	59.15	17.71	ok	ok	ok
			Nmin	0.00	68.29	49.10	59.15	30.01	ok	-9.14	ok
			Mmax	0.00	35.37	49.10	59.15	17.71	ok	ok	ok
			Mmin	0.00	68.29	49.10	59.15	30.01	ok	-9.14	ok
			Qmax	0.00	35.37	49.10	59.15	17.71	ok	ok	ok
			Qmin	0.00	61.76	49.10	59.15	32.93	ok	-2.61	ok
		15	Nmax	0.00	26.94	49.10	59.15	17.06	ok	ok	ok
			Nmin	0.00	52.77	49.10	59.15	30.06	ok	ok	ok
			Mmax	0.00	26.94	49.10	59.15	17.06	ok	ok	ok
			Mmin	0.00	52.77	49.10	59.15	30.06	ok	ok	ok
			Qmax	0.00	26.94	49.10	59.15	17.06	ok	ok	ok
			Qmin	0.00	46.19	49.10	59.15	31.40	ok	ok	ok
	14	15	Nmax	0.00	26.94	49.10	59.15	17.03	ok	ok	ok
			Nmin	0.00	52.77	49.10	59.15	30.03	ok	ok	ok
			Mmax	0.00	26.94	49.10	59.15	17.03	ok	ok	ok
			Mmin	0.00	52.77	49.10	59.15	30.03	ok	ok	ok
			Qmax	0.00	26.94	49.10	59.15	17.03	ok	ok	ok
			Qmin	0.00	46.19	49.10	59.15	31.34	ok	ok	ok
		17	Nmax	0.00	19.41	49.10	59.15	16.63	ok	ok	ok
			Nmin	0.00	38.90	49.10	59.15	30.31	ok	ok	ok
			Mmax	0.00	19.41	49.10	59.15	16.63	ok	ok	ok
			Mmin	0.00	38.90	49.10	59.15	30.31	ok	ok	ok
			Qmax	0.00	19.41	49.10	59.15	16.63	ok	ok	ok
			Qmin	0.00	38.90	49.10	59.15	30.31	ok	ok	ok
	15	17	Nmax	0.00	19.41	98.20	59.15	16.64	ok	ok	ok
			Nmin	0.00	38.90	98.20	59.15	30.33	ok	ok	ok
			Mmax	0.00	19.41	98.20	59.15	16.64	ok	ok	ok
			Mmin	0.00	38.90	98.20	59.15	30.33	ok	ok	ok
			Qmax	0.00	19.41	98.20	59.15	16.64	ok	ok	ok
			Qmin	0.00	38.90	98.20	59.15	30.33	ok	ok	ok
		19	Nmax	0.39	12.64	98.20	59.15	17.06	ok	ok	ok
			Nmin	0.39	26.25	98.20	59.15	31.19	ok	ok	ok
			Mmax	0.39	12.64	98.20	59.15	17.06	ok	ok	ok
			Mmin	0.39	26.25	98.20	59.15	31.19	ok	ok	ok
			Qmax	0.39	12.64	98.20	59.15	17.06	ok	ok	ok
			Qmin	0.39	26.25	98.20	59.15	31.19	ok	ok	ok
	16	19	Nmax	0.39	12.64	98.20	59.15	17.03	ok	ok	ok
			Nmin	0.39	26.25	98.20	59.15	31.15	ok	ok	ok
			Mmax	0.39	12.64	98.20	59.15	17.03	ok	ok	ok
			Mmin	0.39	26.25	98.20	59.15	31.15	ok	ok	ok
			Qmax	0.39	12.64	98.20	59.15	17.03	ok	ok	ok
			Qmin	0.39	26.25	98.20	59.15	31.15	ok	ok	ok
		21	Nmax	4.85	6.58	98.20	59.15	14.85	ok	ok	ok
			Nmin	4.85	14.68	98.20	59.15	31.63	ok	ok	ok
			Mmax	7.04	6.58	98.20	59.15	26.43	ok	ok	ok
			Mmin	4.85	14.68	98.20	59.15	31.63	ok	ok	ok
			Qmax	4.85	6.58	98.20	59.15	14.85	ok	ok	ok
			Qmin	4.85	14.68	98.20	59.15	31.63	ok	ok	ok
	17	21	Nmax	4.85	6.58	98.20	59.15	14.85	ok	ok	ok
			Nmin	4.85	14.68	98.20	59.15	31.64	ok	ok	ok
			Mmax	7.04	6.58	98.20	59.15	26.44	ok	ok	ok
			Mmin	4.85	14.68	98.20	59.15	31.64	ok	ok	ok

Siegrist y Moreno S.L.

LAV SANTA COLOMA DE CERVELLÓ
P.I. RIERA DE CAN JULIA
ENVOLVENTE DE MODELOS DE MUELLES

FECHA: 28/02/2006

RESUMEN DE ARMADO SECCION TIPO MARCO: armado losa superior

fcd(t/m2)= 1666.67
fyd(t/m2)= 4.43 ANCHO UNIDAD= 1.000

				FLEXION			CORTANTE	COMPROBACION		
BARRA	NUDO	HIPÓT.	As,inf(cm2/m)	As,sup(cm2/m)	Ainf,dis	Asup,disp	A90	Ainf	Asup	A90
		Qmax	4.85	6.58	98.20	59.15	14.85	ok	ok	ok
		Qmin	4.85	14.68	98.20	59.15	31.64	ok	ok	ok
	23	Nmax	10.10	1.21	98.20	10.05	14.54	ok	ok	ok
		Nmin	14.05	4.04	98.20	10.05	30.30	ok	ok	ok
		Mmax	15.97	1.21	98.20	10.05	21.55	ok	ok	ok
		Mmin	10.10	4.04	98.20	10.05	30.30	ok	ok	ok
		Qmax	10.10	1.21	98.20	10.05	14.54	ok	ok	ok
		Qmin	14.05	4.04	98.20	10.05	30.30	ok	ok	ok
18	23	Nmax	10.10	1.21	98.20	10.05	14.52	ok	ok	ok
		Nmin	14.05	4.04	98.20	10.05	30.28	ok	ok	ok
		Mmax	15.96	1.21	98.20	10.05	21.55	ok	ok	ok
		Mmin	10.10	4.04	98.20	10.05	30.28	ok	ok	ok
		Qmax	10.10	1.21	98.20	10.05	14.52	ok	ok	ok
		Qmin	14.05	4.04	98.20	10.05	30.28	ok	ok	ok
	25	Nmax	19.34	0.00	98.20	10.05	7.98	ok	ok	ok
		Nmin	33.75	0.00	98.20	10.05	20.56	ok	ok	ok
		Mmax	33.75	0.00	98.20	10.05	20.56	ok	ok	ok
		Mmin	19.34	0.00	98.20	10.05	7.98	ok	ok	ok
		Qmax	19.34	0.00	98.20	10.05	7.98	ok	ok	ok
		Qmin	33.75	0.00	98.20	10.05	20.56	ok	ok	ok
19	25	Nmax	19.34	0.00	98.20	10.05	7.98	ok	ok	ok
		Nmin	33.75	0.00	98.20	10.05	20.55	ok	ok	ok
		Mmax	33.75	0.00	98.20	10.05	20.55	ok	ok	ok
		Mmin	19.34	0.00	98.20	10.05	7.98	ok	ok	ok
		Qmax	19.34	0.00	98.20	10.05	7.98	ok	ok	ok
		Qmin	33.75	0.00	98.20	10.05	20.55	ok	ok	ok
	27	Nmax	26.69	0.00	98.20	10.05	3.04	ok	ok	ok
		Nmin	50.35	0.00	98.20	10.05	11.61	ok	ok	ok
		Mmax	50.35	0.00	98.20	10.05	11.61	ok	ok	ok
		Mmin	26.69	0.00	98.20	10.05	3.04	ok	ok	ok
		Qmax	26.69	0.00	98.20	10.05	3.04	ok	ok	ok
		Qmin	50.35	0.00	98.20	10.05	11.61	ok	ok	ok
20	27	Nmax	26.70	0.00	98.20	10.05	3.04	ok	ok	ok
		Nmin	50.35	0.00	98.20	10.05	11.60	ok	ok	ok
		Mmax	50.35	0.00	98.20	10.05	11.60	ok	ok	ok
		Mmin	26.70	0.00	98.20	10.05	3.04	ok	ok	ok
		Qmax	26.70	0.00	98.20	10.05	3.04	ok	ok	ok
		Qmin	50.35	0.00	98.20	10.05	11.60	ok	ok	ok
	29	Nmax	32.36	0.00	98.20	10.05	No necesita	ok	ok	ok
		Nmin	63.39	0.00	98.20	10.05	3.57	ok	ok	ok
		Mmax	63.39	0.00	98.20	10.05	3.57	ok	ok	ok
		Mmin	32.36	0.00	98.20	10.05	No necesita	ok	ok	ok
		Qmax	32.36	0.00	98.20	10.05	No necesita	ok	ok	ok
		Qmin	63.39	0.00	98.20	10.05	3.57	ok	ok	ok
21	29	Nmax	32.36	0.00	98.20	10.05	No necesita	ok	ok	ok
		Nmin	63.39	0.00	98.20	10.05	3.56	ok	ok	ok
		Mmax	63.39	0.00	98.20	10.05	3.56	ok	ok	ok
		Mmin	32.36	0.00	98.20	10.05	No necesita	ok	ok	ok
		Qmax	32.36	0.00	98.20	10.05	No necesita	ok	ok	ok
		Qmin	63.39	0.00	98.20	10.05	3.56	ok	ok	ok
	31	Nmax	35.99	0.00	98.20	10.05	No necesita	ok	ok	ok
		Nmin	71.95	0.00	98.20	10.05	No necesita	ok	ok	ok

Siegrist y Moreno S.L.

LAV SANTA COLOMA DE CERVELLÓ
P.I. RIERA DE CAN JULIA
ENVOLVENTE DE MODELOS DE MUELLES

FECHA: 28/02/2006

RESUMEN DE ARMADO SECCION TIPO MARCO: armado losa superior

fcd(t/m2)= 1666.67
fyd(t/m2)= 4.43 ANCHO UNIDAD= 1.000

				FLEXION			CORTANTE	COMPROBACION		
BARRA	NUDO	HIPÓT.	As,inf(cm2/m)	As,sup(cm2/m)	Ainf,dis	Asup,disp	A90	Ainf	Asup	A90
		Mmax	71.95	0.00	98.20	10.05	No necesita	ok	ok	ok
		Mmin	35.99	0.00	98.20	10.05	No necesita	ok	ok	ok
		Qmax	35.99	0.00	98.20	10.05	No necesita	ok	ok	ok
		Qmin	71.95	0.00	98.20	10.05	No necesita	ok	ok	ok
22	31	Nmax	35.99	0.00	98.20	10.05	No necesita	ok	ok	ok
		Nmin	71.95	0.00	98.20	10.05	No necesita	ok	ok	ok
		Mmax	71.95	0.00	98.20	10.05	No necesita	ok	ok	ok
		Mmin	35.99	0.00	98.20	10.05	No necesita	ok	ok	ok
		Qmax	35.99	0.00	98.20	10.05	No necesita	ok	ok	ok
		Qmin	71.95	0.00	98.20	10.05	No necesita	ok	ok	ok
	33	Nmax	37.28	0.00	98.20	10.05	No necesita	ok	ok	ok
		Nmin	74.97	0.00	98.20	10.05	No necesita	ok	ok	ok
		Mmax	74.97	0.00	98.20	10.05	No necesita	ok	ok	ok
		Mmin	37.28	0.00	98.20	10.05	No necesita	ok	ok	ok
		Qmax	73.02	0.00	98.20	10.05	No necesita	ok	ok	ok
		Qmin	65.00	0.00	98.20	10.05	No necesita	ok	ok	ok
23	33	Nmax	37.28	0.00	98.20	10.05	No necesita	ok	ok	ok
		Nmin	74.97	0.00	98.20	10.05	No necesita	ok	ok	ok
		Mmax	74.97	0.00	98.20	10.05	No necesita	ok	ok	ok
		Mmin	37.28	0.00	98.20	10.05	No necesita	ok	ok	ok
		Qmax	73.02	0.00	98.20	10.05	No necesita	ok	ok	ok
		Qmin	65.00	0.00	98.20	10.05	No necesita	ok	ok	ok
	35	Nmax	36.19	0.00	98.20	10.05	No necesita	ok	ok	ok
		Nmin	72.19	0.00	98.20	10.05	No necesita	ok	ok	ok
		Mmax	72.19	0.00	98.20	10.05	No necesita	ok	ok	ok
		Mmin	36.19	0.00	98.20	10.05	No necesita	ok	ok	ok
		Qmax	72.19	0.00	98.20	10.05	No necesita	ok	ok	ok
		Qmin	36.19	0.00	98.20	10.05	No necesita	ok	ok	ok
24	35	Nmax	36.19	0.00	98.20	10.05	No necesita	ok	ok	ok
		Nmin	72.19	0.00	98.20	10.05	No necesita	ok	ok	ok
		Mmax	72.19	0.00	98.20	10.05	No necesita	ok	ok	ok
		Mmin	36.19	0.00	98.20	10.05	No necesita	ok	ok	ok
		Qmax	72.19	0.00	98.20	10.05	No necesita	ok	ok	ok
		Qmin	36.19	0.00	98.20	10.05	No necesita	ok	ok	ok
	37	Nmax	32.76	0.00	98.20	10.05	No necesita	ok	ok	ok
		Nmin	63.87	0.00	98.20	10.05	3.62	ok	ok	ok
		Mmax	63.87	0.00	98.20	10.05	3.62	ok	ok	ok
		Mmin	32.76	0.00	98.20	10.05	No necesita	ok	ok	ok
		Qmax	63.87	0.00	98.20	10.05	3.62	ok	ok	ok
		Qmin	32.76	0.00	98.20	10.05	No necesita	ok	ok	ok
25	37	Nmax	32.76	0.00	98.20	10.05	No necesita	ok	ok	ok
		Nmin	63.87	0.00	98.20	10.05	3.62	ok	ok	ok
		Mmax	63.87	0.00	98.20	10.05	3.62	ok	ok	ok
		Mmin	32.76	0.00	98.20	10.05	No necesita	ok	ok	ok
		Qmax	63.87	0.00	98.20	10.05	3.62	ok	ok	ok
		Qmin	32.76	0.00	98.20	10.05	No necesita	ok	ok	ok
	39	Nmax	27.10	0.00	98.20	10.05	3.04	ok	ok	ok
		Nmin	50.76	0.00	98.20	10.05	11.66	ok	ok	ok
		Mmax	50.76	0.00	98.20	10.05	11.66	ok	ok	ok
		Mmin	27.10	0.00	98.20	10.05	3.04	ok	ok	ok
		Qmax	50.76	0.00	98.20	10.05	11.66	ok	ok	ok
		Qmin	27.10	0.00	98.20	10.05	3.04	ok	ok	ok

Siegrist y Moreno S.L.

LAV SANTA COLOMA DE CERVELLÓ
P.I. RIERA DE CAN JULIA
ENVOLVENTE DE MODELOS DE MUELLES

FECHA: 28/02/2006

RESUMEN DE ARMADO SECCION TIPO MARCO: armado losa superior

fcd(t/m2)= 1666.67
fyd(t/m2)= 4.43 ANCHO UNIDAD= 1.000

				FLEXION			CORTANTE	COMPROBACION		
BARRA	NUDO	HIPÓT.	As,inf(cm2/m)	As,sup(cm2/m)	Ainf,dis	Asup,disp	A90	Ainf	Asup	A90
26	39	Nmax	27.10	0.00	98.20	10.05	3.04	ok	ok	ok
		Nmin	50.76	0.00	98.20	10.05	11.66	ok	ok	ok
		Mmax	50.76	0.00	98.20	10.05	11.66	ok	ok	ok
		Mmin	27.10	0.00	98.20	10.05	3.04	ok	ok	ok
		Qmax	50.76	0.00	98.20	10.05	11.66	ok	ok	ok
		Qmin	27.10	0.00	98.20	10.05	3.04	ok	ok	ok
	41	Nmax	19.39	0.00	98.20	10.05	7.97	ok	ok	ok
		Nmin	33.77	0.00	98.20	10.05	20.60	ok	ok	ok
		Mmax	33.77	0.00	98.20	10.05	20.60	ok	ok	ok
		Mmin	19.39	0.00	98.20	10.05	7.97	ok	ok	ok
		Qmax	33.77	0.00	98.20	10.05	20.60	ok	ok	ok
		Qmin	19.39	0.00	98.20	10.05	7.97	ok	ok	ok
27	41	Nmax	19.39	0.00	98.20	10.05	7.97	ok	ok	ok
		Nmin	33.77	0.00	98.20	10.05	20.58	ok	ok	ok
		Mmax	33.77	0.00	98.20	10.05	20.58	ok	ok	ok
		Mmin	19.39	0.00	98.20	10.05	7.97	ok	ok	ok
		Qmax	33.77	0.00	98.20	10.05	20.58	ok	ok	ok
		Qmin	19.39	0.00	98.20	10.05	7.97	ok	ok	ok
	43	Nmax	9.81	1.20	98.20	10.05	14.53	ok	ok	ok
		Nmin	13.73	4.07	98.20	10.05	30.24	ok	ok	ok
		Mmax	15.66	1.20	98.20	10.05	22.15	ok	ok	ok
		Mmin	9.81	4.07	98.20	10.05	30.24	ok	ok	ok
		Qmax	13.73	4.07	98.20	10.05	30.24	ok	ok	ok
		Qmin	9.81	1.20	98.20	10.05	14.53	ok	ok	ok
28	43	Nmax	9.81	1.20	98.20	10.05	14.52	ok	ok	ok
		Nmin	13.73	4.07	98.20	10.05	30.22	ok	ok	ok
		Mmax	15.66	1.20	98.20	10.05	22.12	ok	ok	ok
		Mmin	9.81	4.07	98.20	10.05	30.22	ok	ok	ok
		Qmax	13.73	4.07	98.20	10.05	30.22	ok	ok	ok
		Qmin	9.81	1.20	98.20	10.05	14.52	ok	ok	ok
	45	Nmax	4.41	6.57	98.20	59.15	15.57	ok	ok	ok
		Nmin	4.41	14.71	98.20	59.15	32.48	ok	ok	ok
		Mmax	6.58	6.57	98.20	59.15	27.41	ok	ok	ok
		Mmin	4.41	14.71	98.20	59.15	32.48	ok	ok	ok
		Qmax	4.41	14.71	98.20	59.15	32.48	ok	ok	ok
		Qmin	4.41	6.57	98.20	59.15	15.57	ok	ok	ok
29	45	Nmax	4.41	6.57	98.20	59.15	15.60	ok	ok	ok
		Nmin	4.41	14.71	98.20	59.15	32.51	ok	ok	ok
		Mmax	6.58	6.57	98.20	59.15	27.43	ok	ok	ok
		Mmin	4.41	14.71	98.20	59.15	32.51	ok	ok	ok
		Qmax	4.41	14.71	98.20	59.15	32.51	ok	ok	ok
		Qmin	4.41	6.57	98.20	59.15	15.60	ok	ok	ok
	47	Nmax	0.00	12.61	98.20	59.15	17.42	ok	ok	ok
		Nmin	0.00	26.27	98.20	59.15	31.09	ok	ok	ok
		Mmax	0.00	12.61	98.20	59.15	17.42	ok	ok	ok
		Mmin	0.00	26.27	98.20	59.15	31.09	ok	ok	ok
		Qmax	0.00	26.27	98.20	59.15	31.09	ok	ok	ok
		Qmin	0.00	12.61	98.20	59.15	17.42	ok	ok	ok
30	47	Nmax	0.00	12.61	98.20	59.15	17.40	ok	ok	ok
		Nmin	0.00	26.27	98.20	59.15	31.09	ok	ok	ok
		Mmax	0.00	12.61	98.20	59.15	17.40	ok	ok	ok
		Mmin	0.00	26.27	98.20	59.15	31.09	ok	ok	ok

Siegrist y Moreno S.L.

LAV SANTA COLOMA DE CERVELLÓ
P.I. RIERA DE CAN JULIA
ENVOLVENTE DE MODELOS DE MUELLES

FECHA: 28/02/2006

RESUMEN DE ARMADO SECCION TIPO MARCO: armado losa superior

fcd(t/m2)= 1666.67
fyd(t/m2)= 4.43 ANCHO UNIDAD= 1.000

				FLEXION			CORTANTE	COMPROBACION		
BARRA	NUDO	HIPÓT.	As,inf(cm2/m)	As,sup(cm2/m)	Ainf,dis	Asup,disp	A90	Ainf	Asup	A90
		Qmax	0.00	26.27	98.20	59.15	31.09	ok	ok	ok
		Qmin	0.00	12.61	98.20	59.15	17.40	ok	ok	ok
	49	Nmax	0.00	19.37	98.20	59.15	16.57	ok	ok	ok
		Nmin	0.00	38.90	98.20	59.15	30.38	ok	ok	ok
		Mmax	0.00	19.37	98.20	59.15	16.57	ok	ok	ok
		Mmin	0.00	38.90	98.20	59.15	30.38	ok	ok	ok
		Qmax	0.00	38.90	98.20	59.15	30.38	ok	ok	ok
		Qmin	0.00	19.37	98.20	59.15	16.57	ok	ok	ok
31	49	Nmax	0.00	19.37	49.10	59.15	16.63	ok	ok	ok
		Nmin	0.00	38.90	49.10	59.15	30.41	ok	ok	ok
		Mmax	0.00	19.37	49.10	59.15	16.63	ok	ok	ok
		Mmin	0.00	38.90	49.10	59.15	30.41	ok	ok	ok
		Qmax	0.00	38.90	49.10	59.15	30.41	ok	ok	ok
		Qmin	0.00	19.37	49.10	59.15	16.63	ok	ok	ok
	51	Nmax	0.00	26.90	49.10	59.15	17.04	ok	ok	ok
		Nmin	0.00	52.79	49.10	59.15	30.21	ok	ok	ok
		Mmax	0.00	26.90	49.10	59.15	17.04	ok	ok	ok
		Mmin	0.00	52.79	49.10	59.15	30.21	ok	ok	ok
		Qmax	0.00	46.15	49.10	59.15	31.51	ok	ok	ok
		Qmin	0.00	26.90	49.10	59.15	17.04	ok	ok	ok
32	51	Nmax	0.00	26.90	49.10	59.15	17.03	ok	ok	ok
		Nmin	0.00	52.79	49.10	59.15	30.21	ok	ok	ok
		Mmax	0.00	26.90	49.10	59.15	17.03	ok	ok	ok
		Mmin	0.00	52.79	49.10	59.15	30.21	ok	ok	ok
		Qmax	0.00	46.15	49.10	59.15	31.49	ok	ok	ok
		Qmin	0.00	26.90	49.10	59.15	17.03	ok	ok	ok
	64	Nmax	0.00	35.32	49.10	59.15	17.78	ok	ok	ok
		Nmin	0.00	68.29	49.10	59.15	30.21	ok	-9.14	ok
		Mmax	0.00	35.32	49.10	59.15	17.78	ok	ok	ok
		Mmin	0.00	68.29	49.10	59.15	30.21	ok	-9.14	ok
		Qmax	0.00	61.70	49.10	59.15	33.09	ok	-2.55	ok
		Qmin	0.00	35.32	49.10	59.15	17.78	ok	ok	ok

Siegrist y Moreno S.L.

LAV SANTA COLOMA DE CERVELLÓ
P.I. RIERA DE CAN JULIA
ENVOLVENTE DE MODELOS DE MUELLES

FECHA: 28/02/2006

RESUMEN DE ARMADO SECCION TIPO MARCO: armado losa superior

fcd(t/m2)= 1666.67
fyd(t/m2)= 4.43 ANCHO UNIDAD= 1.000

					FLEXION			CORTANTE	COMPROBACION		
	BARRA	NUDO	HIPÓT.	As,inf(cm2/m)	As,sup(cm2/m)	Ainf,dis	Asup,disp	A90	Ainf	Asup	A90
*	13	13	Nmax	0.00	35.37	49.10	59.15	17.71	ok	ok	ok
			Nmin	0.00	68.29	49.10	59.15	30.01	ok	-9.14	ok
			Mmax	0.00	35.37	49.10	59.15	17.71	ok	ok	ok
			Mmin	0.00	68.29	49.10	59.15	30.01	ok	-9.14	ok
			Qmax	0.00	35.37	49.10	59.15	17.71	ok	ok	ok
			Qmin	0.00	61.76	49.10	59.15	32.93	ok	-2.61	ok
		15	Nmax	0.00	26.94	49.10	59.15	17.06	ok	ok	ok
			Nmin	0.00	52.77	49.10	59.15	30.06	ok	ok	ok
			Mmax	0.00	26.94	49.10	59.15	17.06	ok	ok	ok
			Mmin	0.00	52.77	49.10	59.15	30.06	ok	ok	ok
			Qmax	0.00	26.94	49.10	59.15	17.06	ok	ok	ok
			Qmin	0.00	46.19	49.10	59.15	31.40	ok	ok	ok
	14	15	Nmax	0.00	26.94	49.10	59.15	17.03	ok	ok	ok
			Nmin	0.00	52.77	49.10	59.15	30.03	ok	ok	ok
			Mmax	0.00	26.94	49.10	59.15	17.03	ok	ok	ok
			Mmin	0.00	52.77	49.10	59.15	30.03	ok	ok	ok
			Qmax	0.00	26.94	49.10	59.15	17.03	ok	ok	ok
			Qmin	0.00	46.19	49.10	59.15	31.34	ok	ok	ok
		17	Nmax	0.00	19.41	49.10	59.15	16.63	ok	ok	ok
			Nmin	0.00	38.90	49.10	59.15	30.31	ok	ok	ok
			Mmax	0.00	19.41	49.10	59.15	16.63	ok	ok	ok
			Mmin	0.00	38.90	49.10	59.15	30.31	ok	ok	ok
			Qmax	0.00	19.41	49.10	59.15	16.63	ok	ok	ok
			Qmin	0.00	38.90	49.10	59.15	30.31	ok	ok	ok
	15	17	Nmax	0.00	19.41	49.10	59.15	16.64	ok	ok	ok
			Nmin	0.00	38.90	49.10	59.15	30.33	ok	ok	ok
			Mmax	0.00	19.41	49.10	59.15	16.64	ok	ok	ok
			Mmin	0.00	38.90	49.10	59.15	30.33	ok	ok	ok
			Qmax	0.00	19.41	49.10	59.15	16.64	ok	ok	ok
			Qmin	0.00	38.90	49.10	59.15	30.33	ok	ok	ok
		19	Nmax	0.39	12.64	49.10	59.15	17.06	ok	ok	ok
			Nmin	0.39	26.25	49.10	59.15	31.19	ok	ok	ok
			Mmax	0.39	12.64	49.10	59.15	17.06	ok	ok	ok
			Mmin	0.39	26.25	49.10	59.15	31.19	ok	ok	ok
			Qmax	0.39	12.64	49.10	59.15	17.06	ok	ok	ok
			Qmin	0.39	26.25	49.10	59.15	31.19	ok	ok	ok
	16	19	Nmax	0.39	12.64	49.10	59.15	17.03	ok	ok	ok
			Nmin	0.39	26.25	49.10	59.15	31.15	ok	ok	ok
			Mmax	0.39	12.64	49.10	59.15	17.03	ok	ok	ok
			Mmin	0.39	26.25	49.10	59.15	31.15	ok	ok	ok
			Qmax	0.39	12.64	49.10	59.15	17.03	ok	ok	ok
			Qmin	0.39	26.25	49.10	59.15	31.15	ok	ok	ok
		21	Nmax	4.85	6.58	49.10	59.15	14.85	ok	ok	ok
			Nmin	4.85	14.68	49.10	59.15	31.63	ok	ok	ok
			Mmax	7.04	6.58	49.10	59.15	26.43	ok	ok	ok
			Mmin	4.85	14.68	49.10	59.15	31.63	ok	ok	ok
			Qmax	4.85	6.58	49.10	59.15	14.85	ok	ok	ok
			Qmin	4.85	14.68	49.10	59.15	31.63	ok	ok	ok
	17	21	Nmax	4.85	6.58	49.10	59.15	14.85	ok	ok	ok
			Nmin	4.85	14.68	49.10	59.15	31.64	ok	ok	ok
			Mmax	7.04	6.58	49.10	59.15	26.44	ok	ok	ok
			Mmin	4.85	14.68	49.10	59.15	31.64	ok	ok	ok

Siegrist y Moreno S.L.

LAV SANTA COLOMA DE CERVELLÓ
P.I. RIERA DE CAN JULIA
ENVOLVENTE DE MODELOS DE MUELLES

FECHA: 28/02/2006

RESUMEN DE ARMADO SECCION TIPO MARCO: armado losa superior

fcd(t/m2)= 1666.67
fyd(t/m2)= 4.43 ANCHO UNIDAD= 1.000

				FLEXION			CORTANTE	COMPROBACION		
BARRA	NUDO	HIPÓT.	As,inf(cm2/m)	As,sup(cm2/m)	Ainf,dis	Asup,disp	A90	Ainf	Asup	A90
		Qmax	4.85	6.58	49.10	59.15	14.85	ok	ok	ok
		Qmin	4.85	14.68	49.10	59.15	31.64	ok	ok	ok
	23	Nmax	10.10	1.21	49.10	10.05	14.54	ok	ok	ok
		Nmin	14.05	4.04	49.10	10.05	30.30	ok	ok	ok
		Mmax	15.97	1.21	49.10	10.05	21.55	ok	ok	ok
		Mmin	10.10	4.04	49.10	10.05	30.30	ok	ok	ok
		Qmax	10.10	1.21	49.10	10.05	14.54	ok	ok	ok
		Qmin	14.05	4.04	49.10	10.05	30.30	ok	ok	ok
18	23	Nmax	10.10	1.21	49.10	10.05	14.52	ok	ok	ok
		Nmin	14.05	4.04	49.10	10.05	30.28	ok	ok	ok
		Mmax	15.96	1.21	49.10	10.05	21.55	ok	ok	ok
		Mmin	10.10	4.04	49.10	10.05	30.28	ok	ok	ok
		Qmax	10.10	1.21	49.10	10.05	14.52	ok	ok	ok
		Qmin	14.05	4.04	49.10	10.05	30.28	ok	ok	ok
	25	Nmax	19.34	0.00	98.20	10.05	7.98	ok	ok	ok
		Nmin	33.75	0.00	98.20	10.05	20.56	ok	ok	ok
		Mmax	33.75	0.00	98.20	10.05	20.56	ok	ok	ok
		Mmin	19.34	0.00	98.20	10.05	7.98	ok	ok	ok
		Qmax	19.34	0.00	98.20	10.05	7.98	ok	ok	ok
		Qmin	33.75	0.00	98.20	10.05	20.56	ok	ok	ok
19	25	Nmax	19.34	0.00	98.20	10.05	7.98	ok	ok	ok
		Nmin	33.75	0.00	98.20	10.05	20.55	ok	ok	ok
		Mmax	33.75	0.00	98.20	10.05	20.55	ok	ok	ok
		Mmin	19.34	0.00	98.20	10.05	7.98	ok	ok	ok
		Qmax	19.34	0.00	98.20	10.05	7.98	ok	ok	ok
		Qmin	33.75	0.00	98.20	10.05	20.55	ok	ok	ok
	27	Nmax	26.69	0.00	98.20	10.05	3.04	ok	ok	ok
		Nmin	50.35	0.00	98.20	10.05	11.61	ok	ok	ok
		Mmax	50.35	0.00	98.20	10.05	11.61	ok	ok	ok
		Mmin	26.69	0.00	98.20	10.05	3.04	ok	ok	ok
		Qmax	26.69	0.00	98.20	10.05	3.04	ok	ok	ok
		Qmin	50.35	0.00	98.20	10.05	11.61	ok	ok	ok
20	27	Nmax	26.70	0.00	98.20	10.05	3.04	ok	ok	ok
		Nmin	50.35	0.00	98.20	10.05	11.60	ok	ok	ok
		Mmax	50.35	0.00	98.20	10.05	11.60	ok	ok	ok
		Mmin	26.70	0.00	98.20	10.05	3.04	ok	ok	ok
		Qmax	26.70	0.00	98.20	10.05	3.04	ok	ok	ok
		Qmin	50.35	0.00	98.20	10.05	11.60	ok	ok	ok
	29	Nmax	32.36	0.00	98.20	10.05	No necesita	ok	ok	ok
		Nmin	63.39	0.00	98.20	10.05	3.57	ok	ok	ok
		Mmax	63.39	0.00	98.20	10.05	3.57	ok	ok	ok
		Mmin	32.36	0.00	98.20	10.05	No necesita	ok	ok	ok
		Qmax	32.36	0.00	98.20	10.05	No necesita	ok	ok	ok
		Qmin	63.39	0.00	98.20	10.05	3.57	ok	ok	ok
21	29	Nmax	32.36	0.00	98.20	10.05	No necesita	ok	ok	ok
		Nmin	63.39	0.00	98.20	10.05	3.56	ok	ok	ok
		Mmax	63.39	0.00	98.20	10.05	3.56	ok	ok	ok
		Mmin	32.36	0.00	98.20	10.05	No necesita	ok	ok	ok
		Qmax	32.36	0.00	98.20	10.05	No necesita	ok	ok	ok
		Qmin	63.39	0.00	98.20	10.05	3.56	ok	ok	ok
	31	Nmax	35.99	0.00	98.20	10.05	No necesita	ok	ok	ok
		Nmin	71.95	0.00	98.20	10.05	No necesita	ok	ok	ok

Siegrist y Moreno S.L.

LAV SANTA COLOMA DE CERVELLÓ
P.I. RIERA DE CAN JULIA
ENVOLVENTE DE MODELOS DE MUELLES

FECHA: 28/02/2006

RESUMEN DE ARMADO SECCION TIPO MARCO: armado losa superior

fcd(t/m2)= 1666.67
fyd(t/m2)= 4.43 ANCHO UNIDAD= 1.000

				FLEXION			CORTANTE	COMPROBACION		
BARRA	NUDO	HIPÓT.	As,inf(cm2/m)	As,sup(cm2/m)	Ainf,dis	Asup,disp	A90	Ainf	Asup	A90
		Mmax	71.95	0.00	98.20	10.05	No necesita	ok	ok	ok
		Mmin	35.99	0.00	98.20	10.05	No necesita	ok	ok	ok
		Qmax	35.99	0.00	98.20	10.05	No necesita	ok	ok	ok
		Qmin	71.95	0.00	98.20	10.05	No necesita	ok	ok	ok
22	31	Nmax	35.99	0.00	98.20	10.05	No necesita	ok	ok	ok
		Nmin	71.95	0.00	98.20	10.05	No necesita	ok	ok	ok
		Mmax	71.95	0.00	98.20	10.05	No necesita	ok	ok	ok
		Mmin	35.99	0.00	98.20	10.05	No necesita	ok	ok	ok
		Qmax	35.99	0.00	98.20	10.05	No necesita	ok	ok	ok
		Qmin	71.95	0.00	98.20	10.05	No necesita	ok	ok	ok
	33	Nmax	37.28	0.00	98.20	10.05	No necesita	ok	ok	ok
		Nmin	74.97	0.00	98.20	10.05	No necesita	ok	ok	ok
		Mmax	74.97	0.00	98.20	10.05	No necesita	ok	ok	ok
		Mmin	37.28	0.00	98.20	10.05	No necesita	ok	ok	ok
		Qmax	73.02	0.00	98.20	10.05	No necesita	ok	ok	ok
		Qmin	65.00	0.00	98.20	10.05	No necesita	ok	ok	ok
23	33	Nmax	37.28	0.00	98.20	10.05	No necesita	ok	ok	ok
		Nmin	74.97	0.00	98.20	10.05	No necesita	ok	ok	ok
		Mmax	74.97	0.00	98.20	10.05	No necesita	ok	ok	ok
		Mmin	37.28	0.00	98.20	10.05	No necesita	ok	ok	ok
		Qmax	73.02	0.00	98.20	10.05	No necesita	ok	ok	ok
		Qmin	65.00	0.00	98.20	10.05	No necesita	ok	ok	ok
	35	Nmax	36.19	0.00	98.20	10.05	No necesita	ok	ok	ok
		Nmin	72.19	0.00	98.20	10.05	No necesita	ok	ok	ok
		Mmax	72.19	0.00	98.20	10.05	No necesita	ok	ok	ok
		Mmin	36.19	0.00	98.20	10.05	No necesita	ok	ok	ok
		Qmax	72.19	0.00	98.20	10.05	No necesita	ok	ok	ok
		Qmin	36.19	0.00	98.20	10.05	No necesita	ok	ok	ok
24	35	Nmax	36.19	0.00	98.20	10.05	No necesita	ok	ok	ok
		Nmin	72.19	0.00	98.20	10.05	No necesita	ok	ok	ok
		Mmax	72.19	0.00	98.20	10.05	No necesita	ok	ok	ok
		Mmin	36.19	0.00	98.20	10.05	No necesita	ok	ok	ok
		Qmax	72.19	0.00	98.20	10.05	No necesita	ok	ok	ok
		Qmin	36.19	0.00	98.20	10.05	No necesita	ok	ok	ok
	37	Nmax	32.76	0.00	98.20	10.05	No necesita	ok	ok	ok
		Nmin	63.87	0.00	98.20	10.05	3.62	ok	ok	ok
		Mmax	63.87	0.00	98.20	10.05	3.62	ok	ok	ok
		Mmin	32.76	0.00	98.20	10.05	No necesita	ok	ok	ok
		Qmax	63.87	0.00	98.20	10.05	3.62	ok	ok	ok
		Qmin	32.76	0.00	98.20	10.05	No necesita	ok	ok	ok
25	37	Nmax	32.76	0.00	98.20	10.05	No necesita	ok	ok	ok
		Nmin	63.87	0.00	98.20	10.05	3.62	ok	ok	ok
		Mmax	63.87	0.00	98.20	10.05	3.62	ok	ok	ok
		Mmin	32.76	0.00	98.20	10.05	No necesita	ok	ok	ok
		Qmax	63.87	0.00	98.20	10.05	3.62	ok	ok	ok
		Qmin	32.76	0.00	98.20	10.05	No necesita	ok	ok	ok
	39	Nmax	27.10	0.00	98.20	10.05	3.04	ok	ok	ok
		Nmin	50.76	0.00	98.20	10.05	11.66	ok	ok	ok
		Mmax	50.76	0.00	98.20	10.05	11.66	ok	ok	ok
		Mmin	27.10	0.00	98.20	10.05	3.04	ok	ok	ok
		Qmax	50.76	0.00	98.20	10.05	11.66	ok	ok	ok
		Qmin	27.10	0.00	98.20	10.05	3.04	ok	ok	ok

Siegrist y Moreno S.L.

LAV SANTA COLOMA DE CERVELLÓ
P.I. RIERA DE CAN JULIA
ENVOLVENTE DE MODELOS DE MUELLES

FECHA: 28/02/2006

RESUMEN DE ARMADO SECCION TIPO MARCO: armado losa superior

fcd(t/m2)= 1666.67
fyd(t/m2)= 4.43 ANCHO UNIDAD= 1.000

				FLEXION			CORTANTE	COMPROBACION		
BARRA	NUDO	HIPÓT.	As,inf(cm2/m)	As,sup(cm2/m)	Ainf,dis	Asup,disp	A90	Ainf	Asup	A90
26	39	Nmax	27.10	0.00	98.20	10.05	3.04	ok	ok	ok
		Nmin	50.76	0.00	98.20	10.05	11.66	ok	ok	ok
		Mmax	50.76	0.00	98.20	10.05	11.66	ok	ok	ok
		Mmin	27.10	0.00	98.20	10.05	3.04	ok	ok	ok
		Qmax	50.76	0.00	98.20	10.05	11.66	ok	ok	ok
		Qmin	27.10	0.00	98.20	10.05	3.04	ok	ok	ok
	41	Nmax	19.39	0.00	98.20	10.05	7.97	ok	ok	ok
		Nmin	33.77	0.00	98.20	10.05	20.60	ok	ok	ok
		Mmax	33.77	0.00	98.20	10.05	20.60	ok	ok	ok
		Mmin	19.39	0.00	98.20	10.05	7.97	ok	ok	ok
		Qmax	33.77	0.00	98.20	10.05	20.60	ok	ok	ok
		Qmin	19.39	0.00	98.20	10.05	7.97	ok	ok	ok
27	41	Nmax	19.39	0.00	98.20	10.05	7.97	ok	ok	ok
		Nmin	33.77	0.00	98.20	10.05	20.58	ok	ok	ok
		Mmax	33.77	0.00	98.20	10.05	20.58	ok	ok	ok
		Mmin	19.39	0.00	98.20	10.05	7.97	ok	ok	ok
		Qmax	33.77	0.00	98.20	10.05	20.58	ok	ok	ok
		Qmin	19.39	0.00	98.20	10.05	7.97	ok	ok	ok
	43	Nmax	9.81	1.20	49.10	10.05	14.53	ok	ok	ok
		Nmin	13.73	4.07	49.10	10.05	30.24	ok	ok	ok
		Mmax	15.66	1.20	49.10	10.05	22.15	ok	ok	ok
		Mmin	9.81	4.07	49.10	10.05	30.24	ok	ok	ok
		Qmax	13.73	4.07	49.10	10.05	30.24	ok	ok	ok
		Qmin	9.81	1.20	49.10	10.05	14.53	ok	ok	ok
28	43	Nmax	9.81	1.20	49.10	10.05	14.52	ok	ok	ok
		Nmin	13.73	4.07	49.10	10.05	30.22	ok	ok	ok
		Mmax	15.66	1.20	49.10	10.05	22.12	ok	ok	ok
		Mmin	9.81	4.07	49.10	10.05	30.22	ok	ok	ok
		Qmax	13.73	4.07	49.10	10.05	30.22	ok	ok	ok
		Qmin	9.81	1.20	49.10	10.05	14.52	ok	ok	ok
	45	Nmax	4.41	6.57	49.10	59.15	15.57	ok	ok	ok
		Nmin	4.41	14.71	49.10	59.15	32.48	ok	ok	ok
		Mmax	6.58	6.57	49.10	59.15	27.41	ok	ok	ok
		Mmin	4.41	14.71	49.10	59.15	32.48	ok	ok	ok
		Qmax	4.41	14.71	49.10	59.15	32.48	ok	ok	ok
		Qmin	4.41	6.57	49.10	59.15	15.57	ok	ok	ok
29	45	Nmax	4.41	6.57	49.10	59.15	15.60	ok	ok	ok
		Nmin	4.41	14.71	49.10	59.15	32.51	ok	ok	ok
		Mmax	6.58	6.57	49.10	59.15	27.43	ok	ok	ok
		Mmin	4.41	14.71	49.10	59.15	32.51	ok	ok	ok
		Qmax	4.41	14.71	49.10	59.15	32.51	ok	ok	ok
		Qmin	4.41	6.57	49.10	59.15	15.60	ok	ok	ok
	47	Nmax	0.00	12.61	49.10	59.15	17.42	ok	ok	ok
		Nmin	0.00	26.27	49.10	59.15	31.09	ok	ok	ok
		Mmax	0.00	12.61	49.10	59.15	17.42	ok	ok	ok
		Mmin	0.00	26.27	49.10	59.15	31.09	ok	ok	ok
		Qmax	0.00	26.27	49.10	59.15	31.09	ok	ok	ok
		Qmin	0.00	12.61	49.10	59.15	17.42	ok	ok	ok
30	47	Nmax	0.00	12.61	49.10	59.15	17.40	ok	ok	ok
		Nmin	0.00	26.27	49.10	59.15	31.09	ok	ok	ok
		Mmax	0.00	12.61	49.10	59.15	17.40	ok	ok	ok
		Mmin	0.00	26.27	49.10	59.15	31.09	ok	ok	ok

Siegrist y Moreno S.L.

LAV SANTA COLOMA DE CERVELLÓ
P.I. RIERA DE CAN JULIA
ENVOLVENTE DE MODELOS DE MUELLES

FECHA: 28/02/2006

RESUMEN DE ARMADO SECCION TIPO MARCO: armado losa superior

fcd(t/m2)= 1666.67
fyd(t/m2)= 4.43 ANCHO UNIDAD= 1.000

				FLEXION			CORTANTE	COMPROBACION		
BARRA	NUDO	HIPÓT.	As,inf(cm2/m)	As,sup(cm2/m)	Ainf,dis	Asup,disp	A90	Ainf	Asup	A90
		Qmax	0.00	26.27	49.10	59.15	31.09	ok	ok	ok
		Qmin	0.00	12.61	49.10	59.15	17.40	ok	ok	ok
	49	Nmax	0.00	19.37	49.10	59.15	16.57	ok	ok	ok
		Nmin	0.00	38.90	49.10	59.15	30.38	ok	ok	ok
		Mmax	0.00	19.37	49.10	59.15	16.57	ok	ok	ok
		Mmin	0.00	38.90	49.10	59.15	30.38	ok	ok	ok
		Qmax	0.00	38.90	49.10	59.15	30.38	ok	ok	ok
		Qmin	0.00	19.37	49.10	59.15	16.57	ok	ok	ok
31	49	Nmax	0.00	19.37	49.10	59.15	16.63	ok	ok	ok
		Nmin	0.00	38.90	49.10	59.15	30.41	ok	ok	ok
		Mmax	0.00	19.37	49.10	59.15	16.63	ok	ok	ok
		Mmin	0.00	38.90	49.10	59.15	30.41	ok	ok	ok
		Qmax	0.00	38.90	49.10	59.15	30.41	ok	ok	ok
		Qmin	0.00	19.37	49.10	59.15	16.63	ok	ok	ok
	51	Nmax	0.00	26.90	49.10	59.15	17.04	ok	ok	ok
		Nmin	0.00	52.79	49.10	59.15	30.21	ok	ok	ok
		Mmax	0.00	26.90	49.10	59.15	17.04	ok	ok	ok
		Mmin	0.00	52.79	49.10	59.15	30.21	ok	ok	ok
		Qmax	0.00	46.15	49.10	59.15	31.51	ok	ok	ok
		Qmin	0.00	26.90	49.10	59.15	17.04	ok	ok	ok
32	51	Nmax	0.00	26.90	49.10	59.15	17.03	ok	ok	ok
		Nmin	0.00	52.79	49.10	59.15	30.21	ok	ok	ok
		Mmax	0.00	26.90	49.10	59.15	17.03	ok	ok	ok
		Mmin	0.00	52.79	49.10	59.15	30.21	ok	ok	ok
		Qmax	0.00	46.15	49.10	59.15	31.49	ok	ok	ok
		Qmin	0.00	26.90	49.10	59.15	17.03	ok	ok	ok
	64	Nmax	0.00	35.32	49.10	59.15	17.78	ok	ok	ok
		Nmin	0.00	68.29	49.10	59.15	30.21	ok	-9.14	ok
		Mmax	0.00	35.32	49.10	59.15	17.78	ok	ok	ok
		Mmin	0.00	68.29	49.10	59.15	30.21	ok	-9.14	ok
		Qmax	0.00	61.70	49.10	59.15	33.09	ok	-2.55	ok
		Qmin	0.00	35.32	49.10	59.15	17.78	ok	ok	ok

Siegrist y Moreno S.L.

LAV SANTA COLOMA DE CERVELLÓ
P.I. RIERA DE CAN JULIA
ENVOLVENTE DE MODELOS DE MUELLES

FECHA: 28/02/2006

RESUMEN DE ARMADO SECCION TIPO MARCO: armado de hastiales

fcd(t/m2)= 1666.67
fyd(t/m2)= 4.43 ANCHO UNIDAD= 1.000

					FLEXION			CORTANTE	COMPROBACION		
	BARRA	NUDO	HIPÓT.	As,int(cm2/m)	As,ext(cm2/m)	Aint,dis	Axt,disp	A90	Aint	Aext	A90
*	1	1	Nmax	0.00	45.00	10.05	59.15	31.67	ok	ok	ok
			Nmin	0.00	76.77	10.05	59.15	54.43	ok	-17.62	
			Mmax	0.00	45.00	10.05	59.15	31.67	ok	ok	
			Mmin	0.00	76.77	10.05	59.15	54.43	ok	-17.62	
			Qmax	0.00	47.07	10.05	59.15	31.67	ok	ok	
			Qmin	0.00	76.77	10.05	59.15	54.43	ok	-17.62	
		2	Nmax	0.00	33.46	10.05	59.15	33.31	ok	ok	
			Nmin	0.00	55.12	10.05	59.15	56.58	ok	ok	
			Mmax	0.00	33.46	10.05	59.15	33.31	ok	ok	
			Mmin	0.00	55.12	10.05	59.15	56.58	ok	ok	
			Qmax	0.00	47.54	10.05	59.15	33.31	ok	ok	
			Qmin	0.00	55.12	10.05	59.15	56.58	ok	ok	
	2	2	Nmax	0.00	33.46	10.05	59.15	25.59	ok	ok	
			Nmin	0.00	55.12	10.05	59.15	44.24	ok	ok	
			Mmax	0.00	33.46	10.05	59.15	25.59	ok	ok	
			Mmin	0.00	55.12	10.05	59.15	44.24	ok	ok	
			Qmax	0.00	47.54	10.05	59.15	25.59	ok	ok	
			Qmin	0.00	55.12	10.05	59.15	44.24	ok	ok	
		3	Nmax	0.00	30.51	10.05	59.15	27.35	ok	ok	
			Nmin	0.00	50.63	10.05	59.15	46.43	ok	ok	
			Mmax	0.00	30.51	10.05	59.15	27.35	ok	ok	
			Mmin	0.00	50.63	10.05	59.15	46.43	ok	ok	
			Qmax	0.00	48.06	10.05	59.15	27.35	ok	ok	
			Qmin	0.00	48.36	10.05	59.15	46.43	ok	ok	
	3	3	Nmax	0.00	30.51	10.05	59.15	19.64	ok	ok	
			Nmin	0.00	50.63	10.05	59.15	34.11	ok	ok	
			Mmax	0.00	30.51	10.05	59.15	19.64	ok	ok	
			Mmin	0.00	50.63	10.05	59.15	34.11	ok	ok	
			Qmax	0.00	48.05	10.05	59.15	19.64	ok	ok	
			Qmin	0.00	48.36	10.05	59.15	34.11	ok	ok	
		4	Nmax	0.00	30.15	10.05	59.15	21.76	ok	ok	
			Nmin	0.00	50.27	10.05	59.15	36.69	ok	ok	
			Mmax	0.00	30.15	10.05	59.15	21.76	ok	ok	
			Mmin	0.00	50.27	10.05	59.15	36.69	ok	ok	
			Qmax	0.00	48.62	10.05	59.15	21.76	ok	ok	
			Qmin	0.00	43.12	10.05	59.15	36.69	ok	ok	
	4	4	Nmax	0.00	30.15	10.05	59.15	14.02	ok	ok	
			Nmin	0.00	50.26	10.05	59.15	24.30	ok	ok	
			Mmax	0.00	30.15	10.05	59.15	14.02	ok	ok	
			Mmin	0.00	50.26	10.05	59.15	24.30	ok	ok	
			Qmax	0.00	48.62	10.05	59.15	14.02	ok	ok	
			Qmin	0.00	43.12	10.05	59.15	24.30	ok	ok	
		5	Nmax	0.33	29.87	10.05	59.15	17.66	ok	ok	
			Nmin	1.07	50.00	10.05	59.15	28.30	ok	ok	
			Mmax	2.55	29.87	10.05	59.15	25.22	ok	ok	
			Mmin	0.33	50.00	10.05	59.15	17.66	ok	ok	
			Qmax	0.33	49.28	10.05	59.15	17.66	ok	ok	
			Qmin	1.07	39.47	10.05	59.15	28.30	ok	ok	
	5	5	Nmax	0.34	29.87	10.05	59.15	9.91	ok	ok	
			Nmin	1.09	50.00	10.05	59.15	16.14	ok	ok	
			Mmax	2.54	29.87	10.05	59.15	12.82	ok	ok	
			Mmin	0.34	50.00	10.05	59.15	9.91	ok	ok	

Siegrist y Moreno S.L.

LAV SANTA COLOMA DE CERVELLÓ
P.I. RIERA DE CAN JULIA
ENVOLVENTE DE MODELOS DE MUELLES

FECHA: 28/02/2006

RESUMEN DE ARMADO SECCION TIPO MARCO: armado de hastiales

fcd(t/m2)= 1666.67
fyd(t/m2)= 4.43
ANCHO UNIDAD= 1.000

BARRA	NUDO	HIPÓT.	As,int(cm2/m)	FLEXION As,ext(cm2/m)	Aint,dis	Axt,disp	CORTANTE A90	COMPROBACION Aint	Aext	A90
		Qmax	0.34	49.28	10.05	59.15	9.91	ok	ok	
		Qmin	1.09	39.47	10.05	59.15	16.14	ok	ok	
	6	Nmax	4.28	29.66	10.05	59.15	7.01	ok	ok	
		Nmin	7.17	49.83	10.05	59.15	12.41	ok	ok	
		Mmax	8.08	29.66	10.05	59.15	10.38	ok	ok	
		Mmin	4.28	50.04	10.05	59.15	7.01	ok	ok	
		Qmax	4.28	50.04	10.05	59.15	7.01	ok	ok	
		Qmin	7.17	37.35	10.05	59.15	12.41	ok	ok	
6	6	Nmax	4.29	29.66	10.05	59.15	No necesita	ok	ok	
		Nmin	7.20	49.83	10.05	59.15	No necesita	ok	ok	
		Mmax	8.08	29.66	10.05	59.15	No necesita	ok	ok	
		Mmin	4.29	50.04	10.05	59.15	No necesita	ok	ok	
		Qmax	4.29	50.04	10.05	59.15	No necesita	ok	ok	
		Qmin	7.20	37.35	10.05	59.15	No necesita	ok	ok	
	7	Nmax	5.75	29.53	10.05	59.15	No necesita	ok	ok	
		Nmin	9.28	49.78	10.05	59.15	No necesita	ok	ok	
		Mmax	9.49	29.53	10.05	59.15	No necesita	ok	ok	
		Mmin	5.75	50.92	10.05	59.15	No necesita	ok	ok	
		Qmax	5.75	50.92	10.05	59.15	No necesita	ok	ok	
		Qmin	9.28	36.69	10.05	59.15	No necesita	ok	ok	
7	7	Nmax	5.75	29.53	10.05	59.15	No necesita	ok	ok	
		Nmin	9.29	49.78	10.05	59.15	No necesita	ok	ok	
		Mmax	9.49	29.53	10.05	59.15	1.58	ok	ok	
		Mmin	5.75	50.92	10.05	59.15	No necesita	ok	ok	
		Qmax	9.49	50.92	10.05	59.15	1.58	ok	ok	
		Qmin	5.75	29.53	10.05	59.15	No necesita	ok	ok	
	8	Nmax	4.67	29.43	10.05	59.15	No necesita	ok	ok	
		Nmin	7.25	49.81	10.05	59.15	No necesita	ok	ok	
		Mmax	7.25	29.43	10.05	59.15	No necesita	ok	ok	
		Mmin	4.67	51.88	10.05	59.15	No necesita	ok	ok	
		Qmax	6.69	51.88	10.05	59.15	2.37	ok	ok	
		Qmin	4.67	29.43	10.05	59.15	No necesita	ok	ok	
8	8	Nmax	4.68	29.43	10.05	59.15	5.62	ok	ok	
		Nmin	7.27	49.81	10.05	59.15	12.24	ok	ok	
		Mmax	7.27	29.43	10.05	59.15	12.24	ok	ok	
		Mmin	4.68	51.88	10.05	59.15	5.62	ok	ok	
		Qmax	6.70	51.88	10.05	59.15	14.97	ok	ok	
		Qmin	4.68	29.43	10.05	59.15	5.62	ok	ok	
	9	Nmax	1.10	29.36	10.05	59.15	7.94	ok	ok	
		Nmin	1.22	49.90	10.05	59.15	15.31	ok	ok	
		Mmax	1.22	29.36	10.05	59.15	15.02	ok	ok	
		Mmin	1.10	52.92	10.05	59.15	17.70	ok	ok	
		Qmax	1.10	52.92	10.05	59.15	17.70	ok	ok	
		Qmin	1.10	29.36	10.05	59.15	7.94	ok	ok	
9	9	Nmax	1.10	29.36	10.05	59.15	15.51	ok	ok	
		Nmin	1.22	49.90	10.05	59.15	27.41	ok	ok	
		Mmax	1.22	29.36	10.05	59.15	27.28	ok	ok	
		Mmin	1.10	52.92	10.05	59.15	30.24	ok	ok	
		Qmax	1.10	52.92	10.05	59.15	30.24	ok	ok	
		Qmin	1.10	29.36	10.05	59.15	15.51	ok	ok	
	10	Nmax	0.00	29.30	10.05	59.15	13.21	ok	ok	
		Nmin	0.00	50.00	10.05	59.15	24.08	ok	ok	

Siegrist y Moreno S.L.

LAV SANTA COLOMA DE CERVELLÓ
P.I. RIERA DE CAN JULIA
ENVOLVENTE DE MODELOS DE MUELLES

FECHA: 28/02/2006

RESUMEN DE ARMADO SECCION TIPO MARCO: armado de hastiales

fcd(t/m2)= 1666.67
fyd(t/m2)= 4.43
ANCHO UNIDAD= 1.000

	BARRA	NUDO	HIPÓT.	As,int(cm2/m)	FLEXION As,ext(cm2/m)	Aint,dis	Axt,disp	CORTANTE A90	COMPROBACION Aint	Aext	A90
			Mmax	0.00	29.30	10.05	59.15	13.21	ok	ok	
			Mmin	0.00	53.99	10.05	59.15	26.38	ok	ok	
			Qmax	0.00	53.99	10.05	59.15	26.38	ok	ok	
			Qmin	0.00	29.30	10.05	59.15	13.21	ok	ok	
	10	10	Nmax	0.00	29.30	10.05	59.15	20.97	ok	ok	
			Nmin	0.00	50.00	10.05	59.15	36.50	ok	ok	
			Mmax	0.00	29.30	10.05	59.15	20.97	ok	ok	
			Mmin	0.00	53.99	10.05	59.15	39.02	ok	ok	
			Qmax	0.00	53.99	10.05	59.15	39.02	ok	ok	
			Qmin	0.00	29.30	10.05	59.15	20.97	ok	ok	
		11	Nmax	0.00	29.17	10.05	59.15	18.74	ok	ok	
			Nmin	0.00	50.06	10.05	59.15	33.91	ok	ok	
			Mmax	0.00	29.17	10.05	59.15	18.74	ok	ok	
			Mmin	0.00	55.00	10.05	59.15	36.52	ok	ok	
			Qmax	0.00	55.00	10.05	59.15	36.52	ok	ok	
			Qmin	0.00	29.17	10.05	59.15	18.74	ok	ok	
	11	11	Nmax	0.00	29.17	10.05	59.15	26.42	ok	ok	
			Nmin	0.00	50.06	10.05	59.15	46.19	ok	ok	
			Mmax	0.00	29.17	10.05	59.15	26.42	ok	ok	
			Mmin	0.00	55.00	10.05	59.15	49.11	ok	ok	
			Qmax	0.00	55.00	10.05	59.15	49.11	ok	ok	
			Qmin	0.00	29.17	10.05	59.15	26.42	ok	ok	
		12	Nmax	0.00	28.95	10.05	59.15	24.63	ok	ok	
			Nmin	0.00	49.99	10.05	59.15	44.00	ok	ok	
			Mmax	0.00	28.95	10.05	59.15	24.63	ok	ok	
			Mmin	0.00	55.91	10.05	59.15	46.92	ok	ok	
			Qmax	0.00	55.91	10.05	59.15	46.92	ok	ok	
			Qmin	0.00	28.95	10.05	59.15	24.63	ok	ok	
	12	12	Nmax	0.00	28.95	10.05	59.15	32.32	ok	ok	
			Nmin	0.00	49.99	10.05	59.15	56.35	ok	ok	
			Mmax	0.00	28.95	10.05	59.15	32.32	ok	ok	
			Mmin	0.00	55.91	10.05	59.15	59.43	ok	ok	
			Qmax	0.00	55.91	10.05	59.15	59.43	ok	ok	
			Qmin	0.00	28.95	10.05	59.15	32.32	ok	ok	
		13	Nmax	0.00	42.05	10.05	59.15	30.67	ok	ok	
			Nmin	0.00	75.98	10.05	59.15	54.20	ok	-16.83	
			Mmax	0.00	42.05	10.05	59.15	30.67	ok	ok	
			Mmin	0.00	84.94	10.05	59.15	57.22	ok	-25.79	
			Qmax	0.00	84.94	10.05	59.15	57.22	ok	-25.79	
			Qmin	0.00	42.05	10.05	59.15	30.67	ok	ok	
*	53	52	Nmax	0.00	45.08	10.05	59.15	31.70	ok	ok	
			Nmin	0.00	76.89	10.05	59.15	54.51	ok	-17.74	
			Mmax	0.00	76.89	10.05	59.15	54.51	ok	-17.74	
			Mmin	0.00	45.08	10.05	59.15	31.70	ok	ok	
			Qmax	0.00	76.89	10.05	59.15	54.51	ok	-17.74	
			Qmin	0.00	48.10	10.05	59.15	31.70	ok	ok	
		53	Nmax	0.00	31.97	10.05	59.15	33.35	ok	ok	
			Nmin	0.00	52.15	10.05	59.15	56.67	ok	ok	
			Mmax	0.00	52.15	10.05	59.15	56.67	ok	ok	
			Mmin	0.00	31.97	10.05	59.15	33.35	ok	ok	
			Qmax	0.00	45.80	10.05	59.15	56.67	ok	ok	
			Qmin	0.00	48.60	10.05	59.15	33.35	ok	ok	

Siegrist y Moreno S.L.

LAV SANTA COLOMA DE CERVELLÓ
P.I. RIERA DE CAN JULIA
ENVOLVENTE DE MODELOS DE MUELLES

FECHA: 28/02/2006

RESUMEN DE ARMADO SECCION TIPO MARCO: armado de hastiales

fcd(t/m2)= 1666.67
fyd(t/m2)= 4.43
ANCHO UNIDAD= 1.000

				FLEXION			CORTANTE	COMPROBACION		
BARRA	NUDO	HIPÓT.	As,int(cm2/m)	As,ext(cm2/m)	Aint,dis	Axt,disp	A90	Aint	Aext	A90
54	53	Nmax	0.00	31.97	10.05	59.15	25.61	ok	ok	
		Nmin	0.00	52.15	10.05	59.15	44.27	ok	ok	
		Mmax	0.00	52.15	10.05	59.15	44.27	ok	ok	
		Mmin	0.00	31.97	10.05	59.15	25.61	ok	ok	
		Qmax	0.00	45.80	10.05	59.15	44.27	ok	ok	
		Qmin	0.00	48.60	10.05	59.15	25.61	ok	ok	
	54	Nmax	0.00	31.49	10.05	59.15	27.37	ok	ok	
		Nmin	0.00	51.73	10.05	59.15	46.46	ok	ok	
		Mmax	0.00	51.73	10.05	59.15	46.46	ok	ok	
		Mmin	0.00	31.49	10.05	59.15	27.37	ok	ok	
		Qmax	0.00	31.49	10.05	59.15	46.46	ok	ok	
		Qmin	0.00	49.12	10.05	59.15	27.37	ok	ok	
55	54	Nmax	0.00	31.49	10.05	59.15	19.66	ok	ok	
		Nmin	0.00	51.73	10.05	59.15	34.14	ok	ok	
		Mmax	0.00	51.73	10.05	59.15	34.14	ok	ok	
		Mmin	0.00	31.49	10.05	59.15	19.66	ok	ok	
		Qmax	0.00	31.49	10.05	59.15	34.14	ok	ok	
		Qmin	0.00	49.12	10.05	59.15	19.66	ok	ok	
	55	Nmax	0.00	31.01	10.05	59.15	21.78	ok	ok	
		Nmin	0.00	51.30	10.05	59.15	36.73	ok	ok	
		Mmax	0.00	51.30	10.05	59.15	36.73	ok	ok	
		Mmin	0.00	31.01	10.05	59.15	21.78	ok	ok	
		Qmax	0.00	31.01	10.05	59.15	36.73	ok	ok	
		Qmin	0.00	49.64	10.05	59.15	21.78	ok	ok	
56	55	Nmax	0.00	31.01	10.05	59.15	14.10	ok	ok	
		Nmin	0.00	51.30	10.05	59.15	24.45	ok	ok	
		Mmax	0.00	51.30	10.05	59.15	24.45	ok	ok	
		Mmin	0.00	31.01	10.05	59.15	14.10	ok	ok	
		Qmax	0.00	31.01	10.05	59.15	24.45	ok	ok	
		Qmin	0.00	49.64	10.05	59.15	14.10	ok	ok	
	56	Nmax	0.33	30.54	10.05	59.15	17.75	ok	ok	
		Nmin	1.09	50.89	10.05	59.15	27.84	ok	ok	
		Mmax	0.33	50.89	10.05	59.15	17.75	ok	ok	
		Mmin	2.58	30.54	10.05	59.15	25.11	ok	ok	
		Qmax	1.09	30.54	10.05	59.15	27.84	ok	ok	
		Qmin	0.33	50.15	10.05	59.15	17.75	ok	ok	
57	56	Nmax	0.33	30.53	10.05	59.15	10.02	ok	ok	
		Nmin	1.08	50.88	10.05	59.15	15.50	ok	ok	
		Mmax	0.33	50.88	10.05	59.15	10.02	ok	ok	
		Mmin	2.57	30.53	10.05	59.15	12.49	ok	ok	
		Qmax	1.08	30.53	10.05	59.15	15.50	ok	ok	
		Qmin	0.33	50.15	10.05	59.15	10.02	ok	ok	
	57	Nmax	4.30	30.05	10.05	59.15	7.07	ok	ok	
		Nmin	7.22	50.45	10.05	59.15	12.53	ok	ok	
		Mmax	4.30	50.67	10.05	59.15	7.07	ok	ok	
		Mmin	8.13	30.05	10.05	59.15	10.43	ok	ok	
		Qmax	7.22	30.05	10.05	59.15	12.53	ok	ok	
		Qmin	4.30	50.67	10.05	59.15	7.07	ok	ok	
58	57	Nmax	4.30	30.06	10.05	59.15	No necesita	ok	ok	
		Nmin	7.22	50.45	10.05	59.15	No necesita	ok	ok	
		Mmax	4.30	50.67	10.05	59.15	No necesita	ok	ok	
		Mmin	8.12	30.06	10.05	59.15	No necesita	ok	ok	

Siegrist y Moreno S.L.

LAV SANTA COLOMA DE CERVELLÓ
P.I. RIERA DE CAN JULIA
ENVOLVENTE DE MODELOS DE MUELLES

FECHA: 28/02/2006

RESUMEN DE ARMADO SECCION TIPO MARCO: armado de hastiales

fcd(t/m2)= 1666.67
fyd(t/m2)= 4.43
ANCHO UNIDAD= 1.000

				FLEXION			CORTANTE	COMPROBACION		
BARRA	NUDO	HIPÓT.	As,int(cm2/m)	As,ext(cm2/m)	Aint,dis	Axt,disp	A90	Aint	Aext	A90
		Qmax	7.22	30.06	10.05	59.15	No necesita	ok	ok	
		Qmin	6.67	50.67	10.05	59.15	No necesita	ok	ok	
	58	Nmax	5.79	29.58	10.05	59.15	No necesita	ok	ok	
		Nmin	9.34	50.04	10.05	59.15	No necesita	ok	ok	
		Mmax	5.79	51.19	10.05	59.15	No necesita	ok	ok	
		Mmin	9.56	29.58	10.05	59.15	No necesita	ok	ok	
		Qmax	9.34	29.58	10.05	59.15	No necesita	ok	ok	
		Qmin	7.83	51.19	10.05	59.15	No necesita	ok	ok	
59	58	Nmax	5.79	29.58	10.05	59.15	No necesita	ok	ok	
		Nmin	9.35	50.04	10.05	59.15	No necesita	ok	ok	
		Mmax	5.79	51.19	10.05	59.15	No necesita	ok	ok	
		Mmin	9.55	29.58	10.05	59.15	2.49	ok	ok	
		Qmax	5.79	29.58	10.05	59.15	No necesita	ok	ok	
		Qmin	9.55	51.19	10.05	59.15	2.49	ok	ok	
	59	Nmax	4.72	29.57	10.05	59.15	No necesita	ok	ok	
		Nmin	7.31	50.27	10.05	59.15	No necesita	ok	ok	
		Mmax	4.72	52.39	10.05	59.15	No necesita	ok	ok	
		Mmin	7.31	29.57	10.05	59.15	No necesita	ok	ok	
		Qmax	4.72	29.57	10.05	59.15	No necesita	ok	ok	
		Qmin	6.72	52.39	10.05	59.15	3.41	ok	ok	
60	59	Nmax	4.71	29.57	10.05	59.15	5.74	ok	ok	
		Nmin	7.31	50.27	10.05	59.15	12.39	ok	ok	
		Mmax	4.71	52.39	10.05	59.15	5.74	ok	ok	
		Mmin	7.31	29.57	10.05	59.15	12.39	ok	ok	
		Qmax	4.71	29.57	10.05	59.15	5.74	ok	ok	
		Qmin	6.72	52.39	10.05	59.15	15.59	ok	ok	
	60	Nmax	1.13	29.74	10.05	59.15	8.13	ok	ok	
		Nmin	1.26	50.87	10.05	59.15	16.03	ok	ok	
		Mmax	1.13	53.97	10.05	59.15	17.67	ok	ok	
		Mmin	1.26	29.74	10.05	59.15	14.99	ok	ok	
		Qmax	1.13	29.74	10.05	59.15	8.13	ok	ok	
		Qmin	1.13	53.97	10.05	59.15	17.67	ok	ok	
61	60	Nmax	1.14	29.74	10.05	59.15	15.59	ok	ok	
		Nmin	1.27	50.87	10.05	59.15	27.93	ok	ok	
		Mmax	1.14	53.97	10.05	59.15	30.29	ok	ok	
		Mmin	1.27	29.74	10.05	59.15	27.26	ok	ok	
		Qmax	1.14	29.74	10.05	59.15	15.59	ok	ok	
		Qmin	1.14	53.97	10.05	59.15	30.29	ok	ok	
	61	Nmax	0.00	29.91	10.05	59.15	13.23	ok	ok	
		Nmin	0.00	51.46	10.05	59.15	24.11	ok	ok	
		Mmax	0.00	55.56	10.05	59.15	26.46	ok	ok	
		Mmin	0.00	29.91	10.05	59.15	13.23	ok	ok	
		Qmax	0.00	29.91	10.05	59.15	13.23	ok	ok	
		Qmin	0.00	55.56	10.05	59.15	26.46	ok	ok	
62	61	Nmax	0.00	29.91	10.05	59.15	20.88	ok	ok	
		Nmin	0.00	51.46	10.05	59.15	36.38	ok	ok	
		Mmax	0.00	55.56	10.05	59.15	38.89	ok	ok	
		Mmin	0.00	29.91	10.05	59.15	20.88	ok	ok	
		Qmax	0.00	29.91	10.05	59.15	20.88	ok	ok	
		Qmin	0.00	55.56	10.05	59.15	38.89	ok	ok	
	62	Nmax	0.00	30.08	10.05	59.15	18.65	ok	ok	
		Nmin	0.00	52.06	10.05	59.15	33.79	ok	ok	

Siegrist y Moreno S.L.

LAV SANTA COLOMA DE CERVELLÓ
P.I. RIERA DE CAN JULIA
ENVOLVENTE DE MODELOS DE MUELLES

FECHA: 28/02/2006

RESUMEN DE ARMADO SECCION TIPO MARCO: armado de hastiales

fcd(t/m2)= 1666.67
fyd(t/m2)= 4.43
ANCHO UNIDAD= 1.000

				FLEXION			CORTANTE	COMPROBACION	
BARRA	NUDO	HIPÓT.	As,int(cm2/m)	As,ext(cm2/m)	Aint,dis	Axt,disp	A90	Aint	Aext	A90
		Mmax	0.00	57.16	10.05	59.15	36.39	ok	ok	
		Mmin	0.00	30.08	10.05	59.15	18.65	ok	ok	
		Qmax	0.00	30.08	10.05	59.15	18.65	ok	ok	
		Qmin	0.00	57.16	10.05	59.15	36.39	ok	ok	
63	62	Nmax	0.00	30.08	10.05	59.15	26.44	ok	ok	
		Nmin	0.00	52.06	10.05	59.15	46.23	ok	ok	
		Mmax	0.00	57.15	10.05	59.15	49.08	ok	ok	
		Mmin	0.00	30.08	10.05	59.15	26.44	ok	ok	
		Qmax	0.00	30.08	10.05	59.15	26.44	ok	ok	
		Qmin	0.00	57.15	10.05	59.15	49.08	ok	ok	
	63	Nmax	0.00	30.24	10.05	59.15	24.64	ok	ok	
		Nmin	0.00	52.65	10.05	59.15	44.03	ok	ok	
		Mmax	0.00	58.77	10.05	59.15	46.89	ok	ok	
		Mmin	0.00	30.24	10.05	59.15	24.64	ok	ok	
		Qmax	0.00	30.24	10.05	59.15	24.64	ok	ok	
		Qmin	0.00	58.77	10.05	59.15	46.89	ok	ok	
64	63	Nmax	0.00	30.24	10.05	59.15	32.39	ok	ok	
		Nmin	0.00	52.65	10.05	59.15	56.38	ok	ok	
		Mmax	0.00	58.77	10.05	59.15	59.55	ok	ok	
		Mmin	0.00	30.24	10.05	59.15	32.39	ok	ok	
		Qmax	0.00	30.24	10.05	59.15	32.39	ok	ok	
		Qmin	0.00	58.77	10.05	59.15	59.55	ok	ok	
	64	Nmax	0.00	41.99	10.05	59.15	30.74	ok	ok	
64		Nmin	0.00	75.88	10.05	59.15	54.22	ok	-16.73	
		Mmax	0.00	84.93	10.05	59.15	57.33	ok	-25.78	
		Mmin	0.00	41.99	10.05	59.15	30.74	ok	ok	
		Qmax	0.00	41.99	10.05	59.15	30.74	ok	ok	
		Qmin	0.00	84.93	10.05	59.15	57.33	ok	-25.78	

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES EN UN SÓLO LADO

FECHA: 28/02/2006

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67
ANCHO UNIDAD= 1.000
fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As1 (cm2/m)	As2 (cm2/m)
1	1	Nmax	0.0	-83.7	1.000	0.700	0.650	920.83	0.00	31.40
		Nmin	0.0	-130.0	1.000	0.700	0.650	920.83	0.00	51.49
		Mmax	0.0	-83.7	1.000	0.700	0.650	920.83	0.00	31.40
		Mmin	0.0	-130.0	1.000	0.700	0.650	920.83	0.00	51.49
		Qmax	0.0	-120.3	1.000	0.700	0.650	920.83	0.00	47.07
		Qmin	0.0	-83.7	1.000	0.700	0.650	920.83	0.00	31.40
	2	Nmax	0.0	-82.5	1.000	0.700	0.650	920.83	0.00	30.93
		Nmin	0.0	-129.1	1.000	0.700	0.650	920.83	0.00	51.04
		Mmax	0.0	-82.5	1.000	0.700	0.650	920.83	0.00	30.93
		Mmin	0.0	-129.1	1.000	0.700	0.650	920.83	0.00	51.04
		Qmax	0.0	-121.4	1.000	0.700	0.650	920.83	0.00	47.54
		Qmin	0.0	-82.5	1.000	0.700	0.650	920.83	0.00	30.93
2	2	Nmax	0.0	-82.5	1.000	0.700	0.650	920.83	0.00	30.93
		Nmin	0.0	-129.1	1.000	0.700	0.650	920.83	0.00	51.04
		Mmax	0.0	-82.5	1.000	0.700	0.650	920.83	0.00	30.93
		Mmin	0.0	-129.1	1.000	0.700	0.650	920.83	0.00	51.04
		Qmax	0.0	-121.4	1.000	0.700	0.650	920.83	0.00	47.54
		Qmin	0.0	-82.5	1.000	0.700	0.650	920.83	0.00	30.93
	3	Nmax	0.0	-81.5	1.000	0.700	0.650	920.83	0.00	30.51
		Nmin	0.0	-128.2	1.000	0.700	0.650	920.83	0.00	50.63
		Mmax	0.0	-81.5	1.000	0.700	0.650	920.83	0.00	30.51
		Mmin	0.0	-128.2	1.000	0.700	0.650	920.83	0.00	50.63
		Qmax	0.0	-122.5	1.000	0.700	0.650	920.83	0.00	48.06
		Qmin	0.0	-81.5	1.000	0.700	0.650	920.83	0.00	30.51
3	3	Nmax	0.0	-81.5	1.000	0.700	0.650	920.83	0.00	30.51
		Nmin	0.0	-128.2	1.000	0.700	0.650	920.83	0.00	50.63
		Mmax	0.0	-81.5	1.000	0.700	0.650	920.83	0.00	30.51
		Mmin	0.0	-128.2	1.000	0.700	0.650	920.83	0.00	50.63
		Qmax	0.0	-122.5	1.000	0.700	0.650	920.83	0.00	48.05
		Qmin	0.0	-81.5	1.000	0.700	0.650	920.83	0.00	30.51
	4	Nmax	0.0	-80.6	1.000	0.700	0.650	920.83	0.00	30.15
		Nmin	0.0	-127.4	1.000	0.700	0.650	920.83	0.00	50.27
		Mmax	0.0	-80.6	1.000	0.700	0.650	920.83	0.00	30.15
		Mmin	0.0	-127.4	1.000	0.700	0.650	920.83	0.00	50.27
		Qmax	0.0	-123.7	1.000	0.700	0.650	920.83	0.00	48.62
		Qmin	0.0	-80.6	1.000	0.700	0.650	920.83	0.00	30.15
4	4	Nmax	0.0	-80.6	1.000	0.700	0.650	920.83	0.00	30.15
		Nmin	0.0	-127.4	1.000	0.700	0.650	920.83	0.00	50.26
		Mmax	0.0	-80.6	1.000	0.700	0.650	920.83	0.00	30.15
		Mmin	0.0	-127.4	1.000	0.700	0.650	920.83	0.00	50.26
		Qmax	0.0	-123.7	1.000	0.700	0.650	920.83	0.00	48.62
		Qmin	0.0	-80.6	1.000	0.700	0.650	920.83	0.00	30.15
	5	Nmax	0.0	-79.9	1.000	0.700	0.650	920.83	0.00	29.87
		Nmin	0.0	-126.8	1.000	0.700	0.650	920.83	0.00	50.00
		Mmax	0.0	-79.9	1.000	0.700	0.650	920.83	0.00	29.87
		Mmin	0.0	-126.8	1.000	0.700	0.650	920.83	0.00	50.00
		Qmax	0.0	-125.2	1.000	0.700	0.650	920.83	0.00	49.28
		Qmin	0.0	-79.9	1.000	0.700	0.650	920.83	0.00	29.87
5	5	Nmax	0.0	-79.9	1.000	0.700	0.650	920.83	0.00	29.87
		Nmin	0.0	-126.8	1.000	0.700	0.650	920.83	0.00	50.00
		Mmax	0.0	-79.9	1.000	0.700	0.650	920.83	0.00	29.87

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES EN UN SÓLO LADO

FECHA: 28/02/2006

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As1 (cm2/m)	As2 (cm2/m)
		Mmin	0.0	-126.8	1.000	0.700	0.650	920.83	0.00	50.00
		Qmax	0.0	-125.2	1.000	0.700	0.650	920.83	0.00	49.28
		Qmin	0.0	-79.9	1.000	0.700	0.650	920.83	0.00	29.87
	6	Nmax	0.0	-79.4	1.000	0.700	0.650	920.83	0.00	29.66
		Nmin	0.0	-126.4	1.000	0.700	0.650	920.83	0.00	49.83
		Mmax	0.0	-79.4	1.000	0.700	0.650	920.83	0.00	29.66
		Mmin	0.0	-126.9	1.000	0.700	0.650	920.83	0.00	50.04
		Qmax	0.0	-126.9	1.000	0.700	0.650	920.83	0.00	50.04
		Qmin	0.0	-79.4	1.000	0.700	0.650	920.83	0.00	29.66
6	6	Nmax	0.0	-79.4	1.000	0.700	0.650	920.83	0.00	29.66
		Nmin	0.0	-126.4	1.000	0.700	0.650	920.83	0.00	49.83
		Mmax	0.0	-79.4	1.000	0.700	0.650	920.83	0.00	29.66
		Mmin	0.0	-126.9	1.000	0.700	0.650	920.83	0.00	50.04
		Qmax	0.0	-126.9	1.000	0.700	0.650	920.83	0.00	50.04
		Qmin	0.0	-79.4	1.000	0.700	0.650	920.83	0.00	29.66
	7	Nmax	0.0	-79.1	1.000	0.700	0.650	920.83	0.00	29.53
		Nmin	0.0	-126.3	1.000	0.700	0.650	920.83	0.00	49.78
		Mmax	0.0	-79.1	1.000	0.700	0.650	920.83	0.00	29.53
		Mmin	0.0	-128.8	1.000	0.700	0.650	920.83	0.00	50.92
		Qmax	0.0	-128.8	1.000	0.700	0.650	920.83	0.00	50.92
		Qmin	0.0	-79.1	1.000	0.700	0.650	920.83	0.00	29.53
7	7	Nmax	0.0	-79.1	1.000	0.700	0.650	920.83	0.00	29.53
		Nmin	0.0	-126.3	1.000	0.700	0.650	920.83	0.00	49.78
		Mmax	0.0	-79.1	1.000	0.700	0.650	920.83	0.00	29.53
		Mmin	0.0	-128.8	1.000	0.700	0.650	920.83	0.00	50.92
		Qmax	0.0	-128.8	1.000	0.700	0.650	920.83	0.00	50.92
		Qmin	0.0	-79.1	1.000	0.700	0.650	920.83	0.00	29.53
	8	Nmax	0.0	-78.8	1.000	0.700	0.650	920.83	0.00	29.43
		Nmin	0.0	-126.4	1.000	0.700	0.650	920.83	0.00	49.81
		Mmax	0.0	-78.8	1.000	0.700	0.650	920.83	0.00	29.43
		Mmin	0.0	-130.9	1.000	0.700	0.650	920.83	0.00	51.88
		Qmax	0.0	-130.9	1.000	0.700	0.650	920.83	0.00	51.88
		Qmin	0.0	-78.8	1.000	0.700	0.650	920.83	0.00	29.43
8	8	Nmax	0.0	-78.8	1.000	0.700	0.650	920.83	0.00	29.43
		Nmin	0.0	-126.4	1.000	0.700	0.650	920.83	0.00	49.81
		Mmax	0.0	-78.8	1.000	0.700	0.650	920.83	0.00	29.43
		Mmin	0.0	-130.9	1.000	0.700	0.650	920.83	0.00	51.88
		Qmax	0.0	-130.9	1.000	0.700	0.650	920.83	0.00	51.88
		Qmin	0.0	-78.8	1.000	0.700	0.650	920.83	0.00	29.43
	9	Nmax	0.0	-78.7	1.000	0.700	0.650	920.83	0.00	29.36
		Nmin	0.0	-126.6	1.000	0.700	0.650	920.83	0.00	49.90
		Mmax	0.0	-78.7	1.000	0.700	0.650	920.83	0.00	29.36
		Mmin	0.0	-133.1	1.000	0.700	0.650	920.83	0.00	52.92
		Qmax	0.0	-133.1	1.000	0.700	0.650	920.83	0.00	52.92
		Qmin	0.0	-78.7	1.000	0.700	0.650	920.83	0.00	29.36
9	9	Nmax	0.0	-78.7	1.000	0.700	0.650	920.83	0.00	29.36
		Nmin	0.0	-126.6	1.000	0.700	0.650	920.83	0.00	49.90
		Mmax	0.0	-78.7	1.000	0.700	0.650	920.83	0.00	29.36
		Mmin	0.0	-133.1	1.000	0.700	0.650	920.83	0.00	52.92
		Qmax	0.0	-133.1	1.000	0.700	0.650	920.83	0.00	52.92
		Qmin	0.0	-78.7	1.000	0.700	0.650	920.83	0.00	29.36

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES EN UN SÓLO LADO

FECHA: 28/02/2006

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As1 (cm2/m)	As2 (cm2/m)
	10	Nmax	0.0	-78.5	1.000	0.700	0.650	920.83	0.00	29.30
		Nmin	0.0	-126.8	1.000	0.700	0.650	920.83	0.00	50.00
		Mmax	0.0	-78.5	1.000	0.700	0.650	920.83	0.00	29.30
		Mmin	0.0	-135.4	1.000	0.700	0.650	920.83	0.00	53.99
		Qmax	0.0	-135.4	1.000	0.700	0.650	920.83	0.00	53.99
		Qmin	0.0	-78.5	1.000	0.700	0.650	920.83	0.00	29.30
10	10	Nmax	0.0	-78.5	1.000	0.700	0.650	920.83	0.00	29.30
		Nmin	0.0	-126.8	1.000	0.700	0.650	920.83	0.00	50.00
		Mmax	0.0	-78.5	1.000	0.700	0.650	920.83	0.00	29.30
		Mmin	0.0	-135.4	1.000	0.700	0.650	920.83	0.00	53.99
		Qmax	0.0	-135.4	1.000	0.700	0.650	920.83	0.00	53.99
		Qmin	0.0	-78.5	1.000	0.700	0.650	920.83	0.00	29.30
	11	Nmax	0.0	-78.2	1.000	0.700	0.650	920.83	0.00	29.17
		Nmin	0.0	-126.9	1.000	0.700	0.650	920.83	0.00	50.06
		Mmax	0.0	-78.2	1.000	0.700	0.650	920.83	0.00	29.17
		Mmin	0.0	-137.6	1.000	0.700	0.650	920.83	0.00	55.00
		Qmax	0.0	-137.6	1.000	0.700	0.650	920.83	0.00	55.00
		Qmin	0.0	-78.2	1.000	0.700	0.650	920.83	0.00	29.17
11	11	Nmax	0.0	-78.2	1.000	0.700	0.650	920.83	0.00	29.17
		Nmin	0.0	-126.9	1.000	0.700	0.650	920.83	0.00	50.06
		Mmax	0.0	-78.2	1.000	0.700	0.650	920.83	0.00	29.17
		Mmin	0.0	-137.6	1.000	0.700	0.650	920.83	0.00	55.00
		Qmax	0.0	-137.6	1.000	0.700	0.650	920.83	0.00	55.00
		Qmin	0.0	-78.2	1.000	0.700	0.650	920.83	0.00	29.17
	12	Nmax	0.0	-77.6	1.000	0.700	0.650	920.83	0.00	28.95
		Nmin	0.0	-126.8	1.000	0.700	0.650	920.83	0.00	49.99
		Mmax	0.0	-77.6	1.000	0.700	0.650	920.83	0.00	28.95
		Mmin	0.0	-139.5	1.000	0.700	0.650	920.83	0.00	55.91
		Qmax	0.0	-139.5	1.000	0.700	0.650	920.83	0.00	55.91
		Qmin	0.0	-77.6	1.000	0.700	0.650	920.83	0.00	28.95
12	12	Nmax	0.0	-77.6	1.000	0.700	0.650	920.83	0.00	28.95
		Nmin	0.0	-126.8	1.000	0.700	0.650	920.83	0.00	49.99
		Mmax	0.0	-77.6	1.000	0.700	0.650	920.83	0.00	28.95
		Mmin	0.0	-139.5	1.000	0.700	0.650	920.83	0.00	55.91
		Qmax	0.0	-139.5	1.000	0.700	0.650	920.83	0.00	55.91
		Qmin	0.0	-77.6	1.000	0.700	0.650	920.83	0.00	28.95
	13	Nmax	0.0	-76.7	1.000	0.700	0.650	920.83	0.00	28.59
		Nmin	0.0	-126.2	1.000	0.700	0.650	920.83	0.00	49.72
		Mmax	0.0	-76.7	1.000	0.700	0.650	920.83	0.00	28.59
		Mmin	0.0	-140.9	1.000	0.700	0.650	920.83	0.00	56.61
		Qmax	0.0	-140.9	1.000	0.700	0.650	920.83	0.00	56.61
		Qmin	0.0	-76.7	1.000	0.700	0.650	920.83	0.00	28.59
13	13	Nmax	0.0	-76.7	1.000	0.800	0.750	1062.50	0.00	24.30
		Nmin	0.0	-140.9	1.000	0.800	0.750	1062.50	0.00	46.98
		Mmax	0.0	-76.7	1.000	0.800	0.750	1062.50	0.00	24.30
		Mmin	0.0	-140.9	1.000	0.800	0.750	1062.50	0.00	46.98
		Qmax	0.0	-76.7	1.000	0.800	0.750	1062.50	0.00	24.30
		Qmin	0.0	-126.2	1.000	0.800	0.750	1062.50	0.00	41.54
	15	Nmax	0.0	-52.2	1.000	0.800	0.750	1062.50	0.00	16.24
		Nmin	0.0	-102.2	1.000	0.800	0.750	1062.50	0.00	33.01
		Mmax	0.0	-52.2	1.000	0.800	0.750	1062.50	0.00	16.24

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES EN UN SÓLO LADO

FECHA: 28/02/2006

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As1 (cm2/m)	As2 (cm2/m)
		Mmin	0.0	-102.2	1.000	0.800	0.750	1062.50	0.00	33.01
		Qmax	0.0	-52.2	1.000	0.800	0.750	1062.50	0.00	16.24
		Qmin	0.0	-85.9	1.000	0.800	0.750	1062.50	0.00	27.39
14	15	Nmax	0.0	-52.2	1.000	0.800	0.750	1062.50	0.00	16.24
		Nmin	0.0	-102.2	1.000	0.800	0.750	1062.50	0.00	33.01
		Mmax	0.0	-52.2	1.000	0.800	0.750	1062.50	0.00	16.24
		Mmin	0.0	-102.2	1.000	0.800	0.750	1062.50	0.00	33.01
		Qmax	0.0	-52.2	1.000	0.800	0.750	1062.50	0.00	16.24
		Qmin	0.0	-85.9	1.000	0.800	0.750	1062.50	0.00	27.39
	17	Nmax	0.0	-29.4	1.000	0.800	0.750	1062.50	0.00	9.01
		Nmin	0.0	-64.7	1.000	0.800	0.750	1062.50	0.00	20.32
		Mmax	0.0	-29.4	1.000	0.800	0.750	1062.50	0.00	9.01
		Mmin	0.0	-64.7	1.000	0.800	0.750	1062.50	0.00	20.32
		Qmax	0.0	-29.4	1.000	0.800	0.750	1062.50	0.00	9.01
		Qmin	0.0	-64.7	1.000	0.800	0.750	1062.50	0.00	20.32
15	17	Nmax	0.0	-29.4	1.000	0.800	0.750	1062.50	0.00	9.01
		Nmin	0.0	-64.8	1.000	0.800	0.750	1062.50	0.00	20.33
		Mmax	0.0	-29.4	1.000	0.800	0.750	1062.50	0.00	9.01
		Mmin	0.0	-64.8	1.000	0.800	0.750	1062.50	0.00	20.33
		Qmax	0.0	-29.4	1.000	0.800	0.750	1062.50	0.00	9.01
		Qmin	0.0	-64.8	1.000	0.800	0.750	1062.50	0.00	20.33
	19	Nmax	0.0	-8.3	1.000	0.800	0.750	1062.50	0.00	2.49
		Nmin	0.0	-28.2	1.000	0.800	0.750	1062.50	0.00	8.64
		Mmax	0.0	-8.3	1.000	0.800	0.750	1062.50	0.00	2.49
		Mmin	0.0	-28.2	1.000	0.800	0.750	1062.50	0.00	8.64
		Qmax	0.0	-8.3	1.000	0.800	0.750	1062.50	0.00	2.49
		Qmin	0.0	-28.2	1.000	0.800	0.750	1062.50	0.00	8.64
16	19	Nmax	0.0	-8.3	1.000	0.800	0.750	1062.50	0.00	2.49
		Nmin	0.0	-28.2	1.000	0.800	0.750	1062.50	0.00	8.64
		Mmax	0.0	-8.3	1.000	0.800	0.750	1062.50	0.00	2.49
		Mmin	0.0	-28.2	1.000	0.800	0.750	1062.50	0.00	8.64
		Qmax	0.0	-8.3	1.000	0.800	0.750	1062.50	0.00	2.49
		Qmin	0.0	-28.2	1.000	0.800	0.750	1062.50	0.00	8.64
	21	Nmax	11.2	0.0	1.000	0.800	0.750	1062.50	3.40	0.00
		Nmin	11.2	0.0	1.000	0.800	0.750	1062.50	3.40	0.00
		Mmax	18.2	0.0	1.000	0.800	0.750	1062.50	5.53	0.00
		Mmin	11.2	0.0	1.000	0.800	0.750	1062.50	3.40	0.00
		Qmax	11.2	0.0	1.000	0.800	0.750	1062.50	3.40	0.00
		Qmin	11.2	0.0	1.000	0.800	0.750	1062.50	3.40	0.00
17	21	Nmax	11.2	0.0	1.000	0.800	0.750	1062.50	3.40	0.00
		Nmin	11.2	0.0	1.000	0.800	0.750	1062.50	3.40	0.00
		Mmax	18.2	0.0	1.000	0.800	0.750	1062.50	5.53	0.00
		Mmin	11.2	0.0	1.000	0.800	0.750	1062.50	3.40	0.00
		Qmax	11.2	0.0	1.000	0.800	0.750	1062.50	3.40	0.00
		Qmin	11.2	0.0	1.000	0.800	0.750	1062.50	3.40	0.00
	23	Nmax	29.0	0.0	1.000	0.800	0.750	1062.50	8.87	0.00
		Nmin	41.3	0.0	1.000	0.800	0.750	1062.50	12.76	0.00
		Mmax	47.3	0.0	1.000	0.800	0.750	1062.50	14.66	0.00
		Mmin	29.0	0.0	1.000	0.800	0.750	1062.50	8.87	0.00
		Qmax	29.0	0.0	1.000	0.800	0.750	1062.50	8.87	0.00
		Qmin	41.3	0.0	1.000	0.800	0.750	1062.50	12.76	0.00

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES EN UN SÓLO LADO

FECHA: 28/02/2006

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As1 (cm2/m)	As2 (cm2/m)
18	23	Nmax	29.0	0.0	1.000	0.800	0.750	1062.50	8.87	0.00
		Nmin	41.3	0.0	1.000	0.800	0.750	1062.50	12.75	0.00
		Mmax	47.3	0.0	1.000	0.800	0.750	1062.50	14.66	0.00
		Mmin	29.0	0.0	1.000	0.800	0.750	1062.50	8.87	0.00
		Qmax	29.0	0.0	1.000	0.800	0.750	1062.50	8.87	0.00
		Qmin	41.3	0.0	1.000	0.800	0.750	1062.50	12.75	0.00
	25	Nmax	59.5	0.0	1.000	0.800	0.750	1062.50	18.61	0.00
		Nmin	102.0	0.0	1.000	0.800	0.750	1062.50	32.92	0.00
		Mmax	102.0	0.0	1.000	0.800	0.750	1062.50	32.92	0.00
		Mmin	59.5	0.0	1.000	0.800	0.750	1062.50	18.61	0.00
		Qmax	59.5	0.0	1.000	0.800	0.750	1062.50	18.61	0.00
		Qmin	102.0	0.0	1.000	0.800	0.750	1062.50	32.92	0.00
19	25	Nmax	59.5	0.0	1.000	0.800	0.750	1062.50	18.61	0.00
		Nmin	102.0	0.0	1.000	0.800	0.750	1062.50	32.92	0.00
		Mmax	102.0	0.0	1.000	0.800	0.750	1062.50	32.92	0.00
		Mmin	59.5	0.0	1.000	0.800	0.750	1062.50	18.61	0.00
		Qmax	59.5	0.0	1.000	0.800	0.750	1062.50	18.61	0.00
		Qmin	102.0	0.0	1.000	0.800	0.750	1062.50	32.92	0.00
	27	Nmax	83.3	0.0	1.000	0.800	0.750	1062.50	26.49	0.00
		Nmin	149.1	0.0	1.000	0.800	0.750	1062.50	50.07	0.00
		Mmax	149.1	0.0	1.000	0.800	0.750	1062.50	50.07	0.00
		Mmin	83.3	0.0	1.000	0.800	0.750	1062.50	26.49	0.00
		Qmax	83.3	0.0	1.000	0.800	0.750	1062.50	26.49	0.00
		Qmin	149.1	0.0	1.000	0.800	0.750	1062.50	50.07	0.00
20	27	Nmax	83.3	0.0	1.000	0.800	0.750	1062.50	26.49	0.00
		Nmin	149.1	0.0	1.000	0.800	0.750	1062.50	50.07	0.00
		Mmax	149.1	0.0	1.000	0.800	0.750	1062.50	50.07	0.00
		Mmin	83.3	0.0	1.000	0.800	0.750	1062.50	26.49	0.00
		Qmax	83.3	0.0	1.000	0.800	0.750	1062.50	26.49	0.00
		Qmin	149.1	0.0	1.000	0.800	0.750	1062.50	50.07	0.00
	29	Nmax	100.4	0.0	1.000	0.800	0.750	1062.50	32.36	0.00
		Nmin	183.0	0.0	1.000	0.800	0.750	1062.50	63.39	0.00
		Mmax	183.0	0.0	1.000	0.800	0.750	1062.50	63.39	0.00
		Mmin	100.4	0.0	1.000	0.800	0.750	1062.50	32.36	0.00
		Qmax	100.4	0.0	1.000	0.800	0.750	1062.50	32.36	0.00
		Qmin	183.0	0.0	1.000	0.800	0.750	1062.50	63.39	0.00
21	29	Nmax	100.4	0.0	1.000	0.800	0.750	1062.50	32.36	0.00
		Nmin	183.0	0.0	1.000	0.800	0.750	1062.50	63.39	0.00
		Mmax	183.0	0.0	1.000	0.800	0.750	1062.50	63.39	0.00
		Mmin	100.4	0.0	1.000	0.800	0.750	1062.50	32.36	0.00
		Qmax	100.4	0.0	1.000	0.800	0.750	1062.50	32.36	0.00
		Qmin	183.0	0.0	1.000	0.800	0.750	1062.50	63.39	0.00
	31	Nmax	110.7	0.0	1.000	0.800	0.750	1062.50	35.99	0.00
		Nmin	203.4	0.0	1.000	0.800	0.750	1062.50	71.95	0.00
		Mmax	203.4	0.0	1.000	0.800	0.750	1062.50	71.95	0.00
		Mmin	110.7	0.0	1.000	0.800	0.750	1062.50	35.99	0.00
		Qmax	110.7	0.0	1.000	0.800	0.750	1062.50	35.99	0.00
		Qmin	203.4	0.0	1.000	0.800	0.750	1062.50	71.95	0.00
22	31	Nmax	110.7	0.0	1.000	0.800	0.750	1062.50	35.99	0.00
		Nmin	203.4	0.0	1.000	0.800	0.750	1062.50	71.95	0.00
		Mmax	203.4	0.0	1.000	0.800	0.750	1062.50	71.95	0.00

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES EN UN SÓLO LADO

FECHA: 28/02/2006

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As1 (cm2/m)	As2 (cm2/m)
		Mmin	110.7	0.0	1.000	0.800	0.750	1062.50	35.99	0.00
		Qmax	110.7	0.0	1.000	0.800	0.750	1062.50	35.99	0.00
		Qmin	203.4	0.0	1.000	0.800	0.750	1062.50	71.95	0.00
	33	Nmax	114.4	0.0	1.000	0.800	0.750	1062.50	37.28	0.00
		Nmin	210.4	0.0	1.000	0.800	0.750	1062.50	74.97	0.00
		Mmax	210.4	0.0	1.000	0.800	0.750	1062.50	74.97	0.00
		Mmin	114.4	0.0	1.000	0.800	0.750	1062.50	37.28	0.00
		Qmax	114.4	0.0	1.000	0.800	0.750	1062.50	37.28	0.00
		Qmin	186.9	0.0	1.000	0.800	0.750	1062.50	65.00	0.00
23	33	Nmax	114.4	0.0	1.000	0.800	0.750	1062.50	37.28	0.00
		Nmin	210.4	0.0	1.000	0.800	0.750	1062.50	74.97	0.00
		Mmax	210.4	0.0	1.000	0.800	0.750	1062.50	74.97	0.00
		Mmin	114.4	0.0	1.000	0.800	0.750	1062.50	37.28	0.00
		Qmax	114.4	0.0	1.000	0.800	0.750	1062.50	37.28	0.00
		Qmin	186.9	0.0	1.000	0.800	0.750	1062.50	65.00	0.00
	35	Nmax	111.3	0.0	1.000	0.800	0.750	1062.50	36.19	0.00
		Nmin	203.9	0.0	1.000	0.800	0.750	1062.50	72.19	0.00
		Mmax	203.9	0.0	1.000	0.800	0.750	1062.50	72.19	0.00
		Mmin	111.3	0.0	1.000	0.800	0.750	1062.50	36.19	0.00
		Qmax	203.9	0.0	1.000	0.800	0.750	1062.50	72.19	0.00
		Qmin	111.3	0.0	1.000	0.800	0.750	1062.50	36.19	0.00
24	35	Nmax	111.3	0.0	1.000	0.800	0.750	1062.50	36.19	0.00
		Nmin	203.9	0.0	1.000	0.800	0.750	1062.50	72.19	0.00
		Mmax	203.9	0.0	1.000	0.800	0.750	1062.50	72.19	0.00
		Mmin	111.3	0.0	1.000	0.800	0.750	1062.50	36.19	0.00
		Qmax	203.9	0.0	1.000	0.800	0.750	1062.50	72.19	0.00
		Qmin	111.3	0.0	1.000	0.800	0.750	1062.50	36.19	0.00
	37	Nmax	101.5	0.0	1.000	0.800	0.750	1062.50	32.76	0.00
		Nmin	184.1	0.0	1.000	0.800	0.750	1062.50	63.87	0.00
		Mmax	184.1	0.0	1.000	0.800	0.750	1062.50	63.87	0.00
		Mmin	101.5	0.0	1.000	0.800	0.750	1062.50	32.76	0.00
		Qmax	184.1	0.0	1.000	0.800	0.750	1062.50	63.87	0.00
		Qmin	101.5	0.0	1.000	0.800	0.750	1062.50	32.76	0.00
25	37	Nmax	101.5	0.0	1.000	0.800	0.750	1062.50	32.76	0.00
		Nmin	184.1	0.0	1.000	0.800	0.750	1062.50	63.87	0.00
		Mmax	184.1	0.0	1.000	0.800	0.750	1062.50	63.87	0.00
		Mmin	101.5	0.0	1.000	0.800	0.750	1062.50	32.76	0.00
		Qmax	184.1	0.0	1.000	0.800	0.750	1062.50	63.87	0.00
		Qmin	101.5	0.0	1.000	0.800	0.750	1062.50	32.76	0.00
	39	Nmax	85.0	0.0	1.000	0.800	0.750	1062.50	27.10	0.00
		Nmin	150.9	0.0	1.000	0.800	0.750	1062.50	50.76	0.00
		Mmax	150.9	0.0	1.000	0.800	0.750	1062.50	50.76	0.00
		Mmin	85.0	0.0	1.000	0.800	0.750	1062.50	27.10	0.00
		Qmax	150.9	0.0	1.000	0.800	0.750	1062.50	50.76	0.00
		Qmin	85.0	0.0	1.000	0.800	0.750	1062.50	27.10	0.00
26	39	Nmax	85.0	0.0	1.000	0.800	0.750	1062.50	27.10	0.00
		Nmin	150.9	0.0	1.000	0.800	0.750	1062.50	50.76	0.00
		Mmax	150.9	0.0	1.000	0.800	0.750	1062.50	50.76	0.00
		Mmin	85.0	0.0	1.000	0.800	0.750	1062.50	27.10	0.00
		Qmax	150.9	0.0	1.000	0.800	0.750	1062.50	50.76	0.00
		Qmin	85.0	0.0	1.000	0.800	0.750	1062.50	27.10	0.00

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES EN UN SÓLO LADO

FECHA: 28/02/2006

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As1 (cm2/m)	As2 (cm2/m)
	41	Nmax	61.9	0.0	1.000	0.800	0.750	1062.50	19.39	0.00
		Nmin	104.4	0.0	1.000	0.800	0.750	1062.50	33.77	0.00
		Mmax	104.4	0.0	1.000	0.800	0.750	1062.50	33.77	0.00
		Mmin	61.9	0.0	1.000	0.800	0.750	1062.50	19.39	0.00
		Qmax	104.4	0.0	1.000	0.800	0.750	1062.50	33.77	0.00
		Qmin	61.9	0.0	1.000	0.800	0.750	1062.50	19.39	0.00
27	41	Nmax	61.9	0.0	1.000	0.800	0.750	1062.50	19.39	0.00
		Nmin	104.4	0.0	1.000	0.800	0.750	1062.50	33.77	0.00
		Mmax	104.4	0.0	1.000	0.800	0.750	1062.50	33.77	0.00
		Mmin	61.9	0.0	1.000	0.800	0.750	1062.50	19.39	0.00
		Qmax	104.4	0.0	1.000	0.800	0.750	1062.50	33.77	0.00
		Qmin	61.9	0.0	1.000	0.800	0.750	1062.50	19.39	0.00
	43	Nmax	32.0	0.0	1.000	0.800	0.750	1062.50	9.81	0.00
		Nmin	44.4	0.0	1.000	0.800	0.750	1062.50	13.73	0.00
		Mmax	50.4	0.0	1.000	0.800	0.750	1062.50	15.66	0.00
		Mmin	32.0	0.0	1.000	0.800	0.750	1062.50	9.81	0.00
		Qmax	44.4	0.0	1.000	0.800	0.750	1062.50	13.73	0.00
		Qmin	32.0	0.0	1.000	0.800	0.750	1062.50	9.81	0.00
28	43	Nmax	32.0	0.0	1.000	0.800	0.750	1062.50	9.81	0.00
		Nmin	44.4	0.0	1.000	0.800	0.750	1062.50	13.73	0.00
		Mmax	50.4	0.0	1.000	0.800	0.750	1062.50	15.66	0.00
		Mmin	32.0	0.0	1.000	0.800	0.750	1062.50	9.81	0.00
		Qmax	44.4	0.0	1.000	0.800	0.750	1062.50	13.73	0.00
		Qmin	32.0	0.0	1.000	0.800	0.750	1062.50	9.81	0.00
	45	Nmax	14.5	0.0	1.000	0.800	0.750	1062.50	4.41	0.00
		Nmin	14.5	0.0	1.000	0.800	0.750	1062.50	4.41	0.00
		Mmax	21.6	0.0	1.000	0.800	0.750	1062.50	6.58	0.00
		Mmin	14.5	0.0	1.000	0.800	0.750	1062.50	4.41	0.00
		Qmax	14.5	0.0	1.000	0.800	0.750	1062.50	4.41	0.00
		Qmin	14.5	0.0	1.000	0.800	0.750	1062.50	4.41	0.00
29	45	Nmax	14.5	0.0	1.000	0.800	0.750	1062.50	4.41	0.00
		Nmin	14.5	0.0	1.000	0.800	0.750	1062.50	4.41	0.00
		Mmax	21.6	0.0	1.000	0.800	0.750	1062.50	6.58	0.00
		Mmin	14.5	0.0	1.000	0.800	0.750	1062.50	4.41	0.00
		Qmax	14.5	0.0	1.000	0.800	0.750	1062.50	4.41	0.00
		Qmin	14.5	0.0	1.000	0.800	0.750	1062.50	4.41	0.00
	47	Nmax	0.0	-4.6	1.000	0.800	0.750	1062.50	0.00	1.39
		Nmin	0.0	-24.5	1.000	0.800	0.750	1062.50	0.00	7.49
		Mmax	0.0	-4.6	1.000	0.800	0.750	1062.50	0.00	1.39
		Mmin	0.0	-24.5	1.000	0.800	0.750	1062.50	0.00	7.49
		Qmax	0.0	-24.5	1.000	0.800	0.750	1062.50	0.00	7.49
		Qmin	0.0	-4.6	1.000	0.800	0.750	1062.50	0.00	1.39
30	47	Nmax	0.0	-4.6	1.000	0.800	0.750	1062.50	0.00	1.39
		Nmin	0.0	-24.5	1.000	0.800	0.750	1062.50	0.00	7.49
		Mmax	0.0	-4.6	1.000	0.800	0.750	1062.50	0.00	1.39
		Mmin	0.0	-24.5	1.000	0.800	0.750	1062.50	0.00	7.49
		Qmax	0.0	-24.5	1.000	0.800	0.750	1062.50	0.00	7.49
		Qmin	0.0	-4.6	1.000	0.800	0.750	1062.50	0.00	1.39
	49	Nmax	0.0	-25.5	1.000	0.800	0.750	1062.50	0.00	7.78
		Nmin	0.0	-60.6	1.000	0.800	0.750	1062.50	0.00	18.98
		Mmax	0.0	-25.5	1.000	0.800	0.750	1062.50	0.00	7.78

