

ANEJO N° 6. ESTRUCTURAS

4. Cálculos

Viaducto de Santa Oliva

1.5. Cálculos del vano hiperestático I

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1. DESCRIPCIÓN DE LA ESTRUCTURA. INTRODUCCIÓN.

En el presente Anejo se realiza el cálculo del tablero del tramo II Hiperestático (Viaducto V-1) del Viaducto de Santa Oliva, de la Línea de Alta Velocidad Madrid-Barcelona. Tramo: Lérida-Martorell. Subtramo IXa.

El Viaducto de Santa Oliva está formado por 3 tramos isostáticos y por otros 3 hiperestáticos. Como se ha comentado anteriormente el presente anejo hace referencia al cálculo del tramo II, hiperestático que comprende los vanos 4, 5 y 6.

Todo el viaducto está formado por 2 cajones prefabricados y separados entre ejes de cajones 6,30 m.

El anejo solo abarca el cálculo del tablero.

El cálculo de la subestructura deberá estar justificado en otro anejo.

2. TRAMO IV HIPERESTÁTICO. VIADUCTO V-2

2.1. BASES DE CÁLCULO, INSTRUCCIONES Y NORMAS CONSIDERADAS

2.1.1. Bases de cálculo

El cálculo completo de la estructura se ha llevado a cabo mediante criterios generales de la Mecánica Elástica en cuanto a la deducción de las solicitaciones en las secciones resistentes producidas por el conjunto de las acciones expresadas en las Instrucciones y Normas que más adelante se señalan expresamente.

El estudio de las secciones se ha efectuado mediante criterios de Estados Límites, considerando:

- Por una parte, el Estado Límite de Servicio, bajo las combinaciones de acciones más desfavorables con sus valores característicos y con los materiales, asimismo, sin minorar; comprobando que los estados de tensiones y deformaciones en todos los elementos de la estructura se encuentran en condiciones adecuadas, es decir, con valores inferiores a los límites expresados en las Instrucciones y Normas citadas.
- Por otra parte, el Estado Límite Último de las secciones, comprobando que las solicitaciones más desfavorables mayoradas (valores de cálculo) de las diferentes acciones de la estructura presenta valores inferiores a los esfuerzos de agotamiento de dichas secciones; es decir, teniendo en cuenta las oportunas minoraciones de las resistencias de los diferentes materiales, así como las interacciones de las solicitaciones combinadas de cortantes, axiles, flectores y torsores.

El desarrollo de los cálculos, como es ya hoy en día habitual, se ha efectuado, por regla general, mediante la ayuda de programas de cálculo electrónico, suficientemente contrastados por la experiencia, tales como los correspondientes a los sistemas de entramados y emparrillados. En todos los casos (independientemente de exponer todos los desarrollos numéricos deducidos) los cálculos se completaron con comprobaciones manuales de tipo aproximado que garantizan la correspondencia entre el cálculo y la rea-

lidad. En particular, en aquellos casos en los que las simplificaciones requeridas pueden alterar los resultados, se aplican cálculos con variantes importantes de los parámetros así simplificados que cubren los extremos del espectro posible, adoptando los valores más desfavorables del análisis conjunto.

Independientemente de las generalizaciones aquí expuestas, en cada fase del desarrollo del cálculo que presente una cierta entidad, se expondrán con mayor detalle las hipótesis y criterios considerados, así como las simplificaciones aplicadas y su justificación.

2.1.2. Instrucciones y normas consideradas

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 seguirá una doble vía paralela:

2.1.2.1. Cálculo 1

- "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 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.

2.1.2.2. CÁLCULO 2

Se utilizarán las siguientes Instrucciones:

- "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 utilizará la siguiente Instrucción:

- "Eurocódigo 1: Bases de proyecto y acciones en estructuras. Parte 1; Bases de proyecto" UNE-ENV 1991-1, Octubre 1997 (EC1.1)

Una vez realizados los dos cálculos paralelos por las dos vías anteriores, se adoptarán como solicitaciones (esfuerzos, movimientos, etc.) de diseño, la envolvente de las obtenidas.

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 anteriores 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)

2.1.3. Descripción del proceso de cálculo realizado

En el primer apartado se describen las características de los materiales empleados para la construcción del viaducto detallando las características resistentes utilizadas en el cálculo.

El segundo apartado ("Acciones a considerar") es la aplicación particular en cada viaducto de las acciones de cálculo obtenidas en el apartado "Instrucciones y normas consideradas", general para el presente grupo de estructuras.

En el apartado titulado "Constantes estáticas" se describen las secciones transversales del tablero tenidas en cuenta en el cálculo. Se calculan sus constantes estáticas a usar en el modelo de cálculo (área, inercias a flexión y torsión, posición del centro de gravedad y del centro de esfuerzos cortantes) así como las constantes estáticas a tiempo infinito que tienen en cuenta las redistribuciones tensionales a nivel de sección. Las constantes estáticas se calculan mediante el programa CSEC desarrollado en IDEAM o con el programa comercial FAGUS 2.

En el apartado titulado "Modelo de cálculo" se describe el modelo de barras utilizado para la obtención de esfuerzos en tablero a partir de las cargas actuantes, detallando el número de nudos y posición, barras entre nudos, características de las mismas, tipo de vinculación en función de las fases de montaje de la estructura. Se utiliza el programa DINTEL desarrollado en IDEAM, el cual es de tipo matricial, en el modo viga.

En el apartado denominado "Pretensado" se describe el tipo y unidades de pretensado utilizado y su aplicación a la estructura en cada fase constructiva. Se calculan las pérdidas teniendo en cuenta los criterios de la EHE. Asimismo, se definen las acciones de pretensado a introducir en el modelo descrito en el apartado anterior.

En el apartado denominado "Esfuerzos longitudinales" se detallan los esfuerzos longitudinales (momentos flectores) en los puntos más significativos de la estructura. Este apartado sirve para identificar rápidamente el estado de sollicitación de la estructura en sus puntos más críticos, debido a cada una de las cargas (pesos propios, cargas muertas, sobrecargas de tren, efectos térmicos, etc.).

En el apartado siguiente se controla el Estado Límite de Servicio de Tensiones que permite demostrar la validez del pretensado dispuesto. Se realiza un control del estado tensional existente en la estructura tanto en fases de montaje como en servicio. Se realiza un doble cálculo, a tiempo inicial y a tiempo infinito (teniendo en cuenta los efectos reológicos y las redistribuciones diferidas de las fases de montaje hacia la situación ideal de la estructura cerrada y continua). Se tienen en cuenta los coeficientes de combinación de sobrecargas dominantes y no dominantes dados por el EC1, controlando la estructura en fases de montaje, cargas permanentes, sobrecargas casi permanentes, frecuentes e infrecuentes. Finalmente, se muestran los estados tensionales de la estructura en todos sus nudos, controlando las diferentes fibras significativas (fibras superior e inferior tanto de cajón como de losa, en su caso).

En el apartado de Control del Estado Límite Último de Rotura se indican los coeficientes de seguridad empleados para cada estado simple de carga, se presentan las envolventes de momentos flectores en los puntos más representativos de la discretización y se comprueba con el programa CSEC que la sección de hormigón más el pretensado más la armadura pasiva es capaz de resistir los esfuerzos de la envolvente. A partir de la armadura pasiva necesaria para cumplir este Estado Último, se describe su disposición a lo largo del tablero lo cual posteriormente se transcribe al plano correspondiente.

En el apartado "Análisis Transversal de Esfuerzos" se indican los cortantes y torsores obtenidos en el modelo de cálculo descrito anteriormente, y su combinación en rotura mediante los oportunos coeficientes de ponderación. Posteriormente se describen los procedimientos de control de agotamiento de la sección utilizados en el EC2 basados en el modelo de bielas y tirantes de la sección. La aplicación de dichos procedimientos conducen al control de agotamiento de las bielas comprimidas de hormigón y al establecimientos de la armadura transversal necesaria para soportar la tracción de los tirantes que equilibran el modelo.

En el apartado de "Análisis local de esfuerzos" se establece el control de los efectos locales que producen las cargas en la flexión propia de la losa superior que recoge dichas cargas. Se utiliza el programa ROBOT y se discretiza dicha sección mediante un modelo de barras tipo viga. Se

obtiene así también la armadura transversal de losa a disponer, controlando tanto el Estado Último de Rotura como los de Servicio de Fisuración y Fatiga.

Al final de todos estos apartados se tiene ya toda la armadura general del tablero necesaria para soportar la flexión general descrita en el modelo de cálculo.

En el apartado de "Reacciones en Apoyos" se enumeran las reacciones en apoyos según la vinculación del modelo de cálculo.

En el apartado de cálculo de movimientos longitudinales se obtienen los movimientos debidos a retracción, fluencia y temperatura, con los cuales se puede dimensionar la junta necesaria.

El dimensionamiento de la junta y aparatos de apoyo se realiza a partir de las reacciones obtenidas anteriormente y del cálculo de los movimientos longitudinales debidos a retracción, fluencia y temperatura.

El dimensionamiento de armaduras y macizados en mamparos de pilas y estribos se realiza a continuación. Dichos elementos se diseñan para materializar la transmisión de las reacciones al tablero.

En el apartado "Control de Deformaciones" se controla el Estado Límite de Servicio de Deformaciones, obteniendo las flechas verticales y giros en los apoyos, a partir del modelo de cálculo, acotándolos según los criterios del EC1.

Existe un apartado específico en el que se detallan los controles de armaduras locales y difusión del pretensado.

2.2. CALCULO DEL TABLERO

2.2.1. Características de los materiales y coeficientes de ponderación

A. HORMIGÓN

- Vigas Artesas Prefabricadas

HP-60/B/17/IIa $f_{ck} \geq 60 \text{ N/mm}^2$

$$E_c = 8500 (f_{ck} + 8)^{1/3} = 34694 \text{ N/mm}^2$$

$\gamma = 1,5$ Nivel de Control Estadístico

- Losa superior

HP-35/B/17/IIa $f_{ck} \geq 35 \text{ N/mm}^2$

$$E_c = 29779 \text{ N/mm}^2$$

$\gamma = 1,5$ Nivel de Control Estadístico

B. ARMADURAS

C.1. Pasivas

B-500-S $f_{yk} = 500 \text{ N/mm}^2$ $\gamma_s = 1,15$

C.2. Activas

En torones $\phi 0,6''$ $f_{max,k} = 19.000 \text{ Kp/cm}^2$ $\gamma_p = 1,15$
 $f_{yk} = 17.100 \text{ Kp/cm}^2$

2.2.2. Acciones a considerar

Se indican seguidamente las acciones consideradas en el cálculo de la estructura.

2.2.2.1. Peso propio

Se evaluarán las diferentes secciones tipo para una densidad de 2,5 t/m² para el hormigón:

- Vigas Prefabricadas Artesas

Peso medio para viga de almas de 18 cm: 3,817 t/ml y viga

Peso medio para viga de almas de 24 cm: 4,163 t/ml y viga

- Peso losa

$$0,3 \text{ m} \cdot 14 \text{ m} \cdot 2,5 \text{ t/m}^3 = 10,5 \text{ t/ml en total}$$

2.2.2.2. Cargas muertas

Se consideran las debidas a:

- a) Balasto;
- b) Pendienteado;
- c) Vías y traviesas;
- d) Conductos de cableado y paseos;
- e) Impostas y barandillas
- f) Soportes de catenarias;

A. BALASTO

La sección transversal de balasto se cubica con una densidad de $\gamma = 1,8 \text{ t/m}^3$, al igual que el hormigón ligero del pendienteado del 2%.

Sección completa balasto + pendienteado:

$$A = 7,33 \text{ m}^2 \text{ (para pendiente mínima de 16,9 m)}$$

$$\text{Peso balasto} = 1,8 \times 7,33 = 13,194 \text{ t/ml}$$

Se consideran dos hipótesis de "desbalastado", de acuerdo a las Bases de Cálculo del GIF:

1. 50% de una vía en toda su longitud.
2. 100% de una vía sobre 15 metros.

B. PENDIENTEADO

Se calcula con un hormigón ligero de densidad $\gamma = 2,4 \text{ t/m}^3$

$$\text{Peso total} = 2 \left(\frac{0,14}{2} \right) \times 14,0 = 2,304 \text{ t/ml en total}$$

C. VÍAS Y TRAVIESAS

Se considera el peso de las vías de carriles UIC 60 de 60 kg/ml y carril.

El peso de traviesas de hormigón se considera de 520 kg/ml y vía.

$$\text{Total} = q_{\text{vías+traviesas}} = 2 \cdot (0,52 + 2 \cdot 0,060) = 1,28 \text{ t/ml por la doble vía.}$$

D. CONDUCTOS CABLEADO Y PASEOS.

$$q_{\text{conductos}} = 0,3 \text{ t/ml de peso de una canaleta de conducciones.}$$

Carga en paseos = Se considera una carga de 0,5 t/m² en una superficie de 1,35 m desde el borde del balasto.

$$q_{\text{paseos}} = 0,5 \text{ t/m}^2 \cdot 1,35 = 0,675 \text{ t/ml y lado.}$$

En total:

$Q_{\text{conductos} + \text{paseos}} = 2 \cdot (0,30 + 0,50 \cdot 1,35) = 1,95 \text{ t/ml}$ para la doble vía.
(Aplicadas a 1,20 m del extremo).

E. IMPOSTAS Y BARANDILLAS

Peso de barandilla = 0,05 t/ml y lado.

Peso imposta y muretes: $0,669 + 0,25 = 0,919$

Luego para 2 vías = $q = 2(0,05 + 0,919) = 1,938 \text{ t/ml}$

F. SOPORTES DE CATENARIAS

Estos esfuerzos se tienen en cuenta solo para efectos locales de anclaje de la catenaria y armado local de losa, pero no para el cálculo general del tablero.

Se disponen los soportes a una distancia máxima de 60 m.

Mogotes de anclaje = $Q \cong 0,50 \text{ t}$

$V_T = 2 \cdot 0,50 = 1,0 \text{ t}$ vertical por 2 lados

$H = 0,5 \text{ t}$

$M_{\text{base}} = 9,0 \text{ mt}$

En el caso de rotura accidental de la catenaria ($\gamma = 1,0$).

$\Delta H = 2 \text{ t}$

$\Delta M = 14,0 \text{ t}$

RESUMEN DE CARGA MUERTA POR VÍA

	$q_s \text{ (t/ml) y vía}$	$q_i \text{ (t/ml) y vía}$
Balasto	8,576	5,07
Pendienteado 2%	1,152	1,152
Vías y traviesas	0,64	0,64
Conductos cableado y paseos	0,975	0,975
Imposta y barandillas	0,969	0,969
TOTAL por vía	12,31 T/m	8,806 T/m
TOTAL en dos vías	24,62 T/m	17,62 T/m

2.2.2.3. Sobrecargas móviles

Se utilizará la envolvente de esfuerzos debidos a los trenes de carga de IPF-75 y de EC1-3.

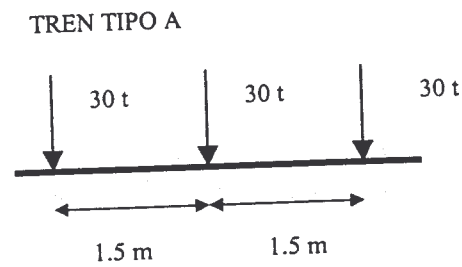
Como coeficiente de impacto se adoptará en cada caso el que corresponda.

Los coeficientes de impacto NO afectan al cálculo de apoyos, frenado, fuerza centrífuga, efectos lazo, pilas y estribos, salvo aquellos casos en que la unión tablero-estructura sea de tipo rígido. Esto conduciría a que el coeficiente de impacto afectaría a la subestructura para las fuerzas de frenado, transmitida a la pila fija a través de los apoyos fijos longitudinales, y fuerza centrífuga, transmitida a través de apoyos 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.

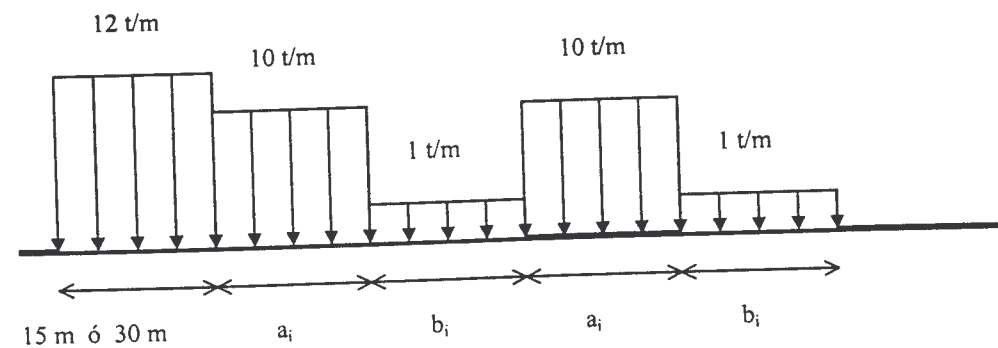
A. NORMA IPF-75 (RIPADO = 0,30 m)

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.



No se admite reducción de cargas por simultaneidad entre ambas vías.

El tren tipo A puede condicionar el trabajo local de reparto de la losa.

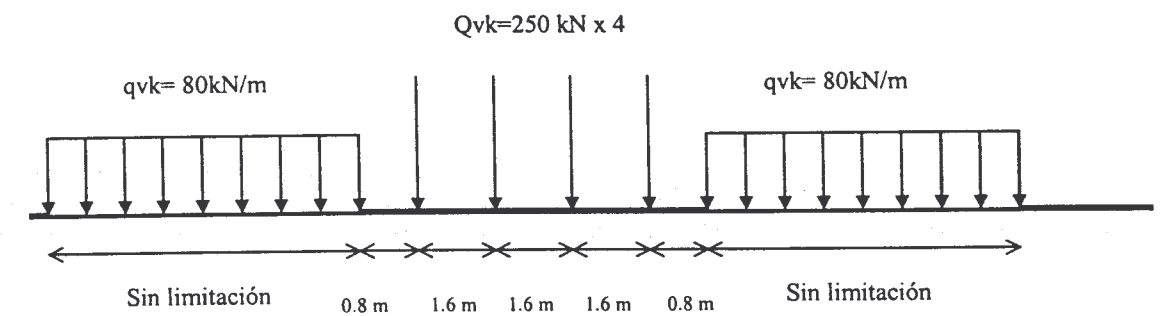
El tren tipo B condiciona el trabajo global.

B. EC1-3

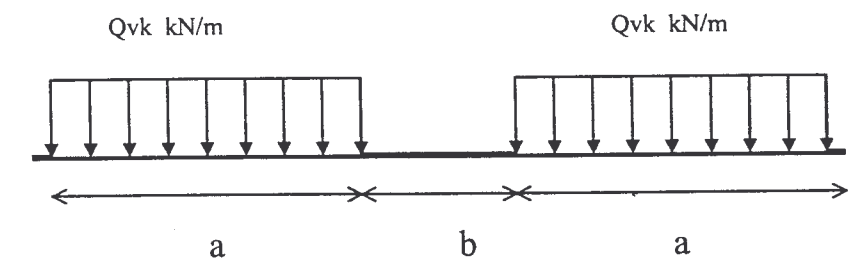
De acuerdo a las Bases de Cálculo, se adoptará un ripado de 30 cm.

El tren de cargas de EC1 tiene la siguiente configuración

Tren tipo 71:



Adicionalmente consideramos un tren pesado equivalente al siguiente esquema de cargas (SW/0) ó (SW2) en una de las vías y el tren estándar tipo 71 en la otra.



	SW0	SW2
Q_{vk}	133	150
a	15	25
b	5,3	7

Para algunas comprobaciones específicas, sobre todo asociadas al viento transversal, se considerará un "tren sin carga", de 12,5 kN/m.

C. SOBRECARGAS EN PASEOS

Se dispondrá una sobrecarga en los paseos laterales de valor:

Sobre un ancho de paseo a cada lado de 1,5 m y una excentricidad media de cada uno de 5,9 m.

$$Q_{sv} = 0,5 \text{ t/m}^2$$

El 50% de dicha carga es compatible con el tráfico ferroviario.

D. COEFICIENTES DE MAYORACIÓN POR IMPACTO: EVALUACIÓN DE EFECTOS DINÁMICOS

- Coeficiente de impacto de IPF-75

$$I = 65x \frac{\mu}{1 - \mu + \mu^2} \quad \text{con} \quad \mu = \frac{V.T}{2L}$$

Con T = periodo de vibración fundamental

$$\text{Para vigas biapoyadas} \quad T = 0,2026 \times \pi \sqrt{\frac{qL^4}{EIg}}$$

$$\text{Para vigas apoyadas-empotradas} \quad T = 0,13 \times \pi \sqrt{\frac{qL^4}{EIg}}$$

$$\text{Para vigas biempotradas} \quad T = 0,0893 \times \pi \sqrt{\frac{qL^4}{EIg}}$$

En el vano central se considerará como biempotrado (más real que biapoyado)

$$T = 0,0893 \times \pi \sqrt{\frac{qL^4}{EIg}}$$

q es la carga permanente por metro lineal.

$$\text{En zona prefabricada } q = 2 \times (10,55 + 8,33) = 37,7 \text{ t/ml}$$

$$L = 39$$

$$E = 2,857 \cdot 10^6 \text{ t/m}^2$$

I = es la inercia media $\Rightarrow$

$$\text{En zona prefabricada } I = 2 \times 4,0268 = 8,053 \text{ m}^4$$

$$g = 9,81 \text{ m/seg}^2$$

$$T = 0,0893 \cdot \pi \cdot \sqrt{\frac{37,7 \cdot 39^4}{2,857 \cdot 10^6 \cdot 8,053 \cdot 9,81}} = 0,1740 \text{ seg}$$

$$\mu = \frac{200}{3,6} \cdot \frac{0,171}{2 \cdot 39} = 0,2483$$

$$I = 65 \cdot \frac{0,2483}{1 - 0,2483 + 0,2483^2} = 0,304 \times 65 = 19,75 \%$$

$$\text{Vano lateral} \quad L = 28,2 \text{ m}$$

Como apoyado-empotrado:

$$T = 0,13 \times \pi \sqrt{\frac{qL^4}{EIg}}$$

Con q en este caso:

$$q_{\text{media}} = 37,7 \text{ t/ml}$$

Con I en este caso:

$$I_{\text{media}} = 8,053 \text{ t/ml}$$

$$T = 0,13 \times \pi \cdot \sqrt{\frac{37,7 \cdot 28,2^4}{2,807 \cdot 10^6 \cdot 8,053 \cdot 9,81}} = 0,133 \text{ seg}$$

$$\mu = \frac{200}{3,6} \cdot \frac{0,133}{2 \cdot 28,2} = 0,130$$

$$I = 65 \cdot \frac{0,130}{1 - 0,130 + 0,130} = 9,55 \%$$

Del lado de la seguridad se considerará un factor de impacto del 19,75%:

$$C_{\text{impacto}} = 1,197$$

- Para acciones según el EC-1

$$\phi_2 = \frac{1,44}{\sqrt{L_\phi - 0,2}} + 0,82 \leq 1,67$$

Para vías con mantenimiento bueno.

Con $K = 1,4$ para 4 vanos.

Luego:

$$L_\phi = 1,40 \cdot \frac{1}{4} (140) = 49 \text{ m}$$

$$\phi_2 = \frac{1,44}{\sqrt{49 - 0,2}} + 0,82 = 1,031 \text{ para el cálculo longitudinal del tablero.}$$

El resto de factores en cálculos locales se ven en cada apartado.

E. COMPARACIÓN DE AMBAS NORMAS

Resumen de esfuerzos de trenes de cargas

FLEXIÓN CON COEFICIENTE DINÁMICO mtn						
		P17	CDV(P17-P18)	P18	DCV(P18-P19)	P19
2(TIPO IPF)	A	-609	1074,9	-642,4	1115,17	-692,8
2(TIPO IPF)	B	-3778	2931	-4063	3190,72	-3755
2(LM71 EC1)		-2756	2369	-2969	2525	-2744
(LM71-SW2)		-3399	2353,5	-3616,45	2592	-3299

Como puede comprobarse el tren B de la IPF es mucho más desfavorable a efectos de cálculo global de flexión que el resto de trenes, aunque no se les afecte del factor de coeficientes de impacto.

Por esto se tomará para el cálculo este tren de cargas.

CORTANTE CON COEFICIENTE DINÁMICO (tn)							
	P16	P17	P17	P18	P18	P19	P19
2(TIPO A IPF)	-179	18,34	-184	149	-185	183,6	-183,6
2(TIPO B IPF)	-426	558	-597	583,3	-616	459	540
2(LM71 EC1)	340	441	-454	454	-462	323,27	415,71
(LM71-SW2)	-401	539	-549	549,97	-547	397	-523

Al igual que en el caso anterior se puede comprobar como condiciona el tren B de la IPF para el cortante, ya que el SW2 sólo es concomitante con el Local Model 71, pero no con 2SW2.

Dado que además el factor del coeficiente de mayoración por impacto es mayor en la IPF, 18 % que en la ECI, 0,3 %, y que el tren B de la IPF condiciona frente al resto se calcularán los efectos globales con este tren B, que puede actuar para las 2 vías.

Además frente al E.L.U. el SW2 sólo se afecta por $\gamma_f = 1,2$ mientras que el tren B de IPF por $\gamma_f = 1,5$.

F. EFECTO LAZO

Según IPF-75: $H_T = 5 \text{ t}$ para el conjunto de ambas vías, aplicada a cota superior del carril.

Según EC1: $H_T = 10,20 \text{ t}$ para el conjunto de ambas vías, aplicada a cota superior del carril

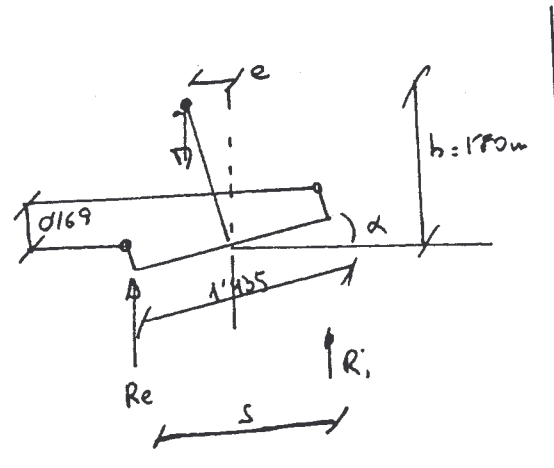
Es más desfavorable EC1.

No lleva coeficiente de mayoración dinámico.

Este efecto no será necesario considerando para el cálculo global al ser poco significativo, aunque su efecto debe añadirse al de la fuerza centrífuga.

G. EFECTO DEL PERALTE DE LA VÍA

El peralte provoca un desequilibrio en las reacciones de los carriles.



$$\sin \alpha = \frac{0,169}{1,80} = 0,0939$$

$$\alpha = 5,36^\circ$$

$$s = 1,80 \cdot \cos \alpha = 1,78 \text{ m}$$

$$e = 1,80 \cdot \sin \alpha = 0,169 \text{ m}$$

$$R_e = P \left(\frac{s}{2} + e \right) / s = 0,648 P$$

$$R_i = P \left(\frac{s}{2} - e \right) / s = 0,352 P$$

sin fuerza centrífuga

A efectos de reacciones se considera como un descentramiento de la carga de 0,212 m.

H. FUERZA CENTRÍFUGA

Según la IPF-75

$$F_c = Q \cdot \frac{V^2}{127 \cdot R}$$

Con $V = 200 \text{ km/h}$

$$R = 6000 \text{ m}$$

$$Q = 12 \text{ t/ml}$$

$$F_c = 12 \cdot \frac{(200)^2}{127 \cdot 6000} = 0,525 \text{ t/ml}$$

$$20,47 \text{ t}$$

Según el EC-1, para una velocidad de 350 km/h.

Se realiza la comprobación para varios casos:

a) $L = 1,6 \cdot 4 = 6,4 \text{ m}$. Correspondiente a 4 ejes de 25 t cada uno del tren LM 71 del EC-1

$$f = 0,73 \quad Q = 4 \cdot 25 = 100 \text{ t}$$

$$Q_{tk} = \frac{V^2}{127 \cdot R} (f \cdot Q) = \frac{350^2}{127 \cdot 6000} \cdot (0,73 \cdot 100) = 11,75 \text{ t}$$

Incluso en la hipótesis de que esta carga fuese resistida por una única pila, hipótesis muy conservadora, pues la rigidez del tablero reparte entre varias pilas, condiciona la carga repartida de IPF.

$$b) L = 10 \text{ m} \quad f = 0,63 \quad Q = 4 \cdot 25 + (10 - 4 \cdot 1,6) \cdot 8 = 128,8 \text{ t}$$

$$Q_n = 0,63 \cdot 128,8 \cdot \frac{350^2}{127 \cdot 6000} = 13,04 \text{ t} \gg 1,30 \text{ t/ml en los 10 m cargados, por lo que el reparto entre pilas provoca que no condicione.}$$

c) Suponemos 2 vanos cargados y, que conservadoramente que la pila central soporte la carga de la mitad de cada vano.

$$L = \frac{38 + 40,00}{2} = 39,00 \text{ m}$$

$$f = 0,385 \quad Q = 4 \cdot 25 + (39,00 - 4 \cdot 1,6) \cdot 8 = 360,8 \text{ t}$$

$$Q_n = \frac{0,385 \cdot 360,8 \cdot 350^2}{127 \cdot 6000} = 22,33 \text{ t} \quad 0,571 \text{ t/ml}$$

Que condiciona frente al valor del la IPF-75.

El tren SW0/SW2 no condiciona al ser $V \leq 80$ km/h.

Como se puede comprobar condiciona al EC1, y habrá que considerar para los efectos locales el reparto de la carga entre carriles de la acción combinada con el peralte.

$$\text{Para la IPF} \quad F_c = \frac{fQ \cdot V^2}{127 \cdot 6000} = \frac{0,385 \cdot 35^2}{127 \cdot 6000} = 0,52 \text{ Q}$$

$$M = F_c \cdot 1,8 = 0,094 \cdot Q$$

$$AR = \frac{M}{S} = \frac{0,094}{1,491} \cdot Q = 0,06315 \cdot Q$$

$$\text{Luego:} \quad \begin{cases} R_i = (0,648 - 0,0631) \cdot Q = 0,585 \cdot Q \\ R_e = (0,352 - 0,0691) \cdot Q = 0,415 \cdot Q \end{cases}$$

Acciones en cada carril por peralte más fuerza centrífuga.

I. 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)

$$F_a = 33 \text{ (KN/m)} \cdot L(m) \leq 1.000 \text{ KN}$$

LM71 y

SW

$$F_a = 1000 \text{ KN} = 102 \text{ t}$$

Fuerzas de frenado (por vía)

$$F_f = 20 \text{ (KN/m)} \cdot L(m) \leq 6.000 \text{ (KN)} \quad \text{LM71 y SW0}$$

$$F_f = 20 \cdot (140) = 2800 \text{ KN} = 280 \text{ t}$$

1/2)

$$F_f = 35 \text{ (KN/m)} \cdot L(m) \quad \text{con } L = 50 \text{ m} \quad \text{SW2 (ponderado por$$

$$F_f = 35 \cdot 50 = 1750 \text{ KN} = 178 \text{ t}$$

La fuerza de frenado se transmitirá a la pila fija.

Se supondrá frenado simultáneo en las 2 vías.

$$F_T = 280 \cdot 2 = 560 \text{ t}$$

Se reducirán al 50% si se considera concomitantes con la fuerza centrífuga.

J. EFECTOS DEL VIENTO

Para calcular los efectos de éste en la estructura se va a seguir la IAP-97.

– Velocidad de referencia:

$$V_{ref} = 28 \text{ m/s}$$

– Velocidad de cálculo:

$$V_c = C_t \cdot C_r \cdot C_z \cdot C_g \cdot V_{ref}$$

C_t = factor de topografía = 1,00

C_r = factor de riesgo (para considerar un periodo de retorno de 100 años) = 1,04

C_z = factor de altura

Entorno tipo II:

$$k_z = 0,19$$

$$z_0 = 0,05 \text{ m}$$

$$z_{min} = 4 \text{ m}$$

$$\text{como } z \geq z_{min} \quad C = k_z \ln \left(\frac{z}{z_0} \right)$$

$$C_z = 0,19 \cdot \ln \left(\frac{z}{0,05} \right) = 1,13 \quad (z = 19,5 \text{ m})$$

$$C_g = \sqrt{\left(1 + \frac{7k_z}{C_z \cdot C_t}\right)} = \sqrt{\left(1 + \frac{7 \cdot 0,19}{1,1,13}\right)} = 1,48$$

Velocidad de cálculo: $V_c = C_t \cdot C_r \cdot C_z \cdot C_g \cdot V_{ref} =$
 $1,00 \cdot 1,04 \cdot 1,13 \cdot 1,48 \cdot 28 \text{ m/s} = 48,30 \text{ m/s}$

· Empuje del viento

$$F = C_d \cdot A \left(\frac{1}{2} \rho V_c^2 \right)$$

$$\frac{1}{2} \rho V_c^2 = \frac{1}{2} \cdot 1,25 \cdot 48,30^2 = 1456 \text{ KN/m}^2 = 0,1456 \text{ t/m}^2$$

· Viento en el tablero

(En lo siguiente se toma conservadoramente el canto máximo; finalmente en los cálculos de pila se toma el valor real asignado a cada punto del eje su canto correspondiente).

– Vacío

- Zona de vigas artesas

$$A = \sum \text{Altura tablero } (1 + \eta_i) + \text{balasto y traviesas} + + \\ 4 \text{ carriles} + 2 \text{ barandillas}$$

Coeficiente de ocultamiento de las 2 artesas.

$$\text{Espaciamiento relativo} = \frac{4,58}{2,55} = 1,79 \gg \eta = 0,18$$

$$A = 0,3 + 2,55 \cdot (1 + 0,18) + 0,80 + 4 \cdot 0,18 + 2 \cdot 0,5 = 5,83 \text{ m}^2$$

Se ha considerado barandilla de 0,5 m² opacas.

– Estructura cargada

- Zona de vigas artesas

$$A = \sum \text{Altura tablero } (1 + \eta_i) + \text{balasto y traviesas} + + \\ 4 \text{ carriles} + 2 \text{ trenes}$$

Coeficiente de ocultamiento de 2 trenes. Con h=3,5 m

$$\text{Espaciamiento relativo} = \frac{3,3}{3,5} = 0,94 \gg \eta = 0,097$$

$$A = 0,3 + 2,55 \cdot (1 + 0,18) + 0,8 + 4 \cdot 0,18 + + \\ 3,5 \cdot (1 + 0,097) = 8,67 \text{ m}^2$$

– Coeficiente de arrastre

$$C_D = 2,5 - 0,3 (B/h_{\text{heq}})$$

– Vacío

- Zona de vigas artesas

$$C_d = 2,5 - 0,3 \left(\frac{14}{5,83} \right) = 1,78; \quad q = 5,83 \text{ m}^2 \cdot 1,78 \cdot 0,1456 \text{ t/m}^2 =$$

$$1,510 \text{ t/ml}$$

– Cargado

- Zona de vigas artesas

$$C_d = 2,5 - 0,3 \left(\frac{14}{8,67} \right) = 2,016; \quad q = 8,67 \text{ m}^2 \cdot 2,016 \cdot 0,1456 \text{ t/m}^2 = 2,54$$

$$\text{t/ml}$$

Viento transversal al tablero en estructura vacía = 1,510 t/m en zona de 2 artesas.

Viento transversal al tablero en estructura cargada = 2,54 t/ml en zona de 2 artesas.

Viento longitudinal al tablero = 25% de los valores anteriores

K. EFECTOS TÉRMICOS

Dilatación / Contracción térmica uniforme

De acuerdo a IAP:

$$\Delta T = K Z^a h^b s^c$$

$$K = 29,13$$

$$Z = 3 \text{ (zona III o IV)}$$

$$a = 0,301$$

$$h = 2,85$$

$$b = -0,148$$

$$s = 1$$

$\Delta T = 34,72^\circ \Rightarrow$ Para el cálculo se usará la mitad al ser este valor de la variación máxima absoluta que tendrá el puente, y se supone que se ejecutará a temperaturas medias.

$$\Delta T = \pm 17,36^\circ \text{C}$$

Gradiente térmico

De acuerdo a las Bases de Cálculo, el gradiente térmico lo evaluaremos con IAP. No obstante, este cálculo resultará excesivamente conservador, ya que no considera la limitación al gradiente térmico que supone el balasto.

En cualquier caso, con IAP:

$$\Delta T_s = K_1 K_2 K_3 \Delta T_{sref}$$

$$K_1 = 0,85$$

$$K_2 = 1,09$$

$$K_3 = 0,90 \text{ (10 cm pavimento)}$$

$$\Delta T_{sref} = 9^\circ$$

$$\text{luego } \Delta T_s = 7,50^\circ \text{C}$$

L. ACCIONES INDIRECTAS DEBIDAS AL PRETENSADO Y EFECTOS REOLÓGICOS DIFERIDOS

Se tienen en cuenta, calculando su valor a partir de los coeficientes de fluencia y retracción de la EHE.

Se tendrá en cuenta el proceso de ejecución y la secuencia aproximada de tiempos de montaje para la obtención de la edad de los hormigones en el momento de la aplicación del pretensado y demás acciones de carácter permanente.

Las deformaciones impuestas se estiman tomando en consideración la rigidez de los aparatos de apoyo. A estos efectos se considerará para el teflón un coeficiente de rozamiento de:

$$\mu = 0,01 \text{ Efectos favorables}$$

$$\mu = 0,05 \text{ Efectos desfavorables}$$

M. DESCARRILAMIENTO DE VEHÍCULOS FERROVIARIOS

La hipótesis de descarrilamiento es una situación accidental a comprobar separada e independientemente del resto de acciones distintas de las cargas permanentes.

Se distinguen dos situaciones de diseño:

a) Análisis local de elementos

2 cargas verticales de 5 T/m en 6,4 m. separadas 1,4 m. entre sí actuantes a 2,20 m máximo en cada lado del eje de la vía.

b) Análisis de estabilidad (equilibrio)

Carga de 8 t/m en 20 m. en borde de voladizo, ó a 2,20 m. máximo cada lado del eje de la vía.

Coeficientes de ponderación:

Mayoración de acciones	1,00
Minoración resistencias	1,30 en hormigón 1,00 en acero

N. ACCIONES SÍSMICAS

Según NCSE-94.

La aceleración sísmica básica será menor de 0,04 g y la de cálculo:

$$a_c = \rho a_b$$

ρ = coeficiente adimensional de riesgo

$$T = 100 \text{ años } \rho = 1,3$$

$$a_c = 1,3 \cdot 0,04 = 0,052 \text{ g} < 0,06 \text{ g}$$

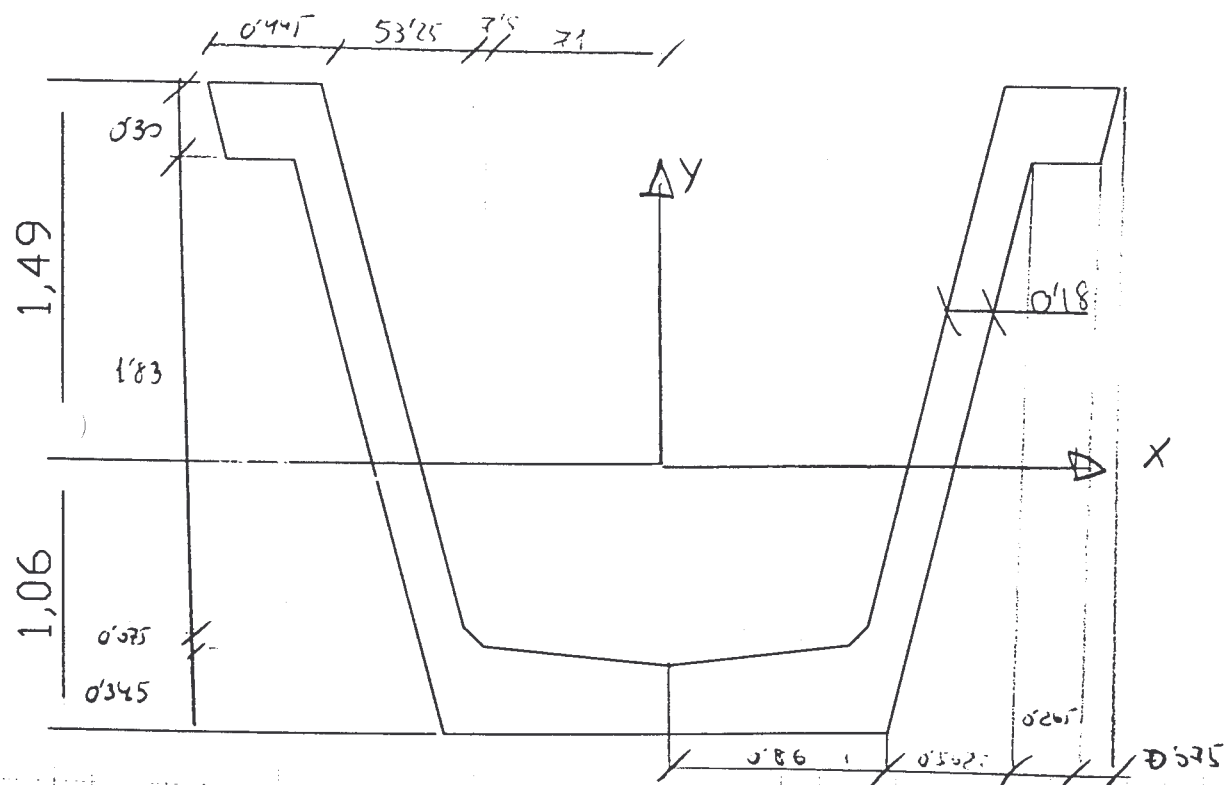
Según esta norma para aceleraciones de cálculo menores de 0,06 g no es necesario tener en cuenta el efecto del sismo.

2.2.3. Tablero. Cálculo longitudinal

2.2.3.1.- Constantes estáticas

En este apartado se tiene como objeto el cálculo de las constantes estáticas de las secciones brutas y en su caso con la contribución de los aligerados.

- VIGA PREFABRICADA



$$A = 1.5269 \text{ m}^2$$

$$E = 338219 \text{ kg/cm}^2$$

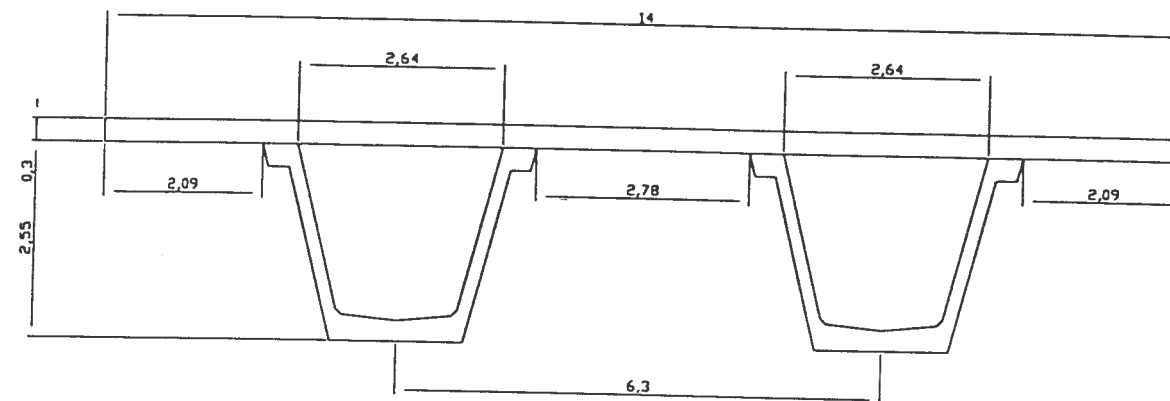
$$I_x = 1.1943 \text{ m}^4$$

$$I_x = \frac{1}{3} (2.55 \cdot 0.18^3 + 2) + \frac{1}{3} (0.33 \cdot 0.38^3 + 2) = 1.022 \text{ m}^4 \quad (0.066 \text{ m}^4 \text{ aligerados} + 2 \text{ m}^4)$$

$$I_x = 1.6112 \text{ m}^4$$

$$A \cdot E = 285773 \text{ kg/m}^2$$

- CÁLCULO DE ANCHOS EFICACES



- En centro de vano $\Rightarrow$ Criterio REX

$$L_{\text{vanes}} \Rightarrow 0.7 \cdot 400 = 280 \text{ m}$$

$$\psi_{\text{rel},1} = \frac{1}{1 + 6.4 \cdot (b/L)^2}$$

$$b = 2.09 \text{ m} \quad \psi_{\text{rel},1} \approx 1.00$$

$$b = 1.32 \text{ m} \quad \psi_{\text{rel},1} \approx 1.00$$

$$b = 1.39 \text{ m} \quad \psi_{\text{rel},1} \approx 1.00$$

No hay que considerar anchos eficaces en centro de vano.

- En pilé tipo 3 $\Rightarrow L = 0.25 (40 + 33.7) = 19.42 \text{ m}$ (Criterio EHE)

$$b = 2.09 \text{ m} < l_{\text{ef}}$$

$$b = 1.32 \text{ m} < l_{\text{ef}}$$

$$b = 1.39 \text{ m} < l_{\text{ef}}$$

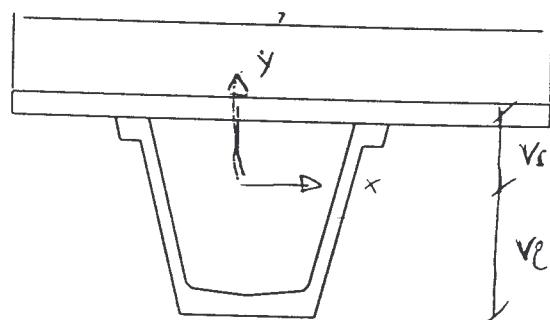
$$b = 0.785 \text{ m} < l_{\text{ef}}$$

$$l_{\text{ef}} = \frac{L}{10} = 1.95 \text{ m}$$

No hace falta considerar anchos eficaces.

IDEAM

- Sección homogénea: $E = 285770 \text{ kg/cm}^2$



$$V_s = \frac{1.52 \cdot 1.18 \cdot 1.79 + 0.15 \cdot 0.70 \cdot 0.70}{1.52 \cdot 1.18 + 0.39 \cdot 7.00} = 0.905 \text{ m} \quad V_i = 1.945 \text{ m}$$

$$A = 1.52 \cdot 1.18 + 0.30 \cdot 7.00 = 3.893 \text{ m}^2$$

$$I_x = 1.1943 \cdot 1.18 + \frac{1}{12} \cdot 7 \cdot 0.3^3 + 1.52 \cdot 1.18 \cdot (0.905 - 1.79)^2 + 0.3 \cdot 7 \cdot (0.15 - 0.905)^2 = 4.0268 \text{ m}^4 / \text{caja}$$

Is (se adopta la mitad de las 2 secciones) $\Rightarrow$

$$= \frac{1}{2} \left(\frac{1}{12} \cdot 1.43 \cdot 0.3 + 1.611 \cdot 2 \cdot 1.18 + 1.526 \cdot 1.18 \cdot (3.15)^2 \right) = 45.13 \text{ m}^4 / \text{caja}$$

$$I_{\text{total}} \text{ por caja} = \frac{4A^2}{\left(\frac{ds}{s} \right)} = \frac{4 \cdot 57568^2}{\frac{2.52}{0.18 \cdot 1.18} + \frac{6.52}{0.18 \cdot 1.18} + \frac{1.6}{0.21 \cdot 1.18} + \frac{2.88}{0.30}} = 3.41 \text{ m}^4$$

IDEAM

Características de la sección: (Homogénea $E = 285770 \text{ kg/cm}^2$)

- Sección caja:

$$A = 1.801$$

$$I_{\text{caja}} = 1.41 \text{ m}^4$$

$$I_{\text{caja}} \text{ total} = 1.901 \text{ m}^4$$

- Sección completa / por caja:

$$A = 3.893 \text{ m}^2$$

$$I_{\text{caja}} = 4.0268 \text{ m}^4$$

$$I_{\text{caja}} \text{ total} = 45.13 \text{ m}^4$$

$$J = 3.41 \text{ m}^4$$

2.2.3.2. Modelo de cálculo

A continuación se expone el modelo de cálculo esquematizado de la siguiente manera:

a) - Nodos y elementos longitudinales.

b) - Nodos y elementos transversales.

c) - Estado de cargas.

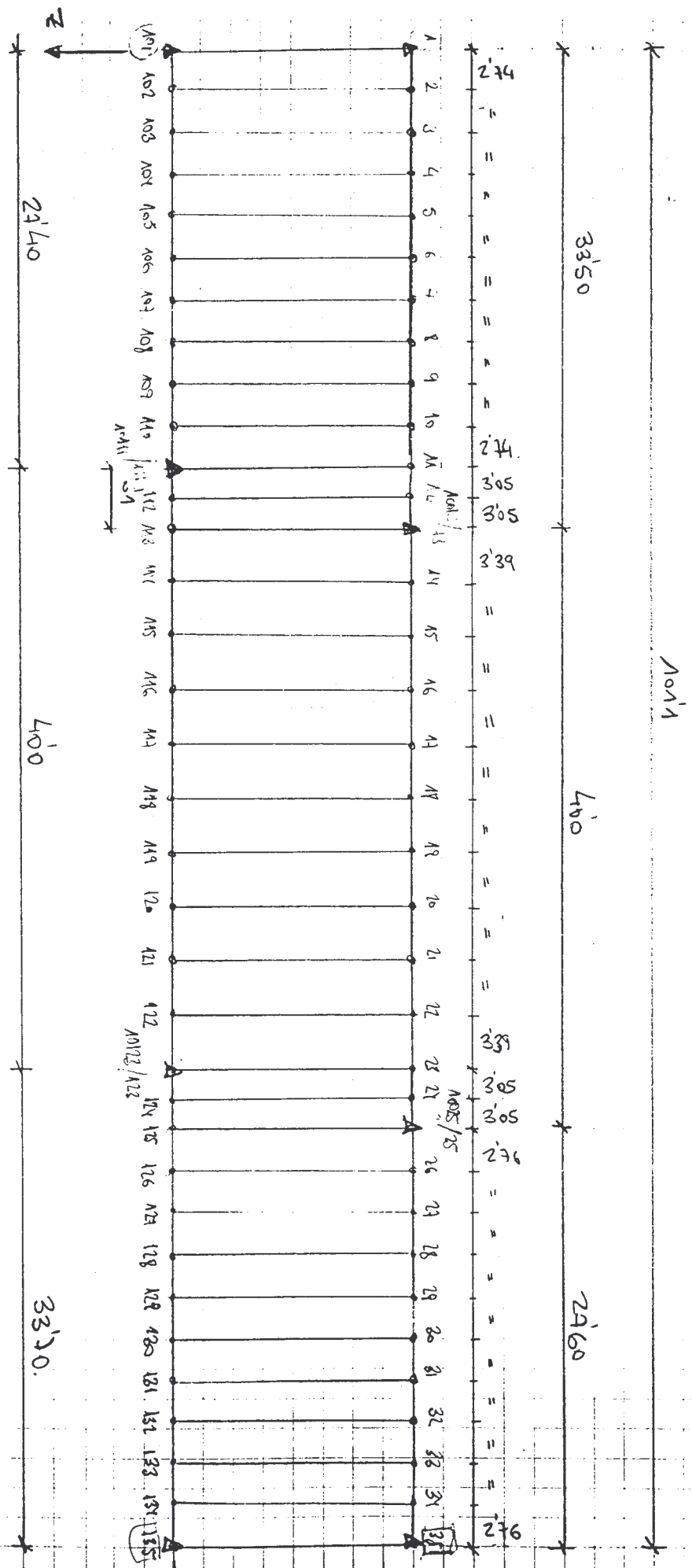
d) - Fases constructivas con estados de carga.

Los listados de entrada de datos se incluyen al final del anexo.

Al final del anexo se incluye un cálculo que determina como fue usado para el cálculo longitudinal el tipo de la IPF.

a) Nodos y elementos longitudinales.

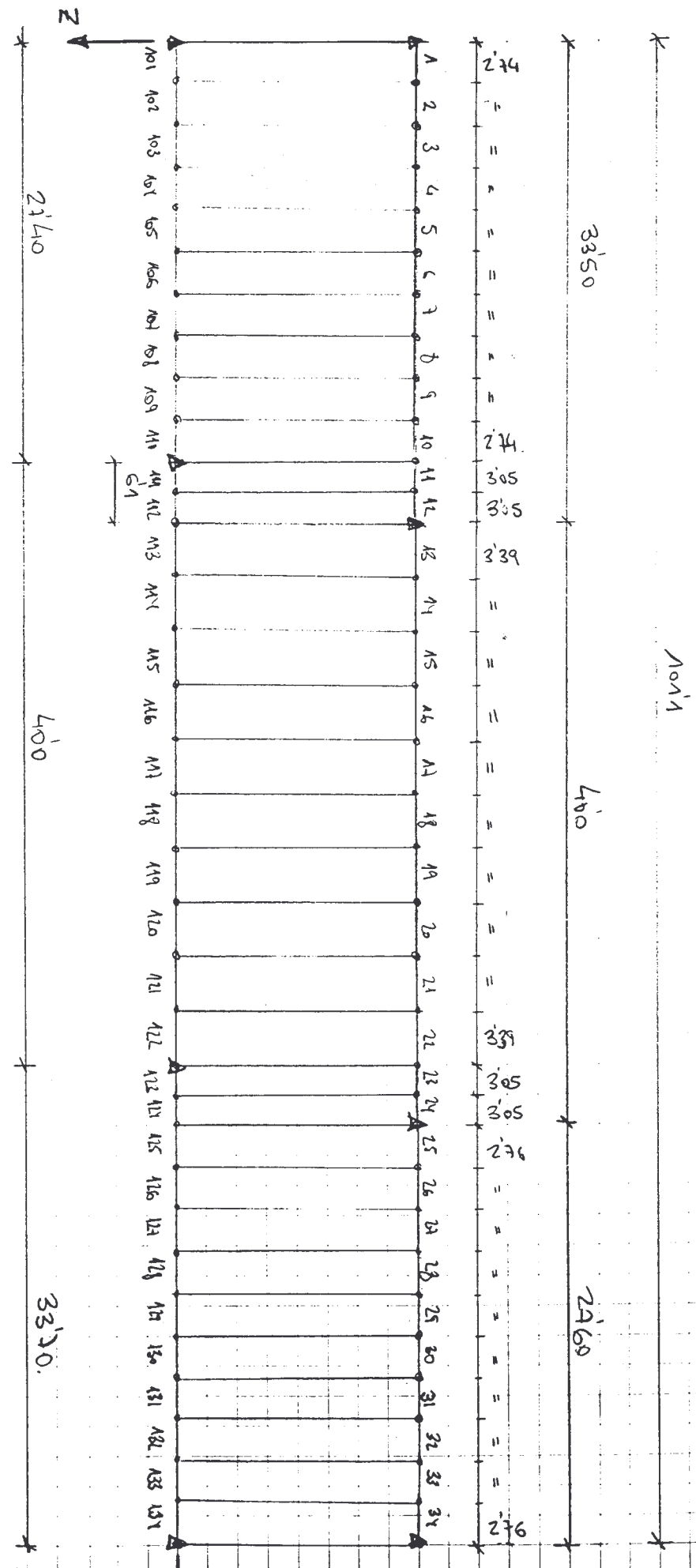
NODOS
LONGITUDINAL



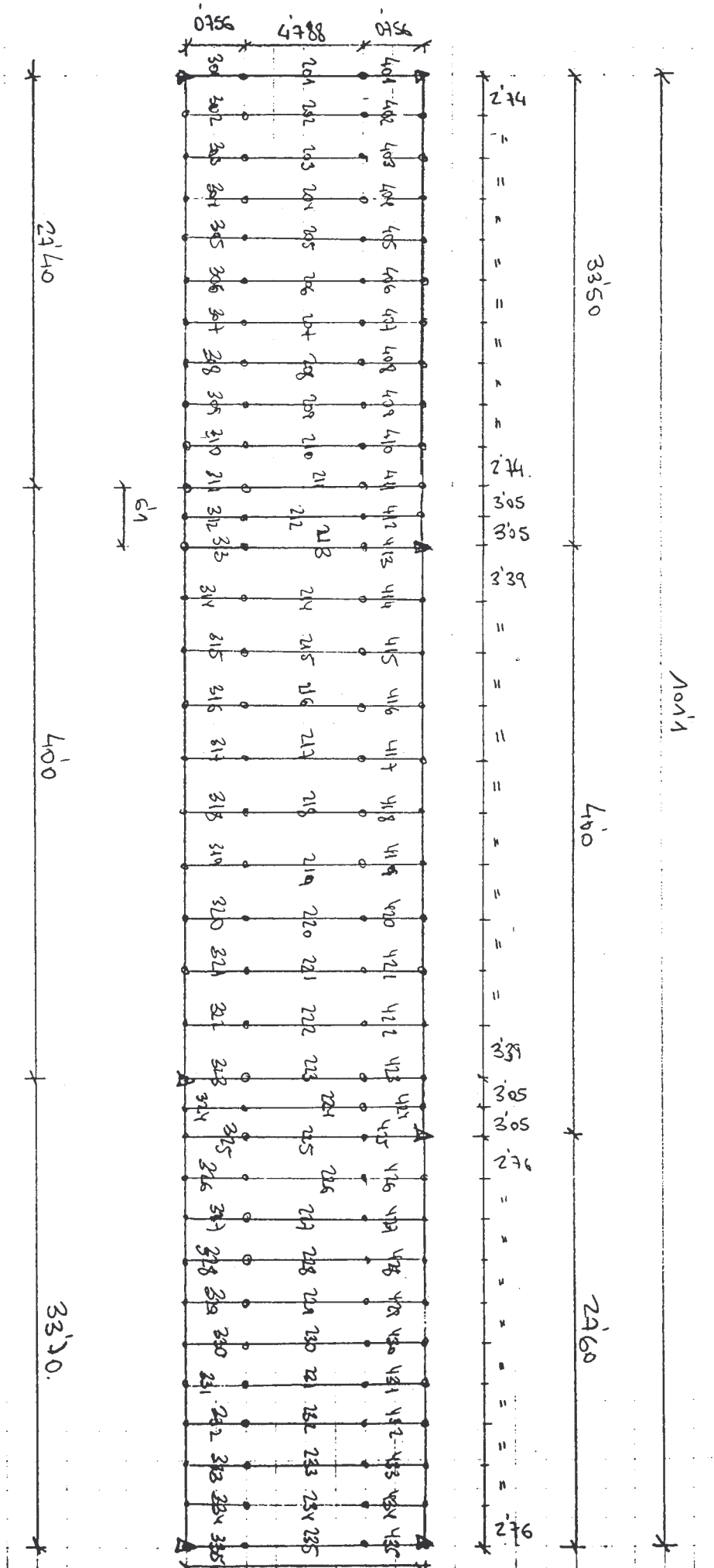
ELEMENTOS
LONGITUDINALES

Grupos:

- ①: A A 34 CALT. 120.
- ②: 10 1 A 134 CALT. 120.
- ③: Bases transversales



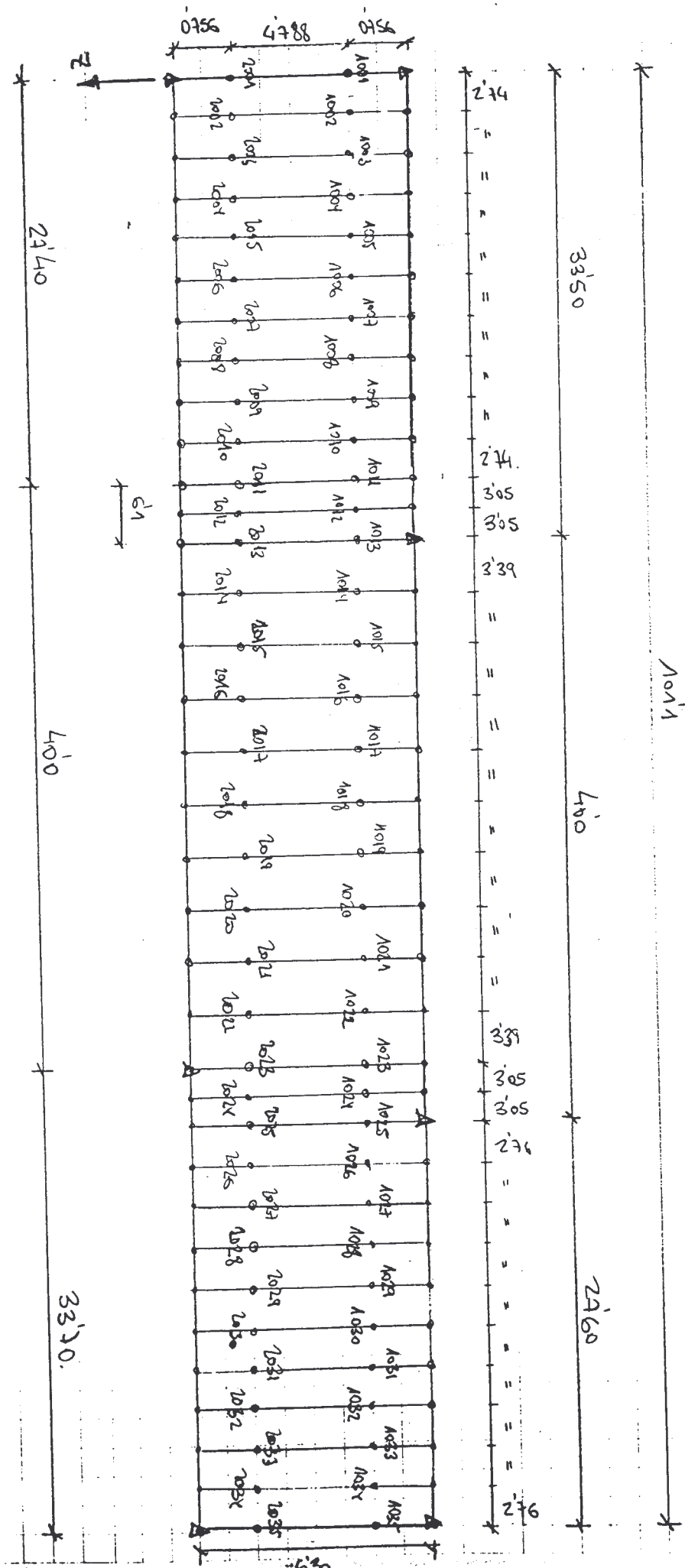
ELEMENTOS TRANSVERSALES



b) Nodos y elementos transversales

Nodos

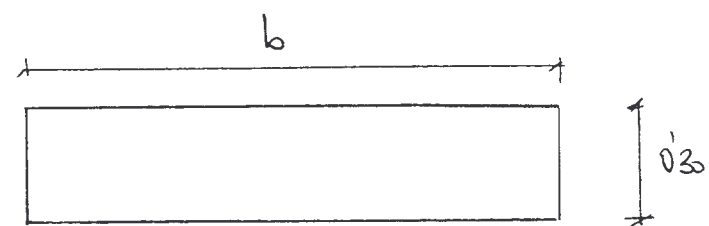
TRANSVERSAL



A continuación se establecen los elementos transversales utilizando el criterio del libro de "Construcción Mixta" de Luis Martínez Galván.

Elementos 401 A 435 y 201 A 335 $\Rightarrow$ rígidos

Elementos de 201 A 235 se agrega a continuación las características siendo:



$$I_F = \frac{1}{12} b \cdot 0.3^3$$

$$I_T = \frac{1}{12} 0.3 \times b^3$$

$$J = \frac{0.3^3 \times b}{6} \times \frac{b^*}{b_1} \quad \text{donde} \quad b^* = 4.788 \text{ m} \quad b_1 = 3.41 \text{ m}$$

VIADUCTO V-1
$$\begin{aligned} h_{losa} &= 0.3 \text{ m} \\ b^* &= 4.788 \text{ m} \\ b &= 3.41 \text{ m} \end{aligned}$$

TIPO	ELEMENTOS	b [m]	I _F [m ⁴]	I _T [m ⁴]	J [m ⁴]	A [m ²]
A1	201	1.37	0.00308	0.0643	0.00866	0.411
A2	202A210	2.74	0.00617	0.5143	0.01731	0.822
A3	211	2.895	0.00651	0.6066	0.01829	0.8685
A4	212,224	3.05	0.00686	0.7093	0.01927	0.915
A5	213,223	3.22	0.00725	0.8347	0.02035	0.966
A6	214,222	3.39	0.00763	0.9740	0.02142	1.017
A7	225	2.905	0.00654	0.6129	0.01836	0.8715
A8	226A234	2.76	0.00621	0.5256	0.01744	0.828
A9	235	1.38	0.00311	0.0657	0.00872	0.414

Valores homogeneizados a hormigón de losa ($E_{losa}=297.788,8 \text{ Kp/cm}^2$)

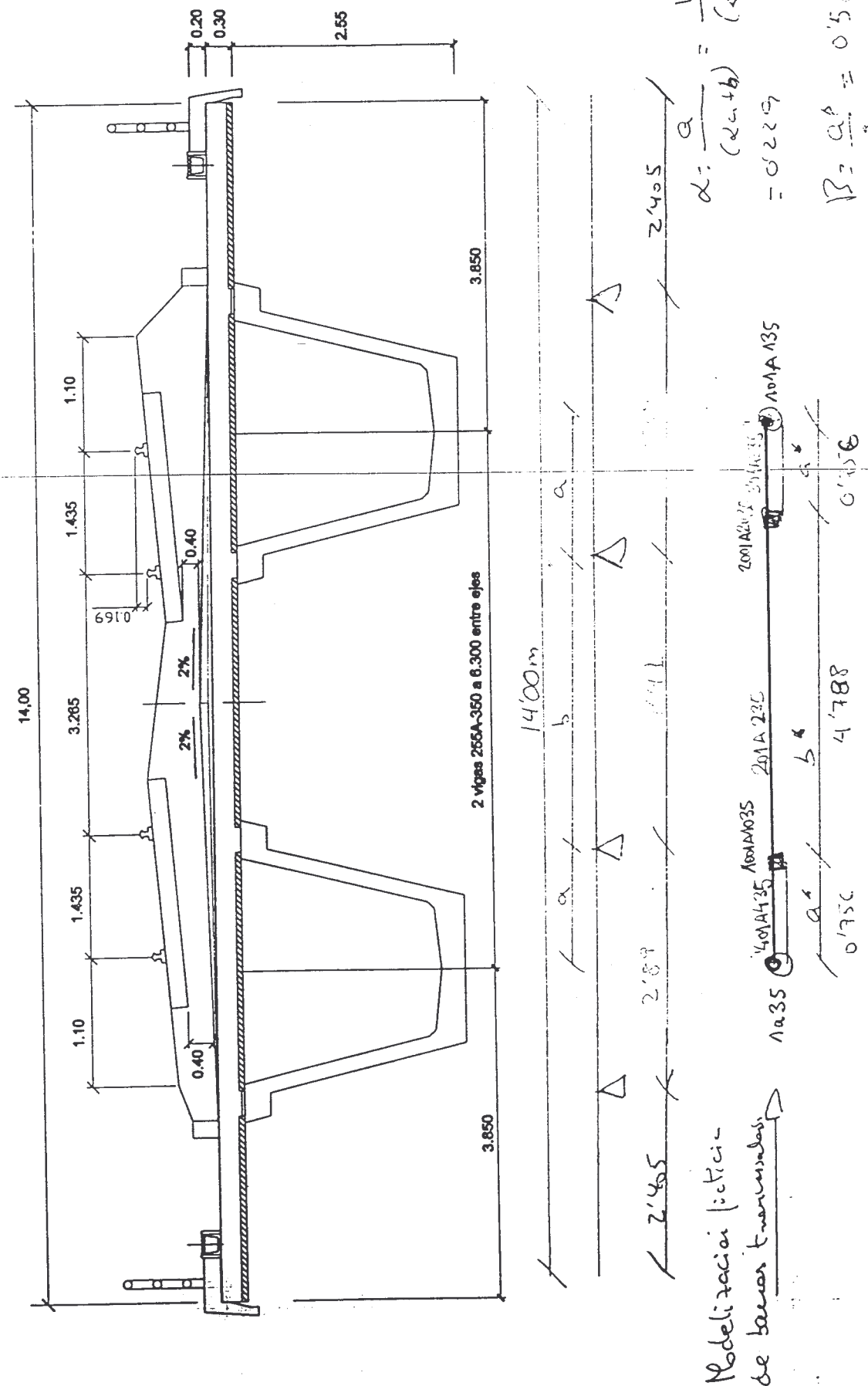
$$I_F = \frac{1}{12} b \times 0.3^3$$

$$I_T = \frac{1}{12} 0.3 \times 6^3$$

$$J = \frac{b^*}{b_1} \times \frac{0.3 \times b}{6}$$

$$b^* = 4.288 \text{ m}$$

$$b_1 = 3'42. \text{ m}$$



c) Extracción de cargas

LOS ESTADOS DE CARGA INTRODUCIDOS SON:

- PPVIGAS → Peso propio vigas

"PPVIGAS"

$$PP_{vigas} = 1'53 \times 2'50 \text{ tn/m}^3 = 3'825 \text{ tn/m} \text{ en elementos}$$

1A34
101A134

- PESO PROPIO LOSA Las acciones de este estado son obtenidas del modelo de cilindro transversal por espesor losa de "PPLASA"

1A34 VIGA IZQUIERDA

$$P_y = -5'25 \text{ tn/m}$$

$$m_x = -2'58 \text{ mt/m}$$

101A134 VIGA DERECHA

$$P_y = -5'25 \text{ tn/m}$$

$$m_x = 2'58 \text{ mt/m}$$

- CARGA MUERTA MÁXIMA

"CHmax"

1A34 VIGA IZQUIERDA

$$P_y \text{ (tn/m)}$$

$$m_x \text{ (tn-m/m)}$$

$$-11'79$$

$$2'01$$

101A134 VIGA DERECHA

$$-13'06$$

$$-1'02$$

- GRADIENTE "GRN"

$\Delta T = 750^{\circ}\text{C}$ en barras 1A34 y 101A134

- SCUPASEOS $\rightarrow$ Para simplificar:

"SCUPASEOS DERE" 101A135

Grupo 2

$$F_y = -0.80 \text{ tn/m}$$

$$M_x = 2.41 \text{ tn.m/m}$$

"SCUPASEOS IZQ" 1A35

Grupo 1

$$F_y = -0.80 \text{ tn/m}$$

$$M_x = -2.41 \text{ tn.m/m}$$

- ENVOLVENTES DE TRENES $\Rightarrow$

"POS DER"

"POS DER D"
"POS DER I"

"POS DER EXT"

"POS DER EXT D"
"POS DER EXT I"

"POS DER INT"

"POS DER INT D"
"POS DER INT I"

"POS IZQ"

"POS IZQ D"
"POS IZQ I"

"POS IZQ EXT"

"POS IZQ EXT D"
"POS IZQ EXT I"

"POS IZQ INT"

"POS IZQ INT D"
"POS IZQ INT I"

A continuación se adjunta el análisis de las distintas posiciones del vehículo pesado realizado para el cálculo del tablero del viaducto V-2 de Santa Oliva.

Al tratarse de secciones transversales idénticas y longitudes de vanos centrales y laterales similares se adopta dicho análisis como válido para el cálculo de la estructura Viaducto V-1.

La conclusión de este análisis es que el peor tren de sobrecargas es el de ripado interior desde el punto de vista de análisis transversal de los alfileres el efecto global de variación de descargas de los vigas con el local de flexión transversal

Desde el punto de vista longitudinal el ripado peor es el exterior pero se tendrá en cuenta este efecto multiplicando los esfuerzos obtenidos con el tren de ripado interior por el coeficiente de 1.08 (rebaso de esfuerzos obtenidos con ripado interior y exterior).

ANÁLISIS DE LA POSICIÓN PESMA DEL VEHICULO PESADO EN LA ESTRUCTURA V-2.

Por el caso de la travesía se introducen travesías de 10 t/m para cada uno de las 6 distintas posiciones de los travesías, con ello se demuestra que es la posición condicionante tanto para la travesía en el derecho como para la travesía en el izquierdo,

Las cargas introducidas son las de la siguiente tabla multiplicadas por 1.08.

Del estudio que se incluye a continuación se deduce que el travesía condicionante para el cálculo de la losa son DERINT e IZQINT, para el cálculo longitudinal no es la condicionante pero, no obstante, para este cálculo se multiplica por 1.08 ambos travesías, para tenerlo en cuenta.

- Descripción introducción de carga de travesía.

Factores para introducir las cargas de travesía

		P (tn/m)	m (ntn)
"-POS DER"			
Grupo 1 - IZQ	"POS DER I"	+0.06	-0.13
Grupo 2 - DER	"POS DER D"	-1.06	-0.82
"-POS DER EXT"			
Grupo 1 - IZQ	"POS DER EXT I"	+0.07	-0.16
Grupo 2 - DER	"POS DER EXT D"	-1.07	-0.77
"-POS DER INT"			
Grupo 1 - IZQ	"POS DER INT I"	+0.04	-0.08
Grupo 2 - DER	"POS DER INT D"	-1.04	-1.03
"-POS IZQ"			
Grupo 1 - IZQ	"POS IZQ I"	-1.03	1.11
Grupo 2 - DER	"POS IZQ D"	0.03	0.06
"-POS IZQ EXT"			
Grupo 1 - IZQ	"POS IZQ EXT I"	-1.06	0.93
Grupo 2 - DER	"POS IZQ EXT D"	0.06	0.12
"-POS IZQ INT"			
Grupo 1 - IZQ	"POS IZQ INT I"	-0.98	1.23
Grupo 2 - DER	"POS IZQ INT D"	0.02	-0.09

En cada caso la carga generada de travesía se introduce multiplicada por estos factores

Fluentes flectores en viga Longitudinales: (mts)

	DER	DER EXT	DER INT	IZQ	IZQ INT	IZQ EXT
Ht Der	577'5	606'3	548'85	95	125'92	96'81
Ht IZQ	133	112'25	153'66	524	478'76	530'40

A priori parece que condiciona el paso de tres
excéntricos pero hay que tener en cuenta que lo
que no es el paso de 1 tra sino de 2 tra:

	DER EXT + IZQ EXT	DER INT + IZQ INT
Ht Der	702'85 mts	680 mts
Ht IZQ	642'65 mts	632'42 mts
	DER EXT + IZQ INT	DER INT + IZQ EXT
Ht Der	732'27	645'7
Ht IZQ	591	682'06

De esta manera se deduce que para el cálculo longitudinal
se puede utilizar $DER INT + IZQ INT$ multiplicado por
los siguientes factores:

$$DER INT \times (732/680 = 1'07)$$

$$IZQ INT \times (682/632 = 1'08)$$

Contantes en viga Longitudinales: (tn)

	DER EXT	DER INT	IZQ EXT	IZQ INT
1	-65	-14	-85	-81
10017	16	31'24	120	115
11	27	30	127	140
10023	14'4	30	165	156
23	0	17	-164	-155'7
10035	23'30	39	182'5	166
35	1'28	-16'95	-176	-167
47	1'58	13'21	115	109
101	-121'9	-110'	-64	-41
10110	186'8	169	19	21'99
113	-181'4	-166	-35	-36
10125	183'9	166	19	21
125	-188'7	-173	-37	-37'6
10137	179'4	163	16'9	18'49
137	-176'05	-141	-38	-38
147	105'48	96'8	18'63	19

$$DER EXT \approx 1'07 \cdot DER INT$$

$$IZQ EXT \approx 1'08 \cdot IZQ INT$$

"LTORSION" El presente estado tiene en cuenta la liberación de la torsión en apoyos en fase 4.

Nudo.	PPLF2	PPLF3	"LTORSION"
1	3'01.	3'195.	3'496
13	4'561	7'00	1'15'61
25	4'3'07	3'460.	7'7'67
35	3'20	2'499.	2'8'19
101	-8'18	-2'4'81	-2'7'99
111	-4'2'94	-3'5'36	-7'8'3.
123	-4'5'66	-7'1'14	-1'16'8
135	-3'0	-3'2'19	-3'5'19.

A continuación se adjuntan los listados de reacción de dicha fase.

Peso propio de los cajones en fase 1.

1; 1PPCF1

Coef. exc:

Nudo	X	Fy (T)	Mx (Tm)
1	0.00	64.07	0.00
13	0.00	76.51	0.00
25	0.00	52.79	0.00
35	0.00	52.79	0.00
10013	0.00	64.07	0.00
10025	0.00	76.51	0.00
101	0.00	52.40	0.00
111	0.00	76.50	0.00
123	0.00	64.45	0.00
135	0.00	64.45	0.00
10111	0.00	52.40	0.00
10123	0.00	76.50	0.00

Peso propio de losa hormigonada en fase 2

[1; 1]PPL

Def. exc:

Nudo	X	Fy (T)	Mx (Tm)
1	0.00	0.27	3.01
13	0.00	99.03	45.61
25	0.00	93.86	43.07
35	0.00	-0.05	3.20
101	0.00	-0.12	-3.18
111	0.00	93.58	-42.94
123	0.00	99.15	-45.66
135	0.00	0.28	-3.00

Peso propio de losa hormigonada en fase 3.

[1; 1]PPLF3

Coef. exc:

Nudo	X	Fy (T)	Mx (Tm)
1	0.00	59.44	31.95
13	0.00	120.95	70.00
25	0.00	110.14	34.60
35	0.00	47.44	24.99
10013	0.00	0.00	0.00
10025	0.00	0.00	0.00
101	0.00	47.01	-24.81
111	0.00	109.25	-35.36
123	0.00	121.47	-71.14
135	0.00	59.86	-32.19
10111	0.00	0.00	0.00
10123	0.00	0.00	0.00

d) Fases constructivas con estados de carga.

El cálculo se estructura en 3 fases que corresponden a la construcción del puente:

- FASE 1: Colocación de vigas, incluyendo la tensión en pila. En dicha fase nos encontramos con las vallas isotónicas con sección cajón de losa, así los estados a considerar son:

"PPCF1" = peso propio de los cajones en fase 1

"PRETFL" = pretensado en fase 1

PRETFLa = calz. derecha (grupo 2)

PRETFLb = calz. izquierda (grupo 1)

- Fase 2: Se da continuidad a las vigas y se horizontaliza la zona de losa sobre pila indicada en el croquis que se incluye al final del apartado.

"PPLF2" = peso de losa horizontalizada en fase 2

"GRADF2" = gradiente en fase 2

PPLF2 incluye los elementos:

10, 11, 12, 13, 14, 15 / 22, 23, 24, 25, 26, 27.

108, 109, 110, 111, 112, 113.

120, 121, 122, 123, 124, 125.

FASE 3 : Se hace el prefuerzo sobre la pila y posteriormente se hormigona el resto de losa. La acción son:

- En los elementos horizontales anteriormente $\rightarrow$ capón
- Beto longitudinal $\rightarrow$ viga
- Travesaños solo activados los 210, 211, 212, 213 y 214, 222, 223, 224, 225 y 226

Los estados de carga son los siguientes:

"PPLF3" pero propio de losa hormigonada en fase 3
Elementos 1 a 9, 16 a 21, 28 a 34, 101 a 107

114 a 119; 126 a 134

"PRETF3C" = calado derecho (grupo 2)

"PRETF3D" = calado izquierdo (grupo 1)

"GRAD F3"

FASE 4 : Esta fase es con la geometría final del puente y los siguientes estados:

"PPVIGAS" pero propio de vigas sobre estructura final.

"PPLOSA" pero propio de losa sobre estructura final

"CHmax" carga muerta máxima

"CHmin" carga muerta mínima

"GRAD" gradiente sobre estructura cancelada.

"SCUPASEG IZQU" pares en vigas numeradas del 1 a 34

"SCUPASEG DERE" pares en vigas numeradas del 101 a 134.

"IZQINT2" para frenado hacia el interior en elementos del 1 a 34

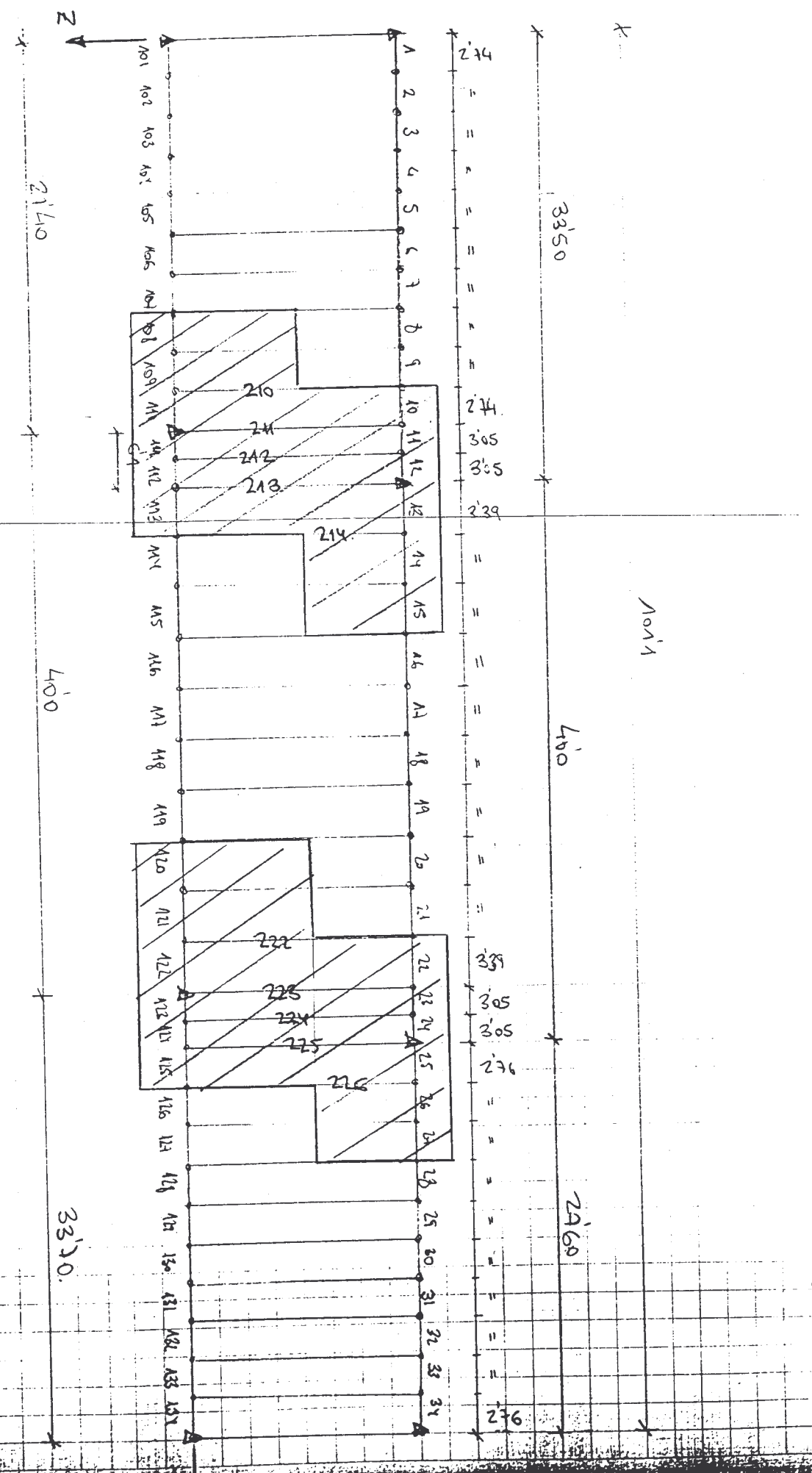
"DERINT2" para frenado hacia el interior en elementos del 101 a 134

"PRET" pretensa sobre estructura final.

INF {
PRETFA = es el pretensado PRETF1a sobre estructura total
PRETFB = es el pretensado PRETF1b sobre estructura total

SUP {
PRETFC = pretensado PRETF3C sobre estructura total
PRETFD = pretensado PRETF3D sobre estructura total

ZONA DE LOSA
 SOBRE PILA HORMIGÓ
 NADA EN FASE 2



IDEAM

DETERMINACIÓN DEL TREN CONDICIONANTE A
CALCULO LONGITUDINAL DEL TABLERO

En el presente apartado se adjunta el análisis comparativo de los 4 traves tipos de las normas IPF y EC-1 realizados para la estructura V-1 del Viaducto de Santa Oliva.

Al tratarse de secciones transversales idénticas y longitudinales de vanos centrales y laterales similares se adopta dicho análisis como válido para el cálculo de la estructura del Viaducto V-1.

Se llega a la conclusión mediante un modelo sencillo que para el cálculo longitudinal el tren condicionante es el tren B IPF.

COMPARACIÓN TRAVES DEL LA IPF Y EC-1 VIADUCTO V-1.

A continuación mediante un modelo simplificado se estudió anal de la traza es condicionante; el tren A de la IPF y el tren B de la IPF, el LM71 o el SW23.

$E = 2857700 \text{ kg/m}^2$	$I = 4'03 \text{ m}^4$	$A = 3'253 \text{ m}^2$
------------------------------	------------------------	-------------------------

TRAVES A IPF, O, C, R:

1) Tren tipo A IPF: Pares de 3 cajas de 30m separadas entre sí 1'5m.

2) Tren tipo B IPF:

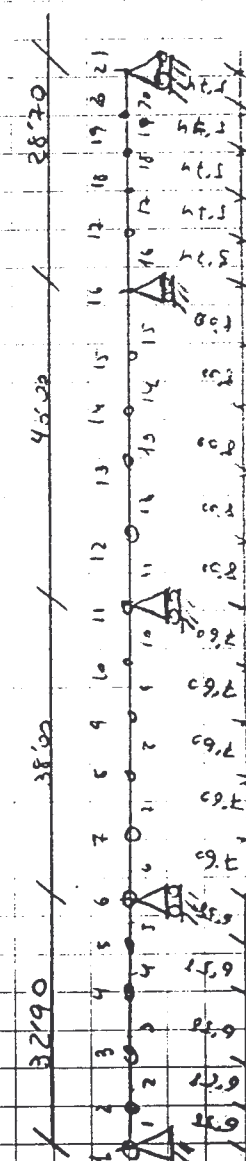
- carga uniforme de 10t/m
- enlucado de 8t/m
- enlucado de 18 cajas de 1'5m separadas cada una 3'75m.

3) Tren LM71 EC-1:

- carga uniforme de 8t/m
- 4 cajas puntal de 12m separadas 1'6m.

4) SW23:

- $P = \begin{matrix} P & P & P & P & P & P & P & P & P & P \\ d & d & d & d & d & d & d & d & d & d \end{matrix}$ $\left\{ \begin{array}{l} P = 23'75 \text{ t.} \\ d = 6'25 \text{ m.} \end{array} \right.$



Resumen (Pictas (m))

Trabajo (m)	6 (-)	Hit de 8 (+)	11 (-)	Hit de 13 (+)	16 (-)
TREN IPE 510A	-257'83	455'50	-272'2	472'53	-293'57
TREN IPE 510B					
8h/m	-125'06	53'66	-128'8	74'41	-122'57
9h/m	-1329'82	285'68	-1435'5	20'62	-1229'8
8h/m de 3h	-146'55	203	-157'5	214	-170'3
SUMA	1601'2	1242'34	-1722	1352	1521
TREN LIT 71 8CL					
8h/m	-1181'89	876'16	-1276	945'81	-1154'31
9h/m de 2h	-156'42	273'19	-165'12	281'11	-178'008
	-1338'31	1150	-1441'12	1226'91	-1332
SUM 2 ECL	-1982	1135	-270	1280	-1871'82

Resumen Constantes (m)

Constante	1 (L)	5 (L)	6 (L)	10 (L)	11 (L)	15 (L)	16 (L)
TREN IPE 510A	7'83 / -76'01	7771	94 / -781	6302 / -10'7	64 / -7817	77'8 / -8121	2153 / -778
TREN IPE 510B							
8h/m	-12'64	20'25	-18'97	11'50	-20'51	19'8	-18'69
9h/m	-135'78	180'46	-195'57	195'97	-200	133'53	-174'93
10 x 6h	4'45 / -32'26	27'9 / 4'45	5'25 / -38'4	35'68 / -4'28	3022 / -40'70	41'25 / -4'61	1'44 / -36
SUMA	-180'68	236'41	-253	247'15	-261'28	194'56	229
TREN LIT 71 8CL							
8h/m	19'15 / -120'7	167'52 / -551	22'56 / -170'84	174'2 / -21'5	16'71 / -172'9	118'7 / -19	6012 / -1511
9h/m de 1h	4'25 / -44'5	46'85 / -1'34	5'51 / -41'63	46'64 / -50'5	3'86 / -46'73	38'23 /	1153 / -46'3
SUMA	-165'2	214'4	-220'47	220'84	-224'63	156'93	-201'8
SUM 2 ECL	24'2 / -224'3	308'8 / -184	31'29 / -312'9	320'06 / 0	0 / -306'82	229'14 / -25	7'92 / -310'5

- Condiciones:

Es importante tener en cuenta que el F_{cr} SW2 es solo coincidente con el F_{cr} via u LM71, ademas el coeficiente de imperfección α I.F. α de 1.18 frente a 1.03 así como el cálculo es considerando el tamaño de la I.F. 3

- Flexión con coef. disminuido (mts)

Nudo $\rightarrow$	6(-)	Hitado 8	11	Hitado 13	16
2(TIR A I.F)	-609	1074'8	-642'4	1115'12	-692'8
2(TIR B I.F)	<u>-3778</u>	<u>2931</u>	<u>-4063</u>	<u>3190'72</u>	<u>3755</u>
2(LM71 E(1))	-2756	2369	-2969	2525	-2744
2(M31 + SW2)	-3399	2353'5	-3616'45	2592	3299

- Carga con coeficiente disminuido (tn)

	1(2)	5(3)	6(4)	10(8)	11(1)	15(3)	16(1)
2 Tipo A I.F	-179	183'4	-184	179	-185	183'6	-183'6
2 Tipo B I.F	-426	558	-597	583'3	-611	459	540
2(LM71 E(1))	340	441	-454	454	-462	323'2	415'71
LM71 + SW2	-401	539	-549	549'37	-547	397	-523

TRENES A INTRODUCIR

Finalmente se introducen en tren $DERINT$ y $IZDINT$. Para el cálculo de los trenes se usa la condición para no para longitudinal, no ellos cuando se comienza por del cálculo se multiplica por 1.03.

Con todo ello se realiza un análisis que es:

P DERINT sobre grupo 2

La envolvente total que se refleja con este tren.	DERINT 1	$q = -1'04$	$w_x = -1'03$	Carga uniforme
	DERINT 2	$q = -9'36$	$w_x = -9'27$	Envolvente
	DERINT 3	$q = -2'08$	$w_x = -2'06$	Paseo en 30m.

P IZDINT sobre grupo 1

La envolvente total que se refleja con este tren.	IZDINT 1	$q = -1'00$	$w_x = 1'23$	Carga uniforme
	IZDINT 2	$q = -9'00$	$w_x = 11'07$	Envolvente
	IZDINT 3	$q = -2'00$	$w_x = 2'46$	Paseo en 30m.

2.2.3.3. Cálculo de esfuerzos

A continuación se incluyen los listados de esfuerzos de los hipótesis simples.

Los estados del tren están sin componente de impacto y para el cálculo longitudinal hay que multiplicarlo por 1.08 para tener en cuenta el ripado hacia el exterior (más desfavorable que el ripado interior considerado, en el caso de esfuerzos longitudinales).

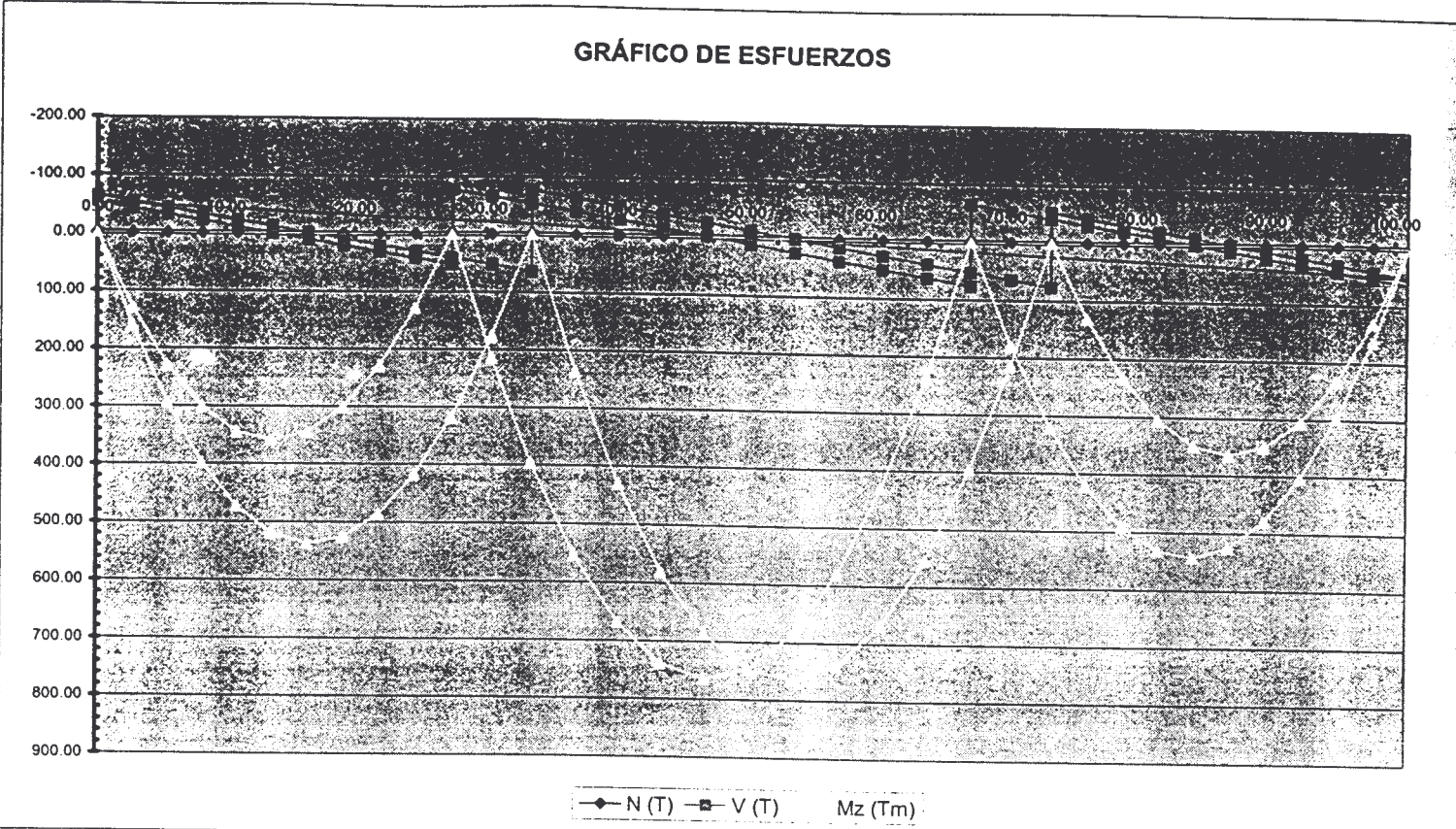
Peso propio de los cajones en fase 1.

[1: 1]PPCF1

Coef. exc:

Barra	Nudo	X	N (T)	Vy (T)	Mz (Tm)
1	1	0.00	0.00	-64.07	0.00
1	2	2.74	0.00	-53.59	161.19
2	2	2.74	0.00	-53.59	161.19
2	3	5.48	0.00	-43.11	293.66
3	3	5.48	0.00	-43.11	293.66
3	4	8.22	0.00	-32.63	397.41
4	4	8.22	0.00	-32.63	397.41
4	5	10.96	0.00	-22.15	472.45
5	5	10.96	0.00	-22.15	472.45
5	6	13.70	0.00	-11.67	518.78
6	6	13.70	0.00	-11.67	518.78
6	7	16.44	0.00	-1.19	536.39
7	7	16.44	0.00	-1.19	536.39
7	8	19.18	0.00	9.30	525.28
8	8	19.18	0.00	9.29	525.28
8	9	21.92	0.00	19.78	485.45
9	9	21.92	0.00	19.77	485.45
9	10	24.66	0.00	30.26	416.91
10	10	24.66	0.00	30.26	416.91
10	11	27.40	0.00	40.74	319.65
11	11	27.40	0.00	40.74	319.65
11	12	30.45	0.00	52.40	177.62
12	12	30.45	0.00	52.40	177.62
12	10013	33.50	0.00	64.07	0.00
13	13	33.50	0.00	-76.51	0.00
13	14	36.89	0.00	-63.54	237.38
14	14	36.89	0.00	-63.54	237.38
14	15	40.28	0.00	-50.57	430.79
15	15	40.28	0.00	-50.57	430.79
15	16	43.67	0.00	-37.60	580.25
16	16	43.67	0.00	-37.60	580.25
16	17	47.06	0.00	-24.64	685.75
17	17	47.06	0.00	-24.64	685.75
17	18	50.45	0.00	-11.67	747.28
18	18	50.45	0.00	-11.67	747.28
18	19	53.84	0.00	1.30	764.85
19	19	53.84	0.00	1.30	764.85
19	20	57.23	0.00	14.27	738.46
20	20	57.23	0.00	14.27	738.46
20	21	60.62	0.00	27.24	668.11
21	21	60.62	0.00	27.24	668.11
21	22	64.01	0.00	40.20	553.79
22	22	64.01	0.00	40.20	553.79
22	23	67.40	0.00	53.17	395.52
23	23	67.40	0.00	53.17	395.52
23	24	70.45	0.00	64.84	215.55
24	24	70.45	0.00	64.84	215.55
24	10025	73.50	0.00	76.51	0.00
25	25	73.50	0.00	-52.79	0.00
25	26	76.26	0.00	-42.23	131.12
26	26	76.26	0.00	-42.23	131.12
26	27	79.02	0.00	-31.67	233.10
27	27	79.02	0.00	-31.67	233.10
27	28	81.78	0.00	-21.11	305.94
28	28	81.78	0.00	-21.11	305.94
28	29	84.54	0.00	-10.56	349.65
29	29	84.54	0.00	-10.56	349.65
29	30	87.30	0.00	0.00	364.22
30	30	87.30	0.00	0.00	364.22
30	31	90.06	0.00	10.56	349.65
31	31	90.06	0.00	10.56	349.65
31	32	92.82	0.00	21.11	305.94
32	32	92.82	0.00	21.11	305.94
32	33	95.58	0.00	31.67	233.10
33	33	95.58	0.00	31.67	233.10
33	34	98.34	0.00	42.23	131.12
34	34	98.34	0.00	42.23	131.12
34	35	101.10	0.00	52.79	0.00
101	101	0.00	0.00	-52.40	0.00
101	102	2.74	0.00	-41.92	129.22
102	102	2.74	0.00	-41.92	129.22
102	103	5.48	0.00	-31.44	229.73

103	103	5.48	0.00	-31.44	229.73
103	104	8.22	0.00	-20.96	301.52
104	104	8.22	0.00	-20.96	301.52
104	105	10.96	0.00	-10.48	344.60
105	105	10.96	0.00	-10.48	344.60
106	106	13.70	0.00	0.00	358.96
106	106	13.70	0.00	0.00	358.96
106	107	16.44	0.00	10.48	344.60
107	107	16.44	0.00	10.48	344.60
107	108	19.18	0.00	20.96	301.52
108	108	19.18	0.00	20.96	301.52
108	109	21.92	0.00	31.44	229.73
109	109	21.92	0.00	31.44	229.73
109	110	24.66	0.00	41.92	129.22
110	110	24.66	0.00	41.92	129.22
110	10111	27.40	0.00	52.40	0.00
111	111	27.40	0.00	-76.50	0.00
111	112	30.45	0.00	-64.84	215.55
112	112	30.45	0.00	-64.84	215.55
112	113	33.50	0.00	-53.17	395.51
113	113	33.50	0.00	-53.17	395.51
113	114	36.89	0.00	-40.20	553.78
114	114	36.89	0.00	-40.20	553.78
114	115	40.28	0.00	-27.24	668.09
115	115	40.28	0.00	-27.24	668.09
115	116	43.67	0.00	-14.27	738.44
116	116	43.67	0.00	-14.27	738.44
116	117	47.06	0.00	-1.30	764.82
117	117	47.06	0.00	-1.30	764.82
117	118	50.45	0.00	11.67	747.25
118	118	50.45	0.00	11.67	747.25
118	119	53.84	0.00	24.63	685.72
119	119	53.84	0.00	24.63	685.72
119	120	57.23	0.00	37.60	580.23
120	120	57.23	0.00	37.60	580.23
120	121	60.62	0.00	50.57	430.78
121	121	60.62	0.00	50.57	430.78
121	122	64.01	0.00	63.54	237.37
122	122	64.01	0.00	63.54	237.37
122	10123	67.40	0.00	76.50	0.00
123	123	67.40	0.00	-64.45	0.00
123	124	70.45	0.00	-52.79	178.79
124	124	70.45	0.00	-52.79	178.79
124	125	73.50	0.00	-41.12	321.99
125	125	73.50	0.00	-41.12	321.99
125	126	76.26	0.00	-30.56	420.91
126	126	76.26	0.00	-30.56	420.91
126	127	79.02	0.00	-20.01	490.70
127	127	79.02	0.00	-20.00	490.70
127	128	81.78	0.00	-9.45	531.34
128	128	81.78	0.00	-9.45	531.34
129	129	84.54	0.00	1.11	542.85
129	129	84.54	0.00	1.11	542.85
129	130	87.30	0.00	11.67	525.22
130	130	87.30	0.00	11.67	525.22
130	131	90.06	0.00	22.22	478.45
131	131	90.06	0.00	22.22	478.45
131	132	92.82	0.00	32.78	402.54
132	132	92.82	0.00	32.78	402.54
132	133	95.58	0.00	43.34	297.50
133	133	95.58	0.00	43.34	297.50
133	134	98.34	0.00	53.89	163.32
134	134	98.34	0.00	53.89	163.32
134	135	101.10	0.00	64.45	0.00



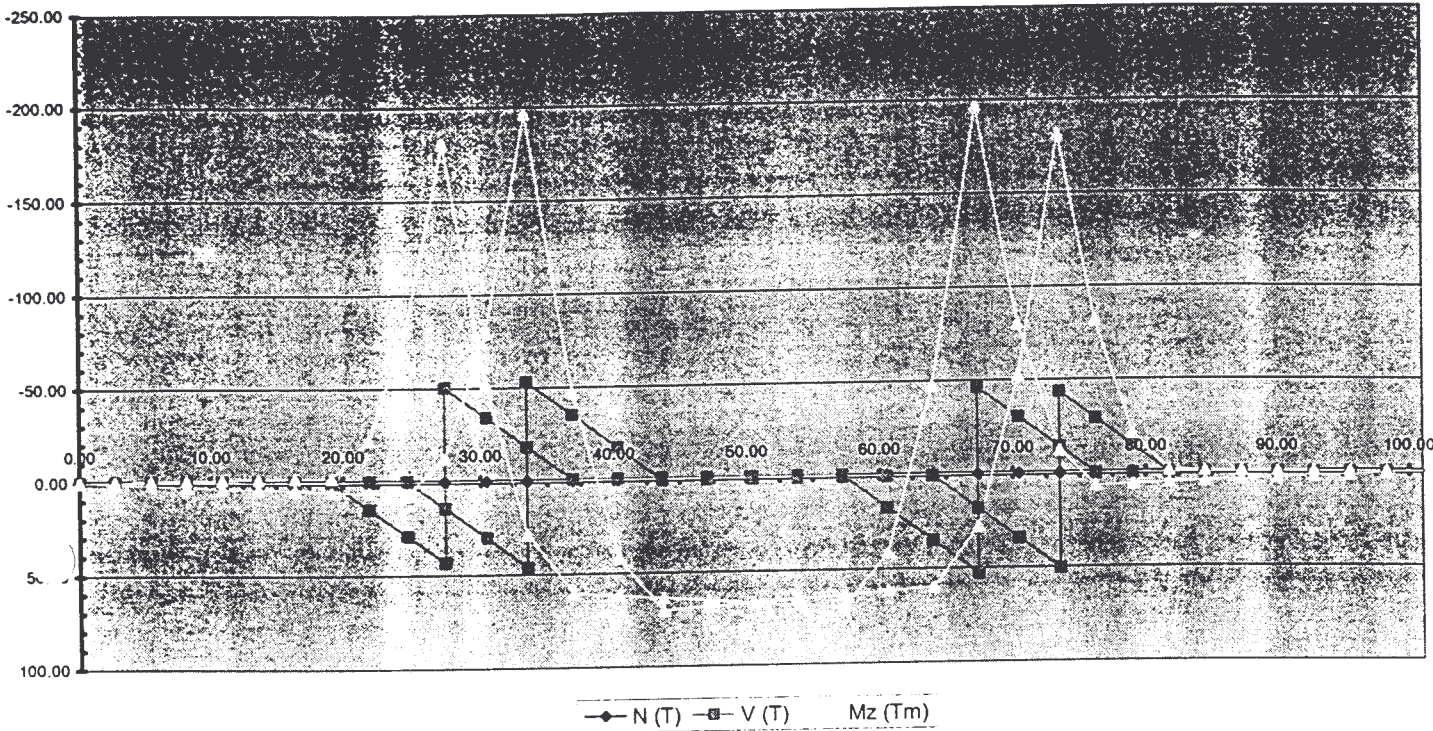
Peso de losa hormigonada en fase 2

1: 1PPI
Coef. exc:

Barra	Nudo	X	N (T)	Vy (T)	Mz (Tm)
1	1	0.00	0.00	-0.27	0.00
1	2	2.74	0.00	-0.27	0.73
2	2	2.74	0.00	-0.27	0.73
2	3	5.48	0.00	-0.27	1.47
3	3	5.48	0.00	-0.27	1.47
3	4	8.22	0.00	-0.27	2.20
4	4	8.22	0.00	-0.27	2.20
4	5	10.96	0.00	-0.27	2.93
5	5	10.96	0.00	-0.27	2.93
5	6	13.70	0.00	-0.27	3.66
6	6	13.70	0.00	-0.27	3.66
6	7	16.44	0.00	-0.27	4.40
7	7	16.44	0.00	-0.27	4.40
7	8	19.18	0.00	-0.27	5.13
8	8	19.18	0.00	-0.27	5.13
8	9	21.92	0.00	-0.27	5.86
9	9	21.92	0.00	-0.27	5.86
	10	24.66	0.00	-0.27	6.59
	10	24.66	0.00	-0.27	6.59
10	11	27.40	0.00	14.12	-12.38
11	11	27.40	0.00	14.12	-12.38
11	12	30.45	0.00	30.13	-79.86
12	12	30.45	0.00	30.13	-79.86
12	10013	33.50	0.00	46.14	-196.18
13	13	33.50	0.00	-52.88	-196.18
13	14	36.89	0.00	-35.09	-47.07
14	14	36.89	0.00	-35.09	-47.07
14	15	40.28	0.00	-17.29	41.71
15	15	40.28	0.00	-17.29	41.71
15	16	43.67	0.00	0.51	70.15
16	16	43.67	0.00	0.51	70.15
16	17	47.06	0.00	0.51	68.42
17	17	47.06	0.00	0.51	68.42
17	18	50.45	0.00	0.51	66.70
18	18	50.45	0.00	0.51	66.70
18	19	53.84	0.00	0.51	64.97
19	19	53.84	0.00	0.51	64.97
19	20	57.23	0.00	0.51	63.25
20	20	57.23	0.00	0.51	63.25
20	21	60.62	0.00	0.51	61.52
	21	60.62	0.00	0.51	61.52
	22	64.01	0.00	0.51	59.80
22	22	64.01	0.00	0.51	59.80
22	23	67.40	0.00	18.31	27.90
23	23	67.40	0.00	18.31	27.90
23	24	70.45	0.00	34.32	-52.35
24	24	70.45	0.00	34.32	-52.35
24	10025	73.50	0.00	50.33	-181.44
25	25	73.50	0.00	-43.52	-181.44
25	26	76.26	0.00	-29.03	-81.32
26	26	76.26	0.00	-29.03	-81.32
26	27	79.02	0.00	-14.54	-21.18
27	27	79.02	0.00	-14.54	-21.18
27	28	81.78	0.00	-0.05	-1.03
28	28	81.78	0.00	-0.05	-1.03
28	29	84.54	0.00	-0.05	-0.89
29	29	84.54	0.00	-0.05	-0.89
29	30	87.30	0.00	-0.05	-0.74
30	30	87.30	0.00	-0.05	-0.74
30	31	90.06	0.00	-0.05	-0.59
31	31	90.06	0.00	-0.05	-0.59
31	32	92.82	0.00	-0.05	-0.44
32	32	92.82	0.00	-0.05	-0.44
	33	95.58	0.00	-0.05	-0.30
	33	95.58	0.00	-0.05	-0.30
33	34	98.34	0.00	-0.05	-0.15
34	34	98.34	0.00	-0.05	-0.15
34	35	101.10	0.00	-0.05	0.00
101	101	0.00	0.00	0.12	0.00
101	102	2.74	0.00	0.12	-0.33
102	102	2.74	0.00	0.12	-0.33
102	103	5.48	0.00	0.12	-0.66

103	103	5.48	0.00	0.12	-0.66
103	104	8.22	0.00	0.12	-1.00
104	104	8.22	0.00	0.12	-1.00
104	105	10.96	0.00	0.12	-1.33
105	105	10.96	0.00	0.12	-1.33
105	106	13.70	0.00	0.12	-1.66
106	106	13.70	0.00	0.12	-1.66
106	107	16.44	0.00	0.12	-1.99
107	107	16.44	0.00	0.12	-1.99
107	108	19.18	0.00	0.12	-2.32
108	108	19.18	0.00	0.12	-2.32
108	109	21.92	0.00	14.51	-22.36
109	109	21.92	0.00	14.51	-22.36
109	110	24.66	0.00	28.89	-81.82
110	110	24.66	0.00	28.89	-81.82
110	10111	27.40	0.00	43.28	-180.69
111	111	27.40	0.00	-50.30	-180.69
111	112	30.45	0.00	-34.29	-51.69
112	112	30.45	0.00	-34.29	-51.69
112	113	33.50	0.00	-18.28	28.47
113	113	33.50	0.00	-18.28	28.47
113	114	36.89	0.00	-0.48	60.26
114	114	36.89	0.00	-0.48	60.26
114	115	40.28	0.00	-0.48	61.88
115	115	40.28	0.00	-0.48	61.88
115	116	43.67	0.00	-0.48	63.50
116	116	43.67	0.00	-0.48	63.50
116	117	47.06	0.00	-0.48	65.12
117	117	47.06	0.00	-0.48	65.12
117	118	50.45	0.00	-0.48	66.74
118	118	50.45	0.00	-0.48	66.74
118	119	53.84	0.00	-0.48	68.36
119	119	53.84	0.00	-0.48	68.36
119	120	57.23	0.00	-0.48	69.98
120	120	57.23	0.00	-0.48	69.98
120	121	60.62	0.00	17.32	41.43
121	121	60.62	0.00	17.32	41.43
121	122	64.01	0.00	35.12	-47.45
122	122	64.01	0.00	35.12	-47.45
122	10123	67.40	0.00	52.91	-196.67
123	123	67.40	0.00	-46.24	-196.67
123	124	70.45	0.00	-30.22	-80.07
124	124	70.45	0.00	-30.22	-80.07
124	125	73.50	0.00	-14.21	-12.30
125	125	73.50	0.00	-14.21	-12.30
125	126	76.26	0.00	0.28	6.93
126	126	76.26	0.00	0.28	6.93
126	127	79.02	0.00	0.28	6.16
127	127	79.02	0.00	0.28	6.16
127	128	81.78	0.00	0.28	5.39
128	128	81.78	0.00	0.28	5.39
128	129	84.54	0.00	0.28	4.62
129	129	84.54	0.00	0.28	4.62
129	130	87.30	0.00	0.28	3.85
130	130	87.30	0.00	0.28	3.85
130	131	90.06	0.00	0.28	3.08
131	131	90.06	0.00	0.28	3.08
131	132	92.82	0.00	0.28	2.31
132	132	92.82	0.00	0.28	2.31
132	133	95.58	0.00	0.28	1.54
133	133	95.58	0.00	0.28	1.54
133	134	98.34	0.00	0.28	0.77
134	134	98.34	0.00	0.28	0.77
134	135	101.10	0.00	0.28	0.00

GRÁFICO DE ESFUERZOS



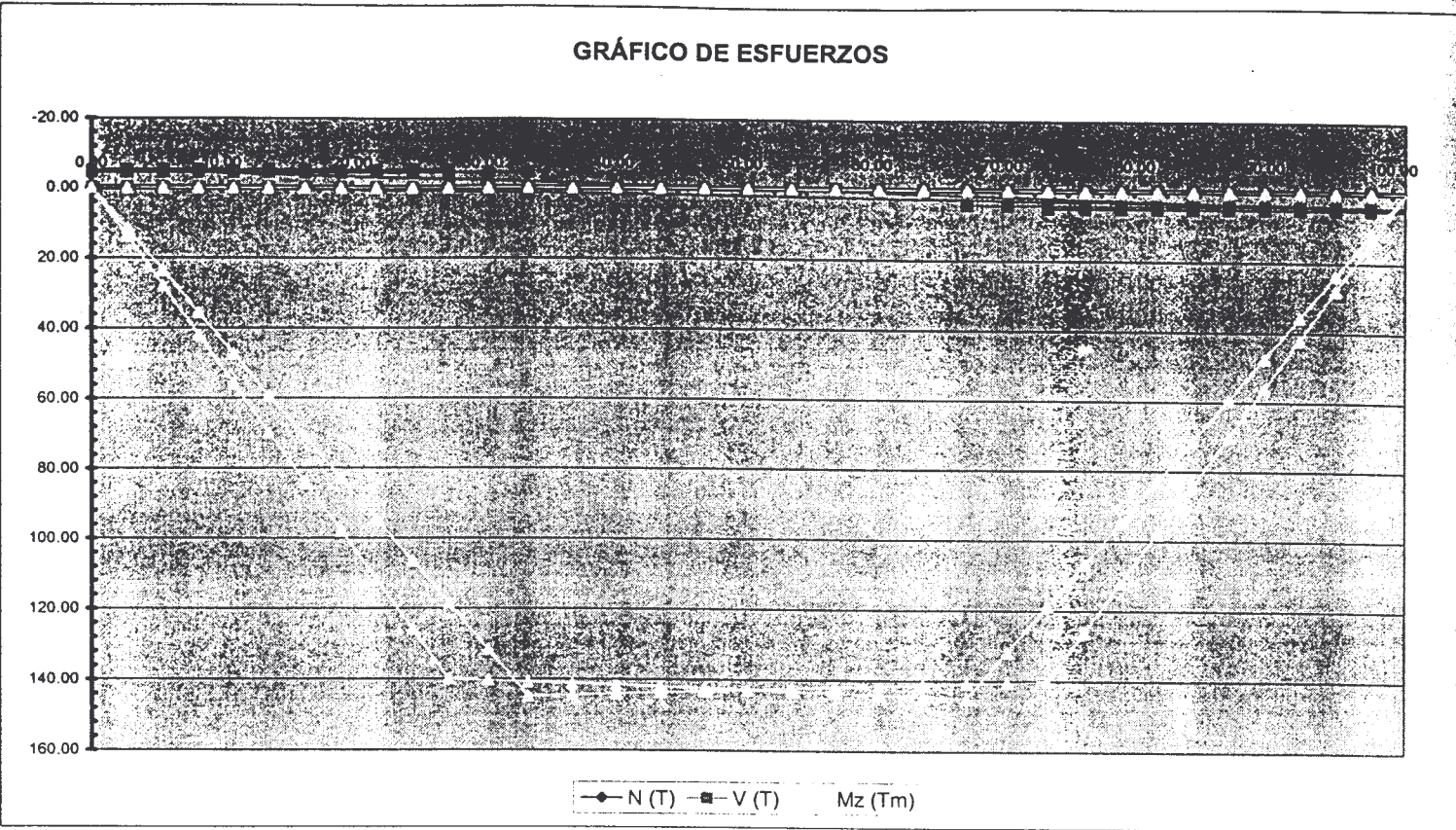
Gradiente en fase 2

[1; 1]GRADF2

Coef. ex:

Barra	Nudo	X	N (T)	Vy (T)	Mz (Tm)
1	1	0.00	0.00	-4.32	0.00
1	2	2.74	0.00	-4.32	11.84
2	2	2.74	0.00	-4.32	11.84
2	3	5.48	0.00	-4.32	23.67
3	3	5.48	0.00	-4.32	23.67
3	4	8.22	0.00	-4.32	35.51
4	4	8.22	0.00	-4.32	35.51
4	5	10.96	0.00	-4.32	47.34
5	5	10.96	0.00	-4.32	47.34
5	6	13.70	0.00	-4.32	59.18
6	6	13.70	0.00	-4.32	59.18
6	7	16.44	0.00	-4.32	71.02
7	7	16.44	0.00	-4.32	71.02
7	8	19.18	0.00	-4.32	82.85
8	8	19.18	0.00	-4.32	82.85
8	9	21.92	0.00	-4.32	94.69
9	9	21.92	0.00	-4.32	94.69
9	10	24.66	0.00	-4.32	106.52
10	10	24.66	0.00	-4.32	106.52
10	11	27.40	0.00	-4.32	118.36
11	11	27.40	0.00	-4.32	118.36
11	12	30.45	0.00	-4.32	131.53
12	12	30.45	0.00	-4.32	131.53
12	10013	33.50	0.00	-4.32	144.71
13	13	33.50	0.00	0.12	144.71
13	14	36.89	0.00	0.12	144.31
14	14	36.89	0.00	0.12	144.31
14	15	40.28	0.00	0.12	143.91
15	15	40.28	0.00	0.12	143.91
15	16	43.67	0.00	0.12	143.51
16	16	43.67	0.00	0.12	143.51
16	17	47.06	0.00	0.12	143.11
17	17	47.06	0.00	0.12	143.11
17	18	50.45	0.00	0.12	142.71
18	18	50.45	0.00	0.12	142.71
18	19	53.84	0.00	0.12	142.31
19	19	53.84	0.00	0.12	142.31
19	20	57.23	0.00	0.12	141.91
20	20	57.23	0.00	0.12	141.91
20	21	60.62	0.00	0.12	141.51
21	21	60.62	0.00	0.12	141.51
21	22	64.01	0.00	0.12	141.11
22	22	64.01	0.00	0.12	141.11
22	23	67.40	0.00	0.12	140.71
23	23	67.40	0.00	0.12	140.71
23	24	70.45	0.00	0.12	140.35
24	24	70.45	0.00	0.12	140.35
24	10025	73.50	0.00	0.12	139.99
25	25	73.50	0.00	5.07	139.99
25	26	76.26	0.00	5.07	125.99
26	26	76.26	0.00	5.07	125.99
26	27	79.02	0.00	5.07	111.99
27	27	79.02	0.00	5.07	111.99
27	28	81.78	0.00	5.07	97.99
28	28	81.78	0.00	5.07	97.99
28	29	84.54	0.00	5.07	83.99
29	29	84.54	0.00	5.07	83.99
29	30	87.30	0.00	5.07	69.99
30	30	87.30	0.00	5.07	69.99
30	31	90.06	0.00	5.07	55.99
31	31	90.06	0.00	5.07	55.99
31	32	92.82	0.00	5.07	42.00
32	32	92.82	0.00	5.07	42.00
32	33	95.58	0.00	5.07	28.00
33	33	95.58	0.00	5.07	28.00
33	34	98.34	0.00	5.07	14.00
34	34	98.34	0.00	5.07	14.00
34	35	101.10	0.00	5.07	0.00
101	101	0.00	0.00	-5.10	0.00
101	102	2.74	0.00	-5.10	13.98
102	102	2.74	0.00	-5.10	13.98
102	103	5.48	0.00	-5.10	27.96

103	103	5.48	0.00	-5.10	27.96
103	104	8.22	0.00	-5.10	41.95
104	104	8.22	0.00	-5.10	41.95
104	105	10.96	0.00	-5.10	55.93
105	105	10.96	0.00	-5.10	55.93
106	106	13.70	0.00	-5.10	69.91
106	106	13.70	0.00	-5.10	69.91
106	107	16.44	0.00	-5.10	83.89
107	107	16.44	0.00	-5.10	83.89
107	108	19.18	0.00	-5.10	97.87
108	108	19.18	0.00	-5.10	97.87
108	109	21.92	0.00	-5.10	111.85
109	109	21.92	0.00	-5.10	111.85
109	110	24.66	0.00	-5.10	125.83
110	110	24.66	0.00	-5.10	125.83
110	10111	27.40	0.00	-5.10	139.82
111	111	27.40	0.00	-0.13	139.82
111	112	30.45	0.00	-0.13	140.20
112	112	30.45	0.00	-0.13	140.20
112	113	33.50	0.00	-0.13	140.59
113	113	33.50	0.00	-0.13	140.59
113	114	36.89	0.00	-0.13	141.01
114	114	36.89	0.00	-0.13	141.01
114	115	40.28	0.00	-0.13	141.44
115	115	40.28	0.00	-0.13	141.44
115	116	43.67	0.00	-0.13	141.87
116	116	43.67	0.00	-0.13	141.87
116	117	47.06	0.00	-0.13	142.30
117	117	47.06	0.00	-0.13	142.30
117	118	50.45	0.00	-0.13	142.72
118	118	50.45	0.00	-0.13	142.72
118	119	53.84	0.00	-0.13	143.15
119	119	53.84	0.00	-0.13	143.15
119	120	57.23	0.00	-0.13	143.58
120	120	57.23	0.00	-0.13	143.58
120	121	60.62	0.00	-0.13	144.01
121	121	60.62	0.00	-0.13	144.01
121	122	64.01	0.00	-0.13	144.43
122	122	64.01	0.00	-0.13	144.43
122	10123	67.40	0.00	-0.13	144.86
123	123	67.40	0.00	4.30	144.86
123	124	70.45	0.00	4.30	131.75
124	124	70.45	0.00	4.30	131.75
124	125	73.50	0.00	4.30	118.64
125	125	73.50	0.00	4.30	118.64
125	126	76.26	0.00	4.30	106.77
126	126	76.26	0.00	4.30	106.77
126	127	79.02	0.00	4.30	94.91
127	127	79.02	0.00	4.30	94.91
127	128	81.78	0.00	4.30	83.05
128	128	81.78	0.00	4.30	83.05
128	129	84.54	0.00	4.30	71.18
129	129	84.54	0.00	4.30	71.18
129	130	87.30	0.00	4.30	59.32
130	130	87.30	0.00	4.30	59.32
130	131	90.06	0.00	4.30	47.45
131	131	90.06	0.00	4.30	47.45
131	132	92.82	0.00	4.30	35.59
132	132	92.82	0.00	4.30	35.59
132	133	95.58	0.00	4.30	23.73
133	133	95.58	0.00	4.30	23.73
133	134	98.34	0.00	4.30	11.86
134	134	98.34	0.00	4.30	11.86
134	135	101.10	0.00	4.30	0.00



Peso propio de losa hormigonada en fase 3.