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES EN UN SÓLO LADO

FECHA: 28/02/2006

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As1 (cm2/m)	As2 (cm2/m)
		Mmin	0.0	-60.6	1.000	0.800	0.750	1062.50	0.00	18.98
		Qmax	0.0	-60.6	1.000	0.800	0.750	1062.50	0.00	18.98
		Qmin	0.0	-25.5	1.000	0.800	0.750	1062.50	0.00	7.78
31	49	Nmax	0.0	-25.5	1.000	0.800	0.750	1062.50	0.00	7.78
		Nmin	0.0	-60.6	1.000	0.800	0.750	1062.50	0.00	18.98
		Mmax	0.0	-25.5	1.000	0.800	0.750	1062.50	0.00	7.78
		Mmin	0.0	-60.6	1.000	0.800	0.750	1062.50	0.00	18.98
		Qmax	0.0	-60.6	1.000	0.800	0.750	1062.50	0.00	18.98
		Qmin	0.0	-25.5	1.000	0.800	0.750	1062.50	0.00	7.78
	51	Nmax	0.0	-47.9	1.000	0.800	0.750	1062.50	0.00	14.87
		Nmin	0.0	-97.8	1.000	0.800	0.750	1062.50	0.00	31.47
		Mmax	0.0	-47.9	1.000	0.800	0.750	1062.50	0.00	14.87
		Mmin	0.0	-97.8	1.000	0.800	0.750	1062.50	0.00	31.47
		Qmax	0.0	-81.4	1.000	0.800	0.750	1062.50	0.00	25.88
		Qmin	0.0	-47.9	1.000	0.800	0.750	1062.50	0.00	14.87
32	51	Nmax	0.0	-47.9	1.000	0.800	0.750	1062.50	0.00	14.87
		Nmin	0.0	-97.8	1.000	0.800	0.750	1062.50	0.00	31.47
		Mmax	0.0	-47.9	1.000	0.800	0.750	1062.50	0.00	14.87
		Mmin	0.0	-97.8	1.000	0.800	0.750	1062.50	0.00	31.47
		Qmax	0.0	-81.4	1.000	0.800	0.750	1062.50	0.00	25.88
		Qmin	0.0	-47.9	1.000	0.800	0.750	1062.50	0.00	14.87
	64	Nmax	0.0	-72.2	1.000	0.800	0.750	1062.50	0.00	22.77
		Nmin	0.0	-136.2	1.000	0.800	0.750	1062.50	0.00	45.22
		Mmax	0.0	-72.2	1.000	0.800	0.750	1062.50	0.00	22.77
		Mmin	0.0	-136.2	1.000	0.800	0.750	1062.50	0.00	45.22
		Qmax	0.0	-121.4	1.000	0.800	0.750	1062.50	0.00	39.80
		Qmin	0.0	-72.2	1.000	0.800	0.750	1062.50	0.00	22.77
33	1	Nmax	120.3	0.0	1.000	0.700	0.650	920.83	47.06	0.00
		Nmin	83.7	0.0	1.000	0.700	0.650	920.83	31.40	0.00
		Mmax	130.0	0.0	1.000	0.700	0.650	920.83	51.49	0.00
		Mmin	83.7	0.0	1.000	0.700	0.650	920.83	31.40	0.00
		Qmax	130.0	0.0	1.000	0.700	0.650	920.83	51.49	0.00
		Qmin	83.7	0.0	1.000	0.700	0.650	920.83	31.40	0.00
	14	Nmax	79.5	0.0	1.000	0.700	0.650	920.83	29.71	0.00
		Nmin	56.0	0.0	1.000	0.700	0.650	920.83	20.42	0.00
		Mmax	87.0	0.0	1.000	0.700	0.650	920.83	32.76	0.00
		Mmin	56.0	0.0	1.000	0.700	0.650	920.83	20.42	0.00
		Qmax	87.0	0.0	1.000	0.700	0.650	920.83	32.76	0.00
		Qmin	56.0	0.0	1.000	0.700	0.650	920.83	20.42	0.00
34	14	Nmax	79.5	0.0	1.000	0.700	0.650	920.83	29.70	0.00
		Nmin	56.0	0.0	1.000	0.700	0.650	920.83	20.42	0.00
		Mmax	87.0	0.0	1.000	0.700	0.650	920.83	32.75	0.00
		Mmin	56.0	0.0	1.000	0.700	0.650	920.83	20.42	0.00
		Qmax	87.0	0.0	1.000	0.700	0.650	920.83	32.75	0.00
		Qmin	56.0	0.0	1.000	0.700	0.650	920.83	20.42	0.00
	16	Nmax	43.6	0.0	1.000	0.700	0.650	920.83	15.71	0.00
		Nmin	31.5	0.0	1.000	0.700	0.650	920.83	11.25	0.00
		Mmax	49.0	0.0	1.000	0.700	0.650	920.83	17.76	0.00
		Mmin	31.5	0.0	1.000	0.700	0.650	920.83	11.25	0.00
		Qmax	49.0	0.0	1.000	0.700	0.650	920.83	17.76	0.00
		Qmin	31.5	0.0	1.000	0.700	0.650	920.83	11.25	0.00

ARMADOJUL_2000_1000_1m.xls PI RIERA DE CAN DE JULIA 28/02/2006
Kv=2000 Kh=1000

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES EN UN SÓLO LADO

FECHA: 28/02/2006

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As1 (cm2/m)	As2 (cm2/m)
35	16	Nmax	43.6	0.0	1.000	0.700	0.650	920.83	15.71	0.00
		Nmin	31.5	0.0	1.000	0.700	0.650	920.83	11.25	0.00
		Mmax	49.0	0.0	1.000	0.700	0.650	920.83	17.76	0.00
		Mmin	31.5	0.0	1.000	0.700	0.650	920.83	11.25	0.00
		Qmax	49.0	0.0	1.000	0.700	0.650	920.83	17.76	0.00
		Qmin	31.5	0.0	1.000	0.700	0.650	920.83	11.25	0.00
	18	Nmax	12.0	0.0	1.000	0.700	0.650	920.83	4.21	0.00
		Nmin	10.1	0.0	1.000	0.700	0.650	920.83	3.52	0.00
		Mmax	15.6	0.0	1.000	0.700	0.650	920.83	5.48	0.00
		Mmin	10.1	0.0	1.000	0.700	0.650	920.83	3.52	0.00
		Qmax	15.6	0.0	1.000	0.700	0.650	920.83	5.48	0.00
		Qmin	10.1	0.0	1.000	0.700	0.650	920.83	3.52	0.00
36	18	Nmax	12.0	0.0	1.000	0.700	0.650	920.83	4.22	0.00
		Nmin	10.1	0.0	1.000	0.700	0.650	920.83	3.52	0.00
		Mmax	15.6	0.0	1.000	0.700	0.650	920.83	5.49	0.00
		Mmin	10.1	0.0	1.000	0.700	0.650	920.83	3.52	0.00
		Qmax	15.6	0.0	1.000	0.700	0.650	920.83	5.49	0.00
		Qmin	10.1	0.0	1.000	0.700	0.650	920.83	3.52	0.00
	20	Nmax	0.0	-15.4	1.000	0.700	0.650	920.83	0.00	5.42
		Nmin	0.0	-8.7	1.000	0.700	0.650	920.83	0.00	3.02
		Mmax	0.0	-8.7	1.000	0.700	0.650	920.83	0.00	3.02
		Mmin	0.0	-15.4	1.000	0.700	0.650	920.83	0.00	5.42
		Qmax	0.0	-13.5	1.000	0.700	0.650	920.83	0.00	4.73
		Qmin	0.0	-8.7	1.000	0.700	0.650	920.83	0.00	3.02
37	20	Nmax	0.0	-15.4	1.000	0.700	0.650	920.83	0.00	5.42
		Nmin	0.0	-8.6	1.000	0.700	0.650	920.83	0.00	3.02
		Mmax	0.0	-8.6	1.000	0.700	0.650	920.83	0.00	3.02
		Mmin	0.0	-15.4	1.000	0.700	0.650	920.83	0.00	5.42
		Qmax	0.0	-13.5	1.000	0.700	0.650	920.83	0.00	4.72
		Qmin	0.0	-8.6	1.000	0.700	0.650	920.83	0.00	3.02
	22	Nmax	0.0	-39.0	1.000	0.700	0.650	920.83	0.00	14.01
		Nmin	0.0	-24.7	1.000	0.700	0.650	920.83	0.00	8.76
		Mmax	0.0	-24.7	1.000	0.700	0.650	920.83	0.00	8.76
		Mmin	0.0	-39.0	1.000	0.700	0.650	920.83	0.00	14.01
		Qmax	0.0	-38.5	1.000	0.700	0.650	920.83	0.00	13.82
		Qmin	0.0	-24.7	1.000	0.700	0.650	920.83	0.00	8.76
38	22	Nmax	0.0	-39.0	1.000	0.700	0.650	920.83	0.00	14.01
		Nmin	0.0	-24.7	1.000	0.700	0.650	920.83	0.00	8.76
		Mmax	0.0	-24.7	1.000	0.700	0.650	920.83	0.00	8.76
		Mmin	0.0	-39.0	1.000	0.700	0.650	920.83	0.00	14.01
		Qmax	0.0	-38.5	1.000	0.700	0.650	920.83	0.00	13.82
		Qmin	0.0	-24.7	1.000	0.700	0.650	920.83	0.00	8.76
	24	Nmax	0.0	-76.1	1.000	0.700	0.650	920.83	0.00	28.32
		Nmin	0.0	-50.0	1.000	0.700	0.650	920.83	0.00	18.15
		Mmax	0.0	-50.0	1.000	0.700	0.650	920.83	0.00	18.15
		Mmin	0.0	-77.9	1.000	0.700	0.650	920.83	0.00	29.06
		Qmax	0.0	-77.9	1.000	0.700	0.650	920.83	0.00	29.06
		Qmin	0.0	-50.0	1.000	0.700	0.650	920.83	0.00	18.15
39	24	Nmax	0.0	-76.1	1.000	0.700	0.650	920.83	0.00	28.32
		Nmin	0.0	-50.0	1.000	0.700	0.650	920.83	0.00	18.15
		Mmax	0.0	-50.0	1.000	0.700	0.650	920.83	0.00	18.15

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES EN UN SÓLO LADO

FECHA: 28/02/2006

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As1 (cm2/m)	As2 (cm2/m)
		Mmin	0.0	-77.9	1.000	0.700	0.650	920.83	0.00	29.06
		Qmax	0.0	-77.9	1.000	0.700	0.650	920.83	0.00	29.06
		Qmin	0.0	-50.0	1.000	0.700	0.650	920.83	0.00	18.15
	26	Nmax	0.0	-101.9	1.000	0.700	0.650	920.83	0.00	38.99
		Nmin	0.0	-67.6	1.000	0.700	0.650	920.83	0.00	24.96
		Mmax	0.0	-67.6	1.000	0.700	0.650	920.83	0.00	24.96
		Mmin	0.0	-105.4	1.000	0.700	0.650	920.83	0.00	40.50
		Qmax	0.0	-105.4	1.000	0.700	0.650	920.83	0.00	40.50
		Qmin	0.0	-67.6	1.000	0.700	0.650	920.83	0.00	24.96
40	26	Nmax	0.0	-101.9	1.000	0.700	0.650	920.83	0.00	38.99
		Nmin	0.0	-67.6	1.000	0.700	0.650	920.83	0.00	24.96
		Mmax	0.0	-67.6	1.000	0.700	0.650	920.83	0.00	24.96
		Mmin	0.0	-105.4	1.000	0.700	0.650	920.83	0.00	40.50
		Qmax	0.0	-105.4	1.000	0.700	0.650	920.83	0.00	40.50
		Qmin	0.0	-67.6	1.000	0.700	0.650	920.83	0.00	24.96
	28	Nmax	0.0	-118.5	1.000	0.700	0.650	920.83	0.00	46.27
		Nmin	0.0	-79.0	1.000	0.700	0.650	920.83	0.00	29.50
		Mmax	0.0	-79.0	1.000	0.700	0.650	920.83	0.00	29.50
		Mmin	0.0	-123.2	1.000	0.700	0.650	920.83	0.00	48.36
		Qmax	0.0	-123.2	1.000	0.700	0.650	920.83	0.00	48.36
		Qmin	0.0	-79.0	1.000	0.700	0.650	920.83	0.00	29.50
41	28	Nmax	0.0	-118.5	1.000	0.700	0.650	920.83	0.00	46.27
		Nmin	0.0	-79.0	1.000	0.700	0.650	920.83	0.00	29.50
		Mmax	0.0	-79.0	1.000	0.700	0.650	920.83	0.00	29.50
		Mmin	0.0	-123.2	1.000	0.700	0.650	920.83	0.00	48.36
		Qmax	0.0	-123.2	1.000	0.700	0.650	920.83	0.00	48.36
		Qmin	0.0	-79.0	1.000	0.700	0.650	920.83	0.00	29.50
	30	Nmax	0.0	-127.7	1.000	0.700	0.650	920.83	0.00	50.43
		Nmin	0.0	-85.2	1.000	0.700	0.650	920.83	0.00	32.03
		Mmax	0.0	-85.2	1.000	0.700	0.650	920.83	0.00	32.03
		Mmin	0.0	-133.0	1.000	0.700	0.650	920.83	0.00	52.88
		Qmax	0.0	-133.0	1.000	0.700	0.650	920.83	0.00	52.88
		Qmin	0.0	-85.2	1.000	0.700	0.650	920.83	0.00	32.03
42	30	Nmax	0.0	-127.7	1.000	0.700	0.650	920.83	0.00	50.43
		Nmin	0.0	-85.2	1.000	0.700	0.650	920.83	0.00	32.03
		Mmax	0.0	-85.2	1.000	0.700	0.650	920.83	0.00	32.03
		Mmin	0.0	-133.0	1.000	0.700	0.650	920.83	0.00	52.88
		Qmax	0.0	-133.0	1.000	0.700	0.650	920.83	0.00	52.88
		Qmin	0.0	-85.2	1.000	0.700	0.650	920.83	0.00	32.03
	32	Nmax	0.0	-130.4	1.000	0.700	0.650	920.83	0.00	51.68
		Nmin	0.0	-87.0	1.000	0.700	0.650	920.83	0.00	32.75
		Mmax	0.0	-87.0	1.000	0.700	0.650	920.83	0.00	32.75
		Mmin	0.0	-136.0	1.000	0.700	0.650	920.83	0.00	54.25
		Qmax	0.0	-136.0	1.000	0.700	0.650	920.83	0.00	54.25
		Qmin	0.0	-87.0	1.000	0.700	0.650	920.83	0.00	32.75
43	32	Nmax	0.0	-130.4	1.000	0.700	0.650	920.83	0.00	51.68
		Nmin	0.0	-87.0	1.000	0.700	0.650	920.83	0.00	32.75
		Mmax	0.0	-87.0	1.000	0.700	0.650	920.83	0.00	32.75
		Mmin	0.0	-136.0	1.000	0.700	0.650	920.83	0.00	54.25
		Qmax	0.0	-87.0	1.000	0.700	0.650	920.83	0.00	32.75
		Qmin	0.0	-136.0	1.000	0.700	0.650	920.83	0.00	54.25

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES EN UN SÓLO LADO

FECHA: 28/02/2006

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As1 (cm2/m)	As2 (cm2/m)
	34	Nmax	0.0	-127.0	1.000	0.700	0.650	920.83	0.00	50.11
		Nmin	0.0	-84.5	1.000	0.700	0.650	920.83	0.00	31.73
		Mmax	0.0	-84.5	1.000	0.700	0.650	920.83	0.00	31.73
		Mmin	0.0	-132.3	1.000	0.700	0.650	920.83	0.00	52.55
		Qmax	0.0	-84.5	1.000	0.700	0.650	920.83	0.00	31.73
		Qmin	0.0	-132.3	1.000	0.700	0.650	920.83	0.00	52.55
44	34	Nmax	0.0	-127.0	1.000	0.700	0.650	920.83	0.00	50.11
		Nmin	0.0	-84.5	1.000	0.700	0.650	920.83	0.00	31.73
		Mmax	0.0	-84.5	1.000	0.700	0.650	920.83	0.00	31.73
		Mmin	0.0	-132.3	1.000	0.700	0.650	920.83	0.00	52.55
		Qmax	0.0	-84.5	1.000	0.700	0.650	920.83	0.00	31.73
		Qmin	0.0	-132.3	1.000	0.700	0.650	920.83	0.00	52.55
	36	Nmax	0.0	-117.1	1.000	0.700	0.650	920.83	0.00	45.65
		Nmin	0.0	-77.5	1.000	0.700	0.650	920.83	0.00	28.91
		Mmax	0.0	-77.5	1.000	0.700	0.650	920.83	0.00	28.91
		Mmin	0.0	-121.8	1.000	0.700	0.650	920.83	0.00	47.73
		Qmax	0.0	-77.5	1.000	0.700	0.650	920.83	0.00	28.91
		Qmin	0.0	-121.8	1.000	0.700	0.650	920.83	0.00	47.73
45	36	Nmax	0.0	-117.1	1.000	0.700	0.650	920.83	0.00	45.65
		Nmin	0.0	-77.5	1.000	0.700	0.650	920.83	0.00	28.91
		Mmax	0.0	-77.5	1.000	0.700	0.650	920.83	0.00	28.91
		Mmin	0.0	-121.8	1.000	0.700	0.650	920.83	0.00	47.73
		Qmax	0.0	-77.5	1.000	0.700	0.650	920.83	0.00	28.91
		Qmin	0.0	-121.8	1.000	0.700	0.650	920.83	0.00	47.73
	38	Nmax	0.0	-99.9	1.000	0.700	0.650	920.83	0.00	38.15
		Nmin	0.0	-65.5	1.000	0.700	0.650	920.83	0.00	24.14
		Mmax	0.0	-65.5	1.000	0.700	0.650	920.83	0.00	24.14
		Mmin	0.0	-103.3	1.000	0.700	0.650	920.83	0.00	39.63
		Qmax	0.0	-65.5	1.000	0.700	0.650	920.83	0.00	24.14
		Qmin	0.0	-103.3	1.000	0.700	0.650	920.83	0.00	39.63
46	38	Nmax	0.0	-99.9	1.000	0.700	0.650	920.83	0.00	38.15
		Nmin	0.0	-65.5	1.000	0.700	0.650	920.83	0.00	24.14
		Mmax	0.0	-65.5	1.000	0.700	0.650	920.83	0.00	24.14
		Mmin	0.0	-103.3	1.000	0.700	0.650	920.83	0.00	39.63
		Qmax	0.0	-65.5	1.000	0.700	0.650	920.83	0.00	24.14
		Qmin	0.0	-103.3	1.000	0.700	0.650	920.83	0.00	39.63
	40	Nmax	0.0	-73.6	1.000	0.700	0.650	920.83	0.00	27.34
		Nmin	0.0	-47.4	1.000	0.700	0.650	920.83	0.00	17.16
		Mmax	0.0	-47.4	1.000	0.700	0.650	920.83	0.00	17.16
		Mmin	0.0	-75.4	1.000	0.700	0.650	920.83	0.00	28.05
		Qmax	0.0	-47.4	1.000	0.700	0.650	920.83	0.00	17.16
		Qmin	0.0	-75.4	1.000	0.700	0.650	920.83	0.00	28.05
47	40	Nmax	0.0	-73.6	1.000	0.700	0.650	920.83	0.00	27.33
		Nmin	0.0	-47.4	1.000	0.700	0.650	920.83	0.00	17.15
		Mmax	0.0	-47.4	1.000	0.700	0.650	920.83	0.00	17.15
		Mmin	0.0	-75.4	1.000	0.700	0.650	920.83	0.00	28.04
		Qmax	0.0	-47.4	1.000	0.700	0.650	920.83	0.00	17.15
		Qmin	0.0	-75.4	1.000	0.700	0.650	920.83	0.00	28.04
	42	Nmax	0.0	-36.3	1.000	0.700	0.650	920.83	0.00	12.99
		Nmin	0.0	-21.8	1.000	0.700	0.650	920.83	0.00	7.69
		Mmax	0.0	-21.8	1.000	0.700	0.650	920.83	0.00	7.69

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES EN UN SÓLO LADO

FECHA: 28/02/2006

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As1 (cm2/m)	As2 (cm2/m)
		Mmin	0.0	-36.3	1.000	0.700	0.650	920.83	0.00	12.99
		Qmax	0.0	-21.8	1.000	0.700	0.650	920.83	0.00	7.69
		Qmin	0.0	-35.7	1.000	0.700	0.650	920.83	0.00	12.78
48	42	Nmax	0.0	-36.3	1.000	0.700	0.650	920.83	0.00	12.98
		Nmin	0.0	-21.8	1.000	0.700	0.650	920.83	0.00	7.69
		Mmax	0.0	-21.8	1.000	0.700	0.650	920.83	0.00	7.69
		Mmin	0.0	-36.3	1.000	0.700	0.650	920.83	0.00	12.98
		Qmax	0.0	-21.8	1.000	0.700	0.650	920.83	0.00	7.69
		Qmin	0.0	-35.7	1.000	0.700	0.650	920.83	0.00	12.77
	44	Nmax	0.0	-12.6	1.000	0.700	0.650	920.83	0.00	4.41
		Nmin	0.0	-5.6	1.000	0.700	0.650	920.83	0.00	1.94
		Mmax	0.0	-5.6	1.000	0.700	0.650	920.83	0.00	1.94
		Mmin	0.0	-12.6	1.000	0.700	0.650	920.83	0.00	4.41
		Qmax	0.0	-5.6	1.000	0.700	0.650	920.83	0.00	1.94
		Qmin	0.0	-10.6	1.000	0.700	0.650	920.83	0.00	3.71
49	44	Nmax	0.0	-12.6	1.000	0.700	0.650	920.83	0.00	4.41
		Nmin	0.0	-5.6	1.000	0.700	0.650	920.83	0.00	1.94
		Mmax	0.0	-5.6	1.000	0.700	0.650	920.83	0.00	1.94
		Mmin	0.0	-12.6	1.000	0.700	0.650	920.83	0.00	4.41
		Qmax	0.0	-5.6	1.000	0.700	0.650	920.83	0.00	1.94
		Qmin	0.0	-10.6	1.000	0.700	0.650	920.83	0.00	3.70
	46	Nmax	14.9	0.0	1.000	0.700	0.650	920.83	5.23	0.00
		Nmin	13.2	0.0	1.000	0.700	0.650	920.83	4.62	0.00
		Mmax	18.5	0.0	1.000	0.700	0.650	920.83	6.53	0.00
		Mmin	13.2	0.0	1.000	0.700	0.650	920.83	4.62	0.00
		Qmax	13.2	0.0	1.000	0.700	0.650	920.83	4.62	0.00
		Qmin	18.5	0.0	1.000	0.700	0.650	920.83	6.53	0.00
50	46	Nmax	14.9	0.0	1.000	0.700	0.650	920.83	5.23	0.00
		Nmin	13.2	0.0	1.000	0.700	0.650	920.83	4.62	0.00
		Mmax	18.5	0.0	1.000	0.700	0.650	920.83	6.53	0.00
		Mmin	13.2	0.0	1.000	0.700	0.650	920.83	4.62	0.00
		Qmax	13.2	0.0	1.000	0.700	0.650	920.83	4.62	0.00
		Qmin	18.5	0.0	1.000	0.700	0.650	920.83	6.53	0.00
	48	Nmax	46.3	0.0	1.000	0.700	0.650	920.83	16.74	0.00
		Nmin	34.5	0.0	1.000	0.700	0.650	920.83	12.35	0.00
		Mmax	51.8	0.0	1.000	0.700	0.650	920.83	18.83	0.00
		Mmin	34.5	0.0	1.000	0.700	0.650	920.83	12.35	0.00
		Qmax	34.5	0.0	1.000	0.700	0.650	920.83	12.35	0.00
		Qmin	51.8	0.0	1.000	0.700	0.650	920.83	18.83	0.00
51	48	Nmax	46.3	0.0	1.000	0.700	0.650	920.83	16.74	0.00
		Nmin	34.5	0.0	1.000	0.700	0.650	920.83	12.35	0.00
		Mmax	51.8	0.0	1.000	0.700	0.650	920.83	18.83	0.00
		Mmin	34.5	0.0	1.000	0.700	0.650	920.83	12.35	0.00
		Qmax	34.5	0.0	1.000	0.700	0.650	920.83	12.35	0.00
		Qmin	51.8	0.0	1.000	0.700	0.650	920.83	18.83	0.00
	50	Nmax	82.1	0.0	1.000	0.700	0.650	920.83	30.74	0.00
		Nmin	58.8	0.0	1.000	0.700	0.650	920.83	21.52	0.00
		Mmax	89.6	0.0	1.000	0.700	0.650	920.83	33.84	0.00
		Mmin	58.8	0.0	1.000	0.700	0.650	920.83	21.52	0.00
		Qmax	58.8	0.0	1.000	0.700	0.650	920.83	21.52	0.00
		Qmin	89.6	0.0	1.000	0.700	0.650	920.83	33.84	0.00

ARMADOJUL_2000_1000_1m.xls PI RIERA DE CAN DE JULIA 28/02/2006
Kv=2000 Kh=1000

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES EN UN SÓLO LADO

FECHA: 28/02/2006

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As1 (cm2/m)	As2 (cm2/m)
52	50	Nmax	82.1	0.0	1.000	0.700	0.650	920.83	30.75	0.00
		Nmin	58.8	0.0	1.000	0.700	0.650	920.83	21.52	0.00
		Mmax	89.6	0.0	1.000	0.700	0.650	920.83	33.84	0.00
		Mmin	58.8	0.0	1.000	0.700	0.650	920.83	21.52	0.00
		Qmax	58.8	0.0	1.000	0.700	0.650	920.83	21.52	0.00
		Qmin	89.6	0.0	1.000	0.700	0.650	920.83	33.84	0.00
	52	Nmax	122.6	0.0	1.000	0.700	0.650	920.83	48.09	0.00
		Nmin	86.3	0.0	1.000	0.700	0.650	920.83	32.46	0.00
		Mmax	132.4	0.0	1.000	0.700	0.650	920.83	52.58	0.00
		Mmin	86.3	0.0	1.000	0.700	0.650	920.83	32.46	0.00
		Qmax	86.3	0.0	1.000	0.700	0.650	920.83	32.46	0.00
		Qmin	132.4	0.0	1.000	0.700	0.650	920.83	52.58	0.00
53	52	Nmax	86.3	0.0	1.000	0.700	0.650	920.83	32.47	0.00
		Nmin	132.4	0.0	1.000	0.700	0.650	920.83	52.58	0.00
		Mmax	132.4	0.0	1.000	0.700	0.650	920.83	52.58	0.00
		Mmin	86.3	0.0	1.000	0.700	0.650	920.83	32.47	0.00
		Qmax	86.3	0.0	1.000	0.700	0.650	920.83	32.47	0.00
		Qmin	122.6	0.0	1.000	0.700	0.650	920.83	48.10	0.00
	53	Nmax	85.1	0.0	1.000	0.700	0.650	920.83	31.97	0.00
		Nmin	131.5	0.0	1.000	0.700	0.650	920.83	52.15	0.00
		Mmax	131.5	0.0	1.000	0.700	0.650	920.83	52.15	0.00
		Mmin	85.1	0.0	1.000	0.700	0.650	920.83	31.97	0.00
		Qmax	85.1	0.0	1.000	0.700	0.650	920.83	31.97	0.00
		Qmin	123.7	0.0	1.000	0.700	0.650	920.83	48.60	0.00
54	53	Nmax	85.1	0.0	1.000	0.700	0.650	920.83	31.97	0.00
		Nmin	131.4	0.0	1.000	0.700	0.650	920.83	52.15	0.00
		Mmax	131.4	0.0	1.000	0.700	0.650	920.83	52.15	0.00
		Mmin	85.1	0.0	1.000	0.700	0.650	920.83	31.97	0.00
		Qmax	85.1	0.0	1.000	0.700	0.650	920.83	31.97	0.00
		Qmin	123.7	0.0	1.000	0.700	0.650	920.83	48.60	0.00
	54	Nmax	83.9	0.0	1.000	0.700	0.650	920.83	31.49	0.00
		Nmin	130.5	0.0	1.000	0.700	0.650	920.83	51.73	0.00
		Mmax	130.5	0.0	1.000	0.700	0.650	920.83	51.73	0.00
		Mmin	83.9	0.0	1.000	0.700	0.650	920.83	31.49	0.00
		Qmax	83.9	0.0	1.000	0.700	0.650	920.83	31.49	0.00
		Qmin	124.8	0.0	1.000	0.700	0.650	920.83	49.12	0.00
55	54	Nmax	83.9	0.0	1.000	0.700	0.650	920.83	31.49	0.00
		Nmin	130.5	0.0	1.000	0.700	0.650	920.83	51.73	0.00
		Mmax	130.5	0.0	1.000	0.700	0.650	920.83	51.73	0.00
		Mmin	83.9	0.0	1.000	0.700	0.650	920.83	31.49	0.00
		Qmax	83.9	0.0	1.000	0.700	0.650	920.83	31.49	0.00
		Qmin	124.8	0.0	1.000	0.700	0.650	920.83	49.12	0.00
	55	Nmax	82.7	0.0	1.000	0.700	0.650	920.83	31.01	0.00
		Nmin	129.6	0.0	1.000	0.700	0.650	920.83	51.30	0.00
		Mmax	129.6	0.0	1.000	0.700	0.650	920.83	51.30	0.00
		Mmin	82.7	0.0	1.000	0.700	0.650	920.83	31.01	0.00
		Qmax	82.7	0.0	1.000	0.700	0.650	920.83	31.01	0.00
		Qmin	126.0	0.0	1.000	0.700	0.650	920.83	49.64	0.00
56	55	Nmax	82.7	0.0	1.000	0.700	0.650	920.83	31.01	0.00
		Nmin	129.6	0.0	1.000	0.700	0.650	920.83	51.30	0.00
		Mmax	129.6	0.0	1.000	0.700	0.650	920.83	51.30	0.00

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES EN UN SÓLO LADO

FECHA: 28/02/2006

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As1 (cm2/m)	As2 (cm2/m)
		Mmin	82.7	0.0	1.000	0.700	0.650	920.83	31.01	0.00
		Qmax	82.7	0.0	1.000	0.700	0.650	920.83	31.01	0.00
		Qmin	126.0	0.0	1.000	0.700	0.650	920.83	49.64	0.00
	56	Nmax	81.6	0.0	1.000	0.700	0.650	920.83	30.54	0.00
		Nmin	128.7	0.0	1.000	0.700	0.650	920.83	50.89	0.00
		Mmax	128.7	0.0	1.000	0.700	0.650	920.83	50.89	0.00
		Mmin	81.6	0.0	1.000	0.700	0.650	920.83	30.54	0.00
		Qmax	81.6	0.0	1.000	0.700	0.650	920.83	30.54	0.00
		Qmin	127.1	0.0	1.000	0.700	0.650	920.83	50.15	0.00
57	56	Nmax	81.5	0.0	1.000	0.700	0.650	920.83	30.53	0.00
		Nmin	128.7	0.0	1.000	0.700	0.650	920.83	50.88	0.00
		Mmax	128.7	0.0	1.000	0.700	0.650	920.83	50.88	0.00
		Mmin	81.5	0.0	1.000	0.700	0.650	920.83	30.53	0.00
		Qmax	81.5	0.0	1.000	0.700	0.650	920.83	30.53	0.00
		Qmin	127.1	0.0	1.000	0.700	0.650	920.83	50.15	0.00
	57	Nmax	80.4	0.0	1.000	0.700	0.650	920.83	30.05	0.00
		Nmin	127.8	0.0	1.000	0.700	0.650	920.83	50.45	0.00
		Mmax	128.2	0.0	1.000	0.700	0.650	920.83	50.67	0.00
		Mmin	80.4	0.0	1.000	0.700	0.650	920.83	30.05	0.00
		Qmax	80.4	0.0	1.000	0.700	0.650	920.83	30.05	0.00
		Qmin	128.2	0.0	1.000	0.700	0.650	920.83	50.67	0.00
58	57	Nmax	80.4	0.0	1.000	0.700	0.650	920.83	30.06	0.00
		Nmin	127.8	0.0	1.000	0.700	0.650	920.83	50.45	0.00
		Mmax	128.2	0.0	1.000	0.700	0.650	920.83	50.67	0.00
		Mmin	80.4	0.0	1.000	0.700	0.650	920.83	30.06	0.00
		Qmax	80.4	0.0	1.000	0.700	0.650	920.83	30.06	0.00
		Qmin	128.2	0.0	1.000	0.700	0.650	920.83	50.67	0.00
	58	Nmax	79.2	0.0	1.000	0.700	0.650	920.83	29.58	0.00
		Nmin	126.9	0.0	1.000	0.700	0.650	920.83	50.04	0.00
		Mmax	129.4	0.0	1.000	0.700	0.650	920.83	51.19	0.00
		Mmin	79.2	0.0	1.000	0.700	0.650	920.83	29.58	0.00
		Qmax	79.2	0.0	1.000	0.700	0.650	920.83	29.58	0.00
		Qmin	129.4	0.0	1.000	0.700	0.650	920.83	51.19	0.00
59	58	Nmax	79.2	0.0	1.000	0.700	0.650	920.83	29.58	0.00
		Nmin	126.9	0.0	1.000	0.700	0.650	920.83	50.04	0.00
		Mmax	129.4	0.0	1.000	0.700	0.650	920.83	51.19	0.00
		Mmin	79.2	0.0	1.000	0.700	0.650	920.83	29.58	0.00
		Qmax	79.2	0.0	1.000	0.700	0.650	920.83	29.58	0.00
		Qmin	129.4	0.0	1.000	0.700	0.650	920.83	51.19	0.00
	59	Nmax	78.0	0.0	1.000	0.700	0.650	920.83	29.11	0.00
		Nmin	126.0	0.0	1.000	0.700	0.650	920.83	49.62	0.00
		Mmax	130.5	0.0	1.000	0.700	0.650	920.83	51.72	0.00
		Mmin	78.0	0.0	1.000	0.700	0.650	920.83	29.11	0.00
		Qmax	78.0	0.0	1.000	0.700	0.650	920.83	29.11	0.00
		Qmin	130.5	0.0	1.000	0.700	0.650	920.83	51.72	0.00
60	59	Nmax	78.0	0.0	1.000	0.700	0.650	920.83	29.11	0.00
		Nmin	126.0	0.0	1.000	0.700	0.650	920.83	49.62	0.00
		Mmax	130.5	0.0	1.000	0.700	0.650	920.83	51.72	0.00
		Mmin	78.0	0.0	1.000	0.700	0.650	920.83	29.11	0.00
		Qmax	78.0	0.0	1.000	0.700	0.650	920.83	29.11	0.00
		Qmin	130.5	0.0	1.000	0.700	0.650	920.83	51.72	0.00

ARMADOJUL_2000_1000_1m.xls PI RIERA DE CAN DE JULIA 28/02/2006
Kv=2000 Kh=1000

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES EN UN SÓLO LADO

FECHA: 28/02/2006

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As1 (cm2/m)	As2 (cm2/m)
	60	Nmax	76.8	0.0	1.000	0.700	0.650	920.83	28.63	0.00
		Nmin	125.0	0.0	1.000	0.700	0.650	920.83	49.20	0.00
		Mmax	131.7	0.0	1.000	0.700	0.650	920.83	52.24	0.00
		Mmin	76.8	0.0	1.000	0.700	0.650	920.83	28.63	0.00
		Qmax	76.8	0.0	1.000	0.700	0.650	920.83	28.63	0.00
		Qmin	131.7	0.0	1.000	0.700	0.650	920.83	52.24	0.00
61	60	Nmax	76.8	0.0	1.000	0.700	0.650	920.83	28.63	0.00
		Nmin	125.0	0.0	1.000	0.700	0.650	920.83	49.20	0.00
		Mmax	131.7	0.0	1.000	0.700	0.650	920.83	52.24	0.00
		Mmin	76.8	0.0	1.000	0.700	0.650	920.83	28.63	0.00
		Qmax	76.8	0.0	1.000	0.700	0.650	920.83	28.63	0.00
		Qmin	131.7	0.0	1.000	0.700	0.650	920.83	52.24	0.00
	61	Nmax	75.7	0.0	1.000	0.700	0.650	920.83	28.16	0.00
		Nmin	124.1	0.0	1.000	0.700	0.650	920.83	48.79	0.00
		Mmax	132.8	0.0	1.000	0.700	0.650	920.83	52.77	0.00
		Mmin	75.7	0.0	1.000	0.700	0.650	920.83	28.16	0.00
		Qmax	75.7	0.0	1.000	0.700	0.650	920.83	28.16	0.00
		Qmin	132.8	0.0	1.000	0.700	0.650	920.83	52.77	0.00
62	61	Nmax	75.7	0.0	1.000	0.700	0.650	920.83	28.16	0.00
		Nmin	124.1	0.0	1.000	0.700	0.650	920.83	48.79	0.00
		Mmax	132.8	0.0	1.000	0.700	0.650	920.83	52.77	0.00
		Mmin	75.7	0.0	1.000	0.700	0.650	920.83	28.16	0.00
		Qmax	75.7	0.0	1.000	0.700	0.650	920.83	28.16	0.00
		Qmin	132.8	0.0	1.000	0.700	0.650	920.83	52.77	0.00
	62	Nmax	74.5	0.0	1.000	0.700	0.650	920.83	27.68	0.00
		Nmin	123.2	0.0	1.000	0.700	0.650	920.83	48.37	0.00
		Mmax	133.9	0.0	1.000	0.700	0.650	920.83	53.29	0.00
		Mmin	74.5	0.0	1.000	0.700	0.650	920.83	27.68	0.00
		Qmax	74.5	0.0	1.000	0.700	0.650	920.83	27.68	0.00
		Qmin	133.9	0.0	1.000	0.700	0.650	920.83	53.29	0.00
63	62	Nmax	74.5	0.0	1.000	0.700	0.650	920.83	27.68	0.00
		Nmin	123.2	0.0	1.000	0.700	0.650	920.83	48.37	0.00
		Mmax	133.9	0.0	1.000	0.700	0.650	920.83	53.29	0.00
		Mmin	74.5	0.0	1.000	0.700	0.650	920.83	27.68	0.00
		Qmax	74.5	0.0	1.000	0.700	0.650	920.83	27.68	0.00
		Qmin	133.9	0.0	1.000	0.700	0.650	920.83	53.29	0.00
	63	Nmax	73.3	0.0	1.000	0.700	0.650	920.83	27.22	0.00
		Nmin	122.3	0.0	1.000	0.700	0.650	920.83	47.96	0.00
		Mmax	135.1	0.0	1.000	0.700	0.650	920.83	53.83	0.00
		Mmin	73.3	0.0	1.000	0.700	0.650	920.83	27.22	0.00
		Qmax	73.3	0.0	1.000	0.700	0.650	920.83	27.22	0.00
		Qmin	135.1	0.0	1.000	0.700	0.650	920.83	53.83	0.00
64	63	Nmax	73.3	0.0	1.000	0.700	0.650	920.83	27.22	0.00
		Nmin	122.3	0.0	1.000	0.700	0.650	920.83	47.96	0.00
		Mmax	135.1	0.0	1.000	0.700	0.650	920.83	53.83	0.00
		Mmin	73.3	0.0	1.000	0.700	0.650	920.83	27.22	0.00
		Qmax	73.3	0.0	1.000	0.700	0.650	920.83	27.22	0.00
		Qmin	135.1	0.0	1.000	0.700	0.650	920.83	53.83	0.00
	64	Nmax	72.2	0.0	1.000	0.700	0.650	920.83	26.75	0.00
		Nmin	121.4	0.0	1.000	0.700	0.650	920.83	47.55	0.00
		Mmax	136.2	0.0	1.000	0.700	0.650	920.83	54.37	0.00

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES EN UN SÓLO LADO

FECHA: 28/02/2006

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As1 (cm2/m)	As2 (cm2/m)
		Mmin	72.2	0.0	1.000	0.700	0.650	920.83	26.75	0.00
		Qmax	72.2	0.0	1.000	0.700	0.650	920.83	26.75	0.00
		Qmin	136.2	0.0	1.000	0.700	0.650	920.83	54.37	0.00

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES EN UN SÓLO LADO

FECHA: 28/02/2006

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
1	1	Nmax	4.5	1.000	0.700	0.650	325.0	28.4	-	No necesita
		Nmin	4.2	1.000	0.700	0.650	325.0	33.4	-	No necesita
		Mmax	4.5	1.000	0.700	0.650	325.0	28.4	-	No necesita
		Mmin	4.2	1.000	0.700	0.650	325.0	33.4	-	No necesita
		Qmax	4.2	1.000	0.700	0.650	325.0	32.5	-	No necesita
		Qmin	4.5	1.000	0.700	0.650	325.0	28.4	-	No necesita
	2	Nmax	1.9	1.000	0.700	0.650	325.0	28.2	-	No necesita
		Nmin	1.7	1.000	0.700	0.650	325.0	33.3	-	No necesita
		Mmax	1.9	1.000	0.700	0.650	325.0	28.2	-	No necesita
		Mmin	1.7	1.000	0.700	0.650	325.0	33.3	-	No necesita
		Qmax	4.7	1.000	0.700	0.650	325.0	32.6	-	No necesita
		Qmin	1.9	1.000	0.700	0.650	325.0	28.2	-	No necesita
2	2	Nmax	4.0	1.000	0.700	0.650	325.0	28.2	-	No necesita
		Nmin	3.9	1.000	0.700	0.650	325.0	33.3	-	No necesita
		Mmax	4.0	1.000	0.700	0.650	325.0	28.2	-	No necesita
		Mmin	3.9	1.000	0.700	0.650	325.0	33.3	-	No necesita
		Qmax	3.9	1.000	0.700	0.650	325.0	32.6	-	No necesita
		Qmin	4.0	1.000	0.700	0.650	325.0	28.2	-	No necesita
	3	Nmax	1.6	1.000	0.700	0.650	325.0	28.1	-	No necesita
		Nmin	1.4	1.000	0.700	0.650	325.0	33.3	-	No necesita
		Mmax	1.6	1.000	0.700	0.650	325.0	28.1	-	No necesita
		Mmin	1.4	1.000	0.700	0.650	325.0	33.3	-	No necesita
		Qmax	4.8	1.000	0.700	0.650	325.0	32.7	-	No necesita
		Qmin	1.6	1.000	0.700	0.650	325.0	28.1	-	No necesita
3	3	Nmax	3.5	1.000	0.700	0.650	325.0	28.1	-	No necesita
		Nmin	3.3	1.000	0.700	0.650	325.0	33.3	-	No necesita
		Mmax	3.5	1.000	0.700	0.650	325.0	28.1	-	No necesita
		Mmin	3.3	1.000	0.700	0.650	325.0	33.3	-	No necesita
		Qmax	3.3	1.000	0.700	0.650	325.0	32.7	-	No necesita
		Qmin	3.5	1.000	0.700	0.650	325.0	28.1	-	No necesita
	4	Nmax	1.2	1.000	0.700	0.650	325.0	28.0	-	No necesita
		Nmin	1.1	1.000	0.700	0.650	325.0	33.2	-	No necesita
		Mmax	1.2	1.000	0.700	0.650	325.0	28.0	-	No necesita
		Mmin	1.1	1.000	0.700	0.650	325.0	33.2	-	No necesita
		Qmax	5.1	1.000	0.700	0.650	325.0	32.8	-	No necesita
		Qmin	1.2	1.000	0.700	0.650	325.0	28.0	-	No necesita
4	4	Nmax	3.0	1.000	0.700	0.650	325.0	28.0	-	No necesita
		Nmin	2.8	1.000	0.700	0.650	325.0	33.2	-	No necesita
		Mmax	3.0	1.000	0.700	0.650	325.0	28.0	-	No necesita
		Mmin	2.8	1.000	0.700	0.650	325.0	33.2	-	No necesita
		Qmax	3.4	1.000	0.700	0.650	325.0	32.8	-	No necesita
		Qmin	3.0	1.000	0.700	0.650	325.0	28.0	-	No necesita
	5	Nmax	0.8	1.000	0.700	0.650	325.0	27.9	-	No necesita
		Nmin	0.7	1.000	0.700	0.650	325.0	33.1	-	No necesita
		Mmax	0.8	1.000	0.700	0.650	325.0	27.9	-	No necesita
		Mmin	0.7	1.000	0.700	0.650	325.0	33.1	-	No necesita
		Qmax	5.5	1.000	0.700	0.650	325.0	33.0	-	No necesita
		Qmin	0.8	1.000	0.700	0.650	325.0	27.9	-	No necesita
5	5	Nmax	2.5	1.000	0.700	0.650	325.0	27.9	-	No necesita
		Nmin	2.3	1.000	0.700	0.650	325.0	33.1	-	No necesita
		Mmax	2.5	1.000	0.700	0.650	325.0	27.9	-	No necesita

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES EN UN SÓLO LADO

FECHA: 28/02/2006

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
		Mmin	2.3	1.000	0.700	0.650	325.0	33.1	-	No necesita
		Qmax	4.0	1.000	0.700	0.650	325.0	33.0	-	No necesita
		Qmin	2.5	1.000	0.700	0.650	325.0	27.9	-	No necesita
	6	Nmax	0.5	1.000	0.700	0.650	325.0	27.8	-	No necesita
		Nmin	0.8	1.000	0.700	0.650	325.0	33.1	-	No necesita
		Mmax	0.5	1.000	0.700	0.650	325.0	27.8	-	No necesita
		Mmin	6.0	1.000	0.700	0.650	325.0	33.1	-	No necesita
		Qmax	6.0	1.000	0.700	0.650	325.0	33.1	-	No necesita
		Qmin	0.5	1.000	0.700	0.650	325.0	27.8	-	No necesita
6	6	Nmax	2.1	1.000	0.700	0.650	325.0	27.8	-	No necesita
		Nmin	1.8	1.000	0.700	0.650	325.0	33.1	-	No necesita
		Mmax	2.1	1.000	0.700	0.650	325.0	27.8	-	No necesita
		Mmin	4.5	1.000	0.700	0.650	325.0	33.1	-	No necesita
		Qmax	4.5	1.000	0.700	0.650	325.0	33.1	-	No necesita
		Qmin	2.1	1.000	0.700	0.650	325.0	27.8	-	No necesita
	7	Nmax	0.6	1.000	0.700	0.650	325.0	27.8	-	No necesita
		Nmin	1.3	1.000	0.700	0.650	325.0	33.1	-	No necesita
		Mmax	0.6	1.000	0.700	0.650	325.0	27.8	-	No necesita
		Mmin	6.4	1.000	0.700	0.650	325.0	33.3	-	No necesita
		Qmax	6.4	1.000	0.700	0.650	325.0	33.3	-	No necesita
		Qmin	0.6	1.000	0.700	0.650	325.0	27.8	-	No necesita
7	7	Nmax	1.8	1.000	0.700	0.650	325.0	27.8	-	No necesita
		Nmin	1.4	1.000	0.700	0.650	325.0	33.1	-	No necesita
		Mmax	1.8	1.000	0.700	0.650	325.0	27.8	-	No necesita
		Mmin	5.0	1.000	0.700	0.650	325.0	33.3	-	No necesita
		Qmax	5.0	1.000	0.700	0.650	325.0	33.3	-	No necesita
		Qmin	1.8	1.000	0.700	0.650	325.0	27.8	-	No necesita
	8	Nmax	0.7	1.000	0.700	0.650	325.0	27.8	-	No necesita
		Nmin	1.6	1.000	0.700	0.650	325.0	33.1	-	No necesita
		Mmax	0.7	1.000	0.700	0.650	325.0	27.8	-	No necesita
		Mmin	6.8	1.000	0.700	0.650	325.0	33.5	-	No necesita
		Qmax	6.8	1.000	0.700	0.650	325.0	33.5	-	No necesita
		Qmin	0.7	1.000	0.700	0.650	325.0	27.8	-	No necesita
8	8	Nmax	1.7	1.000	0.700	0.650	325.0	27.8	-	No necesita
		Nmin	1.2	1.000	0.700	0.650	325.0	33.1	-	No necesita
		Mmax	1.7	1.000	0.700	0.650	325.0	27.8	-	No necesita
		Mmin	5.4	1.000	0.700	0.650	325.0	33.5	-	No necesita
		Qmax	5.4	1.000	0.700	0.650	325.0	33.5	-	No necesita
		Qmin	1.7	1.000	0.700	0.650	325.0	27.8	-	No necesita
	9	Nmax	0.8	1.000	0.700	0.650	325.0	27.7	-	No necesita
		Nmin	1.8	1.000	0.700	0.650	325.0	33.1	-	No necesita
		Mmax	0.8	1.000	0.700	0.650	325.0	27.7	-	No necesita
		Mmin	7.0	1.000	0.700	0.650	325.0	33.8	-	No necesita
		Qmax	7.0	1.000	0.700	0.650	325.0	33.8	-	No necesita
		Qmin	0.8	1.000	0.700	0.650	325.0	27.7	-	No necesita
9	9	Nmax	1.7	1.000	0.700	0.650	325.0	27.7	-	No necesita
		Nmin	1.2	1.000	0.700	0.650	325.0	33.1	-	No necesita
		Mmax	1.7	1.000	0.700	0.650	325.0	27.7	-	No necesita
		Mmin	5.5	1.000	0.700	0.650	325.0	33.8	-	No necesita
		Qmax	5.5	1.000	0.700	0.650	325.0	33.8	-	No necesita
		Qmin	1.7	1.000	0.700	0.650	325.0	27.7	-	No necesita

ARMADOJUL_2000_1000_1m.xls PI RIERA DE CAN DE JULIA 28/02/2006
Kv=2000 Kh=1000

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES EN UN SÓLO LADO

FECHA: 28/02/2006

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
	10	Nmax	0.6	1.000	0.700	0.650	325.0	27.7	-	No necesita
		Nmin	1.8	1.000	0.700	0.650	325.0	33.1	-	No necesita
		Mmax	0.6	1.000	0.700	0.650	325.0	27.7	-	No necesita
		Mmin	7.0	1.000	0.700	0.650	325.0	34.0	-	No necesita
		Qmax	7.0	1.000	0.700	0.650	325.0	34.0	-	No necesita
		Qmin	0.6	1.000	0.700	0.650	325.0	27.7	-	No necesita
10	10	Nmax	2.0	1.000	0.700	0.650	325.0	27.7	-	No necesita
		Nmin	1.4	1.000	0.700	0.650	325.0	33.1	-	No necesita
		Mmax	2.0	1.000	0.700	0.650	325.0	27.7	-	No necesita
		Mmin	5.3	1.000	0.700	0.650	325.0	34.0	-	No necesita
		Qmax	5.3	1.000	0.700	0.650	325.0	34.0	-	No necesita
		Qmin	2.0	1.000	0.700	0.650	325.0	27.7	-	No necesita
	11	Nmax	0.7	1.000	0.700	0.650	325.0	27.7	-	No necesita
		Nmin	1.4	1.000	0.700	0.650	325.0	33.1	-	No necesita
		Mmax	0.7	1.000	0.700	0.650	325.0	27.7	-	No necesita
		Mmin	6.6	1.000	0.700	0.650	325.0	34.2	-	No necesita
		Qmax	6.6	1.000	0.700	0.650	325.0	34.2	-	No necesita
		Qmin	0.7	1.000	0.700	0.650	325.0	27.7	-	No necesita
11	11	Nmax	2.5	1.000	0.700	0.650	325.0	27.7	-	No necesita
		Nmin	1.9	1.000	0.700	0.650	325.0	33.1	-	No necesita
		Mmax	2.5	1.000	0.700	0.650	325.0	27.7	-	No necesita
		Mmin	4.8	1.000	0.700	0.650	325.0	34.2	-	No necesita
		Qmax	4.8	1.000	0.700	0.650	325.0	34.2	-	No necesita
		Qmin	2.5	1.000	0.700	0.650	325.0	27.7	-	No necesita
	12	Nmax	1.3	1.000	0.700	0.650	325.0	27.6	-	No necesita
		Nmin	0.8	1.000	0.700	0.650	325.0	33.1	-	No necesita
		Mmax	1.3	1.000	0.700	0.650	325.0	27.6	-	No necesita
		Mmin	6.0	1.000	0.700	0.650	325.0	34.4	-	No necesita
		Qmax	6.0	1.000	0.700	0.650	325.0	34.4	-	No necesita
		Qmin	1.3	1.000	0.700	0.650	325.0	27.6	-	No necesita
12	12	Nmax	3.2	1.000	0.700	0.650	325.0	27.6	-	No necesita
		Nmin	2.8	1.000	0.700	0.650	325.0	33.1	-	No necesita
		Mmax	3.2	1.000	0.700	0.650	325.0	27.6	-	No necesita
		Mmin	3.8	1.000	0.700	0.650	325.0	34.4	-	No necesita
		Qmax	3.8	1.000	0.700	0.650	325.0	34.4	-	No necesita
		Qmin	3.2	1.000	0.700	0.650	325.0	27.6	-	No necesita
	13	Nmax	2.2	1.000	0.700	0.650	325.0	27.5	-	No necesita
		Nmin	1.8	1.000	0.700	0.650	325.0	33.1	-	No necesita
		Mmax	2.2	1.000	0.700	0.650	325.0	27.5	-	No necesita
		Mmin	4.8	1.000	0.700	0.650	325.0	34.5	-	No necesita
		Qmax	4.8	1.000	0.700	0.650	325.0	34.5	-	No necesita
		Qmin	2.2	1.000	0.700	0.650	325.0	27.5	-	No necesita
13	13	Nmax	71.1	1.000	0.800	0.750	375.0	27.9	23.3	17.7
		Nmin	110.0	1.000	0.800	0.750	375.0	34.8	29.0	30.0
		Mmax	71.1	1.000	0.800	0.750	375.0	27.9	23.3	17.7
		Mmin	110.0	1.000	0.800	0.750	375.0	34.8	29.0	30.0
		Qmax	71.1	1.000	0.800	0.750	375.0	27.9	23.3	17.7
		Qmin	116.7	1.000	0.800	0.750	375.0	33.4	27.8	32.9
	15	Nmax	66.4	1.000	0.800	0.750	375.0	24.4	20.4	17.1
		Nmin	106.9	1.000	0.800	0.750	375.0	30.9	25.8	30.1
		Mmax	66.4	1.000	0.800	0.750	375.0	24.4	20.4	17.1

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES EN UN SÓLO LADO

FECHA: 28/02/2006

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
		Mmin	106.9	1.000	0.800	0.750	375.0	30.9	25.8	30.1
		Qmax	66.4	1.000	0.800	0.750	375.0	24.4	20.4	17.1
		Qmin	109.0	1.000	0.800	0.750	375.0	29.1	24.2	31.4
14	15	Nmax	66.3	1.000	0.800	0.750	375.0	24.4	20.4	17.0
		Nmin	106.9	1.000	0.800	0.750	375.0	30.9	25.8	30.0
		Mmax	66.3	1.000	0.800	0.750	375.0	24.4	20.4	17.0
		Mmin	106.9	1.000	0.800	0.750	375.0	30.9	25.8	30.0
		Qmax	66.3	1.000	0.800	0.750	375.0	24.4	20.4	17.0
		Qmin	108.9	1.000	0.800	0.750	375.0	29.1	24.2	31.3
	17	Nmax	61.6	1.000	0.800	0.750	375.0	20.1	16.7	16.6
		Nmin	103.8	1.000	0.800	0.750	375.0	26.3	21.9	30.3
		Mmax	61.6	1.000	0.800	0.750	375.0	20.1	16.7	16.6
		Mmin	103.8	1.000	0.800	0.750	375.0	26.3	21.9	30.3
		Qmax	61.6	1.000	0.800	0.750	375.0	20.1	16.7	16.6
		Qmin	103.8	1.000	0.800	0.750	375.0	26.3	21.9	30.3
15	17	Nmax	61.7	1.000	0.800	0.750	375.0	20.1	16.7	16.6
		Nmin	103.8	1.000	0.800	0.750	375.0	26.3	21.9	30.3
		Mmax	61.7	1.000	0.800	0.750	375.0	20.1	16.7	16.6
		Mmin	103.8	1.000	0.800	0.750	375.0	26.3	21.9	30.3
		Qmax	61.7	1.000	0.800	0.750	375.0	20.1	16.7	16.6
		Qmin	103.8	1.000	0.800	0.750	375.0	26.3	21.9	30.3
	19	Nmax	57.0	1.000	0.800	0.750	375.0	13.1	10.9	17.1
		Nmin	100.7	1.000	0.800	0.750	375.0	19.8	16.5	31.2
		Mmax	57.0	1.000	0.800	0.750	375.0	13.1	10.9	17.1
		Mmin	100.7	1.000	0.800	0.750	375.0	19.8	16.5	31.2
		Qmax	57.0	1.000	0.800	0.750	375.0	13.1	10.9	17.1
		Qmin	100.7	1.000	0.800	0.750	375.0	19.8	16.5	31.2
16	19	Nmax	56.9	1.000	0.800	0.750	375.0	13.1	10.9	17.0
		Nmin	100.6	1.000	0.800	0.750	375.0	19.8	16.5	31.1
		Mmax	56.9	1.000	0.800	0.750	375.0	13.1	10.9	17.0
		Mmin	100.6	1.000	0.800	0.750	375.0	19.8	16.5	31.1
		Qmax	56.9	1.000	0.800	0.750	375.0	13.1	10.9	17.0
		Qmin	100.6	1.000	0.800	0.750	375.0	19.8	16.5	31.1
	21	Nmax	52.2	1.000	0.800	0.750	375.0	14.5	12.1	14.8
		Nmin	97.5	1.000	0.800	0.750	375.0	14.5	12.1	31.6
		Mmax	85.6	1.000	0.800	0.750	375.0	17.1	14.2	26.4
		Mmin	97.5	1.000	0.800	0.750	375.0	14.5	12.1	31.6
		Qmax	52.2	1.000	0.800	0.750	375.0	14.5	12.1	14.8
		Qmin	97.5	1.000	0.800	0.750	375.0	14.5	12.1	31.6
17	21	Nmax	52.2	1.000	0.800	0.750	375.0	14.5	12.1	14.8
		Nmin	97.5	1.000	0.800	0.750	375.0	14.5	12.1	31.6
		Mmax	85.6	1.000	0.800	0.750	375.0	17.1	14.2	26.4
		Mmin	97.5	1.000	0.800	0.750	375.0	14.5	12.1	31.6
		Qmax	52.2	1.000	0.800	0.750	375.0	14.5	12.1	14.8
		Qmin	97.5	1.000	0.800	0.750	375.0	14.5	12.1	31.6
	23	Nmax	47.5	1.000	0.800	0.750	375.0	20.0	16.6	11.4
		Nmin	94.4	1.000	0.800	0.750	375.0	22.5	18.8	28.0
		Mmax	77.9	1.000	0.800	0.750	375.0	23.6	19.7	21.6
		Mmin	47.5	1.000	0.800	0.750	375.0	20.0	16.6	11.4
		Qmax	47.5	1.000	0.800	0.750	375.0	20.0	16.6	11.4
		Qmin	94.4	1.000	0.800	0.750	375.0	22.5	18.8	28.0

ARMADOJUL_2000_1000_1m.xls PI RIERA DE CAN DE JULIA 28/02/2006
Kv=2000 Kh=1000

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES EN UN SÓLO LADO

FECHA: 28/02/2006

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
18	23	Nmax	47.5	1.000	0.800	0.750	375.0	20.0	16.6	11.4
		Nmin	94.4	1.000	0.800	0.750	375.0	22.5	18.8	28.0
		Mmax	77.9	1.000	0.800	0.750	375.0	23.6	19.7	21.6
		Mmin	47.5	1.000	0.800	0.750	375.0	20.0	16.6	11.4
		Qmax	47.5	1.000	0.800	0.750	375.0	20.0	16.6	11.4
		Qmin	94.4	1.000	0.800	0.750	375.0	22.5	18.8	28.0
	25	Nmax	38.1	1.000	0.800	0.750	375.0	25.6	21.3	6.2
		Nmin	75.6	1.000	0.800	0.750	375.0	30.9	25.8	18.5
		Mmax	75.6	1.000	0.800	0.750	375.0	30.9	25.8	18.5
		Mmin	38.1	1.000	0.800	0.750	375.0	25.6	21.3	6.2
		Qmax	38.1	1.000	0.800	0.750	375.0	25.6	21.3	6.2
		Qmin	75.6	1.000	0.800	0.750	375.0	30.9	25.8	18.5
19	25	Nmax	38.1	1.000	0.800	0.750	375.0	25.6	21.3	6.2
		Nmin	75.6	1.000	0.800	0.750	375.0	30.9	25.8	18.5
		Mmax	75.6	1.000	0.800	0.750	375.0	30.9	25.8	18.5
		Mmin	38.1	1.000	0.800	0.750	375.0	25.6	21.3	6.2
		Qmax	38.1	1.000	0.800	0.750	375.0	25.6	21.3	6.2
		Qmin	75.6	1.000	0.800	0.750	375.0	30.9	25.8	18.5
	27	Nmax	28.6	1.000	0.800	0.750	375.0	28.8	-	No necesita
		Nmin	56.8	1.000	0.800	0.750	375.0	35.6	29.6	10.0
		Mmax	56.8	1.000	0.800	0.750	375.0	35.6	29.6	10.0
		Mmin	28.6	1.000	0.800	0.750	375.0	28.8	-	No necesita
		Qmax	28.6	1.000	0.800	0.750	375.0	28.8	-	No necesita
		Qmin	56.8	1.000	0.800	0.750	375.0	35.6	29.6	10.0
20	27	Nmax	28.6	1.000	0.800	0.750	375.0	28.8	-	No necesita
		Nmin	56.8	1.000	0.800	0.750	375.0	35.6	29.6	10.1
		Mmax	56.8	1.000	0.800	0.750	375.0	35.6	29.6	10.1
		Mmin	28.6	1.000	0.800	0.750	375.0	28.8	-	No necesita
		Qmax	28.6	1.000	0.800	0.750	375.0	28.8	-	No necesita
		Qmin	56.8	1.000	0.800	0.750	375.0	35.6	29.6	10.1
	29	Nmax	19.2	1.000	0.800	0.750	375.0	30.7	-	No necesita
		Nmin	38.0	1.000	0.800	0.750	375.0	38.5	-	No necesita
		Mmax	38.0	1.000	0.800	0.750	375.0	38.5	-	No necesita
		Mmin	19.2	1.000	0.800	0.750	375.0	30.7	-	No necesita
		Qmax	19.2	1.000	0.800	0.750	375.0	30.7	-	No necesita
		Qmin	38.0	1.000	0.800	0.750	375.0	38.5	-	No necesita
21	29	Nmax	19.2	1.000	0.800	0.750	375.0	30.7	-	No necesita
		Nmin	38.0	1.000	0.800	0.750	375.0	38.5	-	No necesita
		Mmax	38.0	1.000	0.800	0.750	375.0	38.5	-	No necesita
		Mmin	19.2	1.000	0.800	0.750	375.0	30.7	-	No necesita
		Qmax	19.2	1.000	0.800	0.750	375.0	30.7	-	No necesita
		Qmin	38.0	1.000	0.800	0.750	375.0	38.5	-	No necesita
	31	Nmax	9.8	1.000	0.800	0.750	375.0	31.8	-	No necesita
		Nmin	19.2	1.000	0.800	0.750	375.0	40.1	-	No necesita
		Mmax	19.2	1.000	0.800	0.750	375.0	40.1	-	No necesita
		Mmin	9.8	1.000	0.800	0.750	375.0	31.8	-	No necesita
		Qmax	9.8	1.000	0.800	0.750	375.0	31.8	-	No necesita
		Qmin	19.2	1.000	0.800	0.750	375.0	40.1	-	No necesita
22	31	Nmax	9.8	1.000	0.800	0.750	375.0	31.8	-	No necesita
		Nmin	19.2	1.000	0.800	0.750	375.0	40.1	-	No necesita
		Mmax	19.2	1.000	0.800	0.750	375.0	40.1	-	No necesita

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES EN UN SÓLO LADO

FECHA: 28/02/2006

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25,00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
		Mmin	9.8	1.000	0.800	0.750	375.0	31.8	-	No necesita
		Qmax	9.8	1.000	0.800	0.750	375.0	31.8	-	No necesita
		Qmin	19.2	1.000	0.800	0.750	375.0	40.1	-	No necesita
	33	Nmax	0.4	1.000	0.800	0.750	375.0	32.2	-	No necesita
		Nmin	0.4	1.000	0.800	0.750	375.0	40.7	-	No necesita
		Mmax	0.4	1.000	0.800	0.750	375.0	40.7	-	No necesita
		Mmin	0.4	1.000	0.800	0.750	375.0	32.2	-	No necesita
		Qmax	0.4	1.000	0.800	0.750	375.0	32.2	-	No necesita
		Qmin	0.4	1.000	0.800	0.750	375.0	38.8	-	No necesita
23	33	Nmax	0.4	1.000	0.800	0.750	375.0	32.2	-	No necesita
		Nmin	0.4	1.000	0.800	0.750	375.0	40.7	-	No necesita
		Mmax	0.4	1.000	0.800	0.750	375.0	40.7	-	No necesita
		Mmin	0.4	1.000	0.800	0.750	375.0	32.2	-	No necesita
		Qmax	0.4	1.000	0.800	0.750	375.0	32.2	-	No necesita
		Qmin	0.4	1.000	0.800	0.750	375.0	38.8	-	No necesita
	35	Nmax	9.0	1.000	0.800	0.750	375.0	31.9	-	No necesita
		Nmin	18.4	1.000	0.800	0.750	375.0	40.2	-	No necesita
		Mmax	18.4	1.000	0.800	0.750	375.0	40.2	-	No necesita
		Mmin	9.0	1.000	0.800	0.750	375.0	31.9	-	No necesita
		Qmax	18.4	1.000	0.800	0.750	375.0	40.2	-	No necesita
		Qmin	9.0	1.000	0.800	0.750	375.0	31.9	-	No necesita
24	35	Nmax	9.0	1.000	0.800	0.750	375.0	31.9	-	No necesita
		Nmin	18.3	1.000	0.800	0.750	375.0	40.2	-	No necesita
		Mmax	18.3	1.000	0.800	0.750	375.0	40.2	-	No necesita
		Mmin	9.0	1.000	0.800	0.750	375.0	31.9	-	No necesita
		Qmax	18.3	1.000	0.800	0.750	375.0	40.2	-	No necesita
		Qmin	9.0	1.000	0.800	0.750	375.0	31.9	-	No necesita
	37	Nmax	18.4	1.000	0.800	0.750	375.0	30.9	-	No necesita
		Nmin	37.2	1.000	0.800	0.750	375.0	38.6	-	No necesita
		Mmax	37.2	1.000	0.800	0.750	375.0	38.6	-	No necesita
		Mmin	18.4	1.000	0.800	0.750	375.0	30.9	-	No necesita
		Qmax	37.2	1.000	0.800	0.750	375.0	38.6	-	No necesita
		Qmin	18.4	1.000	0.800	0.750	375.0	30.9	-	No necesita
25	37	Nmax	18.4	1.000	0.800	0.750	375.0	30.9	-	No necesita
		Nmin	37.1	1.000	0.800	0.750	375.0	38.6	-	No necesita
		Mmax	37.1	1.000	0.800	0.750	375.0	38.6	-	No necesita
		Mmin	18.4	1.000	0.800	0.750	375.0	30.9	-	No necesita
		Qmax	37.1	1.000	0.800	0.750	375.0	38.6	-	No necesita
		Qmin	18.4	1.000	0.800	0.750	375.0	30.9	-	No necesita
	39	Nmax	27.8	1.000	0.800	0.750	375.0	29.0	-	No necesita
		Nmin	56.0	1.000	0.800	0.750	375.0	35.7	29.8	9.7
		Mmax	56.0	1.000	0.800	0.750	375.0	35.7	29.8	9.7
		Mmin	27.8	1.000	0.800	0.750	375.0	29.0	-	No necesita
		Qmax	56.0	1.000	0.800	0.750	375.0	35.7	29.8	9.7
		Qmin	27.8	1.000	0.800	0.750	375.0	29.0	-	No necesita
26	39	Nmax	27.8	1.000	0.800	0.750	375.0	29.0	-	No necesita
		Nmin	55.9	1.000	0.800	0.750	375.0	35.7	29.8	9.7
		Mmax	55.9	1.000	0.800	0.750	375.0	35.7	29.8	9.7
		Mmin	27.8	1.000	0.800	0.750	375.0	29.0	-	No necesita
		Qmax	55.9	1.000	0.800	0.750	375.0	35.7	29.8	9.7
		Qmin	27.8	1.000	0.800	0.750	375.0	29.0	-	No necesita

ARMADOJUL_2000_1000_1m.xls PI RIERA DE CAN DE JULIA
Kv=2000 Kh=1000 28/02/2006

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES EN UN SÓLO LADO

FECHA: 28/02/2006

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25,00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
	41	Nmax	37.2	1.000	0.800	0.750	375.0	25.9	21.6	5.8
		Nmin	74.7	1.000	0.800	0.750	375.0	31.2	26.0	18.0
		Mmax	74.7	1.000	0.800	0.750	375.0	31.2	26.0	18.0
		Mmin	37.2	1.000	0.800	0.750	375.0	25.9	21.6	5.8
		Qmax	74.7	1.000	0.800	0.750	375.0	31.2	26.0	18.0
		Qmin	37.2	1.000	0.800	0.750	375.0	25.9	21.6	5.8
27	41	Nmax	37.2	1.000	0.800	0.750	375.0	25.9	21.6	5.8
		Nmin	74.7	1.000	0.800	0.750	375.0	31.2	26.0	18.0
		Mmax	74.7	1.000	0.800	0.750	375.0	31.2	26.0	18.0
		Mmin	37.2	1.000	0.800	0.750	375.0	25.9	21.6	5.8
		Qmax	74.7	1.000	0.800	0.750	375.0	31.2	26.0	18.0
		Qmin	37.2	1.000	0.800	0.750	375.0	25.9	21.6	5.8
	43	Nmax	46.6	1.000	0.800	0.750	375.0	20.6	17.2	10.9
		Nmin	93.5	1.000	0.800	0.750	375.0	23.1	19.2	27.5
		Mmax	77.0	1.000	0.800	0.750	375.0	24.1	20.1	21.1
		Mmin	46.6	1.000	0.800	0.750	375.0	20.6	17.2	10.9
		Qmax	93.5	1.000	0.800	0.750	375.0	23.1	19.2	27.5
		Qmin	46.6	1.000	0.800	0.750	375.0	20.6	17.2	10.9
28	43	Nmax	46.6	1.000	0.800	0.750	375.0	20.6	17.2	10.9
		Nmin	93.4	1.000	0.800	0.750	375.0	23.1	19.2	27.5
		Mmax	76.9	1.000	0.800	0.750	375.0	24.1	20.1	21.0
		Mmin	46.6	1.000	0.800	0.750	375.0	20.6	17.2	10.9
		Qmax	93.4	1.000	0.800	0.750	375.0	23.1	19.2	27.5
		Qmin	46.6	1.000	0.800	0.750	375.0	20.6	17.2	10.9
	45	Nmax	51.3	1.000	0.800	0.750	375.0	15.8	13.2	14.1
		Nmin	96.5	1.000	0.800	0.750	375.0	15.8	13.2	30.9
		Mmax	84.6	1.000	0.800	0.750	375.0	18.1	15.1	25.8
		Mmin	96.5	1.000	0.800	0.750	375.0	15.8	13.2	30.9
		Qmax	96.5	1.000	0.800	0.750	375.0	15.8	13.2	30.9
		Qmin	51.3	1.000	0.800	0.750	375.0	15.8	13.2	14.1
29	45	Nmax	51.3	1.000	0.800	0.750	375.0	15.8	13.2	14.1
		Nmin	96.6	1.000	0.800	0.750	375.0	15.8	13.2	30.9
		Mmax	84.7	1.000	0.800	0.750	375.0	18.1	15.1	25.8
		Mmin	96.6	1.000	0.800	0.750	375.0	15.8	13.2	30.9
		Qmax	96.6	1.000	0.800	0.750	375.0	15.8	13.2	30.9
		Qmin	51.3	1.000	0.800	0.750	375.0	15.8	13.2	14.1
	47	Nmax	56.0	1.000	0.800	0.750	375.0	10.8	9.0	17.4
		Nmin	99.7	1.000	0.800	0.750	375.0	18.9	15.7	31.1
		Mmax	56.0	1.000	0.800	0.750	375.0	10.8	9.0	17.4
		Mmin	99.7	1.000	0.800	0.750	375.0	18.9	15.7	31.1
		Qmax	99.7	1.000	0.800	0.750	375.0	18.9	15.7	31.1
		Qmin	56.0	1.000	0.800	0.750	375.0	10.8	9.0	17.4
30	47	Nmax	56.0	1.000	0.800	0.750	375.0	10.8	9.0	17.4
		Nmin	99.7	1.000	0.800	0.750	375.0	18.9	15.7	31.1
		Mmax	56.0	1.000	0.800	0.750	375.0	10.8	9.0	17.4
		Mmin	99.7	1.000	0.800	0.750	375.0	18.9	15.7	31.1
		Qmax	99.7	1.000	0.800	0.750	375.0	18.9	15.7	31.1
		Qmin	56.0	1.000	0.800	0.750	375.0	10.8	9.0	17.4
	49	Nmax	60.7	1.000	0.800	0.750	375.0	19.1	15.9	16.6
		Nmin	102.8	1.000	0.800	0.750	375.0	25.7	21.4	30.1
		Mmax	60.7	1.000	0.800	0.750	375.0	19.1	15.9	16.6

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES EN UN SÓLO LADO

FECHA: 28/02/2006

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
		Mmin	102.8	1.000	0.800	0.750	375.0	25.7	21.4	30.1
		Qmax	102.8	1.000	0.800	0.750	375.0	25.7	21.4	30.1
		Qmin	60.7	1.000	0.800	0.750	375.0	19.1	15.9	16.6
31	49	Nmax	60.8	1.000	0.800	0.750	375.0	19.1	15.9	16.6
		Nmin	102.9	1.000	0.800	0.750	375.0	25.7	21.4	30.2
		Mmax	60.8	1.000	0.800	0.750	375.0	19.1	15.9	16.6
		Mmin	102.9	1.000	0.800	0.750	375.0	25.7	21.4	30.2
		Qmax	102.9	1.000	0.800	0.750	375.0	25.7	21.4	30.2
		Qmin	60.8	1.000	0.800	0.750	375.0	19.1	15.9	16.6
	51	Nmax	65.5	1.000	0.800	0.750	375.0	23.7	19.8	16.9
		Nmin	106.0	1.000	0.800	0.750	375.0	30.5	25.4	29.9
		Mmax	65.5	1.000	0.800	0.750	375.0	23.7	19.8	16.9
		Mmin	106.0	1.000	0.800	0.750	375.0	30.5	25.4	29.9
		Qmax	108.1	1.000	0.800	0.750	375.0	28.5	23.8	31.2
		Qmin	65.5	1.000	0.800	0.750	375.0	23.7	19.8	16.9
32	51	Nmax	65.5	1.000	0.800	0.750	375.0	23.7	19.8	16.9
		Nmin	106.0	1.000	0.800	0.750	375.0	30.5	25.4	29.9
		Mmax	65.5	1.000	0.800	0.750	375.0	23.7	19.8	16.9
		Mmin	106.0	1.000	0.800	0.750	375.0	30.5	25.4	29.9
		Qmax	108.1	1.000	0.800	0.750	375.0	28.5	23.8	31.2
		Qmin	65.5	1.000	0.800	0.750	375.0	23.7	19.8	16.9
	64	Nmax	70.2	1.000	0.800	0.750	375.0	27.3	22.8	17.6
		Nmin	109.1	1.000	0.800	0.750	375.0	34.4	28.6	29.8
		Mmax	70.2	1.000	0.800	0.750	375.0	27.3	22.8	17.6
		Mmin	109.1	1.000	0.800	0.750	375.0	34.4	28.6	29.8
		Qmax	115.8	1.000	0.800	0.750	375.0	32.9	27.4	32.7
		Qmin	70.2	1.000	0.800	0.750	375.0	27.3	22.8	17.6
33	1	Nmax	113.8	1.000	0.700	0.650	325.0	32.5	27.0	37.1
		Nmin	77.1	1.000	0.700	0.650	325.0	28.4	23.6	22.9
		Mmax	120.1	1.000	0.700	0.650	325.0	33.4	27.9	39.4
		Mmin	77.1	1.000	0.700	0.650	325.0	28.4	23.6	22.9
		Qmax	120.1	1.000	0.700	0.650	325.0	33.4	27.9	39.4
		Qmin	77.1	1.000	0.700	0.650	325.0	28.4	23.6	22.9
	14	Nmax	114.6	1.000	0.700	0.650	325.0	27.8	23.2	39.1
		Nmin	78.0	1.000	0.700	0.650	325.0	24.6	20.5	24.6
		Mmax	121.0	1.000	0.700	0.650	325.0	28.8	24.0	41.5
		Mmin	78.0	1.000	0.700	0.650	325.0	24.6	20.5	24.6
		Qmax	121.0	1.000	0.700	0.650	325.0	28.8	24.0	41.5
		Qmin	78.0	1.000	0.700	0.650	325.0	24.6	20.5	24.6
34	14	Nmax	100.4	1.000	0.700	0.650	325.0	27.8	23.2	33.0
		Nmin	68.2	1.000	0.700	0.650	325.0	24.6	20.5	20.4
		Mmax	106.2	1.000	0.700	0.650	325.0	28.8	24.0	35.1
		Mmin	68.2	1.000	0.700	0.650	325.0	24.6	20.5	20.4
		Qmax	106.2	1.000	0.700	0.650	325.0	28.8	24.0	35.1
		Qmin	68.2	1.000	0.700	0.650	325.0	24.6	20.5	20.4
	16	Nmax	101.3	1.000	0.700	0.650	325.0	22.5	18.8	35.3
		Nmin	69.0	1.000	0.700	0.650	325.0	20.1	16.8	22.3
		Mmax	107.0	1.000	0.700	0.650	325.0	23.5	19.5	37.4
		Mmin	69.0	1.000	0.700	0.650	325.0	20.1	16.8	22.3
		Qmax	107.0	1.000	0.700	0.650	325.0	23.5	19.5	37.4
		Qmin	69.0	1.000	0.700	0.650	325.0	20.1	16.8	22.3

ARMADOJUL_2000_1000_1m.xls PI RIERA DE CAN DE JULIA
Kv=2000 Kh=1000
28/02/2006

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES EN UN SÓLO LADO

FECHA: 28/02/2006

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
35	16	Nmax	88.0	1.000	0.700	0.650	325.0	22.5	18.8	29.6
		Nmin	59.7	1.000	0.700	0.650	325.0	20.1	16.8	18.4
		Mmax	93.1	1.000	0.700	0.650	325.0	23.5	19.5	31.4
		Mmin	59.7	1.000	0.700	0.650	325.0	20.1	16.8	18.4
		Qmax	93.1	1.000	0.700	0.650	325.0	23.5	19.5	31.4
		Qmin	59.7	1.000	0.700	0.650	325.0	20.1	16.8	18.4
	18	Nmax	88.8	1.000	0.700	0.650	325.0	14.5	12.1	32.8
		Nmin	60.6	1.000	0.700	0.650	325.0	13.7	11.4	21.0
		Mmax	94.0	1.000	0.700	0.650	325.0	15.9	13.2	34.5
		Mmin	60.6	1.000	0.700	0.650	325.0	13.7	11.4	21.0
		Qmax	94.0	1.000	0.700	0.650	325.0	15.9	13.2	34.5
		Qmin	60.6	1.000	0.700	0.650	325.0	13.7	11.4	21.0
36	18	Nmax	76.5	1.000	0.700	0.650	325.0	14.5	12.1	27.5
		Nmin	52.0	1.000	0.700	0.650	325.0	13.7	11.4	17.3
		Mmax	81.1	1.000	0.700	0.650	325.0	15.9	13.2	29.0
		Mmin	52.0	1.000	0.700	0.650	325.0	13.7	11.4	17.3
		Qmax	81.1	1.000	0.700	0.650	325.0	15.9	13.2	29.0
		Qmin	52.0	1.000	0.700	0.650	325.0	13.7	11.4	17.3
	20	Nmax	77.3	1.000	0.700	0.650	325.0	15.8	13.2	27.4
		Nmin	52.8	1.000	0.700	0.650	325.0	13.0	10.8	17.9
		Mmax	52.8	1.000	0.700	0.650	325.0	13.0	10.8	17.9
		Mmin	77.3	1.000	0.700	0.650	325.0	15.8	13.2	27.4
		Qmax	81.9	1.000	0.700	0.650	325.0	15.1	12.6	29.6
		Qmin	52.8	1.000	0.700	0.650	325.0	13.0	10.8	17.9
37	20	Nmax	65.9	1.000	0.700	0.650	325.0	15.8	13.2	22.5
		Nmin	44.8	1.000	0.700	0.650	325.0	13.0	10.8	14.5
		Mmax	44.8	1.000	0.700	0.650	325.0	13.0	10.8	14.5
		Mmin	65.9	1.000	0.700	0.650	325.0	15.8	13.2	22.5
		Qmax	70.0	1.000	0.700	0.650	325.0	15.1	12.6	24.5
		Qmin	44.8	1.000	0.700	0.650	325.0	13.0	10.8	14.5
	22	Nmax	66.8	1.000	0.700	0.650	325.0	21.7	18.1	20.8
		Nmin	45.6	1.000	0.700	0.650	325.0	18.5	15.4	12.9
		Mmax	45.6	1.000	0.700	0.650	325.0	18.5	15.4	12.9
		Mmin	66.8	1.000	0.700	0.650	325.0	21.7	18.1	20.8
		Qmax	70.8	1.000	0.700	0.650	325.0	21.6	18.0	22.6
		Qmin	45.6	1.000	0.700	0.650	325.0	18.5	15.4	12.9
38	22	Nmax	51.0	1.000	0.700	0.650	325.0	21.7	18.1	14.1
		Nmin	34.6	1.000	0.700	0.650	325.0	18.5	15.4	8.2
		Mmax	34.6	1.000	0.700	0.650	325.0	18.5	15.4	8.2
		Mmin	51.0	1.000	0.700	0.650	325.0	21.7	18.1	14.1
		Qmax	54.3	1.000	0.700	0.650	325.0	21.6	18.0	15.5
		Qmin	34.6	1.000	0.700	0.650	325.0	18.5	15.4	8.2
	24	Nmax	52.7	1.000	0.700	0.650	325.0	27.4	22.8	12.8
		Nmin	36.3	1.000	0.700	0.650	325.0	23.6	19.7	7.1
		Mmax	36.3	1.000	0.700	0.650	325.0	23.6	19.7	7.1
		Mmin	56.0	1.000	0.700	0.650	325.0	27.6	23.0	14.1
		Qmax	56.0	1.000	0.700	0.650	325.0	27.6	23.0	14.1
		Qmin	36.3	1.000	0.700	0.650	325.0	23.6	19.7	7.1
39	24	Nmax	35.3	1.000	0.700	0.650	325.0	27.4	22.8	5.3
		Nmin	23.8	1.000	0.700	0.650	325.0	23.6	19.7	1.8
		Mmax	23.8	1.000	0.700	0.650	325.0	23.6	19.7	1.8

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES EN UN SÓLO LADO

FECHA: 28/02/2006

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
		Mmin	37.7	1.000	0.700	0.650	325.0	27.6	23.0	6.3
		Qmax	37.7	1.000	0.700	0.650	325.0	27.6	23.0	6.3
		Qmin	23.8	1.000	0.700	0.650	325.0	23.6	19.7	1.8
	26	Nmax	37.0	1.000	0.700	0.650	325.0	30.5	25.4	5.0
		Nmin	25.5	1.000	0.700	0.650	325.0	26.3	-	No necesita
		Mmax	25.5	1.000	0.700	0.650	325.0	26.3	-	No necesita
		Mmin	39.4	1.000	0.700	0.650	325.0	30.9	25.7	5.8
		Qmax	39.4	1.000	0.700	0.650	325.0	30.9	25.7	5.8
		Qmin	25.5	1.000	0.700	0.650	325.0	26.3	-	No necesita
40	26	Nmax	22.5	1.000	0.700	0.650	325.0	30.5	-	No necesita
		Nmin	15.1	1.000	0.700	0.650	325.0	26.3	-	No necesita
		Mmax	15.1	1.000	0.700	0.650	325.0	26.3	-	No necesita
		Mmin	24.1	1.000	0.700	0.650	325.0	30.9	-	No necesita
		Qmax	24.1	1.000	0.700	0.650	325.0	30.9	-	No necesita
		Qmin	15.1	1.000	0.700	0.650	325.0	26.3	-	No necesita
	28	Nmax	24.2	1.000	0.700	0.650	325.0	32.3	-	No necesita
		Nmin	16.8	1.000	0.700	0.650	325.0	27.8	-	No necesita
		Mmax	16.8	1.000	0.700	0.650	325.0	27.8	-	No necesita
		Mmin	25.8	1.000	0.700	0.650	325.0	32.8	-	No necesita
		Qmax	25.8	1.000	0.700	0.650	325.0	32.8	-	No necesita
		Qmin	16.8	1.000	0.700	0.650	325.0	27.8	-	No necesita
41	28	Nmax	12.0	1.000	0.700	0.650	325.0	32.3	-	No necesita
		Nmin	7.9	1.000	0.700	0.650	325.0	27.8	-	No necesita
		Mmax	7.9	1.000	0.700	0.650	325.0	27.8	-	No necesita
		Mmin	12.9	1.000	0.700	0.650	325.0	32.8	-	No necesita
		Qmax	12.9	1.000	0.700	0.650	325.0	32.8	-	No necesita
		Qmin	7.9	1.000	0.700	0.650	325.0	27.8	-	No necesita
	30	Nmax	13.7	1.000	0.700	0.650	325.0	33.2	-	No necesita
		Nmin	9.6	1.000	0.700	0.650	325.0	28.5	-	No necesita
		Mmax	9.6	1.000	0.700	0.650	325.0	28.5	-	No necesita
		Mmin	14.6	1.000	0.700	0.650	325.0	33.7	-	No necesita
		Qmax	14.6	1.000	0.700	0.650	325.0	33.7	-	No necesita
		Qmin	9.6	1.000	0.700	0.650	325.0	28.5	-	No necesita
42	30	Nmax	3.0	1.000	0.700	0.650	325.0	33.2	-	No necesita
		Nmin	1.6	1.000	0.700	0.650	325.0	28.5	-	No necesita
		Mmax	1.6	1.000	0.700	0.650	325.0	28.5	-	No necesita
		Mmin	3.2	1.000	0.700	0.650	325.0	33.7	-	No necesita
		Qmax	3.2	1.000	0.700	0.650	325.0	33.7	-	No necesita
		Qmin	1.6	1.000	0.700	0.650	325.0	28.5	-	No necesita
	32	Nmax	4.6	1.000	0.700	0.650	325.0	33.5	-	No necesita
		Nmin	3.3	1.000	0.700	0.650	325.0	28.8	-	No necesita
		Mmax	3.3	1.000	0.700	0.650	325.0	28.8	-	No necesita
		Mmin	4.9	1.000	0.700	0.650	325.0	34.0	-	No necesita
		Qmax	4.9	1.000	0.700	0.650	325.0	34.0	-	No necesita
		Qmin	3.3	1.000	0.700	0.650	325.0	28.8	-	No necesita
43	32	Nmax	5.7	1.000	0.700	0.650	325.0	33.5	-	No necesita
		Nmin	4.3	1.000	0.700	0.650	325.0	28.8	-	No necesita
		Mmax	4.3	1.000	0.700	0.650	325.0	28.8	-	No necesita
		Mmin	6.0	1.000	0.700	0.650	325.0	34.0	-	No necesita
		Qmax	4.3	1.000	0.700	0.650	325.0	28.8	-	No necesita
		Qmin	6.0	1.000	0.700	0.650	325.0	34.0	-	No necesita

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES EN UN SÓLO LADO

FECHA: 28/02/2006

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
	34	Nmax	4.0	1.000	0.700	0.650	325.0	33.1	-	No necesita
		Nmin	2.7	1.000	0.700	0.650	325.0	28.5	-	No necesita
		Mmax	2.7	1.000	0.700	0.650	325.0	28.5	-	No necesita
		Mmin	4.3	1.000	0.700	0.650	325.0	33.7	-	No necesita
		Qmax	2.7	1.000	0.700	0.650	325.0	28.5	-	No necesita
		Qmin	4.3	1.000	0.700	0.650	325.0	33.7	-	No necesita
44	34	Nmax	14.7	1.000	0.700	0.650	325.0	33.1	-	No necesita
		Nmin	10.6	1.000	0.700	0.650	325.0	28.5	-	No necesita
		Mmax	10.6	1.000	0.700	0.650	325.0	28.5	-	No necesita
		Mmin	15.6	1.000	0.700	0.650	325.0	33.7	-	No necesita
		Qmax	10.6	1.000	0.700	0.650	325.0	28.5	-	No necesita
		Qmin	15.6	1.000	0.700	0.650	325.0	33.7	-	No necesita
	36	Nmax	13.0	1.000	0.700	0.650	325.0	32.1	-	No necesita
		Nmin	8.9	1.000	0.700	0.650	325.0	27.6	-	No necesita
		Mmax	8.9	1.000	0.700	0.650	325.0	27.6	-	No necesita
		Mmin	13.9	1.000	0.700	0.650	325.0	32.6	-	No necesita
		Qmax	8.9	1.000	0.700	0.650	325.0	27.6	-	No necesita
		Qmin	13.9	1.000	0.700	0.650	325.0	32.6	-	No necesita
45	36	Nmax	25.1	1.000	0.700	0.650	325.0	32.1	-	No necesita
		Nmin	17.7	1.000	0.700	0.650	325.0	27.6	-	No necesita
		Mmax	17.7	1.000	0.700	0.650	325.0	27.6	-	No necesita
		Mmin	26.7	1.000	0.700	0.650	325.0	32.6	-	No necesita
		Qmax	17.7	1.000	0.700	0.650	325.0	27.6	-	No necesita
		Qmin	26.7	1.000	0.700	0.650	325.0	32.6	-	No necesita
	38	Nmax	23.4	1.000	0.700	0.650	325.0	30.3	-	No necesita
		Nmin	16.0	1.000	0.700	0.650	325.0	26.0	-	No necesita
		Mmax	16.0	1.000	0.700	0.650	325.0	26.0	-	No necesita
		Mmin	25.0	1.000	0.700	0.650	325.0	30.6	-	No necesita
		Qmax	16.0	1.000	0.700	0.650	325.0	26.0	-	No necesita
		Qmin	25.0	1.000	0.700	0.650	325.0	30.6	-	No necesita
46	38	Nmax	37.6	1.000	0.700	0.650	325.0	30.3	25.2	5.3
		Nmin	26.3	1.000	0.700	0.650	325.0	26.0	21.6	2.0
		Mmax	26.3	1.000	0.700	0.650	325.0	26.0	21.6	2.0
		Mmin	40.0	1.000	0.700	0.650	325.0	30.6	25.5	6.2
		Qmax	26.3	1.000	0.700	0.650	325.0	26.0	21.6	2.0
		Qmin	40.0	1.000	0.700	0.650	325.0	30.6	25.5	6.2
	40	Nmax	36.0	1.000	0.700	0.650	325.0	27.1	22.6	5.7
		Nmin	24.6	1.000	0.700	0.650	325.0	23.2	19.3	2.2
		Mmax	24.6	1.000	0.700	0.650	325.0	23.2	19.3	2.2
		Mmin	38.4	1.000	0.700	0.650	325.0	27.3	22.8	6.7
		Qmax	24.6	1.000	0.700	0.650	325.0	23.2	19.3	2.2
		Qmin	38.4	1.000	0.700	0.650	325.0	27.3	22.8	6.7
47	40	Nmax	53.2	1.000	0.700	0.650	325.0	27.1	22.6	13.1
		Nmin	36.8	1.000	0.700	0.650	325.0	23.2	19.3	7.4
		Mmax	36.8	1.000	0.700	0.650	325.0	23.2	19.3	7.4
		Mmin	56.4	1.000	0.700	0.650	325.0	27.3	22.8	14.4
		Qmax	36.8	1.000	0.700	0.650	325.0	23.2	19.3	7.4
		Qmin	56.4	1.000	0.700	0.650	325.0	27.3	22.8	14.4
	42	Nmax	51.5	1.000	0.700	0.650	325.0	21.1	17.6	14.5
		Nmin	35.1	1.000	0.700	0.650	325.0	17.7	14.8	8.7
		Mmax	35.1	1.000	0.700	0.650	325.0	17.7	14.8	8.7

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES EN UN SÓLO LADO

FECHA: 28/02/2006

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
		Mmin	51.5	1.000	0.700	0.650	325.0	21.1	17.6	14.5
		Qmax	35.1	1.000	0.700	0.650	325.0	17.7	14.8	8.7
		Qmin	54.7	1.000	0.700	0.650	325.0	21.0	17.5	15.9
48	42	Nmax	66.9	1.000	0.700	0.650	325.0	21.1	17.6	21.1
		Nmin	45.9	1.000	0.700	0.650	325.0	17.7	14.8	13.3
		Mmax	45.9	1.000	0.700	0.650	325.0	17.7	14.8	13.3
		Mmin	66.9	1.000	0.700	0.650	325.0	21.1	17.6	21.1
		Qmax	45.9	1.000	0.700	0.650	325.0	17.7	14.8	13.3
		Qmin	71.0	1.000	0.700	0.650	325.0	21.0	17.5	22.8
	44	Nmax	66.1	1.000	0.700	0.650	325.0	14.7	12.3	23.0
		Nmin	45.1	1.000	0.700	0.650	325.0	11.2	9.4	15.3
		Mmax	45.1	1.000	0.700	0.650	325.0	11.2	9.4	15.3
		Mmin	66.1	1.000	0.700	0.650	325.0	14.7	12.3	23.0
		Qmax	45.1	1.000	0.700	0.650	325.0	11.2	9.4	15.3
		Qmin	70.1	1.000	0.700	0.650	325.0	13.9	11.6	25.0
49	44	Nmax	77.3	1.000	0.700	0.650	325.0	14.7	12.3	27.8
		Nmin	52.9	1.000	0.700	0.650	325.0	11.2	9.3	18.6
		Mmax	52.9	1.000	0.700	0.650	325.0	11.2	9.3	18.6
		Mmin	77.3	1.000	0.700	0.650	325.0	14.7	12.3	27.8
		Qmax	52.9	1.000	0.700	0.650	325.0	11.2	9.3	18.6
		Qmin	81.9	1.000	0.700	0.650	325.0	13.9	11.6	30.1
	46	Nmax	76.5	1.000	0.700	0.650	325.0	15.6	13.0	27.1
		Nmin	52.0	1.000	0.700	0.650	325.0	15.0	12.5	16.9
		Mmax	81.1	1.000	0.700	0.650	325.0	16.8	14.0	28.7
		Mmin	52.0	1.000	0.700	0.650	325.0	15.0	12.5	16.9
		Qmax	52.0	1.000	0.700	0.650	325.0	15.0	12.5	16.9
		Qmin	81.1	1.000	0.700	0.650	325.0	16.8	14.0	28.7
50	46	Nmax	88.6	1.000	0.700	0.650	325.0	15.6	13.0	32.3
		Nmin	60.4	1.000	0.700	0.650	325.0	15.0	12.5	20.5
		Mmax	93.7	1.000	0.700	0.650	325.0	16.8	14.0	34.1
		Mmin	60.4	1.000	0.700	0.650	325.0	15.0	12.5	20.5
		Qmax	60.4	1.000	0.700	0.650	325.0	15.0	12.5	20.5
		Qmin	93.7	1.000	0.700	0.650	325.0	16.8	14.0	34.1
	48	Nmax	87.7	1.000	0.700	0.650	325.0	23.0	19.2	29.3
		Nmin	59.6	1.000	0.700	0.650	325.0	20.8	17.3	18.1
		Mmax	92.9	1.000	0.700	0.650	325.0	23.9	19.9	31.2
		Mmin	59.6	1.000	0.700	0.650	325.0	20.8	17.3	18.1
		Qmax	59.6	1.000	0.700	0.650	325.0	20.8	17.3	18.1
		Qmin	92.9	1.000	0.700	0.650	325.0	23.9	19.9	31.2
51	48	Nmax	100.8	1.000	0.700	0.650	325.0	23.0	19.2	34.9
		Nmin	68.6	1.000	0.700	0.650	325.0	20.8	17.3	21.9
		Mmax	106.5	1.000	0.700	0.650	325.0	23.9	19.9	37.0
		Mmin	68.6	1.000	0.700	0.650	325.0	20.8	17.3	21.9
		Qmax	68.6	1.000	0.700	0.650	325.0	20.8	17.3	21.9
		Qmin	106.5	1.000	0.700	0.650	325.0	23.9	19.9	37.0
	50	Nmax	99.9	1.000	0.700	0.650	325.0	28.2	23.5	32.7
		Nmin	67.7	1.000	0.700	0.650	325.0	25.0	20.8	20.0
		Mmax	105.7	1.000	0.700	0.650	325.0	29.1	24.2	34.8
		Mmin	67.7	1.000	0.700	0.650	325.0	25.0	20.8	20.0
		Qmax	67.7	1.000	0.700	0.650	325.0	25.0	20.8	20.0
		Qmin	105.7	1.000	0.700	0.650	325.0	29.1	24.2	34.8

ARMADOJUL_2000_1000_1m.xls PI RIERA DE CAN DE JULIA 28/02/2006
Kv=2000 Kh=1000

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES EN UN SÓLO LADO

FECHA: 28/02/2006

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
52	50	Nmax	113.9	1.000	0.700	0.650	325.0	28.2	23.5	38.6
		Nmin	77.3	1.000	0.700	0.650	325.0	25.0	20.8	24.1
		Mmax	120.2	1.000	0.700	0.650	325.0	29.1	24.2	41.0
		Mmin	77.3	1.000	0.700	0.650	325.0	25.0	20.8	24.1
		Qmax	77.3	1.000	0.700	0.650	325.0	25.0	20.8	24.1
		Qmin	120.2	1.000	0.700	0.650	325.0	29.1	24.2	41.0
	52	Nmax	113.0	1.000	0.700	0.650	325.0	32.7	27.2	36.7
		Nmin	76.4	1.000	0.700	0.650	325.0	28.7	23.9	22.5
		Mmax	119.4	1.000	0.700	0.650	325.0	33.7	28.1	39.0
		Mmin	76.4	1.000	0.700	0.650	325.0	28.7	23.9	22.5
		Qmax	76.4	1.000	0.700	0.650	325.0	28.7	23.9	22.5
		Qmin	119.4	1.000	0.700	0.650	325.0	33.7	28.1	39.0
53	52	Nmax	3.3	1.000	0.700	0.650	325.0	28.7	-	No necesita
		Nmin	3.0	1.000	0.700	0.650	325.0	33.7	-	No necesita
		Mmax	3.0	1.000	0.700	0.650	325.0	33.7	-	No necesita
		Mmin	3.3	1.000	0.700	0.650	325.0	28.7	-	No necesita
		Qmax	3.3	1.000	0.700	0.650	325.0	28.7	-	No necesita
		Qmin	3.5	1.000	0.700	0.650	325.0	32.7	-	No necesita
	53	Nmax	3.3	1.000	0.700	0.650	325.0	28.5	-	No necesita
		Nmin	3.0	1.000	0.700	0.650	325.0	33.6	-	No necesita
		Mmax	3.0	1.000	0.700	0.650	325.0	33.6	-	No necesita
		Mmin	3.3	1.000	0.700	0.650	325.0	28.5	-	No necesita
		Qmax	3.3	1.000	0.700	0.650	325.0	28.5	-	No necesita
		Qmin	3.5	1.000	0.700	0.650	325.0	32.8	-	No necesita
54	53	Nmax	3.3	1.000	0.700	0.650	325.0	28.5	-	No necesita
		Nmin	3.0	1.000	0.700	0.650	325.0	33.6	-	No necesita
		Mmax	3.0	1.000	0.700	0.650	325.0	33.6	-	No necesita
		Mmin	3.3	1.000	0.700	0.650	325.0	28.5	-	No necesita
		Qmax	3.3	1.000	0.700	0.650	325.0	28.5	-	No necesita
		Qmin	3.5	1.000	0.700	0.650	325.0	32.8	-	No necesita
	54	Nmax	3.3	1.000	0.700	0.650	325.0	28.4	-	No necesita
		Nmin	3.0	1.000	0.700	0.650	325.0	33.5	-	No necesita
		Mmax	3.0	1.000	0.700	0.650	325.0	33.5	-	No necesita
		Mmin	3.3	1.000	0.700	0.650	325.0	28.4	-	No necesita
		Qmax	3.3	1.000	0.700	0.650	325.0	28.4	-	No necesita
		Qmin	3.5	1.000	0.700	0.650	325.0	32.9	-	No necesita
55	54	Nmax	3.3	1.000	0.700	0.650	325.0	28.4	-	No necesita
		Nmin	3.0	1.000	0.700	0.650	325.0	33.5	-	No necesita
		Mmax	3.0	1.000	0.700	0.650	325.0	33.5	-	No necesita
		Mmin	3.3	1.000	0.700	0.650	325.0	28.4	-	No necesita
		Qmax	3.3	1.000	0.700	0.650	325.0	28.4	-	No necesita
		Qmin	3.5	1.000	0.700	0.650	325.0	32.9	-	No necesita
	55	Nmax	3.3	1.000	0.700	0.650	325.0	28.2	-	No necesita
		Nmin	3.0	1.000	0.700	0.650	325.0	33.4	-	No necesita
		Mmax	3.0	1.000	0.700	0.650	325.0	33.4	-	No necesita
		Mmin	3.3	1.000	0.700	0.650	325.0	28.2	-	No necesita
		Qmax	3.3	1.000	0.700	0.650	325.0	28.2	-	No necesita
		Qmin	3.5	1.000	0.700	0.650	325.0	33.0	-	No necesita
56	55	Nmax	3.3	1.000	0.700	0.650	325.0	28.2	-	No necesita
		Nmin	3.0	1.000	0.700	0.650	325.0	33.4	-	No necesita
		Mmax	3.0	1.000	0.700	0.650	325.0	33.4	-	No necesita

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES EN UN SÓLO LADO

FECHA: 28/02/2006

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
		Mmin	3.3	1.000	0.700	0.650	325.0	28.2	-	No necesita
		Qmax	3.3	1.000	0.700	0.650	325.0	28.2	-	No necesita
		Qmin	3.5	1.000	0.700	0.650	325.0	33.0	-	No necesita
	56	Nmax	3.3	1.000	0.700	0.650	325.0	28.1	-	No necesita
		Nmin	3.0	1.000	0.700	0.650	325.0	33.3	-	No necesita
		Mmax	3.0	1.000	0.700	0.650	325.0	33.3	-	No necesita
		Mmin	3.3	1.000	0.700	0.650	325.0	28.1	-	No necesita
		Qmax	3.3	1.000	0.700	0.650	325.0	28.1	-	No necesita
		Qmin	3.5	1.000	0.700	0.650	325.0	33.2	-	No necesita
57	56	Nmax	3.3	1.000	0.700	0.650	325.0	28.1	-	No necesita
		Nmin	3.0	1.000	0.700	0.650	325.0	33.3	-	No necesita
		Mmax	3.0	1.000	0.700	0.650	325.0	33.3	-	No necesita
		Mmin	3.3	1.000	0.700	0.650	325.0	28.1	-	No necesita
		Qmax	3.3	1.000	0.700	0.650	325.0	28.1	-	No necesita
		Qmin	3.5	1.000	0.700	0.650	325.0	33.2	-	No necesita
	57	Nmax	3.3	1.000	0.700	0.650	325.0	27.9	-	No necesita
		Nmin	3.0	1.000	0.700	0.650	325.0	33.2	-	No necesita
		Mmax	3.5	1.000	0.700	0.650	325.0	33.3	-	No necesita
		Mmin	3.3	1.000	0.700	0.650	325.0	27.9	-	No necesita
		Qmax	3.3	1.000	0.700	0.650	325.0	27.9	-	No necesita
		Qmin	3.5	1.000	0.700	0.650	325.0	33.3	-	No necesita
58	57	Nmax	3.3	1.000	0.700	0.650	325.0	28.0	-	No necesita
		Nmin	3.0	1.000	0.700	0.650	325.0	33.2	-	No necesita
		Mmax	3.5	1.000	0.700	0.650	325.0	33.3	-	No necesita
		Mmin	3.3	1.000	0.700	0.650	325.0	28.0	-	No necesita
		Qmax	3.3	1.000	0.700	0.650	325.0	28.0	-	No necesita
		Qmin	3.5	1.000	0.700	0.650	325.0	33.3	-	No necesita
	58	Nmax	3.3	1.000	0.700	0.650	325.0	27.8	-	No necesita
		Nmin	3.0	1.000	0.700	0.650	325.0	33.1	-	No necesita
		Mmax	3.5	1.000	0.700	0.650	325.0	33.4	-	No necesita
		Mmin	3.3	1.000	0.700	0.650	325.0	27.8	-	No necesita
		Qmax	3.3	1.000	0.700	0.650	325.0	27.8	-	No necesita
		Qmin	3.5	1.000	0.700	0.650	325.0	33.4	-	No necesita
59	58	Nmax	3.3	1.000	0.700	0.650	325.0	27.8	-	No necesita
		Nmin	3.0	1.000	0.700	0.650	325.0	33.1	-	No necesita
		Mmax	3.5	1.000	0.700	0.650	325.0	33.4	-	No necesita
		Mmin	3.3	1.000	0.700	0.650	325.0	27.8	-	No necesita
		Qmax	3.3	1.000	0.700	0.650	325.0	27.8	-	No necesita
		Qmin	3.5	1.000	0.700	0.650	325.0	33.4	-	No necesita
	59	Nmax	3.3	1.000	0.700	0.650	325.0	27.7	-	No necesita
		Nmin	3.0	1.000	0.700	0.650	325.0	33.0	-	No necesita
		Mmax	3.5	1.000	0.700	0.650	325.0	33.5	-	No necesita
		Mmin	3.3	1.000	0.700	0.650	325.0	27.7	-	No necesita
		Qmax	3.3	1.000	0.700	0.650	325.0	27.7	-	No necesita
		Qmin	3.5	1.000	0.700	0.650	325.0	33.5	-	No necesita
60	59	Nmax	3.3	1.000	0.700	0.650	325.0	27.7	-	No necesita
		Nmin	3.0	1.000	0.700	0.650	325.0	33.0	-	No necesita
		Mmax	3.5	1.000	0.700	0.650	325.0	33.5	-	No necesita
		Mmin	3.3	1.000	0.700	0.650	325.0	27.7	-	No necesita
		Qmax	3.3	1.000	0.700	0.650	325.0	27.7	-	No necesita
		Qmin	3.5	1.000	0.700	0.650	325.0	33.5	-	No necesita