[1: 1]PF

Coef. exc.

Barra	Nudo	X	N (T)	Vy (T)	Mz (Tm)
1	1	0.00	0.00	-59.44	0.00
1	2	2.74	0.00	-45.06	143.17
2	2	2.74	0.00	-45.06	143.17
2	3	5.48	0.00	-30.67	246.92
3	3	5.48	0.00	-30.67	246.92
3	4	8.22	0.00	-16.29	311.26
4	4	8.22	0.00	-16.29	311.26
4	5	10.96	0.00	-1.90	336.18
5	5	10.96	0.00	-1.90	336.18
5	6	13.70	0.00	12.48	321.69
6	6	13.70	0.00	12.48	321.69
6	7	16.44	0.00	26.87	267.79
7	7	16.44	0.00	26.87	267.79
7	8	19.18	0.00	41.25	174.47
8	8	19.18	0.00	41.25	174.47
8	9	21.92	0.00	55.64	41.73
9	9	21.92	0.00	55.64	41.73
	10	24.66	0.00	70.02	-130.42
	10	24.66	0.00	65.63	-129.04
10	11	27.40	0.00	65.63	-308.87
11	11	27.40	0.00	62.78	-307.17
11	12	30.45	0.00	62.78	-498.65
12	12	30.45	0.00	61.82	-496.80
12	10013	33.50	0.00	61.82	-685.35
13	13	33.50	0.00	-58.17	-683.79
13	14	36.89	0.00	-58.17	-486.61
14	14	36.89	0.00	-55.30	-485.66
14	15	40.28	0.00	-55.30	-298.17
15	15	40.28	0.00	-55.30	-298.17
15	16	43.67	0.00	-55.30	-110.69
16	16	43.67	0.00	-55.30	-110.69
16	17	47.06	0.00	-37.51	46.63
17	17	47.06	0.00	-37.51	46.63
17	18	50.45	0.00	-19.71	143.61
18	18	50.45	0.00	-19.71	143.61
18	19	53.84	0.00	-1.91	180.26
19	19	53.84	0.00	-1.91	180.26
19	20	57.23	0.00	15.89	156.58
20	20	57.23	0.00	15.89	156.58
20	21	60.62	0.00	33.68	72.56
	21	60.62	0.00	33.68	72.56
	22	64.01	0.00	51.48	-71.79
22	22	64.01	0.00	48.61	-70.82
22	23	67.40	0.00	48.61	-235.62
23	23	67.40	0.00	47.67	-234.04
23	24	70.45	0.00	47.67	-379.44
24	24	70.45	0.00	48.69	-377.57
24	10025	73.50	0.00	48.69	-526.06
25	25	73.50	0.00	-58.52	-524.34
25	26	76.26	0.00	-58.52	-362.82
26	26	76.26	0.00	-53.99	-361.41
26	27	79.02	0.00	-53.99	-212.38
27	27	79.02	0.00	-53.99	-212.38
27	28	81.78	0.00	-53.99	-63.36
28	28	81.78	0.00	-53.99	-63.36
28	29	84.54	0.00	-39.50	65.67
29	29	84.54	0.00	-39.50	65.67
29	30	87.30	0.00	-25.01	154.71
30	30	87.30	0.00	-25.01	154.71
30	31	90.06	0.00	-10.52	203.75
31	31	90.06	0.00	-10.52	203.75
31	32	92.82	0.00	3.97	212.80
32	32	92.82	0.00	3.97	212.80
	33	95.58	0.00	18.46	181.86
	33	95.58	0.00	18.46	181.86
33	34	98.34	0.00	32.95	110.93
34	34	98.34	0.00	32.95	110.93
34	35	101.10	0.00	47.44	0.00
101	101	0.00	0.00	-47.01	0.00
101	102	2.74	0.00	-32.63	109.10
102	102	2.74	0.00	-32.63	109.10
102	103	5.48	0.00	-18.24	178.79

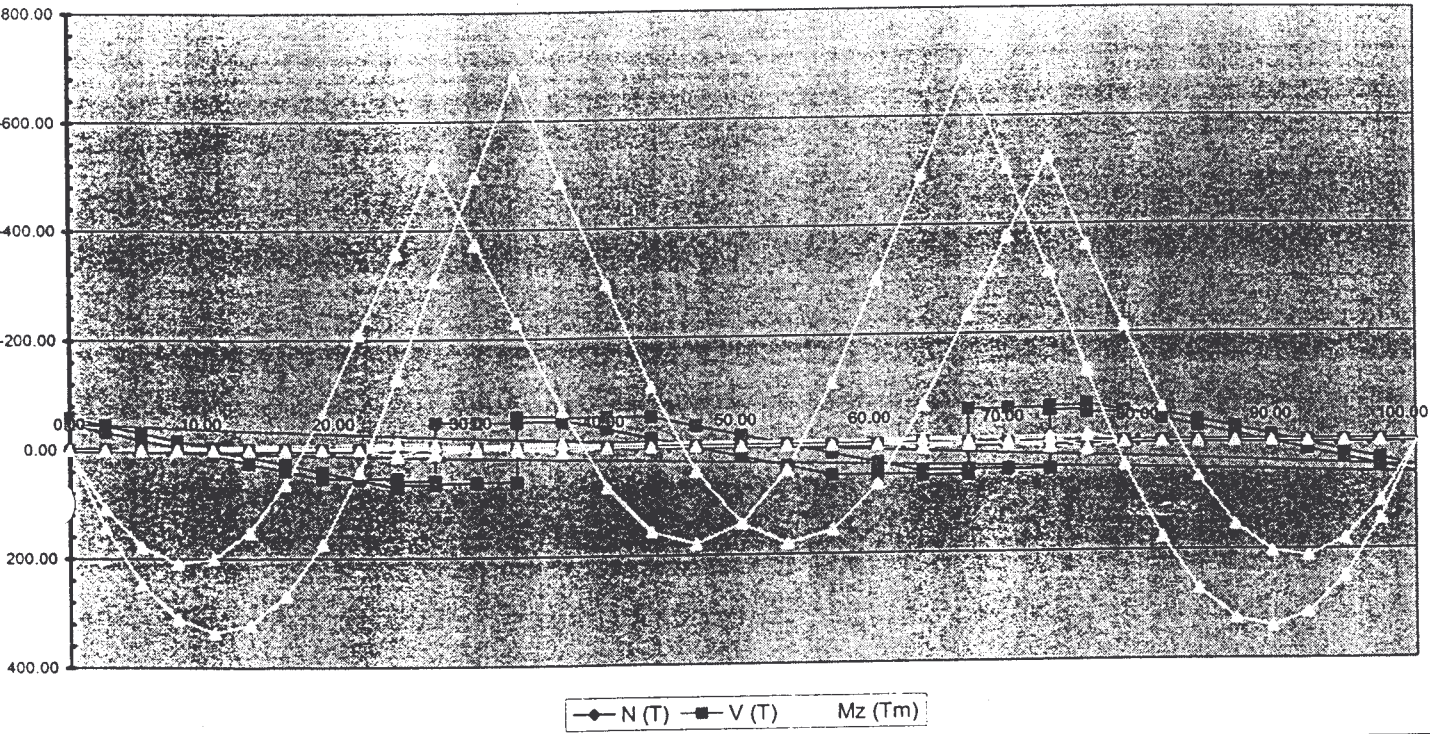
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103	104	8.22	0.00	-3.86	209.07
104	104	8.22	0.00	-3.86	209.07
104	105	10.96	0.00	10.53	199.93
105	105	10.96	0.00	10.53	199.93
105	106	13.70	0.00	24.91	151.37
106	106	13.70	0.00	24.91	151.37
106	107	16.44	0.00	39.30	63.40
107	107	16.44	0.00	39.30	63.40
107	108	19.18	0.00	53.68	-63.99
108	108	19.18	0.00	53.68	-63.99
108	109	21.92	0.00	53.68	-211.08
109	109	21.92	0.00	53.68	-211.08
109	110	24.66	0.00	53.68	-358.17
110	110	24.66	0.00	58.07	-359.55
110	10111	27.40	0.00	58.07	-518.67
111	111	27.40	0.00	-48.32	-520.37
111	112	30.45	0.00	-48.32	-372.99
112	112	30.45	0.00	-47.36	-374.83
112	113	33.50	0.00	-47.36	-230.38
113	113	33.50	0.00	-48.33	-231.94
113	114	36.89	0.00	-48.33	-68.11
114	114	36.89	0.00	-51.19	-69.06
114	115	40.28	0.00	-33.39	74.30
115	115	40.28	0.00	-33.39	74.30
115	116	43.67	0.00	-15.59	157.33
116	116	43.67	0.00	-15.59	157.33
116	117	47.06	0.00	2.20	180.02
117	117	47.06	0.00	2.20	180.02
117	118	50.45	0.00	20.00	142.38
118	118	50.45	0.00	20.00	142.38
118	119	53.84	0.00	37.80	44.41
119	119	53.84	0.00	37.80	44.41
119	120	57.23	0.00	55.60	-113.90
120	120	57.23	0.00	55.60	-113.90
120	121	60.62	0.00	55.60	-302.37
121	121	60.62	0.00	55.60	-302.37
121	122	64.01	0.00	55.60	-490.85
122	122	64.01	0.00	58.46	-491.82
122	10123	67.40	0.00	58.46	-690.01
123	123	67.40	0.00	-62.07	-691.59
123	124	70.45	0.00	-62.07	-502.28
124	124	70.45	0.00	-63.08	-504.15
124	125	73.50	0.00	-63.08	-311.75
125	125	73.50	0.00	-66.02	-313.48
125	126	76.26	0.00	-66.02	-131.26
126	126	76.26	0.00	-70.55	-132.67
126	127	79.02	0.00	-56.06	42.04
127	127	79.02	0.00	-56.06	42.04
127	128	81.78	0.00	-41.57	176.76
128	128	81.78	0.00	-41.57	176.76
128	129	84.54	0.00	-27.08	271.49
129	129	84.54	0.00	-27.08	271.49
129	130	87.30	0.00	-12.59	326.22
130	130	87.30	0.00	-12.59	326.22
130	131	90.06	0.00	1.90	340.96
131	131	90.06	0.00	1.90	340.96
131	132	92.82	0.00	16.39	315.71
132	132	92.82	0.00	16.39	315.71
132	133	95.58	0.00	30.88	250.47
133	133	95.58	0.00	30.88	250.47
133	134	98.34	0.00	45.37	145.23
134	134	98.34	0.00	45.37	145.23
134	135	101.10	0.00	59.86	0.00
301	101	0.00	0.00	0.00	0.00
301	2001	0.00	0.00	0.00	0.00
302	102	2.74	0.00	0.00	0.00
302	2002	2.74	0.00	0.00	0.00
303	103	5.48	0.00	0.00	0.00
303	2003	5.48	0.00	0.00	0.00
304	104	8.22	0.00	0.00	0.00
304	2004	8.22	0.00	0.00	0.00
305	105	10.96	0.00	0.00	0.00
305	2005	10.96	0.00	0.00	0.00
306	106	13.70	0.00	0.00	0.00
306	2006	13.70	0.00	0.00	0.00
307	107	16.44	0.00	0.00	0.00
307	2007	16.44	0.00	0.00	0.00
308	108	19.18	0.00	0.00	0.00
308	2008	19.18	0.00	0.00	0.00
309	109	21.92	0.00	0.00	0.00
309	2009	21.92	0.00	0.00	0.00
310	110	24.66	0.00	-4.39	-14.27

310	2010	24.66	0.00	-4.39	-10.95
311	111	27.40	0.00	-2.85	-9.31
311	2011	27.40	0.00	-2.85	-7.15
312	112	30.45	0.00	-0.96	-3.32
312	2012	30.45	0.00	-0.96	-2.59
31	113	33.50	0.00	0.97	2.81
31	2013	33.50	0.00	0.97	2.08
314	114	36.89	0.00	2.86	8.57
314	2014	36.89	0.00	2.86	6.41
315	115	40.28	0.00	0.00	0.00
315	2015	40.28	0.00	0.00	0.00
316	116	43.67	0.00	0.00	0.00
316	2016	43.67	0.00	0.00	0.00
317	117	47.06	0.00	0.00	0.00
317	2017	47.06	0.00	0.00	0.00
318	118	50.45	0.00	0.00	0.00
318	2018	50.45	0.00	0.00	0.00
319	119	53.84	0.00	0.00	0.00
319	2019	53.84	0.00	0.00	0.00
320	120	57.23	0.00	0.00	0.00
320	2020	57.23	0.00	0.00	0.00
321	121	60.62	0.00	0.00	0.00
321	2021	60.62	0.00	0.00	0.00
322	122	64.01	0.00	-2.87	-9.47
322	2022	64.01	0.00	-2.87	-7.31
323	123	67.40	0.00	-0.94	-3.20
323	2023	67.40	0.00	-0.94	-2.48
324	124	70.45	0.00	1.01	2.90
32	2024	70.45	0.00	1.01	2.13
32	125	73.50	0.00	2.94	8.92
325	2025	73.50	0.00	2.94	6.70
326	126	76.26	0.00	4.53	13.81
326	2026	76.26	0.00	4.53	10.38
327	127	79.02	0.00	0.00	0.00
327	2027	79.02	0.00	0.00	0.00
328	128	81.78	0.00	0.00	0.00
328	2028	81.78	0.00	0.00	0.00
329	129	84.54	0.00	0.00	0.00
329	2029	84.54	0.00	0.00	0.00
330	130	87.30	0.00	0.00	0.00
330	2030	87.30	0.00	0.00	0.00
331	131	90.06	0.00	0.00	0.00
331	2031	90.06	0.00	0.00	0.00
332	132	92.82	0.00	0.00	0.00
332	2032	92.82	0.00	0.00	0.00
333	133	95.58	0.00	0.00	0.00
333	2033	95.58	0.00	0.00	0.00
334	134	98.34	0.00	0.00	0.00
334	2034	98.34	0.00	0.00	0.00
335	135	101.10	0.00	0.00	0.00
335	2035	101.10	0.00	0.00	0.00
20	2001	0.00	0.00	0.00	0.00
20	1001	0.00	0.00	0.00	0.00
202	2002	0.00	0.00	0.00	0.00
202	1002	0.00	0.00	0.00	0.00
203	2003	0.00	0.00	0.00	0.00
203	1003	0.00	0.00	0.00	0.00
204	2004	0.00	0.00	0.00	0.00
204	1004	0.00	0.00	0.00	0.00
205	2005	0.00	0.00	0.00	0.00
205	1005	0.00	0.00	0.00	0.00
206	2006	0.00	0.00	0.00	0.00
206	1006	0.00	0.00	0.00	0.00
207	2007	0.00	0.00	0.00	0.00
207	1007	0.00	0.00	0.00	0.00
208	2008	0.00	0.00	0.00	0.00
208	1008	0.00	0.00	0.00	0.00
209	2009	0.00	0.00	0.00	0.00
209	1009	0.00	0.00	0.00	0.00
210	2010	24.66	0.00	-4.39	-10.95
210	1010	24.66	0.00	-4.39	10.07
211	2011	27.40	0.00	-2.85	-7.15
211	1011	27.40	0.00	-2.85	6.51
212	2012	30.45	0.00	-0.96	-2.59
21	1012	30.45	0.00	-0.96	2.01
2	2013	33.50	0.00	0.97	2.08
213	1013	33.50	0.00	0.97	-2.55
214	2014	36.89	0.00	2.86	6.41
214	1014	36.89	0.00	2.86	-7.29
215	2015	0.00	0.00	0.00	0.00
215	1015	0.00	0.00	0.00	0.00
216	2016	0.00	0.00	0.00	0.00
216	1016	0.00	0.00	0.00	0.00

217	2017	0.00	0.00	0.00	0.00
217	1017	0.00	0.00	0.00	0.00
218	2018	0.00	0.00	0.00	0.00
218	1018	0.00	0.00	0.00	0.00
219	2019	0.00	0.00	0.00	0.00
219	1019	0.00	0.00	0.00	0.00
220	2020	0.00	0.00	0.00	0.00
220	1020	0.00	0.00	0.00	0.00
221	2021	0.00	0.00	0.00	0.00
221	1021	0.00	0.00	0.00	0.00
222	2022	64.01	0.00	-2.87	-7.31
222	1022	64.01	0.00	-2.87	6.42
223	2023	67.40	0.00	-0.94	-2.48
223	1023	67.40	0.00	-0.94	2.02
224	2024	70.45	0.00	1.01	2.13
224	1024	70.45	0.00	1.01	-2.72
225	2025	73.50	0.00	2.94	6.70
225	1025	73.50	0.00	2.94	-7.36
226	2026	76.26	0.00	4.53	10.38
226	1026	76.26	0.00	4.53	-11.29
227	2027	0.00	0.00	0.00	0.00
227	1027	0.00	0.00	0.00	0.00
228	2028	0.00	0.00	0.00	0.00
228	1028	0.00	0.00	0.00	0.00
229	2029	0.00	0.00	0.00	0.00
229	1029	0.00	0.00	0.00	0.00
230	2030	0.00	0.00	0.00	0.00
230	1030	0.00	0.00	0.00	0.00
231	2031	0.00	0.00	0.00	0.00
231	1031	0.00	0.00	0.00	0.00
232	2032	0.00	0.00	0.00	0.00
232	1032	0.00	0.00	0.00	0.00
233	2033	0.00	0.00	0.00	0.00
233	1033	0.00	0.00	0.00	0.00
234	2034	0.00	0.00	0.00	0.00
234	1034	0.00	0.00	0.00	0.00
235	2035	0.00	0.00	0.00	0.00
235	1035	0.00	0.00	0.00	0.00
401	1001	0.00	0.00	0.00	0.00
401	1	0.00	0.00	0.00	0.00
402	1002	2.74	0.00	0.00	0.00
402	2	2.74	0.00	0.00	0.00
403	1003	5.48	0.00	0.00	0.00
403	3	5.48	0.00	0.00	0.00
404	1004	8.22	0.00	0.00	0.00
404	4	8.22	0.00	0.00	0.00
405	1005	10.96	0.00	0.00	0.00
405	5	10.96	0.00	0.00	0.00
406	1006	13.70	0.00	0.00	0.00
406	6	13.70	0.00	0.00	0.00
407	1007	16.44	0.00	0.00	0.00
407	7	16.44	0.00	0.00	0.00
408	1008	19.18	0.00	0.00	0.00
408	8	19.18	0.00	0.00	0.00
409	1009	21.92	0.00	0.00	0.00
409	9	21.92	0.00	0.00	0.00
410	1010	24.66	0.00	-4.39	10.07
410	10	24.66	0.00	-4.39	13.39
411	1011	27.40	0.00	-2.85	6.51
411	11	27.40	0.00	-2.85	8.66
412	1012	30.45	0.00	-0.96	2.01
412	12	30.45	0.00	-0.96	2.74
413	1013	33.50	0.00	0.97	-2.55
413	13	33.50	0.00	0.97	-3.28
414	1014	36.89	0.00	2.86	-7.29
414	14	36.89	0.00	2.86	-9.45
415	1015	40.28	0.00	0.00	0.00
415	15	40.28	0.00	0.00	0.00
416	1016	43.67	0.00	0.00	0.00
416	16	43.67	0.00	0.00	0.00
417	1017	47.06	0.00	0.00	0.00
417	17	47.06	0.00	0.00	0.00
418	1018	50.45	0.00	0.00	0.00
418	18	50.45	0.00	0.00	0.00
419	1019	53.84	0.00	0.00	0.00
419	19	53.84	0.00	0.00	0.00
420	1020	57.23	0.00	0.00	0.00
420	20	57.23	0.00	0.00	0.00
421	1021	60.62	0.00	0.00	0.00
421	21	60.62	0.00	0.00	0.00
422	1022	64.01	0.00	-2.87	6.42
422	22	64.01	0.00	-2.87	8.59
423	1023	67.40	0.00	-0.94	2.02

423	23	67.40	0.00	-0.94	2.73
424	1024	70.45	0.00	1.01	-2.72
424	24	70.45	0.00	1.01	-3.48
425	1025	73.50	0.00	2.94	-7.36
425	25	73.50	0.00	2.94	-9.58
426	1026	76.26	0.00	4.53	-11.29
426	26	76.26	0.00	4.53	-14.71
427	1027	79.02	0.00	0.00	0.00
427	27	79.02	0.00	0.00	0.00
428	1028	81.78	0.00	0.00	0.00
428	28	81.78	0.00	0.00	0.00
429	1029	84.54	0.00	0.00	0.00
429	29	84.54	0.00	0.00	0.00
430	1030	87.30	0.00	0.00	0.00
430	30	87.30	0.00	0.00	0.00
431	1031	90.06	0.00	0.00	0.00
431	31	90.06	0.00	0.00	0.00
432	1032	92.82	0.00	0.00	0.00
432	32	92.82	0.00	0.00	0.00
433	1033	95.58	0.00	0.00	0.00
433	33	95.58	0.00	0.00	0.00
434	1034	98.34	0.00	0.00	0.00
434	34	98.34	0.00	0.00	0.00
435	1035	101.10	0.00	0.00	0.00
435	35	101.10	0.00	0.00	0.00

GRÁFICO DE ESFUERZOS



Gradiente en fase 3

[1;1]GRADF3

Coef. exc:

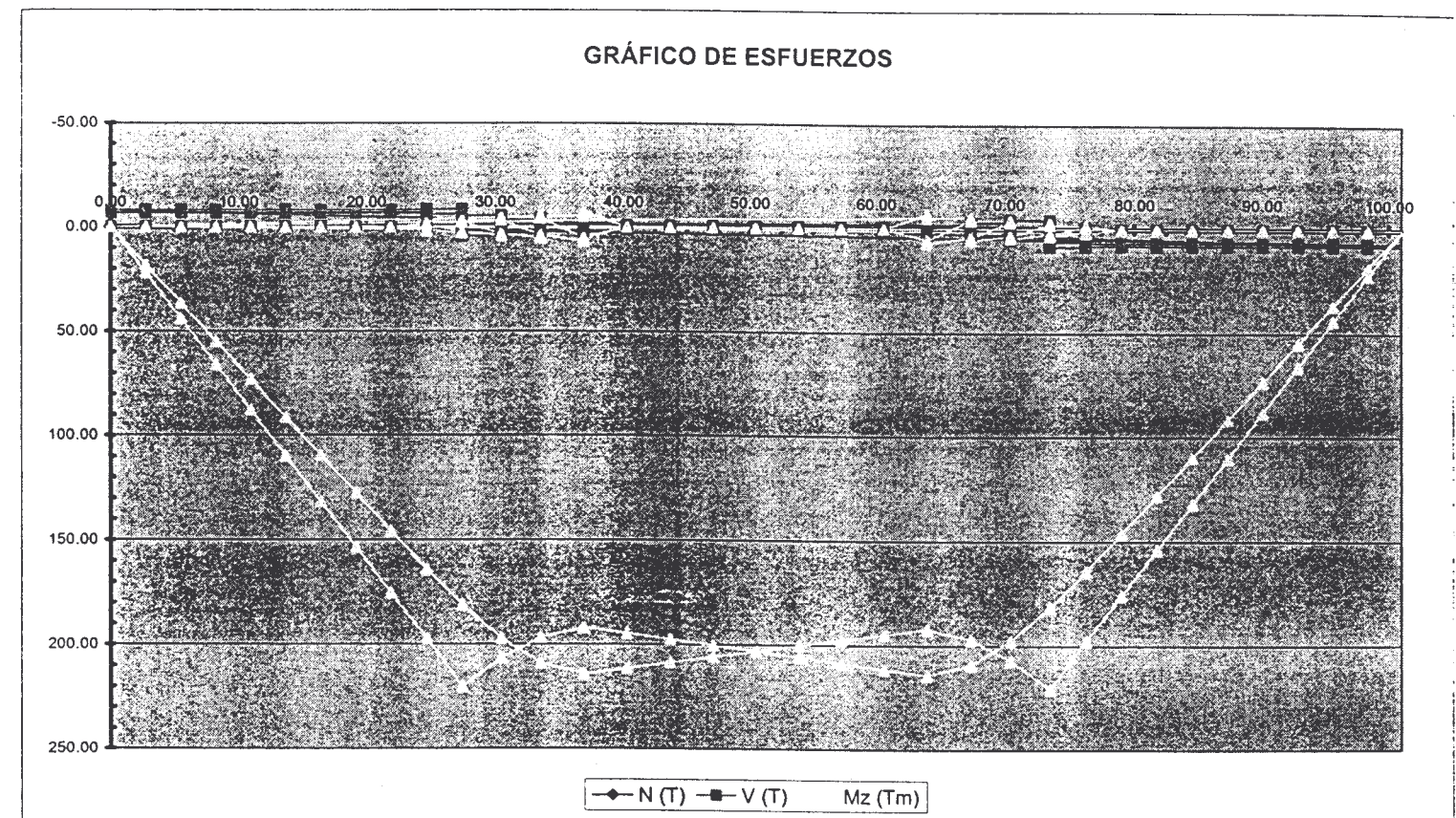
Barra	Nudo	X	N (T)	Vy (T)	Mz (Tm)
1	1	0.00	0.00	-6.65	0.00
1	2	2.74	0.00	-6.65	18.22
2	2	2.74	0.00	-6.65	18.22
2	3	5.48	0.00	-6.65	36.44
3	3	5.48	0.00	-6.65	36.44
3	4	8.22	0.00	-6.65	54.67
4	4	8.22	0.00	-6.65	54.67
4	5	10.96	0.00	-6.65	72.89
5	5	10.96	0.00	-6.65	72.89
5	6	13.70	0.00	-6.65	91.11
6	6	13.70	0.00	-6.65	91.11
6	7	16.44	0.00	-6.65	109.33
7	7	16.44	0.00	-6.65	109.33
7	8	19.18	0.00	-6.65	127.55
8	8	19.18	0.00	-6.65	127.55
8	9	21.92	0.00	-6.65	145.77
9	9	21.92	0.00	-6.65	145.77
9	10	24.66	0.00	-6.65	163.99
10	10	24.66	0.00	-6.11	164.29
10	11	27.40	0.00	-6.11	181.04
11	11	27.40	0.00	-5.17	181.31
11	12	30.45	0.00	-5.17	197.08
12	12	30.45	0.00	-3.81	197.34
12	10013	33.50	0.00	-3.81	208.97
13	13	33.50	0.00	-1.37	209.24
13	14	36.89	0.00	-1.37	213.87
14	14	36.89	0.00	0.82	214.19
14	15	40.28	0.00	0.82	211.42
15	15	40.28	0.00	0.82	211.42
15	16	43.67	0.00	0.82	208.64
16	16	43.67	0.00	0.82	208.64
16	17	47.06	0.00	0.82	205.87
17	17	47.06	0.00	0.82	205.87
17	18	50.45	0.00	0.82	203.09
18	18	50.45	0.00	0.82	203.09
18	19	53.84	0.00	0.82	200.32
19	19	53.84	0.00	0.82	200.32
19	20	57.23	0.00	0.82	197.55
20	20	57.23	0.00	0.82	197.55
20	21	60.62	0.00	0.82	194.78
21	21	60.62	0.00	0.82	194.78
21	22	64.01	0.00	0.82	192.00
22	22	64.01	0.00	-1.37	192.32
22	23	67.40	0.00	-1.37	196.97
23	23	67.40	0.00	-3.10	197.25
23	24	70.45	0.00	-3.10	206.70
24	24	70.45	0.00	-4.46	206.96
24	10025	73.50	0.00	-4.46	220.55
25	25	73.50	0.00	8.49	220.83
25	26	76.26	0.00	8.49	197.38
26	26	76.26	0.00	7.96	197.68
26	27	79.02	0.00	7.96	175.72
27	27	79.02	0.00	7.96	175.72
27	28	81.78	0.00	7.96	153.75
28	28	81.78	0.00	7.96	153.75
28	29	84.54	0.00	7.96	131.79
29	29	84.54	0.00	7.96	131.79
29	30	87.30	0.00	7.96	109.82
30	30	87.30	0.00	7.96	109.82
30	31	90.06	0.00	7.96	87.86
31	31	90.06	0.00	7.96	87.86
31	32	92.82	0.00	7.96	65.89
32	32	92.82	0.00	7.96	65.89
32	33	95.58	0.00	7.96	43.93
33	33	95.58	0.00	7.96	43.93
33	34	98.34	0.00	7.96	21.96
34	34	98.34	0.00	7.96	21.96
34	35	101.10	0.00	7.96	0.00
101	101	0.00	0.00	-8.00	0.00
101	102	2.74	0.00	-8.00	21.93
102	102	2.74	0.00	-8.00	21.93
102	103	5.48	0.00	-8.00	43.87

103	103	5.48	0.00	-8.00	43.87
103	104	8.22	0.00	-8.00	65.80
104	104	8.22	0.00	-8.00	65.80
104	105	10.96	0.00	-8.00	87.73
105	105	10.96	0.00	-8.00	87.73
106	106	13.70	0.00	-8.00	109.66
106	106	13.70	0.00	-8.00	109.66
107	107	16.44	0.00	-8.00	131.60
107	107	16.44	0.00	-8.00	131.60
107	108	19.18	0.00	-8.00	153.53
108	108	19.18	0.00	-8.00	153.53
108	109	21.92	0.00	-8.00	175.46
109	109	21.92	0.00	-8.00	175.46
109	110	24.66	0.00	-8.00	197.39
110	110	24.66	0.00	-8.54	197.10
110	10111	27.40	0.00	-8.54	220.50
111	111	27.40	0.00	4.44	220.23
111	112	30.45	0.00	4.44	206.70
112	112	30.45	0.00	3.08	206.44
112	113	33.50	0.00	3.08	197.04
113	113	33.50	0.00	1.36	196.77
113	114	36.89	0.00	1.36	192.17
114	114	36.89	0.00	-0.83	191.85
114	115	40.28	0.00	-0.83	194.65
115	115	40.28	0.00	-0.83	194.65
115	116	43.67	0.00	-0.83	197.46
116	116	43.67	0.00	-0.83	197.46
116	117	47.06	0.00	-0.83	200.26
117	117	47.06	0.00	-0.83	200.26
118	118	50.45	0.00	-0.83	203.06
118	118	50.45	0.00	-0.83	203.06
118	119	53.84	0.00	-0.83	205.87
119	119	53.84	0.00	-0.83	205.87
119	120	57.23	0.00	-0.83	208.67
120	120	57.23	0.00	-0.83	208.67
120	121	60.62	0.00	-0.83	211.47
121	121	60.62	0.00	-0.83	211.47
121	122	64.01	0.00	-0.83	214.27
122	122	64.01	0.00	1.36	213.95
122	10123	67.40	0.00	1.36	209.33
123	123	67.40	0.00	3.77	209.05
123	124	70.45	0.00	3.77	197.54
124	124	70.45	0.00	5.13	197.28
124	125	73.50	0.00	5.13	181.63
125	125	73.50	0.00	6.08	181.35
125	126	76.26	0.00	6.08	164.58
126	126	76.26	0.00	6.61	164.28
126	127	79.02	0.00	6.61	146.03
127	127	79.02	0.00	6.61	146.03
127	128	81.78	0.00	6.61	127.77
128	128	81.78	0.00	6.61	127.77
129	129	84.54	0.00	6.61	109.52
129	129	84.54	0.00	6.61	109.52
129	130	87.30	0.00	6.61	91.27
130	130	87.30	0.00	6.61	91.27
130	131	90.06	0.00	6.61	73.01
131	131	90.06	0.00	6.61	73.01
131	132	92.82	0.00	6.61	54.76
132	132	92.82	0.00	6.61	54.76
132	133	95.58	0.00	6.61	36.51
133	133	95.58	0.00	6.61	36.51
133	134	98.34	0.00	6.61	18.25
134	134	98.34	0.00	6.61	18.25
134	135	101.10	0.00	6.61	0.00
301	101	0.00	0.00	0.00	0.00
301	2001	0.00	0.00	0.00	0.00
302	102	2.74	0.00	0.00	0.00
302	2002	2.74	0.00	0.00	0.00
303	103	5.48	0.00	0.00	0.00
303	2003	5.48	0.00	0.00	0.00
304	104	8.22	0.00	0.00	0.00
304	2004	8.22	0.00	0.00	0.00
305	105	10.96	0.00	0.00	0.00
305	2005	10.96	0.00	0.00	0.00
306	106	13.70	0.00	0.00	0.00
306	2006	13.70	0.00	0.00	0.00
307	107	16.44	0.00	0.00	0.00
307	2007	16.44	0.00	0.00	0.00
308	108	19.18	0.00	0.00	0.00
308	2008	19.18	0.00	0.00	0.00
309	109	21.92	0.00	0.00	0.00
309	2009	21.92	0.00	0.00	0.00
310	110	24.66	0.00	0.54	1.73

310	2010	24.66	0.00	0.54	1.32
311	111	27.40	0.00	0.94	3.01
311	2011	27.40	0.00	0.94	2.30
312	112	30.45	0.00	1.36	4.25
312	2012	30.45	0.00	1.36	3.22
313	113	33.50	0.00	1.72	5.34
313	2013	33.50	0.00	1.72	4.04
314	114	36.89	0.00	2.18	6.78
314	2014	36.89	0.00	2.18	5.13
315	115	40.28	0.00	0.00	0.00
315	2015	40.28	0.00	0.00	0.00
316	116	43.67	0.00	0.00	0.00
316	2016	43.67	0.00	0.00	0.00
317	117	47.06	0.00	0.00	0.00
317	2017	47.06	0.00	0.00	0.00
318	118	50.45	0.00	0.00	0.00
318	2018	50.45	0.00	0.00	0.00
319	119	53.84	0.00	0.00	0.00
319	2019	53.84	0.00	0.00	0.00
320	120	57.23	0.00	0.00	0.00
320	2020	57.23	0.00	0.00	0.00
321	121	60.62	0.00	0.00	0.00
321	2021	60.62	0.00	0.00	0.00
322	122	64.01	0.00	-2.19	-7.00
322	2022	64.01	0.00	-2.19	-5.34
323	123	67.40	0.00	-1.73	-5.54
323	2023	67.40	0.00	-1.73	-4.23
324	124	70.45	0.00	-1.36	-4.30
324	2024	70.45	0.00	-1.36	-3.27
325	125	73.50	0.00	-0.95	-2.94
325	2025	73.50	0.00	-0.95	-2.22
326	126	76.26	0.00	-0.54	-1.65
326	2026	76.26	0.00	-0.54	-1.25
327	127	79.02	0.00	0.00	0.00
327	2027	79.02	0.00	0.00	0.00
328	128	81.78	0.00	0.00	0.00
328	2028	81.78	0.00	0.00	0.00
329	129	84.54	0.00	0.00	0.00
329	2029	84.54	0.00	0.00	0.00
330	130	87.30	0.00	0.00	0.00
330	2030	87.30	0.00	0.00	0.00
331	131	90.06	0.00	0.00	0.00
331	2031	90.06	0.00	0.00	0.00
332	132	92.82	0.00	0.00	0.00
332	2032	92.82	0.00	0.00	0.00
333	133	95.58	0.00	0.00	0.00
333	2033	95.58	0.00	0.00	0.00
334	134	98.34	0.00	0.00	0.00
334	2034	98.34	0.00	0.00	0.00
335	135	101.10	0.00	0.00	0.00
335	2035	101.10	0.00	0.00	0.00
201	2001	0.00	0.00	0.00	0.00
201	1001	0.00	0.00	0.00	0.00
202	2002	0.00	0.00	0.00	0.00
202	1002	0.00	0.00	0.00	0.00
203	2003	0.00	0.00	0.00	0.00
203	1003	0.00	0.00	0.00	0.00
204	2004	0.00	0.00	0.00	0.00
204	1004	0.00	0.00	0.00	0.00
205	2005	0.00	0.00	0.00	0.00
205	1005	0.00	0.00	0.00	0.00
206	2006	0.00	0.00	0.00	0.00
206	1006	0.00	0.00	0.00	0.00
207	2007	0.00	0.00	0.00	0.00
207	1007	0.00	0.00	0.00	0.00
208	2008	0.00	0.00	0.00	0.00
208	1008	0.00	0.00	0.00	0.00
209	2009	0.00	0.00	0.00	0.00
209	1009	0.00	0.00	0.00	0.00
210	2010	24.66	0.00	0.54	1.32
210	1010	24.66	0.00	0.54	-1.25
211	2011	27.40	0.00	0.94	2.30
211	1011	27.40	0.00	0.94	-2.22
212	2012	30.45	0.00	1.36	3.22
212	1012	30.45	0.00	1.36	-3.27
213	2013	33.50	0.00	1.72	4.04
213	1013	33.50	0.00	1.72	-4.22
214	2014	36.89	0.00	2.18	5.13
214	1014	36.89	0.00	2.18	-5.33
215	2015	0.00	0.00	0.00	0.00
215	1015	0.00	0.00	0.00	0.00
216	2016	0.00	0.00	0.00	0.00
216	1016	0.00	0.00	0.00	0.00

217	2017	0.00	0.00	0.00	0.00
217	1017	0.00	0.00	0.00	0.00
218	2018	0.00	0.00	0.00	0.00
218	1018	0.00	0.00	0.00	0.00
219	2019	0.00	0.00	0.00	0.00
2	1019	0.00	0.00	0.00	0.00
220	2020	0.00	0.00	0.00	0.00
220	1020	0.00	0.00	0.00	0.00
221	2021	0.00	0.00	0.00	0.00
221	1021	0.00	0.00	0.00	0.00
222	2022	64.01	0.00	-2.19	-5.34
222	1022	64.01	0.00	-2.19	5.15
223	2023	67.40	0.00	-1.73	-4.23
223	1023	67.40	0.00	-1.73	4.04
224	2024	70.45	0.00	-1.36	-3.27
224	1024	70.45	0.00	-1.36	3.23
225	2025	73.50	0.00	-0.95	-2.22
225	1025	73.50	0.00	-0.95	2.30
226	2026	76.26	0.00	-0.54	-1.25
226	1026	76.26	0.00	-0.54	1.32
227	2027	0.00	0.00	0.00	0.00
227	1027	0.00	0.00	0.00	0.00
228	2028	0.00	0.00	0.00	0.00
228	1028	0.00	0.00	0.00	0.00
229	2029	0.00	0.00	0.00	0.00
229	1029	0.00	0.00	0.00	0.00
230	2030	0.00	0.00	0.00	0.00
230	1030	0.00	0.00	0.00	0.00
230	2031	0.00	0.00	0.00	0.00
230	1031	0.00	0.00	0.00	0.00
232	2032	0.00	0.00	0.00	0.00
232	1032	0.00	0.00	0.00	0.00
233	2033	0.00	0.00	0.00	0.00
233	1033	0.00	0.00	0.00	0.00
234	2034	0.00	0.00	0.00	0.00
234	1034	0.00	0.00	0.00	0.00
235	2035	0.00	0.00	0.00	0.00
235	1035	0.00	0.00	0.00	0.00
401	1001	0.00	0.00	0.00	0.00
401	1	0.00	0.00	0.00	0.00
402	1002	2.74	0.00	0.00	0.00
402	2	2.74	0.00	0.00	0.00
403	1003	5.48	0.00	0.00	0.00
403	3	5.48	0.00	0.00	0.00
404	1004	8.22	0.00	0.00	0.00
404	4	8.22	0.00	0.00	0.00
405	1005	10.96	0.00	0.00	0.00
405	5	10.96	0.00	0.00	0.00
406	1006	13.70	0.00	0.00	0.00
406	6	13.70	0.00	0.00	0.00
407	1007	16.44	0.00	0.00	0.00
407	7	16.44	0.00	0.00	0.00
408	1008	19.18	0.00	0.00	0.00
408	8	19.18	0.00	0.00	0.00
409	1009	21.92	0.00	0.00	0.00
409	9	21.92	0.00	0.00	0.00
410	1010	24.66	0.00	0.54	-1.25
410	10	24.66	0.00	0.54	-1.66
411	1011	27.40	0.00	0.94	-2.22
411	11	27.40	0.00	0.94	-2.93
412	1012	30.45	0.00	1.36	-3.27
412	12	30.45	0.00	1.36	-4.29
413	1013	33.50	0.00	1.72	-4.22
413	13	33.50	0.00	1.72	-5.52
414	1014	36.89	0.00	2.18	-5.33
414	14	36.89	0.00	2.18	-6.98
415	1015	40.28	0.00	0.00	0.00
415	15	40.28	0.00	0.00	0.00
416	1016	43.67	0.00	0.00	0.00
416	16	43.67	0.00	0.00	0.00
417	1017	47.06	0.00	0.00	0.00
417	17	47.06	0.00	0.00	0.00
418	1018	50.45	0.00	0.00	0.00
418	18	50.45	0.00	0.00	0.00
419	1019	53.84	0.00	0.00	0.00
419	19	53.84	0.00	0.00	0.00
420	1020	57.23	0.00	0.00	0.00
420	20	57.23	0.00	0.00	0.00
421	1021	60.62	0.00	0.00	0.00
421	21	60.62	0.00	0.00	0.00
422	1022	64.01	0.00	-2.19	5.15
422	22	64.01	0.00	-2.19	6.80
423	1023	67.40	0.00	-1.73	4.04

423	23	67.40	0.00	-1.73	5.35
424	1024	70.45	0.00	-1.36	3.23
424	24	70.45	0.00	-1.36	4.25
425	1025	73.50	0.00	-0.95	2.30
425	25	73.50	0.00	-0.95	3.02
426	1026	76.26	0.00	-0.54	1.32
426	26	76.26	0.00	-0.54	1.73
427	1027	79.02	0.00	0.00	0.00
427	27	79.02	0.00	0.00	0.00
428	1028	81.78	0.00	0.00	0.00
428	28	81.78	0.00	0.00	0.00
429	1029	84.54	0.00	0.00	0.00
429	29	84.54	0.00	0.00	0.00
430	1030	87.30	0.00	0.00	0.00
430	30	87.30	0.00	0.00	0.00
431	1031	90.06	0.00	0.00	0.00
431	31	90.06	0.00	0.00	0.00
432	1032	92.82	0.00	0.00	0.00
432	32	92.82	0.00	0.00	0.00
433	1033	95.58	0.00	0.00	0.00
433	33	95.58	0.00	0.00	0.00
434	1034	98.34	0.00	0.00	0.00
434	34	98.34	0.00	0.00	0.00
435	1035	101.10	0.00	0.00	0.00
435	35	101.10	0.00	0.00	0.00



Peso propio de vigas sobre estructura final

1: 1PPVMS

Coef. exc

Barra	Nudo	X	N (T)	Vy (T)	Mz (Tm)
1	1	0.00	0.00	-45.54	-0.21
1	2	2.74	0.00	-35.06	110.22
2	2	2.74	0.00	-34.63	109.82
2	3	5.48	0.00	-24.14	190.33
3	3	5.48	0.00	-24.17	189.95
3	4	8.22	0.00	-13.69	241.81
4	4	8.22	0.00	-14.12	241.47
4	5	10.96	0.00	-3.64	265.81
5	5	10.96	0.00	-4.44	265.54
5	6	13.70	0.00	6.04	263.35
6	6	13.70	0.00	4.94	263.16
6	7	16.44	0.00	15.42	235.28
7	7	16.44	0.00	14.11	235.19
7	8	19.18	0.00	24.59	182.18
8	8	19.18	0.00	23.18	182.24
8	9	21.92	0.00	33.67	104.36
9	9	21.92	0.00	32.33	104.60
	10	24.66	0.00	42.82	1.64
	10	24.66	0.00	41.78	2.12
10	11	27.40	0.00	52.26	-126.71
11	11	27.40	0.00	51.78	-125.90
11	12	30.45	0.00	63.45	-301.64
12	12	30.45	0.00	64.09	-300.62
12	10013	33.50	0.00	75.75	-513.87
13	13	33.50	0.00	-81.50	-513.12
13	14	36.89	0.00	-68.53	-258.82
14	14	36.89	0.00	-66.16	-258.62
14	15	40.28	0.00	-53.19	-56.32
15	15	40.28	0.00	-50.94	-56.53
15	16	43.67	0.00	-37.97	94.17
16	16	43.67	0.00	-36.26	93.68
16	17	47.06	0.00	-23.29	194.62
17	17	47.06	0.00	-22.38	193.98
17	18	50.45	0.00	-9.41	247.87
18	18	50.45	0.00	-9.42	247.18
18	19	53.84	0.00	3.55	257.13
19	19	53.84	0.00	2.62	256.49
19	20	57.23	0.00	15.59	225.63
20	20	57.23	0.00	13.86	225.14
20	21	60.62	0.00	26.83	156.17
	21	60.62	0.00	24.56	155.96
	22	64.01	0.00	37.53	50.71
22	22	64.01	0.00	35.15	50.92
22	23	67.40	0.00	48.12	-90.21
23	23	67.40	0.00	46.38	-89.45
23	24	70.45	0.00	58.05	-248.70
24	24	70.45	0.00	57.41	-247.68
24	10025	73.50	0.00	69.08	-440.57
25	25	73.50	0.00	-73.55	-439.75
25	26	76.26	0.00	-63.00	-251.31
26	26	76.26	0.00	-61.94	-250.83
26	27	79.02	0.00	-51.38	-94.44
27	27	79.02	0.00	-50.03	-94.20
27	28	81.78	0.00	-39.47	29.31
28	28	81.78	0.00	-38.05	29.37
28	29	84.54	0.00	-27.49	119.81
29	29	84.54	0.00	-26.16	119.73
29	30	87.30	0.00	-15.61	177.37
30	30	87.30	0.00	-14.49	177.17
30	31	90.06	0.00	-3.94	202.60
31	31	90.06	0.00	-3.13	202.32
31	32	92.82	0.00	7.43	196.38
32	32	92.82	0.00	7.87	196.04
	33	95.58	0.00	18.42	159.77
	33	95.58	0.00	18.43	159.38
33	34	98.34	0.00	28.99	93.94
34	34	98.34	0.00	28.53	93.53
34	35	101.10	0.00	39.09	0.21
101	101	0.00	0.00	-38.70	0.21
101	102	2.74	0.00	-28.22	91.88
102	102	2.74	0.00	-28.65	92.28
102	103	5.48	0.00	-18.17	156.43

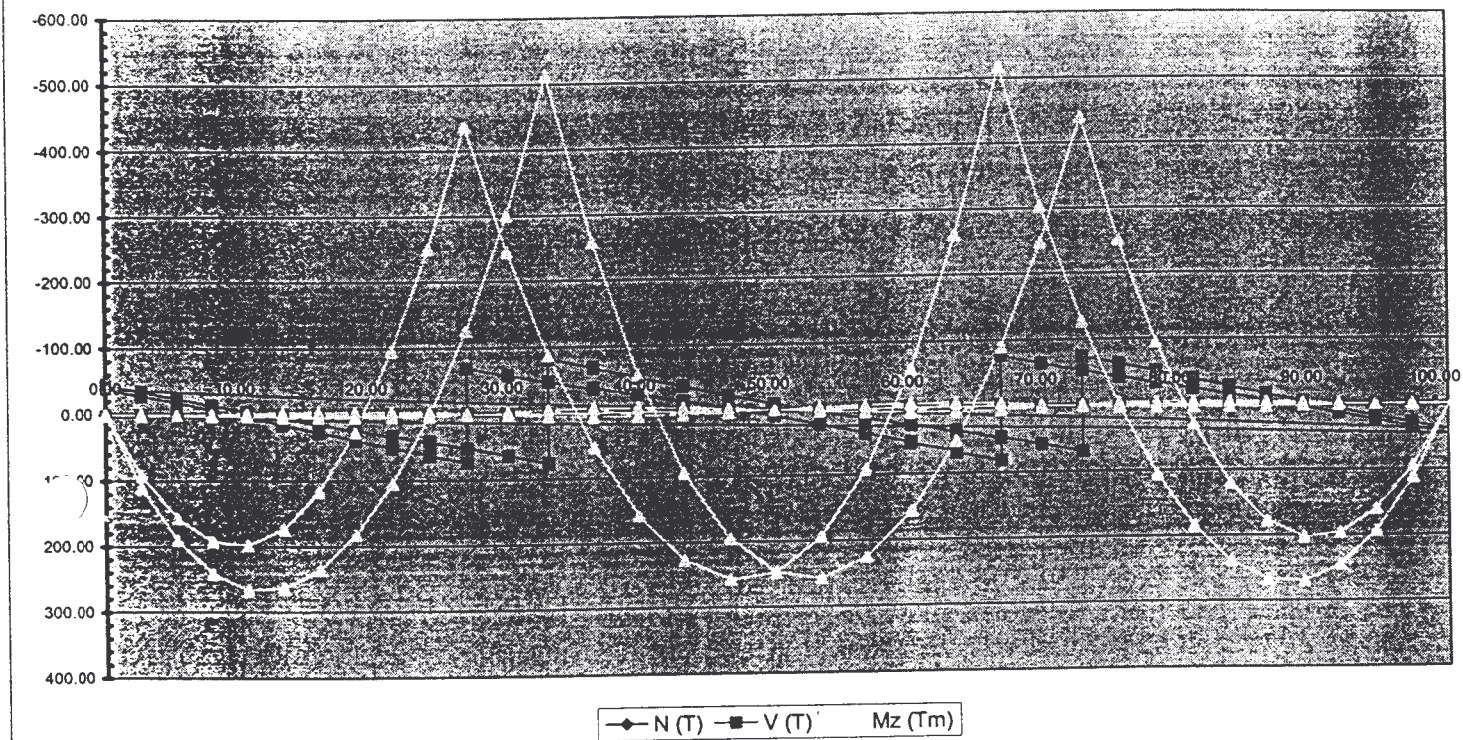
103	103	5.48	0.00	-18.15	156.81
103	104	8.22	0.00	-7.67	192.18
104	104	8.22	0.00	-7.23	192.52
104	105	10.96	0.00	3.25	197.98
105	105	10.96	0.00	4.05	198.25
105	106	13.70	0.00	14.53	172.80
106	106	13.70	0.00	15.63	172.99
106	107	16.44	0.00	26.11	115.81
107	107	16.44	0.00	27.42	115.89
107	108	19.18	0.00	37.90	26.40
108	108	19.18	0.00	39.30	26.34
108	109	21.92	0.00	49.78	-95.71
109	109	21.92	0.00	51.11	-95.95
109	110	24.66	0.00	61.60	-250.36
110	110	24.66	0.00	62.63	-250.84
110	10111	27.40	0.00	73.11	-436.81
111	111	27.40	0.00	-68.96	-437.62
111	i12	30.45	0.00	-57.30	-245.08
112	112	30.45	0.00	-57.93	-246.10
112	113	33.50	0.00	-46.27	-87.19
113	113	33.50	0.00	-48.00	-87.94
113	114	36.89	0.00	-35.03	52.78
114	114	36.89	0.00	-37.40	52.58
114	115	40.28	0.00	-24.43	157.38
115	115	40.28	0.00	-26.69	157.59
115	116	43.67	0.00	-13.72	226.09
116	116	43.67	0.00	-15.43	226.58
116	117	47.06	0.00	-2.47	256.92
117	117	47.06	0.00	-3.38	257.56
117	118	50.45	0.00	9.59	247.04
118	118	50.45	0.00	9.60	247.73
118	119	53.84	0.00	22.56	193.22
119	119	53.84	0.00	23.49	193.86
119	120	57.23	0.00	36.45	92.26
120	120	57.23	0.00	38.18	92.75
120	121	60.62	0.00	51.15	-58.66
121	121	60.62	0.00	53.41	-58.45
121	122	64.01	0.00	66.38	-261.50
122	122	64.01	0.00	68.76	-261.71
122	10123	67.40	0.00	81.73	-516.79
123	123	67.40	0.00	-76.09	-517.54
123	124	70.45	0.00	-64.42	-303.27
124	124	70.45	0.00	-63.79	-304.30
124	125	73.50	0.00	-52.12	-127.54
125	125	73.50	0.00	-52.60	-128.36
125	126	76.26	0.00	-42.04	2.25
126	126	76.26	0.00	-43.10	1.77
126	127	79.02	0.00	-32.54	106.15
127	127	79.02	0.00	-33.90	105.91
127	128	81.78	0.00	-23.34	184.89
128	128	81.78	0.00	-24.76	184.84
128	129	84.54	0.00	-14.21	238.62
129	129	84.54	0.00	-15.54	238.70
129	130	87.30	0.00	-4.98	267.01
130	130	87.30	0.00	-6.09	267.21
130	131	90.06	0.00	4.47	269.45
131	131	90.06	0.00	3.66	269.73
131	132	92.82	0.00	14.21	245.07
132	132	92.82	0.00	13.78	245.41
132	133	95.58	0.00	24.34	192.81
133	133	95.58	0.00	24.33	193.19
133	134	98.34	0.00	34.88	111.49
134	134	98.34	0.00	35.34	111.90
134	135	101.10	0.00	45.90	-0.21
301	101	0.00	0.00	0.46	1.46
301	2001	0.00	0.00	0.46	1.11
302	102	2.74	0.00	0.44	1.38
302	2002	2.74	0.00	0.44	1.05
303	103	5.48	0.00	-0.02	-0.07
303	2003	5.48	0.00	-0.02	-0.05
304	104	8.22	0.00	-0.44	-1.38
304	2004	8.22	0.00	-0.44	-1.05
305	105	10.96	0.00	-0.80	-2.53
305	2005	10.96	0.00	-0.80	-1.92
306	106	13.70	0.00	-1.10	-3.47
306	2006	13.70	0.00	-1.10	-2.63
307	107	16.44	0.00	-1.31	-4.13
307	2007	16.44	0.00	-1.31	-3.14
308	108	19.18	0.00	-1.40	-4.42
308	2008	19.18	0.00	-1.40	-3.36
309	109	21.92	0.00	-1.33	-4.19
309	2009	21.92	0.00	-1.33	-3.18
310	110	24.66	0.00	-1.04	-3.27

310	2010	24.66	0.00	-1.04	-2.48
311	111	27.40	0.00	-0.47	-1.49
311	2011	27.40	0.00	-0.47	-1.13
312	112	30.45	0.00	0.63	2.00
312	2012	30.45	0.00	0.63	1.52
3	113	33.50	0.00	1.73	5.45
313	2013	33.50	0.00	1.73	4.14
314	114	36.89	0.00	2.37	7.47
314	2014	36.89	0.00	2.37	5.67
315	115	40.28	0.00	2.26	7.11
315	2015	40.28	0.00	2.26	5.40
316	116	43.67	0.00	1.71	5.39
316	2016	43.67	0.00	1.71	4.10
317	117	47.06	0.00	0.91	2.87
317	2017	47.06	0.00	0.91	2.18
318	118	50.45	0.00	-0.01	-0.02
318	2018	50.45	0.00	-0.01	-0.02
319	119	53.84	0.00	-0.92	-2.91
319	2019	53.84	0.00	-0.92	-2.21
320	120	57.23	0.00	-1.72	-5.43
320	2020	57.23	0.00	-1.72	-4.13
321	121	60.62	0.00	-2.27	-7.15
321	2021	60.62	0.00	-2.27	-5.43
322	122	64.01	0.00	-2.38	-7.50
322	2022	64.01	0.00	-2.38	-5.70
323	123	67.40	0.00	-1.74	-5.47
323	2023	67.40	0.00	-1.74	-4.16
324	124	70.45	0.00	-0.63	-2.00
324	2024	70.45	0.00	-0.63	-1.52
325	125	73.50	0.00	0.48	1.52
325	2025	73.50	0.00	0.48	1.15
326	126	76.26	0.00	1.06	3.33
326	2026	76.26	0.00	1.06	2.53
327	127	79.02	0.00	1.35	4.26
327	2027	79.02	0.00	1.35	3.24
328	128	81.78	0.00	1.42	4.49
328	2028	81.78	0.00	1.42	3.41
329	129	84.54	0.00	1.33	4.19
329	2029	84.54	0.00	1.33	3.18
330	130	87.30	0.00	1.11	3.51
330	2030	87.30	0.00	1.11	2.66
331	131	90.06	0.00	0.81	2.54
331	2031	90.06	0.00	0.81	1.93
332	132	92.82	0.00	0.44	1.37
332	2032	92.82	0.00	0.44	1.04
333	133	95.58	0.00	0.01	0.03
333	2033	95.58	0.00	0.01	0.03
334	134	98.34	0.00	-0.46	-1.44
334	2034	98.34	0.00	-0.46	-1.09
335	135	101.10	0.00	-0.48	-1.51
335	2035	101.10	0.00	-0.48	-1.15
201	1001	0.00	0.00	0.46	1.11
202	1002	2.74	0.00	0.44	1.05
202	1002	2.74	0.00	0.44	-1.05
203	1003	5.48	0.00	-0.02	-0.05
203	1003	5.48	0.00	-0.02	0.05
204	1004	8.22	0.00	-0.44	-1.05
204	1004	8.22	0.00	-0.44	1.05
205	1005	10.96	0.00	-0.80	-1.92
205	1005	10.96	0.00	-0.80	1.92
206	1006	13.70	0.00	-1.10	-2.63
206	1006	13.70	0.00	-1.10	2.63
207	1007	16.44	0.00	-1.31	-3.14
207	1007	16.44	0.00	-1.31	3.14
208	1008	19.18	0.00	-1.40	-3.36
208	1008	19.18	0.00	-1.40	3.36
209	1009	21.92	0.00	-1.33	-3.18
209	1009	21.92	0.00	-1.33	3.18
210	1010	24.66	0.00	-1.04	-2.48
210	1010	24.66	0.00	-1.04	2.48
211	1011	27.40	0.00	-0.47	-1.13
211	1011	27.40	0.00	-0.47	1.13
212	1012	30.45	0.00	0.63	1.52
212	1012	30.45	0.00	0.63	-1.52
213	1013	33.50	0.00	1.73	4.14
213	1013	33.50	0.00	1.73	-4.14
214	1014	36.89	0.00	2.37	5.67
214	1014	36.89	0.00	2.37	-5.67
215	1015	40.28	0.00	2.26	5.40
215	1015	40.28	0.00	2.26	-5.40

217	2017	47.06	0.00	0.91	2.18
217	1017	47.06	0.00	0.91	-2.18
218	2018	50.45	0.00	-0.01	-0.02
218	1018	50.45	0.00	-0.01	0.02
219	2019	53.84	0.00	-0.92	-2.21
219	1019	53.84	0.00	-0.92	2.21
220	2020	57.23	0.00	-1.72	-4.13
220	1020	57.23	0.00	-1.72	4.13
221	2021	60.62	0.00	-2.27	-5.43
221	1021	60.62	0.00	-2.27	5.43
222	2022	64.01	0.00	-2.38	-5.70
222	1022	64.01	0.00	-2.38	5.70
223	2023	67.40	0.00	-1.74	-4.16
223	1023	67.40	0.00	-1.74	4.16
224	2024	70.45	0.00	-0.63	-1.52
224	1024	70.45	0.00	-0.63	1.52
225	2025	73.50	0.00	0.48	1.15
225	1025	73.50	0.00	0.48	-1.15
226	2026	76.26	0.00	1.06	2.53
226	1026	76.26	0.00	1.06	-2.53
227	2027	79.02	0.00	1.35	3.24
227	1027	79.02	0.00	1.35	-3.24
228	2028	81.78	0.00	1.42	3.41
228	1028	81.78	0.00	1.42	-3.41
229	2029	84.54	0.00	1.33	3.18
229	1029	84.54	0.00	1.33	-3.18
230	2030	87.30	0.00	1.11	2.66
230	1030	87.30	0.00	1.11	-2.66
231	2031	90.06	0.00	0.81	1.93
231	1031	90.06	0.00	0.81	-1.93
232	2032	92.82	0.00	0.44	1.04
232	1032	92.82	0.00	0.44	-1.04
233	2033	95.58	0.00	0.01	0.03
233	1033	95.58	0.00	0.01	-0.03
234	2034	98.34	0.00	-0.46	-1.09
234	1034	98.34	0.00	-0.46	1.09
235	2035	101.10	0.00	-0.48	-1.15
235	1035	101.10	0.00	-0.48	1.15
401	1001	0.00	0.00	0.46	-1.11
401	1	0.00	0.00	0.46	-1.46
402	1002	2.74	0.00	0.44	-1.05
402	2	2.74	0.00	0.44	-1.38
403	1003	5.48	0.00	-0.02	0.05
403	3	5.48	0.00	-0.02	0.07
404	1004	8.22	0.00	-0.44	1.05
404	4	8.22	0.00	-0.44	1.38
405	1005	10.96	0.00	-0.80	1.92
405	5	10.96	0.00	-0.80	2.53
406	1006	13.70	0.00	-1.10	2.63
406	6	13.70	0.00	-1.10	3.47
407	1007	16.44	0.00	-1.31	3.14
407	7	16.44	0.00	-1.31	4.13
408	1008	19.18	0.00	-1.40	3.36
408	8	19.18	0.00	-1.40	4.42
409	1009	21.92	0.00	-1.33	3.18
409	9	21.92	0.00	-1.33	4.19
410	1010	24.66	0.00	-1.04	2.48
410	10	24.66	0.00	-1.04	3.27
411	1011	27.40	0.00	-0.47	1.13
411	11	27.40	0.00	-0.47	1.49
412	1012	30.45	0.00	0.63	-1.52
412	12	30.45	0.00	0.63	-2.00
413	1013	33.50	0.00	1.73	-4.14
413	13	33.50	0.00	1.73	-5.45
414	1014	36.89	0.00	2.37	-5.67
414	14	36.89	0.00	2.37	-7.47
415	1015	40.28	0.00	2.26	-5.40
415	15	40.28	0.00	2.26	-7.11
416	1016	43.67	0.00	1.71	-4.10
416	16	43.67	0.00	1.71	-5.39
417	1017	47.06	0.00	0.91	-2.18
417	17	47.06	0.00	0.91	-2.87
418	1018	50.45	0.00	-0.01	0.02
418	18	50.45	0.00	-0.01	0.02
419	1019	53.84	0.00	-0.92	2.21
419	19	53.84	0.00	-0.92	2.91
420	1020	57.23	0.00	-1.73	4.13
420	20	57.23	0.00	-1.73	5.43
421	1021	60.62	0.00	-2.27	5.43
421	21	60.62	0.00	-2.27	7.15
422	1022	64.01	0.00	-2.38	5.70
422	22	64.01	0.00	-2.38	7.50

423	23	67.40	0.00	-1.74	5.47
424	1024	70.45	0.00	-0.63	1.52
424	24	70.45	0.00	-0.63	2.00
425	1025	73.50	0.00	0.48	-1.15
425	25	73.50	0.00	0.48	-1.52
	1026	76.26	0.00	1.06	-2.53
	26	76.26	0.00	1.06	-3.33
427	1027	79.02	0.00	1.35	-3.24
427	27	79.02	0.00	1.35	-4.26
428	1028	81.78	0.00	1.42	-3.41
428	28	81.78	0.00	1.42	-4.49
429	1029	84.54	0.00	1.33	-3.18
429	29	84.54	0.00	1.33	-4.19
430	1030	87.30	0.00	1.11	-2.66
430	30	87.30	0.00	1.11	-3.51
431	1031	90.06	0.00	0.81	-1.93
431	31	90.06	0.00	0.81	-2.54
432	1032	92.82	0.00	0.44	-1.04
432	32	92.82	0.00	0.44	-1.37
433	1033	95.58	0.00	0.01	-0.03
433	33	95.58	0.00	0.01	-0.03
434	1034	98.34	0.00	-0.46	1.09
434	34	98.34	0.00	-0.46	1.44
435	1035	101.10	0.00	-0.48	1.15
435	35	101.10	0.00	-0.48	1.51

GRÁFICO DE ESFUERZOS



Peso propio de losa sobre estructura final

[1: 1]PPLOSA

Coef. exc:

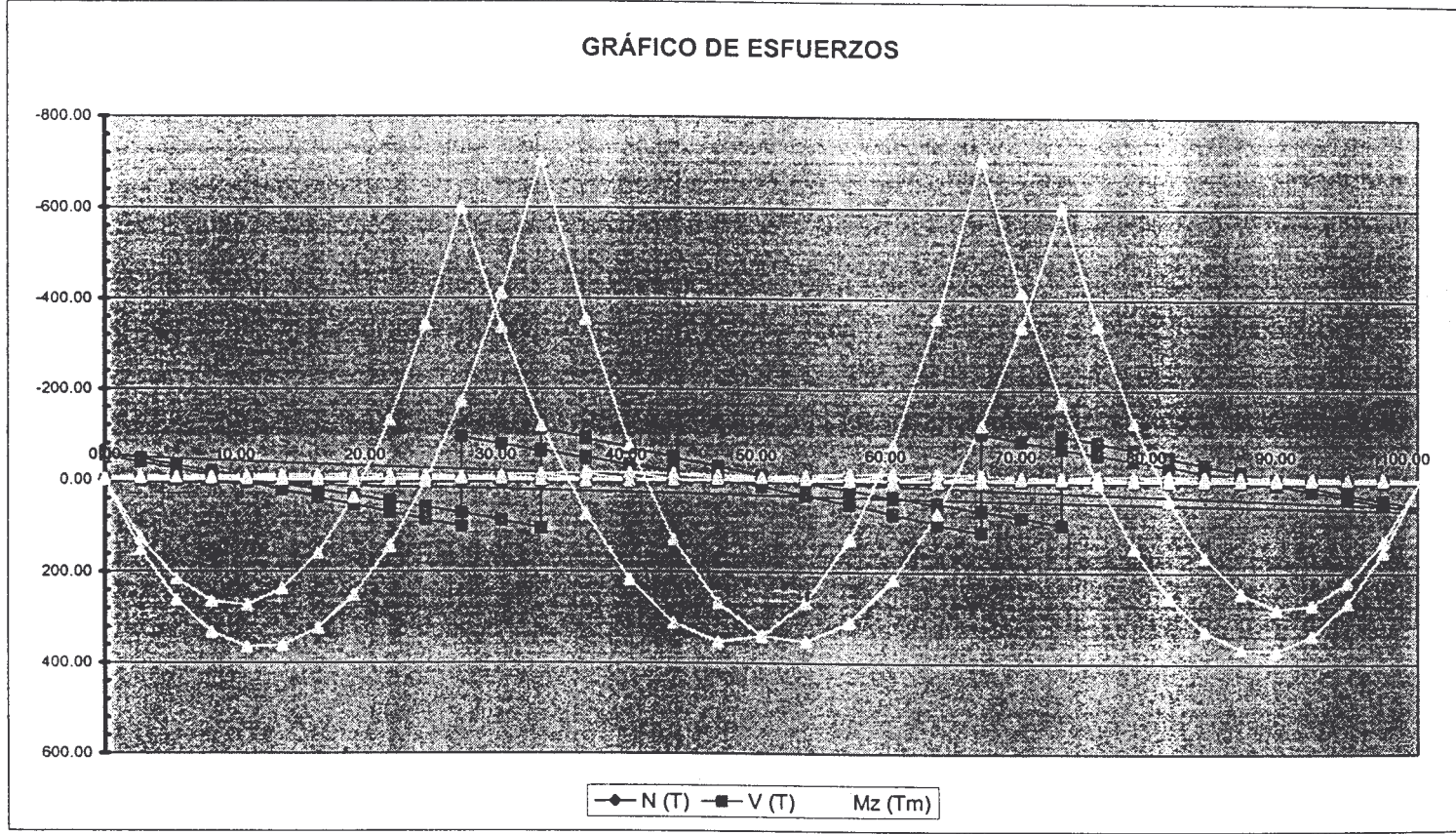
Barra	Nudo	X	N (T)	Vy (T)	Mz (Tm)
1	1	0.00	0.00	-62.51	-0.28
1	2	2.74	0.00	-48.12	151.28
2	2	2.74	0.00	-47.52	150.73
2	3	5.48	0.00	-33.14	261.24
3	3	5.48	0.00	-33.17	260.72
3	4	8.22	0.00	-18.78	331.89
4	4	8.22	0.00	-19.38	331.43
4	5	10.96	0.00	-5.00	364.84
5	5	10.96	0.00	-6.10	364.46
5	6	13.70	0.00	8.29	361.47
6	6	13.70	0.00	6.78	361.20
6	7	16.44	0.00	21.16	322.93
7	7	16.44	0.00	19.36	322.81
7	8	19.18	0.00	33.75	250.05
8	8	19.18	0.00	31.82	250.13
8	9	21.92	0.00	46.21	143.23
9	9	21.92	0.00	44.38	143.57
9	10	24.66	0.00	58.77	2.25
10	10	24.66	0.00	57.34	2.91
10	11	27.40	0.00	71.73	-173.92
11	11	27.40	0.00	71.08	-172.80
11	12	30.45	0.00	87.09	-414.01
12	12	30.45	0.00	87.96	-412.61
12	10013	33.50	0.00	103.97	-705.31
13	13	33.50	0.00	-111.86	-704.28
13	14	36.89	0.00	-94.06	-355.25
14	14	36.89	0.00	-90.81	-354.97
14	15	40.28	0.00	-73.01	-77.30
15	15	40.28	0.00	-69.91	-77.59
15	16	43.67	0.00	-52.12	129.25
16	16	43.67	0.00	-49.77	128.58
16	17	47.06	0.00	-31.97	267.12
17	17	47.06	0.00	-30.72	266.25
17	18	50.45	0.00	-12.92	340.21
18	18	50.45	0.00	-12.93	339.26
18	19	53.84	0.00	4.87	352.93
19	19	53.84	0.00	3.60	352.05
19	20	57.23	0.00	21.40	309.68
20	20	57.23	0.00	19.03	309.02
20	21	60.62	0.00	36.83	214.35
21	21	60.62	0.00	33.71	214.06
21	22	64.01	0.00	51.51	69.61
22	22	64.01	0.00	48.24	69.89
22	23	67.40	0.00	66.04	-123.81
23	23	67.40	0.00	63.66	-122.78
23	24	70.45	0.00	79.67	-341.35
24	24	70.45	0.00	78.80	-339.95
24	10025	73.50	0.00	94.81	-604.70
25	25	73.50	0.00	-100.96	-603.58
25	26	76.26	0.00	-86.47	-344.94
26	26	76.26	0.00	-85.02	-344.28
26	27	79.02	0.00	-70.53	-129.63
27	27	79.02	0.00	-68.67	-129.29
27	28	81.78	0.00	-54.18	40.23
28	28	81.78	0.00	-52.22	40.31
28	29	84.54	0.00	-37.73	164.45
29	29	84.54	0.00	-35.91	164.33
29	30	87.30	0.00	-21.42	243.44
30	30	87.30	0.00	-19.89	243.17
30	31	90.06	0.00	-5.40	278.08
31	31	90.06	0.00	-4.29	277.69
31	32	92.82	0.00	10.20	269.54
32	32	92.82	0.00	10.80	269.08
32	33	95.58	0.00	25.29	219.29
33	33	95.58	0.00	25.30	218.76
33	34	98.34	0.00	39.79	128.94
34	34	98.34	0.00	39.16	128.37
34	35	101.10	0.00	53.65	0.29
101	101	0.00	0.00	-53.11	0.28
101	102	2.74	0.00	-38.73	126.10
102	102	2.74	0.00	-39.33	126.66
102	103	5.48	0.00	-24.94	214.71

103	103	5.48	0.00	-24.91	215.23
103	104	8.22	0.00	-10.53	263.78
104	104	8.22	0.00	-9.93	264.24
104	105	10.96	0.00	4.46	271.74
105	105	10.96	0.00	5.56	272.11
106	106	13.70	0.00	19.94	237.18
106	107	16.44	0.00	21.45	237.44
107	107	16.44	0.00	35.84	158.95
107	108	19.18	0.00	37.64	159.07
108	108	19.18	0.00	52.02	36.24
108	109	21.92	0.00	53.95	36.16
109	109	21.92	0.00	68.33	-131.36
109	110	24.66	0.00	70.16	-131.70
110	110	24.66	0.00	84.54	-343.64
110	10111	27.40	0.00	85.97	-344.29
111	111	27.40	0.00	100.35	-599.54
111	112	30.45	0.00	-94.66	-600.66
112	112	30.45	0.00	-78.64	-336.38
112	113	33.50	0.00	-79.51	-337.78
113	113	33.50	0.00	-63.50	-119.68
113	114	36.89	0.00	-65.88	-120.71
114	114	36.89	0.00	-48.08	72.45
114	115	40.28	0.00	-51.33	72.17
115	115	40.28	0.00	-33.54	216.02
115	116	43.67	0.00	-36.63	216.31
116	116	43.67	0.00	-18.84	310.32
116	117	47.06	0.00	-21.18	310.99
117	117	47.06	0.00	-3.39	352.64
117	118	50.45	0.00	-4.64	353.52
118	118	50.45	0.00	13.16	339.07
118	119	53.84	0.00	13.17	340.02
119	119	53.84	0.00	30.97	265.20
119	120	57.23	0.00	32.24	266.08
120	120	57.23	0.00	50.03	126.63
120	121	60.62	0.00	52.40	127.30
121	121	60.62	0.00	70.20	-80.51
121	122	64.01	0.00	73.31	-80.22
122	122	64.01	0.00	91.11	-358.92
122	10123	67.40	0.00	94.38	-359.21
123	123	67.40	0.00	112.17	-709.31
123	124	70.45	0.00	-104.43	-710.35
124	124	70.45	0.00	-88.42	-416.25
124	125	73.50	0.00	-87.55	-417.66
125	125	73.50	0.00	-71.54	-175.06
125	126	76.26	0.00	-72.20	-176.18
126	126	76.26	0.00	-57.71	3.08
126	127	79.02	0.00	-59.16	2.42
127	127	79.02	0.00	-44.67	145.70
127	128	81.78	0.00	-46.52	145.36
128	128	81.78	0.00	-32.03	253.78
129	129	84.54	0.00	-33.99	253.70
129	130	87.30	0.00	-19.50	327.51
130	130	87.30	0.00	-21.32	327.63
130	131	90.06	0.00	-6.83	366.49
131	131	90.06	0.00	-8.36	366.76
131	132	92.82	0.00	6.13	369.84
132	132	92.82	0.00	5.02	370.22
132	133	95.58	0.00	19.51	336.37
133	133	95.58	0.00	18.91	336.84
133	134	98.34	0.00	33.40	264.64
134	134	98.34	0.00	33.39	265.17
134	135	101.10	0.00	47.88	153.02
301	101	0.00	0.00	48.51	153.58
301	2001	0.00	0.00	63.00	-0.29
302	102	2.74	0.00	0.64	-1.52
302	2002	2.74	0.00	-1.52	-2.00
303	103	5.48	0.00	0.60	-5.16
303	2003	5.48	0.00	0.60	-5.62
304	104	8.22	0.00	-0.03	-7.15
304	2004	8.22	0.00	-0.03	-7.12
305	105	10.96	0.00	-0.60	-8.94
305	2005	10.96	0.00	-0.60	-8.49
306	106	13.70	0.00	-1.10	-10.52
307	107	16.44	0.00	-1.10	-9.69
307	2006	16.44	0.00	-1.51	-11.81
308	108	19.18	0.00	-1.51	-10.67
308	2007	16.44	0.00	-1.80	-12.72
309	109	21.92	0.00	-1.80	-11.36
309	2008	19.18	0.00	-1.80	-13.11
310	110	24.66	0.00	-1.92	-13.11
310	2009	21.92	0.00	-1.92	-11.66
310	2010	24.66	0.00	-1.83	-12.80
310	2011	27.40	0.00	-1.83	-11.42
310	2012	30.45	0.00	-1.83	-2.68
310	2013	33.50	0.00	-1.42	-10.46
310	2014	36.89	0.00	-1.42	-3.64
310	2015	40.28	0.00	-0.65	-9.01
310	2016	43.67	0.00	-0.65	-5.89
310	2017	47.06	0.00	0.87	-6.09
310	2018	50.45	0.00	0.87	-10.26
310	2019	53.84	0.00	2.38	-2.60
310	2020	57.23	0.00	2.38	-13.97
310	2021	60.62	0.00	2.38	-0.93
310	2022	64.01	0.00	3.10	-1.31
310	2023	67.40	0.00	3.10	-1.32
310	2024	70.45	0.00	2.35	-3.10
310	2025	73.50	0.00	1.25	-4.78
310	2026	76.26	0.00	1.25	-5.73
310	2027	79.02	0.00	-0.01	-8.75
310	2028	81.78	0.00	-0.01	-8.75
310	2029	84.54	0.00	-1.27	-12.72
310	2030	87.30	0.00	-1.27	-11.76
310	2031	90.06	0.00	-2.37	-16.18
310	2032	92.82	0.00	-2.37	-14.39
310	2033	95.58	0.00	-3.11	-18.53
310	2034	98.34	0.00	-3.11	-16.18
310	2035	101.10	0.00	-3.27	-19.01
310	2036	104.86	0.00	-3.27	-16.54
310	2037	108.62	0.00	-2.38	-15.79
310	2038	112.38	0.00	-2.38	-13.99
310	2039	116.14	0.00	-0.87	-10.92
310	2040	120.00	0.00	-0.87	-10.26
310	2041	123.86	0.00	0.66	-5.39
310	2042	127.72	0.00	0.66	-5.89
310	2043	131.58	0.00	1.45	-2.53
310	2044	135.44	0.00	1.45	-3.63
310	2045	139.30	0.00	1.86	-1.25
310	2046	143.16	0.00	1.86	-2.66
310	2047	147.02	0.00	1.96	-0.94
310	2048	150.88	0.00	1.96	-2.42
310	2049	154.74	0.00	1.82	-1.36
310	2050	158.60	0.00	1.82	-2.74
310	2051	162.46	0.00	1.53	-2.29
310	2052	166.32	0.00	1.53	-3.45
310	2053	170.18	0.00	1.11	-3.61
310	2054	174.04	0.00	1.11	-4.45
310	2055	177.90	0.00	0.60	-5.22
310	2056	181.76	0.00	0.60	-5.67
310	2057	185.62	0.00	0.01	-7.06
310	2058	189.48	0.00	0.01	-7.07
310	2059	193.34	0.00	-0.63	-9.08
310	2060	197.20	0.00	-0.63	-8.61
310	2061	201.06	0.00	-0.66	-5.63
310	2062	204.92	0.00	-0.66	-5.13
310	2063	208.78	0.00	0.64	-2.00
310	2064	212.64	0.00	0.64	-5.05
310	2065	216.50	0.00	0.60	-5.62
310	2066	220.36	0.00	0.60	-8.49
310	2067	224.22	0.00	0.00	-7.12
310	2068	228.08	0.00	0.00	-6.98
310	2069	231.94	0.00	-0.60	-8.49
310	2070	235.80	0.00	-0.60	-5.62
310	2071	239.66	0.00	-1.10	-9.69
310	2072	243.52	0.00	-1.10	-4.42
310	2073	247.38	0.00	-1.51	-10.67
310	2074	251.24	0.00	-1.51	-3.44
310	2075	255.10	0.00	-1.80	-11.36
310	2076	258.96	0.00	-1.80	-2.75
310	2077	262.82	0.00	-1.92	-11.66
310	2078	266.68	0.00	-1.92	-2.44
310	2079	270.54	0.00	-1.83	-11.42
310	2080	274.40	0.00	-1.83	-2.68
310	2081	278.26	0.00	-1.42	-10.46
310	2082	282.12	0.00	-1.42	-3.64
310	2083	285.98	0.00	-0.65	-9.01
310	2084	289.84	0.00	-0.65	-5.89
310	2085	293.70	0.00	0.87	-6.09
310	2086	297.56	0.00	0.87	-10.26
310	2087	301.42	0.00	2.38	-2.60
310	2088	305.28	0.00	2.38	-13.97
310	2089	309.14	0.00	3.25	-0.93
310	2090	313.00	0.00	3.25	-16.51
310	2091	316.86	0.00	3.10	-1.31
310	2092	320.72	0.00	3.10	-16.14
310	2093	324.58	0.00	2.35	-3.10
310	2094	328.44	0.00	2.35	-14.35

310	2010	24.66	0.00	-1.42	-10.46
311	111	27.40	0.00	-0.65	-9.50
311	2011	27.40	0.00	-0.65	-9.01
312	112	30.45	0.00	0.87	-5.43
312	2012	30.45	0.00	0.87	-6.09
313	113	33.50	0.00	2.38	-0.80
313	2013	33.50	0.00	2.38	-2.60
314	114	36.89	0.00	3.25	1.53
314	2014	36.89	0.00	3.25	-0.93
315	115	40.28	0.00	3.10	1.03
315	2015	40.28	0.00	3.10	-1.31
316	116	43.67	0.00	2.35	-1.32
316	2016	43.67	0.00	2.35	-3.10
317	117	47.06	0.00	1.25	-4.78
317	2017	47.06	0.00	1.25	-5.73
318	118	50.45	0.00	-0.01	-8.75
318	2018	50.45	0.00	-0.01	-8.75
319	119	53.84	0.00	-1.27	-12.72
319	2019	53.84	0.00	-1.27	-11.76
320	120	57.23	0.00	-2.37	-16.18
320	2020	57.23	0.00	-2.37	-14.39
321	121	60.62	0.00	-3.11	-18.53
321	2021	60.62	0.00	-3.11	-16.18
322	122	64.01	0.00	-3.27	-19.01
322	2022	64.01	0.00	-3.27	-16.54
323	123	67.40	0.00	-2.38	-15.79
323	2023	67.40	0.00	-2.38	-13.99
324	124	70.45	0.00	-0.87	-10.92
324	2024	70.45	0.00	-0.87	-10.26
325	125	73.50	0.00	0.66	-5.39
325	2025	73.50	0.00	0.66	-5.89
326	126	76.26	0.00	1.45	-2.53
326	2026	76.26	0.00	1.45	-3.63
327	127	79.02	0.00	1.86	-1.25
327	2027	79.02	0.00	1.86	-2.66
328	128	81.78	0.00	1.96	-0.94
328	2028	81.78	0.00	1.96	-2.42
329	129	84.54	0.00	1.82	-1.36
329	2029	84.54	0.00	1.82	-2.74
330	130	87.30	0.00	1.53	-2.29
330	2030	87.30	0.00	1.53	-3.45
331	131	90.06	0.00	1.11	-3.61
331	2031	90.06	0.00	1.11	-4.45
332	132	92.82	0.00	0.60	-5.22
332	2032	92.82	0.00	0.60	-5.67
333	133	95.58	0.00	0.01	-7.06
333	2033	95.58	0.00	0.01	-7.07
334	134	98.34	0.00	-0.63	-9.08
334	2034	98.34	0.00	-0.63	-8.61
335	135	101.10	0.00	-0.66	-5.63
335	2035	101.10	0.00	-0.66	-5.13
201	2001	0.00	0.00	0.64	-2.00
201	1001	0.00	0.00	0.64	-5.05
202	2002	2.74	0.00	0.60	-5.62
202	1002	2.74	0.00	0.60	-8.49
203	2003	5.48	0.00	-0.03	-7.12
203	1003	5.48	0.00	-0.03	-6.98
204	2004	8.22	0.00	-0.60	-8.49
204	1004	8.22	0.00	-0.60	-5.62
205	2005	10.96	0.00	-1.10	-9.69
205	1005	10.96	0.00	-1.10	-4.42
206	2006	13.70	0.00	-1.51	-10.67
206	1006	13.70	0.00	-1.51	-3.44
207	2007	16.44	0.00	-1.80	-11.36
207	1007	16.44	0.00	-1.80	-2.75
208	2008	19.18	0.00	-1.92	-11.66
208	1008	19.18	0.00	-1.92	-2.44
209	2009	21.92	0.00	-1.83	-11.42
209	1009	21.92	0.00	-1.83	-2.68
210	2010	24.66	0.00	-1.42	-10.46
210	1010	24.66	0.00	-1.42	-3.64
211	2011	27.40	0.00	-0.65	-9.01
211	1011	27.40	0.00	-0.65	-5.89
212	2012	30.45	0.00	0.87	-6.09
212	1012	30.45	0.00	0.87	-10.26
213	2013	33.50	0.00	2.38	-2.60
213	1013	33.50	0.00	2.38	-13.97
214	2014	36.89	0.00	3.25	-0.93
214	1014	36.89	0.00	3.25	-16.51
215	2015	40.28	0.00	3.10	-1.31
215	1015	40.28	0.00	3.10	-16.14
216	2016	43.67	0.00	2.35	-3.10
216	1016	43.67	0.00	2.35	-14.35

217	2017	47.06	0.00	1.25	-5.73
217	1017	47.06	0.00	1.25	-11.72
218	2018	50.45	0.00	-0.01	-8.75
218	1018	50.45	0.00	-0.01	-8.70
219	2019	53.84	0.00	-1.27	-11.76
2	1019	53.84	0.00	-1.27	-5.68
220	2020	57.23	0.00	-2.37	-14.39
220	1020	57.23	0.00	-2.37	-3.06
221	2021	60.62	0.00	-3.11	-16.18
221	1021	60.62	0.00	-3.11	-1.27
222	2022	64.01	0.00	-3.27	-16.54
222	1022	64.01	0.00	-3.27	-0.90
223	2023	67.40	0.00	-2.38	-13.99
223	1023	67.40	0.00	-2.38	-2.58
224	2024	70.45	0.00	-0.87	-10.26
224	1024	70.45	0.00	-0.87	-6.09
225	2025	73.50	0.00	0.66	-5.89
225	1025	73.50	0.00	0.66	-9.06
226	2026	76.26	0.00	1.45	-3.63
226	1026	76.26	0.00	1.45	-10.57
227	2027	79.02	0.00	1.86	-2.66
227	1027	79.02	0.00	1.86	-11.55
228	2028	81.78	0.00	1.96	-2.42
228	1028	81.78	0.00	1.96	-11.78
229	2029	84.54	0.00	1.82	-2.74
229	1029	84.54	0.00	1.82	-11.47
230	2030	87.30	0.00	1.53	-3.45
230	1030	87.30	0.00	1.53	-10.76
231	2031	90.06	0.00	1.11	-4.45
231	1031	90.06	0.00	1.11	-9.76
232	2032	92.82	0.00	0.60	-5.67
232	1032	92.82	0.00	0.60	-8.54
233	2033	95.58	0.00	0.01	-7.07
233	1033	95.58	0.00	0.01	-7.14
234	2034	98.34	0.00	-0.63	-8.61
234	1034	98.34	0.00	-0.63	-5.60
235	2035	101.10	0.00	-0.66	-5.13
235	1035	101.10	0.00	-0.66	-1.98
401	1001	0.00	0.00	0.64	-5.05
401	1	0.00	0.00	0.64	-5.53
402	1002	2.74	0.00	0.60	-8.49
402	2	2.74	0.00	0.60	-8.94
403	1003	5.48	0.00	-0.03	-6.98
403	3	5.48	0.00	-0.03	-6.96
404	1004	8.22	0.00	-0.60	-5.62
404	4	8.22	0.00	-0.60	-5.16
405	1005	10.96	0.00	-1.10	-4.42
405	5	10.96	0.00	-1.10	-3.59
406	1006	13.70	0.00	-1.51	-3.44
406	6	13.70	0.00	-1.51	-2.30
407	1007	16.44	0.00	-1.80	-2.75
407	7	16.44	0.00	-1.80	-1.39
408	1008	19.18	0.00	-1.92	-2.44
408	8	19.18	0.00	-1.92	-0.99
409	1009	21.92	0.00	-1.83	-2.68
409	9	21.92	0.00	-1.83	-1.30
410	1010	24.66	0.00	-1.42	-3.64
410	10	24.66	0.00	-1.42	-2.57
411	1011	27.40	0.00	-0.65	-5.89
411	11	27.40	0.00	-0.65	-5.40
412	1012	30.45	0.00	0.87	-10.26
412	12	30.45	0.00	0.87	-10.92
413	1013	33.50	0.00	2.38	-13.97
413	13	33.50	0.00	2.38	-15.77
414	1014	36.89	0.00	3.25	-16.51
414	14	36.89	0.00	3.25	-18.97
415	1015	40.28	0.00	3.10	-16.14
415	15	40.28	0.00	3.10	-18.48
416	1016	43.67	0.00	2.35	-14.35
416	16	43.67	0.00	2.35	-16.12
417	1017	47.06	0.00	1.25	-11.72
417	17	47.06	0.00	1.25	-12.66
418	1018	50.45	0.00	-0.01	-8.70
418	18	50.45	0.00	-0.01	-8.69
419	1019	53.84	0.00	-1.27	-5.68
419	19	53.84	0.00	-1.27	-4.72
420	1020	57.23	0.00	-2.37	-3.06
420	20	57.23	0.00	-2.37	-1.27
421	1021	60.62	0.00	-3.11	-1.27
421	21	60.62	0.00	-3.11	1.09
422	1022	64.01	0.00	-3.27	-0.90
422	22	64.01	0.00	-3.27	1.57
423	1023	67.40	0.00	-2.38	-2.58

423	23	67.40	0.00	-2.38	-0.78
424	1024	70.45	0.00	-0.87	-6.09
424	24	70.45	0.00	-0.87	-5.43
425	1025	73.50	0.00	0.66	-9.06
425	25	73.50	0.00	0.66	-9.55
426	1026	76.26	0.00	1.45	-10.57
426	26	76.26	0.00	1.45	-11.67
427	1027	79.02	0.00	1.86	-11.55
427	27	79.02	0.00	1.86	-12.95
428	1028	81.78	0.00	1.96	-11.78
428	28	81.78	0.00	1.96	-13.26
429	1029	84.54	0.00	1.82	-11.47
429	29	84.54	0.00	1.82	-12.85
430	1030	87.30	0.00	1.53	-10.76
430	30	87.30	0.00	1.53	-11.92
431	1031	90.06	0.00	1.11	-9.76
431	31	90.06	0.00	1.11	-10.60
432	1032	92.82	0.00	0.60	-8.54
432	32	92.82	0.00	0.60	-8.99
433	1033	95.58	0.00	0.01	-7.14
433	33	95.58	0.00	0.01	-7.15
434	1034	98.34	0.00	-0.63	-5.60
434	34	98.34	0.00	-0.63	-5.13
435	1035	101.10	0.00	-0.66	-1.98
435	35	101.10	0.00	-0.66	-1.48



Barra	Nudo	X	N (T)	Vy (T)	Mz (Tm)
1	1	0.00	0.00	4.73	0.14
1	2	2.74	0.00	4.73	-12.83
2	2	2.74	0.00	3.40	-12.57
2	3	5.48	0.00	3.40	-21.89
3	3	5.48	0.00	2.34	-21.67
3	4	8.22	0.00	2.34	-28.07
4	4	8.22	0.00	1.47	-27.94
4	5	10.96	0.00	1.47	-31.96
5	5	10.96	0.00	0.83	-23.50
5	6	13.70	0.00	0.83	-25.77
6	6	13.70	0.00	0.26	-23.15
6	7	16.44	0.00	0.26	-23.86
7	7	16.44	0.00	0.00	0.00
7	8	19.18	0.00	0.00	0.00
8	8	19.18	0.00	0.00	0.00
8	9	21.92	0.00	0.00	0.00
9	9	21.92	0.00	0.00	0.00
9	10	24.66	0.00	0.00	0.00
10	10	24.66	0.00	0.00	0.00
10	11	27.40	0.00	0.00	0.00
11	11	27.40	0.00	0.00	0.00
11	12	30.45	0.00	0.00	0.00
12	12	30.45	0.00	0.00	0.00
12	10013	33.50	0.00	0.00	0.00
13	13	33.50	0.00	5.82	44.52
13	14	36.89	0.00	5.82	24.79
14	14	36.89	0.00	4.55	23.49
14	15	40.28	0.00	4.55	8.07
15	15	40.28	0.00	3.51	8.18
15	16	43.67	0.00	3.51	-3.71
16	16	43.67	0.00	2.72	3.32
16	17	47.06	0.00	2.72	-5.89
17	17	47.06	0.00	2.15	-5.84
17	18	50.45	0.00	2.15	-13.12
18	18	50.45	0.00	1.58	-10.91
18	19	53.84	0.00	1.58	-16.26
19	19	53.84	0.00	0.98	-10.61
19	20	57.23	0.00	0.98	-13.93
20	20	57.23	0.00	0.75	1.24
20	21	60.62	0.00	0.75	-1.29
21	21	60.62	0.00	0.40	-0.06
21	22	64.01	0.00	0.40	-1.43
22	22	64.01	0.00	0.03	-0.55
22	23	67.40	0.00	0.03	-0.65
23	23	67.40	0.00	0.00	0.00
23	24	70.45	0.00	0.00	0.00
24	24	70.45	0.00	0.00	0.00
24	10025	73.50	0.00	0.00	0.00
25	25	73.50	0.00	5.13	35.71
25	26	76.26	0.00	5.13	21.55
26	26	76.26	0.00	3.93	21.78
26	27	79.02	0.00	3.93	10.93
27	27	79.02	0.00	2.97	11.15
27	28	81.78	0.00	2.97	2.94
28	28	81.78	0.00	2.23	3.11
28	29	84.54	0.00	2.23	-3.05
29	29	84.54	0.00	1.63	-2.95
29	30	87.30	0.00	1.63	-7.44
30	30	87.30	0.00	1.29	0.92
30	31	90.06	0.00	1.29	-2.64
31	31	90.06	0.00	0.95	-1.89
31	32	92.82	0.00	0.95	-4.51
32	32	92.82	0.00	0.47	-1.45
32	33	95.58	0.00	0.47	-2.73
33	33	95.58	0.00	0.06	-0.36
33	34	98.34	0.00	0.06	-0.52
34	34	98.34	0.00	0.03	0.10
34	35	101.10	0.00	0.03	0.00
101	101	0.00	0.00	0.98	0.00
101	102	2.74	0.00	0.98	-2.68
102	102	2.74	0.00	1.29	-2.67
102	103	5.48	0.00	1.56	1.68

Carga muerta maxima

(t: 1)ca

Coef. exc.

Barra	Nudo	X	N (T)	Vy (T)	Mz (Tm)
1	1	0.00	0.00	-138.25	-0.51
1	2	2.74	0.00	-105.95	334.03
2	2	2.74	0.00	-105.29	333.01
2	3	5.48	0.00	-72.98	577.25
3	3	5.48	0.00	-73.51	576.26
3	4	8.22	0.00	-41.20	733.41
4	4	8.22	0.00	-42.85	732.48
4	5	10.96	0.00	-10.54	805.62
5	5	10.96	0.00	-13.24	804.80
5	6	13.70	0.00	19.06	796.83
6	6	13.70	0.00	15.42	796.18
6	7	16.44	0.00	47.73	709.66
7	7	16.44	0.00	43.34	709.29
7	8	19.18	0.00	75.64	546.28
8	8	19.18	0.00	70.82	546.32
8	9	21.92	0.00	103.12	308.03
9	9	21.92	0.00	98.33	308.63
	10	24.66	0.00	130.63	-5.05
	10	24.66	0.00	126.59	-3.67
10	11	27.40	0.00	158.89	-394.78
11	11	27.40	0.00	156.46	-392.25
11	12	30.45	0.00	192.41	-924.28
12	12	30.45	0.00	193.40	-920.97
12	10013	33.50	0.00	229.36	-1566.00
13	13	33.50	0.00	-249.87	-1563.12
13	14	36.89	0.00	-209.91	-783.80
14	14	36.89	0.00	-203.02	-782.87
14	15	40.28	0.00	-163.05	-162.39
15	15	40.28	0.00	-156.18	-162.81
15	16	43.67	0.00	-116.21	298.90
16	16	43.67	0.00	-110.79	297.54
16	17	47.06	0.00	-70.82	605.37
17	17	47.06	0.00	-67.78	603.41
17	18	50.45	0.00	-27.81	765.44
18	18	50.45	0.00	-27.67	763.21
18	19	53.84	0.00	12.30	789.26
19	19	53.84	0.00	9.39	787.07
19	20	57.23	0.00	49.35	687.51
20	20	57.23	0.00	43.63	685.72
20	21	60.62	0.00	83.60	470.07
	21	60.62	0.00	75.79	469.13
	22	64.01	0.00	115.76	144.45
22	22	64.01	0.00	107.24	144.87
22	23	67.40	0.00	147.21	-286.43
23	23	67.40	0.00	140.57	-284.11
23	24	70.45	0.00	176.53	-767.68
24	24	70.45	0.00	173.40	-764.36
24	10025	73.50	0.00	209.36	-1348.00
25	25	73.50	0.00	-225.56	-1345.28
25	26	76.26	0.00	-193.02	-767.64
26	26	76.26	0.00	-190.29	-765.90
26	27	79.02	0.00	-157.75	-285.62
27	27	79.02	0.00	-153.83	-284.64
27	28	81.78	0.00	-121.29	95.03
28	28	81.78	0.00	-116.95	95.38
28	29	84.54	0.00	-84.41	373.26
29	29	84.54	0.00	-80.23	373.07
29	30	87.30	0.00	-47.69	549.60
30	30	87.30	0.00	-44.14	548.98
30	31	90.06	0.00	-11.60	625.90
31	31	90.06	0.00	-9.07	624.92
31	32	92.82	0.00	23.47	605.05
32	32	92.82	0.00	24.66	603.79
2	33	95.58	0.00	57.20	490.82
33	33	95.58	0.00	56.78	489.33
33	34	98.34	0.00	89.33	287.70
34	34	98.34	0.00	87.07	286.07
34	35	101.10	0.00	119.61	0.84
101	101	0.00	0.00	-132.51	0.51
101	102	2.74	0.00	-96.86	314.75
102	102	2.74	0.00	-97.51	315.77
102	103	5.48	0.00	-61.87	534.12

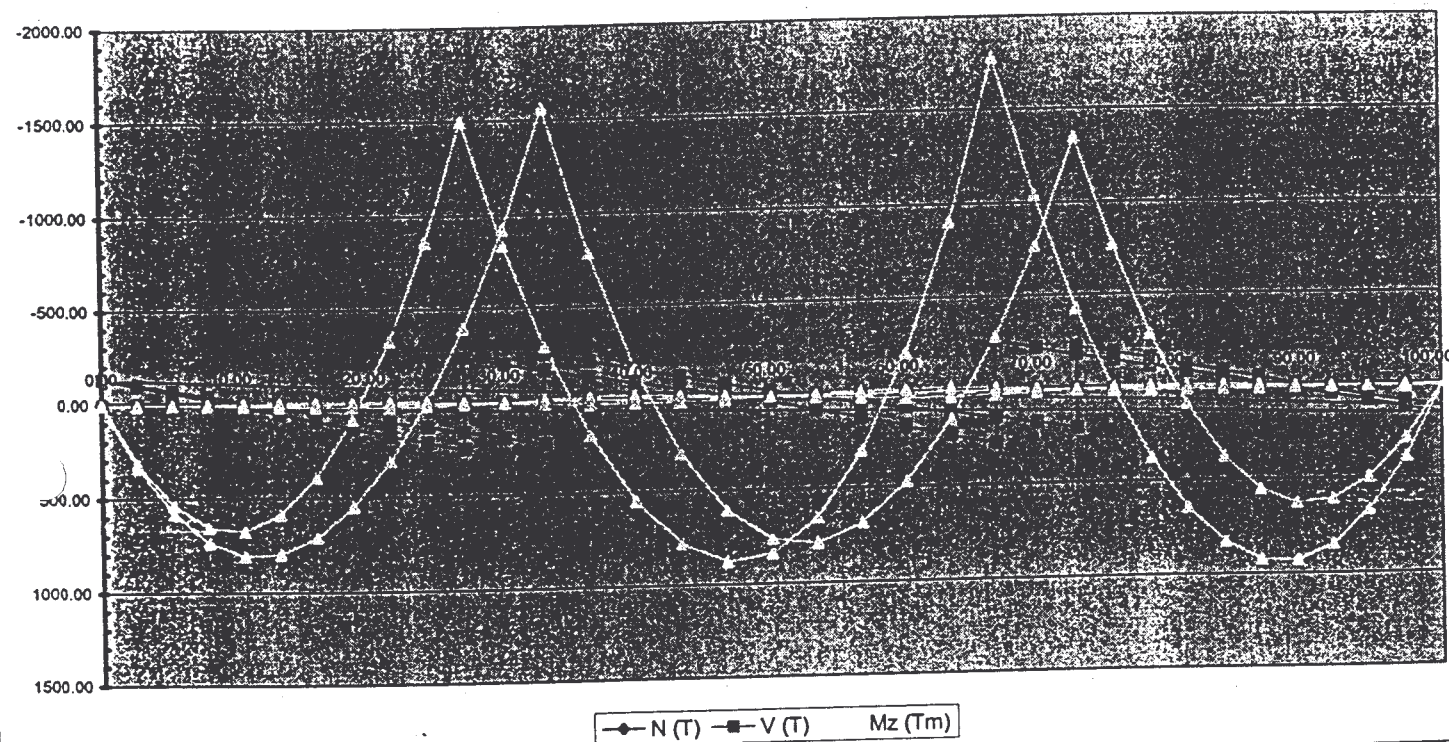
103	103	5.48	0.00	-61.35	535.11
103	104	8.22	0.00	-25.70	654.36
104	104	8.22	0.00	-24.05	655.29
104	105	10.96	0.00	11.59	672.36
105	105	10.96	0.00	14.29	673.18
105	106	13.70	0.00	49.94	585.18
106	106	13.70	0.00	53.58	585.82
106	107	16.44	0.00	89.23	390.17
107	107	16.44	0.00	93.62	390.54
107	108	19.18	0.00	129.26	85.20
108	108	19.18	0.00	134.09	85.16
108	109	21.92	0.00	169.74	-331.09
109	109	21.92	0.00	174.53	-331.69
109	110	24.66	0.00	210.18	-858.75
110	110	24.66	0.00	214.23	-860.12
110	10111	27.40	0.00	249.87	-1496.00
111	111	27.40	0.00	-238.11	-1498.46
111	112	30.45	0.00	-198.43	-832.75
112	112	30.45	0.00	-199.42	-836.06
112	113	33.50	0.00	-159.74	-288.35
113	113	33.50	0.00	-164.33	-290.92
113	114	36.89	0.00	-120.23	191.41
114	114	36.89	0.00	-127.12	190.49
114	115	40.28	0.00	-83.02	546.67
115	115	40.28	0.00	-89.89	547.09
115	116	43.67	0.00	-45.78	777.04
116	116	43.67	0.00	-51.20	778.40
116	117	47.06	0.00	-7.10	877.22
117	117	47.06	0.00	-10.14	879.18
117	118	50.45	0.00	33.96	838.80
118	118	50.45	0.00	33.82	841.03
118	119	53.84	0.00	77.93	651.62
119	119	53.84	0.00	80.84	653.81
119	120	57.23	0.00	124.94	305.01
120	120	57.23	0.00	130.67	306.79
120	121	60.62	0.00	174.77	-210.92
121	121	60.62	0.00	182.58	-209.98
121	122	64.01	0.00	226.68	-903.67
122	122	64.01	0.00	235.20	-904.09
122	10123	67.40	0.00	279.30	-1776.00
123	123	67.40	0.00	-262.92	-1778.48
123	124	70.45	0.00	-223.24	-1037.00
124	124	70.45	0.00	-220.11	-1040.40
124	125	73.50	0.00	-180.43	-429.57
125	125	73.50	0.00	-181.09	-432.34
125	126	76.26	0.00	-145.18	17.90
126	126	76.26	0.00	-147.91	16.17
126	127	79.02	0.00	-112.01	374.86
127	127	79.02	0.00	-115.92	373.88
127	128	81.78	0.00	-80.01	644.26
128	128	81.78	0.00	-84.35	643.92
128	129	84.54	0.00	-48.44	827.18
129	129	84.54	0.00	-52.63	827.36
129	130	87.30	0.00	-16.72	923.05
130	130	87.30	0.00	-20.27	923.67
130	131	90.06	0.00	15.64	930.05
131	131	90.06	0.00	13.11	931.03
131	132	92.82	0.00	49.02	845.29
132	132	92.82	0.00	47.83	846.56
132	133	95.58	0.00	83.74	665.00
133	133	95.58	0.00	84.15	666.48
133	134	98.34	0.00	120.06	384.67
134	134	98.34	0.00	122.31	386.30
134	135	101.10	0.00	158.22	-0.84
301	101	0.00	0.00	0.94	5.04
301	2001	0.00	0.00	0.94	4.33
302	102	2.74	0.00	0.66	6.21
302	2002	2.74	0.00	0.66	5.71
303	103	5.48	0.00	-0.52	2.50
303	2003	5.48	0.00	-0.52	2.89
304	104	8.22	0.00	-1.65	-1.04
304	2004	8.22	0.00	-1.65	0.20
305	105	10.96	0.00	-2.70	-4.36
305	2005	10.96	0.00	-2.70	-2.32
306	106	13.70	0.00	-3.64	-7.32
306	2006	13.70	0.00	-3.64	-4.57
307	107	16.44	0.00	-4.39	-9.68
307	2007	16.44	0.00	-4.39	-6.37
308	108	19.18	0.00	-4.83	-11.07
308	2008	19.18	0.00	-4.83	-7.42
309	109	21.92	0.00	-4.79	-10.95
309	2009	21.92	0.00	-4.79	-7.33
310	110	24.66	0.00	-4.05	-8.61

310	2010	24.66	0.00	-4.05	-5.55
311	111	27.40	0.00	-2.44	-3.30
311	2011	27.40	0.00	-2.44	-1.46
312	112	30.45	0.00	0.99	7.92
312	2012	30.45	0.00	0.99	7.17
313	113	33.50	0.00	4.60	19.35
313	2013	33.50	0.00	4.60	15.88
314	114	36.89	0.00	6.89	26.82
314	2014	36.89	0.00	6.89	21.61
315	115	40.28	0.00	6.87	26.76
315	2015	40.28	0.00	6.87	21.57
316	116	43.67	0.00	5.42	22.20
316	2016	43.67	0.00	5.42	18.10
317	117	47.06	0.00	3.04	14.71
317	2017	47.06	0.00	3.04	12.41
318	118	50.45	0.00	0.14	5.57
318	2018	50.45	0.00	0.14	-5.46
319	119	53.84	0.00	-2.91	-4.05
319	2019	53.84	0.00	-2.91	-1.85
320	120	57.23	0.00	-5.72	-12.91
320	2020	57.23	0.00	-5.72	-8.58
321	121	60.62	0.00	-7.81	-19.47
321	2021	60.62	0.00	-7.81	-13.57
322	122	64.01	0.00	-8.52	-21.71
322	2022	64.01	0.00	-8.52	-15.27
323	123	67.40	0.00	-6.64	-16.07
323	2023	67.40	0.00	-6.64	-11.04
324	124	70.45	0.00	-3.13	-5.06
324	2024	70.45	0.00	-3.13	-2.69
325	125	73.50	0.00	0.66	6.45
325	2025	73.50	0.00	0.66	5.96
326	126	76.26	0.00	2.74	12.79
326	2026	76.26	0.00	2.74	10.72
327	127	79.02	0.00	3.91	16.49
327	2027	79.02	0.00	3.91	13.53
328	128	81.78	0.00	4.34	17.85
328	2028	81.78	0.00	4.34	14.57
329	129	84.54	0.00	4.18	17.34
329	2029	84.54	0.00	4.18	14.18
330	130	87.30	0.00	3.55	15.35
330	2030	87.30	0.00	3.55	12.67
331	131	90.06	0.00	2.53	12.14
331	2031	90.06	0.00	2.53	10.23
332	132	92.82	0.00	1.19	7.93
332	2032	92.82	0.00	1.19	7.03
333	133	95.58	0.00	-0.42	2.86
333	2033	95.58	0.00	-0.42	3.17
334	134	98.34	0.00	-2.25	-2.93
334	2034	98.34	0.00	-2.25	-1.22
335	135	101.10	0.00	-2.13	-4.62
335	2035	101.10	0.00	-2.13	-3.01
201	1001	0.00	0.00	0.94	4.33
201	1001	0.00	0.00	0.94	-0.18
202	1002	2.74	0.00	0.66	5.71
202	1002	2.74	0.00	0.66	2.57
203	1003	5.48	0.00	-0.52	2.89
203	1003	5.48	0.00	-0.52	5.39
204	1004	8.22	0.00	-1.65	0.20
204	1004	8.22	0.00	-1.65	8.08
205	1005	10.96	0.00	-2.70	-2.32
205	1005	10.96	0.00	-2.70	10.60
206	1006	13.70	0.00	-3.64	-4.57
206	1006	13.70	0.00	-3.64	12.85
207	1007	16.44	0.00	-4.39	-6.37
207	1007	16.44	0.00	-4.39	14.65
208	1008	19.18	0.00	-4.83	-7.42
208	1008	19.18	0.00	-4.83	15.70
209	1009	21.92	0.00	-4.79	-7.33
209	1009	21.92	0.00	-4.79	15.61
210	1010	24.66	0.00	-4.05	-5.55
210	1010	24.66	0.00	-4.05	13.83
211	1011	27.40	0.00	-2.44	-1.46
211	1011	27.40	0.00	-2.44	10.20
212	1012	30.45	0.00	0.99	7.17
212	1012	30.45	0.00	0.99	2.43
213	1013	33.50	0.00	4.60	15.88
213	1013	33.50	0.00	4.60	-6.15
214	1014	36.89	0.00	6.89	21.61
214	1014	36.89	0.00	6.89	-11.37
215	1015	40.28	0.00	6.87	21.57
215	1015	40.28	0.00	6.87	-11.32
216	1016	43.67	0.00	5.42	18.10
216	1016	43.67	0.00	5.42	-7.86

217	2017	47.06	0.00	3.04	12.41
217	1017	47.06	0.00	3.04	-2.16
218	2018	50.45	0.00	0.14	5.46
218	1018	50.45	0.00	0.14	4.78
219	2019	53.84	0.00	-2.91	-1.85
219	1019	53.84	0.00	-2.91	12.10
220	2020	57.23	0.00	-5.72	-8.58
220	1020	57.23	0.00	-5.72	18.83
221	2021	60.62	0.00	-7.81	-13.57
221	1021	60.62	0.00	-7.81	23.81
222	2022	64.01	0.00	-8.52	-15.27
222	1022	64.01	0.00	-8.52	25.51
223	2023	67.40	0.00	-6.64	-11.04
223	1023	67.40	0.00	-6.64	20.77
224	2024	70.45	0.00	-3.13	-2.69
224	1024	70.45	0.00	-3.13	12.29
225	2025	73.50	0.00	0.66	5.96
225	1025	73.50	0.00	0.66	2.82
226	2026	76.26	0.00	2.74	10.72
226	1026	76.26	0.00	2.74	-2.38
227	2027	79.02	0.00	3.91	13.53
227	1027	79.02	0.00	3.91	-5.19
228	2028	81.78	0.00	4.34	14.57
228	1028	81.78	0.00	4.34	-6.22
229	2029	84.54	0.00	4.18	14.18
229	1029	84.54	0.00	4.18	-5.84
230	2030	87.30	0.00	3.55	12.67
230	1030	87.30	0.00	3.55	-4.32
231	2031	90.06	0.00	2.53	10.23
231	1031	90.06	0.00	2.53	-1.88
232	2032	92.82	0.00	1.19	7.03
232	1032	92.82	0.00	1.19	1.32
233	2033	95.58	0.00	-0.42	3.17
233	1033	95.58	0.00	-0.42	5.17
234	2034	98.34	0.00	-2.25	-1.22
234	1034	98.34	0.00	-2.25	9.57
235	2035	101.10	0.00	-2.13	-3.01
235	1035	101.10	0.00	-2.13	7.19
401	1001	0.00	0.00	0.94	-0.18
401	1	0.00	0.00	0.94	-0.90
402	1002	2.74	0.00	0.66	2.57
402	2	2.74	0.00	0.66	2.08
403	1003	5.48	0.00	-0.52	5.39
403	3	5.48	0.00	-0.52	5.78
404	1004	8.22	0.00	-1.65	8.08
404	4	8.22	0.00	-1.65	9.33
405	1005	10.96	0.00	-2.70	10.60
405	5	10.96	0.00	-2.70	12.64
406	1006	13.70	0.00	-3.64	12.85
406	6	13.70	0.00	-3.64	15.61
407	1007	16.44	0.00	-4.39	14.65
407	7	16.44	0.00	-4.39	17.97
408	1008	19.18	0.00	-4.83	15.70
408	8	19.18	0.00	-4.83	19.35
409	1009	21.92	0.00	-4.79	15.61
409	9	21.92	0.00	-4.79	19.23
410	1010	24.66	0.00	-4.05	13.83
410	10	24.66	0.00	-4.05	16.89
411	1011	27.40	0.00	-2.44	10.20
411	11	27.40	0.00	-2.44	12.05
412	1012	30.45	0.00	0.99	2.43
412	12	30.45	0.00	0.99	1.68
413	1013	33.50	0.00	4.60	-6.15
413	13	33.50	0.00	4.60	-9.62
414	1014	36.89	0.00	6.89	-11.37
414	14	36.89	0.00	6.89	-16.58
415	1015	40.28	0.00	6.87	-11.32
415	15	40.28	0.00	6.87	-16.52
416	1016	43.67	0.00	5.42	-7.86
416	16	43.67	0.00	5.42	-11.95
417	1017	47.06	0.00	3.04	-2.16
417	17	47.06	0.00	3.04	-4.46
418	1018	50.45	0.00	0.14	4.78
418	18	50.45	0.00	0.14	4.68
419	1019	53.84	0.00	-2.91	12.10
419	19	53.84	0.00	-2.91	14.30
420	1020	57.23	0.00	-5.72	18.83
420	20	57.23	0.00	-5.72	23.15
421	1021	60.62	0.00	-7.81	23.81
421	21	60.62	0.00	-7.81	29.71
422	1022	64.01	0.00	-8.52	25.51
422	22	64.01	0.00	-8.52	31.95
423	1023	67.40	0.00	-6.65	20.77

423	23	67.40	0.00	-6.65	25.80
424	1024	70.45	0.00	-3.13	12.29
424	24	70.45	0.00	-3.13	14.66
425	1025	73.50	0.00	0.66	2.82
425	25	73.50	0.00	0.66	2.32
426	1026	76.26	0.00	2.74	-2.38
426	26	76.26	0.00	2.74	-4.45
427	1027	79.02	0.00	3.91	-5.19
427	27	79.02	0.00	3.91	-8.15
428	1028	81.78	0.00	4.34	-6.22
428	28	81.78	0.00	4.34	-9.51
429	1029	84.54	0.00	4.18	-5.84
429	29	84.54	0.00	4.18	-9.00
430	1030	87.30	0.00	3.55	-4.32
430	30	87.30	0.00	3.55	-7.00
431	1031	90.06	0.00	2.53	-1.88
431	31	90.06	0.00	2.53	-3.80
432	1032	92.82	0.00	1.19	1.32
432	32	92.82	0.00	1.19	0.42
433	1033	95.58	0.00	-0.42	5.17
433	33	95.58	0.00	-0.42	5.49
434	1034	98.34	0.00	-2.25	9.57
434	34	98.34	0.00	-2.25	11.27
435	1035	101.10	0.00	-2.13	7.19
435	35	101.10	0.00	-2.13	8.80

GRÁFICO DE ESFUERZOS



Gradiente termico

(1:1)GRAD

Coef. etc:

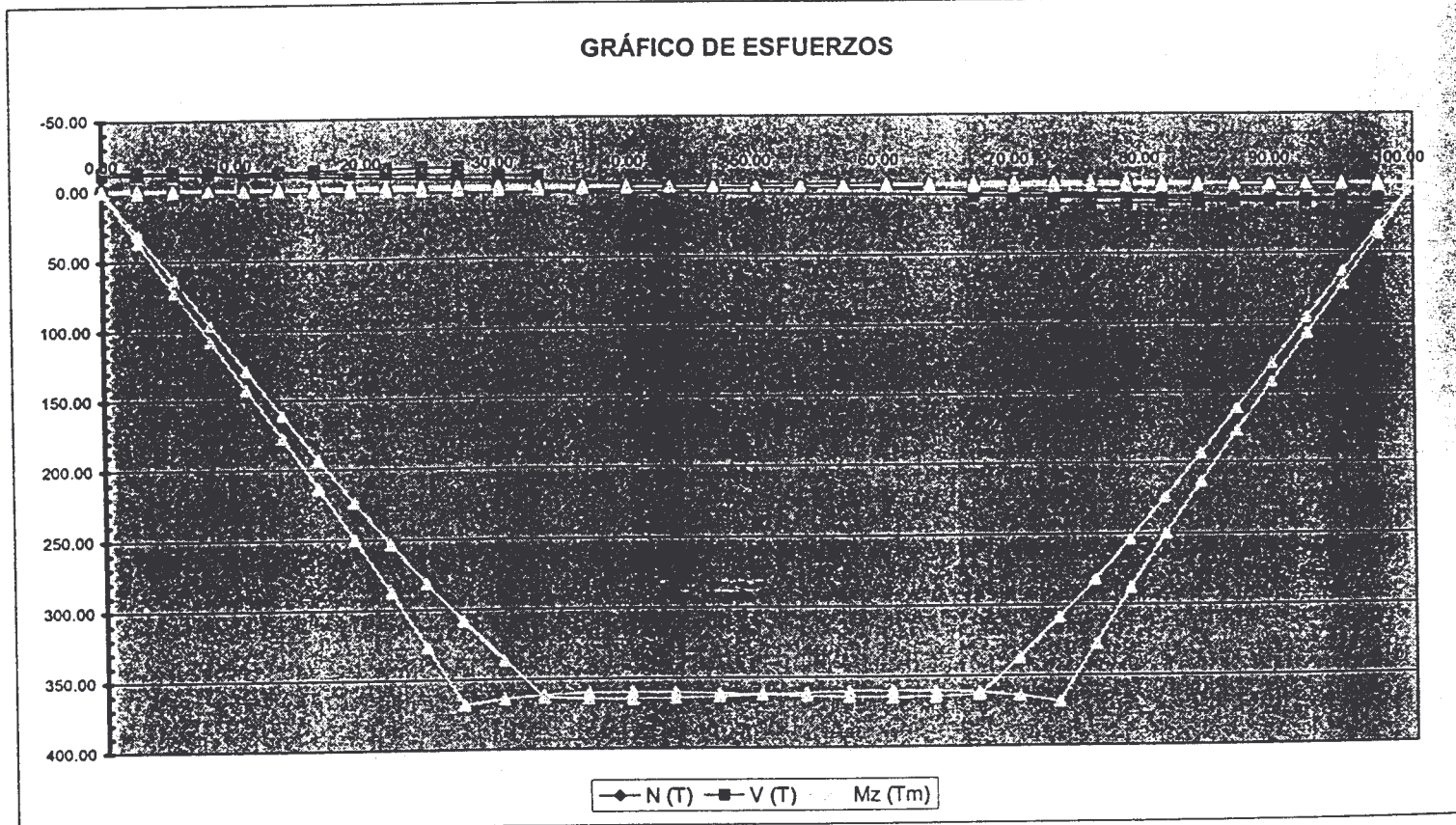
Barra	Nudo	X	N (T)	Vy (T)	Mz (Tm)
1	1	0.00	0.00	-11.27	0.08
1	2	2.74	0.00	-11.27	30.95
2	2	2.74	0.00	-11.64	31.11
2	3	5.48	0.00	-11.64	63.00
3	3	5.48	0.00	-11.84	63.15
3	4	8.22	0.00	-11.84	95.58
4	4	8.22	0.00	-11.88	95.72
4	5	10.96	0.00	-11.88	128.28
5	5	10.96	0.00	-11.78	128.40
5	6	13.70	0.00	-11.78	160.69
6	6	13.70	0.00	-11.56	160.80
6	7	16.44	0.00	-11.56	192.48
7	7	16.44	0.00	-11.23	192.58
7	8	19.18	0.00	-11.23	223.35
8	8	19.18	0.00	-10.81	223.42
8	9	21.92	0.00	-10.81	253.03
9	9	21.92	0.00	-10.31	253.07
9	10	24.66	0.00	-10.31	281.33
10	10	24.66	0.00	-9.78	281.32
10	11	27.40	0.00	-9.78	308.13
11	11	27.40	0.00	-9.23	308.07
11	12	30.45	0.00	-9.23	336.22
12	12	30.45	0.00	-8.70	336.10
12	10013	33.50	0.00	-8.70	362.65
13	13	33.50	0.00	-0.45	362.50
13	14	36.89	0.00	-0.45	364.03
14	14	36.89	0.00	-0.14	363.89
14	15	40.28	0.00	-0.14	364.35
15	15	40.28	0.00	0.08	364.20
15	16	43.67	0.00	0.08	363.94
16	16	43.67	0.00	0.21	363.81
16	17	47.06	0.00	0.21	363.10
17	17	47.06	0.00	0.27	362.97
17	18	50.45	0.00	0.27	362.06
18	18	50.45	0.00	0.27	361.93
18	19	53.84	0.00	0.27	361.01
19	19	53.84	0.00	0.21	360.88
19	20	57.23	0.00	0.21	360.18
20	20	57.23	0.00	0.08	360.04
20	21	60.62	0.00	0.08	359.78
21	21	60.62	0.00	-0.14	359.64
21	22	64.01	0.00	-0.14	360.10
22	22	64.01	0.00	-0.45	359.95
22	23	67.40	0.00	-0.45	361.48
23	23	67.40	0.00	-0.87	361.34
23	24	70.45	0.00	-0.87	363.99
24	24	70.45	0.00	-1.40	363.87
24	10025	73.50	0.00	-1.40	368.12
25	25	73.50	0.00	14.80	368.06
25	26	76.26	0.00	14.80	327.20
26	26	76.26	0.00	14.27	327.20
26	27	79.02	0.00	14.27	287.81
27	27	79.02	0.00	13.77	287.85
27	28	81.78	0.00	13.77	249.83
28	28	81.78	0.00	13.35	249.90
28	29	84.54	0.00	13.35	213.06
29	29	84.54	0.00	13.02	213.15
29	30	87.30	0.00	13.02	177.22
30	30	87.30	0.00	12.79	177.34
30	31	90.06	0.00	12.79	142.03
31	31	90.06	0.00	12.70	142.15
31	32	92.82	0.00	12.70	107.11
32	32	92.82	0.00	12.74	107.25
32	33	95.58	0.00	12.74	72.09
33	33	95.58	0.00	12.94	72.24
33	34	98.34	0.00	12.94	36.52
34	34	98.34	0.00	13.32	36.67
34	35	101.10	0.00	13.32	-0.08
101	101	0.00	0.00	-13.39	-0.08
101	102	2.74	0.00	-13.39	36.62
102	102	2.74	0.00	-13.02	36.46
102	103	5.48	0.00	-13.02	72.15

103	103	5.48	0.00	-12.82	72.00
103	104	8.22	0.00	-12.82	107.14
104	104	8.22	0.00	-12.78	107.00
104	105	10.96	0.00	-12.78	142.02
105	105	10.96	0.00	-12.88	141.90
105	106	13.70	0.00	-12.88	177.18
106	106	13.70	0.00	-13.10	177.07
106	107	16.44	0.00	-13.10	212.96
107	107	16.44	0.00	-13.43	212.87
107	108	19.18	0.00	-13.43	249.67
108	108	19.18	0.00	-13.86	249.61
108	109	21.92	0.00	-13.86	287.57
109	109	21.92	0.00	-14.35	287.53
109	110	24.66	0.00	-14.35	326.85
110	110	24.66	0.00	-14.88	326.85
110	111	27.40	0.00	-14.88	367.62
111	111	27.40	0.00	1.38	367.68
111	112	30.45	0.00	1.38	363.48
112	112	30.45	0.00	0.85	363.60
112	113	33.50	0.00	0.85	361.00
113	113	33.50	0.00	0.43	361.15
113	114	36.89	0.00	0.43	359.68
114	114	36.89	0.00	0.12	359.83
114	115	40.28	0.00	0.12	359.43
115	115	40.28	0.00	-0.10	359.58
115	116	43.67	0.00	-0.10	359.90
116	116	43.67	0.00	-0.23	360.04
117	117	47.06	0.00	-0.23	360.81
117	117	47.06	0.00	-0.29	360.94
117	118	50.45	0.00	-0.29	361.92
118	118	50.45	0.00	-0.29	362.05
118	119	53.84	0.00	-0.29	363.02
119	119	53.84	0.00	-0.23	363.16
119	120	57.23	0.00	-0.23	363.92
120	120	57.23	0.00	-0.10	364.06
120	121	60.62	0.00	-0.10	364.39
121	121	60.62	0.00	0.12	364.53
121	122	64.01	0.00	0.12	364.13
122	122	64.01	0.00	0.43	364.28
122	123	67.40	0.00	0.43	362.81
123	123	67.40	0.00	8.64	362.96
123	124	70.45	0.00	8.64	336.60
124	124	70.45	0.00	9.17	336.73
124	125	73.50	0.00	9.17	308.77
125	125	73.50	0.00	9.72	308.83
125	126	76.26	0.00	9.72	282.00
126	126	76.26	0.00	10.26	282.00
126	127	79.02	0.00	10.26	253.70
127	127	79.02	0.00	10.75	253.66
127	128	81.78	0.00	10.75	223.99
128	128	81.78	0.00	11.18	223.92
128	129	84.54	0.00	11.18	193.08
129	129	84.54	0.00	11.51	192.98
129	130	87.30	0.00	11.51	161.22
130	130	87.30	0.00	11.73	161.11
130	131	90.06	0.00	11.73	128.73
131	131	90.06	0.00	11.83	128.60
131	132	92.82	0.00	11.83	95.95
132	132	92.82	0.00	11.78	95.81
132	133	95.58	0.00	11.78	63.29
133	133	95.58	0.00	11.58	63.14
133	134	98.34	0.00	11.58	31.17
134	134	98.34	0.00	11.21	31.01
134	135	101.10	0.00	11.21	0.08
301	101	0.00	0.00	-0.28	-0.88
301	2001	0.00	0.00	-0.28	-0.67
302	102	2.74	0.00	-0.37	-1.17
302	2002	2.74	0.00	-0.37	-0.89
303	103	5.48	0.00	-0.20	-0.63
303	2003	5.48	0.00	-0.20	-0.48
304	104	8.22	0.00	-0.04	-0.14
304	2004	8.22	0.00	-0.04	-0.10
305	105	10.96	0.00	0.10	0.30
305	2005	10.96	0.00	0.10	0.23
306	106	13.70	0.00	0.22	0.70
306	2006	13.70	0.00	0.22	0.53
307	107	16.44	0.00	0.33	1.04
307	2007	16.44	0.00	0.33	0.79
308	108	19.18	0.00	0.42	1.33
308	2008	19.18	0.00	0.42	1.01
309	109	21.92	0.00	0.49	1.55
309	2009	21.92	0.00	0.49	1.18
310	110	24.66	0.00	0.53	1.67

310	2010	24.66	0.00	0.53	1.27
311	111	27.40	0.00	0.55	1.74
311	2011	27.40	0.00	0.55	1.32
312	112	30.45	0.00	0.53	1.66
312	2012	30.45	0.00	0.53	1.26
313	113	33.50	0.00	0.42	1.32
313	2013	33.50	0.00	0.42	1.00
314	114	36.89	0.00	0.32	1.00
314	2014	36.89	0.00	0.32	0.76
315	115	40.28	0.00	0.21	0.67
315	2015	40.28	0.00	0.21	0.51
316	116	43.67	0.00	0.13	0.41
316	2016	43.67	0.00	0.13	0.31
317	117	47.06	0.00	0.06	0.19
317	2017	47.06	0.00	0.06	0.15
318	118	50.45	0.00	0.00	0.00
318	2018	50.45	0.00	0.00	0.00
319	119	53.84	0.00	-0.06	-0.19
319	2019	53.84	0.00	-0.06	-0.15
320	120	57.23	0.00	-0.13	-0.41
320	2020	57.23	0.00	-0.13	-0.31
321	121	60.62	0.00	-0.21	-0.67
321	2021	60.62	0.00	-0.21	-0.51
322	122	64.01	0.00	-0.32	-0.99
322	2022	64.01	0.00	-0.32	-0.76
323	123	67.40	0.00	-0.42	-1.32
323	2023	67.40	0.00	-0.42	-1.00
324	124	70.45	0.00	-0.53	-1.66
324	2024	70.45	0.00	-0.53	-1.26
325	125	73.50	0.00	-0.55	-1.75
325	2025	73.50	0.00	-0.55	-1.33
326	126	76.26	0.00	-0.53	-1.68
326	2026	76.26	0.00	-0.53	-1.28
327	127	79.02	0.00	-0.50	-1.56
327	2027	79.02	0.00	-0.50	-1.19
328	128	81.78	0.00	-0.43	-1.34
328	2028	81.78	0.00	-0.43	-1.02
329	129	84.54	0.00	-0.33	-1.05
329	2029	84.54	0.00	-0.33	-0.80
330	130	87.30	0.00	-0.22	-0.70
330	2030	87.30	0.00	-0.22	-0.53
331	131	90.06	0.00	-0.10	-0.30
331	2031	90.06	0.00	-0.10	-0.23
332	132	92.82	0.00	0.04	0.14
332	2032	92.82	0.00	0.04	0.11
333	133	95.58	0.00	0.20	0.63
333	2033	95.58	0.00	0.20	0.48
334	134	98.34	0.00	0.37	1.18
334	2034	98.34	0.00	0.37	0.90
335	135	101.10	0.00	0.28	0.89
335	2035	101.10	0.00	0.28	0.68
201	2001	0.00	0.00	-0.28	-0.67
201	1001	0.00	0.00	-0.28	0.67
202	2002	2.74	0.00	-0.37	-0.89
202	1002	2.74	0.00	-0.37	0.89
203	2003	5.48	0.00	-0.20	-0.48
203	1003	5.48	0.00	-0.20	0.48
204	2004	8.22	0.00	-0.04	-0.10
204	1004	8.22	0.00	-0.04	0.10
205	2005	10.96	0.00	0.10	0.23
205	1005	10.96	0.00	0.10	-0.23
206	2006	13.70	0.00	0.22	0.53
206	1006	13.70	0.00	0.22	-0.53
207	2007	16.44	0.00	0.33	0.79
207	1007	16.44	0.00	0.33	-0.79
208	2008	19.18	0.00	0.42	1.01
208	1008	19.18	0.00	0.42	-1.01
209	2009	21.92	0.00	0.49	1.18
209	1009	21.92	0.00	0.49	-1.18
210	2010	24.66	0.00	0.53	1.27
210	1010	24.66	0.00	0.53	-1.27
211	2011	27.40	0.00	0.55	1.32
211	1011	27.40	0.00	0.55	-1.32
212	2012	30.45	0.00	0.53	1.26
212	1012	30.45	0.00	0.53	-1.26
213	2013	33.50	0.00	0.42	1.00
213	1013	33.50	0.00	0.42	-1.00
214	2014	36.89	0.00	0.32	0.76
214	1014	36.89	0.00	0.32	-0.76
215	2015	40.28	0.00	0.21	0.51
215	1015	40.28	0.00	0.21	-0.51
216	2016	43.67	0.00	0.13	0.31
216	1016	43.67	0.00	0.13	-0.31

217	2017	47.06	0.00	0.06	0.15
217	1017	47.06	0.00	0.06	-0.15
218	2018	50.45	0.00	0.00	0.00
218	1018	50.45	0.00	0.00	0.00
219	2019	53.84	0.00	-0.06	-0.15
219	1019	53.84	0.00	-0.06	0.15
220	2020	57.23	0.00	-0.13	-0.31
220	1020	57.23	0.00	-0.13	0.31
221	2021	60.62	0.00	-0.21	-0.51
221	1021	60.62	0.00	-0.21	0.51
222	2022	64.01	0.00	-0.32	-0.76
222	1022	64.01	0.00	-0.32	0.76
223	2023	67.40	0.00	-0.42	-1.00
223	1023	67.40	0.00	-0.42	1.00
224	2024	70.45	0.00	-0.53	-1.26
224	1024	70.45	0.00	-0.53	1.26
225	2025	73.50	0.00	-0.55	-1.33
225	1025	73.50	0.00	-0.55	1.33
226	2026	76.26	0.00	-0.53	-1.28
226	1026	76.26	0.00	-0.53	1.28
227	2027	79.02	0.00	-0.50	-1.19
227	1027	79.02	0.00	-0.50	1.19
228	2028	81.78	0.00	-0.43	-1.02
228	1028	81.78	0.00	-0.43	1.02
229	2029	84.54	0.00	-0.33	-0.80
229	1029	84.54	0.00	-0.33	0.80
230	2030	87.30	0.00	-0.22	-0.53
230	1030	87.30	0.00	-0.22	0.53
231	2031	90.06	0.00	-0.10	-0.23
231	1031	90.06	0.00	-0.10	0.23
232	2032	92.82	0.00	0.04	0.11
232	1032	92.82	0.00	0.04	-0.11
233	2033	95.58	0.00	0.20	0.48
233	1033	95.58	0.00	0.20	-0.48
234	2034	98.34	0.00	0.37	0.90
234	1034	98.34	0.00	0.37	-0.90
235	2035	101.10	0.00	0.28	0.68
235	1035	101.10	0.00	0.28	-0.68
401	1001	0.00	0.00	-0.28	0.67
401	1	0.00	0.00	-0.28	0.88
402	1002	2.74	0.00	-0.37	0.89
402	2	2.74	0.00	-0.37	1.17
403	1003	5.48	0.00	-0.20	0.48
403	3	5.48	0.00	-0.20	0.63
404	1004	8.22	0.00	-0.04	0.10
404	4	8.22	0.00	-0.04	0.14
405	1005	10.96	0.00	0.10	-0.23
405	5	10.96	0.00	0.10	-0.30
406	1006	13.70	0.00	0.22	-0.53
406	6	13.70	0.00	0.22	-0.70
407	1007	16.44	0.00	0.33	-0.79
407	7	16.44	0.00	0.33	-1.04
408	1008	19.18	0.00	0.42	-1.01
408	8	19.18	0.00	0.42	-1.33
409	1009	21.92	0.00	0.49	-1.18
409	9	21.92	0.00	0.49	-1.55
410	1010	24.66	0.00	0.53	-1.27
410	10	24.66	0.00	0.53	-1.67
411	1011	27.40	0.00	0.55	-1.32
411	11	27.40	0.00	0.55	-1.74
412	1012	30.45	0.00	0.53	-1.26
412	12	30.45	0.00	0.53	-1.66
413	1013	33.50	0.00	0.42	-1.00
413	13	33.50	0.00	0.42	-1.32
414	1014	36.89	0.00	0.32	-0.76
414	14	36.89	0.00	0.32	-1.00
415	1015	40.28	0.00	0.21	-0.51
415	15	40.28	0.00	0.21	-0.67
416	1016	43.67	0.00	0.13	-0.31
416	16	43.67	0.00	0.13	-0.41
417	1017	47.06	0.00	0.06	-0.15
417	17	47.06	0.00	0.06	-0.19
418	1018	50.45	0.00	0.00	0.00
418	18	50.45	0.00	0.00	0.00
419	1019	53.84	0.00	-0.06	0.15
419	19	53.84	0.00	-0.06	0.19
420	1020	57.23	0.00	-0.13	0.31
420	20	57.23	0.00	-0.13	0.41
421	1021	60.62	0.00	-0.21	0.51
421	21	60.62	0.00	-0.21	0.67
422	1022	64.01	0.00	-0.32	0.76
422	22	64.01	0.00	-0.32	0.99

423	23	67.40	0.00	-0.42	1.32
424	1024	70.45	0.00	-0.53	1.26
424	24	70.45	0.00	-0.53	1.66
425	1025	73.50	0.00	-0.55	1.33
425	25	73.50	0.00	-0.55	1.75
426	1026	76.26	0.00	-0.53	1.28
426	26	76.26	0.00	-0.53	1.68
427	1027	79.02	0.00	-0.50	1.19
427	27	79.02	0.00	-0.50	1.56
428	1028	81.78	0.00	-0.43	1.02
428	28	81.78	0.00	-0.43	1.34
429	1029	84.54	0.00	-0.33	0.80
429	29	84.54	0.00	-0.33	1.05
430	1030	87.30	0.00	-0.22	0.53
430	30	87.30	0.00	-0.22	0.70
431	1031	90.06	0.00	-0.10	0.23
431	31	90.06	0.00	-0.10	0.30
432	1032	92.82	0.00	0.04	-0.11
432	32	92.82	0.00	0.04	-0.14
433	1033	95.58	0.00	0.20	-0.48
433	33	95.58	0.00	0.20	-0.63
434	1034	98.34	0.00	0.37	-0.90
434	34	98.34	0.00	0.37	-1.18
435	1035	101.10	0.00	0.28	-0.68
435	35	101.10	0.00	0.28	-0.89



de tren de cargas plano generico. VY+

Barra	Nudo	X	N (T)	Vy (T)	Mz (Tm)
1	1	0.00	0.00	0.40	0.02
1	2	2.74	0.00	0.40	-1.08
2	2	2.74	0.00	0.48	-1.05
2	3	5.48	0.00	0.64	6.14
3	3	5.48	0.00	0.91	10.22
3	4	8.22	0.00	1.43	19.33
4	4	8.22	0.00	1.87	19.33
4	5	10.96	0.00	2.68	27.52
5	5	10.96	0.00	3.15	28.32
5	6	13.70	0.00	4.20	33.56
6	6	13.70	0.00	4.71	33.61
6	7	16.44	0.00	5.96	34.22
7	7	16.44	0.00	6.52	34.32
7	8	19.18	0.00	7.95	28.86
8	8	19.18	0.00	8.63	31.21
	9	21.92	0.00	10.23	18.19
	9	21.92	0.00	11.11	18.48
9	10	24.66	0.00	12.90	-3.72
10	10	24.66	0.00	14.00	-3.52
10	11	27.40	0.00	15.99	-36.61
11	11	27.40	0.00	17.44	-31.32
11	12	30.45	0.00	19.88	-88.23
12	12	30.45	0.00	21.73	-87.57
12	10013	33.50	0.00	24.17	-157.57
13	13	33.50	0.00	0.07	1.88
13	14	36.89	0.00	0.07	1.64
14	14	36.89	0.00	0.10	2.21
14	15	40.28	0.00	0.22	7.70
15	15	40.28	0.00	0.35	7.69
15	16	43.67	0.00	0.81	16.07
16	16	43.67	0.00	0.97	18.07
16	17	47.06	0.00	1.73	27.02
17	17	47.06	0.00	1.92	27.03
17	18	50.45	0.00	2.95	34.33
18	18	50.45	0.00	3.13	34.66
18	19	53.84	0.00	4.40	38.41
19	19	53.84	0.00	4.65	39.02
19	20	57.23	0.00	6.16	37.12
	20	57.23	0.00	6.53	37.28
	21	60.62	0.00	8.29	27.44
21	21	60.62	0.00	8.91	29.68
21	22	64.01	0.00	10.94	9.08
22	22	64.01	0.00	11.93	9.34
22	23	67.40	0.00	14.28	-25.44
23	23	67.40	0.00	15.59	-25.09
23	24	70.45	0.00	18.01	-71.51
24	24	70.45	0.00	19.61	-70.93
24	10025	73.50	0.00	22.05	-134.46
25	25	73.50	0.00	0.09	6.49
25	26	76.26	0.00	0.09	6.25
26	26	76.26	0.00	0.15	6.55
26	27	79.02	0.00	0.16	10.25
27	27	79.02	0.00	0.28	10.72
27	28	81.78	0.00	0.53	17.09
28	28	81.78	0.00	0.66	17.19
28	29	84.54	0.00	1.15	24.88
29	29	84.54	0.00	1.26	24.86
29	30	87.30	0.00	1.98	32.49
30	30	87.30	0.00	2.11	33.95
30	31	90.06	0.00	3.07	39.89
31	31	90.06	0.00	3.23	39.94
	32	92.82	0.00	4.46	42.29
	32	92.82	0.00	4.73	42.40
32	33	95.58	0.00	6.28	38.72
33	33	95.58	0.00	6.81	42.73
33	34	98.34	0.00	8.75	29.64
34	34	98.34	0.00	9.79	29.92
34	35	101.10	0.00	11.99	-0.14
101	101	0.00	0.00	2.89	0.18
101	102	2.74	0.00	2.89	-7.75
102	102	2.74	0.00	1.48	-7.03
102	103	5.48	0.00	1.48	-11.10

103	103	5.48	0.00	0.81	-8.21
103	104	8.22	0.00	0.81	-10.43
104	104	8.22	0.00	0.50	-7.20
104	105	10.96	0.00	0.50	-8.57
105	105	10.96	0.00	0.22	-7.72
105	106	13.70	0.00	0.22	-8.32
106	106	13.70	0.00	0.00	0.00
106	107	16.44	0.00	0.00	0.00
107	107	16.44	0.00	0.00	0.00
107	108	19.18	0.00	0.00	0.00
108	108	19.18	0.00	0.00	0.00
108	109	21.92	0.00	0.00	0.00
109	109	21.92	0.00	0.00	0.00
109	110	24.66	0.00	0.00	0.00
110	110	24.66	0.00	0.00	0.00
110	10111	27.40	0.00	0.00	0.00
111	111	27.40	0.00	7.29	35.37
111	112	30.45	0.00	7.29	13.13
112	112	30.45	0.00	5.44	13.03
112	113	33.50	0.00	5.44	-3.55
113	113	33.50	0.00	3.54	-2.59
113	114	36.89	0.00	3.54	-14.59
114	114	36.89	0.00	2.11	-13.68
114	115	40.28	0.00	2.11	-20.83
115	115	40.28	0.00	1.01	-19.30
115	116	43.67	0.00	1.01	-22.73
116	116	43.67	0.00	0.18	-7.46
116	117	47.06	0.00	0.18	-8.07
117	117	47.06	0.00	0.02	-2.27
117	118	50.45	0.00	0.02	-2.32
118	118	50.45	0.00	0.00	0.00
118	119	53.84	0.00	0.00	0.00
119	119	53.84	0.00	0.00	0.00
119	120	57.23	0.00	0.00	0.00
120	120	57.23	0.00	0.08	6.91
120	121	60.62	0.00	0.08	6.62
121	121	60.62	0.00	0.15	6.48
121	122	64.01	0.00	0.15	5.95
122	122	64.01	0.00	0.11	4.36
122	10123	67.40	0.00	0.11	3.98
123	123	67.40	0.00	8.30	48.35
123	124	70.45	0.00	8.30	23.02
124	124	70.45	0.00	6.57	22.91
124	125	73.50	0.00	6.57	2.87
125	125	73.50	0.00	4.96	2.90
125	126	76.26	0.00	4.96	-10.78
126	126	76.26	0.00	3.53	-10.65
126	127	79.02	0.00	3.53	-20.40
127	127	79.02	0.00	2.29	-20.23
127	128	81.78	0.00	2.29	-26.55
128	128	81.78	0.00	1.25	-26.40
128	129	84.54	0.00	1.25	-29.85
129	129	84.54	0.00	0.63	-5.81
129	130	87.30	0.00	0.63	-7.53
130	130	87.30	0.00	0.40	-4.89
130	131	90.06	0.00	0.40	-6.00
131	131	90.06	0.00	0.24	2.43
131	132	92.82	0.00	0.24	1.76
132	132	92.82	0.00	0.22	1.77
132	133	95.58	0.00	0.22	1.15
133	133	95.58	0.00	0.21	1.17
133	134	98.34	0.00	0.21	0.58
134	134	98.34	0.00	0.21	0.58
134	135	101.10	0.00	0.21	0.00
301	101	0.00	0.00	0.93	1.27
301	2001	0.00	0.00	0.93	0.57
302	102	2.74	0.00	1.43	1.21
302	2002	2.74	0.00	1.43	0.13
303	103	5.48	0.00	1.07	0.07
303	2003	5.48	0.00	1.07	-0.74
304	104	8.22	0.00	0.80	-0.79
304	2004	8.22	0.00	0.80	-1.39
305	105	10.96	0.00	0.63	-1.32
305	2005	10.96	0.00	0.63	-1.79
306	106	13.70	0.00	0.57	-1.18
306	2006	13.70	0.00	0.57	-1.61
307	107	16.44	0.00	0.63	-0.36
307	2007	16.44	0.00	0.63	-0.84
308	108	19.18	0.00	0.76	-0.59
308	2008	19.18	0.00	0.76	-1.17
309	109	21.92	0.00	0.96	-0.28
309	2009	21.92	0.00	0.96	-1.00

310	2010	24.66	0.00	1.20	-0.43
311	111	27.40	0.00	1.51	1.27
311	2011	27.40	0.00	1.51	0.13
311	112	30.45	0.00	1.86	2.04
311	2012	30.45	0.00	1.86	0.63
313	113	33.50	0.00	1.92	2.19
313	2013	33.50	0.00	1.92	0.74
314	114	36.89	0.00	1.81	1.63
314	2014	36.89	0.00	1.81	0.26
315	115	40.28	0.00	1.44	0.47
315	2015	40.28	0.00	1.44	-0.62
316	116	43.67	0.00	1.06	-0.56
316	2016	43.67	0.00	1.06	-1.36
317	117	47.06	0.00	0.86	-0.11
317	2017	47.06	0.00	0.86	-0.76
318	118	50.45	0.00	0.81	-0.11
318	2018	50.45	0.00	0.81	-0.72
319	119	53.84	0.00	0.82	0.09
319	2019	53.84	0.00	0.82	-0.53
320	120	57.23	0.00	0.89	0.17
320	2020	57.23	0.00	0.89	-0.51
321	121	60.62	0.00	1.05	0.09
321	2021	60.62	0.00	1.05	-0.70
322	122	64.01	0.00	1.32	0.08
322	2022	64.01	0.00	1.32	-0.92
323	123	67.40	0.00	1.57	1.07
323	2023	67.40	0.00	1.57	-0.11
323	124	70.45	0.00	1.73	1.63
324	2024	70.45	0.00	1.73	0.33
325	125	73.50	0.00	1.62	1.60
325	2025	73.50	0.00	1.62	0.38
326	126	76.26	0.00	1.42	1.17
326	2026	76.26	0.00	1.42	0.09
327	127	79.02	0.00	1.24	0.59
327	2027	79.02	0.00	1.24	-0.35
328	128	81.78	0.00	1.04	-0.03
328	2028	81.78	0.00	1.04	-0.82
329	129	84.54	0.00	0.88	-0.54
329	2029	84.54	0.00	0.88	-1.21
330	130	87.30	0.00	0.79	-0.83
330	2030	87.30	0.00	0.79	-1.43
331	131	90.06	0.00	0.79	-0.84
331	2031	90.06	0.00	0.79	-1.43
332	132	92.82	0.00	0.88	-0.54
332	2032	92.82	0.00	0.88	-1.20
333	133	95.58	0.00	1.08	0.07
333	2033	95.58	0.00	1.08	-0.74
334	134	98.34	0.00	1.35	1.09
334	2034	98.34	0.00	1.35	0.07
335	135	101.10	0.00	0.84	1.11
335	2035	101.10	0.00	0.84	0.47
201	2001	0.00	0.00	0.93	0.57
201	1001	0.00	0.00	0.93	-3.87
202	2002	2.74	0.00	1.43	0.13
202	1002	2.74	0.00	1.43	-6.72
203	2003	5.48	0.00	1.07	-0.74
203	1003	5.48	0.00	1.07	-5.85
204	2004	8.22	0.00	0.80	-1.39
204	1004	8.22	0.00	0.80	-5.20
205	2005	10.96	0.00	0.63	-1.79
205	1005	10.96	0.00	0.63	-4.80
206	2006	13.70	0.00	0.57	-1.61
206	1006	13.70	0.00	0.57	-4.36
207	2007	16.44	0.00	0.63	-0.84
207	1007	16.44	0.00	0.63	-3.85
208	2008	19.18	0.00	0.76	-1.17
208	1008	19.18	0.00	0.76	-4.81
209	2009	21.92	0.00	0.96	-1.00
209	1009	21.92	0.00	0.96	-5.58
210	2010	24.66	0.00	1.20	-0.43
210	1010	24.66	0.00	1.20	-6.16
211	2011	27.40	0.00	1.51	0.13
211	1011	27.40	0.00	1.51	-7.09
212	2012	30.45	0.00	1.86	0.63
212	1012	30.45	0.00	1.86	-8.27
213	2013	33.50	0.00	1.92	0.74
213	1013	33.50	0.00	1.92	-8.48
214	2014	36.89	0.00	1.81	0.26
214	1014	36.89	0.00	1.81	-8.41
215	2015	40.28	0.00	1.44	-0.62
215	1015	40.28	0.00	1.44	-7.53

217	2017	47.06	0.00	0.86	-0.76
217	1017	47.06	0.00	0.86	-4.89
218	2018	50.45	0.00	0.81	-0.72
218	1018	50.45	0.00	0.81	-4.58
219	2019	53.84	0.00	0.82	-0.53
219	1019	53.84	0.00	0.82	-4.45
220	2020	57.23	0.00	0.89	-0.51
220	1020	57.23	0.00	0.89	-4.78
221	2021	60.62	0.00	1.05	-0.70
221	1021	60.62	0.00	1.05	-5.71
222	2022	64.01	0.00	1.32	-0.92
222	1022	64.01	0.00	1.32	-7.23
223	2023	67.40	0.00	1.57	-0.11
223	1023	67.40	0.00	1.57	-7.62
224	2024	70.45	0.00	1.73	0.33
224	1024	70.45	0.00	1.73	-7.96
225	2025	73.50	0.00	1.62	0.38
225	1025	73.50	0.00	1.62	-7.36
226	2026	76.26	0.00	1.42	0.09
226	1026	76.26	0.00	1.42	-6.73
227	2027	79.02	0.00	1.24	-0.35
227	1027	79.02	0.00	1.24	-6.28
228	2028	81.78	0.00	1.04	-0.82
228	1028	81.78	0.00	1.04	-5.81
229	2029	84.54	0.00	0.88	-1.21
229	1029	84.54	0.00	0.88	-5.43
230	2030	87.30	0.00	0.79	-1.43
230	1030	87.30	0.00	0.79	-5.21
231	2031	90.06	0.00	0.79	-1.43
231	1031	90.06	0.00	0.79	-5.20
232	2032	92.82	0.00	0.88	-1.20
232	1032	92.82	0.00	0.88	-5.43
233	2033	95.58	0.00	1.08	-0.74
233	1033	95.58	0.00	1.08	-5.89
234	2034	98.34	0.00	1.35	0.07
234	1034	98.34	0.00	1.35	-6.40
235	2035	101.10	0.00	0.84	0.47
235	1035	101.10	0.00	0.84	-3.56
401	1001	0.00	0.00	0.93	-3.87
401	1	0.00	0.00	0.93	-4.57
402	1002	2.74	0.00	1.43	-6.72
402	2	2.74	0.00	1.43	-7.80
403	1003	5.48	0.00	1.07	-5.85
403	3	5.48	0.00	1.07	-6.66
404	1004	8.22	0.00	0.80	-5.20
404	4	8.22	0.00	0.80	-5.80
405	1005	10.96	0.00	0.63	-4.80
405	5	10.96	0.00	0.63	-5.27
406	1006	13.70	0.00	0.57	-4.36
406	6	13.70	0.00	0.57	-4.80
407	1007	16.44	0.00	0.63	-3.85
407	7	16.44	0.00	0.63	-4.33
408	1008	19.18	0.00	0.76	-4.81
408	8	19.18	0.00	0.76	-5.38
409	1009	21.92	0.00	0.96	-5.58
409	9	21.92	0.00	0.96	-6.30
410	1010	24.66	0.00	1.20	-6.16
410	10	24.66	0.00	1.20	-7.06
411	1011	27.40	0.00	1.51	-7.09
411	11	27.40	0.00	1.51	-8.23
412	1012	30.45	0.00	1.86	-8.27
412	12	30.45	0.00	1.86	-9.67
413	1013	33.50	0.00	1.92	-8.48
413	13	33.50	0.00	1.92	-9.93
414	1014	36.89	0.00	1.81	-8.41
414	14	36.89	0.00	1.81	-9.77
415	1015	40.28	0.00	1.44	-7.53
415	15	40.28	0.00	1.44	-8.62
416	1016	43.67	0.00	1.06	-6.45
416	16	43.67	0.00	1.06	-7.25
417	1017	47.06	0.00	0.86	-4.89
417	17	47.06	0.00	0.86	-5.54
418	1018	50.45	0.00	0.81	-4.58
418	18	50.45	0.00	0.81	-5.19
419	1019	53.84	0.00	0.82	-4.45
419	19	53.84	0.00	0.82	-5.07
420	1020	57.23	0.00	0.89	-4.78
420	20	57.23	0.00	0.89	-5.46
421	1021	60.62	0.00	1.05	-5.71
421	21	60.62	0.00	1.05	-6.50
422	1022	64.01	0.00	1.32	-7.23
422	22	64.01	0.00	1.32	-8.23

Envolvente de tren de cargas plano genérico-MX:

Barra	Nudo	X	N (T)	Vy (T)	Mz (Tm)
1	1	0.00	0.00	0.00	0.00
1	2	2.74	0.00	-0.26	3.71
2	2	2.74	0.00	-0.11	3.69
2	3	5.48	0.00	0.05	12.50
3	3	5.48	0.00	0.28	12.46
3	4	8.22	0.00	0.79	23.32
4	4	8.22	0.00	1.01	23.28
4	5	10.96	0.00	1.82	33.81
5	5	10.96	0.00	1.99	33.79
5	6	13.70	0.00	3.04	42.21
6	6	13.70	0.00	3.14	42.21
6	7	16.44	0.00	4.39	47.13
7	7	16.44	0.00	4.44	47.18
7	8	19.18	0.00	5.87	47.41
8	8	19.18	0.00	5.92	47.51
8	9	21.92	0.00	7.53	41.91
9	9	21.92	0.00	7.63	42.07
9	10	24.66	0.00	9.42	29.39
10	10	24.66	0.00	9.65	29.60
10	11	27.40	0.00	11.64	8.41
11	11	27.40	0.00	12.06	8.65
11	12	30.45	0.00	14.52	-26.81
12	12	30.45	0.00	15.22	-26.57
12	10013	33.50	0.00	17.96	-76.73
13	13	33.50	0.00	-5.40	-76.55
13	14	36.89	0.00	-5.62	-57.16
14	14	36.89	0.00	-4.56	-57.08
14	15	40.28	0.00	-4.43	-35.81
15	15	40.28	0.00	-3.43	-35.80
15	16	43.67	0.00	-2.97	-14.63
16	16	43.67	0.00	-2.12	-14.67
16	17	47.06	0.00	-1.36	4.76
17	17	47.06	0.00	-0.73	4.72
17	18	50.45	0.00	0.29	21.03
18	18	50.45	0.00	0.71	21.02
18	19	53.84	0.00	1.98	32.98
19	19	53.84	0.00	2.24	33.03
19	20	57.23	0.00	3.74	39.31
20	20	57.23	0.00	3.93	39.43
20	21	60.62	0.00	5.68	38.41
21	21	60.62	0.00	5.91	38.61
21	22	64.01	0.00	7.95	28.16
22	22	64.01	0.00	8.33	28.41
22	23	67.40	0.00	10.69	5.82
23	23	67.40	0.00	11.29	6.09
23	24	70.45	0.00	13.71	-27.21
24	24	70.45	0.00	14.54	-26.99
24	10025	73.50	0.00	17.25	-75.02
25	25	73.50	0.00	-5.70	-74.88
25	26	76.26	0.00	-5.92	-58.55
26	26	76.26	0.00	-4.98	-58.48
26	27	79.02	0.00	-4.97	-40.62
27	27	79.02	0.00	-4.04	-40.62
27	28	81.78	0.00	-3.79	-22.31
28	28	81.78	0.00	-2.95	-22.34
28	29	84.54	0.00	-2.47	-4.68
29	29	84.54	0.00	-1.73	-4.71
29	30	87.30	0.00	-1.01	11.17
30	30	87.30	0.00	-0.36	11.15
30	31	90.06	0.00	0.60	23.92
31	31	90.06	0.00	1.21	23.95
31	32	92.82	0.00	2.43	31.90
32	32	92.82	0.00	3.10	32.00
32	33	95.58	0.00	4.65	32.80
33	33	95.58	0.00	5.51	32.97
33	34	98.34	0.00	7.45	23.48
34	34	98.34	0.00	8.64	23.72
34	35	101.10	0.00	11.04	-0.14
101	101	0.00	0.00	1.04	-0.02
101	102	2.74	0.00	1.04	-2.87
102	102	2.74	0.00	0.88	-2.81
102	103	5			

103	103	5.48	0.00	0.68	-5.36
103	104	8.22	0.00	0.68	-7.22
104	104	8.22	0.00	0.39	-7.53
104	105	10.96	0.00	0.39	-8.58
105	105	10.96	0.00	0.02	-8.62
105	106	13.70	0.00	0.02	-8.69
106	106	13.70	0.00	-0.70	-7.60
106	107	16.44	0.00	-0.70	-5.70
107	107	16.44	0.00	-1.30	1.45
107	108	19.18	0.00	-1.30	5.01
108	108	19.18	0.00	-1.53	8.34
108	109	21.92	0.00	-1.53	12.53
109	109	21.92	0.00	-1.77	12.86
109	110	24.66	0.00	-1.77	17.71
110	110	24.66	0.00	-1.93	16.28
110	10111	27.40	0.00	-1.93	21.56
111	111	27.40	0.00	4.45	22.73
111	112	30.45	0.00	4.45	9.16
112	112	30.45	0.00	3.09	7.39
112	113	33.50	0.00	3.09	-2.05
113	113	33.50	0.00	2.11	-1.96
113	114	36.89	0.00	2.11	-9.11
114	114	36.89	0.00	1.13	-7.35
114	115	40.28	0.00	1.13	-11.17
115	115	40.28	0.00	0.31	-4.84
115	116	43.67	0.00	0.31	-5.90
116	116	43.67	0.00	0.08	-4.00
117	117	47.06	0.00	0.08	-4.26
117	117	47.06	0.00	-0.22	-3.90
117	118	50.45	0.00	-0.22	-3.17
118	118	50.45	0.00	-0.58	-2.19
118	119	53.84	0.00	-0.58	-0.23
119	119	53.84	0.00	-1.01	4.24
119	120	57.23	0.00	-1.01	7.65
120	120	57.23	0.00	-1.42	9.89
120	121	60.62	0.00	-1.42	14.69
121	121	60.62	0.00	-2.12	15.18
121	122	64.01	0.00	-2.12	22.35
122	122	64.01	0.00	-3.15	22.10
122	10123	67.40	0.00	-3.15	32.79
123	123	67.40	0.00	7.12	32.59
123	124	70.45	0.00	7.12	10.87
124	124	70.45	0.00	4.62	7.18
124	125	73.50	0.00	4.62	-6.90
125	125	73.50	0.00	3.11	-7.12
125	126	76.26	0.00	3.11	-15.69
126	126	76.26	0.00	2.05	-14.99
126	127	79.02	0.00	2.05	-20.66
127	127	79.02	0.00	1.27	-20.65
127	128	81.78	0.00	1.27	-24.17
128	128	81.78	0.00	0.58	-22.17
128	129	84.54	0.00	0.58	-23.77
129	129	84.54	0.00	0.05	-24.58
129	130	87.30	0.00	0.05	-24.72
130	130	87.30	0.00	-0.52	-27.54
130	131	90.06	0.00	-0.52	-26.11
131	131	90.06	0.00	-1.34	-30.13
131	132	92.82	0.00	-1.34	-26.42
132	132	92.82	0.00	-2.17	-26.56
132	133	95.58	0.00	-2.17	-20.58
133	133	95.58	0.00	-3.19	-20.79
133	134	98.34	0.00	-3.19	-11.99
134	134	98.34	0.00	-4.33	-11.80
134	135	101.10	0.00	-4.33	0.14
301	101	0.00	0.00	0.90	1.61
301	2001	0.00	0.00	0.90	0.93
302	102	2.74	0.00	1.32	1.73
302	2002	2.74	0.00	1.32	0.73
303	103	5.48	0.00	0.91	0.43
303	2003	5.48	0.00	0.91	-0.25
304	104	8.22	0.00	0.57	-0.57
304	2004	8.22	0.00	0.57	-1.00
305	105	10.96	0.00	0.30	-1.25
305	2005	10.96	0.00	0.30	-1.47
306	106	13.70	0.00	0.06	-1.30
306	2006	13.70	0.00	0.06	-1.35
307	107	16.44	0.00	0.03	-0.81
307	2007	16.44	0.00	0.03	-0.83
308	108	19.18	0.00	0.00	-0.24
308	2008	19.18	0.00	0.00	-0.24
309	109	21.92	0.00	0.00	-0.25
309	2009	21.92	0.00	0.00	-0.25

310	2010	24.66	0.00	0.74	0.40
311	111	27.40	0.00	0.93	1.31
311	2011	27.40	0.00	0.93	0.61
312	112	30.45	0.00	1.05	1.50
312	2012	30.45	0.00	1.05	0.71
313	113	33.50	0.00	0.99	1.31
313	2013	33.50	0.00	0.99	0.57
314	114	36.89	0.00	0.92	0.71
314	2014	36.89	0.00	0.92	0.02
315	115	40.28	0.00	0.59	-0.31
315	2015	40.28	0.00	0.59	-0.76
316	116	43.67	0.00	0.41	-1.20
316	2016	43.67	0.00	0.41	-1.51
317	117	47.06	0.00	0.58	-1.48
317	2017	47.06	0.00	0.58	-1.92
318	118	50.45	0.00	0.30	-1.40
318	2018	50.45	0.00	0.30	-1.63
319	119	53.84	0.00	0.25	-1.06
319	2019	53.84	0.00	0.25	-1.25
320	120	57.23	0.00	0.21	-0.42
320	2020	57.23	0.00	0.21	-0.58
321	121	60.62	0.00	0.08	0.03
321	2021	60.62	0.00	0.08	-0.03
322	122	64.01	0.00	0.67	0.93
322	2022	64.01	0.00	0.67	0.42
323	123	67.40	0.00	0.94	1.16
323	2023	67.40	0.00	0.94	0.45
324	124	70.45	0.00	0.93	1.02
324	2024	70.45	0.00	0.93	0.32
325	125	73.50	0.00	0.80	0.59
325	2025	73.50	0.00	0.80	-0.01
326	126	76.26	0.00	0.74	0.22
326	2026	76.26	0.00	0.74	-0.34
327	127	79.02	0.00	0.58	-0.32
327	2027	79.02	0.00	0.58	-0.76
328	128	81.78	0.00	0.55	-0.75
328	2028	81.78	0.00	0.55	-1.16
329	129	84.54	0.00	0.88	-0.54
329	2029	84.54	0.00	0.88	-1.21
330	130	87.30	0.00	0.66	-0.52
330	2030	87.30	0.00	0.66	-1.02
331	131	90.06	0.00	0.43	-0.17
331	2031	90.06	0.00	0.43	-0.50
332	132	92.82	0.00	0.34	-0.31
332	2032	92.82	0.00	0.34	-0.57
333	133	95.58	0.00	0.31	-0.40
333	2033	95.58	0.00	0.31	-0.63
334	134	98.34	0.00	0.18	-0.35
334	2034	98.34	0.00	0.18	-0.49
335	135	101.10	0.00	0.09	-0.19
335	2035	101.10	0.00	0.09	-0.25
201	2001	0.00	0.00	0.90	0.93
201	1001	0.00	0.00	0.90	-3.37
202	2002	2.74	0.00	1.32	0.73
202	1002	2.74	0.00	1.32	-5.61
203	2003	5.48	0.00	0.91	-0.25
203	1003	5.48	0.00	0.91	-4.61
204	2004	8.22	0.00	0.57	-1.00
204	1004	8.22	0.00	0.57	-3.75
205	2005	10.96	0.00	0.30	-1.47
205	1005	10.96	0.00	0.30	-2.92
206	2006	13.70	0.00	0.06	-1.35
206	1006	13.70	0.00	0.06	-1.65
207	2007	16.44	0.00	0.03	-0.83
207	1007	16.44	0.00	0.03	-0.95
208	2008	19.18	0.00	0.00	-0.24
208	1008	19.18	0.00	0.00	-0.26
209	2009	21.92	0.00	0.00	-0.25
209	1009	21.92	0.00	0.00	-0.27
210	2010	24.66	0.00	0.74	0.40
210	1010	24.66	0.00	0.74	-3.13
211	2011	27.40	0.00	0.93	0.61
211	1011	27.40	0.00	0.93	-3.84
212	2012	30.45	0.00	1.05	0.71
212	1012	30.45	0.00	1.05	-4.30
213	2013	33.50	0.00	0.99	0.57
213	1013	33.50	0.00	0.99	-4.16
214	2014	36.89	0.00	0.92	0.02
214	1014	36.89	0.00	0.92	-4.37
215	2015	40.28	0.00	0.59	-0.76
215	1015	40.28	0.00	0.59	-3.58
216	2016	43.67	0.00	0.41	-1.51
216	1016	43.67	0.00	0.41	-2.48

217	2017	47.06	0.00	0.58	-1.92
217	1017	47.06	0.00	0.58	-4.71
218	2018	50.45	0.00	0.30	-1.63
218	1018	50.45	0.00	0.30	-3.08
219	2019	53.84	0.00	0.25	-1.25
219	1019	53.84	0.00	0.25	-2.44
220	2020	57.23	0.00	0.21	-0.58
220	1020	57.23	0.00	0.21	-1.56
221	2021	60.62	0.00	0.08	-0.03
221	1021	60.62	0.00	0.08	-0.43
222	2022	64.01	0.00	0.67	0.42
222	1022	64.01	0.00	0.67	-2.80
223	2023	67.40	0.00	0.94	0.45
223	1023	67.40	0.00	0.94	-4.06
224	2024	70.45	0.00	0.93	0.32
224	1024	70.45	0.00	0.93	-4.13
225	2025	73.50	0.00	0.80	-0.01
225	1025	73.50	0.00	0.80	-3.85
226	2026	76.26	0.00	0.74	-0.34
226	1026	76.26	0.00	0.74	-3.89
227	2027	79.02	0.00	0.58	-0.76
227	1027	79.02	0.00	0.58	-3.55
228	2028	81.78	0.00	0.55	-1.16
228	1028	81.78	0.00	0.55	-3.79
229	2029	84.54	0.00	0.88	-1.21
229	1029	84.54	0.00	0.88	-5.43
230	2030	87.30	0.00	0.66	-1.02
230	1030	87.30	0.00	0.66	-4.18
231	2031	90.06	0.00	0.43	-0.50
231	1031	90.06	0.00	0.43	-2.57
232	2032	92.82	0.00	0.34	-0.57
232	1032	92.82	0.00	0.34	-2.21
233	2033	95.58	0.00	0.31	-0.63
233	1033	95.58	0.00	0.31	-2.11
234	2034	98.34	0.00	0.18	-0.49
234	1034	98.34	0.00	0.18	-1.37
235	2035	101.10	0.00	0.09	-0.25
235	1035	101.10	0.00	0.09	-0.67
401	1001	0.00	0.00	0.90	-3.37
401	1	0.00	0.00	0.90	-4.05
402	1002	2.74	0.00	1.32	-5.61
402	2	2.74	0.00	1.32	-6.61
403	1003	5.48	0.00	0.91	-4.61
403	3	5.48	0.00	0.91	-5.30
404	1004	8.22	0.00	0.57	-3.75
404	4	8.22	0.00	0.57	-4.18
405	1005	10.96	0.00	0.30	-2.92
405	5	10.96	0.00	0.30	-3.15
406	1006	13.70	0.00	0.06	-1.65
406	6	13.70	0.00	0.06	-1.70
407	1007	16.44	0.00	0.03	-0.95
407	7	16.44	0.00	0.03	-0.97
408	1008	19.18	0.00	0.00	-0.26
408	8	19.18	0.00	0.00	-0.26
409	1009	21.92	0.00	0.00	-0.27
409	9	21.92	0.00	0.00	-0.27
410	1010	24.66	0.00	0.74	-3.13
410	10	24.66	0.00	0.74	-3.69
411	1011	27.40	0.00	0.93	-3.84
411	11	27.40	0.00	0.93	-4.54
412	1012	30.45	0.00	1.05	-4.30
412	12	30.45	0.00	1.05	-5.09
413	1013	33.50	0.00	0.99	-4.16
413	13	33.50	0.00	0.99	-4.90
414	1014	36.89	0.00	0.92	-4.37
414	14	36.89	0.00	0.92	-5.06
415	1015	40.28	0.00	0.59	-3.58
415	15	40.28	0.00	0.59	-4.03
416	1016	43.67	0.00	0.41	-3.48
416	16	43.67	0.00	0.41	-3.79
417	1017	47.06	0.00	0.58	-4.71
417	17	47.06	0.00	0.58	-5.15
418	1018	50.45	0.00	0.30	-3.08
418	18	50.45	0.00	0.30	-3.31
419	1019	53.84	0.00	0.25	-2.44
419	19	53.84	0.00	0.25	-2.63
420	1020	57.23	0.00	0.21	-1.56
420	20	57.23	0.00	0.21	-1.72
421	1021	60.62	0.00	0.08	-0.43
421	21	60.62	0.00	0.08	-0.49
422	1022	64.01	0.00	0.67	-2.80
422	22	64.01	0.00	0.67	-3.31
423	1023	67.40	0.00	0.94	-4.06

Envolvente de tren de cargas plano genérico: MZ+

[0; 1]SCUPASEOSIZQUSCunTneg.Barra1.Mx- + [0; 1]SCUPASEOSIZQUSCunTneg.Barra2.Mx- + [0; 1]SCUPASEOSIZQUSCunTneg.Barra3.Mx- + [0; 1]SCUPASEOSIZQUSCunTneg.Barra4.Mx- + [0; 1]SCUPASEOSIZQUSCunTneg.Barra5.Mx-

Coef. exc:

Barra	Nudo	X	N (T)	Vy (T)	Mz (Tm)
1	1	0.00	0.00	0.37	0.02
1	2	2.74	0.00	-12.25	36.37
2	2	2.74	0.00	-10.90	36.00
2	3	5.48	0.00	-8.71	62.87
3	3	5.48	0.00	-7.77	62.55
3	4	8.22	0.00	-5.58	80.85
4	4	8.22	0.00	-4.97	80.61
4	5	10.96	0.00	-2.84	91.38
5	5	10.96	0.00	-2.50	91.23
5	6	13.70	0.00	-0.31	95.07
6	6	13.70	0.00	-0.11	95.02
6	7	16.44	0.00	2.09	92.31
7	7	16.44	0.00	2.24	92.35
7	8	19.18	0.00	4.44	83.20
8	8	19.18	0.00	4.64	83.33
8	9	21.92	0.00	6.65	67.83
9	9	21.92	0.00	6.90	68.02
9	10	24.66	0.00	9.09	46.12
10	10	24.66	0.00	9.48	46.35
10	11	27.40	0.00	6.94	19.84
11	11	27.40	0.00	7.30	19.96
11	12	30.45	0.00	2.63	4.67
12	12	30.45	0.00	2.86	4.69
12	10013	33.50	0.00	-0.01	2.47
13	13	33.50	0.00	0.01	2.47
13	14	36.89	0.00	-2.90	5.19
14	14	36.89	0.00	-2.64	5.16
14	15	40.28	0.00	-7.50	21.32
15	15	40.28	0.00	-5.70	21.14
15	16	43.67	0.00	-7.77	47.40
16	16	43.67	0.00	-7.44	47.13
16	17	47.06	0.00	-4.73	67.75
17	17	47.06	0.00	-4.57	67.58
17	18	50.45	0.00	-2.18	79.02
18	18	50.45	0.00	-2.23	78.94
18	19	53.84	0.00	0.35	82.21
19	19	53.84	0.00	0.30	82.24
19	20	57.23	0.00	2.82	77.13
20	20	57.23	0.00	2.81	77.27
20	21	60.62	0.00	4.42	63.70
21	21	60.62	0.00	4.82	63.92
21	22	64.01	0.00	7.40	43.28
22	22	64.01	0.00	7.96	43.57
22	23	67.40	0.00	5.61	20.40
23	23	67.40	0.00	6.15	20.52
23	24	70.45	0.00	2.24	8.58
24	24	70.45	0.00	2.61	8.59
24	10025	73.50	0.00	-0.25	7.32
25	25	73.50	0.00	0.06	7.31
25	26	76.26	0.00	-2.43	8.87
26	26	76.26	0.00	-2.19	8.84
26	27	79.02	0.00	-7.88	22.29
27	27	79.02	0.00	-7.47	22.13
27	28	81.78	0.00	-7.01	44.03
28	28	81.78	0.00	-6.63	43.87
28	29	84.54	0.00	-4.42	59.11
29	29	84.54	0.00	-4.12	59.00
29	30	87.30	0.00	-1.91	67.32
30	30	87.30	0.00	-1.63	67.29
30	31	90.06	0.00	0.49	68.74
31	31	90.06	0.00	0.87	68.79
31	32	92.82	0.00	3.07	63.36
32	32	92.82	0.00	3.59	63.49
32	33	95.58	0.00	5.79	50.54
33	33	95.58	0.00	6.54	50.75
33	34	98.34	0.00	8.75	29.65
34	34	98.34	0.00	9.79	29.92
34	35	101.10	0.00	-0.32	0.00
101	101	0.00	0.00	1.88	0.20
101	102	2.74	0.00	-0.04	0.10
102	102	2.74	0.00	-0.05	0.11
102	103	5.48	0.00	-0.05	0.25

103	103	5.48	0.00	-0.07	0.26
103	104	8.22	0.00	-0.13	0.45
104	104	8.22	0.00	-0.35	0.50
104	105	10.96	0.00	-0.56	1.77
105	105	10.96	0.00	-0.76	1.88
105	106	13.70	0.00	-0.88	4.05
106	106	13.70	0.00	-0.92	4.10
106	107	16.44	0.00	-1.14	6.94
107	107	16.44	0.00	-1.20	6.91
107	108	19.18	0.00	-1.46	10.44
108	108	19.18	0.00	-1.63	10.32
108	109	21.92	0.00	-2.03	15.29
109	109	21.92	0.00	-2.43	15.09
109	110	24.66	0.00	-2.99	22.53
110	110	24.66	0.00	-3.77	22.31
110	10111	27.40	0.00	-5.15	35.57
111	111	27.40	0.00	7.29	35.37
111	112	30.45	0.00	6.71	13.35
112	112	30.45	0.00	5.15	13.21
112	113	33.50	0.00	0.89	0.73
113	113	33.50	0.00	0.72	0.70
113	114	36.89	0.00	0.00	0.00
114	114	36.89	0.00	0.00	0.00
114	115	40.28	0.00	-0.29	0.37
115	115	40.28	0.00	-0.52	0.54
115	116	43.67	0.00	-0.65	2.55
116	116	43.67	0.00	-0.70	2.79
116	117	47.06	0.00	-0.82	5.31
117	117	47.06	0.00	-0.73	5.50
117	118	50.45	0.00	-0.73	7.98
118	118	50.45	0.00	-0.52	8.08
118	119	53.84	0.00	-0.68	10.11
119	119	53.84	0.00	-0.42	10.11
119	120	57.23	0.00	-0.63	12.05
120	120	57.23	0.00	-0.61	11.93
120	121	60.62	0.00	-1.77	16.08
121	121	60.62	0.00	-2.49	15.83
121	122	64.01	0.00	-4.39	29.48
122	122	64.01	0.00	-5.71	29.20
122	10123	67.40	0.00	-5.71	48.56
123	123	67.40	0.00	8.30	48.35
123	124	70.45	0.00	7.26	23.20
124	124	70.45	0.00	5.70	23.17
124	125	73.50	0.00	2.94	10.13
125	125	73.50	0.00	2.24	10.29
125	126	76.26	0.00	0.66	7.40
126	126	76.26	0.00	0.54	7.41
126	127	79.02	0.00	0.47	5.95
127	127	79.02	0.00	0.40	5.96
127	128	81.78	0.00	0.40	4.86
128	128	81.78	0.00	0.34	4.87
128	129	84.54	0.00	0.34	3.94
129	129	84.54	0.00	0.29	3.95
129	130	87.30	0.00	0.29	3.14
130	130	87.30	0.00	0.26	3.15
130	131	90.06	0.00	0.26	2.42
131	131	90.06	0.00	0.24	2.43
131	132	92.82	0.00	0.23	1.77
132	132	92.82	0.00	0.22	1.78
132	133	95.58	0.00	0.22	1.17
133	133	95.58	0.00	0.21	1.17
133	134	98.34	0.00	0.21	0.58
134	134	98.34	0.00	0.21	0.58
134	135	101.10	0.00	-3.48	0.14
301	101	0.00	0.00	0.87	1.76
301	2001	0.00	0.00	0.87	1.10
302	102	2.74	0.00	1.27	2.06
302	2002	2.74	0.00	1.23	1.13
303	103	5.48	0.00	0.83	0.80
303	2003	5.48	0.00	0.63	0.23
304	104	8.22	0.00	0.22	0.11
304	2004	8.22	0.00	0.08	0.00
305	105	10.96	0.00	0.26	0.10
305	2005	10.96	0.00	0.00	0.00
306	106	13.70	0.00	0.33	0.30
306	2006	13.70	0.00	0.26	0.07
307	107	16.44	0.00	0.48	0.54
307	2007	16.44	0.00	0.41	0.22
308	108	19.18	0.00	0.57	0.82
308	2008	19.18	0.00	0.52	0.40
309	109	21.92	0.00	0.74	1.11
309	2009	21.92	0.00	0.67	0.59
310	110	24.66	0.00	0.89	1.39

310	2010	24.66	0.00	0.76	0.76
311	111	27.40	0.00	1.15	1.77
311	2011	27.40	0.00	1.02	0.94
312	112	30.45	0.00	1.80	2.51
312	2012	30.45	0.00	1.68	1.18
3	113	33.50	0.00	1.86	2.69
313	2013	33.50	0.00	1.78	1.31
314	114	36.89	0.00	1.70	2.16
314	2014	36.89	0.00	1.61	0.90
315	115	40.28	0.00	1.01	1.30
315	2015	40.28	0.00	0.82	0.60
316	116	43.67	0.00	0.70	0.94
316	2016	43.67	0.00	0.60	0.43
317	117	47.06	0.00	0.53	0.64
317	2017	47.06	0.00	0.50	0.25
318	118	50.45	0.00	0.56	0.44
318	2018	50.45	0.00	0.33	0.12
319	119	53.84	0.00	0.62	0.46
319	2019	53.84	0.00	0.42	0.07
320	120	57.23	0.00	0.69	0.63
320	2020	57.23	0.00	0.39	0.18
321	121	60.62	0.00	0.82	0.89
321	2021	60.62	0.00	0.60	0.37
322	122	64.01	0.00	0.92	1.18
322	2022	64.01	0.00	0.71	0.56
323	123	67.40	0.00	1.04	1.43
323	2023	67.40	0.00	0.92	0.66
324	124	70.45	0.00	1.53	1.84
3	2024	70.45	0.00	1.36	0.73
325	125	73.50	0.00	1.46	1.84
325	2025	73.50	0.00	1.34	0.77
326	126	76.26	0.00	1.27	1.46
326	2026	76.26	0.00	0.99	0.58
327	127	79.02	0.00	0.88	1.09
327	2027	79.02	0.00	0.68	0.46
328	128	81.78	0.00	0.69	0.83
328	2028	81.78	0.00	0.56	0.36
329	129	84.54	0.00	0.54	0.63
329	2029	84.54	0.00	0.47	0.25
330	130	87.30	0.00	0.44	0.45
330	2030	87.30	0.00	0.36	0.15
331	131	90.06	0.00	0.44	0.31
331	2031	90.06	0.00	0.24	0.06
332	132	92.82	0.00	0.54	0.29
332	2032	92.82	0.00	0.21	0.01
333	133	95.58	0.00	0.91	0.61
333	2033	95.58	0.00	0.32	0.14
334	134	98.34	0.00	1.30	1.47
334	2034	98.34	0.00	0.93	0.65
335	135	101.10	0.00	0.81	1.26
335	2035	101.10	0.00	0.66	0.71
2	2001	0.00	0.00	0.87	1.10
201	1001	0.00	0.00	0.00	0.00
202	2002	2.74	0.00	1.23	1.13
202	1002	2.74	0.00	0.00	0.00
203	2003	5.48	0.00	0.63	0.23
203	1003	5.48	0.00	0.00	0.00
204	2004	8.22	0.00	0.08	0.00
204	1004	8.22	0.00	0.00	0.00
205	2005	10.96	0.00	0.00	0.00
205	1005	10.96	0.00	0.00	0.00
206	2006	13.70	0.00	0.26	0.07
206	1006	13.70	0.00	0.00	0.00
207	2007	16.44	0.00	0.41	0.22
207	1007	16.44	0.00	0.00	0.00
208	2008	19.18	0.00	0.52	0.40
208	1008	19.18	0.00	0.00	0.00
209	2009	21.92	0.00	0.67	0.59
209	1009	21.92	0.00	0.00	0.00
210	2010	24.66	0.00	0.76	0.76
210	1010	24.66	0.00	0.00	0.00
211	2011	27.40	0.00	1.02	0.94
211	1011	27.40	0.00	0.00	0.00
212	2012	30.45	0.00	1.68	1.18
2	1012	30.45	0.00	0.00	0.00
213	2013	33.50	0.00	1.78	1.31
213	1013	33.50	0.00	0.00	0.00
214	2014	36.89	0.00	1.61	0.90
214	1014	36.89	0.00	0.00	0.00
215	2015	40.28	0.00	0.82	0.60
215	1015	40.28	0.00	0.00	0.00
216	2016	43.67	0.00	0.60	0.43
216	1016	43.67	0.00	0.00	0.00

217	2017	47.06	0.00	0.50	0.25
217	1017	47.06	0.00	0.00	0.00
218	2018	50.45	0.00	0.33	0.12
218	1018	50.45	0.00	0.00	0.00
219	2019	53.84	0.00	0.42	0.07
219	1019	53.84	0.00	0.00	0.00
220	2020	57.23	0.00	0.39	0.18
220	1020	57.23	0.00	0.00	0.00
221	2021	60.62	0.00	0.60	0.37
221	1021	60.62	0.00	0.00	0.00
222	2022	64.01	0.00	0.71	0.56
222	1022	64.01	0.00	0.00	0.00
223	2023	67.40	0.00	0.92	0.66
223	1023	67.40	0.00	0.00	0.00
224	2024	70.45	0.00	1.36	0.73
224	1024	70.45	0.00	0.00	0.00
225	2025	73.50	0.00	1.34	0.77
225	1025	73.50	0.00	0.00	0.00
226	2026	76.26	0.00	0.99	0.58
226	1026	76.26	0.00	0.00	0.00
227	2027	79.02	0.00	0.68	0.46
227	1027	79.02	0.00	0.00	0.00
228	2028	81.78	0.00	0.56	0.36
228	1028	81.78	0.00	0.00	0.00
229	2029	84.54	0.00	0.47	0.25
229	1029	84.54	0.00	0.00	0.00
230	2030	87.30	0.00	0.36	0.15
230	1030	87.30	0.00	0.00	0.00
231	2031	90.06	0.00	0.24	0.06
231	1031	90.06	0.00	0.00	0.00
232	2032	92.82	0.00	0.21	0.01
232	1032	92.82	0.00	0.00	0.00
233	2033	95.58	0.00	0.32	0.14
233	1033	95.58	0.00	0.00	0.00
234	2034	98.34	0.00	0.93	0.65
234	1034	98.34	0.00	0.00	0.00
235	2035	101.10	0.00	0.66	0.71
235	1035	101.10	0.00	0.00	0.00
401	1001	0.00	0.00	0.00	0.00
401	1	0.00	0.00	0.00	0.00
402	1002	2.74	0.00	0.00	0.00
402	2	2.74	0.00	0.00	0.00
403	1003	5.48	0.00	0.00	0.00
403	3	5.48	0.00	0.00	0.00
404	1004	8.22	0.00	0.00	0.00
404	4	8.22	0.00	0.00	0.00
405	1005	10.96	0.00	0.00	0.00
405	5	10.96	0.00	0.00	0.00
406	1006	13.70	0.00	0.00	0.00
406	6	13.70	0.00	0.00	0.00
407	1007	16.44	0.00	0.00	0.00
407	7	16.44	0.00	0.00	0.00
408	1008	19.18	0.00	0.00	0.00
408	8	19.18	0.00	0.00	0.00
409	1009	21.92	0.00	0.00	0.00
409	9	21.92	0.00	0.00	0.00
410	1010	24.66	0.00	0.00	0.00
410	10	24.66	0.00	0.00	0.00
411	1011	27.40	0.00	0.00	0.00
411	11	27.40	0.00	0.00	0.00
412	1012	30.45	0.00	0.00	0.00
412	12	30.45	0.00	0.00	0.00
413	1013	33.50	0.00	0.00	0.00
413	13	33.50	0.00	0.00	0.00
414	1014	36.89	0.00	0.00	0.00
414	14	36.89	0.00	0.00	0.00
415	1015	40.28	0.00	0.00	0.00
415	15	40.28	0.00	0.00	0.00
416	1016	43.67	0.00	0.00	0.00
416	16	43.67	0.00	0.00	0.00
417	1017	47.06	0.00	0.00	0.00
417	17	47.06	0.00	0.00	0.00
418	1018	50.45	0.00	0.00	0.00
418	18	50.45	0.00	0.00	0.00
419	1019	53.84	0.00	0.00	0.00
419	19	53.84	0.00	0.00	0.00
420	1020	57.23	0.00	0.00	0.00
420	20	57.23	0.00	0.00	0.00
421	1021	60.62	0.00	0.00	0.00
421	21	60.62	0.00	0.00	0.00
422	1022	64.01	0.00	0.00	0.00
422	22	64.01	0.00	0.00	0.00
423	1023	67.40	0.00	0.00	0.00

423	23	67.40	0.00	0.00	0.00
424	1024	70.45	0.00	0.00	0.00
424	24	70.45	0.00	0.00	0.00
425	1025	73.50	0.00	0.00	0.00
425	25	73.50	0.00	0.00	0.00
426	1026	76.26	0.00	0.00	0.00
426	26	76.26	0.00	0.00	0.00
427	1027	79.02	0.00	0.00	0.00
427	27	79.02	0.00	0.00	0.00
428	1028	81.78	0.00	0.00	0.00
428	28	81.78	0.00	0.00	0.00
429	1029	84.54	0.00	0.00	0.00
429	29	84.54	0.00	0.00	0.00
430	1030	87.30	0.00	0.00	0.00
430	30	87.30	0.00	0.00	0.00
431	1031	90.06	0.00	0.00	0.00
431	31	90.06	0.00	0.00	0.00
432	1032	92.82	0.00	0.00	0.00
432	32	92.82	0.00	0.00	0.00
433	1033	95.58	0.00	0.00	0.00
433	33	95.58	0.00	0.00	0.00
434	1034	98.34	0.00	0.00	0.00
434	34	98.34	0.00	0.00	0.00
435	1035	101.10	0.00	0.00	0.00
435	35	101.10	0.00	0.00	0.00

423	23	67.40	0.00	0.94	-4.77
424	1024	70.45	0.00	0.93	-4.13
424	24	70.45	0.00	0.93	-4.83
425	1025	73.50	0.00	0.80	-3.85
425	25	73.50	0.00	0.80	-4.46
426	1026	76.26	0.00	0.74	-3.89
426	26	76.26	0.00	0.74	-4.45
427	1027	79.02	0.00	0.58	-3.55
427	27	79.02	0.00	0.58	-4.00
428	1028	81.78	0.00	0.55	-3.79
428	28	81.78	0.00	0.55	-4.20
429	1029	84.54	0.00	0.88	-5.43
429	29	84.54	0.00	0.88	-6.10
430	1030	87.30	0.00	0.66	-4.18
430	30	87.30	0.00	0.66	-4.68
431	1031	90.06	0.00	0.43	-2.57
431	31	90.06	0.00	0.43	-2.90
432	1032	92.82	0.00	0.34	-2.21
432	32	92.82	0.00	0.34	-2.46
433	1033	95.58	0.00	0.31	-2.11
433	33	95.58	0.00	0.31	-2.34
434	1034	98.34	0.00	0.18	-1.37
434	34	98.34	0.00	0.18	-1.50
435	1035	101.10	0.00	0.09	-0.67
435	35	101.10	0.00	0.09	-0.74

GRÁFICO DE ESFUERZOS

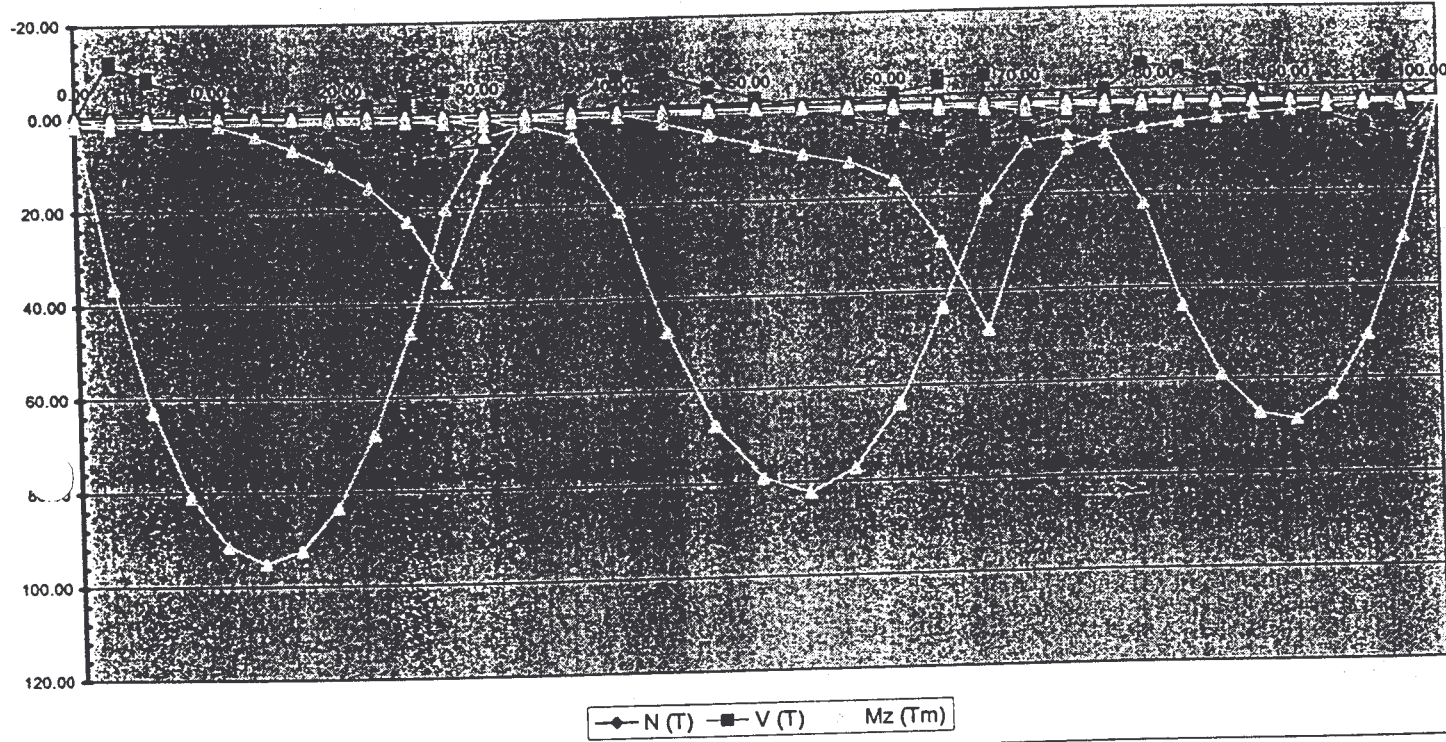
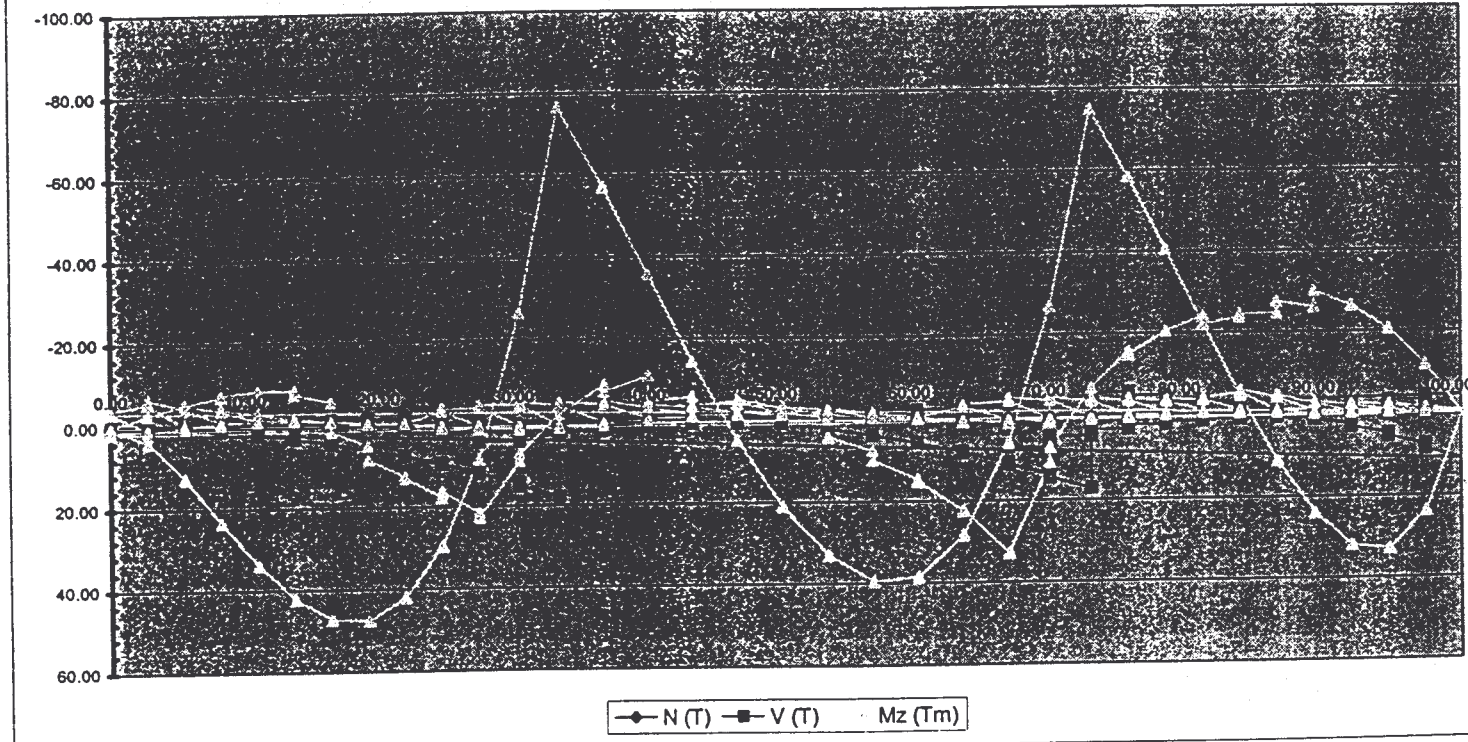


GRÁFICO DE ESFUERZOS



involvente de tren de cargas plano genérico. VY
0; 1]SCU DSIQZQSCunTneg.Barra1.Mx- + [0; 1]SCUPASEOSIZQSCunTneg.Barra2.Mx- + [0; 1]SCUPASEOSIZQSCunTneg.Barra3.Mx- + [0; 1]SCUPASEOSIZQSCunTneg.Barra4.Mx- + [0; 1]SCUPASEOSI
osf. exc.

Barra	Nudo	X	N (T)	Vy (T)	Mz (Tm)
1	1	0.00	0.00	-14.44	-0.20
1	2	2.74	0.00	-12.25	36.37
2	2	2.74	0.00	-10.90	36.00
2	3	5.48	0.00	-8.87	54.36
3	3	5.48	0.00	-8.08	50.01
3	4	8.22	0.00	-6.40	57.52
4	4	8.22	0.00	-6.04	57.32
4	5	10.96	0.00	-4.66	57.56
5	5	10.96	0.00	-4.51	56.66
5	6	13.70	0.00	-3.36	52.13
6	6	13.70	0.00	-3.31	52.07
6	7	16.44	0.00	-2.36	44.61
7	7	16.44	0.00	-2.31	44.60
7	8	19.18	0.00	-1.55	35.53
8	8	19.18	0.00	-1.48	33.24
8	9	21.92	0.00	-0.89	23.66
9	9	21.92	0.00	-0.81	23.68
	10	24.66	0.00	-0.40	14.65
10	10	24.66	0.00	-0.31	14.68
10	11	27.40	0.00	-0.10	7.26
11	11	27.40	0.00	-0.05	2.16
11	12	30.45	0.00	-0.05	2.31
12	12	30.45	0.00	-0.04	1.76
12	10013	33.50	0.00	-0.04	1.88
13	13	33.50	0.00	-22.82	-157.63
13	14	36.89	0.00	-20.11	-84.87
14	14	36.89	0.00	-18.32	-85.68
14	15	40.28	0.00	-15.74	-33.97
15	15	40.28	0.00	-14.42	-34.26
15	16	43.67	0.00	-12.17	0.47
16	16	43.67	0.00	-11.27	-1.80
16	17	47.06	0.00	-9.31	19.57
17	17	47.06	0.00	-8.75	19.38
17	18	50.45	0.00	-7.06	30.63
18	18	50.45	0.00	-6.67	30.23
18	19	53.84	0.00	-5.22	33.87
19	19	53.84	0.00	-4.91	33.31
19	20	57.23	0.00	-3.70	31.47
20	20	57.23	0.00	-3.37	31.48
20	21	60.62	0.00	-2.41	26.00
	21	60.62	0.00	-2.05	24.01
	22	64.01	0.00	-1.37	16.78
22	22	64.01	0.00	-1.05	16.81
22	23	67.40	0.00	-0.69	10.11
23	23	67.40	0.00	-0.43	9.97
23	24	70.45	0.00	-0.41	6.42
24	24	70.45	0.00	-0.28	5.95
24	10025	73.50	0.00	-0.28	6.80
25	25	73.50	0.00	-20.60	-134.18
25	26	76.26	0.00	-18.39	-80.36
26	26	76.26	0.00	-17.03	-80.78
26	27	79.02	0.00	-14.84	-40.93
27	27	79.02	0.00	-13.72	-41.57
27	28	81.78	0.00	-11.76	-13.90
28	28	81.78	0.00	-10.85	-14.15
28	29	84.54	0.00	-9.13	3.22
29	29	84.54	0.00	-8.36	3.14
29	30	87.30	0.00	-6.87	12.04
30	30	87.30	0.00	-6.21	10.55
30	31	90.06	0.00	-4.96	12.87
31	31	90.06	0.00	-4.33	12.87
31	32	92.82	0.00	-3.36	10.51
32	32	92.82	0.00	-2.74	10.54
2	33	95.58	0.00	-2.08	5.69
33	33	95.58	0.00	-1.54	1.88
33	34	98.34	0.00	-1.27	-2.63
34	34	98.34	0.00	-0.96	-2.64
34	35	101.10	0.00	-0.96	0.00
101	101	0.00	0.00	-0.04	0.00
101	102	2.74	0.00	-0.04	0.10
102	102	2.74	0.00	-0.06	-0.27
102	103	5.48	0.00	-0.06	-0.11

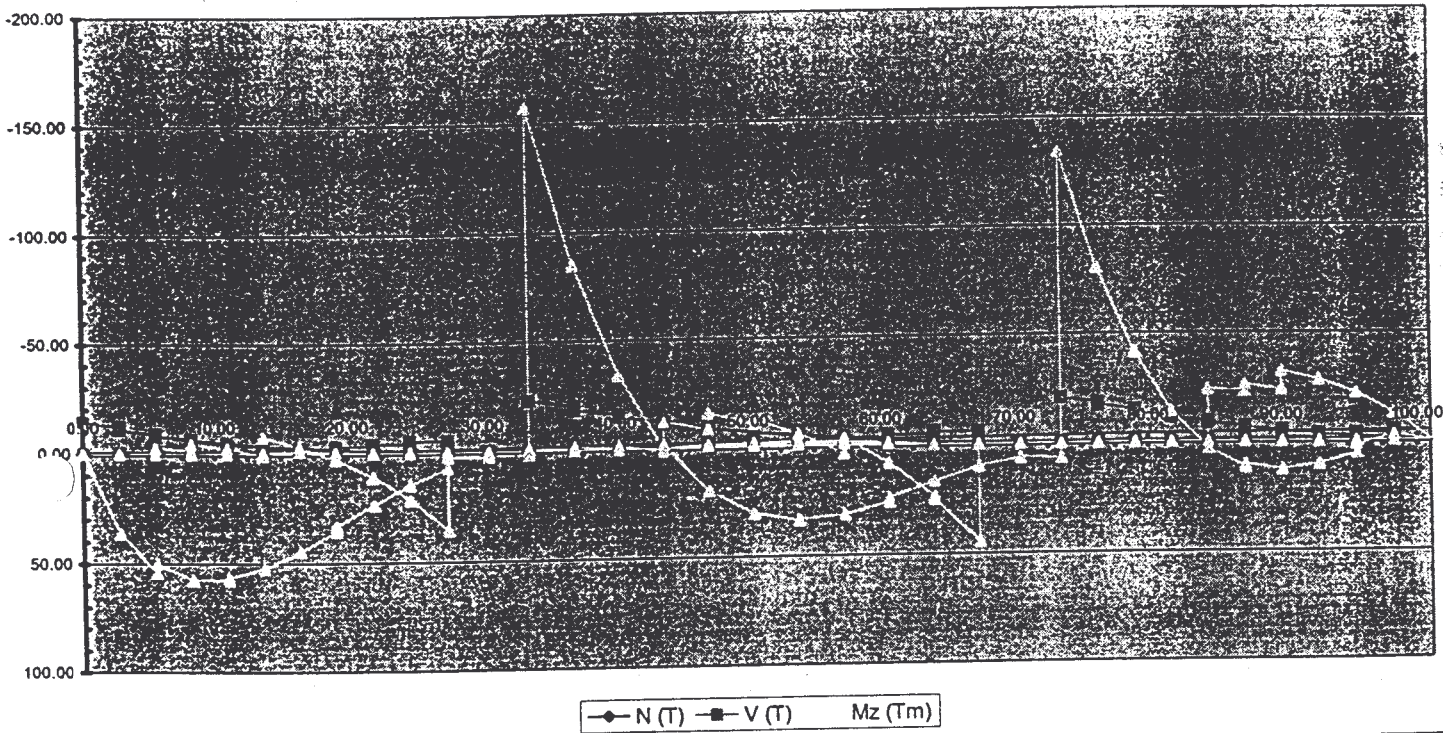
103	103	5.48	0.00	-0.45	-2.72
103	104	8.22	0.00	-0.45	-1.48
104	104	8.22	0.00	-0.93	-4.51
104	105	10.96	0.00	-0.93	-1.95
105	105	10.96	0.00	-1.28	-2.70
105	106	13.70	0.00	-1.28	0.82
106	106	13.70	0.00	-1.63	-7.50
106	107	16.44	0.00	-1.63	-3.03
107	107	16.44	0.00	-2.25	-3.12
107	108	19.18	0.00	-2.25	3.03
108	108	19.18	0.00	-3.00	2.87
108	109	21.92	0.00	-3.00	11.07
109	109	21.92	0.00	-3.95	10.86
109	110	24.66	0.00	-3.95	21.69
110	110	24.66	0.00	-5.15	21.46
110	10111	27.40	0.00	-5.15	35.57
111	111	27.40	0.00	0.00	0.00
111	112	30.45	0.00	0.00	0.00
112	112	30.45	0.00	0.00	0.00
112	113	33.50	0.00	0.00	0.00
113	113	33.50	0.00	-0.03	-0.90
113	114	36.89	0.00	-0.03	-0.80
114	114	36.89	0.00	-0.41	-1.47
114	115	40.28	0.00	-0.41	-0.09
115	115	40.28	0.00	-0.75	-1.33
115	116	43.67	0.00	-0.75	1.22
116	116	43.67	0.00	-0.98	-12.13
116	117	47.06	0.00	-0.98	-8.80
117	117	47.06	0.00	-1.57	-16.07
117	118	50.45	0.00	-1.57	-10.73
118	118	50.45	0.00	-2.14	-12.98
118	119	53.84	0.00	-2.14	-5.71
119	119	53.84	0.00	-2.71	-5.76
119	120	57.23	0.00	-2.71	3.43
120	120	57.23	0.00	-3.50	-3.65
120	121	60.62	0.00	-3.50	8.22
121	121	60.62	0.00	-4.55	8.12
121	122	64.01	0.00	-4.55	23.53
122	122	64.01	0.00	-5.82	24.84
122	10123	67.40	0.00	-5.82	44.58
123	123	67.40	0.00	0.00	0.00
123	124	70.45	0.00	0.00	0.00
124	124	70.45	0.00	0.00	0.00
124	125	73.50	0.00	0.00	0.00
125	125	73.50	0.00	0.00	0.00
125	126	76.26	0.00	0.00	0.00
126	126	76.26	0.00	0.00	0.00
126	127	79.02	0.00	0.00	0.00
127	127	79.02	0.00	0.00	0.00
127	128	81.78	0.00	0.00	0.00
128	128	81.78	0.00	0.00	0.00
128	129	84.54	0.00	0.00	0.00
129	129	84.54	0.00	-0.26	-23.93
129	130	87.30	0.00	-0.26	-23.22
130	130	87.30	0.00	-0.82	-25.83
130	131	90.06	0.00	-0.82	-23.55
131	131	90.06	0.00	-1.45	-32.02
131	132	92.82	0.00	-1.45	-28.02
132	132	92.82	0.00	-2.32	-28.15
132	133	95.58	0.00	-2.32	-21.76
133	133	95.58	0.00	-3.38	-21.98
133	134	98.34	0.00	-3.38	-12.65
134	134	98.34	0.00	-4.73	-12.91
134	135	101.10	0.00	-4.73	0.14
301	101	0.00	0.00	0.00	0.00
301	2001	0.00	0.00	0.00	0.00
302	102	2.74	0.00	0.00	0.00
302	2002	2.74	0.00	0.00	0.00
303	103	5.48	0.00	0.00	0.00
303	2003	5.48	0.00	0.00	0.00
304	104	8.22	0.00	0.00	0.00
304	2004	8.22	0.00	0.00	0.00
305	105	10.96	0.00	0.00	0.00
305	2005	10.96	0.00	0.00	0.00
306	106	13.70	0.00	-0.01	-0.33
306	2006	13.70	0.00	-0.01	-0.32
307	107	16.44	0.00	-0.02	-1.00
307	2007	16.44	0.00	-0.02	-0.99
308	108	19.18	0.00	-0.01	-0.34
308	2008	19.18	0.00	-0.01	-0.33
309	109	21.92	0.00	0.00	0.00
309	2009	21.92	0.00	0.00	0.00
310	110	24.66	0.00	0.00	0.00

310	2010	24.66	0.00	0.00	0.00
311	111	27.40	0.00	0.00	0.00
311	2011	27.40	0.00	0.00	0.00
312	112	30.45	0.00	0.00	0.00
31	2012	30.45	0.00	0.00	0.00
313	113	33.50	0.00	0.00	0.00
313	2013	33.50	0.00	0.00	0.00
314	114	36.89	0.00	0.00	0.00
314	2014	36.89	0.00	0.00	0.00
315	115	40.28	0.00	0.00	0.00
315	2015	40.28	0.00	0.00	0.00
316	116	43.67	0.00	0.00	-0.17
316	2016	43.67	0.00	0.00	-0.17
317	117	47.06	0.00	-0.11	-1.58
317	2017	47.06	0.00	-0.11	-1.50
318	118	50.45	0.00	-0.22	-2.12
318	2018	50.45	0.00	-0.22	-1.95
319	119	53.84	0.00	-0.25	-2.38
319	2019	53.84	0.00	-0.25	-2.19
320	120	57.23	0.00	-0.19	-2.02
320	2020	57.23	0.00	-0.19	-1.88
321	121	60.62	0.00	-0.07	-1.09
321	2021	60.62	0.00	-0.07	-1.04
322	122	64.01	0.00	0.00	0.00
322	2022	64.01	0.00	0.00	0.00
323	123	67.40	0.00	0.00	0.00
323	2023	67.40	0.00	0.00	0.00
324	124	70.45	0.00	0.00	0.00
324	2024	70.45	0.00	0.00	0.00
325	125	73.50	0.00	0.00	0.00
325	2025	73.50	0.00	0.00	0.00
326	126	76.26	0.00	0.00	0.00
326	2026	76.26	0.00	0.00	0.00
327	127	79.02	0.00	0.00	0.00
327	2027	79.02	0.00	0.00	0.00
328	128	81.78	0.00	0.00	0.00
328	2028	81.78	0.00	0.00	0.00
329	129	84.54	0.00	0.00	0.00
329	2029	84.54	0.00	0.00	0.00
330	130	87.30	0.00	0.00	0.00
330	2030	87.30	0.00	0.00	0.00
331	131	90.06	0.00	0.00	0.00
331	2031	90.06	0.00	0.00	0.00
332	132	92.82	0.00	0.00	0.00
332	2032	92.82	0.00	0.00	0.00
333	133	95.58	0.00	0.00	0.00
333	2033	95.58	0.00	0.00	0.00
334	134	98.34	0.00	0.00	-0.12
334	2034	98.34	0.00	0.00	-0.12
335	135	101.10	0.00	0.00	-0.10
201	2035	101.10	0.00	0.00	-0.10
201	2001	0.00	0.00	0.00	0.00
201	1001	0.00	0.00	0.00	0.00
202	2002	2.74	0.00	0.00	0.00
202	1002	2.74	0.00	0.00	0.00
203	2003	5.48	0.00	0.00	0.00
203	1003	5.48	0.00	0.00	0.00
204	2004	8.22	0.00	0.00	0.00
204	1004	8.22	0.00	0.00	0.00
205	2005	10.96	0.00	0.00	0.00
205	1005	10.96	0.00	0.00	0.00
206	2006	13.70	0.00	-0.01	-0.32
206	1006	13.70	0.00	-0.01	-0.29
207	2007	16.44	0.00	-0.02	-0.99
207	1007	16.44	0.00	-0.02	-0.91
208	2008	19.18	0.00	-0.01	-0.33
208	1008	19.18	0.00	-0.01	-0.28
209	2009	21.92	0.00	0.00	0.00
209	1009	21.92	0.00	0.00	0.00
210	2010	24.66	0.00	0.00	0.00
210	1010	24.66	0.00	0.00	0.00
211	2011	27.40	0.00	0.00	0.00
211	1011	27.40	0.00	0.00	0.00
212	2012	30.45	0.00	0.00	0.00
212	1012	30.45	0.00	0.00	0.00
213	2013	33.50	0.00	0.00	0.00
213	1013	33.50	0.00	0.00	0.00
214	2014	36.89	0.00	0.00	0.00
214	1014	36.89	0.00	0.00	0.00
215	2015	40.28	0.00	0.00	0.00
215	1015	40.28	0.00	0.00	0.00
216	2016	43.67	0.00	0.00	-0.17
216	1016	43.67	0.00	0.00	-0.17

217	2017	47.06	0.00	-0.11	-1.50
217	1017	47.06	0.00	-0.11	-1.00
218	2018	50.45	0.00	-0.22	-1.95
218	1018	50.45	0.00	-0.22	-0.89
219	2019	53.84	0.00	-0.25	-2.19
219	1019	53.84	0.00	-0.25	-0.98
220	2020	57.23	0.00	-0.19	-1.88
220	1020	57.23	0.00	-0.19	-0.98
221	2021	60.62	0.00	-0.07	-1.04
221	1021	60.62	0.00	-0.07	-0.70
222	2022	64.01	0.00	0.00	0.00
222	1022	64.01	0.00	0.00	0.00
223	2023	67.40	0.00	0.00	0.00
223	1023	67.40	0.00	0.00	0.00
224	2024	70.45	0.00	0.00	0.00
224	1024	70.45	0.00	0.00	0.00
225	2025	73.50	0.00	0.00	0.00
225	1025	73.50	0.00	0.00	0.00
226	2026	76.26	0.00	0.00	0.00
226	1026	76.26	0.00	0.00	0.00
227	2027	79.02	0.00	0.00	0.00
227	1027	79.02	0.00	0.00	0.00
228	2028	81.78	0.00	0.00	0.00
228	1028	81.78	0.00	0.00	0.00
229	2029	84.54	0.00	0.00	0.00
229	1029	84.54	0.00	0.00	0.00
230	2030	87.30	0.00	0.00	0.00
230	1030	87.30	0.00	0.00	0.00
231	2031	90.06	0.00	0.00	0.00
231	1031	90.06	0.00	0.00	0.00
232	2032	92.82	0.00	0.00	0.00
232	1032	92.82	0.00	0.00	0.00
233	2033	95.58	0.00	0.00	0.00
233	1033	95.58	0.00	0.00	0.00
234	2034	98.34	0.00	0.00	-0.12
234	1034	98.34	0.00	0.00	-0.11
235	2035	101.10	0.00	0.00	-0.10
235	1035	101.10	0.00	0.00	-0.09
401	1001	0.00	0.00	0.00	0.00
401	1	0.00	0.00	0.00	0.00
402	1002	2.74	0.00	0.00	0.00
402	2	2.74	0.00	0.00	0.00
403	1003	5.48	0.00	0.00	0.00
403	3	5.48	0.00	0.00	0.00
404	1004	8.22	0.00	0.00	0.00
404	4	8.22	0.00	0.00	0.00
405	1005	10.96	0.00	0.00	0.00
405	5	10.96	0.00	0.00	0.00
406	1006	13.70	0.00	-0.01	-0.29
406	6	13.70	0.00	-0.01	-0.29
407	1007	16.44	0.00	-0.02	-0.91
407	7	16.44	0.00	-0.02	-0.89
408	1008	19.18	0.00	-0.01	-0.28
408	8	19.18	0.00	-0.01	-0.28
409	1009	21.92	0.00	0.00	0.00
409	9	21.92	0.00	0.00	0.00
410	1010	24.66	0.00	0.00	0.00
410	10	24.66	0.00	0.00	0.00
411	1011	27.40	0.00	0.00	0.00
411	11	27.40	0.00	0.00	0.00
412	1012	30.45	0.00	0.00	0.00
412	12	30.45	0.00	0.00	0.00
413	1013	33.50	0.00	0.00	0.00
413	13	33.50	0.00	0.00	0.00
414	1014	36.89	0.00	0.00	0.00
414	14	36.89	0.00	0.00	0.00
415	1015	40.28	0.00	0.00	0.00
415	15	40.28	0.00	0.00	0.00
416	1016	43.67	0.00	0.00	-0.17
416	16	43.67	0.00	0.00	-0.17
417	1017	47.06	0.00	-0.11	-1.00
417	17	47.06	0.00	-0.11	-0.92
418	1018	50.45	0.00	-0.22	-0.89
418	18	50.45	0.00	-0.22	-0.73
419	1019	53.84	0.00	-0.25	-0.98
419	19	53.84	0.00	-0.25	-0.79
420	1020	57.23	0.00	-0.19	-0.98
420	20	57.23	0.00	-0.19	-0.84
421	1021	60.62	0.00	-0.07	-0.70
421	21	60.62	0.00	-0.07	-0.65
422	1022	64.01	0.00	0.00	0.00
422	22	64.01	0.00	0.00	0.00
423	1023	67.40	0.00	0.00	0.00