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES EN UN SÓLO LADO

FECHA: 28/02/2006

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
	60	Nmax	3.3	1.000	0.700	0.650	325.0	27.5	-	No necesita
		Nmin	3.0	1.000	0.700	0.650	325.0	32.9	-	No necesita
		Mmax	3.5	1.000	0.700	0.650	325.0	33.6	-	No necesita
		Mmin	3.3	1.000	0.700	0.650	325.0	27.5	-	No necesita
		Qmax	3.3	1.000	0.700	0.650	325.0	27.5	-	No necesita
		Qmin	3.5	1.000	0.700	0.650	325.0	33.6	-	No necesita
61	60	Nmax	3.3	1.000	0.700	0.650	325.0	27.5	-	No necesita
		Nmin	3.0	1.000	0.700	0.650	325.0	32.9	-	No necesita
		Mmax	3.5	1.000	0.700	0.650	325.0	33.6	-	No necesita
		Mmin	3.3	1.000	0.700	0.650	325.0	27.5	-	No necesita
		Qmax	3.3	1.000	0.700	0.650	325.0	27.5	-	No necesita
		Qmin	3.5	1.000	0.700	0.650	325.0	33.6	-	No necesita
	61	Nmax	3.3	1.000	0.700	0.650	325.0	27.3	-	No necesita
		Nmin	3.0	1.000	0.700	0.650	325.0	32.8	-	No necesita
		Mmax	3.5	1.000	0.700	0.650	325.0	33.7	-	No necesita
		Mmin	3.3	1.000	0.700	0.650	325.0	27.3	-	No necesita
		Qmax	3.3	1.000	0.700	0.650	325.0	27.3	-	No necesita
		Qmin	3.5	1.000	0.700	0.650	325.0	33.7	-	No necesita
62	61	Nmax	3.3	1.000	0.700	0.650	325.0	27.3	-	No necesita
		Nmin	3.0	1.000	0.700	0.650	325.0	32.8	-	No necesita
		Mmax	3.5	1.000	0.700	0.650	325.0	33.7	-	No necesita
		Mmin	3.3	1.000	0.700	0.650	325.0	27.3	-	No necesita
		Qmax	3.3	1.000	0.700	0.650	325.0	27.3	-	No necesita
		Qmin	3.5	1.000	0.700	0.650	325.0	33.7	-	No necesita
	62	Nmax	3.3	1.000	0.700	0.650	325.0	27.2	-	No necesita
		Nmin	3.0	1.000	0.700	0.650	325.0	32.8	-	No necesita
		Mmax	3.5	1.000	0.700	0.650	325.0	33.8	-	No necesita
		Mmin	3.3	1.000	0.700	0.650	325.0	27.2	-	No necesita
		Qmax	3.3	1.000	0.700	0.650	325.0	27.2	-	No necesita
		Qmin	3.5	1.000	0.700	0.650	325.0	33.8	-	No necesita
63	62	Nmax	3.3	1.000	0.700	0.650	325.0	27.2	-	No necesita
		Nmin	3.0	1.000	0.700	0.650	325.0	32.8	-	No necesita
		Mmax	3.5	1.000	0.700	0.650	325.0	33.8	-	No necesita
		Mmin	3.3	1.000	0.700	0.650	325.0	27.2	-	No necesita
		Qmax	3.3	1.000	0.700	0.650	325.0	27.2	-	No necesita
		Qmin	3.5	1.000	0.700	0.650	325.0	33.8	-	No necesita
	63	Nmax	3.3	1.000	0.700	0.650	325.0	27.0	-	No necesita
		Nmin	3.0	1.000	0.700	0.650	325.0	32.7	-	No necesita
		Mmax	3.5	1.000	0.700	0.650	325.0	33.9	-	No necesita
		Mmin	3.3	1.000	0.700	0.650	325.0	27.0	-	No necesita
		Qmax	3.3	1.000	0.700	0.650	325.0	27.0	-	No necesita
		Qmin	3.5	1.000	0.700	0.650	325.0	33.9	-	No necesita
64	63	Nmax	3.3	1.000	0.700	0.650	325.0	27.0	-	No necesita
		Nmin	3.0	1.000	0.700	0.650	325.0	32.7	-	No necesita
		Mmax	3.5	1.000	0.700	0.650	325.0	33.9	-	No necesita
		Mmin	3.3	1.000	0.700	0.650	325.0	27.0	-	No necesita
		Qmax	3.3	1.000	0.700	0.650	325.0	27.0	-	No necesita
		Qmin	3.5	1.000	0.700	0.650	325.0	33.9	-	No necesita
	64	Nmax	3.3	1.000	0.700	0.650	325.0	26.9	-	No necesita
		Nmin	3.0	1.000	0.700	0.650	325.0	32.6	-	No necesita
		Mmax	3.5	1.000	0.700	0.650	325.0	34.1	-	No necesita

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES EN UN SÓLO LADO

FECHA: 28/02/2006

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
		Mmin	3.3	1.000	0.700	0.650	325.0	26.9	-	No necesita
		Qmax	3.3	1.000	0.700	0.650	325.0	26.9	-	No necesita
		Qmin	3.5	1.000	0.700	0.650	325.0	34.1	-	No necesita

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES A AMBOS LADOS

FECHA: 28/02/2006

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
1	1	Nmax	0.0	-115.7	1.000	0.700	0.650	920.83	0.00	45.00
		Nmin	0.0	-180.4	1.000	0.700	0.650	920.83	0.00	76.77
		Mmax	0.0	-115.7	1.000	0.700	0.650	920.83	0.00	45.00
		Mmin	0.0	-180.4	1.000	0.700	0.650	920.83	0.00	76.77
		Qmax	0.0	-115.7	1.000	0.700	0.650	920.83	0.00	45.00
		Qmin	0.0	-180.4	1.000	0.700	0.650	920.83	0.00	76.77
	2	Nmax	0.0	-75.8	1.000	0.700	0.650	920.83	0.00	28.20
		Nmin	0.0	-117.4	1.000	0.700	0.650	920.83	0.00	45.75
		Mmax	0.0	-75.8	1.000	0.700	0.650	920.83	0.00	28.20
		Mmin	0.0	-117.4	1.000	0.700	0.650	920.83	0.00	45.75
		Qmax	0.0	-75.8	1.000	0.700	0.650	920.83	0.00	28.20
		Qmin	0.0	-117.4	1.000	0.700	0.650	920.83	0.00	45.75
2	2	Nmax	0.0	-75.8	1.000	0.700	0.650	920.83	0.00	28.20
		Nmin	0.0	-117.4	1.000	0.700	0.650	920.83	0.00	45.75
		Mmax	0.0	-75.8	1.000	0.700	0.650	920.83	0.00	28.20
		Mmin	0.0	-117.4	1.000	0.700	0.650	920.83	0.00	45.75
		Qmax	0.0	-75.8	1.000	0.700	0.650	920.83	0.00	28.20
		Qmin	0.0	-117.4	1.000	0.700	0.650	920.83	0.00	45.75
	3	Nmax	0.0	-43.0	1.000	0.700	0.650	920.83	0.00	15.51
		Nmin	0.0	-65.7	1.000	0.700	0.650	920.83	0.00	24.22
		Mmax	0.0	-43.0	1.000	0.700	0.650	920.83	0.00	15.51
		Mmin	0.0	-65.7	1.000	0.700	0.650	920.83	0.00	24.22
		Qmax	0.0	-43.0	1.000	0.700	0.650	920.83	0.00	15.51
		Qmin	0.0	-65.7	1.000	0.700	0.650	920.83	0.00	24.22
3	3	Nmax	0.0	-43.0	1.000	0.700	0.650	920.83	0.00	15.51
		Nmin	0.0	-65.7	1.000	0.700	0.650	920.83	0.00	24.21
		Mmax	0.0	-43.0	1.000	0.700	0.650	920.83	0.00	15.51
		Mmin	0.0	-65.7	1.000	0.700	0.650	920.83	0.00	24.21
		Qmax	0.0	-43.0	1.000	0.700	0.650	920.83	0.00	15.51
		Qmin	0.0	-65.7	1.000	0.700	0.650	920.83	0.00	24.21
	4	Nmax	0.0	-17.4	1.000	0.700	0.650	920.83	0.00	6.14
		Nmin	0.0	-25.6	1.000	0.700	0.650	920.83	0.00	9.06
		Mmax	0.0	-17.4	1.000	0.700	0.650	920.83	0.00	6.14
		Mmin	0.0	-25.6	1.000	0.700	0.650	920.83	0.00	9.06
		Qmax	0.0	-17.4	1.000	0.700	0.650	920.83	0.00	6.14
		Qmin	0.0	-25.6	1.000	0.700	0.650	920.83	0.00	9.06
4	4	Nmax	0.0	-17.4	1.000	0.700	0.650	920.83	0.00	6.14
		Nmin	0.0	-25.6	1.000	0.700	0.650	920.83	0.00	9.06
		Mmax	0.0	-17.4	1.000	0.700	0.650	920.83	0.00	6.14
		Mmin	0.0	-25.6	1.000	0.700	0.650	920.83	0.00	9.06
		Qmax	0.0	-17.4	1.000	0.700	0.650	920.83	0.00	6.14
		Qmin	0.0	-25.6	1.000	0.700	0.650	920.83	0.00	9.06
	5	Nmax	1.0	-0.2	1.000	0.700	0.650	920.83	0.33	0.06
		Nmin	3.1	0.0	1.000	0.700	0.650	920.83	1.07	0.00
		Mmax	7.3	0.0	1.000	0.700	0.650	920.83	2.55	0.00
		Mmin	1.0	-0.2	1.000	0.700	0.650	920.83	0.33	0.06
		Qmax	1.0	-0.2	1.000	0.700	0.650	920.83	0.33	0.06
		Qmin	3.1	0.0	1.000	0.700	0.650	920.83	1.07	0.00
5	5	Nmax	1.0	-0.2	1.000	0.700	0.650	920.83	0.34	0.06
		Nmin	3.1	0.0	1.000	0.700	0.650	920.83	1.09	0.00
		Mmax	7.3	0.0	1.000	0.700	0.650	920.83	2.54	0.00
		Mmin	1.0	-0.2	1.000	0.700	0.650	920.83	0.34	0.06

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES A AMBOS LADOS

FECHA: 28/02/2006

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
		Qmax	1.0	-0.2	1.000	0.700	0.650	920.83	0.34	0.06
		Qmin	3.1	0.0	1.000	0.700	0.650	920.83	1.09	0.00
	6	Nmax	12.2	0.0	1.000	0.700	0.650	920.83	4.28	0.00
		Nmin	20.3	0.0	1.000	0.700	0.650	920.83	7.17	0.00
		Mmax	22.9	0.0	1.000	0.700	0.650	920.83	8.08	0.00
		Mmin	12.2	0.0	1.000	0.700	0.650	920.83	4.28	0.00
		Qmax	12.2	0.0	1.000	0.700	0.650	920.83	4.28	0.00
		Qmin	20.3	0.0	1.000	0.700	0.650	920.83	7.17	0.00
6	6	Nmax	12.2	0.0	1.000	0.700	0.650	920.83	4.29	0.00
		Nmin	20.4	0.0	1.000	0.700	0.650	920.83	7.20	0.00
		Mmax	22.8	0.0	1.000	0.700	0.650	920.83	8.08	0.00
		Mmin	12.2	0.0	1.000	0.700	0.650	920.83	4.29	0.00
		Qmax	12.2	0.0	1.000	0.700	0.650	920.83	4.29	0.00
		Qmin	20.4	0.0	1.000	0.700	0.650	920.83	7.20	0.00
	7	Nmax	16.3	0.0	1.000	0.700	0.650	920.83	5.75	0.00
		Nmin	26.1	0.0	1.000	0.700	0.650	920.83	9.28	0.00
		Mmax	26.7	0.0	1.000	0.700	0.650	920.83	9.49	0.00
		Mmin	16.3	0.0	1.000	0.700	0.650	920.83	5.75	0.00
		Qmax	16.3	0.0	1.000	0.700	0.650	920.83	5.75	0.00
		Qmin	26.1	0.0	1.000	0.700	0.650	920.83	9.28	0.00
7	7	Nmax	16.3	0.0	1.000	0.700	0.650	920.83	5.75	0.00
		Nmin	26.2	0.0	1.000	0.700	0.650	920.83	9.29	0.00
		Mmax	26.7	0.0	1.000	0.700	0.650	920.83	9.49	0.00
		Mmin	16.3	0.0	1.000	0.700	0.650	920.83	5.75	0.00
		Qmax	26.7	0.0	1.000	0.700	0.650	920.83	9.49	0.00
		Qmin	16.3	0.0	1.000	0.700	0.650	920.83	5.75	0.00
	8	Nmax	13.3	0.0	1.000	0.700	0.650	920.83	4.67	0.00
		Nmin	20.5	0.0	1.000	0.700	0.650	920.83	7.25	0.00
		Mmax	20.5	0.0	1.000	0.700	0.650	920.83	7.25	0.00
		Mmin	13.3	0.0	1.000	0.700	0.650	920.83	4.67	0.00
		Qmax	19.0	0.0	1.000	0.700	0.650	920.83	6.69	0.00
		Qmin	13.3	0.0	1.000	0.700	0.650	920.83	4.67	0.00
8	8	Nmax	13.3	0.0	1.000	0.700	0.650	920.83	4.68	0.00
		Nmin	20.6	0.0	1.000	0.700	0.650	920.83	7.27	0.00
		Mmax	20.6	0.0	1.000	0.700	0.650	920.83	7.27	0.00
		Mmin	13.3	0.0	1.000	0.700	0.650	920.83	4.68	0.00
		Qmax	19.0	0.0	1.000	0.700	0.650	920.83	6.70	0.00
		Qmin	13.3	0.0	1.000	0.700	0.650	920.83	4.68	0.00
	9	Nmax	3.2	0.0	1.000	0.700	0.650	920.83	1.10	0.00
		Nmin	3.5	0.0	1.000	0.700	0.650	920.83	1.22	0.00
		Mmax	3.5	0.0	1.000	0.700	0.650	920.83	1.22	0.00
		Mmin	3.2	-0.5	1.000	0.700	0.650	920.83	1.10	0.16
		Qmax	3.2	-0.5	1.000	0.700	0.650	920.83	1.10	0.16
		Qmin	3.2	0.0	1.000	0.700	0.650	920.83	1.10	0.00
9	9	Nmax	3.2	0.0	1.000	0.700	0.650	920.83	1.10	0.00
		Nmin	3.5	0.0	1.000	0.700	0.650	920.83	1.22	0.00
		Mmax	3.5	0.0	1.000	0.700	0.650	920.83	1.22	0.00
		Mmin	3.2	-0.4	1.000	0.700	0.650	920.83	1.10	0.15
		Qmax	3.2	-0.4	1.000	0.700	0.650	920.83	1.10	0.15
		Qmin	3.2	0.0	1.000	0.700	0.650	920.83	1.10	0.00
	10	Nmax	0.0	-14.2	1.000	0.700	0.650	920.83	0.00	4.97
		Nmin	0.0	-25.0	1.000	0.700	0.650	920.83	0.00	8.84

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES A AMBOS LADOS

FECHA: 28/02/2006

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
		Mmax	0.0	-14.2	1.000	0.700	0.650	920.83	0.00	4.97
		Mmin	0.0	-31.5	1.000	0.700	0.650	920.83	0.00	11.24
		Qmax	0.0	-31.5	1.000	0.700	0.650	920.83	0.00	11.24
		Qmin	0.0	-14.2	1.000	0.700	0.650	920.83	0.00	4.97
10	10	Nmax	0.0	-14.2	1.000	0.700	0.650	920.83	0.00	4.97
		Nmin	0.0	-25.0	1.000	0.700	0.650	920.83	0.00	8.84
		Mmax	0.0	-14.2	1.000	0.700	0.650	920.83	0.00	4.97
		Mmin	0.0	-31.5	1.000	0.700	0.650	920.83	0.00	11.24
		Qmax	0.0	-31.5	1.000	0.700	0.650	920.83	0.00	11.24
		Qmin	0.0	-14.2	1.000	0.700	0.650	920.83	0.00	4.97
	11	Nmax	0.0	-38.6	1.000	0.700	0.650	920.83	0.00	13.84
		Nmin	0.0	-64.8	1.000	0.700	0.650	920.83	0.00	23.85
		Mmax	0.0	-38.6	1.000	0.700	0.650	920.83	0.00	13.84
		Mmin	0.0	-74.2	1.000	0.700	0.650	920.83	0.00	27.58
		Qmax	0.0	-74.2	1.000	0.700	0.650	920.83	0.00	27.58
		Qmin	0.0	-38.6	1.000	0.700	0.650	920.83	0.00	13.84
11	11	Nmax	0.0	-38.6	1.000	0.700	0.650	920.83	0.00	13.86
		Nmin	0.0	-64.9	1.000	0.700	0.650	920.83	0.00	23.87
		Mmax	0.0	-38.6	1.000	0.700	0.650	920.83	0.00	13.86
		Mmin	0.0	-74.3	1.000	0.700	0.650	920.83	0.00	27.59
		Qmax	0.0	-74.3	1.000	0.700	0.650	920.83	0.00	27.59
		Qmin	0.0	-38.6	1.000	0.700	0.650	920.83	0.00	13.86
	12	Nmax	0.0	-70.2	1.000	0.700	0.650	920.83	0.00	25.98
		Nmin	0.0	-116.2	1.000	0.700	0.650	920.83	0.00	45.22
		Mmax	0.0	-70.2	1.000	0.700	0.650	920.83	0.00	25.98
		Mmin	0.0	-128.7	1.000	0.700	0.650	920.83	0.00	50.88
		Qmax	0.0	-128.7	1.000	0.700	0.650	920.83	0.00	50.88
		Qmin	0.0	-70.2	1.000	0.700	0.650	920.83	0.00	25.98
12	12	Nmax	0.0	-70.2	1.000	0.700	0.650	920.83	0.00	25.98
		Nmin	0.0	-116.2	1.000	0.700	0.650	920.83	0.00	45.23
		Mmax	0.0	-70.2	1.000	0.700	0.650	920.83	0.00	25.98
		Mmin	0.0	-128.7	1.000	0.700	0.650	920.83	0.00	50.88
		Qmax	0.0	-128.7	1.000	0.700	0.650	920.83	0.00	50.88
		Qmin	0.0	-70.2	1.000	0.700	0.650	920.83	0.00	25.98
	13	Nmax	0.0	-109.0	1.000	0.700	0.650	920.83	0.00	42.05
		Nmin	0.0	-179.0	1.000	0.700	0.650	920.83	0.00	75.98
		Mmax	0.0	-109.0	1.000	0.700	0.650	920.83	0.00	42.05
		Mmin	0.0	-194.8	1.000	0.700	0.650	920.83	0.00	84.94
		Qmax	0.0	-194.8	1.000	0.700	0.650	920.83	0.00	84.94
		Qmin	0.0	-109.0	1.000	0.700	0.650	920.83	0.00	42.05
13	13	Nmax	0.0	-109.0	1.000	0.800	0.750	1062.50	0.00	35.37
		Nmin	0.0	-194.8	1.000	0.800	0.750	1062.50	0.00	68.29
		Mmax	0.0	-109.0	1.000	0.800	0.750	1062.50	0.00	35.37
		Mmin	0.0	-194.8	1.000	0.800	0.750	1062.50	0.00	68.29
		Qmax	0.0	-109.0	1.000	0.800	0.750	1062.50	0.00	35.37
		Qmin	0.0	-178.9	1.000	0.800	0.750	1062.50	0.00	61.76
	15	Nmax	0.0	-84.6	1.000	0.800	0.750	1062.50	0.00	26.94
		Nmin	0.0	-156.2	1.000	0.800	0.750	1062.50	0.00	52.77
		Mmax	0.0	-84.6	1.000	0.800	0.750	1062.50	0.00	26.94
		Mmin	0.0	-156.2	1.000	0.800	0.750	1062.50	0.00	52.77
		Qmax	0.0	-84.6	1.000	0.800	0.750	1062.50	0.00	26.94
		Qmin	0.0	-138.8	1.000	0.800	0.750	1062.50	0.00	46.19

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES A AMBOS LADOS

FECHA: 28/02/2006

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
14	15	Nmax	0.0	-84.6	1.000	0.800	0.750	1062.50	0.00	26.94
		Nmin	0.0	-156.2	1.000	0.800	0.750	1062.50	0.00	52.77
		Mmax	0.0	-84.6	1.000	0.800	0.750	1062.50	0.00	26.94
		Mmin	0.0	-156.2	1.000	0.800	0.750	1062.50	0.00	52.77
		Qmax	0.0	-84.6	1.000	0.800	0.750	1062.50	0.00	26.94
		Qmin	0.0	-138.8	1.000	0.800	0.750	1062.50	0.00	46.19
	17	Nmax	0.0	-62.0	1.000	0.800	0.750	1062.50	0.00	19.41
		Nmin	0.0	-118.9	1.000	0.800	0.750	1062.50	0.00	38.90
		Mmax	0.0	-62.0	1.000	0.800	0.750	1062.50	0.00	19.41
		Mmin	0.0	-118.9	1.000	0.800	0.750	1062.50	0.00	38.90
		Qmax	0.0	-62.0	1.000	0.800	0.750	1062.50	0.00	19.41
		Qmin	0.0	-118.9	1.000	0.800	0.750	1062.50	0.00	38.90
15	17	Nmax	0.0	-62.0	1.000	0.800	0.750	1062.50	0.00	19.41
		Nmin	0.0	-118.9	1.000	0.800	0.750	1062.50	0.00	38.90
		Mmax	0.0	-62.0	1.000	0.800	0.750	1062.50	0.00	19.41
		Mmin	0.0	-118.9	1.000	0.800	0.750	1062.50	0.00	38.90
		Qmax	0.0	-62.0	1.000	0.800	0.750	1062.50	0.00	19.41
		Qmin	0.0	-118.9	1.000	0.800	0.750	1062.50	0.00	38.90
	19	Nmax	0.0	-40.9	1.000	0.800	0.750	1062.50	0.00	12.64
		Nmin	0.0	-82.5	1.000	0.800	0.750	1062.50	0.00	26.25
		Mmax	0.0	-40.9	1.000	0.800	0.750	1062.50	0.00	12.64
		Mmin	0.0	-82.5	1.000	0.800	0.750	1062.50	0.00	26.25
		Qmax	0.0	-40.9	1.000	0.800	0.750	1062.50	0.00	12.64
		Qmin	0.0	-82.5	1.000	0.800	0.750	1062.50	0.00	26.25
16	19	Nmax	0.0	-40.9	1.000	0.800	0.750	1062.50	0.00	12.64
		Nmin	0.0	-82.5	1.000	0.800	0.750	1062.50	0.00	26.25
		Mmax	0.0	-40.9	1.000	0.800	0.750	1062.50	0.00	12.64
		Mmin	0.0	-82.5	1.000	0.800	0.750	1062.50	0.00	26.25
		Qmax	0.0	-40.9	1.000	0.800	0.750	1062.50	0.00	12.64
		Qmin	0.0	-82.5	1.000	0.800	0.750	1062.50	0.00	26.25
	21	Nmax	0.0	-21.6	1.000	0.800	0.750	1062.50	0.00	6.58
		Nmin	0.0	-47.3	1.000	0.800	0.750	1062.50	0.00	14.68
		Mmax	0.0	-21.6	1.000	0.800	0.750	1062.50	0.00	6.58
		Mmin	0.0	-47.3	1.000	0.800	0.750	1062.50	0.00	14.68
		Qmax	0.0	-21.6	1.000	0.800	0.750	1062.50	0.00	6.58
		Qmin	0.0	-47.3	1.000	0.800	0.750	1062.50	0.00	14.68
17	21	Nmax	0.0	-21.6	1.000	0.800	0.750	1062.50	0.00	6.58
		Nmin	0.0	-47.3	1.000	0.800	0.750	1062.50	0.00	14.68
		Mmax	0.0	-21.6	1.000	0.800	0.750	1062.50	0.00	6.58
		Mmin	0.0	-47.3	1.000	0.800	0.750	1062.50	0.00	14.68
		Qmax	0.0	-21.6	1.000	0.800	0.750	1062.50	0.00	6.58
		Qmin	0.0	-47.3	1.000	0.800	0.750	1062.50	0.00	14.68
	23	Nmax	0.0	-4.0	1.000	0.800	0.750	1062.50	0.00	1.21
		Nmin	0.0	-13.3	1.000	0.800	0.750	1062.50	0.00	4.04
		Mmax	0.0	-4.0	1.000	0.800	0.750	1062.50	0.00	1.21
		Mmin	0.0	-13.3	1.000	0.800	0.750	1062.50	0.00	4.04
		Qmax	0.0	-4.0	1.000	0.800	0.750	1062.50	0.00	1.21
		Qmin	0.0	-13.3	1.000	0.800	0.750	1062.50	0.00	4.04
18	23	Nmax	0.0	-4.0	1.000	0.800	0.750	1062.50	0.00	1.21
		Nmin	0.0	-13.3	1.000	0.800	0.750	1062.50	0.00	4.04
		Mmax	0.0	-4.0	1.000	0.800	0.750	1062.50	0.00	1.21
		Mmin	0.0	-13.3	1.000	0.800	0.750	1062.50	0.00	4.04

ARMADOJUL_2000_1000_2m.xls PI RIERA DE CAN JULIÁ 28/02/2006
Kv=2000 Kh=1000

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES A AMBOS LADOS

FECHA: 28/02/2006

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
		Qmax	0.0	-4.0	1.000	0.800	0.750	1062.50	0.00	1.21
		Qmin	0.0	-13.3	1.000	0.800	0.750	1062.50	0.00	4.04
	25	Nmax	26.2	0.0	1.000	0.800	0.750	1062.50	8.02	0.00
		Nmin	47.1	0.0	1.000	0.800	0.750	1062.50	14.59	0.00
		Mmax	47.1	0.0	1.000	0.800	0.750	1062.50	14.59	0.00
		Mmin	26.2	0.0	1.000	0.800	0.750	1062.50	8.02	0.00
		Qmax	26.2	0.0	1.000	0.800	0.750	1062.50	8.02	0.00
		Qmin	47.1	0.0	1.000	0.800	0.750	1062.50	14.59	0.00
19	25	Nmax	26.2	0.0	1.000	0.800	0.750	1062.50	8.02	0.00
		Nmin	47.1	0.0	1.000	0.800	0.750	1062.50	14.59	0.00
		Mmax	47.1	0.0	1.000	0.800	0.750	1062.50	14.59	0.00
		Mmin	26.2	0.0	1.000	0.800	0.750	1062.50	8.02	0.00
		Qmax	26.2	0.0	1.000	0.800	0.750	1062.50	8.02	0.00
		Qmin	47.1	0.0	1.000	0.800	0.750	1062.50	14.59	0.00
	27	Nmax	49.7	0.0	1.000	0.800	0.750	1062.50	15.45	0.00
		Nmin	93.9	0.0	1.000	0.800	0.750	1062.50	30.14	0.00
		Mmax	93.9	0.0	1.000	0.800	0.750	1062.50	30.14	0.00
		Mmin	49.7	0.0	1.000	0.800	0.750	1062.50	15.45	0.00
		Qmax	49.7	0.0	1.000	0.800	0.750	1062.50	15.45	0.00
		Qmin	93.9	0.0	1.000	0.800	0.750	1062.50	30.14	0.00
20	27	Nmax	49.7	0.0	1.000	0.800	0.750	1062.50	15.45	0.00
		Nmin	93.9	0.0	1.000	0.800	0.750	1062.50	30.14	0.00
		Mmax	93.9	0.0	1.000	0.800	0.750	1062.50	30.14	0.00
		Mmin	49.7	0.0	1.000	0.800	0.750	1062.50	15.45	0.00
		Qmax	49.7	0.0	1.000	0.800	0.750	1062.50	15.45	0.00
		Qmin	93.9	0.0	1.000	0.800	0.750	1062.50	30.14	0.00
	29	Nmax	66.5	0.0	1.000	0.800	0.750	1062.50	20.91	0.00
		Nmin	127.4	0.0	1.000	0.800	0.750	1062.50	41.99	0.00
		Mmax	127.4	0.0	1.000	0.800	0.750	1062.50	41.99	0.00
		Mmin	66.5	0.0	1.000	0.800	0.750	1062.50	20.91	0.00
		Qmax	66.5	0.0	1.000	0.800	0.750	1062.50	20.91	0.00
		Qmin	127.4	0.0	1.000	0.800	0.750	1062.50	41.99	0.00
21	29	Nmax	66.5	0.0	1.000	0.800	0.750	1062.50	20.91	0.00
		Nmin	127.4	0.0	1.000	0.800	0.750	1062.50	41.99	0.00
		Mmax	127.4	0.0	1.000	0.800	0.750	1062.50	41.99	0.00
		Mmin	66.5	0.0	1.000	0.800	0.750	1062.50	20.91	0.00
		Qmax	66.5	0.0	1.000	0.800	0.750	1062.50	20.91	0.00
		Qmin	127.4	0.0	1.000	0.800	0.750	1062.50	41.99	0.00
	31	Nmax	76.6	0.0	1.000	0.800	0.750	1062.50	24.24	0.00
		Nmin	147.5	0.0	1.000	0.800	0.750	1062.50	49.45	0.00
		Mmax	147.5	0.0	1.000	0.800	0.750	1062.50	49.45	0.00
		Mmin	76.6	0.0	1.000	0.800	0.750	1062.50	24.24	0.00
		Qmax	76.6	0.0	1.000	0.800	0.750	1062.50	24.24	0.00
		Qmin	147.5	0.0	1.000	0.800	0.750	1062.50	49.45	0.00
22	31	Nmax	76.6	0.0	1.000	0.800	0.750	1062.50	24.25	0.00
		Nmin	147.5	0.0	1.000	0.800	0.750	1062.50	49.46	0.00
		Mmax	147.5	0.0	1.000	0.800	0.750	1062.50	49.46	0.00
		Mmin	76.6	0.0	1.000	0.800	0.750	1062.50	24.25	0.00
		Qmax	76.6	0.0	1.000	0.800	0.750	1062.50	24.25	0.00
		Qmin	147.5	0.0	1.000	0.800	0.750	1062.50	49.46	0.00
	33	Nmax	79.9	0.0	1.000	0.800	0.750	1062.50	25.37	0.00
		Nmin	154.2	0.0	1.000	0.800	0.750	1062.50	52.01	0.00

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES A AMBOS LADOS

FECHA: 28/02/2006

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
		Mmax	154.2	0.0	1.000	0.800	0.750	1062.50	52.01	0.00
		Mmin	79.9	0.0	1.000	0.800	0.750	1062.50	25.37	0.00
		Qmax	137.2	0.0	1.000	0.800	0.750	1062.50	45.59	0.00
		Qmin	79.9	0.0	1.000	0.800	0.750	1062.50	25.37	0.00
23	33	Nmax	79.9	0.0	1.000	0.800	0.750	1062.50	25.37	0.00
		Nmin	154.2	0.0	1.000	0.800	0.750	1062.50	52.01	0.00
		Mmax	154.2	0.0	1.000	0.800	0.750	1062.50	52.01	0.00
		Mmin	79.9	0.0	1.000	0.800	0.750	1062.50	25.37	0.00
		Qmax	154.2	0.0	1.000	0.800	0.750	1062.50	52.01	0.00
		Qmin	79.9	0.0	1.000	0.800	0.750	1062.50	25.37	0.00
	35	Nmax	76.6	0.0	1.000	0.800	0.750	1062.50	24.24	0.00
		Nmin	147.5	0.0	1.000	0.800	0.750	1062.50	49.44	0.00
		Mmax	147.5	0.0	1.000	0.800	0.750	1062.50	49.44	0.00
		Mmin	76.6	0.0	1.000	0.800	0.750	1062.50	24.24	0.00
		Qmax	147.5	0.0	1.000	0.800	0.750	1062.50	49.44	0.00
		Qmin	76.6	0.0	1.000	0.800	0.750	1062.50	24.24	0.00
24	35	Nmax	76.6	0.0	1.000	0.800	0.750	1062.50	24.24	0.00
		Nmin	147.5	0.0	1.000	0.800	0.750	1062.50	49.44	0.00
		Mmax	147.5	0.0	1.000	0.800	0.750	1062.50	49.44	0.00
		Mmin	76.6	0.0	1.000	0.800	0.750	1062.50	24.24	0.00
		Qmax	147.5	0.0	1.000	0.800	0.750	1062.50	49.44	0.00
		Qmin	76.6	0.0	1.000	0.800	0.750	1062.50	24.24	0.00
	37	Nmax	66.5	0.0	1.000	0.800	0.750	1062.50	20.90	0.00
		Nmin	127.3	0.0	1.000	0.800	0.750	1062.50	41.96	0.00
		Mmax	127.3	0.0	1.000	0.800	0.750	1062.50	41.96	0.00
		Mmin	66.5	0.0	1.000	0.800	0.750	1062.50	20.90	0.00
		Qmax	127.3	0.0	1.000	0.800	0.750	1062.50	41.96	0.00
		Qmin	66.5	0.0	1.000	0.800	0.750	1062.50	20.90	0.00
25	37	Nmax	66.5	0.0	1.000	0.800	0.750	1062.50	20.90	0.00
		Nmin	127.3	0.0	1.000	0.800	0.750	1062.50	41.96	0.00
		Mmax	127.3	0.0	1.000	0.800	0.750	1062.50	41.96	0.00
		Mmin	66.5	0.0	1.000	0.800	0.750	1062.50	20.90	0.00
		Qmax	127.3	0.0	1.000	0.800	0.750	1062.50	41.96	0.00
		Qmin	66.5	0.0	1.000	0.800	0.750	1062.50	20.90	0.00
	39	Nmax	49.7	0.0	1.000	0.800	0.750	1062.50	15.45	0.00
		Nmin	93.9	0.0	1.000	0.800	0.750	1062.50	30.11	0.00
		Mmax	93.9	0.0	1.000	0.800	0.750	1062.50	30.11	0.00
		Mmin	49.7	0.0	1.000	0.800	0.750	1062.50	15.45	0.00
		Qmax	93.9	0.0	1.000	0.800	0.750	1062.50	30.11	0.00
		Qmin	49.7	0.0	1.000	0.800	0.750	1062.50	15.45	0.00
26	39	Nmax	49.7	0.0	1.000	0.800	0.750	1062.50	15.45	0.00
		Nmin	93.9	0.0	1.000	0.800	0.750	1062.50	30.11	0.00
		Mmax	93.9	0.0	1.000	0.800	0.750	1062.50	30.11	0.00
		Mmin	49.7	0.0	1.000	0.800	0.750	1062.50	15.45	0.00
		Qmax	93.9	0.0	1.000	0.800	0.750	1062.50	30.11	0.00
		Qmin	49.7	0.0	1.000	0.800	0.750	1062.50	15.45	0.00
	41	Nmax	26.3	0.0	1.000	0.800	0.750	1062.50	8.03	0.00
		Nmin	47.0	0.0	1.000	0.800	0.750	1062.50	14.56	0.00
		Mmax	47.0	0.0	1.000	0.800	0.750	1062.50	14.56	0.00
		Mmin	26.3	0.0	1.000	0.800	0.750	1062.50	8.03	0.00
		Qmax	47.0	0.0	1.000	0.800	0.750	1062.50	14.56	0.00
		Qmin	26.3	0.0	1.000	0.800	0.750	1062.50	8.03	0.00

ARMADOJUL_2000_1000_2m.xls PI RIERA DE CAN JULIÁ 28/02/2006
Kv=2000 Kh=1000

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES A AMBOS LADOS

FECHA: 28/02/2006

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
27	41	Nmax	26.3	0.0	1.000	0.800	0.750	1062.50	8.03	0.00
		Nmin	47.0	0.0	1.000	0.800	0.750	1062.50	14.56	0.00
		Mmax	47.0	0.0	1.000	0.800	0.750	1062.50	14.56	0.00
		Mmin	26.3	0.0	1.000	0.800	0.750	1062.50	8.03	0.00
		Qmax	47.0	0.0	1.000	0.800	0.750	1062.50	14.56	0.00
		Qmin	26.3	0.0	1.000	0.800	0.750	1062.50	8.03	0.00
	43	Nmax	0.0	-4.0	1.000	0.800	0.750	1062.50	0.00	1.20
		Nmin	0.0	-13.4	1.000	0.800	0.750	1062.50	0.00	4.07
		Mmax	0.0	-4.0	1.000	0.800	0.750	1062.50	0.00	1.20
		Mmin	0.0	-13.4	1.000	0.800	0.750	1062.50	0.00	4.07
		Qmax	0.0	-13.4	1.000	0.800	0.750	1062.50	0.00	4.07
		Qmin	0.0	-4.0	1.000	0.800	0.750	1062.50	0.00	1.20
28	43	Nmax	0.0	-4.0	1.000	0.800	0.750	1062.50	0.00	1.20
		Nmin	0.0	-13.4	1.000	0.800	0.750	1062.50	0.00	4.07
		Mmax	0.0	-4.0	1.000	0.800	0.750	1062.50	0.00	1.20
		Mmin	0.0	-13.4	1.000	0.800	0.750	1062.50	0.00	4.07
		Qmax	0.0	-13.4	1.000	0.800	0.750	1062.50	0.00	4.07
		Qmin	0.0	-4.0	1.000	0.800	0.750	1062.50	0.00	1.20
	45	Nmax	0.0	-21.6	1.000	0.800	0.750	1062.50	0.00	6.57
		Nmin	0.0	-47.4	1.000	0.800	0.750	1062.50	0.00	14.71
		Mmax	0.0	-21.6	1.000	0.800	0.750	1062.50	0.00	6.57
		Mmin	0.0	-47.4	1.000	0.800	0.750	1062.50	0.00	14.71
		Qmax	0.0	-47.4	1.000	0.800	0.750	1062.50	0.00	14.71
		Qmin	0.0	-21.6	1.000	0.800	0.750	1062.50	0.00	6.57
29	45	Nmax	0.0	-21.6	1.000	0.800	0.750	1062.50	0.00	6.57
		Nmin	0.0	-47.4	1.000	0.800	0.750	1062.50	0.00	14.71
		Mmax	0.0	-21.6	1.000	0.800	0.750	1062.50	0.00	6.57
		Mmin	0.0	-47.4	1.000	0.800	0.750	1062.50	0.00	14.71
		Qmax	0.0	-47.4	1.000	0.800	0.750	1062.50	0.00	14.71
		Qmin	0.0	-21.6	1.000	0.800	0.750	1062.50	0.00	6.57
	47	Nmax	0.0	-40.9	1.000	0.800	0.750	1062.50	0.00	12.61
		Nmin	0.0	-82.6	1.000	0.800	0.750	1062.50	0.00	26.27
		Mmax	0.0	-40.9	1.000	0.800	0.750	1062.50	0.00	12.61
		Mmin	0.0	-82.6	1.000	0.800	0.750	1062.50	0.00	26.27
		Qmax	0.0	-82.6	1.000	0.800	0.750	1062.50	0.00	26.27
		Qmin	0.0	-40.9	1.000	0.800	0.750	1062.50	0.00	12.61
30	47	Nmax	0.0	-40.9	1.000	0.800	0.750	1062.50	0.00	12.61
		Nmin	0.0	-82.6	1.000	0.800	0.750	1062.50	0.00	26.27
		Mmax	0.0	-40.9	1.000	0.800	0.750	1062.50	0.00	12.61
		Mmin	0.0	-82.6	1.000	0.800	0.750	1062.50	0.00	26.27
		Qmax	0.0	-82.6	1.000	0.800	0.750	1062.50	0.00	26.27
		Qmin	0.0	-40.9	1.000	0.800	0.750	1062.50	0.00	12.61
	49	Nmax	0.0	-61.8	1.000	0.800	0.750	1062.50	0.00	19.37
		Nmin	0.0	-118.9	1.000	0.800	0.750	1062.50	0.00	38.90
		Mmax	0.0	-61.8	1.000	0.800	0.750	1062.50	0.00	19.37
		Mmin	0.0	-118.9	1.000	0.800	0.750	1062.50	0.00	38.90
		Qmax	0.0	-118.9	1.000	0.800	0.750	1062.50	0.00	38.90
		Qmin	0.0	-61.8	1.000	0.800	0.750	1062.50	0.00	19.37
31	49	Nmax	0.0	-61.8	1.000	0.800	0.750	1062.50	0.00	19.37
		Nmin	0.0	-118.9	1.000	0.800	0.750	1062.50	0.00	38.90
		Mmax	0.0	-61.8	1.000	0.800	0.750	1062.50	0.00	19.37
		Mmin	0.0	-118.9	1.000	0.800	0.750	1062.50	0.00	38.90

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES A AMBOS LADOS

FECHA: 28/02/2006

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
		Qmax	0.0	-118.9	1.000	0.800	0.750	1062.50	0.00	38.90
		Qmin	0.0	-61.8	1.000	0.800	0.750	1062.50	0.00	19.37
	51	Nmax	0.0	-84.5	1.000	0.800	0.750	1062.50	0.00	26.90
		Nmin	0.0	-156.2	1.000	0.800	0.750	1062.50	0.00	52.79
		Mmax	0.0	-84.5	1.000	0.800	0.750	1062.50	0.00	26.90
		Mmin	0.0	-156.2	1.000	0.800	0.750	1062.50	0.00	52.79
		Qmax	0.0	-138.7	1.000	0.800	0.750	1062.50	0.00	46.15
		Qmin	0.0	-84.5	1.000	0.800	0.750	1062.50	0.00	26.90
32	51	Nmax	0.0	-84.5	1.000	0.800	0.750	1062.50	0.00	26.90
		Nmin	0.0	-156.2	1.000	0.800	0.750	1062.50	0.00	52.79
		Mmax	0.0	-84.5	1.000	0.800	0.750	1062.50	0.00	26.90
		Mmin	0.0	-156.2	1.000	0.800	0.750	1062.50	0.00	52.79
		Qmax	0.0	-138.7	1.000	0.800	0.750	1062.50	0.00	46.15
		Qmin	0.0	-84.5	1.000	0.800	0.750	1062.50	0.00	26.90
	64	Nmax	0.0	-108.8	1.000	0.800	0.750	1062.50	0.00	35.32
		Nmin	0.0	-194.8	1.000	0.800	0.750	1062.50	0.00	68.29
		Mmax	0.0	-108.8	1.000	0.800	0.750	1062.50	0.00	35.32
		Mmin	0.0	-194.8	1.000	0.800	0.750	1062.50	0.00	68.29
		Qmax	0.0	-178.8	1.000	0.800	0.750	1062.50	0.00	61.70
		Qmin	0.0	-108.8	1.000	0.800	0.750	1062.50	0.00	35.32
33	1	Nmax	115.7	0.0	1.000	0.700	0.650	920.83	45.00	0.00
		Nmin	180.4	0.0	1.000	0.700	0.650	920.83	76.77	0.00
		Mmax	180.4	0.0	1.000	0.700	0.650	920.83	76.77	0.00
		Mmin	115.7	0.0	1.000	0.700	0.650	920.83	45.00	0.00
		Qmax	180.4	0.0	1.000	0.700	0.650	920.83	76.77	0.00
		Qmin	115.7	0.0	1.000	0.700	0.650	920.83	45.00	0.00
	14	Nmax	87.8	0.0	1.000	0.700	0.650	920.83	33.11	0.00
		Nmin	137.1	0.0	1.000	0.700	0.650	920.83	54.77	0.00
		Mmax	137.1	0.0	1.000	0.700	0.650	920.83	54.77	0.00
		Mmin	87.8	0.0	1.000	0.700	0.650	920.83	33.11	0.00
		Qmax	137.1	0.0	1.000	0.700	0.650	920.83	54.77	0.00
		Qmin	87.8	0.0	1.000	0.700	0.650	920.83	33.11	0.00
34	14	Nmax	87.8	0.0	1.000	0.700	0.650	920.83	33.11	0.00
		Nmin	137.0	0.0	1.000	0.700	0.650	920.83	54.76	0.00
		Mmax	137.0	0.0	1.000	0.700	0.650	920.83	54.76	0.00
		Mmin	87.8	0.0	1.000	0.700	0.650	920.83	33.11	0.00
		Qmax	137.0	0.0	1.000	0.700	0.650	920.83	54.76	0.00
		Qmin	87.8	0.0	1.000	0.700	0.650	920.83	33.11	0.00
	16	Nmax	62.8	0.0	1.000	0.700	0.650	920.83	23.08	0.00
		Nmin	98.1	0.0	1.000	0.700	0.650	920.83	37.41	0.00
		Mmax	98.1	0.0	1.000	0.700	0.650	920.83	37.41	0.00
		Mmin	62.8	0.0	1.000	0.700	0.650	920.83	23.08	0.00
		Qmax	98.1	0.0	1.000	0.700	0.650	920.83	37.41	0.00
		Qmin	62.8	0.0	1.000	0.700	0.650	920.83	23.08	0.00
35	16	Nmax	62.8	0.0	1.000	0.700	0.650	920.83	23.08	0.00
		Nmin	98.1	0.0	1.000	0.700	0.650	920.83	37.41	0.00
		Mmax	98.1	0.0	1.000	0.700	0.650	920.83	37.41	0.00
		Mmin	62.8	0.0	1.000	0.700	0.650	920.83	23.08	0.00
		Qmax	98.1	0.0	1.000	0.700	0.650	920.83	37.41	0.00
		Qmin	62.8	0.0	1.000	0.700	0.650	920.83	23.08	0.00
	18	Nmax	40.4	0.0	1.000	0.700	0.650	920.83	14.53	0.00
		Nmin	63.2	0.0	1.000	0.700	0.650	920.83	23.23	0.00

ARMADOJUL_2000_1000_2m.xls PI RIERA DE CAN JULIÁ 28/02/2006
Kv=2000 Kh=1000

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES A AMBOS LADOS

FECHA: 28/02/2006

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
		Mmax	63.2	0.0	1.000	0.700	0.650	920.83	23.23	0.00
		Mmin	40.4	0.0	1.000	0.700	0.650	920.83	14.53	0.00
		Qmax	63.2	0.0	1.000	0.700	0.650	920.83	23.23	0.00
		Qmin	40.4	0.0	1.000	0.700	0.650	920.83	14.53	0.00
36	18	Nmax	40.4	0.0	1.000	0.700	0.650	920.83	14.53	0.00
		Nmin	63.2	0.0	1.000	0.700	0.650	920.83	23.24	0.00
		Mmax	63.2	0.0	1.000	0.700	0.650	920.83	23.24	0.00
		Mmin	40.4	0.0	1.000	0.700	0.650	920.83	14.53	0.00
		Qmax	63.2	0.0	1.000	0.700	0.650	920.83	23.24	0.00
		Qmin	40.4	0.0	1.000	0.700	0.650	920.83	14.53	0.00
	20	Nmax	20.5	0.0	1.000	0.700	0.650	920.83	7.25	0.00
		Nmin	32.3	0.0	1.000	0.700	0.650	920.83	11.51	0.00
		Mmax	32.3	0.0	1.000	0.700	0.650	920.83	11.51	0.00
		Mmin	20.5	0.0	1.000	0.700	0.650	920.83	7.25	0.00
		Qmax	32.3	0.0	1.000	0.700	0.650	920.83	11.51	0.00
		Qmin	20.5	0.0	1.000	0.700	0.650	920.83	7.25	0.00
37	20	Nmax	20.5	0.0	1.000	0.700	0.650	920.83	7.25	0.00
		Nmin	32.3	0.0	1.000	0.700	0.650	920.83	11.51	0.00
		Mmax	32.3	0.0	1.000	0.700	0.650	920.83	11.51	0.00
		Mmin	20.5	0.0	1.000	0.700	0.650	920.83	7.25	0.00
		Qmax	32.3	0.0	1.000	0.700	0.650	920.83	11.51	0.00
		Qmin	20.5	0.0	1.000	0.700	0.650	920.83	7.25	0.00
	22	Nmax	3.1	0.0	1.000	0.700	0.650	920.83	1.07	0.00
		Nmin	5.1	0.0	1.000	0.700	0.650	920.83	1.76	0.00
		Mmax	5.4	0.0	1.000	0.700	0.650	920.83	1.89	0.00
		Mmin	3.1	0.0	1.000	0.700	0.650	920.83	1.07	0.00
		Qmax	5.1	0.0	1.000	0.700	0.650	920.83	1.76	0.00
		Qmin	3.1	0.0	1.000	0.700	0.650	920.83	1.07	0.00
38	22	Nmax	3.1	0.0	1.000	0.700	0.650	920.83	1.06	0.00
		Nmin	5.0	0.0	1.000	0.700	0.650	920.83	1.76	0.00
		Mmax	5.4	0.0	1.000	0.700	0.650	920.83	1.88	0.00
		Mmin	3.1	0.0	1.000	0.700	0.650	920.83	1.06	0.00
		Qmax	5.0	0.0	1.000	0.700	0.650	920.83	1.76	0.00
		Qmin	3.1	0.0	1.000	0.700	0.650	920.83	1.06	0.00
	24	Nmax	0.0	-25.2	1.000	0.700	0.650	920.83	0.00	8.95
		Nmin	0.0	-39.0	1.000	0.700	0.650	920.83	0.00	14.02
		Mmax	0.0	-25.2	1.000	0.700	0.650	920.83	0.00	8.95
		Mmin	0.0	-39.0	1.000	0.700	0.650	920.83	0.00	14.02
		Qmax	0.0	-39.0	1.000	0.700	0.650	920.83	0.00	14.02
		Qmin	0.0	-25.2	1.000	0.700	0.650	920.83	0.00	8.95
39	24	Nmax	0.0	-25.2	1.000	0.700	0.650	920.83	0.00	8.95
		Nmin	0.0	-39.0	1.000	0.700	0.650	920.83	0.00	14.02
		Mmax	0.0	-25.2	1.000	0.700	0.650	920.83	0.00	8.95
		Mmin	0.0	-39.0	1.000	0.700	0.650	920.83	0.00	14.02
		Qmax	0.0	-39.0	1.000	0.700	0.650	920.83	0.00	14.02
		Qmin	0.0	-25.2	1.000	0.700	0.650	920.83	0.00	8.95
	26	Nmax	0.0	-45.8	1.000	0.700	0.650	920.83	0.00	16.53
		Nmin	0.0	-71.0	1.000	0.700	0.650	920.83	0.00	26.30
		Mmax	0.0	-45.8	1.000	0.700	0.650	920.83	0.00	16.53
		Mmin	0.0	-71.0	1.000	0.700	0.650	920.83	0.00	26.30
		Qmax	0.0	-71.0	1.000	0.700	0.650	920.83	0.00	26.30
		Qmin	0.0	-45.8	1.000	0.700	0.650	920.83	0.00	16.53

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES A AMBOS LADOS

FECHA: 28/02/2006

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
40	26	Nmax	0.0	-45.8	1.000	0.700	0.650	920.83	0.00	16.53
		Nmin	0.0	-71.0	1.000	0.700	0.650	920.83	0.00	26.30
		Mmax	0.0	-45.8	1.000	0.700	0.650	920.83	0.00	16.53
		Mmin	0.0	-71.0	1.000	0.700	0.650	920.83	0.00	26.30
		Qmax	0.0	-71.0	1.000	0.700	0.650	920.83	0.00	26.30
		Qmin	0.0	-45.8	1.000	0.700	0.650	920.83	0.00	16.53
	28	Nmax	0.0	-59.6	1.000	0.700	0.650	920.83	0.00	21.81
		Nmin	0.0	-92.5	1.000	0.700	0.650	920.83	0.00	35.06
		Mmax	0.0	-59.6	1.000	0.700	0.650	920.83	0.00	21.81
		Mmin	0.0	-92.5	1.000	0.700	0.650	920.83	0.00	35.06
		Qmax	0.0	-92.5	1.000	0.700	0.650	920.83	0.00	35.06
		Qmin	0.0	-59.6	1.000	0.700	0.650	920.83	0.00	21.81
41	28	Nmax	0.0	-59.6	1.000	0.700	0.650	920.83	0.00	21.81
		Nmin	0.0	-92.5	1.000	0.700	0.650	920.83	0.00	35.06
		Mmax	0.0	-59.6	1.000	0.700	0.650	920.83	0.00	21.81
		Mmin	0.0	-92.5	1.000	0.700	0.650	920.83	0.00	35.06
		Qmax	0.0	-92.5	1.000	0.700	0.650	920.83	0.00	35.06
		Qmin	0.0	-59.6	1.000	0.700	0.650	920.83	0.00	21.81
	30	Nmax	0.0	-67.5	1.000	0.700	0.650	920.83	0.00	24.91
		Nmin	0.0	-104.9	1.000	0.700	0.650	920.83	0.00	40.30
		Mmax	0.0	-67.5	1.000	0.700	0.650	920.83	0.00	24.91
		Mmin	0.0	-104.9	1.000	0.700	0.650	920.83	0.00	40.30
		Qmax	0.0	-104.9	1.000	0.700	0.650	920.83	0.00	40.30
		Qmin	0.0	-67.5	1.000	0.700	0.650	920.83	0.00	24.91
42	30	Nmax	0.0	-67.5	1.000	0.700	0.650	920.83	0.00	24.91
		Nmin	0.0	-104.9	1.000	0.700	0.650	920.83	0.00	40.30
		Mmax	0.0	-67.5	1.000	0.700	0.650	920.83	0.00	24.91
		Mmin	0.0	-104.9	1.000	0.700	0.650	920.83	0.00	40.30
		Qmax	0.0	-104.9	1.000	0.700	0.650	920.83	0.00	40.30
		Qmin	0.0	-67.5	1.000	0.700	0.650	920.83	0.00	24.91
	32	Nmax	0.0	-70.1	1.000	0.700	0.650	920.83	0.00	25.93
		Nmin	0.0	-108.9	1.000	0.700	0.650	920.83	0.00	42.03
		Mmax	0.0	-70.1	1.000	0.700	0.650	920.83	0.00	25.93
		Mmin	0.0	-108.9	1.000	0.700	0.650	920.83	0.00	42.03
		Qmax	0.0	-108.9	1.000	0.700	0.650	920.83	0.00	42.03
		Qmin	0.0	-70.1	1.000	0.700	0.650	920.83	0.00	25.93
43	32	Nmax	0.0	-70.1	1.000	0.700	0.650	920.83	0.00	25.93
		Nmin	0.0	-108.9	1.000	0.700	0.650	920.83	0.00	42.03
		Mmax	0.0	-70.1	1.000	0.700	0.650	920.83	0.00	25.93
		Mmin	0.0	-108.9	1.000	0.700	0.650	920.83	0.00	42.03
		Qmax	0.0	-70.1	1.000	0.700	0.650	920.83	0.00	25.93
		Qmin	0.0	-108.9	1.000	0.700	0.650	920.83	0.00	42.03
	34	Nmax	0.0	-67.5	1.000	0.700	0.650	920.83	0.00	24.90
		Nmin	0.0	-104.9	1.000	0.700	0.650	920.83	0.00	40.28
		Mmax	0.0	-67.5	1.000	0.700	0.650	920.83	0.00	24.90
		Mmin	0.0	-104.9	1.000	0.700	0.650	920.83	0.00	40.28
		Qmax	0.0	-67.5	1.000	0.700	0.650	920.83	0.00	24.90
		Qmin	0.0	-104.9	1.000	0.700	0.650	920.83	0.00	40.28
44	34	Nmax	0.0	-67.5	1.000	0.700	0.650	920.83	0.00	24.90
		Nmin	0.0	-104.9	1.000	0.700	0.650	920.83	0.00	40.28
		Mmax	0.0	-67.5	1.000	0.700	0.650	920.83	0.00	24.90
		Mmin	0.0	-104.9	1.000	0.700	0.650	920.83	0.00	40.28

ARMADOJUL_2000_1000_2m.xls PI RIERA DE CAN JULIÁ 28/02/2006
Kv=2000 Kh=1000

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES A AMBOS LADOS

FECHA: 28/02/2006

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
		Qmax	0.0	-67.5	1.000	0.700	0.650	920.83	0.00	24.90
		Qmin	0.0	-104.9	1.000	0.700	0.650	920.83	0.00	40.28
	36	Nmax	0.0	-59.5	1.000	0.700	0.650	920.83	0.00	21.78
		Nmin	0.0	-92.4	1.000	0.700	0.650	920.83	0.00	35.01
		Mmax	0.0	-59.5	1.000	0.700	0.650	920.83	0.00	21.78
		Mmin	0.0	-92.4	1.000	0.700	0.650	920.83	0.00	35.01
		Qmax	0.0	-59.5	1.000	0.700	0.650	920.83	0.00	21.78
		Qmin	0.0	-92.4	1.000	0.700	0.650	920.83	0.00	35.01
45	36	Nmax	0.0	-59.5	1.000	0.700	0.650	920.83	0.00	21.78
		Nmin	0.0	-92.4	1.000	0.700	0.650	920.83	0.00	35.01
		Mmax	0.0	-59.5	1.000	0.700	0.650	920.83	0.00	21.78
		Mmin	0.0	-92.4	1.000	0.700	0.650	920.83	0.00	35.01
		Qmax	0.0	-59.5	1.000	0.700	0.650	920.83	0.00	21.78
		Qmin	0.0	-92.4	1.000	0.700	0.650	920.83	0.00	35.01
	38	Nmax	0.0	-45.7	1.000	0.700	0.650	920.83	0.00	16.49
		Nmin	0.0	-70.9	1.000	0.700	0.650	920.83	0.00	26.25
		Mmax	0.0	-45.7	1.000	0.700	0.650	920.83	0.00	16.49
		Mmin	0.0	-70.9	1.000	0.700	0.650	920.83	0.00	26.25
		Qmax	0.0	-45.7	1.000	0.700	0.650	920.83	0.00	16.49
		Qmin	0.0	-70.9	1.000	0.700	0.650	920.83	0.00	26.25
46	38	Nmax	0.0	-45.7	1.000	0.700	0.650	920.83	0.00	16.49
		Nmin	0.0	-70.9	1.000	0.700	0.650	920.83	0.00	26.25
		Mmax	0.0	-45.7	1.000	0.700	0.650	920.83	0.00	16.49
		Mmin	0.0	-70.9	1.000	0.700	0.650	920.83	0.00	26.25
		Qmax	0.0	-45.7	1.000	0.700	0.650	920.83	0.00	16.49
		Qmin	0.0	-70.9	1.000	0.700	0.650	920.83	0.00	26.25
	40	Nmax	0.0	-25.1	1.000	0.700	0.650	920.83	0.00	8.91
		Nmin	0.0	-38.9	1.000	0.700	0.650	920.83	0.00	13.96
		Mmax	0.0	-25.1	1.000	0.700	0.650	920.83	0.00	8.91
		Mmin	0.0	-38.9	1.000	0.700	0.650	920.83	0.00	13.96
		Qmax	0.0	-25.1	1.000	0.700	0.650	920.83	0.00	8.91
		Qmin	0.0	-38.9	1.000	0.700	0.650	920.83	0.00	13.96
47	40	Nmax	0.0	-25.1	1.000	0.700	0.650	920.83	0.00	8.91
		Nmin	0.0	-38.9	1.000	0.700	0.650	920.83	0.00	13.96
		Mmax	0.0	-25.1	1.000	0.700	0.650	920.83	0.00	8.91
		Mmin	0.0	-38.9	1.000	0.700	0.650	920.83	0.00	13.96
		Qmax	0.0	-25.1	1.000	0.700	0.650	920.83	0.00	8.91
		Qmin	0.0	-38.9	1.000	0.700	0.650	920.83	0.00	13.96
	42	Nmax	3.2	0.0	1.000	0.700	0.650	920.83	1.11	0.00
		Nmin	5.2	0.0	1.000	0.700	0.650	920.83	1.82	0.00
		Mmax	5.5	0.0	1.000	0.700	0.650	920.83	1.91	0.00
		Mmin	3.2	0.0	1.000	0.700	0.650	920.83	1.11	0.00
		Qmax	3.2	0.0	1.000	0.700	0.650	920.83	1.11	0.00
		Qmin	5.2	0.0	1.000	0.700	0.650	920.83	1.82	0.00
48	42	Nmax	3.2	0.0	1.000	0.700	0.650	920.83	1.11	0.00
		Nmin	5.2	0.0	1.000	0.700	0.650	920.83	1.82	0.00
		Mmax	5.5	0.0	1.000	0.700	0.650	920.83	1.91	0.00
		Mmin	3.2	0.0	1.000	0.700	0.650	920.83	1.11	0.00
		Qmax	3.2	0.0	1.000	0.700	0.650	920.83	1.11	0.00
		Qmin	5.2	0.0	1.000	0.700	0.650	920.83	1.82	0.00
	44	Nmax	20.7	0.0	1.000	0.700	0.650	920.83	7.30	0.00
		Nmin	32.4	0.0	1.000	0.700	0.650	920.83	11.57	0.00

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES A AMBOS LADOS

FECHA: 28/02/2006

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
		Mmax	32.4	0.0	1.000	0.700	0.650	920.83	11.57	0.00
		Mmin	20.7	0.0	1.000	0.700	0.650	920.83	7.30	0.00
		Qmax	20.7	0.0	1.000	0.700	0.650	920.83	7.30	0.00
		Qmin	32.4	0.0	1.000	0.700	0.650	920.83	11.57	0.00
49	44	Nmax	20.7	0.0	1.000	0.700	0.650	920.83	7.30	0.00
		Nmin	32.4	0.0	1.000	0.700	0.650	920.83	11.57	0.00
		Mmax	32.4	0.0	1.000	0.700	0.650	920.83	11.57	0.00
		Mmin	20.7	0.0	1.000	0.700	0.650	920.83	7.30	0.00
		Qmax	20.7	0.0	1.000	0.700	0.650	920.83	7.30	0.00
		Qmin	32.4	0.0	1.000	0.700	0.650	920.83	11.57	0.00
	46	Nmax	40.6	0.0	1.000	0.700	0.650	920.83	14.58	0.00
		Nmin	63.4	0.0	1.000	0.700	0.650	920.83	23.30	0.00
		Mmax	63.4	0.0	1.000	0.700	0.650	920.83	23.30	0.00
		Mmin	40.6	0.0	1.000	0.700	0.650	920.83	14.58	0.00
		Qmax	40.6	0.0	1.000	0.700	0.650	920.83	14.58	0.00
		Qmin	63.4	0.0	1.000	0.700	0.650	920.83	23.30	0.00
50	46	Nmax	40.6	0.0	1.000	0.700	0.650	920.83	14.58	0.00
		Nmin	63.4	0.0	1.000	0.700	0.650	920.83	23.30	0.00
		Mmax	63.4	0.0	1.000	0.700	0.650	920.83	23.30	0.00
		Mmin	40.6	0.0	1.000	0.700	0.650	920.83	14.58	0.00
		Qmax	40.6	0.0	1.000	0.700	0.650	920.83	14.58	0.00
		Qmin	63.4	0.0	1.000	0.700	0.650	920.83	23.30	0.00
	48	Nmax	63.0	0.0	1.000	0.700	0.650	920.83	23.14	0.00
		Nmin	98.3	0.0	1.000	0.700	0.650	920.83	37.48	0.00
		Mmax	98.3	0.0	1.000	0.700	0.650	920.83	37.48	0.00
		Mmin	63.0	0.0	1.000	0.700	0.650	920.83	23.14	0.00
		Qmax	63.0	0.0	1.000	0.700	0.650	920.83	23.14	0.00
		Qmin	98.3	0.0	1.000	0.700	0.650	920.83	37.48	0.00
51	48	Nmax	63.0	0.0	1.000	0.700	0.650	920.83	23.14	0.00
		Nmin	98.3	0.0	1.000	0.700	0.650	920.83	37.49	0.00
		Mmax	98.3	0.0	1.000	0.700	0.650	920.83	37.49	0.00
		Mmin	63.0	0.0	1.000	0.700	0.650	920.83	23.14	0.00
		Qmax	63.0	0.0	1.000	0.700	0.650	920.83	23.14	0.00
		Qmin	98.3	0.0	1.000	0.700	0.650	920.83	37.49	0.00
	50	Nmax	88.0	0.0	1.000	0.700	0.650	920.83	33.16	0.00
		Nmin	137.2	0.0	1.000	0.700	0.650	920.83	54.85	0.00
		Mmax	137.2	0.0	1.000	0.700	0.650	920.83	54.85	0.00
		Mmin	88.0	0.0	1.000	0.700	0.650	920.83	33.16	0.00
		Qmax	88.0	0.0	1.000	0.700	0.650	920.83	33.16	0.00
		Qmin	137.2	0.0	1.000	0.700	0.650	920.83	54.85	0.00
52	50	Nmax	88.0	0.0	1.000	0.700	0.650	920.83	33.17	0.00
		Nmin	137.2	0.0	1.000	0.700	0.650	920.83	54.86	0.00
		Mmax	137.2	0.0	1.000	0.700	0.650	920.83	54.86	0.00
		Mmin	88.0	0.0	1.000	0.700	0.650	920.83	33.17	0.00
		Qmax	88.0	0.0	1.000	0.700	0.650	920.83	33.17	0.00
		Qmin	137.2	0.0	1.000	0.700	0.650	920.83	54.86	0.00
	52	Nmax	115.8	0.0	1.000	0.700	0.650	920.83	45.06	0.00
		Nmin	180.6	0.0	1.000	0.700	0.650	920.83	76.86	0.00
		Mmax	180.6	0.0	1.000	0.700	0.650	920.83	76.86	0.00
		Mmin	115.8	0.0	1.000	0.700	0.650	920.83	45.06	0.00
		Qmax	115.8	0.0	1.000	0.700	0.650	920.83	45.06	0.00
		Qmin	180.6	0.0	1.000	0.700	0.650	920.83	76.86	0.00

ARMADOJUL_2000_1000_2m.xls PI RIERA DE CAN JULIÁ 28/02/2006
Kv=2000 Kh=1000

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES A AMBOS LADOS

FECHA: 28/02/2006

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
53	52	Nmax	115.8	0.0	1.000	0.700	0.650	920.83	45.08	0.00
		Nmin	180.6	0.0	1.000	0.700	0.650	920.83	76.89	0.00
		Mmax	180.6	0.0	1.000	0.700	0.650	920.83	76.89	0.00
		Mmin	115.8	0.0	1.000	0.700	0.650	920.83	45.08	0.00
		Qmax	180.6	0.0	1.000	0.700	0.650	920.83	76.89	0.00
		Qmin	115.8	0.0	1.000	0.700	0.650	920.83	45.08	0.00
	53	Nmax	75.9	0.0	1.000	0.700	0.650	920.83	28.25	0.00
		Nmin	117.5	0.0	1.000	0.700	0.650	920.83	45.80	0.00
		Mmax	117.5	0.0	1.000	0.700	0.650	920.83	45.80	0.00
		Mmin	75.9	0.0	1.000	0.700	0.650	920.83	28.25	0.00
		Qmax	117.5	0.0	1.000	0.700	0.650	920.83	45.80	0.00
		Qmin	75.9	0.0	1.000	0.700	0.650	920.83	28.25	0.00
54	53	Nmax	75.9	0.0	1.000	0.700	0.650	920.83	28.25	0.00
		Nmin	117.5	0.0	1.000	0.700	0.650	920.83	45.80	0.00
		Mmax	117.5	0.0	1.000	0.700	0.650	920.83	45.80	0.00
		Mmin	75.9	0.0	1.000	0.700	0.650	920.83	28.25	0.00
		Qmax	117.5	0.0	1.000	0.700	0.650	920.83	45.80	0.00
		Qmin	75.9	0.0	1.000	0.700	0.650	920.83	28.25	0.00
	54	Nmax	43.1	0.0	1.000	0.700	0.650	920.83	15.54	0.00
		Nmin	65.8	0.0	1.000	0.700	0.650	920.83	24.25	0.00
		Mmax	65.8	0.0	1.000	0.700	0.650	920.83	24.25	0.00
		Mmin	43.1	0.0	1.000	0.700	0.650	920.83	15.54	0.00
		Qmax	65.8	0.0	1.000	0.700	0.650	920.83	24.25	0.00
		Qmin	43.1	0.0	1.000	0.700	0.650	920.83	15.54	0.00
55	54	Nmax	43.1	0.0	1.000	0.700	0.650	920.83	15.54	0.00
		Nmin	65.8	0.0	1.000	0.700	0.650	920.83	24.25	0.00
		Mmax	65.8	0.0	1.000	0.700	0.650	920.83	24.25	0.00
		Mmin	43.1	0.0	1.000	0.700	0.650	920.83	15.54	0.00
		Qmax	65.8	0.0	1.000	0.700	0.650	920.83	24.25	0.00
		Qmin	43.1	0.0	1.000	0.700	0.650	920.83	15.54	0.00
	55	Nmax	17.5	0.0	1.000	0.700	0.650	920.83	6.16	0.00
		Nmin	25.6	0.0	1.000	0.700	0.650	920.83	9.09	0.00
		Mmax	25.6	0.0	1.000	0.700	0.650	920.83	9.09	0.00
		Mmin	17.5	0.0	1.000	0.700	0.650	920.83	6.16	0.00
		Qmax	25.6	0.0	1.000	0.700	0.650	920.83	9.09	0.00
		Qmin	17.5	0.0	1.000	0.700	0.650	920.83	6.16	0.00
56	55	Nmax	17.5	0.0	1.000	0.700	0.650	920.83	6.16	0.00
		Nmin	25.6	0.0	1.000	0.700	0.650	920.83	9.09	0.00
		Mmax	25.6	0.0	1.000	0.700	0.650	920.83	9.09	0.00
		Mmin	17.5	0.0	1.000	0.700	0.650	920.83	6.16	0.00
		Qmax	25.6	0.0	1.000	0.700	0.650	920.83	9.09	0.00
		Qmin	17.5	0.0	1.000	0.700	0.650	920.83	6.16	0.00
	56	Nmax	0.2	-1.0	1.000	0.700	0.650	920.83	0.06	0.33
		Nmin	0.0	-3.1	1.000	0.700	0.650	920.83	0.00	1.09
		Mmax	0.2	-1.0	1.000	0.700	0.650	920.83	0.06	0.33
		Mmin	0.0	-7.4	1.000	0.700	0.650	920.83	0.00	2.58
		Qmax	0.0	-3.1	1.000	0.700	0.650	920.83	0.00	1.09
		Qmin	0.2	-1.0	1.000	0.700	0.650	920.83	0.06	0.33
57	56	Nmax	0.2	-1.0	1.000	0.700	0.650	920.83	0.07	0.33
		Nmin	0.0	-3.1	1.000	0.700	0.650	920.83	0.00	1.08
		Mmax	0.2	-1.0	1.000	0.700	0.650	920.83	0.07	0.33
		Mmin	0.0	-7.4	1.000	0.700	0.650	920.83	0.00	2.57

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES A AMBOS LADOS

FECHA: 28/02/2006

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
		Qmax	0.0	-3.1	1.000	0.700	0.650	920.83	0.00	1.08
		Qmin	0.2	-1.0	1.000	0.700	0.650	920.83	0.07	0.33
	57	Nmax	0.0	-12.3	1.000	0.700	0.650	920.83	0.00	4.30
		Nmin	0.0	-20.5	1.000	0.700	0.650	920.83	0.00	7.22
		Mmax	0.0	-12.3	1.000	0.700	0.650	920.83	0.00	4.30
		Mmin	0.0	-23.0	1.000	0.700	0.650	920.83	0.00	8.13
		Qmax	0.0	-20.5	1.000	0.700	0.650	920.83	0.00	7.22
		Qmin	0.0	-12.3	1.000	0.700	0.650	920.83	0.00	4.30
58	57	Nmax	0.0	-12.3	1.000	0.700	0.650	920.83	0.00	4.30
		Nmin	0.0	-20.5	1.000	0.700	0.650	920.83	0.00	7.22
		Mmax	0.0	-12.3	1.000	0.700	0.650	920.83	0.00	4.30
		Mmin	0.0	-23.0	1.000	0.700	0.650	920.83	0.00	8.12
		Qmax	0.0	-20.5	1.000	0.700	0.650	920.83	0.00	7.22
		Qmin	0.0	-12.3	1.000	0.700	0.650	920.83	0.00	4.30
	58	Nmax	0.0	-16.5	1.000	0.700	0.650	920.83	0.00	5.79
		Nmin	0.0	-26.3	1.000	0.700	0.650	920.83	0.00	9.34
		Mmax	0.0	-16.5	1.000	0.700	0.650	920.83	0.00	5.79
		Mmin	0.0	-26.9	1.000	0.700	0.650	920.83	0.00	9.56
		Qmax	0.0	-26.3	1.000	0.700	0.650	920.83	0.00	9.34
		Qmin	0.0	-16.5	1.000	0.700	0.650	920.83	0.00	5.79
59	58	Nmax	0.0	-16.5	1.000	0.700	0.650	920.83	0.00	5.79
		Nmin	0.0	-26.3	1.000	0.700	0.650	920.83	0.00	9.35
		Mmax	0.0	-16.5	1.000	0.700	0.650	920.83	0.00	5.79
		Mmin	0.0	-26.9	1.000	0.700	0.650	920.83	0.00	9.55
		Mmax	0.0	-16.5	1.000	0.700	0.650	920.83	0.00	5.79
		Mmin	0.0	-26.9	1.000	0.700	0.650	920.83	0.00	9.55
		Qmax	0.0	-16.5	1.000	0.700	0.650	920.83	0.00	5.79
		Qmin	0.0	-26.9	1.000	0.700	0.650	920.83	0.00	9.55
	59	Nmax	0.0	-13.4	1.000	0.700	0.650	920.83	0.00	4.72
		Nmin	0.0	-20.7	1.000	0.700	0.650	920.83	0.00	7.31
		Mmax	0.0	-13.4	1.000	0.700	0.650	920.83	0.00	4.72
		Mmin	0.0	-20.7	1.000	0.700	0.650	920.83	0.00	7.31
		Qmax	0.0	-13.4	1.000	0.700	0.650	920.83	0.00	4.72
		Qmin	0.0	-19.1	1.000	0.700	0.650	920.83	0.00	6.72
60	59	Nmax	0.0	-13.4	1.000	0.700	0.650	920.83	0.00	4.71
		Nmin	0.0	-20.7	1.000	0.700	0.650	920.83	0.00	7.31
		Mmax	0.0	-13.4	1.000	0.700	0.650	920.83	0.00	4.71
		Mmin	0.0	-20.7	1.000	0.700	0.650	920.83	0.00	7.31
		Qmax	0.0	-13.4	1.000	0.700	0.650	920.83	0.00	4.71
		Qmin	0.0	-19.1	1.000	0.700	0.650	920.83	0.00	6.72
	60	Nmax	0.0	-3.2	1.000	0.700	0.650	920.83	0.00	1.13
		Nmin	0.0	-3.6	1.000	0.700	0.650	920.83	0.00	1.26
		Mmax	0.4	-3.2	1.000	0.700	0.650	920.83	0.15	1.13
		Mmin	0.0	-3.6	1.000	0.700	0.650	920.83	0.00	1.26
		Qmax	0.0	-3.2	1.000	0.700	0.650	920.83	0.00	1.13
		Qmin	0.4	-3.2	1.000	0.700	0.650	920.83	0.15	1.13
61	60	Nmax	0.0	-3.3	1.000	0.700	0.650	920.83	0.00	1.14
		Nmin	0.0	-3.6	1.000	0.700	0.650	920.83	0.00	1.27
		Mmax	0.4	-3.3	1.000	0.700	0.650	920.83	0.14	1.14
		Mmin	0.0	-3.6	1.000	0.700	0.650	920.83	0.00	1.27
		Qmax	0.0	-3.3	1.000	0.700	0.650	920.83	0.00	1.14
		Qmin	0.4	-3.3	1.000	0.700	0.650	920.83	0.14	1.14
	61	Nmax	14.1	0.0	1.000	0.700	0.650	920.83	4.93	0.00
		Nmin	24.8	0.0	1.000	0.700	0.650	920.83	8.80	0.00

ARMADOJUL_2000_1000_2m.xls PI RIERA DE CAN JULIÁ 28/02/2006
Kv=2000 Kh=1000

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES A AMBOS LADOS

FECHA: 28/02/2006

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
		Mmax	31.6	0.0	1.000	0.700	0.650	920.83	11.25	0.00
		Mmin	14.1	0.0	1.000	0.700	0.650	920.83	4.93	0.00
		Qmax	14.1	0.0	1.000	0.700	0.650	920.83	4.93	0.00
		Qmin	31.6	0.0	1.000	0.700	0.650	920.83	11.25	0.00
62	61	Nmax	14.1	0.0	1.000	0.700	0.650	920.83	4.94	0.00
		Nmin	24.9	0.0	1.000	0.700	0.650	920.83	8.81	0.00
		Mmax	31.6	0.0	1.000	0.700	0.650	920.83	11.25	0.00
		Mmin	14.1	0.0	1.000	0.700	0.650	920.83	4.94	0.00
		Qmax	14.1	0.0	1.000	0.700	0.650	920.83	4.94	0.00
		Qmin	31.6	0.0	1.000	0.700	0.650	920.83	11.25	0.00
	62	Nmax	38.4	0.0	1.000	0.700	0.650	920.83	13.77	0.00
		Nmin	64.6	0.0	1.000	0.700	0.650	920.83	23.76	0.00
		Mmax	74.1	0.0	1.000	0.700	0.650	920.83	27.54	0.00
		Mmin	38.4	0.0	1.000	0.700	0.650	920.83	13.77	0.00
		Qmax	38.4	0.0	1.000	0.700	0.650	920.83	13.77	0.00
		Qmin	74.1	0.0	1.000	0.700	0.650	920.83	27.54	0.00
63	62	Nmax	38.4	0.0	1.000	0.700	0.650	920.83	13.78	0.00
		Nmin	64.6	0.0	1.000	0.700	0.650	920.83	23.76	0.00
		Mmax	74.1	0.0	1.000	0.700	0.650	920.83	27.54	0.00
		Mmin	38.4	0.0	1.000	0.700	0.650	920.83	13.78	0.00
		Qmax	38.4	0.0	1.000	0.700	0.650	920.83	13.78	0.00
		Qmin	74.1	0.0	1.000	0.700	0.650	920.83	27.54	0.00
	63	Nmax	70.0	0.0	1.000	0.700	0.650	920.83	25.91	0.00
		Nmin	115.9	0.0	1.000	0.700	0.650	920.83	45.12	0.00
		Mmax	128.6	0.0	1.000	0.700	0.650	920.83	50.83	0.00
		Mmin	70.0	0.0	1.000	0.700	0.650	920.83	25.91	0.00
		Qmax	70.0	0.0	1.000	0.700	0.650	920.83	25.91	0.00
		Qmin	128.6	0.0	1.000	0.700	0.650	920.83	50.83	0.00
64	63	Nmax	70.0	0.0	1.000	0.700	0.650	920.83	25.91	0.00
		Nmin	116.0	0.0	1.000	0.700	0.650	920.83	45.13	0.00
		Mmax	128.6	0.0	1.000	0.700	0.650	920.83	50.83	0.00
		Mmin	70.0	0.0	1.000	0.700	0.650	920.83	25.91	0.00
		Qmax	70.0	0.0	1.000	0.700	0.650	920.83	25.91	0.00
		Qmin	128.6	0.0	1.000	0.700	0.650	920.83	50.83	0.00
	64	Nmax	108.8	0.0	1.000	0.700	0.650	920.83	41.99	0.00
		Nmin	178.8	0.0	1.000	0.700	0.650	920.83	75.88	0.00
		Mmax	194.8	0.0	1.000	0.700	0.650	920.83	84.93	0.00
		Mmin	108.8	0.0	1.000	0.700	0.650	920.83	41.99	0.00
		Qmax	108.8	0.0	1.000	0.700	0.650	920.83	41.99	0.00
		Qmin	194.8	0.0	1.000	0.700	0.650	920.83	84.93	0.00

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES A AMBOS LADOS

FECHA: 28/02/2006

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
1	1	Nmax	100.8	1.000	0.700	0.650	325.0	32.0	26.6	31.7
		Nmin	159.2	1.000	0.700	0.650	325.0	38.2	31.8	54.4
		Mmax	100.8	1.000	0.700	0.650	325.0	32.0	26.6	31.7
		Mmin	159.2	1.000	0.700	0.650	325.0	38.2	31.8	54.4
		Qmax	100.8	1.000	0.700	0.650	325.0	32.0	26.6	31.7
		Qmin	159.2	1.000	0.700	0.650	325.0	38.2	31.8	54.4
	2	Nmax	100.8	1.000	0.700	0.650	325.0	27.4	22.8	33.3
		Nmin	159.2	1.000	0.700	0.650	325.0	32.2	26.8	56.6
		Mmax	100.8	1.000	0.700	0.650	325.0	27.4	22.8	33.3
		Mmin	159.2	1.000	0.700	0.650	325.0	32.2	26.8	56.6
		Qmax	100.8	1.000	0.700	0.650	325.0	27.4	22.8	33.3
		Qmin	159.2	1.000	0.700	0.650	325.0	32.2	26.8	56.6
2	2	Nmax	82.7	1.000	0.700	0.650	325.0	27.4	22.8	25.6
		Nmin	130.3	1.000	0.700	0.650	325.0	32.2	26.8	44.2
		Mmax	82.7	1.000	0.700	0.650	325.0	27.4	22.8	25.6
		Mmin	130.3	1.000	0.700	0.650	325.0	32.2	26.8	44.2
		Qmax	82.7	1.000	0.700	0.650	325.0	27.4	22.8	25.6
		Qmin	130.3	1.000	0.700	0.650	325.0	32.2	26.8	44.2
	3	Nmax	82.7	1.000	0.700	0.650	325.0	22.4	18.7	27.3
		Nmin	130.3	1.000	0.700	0.650	325.0	26.0	21.7	46.4
		Mmax	82.7	1.000	0.700	0.650	325.0	22.4	18.7	27.3
		Mmin	130.3	1.000	0.700	0.650	325.0	26.0	21.7	46.4
		Qmax	82.7	1.000	0.700	0.650	325.0	22.4	18.7	27.3
		Qmin	130.3	1.000	0.700	0.650	325.0	26.0	21.7	46.4
3	3	Nmax	64.6	1.000	0.700	0.650	325.0	22.4	18.7	19.6
		Nmin	101.5	1.000	0.700	0.650	325.0	26.0	21.7	34.1
		Mmax	64.6	1.000	0.700	0.650	325.0	22.4	18.7	19.6
		Mmin	101.5	1.000	0.700	0.650	325.0	26.0	21.7	34.1
		Qmax	64.6	1.000	0.700	0.650	325.0	22.4	18.7	19.6
		Qmin	101.5	1.000	0.700	0.650	325.0	26.0	21.7	34.1
	4	Nmax	64.6	1.000	0.700	0.650	325.0	16.5	13.7	21.8
		Nmin	101.5	1.000	0.700	0.650	325.0	18.7	15.6	36.7
		Mmax	64.6	1.000	0.700	0.650	325.0	16.5	13.7	21.8
		Mmin	101.5	1.000	0.700	0.650	325.0	18.7	15.6	36.7
		Qmax	64.6	1.000	0.700	0.650	325.0	16.5	13.7	21.8
		Qmin	101.5	1.000	0.700	0.650	325.0	18.7	15.6	36.7
4	4	Nmax	46.5	1.000	0.700	0.650	325.0	16.5	13.7	14.0
		Nmin	72.5	1.000	0.700	0.650	325.0	18.7	15.6	24.3
		Mmax	46.5	1.000	0.700	0.650	325.0	16.5	13.7	14.0
		Mmin	72.5	1.000	0.700	0.650	325.0	18.7	15.6	24.3
		Qmax	46.5	1.000	0.700	0.650	325.0	16.5	13.7	14.0
		Qmin	72.5	1.000	0.700	0.650	325.0	18.7	15.6	24.3
	5	Nmax	46.5	1.000	0.700	0.650	325.0	6.2	5.2	17.7
		Nmin	72.5	1.000	0.700	0.650	325.0	9.2	7.7	27.7
		Mmax	68.8	1.000	0.700	0.650	325.0	12.3	10.2	25.0
		Mmin	46.5	1.000	0.700	0.650	325.0	6.2	5.2	17.7
		Qmax	46.5	1.000	0.700	0.650	325.0	6.2	5.2	17.7
		Qmin	72.5	1.000	0.700	0.650	325.0	9.2	7.7	27.7
5	5	Nmax	28.4	1.000	0.700	0.650	325.0	6.3	5.2	9.9
		Nmin	43.4	1.000	0.700	0.650	325.0	9.3	7.7	15.2
		Mmax	39.3	1.000	0.700	0.650	325.0	12.3	10.2	12.4

ARMADOJUL_2000_1000_2m.xls PI RIERA DE CAN JULIÁ 28/02/2006
Kv=2000 Kh=1000

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES A AMBOS LADOS

FECHA: 28/02/2006

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
		Mmin	28.4	1.000	0.700	0.650	325.0	6.3	5.2	9.9
		Qmax	28.4	1.000	0.700	0.650	325.0	6.3	5.2	9.9
		Qmin	43.4	1.000	0.700	0.650	325.0	9.3	7.7	15.2
	6	Nmax	28.4	1.000	0.700	0.650	325.0	14.6	12.2	7.0
		Nmin	43.4	1.000	0.700	0.650	325.0	17.3	14.4	12.4
		Mmax	39.3	1.000	0.700	0.650	325.0	18.0	15.0	10.4
		Mmin	28.4	1.000	0.700	0.650	325.0	14.6	12.2	7.0
		Qmax	28.4	1.000	0.700	0.650	325.0	14.6	12.2	7.0
		Qmin	43.4	1.000	0.700	0.650	325.0	17.3	14.4	12.4
6	6	Nmax	10.4	1.000	0.700	0.650	325.0	14.6	-	No necesita
		Nmin	14.5	1.000	0.700	0.650	325.0	17.4	-	No necesita
		Mmax	10.4	1.000	0.700	0.650	325.0	18.0	-	No necesita
		Mmin	10.4	1.000	0.700	0.650	325.0	14.6	-	No necesita
		Qmax	10.4	1.000	0.700	0.650	325.0	14.6	-	No necesita
		Qmin	14.5	1.000	0.700	0.650	325.0	17.4	-	No necesita
	7	Nmax	10.4	1.000	0.700	0.650	325.0	16.1	-	No necesita
		Nmin	14.5	1.000	0.700	0.650	325.0	18.9	-	No necesita
		Mmax	10.4	1.000	0.700	0.650	325.0	19.0	-	No necesita
		Mmin	10.4	1.000	0.700	0.650	325.0	16.1	-	No necesita
		Qmax	10.4	1.000	0.700	0.650	325.0	16.1	-	No necesita
		Qmin	14.5	1.000	0.700	0.650	325.0	18.9	-	No necesita
7	7	Nmax	7.6	1.000	0.700	0.650	325.0	16.1	-	No necesita
		Nmin	14.2	1.000	0.700	0.650	325.0	18.9	-	No necesita
		Mmax	19.5	1.000	0.700	0.650	325.0	19.0	15.9	1.6
		Mmin	7.6	1.000	0.700	0.650	325.0	16.1	-	No necesita
		Qmax	19.5	1.000	0.700	0.650	325.0	19.0	15.9	1.6
		Qmin	7.6	1.000	0.700	0.650	325.0	16.1	-	No necesita
	8	Nmax	7.6	1.000	0.700	0.650	325.0	15.0	-	No necesita
		Nmin	14.2	1.000	0.700	0.650	325.0	17.4	-	No necesita
		Mmax	14.2	1.000	0.700	0.650	325.0	17.4	-	No necesita
		Mmin	7.6	1.000	0.700	0.650	325.0	15.0	-	No necesita
		Qmax	19.5	1.000	0.700	0.650	325.0	16.9	14.1	2.3
		Qmin	7.6	1.000	0.700	0.650	325.0	15.0	-	No necesita
8	8	Nmax	25.7	1.000	0.700	0.650	325.0	15.0	12.5	5.6
		Nmin	43.2	1.000	0.700	0.650	325.0	17.4	14.5	12.2
		Mmax	43.2	1.000	0.700	0.650	325.0	17.4	14.5	12.2
		Mmin	25.7	1.000	0.700	0.650	325.0	15.0	12.5	5.6
		Qmax	49.2	1.000	0.700	0.650	325.0	16.9	14.1	15.0
		Qmin	25.7	1.000	0.700	0.650	325.0	15.0	12.5	5.6
	9	Nmax	25.7	1.000	0.700	0.650	325.0	9.3	7.7	7.7
		Nmin	43.2	1.000	0.700	0.650	325.0	9.6	8.0	15.0
		Mmax	43.2	1.000	0.700	0.650	325.0	9.6	8.0	15.0
		Mmin	49.2	1.000	0.700	0.650	325.0	9.3	7.7	17.7
		Qmax	49.2	1.000	0.700	0.650	325.0	9.3	7.7	17.7
		Qmin	25.7	1.000	0.700	0.650	325.0	9.3	7.7	7.7
9	9	Nmax	43.7	1.000	0.700	0.650	325.0	9.3	7.7	15.4
		Nmin	71.9	1.000	0.700	0.650	325.0	9.6	8.0	27.3
		Mmax	71.9	1.000	0.700	0.650	325.0	9.6	8.0	27.3
		Mmin	78.5	1.000	0.700	0.650	325.0	9.3	7.7	30.2
		Qmax	78.5	1.000	0.700	0.650	325.0	9.3	7.7	30.2
		Qmin	43.7	1.000	0.700	0.650	325.0	9.3	7.7	15.4
	10	Nmax	43.7	1.000	0.700	0.650	325.0	15.3	12.8	13.2

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES A AMBOS LADOS

FECHA: 28/02/2006

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
		Nmin	71.9	1.000	0.700	0.650	325.0	18.6	15.5	24.1
		Mmax	43.7	1.000	0.700	0.650	325.0	15.3	12.8	13.2
		Mmin	78.5	1.000	0.700	0.650	325.0	20.1	16.8	26.4
		Qmax	78.5	1.000	0.700	0.650	325.0	20.1	16.8	26.4
		Qmin	43.7	1.000	0.700	0.650	325.0	15.3	12.8	13.2
10	10	Nmax	61.9	1.000	0.700	0.650	325.0	15.3	12.8	21.0
		Nmin	100.9	1.000	0.700	0.650	325.0	18.6	15.5	36.5
		Mmax	61.9	1.000	0.700	0.650	325.0	15.3	12.8	21.0
		Mmin	108.1	1.000	0.700	0.650	325.0	20.1	16.8	39.0
		Qmax	108.1	1.000	0.700	0.650	325.0	20.1	16.8	39.0
		Qmin	61.9	1.000	0.700	0.650	325.0	15.3	12.8	21.0
	11	Nmax	61.9	1.000	0.700	0.650	325.0	21.6	18.0	18.7
		Nmin	100.9	1.000	0.700	0.650	325.0	25.9	21.6	33.9
		Mmax	61.9	1.000	0.700	0.650	325.0	21.6	18.0	18.7
		Mmin	108.1	1.000	0.700	0.650	325.0	27.2	22.6	36.5
		Qmax	108.1	1.000	0.700	0.650	325.0	27.2	22.6	36.5
		Qmin	61.9	1.000	0.700	0.650	325.0	21.6	18.0	18.7
11	11	Nmax	79.8	1.000	0.700	0.650	325.0	21.6	18.0	26.4
		Nmin	129.7	1.000	0.700	0.650	325.0	25.9	21.6	46.2
		Mmax	79.8	1.000	0.700	0.650	325.0	21.6	18.0	26.4
		Mmin	137.6	1.000	0.700	0.650	325.0	27.2	22.6	49.1
		Qmax	137.6	1.000	0.700	0.650	325.0	27.2	22.6	49.1
		Qmin	79.8	1.000	0.700	0.650	325.0	21.6	18.0	26.4
	12	Nmax	79.8	1.000	0.700	0.650	325.0	26.6	22.2	24.6
		Nmin	129.7	1.000	0.700	0.650	325.0	32.0	26.7	44.0
		Mmax	79.8	1.000	0.700	0.650	325.0	26.6	22.2	24.6
		Mmin	137.6	1.000	0.700	0.650	325.0	33.3	27.8	46.9
		Qmax	137.6	1.000	0.700	0.650	325.0	33.3	27.8	46.9
		Qmin	79.8	1.000	0.700	0.650	325.0	26.6	22.2	24.6
12	12	Nmax	97.8	1.000	0.700	0.650	325.0	26.6	22.2	32.3
		Nmin	158.6	1.000	0.700	0.650	325.0	32.0	26.7	56.4
		Mmax	97.8	1.000	0.700	0.650	325.0	26.6	22.2	32.3
		Mmin	166.8	1.000	0.700	0.650	325.0	33.3	27.8	59.4
		Qmax	166.8	1.000	0.700	0.650	325.0	33.3	27.8	59.4
		Qmin	97.8	1.000	0.700	0.650	325.0	26.6	22.2	32.3
	13	Nmax	97.8	1.000	0.700	0.650	325.0	31.3	26.1	30.7
		Nmin	158.6	1.000	0.700	0.650	325.0	38.1	31.7	54.2
		Mmax	97.8	1.000	0.700	0.650	325.0	31.3	26.1	30.7
		Mmin	166.8	1.000	0.700	0.650	325.0	39.5	32.9	57.2
		Qmax	166.8	1.000	0.700	0.650	325.0	39.5	32.9	57.2
		Qmin	97.8	1.000	0.700	0.650	325.0	31.3	26.1	30.7
13	13	Nmax	70.7	1.000	0.800	0.750	375.0	31.7	26.4	16.4
		Nmin	109.6	1.000	0.800	0.750	375.0	39.4	32.9	28.4
		Mmax	70.7	1.000	0.800	0.750	375.0	31.7	26.4	16.4
		Mmin	109.6	1.000	0.800	0.750	375.0	39.4	32.9	28.4
		Qmax	70.7	1.000	0.800	0.750	375.0	31.7	26.4	16.4
		Qmin	116.3	1.000	0.800	0.750	375.0	38.1	31.8	31.3
	15	Nmax	66.0	1.000	0.800	0.750	375.0	28.9	24.1	15.5
		Nmin	106.5	1.000	0.800	0.750	375.0	36.2	30.2	28.3
		Mmax	66.0	1.000	0.800	0.750	375.0	28.9	24.1	15.5
		Mmin	106.5	1.000	0.800	0.750	375.0	36.2	30.2	28.3
		Qmax	66.0	1.000	0.800	0.750	375.0	28.9	24.1	15.5

ARMADOJUL_2000_1000_2m.xls PI RIERA DE CAN JULIÁ 28/02/2006
Kv=2000 Kh=1000

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES A AMBOS LADOS

FECHA: 28/02/2006

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
		Qmin	108.5	1.000	0.800	0.750	375.0	34.6	28.8	29.5
14	15	Nmax	65.9	1.000	0.800	0.750	375.0	28.9	24.1	15.5
		Nmin	106.4	1.000	0.800	0.750	375.0	36.2	30.2	28.2
		Mmax	65.9	1.000	0.800	0.750	375.0	28.9	24.1	15.5
		Mmin	106.4	1.000	0.800	0.750	375.0	36.2	30.2	28.2
		Qmax	65.9	1.000	0.800	0.750	375.0	28.9	24.1	15.5
		Qmin	108.4	1.000	0.800	0.750	375.0	34.6	28.8	29.5
	17	Nmax	61.2	1.000	0.800	0.750	375.0	25.9	21.6	14.7
		Nmin	103.3	1.000	0.800	0.750	375.0	32.7	27.2	28.2
		Mmax	61.2	1.000	0.800	0.750	375.0	25.9	21.6	14.7
		Mmin	103.3	1.000	0.800	0.750	375.0	32.7	27.2	28.2
		Qmax	61.2	1.000	0.800	0.750	375.0	25.9	21.6	14.7
		Qmin	103.3	1.000	0.800	0.750	375.0	32.7	27.2	28.2
15	17	Nmax	61.3	1.000	0.800	0.750	375.0	25.9	21.6	14.7
		Nmin	103.4	1.000	0.800	0.750	375.0	32.7	27.2	28.2
		Mmax	61.3	1.000	0.800	0.750	375.0	25.9	21.6	14.7
		Mmin	103.4	1.000	0.800	0.750	375.0	32.7	27.2	28.2
		Qmax	61.3	1.000	0.800	0.750	375.0	25.9	21.6	14.7
		Qmin	103.4	1.000	0.800	0.750	375.0	32.7	27.2	28.2
	19	Nmax	56.6	1.000	0.800	0.750	375.0	22.5	18.7	14.0
		Nmin	100.3	1.000	0.800	0.750	375.0	28.7	23.9	28.3
		Mmax	56.6	1.000	0.800	0.750	375.0	22.5	18.7	14.0
		Mmin	100.3	1.000	0.800	0.750	375.0	28.7	23.9	28.3
		Qmax	56.6	1.000	0.800	0.750	375.0	22.5	18.7	14.0
		Qmin	100.3	1.000	0.800	0.750	375.0	28.7	23.9	28.3
16	19	Nmax	56.5	1.000	0.800	0.750	375.0	22.5	18.7	14.0
		Nmin	100.2	1.000	0.800	0.750	375.0	28.7	23.9	28.2
		Mmax	56.5	1.000	0.800	0.750	375.0	22.5	18.7	14.0
		Mmin	100.2	1.000	0.800	0.750	375.0	28.7	23.9	28.2
		Qmax	56.5	1.000	0.800	0.750	375.0	22.5	18.7	14.0
		Qmin	100.2	1.000	0.800	0.750	375.0	28.7	23.9	28.2
	21	Nmax	51.8	1.000	0.800	0.750	375.0	18.1	15.1	13.6
		Nmin	97.1	1.000	0.800	0.750	375.0	23.6	19.7	28.7
		Mmax	51.8	1.000	0.800	0.750	375.0	18.1	15.1	13.6
		Mmin	97.1	1.000	0.800	0.750	375.0	23.6	19.7	28.7
		Qmax	51.8	1.000	0.800	0.750	375.0	18.1	15.1	13.6
		Qmin	97.1	1.000	0.800	0.750	375.0	23.6	19.7	28.7
17	21	Nmax	51.8	1.000	0.800	0.750	375.0	18.1	15.1	13.6
		Nmin	97.1	1.000	0.800	0.750	375.0	23.6	19.7	28.7
		Mmax	51.8	1.000	0.800	0.750	375.0	18.1	15.1	13.6
		Mmin	97.1	1.000	0.800	0.750	375.0	23.6	19.7	28.7
		Qmax	51.8	1.000	0.800	0.750	375.0	18.1	15.1	13.6
		Qmin	97.1	1.000	0.800	0.750	375.0	23.6	19.7	28.7
	23	Nmax	47.1	1.000	0.800	0.750	375.0	10.3	8.6	14.3
		Nmin	94.0	1.000	0.800	0.750	375.0	15.4	12.8	30.1
		Mmax	47.1	1.000	0.800	0.750	375.0	10.3	8.6	14.3
		Mmin	94.0	1.000	0.800	0.750	375.0	15.4	12.8	30.1
		Qmax	47.1	1.000	0.800	0.750	375.0	10.3	8.6	14.3
		Qmin	94.0	1.000	0.800	0.750	375.0	15.4	12.8	30.1
18	23	Nmax	47.1	1.000	0.800	0.750	375.0	10.3	8.6	14.3
		Nmin	94.0	1.000	0.800	0.750	375.0	15.4	12.8	30.1
		Mmax	47.1	1.000	0.800	0.750	375.0	10.3	8.6	14.3

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES A AMBOS LADOS

FECHA: 28/02/2006

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
		Mmin	94.0	1.000	0.800	0.750	375.0	15.4	12.8	30.1
		Qmax	47.1	1.000	0.800	0.750	375.0	10.3	8.6	14.3
		Qmin	94.0	1.000	0.800	0.750	375.0	15.4	12.8	30.1
	25	Nmax	37.6	1.000	0.800	0.750	375.0	19.3	16.1	8.0
		Nmin	75.2	1.000	0.800	0.750	375.0	23.6	19.6	20.6
		Mmax	75.2	1.000	0.800	0.750	375.0	23.6	19.6	20.6
		Mmin	37.6	1.000	0.800	0.750	375.0	19.3	16.1	8.0
		Qmax	37.6	1.000	0.800	0.750	375.0	19.3	16.1	8.0
		Qmin	75.2	1.000	0.800	0.750	375.0	23.6	19.6	20.6
19	25	Nmax	37.6	1.000	0.800	0.750	375.0	19.3	16.1	8.0
		Nmin	75.1	1.000	0.800	0.750	375.0	23.6	19.6	20.6
		Mmax	75.1	1.000	0.800	0.750	375.0	23.6	19.6	20.6
		Mmin	37.6	1.000	0.800	0.750	375.0	19.3	16.1	8.0
		Qmax	37.6	1.000	0.800	0.750	375.0	19.3	16.1	8.0
		Qmin	75.1	1.000	0.800	0.750	375.0	23.6	19.6	20.6
	27	Nmax	28.2	1.000	0.800	0.750	375.0	24.0	20.0	3.0
		Nmin	56.4	1.000	0.800	0.750	375.0	30.0	25.0	11.6
		Mmax	56.4	1.000	0.800	0.750	375.0	30.0	25.0	11.6
		Mmin	28.2	1.000	0.800	0.750	375.0	24.0	20.0	3.0
		Qmax	28.2	1.000	0.800	0.750	375.0	24.0	20.0	3.0
		Qmin	56.4	1.000	0.800	0.750	375.0	30.0	25.0	11.6
20	27	Nmax	28.2	1.000	0.800	0.750	375.0	24.0	20.0	3.0
		Nmin	56.3	1.000	0.800	0.750	375.0	30.0	25.0	11.6
		Mmax	56.3	1.000	0.800	0.750	375.0	30.0	25.0	11.6
		Mmin	28.2	1.000	0.800	0.750	375.0	24.0	20.0	3.0
		Qmax	28.2	1.000	0.800	0.750	375.0	24.0	20.0	3.0
		Qmin	56.3	1.000	0.800	0.750	375.0	30.0	25.0	11.6
	29	Nmax	18.8	1.000	0.800	0.750	375.0	26.6	-	No necesita
		Nmin	37.6	1.000	0.800	0.750	375.0	33.5	27.9	3.6
		Mmax	37.6	1.000	0.800	0.750	375.0	33.5	27.9	3.6
		Mmin	18.8	1.000	0.800	0.750	375.0	26.6	-	No necesita
		Qmax	18.8	1.000	0.800	0.750	375.0	26.6	-	No necesita
		Qmin	37.6	1.000	0.800	0.750	375.0	33.5	27.9	3.6
21	29	Nmax	18.8	1.000	0.800	0.750	375.0	26.6	-	No necesita
		Nmin	37.6	1.000	0.800	0.750	375.0	33.5	27.9	3.6
		Mmax	37.6	1.000	0.800	0.750	375.0	33.5	27.9	3.6
		Mmin	18.8	1.000	0.800	0.750	375.0	26.6	-	No necesita
		Qmax	18.8	1.000	0.800	0.750	375.0	26.6	-	No necesita
		Qmin	37.6	1.000	0.800	0.750	375.0	33.5	27.9	3.6
	31	Nmax	9.4	1.000	0.800	0.750	375.0	27.9	-	No necesita
		Nmin	18.8	1.000	0.800	0.750	375.0	35.4	-	No necesita
		Mmax	18.8	1.000	0.800	0.750	375.0	35.4	-	No necesita
		Mmin	9.4	1.000	0.800	0.750	375.0	27.9	-	No necesita
		Qmax	9.4	1.000	0.800	0.750	375.0	27.9	-	No necesita
		Qmin	18.8	1.000	0.800	0.750	375.0	35.4	-	No necesita
22	31	Nmax	9.4	1.000	0.800	0.750	375.0	27.9	-	No necesita
		Nmin	18.8	1.000	0.800	0.750	375.0	35.4	-	No necesita
		Mmax	18.8	1.000	0.800	0.750	375.0	35.4	-	No necesita
		Mmin	9.4	1.000	0.800	0.750	375.0	27.9	-	No necesita
		Qmax	9.4	1.000	0.800	0.750	375.0	27.9	-	No necesita
		Qmin	18.8	1.000	0.800	0.750	375.0	35.4	-	No necesita
	33	Nmax	0.0	1.000	0.800	0.750	375.0	28.3	-	No necesita

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES A AMBOS LADOS

FECHA: 28/02/2006

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
		Nmin	0.0	1.000	0.800	0.750	375.0	36.0	-	No necesita
		Mmax	0.0	1.000	0.800	0.750	375.0	36.0	-	No necesita
		Mmin	0.0	1.000	0.800	0.750	375.0	28.3	-	No necesita
		Qmax	0.0	1.000	0.800	0.750	375.0	34.5	-	No necesita
		Qmin	0.0	1.000	0.800	0.750	375.0	28.3	-	No necesita
23	33	Nmax	0.0	1.000	0.800	0.750	375.0	28.3	-	No necesita
		Nmin	0.0	1.000	0.800	0.750	375.0	36.0	-	No necesita
		Mmax	0.0	1.000	0.800	0.750	375.0	36.0	-	No necesita
		Mmin	0.0	1.000	0.800	0.750	375.0	28.3	-	No necesita
		Qmax	0.0	1.000	0.800	0.750	375.0	36.0	-	No necesita
		Qmin	0.0	1.000	0.800	0.750	375.0	28.3	-	No necesita
	35	Nmax	9.4	1.000	0.800	0.750	375.0	27.9	-	No necesita
		Nmin	18.8	1.000	0.800	0.750	375.0	35.4	-	No necesita
		Mmax	18.8	1.000	0.800	0.750	375.0	35.4	-	No necesita
		Mmin	9.4	1.000	0.800	0.750	375.0	27.9	-	No necesita
		Qmax	18.8	1.000	0.800	0.750	375.0	35.4	-	No necesita
		Qmin	9.4	1.000	0.800	0.750	375.0	27.9	-	No necesita
24	35	Nmax	9.4	1.000	0.800	0.750	375.0	27.9	-	No necesita
		Nmin	18.8	1.000	0.800	0.750	375.0	35.4	-	No necesita
		Mmax	18.8	1.000	0.800	0.750	375.0	35.4	-	No necesita
		Mmin	9.4	1.000	0.800	0.750	375.0	27.9	-	No necesita
		Qmax	18.8	1.000	0.800	0.750	375.0	35.4	-	No necesita
		Qmin	9.4	1.000	0.800	0.750	375.0	27.9	-	No necesita
	37	Nmax	18.8	1.000	0.800	0.750	375.0	26.6	-	No necesita
		Nmin	37.6	1.000	0.800	0.750	375.0	33.5	27.9	3.6
		Mmax	37.6	1.000	0.800	0.750	375.0	33.5	27.9	3.6
		Mmin	18.8	1.000	0.800	0.750	375.0	26.6	-	No necesita
		Qmax	37.6	1.000	0.800	0.750	375.0	33.5	27.9	3.6
		Qmin	18.8	1.000	0.800	0.750	375.0	26.6	-	No necesita
25	37	Nmax	18.8	1.000	0.800	0.750	375.0	26.6	-	No necesita
		Nmin	37.6	1.000	0.800	0.750	375.0	33.5	27.9	3.6
		Mmax	37.6	1.000	0.800	0.750	375.0	33.5	27.9	3.6
		Mmin	18.8	1.000	0.800	0.750	375.0	26.6	-	No necesita
		Qmax	37.6	1.000	0.800	0.750	375.0	33.5	27.9	3.6
		Qmin	18.8	1.000	0.800	0.750	375.0	26.6	-	No necesita
	39	Nmax	28.2	1.000	0.800	0.750	375.0	24.0	20.0	3.0
		Nmin	56.4	1.000	0.800	0.750	375.0	30.0	25.0	11.6
		Mmax	56.4	1.000	0.800	0.750	375.0	30.0	25.0	11.6
		Mmin	28.2	1.000	0.800	0.750	375.0	24.0	20.0	3.0
		Qmax	56.4	1.000	0.800	0.750	375.0	30.0	25.0	11.6
		Qmin	28.2	1.000	0.800	0.750	375.0	24.0	20.0	3.0
26	39	Nmax	28.2	1.000	0.800	0.750	375.0	24.0	20.0	3.0
		Nmin	56.4	1.000	0.800	0.750	375.0	30.0	25.0	11.6
		Mmax	56.4	1.000	0.800	0.750	375.0	30.0	25.0	11.6
		Mmin	28.2	1.000	0.800	0.750	375.0	24.0	20.0	3.0
		Qmax	56.4	1.000	0.800	0.750	375.0	30.0	25.0	11.6
		Qmin	28.2	1.000	0.800	0.750	375.0	24.0	20.0	3.0
	41	Nmax	37.6	1.000	0.800	0.750	375.0	19.3	16.1	8.0
		Nmin	75.2	1.000	0.800	0.750	375.0	23.6	19.6	20.6
		Mmax	75.2	1.000	0.800	0.750	375.0	23.6	19.6	20.6
		Mmin	37.6	1.000	0.800	0.750	375.0	19.3	16.1	8.0