423	23	67.40	0.00	0.00	0.00
424	1024	70.45	0.00	0.00	0.00
424	24	70.45	0.00	0.00	0.00
425	1025	73.50	0.00	0.00	0.00
425	25	73.50	0.00	0.00	0.00
426	1026	76.26	0.00	0.00	0.00
426	26	76.26	0.00	0.00	0.00
427	1027	79.02	0.00	0.00	0.00
427	27	79.02	0.00	0.00	0.00
428	1028	81.78	0.00	0.00	0.00
428	28	81.78	0.00	0.00	0.00
429	1029	84.54	0.00	0.00	0.00
429	29	84.54	0.00	0.00	0.00
430	1030	87.30	0.00	0.00	0.00
430	30	87.30	0.00	0.00	0.00
431	1031	90.06	0.00	0.00	0.00
431	31	90.06	0.00	0.00	0.00
432	1032	92.82	0.00	0.00	0.00
432	32	92.82	0.00	0.00	0.00
433	1033	95.58	0.00	0.00	0.00
433	33	95.58	0.00	0.00	0.00
434	1034	98.34	0.00	0.00	-0.11
434	34	98.34	0.00	0.00	-0.11
435	1035	101.10	0.00	0.00	-0.09
435	35	101.10	0.00	0.00	-0.09

GRÁFICO DE ESFUERZOS



Envolvente de tren de cargas plano genérico. MX-

[0; 1]SCUPASEOSIZQUSCuniTneg.Barra1.Mx- + [0; 1]SCUPASEOSIZQUSCuniTneg.Barra2.Mx- + [0; 1]SCUPASEOSIZQUSCuniTneg.Barra3.Mx- + [0; 1]SCUPASEOSIZQUSCuniTneg.Barra4.Mx- + [0; 1]SCUPASEOSIZQUSCuniTneg.Barra5.Mx-

Coef. ext:

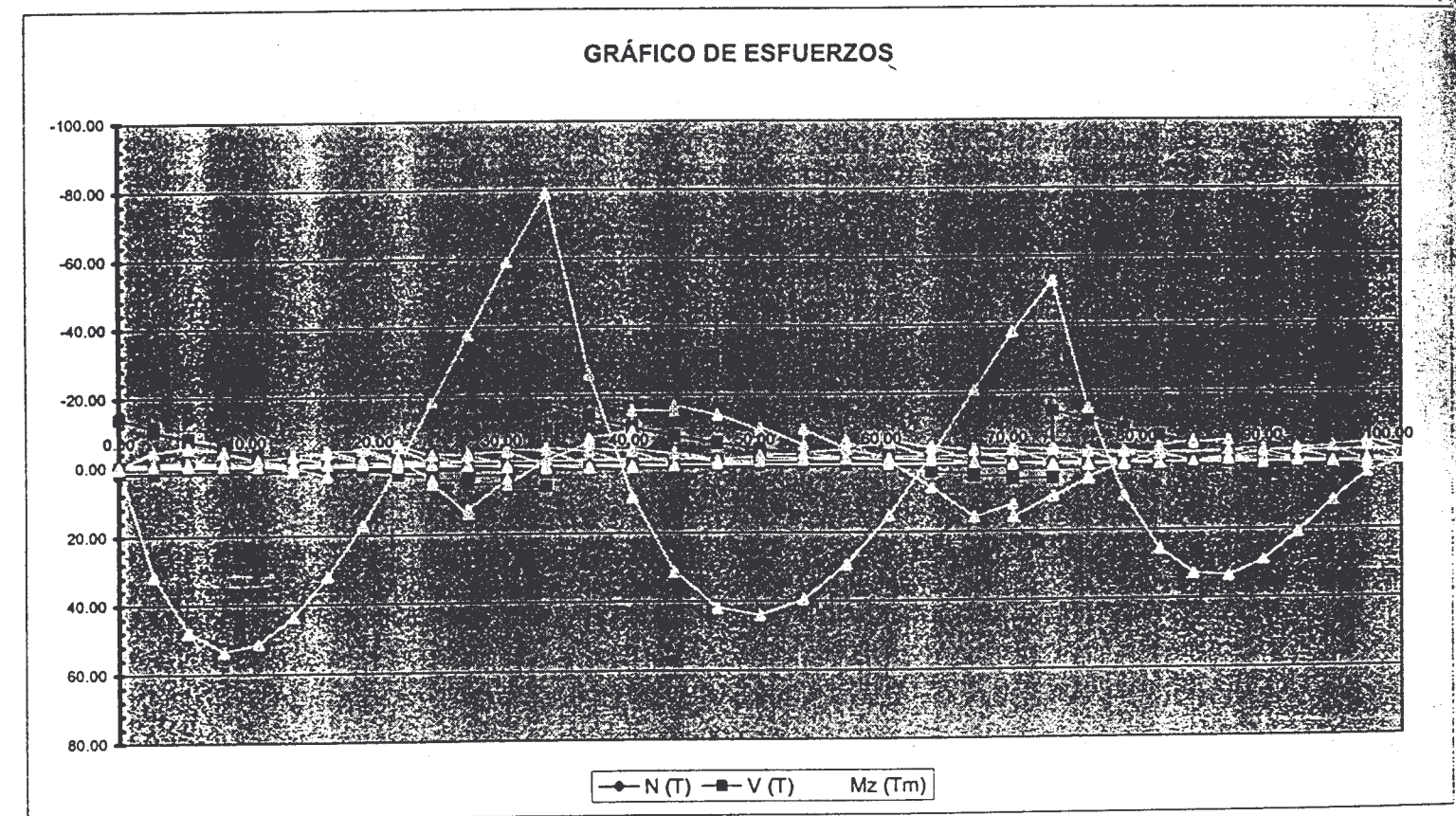
Barra	Nudo	X	N (T)	Vy (T)	Mz (Tm)
1	1	0.00	0.00	-14.04	-0.18
1	2	2.74	0.00	-11.59	31.58
2	2	2.74	0.00	-10.31	31.26
2	3	5.48	0.00	-8.28	48.01
3	3	5.48	0.00	-7.44	47.76
3	4	8.22	0.00	-5.76	53.52
4	4	8.22	0.00	-5.19	53.37
4	5	10.96	0.00	-3.81	51.27
5	5	10.96	0.00	-3.35	51.19
5	6	13.70	0.00	-2.20	43.48
6	6	13.70	0.00	-1.74	43.48
6	7	16.44	0.00	-0.79	31.71
7	7	16.44	0.00	-0.23	31.75
7	8	19.18	0.00	0.53	16.98
8	8	19.18	0.00	1.23	17.03
8	9	21.92	0.00	1.82	0.03
9	9	21.92	0.00	2.67	0.09
9	10	24.66	0.00	3.07	-18.46
10	10	24.66	0.00	4.04	-18.44
10	11	27.40	0.00	4.24	-37.77
11	11	27.40	0.00	5.33	-37.81
11	12	30.45	0.00	5.31	-59.11
12	12	30.45	0.00	6.46	-59.24
12	10013	33.50	0.00	6.16	-78.96
13	13	33.50	0.00	-17.35	-79.20
13	14	36.89	0.00	-14.41	-26.07
14	14	36.89	0.00	-13.67	-26.39
14	15	40.28	0.00	-11.08	9.54
15	15	40.28	0.00	-10.65	9.24
15	16	43.67	0.00	-8.40	31.17
16	16	43.67	0.00	-8.18	30.94
16	17	47.06	0.00	-6.22	41.84
17	17	47.06	0.00	-6.10	41.69
17	18	50.45	0.00	-4.41	43.94
18	18	50.45	0.00	-4.25	43.87
18	19	53.84	0.00	-2.80	39.30
19	19	53.84	0.00	-2.49	39.30
19	20	57.23	0.00	-1.28	29.28
20	20	57.23	0.00	-0.77	29.33
20	21	60.62	0.00	0.19	15.03
21	21	60.62	0.00	0.94	15.08
21	22	64.01	0.00	1.62	-2.29
22	22	64.01	0.00	2.55	-2.26
22	23	67.40	0.00	2.91	-21.16
23	23	67.40	0.00	3.87	-21.20
23	24	70.45	0.00	3.89	-37.87
24	24	70.45	0.00	4.80	-37.99
24	10025	73.50	0.00	4.52	-52.64
25	25	73.50	0.00	-14.81	-52.81
25	26	76.26	0.00	-12.39	-15.56
26	26	76.26	0.00	-11.90	-15.75
26	27	79.02	0.00	-9.71	9.94
27	27	79.02	0.00	-9.39	9.77
27	28	81.78	0.00	-7.44	25.50
28	28	81.78	0.00	-7.24	25.37
28	29	84.54	0.00	-5.51	32.78
29	29	84.54	0.00	-5.37	32.70
29	30	87.30	0.00	-3.88	33.37
30	30	87.30	0.00	-3.74	33.34
30	31	90.06	0.00	-2.49	28.84
31	31	90.06	0.00	-2.31	28.85
31	32	92.82	0.00	-1.33	20.91
32	32	92.82	0.00	-1.11	20.94
32	33	95.58	0.00	-0.46	11.60
33	33	95.58	0.00	-0.24	11.64
33	34	98.34	0.00	0.03	3.53
34	34	98.34	0.00	0.19	3.55
34	35	101.10	0.00	0.00	0.00
101	101	0.00	0.00	1.81	0.20
101	102	2.74	0.00	1.81	-4.77
102	102	2.74	0.00	0.54	-4.40
102	103	5.48	0.00	0.54	-5.89

103	103	5.48	0.00	-0.32	-5.57
103	104	8.22	0.00	-0.32	-4.70
104	104	8.22	0.00	-0.82	-4.19
104	105	10.96	0.00	-0.82	-1.94
1	105	10.96	0.00	-1.09	-1.80
105	106	13.70	0.00	-1.09	1.18
106	106	13.70	0.00	-0.94	0.10
106	107	16.44	0.00	-0.94	2.66
107	107	16.44	0.00	-0.95	-4.57
107	108	19.18	0.00	-0.95	-1.98
108	108	19.18	0.00	-1.46	-5.48
108	109	21.92	0.00	-1.46	-1.46
109	109	21.92	0.00	-2.18	-2.00
109	110	24.66	0.00	-2.18	3.97
110	110	24.66	0.00	-3.22	5.18
110	10111	27.40	0.00	-3.22	14.01
111	111	27.40	0.00	2.84	12.64
111	112	30.45	0.00	2.84	3.97
112	112	30.45	0.00	2.34	5.64
112	113	33.50	0.00	2.34	-1.51
113	113	33.50	0.00	1.40	-1.53
113	114	36.89	0.00	1.40	-6.29
114	114	36.89	0.00	0.57	-7.81
114	115	40.28	0.00	0.57	-9.76
115	115	40.28	0.00	-0.05	-15.79
115	116	43.67	0.00	-0.05	-15.61
116	116	43.67	0.00	-0.88	-17.24
	117	47.06	0.00	-0.88	-14.26
	117	47.06	0.00	-1.34	-14.44
117	118	50.45	0.00	-1.34	-9.88
118	118	50.45	0.00	-1.56	-10.79
118	119	53.84	0.00	-1.56	-5.48
119	119	53.84	0.00	-1.71	-10.01
119	120	57.23	0.00	-1.71	-4.22
120	120	57.23	0.00	-2.00	-6.63
120	121	60.62	0.00	-2.00	0.15
121	121	60.62	0.00	-2.28	-0.58
121	122	64.01	0.00	-2.28	7.13
122	122	64.01	0.00	-2.56	7.10
122	10123	67.40	0.00	-2.56	15.77
123	123	67.40	0.00	1.18	15.76
123	124	70.45	0.00	1.18	12.15
124	124	70.45	0.00	1.96	15.74
124	125	73.50	0.00	1.96	9.77
125	125	73.50	0.00	1.85	10.02
125	126	76.26	0.00	1.85	4.92
126	126	76.26	0.00	1.48	4.34
126	127	79.02	0.00	1.48	0.27
127	127	79.02	0.00	1.02	0.42
127	128	81.78	0.00	1.02	-2.39
	128	81.78	0.00	0.67	-4.23
	129	84.54	0.00	0.67	-6.08
129	129	84.54	0.00	0.32	-5.16
129	130	87.30	0.00	0.32	-6.04
130	130	87.30	0.00	0.10	-3.18
130	131	90.06	0.00	0.10	-3.44
131	131	90.06	0.00	0.13	0.54
131	132	92.82	0.00	0.13	0.17
132	132	92.82	0.00	0.07	0.17
132	133	95.58	0.00	0.07	-0.03
133	133	95.58	0.00	0.02	-0.03
133	134	98.34	0.00	0.02	-0.08
134	134	98.34	0.00	-0.19	-0.53
134	135	101.10	0.00	-0.19	0.00
301	101	0.00	0.00	0.03	-0.34
301	2001	0.00	0.00	0.03	-0.36
302	102	2.74	0.00	0.11	-0.52
302	2002	2.74	0.00	0.11	-0.60
303	103	5.48	0.00	0.16	-0.37
303	2003	5.48	0.00	0.16	-0.49
304	104	8.22	0.00	0.22	-0.22
304	2004	8.22	0.00	0.22	-0.39
305	105	10.96	0.00	0.33	-0.07
5	2005	10.96	0.00	0.33	-0.32
6	106	13.70	0.00	0.50	-0.21
306	2006	13.70	0.00	0.50	-0.59
307	107	16.44	0.00	0.59	-0.55
307	2007	16.44	0.00	0.59	-0.99
308	108	19.18	0.00	0.75	-0.69
308	2008	19.18	0.00	0.75	-1.25
309	109	21.92	0.00	0.95	-0.03
309	2009	21.92	0.00	0.95	-0.75
310	110	24.66	0.00	0.46	-0.44

310	2010	24.66	0.00	0.46	-0.79
311	111	27.40	0.00	0.58	0.04
311	2011	27.40	0.00	0.58	-0.39
312	112	30.45	0.00	0.81	0.53
312	2012	30.45	0.00	0.81	-0.08
313	113	33.50	0.00	0.94	0.88
313	2013	33.50	0.00	0.94	0.17
314	114	36.89	0.00	0.89	0.91
314	2014	36.89	0.00	0.89	0.24
315	115	40.28	0.00	0.85	0.78
315	2015	40.28	0.00	0.85	0.14
316	116	43.67	0.00	0.65	0.47
316	2016	43.67	0.00	0.65	-0.02
317	117	47.06	0.00	0.18	-0.20
317	2017	47.06	0.00	0.18	-0.34
318	118	50.45	0.00	0.28	-0.83
318	2018	50.45	0.00	0.28	-1.05
319	119	53.84	0.00	0.32	-1.23
319	2019	53.84	0.00	0.32	-1.47
320	120	57.23	0.00	0.50	-1.43
320	2020	57.23	0.00	0.50	-1.81
321	121	60.62	0.00	0.89	-1.04
321	2021	60.62	0.00	0.89	-1.71
322	122	64.01	0.00	0.65	-0.85
322	2022	64.01	0.00	0.65	-1.33
323	123	67.40	0.00	0.63	-0.09
323	2023	67.40	0.00	0.63	-0.56
324	124	70.45	0.00	0.80	0.62
324	2024	70.45	0.00	0.80	0.01
325	125	73.50	0.00	0.81	1.00
325	2025	73.50	0.00	0.81	0.39
326	126	76.26	0.00	0.68	0.95
326	2026	76.26	0.00	0.68	0.43
327	127	79.02	0.00	0.66	0.91
327	2027	79.02	0.00	0.66	0.41
328	128	81.78	0.00	0.49	0.72
328	2028	81.78	0.00	0.49	0.34
329	129	84.54	0.00	0.00	0.00
329	2029	84.54	0.00	0.00	0.00
330	130	87.30	0.00	0.13	-0.31
330	2030	87.30	0.00	0.13	-0.41
331	131	90.06	0.00	0.36	-0.66
331	2031	90.06	0.00	0.36	-0.93
332	132	92.82	0.00	0.54	-0.22
332	2032	92.82	0.00	0.54	-0.63
333	133	95.58	0.00	0.77	0.47
333	2033	95.58	0.00	0.77	-0.11
334	134	98.34	0.00	1.16	1.33
334	2034	98.34	0.00	1.16	0.45
335	135	101.10	0.00	0.75	1.18
335	2035	101.10	0.00	0.75	0.61
201	2001	0.00	0.00	0.03	-0.36
201	1001	0.00	0.00	0.03	-0.50
202	2002	2.74	0.00	0.11	-0.60
202	1002	2.74	0.00	0.11	-1.11
203	2003	5.48	0.00	0.16	-0.49
203	1003	5.48	0.00	0.16	-1.24
204	2004	8.22	0.00	0.22	-0.39
204	1004	8.22	0.00	0.22	-1.45
205	2005	10.96	0.00	0.33	-0.32
205	1005	10.96	0.00	0.33	-1.88
206	2006	13.70	0.00	0.50	-0.59
206	1006	13.70	0.00	0.50	-3.00
207	2007	16.44	0.00	0.59	-0.99
207	1007	16.44	0.00	0.59	-3.81
208	2008	19.18	0.00	0.75	-1.25
208	1008	19.18	0.00	0.75	-4.83
209	2009	21.92	0.00	0.95	-0.75
209	1009	21.92	0.00	0.95	-5.31
210	2010	24.66	0.00	0.46	-0.79
210	1010	24.66	0.00	0.46	-2.98
211	2011	27.40	0.00	0.58	-0.39
211	1011	27.40	0.00	0.58	-3.15
212	2012	30.45	0.00	0.81	-0.08
212	1012	30.45	0.00	0.81	-3.97
213	2013	33.50	0.00	0.94	0.17
213	1013	33.50	0.00	0.94	-4.32
214	2014	36.89	0.00	0.89	0.24
214	1014	36.89	0.00	0.89	-4.04
215	2015	40.28	0.00	0.85	0.14
215	1015	40.28	0.00	0.85	-3.95
216	2016	43.67	0.00	0.65	-0.02
216	1016	43.67	0.00	0.65	-3.14

217	2017	47.06	0.00	0.18	-0.34
217	1017	47.06	0.00	0.18	-1.18
218	2018	50.45	0.00	0.28	-1.05
218	1018	50.45	0.00	0.28	-2.39
219	2019	53.84	0.00	0.32	-1.47
219	1019	53.84	0.00	0.32	-2.99
220	2020	57.23	0.00	0.50	-1.81
220	1020	57.23	0.00	0.50	-4.20
221	2021	60.62	0.00	0.89	-1.71
221	1021	60.62	0.00	0.89	-5.98
222	2022	64.01	0.00	0.65	-1.33
222	1022	64.01	0.00	0.65	-4.43
223	2023	67.40	0.00	0.63	-0.56
223	1023	67.40	0.00	0.63	-3.57
224	2024	70.45	0.00	0.80	0.01
224	1024	70.45	0.00	0.80	-3.83
225	2025	73.50	0.00	0.81	0.39
225	1025	73.50	0.00	0.81	-3.51
226	2026	76.26	0.00	0.68	0.43
226	1026	76.26	0.00	0.68	-2.84
227	2027	79.02	0.00	0.66	0.41
227	1027	79.02	0.00	0.66	-2.73
228	2028	81.78	0.00	0.49	0.34
228	1028	81.78	0.00	0.49	-2.03
229	2029	84.54	0.00	0.00	0.00
229	1029	84.54	0.00	0.00	0.00
230	2030	87.30	0.00	0.13	-0.41
230	1030	87.30	0.00	0.13	-1.03
231	2031	90.06	0.00	0.36	-0.93
231	1031	90.06	0.00	0.36	-2.63
232	2032	92.82	0.00	0.54	-0.63
232	1032	92.82	0.00	0.54	-3.23
233	2033	95.58	0.00	0.77	-0.11
233	1033	95.58	0.00	0.77	-3.78
234	2034	98.34	0.00	1.16	0.45
234	1034	98.34	0.00	1.16	-5.11
235	2035	101.10	0.00	0.75	0.61
235	1035	101.10	0.00	0.75	-3.00
401	1001	0.00	0.00	0.03	-0.50
401	1	0.00	0.00	0.03	-0.52
402	1002	2.74	0.00	0.11	-1.11
402	2	2.74	0.00	0.11	-1.19
403	1003	5.48	0.00	0.16	-1.24
403	3	5.48	0.00	0.16	-1.36
404	1004	8.22	0.00	0.22	-1.45
404	4	8.22	0.00	0.22	-1.62
405	1005	10.96	0.00	0.33	-1.88
405	5	10.96	0.00	0.33	-2.12
406	1006	13.70	0.00	0.50	-3.00
406	6	13.70	0.00	0.50	-3.38
407	1007	16.44	0.00	0.59	-3.81
407	7	16.44	0.00	0.59	-4.25
408	1008	19.18	0.00	0.75	-4.83
408	8	19.18	0.00	0.75	-5.39
409	1009	21.92	0.00	0.95	-5.31
409	9	21.92	0.00	0.95	-6.03
410	1010	24.66	0.00	0.46	-2.98
410	10	24.66	0.00	0.46	-3.33
411	1011	27.40	0.00	0.58	-3.15
411	11	27.40	0.00	0.58	-3.58
412	1012	30.45	0.00	0.81	-3.97
412	12	30.45	0.00	0.81	-4.58
413	1013	33.50	0.00	0.94	-4.32
413	13	33.50	0.00	0.94	-5.03
414	1014	36.89	0.00	0.89	-4.04
414	14	36.89	0.00	0.89	-4.71
415	1015	40.28	0.00	0.85	-3.95
415	15	40.28	0.00	0.85	-4.59
416	1016	43.67	0.00	0.65	-3.14
416	16	43.67	0.00	0.65	-3.63
417	1017	47.06	0.00	0.18	-1.18
417	17	47.06	0.00	0.18	-1.31
418	1018	50.45	0.00	0.28	-2.39
418	18	50.45	0.00	0.28	-2.60
419	1019	53.84	0.00	0.32	-2.99
419	19	53.84	0.00	0.32	-3.23
420	1020	57.23	0.00	0.50	-4.20
420	20	57.23	0.00	0.50	-4.58
421	1021	60.62	0.00	0.89	-5.98
421	21	60.62	0.00	0.89	-6.65
422	1022	64.01	0.00	0.65	-4.43
422	22	64.01	0.00	0.65	-4.92
423	1023	67.40	0.00	0.63	-3.57

423	23	67.40	0.00	0.63	-4.04
424	1024	70.45	0.00	0.80	-3.83
424	24	70.45	0.00	0.80	-4.44
425	1025	73.50	0.00	0.81	-3.51
425	25	73.50	0.00	0.81	-4.12
426	1026	76.26	0.00	0.68	-2.84
426	26	76.26	0.00	0.68	-3.36
427	1027	79.02	0.00	0.66	-2.73
427	27	79.02	0.00	0.66	-3.22
428	1028	81.78	0.00	0.49	-2.03
428	28	81.78	0.00	0.49	-2.40
429	1029	84.54	0.00	0.00	0.00
429	29	84.54	0.00	0.00	0.00
430	1030	87.30	0.00	0.13	-1.03
430	30	87.30	0.00	0.13	-1.12
431	1031	90.06	0.00	0.36	-2.63
431	31	90.06	0.00	0.36	-2.90
432	1032	92.82	0.00	0.54	-3.23
432	32	92.82	0.00	0.54	-3.64
433	1033	95.58	0.00	0.77	-3.78
433	33	95.58	0.00	0.77	-4.36
434	1034	98.34	0.00	1.16	-5.11
434	34	98.34	0.00	1.16	-5.98
435	1035	101.10	0.00	0.75	-3.00
435	35	101.10	0.00	0.75	-3.57



Envolvimento de tren de cargas plano genérico: MZ
x: 1]SCU 0.5ZQUSCunTneg.Barra1.Mx- + [0; 1]SCUPASEOSIZQUSCunTneg.Barra2.Mx- + [0; 1]SCUPASEOSIZQUSCunTneg.Barra3.Mx- + [0; 1]SCUPASEOSIZQUSCunTneg.Barra4.Mx- + [0; 1]SCUPASEC
coef. exc.

Barra	Nudo	X	N (T)	Vy (T)	Mz (Tm)
1	1	0.00	0.00	-14.42	-0.20
1	2	2.74	0.00	0.40	-1.08
2	2	2.74	0.00	0.48	-1.05
2	3	5.48	0.00	0.48	-2.37
3	3	5.48	0.00	0.61	-2.33
3	4	8.22	0.00	0.61	-4.01
4	4	8.22	0.00	0.80	-3.97
4	5	10.96	0.00	0.86	-6.30
5	5	10.96	0.00	1.14	-6.25
5	6	13.70	0.00	1.14	-9.38
6	6	13.70	0.00	1.51	-9.34
6	7	16.44	0.00	1.51	-13.48
7	7	16.44	0.00	1.97	-13.43
7	8	19.18	0.00	1.97	-18.82
8	8	19.18	0.00	2.51	-18.78
8	9	21.92	0.00	2.69	-25.88
	9	21.92	0.00	3.40	-25.86
	10	24.66	0.00	3.40	-35.19
10	10	24.66	0.00	4.21	-35.19
10	11	27.40	0.00	8.94	-49.19
11	11	27.40	0.00	10.09	-49.12
11	12	30.45	0.00	17.19	-90.59
12	12	30.45	0.00	18.83	-90.51
12	10013	33.50	0.00	24.13	-158.16
13	13	33.50	0.00	-22.76	-158.22
13	14	36.89	0.00	-17.14	-88.42
14	14	36.89	0.00	-15.59	-88.62
14	15	40.28	0.00	-8.02	-47.59
15	15	40.28	0.00	-8.37	-47.70
15	16	43.67	0.00	-3.59	-30.85
16	16	43.67	0.00	-2.86	-30.85
16	17	47.06	0.00	-2.86	-21.16
17	17	47.06	0.00	-2.26	-21.17
17	18	50.45	0.00	-1.94	-14.06
18	18	50.45	0.00	-1.30	-14.04
18	19	53.84	0.00	-1.18	-9.93
19	19	53.84	0.00	-0.56	-9.91
19	20	57.23	0.00	-0.36	-8.54
20	20	57.23	0.00	0.35	-8.51
20	21	60.62	0.00	1.45	-10.26
	21	60.62	0.00	2.03	-10.24
21	22	64.01	0.00	2.16	-17.41
22	22	64.01	0.00	2.92	-17.42
22	23	67.40	0.00	7.98	-35.74
23	23	67.40	0.00	9.01	-35.64
23	24	70.45	0.00	15.37	-73.66
24	24	70.45	0.00	16.72	-73.56
24	10025	73.50	0.00	22.03	-134.98
25	25	73.50	0.00	-20.57	-135.00
25	26	76.26	0.00	-15.88	-82.98
26	26	76.26	0.00	-14.69	-83.07
26	27	79.02	0.00	-6.79	-52.97
27	27	79.02	0.00	-5.97	-52.98
27	28	81.78	0.00	-4.22	-40.84
28	28	81.78	0.00	-3.56	-40.83
28	29	84.54	0.00	-3.56	-31.00
29	29	84.54	0.00	-2.98	-31.01
29	30	87.30	0.00	-2.98	-22.78
30	30	87.30	0.00	-2.47	-22.79
30	31	90.06	0.00	-2.38	-15.97
31	31	90.06	0.00	-1.97	-15.98
31	32	92.82	0.00	-1.97	-10.55
	32	92.82	0.00	-1.61	-10.56
	33	95.58	0.00	-1.59	-6.13
33	33	95.58	0.00	-1.27	-6.14
33	34	98.34	0.00	-1.27	-2.64
34	34	98.34	0.00	-0.96	-2.64
34	35	101.10	0.00	11.35	-0.14
101	101	0.00	0.00	0.98	-0.02
101	102	2.74	0.00	2.89	-7.75
102	102	2.74	0.00	1.48	-7.41
102	103	5.48	0.00	1.48	-11.48

217	2017	47.06	0.00	0.25	-0.98
217	1017	47.06	0.00	0.25	-2.19
218	2018	50.45	0.00	0.22	-0.89
218	1018	50.45	0.00	0.22	-1.95
219	2019	53.84	0.00	0.11	-1.00
219	1019	53.84	0.00	0.11	-1.50
220	2020	57.23	0.00	0.00	-0.17
220	1020	57.23	0.00	0.00	-0.17
221	2021	60.62	0.00	0.00	0.00
221	1021	60.62	0.00	0.00	0.00
222	2022	64.01	0.00	0.00	0.00
222	1022	64.01	0.00	0.00	0.00
223	2023	67.40	0.00	0.00	0.00
223	1023	67.40	0.00	0.00	0.00
224	2024	70.45	0.00	0.00	0.00
224	1024	70.45	0.00	0.00	0.00
225	2025	73.50	0.00	0.00	0.00
225	1025	73.50	0.00	0.00	0.00
226	2026	76.26	0.00	0.00	0.00
226	1026	76.26	0.00	0.00	0.00
227	2027	79.02	0.00	0.00	0.00
227	1027	79.02	0.00	0.00	0.00
228	2028	81.78	0.00	0.01	-0.43
228	1028	81.78	0.00	0.01	-0.49
229	2029	84.54	0.00	0.02	-0.90
229	1029	84.54	0.00	0.02	-1.02
230	2030	87.30	0.00	0.01	-0.29
230	1030	87.30	0.00	0.01	-0.33
231	2031	90.06	0.00	0.00	0.00
231	1031	90.06	0.00	0.00	0.00
232	2032	92.82	0.00	0.00	0.00
232	1032	92.82	0.00	0.00	0.00
233	2033	95.58	0.00	0.00	0.00
233	1033	95.58	0.00	0.00	0.00
234	2034	98.34	0.00	0.00	0.00
234	1034	98.34	0.00	0.00	0.00
235	2035	101.10	0.00	0.00	0.00
235	1035	101.10	0.00	0.00	0.00
401	1001	0.00	0.00	0.00	-0.10
401	1	0.00	0.00	0.00	-0.10
402	1002	2.74	0.00	0.00	-0.12
402	2	2.74	0.00	0.00	-0.12
403	1003	5.48	0.00	0.00	0.00
403	3	5.48	0.00	0.00	0.00
404	1004	8.22	0.00	0.00	0.00
404	4	8.22	0.00	0.00	0.00
405	1005	10.96	0.00	0.00	0.00
405	5	10.96	0.00	0.00	0.00
406	1006	13.70	0.00	0.00	0.00
406	6	13.70	0.00	0.00	0.00
407	1007	16.44	0.00	0.00	0.00
407	7	16.44	0.00	0.00	0.00
408	1008	19.18	0.00	0.00	0.00
408	8	19.18	0.00	0.00	0.00
409	1009	21.92	0.00	0.00	0.00
409	9	21.92	0.00	0.00	0.00
410	1010	24.66	0.00	0.00	0.00
410	10	24.66	0.00	0.00	0.00
411	1011	27.40	0.00	0.00	0.00
411	11	27.40	0.00	0.00	0.00
412	1012	30.45	0.00	0.00	0.00
412	12	30.45	0.00	0.00	0.00
413	1013	33.50	0.00	0.00	0.00
413	13	33.50	0.00	0.00	0.00
414	1014	36.89	0.00	0.00	0.00
414	14	36.89	0.00	0.00	0.00
415	1015	40.28	0.00	0.07	-1.04
415	15	40.28	0.00	0.07	-1.09
416	1016	43.67	0.00	0.19	-1.88
416	16	43.67	0.00	0.19	-2.02
417	1017	47.06	0.00	0.25	-2.19
417	17	47.06	0.00	0.25	-2.38
418	1018	50.45	0.00	0.22	-1.95
418	18	50.45	0.00	0.22	-2.12
419	1019	53.84	0.00	0.11	-1.50
419	19	53.84	0.00	0.11	-1.58
420	1020	57.23	0.00	0.00	-0.17
420	20	57.23	0.00	0.00	-0.17
421	1021	60.62	0.00	0.00	0.00
421	21	60.62	0.00	0.00	0.00
422	1022	64.01	0.00	0.00	0.00
422	22	64.01	0.00	0.00	0.00
423	1023	67.40	0.00	0.00	0.00

310	2010	24.66	0.00	0.00	0.00
311	111	27.40	0.00	0.00	0.00
311	2011	27.40	0.00	0.00	0.00
312	112	30.45	0.00	0.00	0.00
312	2012	30.45	0.00	0.00	0.00
313	113	33.50	0.00	0.00	0.00
313	2013	33.50	0.00	0.00	0.00
314	114	36.89	0.00	0.00	0.00
314	2014	36.89	0.00	0.00	0.00
315	115	40.28	0.00	0.07	-0.65
315	2015	40.28	0.00	0.07	-0.70
316	116	43.67	0.00	0.19	-0.84
316	2016	43.67	0.00	0.19	-0.98
317	117	47.06	0.00	0.25	-0.79
317	2017	47.06	0.00	0.25	-0.98
318	118	50.45	0.00	0.22	-0.73
318	2018	50.45	0.00	0.22	-0.89
319	119	53.84	0.00	0.11	-0.92
319	2019	53.84	0.00	0.11	-1.00
320	120	57.23	0.00	0.00	-0.17
320	2020	57.23	0.00	0.00	-0.17
321	121	60.62	0.00	0.00	0.00
321	2021	60.62	0.00	0.00	0.00
322	122	64.01	0.00	0.00	0.00
322	2022	64.01	0.00	0.00	0.00
323	123	67.40	0.00	0.00	0.00
323	2023	67.40	0.00	0.00	0.00
324	124	70.45	0.00	0.00	0.00
324	2024	70.45	0.00	0.00	0.00
325	125	73.50	0.00	0.00	0.00
325	2025	73.50	0.00	0.00	0.00
326	126	76.26	0.00	0.00	0.00
326	2026	76.26	0.00	0.00	0.00
327	127	79.02	0.00	0.00	0.00
327	2027	79.02	0.00	0.00	0.00
328	128	81.78	0.00	0.01	-0.42
328	2028	81.78	0.00	0.01	-0.43
329	129	84.54	0.00	0.02	-0.88
329	2029	84.54	0.00	0.02	-0.90
330	130	87.30	0.00	0.01	-0.28
330	2030	87.30	0.00	0.01	-0.29
331	131	90.06	0.00	0.00	0.00
331	2031	90.06	0.00	0.00	0.00
332	132	92.82	0.00	0.00	0.00
332	2032	92.82	0.00	0.00	0.00
333	133	95.58	0.00	0.00	0.00
333	2033	95.58	0.00	0.00	0.00
334	134	98.34	0.00	0.00	0.00
334	2034	98.34	0.00	0.00	0.00
335	135	101.10	0.00	0.00	0.00
335	2035	101.10	0.00	0.00	0.00
201	2001	0.00	0.00	0.00	-0.10
201	1001	0.00	0.00	0.00	-0.10
202	2002	2.74	0.00	0.00	-0.12
202	1002	2.74	0.00	0.00	-0.12
203	2003	5.48	0.00	0.00	0.00
203	1003	5.48	0.00	0.00	0.00
204	2004	8.22	0.00	0.00	0.00
204	1004	8.22	0.00	0.00	0.00
205	2005	10.96	0.00	0.00	0.00
205	1005	10.96	0.00	0.00	0.00
206	2006	13.70	0.00	0.00	0.00
206	1006	13.70	0.00	0.00	0.00
207	2007	16.44	0.00	0.00	0.00
207	1007	16.44	0.00	0.00	0.00
208	2008	19.18	0.00	0.00	0.00
208	1008	19.18	0.00	0.00	0.00
209	2009	21.92	0.00	0.00	0.00
209	1009	21.92	0.00	0.00	0.00
210	2010	24.66	0.00	0.00	0.00
210	1010	24.66	0.00	0.00	0.00
211	2011	27.40	0.00	0.00	0.00
211	1011	27.40	0.00	0.00	0.00
212	2012	30.45	0.00	0.00	0.00
212	1012	30.45	0.00	0.00	0.00
213	2013	33.50	0.00	0.00	0.00
213	1013	33.50	0.00	0.00	0.00
214	2014	36.89	0.00	0.00	0.00
214	1014	36.89	0.00	0.00	0.00
215	2015	40.28	0.00	0.07	-0.70
215	1015	40.28	0.00	0.07	-1.04
216	2016	43.67	0.00	0.19	-0.98
216	1016	43.67	0.00	0.19	-1.88

103	103	5.48	0.00	0.43	-11.19
103	104	8.22	0.00	0.49	-12.37
104	104	8.22	0.00	-0.09	-12.22
104	105	10.96	0.00	0.13	-12.29
105	105	10.96	0.00	-0.30	-12.30
105	106	13.70	0.00	-0.18	-11.55
106	106	13.70	0.00	-0.71	-11.61
106	107	16.44	0.00	-0.49	-9.97
107	107	16.44	0.00	-1.05	-10.03
107	108	19.18	0.00	-0.78	-7.41
108	108	19.18	0.00	-1.37	-7.46
108	109	21.92	0.00	-0.97	-4.22
109	109	21.92	0.00	-1.52	-4.23
109	110	24.66	0.00	-0.96	-0.85
110	110	24.66	0.00	-1.37	-0.84
110	10111	27.40	0.00	0.00	0.00
111	111	27.40	0.00	0.00	0.00
111	112	30.45	0.00	0.58	-0.23
112	112	30.45	0.00	0.28	-0.18
112	113	33.50	0.00	4.54	-4.28
113	113	33.50	0.00	2.79	-4.19
113	114	36.89	0.00	3.51	-15.39
114	114	36.89	0.00	1.70	-15.16
114	115	40.28	0.00	1.99	-21.30
115	115	40.28	0.00	0.78	-21.17
115	116	43.67	0.00	0.91	-24.06
116	116	43.67	0.00	-0.10	-24.03
116	117	47.06	0.00	0.02	-23.83
117	117	47.06	0.00	-0.83	-23.84
117	118	50.45	0.00	-0.83	-21.03
118	118	50.45	0.00	-1.63	-21.06
118	119	53.84	0.00	-1.46	-15.82
119	119	53.84	0.00	-2.29	-15.88
119	120	57.23	0.00	-2.08	-8.62
120	120	57.23	0.00	-2.81	-8.67
120	121	60.62	0.00	-1.65	-1.23
121	121	60.62	0.00	-1.90	-1.24
121	122	64.01	0.00	0.00	0.00
122	122	64.01	0.00	0.00	0.00
122	10123	67.40	0.00	0.00	0.00
123	123	67.40	0.00	0.00	0.00
123	124	70.45	0.00	1.05	-0.18
124	124	70.45	0.00	0.87	-0.26
124	125	73.50	0.00	3.63	-7.26
125	125	73.50	0.00	2.72	-7.39
125	126	76.26	0.00	4.30	-18.18
126	126	76.26	0.00	2.99	-18.06
126	127	79.02	0.00	3.06	-26.34
127	127	79.02	0.00	1.90	-26.19
127	128	81.78	0.00	1.90	-31.42
128	128	81.78	0.00	0.91	-31.27
128	129	84.54	0.00	0.91	-33.79
128	129	84.54	0.00	0.07	-33.69
129	130	87.30	0.00	0.07	-33.90
130	130	87.30	0.00	-0.68	-33.86
130	131	90.06	0.00	-0.68	-31.97
131	131	90.06	0.00	-1.45	-32.02
131	132	92.82	0.00	-1.44	-28.03
132	132	92.82	0.00	-2.31	-28.16
132	133	95.58	0.00	-2.31	-21.77
133	133	95.58	0.00	-3.38	-21.98
133	134	98.34	0.00	-3.38	-12.65
134	134	98.34	0.00	-4.73	-12.91
134	135	101.10	0.00	-1.04	0.00
301	101	0.00	0.00	0.06	-0.49
301	2001	0.00	0.00	0.06	-0.53
302	102	2.74	0.00	0.16	-0.86
302	2002	2.74	0.00	0.20	-1.00
303	103	5.48	0.00	0.24	-0.73
303	2003	5.48	0.00	0.44	-0.96
304	104	8.22	0.00	0.58	-0.90
304	2004	8.22	0.00	0.71	-1.40
305	105	10.96	0.00	0.37	-1.42
305	2005	10.96	0.00	0.63	-1.79
306	106	13.70	0.00	0.24	-1.80
306	2006	13.70	0.00	0.31	-2.00
307	107	16.44	0.00	0.14	-1.91
307	2007	16.44	0.00	0.21	-2.04
308	108	19.18	0.00	0.18	-1.75
308	2008	19.18	0.00	0.23	-1.89
309	109	21.92	0.00	0.22	-1.39
309	2009	21.92	0.00	0.29	-1.59
310	110	24.66	0.00	0.40	-0.91

310	2010	24.66	0.00	0.44	-1.18
311	111	27.40	0.00	0.36	-0.50
311	2011	27.40	0.00	0.49	-0.81
312	112	30.45	0.00	0.06	-0.48
312	012	30.45	0.00	0.18	-0.55
313	113	33.50	0.00	0.07	-0.50
313	2013	33.50	0.00	0.14	-0.57
314	114	36.89	0.00	0.11	-0.54
314	2014	36.89	0.00	0.20	-0.64
315	115	40.28	0.00	0.44	-0.83
315	2015	40.28	0.00	0.62	-1.22
316	116	43.67	0.00	0.36	-1.67
316	2016	43.67	0.00	0.46	-1.96
317	117	47.06	0.00	0.23	-2.33
317	2017	47.06	0.00	0.26	-2.51
318	118	50.45	0.00	0.02	-2.68
318	2018	50.45	0.00	0.26	-2.80
319	119	53.84	0.00	-0.05	-2.75
319	2019	53.84	0.00	0.15	-2.78
320	120	57.23	0.00	0.01	-2.48
320	2020	57.23	0.00	0.31	-2.57
321	121	60.62	0.00	0.15	-1.89
321	2021	60.62	0.00	0.38	-2.12
322	122	64.01	0.00	0.40	-1.10
322	2022	64.01	0.00	0.61	-1.47
323	123	67.40	0.00	0.53	-0.36
323	2023	67.40	0.00	0.65	-0.78
324	124	70.45	0.00	0.20	-0.20
324	2024	70.45	0.00	0.37	-0.40
325	125	73.50	0.00	0.15	-0.24
325	2025	73.50	0.00	0.28	-0.39
326	126	76.26	0.00	0.16	-0.29
326	2026	76.26	0.00	0.43	-0.49
327	127	79.02	0.00	0.36	-0.51
327	2027	79.02	0.00	0.56	-0.81
328	128	81.78	0.00	0.36	-0.86
328	2028	81.78	0.00	0.48	-1.18
329	129	84.54	0.00	0.34	-1.17
329	2029	84.54	0.00	0.42	-1.45
330	130	87.30	0.00	0.35	-1.28
330	2030	87.30	0.00	0.43	-1.57
331	131	90.06	0.00	0.35	-1.15
331	2031	90.06	0.00	0.55	-1.50
332	132	92.82	0.00	0.35	-0.83
332	2032	92.82	0.00	0.67	-1.22
333	133	95.58	0.00	0.17	-0.54
333	2033	95.58	0.00	0.76	-0.88
334	134	98.34	0.00	0.05	-0.53
334	2034	98.34	0.00	0.42	-0.73
335	135	101.10	0.00	0.04	-0.27
335	2035	101.10	0.00	0.19	-0.36
201	2001	0.00	0.00	0.06	-0.53
201	1001	0.00	0.00	0.93	-3.87
202	2002	2.74	0.00	0.20	-1.00
202	1002	2.74	0.00	1.43	-6.72
203	2003	5.48	0.00	0.44	-0.96
203	1003	5.48	0.00	1.07	-5.85
204	2004	8.22	0.00	0.71	-1.40
204	1004	8.22	0.00	0.80	-5.20
205	2005	10.96	0.00	0.63	-1.79
205	1005	10.96	0.00	0.63	-4.80
206	2006	13.70	0.00	0.31	-2.00
206	1006	13.70	0.00	0.57	-4.65
207	2007	16.44	0.00	0.21	-2.04
207	1007	16.44	0.00	0.61	-4.76
208	2008	19.18	0.00	0.23	-1.89
208	1008	19.18	0.00	0.75	-5.09
209	2009	21.92	0.00	0.29	-1.59
209	1009	21.92	0.00	0.96	-5.58
210	2010	24.66	0.00	0.44	-1.18
210	1010	24.66	0.00	1.20	-6.16
211	2011	27.40	0.00	0.49	-0.81
211	1011	27.40	0.00	1.51	-7.09
21	2012	30.45	0.00	0.18	-0.55
212	1012	30.45	0.00	1.86	-8.27
213	2013	33.50	0.00	0.14	-0.57
213	1013	33.50	0.00	1.92	-8.48
214	2014	36.89	0.00	0.20	-0.64
214	1014	36.89	0.00	1.81	-8.41
215	2015	40.28	0.00	0.62	-1.22
215	1015	40.28	0.00	1.44	-7.53
216	2016	43.67	0.00	0.46	-1.96
216	1016	43.67	0.00	1.06	-6.62

217	2017	47.06	0.00	0.26	-2.51
217	1017	47.06	0.00	0.76	-5.89
218	2018	50.45	0.00	0.26	-2.80
218	1018	50.45	0.00	0.58	-5.47
219	2019	53.84	0.00	0.15	-2.78
219	1019	53.84	0.00	0.57	-5.43
220	2020	57.23	0.00	0.31	-2.57
220	1020	57.23	0.00	0.71	-5.76
221	2021	60.62	0.00	0.38	-2.12
221	1021	60.62	0.00	0.97	-6.41
222	2022	64.01	0.00	0.61	-1.47
222	1022	64.01	0.00	1.32	-7.23
223	2023	67.40	0.00	0.65	-0.78
223	1023	67.40	0.00	1.57	-7.62
224	2024	70.45	0.00	0.37	-0.40
224	1024	70.45	0.00	1.73	-7.96
225	2025	73.50	0.00	0.28	-0.39
225	1025	73.50	0.00	1.62	-7.36
226	2026	76.26	0.00	0.43	-0.49
226	1026	76.26	0.00	1.42	-6.73
227	2027	79.02	0.00	0.56	-0.81
227	1027	79.02	0.00	1.24	-6.28
228	2028	81.78	0.00	0.48	-1.18
228	1028	81.78	0.00	1.04	-5.81
229	2029	84.54	0.00	0.42	-1.45
229	1029	84.54	0.00	0.88	-5.43
230	2030	87.30	0.00	0.43	-1.57
230	1030	87.30	0.00	0.79	-5.21
231	2031	90.06	0.00	0.55	-1.50
231	1031	90.06	0.00	0.79	-5.20
232	2032	92.82	0.00	0.67	-1.22
232	1032	92.82	0.00	0.88	-5.43
233	2033	95.58	0.00	0.76	-0.88
233	1033	95.58	0.00	1.08	-5.89
234	2034	98.34	0.00	0.42	-0.73
234	1034	98.34	0.00	1.35	-6.55
235	2035	101.10	0.00	0.19	-0.36
235	1035	101.10	0.00	0.84	-3.67
401	1001	0.00	0.00	0.93	-3.87
401	1	0.00	0.00	0.93	-4.57
402	1002	2.74	0.00	1.43	-6.72
402	2	2.74	0.00	1.43	-7.80
403	1003	5.48	0.00	1.07	-5.85
403	3	5.48	0.00	1.07	-6.66
404	1004	8.22	0.00	0.80	-5.20
404	4	8.22	0.00	0.80	-5.80
405	1005	10.96	0.00	0.63	-4.80
405	5	10.96	0.00	0.63	-5.27
406	1006	13.70	0.00	0.57	-4.65
406	6	13.70	0.00	0.57	-5.08
407	1007	16.44	0.00	0.61	-4.76
407	7	16.44	0.00	0.61	-5.23
408	1008	19.18	0.00	0.75	-5.09
408	8	19.18	0.00	0.75	-5.66
409	1009	21.92	0.00	0.96	-5.58
409	9	21.92	0.00	0.96	-6.30
410	1010	24.66	0.00	1.20	-6.16
410	10	24.66	0.00	1.20	-7.06
411	1011	27.40	0.00	1.51	-7.09
411	11	27.40	0.00	1.51	-8.23
412	1012	30.45	0.00	1.86	-8.27
412	12	30.45	0.00	1.86	-9.67
413	1013	33.50	0.00	1.92	-8.48
413	13	33.50	0.00	1.92	-9.93
414	1014	36.89	0.00	1.81	-8.41
414	14	36.89	0.00	1.81	-9.77
415	1015	40.28	0.00	1.44	-7.53
415	15	40.28	0.00	1.44	-8.62
416	1016	43.67	0.00	1.06	-6.62
416	16	43.67	0.00	1.06	-7.42
417	1017	47.06	0.00	0.76	-5.89
417	17	47.06	0.00	0.76	-6.46
418	1018	50.45	0.00	0.58	-5.47
418	18	50.45	0.00	0.58	-5.92
419	1019	53.84	0.00	0.57	-5.43
419	19	53.84	0.00	0.57	-5.86
420	1020	57.23	0.00	0.71	-5.76
420	20	57.23	0.00	0.71	-6.30
421	1021	60.62	0.00	0.97	-6.41
421	21	60.62	0.00	0.97	-7.14
422	1022	64.01	0.00	1.32	-7.23
422	22	64.01	0.00	1.32	-8.23
423	1023	67.40	0.00	1.57	-7.62

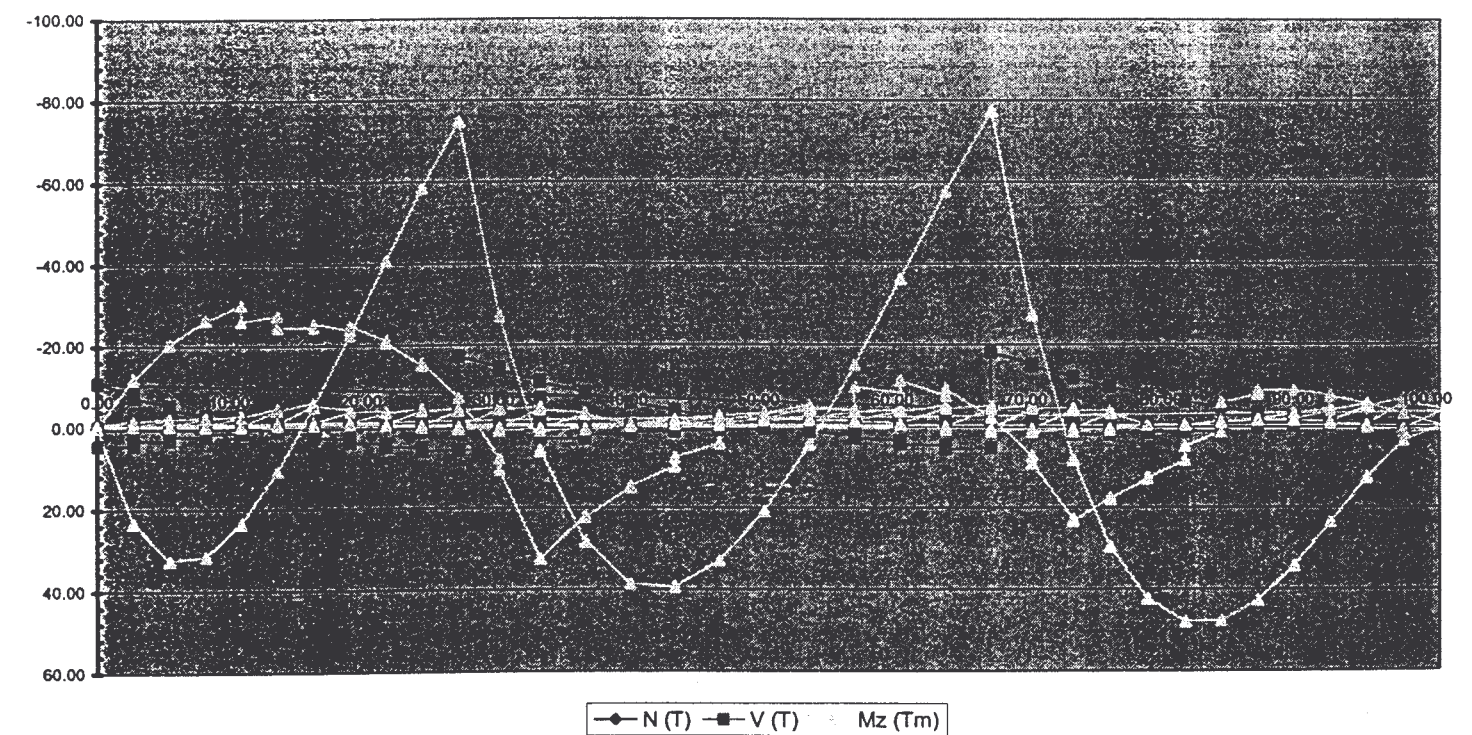
103	103	5.48	0.00	-4.61	32.29
103	104	8.22	0.00	-3.06	31.45
104	104	8.22	0.00	-2.39	31.35
104	105	10.96	0.00	-1.17	23.43
105	105	10.96	0.00	-0.56	23.40
105	106	13.70	0.00	0.40	10.70
106	106	13.70	0.00	1.05	10.71
106	107	16.44	0.00	1.76	-5.08
107	107	16.44	0.00	2.50	-5.05
107	108	19.18	0.00	2.98	-22.62
108	108	19.18	0.00	3.82	-22.59
108	109	21.92	0.00	4.07	-40.80
109	109	21.92	0.00	4.99	-40.81
109	110	24.66	0.00	5.00	-58.58
110	110	24.66	0.00	5.94	-58.64
110	10111	27.40	0.00	5.72	-74.89
111	111	27.40	0.00	-17.25	-75.04
111	112	30.45	0.00	-14.54	-27.00
112	112	30.45	0.00	-13.71	-27.22
112	113	33.50	0.00	-11.29	6.07
113	113	33.50	0.00	-10.68	5.81
113	114	36.89	0.00	-8.33	28.39
114	114	36.89	0.00	-7.94	28.14
114	115	40.28	0.00	-5.90	38.57
115	115	40.28	0.00	-5.67	38.37
115	116	43.67	0.00	-3.92	39.36
116	116	43.67	0.00	-3.73	39.24
116	117	47.06	0.00	-2.22	32.91
117	117	47.06	0.00	-1.96	32.85
117	118	50.45	0.00	-0.69	20.83
118	118	50.45	0.00	-0.26	20.83
118	119	53.84	0.00	0.76	4.44
119	119	53.84	0.00	1.40	4.47
119	120	57.23	0.00	2.16	-15.07
120	120	57.23	0.00	3.01	-15.04
120	121	60.62	0.00	3.47	-36.36
121	121	60.62	0.00	4.48	-36.36
121	122	64.01	0.00	4.61	-57.80
122	122	64.01	0.00	5.68	-57.88
122	10123	67.40	0.00	5.46	-77.47
123	123	67.40	0.00	-18.05	-77.65
123	124	70.45	0.00	-15.31	-27.21
124	124	70.45	0.00	-14.61	-27.45
124	125	73.50	0.00	-12.14	8.28
125	125	73.50	0.00	-11.72	8.04
125	126	76.26	0.00	-9.71	29.58
126	126	76.26	0.00	-9.49	29.37
126	127	79.02	0.00	-7.68	42.29
127	127	79.02	0.00	-7.58	42.12
127	128	81.78	0.00	-5.96	47.87
128	128	81.78	0.00	-5.92	47.76
128	129	84.54	0.00	-4.48	47.60
129	129	84.54	0.00	-4.43	47.55
129	130	87.30	0.00	-3.17	42.64
130	130	87.30	0.00	-3.07	42.64
130	131	90.06	0.00	-2.01	34.17
131	131	90.06	0.00	-1.85	34.20
131	132	92.82	0.00	-1.03	23.56
132	132	92.82	0.00	-0.81	23.61
132	133	95.58	0.00	-0.28	12.63
133	133	95.58	0.00	-0.05	12.67
133	134	98.34	0.00	0.11	3.75
134	134	98.34	0.00	0.26	3.77
134	135	101.10	0.00	0.00	0.00
301	101	0.00	0.00	-0.09	-0.74
301	2001	0.00	0.00	-0.09	-0.67
302	102	2.74	0.00	-0.22	-1.74
302	2002	2.74	0.00	-0.22	-1.58
303	103	5.48	0.00	-0.31	-2.34
303	2003	5.48	0.00	-0.31	-2.11
304	104	8.22	0.00	-0.34	-2.47
304	2004	8.22	0.00	-0.34	-2.21
305	105	10.96	0.00	-0.43	-2.90
305	2005	10.96	0.00	-0.43	-2.57
306	106	13.70	0.00	-0.67	-4.68
306	2006	13.70	0.00	-0.67	-4.18
307	107	16.44	0.00	-0.89	-6.09
307	2007	16.44	0.00	-0.89	-5.42
308	108	19.18	0.00	-0.55	-4.19
308	2008	19.18	0.00	-0.55	-3.77
309	109	21.92	0.00	-0.58	-3.97
309	2009	21.92	0.00	-0.58	-3.53
310	110	24.66	0.00	-0.73	-4.41

310	2010	24.66	0.00	-0.73	-3.85
311	111	27.40	0.00	-0.79	-4.42
311	2011	27.40	0.00	-0.79	-3.82
312	112	30.45	0.00	-0.92	-4.81
312	2012	30.45	0.00	-0.92	-4.11
313	113	33.50	0.00	-0.93	-4.75
313	2013	33.50	0.00	-0.93	-4.04
314	114	36.89	0.00	-0.67	-3.29
314	2014	36.89	0.00	-0.67	-2.79
315	115	40.28	0.00	-0.08	-0.49
315	2015	40.28	0.00	-0.08	-0.43
316	116	43.67	0.00	-0.21	-1.73
316	2016	43.67	0.00	-0.21	-1.57
317	117	47.06	0.00	-0.25	-2.64
317	2017	47.06	0.00	-0.25	-2.45
318	118	50.45	0.00	-0.31	-3.33
318	2018	50.45	0.00	-0.31	-3.10
319	119	53.84	0.00	-0.59	-5.17
319	2019	53.84	0.00	-0.59	-4.72
320	120	57.23	0.00	-0.41	-3.79
320	2020	57.23	0.00	-0.41	-3.48
321	121	60.62	0.00	-0.59	-4.02
321	2021	60.62	0.00	-0.59	-3.58
322	122	64.01	0.00	-0.92	-5.06
322	2022	64.01	0.00	-0.92	-4.36
323	123	67.40	0.00	-0.99	-4.90
323	2023	67.40	0.00	-0.99	-4.15
324	124	70.45	0.00	-1.05	-5.09
324	2024	70.45	0.00	-1.05	-4.30
325	125	73.50	0.00	-0.93	-4.50
325	2025	73.50	0.00	-0.93	-3.80
326	126	76.26	0.00	-0.74	-3.71
326	2026	76.26	0.00	-0.74	-3.15
327	127	79.02	0.00	0.00	-0.27
327	2027	79.02	0.00	0.00	-0.27
328	128	81.78	0.00	0.00	-0.26
328	2028	81.78	0.00	0.00	-0.26
329	129	84.54	0.00	-0.02	-0.97
329	2029	84.54	0.00	-0.02	-0.95
330	130	87.30	0.00	-0.06	-1.70
330	2030	87.30	0.00	-0.06	-1.65
331	131	90.06	0.00	-0.30	-3.15
331	2031	90.06	0.00	-0.30	-2.92
332	132	92.82	0.00	-0.57	-4.20
332	2032	92.82	0.00	-0.57	-3.77
333	133	95.58	0.00	-0.92	-5.34
333	2033	95.58	0.00	-0.92	-4.65
334	134	98.34	0.00	-1.34	-6.69
334	2034	98.34	0.00	-1.34	-5.67
335	135	101.10	0.00	-0.91	-4.11
335	2035	101.10	0.00	-0.91	-3.42
201	2001	0.00	0.00	-0.09	-0.67
201	1001	0.00	0.00	-0.09	-0.25
202	2002	2.74	0.00	-0.22	-1.58
202	1002	2.74	0.00	-0.22	-0.55
203	2003	5.48	0.00	-0.31	-2.11
203	1003	5.48	0.00	-0.31	-0.63
204	2004	8.22	0.00	-0.34	-2.21
204	1004	8.22	0.00	-0.34	-0.56
205	2005	10.96	0.00	-0.43	-2.57
205	1005	10.96	0.00	-0.43	-0.49
206	2006	13.70	0.00	-0.67	-4.18
206	1006	13.70	0.00	-0.67	-0.99
207	2007	16.44	0.00	-0.89	-5.42
207	1007	16.44	0.00	-0.89	-1.17
208	2008	19.18	0.00	-0.55	-3.77
208	1008	19.18	0.00	-0.55	-1.14
209	2009	21.92	0.00	-0.58	-3.53
209	1009	21.92	0.00	-0.58	-0.75
210	2010	24.66	0.00	-0.73	-3.85
210	1010	24.66	0.00	-0.73	-0.34
211	2011	27.40	0.00	-0.79	-3.82
211	1011	27.40	0.00	-0.79	-0.02
212	2012	30.45	0.00	-0.92	-4.11
212	1012	30.45	0.00	-0.92	0.30
213	2013	33.50	0.00	-0.93	-4.04
213	1013	33.50	0.00	-0.93	0.44
214	2014	36.89	0.00	-0.67	-2.79
214	1014	36.89	0.00	-0.67	0.41
215	2015	40.28	0.00	-0.08	-0.43
215	1015	40.28	0.00	-0.08	-0.03
216	2016	43.67	0.00	-0.21	-1.57
216	1016	43.67	0.00	-0.21	-0.57

217	2017	47.06	0.00	-0.25	-2.45
217	1017	47.06	0.00	-0.25	-1.24
218	2018	50.45	0.00	-0.31	-3.10
218	1018	50.45	0.00	-0.31	-1.62
219	2019	53.84	0.00	-0.59	-4.72
219	1019	53.84	0.00	-0.59	-1.91
220	2020	57.23	0.00	-0.41	-3.48
220	1020	57.23	0.00	-0.41	-1.51
221	2021	60.62	0.00	-0.59	-3.58
221	1021	60.62	0.00	-0.59	-0.76
222	2022	64.01	0.00	-0.92	-4.36
222	1022	64.01	0.00	-0.92	0.02
223	2023	67.40	0.00	-0.99	-4.15
223	1023	67.40	0.00	-0.99	0.57
224	2024	70.45	0.00	-1.05	-4.30
224	1024	70.45	0.00	-1.05	0.71
225	2025	73.50	0.00	-0.93	-3.80
225	1025	73.50	0.00	-0.93	0.66
226	2026	76.26	0.00	-0.74	-3.15
226	1026	76.26	0.00	-0.74	0.41
227	2027	79.02	0.00	0.00	-0.27
227	1027	79.02	0.00	0.00	-0.25
228	2028	81.78	0.00	0.00	-0.26
228	1028	81.78	0.00	0.00	-0.24
229	2029	84.54	0.00	-0.02	-0.95
229	1029	84.54	0.00	-0.02	-0.85
230	2030	87.30	0.00	-0.06	-1.65
230	1030	87.30	0.00	-0.06	-1.37
231	2031	90.06	0.00	-0.30	-2.92
231	1031	90.06	0.00	-0.30	-1.51
232	2032	92.82	0.00	-0.57	-3.77
232	1032	92.82	0.00	-0.57	-1.03
233	2033	95.58	0.00	-0.92	-4.65
233	1033	95.58	0.00	-0.92	-0.26
234	2034	98.34	0.00	-1.34	-5.67
234	1034	98.34	0.00	-1.34	0.76
235	2035	101.10	0.00	-0.91	-3.42
235	1035	101.10	0.00	-0.91	0.96
401	1001	0.00	0.00	-0.09	-0.25
401	1	0.00	0.00	-0.09	-0.19
402	1002	2.74	0.00	-0.22	-0.55
402	2	2.74	0.00	-0.22	-0.39
403	1003	5.48	0.00	-0.31	-0.63
403	3	5.48	0.00	-0.31	-0.39
404	1004	8.22	0.00	-0.34	-0.56
404	4	8.22	0.00	-0.34	-0.30
405	1005	10.96	0.00	-0.43	-0.49
405	5	10.96	0.00	-0.43	-0.16
406	1006	13.70	0.00	-0.67	-0.99
406	6	13.70	0.00	-0.67	-0.48
407	1007	16.44	0.00	-0.89	-1.17
407	7	16.44	0.00	-0.89	-0.50
408	1008	19.18	0.00	-0.55	-1.14
408	8	19.18	0.00	-0.55	-0.72
409	1009	21.92	0.00	-0.58	-0.75
409	9	21.92	0.00	-0.58	-0.31
410	1010	24.66	0.00	-0.73	-0.34
410	10	24.66	0.00	-0.73	0.22
411	1011	27.40	0.00	-0.79	-0.02
411	11	27.40	0.00	-0.79	0.58
412	1012	30.45	0.00	-0.92	0.30
412	12	30.45	0.00	-0.92	1.00
413	1013	33.50	0.00	-0.93	0.44
413	13	33.50	0.00	-0.93	1.14
414	1014	36.89	0.00	-0.67	0.41
414	14	36.89	0.00	-0.67	0.91
415	1015	40.28	0.00	-0.08	-0.03
415	15	40.28	0.00	-0.08	0.04
416	1016	43.67	0.00	-0.21	-0.57
416	16	43.67	0.00	-0.21	-0.42
417	1017	47.06	0.00	-0.25	-1.24
417	17	47.06	0.00	-0.25	-1.05
418	1018	50.45	0.00	-0.31	-1.62
418	18	50.45	0.00	-0.31	-1.39
419	1019	53.84	0.00	-0.59	-1.91
419	19	53.84	0.00	-0.59	-1.47
420	1020	57.23	0.00	-0.41	-1.51
420	20	57.23	0.00	-0.41	-1.20
421	1021	60.62	0.00	-0.59	-0.76
421	21	60.62	0.00	-0.59	-0.31
422	1022	64.01	0.00	-0.92	0.02
422	22	64.01	0.00	-0.92	0.71
423	1023	67.40	0.00	-0.99	0.57

423	23	67.40	0.00	-0.99	1.31
424	1024	70.45	0.00	-1.05	0.71
424	24	70.45	0.00	-1.05	1.50
425	1025	73.50	0.00	-0.93	0.66
425	25	73.50	0.00	-0.93	1.37
426	1026	76.26	0.00	-0.74	0.41
426	26	76.26	0.00	-0.74	0.97
427	1027	79.02	0.00	0.00	-0.25
427	27	79.02	0.00	0.00	-0.25
428	1028	81.78	0.00	0.00	-0.24
428	28	81.78	0.00	0.00	-0.24
429	1029	84.54	0.00	-0.02	-0.85
429	29	84.54	0.00	-0.02	-0.83
430	1030	87.30	0.00	-0.06	-1.37
430	30	87.30	0.00	-0.06	-1.33
431	1031	90.06	0.00	-0.30	-1.51
431	31	90.06	0.00	-0.30	-1.29
432	1032	92.82	0.00	-0.57	-1.03
432	32	92.82	0.00	-0.57	-0.59
433	1033	95.58	0.00	-0.92	-0.26
433	33	95.58	0.00	-0.92	0.44
434	1034	98.34	0.00	-1.34	0.76
434	34	98.34	0.00	-1.34	1.77
435	1035	101.10	0.00	-0.91	0.96
435	35	101.10	0.00	-0.91	1.65

GRÁFICO DE ESFUERZOS



solvente de tren de cargas plano genérico. MZ+

SCUPAS ERE.SCunTpos.Barra101.Mx+ + [0; 1]SCUPASEOSDERE.SCunTpos.Barra102.Mx+ + [0; 1]SCUPASEOSDERE.SCunTpos.Barra103.Mx+ + [0; 1]SCUPASEOSDERE.SCunTpos.Barra104.Mx+ + [0;

EXC

irra	Nudo	X	N (T)	Vy (T)	Mz (Tm)
1	1	0.00	0.00	3.48	0.14
1	2	2.74	0.00	-0.22	0.59
2	2	2.74	0.00	-0.22	0.59
2	3	5.48	0.00	-0.22	1.19
3	3	5.48	0.00	-0.23	1.19
3	4	8.22	0.00	-0.23	1.81
4	4	8.22	0.00	-0.24	1.81
4	5	10.96	0.00	-0.25	2.47
5	5	10.96	0.00	-0.27	2.47
5	6	13.70	0.00	-0.27	3.21
6	6	13.70	0.00	-0.30	3.20
6	7	16.44	0.00	-0.30	4.03
7	7	16.44	0.00	-0.34	4.02
7	8	19.18	0.00	-0.34	4.96
8	8	19.18	0.00	-0.40	4.95
8	9	21.92	0.00	-0.40	6.06
9	9	21.92	0.00	-0.48	6.05
9	10	24.66	0.00	-0.55	7.52
10	10	24.66	0.00	-0.67	7.51
10	11	27.40	0.00	-2.25	10.34
11	11	27.40	0.00	-2.94	10.19
11	12	30.45	0.00	-5.69	23.13
12	12	30.45	0.00	-7.24	23.16
12	10013	33.50	0.00	-8.28	48.21
13	13	33.50	0.00	5.70	48.43
13	14	36.89	0.00	5.70	29.10
14	14	36.89	0.00	4.39	29.38
14	15	40.28	0.00	2.47	15.72
15	15	40.28	0.00	1.75	15.97
15	16	43.67	0.00	0.60	11.84
16	16	43.67	0.00	0.62	11.96
16	17	47.06	0.00	0.41	10.06
17	17	47.06	0.00	0.60	10.06
17	18	50.45	0.00	0.51	8.06
18	18	50.45	0.00	0.72	7.95
18	19	53.84	0.00	0.72	5.50
19	19	53.84	0.00	0.82	5.30
19	20	57.23	0.00	0.70	2.80
20	20	57.23	0.00	0.64	2.56
20	21	60.62	0.00	0.51	0.57
21	21	60.62	0.00	0.29	0.39
21	22	64.01	0.00	0.00	0.00
22	22	64.01	0.00	0.00	0.00
22	23	67.40	0.00	-0.72	0.69
23	23	67.40	0.00	-0.89	0.72
23	24	70.45	0.00	-5.18	13.22
24	24	70.45	0.00	-6.74	13.36
24	10025	73.50	0.00	-7.33	35.51
25	25	73.50	0.00	5.13	35.71
25	26	76.26	0.00	3.75	22.37
26	26	76.26	0.00	2.96	22.60
26	27	79.02	0.00	2.41	15.18
27	27	79.02	0.00	2.01	15.38
27	28	81.78	0.00	1.61	10.44
28	28	81.78	0.00	1.45	10.56
28	29	84.54	0.00	1.18	7.04
29	29	84.54	0.00	1.14	7.07
29	30	87.30	0.00	0.92	4.22
30	30	87.30	0.00	0.88	4.16
30	31	90.06	0.00	0.77	1.95
31	31	90.06	0.00	0.66	1.83
31	32	92.82	0.00	0.35	0.51
32	32	92.82	0.00	0.19	0.45
32	33	95.58	0.00	0.07	0.25
33	33	95.58	0.00	0.05	0.24
33	34	98.34	0.00	0.05	0.10
34	34	98.34	0.00	0.03	0.10
34	35	101.10	0.00	-1.89	0.20
101	101	0.00	0.00	0.32	0.00
101	102	2.74	0.00	-9.74	29.54
102	102	2.74	0.00	-8.71	29.29
102	103	5.48	0.00	-8.52	50.75

103	103	5.48	0.00	-5.77	49.94
103	104	8.22	0.00	-3.59	62.79
104	104	8.22	0.00	-3.07	62.65
104	105	10.96	0.00	-0.94	68.07
105	105	10.96	0.00	-0.59	68.02
105	106	13.70	0.00	1.60	66.64
106	106	13.70	0.00	1.89	66.66
106	107	16.44	0.00	4.08	58.49
107	107	16.44	0.00	4.39	58.59
107	108	19.18	0.00	6.58	43.56
108	108	19.18	0.00	6.97	43.72
108	109	21.92	0.00	7.42	22.10
109	109	21.92	0.00	7.83	22.25
109	110	24.66	0.00	2.17	8.94
110	110	24.66	0.00	2.41	8.98
110	10111	27.40	0.00	-0.06	7.45
111	111	27.40	0.00	0.26	7.47
111	112	30.45	0.00	-2.60	8.70
112	112	30.45	0.00	-2.23	8.69
112	113	33.50	0.00	-6.15	20.56
113	113	33.50	0.00	-5.60	20.44
113	114	36.89	0.00	-7.95	43.53
114	114	36.89	0.00	-7.39	43.24
114	115	40.28	0.00	-4.81	63.86
115	115	40.28	0.00	-4.41	63.64
115	116	43.67	0.00	-2.82	77.21
116	116	43.67	0.00	-2.83	77.08
116	117	47.06	0.00	-0.30	82.21
117	117	47.06	0.00	-0.36	82.18
117	118	50.45	0.00	2.23	78.92
118	118	50.45	0.00	2.17	79.01
118	119	53.84	0.00	4.57	67.58
119	119	53.84	0.00	4.73	67.76
119	120	57.23	0.00	7.44	47.13
120	120	57.23	0.00	7.77	47.40
120	121	60.62	0.00	5.71	21.11
121	121	60.62	0.00	7.50	21.30
121	122	64.01	0.00	2.65	5.09
122	122	64.01	0.00	2.91	5.13
122	10123	67.40	0.00	0.00	2.38
123	123	67.40	0.00	0.00	2.38
123	124	70.45	0.00	-2.86	4.59
124	124	70.45	0.00	-2.64	4.57
124	125	73.50	0.00	-7.36	19.77
125	125	73.50	0.00	-7.00	19.64
125	126	76.26	0.00	-9.54	46.31
126	126	76.26	0.00	-9.15	46.07
126	127	79.02	0.00	-6.95	68.29
127	127	79.02	0.00	-6.71	68.10
127	128	81.78	0.00	-4.67	83.85
128	128	81.78	0.00	-4.48	83.72
128	129	84.54	0.00	-2.27	93.04
129	129	84.54	0.00	-2.12	92.99
129	130	87.30	0.00	0.08	95.81
130	130	87.30	0.00	0.27	95.86
130	131	90.06	0.00	2.48	92.05
131	131	90.06	0.00	2.82	92.20
131	132	92.82	0.00	4.96	81.41
132	132	92.82	0.00	5.57	81.65
132	133	95.58	0.00	7.78	63.22
133	133	95.58	0.00	8.73	63.55
133	134	98.34	0.00	10.94	36.41
134	134	98.34	0.00	12.30	36.80
134	135	101.10	0.00	-0.36	0.02
301	101	0.00	0.00	0.00	0.00
301	2001	0.00	0.00	0.00	0.00
302	102	2.74	0.00	0.00	0.00
302	2002	2.74	0.00	0.00	0.00
303	103	5.48	0.00	0.00	0.00
303	2003	5.48	0.00	0.00	0.00
304	104	8.22	0.00	0.00	0.00
304	2004	8.22	0.00	0.00	0.00
305	105	10.96	0.00	0.00	0.00
305	2005	10.96	0.00	0.00	0.00
306	106	13.70	0.00	0.00	0.00
306	2006	13.70	0.00	0.00	0.00
307	107	16.44	0.00	0.00	0.00
307	2007	16.44	0.00	0.00	0.00
308	108	19.18	0.00	0.00	0.00
308	2008	19.18	0.00	0.00	0.00
309	109	21.92	0.00	0.00	0.00
309	2009	21.92	0.00	0.00	0.00
310	110	24.66	0.00	0.00	0.00

310	2010	24.66	0.00	0.00	0.00
311	111	27.40	0.00	0.00	0.00
311	2011	27.40	0.00	0.00	0.00
312	112	30.45	0.00	0.00	0.00
312	2012	30.45	0.00	0.00	0.00
313	113	33.50	0.00	0.00	0.00
313	2013	33.50	0.00	0.00	0.00
314	114	36.89	0.00	0.00	0.00
314	2014	36.89	0.00	0.00	0.00
315	115	40.28	0.00	0.00	0.00
315	2015	40.28	0.00	0.00	0.00
316	116	43.67	0.00	0.00	0.00
316	2016	43.67	0.00	0.00	0.00
317	117	47.06	0.00	0.00	0.00
317	2017	47.06	0.00	0.00	0.00
318	118	50.45	0.00	0.00	0.00
318	2018	50.45	0.00	0.00	0.00
319	119	53.84	0.00	0.00	0.00
319	2019	53.84	0.00	0.00	0.00
320	120	57.23	0.00	0.00	0.00
320	2020	57.23	0.00	0.00	0.00
321	121	60.62	0.00	0.00	0.00
321	2021	60.62	0.00	0.00	0.00
322	122	64.01	0.00	0.00	0.00
322	2022	64.01	0.00	0.00	0.00
323	123	67.40	0.00	0.00	0.00
323	2023	67.40	0.00	0.00	0.00
324	124	70.45	0.00	0.00	0.00
324	2024	70.45	0.00	0.00	0.00
325	125	73.50	0.00	0.00	0.00
325	2025	73.50	0.00	0.00	0.00
326	126	76.26	0.00	0.00	0.00
326	2026	76.26	0.00	0.00	0.00
327	127	79.02	0.00	0.00	0.00
327	2027	79.02	0.00	0.00	0.00
328	128	81.78	0.00	0.00	0.00
328	2028	81.78	0.00	0.00	0.00
329	129	84.54	0.00	0.00	0.00
329	2029	84.54	0.00	0.00	0.00
330	130	87.30	0.00	0.00	0.00
330	2030	87.30	0.00	0.00	0.00
331	131	90.06	0.00	0.00	0.00
331	2031	90.06	0.00	0.00	0.00
332	132	92.82	0.00	0.00	0.00
332	2032	92.82	0.00	0.00	0.00
333	133	95.58	0.00	0.00	0.00
333	2033	95.58	0.00	0.00	0.00
334	134	98.34	0.00	0.00	0.00
334	2034	98.34	0.00	0.00	0.00
335	135	101.10	0.00	0.00	0.00
335	2035	101.10	0.00	0.00	0.00
201	1001	0.00	0.00	0.00	0.00
201	1001	0.00	0.00	-0.64	0.69
202	1002	2.74	0.00	0.00	0.00
202	1002	2.74	0.00	-0.92	0.64
203	1003	5.48	0.00	0.00	0.00
203	1003	5.48	0.00	-0.31	0.14
204	1004	8.22	0.00	0.00	0.00
204	1004	8.22	0.00	-0.21	0.02
205	1005	10.96	0.00	0.00	0.00
205	1005	10.96	0.00	-0.24	0.07
206	1006	13.70	0.00	0.00	0.00
206	1006	13.70	0.00	-0.36	0.15
207	1007	16.44	0.00	0.00	0.00
207	1007	16.44	0.00	-0.47	0.25
208	1008	19.18	0.00	0.00	0.00
208	1008	19.18	0.00	-0.56	0.36
209	1009	21.92	0.00	0.00	0.00
209	1009	21.92	0.00	-0.73	0.46
210	1010	24.66	0.00	0.00	0.00
210	1010	24.66	0.00	-0.98	0.58
211	1011	27.40	0.00	0.00	0.00
211	1011	27.40	0.00	-1.33	0.76
212	1012	30.45	0.00	0.00	0.00
212	1012	30.45	0.00	-1.36	0.72
213	1013	33.50	0.00	0.00	0.00
213	1013	33.50	0.00	-0.91	0.65
214	1014	36.89	0.00	0.00	0.00
214	1014	36.89	0.00	-0.70	0.54
215	1015	40.28	0.00	0.00	0.00
215	1015	40.28	0.00	-0.59	0.36
216	1016	43.67	0.00	0.00	0.00
216	1016	43.67	0.00	-0.49	0.18

217	2017	47.06	0.00	0.00	0.00
217	1017	47.06	0.00	-0.42	0.07
218	2018	50.45	0.00	0.00	0.00
218	1018	50.45	0.00	-0.33	0.13
219	2019	53.84	0.00	0.00	0.00
219	1019	53.84	0.00	-0.50	0.26
220	2020	57.23	0.00	0.00	0.00
220	1020	57.23	0.00	-0.61	0.44
221	2021	60.62	0.00	0.00	0.00
221	1021	60.62	0.00	-0.83	0.61
222	2022	64.01	0.00	0.00	0.00
222	1022	64.01	0.00	-1.62	0.92
223	2023	67.40	0.00	0.00	0.00
223	1023	67.40	0.00	-1.79	1.32
224	2024	70.45	0.00	0.00	0.00
224	1024	70.45	0.00	-1.68	1.19
225	2025	73.50	0.00	0.00	0.00
225	1025	73.50	0.00	-1.02	0.95
226	2026	76.26	0.00	0.00	0.00
226	1026	76.26	0.00	-0.76	0.76
227	2027	79.02	0.00	0.00	0.00
227	1027	79.02	0.00	-0.67	0.59
228	2028	81.78	0.00	0.00	0.00
228	1028	81.78	0.00	-0.52	0.40
229	2029	84.54	0.00	0.00	0.00
229	1029	84.54	0.00	-0.41	0.22
230	2030	87.30	0.00	0.00	0.00
230	1030	87.30	0.00	-0.26	0.07
231	2031	90.06	0.00	0.00	0.00
231	1031	90.06	0.00	0.00	0.00
232	2032	92.82	0.00	0.00	0.00
232	1032	92.82	0.00	-0.08	0.00
233	2033	95.58	0.00	0.00	0.00
233	1033	95.58	0.00	-0.64	0.23
234	2034	98.34	0.00	0.00	0.00
234	1034	98.34	0.00	-1.25	1.15
235	2035	101.10	0.00	0.00	0.00
235	1035	101.10	0.00	-0.88	1.13
401	1001	0.00	0.00	-0.64	0.69
401	1	0.00	0.00	-0.81	1.23
402	1002	2.74	0.00	-0.92	0.64
402	2	2.74	0.00	-1.29	1.45
403	1003	5.48	0.00	-0.31	0.14
403	3	5.48	0.00	-0.90	0.62
404	1004	8.22	0.00	-0.21	0.02
404	4	8.22	0.00	-0.54	0.30
405	1005	10.96	0.00	-0.24	0.07
405	5	10.96	0.00	-0.44	0.32
406	1006	13.70	0.00	-0.36	0.15
406	6	13.70	0.00	-0.44	0.46
407	1007	16.44	0.00	-0.47	0.25
407	7	16.44	0.00	-0.54	0.64
408	1008	19.18	0.00	-0.56	0.36
408	8	19.18	0.00	-0.68	0.83
409	1009	21.92	0.00	-0.73	0.46
409	9	21.92	0.00	-0.88	1.09
410	1010	24.66	0.00	-0.98	0.58
410	10	24.66	0.00	-1.26	1.45
411	1011	27.40	0.00	-1.33	0.76
411	11	27.40	0.00	-1.45	1.82
412	1012	30.45	0.00	-1.36	0.72
412	12	30.45	0.00	-1.53	1.82
413	1013	33.50	0.00	-0.91	0.65
413	13	33.50	0.00	-1.03	1.41
414	1014	36.89	0.00	-0.70	0.54
414	14	36.89	0.00	-0.93	1.16
415	1015	40.28	0.00	-0.59	0.36
415	15	40.28	0.00	-0.82	0.87
416	1016	43.67	0.00	-0.39	0.18
416	16	43.67	0.00	-0.69	0.62
417	1017	47.06	0.00	-0.42	0.07
417	17	47.06	0.00	-0.62	0.46
418	1018	50.45	0.00	-0.33	0.13
418	18	50.45	0.00	-0.57	0.45
419	1019	53.84	0.00	-0.50	0.26
419	19	53.84	0.00	-0.54	0.66
420	1020	57.23	0.00	-0.61	0.44
420	20	57.23	0.00	-0.71	0.96
421	1021	60.62	0.00	-0.83	0.61
421	21	60.62	0.00	-1.01	1.32
422	1022	64.01	0.00	-1.62	0.92
422	22	64.01	0.00	-1.71	2.18
423	1023	67.40	0.00	-1.79	1.32

GRÁFICO DE ESFUERZOS

The graph displays the internal forces along the length of a beam. The x-axis represents the distance from 0.00 to 100.00. The y-axis represents the force values, ranging from -20.00 to 120.00. Three data series are plotted:

- $N(T)$ (Normal Force): Represented by a solid line with diamond markers, showing a constant value of 0.00.
- $V(T)$ (Shear Force): Represented by a solid line with square markers, showing a constant value of 0.00.
- $M_z(Tm)$ (Bending Moment): Represented by a solid line with triangle markers, showing a sinusoidal wave with a peak of approximately 80.00 and a trough of approximately -90.00.

208L EXC

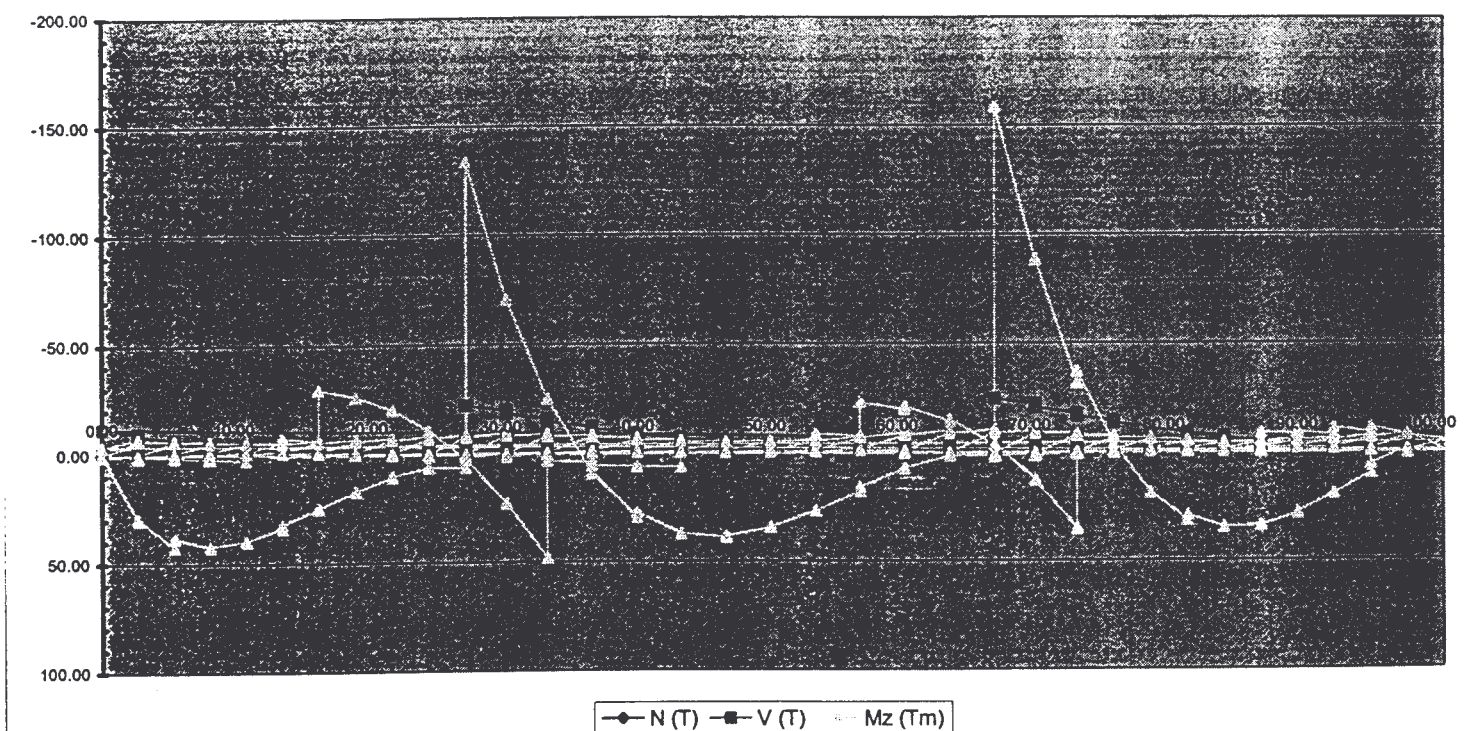
335

103	103	5.48	0.00	-6.26	38.29
103	104	8.22	0.00	-4.71	41.97
104	104	8.22	0.00	-4.45	41.87
104	105	10.96	0.00	-3.22	39.58
105	105	10.96	0.00	-3.06	39.54
105	106	13.70	0.00	-2.11	33.69
106	106	13.70	0.00	-1.97	32.24
106	107	16.44	0.00	-1.26	24.72
107	107	16.44	0.00	-1.14	24.74
107	108	19.18	0.00	-0.66	17.16
108	108	19.18	0.00	-0.53	17.05
108	109	21.92	0.00	-0.29	10.78
109	109	21.92	0.00	-0.17	10.31
109	110	24.66	0.00	-0.16	6.67
110	110	24.66	0.00	-0.09	6.37
110	10111	27.40	0.00	-0.09	6.62
111	111	27.40	0.00	-22.00	-133.84
111	112	30.45	0.00	-19.56	-70.45
112	112	30.45	0.00	-17.97	-71.04
112	113	33.50	0.00	-15.55	-24.74
113	113	33.50	0.00	-14.25	-25.10
113	114	36.89	0.00	-11.90	9.58
114	114	36.89	0.00	-10.91	9.33
114	115	40.28	0.00	-8.88	29.84
115	115	40.28	0.00	-8.27	27.61
115	116	43.67	0.00	-6.51	37.39
116	116	43.67	0.00	-6.14	37.23
116	117	47.06	0.00	-4.64	39.09
117	117	47.06	0.00	-4.39	38.48
117	118	50.45	0.00	-3.12	34.70
118	118	50.45	0.00	-2.94	34.37
118	119	53.84	0.00	-1.91	27.03
119	119	53.84	0.00	-1.72	27.03
119	120	57.23	0.00	-0.96	18.06
120	120	57.23	0.00	-0.80	16.06
120	121	60.62	0.00	-0.34	7.65
121	121	60.62	0.00	-0.22	7.43
121	122	64.01	0.00	-0.09	1.92
122	122	64.01	0.00	-0.07	1.60
122	10123	67.40	0.00	-0.07	1.83
123	123	67.40	0.00	-24.25	-158.41
123	124	70.45	0.00	-21.81	-88.16
124	124	70.45	0.00	-19.96	-88.80
124	125	73.50	0.00	-17.52	-31.65
125	125	73.50	0.00	-16.06	-36.93
125	126	76.26	0.00	-14.05	-3.42
126	126	76.26	0.00	-12.95	-3.62
126	127	79.02	0.00	-11.14	18.85
127	127	79.02	0.00	-10.27	18.65
127	128	81.78	0.00	-8.65	31.82
128	128	81.78	0.00	-7.98	29.37
12	129	84.54	0.00	-6.54	34.90
129	129	84.54	0.00	-5.98	34.80
129	130	87.30	0.00	-4.72	34.17
130	130	87.30	0.00	-4.22	34.12
130	131	90.06	0.00	-3.16	28.81
131	131	90.06	0.00	-2.69	28.00
131	132	92.82	0.00	-1.87	19.69
132	132	92.82	0.00	-1.43	19.69
132	133	95.58	0.00	-0.91	10.43
133	133	95.58	0.00	-0.63	6.30
133	134	98.34	0.00	-0.47	-1.03
134	134	98.34	0.00	-0.39	-1.06
134	135	101.10	0.00	-0.39	0.02
301	101	0.00	0.00	-0.83	-4.15
301	2001	0.00	0.00	-0.83	-3.52
302	102	2.74	0.00	-1.34	-7.36
302	2002	2.74	0.00	-1.34	-6.35
303	103	5.48	0.00	-1.07	-6.67
303	2003	5.48	0.00	-1.07	-5.86
304	104	8.22	0.00	-0.89	-6.09
304	2004	8.22	0.00	-0.89	-5.42
305	105	10.96	0.00	-0.79	-5.80
305	2005	10.96	0.00	-0.79	-5.20
30	106	13.70	0.00	-0.80	-5.81
306	2006	13.70	0.00	-0.80	-5.20
307	107	16.44	0.00	-0.89	-6.09
307	2007	16.44	0.00	-0.89	-5.42
308	108	19.18	0.00	-1.04	-6.58
308	2008	19.18	0.00	-1.04	-5.79
309	109	21.92	0.00	-1.23	-7.18
309	2009	21.92	0.00	-1.23	-6.25
310	110	24.66	0.00	-1.41	-7.75
310	2010	24.66	0.00	-1.41	-6.68
311	111	27.40	0.00	-1.61	-8.54
311	2011	27.40	0.00	-1.61	-7.33
312	112	30.45	0.00	-1.73	-9.25
312	2012	30.45	0.00	-1.73	-7.95
313	113	33.50	0.00	-1.56	-8.79
313	2013	33.50	0.00	-1.56	-7.61
314	114	36.89	0.00	-1.31	-8.21
314	2014	36.89	0.00	-1.31	-7.22
315	115	40.28	0.00	-1.04	-6.48
315	2015	40.28	0.00	-1.04	-5.70
316	116	43.67	0.00	-0.89	-5.45
316	2016	43.67	0.00	-0.89	-4.78
317	117	47.06	0.00	-0.82	-5.07
317	2017	47.06	0.00	-0.82	-4.45
318	118	50.45	0.00	-0.81	-5.19
318	2018	50.45	0.00	-0.81	-4.58
319	119	53.84	0.00	-0.87	-5.56
319	2019	53.84	0.00	-0.87	-4.90
320	120	57.23	0.00	-1.07	-7.27
320	2020	57.23	0.00	-1.07	-6.46
321	121	60.62	0.00	-1.45	-8.64
321	2021	60.62	0.00	-1.45	-7.54
322	122	64.01	0.00	-1.82	-9.80
322	2022	64.01	0.00	-1.82	-8.42
323	123	67.40	0.00	-1.93	-9.95
323	2023	67.40	0.00	-1.93	-8.49
324	124	70.45	0.00	-1.86	-9.69
324	2024	70.45	0.00	-1.86	-8.28
325	125	73.50	0.00	-1.52	-8.26
325	2025	73.50	0.00	-1.52	-7.12
326	126	76.26	0.00	-1.20	-7.11
326	2026	76.26	0.00	-1.20	-6.20
327	127	79.02	0.00	-0.96	-6.33
327	2027	79.02	0.00	-0.96	-5.61
328	128	81.78	0.00	-0.76	-5.24
328	2028	81.78	0.00	-0.76	-4.67
329	129	84.54	0.00	-0.63	-4.34
329	2029	84.54	0.00	-0.63	-3.86
330	130	87.30	0.00	-0.57	-4.79
330	2030	87.30	0.00	-0.57	-4.36
331	131	90.06	0.00	-0.62	-5.27
331	2031	90.06	0.00	-0.62	-4.80
332	132	92.82	0.00	-0.79	-5.81
332	2032	92.82	0.00	-0.79	-5.21
333	133	95.58	0.00	-1.07	-6.70
333	2033	95.58	0.00	-1.07	-5.89
334	134	98.34	0.00	-1.45	-7.87
334	2034	98.34	0.00	-1.45	-6.78
335	135	101.10	0.00	-0.94	-4.63
335	2035	101.10	0.00	-0.94	-3.91
201	2001	0.00	0.00	-0.83	-3.52
201	1001	0.00	0.00	-0.83	0.46
202	2002	2.74	0.00	-1.34	-6.35
202	1002	2.74	0.00	-1.34	0.06
203	2003	5.48	0.00	-1.07	-5.86
203	1003	5.48	0.00	-1.07	-0.73
204	2004	8.22	0.00	-0.89	-5.42
204	1004	8.22	0.00	-0.89	-1.17
205	2005	10.96	0.00	-0.79	-5.20
205	1005	10.96	0.00	-0.79	-1.39
206	2006	13.70	0.00	-0.80	-5.20
206	1006	13.70	0.00	-0.80	-1.38
207	2007	16.44	0.00	-0.89	-5.42
207	1007	16.44	0.00	-0.89	-1.17
208	2008	19.18	0.00	-1.04	-5.79
208	1008	19.18	0.00	-1.04	-0.80
209	2009	21.92	0.00	-1.23	-6.25
209	1009	21.92	0.00	-1.23	-0.34
210	2010	24.66	0.00	-1.41	-6.68
210	1010	24.66	0.00	-1.41	0.09
211	2011	27.40	0.00	-1.61	-7.33
211	1011	27.40	0.00	-1.61	0.37
212	2012	30.45	0.00	-1.73	-7.95
212	1012	30.45	0.00	-1.73	0.31
213	2013	33.50	0.00	-1.56	-7.61
213	1013	33.50	0.00	-1.56	-0.13
214	2014	36.89	0.00	-1.31	-7.22
214	1014	36.89	0.00	-1.31	-0.93
215	2015	40.28	0.00	-1.04	-5.70
215	1015	40.28	0.00	-1.04	-0.71
216	2016	43.67	0.00	-0.89	-4.78
216	1016	43.67	0.00	-0.89	-0.51

217	2017	47.06	0.00	-0.82	-4.45
217	1017	47.06	0.00	-0.82	-0.53
218	2018	50.45	0.00	-0.81	-4.58
218	1018	50.45	0.00	-0.81	-0.72
219	2019	53.84	0.00	-0.87	-4.90
219	1019	53.84	0.00	-0.87	-0.75
220	2020	57.23	0.00	-1.07	-6.46
220	1020	57.23	0.00	-1.07	-1.35
221	2021	60.62	0.00	-1.45	-7.54
221	1021	60.62	0.00	-1.45	-0.61
222	2022	64.01	0.00	-1.82	-8.42
222	1022	64.01	0.00	-1.82	0.28
223	2023	67.40	0.00	-1.93	-8.49
223	1023	67.40	0.00	-1.93	0.75
224	2024	70.45	0.00	-1.86	-8.28
224	1024	70.45	0.00	-1.86	0.64
225	2025	73.50	0.00	-1.52	-7.12
225	1025	73.50	0.00	-1.52	0.14
226	2026	76.26	0.00	-1.20	-6.20
226	1026	76.26	0.00	-1.20	-0.44
227	2027	79.02	0.00	-0.96	-5.61
227	1027	79.02	0.00	-0.96	-1.03
228	2028	81.78	0.00	-0.76	-4.67
228	1028	81.78	0.00	-0.76	-1.04
229	2029	84.54	0.00	-0.63	-3.86
229	1029	84.54	0.00	-0.63	-0.86
230	2030	87.30	0.00	-0.57	-4.36
230	1030	87.30	0.00	-0.57	-1.65
231	2031	90.06	0.00	-0.62	-4.80
231	1031	90.06	0.00	-0.62	-1.84
232	2032	92.82	0.00	-0.79	-5.21
232	1032	92.82	0.00	-0.79	-1.42
233	2033	95.58	0.00	-1.07	-5.89
233	1033	95.58	0.00	-1.07	-0.75
234	2034	98.34	0.00	-1.45	-6.78
234	1034	98.34	0.00	-1.45	0.14
235	2035	101.10	0.00	-0.94	-3.91
235	1035	101.10	0.00	-0.94	0.60
401	1001	0.00	0.00	-0.83	0.46
401	1	0.00	0.00	-0.83	1.08
402	1002	2.74	0.00	-1.34	0.06
402	2	2.74	0.00	-1.34	1.08
403	1003	5.48	0.00	-1.07	-0.73
403	3	5.48	0.00	-1.07	0.08
404	1004	8.22	0.00	-0.89	-1.17
404	4	8.22	0.00	-0.89	-0.50
405	1005	10.96	0.00	-0.79	-1.39
405	5	10.96	0.00	-0.79	-0.79
406	1006	13.70	0.00	-0.80	-1.38
406	6	13.70	0.00	-0.80	-0.78
407	1007	16.44	0.00	-0.89	-1.17
407	7	16.44	0.00	-0.89	-0.50
408	1008	19.18	0.00	-1.04	-0.80
408	8	19.18	0.00	-1.04	-0.01
409	1009	21.92	0.00	-1.23	-0.34
409	9	21.92	0.00	-1.23	0.59
410	1010	24.66	0.00	-1.41	0.09
410	10	24.66	0.00	-1.41	1.16
411	1011	27.40	0.00	-1.61	0.37
411	11	27.40	0.00	-1.61	1.58
412	1012	30.45	0.00	-1.73	0.31
412	12	30.45	0.00	-1.73	1.62
413	1013	33.50	0.00	-1.56	-0.13
413	13	33.50	0.00	-1.56	1.05
414	1014	36.89	0.00	-1.31	-0.93
414	14	36.89	0.00	-1.31	0.06
415	1015	40.28	0.00	-1.04	-0.71
415	15	40.28	0.00	-1.04	0.08
416	1016	43.67	0.00	-0.89	-0.51
416	16	43.67	0.00	-0.89	0.16
417	1017	47.06	0.00	-0.82	-0.53
417	17	47.06	0.00	-0.82	0.09
418	1018	50.45	0.00	-0.81	-0.72
418	18	50.45	0.00	-0.81	-0.11
419	1019	53.84	0.00	-0.87	-0.75
419	19	53.84	0.00	-0.87	-0.09
420	1020	57.23	0.00	-1.07	-1.35
420	20	57.23	0.00	-1.07	-0.54
421	1021	60.62	0.00	-1.45	-0.61
421	21	60.62	0.00	-1.45	0.49
422	1022	64.01	0.00	-1.82	0.28
422	22	64.01	0.00	-1.82	1.65
423	1023	67.40	0.00	-1.93	0.75

423	23	67.40	0.00	-1.93	2.21
424	1024	70.45	0.00	-1.86	0.64
424	24	70.45	0.00	-1.86	2.05
425	1025	73.50	0.00	-1.52	0.14
425	25	73.50	0.00	-1.52	1.28
426	1026	76.26	0.00	-1.20	-0.44
426	26	76.26	0.00	-1.20	0.47
427	1027	79.02	0.00	-0.96	-1.03
427	27	79.02	0.00	-0.96	-0.31
428	1028	81.78	0.00	-0.76	-1.04
428	28	81.78	0.00	-0.76	-0.47
429	1029	84.54	0.00	-0.63	-0.86
429	29	84.54	0.00	-0.63	-0.38
430	1030	87.30	0.00	-0.57	-1.65
430	30	87.30	0.00	-0.57	-1.22
431	1031	90.06	0.00	-0.62	-1.84
431	31	90.06	0.00	-0.62	-1.37
432	1032	92.82	0.00	-0.79	-1.42
432	32	92.82	0.00	-0.79	-0.82
433	1033	95.58	0.00	-1.07	-0.75
433	33	95.58	0.00	-1.07	0.06
434	1034	98.34	0.00	-1.45	0.14
434	34	98.34	0.00	-1.45	1.24
435	1035	101.10	0.00	-0.94	0.60
435	35	101.10	0.00	-0.94	1.31

GRÁFICO DE ESFUERZOS



SCUPAS FRE SCuniTpos.Barra101.Mx++ [0; 1) SCUPASEOSDERE SCuniTpos.Barra102.Mx++ [0; 1) SCUPASEOSDERE SCuniTpos.Barra103.Mx++ [0; 1) SCUPASEOSDERE SCuniTpos.Barra104.Mx++ [0; 1)

EXC

Tramo	Nudo	X	N (T)	Vy (T)	Mz (Tm)
1	1	0.00	0.00	0.02	0.00
1	2	2.74	0.00	0.02	-0.07
2	2	2.74	0.00	-0.03	-0.07
2	3	5.48	0.00	-0.03	0.00
3	3	5.48	0.00	-0.08	0.00
3	4	8.22	0.00	-0.08	0.21
4	4	8.22	0.00	-0.14	0.21
4	5	10.96	0.00	-0.14	0.59
5	5	10.96	0.00	-0.10	-3.38
5	6	13.70	0.00	-0.10	-3.10
6	6	13.70	0.00	-0.33	-5.98
6	7	16.44	0.00	-0.33	-5.09
7	7	16.44	0.00	-0.65	-4.25
7	8	19.18	0.00	-0.65	-2.48
8	8	19.18	0.00	-0.94	-1.48
8	9	21.92	0.00	-0.94	1.11
9	9	21.92	0.00	-1.49	0.36
9	10	24.66	0.00	-1.49	4.44
10	10	24.66	0.00	-1.86	5.01
10	11	27.40	0.00	-1.86	10.09
11	11	27.40	0.00	-1.69	9.80
11	12	30.45	0.00	-1.69	14.96
12	12	30.45	0.00	-1.19	12.30
12	10013	33.50	0.00	-1.19	15.93
13	13	33.50	0.00	2.59	15.95
13	14	36.89	0.00	2.59	7.19
14	14	36.89	0.00	2.30	7.22
14	15	40.28	0.00	2.30	-0.58
15	15	40.28	0.00	2.02	0.15
15	16	43.67	0.00	2.02	-6.70
16	16	43.67	0.00	1.72	-4.31
16	17	47.06	0.00	1.72	-10.15
17	17	47.06	0.00	1.57	-5.64
17	18	50.45	0.00	1.57	-10.98
18	18	50.45	0.00	1.35	-10.08
18	19	53.84	0.00	1.35	-14.65
19	19	53.84	0.00	0.88	-14.47
19	20	57.23	0.00	0.88	-17.45
20	20	57.23	0.00	0.19	-11.97
20	21	60.62	0.00	0.19	-12.61
21	21	60.62	0.00	-0.58	-9.80
21	22	64.01	0.00	-0.58	-7.82
22	22	64.01	0.00	-1.41	-6.26
22	23	67.40	0.00	-1.41	-1.47
23	23	67.40	0.00	-2.35	-1.44
23	24	70.45	0.00	-2.35	5.73
24	24	70.45	0.00	-2.85	4.06
24	10025	73.50	0.00	-2.85	12.76
25	25	73.50	0.00	3.05	12.41
25	26	76.26	0.00	3.05	4.00
26	26	76.26	0.00	2.18	4.02
26	27	79.02	0.00	2.18	-2.00
27	27	79.02	0.00	1.46	-1.46
27	28	81.78	0.00	1.46	-5.50
28	28	81.78	0.00	0.94	-1.94
28	29	84.54	0.00	0.94	-4.54
29	29	84.54	0.00	0.94	2.80
29	30	87.30	0.00	0.94	0.21
30	30	87.30	0.00	1.10	1.32
30	31	90.06	0.00	1.10	-1.71
31	31	90.06	0.00	0.84	-1.85
31	32	92.82	0.00	0.84	-4.17
32	32	92.82	0.00	0.34	-4.68
32	33	95.58	0.00	0.34	-5.60
33	33	95.58	0.00	-0.53	-5.92
33	34	98.34	0.00	-0.53	-4.45
34	34	98.34	0.00	-1.82	-4.83
34	35	101.10	0.00	-1.82	0.20
101	101	0.00	0.00	0.00	0.00
101	102	2.74	0.00	-0.19	3.50
102	102	2.74	0.00	-0.03	3.48
102	103	5.48	0.00	0.23	11.47

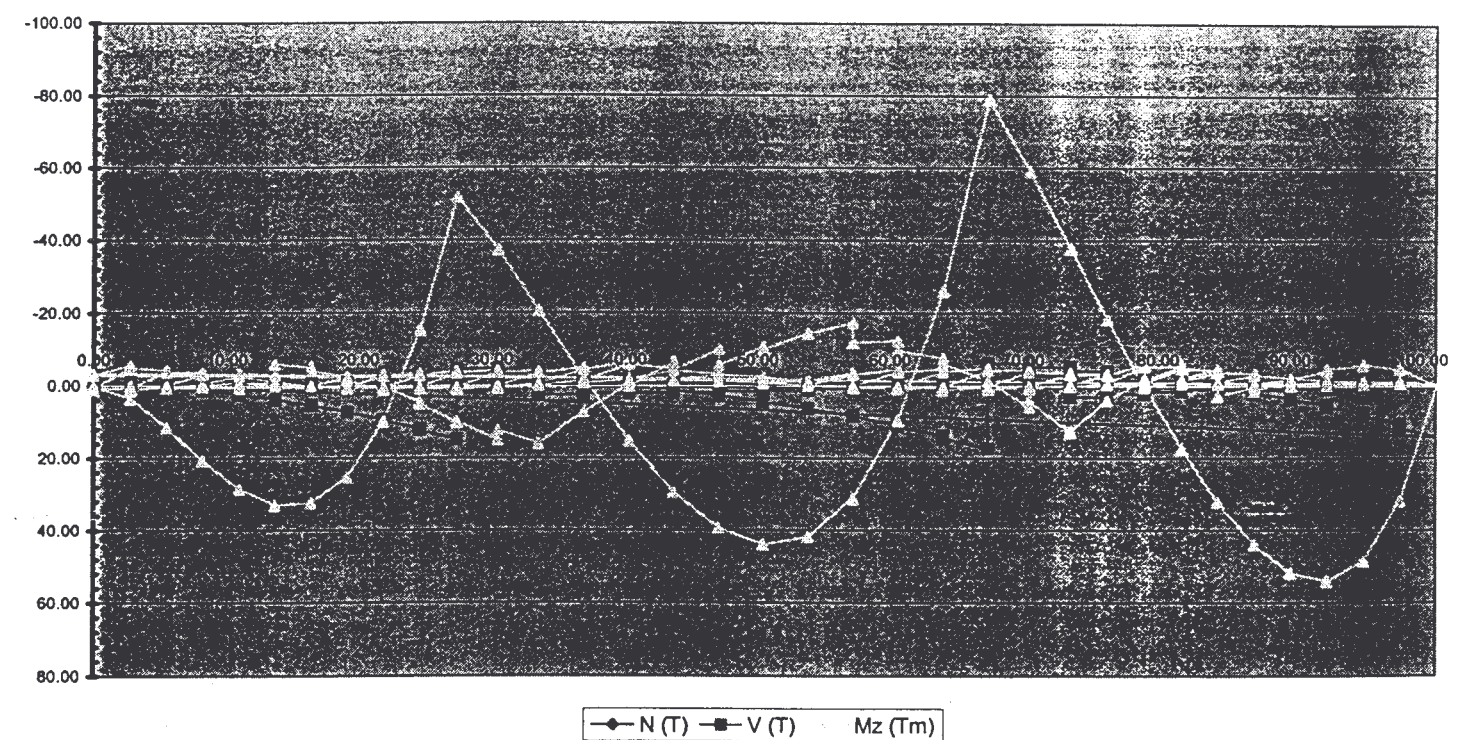
103	103	5.48	0.00	0.45	11.44
103	104	8.22	0.00	1.10	20.66
104	104	8.22	0.00	1.32	20.63
104	105	10.96	0.00	2.29	28.49
105	105	10.96	0.00	2.47	28.48
105	106	13.70	0.00	3.71	32.95
106	106	13.70	0.00	3.85	32.97
106	107	16.44	0.00	5.34	32.34
107	107	16.44	0.00	5.48	32.41
107	108	19.18	0.00	7.19	25.11
108	108	19.18	0.00	7.39	25.24
108	109	21.92	0.00	9.34	9.71
109	109	21.92	0.00	9.65	9.88
109	110	24.66	0.00	11.83	-15.47
110	110	24.66	0.00	12.31	-15.29
110	10111	27.40	0.00	14.72	-52.04
111	111	27.40	0.00	-4.47	-51.87
111	112	30.45	0.00	-4.74	-37.39
112	112	30.45	0.00	-3.84	-37.27
112	113	33.50	0.00	-3.82	-20.76
113	113	33.50	0.00	-2.87	-20.71
113	114	36.89	0.00	-2.51	-1.96
114	114	36.89	0.00	-1.59	-1.99
114	115	40.28	0.00	-0.91	15.27
115	115	40.28	0.00	-0.17	15.22
115	116	43.67	0.00	0.79	29.44
116	116	43.67	0.00	1.30	29.39
116	117	47.06	0.00	2.51	39.35
117	117	47.06	0.00	2.81	39.35
117	118	50.45	0.00	4.25	43.89
118	118	50.45	0.00	4.42	43.96
118	119	53.84	0.00	6.10	41.69
119	119	53.84	0.00	6.23	41.84
119	120	57.23	0.00	8.18	30.94
120	120	57.23	0.00	8.40	31.17
120	121	60.62	0.00	10.65	9.24
121	121	60.62	0.00	11.08	9.54
121	122	64.01	0.00	13.67	-26.38
122	122	64.01	0.00	14.41	-26.06
122	10123	67.40	0.00	17.34	-79.18
123	123	67.40	0.00	-6.16	-78.94
123	124	70.45	0.00	-6.46	-59.24
124	124	70.45	0.00	-5.30	-59.10
124	125	73.50	0.00	-5.33	-37.83
125	125	73.50	0.00	-4.24	-37.78
125	126	76.26	0.00	-4.03	-18.33
126	126	76.26	0.00	-3.06	-18.35
126	127	79.02	0.00	-2.65	0.31
127	127	79.02	0.00	-1.80	0.25
127	128	81.78	0.00	-1.21	17.36
128	128	81.78	0.00	-0.51	17.30
128	129	84.54	0.00	0.26	32.15
129	129	84.54	0.00	0.81	32.12
129	130	87.30	0.00	1.76	43.96
130	130	87.30	0.00	2.22	43.97
130	131	90.06	0.00	3.37	51.74
131	131	90.06	0.00	3.82	51.81
131	132	92.82	0.00	5.21	53.95
132	132	92.82	0.00	5.78	54.11
132	133	95.58	0.00	7.47	48.31
133	133	95.58	0.00	8.31	48.56
133	134	98.34	0.00	10.36	31.64
134	134	98.34	0.00	11.65	31.97
134	135	101.10	0.00	14.12	-0.19
301	101	0.00	0.00	-0.74	-3.52
301	2001	0.00	0.00	-0.74	-2.96
302	102	2.74	0.00	-1.12	-5.77
302	2002	2.74	0.00	-1.12	-4.92
303	103	5.48	0.00	-0.76	-4.33
303	2003	5.48	0.00	-0.76	-3.75
304	104	8.22	0.00	-0.54	-3.62
304	2004	8.22	0.00	-0.54	-3.21
305	105	10.96	0.00	-0.36	-2.90
305	2005	10.96	0.00	-0.36	-2.63
306	106	13.70	0.00	-0.13	-1.12
306	2006	13.70	0.00	-0.13	-1.02
307	107	16.44	0.00	0.00	0.00
307	2007	16.44	0.00	0.00	0.00
308	108	19.18	0.00	-0.49	-2.39
308	2008	19.18	0.00	-0.49	-2.02
309	109	21.92	0.00	-0.65	-3.21
309	2009	21.92	0.00	-0.65	-2.72
310	110	24.66	0.00	-0.68	-3.24

310	2010	24.66	0.00	-0.68	-2.83
311	111	27.40	0.00	-0.81	-4.12
311	2011	27.40	0.00	-0.81	-3.50
312	112	30.45	0.00	-0.78	-4.23
312	2012	30.45	0.00	-0.78	-3.65
313	113	33.50	0.00	-0.63	-4.04
313	2013	33.50	0.00	-0.63	-3.57
314	114	36.89	0.00	-0.65	-4.92
314	2014	36.89	0.00	-0.65	-4.43
315	115	40.28	0.00	-0.89	-6.64
315	2015	40.28	0.00	-0.89	-5.97
316	116	43.67	0.00	-0.50	-4.56
316	2016	43.67	0.00	-0.50	-4.19
317	117	47.06	0.00	-0.31	-3.22
317	2017	47.06	0.00	-0.31	-2.98
318	118	50.45	0.00	-0.28	-2.59
318	2018	50.45	0.00	-0.28	-2.38
319	119	53.84	0.00	-0.17	-1.31
319	2019	53.84	0.00	-0.17	-1.17
320	120	57.23	0.00	-0.66	-3.65
320	2020	57.23	0.00	-0.66	-3.15
321	121	60.62	0.00	-0.86	-4.62
321	2021	60.62	0.00	-0.86	-3.97
322	122	64.01	0.00	-0.90	-4.74
322	2022	64.01	0.00	-0.90	-4.06
323	123	67.40	0.00	-0.95	-5.05
323	2023	67.40	0.00	-0.95	-4.34
324	124	70.45	0.00	-0.82	-4.60
324	2024	70.45	0.00	-0.82	-3.98
325	125	73.50	0.00	-0.58	-3.61
325	2025	73.50	0.00	-0.58	-3.17
326	126	76.26	0.00	-0.46	-3.35
326	2026	76.26	0.00	-0.46	-3.01
327	127	79.02	0.00	-0.95	-6.05
327	2027	79.02	0.00	-0.95	-5.33
328	128	81.78	0.00	-0.74	-5.40
328	2028	81.78	0.00	-0.74	-4.84
329	129	84.54	0.00	-0.58	-4.25
329	2029	84.54	0.00	-0.58	-3.81
330	130	87.30	0.00	-0.50	-3.38
330	2030	87.30	0.00	-0.50	-3.00
331	131	90.06	0.00	-0.32	-2.12
331	2031	90.06	0.00	-0.32	-1.87
332	132	92.82	0.00	-0.22	-1.61
332	2032	92.82	0.00	-0.22	-1.45
333	133	95.58	0.00	-0.16	-1.36
333	2033	95.58	0.00	-0.16	-1.24
334	134	98.34	0.00	-0.10	-1.19
334	2034	98.34	0.00	-0.10	-1.11
335	135	101.10	0.00	-0.03	-0.52
335	2035	101.10	0.00	-0.03	-0.50
201	2001	0.00	0.00	-0.74	-2.96
201	1001	0.00	0.00	-0.74	0.59
202	2002	2.74	0.00	-1.12	-4.92
202	1002	2.74	0.00	-1.12	0.46
203	2003	5.48	0.00	-0.76	-3.75
203	1003	5.48	0.00	-0.76	-0.10
204	2004	8.22	0.00	-0.54	-3.21
204	1004	8.22	0.00	-0.54	-0.61
205	2005	10.96	0.00	-0.36	-2.63
205	1005	10.96	0.00	-0.36	-0.90
206	2006	13.70	0.00	-0.13	-1.02
206	1006	13.70	0.00	-0.13	-0.40
207	2007	16.44	0.00	0.00	0.00
207	1007	16.44	0.00	0.00	0.00
208	2008	19.18	0.00	-0.49	-2.02
208	1008	19.18	0.00	-0.49	0.34
209	2009	21.92	0.00	-0.65	-2.72
209	1009	21.92	0.00	-0.65	0.41
210	2010	24.66	0.00	-0.68	-2.83
210	1010	24.66	0.00	-0.68	0.43
211	2011	27.40	0.00	-0.81	-3.50
211	1011	27.40	0.00	-0.81	0.39
212	2012	30.45	0.00	-0.78	-3.65
212	1012	30.45	0.00	-0.78	0.08
213	2013	33.50	0.00	-0.63	-3.57
213	1013	33.50	0.00	-0.63	-0.56
214	2014	36.89	0.00	-0.65	-4.43
214	1014	36.89	0.00	-0.65	-1.34
215	2015	40.28	0.00	-0.89	-5.97
215	1015	40.28	0.00	-0.89	-1.72
216	2016	43.67	0.00	-0.50	-4.19
216	1016	43.67	0.00	-0.50	-1.82

217	2017	47.06	0.00	-0.31	-2.98
217	1017	47.06	0.00	-0.31	-1.48
218	2018	50.45	0.00	-0.28	-2.38
218	1018	50.45	0.00	-0.28	-1.05
219	2019	53.84	0.00	-0.17	-1.17
219	1019	53.84	0.00	-0.17	-0.34
220	2020	57.23	0.00	-0.66	-3.15
220	1020	57.23	0.00	-0.66	-0.01
221	2021	60.62	0.00	-0.86	-3.97
221	1021	60.62	0.00	-0.86	0.15
222	2022	64.01	0.00	-0.90	-4.06
222	1022	64.01	0.00	-0.90	0.25
223	2023	67.40	0.00	-0.95	-4.34
223	1023	67.40	0.00	-0.95	0.19
224	2024	70.45	0.00	-0.82	-3.98
224	1024	70.45	0.00	-0.82	-0.07
225	2025	73.50	0.00	-0.58	-3.17
225	1025	73.50	0.00	-0.58	-0.39
226	2026	76.26	0.00	-0.46	-3.01
226	1026	76.26	0.00	-0.46	-0.80
227	2027	79.02	0.00	-0.95	-5.33
227	1027	79.02	0.00	-0.95	-0.78
228	2028	81.78	0.00	-0.74	-4.84
228	1028	81.78	0.00	-0.74	-1.29
229	2029	84.54	0.00	-0.58	-3.81
229	1029	84.54	0.00	-0.58	-1.03
230	2030	87.30	0.00	-0.50	-3.00
230	1030	87.30	0.00	-0.50	-0.61
231	2031	90.06	0.00	-0.32	-1.87
231	1031	90.06	0.00	-0.32	-0.33
232	2032	92.82	0.00	-0.22	-1.45
232	1032	92.82	0.00	-0.22	-0.40
233	2033	95.58	0.00	-0.16	-1.24
233	1033	95.58	0.00	-0.16	-0.49
234	2034	98.34	0.00	-0.10	-1.11
234	1034	98.34	0.00	-0.10	-0.61
235	2035	101.10	0.00	-0.03	-0.50
235	1035	101.10	0.00	-0.03	-0.36
401	1001	0.00	0.00	-0.74	0.59
401	1	0.00	0.00	-0.74	1.15
402	1002	2.74	0.00	-1.12	0.46
402	2	2.74	0.00	-1.12	1.31
403	1003	5.48	0.00	-0.76	-0.10
403	3	5.48	0.00	-0.76	0.48
404	1004	8.22	0.00	-0.54	-0.61
404	4	8.22	0.00	-0.54	-0.20
405	1005	10.96	0.00	-0.36	-0.90
405	5	10.96	0.00	-0.36	-0.63
406	1006	13.70	0.00	-0.13	-0.40
406	6	13.70	0.00	-0.13	-0.30
407	1007	16.44	0.00	0.00	0.00
407	7	16.44	0.00	0.00	0.00
408	1008	19.18	0.00	-0.49	0.34
408	8	19.18	0.00	-0.49	0.72
409	1009	21.92	0.00	-0.65	0.41
409	9	21.92	0.00	-0.65	0.90
410	1010	24.66	0.00	-0.68	0.43
410	10	24.66	0.00	-0.68	0.95
411	1011	27.40	0.00	-0.81	0.39
411	11	27.40	0.00	-0.81	1.00
412	1012	30.45	0.00	-0.78	0.08
412	12	30.45	0.00	-0.78	0.67
413	1013	33.50	0.00	-0.63	-0.56
413	13	33.50	0.00	-0.63	-0.09
414	1014	36.89	0.00	-0.65	-1.34
414	14	36.89	0.00	-0.65	-0.85
415	1015	40.28	0.00	-0.89	-1.72
415	15	40.28	0.00	-0.89	-1.06
416	1016	43.67	0.00	-0.50	-1.82
416	16	43.67	0.00	-0.50	-1.44
417	1017	47.06	0.00	-0.31	-1.48
417	17	47.06	0.00	-0.31	-1.24
418	1018	50.45	0.00	-0.28	-1.05
418	18	50.45	0.00	-0.28	-0.84
419	1019	53.84	0.00	-0.17	-0.34
419	19	53.84	0.00	-0.17	-0.21
420	1020	57.23	0.00	-0.66	-0.01
420	20	57.23	0.00	-0.66	0.49
421	1021	60.62	0.00	-0.86	0.15
421	21	60.62	0.00	-0.86	0.80
422	1022	64.01	0.00	-0.90	0.25
422	22	64.01	0.00	-0.90	0.94
423	1023	67.40	0.00	-0.95	0.19

423	23	67.40	0.00	-0.95	0.90
424	1024	70.45	0.00	-0.82	-0.07
424	24	70.45	0.00	-0.82	0.55
425	1025	73.50	0.00	-0.58	-0.39
425	25	73.50	0.00	-0.58	0.05
426	1026	76.26	0.00	-0.46	-0.80
426	26	76.26	0.00	-0.46	-0.46
427	1027	79.02	0.00	-0.95	-0.78
427	27	79.02	0.00	-0.95	-0.06
428	1028	81.78	0.00	-0.74	-1.29
428	28	81.78	0.00	-0.74	-0.73
429	1029	84.54	0.00	-0.58	-1.03
429	29	84.54	0.00	-0.58	-0.59
430	1030	87.30	0.00	-0.50	-0.61
430	30	87.30	0.00	-0.50	-0.23
431	1031	90.06	0.00	-0.32	-0.33
431	31	90.06	0.00	-0.32	-0.08
432	1032	92.82	0.00	-0.22	-0.40
432	32	92.82	0.00	-0.22	-0.23
433	1033	95.58	0.00	-0.16	-0.49
433	33	95.58	0.00	-0.16	-0.37
434	1034	98.34	0.00	-0.10	-0.61
434	34	98.34	0.00	-0.10	-0.53
435	1035	101.10	0.00	-0.03	-0.36
435	35	101.10	0.00	-0.03	-0.34

GRÁFICO DE ESFUERZOS



ovente de tren de cargas plano genérico. MZ-

SCUPAS ERE.SCUnTpos.Barra101.Mx++ [0; 1]SCUPASEOSDERE.SCUnTpos.Barra102.Mx++ [0; 1]SCUPASEOSDERE.SCUnTpos.Barra103.Mx++ [0; 1]SCUPASEOSDERE.SCUnTpos.Barra104.Mx++ [0; 1]

irra	Nudo	X	N (T)	Vy (T)	Mz (Tm)
1	1	0.00	0.00	1.04	0.00
1	2	2.74	0.00	4.73	-12.83
2	2	2.74	0.00	3.40	-12.57
2	3	5.48	0.00	3.40	-21.89
3	3	5.48	0.00	2.33	-21.68
3	4	8.22	0.00	2.33	-28.08
4	4	8.22	0.00	1.46	-27.95
4	5	10.96	0.00	1.47	-31.96
5	5	10.96	0.00	0.69	-31.91
5	6	13.70	0.00	0.69	-33.82
6	6	13.70	0.00	-0.07	-33.85
6	7	16.44	0.00	-0.07	-33.65
7	7	16.44	0.00	-0.91	-33.75
7	8	19.18	0.00	-0.91	-31.24
8	8	19.18	0.00	-1.90	-31.39
8	9	21.92	0.00	-1.90	-26.18
9	9	21.92	0.00	-3.06	-26.33
9	10	24.66	0.00	-2.99	-18.11
10	10	24.66	0.00	-4.29	-18.23
10	11	27.40	0.00	-2.71	-7.49
11	11	27.40	0.00	-3.62	-7.36
11	12	30.45	0.00	-0.87	-0.30
12	12	30.45	0.00	-1.04	-0.22
12	10013	33.50	0.00	0.00	0.00
13	13	33.50	0.00	0.00	0.00
13	14	36.89	0.00	0.00	0.00
14	14	36.89	0.00	0.00	0.00
14	15	40.28	0.00	1.92	-1.23
15	15	40.28	0.00	1.67	-1.22
15	16	43.67	0.00	2.82	-8.69
16	16	43.67	0.00	2.10	-8.64
16	17	47.06	0.00	2.30	-15.95
17	17	47.06	0.00	1.55	-15.89
17	18	50.45	0.00	1.64	-21.18
18	18	50.45	0.00	0.84	-21.15
18	19	53.84	0.00	0.84	-24.00
19	19	53.84	0.00	-0.01	-23.98
19	20	57.23	0.00	0.10	-24.20
20	20	57.23	0.00	-0.91	-24.23
20	21	60.62	0.00	-0.78	-21.34
21	21	60.62	0.00	-2.00	-21.46
21	22	64.01	0.00	-1.71	-15.26
22	22	64.01	0.00	-3.53	-15.50
22	23	67.40	0.00	-2.81	-4.22
23	23	67.40	0.00	-4.57	-4.31
23	24	70.45	0.00	-0.28	-0.15
24	24	70.45	0.00	-0.58	-0.19
24	10025	73.50	0.00	0.00	0.00
25	25	73.50	0.00	0.00	0.00
25	26	76.26	0.00	1.38	-0.82
26	26	76.26	0.00	0.97	-0.83
26	27	79.02	0.00	1.52	-4.25
27	27	79.02	0.00	0.97	-4.23
27	28	81.78	0.00	1.36	-7.50
28	28	81.78	0.00	0.78	-7.45
28	29	84.54	0.00	1.05	-10.08
29	29	84.54	0.00	0.49	-10.02
29	30	87.30	0.00	0.70	-11.66
30	30	87.30	0.00	0.18	-11.60
30	31	90.06	0.00	0.30	-12.34
31	31	90.06	0.00	-0.21	-12.32
31	32	92.82	0.00	0.10	-12.25
32	32	92.82	0.00	-0.53	-12.39
32	33	95.58	0.00	-0.41	-11.24
33	33	95.58	0.00	-1.47	-11.52
33	34	98.34	0.00	-1.47	-7.47
34	34	98.34	0.00	-2.90	-7.81
34	35	101.10	0.00	-0.97	-0.02
101	101	0.00	0.00	-11.27	-0.14
101	102	2.74	0.00	0.98	-2.68
102	102	2.74	0.00	1.29	-2.68
102	103	5.48	0.00	1.29	-6.22

103	103	5.48	0.00	1.62	-6.21
103	104	8.22	0.00	1.63	-10.68
104	104	8.22	0.00	2.00	-10.67
104	105	10.96	0.00	2.05	-16.14
105	105	10.96	0.00	2.50	-16.13
105	106	13.70	0.00	2.50	-22.99
106	106	13.70	0.00	3.01	-22.98
106	107	16.44	0.00	3.01	-31.23
107	107	16.44	0.00	3.59	-31.22
107	108	19.18	0.00	3.59	-41.07
108	108	19.18	0.00	4.25	-41.08
108	109	21.92	0.00	5.99	-53.19
109	109	21.92	0.00	6.81	-53.18
109	110	24.66	0.00	14.66	-82.99
110	110	24.66	0.00	15.84	-82.90
110	10111	27.40	0.00	20.50	-134.38
111	111	27.40	0.00	-21.98	-134.37
111	112	30.45	0.00	-16.68	-73.08
112	112	30.45	0.00	-15.33	-73.19
112	113	33.50	0.00	-8.96	-35.24
113	113	33.50	0.00	-7.95	-35.35
113	114	36.89	0.00	-2.88	-17.10
114	114	36.89	0.00	-2.13	-17.09
114	115	40.28	0.00	-2.00	-10.02
115	115	40.28	0.00	-1.43	-10.05
115	116	43.67	0.00	-0.31	-8.41
116	116	43.67	0.00	0.40	-8.45
116	117	47.06	0.00	0.59	-9.95
117	117	47.06	0.00	1.21	-9.97
117	118	50.45	0.00	1.34	-14.20
118	118	50.45	0.00	1.98	-14.22
118	119	53.84	0.00	2.29	-21.46
119	119	53.84	0.00	2.89	-21.45
119	120	57.23	0.00	2.89	-31.26
120	120	57.23	0.00	3.63	-31.26
120	121	60.62	0.00	8.41	-48.22
121	121	60.62	0.00	8.06	-48.12
121	122	64.01	0.00	15.63	-89.27
122	122	64.01	0.00	17.19	-89.07
122	10123	67.40	0.00	22.81	-159.03
123	123	67.40	0.00	-24.22	-158.97
123	124	70.45	0.00	-18.91	-91.04
124	124	70.45	0.00	-17.27	-91.12
124	125	73.50	0.00	-10.12	-49.32
125	125	73.50	0.00	-8.96	-49.39
125	126	76.26	0.00	-4.20	-35.06
126	126	76.26	0.00	-3.39	-35.05
126	127	79.02	0.00	-3.39	-25.70
127	127	79.02	0.00	-2.67	-25.72
127	128	81.78	0.00	-2.50	-18.62
128	128	81.78	0.00	-1.95	-18.66
128	129	84.54	0.00	-1.95	-13.28
129	129	84.54	0.00	-1.49	-13.33
129	130	87.30	0.00	-1.49	-9.21
130	130	87.30	0.00	-1.13	-9.26
130	131	90.06	0.00	-1.13	-6.15
131	131	90.06	0.00	-0.84	-6.19
131	132	92.82	0.00	-0.78	-3.90
132	132	92.82	0.00	-0.60	-3.94
132	133	95.58	0.00	-0.60	-2.29
133	133	95.58	0.00	-0.47	-2.33
133	134	98.34	0.00	-0.47	-1.03
134	134	98.34	0.00	-0.39	-1.06
134	135	101.10	0.00	14.48	-0.20
301	101	0.00	0.00	-0.83	-4.26
301	2001	0.00	0.00	-0.83	-3.63
302	102	2.74	0.00	-1.34	-7.51
302	2002	2.74	0.00	-1.34	-6.50
303	103	5.48	0.00	-1.07	-6.67
303	2003	5.48	0.00	-1.07	-5.86
304	104	8.22	0.00	-0.89	-6.09
304	2004	8.22	0.00	-0.89	-5.42
305	105	10.96	0.00	-0.79	-5.80
305	2005	10.96	0.00	-0.79	-5.20
306	106	13.70	0.00	-0.80	-5.81
306	2006	13.70	0.00	-0.80	-5.20
307	107	16.44	0.00	-0.89	-6.09
307	2007	16.44	0.00	-0.89	-5.42
308	108	19.18	0.00	-1.04	-6.58
308	2008	19.18	0.00	-1.04	-5.79
309	109	21.92	0.00	-1.23	-7.18
309	2009	21.92	0.00	-1.23	-6.25
310	110	24.66	0.00	-1.41	-7.75

310	2010	24.66	0.00	-1.41	-6.68
311	111	27.40	0.00	-1.61	-8.54
311	2011	27.40	0.00	-1.61	-7.33
312	112	30.45	0.00	-1.73	-9.25
312	2012	30.45	0.00	-1.73	-7.95
313	113	33.50	0.00	-1.56	-8.79
313	2013	33.50	0.00	-1.56	-7.61
314	114	36.89	0.00	-1.31	-8.21
314	2014	36.89	0.00	-1.31	-7.22
315	115	40.28	0.00	-0.97	-7.13
315	2015	40.28	0.00	-0.97	-6.40
316	116	43.67	0.00	-0.70	-6.29
316	2016	43.67	0.00	-0.70	-5.76
317	117	47.06	0.00	-0.57	-5.86
317	2017	47.06	0.00	-0.57	-5.43
318	118	50.45	0.00	-0.59	-5.92
318	2018	50.45	0.00	-0.59	-5.48
319	119	53.84	0.00	-0.76	-6.47
319	2019	53.84	0.00	-0.76	-5.90
320	120	57.23	0.00	-1.07	-7.43
320	2020	57.23	0.00	-1.07	-6.63
321	121	60.62	0.00	-1.45	-8.64
321	2021	60.62	0.00	-1.45	-7.54
322	122	64.01	0.00	-1.82	-9.80
322	2022	64.01	0.00	-1.82	-8.42
323	123	67.40	0.00	-1.93	-9.95
323	2023	67.40	0.00	-1.93	-8.49
324	124	70.45	0.00	-1.86	-9.69
324	2024	70.45	0.00	-1.86	-8.28
325	125	73.50	0.00	-1.52	-8.26
325	2025	73.50	0.00	-1.52	-7.12
326	126	76.26	0.00	-1.20	-7.11
326	2026	76.26	0.00	-1.20	-6.20
327	127	79.02	0.00	-0.96	-6.33
327	2027	79.02	0.00	-0.96	-5.61
328	128	81.78	0.00	-0.74	-5.66
328	2028	81.78	0.00	-0.74	-5.10
329	129	84.54	0.00	-0.60	-5.22
329	2029	84.54	0.00	-0.60	-4.76
330	130	87.30	0.00	-0.56	-5.07
330	2030	87.30	0.00	-0.56	-4.65
331	131	90.06	0.00	-0.62	-5.27
331	2031	90.06	0.00	-0.62	-4.80
332	132	92.82	0.00	-0.79	-5.81
332	2032	92.82	0.00	-0.79	-5.21
333	133	95.58	0.00	-1.07	-6.70
333	2033	95.58	0.00	-1.07	-5.89
334	134	98.34	0.00	-1.45	-7.87
334	2034	98.34	0.00	-1.45	-6.78
335	135	101.10	0.00	-0.94	-4.63
335	2035	101.10	0.00	-0.94	-3.91
201	2001	0.00	0.00	-0.83	-3.63
201	1001	0.00	0.00	-0.19	-0.36
202	2002	2.74	0.00	-1.34	-6.50
202	1002	2.74	0.00	-0.42	-0.73
203	2003	5.48	0.00	-1.07	-5.86
203	1003	5.48	0.00	-0.76	-0.87
204	2004	8.22	0.00	-0.89	-5.42
204	1004	8.22	0.00	-0.68	-1.19
205	2005	10.96	0.00	-0.79	-5.20
205	1005	10.96	0.00	-0.56	-1.46
206	2006	13.70	0.00	-0.80	-5.20
206	1006	13.70	0.00	-0.44	-1.53
207	2007	16.44	0.00	-0.89	-5.42
207	1007	16.44	0.00	-0.42	-1.42
208	2008	19.18	0.00	-1.04	-5.79
208	1008	19.18	0.00	-0.49	-1.16
209	2009	21.92	0.00	-1.23	-6.25
209	1009	21.92	0.00	-0.50	-0.80
210	2010	24.66	0.00	-1.41	-6.68
210	1010	24.66	0.00	-0.43	-0.49
211	2011	27.40	0.00	-1.61	-7.33
211	1011	27.40	0.00	-0.28	-0.39
212	2012	30.45	0.00	-1.73	-7.95
212	1012	30.45	0.00	-0.37	-0.40
213	2013	33.50	0.00	-1.56	-7.61
213	1013	33.50	0.00	-0.65	-0.78
214	2014	36.89	0.00	-1.31	-7.22
214	1014	36.89	0.00	-0.61	-1.47
215	2015	40.28	0.00	-0.97	-6.40
215	1015	40.28	0.00	-0.38	-2.11
216	2016	43.67	0.00	-0.70	-5.76
216	1016	43.67	0.00	-0.32	-2.57

217	2017	47.06	0.00	-0.57	-5.43
217	1017	47.06	0.00	-0.15	-2.78
218	2018	50.45	0.00	-0.59	-5.48
218	1018	50.45	0.00	-0.26	-2.80
219	2019	53.84	0.00	-0.76	-5.90
219	1019	53.84	0.00	-0.26	-2.52
220	2020	57.23	0.00	-1.07	-6.63
220	1020	57.23	0.00	-0.46	-1.96
221	2021	60.62	0.00	-1.45	-7.54
221	1021	60.62	0.00	-0.62	-1.22
222	2022	64.01	0.00	-1.82	-8.42
222	1022	64.01	0.00	-0.20	-0.64
223	2023	67.40	0.00	-1.93	-8.49
223	1023	67.40	0.00	-0.14	-0.56
224	2024	70.45	0.00	-1.86	-8.28
224	1024	70.45	0.00	-0.18	-0.55
225	2025	73.50	0.00	-1.52	-7.12
225	1025	73.50	0.00	-0.50	-0.81
226	2026	76.26	0.00	-1.20	-6.20
226	1026	76.26	0.00	-0.44	-1.20
227	2027	79.02	0.00	-0.96	-5.61
227	1027	79.02	0.00	-0.28	-1.62
228	2028	81.78	0.00	-0.74	-5.10
228	1028	81.78	0.00	-0.22	-1.93
229	2029	84.54	0.00	-0.60	-4.76
229	1029	84.54	0.00	-0.20	-2.09
230	2030	87.30	0.00	-0.56	-4.65
230	1030	87.30	0.00	-0.30	-2.05
231	2031	90.06	0.00	-0.62	-4.80
231	1031	90.06	0.00	-0.62	-1.84
232	2032	92.82	0.00	-0.79	-5.21
232	1032	92.82	0.00	-0.71	-1.43
233	2033	95.58	0.00	-1.07	-5.89
233	1033	95.58	0.00	-0.44	-0.97
234	2034	98.34	0.00	-1.45	-6.78
234	1034	98.34	0.00	-0.20	-1.00
235	2035	101.10	0.00	-0.94	-3.91
235	1035	101.10	0.00	-0.06	-0.54
401	1001	0.00	0.00	-0.19	-0.36
401	1	0.00	0.00	-0.02	-0.27
402	1002	2.74	0.00	-0.42	-0.73
402	2	2.74	0.00	-0.05	-0.53
403	1003	5.48	0.00	-0.76	-0.87
403	3	5.48	0.00	-0.17	-0.53
404	1004	8.22	0.00	-0.68	-1.19
404	4	8.22	0.00	-0.35	-0.81
405	1005	10.96	0.00	-0.56	-1.46
405	5	10.96	0.00	-0.35	-1.11
406	1006	13.70	0.00	-0.44	-1.53
406	6	13.70	0.00	-0.36	-1.24
407	1007	16.44	0.00	-0.42	-1.42
407	7	16.44	0.00	-0.34	-1.13
408	1008	19.18	0.00	-0.49	-1.16
408	8	19.18	0.00	-0.36	-0.84
409	1009	21.92	0.00	-0.50	-0.80
409	9	21.92	0.00	-0.36	-0.49
410	1010	24.66	0.00	-0.43	-0.49
410	10	24.66	0.00	-0.16	-0.28
411	1011	27.40	0.00	-0.28	-0.39
411	11	27.40	0.00	-0.15	-0.24
412	1012	30.45	0.00	-0.37	-0.40
412	12	30.45	0.00	-0.20	-0.20
413	1013	33.50	0.00	-0.65	-0.78
413	13	33.50	0.00	-0.53	-0.36
414	1014	36.89	0.00	-0.61	-1.47
414	14	36.89	0.00	-0.38	-1.10
415	1015	40.28	0.00	-0.38	-2.11
415	15	40.28	0.00	-0.15	-1.89
416	1016	43.67	0.00	-0.32	-2.57
416	16	43.67	0.00	-0.01	-2.48
417	1017	47.06	0.00	-0.15	-2.78
417	17	47.06	0.00	0.05	-2.75
418	1018	50.45	0.00	-0.25	-2.80
418	18	50.45	0.00	-0.02	-2.68
419	1019	53.84	0.00	-0.26	-2.52
419	19	53.84	0.00	-0.22	-2.33
420	1020	57.23	0.00	-0.46	-1.96
420	20	57.23	0.00	-0.36	-1.67
421	1021	60.62	0.00	-0.62	-1.22
421	21	60.62	0.00	-0.43	-0.83
422	1022	64.01	0.00	-0.20	-0.64
422	22	64.01	0.00	-0.11	-0.53
423	1023	67.40	0.00	-0.14	-0.56

GRÁFICO DE ESFUERZOS


$$[0; 1] \text{I} \text{Z} \text{Q} \text{I} \text{N} \text{T} 2 . \text{PaseoTren} . \text{Nudo} 1 . \text{Pos} 2 . \text{Mx} + [0; 1] \text{I} \text{Z} \text{Q} \text{I} \text{N} \text{T} 2 . \text{PaseoTren} . \text{Nudo} 1 . \text{Pos} 3 . \text{Mx} + [0; 1] \text{I} \text{Z} \text{Q} \text{I} \text{N} \text{T} 2 . \text{PaseoTren} . \text{Nudo} 2 . \text{Pos} 2 . \text{Mx} + [0; 1] \text{I} \text{Z} \text{Q} \text{I} \text{N} \text{T} 2 . \text{PaseoTren} . \text{Nudo} 3 . \text{Pos} 2 . \text{Mx} + [0; 1] \text{I} \text{Z} \text{Q} \text{I} \text{N} \text{T} 2 . \text{PaseoTren} . \text{Nudo} 4 . \text{Pos}$$

Coef. exc:

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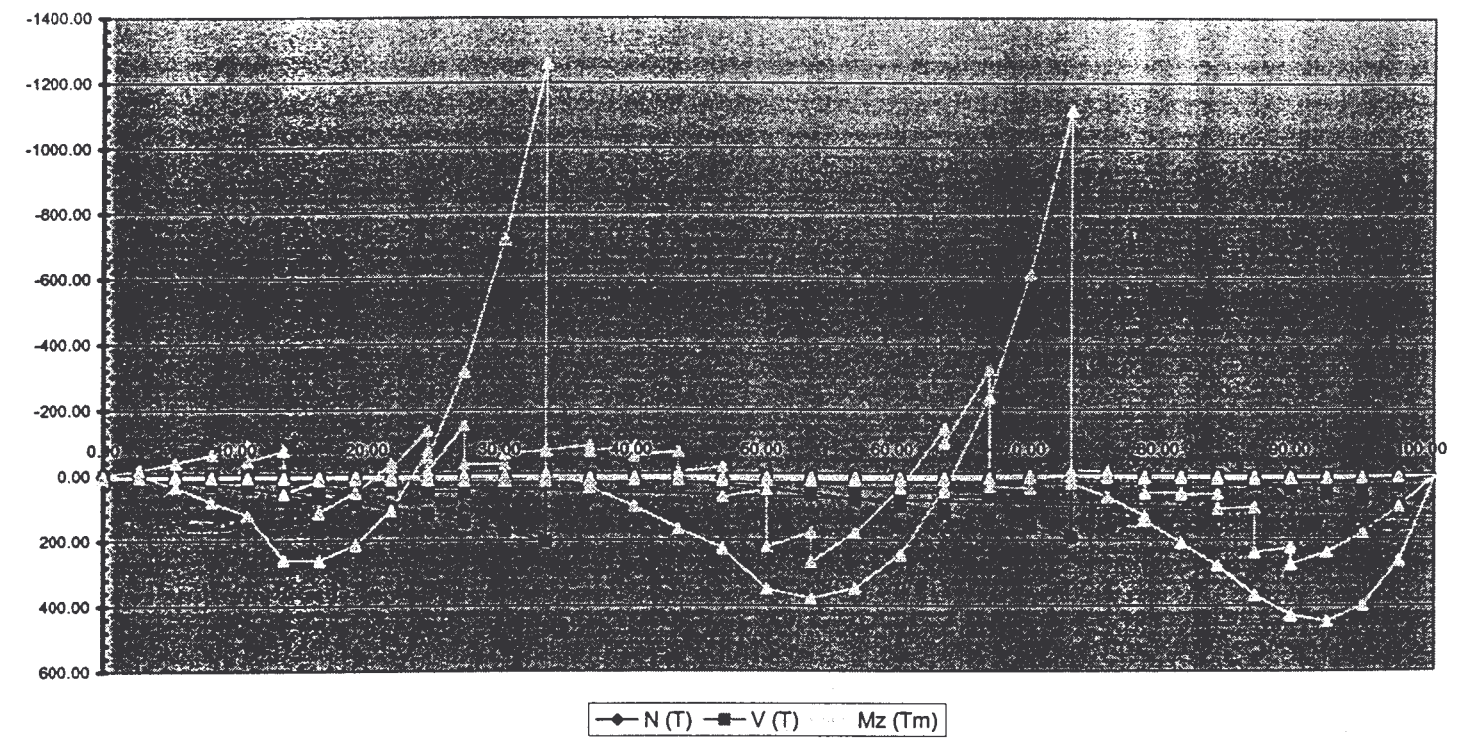
103	103	5.48	0.00	9.34	-39.88
103	104	8.22	0.00	9.34	-65.49
104	104	8.22	0.00	10.10	-66.02
104	105	10.96	0.00	10.10	-93.70
105	105	10.96	0.00	11.01	-46.68
105	106	13.70	0.00	11.01	-76.84
106	106	13.70	0.00	14.72	54.08
106	107	16.44	0.00	14.72	13.75
107	107	16.44	0.00	23.91	113.71
107	108	19.18	0.00	23.91	48.19
108	108	19.18	0.00	33.07	53.20
108	109	21.92	0.00	33.07	-37.41
109	109	21.92	0.00	41.28	-25.74
109	110	24.66	0.00	41.28	-138.85
110	110	24.66	0.00	49.89	-15.86
110	10111	27.40	0.00	49.89	-152.56
111	111	27.40	0.00	-0.31	-35.15
111	112	30.45	0.00	-0.31	-34.21
112	112	30.45	0.00	2.37	-68.44
112	113	33.50	0.00	2.37	-75.67
113	113	33.50	0.00	3.93	-78.20
113	114	36.89	0.00	3.93	-91.53
114	114	36.89	0.00	4.34	-74.66
114	115	40.28	0.00	4.34	-89.35
115	115	40.28	0.00	4.02	-59.95
115	116	43.67	0.00	4.02	-73.57
116	116	43.67	0.00	4.43	-11.56
116	117	47.06	0.00	4.43	-26.57
117	117	47.06	0.00	6.58	65.83
117	118	50.45	0.00	6.58	43.51
118	118	50.45	0.00	13.25	219.22
118	119	53.84	0.00	13.25	174.31
119	119	53.84	0.00	26.84	266.07
119	120	57.23	0.00	26.84	175.09
120	120	57.23	0.00	40.76	176.75
120	121	60.62	0.00	40.76	38.58
121	121	60.62	0.00	53.73	38.70
121	122	64.01	0.00	53.73	-143.42
122	122	64.01	0.00	65.49	-99.58
122	10123	67.40	0.00	65.49	-321.60
123	123	67.40	0.00	-1.43	34.89
123	124	70.45	0.00	-1.43	39.24
124	124	70.45	0.00	-1.14	-1.18
124	125	73.50	0.00	-1.14	2.31
125	125	73.50	0.00	-0.68	-13.09
125	126	76.26	0.00	-0.68	-11.21
126	126	76.26	0.00	-0.53	2.02
126	127	79.02	0.00	-0.53	3.49
127	127	79.02	0.00	-0.14	54.59
127	128	81.78	0.00	-0.14	54.97
128	128	81.78	0.00	0.53	59.31
128	129	84.54	0.00	0.53	57.85
129	129	84.54	0.00	1.54	102.75
129	130	87.30	0.00	1.54	98.49
130	130	87.30	0.00	5.53	236.83
130	131	90.06	0.00	5.53	221.56
131	131	90.06	0.00	13.54	272.96
131	132	92.82	0.00	13.54	235.60
132	132	92.82	0.00	21.43	235.08
132	133	95.58	0.00	21.43	175.93
133	133	95.58	0.00	28.48	175.04
133	134	98.34	0.00	28.48	96.44
134	134	98.34	0.00	34.32	95.33
134	135	101.10	0.00	34.32	0.60
301	101	0.00	0.00	1.19	8.72
301	2001	0.00	0.00	1.19	7.83
302	102	2.74	0.00	-0.02	5.93
302	2002	2.74	0.00	-0.02	5.95
303	103	5.48	0.00	-0.53	0.02
303	2003	5.48	0.00	-0.53	0.42
304	104	8.22	0.00	-0.49	2.89
304	2004	8.22	0.00	-0.49	3.26
305	105	10.96	0.00	-0.06	5.56
305	2005	10.96	0.00	-0.06	5.61
306	106	13.70	0.00	0.45	7.81
306	2006	13.70	0.00	0.45	7.47
307	107	16.44	0.00	0.97	9.56
307	2007	16.44	0.00	0.97	8.83
308	108	19.18	0.00	1.46	11.26
308	2008	19.18	0.00	1.46	10.16
309	109	21.92	0.00	1.89	12.80
309	2009	21.92	0.00	1.89	11.37
310	110	24.66	0.00	2.21	13.99

310	2010	24.66	0.00	2.21	12.32
311	111	27.40	0.00	2.47	14.78
311	2011	27.40	0.00	2.47	12.91
312	112	30.45	0.00	2.53	15.92
312	2012	30.45	0.00	2.53	14.01
313	113	33.50	0.00	1.82	15.00
313	2013	33.50	0.00	1.82	13.63
314	114	36.89	0.00	1.35	15.05
314	2014	36.89	0.00	1.35	14.03
315	115	40.28	0.00	1.57	13.10
315	2015	40.28	0.00	1.57	11.92
316	116	43.67	0.00	1.81	14.12
316	2016	43.67	0.00	1.81	12.76
317	117	47.06	0.00	1.77	15.85
317	2017	47.06	0.00	1.77	14.51
318	118	50.45	0.00	1.69	15.82
318	2018	50.45	0.00	1.69	14.54
319	119	53.84	0.00	1.55	15.65
319	2019	53.84	0.00	1.55	14.48
320	120	57.23	0.00	1.40	15.11
320	2020	57.23	0.00	1.40	14.05
321	121	60.62	0.00	1.22	14.57
321	2021	60.62	0.00	1.22	13.65
322	122	64.01	0.00	1.06	13.33
322	2022	64.01	0.00	1.06	12.53
323	123	67.40	0.00	0.75	11.40
323	2023	67.40	0.00	0.75	10.83
324	124	70.45	0.00	0.32	9.16
324	2024	70.45	0.00	0.32	8.92
325	125	73.50	0.00	-0.18	4.13
325	2025	73.50	0.00	-0.18	4.26
326	126	76.26	0.00	0.30	7.90
326	2026	76.26	0.00	0.30	7.67
327	127	79.02	0.00	0.92	9.77
327	2027	79.02	0.00	0.92	9.07
328	128	81.78	0.00	1.24	10.42
328	2028	81.78	0.00	1.24	9.48
329	129	84.54	0.00	1.32	11.46
329	2029	84.54	0.00	1.32	10.46
330	130	87.30	0.00	1.20	10.93
330	2030	87.30	0.00	1.20	10.03
331	131	90.06	0.00	0.95	10.03
331	2031	90.06	0.00	0.95	9.31
332	132	92.82	0.00	0.64	8.42
332	2032	92.82	0.00	0.64	7.93
333	133	95.58	0.00	0.35	6.82
333	2033	95.58	0.00	0.35	6.55
334	134	98.34	0.00	0.16	5.60
334	2034	98.34	0.00	0.16	5.48
335	135	101.10	0.00	0.04	2.43
335	2035	101.10	0.00	0.04	2.40
201	2001	0.00	0.00	1.19	7.83
201	1001	0.00	0.00	1.19	2.15
202	2002	2.74	0.00	-0.02	5.95
202	1002	2.74	0.00	-0.02	6.06
203	2003	5.48	0.00	-0.53	0.42
203	1003	5.48	0.00	-0.53	2.95
204	2004	8.22	0.00	-0.49	3.26
204	1004	8.22	0.00	-0.49	5.62
205	2005	10.96	0.00	-0.06	5.61
205	1005	10.96	0.00	-0.06	5.90
206	2006	13.70	0.00	0.45	7.47
206	1006	13.70	0.00	0.45	5.31
207	2007	16.44	0.00	0.97	8.83
207	1007	16.44	0.00	0.97	4.19
208	2008	19.18	0.00	1.46	10.16
208	1008	19.18	0.00	1.46	3.16
209	2009	21.92	0.00	1.89	11.37
209	1009	21.92	0.00	1.89	2.30
210	2010	24.66	0.00	2.21	12.32
210	1010	24.66	0.00	2.21	1.74
211	2011	27.40	0.00	2.47	12.91
211	1011	27.40	0.00	2.47	1.06
212	2012	30.45	0.00	2.53	14.01
212	1012	30.45	0.00	2.53	1.91
213	2013	33.50	0.00	1.82	13.63
213	1013	33.50	0.00	1.82	4.92
214	2014	36.89	0.00	1.35	14.03
214	1014	36.89	0.00	1.35	7.54
215	2015	40.28	0.00	1.57	11.92
215	1015	40.28	0.00	1.57	4.41
216	2016	43.67	0.00	1.81	12.76
216	1016	43.67	0.00	1.81	4.11

217	2017	47.06	0.00	1.77	14.51
217	1017	47.06	0.00	1.77	6.06
218	2018	50.45	0.00	1.69	14.54
218	1018	50.45	0.00	1.69	6.46
219	2019	53.84	0.00	1.55	14.48
219	1019	53.84	0.00	1.55	7.06
220	2020	57.23	0.00	1.40	14.05
220	1020	57.23	0.00	1.40	7.36
221	2021	60.62	0.00	1.22	13.65
221	1021	60.62	0.00	1.22	7.78
222	2022	64.01	0.00	1.06	12.53
222	1022	64.01	0.00	1.06	7.46
223	2023	67.40	0.00	0.75	10.83
223	1023	67.40	0.00	0.75	7.25
224	2024	70.45	0.00	0.32	8.92
224	1024	70.45	0.00	0.32	7.39
225	2025	73.50	0.00	-0.18	4.26
225	1025	73.50	0.00	-0.18	5.12
226	2026	76.26	0.00	0.30	7.67
226	1026	76.26	0.00	0.30	6.22
227	2027	79.02	0.00	0.92	9.07
227	1027	79.02	0.00	0.92	4.69
228	2028	81.78	0.00	1.24	9.48
228	1028	81.78	0.00	1.24	3.56
229	2029	84.54	0.00	1.32	10.46
229	1029	84.54	0.00	1.32	4.14
230	2030	87.30	0.00	1.20	10.03
230	1030	87.30	0.00	1.20	4.28
231	2031	90.06	0.00	0.95	9.31
231	1031	90.06	0.00	0.95	4.76
232	2032	92.82	0.00	0.64	7.93
232	1032	92.82	0.00	0.64	4.85
233	2033	95.58	0.00	0.35	6.55
233	1033	95.58	0.00	0.35	4.86
234	2034	98.34	0.00	0.16	5.48
234	1034	98.34	0.00	0.16	4.73
235	2035	101.10	0.00	0.04	2.40
235	1035	101.10	0.00	0.04	2.22
401	1001	0.00	0.00	1.19	2.15
401	1	0.00	0.00	1.19	1.25
402	1002	2.74	0.00	-0.02	6.06
402	2	2.74	0.00	-0.02	6.07
403	1003	5.48	0.00	-0.53	2.95
403	3	5.48	0.00	-0.53	3.35
404	1004	8.22	0.00	-0.49	5.62
404	4	8.22	0.00	-0.49	5.99
405	1005	10.96	0.00	-0.06	5.90
405	5	10.96	0.00	-0.06	5.95
406	1006	13.70	0.00	0.45	5.31
406	6	13.70	0.00	0.45	4.96
407	1007	16.44	0.00	0.97	4.19
407	7	16.44	0.00	0.97	3.46
408	1008	19.18	0.00	1.46	3.16
408	8	19.18	0.00	1.46	2.05
409	1009	21.92	0.00	1.89	2.30
409	9	21.92	0.00	1.89	0.87
410	1010	24.66	0.00	2.21	1.74
410	10	24.66	0.00	2.21	0.07
411	1011	27.40	0.00	2.47	1.06
411	11	27.40	0.00	2.47	-0.81
412	1012	30.45	0.00	2.53	1.91
412	12	30.45	0.00	2.53	0.00
413	1013	33.50	0.00	1.82	4.92
413	13	33.50	0.00	1.82	3.54
414	1014	36.89	0.00	1.35	7.54
414	14	36.89	0.00	1.35	6.52
415	1015	40.28	0.00	1.57	4.41
415	15	40.28	0.00	1.57	3.23
416	1016	43.67	0.00	1.81	4.11
416	16	43.67	0.00	1.81	2.75
417	1017	47.06	0.00	1.77	6.06
417	17	47.06	0.00	1.77	4.73
418	1018	50.45	0.00	1.69	6.46
418	18	50.45	0.00	1.69	5.18
419	1019	53.84	0.00	1.55	7.06
419	19	53.84	0.00	1.55	5.88
420	1020	57.23	0.00	1.40	7.36
420	20	57.23	0.00	1.40	6.31
421	1021	60.62	0.00	1.22	7.78
421	21	60.62	0.00	1.22	6.86
422	1022	64.01	0.00	1.06	7.46
422	22	64.01	0.00	1.06	6.66
423	1023	67.40	0.00	0.75	7.25

423	23	67.40	0.00	0.75	6.68
424	1024	70.45	0.00	0.32	7.39
424	24	70.45	0.00	0.32	7.15
425	1025	73.50	0.00	-0.18	5.12
425	25	73.50	0.00	-0.18	5.25
426	1026	76.26	0.00	0.30	6.22
426	26	76.26	0.00	0.30	5.99
427	1027	79.02	0.00	0.92	4.69
427	27	79.02	0.00	0.92	4.00
428	1028	81.78	0.00	1.24	3.56
428	28	81.78	0.00	1.24	2.62
429	1029	84.54	0.00	1.32	4.14
429	29	84.54	0.00	1.32	3.14
430	1030	87.30	0.00	1.20	4.28
430	30	87.30	0.00	1.20	3.37
431	1031	90.06	0.00	0.95	4.76
431	31	90.06	0.00	0.95	4.04
432	1032	92.82	0.00	0.64	4.85
432	32	92.82	0.00	0.64	4.36
433	1033	95.58	0.00	0.35	4.86
433	33	95.58	0.00	0.35	4.60
434	1034	98.34	0.00	0.16	4.73
434	34	98.34	0.00	0.16	4.61
435	1035	101.10	0.00	0.04	2.22
435	35	101.10	0.00	0.04	2.20

GRÁFICO DE ESFUERZOS



voiven de tren de cargas plano genérico. MX+

10Tren.Nudo1.Pos2.Mx+ + [0; 1]10ZQINT2.PaseoTren.Nudo1.Pos3.Mx+ + [0; 1]10ZQINT2.PaseoTren.Nudo2.Pos2.Mx+ + [0; 1]10ZQINT2.PaseoTren.Nudo3.Pos2.Mx+ + [0; 1]10ZQINT2.PaseoTren.Nudo4.Pos

1. exc

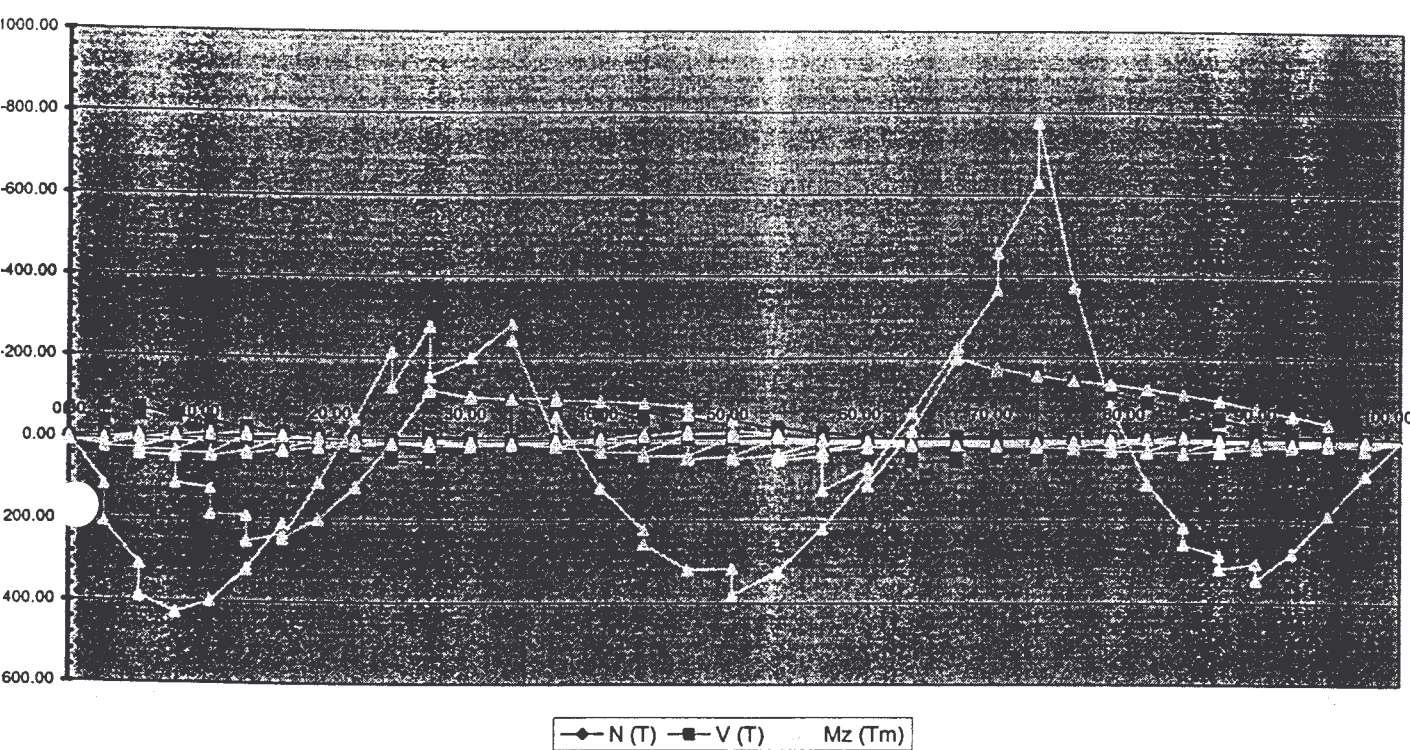
arra	Nudo	X	N (T)	Vy (T)	Mz (Tm)
1	1	0.00	0.00	-64.27	-0.21
1	2	2.74	0.00	-40.23	113.80
2	2	2.74	0.00	-76.63	202.87
2	3	5.48	0.00	-55.03	307.51
3	3	5.48	0.00	-74.31	385.95
3	4	8.22	0.00	-51.51	426.88
4	4	8.22	0.00	-57.12	425.68
4	5	10.96	0.00	-36.78	398.61
5	5	10.96	0.00	-42.66	397.91
5	6	13.70	0.00	-24.12	319.12
6	6	13.70	0.00	-29.59	318.82
6	7	16.44	0.00	-12.90	206.48
7	7	16.44	0.00	-18.56	243.01
7	8	19.18	0.00	-3.51	106.15
8	8	19.18	0.00	-7.20	106.34
8	9	21.92	0.00	5.83	-50.34
9	9	21.92	0.00	3.47	-50.11
9	10	24.66	0.00	15.98	-214.49
10	10	24.66	0.00	9.10	-128.59
10	11	27.40	0.00	19.73	-277.02
11	11	27.40	0.00	14.65	-154.52
11	12	30.45	0.00	16.42	-201.18
12	12	30.45	0.00	14.71	-201.33
12	10013	33.50	0.00	20.67	-283.05
13	13	33.50	0.00	-97.64	-243.92
13	14	36.89	0.00	-66.72	0.76
14	14	36.89	0.00	-88.34	-57.54
14	15	40.28	0.00	-60.00	117.59
15	15	40.28	0.00	-75.49	118.21
15	16	43.67	0.00	-49.77	219.18
16	16	43.67	0.00	-71.08	253.37
16	17	47.06	0.00	-47.81	317.81
17	17	47.06	0.00	-54.65	317.80
17	18	50.45	0.00	-33.60	314.40
18	18	50.45	0.00	-49.58	379.97
18	19	53.84	0.00	-27.46	321.57
19	19	53.84	0.00	-34.67	321.08
19	20	57.23	0.00	-14.70	217.17
20	20	57.23	0.00	-20.78	217.09
20	21	60.62	0.00	-3.19	84.40
21	21	60.62	0.00	-7.82	84.58
21	22	64.01	0.00	7.53	-67.37
22	22	64.01	0.00	4.39	-67.14
22	23	67.40	0.00	18.39	-225.57
23	23	67.40	0.00	16.48	-225.52
23	24	70.45	0.00	24.68	-365.76
24	24	70.45	0.00	43.73	-457.73
24	10025	73.50	0.00	50.10	-631.34
25	25	73.50	0.00	-170.97	-776.90
25	26	76.26	0.00	-140.47	-373.53
26	26	76.26	0.00	-142.63	-374.25
26	27	79.02	0.00	-114.30	-83.22
27	27	79.02	0.00	-117.15	-84.11
27	28	81.78	0.00	-91.09	106.94
28	28	81.78	0.00	-94.52	106.12
28	29	84.54	0.00	-70.74	211.66
29	29	84.54	0.00	-71.28	255.33
29	30	87.30	0.00	-49.79	282.02
30	30	87.30	0.00	-50.81	315.13
30	31	90.06	0.00	-29.35	301.81
31	31	90.06	0.00	-28.88	343.34
31	32	92.82	0.00	-9.50	275.97
32	32	92.82	0.00	-12.92	276.05
32	33	95.58	0.00	4.12	183.30
33	33	95.58	0.00	1.46	183.48
33	34	98.34	0.00	15.88	84.15
34	34	98.34	0.00	14.06	84.37
34	35	101.10	0.00	8.28	-0.04
101	101	0.00	0.00	0.63	-0.15
101	102	2.74	0.00	0.63	-1.87
102	102	2.74	0.00	2.85	0.07
102	103	5.48	0.00	2.85	-7.75

103	103	5.48	0.00	-1.76	39.63
103	104	8.22	0.00	-1.76	44.45
104	104	8.22	0.00	-4.12	109.76
104	105	10.96	0.00	-4.12	121.05
105	105	10.96	0.00	-1.13	183.72
105	106	13.70	0.00	-1.13	186.82
106	106	13.70	0.00	6.60	250.70
106	107	16.44	0.00	6.60	232.61
107	107	16.44	0.00	17.46	242.44
107	108	19.18	0.00	17.46	194.61
108	108	19.18	0.00	28.70	195.56
108	109	21.92	0.00	28.70	116.91
109	109	21.92	0.00	38.57	115.72
109	110	24.66	0.00	38.57	10.05
110	110	24.66	0.00	46.98	8.37
110	10111	27.40	0.00	46.98	-120.35
111	111	27.40	0.00	-6.39	-122.52
111	112	30.45	0.00	-6.39	-103.03
112	112	30.45	0.00	-1.77	-105.22
112	113	33.50	0.00	-1.77	-99.83
113	113	33.50	0.00	0.17	-101.89
113	114	36.89	0.00	0.17	-102.47
114	114	36.89	0.00	-0.83	-97.35
114	115	40.28	0.00	-0.83	-94.52
115	115	40.28	0.00	-1.56	-95.21
115	116	43.67	0.00	-1.56	-89.93
116	116	43.67	0.00	-2.75	-90.21
116	117	47.06	0.00	-2.75	-80.89
117	117	47.06	0.00	-3.48	-61.36
117	118	50.45	0.00	-3.48	-49.58
118	118	50.45	0.00	-2.57	-23.07
118	119	53.84	0.00	-2.57	-14.35
119	119	53.84	0.00	3.11	48.70
119	120	57.23	0.00	3.11	38.16
120	120	57.23	0.00	16.50	122.46
120	121	60.62	0.00	16.50	66.51
121	121	60.62	0.00	38.92	110.25
121	122	64.01	0.00	38.92	-21.69
122	122	64.01	0.00	51.57	-24.19
122	10123	67.40	0.00	51.57	-199.01
123	123	67.40	0.00	-10.13	-201.37
123	124	70.45	0.00	-10.13	-170.47
124	124	70.45	0.00	-6.85	-176.96
124	125	73.50	0.00	-6.85	-156.06
125	125	73.50	0.00	-4.58	-157.76
125	126	76.26	0.00	-4.58	-145.12
126	126	76.26	0.00	-3.92	-146.22
126	127	79.02	0.00	-3.92	-135.41
127	127	79.02	0.00	-4.16	-136.08
127	128	81.78	0.00	-4.16	-124.60
128	128	81.78	0.00	-4.87	-124.95
128	129	84.54	0.00	-4.87	-111.51
129	129	84.54	0.00	-5.72	-111.60
129	130	87.30	0.00	-5.72	-95.81
130	130	87.30	0.00	-6.49	-95.72
130	131	90.06	0.00	-6.49	-77.80
131	131	90.06	0.00	-7.03	-77.58
131	132	92.82	0.00	-7.03	-58.19
132	132	92.82	0.00	-7.46	-61.13
132	133	95.58	0.00	-7.46	-40.54
133	133	95.58	0.00	-0.98	-2.17
133	134	98.34	0.00	-0.98	0.55
134	134	98.34	0.00	7.83	21.87
134	135	101.10	0.00	7.83	0.26
301	101	0.00	0.00	0.51	8.67
301	2001	0.00	0.00	0.51	8.28
302	102	2.74	0.00	-2.39	6.57
302	2002	2.74	0.00	-2.39	8.37
303	103	5.48	0.00	-4.82	-2.06
303	2003	5.48	0.00	-4.82	1.58
304	104	8.22	0.00	-7.37	-10.12
304	2004	8.22	0.00	-7.37	-4.54
305	105	10.96	0.00	-9.24	-16.07
305	2005	10.96	0.00	-9.24	-9.09
306	106	13.70	0.00	-8.17	-15.20
306	2006	13.70	0.00	-8.17	-9.02
307	107	16.44	0.00	-6.25	-10.80
307	2007	16.44	0.00	-6.25	-6.08
308	108	19.18	0.00	-4.10	-4.96
308	2008	19.18	0.00	-4.10	-1.86
309	109	21.92	0.00	-2.62	-0.91
309	2009	21.92	0.00	-2.62	1.07
310	110	24.66	0.00	-0.34	8.28

310	2010	24.66	0.00	-0.34	8.54	217	2017	47.06	0.00	-11.05	-14.63
311	111	27.40	0.00	1.72	15.36	217	1017	47.06	0.00	-11.05	38.28
311	2011	27.40	0.00	1.72	14.06	218	2018	50.45	0.00	-10.13	-9.94
312	112	30.45	0.00	1.77	15.85	218	1018	50.45	0.00	-10.13	38.54
312	2012	30.45	0.00	1.77	14.51	219	2019	53.84	0.00	-8.78	-6.69
313	113	33.50	0.00	0.66	12.33	219	1019	53.84	0.00	-8.78	35.34
313	2013	33.50	0.00	0.66	11.83	220	2020	57.23	0.00	-4.62	1.15
314	114	36.89	0.00	-2.13	4.57	220	1020	57.23	0.00	-4.62	23.28
314	2014	36.89	0.00	-2.13	6.18	221	2021	60.62	0.00	-2.46	4.91
315	115	40.28	0.00	-5.42	-5.06	221	1021	60.62	0.00	-2.46	16.69
315	2015	40.28	0.00	-5.42	-0.96	222	2022	64.01	0.00	-0.72	9.04
316	116	43.67	0.00	-8.32	-14.65	222	1022	64.01	0.00	-0.72	12.47
316	2016	43.67	0.00	-8.32	-8.36	223	2023	67.40	0.00	0.05	11.77
317	117	47.06	0.00	-11.05	-22.99	223	1023	67.40	0.00	0.05	11.53
317	2017	47.06	0.00	-11.05	-14.63	224	2024	70.45	0.00	-0.69	11.28
318	118	50.45	0.00	-10.13	-17.60	224	1024	70.45	0.00	-0.69	14.58
318	2018	50.45	0.00	-10.13	-9.94	225	2025	73.50	0.00	-1.72	7.67
319	119	53.84	0.00	-8.78	-13.33	225	1025	73.50	0.00	-1.72	15.89
319	2019	53.84	0.00	-8.78	-6.69	226	2026	76.26	0.00	-3.07	4.08
320	120	57.23	0.00	-4.62	-2.34	226	1026	76.26	0.00	-3.07	18.78
320	2020	57.23	0.00	-4.62	1.15	227	2027	79.02	0.00	-4.65	0.58
321	121	60.62	0.00	-2.46	3.06	227	1027	79.02	0.00	-4.65	22.82
321	2021	60.62	0.00	-2.46	4.91	228	2028	81.78	0.00	-5.88	-2.39
322	122	64.01	0.00	-0.72	8.50	228	1028	81.78	0.00	-5.88	25.77
322	2022	64.01	0.00	-0.72	9.04	229	2029	84.54	0.00	-6.51	-4.61
323	123	67.40	0.00	0.05	11.81	229	1029	84.54	0.00	-6.51	26.55
323	2023	67.40	0.00	0.05	11.77	230	2030	87.30	0.00	-4.94	1.13
324	124	70.45	0.00	-0.69	10.76	230	1030	87.30	0.00	-4.94	24.77
324	2024	70.45	0.00	-0.69	11.28	231	2031	90.06	0.00	-2.43	6.70
325	125	73.50	0.00	-1.72	6.37	231	1031	90.06	0.00	-2.43	18.35
325	2025	73.50	0.00	-1.72	7.67	232	2032	92.82	0.00	-1.27	8.38
326	126	76.26	0.00	-3.07	1.76	232	1032	92.82	0.00	-1.27	14.45
326	2026	76.26	0.00	-3.07	4.08	233	2033	95.58	0.00	-1.13	7.79
327	127	79.02	0.00	-4.65	-2.93	233	1033	95.58	0.00	-1.13	13.19
327	2027	79.02	0.00	-4.65	0.58	234	2034	98.34	0.00	-1.75	6.56
328	128	81.78	0.00	-5.88	-6.84	234	1034	98.34	0.00	-1.75	14.93
328	2028	81.78	0.00	-5.88	-2.39	235	2035	101.10	0.00	-0.77	3.01
329	129	84.54	0.00	-6.51	-9.52	235	1035	101.10	0.00	-0.77	6.69
329	2029	84.54	0.00	-6.51	-4.61	401	1001	0.00	0.00	0.51	5.82
330	130	87.30	0.00	-4.94	-2.60	401	1	0.00	0.00	0.51	5.44
330	2030	87.30	0.00	-4.94	1.13	402	1002	2.74	0.00	-2.39	19.82
331	131	90.06	0.00	-2.43	4.86	402	2	2.74	0.00	-2.39	21.62
331	2031	90.06	0.00	-2.43	6.70	403	1003	5.48	0.00	-4.82	24.66
332	132	92.82	0.00	-1.27	7.42	403	3	5.48	0.00	-4.82	28.30
332	2032	92.82	0.00	-1.27	8.38	404	1004	8.22	0.00	-7.37	30.77
333	133	95.58	0.00	-1.13	6.93	404	4	8.22	0.00	-7.37	36.34
333	2033	95.58	0.00	-1.13	7.79	405	1005	10.96	0.00	-9.24	35.13
334	134	98.34	0.00	-1.75	5.24	405	5	10.96	0.00	-9.24	42.11
334	2034	98.34	0.00	-1.75	6.56	406	1006	13.70	0.00	-8.17	30.11
335	135	101.10	0.00	-0.77	2.43	406	6	13.70	0.00	-8.17	36.29
335	2035	101.10	0.00	-0.77	3.01	407	1007	16.44	0.00	-6.25	23.84
201	2001	0.00	0.00	0.51	8.28	407	7	16.44	0.00	-6.25	28.57
201	1001	0.00	0.00	0.51	5.82	408	1008	19.18	0.00	-4.10	17.76
202	2002	2.74	0.00	-2.39	8.37	408	8	19.18	0.00	-4.10	20.85
202	1002	2.74	0.00	-2.39	19.82	409	1009	21.92	0.00	-2.62	13.61
203	2003	5.48	0.00	-4.82	1.58	409	9	21.92	0.00	-2.62	15.59
203	1003	5.48	0.00	-4.82	24.66	410	1010	24.66	0.00	-0.34	10.19
204	2004	8.22	0.00	-7.37	-4.54	410	10	24.66	0.00	-0.34	10.45
204	1004	8.22	0.00	-7.37	30.77	411	1011	27.40	0.00	1.72	5.84
205	2005	10.96	0.00	-9.24	-9.09	411	11	27.40	0.00	1.72	4.54
205	1005	10.96	0.00	-9.24	35.13	412	1012	30.45	0.00	1.77	6.02
206	2006	13.70	0.00	-8.17	-9.02	412	12	30.45	0.00	1.77	4.68
206	1006	13.70	0.00	-8.17	30.11	413	1013	33.50	0.00	0.66	8.64
207	2007	16.44	0.00	-6.25	-6.08	413	13	33.50	0.00	0.66	8.14
207	1007	16.44	0.00	-6.25	23.84	414	1014	36.89	0.00	-2.13	16.36
208	2008	19.18	0.00	-4.10	-1.86	414	14	36.89	0.00	-2.13	17.97
208	1008	19.18	0.00	-4.10	17.76	415	1015	40.28	0.00	-5.42	25.01
209	2009	21.92	0.00	-2.62	1.07	415	15	40.28	0.00	-5.42	29.11
209	1009	21.92	0.00	-2.62	13.61	416	1016	43.67	0.00	-8.32	31.49
210	2010	24.66	0.00	-0.34	8.54	416	16	43.67	0.00	-8.32	37.78
210	1010	24.66	0.00	-0.34	10.19	417	1017	47.06	0.00	-11.05	38.28
211	2011	27.40	0.00	1.72	14.06	417	17	47.06	0.00	-11.05	46.63
211	1011	27.40	0.00	1.72	5.84	418	1018	50.45	0.00	-10.13	38.54
212	2012	30.45	0.00	1.77	14.51	418	18	50.45	0.00	-10.13	46.19
212	1012	30.45	0.00	1.77	6.02	419	1019	53.84	0.00	-8.78	35.34
213	2013	33.50	0.00	0.66	11.83	419	19	53.84	0.00	-8.78	41.98
213	1013	33.50	0.00	0.66	8.64	420	1020	57.23	0.00	-4.62	23.28
214	2014	36.89	0.00	-2.13	6.18	420	20	57.23	0.00	-4.62	26.77
214	1014	36.89	0.00	-2.13	16.36	421	1021	60.62	0.00	-2.46	16.69
215	2015	40.28	0.00	-5.42	-0.96	421	21	60.62	0.00	-2.46	18.55
215	1015	40.28	0.00	-5.42	25.01	422	1022	64.01	0.00	-0.72	12.47
216	2016	43.67	0.00	-8.32	-8.36	422	22	64.01	0.00	-0.72	13.02
216	1016	43.67	0.00	-8.32	31.49	423	1023	67.40	0.00	0.05	11.53

423	23	67.40	0.00	0.05	11.49
424	1024	70.45	0.00	-0.69	14.58
424	24	70.45	0.00	-0.69	15.10
425	1025	73.50	0.00	-1.72	15.89
425	25	73.50	0.00	-1.72	17.19
426	1026	76.26	0.00	-3.07	18.78
426	26	76.26	0.00	-3.07	21.10
427	1027	79.02	0.00	-4.65	22.82
427	27	79.02	0.00	-4.65	26.33
428	1028	81.78	0.00	-5.88	25.77
428	28	81.78	0.00	-5.88	30.22
429	1029	84.54	0.00	-6.51	26.55
429	29	84.54	0.00	-6.51	31.47
430	1030	87.30	0.00	-4.94	24.77
430	30	87.30	0.00	-4.94	28.50
431	1031	90.06	0.00	-2.43	18.35
431	31	90.06	0.00	-2.43	20.19
432	1032	92.82	0.00	-1.27	14.45
432	32	92.82	0.00	-1.27	15.41
433	1033	95.58	0.00	-1.13	13.19
433	33	95.58	0.00	-1.13	14.04
434	1034	98.34	0.00	-1.75	14.93
434	34	98.34	0.00	-1.75	16.25
435	1035	101.10	0.00	-0.77	6.69
435	35	101.10	0.00	-0.77	7.27

GRÁFICO DE ESFUERZOS



103	103	5.48	0.00	2.10	5.44
103	104	8.22	0.00	2.75	10.14
104	104	8.22	0.00	3.37	10.11
104	105	10.96	0.00	4.34	12.35
105	105	10.96	0.00	4.97	12.35
105	106	13.70	0.00	6.21	9.96
106	106	13.70	0.00	6.87	11.44
106	107	16.44	0.00	8.35	2.53
107	107	16.44	0.00	9.12	2.62
107	108	19.18	0.00	10.84	-14.67
108	108	19.18	0.00	11.75	-14.41
108	109	21.92	0.00	13.69	-41.87
109	109	21.92	0.00	14.81	-41.24
109	110	24.66	0.00	16.99	-80.72
110	110	24.66	0.00	18.34	-80.30
110	10111	27.40	0.00	20.53	-133.55
111	111	27.40	0.00	0.28	6.93
111	112	30.45	0.00	0.28	6.07
112	112	30.45	0.00	0.42	6.54
112	113	33.50	0.00	0.44	10.06
113	113	33.50	0.00	0.70	10.20
113	114	36.89	0.00	1.06	16.85
114	114	36.89	0.00	1.39	16.82
114	115	40.28	0.00	2.07	24.00
115	115	40.28	0.00	2.42	25.98
115	116	43.67	0.00	3.38	31.41
116	116	43.67	0.00	3.72	31.40
116	117	47.06	0.00	4.92	33.17
117	117	47.06	0.00	5.24	33.73
117	118	50.45	0.00	6.69	30.02
118	118	50.45	0.00	7.09	30.42
118	119	53.84	0.00	8.78	19.09
119	119	53.84	0.00	9.34	19.28
119	120	57.23	0.00	11.30	-2.19
120	120	57.23	0.00	12.20	0.07
120	121	60.62	0.00	14.45	-34.77
121	121	60.62	0.00	15.78	-34.25
121	122	64.01	0.00	18.37	-86.09
122	122	64.01	0.00	20.16	-85.54
122	10123	67.40	0.00	22.87	-158.48
123	123	67.40	0.00	0.04	1.82
123	124	70.45	0.00	0.04	1.71
124	124	70.45	0.00	0.05	2.24
124	125	73.50	0.00	0.05	2.10
125	125	73.50	0.00	0.10	7.19
125	126	76.26	0.00	0.30	14.66
126	126	76.26	0.00	0.40	14.64
126	127	79.02	0.00	0.81	23.75
127	127	79.02	0.00	0.89	23.73
127	128	81.78	0.00	1.48	33.40
128	128	81.78	0.00	1.55	35.68
128	129	84.54	0.00	2.32	44.86
129	129	84.54	0.00	2.36	44.87
129	130	87.30	0.00	3.31	52.43
130	130	87.30	0.00	3.36	52.48
130	131	90.06	0.00	4.51	57.10
131	131	90.06	0.00	4.66	58.01
131	132	92.82	0.00	6.05	57.82
132	132	92.82	0.00	6.41	58.02
132	133	95.58	0.00	8.09	50.51
133	133	95.58	0.00	8.89	54.92
133	134	98.34	0.00	10.94	36.41
134	134	98.34	0.00	12.30	36.80
134	135	101.10	0.00	14.51	-0.20
301	101	0.00	0.00	0.00	-0.09
301	2001	0.00	0.00	0.00	-0.10
302	102	2.74	0.00	0.00	-0.11
302	2002	2.74	0.00	0.00	-0.12
303	103	5.48	0.00	0.00	0.00
303	2003	5.48	0.00	0.00	0.00
304	104	8.22	0.00	0.00	0.00
304	2004	8.22	0.00	0.00	0.00
305	105	10.96	0.00	0.00	0.00
305	2005	10.96	0.00	0.00	0.00
306	106	13.70	0.00	0.00	0.00
306	2006	13.70	0.00	0.00	0.00
307	107	16.44	0.00	0.00	0.00
307	2007	16.44	0.00	0.00	0.00
308	108	19.18	0.00	0.00	0.00
308	2008	19.18	0.00	0.00	0.00
309	109	21.92	0.00	0.00	0.00
309	2009	21.92	0.00	0.00	0.00
310	110	24.66	0.00	0.00	0.00

involvente de tren de cargas plano genérico. MZ+

1JZQINT PaseoTren.Nudo1.Pos2.Mx+ + [0; 1JZQINT2.PaseoTren.Nudo1.Pos3.Mx+ + [0; 1JZQINT2.PaseoTren.Nudo2.Pos2.Mx+ + [0; 1JZQINT2.PaseoTren.Nudo3.Pos2.Mx+ + [0; 1JZQINT2.PaseoTren.Nudo4.Pos

el. exc:

Barra	Nudo	X	N (T)	Vy (T)	Mz (Tm)
1	1	0.00	0.00	7.80	0.28
1	2	2.74	0.00	-105.58	332.90
2	2	2.74	0.00	-107.92	330.14
2	3	5.48	0.00	-75.04	580.80
3	3	5.48	0.00	-80.36	578.39
3	4	8.22	0.00	-47.48	753.53
4	4	8.22	0.00	-55.23	751.62
4	5	10.96	0.00	-22.51	858.32
5	5	10.96	0.00	-32.04	856.99
5	6	13.70	0.00	0.51	900.15
6	6	13.70	0.00	-10.36	899.44
6	7	16.44	0.00	22.52	882.78
7	7	16.44	0.00	11.15	882.71
7	8	19.18	0.00	43.43	807.48
8	8	19.18	0.00	32.45	808.04
8	9	21.92	0.00	65.00	674.38
9	9	21.92	0.00	54.77	675.53
9	10	24.66	0.00	87.65	480.42
10	10	24.66	0.00	78.73	482.09
10	11	27.40	0.00	81.77	249.89
11	11	27.40	0.00	75.71	251.36
11	12	30.45	0.00	46.47	79.41
12	12	30.45	0.00	43.33	80.05
12	10013	33.50	0.00	9.42	3.14
13	13	33.50	0.00	-3.48	3.38
13	14	36.89	0.00	-42.72	74.50
14	14	36.89	0.00	-45.65	74.27
14	15	40.28	0.00	-75.11	270.18
15	15	40.28	0.00	-80.83	268.56
15	16	43.67	0.00	-72.30	524.55
16	16	43.67	0.00	-80.97	522.00
16	17	47.06	0.00	-41.86	730.96
17	17	47.06	0.00	-53.33	728.86
17	18	50.45	0.00	-12.65	840.69
18	18	50.45	0.00	-26.03	839.31
18	19	53.84	0.00	13.31	861.61
19	19	53.84	0.00	-1.32	860.99
19	20	57.23	0.00	39.36	796.50
20	20	57.23	0.00	24.68	796.74
20	21	60.62	0.00	63.84	647.66
21	21	60.62	0.00	50.26	648.76
21	22	64.01	0.00	70.20	431.91
22	22	64.01	0.00	60.38	433.33
22	23	67.40	0.00	70.44	210.97
23	23	67.40	0.00	64.68	212.14
23	24	70.45	0.00	20.92	91.94
24	24	70.45	0.00	19.28	91.99
24	10025	73.50	0.00	3.28	39.43
25	25	73.50	0.00	-8.85	39.27
25	26	76.26	0.00	-42.06	113.26
26	26	76.26	0.00	-43.82	112.86
26	27	79.02	0.00	-86.11	291.42
27	27	79.02	0.00	-90.79	290.15
27	28	81.78	0.00	-60.71	503.25
28	28	81.78	0.00	-67.00	502.12
28	29	84.54	0.00	-33.88	641.34
29	29	84.54	0.00	-41.26	640.55
29	30	87.30	0.00	-8.14	708.72
30	30	87.30	0.00	-16.17	708.36
30	31	90.06	0.00	16.89	707.28
31	31	90.06	0.00	8.76	707.38
31	32	92.82	0.00	41.88	637.49
32	32	92.82	0.00	34.14	638.04
32	33	95.58	0.00	67.26	498.11
33	33	95.58	0.00	60.41	499.06
33	34	98.34	0.00	93.34	286.64
34	34	98.34	0.00	87.99	287.88
34	35	101.10	0.00	-9.54	0.21
101	101	0.00	0.00	-30.25	1.45
101	102	2.74	0.00	-30.52	85.06
102	102	2.74	0.00	-27.87	87.77
102	103	5.48	0.00	-27.87	164.14

103	103	5.48	0.00	-22.27	166.51
103	104	8.22	0.00	-22.45	227.80
104	104	8.22	0.00	-14.56	229.72
104	105	10.96	0.00	-14.56	269.61
105	105	10.96	0.00	-4.84	270.95
105	106	13.70	0.00	-4.84	284.22
106	106	13.70	0.00	6.03	284.93
106	107	16.44	0.00	6.03	268.40
107	107	16.44	0.00	17.40	268.47
107	108	19.18	0.00	17.35	220.91
108	108	19.18	0.00	28.57	220.35
108	109	21.92	0.00	27.76	142.69
109	109	21.92	0.00	37.85	141.52
109	110	24.66	0.00	28.47	41.90
110	110	24.66	0.00	35.48	40.56
110	10111	27.40	0.00	5.17	0.95
111	111	27.40	0.00	-1.66	0.79
111	112	30.45	0.00	-1.91	6.08
112	112	30.45	0.00	-0.51	5.86
112	113	33.50	0.00	-9.36	10.62
113	113	33.50	0.00	-6.08	10.74
113	114	36.89	0.00	-31.17	90.22
114	114	36.89	0.00	-27.70	92.47
114	115	40.28	0.00	-31.10	194.91
115	115	40.28	0.00	-25.16	197.66
115	116	43.67	0.00	-25.43	283.58
116	116	43.67	0.00	-16.41	286.16
116	117	47.06	0.00	-16.56	342.07
117	117	47.06	0.00	-4.91	344.18
117	118	50.45	0.00	-4.97	360.91
118	118	50.45	0.00	8.65	362.33
118	119	53.84	0.00	8.43	333.66
119	119	53.84	0.00	23.10	334.30
119	120	57.23	0.00	22.87	256.04
120	120	57.23	0.00	37.57	255.80
120	121	60.62	0.00	36.87	129.28
121	121	60.62	0.00	50.18	128.16
121	122	64.01	0.00	4.11	18.59
122	122	64.01	0.00	8.02	18.17
122	10123	67.40	0.00	-7.47	40.97
123	123	67.40	0.00	-1.90	41.09
123	124	70.45	0.00	-2.02	47.20
124	124	70.45	0.00	-1.72	47.33
124	125	73.50	0.00	-21.56	74.94
125	125	73.50	0.00	-20.02	75.86
125	126	76.26	0.00	-25.60	139.10
126	126	76.26	0.00	-21.97	140.33
126	127	79.02	0.00	-21.97	200.97
127	127	79.02	0.00	-16.85	202.24
127	128	81.78	0.00	-16.85	248.76
128	128	81.78	0.00	-10.38	249.85
128	129	84.54	0.00	-10.38	278.51
129	129	84.54	0.00	-2.87	279.29
129	130	87.30	0.00	-2.87	287.20
130	130	87.30	0.00	5.27	287.57
130	131	90.06	0.00	5.27	273.03
131	131	90.06	0.00	13.54	272.96
131	132	92.82	0.00	13.54	235.60
132	132	92.82	0.00	21.43	235.08
132	133	95.58	0.00	21.43	175.93
133	133	95.58	0.00	28.48	175.04
133	134	98.34	0.00	28.48	96.44
134	134	98.34	0.00	34.32	95.33
134	135	101.10	0.00	27.83	0.69
301	101	0.00	0.00	0.98	9.63
301	2001	0.00	0.00	0.75	8.96
302	102	2.74	0.00	-0.88	9.94
302	2002	2.74	0.00	-1.72	10.84
303	103	5.48	0.00	-2.19	5.37
303	2003	5.48	0.00	-2.70	7.06
304	104	8.22	0.00	-1.02	6.14
304	2004	8.22	0.00	-1.46	7.07
305	105	10.96	0.00	-0.57	7.73
305	2005	10.96	0.00	-0.57	8.17
306	106	13.70	0.00	0.06	9.33
306	2006	13.70	0.00	-0.14	9.36
307	107	16.44	0.00	0.49	10.86
307	2007	16.44	0.00	0.21	10.54
308	108	19.18	0.00	0.86	12.28
308	2008	19.18	0.00	0.62	11.72
309	109	21.92	0.00	1.45	13.56
309	2009	21.92	0.00	0.95	12.72
310	110	24.66	0.00	1.76	14.56

310	2010	24.66	0.00	1.16	13.44
311	111	27.40	0.00	2.05	15.89
311	2011	27.40	0.00	1.11	14.69
312	112	30.45	0.00	1.24	17.63
312	2012	30.45	0.00	0.68	16.82
311	113	33.50	0.00	0.97	18.13
313	2013	33.50	0.00	-0.24	17.76
314	114	36.89	0.00	0.11	17.88
314	2014	36.89	0.00	-0.27	18.02
315	115	40.28	0.00	0.13	17.43
315	2015	40.28	0.00	0.13	17.33
316	116	43.67	0.00	0.92	17.72
316	2016	43.67	0.00	0.92	17.02
317	117	47.06	0.00	1.41	17.90
317	2017	47.06	0.00	1.21	16.89
318	118	50.45	0.00	1.34	17.53
318	2018	50.45	0.00	1.07	16.58
319	119	53.84	0.00	1.37	16.95
319	2019	53.84	0.00	0.92	16.09
320	120	57.23	0.00	1.00	16.31
320	2020	57.23	0.00	0.99	15.56
321	121	60.62	0.00	0.72	15.75
321	2021	60.62	0.00	0.72	15.21
322	122	64.01	0.00	0.46	15.11
322	2022	64.01	0.00	0.44	14.77
323	123	67.40	0.00	0.23	13.30
323	2023	67.40	0.00	-0.22	13.24
324	124	70.45	0.00	-0.97	11.57
324	2024	70.45	0.00	-1.25	12.40
325	125	73.50	0.00	-1.52	10.40
325	2025	73.50	0.00	-1.85	11.64
326	126	76.26	0.00	-1.13	10.98
326	2026	76.26	0.00	-1.40	11.84
327	127	79.02	0.00	0.12	12.21
327	2027	79.02	0.00	-0.58	12.42
328	128	81.78	0.00	0.51	13.22
328	2028	81.78	0.00	0.22	12.88
329	129	84.54	0.00	0.84	13.37
329	2029	84.54	0.00	0.59	12.86
330	130	87.30	0.00	0.76	12.88
330	2030	87.30	0.00	0.21	12.38
331	131	90.06	0.00	0.52	11.93
331	2031	90.06	0.00	0.31	11.65
332	132	92.82	0.00	0.20	10.72
332	2032	92.82	0.00	-0.02	10.69
333	133	95.58	0.00	-0.20	9.36
333	2033	95.58	0.00	-0.64	9.64
334	134	98.34	0.00	-0.41	7.98
334	2034	98.34	0.00	-1.78	8.87
335	135	101.10	0.00	-0.69	4.33
335	2035	101.10	0.00	-1.08	4.94
201	2001	0.00	0.00	0.75	8.96
201	1001	0.00	0.00	-1.60	11.36
202	2002	2.74	0.00	-1.72	10.84
202	1002	2.74	0.00	-3.81	27.77
203	2003	5.48	0.00	-2.70	7.06
203	1003	5.48	0.00	-6.14	33.33
204	2004	8.22	0.00	-1.46	7.07
204	1004	8.22	0.00	-7.98	37.72
205	2005	10.96	0.00	-0.57	8.17
205	1005	10.96	0.00	-9.26	40.75
206	2006	13.70	0.00	-0.14	9.36
206	1006	13.70	0.00	-10.10	42.34
207	2007	16.44	0.00	0.21	10.54
207	1007	16.44	0.00	-11.06	42.92
208	2008	19.18	0.00	0.62	11.72
208	1008	19.18	0.00	-10.98	42.27
209	2009	21.92	0.00	0.95	12.72
209	1009	21.92	0.00	-10.20	40.27
210	2010	24.66	0.00	1.16	13.44
210	1010	24.66	0.00	-8.93	37.07
211	2011	27.40	0.00	1.11	14.69
211	1011	27.40	0.00	-7.65	34.70
212	2012	30.45	0.00	0.68	16.82
212	1012	30.45	0.00	-5.66	31.98
213	2013	33.50	0.00	-0.24	17.76
213	1013	33.50	0.00	-3.60	27.76
214	2014	36.89	0.00	-0.27	18.02
214	1014	36.89	0.00	-3.01	29.66
215	2015	40.28	0.00	0.13	17.33
215	1015	40.28	0.00	-5.97	34.54
216	2016	43.67	0.00	0.92	17.02
216	1016	43.67	0.00	-8.79	40.89
217	2017	47.06	0.00	1.21	16.89
217	1017	47.06	0.00	-11.27	46.59
218	2018	50.45	0.00	1.07	16.58
218	1018	50.45	0.00	-12.75	50.74
219	2019	53.84	0.00	0.92	16.09
219	1019	53.84	0.00	-13.64	53.03
220	2020	57.23	0.00	0.99	15.56
220	1020	57.23	0.00	-13.45	53.12
221	2021	60.62	0.00	0.72	15.21
221	1021	60.62	0.00	-12.34	51.25
222	2022	64.01	0.00	0.44	14.77
222	1022	64.01	0.00	-10.48	47.48
223	2023	67.40	0.00	-0.22	13.24
223	1023	67.40	0.00	-7.81	39.99
224	2024	70.45	0.00	-1.25	12.40
224	1024	70.45	0.00	-5.58	34.40
225	2025	73.50	0.00	-1.85	11.64
225	1025	73.50	0.00	-3.74	28.29
226	2026	76.26	0.00	-1.40	11.84
226	1026	76.26	0.00	-3.53	26.91
227	2027	79.02	0.00	-0.58	12.42
227	1027	79.02	0.00	-4.24	28.68
228	2028	81.78	0.00	0.22	12.88
228	1028	81.78	0.00	-5.88	31.19
229	2029	84.54	0.00	0.59	12.86
229	1029	84.54	0.00	-6.80	33.49
230	2030	87.30	0.00	0.21	12.38
230	1030	87.30	0.00	-7.42	35.06
231	2031	90.06	0.00	0.31	11.65
231	1031	90.06	0.00	-7.65	35.67
232	2032	92.82	0.00	-0.02	10.69
232	1032	92.82	0.00	-6.94	35.37
233	2033	95.58	0.00	-0.64	9.64
233	1033	95.58	0.00	-6.42	34.15
234	2034	98.34	0.00	-1.78	8.87
234	1034	98.34	0.00	-5.54	32.06
235	2035	101.10	0.00	-1.08	4.94
235	1035	101.10	0.00	-2.22	14.71
401	1001	0.00	0.00	-1.60	11.36
401	1	0.00	0.00	-1.75	12.65
402	1002	2.74	0.00	-3.81	27.77
402	2	2.74	0.00	-3.81	30.65
403	1003	5.48	0.00	-6.14	33.33
403	3	5.48	0.00	-6.14	37.97
404	1004	8.22	0.00	-7.98	37.72
404	4	8.22	0.00	-7.98	43.76
405	1005	10.96	0.00	-9.26	40.75
405	5	10.96	0.00	-9.26	47.75
406	1006	13.70	0.00	-10.10	42.34
406	6	13.70	0.00	-10.70	50.24
407	1007	16.44	0.00	-11.06	42.92
407	7	16.44	0.00	-11.18	51.33
408	1008	19.18	0.00	-10.98	42.27
408	8	19.18	0.00	-11.17	50.64
409	1009	21.92	0.00	-10.20	40.27
409	9	21.92	0.00	-10.41	48.09
410	1010	24.66	0.00	-8.93	37.07
410	10	24.66	0.00	-9.26	43.92
411	1011	27.40	0.00	-7.65	34.70
411	11	27.40	0.00	-7.78	40.53
412	1012	30.45	0.00	-5.66	31.98
412	12	30.45	0.00	-6.07	36.45
413	1013	33.50	0.00	-3.60	27.76
413	13	33.50	0.00	-3.81	30.50
414	1014	36.89	0.00	-3.01	29.66
414	14	36.89	0.00	-3.20	31.96
415	1015	40.28	0.00	-5.97	34.54
415	15	40.28	0.00	-6.35	39.15
416	1016	43.67	0.00	-8.79	40.89
416	16	43.67	0.00	-9.16	47.68
417	1017	47.06	0.00	-11.27	46.59
417	17	47.06	0.00	-11.47	55.22
418	1018	50.45	0.00	-12.75	50.74
418	18	50.45	0.00	-13.10	60.62
419	1019	53.84	0.00	-13.64	53.03
419	19	53.84	0.00	-13.94	63.49
420	1020	57.23	0.00	-13.45	53.12
420	20	57.23	0.00	-14.24	63.56
421	1021	60.62	0.00	-12.34	51.25
421	21	60.62	0.00	-13.42	61.03
422	1022	64.01	0.00	-10.48	47.48
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423	1023	67.40	0.00	-7.82	39.99

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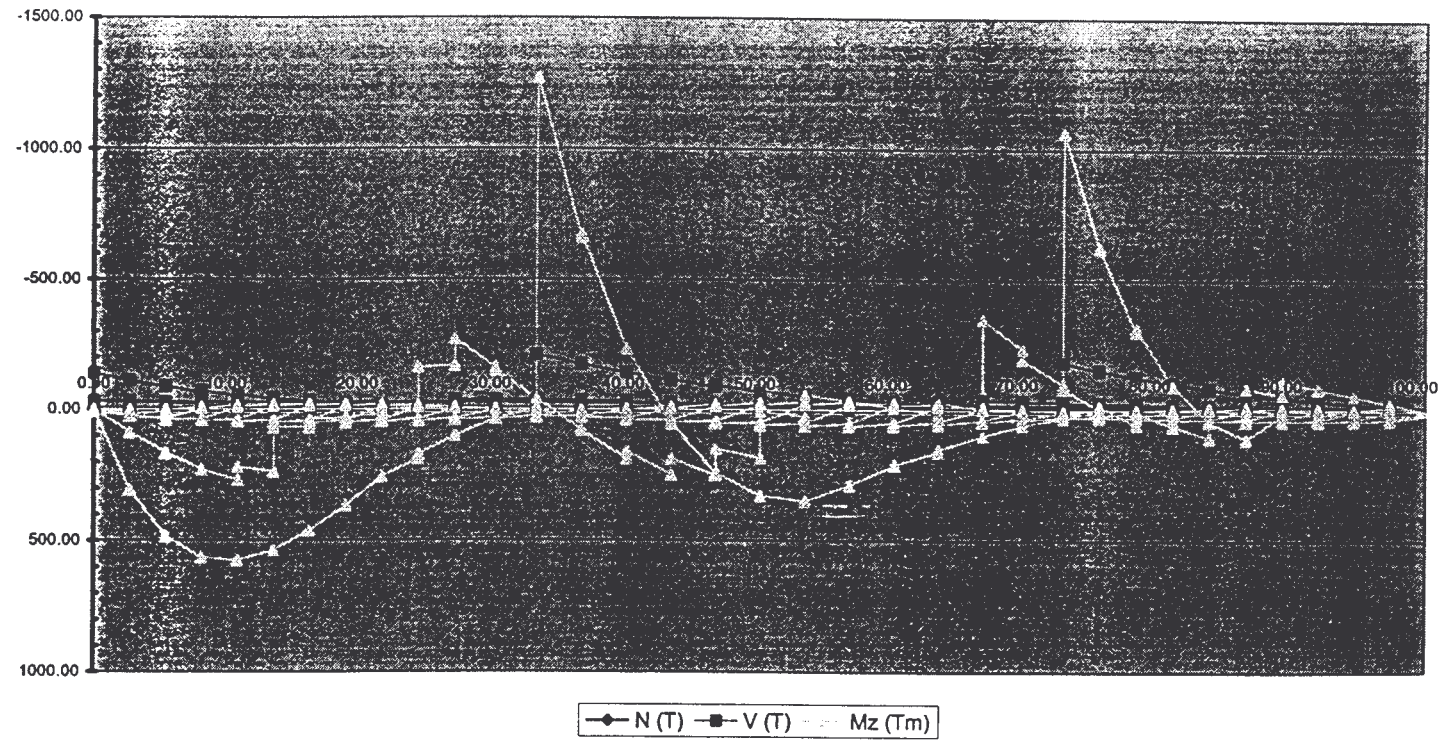
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104	105	10.96	0.00	-14.59	269.27
105	105	10.96	0.00	-5.65	220.79
105	106	13.70	0.00	-5.65	236.27
106	106	13.70	0.00	0.07	68.24
106	107	16.44	0.00	0.07	68.06
107	107	16.44	0.00	1.31	36.30
107	108	19.18	0.00	1.31	32.71
108	108	19.18	0.00	2.50	26.25
108	109	21.92	0.00	2.50	19.39
109	109	21.92	0.00	3.50	1.71
109	110	24.66	0.00	3.50	-7.88
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110	10111	27.40	0.00	2.17	-167.81
111	111	27.40	0.00	-35.73	-269.86
111	112	30.45	0.00	-35.73	-160.89
112	112	30.45	0.00	-35.11	-147.55
112	113	33.50	0.00	-35.11	-40.47
113	113	33.50	0.00	-34.46	-39.95
113	114	36.89	0.00	-34.46	76.87
114	114	36.89	0.00	-31.71	80.84
114	115	40.28	0.00	-31.71	188.34
115	115	40.28	0.00	-26.08	159.04
115	116	43.67	0.00	-26.08	247.44
116	116	43.67	0.00	-18.54	187.43
116	117	47.06	0.00	-18.54	250.29
117	117	47.06	0.00	-10.39	148.76
117	118	50.45	0.00	-10.39	184.00
118	118	50.45	0.00	-6.18	3.85
118	119	53.84	0.00	-6.18	24.79
119	119	53.84	0.00	-6.74	-57.83
119	120	57.23	0.00	-6.74	-34.98
120	120	57.23	0.00	-7.28	-34.97
120	121	60.62	0.00	-7.28	-10.30
121	121	60.62	0.00	-7.51	-10.12
121	122	64.01	0.00	-7.51	15.33
122	122	64.01	0.00	-8.18	-30.19
122	10123	67.40	0.00	-8.18	-2.47
123	123	67.40	0.00	-37.18	-349.04
123	124	70.45	0.00	-37.18	-235.63
124	124	70.45	0.00	-32.20	-196.57
124	125	73.50	0.00	-32.20	-98.37
125	125	73.50	0.00	-28.79	-83.48
125	126	76.26	0.00	-28.79	-4.03
126	126	76.26	0.00	-25.10	-15.79
126	127	79.02	0.00	-25.10	53.50
127	127	79.02	0.00	-20.88	3.99
127	128	81.78	0.00	-20.88	61.63
128	128	81.78	0.00	-15.91	58.41
128	129	84.54	0.00	-15.91	102.32
128	129	84.54	0.00	-10.75	-11.99
129	130	87.30	0.00	-10.75	17.68
130	130	87.30	0.00	-8.83	-86.43
130	131	90.06	0.00	-8.83	-62.05
131	131	90.06	0.00	-9.51	-111.98
131	132	92.82	0.00	-9.51	-85.74
132	132	92.82	0.00	-10.11	-85.50
132	133	95.58	0.00	-10.11	-57.59
133	133	95.58	0.00	-10.36	-57.31
133	134	98.34	0.00	-10.36	-28.71
134	134	98.34	0.00	-10.27	-28.47
134	135	101.10	0.00	-10.27	-0.12
301	101	0.00	0.00	-1.96	-0.66
301	2001	0.00	0.00	-1.96	0.82
302	102	2.74	0.00	-4.19	0.60
302	2002	2.74	0.00	-4.19	3.77
303	103	5.48	0.00	-6.14	-0.70
303	2003	5.48	0.00	-6.14	3.94
304	104	8.22	0.00	-8.13	-9.08
304	2004	8.22	0.00	-8.13	-2.94
305	105	10.96	0.00	-9.84	-15.72
305	2005	10.96	0.00	-9.84	-8.28
306	106	13.70	0.00	-10.98	-19.95
306	2006	13.70	0.00	-10.98	-11.66
307	107	16.44	0.00	-11.48	-21.71
307	2007	16.44	0.00	-11.48	-13.03
308	108	19.18	0.00	-11.35	-21.46
308	2008	19.18	0.00	-11.35	-12.88
309	109	21.92	0.00	-10.61	-19.35
309	2009	21.92	0.00	-10.61	-11.33
310	110	24.66	0.00	-9.33	-15.52

310	2010	24.66	0.00	-9.33	-8.47
311	111	27.40	0.00	-8.00	-10.14
311	2011	27.40	0.00	-8.00	-4.09
312	112	30.45	0.00	-6.21	-3.31
312	2012	30.45	0.00	-6.21	1.38
313	113	33.50	0.00	-4.15	2.12
313	2013	33.50	0.00	-4.15	5.25
314	114	36.89	0.00	-4.44	0.95
314	2014	36.89	0.00	-4.44	4.31
315	115	40.28	0.00	-6.57	-3.13
315	2015	40.28	0.00	-6.57	1.84
316	116	43.67	0.00	-9.37	-12.27
316	2016	43.67	0.00	-9.37	-5.19
317	117	47.06	0.00	-11.83	-21.96
317	2017	47.06	0.00	-11.83	-13.01
318	118	50.45	0.00	-13.73	-28.24
318	2018	50.45	0.00	-13.73	-17.86
319	119	53.84	0.00	-14.81	-31.95
319	2019	53.84	0.00	-14.81	-20.76
320	120	57.23	0.00	-14.91	-32.29
320	2020	57.23	0.00	-14.91	-21.02
321	121	60.62	0.00	-14.04	-29.61
321	2021	60.62	0.00	-14.04	-18.99
322	122	64.01	0.00	-12.20	-22.89
322	2022	64.01	0.00	-12.20	-13.67
323	123	67.40	0.00	-9.06	-13.38
323	2023	67.40	0.00	-9.06	-6.53
324	124	70.45	0.00	-6.30	-4.01
324	2024	70.45	0.00	-6.30	0.76
325	125	73.50	0.00	-3.87	4.58
325	2025	73.50	0.00	-3.87	7.51
326	126	76.26	0.00	-4.04	1.44
326	2026	76.26	0.00	-4.04	4.49
327	127	79.02	0.00	-5.27	-2.47
327	2027	79.02	0.00	-5.27	1.52
328	128	81.78	0.00	-6.53	-5.84
328	2028	81.78	0.00	-6.53	-0.91
329	129	84.54	0.00	-7.55	-9.82
329	2029	84.54	0.00	-7.55	-4.11
330	130	87.30	0.00	-8.17	-11.58
330	2030	87.30	0.00	-8.17	-5.41
331	131	90.06	0.00	-8.29	-11.84
331	2031	90.06	0.00	-8.29	-5.57
332	132	92.82	0.00	-7.93	-10.06
332	2032	92.82	0.00	-7.93	-4.06
333	133	95.58	0.00	-7.14	-6.94
333	2033	95.58	0.00	-7.14	-1.54
334	134	98.34	0.00	-6.06	-2.96
334	2034	98.34	0.00	-6.06	1.61
335	135	101.10	0.00	-2.41	0.71
335	2035	101.10	0.00	-2.41	2.53
201	2001	0.00	0.00	-1.96	0.82
201	1001	0.00	0.00	-1.96	10.20
202	2002	2.74	0.00	-4.19	3.77
202	1002	2.74	0.00	-4.19	23.85
203	2003	5.48	0.00	-6.14	3.94
203	1003	5.48	0.00	-6.14	33.33
204	2004	8.22	0.00	-8.13	-2.94
204	1004	8.22	0.00	-8.13	36.00
205	2005	10.96	0.00	-9.84	-8.28
205	1005	10.96	0.00	-9.84	38.82
206	2006	13.70	0.00	-10.98	-11.66
206	1006	13.70	0.00	-10.98	40.89
207	2007	16.44	0.00	-11.48	-13.03
207	1007	16.44	0.00	-11.48	41.94
208	2008	19.18	0.00	-11.35	-12.88
208	1008	19.18	0.00	-11.35	41.46
209	2009	21.92	0.00	-10.61	-11.33
209	1009	21.92	0.00	-10.61	39.48
210	2010	24.66	0.00	-9.33	-8.47
210	1010	24.66	0.00	-9.33	36.19
211	2011	27.40	0.00	-8.00	-4.09
211	1011	27.40	0.00	-8.00	34.22
212	2012	30.45	0.00	-6.21	1.38
212	1012	30.45	0.00	-6.21	31.09
213	2013	33.50	0.00	-4.15	5.25
213	1013	33.50	0.00	-4.15	25.11
214	2014	36.89	0.00	-4.44	4.31
214	1014	36.89	0.00	-4.44	25.55
215	2015	40.28	0.00	-6.57	1.84
215	1015	40.28	0.00	-6.57	33.29
216	2016	43.67	0.00	-9.37	-5.19
216	1016	43.67	0.00	-9.37	39.70

217	2017	47.06	0.00	-11.83	-13.01
217	1017	47.06	0.00	-11.83	43.65
218	2018	50.45	0.00	-13.73	-17.86
218	1018	50.45	0.00	-13.73	47.90
219	2019	53.84	0.00	-14.81	-20.76
21	1019	53.84	0.00	-14.81	50.14
220	2020	57.23	0.00	-14.91	-21.02
220	1020	57.23	0.00	-14.91	50.36
221	2021	60.62	0.00	-14.04	-18.99
221	1021	60.62	0.00	-14.04	48.23
222	2022	64.01	0.00	-12.20	-13.67
222	1022	64.01	0.00	-12.20	44.74
223	2023	67.40	0.00	-9.06	-6.53
223	1023	67.40	0.00	-9.06	36.86
224	2024	70.45	0.00	-6.30	0.76
224	1024	70.45	0.00	-6.30	30.92
225	2025	73.50	0.00	-3.87	7.51
225	1025	73.50	0.00	-3.87	26.05
226	2026	76.26	0.00	-4.04	4.49
226	1026	76.26	0.00	-4.04	23.84
227	2027	79.02	0.00	-5.27	1.52
227	1027	79.02	0.00	-5.27	26.77
228	2028	81.78	0.00	-6.53	-0.91
228	1028	81.78	0.00	-6.53	30.36
229	2029	84.54	0.00	-7.55	-4.11
229	1029	84.54	0.00	-7.55	32.06
230	2030	87.30	0.00	-8.17	-5.41
230	1030	87.30	0.00	-8.17	33.69
23	2031	90.06	0.00	-8.29	-5.57
231	1031	90.06	0.00	-8.29	34.12
232	2032	92.82	0.00	-7.93	-4.06
232	1032	92.82	0.00	-7.93	33.92
233	2033	95.58	0.00	-7.14	-1.54
233	1033	95.58	0.00	-7.14	32.66
234	2034	98.34	0.00	-6.06	1.61
234	1034	98.34	0.00	-6.06	30.61
235	2035	101.10	0.00	-2.41	2.53
235	1035	101.10	0.00	-2.41	14.07
401	1001	0.00	0.00	-1.96	10.20
401	1	0.00	0.00	-1.96	11.68
402	1002	2.74	0.00	-4.19	23.85
402	2	2.74	0.00	-4.19	27.02
403	1003	5.48	0.00	-6.14	33.33
403	3	5.48	0.00	-6.14	37.97
404	1004	8.22	0.00	-8.13	36.00
404	4	8.22	0.00	-8.13	42.14
405	1005	10.96	0.00	-9.84	38.82
405	5	10.96	0.00	-9.84	46.26
406	1006	13.70	0.00	-10.98	40.89
406	6	13.70	0.00	-10.98	49.19
407	1007	16.44	0.00	-11.48	41.94
40	7	16.44	0.00	-11.48	50.62
406	1008	19.18	0.00	-11.35	41.46
408	8	19.18	0.00	-11.35	50.04
409	1009	21.92	0.00	-10.61	39.48
409	9	21.92	0.00	-10.61	47.50
410	1010	24.66	0.00	-9.33	36.19
410	10	24.66	0.00	-9.33	43.24
411	1011	27.40	0.00	-8.00	34.22
411	11	27.40	0.00	-8.00	40.26
412	1012	30.45	0.00	-6.21	31.09
412	12	30.45	0.00	-6.21	35.78
413	1013	33.50	0.00	-4.15	25.11
413	13	33.50	0.00	-4.15	28.24
414	1014	36.89	0.00	-4.44	25.55
414	14	36.89	0.00	-4.44	28.90
415	1015	40.28	0.00	-6.57	33.29
415	15	40.28	0.00	-6.57	38.26
416	1016	43.67	0.00	-9.37	39.70
416	16	43.67	0.00	-9.37	46.79
417	1017	47.06	0.00	-11.83	43.65
417	17	47.06	0.00	-11.83	52.59
418	1018	50.45	0.00	-13.73	47.90
418	18	50.45	0.00	-13.73	58.28
41	1019	53.84	0.00	-14.81	50.14
416	19	53.84	0.00	-14.81	61.33
420	1020	57.23	0.00	-14.91	50.36
420	20	57.23	0.00	-14.91	61.63
421	1021	60.62	0.00	-14.04	48.23
421	21	60.62	0.00	-14.04	58.84
422	1022	64.01	0.00	-12.20	44.74
422	22	64.01	0.00	-12.20	53.96
423	1023	67.40	0.00	-9.06	36.86

423	23	67.40	0.00	-9.06	43.72
424	1024	70.45	0.00	-6.30	30.92
424	24	70.45	0.00	-6.30	35.68
425	1025	73.50	0.00	-3.87	26.05
425	25	73.50	0.00	-3.87	28.98
426	1026	76.26	0.00	-4.04	23.84
426	26	76.26	0.00	-4.04	26.89
427	1027	79.02	0.00	-5.27	26.77
427	27	79.02	0.00	-5.27	30.76
428	1028	81.78	0.00	-6.53	30.36
428	28	81.78	0.00	-6.53	35.30
429	1029	84.54	0.00	-7.55	32.06
429	29	84.54	0.00	-7.55	37.77
430	1030	87.30	0.00	-8.16	33.69
430	30	87.30	0.00	-8.16	39.86
431	1031	90.06	0.00	-8.29	34.12
431	31	90.06	0.00	-8.29	40.39
432	1032	92.82	0.00	-7.93	33.92
432	32	92.82	0.00	-7.93	39.92
433	1033	95.58	0.00	-7.14	32.66
433	33	95.58	0.00	-7.14	38.06
434	1034	98.34	0.00	-6.06	30.61
434	34	98.34	0.00	-6.06	35.19
435	1035	101.10	0.00	-2.41	14.07
435	35	101.10	0.00	-2.41	15.89

GRÁFICO DE ESFUERZOS



voivente de tren de cargas plano genérico. MX-

IZQINT2 yTren.Nudo1.Pos2.Mx+ + [0; 1]IZQINT2.PaseoTren.Nudo1.Pos3.Mx+ + [0; 1]IZQINT2.PaseoTren.Nudo3.Pos2.Mx+ + [0; 1]IZQINT2.PaseoTren.Nudo4.Pos

exc

arra	Nudo	X	N (T)	Vy (T)	Mz (Tm)
1	1	0.00	0.00	-43.35	-0.72
1	2	2.74	0.00	-54.51	193.43
2	2	2.74	0.00	-18.27	90.49
2	3	5.48	0.00	-4.24	197.05
3	3	5.48	0.00	-6.68	196.62
3	4	8.22	0.00	9.71	300.37
4	4	8.22	0.00	6.28	300.00
4	5	10.96	0.00	24.72	384.91
5	5	10.96	0.00	20.32	384.69
5	6	13.70	0.00	40.51	437.68
6	6	13.70	0.00	35.24	437.70
6	7	16.44	0.00	54.70	478.23
7	7	16.44	0.00	48.54	478.55
7	8	19.18	0.00	69.61	472.47
8	8	19.18	0.00	62.20	447.28
8	9	21.92	0.00	85.50	410.94
9	9	21.92	0.00	77.72	389.35
9	10	24.66	0.00	101.40	265.45
10	10	24.66	0.00	101.03	181.23
10	11	27.40	0.00	126.41	-34.17
11	11	27.40	0.00	127.88	-128.85
11	12	30.45	0.00	160.01	-490.80
12	12	30.45	0.00	157.48	-488.79
12	10013	33.50	0.00	191.24	-985.91
13	13	33.50	0.00	-89.56	-1024.16
13	14	36.89	0.00	-82.33	-685.97
14	14	36.89	0.00	-63.65	-628.21
14	15	40.28	0.00	-53.31	-335.02
15	15	40.28	0.00	-42.34	-336.93
15	16	43.67	0.00	-29.97	-51.00
16	16	43.67	0.00	-15.72	-86.77
16	17	47.06	0.00	2.03	104.02
17	17	47.06	0.00	-0.91	103.80
17	18	50.45	0.00	19.11	261.89
18	18	50.45	0.00	14.36	261.68
18	19	53.84	0.00	36.73	369.55
19	19	53.84	0.00	29.44	333.74
19	20	57.23	0.00	53.25	381.95
20	20	57.23	0.00	45.82	382.32
20	21	60.62	0.00	71.80	356.57
21	21	60.62	0.00	63.63	357.44
21	22	64.01	0.00	93.97	252.41
22	22	64.01	0.00	85.81	253.91
22	23	67.40	0.00	114.70	23.82
23	23	67.40	0.00	89.72	37.85
23	24	70.45	0.00	115.34	-215.67
24	24	70.45	0.00	90.89	-122.33
24	10025	73.50	0.00	118.52	-415.04
25	25	73.50	0.00	-19.99	-262.46
25	26	76.26	0.00	-20.44	-304.57
26	26	76.26	0.00	-16.53	-189.43
26	27	79.02	0.00	-13.63	-176.20
27	27	79.02	0.00	-15.26	-175.89
27	28	81.78	0.00	-5.43	-33.59
28	28	81.78	0.00	-7.49	-33.53
28	29	84.54	0.00	5.26	105.13
29	29	84.54	0.00	-0.72	60.78
29	30	87.30	0.00	14.46	193.43
30	30	87.30	0.00	7.54	125.54
30	31	90.06	0.00	24.97	236.24
31	31	90.06	0.00	16.81	194.63
31	32	92.82	0.00	36.48	269.00
32	32	92.82	0.00	32.10	269.25
32	33	95.58	0.00	54.55	278.17
33	33	95.58	0.00	49.84	278.71
33	34	98.34	0.00	75.44	197.98
34	34	98.34	0.00	70.82	198.82
34	35	101.10	0.00	102.69	-0.48
101	101	0.00	0.00	-24.75	1.31
101	102	2.74	0.00	-24.75	69.12
102	102	2.74	0.00	-22.17	67.61
102	103	5.48	0.00	-22.17	128.36