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES A AMBOS LADOS

FECHA: 28/02/2006

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
		Qmax	75.2	1.000	0.800	0.750	375.0	23.6	19.6	20.6
		Qmin	37.6	1.000	0.800	0.750	375.0	19.3	16.1	8.0
27	41	Nmax	37.6	1.000	0.800	0.750	375.0	19.3	16.1	8.0
		Nmin	75.1	1.000	0.800	0.750	375.0	23.6	19.6	20.6
		Mmax	75.1	1.000	0.800	0.750	375.0	23.6	19.6	20.6
		Mmin	37.6	1.000	0.800	0.750	375.0	19.3	16.1	8.0
		Qmax	75.1	1.000	0.800	0.750	375.0	23.6	19.6	20.6
		Qmin	37.6	1.000	0.800	0.750	375.0	19.3	16.1	8.0
	43	Nmax	47.0	1.000	0.800	0.750	375.0	10.3	8.5	14.3
		Nmin	94.0	1.000	0.800	0.750	375.0	15.4	12.8	30.0
		Mmax	47.0	1.000	0.800	0.750	375.0	10.3	8.5	14.3
		Mmin	94.0	1.000	0.800	0.750	375.0	15.4	12.8	30.0
		Qmax	94.0	1.000	0.800	0.750	375.0	15.4	12.8	30.0
		Qmin	47.0	1.000	0.800	0.750	375.0	10.3	8.5	14.3
28	43	Nmax	47.0	1.000	0.800	0.750	375.0	10.3	8.5	14.2
		Nmin	93.9	1.000	0.800	0.750	375.0	15.4	12.8	30.0
		Mmax	47.0	1.000	0.800	0.750	375.0	10.3	8.5	14.2
		Mmin	93.9	1.000	0.800	0.750	375.0	15.4	12.8	30.0
		Qmax	93.9	1.000	0.800	0.750	375.0	15.4	12.8	30.0
		Qmin	47.0	1.000	0.800	0.750	375.0	10.3	8.5	14.2
	45	Nmax	51.7	1.000	0.800	0.750	375.0	18.1	15.1	13.6
		Nmin	97.1	1.000	0.800	0.750	375.0	23.6	19.7	28.7
		Mmax	51.7	1.000	0.800	0.750	375.0	18.1	15.1	13.6
		Mmin	97.1	1.000	0.800	0.750	375.0	23.6	19.7	28.7
		Qmax	97.1	1.000	0.800	0.750	375.0	23.6	19.7	28.7
		Qmin	51.7	1.000	0.800	0.750	375.0	18.1	15.1	13.6
29	45	Nmax	51.8	1.000	0.800	0.750	375.0	18.1	15.1	13.6
		Nmin	97.1	1.000	0.800	0.750	375.0	23.6	19.7	28.7
		Mmax	51.8	1.000	0.800	0.750	375.0	18.1	15.1	13.6
		Mmin	97.1	1.000	0.800	0.750	375.0	23.6	19.7	28.7
		Qmax	97.1	1.000	0.800	0.750	375.0	23.6	19.7	28.7
		Qmin	51.8	1.000	0.800	0.750	375.0	18.1	15.1	13.6
	47	Nmax	56.5	1.000	0.800	0.750	375.0	22.5	18.7	14.0
		Nmin	100.2	1.000	0.800	0.750	375.0	28.7	23.9	28.3
		Mmax	56.5	1.000	0.800	0.750	375.0	22.5	18.7	14.0
		Mmin	100.2	1.000	0.800	0.750	375.0	28.7	23.9	28.3
		Qmax	100.2	1.000	0.800	0.750	375.0	28.7	23.9	28.3
		Qmin	56.5	1.000	0.800	0.750	375.0	22.5	18.7	14.0
30	47	Nmax	56.4	1.000	0.800	0.750	375.0	22.5	18.7	14.0
		Nmin	100.1	1.000	0.800	0.750	375.0	28.7	23.9	28.2
		Mmax	56.4	1.000	0.800	0.750	375.0	22.5	18.7	14.0
		Mmin	100.1	1.000	0.800	0.750	375.0	28.7	23.9	28.2
		Qmax	100.1	1.000	0.800	0.750	375.0	28.7	23.9	28.2
		Qmin	56.4	1.000	0.800	0.750	375.0	22.5	18.7	14.0
	49	Nmax	61.1	1.000	0.800	0.750	375.0	25.9	21.6	14.6
		Nmin	103.2	1.000	0.800	0.750	375.0	32.7	27.2	28.1
		Mmax	61.1	1.000	0.800	0.750	375.0	25.9	21.6	14.6
		Mmin	103.2	1.000	0.800	0.750	375.0	32.7	27.2	28.1
		Qmax	103.2	1.000	0.800	0.750	375.0	32.7	27.2	28.1
		Qmin	61.1	1.000	0.800	0.750	375.0	25.9	21.6	14.6
31	49	Nmax	61.2	1.000	0.800	0.750	375.0	25.9	21.6	14.7

ARMADOJUL_2000_1000_2m.xls PI RIERA DE CAN JULIÁ 28/02/2006
Kv=2000 Kh=1000

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES A AMBOS LADOS

FECHA: 28/02/2006

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
		Nmin	103.3	1.000	0.800	0.750	375.0	32.7	27.2	28.2
		Mmax	61.2	1.000	0.800	0.750	375.0	25.9	21.6	14.7
		Mmin	103.3	1.000	0.800	0.750	375.0	32.7	27.2	28.2
		Qmax	103.3	1.000	0.800	0.750	375.0	32.7	27.2	28.2
		Qmin	61.2	1.000	0.800	0.750	375.0	25.9	21.6	14.7
	51	Nmax	65.9	1.000	0.800	0.750	375.0	28.9	24.1	15.5
		Nmin	106.5	1.000	0.800	0.750	375.0	36.2	30.2	28.3
		Mmax	65.9	1.000	0.800	0.750	375.0	28.9	24.1	15.5
		Mmin	106.5	1.000	0.800	0.750	375.0	36.2	30.2	28.3
		Qmax	108.5	1.000	0.800	0.750	375.0	34.6	28.8	29.5
		Qmin	65.9	1.000	0.800	0.750	375.0	28.9	24.1	15.5
32	51	Nmax	65.9	1.000	0.800	0.750	375.0	28.9	24.1	15.5
		Nmin	106.4	1.000	0.800	0.750	375.0	36.2	30.2	28.2
		Mmax	65.9	1.000	0.800	0.750	375.0	28.9	24.1	15.5
		Mmin	106.4	1.000	0.800	0.750	375.0	36.2	30.2	28.2
		Qmax	108.4	1.000	0.800	0.750	375.0	34.6	28.8	29.5
		Qmin	65.9	1.000	0.800	0.750	375.0	28.9	24.1	15.5
	64	Nmax	70.6	1.000	0.800	0.750	375.0	31.6	26.4	16.4
		Nmin	109.5	1.000	0.800	0.750	375.0	39.4	32.9	28.4
		Mmax	70.6	1.000	0.800	0.750	375.0	31.6	26.4	16.4
		Mmin	109.5	1.000	0.800	0.750	375.0	39.4	32.9	28.4
		Qmax	116.2	1.000	0.800	0.750	375.0	38.1	31.8	31.3
		Qmin	70.6	1.000	0.800	0.750	375.0	31.6	26.4	16.4
33	1	Nmax	77.5	1.000	0.700	0.650	325.0	32.0	26.6	21.7
		Nmin	120.9	1.000	0.700	0.650	325.0	38.2	31.8	38.1
		Mmax	120.9	1.000	0.700	0.650	325.0	38.2	31.8	38.1
		Mmin	77.5	1.000	0.700	0.650	325.0	32.0	26.6	21.7
		Qmax	120.9	1.000	0.700	0.650	325.0	38.2	31.8	38.1
		Qmin	77.5	1.000	0.700	0.650	325.0	32.0	26.6	21.7
	14	Nmax	78.4	1.000	0.700	0.650	325.0	28.9	24.1	23.2
		Nmin	121.7	1.000	0.700	0.650	325.0	34.1	28.4	39.9
		Mmax	121.7	1.000	0.700	0.650	325.0	34.1	28.4	39.9
		Mmin	78.4	1.000	0.700	0.650	325.0	28.9	24.1	23.2
		Qmax	121.7	1.000	0.700	0.650	325.0	34.1	28.4	39.9
		Qmin	78.4	1.000	0.700	0.650	325.0	28.9	24.1	23.2
34	14	Nmax	69.8	1.000	0.700	0.650	325.0	28.9	24.1	19.6
		Nmin	108.9	1.000	0.700	0.650	325.0	34.1	28.4	34.4
		Mmax	108.9	1.000	0.700	0.650	325.0	34.1	28.4	34.4
		Mmin	69.8	1.000	0.700	0.650	325.0	28.9	24.1	19.6
		Qmax	108.9	1.000	0.700	0.650	325.0	34.1	28.4	34.4
		Qmin	69.8	1.000	0.700	0.650	325.0	28.9	24.1	19.6
	16	Nmax	70.6	1.000	0.700	0.650	325.0	25.6	21.3	21.1
		Nmin	109.8	1.000	0.700	0.650	325.0	30.1	25.1	36.2
		Mmax	109.8	1.000	0.700	0.650	325.0	30.1	25.1	36.2
		Mmin	70.6	1.000	0.700	0.650	325.0	25.6	21.3	21.1
		Qmax	109.8	1.000	0.700	0.650	325.0	30.1	25.1	36.2
		Qmin	70.6	1.000	0.700	0.650	325.0	25.6	21.3	21.1
35	16	Nmax	62.4	1.000	0.700	0.650	325.0	25.6	21.3	17.5
		Nmin	97.4	1.000	0.700	0.650	325.0	30.1	25.1	30.9
		Mmax	97.4	1.000	0.700	0.650	325.0	30.1	25.1	30.9
		Mmin	62.4	1.000	0.700	0.650	325.0	25.6	21.3	17.5

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES A AMBOS LADOS

FECHA: 28/02/2006

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
		Qmax	97.4	1.000	0.700	0.650	325.0	30.1	25.1	30.9
		Qmin	62.4	1.000	0.700	0.650	325.0	25.6	21.3	17.5
	18	Nmax	63.2	1.000	0.700	0.650	325.0	21.9	18.3	19.2
		Nmin	98.2	1.000	0.700	0.650	325.0	25.7	21.4	32.8
		Mmax	98.2	1.000	0.700	0.650	325.0	25.7	21.4	32.8
		Mmin	63.2	1.000	0.700	0.650	325.0	21.9	18.3	19.2
		Qmax	98.2	1.000	0.700	0.650	325.0	25.7	21.4	32.8
		Qmin	63.2	1.000	0.700	0.650	325.0	21.9	18.3	19.2
36	18	Nmax	55.3	1.000	0.700	0.650	325.0	21.9	18.3	15.8
		Nmin	86.4	1.000	0.700	0.650	325.0	25.7	21.4	27.8
		Mmax	86.4	1.000	0.700	0.650	325.0	25.7	21.4	27.8
		Mmin	55.3	1.000	0.700	0.650	325.0	21.9	18.3	15.8
		Qmax	86.4	1.000	0.700	0.650	325.0	25.7	21.4	27.8
		Qmin	55.3	1.000	0.700	0.650	325.0	21.9	18.3	15.8
	20	Nmax	56.2	1.000	0.700	0.650	325.0	17.4	14.5	17.8
		Nmin	87.2	1.000	0.700	0.650	325.0	20.3	16.9	30.1
		Mmax	87.2	1.000	0.700	0.650	325.0	20.3	16.9	30.1
		Mmin	56.2	1.000	0.700	0.650	325.0	17.4	14.5	17.8
		Qmax	87.2	1.000	0.700	0.650	325.0	20.3	16.9	30.1
		Qmin	56.2	1.000	0.700	0.650	325.0	17.4	14.5	17.8
37	20	Nmax	48.7	1.000	0.700	0.650	325.0	17.4	14.5	14.6
		Nmin	76.0	1.000	0.700	0.650	325.0	20.3	16.9	25.2
		Mmax	76.0	1.000	0.700	0.650	325.0	20.3	16.9	25.2
		Mmin	48.7	1.000	0.700	0.650	325.0	17.4	14.5	14.6
		Qmax	76.0	1.000	0.700	0.650	325.0	20.3	16.9	25.2
		Qmin	48.7	1.000	0.700	0.650	325.0	17.4	14.5	14.6
	22	Nmax	49.5	1.000	0.700	0.650	325.0	9.2	7.7	17.9
		Nmin	76.8	1.000	0.700	0.650	325.0	10.9	9.0	29.0
		Mmax	72.9	1.000	0.700	0.650	325.0	11.1	9.3	27.2
		Mmin	49.5	1.000	0.700	0.650	325.0	9.2	7.7	17.9
		Qmax	76.8	1.000	0.700	0.650	325.0	10.9	9.0	29.0
		Qmin	49.5	1.000	0.700	0.650	325.0	9.2	7.7	17.9
38	22	Nmax	38.8	1.000	0.700	0.650	325.0	9.2	7.6	13.3
		Nmin	60.9	1.000	0.700	0.650	325.0	10.8	9.0	22.2
		Mmax	57.8	1.000	0.700	0.650	325.0	11.1	9.2	20.7
		Mmin	38.8	1.000	0.700	0.650	325.0	9.2	7.6	13.3
		Qmax	60.9	1.000	0.700	0.650	325.0	10.8	9.0	22.2
		Qmin	38.8	1.000	0.700	0.650	325.0	9.2	7.6	13.3
	24	Nmax	40.5	1.000	0.700	0.650	325.0	18.7	15.6	10.7
		Nmin	62.6	1.000	0.700	0.650	325.0	21.7	18.1	19.0
		Mmax	40.5	1.000	0.700	0.650	325.0	18.7	15.6	10.7
		Mmin	62.6	1.000	0.700	0.650	325.0	21.7	18.1	19.0
		Qmax	62.6	1.000	0.700	0.650	325.0	21.7	18.1	19.0
		Qmin	40.5	1.000	0.700	0.650	325.0	18.7	15.6	10.7
39	24	Nmax	27.9	1.000	0.700	0.650	325.0	18.7	15.6	5.3
		Nmin	44.0	1.000	0.700	0.650	325.0	21.7	18.1	11.1
		Mmax	27.9	1.000	0.700	0.650	325.0	18.7	15.6	5.3
		Mmin	44.0	1.000	0.700	0.650	325.0	21.7	18.1	11.1
		Qmax	44.0	1.000	0.700	0.650	325.0	21.7	18.1	11.1
		Qmin	27.9	1.000	0.700	0.650	325.0	18.7	15.6	5.3
	26	Nmax	29.6	1.000	0.700	0.650	325.0	22.9	19.1	4.5

ARMADOJUL_2000_1000_2m.xls PI RIERA DE CAN JULIÁ 28/02/2006
Kv=2000 Kh=1000

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES A AMBOS LADOS

FECHA: 28/02/2006

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
		Nmin	45.7	1.000	0.700	0.650	325.0	26.7	22.3	10.0
		Mmax	29.6	1.000	0.700	0.650	325.0	22.9	19.1	4.5
		Mmin	45.7	1.000	0.700	0.650	325.0	26.7	22.3	10.0
		Qmax	45.7	1.000	0.700	0.650	325.0	26.7	22.3	10.0
		Qmin	29.6	1.000	0.700	0.650	325.0	22.9	19.1	4.5
40	26	Nmax	18.5	1.000	0.700	0.650	325.0	22.9	-	No necesita
		Nmin	29.3	1.000	0.700	0.650	325.0	26.7	22.3	3.0
		Mmax	18.5	1.000	0.700	0.650	325.0	22.9	-	No necesita
		Mmin	29.3	1.000	0.700	0.650	325.0	26.7	22.3	3.0
		Qmax	29.3	1.000	0.700	0.650	325.0	26.7	22.3	3.0
		Qmin	18.5	1.000	0.700	0.650	325.0	22.9	-	No necesita
	28	Nmax	20.2	1.000	0.700	0.650	325.0	25.1	-	No necesita
		Nmin	31.0	1.000	0.700	0.650	325.0	29.4	24.5	2.8
		Mmax	20.2	1.000	0.700	0.650	325.0	25.1	-	No necesita
		Mmin	31.0	1.000	0.700	0.650	325.0	29.4	24.5	2.8
		Qmax	31.0	1.000	0.700	0.650	325.0	29.4	24.5	2.8
		Qmin	20.2	1.000	0.700	0.650	325.0	25.1	-	No necesita
41	28	Nmax	10.3	1.000	0.700	0.650	325.0	25.1	-	No necesita
		Nmin	16.5	1.000	0.700	0.650	325.0	29.4	-	No necesita
		Mmax	10.3	1.000	0.700	0.650	325.0	25.1	-	No necesita
		Mmin	16.5	1.000	0.700	0.650	325.0	29.4	-	No necesita
		Qmax	16.5	1.000	0.700	0.650	325.0	29.4	-	No necesita
		Qmin	10.3	1.000	0.700	0.650	325.0	25.1	-	No necesita
	30	Nmax	12.0	1.000	0.700	0.650	325.0	26.3	-	No necesita
		Nmin	18.2	1.000	0.700	0.650	325.0	30.8	-	No necesita
		Mmax	12.0	1.000	0.700	0.650	325.0	26.3	-	No necesita
		Mmin	18.2	1.000	0.700	0.650	325.0	30.8	-	No necesita
		Qmax	18.2	1.000	0.700	0.650	325.0	30.8	-	No necesita
		Qmin	12.0	1.000	0.700	0.650	325.0	26.3	-	No necesita
42	30	Nmax	2.8	1.000	0.700	0.650	325.0	26.3	-	No necesita
		Nmin	4.8	1.000	0.700	0.650	325.0	30.8	-	No necesita
		Mmax	2.8	1.000	0.700	0.650	325.0	26.3	-	No necesita
		Mmin	4.8	1.000	0.700	0.650	325.0	30.8	-	No necesita
		Qmax	4.8	1.000	0.700	0.650	325.0	30.8	-	No necesita
		Qmin	2.8	1.000	0.700	0.650	325.0	26.3	-	No necesita
	32	Nmax	4.5	1.000	0.700	0.650	325.0	26.6	-	No necesita
		Nmin	6.5	1.000	0.700	0.650	325.0	31.3	-	No necesita
		Mmax	4.5	1.000	0.700	0.650	325.0	26.6	-	No necesita
		Mmin	6.5	1.000	0.700	0.650	325.0	31.3	-	No necesita
		Qmax	6.5	1.000	0.700	0.650	325.0	31.3	-	No necesita
		Qmin	4.5	1.000	0.700	0.650	325.0	26.6	-	No necesita
43	32	Nmax	4.5	1.000	0.700	0.650	325.0	26.6	-	No necesita
		Nmin	6.5	1.000	0.700	0.650	325.0	31.3	-	No necesita
		Mmax	4.5	1.000	0.700	0.650	325.0	26.6	-	No necesita
		Mmin	6.5	1.000	0.700	0.650	325.0	31.3	-	No necesita
		Qmax	4.5	1.000	0.700	0.650	325.0	26.6	-	No necesita
		Qmin	6.5	1.000	0.700	0.650	325.0	31.3	-	No necesita
	34	Nmax	2.8	1.000	0.700	0.650	325.0	26.3	-	No necesita
		Nmin	4.8	1.000	0.700	0.650	325.0	30.8	-	No necesita
		Mmax	2.8	1.000	0.700	0.650	325.0	26.3	-	No necesita
		Mmin	4.8	1.000	0.700	0.650	325.0	30.8	-	No necesita

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES A AMBOS LADOS

FECHA: 28/02/2006

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
		Qmax	2.8	1.000	0.700	0.650	325.0	26.3	-	No necesita
		Qmin	4.8	1.000	0.700	0.650	325.0	30.8	-	No necesita
44	34	Nmax	12.0	1.000	0.700	0.650	325.0	26.3	-	No necesita
		Nmin	18.2	1.000	0.700	0.650	325.0	30.8	-	No necesita
		Mmax	12.0	1.000	0.700	0.650	325.0	26.3	-	No necesita
		Mmin	18.2	1.000	0.700	0.650	325.0	30.8	-	No necesita
		Qmax	12.0	1.000	0.700	0.650	325.0	26.3	-	No necesita
		Qmin	18.2	1.000	0.700	0.650	325.0	30.8	-	No necesita
	36	Nmax	10.3	1.000	0.700	0.650	325.0	25.1	-	No necesita
		Nmin	16.5	1.000	0.700	0.650	325.0	29.4	-	No necesita
		Mmax	10.3	1.000	0.700	0.650	325.0	25.1	-	No necesita
		Mmin	16.5	1.000	0.700	0.650	325.0	29.4	-	No necesita
		Qmax	10.3	1.000	0.700	0.650	325.0	25.1	-	No necesita
		Qmin	16.5	1.000	0.700	0.650	325.0	29.4	-	No necesita
45	36	Nmax	20.2	1.000	0.700	0.650	325.0	25.1	-	No necesita
		Nmin	31.1	1.000	0.700	0.650	325.0	29.4	24.5	2.8
		Mmax	20.2	1.000	0.700	0.650	325.0	25.1	-	No necesita
		Mmin	31.1	1.000	0.700	0.650	325.0	29.4	24.5	2.8
		Qmax	20.2	1.000	0.700	0.650	325.0	25.1	-	No necesita
		Qmin	31.1	1.000	0.700	0.650	325.0	29.4	24.5	2.8
	38	Nmax	18.6	1.000	0.700	0.650	325.0	22.9	-	No necesita
		Nmin	29.4	1.000	0.700	0.650	325.0	26.7	22.3	3.0
		Mmax	18.6	1.000	0.700	0.650	325.0	22.9	-	No necesita
		Mmin	29.4	1.000	0.700	0.650	325.0	26.7	22.3	3.0
		Qmax	18.6	1.000	0.700	0.650	325.0	22.9	-	No necesita
		Qmin	29.4	1.000	0.700	0.650	325.0	26.7	22.3	3.0
46	38	Nmax	29.7	1.000	0.700	0.650	325.0	22.9	19.1	4.5
		Nmin	45.7	1.000	0.700	0.650	325.0	26.7	22.3	10.0
		Mmax	29.7	1.000	0.700	0.650	325.0	22.9	19.1	4.5
		Mmin	45.7	1.000	0.700	0.650	325.0	26.7	22.3	10.0
		Qmax	29.7	1.000	0.700	0.650	325.0	22.9	19.1	4.5
		Qmin	45.7	1.000	0.700	0.650	325.0	26.7	22.3	10.0
	40	Nmax	28.0	1.000	0.700	0.650	325.0	18.6	15.5	5.3
		Nmin	44.0	1.000	0.700	0.650	325.0	21.6	18.0	11.1
		Mmax	28.0	1.000	0.700	0.650	325.0	18.6	15.5	5.3
		Mmin	44.0	1.000	0.700	0.650	325.0	21.6	18.0	11.1
		Qmax	28.0	1.000	0.700	0.650	325.0	18.6	15.5	5.3
		Qmin	44.0	1.000	0.700	0.650	325.0	21.6	18.0	11.1
47	40	Nmax	40.5	1.000	0.700	0.650	325.0	18.6	15.5	10.7
		Nmin	62.6	1.000	0.700	0.650	325.0	21.6	18.0	19.1
		Mmax	40.5	1.000	0.700	0.650	325.0	18.6	15.5	10.7
		Mmin	62.6	1.000	0.700	0.650	325.0	21.6	18.0	19.1
		Qmax	40.5	1.000	0.700	0.650	325.0	18.6	15.5	10.7
		Qmin	62.6	1.000	0.700	0.650	325.0	21.6	18.0	19.1
	42	Nmax	38.8	1.000	0.700	0.650	325.0	9.3	7.8	13.3
		Nmin	60.9	1.000	0.700	0.650	325.0	11.0	9.1	22.1
		Mmax	57.8	1.000	0.700	0.650	325.0	11.1	9.3	20.7
		Mmin	38.8	1.000	0.700	0.650	325.0	9.3	7.8	13.3
		Qmax	38.8	1.000	0.700	0.650	325.0	9.3	7.8	13.3
		Qmin	60.9	1.000	0.700	0.650	325.0	11.0	9.1	22.1
48	42	Nmax	49.5	1.000	0.700	0.650	325.0	9.3	7.8	17.8

ARMADOJUL_2000_1000_2m.xls PI RIERA DE CAN JULIÁ 28/02/2006
Kv=2000 Kh=1000

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES A AMBOS LADOS

FECHA: 28/02/2006

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
		Nmin	76.9	1.000	0.700	0.650	325.0	11.0	9.1	28.9
		Mmax	72.9	1.000	0.700	0.650	325.0	11.1	9.3	27.2
		Mmin	49.5	1.000	0.700	0.650	325.0	9.3	7.8	17.8
		Qmax	49.5	1.000	0.700	0.650	325.0	9.3	7.8	17.8
		Qmin	76.9	1.000	0.700	0.650	325.0	11.0	9.1	28.9
	44	Nmax	48.7	1.000	0.700	0.650	325.0	17.4	14.5	14.6
		Nmin	76.0	1.000	0.700	0.650	325.0	20.3	16.9	25.3
		Mmax	76.0	1.000	0.700	0.650	325.0	20.3	16.9	25.3
		Mmin	48.7	1.000	0.700	0.650	325.0	17.4	14.5	14.6
		Qmax	48.7	1.000	0.700	0.650	325.0	17.4	14.5	14.6
		Qmin	76.0	1.000	0.700	0.650	325.0	20.3	16.9	25.3
49	44	Nmax	56.2	1.000	0.700	0.650	325.0	17.4	14.5	17.8
		Nmin	87.2	1.000	0.700	0.650	325.0	20.3	16.9	30.0
		Mmax	87.2	1.000	0.700	0.650	325.0	20.3	16.9	30.0
		Mmin	56.2	1.000	0.700	0.650	325.0	17.4	14.5	17.8
		Qmax	56.2	1.000	0.700	0.650	325.0	17.4	14.5	17.8
		Qmin	87.2	1.000	0.700	0.650	325.0	20.3	16.9	30.0
	46	Nmax	55.3	1.000	0.700	0.650	325.0	22.0	18.3	15.8
		Nmin	86.4	1.000	0.700	0.650	325.0	25.7	21.4	27.8
		Mmax	86.4	1.000	0.700	0.650	325.0	25.7	21.4	27.8
		Mmin	55.3	1.000	0.700	0.650	325.0	22.0	18.3	15.8
		Qmax	55.3	1.000	0.700	0.650	325.0	22.0	18.3	15.8
		Qmin	86.4	1.000	0.700	0.650	325.0	25.7	21.4	27.8
50	46	Nmax	63.2	1.000	0.700	0.650	325.0	22.0	18.3	19.2
		Nmin	98.2	1.000	0.700	0.650	325.0	25.7	21.4	32.8
		Mmax	98.2	1.000	0.700	0.650	325.0	25.7	21.4	32.8
		Mmin	63.2	1.000	0.700	0.650	325.0	22.0	18.3	19.2
		Qmax	63.2	1.000	0.700	0.650	325.0	22.0	18.3	19.2
		Qmin	98.2	1.000	0.700	0.650	325.0	25.7	21.4	32.8
	48	Nmax	62.4	1.000	0.700	0.650	325.0	25.6	21.3	17.5
		Nmin	97.3	1.000	0.700	0.650	325.0	30.1	25.1	30.9
		Mmax	97.3	1.000	0.700	0.650	325.0	30.1	25.1	30.9
		Mmin	62.4	1.000	0.700	0.650	325.0	25.6	21.3	17.5
		Qmax	62.4	1.000	0.700	0.650	325.0	25.6	21.3	17.5
		Qmin	97.3	1.000	0.700	0.650	325.0	30.1	25.1	30.9
51	48	Nmax	70.6	1.000	0.700	0.650	325.0	25.6	21.3	21.1
		Nmin	109.7	1.000	0.700	0.650	325.0	30.1	25.1	36.2
		Mmax	109.7	1.000	0.700	0.650	325.0	30.1	25.1	36.2
		Mmin	70.6	1.000	0.700	0.650	325.0	25.6	21.3	21.1
		Qmax	70.6	1.000	0.700	0.650	325.0	25.6	21.3	21.1
		Qmin	109.7	1.000	0.700	0.650	325.0	30.1	25.1	36.2
	50	Nmax	69.8	1.000	0.700	0.650	325.0	28.9	24.1	19.5
		Nmin	108.9	1.000	0.700	0.650	325.0	34.2	28.5	34.4
		Mmax	108.9	1.000	0.700	0.650	325.0	34.2	28.5	34.4
		Mmin	69.8	1.000	0.700	0.650	325.0	28.9	24.1	19.5
		Qmax	69.8	1.000	0.700	0.650	325.0	28.9	24.1	19.5
		Qmin	108.9	1.000	0.700	0.650	325.0	34.2	28.5	34.4
52	50	Nmax	78.4	1.000	0.700	0.650	325.0	28.9	24.1	23.2
		Nmin	121.8	1.000	0.700	0.650	325.0	34.2	28.5	39.9
		Mmax	121.8	1.000	0.700	0.650	325.0	34.2	28.5	39.9
		Mmin	78.4	1.000	0.700	0.650	325.0	28.9	24.1	23.2

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES A AMBOS LADOS

FECHA: 28/02/2006

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
		Qmax	78.4	1.000	0.700	0.650	325.0	28.9	24.1	23.2
		Qmin	121.8	1.000	0.700	0.650	325.0	34.2	28.5	39.9
	52	Nmax	77.5	1.000	0.700	0.650	325.0	32.0	26.7	21.7
		Nmin	120.9	1.000	0.700	0.650	325.0	38.2	31.9	38.1
		Mmax	120.9	1.000	0.700	0.650	325.0	38.2	31.9	38.1
		Mmin	77.5	1.000	0.700	0.650	325.0	32.0	26.7	21.7
		Qmax	77.5	1.000	0.700	0.650	325.0	32.0	26.7	21.7
		Qmin	120.9	1.000	0.700	0.650	325.0	38.2	31.9	38.1
53	52	Nmax	100.9	1.000	0.700	0.650	325.0	32.0	26.7	31.7
		Nmin	159.4	1.000	0.700	0.650	325.0	38.2	31.9	54.5
		Mmax	159.4	1.000	0.700	0.650	325.0	38.2	31.9	54.5
		Mmin	100.9	1.000	0.700	0.650	325.0	32.0	26.7	31.7
		Qmax	159.4	1.000	0.700	0.650	325.0	38.2	31.9	54.5
		Qmin	100.9	1.000	0.700	0.650	325.0	32.0	26.7	31.7
	53	Nmax	100.9	1.000	0.700	0.650	325.0	27.4	22.8	33.3
		Nmin	159.4	1.000	0.700	0.650	325.0	32.2	26.8	56.7
		Mmax	159.4	1.000	0.700	0.650	325.0	32.2	26.8	56.7
		Mmin	100.9	1.000	0.700	0.650	325.0	27.4	22.8	33.3
		Qmax	159.4	1.000	0.700	0.650	325.0	32.2	26.8	56.7
		Qmin	100.9	1.000	0.700	0.650	325.0	27.4	22.8	33.3
54	53	Nmax	82.7	1.000	0.700	0.650	325.0	27.4	22.8	25.6
		Nmin	130.4	1.000	0.700	0.650	325.0	32.2	26.8	44.3
		Mmax	130.4	1.000	0.700	0.650	325.0	32.2	26.8	44.3
		Mmin	82.7	1.000	0.700	0.650	325.0	27.4	22.8	25.6
		Qmax	130.4	1.000	0.700	0.650	325.0	32.2	26.8	44.3
		Qmin	82.7	1.000	0.700	0.650	325.0	27.4	22.8	25.6
	54	Nmax	82.7	1.000	0.700	0.650	325.0	22.4	18.7	27.4
		Nmin	130.4	1.000	0.700	0.650	325.0	26.0	21.7	46.5
		Mmax	130.4	1.000	0.700	0.650	325.0	26.0	21.7	46.5
		Mmin	82.7	1.000	0.700	0.650	325.0	22.4	18.7	27.4
		Qmax	130.4	1.000	0.700	0.650	325.0	26.0	21.7	46.5
		Qmin	82.7	1.000	0.700	0.650	325.0	22.4	18.7	27.4
55	54	Nmax	64.7	1.000	0.700	0.650	325.0	22.4	18.7	19.7
		Nmin	101.6	1.000	0.700	0.650	325.0	26.0	21.7	34.1
		Mmax	101.6	1.000	0.700	0.650	325.0	26.0	21.7	34.1
		Mmin	64.7	1.000	0.700	0.650	325.0	22.4	18.7	19.7
		Qmax	101.6	1.000	0.700	0.650	325.0	26.0	21.7	34.1
		Qmin	64.7	1.000	0.700	0.650	325.0	22.4	18.7	19.7
	55	Nmax	64.7	1.000	0.700	0.650	325.0	16.5	13.7	21.8
		Nmin	101.6	1.000	0.700	0.650	325.0	18.8	15.6	36.7
		Mmax	101.6	1.000	0.700	0.650	325.0	18.8	15.6	36.7
		Mmin	64.7	1.000	0.700	0.650	325.0	16.5	13.7	21.8
		Qmax	101.6	1.000	0.700	0.650	325.0	18.8	15.6	36.7
		Qmin	64.7	1.000	0.700	0.650	325.0	16.5	13.7	21.8
56	55	Nmax	46.7	1.000	0.700	0.650	325.0	16.5	13.7	14.1
		Nmin	72.9	1.000	0.700	0.650	325.0	18.8	15.6	24.5
		Mmax	72.9	1.000	0.700	0.650	325.0	18.8	15.6	24.5
		Mmin	46.7	1.000	0.700	0.650	325.0	16.5	13.7	14.1
		Qmax	72.9	1.000	0.700	0.650	325.0	18.8	15.6	24.5
		Qmin	46.7	1.000	0.700	0.650	325.0	16.5	13.7	14.1
	56	Nmax	46.7	1.000	0.700	0.650	325.0	6.2	5.2	17.8

ARMADOJUL_2000_1000_2m.xls PI RIERA DE CAN JULIÁ
Kv=2000 Kh=1000 28/02/2006

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES A AMBOS LADOS

FECHA: 28/02/2006

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
		Nmin	72.9	1.000	0.700	0.650	325.0	9.3	7.7	27.8
		Mmax	46.7	1.000	0.700	0.650	325.0	6.2	5.2	17.8
		Mmin	69.0	1.000	0.700	0.650	325.0	12.3	10.3	25.1
		Qmax	72.9	1.000	0.700	0.650	325.0	9.3	7.7	27.8
		Qmin	46.7	1.000	0.700	0.650	325.0	6.2	5.2	17.8
57	56	Nmax	28.6	1.000	0.700	0.650	325.0	6.2	5.2	10.0
		Nmin	43.8	1.000	0.700	0.650	325.0	9.2	7.7	15.4
		Mmax	28.6	1.000	0.700	0.650	325.0	6.2	5.2	10.0
		Mmin	39.5	1.000	0.700	0.650	325.0	12.3	10.3	12.5
		Qmax	43.8	1.000	0.700	0.650	325.0	9.2	7.7	15.4
		Qmin	28.6	1.000	0.700	0.650	325.0	6.2	5.2	10.0
	57	Nmax	28.6	1.000	0.700	0.650	325.0	14.6	12.2	7.0
		Nmin	43.8	1.000	0.700	0.650	325.0	17.4	14.5	12.5
		Mmax	28.6	1.000	0.700	0.650	325.0	14.6	12.2	7.0
		Mmin	39.5	1.000	0.700	0.650	325.0	18.1	15.1	10.4
		Qmax	43.8	1.000	0.700	0.650	325.0	17.4	14.5	12.5
		Qmin	28.6	1.000	0.700	0.650	325.0	14.6	12.2	7.0
58	57	Nmax	10.5	1.000	0.700	0.650	325.0	14.6	-	No necesita
		Nmin	14.8	1.000	0.700	0.650	325.0	17.4	-	No necesita
		Mmax	10.5	1.000	0.700	0.650	325.0	14.6	-	No necesita
		Mmin	10.5	1.000	0.700	0.650	325.0	18.1	-	No necesita
		Qmax	14.8	1.000	0.700	0.650	325.0	17.4	-	No necesita
		Qmin	10.5	1.000	0.700	0.650	325.0	14.6	-	No necesita
	58	Nmax	10.5	1.000	0.700	0.650	325.0	16.1	-	No necesita
		Nmin	14.8	1.000	0.700	0.650	325.0	18.9	-	No necesita
		Mmax	10.5	1.000	0.700	0.650	325.0	16.1	-	No necesita
		Mmin	10.5	1.000	0.700	0.650	325.0	19.1	-	No necesita
		Qmax	14.8	1.000	0.700	0.650	325.0	18.9	-	No necesita
		Qmin	10.5	1.000	0.700	0.650	325.0	16.1	-	No necesita
59	58	Nmax	7.6	1.000	0.700	0.650	325.0	16.1	-	No necesita
		Nmin	14.2	1.000	0.700	0.650	325.0	18.9	-	No necesita
		Mmax	7.6	1.000	0.700	0.650	325.0	16.1	-	No necesita
		Mmin	19.7	1.000	0.700	0.650	325.0	19.1	15.9	1.6
		Qmax	7.6	1.000	0.700	0.650	325.0	16.1	-	No necesita
		Qmin	19.7	1.000	0.700	0.650	325.0	19.1	15.9	1.6
	59	Nmax	7.6	1.000	0.700	0.650	325.0	15.1	-	No necesita
		Nmin	14.2	1.000	0.700	0.650	325.0	17.4	-	No necesita
		Mmax	7.6	1.000	0.700	0.650	325.0	15.1	-	No necesita
		Mmin	14.2	1.000	0.700	0.650	325.0	17.4	-	No necesita
		Qmax	7.6	1.000	0.700	0.650	325.0	15.1	-	No necesita
		Qmin	19.7	1.000	0.700	0.650	325.0	17.0	14.1	2.4
60	59	Nmax	25.7	1.000	0.700	0.650	325.0	15.1	12.6	5.6
		Nmin	43.2	1.000	0.700	0.650	325.0	17.4	14.5	12.2
		Mmax	25.7	1.000	0.700	0.650	325.0	15.1	12.6	5.6
		Mmin	43.2	1.000	0.700	0.650	325.0	17.4	14.5	12.2
		Qmax	25.7	1.000	0.700	0.650	325.0	15.1	12.6	5.6
		Qmin	49.1	1.000	0.700	0.650	325.0	17.0	14.1	15.0
	60	Nmax	25.7	1.000	0.700	0.650	325.0	9.4	7.8	7.6
		Nmin	43.2	1.000	0.700	0.650	325.0	9.7	8.1	15.0
		Mmax	49.1	1.000	0.700	0.650	325.0	9.4	7.8	17.7
		Mmin	43.2	1.000	0.700	0.650	325.0	9.7	8.1	15.0

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES A AMBOS LADOS

FECHA: 28/02/2006

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
		Qmax	25.7	1.000	0.700	0.650	325.0	9.4	7.8	7.6
		Qmin	49.1	1.000	0.700	0.650	325.0	9.4	7.8	17.7
61	60	Nmax	43.7	1.000	0.700	0.650	325.0	9.4	7.8	15.3
		Nmin	71.9	1.000	0.700	0.650	325.0	9.7	8.1	27.3
		Mmax	78.7	1.000	0.700	0.650	325.0	9.4	7.8	30.3
		Mmin	71.9	1.000	0.700	0.650	325.0	9.7	8.1	27.3
		Qmax	43.7	1.000	0.700	0.650	325.0	9.4	7.8	15.3
		Qmin	78.7	1.000	0.700	0.650	325.0	9.4	7.8	30.3
	61	Nmax	43.7	1.000	0.700	0.650	325.0	15.3	12.8	13.2
		Nmin	71.9	1.000	0.700	0.650	325.0	18.6	15.5	24.1
		Mmax	78.7	1.000	0.700	0.650	325.0	20.1	16.8	26.5
		Mmin	43.7	1.000	0.700	0.650	325.0	15.3	12.8	13.2
		Qmax	43.7	1.000	0.700	0.650	325.0	15.3	12.8	13.2
		Qmin	78.7	1.000	0.700	0.650	325.0	20.1	16.8	26.5
62	61	Nmax	61.6	1.000	0.700	0.650	325.0	15.3	12.8	20.9
		Nmin	100.6	1.000	0.700	0.650	325.0	18.6	15.5	36.4
		Mmax	107.8	1.000	0.700	0.650	325.0	20.1	16.8	38.9
		Mmin	61.6	1.000	0.700	0.650	325.0	15.3	12.8	20.9
		Qmax	61.6	1.000	0.700	0.650	325.0	15.3	12.8	20.9
		Qmin	107.8	1.000	0.700	0.650	325.0	20.1	16.8	38.9
	62	Nmax	61.6	1.000	0.700	0.650	325.0	21.5	18.0	18.7
		Nmin	100.6	1.000	0.700	0.650	325.0	25.8	21.5	33.8
		Mmax	107.8	1.000	0.700	0.650	325.0	27.1	22.6	36.4
		Mmin	61.6	1.000	0.700	0.650	325.0	21.5	18.0	18.7
		Qmax	61.6	1.000	0.700	0.650	325.0	21.5	18.0	18.7
		Qmin	107.8	1.000	0.700	0.650	325.0	27.1	22.6	36.4
63	62	Nmax	79.8	1.000	0.700	0.650	325.0	21.6	18.0	26.4
		Nmin	129.7	1.000	0.700	0.650	325.0	25.8	21.5	46.2
		Mmax	137.5	1.000	0.700	0.650	325.0	27.1	22.6	49.1
		Mmin	79.8	1.000	0.700	0.650	325.0	21.6	18.0	26.4
		Qmax	79.8	1.000	0.700	0.650	325.0	21.6	18.0	26.4
		Qmin	137.5	1.000	0.700	0.650	325.0	27.1	22.6	49.1
	63	Nmax	79.8	1.000	0.700	0.650	325.0	26.6	22.2	24.6
		Nmin	129.7	1.000	0.700	0.650	325.0	32.0	26.7	44.0
		Mmax	137.5	1.000	0.700	0.650	325.0	33.3	27.7	46.9
		Mmin	79.8	1.000	0.700	0.650	325.0	26.6	22.2	24.6
		Qmax	79.8	1.000	0.700	0.650	325.0	26.6	22.2	24.6
		Qmin	137.5	1.000	0.700	0.650	325.0	33.3	27.7	46.9
64	63	Nmax	98.0	1.000	0.700	0.650	325.0	26.6	22.2	32.4
		Nmin	158.6	1.000	0.700	0.650	325.0	32.0	26.7	56.4
		Mmax	167.1	1.000	0.700	0.650	325.0	33.3	27.7	59.5
		Mmin	98.0	1.000	0.700	0.650	325.0	26.6	22.2	32.4
		Qmax	98.0	1.000	0.700	0.650	325.0	26.6	22.2	32.4
		Qmin	167.1	1.000	0.700	0.650	325.0	33.3	27.7	59.5
	64	Nmax	98.0	1.000	0.700	0.650	325.0	31.2	26.0	30.7
		Nmin	158.6	1.000	0.700	0.650	325.0	38.1	31.7	54.2
		Mmax	167.1	1.000	0.700	0.650	325.0	39.5	32.9	57.3
		Mmin	98.0	1.000	0.700	0.650	325.0	31.2	26.0	30.7
		Qmax	98.0	1.000	0.700	0.650	325.0	31.2	26.0	30.7
		Qmin	167.1	1.000	0.700	0.650	325.0	39.5	32.9	57.3

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES EN UN SÓLO LADO

FECHA: 28/02/2006

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As1 (cm2/m)	As2 (cm2/m)
1	1	Nmax	0.0	-100.8	1.000	0.700	0.650	920.83	0.00	38.56
		Nmin	0.0	-154.6	1.000	0.700	0.650	920.83	0.00	63.27
		Mmax	0.0	-100.8	1.000	0.700	0.650	920.83	0.00	38.56
		Mmin	0.0	-154.6	1.000	0.700	0.650	920.83	0.00	63.27
		Qmax	0.0	-100.8	1.000	0.700	0.650	920.83	0.00	38.56
		Qmin	0.0	-154.6	1.000	0.700	0.650	920.83	0.00	63.27
	2	Nmax	0.0	-88.7	1.000	0.700	0.650	920.83	0.00	33.46
		Nmin	0.0	-137.8	1.000	0.700	0.650	920.83	0.00	55.12
		Mmax	0.0	-88.7	1.000	0.700	0.650	920.83	0.00	33.46
		Mmin	0.0	-137.8	1.000	0.700	0.650	920.83	0.00	55.12
		Qmax	0.0	-88.7	1.000	0.700	0.650	920.83	0.00	33.46
		Qmin	0.0	-137.8	1.000	0.700	0.650	920.83	0.00	55.12
2	2	Nmax	0.0	-88.7	1.000	0.700	0.650	920.83	0.00	33.46
		Nmin	0.0	-137.8	1.000	0.700	0.650	920.83	0.00	55.12
		Mmax	0.0	-88.7	1.000	0.700	0.650	920.83	0.00	33.46
		Mmin	0.0	-137.8	1.000	0.700	0.650	920.83	0.00	55.12
		Qmax	0.0	-88.7	1.000	0.700	0.650	920.83	0.00	33.46
		Qmin	0.0	-137.8	1.000	0.700	0.650	920.83	0.00	55.12
	3	Nmax	0.0	-78.3	1.000	0.700	0.650	920.83	0.00	29.20
		Nmin	0.0	-123.2	1.000	0.700	0.650	920.83	0.00	48.36
		Mmax	0.0	-78.3	1.000	0.700	0.650	920.83	0.00	29.20
		Mmin	0.0	-123.2	1.000	0.700	0.650	920.83	0.00	48.36
		Qmax	0.0	-78.3	1.000	0.700	0.650	920.83	0.00	29.20
		Qmin	0.0	-123.2	1.000	0.700	0.650	920.83	0.00	48.36
3	3	Nmax	0.0	-78.3	1.000	0.700	0.650	920.83	0.00	29.20
		Nmin	0.0	-123.2	1.000	0.700	0.650	920.83	0.00	48.36
		Mmax	0.0	-78.3	1.000	0.700	0.650	920.83	0.00	29.20
		Mmin	0.0	-123.2	1.000	0.700	0.650	920.83	0.00	48.36
		Qmax	0.0	-78.3	1.000	0.700	0.650	920.83	0.00	29.20
		Qmin	0.0	-123.2	1.000	0.700	0.650	920.83	0.00	48.36
	4	Nmax	0.0	-69.9	1.000	0.700	0.650	920.83	0.00	25.86
		Nmin	0.0	-111.4	1.000	0.700	0.650	920.83	0.00	43.12
		Mmax	0.0	-69.9	1.000	0.700	0.650	920.83	0.00	25.86
		Mmin	0.0	-111.4	1.000	0.700	0.650	920.83	0.00	43.12
		Qmax	0.0	-69.9	1.000	0.700	0.650	920.83	0.00	25.86
		Qmin	0.0	-111.4	1.000	0.700	0.650	920.83	0.00	43.12
4	4	Nmax	0.0	-69.9	1.000	0.700	0.650	920.83	0.00	25.86
		Nmin	0.0	-111.4	1.000	0.700	0.650	920.83	0.00	43.12
		Mmax	0.0	-69.9	1.000	0.700	0.650	920.83	0.00	25.86
		Mmin	0.0	-111.4	1.000	0.700	0.650	920.83	0.00	43.12
		Qmax	0.0	-69.9	1.000	0.700	0.650	920.83	0.00	25.86
		Qmin	0.0	-111.4	1.000	0.700	0.650	920.83	0.00	43.12
	5	Nmax	0.0	-63.9	1.000	0.700	0.650	920.83	0.00	23.49
		Nmin	0.0	-103.0	1.000	0.700	0.650	920.83	0.00	39.47
		Mmax	0.0	-63.9	1.000	0.700	0.650	920.83	0.00	23.49
		Mmin	0.0	-103.0	1.000	0.700	0.650	920.83	0.00	39.47
		Qmax	0.0	-63.9	1.000	0.700	0.650	920.83	0.00	23.49
		Qmin	0.0	-103.0	1.000	0.700	0.650	920.83	0.00	39.47
5	5	Nmax	0.0	-63.9	1.000	0.700	0.650	920.83	0.00	23.49
		Nmin	0.0	-103.0	1.000	0.700	0.650	920.83	0.00	39.47
		Mmax	0.0	-63.9	1.000	0.700	0.650	920.83	0.00	23.49

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES EN UN SÓLO LADO

FECHA: 28/02/2006

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As1 (cm2/m)	As2 (cm2/m)
		Mmin	0.0	-103.0	1.000	0.700	0.650	920.83	0.00	39.47
		Qmax	0.0	-63.9	1.000	0.700	0.650	920.83	0.00	23.49
		Qmin	0.0	-103.0	1.000	0.700	0.650	920.83	0.00	39.47
	6	Nmax	0.0	-60.2	1.000	0.700	0.650	920.83	0.00	22.07
		Nmin	0.0	-98.0	1.000	0.700	0.650	920.83	0.00	37.35
		Mmax	0.0	-60.2	1.000	0.700	0.650	920.83	0.00	22.07
		Mmin	0.0	-98.2	1.000	0.700	0.650	920.83	0.00	37.45
		Qmax	0.0	-60.2	1.000	0.700	0.650	920.83	0.00	22.07
		Qmin	0.0	-98.0	1.000	0.700	0.650	920.83	0.00	37.35
6	6	Nmax	0.0	-60.2	1.000	0.700	0.650	920.83	0.00	22.07
		Nmin	0.0	-98.0	1.000	0.700	0.650	920.83	0.00	37.35
		Mmax	0.0	-60.2	1.000	0.700	0.650	920.83	0.00	22.07
		Mmin	0.0	-98.2	1.000	0.700	0.650	920.83	0.00	37.45
		Qmax	0.0	-98.2	1.000	0.700	0.650	920.83	0.00	37.45
		Qmin	0.0	-98.0	1.000	0.700	0.650	920.83	0.00	37.35
	7	Nmax	0.0	-58.9	1.000	0.700	0.650	920.83	0.00	21.54
		Nmin	0.0	-96.4	1.000	0.700	0.650	920.83	0.00	36.69
		Mmax	0.0	-58.9	1.000	0.700	0.650	920.83	0.00	21.54
		Mmin	0.0	-98.6	1.000	0.700	0.650	920.83	0.00	37.59
		Qmax	0.0	-98.6	1.000	0.700	0.650	920.83	0.00	37.59
		Qmin	0.0	-96.4	1.000	0.700	0.650	920.83	0.00	36.69
7	7	Nmax	0.0	-58.9	1.000	0.700	0.650	920.83	0.00	21.54
		Nmin	0.0	-96.4	1.000	0.700	0.650	920.83	0.00	36.69
		Mmax	0.0	-58.9	1.000	0.700	0.650	920.83	0.00	21.54
		Mmin	0.0	-98.6	1.000	0.700	0.650	920.83	0.00	37.59
		Qmax	0.0	-98.6	1.000	0.700	0.650	920.83	0.00	37.59
		Qmin	0.0	-58.9	1.000	0.700	0.650	920.83	0.00	21.54
	8	Nmax	0.0	-59.5	1.000	0.700	0.650	920.83	0.00	21.78
		Nmin	0.0	-97.9	1.000	0.700	0.650	920.83	0.00	37.32
		Mmax	0.0	-59.5	1.000	0.700	0.650	920.83	0.00	21.78
		Mmin	0.0	-102.0	1.000	0.700	0.650	920.83	0.00	39.07
		Qmax	0.0	-102.0	1.000	0.700	0.650	920.83	0.00	39.07
		Qmin	0.0	-59.5	1.000	0.700	0.650	920.83	0.00	21.78
8	8	Nmax	0.0	-59.5	1.000	0.700	0.650	920.83	0.00	21.79
		Nmin	0.0	-97.9	1.000	0.700	0.650	920.83	0.00	37.32
		Mmax	0.0	-59.5	1.000	0.700	0.650	920.83	0.00	21.79
		Mmin	0.0	-102.0	1.000	0.700	0.650	920.83	0.00	39.07
		Qmax	0.0	-102.0	1.000	0.700	0.650	920.83	0.00	39.07
		Qmin	0.0	-59.5	1.000	0.700	0.650	920.83	0.00	21.79
	9	Nmax	0.0	-61.8	1.000	0.700	0.650	920.83	0.00	22.66
		Nmin	0.0	-101.9	1.000	0.700	0.650	920.83	0.00	39.02
		Mmax	0.0	-61.8	1.000	0.700	0.650	920.83	0.00	22.66
		Mmin	0.0	-108.1	1.000	0.700	0.650	920.83	0.00	41.66
		Qmax	0.0	-108.1	1.000	0.700	0.650	920.83	0.00	41.66
		Qmin	0.0	-61.8	1.000	0.700	0.650	920.83	0.00	22.66
9	9	Nmax	0.0	-61.8	1.000	0.700	0.650	920.83	0.00	22.66
		Nmin	0.0	-101.9	1.000	0.700	0.650	920.83	0.00	39.02
		Mmax	0.0	-61.8	1.000	0.700	0.650	920.83	0.00	22.66
		Mmin	0.0	-108.1	1.000	0.700	0.650	920.83	0.00	41.66
		Qmax	0.0	-108.1	1.000	0.700	0.650	920.83	0.00	41.66
		Qmin	0.0	-61.8	1.000	0.700	0.650	920.83	0.00	22.66

ARMADOJUL_2000_10000_1m.xls PI RIERA DE CAN DE JULIA 28/02/2006
Kv=2000 Kh=10000

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES EN UN SÓLO LADO

FECHA: 28/02/2006

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As1 (cm2/m)	As2 (cm2/m)
	10	Nmax	0.0	-65.1	1.000	0.700	0.650	920.83	0.00	23.96
		Nmin	0.0	-107.6	1.000	0.700	0.650	920.83	0.00	41.46
		Mmax	0.0	-65.1	1.000	0.700	0.650	920.83	0.00	23.96
		Mmin	0.0	-115.8	1.000	0.700	0.650	920.83	0.00	45.07
		Qmax	0.0	-115.8	1.000	0.700	0.650	920.83	0.00	45.07
		Qmin	0.0	-65.1	1.000	0.700	0.650	920.83	0.00	23.96
10	10	Nmax	0.0	-65.1	1.000	0.700	0.650	920.83	0.00	23.96
		Nmin	0.0	-107.6	1.000	0.700	0.650	920.83	0.00	41.46
		Mmax	0.0	-65.1	1.000	0.700	0.650	920.83	0.00	23.96
		Mmin	0.0	-115.8	1.000	0.700	0.650	920.83	0.00	45.07
		Qmax	0.0	-115.8	1.000	0.700	0.650	920.83	0.00	45.07
		Qmin	0.0	-65.1	1.000	0.700	0.650	920.83	0.00	23.96
	11	Nmax	0.0	-68.8	1.000	0.700	0.650	920.83	0.00	25.44
		Nmin	0.0	-113.9	1.000	0.700	0.650	920.83	0.00	44.24
		Mmax	0.0	-68.8	1.000	0.700	0.650	920.83	0.00	25.44
		Mmin	0.0	-124.3	1.000	0.700	0.650	920.83	0.00	48.88
		Qmax	0.0	-124.3	1.000	0.700	0.650	920.83	0.00	48.88
		Qmin	0.0	-68.8	1.000	0.700	0.650	920.83	0.00	25.44
11	11	Nmax	0.0	-68.8	1.000	0.700	0.650	920.83	0.00	25.44
		Nmin	0.0	-113.9	1.000	0.700	0.650	920.83	0.00	44.24
		Mmax	0.0	-68.8	1.000	0.700	0.650	920.83	0.00	25.44
		Mmin	0.0	-124.3	1.000	0.700	0.650	920.83	0.00	48.88
		Qmax	0.0	-124.3	1.000	0.700	0.650	920.83	0.00	48.88
		Qmin	0.0	-68.8	1.000	0.700	0.650	920.83	0.00	25.44
	12	Nmax	0.0	-72.1	1.000	0.700	0.650	920.83	0.00	26.73
		Nmin	0.0	-119.6	1.000	0.700	0.650	920.83	0.00	46.74
		Mmax	0.0	-72.1	1.000	0.700	0.650	920.83	0.00	26.73
		Mmin	0.0	-132.1	1.000	0.700	0.650	920.83	0.00	52.46
		Qmax	0.0	-132.1	1.000	0.700	0.650	920.83	0.00	52.46
		Qmin	0.0	-72.1	1.000	0.700	0.650	920.83	0.00	26.73
12	12	Nmax	0.0	-72.1	1.000	0.700	0.650	920.83	0.00	26.73
		Nmin	0.0	-119.6	1.000	0.700	0.650	920.83	0.00	46.74
		Mmax	0.0	-72.1	1.000	0.700	0.650	920.83	0.00	26.73
		Mmin	0.0	-132.1	1.000	0.700	0.650	920.83	0.00	52.46
		Qmax	0.0	-132.1	1.000	0.700	0.650	920.83	0.00	52.46
		Qmin	0.0	-72.1	1.000	0.700	0.650	920.83	0.00	26.73
	13	Nmax	0.0	-73.8	1.000	0.700	0.650	920.83	0.00	27.43
		Nmin	0.0	-122.9	1.000	0.700	0.650	920.83	0.00	48.26
		Mmax	0.0	-73.8	1.000	0.700	0.650	920.83	0.00	27.43
		Mmin	0.0	-137.6	1.000	0.700	0.650	920.83	0.00	55.04
		Qmax	0.0	-137.6	1.000	0.700	0.650	920.83	0.00	55.04
		Qmin	0.0	-73.8	1.000	0.700	0.650	920.83	0.00	27.43
13	13	Nmax	0.0	-73.8	1.000	0.800	0.750	1062.50	0.00	23.34
		Nmin	0.0	-137.6	1.000	0.800	0.750	1062.50	0.00	45.75
		Mmax	0.0	-73.8	1.000	0.800	0.750	1062.50	0.00	23.34
		Mmin	0.0	-137.6	1.000	0.800	0.750	1062.50	0.00	45.75
		Qmax	0.0	-73.8	1.000	0.800	0.750	1062.50	0.00	23.34
		Qmin	0.0	-123.0	1.000	0.800	0.750	1062.50	0.00	40.37
	15	Nmax	0.0	-49.7	1.000	0.800	0.750	1062.50	0.00	15.43
		Nmin	0.0	-99.4	1.000	0.800	0.750	1062.50	0.00	32.03
		Mmax	0.0	-49.7	1.000	0.800	0.750	1062.50	0.00	15.43

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES EN UN SÓLO LADO

FECHA: 28/02/2006

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As1 (cm2/m)	As2 (cm2/m)
		Mmin	0.0	-99.4	1.000	0.800	0.750	1062.50	0.00	32.03
		Qmax	0.0	-49.7	1.000	0.800	0.750	1062.50	0.00	15.43
		Qmin	0.0	-83.2	1.000	0.800	0.750	1062.50	0.00	26.46
14	15	Nmax	0.0	-49.7	1.000	0.800	0.750	1062.50	0.00	15.43
		Nmin	0.0	-99.4	1.000	0.800	0.750	1062.50	0.00	32.03
		Mmax	0.0	-49.7	1.000	0.800	0.750	1062.50	0.00	15.43
		Mmin	0.0	-99.4	1.000	0.800	0.750	1062.50	0.00	32.03
		Qmax	0.0	-49.7	1.000	0.800	0.750	1062.50	0.00	15.43
		Qmin	0.0	-83.1	1.000	0.800	0.750	1062.50	0.00	26.46
	17	Nmax	0.0	-27.3	1.000	0.800	0.750	1062.50	0.00	8.35
		Nmin	0.0	-62.4	1.000	0.800	0.750	1062.50	0.00	19.56
		Mmax	0.0	-27.3	1.000	0.800	0.750	1062.50	0.00	8.35
		Mmin	0.0	-62.4	1.000	0.800	0.750	1062.50	0.00	19.56
		Qmax	0.0	-27.3	1.000	0.800	0.750	1062.50	0.00	8.35
		Qmin	0.0	-62.4	1.000	0.800	0.750	1062.50	0.00	19.56
15	17	Nmax	0.0	-27.3	1.000	0.800	0.750	1062.50	0.00	8.34
		Nmin	0.0	-62.4	1.000	0.800	0.750	1062.50	0.00	19.55
		Mmax	0.0	-27.3	1.000	0.800	0.750	1062.50	0.00	8.34
		Mmin	0.0	-62.4	1.000	0.800	0.750	1062.50	0.00	19.55
		Qmax	0.0	-27.3	1.000	0.800	0.750	1062.50	0.00	8.34
		Qmin	0.0	-62.4	1.000	0.800	0.750	1062.50	0.00	19.55
	19	Nmax	0.0	-6.5	1.000	0.800	0.750	1062.50	0.00	1.96
		Nmin	0.0	-26.4	1.000	0.800	0.750	1062.50	0.00	8.08
		Mmax	0.0	-6.5	1.000	0.800	0.750	1062.50	0.00	1.96
		Mmin	0.0	-26.4	1.000	0.800	0.750	1062.50	0.00	8.08
		Qmax	0.0	-6.5	1.000	0.800	0.750	1062.50	0.00	1.96
		Qmin	0.0	-26.4	1.000	0.800	0.750	1062.50	0.00	8.08
16	19	Nmax	0.0	-6.5	1.000	0.800	0.750	1062.50	0.00	1.96
		Nmin	0.0	-26.4	1.000	0.800	0.750	1062.50	0.00	8.07
		Mmax	0.0	-6.5	1.000	0.800	0.750	1062.50	0.00	1.96
		Mmin	0.0	-26.4	1.000	0.800	0.750	1062.50	0.00	8.07
		Qmax	0.0	-6.5	1.000	0.800	0.750	1062.50	0.00	1.96
		Qmin	0.0	-26.4	1.000	0.800	0.750	1062.50	0.00	8.07
	21	Nmax	12.6	0.0	1.000	0.800	0.750	1062.50	3.83	0.00
		Nmin	12.6	0.0	1.000	0.800	0.750	1062.50	3.83	0.00
		Mmax	19.5	0.0	1.000	0.800	0.750	1062.50	5.94	0.00
		Mmin	12.6	0.0	1.000	0.800	0.750	1062.50	3.83	0.00
		Qmax	12.6	0.0	1.000	0.800	0.750	1062.50	3.83	0.00
		Qmin	12.6	0.0	1.000	0.800	0.750	1062.50	3.83	0.00
17	21	Nmax	12.6	0.0	1.000	0.800	0.750	1062.50	3.83	0.00
		Nmin	12.6	0.0	1.000	0.800	0.750	1062.50	3.83	0.00
		Mmax	19.5	0.0	1.000	0.800	0.750	1062.50	5.94	0.00
		Mmin	12.6	0.0	1.000	0.800	0.750	1062.50	3.83	0.00
		Qmax	12.6	0.0	1.000	0.800	0.750	1062.50	3.83	0.00
		Qmin	12.6	0.0	1.000	0.800	0.750	1062.50	3.83	0.00
	23	Nmax	30.0	0.0	1.000	0.800	0.750	1062.50	9.19	0.00
		Nmin	42.1	0.0	1.000	0.800	0.750	1062.50	13.02	0.00
		Mmax	48.1	0.0	1.000	0.800	0.750	1062.50	14.93	0.00
		Mmin	30.0	0.0	1.000	0.800	0.750	1062.50	9.19	0.00
		Qmax	30.0	0.0	1.000	0.800	0.750	1062.50	9.19	0.00
		Qmin	42.1	0.0	1.000	0.800	0.750	1062.50	13.02	0.00

ARMADOJUL_2000_10000_1m.xls PI RIERA DE CAN DE JULIA 28/02/2006
Kv=2000 Kh=10000

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES EN UN SÓLO LADO

FECHA: 28/02/2006

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As1 (cm2/m)	As2 (cm2/m)
18	23	Nmax	30.0	0.0	1.000	0.800	0.750	1062.50	9.19	0.00
		Nmin	42.1	0.0	1.000	0.800	0.750	1062.50	13.02	0.00
		Mmax	48.1	0.0	1.000	0.800	0.750	1062.50	14.92	0.00
		Mmin	30.0	0.0	1.000	0.800	0.750	1062.50	9.19	0.00
		Qmax	30.0	0.0	1.000	0.800	0.750	1062.50	9.19	0.00
		Qmin	42.1	0.0	1.000	0.800	0.750	1062.50	13.02	0.00
	25	Nmax	59.7	0.0	1.000	0.800	0.750	1062.50	18.68	0.00
		Nmin	101.8	0.0	1.000	0.800	0.750	1062.50	32.85	0.00
		Mmax	101.8	0.0	1.000	0.800	0.750	1062.50	32.85	0.00
		Mmin	59.7	0.0	1.000	0.800	0.750	1062.50	18.68	0.00
		Qmax	59.7	0.0	1.000	0.800	0.750	1062.50	18.68	0.00
		Qmin	101.8	0.0	1.000	0.800	0.750	1062.50	32.85	0.00
19	25	Nmax	59.7	0.0	1.000	0.800	0.750	1062.50	18.68	0.00
		Nmin	101.8	0.0	1.000	0.800	0.750	1062.50	32.84	0.00
		Mmax	101.8	0.0	1.000	0.800	0.750	1062.50	32.84	0.00
		Mmin	59.7	0.0	1.000	0.800	0.750	1062.50	18.68	0.00
		Qmax	59.7	0.0	1.000	0.800	0.750	1062.50	18.68	0.00
		Qmin	101.8	0.0	1.000	0.800	0.750	1062.50	32.84	0.00
	27	Nmax	82.7	0.0	1.000	0.800	0.750	1062.50	26.31	0.00
		Nmin	147.9	0.0	1.000	0.800	0.750	1062.50	49.60	0.00
		Mmax	147.9	0.0	1.000	0.800	0.750	1062.50	49.60	0.00
		Mmin	82.7	0.0	1.000	0.800	0.750	1062.50	26.31	0.00
		Qmax	82.7	0.0	1.000	0.800	0.750	1062.50	26.31	0.00
		Qmin	147.9	0.0	1.000	0.800	0.750	1062.50	49.60	0.00
20	27	Nmax	82.7	0.0	1.000	0.800	0.750	1062.50	26.30	0.00
		Nmin	147.9	0.0	1.000	0.800	0.750	1062.50	49.59	0.00
		Mmax	147.9	0.0	1.000	0.800	0.750	1062.50	49.59	0.00
		Mmin	82.7	0.0	1.000	0.800	0.750	1062.50	26.30	0.00
		Qmax	82.7	0.0	1.000	0.800	0.750	1062.50	26.30	0.00
		Qmin	147.9	0.0	1.000	0.800	0.750	1062.50	49.59	0.00
	29	Nmax	98.9	0.0	1.000	0.800	0.750	1062.50	31.87	0.00
		Nmin	180.6	0.0	1.000	0.800	0.750	1062.50	62.43	0.00
		Mmax	180.6	0.0	1.000	0.800	0.750	1062.50	62.43	0.00
		Mmin	98.9	0.0	1.000	0.800	0.750	1062.50	31.87	0.00
		Qmax	98.9	0.0	1.000	0.800	0.750	1062.50	31.87	0.00
		Qmin	180.6	0.0	1.000	0.800	0.750	1062.50	62.43	0.00
21	29	Nmax	98.9	0.0	1.000	0.800	0.750	1062.50	31.87	0.00
		Nmin	180.6	0.0	1.000	0.800	0.750	1062.50	62.43	0.00
		Mmax	180.6	0.0	1.000	0.800	0.750	1062.50	62.43	0.00
		Mmin	98.9	0.0	1.000	0.800	0.750	1062.50	31.87	0.00
		Qmax	98.9	0.0	1.000	0.800	0.750	1062.50	31.87	0.00
		Qmin	180.6	0.0	1.000	0.800	0.750	1062.50	62.43	0.00
	31	Nmax	108.5	0.0	1.000	0.800	0.750	1062.50	35.22	0.00
		Nmin	200.0	0.0	1.000	0.800	0.750	1062.50	70.50	0.00
		Mmax	200.0	0.0	1.000	0.800	0.750	1062.50	70.50	0.00
		Mmin	108.5	0.0	1.000	0.800	0.750	1062.50	35.22	0.00
		Qmax	108.5	0.0	1.000	0.800	0.750	1062.50	35.22	0.00
		Qmin	200.0	0.0	1.000	0.800	0.750	1062.50	70.50	0.00
22	31	Nmax	108.5	0.0	1.000	0.800	0.750	1062.50	35.22	0.00
		Nmin	200.0	0.0	1.000	0.800	0.750	1062.50	70.50	0.00
		Mmax	200.0	0.0	1.000	0.800	0.750	1062.50	70.50	0.00

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES EN UN SÓLO LADO

FECHA: 28/02/2006

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As1 (cm2/m)	As2 (cm2/m)
		Mmin	108.5	0.0	1.000	0.800	0.750	1062.50	35.22	0.00
		Qmax	108.5	0.0	1.000	0.800	0.750	1062.50	35.22	0.00
		Qmin	200.0	0.0	1.000	0.800	0.750	1062.50	70.50	0.00
	33	Nmax	111.4	0.0	1.000	0.800	0.750	1062.50	36.21	0.00
		Nmin	205.9	0.0	1.000	0.800	0.750	1062.50	73.02	0.00
		Mmax	205.9	0.0	1.000	0.800	0.750	1062.50	73.02	0.00
		Mmin	111.4	0.0	1.000	0.800	0.750	1062.50	36.21	0.00
		Qmax	205.9	0.0	1.000	0.800	0.750	1062.50	73.02	0.00
		Qmin	111.4	0.0	1.000	0.800	0.750	1062.50	36.21	0.00
23	33	Nmax	111.4	0.0	1.000	0.800	0.750	1062.50	36.21	0.00
		Nmin	205.9	0.0	1.000	0.800	0.750	1062.50	73.02	0.00
		Mmax	205.9	0.0	1.000	0.800	0.750	1062.50	73.02	0.00
		Mmin	111.4	0.0	1.000	0.800	0.750	1062.50	36.21	0.00
		Qmax	205.9	0.0	1.000	0.800	0.750	1062.50	73.02	0.00
		Qmin	111.4	0.0	1.000	0.800	0.750	1062.50	36.21	0.00
	35	Nmax	107.5	0.0	1.000	0.800	0.750	1062.50	34.86	0.00
		Nmin	198.4	0.0	1.000	0.800	0.750	1062.50	69.83	0.00
		Mmax	198.4	0.0	1.000	0.800	0.750	1062.50	69.83	0.00
		Mmin	107.5	0.0	1.000	0.800	0.750	1062.50	34.86	0.00
		Qmax	198.4	0.0	1.000	0.800	0.750	1062.50	69.83	0.00
		Qmin	107.5	0.0	1.000	0.800	0.750	1062.50	34.86	0.00
24	35	Nmax	107.5	0.0	1.000	0.800	0.750	1062.50	34.86	0.00
		Nmin	198.4	0.0	1.000	0.800	0.750	1062.50	69.83	0.00
		Mmax	198.4	0.0	1.000	0.800	0.750	1062.50	69.83	0.00
		Mmin	107.5	0.0	1.000	0.800	0.750	1062.50	34.86	0.00
		Qmax	198.4	0.0	1.000	0.800	0.750	1062.50	69.83	0.00
		Qmin	107.5	0.0	1.000	0.800	0.750	1062.50	34.86	0.00
	37	Nmax	96.9	0.0	1.000	0.800	0.750	1062.50	31.16	0.00
		Nmin	177.5	0.0	1.000	0.800	0.750	1062.50	61.19	0.00
		Mmax	177.5	0.0	1.000	0.800	0.750	1062.50	61.19	0.00
		Mmin	96.9	0.0	1.000	0.800	0.750	1062.50	31.16	0.00
		Qmax	177.5	0.0	1.000	0.800	0.750	1062.50	61.19	0.00
		Qmin	96.9	0.0	1.000	0.800	0.750	1062.50	31.16	0.00
25	37	Nmax	96.9	0.0	1.000	0.800	0.750	1062.50	31.16	0.00
		Nmin	177.5	0.0	1.000	0.800	0.750	1062.50	61.19	0.00
		Mmax	177.5	0.0	1.000	0.800	0.750	1062.50	61.19	0.00
		Mmin	96.9	0.0	1.000	0.800	0.750	1062.50	31.16	0.00
		Qmax	177.5	0.0	1.000	0.800	0.750	1062.50	61.19	0.00
		Qmin	96.9	0.0	1.000	0.800	0.750	1062.50	31.16	0.00
	39	Nmax	79.6	0.0	1.000	0.800	0.750	1062.50	25.27	0.00
		Nmin	143.3	0.0	1.000	0.800	0.750	1062.50	47.85	0.00
		Mmax	143.3	0.0	1.000	0.800	0.750	1062.50	47.85	0.00
		Mmin	79.6	0.0	1.000	0.800	0.750	1062.50	25.27	0.00
		Qmax	143.3	0.0	1.000	0.800	0.750	1062.50	47.85	0.00
		Qmin	79.6	0.0	1.000	0.800	0.750	1062.50	25.27	0.00
26	39	Nmax	79.6	0.0	1.000	0.800	0.750	1062.50	25.27	0.00
		Nmin	143.2	0.0	1.000	0.800	0.750	1062.50	47.84	0.00
		Mmax	143.2	0.0	1.000	0.800	0.750	1062.50	47.84	0.00
		Mmin	79.6	0.0	1.000	0.800	0.750	1062.50	25.27	0.00
		Qmax	143.2	0.0	1.000	0.800	0.750	1062.50	47.84	0.00
		Qmin	79.6	0.0	1.000	0.800	0.750	1062.50	25.27	0.00

ARMADOJUL_2000_10000_1m.xls PI RIERA DE CAN DE JULIA 28/02/2006
Kv=2000 Kh=10000

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES EN UN SÓLO LADO

FECHA: 28/02/2006

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As1 (cm2/m)	As2 (cm2/m)
	41	Nmax	55.6	0.0	1.000	0.800	0.750	1062.50	17.35	0.00
		Nmin	95.6	0.0	1.000	0.800	0.750	1062.50	30.71	0.00
		Mmax	95.6	0.0	1.000	0.800	0.750	1062.50	30.71	0.00
		Mmin	55.6	0.0	1.000	0.800	0.750	1062.50	17.35	0.00
		Qmax	95.6	0.0	1.000	0.800	0.750	1062.50	30.71	0.00
		Qmin	55.6	0.0	1.000	0.800	0.750	1062.50	17.35	0.00
27	41	Nmax	55.6	0.0	1.000	0.800	0.750	1062.50	17.35	0.00
		Nmin	95.6	0.0	1.000	0.800	0.750	1062.50	30.70	0.00
		Mmax	95.6	0.0	1.000	0.800	0.750	1062.50	30.70	0.00
		Mmin	55.6	0.0	1.000	0.800	0.750	1062.50	17.35	0.00
		Qmax	95.6	0.0	1.000	0.800	0.750	1062.50	30.70	0.00
		Qmin	55.6	0.0	1.000	0.800	0.750	1062.50	17.35	0.00
	43	Nmax	24.9	0.0	1.000	0.800	0.750	1062.50	7.61	0.00
		Nmin	34.5	0.0	1.000	0.800	0.750	1062.50	10.59	0.00
		Mmax	40.6	0.0	1.000	0.800	0.750	1062.50	12.54	0.00
		Mmin	24.9	0.0	1.000	0.800	0.750	1062.50	7.61	0.00
		Qmax	34.5	0.0	1.000	0.800	0.750	1062.50	10.59	0.00
		Qmin	24.9	0.0	1.000	0.800	0.750	1062.50	7.61	0.00
28	43	Nmax	24.9	0.0	1.000	0.800	0.750	1062.50	7.60	0.00
		Nmin	34.5	0.0	1.000	0.800	0.750	1062.50	10.59	0.00
		Mmax	40.6	0.0	1.000	0.800	0.750	1062.50	12.54	0.00
		Mmin	24.9	0.0	1.000	0.800	0.750	1062.50	7.60	0.00
		Qmax	34.5	0.0	1.000	0.800	0.750	1062.50	10.59	0.00
		Qmin	24.9	0.0	1.000	0.800	0.750	1062.50	7.60	0.00
	45	Nmax	7.1	0.0	1.000	0.800	0.750	1062.50	2.14	0.00
		Nmin	7.1	-1.6	1.000	0.800	0.750	1062.50	2.14	0.49
		Mmax	11.3	0.0	1.000	0.800	0.750	1062.50	3.42	0.00
		Mmin	7.1	-1.6	1.000	0.800	0.750	1062.50	2.14	0.49
		Qmax	7.1	-1.6	1.000	0.800	0.750	1062.50	2.14	0.49
		Qmin	7.1	0.0	1.000	0.800	0.750	1062.50	2.14	0.00
29	45	Nmax	7.1	0.0	1.000	0.800	0.750	1062.50	2.14	0.00
		Nmin	7.1	-1.6	1.000	0.800	0.750	1062.50	2.14	0.49
		Mmax	11.3	0.0	1.000	0.800	0.750	1062.50	3.42	0.00
		Mmin	7.1	-1.6	1.000	0.800	0.750	1062.50	2.14	0.49
		Qmax	7.1	-1.6	1.000	0.800	0.750	1062.50	2.14	0.49
		Qmin	7.1	0.0	1.000	0.800	0.750	1062.50	2.14	0.00
	47	Nmax	0.0	-12.5	1.000	0.800	0.750	1062.50	0.00	3.79
		Nmin	0.0	-35.5	1.000	0.800	0.750	1062.50	0.00	10.92
		Mmax	0.0	-12.5	1.000	0.800	0.750	1062.50	0.00	3.79
		Mmin	0.0	-35.5	1.000	0.800	0.750	1062.50	0.00	10.92
		Qmax	0.0	-35.5	1.000	0.800	0.750	1062.50	0.00	10.92
		Qmin	0.0	-12.5	1.000	0.800	0.750	1062.50	0.00	3.79
30	47	Nmax	0.0	-12.5	1.000	0.800	0.750	1062.50	0.00	3.79
		Nmin	0.0	-35.5	1.000	0.800	0.750	1062.50	0.00	10.92
		Mmax	0.0	-12.5	1.000	0.800	0.750	1062.50	0.00	3.79
		Mmin	0.0	-35.5	1.000	0.800	0.750	1062.50	0.00	10.92
		Qmax	0.0	-35.5	1.000	0.800	0.750	1062.50	0.00	10.92
		Qmin	0.0	-12.5	1.000	0.800	0.750	1062.50	0.00	3.79
	49	Nmax	0.0	-33.7	1.000	0.800	0.750	1062.50	0.00	10.37
		Nmin	0.0	-72.2	1.000	0.800	0.750	1062.50	0.00	22.78
		Mmax	0.0	-33.7	1.000	0.800	0.750	1062.50	0.00	10.37

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES EN UN SÓLO LADO

FECHA: 28/02/2006

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As1 (cm2/m)	As2 (cm2/m)
		Mmin	0.0	-72.2	1.000	0.800	0.750	1062.50	0.00	22.78
		Qmax	0.0	-72.2	1.000	0.800	0.750	1062.50	0.00	22.78
		Qmin	0.0	-33.7	1.000	0.800	0.750	1062.50	0.00	10.37
31	49	Nmax	0.0	-33.7	1.000	0.800	0.750	1062.50	0.00	10.37
		Nmin	0.0	-72.2	1.000	0.800	0.750	1062.50	0.00	22.78
		Mmax	0.0	-33.7	1.000	0.800	0.750	1062.50	0.00	10.37
		Mmin	0.0	-72.2	1.000	0.800	0.750	1062.50	0.00	22.78
		Qmax	0.0	-72.2	1.000	0.800	0.750	1062.50	0.00	22.78
		Qmin	0.0	-33.7	1.000	0.800	0.750	1062.50	0.00	10.37
	51	Nmax	0.0	-56.6	1.000	0.800	0.750	1062.50	0.00	17.68
		Nmin	0.0	-109.9	1.000	0.800	0.750	1062.50	0.00	35.71
		Mmax	0.0	-56.6	1.000	0.800	0.750	1062.50	0.00	17.68
		Mmin	0.0	-109.9	1.000	0.800	0.750	1062.50	0.00	35.71
		Qmax	0.0	-93.4	1.000	0.800	0.750	1062.50	0.00	29.94
		Qmin	0.0	-56.6	1.000	0.800	0.750	1062.50	0.00	17.68
32	51	Nmax	0.0	-56.6	1.000	0.800	0.750	1062.50	0.00	17.67
		Nmin	0.0	-109.9	1.000	0.800	0.750	1062.50	0.00	35.70
		Mmax	0.0	-56.6	1.000	0.800	0.750	1062.50	0.00	17.67
		Mmin	0.0	-109.9	1.000	0.800	0.750	1062.50	0.00	35.70
		Qmax	0.0	-93.3	1.000	0.800	0.750	1062.50	0.00	29.93
		Qmin	0.0	-56.6	1.000	0.800	0.750	1062.50	0.00	17.67
	64	Nmax	0.0	-81.2	1.000	0.800	0.750	1062.50	0.00	25.82
		Nmin	0.0	-148.8	1.000	0.800	0.750	1062.50	0.00	49.95
		Mmax	0.0	-81.2	1.000	0.800	0.750	1062.50	0.00	25.82
		Mmin	0.0	-148.8	1.000	0.800	0.750	1062.50	0.00	49.95
		Qmax	0.0	-133.8	1.000	0.800	0.750	1062.50	0.00	44.33
		Qmin	0.0	-81.2	1.000	0.800	0.750	1062.50	0.00	25.82
33	1	Nmax	145.1	0.0	1.000	0.700	0.650	920.83	58.62	0.00
		Nmin	100.8	0.0	1.000	0.700	0.650	920.83	38.56	0.00
		Mmax	154.6	0.0	1.000	0.700	0.650	920.83	63.27	0.00
		Mmin	100.8	0.0	1.000	0.700	0.650	920.83	38.56	0.00
		Qmax	154.6	0.0	1.000	0.700	0.650	920.83	63.27	0.00
		Qmin	100.8	0.0	1.000	0.700	0.650	920.83	38.56	0.00
	14	Nmax	104.5	0.0	1.000	0.700	0.650	920.83	40.14	0.00
		Nmin	73.3	0.0	1.000	0.700	0.650	920.83	27.21	0.00
		Mmax	111.7	0.0	1.000	0.700	0.650	920.83	43.27	0.00
		Mmin	73.3	0.0	1.000	0.700	0.650	920.83	27.21	0.00
		Qmax	111.7	0.0	1.000	0.700	0.650	920.83	43.27	0.00
		Qmin	73.3	0.0	1.000	0.700	0.650	920.83	27.21	0.00
34	14	Nmax	104.5	0.0	1.000	0.700	0.650	920.83	40.14	0.00
		Nmin	73.3	0.0	1.000	0.700	0.650	920.83	27.20	0.00
		Mmax	111.7	0.0	1.000	0.700	0.650	920.83	43.26	0.00
		Mmin	73.3	0.0	1.000	0.700	0.650	920.83	27.20	0.00
		Qmax	111.7	0.0	1.000	0.700	0.650	920.83	43.26	0.00
		Qmin	73.3	0.0	1.000	0.700	0.650	920.83	27.20	0.00
	16	Nmax	68.4	0.0	1.000	0.700	0.650	920.83	25.25	0.00
		Nmin	48.7	0.0	1.000	0.700	0.650	920.83	17.65	0.00
		Mmax	73.5	0.0	1.000	0.700	0.650	920.83	27.30	0.00
		Mmin	48.7	0.0	1.000	0.700	0.650	920.83	17.65	0.00
		Qmax	73.5	0.0	1.000	0.700	0.650	920.83	27.30	0.00
		Qmin	48.7	0.0	1.000	0.700	0.650	920.83	17.65	0.00

ARMADOJUL_2000_10000_1m.xls PI RIERA DE CAN DE JULIA 28/02/2006
Kv=2000 Kh=10000

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES EN UN SÓLO LADO

FECHA: 28/02/2006

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As1 (cm2/m)	As2 (cm2/m)
35	16	Nmax	68.4	0.0	1.000	0.700	0.650	920.83	25.25	0.00
		Nmin	48.7	0.0	1.000	0.700	0.650	920.83	17.65	0.00
		Mmax	73.5	0.0	1.000	0.700	0.650	920.83	27.30	0.00
		Mmin	48.7	0.0	1.000	0.700	0.650	920.83	17.65	0.00
		Qmax	73.5	0.0	1.000	0.700	0.650	920.83	27.30	0.00
		Qmin	48.7	0.0	1.000	0.700	0.650	920.83	17.65	0.00
	18	Nmax	36.1	0.0	1.000	0.700	0.650	920.83	12.94	0.00
		Nmin	26.8	0.0	1.000	0.700	0.650	920.83	9.52	0.00
		Mmax	39.5	0.0	1.000	0.700	0.650	920.83	14.17	0.00
		Mmin	26.8	0.0	1.000	0.700	0.650	920.83	9.52	0.00
		Qmax	39.5	0.0	1.000	0.700	0.650	920.83	14.17	0.00
		Qmin	26.8	0.0	1.000	0.700	0.650	920.83	9.52	0.00
36	18	Nmax	36.1	0.0	1.000	0.700	0.650	920.83	12.93	0.00
		Nmin	26.8	0.0	1.000	0.700	0.650	920.83	9.52	0.00
		Mmax	39.5	0.0	1.000	0.700	0.650	920.83	14.17	0.00
		Mmin	26.8	0.0	1.000	0.700	0.650	920.83	9.52	0.00
		Qmax	39.5	0.0	1.000	0.700	0.650	920.83	14.17	0.00
		Qmin	26.8	0.0	1.000	0.700	0.650	920.83	9.52	0.00
	20	Nmax	7.7	0.0	1.000	0.700	0.650	920.83	2.67	0.00
		Nmin	7.4	0.0	1.000	0.700	0.650	920.83	2.58	0.00
		Mmax	9.4	0.0	1.000	0.700	0.650	920.83	3.27	0.00
		Mmin	7.4	0.0	1.000	0.700	0.650	920.83	2.58	0.00
		Qmax	9.4	0.0	1.000	0.700	0.650	920.83	3.27	0.00
		Qmin	7.4	0.0	1.000	0.700	0.650	920.83	2.58	0.00
37	20	Nmax	7.7	0.0	1.000	0.700	0.650	920.83	2.67	0.00
		Nmin	7.4	0.0	1.000	0.700	0.650	920.83	2.58	0.00
		Mmax	9.4	0.0	1.000	0.700	0.650	920.83	3.27	0.00
		Mmin	7.4	0.0	1.000	0.700	0.650	920.83	2.58	0.00
		Qmax	9.4	0.0	1.000	0.700	0.650	920.83	3.27	0.00
		Qmin	7.4	0.0	1.000	0.700	0.650	920.83	2.58	0.00
	22	Nmax	0.0	-17.3	1.000	0.700	0.650	920.83	0.00	6.07
		Nmin	0.0	-9.6	1.000	0.700	0.650	920.83	0.00	3.35
		Mmax	0.0	-9.6	1.000	0.700	0.650	920.83	0.00	3.35
		Mmin	0.0	-17.3	1.000	0.700	0.650	920.83	0.00	6.07
		Qmax	0.0	-17.0	1.000	0.700	0.650	920.83	0.00	5.98
		Qmin	0.0	-9.6	1.000	0.700	0.650	920.83	0.00	3.35
38	22	Nmax	0.0	-17.3	1.000	0.700	0.650	920.83	0.00	6.07
		Nmin	0.0	-9.6	1.000	0.700	0.650	920.83	0.00	3.35
		Mmax	0.0	-9.6	1.000	0.700	0.650	920.83	0.00	3.35
		Mmin	0.0	-17.3	1.000	0.700	0.650	920.83	0.00	6.07
		Qmax	0.0	-17.0	1.000	0.700	0.650	920.83	0.00	5.98
		Qmin	0.0	-9.6	1.000	0.700	0.650	920.83	0.00	3.35
	24	Nmax	0.0	-57.5	1.000	0.700	0.650	920.83	0.00	21.02
		Nmin	0.0	-37.1	1.000	0.700	0.650	920.83	0.00	13.30
		Mmax	0.0	-37.1	1.000	0.700	0.650	920.83	0.00	13.30
		Mmin	0.0	-59.6	1.000	0.700	0.650	920.83	0.00	21.81
		Qmax	0.0	-59.6	1.000	0.700	0.650	920.83	0.00	21.81
		Qmin	0.0	-37.1	1.000	0.700	0.650	920.83	0.00	13.30
39	24	Nmax	0.0	-57.5	1.000	0.700	0.650	920.83	0.00	21.02
		Nmin	0.0	-37.1	1.000	0.700	0.650	920.83	0.00	13.30
		Mmax	0.0	-37.1	1.000	0.700	0.650	920.83	0.00	13.30

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES EN UN SÓLO LADO

FECHA: 28/02/2006

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As1 (cm2/m)	As2 (cm2/m)
		Mmin	0.0	-59.6	1.000	0.700	0.650	920.83	0.00	21.81
		Qmax	0.0	-59.6	1.000	0.700	0.650	920.83	0.00	21.81
		Qmin	0.0	-37.1	1.000	0.700	0.650	920.83	0.00	13.30
	26	Nmax	0.0	-87.1	1.000	0.700	0.650	920.83	0.00	32.79
		Nmin	0.0	-57.3	1.000	0.700	0.650	920.83	0.00	20.94
		Mmax	0.0	-57.3	1.000	0.700	0.650	920.83	0.00	20.94
		Mmin	0.0	-90.7	1.000	0.700	0.650	920.83	0.00	34.31
		Qmax	0.0	-90.7	1.000	0.700	0.650	920.83	0.00	34.31
		Qmin	0.0	-57.3	1.000	0.700	0.650	920.83	0.00	20.94
40	26	Nmax	0.0	-87.1	1.000	0.700	0.650	920.83	0.00	32.79
		Nmin	0.0	-57.3	1.000	0.700	0.650	920.83	0.00	20.94
		Mmax	0.0	-57.3	1.000	0.700	0.650	920.83	0.00	20.94
		Mmin	0.0	-90.7	1.000	0.700	0.650	920.83	0.00	34.31
		Qmax	0.0	-90.7	1.000	0.700	0.650	920.83	0.00	34.31
		Qmin	0.0	-57.3	1.000	0.700	0.650	920.83	0.00	20.94
	28	Nmax	0.0	-107.7	1.000	0.700	0.650	920.83	0.00	41.52
		Nmin	0.0	-71.5	1.000	0.700	0.650	920.83	0.00	26.49
		Mmax	0.0	-71.5	1.000	0.700	0.650	920.83	0.00	26.49
		Mmin	0.0	-112.5	1.000	0.700	0.650	920.83	0.00	43.61
		Qmax	0.0	-112.5	1.000	0.700	0.650	920.83	0.00	43.61
		Qmin	0.0	-71.5	1.000	0.700	0.650	920.83	0.00	26.49
41	28	Nmax	0.0	-107.7	1.000	0.700	0.650	920.83	0.00	41.52
		Nmin	0.0	-71.5	1.000	0.700	0.650	920.83	0.00	26.49
		Mmax	0.0	-71.5	1.000	0.700	0.650	920.83	0.00	26.49
		Mmin	0.0	-112.5	1.000	0.700	0.650	920.83	0.00	43.60
		Qmax	0.0	-112.5	1.000	0.700	0.650	920.83	0.00	43.60
		Qmin	0.0	-71.5	1.000	0.700	0.650	920.83	0.00	26.49
	30	Nmax	0.0	-121.0	1.000	0.700	0.650	920.83	0.00	47.36
		Nmin	0.0	-80.5	1.000	0.700	0.650	920.83	0.00	30.13
		Mmax	0.0	-80.5	1.000	0.700	0.650	920.83	0.00	30.13
		Mmin	0.0	-126.4	1.000	0.700	0.650	920.83	0.00	49.81
		Qmax	0.0	-126.4	1.000	0.700	0.650	920.83	0.00	49.81
		Qmin	0.0	-80.5	1.000	0.700	0.650	920.83	0.00	30.13
42	30	Nmax	0.0	-121.0	1.000	0.700	0.650	920.83	0.00	47.36
		Nmin	0.0	-80.5	1.000	0.700	0.650	920.83	0.00	30.13
		Mmax	0.0	-80.5	1.000	0.700	0.650	920.83	0.00	30.13
		Mmin	0.0	-126.4	1.000	0.700	0.650	920.83	0.00	49.81
		Qmax	0.0	-126.4	1.000	0.700	0.650	920.83	0.00	49.81
		Qmin	0.0	-80.5	1.000	0.700	0.650	920.83	0.00	30.13
	32	Nmax	0.0	-127.7	1.000	0.700	0.650	920.83	0.00	50.41
		Nmin	0.0	-85.1	1.000	0.700	0.650	920.83	0.00	31.99
		Mmax	0.0	-85.1	1.000	0.700	0.650	920.83	0.00	31.99
		Mmin	0.0	-133.2	1.000	0.700	0.650	920.83	0.00	52.98
		Qmax	0.0	-133.2	1.000	0.700	0.650	920.83	0.00	52.98
		Qmin	0.0	-85.1	1.000	0.700	0.650	920.83	0.00	31.99
43	32	Nmax	0.0	-127.7	1.000	0.700	0.650	920.83	0.00	50.41
		Nmin	0.0	-85.1	1.000	0.700	0.650	920.83	0.00	31.99
		Mmax	0.0	-85.1	1.000	0.700	0.650	920.83	0.00	31.99
		Mmin	0.0	-133.2	1.000	0.700	0.650	920.83	0.00	52.98
		Qmax	0.0	-127.7	1.000	0.700	0.650	920.83	0.00	50.41
		Qmin	0.0	-133.2	1.000	0.700	0.650	920.83	0.00	52.98

ARMADOJUL_2000_10000_1m.xls PI RIERA DE CAN DE JULIA 28/02/2006
Kv=2000 Kh=10000

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES EN UN SÓLO LADO

FECHA: 28/02/2006

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As1 (cm2/m)	As2 (cm2/m)
	34	Nmax	0.0	-128.1	1.000	0.700	0.650	920.83	0.00	50.60
		Nmin	0.0	-85.3	1.000	0.700	0.650	920.83	0.00	32.07
		Mmax	0.0	-85.3	1.000	0.700	0.650	920.83	0.00	32.07
		Mmin	0.0	-133.4	1.000	0.700	0.650	920.83	0.00	53.04
		Qmax	0.0	-128.1	1.000	0.700	0.650	920.83	0.00	50.60
		Qmin	0.0	-133.4	1.000	0.700	0.650	920.83	0.00	53.04
44	34	Nmax	0.0	-128.1	1.000	0.700	0.650	920.83	0.00	50.60
		Nmin	0.0	-85.3	1.000	0.700	0.650	920.83	0.00	32.07
		Mmax	0.0	-85.3	1.000	0.700	0.650	920.83	0.00	32.07
		Mmin	0.0	-133.4	1.000	0.700	0.650	920.83	0.00	53.04
		Qmax	0.0	-85.3	1.000	0.700	0.650	920.83	0.00	32.07
		Qmin	0.0	-133.4	1.000	0.700	0.650	920.83	0.00	53.04
	36	Nmax	0.0	-121.8	1.000	0.700	0.650	920.83	0.00	47.74
		Nmin	0.0	-80.9	1.000	0.700	0.650	920.83	0.00	30.26
		Mmax	0.0	-80.9	1.000	0.700	0.650	920.83	0.00	30.26
		Mmin	0.0	-126.4	1.000	0.700	0.650	920.83	0.00	49.81
		Qmax	0.0	-80.9	1.000	0.700	0.650	920.83	0.00	30.26
		Qmin	0.0	-126.4	1.000	0.700	0.650	920.83	0.00	49.81
45	36	Nmax	0.0	-121.8	1.000	0.700	0.650	920.83	0.00	47.74
		Nmin	0.0	-80.9	1.000	0.700	0.650	920.83	0.00	30.26
		Mmax	0.0	-80.9	1.000	0.700	0.650	920.83	0.00	30.26
		Mmin	0.0	-126.4	1.000	0.700	0.650	920.83	0.00	49.81
		Qmax	0.0	-80.9	1.000	0.700	0.650	920.83	0.00	30.26
		Qmin	0.0	-126.4	1.000	0.700	0.650	920.83	0.00	49.81
	38	Nmax	0.0	-107.8	1.000	0.700	0.650	920.83	0.00	41.54
		Nmin	0.0	-71.2	1.000	0.700	0.650	920.83	0.00	26.36
		Mmax	0.0	-71.2	1.000	0.700	0.650	920.83	0.00	26.36
		Mmin	0.0	-111.1	1.000	0.700	0.650	920.83	0.00	43.01
		Qmax	0.0	-71.2	1.000	0.700	0.650	920.83	0.00	26.36
		Qmin	0.0	-111.1	1.000	0.700	0.650	920.83	0.00	43.01
46	38	Nmax	0.0	-107.8	1.000	0.700	0.650	920.83	0.00	41.54
		Nmin	0.0	-71.2	1.000	0.700	0.650	920.83	0.00	26.36
		Mmax	0.0	-71.2	1.000	0.700	0.650	920.83	0.00	26.36
		Mmin	0.0	-111.1	1.000	0.700	0.650	920.83	0.00	43.01
		Qmax	0.0	-71.2	1.000	0.700	0.650	920.83	0.00	26.36
		Qmin	0.0	-111.1	1.000	0.700	0.650	920.83	0.00	43.01
	40	Nmax	0.0	-84.3	1.000	0.700	0.650	920.83	0.00	31.66
		Nmin	0.0	-55.0	1.000	0.700	0.650	920.83	0.00	20.05
		Mmax	0.0	-55.0	1.000	0.700	0.650	920.83	0.00	20.05
		Mmin	0.0	-86.0	1.000	0.700	0.650	920.83	0.00	32.33
		Qmax	0.0	-55.0	1.000	0.700	0.650	920.83	0.00	20.05
		Qmin	0.0	-86.0	1.000	0.700	0.650	920.83	0.00	32.33
47	40	Nmax	0.0	-84.3	1.000	0.700	0.650	920.83	0.00	31.66
		Nmin	0.0	-55.0	1.000	0.700	0.650	920.83	0.00	20.05
		Mmax	0.0	-55.0	1.000	0.700	0.650	920.83	0.00	20.05
		Mmin	0.0	-86.0	1.000	0.700	0.650	920.83	0.00	32.33
		Qmax	0.0	-55.0	1.000	0.700	0.650	920.83	0.00	20.05
		Qmin	0.0	-86.0	1.000	0.700	0.650	920.83	0.00	32.33
	42	Nmax	0.0	-49.2	1.000	0.700	0.650	920.83	0.00	17.81
		Nmin	0.0	-30.9	1.000	0.700	0.650	920.83	0.00	11.02
		Mmax	0.0	-30.9	1.000	0.700	0.650	920.83	0.00	11.02

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES EN UN SÓLO LADO

FECHA: 28/02/2006

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As1 (cm2/m)	As2 (cm2/m)
		Mmin	0.0	-49.2	1.000	0.700	0.650	920.83	0.00	17.81
		Qmax	0.0	-30.9	1.000	0.700	0.650	920.83	0.00	11.02
		Qmin	0.0	-48.4	1.000	0.700	0.650	920.83	0.00	17.54
48	42	Nmax	0.0	-49.1	1.000	0.700	0.650	920.83	0.00	17.81
		Nmin	0.0	-30.9	1.000	0.700	0.650	920.83	0.00	11.01
		Mmax	0.0	-30.9	1.000	0.700	0.650	920.83	0.00	11.01
		Mmin	0.0	-49.1	1.000	0.700	0.650	920.83	0.00	17.81
		Qmax	0.0	-30.9	1.000	0.700	0.650	920.83	0.00	11.01
		Qmin	0.0	-48.4	1.000	0.700	0.650	920.83	0.00	17.53
	44	Nmax	0.0	-26.3	1.000	0.700	0.650	920.83	0.00	9.33
		Nmin	0.0	-15.3	1.000	0.700	0.650	920.83	0.00	5.37
		Mmax	0.0	-15.3	1.000	0.700	0.650	920.83	0.00	5.37
		Mmin	0.0	-26.3	1.000	0.700	0.650	920.83	0.00	9.33
		Qmax	0.0	-15.3	1.000	0.700	0.650	920.83	0.00	5.37
		Qmin	0.0	-24.1	1.000	0.700	0.650	920.83	0.00	8.53
49	44	Nmax	0.0	-26.3	1.000	0.700	0.650	920.83	0.00	9.33
		Nmin	0.0	-15.3	1.000	0.700	0.650	920.83	0.00	5.37
		Mmax	0.0	-15.3	1.000	0.700	0.650	920.83	0.00	5.37
		Mmin	0.0	-26.3	1.000	0.700	0.650	920.83	0.00	9.33
		Qmax	0.0	-15.3	1.000	0.700	0.650	920.83	0.00	5.37
		Qmin	0.0	-24.1	1.000	0.700	0.650	920.83	0.00	8.53
	46	Nmax	3.1	-0.5	1.000	0.700	0.650	920.83	1.07	0.17
		Nmin	3.1	0.0	1.000	0.700	0.650	920.83	1.07	0.00
		Mmax	4.5	0.0	1.000	0.700	0.650	920.83	1.55	0.00
		Mmin	3.1	-0.5	1.000	0.700	0.650	920.83	1.07	0.17
		Qmax	3.1	0.0	1.000	0.700	0.650	920.83	1.07	0.00
		Qmin	4.5	0.0	1.000	0.700	0.650	920.83	1.55	0.00
50	46	Nmax	3.1	-0.5	1.000	0.700	0.650	920.83	1.07	0.17
		Nmin	3.1	0.0	1.000	0.700	0.650	920.83	1.07	0.00
		Mmax	4.5	0.0	1.000	0.700	0.650	920.83	1.55	0.00
		Mmin	3.1	-0.5	1.000	0.700	0.650	920.83	1.07	0.17
		Qmax	3.1	0.0	1.000	0.700	0.650	920.83	1.07	0.00
		Qmin	4.5	0.0	1.000	0.700	0.650	920.83	1.55	0.00
	48	Nmax	31.8	0.0	1.000	0.700	0.650	920.83	11.33	0.00
		Nmin	24.3	0.0	1.000	0.700	0.650	920.83	8.60	0.00
		Mmax	37.5	0.0	1.000	0.700	0.650	920.83	13.43	0.00
		Mmin	24.3	0.0	1.000	0.700	0.650	920.83	8.60	0.00
		Qmax	24.3	0.0	1.000	0.700	0.650	920.83	8.60	0.00
		Qmin	37.5	0.0	1.000	0.700	0.650	920.83	13.43	0.00
51	48	Nmax	31.8	0.0	1.000	0.700	0.650	920.83	11.33	0.00
		Nmin	24.3	0.0	1.000	0.700	0.650	920.83	8.60	0.00
		Mmax	37.5	0.0	1.000	0.700	0.650	920.83	13.43	0.00
		Mmin	24.3	0.0	1.000	0.700	0.650	920.83	8.60	0.00
		Qmax	24.3	0.0	1.000	0.700	0.650	920.83	8.60	0.00
		Qmin	37.5	0.0	1.000	0.700	0.650	920.83	13.43	0.00
	50	Nmax	67.5	0.0	1.000	0.700	0.650	920.83	24.91	0.00
		Nmin	48.5	0.0	1.000	0.700	0.650	920.83	17.58	0.00
		Mmax	75.2	0.0	1.000	0.700	0.650	920.83	27.98	0.00
		Mmin	48.5	0.0	1.000	0.700	0.650	920.83	17.58	0.00
		Qmax	48.5	0.0	1.000	0.700	0.650	920.83	17.58	0.00
		Qmin	75.2	0.0	1.000	0.700	0.650	920.83	27.98	0.00

ARMADOJUL_2000_10000_1m.xls PI RIERA DE CAN DE JULIA 28/02/2006
Kv=2000 Kh=10000

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES EN UN SÓLO LADO

FECHA: 28/02/2006

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As1 (cm2/m)	As2 (cm2/m)
52	50	Nmax	67.5	0.0	1.000	0.700	0.650	920.83	24.91	0.00
		Nmin	48.5	0.0	1.000	0.700	0.650	920.83	17.58	0.00
		Mmax	75.2	0.0	1.000	0.700	0.650	920.83	27.98	0.00
		Mmin	48.5	0.0	1.000	0.700	0.650	920.83	17.58	0.00
		Qmax	48.5	0.0	1.000	0.700	0.650	920.83	17.58	0.00
		Qmin	75.2	0.0	1.000	0.700	0.650	920.83	27.98	0.00
	52	Nmax	108.4	0.0	1.000	0.700	0.650	920.83	41.79	0.00
		Nmin	76.3	0.0	1.000	0.700	0.650	920.83	28.39	0.00
		Mmax	118.3	0.0	1.000	0.700	0.650	920.83	46.19	0.00
		Mmin	76.3	0.0	1.000	0.700	0.650	920.83	28.39	0.00
		Qmax	76.3	0.0	1.000	0.700	0.650	920.83	28.39	0.00
		Qmin	118.3	0.0	1.000	0.700	0.650	920.83	46.19	0.00
53	52	Nmax	76.3	0.0	1.000	0.700	0.650	920.83	28.39	0.00
		Nmin	118.3	0.0	1.000	0.700	0.650	920.83	46.19	0.00
		Mmax	118.3	0.0	1.000	0.700	0.650	920.83	46.19	0.00
		Mmin	76.3	0.0	1.000	0.700	0.650	920.83	28.39	0.00
		Qmax	76.3	0.0	1.000	0.700	0.650	920.83	28.39	0.00
		Qmin	108.4	0.0	1.000	0.700	0.650	920.83	41.79	0.00
	53	Nmax	76.7	0.0	1.000	0.700	0.650	920.83	28.56	0.00
		Nmin	119.6	0.0	1.000	0.700	0.650	920.83	46.77	0.00
		Mmax	119.6	0.0	1.000	0.700	0.650	920.83	46.77	0.00
		Mmin	76.7	0.0	1.000	0.700	0.650	920.83	28.56	0.00
		Qmax	76.7	0.0	1.000	0.700	0.650	920.83	28.56	0.00
		Qmin	111.7	0.0	1.000	0.700	0.650	920.83	43.26	0.00
54	53	Nmax	76.7	0.0	1.000	0.700	0.650	920.83	28.56	0.00
		Nmin	119.6	0.0	1.000	0.700	0.650	920.83	46.77	0.00
		Mmax	119.6	0.0	1.000	0.700	0.650	920.83	46.77	0.00
		Mmin	76.7	0.0	1.000	0.700	0.650	920.83	28.56	0.00
		Qmax	76.7	0.0	1.000	0.700	0.650	920.83	28.56	0.00
		Qmin	111.7	0.0	1.000	0.700	0.650	920.83	43.26	0.00
	54	Nmax	77.1	0.0	1.000	0.700	0.650	920.83	28.73	0.00
		Nmin	120.9	0.0	1.000	0.700	0.650	920.83	47.35	0.00
		Mmax	120.9	0.0	1.000	0.700	0.650	920.83	47.35	0.00
		Mmin	77.1	0.0	1.000	0.700	0.650	920.83	28.73	0.00
		Qmax	77.1	0.0	1.000	0.700	0.650	920.83	28.73	0.00
		Qmin	115.1	0.0	1.000	0.700	0.650	920.83	44.76	0.00
55	54	Nmax	77.1	0.0	1.000	0.700	0.650	920.83	28.73	0.00
		Nmin	120.9	0.0	1.000	0.700	0.650	920.83	47.35	0.00
		Mmax	120.9	0.0	1.000	0.700	0.650	920.83	47.35	0.00
		Mmin	77.1	0.0	1.000	0.700	0.650	920.83	28.73	0.00
		Qmax	77.1	0.0	1.000	0.700	0.650	920.83	28.73	0.00
		Qmin	115.1	0.0	1.000	0.700	0.650	920.83	44.76	0.00
	55	Nmax	77.5	0.0	1.000	0.700	0.650	920.83	28.90	0.00
		Nmin	122.2	0.0	1.000	0.700	0.650	920.83	47.94	0.00
		Mmax	122.2	0.0	1.000	0.700	0.650	920.83	47.94	0.00
		Mmin	77.5	0.0	1.000	0.700	0.650	920.83	28.90	0.00
		Qmax	77.5	0.0	1.000	0.700	0.650	920.83	28.90	0.00
		Qmin	118.5	0.0	1.000	0.700	0.650	920.83	46.26	0.00
56	55	Nmax	77.5	0.0	1.000	0.700	0.650	920.83	28.90	0.00
		Nmin	122.2	0.0	1.000	0.700	0.650	920.83	47.93	0.00
		Mmax	122.2	0.0	1.000	0.700	0.650	920.83	47.93	0.00