103	103	5.48	0.00	-13.96	102.12
103	104	8.22	0.00	-13.96	140.38
104	104	8.22	0.00	-1.55	64.46
104	105	10.96	0.00	-1.55	68.72
105	105	10.96	0.00	6.69	-14.65
105	106	13.70	0.00	6.69	-32.98
106	106	13.70	0.00	9.31	-89.21
106	107	16.44	0.00	9.31	-114.72
107	107	16.44	0.00	8.96	-124.19
107	108	19.18	0.00	8.96	-148.76
108	108	19.18	0.00	7.59	-150.63
108	109	21.92	0.00	7.59	-171.42
109	109	21.92	0.00	6.41	-171.61
109	110	24.66	0.00	6.41	-189.18
110	110	24.66	0.00	5.06	-189.21
110	10111	27.40	0.00	5.06	-203.08
111	111	27.40	0.00	-29.56	-202.86
111	112	30.45	0.00	-29.56	-112.71
112	112	30.45	0.00	-30.64	-112.01
112	113	33.50	0.00	-30.64	-18.54
113	113	33.50	0.00	-30.48	-17.03
113	114	36.89	0.00	-30.48	86.28
114	114	36.89	0.00	-26.77	82.16
114	115	40.28	0.00	-26.77	172.92
115	115	40.28	0.00	-21.27	175.42
115	116	43.67	0.00	-21.27	247.53
116	116	43.67	0.00	-12.62	245.68
116	117	47.06	0.00	-12.62	288.47
117	117	47.06	0.00	-2.06	268.42
117	118	50.45	0.00	-2.06	275.39
118	118	50.45	0.00	8.55	236.43
118	119	53.84	0.00	8.55	207.44
119	119	53.84	0.00	14.54	116.08
119	120	57.23	0.00	14.54	66.78
120	120	57.23	0.00	11.96	-38.72
120	121	60.62	0.00	11.96	-79.27
121	121	60.62	0.00	9.28	-103.60
121	122	64.01	0.00	9.28	-135.08
122	122	64.01	0.00	8.19	-133.36
122	10123	67.40	0.00	8.19	-161.11
123	123	67.40	0.00	-29.82	-161.05
123	124	70.45	0.00	-29.82	-70.09
124	124	70.45	0.00	-27.01	-65.00
124	125	73.50	0.00	-27.01	17.39
125	125	73.50	0.00	-25.18	18.22
125	126	76.26	0.00	-25.18	87.71
126	126	76.26	0.00	-22.16	88.90
126	127	79.02	0.00	-22.16	150.05
127	127	79.02	0.00	-17.59	151.28
127	128	81.78	0.00	-17.59	199.84
128	128	81.78	0.00	-11.62	200.92
128	129	84.54	0.00	-11.62	232.99
129	129	84.54	0.00	-4.55	233.74
129	130	87.30	0.00	-4.55	246.31
130	130	87.30	0.00	3.16	246.65
130	131	90.06	0.00	3.16	237.92
131	131	90.06	0.00	11.02	237.80
131	132	92.82	0.00	11.02	207.38
132	132	92.82	0.00	18.83	211.02
132	133	95.58	0.00	18.83	159.06
133	133	95.58	0.00	19.14	120.06
133	134	98.34	0.00	19.14	67.23
134	134	98.34	0.00	14.40	39.95
134	135	101.10	0.00	14.40	0.21
301	101	0.00	0.00	-1.32	-0.67
301	2001	0.00	0.00	-1.32	0.33
302	102	2.74	0.00	-1.98	0.77
302	2002	2.74	0.00	-1.98	2.26
303	103	5.48	0.00	-1.94	1.87
303	2003	5.48	0.00	-1.94	3.34
304	104	8.22	0.00	-1.26	4.01
304	2004	8.22	0.00	-1.26	4.96
305	105	10.96	0.00	-0.60	6.08
305	2005	10.96	0.00	-0.60	6.54
306	106	13.70	0.00	-2.16	3.56
306	2006	13.70	0.00	-2.16	5.19
307	107	16.44	0.00	-3.42	1.04
307	2007	16.44	0.00	-3.42	3.63
308	108	19.18	0.00	-5.92	-6.34
308	2008	19.18	0.00	-5.92	-1.86
309	109	21.92	0.00	-6.69	-7.86
309	2009	21.92	0.00	-6.69	-2.80
310	110	24.66	0.00	-8.89	-10.02

310	2010	24.66	0.00	-6.89	-4.81	217	2017	47.06	0.00	0.73	15.22
311	111	27.40	0.00	-7.30	-10.80	217	1017	47.06	0.00	0.73	11.72
311	2011	27.40	0.00	-7.30	-5.28	218	2018	50.45	0.00	-2.09	6.05
312	112	30.45	0.00	-5.47	-3.24	218	1018	50.45	0.00	-2.09	16.06
312	2012	30.45	0.00	-5.47	0.89	219	2019	53.84	0.00	-4.19	1.05
313	113	33.50	0.00	-2.94	5.03	219	1019	53.84	0.00	-4.19	21.12
313	2013	33.50	0.00	-2.94	7.25	220	2020	57.23	0.00	-8.24	-6.67
314	114	36.89	0.00	-0.78	12.08	220	1020	57.23	0.00	-8.24	32.78
314	2014	36.89	0.00	-0.78	12.67	221	2021	60.62	0.00	-10.20	-9.93
315	115	40.28	0.00	0.61	15.57	221	1021	60.62	0.00	-10.20	38.91
315	2015	40.28	0.00	0.61	15.11	222	2022	64.01	0.00	-10.44	-10.50
316	116	43.67	0.00	0.37	14.83	222	1022	64.01	0.00	-10.44	39.47
316	2016	43.67	0.00	0.37	14.55	223	2023	67.40	0.00	-8.42	-7.88
317	117	47.06	0.00	0.73	15.77	223	1023	67.40	0.00	-8.42	32.42
317	2017	47.06	0.00	0.73	15.22	224	2024	70.45	0.00	-5.32	-1.42
318	118	50.45	0.00	-2.09	4.46	224	1024	70.45	0.00	-5.32	24.04
318	2018	50.45	0.00	-2.09	6.05	225	2025	73.50	0.00	-2.35	4.79
319	119	53.84	0.00	-4.19	-2.12	225	1025	73.50	0.00	-2.35	16.05
319	2019	53.84	0.00	-4.19	1.05	226	2026	76.26	0.00	-0.66	8.08
320	120	57.23	0.00	-8.24	-12.90	226	1026	76.26	0.00	-0.66	11.25
320	2020	57.23	0.00	-8.24	-6.67	227	2027	79.02	0.00	0.30	10.15
321	121	60.62	0.00	-10.20	-17.65	227	1027	79.02	0.00	0.30	8.70
321	2021	60.62	0.00	-10.20	-9.93	228	2028	81.78	0.00	0.60	10.92
322	122	64.01	0.00	-10.44	-18.39	228	1028	81.78	0.00	0.60	8.02
322	2022	64.01	0.00	-10.44	-10.50	229	2029	84.54	0.00	0.41	10.78
323	123	67.40	0.00	-8.42	-14.24	229	1029	84.54	0.00	0.41	8.80
323	2023	67.40	0.00	-8.42	-7.88	230	2030	87.30	0.00	-1.87	3.01
324	124	70.45	0.00	-5.32	-5.44	230	1030	87.30	0.00	-1.87	11.95
324	2024	70.45	0.00	-5.32	-1.42	231	2031	90.06	0.00	-4.95	-3.10
325	125	73.50	0.00	-2.35	3.02	231	1031	90.06	0.00	-4.95	20.60
325	2025	73.50	0.00	-2.35	4.79	232	2032	92.82	0.00	-6.07	-4.64
326	126	76.26	0.00	-0.66	7.58	232	1032	92.82	0.00	-6.07	24.40
326	2026	76.26	0.00	-0.66	8.08	233	2033	95.58	0.00	-5.72	-2.89
327	127	79.02	0.00	0.30	10.38	233	1033	95.58	0.00	-5.72	24.52
327	2027	79.02	0.00	0.30	10.15	234	2034	98.34	0.00	-4.24	0.41
328	128	81.78	0.00	0.60	11.37	234	1034	98.34	0.00	-4.24	20.73
328	2028	81.78	0.00	0.60	10.92	235	2035	101.10	0.00	-1.67	1.80
329	129	84.54	0.00	0.41	11.09	235	1035	101.10	0.00	-1.67	9.81
329	2029	84.54	0.00	0.41	10.78	401	1001	0.00	0.00	-1.32	6.65
330	130	87.30	0.00	-1.87	1.60	401	1	0.00	0.00	-1.32	7.65
330	2030	87.30	0.00	-1.87	3.01	402	1002	2.74	0.00	-1.98	11.72
331	131	90.06	0.00	-4.95	-6.84	402	2	2.74	0.00	-1.98	13.22
331	2031	90.06	0.00	-4.95	-3.10	403	1003	5.48	0.00	-1.94	12.61
332	132	92.82	0.00	-6.07	-9.23	403	3	5.48	0.00	-1.94	14.07
332	2032	92.82	0.00	-6.07	-4.64	404	1004	8.22	0.00	-1.26	10.99
333	133	95.58	0.00	-5.72	-7.22	404	4	8.22	0.00	-1.26	11.94
333	2033	95.58	0.00	-5.72	-2.89	405	1005	10.96	0.00	-0.60	9.42
334	134	98.34	0.00	-4.24	-2.80	405	5	10.96	0.00	-0.60	9.87
334	2034	98.34	0.00	-4.24	0.41	406	1006	13.70	0.00	-2.16	15.55
335	135	101.10	0.00	-1.67	0.54	406	6	13.70	0.00	-2.16	17.19
335	2035	101.10	0.00	-1.67	1.80	407	1007	16.44	0.00	-3.42	20.02
201	2001	0.00	0.00	-1.32	0.33	407	7	16.44	0.00	-3.42	22.61
201	1001	0.00	0.00	-1.32	6.65	408	1008	19.18	0.00	-5.92	26.48
202	2002	2.74	0.00	-1.98	2.26	408	8	19.18	0.00	-5.92	30.96
202	1002	2.74	0.00	-1.98	11.72	409	1009	21.92	0.00	-6.69	29.21
203	2003	5.48	0.00	-1.94	3.34	409	9	21.92	0.00	-6.69	34.27
203	1003	5.48	0.00	-1.94	12.61	410	1010	24.66	0.00	-6.89	28.16
204	2004	8.22	0.00	-1.26	4.96	410	10	24.66	0.00	-6.89	33.36
204	1004	8.22	0.00	-1.26	10.99	411	1011	27.40	0.00	-7.30	29.68
205	2005	10.96	0.00	-0.60	6.54	411	11	27.40	0.00	-7.30	35.20
205	1005	10.96	0.00	-0.60	9.42	412	1012	30.45	0.00	-5.47	27.07
206	2006	13.70	0.00	-2.16	5.19	412	12	30.45	0.00	-5.47	31.20
206	1006	13.70	0.00	-2.16	15.55	413	1013	33.50	0.00	-2.94	21.35
207	2007	16.44	0.00	-3.42	3.63	413	13	33.50	0.00	-2.94	23.58
207	1007	16.44	0.00	-3.42	20.02	414	1014	36.89	0.00	-0.78	16.39
208	2008	19.18	0.00	-5.92	-1.86	414	14	36.89	0.00	-0.78	16.97
208	1008	19.18	0.00	-5.92	26.48	415	1015	40.28	0.00	0.61	12.17
209	2009	21.92	0.00	-6.69	-2.80	415	15	40.28	0.00	0.61	11.71
209	1009	21.92	0.00	-6.69	29.21	416	1016	43.67	0.00	0.37	12.78
210	2010	24.66	0.00	-6.89	-4.81	416	16	43.67	0.00	0.37	12.50
210	1010	24.66	0.00	-6.89	28.16	417	1017	47.06	0.00	0.73	11.72
211	2011	27.40	0.00	-7.30	-5.28	417	17	47.06	0.00	0.73	11.17
211	1011	27.40	0.00	-7.30	29.68	418	1018	50.45	0.00	-2.09	16.06
212	2012	30.45	0.00	-5.47	0.89	418	18	50.45	0.00	-2.09	17.64
212	1012	30.45	0.00	-5.47	27.07	419	1019	53.84	0.00	-4.19	21.12
213	2013	33.50	0.00	-2.94	7.25	419	19	53.84	0.00	-4.19	24.28
213	1013	33.50	0.00	-2.94	21.35	420	1020	57.23	0.00	-8.24	32.78
214	2014	36.89	0.00	-0.78	12.67	420	20	57.23	0.00	-8.24	39.01
214	1014	36.89	0.00	-0.78	16.39	421	1021	60.62	0.00	-10.20	38.91
215	2015	40.28	0.00	0.61	15.11	421	21	60.62	0.00	-10.20	46.62
215	1015	40.28	0.00	0.61	12.17	422	1022	64.01	0.00	-10.44	39.47
216	2016	43.67	0.00	0.37	14.55	422	22	64.01	0.00	-10.44	47.36
216	1016	43.67	0.00	0.37	12.78	423	1023	67.40	0.00	-8.42	32.42

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Coef. exc:

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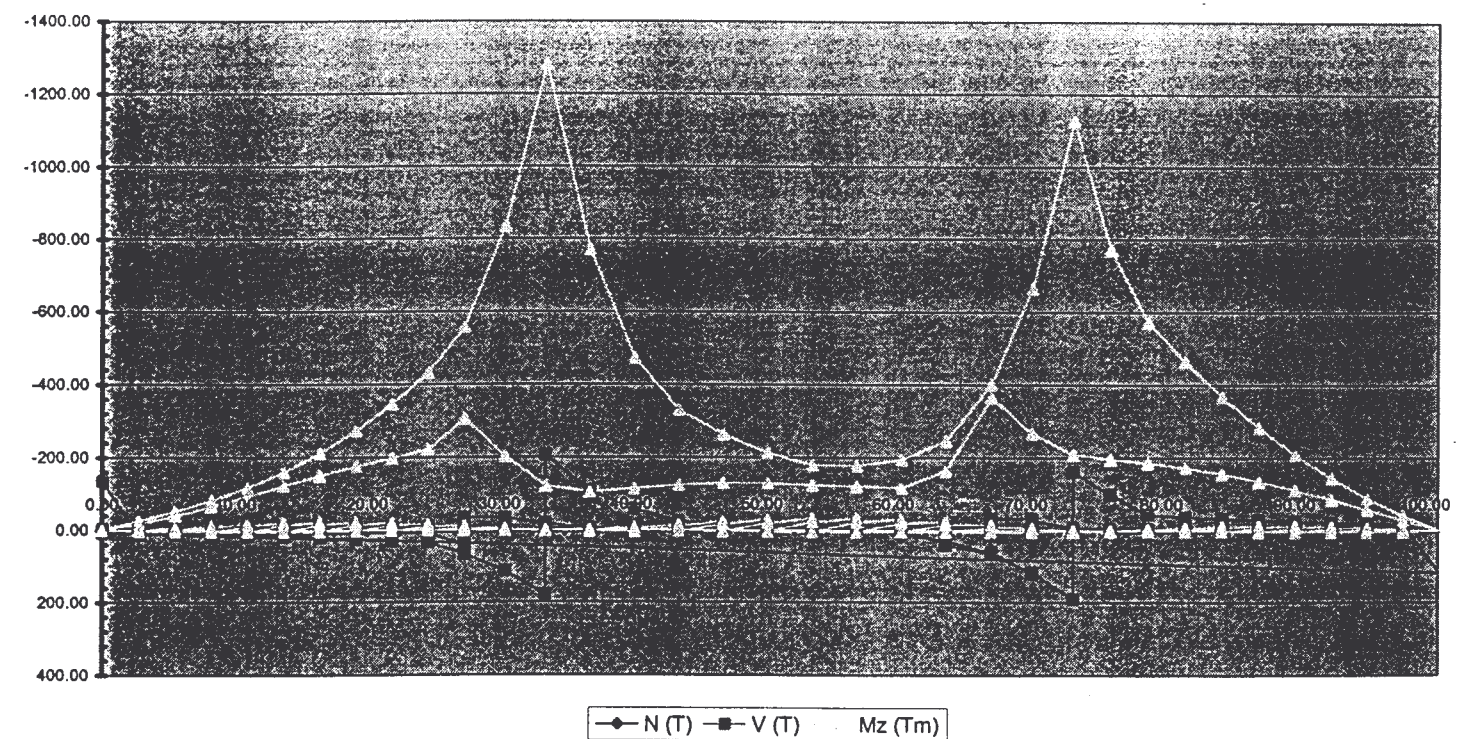
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103	104	8.22	0.00	9.32	-65.54
104	104	8.22	0.00	10.06	-66.07
104	105	10.96	0.00	10.10	-93.70
105	105	10.96	0.00	10.30	-94.22
105	106	13.70	0.00	10.30	-122.43
106	106	13.70	0.00	9.96	-122.92
106	107	16.44	0.00	9.96	-150.20
107	107	16.44	0.00	9.11	-150.64
107	108	19.18	0.00	9.11	-175.59
108	108	19.18	0.00	7.79	-175.94
108	109	21.92	0.00	8.59	-197.89
109	109	21.92	0.00	7.24	-198.11
109	110	24.66	0.00	10.57	-221.91
110	110	24.66	0.00	9.46	-221.98
110	10111	27.40	0.00	39.90	-305.65
111	111	27.40	0.00	-34.31	-307.07
111	112	30.45	0.00	-33.95	-202.92
112	112	30.45	0.00	-32.21	-204.00
112	113	33.50	0.00	-18.05	-121.74
113	113	33.50	0.00	-18.73	-122.72
113	114	36.89	0.00	0.71	-104.47
114	114	36.89	0.00	0.22	-105.72
114	115	40.28	0.00	3.53	-114.59
115	115	40.28	0.00	2.56	-115.55
115	116	43.67	0.00	2.68	-124.45
116	116	43.67	0.00	1.20	-125.04
116	117	47.06	0.00	1.36	-129.40
117	117	47.06	0.00	-0.23	-129.77
117	118	50.45	0.00	-0.17	-129.08
118	118	50.45	0.00	-1.75	-129.28
118	119	53.84	0.00	0.33	-124.41
119	119	53.84	0.00	-0.85	-124.62
119	120	57.23	0.00	-0.61	-121.81
120	120	57.23	0.00	-1.66	-121.91
120	121	60.62	0.00	-0.85	-117.33
121	121	60.62	0.00	-1.27	-117.31
121	122	64.01	0.00	34.92	-164.39
122	122	64.01	0.00	40.29	-165.34
122	10123	67.40	0.00	64.82	-365.00
123	123	67.40	0.00	-33.01	-367.15
123	124	70.45	0.00	-32.82	-266.73
124	124	70.45	0.00	-27.44	-268.64
124	125	73.50	0.00	-7.60	-207.32
125	125	73.50	0.00	-5.45	-209.15
125	126	76.26	0.00	-4.30	-196.11
126	126	76.26	0.00	-4.19	-197.27
126	127	79.02	0.00	-4.19	-185.70
127	127	79.02	0.00	-4.95	-186.41
127	128	81.78	0.00	-4.95	-172.76
128	128	81.78	0.00	-6.13	-173.13
128	129	84.54	0.00	-6.13	-156.21
129	129	84.54	0.00	-7.41	-156.34
129	130	87.30	0.00	-7.41	-135.89
130	130	87.30	0.00	-8.58	-135.83
130	131	90.06	0.00	-8.58	-112.15
131	131	90.06	0.00	-9.51	-111.98
131	132	92.82	0.00	-9.51	-85.74
132	132	92.82	0.00	-10.11	-85.50
132	133	95.58	0.00	-10.11	-57.59
133	133	95.58	0.00	-10.36	-57.31
133	134	98.34	0.00	-10.36	-28.71
134	134	98.34	0.00	-10.27	-28.47
134	135	101.10	0.00	-3.33	-0.21
301	101	0.00	0.00	-1.76	-1.56
301	2001	0.00	0.00	-1.52	-0.31
302	102	2.74	0.00	-3.45	-2.43
302	2002	2.74	0.00	-2.19	-0.15
303	103	5.48	0.00	-4.41	-5.78
303	2003	5.48	0.00	-4.04	-2.47
304	104	8.22	0.00	-7.60	-12.29
304	2004	8.22	0.00	-7.13	-6.71
305	105	10.96	0.00	-9.34	-17.88
305	2005	10.96	0.00	-9.34	-10.81
306	106	13.70	0.00	-10.59	-21.45
306	2006	13.70	0.00	-10.39	-13.52
307	107	16.44	0.00	-11.01	-22.98
307	2007	16.44	0.00	-10.73	-14.70
308	108	19.18	0.00	-10.76	-22.46
308	2008	19.18	0.00	-10.53	-14.41
309	109	21.92	0.00	-10.19	-20.11
309	2009	21.92	0.00	-9.68	-12.67
310	110	24.66	0.00	-8.88	-16.09

310	2010	24.66	0.00	-8.28	-9.59
311	111	27.40	0.00	-7.57	-11.25
311	2011	27.40	0.00	-6.63	-5.88
312	112	30.45	0.00	-4.91	-5.03
312	2012	30.45	0.00	-4.36	-1.43
313	113	33.50	0.00	-2.99	-1.08
313	2013	33.50	0.00	-1.60	0.68
314	114	36.89	0.00	-3.23	-1.78
314	2014	36.89	0.00	-2.29	0.17
315	115	40.28	0.00	-5.13	-7.39
315	2015	40.28	0.00	-5.13	-3.51
316	116	43.67	0.00	-8.49	-15.87
316	2016	43.67	0.00	-8.49	-9.45
317	117	47.06	0.00	-11.48	-24.01
317	2017	47.06	0.00	-11.27	-15.39
318	118	50.45	0.00	-13.39	-29.95
318	2018	50.45	0.00	-13.12	-19.89
319	119	53.84	0.00	-14.63	-33.25
319	2019	53.84	0.00	-14.18	-22.36
320	120	57.23	0.00	-14.51	-33.49
320	2020	57.23	0.00	-14.51	-22.52
321	121	60.62	0.00	-13.58	-30.62
321	2021	60.62	0.00	-13.58	-20.35
322	122	64.01	0.00	-11.62	-24.60
322	2022	64.01	0.00	-11.62	-15.82
323	123	67.40	0.00	-8.58	-15.11
323	2023	67.40	0.00	-8.12	-8.74
324	124	70.45	0.00	-5.02	-6.34
324	2024	70.45	0.00	-4.79	-2.62
325	125	73.50	0.00	-2.61	-1.35
325	2025	73.50	0.00	-1.82	0.31
326	126	76.26	0.00	-2.62	-1.62
326	2026	76.26	0.00	-1.79	0.17
327	127	79.02	0.00	-4.48	-4.72
327	2027	79.02	0.00	-3.74	-1.65
328	128	81.78	0.00	-5.77	-8.66
328	2028	81.78	0.00	-5.50	-4.33
329	129	84.54	0.00	-7.07	-11.76
329	2029	84.54	0.00	-6.79	-6.55
330	130	87.30	0.00	-7.72	-13.55
330	2030	87.30	0.00	-7.15	-7.81
331	131	90.06	0.00	-7.83	-13.79
331	2031	90.06	0.00	-7.63	-7.97
332	132	92.82	0.00	-7.44	-12.40
332	2032	92.82	0.00	-7.20	-6.89
333	133	95.58	0.00	-6.58	-9.47
333	2033	95.58	0.00	-6.06	-4.65
334	134	98.34	0.00	-5.49	-5.29
334	2034	98.34	0.00	-3.85	-1.84
335	135	101.10	0.00	-1.57	-1.23
335	2035	101.10	0.00	-0.96	-0.15
201	2001	0.00	0.00	-1.52	-0.31
201	1001	0.00	0.00	0.64	0.64
202	2002	2.74	0.00	-2.19	-0.15
202	1002	2.74	0.00	-0.35	2.51
203	2003	5.48	0.00	-4.04	-2.47
203	1003	5.48	0.00	-0.53	2.95
204	2004	8.22	0.00	-7.13	-6.71
204	1004	8.22	0.00	-0.67	3.29
205	2005	10.96	0.00	-9.34	-10.81
205	1005	10.96	0.00	-0.77	3.53
206	2006	13.70	0.00	-10.39	-13.52
206	1006	13.70	0.00	-0.65	3.64
207	2007	16.44	0.00	-10.73	-14.70
207	1007	16.44	0.00	0.23	3.19
208	2008	19.18	0.00	-10.53	-14.41
208	1008	19.18	0.00	1.09	2.35
209	2009	21.92	0.00	-9.68	-12.67
209	1009	21.92	0.00	1.49	1.51
210	2010	24.66	0.00	-8.28	-9.59
210	1010	24.66	0.00	1.82	0.86
211	2011	27.40	0.00	-6.63	-5.88
211	1011	27.40	0.00	2.10	0.57
212	2012	30.45	0.00	-4.36	-1.43
212	1012	30.45	0.00	1.98	0.95
213	2013	33.50	0.00	-1.60	0.68
213	1013	33.50	0.00	0.92	1.98
214	2014	36.89	0.00	-2.29	0.17
214	1014	36.89	0.00	-0.24	2.67
215	2015	40.28	0.00	-5.13	-3.51
215	1015	40.28	0.00	0.63	2.73
216	2016	43.67	0.00	-8.49	-9.45
216	1016	43.67	0.00	0.79	2.71

217	2017	47.06	0.00	-11.27	-15.39
217	1017	47.06	0.00	0.76	3.03
218	2018	50.45	0.00	-13.12	-19.89
218	1018	50.45	0.00	0.29	3.54
219	2019	53.84	0.00	-14.18	-22.36
219	1019	53.84	0.00	0.02	4.03
220	2020	57.23	0.00	-14.51	-22.52
220	1020	57.23	0.00	-0.35	4.38
221	2021	60.62	0.00	-13.58	-20.35
221	1021	60.62	0.00	-0.70	4.44
222	2022	64.01	0.00	-11.62	-15.82
222	1022	64.01	0.00	-0.86	4.15
223	2023	67.40	0.00	-8.12	-8.74
223	1023	67.40	0.00	-0.65	3.53
224	2024	70.45	0.00	-4.79	-2.62
224	1024	70.45	0.00	-0.47	3.08
225	2025	73.50	0.00	-1.82	0.31
225	1025	73.50	0.00	-0.32	2.55
226	2026	76.26	0.00	-1.79	0.17
226	1026	76.26	0.00	-0.30	2.40
227	2027	79.02	0.00	-3.74	-1.65
227	1027	79.02	0.00	-0.34	2.51
228	2028	81.78	0.00	-5.50	-4.33
228	1028	81.78	0.00	0.28	2.50
229	2029	84.54	0.00	-6.79	-6.55
229	1029	84.54	0.00	0.24	2.56
230	2030	87.30	0.00	-7.15	-7.81
230	1030	87.30	0.00	0.14	2.76
231	2031	90.06	0.00	-7.63	-7.97
231	1031	90.06	0.00	0.03	2.99
232	2032	92.82	0.00	-7.20	-6.89
232	1032	92.82	0.00	-0.57	3.05
233	2033	95.58	0.00	-6.06	-4.65
233	1033	95.58	0.00	-0.53	2.96
234	2034	98.34	0.00	-3.85	-1.84
234	1034	98.34	0.00	-0.46	2.80
235	2035	101.10	0.00	-0.96	-0.15
235	1035	101.10	0.00	-0.19	1.30
401	1001	0.00	0.00	0.64	0.64
401	1	0.00	0.00	0.79	0.07
402	1002	2.74	0.00	-0.35	2.51
402	2	2.74	0.00	-0.35	2.77
403	1003	5.48	0.00	-0.53	2.95
403	3	5.48	0.00	-0.53	3.35
404	1004	8.22	0.00	-0.67	3.29
404	4	8.22	0.00	-0.67	3.80
405	1005	10.96	0.00	-0.77	3.53
405	5	10.96	0.00	-0.77	4.11
406	1006	13.70	0.00	-0.65	3.64
406	6	13.70	0.00	-0.06	3.87
407	1007	16.44	0.00	0.23	3.19
407	7	16.44	0.00	0.67	2.74
408	1008	19.18	0.00	1.09	2.35
408	8	19.18	0.00	1.28	1.46
409	1009	21.92	0.00	1.49	1.51
409	9	21.92	0.00	1.70	0.28
410	1010	24.66	0.00	1.82	0.86
410	10	24.66	0.00	2.14	-0.62
411	1011	27.40	0.00	2.10	0.57
411	11	27.40	0.00	2.26	-1.08
412	1012	30.45	0.00	1.98	0.95
412	12	30.45	0.00	2.39	-0.74
413	1013	33.50	0.00	0.92	1.98
413	13	33.50	0.00	1.48	1.26
414	1014	36.89	0.00	-0.24	2.67
414	14	36.89	0.00	-0.06	2.83
415	1015	40.28	0.00	0.63	2.73
415	15	40.28	0.00	1.00	2.16
416	1016	43.67	0.00	0.79	2.71
416	16	43.67	0.00	1.55	1.78
417	1017	47.06	0.00	0.76	3.03
417	17	47.06	0.00	1.35	2.07
418	1018	50.45	0.00	0.29	3.54
418	18	50.45	0.00	1.01	2.84
419	1019	53.84	0.00	0.02	4.03
419	19	53.84	0.00	0.64	3.71
420	1020	57.23	0.00	-0.35	4.38
420	20	57.23	0.00	0.70	4.33
421	1021	60.62	0.00	-0.70	4.44
421	21	60.62	0.00	0.39	4.52
422	1022	64.01	0.00	-0.86	4.15
422	22	64.01	0.00	0.08	4.47
423	1023	67.40	0.00	-0.65	3.53

423	23	67.40	0.00	-0.27	3.99
424	1024	70.45	0.00	-0.47	3.08
424	24	70.45	0.00	-0.47	3.43
425	1025	73.50	0.00	-0.32	2.55
425	25	73.50	0.00	-0.32	2.80
426	1026	76.26	0.00	-0.30	2.40
426	26	76.26	0.00	-0.30	2.63
427	1027	79.02	0.00	-0.34	2.51
427	27	79.02	0.00	0.37	2.49
428	1028	81.78	0.00	0.28	2.50
428	28	81.78	0.00	0.66	2.11
429	1029	84.54	0.00	0.24	2.56
429	29	84.54	0.00	0.96	2.00
430	1030	87.30	0.00	0.14	2.76
430	30	87.30	0.00	0.83	2.31
431	1031	90.06	0.00	0.03	2.99
431	31	90.06	0.00	0.36	2.85
432	1032	92.82	0.00	-0.57	3.05
432	32	92.82	0.00	0.06	3.23
433	1033	95.58	0.00	-0.53	2.96
433	33	95.58	0.00	-0.40	3.35
434	1034	98.34	0.00	-0.46	2.80
434	34	98.34	0.00	-0.46	3.15
435	1035	101.10	0.00	-0.19	1.30
435	35	101.10	0.00	-0.19	1.44

GRÁFICO DE ESFUERZOS



of 1000

103	103	5.48	0.00	27.35	-0.08
103	104	8.22	0.00	39.15	17.90
104	104	8.22	0.00	38.22	18.15
104	105	10.96	0.00	52.51	18.89
105	105	10.96	0.00	51.32	19.17
105	106	13.70	0.00	70.47	115.71
106	106	13.70	0.00	67.99	116.13
106	107	16.44	0.00	90.32	44.46
107	107	16.44	0.00	87.74	45.04
107	108	19.18	0.00	112.49	-102.92
108	108	19.18	0.00	110.10	-102.25
108	109	21.92	0.00	137.26	-342.31
109	109	21.92	0.00	135.24	-341.70
109	110	24.66	0.00	164.80	-688.38
110	110	24.66	0.00	163.26	-671.45
110	10111	27.40	0.00	195.23	-1150.72
111	111	27.40	0.00	-3.89	26.89
111	112	30.45	0.00	1.92	56.27
112	112	30.45	0.00	0.92	56.37
112	113	33.50	0.00	8.88	102.59
113	113	33.50	0.00	7.49	112.48
113	114	36.89	0.00	18.84	171.28
114	114	36.89	0.00	16.60	174.93
114	115	40.28	0.00	30.32	227.92
115	115	40.28	0.00	27.17	228.14
115	116	43.67	0.00	44.29	309.15
116	116	43.67	0.00	39.22	309.66
116	117	47.06	0.00	60.56	372.71
117	117	47.06	0.00	54.43	373.70
117	118	50.45	0.00	78.59	350.77
118	118	50.45	0.00	72.46	352.29
118	119	53.84	0.00	99.11	253.88
119	119	53.84	0.00	93.79	255.88
119	120	57.23	0.00	123.82	48.98
120	120	57.23	0.00	120.13	51.26
120	121	60.62	0.00	151.73	-261.67
121	121	60.62	0.00	150.03	-255.97
121	122	64.01	0.00	185.45	-731.31
122	122	64.01	0.00	185.69	-717.55
122	10123	67.40	0.00	224.48	-1372.92
123	123	67.40	0.00	-11.12	-27.47
123	124	70.45	0.00	-5.29	25.07
124	124	70.45	0.00	-7.43	26.65
124	125	73.50	0.00	0.45	101.24
125	125	73.50	0.00	-1.88	117.31
125	126	76.26	0.00	6.96	195.94
126	126	76.26	0.00	3.97	197.09
126	127	79.02	0.00	14.87	274.18
127	127	79.02	0.00	10.85	274.01
127	128	81.78	0.00	24.38	393.57
128	128	81.78	0.00	19.20	393.59
128	129	84.54	0.00	34.87	496.59
129	129	84.54	0.00	28.78	496.93
129	130	87.30	0.00	46.23	577.33
130	130	87.30	0.00	39.68	578.11
130	131	90.06	0.00	59.34	619.32
131	131	90.06	0.00	52.99	620.65
131	132	92.82	0.00	74.90	608.77
132	132	92.82	0.00	69.58	610.72
132	133	95.58	0.00	94.18	522.34
133	133	95.58	0.00	90.82	525.21
133	134	98.34	0.00	118.46	330.27
134	134	98.34	0.00	117.96	333.33
134	135	101.10	0.00	148.86	-1.62
301	101	0.00	0.00	1.70	12.05
301	2001	0.00	0.00	1.70	10.77
302	102	2.74	0.00	4.91	28.43
302	2002	2.74	0.00	4.91	24.71
303	103	5.48	0.00	6.23	32.06
303	2003	5.48	0.00	6.23	27.35
304	104	8.22	0.00	7.17	34.53
304	2004	8.22	0.00	7.17	29.11
305	105	10.96	0.00	7.65	35.94
305	2005	10.96	0.00	7.65	30.16
306	106	13.70	0.00	7.57	35.58
306	2006	13.70	0.00	7.57	29.86
307	107	16.44	0.00	6.96	33.51
307	2007	16.44	0.00	6.96	28.25
308	108	19.18	0.00	5.88	29.96
308	2008	19.18	0.00	5.88	25.52
309	109	21.92	0.00	4.51	25.80
309	2009	21.92	0.00	4.51	22.39
310	110	24.66	0.00	3.15	21.34

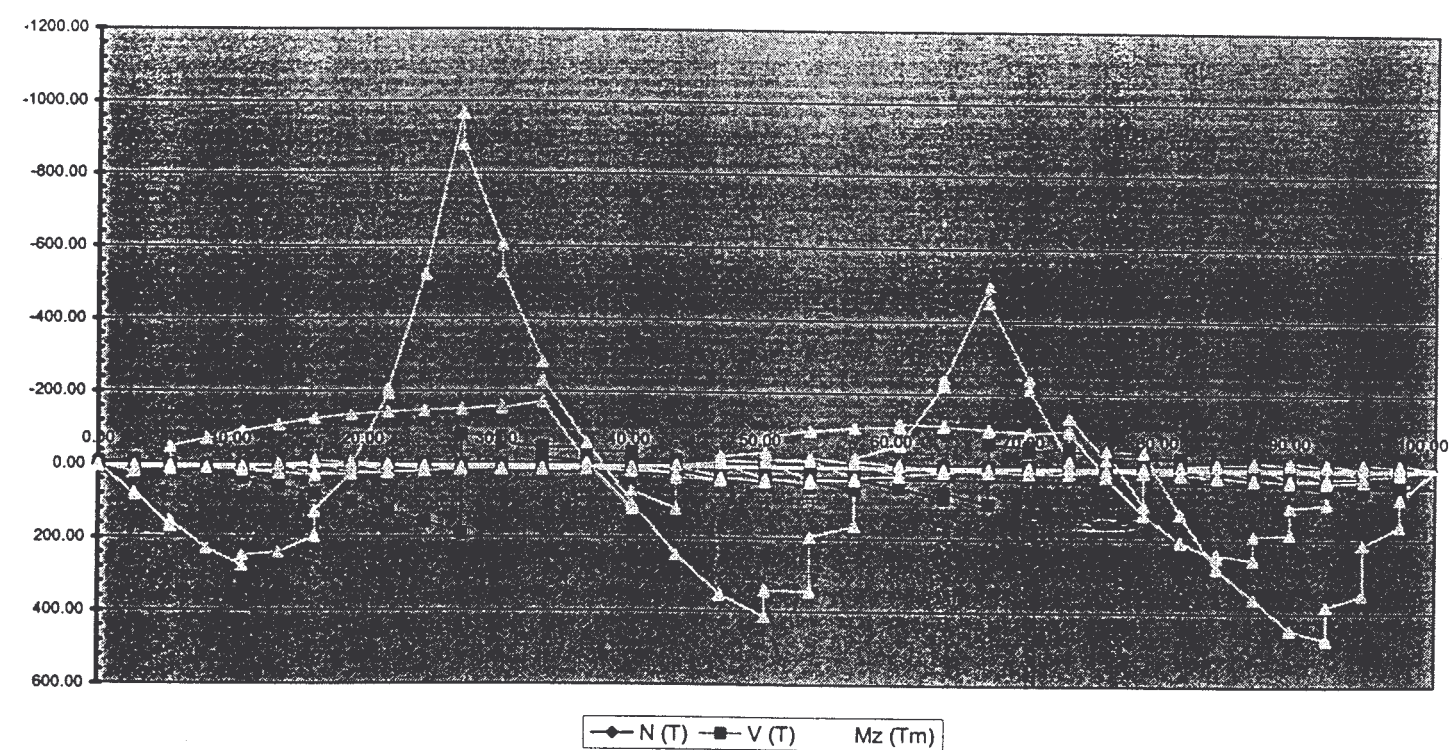
103	103	5.48	0.00	3.42	154.20
103	104	8.22	0.00	20.92	229.93
104	104	8.22	0.00	18.52	229.86
104	105	10.96	0.00	38.51	276.77
105	105	10.96	0.00	38.66	248.09
105	106	13.70	0.00	60.86	240.41
106	106	13.70	0.00	57.87	240.80
106	107	16.44	0.00	80.21	196.85
107	107	16.44	0.00	79.73	128.10
107	108	19.18	0.00	105.38	23.28
108	108	19.18	0.00	101.49	4.63
108	109	21.92	0.00	130.02	-196.12
109	109	21.92	0.00	126.26	-209.08
109	110	24.66	0.00	157.64	-522.34
110	110	24.66	0.00	156.36	-521.74
110	10111	27.40	0.00	188.21	-968.22
111	111	27.40	0.00	-83.21	-880.11
111	112	30.45	0.00	-76.94	-605.07
112	112	30.45	0.00	-57.81	-527.64
112	113	33.50	0.00	-49.76	-283.71
113	113	33.50	0.00	-21.19	-233.65
113	114	36.89	0.00	-6.80	-61.39
114	114	36.89	0.00	-9.11	-61.66
114	115	40.28	0.00	6.75	101.90
115	115	40.28	0.00	2.81	101.67
115	116	43.67	0.00	21.01	243.03
116	116	43.67	0.00	15.45	243.07
116	117	47.06	0.00	36.20	352.40
117	117	47.06	0.00	29.37	352.89
117	118	50.45	0.00	52.41	412.56
118	118	50.45	0.00	35.92	341.10
118	119	53.84	0.00	57.88	342.55
119	119	53.84	0.00	38.97	192.99
119	120	57.23	0.00	63.29	163.16
120	120	57.23	0.00	31.62	-24.04
120	121	60.62	0.00	58.54	-60.65
121	121	60.62	0.00	57.27	-60.43
121	122	64.01	0.00	86.98	-225.98
122	122	64.01	0.00	69.33	-241.55
122	10123	67.40	0.00	101.80	-497.84
123	123	67.40	0.00	-63.03	-452.83
123	124	70.45	0.00	-57.19	-241.97
124	124	70.45	0.00	-44.97	-215.56
124	125	73.50	0.00	-54.55	-18.50
125	125	73.50	0.00	-18.06	-138.96
125	126	76.26	0.00	-4.80	-23.19
126	126	76.26	0.00	-8.37	-47.77
126	127	79.02	0.00	4.57	103.04
127	127	79.02	0.00	-7.58	-43.15
127	128	81.78	0.00	5.96	127.26
128	128	81.78	0.00	2.86	127.02
12	129	84.54	0.00	18.53	275.11
129	129	84.54	0.00	14.12	275.09
129	130	87.30	0.00	30.56	357.54
130	130	87.30	0.00	25.50	357.85
130	131	90.06	0.00	44.86	441.80
131	131	90.06	0.00	39.40	442.58
131	132	92.82	0.00	60.71	470.45
132	132	92.82	0.00	44.42	380.24
132	133	95.58	0.00	64.68	345.18
133	133	95.58	0.00	36.24	209.01
133	134	98.34	0.00	59.08	158.64
134	134	98.34	0.00	28.88	83.65
134	135	101.10	0.00	54.43	-0.04
301	101	0.00	0.00	0.53	5.71
301	2001	0.00	0.00	0.53	5.31
302	102	2.74	0.00	0.59	9.98
302	2002	2.74	0.00	0.59	9.53
303	103	5.48	0.00	0.64	10.74
303	2003	5.48	0.00	0.64	10.26
304	104	8.22	0.00	0.14	9.20
304	2004	8.22	0.00	0.14	9.10
305	105	10.96	0.00	1.70	15.49
305	2005	10.96	0.00	1.70	14.20
30	106	13.70	0.00	4.18	23.78
306	2006	13.70	0.00	4.18	20.62
307	107	16.44	0.00	6.46	30.14
307	2007	16.44	0.00	6.46	25.26
308	108	19.18	0.00	5.36	26.58
308	2008	19.18	0.00	5.36	22.53
309	109	21.92	0.00	4.19	23.43
309	2009	21.92	0.00	4.19	20.26
310	110	24.66	0.00	2.45	17.27

310	2010	24.66	0.00	2.45	15.41
311	111	27.40	0.00	1.00	12.97
311	2011	27.40	0.00	1.00	12.21
312	112	30.45	0.00	-0.25	9.69
312	2012	30.45	0.00	-0.25	9.87
313	113	33.50	0.00	-0.81	7.67
313	2013	33.50	0.00	-0.81	8.28
314	114	36.89	0.00	-0.19	8.88
314	2014	36.89	0.00	-0.19	9.02
315	115	40.28	0.00	1.94	15.14
315	2015	40.28	0.00	1.94	13.67
316	116	43.67	0.00	4.13	23.23
316	2016	43.67	0.00	4.13	20.11
317	117	47.06	0.00	8.37	38.39
317	2017	47.06	0.00	8.37	32.06
318	118	50.45	0.00	9.77	42.77
318	2018	50.45	0.00	9.77	35.38
319	119	53.84	0.00	10.84	44.06
319	2019	53.84	0.00	10.84	35.86
320	120	57.23	0.00	8.36	36.68
320	2020	57.23	0.00	8.36	30.37
321	121	60.62	0.00	4.84	25.31
321	2021	60.62	0.00	4.84	21.65
322	122	64.01	0.00	1.38	14.13
322	2022	64.01	0.00	1.38	13.09
323	123	67.40	0.00	-1.53	3.75
323	2023	67.40	0.00	-1.53	4.91
324	124	70.45	0.00	-2.83	-0.81
324	2024	70.45	0.00	-2.83	1.33
325	125	73.50	0.00	-2.69	-0.58
325	2025	73.50	0.00	-2.69	1.45
326	126	76.26	0.00	-0.65	5.27
326	2026	76.26	0.00	-0.65	5.77
327	127	79.02	0.00	2.33	13.51
327	2027	79.02	0.00	2.33	11.75
328	128	81.78	0.00	3.67	17.68
328	2028	81.78	0.00	3.67	14.91
329	129	84.54	0.00	6.09	26.66
329	2029	84.54	0.00	6.09	22.06
330	130	87.30	0.00	8.03	34.18
330	2030	87.30	0.00	8.03	28.12
331	131	90.06	0.00	8.94	39.17
331	2031	90.06	0.00	8.94	32.41
332	132	92.82	0.00	6.88	32.75
332	2032	92.82	0.00	6.88	27.55
333	133	95.58	0.00	4.55	26.20
333	2033	95.58	0.00	4.55	22.76
334	134	98.34	0.00	1.16	15.54
334	2034	98.34	0.00	1.16	14.67
335	135	101.10	0.00	-1.35	1.72
335	2035	101.10	0.00	-1.35	2.73
201	2001	0.00	0.00	0.53	5.31
201	1001	0.00	0.00	0.53	2.78
202	2002	2.74	0.00	0.59	9.53
202	1002	2.74	0.00	0.59	6.69
203	2003	5.48	0.00	0.64	10.26
203	1003	5.48	0.00	0.64	7.22
204	2004	8.22	0.00	0.14	9.10
204	1004	8.22	0.00	0.14	8.44
205	2005	10.96	0.00	1.70	14.20
205	1005	10.96	0.00	1.70	6.06
206	2006	13.70	0.00	4.18	20.62
206	1006	13.70	0.00	4.18	0.63
207	2007	16.44	0.00	6.46	25.26
207	1007	16.44	0.00	6.46	-5.66
208	2008	19.18	0.00	5.36	22.53
208	1008	19.18	0.00	5.36	-3.12
209	2009	21.92	0.00	4.19	20.26
209	1009	21.92	0.00	4.19	0.21
210	2010	24.66	0.00	2.45	15.41
210	1010	24.66	0.00	2.45	3.69
211	2011	27.40	0.00	1.00	12.21
211	1011	27.40	0.00	1.00	7.44
212	2012	30.45	0.00	-0.25	9.87
212	1012	30.45	0.00	-0.25	11.05
213	2013	33.50	0.00	-0.81	8.28
213	1013	33.50	0.00	-0.81	12.14
214	2014	36.89	0.00	-0.19	9.02
214	1014	36.89	0.00	-0.19	9.91
215	2015	40.28	0.00	1.94	13.67
215	1015	40.28	0.00	1.94	4.39
216	2016	43.67	0.00	4.13	20.11
216	1016	43.67	0.00	4.13	0.32

217	2017	47.06	0.00	8.37	32.06
217	1017	47.06	0.00	8.37	-8.03
218	2018	50.45	0.00	9.77	35.38
218	1018	50.45	0.00	9.77	-11.41
219	2019	53.84	0.00	10.84	35.86
219	1019	53.84	0.00	10.84	-16.06
220	2020	57.23	0.00	8.36	30.37
220	1020	57.23	0.00	8.36	-9.65
221	2021	60.62	0.00	4.84	21.65
221	1021	60.62	0.00	4.84	-1.52
222	2022	64.01	0.00	1.38	13.09
222	1022	64.01	0.00	1.38	6.48
223	2023	67.40	0.00	-1.53	4.91
223	1023	67.40	0.00	-1.53	12.23
224	2024	70.45	0.00	-2.83	1.33
224	1024	70.45	0.00	-2.83	14.88
225	2025	73.50	0.00	-2.69	1.45
225	1025	73.50	0.00	-2.69	14.32
226	2026	76.26	0.00	-0.65	5.77
226	1026	76.26	0.00	-0.65	8.90
227	2027	79.02	0.00	2.33	11.75
227	1027	79.02	0.00	2.33	0.60
228	2028	81.78	0.00	3.67	14.91
228	1028	81.78	0.00	3.67	-2.65
229	2029	84.54	0.00	6.09	22.06
229	1029	84.54	0.00	6.09	-7.08
230	2030	87.30	0.00	8.03	28.12
230	1030	87.30	0.00	8.03	-10.32
231	2031	90.06	0.00	8.94	32.41
231	1031	90.06	0.00	8.94	-10.42
232	2032	92.82	0.00	6.88	27.55
232	1032	92.82	0.00	6.88	-5.41
233	2033	95.58	0.00	4.55	22.76
233	1033	95.58	0.00	4.55	0.98
234	2034	98.34	0.00	1.16	14.67
234	1034	98.34	0.00	1.16	9.13
235	2035	101.10	0.00	-1.35	2.73
235	1035	101.10	0.00	-1.35	9.18
401	1001	0.00	0.00	0.53	2.78
401	1	0.00	0.00	0.53	2.38
402	1002	2.74	0.00	0.59	6.69
402	2	2.74	0.00	0.59	6.24
403	1003	5.48	0.00	0.64	7.22
403	3	5.48	0.00	0.64	6.74
404	1004	8.22	0.00	0.14	8.44
404	4	8.22	0.00	0.14	8.33
405	1005	10.96	0.00	1.70	6.06
405	5	10.96	0.00	1.70	4.77
406	1006	13.70	0.00	4.18	0.63
406	6	13.70	0.00	4.18	-2.53
407	1007	16.44	0.00	6.46	-5.66
407	7	16.44	0.00	6.46	-10.54
408	1008	19.18	0.00	5.36	-3.12
408	8	19.18	0.00	5.36	-7.17
409	1009	21.92	0.00	4.19	0.21
409	9	21.92	0.00	4.19	-2.96
410	1010	24.66	0.00	2.45	3.69
410	10	24.66	0.00	2.45	1.84
411	1011	27.40	0.00	1.00	7.44
411	11	27.40	0.00	1.00	6.69
412	1012	30.45	0.00	-0.25	11.05
412	12	30.45	0.00	-0.25	11.23
413	1013	33.50	0.00	-0.81	12.14
413	13	33.50	0.00	-0.81	12.75
414	1014	36.89	0.00	-0.19	9.91
414	14	36.89	0.00	-0.19	10.05
415	1015	40.28	0.00	1.94	4.39
415	15	40.28	0.00	1.94	2.92
416	1016	43.67	0.00	4.13	0.32
416	16	43.67	0.00	4.13	-2.80
417	1017	47.06	0.00	8.37	-8.03
417	17	47.06	0.00	8.37	-14.36
418	1018	50.45	0.00	9.77	-11.41
418	18	50.45	0.00	9.77	-18.79
419	1019	53.84	0.00	10.84	-16.06
419	19	53.84	0.00	10.84	-24.26
420	1020	57.23	0.00	8.36	-9.65
420	20	57.23	0.00	8.36	-15.97
421	1021	60.62	0.00	4.84	-1.52
421	21	60.62	0.00	4.84	-5.18
422	1022	64.01	0.00	1.38	6.48
422	22	64.01	0.00	1.38	5.43
423	1023	67.40	0.00	-1.53	12.23

423	23	67.40	0.00	-1.53	13.38
424	1024	70.45	0.00	-2.83	14.88
424	24	70.45	0.00	-2.83	17.02
425	1025	73.50	0.00	-2.69	14.32
425	25	73.50	0.00	-2.69	16.35
426	1026	76.26	0.00	-0.65	8.90
426	26	76.26	0.00	-0.65	9.39
427	1027	79.02	0.00	2.33	0.60
427	27	79.02	0.00	2.33	-1.16
428	1028	81.78	0.00	3.67	-2.65
428	28	81.78	0.00	3.67	-5.42
429	1029	84.54	0.00	6.09	-7.08
429	29	84.54	0.00	6.09	-11.69
430	1030	87.30	0.00	8.03	-10.32
430	30	87.30	0.00	8.03	-16.39
431	1031	90.06	0.00	8.94	-10.42
431	31	90.06	0.00	8.94	-17.18
432	1032	92.82	0.00	6.88	-5.41
432	32	92.82	0.00	6.88	-10.61
433	1033	95.58	0.00	4.55	0.98
433	33	95.58	0.00	4.55	-2.46
434	1034	98.34	0.00	1.16	9.13
434	34	98.34	0.00	1.16	8.26
435	1035	101.10	0.00	-1.35	9.18
435	35	101.10	0.00	-1.35	10.19

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310	2010	24.66	0.00	2.32	20.90	217	2017	47.06	0.00	13.49	48.67
311	111	27.40	0.00	2.38	23.61	217	1017	47.06	0.00	-1.76	15.33
311	2011	27.40	0.00	2.37	21.81	218	2018	50.45	0.00	12.68	46.55
312	112	30.45	0.00	4.47	30.66	218	1018	50.45	0.00	-1.96	15.85
312	2012	30.45	0.00	4.12	27.48	219	2019	53.84	0.00	10.98	42.26
313	113	33.50	0.00	7.60	39.07	219	1019	53.84	0.00	-2.09	16.29
313	2013	33.50	0.00	7.14	33.47	220	2020	57.23	0.00	8.50	36.09
314	114	36.89	0.00	10.87	49.77	220	1020	57.23	0.00	-1.73	16.55
314	2014	36.89	0.00	10.66	41.58	221	2021	60.62	0.00	5.40	28.96
315	115	40.28	0.00	13.08	55.99	221	1021	60.62	0.00	-1.15	16.99
315	2015	40.28	0.00	12.91	46.18	222	2022	64.01	0.00	2.17	22.55
316	116	43.67	0.00	14.28	59.17	222	1022	64.01	0.00	-0.71	18.00
316	2016	43.67	0.00	13.73	48.53	223	2023	67.40	0.00	2.43	21.30
317	117	47.06	0.00	14.17	59.19	223	1023	67.40	0.00	-1.50	18.06
317	2017	47.06	0.00	13.49	48.67	224	2024	70.45	0.00	4.87	26.17
318	118	50.45	0.00	12.81	56.22	224	1024	70.45	0.00	-2.02	17.10
318	2018	50.45	0.00	12.68	46.55	225	2025	73.50	0.00	7.09	29.91
319	119	53.84	0.00	11.12	50.65	225	1025	73.50	0.00	-2.19	14.95
319	2019	53.84	0.00	10.98	42.26	226	2026	76.26	0.00	8.64	33.15
320	120	57.23	0.00	8.65	42.60	226	1026	76.26	0.00	-2.14	13.60
320	2020	57.23	0.00	8.50	36.09	227	2027	79.02	0.00	10.07	36.73
321	121	60.62	0.00	5.70	33.08	227	1027	79.02	0.00	-1.68	12.64
321	2021	60.62	0.00	5.40	28.96	228	2028	81.78	0.00	10.83	38.96
322	122	64.01	0.00	2.89	24.50	228	1028	81.78	0.00	-1.18	11.43
322	2022	64.01	0.00	2.17	22.55	229	2029	84.54	0.00	11.05	39.63
323	123	67.40	0.00	2.59	23.25	229	1029	84.54	0.00	-0.93	10.07
323	2023	67.40	0.00	2.43	21.30	230	2030	87.30	0.00	10.35	38.75
324	124	70.45	0.00	4.87	29.84	230	1030	87.30	0.00	-0.24	8.74
324	2024	70.45	0.00	4.87	26.17	231	2031	90.06	0.00	8.72	36.56
325	125	73.50	0.00	7.09	35.27	231	1031	90.06	0.00	0.24	7.43
325	2025	73.50	0.00	7.09	29.91	232	2032	92.82	0.00	7.27	33.11
326	126	76.26	0.00	8.64	39.68	232	1032	92.82	0.00	0.92	6.20
326	2026	76.26	0.00	8.64	33.15	233	2033	95.58	0.00	5.16	28.07
327	127	79.02	0.00	10.07	44.34	233	1033	95.58	0.00	2.14	6.26
327	2027	79.02	0.00	10.07	36.73	234	2034	98.34	0.00	2.48	21.66
328	128	81.78	0.00	10.93	47.21	234	1034	98.34	0.00	0.54	10.98
328	2028	81.78	0.00	10.83	38.96	235	2035	101.10	0.00	1.38	9.09
329	129	84.54	0.00	11.14	47.99	235	1035	101.10	0.00	-1.56	9.66
329	2029	84.54	0.00	11.05	39.63	401	1001	0.00	0.00	0.58	4.88
330	130	87.30	0.00	10.59	46.64	401	1	0.00	0.00	0.40	4.56
330	2030	87.30	0.00	10.35	38.75	402	1002	2.74	0.00	1.16	8.22
331	131	90.06	0.00	9.17	43.28	402	2	2.74	0.00	0.04	7.61
331	2031	90.06	0.00	8.72	36.56	403	1003	5.48	0.00	-0.03	8.87
332	132	92.82	0.00	7.27	38.61	403	3	5.48	0.00	-0.19	8.93
332	2032	92.82	0.00	7.27	33.11	404	1004	8.22	0.00	-0.40	9.92
333	133	95.58	0.00	5.16	31.97	404	4	8.22	0.00	-0.59	10.28
333	2033	95.58	0.00	5.16	28.07	405	1005	10.96	0.00	-0.76	10.90
334	134	98.34	0.00	2.48	23.53	405	5	10.96	0.00	-0.94	11.55
334	2034	98.34	0.00	2.48	21.66	406	1006	13.70	0.00	-1.02	11.70
335	135	101.10	0.00	1.54	10.24	406	6	13.70	0.00	-1.22	12.61
335	2035	101.10	0.00	1.38	9.09	407	1007	16.44	0.00	-1.15	12.30
201	2001	0.00	0.00	1.46	11.29	407	7	16.44	0.00	-1.37	13.27
201	1001	0.00	0.00	0.58	4.88	408	1008	19.18	0.00	-1.13	12.44
202	2002	2.74	0.00	4.26	25.82	408	8	19.18	0.00	-1.13	13.29
202	1002	2.74	0.00	1.16	8.22	409	1009	21.92	0.00	-0.46	12.06
203	2003	5.48	0.00	5.78	28.41	409	9	21.92	0.00	-0.65	12.46
203	1003	5.48	0.00	-0.03	8.87	410	1010	24.66	0.00	0.22	11.57
204	2004	8.22	0.00	6.71	30.21	410	10	24.66	0.00	0.22	11.40
204	1004	8.22	0.00	-0.40	9.92	411	1011	27.40	0.00	1.05	11.48
205	2005	10.96	0.00	7.23	30.97	411	11	27.40	0.00	0.60	10.90
205	1005	10.96	0.00	-0.76	10.90	412	1012	30.45	0.00	0.28	12.22
206	2006	13.70	0.00	7.22	30.56	412	12	30.45	0.00	0.10	12.06
206	1006	13.70	0.00	-1.02	11.70	413	1013	33.50	0.00	-0.67	13.11
207	2007	16.44	0.00	6.61	28.99	413	13	33.50	0.00	-1.03	13.78
207	1007	16.44	0.00	-1.15	12.30	414	1014	36.89	0.00	-1.27	14.54
208	2008	19.18	0.00	5.46	26.46	414	14	36.89	0.00	-1.30	15.52
208	1008	19.18	0.00	-1.13	12.44	415	1015	40.28	0.00	-1.46	14.79
209	2009	21.92	0.00	4.03	23.40	415	15	40.28	0.00	-1.46	15.89
209	1009	21.92	0.00	-0.46	12.06	416	1016	43.67	0.00	-1.63	14.93
210	2010	24.66	0.00	2.32	20.90	416	16	43.67	0.00	-1.80	16.19
210	1010	24.66	0.00	0.22	11.57	417	1017	47.06	0.00	-1.76	15.33
211	2011	27.40	0.00	2.37	21.81	417	17	47.06	0.00	-1.97	16.76
211	1011	27.40	0.00	1.05	11.48	418	1018	50.45	0.00	-1.96	15.85
212	2012	30.45	0.00	4.12	27.48	418	18	50.45	0.00	-2.12	17.35
212	1012	30.45	0.00	0.28	12.22	419	1019	53.84	0.00	-2.09	16.29
213	2013	33.50	0.00	7.14	33.47	419	19	53.84	0.00	-2.09	17.87
213	1013	33.50	0.00	-0.67	13.11	420	1020	57.23	0.00	-1.73	16.55
214	2014	36.89	0.00	10.66	41.58	420	20	57.23	0.00	-1.90	17.89
214	1014	36.89	0.00	-1.27	14.54	421	1021	60.62	0.00	-1.15	16.99
215	2015	40.28	0.00	12.91	46.18	421	21	60.62	0.00	-1.15	17.86
215	1015	40.28	0.00	-1.46	14.79	422	1022	64.01	0.00	-0.71	18.00
216	2016	43.67	0.00	13.73	48.53	422	22	64.01	0.00	-1.59	18.87
216	1016	43.67	0.00	-1.53	10.23	423	1023	67.40	0.00	-1.50	18.06

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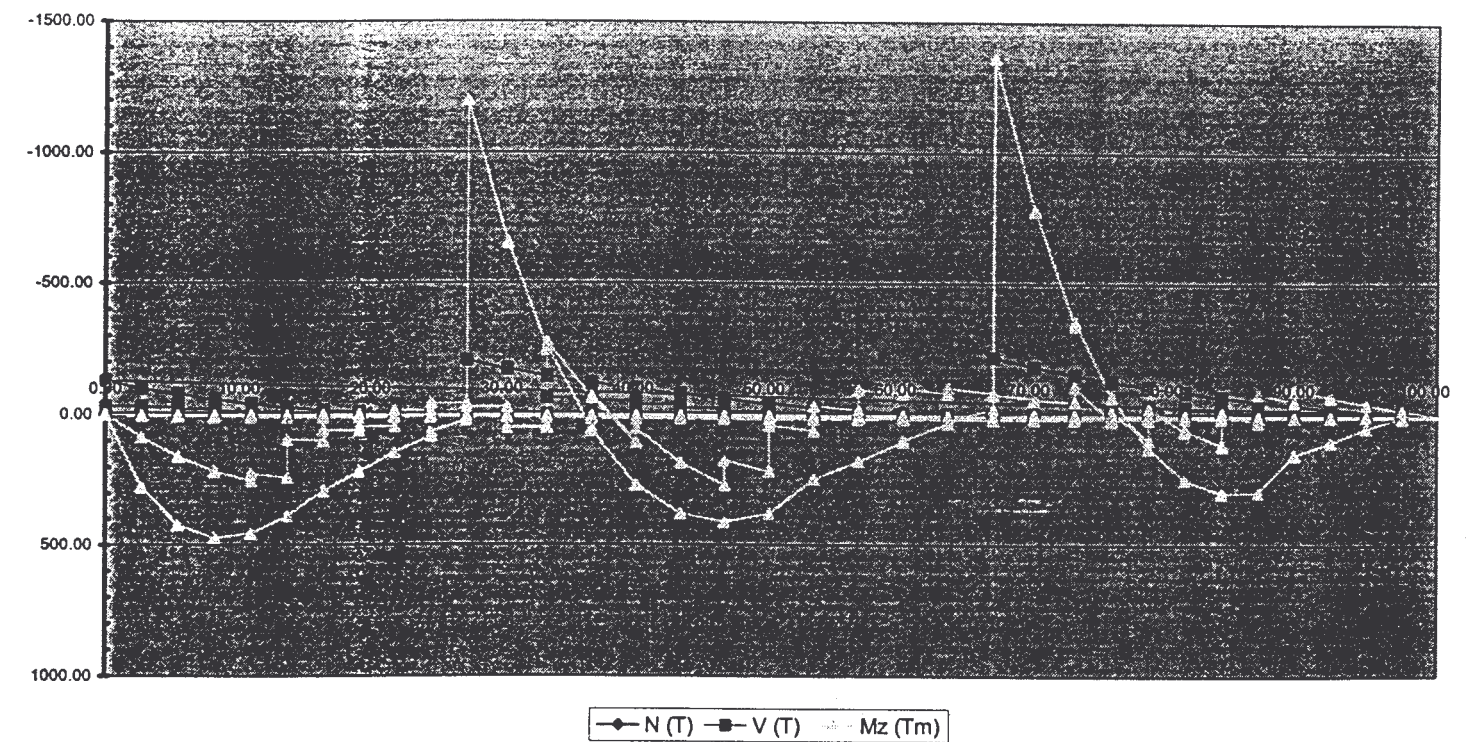
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103	104	8.22	0.00	-54.61	473.31
104	104	8.22	0.00	-59.58	472.72
104	105	10.96	0.00	-38.52	454.11
105	105	10.96	0.00	-43.16	453.89
105	106	13.70	0.00	-24.77	387.37
106	106	13.70	0.00	-28.66	387.41
106	107	16.44	0.00	-14.78	289.99
107	107	16.44	0.00	-17.47	290.17
107	108	19.18	0.00	-6.67	216.45
108	108	19.18	0.00	-8.61	216.57
108	109	21.92	0.00	0.22	143.73
109	109	21.92	0.00	-1.06	143.96
109	110	24.66	0.00	5.79	81.38
110	110	24.66	0.00	4.88	64.87
110	10111	27.40	0.00	9.85	20.75
111	111	27.40	0.00	-206.29	-1199.41
111	112	30.45	0.00	-171.36	-653.61
112	112	30.45	0.00	-174.71	-655.64
112	113	33.50	0.00	-142.76	-245.35
113	113	33.50	0.00	-148.13	-257.34
113	114	36.89	0.00	-115.39	53.29
114	114	36.89	0.00	-122.60	61.56
114	115	40.28	0.00	-92.39	269.11
115	115	40.28	0.00	-100.52	267.66
115	116	43.67	0.00	-72.71	378.66
116	116	43.67	0.00	-80.71	377.70
116	117	47.06	0.00	-55.17	409.40
117	117	47.06	0.00	-62.38	408.87
117	118	50.45	0.00	-39.14	376.82
118	118	50.45	0.00	-45.12	376.61
118	119	53.84	0.00	-25.58	244.10
119	119	53.84	0.00	-29.47	243.94
119	120	57.23	0.00	-15.00	175.80
120	120	57.23	0.00	-17.91	175.70
120	121	60.62	0.00	-6.05	100.12
121	121	60.62	0.00	-8.22	96.55
121	122	64.01	0.00	0.85	30.10
122	122	64.01	0.00	-0.89	17.76
122	10123	67.40	0.00	5.42	-23.70
123	123	67.40	0.00	-219.71	-1362.95
123	124	70.45	0.00	-184.87	-777.90
124	124	70.45	0.00	-185.29	-781.45
124	125	73.50	0.00	-152.64	-339.66
125	125	73.50	0.00	-154.99	-357.72
125	126	76.26	0.00	-127.63	-68.54
126	126	76.26	0.00	-131.06	-71.60
126	127	79.02	0.00	-105.53	126.65
127	127	79.02	0.00	-109.73	125.25
127	128	81.78	0.00	-85.91	244.99
128	128	81.78	0.00	-90.41	243.92
128	129	84.54	0.00	-68.25	296.72
129	129	84.54	0.00	-72.63	295.98
129	130	87.30	0.00	-52.20	293.34
130	130	87.30	0.00	-56.13	292.88
130	131	90.06	0.00	-36.91	147.14
131	131	90.06	0.00	-39.42	146.71
131	132	92.82	0.00	-25.87	100.64
132	132	92.82	0.00	-28.15	100.03
132	133	95.58	0.00	-16.84	46.62
133	133	95.58	0.00	-19.06	45.88
133	134	98.34	0.00	-10.33	5.25
134	134	98.34	0.00	-12.73	4.72
134	135	101.10	0.00	-6.71	0.28
301	101	0.00	0.00	-0.17	1.58
301	2001	0.00	0.00	-0.17	1.71
302	102	2.74	0.00	-0.44	3.31
302	2002	2.74	0.00	-0.44	3.64
303	103	5.48	0.00	-0.66	3.15
303	2003	5.48	0.00	-0.66	3.65
304	104	8.22	0.00	-0.97	2.73
304	2004	8.22	0.00	-0.97	3.47
305	105	10.96	0.00	-1.31	1.73
305	2005	10.96	0.00	-1.31	2.72
306	106	13.70	0.00	-1.60	0.92
306	2006	13.70	0.00	-1.60	2.13
307	107	16.44	0.00	-1.77	0.51
307	2007	16.44	0.00	-1.77	1.84
308	108	19.18	0.00	-1.74	0.75
308	2008	19.18	0.00	-1.74	2.06
309	109	21.92	0.00	-1.43	1.53
309	2009	21.92	0.00	-1.43	2.62
310	110	24.66	0.00	-0.81	3.56

310	2010	24.66	0.00	-0.81	4.18
311	111	27.40	0.00	-0.25	6.09
311	2011	27.40	0.00	-0.25	6.27
312	112	30.45	0.00	-0.86	5.17
312	2012	30.45	0.00	-0.86	5.82
313	113	33.50	0.00	-1.38	3.80
313	2013	33.50	0.00	-1.38	4.84
314	114	36.89	0.00	-1.73	3.79
314	2014	36.89	0.00	-1.73	5.10
315	115	40.28	0.00	-1.83	3.31
315	2015	40.28	0.00	-1.83	4.70
316	116	43.67	0.00	-1.94	2.84
316	2016	43.67	0.00	-1.94	4.31
317	117	47.06	0.00	-2.08	2.47
317	2017	47.06	0.00	-2.08	4.04
318	118	50.45	0.00	-2.23	2.10
318	2018	50.45	0.00	-2.23	3.79
319	119	53.84	0.00	-2.35	1.23
319	2019	53.84	0.00	-2.35	3.00
320	120	57.23	0.00	-2.42	-0.56
320	2020	57.23	0.00	-2.42	1.27
321	121	60.62	0.00	-2.28	0.32
321	2021	60.62	0.00	-2.28	2.04
322	122	64.01	0.00	-2.25	2.95
322	2022	64.01	0.00	-2.25	4.65
323	123	67.40	0.00	-2.66	0.38
323	2023	67.40	0.00	-2.66	2.39
324	124	70.45	0.00	-3.24	-3.55
324	2024	70.45	0.00	-3.24	-1.10
325	125	73.50	0.00	-3.17	-3.56
325	2025	73.50	0.00	-3.17	-1.16
326	126	76.26	0.00	-2.84	-3.01
326	2026	76.26	0.00	-2.84	-0.87
327	127	79.02	0.00	-2.44	-1.93
327	2027	79.02	0.00	-2.44	-0.09
328	128	81.78	0.00	-1.92	-0.45
328	2028	81.78	0.00	-1.92	1.01
329	129	84.54	0.00	-1.35	1.23
329	2029	84.54	0.00	-1.35	2.25
330	130	87.30	0.00	-0.76	2.97
330	2030	87.30	0.00	-0.76	3.55
331	131	90.06	0.00	-0.18	4.71
331	2031	90.06	0.00	-0.18	4.85
332	132	92.82	0.00	0.32	5.34
332	2032	92.82	0.00	0.32	5.10
333	133	95.58	0.00	0.44	2.82
333	2033	95.58	0.00	0.44	2.48
334	134	98.34	0.00	-0.50	5.31
334	2034	98.34	0.00	-0.50	5.69
335	135	101.10	0.00	-1.82	-1.13
335	2035	101.10	0.00	-1.82	0.24
201	2001	0.00	0.00	-0.17	1.71
201	1001	0.00	0.00	-0.17	2.54
202	2002	2.74	0.00	-0.44	3.64
202	1002	2.74	0.00	-0.44	5.76
203	2003	5.48	0.00	-0.66	3.65
203	1003	5.48	0.00	-0.66	6.80
204	2004	8.22	0.00	-0.97	3.47
204	1004	8.22	0.00	-0.97	8.11
205	2005	10.96	0.00	-1.31	2.72
205	1005	10.96	0.00	-1.31	9.00
206	2006	13.70	0.00	-1.60	2.13
206	1006	13.70	0.00	-1.60	9.79
207	2007	16.44	0.00	-1.77	1.84
207	1007	16.44	0.00	-1.77	10.31
208	2008	19.18	0.00	-1.74	2.06
208	1008	19.18	0.00	-1.74	10.38
209	2009	21.92	0.00	-1.43	2.62
209	1009	21.92	0.00	-1.43	9.48
210	2010	24.66	0.00	-0.81	4.18
210	1010	24.66	0.00	-0.81	8.07
211	2011	27.40	0.00	-0.25	6.27
211	1011	27.40	0.00	-0.25	7.46
212	2012	30.45	0.00	-0.86	5.82
212	1012	30.45	0.00	-0.86	9.94
213	2013	33.50	0.00	-1.38	4.84
213	1013	33.50	0.00	-1.38	11.46
214	2014	36.89	0.00	-1.73	5.10
214	1014	36.89	0.00	-1.73	13.41
215	2015	40.28	0.00	-1.83	4.70
215	1015	40.28	0.00	-1.83	13.46
216	2016	43.67	0.00	-1.94	4.31
216	1016	43.67	0.00	-1.94	13.62

217	2017	47.06	0.00	-2.08	4.04
217	1017	47.06	0.00	-2.08	13.99
218	2018	50.45	0.00	-2.23	3.79
218	1018	50.45	0.00	-2.23	14.45
219	2019	53.84	0.00	-2.35	3.00
219	1019	53.84	0.00	-2.35	14.23
220	2020	57.23	0.00	-2.42	1.27
220	1020	57.23	0.00	-2.42	12.87
221	2021	60.62	0.00	-2.28	2.04
221	1021	60.62	0.00	-2.28	12.98
222	2022	64.01	0.00	-2.25	4.65
222	1022	64.01	0.00	-2.25	15.43
223	2023	67.40	0.00	-2.66	2.39
223	1023	67.40	0.00	-2.66	15.11
224	2024	70.45	0.00	-3.24	-1.10
224	1024	70.45	0.00	-3.24	14.42
225	2025	73.50	0.00	-3.17	1.16
225	1025	73.50	0.00	-3.17	14.03
226	2026	76.26	0.00	-2.84	-0.87
226	1026	76.26	0.00	-2.84	12.71
227	2027	79.02	0.00	-2.44	-0.09
227	1027	79.02	0.00	-2.44	11.60
228	2028	81.78	0.00	-1.92	1.01
228	1028	81.78	0.00	-1.92	10.21
229	2029	84.54	0.00	-1.35	2.25
229	1029	84.54	0.00	-1.35	8.71
230	2030	87.30	0.00	-0.76	3.55
230	1030	87.30	0.00	-0.76	7.20
231	2031	90.06	0.00	-0.18	4.85
231	1031	90.06	0.00	-0.18	5.73
232	2032	92.82	0.00	0.32	5.10
232	1032	92.82	0.00	0.32	3.58
233	2033	95.58	0.00	0.44	2.48
233	1033	95.58	0.00	0.44	0.36
234	2034	98.34	0.00	-0.50	5.69
234	1034	98.34	0.00	-0.50	8.10
235	2035	101.10	0.00	-1.82	0.24
235	1035	101.10	0.00	-1.82	8.94
401	1001	0.00	0.00	-0.17	2.54
401	1	0.00	0.00	-0.17	2.67
402	1002	2.74	0.00	-0.44	5.76
402	2	2.74	0.00	-0.44	6.09
403	1003	5.48	0.00	-0.66	6.80
403	3	5.48	0.00	-0.66	7.30
404	1004	8.22	0.00	-0.97	8.11
404	4	8.22	0.00	-0.97	8.84
405	1005	10.96	0.00	-1.31	9.00
405	5	10.96	0.00	-1.31	10.00
406	1006	13.70	0.00	-1.60	9.79
406	6	13.70	0.00	-1.60	11.00
407	1007	16.44	0.00	-1.77	10.31
407	7	16.44	0.00	-1.77	11.65
408	1008	19.18	0.00	-1.74	10.38
408	8	19.18	0.00	-1.74	11.70
409	1009	21.92	0.00	-1.43	9.48
409	9	21.92	0.00	-1.43	10.57
410	1010	24.66	0.00	-0.81	8.07
410	10	24.66	0.00	-0.81	8.69
411	1011	27.40	0.00	-0.25	7.46
411	11	27.40	0.00	-0.25	7.64
412	1012	30.45	0.00	-0.86	9.94
412	12	30.45	0.00	-0.86	10.59
413	1013	33.50	0.00	-1.38	11.46
413	13	33.50	0.00	-1.38	12.51
414	1014	36.89	0.00	-1.73	13.41
414	14	36.89	0.00	-1.73	14.72
415	1015	40.28	0.00	-1.83	13.46
415	15	40.28	0.00	-1.83	14.85
416	1016	43.67	0.00	-1.94	13.62
416	16	43.67	0.00	-1.94	15.08
417	1017	47.06	0.00	-2.08	13.99
417	17	47.06	0.00	-2.08	15.56
418	1018	50.45	0.00	-2.23	14.45
418	18	50.45	0.00	-2.23	16.13
419	1019	53.84	0.00	-2.35	14.23
419	19	53.84	0.00	-2.35	16.00
420	1020	57.23	0.00	-2.42	12.87
420	20	57.23	0.00	-2.42	14.71
421	1021	60.62	0.00	-2.28	12.98
421	21	60.62	0.00	-2.28	14.71
422	1022	64.01	0.00	-2.25	15.43
422	22	64.01	0.00	-2.25	17.14
423	1023	67.40	0.00	-2.66	15.11

423	23	67.40	0.00	-2.66	17.11
424	1024	70.45	0.00	-3.24	14.42
424	24	70.45	0.00	-3.24	16.87
425	1025	73.50	0.00	-3.17	14.03
425	25	73.50	0.00	-3.17	16.43
426	1026	76.26	0.00	-2.84	12.71
426	26	76.26	0.00	-2.84	14.86
427	1027	79.02	0.00	-2.44	11.60
427	27	79.02	0.00	-2.44	13.44
428	1028	81.78	0.00	-1.92	10.21
428	28	81.78	0.00	-1.92	11.66
429	1029	84.54	0.00	-1.35	8.71
429	29	84.54	0.00	-1.35	9.73
430	1030	87.30	0.00	-0.76	7.20
430	30	87.30	0.00	-0.76	7.78
431	1031	90.06	0.00	-0.19	5.73
431	31	90.06	0.00	-0.19	5.87
432	1032	92.82	0.00	0.32	3.58
432	32	92.82	0.00	0.32	3.34
433	1033	95.58	0.00	0.44	0.36
433	33	95.58	0.00	0.44	0.02
434	1034	98.34	0.00	-0.50	8.10
434	34	98.34	0.00	-0.50	8.48
435	1035	101.10	0.00	-1.82	8.94
435	35	101.10	0.00	-1.82	10.32

GRÁFICO DE ESFUERZOS



DERINT2.PaseoTren.Nudo101.Pos2.Mx- + { 0; 1}DERINT2.PaseoTren.Nudo102.Pos2.Mx- + { 0; 1}DERINT2.PaseoTren.Nudo103.Pos2.Mx- + { 0; 1}DERINT2.PaseoTren.Nudo104.Pos2.Mx- + { 0; 1}

12.10 242.

310	110	24.00	0.00	0.12	7.03
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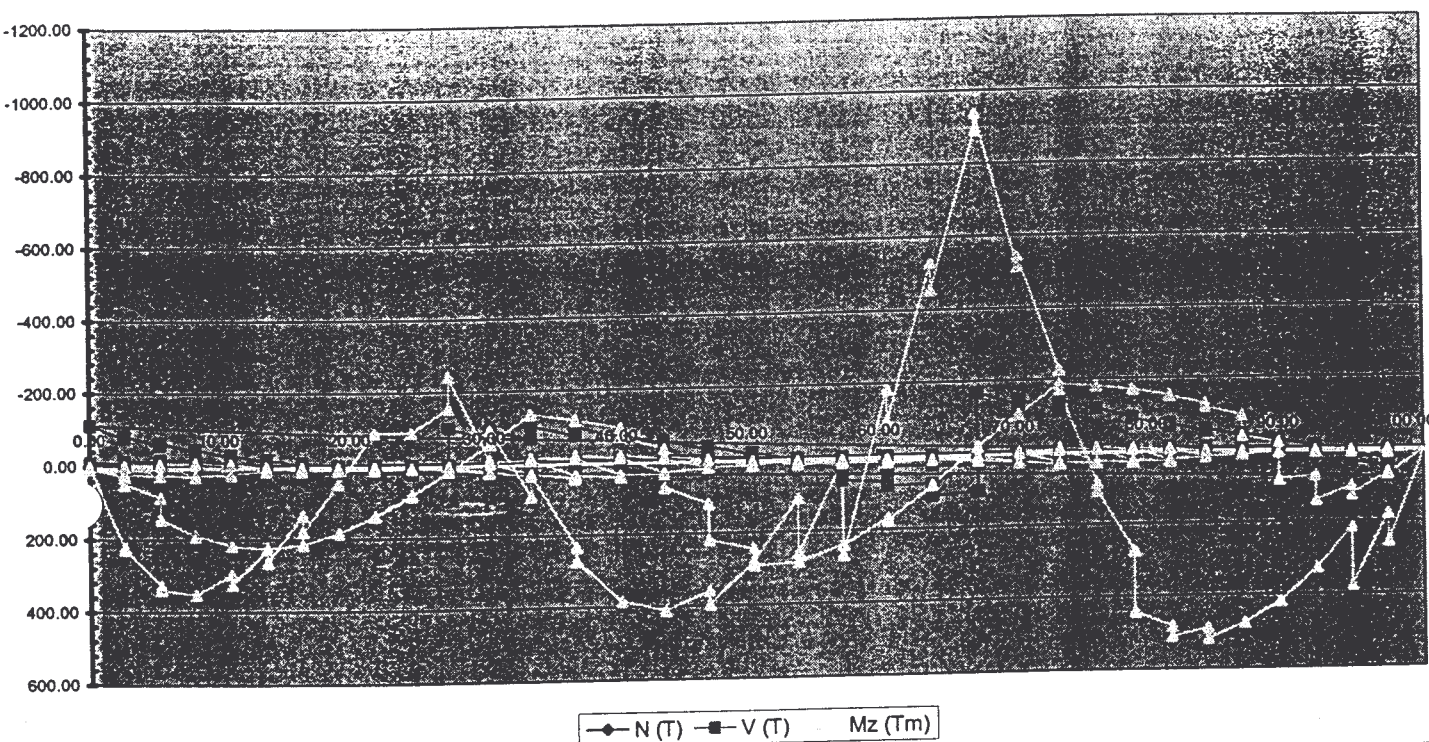
310	2010	24.66	0.00	-0.12	7.72	217	2017	47.06	0.00	3.84	18.46
311	111	27.40	0.00	1.52	13.48	217	1017	47.06	0.00	3.84	0.07
311	2011	27.40	0.00	1.52	12.33	218	2018	50.45	0.00	1.71	13.34
312	112	30.45	0.00	4.58	24.26	218	1018	50.45	0.00	1.71	5.15
312	2012	30.45	0.00	4.58	20.80	219	2019	53.84	0.00	-1.39	7.92
313	113	33.50	0.00	7.57	33.58	219	1019	53.84	0.00	-1.39	14.56
313	2013	33.50	0.00	7.57	27.86	220	2020	57.23	0.00	-1.49	7.21
314	114	36.89	0.00	9.98	43.08	220	1020	57.23	0.00	-1.49	14.32
314	2014	36.89	0.00	9.98	35.54	221	2021	60.62	0.00	-1.52	7.78
315	115	40.28	0.00	9.63	42.45	221	1021	60.62	0.00	-1.52	15.05
315	2015	40.28	0.00	9.63	35.17	222	2022	64.01	0.00	-0.29	11.10
316	116	43.67	0.00	7.84	35.60	222	1022	64.01	0.00	-0.29	12.50
316	2016	43.67	0.00	7.84	29.68	223	2023	67.40	0.00	1.91	16.54
317	117	47.06	0.00	3.84	21.36	223	1023	67.40	0.00	1.91	7.40
317	2017	47.06	0.00	3.84	18.46	224	2024	70.45	0.00	4.70	23.47
318	118	50.45	0.00	1.71	14.64	224	1024	70.45	0.00	4.70	0.94
318	2018	50.45	0.00	1.71	13.34	225	2025	73.50	0.00	6.78	26.96
319	119	53.84	0.00	-1.39	6.88	225	1025	73.50	0.00	6.78	-5.49
319	2019	53.84	0.00	-1.39	7.92	226	2026	76.26	0.00	6.70	26.45
320	120	57.23	0.00	-1.49	6.09	226	1026	76.26	0.00	6.70	-5.64
320	2020	57.23	0.00	-1.49	7.21	227	2027	79.02	0.00	6.12	25.80
321	121	60.62	0.00	-1.52	6.63	227	1027	79.02	0.00	6.12	-3.49
321	2021	60.62	0.00	-1.52	7.78	228	2028	81.78	0.00	5.69	24.57
322	122	64.01	0.00	-0.29	10.88	228	1028	81.78	0.00	5.69	-2.66
322	2022	64.01	0.00	-0.29	11.10	229	2029	84.54	0.00	2.95	17.05
323	123	67.40	0.00	1.91	17.98	229	1029	84.54	0.00	2.95	2.91
323	2023	67.40	0.00	1.91	16.54	230	2030	87.30	0.00	1.75	12.93
324	124	70.45	0.00	4.70	27.03	230	1030	87.30	0.00	1.75	4.57
324	2024	70.45	0.00	4.70	23.47	231	2031	90.06	0.00	0.27	7.36
325	125	73.50	0.00	6.78	32.08	231	1031	90.06	0.00	0.27	6.08
325	2025	73.50	0.00	6.78	26.96	232	2032	92.82	0.00	0.95	8.99
326	126	76.26	0.00	6.70	31.52	232	1032	92.82	0.00	0.95	4.45
326	2026	76.26	0.00	6.70	26.45	233	2033	95.58	0.00	1.12	8.61
327	127	79.02	0.00	6.12	30.42	233	1033	95.58	0.00	1.12	3.23
327	2027	79.02	0.00	6.12	25.80	234	2034	98.34	0.00	1.75	10.08
328	128	81.78	0.00	5.69	28.87	234	1034	98.34	0.00	1.75	1.70
328	2028	81.78	0.00	5.69	24.57	235	2035	101.10	0.00	1.21	5.82
329	129	84.54	0.00	2.95	19.29	235	1035	101.10	0.00	1.21	0.05
329	2029	84.54	0.00	2.95	17.05	401	1001	0.00	0.00	1.07	2.24
330	130	87.30	0.00	1.75	14.24	401	1	0.00	0.00	1.07	1.43
330	2030	87.30	0.00	1.75	12.93	402	1002	2.74	0.00	3.96	0.11
331	131	90.06	0.00	0.27	7.56	402	2	2.74	0.00	3.96	-2.89
331	2031	90.06	0.00	0.27	7.36	403	1003	5.48	0.00	4.99	-2.98
332	132	92.82	0.00	0.95	9.71	403	3	5.48	0.00	4.99	-6.75
332	2032	92.82	0.00	0.95	8.99	404	1004	8.22	0.00	6.11	-5.71
333	133	95.58	0.00	1.12	9.46	404	4	8.22	0.00	6.11	-10.33
333	2033	95.58	0.00	1.12	8.61	405	1005	10.96	0.00	4.68	-3.65
334	134	98.34	0.00	1.75	11.40	405	5	10.96	0.00	4.68	-7.18
334	2034	98.34	0.00	1.75	10.08	406	1006	13.70	0.00	1.52	2.58
335	135	101.10	0.00	1.21	6.74	406	6	13.70	0.00	1.52	1.43
335	2035	101.10	0.00	1.21	5.82	407	1007	16.44	0.00	-1.38	10.91
201	2001	0.00	0.00	1.07	7.37	407	7	16.44	0.00	-1.38	11.95
201	1001	0.00	0.00	1.07	2.24	408	1008	19.18	0.00	-1.24	10.83
202	2002	2.74	0.00	3.96	19.09	408	8	19.18	0.00	-1.24	11.78
202	1002	2.74	0.00	3.96	0.11	409	1009	21.92	0.00	-1.14	10.04
203	2003	5.48	0.00	4.99	20.90	409	9	21.92	0.00	-1.14	10.90
203	1003	5.48	0.00	4.99	-2.98	410	1010	24.66	0.00	-0.12	8.30
204	2004	8.22	0.00	6.11	23.56	410	10	24.66	0.00	-0.12	8.39
204	1004	8.22	0.00	6.11	-5.71	411	1011	27.40	0.00	1.52	5.07
205	2005	10.96	0.00	4.68	18.75	411	11	27.40	0.00	1.52	3.93
205	1005	10.96	0.00	4.68	-3.65	412	1012	30.45	0.00	4.58	-1.11
206	2006	13.70	0.00	1.52	9.86	412	12	30.45	0.00	4.58	-4.57
206	1006	13.70	0.00	1.52	2.58	413	1013	33.50	0.00	7.57	-8.37
207	2007	16.44	0.00	-1.38	4.30	413	13	33.50	0.00	7.57	-14.08
207	1007	16.44	0.00	-1.38	10.91	414	1014	36.89	0.00	9.98	-12.24
208	2008	19.18	0.00	-1.24	4.88	414	14	36.89	0.00	9.98	-19.79
208	1008	19.18	0.00	-1.24	10.83	415	1015	40.28	0.00	9.63	-10.93
209	2009	21.92	0.00	-1.14	4.56	415	15	40.28	0.00	9.63	-18.21
209	1009	21.92	0.00	-1.14	10.04	416	1016	43.67	0.00	7.84	-7.84
210	2010	24.66	0.00	-0.12	7.72	416	16	43.67	0.00	7.84	-13.77
210	1010	24.66	0.00	-0.12	8.30	417	1017	47.06	0.00	3.84	0.07
211	2011	27.40	0.00	1.52	12.33	417	17	47.06	0.00	3.84	-2.83
211	1011	27.40	0.00	1.52	5.07	418	1018	50.45	0.00	1.71	5.15
212	2012	30.45	0.00	4.58	20.80	418	18	50.45	0.00	1.71	3.85
212	1012	30.45	0.00	4.58	-1.11	419	1019	53.84	0.00	-1.39	14.56
213	2013	33.50	0.00	7.57	27.86	419	19	53.84	0.00	-1.39	15.60
213	1013	33.50	0.00	7.57	-8.37	420	1020	57.23	0.00	-1.49	14.32
214	2014	36.89	0.00	9.98	35.54	420	20	57.23	0.00	-1.49	15.45
214	1014	36.89	0.00	9.98	-12.24	421	1021	60.62	0.00	-1.52	15.05
215	2015	40.28	0.00	9.63	35.17	421	21	60.62	0.00	-1.52	16.20
215	1015	40.28	0.00	9.63	-10.93	422	1022	64.01	0.00	-0.29	12.50
216	2016	43.67	0.00	7.84	29.68	422	22	64.01	0.00	-0.29	12.72
216	1016	43.67	0.00	7.84	-7.84	423	1023	67.40	0.00	1.91	7.40

GRÁFICO DE ESFUERZOS

Legend:

- $N(T)$ (Normal Force)
- $V(T)$ (Shear Force)
- $M_z(Tm)$ (Bending Moment)

GRÁFICO DE ESFUERZOS

**Envolvente de tren de cargas plano genérico. MZ-**

0; 1)DERINT2.PaseoTren.Nudo101.Pos2.Mx- + { 0; 1)DERINT2.PaseoTren.Nudo101.Pos3.Mx- + { 0; 1)DERINT2.PaseoTren.Nudo102.Pos2.Mx- + { 0; 1)DERINT2.PaseoTren.Nudo103.Pos2.Mx- + { 0; 1)DERINT2.PaseoTren

Def. end;

Barra	Nudo	X	N (T)	Vy (T)	Mz (Tm)
1	1	0.00	0.00	5.33	-0.19
1	2	2.74	0.00	12.17	-33.48
2	2	2.74	0.00	11.93	-33.76
2	3	5.48	0.00	11.93	-66.44
3	3	5.48	0.00	11.33	-66.70
3	4	8.22	0.00	11.33	-97.74
4	4	8.22	0.00	10.37	-97.98
4	5	10.96	0.00	10.37	-126.39
5	5	10.96	0.00	9.07	-126.57
5	6	13.70	0.00	9.07	-151.43
6	6	13.70	0.00	7.50	-151.49
6	7	16.44	0.00	7.50	-172.03
7	7	16.44	0.00	5.76	-171.93
7	8	19.18	0.00	5.76	-187.70
8	8	19.18	0.00	4.06	-187.33
8	9	21.92	0.00	4.06	-198.45
9	9	21.92	0.00	2.71	-197.73
9	10	24.66	0.00	2.71	-205.15
10	10	24.66	0.00	2.17	-203.97
10	11	27.40	0.00	3.05	-210.78
11	11	27.40	0.00	4.46	-208.83
11	12	30.45	0.00	22.03	-252.99
12	12	30.45	0.00	26.09	-250.99
12	10013	33.50	0.00	26.17	-330.70
13	13	33.50	0.00	-60.82	-328.37
13	14	36.89	0.00	-36.89	-143.40
14	14	36.89	0.00	-27.41	-142.35
14	15	40.28	0.00	4.85	-108.64
15	15	40.28	0.00	3.63	-108.61
15	16	43.67	0.00	4.24	-122.69
16	16	43.67	0.00	2.57	-122.55
16	17	47.06	0.00	5.18	-132.37
17	17	47.06	0.00	3.21	-132.24
17	18	50.45	0.00	3.21	-143.13
18	18	50.45	0.00	1.08	-142.92
18	19	53.84	0.00	1.08	-146.58
19	19	53.84	0.00	-1.15	-146.22
19	20	57.23	0.00	-1.00	-142.35
20	20	57.23	0.00	-3.20	-141.77
20	21	60.62	0.00	-3.09	-131.00
21	21	60.62	0.00	-4.88	-130.04
21	22	64.01	0.00	-1.51	-115.60
22	22	64.01	0.00	-2.87	-114.31
22	23	67.40	0.00	15.97	-125.39
23	23	67.40	0.00	15.01	-124.34
23	24	70.45	0.00	27.65	-192.51
24	24	70.45	0.00	27.88	-191.37
24	10025	73.50	0.00	28.19	-276.77
25	25	73.50	0.00	-35.51	-275.22
25	26	76.26	0.00	-6.12	-211.69
26	26	76.26	0.00	-8.02	-211.59
26	27	79.02	0.00	-3.98	-195.16
27	27	79.02	0.00	-6.30	-194.90
27	28	81.78	0.00	-6.30	-177.52
28	28	81.78	0.00	-8.13	-177.13
28	29	84.54	0.00	-8.13	-154.70
29	29	84.54	0.00	-9.40	-154.22
29	30	87.30	0.00	-9.40	-128.27
30	30	87.30	0.00	-10.09	-127.75
30	31	90.06	0.00	-10.09	-99.90
31	31	90.06	0.00	-10.19	-99.36
31	32	92.82	0.00	-10.15	-71.26
32	32	92.82	0.00	-9.66	-70.72
32	33	95.58	0.00	-9.66	-44.05
33	33	95.58	0.00	-8.51	-43.52
33	34	98.34	0.00	-8.51	-20.03
34	34	98.34	0.00	-6.99	-19.54
34	35	101.10	0.00	-6.75	-0.28
101	101	0.00	0.00	-124.19	-0.78
101	102	2.74	0.00	16.49	-41.11

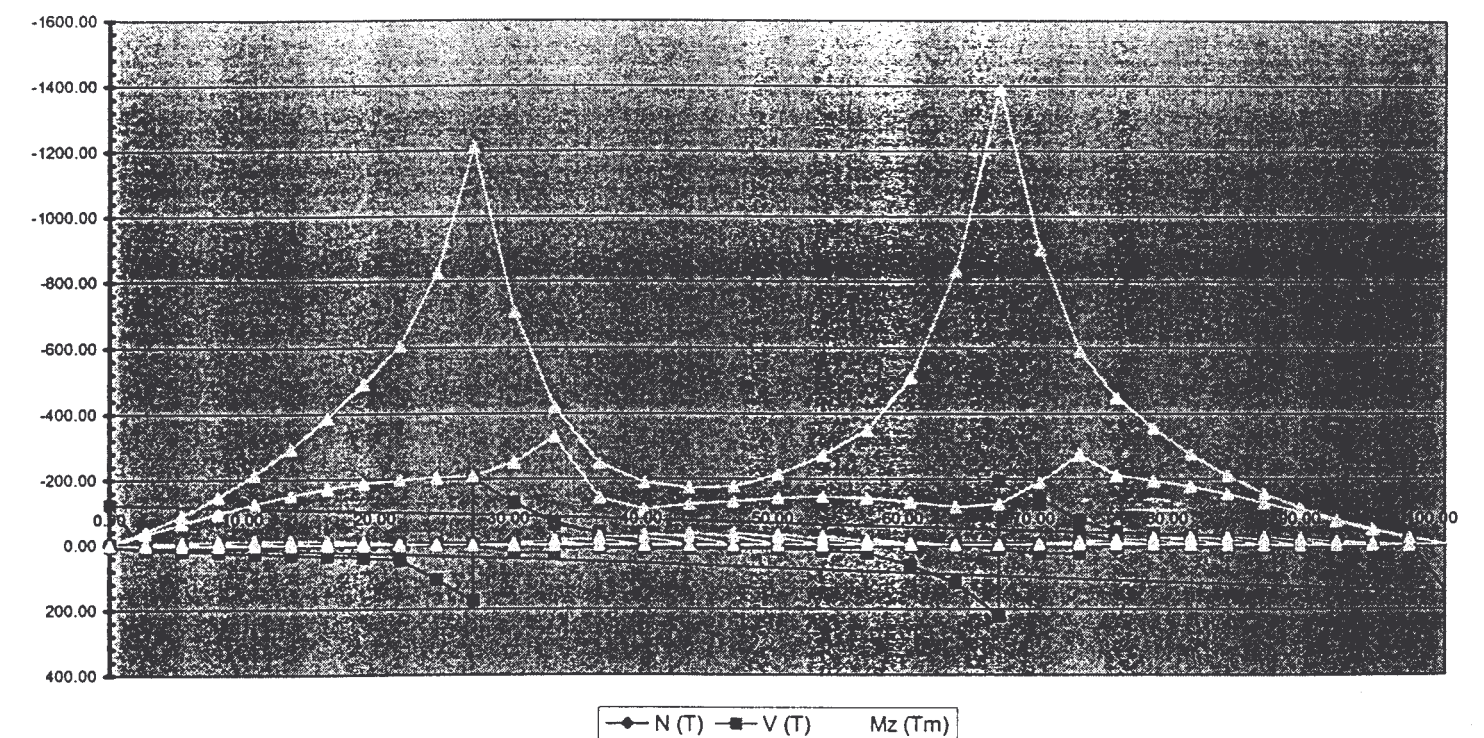
103	103	5.48	0.00	19.82	-89.64
103	104	8.22	0.00	22.67	-147.85
104	104	8.22	0.00	23.52	-147.58
104	105	10.96	0.00	26.37	-215.93
105	105	10.96	0.00	27.59	-215.73
105	106	13.70	0.00	30.44	-295.22
106	106	13.70	0.00	31.94	-295.14
106	107	16.44	0.00	34.79	-386.56
107	107	16.44	0.00	36.44	-386.67
107	108	19.18	0.00	39.28	-490.41
108	108	19.18	0.00	40.85	-490.80
108	109	21.92	0.00	47.06	-606.86
109	109	21.92	0.00	48.04	-607.57
109	110	24.66	0.00	107.77	-826.55
110	110	24.66	0.00	107.19	-827.02
110	10111	27.40	0.00	173.73	-1211.33
111	111	27.40	0.00	-203.49	-1212.45
111	112	30.45	0.00	-125.47	-707.32
112	112	30.45	0.00	-127.90	-708.64
112	113	33.50	0.00	-66.57	-418.49
113	113	33.50	0.00	-68.30	-419.39
113	114	36.89	0.00	-33.02	-248.62
114	114	36.89	0.00	-33.64	-248.97
114	115	40.28	0.00	-8.57	-190.26
115	115	40.28	0.00	-7.12	-190.29
115	116	43.67	0.00	-3.03	-173.35
116	116	43.67	0.00	-1.37	-173.49
116	117	47.06	0.00	7.36	-177.19
117	117	47.06	0.00	9.32	-177.29
117	118	50.45	0.00	13.22	-214.96
118	118	50.45	0.00	15.18	-215.14
118	119	53.84	0.00	18.71	-272.58
119	119	53.84	0.00	20.79	-272.92
119	120	57.23	0.00	25.47	-350.26
120	120	57.23	0.00	27.35	-350.81
120	121	60.62	0.00	63.87	-509.44
121	121	60.62	0.00	65.51	-509.21
121	122	64.01	0.00	116.06	-834.59
122	122	64.01	0.00	117.51	-834.22
122	10123	67.40	0.00	220.88	-1390.69
123	123	67.40	0.00	-194.12	-1390.59
123	124	70.45	0.00	-123.07	-898.28
124	124	70.45	0.00	-140.96	-899.05
124	125	73.50	0.00	-74.68	-589.33
125	125	73.50	0.00	-73.20	-589.85
125	126	76.26	0.00	-38.10	-449.16
126	126	76.26	0.00	-35.60	-449.21
126	127	79.02	0.00	-32.73	-354.90
127	127	79.02	0.00	-30.60	-355.16
127	128	81.78	0.00	-27.21	-275.74
128	128	81.78	0.00	-25.38	-276.14
128	129	84.54	0.00	-22.51	-210.05
129	129	84.54	0.00	-21.23	-210.52
129	130	87.30	0.00	-18.31	-155.99
130	130	87.30	0.00	-17.65	-156.50
130	131	90.06	0.00	-14.78	-111.76
131	131	90.06	0.00	-14.70	-112.30
131	132	92.82	0.00	-11.61	-75.74
132	132	92.82	0.00	-12.25	-76.28
132	133	95.58	0.00	-9.38	-46.43
133	133	95.58	0.00	-10.61	-46.97
133	134	98.34	0.00	-7.74	-21.65
134	134	98.34	0.00	-9.58	-22.20
134	135	101.10	0.00	145.91	-1.62
301	101	0.00	0.00	0.02	1.07
301	2001	0.00	0.00	0.12	1.00
302	102	2.74	0.00	0.00	2.36
302	2002	2.74	0.00	0.35	2.25
303	103	5.48	0.00	-0.25	2.33
303	2003	5.48	0.00	-0.01	2.40
304	104	8.22	0.00	-0.77	1.85
304	2004	8.22	0.00	-0.24	2.27
305	105	10.96	0.00	-1.02	1.14
305	2005	10.96	0.00	-0.90	1.91
306	106	13.70	0.00	-1.44	0.40
306	2006	13.70	0.00	-1.25	1.42
307	107	16.44	0.00	-1.61	-0.06
307	2007	16.44	0.00	-1.42	1.11
308	108	19.18	0.00	-1.62	0.01
308	2008	19.18	0.00	-1.32	1.12
309	109	21.92	0.00	-1.24	0.74
309	2009	21.92	0.00	-0.64	1.52
310	110	24.66	0.00	-0.26	0.62

310	2010	24.66	0.00	0.19	1.85
311	111	27.40	0.00	0.20	2.11
311	2011	27.40	0.00	0.20	1.96
312	112	30.45	0.00	-0.01	2.63
312	2012	30.45	0.00	0.34	2.44
313	113	33.50	0.00	-0.61	2.41
313	2013	33.50	0.00	-0.16	2.73
314	114	36.89	0.00	-1.08	2.34
314	2014	36.89	0.00	-0.61	2.98
315	115	40.28	0.00	-1.30	2.21
315	2015	40.28	0.00	-0.90	3.07
316	116	43.67	0.00	-1.60	1.97
316	2016	43.67	0.00	-1.03	3.01
317	117	47.06	0.00	-1.65	1.55
317	2017	47.06	0.00	-0.92	2.61
318	118	50.45	0.00	-1.53	0.70
318	2018	50.45	0.00	-1.40	1.84
319	119	53.84	0.00	-1.96	-0.37
319	2019	53.84	0.00	-1.79	1.10
320	120	57.23	0.00	-2.23	-0.96
320	2020	57.23	0.00	-2.04	0.69
321	121	60.62	0.00	-2.17	-0.52
321	2021	60.62	0.00	-1.87	0.93
322	122	64.01	0.00	-1.32	0.96
322	2022	64.01	0.00	-0.61	1.72
323	123	67.40	0.00	-2.13	-1.34
323	2023	67.40	0.00	-1.97	0.26
324	124	70.45	0.00	-3.00	-3.76
324	2024	70.45	0.00	-3.00	-1.49
325	125	73.50	0.00	-3.06	-4.05
325	2025	73.50	0.00	-3.06	-1.74
326	126	76.26	0.00	-2.69	-3.32
326	2026	76.26	0.00	-2.69	-1.29
327	127	79.02	0.00	-2.28	-2.17
327	2027	79.02	0.00	-2.28	-0.45
328	128	81.78	0.00	-1.77	-0.69
328	2028	81.78	0.00	-1.67	0.63
329	129	84.54	0.00	-1.23	0.92
329	2029	84.54	0.00	-1.15	1.79
330	130	87.30	0.00	-0.63	2.48
330	2030	87.30	0.00	-0.39	2.83
331	131	90.06	0.00	0.27	3.55
331	2031	90.06	0.00	0.72	3.15
332	132	92.82	0.00	0.61	3.34
332	2032	92.82	0.00	0.61	2.88
333	133	95.58	0.00	0.44	2.82
333	2033	95.58	0.00	0.44	2.48
334	134	98.34	0.00	0.23	2.15
334	2034	98.34	0.00	0.23	1.97
335	135	101.10	0.00	-1.71	-1.91
335	2035	101.10	0.00	-1.55	-0.64
201	2001	0.00	0.00	0.12	1.00
201	1001	0.00	0.00	0.74	0.02
202	2002	2.74	0.00	0.35	2.25
202	1002	2.74	0.00	3.13	-1.37
203	2003	5.48	0.00	-0.01	2.40
203	1003	5.48	0.00	5.51	-4.54
204	2004	8.22	0.00	-0.24	2.27
204	1004	8.22	0.00	6.59	-7.11
205	2005	10.96	0.00	-0.90	1.91
205	1005	10.96	0.00	7.07	-8.40
206	2006	13.70	0.00	-1.25	1.42
206	1006	13.70	0.00	6.97	-8.33
207	2007	16.44	0.00	-1.42	1.11
207	1007	16.44	0.00	6.31	-7.07
208	2008	19.18	0.00	-1.32	1.12
208	1008	19.18	0.00	5.26	-4.73
209	2009	21.92	0.00	-0.64	1.52
209	1009	21.92	0.00	3.50	-1.82
210	2010	24.66	0.00	0.19	1.85
210	1010	24.66	0.00	1.66	0.25
211	2011	27.40	0.00	0.20	1.96
211	1011	27.40	0.00	1.20	0.46
212	2012	30.45	0.00	0.34	2.44
212	1012	30.45	0.00	4.08	-2.35
213	2013	33.50	0.00	-0.16	2.73
213	1013	33.50	0.00	7.44	-8.85
214	2014	36.89	0.00	-0.61	2.98
214	1014	36.89	0.00	11.07	-16.44
215	2015	40.28	0.00	-0.90	3.07
215	1015	40.28	0.00	13.22	-21.45
216	2016	43.67	0.00	-1.03	3.01
216	1016	43.67	0.00	14.20	-24.00

217	2017	47.06	0.00	-0.92	2.61
217	1017	47.06	0.00	14.29	-23.98
218	2018	50.45	0.00	-1.40	1.84
218	1018	50.45	0.00	13.26	-21.50
219	2019	53.84	0.00	-1.79	1.10
219	1019	53.84	0.00	11.25	-16.78
220	2020	57.23	0.00	-2.04	0.69
220	1020	57.23	0.00	8.12	-10.35
221	2021	60.62	0.00	-1.87	0.93
221	1021	60.62	0.00	4.65	-3.79
222	2022	64.01	0.00	-0.61	1.72
222	1022	64.01	0.00	1.57	0.29
223	2023	67.40	0.00	-1.97	0.26
223	1023	67.40	0.00	1.64	0.80
224	2024	70.45	0.00	-3.00	-1.49
224	1024	70.45	0.00	3.87	-1.28
225	2025	73.50	0.00	-3.06	-1.74
225	1025	73.50	0.00	6.21	-6.06
226	2026	76.26	0.00	-2.69	-1.29
226	1026	76.26	0.00	8.10	-10.21
227	2027	79.02	0.00	-2.28	-0.45
227	1027	79.02	0.00	9.48	-13.62
228	2028	81.78	0.00	-1.67	0.63
228	1028	81.78	0.00	10.35	-15.65
229	2029	84.54	0.00	-1.15	1.79
229	1029	84.54	0.00	10.85	-16.08
230	2030	87.30	0.00	-0.39	2.83
230	1030	87.30	0.00	10.21	-14.85
231	2031	90.06	0.00	0.72	3.15
231	1031	90.06	0.00	9.04	-11.87
232	2032	92.82	0.00	0.61	2.88
232	1032	92.82	0.00	6.88	-7.21
233	2033	95.58	0.00	0.44	2.48
233	1033	95.58	0.00	3.52	-2.34
234	2034	98.34	0.00	0.23	1.97
234	1034	98.34	0.00	1.97	-0.07
235	2035	101.10	0.00	-1.55	-0.64
235	1035	101.10	0.00	1.40	-0.41
401	1001	0.00	0.00	0.74	0.02
401	1	0.00	0.00	1.07	-0.67
402	1002	2.74	0.00	3.13	-1.37
402	2	2.74	0.00	4.42	-4.03
403	1003	5.48	0.00	5.51	-4.54
403	3	5.48	0.00	5.72	-8.77
404	1004	8.22	0.00	6.59	-7.11
404	4	8.22	0.00	6.76	-12.14
405	1005	10.96	0.00	7.07	-8.40
405	5	10.96	0.00	7.25	-13.83
406	1006	13.70	0.00	6.97	-8.33
406	6	13.70	0.00	7.19	-13.74
407	1007	16.44	0.00	6.31	-7.07
407	7	16.44	0.00	6.55	-11.95
408	1008	19.18	0.00	5.27	-4.73
408	8	19.18	0.00	5.28	-8.71
409	1009	21.92	0.00	3.50	-1.82
409	9	21.92	0.00	3.71	-4.54
410	1010	24.66	0.00	1.66	0.25
410	10	24.66	0.00	2.12	-1.16
411	1011	27.40	0.00	1.20	0.46
411	11	27.40	0.00	1.64	-0.66
412	1012	30.45	0.00	4.08	-2.35
412	12	30.45	0.00	4.26	-5.49
413	1013	33.50	0.00	7.44	-8.85
413	13	33.50	0.00	7.81	-14.64
414	1014	36.89	0.00	11.07	-16.44
414	14	36.89	0.00	11.07	-24.82
415	1015	40.28	0.00	13.22	-21.45
415	15	40.28	0.00	13.22	-31.45
416	1016	43.67	0.00	14.30	-24.00
416	16	43.67	0.00	14.46	-34.83
417	1017	47.06	0.00	14.29	-23.98
417	17	47.06	0.00	14.49	-34.88
418	1018	50.45	0.00	13.26	-21.50
418	18	50.45	0.00	13.41	-31.53
419	1019	53.84	0.00	11.25	-16.78
419	19	53.84	0.00	11.25	-25.29
420	1020	57.23	0.00	8.12	-10.35
420	20	57.23	0.00	8.29	-16.53
421	1021	60.62	0.00	4.65	-3.79
421	21	60.62	0.00	4.65	-7.30
422	1022	64.01	0.00	1.57	0.29
422	22	64.01	0.00	2.88	-1.23
423	1023	67.40	0.00	1.64	0.80

423	23	67.40	0.00	2.42	-0.64
424	1024	70.45	0.00	3.87	-1.28
424	24	70.45	0.00	4.16	-4.37
425	1025	73.50	0.00	6.21	-6.06
425	25	73.50	0.00	6.84	-10.96
426	1026	76.26	0.00	8.10	-10.21
426	26	76.26	0.00	8.48	-16.49
427	1027	79.02	0.00	9.48	-13.62
427	27	79.02	0.00	9.93	-21.00
428	1028	81.78	0.00	10.35	-15.65
428	28	81.78	0.00	10.74	-23.65
429	1029	84.54	0.00	10.85	-16.08
429	29	84.54	0.00	10.85	-24.28
430	1030	87.30	0.00	10.21	-14.85
430	30	87.30	0.00	10.40	-22.67
431	1031	90.06	0.00	9.04	-11.87
431	31	90.06	0.00	9.19	-18.71
432	1032	92.82	0.00	6.88	-7.21
432	32	92.82	0.00	7.10	-12.47
433	1033	95.58	0.00	3.52	-2.34
433	33	95.58	0.00	3.83	-5.19
434	1034	98.34	0.00	1.97	-0.07
434	34	98.34	0.00	2.79	-1.91
435	1035	101.10	0.00	1.40	-0.41
435	35	101.10	0.00	1.40	-1.47