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES EN UN SÓLO LADO

FECHA: 28/02/2006

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As1 (cm2/m)	As2 (cm2/m)
		Mmin	77.5	0.0	1.000	0.700	0.650	920.83	28.90	0.00
		Qmax	77.5	0.0	1.000	0.700	0.650	920.83	28.90	0.00
		Qmin	118.5	0.0	1.000	0.700	0.650	920.83	46.25	0.00
	56	Nmax	77.9	0.0	1.000	0.700	0.650	920.83	29.07	0.00
		Nmin	123.5	0.0	1.000	0.700	0.650	920.83	48.51	0.00
		Mmax	123.5	0.0	1.000	0.700	0.650	920.83	48.51	0.00
		Mmin	77.9	0.0	1.000	0.700	0.650	920.83	29.07	0.00
		Qmax	77.9	0.0	1.000	0.700	0.650	920.83	29.07	0.00
		Qmin	121.8	0.0	1.000	0.700	0.650	920.83	47.76	0.00
57	56	Nmax	77.9	0.0	1.000	0.700	0.650	920.83	29.07	0.00
		Nmin	123.5	0.0	1.000	0.700	0.650	920.83	48.51	0.00
		Mmax	123.5	0.0	1.000	0.700	0.650	920.83	48.51	0.00
		Mmin	77.9	0.0	1.000	0.700	0.650	920.83	29.07	0.00
		Qmax	77.9	0.0	1.000	0.700	0.650	920.83	29.07	0.00
		Qmin	121.8	0.0	1.000	0.700	0.650	920.83	47.76	0.00
	57	Nmax	78.3	0.0	1.000	0.700	0.650	920.83	29.23	0.00
		Nmin	124.8	0.0	1.000	0.700	0.650	920.83	49.09	0.00
		Mmax	125.2	0.0	1.000	0.700	0.650	920.83	49.29	0.00
		Mmin	78.3	0.0	1.000	0.700	0.650	920.83	29.23	0.00
		Qmax	78.3	0.0	1.000	0.700	0.650	920.83	29.23	0.00
		Qmin	125.2	0.0	1.000	0.700	0.650	920.83	49.29	0.00
58	57	Nmax	78.3	0.0	1.000	0.700	0.650	920.83	29.23	0.00
		Nmin	124.8	0.0	1.000	0.700	0.650	920.83	49.09	0.00
		Mmax	125.2	0.0	1.000	0.700	0.650	920.83	49.29	0.00
		Mmin	78.3	0.0	1.000	0.700	0.650	920.83	29.23	0.00
		Qmax	78.3	0.0	1.000	0.700	0.650	920.83	29.23	0.00
		Qmin	125.2	0.0	1.000	0.700	0.650	920.83	49.29	0.00
	58	Nmax	78.8	0.0	1.000	0.700	0.650	920.83	29.41	0.00
		Nmin	126.1	0.0	1.000	0.700	0.650	920.83	49.69	0.00
		Mmax	128.6	0.0	1.000	0.700	0.650	920.83	50.84	0.00
		Mmin	78.8	0.0	1.000	0.700	0.650	920.83	29.41	0.00
		Qmax	78.8	0.0	1.000	0.700	0.650	920.83	29.41	0.00
		Qmin	128.6	0.0	1.000	0.700	0.650	920.83	50.84	0.00
59	58	Nmax	78.8	0.0	1.000	0.700	0.650	920.83	29.41	0.00
		Nmin	126.1	0.0	1.000	0.700	0.650	920.83	49.69	0.00
		Mmax	128.6	0.0	1.000	0.700	0.650	920.83	50.84	0.00
		Mmin	78.8	0.0	1.000	0.700	0.650	920.83	29.41	0.00
		Qmax	78.8	0.0	1.000	0.700	0.650	920.83	29.41	0.00
		Qmin	128.6	0.0	1.000	0.700	0.650	920.83	50.84	0.00
	59	Nmax	79.2	0.0	1.000	0.700	0.650	920.83	29.57	0.00
		Nmin	127.4	0.0	1.000	0.700	0.650	920.83	50.27	0.00
		Mmax	132.0	0.0	1.000	0.700	0.650	920.83	52.39	0.00
		Mmin	79.2	0.0	1.000	0.700	0.650	920.83	29.57	0.00
		Qmax	79.2	0.0	1.000	0.700	0.650	920.83	29.57	0.00
		Qmin	132.0	0.0	1.000	0.700	0.650	920.83	52.39	0.00
60	59	Nmax	79.2	0.0	1.000	0.700	0.650	920.83	29.57	0.00
		Nmin	127.4	0.0	1.000	0.700	0.650	920.83	50.27	0.00
		Mmax	132.0	0.0	1.000	0.700	0.650	920.83	52.39	0.00
		Mmin	79.2	0.0	1.000	0.700	0.650	920.83	29.57	0.00
		Qmax	79.2	0.0	1.000	0.700	0.650	920.83	29.57	0.00
		Qmin	132.0	0.0	1.000	0.700	0.650	920.83	52.39	0.00

ARMADOJUL_2000_10000_1m.xls PI RIERA DE CAN DE JULIA 28/02/2006
Kv=2000 Kh=10000

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES EN UN SÓLO LADO

FECHA: 28/02/2006

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As1 (cm2/m)	As2 (cm2/m)
	60	Nmax	79.6	0.0	1.000	0.700	0.650	920.83	29.74	0.00
		Nmin	128.7	0.0	1.000	0.700	0.650	920.83	50.87	0.00
		Mmax	135.4	0.0	1.000	0.700	0.650	920.83	53.97	0.00
		Mmin	79.6	0.0	1.000	0.700	0.650	920.83	29.74	0.00
		Qmax	79.6	0.0	1.000	0.700	0.650	920.83	29.74	0.00
		Qmin	135.4	0.0	1.000	0.700	0.650	920.83	53.97	0.00
61	60	Nmax	79.6	0.0	1.000	0.700	0.650	920.83	29.74	0.00
		Nmin	128.7	0.0	1.000	0.700	0.650	920.83	50.87	0.00
		Mmax	135.4	0.0	1.000	0.700	0.650	920.83	53.97	0.00
		Mmin	79.6	0.0	1.000	0.700	0.650	920.83	29.74	0.00
		Qmax	79.6	0.0	1.000	0.700	0.650	920.83	29.74	0.00
		Qmin	135.4	0.0	1.000	0.700	0.650	920.83	53.97	0.00
	61	Nmax	80.0	0.0	1.000	0.700	0.650	920.83	29.91	0.00
		Nmin	130.0	0.0	1.000	0.700	0.650	920.83	51.46	0.00
		Mmax	138.7	0.0	1.000	0.700	0.650	920.83	55.56	0.00
		Mmin	80.0	0.0	1.000	0.700	0.650	920.83	29.91	0.00
		Qmax	80.0	0.0	1.000	0.700	0.650	920.83	29.91	0.00
		Qmin	138.7	0.0	1.000	0.700	0.650	920.83	55.56	0.00
62	61	Nmax	80.0	0.0	1.000	0.700	0.650	920.83	29.91	0.00
		Nmin	130.0	0.0	1.000	0.700	0.650	920.83	51.46	0.00
		Mmax	138.7	0.0	1.000	0.700	0.650	920.83	55.56	0.00
		Mmin	80.0	0.0	1.000	0.700	0.650	920.83	29.91	0.00
		Qmax	80.0	0.0	1.000	0.700	0.650	920.83	29.91	0.00
		Qmin	138.7	0.0	1.000	0.700	0.650	920.83	55.56	0.00
	62	Nmax	80.4	0.0	1.000	0.700	0.650	920.83	30.08	0.00
		Nmin	131.3	0.0	1.000	0.700	0.650	920.83	52.06	0.00
		Mmax	142.1	0.0	1.000	0.700	0.650	920.83	57.16	0.00
		Mmin	80.4	0.0	1.000	0.700	0.650	920.83	30.08	0.00
		Qmax	80.4	0.0	1.000	0.700	0.650	920.83	30.08	0.00
		Qmin	142.1	0.0	1.000	0.700	0.650	920.83	57.16	0.00
63	62	Nmax	80.4	0.0	1.000	0.700	0.650	920.83	30.08	0.00
		Nmin	131.3	0.0	1.000	0.700	0.650	920.83	52.06	0.00
		Mmax	142.1	0.0	1.000	0.700	0.650	920.83	57.15	0.00
		Mmin	80.4	0.0	1.000	0.700	0.650	920.83	30.08	0.00
		Qmax	80.4	0.0	1.000	0.700	0.650	920.83	30.08	0.00
		Qmin	142.1	0.0	1.000	0.700	0.650	920.83	57.15	0.00
	63	Nmax	80.8	0.0	1.000	0.700	0.650	920.83	30.24	0.00
		Nmin	132.5	0.0	1.000	0.700	0.650	920.83	52.65	0.00
		Mmax	145.4	0.0	1.000	0.700	0.650	920.83	58.77	0.00
		Mmin	80.8	0.0	1.000	0.700	0.650	920.83	30.24	0.00
		Qmax	80.8	0.0	1.000	0.700	0.650	920.83	30.24	0.00
		Qmin	145.4	0.0	1.000	0.700	0.650	920.83	58.77	0.00
64	63	Nmax	80.8	0.0	1.000	0.700	0.650	920.83	30.24	0.00
		Nmin	132.5	0.0	1.000	0.700	0.650	920.83	52.65	0.00
		Mmax	145.4	0.0	1.000	0.700	0.650	920.83	58.77	0.00
		Mmin	80.8	0.0	1.000	0.700	0.650	920.83	30.24	0.00
		Qmax	80.8	0.0	1.000	0.700	0.650	920.83	30.24	0.00
		Qmin	145.4	0.0	1.000	0.700	0.650	920.83	58.77	0.00
	64	Nmax	81.2	0.0	1.000	0.700	0.650	920.83	30.41	0.00
		Nmin	133.8	0.0	1.000	0.700	0.650	920.83	53.25	0.00
		Mmax	148.8	0.0	1.000	0.700	0.650	920.83	60.41	0.00

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES EN UN SÓLO LADO

FECHA: 28/02/2006

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As1 (cm2/m)	As2 (cm2/m)
		Mmin	81.2	0.0	1.000	0.700	0.650	920.83	30.41	0.00
		Qmax	81.2	0.0	1.000	0.700	0.650	920.83	30.41	0.00
		Qmin	148.8	0.0	1.000	0.700	0.650	920.83	60.41	0.00

ARMADOJUL_2000_10000_1m.xls PI RIERA DE CAN DE JULIA 28/02/2006
Kv=2000 Kh=10000

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES EN UN SÓLO LADO

FECHA: 28/02/2006

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
1	1	Nmax	31.9	1.000	0.700	0.650	325.0	30.4	25.3	2.8
		Nmin	43.6	1.000	0.700	0.650	325.0	35.8	29.9	5.9
		Mmax	31.9	1.000	0.700	0.650	325.0	30.4	25.3	2.8
		Mmin	43.6	1.000	0.700	0.650	325.0	35.8	29.9	5.9
		Qmax	31.9	1.000	0.700	0.650	325.0	30.4	25.3	2.8
		Qmin	43.6	1.000	0.700	0.650	325.0	35.8	29.9	5.9
	2	Nmax	29.4	1.000	0.700	0.650	325.0	29.0	24.1	2.2
		Nmin	41.1	1.000	0.700	0.650	325.0	34.2	28.5	5.4
		Mmax	29.4	1.000	0.700	0.650	325.0	29.0	24.1	2.2
		Mmin	41.1	1.000	0.700	0.650	325.0	34.2	28.5	5.4
		Qmax	29.4	1.000	0.700	0.650	325.0	29.0	24.1	2.2
		Qmin	41.1	1.000	0.700	0.650	325.0	34.2	28.5	5.4
2	2	Nmax	27.6	1.000	0.700	0.650	325.0	29.0	-	No necesita
		Nmin	38.2	1.000	0.700	0.650	325.0	34.2	28.5	4.1
		Mmax	27.6	1.000	0.700	0.650	325.0	29.0	-	No necesita
		Mmin	38.2	1.000	0.700	0.650	325.0	34.2	28.5	4.1
		Qmax	27.6	1.000	0.700	0.650	325.0	29.0	-	No necesita
		Qmin	38.2	1.000	0.700	0.650	325.0	34.2	28.5	4.1
	3	Nmax	25.2	1.000	0.700	0.650	325.0	27.7	-	No necesita
		Nmin	35.8	1.000	0.700	0.650	325.0	32.8	27.3	3.6
		Mmax	25.2	1.000	0.700	0.650	325.0	27.7	-	No necesita
		Mmin	35.8	1.000	0.700	0.650	325.0	32.8	27.3	3.6
		Qmax	25.2	1.000	0.700	0.650	325.0	27.7	-	No necesita
		Qmin	35.8	1.000	0.700	0.650	325.0	32.8	27.3	3.6
3	3	Nmax	22.2	1.000	0.700	0.650	325.0	27.7	-	No necesita
		Nmin	30.9	1.000	0.700	0.650	325.0	32.8	-	No necesita
		Mmax	22.2	1.000	0.700	0.650	325.0	27.7	-	No necesita
		Mmin	30.9	1.000	0.700	0.650	325.0	32.8	-	No necesita
		Qmax	22.2	1.000	0.700	0.650	325.0	27.7	-	No necesita
		Qmin	30.9	1.000	0.700	0.650	325.0	32.8	-	No necesita
	4	Nmax	20.0	1.000	0.700	0.650	325.0	26.6	-	No necesita
		Nmin	28.6	1.000	0.700	0.650	325.0	31.5	-	No necesita
		Mmax	20.0	1.000	0.700	0.650	325.0	26.6	-	No necesita
		Mmin	28.6	1.000	0.700	0.650	325.0	31.5	-	No necesita
		Qmax	20.0	1.000	0.700	0.650	325.0	26.6	-	No necesita
		Qmin	28.6	1.000	0.700	0.650	325.0	31.5	-	No necesita
4	4	Nmax	16.3	1.000	0.700	0.650	325.0	26.6	-	No necesita
		Nmin	22.4	1.000	0.700	0.650	325.0	31.5	-	No necesita
		Mmax	16.3	1.000	0.700	0.650	325.0	26.6	-	No necesita
		Mmin	22.4	1.000	0.700	0.650	325.0	31.5	-	No necesita
		Qmax	16.3	1.000	0.700	0.650	325.0	26.6	-	No necesita
		Qmin	22.4	1.000	0.700	0.650	325.0	31.5	-	No necesita
	5	Nmax	14.2	1.000	0.700	0.650	325.0	25.7	-	No necesita
		Nmin	20.3	1.000	0.700	0.650	325.0	30.6	-	No necesita
		Mmax	14.2	1.000	0.700	0.650	325.0	25.7	-	No necesita
		Mmin	20.3	1.000	0.700	0.650	325.0	30.6	-	No necesita
		Qmax	14.2	1.000	0.700	0.650	325.0	25.7	-	No necesita
		Qmin	20.3	1.000	0.700	0.650	325.0	30.6	-	No necesita
5	5	Nmax	10.2	1.000	0.700	0.650	325.0	25.7	-	No necesita
		Nmin	13.6	1.000	0.700	0.650	325.0	30.6	-	No necesita
		Mmax	10.2	1.000	0.700	0.650	325.0	25.7	-	No necesita

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES EN UN SÓLO LADO

FECHA: 28/02/2006

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
		Mmin	13.6	1.000	0.700	0.650	325.0	30.6	-	No necesita
		Qmax	10.2	1.000	0.700	0.650	325.0	25.7	-	No necesita
		Qmin	13.6	1.000	0.700	0.650	325.0	30.6	-	No necesita
	6	Nmax	8.3	1.000	0.700	0.650	325.0	25.2	-	No necesita
		Nmin	11.6	1.000	0.700	0.650	325.0	30.0	-	No necesita
		Mmax	8.3	1.000	0.700	0.650	325.0	25.2	-	No necesita
		Mmin	8.3	1.000	0.700	0.650	325.0	30.1	-	No necesita
		Qmax	8.3	1.000	0.700	0.650	325.0	25.2	-	No necesita
		Qmin	11.6	1.000	0.700	0.650	325.0	30.0	-	No necesita
6	6	Nmax	4.4	1.000	0.700	0.650	325.0	25.2	-	No necesita
		Nmin	4.9	1.000	0.700	0.650	325.0	30.0	-	No necesita
		Mmax	4.4	1.000	0.700	0.650	325.0	25.2	-	No necesita
		Mmin	4.4	1.000	0.700	0.650	325.0	30.1	-	No necesita
		Qmax	4.4	1.000	0.700	0.650	325.0	30.1	-	No necesita
		Qmin	4.9	1.000	0.700	0.650	325.0	30.0	-	No necesita
	7	Nmax	2.6	1.000	0.700	0.650	325.0	25.0	-	No necesita
		Nmin	3.1	1.000	0.700	0.650	325.0	29.9	-	No necesita
		Mmax	2.6	1.000	0.700	0.650	325.0	25.0	-	No necesita
		Mmin	2.8	1.000	0.700	0.650	325.0	30.1	-	No necesita
		Qmax	2.8	1.000	0.700	0.650	325.0	30.1	-	No necesita
		Qmin	3.1	1.000	0.700	0.650	325.0	29.9	-	No necesita
7	7	Nmax	0.8	1.000	0.700	0.650	325.0	25.0	-	No necesita
		Nmin	3.0	1.000	0.700	0.650	325.0	29.9	-	No necesita
		Mmax	0.8	1.000	0.700	0.650	325.0	25.0	-	No necesita
		Mmin	8.0	1.000	0.700	0.650	325.0	30.1	-	No necesita
		Qmax	8.0	1.000	0.700	0.650	325.0	30.1	-	No necesita
		Qmin	0.8	1.000	0.700	0.650	325.0	25.0	-	No necesita
	8	Nmax	2.5	1.000	0.700	0.650	325.0	25.1	-	No necesita
		Nmin	4.7	1.000	0.700	0.650	325.0	30.0	-	No necesita
		Mmax	2.5	1.000	0.700	0.650	325.0	25.1	-	No necesita
		Mmin	9.7	1.000	0.700	0.650	325.0	30.5	-	No necesita
		Qmax	9.7	1.000	0.700	0.650	325.0	30.5	-	No necesita
		Qmin	2.5	1.000	0.700	0.650	325.0	25.1	-	No necesita
8	8	Nmax	4.9	1.000	0.700	0.650	325.0	25.1	-	No necesita
		Nmin	9.3	1.000	0.700	0.650	325.0	30.0	-	No necesita
		Mmax	4.9	1.000	0.700	0.650	325.0	25.1	-	No necesita
		Mmin	14.4	1.000	0.700	0.650	325.0	30.5	-	No necesita
		Qmax	14.4	1.000	0.700	0.650	325.0	30.5	-	No necesita
		Qmin	4.9	1.000	0.700	0.650	325.0	25.1	-	No necesita
	9	Nmax	6.5	1.000	0.700	0.650	325.0	25.4	-	No necesita
		Nmin	10.9	1.000	0.700	0.650	325.0	30.5	-	No necesita
		Mmax	6.5	1.000	0.700	0.650	325.0	25.4	-	No necesita
		Mmin	16.0	1.000	0.700	0.650	325.0	31.2	-	No necesita
		Qmax	16.0	1.000	0.700	0.650	325.0	31.2	-	No necesita
		Qmin	6.5	1.000	0.700	0.650	325.0	25.4	-	No necesita
9	9	Nmax	7.7	1.000	0.700	0.650	325.0	25.4	-	No necesita
		Nmin	13.7	1.000	0.700	0.650	325.0	30.5	-	No necesita
		Mmax	7.7	1.000	0.700	0.650	325.0	25.4	-	No necesita
		Mmin	18.9	1.000	0.700	0.650	325.0	31.2	-	No necesita
		Qmax	18.9	1.000	0.700	0.650	325.0	31.2	-	No necesita
		Qmin	7.7	1.000	0.700	0.650	325.0	25.4	-	No necesita

ARMADOJUL_2000_10000_1m.xls PI RIERA DE CAN DE JULIA 28/02/2006
Kv=2000 Kh=10000

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES EN UN SÓLO LADO

FECHA: 28/02/2006

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
	10	Nmax	9.2	1.000	0.700	0.650	325.0	25.9	-	No necesita
		Nmin	15.1	1.000	0.700	0.650	325.0	31.1	-	No necesita
		Mmax	9.2	1.000	0.700	0.650	325.0	25.9	-	No necesita
		Mmin	20.4	1.000	0.700	0.650	325.0	32.0	-	No necesita
		Qmax	20.4	1.000	0.700	0.650	325.0	32.0	-	No necesita
		Qmin	9.2	1.000	0.700	0.650	325.0	25.9	-	No necesita
10	10	Nmax	8.8	1.000	0.700	0.650	325.0	25.9	-	No necesita
		Nmin	15.4	1.000	0.700	0.650	325.0	31.1	-	No necesita
		Mmax	8.8	1.000	0.700	0.650	325.0	25.9	-	No necesita
		Mmin	20.8	1.000	0.700	0.650	325.0	32.0	-	No necesita
		Qmax	20.8	1.000	0.700	0.650	325.0	32.0	-	No necesita
		Qmin	8.8	1.000	0.700	0.650	325.0	25.9	-	No necesita
	11	Nmax	10.1	1.000	0.700	0.650	325.0	26.4	-	No necesita
		Nmin	16.6	1.000	0.700	0.650	325.0	31.8	-	No necesita
		Mmax	10.1	1.000	0.700	0.650	325.0	26.4	-	No necesita
		Mmin	22.1	1.000	0.700	0.650	325.0	32.9	-	No necesita
		Qmax	22.1	1.000	0.700	0.650	325.0	32.9	-	No necesita
		Qmin	10.1	1.000	0.700	0.650	325.0	26.4	-	No necesita
11	11	Nmax	7.6	1.000	0.700	0.650	325.0	26.4	-	No necesita
		Nmin	13.7	1.000	0.700	0.650	325.0	31.8	-	No necesita
		Mmax	7.6	1.000	0.700	0.650	325.0	26.4	-	No necesita
		Mmin	19.2	1.000	0.700	0.650	325.0	32.9	-	No necesita
		Qmax	19.2	1.000	0.700	0.650	325.0	32.9	-	No necesita
		Qmin	7.6	1.000	0.700	0.650	325.0	26.4	-	No necesita
	12	Nmax	8.8	1.000	0.700	0.650	325.0	26.9	-	No necesita
		Nmin	14.8	1.000	0.700	0.650	325.0	32.4	-	No necesita
		Mmax	8.8	1.000	0.700	0.650	325.0	26.9	-	No necesita
		Mmin	20.3	1.000	0.700	0.650	325.0	33.7	-	No necesita
		Qmax	20.3	1.000	0.700	0.650	325.0	33.7	-	No necesita
		Qmin	8.8	1.000	0.700	0.650	325.0	26.9	-	No necesita
12	12	Nmax	3.9	1.000	0.700	0.650	325.0	26.9	-	No necesita
		Nmin	8.0	1.000	0.700	0.650	325.0	32.4	-	No necesita
		Mmax	3.9	1.000	0.700	0.650	325.0	26.9	-	No necesita
		Mmin	13.4	1.000	0.700	0.650	325.0	33.7	-	No necesita
		Qmax	13.4	1.000	0.700	0.650	325.0	33.7	-	No necesita
		Qmin	3.9	1.000	0.700	0.650	325.0	26.9	-	No necesita
	13	Nmax	4.9	1.000	0.700	0.650	325.0	27.1	-	No necesita
		Nmin	9.0	1.000	0.700	0.650	325.0	32.7	-	No necesita
		Mmax	4.9	1.000	0.700	0.650	325.0	27.1	-	No necesita
		Mmin	14.4	1.000	0.700	0.650	325.0	34.2	-	No necesita
		Qmax	14.4	1.000	0.700	0.650	325.0	34.2	-	No necesita
		Qmin	4.9	1.000	0.700	0.650	325.0	27.1	-	No necesita
13	13	Nmax	70.1	1.000	0.800	0.750	375.0	27.6	23.0	17.4
		Nmin	108.7	1.000	0.800	0.750	375.0	34.5	28.7	29.6
		Mmax	70.1	1.000	0.800	0.750	375.0	27.6	23.0	17.4
		Mmin	108.7	1.000	0.800	0.750	375.0	34.5	28.7	29.6
		Qmax	70.1	1.000	0.800	0.750	375.0	27.6	23.0	17.4
		Qmin	115.4	1.000	0.800	0.750	375.0	33.1	27.6	32.5
	15	Nmax	65.4	1.000	0.800	0.750	375.0	24.0	20.0	16.8
		Nmin	105.6	1.000	0.800	0.750	375.0	30.6	25.5	29.7
		Mmax	65.4	1.000	0.800	0.750	375.0	24.0	20.0	16.8

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES EN UN SÓLO LADO

FECHA: 28/02/2006

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
		Mmin	105.6	1.000	0.800	0.750	375.0	30.6	25.5	29.7
		Qmax	65.4	1.000	0.800	0.750	375.0	24.0	20.0	16.8
		Qmin	107.7	1.000	0.800	0.750	375.0	28.7	24.0	31.0
14	15	Nmax	65.3	1.000	0.800	0.750	375.0	24.0	20.0	16.8
		Nmin	105.5	1.000	0.800	0.750	375.0	30.6	25.5	29.6
		Mmax	65.3	1.000	0.800	0.750	375.0	24.0	20.0	16.8
		Mmin	105.5	1.000	0.800	0.750	375.0	30.6	25.5	29.6
		Qmax	65.3	1.000	0.800	0.750	375.0	24.0	20.0	16.8
		Qmin	107.5	1.000	0.800	0.750	375.0	28.7	24.0	31.0
	17	Nmax	60.6	1.000	0.800	0.750	375.0	19.6	16.3	16.4
		Nmin	102.4	1.000	0.800	0.750	375.0	26.0	21.7	29.9
		Mmax	60.6	1.000	0.800	0.750	375.0	19.6	16.3	16.4
		Mmin	102.4	1.000	0.800	0.750	375.0	26.0	21.7	29.9
		Qmax	60.6	1.000	0.800	0.750	375.0	19.6	16.3	16.4
		Qmin	102.4	1.000	0.800	0.750	375.0	26.0	21.7	29.9
15	17	Nmax	60.6	1.000	0.800	0.750	375.0	19.6	16.3	16.4
		Nmin	102.4	1.000	0.800	0.750	375.0	26.0	21.7	29.9
		Mmax	60.6	1.000	0.800	0.750	375.0	19.6	16.3	16.4
		Mmin	102.4	1.000	0.800	0.750	375.0	26.0	21.7	29.9
		Qmax	60.6	1.000	0.800	0.750	375.0	19.6	16.3	16.4
		Qmin	102.4	1.000	0.800	0.750	375.0	26.0	21.7	29.9
	19	Nmax	55.9	1.000	0.800	0.750	375.0	12.1	10.1	17.0
		Nmin	99.2	1.000	0.800	0.750	375.0	19.4	16.1	30.8
		Mmax	55.9	1.000	0.800	0.750	375.0	12.1	10.1	17.0
		Mmin	99.2	1.000	0.800	0.750	375.0	19.4	16.1	30.8
		Qmax	55.9	1.000	0.800	0.750	375.0	12.1	10.1	17.0
		Qmin	99.2	1.000	0.800	0.750	375.0	19.4	16.1	30.8
16	19	Nmax	55.9	1.000	0.800	0.750	375.0	12.1	10.1	17.0
		Nmin	99.2	1.000	0.800	0.750	375.0	19.3	16.1	30.8
		Mmax	55.9	1.000	0.800	0.750	375.0	12.1	10.1	17.0
		Mmin	99.2	1.000	0.800	0.750	375.0	19.3	16.1	30.8
		Qmax	55.9	1.000	0.800	0.750	375.0	12.1	10.1	17.0
		Qmin	99.2	1.000	0.800	0.750	375.0	19.3	16.1	30.8
	21	Nmax	51.2	1.000	0.800	0.750	375.0	15.1	12.6	14.3
		Nmin	96.1	1.000	0.800	0.750	375.0	15.1	12.6	30.9
		Mmax	84.3	1.000	0.800	0.750	375.0	17.5	14.6	25.8
		Mmin	96.1	1.000	0.800	0.750	375.0	15.1	12.6	30.9
		Qmax	51.2	1.000	0.800	0.750	375.0	15.1	12.6	14.3
		Qmin	96.1	1.000	0.800	0.750	375.0	15.1	12.6	30.9
17	21	Nmax	51.1	1.000	0.800	0.750	375.0	15.1	12.6	14.3
		Nmin	96.0	1.000	0.800	0.750	375.0	15.1	12.6	30.9
		Mmax	84.2	1.000	0.800	0.750	375.0	17.5	14.6	25.8
		Mmin	96.0	1.000	0.800	0.750	375.0	15.1	12.6	30.9
		Qmax	51.1	1.000	0.800	0.750	375.0	15.1	12.6	14.3
		Qmin	96.0	1.000	0.800	0.750	375.0	15.1	12.6	30.9
	23	Nmax	46.4	1.000	0.800	0.750	375.0	20.2	16.8	11.0
		Nmin	93.0	1.000	0.800	0.750	375.0	22.7	18.9	27.4
		Mmax	76.5	1.000	0.800	0.750	375.0	23.8	19.8	21.0
		Mmin	46.4	1.000	0.800	0.750	375.0	20.2	16.8	11.0
		Qmax	46.4	1.000	0.800	0.750	375.0	20.2	16.8	11.0
		Qmin	93.0	1.000	0.800	0.750	375.0	22.7	18.9	27.4

ARMADOJUL_2000_10000_1m.xls PI RIERA DE CAN DE JULIA 28/02/2006
Kv=2000 Kh=10000

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES EN UN SÓLO LADO

FECHA: 28/02/2006

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
18	23	Nmax	46.4	1.000	0.800	0.750	375.0	20.2	16.8	10.9
		Nmin	92.9	1.000	0.800	0.750	375.0	22.7	18.9	27.4
		Mmax	76.4	1.000	0.800	0.750	375.0	23.7	19.8	21.0
		Mmin	46.4	1.000	0.800	0.750	375.0	20.2	16.8	10.9
		Qmax	46.4	1.000	0.800	0.750	375.0	20.2	16.8	10.9
		Qmin	92.9	1.000	0.800	0.750	375.0	22.7	18.9	27.4
	25	Nmax	36.9	1.000	0.800	0.750	375.0	25.6	21.3	5.8
		Nmin	74.1	1.000	0.800	0.750	375.0	30.9	25.7	17.9
		Mmax	74.1	1.000	0.800	0.750	375.0	30.9	25.7	17.9
		Mmin	36.9	1.000	0.800	0.750	375.0	25.6	21.3	5.8
		Qmax	36.9	1.000	0.800	0.750	375.0	25.6	21.3	5.8
		Qmin	74.1	1.000	0.800	0.750	375.0	30.9	25.7	17.9
19	25	Nmax	37.0	1.000	0.800	0.750	375.0	25.6	21.3	5.8
		Nmin	74.1	1.000	0.800	0.750	375.0	30.9	25.7	17.9
		Mmax	74.1	1.000	0.800	0.750	375.0	30.9	25.7	17.9
		Mmin	37.0	1.000	0.800	0.750	375.0	25.6	21.3	5.8
		Qmax	37.0	1.000	0.800	0.750	375.0	25.6	21.3	5.8
		Qmin	74.1	1.000	0.800	0.750	375.0	30.9	25.7	17.9
	27	Nmax	27.5	1.000	0.800	0.750	375.0	28.7	-	No necesita
		Nmin	55.3	1.000	0.800	0.750	375.0	35.4	29.5	9.6
		Mmax	55.3	1.000	0.800	0.750	375.0	35.4	29.5	9.6
		Mmin	27.5	1.000	0.800	0.750	375.0	28.7	-	No necesita
		Qmax	27.5	1.000	0.800	0.750	375.0	28.7	-	No necesita
		Qmin	55.3	1.000	0.800	0.750	375.0	35.4	29.5	9.6
20	27	Nmax	27.5	1.000	0.800	0.750	375.0	28.7	-	No necesita
		Nmin	55.3	1.000	0.800	0.750	375.0	35.4	29.5	9.5
		Mmax	55.3	1.000	0.800	0.750	375.0	35.4	29.5	9.5
		Mmin	27.5	1.000	0.800	0.750	375.0	28.7	-	No necesita
		Qmax	27.5	1.000	0.800	0.750	375.0	28.7	-	No necesita
		Qmin	55.3	1.000	0.800	0.750	375.0	35.4	29.5	9.5
	29	Nmax	18.1	1.000	0.800	0.750	375.0	30.6	-	No necesita
		Nmin	36.5	1.000	0.800	0.750	375.0	38.3	-	No necesita
		Mmax	36.5	1.000	0.800	0.750	375.0	38.3	-	No necesita
		Mmin	18.1	1.000	0.800	0.750	375.0	30.6	-	No necesita
		Qmax	18.1	1.000	0.800	0.750	375.0	30.6	-	No necesita
		Qmin	36.5	1.000	0.800	0.750	375.0	38.3	-	No necesita
21	29	Nmax	18.1	1.000	0.800	0.750	375.0	30.6	-	No necesita
		Nmin	36.5	1.000	0.800	0.750	375.0	38.3	-	No necesita
		Mmax	36.5	1.000	0.800	0.750	375.0	38.3	-	No necesita
		Mmin	18.1	1.000	0.800	0.750	375.0	30.6	-	No necesita
		Qmax	18.1	1.000	0.800	0.750	375.0	30.6	-	No necesita
		Qmin	36.5	1.000	0.800	0.750	375.0	38.3	-	No necesita
	31	Nmax	8.7	1.000	0.800	0.750	375.0	31.6	-	No necesita
		Nmin	17.7	1.000	0.800	0.750	375.0	39.8	-	No necesita
		Mmax	17.7	1.000	0.800	0.750	375.0	39.8	-	No necesita
		Mmin	8.7	1.000	0.800	0.750	375.0	31.6	-	No necesita
		Qmax	8.7	1.000	0.800	0.750	375.0	31.6	-	No necesita
		Qmin	17.7	1.000	0.800	0.750	375.0	39.8	-	No necesita
22	31	Nmax	8.7	1.000	0.800	0.750	375.0	31.6	-	No necesita
		Nmin	17.7	1.000	0.800	0.750	375.0	39.8	-	No necesita
		Mmax	17.7	1.000	0.800	0.750	375.0	39.8	-	No necesita

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES EN UN SÓLO LADO

FECHA: 28/02/2006

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
		Mmin	8.7	1.000	0.800	0.750	375.0	31.6	-	No necesita
		Qmax	8.7	1.000	0.800	0.750	375.0	31.6	-	No necesita
		Qmin	17.7	1.000	0.800	0.750	375.0	39.8	-	No necesita
	33	Nmax	0.7	1.000	0.800	0.750	375.0	31.9	-	No necesita
		Nmin	1.1	1.000	0.800	0.750	375.0	40.3	-	No necesita
		Mmax	1.1	1.000	0.800	0.750	375.0	40.3	-	No necesita
		Mmin	0.7	1.000	0.800	0.750	375.0	31.9	-	No necesita
		Qmax	1.1	1.000	0.800	0.750	375.0	40.3	-	No necesita
		Qmin	0.7	1.000	0.800	0.750	375.0	31.9	-	No necesita
23	33	Nmax	0.7	1.000	0.800	0.750	375.0	31.9	-	No necesita
		Nmin	1.1	1.000	0.800	0.750	375.0	40.3	-	No necesita
		Mmax	1.1	1.000	0.800	0.750	375.0	40.3	-	No necesita
		Mmin	0.7	1.000	0.800	0.750	375.0	31.9	-	No necesita
		Qmax	1.1	1.000	0.800	0.750	375.0	40.3	-	No necesita
		Qmin	0.7	1.000	0.800	0.750	375.0	31.9	-	No necesita
	35	Nmax	10.1	1.000	0.800	0.750	375.0	31.5	-	No necesita
		Nmin	19.9	1.000	0.800	0.750	375.0	39.7	-	No necesita
		Mmax	19.9	1.000	0.800	0.750	375.0	39.7	-	No necesita
		Mmin	10.1	1.000	0.800	0.750	375.0	31.5	-	No necesita
		Qmax	19.9	1.000	0.800	0.750	375.0	39.7	-	No necesita
		Qmin	10.1	1.000	0.800	0.750	375.0	31.5	-	No necesita
24	35	Nmax	10.1	1.000	0.800	0.750	375.0	31.5	-	No necesita
		Nmin	19.8	1.000	0.800	0.750	375.0	39.7	-	No necesita
		Mmax	19.8	1.000	0.800	0.750	375.0	39.7	-	No necesita
		Mmin	10.1	1.000	0.800	0.750	375.0	31.5	-	No necesita
		Qmax	19.8	1.000	0.800	0.750	375.0	39.7	-	No necesita
		Qmin	10.1	1.000	0.800	0.750	375.0	31.5	-	No necesita
	37	Nmax	19.5	1.000	0.800	0.750	375.0	30.4	-	No necesita
		Nmin	38.7	1.000	0.800	0.750	375.0	38.0	31.7	2.6
		Mmax	38.7	1.000	0.800	0.750	375.0	38.0	31.7	2.6
		Mmin	19.5	1.000	0.800	0.750	375.0	30.4	-	No necesita
		Qmax	38.7	1.000	0.800	0.750	375.0	38.0	31.7	2.6
		Qmin	19.5	1.000	0.800	0.750	375.0	30.4	-	No necesita
25	37	Nmax	19.5	1.000	0.800	0.750	375.0	30.4	-	No necesita
		Nmin	38.7	1.000	0.800	0.750	375.0	38.0	31.7	2.6
		Mmax	38.7	1.000	0.800	0.750	375.0	38.0	31.7	2.6
		Mmin	19.5	1.000	0.800	0.750	375.0	30.4	-	No necesita
		Qmax	38.7	1.000	0.800	0.750	375.0	38.0	31.7	2.6
		Qmin	19.5	1.000	0.800	0.750	375.0	30.4	-	No necesita
	39	Nmax	28.9	1.000	0.800	0.750	375.0	28.3	23.6	2.0
		Nmin	57.4	1.000	0.800	0.750	375.0	35.0	29.2	10.5
		Mmax	57.4	1.000	0.800	0.750	375.0	35.0	29.2	10.5
		Mmin	28.9	1.000	0.800	0.750	375.0	28.3	23.6	2.0
		Qmax	57.4	1.000	0.800	0.750	375.0	35.0	29.2	10.5
		Qmin	28.9	1.000	0.800	0.750	375.0	28.3	23.6	2.0
26	39	Nmax	28.9	1.000	0.800	0.750	375.0	28.3	23.6	2.0
		Nmin	57.4	1.000	0.800	0.750	375.0	35.0	29.2	10.5
		Mmax	57.4	1.000	0.800	0.750	375.0	35.0	29.2	10.5
		Mmin	28.9	1.000	0.800	0.750	375.0	28.3	23.6	2.0
		Qmax	57.4	1.000	0.800	0.750	375.0	35.0	29.2	10.5
		Qmin	28.9	1.000	0.800	0.750	375.0	28.3	23.6	2.0

ARMADOJUL_2000_10000_1m.xls PI RIERA DE CAN DE JULIA 28/02/2006
Kv=2000 Kh=10000

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES EN UN SÓLO LADO

FECHA: 28/02/2006

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
	41	Nmax	38.4	1.000	0.800	0.750	375.0	25.0	20.8	6.5
		Nmin	76.2	1.000	0.800	0.750	375.0	30.2	25.2	18.9
		Mmax	76.2	1.000	0.800	0.750	375.0	30.2	25.2	18.9
		Mmin	38.4	1.000	0.800	0.750	375.0	25.0	20.8	6.5
		Qmax	76.2	1.000	0.800	0.750	375.0	30.2	25.2	18.9
		Qmin	38.4	1.000	0.800	0.750	375.0	25.0	20.8	6.5
27	41	Nmax	38.3	1.000	0.800	0.750	375.0	25.0	20.8	6.5
		Nmin	76.2	1.000	0.800	0.750	375.0	30.2	25.2	18.9
		Mmax	76.2	1.000	0.800	0.750	375.0	30.2	25.2	18.9
		Mmin	38.3	1.000	0.800	0.750	375.0	25.0	20.8	6.5
		Qmax	76.2	1.000	0.800	0.750	375.0	30.2	25.2	18.9
		Qmin	38.3	1.000	0.800	0.750	375.0	25.0	20.8	6.5
	43	Nmax	47.8	1.000	0.800	0.750	375.0	19.0	15.8	11.8
		Nmin	95.0	1.000	0.800	0.750	375.0	21.2	17.7	28.7
		Mmax	78.5	1.000	0.800	0.750	375.0	22.4	18.7	22.2
		Mmin	47.8	1.000	0.800	0.750	375.0	19.0	15.8	11.8
		Qmax	95.0	1.000	0.800	0.750	375.0	21.2	17.7	28.7
		Qmin	47.8	1.000	0.800	0.750	375.0	19.0	15.8	11.8
28	43	Nmax	47.7	1.000	0.800	0.750	375.0	19.0	15.8	11.8
		Nmin	95.0	1.000	0.800	0.750	375.0	21.2	17.7	28.6
		Mmax	78.4	1.000	0.800	0.750	375.0	22.4	18.7	22.1
		Mmin	47.7	1.000	0.800	0.750	375.0	19.0	15.8	11.8
		Qmax	95.0	1.000	0.800	0.750	375.0	21.2	17.7	28.6
		Qmin	47.7	1.000	0.800	0.750	375.0	19.0	15.8	11.8
	45	Nmax	52.4	1.000	0.800	0.750	375.0	12.4	10.4	15.6
		Nmin	98.1	1.000	0.800	0.750	375.0	12.4	10.4	32.5
		Mmax	86.1	1.000	0.800	0.750	375.0	14.5	12.1	27.4
		Mmin	98.1	1.000	0.800	0.750	375.0	12.4	10.4	32.5
		Qmax	98.1	1.000	0.800	0.750	375.0	12.4	10.4	32.5
		Qmin	52.4	1.000	0.800	0.750	375.0	12.4	10.4	15.6
29	45	Nmax	52.5	1.000	0.800	0.750	375.0	12.4	10.4	15.6
		Nmin	98.1	1.000	0.800	0.750	375.0	12.4	10.4	32.5
		Mmax	86.2	1.000	0.800	0.750	375.0	14.5	12.1	27.4
		Mmin	98.1	1.000	0.800	0.750	375.0	12.4	10.4	32.5
		Qmax	98.1	1.000	0.800	0.750	375.0	12.4	10.4	32.5
		Qmin	52.5	1.000	0.800	0.750	375.0	12.4	10.4	15.6
	47	Nmax	57.2	1.000	0.800	0.750	375.0	15.0	12.5	16.5
		Nmin	101.2	1.000	0.800	0.750	375.0	21.4	17.8	30.9
		Mmax	57.2	1.000	0.800	0.750	375.0	15.0	12.5	16.5
		Mmin	101.2	1.000	0.800	0.750	375.0	21.4	17.8	30.9
		Qmax	101.2	1.000	0.800	0.750	375.0	21.4	17.8	30.9
		Qmin	57.2	1.000	0.800	0.750	375.0	15.0	12.5	16.5
30	47	Nmax	57.2	1.000	0.800	0.750	375.0	15.0	12.5	16.5
		Nmin	101.2	1.000	0.800	0.750	375.0	21.4	17.8	30.9
		Mmax	57.2	1.000	0.800	0.750	375.0	15.0	12.5	16.5
		Mmin	101.2	1.000	0.800	0.750	375.0	21.4	17.8	30.9
		Qmax	101.2	1.000	0.800	0.750	375.0	21.4	17.8	30.9
		Qmin	57.2	1.000	0.800	0.750	375.0	15.0	12.5	16.5
	49	Nmax	61.9	1.000	0.800	0.750	375.0	21.0	17.5	16.4
		Nmin	104.4	1.000	0.800	0.750	375.0	27.3	22.8	30.2
		Mmax	61.9	1.000	0.800	0.750	375.0	21.0	17.5	16.4

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES EN UN SÓLO LADO

FECHA: 28/02/2006

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
		Mmin	104.4	1.000	0.800	0.750	375.0	27.3	22.8	30.2
		Qmax	104.4	1.000	0.800	0.750	375.0	27.3	22.8	30.2
		Qmin	61.9	1.000	0.800	0.750	375.0	21.0	17.5	16.4
31	49	Nmax	62.0	1.000	0.800	0.750	375.0	21.0	17.5	16.5
		Nmin	104.5	1.000	0.800	0.750	375.0	27.3	22.8	30.2
		Mmax	62.0	1.000	0.800	0.750	375.0	21.0	17.5	16.5
		Mmin	104.5	1.000	0.800	0.750	375.0	27.3	22.8	30.2
		Qmax	104.5	1.000	0.800	0.750	375.0	27.3	22.8	30.2
		Qmin	62.0	1.000	0.800	0.750	375.0	21.0	17.5	16.5
	51	Nmax	66.7	1.000	0.800	0.750	375.0	25.1	20.9	16.9
		Nmin	107.5	1.000	0.800	0.750	375.0	31.8	26.5	30.0
		Mmax	66.7	1.000	0.800	0.750	375.0	25.1	20.9	16.9
		Mmin	107.5	1.000	0.800	0.750	375.0	31.8	26.5	30.0
		Qmax	109.6	1.000	0.800	0.750	375.0	30.0	25.0	31.3
		Qmin	66.7	1.000	0.800	0.750	375.0	25.1	20.9	16.9
32	51	Nmax	66.6	1.000	0.800	0.750	375.0	25.1	20.9	16.9
		Nmin	107.5	1.000	0.800	0.750	375.0	31.8	26.5	30.0
		Mmax	66.6	1.000	0.800	0.750	375.0	25.1	20.9	16.9
		Mmin	107.5	1.000	0.800	0.750	375.0	31.8	26.5	30.0
		Qmax	109.5	1.000	0.800	0.750	375.0	29.9	25.0	31.3
		Qmin	66.6	1.000	0.800	0.750	375.0	25.1	20.9	16.9
	64	Nmax	71.3	1.000	0.800	0.750	375.0	28.5	23.8	17.6
		Nmin	110.6	1.000	0.800	0.750	375.0	35.5	29.6	30.0
		Mmax	71.3	1.000	0.800	0.750	375.0	28.5	23.8	17.6
		Mmin	110.6	1.000	0.800	0.750	375.0	35.5	29.6	30.0
		Qmax	117.3	1.000	0.800	0.750	375.0	34.1	28.4	32.9
		Qmin	71.3	1.000	0.800	0.750	375.0	28.5	23.8	17.6
33	1	Nmax	113.2	1.000	0.700	0.650	325.0	34.9	29.1	36.0
		Nmin	76.7	1.000	0.700	0.650	325.0	30.4	25.3	22.0
		Mmax	119.6	1.000	0.700	0.650	325.0	35.8	29.9	38.4
		Mmin	76.7	1.000	0.700	0.650	325.0	30.4	25.3	22.0
		Qmax	119.6	1.000	0.700	0.650	325.0	35.8	29.9	38.4
		Qmin	76.7	1.000	0.700	0.650	325.0	30.4	25.3	22.0
	14	Nmax	114.1	1.000	0.700	0.650	325.0	30.8	25.7	37.8
		Nmin	77.5	1.000	0.700	0.650	325.0	27.0	22.5	23.5
		Mmax	120.5	1.000	0.700	0.650	325.0	31.6	26.3	40.2
		Mmin	77.5	1.000	0.700	0.650	325.0	27.0	22.5	23.5
		Qmax	120.5	1.000	0.700	0.650	325.0	31.6	26.3	40.2
		Qmin	77.5	1.000	0.700	0.650	325.0	27.0	22.5	23.5
34	14	Nmax	101.2	1.000	0.700	0.650	325.0	30.8	25.7	32.3
		Nmin	68.6	1.000	0.700	0.650	325.0	27.0	22.5	19.7
		Mmax	106.9	1.000	0.700	0.650	325.0	31.6	26.3	34.4
		Mmin	68.6	1.000	0.700	0.650	325.0	27.0	22.5	19.7
		Qmax	106.9	1.000	0.700	0.650	325.0	31.6	26.3	34.4
		Qmin	68.6	1.000	0.700	0.650	325.0	27.0	22.5	19.7
	16	Nmax	102.0	1.000	0.700	0.650	325.0	26.4	22.0	34.2
		Nmin	69.5	1.000	0.700	0.650	325.0	23.4	19.5	21.3
		Mmax	107.8	1.000	0.700	0.650	325.0	27.1	22.6	36.4
		Mmin	69.5	1.000	0.700	0.650	325.0	23.4	19.5	21.3
		Qmax	107.8	1.000	0.700	0.650	325.0	27.1	22.6	36.4
		Qmin	69.5	1.000	0.700	0.650	325.0	23.4	19.5	21.3

ARMADOJUL_2000_10000_1m.xls PI RIERA DE CAN DE JULIA 28/02/2006
Kv=2000 Kh=10000

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES EN UN SÓLO LADO

FECHA: 28/02/2006

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
35	16	Nmax	89.9	1.000	0.700	0.650	325.0	26.4	22.0	29.0
		Nmin	61.0	1.000	0.700	0.650	325.0	23.4	19.5	17.7
		Mmax	95.0	1.000	0.700	0.650	325.0	27.1	22.6	31.0
		Mmin	61.0	1.000	0.700	0.650	325.0	23.4	19.5	17.7
		Qmax	95.0	1.000	0.700	0.650	325.0	27.1	22.6	31.0
		Qmin	61.0	1.000	0.700	0.650	325.0	23.4	19.5	17.7
	18	Nmax	90.7	1.000	0.700	0.650	325.0	21.1	17.6	31.3
		Nmin	61.9	1.000	0.700	0.650	325.0	19.0	15.9	19.6
		Mmax	95.9	1.000	0.700	0.650	325.0	21.8	18.1	33.2
		Mmin	61.9	1.000	0.700	0.650	325.0	19.0	15.9	19.6
		Qmax	95.9	1.000	0.700	0.650	325.0	21.8	18.1	33.2
		Qmin	61.9	1.000	0.700	0.650	325.0	19.0	15.9	19.6
36	18	Nmax	79.3	1.000	0.700	0.650	325.0	21.1	17.6	26.4
		Nmin	53.9	1.000	0.700	0.650	325.0	19.0	15.9	16.3
		Mmax	83.9	1.000	0.700	0.650	325.0	21.8	18.1	28.1
		Mmin	53.9	1.000	0.700	0.650	325.0	19.0	15.9	16.3
		Qmax	83.9	1.000	0.700	0.650	325.0	21.8	18.1	28.1
		Qmin	53.9	1.000	0.700	0.650	325.0	19.0	15.9	16.3
	20	Nmax	80.2	1.000	0.700	0.650	325.0	12.5	10.4	29.8
		Nmin	54.8	1.000	0.700	0.650	325.0	12.3	10.3	19.0
		Mmax	84.7	1.000	0.700	0.650	325.0	13.3	11.1	31.4
		Mmin	54.8	1.000	0.700	0.650	325.0	12.3	10.3	19.0
		Qmax	84.7	1.000	0.700	0.650	325.0	13.3	11.1	31.4
		Qmin	54.8	1.000	0.700	0.650	325.0	12.3	10.3	19.0
37	20	Nmax	69.5	1.000	0.700	0.650	325.0	12.5	10.4	25.3
		Nmin	47.3	1.000	0.700	0.650	325.0	12.3	10.3	15.8
		Mmax	73.5	1.000	0.700	0.650	325.0	13.3	11.1	26.7
		Mmin	47.3	1.000	0.700	0.650	325.0	12.3	10.3	15.8
		Qmax	73.5	1.000	0.700	0.650	325.0	13.3	11.1	26.7
		Qmin	47.3	1.000	0.700	0.650	325.0	12.3	10.3	15.8
	22	Nmax	70.4	1.000	0.700	0.650	325.0	16.4	13.7	24.2
		Nmin	48.1	1.000	0.700	0.650	325.0	13.5	11.2	15.8
		Mmax	48.1	1.000	0.700	0.650	325.0	13.5	11.2	15.8
		Mmin	70.4	1.000	0.700	0.650	325.0	16.4	13.7	24.2
		Qmax	74.4	1.000	0.700	0.650	325.0	16.3	13.6	26.0
		Qmin	48.1	1.000	0.700	0.650	325.0	13.5	11.2	15.8
38	22	Nmax	55.6	1.000	0.700	0.650	325.0	16.4	13.7	17.9
		Nmin	37.7	1.000	0.700	0.650	325.0	13.5	11.2	11.3
		Mmax	37.7	1.000	0.700	0.650	325.0	13.5	11.2	11.3
		Mmin	55.6	1.000	0.700	0.650	325.0	16.4	13.7	17.9
		Qmax	58.8	1.000	0.700	0.650	325.0	16.3	13.6	19.3
		Qmin	37.7	1.000	0.700	0.650	325.0	13.5	11.2	11.3
	24	Nmax	57.2	1.000	0.700	0.650	325.0	24.8	20.7	15.6
		Nmin	39.4	1.000	0.700	0.650	325.0	21.3	17.7	9.2
		Mmax	39.4	1.000	0.700	0.650	325.0	21.3	17.7	9.2
		Mmin	60.5	1.000	0.700	0.650	325.0	25.1	20.9	16.9
		Qmax	60.5	1.000	0.700	0.650	325.0	25.1	20.9	16.9
		Qmin	39.4	1.000	0.700	0.650	325.0	21.3	17.7	9.2
39	24	Nmax	40.6	1.000	0.700	0.650	325.0	24.8	20.7	8.5
		Nmin	27.5	1.000	0.700	0.650	325.0	21.3	17.7	4.2
		Mmax	27.5	1.000	0.700	0.650	325.0	21.3	17.7	4.2

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES EN UN SÓLO LADO

FECHA: 28/02/2006

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
		Mmin	42.9	1.000	0.700	0.650	325.0	25.1	20.9	9.4
		Qmax	42.9	1.000	0.700	0.650	325.0	25.1	20.9	9.4
		Qmin	27.5	1.000	0.700	0.650	325.0	21.3	17.7	4.2
	26	Nmax	42.2	1.000	0.700	0.650	325.0	28.8	24.0	7.8
		Nmin	29.2	1.000	0.700	0.650	325.0	24.8	20.6	3.6
		Mmax	29.2	1.000	0.700	0.650	325.0	24.8	20.6	3.6
		Mmin	44.6	1.000	0.700	0.650	325.0	29.2	24.3	8.6
		Qmax	44.6	1.000	0.700	0.650	325.0	29.2	24.3	8.6
		Qmin	29.2	1.000	0.700	0.650	325.0	24.8	20.6	3.6
40	26	Nmax	28.2	1.000	0.700	0.650	325.0	28.8	-	No necesita
		Nmin	19.0	1.000	0.700	0.650	325.0	24.8	-	No necesita
		Mmax	19.0	1.000	0.700	0.650	325.0	24.8	-	No necesita
		Mmin	29.7	1.000	0.700	0.650	325.0	29.2	24.3	2.3
		Qmax	29.7	1.000	0.700	0.650	325.0	29.2	24.3	2.3
		Qmin	19.0	1.000	0.700	0.650	325.0	24.8	-	No necesita
	28	Nmax	29.8	1.000	0.700	0.650	325.0	31.1	-	No necesita
		Nmin	20.7	1.000	0.700	0.650	325.0	26.8	-	No necesita
		Mmax	20.7	1.000	0.700	0.650	325.0	26.8	-	No necesita
		Mmin	31.4	1.000	0.700	0.650	325.0	31.6	-	No necesita
		Qmax	31.4	1.000	0.700	0.650	325.0	31.6	-	No necesita
		Qmin	20.7	1.000	0.700	0.650	325.0	26.8	-	No necesita
41	28	Nmax	17.7	1.000	0.700	0.650	325.0	31.1	-	No necesita
		Nmin	11.9	1.000	0.700	0.650	325.0	26.8	-	No necesita
		Mmax	11.9	1.000	0.700	0.650	325.0	26.8	-	No necesita
		Mmin	18.6	1.000	0.700	0.650	325.0	31.6	-	No necesita
		Qmax	18.6	1.000	0.700	0.650	325.0	31.6	-	No necesita
		Qmin	11.9	1.000	0.700	0.650	325.0	26.8	-	No necesita
	30	Nmax	19.4	1.000	0.700	0.650	325.0	32.5	-	No necesita
		Nmin	13.6	1.000	0.700	0.650	325.0	28.0	-	No necesita
		Mmax	13.6	1.000	0.700	0.650	325.0	28.0	-	No necesita
		Mmin	20.3	1.000	0.700	0.650	325.0	33.1	-	No necesita
		Qmax	20.3	1.000	0.700	0.650	325.0	33.1	-	No necesita
		Qmin	13.6	1.000	0.700	0.650	325.0	28.0	-	No necesita
42	30	Nmax	8.6	1.000	0.700	0.650	325.0	32.5	-	No necesita
		Nmin	5.5	1.000	0.700	0.650	325.0	28.0	-	No necesita
		Mmax	5.5	1.000	0.700	0.650	325.0	28.0	-	No necesita
		Mmin	8.8	1.000	0.700	0.650	325.0	33.1	-	No necesita
		Qmax	8.8	1.000	0.700	0.650	325.0	33.1	-	No necesita
		Qmin	5.5	1.000	0.700	0.650	325.0	28.0	-	No necesita
	32	Nmax	10.2	1.000	0.700	0.650	325.0	33.2	-	No necesita
		Nmin	7.2	1.000	0.700	0.650	325.0	28.5	-	No necesita
		Mmax	7.2	1.000	0.700	0.650	325.0	28.5	-	No necesita
		Mmin	10.5	1.000	0.700	0.650	325.0	33.8	-	No necesita
		Qmax	10.5	1.000	0.700	0.650	325.0	33.8	-	No necesita
		Qmin	7.2	1.000	0.700	0.650	325.0	28.5	-	No necesita
43	32	Nmax	0.6	1.000	0.700	0.650	325.0	33.2	-	No necesita
		Nmin	0.6	1.000	0.700	0.650	325.0	28.5	-	No necesita
		Mmax	0.6	1.000	0.700	0.650	325.0	28.5	-	No necesita
		Mmin	0.7	1.000	0.700	0.650	325.0	33.8	-	No necesita
		Qmax	0.6	1.000	0.700	0.650	325.0	33.2	-	No necesita
		Qmin	0.7	1.000	0.700	0.650	325.0	33.8	-	No necesita

ARMADOJUL_2000_10000_1m.xls PI RIERA DE CAN DE JULIA 28/02/2006
Kv=2000 Kh=10000

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES EN UN SÓLO LADO

FECHA: 28/02/2006

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
	34	Nmax	1.4	1.000	0.700	0.650	325.0	33.2	-	No necesita
		Nmin	1.2	1.000	0.700	0.650	325.0	28.6	-	No necesita
		Mmax	1.2	1.000	0.700	0.650	325.0	28.6	-	No necesita
		Mmin	1.1	1.000	0.700	0.650	325.0	33.8	-	No necesita
		Qmax	1.4	1.000	0.700	0.650	325.0	33.2	-	No necesita
		Qmin	1.1	1.000	0.700	0.650	325.0	33.8	-	No necesita
44	34	Nmax	9.7	1.000	0.700	0.650	325.0	33.2	-	No necesita
		Nmin	7.0	1.000	0.700	0.650	325.0	28.6	-	No necesita
		Mmax	7.0	1.000	0.700	0.650	325.0	28.6	-	No necesita
		Mmin	10.7	1.000	0.700	0.650	325.0	33.8	-	No necesita
		Qmax	7.0	1.000	0.700	0.650	325.0	28.6	-	No necesita
		Qmin	10.7	1.000	0.700	0.650	325.0	33.8	-	No necesita
	36	Nmax	8.0	1.000	0.700	0.650	325.0	32.6	-	No necesita
		Nmin	5.4	1.000	0.700	0.650	325.0	28.0	-	No necesita
		Mmax	5.4	1.000	0.700	0.650	325.0	28.0	-	No necesita
		Mmin	9.0	1.000	0.700	0.650	325.0	33.1	-	No necesita
		Qmax	5.4	1.000	0.700	0.650	325.0	28.0	-	No necesita
		Qmin	9.0	1.000	0.700	0.650	325.0	33.1	-	No necesita
45	36	Nmax	20.5	1.000	0.700	0.650	325.0	32.6	-	No necesita
		Nmin	14.5	1.000	0.700	0.650	325.0	28.0	-	No necesita
		Mmax	14.5	1.000	0.700	0.650	325.0	28.0	-	No necesita
		Mmin	22.2	1.000	0.700	0.650	325.0	33.1	-	No necesita
		Qmax	14.5	1.000	0.700	0.650	325.0	28.0	-	No necesita
		Qmin	22.2	1.000	0.700	0.650	325.0	33.1	-	No necesita
	38	Nmax	18.8	1.000	0.700	0.650	325.0	31.1	-	No necesita
		Nmin	12.8	1.000	0.700	0.650	325.0	26.8	-	No necesita
		Mmax	12.8	1.000	0.700	0.650	325.0	26.8	-	No necesita
		Mmin	20.5	1.000	0.700	0.650	325.0	31.5	-	No necesita
		Qmax	12.8	1.000	0.700	0.650	325.0	26.8	-	No necesita
		Qmin	20.5	1.000	0.700	0.650	325.0	31.5	-	No necesita
46	38	Nmax	33.8	1.000	0.700	0.650	325.0	31.1	25.9	3.3
		Nmin	23.5	1.000	0.700	0.650	325.0	26.8	-	No necesita
		Mmax	23.5	1.000	0.700	0.650	325.0	26.8	-	No necesita
		Mmin	36.2	1.000	0.700	0.650	325.0	31.5	26.2	4.2
		Qmax	23.5	1.000	0.700	0.650	325.0	26.8	-	No necesita
		Qmin	36.2	1.000	0.700	0.650	325.0	31.5	26.2	4.2
	40	Nmax	32.1	1.000	0.700	0.650	325.0	28.4	23.7	3.6
		Nmin	21.8	1.000	0.700	0.650	325.0	24.4	-	No necesita
		Mmax	21.8	1.000	0.700	0.650	325.0	24.4	-	No necesita
		Mmin	34.5	1.000	0.700	0.650	325.0	28.6	23.9	4.5
		Qmax	21.8	1.000	0.700	0.650	325.0	24.4	-	No necesita
		Qmin	34.5	1.000	0.700	0.650	325.0	28.6	23.9	4.5
47	40	Nmax	50.1	1.000	0.700	0.650	325.0	28.4	23.7	11.3
		Nmin	34.6	1.000	0.700	0.650	325.0	24.4	20.4	6.1
		Mmax	34.6	1.000	0.700	0.650	325.0	24.4	20.4	6.1
		Mmin	53.4	1.000	0.700	0.650	325.0	28.6	23.9	12.6
		Qmax	34.6	1.000	0.700	0.650	325.0	24.4	20.4	6.1
		Qmin	53.4	1.000	0.700	0.650	325.0	28.6	23.9	12.6
	42	Nmax	48.4	1.000	0.700	0.650	325.0	23.5	19.6	12.3
		Nmin	32.9	1.000	0.700	0.650	325.0	20.0	16.7	6.9
		Mmax	32.9	1.000	0.700	0.650	325.0	20.0	16.7	6.9

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES EN UN SÓLO LADO

FECHA: 28/02/2006

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
		Mmin	48.4	1.000	0.700	0.650	325.0	23.5	19.6	12.3
		Qmax	32.9	1.000	0.700	0.650	325.0	20.0	16.7	6.9
		Qmin	51.7	1.000	0.700	0.650	325.0	23.4	19.5	13.8
48	42	Nmax	64.7	1.000	0.700	0.650	325.0	23.5	19.6	19.3
		Nmin	44.4	1.000	0.700	0.650	325.0	20.0	16.7	11.8
		Mmax	44.4	1.000	0.700	0.650	325.0	20.0	16.7	11.8
		Mmin	64.7	1.000	0.700	0.650	325.0	23.5	19.6	19.3
		Qmax	44.4	1.000	0.700	0.650	325.0	20.0	16.7	11.8
		Qmin	68.8	1.000	0.700	0.650	325.0	23.4	19.5	21.1
	44	Nmax	63.9	1.000	0.700	0.650	325.0	18.9	15.8	20.6
		Nmin	43.5	1.000	0.700	0.650	325.0	15.7	13.1	13.0
		Mmax	43.5	1.000	0.700	0.650	325.0	15.7	13.1	13.0
		Mmin	63.9	1.000	0.700	0.650	325.0	18.9	15.8	20.6
		Qmax	43.5	1.000	0.700	0.650	325.0	15.7	13.1	13.0
		Qmin	68.0	1.000	0.700	0.650	325.0	18.4	15.3	22.5
49	44	Nmax	75.7	1.000	0.700	0.650	325.0	18.9	15.8	25.6
		Nmin	51.8	1.000	0.700	0.650	325.0	15.7	13.1	16.5
		Mmax	51.8	1.000	0.700	0.650	325.0	15.7	13.1	16.5
		Mmin	75.7	1.000	0.700	0.650	325.0	18.9	15.8	25.6
		Qmax	51.8	1.000	0.700	0.650	325.0	15.7	13.1	16.5
		Qmin	80.3	1.000	0.700	0.650	325.0	18.4	15.3	27.8
	46	Nmax	74.9	1.000	0.700	0.650	325.0	9.2	7.7	28.7
		Nmin	50.9	1.000	0.700	0.650	325.0	9.2	7.7	18.5
		Mmax	79.5	1.000	0.700	0.650	325.0	10.4	8.7	30.3
		Mmin	74.9	1.000	0.700	0.650	325.0	9.2	7.7	28.7
		Qmax	50.9	1.000	0.700	0.650	325.0	9.2	7.7	18.5
		Qmin	79.5	1.000	0.700	0.650	325.0	10.4	8.7	30.3
50	46	Nmax	87.7	1.000	0.700	0.650	325.0	9.2	7.7	34.2
		Nmin	59.8	1.000	0.700	0.650	325.0	9.2	7.7	22.3
		Mmax	92.9	1.000	0.700	0.650	325.0	10.4	8.7	36.0
		Mmin	87.7	1.000	0.700	0.650	325.0	9.2	7.7	34.2
		Qmax	59.8	1.000	0.700	0.650	325.0	9.2	7.7	22.3
		Qmin	92.9	1.000	0.700	0.650	325.0	10.4	8.7	36.0
	48	Nmax	86.9	1.000	0.700	0.650	325.0	20.2	16.8	29.9
		Nmin	59.0	1.000	0.700	0.650	325.0	18.4	15.3	18.6
		Mmax	92.1	1.000	0.700	0.650	325.0	21.4	17.8	31.7
		Mmin	59.0	1.000	0.700	0.650	325.0	18.4	15.3	18.6
		Qmax	59.0	1.000	0.700	0.650	325.0	18.4	15.3	18.6
		Qmin	92.1	1.000	0.700	0.650	325.0	21.4	17.8	31.7
51	48	Nmax	100.8	1.000	0.700	0.650	325.0	20.2	16.8	35.9
		Nmin	68.6	1.000	0.700	0.650	325.0	18.4	15.3	22.8
		Mmax	106.5	1.000	0.700	0.650	325.0	21.4	17.8	37.9
		Mmin	68.6	1.000	0.700	0.650	325.0	18.4	15.3	22.8
		Qmax	68.6	1.000	0.700	0.650	325.0	18.4	15.3	22.8
		Qmin	106.5	1.000	0.700	0.650	325.0	21.4	17.8	37.9
	50	Nmax	99.9	1.000	0.700	0.650	325.0	26.3	21.9	33.4
		Nmin	67.8	1.000	0.700	0.650	325.0	23.4	19.5	20.6
		Mmax	105.7	1.000	0.700	0.650	325.0	27.3	22.7	35.4
		Mmin	67.8	1.000	0.700	0.650	325.0	23.4	19.5	20.6
		Qmax	67.8	1.000	0.700	0.650	325.0	23.4	19.5	20.6
		Qmin	105.7	1.000	0.700	0.650	325.0	27.3	22.7	35.4

ARMADOJUL_2000_10000_1m.xls PI RIERA DE CAN DE JULIA 28/02/2006
Kv=2000 Kh=10000

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES EN UN SÓLO LADO

FECHA: 28/02/2006

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
52	50	Nmax	114.9	1.000	0.700	0.650	325.0	26.3	21.9	39.7
		Nmin	78.1	1.000	0.700	0.650	325.0	23.4	19.5	25.0
		Mmax	121.2	1.000	0.700	0.650	325.0	27.3	22.7	42.1
		Mmin	78.1	1.000	0.700	0.650	325.0	23.4	19.5	25.0
		Qmax	78.1	1.000	0.700	0.650	325.0	23.4	19.5	25.0
		Qmin	121.2	1.000	0.700	0.650	325.0	27.3	22.7	42.1
	52	Nmax	114.0	1.000	0.700	0.650	325.0	31.2	26.0	37.6
		Nmin	77.2	1.000	0.700	0.650	325.0	27.4	22.9	23.2
		Mmax	120.4	1.000	0.700	0.650	325.0	32.3	26.9	39.9
		Mmin	77.2	1.000	0.700	0.650	325.0	27.4	22.9	23.2
		Qmax	77.2	1.000	0.700	0.650	325.0	27.4	22.9	23.2
		Qmin	120.4	1.000	0.700	0.650	325.0	32.3	26.9	39.9
53	52	Nmax	1.1	1.000	0.700	0.650	325.0	27.4	-	No necesita
		Nmin	3.4	1.000	0.700	0.650	325.0	32.3	-	No necesita
		Mmax	3.4	1.000	0.700	0.650	325.0	32.3	-	No necesita
		Mmin	1.1	1.000	0.700	0.650	325.0	27.4	-	No necesita
		Qmax	1.1	1.000	0.700	0.650	325.0	27.4	-	No necesita
		Qmin	8.6	1.000	0.700	0.650	325.0	31.2	-	No necesita
	53	Nmax	1.1	1.000	0.700	0.650	325.0	27.5	-	No necesita
		Nmin	3.4	1.000	0.700	0.650	325.0	32.4	-	No necesita
		Mmax	3.4	1.000	0.700	0.650	325.0	32.4	-	No necesita
		Mmin	1.1	1.000	0.700	0.650	325.0	27.5	-	No necesita
		Qmax	1.1	1.000	0.700	0.650	325.0	27.5	-	No necesita
		Qmin	8.6	1.000	0.700	0.650	325.0	31.6	-	No necesita
54	53	Nmax	1.1	1.000	0.700	0.650	325.0	27.5	-	No necesita
		Nmin	3.4	1.000	0.700	0.650	325.0	32.4	-	No necesita
		Mmax	3.4	1.000	0.700	0.650	325.0	32.4	-	No necesita
		Mmin	1.1	1.000	0.700	0.650	325.0	27.5	-	No necesita
		Qmax	1.1	1.000	0.700	0.650	325.0	27.5	-	No necesita
		Qmin	8.6	1.000	0.700	0.650	325.0	31.6	-	No necesita
	54	Nmax	1.1	1.000	0.700	0.650	325.0	27.5	-	No necesita
		Nmin	3.4	1.000	0.700	0.650	325.0	32.5	-	No necesita
		Mmax	3.4	1.000	0.700	0.650	325.0	32.5	-	No necesita
		Mmin	1.1	1.000	0.700	0.650	325.0	27.5	-	No necesita
		Qmax	1.1	1.000	0.700	0.650	325.0	27.5	-	No necesita
		Qmin	8.6	1.000	0.700	0.650	325.0	31.9	-	No necesita
55	54	Nmax	1.1	1.000	0.700	0.650	325.0	27.5	-	No necesita
		Nmin	3.4	1.000	0.700	0.650	325.0	32.5	-	No necesita
		Mmax	3.4	1.000	0.700	0.650	325.0	32.5	-	No necesita
		Mmin	1.1	1.000	0.700	0.650	325.0	27.5	-	No necesita
		Qmax	1.1	1.000	0.700	0.650	325.0	27.5	-	No necesita
		Qmin	8.6	1.000	0.700	0.650	325.0	31.9	-	No necesita
	55	Nmax	1.1	1.000	0.700	0.650	325.0	27.6	-	No necesita
		Nmin	3.4	1.000	0.700	0.650	325.0	32.7	-	No necesita
		Mmax	3.4	1.000	0.700	0.650	325.0	32.7	-	No necesita
		Mmin	1.1	1.000	0.700	0.650	325.0	27.6	-	No necesita
		Qmax	1.1	1.000	0.700	0.650	325.0	27.6	-	No necesita
		Qmin	8.6	1.000	0.700	0.650	325.0	32.3	-	No necesita
56	55	Nmax	1.1	1.000	0.700	0.650	325.0	27.6	-	No necesita
		Nmin	3.4	1.000	0.700	0.650	325.0	32.7	-	No necesita
		Mmax	3.4	1.000	0.700	0.650	325.0	32.7	-	No necesita

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES EN UN SÓLO LADO

FECHA: 28/02/2006

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
		Mmin	1.1	1.000	0.700	0.650	325.0	27.6	-	No necesita
		Qmax	1.1	1.000	0.700	0.650	325.0	27.6	-	No necesita
		Qmin	8.6	1.000	0.700	0.650	325.0	32.3	-	No necesita
	56	Nmax	1.1	1.000	0.700	0.650	325.0	27.6	-	No necesita
		Nmin	3.4	1.000	0.700	0.650	325.0	32.8	-	No necesita
		Mmax	3.4	1.000	0.700	0.650	325.0	32.8	-	No necesita
		Mmin	1.1	1.000	0.700	0.650	325.0	27.6	-	No necesita
		Qmax	1.1	1.000	0.700	0.650	325.0	27.6	-	No necesita
		Qmin	8.6	1.000	0.700	0.650	325.0	32.6	-	No necesita
57	56	Nmax	1.1	1.000	0.700	0.650	325.0	27.6	-	No necesita
		Nmin	3.4	1.000	0.700	0.650	325.0	32.8	-	No necesita
		Mmax	3.4	1.000	0.700	0.650	325.0	32.8	-	No necesita
		Mmin	1.1	1.000	0.700	0.650	325.0	27.6	-	No necesita
		Qmax	1.1	1.000	0.700	0.650	325.0	27.6	-	No necesita
		Qmin	8.7	1.000	0.700	0.650	325.0	32.6	-	No necesita
	57	Nmax	1.1	1.000	0.700	0.650	325.0	27.7	-	No necesita
		Nmin	3.4	1.000	0.700	0.650	325.0	32.9	-	No necesita
		Mmax	8.7	1.000	0.700	0.650	325.0	33.0	-	No necesita
		Mmin	1.1	1.000	0.700	0.650	325.0	27.7	-	No necesita
		Qmax	1.1	1.000	0.700	0.650	325.0	27.7	-	No necesita
		Qmin	8.7	1.000	0.700	0.650	325.0	33.0	-	No necesita
58	57	Nmax	1.1	1.000	0.700	0.650	325.0	27.7	-	No necesita
		Nmin	3.4	1.000	0.700	0.650	325.0	32.9	-	No necesita
		Mmax	8.7	1.000	0.700	0.650	325.0	33.0	-	No necesita
		Mmin	1.1	1.000	0.700	0.650	325.0	27.7	-	No necesita
		Qmax	1.1	1.000	0.700	0.650	325.0	27.7	-	No necesita
		Qmin	8.7	1.000	0.700	0.650	325.0	33.0	-	No necesita
	58	Nmax	1.1	1.000	0.700	0.650	325.0	27.7	-	No necesita
		Nmin	3.4	1.000	0.700	0.650	325.0	33.0	-	No necesita
		Mmax	8.7	1.000	0.700	0.650	325.0	33.3	-	No necesita
		Mmin	1.1	1.000	0.700	0.650	325.0	27.7	-	No necesita
		Qmax	1.1	1.000	0.700	0.650	325.0	27.7	-	No necesita
		Qmin	8.7	1.000	0.700	0.650	325.0	33.3	-	No necesita
59	58	Nmax	1.1	1.000	0.700	0.650	325.0	27.7	-	No necesita
		Nmin	3.4	1.000	0.700	0.650	325.0	33.0	-	No necesita
		Mmax	8.6	1.000	0.700	0.650	325.0	33.3	-	No necesita
		Mmin	1.1	1.000	0.700	0.650	325.0	27.7	-	No necesita
		Qmax	1.1	1.000	0.700	0.650	325.0	27.7	-	No necesita
		Qmin	8.6	1.000	0.700	0.650	325.0	33.3	-	No necesita
	59	Nmax	1.1	1.000	0.700	0.650	325.0	27.8	-	No necesita
		Nmin	3.4	1.000	0.700	0.650	325.0	33.2	-	No necesita
		Mmax	8.6	1.000	0.700	0.650	325.0	33.6	-	No necesita
		Mmin	1.1	1.000	0.700	0.650	325.0	27.8	-	No necesita
		Qmax	1.1	1.000	0.700	0.650	325.0	27.8	-	No necesita
		Qmin	8.6	1.000	0.700	0.650	325.0	33.6	-	No necesita
60	59	Nmax	1.1	1.000	0.700	0.650	325.0	27.8	-	No necesita
		Nmin	3.4	1.000	0.700	0.650	325.0	33.2	-	No necesita
		Mmax	8.6	1.000	0.700	0.650	325.0	33.6	-	No necesita
		Mmin	1.1	1.000	0.700	0.650	325.0	27.8	-	No necesita
		Qmax	1.1	1.000	0.700	0.650	325.0	27.8	-	No necesita
		Qmin	8.6	1.000	0.700	0.650	325.0	33.6	-	No necesita

ARMADOJUL_2000_10000_1m.xls PI RIERA DE CAN DE JULIA
Kv=2000 Kh=10000
28/02/2006

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES EN UN SÓLO LADO

FECHA: 28/02/2006

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
	60	Nmax	1.1	1.000	0.700	0.650	325.0	27.9	-	No necesita
		Nmin	3.4	1.000	0.700	0.650	325.0	33.3	-	No necesita
		Mmax	8.6	1.000	0.700	0.650	325.0	34.0	-	No necesita
		Mmin	1.1	1.000	0.700	0.650	325.0	27.9	-	No necesita
		Qmax	1.1	1.000	0.700	0.650	325.0	27.9	-	No necesita
		Qmin	8.6	1.000	0.700	0.650	325.0	34.0	-	No necesita
61	60	Nmax	1.1	1.000	0.700	0.650	325.0	27.9	-	No necesita
		Nmin	3.4	1.000	0.700	0.650	325.0	33.3	-	No necesita
		Mmax	8.6	1.000	0.700	0.650	325.0	34.0	-	No necesita
		Mmin	1.1	1.000	0.700	0.650	325.0	27.9	-	No necesita
		Qmax	1.1	1.000	0.700	0.650	325.0	27.9	-	No necesita
		Qmin	8.6	1.000	0.700	0.650	325.0	34.0	-	No necesita
	61	Nmax	1.1	1.000	0.700	0.650	325.0	27.9	-	No necesita
		Nmin	3.4	1.000	0.700	0.650	325.0	33.4	-	No necesita
		Mmax	8.6	1.000	0.700	0.650	325.0	34.3	-	No necesita
		Mmin	1.1	1.000	0.700	0.650	325.0	27.9	-	No necesita
		Qmax	1.1	1.000	0.700	0.650	325.0	27.9	-	No necesita
		Qmin	8.6	1.000	0.700	0.650	325.0	34.3	-	No necesita
62	61	Nmax	1.1	1.000	0.700	0.650	325.0	27.9	-	No necesita
		Nmin	3.4	1.000	0.700	0.650	325.0	33.4	-	No necesita
		Mmax	8.6	1.000	0.700	0.650	325.0	34.3	-	No necesita
		Mmin	1.1	1.000	0.700	0.650	325.0	27.9	-	No necesita
		Qmax	1.1	1.000	0.700	0.650	325.0	27.9	-	No necesita
		Qmin	8.6	1.000	0.700	0.650	325.0	34.3	-	No necesita
	62	Nmax	1.1	1.000	0.700	0.650	325.0	28.0	-	No necesita
		Nmin	3.4	1.000	0.700	0.650	325.0	33.6	-	No necesita
		Mmax	8.6	1.000	0.700	0.650	325.0	34.6	-	No necesita
		Mmin	1.1	1.000	0.700	0.650	325.0	28.0	-	No necesita
		Qmax	1.1	1.000	0.700	0.650	325.0	28.0	-	No necesita
		Qmin	8.6	1.000	0.700	0.650	325.0	34.6	-	No necesita
63	62	Nmax	1.1	1.000	0.700	0.650	325.0	28.0	-	No necesita
		Nmin	3.4	1.000	0.700	0.650	325.0	33.6	-	No necesita
		Mmax	8.6	1.000	0.700	0.650	325.0	34.6	-	No necesita
		Mmin	1.1	1.000	0.700	0.650	325.0	28.0	-	No necesita
		Qmax	1.1	1.000	0.700	0.650	325.0	28.0	-	No necesita
		Qmin	8.6	1.000	0.700	0.650	325.0	34.6	-	No necesita
	63	Nmax	1.1	1.000	0.700	0.650	325.0	28.0	-	No necesita
		Nmin	3.4	1.000	0.700	0.650	325.0	33.7	-	No necesita
		Mmax	8.6	1.000	0.700	0.650	325.0	35.0	-	No necesita
		Mmin	1.1	1.000	0.700	0.650	325.0	28.0	-	No necesita
		Qmax	1.1	1.000	0.700	0.650	325.0	28.0	-	No necesita
		Qmin	8.6	1.000	0.700	0.650	325.0	35.0	-	No necesita
64	63	Nmax	1.1	1.000	0.700	0.650	325.0	28.0	-	No necesita
		Nmin	3.4	1.000	0.700	0.650	325.0	33.7	-	No necesita
		Mmax	8.6	1.000	0.700	0.650	325.0	35.0	-	No necesita
		Mmin	1.1	1.000	0.700	0.650	325.0	28.0	-	No necesita
		Qmax	1.1	1.000	0.700	0.650	325.0	28.0	-	No necesita
		Qmin	8.6	1.000	0.700	0.650	325.0	35.0	-	No necesita
	64	Nmax	1.1	1.000	0.700	0.650	325.0	28.1	-	No necesita
		Nmin	3.4	1.000	0.700	0.650	325.0	33.8	-	No necesita
		Mmax	8.6	1.000	0.700	0.650	325.0	35.3	-	No necesita

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES EN UN SÓLO LADO

FECHA: 28/02/2006

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
		Mmin	1.1	1.000	0.700	0.650	325.0	28.1	-	No necesita
		Qmax	1.1	1.000	0.700	0.650	325.0	28.1	-	No necesita
		Qmin	8.6	1.000	0.700	0.650	325.0	35.3	-	No necesita

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES A AMBOS LADOS

FECHA: 28/02/2006

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As1 (cm2/m)	As2 (cm2/m)
1	1	Nmax	0.0	-115.4	1.000	0.700	0.650	920.83	0.00	44.89
		Nmin	0.0	-180.2	1.000	0.700	0.650	920.83	0.00	76.64
		Mmax	0.0	-115.4	1.000	0.700	0.650	920.83	0.00	44.89
		Mmin	0.0	-180.2	1.000	0.700	0.650	920.83	0.00	76.64
		Qmax	0.0	-115.4	1.000	0.700	0.650	920.83	0.00	44.89
		Qmin	0.0	-180.2	1.000	0.700	0.650	920.83	0.00	76.64
	2	Nmax	0.0	-76.2	1.000	0.700	0.650	920.83	0.00	28.38
		Nmin	0.0	-118.2	1.000	0.700	0.650	920.83	0.00	46.12
		Mmax	0.0	-76.2	1.000	0.700	0.650	920.83	0.00	28.38
		Mmin	0.0	-118.2	1.000	0.700	0.650	920.83	0.00	46.12
		Qmax	0.0	-76.2	1.000	0.700	0.650	920.83	0.00	28.38
		Qmin	0.0	-118.2	1.000	0.700	0.650	920.83	0.00	46.12
2	2	Nmax	0.0	-76.2	1.000	0.700	0.650	920.83	0.00	28.38
		Nmin	0.0	-118.2	1.000	0.700	0.650	920.83	0.00	46.12
		Mmax	0.0	-76.2	1.000	0.700	0.650	920.83	0.00	28.38
		Mmin	0.0	-118.2	1.000	0.700	0.650	920.83	0.00	46.12
		Qmax	0.0	-76.2	1.000	0.700	0.650	920.83	0.00	28.38
		Qmin	0.0	-118.2	1.000	0.700	0.650	920.83	0.00	46.12
	3	Nmax	0.0	-44.0	1.000	0.700	0.650	920.83	0.00	15.87
		Nmin	0.0	-67.4	1.000	0.700	0.650	920.83	0.00	24.86
		Mmax	0.0	-44.0	1.000	0.700	0.650	920.83	0.00	15.87
		Mmin	0.0	-67.4	1.000	0.700	0.650	920.83	0.00	24.86
		Qmax	0.0	-44.0	1.000	0.700	0.650	920.83	0.00	15.87
		Qmin	0.0	-67.4	1.000	0.700	0.650	920.83	0.00	24.86
3	3	Nmax	0.0	-44.0	1.000	0.700	0.650	920.83	0.00	15.87
		Nmin	0.0	-67.4	1.000	0.700	0.650	920.83	0.00	24.86
		Mmax	0.0	-44.0	1.000	0.700	0.650	920.83	0.00	15.87
		Mmin	0.0	-67.4	1.000	0.700	0.650	920.83	0.00	24.86
		Qmax	0.0	-44.0	1.000	0.700	0.650	920.83	0.00	15.87
		Qmin	0.0	-67.4	1.000	0.700	0.650	920.83	0.00	24.86
	4	Nmax	0.0	-18.8	1.000	0.700	0.650	920.83	0.00	6.64
		Nmin	0.0	-27.9	1.000	0.700	0.650	920.83	0.00	9.90
		Mmax	0.0	-18.8	1.000	0.700	0.650	920.83	0.00	6.64
		Mmin	0.0	-27.9	1.000	0.700	0.650	920.83	0.00	9.90
		Qmax	0.0	-18.8	1.000	0.700	0.650	920.83	0.00	6.64
		Qmin	0.0	-27.9	1.000	0.700	0.650	920.83	0.00	9.90
4	4	Nmax	0.0	-18.9	1.000	0.700	0.650	920.83	0.00	6.65
		Nmin	0.0	-27.9	1.000	0.700	0.650	920.83	0.00	9.90
		Mmax	0.0	-18.9	1.000	0.700	0.650	920.83	0.00	6.65
		Mmin	0.0	-27.9	1.000	0.700	0.650	920.83	0.00	9.90
		Qmax	0.0	-18.9	1.000	0.700	0.650	920.83	0.00	6.65
		Qmin	0.0	-27.9	1.000	0.700	0.650	920.83	0.00	9.90
	5	Nmax	0.0	-1.4	1.000	0.700	0.650	920.83	0.00	0.48
		Nmin	0.2	-0.8	1.000	0.700	0.650	920.83	0.08	0.28
		Mmax	4.3	-0.8	1.000	0.700	0.650	920.83	1.50	0.28
		Mmin	0.0	-1.4	1.000	0.700	0.650	920.83	0.00	0.48
		Qmax	0.0	-1.4	1.000	0.700	0.650	920.83	0.00	0.48
		Qmin	0.2	-0.8	1.000	0.700	0.650	920.83	0.08	0.28
5	5	Nmax	0.0	-1.4	1.000	0.700	0.650	920.83	0.00	0.48
		Nmin	0.2	-0.8	1.000	0.700	0.650	920.83	0.08	0.28
		Mmax	4.3	-0.8	1.000	0.700	0.650	920.83	1.50	0.28

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES A AMBOS LADOS

FECHA: 28/02/2006

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As1 (cm2/m)	As2 (cm2/m)
		Mmin	0.0	-1.4	1.000	0.700	0.650	920.83	0.00	0.48
		Qmax	0.0	-1.4	1.000	0.700	0.650	920.83	0.00	0.48
		Qmin	0.2	-0.8	1.000	0.700	0.650	920.83	0.08	0.28
	6	Nmax	10.2	0.0	1.000	0.700	0.650	920.83	3.58	0.00
		Nmin	17.2	0.0	1.000	0.700	0.650	920.83	6.04	0.00
		Mmax	19.6	0.0	1.000	0.700	0.650	920.83	6.91	0.00
		Mmin	10.2	0.0	1.000	0.700	0.650	920.83	3.58	0.00
		Qmax	10.2	0.0	1.000	0.700	0.650	920.83	3.58	0.00
		Qmin	17.2	0.0	1.000	0.700	0.650	920.83	6.04	0.00
6	6	Nmax	10.2	0.0	1.000	0.700	0.650	920.83	3.58	0.00
		Nmin	17.2	0.0	1.000	0.700	0.650	920.83	6.04	0.00
		Mmax	19.6	0.0	1.000	0.700	0.650	920.83	6.91	0.00
		Mmin	10.2	0.0	1.000	0.700	0.650	920.83	3.58	0.00
		Qmax	10.2	0.0	1.000	0.700	0.650	920.83	3.58	0.00
		Qmin	17.2	0.0	1.000	0.700	0.650	920.83	6.04	0.00
	7	Nmax	14.3	0.0	1.000	0.700	0.650	920.83	5.01	0.00
		Nmin	22.9	0.0	1.000	0.700	0.650	920.83	8.10	0.00
		Mmax	23.5	0.0	1.000	0.700	0.650	920.83	8.31	0.00
		Mmin	14.3	0.0	1.000	0.700	0.650	920.83	5.01	0.00
		Qmax	14.3	0.0	1.000	0.700	0.650	920.83	5.01	0.00
		Qmin	22.9	0.0	1.000	0.700	0.650	920.83	8.10	0.00
7	7	Nmax	14.3	0.0	1.000	0.700	0.650	920.83	5.01	0.00
		Nmin	22.9	0.0	1.000	0.700	0.650	920.83	8.09	0.00
		Mmax	23.5	0.0	1.000	0.700	0.650	920.83	8.31	0.00
		Mmin	14.3	0.0	1.000	0.700	0.650	920.83	5.01	0.00
		Qmax	23.5	0.0	1.000	0.700	0.650	920.83	8.31	0.00
		Qmin	14.3	0.0	1.000	0.700	0.650	920.83	5.01	0.00
	8	Nmax	11.4	0.0	1.000	0.700	0.650	920.83	3.98	0.00
		Nmin	17.5	0.0	1.000	0.700	0.650	920.83	6.16	0.00
		Mmax	17.5	0.0	1.000	0.700	0.650	920.83	6.16	0.00
		Mmin	11.4	0.0	1.000	0.700	0.650	920.83	3.98	0.00
		Qmax	16.0	0.0	1.000	0.700	0.650	920.83	5.63	0.00
		Qmin	11.4	0.0	1.000	0.700	0.650	920.83	3.98	0.00
8	8	Nmax	11.4	0.0	1.000	0.700	0.650	920.83	3.98	0.00
		Nmin	17.5	0.0	1.000	0.700	0.650	920.83	6.16	0.00
		Mmax	17.5	0.0	1.000	0.700	0.650	920.83	6.16	0.00
		Mmin	11.4	0.0	1.000	0.700	0.650	920.83	3.98	0.00
		Qmax	16.0	0.0	1.000	0.700	0.650	920.83	5.63	0.00
		Qmin	11.4	0.0	1.000	0.700	0.650	920.83	3.98	0.00
	9	Nmax	1.8	0.0	1.000	0.700	0.650	920.83	0.61	0.00
		Nmin	1.5	0.0	1.000	0.700	0.650	920.83	0.51	0.00
		Mmax	1.8	0.0	1.000	0.700	0.650	920.83	0.61	0.00
		Mmin	1.5	-2.9	1.000	0.700	0.650	920.83	0.51	0.99
		Qmax	1.5	-2.9	1.000	0.700	0.650	920.83	0.51	0.99
		Qmin	1.8	0.0	1.000	0.700	0.650	920.83	0.61	0.00
9	9	Nmax	1.8	0.0	1.000	0.700	0.650	920.83	0.61	0.00
		Nmin	1.5	0.0	1.000	0.700	0.650	920.83	0.51	0.00
		Mmax	1.8	0.0	1.000	0.700	0.650	920.83	0.61	0.00
		Mmin	1.5	-2.9	1.000	0.700	0.650	920.83	0.51	0.99
		Qmax	1.5	-2.9	1.000	0.700	0.650	920.83	0.51	0.99
		Qmin	1.8	0.0	1.000	0.700	0.650	920.83	0.61	0.00

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES A AMBOS LADOS

FECHA: 28/02/2006

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As1 (cm2/m)	As2 (cm2/m)
	10	Nmax	0.0	-15.4	1.000	0.700	0.650	920.83	0.00	5.43
		Nmin	0.0	-26.9	1.000	0.700	0.650	920.83	0.00	9.54
		Mmax	0.0	-15.4	1.000	0.700	0.650	920.83	0.00	5.43
		Mmin	0.0	-33.2	1.000	0.700	0.650	920.83	0.00	11.84
		Qmax	0.0	-33.2	1.000	0.700	0.650	920.83	0.00	11.84
		Qmin	0.0	-15.4	1.000	0.700	0.650	920.83	0.00	5.43
10	10	Nmax	0.0	-15.4	1.000	0.700	0.650	920.83	0.00	5.43
		Nmin	0.0	-26.9	1.000	0.700	0.650	920.83	0.00	9.54
		Mmax	0.0	-15.4	1.000	0.700	0.650	920.83	0.00	5.43
		Mmin	0.0	-33.2	1.000	0.700	0.650	920.83	0.00	11.84
		Qmax	0.0	-33.2	1.000	0.700	0.650	920.83	0.00	11.84
		Qmin	0.0	-15.4	1.000	0.700	0.650	920.83	0.00	5.43
	11	Nmax	0.0	-39.3	1.000	0.700	0.650	920.83	0.00	14.11
		Nmin	0.0	-65.8	1.000	0.700	0.650	920.83	0.00	24.25
		Mmax	0.0	-39.3	1.000	0.700	0.650	920.83	0.00	14.11
		Mmin	0.0	-74.8	1.000	0.700	0.650	920.83	0.00	27.82
		Qmax	0.0	-74.8	1.000	0.700	0.650	920.83	0.00	27.82
		Qmin	0.0	-39.3	1.000	0.700	0.650	920.83	0.00	14.11
11	11	Nmax	0.0	-39.3	1.000	0.700	0.650	920.83	0.00	14.11
		Nmin	0.0	-65.8	1.000	0.700	0.650	920.83	0.00	24.25
		Mmax	0.0	-39.3	1.000	0.700	0.650	920.83	0.00	14.11
		Mmin	0.0	-74.8	1.000	0.700	0.650	920.83	0.00	27.82
		Qmax	0.0	-74.8	1.000	0.700	0.650	920.83	0.00	27.82
		Qmin	0.0	-39.3	1.000	0.700	0.650	920.83	0.00	14.11
	12	Nmax	0.0	-70.3	1.000	0.700	0.650	920.83	0.00	26.01
		Nmin	0.0	-116.1	1.000	0.700	0.650	920.83	0.00	45.19
		Mmax	0.0	-70.3	1.000	0.700	0.650	920.83	0.00	26.01
		Mmin	0.0	-128.0	1.000	0.700	0.650	920.83	0.00	50.56
		Qmax	0.0	-128.0	1.000	0.700	0.650	920.83	0.00	50.56
		Qmin	0.0	-70.3	1.000	0.700	0.650	920.83	0.00	26.01
12	12	Nmax	0.0	-70.3	1.000	0.700	0.650	920.83	0.00	26.01
		Nmin	0.0	-116.1	1.000	0.700	0.650	920.83	0.00	45.19
		Mmax	0.0	-70.3	1.000	0.700	0.650	920.83	0.00	26.01
		Mmin	0.0	-128.0	1.000	0.700	0.650	920.83	0.00	50.56
		Qmax	0.0	-128.0	1.000	0.700	0.650	920.83	0.00	50.56
		Qmin	0.0	-70.3	1.000	0.700	0.650	920.83	0.00	26.01
	13	Nmax	0.0	-108.2	1.000	0.700	0.650	920.83	0.00	41.73
		Nmin	0.0	-177.4	1.000	0.700	0.650	920.83	0.00	75.16
		Mmax	0.0	-108.2	1.000	0.700	0.650	920.83	0.00	41.73
		Mmin	0.0	-192.4	1.000	0.700	0.650	920.83	0.00	83.58
		Qmax	0.0	-192.4	1.000	0.700	0.650	920.83	0.00	83.58
		Qmin	0.0	-108.2	1.000	0.700	0.650	920.83	0.00	41.73
13	13	Nmax	0.0	-108.2	1.000	0.800	0.750	1062.50	0.00	35.10
		Nmin	0.0	-192.4	1.000	0.800	0.750	1062.50	0.00	67.31
		Mmax	0.0	-108.2	1.000	0.800	0.750	1062.50	0.00	35.10
		Mmin	0.0	-192.4	1.000	0.800	0.750	1062.50	0.00	67.31
		Qmax	0.0	-108.2	1.000	0.800	0.750	1062.50	0.00	35.10
		Qmin	0.0	-177.4	1.000	0.800	0.750	1062.50	0.00	61.15
	15	Nmax	0.0	-83.8	1.000	0.800	0.750	1062.50	0.00	26.67
		Nmin	0.0	-153.9	1.000	0.800	0.750	1062.50	0.00	51.88
		Mmax	0.0	-83.8	1.000	0.800	0.750	1062.50	0.00	26.67

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES A AMBOS LADOS

FECHA: 28/02/2006

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As1 (cm2/m)	As2 (cm2/m)
		Mmin	0.0	-153.9	1.000	0.800	0.750	1062.50	0.00	51.88
		Qmax	0.0	-83.8	1.000	0.800	0.750	1062.50	0.00	26.67
		Qmin	0.0	-137.3	1.000	0.800	0.750	1062.50	0.00	45.61
14	15	Nmax	0.0	-83.8	1.000	0.800	0.750	1062.50	0.00	26.67
		Nmin	0.0	-153.9	1.000	0.800	0.750	1062.50	0.00	51.89
		Mmax	0.0	-83.8	1.000	0.800	0.750	1062.50	0.00	26.67
		Mmin	0.0	-153.9	1.000	0.800	0.750	1062.50	0.00	51.89
		Qmax	0.0	-83.8	1.000	0.800	0.750	1062.50	0.00	26.67
		Qmin	0.0	-137.3	1.000	0.800	0.750	1062.50	0.00	45.62
	17	Nmax	0.0	-61.1	1.000	0.800	0.750	1062.50	0.00	19.14
		Nmin	0.0	-116.6	1.000	0.800	0.750	1062.50	0.00	38.08
		Mmax	0.0	-61.1	1.000	0.800	0.750	1062.50	0.00	19.14
		Mmin	0.0	-116.6	1.000	0.800	0.750	1062.50	0.00	38.08
		Qmax	0.0	-61.1	1.000	0.800	0.750	1062.50	0.00	19.14
		Qmin	0.0	-116.6	1.000	0.800	0.750	1062.50	0.00	38.08
15	17	Nmax	0.0	-61.1	1.000	0.800	0.750	1062.50	0.00	19.14
		Nmin	0.0	-116.6	1.000	0.800	0.750	1062.50	0.00	38.08
		Mmax	0.0	-61.1	1.000	0.800	0.750	1062.50	0.00	19.14
		Mmin	0.0	-116.6	1.000	0.800	0.750	1062.50	0.00	38.08
		Qmax	0.0	-61.1	1.000	0.800	0.750	1062.50	0.00	19.14
		Qmin	0.0	-116.6	1.000	0.800	0.750	1062.50	0.00	38.08
	19	Nmax	0.0	-40.1	1.000	0.800	0.750	1062.50	0.00	12.37
		Nmin	0.0	-80.3	1.000	0.800	0.750	1062.50	0.00	25.50
		Mmax	0.0	-40.1	1.000	0.800	0.750	1062.50	0.00	12.37
		Mmin	0.0	-80.3	1.000	0.800	0.750	1062.50	0.00	25.50
		Qmax	0.0	-40.1	1.000	0.800	0.750	1062.50	0.00	12.37
		Qmin	0.0	-80.3	1.000	0.800	0.750	1062.50	0.00	25.50
16	19	Nmax	0.0	-40.1	1.000	0.800	0.750	1062.50	0.00	12.37
		Nmin	0.0	-80.3	1.000	0.800	0.750	1062.50	0.00	25.50
		Mmax	0.0	-40.1	1.000	0.800	0.750	1062.50	0.00	12.37
		Mmin	0.0	-80.3	1.000	0.800	0.750	1062.50	0.00	25.50
		Qmax	0.0	-40.1	1.000	0.800	0.750	1062.50	0.00	12.37
		Qmin	0.0	-80.3	1.000	0.800	0.750	1062.50	0.00	25.50
	21	Nmax	0.0	-20.8	1.000	0.800	0.750	1062.50	0.00	6.32
		Nmin	0.0	-45.1	1.000	0.800	0.750	1062.50	0.00	13.98
		Mmax	0.0	-20.8	1.000	0.800	0.750	1062.50	0.00	6.32
		Mmin	0.0	-45.1	1.000	0.800	0.750	1062.50	0.00	13.98
		Qmax	0.0	-20.8	1.000	0.800	0.750	1062.50	0.00	6.32
		Qmin	0.0	-45.1	1.000	0.800	0.750	1062.50	0.00	13.98
17	21	Nmax	0.0	-20.8	1.000	0.800	0.750	1062.50	0.00	6.32
		Nmin	0.0	-45.1	1.000	0.800	0.750	1062.50	0.00	13.98
		Mmax	0.0	-20.8	1.000	0.800	0.750	1062.50	0.00	6.32
		Mmin	0.0	-45.1	1.000	0.800	0.750	1062.50	0.00	13.98
		Qmax	0.0	-20.8	1.000	0.800	0.750	1062.50	0.00	6.32
		Qmin	0.0	-45.1	1.000	0.800	0.750	1062.50	0.00	13.98
	23	Nmax	0.0	-3.1	1.000	0.800	0.750	1062.50	0.00	0.94
		Nmin	0.0	-11.2	1.000	0.800	0.750	1062.50	0.00	3.38
		Mmax	0.0	-3.1	1.000	0.800	0.750	1062.50	0.00	0.94
		Mmin	0.0	-11.2	1.000	0.800	0.750	1062.50	0.00	3.38
		Qmax	0.0	-3.1	1.000	0.800	0.750	1062.50	0.00	0.94
		Qmin	0.0	-11.2	1.000	0.800	0.750	1062.50	0.00	3.38

ARMADOJUL_2000_10000_2m.xls PI RIERA DE CAN DE JULIA 28/02/2006
Kv=2000 Kh=10000

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES A AMBOS LADOS

FECHA: 28/02/2006

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As1 (cm2/m)	As2 (cm2/m)
18	23	Nmax	0.0	-3.1	1.000	0.800	0.750	1062.50	0.00	0.95
		Nmin	0.0	-11.2	1.000	0.800	0.750	1062.50	0.00	3.38
		Mmax	0.0	-3.1	1.000	0.800	0.750	1062.50	0.00	0.95
		Mmin	0.0	-11.2	1.000	0.800	0.750	1062.50	0.00	3.38
		Qmax	0.0	-3.1	1.000	0.800	0.750	1062.50	0.00	0.95
		Qmin	0.0	-11.2	1.000	0.800	0.750	1062.50	0.00	3.38
	25	Nmax	27.1	0.0	1.000	0.800	0.750	1062.50	8.30	0.00
		Nmin	49.1	0.0	1.000	0.800	0.750	1062.50	15.25	0.00
		Mmax	49.1	0.0	1.000	0.800	0.750	1062.50	15.25	0.00
		Mmin	27.1	0.0	1.000	0.800	0.750	1062.50	8.30	0.00
		Qmax	27.1	0.0	1.000	0.800	0.750	1062.50	8.30	0.00
		Qmin	49.1	0.0	1.000	0.800	0.750	1062.50	15.25	0.00
19	25	Nmax	27.1	0.0	1.000	0.800	0.750	1062.50	8.30	0.00
		Nmin	49.1	0.0	1.000	0.800	0.750	1062.50	15.25	0.00
		Mmax	49.1	0.0	1.000	0.800	0.750	1062.50	15.25	0.00
		Mmin	27.1	0.0	1.000	0.800	0.750	1062.50	8.30	0.00
		Qmax	27.1	0.0	1.000	0.800	0.750	1062.50	8.30	0.00
		Qmin	49.1	0.0	1.000	0.800	0.750	1062.50	15.25	0.00
	27	Nmax	50.6	0.0	1.000	0.800	0.750	1062.50	15.74	0.00
		Nmin	95.9	0.0	1.000	0.800	0.750	1062.50	30.81	0.00
		Mmax	95.9	0.0	1.000	0.800	0.750	1062.50	30.81	0.00
		Mmin	50.6	0.0	1.000	0.800	0.750	1062.50	15.74	0.00
		Qmax	50.6	0.0	1.000	0.800	0.750	1062.50	15.74	0.00
		Qmin	95.9	0.0	1.000	0.800	0.750	1062.50	30.81	0.00
20	27	Nmax	50.6	0.0	1.000	0.800	0.750	1062.50	15.74	0.00
		Nmin	95.9	0.0	1.000	0.800	0.750	1062.50	30.81	0.00
		Mmax	95.9	0.0	1.000	0.800	0.750	1062.50	30.81	0.00
		Mmin	50.6	0.0	1.000	0.800	0.750	1062.50	15.74	0.00
		Qmax	50.6	0.0	1.000	0.800	0.750	1062.50	15.74	0.00
		Qmin	95.9	0.0	1.000	0.800	0.750	1062.50	30.81	0.00
	29	Nmax	67.4	0.0	1.000	0.800	0.750	1062.50	21.21	0.00
		Nmin	129.3	0.0	1.000	0.800	0.750	1062.50	42.66	0.00
		Mmax	129.3	0.0	1.000	0.800	0.750	1062.50	42.66	0.00
		Mmin	67.4	0.0	1.000	0.800	0.750	1062.50	21.21	0.00
		Qmax	67.4	0.0	1.000	0.800	0.750	1062.50	21.21	0.00
		Qmin	129.3	0.0	1.000	0.800	0.750	1062.50	42.66	0.00
21	29	Nmax	67.4	0.0	1.000	0.800	0.750	1062.50	21.21	0.00
		Nmin	129.3	0.0	1.000	0.800	0.750	1062.50	42.66	0.00
		Mmax	129.3	0.0	1.000	0.800	0.750	1062.50	42.66	0.00
		Mmin	67.4	0.0	1.000	0.800	0.750	1062.50	21.21	0.00
		Qmax	67.4	0.0	1.000	0.800	0.750	1062.50	21.21	0.00
		Qmin	129.3	0.0	1.000	0.800	0.750	1062.50	42.66	0.00
	31	Nmax	77.5	0.0	1.000	0.800	0.750	1062.50	24.56	0.00
		Nmin	149.2	0.0	1.000	0.800	0.750	1062.50	50.11	0.00
		Mmax	149.2	0.0	1.000	0.800	0.750	1062.50	50.11	0.00
		Mmin	77.5	0.0	1.000	0.800	0.750	1062.50	24.56	0.00
		Qmax	77.5	0.0	1.000	0.800	0.750	1062.50	24.56	0.00
		Qmin	149.2	0.0	1.000	0.800	0.750	1062.50	50.11	0.00
22	31	Nmax	77.5	0.0	1.000	0.800	0.750	1062.50	24.56	0.00
		Nmin	149.2	0.0	1.000	0.800	0.750	1062.50	50.11	0.00
		Mmax	149.2	0.0	1.000	0.800	0.750	1062.50	50.11	0.00

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES A AMBOS LADOS

FECHA: 28/02/2006

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As1 (cm2/m)	As2 (cm2/m)
		Mmin	77.5	0.0	1.000	0.800	0.750	1062.50	24.56	0.00
		Qmax	77.5	0.0	1.000	0.800	0.750	1062.50	24.56	0.00
		Qmin	149.2	0.0	1.000	0.800	0.750	1062.50	50.11	0.00
	33	Nmax	80.9	0.0	1.000	0.800	0.750	1062.50	25.69	0.00
		Nmin	155.8	0.0	1.000	0.800	0.750	1062.50	52.62	0.00
		Mmax	155.8	0.0	1.000	0.800	0.750	1062.50	52.62	0.00
		Mmin	80.9	0.0	1.000	0.800	0.750	1062.50	25.69	0.00
		Qmax	155.8	0.0	1.000	0.800	0.750	1062.50	52.62	0.00
		Qmin	80.9	0.0	1.000	0.800	0.750	1062.50	25.69	0.00
23	33	Nmax	80.9	0.0	1.000	0.800	0.750	1062.50	25.69	0.00
		Nmin	155.8	0.0	1.000	0.800	0.750	1062.50	52.62	0.00
		Mmax	155.8	0.0	1.000	0.800	0.750	1062.50	52.62	0.00
		Mmin	80.9	0.0	1.000	0.800	0.750	1062.50	25.69	0.00
		Qmax	155.8	0.0	1.000	0.800	0.750	1062.50	52.62	0.00
		Qmin	80.9	0.0	1.000	0.800	0.750	1062.50	25.69	0.00
	35	Nmax	77.5	0.0	1.000	0.800	0.750	1062.50	24.56	0.00
		Nmin	148.9	0.0	1.000	0.800	0.750	1062.50	50.00	0.00
		Mmax	148.9	0.0	1.000	0.800	0.750	1062.50	50.00	0.00
		Mmin	77.5	0.0	1.000	0.800	0.750	1062.50	24.56	0.00
		Qmax	148.9	0.0	1.000	0.800	0.750	1062.50	50.00	0.00
		Qmin	77.5	0.0	1.000	0.800	0.750	1062.50	24.56	0.00
24	35	Nmax	77.5	0.0	1.000	0.800	0.750	1062.50	24.56	0.00
		Nmin	149.0	0.0	1.000	0.800	0.750	1062.50	50.00	0.00
		Mmax	149.0	0.0	1.000	0.800	0.750	1062.50	50.00	0.00
		Mmin	77.5	0.0	1.000	0.800	0.750	1062.50	24.56	0.00
		Qmax	149.0	0.0	1.000	0.800	0.750	1062.50	50.00	0.00
		Qmin	77.5	0.0	1.000	0.800	0.750	1062.50	24.56	0.00
	37	Nmax	67.4	0.0	1.000	0.800	0.750	1062.50	21.21	0.00
		Nmin	128.7	0.0	1.000	0.800	0.750	1062.50	42.44	0.00
		Mmax	128.7	0.0	1.000	0.800	0.750	1062.50	42.44	0.00
		Mmin	67.4	0.0	1.000	0.800	0.750	1062.50	21.21	0.00
		Qmax	128.7	0.0	1.000	0.800	0.750	1062.50	42.44	0.00
		Qmin	67.4	0.0	1.000	0.800	0.750	1062.50	21.21	0.00
25	37	Nmax	67.4	0.0	1.000	0.800	0.750	1062.50	21.21	0.00
		Nmin	128.7	0.0	1.000	0.800	0.750	1062.50	42.44	0.00
		Mmax	128.7	0.0	1.000	0.800	0.750	1062.50	42.44	0.00
		Mmin	67.4	0.0	1.000	0.800	0.750	1062.50	21.21	0.00
		Qmax	128.7	0.0	1.000	0.800	0.750	1062.50	42.44	0.00
		Qmin	67.4	0.0	1.000	0.800	0.750	1062.50	21.21	0.00
	39	Nmax	50.6	0.0	1.000	0.800	0.750	1062.50	15.74	0.00
		Nmin	95.0	0.0	1.000	0.800	0.750	1062.50	30.51	0.00
		Mmax	95.0	0.0	1.000	0.800	0.750	1062.50	30.51	0.00
		Mmin	50.6	0.0	1.000	0.800	0.750	1062.50	15.74	0.00
		Qmax	95.0	0.0	1.000	0.800	0.750	1062.50	30.51	0.00
		Qmin	50.6	0.0	1.000	0.800	0.750	1062.50	15.74	0.00
26	39	Nmax	50.6	0.0	1.000	0.800	0.750	1062.50	15.74	0.00
		Nmin	95.0	0.0	1.000	0.800	0.750	1062.50	30.51	0.00
		Mmax	95.0	0.0	1.000	0.800	0.750	1062.50	30.51	0.00
		Mmin	50.6	0.0	1.000	0.800	0.750	1062.50	15.74	0.00
		Qmax	95.0	0.0	1.000	0.800	0.750	1062.50	30.51	0.00
		Qmin	50.6	0.0	1.000	0.800	0.750	1062.50	15.74	0.00

ARMADOJUL_2000_10000_2m.xls PI RIERA DE CAN DE JULIA 28/02/2006
Kv=2000 Kh=10000

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES A AMBOS LADOS

FECHA: 28/02/2006

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As1 (cm2/m)	As2 (cm2/m)
	41	Nmax	27.2	0.0	1.000	0.800	0.750	1062.50	8.31	0.00
		Nmin	48.0	0.0	1.000	0.800	0.750	1062.50	14.88	0.00
		Mmax	48.0	0.0	1.000	0.800	0.750	1062.50	14.88	0.00
		Mmin	27.2	0.0	1.000	0.800	0.750	1062.50	8.31	0.00
		Qmax	48.0	0.0	1.000	0.800	0.750	1062.50	14.88	0.00
		Qmin	27.2	0.0	1.000	0.800	0.750	1062.50	8.31	0.00
27	41	Nmax	27.2	0.0	1.000	0.800	0.750	1062.50	8.31	0.00
		Nmin	48.0	0.0	1.000	0.800	0.750	1062.50	14.88	0.00
		Mmax	48.0	0.0	1.000	0.800	0.750	1062.50	14.88	0.00
		Mmin	27.2	0.0	1.000	0.800	0.750	1062.50	8.31	0.00
		Qmax	48.0	0.0	1.000	0.800	0.750	1062.50	14.88	0.00
		Qmin	27.2	0.0	1.000	0.800	0.750	1062.50	8.31	0.00
	43	Nmax	0.0	-3.1	1.000	0.800	0.750	1062.50	0.00	0.92
		Nmin	0.0	-12.5	1.000	0.800	0.750	1062.50	0.00	3.80
		Mmax	0.0	-3.1	1.000	0.800	0.750	1062.50	0.00	0.92
		Mmin	0.0	-12.5	1.000	0.800	0.750	1062.50	0.00	3.80
		Qmax	0.0	-12.5	1.000	0.800	0.750	1062.50	0.00	3.80
		Qmin	0.0	-3.1	1.000	0.800	0.750	1062.50	0.00	0.92
28	43	Nmax	0.0	-3.1	1.000	0.800	0.750	1062.50	0.00	0.92
		Nmin	0.0	-12.5	1.000	0.800	0.750	1062.50	0.00	3.80
		Mmax	0.0	-3.1	1.000	0.800	0.750	1062.50	0.00	0.92
		Mmin	0.0	-12.5	1.000	0.800	0.750	1062.50	0.00	3.80
		Qmax	0.0	-12.5	1.000	0.800	0.750	1062.50	0.00	3.80
		Qmin	0.0	-3.1	1.000	0.800	0.750	1062.50	0.00	0.92
	45	Nmax	0.0	-20.7	1.000	0.800	0.750	1062.50	0.00	6.29
		Nmin	0.0	-46.6	1.000	0.800	0.750	1062.50	0.00	14.45
		Mmax	0.0	-20.7	1.000	0.800	0.750	1062.50	0.00	6.29
		Mmin	0.0	-46.6	1.000	0.800	0.750	1062.50	0.00	14.45
		Qmax	0.0	-46.6	1.000	0.800	0.750	1062.50	0.00	14.45
		Qmin	0.0	-20.7	1.000	0.800	0.750	1062.50	0.00	6.29
29	45	Nmax	0.0	-20.7	1.000	0.800	0.750	1062.50	0.00	6.29
		Nmin	0.0	-46.6	1.000	0.800	0.750	1062.50	0.00	14.45
		Mmax	0.0	-20.7	1.000	0.800	0.750	1062.50	0.00	6.29
		Mmin	0.0	-46.6	1.000	0.800	0.750	1062.50	0.00	14.45
		Qmax	0.0	-46.6	1.000	0.800	0.750	1062.50	0.00	14.45
		Qmin	0.0	-20.7	1.000	0.800	0.750	1062.50	0.00	6.29
	47	Nmax	0.0	-40.0	1.000	0.800	0.750	1062.50	0.00	12.33
		Nmin	0.0	-81.9	1.000	0.800	0.750	1062.50	0.00	26.04
		Mmax	0.0	-40.0	1.000	0.800	0.750	1062.50	0.00	12.33
		Mmin	0.0	-81.9	1.000	0.800	0.750	1062.50	0.00	26.04
		Qmax	0.0	-81.9	1.000	0.800	0.750	1062.50	0.00	26.04
		Qmin	0.0	-40.0	1.000	0.800	0.750	1062.50	0.00	12.33
30	47	Nmax	0.0	-40.0	1.000	0.800	0.750	1062.50	0.00	12.33
		Nmin	0.0	-81.9	1.000	0.800	0.750	1062.50	0.00	26.04
		Mmax	0.0	-40.0	1.000	0.800	0.750	1062.50	0.00	12.33
		Mmin	0.0	-81.9	1.000	0.800	0.750	1062.50	0.00	26.04
		Qmax	0.0	-81.9	1.000	0.800	0.750	1062.50	0.00	26.04
		Qmin	0.0	-40.0	1.000	0.800	0.750	1062.50	0.00	12.33
	49	Nmax	0.0	-61.0	1.000	0.800	0.750	1062.50	0.00	19.08
		Nmin	0.0	-118.3	1.000	0.800	0.750	1062.50	0.00	38.68
		Mmax	0.0	-61.0	1.000	0.800	0.750	1062.50	0.00	19.08

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES A AMBOS LADOS

FECHA: 28/02/2006

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As1 (cm2/m)	As2 (cm2/m)
		Mmin	0.0	-118.3	1.000	0.800	0.750	1062.50	0.00	38.68
		Qmax	0.0	-118.3	1.000	0.800	0.750	1062.50	0.00	38.68
		Qmin	0.0	-61.0	1.000	0.800	0.750	1062.50	0.00	19.08
31	49	Nmax	0.0	-61.0	1.000	0.800	0.750	1062.50	0.00	19.08
		Nmin	0.0	-118.3	1.000	0.800	0.750	1062.50	0.00	38.68
		Mmax	0.0	-61.0	1.000	0.800	0.750	1062.50	0.00	19.08
		Mmin	0.0	-118.3	1.000	0.800	0.750	1062.50	0.00	38.68
		Qmax	0.0	-118.3	1.000	0.800	0.750	1062.50	0.00	38.68
		Qmin	0.0	-61.0	1.000	0.800	0.750	1062.50	0.00	19.08
	51	Nmax	0.0	-83.6	1.000	0.800	0.750	1062.50	0.00	26.61
		Nmin	0.0	-155.7	1.000	0.800	0.750	1062.50	0.00	52.57
		Mmax	0.0	-83.6	1.000	0.800	0.750	1062.50	0.00	26.61
		Mmin	0.0	-155.7	1.000	0.800	0.750	1062.50	0.00	52.57
		Qmax	0.0	-137.5	1.000	0.800	0.750	1062.50	0.00	45.71
		Qmin	0.0	-83.6	1.000	0.800	0.750	1062.50	0.00	26.61
32	51	Nmax	0.0	-83.6	1.000	0.800	0.750	1062.50	0.00	26.60
		Nmin	0.0	-155.7	1.000	0.800	0.750	1062.50	0.00	52.57
		Mmax	0.0	-83.6	1.000	0.800	0.750	1062.50	0.00	26.60
		Mmin	0.0	-155.7	1.000	0.800	0.750	1062.50	0.00	52.57
		Qmax	0.0	-137.5	1.000	0.800	0.750	1062.50	0.00	45.71
		Qmin	0.0	-83.6	1.000	0.800	0.750	1062.50	0.00	26.60
	64	Nmax	0.0	-108.0	1.000	0.800	0.750	1062.50	0.00	35.02
		Nmin	0.0	-194.3	1.000	0.800	0.750	1062.50	0.00	68.09
		Mmax	0.0	-108.0	1.000	0.800	0.750	1062.50	0.00	35.02
		Mmin	0.0	-194.3	1.000	0.800	0.750	1062.50	0.00	68.09
		Qmax	0.0	-177.7	1.000	0.800	0.750	1062.50	0.00	61.25
		Qmin	0.0	-108.0	1.000	0.800	0.750	1062.50	0.00	35.02
33	1	Nmax	115.4	0.0	1.000	0.700	0.650	920.83	44.89	0.00
		Nmin	180.2	0.0	1.000	0.700	0.650	920.83	76.64	0.00
		Mmax	180.2	0.0	1.000	0.700	0.650	920.83	76.64	0.00
		Mmin	115.4	0.0	1.000	0.700	0.650	920.83	44.89	0.00
		Qmax	180.2	0.0	1.000	0.700	0.650	920.83	76.64	0.00
		Qmin	115.4	0.0	1.000	0.700	0.650	920.83	44.89	0.00
	14	Nmax	87.6	0.0	1.000	0.700	0.650	920.83	33.00	0.00
		Nmin	136.8	0.0	1.000	0.700	0.650	920.83	54.66	0.00
		Mmax	136.8	0.0	1.000	0.700	0.650	920.83	54.66	0.00
		Mmin	87.6	0.0	1.000	0.700	0.650	920.83	33.00	0.00
		Qmax	136.8	0.0	1.000	0.700	0.650	920.83	54.66	0.00
		Qmin	87.6	0.0	1.000	0.700	0.650	920.83	33.00	0.00
34	14	Nmax	87.6	0.0	1.000	0.700	0.650	920.83	32.99	0.00
		Nmin	136.8	0.0	1.000	0.700	0.650	920.83	54.65	0.00
		Mmax	136.8	0.0	1.000	0.700	0.650	920.83	54.65	0.00
		Mmin	87.6	0.0	1.000	0.700	0.650	920.83	32.99	0.00
		Qmax	136.8	0.0	1.000	0.700	0.650	920.83	54.65	0.00
		Qmin	87.6	0.0	1.000	0.700	0.650	920.83	32.99	0.00
	16	Nmax	62.5	0.0	1.000	0.700	0.650	920.83	22.97	0.00
		Nmin	97.9	0.0	1.000	0.700	0.650	920.83	37.31	0.00
		Mmax	97.9	0.0	1.000	0.700	0.650	920.83	37.31	0.00
		Mmin	62.5	0.0	1.000	0.700	0.650	920.83	22.97	0.00
		Qmax	97.9	0.0	1.000	0.700	0.650	920.83	37.31	0.00
		Qmin	62.5	0.0	1.000	0.700	0.650	920.83	22.97	0.00

ARMADOJUL_2000_10000_2m.xls PI RIERA DE CAN DE JULIA 28/02/2006
Kv=2000 Kh=10000

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES A AMBOS LADOS

FECHA: 28/02/2006

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As1 (cm2/m)	As2 (cm2/m)
35	16	Nmax	62.5	0.0	1.000	0.700	0.650	920.83	22.96	0.00
		Nmin	97.9	0.0	1.000	0.700	0.650	920.83	37.30	0.00
		Mmax	97.9	0.0	1.000	0.700	0.650	920.83	37.30	0.00
		Mmin	62.5	0.0	1.000	0.700	0.650	920.83	22.96	0.00
		Qmax	97.9	0.0	1.000	0.700	0.650	920.83	37.30	0.00
		Qmin	62.5	0.0	1.000	0.700	0.650	920.83	22.96	0.00
	18	Nmax	40.1	0.0	1.000	0.700	0.650	920.83	14.41	0.00
		Nmin	62.9	0.0	1.000	0.700	0.650	920.83	23.12	0.00
		Mmax	62.9	0.0	1.000	0.700	0.650	920.83	23.12	0.00
		Mmin	40.1	0.0	1.000	0.700	0.650	920.83	14.41	0.00
		Qmax	62.9	0.0	1.000	0.700	0.650	920.83	23.12	0.00
		Qmin	40.1	0.0	1.000	0.700	0.650	920.83	14.41	0.00
36	18	Nmax	40.1	0.0	1.000	0.700	0.650	920.83	14.41	0.00
		Nmin	62.9	0.0	1.000	0.700	0.650	920.83	23.12	0.00
		Mmax	62.9	0.0	1.000	0.700	0.650	920.83	23.12	0.00
		Mmin	40.1	0.0	1.000	0.700	0.650	920.83	14.41	0.00
		Qmax	62.9	0.0	1.000	0.700	0.650	920.83	23.12	0.00
		Qmin	40.1	0.0	1.000	0.700	0.650	920.83	14.41	0.00
	20	Nmax	20.2	0.0	1.000	0.700	0.650	920.83	7.13	0.00
		Nmin	32.0	0.0	1.000	0.700	0.650	920.83	11.40	0.00
		Mmax	32.0	0.0	1.000	0.700	0.650	920.83	11.40	0.00
		Mmin	20.2	0.0	1.000	0.700	0.650	920.83	7.13	0.00
		Qmax	32.0	0.0	1.000	0.700	0.650	920.83	11.40	0.00
		Qmin	20.2	0.0	1.000	0.700	0.650	920.83	7.13	0.00
37	20	Nmax	20.2	0.0	1.000	0.700	0.650	920.83	7.13	0.00
		Nmin	32.0	0.0	1.000	0.700	0.650	920.83	11.40	0.00
		Mmax	32.0	0.0	1.000	0.700	0.650	920.83	11.40	0.00
		Mmin	20.2	0.0	1.000	0.700	0.650	920.83	7.13	0.00
		Qmax	32.0	0.0	1.000	0.700	0.650	920.83	11.40	0.00
		Qmin	20.2	0.0	1.000	0.700	0.650	920.83	7.13	0.00
	22	Nmax	2.7	0.0	1.000	0.700	0.650	920.83	0.95	0.00
		Nmin	4.7	0.0	1.000	0.700	0.650	920.83	1.64	0.00
		Mmax	5.7	0.0	1.000	0.700	0.650	920.83	1.98	0.00
		Mmin	2.7	0.0	1.000	0.700	0.650	920.83	0.95	0.00
		Qmax	4.7	0.0	1.000	0.700	0.650	920.83	1.64	0.00
		Qmin	2.7	0.0	1.000	0.700	0.650	920.83	0.95	0.00
38	22	Nmax	2.7	0.0	1.000	0.700	0.650	920.83	0.95	0.00
		Nmin	4.7	0.0	1.000	0.700	0.650	920.83	1.64	0.00
		Mmax	5.7	0.0	1.000	0.700	0.650	920.83	1.98	0.00
		Mmin	2.7	0.0	1.000	0.700	0.650	920.83	0.95	0.00
		Qmax	4.7	0.0	1.000	0.700	0.650	920.83	1.64	0.00
		Qmin	2.7	0.0	1.000	0.700	0.650	920.83	0.95	0.00
	24	Nmax	0.0	-25.6	1.000	0.700	0.650	920.83	0.00	9.07
		Nmin	0.0	-39.4	1.000	0.700	0.650	920.83	0.00	14.14
		Mmax	0.0	-25.6	1.000	0.700	0.650	920.83	0.00	9.07
		Mmin	0.0	-39.4	1.000	0.700	0.650	920.83	0.00	14.14
		Qmax	0.0	-39.4	1.000	0.700	0.650	920.83	0.00	14.14
		Qmin	0.0	-25.6	1.000	0.700	0.650	920.83	0.00	9.07
39	24	Nmax	0.0	-25.6	1.000	0.700	0.650	920.83	0.00	9.07
		Nmin	0.0	-39.4	1.000	0.700	0.650	920.83	0.00	14.14
		Mmax	0.0	-25.6	1.000	0.700	0.650	920.83	0.00	9.07

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES A AMBOS LADOS

FECHA: 28/02/2006

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As1 (cm2/m)	As2 (cm2/m)
		Mmin	0.0	-39.4	1.000	0.700	0.650	920.83	0.00	14.14
		Qmax	0.0	-39.4	1.000	0.700	0.650	920.83	0.00	14.14
		Qmin	0.0	-25.6	1.000	0.700	0.650	920.83	0.00	9.07
	26	Nmax	0.0	-46.1	1.000	0.700	0.650	920.83	0.00	16.66
		Nmin	0.0	-71.4	1.000	0.700	0.650	920.83	0.00	26.45
		Mmax	0.0	-46.1	1.000	0.700	0.650	920.83	0.00	16.66
		Mmin	0.0	-71.4	1.000	0.700	0.650	920.83	0.00	26.45
		Qmax	0.0	-71.4	1.000	0.700	0.650	920.83	0.00	26.45
		Qmin	0.0	-46.1	1.000	0.700	0.650	920.83	0.00	16.66
40	26	Nmax	0.0	-46.1	1.000	0.700	0.650	920.83	0.00	16.66
		Nmin	0.0	-71.4	1.000	0.700	0.650	920.83	0.00	26.45
		Mmax	0.0	-46.1	1.000	0.700	0.650	920.83	0.00	16.66
		Mmin	0.0	-71.4	1.000	0.700	0.650	920.83	0.00	26.45
		Qmax	0.0	-71.4	1.000	0.700	0.650	920.83	0.00	26.45
		Qmin	0.0	-46.1	1.000	0.700	0.650	920.83	0.00	16.66
	28	Nmax	0.0	-59.9	1.000	0.700	0.650	920.83	0.00	21.94
		Nmin	0.0	-93.0	1.000	0.700	0.650	920.83	0.00	35.25
		Mmax	0.0	-59.9	1.000	0.700	0.650	920.83	0.00	21.94
		Mmin	0.0	-93.0	1.000	0.700	0.650	920.83	0.00	35.25
		Qmax	0.0	-93.0	1.000	0.700	0.650	920.83	0.00	35.25
		Qmin	0.0	-59.9	1.000	0.700	0.650	920.83	0.00	21.94
41	28	Nmax	0.0	-59.9	1.000	0.700	0.650	920.83	0.00	21.94
		Nmin	0.0	-93.0	1.000	0.700	0.650	920.83	0.00	35.25
		Mmax	0.0	-59.9	1.000	0.700	0.650	920.83	0.00	21.94
		Mmin	0.0	-93.0	1.000	0.700	0.650	920.83	0.00	35.25
		Qmax	0.0	-93.0	1.000	0.700	0.650	920.83	0.00	35.25
		Qmin	0.0	-59.9	1.000	0.700	0.650	920.83	0.00	21.94
	30	Nmax	0.0	-67.9	1.000	0.700	0.650	920.83	0.00	25.06
		Nmin	0.0	-105.5	1.000	0.700	0.650	920.83	0.00	40.55
		Mmax	0.0	-67.9	1.000	0.700	0.650	920.83	0.00	25.06
		Mmin	0.0	-105.5	1.000	0.700	0.650	920.83	0.00	40.55
		Qmax	0.0	-105.5	1.000	0.700	0.650	920.83	0.00	40.55
		Qmin	0.0	-67.9	1.000	0.700	0.650	920.83	0.00	25.06
42	30	Nmax	0.0	-67.9	1.000	0.700	0.650	920.83	0.00	25.06
		Nmin	0.0	-105.5	1.000	0.700	0.650	920.83	0.00	40.55
		Mmax	0.0	-67.9	1.000	0.700	0.650	920.83	0.00	25.06
		Mmin	0.0	-105.5	1.000	0.700	0.650	920.83	0.00	40.55
		Qmax	0.0	-105.5	1.000	0.700	0.650	920.83	0.00	40.55
		Qmin	0.0	-67.9	1.000	0.700	0.650	920.83	0.00	25.06
	32	Nmax	0.0	-70.5	1.000	0.700	0.650	920.83	0.00	26.10
		Nmin	0.0	-109.6	1.000	0.700	0.650	920.83	0.00	42.35
		Mmax	0.0	-70.5	1.000	0.700	0.650	920.83	0.00	26.10
		Mmin	0.0	-109.6	1.000	0.700	0.650	920.83	0.00	42.35
		Qmax	0.0	-109.6	1.000	0.700	0.650	920.83	0.00	42.35
		Qmin	0.0	-70.5	1.000	0.700	0.650	920.83	0.00	26.10
43	32	Nmax	0.0	-70.5	1.000	0.700	0.650	920.83	0.00	26.10
		Nmin	0.0	-109.6	1.000	0.700	0.650	920.83	0.00	42.35
		Mmax	0.0	-70.5	1.000	0.700	0.650	920.83	0.00	26.10
		Mmin	0.0	-109.6	1.000	0.700	0.650	920.83	0.00	42.35
		Qmax	0.0	-70.5	1.000	0.700	0.650	920.83	0.00	26.10
		Qmin	0.0	-109.6	1.000	0.700	0.650	920.83	0.00	42.35

ARMADOJUL_2000_10000_2m.xls PI RIERA DE CAN DE JULIA 28/02/2006
Kv=2000 Kh=10000

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES A AMBOS LADOS

FECHA: 28/02/2006

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As1 (cm2/m)	As2 (cm2/m)
	34	Nmax	0.0	-68.0	1.000	0.700	0.650	920.83	0.00	25.11
		Nmin	0.0	-105.8	1.000	0.700	0.650	920.83	0.00	40.67
		Mmax	0.0	-68.0	1.000	0.700	0.650	920.83	0.00	25.11
		Mmin	0.0	-105.8	1.000	0.700	0.650	920.83	0.00	40.67
		Qmax	0.0	-68.0	1.000	0.700	0.650	920.83	0.00	25.11
		Qmin	0.0	-105.8	1.000	0.700	0.650	920.83	0.00	40.67
44	34	Nmax	0.0	-68.0	1.000	0.700	0.650	920.83	0.00	25.11
		Nmin	0.0	-105.8	1.000	0.700	0.650	920.83	0.00	40.67
		Mmax	0.0	-68.0	1.000	0.700	0.650	920.83	0.00	25.11
		Mmin	0.0	-105.8	1.000	0.700	0.650	920.83	0.00	40.67
		Qmax	0.0	-68.0	1.000	0.700	0.650	920.83	0.00	25.11
		Qmin	0.0	-105.8	1.000	0.700	0.650	920.83	0.00	40.67
	36	Nmax	0.0	-60.1	1.000	0.700	0.650	920.83	0.00	22.02
		Nmin	0.0	-93.5	1.000	0.700	0.650	920.83	0.00	35.48
		Mmax	0.0	-60.1	1.000	0.700	0.650	920.83	0.00	22.02
		Mmin	0.0	-93.5	1.000	0.700	0.650	920.83	0.00	35.48
		Qmax	0.0	-60.1	1.000	0.700	0.650	920.83	0.00	22.02
		Qmin	0.0	-93.5	1.000	0.700	0.650	920.83	0.00	35.48
45	36	Nmax	0.0	-60.1	1.000	0.700	0.650	920.83	0.00	22.02
		Nmin	0.0	-93.5	1.000	0.700	0.650	920.83	0.00	35.48
		Mmax	0.0	-60.1	1.000	0.700	0.650	920.83	0.00	22.02
		Mmin	0.0	-93.5	1.000	0.700	0.650	920.83	0.00	35.48
		Qmax	0.0	-60.1	1.000	0.700	0.650	920.83	0.00	22.02
		Qmin	0.0	-93.5	1.000	0.700	0.650	920.83	0.00	35.48
	38	Nmax	0.0	-46.4	1.000	0.700	0.650	920.83	0.00	16.78
		Nmin	0.0	-72.2	1.000	0.700	0.650	920.83	0.00	26.78
		Mmax	0.0	-46.4	1.000	0.700	0.650	920.83	0.00	16.78
		Mmin	0.0	-72.2	1.000	0.700	0.650	920.83	0.00	26.78
		Qmax	0.0	-46.4	1.000	0.700	0.650	920.83	0.00	16.78
		Qmin	0.0	-72.2	1.000	0.700	0.650	920.83	0.00	26.78
46	38	Nmax	0.0	-46.4	1.000	0.700	0.650	920.83	0.00	16.78
		Nmin	0.0	-72.2	1.000	0.700	0.650	920.83	0.00	26.78
		Mmax	0.0	-46.4	1.000	0.700	0.650	920.83	0.00	16.78
		Mmin	0.0	-72.2	1.000	0.700	0.650	920.83	0.00	26.78
		Qmax	0.0	-46.4	1.000	0.700	0.650	920.83	0.00	16.78
		Qmin	0.0	-72.2	1.000	0.700	0.650	920.83	0.00	26.78
	40	Nmax	0.0	-26.0	1.000	0.700	0.650	920.83	0.00	9.22
		Nmin	0.0	-40.5	1.000	0.700	0.650	920.83	0.00	14.55
		Mmax	0.0	-26.0	1.000	0.700	0.650	920.83	0.00	9.22
		Mmin	0.0	-40.5	1.000	0.700	0.650	920.83	0.00	14.55
		Qmax	0.0	-26.0	1.000	0.700	0.650	920.83	0.00	9.22
		Qmin	0.0	-40.5	1.000	0.700	0.650	920.83	0.00	14.55
47	40	Nmax	0.0	-26.0	1.000	0.700	0.650	920.83	0.00	9.22
		Nmin	0.0	-40.5	1.000	0.700	0.650	920.83	0.00	14.55
		Mmax	0.0	-26.0	1.000	0.700	0.650	920.83	0.00	9.22
		Mmin	0.0	-40.5	1.000	0.700	0.650	920.83	0.00	14.55
		Qmax	0.0	-26.0	1.000	0.700	0.650	920.83	0.00	9.22
		Qmin	0.0	-40.5	1.000	0.700	0.650	920.83	0.00	14.55
	42	Nmax	2.2	0.0	1.000	0.700	0.650	920.83	0.77	0.00
		Nmin	3.4	0.0	1.000	0.700	0.650	920.83	1.19	0.00
		Mmax	3.4	0.0	1.000	0.700	0.650	920.83	1.19	0.00

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES A AMBOS LADOS

FECHA: 28/02/2006

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

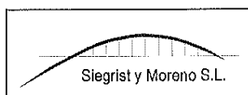
fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As1 (cm2/m)	As2 (cm2/m)
		Mmin	2.2	0.0	1.000	0.700	0.650	920.83	0.77	0.00
		Qmax	2.2	0.0	1.000	0.700	0.650	920.83	0.77	0.00
		Qmin	3.4	0.0	1.000	0.700	0.650	920.83	1.19	0.00
48	42	Nmax	2.2	0.0	1.000	0.700	0.650	920.83	0.77	0.00
		Nmin	3.4	0.0	1.000	0.700	0.650	920.83	1.19	0.00
		Mmax	3.4	0.0	1.000	0.700	0.650	920.83	1.19	0.00
		Mmin	2.2	0.0	1.000	0.700	0.650	920.83	0.77	0.00
		Qmax	2.2	0.0	1.000	0.700	0.650	920.83	0.77	0.00
		Qmin	3.4	0.0	1.000	0.700	0.650	920.83	1.19	0.00
	44	Nmax	19.6	0.0	1.000	0.700	0.650	920.83	6.93	0.00
		Nmin	30.5	0.0	1.000	0.700	0.650	920.83	10.88	0.00
		Mmax	30.5	0.0	1.000	0.700	0.650	920.83	10.88	0.00
		Mmin	19.6	0.0	1.000	0.700	0.650	920.83	6.93	0.00
		Qmax	19.6	0.0	1.000	0.700	0.650	920.83	6.93	0.00
		Qmin	30.5	0.0	1.000	0.700	0.650	920.83	10.88	0.00
49	44	Nmax	19.6	0.0	1.000	0.700	0.650	920.83	6.93	0.00
		Nmin	30.5	0.0	1.000	0.700	0.650	920.83	10.88	0.00
		Mmax	30.5	0.0	1.000	0.700	0.650	920.83	10.88	0.00
		Mmin	19.6	0.0	1.000	0.700	0.650	920.83	6.93	0.00
		Qmax	19.6	0.0	1.000	0.700	0.650	920.83	6.93	0.00
		Qmin	30.5	0.0	1.000	0.700	0.650	920.83	10.88	0.00
	46	Nmax	39.5	0.0	1.000	0.700	0.650	920.83	14.18	0.00
		Nmin	61.4	0.0	1.000	0.700	0.650	920.83	22.54	0.00
		Mmax	61.4	0.0	1.000	0.700	0.650	920.83	22.54	0.00
		Mmin	39.5	0.0	1.000	0.700	0.650	920.83	14.18	0.00
		Qmax	39.5	0.0	1.000	0.700	0.650	920.83	14.18	0.00
		Qmin	61.4	0.0	1.000	0.700	0.650	920.83	22.54	0.00
50	46	Nmax	39.5	0.0	1.000	0.700	0.650	920.83	14.18	0.00
		Nmin	61.4	0.0	1.000	0.700	0.650	920.83	22.54	0.00
		Mmax	61.4	0.0	1.000	0.700	0.650	920.83	22.54	0.00
		Mmin	39.5	0.0	1.000	0.700	0.650	920.83	14.18	0.00
		Qmax	39.5	0.0	1.000	0.700	0.650	920.83	14.18	0.00
		Qmin	61.4	0.0	1.000	0.700	0.650	920.83	22.54	0.00
	48	Nmax	61.9	0.0	1.000	0.700	0.650	920.83	22.70	0.00
		Nmin	96.3	0.0	1.000	0.700	0.650	920.83	36.64	0.00
		Mmax	96.3	0.0	1.000	0.700	0.650	920.83	36.64	0.00
		Mmin	61.9	0.0	1.000	0.700	0.650	920.83	22.70	0.00
		Qmax	61.9	0.0	1.000	0.700	0.650	920.83	22.70	0.00
		Qmin	96.3	0.0	1.000	0.700	0.650	920.83	36.64	0.00
51	48	Nmax	61.9	0.0	1.000	0.700	0.650	920.83	22.70	0.00
		Nmin	96.3	0.0	1.000	0.700	0.650	920.83	36.64	0.00
		Mmax	96.3	0.0	1.000	0.700	0.650	920.83	36.64	0.00
		Mmin	61.9	0.0	1.000	0.700	0.650	920.83	22.70	0.00
		Qmax	61.9	0.0	1.000	0.700	0.650	920.83	22.70	0.00
		Qmin	96.3	0.0	1.000	0.700	0.650	920.83	36.64	0.00
	50	Nmax	86.8	0.0	1.000	0.700	0.650	920.83	32.69	0.00
		Nmin	135.2	0.0	1.000	0.700	0.650	920.83	53.88	0.00
		Mmax	135.2	0.0	1.000	0.700	0.650	920.83	53.88	0.00
		Mmin	86.8	0.0	1.000	0.700	0.650	920.83	32.69	0.00
		Qmax	86.8	0.0	1.000	0.700	0.650	920.83	32.69	0.00
		Qmin	135.2	0.0	1.000	0.700	0.650	920.83	53.88	0.00

ARMADOJUL_2000_10000_2m.xls PI RIERA DE CAN DE JULIA 28/02/2006
Kv=2000 Kh=10000



AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES A AMBOS LADOS

FECHA: 28/02/2006

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As1 (cm2/m)	As2 (cm2/m)
52	50	Nmax	86.8	0.0	1.000	0.700	0.650	920.83	32.70	0.00
		Nmin	135.2	0.0	1.000	0.700	0.650	920.83	53.89	0.00
		Mmax	135.2	0.0	1.000	0.700	0.650	920.83	53.89	0.00
		Mmin	86.8	0.0	1.000	0.700	0.650	920.83	32.70	0.00
		Qmax	86.8	0.0	1.000	0.700	0.650	920.83	32.70	0.00
		Qmin	135.2	0.0	1.000	0.700	0.650	920.83	53.89	0.00
	52	Nmax	114.6	0.0	1.000	0.700	0.650	920.83	44.55	0.00
		Nmin	178.5	0.0	1.000	0.700	0.650	920.83	75.73	0.00
		Mmax	178.5	0.0	1.000	0.700	0.650	920.83	75.73	0.00
		Mmin	114.6	0.0	1.000	0.700	0.650	920.83	44.55	0.00
		Qmax	114.6	0.0	1.000	0.700	0.650	920.83	44.55	0.00
		Qmin	178.5	0.0	1.000	0.700	0.650	920.83	75.73	0.00
53	52	Nmax	114.6	0.0	1.000	0.700	0.650	920.83	44.55	0.00
		Nmin	178.5	0.0	1.000	0.700	0.650	920.83	75.73	0.00
		Mmax	178.5	0.0	1.000	0.700	0.650	920.83	75.73	0.00
		Mmin	114.6	0.0	1.000	0.700	0.650	920.83	44.55	0.00
		Qmax	178.5	0.0	1.000	0.700	0.650	920.83	75.73	0.00
		Qmin	114.6	0.0	1.000	0.700	0.650	920.83	44.55	0.00
	53	Nmax	75.8	0.0	1.000	0.700	0.650	920.83	28.22	0.00
		Nmin	117.1	0.0	1.000	0.700	0.650	920.83	45.64	0.00
		Mmax	117.1	0.0	1.000	0.700	0.650	920.83	45.64	0.00
		Mmin	75.8	0.0	1.000	0.700	0.650	920.83	28.22	0.00
		Qmax	117.1	0.0	1.000	0.700	0.650	920.83	45.64	0.00
		Qmin	75.8	0.0	1.000	0.700	0.650	920.83	28.22	0.00
54	53	Nmax	75.8	0.0	1.000	0.700	0.650	920.83	28.22	0.00
		Nmin	117.1	0.0	1.000	0.700	0.650	920.83	45.64	0.00
		Mmax	117.1	0.0	1.000	0.700	0.650	920.83	45.64	0.00
		Mmin	75.8	0.0	1.000	0.700	0.650	920.83	28.22	0.00
		Qmax	117.1	0.0	1.000	0.700	0.650	920.83	45.64	0.00
		Qmin	75.8	0.0	1.000	0.700	0.650	920.83	28.22	0.00
	54	Nmax	44.1	0.0	1.000	0.700	0.650	920.83	15.90	0.00
		Nmin	67.1	0.0	1.000	0.700	0.650	920.83	24.73	0.00
		Mmax	67.1	0.0	1.000	0.700	0.650	920.83	24.73	0.00
		Mmin	44.1	0.0	1.000	0.700	0.650	920.83	15.90	0.00
		Qmax	67.1	0.0	1.000	0.700	0.650	920.83	24.73	0.00
		Qmin	44.1	0.0	1.000	0.700	0.650	920.83	15.90	0.00
55	54	Nmax	44.1	0.0	1.000	0.700	0.650	920.83	15.90	0.00
		Nmin	67.1	0.0	1.000	0.700	0.650	920.83	24.73	0.00
		Mmax	67.1	0.0	1.000	0.700	0.650	920.83	24.73	0.00
		Mmin	44.1	0.0	1.000	0.700	0.650	920.83	15.90	0.00
		Qmax	67.1	0.0	1.000	0.700	0.650	920.83	24.73	0.00
		Qmin	44.1	0.0	1.000	0.700	0.650	920.83	15.90	0.00
	55	Nmax	19.3	0.0	1.000	0.700	0.650	920.83	6.79	0.00
		Nmin	28.2	0.0	1.000	0.700	0.650	920.83	10.01	0.00
		Mmax	28.2	0.0	1.000	0.700	0.650	920.83	10.01	0.00
		Mmin	19.3	0.0	1.000	0.700	0.650	920.83	6.79	0.00
		Qmax	28.2	0.0	1.000	0.700	0.650	920.83	10.01	0.00
		Qmin	19.3	0.0	1.000	0.700	0.650	920.83	6.79	0.00
56	55	Nmax	19.3	0.0	1.000	0.700	0.650	920.83	6.79	0.00
		Nmin	28.2	0.0	1.000	0.700	0.650	920.83	10.01	0.00
		Mmax	28.2	0.0	1.000	0.700	0.650	920.83	10.01	0.00

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES A AMBOS LADOS

FECHA: 28/02/2006

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As1 (cm2/m)	As2 (cm2/m)
		Mmin	19.3	0.0	1.000	0.700	0.650	920.83	6.79	0.00
		Qmax	28.2	0.0	1.000	0.700	0.650	920.83	10.01	0.00
		Qmin	19.3	0.0	1.000	0.700	0.650	920.83	6.79	0.00
	56	Nmax	1.9	0.0	1.000	0.700	0.650	920.83	0.65	0.00
		Nmin	1.4	0.0	1.000	0.700	0.650	920.83	0.48	0.00
		Mmax	1.9	0.0	1.000	0.700	0.650	920.83	0.65	0.00
		Mmin	1.4	-4.3	1.000	0.700	0.650	920.83	0.48	1.50
		Qmax	1.4	0.0	1.000	0.700	0.650	920.83	0.48	0.00
		Qmin	1.9	0.0	1.000	0.700	0.650	920.83	0.65	0.00
57	56	Nmax	1.9	0.0	1.000	0.700	0.650	920.83	0.65	0.00
		Nmin	1.4	0.0	1.000	0.700	0.650	920.83	0.48	0.00
		Mmax	1.9	0.0	1.000	0.700	0.650	920.83	0.65	0.00
		Mmin	1.4	-4.3	1.000	0.700	0.650	920.83	0.48	1.50
		Qmax	1.4	0.0	1.000	0.700	0.650	920.83	0.48	0.00
		Qmin	1.9	0.0	1.000	0.700	0.650	920.83	0.65	0.00
	57	Nmax	0.0	-9.6	1.000	0.700	0.650	920.83	0.00	3.35
		Nmin	0.0	-16.3	1.000	0.700	0.650	920.83	0.00	5.72
		Mmax	0.0	-9.6	1.000	0.700	0.650	920.83	0.00	3.35
		Mmin	0.0	-18.9	1.000	0.700	0.650	920.83	0.00	6.67
		Qmax	0.0	-16.3	1.000	0.700	0.650	920.83	0.00	5.72
		Qmin	0.0	-9.6	1.000	0.700	0.650	920.83	0.00	3.35
58	57	Nmax	0.0	-9.6	1.000	0.700	0.650	920.83	0.00	3.35
		Nmin	0.0	-16.3	1.000	0.700	0.650	920.83	0.00	5.72
		Mmax	0.0	-9.6	1.000	0.700	0.650	920.83	0.00	3.35
		Mmin	0.0	-18.9	1.000	0.700	0.650	920.83	0.00	6.67
		Qmax	0.0	-16.3	1.000	0.700	0.650	920.83	0.00	5.72
		Qmin	0.0	-18.9	1.000	0.700	0.650	920.83	0.00	6.67
	58	Nmax	0.0	-13.6	1.000	0.700	0.650	920.83	0.00	4.78
		Nmin	0.0	-21.8	1.000	0.700	0.650	920.83	0.00	7.70
		Mmax	0.0	-13.6	1.000	0.700	0.650	920.83	0.00	4.78
		Mmin	0.0	-22.1	1.000	0.700	0.650	920.83	0.00	7.83
		Qmax	0.0	-21.8	1.000	0.700	0.650	920.83	0.00	7.70
		Qmin	0.0	-22.1	1.000	0.700	0.650	920.83	0.00	7.83
59	58	Nmax	0.0	-13.6	1.000	0.700	0.650	920.83	0.00	4.78
		Nmin	0.0	-21.8	1.000	0.700	0.650	920.83	0.00	7.70
		Mmax	0.0	-13.6	1.000	0.700	0.650	920.83	0.00	4.78
		Mmin	0.0	-22.1	1.000	0.700	0.650	920.83	0.00	7.83
		Qmax	0.0	-13.6	1.000	0.700	0.650	920.83	0.00	4.78
		Qmin	0.0	-22.1	1.000	0.700	0.650	920.83	0.00	7.83
	59	Nmax	0.0	-10.7	1.000	0.700	0.650	920.83	0.00	3.74
		Nmin	0.0	-16.1	1.000	0.700	0.650	920.83	0.00	5.67
		Mmax	0.0	-10.7	1.000	0.700	0.650	920.83	0.00	3.74
		Mmin	0.0	-16.1	1.000	0.700	0.650	920.83	0.00	5.67
		Qmax	0.0	-10.7	1.000	0.700	0.650	920.83	0.00	3.74
		Qmin	0.0	-13.9	1.000	0.700	0.650	920.83	0.00	4.89
60	59	Nmax	0.0	-10.7	1.000	0.700	0.650	920.83	0.00	3.74
		Nmin	0.0	-16.1	1.000	0.700	0.650	920.83	0.00	5.68
		Mmax	0.0	-10.7	1.000	0.700	0.650	920.83	0.00	3.74
		Mmin	0.0	-16.1	1.000	0.700	0.650	920.83	0.00	5.68
		Qmax	0.0	-10.7	1.000	0.700	0.650	920.83	0.00	3.74
		Qmin	0.0	-14.0	1.000	0.700	0.650	920.83	0.00	4.90

ARMADOJUL_2000_10000_2m.xls PI RIERA DE CAN DE JULIA 28/02/2006
Kv=2000 Kh=10000

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES A AMBOS LADOS

FECHA: 28/02/2006

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As1 (cm2/m)	As2 (cm2/m)
	60	Nmax	0.0	-1.5	1.000	0.700	0.650	920.83	0.00	0.52
		Nmin	0.6	-0.8	1.000	0.700	0.650	920.83	0.22	0.27
		Mmax	5.5	-0.8	1.000	0.700	0.650	920.83	1.92	0.27
		Mmin	0.0	-1.5	1.000	0.700	0.650	920.83	0.00	0.52
		Qmax	0.0	-1.5	1.000	0.700	0.650	920.83	0.00	0.52
		Qmin	5.5	-0.8	1.000	0.700	0.650	920.83	1.92	0.27
61	60	Nmax	0.0	-1.5	1.000	0.700	0.650	920.83	0.00	0.52
		Nmin	0.6	-0.8	1.000	0.700	0.650	920.83	0.22	0.27
		Mmax	5.5	-0.8	1.000	0.700	0.650	920.83	1.92	0.27
		Mmin	0.0	-1.5	1.000	0.700	0.650	920.83	0.00	0.52
		Qmax	0.0	-1.5	1.000	0.700	0.650	920.83	0.00	0.52
		Qmin	5.5	-0.8	1.000	0.700	0.650	920.83	1.92	0.27
	61	Nmax	16.1	0.0	1.000	0.700	0.650	920.83	5.66	0.00
		Nmin	28.4	0.0	1.000	0.700	0.650	920.83	10.11	0.00
		Mmax	36.2	0.0	1.000	0.700	0.650	920.83	12.95	0.00
		Mmin	16.1	0.0	1.000	0.700	0.650	920.83	5.66	0.00
		Qmax	16.1	0.0	1.000	0.700	0.650	920.83	5.66	0.00
		Qmin	36.2	0.0	1.000	0.700	0.650	920.83	12.95	0.00
62	61	Nmax	16.1	0.0	1.000	0.700	0.650	920.83	5.66	0.00
		Nmin	28.4	0.0	1.000	0.700	0.650	920.83	10.11	0.00
		Mmax	36.2	0.0	1.000	0.700	0.650	920.83	12.95	0.00
		Mmin	16.1	0.0	1.000	0.700	0.650	920.83	5.66	0.00
		Qmax	16.1	0.0	1.000	0.700	0.650	920.83	5.66	0.00
		Qmin	36.2	0.0	1.000	0.700	0.650	920.83	12.95	0.00
	62	Nmax	39.8	0.0	1.000	0.700	0.650	920.83	14.28	0.00
		Nmin	67.1	0.0	1.000	0.700	0.650	920.83	24.76	0.00
		Mmax	77.7	0.0	1.000	0.700	0.650	920.83	28.99	0.00
		Mmin	39.8	0.0	1.000	0.700	0.650	920.83	14.28	0.00
		Qmax	39.8	0.0	1.000	0.700	0.650	920.83	14.28	0.00
		Qmin	77.7	0.0	1.000	0.700	0.650	920.83	28.99	0.00
63	62	Nmax	39.8	0.0	1.000	0.700	0.650	920.83	14.28	0.00
		Nmin	67.1	0.0	1.000	0.700	0.650	920.83	24.76	0.00
		Mmax	77.7	0.0	1.000	0.700	0.650	920.83	28.99	0.00
		Mmin	39.8	0.0	1.000	0.700	0.650	920.83	14.28	0.00
		Qmax	39.8	0.0	1.000	0.700	0.650	920.83	14.28	0.00
		Qmin	77.7	0.0	1.000	0.700	0.650	920.83	28.99	0.00
	63	Nmax	70.4	0.0	1.000	0.700	0.650	920.83	26.04	0.00
		Nmin	116.8	0.0	1.000	0.700	0.650	920.83	45.52	0.00
		Mmax	130.4	0.0	1.000	0.700	0.650	920.83	51.67	0.00
		Mmin	70.4	0.0	1.000	0.700	0.650	920.83	26.04	0.00
		Qmax	70.4	0.0	1.000	0.700	0.650	920.83	26.04	0.00
		Qmin	130.4	0.0	1.000	0.700	0.650	920.83	51.67	0.00
64	63	Nmax	70.4	0.0	1.000	0.700	0.650	920.83	26.04	0.00
		Nmin	116.8	0.0	1.000	0.700	0.650	920.83	45.52	0.00
		Mmax	130.4	0.0	1.000	0.700	0.650	920.83	51.67	0.00
		Mmin	70.4	0.0	1.000	0.700	0.650	920.83	26.04	0.00
		Qmax	70.4	0.0	1.000	0.700	0.650	920.83	26.04	0.00
		Qmin	130.4	0.0	1.000	0.700	0.650	920.83	51.67	0.00
	64	Nmax	108.0	0.0	1.000	0.700	0.650	920.83	41.62	0.00
		Nmin	177.7	0.0	1.000	0.700	0.650	920.83	75.29	0.00
		Mmax	194.3	0.0	1.000	0.700	0.650	920.83	84.67	0.00

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES A AMBOS LADOS

FECHA: 28/02/2006

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As1 (cm2/m)	As2 (cm2/m)
		Mmin	108.0	0.0	1.000	0.700	0.650	920.83	41.62	0.00
		Qmax	108.0	0.0	1.000	0.700	0.650	920.83	41.62	0.00
		Qmin	194.3	0.0	1.000	0.700	0.650	920.83	84.67	0.00

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES A AMBOS LADOS

FECHA: 28/02/2006

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
1	1	Nmax	98.9	1.000	0.700	0.650	325.0	31.9	26.6	30.9
		Nmin	156.5	1.000	0.700	0.650	325.0	38.2	31.8	53.3
		Mmax	98.9	1.000	0.700	0.650	325.0	31.9	26.6	30.9
		Mmin	156.5	1.000	0.700	0.650	325.0	38.2	31.8	53.3
		Qmax	98.9	1.000	0.700	0.650	325.0	31.9	26.6	30.9
		Qmin	156.5	1.000	0.700	0.650	325.0	38.2	31.8	53.3
	2	Nmax	98.9	1.000	0.700	0.650	325.0	27.4	22.9	32.5
		Nmin	156.5	1.000	0.700	0.650	325.0	32.2	26.9	55.4
		Mmax	98.9	1.000	0.700	0.650	325.0	27.4	22.9	32.5
		Mmin	156.5	1.000	0.700	0.650	325.0	32.2	26.9	55.4
		Qmax	98.9	1.000	0.700	0.650	325.0	27.4	22.9	32.5
		Qmin	156.5	1.000	0.700	0.650	325.0	32.2	26.9	55.4
2	2	Nmax	81.4	1.000	0.700	0.650	325.0	27.4	22.9	25.0
		Nmin	128.3	1.000	0.700	0.650	325.0	32.2	26.9	43.4
		Mmax	81.4	1.000	0.700	0.650	325.0	27.4	22.9	25.0
		Mmin	128.3	1.000	0.700	0.650	325.0	32.2	26.9	43.4
		Qmax	81.4	1.000	0.700	0.650	325.0	27.4	22.9	25.0
		Qmin	128.3	1.000	0.700	0.650	325.0	32.2	26.9	43.4
	3	Nmax	81.4	1.000	0.700	0.650	325.0	22.6	18.8	26.7
		Nmin	128.3	1.000	0.700	0.650	325.0	26.2	21.9	45.5
		Mmax	81.4	1.000	0.700	0.650	325.0	22.6	18.8	26.7
		Mmin	128.3	1.000	0.700	0.650	325.0	26.2	21.9	45.5
		Qmax	81.4	1.000	0.700	0.650	325.0	22.6	18.8	26.7
		Qmin	128.3	1.000	0.700	0.650	325.0	26.2	21.9	45.5
3	3	Nmax	63.5	1.000	0.700	0.650	325.0	22.6	18.8	19.1
		Nmin	99.7	1.000	0.700	0.650	325.0	26.2	21.9	33.3
		Mmax	63.5	1.000	0.700	0.650	325.0	22.6	18.8	19.1
		Mmin	99.7	1.000	0.700	0.650	325.0	26.2	21.9	33.3
		Qmax	63.5	1.000	0.700	0.650	325.0	22.6	18.8	19.1
		Qmin	99.7	1.000	0.700	0.650	325.0	26.2	21.9	33.3
	4	Nmax	63.5	1.000	0.700	0.650	325.0	16.9	14.1	21.1
		Nmin	99.7	1.000	0.700	0.650	325.0	19.3	16.1	35.7
		Mmax	63.5	1.000	0.700	0.650	325.0	16.9	14.1	21.1
		Mmin	99.7	1.000	0.700	0.650	325.0	19.3	16.1	35.7
		Qmax	63.5	1.000	0.700	0.650	325.0	16.9	14.1	21.1
		Qmin	99.7	1.000	0.700	0.650	325.0	19.3	16.1	35.7
4	4	Nmax	45.7	1.000	0.700	0.650	325.0	16.9	14.1	13.5
		Nmin	71.1	1.000	0.700	0.650	325.0	19.3	16.1	23.5
		Mmax	45.7	1.000	0.700	0.650	325.0	16.9	14.1	13.5
		Mmin	71.1	1.000	0.700	0.650	325.0	19.3	16.1	23.5
		Qmax	45.7	1.000	0.700	0.650	325.0	16.9	14.1	13.5
		Qmin	71.1	1.000	0.700	0.650	325.0	19.3	16.1	23.5
	5	Nmax	45.7	1.000	0.700	0.650	325.0	7.0	5.9	17.0
		Nmin	71.1	1.000	0.700	0.650	325.0	5.9	4.9	28.3
		Mmax	67.6	1.000	0.700	0.650	325.0	10.3	8.6	25.2
		Mmin	45.7	1.000	0.700	0.650	325.0	7.0	5.9	17.0
		Qmax	45.7	1.000	0.700	0.650	325.0	7.0	5.9	17.0
		Qmin	71.1	1.000	0.700	0.650	325.0	5.9	4.9	28.3
5	5	Nmax	27.9	1.000	0.700	0.650	325.0	7.0	5.9	9.4
		Nmin	42.7	1.000	0.700	0.650	325.0	5.9	4.9	16.1
		Mmax	38.6	1.000	0.700	0.650	325.0	10.3	8.6	12.8

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES A AMBOS LADOS

FECHA: 28/02/2006

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
		Mmin	27.9	1.000	0.700	0.650	325.0	7.0	5.9	9.4
		Qmax	27.9	1.000	0.700	0.650	325.0	7.0	5.9	9.4
		Qmin	42.7	1.000	0.700	0.650	325.0	5.9	4.9	16.1
	6	Nmax	27.9	1.000	0.700	0.650	325.0	13.8	11.5	7.0
		Nmin	42.7	1.000	0.700	0.650	325.0	16.4	13.6	12.4
		Mmax	38.6	1.000	0.700	0.650	325.0	17.1	14.3	10.4
		Mmin	27.9	1.000	0.700	0.650	325.0	13.8	11.5	7.0
		Qmax	27.9	1.000	0.700	0.650	325.0	13.8	11.5	7.0
		Qmin	42.7	1.000	0.700	0.650	325.0	16.4	13.6	12.4
6	6	Nmax	10.2	1.000	0.700	0.650	325.0	13.8	-	No necesita
		Nmin	14.5	1.000	0.700	0.650	325.0	16.4	-	No necesita
		Mmax	10.2	1.000	0.700	0.650	325.0	17.1	-	No necesita
		Mmin	10.2	1.000	0.700	0.650	325.0	13.8	-	No necesita
		Qmax	10.2	1.000	0.700	0.650	325.0	13.8	-	No necesita
		Qmin	14.5	1.000	0.700	0.650	325.0	16.4	-	No necesita
	7	Nmax	10.2	1.000	0.700	0.650	325.0	15.4	-	No necesita
		Nmin	14.5	1.000	0.700	0.650	325.0	18.1	-	No necesita
		Mmax	10.2	1.000	0.700	0.650	325.0	18.2	-	No necesita
		Mmin	10.2	1.000	0.700	0.650	325.0	15.4	-	No necesita
		Qmax	10.2	1.000	0.700	0.650	325.0	15.4	-	No necesita
		Qmin	14.5	1.000	0.700	0.650	325.0	18.1	-	No necesita
7	7	Nmax	7.4	1.000	0.700	0.650	325.0	15.4	-	No necesita
		Nmin	13.7	1.000	0.700	0.650	325.0	18.0	-	No necesita
		Mmax	18.9	1.000	0.700	0.650	325.0	18.2	15.2	1.6
		Mmin	7.4	1.000	0.700	0.650	325.0	15.4	-	No necesita
		Qmax	18.9	1.000	0.700	0.650	325.0	18.2	15.2	1.6
		Qmin	7.4	1.000	0.700	0.650	325.0	15.4	-	No necesita
	8	Nmax	7.4	1.000	0.700	0.650	325.0	14.2	-	No necesita
		Nmin	13.7	1.000	0.700	0.650	325.0	16.5	-	No necesita
		Mmax	13.7	1.000	0.700	0.650	325.0	16.5	-	No necesita
		Mmin	7.4	1.000	0.700	0.650	325.0	14.2	-	No necesita
		Qmax	18.9	1.000	0.700	0.650	325.0	16.0	13.3	2.4
		Qmin	7.4	1.000	0.700	0.650	325.0	14.2	-	No necesita
8	8	Nmax	25.0	1.000	0.700	0.650	325.0	14.2	11.9	5.6
		Nmin	41.8	1.000	0.700	0.650	325.0	16.5	13.7	12.0
		Mmax	41.8	1.000	0.700	0.650	325.0	16.5	13.7	12.0
		Mmin	25.0	1.000	0.700	0.650	325.0	14.2	11.9	5.6
		Qmax	47.6	1.000	0.700	0.650	325.0	16.0	13.3	14.7
		Qmin	25.0	1.000	0.700	0.650	325.0	14.2	11.9	5.6
	9	Nmax	25.0	1.000	0.700	0.650	325.0	7.6	6.4	7.9
		Nmin	41.8	1.000	0.700	0.650	325.0	7.2	6.0	15.3
		Mmax	25.0	1.000	0.700	0.650	325.0	7.6	6.4	7.9
		Mmin	47.6	1.000	0.700	0.650	325.0	9.0	7.5	17.2
		Qmax	47.6	1.000	0.700	0.650	325.0	9.0	7.5	17.2
		Qmin	25.0	1.000	0.700	0.650	325.0	7.6	6.4	7.9
9	9	Nmax	42.7	1.000	0.700	0.650	325.0	7.6	6.4	15.5
		Nmin	70.1	1.000	0.700	0.650	325.0	7.2	6.0	27.4
		Mmax	42.7	1.000	0.700	0.650	325.0	7.6	6.4	15.5
		Mmin	76.5	1.000	0.700	0.650	325.0	9.0	7.5	29.5
		Qmax	76.5	1.000	0.700	0.650	325.0	9.0	7.5	29.5
		Qmin	42.7	1.000	0.700	0.650	325.0	7.6	6.4	15.5

ARMADOJUL_2000_10000_2m.xls PI RIERA DE CAN DE JULIA 28/02/2006
Kv=2000 Kh=10000

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES A AMBOS LADOS

FECHA: 28/02/2006

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
	10	Nmax	42.7	1.000	0.700	0.650	325.0	15.8	13.2	12.6
		Nmin	70.1	1.000	0.700	0.650	325.0	19.1	15.9	23.2
		Mmax	42.7	1.000	0.700	0.650	325.0	15.8	13.2	12.6
		Mmin	76.5	1.000	0.700	0.650	325.0	20.5	17.1	25.4
		Qmax	76.5	1.000	0.700	0.650	325.0	20.5	17.1	25.4
		Qmin	42.7	1.000	0.700	0.650	325.0	15.8	13.2	12.6
10	10	Nmax	60.5	1.000	0.700	0.650	325.0	15.8	13.2	20.2
		Nmin	98.6	1.000	0.700	0.650	325.0	19.1	15.9	35.3
		Mmax	60.5	1.000	0.700	0.650	325.0	15.8	13.2	20.2
		Mmin	105.5	1.000	0.700	0.650	325.0	20.5	17.1	37.8
		Qmax	105.5	1.000	0.700	0.650	325.0	20.5	17.1	37.8
		Qmin	60.5	1.000	0.700	0.650	325.0	15.8	13.2	20.2
	11	Nmax	60.5	1.000	0.700	0.650	325.0	21.7	18.1	18.1
		Nmin	98.6	1.000	0.700	0.650	325.0	26.0	21.7	32.9
		Mmax	60.5	1.000	0.700	0.650	325.0	21.7	18.1	18.1
		Mmin	105.5	1.000	0.700	0.650	325.0	27.2	22.7	35.4
		Qmax	105.5	1.000	0.700	0.650	325.0	27.2	22.7	35.4
		Qmin	60.5	1.000	0.700	0.650	325.0	21.7	18.1	18.1
11	11	Nmax	78.2	1.000	0.700	0.650	325.0	21.7	18.1	25.7
		Nmin	127.0	1.000	0.700	0.650	325.0	26.0	21.7	45.0
		Mmax	78.2	1.000	0.700	0.650	325.0	21.7	18.1	25.7
		Mmin	134.4	1.000	0.700	0.650	325.0	27.2	22.7	47.7
		Qmax	134.4	1.000	0.700	0.650	325.0	27.2	22.7	47.7
		Qmin	78.2	1.000	0.700	0.650	325.0	21.7	18.1	25.7
	12	Nmax	78.2	1.000	0.700	0.650	325.0	26.6	22.2	23.9
		Nmin	127.0	1.000	0.700	0.650	325.0	32.0	26.7	42.9
		Mmax	78.2	1.000	0.700	0.650	325.0	26.6	22.2	23.9
		Mmin	134.4	1.000	0.700	0.650	325.0	33.2	27.7	45.6
		Qmax	134.4	1.000	0.700	0.650	325.0	33.2	27.7	45.6
		Qmin	78.2	1.000	0.700	0.650	325.0	26.6	22.2	23.9
12	12	Nmax	95.7	1.000	0.700	0.650	325.0	26.6	22.2	31.4
		Nmin	154.9	1.000	0.700	0.650	325.0	32.0	26.7	54.8
		Mmax	95.7	1.000	0.700	0.650	325.0	26.6	22.2	31.4
		Mmin	162.6	1.000	0.700	0.650	325.0	33.2	27.7	57.7
		Qmax	162.6	1.000	0.700	0.650	325.0	33.2	27.7	57.7
		Qmin	95.7	1.000	0.700	0.650	325.0	26.6	22.2	31.4
	13	Nmax	95.7	1.000	0.700	0.650	325.0	31.2	26.0	29.8
		Nmin	154.9	1.000	0.700	0.650	325.0	37.9	31.6	52.7
		Mmax	95.7	1.000	0.700	0.650	325.0	31.2	26.0	29.8
		Mmin	162.6	1.000	0.700	0.650	325.0	39.3	32.8	55.5
		Qmax	162.6	1.000	0.700	0.650	325.0	39.3	32.8	55.5
		Qmin	95.7	1.000	0.700	0.650	325.0	31.2	26.0	29.8
13	13	Nmax	70.8	1.000	0.800	0.750	375.0	31.6	26.3	16.5
		Nmin	109.5	1.000	0.800	0.750	375.0	39.2	32.7	28.5
		Mmax	70.8	1.000	0.800	0.750	375.0	31.6	26.3	16.5
		Mmin	109.5	1.000	0.800	0.750	375.0	39.2	32.7	28.5
		Qmax	70.8	1.000	0.800	0.750	375.0	31.6	26.3	16.5
		Qmin	116.4	1.000	0.800	0.750	375.0	38.0	31.7	31.4
	15	Nmax	66.0	1.000	0.800	0.750	375.0	28.8	24.0	15.6
		Nmin	106.4	1.000	0.800	0.750	375.0	36.0	30.0	28.3
		Mmax	66.0	1.000	0.800	0.750	375.0	28.8	24.0	15.6

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES A AMBOS LADOS

FECHA: 28/02/2006

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
		Mmin	106.4	1.000	0.800	0.750	375.0	36.0	30.0	28.3
		Qmax	66.0	1.000	0.800	0.750	375.0	28.8	24.0	15.6
		Qmin	108.6	1.000	0.800	0.750	375.0	34.5	28.7	29.6
14	15	Nmax	66.0	1.000	0.800	0.750	375.0	28.8	24.0	15.5
		Nmin	106.3	1.000	0.800	0.750	375.0	36.0	30.0	28.3
		Mmax	66.0	1.000	0.800	0.750	375.0	28.8	24.0	15.5
		Mmin	106.3	1.000	0.800	0.750	375.0	36.0	30.0	28.3
		Qmax	66.0	1.000	0.800	0.750	375.0	28.8	24.0	15.5
		Qmin	108.5	1.000	0.800	0.750	375.0	34.5	28.7	29.5
	17	Nmax	61.3	1.000	0.800	0.750	375.0	25.8	21.5	14.7
		Nmin	103.2	1.000	0.800	0.750	375.0	32.5	27.0	28.2
		Mmax	61.3	1.000	0.800	0.750	375.0	25.8	21.5	14.7
		Mmin	103.2	1.000	0.800	0.750	375.0	32.5	27.0	28.2
		Qmax	61.3	1.000	0.800	0.750	375.0	25.8	21.5	14.7
		Qmin	103.2	1.000	0.800	0.750	375.0	32.5	27.0	28.2
15	17	Nmax	61.3	1.000	0.800	0.750	375.0	25.8	21.5	14.8
		Nmin	103.3	1.000	0.800	0.750	375.0	32.5	27.0	28.2
		Mmax	61.3	1.000	0.800	0.750	375.0	25.8	21.5	14.8
		Mmin	103.3	1.000	0.800	0.750	375.0	32.5	27.0	28.2
		Qmax	61.3	1.000	0.800	0.750	375.0	25.8	21.5	14.8
		Qmin	103.3	1.000	0.800	0.750	375.0	32.5	27.0	28.2
	19	Nmax	56.6	1.000	0.800	0.750	375.0	22.3	18.6	14.1
		Nmin	100.2	1.000	0.800	0.750	375.0	28.4	23.7	28.3
		Mmax	56.6	1.000	0.800	0.750	375.0	22.3	18.6	14.1
		Mmin	100.2	1.000	0.800	0.750	375.0	28.4	23.7	28.3
		Qmax	56.6	1.000	0.800	0.750	375.0	22.3	18.6	14.1
		Qmin	100.2	1.000	0.800	0.750	375.0	28.4	23.7	28.3
16	19	Nmax	56.5	1.000	0.800	0.750	375.0	22.3	18.6	14.0
		Nmin	100.0	1.000	0.800	0.750	375.0	28.4	23.7	28.3
		Mmax	56.5	1.000	0.800	0.750	375.0	22.3	18.6	14.0
		Mmin	100.0	1.000	0.800	0.750	375.0	28.4	23.7	28.3
		Qmax	56.5	1.000	0.800	0.750	375.0	22.3	18.6	14.0
		Qmin	100.0	1.000	0.800	0.750	375.0	28.4	23.7	28.3
	21	Nmax	51.8	1.000	0.800	0.750	375.0	17.8	14.9	13.7
		Nmin	96.9	1.000	0.800	0.750	375.0	23.2	19.4	28.7
		Mmax	51.8	1.000	0.800	0.750	375.0	17.8	14.9	13.7
		Mmin	96.9	1.000	0.800	0.750	375.0	23.2	19.4	28.7
		Qmax	51.8	1.000	0.800	0.750	375.0	17.8	14.9	13.7
		Qmin	96.9	1.000	0.800	0.750	375.0	23.2	19.4	28.7
17	21	Nmax	51.9	1.000	0.800	0.750	375.0	17.8	14.9	13.7
		Nmin	97.0	1.000	0.800	0.750	375.0	23.2	19.4	28.7
		Mmax	51.9	1.000	0.800	0.750	375.0	17.8	14.9	13.7
		Mmin	97.0	1.000	0.800	0.750	375.0	23.2	19.4	28.7
		Qmax	51.9	1.000	0.800	0.750	375.0	17.8	14.9	13.7
		Qmin	97.0	1.000	0.800	0.750	375.0	23.2	19.4	28.7
	23	Nmax	47.1	1.000	0.800	0.750	375.0	9.5	7.9	14.5
		Nmin	93.9	1.000	0.800	0.750	375.0	14.5	12.1	30.3
		Mmax	47.1	1.000	0.800	0.750	375.0	9.5	7.9	14.5
		Mmin	93.9	1.000	0.800	0.750	375.0	14.5	12.1	30.3
		Qmax	47.1	1.000	0.800	0.750	375.0	9.5	7.9	14.5
		Qmin	93.9	1.000	0.800	0.750	375.0	14.5	12.1	30.3

ARMADOJUL_2000_10000_2m.xls PI RIERA DE CAN DE JULIA 28/02/2006
Kv=2000 Kh=10000

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES A AMBOS LADOS

FECHA: 28/02/2006

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
18	23	Nmax	47.1	1.000	0.800	0.750	375.0	9.5	7.9	14.5
		Nmin	93.8	1.000	0.800	0.750	375.0	14.5	12.1	30.3
		Mmax	47.1	1.000	0.800	0.750	375.0	9.5	7.9	14.5
		Mmin	93.8	1.000	0.800	0.750	375.0	14.5	12.1	30.3
		Qmax	47.1	1.000	0.800	0.750	375.0	9.5	7.9	14.5
		Qmin	93.8	1.000	0.800	0.750	375.0	14.5	12.1	30.3
	25	Nmax	37.7	1.000	0.800	0.750	375.0	19.5	16.3	7.9
		Nmin	75.0	1.000	0.800	0.750	375.0	23.9	19.9	20.4
		Mmax	75.0	1.000	0.800	0.750	375.0	23.9	19.9	20.4
		Mmin	37.7	1.000	0.800	0.750	375.0	19.5	16.3	7.9
		Qmax	37.7	1.000	0.800	0.750	375.0	19.5	16.3	7.9
		Qmin	75.0	1.000	0.800	0.750	375.0	23.9	19.9	20.4
19	25	Nmax	37.7	1.000	0.800	0.750	375.0	19.5	16.3	7.9
		Nmin	75.0	1.000	0.800	0.750	375.0	23.9	19.9	20.4
		Mmax	75.0	1.000	0.800	0.750	375.0	23.9	19.9	20.4
		Mmin	37.7	1.000	0.800	0.750	375.0	19.5	16.3	7.9
		Qmax	37.7	1.000	0.800	0.750	375.0	19.5	16.3	7.9
		Qmin	75.0	1.000	0.800	0.750	375.0	23.9	19.9	20.4
	27	Nmax	28.3	1.000	0.800	0.750	375.0	24.2	20.1	3.0
		Nmin	56.2	1.000	0.800	0.750	375.0	30.2	25.2	11.5
		Mmax	56.2	1.000	0.800	0.750	375.0	30.2	25.2	11.5
		Mmin	28.3	1.000	0.800	0.750	375.0	24.2	20.1	3.0
		Qmax	28.3	1.000	0.800	0.750	375.0	24.2	20.1	3.0
		Qmin	56.2	1.000	0.800	0.750	375.0	30.2	25.2	11.5
20	27	Nmax	28.3	1.000	0.800	0.750	375.0	24.2	20.1	3.0
		Nmin	56.2	1.000	0.800	0.750	375.0	30.2	25.2	11.5
		Mmax	56.2	1.000	0.800	0.750	375.0	30.2	25.2	11.5
		Mmin	28.3	1.000	0.800	0.750	375.0	24.2	20.1	3.0
		Qmax	28.3	1.000	0.800	0.750	375.0	24.2	20.1	3.0
		Qmin	56.2	1.000	0.800	0.750	375.0	30.2	25.2	11.5
	29	Nmax	18.8	1.000	0.800	0.750	375.0	26.7	-	No necesita
		Nmin	37.4	1.000	0.800	0.750	375.0	33.7	28.1	3.5
		Mmax	37.4	1.000	0.800	0.750	375.0	33.7	28.1	3.5
		Mmin	18.8	1.000	0.800	0.750	375.0	26.7	-	No necesita
		Qmax	18.8	1.000	0.800	0.750	375.0	26.7	-	No necesita
		Qmin	37.4	1.000	0.800	0.750	375.0	33.7	28.1	3.5
21	29	Nmax	18.8	1.000	0.800	0.750	375.0	26.7	-	No necesita
		Nmin	37.4	1.000	0.800	0.750	375.0	33.7	28.1	3.4
		Mmax	37.4	1.000	0.800	0.750	375.0	33.7	28.1	3.4
		Mmin	18.8	1.000	0.800	0.750	375.0	26.7	-	No necesita
		Qmax	18.8	1.000	0.800	0.750	375.0	26.7	-	No necesita
		Qmin	37.4	1.000	0.800	0.750	375.0	33.7	28.1	3.4
	31	Nmax	9.4	1.000	0.800	0.750	375.0	28.0	-	No necesita
		Nmin	18.6	1.000	0.800	0.750	375.0	35.6	-	No necesita
		Mmax	18.6	1.000	0.800	0.750	375.0	35.6	-	No necesita
		Mmin	9.4	1.000	0.800	0.750	375.0	28.0	-	No necesita
		Qmax	9.4	1.000	0.800	0.750	375.0	28.0	-	No necesita
		Qmin	18.6	1.000	0.800	0.750	375.0	35.6	-	No necesita
22	31	Nmax	9.4	1.000	0.800	0.750	375.0	28.0	-	No necesita
		Nmin	18.6	1.000	0.800	0.750	375.0	35.6	-	No necesita
		Mmax	18.6	1.000	0.800	0.750	375.0	35.6	-	No necesita

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES A AMBOS LADOS

FECHA: 28/02/2006

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
		Mmin	9.4	1.000	0.800	0.750	375.0	28.0	-	No necesita
		Qmax	9.4	1.000	0.800	0.750	375.0	28.0	-	No necesita
		Qmin	18.6	1.000	0.800	0.750	375.0	35.6	-	No necesita
	33	Nmax	0.0	1.000	0.800	0.750	375.0	28.5	-	No necesita
		Nmin	0.2	1.000	0.800	0.750	375.0	36.1	-	No necesita
		Mmax	0.2	1.000	0.800	0.750	375.0	36.1	-	No necesita
		Mmin	0.0	1.000	0.800	0.750	375.0	28.5	-	No necesita
		Qmax	0.2	1.000	0.800	0.750	375.0	36.1	-	No necesita
		Qmin	0.0	1.000	0.800	0.750	375.0	28.5	-	No necesita
23	33	Nmax	0.0	1.000	0.800	0.750	375.0	28.5	-	No necesita
		Nmin	0.2	1.000	0.800	0.750	375.0	36.1	-	No necesita
		Mmax	0.2	1.000	0.800	0.750	375.0	36.1	-	No necesita
		Mmin	0.0	1.000	0.800	0.750	375.0	28.5	-	No necesita
		Qmax	0.2	1.000	0.800	0.750	375.0	36.1	-	No necesita
		Qmin	0.0	1.000	0.800	0.750	375.0	28.5	-	No necesita
	35	Nmax	9.4	1.000	0.800	0.750	375.0	28.0	-	No necesita
		Nmin	19.0	1.000	0.800	0.750	375.0	35.5	-	No necesita
		Mmax	19.0	1.000	0.800	0.750	375.0	35.5	-	No necesita
		Mmin	9.4	1.000	0.800	0.750	375.0	28.0	-	No necesita
		Qmax	19.0	1.000	0.800	0.750	375.0	35.5	-	No necesita
		Qmin	9.4	1.000	0.800	0.750	375.0	28.0	-	No necesita
24	35	Nmax	9.4	1.000	0.800	0.750	375.0	28.0	-	No necesita
		Nmin	19.0	1.000	0.800	0.750	375.0	35.5	-	No necesita
		Mmax	19.0	1.000	0.800	0.750	375.0	35.5	-	No necesita
		Mmin	9.4	1.000	0.800	0.750	375.0	28.0	-	No necesita
		Qmax	19.0	1.000	0.800	0.750	375.0	35.5	-	No necesita
		Qmin	9.4	1.000	0.800	0.750	375.0	28.0	-	No necesita
	37	Nmax	18.8	1.000	0.800	0.750	375.0	26.7	-	No necesita
		Nmin	37.8	1.000	0.800	0.750	375.0	33.6	28.0	3.6
		Mmax	37.8	1.000	0.800	0.750	375.0	33.6	28.0	3.6
		Mmin	18.8	1.000	0.800	0.750	375.0	26.7	-	No necesita
		Qmax	37.8	1.000	0.800	0.750	375.0	33.6	28.0	3.6
		Qmin	18.8	1.000	0.800	0.750	375.0	26.7	-	No necesita
25	37	Nmax	18.8	1.000	0.800	0.750	375.0	26.7	-	No necesita
		Nmin	37.8	1.000	0.800	0.750	375.0	33.6	28.0	3.6
		Mmax	37.8	1.000	0.800	0.750	375.0	33.6	28.0	3.6
		Mmin	18.8	1.000	0.800	0.750	375.0	26.7	-	No necesita
		Qmax	37.8	1.000	0.800	0.750	375.0	33.6	28.0	3.6
		Qmin	18.8	1.000	0.800	0.750	375.0	26.7	-	No necesita
	39	Nmax	28.2	1.000	0.800	0.750	375.0	24.2	20.1	3.0
		Nmin	56.6	1.000	0.800	0.750	375.0	30.1	25.1	11.7
		Mmax	56.6	1.000	0.800	0.750	375.0	30.1	25.1	11.7
		Mmin	28.2	1.000	0.800	0.750	375.0	24.2	20.1	3.0
		Qmax	56.6	1.000	0.800	0.750	375.0	30.1	25.1	11.7
		Qmin	28.2	1.000	0.800	0.750	375.0	24.2	20.1	3.0
26	39	Nmax	28.2	1.000	0.800	0.750	375.0	24.2	20.1	3.0
		Nmin	56.6	1.000	0.800	0.750	375.0	30.1	25.1	11.7
		Mmax	56.6	1.000	0.800	0.750	375.0	30.1	25.1	11.7
		Mmin	28.2	1.000	0.800	0.750	375.0	24.2	20.1	3.0
		Qmax	56.6	1.000	0.800	0.750	375.0	30.1	25.1	11.7
		Qmin	28.2	1.000	0.800	0.750	375.0	24.2	20.1	3.0

ARMADOJUL_2000_10000_2m.xls PI RIERA DE CAN DE JULIA 28/02/2006
Kv=2000 Kh=10000

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES A AMBOS LADOS

FECHA: 28/02/2006

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
	41	Nmax	37.7	1.000	0.800	0.750	375.0	19.5	16.3	7.9
		Nmin	75.4	1.000	0.800	0.750	375.0	23.7	19.8	20.6
		Mmax	75.4	1.000	0.800	0.750	375.0	23.7	19.8	20.6
		Mmin	37.7	1.000	0.800	0.750	375.0	19.5	16.3	7.9
		Qmax	75.4	1.000	0.800	0.750	375.0	23.7	19.8	20.6
		Qmin	37.7	1.000	0.800	0.750	375.0	19.5	16.3	7.9
27	41	Nmax	37.6	1.000	0.800	0.750	375.0	19.5	16.3	7.9
		Nmin	75.4	1.000	0.800	0.750	375.0	23.7	19.8	20.6
		Mmax	75.4	1.000	0.800	0.750	375.0	23.7	19.8	20.6
		Mmin	37.6	1.000	0.800	0.750	375.0	19.5	16.3	7.9
		Qmax	75.4	1.000	0.800	0.750	375.0	23.7	19.8	20.6
		Qmin	37.6	1.000	0.800	0.750	375.0	19.5	16.3	7.9
	43	Nmax	47.1	1.000	0.800	0.750	375.0	9.4	7.8	14.5
		Nmin	94.2	1.000	0.800	0.750	375.0	15.1	12.5	30.2
		Mmax	47.1	1.000	0.800	0.750	375.0	9.4	7.8	14.5
		Mmin	94.2	1.000	0.800	0.750	375.0	15.1	12.5	30.2
		Qmax	94.2	1.000	0.800	0.750	375.0	15.1	12.5	30.2
		Qmin	47.1	1.000	0.800	0.750	375.0	9.4	7.8	14.5
28	43	Nmax	47.0	1.000	0.800	0.750	375.0	9.4	7.8	14.5
		Nmin	94.1	1.000	0.800	0.750	375.0	15.1	12.5	30.2
		Mmax	47.0	1.000	0.800	0.750	375.0	9.4	7.8	14.5
		Mmin	94.1	1.000	0.800	0.750	375.0	15.1	12.5	30.2
		Qmax	94.1	1.000	0.800	0.750	375.0	15.1	12.5	30.2
		Qmin	47.0	1.000	0.800	0.750	375.0	9.4	7.8	14.5
	45	Nmax	51.7	1.000	0.800	0.750	375.0	17.8	14.8	13.7
		Nmin	97.2	1.000	0.800	0.750	375.0	23.5	19.6	28.8
		Mmax	51.7	1.000	0.800	0.750	375.0	17.8	14.8	13.7
		Mmin	97.2	1.000	0.800	0.750	375.0	23.5	19.6	28.8
		Qmax	97.2	1.000	0.800	0.750	375.0	23.5	19.6	28.8
		Qmin	51.7	1.000	0.800	0.750	375.0	17.8	14.8	13.7
29	45	Nmax	51.7	1.000	0.800	0.750	375.0	17.8	14.8	13.7
		Nmin	97.3	1.000	0.800	0.750	375.0	23.5	19.6	28.8
		Mmax	51.7	1.000	0.800	0.750	375.0	17.8	14.8	13.7
		Mmin	97.3	1.000	0.800	0.750	375.0	23.5	19.6	28.8
		Qmax	97.3	1.000	0.800	0.750	375.0	23.5	19.6	28.8
		Qmin	51.7	1.000	0.800	0.750	375.0	17.8	14.8	13.7
	47	Nmax	56.4	1.000	0.800	0.750	375.0	22.3	18.6	14.0
		Nmin	100.4	1.000	0.800	0.750	375.0	28.6	23.8	28.3
		Mmax	56.4	1.000	0.800	0.750	375.0	22.3	18.6	14.0
		Mmin	100.4	1.000	0.800	0.750	375.0	28.6	23.8	28.3
		Qmax	100.4	1.000	0.800	0.750	375.0	28.6	23.8	28.3
		Qmin	56.4	1.000	0.800	0.750	375.0	22.3	18.6	14.0
30	47	Nmax	56.4	1.000	0.800	0.750	375.0	22.3	18.6	14.0
		Nmin	100.3	1.000	0.800	0.750	375.0	28.6	23.8	28.3
		Mmax	56.4	1.000	0.800	0.750	375.0	22.3	18.6	14.0
		Mmin	100.3	1.000	0.800	0.750	375.0	28.6	23.8	28.3
		Qmax	100.3	1.000	0.800	0.750	375.0	28.6	23.8	28.3
		Qmin	56.4	1.000	0.800	0.750	375.0	22.3	18.6	14.0
	49	Nmax	61.2	1.000	0.800	0.750	375.0	25.8	21.5	14.7
		Nmin	103.4	1.000	0.800	0.750	375.0	32.6	27.2	28.2
		Mmax	61.2	1.000	0.800	0.750	375.0	25.8	21.5	14.7

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN DE JULIA
MUELLES A AMBOS LADOS

FECHA: 28/02/2006

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
		Mmin	103.4	1.000	0.800	0.750	375.0	32.6	27.2	28.2
		Qmax	103.4	1.000	0.800	0.750	375.0	32.6	27.2	28.2
		Qmin	61.2	1.000	0.800	0.750	375.0	25.8	21.5	14.7
31	49	Nmax	61.2	1.000	0.800	0.750	375.0	25.8	21.5	14.7
		Nmin	103.6	1.000	0.800	0.750	375.0	32.6	27.2	28.3
		Mmax	61.2	1.000	0.800	0.750	375.0	25.8	21.5	14.7
		Mmin	103.6	1.000	0.800	0.750	375.0	32.6	27.2	28.3
		Qmax	103.6	1.000	0.800	0.750	375.0	32.6	27.2	28.3
		Qmin	61.2	1.000	0.800	0.750	375.0	25.8	21.5	14.7
	51	Nmax	65.9	1.000	0.800	0.750	375.0	28.8	24.0	15.5
		Nmin	106.6	1.000	0.800	0.750	375.0	36.1	30.1	28.3
		Mmax	65.9	1.000	0.800	0.750	375.0	28.8	24.0	15.5
		Mmin	106.6	1.000	0.800	0.750	375.0	36.1	30.1	28.3
		Qmax	108.5	1.000	0.800	0.750	375.0	34.5	28.7	29.6
		Qmin	65.9	1.000	0.800	0.750	375.0	28.8	24.0	15.5
32	51	Nmax	65.9	1.000	0.800	0.750	375.0	28.8	24.0	15.5
		Nmin	106.7	1.000	0.800	0.750	375.0	36.1	30.1	28.3
		Mmax	65.9	1.000	0.800	0.750	375.0	28.8	24.0	15.5
		Mmin	106.7	1.000	0.800	0.750	375.0	36.1	30.1	28.3
		Qmax	108.5	1.000	0.800	0.750	375.0	34.5	28.7	29.5
		Qmin	65.9	1.000	0.800	0.750	375.0	28.8	24.0	15.5
	64	Nmax	70.7	1.000	0.800	0.750	375.0	31.6	26.3	16.4
		Nmin	109.8	1.000	0.800	0.750	375.0	39.4	32.8	28.5
		Mmax	70.7	1.000	0.800	0.750	375.0	31.6	26.3	16.4
		Mmin	109.8	1.000	0.800	0.750	375.0	39.4	32.8	28.5
		Qmax	116.3	1.000	0.800	0.750	375.0	38.0	31.7	31.3
		Qmin	70.7	1.000	0.800	0.750	375.0	31.6	26.3	16.4
33	1	Nmax	77.6	1.000	0.700	0.650	325.0	31.9	26.6	21.8
		Nmin	121.0	1.000	0.700	0.650	325.0	38.2	31.8	38.1
		Mmax	121.0	1.000	0.700	0.650	325.0	38.2	31.8	38.1
		Mmin	77.6	1.000	0.700	0.650	325.0	31.9	26.6	21.8
		Qmax	121.0	1.000	0.700	0.650	325.0	38.2	31.8	38.1
		Qmin	77.6	1.000	0.700	0.650	325.0	31.9	26.6	21.8
	14	Nmax	78.4	1.000	0.700	0.650	325.0	28.8	24.0	23.2
		Nmin	121.8	1.000	0.700	0.650	325.0	34.1	28.4	39.9
		Mmax	121.8	1.000	0.700	0.650	325.0	34.1	28.4	39.9
		Mmin	78.4	1.000	0.700	0.650	325.0	28.8	24.0	23.2
		Qmax	121.8	1.000	0.700	0.650	325.0	34.1	28.4	39.9
		Qmin	78.4	1.000	0.700	0.650	325.0	28.8	24.0	23.2
34	14	Nmax	69.8	1.000	0.700	0.650	325.0	28.8	24.0	19.6
		Nmin	108.9	1.000	0.700	0.650	325.0	34.1	28.4	34.4
		Mmax	108.9	1.000	0.700	0.650	325.0	34.1	28.4	34.4
		Mmin	69.8	1.000	0.700	0.650	325.0	28.8	24.0	19.6
		Qmax	108.9	1.000	0.700	0.650	325.0	34.1	28.4	34.4
		Qmin	69.8	1.000	0.700	0.650	325.0	28.8	24.0	19.6
	16	Nmax	70.7	1.000	0.700	0.650	325.0	25.6	21.3	21.1
		Nmin	109.8	1.000	0.700	0.650	325.0	30.0	25.0	36.2
		Mmax	109.8	1.000	0.700	0.650	325.0	30.0	25.0	36.2
		Mmin	70.7	1.000	0.700	0.650	325.0	25.6	21.3	21.1
		Qmax	109.8	1.000	0.700	0.650	325.0	30.0	25.0	36.2
		Qmin	70.7	1.000	0.700	0.650	325.0	25.6	21.3	21.1

ARMADOJUL_2000_10000_2m.xls PI RIERA DE CAN DE JULIA 28/02/2006
Kv=2000 Kh=10000

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN DE JULIA
MUELLES A AMBOS LADOS

FECHA: 28/02/2006

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
35	16	Nmax	62.4	1.000	0.700	0.650	325.0	25.6	21.3	17.6
		Nmin	97.4	1.000	0.700	0.650	325.0	30.0	25.0	30.9
		Mmax	97.4	1.000	0.700	0.650	325.0	30.0	25.0	30.9
		Mmin	62.4	1.000	0.700	0.650	325.0	25.6	21.3	17.6
		Qmax	97.4	1.000	0.700	0.650	325.0	30.0	25.0	30.9
		Qmin	62.4	1.000	0.700	0.650	325.0	25.6	21.3	17.6
	18	Nmax	63.2	1.000	0.700	0.650	325.0	21.9	18.2	19.2
		Nmin	98.2	1.000	0.700	0.650	325.0	25.6	21.3	32.9
		Mmax	98.2	1.000	0.700	0.650	325.0	25.6	21.3	32.9
		Mmin	63.2	1.000	0.700	0.650	325.0	21.9	18.2	19.2
		Qmax	98.2	1.000	0.700	0.650	325.0	25.6	21.3	32.9
		Qmin	63.2	1.000	0.700	0.650	325.0	21.9	18.2	19.2
36	18	Nmax	55.3	1.000	0.700	0.650	325.0	21.9	18.2	15.9
		Nmin	86.4	1.000	0.700	0.650	325.0	25.6	21.3	27.8
		Mmax	86.4	1.000	0.700	0.650	325.0	25.6	21.3	27.8
		Mmin	55.3	1.000	0.700	0.650	325.0	21.9	18.2	15.9
		Qmax	86.4	1.000	0.700	0.650	325.0	25.6	21.3	27.8
		Qmin	55.3	1.000	0.700	0.650	325.0	21.9	18.2	15.9
	20	Nmax	56.2	1.000	0.700	0.650	325.0	17.3	14.4	17.8
		Nmin	87.3	1.000	0.700	0.650	325.0	20.2	16.9	30.1
		Mmax	87.3	1.000	0.700	0.650	325.0	20.2	16.9	30.1
		Mmin	56.2	1.000	0.700	0.650	325.0	17.3	14.4	17.8
		Qmax	87.3	1.000	0.700	0.650	325.0	20.2	16.9	30.1
		Qmin	56.2	1.000	0.700	0.650	325.0	17.3	14.4	17.8
37	20	Nmax	48.6	1.000	0.700	0.650	325.0	17.3	14.4	14.6
		Nmin	76.0	1.000	0.700	0.650	325.0	20.2	16.9	25.3
		Mmax	76.0	1.000	0.700	0.650	325.0	20.2	16.9	25.3
		Mmin	48.6	1.000	0.700	0.650	325.0	17.3	14.4	14.6
		Qmax	76.0	1.000	0.700	0.650	325.0	20.2	16.9	25.3
		Qmin	48.6	1.000	0.700	0.650	325.0	17.3	14.4	14.6
	22	Nmax	49.5	1.000	0.700	0.650	325.0	8.8	7.4	18.0
		Nmin	76.9	1.000	0.700	0.650	325.0	10.6	8.8	29.1
		Mmax	73.0	1.000	0.700	0.650	325.0	11.3	9.4	27.2
		Mmin	49.5	1.000	0.700	0.650	325.0	8.8	7.4	18.0
		Qmax	76.9	1.000	0.700	0.650	325.0	10.6	8.8	29.1
		Qmin	49.5	1.000	0.700	0.650	325.0	8.8	7.4	18.0
38	22	Nmax	38.8	1.000	0.700	0.650	325.0	8.8	7.4	13.4
		Nmin	61.0	1.000	0.700	0.650	325.0	10.6	8.8	22.3
		Mmax	57.9	1.000	0.700	0.650	325.0	11.3	9.4	20.7
		Mmin	38.8	1.000	0.700	0.650	325.0	8.8	7.4	13.4
		Qmax	61.0	1.000	0.700	0.650	325.0	10.6	8.8	22.3
		Qmin	38.8	1.000	0.700	0.650	325.0	8.8	7.4	13.4
	24	Nmax	40.5	1.000	0.700	0.650	325.0	18.7	15.6	10.6
		Nmin	62.6	1.000	0.700	0.650	325.0	21.7	18.1	19.0
		Mmax	40.5	1.000	0.700	0.650	325.0	18.7	15.6	10.6
		Mmin	62.6	1.000	0.700	0.650	325.0	21.7	18.1	19.0
		Qmax	62.6	1.000	0.700	0.650	325.0	21.7	18.1	19.0
		Qmin	40.5	1.000	0.700	0.650	325.0	18.7	15.6	10.6
39	24	Nmax	27.9	1.000	0.700	0.650	325.0	18.7	15.6	5.3
		Nmin	44.0	1.000	0.700	0.650	325.0	21.7	18.1	11.1
		Mmax	27.9	1.000	0.700	0.650	325.0	18.7	15.6	5.3

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES A AMBOS LADOS

FECHA: 28/02/2006

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
		Mmin	44.0	1.000	0.700	0.650	325.0	21.7	18.1	11.1
		Qmax	44.0	1.000	0.700	0.650	325.0	21.7	18.1	11.1
		Qmin	27.9	1.000	0.700	0.650	325.0	18.7	15.6	5.3
	26	Nmax	29.6	1.000	0.700	0.650	325.0	23.0	19.1	4.5
		Nmin	45.7	1.000	0.700	0.650	325.0	26.8	22.3	10.0
		Mmax	29.6	1.000	0.700	0.650	325.0	23.0	19.1	4.5
		Mmin	45.7	1.000	0.700	0.650	325.0	26.8	22.3	10.0
		Qmax	45.7	1.000	0.700	0.650	325.0	26.8	22.3	10.0
		Qmin	29.6	1.000	0.700	0.650	325.0	23.0	19.1	4.5
40	26	Nmax	18.6	1.000	0.700	0.650	325.0	23.0	-	No necesita
		Nmin	29.5	1.000	0.700	0.650	325.0	26.8	22.3	3.1
		Mmax	18.6	1.000	0.700	0.650	325.0	23.0	-	No necesita
		Mmin	29.5	1.000	0.700	0.650	325.0	26.8	22.3	3.1
		Qmax	29.5	1.000	0.700	0.650	325.0	26.8	22.3	3.1
		Qmin	18.6	1.000	0.700	0.650	325.0	23.0	-	No necesita
	28	Nmax	20.3	1.000	0.700	0.650	325.0	25.2	-	No necesita
		Nmin	31.1	1.000	0.700	0.650	325.0	29.5	24.6	2.8
		Mmax	20.3	1.000	0.700	0.650	325.0	25.2	-	No necesita
		Mmin	31.1	1.000	0.700	0.650	325.0	29.5	24.6	2.8
		Qmax	31.1	1.000	0.700	0.650	325.0	29.5	24.6	2.8
		Qmin	20.3	1.000	0.700	0.650	325.0	25.2	-	No necesita
41	28	Nmax	10.3	1.000	0.700	0.650	325.0	25.2	-	No necesita
		Nmin	16.6	1.000	0.700	0.650	325.0	29.5	-	No necesita
		Mmax	10.3	1.000	0.700	0.650	325.0	25.2	-	No necesita
		Mmin	16.6	1.000	0.700	0.650	325.0	29.5	-	No necesita
		Qmax	16.6	1.000	0.700	0.650	325.0	29.5	-	No necesita
		Qmin	10.3	1.000	0.700	0.650	325.0	25.2	-	No necesita
	30	Nmax	12.0	1.000	0.700	0.650	325.0	26.3	-	No necesita
		Nmin	18.3	1.000	0.700	0.650	325.0	30.9	-	No necesita
		Mmax	12.0	1.000	0.700	0.650	325.0	26.3	-	No necesita
		Mmin	18.3	1.000	0.700	0.650	325.0	30.9	-	No necesita
		Qmax	18.3	1.000	0.700	0.650	325.0	30.9	-	No necesita
		Qmin	12.0	1.000	0.700	0.650	325.0	26.3	-	No necesita
42	30	Nmax	2.8	1.000	0.700	0.650	325.0	26.3	-	No necesita
		Nmin	5.0	1.000	0.700	0.650	325.0	30.9	-	No necesita
		Mmax	2.8	1.000	0.700	0.650	325.0	26.3	-	No necesita
		Mmin	5.0	1.000	0.700	0.650	325.0	30.9	-	No necesita
		Qmax	5.0	1.000	0.700	0.650	325.0	30.9	-	No necesita
		Qmin	2.8	1.000	0.700	0.650	325.0	26.3	-	No necesita
	32	Nmax	4.5	1.000	0.700	0.650	325.0	26.7	-	No necesita
		Nmin	6.7	1.000	0.700	0.650	325.0	31.3	-	No necesita
		Mmax	4.5	1.000	0.700	0.650	325.0	26.7	-	No necesita
		Mmin	6.7	1.000	0.700	0.650	325.0	31.3	-	No necesita
		Qmax	6.7	1.000	0.700	0.650	325.0	31.3	-	No necesita
		Qmin	4.5	1.000	0.700	0.650	325.0	26.7	-	No necesita
43	32	Nmax	4.4	1.000	0.700	0.650	325.0	26.7	-	No necesita
		Nmin	6.3	1.000	0.700	0.650	325.0	31.3	-	No necesita
		Mmax	4.4	1.000	0.700	0.650	325.0	26.7	-	No necesita
		Mmin	6.3	1.000	0.700	0.650	325.0	31.3	-	No necesita
		Qmax	4.4	1.000	0.700	0.650	325.0	26.7	-	No necesita
		Qmin	6.3	1.000	0.700	0.650	325.0	31.3	-	No necesita

ARMADOJUL_2000_10000_2m.xls PI RIERA DE CAN DE JULIA 28/02/2006
Kv=2000 Kh=10000

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES A AMBOS LADOS

FECHA: 28/02/2006

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
	34	Nmax	2.7	1.000	0.700	0.650	325.0	26.3	-	No necesita
		Nmin	4.6	1.000	0.700	0.650	325.0	30.9	-	No necesita
		Mmax	2.7	1.000	0.700	0.650	325.0	26.3	-	No necesita
		Mmin	4.6	1.000	0.700	0.650	325.0	30.9	-	No necesita
		Qmax	2.7	1.000	0.700	0.650	325.0	26.3	-	No necesita
		Qmin	4.6	1.000	0.700	0.650	325.0	30.9	-	No necesita
44	34	Nmax	11.9	1.000	0.700	0.650	325.0	26.3	-	No necesita
		Nmin	17.9	1.000	0.700	0.650	325.0	30.9	-	No necesita
		Mmax	11.9	1.000	0.700	0.650	325.0	26.3	-	No necesita
		Mmin	17.9	1.000	0.700	0.650	325.0	30.9	-	No necesita
		Qmax	11.9	1.000	0.700	0.650	325.0	26.3	-	No necesita
		Qmin	17.9	1.000	0.700	0.650	325.0	30.9	-	No necesita
	36	Nmax	10.2	1.000	0.700	0.650	325.0	25.2	-	No necesita
		Nmin	16.2	1.000	0.700	0.650	325.0	29.5	-	No necesita
		Mmax	10.2	1.000	0.700	0.650	325.0	25.2	-	No necesita
		Mmin	16.2	1.000	0.700	0.650	325.0	29.5	-	No necesita
		Qmax	10.2	1.000	0.700	0.650	325.0	25.2	-	No necesita
		Qmin	16.2	1.000	0.700	0.650	325.0	29.5	-	No necesita
45	36	Nmax	20.1	1.000	0.700	0.650	325.0	25.2	-	No necesita
		Nmin	30.8	1.000	0.700	0.650	325.0	29.5	24.6	2.6
		Mmax	20.1	1.000	0.700	0.650	325.0	25.2	-	No necesita
		Mmin	30.8	1.000	0.700	0.650	325.0	29.5	24.6	2.6
		Qmax	20.1	1.000	0.700	0.650	325.0	25.2	-	No necesita
		Qmin	30.8	1.000	0.700	0.650	325.0	29.5	24.6	2.6
	38	Nmax	18.4	1.000	0.700	0.650	325.0	23.0	-	No necesita
		Nmin	29.1	1.000	0.700	0.650	325.0	26.9	22.4	2.8
		Mmax	18.4	1.000	0.700	0.650	325.0	23.0	-	No necesita
		Mmin	29.1	1.000	0.700	0.650	325.0	26.9	22.4	2.8
		Qmax	18.4	1.000	0.700	0.650	325.0	23.0	-	No necesita
		Qmin	29.1	1.000	0.700	0.650	325.0	26.9	22.4	2.8
46	38	Nmax	29.5	1.000	0.700	0.650	325.0	23.0	19.2	4.4
		Nmin	45.4	1.000	0.700	0.650	325.0	26.9	22.4	9.8
		Mmax	29.5	1.000	0.700	0.650	325.0	23.0	19.2	4.4
		Mmin	45.4	1.000	0.700	0.650	325.0	26.9	22.4	9.8
		Qmax	29.5	1.000	0.700	0.650	325.0	23.0	19.2	4.4
		Qmin	45.4	1.000	0.700	0.650	325.0	26.9	22.4	9.8
	40	Nmax	27.8	1.000	0.700	0.650	325.0	18.9	15.7	5.2
		Nmin	43.7	1.000	0.700	0.650	325.0	21.9	18.3	10.9
		Mmax	27.8	1.000	0.700	0.650	325.0	18.9	15.7	5.2
		Mmin	43.7	1.000	0.700	0.650	325.0	21.9	18.3	10.9
		Qmax	27.8	1.000	0.700	0.650	325.0	18.9	15.7	5.2
		Qmin	43.7	1.000	0.700	0.650	325.0	21.9	18.3	10.9
47	40	Nmax	40.4	1.000	0.700	0.650	325.0	18.9	15.7	10.5
		Nmin	62.3	1.000	0.700	0.650	325.0	21.9	18.3	18.8
		Mmax	40.4	1.000	0.700	0.650	325.0	18.9	15.7	10.5
		Mmin	62.3	1.000	0.700	0.650	325.0	21.9	18.3	18.8
		Qmax	40.4	1.000	0.700	0.650	325.0	18.9	15.7	10.5
		Qmin	62.3	1.000	0.700	0.650	325.0	21.9	18.3	18.8
	42	Nmax	38.7	1.000	0.700	0.650	325.0	8.2	6.9	13.6
		Nmin	60.7	1.000	0.700	0.650	325.0	9.5	7.9	22.5
		Mmax	60.7	1.000	0.700	0.650	325.0	9.5	7.9	22.5

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES A AMBOS LADOS

FECHA: 28/02/2006

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
		Mmin	38.7	1.000	0.700	0.650	325.0	8.2	6.9	13.6
		Qmax	38.7	1.000	0.700	0.650	325.0	8.2	6.9	13.6
		Qmin	60.7	1.000	0.700	0.650	325.0	9.5	7.9	22.5
48	42	Nmax	49.4	1.000	0.700	0.650	325.0	8.2	6.9	18.2
		Nmin	76.6	1.000	0.700	0.650	325.0	9.5	7.9	29.3
		Mmax	76.6	1.000	0.700	0.650	325.0	9.5	7.9	29.3
		Mmin	49.4	1.000	0.700	0.650	325.0	8.2	6.9	18.2
		Qmax	49.4	1.000	0.700	0.650	325.0	8.2	6.9	18.2
		Qmin	76.6	1.000	0.700	0.650	325.0	9.5	7.9	29.3
	44	Nmax	48.5	1.000	0.700	0.650	325.0	17.1	14.3	14.6
		Nmin	75.7	1.000	0.700	0.650	325.0	19.9	16.6	25.3
		Mmax	75.7	1.000	0.700	0.650	325.0	19.9	16.6	25.3
		Mmin	48.5	1.000	0.700	0.650	325.0	17.1	14.3	14.6
		Qmax	48.5	1.000	0.700	0.650	325.0	17.1	14.3	14.6
		Qmin	75.7	1.000	0.700	0.650	325.0	19.9	16.6	25.3
49	44	Nmax	56.0	1.000	0.700	0.650	325.0	17.1	14.3	17.8
		Nmin	87.0	1.000	0.700	0.650	325.0	19.9	16.6	30.1
		Mmax	87.0	1.000	0.700	0.650	325.0	19.9	16.6	30.1
		Mmin	56.0	1.000	0.700	0.650	325.0	17.1	14.3	17.8
		Qmax	56.0	1.000	0.700	0.650	325.0	17.1	14.3	17.8
		Qmin	87.0	1.000	0.700	0.650	325.0	19.9	16.6	30.1
	46	Nmax	55.2	1.000	0.700	0.650	325.0	21.8	18.1	15.8
		Nmin	86.2	1.000	0.700	0.650	325.0	25.4	21.2	27.8
		Mmax	86.2	1.000	0.700	0.650	325.0	25.4	21.2	27.8
		Mmin	55.2	1.000	0.700	0.650	325.0	21.8	18.1	15.8
		Qmax	55.2	1.000	0.700	0.650	325.0	21.8	18.1	15.8
		Qmin	86.2	1.000	0.700	0.650	325.0	25.4	21.2	27.8
50	46	Nmax	63.1	1.000	0.700	0.650	325.0	21.8	18.1	19.2
		Nmin	98.0	1.000	0.700	0.650	325.0	25.4	21.2	32.8
		Mmax	98.0	1.000	0.700	0.650	325.0	25.4	21.2	32.8
		Mmin	63.1	1.000	0.700	0.650	325.0	21.8	18.1	19.2
		Qmax	63.1	1.000	0.700	0.650	325.0	21.8	18.1	19.2
		Qmin	98.0	1.000	0.700	0.650	325.0	25.4	21.2	32.8
	48	Nmax	62.2	1.000	0.700	0.650	325.0	25.5	21.2	17.5
		Nmin	97.1	1.000	0.700	0.650	325.0	29.9	24.9	30.9
		Mmax	97.1	1.000	0.700	0.650	325.0	29.9	24.9	30.9
		Mmin	62.2	1.000	0.700	0.650	325.0	25.5	21.2	17.5
		Qmax	62.2	1.000	0.700	0.650	325.0	25.5	21.2	17.5
		Qmin	97.1	1.000	0.700	0.650	325.0	29.9	24.9	30.9
51	48	Nmax	70.5	1.000	0.700	0.650	325.0	25.5	21.2	21.1
		Nmin	109.6	1.000	0.700	0.650	325.0	29.9	24.9	36.2
		Mmax	109.6	1.000	0.700	0.650	325.0	29.9	24.9	36.2
		Mmin	70.5	1.000	0.700	0.650	325.0	25.5	21.2	21.1
		Qmax	70.5	1.000	0.700	0.650	325.0	25.5	21.2	21.1
		Qmin	109.6	1.000	0.700	0.650	325.0	29.9	24.9	36.2
	50	Nmax	69.7	1.000	0.700	0.650	325.0	28.7	24.0	19.5
		Nmin	108.8	1.000	0.700	0.650	325.0	34.0	28.3	34.4
		Mmax	108.8	1.000	0.700	0.650	325.0	34.0	28.3	34.4
		Mmin	69.7	1.000	0.700	0.650	325.0	28.7	24.0	19.5
		Qmax	69.7	1.000	0.700	0.650	325.0	28.7	24.0	19.5
		Qmin	108.8	1.000	0.700	0.650	325.0	34.0	28.3	34.4

ARMADOJUL_2000_10000_2m.xls PI RIERA DE CAN DE JULIA 28/02/2006
Kv=2000 Kh=10000

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES A AMBOS LADOS

FECHA: 28/02/2006

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
52	50	Nmax	78.3	1.000	0.700	0.650	325.0	28.7	24.0	23.2
		Nmin	121.8	1.000	0.700	0.650	325.0	34.0	28.3	39.9
		Mmax	121.8	1.000	0.700	0.650	325.0	34.0	28.3	39.9
		Mmin	78.3	1.000	0.700	0.650	325.0	28.7	24.0	23.2
		Qmax	78.3	1.000	0.700	0.650	325.0	28.7	24.0	23.2
		Qmin	121.8	1.000	0.700	0.650	325.0	34.0	28.3	39.9
	52	Nmax	77.5	1.000	0.700	0.650	325.0	31.9	26.6	21.8
		Nmin	120.9	1.000	0.700	0.650	325.0	38.0	31.7	38.1
		Mmax	120.9	1.000	0.700	0.650	325.0	38.0	31.7	38.1
		Mmin	77.5	1.000	0.700	0.650	325.0	31.9	26.6	21.8
		Qmax	77.5	1.000	0.700	0.650	325.0	31.9	26.6	21.8
		Qmin	120.9	1.000	0.700	0.650	325.0	38.0	31.7	38.1
53	52	Nmax	98.0	1.000	0.700	0.650	325.0	31.9	26.6	30.5
		Nmin	155.0	1.000	0.700	0.650	325.0	38.0	31.7	52.7
		Mmax	155.0	1.000	0.700	0.650	325.0	38.0	31.7	52.7
		Mmin	98.0	1.000	0.700	0.650	325.0	31.9	26.6	30.5
		Qmax	155.0	1.000	0.700	0.650	325.0	38.0	31.7	52.7
		Qmin	98.0	1.000	0.700	0.650	325.0	31.9	26.6	30.5
	53	Nmax	98.0	1.000	0.700	0.650	325.0	27.4	22.8	32.1
		Nmin	155.0	1.000	0.700	0.650	325.0	32.1	26.8	54.8
		Mmax	155.0	1.000	0.700	0.650	325.0	32.1	26.8	54.8
		Mmin	98.0	1.000	0.700	0.650	325.0	27.4	22.8	32.1
		Qmax	155.0	1.000	0.700	0.650	325.0	32.1	26.8	54.8
		Qmin	98.0	1.000	0.700	0.650	325.0	27.4	22.8	32.1
54	53	Nmax	80.2	1.000	0.700	0.650	325.0	27.4	22.8	24.5
		Nmin	126.4	1.000	0.700	0.650	325.0	32.1	26.8	42.6
		Mmax	126.4	1.000	0.700	0.650	325.0	32.1	26.8	42.6
		Mmin	80.2	1.000	0.700	0.650	325.0	27.4	22.8	24.5
		Qmax	126.4	1.000	0.700	0.650	325.0	32.1	26.8	42.6
		Qmin	80.2	1.000	0.700	0.650	325.0	27.4	22.8	24.5
	54	Nmax	80.2	1.000	0.700	0.650	325.0	22.6	18.8	26.2
		Nmin	126.4	1.000	0.700	0.650	325.0	26.2	21.8	44.7
		Mmax	126.4	1.000	0.700	0.650	325.0	26.2	21.8	44.7
		Mmin	80.2	1.000	0.700	0.650	325.0	22.6	18.8	26.2
		Qmax	126.4	1.000	0.700	0.650	325.0	26.2	21.8	44.7
		Qmin	80.2	1.000	0.700	0.650	325.0	22.6	18.8	26.2
55	54	Nmax	62.7	1.000	0.700	0.650	325.0	22.6	18.8	18.7
		Nmin	98.2	1.000	0.700	0.650	325.0	26.2	21.8	32.7
		Mmax	98.2	1.000	0.700	0.650	325.0	26.2	21.8	32.7
		Mmin	62.7	1.000	0.700	0.650	325.0	22.6	18.8	18.7
		Qmax	98.2	1.000	0.700	0.650	325.0	26.2	21.8	32.7
		Qmin	62.7	1.000	0.700	0.650	325.0	22.6	18.8	18.7
	55	Nmax	62.7	1.000	0.700	0.650	325.0	17.0	14.2	20.7
		Nmin	98.2	1.000	0.700	0.650	325.0	19.4	16.1	35.1
		Mmax	98.2	1.000	0.700	0.650	325.0	19.4	16.1	35.1
		Mmin	62.7	1.000	0.700	0.650	325.0	17.0	14.2	20.7
		Qmax	98.2	1.000	0.700	0.650	325.0	19.4	16.1	35.1
		Qmin	62.7	1.000	0.700	0.650	325.0	17.0	14.2	20.7
56	55	Nmax	45.2	1.000	0.700	0.650	325.0	17.0	14.2	13.3
		Nmin	70.2	1.000	0.700	0.650	325.0	19.4	16.1	23.1
		Mmax	70.2	1.000	0.700	0.650	325.0	19.4	16.1	23.1