GRÁFICO DE ESFUERZOS



distribución de peso propio

$0.85PVP + [-.85; .85]PPOSA + [-.85; -.85]PPCF1 + [-.85; -.85]PPLF3 + [-.85; -.85]PPLF2$
 L exc

Barra	Nudo	X	N (T)	Vy (T)	Mz (Tm)
1	1	0.00	0.00	13.37	-0.42
1	2	2.74	0.00	13.38	-37.05
2	2	2.74	0.00	14.25	-37.86
2	3	5.48	0.00	14.25	-76.91
3	3	5.48	0.00	14.20	-77.67
3	4	8.22	0.00	14.21	-116.59
4	4	8.22	0.00	13.34	-117.27
4	5	10.96	0.00	13.33	-153.77
5	5	10.96	0.00	11.71	-154.33
5	6	13.70	0.00	11.72	-186.41
6	6	13.70	0.00	9.50	-186.80
6	7	16.44	0.00	9.49	-212.81
7	7	16.44	0.00	6.85	-212.99
7	8	19.18	0.00	6.85	-231.75
8	8	19.18	0.00	4.02	-231.63
8	9	21.92	0.00	4.02	-242.63
9	9	21.92	0.00	1.33	-242.14
9	10	24.66	0.00	1.34	-245.81
10	10	24.66	0.00	2.98	-246.02
10	11	27.40	0.00	2.98	-254.18
11	11	27.40	0.00	4.44	-253.98
11	12	30.45	0.00	4.45	-267.55
12	12	30.45	0.00	6.55	-267.06
12	10013	33.50	0.00	6.54	-287.00
13	13	33.50	0.00	-4.93	-286.82
13	14	36.89	0.00	-4.92	-270.10
14	14	36.89	0.00	-2.58	-270.50
14	15	40.28	0.00	-2.58	-261.76
15	15	40.28	0.00	1.96	-262.18
15	16	43.67	0.00	1.95	-268.85
16	16	43.67	0.00	5.41	-269.83
16	17	47.06	0.00	5.42	-288.20
17	17	47.06	0.00	7.26	-289.48
17	18	50.45	0.00	7.26	-314.08
18	18	50.45	0.00	7.24	-315.48
18	19	53.84	0.00	7.24	-340.02
19	19	53.84	0.00	5.37	-341.31
19	20	57.23	0.00	5.37	-359.53
20	20	57.23	0.00	1.89	-360.51
20	21	60.62	0.00	1.90	-366.92
21	21	60.62	0.00	-2.69	-367.34
2	22	64.01	0.00	-2.68	-358.26
22	22	64.01	0.00	-5.04	-358.67
22	23	67.40	0.00	-5.04	-341.55
23	23	67.40	0.00	-7.74	-341.37
23	24	70.45	0.00	-7.74	-317.74
24	24	70.45	0.00	-9.89	-317.27
24	10025	73.50	0.00	-9.89	-287.10
25	25	73.50	0.00	-16.73	-286.92
25	26	76.26	0.00	-16.74	-240.75
26	26	76.26	0.00	-18.45	-240.98
26	27	79.02	0.00	-18.45	-190.07
27	27	79.02	0.00	-15.73	-189.58
27	28	81.78	0.00	-15.73	-146.21
28	28	81.78	0.00	-12.85	-146.09
28	29	84.54	0.00	-12.84	-110.64
29	29	84.54	0.00	-10.17	-110.81
29	30	87.30	0.00	-10.17	-82.77
30	30	87.30	0.00	-7.92	-83.17
30	31	90.06	0.00	-7.93	-61.31
31	31	90.06	0.00	-6.30	-61.88
31	32	92.82	0.00	-6.29	-44.52
32	32	92.82	0.00	-5.41	-45.20
32	33	95.58	0.00	-5.41	-30.26
33	33	95.58	0.00	-5.40	-31.04
33	34	98.34	0.00	-5.40	-16.17
34	34	98.34	0.00	-6.32	-17.00
34	35	101.10	0.00	-6.32	0.43
101	101	0.00	0.00	6.36	0.42
101	102	2.74	0.00	6.36	-17.01
102	102	2.74	0.00	5.48	-16.19
102	103	5.48	0.00	5.48	-31.21

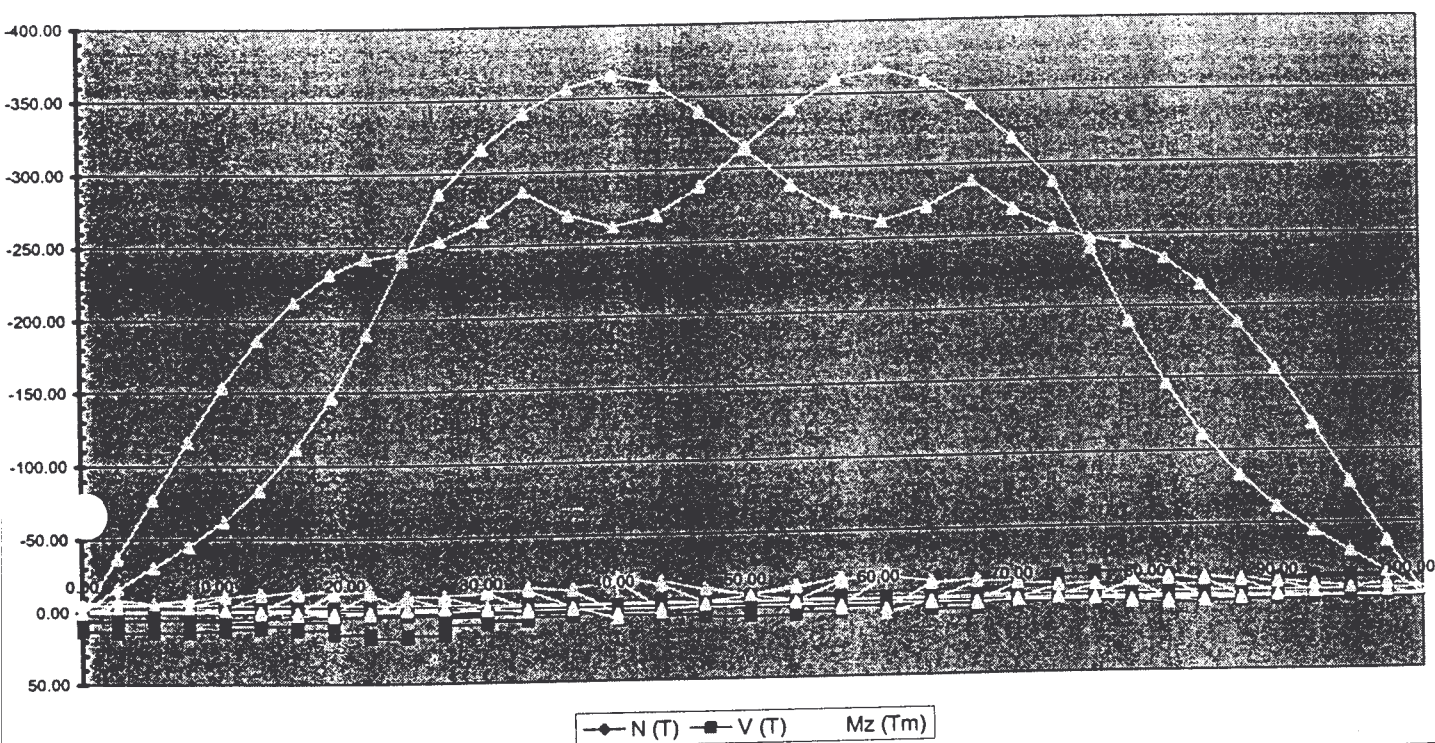
103	103	5.48	0.00	5.53	-30.45
103	104	8.22	0.00	5.53	-45.59
104	104	8.22	0.00	6.41	-44.91
104	105	10.96	0.00	6.41	-62.46
105	105	10.96	0.00	8.02	-61.91
105	106	13.70	0.00	8.02	-83.89
106	106	13.70	0.00	10.24	-83.50
106	107	16.44	0.00	10.24	-111.56
107	107	16.44	0.00	12.89	-111.39
107	108	19.18	0.00	12.89	-146.68
108	108	19.18	0.00	15.72	-146.80
108	109	21.92	0.00	15.71	-189.86
109	109	21.92	0.00	18.39	-190.35
109	110	24.66	0.00	18.40	-240.75
110	110	24.66	0.00	16.76	-240.53
110	10111	27.40	0.00	16.75	-286.44
111	111	27.40	0.00	9.78	-286.64
111	112	30.45	0.00	9.78	-316.48
112	112	30.45	0.00	7.69	-316.97
112	113	33.50	0.00	7.68	-340.40
113	113	33.50	0.00	5.01	-340.59
113	114	36.89	0.00	5.02	-357.60
114	114	36.89	0.00	2.67	-357.20
114	115	40.28	0.00	2.67	-366.24
115	115	40.28	0.00	-1.88	-365.81
115	116	43.67	0.00	-1.89	-359.43
116	116	43.67	0.00	-5.33	-358.45
116	117	47.06	0.00	-5.34	-340.34
117	117	47.06	0.00	-7.17	-339.05
117	118	50.45	0.00	-7.17	-314.72
118	118	50.45	0.00	-7.16	-313.33
118	119	53.84	0.00	-7.16	-289.06
119	119	53.84	0.00	-5.29	-287.77
119	120	57.23	0.00	-5.30	-269.81
120	120	57.23	0.00	-1.82	-268.82
120	121	60.62	0.00	-1.82	-262.66
121	121	60.62	0.00	2.75	-262.23
121	122	64.01	0.00	2.75	-271.57
122	122	64.01	0.00	5.12	-271.17
122	10123	67.40	0.00	5.13	-288.51
123	123	67.40	0.00	-6.60	-288.69
123	124	70.45	0.00	-6.60	-268.57
124	124	70.45	0.00	-4.46	-269.05
124	125	73.50	0.00	-4.46	-255.46
125	125	73.50	0.00	-2.93	-255.64
125	126	76.26	0.00	-2.93	-247.56
126	126	76.26	0.00	-1.22	-247.33
126	127	79.02	0.00	-1.21	-243.99
127	127	79.02	0.00	-3.94	-244.49
127	128	81.78	0.00	-3.94	-233.60
128	128	81.78	0.00	-6.81	-233.71
128	129	84.54	0.00	-6.82	-214.91
129	129	84.54	0.00	-9.49	-214.74
129	130	87.30	0.00	-9.49	-188.52
130	130	87.30	0.00	-11.74	-188.12
130	131	90.06	0.00	-11.73	-155.72
131	131	90.06	0.00	-13.36	-155.16
131	132	92.82	0.00	-13.37	-118.25
132	132	92.82	0.00	-14.25	-117.56
132	133	95.58	0.00	-14.25	-78.25
133	133	95.58	0.00	-14.26	-77.48
133	134	98.34	0.00	-14.26	-38.09
134	134	98.34	0.00	-13.34	-37.26
134	135	101.10	0.00	-13.34	-0.43
301	101	0.00	0.00	0.94	-0.05
301	2001	0.00	0.00	0.94	-0.76
302	102	2.74	0.00	0.88	-3.21
302	2002	2.74	0.00	0.88	-3.88
303	103	5.48	0.00	-0.04	-6.14
303	2003	5.48	0.00	-0.04	-6.09
304	104	8.22	0.00	-0.88	-8.77
304	2004	8.22	0.00	-0.88	-8.11
305	105	10.96	0.00	-1.62	-11.09
305	2005	10.96	0.00	-1.62	-9.87
306	106	13.70	0.00	-2.22	-12.99
306	2006	13.70	0.00	-2.22	-11.31
307	107	16.44	0.00	-2.64	-14.32
307	2007	16.44	0.00	-2.64	-12.33
308	108	19.18	0.00	-2.82	-14.90
308	2008	19.18	0.00	-2.82	-12.77
309	109	21.92	0.00	-2.69	-14.44
309	2009	21.92	0.00	-2.69	-12.41
310	110	24.66	0.00	-1.84	-0.45

310	2010	24.66	0.00	1.64	-1.69
311	111	27.40	0.00	1.47	-1.43
311	2011	27.40	0.00	1.47	-2.54
312	112	30.45	0.00	2.09	-0.09
312	2012	30.45	0.00	2.09	-1.68
313	113	33.50	0.00	2.67	1.56
313	2013	33.50	0.00	2.67	-0.46
314	114	36.89	0.00	2.35	0.37
314	2014	36.89	0.00	2.35	-1.42
315	115	40.28	0.00	4.56	6.92
315	2015	40.28	0.00	4.56	3.48
316	116	43.67	0.00	3.45	3.46
316	2016	43.67	0.00	3.45	0.85
317	117	47.06	0.00	1.84	-1.62
317	2017	47.06	0.00	1.84	-3.02
318	118	50.45	0.00	-0.02	-7.45
318	2018	50.45	0.00	-0.02	-7.45
319	119	53.84	0.00	-1.86	-13.29
319	2019	53.84	0.00	-1.86	-11.87
320	120	57.23	0.00	-3.48	-18.37
320	2020	57.23	0.00	-3.48	-15.74
321	121	60.62	0.00	-4.57	-21.83
321	2021	60.62	0.00	-4.57	-18.37
322	122	64.01	0.00	-2.36	-14.48
322	2022	64.01	0.00	-2.36	-12.69
323	123	67.40	0.00	-2.70	-15.35
323	2023	67.40	0.00	-2.70	-13.32
324	124	70.45	0.00	-2.13	-13.45
324	2024	70.45	0.00	-2.13	-11.82
325	125	73.50	0.00	-1.53	-10.87
325	2025	73.50	0.00	-1.53	-9.72
326	126	76.26	0.00	-1.72	-11.06
326	2026	76.26	0.00	-1.72	-9.76
327	127	79.02	0.00	2.73	2.56
327	2027	79.02	0.00	2.73	0.49
328	128	81.78	0.00	2.87	3.02
328	2028	81.78	0.00	2.87	0.84
329	129	84.54	0.00	2.68	2.41
329	2029	84.54	0.00	2.68	0.37
330	130	87.30	0.00	2.24	1.04
330	2030	87.30	0.00	2.24	-0.67
331	131	90.06	0.00	1.63	-0.91
331	2031	90.06	0.00	1.63	-2.14
332	132	92.82	0.00	0.88	-3.27
332	2032	92.82	0.00	0.88	-3.94
333	133	95.58	0.00	0.02	-5.98
333	2033	95.58	0.00	0.02	-5.98
334	134	98.34	0.00	-0.93	-8.94
334	2034	98.34	0.00	-0.93	-8.25
335	135	101.10	0.00	-0.97	-6.07
335	2035	101.10	0.00	-0.97	-5.34
201	2001	0.00	0.00	0.94	-0.76
201	1001	0.00	0.00	0.94	-5.24
202	2002	2.74	0.00	0.88	-3.88
202	1002	2.74	0.00	0.88	-8.11
203	2003	5.48	0.00	-0.04	-6.09
203	1003	5.48	0.00	-0.04	-5.89
204	2004	8.22	0.00	-0.88	-8.11
204	1004	8.22	0.00	-0.88	-3.88
205	2005	10.96	0.00	-1.62	-9.87
205	1005	10.96	0.00	-1.62	-2.13
206	2006	13.70	0.00	-2.22	-11.31
206	1006	13.70	0.00	-2.22	-0.69
207	2007	16.44	0.00	-2.64	-12.33
207	1007	16.44	0.00	-2.64	0.33
208	2008	19.18	0.00	-2.82	-12.77
208	1008	19.18	0.00	-2.82	0.78
209	2009	21.92	0.00	-2.69	-12.41
209	1009	21.92	0.00	-2.69	0.43
210	2010	24.66	0.00	1.64	-1.69
210	1010	24.66	0.00	1.64	-9.55
211	2011	27.40	0.00	1.47	-2.54
211	1011	27.40	0.00	1.47	-9.58
212	2012	30.45	0.00	2.09	-1.68
211	1012	30.45	0.00	2.09	-11.72
211	2013	33.50	0.00	2.67	-0.46
213	1013	33.50	0.00	2.67	-13.23
214	2014	36.89	0.00	2.35	-1.42
214	1014	36.89	0.00	2.35	-12.66
215	2015	40.28	0.00	4.56	3.48
215	1015	40.28	0.00	4.56	-18.31
216	2016	43.67	0.00	3.45	0.85
216	1016	43.67	0.00	3.45	-15.68

217	2017	47.06	0.00	1.84	-3.02
217	1017	47.06	0.00	1.84	-11.82
218	2018	50.45	0.00	-0.02	-7.45
218	1018	50.45	0.00	-0.02	-7.38
219	2019	53.84	0.00	-1.86	-11.87
219	1019	53.84	0.00	-1.86	-2.95
220	2020	57.23	0.00	-3.48	-15.74
220	1020	57.23	0.00	-3.48	0.91
221	2021	60.62	0.00	-4.57	-18.37
221	1021	60.62	0.00	-4.57	3.54
222	2022	64.01	0.00	-2.36	-12.69
222	1022	64.01	0.00	-2.36	-1.38
223	2023	67.40	0.00	-2.70	-13.32
223	1023	67.40	0.00	-2.70	-0.37
224	2024	70.45	0.00	-2.13	-11.82
224	1024	70.45	0.00	-2.13	-1.57
225	2025	73.50	0.00	-1.53	-9.72
225	1025	73.50	0.00	-1.53	-2.42
226	2026	76.26	0.00	-1.72	-9.76
226	1026	76.26	0.00	-1.72	-1.54
227	2027	79.02	0.00	2.73	0.49
227	1027	79.02	0.00	2.73	-12.57
228	2028	81.78	0.00	2.87	0.84
228	1028	81.78	0.00	2.87	-12.91
229	2029	84.54	0.00	2.68	0.37
229	1029	84.54	0.00	2.68	-12.45
230	2030	87.30	0.00	2.24	-0.67
230	1030	87.30	0.00	2.24	-11.41
231	2031	90.06	0.00	1.63	-2.14
231	1031	90.06	0.00	1.63	-9.94
232	2032	92.82	0.00	0.88	-3.94
232	1032	92.82	0.00	0.88	-8.14
233	2033	95.58	0.00	0.02	-5.98
233	1033	95.58	0.00	0.02	-6.09
234	2034	98.34	0.00	-0.93	-8.25
234	1034	98.34	0.00	-0.93	-3.83
235	2035	101.10	0.00	-0.97	-5.34
235	1035	101.10	0.00	-0.97	-0.71
401	1001	0.00	0.00	0.94	-5.24
401	1	0.00	0.00	0.94	-5.94
402	1002	2.74	0.00	0.88	-8.11
402	2	2.74	0.00	0.88	-8.77
403	1003	5.48	0.00	-0.04	-5.89
403	3	5.48	0.00	-0.04	-5.86
404	1004	8.22	0.00	-0.88	-3.88
404	4	8.22	0.00	-0.88	-3.21
405	1005	10.96	0.00	-1.62	-2.13
405	5	10.96	0.00	-1.62	-0.90
406	1006	13.70	0.00	-2.22	-0.69
406	6	13.70	0.00	-2.22	0.99
407	1007	16.44	0.00	-2.64	0.33
407	7	16.44	0.00	-2.64	2.33
408	1008	19.18	0.00	-2.82	0.78
408	8	19.18	0.00	-2.82	2.92
409	1009	21.92	0.00	-2.69	0.43
409	9	21.92	0.00	-2.69	2.46
410	1010	24.66	0.00	1.64	-9.55
410	10	24.66	0.00	1.64	-10.79
411	1011	27.40	0.00	1.47	-9.58
411	11	27.40	0.00	1.47	-10.68
412	1012	30.45	0.00	2.09	-11.72
412	12	30.45	0.00	2.09	-13.31
413	1013	33.50	0.00	2.67	-13.23
413	13	33.50	0.00	2.67	-15.25
414	1014	36.89	0.00	2.35	-12.66
414	14	36.89	0.00	2.35	-14.44
415	1015	40.28	0.00	4.56	-18.31
415	15	40.28	0.00	4.56	-21.75
416	1016	43.67	0.00	3.45	-15.68
416	16	43.67	0.00	3.45	-18.28
417	1017	47.06	0.00	1.84	-11.82
417	17	47.06	0.00	1.84	-13.20
418	1018	50.45	0.00	-0.02	-7.38
418	18	50.45	0.00	-0.02	-7.37
419	1019	53.84	0.00	-1.86	-2.95
419	19	53.84	0.00	-1.86	-1.54
420	1020	57.23	0.00	-3.49	0.91
420	20	57.23	0.00	-3.49	3.54
421	1021	60.62	0.00	-4.57	3.54
421	21	60.62	0.00	-4.57	7.00
422	1022	64.01	0.00	-2.36	-1.38
422	22	64.01	0.00	-2.36	0.41
423	1023	67.40	0.00	-2.70	-0.37

423	23	67.40	0.00	-2.70	1.67
424	1024	70.45	0.00	-2.13	-1.57
424	24	70.45	0.00	-2.13	0.04
425	1025	73.50	0.00	-1.53	-2.42
425	25	73.50	0.00	-1.53	-1.27
426	1026	76.26	0.00	-1.72	-1.54
426	26	76.26	0.00	-1.72	-0.25
427	1027	79.02	0.00	2.73	-12.57
427	27	79.02	0.00	2.73	-14.63
428	1028	81.78	0.00	2.87	-12.91
428	28	81.78	0.00	2.87	-15.09
429	1029	84.54	0.00	2.68	-12.45
429	29	84.54	0.00	2.68	-14.48
430	1030	87.30	0.00	2.24	-11.41
430	30	87.30	0.00	2.24	-13.12
431	1031	90.06	0.00	1.63	-9.94
431	31	90.06	0.00	1.63	-11.17
432	1032	92.82	0.00	0.88	-8.14
432	32	92.82	0.00	0.88	-8.81
433	1033	95.58	0.00	0.02	-6.09
433	33	95.58	0.00	0.02	-6.10
434	1034	98.34	0.00	-0.93	-3.83
434	34	98.34	0.00	-0.93	-3.14
435	1035	101.10	0.00	-0.97	-0.71
435	35	101.10	0.00	-0.97	0.03

GRÁFICO DE ESFUERZOS



~csimp4.esv

Programa DINTEL IDEAM S.A.
LTORSION

08/12/02

CÁLCULO TENSIONAL

Hipótesis de cálculo:

LTORSION

Desbloqueo empotramiento torsion

[1; 1]LTORSION

Coef. exc:

Barra	Nudo	X	N (T)	Vy (T)	Mz (Tm)
1	1	0.00	0.00	-0.41	0.00
1	2	2.74	0.00	-0.41	1.12
2	2	2.74	0.00	-0.27	1.11
2	3	5.48	0.00	-0.27	1.85
3	3	5.48	0.00	-0.16	1.85
3	4	8.22	0.00	-0.16	2.28
4	4	8.22	0.00	-0.07	2.28
4	5	10.96	0.00	-0.07	2.48
5	5	10.96	0.00	0.00	2.48
5	6	13.70	0.00	0.00	2.50
6	6	13.70	0.00	0.05	2.50
6	7	16.44	0.00	0.05	2.36
7	7	16.44	0.00	0.09	2.37
7	8	19.18	0.00	0.09	2.12
8	8	19.18	0.00	0.12	2.12
8	9	21.92	0.00	0.12	1.80
9	9	21.92	0.00	0.14	1.80
9	10	24.66	0.00	0.14	1.42
10	10	24.66	0.00	0.14	1.42
10	11	27.40	0.00	0.14	1.03
11	11	27.40	0.00	0.12	1.02
11	12	30.45	0.00	0.12	0.64
12	12	30.45	0.00	0.48	0.63
12	10013	33.50	0.00	0.48	-0.85
13	13	33.50	0.00	-0.71	-0.86
13	14	36.89	0.00	-0.71	1.54
14	14	36.89	0.00	-0.13	1.54
14	15	40.28	0.00	-0.13	1.99
15	15	40.28	0.00	0.25	2.00
15	16	43.67	0.00	0.25	1.14
16	16	43.67	0.00	0.49	1.16
16	17	47.06	0.00	0.49	-0.50
17	17	47.06	0.00	0.60	-0.47
17	18	50.45	0.00	0.60	-2.50
18	18	50.45	0.00	0.59	-2.47
18	19	53.84	0.00	0.59	-4.47
19	19	53.84	0.00	0.47	-4.45
19	20	57.23	0.00	0.47	-6.04
20	20	57.23	0.00	0.22	-6.02
20	21	60.62	0.00	0.22	-6.76
21	21	60.62	0.00	-0.19	-6.75
21	22	64.01	0.00	-0.19	-6.10
22	22	64.01	0.00	-0.79	-6.11
22	23	67.40	0.00	-0.79	-3.42
23	23	67.40	0.00	-1.58	-3.44
23	24	70.45	0.00	-1.58	1.39
24	24	70.45	0.00	-1.97	1.38
24	10025	73.50	0.00	-1.97	7.40
25	25	73.50	0.00	0.51	7.39
25	26	76.26	0.00	0.51	5.98
26	26	76.26	0.00	0.49	5.97

CÁLCULO TENSIONAL

Hipótesis de cálculo:
LTORSION

Desbloqueo empotramiento torsion

[1; 1]LTORSION

Coef. exc:

Barra	Nudo	X	N (T)	Vy (T)	Mz (Tm)
26	27	79.02	0.00	0.49	4.63
27	27	79.02	0.00	0.45	4.63
27	28	81.78	0.00	0.45	3.39
28	28	81.78	0.00	0.41	3.39
28	29	84.54	0.00	0.41	2.27
29	29	84.54	0.00	0.35	2.27
29	30	87.30	0.00	0.35	1.29
30	30	87.30	0.00	0.29	1.30
30	31	90.06	0.00	0.29	0.49
31	31	90.06	0.00	0.21	0.49
31	32	92.82	0.00	0.21	-0.10
32	32	92.82	0.00	0.12	-0.10
32	33	95.58	0.00	0.12	-0.42
33	33	95.58	0.00	0.00	-0.43
33	34	98.34	0.00	0.00	-0.42
34	34	98.34	0.00	-0.16	-0.43
34	35	101.10	0.00	-0.16	0.00
101	101	0.00	0.00	0.12	0.00
101	102	2.74	0.00	0.12	-0.34
102	102	2.74	0.00	-0.02	-0.33
102	103	5.48	0.00	-0.02	-0.29
103	103	5.48	0.00	-0.13	-0.29
103	104	8.22	0.00	-0.13	0.06
104	104	8.22	0.00	-0.21	0.06
104	105	10.96	0.00	-0.21	0.64
105	105	10.96	0.00	-0.28	0.64
105	106	13.70	0.00	-0.28	1.41
106	106	13.70	0.00	-0.33	1.41
106	107	16.44	0.00	-0.33	2.32
107	107	16.44	0.00	-0.37	2.32
107	108	19.18	0.00	-0.37	3.35
108	108	19.18	0.00	-0.40	3.35
108	109	21.92	0.00	-0.40	4.45
109	109	21.92	0.00	-0.42	4.46
109	110	24.66	0.00	-0.42	5.61
110	110	24.66	0.00	-0.43	5.62
110	10111	27.40	0.00	-0.43	6.79
111	111	27.40	0.00	1.85	6.80
111	112	30.45	0.00	1.85	1.14
112	112	30.45	0.00	1.49	1.16
112	113	33.50	0.00	1.49	-3.40
113	113	33.50	0.00	0.73	-3.38
113	114	36.89	0.00	0.73	-5.87
114	114	36.89	0.00	0.16	-5.86
114	115	40.28	0.00	0.16	-6.40
115	115	40.28	0.00	-0.23	-6.41
115	116	43.67	0.00	-0.23	-5.63
116	116	43.67	0.00	-0.46	-5.65
116	117	47.06	0.00	-0.46	-4.08
117	117	47.06	0.00	-0.57	-4.10
117	118	50.45	0.00	-0.57	-2.16

CÁLCULO TENSIONAL

Hipótesis de cálculo:
LTORSION

Desbloqueo empotramiento torsion

[1; 1]LTORSION

Coef. exc:

Barra	Nudo	X	N (T)	Vy (T)	Mz (Tm)
118	118	50.45	0.00	-0.57	-2.19
118	119	53.84	0.00	-0.57	-0.27
119	119	53.84	0.00	-0.44	-0.29
119	120	57.23	0.00	-0.44	1.21
120	120	57.23	0.00	-0.19	1.20
120	121	60.62	0.00	-0.19	1.85
121	121	60.62	0.00	0.22	1.85
121	122	64.01	0.00	0.22	1.12
122	122	64.01	0.00	0.82	1.12
122	10123	67.40	0.00	0.82	-1.64
123	123	67.40	0.00	-0.61	-1.63
123	124	70.45	0.00	-0.61	0.23
124	124	70.45	0.00	-0.22	0.24
124	125	73.50	0.00	-0.22	0.91
125	125	73.50	0.00	-0.21	0.91
125	126	76.26	0.00	-0.21	1.49
126	126	76.26	0.00	-0.19	1.50
126	127	79.02	0.00	-0.19	2.01
127	127	79.02	0.00	-0.15	2.01
127	128	81.78	0.00	-0.15	2.42
128	128	81.78	0.00	-0.11	2.42
128	129	84.54	0.00	-0.11	2.71
129	129	84.54	0.00	-0.05	2.71
129	130	87.30	0.00	-0.05	2.85
130	130	87.30	0.00	0.01	2.85
130	131	90.06	0.00	0.01	2.82
131	131	90.06	0.00	0.09	2.82
131	132	92.82	0.00	0.09	2.58
132	132	92.82	0.00	0.18	2.59
132	133	95.58	0.00	0.18	2.08
133	133	95.58	0.00	0.30	2.09
133	134	98.34	0.00	0.30	1.25
134	134	98.34	0.00	0.46	1.26
134	135	101.10	0.00	0.46	0.00
301	101	0.00	0.00	0.09	-3.29
301	2001	0.00	0.00	0.09	-3.35
302	102	2.74	0.00	0.14	-6.54
302	2002	2.74	0.00	0.14	-6.65
303	103	5.48	0.00	0.11	-6.53
303	2003	5.48	0.00	0.11	-6.61
304	104	8.22	0.00	0.09	-6.53
304	2004	8.22	0.00	0.09	-6.60
305	105	10.96	0.00	0.07	-6.56
305	2005	10.96	0.00	0.07	-6.61
306	106	13.70	0.00	0.05	-6.60
306	2006	13.70	0.00	0.05	-6.64
307	107	16.44	0.00	0.04	-6.67
307	2007	16.44	0.00	0.04	-6.70
308	108	19.18	0.00	0.03	-6.77
308	2008	19.18	0.00	0.03	-6.79
309	109	21.92	0.00	0.02	-6.91

CÁLCULO TENSIONAL

Hipótesis de cálculo:
LTORSION

Desbloqueo empotramiento torsion

[1; 1]LTORSION

Coef. exc:

Barra	Nudo	X	N (T)	Vy (T)	Mz (Tm)
309	2009	21.92	0.00	0.02	-6.92
310	110	24.66	0.00	0.00	-7.09
310	2010	24.66	0.00	0.00	-7.09
311	111	27.40	0.00	-0.02	-7.73
311	2011	27.40	0.00	-0.02	-7.72
312	112	30.45	0.00	0.36	-7.31
312	2012	30.45	0.00	0.36	-7.58
313	113	33.50	0.00	0.76	-6.23
313	2013	33.50	0.00	0.76	-6.81
314	114	36.89	0.00	0.57	-6.98
314	2014	36.89	0.00	0.57	-7.42
315	115	40.28	0.00	0.39	-7.35
315	2015	40.28	0.00	0.39	-7.64
316	116	43.67	0.00	0.24	-7.67
316	2016	43.67	0.00	0.24	-7.85
317	117	47.06	0.00	0.11	-7.97
317	2017	47.06	0.00	0.11	-8.06
318	118	50.45	0.00	-0.01	-8.30
318	2018	50.45	0.00	-0.01	-8.30
319	119	53.84	0.00	-0.12	-8.70
319	2019	53.84	0.00	-0.12	-8.61
320	120	57.23	0.00	-0.25	-9.20
320	2020	57.23	0.00	-0.25	-9.01
321	121	60.62	0.00	-0.41	-9.86
321	2021	60.62	0.00	-0.41	-9.55
322	122	64.01	0.00	-0.60	-10.69
322	2022	64.01	0.00	-0.60	-10.23
323	123	67.40	0.00	-0.79	-11.12
323	2023	67.40	0.00	-0.79	-10.52
324	124	70.45	0.00	-0.39	-9.67
324	2024	70.45	0.00	-0.39	-9.38
325	125	73.50	0.00	-0.01	-7.73
325	2025	73.50	0.00	-0.01	-7.72
326	126	76.26	0.00	-0.02	-7.22
326	2026	76.26	0.00	-0.02	-7.20
327	127	79.02	0.00	-0.04	-7.12
327	2027	79.02	0.00	-0.04	-7.09
328	128	81.78	0.00	-0.04	-7.05
328	2028	81.78	0.00	-0.04	-7.01
329	129	84.54	0.00	-0.05	-7.01
329	2029	84.54	0.00	-0.05	-6.97
330	130	87.30	0.00	-0.06	-7.01
330	2030	87.30	0.00	-0.06	-6.96
331	131	90.06	0.00	-0.08	-7.05
331	2031	90.06	0.00	-0.08	-7.00
332	132	92.82	0.00	-0.10	-7.15
332	2032	92.82	0.00	-0.10	-7.08
333	133	95.58	0.00	-0.12	-7.30
333	2033	95.58	0.00	-0.12	-7.21
334	134	98.34	0.00	-0.15	-7.50
334	2034	98.34	0.00	-0.15	-7.39

CÁLCULO TENSIONAL

Hipótesis de cálculo:
LTORSION

Desbloqueo empotramiento torsion

[1; 1]LTORSION

Coef. exc:

Barra	Nudo	X	N (T)	Vy (T)	Mz (Tm)
335	135	101.10	0.00	-0.09	-3.88
335	2035	101.10	0.00	-0.09	-3.81
201	2001	0.00	0.00	0.09	-3.35
201	1001	0.00	0.00	0.09	-3.77
202	2002	2.74	0.00	0.14	-6.65
202	1002	2.74	0.00	0.14	-7.31
203	2003	5.48	0.00	0.11	-6.61
203	1003	5.48	0.00	0.11	-7.14
204	2004	8.22	0.00	0.09	-6.60
204	1004	8.22	0.00	0.09	-7.01
205	2005	10.96	0.00	0.07	-6.61
205	1005	10.96	0.00	0.07	-6.93
206	2006	13.70	0.00	0.05	-6.64
206	1006	13.70	0.00	0.05	-6.90
207	2007	16.44	0.00	0.04	-6.70
207	1007	16.44	0.00	0.04	-6.90
208	2008	19.18	0.00	0.03	-6.79
208	1008	19.18	0.00	0.03	-6.94
209	2009	21.92	0.00	0.02	-6.92
209	1009	21.92	0.00	0.02	-7.01
210	2010	24.66	0.00	0.00	-7.09
210	1010	24.66	0.00	0.00	-7.11
211	2011	27.40	0.00	-0.02	-7.72
211	1011	27.40	0.00	-0.02	-7.63
212	2012	30.45	0.00	0.36	-7.58
212	1012	30.45	0.00	0.36	-9.31
213	2013	33.50	0.00	0.76	-6.81
213	1013	33.50	0.00	0.76	-10.45
214	2014	36.89	0.00	0.57	-7.42
214	1014	36.89	0.00	0.57	-10.17
215	2015	40.28	0.00	0.39	-7.64
215	1015	40.28	0.00	0.39	-9.50
216	2016	43.67	0.00	0.24	-7.85
216	1016	43.67	0.00	0.24	-8.97
217	2017	47.06	0.00	0.11	-8.06
217	1017	47.06	0.00	0.11	-8.57
218	2018	50.45	0.00	-0.01	-8.30
218	1018	50.45	0.00	-0.01	-8.27
219	2019	53.84	0.00	-0.12	-8.61
219	1019	53.84	0.00	-0.12	-8.02
220	2020	57.23	0.00	-0.25	-9.01
220	1020	57.23	0.00	-0.25	-7.81
221	2021	60.62	0.00	-0.41	-9.55
221	1021	60.62	0.00	-0.41	-7.59
222	2022	64.01	0.00	-0.60	-10.23
222	1022	64.01	0.00	-0.60	-7.35
223	2023	67.40	0.00	-0.79	-10.52
223	1023	67.40	0.00	-0.79	-6.73
224	2024	70.45	0.00	-0.39	-9.38
224	1024	70.45	0.00	-0.39	-7.51
225	2025	73.50	0.00	-0.01	-7.72

CÁLCULO TENSIONAL

Hipótesis de cálculo:
LTORSION

Desbloqueo empotramiento torsion

[1; 1]LTORSION
Coef. exc:

Barra	Nudo	X	N (T)	Vy (T)	Mz (Tm)
225	1025	73.50	0.00	-0.01	-7.68
226	2026	76.26	0.00	-0.02	-7.20
226	1026	76.26	0.00	-0.02	-7.09
227	2027	79.02	0.00	-0.04	-7.09
227	1027	79.02	0.00	-0.04	-6.92
228	2028	81.78	0.00	-0.04	-7.01
228	1028	81.78	0.00	-0.04	-6.80
229	2029	84.54	0.00	-0.05	-6.97
229	1029	84.54	0.00	-0.05	-6.71
230	2030	87.30	0.00	-0.06	-6.96
230	1030	87.30	0.00	-0.06	-6.66
231	2031	90.06	0.00	-0.08	-7.00
231	1031	90.06	0.00	-0.08	-6.63
232	2032	92.82	0.00	-0.10	-7.08
232	1032	92.82	0.00	-0.10	-6.62
233	2033	95.58	0.00	-0.12	-7.21
233	1033	95.58	0.00	-0.12	-6.63
234	2034	98.34	0.00	-0.15	-7.39
234	1034	98.34	0.00	-0.15	-6.66
235	2035	101.10	0.00	-0.09	-3.81
235	1035	101.10	0.00	-0.09	-3.36
401	1001	0.00	0.00	0.09	-3.77
401	1	0.00	0.00	0.09	-3.83
402	1002	2.74	0.00	0.14	-7.31
402	2	2.74	0.00	0.14	-7.42
403	1003	5.48	0.00	0.11	-7.14
403	3	5.48	0.00	0.11	-7.22
404	1004	8.22	0.00	0.09	-7.01
404	4	8.22	0.00	0.09	-7.08
405	1005	10.96	0.00	0.07	-6.93
405	5	10.96	0.00	0.07	-6.98
406	1006	13.70	0.00	0.05	-6.90
406	6	13.70	0.00	0.05	-6.94
407	1007	16.44	0.00	0.04	-6.90
407	7	16.44	0.00	0.04	-6.93
408	1008	19.18	0.00	0.03	-6.94
408	8	19.18	0.00	0.03	-6.96
409	1009	21.92	0.00	0.02	-7.01
409	9	21.92	0.00	0.02	-7.02
410	1010	24.66	0.00	0.00	-7.11
410	10	24.66	0.00	0.00	-7.11
411	1011	27.40	0.00	-0.02	-7.63
411	11	27.40	0.00	-0.02	-7.62
412	1012	30.45	0.00	0.36	-9.31
412	12	30.45	0.00	0.36	-9.58
413	1013	33.50	0.00	0.76	-10.45
413	13	33.50	0.00	0.76	-11.02
414	1014	36.89	0.00	0.57	-10.17
414	14	36.89	0.00	0.57	-10.60
415	1015	40.28	0.00	0.39	-9.50
415	15	40.28	0.00	0.39	-9.79

CÁLCULO TENSIONAL

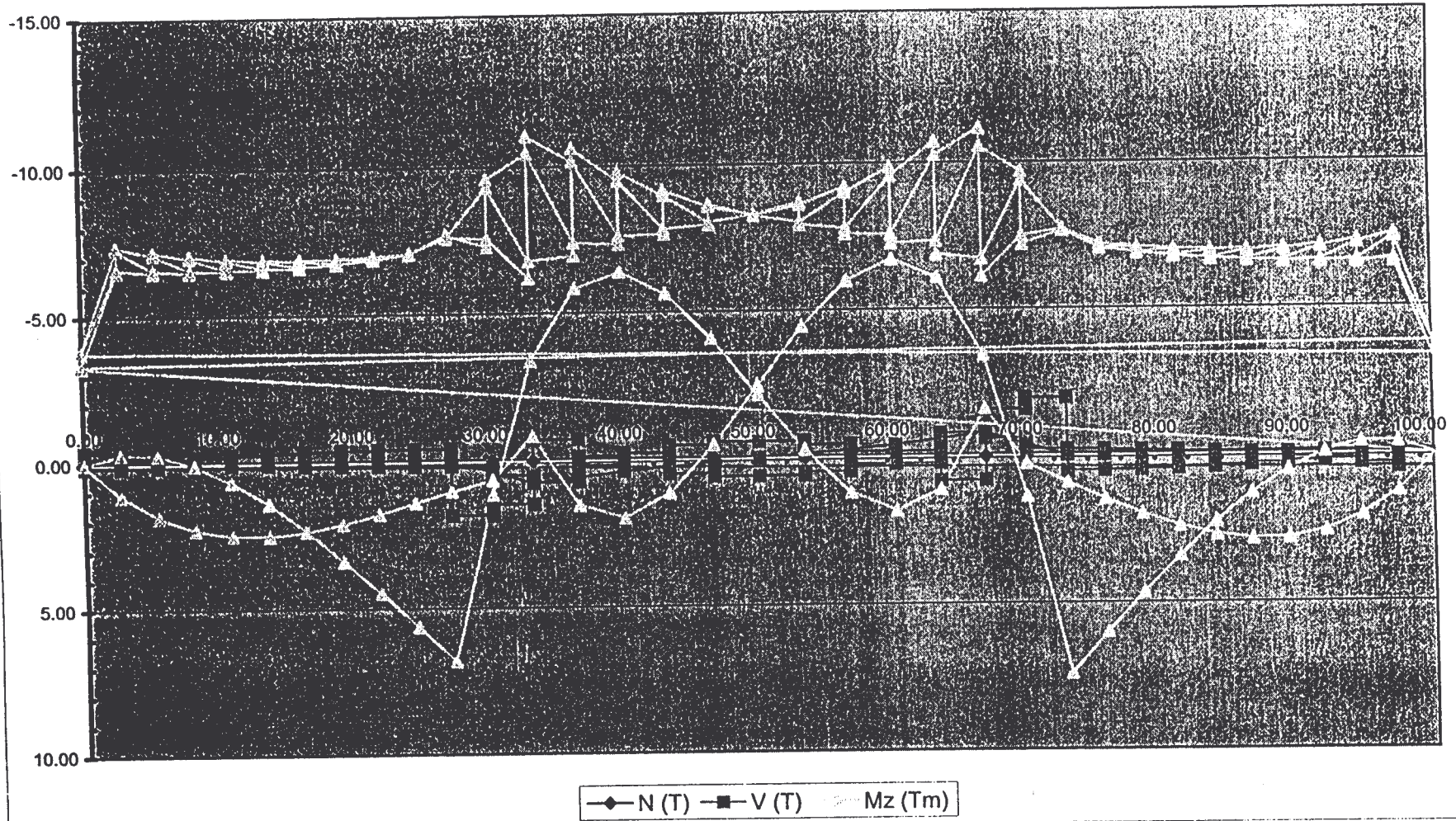
Hipótesis de cálculo:
LTORSION

Desbloqueo empotramiento torsion

[1; 1]LTORSION
Coef. exc:

Barra	Nudo	X	N (T)	Vy (T)	Mz (Tm)
416	1016	43.67	0.00	0.24	-8.97
416	16	43.67	0.00	0.24	-9.15
417	1017	47.06	0.00	0.11	-8.57
417	17	47.06	0.00	0.11	-8.66
418	1018	50.45	0.00	-0.01	-8.27
418	18	50.45	0.00	-0.01	-8.26
419	1019	53.84	0.00	-0.12	-8.02
419	19	53.84	0.00	-0.12	-7.93
420	1020	57.23	0.00	-0.25	-7.81
420	20	57.23	0.00	-0.25	-7.62
421	1021	60.62	0.00	-0.41	-7.59
421	21	60.62	0.00	-0.41	-7.28
422	1022	64.01	0.00	-0.60	-7.35
422	22	64.01	0.00	-0.60	-6.90
423	1023	67.40	0.00	-0.79	-6.73
423	23	67.40	0.00	-0.79	-6.14
424	1024	70.45	0.00	-0.39	-7.51
424	24	70.45	0.00	-0.39	-7.21
425	1025	73.50	0.00	-0.01	-7.68
425	25	73.50	0.00	-0.01	-7.67
426	1026	76.26	0.00	-0.02	-7.09
426	26	76.26	0.00	-0.02	-7.07
427	1027	79.02	0.00	-0.04	-6.92
427	27	79.02	0.00	-0.04	-6.90
428	1028	81.78	0.00	-0.04	-6.80
428	28	81.78	0.00	-0.04	-6.77
429	1029	84.54	0.00	-0.05	-6.71
429	29	84.54	0.00	-0.05	-6.67
430	1030	87.30	0.00	-0.06	-6.66
430	30	87.30	0.00	-0.06	-6.61
431	1031	90.06	0.00	-0.08	-6.63
431	31	90.06	0.00	-0.08	-6.57
432	1032	92.82	0.00	-0.10	-6.62
432	32	92.82	0.00	-0.10	-6.54
433	1033	95.58	0.00	-0.12	-6.63
433	33	95.58	0.00	-0.12	-6.54
434	1034	98.34	0.00	-0.15	-6.66
434	34	98.34	0.00	-0.15	-6.55
435	1035	101.10	0.00	-0.09	-3.36
435	35	101.10	0.00	-0.09	-3.29

GRÁFICO DE ESFUERZOS



2.2.3.4. Definición de pretensado. Estimación de las pérdidas de pretensado

Este apartado se divide en una primera parte en la cual se definen los pretensados que resultando son:

sobre fases:

FASE 1. { "PRETF1B" Pretensado de vigas nudo de 1 a 35 Calzada Izquierda
"PRETF1A" Pretensado de vigas nudo 101 a 135 Calzada derecha

FASE 2. { "PRETF3C" Pretensado sobre pila en Calzada derecha
"PRETF3D" Pretensado sobre pila en Calzada Izquierda

Estos mismos pretensados se introducen en estructura cerrada para obtener las redistribuciones, resultando:

"PRETFB" ; "PRETFA" ; "PRETFC" ; "PRETFD"

Resumen pretensado integrado:

* Grupo 1: CALZADA IZQUIERDA "PRETF1B"

Viga de 33'53 m

FAMILIA.		V_i	$X_{inicial}$	X_{final}	V_s
1)	26 torones $\phi 12"$	0'05	0	33'5	2'70.
2)	26 torones $\phi 16"$	0'08	2'74	30'45	2'52
3)	18 torones $\phi 16"$	0'146	5'48	27'4	2'04
4)	18 torones $\phi 16"$	0'194	8'22	24'66	2'656
5)	8 torones $\phi 12"$	2'40	0	33'5	0'45.

Viga de 40 m

FAMILIA.		V_i	$X_{inicial}$	X_{final}	V_s
6)	28 torones $\phi 12"$	0'05	33'5	73'5	2'80
7)	26 torones $\phi 16"$	0'08	36'89	70'45	2'52
8)	28 torones $\phi 16"$	0'146	40'28	67'4	2'04
9)	28 torones $\phi 16"$	0'194	43'67	64'01	2'656
10)	8 torones $\phi 12"$	2'40	33'5	73'5	0'45.

PRETENSADO VIGAS PREFABRICADAS NUDO DEL 1 AL 35

CALZADA IZQUIERDA.

" PRETF1B "

Viga de 27'62 m

FAMILIA.

		V_i	$X_{inicial}$	X_{final}	V_s
13	26 torones $\phi 06"$	005	73'5	101'1	2'80
17	2 torones $\phi 06"$	0038	76'26	98'34	2'52
13	12 torones $\phi 06"$	0146	79'02	85'58	2'04
14	8 torones $\phi 06"$	2'40	73'5	101'1	0'45

V1INF1

FAMILIA DE (1

COEFICIENT DESVIACIÓN MÓDULO DE ANCLAJE
ROZAMIENTO PARÁSITA ELASTICIDAD ORIGEN
VAJNA-TEND (rad/m) ACERO (kg/c (m.)

0.21	0	1950000	0	33.5 AMBOS	26	140	129	0
67.8947368								

TRAZADO EN ALZADO

TRAMO	X_{fin}	RECTA 1		X_{fin}	PARABOLA		X_{fin}	RECTA 2	
		Y_{fin}	Pend		Y_{fin}	Pend		Y_{fin}	Pend
1	33.5	2.8	0	33.5	2.8	0	33.5	2.8	0

TRAZADO EN PLANTA

TRAMO	X_{fin}	RECTA 1		X_{fin}	PARABOLA		X_{fin}	RECTA 2	
		Y_{fin}	Pend		Y_{fin}	Pend		Y_{fin}	Pend
1	0	0	0	0	0	0	33.5	0	0

NUDO	X (m.)	Y (m.)	Pend. Y	Y_{cdg} (m.)	Z (m.)	Pend. Z	TENSIÓN (kg/mm2)	Sección dorsal		Sección frontal	
								AXIL (t.)	CORTANTE (t.)	AXIL (t.)	CORTANTE (t.)
1	0	2.8	0	1.7859999	0	0	129	0	0	-469.56	0
2	2.74	2.8	0	1.7859999	0	0	129	-469.56	-469.56	-469.56	0
3	5.48	2.8	0	1.7859999	0	0	129	-469.56	-469.56	-469.56	0
4	8.22	2.8	0	1.7859999	0	0	129	-469.56	-469.56	-469.56	0
5	10.96	2.8	0	1.7859999	0	0	129	-469.56	-469.56	-469.56	0
6	13.7	2.8	0	1.7859999	0	0	129	-469.56	-469.56	-469.56	0
7	16.44	2.8	0	1.7859999	0	0	129	-469.56	-469.56	-469.56	0
8	19.18	2.8	0	1.7859999	0	0	129	-469.56	-469.56	-469.56	0
9	21.92	2.8	0	1.7859999	0	0	129	-469.56	-469.56	-469.56	0
10	24.66	2.8	0	1.7859999	0	0	129	-469.56	-469.56	-469.56	0
11	27.4	2.8	0	1.7859999	0	0	129	-469.56	-469.56	-469.56	0
12	30.45	2.8	0	1.7859999	0	0	129	-469.56	-469.56	-469.56	0
10013	33.5	2.8	0	1.7859999	0	0	129	-469.56	-469.56	0	0
13	33.5	2.8	0	1.7859999	0	0	129	0	0	0	0

ALARGAMIENTO DE TESADO

221.615385

V1INF2 FAMILIA DE (2

COEFICIENT DESVIACIÓN ROZAMIENTO PARÁSITA VAINA-TEND (rad/m)	MÓDULO DE ANCLAJE ELASTICIDAD ORIGEN ACERO (kg/c (m.)	ANCLAJE FINAL (m.)	TESADO DESDE EXTREMOS	NÚMERO DE TORONES	ÁREA TORÓN (mm2)	TENSIÓN TESADO (kg/mm2)	PENETRACIÓN DE CUÑA (mm.)	
0.21	0	1950000	2.74	30.45 AMBOS	26	140	129 67.8947368	0

TRAZADO EN ALZADO

TRAMO	Xfin	RECTA 1 Yfin	Pend	Xfin	PARABOLA Yfin	Pend	Xfin	RECTA 2 Yfin	Pend
1	30.4499991	2.752	0	30.4499991	2.752	0	30.4499991	2.752	0

TRAZADO EN PLANTA

TRAMO	RECTA 1				PARABOLA				RECTA 2			
	Xfin	Yfin	Pend		Xfin	Yfin	Pend		Xfin	Yfin	Pend	
1	2.74	0	0		2.74	0	0		30.45	0	0	

NUDO	X (m.)	Y (m.)	Pend. Y	Ycdg (m.)	Z (m.)	Pend. Z	TENSIÓN (kg/mm2)	AXIL (t.)	Sección dorsal CORTANTE (t.)	MOMENTO (mt.)	AXIL (t.)	Sección frontal CORTANTE (t.)	MOMENTO (mt.)
2	2.74	2.752	0	1.7859999	0	0	0	129	0	0	0	-469.56	0 -453.595002
3	5.48	2.752	0	1.7859999	0	0	0	129	-469.56	0	-453.595002	-469.56	0 -453.595002
4	8.22	2.752	0	1.7859999	0	0	0	129	-469.56	0	-453.595002	-469.56	0 -453.595002
5	10.96	2.752	0	1.7859999	0	0	0	129	-469.56	0	-453.595002	-469.56	0 -453.595002
6	13.7	2.752	0	1.7859999	0	0	0	129	-469.56	0	-453.595002	-469.56	0 -453.595002
7	16.44	2.752	0	1.7859999	0	0	0	129	-469.56	0	-453.595002	-469.56	0 -453.595002
8	19.18	2.752	0	1.7859999	0	0	0	129	-469.56	0	-453.595002	-469.56	0 -453.595002
9	21.92	2.752	0	1.7859999	0	0	0	129	-469.56	0	-453.595002	-469.56	0 -453.595002
10	24.66	2.752	0	1.7859999	0	0	0	129	-469.56	0	-453.595002	-469.56	0 -453.595002
11	27.4	2.752	0	1.7859999	0	0	0	129	-469.56	0	-453.595002	-469.56	0 -453.595002
12	30.45	2.752	0	1.7859999	0	0	0	129	-469.56	0	-453.595002	0	0 0

ALARGAMIENTO DE TESADO 183.312308

V1INF3 FAMILIA DE (3

COEFICIENT DESVIACIÓN ROZAMIENTO PARÁSITA VAINA-TEND (rad/m)	MÓDULO DE ANCLAJE ELASTICIDAD ORIGEN ACERO (kg/c (m.)	ANCLAJE FINAL (m.)	TESADO DESDE EXTREMOS	NÚMERO DE TORONES	ÁREA TORÓN (mm2)	TENSIÓN TESADO (kg/mm2)	PENETRACIÓN DE CUÑA (mm.)
0.21	0	1950000	5.48	27.4 AMBOS	18	140	129
						67.8947368	0

TRAZADO EN ALZADO

TRAMO	Xfin	RECTA 1 Yfin	Pend	Xfin	PARABOLA Yfin	Pend	Xfin	RECTA 2 Yfin	Pend
1	27.4000001	2.704	0	27.4000001	2.704	0	27.4000001	2.704	0

TRAZADO EN PLANTA

TRAMO	RECTA 1				PARABOLA				RECTA 2			
	Xfin	Yfin	Pend		Xfin	Yfin	Pend		Xfin	Yfin	Pend	
1		5.48	0	0		5.48	0	0		27.4	0	0

NUDO	X (m.)	Y (m.)	Pend. Y	Ycdg (m.)	Z (m.)	Pend. Z	TENSIÓN (kg/mm2)	AXIL (t.)	Sección dorsal CORTANTE (t.)	MOMENTO (mt.)	AXIL (t.)	Sección frontal CORTANTE (t.)	MOMENTO (mt.)
3	5.48	2.704	0	1.7859999	0	0	0	129	0	0	0	-325.08	0 -298.423459
4	8.22	2.704	0	1.7859999	0	0	0	129	-325.08	0	-298.423459	-325.08	0 -298.423459
5	10.96	2.704	0	1.7859999	0	0	0	129	-325.08	0	-298.423459	-325.08	0 -298.423459
6	13.7	2.704	0	1.7859999	0	0	0	129	-325.08	0	-298.423459	-325.08	0 -298.423459
7	16.44	2.704	0	1.7859999	0	0	0	129	-325.08	0	-298.423459	-325.08	0 -298.423459
8	19.18	2.704	0	1.7859999	0	0	0	129	-325.08	0	-298.423459	-325.08	0 -298.423459
9	21.92	2.704	0	1.7859999	0	0	0	129	-325.08	0	-298.423459	-325.08	0 -298.423459
10	24.66	2.704	0	1.7859999	0	0	0	129	-325.08	0	-298.423459	-325.08	0 -298.423459
11	27.4	2.704	0	1.7859999	0	0	0	129	-325.08	0	-298.423459	0	0 0

ALARGAMIENTO DE TESADO 145.009231

V1INF

FAMILIA DE (4

COEFICIENT DESVIACIÓN ROZAMIENTO PARÁSITA VAINA-TEND (rad/m)	MÓDULO DE ANCLAJE ELASTICIDAD ORIGEN ACERO (kg/c (m.)	ANCLAJE FINAL (m.)	TESADO DESDE EXTREMOS	NÚMERO DE TORONES	ÁREA TORÓN (mm2)	TENSIÓN TESADO (kg/mm2)	PENETRACIÓN DE CUÑA (mm.)	
0.21	0	1950000	8.22	24.66 AMBOS	18	140	129 67.8947368	0

TRAZADO EN ALZADO

TRAMO	Xfin	RECTA 1 Yfin	Pend	Xfin	PARABOLA Yfin	Pend	Xfin	RECTA 2 Yfin	Pend
1	24.6600005	2.656	0	24.6600005	2.656	0	24.6600005	2.656	0

TRAZADO EN PLANTA

TRAMO	Xfin	RECTA 1 Yfin	Pend	Xfin	PARABOLA Yfin	Pend	Xfin	RECTA 2 Yfin	Pend
1	8.22	0	0	8.22	0	0	24.66	0	0

NUDO	X (m.)	Y (m.)	Pend. Y	Ycdg (m.)	Z (m.)	Pend. Z	TENSIÓN (kg/mm2)	AXIL (t.)	Sección dorsal CORTANTE (t.)	MOMENTO (mt.)	AXIL (t.)	Sección frontal CORTANTE (t.)	MOMENTO (mt.)
4	8.22	2.656	0	1.7859999	0	0	129	0	0	0	0	-325.08	0 -282.819619
5	10.96	2.656	0	1.7859999	0	0	129	-325.08	0	-282.819619	-325.08	0 -282.819619	0 -282.819619
6	13.7	2.656	0	1.7859999	0	0	129	-325.08	0	-282.819619	-325.08	0 -282.819619	0 -282.819619
7	16.44	2.656	0	1.7859999	0	0	129	-325.08	0	-282.819619	-325.08	0 -282.819619	0 -282.819619
8	19.18	2.656	0	1.7859999	0	0	129	-325.08	0	-282.819619	-325.08	0 -282.819619	0 -282.819619
9	21.92	2.656	0	1.7859999	0	0	129	-325.08	0	-282.819619	-325.08	0 -282.819619	0 -282.819619
10	24.66	2.656	0	1.7859999	0	0	129	-325.08	0	-282.819619	0	0	0

ALARGAMIENTO DE TESADO 108.756923

V1SUP

FAMILIA DE (5

COEFICIENT DESVIACIÓN ROZAMIENTO PARÁSITA VAINA-TEND (rad/m)	MÓDULO DE ANCLAJE ELASTICIDAD ORIGEN ACERO (kg/c (m.)	ANCLAJE FINAL (m.)	TESADO DESDE EXTREMOS	NÚMERO DE TORONES	ÁREA TORÓN (mm2)	TENSIÓN TESADO (kg/mm2)	PENETRACIÓN DE CUÑA (mm.)
0.21	0	1950000	0	33.5 AMBOS	8	140	148
						77.8947368	0

TRAZADO EN ALZADO

TRAMO	Xfin	RECTA 1 Yfin	Pend	Xfin	PARABOLA Yfin	Pend	Xfin	RECTA 2 Yfin	Pend
1	33.5	0.45	0	33.5	0.45	0	33.5	0.45	0

TRAZADO EN PLANTA

TRAMO	Xfin	RECTA 1 Yfin	Pend	Xfin	PARABOLA Yfin	Pend	Xfin	RECTA 2 Yfin	Pend
1	0	0	0	0	0	0	33.5	0	0

NUDO	X (m.)	Y (m.)	Pend. Y	Ycdg (m.)	Z (m.)	Pend. Z	TENSIÓN (kg/mm2)	AXIL (t.)	Sección dorsal CORTANTE (t.)	MOMENTO (mt.)	AXIL (t.)	Sección frontal CORTANTE (t.)	MOMENTO (mt.)
1	0	0.45	0	1.7859999	0	0	148	0	0	0	-165.76	0 221.455337	0 221.455337
2	2.74	0.45	0	1.7859999	0	0	148	-165.76	0	221.455337	-165.76	0 221.455337	0 221.455337
3	5.48	0.45	0	1.7859999	0	0	148	-165.76	0	221.455337	-165.76	0 221.455337	0 221.455337
4	8.22	0.45	0	1.7859999	0	0	148	-165.76	0	221.455337	-165.76	0 221.455337	0 221.455337
5	10.96	0.45	0	1.7859999	0	0	148	-165.76	0	221.455337	-165.76	0 221.455337	0 221.455337
6	13.7	0.45	0	1.7859999	0	0	148	-165.76	0	221.455337	-165.76	0 221.455337	0 221.455337
7	16.44	0.45	0	1.7859999	0	0	148	-165.76	0	221.455337	-165.76	0 221.455337	0 221.455337
8	19.18	0.45	0	1.7859999	0	0	148	-165.76	0	221.455337	-165.76	0 221.455337	0 221.455337
9	21.92	0.45	0	1.7859999	0	0	148	-165.76	0	221.455337	-165.76	0 221.455337	0 221.455337
10	24.66	0.45	0	1.7859999	0	0	148	-165.76	0	221.455337	-165.76	0 221.455337	0 221.455337
11	27.4	0.45	0	1.7859999	0	0	148	-165.76	0	221.455337	-165.76	0 221.455337	0 221.455337
12	30.45	0.45	0	1.7859999	0	0	148	-165.76	0	221.455337	-165.76	0 221.455337	0 221.455337
10013	33.5	0.45	0	1.7859999	0	0	148	-165.76	0	221.455337	0	0	0
13	33.5	0.45	0	1.7859999	0	0	148	0	0	0	0	0	0

ALARGAMIENTO DE TESADO 254.25641

V3INF

FAMILIA DE (6

COEFICIENT ROZAMIENTO VAINA-TEND	DESVIACIÓN PARÁSITA (rad/m)	MÓDULO DE ELASTICIDAD ACERO (kg/c (m.)	ANCLAJE ORIGEN (m.)	ANCLAJE FINAL (m.)	TESADO DESDE EXTREMOS	NÚMERO DE TORONES	ÁREA TORÓN (mm2)	TENSIÓN TESADO (kg/mm2)	PENETRACIÓN DE CUÑA (mm.)
0.21	0	1950000	33.5	73.5	AMBOS	28	140	129 67.8947368	0

TRAZADO EN ALZADO

TRAMO	Xfin	RECTA 1 Yfin	Pend	Xfin	PARABOLA Yfin	Pend	Xfin	RECTA 2 Yfin	Pend
1	73.5	2.8	0	73.5	2.8	0	73.5	2.8	0

TRAZADO EN PLANTA

TRAMO	Xfin	RECTA 1 Yfin	Pend	Xfin	PARABOLA Yfin	Pend	Xfin	RECTA 2 Yfin	Pend
1	33.5	0	0	33.5	0	0	73.5	0	0

NUDO	X (m.)	Y (m.)	Pend. Y	Ycdg (m.)	Z (m.)	Pend. Z	TENSIÓN (kg/mm2)	AXIL (t.)	Sección dorsal CORTANTE (t.)	MOMENTO (mt.)	AXIL (t.)	Sección frontal CORTANTE (t.)	MOMENTO (mt.)
13	33.5	2.8	0	1.7859999	0	0	129	0	0	0	-505.68	0	-512.759561
14	36.89	2.8	0	1.7859999	0	0	129	-505.68	0	-512.759561	-505.68	0	-512.759561
15	40.28	2.8	0	1.7859999	0	0	129	-505.68	0	-512.759561	-505.68	0	-512.759561
16	43.67	2.8	0	1.7859999	0	0	129	-505.68	0	-512.759561	-505.68	0	-512.759561
17	47.06	2.8	0	1.7859999	0	0	129	-505.68	0	-512.759561	-505.68	0	-512.759561
18	50.45	2.8	0	1.7859999	0	0	129	-505.68	0	-512.759561	-505.68	0	-512.759561
19	53.84	2.8	0	1.7859999	0	0	129	-505.68	0	-512.759561	-505.68	0	-512.759561
20	57.23	2.8	0	1.7859999	0	0	129	-505.68	0	-512.759561	-505.68	0	-512.759561
21	60.62	2.8	0	1.7859999	0	0	129	-505.68	0	-512.759561	-505.68	0	-512.759561
22	64.01	2.8	0	1.7859999	0	0	129	-505.68	0	-512.759561	-505.68	0	-512.759561
23	67.4	2.8	0	1.7859999	0	0	129	-505.68	0	-512.759561	-505.68	0	-512.759561
24	70.45	2.8	0	1.7859999	0	0	129	-505.68	0	-512.759561	-505.68	0	-512.759561
10025	73.5	2.8	0	1.7859999	0	0	129	-505.68	0	-512.759561	0	0	0
25	73.5	2.8	0	1.7859999	0	0	129	0	0	0	0	0	0

ALARGAMIENTO DE TESADO 264.615385

V3INF2

FAMILIA DE (7

COEFICIENT ROZAMIENTO VAINA-TEND	DESVIACIÓN PARÁSITA (rad/m)	MÓDULO DE ELASTICIDAD ACERO (kg/c (m.)	ANCLAJE ORIGEN (m.)	ANCLAJE FINAL (m.)	TESADO DESDE EXTREMOS	NÚMERO DE TORONES	ÁREA TORÓN (mm2)	TENSIÓN TESADO (kg/mm2)	PENETRACIÓN DE CUÑA (mm.)
0.21	0	1950000	36.89	70.45	AMBOS	26	140	129 67.8947368	0

TRAZADO EN ALZADO

TRAMO	Xfin	RECTA 1 Yfin	Pend	Xfin	PARABOLA Yfin	Pend	Xfin	RECTA 2 Yfin	Pend
1	70.4500014	2.752	0	70.4500014	2.752	0	70.4500014	2.752	0

TRAZADO EN PLANTA

TRAMO	Xfin	RECTA 1 Yfin	Pend	Xfin	PARABOLA Yfin	Pend	Xfin	RECTA 2 Yfin	Pend
1	36.89	0	0	36.89	0	0	70.45	0	0

NUDO	X (m.)	Y (m.)	Pend. Y	Ycdg (m.)	Z (m.)	Pend. Z	TENSIÓN (kg/mm2)	AXIL (t.)	Sección dorsal CORTANTE (t.)	MOMENTO (mt.)	AXIL (t.)	Sección frontal CORTANTE (t.)	MOMENTO (mt.)
14	36.89	2.752	0	1.7859999	0	0	129	0	0	0	-469.56	0	-453.595002
15	40.28	2.752	0	1.7859999	0	0	129	-469.56	0	-453.595002	-469.56	0	-453.595002
16	43.67	2.752	0	1.7859999	0	0	129	-469.56	0	-453.595002	-469.56	0	-453.595002
17	47.06	2.752	0	1.7859999	0	0	129	-469.56	0	-453.595002	-469.56	0	-453.595002
18	50.45	2.752	0	1.7859999	0	0	129	-469.56	0	-453.595002	-469.56	0	-453.595002
19	53.84	2.752	0	1.7859999	0	0	129	-469.56	0	-453.595002	-469.56	0	-453.595002
20	57.23	2.752	0	1.7859999	0	0	129	-469.56	0	-453.595002	-469.56	0	-453.595002
21	60.62	2.752	0	1.7859999	0	0	129	-469.56	0	-453.595002	-469.56	0	-453.595002
22	64.01	2.752	0	1.7859999	0	0	129	-469.56	0	-453.595002	-469.56	0	-453.595002
23	67.4	2.752	0	1.7859999	0	0	129	-469.56	0	-453.595002	-469.56	0	-453.595002
24	70.45	2.752	0	1.7859999	0	0	129	-469.56	0	-453.595002	0	0	0

ALARGAMIENTO DE TESADO 222.012308

COEFICIENT DESVIACIÓN ROZAMIENTO PARÁSITA VAINA-TEND (rad/m)	MÓDULO DE ANCLAJE ELASTICIDAD ORIGEN ACERO (kg/c (m.)	ANCLAJE FINAL (m.)	TESADO DESDE EXTREMOS	NÚMERO DE TORONES	ÁREA TORÓN (mm2)	TENSIÓN TESADO (kg/mm2)	PENETRACIÓN DE CUÑA (mm.)		
0.21	0	1950000	40.28	67.4	AMBOS	28	140	129	0
						67.8947368			

TRAZADO EN ALZADO

TRAMO	Xfin	RECTA 1 Yfin	Pend	Xfin	PARABOLA Yfin	Pend	Xfin	RECTA 2 Yfin	Pend
1	67.4000008	2.704	0	67.4000008	2.704	0	67.4000008	2.704	0

TRAZADO EN PLANTA

TRAMO	Xfin	RECTA 1 Yfin	Pend	Xfin	PARABOLA Yfin	Pend	Xfin	RECTA 2 Yfin	Pend
1	40.28	0	0	40.28	0	0	67.4	0	0

NUDO	X (m.)	Y (m.)	Pend. Y	Ycdg (m.)	Z (m.)	Pend. Z	TENSIÓN (kg/mm2)	AXIL (t.)	Sección dorsal CORTANTE (t.)	MOMENTO (mt.)	AXIL (t.)	Sección frontal CORTANTE (t.)	MOMENTO (mt.)
15	40.28	2.704	0	1.7859999	0	0	129	0	0	0	-505.68	0	-464.214282
16	43.67	2.704	0	1.7859999	0	0	129	-505.68	0	-464.214282	-505.68	0	-464.214282
17	47.06	2.704	0	1.7859999	0	0	129	-505.68	0	-464.214282	-505.68	0	-464.214282
18	50.45	2.704	0	1.7859999	0	0	129	-505.68	0	-464.214282	-505.68	0	-464.214282
19	53.84	2.704	0	1.7859999	0	0	129	-505.68	0	-464.214282	-505.68	0	-464.214282
20	57.23	2.704	0	1.7859999	0	0	129	-505.68	0	-464.214282	-505.68	0	-464.214282
21	60.62	2.704	0	1.7859999	0	0	129	-505.68	0	-464.214282	-505.68	0	-464.214282
22	64.01	2.704	0	1.7859999	0	0	129	-505.68	0	-464.214282	-505.68	0	-464.214282
23	67.4	2.704	0	1.7859999	0	0	129	-505.68	0	-464.214282	0	0	0

ALARGAMIENTO DE TESADO179.409231

COEFICIENT DESVIACIÓN ROZAMIENTO PARÁSITA VAINA-TEND (rad/m)	MÓDULO DE ANCLAJE ELASTICIDAD ORIGEN ACERO (kg/c (m.)	ANCLAJE FINAL (m.)	TESADO DESDE EXTREMOS	NÚMERO DE TORONES	ÁREA TORÓN (mm2)	TENSIÓN TESADO (kg/mm2)	PENETRACIÓN DE CUÑA (mm.)		
0.21	0	1950000	43.67	64.01	AMBOS	28	140	129	0
						67.8947368			

TRAZADO EN ALZADO

TRAMO	Xfin	RECTA 1 Yfin	Pend	Xfin	PARABOLA Yfin	Pend	Xfin	RECTA 2 Yfin	Pend
1	64.0100002	2.656	0	64.0100002	2.656	0	64.0100002	2.656	0

TRAZADO EN PLANTA

TRAMO	Xfin	RECTA 1 Yfin	Pend	Xfin	PARABOLA Yfin	Pend	Xfin	RECTA 2 Yfin	Pend
1	43.67	0	0	43.67	0	0	64.01	0	0

NUDO	X (m.)	Y (m.)	Pend. Y	Ycdg (m.)	Z (m.)	Pend. Z	TENSIÓN (kg/mm2)	AXIL (t.)	Sección dorsal CORTANTE (t.)	MOMENTO (mt.)	AXIL (t.)	Sección frontal CORTANTE (t.)	MOMENTO (mt.)
16	43.67	2.656	0	1.7859999	0	0	129	0	0	0	-505.68	0	-439.941642
17	47.06	2.656	0	1.7859999	0	0	129	-505.68	0	-439.941642	-505.68	0	-439.941642
18	50.45	2.656	0	1.7859999	0	0	129	-505.68	0	-439.941642	-505.68	0	-439.941642
19	53.84	2.656	0	1.7859999	0	0	129	-505.68	0	-439.941642	-505.68	0	-439.941642
20	57.23	2.656	0	1.7859999	0	0	129	-505.68	0	-439.941642	-505.68	0	-439.941642
21	60.62	2.656	0	1.7859999	0	0	129	-505.68	0	-439.941642	-505.68	0	-439.941642
22	64.01	2.656	0	1.7859999	0	0	129	-505.68	0	-439.941642	0	0	0

ALARGAMIENTO DE TESADO134.556923

COEFICIENT ROZAMIENTO VAINA-TEND	DESVIACIÓN (PARÁSITA rad/m)	MÓDULO DE ANCLAJE ELASTICIDAD ACERO (kg/c (m.)	ANCLAJE FINAL (m.)	TESADO DESDE EXTREMOS	NÚMERO DE TORONES	ÁREA TORÓN (mm2)	TENSIÓN TESADO (kg/mm2)	PENETRACIÓN DE CUÑA (mm.)
0.21	0	1950000	33.5	73.5 AMBOS	8	140	148 77.8947368	0

TRAZADO EN ALZADO

TRAMO	Xfin	RECTA 1 Yfin	Pend	Xfin	PARABOLA Yfin	Pend	Xfin	RECTA 2 Yfin	Pend
1	73.5	0.45	0	73.5	0.45	0	73.5	0.45	0

TRAZADO EN PLANTA

TRAMO	Xfin	RECTA 1 Yfin	Pend	Xfin	PARABOLA Yfin	Pend	Xfin	RECTA 2 Yfin	Pend
1	33.5	0	0	33.5	0	0	73.5	0	0

NUDO	X (m.)	Y (m.)	Pend. Y	Ycdg (m.)	Z (m.)	Pend. Z	TENSIÓN (kg/mm2)	AXIL (t.)	Sección dorsal CORTANTE (t.)	MOMENTO (mt.)	AXIL (t.)	Sección frontal CORTANTE (t.)	MOMENTO (mt.)
13	33.5	0.45	0	1.7859999	0	0	148	0	0	0	-165.76	0	221.455337
14	36.89	0.45	0	1.7859999	0	0	148	-165.76	0	221.455337	-165.76	0	221.455337
15	40.28	0.45	0	1.7859999	0	0	148	-165.76	0	221.455337	-165.76	0	221.455337
16	43.67	0.45	0	1.7859999	0	0	148	-165.76	0	221.455337	-165.76	0	221.455337
17	47.06	0.45	0	1.7859999	0	0	148	-165.76	0	221.455337	-165.76	0	221.455337
18	50.45	0.45	0	1.7859999	0	0	148	-165.76	0	221.455337	-165.76	0	221.455337
19	53.84	0.45	0	1.7859999	0	0	148	-165.76	0	221.455337	-165.76	0	221.455337
20	57.23	0.45	0	1.7859999	0	0	148	-165.76	0	221.455337	-165.76	0	221.455337
21	60.62	0.45	0	1.7859999	0	0	148	-165.76	0	221.455337	-165.76	0	221.455337
22	64.01	0.45	0	1.7859999	0	0	148	-165.76	0	221.455337	-165.76	0	221.455337
23	67.4	0.45	0	1.7859999	0	0	148	-165.76	0	221.455337	-165.76	0	221.455337
24	70.45	0.45	0	1.7859999	0	0	148	-165.76	0	221.455337	-165.76	0	221.455337
10025	73.5	0.45	0	1.7859999	0	0	148	-165.76	0	221.455337	0	0	0
25	73.5	0.45	0	1.7859999	0	0	148	0	0	0	0	0	0

ALARGAMIENTO DE TESADO 303.589744

COEFICIENT ROZAMIENTO VAINA-TEND	DESVIACIÓN (PARÁSITA rad/m)	MÓDULO DE ANCLAJE ELASTICIDAD ACERO (kg/c (m.)	ANCLAJE FINAL (m.)	TESADO DESDE EXTREMOS	NÚMERO DE TORONES	ÁREA TORÓN (mm2)	TENSIÓN TESADO (kg/mm2)	PENETRACIÓN DE CUÑA (mm.)
0.21	0	1950000	73.5	101.1 AMBOS	26	140	129 67.8947368	0

TRAZADO EN ALZADO

TRAMO	Xfin	RECTA 1 Yfin	Pend	Xfin	PARABOLA Yfin	Pend	Xfin	RECTA 2 Yfin	Pend
1	101.1	2.8	0	101.1	2.8	0	101.1	2.8	0

TRAZADO EN PLANTA

TRAMO	Xfin	RECTA 1 Yfin	Pend	Xfin	PARABOLA Yfin	Pend	Xfin	RECTA 2 Yfin	Pend
1	73.5	0	0	73.5	0	0	101.1	0	0

NUDO	X (m.)	Y (m.)	Pend. Y	Ycdg (m.)	Z (m.)	Pend. Z	TENSIÓN (kg/mm2)	AXIL (t.)	Sección dorsal CORTANTE (t.)	MOMENTO (mt.)	AXIL (t.)	Sección frontal CORTANTE (t.)	MOMENTO (mt.)
25	73.5	2.8	0	1.7859999	0	0	129	0	0	0	-469.56	0	-476.133882
26	76.26	2.8	0	1.7859999	0	0	129	-469.56	0	-476.133882	-469.56	0	-476.133882
27	79.02	2.8	0	1.7859999	0	0	129	-469.56	0	-476.133882	-469.56	0	-476.133882
28	81.78	2.8	0	1.7859999	0	0	129	-469.56	0	-476.133882	-469.56	0	-476.133882
29	84.54	2.8	0	1.7859999	0	0	129	-469.56	0	-476.133882	-469.56	0	-476.133882
30	87.3	2.8	0	1.7859999	0	0	129	-469.56	0	-476.133882	-469.56	0	-476.133882
31	90.06	2.8	0	1.7859999	0	0	129	-469.56	0	-476.133882	-469.56	0	-476.133882
32	92.82	2.8	0	1.7859999	0	0	129	-469.56	0	-476.133882	-469.56	0	-476.133882
33	95.58	2.8	0	1.7859999	0	0	129	-469.56	0	-476.133882	-469.56	0	-476.133882
34	98.34	2.8	0	1.7859999	0	0	129	-469.56	0	-476.133882	-469.56	0	-476.133882
35	101.1	2.8	0	1.7859999	0	0	129	-469.56	0	-476.133882	0	0	0
0	101.1	2.8	0	1.7859999	0	0	129	0	0	0	-469.56	0	-476.133885

ALARGAMIENTO DE TESADO 182.584615

COEFICIENT DESVIACIÓN ROZAMIENTO PARÁSITA VAINA-TEND (rad/m)	MÓDULO DE ANCLAJE ELASTICIDAD ORIGEN ACERO (kg/c (m.)	ANCLAJE FINAL (m.)	TESADO DESDE EXTREMOS	NÚMERO DE TORONES	ÁREA TORÓN (mm2)	TENSIÓN TESADO (kg/mm2)	PENETRACIÓN DE CUÑA (mm.)
0.21	0	1950000	76.26	98.34 AMBOS	20	140 129 67.8947368	0

TRAZADO EN ALZADO

TRAMO	Xfin	RECTA 1 Yfin	Pend	Xfin	PARABOLA Yfin	Pend	Xfin	RECTA 2 Yfin	Pend
1	98.3399999	2.752	0	98.3399999	2.752	0	98.3399999	2.752	0

TRAZADO EN PLANTA

TRAMO	Xfin	RECTA 1 Yfin	Pend	Xfin	PARABOLA Yfin	Pend	Xfin	RECTA 2 Yfin	Pend
1	76.26	0	0	76.26	0	0	98.34	0	0

NUDO	X (m.)	Y (m.)	Pend. Y	Ycdg (m.)	Z (m.)	Pend. Z	TENSIÓN (kg/mm2)	AXIL (t.)	Sección dorsal CORTANTE (t.)	MOMENTO (mt.)	AXIL (t.)	Sección frontal CORTANTE (t.)	MOMENTO (mt.)
26	76.26	2.752	0	1.7859999	0	0	129	0	0	0	-361.2	0	-348.919246
27	79.02	2.752	0	1.7859999	0	0	129	-361.2	0	-348.919246	-361.2	0	-348.919246
28	81.78	2.752	0	1.7859999	0	0	129	-361.2	0	-348.919246	-361.2	0	-348.919246
29	84.54	2.752	0	1.7859999	0	0	129	-361.2	0	-348.919246	-361.2	0	-348.919246
30	87.3	2.752	0	1.7859999	0	0	129	-361.2	0	-348.919246	-361.2	0	-348.919246
31	90.06	2.752	0	1.7859999	0	0	129	-361.2	0	-348.919246	-361.2	0	-348.919246
32	92.82	2.752	0	1.7859999	0	0	129	-361.2	0	-348.919246	-361.2	0	-348.919246
33	95.58	2.752	0	1.7859999	0	0	129	-361.2	0	-348.919246	-361.2	0	-348.919246
34	98.34	2.752	0	1.7859999	0	0	129	-361.2	0	-348.919246	0	0	0

ALARGAMIENTO DE TESADO 146.067692

COEFICIENT DESVIACIÓN ROZAMIENTO PARÁSITA VAINA-TEND (rad/m)	MÓDULO DE ANCLAJE ELASTICIDAD ORIGEN ACERO (kg/c (m.)	ANCLAJE FINAL (m.)	TESADO DESDE EXTREMOS	NÚMERO DE TORONES	ÁREA TORÓN (mm2)	TENSIÓN TESADO (kg/mm2)	PENETRACIÓN DE CUÑA (mm.)
0.21	0	1950000	79.02	95.58 AMBOS	12	140 129 67.8947368	0

TRAZADO EN ALZADO

TRAMO	Xfin	RECTA 1 Yfin	Pend	Xfin	PARABOLA Yfin	Pend	Xfin	RECTA 2 Yfin	Pend
1	95.5799995	2.704	0	95.5799995	2.704	0	95.5799995	2.704	0

TRAZADO EN PLANTA

TRAMO	Xfin	RECTA 1 Yfin	Pend	Xfin	PARABOLA Yfin	Pend	Xfin	RECTA 2 Yfin	Pend
1	79.02	0	0	79.02	0	0	95.58	0	0

NUDO	X (m.)	Y (m.)	Pend. Y	Ycdg (m.)	Z (m.)	Pend. Z	TENSIÓN (kg/mm2)	AXIL (t.)	Sección dorsal CORTANTE (t.)	MOMENTO (mt.)	AXIL (t.)	Sección frontal CORTANTE (t.)	MOMENTO (mt.)
27	79.02	2.704	0	1.7859999	0	0	129	0	0	0	-216.72	0	-198.948982
28	81.78	2.704	0	1.7859999	0	0	129	-216.72	0	-198.948982	-216.72	0	-198.948982
29	84.54	2.704	0	1.7859999	0	0	129	-216.72	0	-198.948982	-216.72	0	-198.948982
30	87.3	2.704	0	1.7859999	0	0	129	-216.72	0	-198.948982	-216.72	0	-198.948982
31	90.06	2.704	0	1.7859999	0	0	129	-216.72	0	-198.948982	-216.72	0	-198.948982
32	92.82	2.704	0	1.7859999	0	0	129	-216.72	0	-198.948982	-216.72	0	-198.948982
33	95.58	2.704	0	1.7859999	0	0	129	-216.72	0	-198.948982	0	0	0

ALARGAMIENTO DE TESADO 109.550769

COEFICIENT DE ROZAMIENTO/ PARÁSITA VAINA-TEND (rad/m)	DESVIACIÓN MÓDULO DE ANCLAJE ELASTICIDAD/ ORIGEN ACERO (kg/c (m.)	ANCLAJE FINAL (m.)	TESADO DESDE EXTREMOS	NÚMERO DE TORONES	ÁREA TORÓN (mm2)	TENSIÓN TESADO (kg/mm2)	PENETRACIÓN DE CUÑA (mm.)		
0.21	0	1950000	73.5	101.1	AMBOS	8	140	148	0
								77.8947368	

TRAZADO EN ALZADO

TRAMO	Xfin	RECTA 1		Pend	PARABOLA		RECTA 2		Pend
		Yfin	Xfin		Yfin	Xfin	Yfin	Xfin	
1	101.1	0.45	0	101.1	0.45	0	101.1	0.45	0

TRAZADO EN PLANTA

TRAMO	Xfin	RECTA 1		Pend	PARABOLA		RECTA 2		Pend
		Yfin	Xfin		Yfin	Xfin	Yfin	Xfin	
1	73.5	0	0	73.5	0	0	101.1	0	0

NUDO	X (m.)	Y (m.)	Pend. Y	Ycdg (m.)	Z (m.)	Pend. Z	TENSIÓN (kg/mm2)	Sección dorsal			Sección frontal		
								AXIL (t.)	CORTANTE (t.)	MOMENTO (mt.)	AXIL (t.)	CORTANTE (t.)	MOMENTO (mt.)
25	73.5	0.45	0	1.7859999	0	0	148	0	0	-165.76	0	221.455337	
26	76.26	0.45	0	1.7859999	0	0	148	-165.76	0	-165.76	0	221.455337	
27	79.02	0.45	0	1.7859999	0	0	148	-165.76	0	-165.76	0	221.455337	
28	81.78	0.45	0	1.7859999	0	0	148	-165.76	0	-165.76	0	221.455337	
29	84.54	0.45	0	1.7859999	0	0	148	-165.76	0	-165.76	0	221.455337	
30	87.3	0.45	0	1.7859999	0	0	148	-165.76	0	-165.76	0	221.455337	
31	90.06	0.45	0	1.7859999	0	0	148	-165.76	0	-165.76	0	221.455337	
32	92.82	0.45	0	1.7859999	0	0	148	-165.76	0	-165.76	0	221.455337	
33	95.58	0.45	0	1.7859999	0	0	148	-165.76	0	-165.76	0	221.455337	
34	98.34	0.45	0	1.7859999	0	0	148	-165.76	0	-165.76	0	221.455337	
35	101.1	0.45	0	1.7859999	0	0	148	-165.76	0	-165.76	0	221.455337	
0	101.1	0.45	0	1.7859999	0	0	148	-165.76	0	-165.76	0	221.455344	

ALARGAMIENTO DE TESADO

209.476923

IDEAM

PRETENSADO VIGAS PREFABRICADAS NUDO de 101 A 135.

CAJADA DERECHA

" PRET F1 A "

- GRUPO 2. CALZADA DERECHA. "PREFIA"

Viga de 2735 m

FAMILIA	Vi	X _{inicial}	X _{final}	Vs
① 26 troncos $\phi 0.6"$	0.05	0	27'4	2'80
② 16 troncos $\phi 0.6"$	0.098	27'4	24'66	2'752
③ 12 troncos $\phi 0.6"$	0.146	5'18	21'92	2'704
④ 2 troncos $\phi 0.6"$	2'40.	0	27'4	0'45.

Viga de 40 m

FAMILIA	Vi	X _{inicial}	X _{final}	Vs
⑤ 28 troncos $\phi 0.6"$	0.05	27'4	67'4	2'80
⑥ 26 troncos $\phi 0.6"$	0.098	30'45	64'01	2'752
⑦ 28 troncos $\phi 0.6"$	0.146	33'5	60'62	2'704
⑧ 28 troncos $\phi 0.6"$	0.194	36'89	57'23	2'656
⑨ 8 troncos $\phi 0.6"$	2'40.	27'4	67'4	0'45.

Viga de 3371 m

FAMILIA	Vi	X _{inicial}	X _{final}	Vs
⑩ 28 troncos $\phi 0.6"$	0.05	67'4	101'1	2'80
⑪ 26 troncos $\phi 0.6"$	0.098	70'45	98'34	2'752
⑫ 26 troncos $\phi 0.6"$	0.146	73'5	95'58	2'704
⑬ 26 troncos $\phi 0.6"$	0.194	76'26	92'82	2'656
⑭ 8 troncos $\phi 0.6"$	2'40.	67'4	101'1	0'45.

COEFICIENT DE DESVIACIÓN ROZAMIENTO PARÁSITA VAINA-TEND (rad/m)	MÓDULO DE ELASTICIDAD ACERO (kg/c (m.)	ANCLAJE FINAL (m.)	TESADO DESDE EXTREMOS	NÚMERO DE TORONES	ÁREA TORÓN (mm2)	TENSIÓN TESADO (kg/mm2)	PENETRACIÓN DE CUÑA (mm.)
0.21	0	1950000	0	27.4 AMBOS	26	140	129
						67.8947368	0

TRAZADO EN ALZADO

TRAMO	Xfin	RECTA 1 Yfin	Pend	Xfin	PARABOLA Yfin	Pend	Xfin	RECTA 2 Yfin	Pend
1	27.3999996	2.8	0	27.3999996	2.8	0	27.3999996	2.8	0

TRAZADO EN PLANTA

TRAMO	Xfin	RECTA 1 Yfin	Pend	Xfin	PARABOLA Yfin	Pend	Xfin	RECTA 2 Yfin	Pend
1	0	0	0	0	0	0	27.4	0	0

NUDO	X (m.)	Y (m.)	Pend. Y	Ycdg (m.)	Z (m.)	Pend. Z	TENSIÓN (kg/mm2)	AXIL (t.)	Sección dorsal CORTANTE (t.)	MOMENTO (mt.)	AXIL (t.)	Sección frontal CORTANTE (t.)	MOMENTO (mt.)
101	0	2.8	0	1.7859999	0	0	129	0	0	0	-469.56	0	-476.133882
102	2.74	2.8	0	1.7859999	0	0	129	-469.56	0	-476.133882	-469.56	0	-476.133882
103	5.48	2.8	0	1.7859999	0	0	129	-469.56	0	-476.133882	-469.56	0	-476.133882
104	8.22	2.8	0	1.7859999	0	0	129	-469.56	0	-476.133882	-469.56	0	-476.133882
105	10.96	2.8	0	1.7859999	0	0	129	-469.56	0	-476.133882	-469.56	0	-476.133882
106	13.7	2.8	0	1.7859999	0	0	129	-469.56	0	-476.133882	-469.56	0	-476.133882
107	16.44	2.8	0	1.7859999	0	0	129	-469.56	0	-476.133882	-469.56	0	-476.133882
108	19.18	2.8	0	1.7859999	0	0	129	-469.56	0	-476.133882	-469.56	0	-476.133882
109	21.92	2.8	0	1.7859999	0	0	129	-469.56	0	-476.133882	-469.56	0	-476.133882
110	24.66	2.8	0	1.7859999	0	0	129	-469.56	0	-476.133882	0	0	0
10111	27.4	2.8	0	1.7859999	0	0	129	0	0	0	0	0	0
111	27.4	2.8	0	1.7859999	0	0	129	0	0	0	0	0	0

ALARGAMIENTO DE TESADO 181.261538

COEFICIENT DESVIACIÓN ROZAMIENTO PARÁSITA VAINA-TEND (rad/m)	MÓDULO DE ANCLAJE ELASTICIDAD ORIGEN ACERO (kg/c (m.)	ANCLAJE FINAL (m.)	TESADO DESDE EXTREMOS	NÚMERO DE TORONES	ÁREA TORÓN (mm2)	TENSIÓN TESADO (kg/mm2)	PENETRACIÓN DE CUÑA (mm.)
0.21	0	1950000	2.74	24.66 AMBOS	16	140	129
						67.8947368	0

TRAZADO EN ALZADO

TRAMO	Xfin	RECTA 1 Yfin	Pend	Xfin	PARABOLA Yfin	Pend	Xfin	RECTA 2 Yfin	Pend
1	24.6600001	2.752	0	24.6600001	2.752	0	24.6600001	2.752	0

TRAZADO EN PLANTA

TRAMO	Xfin	RECTA 1 Yfin	Pend	Xfin	PARABOLA Yfin	Pend	Xfin	RECTA 2 Yfin	Pend
1	2.74	0	0	2.74	0	0	24.66	0	0

NUDO	X (m.)	Y (m.)	Pend. Y	Ycdg (m.)	Z (m.)	Pend. Z	TENSIÓN (kg/mm2)	AXIL (t.)	Sección dorsal CORTANTE (t.)	MOMENTO (mt.)	AXIL (t.)	Sección frontal CORTANTE (t.)	MOMENTO (mt.)
102	2.74	2.752	0	1.7859999	0	0	129	0	0	0	-288.96	0	-279.135379
103	5.48	2.752	0	1.7859999	0	0	129	-288.96	0	-279.135379	-288.96	0	-279.135379
104	8.22	2.752	0	1.7859999	0	0	129	-288.96	0	-279.135379	-288.96	0	-279.135379
105	10.96	2.752	0	1.7859999	0	0	129	-288.96	0	-279.135379	-288.96	0	-279.135379
106	13.7	2.752	0	1.7859999	0	0	129	-288.96	0	-279.135379	-288.96	0	-279.135379
107	16.44	2.752	0	1.7859999	0	0	129	-288.96	0	-279.135379	-288.96	0	-279.135379
108	19.18	2.752	0	1.7859999	0	0	129	-288.96	0	-279.135379	-288.96	0	-279.135379
109	21.92	2.752	0	1.7859999	0	0	129	-288.96	0	-279.135379	-288.96	0	-279.135379
110	24.66	2.752	0	1.7859999	0	0	129	-288.96	0	-279.135379	0	0	0

ALARGAMIENTO DE TESADO 145.009231

COEFICIENT ROZAMIENTO VAINA-TEND	DESVIACIÓN PARÁSITA (rad/m)	MÓDULO DE ELASTICIDAD ACERO (kg/c	ANCLAJE FINAL (m.)	TESADO DESDE EXTREMOS	NÚMERO DE TORONES	ÁREA TORÓN (mm2)	TENSIÓN TESADO (kg/mm2)	PENETRACIÓN DE CUÑA (mm.)
0.21	0	1950000	5.48	21.92 AMBOS	12	140	129 67.8947368	0

TRAZADO EN ALZADO

TRAMO	Xfin	RECTA 1 Yfin	Pend	Xfin	PARABOLA Yfin	Pend	Xfin	RECTA 2 Yfin	Pend
1	21.9200005	2.704	0	21.9200005	2.704	0	21.9200005	2.704	0

TRAZADO EN PLANTA

TRAMO	Xfin	RECTA 1 Yfin	Pend	Xfin	PARABOLA Yfin	Pend	Xfin	RECTA 2 Yfin	Pend
1	5.48	0	0	5.48	0	0	21.92	0	0

NUDO	X (m.)	Y (m.)	Pend. Y	Ycdg (m.)	Z (m.)	Pend. Z	TENSIÓN (kg/mm2)	AXIL (t.)	Sección dorsal CORTANTE (t.)	MOMENTO (mt.)	AXIL (t.)	Sección frontal CORTANTE (t.)	MOMENTO (mt.)
103	5.48	2.704	0	1.7859999	0	0	129	0	0	0	-216.72	0	-198.948982
104	8.22	2.704	0	1.7859999	0	0	129	-216.72	0	-198.948982	-216.72	0	-198.948982
105	10.96	2.704	0	1.7859999	0	0	129	-216.72	0	-198.948982	-216.72	0	-198.948982
106	13.7	2.704	0	1.7859999	0	0	129	-216.72	0	-198.948982	-216.72	0	-198.948982
107	16.44	2.704	0	1.7859999	0	0	129	-216.72	0	-198.948982	-216.72	0	-198.948982
108	19.18	2.704	0	1.7859999	0	0	129	-216.72	0	-198.948982	-216.72	0	-198.948982
109	21.92	2.704	0	1.7859999	0	0	129	-216.72	0	-198.948982	0	0	0

ALARGAMIENTO DE TESADO 108.756923

COEFICIENT ROZAMIENTO VAINA-TEND	DESVIACIÓN PARÁSITA (rad/m)	MÓDULO DE ELASTICIDAD ACERO (kg/c	ANCLAJE FINAL (m.)	TESADO DESDE EXTREMOS	NÚMERO DE TORONES	ÁREA TORÓN (mm2)	TENSIÓN TESADO (kg/mm2)	PENETRACIÓN DE CUÑA (mm.)
0.21	0	1950000	0	27.4 AMBOS	8	140	148 77.8947368	0

TRAZADO EN ALZADO

TRAMO	Xfin	RECTA 1 Yfin	Pend	Xfin	PARABOLA Yfin	Pend	Xfin	RECTA 2 Yfin	Pend
1	27.3999996	0.45	0	27.3999996	0.45	0	27.3999996	0.45	0

TRAZADO EN PLANTA

TRAMO	Xfin	RECTA 1 Yfin	Pend	Xfin	PARABOLA Yfin	Pend	Xfin	RECTA 2 Yfin	Pend
1	0	0	0	0	0	0	27.4	0	0

NUDO	X (m.)	Y (m.)	Pend. Y	Ycdg (m.)	Z (m.)	Pend. Z	TENSIÓN (kg/mm2)	AXIL (t.)	Sección dorsal CORTANTE (t.)	MOMENTO (mt.)	AXIL (t.)	Sección frontal CORTANTE (t.)	MOMENTO (mt.)
101	0	0.45	0	1.7859999	0	0	148	0	0	0	-165.76	0	221.455337
102	2.74	0.45	0	1.7859999	0	0	148	-165.76	0	221.455337	-165.76	0	221.455337
103	5.48	0.45	0	1.7859999	0	0	148	-165.76	0	221.455337	-165.76	0	221.455337
104	8.22	0.45	0	1.7859999	0	0	148	-165.76	0	221.455337	-165.76	0	221.455337
105	10.96	0.45	0	1.7859999	0	0	148	-165.76	0	221.455337	-165.76	0	221.455337
106	13.7	0.45	0	1.7859999	0	0	148	-165.76	0	221.455337	-165.76	0	221.455337
107	16.44	0.45	0	1.7859999	0	0	148	-165.76	0	221.455337	-165.76	0	221.455337
108	19.18	0.45	0	1.7859999	0	0	148	-165.76	0	221.455337	-165.76	0	221.455337
109	21.92	0.45	0	1.7859999	0	0	148	-165.76	0	221.455337	-165.76	0	221.455337
110	24.66	0.45	0	1.7859999	0	0	148	-165.76	0	221.455337	-165.76	0	221.455337
10111	27.4	0.45	0	1.7859999	0	0	148	-165.76	0	221.455337	0	0	0
111	27.4	0.45	0	1.7859999	0	0	148	0	0	0	0	0	0

ALARGAMIENTO DE TESADO 207.958974

V3INF

FAMILIA DE (5

COEFICIENT ROZAMIENTO VAINA-TEND	DESVIACIÓN PARÁSITA (rad/m)	MÓDULO DE ELASTICIDAD ACERO (kg/c (m.)	ANCLAJE FINAL (m.)	TESADO DESDE EXTREMOS	NÚMERO DE TORONES	ÁREA TORÓN (mm2)	TENSIÓN TESADO (kg/mm2)	PENETRACIÓN DE CUÑA (mm.)
0.21	0	1950000	27.4	67.4 AMBOS	28	140	129 67.8947368	0

TRAZADO EN ALZADO

TRAMO	Xfin	RECTA 1 Yfin	Pend	Xfin	PARABOLA Yfin	Pend	Xfin	RECTA 2 Yfin	Pend
1	67.4	2.8	0	67.4	2.8	0	67.4	2.8	0

TRAZADO EN PLANTA

TRAMO	Xfin	RECTA 1 Yfin	Pend	Xfin	PARABOLA Yfin	Pend	Xfin	RECTA 2 Yfin	Pend
1	27.4	0	0	27.4	0	0	67.4	0	0

NUDO	X (m.)	Y (m.)	Pend. Y	Ycdg (m.)	Z (m.)	Pend. Z	TENSIÓN (kg/mm2)	AXIL (t.)	Sección dorsal CORTANTE (t.)	MOMENTO (mt.)	AXIL (t.)	Sección frontal CORTANTE (t.)	MOMENTO (mt.)
111	27.4	2.8	0	1.7859999	0	0	0	129	0	0	0	-505.68	0 -512.759561
112	30.45	2.8	0	1.7859999	0	0	0	129	-505.68	0	-512.759561	-505.68	0 -512.759561
113	33.5	2.8	0	1.7859999	0	0	0	129	-505.68	0	-512.759561	-505.68	0 -512.759561
114	36.89	2.8	0	1.7859999	0	0	0	129	-505.68	0	-512.759561	-505.68	0 -512.759561
115	40.28	2.8	0	1.7859999	0	0	0	129	-505.68	0	-512.759561	-505.68	0 -512.759561
116	43.67	2.8	0	1.7859999	0	0	0	129	-505.68	0	-512.759561	-505.68	0 -512.759561
117	47.06	2.8	0	1.7859999	0	0	0	129	-505.68	0	-512.759561	-505.68	0 -512.759561
118	50.45	2.8	0	1.7859999	0	0	0	129	-505.68	0	-512.759561	-505.68	0 -512.759561
119	53.84	2.8	0	1.7859999	0	0	0	129	-505.68	0	-512.759561	-505.68	0 -512.759561
120	57.23	2.8	0	1.7859999	0	0	0	129	-505.68	0	-512.759561	-505.68	0 -512.759561
121	60.62	2.8	0	1.7859999	0	0	0	129	-505.68	0	-512.759561	-505.68	0 -512.759561
122	64.01	2.8	0	1.7859999	0	0	0	129	-505.68	0	-512.759561	-505.68	0 -512.759561
10123	67.4	2.8	0	1.7859999	0	0	0	129	-505.68	0	-512.759561	0	0 0
123	67.4	2.8	0	1.7859999	0	0	0	129	0	0	0	0	0 0

ALARGAMIENTO DE TESADO 264.615385

V3INF2

FAMILIA DE (6

COEFICIENT ROZAMIENTO VAINA-TEND	DESVIACIÓN PARÁSITA (rad/m)	MÓDULO DE ELASTICIDAD ACERO (kg/c (m.)	ANCLAJE FINAL (m.)	TESADO DESDE EXTREMOS	NÚMERO DE TORONES	ÁREA TORÓN (mm2)	TENSIÓN TESADO (kg/mm2)	PENETRACIÓN DE CUÑA (mm.)
0.21	0	1950000	30.45	64.01 AMBOS	26	140	129 67.8947368	0

TRAZADO EN ALZADO

TRAMO	Xfin	RECTA 1 Yfin	Pend	Xfin	PARABOLA Yfin	Pend	Xfin	RECTA 2 Yfin	Pend
1	64.0100014	2.752	0	64.0100014	2.752	0	64.0100014	2.752	0

TRAZADO EN PLANTA

TRAMO	Xfin	RECTA 1 Yfin	Pend	Xfin	PARABOLA Yfin	Pend	Xfin	RECTA 2 Yfin	Pend
1	30.45	0	0	30.45	0	0	64.01	0	0

NUDO	X (m.)	Y (m.)	Pend. Y	Ycdg (m.)	Z (m.)	Pend. Z	TENSIÓN (kg/mm2)	AXIL (t.)	Sección dorsal CORTANTE (t.)	MOMENTO (mt.)	AXIL (t.)	Sección frontal CORTANTE (t.)	MOMENTO (mt.)
112	30.45	2.752	0	1.7859999	0	0	0	129	0	0	0	-469.56	0 -453.595002
113	33.5	2.752	0	1.7859999	0	0	0	129	-469.56	0	-453.595002	-469.56	0 -453.595002
114	36.89	2.752	0	1.7859999	0	0	0	129	-469.56	0	-453.595002	-469.56	0 -453.595002
115	40.28	2.752	0	1.7859999	0	0	0	129	-469.56	0	-453.595002	-469.56	0 -453.595002
116	43.67	2.752	0	1.7859999	0	0	0	129	-469.56	0	-453.595002	-469.56	0 -453.595002
117	47.06	2.752	0	1.7859999	0	0	0	129	-469.56	0	-453.595002	-469.56	0 -453.595002
118	50.45	2.752	0	1.7859999	0	0	0	129	-469.56	0	-453.595002	-469.56	0 -453.595002
119	53.84	2.752	0	1.7859999	0	0	0	129	-469.56	0	-453.595002	-469.56	0 -453.595002
120	57.23	2.752	0	1.7859999	0	0	0	129	-469.56	0	-453.595002	-469.56	0 -453.595002
121	60.62	2.752	0	1.7859999	0	0	0	129	-469.56	0	-453.595002	-469.56	0 -453.595002
122	64.01	2.752	0	1.7859999	0	0	0	129	-469.56	0	-453.595002	0	0 -453.595002

ALARGAMIENTO DE TESADO 222.012308

V3IN'

FAMILIA DE (7

COEFICIENT ROZAMIENTO VAINA-TEND	DESVIACIÓN PARÁSITA (rad/m)	MÓDULO DE ELASTICIDAD ACERO (kg/c (m.)	ANCLAJE FINAL (m.)	TESADO DESDE EXTREMOS	NÚMERO DE TORONES	ÁREA TORÓN (mm2)	TENSIÓN TESADO (kg/mm2)	PENETRACIÓN DE CUÑA (mm.)
0.21	0	1950000	33.5	60.62 AMBOS	28	140	129 67.8947368	0

TRAZADO EN ALZADO

TRAMO	Xfin	RECTA 1 Yfin	Pend	Xfin	PARABOLA Yfin	Pend	Xfin	RECTA 2 Yfin	Pend
1	60.6200008	2.704	0	60.6200008	2.704	0	60.6200008	2.704	0

TRAZADO EN PLANTA

TRAMO	Xfin	RECTA 1 Yfin	Pend	Xfin	PARABOLA Yfin	Pend	Xfin	RECTA 2 Yfin	Pend
1	33.5	0	0	33.5	0	0	60.62	0	0

NUDO	X (m.)	Y (m.)	Pend. Y	Ycdg (m.)	Z (m.)	Pend. Z	TENSIÓN (kg/mm2)	AXIL (t.)	Sección dorsal CORTANTE (t.)	MOMENTO (mt.)	AXIL (t.)	Sección frontal CORTANTE (t.)	MOMENTO (mt.)
113	33.5	2.704	0	1.7859999	0	0	0	129	0	0	0	-505.68	0 -464.214282
114	36.89	2.704	0	1.7859999	0	0	0	129	-505.68	0	-464.214282	-505.68	0 -464.214282
115	40.28	2.704	0	1.7859999	0	0	0	129	-505.68	0	-464.214282	-505.68	0 -464.214282
116	43.67	2.704	0	1.7859999	0	0	0	129	-505.68	0	-464.214282	-505.68	0 -464.214282
117	47.06	2.704	0	1.7859999	0	0	0	129	-505.68	0	-464.214282	-505.68	0 -464.214282
118	50.45	2.704	0	1.7859999	0	0	0	129	-505.68	0	-464.214282	-505.68	0 -464.214282
119	53.84	2.704	0	1.7859999	0	0	0	129	-505.68	0	-464.214282	-505.68	0 -464.214282
120	57.23	2.704	0	1.7859999	0	0	0	129	-505.68	0	-464.214282	-505.68	0 -464.214282
121	60.62	2.704	0	1.7859999	0	0	0	129	-505.68	0	-464.214282	0	0 0

ALARGAMIENTO DE TESADO 179.409231

V3INF4

FAMILIA DE (8

COEFICIENT ROZAMIENTO VAINA-TEND	DESVIACIÓN PARÁSITA (rad/m)	MÓDULO DE ELASTICIDAD ACERO (kg/c (m.)	ANCLAJE FINAL (m.)	TESADO DESDE EXTREMOS	NÚMERO DE TORONES	ÁREA TORÓN (mm2)	TENSIÓN TESADO (kg/mm2)	PENETRACIÓN DE CUÑA (mm.)
0.21	0	1950000	36.89	57.23 AMBOS	28	140	129 67.8947368	0

TRAZADO EN ALZADO

TRAMO	Xfin	RECTA 1 Yfin	Pend	Xfin	PARABOLA Yfin	Pend	Xfin	RECTA 2 Yfin	Pend
1	57.2300002	2.656	0	57.2300002	2.656	0	57.2300002	2.656	0

TRAZADO EN PLANTA

TRAMO	Xfin	RECTA 1 Yfin	Pend	Xfin	PARABOLA Yfin	Pend	Xfin	RECTA 2 Yfin	Pend
1	36.89	0	0	36.89	0	0	57.23	0	0

NUDO	X (m.)	Y (m.)	Pend. Y	Ycdg (m.)	Z (m.)	Pend. Z	TENSIÓN (kg/mm2)	AXIL (t.)	Sección dorsal CORTANTE (t.)	MOMENTO (mt.)	AXIL (t.)	Sección frontal CORTANTE (t.)	MOMENTO (mt.)
114	36.89	2.656	0	1.7859999	0	0	0	129	0	0	0	-505.68	0 -439.941642
115	40.28	2.656	0	1.7859999	0	0	0	129	-505.68	0	-439.941642	-505.68	0 -439.941642
116	43.67	2.656	0	1.7859999	0	0	0	129	-505.68	0	-439.941642	-505.68	0 -439.941642
117	47.06	2.656	0	1.7859999	0	0	0	129	-505.68	0	-439.941642	-505.68	0 -439.941642
118	50.45	2.656	0	1.7859999	0	0	0	129	-505.68	0	-439.941642	-505.68	0 -439.941642
119	53.84	2.656	0	1.7859999	0	0	0	129	-505.68	0	-439.941642	-505.68	0 -439.941642
120	57.23	2.656	0	1.7859999	0	0	0	129	-505.68	0	-439.941642	0	0 0

ALARGAMIENTO DE TESADO 134.556923

COEFICIENT ROZAMIENTO VAINA-TEND	DESVIACIÓN (PARÁSITA rad/m)	MÓDULO DE ELASTICIDAD ACERO (kg/c	ANCLAJE ORIGEN (m.)	ANCLAJE FINAL (m.)	TESADO DESDE EXTREMOS	NÚMERO DE TORONES	ÁREA TORÓN (mm2)	TENSIÓN TESADO (kg/mm2)	PENETRACIÓN DE CUÑA (mm.)
0.21	0	1950000	27.4	67.4	AMBOS	8	140	148 77.8947368	0

TRAZADO EN ALZADO

TRAMO	Xfin	RECTA 1 Yfin	Pend	Xfin	PARABOLA Yfin	Pend	Xfin	RECTA 2 Yfin	Pend
1	67.4	0.45	0	67.4	0.45	0	67.4	0.45	0

TRAZADO EN PLANTA

TRAMO	Xfin	RECTA 1 Yfin	Pend	Xfin	PARABOLA Yfin	Pend	Xfin	RECTA 2 Yfin	Pend
1	27.4	0	0	27.4	0	0	67.4	0	0

NUDO	X (m.)	Y (m.)	Pend. Y	Ycdg (m.)	Z (m.)	Pend. Z	TENSIÓN (kg/mm2)	AXIL (t.)	Sección dorsal CORTANTE (t.)	MOMENTO (mt.)	AXIL (t.)	Sección frontal CORTANTE (t.)	MOMENTO (mt.)
111	27.4	0.45	0	1.7859999	0	0	148	0	0	0	-165.76	0	221.455337
112	30.45	0.45	0	1.7859999	0	0	148	-165.76	0	221.455337	-165.76	0	221.455337
113	33.5	0.45	0	1.7859999	0	0	148	-165.76	0	221.455337	-165.76	0	221.455337
114	36.89	0.45	0	1.7859999	0	0	148	-165.76	0	221.455337	-165.76	0	221.455337
115	40.28	0.45	0	1.7859999	0	0	148	-165.76	0	221.455337	-165.76	0	221.455337
116	43.67	0.45	0	1.7859999	0	0	148	-165.76	0	221.455337	-165.76	0	221.455337
117	47.06	0.45	0	1.7859999	0	0	148	-165.76	0	221.455337	-165.76	0	221.455337
118	50.45	0.45	0	1.7859999	0	0	148	-165.76	0	221.455337	-165.76	0	221.455337
119	53.84	0.45	0	1.7859999	0	0	148	-165.76	0	221.455337	-165.76	0	221.455337
120	57.23	0.45	0	1.7859999	0	0	148	-165.76	0	221.455337	-165.76	0	221.455337
121	60.62	0.45	0	1.7859999	0	0	148	-165.76	0	221.455337	-165.76	0	221.455337
122	64.01	0.45	0	1.7859999	0	0	148	-165.76	0	221.455337	-165.76	0	221.455337
10123	67.4	0.45	0	1.7859999	0	0	148	-165.76	0	221.455337	0	0	0
123	67.4	0.45	0	1.7859999	0	0	148	0	0	0	0	0	0

ALARGAMIENTO DE TESADO303.589744

COEFICIENT ROZAMIENTO VAINA-TEND	DESVIACIÓN (PARÁSITA rad/m)	MÓDULO DE ELASTICIDAD ACERO (kg/c	ANCLAJE ORIGEN (m.)	ANCLAJE FINAL (m.)	TESADO DESDE EXTREMOS	NÚMERO DE TORONES	ÁREA TORÓN (mm2)	TENSIÓN TESADO (kg/mm2)	PENETRACIÓN DE CUÑA (mm.)
0.21	0	1950000	67.4	101.1	AMBOS	28	140	129 67.8947368	0

TRAZADO EN ALZADO

TRAMO	Xfin	RECTA 1 Yfin	Pend	Xfin	PARABOLA Yfin	Pend	Xfin	RECTA 2 Yfin	Pend
1	101.100001	2.8	0	101.100001	2.8	0	101.100001	2.8	0

TRAZADO EN PLANTA

TRAMO	Xfin	RECTA 1 Yfin	Pend	Xfin	PARABOLA Yfin	Pend	Xfin	RECTA 2 Yfin	Pend
1	67.4	0	0	67.4	0	0	101.1	0	0

NUDO	X (m.)	Y (m.)	Pend. Y	Ycdg (m.)	Z (m.)	Pend. Z	TENSIÓN (kg/mm2)	AXIL (t.)	Sección dorsal CORTANTE (t.)	MOMENTO (mt.)	AXIL (t.)	Sección frontal CORTANTE (t.)	MOMENTO (mt.)
123	67.4	2.8	0	1.7859999	0	0	129	0	0	0	-505.68	0	-512.759561
124	70.45	2.8	0	1.7859999	0	0	129	-505.68	0	-512.759561	-505.68	0	-512.759561
125	73.5	2.8	0	1.7859999	0	0	129	-505.68	0	-512.759561	-505.68	0	-512.759561
126	76.26	2.8	0	1.7859999	0	0	129	-505.68	0	-512.759561	-505.68	0	-512.759561
127	79.02	2.8	0	1.7859999	0	0	129	-505.68	0	-512.759561	-505.68	0	-512.759561
128	81.78	2.8	0	1.7859999	0	0	129	-505.68	0	-512.759561	-505.68	0	-512.759561
129	84.54	2.8	0	1.7859999	0	0	129	-505.68	0	-512.759561	-505.68	0	-512.759561
130	87.3	2.8	0	1.7859999	0	0	129	-505.68	0	-512.759561	-505.68	0	-512.759561
131	90.06	2.8	0	1.7859999	0	0	129	-505.68	0	-512.759561	-505.68	0	-512.759561
132	92.82	2.8	0	1.7859999	0	0	129	-505.68	0	-512.759561	-505.68	0	-512.759561
133	95.58	2.8	0	1.7859999	0	0	129	-505.68	0	-512.759561	-505.68	0	-512.759561
134	98.34	2.8	0	1.7859999	0	0	129	-505.68	0	-512.759561	-505.68	0	-512.759561
135	101.1	2.8	0	1.7859999	0	0	129	-505.68	0	-512.759561	0	0	0
0	101.1	2.8	0	1.7859999	0	0	129	0	0	0	-505.68	0	-512.759568

ALARGAMIENTO DE TESADO222.938462

COEFICIENT ROZAMIENTO VAINA-TEND	DESVIACIÓN PARÁSITA (rad/m)	MÓDULO DE ANCLAJE ELASTICIDAD ACERO (kg/c (m.)	ANCLAJE ORIGEN FINAL (m.)	TESADO DESDE EXTREMOS	NÚMERO DE TORONES	ÁREA TORÓN (mm2)	TENSIÓN TESADO (kg/mm2)	PENETRACIÓN DE CUÑA (mm.)
0.21	0	1950000	70.45	98.34 AMBOS	26	140	129 67.8947368	0

TRAZADO EN ALZADO

TRAMO	Xfin	RECTA 1 Yfin	Pend	Xfin	PARABOLA Yfin	Pend	Xfin	RECTA 2 Yfin	Pend
1	98.3399994	2.752	0	98.3399994	2.752	0	98.3399994	2.752	0

TRAZADO EN PLANTA

TRAMO	Xfin	RECTA 1 Yfin	Pend	Xfin	PARABOLA Yfin	Pend	Xfin	RECTA 2 Yfin	Pend
1	70.45	0	0	70.45	0	0	98.34	0	0

NUDO	X (m.)	Y (m.)	Pend. Y	Ycdg (m.)	Z (m.)	Pend. Z	TENSIÓN (kg/mm2)	AXIL (t.)	Sección dorsal CORTANTE (t.)	MOMENTO (mt.)	AXIL (t.)	Sección frontal CORTANTE (t.)	MOMENTO (mt.)
124	70.45	2.752	0	1.7859999	0	0	0	129	0	0	0	-469.56	0 -453.595002
125	73.5	2.752	0	1.7859999	0	0	0	129	-469.56	0	-453.595002	-469.56	0 -453.595002
126	76.26	2.752	0	1.7859999	0	0	0	129	-469.56	0	-453.595002	-469.56	0 -453.595002
127	79.02	2.752	0	1.7859999	0	0	0	129	-469.56	0	-453.595002	-469.56	0 -453.595002
128	81.78	2.752	0	1.7859999	0	0	0	129	-469.56	0	-453.595002	-469.56	0 -453.595002
129	84.54	2.752	0	1.7859999	0	0	0	129	-469.56	0	-453.595002	-469.56	0 -453.595002
130	87.3	2.752	0	1.7859999	0	0	0	129	-469.56	0	-453.595002	-469.56	0 -453.595002
131	90.06	2.752	0	1.7859999	0	0	0	129	-469.56	0	-453.595002	-469.56	0 -453.595002
132	92.82	2.752	0	1.7859999	0	0	0	129	-469.56	0	-453.595002	-469.56	0 -453.595002
133	95.58	2.752	0	1.7859999	0	0	0	129	-469.56	0	-453.595002	-469.56	0 -453.595002
134	98.34	2.752	0	1.7859999	0	0	0	129	-469.56	0	-453.595002	0	0 0

ALARGAMIENTO DE TESADO 184.503077

COEFICIENT ROZAMIENTO VAINA-TEND	DESVIACIÓN PARÁSITA (rad/m)	MÓDULO DE ANCLAJE ELASTICIDAD ACERO (kg/c (m.)	ANCLAJE ORIGEN FINAL (m.)	TESADO DESDE EXTREMOS	NÚMERO DE TORONES	ÁREA TORÓN (mm2)	TENSIÓN TESADO (kg/mm2)	PENETRACIÓN DE CUÑA (mm.)
0.21	0	1950000	73.5	95.58 AMBOS	26	140	129 67.8947368	0

TRAZADO EN ALZADO

TRAMO	Xfin	RECTA 1 Yfin	Pend	Xfin	PARABOLA Yfin	Pend	Xfin	RECTA 2 Yfin	Pend
1	95.5799999	2.704	0	95.5799999	2.704	0	95.5799999	2.704	0

TRAZADO EN PLANTA

TRAMO	Xfin	RECTA 1 Yfin	Pend	Xfin	PARABOLA Yfin	Pend	Xfin	RECTA 2 Yfin	Pend
1	73.5	0	0	73.5	0	0	95.58	0	0

NUDO	X (m.)	Y (m.)	Pend. Y	Ycdg (m.)	Z (m.)	Pend. Z	TENSIÓN (kg/mm2)	AXIL (t.)	Sección dorsal CORTANTE (t.)	MOMENTO (mt.)	AXIL (t.)	Sección frontal CORTANTE (t.)	MOMENTO (mt.)
125	73.5	2.704	0	1.7859999	0	0	0	129	0	0	0	-469.56	0 -431.056123
126	76.26	2.704	0	1.7859999	0	0	0	129	-469.56	0	-431.056123	-469.56	0 -431.056123
127	79.02	2.704	0	1.7859999	0	0	0	129	-469.56	0	-431.056123	-469.56	0 -431.056123
128	81.78	2.704	0	1.7859999	0	0	0	129	-469.56	0	-431.056123	-469.56	0 -431.056123
129	84.54	2.704	0	1.7859999	0	0	0	129	-469.56	0	-431.056123	-469.56	0 -431.056123
130	87.3	2.704	0	1.7859999	0	0	0	129	-469.56	0	-431.056123	-469.56	0 -431.056123
131	90.06	2.704	0	1.7859999	0	0	0	129	-469.56	0	-431.056123	-469.56	0 -431.056123
132	92.82	2.704	0	1.7859999	0	0	0	129	-469.56	0	-431.056123	-469.56	0 -431.056123
133	95.58	2.704	0	1.7859999	0	0	0	129	-469.56	0	-431.056123	0	0 0

ALARGAMIENTO DE TESADO 146.067692

V5IN

FAMILIA DE (13

COEFICIENT DESVIACIÓN ROZAMIENTO PARÁSITA VAINA-TEND (rad/m)	MÓDULO DE ANCLAJE ELASTICIDAD ORIGEN ACERO (kg/c (m.)	ANCLAJE FINAL (m.)	TESADO DESDE EXTREMOS	NÚMERO DE TORONES	ÁREA TORÓN (mm2)	TENSIÓN TESADO (kg/mm2)	PENETRACIÓN DE CUÑA (mm.)
0.21	0	1950000	76.26	92.82 AMBOS	26	140	129
						67.8947368	0

TRAZADO EN ALZADO

TRAMO	Xfin	RECTA 1 Yfin	Pend	Xfin	PARABOLA Yfin	Pend	Xfin	RECTA 2 Yfin	Pend
1	92.8199995	2.656	0	92.8199995	2.656	0	92.8199995	2.656	0

TRAZADO EN PLANTA

TRAMO	Xfin	RECTA 1 Yfin	Pend	Xfin	PARABOLA Yfin	Pend	Xfin	RECTA 2 Yfin	Pend
1	76.26	0	0	76.26	0	0	92.82	0	0

NUDO	X (m.)	Y (m.)	Pend. Y	Ycdg (m.)	Z (m.)	Pend. Z	TENSIÓN (kg/mm2)	AXIL (t.)	Sección dorsal CORTANTE (t.)	MOMENTO (mt.)	AXIL (t.)	Sección frontal CORTANTE (t.)	MOMENTO (mt.)
126	76.26	2.656	0	1.7859999	0	0	129	0	0	0	-469.56	0	-408.517243
127	79.02	2.656	0	1.7859999	0	0	129	-469.56	0	-408.517243	-469.56	0	-408.517243
128	81.78	2.656	0	1.7859999	0	0	129	-469.56	0	-408.517243	-469.56	0	-408.517243
129	84.54	2.656	0	1.7859999	0	0	129	-469.56	0	-408.517243	-469.56	0	-408.517243
130	87.3	2.656	0	1.7859999	0	0	129	-469.56	0	-408.517243	-469.56	0	-408.517243
131	90.06	2.656	0	1.7859999	0	0	129	-469.56	0	-408.517243	-469.56	0	-408.517243
132	92.82	2.656	0	1.7859999	0	0	129	-469.56	0	-408.517243	0	0	0

ALARGAMIENTO DE TESADO 109.550769

V5SUP

FAMILIA DE (14

COEFICIENT DESVIACIÓN ROZAMIENTO PARÁSITA VAINA-TEND (rad/m)	MÓDULO DE ANCLAJE ELASTICIDAD ORIGEN ACERO (kg/c (m.)	ANCLAJE FINAL (m.)	TESADO DESDE EXTREMOS	NÚMERO DE TORONES	ÁREA TORÓN (mm2)	TENSIÓN TESADO (kg/mm2)	PENETRACIÓN DE CUÑA (mm.)
0.21	0	1950000	67.4	101.1 AMBOS	8	140	148
						77.8947368	0

TRAZADO EN ALZADO

TRAMO	Xfin	RECTA 1 Yfin	Pend	Xfin	PARABOLA Yfin	Pend	Xfin	RECTA 2 Yfin	Pend
1	101.100001	0.45	0	101.100001	0.45	0	101.100001	0.45	0

TRAZADO EN PLANTA

TRAMO	Xfin	RECTA 1 Yfin	Pend	Xfin	PARABOLA Yfin	Pend	Xfin	RECTA 2 Yfin	Pend
1	67.4	0	0	67.4	0	0	101.1	0	0

NUDO	X (m.)	Y (m.)	Pend. Y	Ycdg (m.)	Z (m.)	Pend. Z	TENSIÓN (kg/mm2)	AXIL (t.)	Sección dorsal CORTANTE (t.)	MOMENTO (mt.)	AXIL (t.)	Sección frontal CORTANTE (t.)	MOMENTO (mt.)
123	67.4	0.45	0	1.7859999	0	0	148	0	0	0	-165.76	0	221.455337
124	70.45	0.45	0	1.7859999	0	0	148	-165.76	0	221.455337	-165.76	0	221.455337
125	73.5	0.45	0	1.7859999	0	0	148	-165.76	0	221.455337	-165.76	0	221.455337
126	76.26	0.45	0	1.7859999	0	0	148	-165.76	0	221.455337	-165.76	0	221.455337
127	79.02	0.45	0	1.7859999	0	0	148	-165.76	0	221.455337	-165.76	0	221.455337
128	81.78	0.45	0	1.7859999	0	0	148	-165.76	0	221.455337	-165.76	0	221.455337
129	84.54	0.45	0	1.7859999	0	0	148	-165.76	0	221.455337	-165.76	0	221.455337
130	87.3	0.45	0	1.7859999	0	0	148	-165.76	0	221.455337	-165.76	0	221.455337
131	90.06	0.45	0	1.7859999	0	0	148	-165.76	0	221.455337	-165.76	0	221.455337
132	92.82	0.45	0	1.7859999	0	0	148	-165.76	0	221.455337	-165.76	0	221.455337
133	95.58	0.45	0	1.7859999	0	0	148	-165.76	0	221.455337	-165.76	0	221.455337
134	98.34	0.45	0	1.7859999	0	0	148	-165.76	0	221.455337	-165.76	0	221.455337
135	101.1	0.45	0	1.7859999	0	0	148	-165.76	0	221.455337	-165.76	0	221.455337
0	101.1	0.45	0	1.7859999	0	0	148	0	0	0	-165.76	0	221.455344

ALARGAMIENTO DE TESADO 255.774359

PRETENSADO SUPERIOR SOBRE PILA

"PRETF3C" C/ta de derecha (grupo 2)

FAMILIA		Vs	X inicial	X final
①	8 x 7 ϕ 0.6"	0.12	19'18 (A)	33'5 (P)
②	8 x 7 ϕ 0.6"	0.12	57'23 (A)	73'5 (P)
③	7 x 7 ϕ 0.6"	0.12	21'92 (P)	35'89 (A)
④	7 x 7 ϕ 0.6"	0.12	60'62 (P)	76'26 (A)

POSTESADO DE LOSA SOBRE PILA.