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES A AMBOS LADOS

FECHA: 28/02/2006

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
		Mmin	45.2	1.000	0.700	0.650	325.0	17.0	14.2	13.3
		Qmax	70.2	1.000	0.700	0.650	325.0	19.4	16.1	23.1
		Qmin	45.2	1.000	0.700	0.650	325.0	17.0	14.2	13.3
	56	Nmax	45.2	1.000	0.700	0.650	325.0	7.8	6.5	16.6
		Nmin	70.2	1.000	0.700	0.650	325.0	7.0	5.8	27.5
		Mmax	45.2	1.000	0.700	0.650	325.0	7.8	6.5	16.6
		Mmin	65.9	1.000	0.700	0.650	325.0	10.3	8.6	24.5
		Qmax	70.2	1.000	0.700	0.650	325.0	7.0	5.8	27.5
		Qmin	45.2	1.000	0.700	0.650	325.0	7.8	6.5	16.6
57	56	Nmax	27.8	1.000	0.700	0.650	325.0	7.8	6.5	9.1
		Nmin	42.1	1.000	0.700	0.650	325.0	7.0	5.8	15.5
		Mmax	27.8	1.000	0.700	0.650	325.0	7.8	6.5	9.1
		Mmin	37.0	1.000	0.700	0.650	325.0	10.3	8.6	12.1
		Qmax	42.1	1.000	0.700	0.650	325.0	7.0	5.8	15.5
		Qmin	27.8	1.000	0.700	0.650	325.0	7.8	6.5	9.1
	57	Nmax	27.8	1.000	0.700	0.650	325.0	13.5	11.2	7.1
		Nmin	42.1	1.000	0.700	0.650	325.0	16.1	13.4	12.3
		Mmax	27.8	1.000	0.700	0.650	325.0	13.5	11.2	7.1
		Mmin	37.0	1.000	0.700	0.650	325.0	16.9	14.1	9.8
		Qmax	42.1	1.000	0.700	0.650	325.0	16.1	13.4	12.3
		Qmin	27.8	1.000	0.700	0.650	325.0	13.5	11.2	7.1
58	57	Nmax	10.2	1.000	0.700	0.650	325.0	13.5	-	No necesita
		Nmin	13.9	1.000	0.700	0.650	325.0	16.1	-	No necesita
		Mmax	10.2	1.000	0.700	0.650	325.0	13.5	-	No necesita
		Mmin	10.2	1.000	0.700	0.650	325.0	16.9	-	No necesita
		Qmax	13.9	1.000	0.700	0.650	325.0	16.1	-	No necesita
		Qmin	10.2	1.000	0.700	0.650	325.0	16.9	-	No necesita
	58	Nmax	10.2	1.000	0.700	0.650	325.0	15.1	-	No necesita
		Nmin	13.9	1.000	0.700	0.650	325.0	17.8	-	No necesita
		Mmax	10.2	1.000	0.700	0.650	325.0	15.1	-	No necesita
		Mmin	10.2	1.000	0.700	0.650	325.0	17.8	-	No necesita
		Qmax	13.9	1.000	0.700	0.650	325.0	17.8	-	No necesita
		Qmin	10.2	1.000	0.700	0.650	325.0	17.8	-	No necesita
59	58	Nmax	7.5	1.000	0.700	0.650	325.0	15.1	-	No necesita
		Nmin	14.3	1.000	0.700	0.650	325.0	17.8	-	No necesita
		Mmax	7.5	1.000	0.700	0.650	325.0	15.1	-	No necesita
		Mmin	20.7	1.000	0.700	0.650	325.0	17.8	14.9	2.5
		Qmax	7.5	1.000	0.700	0.650	325.0	15.1	-	No necesita
		Qmin	20.7	1.000	0.700	0.650	325.0	17.8	14.9	2.5
	59	Nmax	7.5	1.000	0.700	0.650	325.0	13.9	-	No necesita
		Nmin	14.3	1.000	0.700	0.650	325.0	16.0	-	No necesita
		Mmax	7.5	1.000	0.700	0.650	325.0	13.9	-	No necesita
		Mmin	14.3	1.000	0.700	0.650	325.0	16.0	-	No necesita
		Qmax	7.5	1.000	0.700	0.650	325.0	13.9	-	No necesita
		Qmin	20.7	1.000	0.700	0.650	325.0	15.3	12.7	3.4
60	59	Nmax	25.1	1.000	0.700	0.650	325.0	14.0	11.6	5.7
		Nmin	42.4	1.000	0.700	0.650	325.0	16.0	13.4	12.4
		Mmax	25.1	1.000	0.700	0.650	325.0	14.0	11.6	5.7
		Mmin	42.4	1.000	0.700	0.650	325.0	16.0	13.4	12.4
		Qmax	25.1	1.000	0.700	0.650	325.0	14.0	11.6	5.7
		Qmin	49.2	1.000	0.700	0.650	325.0	15.3	12.7	15.6

ARMADOJUL_2000_10000_2m.xls PI RIERA DE CAN DE JULIA 28/02/2006
Kv=2000 Kh=10000

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES A AMBOS LADOS

FECHA: 28/02/2006

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
	60	Nmax	25.1	1.000	0.700	0.650	325.0	7.2	6.0	8.1
		Nmin	42.4	1.000	0.700	0.650	325.0	5.8	4.8	16.0
		Mmax	49.2	1.000	0.700	0.650	325.0	11.2	9.3	17.0
		Mmin	25.1	1.000	0.700	0.650	325.0	7.2	6.0	8.1
		Qmax	25.1	1.000	0.700	0.650	325.0	7.2	6.0	8.1
		Qmin	49.2	1.000	0.700	0.650	325.0	11.2	9.3	17.0
61	60	Nmax	42.5	1.000	0.700	0.650	325.0	7.2	6.0	15.6
		Nmin	70.2	1.000	0.700	0.650	325.0	5.8	4.8	27.9
		Mmax	77.3	1.000	0.700	0.650	325.0	11.2	9.3	29.1
		Mmin	42.5	1.000	0.700	0.650	325.0	7.2	6.0	15.6
		Qmax	42.5	1.000	0.700	0.650	325.0	7.2	6.0	15.6
		Qmin	77.3	1.000	0.700	0.650	325.0	11.2	9.3	29.1
	61	Nmax	42.5	1.000	0.700	0.650	325.0	16.0	13.3	12.5
		Nmin	70.2	1.000	0.700	0.650	325.0	19.4	16.2	23.1
		Mmax	77.3	1.000	0.700	0.650	325.0	21.1	17.6	25.5
		Mmin	42.5	1.000	0.700	0.650	325.0	16.0	13.3	12.5
		Qmax	42.5	1.000	0.700	0.650	325.0	16.0	13.3	12.5
		Qmin	77.3	1.000	0.700	0.650	325.0	21.1	17.6	25.5
62	61	Nmax	59.9	1.000	0.700	0.650	325.0	16.0	13.3	19.9
		Nmin	97.9	1.000	0.700	0.650	325.0	19.4	16.2	34.9
		Mmax	105.2	1.000	0.700	0.650	325.0	21.1	17.6	37.4
		Mmin	59.9	1.000	0.700	0.650	325.0	16.0	13.3	19.9
		Qmax	59.9	1.000	0.700	0.650	325.0	16.0	13.3	19.9
		Qmin	105.2	1.000	0.700	0.650	325.0	21.1	17.6	37.4
	62	Nmax	59.9	1.000	0.700	0.650	325.0	21.8	18.2	17.8
		Nmin	97.9	1.000	0.700	0.650	325.0	26.2	21.8	32.5
		Mmax	105.2	1.000	0.700	0.650	325.0	27.6	23.0	35.1
		Mmin	59.9	1.000	0.700	0.650	325.0	21.8	18.2	17.8
		Qmax	59.9	1.000	0.700	0.650	325.0	21.8	18.2	17.8
		Qmin	105.2	1.000	0.700	0.650	325.0	27.6	23.0	35.1
63	62	Nmax	77.3	1.000	0.700	0.650	325.0	21.8	18.2	25.3
		Nmin	125.6	1.000	0.700	0.650	325.0	26.2	21.8	44.3
		Mmax	133.1	1.000	0.700	0.650	325.0	27.6	23.0	47.0
		Mmin	77.3	1.000	0.700	0.650	325.0	21.8	18.2	25.3
		Qmax	77.3	1.000	0.700	0.650	325.0	21.8	18.2	25.3
		Qmin	133.1	1.000	0.700	0.650	325.0	27.6	23.0	47.0
	63	Nmax	77.3	1.000	0.700	0.650	325.0	26.6	22.2	23.5
		Nmin	125.6	1.000	0.700	0.650	325.0	32.1	26.7	42.2
		Mmax	133.1	1.000	0.700	0.650	325.0	33.5	27.9	44.9
		Mmin	77.3	1.000	0.700	0.650	325.0	26.6	22.2	23.5
		Qmax	77.3	1.000	0.700	0.650	325.0	26.6	22.2	23.5
		Qmin	133.1	1.000	0.700	0.650	325.0	33.5	27.9	44.9
64	63	Nmax	95.0	1.000	0.700	0.650	325.0	26.6	22.2	31.1
		Nmin	153.7	1.000	0.700	0.650	325.0	32.1	26.7	54.2
		Mmax	161.3	1.000	0.700	0.650	325.0	33.5	27.9	57.0
		Mmin	95.0	1.000	0.700	0.650	325.0	26.6	22.2	31.1
		Qmax	95.0	1.000	0.700	0.650	325.0	26.6	22.2	31.1
		Qmin	161.3	1.000	0.700	0.650	325.0	33.5	27.9	57.0
	64	Nmax	95.0	1.000	0.700	0.650	325.0	31.2	26.0	29.5
		Nmin	153.7	1.000	0.700	0.650	325.0	38.0	31.6	52.1
		Mmax	161.3	1.000	0.700	0.650	325.0	39.5	32.9	54.9

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIA
MUELLES A AMBOS LADOS

FECHA: 28/02/2006

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
		Mmin	95.0	1.000	0.700	0.650	325.0	31.2	26.0	29.5
		Qmax	95.0	1.000	0.700	0.650	325.0	31.2	26.0	29.5
		Qmin	161.3	1.000	0.700	0.650	325.0	39.5	32.9	54.9

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIÁ

FECHA: 28/02/2006

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
1	1	Nmax	0.0	-101.3	1.000	0.700	0.650	920.83	0.00	38.75
		Nmin	0.0	-147.4	1.000	0.700	0.650	920.83	0.00	59.74
		Mmax	0.0	-101.3	1.000	0.700	0.650	920.83	0.00	38.75
		Mmin	0.0	-147.4	1.000	0.700	0.650	920.83	0.00	59.74
		Qmax	0.0	-137.7	1.000	0.700	0.650	920.83	0.00	55.05
		Qmin	0.0	-101.3	1.000	0.700	0.650	920.83	0.00	38.75
	2	Nmax	0.0	-81.2	1.000	0.700	0.650	920.83	0.00	30.40
		Nmin	0.0	-127.9	1.000	0.700	0.650	920.83	0.00	50.52
		Mmax	0.0	-81.2	1.000	0.700	0.650	920.83	0.00	30.40
		Mmin	0.0	-127.9	1.000	0.700	0.650	920.83	0.00	50.52
		Qmax	0.0	-122.2	1.000	0.700	0.650	920.83	0.00	47.93
		Qmin	0.0	-81.2	1.000	0.700	0.650	920.83	0.00	30.40
2	2	Nmax	0.0	-81.2	1.000	0.700	0.650	920.83	0.00	30.41
		Nmin	0.0	-127.9	1.000	0.700	0.650	920.83	0.00	50.52
		Mmax	0.0	-81.2	1.000	0.700	0.650	920.83	0.00	30.41
		Mmin	0.0	-127.9	1.000	0.700	0.650	920.83	0.00	50.52
		Qmax	0.0	-122.2	1.000	0.700	0.650	920.83	0.00	47.94
		Qmin	0.0	-81.2	1.000	0.700	0.650	920.83	0.00	30.41
	3	Nmax	0.0	-75.9	1.000	0.700	0.650	920.83	0.00	28.25
		Nmin	0.0	-123.1	1.000	0.700	0.650	920.83	0.00	48.33
		Mmax	0.0	-75.9	1.000	0.700	0.650	920.83	0.00	28.25
		Mmin	0.0	-123.1	1.000	0.700	0.650	920.83	0.00	48.33
		Qmax	0.0	-121.5	1.000	0.700	0.650	920.83	0.00	47.61
		Qmin	0.0	-75.9	1.000	0.700	0.650	920.83	0.00	28.25
3	3	Nmax	0.0	-75.9	1.000	0.700	0.650	920.83	0.00	28.25
		Nmin	0.0	-123.1	1.000	0.700	0.650	920.83	0.00	48.33
		Mmax	0.0	-75.9	1.000	0.700	0.650	920.83	0.00	28.25
		Mmin	0.0	-123.1	1.000	0.700	0.650	920.83	0.00	48.33
		Qmax	0.0	-121.5	1.000	0.700	0.650	920.83	0.00	47.61
		Qmin	0.0	-75.9	1.000	0.700	0.650	920.83	0.00	28.25
	4	Nmax	0.0	-73.8	1.000	0.700	0.650	920.83	0.00	27.39
		Nmin	0.0	-121.5	1.000	0.700	0.650	920.83	0.00	47.60
		Mmax	0.0	-73.8	1.000	0.700	0.650	920.83	0.00	27.39
		Mmin	0.0	-124.0	1.000	0.700	0.650	920.83	0.00	48.74
		Qmax	0.0	-124.0	1.000	0.700	0.650	920.83	0.00	48.74
		Qmin	0.0	-73.8	1.000	0.700	0.650	920.83	0.00	27.39
4	4	Nmax	0.0	-73.8	1.000	0.700	0.650	920.83	0.00	27.39
		Nmin	0.0	-121.5	1.000	0.700	0.650	920.83	0.00	47.60
		Mmax	0.0	-73.8	1.000	0.700	0.650	920.83	0.00	27.39
		Mmin	0.0	-124.0	1.000	0.700	0.650	920.83	0.00	48.74
		Qmax	0.0	-124.0	1.000	0.700	0.650	920.83	0.00	48.74
		Qmin	0.0	-73.8	1.000	0.700	0.650	920.83	0.00	27.39
	5	Nmax	0.0	-73.4	1.000	0.700	0.650	920.83	0.00	27.24
		Nmin	0.0	-121.6	1.000	0.700	0.650	920.83	0.00	47.66
		Mmax	0.0	-73.4	1.000	0.700	0.650	920.83	0.00	27.24
		Mmin	0.0	-128.2	1.000	0.700	0.650	920.83	0.00	50.66
		Qmax	0.0	-128.2	1.000	0.700	0.650	920.83	0.00	50.66
		Qmin	0.0	-73.4	1.000	0.700	0.650	920.83	0.00	27.24
5	5	Nmax	0.0	-73.4	1.000	0.700	0.650	920.83	0.00	27.24
		Nmin	0.0	-121.6	1.000	0.700	0.650	920.83	0.00	47.66
		Mmax	0.0	-73.4	1.000	0.700	0.650	920.83	0.00	27.24
		Mmin	0.0	-128.2	1.000	0.700	0.650	920.83	0.00	50.66

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIÁ

FECHA: 28/02/2006

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
		Qmax	0.0	-128.2	1.000	0.700	0.650	920.83	0.00	50.66
		Qmin	0.0	-73.4	1.000	0.700	0.650	920.83	0.00	27.24
	6	Nmax	0.0	-74.4	1.000	0.700	0.650	920.83	0.00	27.64
		Nmin	0.0	-123.1	1.000	0.700	0.650	920.83	0.00	48.35
		Mmax	0.0	-74.4	1.000	0.700	0.650	920.83	0.00	27.64
		Mmin	0.0	-133.8	1.000	0.700	0.650	920.83	0.00	53.26
		Qmax	0.0	-133.8	1.000	0.700	0.650	920.83	0.00	53.26
		Qmin	0.0	-74.4	1.000	0.700	0.650	920.83	0.00	27.64
6	6	Nmax	0.0	-74.4	1.000	0.700	0.650	920.83	0.00	27.64
		Nmin	0.0	-123.1	1.000	0.700	0.650	920.83	0.00	48.35
		Mmax	0.0	-74.4	1.000	0.700	0.650	920.83	0.00	27.64
		Mmin	0.0	-133.8	1.000	0.700	0.650	920.83	0.00	53.26
		Qmax	0.0	-133.8	1.000	0.700	0.650	920.83	0.00	53.26
		Qmin	0.0	-74.4	1.000	0.700	0.650	920.83	0.00	27.64
	7	Nmax	0.0	-80.7	1.000	0.700	0.650	920.83	0.00	30.20
		Nmin	0.0	-130.0	1.000	0.700	0.650	920.83	0.00	51.50
		Mmax	0.0	-80.7	1.000	0.700	0.650	920.83	0.00	30.20
		Mmin	0.0	-144.8	1.000	0.700	0.650	920.83	0.00	58.47
		Qmax	0.0	-144.8	1.000	0.700	0.650	920.83	0.00	58.47
		Qmin	0.0	-80.7	1.000	0.700	0.650	920.83	0.00	30.20
7	7	Nmax	0.0	-80.7	1.000	0.800	0.750	1062.50	0.00	25.64
		Nmin	0.0	-144.8	1.000	0.800	0.750	1062.50	0.00	48.44
		Mmax	0.0	-80.7	1.000	0.800	0.750	1062.50	0.00	25.64
		Mmin	0.0	-144.8	1.000	0.800	0.750	1062.50	0.00	48.44
		Qmax	0.0	-80.7	1.000	0.800	0.750	1062.50	0.00	25.64
		Qmin	0.0	-130.0	1.000	0.800	0.750	1062.50	0.00	42.94
	9	Nmax	0.0	-56.3	1.000	0.800	0.750	1062.50	0.00	17.58
		Nmin	0.0	-106.2	1.000	0.800	0.750	1062.50	0.00	34.40
		Mmax	0.0	-56.3	1.000	0.800	0.750	1062.50	0.00	17.58
		Mmin	0.0	-106.2	1.000	0.800	0.750	1062.50	0.00	34.40
		Qmax	0.0	-56.3	1.000	0.800	0.750	1062.50	0.00	17.58
		Qmin	0.0	-89.9	1.000	0.800	0.750	1062.50	0.00	28.74
8	9	Nmax	0.0	-56.3	1.000	0.800	0.750	1062.50	0.00	17.58
		Nmin	0.0	-106.2	1.000	0.800	0.750	1062.50	0.00	34.40
		Mmax	0.0	-56.3	1.000	0.800	0.750	1062.50	0.00	17.58
		Mmin	0.0	-106.2	1.000	0.800	0.750	1062.50	0.00	34.40
		Qmax	0.0	-56.3	1.000	0.800	0.750	1062.50	0.00	17.58
		Qmin	0.0	-89.9	1.000	0.800	0.750	1062.50	0.00	28.74
	11	Nmax	0.0	-33.7	1.000	0.800	0.750	1062.50	0.00	10.35
		Nmin	0.0	-68.9	1.000	0.800	0.750	1062.50	0.00	21.69
		Mmax	0.0	-33.7	1.000	0.800	0.750	1062.50	0.00	10.35
		Mmin	0.0	-68.9	1.000	0.800	0.750	1062.50	0.00	21.69
		Qmax	0.0	-33.7	1.000	0.800	0.750	1062.50	0.00	10.35
		Qmin	0.0	-68.9	1.000	0.800	0.750	1062.50	0.00	21.69
9	11	Nmax	0.0	-33.7	1.000	0.800	0.750	1062.50	0.00	10.35
		Nmin	0.0	-68.9	1.000	0.800	0.750	1062.50	0.00	21.69
		Mmax	0.0	-33.7	1.000	0.800	0.750	1062.50	0.00	10.35
		Mmin	0.0	-68.9	1.000	0.800	0.750	1062.50	0.00	21.69
		Qmax	0.0	-33.7	1.000	0.800	0.750	1062.50	0.00	10.35
		Qmin	0.0	-68.9	1.000	0.800	0.750	1062.50	0.00	21.69
	13	Nmax	1.3	-12.7	1.000	0.800	0.750	1062.50	0.39	3.84
		Nmin	1.3	-32.5	1.000	0.800	0.750	1062.50	0.39	9.99

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIÁ

FECHA: 28/02/2006

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
		Mmax	1.3	-12.7	1.000	0.800	0.750	1062.50	0.39	3.84
		Mmin	1.3	-32.5	1.000	0.800	0.750	1062.50	0.39	9.99
		Qmax	1.3	-12.7	1.000	0.800	0.750	1062.50	0.39	3.84
		Qmin	1.3	-32.5	1.000	0.800	0.750	1062.50	0.39	9.99
10	13	Nmax	1.3	-12.7	1.000	0.800	0.750	1062.50	0.39	3.84
		Nmin	1.3	-32.5	1.000	0.800	0.750	1062.50	0.39	9.99
		Mmax	1.3	-12.7	1.000	0.800	0.750	1062.50	0.39	3.84
		Mmin	1.3	-32.5	1.000	0.800	0.750	1062.50	0.39	9.99
		Qmax	1.3	-12.7	1.000	0.800	0.750	1062.50	0.39	3.84
		Qmin	1.3	-32.5	1.000	0.800	0.750	1062.50	0.39	9.99
	15	Nmax	16.0	0.0	1.000	0.800	0.750	1062.50	4.85	0.00
		Nmin	16.0	0.0	1.000	0.800	0.750	1062.50	4.85	0.00
		Mmax	23.1	0.0	1.000	0.800	0.750	1062.50	7.04	0.00
		Mmin	16.0	0.0	1.000	0.800	0.750	1062.50	4.85	0.00
		Qmax	16.0	0.0	1.000	0.800	0.750	1062.50	4.85	0.00
		Qmin	16.0	0.0	1.000	0.800	0.750	1062.50	4.85	0.00
11	15	Nmax	16.0	0.0	1.000	0.800	0.750	1062.50	4.85	0.00
		Nmin	16.0	0.0	1.000	0.800	0.750	1062.50	4.85	0.00
		Mmax	23.1	0.0	1.000	0.800	0.750	1062.50	7.04	0.00
		Mmin	16.0	0.0	1.000	0.800	0.750	1062.50	4.85	0.00
		Qmax	16.0	0.0	1.000	0.800	0.750	1062.50	4.85	0.00
		Qmin	16.0	0.0	1.000	0.800	0.750	1062.50	4.85	0.00
	17	Nmax	32.9	0.0	1.000	0.800	0.750	1062.50	10.10	0.00
		Nmin	45.4	0.0	1.000	0.800	0.750	1062.50	14.05	0.00
		Mmax	51.4	0.0	1.000	0.800	0.750	1062.50	15.97	0.00
		Mmin	32.9	0.0	1.000	0.800	0.750	1062.50	10.10	0.00
		Qmax	32.9	0.0	1.000	0.800	0.750	1062.50	10.10	0.00
		Qmin	45.4	0.0	1.000	0.800	0.750	1062.50	14.05	0.00
12	17	Nmax	32.9	0.0	1.000	0.800	0.750	1062.50	10.10	0.00
		Nmin	45.4	0.0	1.000	0.800	0.750	1062.50	14.05	0.00
		Mmax	51.3	0.0	1.000	0.800	0.750	1062.50	15.96	0.00
		Mmin	32.9	0.0	1.000	0.800	0.750	1062.50	10.10	0.00
		Qmax	32.9	0.0	1.000	0.800	0.750	1062.50	10.10	0.00
		Qmin	45.4	0.0	1.000	0.800	0.750	1062.50	14.05	0.00
	19	Nmax	61.7	0.0	1.000	0.800	0.750	1062.50	19.34	0.00
		Nmin	104.4	0.0	1.000	0.800	0.750	1062.50	33.75	0.00
		Mmax	104.4	0.0	1.000	0.800	0.750	1062.50	33.75	0.00
		Mmin	61.7	0.0	1.000	0.800	0.750	1062.50	19.34	0.00
		Qmax	61.7	0.0	1.000	0.800	0.750	1062.50	19.34	0.00
		Qmin	104.4	0.0	1.000	0.800	0.750	1062.50	33.75	0.00
13	19	Nmax	61.7	0.0	1.000	0.800	0.750	1062.50	19.34	0.00
		Nmin	104.4	0.0	1.000	0.800	0.750	1062.50	33.75	0.00
		Mmax	104.4	0.0	1.000	0.800	0.750	1062.50	33.75	0.00
		Mmin	61.7	0.0	1.000	0.800	0.750	1062.50	19.34	0.00
		Qmax	61.7	0.0	1.000	0.800	0.750	1062.50	19.34	0.00
		Qmin	104.4	0.0	1.000	0.800	0.750	1062.50	33.75	0.00
	21	Nmax	83.8	0.0	1.000	0.800	0.750	1062.50	26.69	0.00
		Nmin	149.9	0.0	1.000	0.800	0.750	1062.50	50.35	0.00
		Mmax	149.9	0.0	1.000	0.800	0.750	1062.50	50.35	0.00
		Mmin	83.8	0.0	1.000	0.800	0.750	1062.50	26.69	0.00
		Qmax	83.8	0.0	1.000	0.800	0.750	1062.50	26.69	0.00
		Qmin	149.9	0.0	1.000	0.800	0.750	1062.50	50.35	0.00

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIÁ

FECHA: 28/02/2006

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
14	21	Nmax	83.9	0.0	1.000	0.800	0.750	1062.50	26.70	0.00
		Nmin	149.9	0.0	1.000	0.800	0.750	1062.50	50.35	0.00
		Mmax	149.9	0.0	1.000	0.800	0.750	1062.50	50.35	0.00
		Mmin	83.9	0.0	1.000	0.800	0.750	1062.50	26.70	0.00
		Qmax	83.9	0.0	1.000	0.800	0.750	1062.50	26.70	0.00
		Qmin	149.9	0.0	1.000	0.800	0.750	1062.50	50.35	0.00
	23	Nmax	99.2	0.0	1.000	0.800	0.750	1062.50	31.97	0.00
		Nmin	182.0	0.0	1.000	0.800	0.750	1062.50	62.99	0.00
		Mmax	182.0	0.0	1.000	0.800	0.750	1062.50	62.99	0.00
		Mmin	99.2	0.0	1.000	0.800	0.750	1062.50	31.97	0.00
		Qmax	99.2	0.0	1.000	0.800	0.750	1062.50	31.97	0.00
		Qmin	182.0	0.0	1.000	0.800	0.750	1062.50	62.99	0.00
15	23	Nmax	99.2	0.0	1.000	0.800	0.750	1062.50	31.97	0.00
		Nmin	182.0	0.0	1.000	0.800	0.750	1062.50	62.99	0.00
		Mmax	182.0	0.0	1.000	0.800	0.750	1062.50	62.99	0.00
		Mmin	99.2	0.0	1.000	0.800	0.750	1062.50	31.97	0.00
		Qmax	99.2	0.0	1.000	0.800	0.750	1062.50	31.97	0.00
		Qmin	182.0	0.0	1.000	0.800	0.750	1062.50	62.99	0.00
	25	Nmax	109.1	0.0	1.000	0.800	0.750	1062.50	35.41	0.00
		Nmin	201.9	0.0	1.000	0.800	0.750	1062.50	71.30	0.00
		Mmax	201.9	0.0	1.000	0.800	0.750	1062.50	71.30	0.00
		Mmin	109.1	0.0	1.000	0.800	0.750	1062.50	35.41	0.00
		Qmax	109.1	0.0	1.000	0.800	0.750	1062.50	35.41	0.00
		Qmin	201.9	0.0	1.000	0.800	0.750	1062.50	71.30	0.00
16	25	Nmax	109.1	0.0	1.000	0.800	0.750	1062.50	35.41	0.00
		Nmin	201.9	0.0	1.000	0.800	0.750	1062.50	71.30	0.00
		Mmax	201.9	0.0	1.000	0.800	0.750	1062.50	71.30	0.00
		Mmin	109.1	0.0	1.000	0.800	0.750	1062.50	35.41	0.00
		Qmax	109.1	0.0	1.000	0.800	0.750	1062.50	35.41	0.00
		Qmin	201.9	0.0	1.000	0.800	0.750	1062.50	71.30	0.00
	27	Nmax	112.4	0.0	1.000	0.800	0.750	1062.50	36.60	0.00
		Nmin	208.6	0.0	1.000	0.800	0.750	1062.50	74.19	0.00
		Mmax	208.6	0.0	1.000	0.800	0.750	1062.50	74.19	0.00
		Mmin	112.4	0.0	1.000	0.800	0.750	1062.50	36.60	0.00
		Qmax	185.1	0.0	1.000	0.800	0.750	1062.50	64.25	0.00
		Qmin	112.4	0.0	1.000	0.800	0.750	1062.50	36.60	0.00
17	27	Nmax	112.4	0.0	1.000	0.800	0.750	1062.50	36.60	0.00
		Nmin	208.6	0.0	1.000	0.800	0.750	1062.50	74.19	0.00
		Mmax	208.6	0.0	1.000	0.800	0.750	1062.50	74.19	0.00
		Mmin	112.4	0.0	1.000	0.800	0.750	1062.50	36.60	0.00
		Qmax	185.1	0.0	1.000	0.800	0.750	1062.50	64.25	0.00
		Qmin	112.4	0.0	1.000	0.800	0.750	1062.50	36.60	0.00
	29	Nmax	109.1	0.0	1.000	0.800	0.750	1062.50	35.41	0.00
		Nmin	201.8	0.0	1.000	0.800	0.750	1062.50	71.29	0.00
		Mmax	201.8	0.0	1.000	0.800	0.750	1062.50	71.29	0.00
		Mmin	109.1	0.0	1.000	0.800	0.750	1062.50	35.41	0.00
		Qmax	201.8	0.0	1.000	0.800	0.750	1062.50	71.29	0.00
		Qmin	109.1	0.0	1.000	0.800	0.750	1062.50	35.41	0.00
18	29	Nmax	109.1	0.0	1.000	0.800	0.750	1062.50	35.41	0.00
		Nmin	201.8	0.0	1.000	0.800	0.750	1062.50	71.29	0.00
		Mmax	201.8	0.0	1.000	0.800	0.750	1062.50	71.29	0.00
		Mmin	109.1	0.0	1.000	0.800	0.750	1062.50	35.41	0.00

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIÁ

FECHA: 28/02/2006

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
		Qmax	201.8	0.0	1.000	0.800	0.750	1062.50	71.29	0.00
		Qmin	109.1	0.0	1.000	0.800	0.750	1062.50	35.41	0.00
	31	Nmax	99.0	0.0	1.000	0.800	0.750	1062.50	31.89	0.00
		Nmin	181.7	0.0	1.000	0.800	0.750	1062.50	62.88	0.00
		Mmax	181.7	0.0	1.000	0.800	0.750	1062.50	62.88	0.00
		Mmin	99.0	0.0	1.000	0.800	0.750	1062.50	31.89	0.00
		Qmax	181.7	0.0	1.000	0.800	0.750	1062.50	62.88	0.00
		Qmin	99.0	0.0	1.000	0.800	0.750	1062.50	31.89	0.00
19	31	Nmax	99.0	0.0	1.000	0.800	0.750	1062.50	31.89	0.00
		Nmin	181.7	0.0	1.000	0.800	0.750	1062.50	62.88	0.00
		Mmax	181.7	0.0	1.000	0.800	0.750	1062.50	62.88	0.00
		Mmin	99.0	0.0	1.000	0.800	0.750	1062.50	31.89	0.00
		Qmax	181.7	0.0	1.000	0.800	0.750	1062.50	62.88	0.00
		Qmin	99.0	0.0	1.000	0.800	0.750	1062.50	31.89	0.00
	33	Nmax	82.2	0.0	1.000	0.800	0.750	1062.50	26.14	0.00
		Nmin	148.2	0.0	1.000	0.800	0.750	1062.50	49.71	0.00
		Mmax	148.2	0.0	1.000	0.800	0.750	1062.50	49.71	0.00
		Mmin	82.2	0.0	1.000	0.800	0.750	1062.50	26.14	0.00
		Qmax	148.2	0.0	1.000	0.800	0.750	1062.50	49.71	0.00
		Qmin	82.2	0.0	1.000	0.800	0.750	1062.50	26.14	0.00
20	33	Nmax	82.2	0.0	1.000	0.800	0.750	1062.50	26.14	0.00
		Nmin	148.2	0.0	1.000	0.800	0.750	1062.50	49.71	0.00
		Mmax	148.2	0.0	1.000	0.800	0.750	1062.50	49.71	0.00
		Mmin	82.2	0.0	1.000	0.800	0.750	1062.50	26.14	0.00
		Qmax	148.2	0.0	1.000	0.800	0.750	1062.50	49.71	0.00
		Qmin	82.2	0.0	1.000	0.800	0.750	1062.50	26.14	0.00
	35	Nmax	58.7	0.0	1.000	0.800	0.750	1062.50	18.36	0.00
		Nmin	101.3	0.0	1.000	0.800	0.750	1062.50	32.69	0.00
		Mmax	101.3	0.0	1.000	0.800	0.750	1062.50	32.69	0.00
		Mmin	58.7	0.0	1.000	0.800	0.750	1062.50	18.36	0.00
		Qmax	101.3	0.0	1.000	0.800	0.750	1062.50	32.69	0.00
		Qmin	58.7	0.0	1.000	0.800	0.750	1062.50	18.36	0.00
21	35	Nmax	58.7	0.0	1.000	0.800	0.750	1062.50	18.36	0.00
		Nmin	101.3	0.0	1.000	0.800	0.750	1062.50	32.68	0.00
		Mmax	101.3	0.0	1.000	0.800	0.750	1062.50	32.68	0.00
		Mmin	58.7	0.0	1.000	0.800	0.750	1062.50	18.36	0.00
		Qmax	101.3	0.0	1.000	0.800	0.750	1062.50	32.68	0.00
		Qmin	58.7	0.0	1.000	0.800	0.750	1062.50	18.36	0.00
	37	Nmax	28.5	0.0	1.000	0.800	0.750	1062.50	8.72	0.00
		Nmin	40.9	0.0	1.000	0.800	0.750	1062.50	12.63	0.00
		Mmax	46.9	0.0	1.000	0.800	0.750	1062.50	14.54	0.00
		Mmin	28.5	0.0	1.000	0.800	0.750	1062.50	8.72	0.00
		Qmax	40.9	0.0	1.000	0.800	0.750	1062.50	12.63	0.00
		Qmin	28.5	0.0	1.000	0.800	0.750	1062.50	8.72	0.00
22	37	Nmax	28.5	0.0	1.000	0.800	0.750	1062.50	8.72	0.00
		Nmin	40.9	0.0	1.000	0.800	0.750	1062.50	12.63	0.00
		Mmax	46.9	0.0	1.000	0.800	0.750	1062.50	14.54	0.00
		Mmin	28.5	0.0	1.000	0.800	0.750	1062.50	8.72	0.00
		Qmax	40.9	0.0	1.000	0.800	0.750	1062.50	12.63	0.00
		Qmin	28.5	0.0	1.000	0.800	0.750	1062.50	8.72	0.00
	39	Nmax	10.9	-5.6	1.000	0.800	0.750	1062.50	3.30	1.69
		Nmin	10.9	-5.6	1.000	0.800	0.750	1062.50	3.30	1.69

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIÁ

FECHA: 28/02/2006

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
		Mmax	18.0	-5.6	1.000	0.800	0.750	1062.50	5.47	1.69
		Mmin	10.9	-5.6	1.000	0.800	0.750	1062.50	3.30	1.69
		Qmax	10.9	-5.6	1.000	0.800	0.750	1062.50	3.30	1.69
		Qmin	10.9	-5.6	1.000	0.800	0.750	1062.50	3.30	1.69
23	39	Nmax	10.9	-5.6	1.000	0.800	0.750	1062.50	3.30	1.69
		Nmin	10.9	-5.6	1.000	0.800	0.750	1062.50	3.30	1.69
		Mmax	18.0	-5.6	1.000	0.800	0.750	1062.50	5.47	1.69
		Mmin	10.9	-5.6	1.000	0.800	0.750	1062.50	3.30	1.69
		Qmax	10.9	-5.6	1.000	0.800	0.750	1062.50	3.30	1.69
		Qmin	10.9	-5.6	1.000	0.800	0.750	1062.50	3.30	1.69
	41	Nmax	0.0	-19.3	1.000	0.800	0.750	1062.50	0.00	5.86
		Nmin	0.0	-39.1	1.000	0.800	0.750	1062.50	0.00	12.07
		Mmax	0.0	-19.3	1.000	0.800	0.750	1062.50	0.00	5.86
		Mmin	0.0	-39.1	1.000	0.800	0.750	1062.50	0.00	12.07
		Qmax	0.0	-39.1	1.000	0.800	0.750	1062.50	0.00	12.07
		Qmin	0.0	-19.3	1.000	0.800	0.750	1062.50	0.00	5.86
24	41	Nmax	0.0	-19.3	1.000	0.800	0.750	1062.50	0.00	5.86
		Nmin	0.0	-39.1	1.000	0.800	0.750	1062.50	0.00	12.07
		Mmax	0.0	-19.3	1.000	0.800	0.750	1062.50	0.00	5.86
		Mmin	0.0	-39.1	1.000	0.800	0.750	1062.50	0.00	12.07
		Qmax	0.0	-39.1	1.000	0.800	0.750	1062.50	0.00	12.07
		Qmin	0.0	-19.3	1.000	0.800	0.750	1062.50	0.00	5.86
	43	Nmax	0.0	-40.9	1.000	0.800	0.750	1062.50	0.00	12.63
		Nmin	0.0	-76.1	1.000	0.800	0.750	1062.50	0.00	24.09
		Mmax	0.0	-40.9	1.000	0.800	0.750	1062.50	0.00	12.63
		Mmin	0.0	-76.1	1.000	0.800	0.750	1062.50	0.00	24.09
		Qmax	0.0	-76.1	1.000	0.800	0.750	1062.50	0.00	24.09
		Qmin	0.0	-40.9	1.000	0.800	0.750	1062.50	0.00	12.63
25	43	Nmax	0.0	-40.9	1.000	0.800	0.750	1062.50	0.00	12.63
		Nmin	0.0	-76.1	1.000	0.800	0.750	1062.50	0.00	24.09
		Mmax	0.0	-40.9	1.000	0.800	0.750	1062.50	0.00	12.63
		Mmin	0.0	-76.1	1.000	0.800	0.750	1062.50	0.00	24.09
		Qmax	0.0	-76.1	1.000	0.800	0.750	1062.50	0.00	24.09
		Qmin	0.0	-40.9	1.000	0.800	0.750	1062.50	0.00	12.63
	45	Nmax	0.0	-64.3	1.000	0.800	0.750	1062.50	0.00	20.17
		Nmin	0.0	-114.1	1.000	0.800	0.750	1062.50	0.00	37.21
		Mmax	0.0	-64.3	1.000	0.800	0.750	1062.50	0.00	20.17
		Mmin	0.0	-114.1	1.000	0.800	0.750	1062.50	0.00	37.21
		Qmax	0.0	-97.8	1.000	0.800	0.750	1062.50	0.00	31.47
		Qmin	0.0	-64.3	1.000	0.800	0.750	1062.50	0.00	20.17
26	45	Nmax	0.0	-64.3	1.000	0.800	0.750	1062.50	0.00	20.17
		Nmin	0.0	-114.1	1.000	0.800	0.750	1062.50	0.00	37.21
		Mmax	0.0	-64.3	1.000	0.800	0.750	1062.50	0.00	20.17
		Mmin	0.0	-114.1	1.000	0.800	0.750	1062.50	0.00	37.21
		Qmax	0.0	-97.8	1.000	0.800	0.750	1062.50	0.00	31.47
		Qmin	0.0	-64.3	1.000	0.800	0.750	1062.50	0.00	20.17
	52	Nmax	0.0	-89.3	1.000	0.800	0.750	1062.50	0.00	28.56
		Nmin	0.0	-153.4	1.000	0.800	0.750	1062.50	0.00	51.70
		Mmax	0.0	-89.3	1.000	0.800	0.750	1062.50	0.00	28.56
		Mmin	0.0	-153.4	1.000	0.800	0.750	1062.50	0.00	51.70
		Qmax	0.0	-138.6	1.000	0.800	0.750	1062.50	0.00	46.11
		Qmin	0.0	-89.3	1.000	0.800	0.750	1062.50	0.00	28.56

ARMADOJUL_2000_sinm.xls PI RIERA DE CAN JULIÁ
Kv=2000 Sin Kh
28/02/2006

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIÁ

FECHA: 28/02/2006

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
27	1	Nmax	137.7	0.0	1.000	0.700	0.650	920.83	55.05	0.00
		Nmin	101.3	0.0	1.000	0.700	0.650	920.83	38.75	0.00
		Mmax	147.4	0.0	1.000	0.700	0.650	920.83	59.74	0.00
		Mmin	101.3	0.0	1.000	0.700	0.650	920.83	38.75	0.00
		Qmax	147.4	0.0	1.000	0.700	0.650	920.83	59.74	0.00
		Qmin	101.3	0.0	1.000	0.700	0.650	920.83	38.75	0.00
	8	Nmax	97.5	0.0	1.000	0.700	0.650	920.83	37.13	0.00
		Nmin	74.2	0.0	1.000	0.700	0.650	920.83	27.55	0.00
		Mmax	105.0	0.0	1.000	0.700	0.650	920.83	40.33	0.00
		Mmin	74.2	0.0	1.000	0.700	0.650	920.83	27.55	0.00
		Qmax	105.0	0.0	1.000	0.700	0.650	920.83	40.33	0.00
		Qmin	74.2	0.0	1.000	0.700	0.650	920.83	27.55	0.00
28	8	Nmax	97.5	0.0	1.000	0.700	0.650	920.83	37.14	0.00
		Nmin	74.2	0.0	1.000	0.700	0.650	920.83	27.55	0.00
		Mmax	105.0	0.0	1.000	0.700	0.650	920.83	40.34	0.00
		Mmin	74.2	0.0	1.000	0.700	0.650	920.83	27.55	0.00
		Qmax	105.0	0.0	1.000	0.700	0.650	920.83	40.34	0.00
		Qmin	74.2	0.0	1.000	0.700	0.650	920.83	27.55	0.00
	10	Nmax	61.7	0.0	1.000	0.700	0.650	920.83	22.65	0.00
		Nmin	49.9	0.0	1.000	0.700	0.650	920.83	18.10	0.00
		Mmax	67.2	0.0	1.000	0.700	0.650	920.83	24.78	0.00
		Mmin	49.9	0.0	1.000	0.700	0.650	920.83	18.10	0.00
		Qmax	67.2	0.0	1.000	0.700	0.650	920.83	24.78	0.00
		Qmin	49.9	0.0	1.000	0.700	0.650	920.83	18.10	0.00
29	10	Nmax	61.8	0.0	1.000	0.700	0.650	920.83	22.66	0.00
		Nmin	49.9	0.0	1.000	0.700	0.650	920.83	18.10	0.00
		Mmax	67.2	0.0	1.000	0.700	0.650	920.83	24.79	0.00
		Mmin	49.9	0.0	1.000	0.700	0.650	920.83	18.10	0.00
		Qmax	67.2	0.0	1.000	0.700	0.650	920.83	24.79	0.00
		Qmin	49.9	0.0	1.000	0.700	0.650	920.83	18.10	0.00
	12	Nmax	30.0	0.0	1.000	0.700	0.650	920.83	10.67	0.00
		Nmin	28.2	0.0	1.000	0.700	0.650	920.83	10.02	0.00
		Mmax	33.6	0.0	1.000	0.700	0.650	920.83	12.00	0.00
		Mmin	28.2	0.0	1.000	0.700	0.650	920.83	10.02	0.00
		Qmax	33.6	0.0	1.000	0.700	0.650	920.83	12.00	0.00
		Qmin	28.2	0.0	1.000	0.700	0.650	920.83	10.02	0.00
30	12	Nmax	30.0	0.0	1.000	0.700	0.650	920.83	10.67	0.00
		Nmin	28.2	0.0	1.000	0.700	0.650	920.83	10.02	0.00
		Mmax	33.6	0.0	1.000	0.700	0.650	920.83	12.00	0.00
		Mmin	28.2	0.0	1.000	0.700	0.650	920.83	10.02	0.00
		Qmax	33.6	0.0	1.000	0.700	0.650	920.83	12.00	0.00
		Qmin	28.2	0.0	1.000	0.700	0.650	920.83	10.02	0.00
	14	Nmax	13.0	-12.5	1.000	0.700	0.650	920.83	4.55	4.38
		Nmin	13.0	-5.5	1.000	0.700	0.650	920.83	4.55	1.92
		Mmax	13.0	-5.5	1.000	0.700	0.650	920.83	4.55	1.92
		Mmin	13.0	-12.5	1.000	0.700	0.650	920.83	4.55	4.38
		Qmax	13.0	-10.5	1.000	0.700	0.650	920.83	4.55	3.68
		Qmin	13.0	-5.5	1.000	0.700	0.650	920.83	4.55	1.92
31	14	Nmax	13.0	-12.5	1.000	0.700	0.650	920.83	4.55	4.38
		Nmin	13.0	-5.5	1.000	0.700	0.650	920.83	4.55	1.92
		Mmax	13.0	-5.5	1.000	0.700	0.650	920.83	4.55	1.92
		Mmin	13.0	-12.5	1.000	0.700	0.650	920.83	4.55	4.38

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIÁ

FECHA: 28/02/2006

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
		Qmax	13.0	-10.5	1.000	0.700	0.650	920.83	4.55	3.68
		Qmin	13.0	-5.5	1.000	0.700	0.650	920.83	4.55	1.92
	16	Nmax	4.1	-36.2	1.000	0.700	0.650	920.83	1.43	12.96
		Nmin	4.1	-21.7	1.000	0.700	0.650	920.83	1.43	7.68
		Mmax	4.1	-21.7	1.000	0.700	0.650	920.83	1.43	7.68
		Mmin	4.1	-36.2	1.000	0.700	0.650	920.83	1.43	12.96
		Qmax	4.1	-35.7	1.000	0.700	0.650	920.83	1.43	12.76
		Qmin	4.1	-21.7	1.000	0.700	0.650	920.83	1.43	7.68
32	16	Nmax	4.1	-36.2	1.000	0.700	0.650	920.83	1.43	12.96
		Nmin	4.1	-21.7	1.000	0.700	0.650	920.83	1.43	7.68
		Mmax	4.1	-21.7	1.000	0.700	0.650	920.83	1.43	7.68
		Mmin	4.1	-36.2	1.000	0.700	0.650	920.83	1.43	12.96
		Qmax	4.1	-35.7	1.000	0.700	0.650	920.83	1.43	12.76
		Qmin	4.1	-21.7	1.000	0.700	0.650	920.83	1.43	7.68
	18	Nmax	0.0	-73.6	1.000	0.700	0.650	920.83	0.00	27.32
		Nmin	0.0	-47.4	1.000	0.700	0.650	920.83	0.00	17.14
		Mmax	0.0	-47.4	1.000	0.700	0.650	920.83	0.00	17.14
		Mmin	0.0	-75.4	1.000	0.700	0.650	920.83	0.00	28.04
		Qmax	0.0	-75.4	1.000	0.700	0.650	920.83	0.00	28.04
		Qmin	0.0	-47.4	1.000	0.700	0.650	920.83	0.00	17.14
33	18	Nmax	0.0	-73.6	1.000	0.700	0.650	920.83	0.00	27.32
		Nmin	0.0	-47.4	1.000	0.700	0.650	920.83	0.00	17.14
		Mmax	0.0	-47.4	1.000	0.700	0.650	920.83	0.00	17.14
		Mmin	0.0	-75.4	1.000	0.700	0.650	920.83	0.00	28.04
		Qmax	0.0	-75.4	1.000	0.700	0.650	920.83	0.00	28.04
		Qmin	0.0	-47.4	1.000	0.700	0.650	920.83	0.00	17.14
	20	Nmax	0.0	-99.7	1.000	0.700	0.650	920.83	0.00	38.08
		Nmin	0.0	-65.4	1.000	0.700	0.650	920.83	0.00	24.08
		Mmax	0.0	-65.4	1.000	0.700	0.650	920.83	0.00	24.08
		Mmin	0.0	-103.2	1.000	0.700	0.650	920.83	0.00	39.58
		Qmax	0.0	-103.2	1.000	0.700	0.650	920.83	0.00	39.58
		Qmin	0.0	-65.4	1.000	0.700	0.650	920.83	0.00	24.08
34	20	Nmax	0.0	-99.7	1.000	0.700	0.650	920.83	0.00	38.08
		Nmin	0.0	-65.4	1.000	0.700	0.650	920.83	0.00	24.08
		Mmax	0.0	-65.4	1.000	0.700	0.650	920.83	0.00	24.08
		Mmin	0.0	-103.2	1.000	0.700	0.650	920.83	0.00	39.58
		Qmax	0.0	-103.2	1.000	0.700	0.650	920.83	0.00	39.58
		Qmin	0.0	-65.4	1.000	0.700	0.650	920.83	0.00	24.08
	22	Nmax	0.0	-116.8	1.000	0.700	0.650	920.83	0.00	45.50
		Nmin	0.0	-77.2	1.000	0.700	0.650	920.83	0.00	28.76
		Mmax	0.0	-77.2	1.000	0.700	0.650	920.83	0.00	28.76
		Mmin	0.0	-121.4	1.000	0.700	0.650	920.83	0.00	47.58
		Qmax	0.0	-121.4	1.000	0.700	0.650	920.83	0.00	47.58
		Qmin	0.0	-77.2	1.000	0.700	0.650	920.83	0.00	28.76
35	22	Nmax	0.0	-116.8	1.000	0.700	0.650	920.83	0.00	45.50
		Nmin	0.0	-77.2	1.000	0.700	0.650	920.83	0.00	28.76
		Mmax	0.0	-77.2	1.000	0.700	0.650	920.83	0.00	28.76
		Mmin	0.0	-121.4	1.000	0.700	0.650	920.83	0.00	47.58
		Qmax	0.0	-121.4	1.000	0.700	0.650	920.83	0.00	47.58
		Qmin	0.0	-77.2	1.000	0.700	0.650	920.83	0.00	28.76
	24	Nmax	0.0	-126.4	1.000	0.700	0.650	920.83	0.00	49.82
		Nmin	0.0	-83.8	1.000	0.700	0.650	920.83	0.00	31.47

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIÁ

FECHA: 28/02/2006

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
		Mmax	0.0	-83.8	1.000	0.700	0.650	920.83	0.00	31.47
		Mmin	0.0	-131.7	1.000	0.700	0.650	920.83	0.00	52.26
		Qmax	0.0	-131.7	1.000	0.700	0.650	920.83	0.00	52.26
		Qmin	0.0	-83.8	1.000	0.700	0.650	920.83	0.00	31.47
36	24	Nmax	0.0	-126.4	1.000	0.700	0.650	920.83	0.00	49.82
		Nmin	0.0	-83.8	1.000	0.700	0.650	920.83	0.00	31.47
		Mmax	0.0	-83.8	1.000	0.700	0.650	920.83	0.00	31.47
		Mmin	0.0	-131.7	1.000	0.700	0.650	920.83	0.00	52.26
		Qmax	0.0	-131.7	1.000	0.700	0.650	920.83	0.00	52.26
		Qmin	0.0	-83.8	1.000	0.700	0.650	920.83	0.00	31.47
	26	Nmax	0.0	-129.5	1.000	0.700	0.650	920.83	0.00	51.23
		Nmin	0.0	-86.0	1.000	0.700	0.650	920.83	0.00	32.34
		Mmax	0.0	-86.0	1.000	0.700	0.650	920.83	0.00	32.34
		Mmin	0.0	-135.0	1.000	0.700	0.650	920.83	0.00	53.80
		Qmax	0.0	-135.0	1.000	0.700	0.650	920.83	0.00	53.80
		Qmin	0.0	-86.0	1.000	0.700	0.650	920.83	0.00	32.34
37	26	Nmax	0.0	-129.5	1.000	0.700	0.650	920.83	0.00	51.23
		Nmin	0.0	-86.0	1.000	0.700	0.650	920.83	0.00	32.34
		Mmax	0.0	-86.0	1.000	0.700	0.650	920.83	0.00	32.34
		Mmin	0.0	-135.0	1.000	0.700	0.650	920.83	0.00	53.80
		Qmax	0.0	-86.0	1.000	0.700	0.650	920.83	0.00	32.34
		Qmin	0.0	-135.0	1.000	0.700	0.650	920.83	0.00	53.80
	28	Nmax	0.0	-127.6	1.000	0.700	0.650	920.83	0.00	50.37
		Nmin	0.0	-85.0	1.000	0.700	0.650	920.83	0.00	31.95
		Mmax	0.0	-85.0	1.000	0.700	0.650	920.83	0.00	31.95
		Mmin	0.0	-132.9	1.000	0.700	0.650	920.83	0.00	52.82
		Qmax	0.0	-85.0	1.000	0.700	0.650	920.83	0.00	31.95
		Qmin	0.0	-132.9	1.000	0.700	0.650	920.83	0.00	52.82
38	28	Nmax	0.0	-127.6	1.000	0.700	0.650	920.83	0.00	50.37
		Nmin	0.0	-85.0	1.000	0.700	0.650	920.83	0.00	31.95
		Mmax	0.0	-85.0	1.000	0.700	0.650	920.83	0.00	31.95
		Mmin	0.0	-132.9	1.000	0.700	0.650	920.83	0.00	52.82
		Qmax	0.0	-85.0	1.000	0.700	0.650	920.83	0.00	31.95
		Qmin	0.0	-132.9	1.000	0.700	0.650	920.83	0.00	52.82
	30	Nmax	0.0	-120.5	1.000	0.700	0.650	920.83	0.00	47.14
		Nmin	0.0	-80.9	1.000	0.700	0.650	920.83	0.00	30.26
		Mmax	0.0	-80.9	1.000	0.700	0.650	920.83	0.00	30.26
		Mmin	0.0	-125.1	1.000	0.700	0.650	920.83	0.00	49.24
		Qmax	0.0	-80.9	1.000	0.700	0.650	920.83	0.00	30.26
		Qmin	0.0	-125.1	1.000	0.700	0.650	920.83	0.00	49.24
39	30	Nmax	0.0	-120.5	1.000	0.700	0.650	920.83	0.00	47.14
		Nmin	0.0	-80.9	1.000	0.700	0.650	920.83	0.00	30.26
		Mmax	0.0	-80.9	1.000	0.700	0.650	920.83	0.00	30.26
		Mmin	0.0	-125.1	1.000	0.700	0.650	920.83	0.00	49.24
		Qmax	0.0	-80.9	1.000	0.700	0.650	920.83	0.00	30.26
		Qmin	0.0	-125.1	1.000	0.700	0.650	920.83	0.00	49.24
	32	Nmax	0.0	-105.6	1.000	0.700	0.650	920.83	0.00	40.62
		Nmin	0.0	-71.3	1.000	0.700	0.650	920.83	0.00	26.42
		Mmax	0.0	-71.3	1.000	0.700	0.650	920.83	0.00	26.42
		Mmin	0.0	-109.1	1.000	0.700	0.650	920.83	0.00	42.13
		Qmax	0.0	-71.3	1.000	0.700	0.650	920.83	0.00	26.42
		Qmin	0.0	-109.1	1.000	0.700	0.650	920.83	0.00	42.13

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIÁ

FECHA: 28/02/2006

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
40	32	Nmax	0.0	-105.6	1.000	0.700	0.650	920.83	0.00	40.62
		Nmin	0.0	-71.3	1.000	0.700	0.650	920.83	0.00	26.42
		Mmax	0.0	-71.3	1.000	0.700	0.650	920.83	0.00	26.42
		Mmin	0.0	-109.1	1.000	0.700	0.650	920.83	0.00	42.13
		Qmax	0.0	-71.3	1.000	0.700	0.650	920.83	0.00	26.42
		Qmin	0.0	-109.1	1.000	0.700	0.650	920.83	0.00	42.13
	34	Nmax	0.0	-81.4	1.000	0.700	0.650	920.83	0.00	30.46
		Nmin	0.0	-55.2	1.000	0.700	0.650	920.83	0.00	20.13
		Mmax	0.0	-55.2	1.000	0.700	0.650	920.83	0.00	20.13
		Mmin	0.0	-83.2	1.000	0.700	0.650	920.83	0.00	31.20
		Qmax	0.0	-55.2	1.000	0.700	0.650	920.83	0.00	20.13
		Qmin	0.0	-83.2	1.000	0.700	0.650	920.83	0.00	31.20
41	34	Nmax	0.0	-81.4	1.000	0.700	0.650	920.83	0.00	30.47
		Nmin	0.0	-55.2	1.000	0.700	0.650	920.83	0.00	20.13
		Mmax	0.0	-55.2	1.000	0.700	0.650	920.83	0.00	20.13
		Mmin	0.0	-83.2	1.000	0.700	0.650	920.83	0.00	31.20
		Qmax	0.0	-55.2	1.000	0.700	0.650	920.83	0.00	20.13
		Qmin	0.0	-83.2	1.000	0.700	0.650	920.83	0.00	31.20
	36	Nmax	0.0	-45.4	1.000	0.700	0.650	920.83	0.00	16.41
		Nmin	0.0	-31.0	1.000	0.700	0.650	920.83	0.00	11.05
		Mmax	0.0	-31.0	1.000	0.700	0.650	920.83	0.00	11.05
		Mmin	0.0	-45.4	1.000	0.700	0.650	920.83	0.00	16.41
		Qmax	0.0	-31.0	1.000	0.700	0.650	920.83	0.00	11.05
		Qmin	0.0	-44.9	1.000	0.700	0.650	920.83	0.00	16.21
42	36	Nmax	0.0	-45.4	1.000	0.700	0.650	920.83	0.00	16.41
		Nmin	0.0	-31.0	1.000	0.700	0.650	920.83	0.00	11.05
		Mmax	0.0	-31.0	1.000	0.700	0.650	920.83	0.00	11.05
		Mmin	0.0	-45.4	1.000	0.700	0.650	920.83	0.00	16.41
		Qmax	0.0	-31.0	1.000	0.700	0.650	920.83	0.00	11.05
		Qmin	0.0	-44.9	1.000	0.700	0.650	920.83	0.00	16.21
	38	Nmax	2.2	-22.2	1.000	0.700	0.650	920.83	0.75	7.84
		Nmin	2.2	-15.2	1.000	0.700	0.650	920.83	0.75	5.35
		Mmax	2.2	-15.2	1.000	0.700	0.650	920.83	0.75	5.35
		Mmin	2.2	-22.2	1.000	0.700	0.650	920.83	0.75	7.84
		Qmax	2.2	-15.2	1.000	0.700	0.650	920.83	0.75	5.35
		Qmin	2.2	-20.2	1.000	0.700	0.650	920.83	0.75	7.12
43	38	Nmax	2.2	-22.2	1.000	0.700	0.650	920.83	0.75	7.84
		Nmin	2.2	-15.2	1.000	0.700	0.650	920.83	0.75	5.35
		Mmax	2.2	-15.2	1.000	0.700	0.650	920.83	0.75	5.35
		Mmin	2.2	-22.2	1.000	0.700	0.650	920.83	0.75	7.84
		Qmax	2.2	-15.2	1.000	0.700	0.650	920.83	0.75	5.35
		Qmin	2.2	-20.2	1.000	0.700	0.650	920.83	0.75	7.12
	40	Nmax	18.9	-2.0	1.000	0.700	0.650	920.83	6.65	0.69
		Nmin	17.1	-2.0	1.000	0.700	0.650	920.83	6.02	0.69
		Mmax	22.5	-2.0	1.000	0.700	0.650	920.83	7.95	0.69
		Mmin	17.1	-2.0	1.000	0.700	0.650	920.83	6.02	0.69
		Qmax	17.1	-2.0	1.000	0.700	0.650	920.83	6.02	0.69
		Qmin	22.5	-2.0	1.000	0.700	0.650	920.83	7.95	0.69
44	40	Nmax	18.9	-2.0	1.000	0.700	0.650	920.83	6.66	0.69
		Nmin	17.1	-2.0	1.000	0.700	0.650	920.83	6.02	0.69
		Mmax	22.5	-2.0	1.000	0.700	0.650	920.83	7.95	0.69
		Mmin	17.1	-2.0	1.000	0.700	0.650	920.83	6.02	0.69

ARMADOJUL_2000_sinm.xls PI RIERA DE CAN JULIÁ 28/02/2006
Kv=2000 Sin Kh

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIÁ

FECHA: 28/02/2006

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
		Qmax	17.1	-2.0	1.000	0.700	0.650	920.83	6.02	0.69
		Qmin	22.5	-2.0	1.000	0.700	0.650	920.83	7.95	0.69
	42	Nmax	50.6	0.0	1.000	0.700	0.650	920.83	18.35	0.00
		Nmin	38.7	0.0	1.000	0.700	0.650	920.83	13.89	0.00
		Mmax	56.0	0.0	1.000	0.700	0.650	920.83	20.43	0.00
		Mmin	38.7	0.0	1.000	0.700	0.650	920.83	13.89	0.00
		Qmax	38.7	0.0	1.000	0.700	0.650	920.83	13.89	0.00
		Qmin	56.0	0.0	1.000	0.700	0.650	920.83	20.43	0.00
45	42	Nmax	50.6	0.0	1.000	0.700	0.650	920.83	18.35	0.00
		Nmin	38.7	0.0	1.000	0.700	0.650	920.83	13.89	0.00
		Mmax	56.0	0.0	1.000	0.700	0.650	920.83	20.44	0.00
		Mmin	38.7	0.0	1.000	0.700	0.650	920.83	13.89	0.00
		Qmax	38.7	0.0	1.000	0.700	0.650	920.83	13.89	0.00
		Qmin	56.0	0.0	1.000	0.700	0.650	920.83	20.44	0.00
	44	Nmax	86.5	0.0	1.000	0.700	0.650	920.83	32.54	0.00
		Nmin	63.1	0.0	1.000	0.700	0.650	920.83	23.20	0.00
		Mmax	94.0	0.0	1.000	0.700	0.650	920.83	35.65	0.00
		Mmin	63.1	0.0	1.000	0.700	0.650	920.83	23.20	0.00
		Qmax	63.1	0.0	1.000	0.700	0.650	920.83	23.20	0.00
		Qmin	94.0	0.0	1.000	0.700	0.650	920.83	35.65	0.00
46	44	Nmax	86.5	0.0	1.000	0.700	0.650	920.83	32.54	0.00
		Nmin	63.1	0.0	1.000	0.700	0.650	920.83	23.20	0.00
		Mmax	94.0	0.0	1.000	0.700	0.650	920.83	35.65	0.00
		Mmin	63.1	0.0	1.000	0.700	0.650	920.83	23.20	0.00
		Qmax	63.1	0.0	1.000	0.700	0.650	920.83	23.20	0.00
		Qmin	94.0	0.0	1.000	0.700	0.650	920.83	35.65	0.00
	46	Nmax	127.1	0.0	1.000	0.700	0.650	920.83	50.16	0.00
		Nmin	90.8	0.0	1.000	0.700	0.650	920.83	34.32	0.00
		Mmax	136.9	0.0	1.000	0.700	0.650	920.83	54.69	0.00
		Mmin	90.8	0.0	1.000	0.700	0.650	920.83	34.32	0.00
		Qmax	90.8	0.0	1.000	0.700	0.650	920.83	34.32	0.00
		Qmin	136.9	0.0	1.000	0.700	0.650	920.83	54.69	0.00
47	46	Nmax	90.8	0.0	1.000	0.700	0.650	920.83	34.32	0.00
		Nmin	136.9	0.0	1.000	0.700	0.650	920.83	54.69	0.00
		Mmax	136.9	0.0	1.000	0.700	0.650	920.83	54.69	0.00
		Mmin	90.8	0.0	1.000	0.700	0.650	920.83	34.32	0.00
		Qmax	90.8	0.0	1.000	0.700	0.650	920.83	34.32	0.00
		Qmin	127.1	0.0	1.000	0.700	0.650	920.83	50.16	0.00
	47	Nmax	80.1	0.0	1.000	0.700	0.650	920.83	29.95	0.00
		Nmin	126.8	0.0	1.000	0.700	0.650	920.83	49.99	0.00
		Mmax	126.8	0.0	1.000	0.700	0.650	920.83	49.99	0.00
		Mmin	80.1	0.0	1.000	0.700	0.650	920.83	29.95	0.00
		Qmax	80.1	0.0	1.000	0.700	0.650	920.83	29.95	0.00
		Qmin	121.1	0.0	1.000	0.700	0.650	920.83	47.42	0.00
48	47	Nmax	80.1	0.0	1.000	0.700	0.650	920.83	29.95	0.00
		Nmin	126.8	0.0	1.000	0.700	0.650	920.83	49.99	0.00
		Mmax	126.8	0.0	1.000	0.700	0.650	920.83	49.99	0.00
		Mmin	80.1	0.0	1.000	0.700	0.650	920.83	29.95	0.00
		Qmax	80.1	0.0	1.000	0.700	0.650	920.83	29.95	0.00
		Qmin	121.1	0.0	1.000	0.700	0.650	920.83	47.42	0.00
	48	Nmax	75.9	0.0	1.000	0.700	0.650	920.83	28.24	0.00
		Nmin	123.1	0.0	1.000	0.700	0.650	920.83	48.31	0.00

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIÁ

FECHA: 28/02/2006

ARMADO A ESFUERZOS NORMALES (FLEXIÓN)

fcd(t/m2)= 1666.67

ANCHO UNIDAD= 1.000

fyd(t/m2)= 4.43

BARRA	NUDO	HIPÓT.	Md+	Md-	b(m)	h(m)	d(m)	Ucd (t)	As,inf. (cm2/m)	As,sup(cm2/m)
		Mmax	123.1	0.0	1.000	0.700	0.650	920.83	48.31	0.00
		Mmin	75.9	0.0	1.000	0.700	0.650	920.83	28.24	0.00
		Qmax	75.9	0.0	1.000	0.700	0.650	920.83	28.24	0.00
		Qmin	121.5	0.0	1.000	0.700	0.650	920.83	47.60	0.00
49	48	Nmax	75.9	0.0	1.000	0.700	0.650	920.83	28.24	0.00
		Nmin	123.1	0.0	1.000	0.700	0.650	920.83	48.31	0.00
		Mmax	123.1	0.0	1.000	0.700	0.650	920.83	48.31	0.00
		Mmin	75.9	0.0	1.000	0.700	0.650	920.83	28.24	0.00
		Qmax	75.9	0.0	1.000	0.700	0.650	920.83	28.24	0.00
		Qmin	121.5	0.0	1.000	0.700	0.650	920.83	47.60	0.00
	49	Nmax	73.7	0.0	1.000	0.700	0.650	920.83	27.38	0.00
		Nmin	121.5	0.0	1.000	0.700	0.650	920.83	47.58	0.00
		Mmax	124.0	0.0	1.000	0.700	0.650	920.83	48.72	0.00
		Mmin	73.7	0.0	1.000	0.700	0.650	920.83	27.38	0.00
		Qmax	73.7	0.0	1.000	0.700	0.650	920.83	27.38	0.00
		Qmin	124.0	0.0	1.000	0.700	0.650	920.83	48.72	0.00
50	49	Nmax	73.7	0.0	1.000	0.700	0.650	920.83	27.38	0.00
		Nmin	121.5	0.0	1.000	0.700	0.650	920.83	47.58	0.00
		Mmax	124.0	0.0	1.000	0.700	0.650	920.83	48.72	0.00
		Mmin	73.7	0.0	1.000	0.700	0.650	920.83	27.38	0.00
		Qmax	73.7	0.0	1.000	0.700	0.650	920.83	27.38	0.00
		Qmin	124.0	0.0	1.000	0.700	0.650	920.83	48.72	0.00
	50	Nmax	75.5	0.0	1.000	0.700	0.650	920.83	28.10	0.00
		Nmin	123.8	0.0	1.000	0.700	0.650	920.83	48.63	0.00
		Mmax	130.4	0.0	1.000	0.700	0.650	920.83	51.65	0.00
		Mmin	75.5	0.0	1.000	0.700	0.650	920.83	28.10	0.00
		Qmax	75.5	0.0	1.000	0.700	0.650	920.83	28.10	0.00
		Qmin	130.4	0.0	1.000	0.700	0.650	920.83	51.65	0.00
51	50	Nmax	75.5	0.0	1.000	0.700	0.650	920.83	28.10	0.00
		Nmin	123.8	0.0	1.000	0.700	0.650	920.83	48.63	0.00
		Mmax	130.4	0.0	1.000	0.700	0.650	920.83	51.65	0.00
		Mmin	75.5	0.0	1.000	0.700	0.650	920.83	28.10	0.00
		Qmax	75.5	0.0	1.000	0.700	0.650	920.83	28.10	0.00
		Qmin	130.4	0.0	1.000	0.700	0.650	920.83	51.65	0.00
	51	Nmax	81.6	0.0	1.000	0.700	0.650	920.83	30.56	0.00
		Nmin	130.4	0.0	1.000	0.700	0.650	920.83	51.65	0.00
		Mmax	141.1	0.0	1.000	0.700	0.650	920.83	56.67	0.00
		Mmin	81.6	0.0	1.000	0.700	0.650	920.83	30.56	0.00
		Qmax	81.6	0.0	1.000	0.700	0.650	920.83	30.56	0.00
		Qmin	141.1	0.0	1.000	0.700	0.650	920.83	56.67	0.00
52	51	Nmax	81.6	0.0	1.000	0.700	0.650	920.83	30.56	0.00
		Nmin	130.4	0.0	1.000	0.700	0.650	920.83	51.65	0.00
		Mmax	141.1	0.0	1.000	0.700	0.650	920.83	56.67	0.00
		Mmin	81.6	0.0	1.000	0.700	0.650	920.83	30.56	0.00
		Qmax	81.6	0.0	1.000	0.700	0.650	920.83	30.56	0.00
		Qmin	141.1	0.0	1.000	0.700	0.650	920.83	56.67	0.00
	52	Nmax	89.3	0.0	1.000	0.700	0.650	920.83	33.73	0.00
		Nmin	138.6	0.0	1.000	0.700	0.650	920.83	55.51	0.00
		Mmax	153.4	0.0	1.000	0.700	0.650	920.83	62.68	0.00
		Mmin	89.3	0.0	1.000	0.700	0.650	920.83	33.73	0.00
		Qmax	89.3	0.0	1.000	0.700	0.650	920.83	33.73	0.00
		Qmin	153.4	0.0	1.000	0.700	0.650	920.83	62.68	0.00

ARMADOJUL_2000_sinm.xls PI RIERA DE CAN JULIÁ 28/02/2006
Kv=2000 Sin Kh

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIÁ

FECHA: 28/02/2006

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
1	1	Nmax	30.3	1.000	0.700	0.650	325.0	30.4	-	No necesita
		Nmin	29.9	1.000	0.700	0.650	325.0	35.1	-	No necesita
		Mmax	30.3	1.000	0.700	0.650	325.0	30.4	-	No necesita
		Mmin	29.9	1.000	0.700	0.650	325.0	35.1	-	No necesita
		Qmax	29.9	1.000	0.700	0.650	325.0	34.2	-	No necesita
		Qmin	30.3	1.000	0.700	0.650	325.0	30.4	-	No necesita
	2	Nmax	21.2	1.000	0.700	0.650	325.0	28.1	-	No necesita
		Nmin	20.8	1.000	0.700	0.650	325.0	33.2	-	No necesita
		Mmax	21.2	1.000	0.700	0.650	325.0	28.1	-	No necesita
		Mmin	20.8	1.000	0.700	0.650	325.0	33.2	-	No necesita
		Qmax	20.8	1.000	0.700	0.650	325.0	32.7	-	No necesita
		Qmin	21.2	1.000	0.700	0.650	325.0	28.1	-	No necesita
2	2	Nmax	21.2	1.000	0.700	0.650	325.0	28.1	-	No necesita
		Nmin	20.8	1.000	0.700	0.650	325.0	33.2	-	No necesita
		Mmax	21.2	1.000	0.700	0.650	325.0	28.1	-	No necesita
		Mmin	20.8	1.000	0.700	0.650	325.0	33.2	-	No necesita
		Qmax	20.8	1.000	0.700	0.650	325.0	32.7	-	No necesita
		Qmin	21.2	1.000	0.700	0.650	325.0	28.1	-	No necesita
	3	Nmax	13.0	1.000	0.700	0.650	325.0	27.4	-	No necesita
		Nmin	12.7	1.000	0.700	0.650	325.0	32.7	-	No necesita
		Mmax	13.0	1.000	0.700	0.650	325.0	27.4	-	No necesita
		Mmin	12.7	1.000	0.700	0.650	325.0	32.7	-	No necesita
		Qmax	12.7	1.000	0.700	0.650	325.0	32.6	-	No necesita
		Qmin	13.0	1.000	0.700	0.650	325.0	27.4	-	No necesita
3	3	Nmax	13.0	1.000	0.700	0.650	325.0	27.4	-	No necesita
		Nmin	12.7	1.000	0.700	0.650	325.0	32.7	-	No necesita
		Mmax	13.0	1.000	0.700	0.650	325.0	27.4	-	No necesita
		Mmin	12.7	1.000	0.700	0.650	325.0	32.7	-	No necesita
		Qmax	12.7	1.000	0.700	0.650	325.0	32.6	-	No necesita
		Qmin	13.0	1.000	0.700	0.650	325.0	27.4	-	No necesita
	4	Nmax	5.8	1.000	0.700	0.650	325.0	27.1	-	No necesita
		Nmin	5.5	1.000	0.700	0.650	325.0	32.6	-	No necesita
		Mmax	5.8	1.000	0.700	0.650	325.0	27.1	-	No necesita
		Mmin	5.5	1.000	0.700	0.650	325.0	32.8	-	No necesita
		Qmax	5.5	1.000	0.700	0.650	325.0	32.8	-	No necesita
		Qmin	5.8	1.000	0.700	0.650	325.0	27.1	-	No necesita
4	4	Nmax	5.8	1.000	0.700	0.650	325.0	27.1	-	No necesita
		Nmin	5.5	1.000	0.700	0.650	325.0	32.6	-	No necesita
		Mmax	5.8	1.000	0.700	0.650	325.0	27.1	-	No necesita
		Mmin	5.5	1.000	0.700	0.650	325.0	32.8	-	No necesita
		Qmax	5.5	1.000	0.700	0.650	325.0	32.8	-	No necesita
		Qmin	5.8	1.000	0.700	0.650	325.0	27.1	-	No necesita
	5	Nmax	5.9	1.000	0.700	0.650	325.0	27.0	-	No necesita
		Nmin	6.2	1.000	0.700	0.650	325.0	32.6	-	No necesita
		Mmax	5.9	1.000	0.700	0.650	325.0	27.0	-	No necesita
		Mmin	11.4	1.000	0.700	0.650	325.0	33.3	-	No necesita
		Qmax	11.4	1.000	0.700	0.650	325.0	33.3	-	No necesita
		Qmin	5.9	1.000	0.700	0.650	325.0	27.0	-	No necesita
5	5	Nmax	5.9	1.000	0.700	0.650	325.0	27.0	-	No necesita
		Nmin	6.2	1.000	0.700	0.650	325.0	32.6	-	No necesita
		Mmax	5.9	1.000	0.700	0.650	325.0	27.0	-	No necesita
		Mmin	11.4	1.000	0.700	0.650	325.0	33.3	-	No necesita
		Qmax	11.4	1.000	0.700	0.650	325.0	33.3	-	No necesita

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIÁ

FECHA: 28/02/2006

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
		Qmin	5.9	1.000	0.700	0.650	325.0	27.0	-	No necesita
	6	Nmax	11.2	1.000	0.700	0.650	325.0	27.2	-	No necesita
		Nmin	11.6	1.000	0.700	0.650	325.0	32.7	-	No necesita
		Mmax	11.2	1.000	0.700	0.650	325.0	27.2	-	No necesita
		Mmin	16.8	1.000	0.700	0.650	325.0	33.8	-	No necesita
		Qmax	16.8	1.000	0.700	0.650	325.0	33.8	-	No necesita
		Qmin	11.2	1.000	0.700	0.650	325.0	27.2	-	No necesita
6	6	Nmax	11.2	1.000	0.700	0.650	325.0	27.2	-	No necesita
		Nmin	11.6	1.000	0.700	0.650	325.0	32.7	-	No necesita
		Mmax	11.2	1.000	0.700	0.650	325.0	27.2	-	No necesita
		Mmin	16.8	1.000	0.700	0.650	325.0	33.8	-	No necesita
		Qmax	16.8	1.000	0.700	0.650	325.0	33.8	-	No necesita
		Qmin	11.2	1.000	0.700	0.650	325.0	27.2	-	No necesita
	7	Nmax	15.6	1.000	0.700	0.650	325.0	28.0	-	No necesita
		Nmin	16.0	1.000	0.700	0.650	325.0	33.4	-	No necesita
		Mmax	15.6	1.000	0.700	0.650	325.0	28.0	-	No necesita
		Mmin	21.2	1.000	0.700	0.650	325.0	34.9	-	No necesita
		Qmax	21.2	1.000	0.700	0.650	325.0	34.9	-	No necesita
		Qmin	15.6	1.000	0.700	0.650	325.0	28.0	-	No necesita
7	7	Nmax	70.7	1.000	0.800	0.750	375.0	28.4	23.7	17.4
		Nmin	109.7	1.000	0.800	0.750	375.0	35.2	29.3	29.8
		Mmax	70.7	1.000	0.800	0.750	375.0	28.4	23.7	17.4
		Mmin	109.7	1.000	0.800	0.750	375.0	35.2	29.3	29.8
		Qmax	70.7	1.000	0.800	0.750	375.0	28.4	23.7	17.4
		Qmin	116.4	1.000	0.800	0.750	375.0	33.8	28.1	32.7
	9	Nmax	66.0	1.000	0.800	0.750	375.0	25.1	20.9	16.7
		Nmin	106.6	1.000	0.800	0.750	375.0	31.4	26.1	29.8
		Mmax	66.0	1.000	0.800	0.750	375.0	25.1	20.9	16.7
		Mmin	106.6	1.000	0.800	0.750	375.0	31.4	26.1	29.8
		Qmax	66.0	1.000	0.800	0.750	375.0	25.1	20.9	16.7
		Qmin	108.7	1.000	0.800	0.750	375.0	29.5	24.6	31.1
8	9	Nmax	65.9	1.000	0.800	0.750	375.0	25.1	20.9	16.7
		Nmin	106.4	1.000	0.800	0.750	375.0	31.4	26.1	29.7
		Mmax	65.9	1.000	0.800	0.750	375.0	25.1	20.9	16.7
		Mmin	106.4	1.000	0.800	0.750	375.0	31.4	26.1	29.7
		Qmax	65.9	1.000	0.800	0.750	375.0	25.1	20.9	16.7
		Qmin	108.4	1.000	0.800	0.750	375.0	29.5	24.6	31.0
	11	Nmax	61.2	1.000	0.800	0.750	375.0	21.0	17.5	16.2
		Nmin	103.3	1.000	0.800	0.750	375.0	26.9	22.4	30.0
		Mmax	61.2	1.000	0.800	0.750	375.0	21.0	17.5	16.2
		Mmin	103.3	1.000	0.800	0.750	375.0	26.9	22.4	30.0
		Qmax	61.2	1.000	0.800	0.750	375.0	21.0	17.5	16.2
		Qmin	103.3	1.000	0.800	0.750	375.0	26.9	22.4	30.0
9	11	Nmax	61.2	1.000	0.800	0.750	375.0	21.0	17.5	16.2
		Nmin	103.3	1.000	0.800	0.750	375.0	26.9	22.4	30.0
		Mmax	61.2	1.000	0.800	0.750	375.0	21.0	17.5	16.2
		Mmin	103.3	1.000	0.800	0.750	375.0	26.9	22.4	30.0
		Qmax	61.2	1.000	0.800	0.750	375.0	21.0	17.5	16.2
		Qmin	103.3	1.000	0.800	0.750	375.0	26.9	22.4	30.0
	13	Nmax	56.5	1.000	0.800	0.750	375.0	15.1	12.6	16.3
		Nmin	100.2	1.000	0.800	0.750	375.0	20.8	17.3	30.7
		Mmax	56.5	1.000	0.800	0.750	375.0	15.1	12.6	16.3
		Mmin	100.2	1.000	0.800	0.750	375.0	20.8	17.3	30.7

ARMADOJUL_2000_sinm.xls PI RIERA DE CAN JULIÁ Kv=2000 Sin Kh 28/02/2006

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIÁ

FECHA: 28/02/2006

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
		Qmax	56.5	1.000	0.800	0.750	375.0	15.1	12.6	16.3
		Qmin	100.2	1.000	0.800	0.750	375.0	20.8	17.3	30.7
10	13	Nmax	56.5	1.000	0.800	0.750	375.0	15.1	12.6	16.3
		Nmin	100.2	1.000	0.800	0.750	375.0	20.8	17.3	30.7
		Mmax	56.5	1.000	0.800	0.750	375.0	15.1	12.6	16.3
		Mmin	100.2	1.000	0.800	0.750	375.0	20.8	17.3	30.7
		Qmax	56.5	1.000	0.800	0.750	375.0	15.1	12.6	16.3
		Qmin	100.2	1.000	0.800	0.750	375.0	20.8	17.3	30.7
	15	Nmax	51.8	1.000	0.800	0.750	375.0	16.3	13.6	14.1
		Nmin	97.1	1.000	0.800	0.750	375.0	16.3	13.6	30.9
		Mmax	85.2	1.000	0.800	0.750	375.0	18.5	15.4	25.9
		Mmin	97.1	1.000	0.800	0.750	375.0	16.3	13.6	30.9
		Qmax	51.8	1.000	0.800	0.750	375.0	16.3	13.6	14.1
		Qmin	97.1	1.000	0.800	0.750	375.0	16.3	13.6	30.9
11	15	Nmax	51.8	1.000	0.800	0.750	375.0	16.3	13.6	14.1
		Nmin	97.1	1.000	0.800	0.750	375.0	16.3	13.6	30.9
		Mmax	85.3	1.000	0.800	0.750	375.0	18.5	15.4	25.9
		Mmin	97.1	1.000	0.800	0.750	375.0	16.3	13.6	30.9
		Qmax	51.8	1.000	0.800	0.750	375.0	16.3	13.6	14.1
		Qmin	97.1	1.000	0.800	0.750	375.0	16.3	13.6	30.9
	17	Nmax	47.1	1.000	0.800	0.750	375.0	20.9	17.4	11.0
		Nmin	94.0	1.000	0.800	0.750	375.0	23.3	19.4	27.6
		Mmax	77.5	1.000	0.800	0.750	375.0	24.3	20.2	21.2
		Mmin	47.1	1.000	0.800	0.750	375.0	20.9	17.4	11.0
		Qmax	47.1	1.000	0.800	0.750	375.0	20.9	17.4	11.0
		Qmin	94.0	1.000	0.800	0.750	375.0	23.3	19.4	27.6
12	17	Nmax	47.1	1.000	0.800	0.750	375.0	20.8	17.4	11.0
		Nmin	94.0	1.000	0.800	0.750	375.0	23.3	19.4	27.6
		Mmax	77.4	1.000	0.800	0.750	375.0	24.3	20.2	21.2
		Mmin	47.1	1.000	0.800	0.750	375.0	20.8	17.4	11.0
		Qmax	47.1	1.000	0.800	0.750	375.0	20.8	17.4	11.0
		Qmin	94.0	1.000	0.800	0.750	375.0	23.3	19.4	27.6
	19	Nmax	37.6	1.000	0.800	0.750	375.0	25.9	21.6	5.9
		Nmin	75.2	1.000	0.800	0.750	375.0	31.2	26.0	18.2
		Mmax	75.2	1.000	0.800	0.750	375.0	31.2	26.0	18.2
		Mmin	37.6	1.000	0.800	0.750	375.0	25.9	21.6	5.9
		Qmax	37.6	1.000	0.800	0.750	375.0	25.9	21.6	5.9
		Qmin	75.2	1.000	0.800	0.750	375.0	31.2	26.0	18.2
13	19	Nmax	37.7	1.000	0.800	0.750	375.0	25.9	21.6	6.0
		Nmin	75.2	1.000	0.800	0.750	375.0	31.2	26.0	18.2
		Mmax	75.2	1.000	0.800	0.750	375.0	31.2	26.0	18.2
		Mmin	37.7	1.000	0.800	0.750	375.0	25.9	21.6	6.0
		Qmax	37.7	1.000	0.800	0.750	375.0	25.9	21.6	6.0
		Qmin	75.2	1.000	0.800	0.750	375.0	31.2	26.0	18.2
	21	Nmax	28.2	1.000	0.800	0.750	375.0	28.8	-	No necesita
		Nmin	56.4	1.000	0.800	0.750	375.0	35.6	29.7	9.9
		Mmax	56.4	1.000	0.800	0.750	375.0	35.6	29.7	9.9
		Mmin	28.2	1.000	0.800	0.750	375.0	28.8	-	No necesita
		Qmax	28.2	1.000	0.800	0.750	375.0	28.8	-	No necesita
		Qmin	56.4	1.000	0.800	0.750	375.0	35.6	29.7	9.9
14	21	Nmax	28.2	1.000	0.800	0.750	375.0	28.8	-	No necesita
		Nmin	56.4	1.000	0.800	0.750	375.0	35.6	29.7	9.9
		Mmax	56.4	1.000	0.800	0.750	375.0	35.6	29.7	9.9

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIÁ

FECHA: 28/02/2006

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
		Mmin	28.2	1.000	0.800	0.750	375.0	28.8	-	No necesita
		Qmax	28.2	1.000	0.800	0.750	375.0	28.8	-	No necesita
		Qmin	56.4	1.000	0.800	0.750	375.0	35.6	29.7	9.9
	23	Nmax	18.8	1.000	0.800	0.750	375.0	30.6	-	No necesita
		Nmin	37.6	1.000	0.800	0.750	375.0	38.4	-	No necesita
		Mmax	37.6	1.000	0.800	0.750	375.0	38.4	-	No necesita
		Mmin	18.8	1.000	0.800	0.750	375.0	30.6	-	No necesita
		Qmax	18.8	1.000	0.800	0.750	375.0	30.6	-	No necesita
		Qmin	37.6	1.000	0.800	0.750	375.0	38.4	-	No necesita
15	23	Nmax	18.8	1.000	0.800	0.750	375.0	30.6	-	No necesita
		Nmin	37.6	1.000	0.800	0.750	375.0	38.4	-	No necesita
		Mmax	37.6	1.000	0.800	0.750	375.0	38.4	-	No necesita
		Mmin	18.8	1.000	0.800	0.750	375.0	30.6	-	No necesita
		Qmax	18.8	1.000	0.800	0.750	375.0	30.6	-	No necesita
		Qmin	37.6	1.000	0.800	0.750	375.0	38.4	-	No necesita
	25	Nmax	9.4	1.000	0.800	0.750	375.0	31.7	-	No necesita
		Nmin	18.8	1.000	0.800	0.750	375.0	40.0	-	No necesita
		Mmax	18.8	1.000	0.800	0.750	375.0	40.0	-	No necesita
		Mmin	9.4	1.000	0.800	0.750	375.0	31.7	-	No necesita
		Qmax	9.4	1.000	0.800	0.750	375.0	31.7	-	No necesita
		Qmin	18.8	1.000	0.800	0.750	375.0	40.0	-	No necesita
16	25	Nmax	9.4	1.000	0.800	0.750	375.0	31.7	-	No necesita
		Nmin	18.8	1.000	0.800	0.750	375.0	40.0	-	No necesita
		Mmax	18.8	1.000	0.800	0.750	375.0	40.0	-	No necesita
		Mmin	9.4	1.000	0.800	0.750	375.0	31.7	-	No necesita
		Qmax	9.4	1.000	0.800	0.750	375.0	31.7	-	No necesita
		Qmin	18.8	1.000	0.800	0.750	375.0	40.0	-	No necesita
	27	Nmax	1.9	1.000	0.800	0.750	375.0	32.0	-	No necesita
		Nmin	1.9	1.000	0.800	0.750	375.0	40.5	-	No necesita
		Mmax	1.9	1.000	0.800	0.750	375.0	40.5	-	No necesita
		Mmin	1.9	1.000	0.800	0.750	375.0	32.0	-	No necesita
		Qmax	1.9	1.000	0.800	0.750	375.0	38.6	-	No necesita
		Qmin	1.9	1.000	0.800	0.750	375.0	32.0	-	No necesita
17	27	Nmax	1.9	1.000	0.800	0.750	375.0	32.0	-	No necesita
		Nmin	1.9	1.000	0.800	0.750	375.0	40.5	-	No necesita
		Mmax	1.9	1.000	0.800	0.750	375.0	40.5	-	No necesita
		Mmin	1.9	1.000	0.800	0.750	375.0	32.0	-	No necesita
		Qmax	1.9	1.000	0.800	0.750	375.0	38.6	-	No necesita
		Qmin	1.9	1.000	0.800	0.750	375.0	32.0	-	No necesita
	29	Nmax	11.4	1.000	0.800	0.750	375.0	31.7	-	No necesita
		Nmin	20.7	1.000	0.800	0.750	375.0	40.0	-	No necesita
		Mmax	20.7	1.000	0.800	0.750	375.0	40.0	-	No necesita
		Mmin	11.4	1.000	0.800	0.750	375.0	31.7	-	No necesita
		Qmax	20.7	1.000	0.800	0.750	375.0	40.0	-	No necesita
		Qmin	11.4	1.000	0.800	0.750	375.0	31.7	-	No necesita
18	29	Nmax	11.3	1.000	0.800	0.750	375.0	31.7	-	No necesita
		Nmin	20.7	1.000	0.800	0.750	375.0	40.0	-	No necesita
		Mmax	20.7	1.000	0.800	0.750	375.0	40.0	-	No necesita
		Mmin	11.3	1.000	0.800	0.750	375.0	31.7	-	No necesita
		Qmax	20.7	1.000	0.800	0.750	375.0	40.0	-	No necesita
		Qmin	11.3	1.000	0.800	0.750	375.0	31.7	-	No necesita
	31	Nmax	20.8	1.000	0.800	0.750	375.0	30.6	-	No necesita
		Nmin	39.5	1.000	0.800	0.750	375.0	38.4	32.0	2.8

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIÁ

FECHA: 28/02/2006

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
		Mmax	39.5	1.000	0.800	0.750	375.0	38.4	32.0	2.8
		Mmin	20.8	1.000	0.800	0.750	375.0	30.6	-	No necesita
		Qmax	39.5	1.000	0.800	0.750	375.0	38.4	32.0	2.8
		Qmin	20.8	1.000	0.800	0.750	375.0	30.6	-	No necesita
19	31	Nmax	20.8	1.000	0.800	0.750	375.0	30.6	-	No necesita
		Nmin	39.6	1.000	0.800	0.750	375.0	38.4	32.0	2.8
		Mmax	39.6	1.000	0.800	0.750	375.0	38.4	32.0	2.8
		Mmin	20.8	1.000	0.800	0.750	375.0	30.6	-	No necesita
		Qmax	39.6	1.000	0.800	0.750	375.0	38.4	32.0	2.8
		Qmin	20.8	1.000	0.800	0.750	375.0	30.6	-	No necesita
	33	Nmax	30.2	1.000	0.800	0.750	375.0	28.6	23.9	2.3
		Nmin	58.3	1.000	0.800	0.750	375.0	35.5	29.6	10.7
		Mmax	58.3	1.000	0.800	0.750	375.0	35.5	29.6	10.7
		Mmin	30.2	1.000	0.800	0.750	375.0	28.6	23.9	2.3
		Qmax	58.3	1.000	0.800	0.750	375.0	35.5	29.6	10.7
		Qmin	30.2	1.000	0.800	0.750	375.0	28.6	23.9	2.3
20	33	Nmax	30.2	1.000	0.800	0.750	375.0	28.6	23.9	2.3
		Nmin	58.3	1.000	0.800	0.750	375.0	35.5	29.6	10.6
		Mmax	58.3	1.000	0.800	0.750	375.0	35.5	29.6	10.6
		Mmin	30.2	1.000	0.800	0.750	375.0	28.6	23.9	2.3
		Qmax	58.3	1.000	0.800	0.750	375.0	35.5	29.6	10.6
		Qmin	30.2	1.000	0.800	0.750	375.0	28.6	23.9	2.3
	35	Nmax	39.6	1.000	0.800	0.750	375.0	25.4	21.2	6.8
		Nmin	77.1	1.000	0.800	0.750	375.0	30.8	25.7	19.0
		Mmax	77.1	1.000	0.800	0.750	375.0	30.8	25.7	19.0
		Mmin	39.6	1.000	0.800	0.750	375.0	25.4	21.2	6.8
		Qmax	77.1	1.000	0.800	0.750	375.0	30.8	25.7	19.0
		Qmin	39.6	1.000	0.800	0.750	375.0	25.4	21.2	6.8
21	35	Nmax	39.6	1.000	0.800	0.750	375.0	25.4	21.2	6.8
		Nmin	77.1	1.000	0.800	0.750	375.0	30.8	25.7	19.0
		Mmax	77.1	1.000	0.800	0.750	375.0	30.8	25.7	19.0
		Mmin	39.6	1.000	0.800	0.750	375.0	25.4	21.2	6.8
		Qmax	77.1	1.000	0.800	0.750	375.0	30.8	25.7	19.0
		Qmin	39.6	1.000	0.800	0.750	375.0	25.4	21.2	6.8
	37	Nmax	49.0	1.000	0.800	0.750	375.0	19.9	16.5	12.0
		Nmin	95.9	1.000	0.800	0.750	375.0	22.5	18.7	28.6
		Mmax	79.4	1.000	0.800	0.750	375.0	23.5	19.6	22.1
		Mmin	49.0	1.000	0.800	0.750	375.0	19.9	16.5	12.0
		Qmax	95.9	1.000	0.800	0.750	375.0	22.5	18.7	28.6
		Qmin	49.0	1.000	0.800	0.750	375.0	19.9	16.5	12.0
22	37	Nmax	49.0	1.000	0.800	0.750	375.0	19.9	16.5	12.0
		Nmin	95.9	1.000	0.800	0.750	375.0	22.5	18.7	28.6
		Mmax	79.3	1.000	0.800	0.750	375.0	23.5	19.6	22.1
		Mmin	49.0	1.000	0.800	0.750	375.0	19.9	16.5	12.0
		Qmax	95.9	1.000	0.800	0.750	375.0	22.5	18.7	28.6
		Qmin	49.0	1.000	0.800	0.750	375.0	19.9	16.5	12.0
	39	Nmax	53.7	1.000	0.800	0.750	375.0	14.4	12.0	15.5
		Nmin	99.0	1.000	0.800	0.750	375.0	14.4	12.0	32.2
		Mmax	87.1	1.000	0.800	0.750	375.0	17.0	14.2	27.0
		Mmin	99.0	1.000	0.800	0.750	375.0	14.4	12.0	32.2
		Qmax	99.0	1.000	0.800	0.750	375.0	14.4	12.0	32.2
		Qmin	53.7	1.000	0.800	0.750	375.0	14.4	12.0	15.5
23	39	Nmax	53.7	1.000	0.800	0.750	375.0	14.4	12.0	15.5

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIÁ

FECHA: 28/02/2006

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
		Nmin	99.1	1.000	0.800	0.750	375.0	14.4	12.0	32.3
		Mmax	87.2	1.000	0.800	0.750	375.0	17.0	14.2	27.0
		Mmin	99.1	1.000	0.800	0.750	375.0	14.4	12.0	32.3
		Qmax	99.1	1.000	0.800	0.750	375.0	14.4	12.0	32.3
		Qmin	53.7	1.000	0.800	0.750	375.0	14.4	12.0	15.5
	41	Nmax	58.4	1.000	0.800	0.750	375.0	17.4	14.5	16.3
		Nmin	102.2	1.000	0.800	0.750	375.0	22.1	18.4	31.0
		Mmax	58.4	1.000	0.800	0.750	375.0	17.4	14.5	16.3
		Mmin	102.2	1.000	0.800	0.750	375.0	22.1	18.4	31.0
		Qmax	102.2	1.000	0.800	0.750	375.0	22.1	18.4	31.0
		Qmin	58.4	1.000	0.800	0.750	375.0	17.4	14.5	16.3
24	41	Nmax	58.4	1.000	0.800	0.750	375.0	17.4	14.5	16.3
		Nmin	102.1	1.000	0.800	0.750	375.0	22.1	18.4	31.0
		Mmax	58.4	1.000	0.800	0.750	375.0	17.4	14.5	16.3
		Mmin	102.1	1.000	0.800	0.750	375.0	22.1	18.4	31.0
		Qmax	102.1	1.000	0.800	0.750	375.0	22.1	18.4	31.0
		Qmin	58.4	1.000	0.800	0.750	375.0	17.4	14.5	16.3
	43	Nmax	63.1	1.000	0.800	0.750	375.0	22.5	18.7	16.4
		Nmin	105.2	1.000	0.800	0.750	375.0	27.9	23.2	30.4
		Mmax	63.1	1.000	0.800	0.750	375.0	22.5	18.7	16.4
		Mmin	105.2	1.000	0.800	0.750	375.0	27.9	23.2	30.4
		Qmax	105.2	1.000	0.800	0.750	375.0	27.9	23.2	30.4
		Qmin	63.1	1.000	0.800	0.750	375.0	22.5	18.7	16.4
25	43	Nmax	63.2	1.000	0.800	0.750	375.0	22.5	18.7	16.5
		Nmin	105.3	1.000	0.800	0.750	375.0	27.9	23.2	30.4
		Mmax	63.2	1.000	0.800	0.750	375.0	22.5	18.7	16.5
		Mmin	105.3	1.000	0.800	0.750	375.0	27.9	23.2	30.4
		Qmax	105.3	1.000	0.800	0.750	375.0	27.9	23.2	30.4
		Qmin	63.2	1.000	0.800	0.750	375.0	22.5	18.7	16.5
	45	Nmax	67.9	1.000	0.800	0.750	375.0	26.3	21.9	17.0
		Nmin	108.4	1.000	0.800	0.750	375.0	32.2	26.8	30.2
		Mmax	67.9	1.000	0.800	0.750	375.0	26.3	21.9	17.0
		Mmin	108.4	1.000	0.800	0.750	375.0	32.2	26.8	30.2
		Qmax	110.5	1.000	0.800	0.750	375.0	30.5	25.4	31.5
		Qmin	67.9	1.000	0.800	0.750	375.0	26.3	21.9	17.0
26	45	Nmax	67.9	1.000	0.800	0.750	375.0	26.3	21.9	17.0
		Nmin	108.4	1.000	0.800	0.750	375.0	32.2	26.8	30.2
		Mmax	67.9	1.000	0.800	0.750	375.0	26.3	21.9	17.0
		Mmin	108.4	1.000	0.800	0.750	375.0	32.2	26.8	30.2
		Qmax	110.4	1.000	0.800	0.750	375.0	30.5	25.4	31.5
		Qmin	67.9	1.000	0.800	0.750	375.0	26.3	21.9	17.0
	52	Nmax	72.6	1.000	0.800	0.750	375.0	29.5	24.6	17.8
		Nmin	111.5	1.000	0.800	0.750	375.0	35.9	29.9	30.2
		Mmax	72.6	1.000	0.800	0.750	375.0	29.5	24.6	17.8
		Mmin	111.5	1.000	0.800	0.750	375.0	35.9	29.9	30.2
		Qmax	118.2	1.000	0.800	0.750	375.0	34.6	28.8	33.1
		Qmin	72.6	1.000	0.800	0.750	375.0	29.5	24.6	17.8
27	1	Nmax	113.5	1.000	0.700	0.650	325.0	34.2	28.5	36.3
		Nmin	76.9	1.000	0.700	0.650	325.0	30.4	25.3	22.0
		Mmax	119.9	1.000	0.700	0.650	325.0	35.1	29.3	38.7
		Mmin	76.9	1.000	0.700	0.650	325.0	30.4	25.3	22.0
		Qmax	119.9	1.000	0.700	0.650	325.0	35.1	29.3	38.7
		Qmin	76.9	1.000	0.700	0.650	325.0	30.4	25.3	22.0

ARMADOJUL_2000_sinm.xls PI RIERA DE CAN JULIÁ
Kv=2000 Sin Kh
28/02/2006

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIÁ

FECHA: 28/02/2006

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
	8	Nmax	114.4	1.000	0.700	0.650	325.0	30.0	25.0	38.2
		Nmin	77.8	1.000	0.700	0.650	325.0	27.2	22.6	23.6
		Mmax	120.8	1.000	0.700	0.650	325.0	30.8	25.7	40.6
		Mmin	77.8	1.000	0.700	0.650	325.0	27.2	22.6	23.6
		Qmax	120.8	1.000	0.700	0.650	325.0	30.8	25.7	40.6
		Qmin	77.8	1.000	0.700	0.650	325.0	27.2	22.6	23.6
28	8	Nmax	100.6	1.000	0.700	0.650	325.0	30.0	25.0	32.3
		Nmin	68.3	1.000	0.700	0.650	325.0	27.2	22.6	19.5
		Mmax	106.4	1.000	0.700	0.650	325.0	30.8	25.7	34.5
		Mmin	68.3	1.000	0.700	0.650	325.0	27.2	22.6	19.5
		Qmax	106.4	1.000	0.700	0.650	325.0	30.8	25.7	34.5
		Qmin	68.3	1.000	0.700	0.650	325.0	27.2	22.6	19.5
	10	Nmax	101.4	1.000	0.700	0.650	325.0	25.4	21.2	34.3
		Nmin	69.2	1.000	0.700	0.650	325.0	23.6	19.7	21.1
		Mmax	107.2	1.000	0.700	0.650	325.0	26.2	21.8	36.5
		Mmin	69.2	1.000	0.700	0.650	325.0	23.6	19.7	21.1
		Qmax	107.2	1.000	0.700	0.650	325.0	26.2	21.8	36.5
		Qmin	69.2	1.000	0.700	0.650	325.0	23.6	19.7	21.1
29	10	Nmax	88.6	1.000	0.700	0.650	325.0	25.4	21.2	28.8
		Nmin	60.4	1.000	0.700	0.650	325.0	23.6	19.7	17.4
		Mmax	93.7	1.000	0.700	0.650	325.0	26.2	21.8	30.7
		Mmin	60.4	1.000	0.700	0.650	325.0	23.6	19.7	17.4
		Qmax	93.7	1.000	0.700	0.650	325.0	26.2	21.8	30.7
		Qmin	60.4	1.000	0.700	0.650	325.0	23.6	19.7	17.4
	12	Nmax	89.5	1.000	0.700	0.650	325.0	19.8	16.5	31.2
		Nmin	61.2	1.000	0.700	0.650	325.0	19.4	16.2	19.3
		Mmax	94.6	1.000	0.700	0.650	325.0	20.6	17.1	33.1
		Mmin	61.2	1.000	0.700	0.650	325.0	19.4	16.2	19.3
		Qmax	94.6	1.000	0.700	0.650	325.0	20.6	17.1	33.1
		Qmin	61.2	1.000	0.700	0.650	325.0	19.4	16.2	19.3
30	12	Nmax	77.9	1.000	0.700	0.650	325.0	19.8	16.5	26.3
		Nmin	53.5	1.000	0.700	0.650	325.0	19.4	16.2	15.9
		Mmax	82.5	1.000	0.700	0.650	325.0	20.6	17.1	27.9
		Mmin	53.5	1.000	0.700	0.650	325.0	19.4	16.2	15.9
		Qmax	82.5	1.000	0.700	0.650	325.0	20.6	17.1	27.9
		Qmin	53.5	1.000	0.700	0.650	325.0	19.4	16.2	15.9
	14	Nmax	78.8	1.000	0.700	0.650	325.0	14.9	12.4	28.4
		Nmin	54.3	1.000	0.700	0.650	325.0	14.9	12.4	17.9
		Mmax	54.3	1.000	0.700	0.650	325.0	14.9	12.4	17.9
		Mmin	78.8	1.000	0.700	0.650	325.0	14.9	12.4	28.4
		Qmax	83.4	1.000	0.700	0.650	325.0	14.9	12.4	30.3
		Qmin	54.3	1.000	0.700	0.650	325.0	14.9	12.4	17.9
31	14	Nmax	68.1	1.000	0.700	0.650	325.0	14.9	12.4	23.8
		Nmin	47.0	1.000	0.700	0.650	325.0	14.9	12.4	14.8
		Mmax	47.0	1.000	0.700	0.650	325.0	14.9	12.4	14.8
		Mmin	68.1	1.000	0.700	0.650	325.0	14.9	12.4	23.8
		Qmax	72.2	1.000	0.700	0.650	325.0	14.9	12.4	25.5
		Qmin	47.0	1.000	0.700	0.650	325.0	14.9	12.4	14.8
	16	Nmax	69.0	1.000	0.700	0.650	325.0	21.1	17.6	21.9
		Nmin	47.9	1.000	0.700	0.650	325.0	17.7	14.8	14.2
		Mmax	47.9	1.000	0.700	0.650	325.0	17.7	14.8	14.2
		Mmin	69.0	1.000	0.700	0.650	325.0	21.1	17.6	21.9
		Qmax	73.0	1.000	0.700	0.650	325.0	21.0	17.5	23.7

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIÁ

FECHA: 28/02/2006

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
		Qmin	47.9	1.000	0.700	0.650	325.0	17.7	14.8	14.2
32	16	Nmax	54.1	1.000	0.700	0.650	325.0	21.1	17.6	15.6
		Nmin	37.7	1.000	0.700	0.650	325.0	17.7	14.8	9.8
		Mmax	37.7	1.000	0.700	0.650	325.0	17.7	14.8	9.8
		Mmin	54.1	1.000	0.700	0.650	325.0	21.1	17.6	15.6
		Qmax	57.4	1.000	0.700	0.650	325.0	21.0	17.5	17.1
		Qmin	37.7	1.000	0.700	0.650	325.0	17.7	14.8	9.8
	18	Nmax	55.8	1.000	0.700	0.650	325.0	27.1	22.6	14.2
		Nmin	39.4	1.000	0.700	0.650	325.0	23.2	19.3	8.6
		Mmax	39.4	1.000	0.700	0.650	325.0	23.2	19.3	8.6
		Mmin	59.1	1.000	0.700	0.650	325.0	27.3	22.8	15.5
		Qmax	59.1	1.000	0.700	0.650	325.0	27.3	22.8	15.5
		Qmin	39.4	1.000	0.700	0.650	325.0	23.2	19.3	8.6
33	18	Nmax	39.1	1.000	0.700	0.650	325.0	27.1	22.6	7.1
		Nmin	27.7	1.000	0.700	0.650	325.0	23.2	19.3	3.6
		Mmax	27.7	1.000	0.700	0.650	325.0	23.2	19.3	3.6
		Mmin	41.5	1.000	0.700	0.650	325.0	27.3	22.8	8.0
		Qmax	41.5	1.000	0.700	0.650	325.0	27.3	22.8	8.0
		Qmin	27.7	1.000	0.700	0.650	325.0	23.2	19.3	3.6
	20	Nmax	40.8	1.000	0.700	0.650	325.0	30.2	25.2	6.7
		Nmin	29.4	1.000	0.700	0.650	325.0	26.0	21.6	3.3
		Mmax	29.4	1.000	0.700	0.650	325.0	26.0	21.6	3.3
		Mmin	43.2	1.000	0.700	0.650	325.0	30.6	25.5	7.6
		Qmax	43.2	1.000	0.700	0.650	325.0	30.6	25.5	7.6
		Qmin	29.4	1.000	0.700	0.650	325.0	26.0	21.6	3.3
34	20	Nmax	26.8	1.000	0.700	0.650	325.0	30.2	-	No necesita
		Nmin	19.4	1.000	0.700	0.650	325.0	26.0	-	No necesita
		Mmax	19.4	1.000	0.700	0.650	325.0	26.0	-	No necesita
		Mmin	28.4	1.000	0.700	0.650	325.0	30.6	-	No necesita
		Qmax	28.4	1.000	0.700	0.650	325.0	30.6	-	No necesita
		Qmin	19.4	1.000	0.700	0.650	325.0	26.0	-	No necesita
	22	Nmax	28.5	1.000	0.700	0.650	325.0	32.1	-	No necesita
		Nmin	21.1	1.000	0.700	0.650	325.0	27.5	-	No necesita
		Mmax	21.1	1.000	0.700	0.650	325.0	27.5	-	No necesita
		Mmin	30.1	1.000	0.700	0.650	325.0	32.6	-	No necesita
		Qmax	30.1	1.000	0.700	0.650	325.0	32.6	-	No necesita
		Qmin	21.1	1.000	0.700	0.650	325.0	27.5	-	No necesita
35	22	Nmax	16.4	1.000	0.700	0.650	325.0	32.1	-	No necesita
		Nmin	12.3	1.000	0.700	0.650	325.0	27.5	-	No necesita
		Mmax	12.3	1.000	0.700	0.650	325.0	27.5	-	No necesita
		Mmin	17.4	1.000	0.700	0.650	325.0	32.6	-	No necesita
		Qmax	17.4	1.000	0.700	0.650	325.0	32.6	-	No necesita
		Qmin	12.3	1.000	0.700	0.650	325.0	27.5	-	No necesita
	24	Nmax	18.1	1.000	0.700	0.650	325.0	33.1	-	No necesita
		Nmin	14.0	1.000	0.700	0.650	325.0	28.4	-	No necesita
		Mmax	14.0	1.000	0.700	0.650	325.0	28.4	-	No necesita
		Mmin	19.1	1.000	0.700	0.650	325.0	33.6	-	No necesita
		Qmax	19.1	1.000	0.700	0.650	325.0	33.6	-	No necesita
		Qmin	14.0	1.000	0.700	0.650	325.0	28.4	-	No necesita
36	24	Nmax	7.3	1.000	0.700	0.650	325.0	33.1	-	No necesita
		Nmin	6.0	1.000	0.700	0.650	325.0	28.4	-	No necesita
		Mmax	6.0	1.000	0.700	0.650	325.0	28.4	-	No necesita
		Mmin	7.6	1.000	0.700	0.650	325.0	33.6	-	No necesita

ARMADOJUL_2000_sinm.xls PI RIERA DE CAN JULIÁ
Kv=2000 Sin Kh
28/02/2006

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIÁ

FECHA: 28/02/2006

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
		Qmax	7.6	1.000	0.700	0.650	325.0	33.6	-	No necesita
		Qmin	6.0	1.000	0.700	0.650	325.0	28.4	-	No necesita
	26	Nmax	9.0	1.000	0.700	0.650	325.0	33.4	-	No necesita
		Nmin	7.7	1.000	0.700	0.650	325.0	28.6	-	No necesita
		Mmax	7.7	1.000	0.700	0.650	325.0	28.6	-	No necesita
		Mmin	9.3	1.000	0.700	0.650	325.0	33.9	-	No necesita
		Qmax	9.3	1.000	0.700	0.650	325.0	33.9	-	No necesita
		Qmin	7.7	1.000	0.700	0.650	325.0	28.6	-	No necesita
37	26	Nmax	5.3	1.000	0.700	0.650	325.0	33.4	-	No necesita
		Nmin	4.0	1.000	0.700	0.650	325.0	28.6	-	No necesita
		Mmax	4.0	1.000	0.700	0.650	325.0	28.6	-	No necesita
		Mmin	5.6	1.000	0.700	0.650	325.0	33.9	-	No necesita
		Qmax	4.0	1.000	0.700	0.650	325.0	28.6	-	No necesita
		Qmin	5.6	1.000	0.700	0.650	325.0	33.9	-	No necesita
	28	Nmax	3.6	1.000	0.700	0.650	325.0	33.2	-	No necesita
		Nmin	2.8	1.000	0.700	0.650	325.0	28.5	-	No necesita
		Mmax	2.8	1.000	0.700	0.650	325.0	28.5	-	No necesita
		Mmin	3.9	1.000	0.700	0.650	325.0	33.7	-	No necesita
		Qmax	2.8	1.000	0.700	0.650	325.0	28.5	-	No necesita
		Qmin	3.9	1.000	0.700	0.650	325.0	33.7	-	No necesita
38	28	Nmax	14.6	1.000	0.700	0.650	325.0	33.2	-	No necesita
		Nmin	10.4	1.000	0.700	0.650	325.0	28.5	-	No necesita
		Mmax	10.4	1.000	0.700	0.650	325.0	28.5	-	No necesita
		Mmin	15.5	1.000	0.700	0.650	325.0	33.7	-	No necesita
		Qmax	10.4	1.000	0.700	0.650	325.0	28.5	-	No necesita
		Qmin	15.5	1.000	0.700	0.650	325.0	33.7	-	No necesita
	30	Nmax	12.9	1.000	0.700	0.650	325.0	32.5	-	No necesita
		Nmin	8.8	1.000	0.700	0.650	325.0	28.0	-	No necesita
		Mmax	8.8	1.000	0.700	0.650	325.0	28.0	-	No necesita
		Mmin	13.8	1.000	0.700	0.650	325.0	32.9	-	No necesita
		Qmax	8.8	1.000	0.700	0.650	325.0	28.0	-	No necesita
		Qmin	13.8	1.000	0.700	0.650	325.0	32.9	-	No necesita
39	30	Nmax	25.2	1.000	0.700	0.650	325.0	32.5	-	No necesita
		Nmin	17.8	1.000	0.700	0.650	325.0	28.0	-	No necesita
		Mmax	17.8	1.000	0.700	0.650	325.0	28.0	-	No necesita
		Mmin	26.8	1.000	0.700	0.650	325.0	32.9	-	No necesita
		Qmax	17.8	1.000	0.700	0.650	325.0	28.0	-	No necesita
		Qmin	26.8	1.000	0.700	0.650	325.0	32.9	-	No necesita
	32	Nmax	23.5	1.000	0.700	0.650	325.0	30.9	-	No necesita
		Nmin	16.1	1.000	0.700	0.650	325.0	26.8	-	No necesita
		Mmax	16.1	1.000	0.700	0.650	325.0	26.8	-	No necesita
		Mmin	25.2	1.000	0.700	0.650	325.0	31.3	-	No necesita
		Qmax	16.1	1.000	0.700	0.650	325.0	26.8	-	No necesita
		Qmin	25.2	1.000	0.700	0.650	325.0	31.3	-	No necesita
40	32	Nmax	38.0	1.000	0.700	0.650	325.0	30.9	25.8	5.2
		Nmin	26.6	1.000	0.700	0.650	325.0	26.8	-	No necesita
		Mmax	26.6	1.000	0.700	0.650	325.0	26.8	-	No necesita
		Mmin	40.4	1.000	0.700	0.650	325.0	31.3	26.1	6.1
		Qmax	26.6	1.000	0.700	0.650	325.0	26.8	-	No necesita
		Qmin	40.4	1.000	0.700	0.650	325.0	31.3	26.1	6.1
	34	Nmax	36.3	1.000	0.700	0.650	325.0	28.1	23.4	5.5
		Nmin	24.9	1.000	0.700	0.650	325.0	24.5	20.4	1.9
		Mmax	24.9	1.000	0.700	0.650	325.0	24.5	20.4	1.9

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIÁ

FECHA: 28/02/2006

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
		Mmin	38.7	1.000	0.700	0.650	325.0	28.3	23.6	6.5
		Qmax	24.9	1.000	0.700	0.650	325.0	24.5	20.4	1.9
		Qmin	38.7	1.000	0.700	0.650	325.0	28.3	23.6	6.5
41	34	Nmax	53.7	1.000	0.700	0.650	325.0	28.1	23.4	12.9
		Nmin	37.3	1.000	0.700	0.650	325.0	24.5	20.4	7.2
		Mmax	37.3	1.000	0.700	0.650	325.0	24.5	20.4	7.2
		Mmin	57.0	1.000	0.700	0.650	325.0	28.3	23.6	14.3
		Qmax	37.3	1.000	0.700	0.650	325.0	24.5	20.4	7.2
		Qmin	57.0	1.000	0.700	0.650	325.0	28.3	23.6	14.3
	36	Nmax	52.0	1.000	0.700	0.650	325.0	22.8	19.0	14.1
		Nmin	35.6	1.000	0.700	0.650	325.0	20.0	16.7	8.1
		Mmax	35.6	1.000	0.700	0.650	325.0	20.0	16.7	8.1
		Mmin	52.0	1.000	0.700	0.650	325.0	22.8	19.0	14.1
		Qmax	35.6	1.000	0.700	0.650	325.0	20.0	16.7	8.1
		Qmin	55.3	1.000	0.700	0.650	325.0	22.7	19.0	15.5
42	36	Nmax	67.5	1.000	0.700	0.650	325.0	22.8	19.0	20.7
		Nmin	46.5	1.000	0.700	0.650	325.0	20.0	16.7	12.7
		Mmax	46.5	1.000	0.700	0.650	325.0	20.0	16.7	12.7
		Mmin	67.5	1.000	0.700	0.650	325.0	22.8	19.0	20.7
		Qmax	46.5	1.000	0.700	0.650	325.0	20.0	16.7	12.7
		Qmin	71.6	1.000	0.700	0.650	325.0	22.7	19.0	22.5
	38	Nmax	66.7	1.000	0.700	0.650	325.0	17.9	14.9	22.1
		Nmin	45.6	1.000	0.700	0.650	325.0	15.7	13.1	13.9
		Mmax	45.6	1.000	0.700	0.650	325.0	15.7	13.1	13.9
		Mmin	66.7	1.000	0.700	0.650	325.0	17.9	14.9	22.1
		Qmax	45.6	1.000	0.700	0.650	325.0	15.7	13.1	13.9
		Qmin	70.7	1.000	0.700	0.650	325.0	17.3	14.4	24.1
43	38	Nmax	77.9	1.000	0.700	0.650	325.0	17.9	14.9	26.9
		Nmin	53.4	1.000	0.700	0.650	325.0	15.7	13.1	17.2
		Mmax	53.4	1.000	0.700	0.650	325.0	15.7	13.1	17.2
		Mmin	77.9	1.000	0.700	0.650	325.0	17.9	14.9	26.9
		Qmax	53.4	1.000	0.700	0.650	325.0	15.7	13.1	17.2
		Qmin	82.5	1.000	0.700	0.650	325.0	17.3	14.4	29.1
	40	Nmax	77.1	1.000	0.700	0.650	325.0	16.9	14.1	26.9
		Nmin	52.6	1.000	0.700	0.650	325.0	16.3	13.6	16.7
		Mmax	81.6	1.000	0.700	0.650	325.0	17.9	15.0	28.5
		Mmin	52.6	1.000	0.700	0.650	325.0	16.3	13.6	16.7
		Qmax	52.6	1.000	0.700	0.650	325.0	16.3	13.6	16.7
		Qmin	81.6	1.000	0.700	0.650	325.0	17.9	15.0	28.5
44	40	Nmax	89.1	1.000	0.700	0.650	325.0	16.9	14.1	32.1
		Nmin	61.0	1.000	0.700	0.650	325.0	16.3	13.6	20.2
		Mmax	94.3	1.000	0.700	0.650	325.0	17.9	15.0	33.9
		Mmin	61.0	1.000	0.700	0.650	325.0	16.3	13.6	20.2
		Qmax	61.0	1.000	0.700	0.650	325.0	16.3	13.6	20.2
		Qmin	94.3	1.000	0.700	0.650	325.0	17.9	15.0	33.9
	42	Nmax	88.3	1.000	0.700	0.650	325.0	23.7	19.8	29.3
		Nmin	60.1	1.000	0.700	0.650	325.0	21.6	18.0	18.0
		Mmax	93.4	1.000	0.700	0.650	325.0	24.6	20.5	31.2
		Mmin	60.1	1.000	0.700	0.650	325.0	21.6	18.0	18.0
		Qmax	60.1	1.000	0.700	0.650	325.0	21.6	18.0	18.0
		Qmin	93.4	1.000	0.700	0.650	325.0	24.6	20.5	31.2
45	42	Nmax	101.7	1.000	0.700	0.650	325.0	23.7	19.8	35.0
		Nmin	69.5	1.000	0.700	0.650	325.0	21.6	18.0	22.0

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIÁ

FECHA: 28/02/2006

ARMADO A CORTANTE

f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
		Mmax	107.4	1.000	0.700	0.650	325.0	24.6	20.5	37.1
		Mmin	69.5	1.000	0.700	0.650	325.0	21.6	18.0	22.0
		Qmax	69.5	1.000	0.700	0.650	325.0	21.6	18.0	22.0
		Qmin	107.4	1.000	0.700	0.650	325.0	24.6	20.5	37.1
	44	Nmax	100.8	1.000	0.700	0.650	325.0	28.7	23.9	32.9
		Nmin	68.6	1.000	0.700	0.650	325.0	25.6	21.4	20.2
		Mmax	106.6	1.000	0.700	0.650	325.0	29.6	24.7	35.0
		Mmin	68.6	1.000	0.700	0.650	325.0	25.6	21.4	20.2
		Qmax	68.6	1.000	0.700	0.650	325.0	25.6	21.4	20.2
		Qmin	106.6	1.000	0.700	0.650	325.0	29.6	24.7	35.0
46	44	Nmax	115.7	1.000	0.700	0.650	325.0	28.7	23.9	39.2
		Nmin	79.1	1.000	0.700	0.650	325.0	25.6	21.4	24.7
		Mmax	122.0	1.000	0.700	0.650	325.0	29.6	24.7	41.6
		Mmin	79.1	1.000	0.700	0.650	325.0	25.6	21.4	24.7
		Qmax	79.1	1.000	0.700	0.650	325.0	25.6	21.4	24.7
		Qmin	122.0	1.000	0.700	0.650	325.0	29.6	24.7	41.6
	46	Nmax	114.9	1.000	0.700	0.650	325.0	33.2	27.6	37.3
		Nmin	78.3	1.000	0.700	0.650	325.0	29.2	24.3	23.0
		Mmax	121.2	1.000	0.700	0.650	325.0	34.1	28.4	39.6
		Mmin	78.3	1.000	0.700	0.650	325.0	29.2	24.3	23.0
		Qmax	78.3	1.000	0.700	0.650	325.0	29.2	24.3	23.0
		Qmin	121.2	1.000	0.700	0.650	325.0	34.1	28.4	39.6
47	46	Nmax	25.5	1.000	0.700	0.650	325.0	29.2	-	No necesita
		Nmin	25.2	1.000	0.700	0.650	325.0	34.1	-	No necesita
		Mmax	25.2	1.000	0.700	0.650	325.0	34.1	-	No necesita
		Mmin	25.5	1.000	0.700	0.650	325.0	29.2	-	No necesita
		Qmax	25.5	1.000	0.700	0.650	325.0	29.2	-	No necesita
		Qmin	25.2	1.000	0.700	0.650	325.0	33.2	-	No necesita
	47	Nmax	16.4	1.000	0.700	0.650	325.0	27.9	-	No necesita
		Nmin	16.1	1.000	0.700	0.650	325.0	33.1	-	No necesita
		Mmax	16.1	1.000	0.700	0.650	325.0	33.1	-	No necesita
		Mmin	16.4	1.000	0.700	0.650	325.0	27.9	-	No necesita
		Qmax	16.4	1.000	0.700	0.650	325.0	27.9	-	No necesita
		Qmin	16.1	1.000	0.700	0.650	325.0	32.5	-	No necesita
48	47	Nmax	16.4	1.000	0.700	0.650	325.0	27.9	-	No necesita
		Nmin	16.1	1.000	0.700	0.650	325.0	33.1	-	No necesita
		Mmax	16.1	1.000	0.700	0.650	325.0	33.1	-	No necesita
		Mmin	16.4	1.000	0.700	0.650	325.0	27.9	-	No necesita
		Qmax	16.4	1.000	0.700	0.650	325.0	27.9	-	No necesita
		Qmin	16.1	1.000	0.700	0.650	325.0	32.5	-	No necesita
	48	Nmax	8.3	1.000	0.700	0.650	325.0	27.4	-	No necesita
		Nmin	7.9	1.000	0.700	0.650	325.0	32.7	-	No necesita
		Mmax	7.9	1.000	0.700	0.650	325.0	32.7	-	No necesita
		Mmin	8.3	1.000	0.700	0.650	325.0	27.4	-	No necesita
		Qmax	8.3	1.000	0.700	0.650	325.0	27.4	-	No necesita
		Qmin	7.9	1.000	0.700	0.650	325.0	32.6	-	No necesita
49	48	Nmax	8.3	1.000	0.700	0.650	325.0	27.4	-	No necesita
		Nmin	7.9	1.000	0.700	0.650	325.0	32.7	-	No necesita
		Mmax	7.9	1.000	0.700	0.650	325.0	32.7	-	No necesita
		Mmin	8.3	1.000	0.700	0.650	325.0	27.4	-	No necesita
		Qmax	8.3	1.000	0.700	0.650	325.0	27.4	-	No necesita
		Qmin	7.9	1.000	0.700	0.650	325.0	32.6	-	No necesita
	49	Nmax	3.7	1.000	0.700	0.650	325.0	27.1	-	No necesita

Siegrist y Moreno S.L.

AVE CERVELLÓ
PI RIERA DE CAN JULIÁ

FECHA: 28/02/2006

ARMADO A CORTANTE

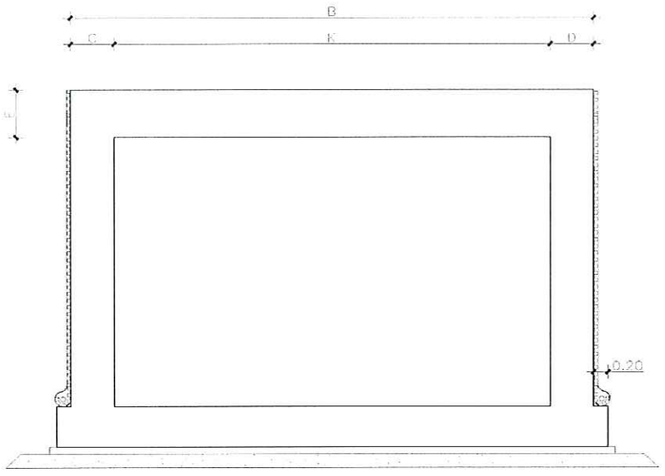
f1cd(t/m2)= 1000
fck(N/mm2)= 25.00
cotg(θ)= 1
cotg(α)= 0

BARRA	NUDO	HIPÓTESIS	Vd	b0(m)	h(m)	d(m)	Vu1	Vu2	Vcu	A90
		Nmin	4.1	1.000	0.700	0.650	325.0	32.6	-	No necesita
		Mmax	9.3	1.000	0.700	0.650	325.0	32.8	-	No necesita
		Mmin	3.7	1.000	0.700	0.650	325.0	27.1	-	No necesita
		Qmax	3.7	1.000	0.700	0.650	325.0	27.1	-	No necesita
		Qmin	9.3	1.000	0.700	0.650	325.0	32.8	-	No necesita
50	49	Nmax	3.7	1.000	0.700	0.650	325.0	27.1	-	No necesita
		Nmin	4.1	1.000	0.700	0.650	325.0	32.6	-	No necesita
		Mmax	9.3	1.000	0.700	0.650	325.0	32.8	-	No necesita
		Mmin	3.7	1.000	0.700	0.650	325.0	27.1	-	No necesita
		Qmax	3.7	1.000	0.700	0.650	325.0	27.1	-	No necesita
		Qmin	9.3	1.000	0.700	0.650	325.0	32.8	-	No necesita
	50	Nmax	6.7	1.000	0.700	0.650	325.0	27.3	-	No necesita
		Nmin	7.1	1.000	0.700	0.650	325.0	32.8	-	No necesita
		Mmax	12.3	1.000	0.700	0.650	325.0	33.5	-	No necesita
		Mmin	6.7	1.000	0.700	0.650	325.0	27.3	-	No necesita
		Qmax	6.7	1.000	0.700	0.650	325.0	27.3	-	No necesita
		Qmin	12.3	1.000	0.700	0.650	325.0	33.5	-	No necesita
51	50	Nmax	6.7	1.000	0.700	0.650	325.0	27.3	-	No necesita
		Nmin	7.1	1.000	0.700	0.650	325.0	32.8	-	No necesita
		Mmax	12.3	1.000	0.700	0.650	325.0	33.5	-	No necesita
		Mmin	6.7	1.000	0.700	0.650	325.0	27.3	-	No necesita
		Qmax	6.7	1.000	0.700	0.650	325.0	27.3	-	No necesita
		Qmin	12.3	1.000	0.700	0.650	325.0	33.5	-	No necesita
	51	Nmax	11.2	1.000	0.700	0.650	325.0	28.1	-	No necesita
		Nmin	11.6	1.000	0.700	0.650	325.0	33.5	-	No necesita
		Mmax	16.8	1.000	0.700	0.650	325.0	34.5	-	No necesita
		Mmin	11.2	1.000	0.700	0.650	325.0	28.1	-	No necesita
		Qmax	11.2	1.000	0.700	0.650	325.0	28.1	-	No necesita
		Qmin	16.8	1.000	0.700	0.650	325.0	34.5	-	No necesita
52	51	Nmax	11.2	1.000	0.700	0.650	325.0	28.1	-	No necesita
		Nmin	11.6	1.000	0.700	0.650	325.0	33.5	-	No necesita
		Mmax	16.8	1.000	0.700	0.650	325.0	34.5	-	No necesita
		Mmin	11.2	1.000	0.700	0.650	325.0	28.1	-	No necesita
		Qmax	11.2	1.000	0.700	0.650	325.0	28.1	-	No necesita
		Qmin	16.8	1.000	0.700	0.650	325.0	34.5	-	No necesita
	52	Nmax	15.6	1.000	0.700	0.650	325.0	29.0	-	No necesita
		Nmin	16.0	1.000	0.700	0.650	325.0	34.3	-	No necesita
		Mmax	21.2	1.000	0.700	0.650	325.0	35.7	-	No necesita
		Mmin	15.6	1.000	0.700	0.650	325.0	29.0	-	No necesita
		Qmax	15.6	1.000	0.700	0.650	325.0	29.0	-	No necesita
		Qmin	21.2	1.000	0.700	0.650	325.0	35.7	-	No necesita

4.10. Paso inferior del camino del Pla Soler

CÁLCULO TRANVERSAL LOSA SUPERIOR

MODELO DE CÁLCULO



Sección tipo del marco

Dimensiones marco

	B	C	D	E	K
[m]	7.20	0.60	0.60	0.70	6.00

Diensiones del Emparrillado

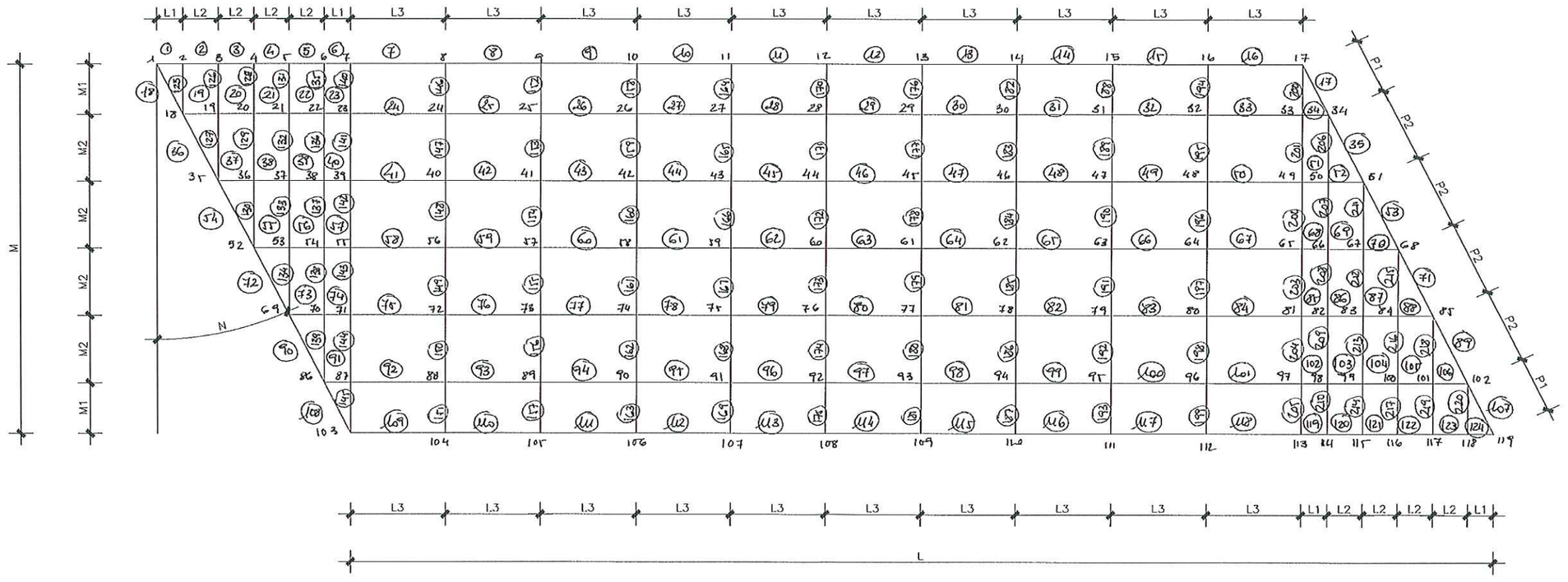
	L	M	N	L1	L2	L3	M1	M2	P1	P2
[m]	19.00	6.60	25.79	0.43	0.58	1.58	0.90	1.20	1.00	1.33

Caracteristicas mecánicas de barras tipo

	c	b	I	c/b	β	J
1	0.70	0.60	0.02	1.17	0.15	0.02
2	0.70	1.20	0.03	1.71	0.20	0.08
3	0.70	0.50	0.01	1.40	0.17	0.02
4	0.70	0.51	0.01	1.38	0.17	0.02
5	0.70	0.58	0.02	1.21	0.16	0.02
6	0.70	1.01	0.03	1.44	0.18	0.06
7	0.70	1.58	0.05	2.26	0.24	0.13

Siendo:
c y d dimensiones de la barra
I inercia a Flexión de la barra
J Inercia a Torsión

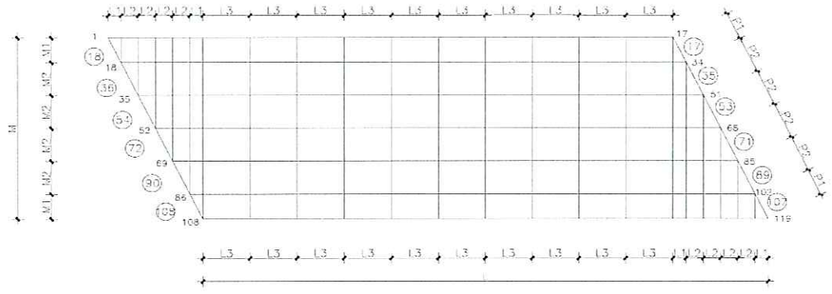
$$J = \beta \cdot c \cdot b^3$$



Modelo de Cálculo

CÁLCULO TRANVERSAL LOSA SUPERIOR

1-CÁLCULO DEL MARCO TIPO



Características del Modelo de Cálculo

L	M	N	L1	L2	L3	M1	M2	P1	P2
19.00	6.60	25.79	0.43	0.58	1.58	0.90	1.20	1.00	1.33

Características de Barras

h	b	I	J	A
0.70	0.50	0.01429	0.01505	0.35

Barra	17	18	35	36	53	54	71	72	89	90	107	108
NI	17	1	34	18	51	35	68	52	85	69	102	86
NF	34	18	51	35	68	52	85	69	102	86	119	103

CARGAS

Peso propio: 0.88 t/m

Carga permanente:

Balasto Altura 0.56 Densidad 1.80

Tierras Altura 2.2 Densidad 2.00

Sobrecargas verticales:

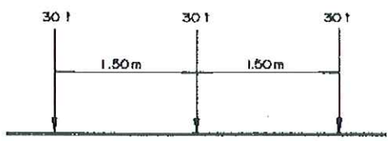
SC Terreno 3.000

H-5 Tren A RENFE Via Izquierda carga por carril 15 t
H-6 Tren A RENFE Via Derecha carga por carril 15 t

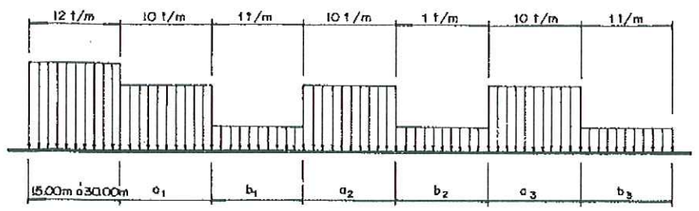
H-7 Tren B RENFE Via Izquierda carga por carril 6 T/m
H-8 Tren B RENFE Via Derecha carga por carril 6 T/m

Coeficiente de impacto transversal= 1.6

TREN TIPO A



TREN TIPO B



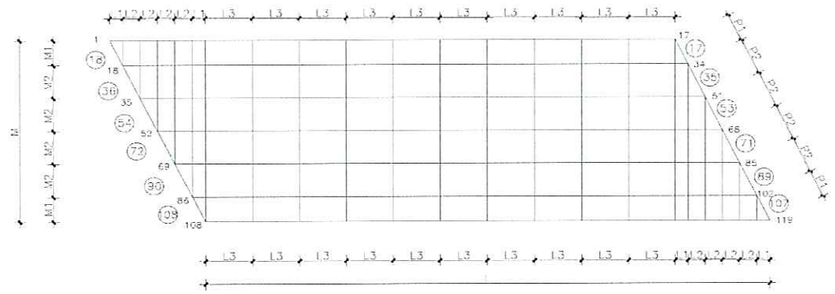
f_c 25
Ucd(t) 460.4

LOSA APOYADA
DIMENSIONAMIENTO A FLEXIÓN TRANSVERSAL

BARRA	NUDO	Md+	Md-	As,i (cm²/m)	As,s (cm²/m)
17	17	-2.44	-4.98	-	3.48
	34	25.58	12.53	18.58	-
18	1	0.75	0.19	0.52	-
	18	7.58	2.3	5.33	-
35	34	11.91	5.83	8.43	-
	51	40.39	19.78	30.22	-
36	18	16.24	6.23	11.59	-
	35	24.83	8.24	18.01	-
53	51	24.11	11.81	17.46	-
	68	39.04	19.12	29.13	-
54	35	40.3	14.02	30.15	-
	52	37.04	12.05	27.52	-
71	68	24.71	12.1	17.92	-
	85	28.69	14.05	20.96	-
72	52	56.84	19.14	44.12	-
	69	35	11.81	25.90	-
89	85	16.89	8.27	12.07	-
	102	12.8	6.27	9.08	-
90	69	58.87	19.88	45.92	-
	86	14.7	5.93	10.46	-
107	102	4.67	2.29	3.27	-
	119	0.55	0.27	0.38	-
108	86	35.07	12.61	25.95	-
	103	-1.85	-10.55	-	7.45

CÁLCULO TRANVERSAL LOSA SUPERIOR

1-CÁLCULO DEL MARCO TIPO



Características del Modelo de Cálculo

L	M	N	L1	L2	L3	M1	M2	P1	P2
19.00	6.60	25.79	0.43	0.58	1.58	0.90	1.20	1.00	1.20

Características de Barras

h	b	I	J	A
0.70	0.50	0.01429	0.01505	0.35

Barra	17	18	35	36	53	54	71	72	89	90	107	108
NI	17	1	34	18	51	35	68	52	85	69	102	86
NF	34	18	51	35	68	52	85	69	102	86	119	103

CARGAS

Peso propio: 0.88 t/m

Carga permanente:

Balasto	Altura	0.56	Densidad	1.80	
Tierras	Altura	2.2	Densidad	2.00	

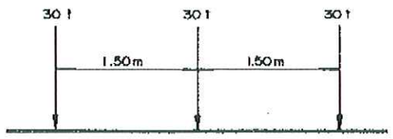
Sobrecargas verticales:

SC Terreno 3.000

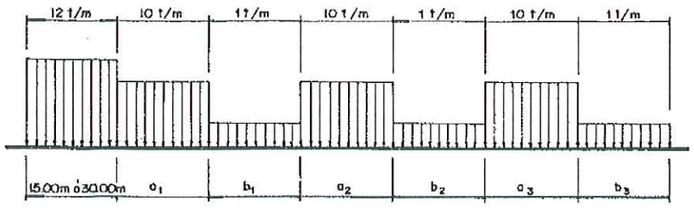
H-5	Tren A RENFE Via Izquierda	carga por carril	15 t
H-6	Tren A RENFE Via Derecha	carga por carril	15 t
H-7	Tren B RENFE Via Izquierda	carga por carril	6 T/m
H-8	Tren B RENFE Via Derecha	carga por carril	6 T/m

Coeficiente de impacto transversal= 1.6

TREN TIPO A



TREN TIPO B



f_c	25	
Ucd(t)	460.4	

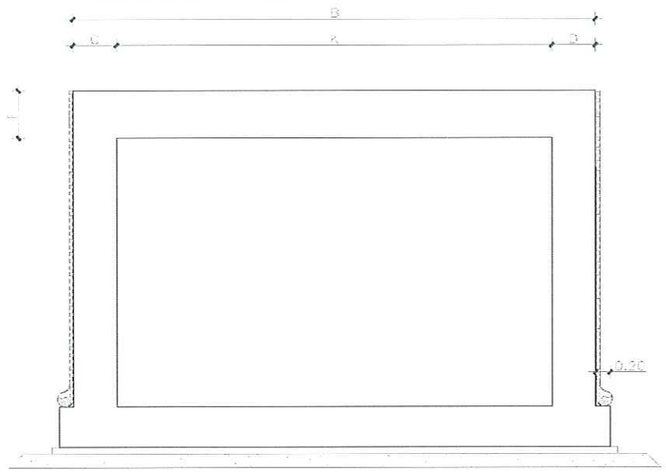
LOSA EMPOTRADA
DIMENSIONAMIENTO A FLEXIÓN TRANSVERSAL

BARRA	NUDO	Md+	Md-	As,i (cm²/m)	As,s (cm²/m)
17	17	-12.26	-25.03	-	18.16
	34	-2.55	-5.2	-	3.64
18	1	-5.25	-16.24	-	11.59
	18	-3.82	-12.66	-	8.98
35	34	-1.83	-3.73	-	2.60
	51	11.49	5.63	8.13	-
36	18	-3.41	-12.66	-	8.98
	35	3.45	0.36	2.41	-
53	51	8.3	4.06	5.84	-
	68	12.67	6.21	8.99	-
54	35	6.94	2.23	4.87	-
	52	14.86	4.24	10.58	-
71	68	8.66	4.24	6.10	-
	85	4.56	2.23	3.19	-
72	52	20.83	6.21	14.99	-
	69	13.46	4.06	9.56	-
89	85	1.56	0.76	1.09	-
	102	-3.41	-6.96	-	4.89
90	69	18.97	5.63	13.61	3.94
	86	-1.83	-8.05	-	5.66
107	102	-3.82	-7.8	-	5.48
	119	-5.25	-10.72	-	7.58
108	86	-2.55	-9.08	-	6.40
	103	-12.26	-38.94	-	29.05

CÁLCULO TRANVERSAL LOSA SUPERIOR

Se modeliza la Losa Superior de la Estructura mediante un modelo bidimensional de elementos finitos de las siguientes características:

MODELO DE CÁLCULO



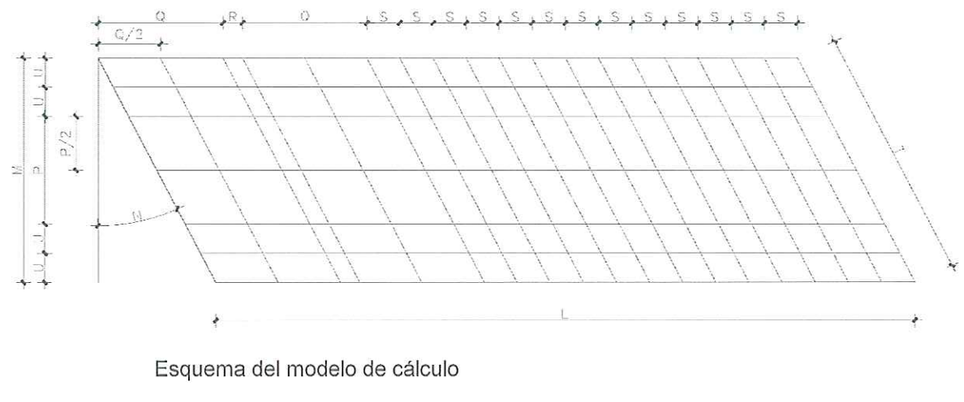
Sección tipo del marco

Dimensiones marco

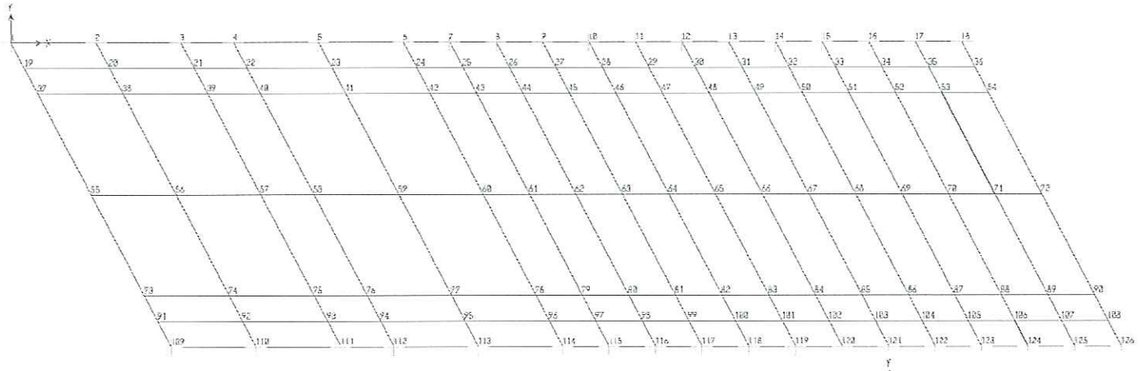
	B	C	D	E	K
[m]	7.20	0.60	0.60	0.70	6.00

Diensiones del Emparrillado

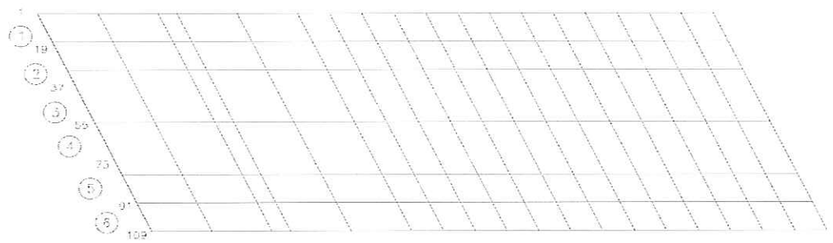
	L	M	N	O	P	Q	R	S	T
[m]	19.00	6.60	25.79	0.43	4.86	3.39	1.06	0.93	7.33



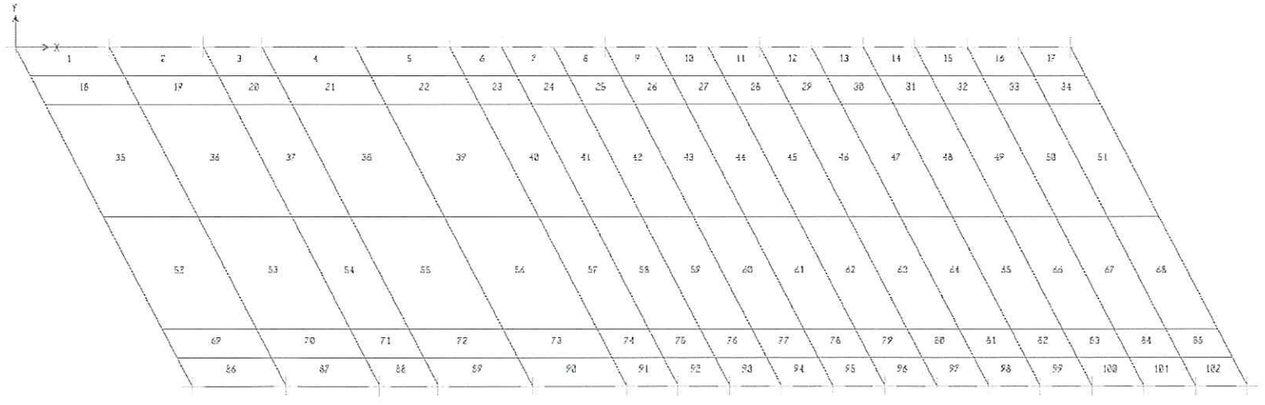
Esquema del modelo de cálculo



Numeración de nodos



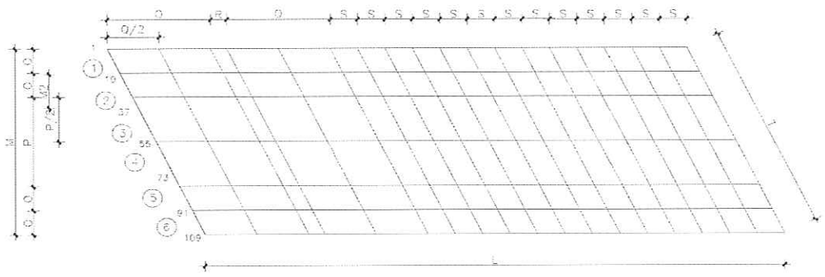
Numeración de Elementos tipo Barra



Numeración de Elementos tipo Shell

CÁLCULO TRANVERSAL LOSA SUPERIOR

1-CÁLCULO DEL MARCO TIPO



Características del Modelo de Cálculo

L	M	N	O	P	Q	R	S	T
19.00	6.60	25.79	0.43	4.86	3.39	1.06	0.93	7.33

Características de Elementos tipo barra

h	b	I	J
0.70	0.50	0.0143	0.0151

Barra	1	2	3	4	5	6
NI	1	19	37	55	73	91
NF	19	37	55	73	91	109

CARGAS

Peso propio: 2.50 t/m3

Carga permanente:

Balasto	Altura	0.56 m	Densidad	1.80 t/m^3
Tierras	Altura	2.20 m	Densidad	2.00 t/m^3

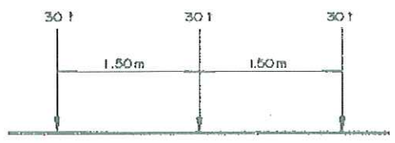
Sobrecargas verticales:

SC Terreno 3.000

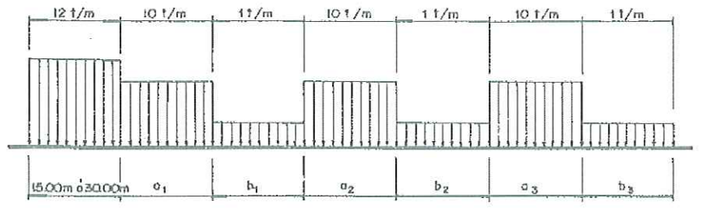
H-5	Tren A RENFE Via Izquierda	carga por carril	15 t
H-6	Tren A RENFE Via Derecha	carga por carril	15 t
H-7	Tren B RENFE Via Izquierda	carga por carril	6 t/m
H-8	Tren B RENFE Via Derecha	carga por carril	6 t/m

Coeficiente de impacto transversal= 1.6

TREN TIPO A



TREN TIPO B



f_c	25
Ucd(t)	460.4

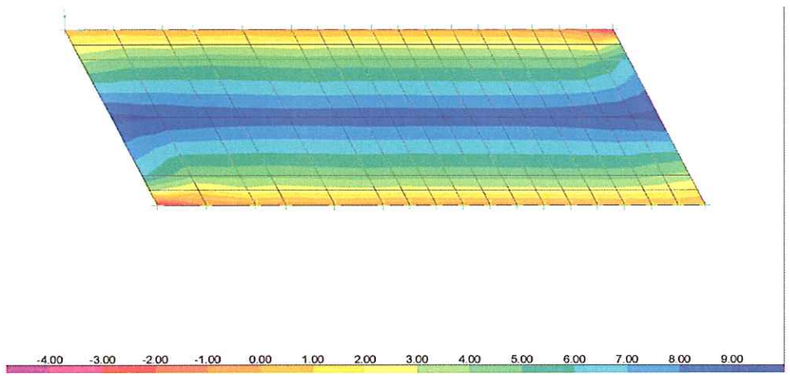
LOSA APOYADA
DIMENSIONAMIENTO A FLEXIÓN TRANSVERSAL

BARRA	NUDO	Md+	Md-	As,i (cm^2/m)	As,s (cm^2/m)
1	1	0.91	1.86	-	1.30
	19	5.81	2.09	4.07	-
2	19	11.68	4.19	8.27	-
	37	15.59	5.54	11.11	-
3	37	19.64	6.95	14.11	-
	55	47.07	16.02	35.73	-
4	55	50.45	17.23	38.59	-
	73	31.67	11.51	23.28	-
5	73	27.84	10.27	20.31	-
	91	22.03	8.31	15.89	-
6	91	11.72	4.65	8.29	-
	109	1.48	2.94	-	2.05

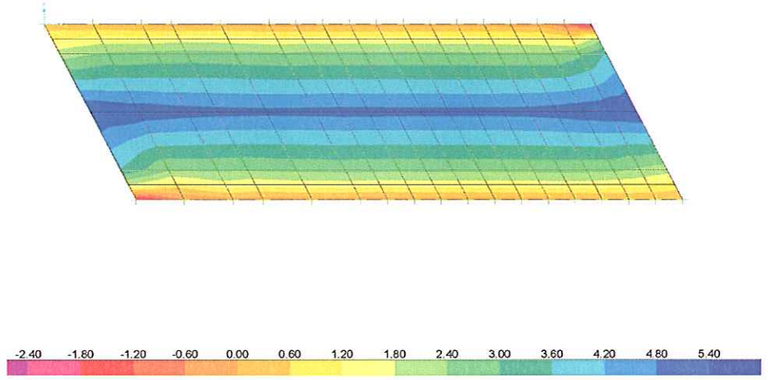
LOSA EMPOTRADA

BARRA	NUDO	Md+	Md-	As,i (cm^2/m)	As,s (cm^2/m)
1	1	-5.29	-16.40	-	11.71
	18	-4.96	-15.63	-	11.14
2	18	-3.86	-12.49	-	8.86
	35	-2.96	-9.71	2.06	-
3	35	-2.28	-2.28	1.59	-
	52	17.51	5.41	12.53	-
4	52	20.64	6.40	14.85	-
	69	1.17	0.48	0.81	-
5	69	-2.28	-1.11	1.58	-
	86	-3.13	-10.29	-	7.27
6	86	-7.51	-23.55	-	17.04
	103	-10.68	-33.03	-	24.35

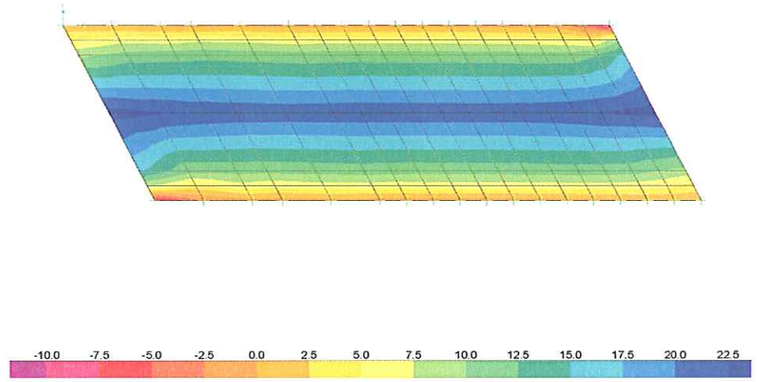
LOSA APOYADA



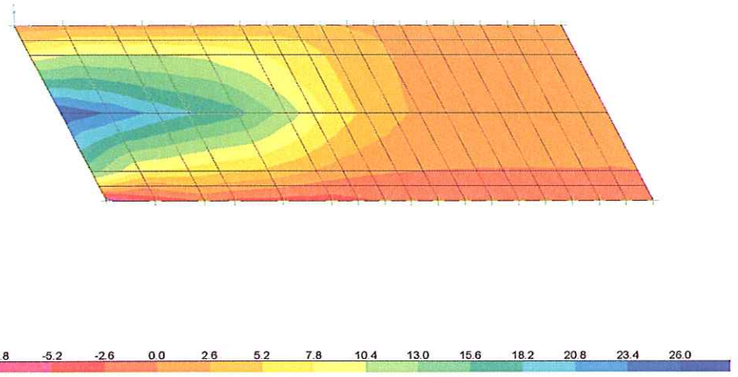
Momento Transversal PP



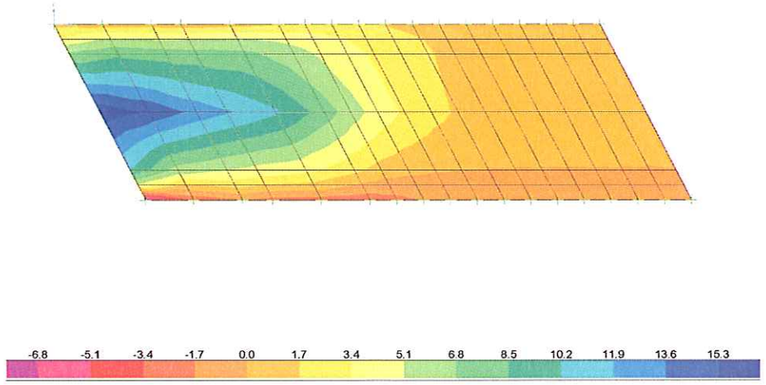
Momento Transversal Balasto



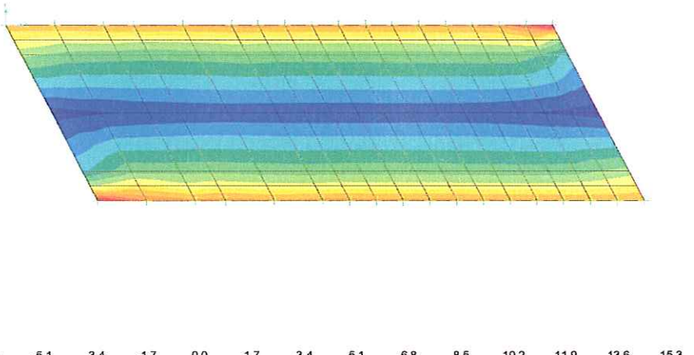
Momento Transversal Peso de Tierras



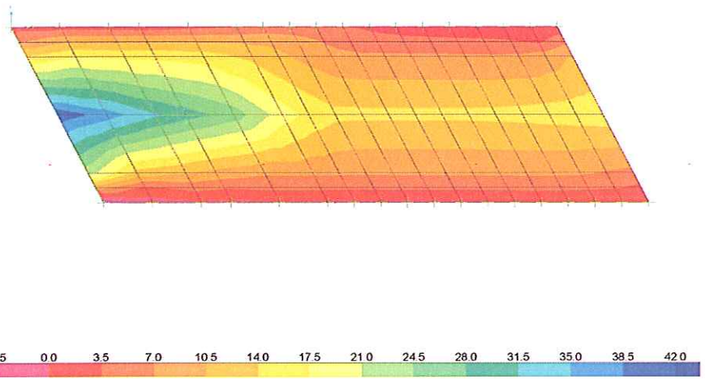
Momento Transversal Tren Tipo A



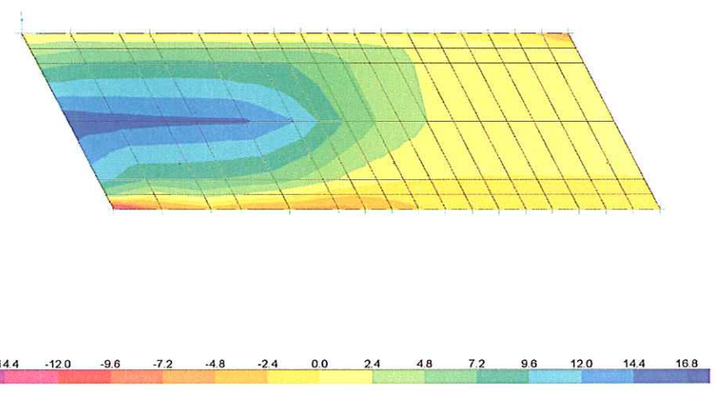
Momento Transversal Tren Tipo B



Momento Transversal SC.Uniforme

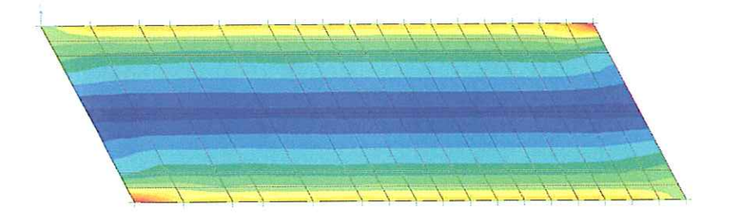


Momento Transversal Envolvente de SC(Max)

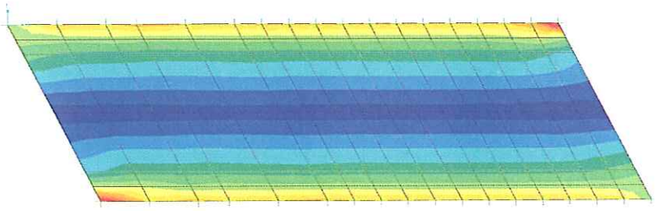


Momento Transversal Envolvente de SC(Min)

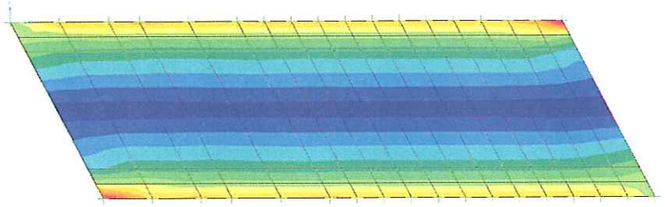
LOSA EMPOTRADA



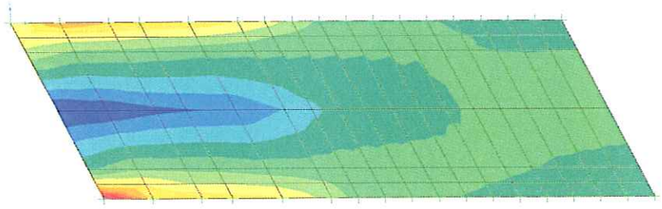
Momento Transversal PP



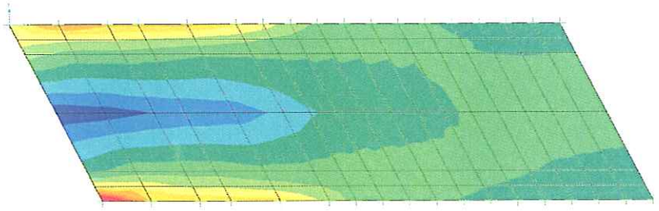
Momento Transversal Balasto



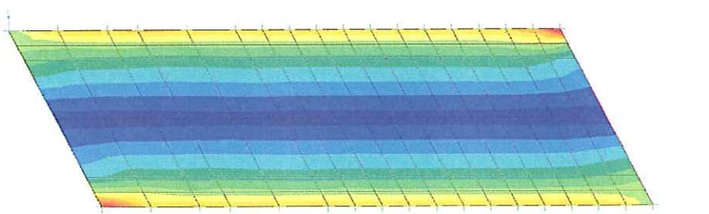
Momento Transversal Peso de Tierras



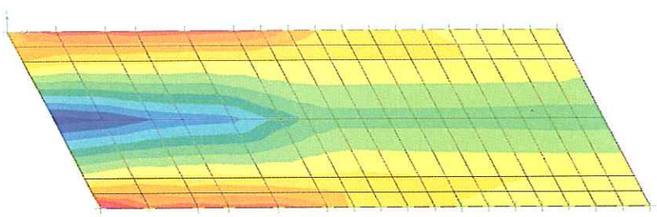
Momento Transversal Tren Tipo A



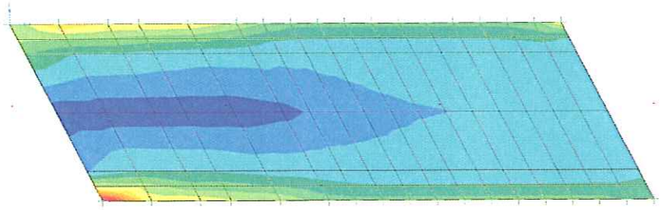
Momento Transversal Tren Tipo B



Momento Transversal SC.Uniforme



Momento Transversal Envolvente de SC(Max)



CÁLCULO TRANVERSAL LOSA SUPERIOR

MODELO DE CÁLCULO
Se arma una viga riostra de 0.50 m ancho

P.I. CAMINO PLA DE SOLER

ARMADURAS cm^2/m

	Anterior		Cálculo		Final	
MODELO DE CÁLCULO	A_I	A_S	A_I	A_S	A_I	A_S
EMPARRILLADO	46	39.5	45.92	29.05	5ϕ25	5ϕ25
SAP			38.59	24.35		

P.I. CAMINO

	Anterior		Cálculo		Final	
MODELO DE CÁLCULO	A_I	A_S	A_I	A_S	A_I	A_S
EMPARRILLADO	46.75	44.5	61.69	42.23	7ϕ25	7ϕ25
SAP			58.56	35.32		

P.I. RIERA DE CAN JULIA

	Anterior		Cálculo		Final	
MODELO DE CÁLCULO	A_I	A_S	A_I	A_S	A_I	A_S
EMPARRILLADO	98	69	73.66	54.42	8ϕ25	8ϕ25
SAP			78.23	49.16		

P.I. RIERA DE CAN VIA

	Anterior		Cálculo		Final	
MODELO DE CÁLCULO	A_I	A_S	A_I	A_S	A_I	A_S
EMPARRILLADO	64.33	32.25	59.8	41.95	7ϕ25	7ϕ25
SAP			61.13	38.21		

COMPROBACIÓN A CORTANTE

	A_I	A_S	V+	V-	h
P.I. CAMINO PLA DE SOLER	24.5	24.5	30.56	-44.05	0.7
P.I. CAMINO	34.3	34.3	15.93	-32.38	0.5
P.I. RIERA DE CAN JULIA	39.2	39.2	37.82	-53.33	0.8
P.I. RIERA DE CAN VIA	34.3	34.3	29.21	-44.21	0.8

	Aflexión					Acortante				Dispuesta
	A_I	A_S	V+	V-	h	As,t (cm^2/m)	ρ_1	ξ	Vcu(t)	As,t (cm^2/m)
P.I. CAMINO PLA DE SOLER	49	49	61.12	-88.1	0.7	25.93	0.0075	1.55	27.4	37.67
P.I. CAMINO	68.6	68.6	31.86	-64.76	0.5	24.09	0.0152	1.67	25.7	37.67
P.I. RIERA DE CAN JULIA	78.4	78.4	75.64	-106.7	0.8	26.76	0.0105	1.52	34.4	37.67
P.I. RIERA DE CAN VIA	68.6	68.6	58.42	-88.42	0.8	20.56	0.0091	1.52	32.9	36.16

SIEGRIST Y MORENO, S.L.
PROYECTOS DE INGENIERÍA

SEGRE, 20 - Esc. Izda. - 1.º E
28002 - MADRID
TELEF. 91 564 94 34
FAX: 91 564 71 83
e-mail: siemor@ciccp.es

Inscrita en el Registro Mercantil de Madrid, tomo 44 general, folio 114, hoja nº M-862, inscripción 1ª - C.I.F.: B-79379087

Siegrist y Moreno, S.L., y en su nombre **D. Guillermo Siegrist Ridruejo**, Ingeniero de Caminos, Canales y Puertos, colegiado número 16204,

CERTIFICA:

que ha realizado los cálculos y planos del Proyecto Modificado Número 1 para Obra de las siguiente estructura:

"Paso Inferior Camino de Can Soler"

del "*Proyecto de Construcción de la Línea Ferroviaria de Alta Velocidad Madrid-Barcelona-Frontera Francesa. Tramo: Sant Vicenç del Horts – Santa Coloma de Cervelló*"

y se hace responsable de los mismos.

Los cálculos y planos de esta estructura se han realizado de acuerdo con las siguientes normativas:

1. "Instrucción de Hormigón Estructural EHE".
2. " Borrador de la Instrucción sobre las Acciones a considerar en el proyecto de Puentes de Ferrocarril - IAPF" de fecha febrero de 2003, en lo relativo a las acciones y sus combinaciones".
3. "Instrucción Relativa a las Acciones a considerar en el proyecto de Puentes de Ferrocarril - IAPF" de fecha 25 de junio de 1975.
4. "Norma de construcción sismorresistente: parte general y edificación". NCSE-02 (Real Decreto 997/2002, de 27 de septiembre, B.O.E. 11-X-2002).
5. "Eurocódigo 1: Bases de Proyecto y Acciones en Estructuras. Parte 3: Cargas de Tráfico en Puentes (EC 1.1.3) UNE-ENV 1991-3" de fecha octubre de 1997.
6. "Eurocódigo 1: Bases de Proyecto y Acciones en Estructuras. Parte 1: Bases de Proyecto (EC 1.1) UNE-ENV 1991-1".

Madrid, a 13 de Diciembre de 2004
Firmado:

SIEGRIST Y MORENO, S.L.
Teléf. 91 564 94 34
C.I.F. B-79379087

Guillermo Siegrist Ridruejo
Ingeniero de Caminos, Canales y Puertos
Colegiado 16204

4.11. Muros

ÍNDICE

1. Objeto del presente Apéndice.
2. Cálculos de los muros.
    2.1. Generalidades.
        2.1.1. Objeto.
        2.1.2. Descripción general
        2.1.3. Instrucciones y Normas aplicadas
        2.1.4. Niveles de control y calidad adoptados
    2.2. Acciones
        2.2.1. Muro
        2.2.2. Relleno del trasdós
        2.2.3. Sobrecarga en coronación
        2.2.4. Empujes debidos al nivel freático.
        2.2.5. Tensiones en el terreno de cimentación
        2.2.6. Coeficientes de seguridad a deslizamiento y a vuelco.
        2.2.7. Hipótesis de cálculo

OBJETO DEL PRESENTE APÉNDICE.

El presente apéndice tiene por objeto el estudio de todos los muros del *Proyecto de Construcción de Plataforma de la Línea de Alta Velocidad Madrid – Zaragoza – Barcelona – Frontera Francesa, Tramo: Sant Vicenç dels Horts – Santa Coloma de Cervelló.*

El estudio de todas las estructuras tiene como objeto el cálculo el cálculo resistente y de estabilidad de las estructuras anteriormente descritas y la determinación de su geometría y armado.

2. CÁLCULOS DE LOS MUROS.

2.1. GENERALIDADES.

2.1.1. Objeto.

El objeto de la presente Nota de Cálculo es la justificación técnica de los muros que contienen el terraplén de la propia plataforma ferroviaria, así como de aquellos que contienen los taludes de la Autovía del Baix Llobregat. Estos muros tienen por objeto en el primero de los casos el evitar posibles afecciones a Servidumbres (Arqueta de carga del sifón de cruce del río llobregat de la Empresa Metropolitana de Sanejament, S.A.) , y en el segundo de ellos permitir la implantación de una vía de servicio en el margen derecho de la plataforma ferroviaria.

Esta justificación técnica se efectúa mediante la realización y la exposición de los cálculos correspondientes.

2.1.2. Descripción general

a) Muro 4.86.

Este muro se ha dispuesto en el P.K. 604+860 y el obketo del mismo es la no afección a la arqueta de carga del sifón de cruce del río Llobregat del Colector del Sistema 7 de la Empresa Metropolitana de Sanejament, S.A..

La altura de este muro es variable, ascendiendo desde un (1) metro hasta llegar a una altura máxima de 3.10 m y volver a disminuir hasta un (1) metro otra vez.

Este muro, en un tramo de 3.5 m, se cimenta sobre el doble tubo de ø800 mm de hormigón armado Clase IV ASTM del colector del municipio de Sant Vicenç dels Horts. Para proteger dicho colector, éste se hormigonará con un espesor mínimo de 50 cm, distancia medida desde las generatrices exteriores de los colectores.

Las alturas de este muro oscila entre los 1.0 y los 3.10 metros, siendo sus alzados de altura linealmente variable.

Sus características principales se muestran en la tabla adjunta.

Muro tipo	Máximo alzado (m)	Longitud de la puntera (m)	Longitud del talón (m)	Canto del alzado (m)	Canto de la zapata (m)
4.86	3,10	0,15	1,80	0,35	0,50

b) Muro 6.05.

Este muro se ha dispuesto como contención del terraplén de la Autovía del Baix Llobregat en las inmediaciones del Estribo 1 del Viaducto 1 del río Llobregat.

La altura de este tipo de muro oscila entre los 1,0 y los 2,70 metros, siendo sus alzados de altura linealmente variable.

Sus características principales se muestran en la tabla adjunta.

Muro tipo	Máximo alzado (m)	Longitud de la puntera (m)	Longitud del talón (m)	Canto del alzado (m)	Canto de la zapata (m)
6.05	2,70	0,50	1,10	0,35	0,50

2.1.3. Instrucciones y Normas aplicadas

Las Normas aplicadas son las vigentes en la fecha de redacción de esta Nota:

- Hormigón armado y pretensado: EHE “Instrucción de hormigón estructural”, aprobada por Real Decreto 2.661/1.998, de 11 de Diciembre.

2.1.4. Niveles de control y calidad adoptados

El control de calidad se atendrá a lo especificado en la Instrucción EHE, con los siguientes niveles de control:

· Materiales:

Hormigones		
En zapatas y alzados:	HA-25	Normal gc = 1,50
Acero corrugado		
B 500 S	fyk ³ 500 N/mm2	Normal gs = 1,15

· Ejecución

Tipo de control	Intenso	gf = 1,35 (permanente)
		gf = 1,50 (variable)

2.2. ACCIONES

2.2.1. Muro

El peso de cada uno de los elementos del muro, zapata y alzado, se ha obtenido multiplicando el área de la sección transversal correspondiente por el peso específico del hormigón armado, cuyo valor según la Instrucción EHE es de 2,50 Mp/m^3.

2.2.2.

Relleno del trasdós

Para el relleno del material del trasdós se ha supuesto un material con las siguientes características:

Peso específico natural: 21,0 kN/m3

Peso específico saturado: 22,0 kN/m3

Ángulo de rozamiento interno: 35°

El coeficiente de empuje se ha calculado a partir de la expresión

$$\lambda_h = \frac{\operatorname{sen}^2(\alpha+\varphi)}{\operatorname{sen}^2\alpha\cdot\left[1+\sqrt{\frac{\operatorname{sen}(\varphi+\delta)\cdot\operatorname{sen}(\varphi-\beta)}{\operatorname{sen}(\alpha-\delta)\cdot\operatorname{sen}(\alpha+\beta)}}\right]^2}$$

en donde:

λ_h, es el coeficiente de empuje horizontal

α, es el ángulo que forma el paramento del trasdós con la cara superior de la zapata

β, es el ángulo del talud en coronación (si hubiere)

δ, es el ángulo de rozamiento muro-relleno en el trasdós

φ, es el ángulo de rozamiento interno del relleno del trasdós

En el caso presente, α = 90° y φ = 35°. Para δ se ha supuesto un valor de 0°, con lo cual se está del lado de la seguridad, y para β se ha fijado un valor de 5º para el muro 4.86, ya que el terreno del trasdós es tiene una pendiente del 2% y de 25º par el muro 6.05.

No se ha tenido en cuenta, en ninguno de los dos casos, el posible empuje pasivo frente a la puntera, ya que se trata de un relleno de escasa importancia que probablemente no llegue a movilizar dicho empuje.

2.2.3. Sobrecarga en coronación

a) Muro 4.86.

Se ha supuesto un valor de 30 kN/m^2, que cubre las cargas transmitidas por el paso de las circulaciones.

b) Muro 6.05.

Se ha supuesto un valor de 10 kN/m^2.

2.2.4. Empujes debidos al nivel freático.

Todas las situaciones planteadas son en ausencia de nivel freático.

2.2.5. Tensiones en el terreno de cimentación

Como tensión admisible media del terreno de cimentación se ha adoptado un valor de 300 kN/m^2, valor que puede aumentarse un 25% en el caso de tensión en puntera. Como coeficiente de rozamiento zapata-terreno de cimentación se ha fijado un valor de 0,60. Como valor mínimo de la tensión del terreno en cualquier punto de la zapata, se ha adoptado un valor de 0,00 kN/m^2, en orden a evitar despegues de la misma.

2.2.6. Coeficientes de seguridad a deslizamiento y a vuelco.

En la tabla adjunta se presentan los valores adoptados de los coeficientes de seguridad a deslizamiento y a vuelco, tanto en las situaciones secas (ausencia de nivel freático), como inundadas (presencia del nivel freático).

	Seco	Inundado
Coeficiente de seguridad a deslizamiento	1,50	1,20
Coeficiente de seguridad a vuelco	1,80	1,50

2.2.7. Hipótesis de cálculo

Aplicando las acciones expuestas en el apartado anterior, se han analizado las siguientes hipótesis:

1. Máximo empuje de tierras (con sobrecarga) con ausencia del nivel freático.
2. Máximo empuje de tierras (con sobrecarga) con presencia del nivel freático.
3. Mínimo empuje de tierras (sin sobrecarga) con ausencia del nivel freático.
4. Mínimo empuje de tierras (con sobrecarga) con presencia del nivel freático.

Para cada hipótesis se han analizado las tensiones media, máxima y mínima, así como los coeficientes de seguridad a deslizamiento y a vuelco, comprobándose que todos los valores obtenidos se encuentran dentro de los rangos propuestos.

Por último se lleva a cabo el armado de las secciones críticas de la zapata (puntera y talón en sus caras inferior y superior), y del alzado del muro, así como las comprobaciones a cortante para verificar la necesidad de disposición o no de armadura transversal.

En las páginas siguientes se presentan los cálculos correspondientes a los distintos tipos de muros.

CÁLCULO DE MUROS

Proyecto de Construcción de la Línea de Alta Velocidad Madrid - Zaragoza - Barcelona - Frontera Francesa
Designación de la obra: Tramo: Sant Vicenç dels Horts - Santa Coloma de Cervelló
Designación del muro: Muro 4,85

1. Características geométricas.

Altura del alzado (m):	3,100	m
Canto del alzado (m):	0,350	m
Canto de la zapata (m):	0,500	m
Altura total del muro (m):	3,600	m
Longitud de la puntera (m):	0,150	m
Longitud del talón (m):	1,800	m
Longitud total de la zapata (m):	2,300	m
Altura de tierras sobre puntera (m):	0,500	m
Desnivel (m):	2,600	m
Profundidad del nivel freático en el trasdós (m):	100,000	m
Profundidad del nivel freático en el intradós (m):	100,000	m

2. Características de los materiales.

Zapata		
Hormigón, f_{ck}:	25,000	N/mm^2
Acero, f_{yk}:	500,000	N/mm^2
Alzado		
Hormigón, f_{ck}:	25,000	N/mm^2
Acero, f_{yk}:	500,000	N/mm^2

3. Coeficientes de seguridad.

Hormigón, γ_c:	1,500
Acero, γ_s:	1,150
Mayoración acciones desfavorables, γ_f:	1,500
Minoración acciones favorables, γ_f:	0,900
Coeficiente de seguridad a deslizamiento seco:	1,500
Coeficiente de seguridad a deslizamiento inundado:	1,200
Coeficiente de seguridad a vuelco seco:	1,800
Coeficiente de seguridad a vuelco inundado:	1,500

4. Características del relleno.

Densidad natural, γ_{nat}:	21,000	kN/m^3
Densidad saturada, γ_{sat}:	22,000	kN/m^3
Ángulo de rozamiento interno, φ:	35,000	
Talud del terreno en coronación (1 H / t V):	0,100	
Coeficiente de empuje, λ_0:	0,286	
Sobrecarga en coronación:	30,000	kN/m^2

5. Características del terreno de cimentación.

Tensión admisible media:	300,000	kN/m^2
Tensión admisible en punta:	375,000	kN/m^2
Coeficiente de rozamiento zapata-terreno:	0,600	

6. Composición de acciones en la base.

Acciones verticales

Pesos	P (kN)	x (m)	M_x (kNxm)
Alzado	27,125	0,325	8,816
Zapata	28,750	1,150	33,063
Tierras sobre puntera sin N.F.	1,575	0,075	0,118
Tierras sobre puntera con N.F.	1,575	0,075	0,118
Talud de tierras	3,402	1,700	5,783
Tierras sobre talón sin N.F.	117,180	1,400	164,052
Tierras sobre talón con N.F.	117,180	1,400	164,052
Total sin N.F.	**178,032**		**211,832**
Total con N.F.	**178,032**		**211,832**

Sobrecarga	P (kN)	x (m)	M_x (kNxm)
	54,000	**1,400**	**75,600**

Subpresión	P (kN)	x (m)	M_x (kNxm)
	0,000		**0,000**

Empuje de tierras

	E (kN)	z (m)	M_x (kNxm)
Trasdós			
Por encima de N.F.	38,954	1,200	46,745
Por debajo de N.F. sin agua	0,000	0,000	0,000
Por debajo de N.F. con agua	0,000	0,000	0,000
Sobrecarga	30,916	1,800	55,648
Hidrostático	0,000	0,000	0,000
Intradós			
Hidrostático	0,000	0,000	0,000
Total trasdós sin sobrecarga, sin N.F.	**38,954**		**46,745**
Total trasdós sin sobrecarga, con N.F.	**38,954**		**46,745**
Total trasdós con sobrecarga, sin N.F.	**69,869**		**102,393**
Total trasdós con sobrecarga, con N.F.	**69,869**		**102,393**
Total intradós	**0,000**		**0,000**

Proyecto de Construcción de la Línea de Alta Velocidad Madrid - Zaragoza - Barcelona - Frontera Francesa
Designación de la obra: Tramo: Sant Vicenç dels Horts - Santa Coloma de Cervelló
Designación del muro: Muro 4,85

7. Hipótesis de cálculo.

Hipótesis 1. Máximo empuje de tierras sin subpresión

Servicio

N =	232,032	kN
M =	185,039	kNxm
σ_{media} =	100,883	kN/m^2
$\sigma_{puntera}$ =	193,660	kN/m^2
$\sigma_{talón}$ =	8,107	kN/m^2
Coeficiente de seguridad a deslizamiento:	1,993	
Coeficiente de seguridad a vuelco:	2,807	

Hipótesis 2. Máximo empuje de tierras con subpresión

Servicio

N =	232,032	kN
M =	185,039	kNxm
σ_{media} =	100,883	kN/m^2
$\sigma_{puntera}$ =	193,660	kN/m^2
$\sigma_{talón}$ =	8,107	kN/m^2
Coeficiente de seguridad a deslizamiento:	1,993	
Coeficiente de seguridad a vuelco:	2,807	

Hipótesis 3. Mínimo empuje de tierras sin subpresión

Servicio

N =	178,032	kN
M =	165,087	kNxm
σ_{media} =	77,405	kN/m^2
$\sigma_{puntera}$ =	122,376	kN/m^2
$\sigma_{talón}$ =	32,434	kN/m^2
Coeficiente de seguridad a deslizamiento:	2,742	
Coeficiente de seguridad a vuelco:	4,532	

Hipótesis 4. Mínimo empuje de tierras con subpresión

Servicio

N =	178,032	kN
M =	165,087	kNxm
σ_{media} =	77,405	kN/m^2
$\sigma_{puntera}$ =	122,376	kN/m^2
$\sigma_{talón}$ =	32,434	kN/m^2
Coeficiente de seguridad a deslizamiento:	2,742	
Coeficiente de seguridad a vuelco:	4,532	

Proyecto de Construcción de la Línea de Alta Velocidad Madrid - Zaragoza - Barcelona - Frontera Francesa
Designación de la obra: Tramo: Sant Vicenç dels Horts - Santa Coloma de Cervelló
Designación del muro: Muro 4,85

8. Estabilidad y tensiones sobre el terreno.

	Servicio. Sin inundación			Servicio. Inundado		
	Resultante	**Adoptado**	**Validación**	**Resultante**	**Adoptado**	**Validación**
Coeficiente de seguridad a deslizamiento:	1,993	1,500	CUMPLE	1,993	1,200	CUMPLE
Coeficiente de seguridad a vuelco:	2,807	1,800	CUMPLE	2,807	1,500	CUMPLE

	Resultante	**Adoptado**	**Validación**
Tensión media:	100,883 kN/m^2	300,000 kN/m^2	CUMPLE
Tensión máxima en puntera:	193,660 kN/m^2	375,000 kN/m^2	CUMPLE
Tensión máxima en talón:	32,434 kN/m^2	375,000 kN/m^2	CUMPLE
Tensión mínima en puntera:	122,376 kN/m^2	0,000 kN/m^2	CUMPLE
Tensión mínima en talón:	8,107 kN/m^2	0,000 kN/m^2	CUMPLE

9. Armado de secciones

Armadura de la zapata (por metro lineal)

	M_d (kNxm)	**A_{sd} (cm^2)**	**$A_{s\ mec}$ (cm^2)**	**$A_{s\ geom}$ (cm^2)**	**$A_{sd\ adop}$ (cm^2)**
Flector de diseño inferior en puntera:	5,393	0,306	7,667	4,500	7,667
Flector de diseño inferior en talón:	22,055	1,253	7,667	4,500	7,667
Flector de diseño superior en talón:	193,660	10,998	10,998	4,500	10,998
Flector de diseño superior en puntera:	0,000	0,000	7,667	4,500	7,667

Armadura del alzado (por metro lineal)

Profundidad (m)	**M_d (kNxm)**	**A_{sd} (cm^2)**	**$A_{s\ mec}$ (cm^2)**	**$A_{s\ geom}$ (cm^2)**	**$A_{sd\ adop}$ (cm^2)**	**V_d (kN)**
0,000	0,000	0,000	5,367	3,150	5,367	0,000
0,250	0,426	0,036	5,367	3,150	5,367	3,502
0,500	1,798	0,153	5,367	3,150	5,367	7,568
0,750	4,257	0,363	5,367	3,150	5,367	12,197
1,000	7,944	0,677	5,367	3,150	5,367	17,390
1,250	12,999	1,107	5,367	3,150	5,367	23,147
1,500	19,564	1,667	5,367	3,150	5,367	29,467
1,750	27,779	2,366	5,367	3,150	5,367	36,350
2,000	37,786	3,219	5,367	3,150	5,367	43,797
2,250	49,725	4,236	5,367	3,150	5,367	51,808
2,500	63,737	5,429	5,429	3,150	5,429	60,382
Alzado a un canto:						
2,800	83,486	7,112	7,112	3,150	7,112	71,415

Comprobación a cortante (por metro lineal)

	V_d (kN)	**$V_{u2\ sin\ arm}$ (kN)**	**Arm. transv**	**V_{cu} (kN)**	**A_{sd} (cm^2/ml)**	**V_{u1} (kN)**	**Validación V_{u1}**
Cortante de diseño en puntera:	10,689	145,818	NO	---	---	---	---
Cortante de diseño en talón:	146,660	164,435	NO	---	---	---	---
Cortante de diseño en alzado a un canto:	71,415	118,271	NO	---	---	---	---

CÁLCULO DE MUROS

Proyecto de Construcción de la Línea de Alta Velocidad Madrid - Zaragoza - Barcelona - Frontera Francesa
Designación de la obra: Tramo: Sant Vicenç dels Horts - Santa Coloma de Cervelló
Designación del muro: Muro 6,05

1. Características geométricas.

Altura del alzado (m):	2,700	m
Canto del alzado (m):	0,350	m
Canto de la zapata (m):	0,500	m
Altura total del muro (m):	3,200	m
Longitud de la puntera (m):	0,500	m
Longitud del talón (m):	1,100	m
Longitud total de la zapata (m):	1,950	m
Altura de tierras sobre puntera (m):	0,500	m
Desnivel (m):	2,200	m
Profundidad del nivel freático en el trasdós (m):	100,000	m
Profundidad del nivel freático en el intradós (m):	100,000	m

2. Características de los materiales.

Zapata		
Hormigón, f_{ck}:	25,000	N/mm^2
Acero, f_{yk}:	500,000	N/mm^2
Alzado		
Hormigón, f_{ck}:	25,000	N/mm^2
Acero, f_{yk}:	500,000	N/mm^2

3. Coeficientes de seguridad.

Hormigón, γ_c:	1,500
Acero, γ_s:	1,150
Mayoración acciones desfavorables, γ_f:	1,500
Minoración acciones favorables, γ_f:	0,900
Coeficiente de seguridad a deslizamiento seco:	1,500
Coeficiente de seguridad a deslizamiento inundado:	1,200
Coeficiente de seguridad a vuelco seco:	1,800
Coeficiente de seguridad a vuelco inundado:	1,500

4. Características del relleno.

Densidad natural, γ_{nat}:	21,000	kN/m^3
Densidad saturada, γ_{sat}:	22,000	kN/m^3
Ángulo de rozamiento interno, φ:	35,000	
Talud del terreno en coronación (1 H / t V):	0,450	
Coeficiente de empuje, λ_0:	0,372	
Sobrecarga en coronación:	10,000	kN/m^2

5. Características del terreno de cimentación.

Tensión admisible media:	300,000	kN/m^2
Tensión admisible en punta:	375,000	kN/m^2
Coeficiente de rozamiento zapata-terreno:	0,600	

6. Composición de acciones en la base.

Acciones verticales

Pesos	P (kN)	x (m)	M_x (kNxm)
Alzado	23,625	0,675	15,947
Zapata	24,375	0,975	23,766
Tierras sobre puntera sin N.F.	5,250	0,250	1,313
Tierras sobre puntera con N.F.	5,250	0,250	1,313
Talud de tierras	5,717	1,583	9,052
Tierras sobre talón sin N.F.	62,370	1,400	87,318
Tierras sobre talón con N.F.	62,370	1,400	87,318
Total sin N.F.	**121,337**		**137,395**
Total con N.F.	**121,337**		**137,395**

Sobrecarga	P (kN)	x (m)	M_x (kNxm)
	11,000	**1,400**	**15,400**

Subpresión	P (kN)	x (m)	M_x (kNxm)
	0,000		**0,000**

Empuje de tierras

	E (kN)	z (m)	M_x (kNxm)
Trasdós			
Por encima de N.F.	40,008	1,067	42,676
Por debajo de N.F. sin agua	0,000	0,000	0,000
Por debajo de N.F. con agua	0,000	0,000	0,000
Sobrecarga	11,907	1,600	19,052
Hidrostático	0,000	0,000	0,000
Intradós			
Hidrostático	0,000	0,000	0,000
Total trasdós sin sobrecarga, sin N.F.	**40,008**		**42,676**
Total trasdós sin sobrecarga, con N.F.	**40,008**		**42,676**
Total trasdós con sobrecarga, sin N.F.	**51,916**		**61,727**
Total trasdós con sobrecarga, con N.F.	**51,916**		**61,727**
Total intradós	**0,000**		**0,000**

7. Hipótesis de cálculo.

Hipótesis 1. Máximo empuje de tierras sin subpresión

Servicio

N =	132,337	kN
M =	91,068	kNxm
σ_{media} =	67,865	kN/m^2
$\sigma_{puntera}$ =	127,764	kN/m^2
$\sigma_{talón}$ =	7,967	kN/m^2
Coeficiente de seguridad a deslizamiento:	1,529	
Coeficiente de seguridad a vuelco:	2,475	

Hipótesis 2. Máximo empuje de tierras con subpresión

Servicio

N =	132,337	kN
M =	91,068	kNxm
σ_{media} =	67,865	kN/m^2
$\sigma_{puntera}$ =	127,764	kN/m^2
$\sigma_{talón}$ =	7,967	kN/m^2
Coeficiente de seguridad a deslizamiento:	1,529	
Coeficiente de seguridad a vuelco:	2,475	

Hipótesis 3. Mínimo empuje de tierras sin subpresión

Servicio

N =	121,337	kN
M =	94,720	kNxm
σ_{media} =	62,224	kN/m^2
$\sigma_{puntera}$ =	99,438	kN/m^2
$\sigma_{talón}$ =	25,011	kN/m^2
Coeficiente de seguridad a deslizamiento:	1,820	
Coeficiente de seguridad a vuelco:	3,220	

Hipótesis 4. Mínimo empuje de tierras con subpresión

Servicio

N =	121,337	kN
M =	94,720	kNxm
σ_{media} =	62,224	kN/m^2
$\sigma_{puntera}$ =	99,438	kN/m^2
$\sigma_{talón}$ =	25,011	kN/m^2
Coeficiente de seguridad a deslizamiento:	1,820	
Coeficiente de seguridad a vuelco:	3,220	

Proyecto de Construcción de la Línea de Alta Velocidad Madrid - Zaragoza - Barcelona - Frontera Francesa
Designación de la obra: Tramo: Sant Vicenç dels Horts - Santa Coloma de Cervelló
Designación del muro: Muro 6,05

8. Estabilidad y tensiones sobre el terreno.

	Servicio. Sin inundación			Servicio. Inundado		
	Resultante	Adoptado	Validación	Resultante	Adoptado	Validación
Coeficiente de seguridad a deslizamiento:	1,529	1,500	CUMPLE	1,529	1,200	CUMPLE
Coeficiente de seguridad a vuelco:	2,475	1,800	CUMPLE	2,475	1,500	CUMPLE

	Resultante	Adoptado	Validación
Tensión media:	67,865 kN/m^2	300,000 kN/m^2	CUMPLE
Tensión máxima en puntera:	127,764 kN/m^2	375,000 kN/m^2	CUMPLE
Tensión máxima en talón:	25,011 kN/m^2	375,000 kN/m^2	CUMPLE
Tensión mínima en puntera:	99,438 kN/m^2	0,000 kN/m^2	CUMPLE
Tensión mínima en talón:	7,967 kN/m^2	0,000 kN/m^2	CUMPLE

9. Armado de secciones

Armadura de la zapata (por metro lineal)

	M_d (kNxm)	A_{sd} (cm^2)	$A_{s\ mec}$ (cm^2)	$A_{s\ geom}$ (cm^2)	$A_{sd\ adop}$ (cm^2)
Flector de diseño inferior en puntera:	23,529	1,336	7,667	4,500	7,667
Flector de diseño inferior en talón:	0,000	0,000	7,667	4,500	7,667
Flector de diseño superior en talón:	66,605	3,783	7,667	4,500	7,667
Flector de diseño superior en puntera:	0,000	0,000	7,667	4,500	7,667

Armadura del alzado (por metro lineal)

Profundidad (m)	M_d (kNxm)	A_{sd} (cm^2)	$A_{s\ mec}$ (cm^2)	$A_{s\ geom}$ (cm^2)	$A_{sd\ adop}$ (cm^2)	V_d (kN)
0,000	0,000	0,000	5,367	3,150	5,367	0,000
0,250	0,205	0,017	5,367	3,150	5,367	1,762
0,500	0,942	0,080	5,367	3,150	5,367	4,256
0,750	2,394	0,204	5,367	3,150	5,367	7,483
1,000	4,744	0,404	5,367	3,150	5,367	11,442
1,250	8,176	0,696	5,367	3,150	5,367	16,134
1,500	12,872	1,097	5,367	3,150	5,367	21,559
1,750	19,016	1,620	5,367	3,150	5,367	27,716
2,000	26,791	2,282	5,367	3,150	5,367	34,605
2,250	36,380	3,099	5,367	3,150	5,367	42,228
2,500	47,966	4,086	5,367	3,150	5,367	50,583
Alzado a un canto:						
2,400	43,080	3,670	5,367	3,150	5,367	47,153

Comprobación a cortante (por metro lineal)

	V_d (kN)	$V_{u2\ sin\ arm}$ (kN)	Arm. transv	V_{cu} (kN)	A_{sd} (cm^2/ml)	V_{u1} (kN)	Validación V_{u1}
Cortante de diseño en puntera:	8,432	145,818	NO	---	---	---	---
Cortante de diseño en talón:	68,020	145,818	NO	---	---	---	---
Cortante de diseño en alzado a un canto:	47,153	107,687	NO	---	---	---	---

4.12. Ampliación del azud de Sant Vicenç dels Horts

4.12. Ampliación del Azud de Sant Vicenç dels Horts.

Esta información no ha sido facilitada por la Asistencia Técnica al Control de Obra.

4.13. Cajón reposición A164

4.13. Cajón de reposición A164.

Esta información no ha sido facilitada por la Asistencia Técnica al Control de Obra.

5. Proceso Constructivo

5. Proceso constructivo

Esta información no ha sido facilitada por la Asistencia Técnica. A continuación se adjunta la documentación incorporada por la Asistencia Técnica.

1. PERFORACIÓN Y HORMIGONADO DE PILOTES

1.1. 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.

Para la construcción del pilote se dispondrá una superficie de trabajo sensiblemente horizontal, libre de obstáculos y de anchura suficiente para el trabajo de la maquinaria. El nivel freático deberá quedar a una profundidad del orden de un metro y medio (1,5 m) por debajo de la superficie del terreno. Si esta condición no se cumple, se construirá un terraplén, con un grado de compactación no inferior al del terreno natural. La superficie de trabajo estará convenientemente drenada para evitar encharcamientos en periodos lluviosos.

Antes de proceder a la perforación del pilote, deberán ser desviadas todas las conducciones aéreas que afecten al área de trabajo. Igualmente, deberán ser eliminados o modificados todos los elementos enterrados, tales como canalizaciones, raíces, restos de cimentaciones, etc., que interfieran directamente los trabajos, y también aquéllos que, por su proximidad, puedan afectar a la estabilidad del terreno durante la perforación del pilote. Asimismo, cuando dicha perforación pueda comprometer la estabilidad de estructuras contiguas, se efectuarán los oportunos apuntalamientos o recalces.

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.

1.2. 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 sondeará todo el pilote penetrando en el terreno un mínimo de 5 metros. 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.

1.3. COLOCACIÓN DE ARMADURAS

La colocación de la armadura debe efectuarse inmediatamente después de haber limpiado el fondo.

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.

1.4. 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 cero coma cinco diámetros (0,5 Ø) (si es bajo el nivel freático uno coma cinco diámetros (1,5 Ø)) 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 el inicio 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 diez por ciento (10 %) del diámetro del pilote. La desviación respecto a la vertical no será superior al dos por ciento (2 %) de la longitud del pilote indicada en los Planos.

1.5. 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 colocarse en la longitud adecuada para evitar desprendimientos, problemas de hormigonado, etc. 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.

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.

1.6. 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, así como el consumo real de hormigón, 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 siete (7) 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 setenta y cinco milímetros (75 mm) de diámetro interior, en toda la longitud de la perforación hasta veinte centímetros (20 cm) por encima del fondo de la misma, para las comprobaciones de continuidad y bajo 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 en aquellos pilotes que designe el proyecto o la D.O. a través de algunos tubos mencionados, 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 cuatro y cinco metros (4 y 5 m), 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, o de rellenar una zona carstificada 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 cinco (5) atmósferas de presión de agua a nivel de extremo inferior de pilote y tres (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 dos (2) atmósferas en la boca superior del tubo de inyección (nivel de rasante) y mantener dicha presión durante un tiempo mínimo de quince (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 pie de pilote hubiera sido completado.

Se empleará mortero entre uno y medio y dos a uno (1,5 -2 : 1) (arena : cemento), con una relación agua/cemento de cero coma treinta y cinco (0,35) y adicionándole cuatro coma cinco gramos (4,5 g) de expansivo por kilogramo de cemento.

1.7. 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 cuatro (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 uno – dos, uno – tres, uno – cuatro, dos – tres, dos – cuatro y tres –cuatro (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.

1.8. 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 pruebas de carga suplementarias sobre pilotes, 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.

2. HORMIGONADO DE ESTRUCTURAS Y OBRAS DE FÁBRICA

2.1. CONDICIONES DEL PROCESO DE EJECUCIÓN

Artículo 2.1.1. 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, etc.).
- 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 personas (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., una 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.

Artículo 2.1.2. Curado

Durante el fraguado y hasta conseguir el setenta por ciento (70 %) de la resistencia prevista, se han de mantener húmedas las superficies del hormigón. Este proceso ha de ser como mínimo de:

- siete (7) días en tiempo húmedo y condiciones normales.
- quince (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 del Pliego de Prescripciones Técnicas Particulares.

Durante el fraguado se han de evitar sobrecargas y vibraciones que puedan provocar la fisuración del elemento.

Artículo 2.1.3. Control de calidad

El control de la calidad de los hormigones se llevará a cabo de acuerdo con los criterios que establece la Instrucción EHE, en su artículo nº 82.

En cuanto al control de la ejecución, en los Planos se indica el nivel de control que debe aplicarse a cada elemento de obra.

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 Artículo 88.5 de la Instrucción EHE.

En caso de resultados desfavorables en los ensayos de información complementaria, 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. ENCOFRADOS EN ESTRUCTURAS Y OBRAS DE FÁBRICA

3.1. 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.

4. ENCOFRADOS PARA ALIGERAMIENTOS EN TABLEROS

4.1. CONDICIONES DEL PROCESO DE EJECUCIÓN

Los encofrados perdidos se han de sujetar adecuadamente a los encofrados exteriores o a otros puntos fijos, para que no se muevan durante el vertido y compactación del hormigón.

Se han de tomar las medidas adecuadas para que no floten en el interior de la masa de hormigón fresco.

La colocación de los encofrados se ha de realizar teniendo cuidado de que no reciban golpes u otras acciones que puedan dañarlos.

La superficie del encofrado ha de estar limpia antes del hormigonado y se ha de comprobar la situación relativa de las armaduras, su nivelación y la solidez del conjunto.

5. CIMBRAS PARA ENCOFRADOS DE LOSAS Y TABLEROS EN PUENTES

5.1. 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 veinte por ciento (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 doce (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.

6. ARMADURAS PASIVAS

6.1. 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. Se realizarán dos (2) ensayos de doblado - desdoblado cada veinte toneladas (20 t) de acero colocado, verificándose asimismo la sección equivalente. Cada cincuenta toneladas (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: dos coma cinco centímetros (2,5 cm).
- Paramentos en contacto con tierras, impermeabilizados: tres coma cinco centímetros (3,5 cm).
- Paramentos en contacto con tierras, sin impermeabilizar: cuatro centímetros (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.

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.

7. ARMADURAS ACTIVAS PARA PRETENSADO

7.1. CONDICIONES DEL PROCESO DE EJECUCIÓN

No se permite dejar las vainas sobre el fondo del encofrado para levantarlas después, a medida que se hormigona la pieza, hasta situarlas en la posición requerida.

Una vez la D.O. haya comprobado la colocación y fijación de las vainas, se pueden iniciar las fases de colocación de anclajes y enfilado de armaduras.

El montaje de dispositivos de anclaje se ha de realizar siguiendo estrictamente las especificaciones propias del sistema utilizado.

Se han de adoptar las precauciones necesarias para evitar que las armaduras sufran daños al colocarlas, especialmente en cortaduras o calentamientos locales que pueden modificar sus características. En especial, se han de evitar las operaciones de soldadura en las proximidades de la zona activa de las armaduras.

Cualquier ajuste de longitud o arreglo de los extremos de la armadura se ha de hacer mecánicamente o por oxicorte y, en este último caso, la zona de acero afectada ha de quedar fuera de la zona activa. En caso de utilizar el soplete, se ha de evitar que la llama afecte a otros tendones ya tesados.

Una vez colocados los tendones, y antes de autorizar el hormigonado, la D.O. ha de revisar tanto las armaduras como las vainas, anclajes y demás elementos ya dispuestos a su posición definitiva y constatar su concordancia con las indicadas en el Proyecto, así como su estanqueidad.

El contratista ha de presentar a la D.O. para su aprobación y con suficiente antelación el sistema de pretensado.

El tesado no se ha de iniciar sin la autorización de la D.O., la cual ha de comprobar que el hormigón ha alcanzado la resistencia mínima para empezar la operación, según los resultados de la rotura de probetas de hormigón y lo establecido en el programa de tesado.

Antes de empezar las operaciones de tesado se ha de comprobar el calibrado de los gatos.

Se ha de comprobar el estado del equipo de tesado y se ha de realizar el tesado de acuerdo con las recomendaciones del fabricante del sistema utilizado. En particular, se ha de tener cuidado que el gato se coloque perpendicularmente y centrado respecto al anclaje.

No puede haber más personal que el que haya de tesar en las proximidades de la zona. Por detrás de los gatos, se han de colocar protecciones resistentes y se prohibirá, durante el tesado, el paso entre estas protecciones y el gato.

Se ha de seguir el programa de tesado, de acuerdo con el Proyecto, definiendo al menos: el orden de tesado; eventualmente, las sucesivas etapas parciales de pretensado; el valor de tensión en los anclajes, y los alargamientos que han de obtenerse.

El tesado se ha de efectuar por operarios cualificados.

El tesado, cuando la temperatura sea inferior a dos grados centígrados (2 °C), requiere precauciones especiales, a definir por la Dirección de Obra.

Para poder tomar lectura de los alargamientos, la carga del tesado se ha de introducir por escalones. Como mínimo se han de hacer los dos siguientes: un primero, hasta conseguir un diez por ciento (10 %)de la fuerza máxima, y el segundo hasta la carga prevista.

Si los alargamientos medidos superan las tolerancias admitidas respecto a los previstos, se han de examinar las posibles causas de variación, como errores de lectura, de sección de las armaduras, de módulos de elasticidad o coeficientes de roce, rotura de algún elemento del tendón, tapones, u otros, y se ha de proceder a un retesado con nueva medición de alargamientos, previa aprobación de la D.O.

No se permite el corte de cables para proceder a la inyección, si no es con la autorización expresa de la D.O.

Antes de inyectar se ha de limpiar el conducto con aire a presión, observando si éste sale por el otro extremo de forma regular. En caso de haber algún tapón, se han de tomar las medidas oportunas para asegurar la inyección correcta.

Las conexiones de las bocas de inyección han de estar limpias de hormigón o cualquier otro material, y han de ser herméticas, para evitar posibles arrastres.

No se ha de inyectar si se prevén heladas en un plazo de dos (2) días, ni cuando la temperatura de la pieza sea inferior a cinco grados centígrados (5 °C); de no ser posible cumplir esta prescripción, se tomarán medidas como el calentamiento del elemento o de la lechada, siempre que sean aprobadas por la D.O.

Antes de iniciar la inyección se han de abrir todos los tubos de purga.

La inyección ha de hacerse desde el anclaje más bajo o desde el tubo de purga inferior del conducto.

No han de transcurrir más de treinta (30) minutos desde el amasado hasta el inicio de la inyección, a menos que se utilicen retardadores.

La bomba ha de proporcionar una inyección continua e ininterrumpida de cada conducto, y con la uniformidad necesaria para no producir segregaciones.

A medida que la inyección vaya saliendo por los sucesivos tubos de purga más próximos al punto por donde se inyecta, se han de ir cerrando éstos, dejando que fluya previamente por ellos la lechada hasta que tenga la misma consistencia que la que se inyecta.

Cuando se inyecte en conductos largos y ondulados, donde se precise una presión elevada, se puede cerrar el extremo por el que se ha iniciado la inyección y continuarla por los sucesivos tubos de purga.

En conductos muy largos o de gran sección útil, puede ser necesaria la reinyección, después de dos (2) horas, para compensar la eventual reducción de volumen de la mezcla.

7.2. CONTROL DE CALIDAD

Para el control de calidad del acero, se tomarán dos probetas cada diez toneladas (10 t) de armadura, verificándose la sección equivalente y realizándose ensayos de doblado - desdoblado. Cada cincuenta toneladas (50 t) se realizarán ensayos de comprobación de límite elástico, carga de rotura y alargamiento bajo carga máxima.

El control de la fuerza de pretensado introducida se realizará midiendo simultáneamente el esfuerzo ejercido por el gato y el alargamiento experimentado por la armadura. Los valores se anotarán en la correspondiente tabla de tesado.

El control de los dispositivos de anclaje, de las vainas y accesorios, así como de los equipos de tesado y de los productos de inyección, se llevará a cabo de acuerdo con lo especificado en los artículos correspondientes de la EHE.

8. APOYOS DE NEOPRENO ZUNCHADO

8.1. CONDICIONES DEL PROCESO DE EJECUCIÓN

a) 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/cm2).

b) 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/cm2) y una carga en rotura mínima de cuatro mil doscientos kilogramos por centímetro cuadrado (4.200 kg/cm2).

La carga tangencial mínima capaz de resistir la unión al material elastomérico será en servicio de ochenta kilogramos por centímetro cuadrado (80 kg/cm2), siendo la deformación tangencial correspondiente de siete décimas (0,7).

8.2. 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.

9. APARATOS DE APOYO TIPO “POT”

9.1. CONDICIONES DEL PROCESO DE EJECUCIÓN

El material elastomérico y los zunchos de acero deberán cumplir las mismas condiciones establecidas en el Artículo relativo a los Apoyos de neopreno zunchado.

La chapa intermedia y la placa de deslizamiento serán de acero debidamente protegido contra la corrosión, mediante pintura o galvanización con espesores superiores a ciento cincuenta (150) micras.

La placa de deslizamiento deberá poseer una chapa de acero inoxidable perfectamente pulida de al menos dos milímetros (2 mm) de espesor.

El teflón será puro y sin adición de productos regenerados. Deberá ser sintetizado libremente y enfriado sin presión. La lámina de teflón será del espesor necesario y dispondrá de los dispositivos precisos que permitan mantener sus propiedades de deslizamiento durante la vida útil de la obra.

El conjunto teflón acero inoxidable tendrá un coeficiente de rozamiento máximo del tres por ciento (3,0 %) para una tensión media vertical de cien kilopondios por centímetro cuadrado (100 kp/cm^2).

En los apoyos de mayor tamaño se podrá sustituir la lámina completa de teflón por una serie de bandas alojadas en cavidades talladas en la cara superior de la chapa intermedia. El área en planta de dichas cavidades y, por lo tanto, de la superficie de teflón, estará comprendida entre el diez (10) y el treinta (30) por ciento del total del área de contacto. La profundidad de las cavidades no excederá de la mitad del espesor de la lámina de teflón.

Los lubricantes y adhesivos que se empleen mantendrán sus propiedades frente a la acción de los agentes atmosféricos y biológicos y dentro del intervalo de temperaturas a que pueda estar sometida la estructura.

Los apoyos llegarán a la obra en dos piezas. Por una parte, la cazoleta de confinamiento (POT) con su pastilla de neopreno y la placa intermedia con el pistón. Por otra parte, la placa superior de deslizamiento. Ambos elementos llevan anclajes que quedarán embebidos en el hormigón de pilas o estribos en el primer caso y de tablero, en el segundo. La pieza inferior se colocará en obra antes del hormigonado de los anclajes perfectamente nivelada. Antes del hormigonado del tablero, se colocará la placa superior en la posición relativa indicada en los planos respecto a la placa inferior. El diseño de los anclajes, tanto superiores como inferiores, debe permitir la sustitución de los apoyos en caso necesario.

9.2. CONTROL DE CALIDAD

El aparato de apoyo y la chapa de acero inoxidable de deslizamiento tendrán las dimensiones que se indican en Planos.

El fabricante deberá presentar certificado de haber efectuado en un Laboratorio Oficial un ensayo de resistencia de un apoyo completo de tipología similar a los que se utilizarán en obra. En dicho ensayo se habrá sometido al apoyo a la actuación del efecto de un mínimo de dos (2) millones de ciclos alternativos de carga. Las cargas de ensayo oscilarán entre cero coma cinco (0,5) y uno coma cinco (1,5) veces la carga nominal del apoyo, indicada por el fabricante.

El apoyo a la terminación del ensayo no deberá presentar ningún desprendimiento entre la chapa de acero y el caucho, ni agrietamiento de éste. Dada la tipología de este ensayo no se fija limitación en la fecha de ejecución, siendo suficiente el haberlo efectuado con resultados satisfactorios una vez.

10. JUNTAS DE DILATACIÓN EN VIADUCTOS DE FERROCARRIL

10.1. CONDICIONES DEL PROCESO DE EJECUCIÓN

Las partes vistas llevarán una capa de pintura anticorrosiva de minio de plomo clorocaucho de treinta y cinco (35) micras, con una segunda capa de pintura clorocaucho de 35 micras.

Las superficies se prepararán previamente con cepillado grado ST-3.

El proceso de colocación se someterá a aprobación de la D.O., no producirá desperfectos, ni modificará las condiciones exigidas al material.

11. IMPERMEABILIZACIÓN Y DRENAJE CON GEOTEXTIL DE TRASDÓS DE MUROS Y DE ESTRIBOS.

11.1. 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.

Las láminas de geotextil se protegerán del paso sobre ellas de personas, equipos o materiales.

12. IMPERMEABILIZACIÓN Y PROTECCIÓN DE TABLEROS EN PUENTES Y ESTRUCTURAS PARA FERROCARRIL

12.1. CONDICIONES GENERALES

El sistema de impermeabilización y protección a utilizado entre el tablero de hormigón y la capa de balasto se define como sigue:

Impermeabilización:

- Imprimación bituminosa del tablero.
- Membrana termosoldable de betún elastómero (espesor de cuatro milímetros (4 mm) y dotación de betún de seis kilogramos por metro cuadrado (6 kg/m^2)) armada con geotextil de doscientos gramos por metro cuadrado (200 g/m^2) y autoprotegida en superficie por una capa de gránulos minerales de naturaleza silícea.

Protección:

- Mezcla de aglomerado asfáltico de treinta milímetros (30 mm) de espesor (granulometría D-20, árido silíceo de machaqueo y filler calizo).

12.2. CONDICIONES DEL PROCESO DE EJECUCIÓN

La superficie del tablero, cuya edad será siempre superior a veintiocho (28) días, no debe presentar cavidades ni elementos salientes que puedan dañar la membrana de impermeabilización. La textura superficial será tal que en el ensayo del círculo de arena, la altura resulte inferior a uno coma cinco milímetros (1,5 mm). Se eliminará mediante barrido y/o aspiración todo material y polvo suelto, con la ayuda si fuera preciso de un lavado con agua a presión.

Una vez obtenida la uniformidad y limpieza del soporte, totalmente seco, y previa aprobación de su estado por la D.O., se procederá a la aplicación de un riego de imprimación con emulsión bituminosa recomendada por el fabricante de la membrana, con una dotación de trescientos gramos por metro cuadrado (300 g/m^2).

A continuación se colocará, entre los muretes de guardabalasto, la membrana principal de impermeabilización, de base bituminosa mejorada con elastómero y armada con geotextil, cuya adherencia al soporte de hormigón debe ser perfecta a través del riego de imprimación.

Cuando se emplee el Sistema I, sobre la membrana principal de impermeabilización debe extenderse el aglomerado asfáltico con medios manuales, a temperatura aproximada de ciento treinta grados centígrados (130 ºC) y un espesor, después de compactado con rodillo, de treinta milímetros (30 mm).

Cuando se emplee el Sistema II, las dos membranas de protección que se sueldan sobre la primera deben llevar la capa de autoprotección, salvo en una franja de cinco centímetros (5 cm) de los bordes longitudinales a fin de permitir la soldadura de las bandas contiguas. En las membranas superpuestas se cuidará de no hacer coincidir los solapes entre bandas contiguas. Sobre la última membrana se extenderá, con medios manuales, la capa de gravilla rodada de cinco a diez centímetros (5 a 10 cm) de espesor, previa a la colocación del balasto.

En el Sistema III, entre murete guardabalasto y canaleta, sobre la membrana principal de impermeabilización, recubierta de gránulos minerales, no se colocará ninguna protección adicional.

La circulación de maquinaria y vehículos de obra sobre las membranas en cualquiera de los sistemas, antes de estar cubiertos por una de las protecciones mencionadas o por el propio balasto, estará totalmente prohibida.

13. BARANDILLAS DE ACERO

13.1. 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 centímetros (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.

14. PUESTA A TIERRA DE ELEMENTOS METÁLICOS Y ARMADURAS EN VIADUCTOS Y PUENTES PARA FERROCARRIL Y PASOS INFERIORES.

14.1. 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 cables de cobre. Para poder realizar la medición de la tierra, se colocará una (1) pica de acero - cobre unida al extremo del cable de toma de tierra, e irá alojada en una arqueta de cuarenta por cuarente por sesenta centímetros (0,40 x 0,4 x 0,6 m), rellena de arena y registrable. 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 menor o igual a diez ohmios ($\leq 10\ \Omega$).

La armadura del tablero estará unida (salvo los cables de tesado), tanto transversal como longitudinalmente para conseguir la continuidad eléctrica, y se conectará a los carriles exteriores en cada pila y estribo, con cable de cobre de cincuenta milímetros cuadrados (50 mm^2) como mínimo.

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.

Las condiciones anteriores son aplicables asimismo al caso particular del tablero solidarizado a los apoyos laterales (caso de pórticos o marcos cerrados en los Pasos Inferiores sin cobertura de terraplén), con la particularidad de que en estas estructuras ya existe continuidad de toda la armadura hasta la cimentación de los apoyos.

En caso que la armadura del tablero no esté unida de la forma indicada anteriormente, se colocará longitudinalmente en ambos lados de las vías, un cable de cobre de cincuenta milímetros cuadrados (50 mm^2), como mínimo, 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.