"PRETF3D." C/ta de izquierda

FAMILIA		Vs	X inicial	X final
①	8 x 7 ϕ 0.6"	0.12	24'66 (A)	27'4 (P)
②	8 x 7 ϕ 0.6"	0.12	64'01 (A)	79'02 (P)
③	7 x 7 ϕ 0.6"	0.12	27'4 (P)	43'62 (A)
④	7 x 7 ϕ 0.6"	0.12	67'4 (P)	81'72 (A)

" PRET F3 C "

P4B

FAMILIA DE (1

COEFICIENT DESVIACIÓN MÓDULO DE ANCLAJE
ROZAMIENTO: PARÁSITA ELASTICIDAD: ORIGEN
VAINA- TEND (rad/m) ACERO (kg/c (m.)

0.21 0.006 1950000 19.18 33.5 ORIGEN 56 140 140 5
73.6842105

TRAZADO EN ALZADO

TRAMO	Xfin	RECTA 1		Pend	PARABOLA		RECTA 2	
		Yfin	Xfin		Yfin	Pend	Yfin	Pend
1	33.5	0.12	0	33.5	0.12	0	33.5000009	0.12 0

TRAZADO EN PLANTA

TRAMO	Xfin	RECTA 1		Pend	PARABOLA		RECTA 2	
		Yfin	Xfin		Yfin	Pend	Yfin	Pend
1	19.18	0	0	19.18	0	0	33.5	0 0

NUDO	X (m.)	Y (m.)	Pend. Y	Ycdg (m.)	Z (m.)	Pend. Z	TENSIÓN (kg/mm2)	AXIL (t.)	Sección dorsal		Sección frontal	
									CORTANTE (t.)	MOMENTO (mt.)	CORTANTE (t.)	MOMENTO (mt.)
108	19.18	0.12	0	0.8999999	0	0	0	126.625	0	0	-992.74	0 774.337098
109	21.92	0.12	0	0.8999999	0	0	0	127.107503	-996.522821	0	-996.522821	0 777.28771
110	24.66	0.12	0	0.8999999	0	0	0	127.588342	-1000.2926	0	-1000.2926	0 780.228135
10111	27.4	0.12	0	0.8999999	0	0	0	128.067525	-1004.04939	0	0	0 783.158419
111	27.4	0.12	0	0.8999999	0	0	0	128.067525	0	0	-1004.04939	0 783.158419
112	30.45	0.12	0	0.8999999	0	0	0	138.026021	-1082.124	0	-1082.124	0 844.056635
113	33.5	0.12	0	0.8999999	0	0	0	137.496605	-1077.97338	0	0	0 840.81914

ALARGAMIENTO DE TESADO

101.888408

COEFICIENT ROZAMIENTO VAINA-TEND	DESVIACIÓN PARÁSITA (rad/m)	MÓDULO DE ELASTICIDAD ACERO (kg/c	ANCLAJE ORIGEN (m.)	ANCLAJE FINAL (m.)	TESADO DESDE EXTREMOS	NÚMERO DE TORONES	ÁREA TORÓN (mm2)	TENSIÓN TESADO (kg/mm2)	PENETRACIÓN DE CUÑA (mm.)
0.21	0.006	1950000	57.23	73.5	ORIGEN	56	140	140 73.6842105	5

TRAZADO EN ALZADO

TRAMO	RECTA 1			PARABOLA			RECTA 2		
	Xfin	Yfin	Pend	Xfin	Yfin	Pend	Xfin	Yfin	Pend
1	73.5	0.12	0	73.5	0.12	0	73.4999993	0.12	0

TRAZADO EN PLANTA

TRAMO	RECTA 1				PARABOLA				RECTA 2			
	Xfin	Yfin	Pend		Xfin	Yfin	Pend		Xfin	Yfin	Pend	
1	57.23	0	0		57.23	0	0		73.5	0	0	

NUDO	X (m.)	Y (m.)	Pend. Y	Ycdg (m.)	Z (m.)	Pend. Z	TENSIÓN (kg/mm2)	AXIL (t.)	Sección dorsal CORTANTE (t.)	MOMENTO (mt.)	AXIL (t.)	Sección frontal CORTANTE (t.)	MOMENTO (mt.)
120	57.23	0.12	0	0.8999999	0	0	128.708333	0	0	0	-1009.07333	0	787.07708
121	60.62	0.12	0	0.8999999	0	0	129.305054	-1013.75162	0	790.726189	-1013.75162	0	790.726189
122	64.01	0.12	0	0.8999999	0	0	129.899231	-1018.40997	0	794.359682	-1018.40997	0	794.359682
10123	67.4	0.12	0	0.8999999	0	0	130.490876	-1023.04847	0	797.977703	0	0	0
123	67.4	0.12	0	0.8999999	0	0	130.490876	0	0	0	-1023.04847	0	797.977703
124	70.45	0.12	0	0.8999999	0	0	137.687307	-1079.46849	0	841.985332	-1079.46849	0	841.985332
125	73.5	0.12	0	0.8999999	0	0	137.15919	-1075.32805	0	838.75574	0	0	0

ALARGAMIENTO DE TESADO115.621243

COEFICIENT ROZAMIENTO VAINA-TEND	DESVIACIÓN PARÁSITA (rad/m)	MÓDULO DE ELASTICIDAD ACERO (kg/c	ANCLAJE ORIGEN (m.)	ANCLAJE FINAL (m.)	TESADO DESDE EXTREMOS	NÚMERO DE TORONES	ÁREA TORÓN (mm2)	TENSIÓN TESADO (kg/mm2)	PENETRACIÓN DE CUÑA (mm.)
0.21	0.006	1950000	21.92	36.89	FINAL	49	140	140 73.6842105	5

TRAZADO EN ALZADO

TRAMO	Xfin	RECTA 1 Yfin	Pend	Xfin	PARABOLA Yfin	Pend	Xfin	RECTA 2 Yfin	Pend
1	36.8899994	0.12	0	36.8899994	0.12	0	36.8899995	0.12	0

TRAZADO EN PLANTA

TRAMO	Xfin	RECTA 1 Yfin	Pend	Xfin	PARABOLA Yfin	Pend	Xfin	RECTA 2 Yfin	Pend
1	21.92	0	0	21.92	0	0	36.89	0	0

NUDO	X (m.)	Y (m.)	Pend. Y	Ycdg (m.)	Z (m.)	Pend. Z	TENSIÓN (kg/mm2)	AXIL (t.)	Sección dorsal CORTANTE (t.)	MOMENTO (mt.)	AXIL (t.)	Sección frontal CORTANTE (t.)	MOMENTO (mt.)
109	21.92	0.12	0	0.8999999	0	0	137.384041	0	0	0	-942.454521	0	735.114443
110	24.66	0.12	0	0.8999999	0	0	137.859165	-945.713874	0	737.656726	-945.713874	0	737.656726
10111	27.4	0.12	0	0.8999999	0	0	129.664067	-889.495501	0	693.806392	0	0	0
111	27.4	0.12	0	0.8999999	0	0	129.664067	0	0	0	-889.495501	0	693.806392
112	30.45	0.12	0	0.8999999	0	0	129.131419	-885.841537	0	690.956327	-885.841537	0	690.956327
113	33.5	0.12	0	0.8999999	0	0	128.596721	-882.173504	0	688.095264	-882.173504	0	688.095264
114	36.89	0.12	0	0.8999999	0	0	128	-878.08	0	684.90233	0	0	0

ALARGAMIENTO DE TESADO106.469769

COEFICIENT DESVIACIÓN MÓDULO DE ANCLAJE ANCLAJE TESADO NÚMERO ÁREA Tensión PENETRACIÓN
ROZAMIENTO PARÁSITA ELASTICIDAD ORIGEN FINAL DESDE DE TORÓN TESADO DE CUÑA
VAINA-TEND (rad/m) ACERO (kg/c (m.) (m.) EXTREMOS TORONES (mm2) (kg/mm2) (mm.)

0.21 0.006 1950000 60.62 76.26 FINAL 49 140 140 5
73.6842105

TRAZADO EN ALZADO

TRAMO	Xfin	RECTA 1		Pend	PARABOLA		Xfin	RECTA 2		Pend
		Yfin	Yfin		Yfin	Pend		Yfin	Yfin	
1	76.2600003	0.12	0	0	76.2600003	0.12	0	76.2600003	0.12	0

TRAZADO EN PLANTA

TRAMO	Xfin	RECTA 1		Pend	PARABOLA		Xfin	RECTA 2		Pend
		Yfin	Yfin		Yfin	Pend		Yfin	Yfin	
1	60.62	0	0	0	60.62	0	0	76.26	0	0

NUDO	X (m.)	Y (m.)	Pend. Y	Ycdg (m.)	Z (m.)	Pend. Z	Tensión (kg/mm2)	AXIL (t.)	Sección dorsal		AXIL (t.)	Sección frontal	
									CORTANTE (t.)	MOMENTO (mt.)		CORTANTE (t.)	MOMENTO (mt.)
121	60.62	0.12	0	0	0.89999999	0	0	137.26811	0	0	0	-941.659236	0
122	64.01	0.12	0	0	0.89999999	0	0	137.855691	-945.690042	0	737.638159	-945.690042	0
10123	67.4	0.12	0	0	0.89999999	0	0	128.929213	-884.454398	0	689.874353	0	0
123	67.4	0.12	0	0	0.89999999	0	0	128.929213	0	0	0	-884.454398	0
124	70.45	0.12	0	0	0.89999999	0	0	128.396142	-880.797532	0	687.022002	-880.797532	0
125	73.5	0.12	0	0	0.89999999	0	0	127.861018	-877.126586	0	684.158654	-877.126586	0
126	76.26	0.12	0	0	0.89999999	0	0	127.375	-873.7925	0	681.558051	0	0

ALARGAMIENTO DE TESADO

111.18817

IDEAM

"PRETF3D"

PILA4A

FAMILIA DE (1

COEFICIENT ROZAMIENTO VAINA-TEND	DESVIACIÓN PARÁSITA (rad/m)	MÓDULO DE ELASTICIDAD ACERO (kg/c	ANCLAJE FINAL (m.)	TESADO DESDE EXTREMOS	NÚMERO DE TORONES	ÁREA TORÓN (mm2)	TENSIÓN TESADO (kg/mm2)	PENETRACIÓN DE CUÑA (mm.)
0.21	0.006	1950000	24.66	40.28 ORIGEN	56	140	140 73.6842105	5

TRAZADO EN ALZADO

TRAMO	Xfin	RECTA 1 Yfin	Pend	Xfin	PARABOLA Yfin	Pend	Xfin	RECTA 2 Yfin	Pend
1	40.2799999	0.12	0	40.2799999	0.12	0	40.2799999	0.12	0

TRAZADO EN PLANTA

TRAMO	Xfin	RECTA 1 Yfin	Pend	Xfin	PARABOLA Yfin	Pend	Xfin	RECTA 2 Yfin	Pend
1	24.66	0	0	24.66	0	0	40.28	0	0

NUDO	X (m.)	Y (m.)	Pend. Y	Ycdg (m.)	Z (m.)	Pend. Z	TENSIÓN (kg/mm2)	AXIL (t.)	Sección dorsal CORTANTE (t.)	MOMENTO (mt.)	AXIL (t.)	Sección frontal CORTANTE (t.)	MOMENTO (mt.)
10	24.66	0.12	0	0.8999999	0	0	127.375	0	0	0	-998.62	0	778.923501
11	27.4	0.12	0	0.8999999	0	0	127.857503	-1002.40282	0	781.874113	-1002.40282	0	781.874113
12	30.45	0.12	0	0.8999999	0	0	128.392639	-1006.59829	0	785.146552	-1006.59829	0	785.146552
10013	33.5	0.12	0	0.8999999	0	0	128.925724	-1010.77767	0	788.40647	0	0	0
13	33.5	0.12	0	0.8999999	0	0	128.925724	0	0	0	-1010.77767	0	788.40647
14	36.89	0.12	0	0.8999999	0	0	137.859165	-1080.81586	0	843.036218	-1080.81586	0	843.036218
15	40.28	0.12	0	0.8999999	0	0	137.271569	-1076.2091	0	839.443	0	0	0

ALARGAMIENTO DE TESADO 111.04738

PILA5A

FAMILIA DE (2

COEFICIENT ROZAMIENTO VAINA-TEND	DESVIACIÓN PARÁSITA (rad/m)	MÓDULO DE ELASTICIDAD ACERO (kg/c	ANCLAJE FINAL (m.)	TESADO DESDE EXTREMOS	NÚMERO DE TORONES	ÁREA TORÓN (mm2)	TENSIÓN TESADO (kg/mm2)	PENETRACIÓN DE CUÑA (mm.)
0.21	0.006	1950000	64.01	79.02 ORIGEN	56	140	140 73.6842105	5

TRAZADO EN ALZADO

TRAMO	Xfin	RECTA 1 Yfin	Pend	Xfin	PARABOLA Yfin	Pend	Xfin	RECTA 2 Yfin	Pend
1	79.0200002	0.12	0	79.0200002	0.12	0	79.0200002	0.12	0

TRAZADO EN PLANTA

TRAMO	Xfin	RECTA 1 Yfin	Pend	Xfin	PARABOLA Yfin	Pend	Xfin	RECTA 2 Yfin	Pend
1	64.01	0	0	64.01	0	0	79.02	0	0

NUDO	X (m.)	Y (m.)	Pend. Y	Ycdg (m.)	Z (m.)	Pend. Z	TENSIÓN (kg/mm2)	AXIL (t.)	Sección dorsal CORTANTE (t.)	MOMENTO (mt.)	AXIL (t.)	Sección frontal CORTANTE (t.)	MOMENTO (mt.)
22	64.01	0.12	0	0.8999999	0	0	128	0	0	0	-1003.52	0	782.74552
23	67.4	0.12	0	0.8999999	0	0	128.596721	-1008.19829	0	786.39458	-1008.19829	0	786.39458
24	70.45	0.12	0	0.8999999	0	0	129.131419	-1012.39033	0	789.664353	-1012.39033	0	789.664353
10025	73.5	0.12	0	0.8999999	0	0	129.664067	-1016.56629	0	792.921605	0	0	0
25	73.5	0.12	0	0.8999999	0	0	129.664067	0	0	0	-1016.56629	0	792.921605
26	76.26	0.12	0	0.8999999	0	0	137.855691	-1080.78862	0	843.014985	-1080.78862	0	843.014985
27	79.02	0.12	0	0.8999999	0	0	137.377117	-1077.0366	0	840.088462	0	0	0

ALARGAMIENTO DE TESADO 106.751577

PILA4C

FAMILIA DE (3

COEFICIENT DE ROZAMIENTO VAINA-TEND (rad/m)	DESVIACIÓN PARÁSITA (m.)	MÓDULO DE ELASTICIDAD ACERO (kg/c (m.)	DE ANCLAJE ORIGEN (m.)	ANCLAJE FINAL (m.)	TESADO DESDE EXTREMOS	NÚMERO DE TORONES	ÁREA TORÓN (mm2)	TENSIÓN TESADO (kg/mm2)	PENETRACIÓN DE CUÑA (mm.)
0.21	0.006	1950000	27.4	43.67	FINAL	49	140	140 73.6842105	5

TRAZADO EN ALZADO

TRAMO	Xfin	RECTA 1 Yfin	Pend	Xfin	PARABOLA Yfin	Pend	Xfin	RECTA 2 Yfin	Pend
1	43.6700005	0.12	0	43.6700005	0.12	0	43.6700005	0.12	0

TRAZADO EN PLANTA

TRAMO	Xfin	RECTA 1 Yfin	Pend	Xfin	PARABOLA Yfin	Pend	Xfin	RECTA 2 Yfin	Pend
1	27.4	0	0	27.4	0	0	43.67	0	0

NUDO	X (m.)	Y (m.)	Pend. Y	Ycdg (m.)	Z (m.)	Pend. Z	TENSIÓN (kg/mm2)	AXIL (t.)	Sección dorsal CORTANTE (t.)	MOMENTO (mt.)	AXIL (t.)	Sección frontal CORTANTE (t.)	MOMENTO (mt.)
11	27.4	0.12	0	0.8999999	0	0	137.15919	0	0	0	-940.912044	0	733.911308
12	30.45	0.12	0	0.8999999	0	0	137.687307	-944.534926	0	736.737141	-944.534926	0	736.737141
10013	33.5	0.12	0	0.8999999	0	0	130.490876	-895.167409	0	698.230502	0	0	0
13	33.5	0.12	0	0.8999999	0	0	130.490876	0	0	0	-895.167409	0	698.230502
14	36.89	0.12	0	0.8999999	0	0	129.899231	-891.108727	0	695.064704	-891.108727	0	695.064704
15	40.28	0.12	0	0.8999999	0	0	129.305054	-887.032671	0	691.885385	-887.032671	0	691.885385
16	43.67	0.12	0	0.8999999	0	0	128.708333	-882.939167	0	688.692451	0	0	0

ALARGAMIENTO DE TESADO 115.621243

PILA5C

FAMILIA DE (4

COEFICIENT DE ROZAMIENTO VAINA-TEND (rad/m)	DESVIACIÓN PARÁSITA (m.)	MÓDULO DE ELASTICIDAD ACERO (kg/c (m.)	DE ANCLAJE ORIGEN (m.)	ANCLAJE FINAL (m.)	TESADO DESDE EXTREMOS	NÚMERO DE TORONES	ÁREA TORÓN (mm2)	TENSIÓN TESADO (kg/mm2)	PENETRACIÓN DE CUÑA (mm.)
0.21	0.006	1950000	67.4	81.78	FINAL	49	140	140 73.6842105	5

TRAZADO EN ALZADO

TRAMO	Xfin	RECTA 1 Yfin	Pend	Xfin	PARABOLA Yfin	Pend	Xfin	RECTA 2 Yfin	Pend
1	81.7800001	0.12	0	81.7800001	0.12	0	81.7800001	0.12	0

TRAZADO EN PLANTA

TRAMO	Xfin	RECTA 1 Yfin	Pend	Xfin	PARABOLA Yfin	Pend	Xfin	RECTA 2 Yfin	Pend
1	67.4	0	0	67.4	0	0	81.78	0	0

NUDO	X (m.)	Y (m.)	Pend. Y	Ycdg (m.)	Z (m.)	Pend. Z	TENSIÓN (kg/mm2)	AXIL (t.)	Sección dorsal CORTANTE (t.)	MOMENTO (mt.)	AXIL (t.)	Sección frontal CORTANTE (t.)	MOMENTO (mt.)
23	67.4	0.12	0	0.8999999	0	0	137.48621	0	0	0	-943.155402	0	735.661119
24	70.45	0.12	0	0.8999999	0	0	138.015586	-946.786922	0	738.493712	-946.786922	0	738.493712
10025	73.5	0.12	0	0.8999999	0	0	128.327999	-880.330076	0	686.657377	0	0	0
25	73.5	0.12	0	0.8999999	0	0	128.327999	0	0	0	-880.330076	0	686.657377
26	76.26	0.12	0	0.8999999	0	0	127.84535	-877.019098	0	684.074817	-877.019098	0	684.074817
27	79.02	0.12	0	0.8999999	0	0	127.361018	-873.696586	0	681.48326	-873.696586	0	681.48326
28	81.78	0.12	0	0.8999999	0	0	126.875	-870.3625	0	678.882657	0	0	0

ALARGAMIENTO DE TESADO 102.31146

Del estudio de los pedidos que se incluye a continuación, se deduce:

o Pedidos de vigas prefabricadas:

Pérdida por acortamiento elástico = 13.3%

Pérdida a $t = INF = 19.50\%$

o Pedidos según se piden

Pérdida por acortamiento elástico = 1.84%

Pérdida de rozamiento y penetración de aire (5%)
Incluido en el cálculo del momento.

Pérdida a $t = INF = 15\%$

Coefficiente de rozamiento viento - tendón = 0.21

Desviación pasiva = 0.06

ESTIMACIÓN DE PÉRDIDAS DE PRETENSADO

- PERDIDAS INSTANTANEAS :

Torones metálicos: En este caso solo existen las pérdidas por acortamiento elástico que resultan:

$$\Delta P = \sigma_{cp} \cdot A_p \cdot \frac{E_p}{E_c f}$$

Para el nudo 117:

$$E_{ej} = 330.000 \text{ kg/cm}^2 \times \frac{10}{85} = 292450 \text{ kg/cm}^2$$

$$E_p = 1.900.000 \text{ kg/cm}^2$$

$$A_p = 114 \text{ cm}^2 \times (3 \times 28 + 26) = 154 \text{ cm}^2$$

$$E_p = \sigma_{metálico} + \sigma_{propiio} = 303 \text{ kg/cm}^2$$

$$\Delta P = 303 \text{ kg/cm}^2 \times 154 \text{ cm}^2 \times \frac{19}{219445} =$$

$$= 301 \text{ tn}$$

$$T_{resaca} = (3 \times 28 + 26) \text{ toneladas} \times 20.75 \text{ tn} = 2282.5 \text{ tn}$$

$$\text{pérdidas} = 13.2\%$$

Tensión de tracción para cancelar la pérdida:

$$0.58 \times 140 = 122$$

Postesado: Las pérdidas de rozamiento y de penetración de cuña.

$$\Delta P_3 = \sigma_{cp} \cdot \frac{n-1}{2n} \cdot \frac{A_p \cdot E_p}{E_c f}$$

$$= \sigma_{cp} \times \frac{15-1}{2 \cdot 15} \times 114 \text{ cm}^2 \cdot 15.7 \cdot \frac{19}{2185} =$$

$$= 87 \text{ kg/cm}^2 \cdot 457 = 39759 \text{ kg} = 397 \text{ tn}$$

$$T_{resaca} = 15.7 \cdot 19.95 \text{ tn} = 2094 \text{ tn}$$

$$\text{pérdidas} = 0.0182 \quad 1.82\% \text{ de pérdidas}$$

Tensión de tracción para cancelar la pérdida:

$$142.5 \cdot 0.982 = 139.9$$

DEAM

Perdidas a $t = \infty$:

- Pretensão em centro de vau: (Preliminar) Nudo 18.

$$\Delta P_{dij} = \left(\frac{n \cdot \varphi(t, t_0) \sigma_{cp} + E_{cp} \cdot \varepsilon_{cs}(t, t_0) + 0.8 \cdot \Delta \sigma_{cp}}{1 + n \cdot \frac{A_p}{A_c} \left(1 + \frac{A_c \cdot \varphi^2}{I_c} \right) (1 + \chi \varphi(t, t_0))} \right) A_p$$

CAJON $\rightarrow \varepsilon_{cs} = -29.16 \cdot 10^{-5}$

$n = 5.75 = E_p/E_c$

$\varphi = 1.765$

$E_p = 1900000 \text{ kg/cm}^2$

$A_c = 145 \text{ cm}^2$

$\sigma_{cp} = 187 \text{ kg/cm}^2$

$n \cdot \varphi(t, t_0) \cdot \sigma_{cp} = 5.75 \cdot 187 \cdot 1.765 = 1897.81 \text{ kg/cm}^2$

$E_{cp} \cdot \varepsilon_{cs}(t, t_0) = 29.16 \cdot 10^{-5} \cdot 1950000 = 568.32 \text{ kg/cm}^2$

$\Delta \sigma_{cp} = \rho_p \cdot P_{ki} = \rho_p \cdot 12900 \text{ kg/cm}^2 = 0.05 \cdot 12900 = 645.00 \text{ kg/cm}^2$

$\rho_p = \left(\frac{129000}{190000} = 0.679 \right) = 5.76\%$

$1 + 5.75 \cdot \frac{145 \text{ cm}^2}{38930 \text{ cm}^2} \cdot \left(1 + \frac{3.89 \cdot 1.765^2}{4.0} \right) \cdot (1 + 0.8 \cdot 1.765) =$

$= 1.24$

Perdas diferidas = $\frac{1897.81 + 568 + 645}{1.24} = 0.195$

perdas diferidas = 19.50%

IDEAM

- Pretensão de 2ª fase: (Posterior) Nudo 123

$n \cdot \varphi(t, t_0) \cdot \sigma_{cp} = 5.75 \cdot 2.28 \cdot 37.5 = 564.30 \text{ kg/cm}^2$

$E_p \cdot \varepsilon_{cs}(t, t_0) = 41.10^{-5} \cdot 1950000 = 799.5 \text{ kg/cm}^2$

$\Delta \sigma_{cp} = \rho_p \cdot P_{ki} = 0.058 \cdot 13200 = 765.6 \text{ kg/cm}^2$

$\rho_p = \left(\frac{13200}{190000} = 0.0699 \right) = 5.8\%$

$1 + 5.75 \cdot \frac{145 \text{ cm}^2}{38930 \text{ cm}^2} \cdot \left(1 + \frac{3.89 \cdot 0.78^2}{4} \right) \cdot (1 + 0.8 \cdot 2.28) =$

$= 1.07$

Perdas diferidas = $\frac{564.3 + 799 + 765}{1.07} = 0.15$

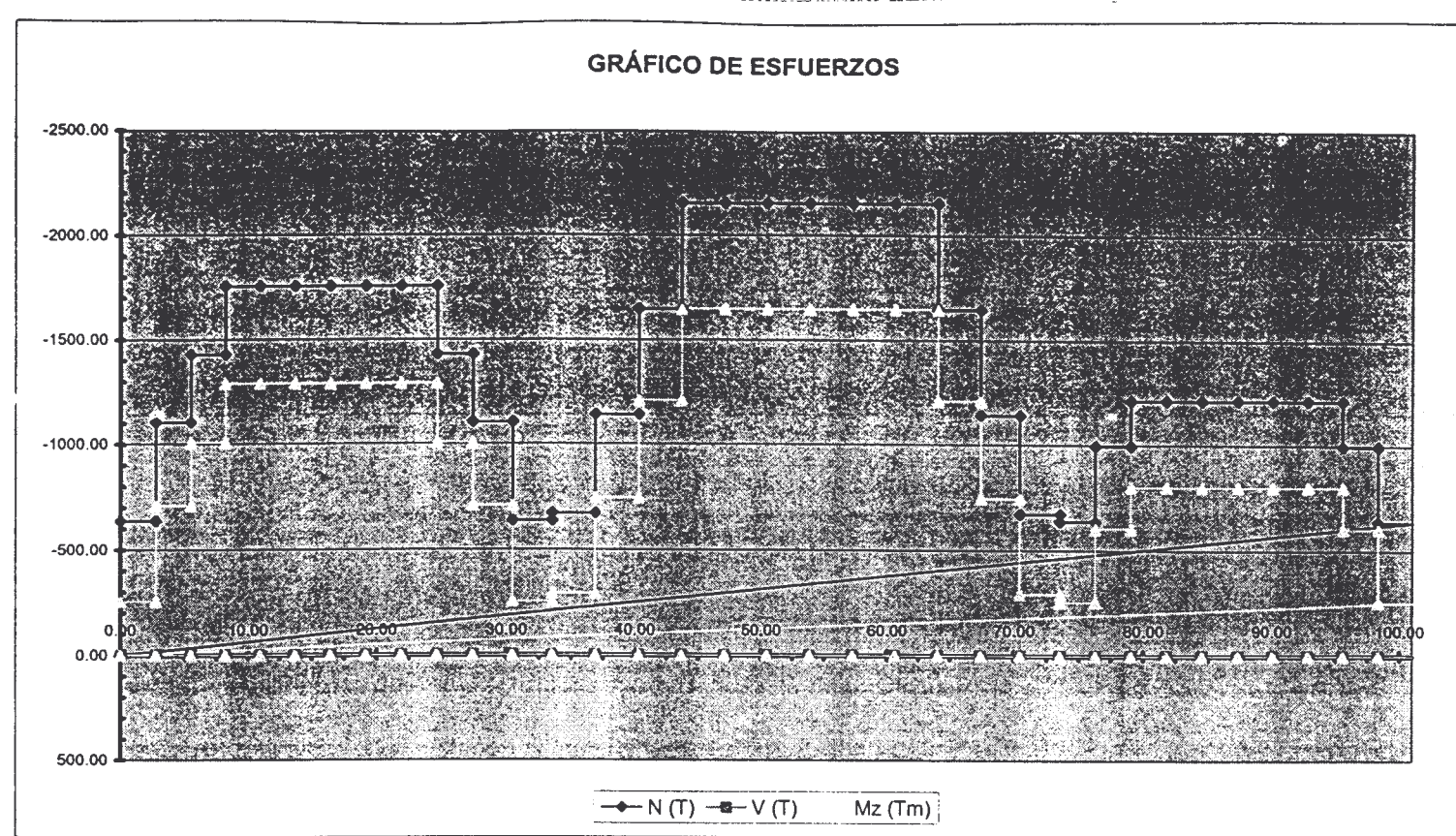
perdas diferidas = 15%

ESFUERZOS DE PRETENSADO FASE 1.

Pretensado Total (t=0)
(1; 1)PRETF1B.FAM1.TOT + (1; 1)PRETF1B.FAM2.TOT + (1; 1)PRETF1B.FAM3.TOT + (1; 1)PRETF1B.FAM4.TOT + (1; 1)PRETF1B.FAM5.TOT + (1; 1)PRETF1B.FAM6.TOT + (1; 1)PRETF1B.FAM7.TOT + (1; 1)PRE
Coef. exc:

Barra	Nudo	X	N (T)	Vy (T)	Mz (Tm)
1	1	0.00	-635.32	0.00	-254.68
1	2	2.74	-635.32	0.00	-254.67
2	2	2.74	-1104.88	0.00	-708.27
2	3	5.48	-1104.88	0.00	-708.26
3	3	5.48	-1429.96	0.00	-1006.69
3	4	8.22	-1429.96	0.00	-1006.68
4	4	8.22	-1755.04	0.00	-1289.50
4	5	10.96	-1755.04	0.00	-1289.50
5	5	10.96	-1755.04	0.00	-1289.50
5	6	13.70	-1755.04	0.00	-1289.50
6	6	13.70	-1755.04	0.00	-1289.50
6	7	16.44	-1755.04	0.00	-1289.50
7	7	16.44	-1755.04	0.00	-1289.50
7	8	19.18	-1755.04	0.00	-1289.50
8	8	19.18	-1755.04	0.00	-1289.50
8	9	21.92	-1755.04	0.00	-1289.50
9	9	21.92	-1755.04	0.00	-1289.50
9	10	24.66	-1755.04	0.00	-1289.51
10	10	24.66	-1429.96	0.00	-1006.69
10	11	27.40	-1429.96	0.00	-1006.69
11	11	27.40	-1104.88	0.00	-708.26
11	12	30.45	-1104.88	0.00	-708.27
12	12	30.45	-635.32	0.00	-254.67
12	10013	33.50	-635.32	0.00	-254.68
13	13	33.50	-671.44	0.01	-291.30
13	14	36.89	-671.44	0.01	-291.35
14	14	36.89	-1141.00	0.01	-744.95
14	15	40.28	-1141.00	0.01	-744.99
15	15	40.28	-1646.68	0.01	-1209.20
15	16	43.67	-1646.68	0.01	-1209.23
16	16	43.67	-2152.36	0.01	-1649.18
16	17	47.06	-2152.36	0.01	-1649.21
17	17	47.06	-2152.36	0.01	-1649.21
17	18	50.45	-2152.36	0.01	-1649.23
18	18	50.45	-2152.36	0.00	-1649.23
18	19	53.84	-2152.36	0.00	-1649.23
19	19	53.84	-2152.36	0.00	-1649.23
19	20	57.23	-2152.36	0.00	-1649.22
20	20	57.23	-2152.36	-0.01	-1649.22
20	21	60.62	-2152.36	-0.01	-1649.20
21	21	60.62	-2152.36	-0.01	-1649.20
21	22	64.01	-2152.36	-0.01	-1649.17
22	22	64.01	-1646.68	-0.01	-1209.23
22	23	67.40	-1646.68	-0.01	-1209.20
23	23	67.40	-1141.00	-0.01	-744.98
23	24	70.45	-1141.00	-0.01	-744.94
24	24	70.45	-671.44	-0.01	-291.34
24	10025	73.50	-671.44	-0.01	-291.30
25	25	73.50	-635.32	0.00	-254.68
25	26	76.26	-635.32	0.00	-254.68
26	26	76.26	-996.52	0.00	-603.60
26	27	79.02	-996.52	0.00	-603.60
27	27	79.02	-1213.24	0.00	-802.55
27	28	81.78	-1213.24	0.00	-802.55
28	28	81.78	-1213.24	0.00	-802.55
28	29	84.54	-1213.24	0.00	-802.54
29	29	84.54	-1213.24	0.00	-802.54
29	30	87.30	-1213.24	0.00	-802.55
30	30	87.30	-1213.24	0.00	-802.55
30	31	90.06	-1213.24	0.00	-802.55
31	31	90.06	-1213.24	0.00	-802.55
31	32	92.82	-1213.24	0.00	-802.55
32	32	92.82	-1213.24	0.00	-802.55
32	33	95.58	-1213.24	0.00	-802.55
33	33	95.58	-996.52	0.00	-603.60
33	34	98.34	-996.52	0.00	-603.60
34	34	98.34	-635.32	0.00	-254.68
34	35	101.10	-635.32	0.00	-254.68
101	101	0.00	0.00	0.00	0.00
101	102	2.74	0.00	0.00	0.00
102	102	2.74	0.00	0.00	0.00
102	103	5.48	0.00	0.00	0.00

103	103	5.48	0.00	0.00	0.00
103	104	8.22	0.00	0.00	0.00
104	104	8.22	0.00	0.00	0.00
104	105	10.96	0.00	0.00	0.00
105	105	10.96	0.00	0.00	0.00
106	106	13.70	0.00	0.00	0.00
106	107	16.44	0.00	0.00	0.00
107	107	16.44	0.00	0.00	0.00
107	108	19.18	0.00	0.00	0.00
108	108	19.18	0.00	0.00	0.00
108	109	21.92	0.00	0.00	0.00
109	109	21.92	0.00	0.00	0.00
109	110	24.66	0.00	0.00	0.00
110	110	24.66	0.00	0.00	0.00
110	111	27.40	0.00	0.00	0.00
111	111	27.40	0.00	0.00	0.00
111	112	30.45	0.00	0.00	0.00
112	112	30.45	0.00	0.00	0.00
112	113	33.50	0.00	0.00	0.00
113	113	33.50	0.00	0.00	0.00
113	114	36.89	0.00	0.00	0.00
114	114	36.89	0.00	0.00	0.00
114	115	40.28	0.00	0.00	0.00
115	115	40.28	0.00	0.00	0.00
115	116	43.67	0.00	0.00	0.00
116	116	43.67	0.00	0.00	0.00
116	117	47.06	0.00	0.00	0.00
117	117	47.06	0.00	0.00	0.00
118	118	50.45	0.00	0.00	0.00
118	119	53.84	0.00	0.00	0.00
119	119	53.84	0.00	0.00	0.00
119	120	57.23	0.00	0.00	0.00
120	120	57.23	0.00	0.00	0.00
120	121	60.62	0.00	0.00	0.00
121	121	60.62	0.00	0.00	0.00
121	122	64.01	0.00	0.00	0.00
122	122	64.01	0.00	0.00	0.00
122	123	67.40	0.00	0.00	0.00
123	123	67.40	0.00	0.00	0.00
123	124	70.45	0.00	0.00	0.00
124	124	70.45	0.00	0.00	0.00
124	125	73.50	0.00	0.00	0.00
125	125	73.50	0.00	0.00	0.00
125	126	76.26	0.00	0.00	0.00
126	126	76.26	0.00	0.00	0.00
126	127	79.02	0.00	0.00	0.00
127	127	79.02	0.00	0.00	0.00
127	128	81.78	0.00	0.00	0.00
128	128	81.78	0.00	0.00	0.00
129	129	84.54	0.00	0.00	0.00
129	130	87.30	0.00	0.00	0.00
130	130	87.30	0.00	0.00	0.00
130	131	90.06	0.00	0.00	0.00
131	131	90.06	0.00	0.00	0.00
131	132	92.82	0.00	0.00	0.00
132	132	92.82	0.00	0.00	0.00
132	133	95.58	0.00	0.00	0.00
133	133	95.58	0.00	0.00	0.00
133	134	98.34	0.00	0.00	0.00
134	134	98.34	0.00	0.00	0.00
134	135	101.10	0.00	0.00	0.00



Pretensado Hiperestático (t=0)

[1; 1]PRETF1B.FAM1.TOT + [-1;-1]PRETF1B.FAM1.ISO + [1; 1]PRETF1B.FAM2.TOT + [-1;-1]PRETF1B.FAM2.ISO + [1; 1]PRETF1B.FAM3.TOT + [-1;-1]PRETF1B.FAM3.ISO + [1; 1]PRETF1B.FAM4.TOT + [-1;-1]PRETF1B.FAM4.ISO

Coef. exc.

Barra	Nudo	X	N (T)	Vy (T)	Mz (Tm)
1	1	0.00	0.00	0.00	0.00
1	2	2.74	0.00	0.00	0.01
2	2	2.74	0.00	0.00	0.01
2	3	5.48	0.00	0.00	0.01
3	3	5.48	0.00	0.00	0.01
3	4	8.22	0.00	0.00	0.02
4	4	8.22	0.00	0.00	0.02
4	5	10.96	0.00	0.00	0.02
5	5	10.96	0.00	0.00	0.02
5	6	13.70	0.00	0.00	0.02
6	6	13.70	0.00	0.00	0.02
6	7	16.44	0.00	0.00	0.02
7	7	16.44	0.00	0.00	0.02
7	8	19.18	0.00	0.00	0.02
8	8	19.18	0.00	0.00	0.02
8	9	21.92	0.00	0.00	0.02
9	9	21.92	0.00	0.00	0.02
9	10	24.66	0.00	0.00	0.01
	10	24.66	0.00	0.00	0.01
10	11	27.40	0.00	0.00	0.01
11	11	27.40	0.00	0.00	0.01
11	12	30.45	0.00	0.00	0.01
12	12	30.45	0.00	0.00	0.01
12	10013	33.50	0.00	0.00	0.00
13	13	33.50	0.00	0.01	0.00
13	14	36.89	0.00	0.01	-0.05
14	14	36.89	0.00	0.01	-0.05
14	15	40.28	0.00	0.01	-0.09
15	15	40.28	0.00	0.01	-0.09
15	16	43.67	0.00	0.01	-0.12
16	16	43.67	0.00	0.01	-0.12
16	17	47.06	0.00	0.01	-0.15
17	17	47.06	0.00	0.01	-0.15
17	18	50.45	0.00	0.01	-0.17
18	18	50.45	0.00	0.00	-0.17
18	19	53.84	0.00	0.00	-0.17
19	19	53.84	0.00	0.00	-0.17
19	20	57.23	0.00	0.00	-0.16
20	20	57.23	0.00	-0.01	-0.16
20	21	60.62	0.00	-0.01	-0.14
21	21	60.62	0.00	-0.01	-0.14
	22	64.01	0.00	-0.01	-0.11
22	22	64.01	0.00	-0.01	-0.11
22	23	67.40	0.00	-0.01	-0.08
23	23	67.40	0.00	-0.01	-0.08
23	24	70.45	0.00	-0.01	-0.04
24	24	70.45	0.00	-0.01	-0.04
24	10025	73.50	0.00	-0.01	0.00
25	25	73.50	0.00	0.00	0.00
25	26	76.26	0.00	0.00	0.00
26	26	76.26	0.00	0.00	0.00
26	27	79.02	0.00	0.00	0.00
27	27	79.02	0.00	0.00	0.00
27	28	81.78	0.00	0.00	0.00
28	28	81.78	0.00	0.00	0.00
28	29	84.54	0.00	0.00	0.00
29	29	84.54	0.00	0.00	0.00
29	30	87.30	0.00	0.00	0.00
30	30	87.30	0.00	0.00	0.00
30	31	90.06	0.00	0.00	0.00
31	31	90.06	0.00	0.00	0.00
31	32	92.82	0.00	0.00	0.00
32	32	92.82	0.00	0.00	0.00
32	33	95.58	0.00	0.00	0.00
	33	95.58	0.00	0.00	0.00
33	34	98.34	0.00	0.00	0.00
34	34	98.34	0.00	0.00	0.00
34	35	101.10	0.00	0.00	0.00
101	101	0.00	0.00	0.00	0.00
101	102	2.74	0.00	0.00	0.00
102	102	2.74	0.00	0.00	0.00
102	103	5.48	0.00	0.00	0.00

103	103	5.48	0.00	0.00	0.00
103	104	8.22	0.00	0.00	0.00
104	104	8.22	0.00	0.00	0.00
104	105	10.96	0.00	0.00	0.00
105	105	10.96	0.00	0.00	0.00
105	106	13.70	0.00	0.00	0.00
106	106	13.70	0.00	0.00	0.00
106	107	16.44	0.00	0.00	0.00
107	107	16.44	0.00	0.00	0.00
107	108	19.18	0.00	0.00	0.00
108	108	19.18	0.00	0.00	0.00
108	109	21.92	0.00	0.00	0.00
109	109	21.92	0.00	0.00	0.00
109	110	24.66	0.00	0.00	0.00
110	110	24.66	0.00	0.00	0.00
110	10111	27.40	0.00	0.00	0.00
111	111	27.40	0.00	0.00	0.00
111	112	30.45	0.00	0.00	0.00
112	112	30.45	0.00	0.00	0.00
112	113	33.50	0.00	0.00	0.00
113	113	33.50	0.00	0.00	0.00
113	114	36.89	0.00	0.00	0.00
114	114	36.89	0.00	0.00	0.00
114	115	40.28	0.00	0.00	0.00
115	115	40.28	0.00	0.00	0.00
115	116	43.67	0.00	0.00	0.00
116	116	43.67	0.00	0.00	0.00
116	117	47.06	0.00	0.00	0.00
117	117	47.06	0.00	0.00	0.00
117	118	50.45	0.00	0.00	0.00
118	118	50.45	0.00	0.00	0.00
118	119	53.84	0.00	0.00	0.00
119	119	53.84	0.00	0.00	0.00
119	120	57.23	0.00	0.00	0.00
120	120	57.23	0.00	0.00	0.00
120	121	60.62	0.00	0.00	0.00
121	121	60.62	0.00	0.00	0.00
121	122	64.01	0.00	0.00	0.00
122	122	64.01	0.00	0.00	0.00
122	10123	67.40	0.00	0.00	0.00
123	123	67.40	0.00	0.00	0.00
123	124	70.45	0.00	0.00	0.00
124	124	70.45	0.00	0.00	0.00
124	125	73.50	0.00	0.00	0.00
125	125	73.50	0.00	0.00	0.00
125	126	76.26	0.00	0.00	0.00
126	126	76.26	0.00	0.00	0.00
126	127	79.02	0.00	0.00	0.00
127	127	79.02	0.00	0.00	0.00
127	128	81.78	0.00	0.00	0.00
128	128	81.78	0.00	0.00	0.00
128	129	84.54	0.00	0.00	0.00
129	129	84.54	0.00	0.00	0.00
129	130	87.30	0.00	0.00	0.00
130	130	87.30	0.00	0.00	0.00
130	131	90.06	0.00	0.00	0.00
131	131	90.06	0.00	0.00	0.00
131	132	92.82	0.00	0.00	0.00
132	132	92.82	0.00	0.00	0.00
132	133	95.58	0.00	0.00	0.00
133	133	95.58	0.00	0.00	0.00
133	134	98.34	0.00	0.00	0.00
134	134	98.34	0.00	0.00	0.00
134	135	101.10	0.00	0.00	0.00

Pretensado isostático (t=0)

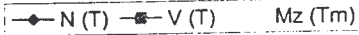
1; 1)PRETF1B.FAM1.ISO + [1; 1)PRETF1B.FAM2.ISO + [1; 1)PRETF1B.FAM3.ISO + [1; 1)PRETF1B.FAM4.ISO + [1; 1)PRETF1B.FAM5.ISO + [1; 1)PRETF1B.FAM6.ISO + [1; 1)PRETF1B.FAM7.ISO + [1; 1)PRETF1B

Coef. exc.

Barra	Nudo	X	N (T)	Vy (T)	Mz (Tm)
1	1	0.00	-635.32	0.00	-254.68
1	2	2.74	-635.32	0.00	-254.68
2	2	2.74	-1104.88	0.00	-708.27
2	3	5.48	-1104.88	0.00	-708.27
3	3	5.48	-1429.96	0.00	-1006.70
3	4	8.22	-1429.96	0.00	-1006.70
4	4	8.22	-1755.04	0.00	-1289.52
4	5	10.96	-1755.04	0.00	-1289.52
5	5	10.96	-1755.04	0.00	-1289.52
5	6	13.70	-1755.04	0.00	-1289.52
6	6	13.70	-1755.04	0.00	-1289.52
6	7	16.44	-1755.04	0.00	-1289.52
7	7	16.44	-1755.04	0.00	-1289.52
7	8	19.18	-1755.04	0.00	-1289.52
8	8	19.18	-1755.04	0.00	-1289.52
8	9	21.92	-1755.04	0.00	-1289.52
9	9	21.92	-1755.04	0.00	-1289.52
9	10	24.66	-1755.04	0.00	-1289.52
10	10	24.66	-1429.96	0.00	-1006.70
10	11	27.40	-1429.96	0.00	-1006.70
11	11	27.40	-1104.88	0.00	-708.27
11	12	30.45	-1104.88	0.00	-708.27
12	12	30.45	-635.32	0.00	-254.68
12	10013	33.50	-635.32	0.00	-254.68
13	13	33.50	-671.44	0.00	-291.30
13	14	36.89	-671.44	0.00	-291.30
14	14	36.89	-1141.00	0.00	-744.90
14	15	40.28	-1141.00	0.00	-744.90
15	15	40.28	-1646.68	0.00	-1209.11
15	16	43.67	-1646.68	0.00	-1209.11
16	16	43.67	-2152.36	0.00	-1649.06
16	17	47.06	-2152.36	0.00	-1649.06
17	17	47.06	-2152.36	0.00	-1649.06
17	18	50.45	-2152.36	0.00	-1649.06
18	18	50.45	-2152.36	0.00	-1649.06
18	19	53.84	-2152.36	0.00	-1649.06
19	19	53.84	-2152.36	0.00	-1649.06
19	20	57.23	-2152.36	0.00	-1649.06
20	20	57.23	-2152.36	0.00	-1649.06
20	21	60.62	-2152.36	0.00	-1649.06
21	21	60.62	-2152.36	0.00	-1649.06
22	22	64.01	-2152.36	0.00	-1649.06
22	22	64.01	-1646.68	0.00	-1209.11
22	23	67.40	-1646.68	0.00	-1209.11
23	23	67.40	-1141.00	0.00	-744.90
23	24	70.45	-1141.00	0.00	-744.90
24	24	70.45	-671.44	0.00	-291.30
24	10025	73.50	-671.44	0.00	-291.30
25	25	73.50	-635.32	0.00	-254.68
25	26	76.26	-635.32	0.00	-254.68
26	26	76.26	-996.52	0.00	-603.60
26	27	79.02	-996.52	0.00	-603.60
27	27	79.02	-1213.24	0.00	-802.55
27	28	81.78	-1213.24	0.00	-802.55
28	28	81.78	-1213.24	0.00	-802.55
28	29	84.54	-1213.24	0.00	-802.55
29	29	84.54	-1213.24	0.00	-802.55
29	30	87.30	-1213.24	0.00	-802.55
30	30	87.30	-1213.24	0.00	-802.55
30	31	90.06	-1213.24	0.00	-802.55
31	31	90.06	-1213.24	0.00	-802.55
31	32	92.82	-1213.24	0.00	-802.55
32	32	92.82	-1213.24	0.00	-802.55
32	33	95.58	-1213.24	0.00	-802.55
33	33	95.58	-996.52	0.00	-603.60
33	34	98.34	-996.52	0.00	-603.60
34	34	98.34	-635.32	0.00	-254.68
34	35	101.10	-635.32	0.00	-254.68
101	101	0.00	0.00	0.00	0.00
101	102	0.00	0.00	0.00	0.00
102	102	0.00	0.00	0.00	0.00
102	103	0.00	0.00	0.00	0.00

103	103	0.00	0.00	0.00	0.00
103	104	0.00	0.00	0.00	0.00
104	104	0.00	0.00	0.00	0.00
104	105	0.00	0.00	0.00	0.00
105	105	0.00	0.00	0.00	0.00
105	106	0.00	0.00	0.00	0.00
106	106	0.00	0.00	0.00	0.00
106	107	0.00	0.00	0.00	0.00
107	107	0.00	0.00	0.00	0.00
107	108	0.00	0.00	0.00	0.00
108	108	0.00	0.00	0.00	0.00
108	109	0.00	0.00	0.00	0.00
109	109	0.00	0.00	0.00	0.00
109	110	0.00	0.00	0.00	0.00
110	110	0.00	0.00	0.00	0.00
110	10111	0.00	0.00	0.00	0.00
111	111	0.00	0.00	0.00	0.00
111	112	0.00	0.00	0.00	0.00
112	112	0.00	0.00	0.00	0.00
112	113	0.00	0.00	0.00	0.00
113	113	0.00	0.00	0.00	0.00
113	114	0.00	0.00	0.00	0.00
114	114	0.00	0.00	0.00	0.00
114	115	0.00	0.00	0.00	0.00
115	115	0.00	0.00	0.00	0.00
115	116	0.00	0.00	0.00	0.00
116	116	0.00	0.00	0.00	0.00
116	117	0.00	0.00	0.00	0.00
117	117	0.00	0.00	0.00	0.00
117	118	0.00	0.00	0.00	0.00
118	118	0.00	0.00	0.00	0.00
118	119	0.00	0.00	0.00	0.00
119	119	0.00	0.00	0.00	0.00
119	120	0.00	0.00	0.00	0.00
120	120	0.00	0.00	0.00	0.00
120	121	0.00	0.00	0.00	0.00
121	121	0.00	0.00	0.00	0.00
121	122	0.00	0.00	0.00	0.00
122	122	0.00	0.00	0.00	0.00
122	10123	0.00	0.00	0.00	0.00
123	123	0.00	0.00	0.00	0.00
123	124	0.00	0.00	0.00	0.00
124	124	0.00	0.00	0.00	0.00
124	125	0.00	0.00	0.00	0.00
125	125	0.00	0.00	0.00	0.00
125	126	0.00	0.00	0.00	0.00
126	126	0.00	0.00	0.00	0.00
126	127	0.00	0.00	0.00	0.00
127	127	0.00	0.00	0.00	0.00
127	128	0.00	0.00	0.00	0.00
128	128	0.00	0.00	0.00	0.00
128	129	0.00	0.00	0.00	0.00
129	129	0.00	0.00	0.00	0.00
129	130	0.00	0.00	0.00	0.00
130	130	0.00	0.00	0.00	0.00
130	131	0.00	0.00	0.00	0.00
131	131	0.00	0.00	0.00	0.00
131	132	0.00	0.00	0.00	0.00
132	132	0.00	0.00	0.00	0.00
132	133	0.00	0.00	0.00	0.00
133	133	0.00	0.00	0.00	0.00
133	134	0.00	0.00	0.00	0.00
134	134	0.00	0.00	0.00	0.00
134	135	0.00	0.00	0.00	0.00

GRÁFICO DE ESFUERZOS



Pretensado Hiperestático ($t=0$)

[1; 1]PRETF1A.FAM1.TOT + [-1; -1]PRETF1A.FAM1.ISO + [1; 1]PRETF1A.FAM2.TOT + [-1; -1]PRETF1A.FAM2.ISO + [1; 1]PRETF1A.FAM3.TOT + [-1; -1]PRETF1A.FAM3.ISO + [1; 1]PRETF1A.FAM4.TOT + [-1; -1]PRETF

Barra	Nudo	X	N (T)	Vy (T)	Mz (Tm)
1	1	0.00	0.00	0.00	0.00
1	2	2.74	0.00	0.00	0.00
2	2	2.74	0.00	0.00	0.00
2	3	5.48	0.00	0.00	0.00
3	3	5.48	0.00	0.00	0.00
3	4	8.22	0.00	0.00	0.00
4	4	8.22	0.00	0.00	0.00
4	5	10.96	0.00	0.00	0.00
5	5	10.96	0.00	0.00	0.00
5	6	13.70	0.00	0.00	0.00
6	6	13.70	0.00	0.00	0.00
6	7	16.44	0.00	0.00	0.00
7	7	16.44	0.00	0.00	0.00
7	8	19.18	0.00	0.00	0.00
8	8	19.18	0.00	0.00	0.00
8	9	21.92	0.00	0.00	0.00
9	9	21.92	0.00	0.00	0.00
9	10	24.66	0.00	0.00	0.00
10	10	24.66	0.00	0.00	0.00
10	11	27.40	0.00	0.00	0.00
11	11	27.40	0.00	0.00	0.00
11	12	30.45	0.00	0.00	0.00
12	12	30.45	0.00	0.00	0.00
12	10013	33.50	0.00	0.00	0.00
13	13	33.50	0.00	0.00	0.00
13	14	36.89	0.00	0.00	0.00
14	14	36.89	0.00	0.00	0.00
14	15	40.28	0.00	0.00	0.00
15	15	40.28	0.00	0.00	0.00
15	16	43.67	0.00	0.00	0.00
16	16	43.67	0.00	0.00	0.00
16	17	47.06	0.00	0.00	0.00
17	17	47.06	0.00	0.00	0.00
17	18	50.45	0.00	0.00	0.00
18	18	50.45	0.00	0.00	0.00
18	19	53.84	0.00	0.00	0.00
19	19	53.84	0.00	0.00	0.00
19	20	57.23	0.00	0.00	0.00
20	20	57.23	0.00	0.00	0.00
20	21	60.62	0.00	0.00	0.00
21	21	60.62	0.00	0.00	0.00
21	22	64.01	0.00	0.00	0.00
22	22	64.01	0.00	0.00	0.00
22	23	67.40	0.00	0.00	0.00
23	23	67.40	0.00	0.00	0.00
23	24	70.45	0.00	0.00	0.00
24	24	70.45	0.00	0.00	0.00
24	10025	73.50	0.00	0.00	0.00
25	25	73.50	0.00	0.00	0.00
25	26	76.26	0.00	0.00	0.00
26	26	76.26	0.00	0.00	0.00
26	27	79.02	0.00	0.00	0.00
27	27	79.02	0.00	0.00	0.00
27	28	81.78	0.00	0.00	0.00
28	28	81.78	0.00	0.00	0.00
28	29	84.54	0.00	0.00	0.00
29	29	84.54	0.00	0.00	0.00
29	30	87.30	0.00	0.00	0.00
30	30	87.30	0.00	0.00	0.00
30	31	90.06	0.00	0.00	0.00
31	31	90.06	0.00	0.00	0.00
31	32	92.82	0.00	0.00	0.00
32	32	92.82	0.00	0.00	0.00
32	33	95.58	0.00	0.00	0.00
33	33	95.58	0.00	0.00	0.00
33	34	98.34	0.00	0.00	0.00
34	34	98.34	0.00	0.00	0.00
34	35	101.10	0.00	0.00	0.00
101	101	0.00	0.00	0.00	0.00
101	102	2.74	0.00	0.00	0.00
102	102	2.74	0.00	0.00	0.00
102	103	5.48	0.00	0.00	0.00

103	103	5.48	0.00	0.00	0.00
103	104	8.22	0.00	0.00	0.01
104	104	8.22	0.00	0.00	0.01
104	105	10.96	0.00	0.00	0.01
105	105	10.96	0.00	0.00	0.01
10	106	13.70	0.00	0.00	0.00
106	106	13.70	0.00	0.00	0.00
106	107	16.44	0.00	0.00	0.00
107	107	16.44	0.00	0.00	0.00
107	108	19.18	0.00	0.00	0.00
108	108	19.18	0.00	0.00	0.00
108	109	21.92	0.00	0.00	0.00
109	109	21.92	0.00	0.00	0.00
109	110	24.66	0.00	0.00	0.00
110	110	24.66	0.00	0.00	0.00
110	10111	27.40	0.00	0.00	0.00
111	111	27.40	0.00	0.01	0.00
111	112	30.45	0.00	0.01	-0.04
112	112	30.45	0.00	0.01	-0.04
112	113	33.50	0.00	0.01	-0.07
113	113	33.50	0.00	0.01	-0.07
113	114	36.89	0.00	0.01	-0.09
114	114	36.89	0.00	0.00	-0.09
114	115	40.28	0.00	0.00	-0.09
115	115	40.28	0.00	0.00	-0.09
115	116	43.67	0.00	0.00	-0.10
116	116	43.67	0.00	0.00	-0.10
116	117	47.06	0.00	0.00	-0.10
117	117	47.06	0.00	0.00	-0.10
117	118	50.45	0.00	0.00	-0.09
118	118	50.45	0.00	0.00	-0.09
118	119	53.84	0.00	0.00	-0.08
119	119	53.84	0.00	0.00	-0.08
119	120	57.23	0.00	0.00	-0.07
120	120	57.23	0.00	-0.01	-0.07
120	121	60.62	0.00	-0.01	-0.05
121	121	60.62	0.00	-0.01	-0.05
121	122	64.01	0.00	-0.01	-0.03
122	122	64.01	0.00	-0.01	-0.03
122	10123	67.40	0.00	-0.01	0.00
123	123	67.40	0.00	0.00	0.00
123	124	70.45	0.00	0.00	-0.01
124	124	70.45	0.00	0.00	-0.01
124	125	73.50	0.00	0.00	-0.01
125	125	73.50	0.00	0.00	-0.01
125	126	76.26	0.00	0.00	-0.02
126	126	76.26	0.00	0.00	-0.02
126	127	79.02	0.00	0.00	-0.02
127	127	79.02	0.00	0.00	-0.02
127	128	81.78	0.00	0.00	-0.02
128	128	81.78	0.00	0.00	-0.02
128	129	84.54	0.00	0.00	-0.02
129	129	84.54	0.00	0.00	-0.02
129	130	87.30	0.00	0.00	-0.02
130	130	87.30	0.00	0.00	-0.02
130	131	90.06	0.00	0.00	-0.02
131	131	90.06	0.00	0.00	-0.02
131	132	92.82	0.00	0.00	-0.01
132	132	92.82	0.00	0.00	-0.01
132	133	95.58	0.00	0.00	-0.01
133	133	95.58	0.00	0.00	-0.01
133	134	98.34	0.00	0.00	0.00
134	134	98.34	0.00	0.00	0.00
134	135	101.10	0.00	0.00	0.00

Pretensado Isostático ($t=0$)

[1; 1]PRETF1A.FAM1.ISO + [1; 1]PRETF1A.FAM2.ISO + [1; 1]PRETF1A.FAM3.ISO + [1; 1]PRETF1A.FAM4.ISO + [1; 1]PRETF1A.FAM5.ISO + [1; 1]PRETF1A.FAM6.ISO + [1; 1]PRETF1A.FAM7.ISO + [1; 1]PRETF1A.

Coef. exc:

Barra	Nudo	X	N (T)	Vy (T)	Mz (Tm)
1	1	0.00	0.00	0.00	0.00
1	2	0.00	0.00	0.00	0.00
2	2	0.00	0.00	0.00	0.00
2	3	0.00	0.00	0.00	0.00
3	3	0.00	0.00	0.00	0.00
3	4	0.00	0.00	0.00	0.00
4	4	0.00	0.00	0.00	0.00
4	5	0.00	0.00	0.00	0.00
5	5	0.00	0.00	0.00	0.00
5	6	0.00	0.00	0.00	0.00
6	6	0.00	0.00	0.00	0.00
6	7	0.00	0.00	0.00	0.00
7	7	0.00	0.00	0.00	0.00
7	8	0.00	0.00	0.00	0.00
8	8	0.00	0.00	0.00	0.00
8	9	0.00	0.00	0.00	0.00
9	9	0.00	0.00	0.00	0.00
9	10	0.00	0.00	0.00	0.00
10	10	0.00	0.00	0.00	0.00
10	11	0.00	0.00	0.00	0.00
11	11	0.00	0.00	0.00	0.00
11	12	0.00	0.00	0.00	0.00
12	12	0.00	0.00	0.00	0.00
12	10013	0.00	0.00	0.00	0.00
13	13	0.00	0.00	0.00	0.00
13	14	0.00	0.00	0.00	0.00
14	14	0.00	0.00	0.00	0.00
14	15	0.00	0.00	0.00	0.00
15	15	0.00	0.00	0.00	0.00
15	16	0.00	0.00	0.00	0.00
16	16	0.00	0.00	0.00	0.00
16	17	0.00	0.00	0.00	0.00
17	17	0.00	0.00	0.00	0.00
17	18	0.00	0.00	0.00	0.00
18	18	0.00	0.00	0.00	0.00
18	19	0.00	0.00	0.00	0.00
19	19	0.00	0.00	0.00	0.00
19	20	0.00	0.00	0.00	0.00
20	20	0.00	0.00	0.00	0.00
20	21	0.00	0.00	0.00	0.00
21	21	0.00	0.00	0.00	0.00
21	22	0.00	0.00	0.00	0.00
22	22	0.00	0.00	0.00	0.00
22	23	0.00	0.00	0.00	0.00
23	23	0.00	0.00	0.00	0.00
23	24	0.00	0.00	0.00	0.00
24	24	0.00	0.00	0.00	0.00
24	10025	0.00	0.00	0.00	0.00
25	25	0.00	0.00	0.00	0.00
25	26	0.00	0.00	0.00	0.00
26	26	0.00	0.00	0.00	0.00
26	27	0.00	0.00	0.00	0.00
27	27	0.00	0.00	0.00	0.00
27	28	0.00	0.00	0.00	0.00
28	28	0.00	0.00	0.00	0.00
28	29	0.00	0.00	0.00	0.00
29	29	0.00	0.00	0.00	0.00
29	30	0.00	0.00	0.00	0.00
30	30	0.00	0.00	0.00	0.00
30	31	0.00	0.00	0.00	0.00
31	31	0.00	0.00	0.00	0.00
31	32	0.00	0.00	0.00	0.00
32	32	0.00	0.00	0.00	0.00
32	33	0.00	0.00	0.00	0.00
33	33	0.00	0.00	0.00	0.00
33	34	0.00	0.00	0.00	0.00
34	34	0.00	0.00	0.00	0.00
34	35	0.00	0.00	0.00	0.00
101	101	0.00	-635.32	0.00	-254.68
101	102	2.74	-635.32	0.00	-254.68
102	102	2.74	-924.28	0.00	-533.81
102	103	5.48	-924.28	0.00	-533.81

103	103	5.48	-1141.00	0.00	-732.76
103	104	8.22	-1141.00	0.00	-732.76
104	104	8.22	-1141.00	0.00	-732.76
104	105	10.96	-1141.00	0.00	-732.76
105	105	10.96	-1141.00	0.00	-732.76
105	106	13.70	-1141.00	0.00	-732.76
106	106	13.70	-1141.00	0.00	-732.76
106	107	16.44	-1141.00	0.00	-732.76
107	107	16.44	-1141.00	0.00	-732.76
107	108	19.18	-1141.00	0.00	-732.76
108	108	19.18	-1141.00	0.00	-732.76
108	109	21.92	-1141.00	0.00	-732.76
109	109	21.92	-924.28	0.00	-533.81
109	110	24.66	-924.28	0.00	-533.81
110	110	24.66	-635.32	0.00	-254.68
110	10111	27.40	-635.32	0.00	-254.68
111	111	27.40	-671.44	0.00	-291.30
111	112	30.45	-671.44	0.00	-291.30
112	112	30.45	-1141.00	0.00	-744.90
112	113	33.50	-1141.00	0.00	-744.90
113	113	33.50	-1646.68	0.00	-1209.11
113	114	36.89	-1646.68	0.00	-1209.11
114	114	36.89	-2152.36	0.00	-1649.06
114	115	40.28	-2152.36	0.00	-1649.06
115	115	40.28	-2152.36	0.00	-1649.06
115	116	43.67	-2152.36	0.00	-1649.06
116	116	43.67	-2152.36	0.00	-1649.06
116	117	47.06	-2152.36	0.00	-1649.06
117	117	47.06	-2152.36	0.00	-1649.06
117	118	50.45	-2152.36	0.00	-1649.06
118	118	50.45	-2152.36	0.00	-1649.06
118	119	53.84	-2152.36	0.00	-1649.06
119	119	53.84	-2152.36	0.00	-1649.06
119	120	57.23	-2152.36	0.00	-1649.06
120	120	57.23	-1646.68	0.00	-1209.11
120	121	60.62	-1646.68	0.00	-1209.11
121	121	60.62	-1141.00	0.00	-744.90
121	122	64.01	-1141.00	0.00	-744.90
122	122	64.01	-671.44	0.00	-291.30
122	10123	67.40	-671.44	0.00	-291.30
123	123	67.40	-671.44	0.00	-291.30
123	124	70.45	-671.44	0.00	-291.30
124	124	70.45	-1141.00	0.00	-744.90
124	125	73.50	-1141.00	0.00	-744.90
125	125	73.50	-1610.56	0.00	-1175.96
125	126	76.26	-1610.56	0.00	-1175.96
126	126	76.26	-2080.12	0.00	-1584.47
126	127	79.02	-2080.12	0.00	-1584.47
127	127	79.02	-2080.12	0.00	-1584.47
127	128	81.78	-2080.12	0.00	-1584.47
127	128	81.78	-2080.12	0.00	-1584.47
128	129	84.54	-2080.12	0.00	-1584.47
129	129	84.54	-2080.12	0.00	-1584.47
129	130	87.30	-2080.12	0.00	-1584.47
130	130	87.30	-2080.12	0.00	-1584.47
130	131	90.06	-2080.12	0.00	-1584.47
131	131	90.06	-2080.12	0.00	-1584.47
131	132	92.82	-2080.12	0.00	-1584.47
132	132	92.82	-1610.56	0.00	-1175.96
132	133	95.58	-1610.56	0.00	-1175.96
133	133	95.58	-1141.00	0.00	-744.90
133	134	98.34	-1141.00	0.00	-744.90
134	134	98.34	-671.44	0.00	-291.30
134	135	101.10	-671.44	0.00	-291.30

IDEAM

ESFUERZOS DE PRETENSADO FASE 3

ESTUARIOS DE PRETENSADO EN FASE 4

(SOBRE ESTRUCTURA IDEAL).



Pretensado Total (t=0)
[1; 1]PRETF3D.FAM1.TOT + [1; 1]PRETF3D.FAM2.TOT + [1; 1]PRETF3D.FAM3.TOT + [1; 1]PRETF3D.FAM4.TOT
Coef. exc:

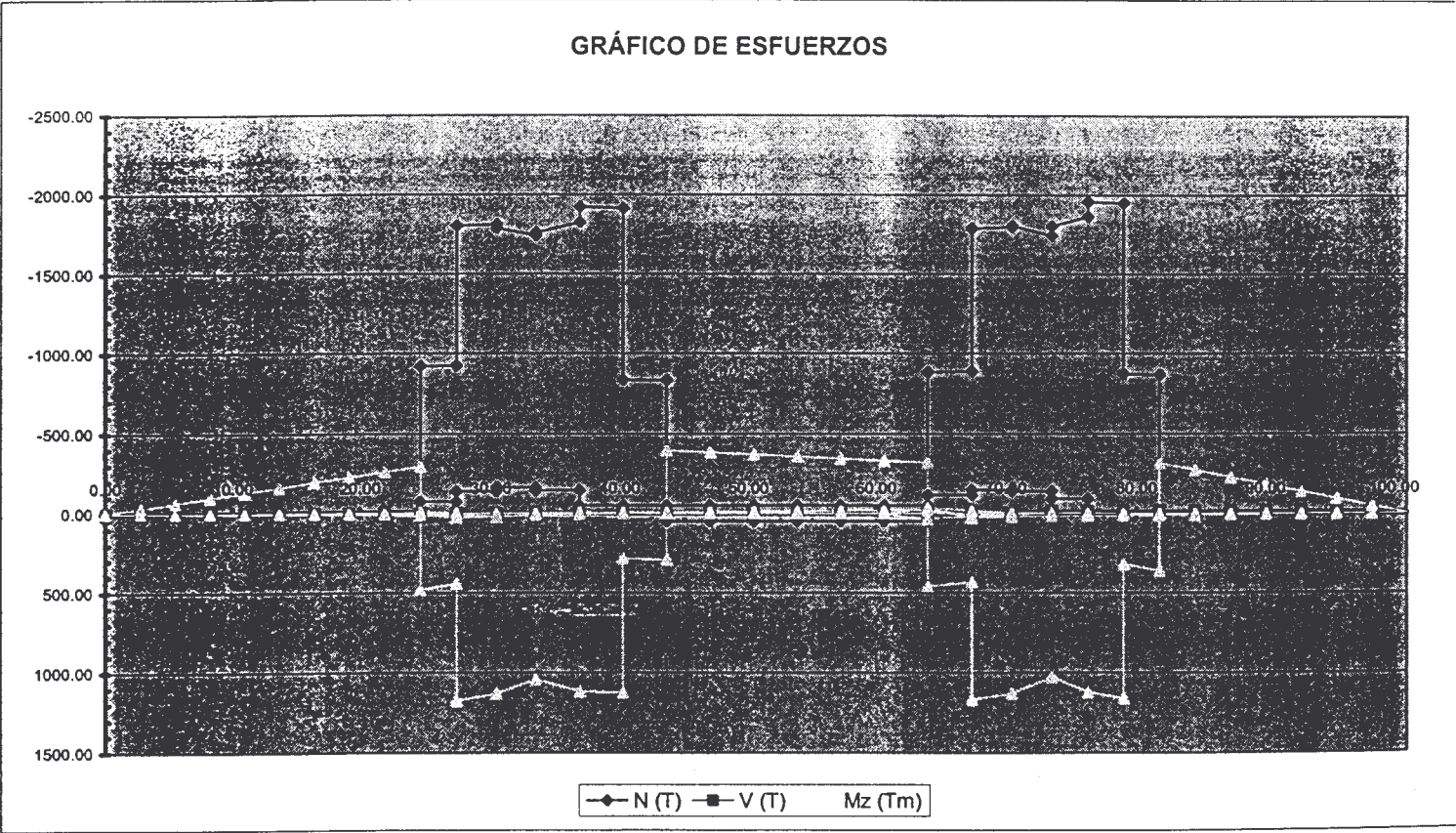
Barra	Nudo	X	N (T)	Vy (T)	Mz (Tm)
1	1	0.00	0.00	11.99	0.00
1	2	2.74	0.00	11.99	-32.85
2	2	2.74	0.00	11.99	-32.85
2	3	5.48	0.00	11.99	-65.70
3	3	5.48	0.00	11.99	-65.70
3	4	8.22	0.00	11.99	-98.55
4	4	8.22	0.00	11.99	-98.55
4	5	10.96	0.00	11.99	-131.40
5	5	10.96	0.00	11.99	-131.40
5	6	13.70	0.00	11.99	-164.25
6	6	13.70	0.00	11.99	-164.25
6	7	16.44	0.00	11.99	-197.11
7	7	16.44	0.00	11.99	-197.11
7	8	19.18	0.00	11.99	-229.96
8	8	19.18	0.00	11.99	-229.96
8	9	21.92	0.00	11.99	-262.81
9	9	21.92	0.00	11.99	-262.81
9	10	24.66	0.00	11.99	-295.66
10	10	24.66	-923.91	15.67	480.94
10	11	27.40	-927.70	15.67	440.96
11	11	27.40	-1803.67	16.95	1172.90
11	12	30.45	-1811.49	16.95	1127.31
12	12	30.45	-1787.61	16.49	1126.69
12	10013	33.50	-1742.42	16.49	1041.14
13	13	33.50	-1759.83	-5.91	1041.93
13	14	36.89	-1825.81	-5.91	1113.43
14	14	36.89	-1922.47	-3.80	1115.96
14	15	40.28	-1913.79	-3.80	1122.05
15	15	40.28	-837.58	-3.80	282.61
15	16	43.67	-833.48	-3.80	292.29
16	16	43.67	49.46	-3.80	-396.41
16	17	47.06	49.46	-3.80	-383.54
17	17	47.06	49.46	-3.80	-383.54
17	18	50.45	49.46	-3.80	-370.67
18	18	50.45	49.46	-3.80	-370.67
18	19	53.84	49.46	-3.80	-357.80
19	19	53.84	49.46	-3.79	-357.80
19	20	57.23	49.46	-3.79	-344.94
20	20	57.23	49.46	-3.80	-344.94
20	21	60.62	49.46	-3.80	-332.07
21	21	60.62	49.46	-3.80	-332.07
21	22	64.01	49.46	-3.80	-319.20
22	22	64.01	-886.31	8.49	458.87
22	23	67.40	-890.99	8.49	433.74
23	23	67.40	-1790.60	14.42	1165.63
23	24	70.45	-1798.43	14.42	1127.76
24	24	70.45	-1806.40	16.48	1125.64
24	10025	73.50	-1744.12	16.48	1026.81
25	25	73.50	-1804.53	-16.52	1026.08
25	26	76.26	-1865.44	-16.52	1119.19
26	26	76.26	-1957.81	-16.40	1119.61
26	27	79.02	-1950.73	-16.40	1159.36
27	27	79.02	-873.70	-16.40	319.28
27	28	81.78	-870.36	-16.40	361.95
28	28	81.78	0.00	-16.40	-316.93
28	29	84.54	0.00	-16.40	-271.66
29	29	84.54	0.00	-16.40	-271.66
29	30	87.30	0.00	-16.40	-226.38
30	30	87.30	0.00	-16.40	-226.38
30	31	90.06	0.00	-16.40	-181.10
31	31	90.06	0.00	-16.40	-181.10
31	32	92.82	0.00	-16.40	-135.83
32	32	92.82	0.00	-16.40	-135.83
32	33	95.58	0.00	-16.40	-90.55
33	33	95.58	0.00	-16.40	-90.55
33	34	98.34	0.00	-16.40	-45.28
34	34	98.34	0.00	-16.40	-45.28
34	35	101.10	0.00	-16.40	0.00
101	101	0.00	0.00	-0.34	0.00
101	102	2.74	0.00	-0.34	0.92
102	102	2.74	0.00	-0.34	0.92
102	103	5.48	0.00	-0.34	1.85

103	103	5.48	0.00	-0.34	1.85
103	104	8.22	0.00	-0.34	2.77
104	104	8.22	0.00	-0.34	2.77
104	105	10.96	0.00	-0.34	3.69
104	105	10.96	0.00	-0.34	3.69
106	106	13.70	0.00	-0.34	4.62
106	106	13.70	0.00	-0.34	4.62
106	107	16.44	0.00	-0.34	5.54
107	107	16.44	0.00	-0.34	5.54
107	108	19.18	0.00	-0.34	6.46
108	108	19.18	0.00	-0.34	6.46
108	109	21.92	0.00	-0.34	7.38
109	109	21.92	0.00	-0.34	7.38
109	110	24.66	0.00	-0.34	8.31
110	110	24.66	-74.71	-4.01	10.63
110	10111	27.40	-74.71	-4.01	21.63
111	111	27.40	-139.65	2.04	23.60
111	112	30.45	-139.65	2.04	17.38
112	112	30.45	-163.52	2.50	18.00
112	113	33.50	-163.52	2.50	10.39
113	113	33.50	-146.12	2.81	9.60
113	114	36.89	-146.12	2.81	0.07
114	114	36.89	-49.46	0.70	-2.46
114	115	40.28	-49.46	0.70	-4.82
115	115	40.28	-49.46	0.70	-4.82
115	116	43.67	-49.46	0.70	-7.19
116	116	43.67	-49.46	0.70	-7.19
117	117	47.06	-49.46	0.70	-9.55
117	117	47.06	-49.46	0.70	-9.55
117	118	50.45	-49.46	0.70	-11.91
118	118	50.45	-49.46	0.70	-11.91
118	119	53.84	-49.46	0.70	-14.27
119	119	53.84	-49.46	0.70	-14.27
119	120	57.23	-49.46	0.70	-16.64
120	120	57.23	-49.46	0.70	-16.64
120	121	60.62	-49.46	0.70	-19.00
121	121	60.62	-49.46	0.70	-19.00
121	122	64.01	-49.46	0.70	-21.36
122	122	64.01	-117.21	-11.59	-16.69
122	10123	67.40	-117.21	-11.59	22.60
123	123	67.40	-148.72	3.08	26.37
123	124	70.45	-148.72	3.08	16.98
124	124	70.45	-140.75	1.01	19.11
124	125	73.50	-140.75	1.01	16.01
125	125	73.50	-92.36	0.70	16.74
125	126	76.26	-92.36	0.70	14.82
126	126	76.26	0.00	0.58	14.40
126	127	79.02	0.00	0.58	12.80
127	127	79.02	0.00	0.58	12.80
127	128	81.78	0.00	0.58	11.20
127	128	81.78	0.00	0.58	11.20
129	129	84.54	0.00	0.58	9.60
129	129	84.54	0.00	0.58	9.60
129	130	87.30	0.00	0.58	8.00
130	130	87.30	0.00	0.58	8.00
130	131	90.06	0.00	0.58	6.40
131	131	90.06	0.00	0.58	6.40
131	132	92.82	0.00	0.58	4.80
132	132	92.82	0.00	0.58	4.80
132	133	95.58	0.00	0.58	3.20
133	133	95.58	0.00	0.58	3.20
133	134	98.34	0.00	0.58	1.60
134	134	98.34	0.00	0.58	1.60
134	135	101.10	0.00	0.58	0.00
301	101	0.00	0.00	0.00	0.00
301	2001	0.00	0.00	0.00	0.00
302	102	2.74	0.00	0.00	0.00
302	2002	2.74	0.00	0.00	0.00
303	103	5.48	0.00	0.00	0.00
303	2003	5.48	0.00	0.00	0.00
304	104	8.22	0.00	0.00	0.00
304	2004	8.22	0.00	0.00	0.00
305	105	10.96	0.00	0.00	0.00
305	2005	10.96	0.00	0.00	0.00
306	106	13.70	0.00	0.00	0.00
306	2006	13.70	0.00	0.00	0.00
307	107	16.44	0.00	0.00	0.00
307	2007	16.44	0.00	0.00	0.00
308	108	19.18	0.00	0.00	0.00
308	2008	19.18	0.00	0.00	0.00
309	109	21.92	0.00	0.00	0.00
309	2009	21.92	0.00	0.00	0.00
310	110	24.66	-13.91	3.68	11.67

310	2010	24.66	-13.91	3.68	8.89
311	111	27.40	0.31	1.28	4.11
311	2011	27.40	0.31	1.28	3.15
312	112	30.45	4.37	-0.45	-1.40
312	2012	30.45	4.37	-0.45	-1.05
313	113	33.50	3.87	-0.32	-1.03
313	2013	33.50	3.87	-0.32	-0.79
314	114	36.89	6.91	2.11	6.63
314	2014	36.89	6.91	2.11	5.03
315	115	40.28	0.00	0.00	0.00
315	2015	40.28	0.00	0.00	0.00
316	116	43.67	0.00	0.00	0.00
316	2016	43.67	0.00	0.00	0.00
317	117	47.06	0.00	0.00	0.00
317	2017	47.06	0.00	0.00	0.00
318	118	50.45	0.00	0.00	0.00
318	2018	50.45	0.00	0.00	0.00
319	119	53.84	0.00	0.00	0.00
319	2019	53.84	0.00	0.00	0.00
320	120	57.23	0.00	0.00	0.00
320	2020	57.23	0.00	0.00	0.00
321	121	60.62	0.00	0.00	0.00
321	2021	60.62	0.00	0.00	0.00
322	122	64.01	-4.56	12.29	39.11
322	2022	64.01	-4.56	12.29	29.82
323	123	67.40	4.46	5.92	19.05
323	2023	67.40	4.46	5.92	14.57
324	124	70.45	7.23	2.06	6.67
324	2024	70.45	7.23	2.06	5.11
325	125	73.50	2.99	0.32	0.97
325	2025	73.50	2.99	0.32	0.73
326	126	76.26	-11.68	0.12	0.35
326	2026	76.26	-11.68	0.12	0.26
327	127	79.02	0.00	0.00	0.00
327	2027	79.02	0.00	0.00	0.00
328	128	81.78	0.00	0.00	0.00
328	2028	81.78	0.00	0.00	0.00
329	129	84.54	0.00	0.00	0.00
329	2029	84.54	0.00	0.00	0.00
330	130	87.30	0.00	0.00	0.00
330	2030	87.30	0.00	0.00	0.00
331	131	90.06	0.00	0.00	0.00
331	2031	90.06	0.00	0.00	0.00
332	132	92.82	0.00	0.00	0.00
332	2032	92.82	0.00	0.00	0.00
333	133	95.58	0.00	0.00	0.00
333	2033	95.58	0.00	0.00	0.00
334	134	98.34	0.00	0.00	0.00
334	2034	98.34	0.00	0.00	0.00
335	135	101.10	0.00	0.00	0.00
335	2035	101.10	0.00	0.00	0.00
201	2001	0.00	0.00	0.00	0.00
201	1001	0.00	0.00	0.00	0.00
202	2002	0.00	0.00	0.00	0.00
202	1002	0.00	0.00	0.00	0.00
203	2003	0.00	0.00	0.00	0.00
203	1003	0.00	0.00	0.00	0.00
204	2004	0.00	0.00	0.00	0.00
204	1004	0.00	0.00	0.00	0.00
205	2005	0.00	0.00	0.00	0.00
205	1005	0.00	0.00	0.00	0.00
206	2006	0.00	0.00	0.00	0.00
206	1006	0.00	0.00	0.00	0.00
207	2007	0.00	0.00	0.00	0.00
207	1007	0.00	0.00	0.00	0.00
208	2008	0.00	0.00	0.00	0.00
208	1008	0.00	0.00	0.00	0.00
209	2009	0.00	0.00	0.00	0.00
209	1009	0.00	0.00	0.00	0.00
210	2010	24.66	-13.91	3.68	8.89
210	1010	24.66	-13.91	3.68	-8.72
211	2011	27.40	0.31	1.28	3.15
211	1011	27.40	0.31	1.28	-2.97
212	2012	30.45	4.37	-0.45	-1.05
212	1012	30.45	4.37	-0.45	1.12
213	2013	33.50	3.87	-0.32	-0.79
213	1013	33.50	3.87	-0.32	0.72
214	2014	36.89	6.91	2.11	5.03
214	1014	36.89	6.91	2.11	-5.09
215	2015	0.00	0.00	0.00	0.00
215	1015	0.00	0.00	0.00	0.00
216	2016	0.00	0.00	0.00	0.00
216	1016	0.00	0.00	0.00	0.00

217	2017	0.00	0.00	0.00	0.00
217	1017	0.00	0.00	0.00	0.00
218	2018	0.00	0.00	0.00	0.00
218	1018	0.00	0.00	0.00	0.00
219	2019	0.00	0.00	0.00	0.00
219	1019	0.00	0.00	0.00	0.00
220	2020	0.00	0.00	0.00	0.00
220	1020	0.00	0.00	0.00	0.00
221	2021	0.00	0.00	0.00	0.00
221	1021	0.00	0.00	0.00	0.00
222	2022	64.01	-4.56	12.29	29.82
222	1022	64.01	-4.56	12.29	-29.01
223	2023	67.40	4.46	5.92	14.57
223	1023	67.40	4.46	5.92	-13.80
224	2024	70.45	7.23	2.06	5.11
224	1024	70.45	7.23	2.06	-4.76
225	2025	73.50	2.99	0.32	0.73
225	1025	73.50	2.99	0.32	-0.79
226	2026	76.26	-11.68	0.12	0.26
226	1026	76.26	-11.68	0.12	-0.31
227	2027	0.00	0.00	0.00	0.00
227	1027	0.00	0.00	0.00	0.00
228	2028	0.00	0.00	0.00	0.00
228	1028	0.00	0.00	0.00	0.00
229	2029	0.00	0.00	0.00	0.00
229	1029	0.00	0.00	0.00	0.00
230	2030	0.00	0.00	0.00	0.00
231	2031	0.00	0.00	0.00	0.00
231	1031	0.00	0.00	0.00	0.00
232	2032	0.00	0.00	0.00	0.00
232	1032	0.00	0.00	0.00	0.00
233	2033	0.00	0.00	0.00	0.00
233	1033	0.00	0.00	0.00	0.00
234	2034	0.00	0.00	0.00	0.00
234	1034	0.00	0.00	0.00	0.00
235	2035	0.00	0.00	0.00	0.00
235	1035	0.00	0.00	0.00	0.00
401	1001	0.00	0.00	0.00	0.00
401	1	0.00	0.00	0.00	0.00
402	1002	2.74	0.00	0.00	0.00
402	2	2.74	0.00	0.00	0.00
403	1003	5.48	0.00	0.00	0.00
403	3	5.48	0.00	0.00	0.00
404	1004	8.22	0.00	0.00	0.00
404	4	8.22	0.00	0.00	0.00
405	1005	10.96	0.00	0.00	0.00
405	5	10.96	0.00	0.00	0.00
406	1006	13.70	0.00	0.00	0.00
406	6	13.70	0.00	0.00	0.00
407	1007	16.44	0.00	0.00	0.00
407	7	16.44	0.00	0.00	0.00
408	1008	19.18	0.00	0.00	0.00
408	8	19.18	0.00	0.00	0.00
409	1009	21.92	0.00	0.00	0.00
409	9	21.92	0.00	0.00	0.00
410	1010	24.66	-13.91	3.68	-8.72
410	10	24.66	-13.91	3.68	-11.51
411	1011	27.40	0.31	1.28	-2.97
411	11	27.40	0.31	1.28	-3.94
412	1012	30.45	4.37	-0.45	1.12
412	12	30.45	4.37	-0.45	1.46
413	1013	33.50	3.87	-0.32	0.72
413	13	33.50	3.87	-0.32	0.96
414	1014	36.89	6.91	2.11	-5.09
414	14	36.89	6.91	2.11	-6.69
415	1015	40.28	0.00	0.00	0.00
415	15	40.28	0.00	0.00	0.00
416	1016	43.67	0.00	0.00	0.00
416	16	43.67	0.00	0.00	0.00
417	1017	47.06	0.00	0.00	0.00
417	17	47.06	0.00	0.00	0.00
418	1018	50.45	0.00	0.00	0.00
418	18	50.45	0.00	0.00	0.00
419	1019	53.84	0.00	0.00	0.00
419	19	53.84	0.00	0.00	0.00
420	1020	57.23	0.00	0.00	0.00
420	20	57.23	0.00	0.00	0.00
421	1021	60.62	0.00	0.00	0.00
421	21	60.62	0.00	0.00	0.00
422	1022	64.01	-4.56	12.29	-29.01
422	22	64.01	-4.56	12.29	-38.30
423	1023	67.40	4.46	5.92	-13.80

423	23	67.40	4.46	5.92	-18.27
424	1024	70.45	7.23	2.06	-4.76
424	24	70.45	7.23	2.06	-6.32
425	1025	73.50	2.99	0.32	-0.79
425	25	73.50	2.99	0.32	-1.03
426	1026	76.26	-11.68	0.12	-0.31
426	26	76.26	-11.68	0.12	-0.40
427	1027	79.02	0.00	0.00	0.00
427	27	79.02	0.00	0.00	0.00
428	1028	81.78	0.00	0.00	0.00
428	28	81.78	0.00	0.00	0.00
429	1029	84.54	0.00	0.00	0.00
429	29	84.54	0.00	0.00	0.00
430	1030	87.30	0.00	0.00	0.00
430	30	87.30	0.00	0.00	0.00
431	1031	90.06	0.00	0.00	0.00
431	31	90.06	0.00	0.00	0.00
432	1032	92.82	0.00	0.00	0.00
432	32	92.82	0.00	0.00	0.00
433	1033	95.58	0.00	0.00	0.00
433	33	95.58	0.00	0.00	0.00
434	1034	98.34	0.00	0.00	0.00
434	34	98.34	0.00	0.00	0.00
435	1035	101.10	0.00	0.00	0.00
435	35	101.10	0.00	0.00	0.00



Preferido Hiperestático (t=0)

[1; 1]PRE.FAM1.TOT + [-1;-1]PRETF3D.FAM1.ISO + [1; 1]PRETF3D.FAM2.TOT + [-1;-1]PRETF3D.FAM2.ISO + [1; 1]PRETF3D.FAM3.TOT + [-1;-1]PRETF3D.FAM3.ISO + [1; 1]PRETF3D.FAM4.TOT + [-1;-1]PRETF3D.FAM4.ISO

Coef. exc

Barra	Nudo	X	N (T)	Vy (T)	Mz (Tm)
1	1	0.00	0.00	11.99	0.00
1	2	2.74	0.00	11.99	-32.85
2	2	2.74	0.00	11.99	-32.85
2	3	5.48	0.00	11.99	-65.70
3	3	5.48	0.00	11.99	-65.70
3	4	8.22	0.00	11.99	-98.55
4	4	8.22	0.00	11.99	-98.55
4	5	10.96	0.00	11.99	-131.40
5	5	10.96	0.00	11.99	-131.40
5	6	13.70	0.00	11.99	-164.25
6	6	13.70	0.00	11.99	-164.25
6	7	16.44	0.00	11.99	-197.11
7	7	16.44	0.00	11.99	-197.11
7	8	19.18	0.00	11.99	-229.96
8	8	19.18	0.00	11.99	-229.96
8	9	21.92	0.00	11.99	-262.81
9	9	21.92	0.00	11.99	-262.81
10	10	24.66	0.00	11.99	-295.66
10	10	24.66	74.71	15.67	-297.99
10	11	27.40	74.71	15.67	-340.91
11	11	27.40	139.65	16.95	-342.89
11	12	30.45	139.65	16.95	-394.57
12	12	30.45	163.52	16.49	-395.20
12	10013	33.50	163.52	16.49	-445.50
13	13	33.50	146.12	-5.91	-444.71
13	14	36.89	146.12	-5.91	-424.67
14	14	36.89	49.46	-3.80	-422.14
14	15	40.28	49.46	-3.80	-409.27
15	15	40.28	49.46	-3.80	-409.27
15	16	43.67	49.46	-3.80	-396.41
16	16	43.67	49.46	-3.80	-396.41
16	17	47.06	49.46	-3.80	-383.54
17	17	47.06	49.46	-3.80	-383.54
17	18	50.45	49.46	-3.80	-370.67
18	18	50.45	49.46	-3.80	-370.67
18	19	53.84	49.46	-3.80	-357.80
19	19	53.84	49.46	-3.79	-357.80
19	20	57.23	49.46	-3.79	-344.94
20	20	57.23	49.46	-3.80	-344.94
20	21	60.62	49.46	-3.80	-332.07
21	21	60.62	49.46	-3.80	-332.07
21	22	64.01	49.46	-3.80	-319.20
22	22	64.01	117.21	8.49	-323.87
22	23	67.40	117.21	8.49	-352.66
23	23	67.40	160.75	14.42	-356.43
23	24	70.45	160.75	14.42	-400.39
24	24	70.45	152.78	16.48	-402.52
24	10025	73.50	152.78	16.48	-452.77
25	25	73.50	92.36	-16.52	-453.50
25	26	76.26	92.36	-16.52	-407.90
26	26	76.26	0.00	-16.40	-407.48
26	27	79.02	0.00	-16.40	-362.21
27	27	79.02	0.00	-16.40	-362.21
27	28	81.78	0.00	-16.40	-316.93
28	28	81.78	0.00	-16.40	-316.93
28	29	84.54	0.00	-16.40	-271.66
29	29	84.54	0.00	-16.40	-271.66
29	30	87.30	0.00	-16.40	-226.38
30	30	87.30	0.00	-16.40	-226.38
30	31	90.06	0.00	-16.40	-181.10
31	31	90.06	0.00	-16.40	-181.10
31	32	92.82	0.00	-16.40	-135.83
32	32	92.82	0.00	-16.40	-135.83
33	33	95.58	0.00	-16.40	-90.55
33	33	95.58	0.00	-16.40	-90.55
33	34	98.34	0.00	-16.40	-45.28
34	34	98.34	0.00	-16.40	-45.28
34	35	101.10	0.00	-16.40	0.00
101	101	0.00	0.00	-0.34	0.00
101	102	2.74	0.00	-0.34	0.92
102	102	2.74	0.00	-0.34	0.92
102	103	5.48	0.00	-0.34	1.85

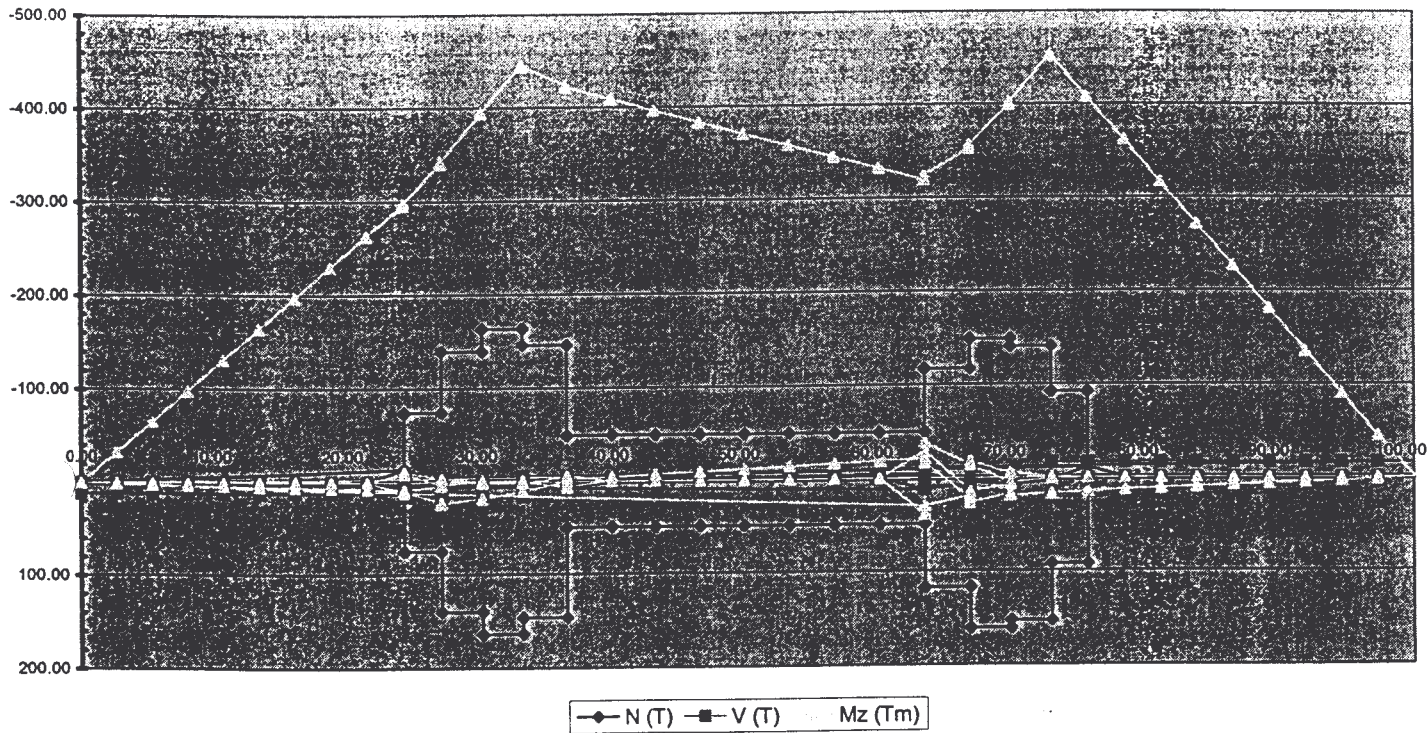
103	103	5.48	0.00	-0.34	1.85
103	104	8.22	0.00	-0.34	2.77
104	104	8.22	0.00	-0.34	2.77
104	105	10.96	0.00	-0.34	3.69
105	105	10.96	0.00	-0.34	3.69
105	106	13.70	0.00	-0.34	4.62
106	106	13.70	0.00	-0.34	4.62
106	107	16.44	0.00	-0.34	5.54
107	107	16.44	0.00	-0.34	5.54
107	108	19.18	0.00	-0.34	6.46
108	108	19.18	0.00	-0.34	6.46
108	109	21.92	0.00	-0.34	7.38
109	109	21.92	0.00	-0.34	7.38
109	110	24.66	0.00	-0.34	8.31
110	110	24.66	-74.71	-4.01	10.63
110	10111	27.40	-74.71	-4.01	21.63
111	111	27.40	-139.65	2.04	23.60
111	112	30.45	-139.65	2.04	17.38
112	112	30.45	-163.52	2.50	18.00
112	113	33.50	-163.52	2.50	10.39
113	113	33.50	-146.12	2.81	9.60
113	114	36.89	-146.12	2.81	0.07
114	114	36.89	-49.46	0.70	-2.46
114	115	40.28	-49.46	0.70	-4.82
115	115	40.28	-49.46	0.70	-4.82
115	116	43.67	-49.46	0.70	-7.19
116	116	43.67	-49.46	0.70	-7.19
116	117	47.06	-49.46	0.70	-9.55
117	117	47.06	-49.46	0.70	-9.55
117	118	50.45	-49.46	0.70	-11.91
118	118	50.45	-49.46	0.70	-11.91
118	119	53.84	-49.46	0.70	-14.27
119	119	53.84	-49.46	0.70	-14.27
119	120	57.23	-49.46	0.70	-16.64
120	120	57.23	-49.46	0.70	-16.64
120	121	60.62	-49.46	0.70	-19.00
121	121	60.62	-49.46	0.70	-19.00
121	122	64.01	-49.46	0.70	-21.36
122	122	64.01	-117.21	-11.59	-16.69
122	10123	67.40	-117.21	-11.59	22.60
123	123	67.40	-148.72	3.08	26.37
123	124	70.45	-148.72	3.08	16.98
124	124	70.45	-140.75	1.01	19.11
124	125	73.50	-140.75	1.01	16.01
125	125	73.50	-92.36	0.70	16.74
125	126	76.26	-92.36	0.70	14.82
126	126	76.26	0.00	0.58	14.40
126	127	79.02	0.00	0.58	12.80
127	127	79.02	0.00	0.58	12.80
127	128	81.78	0.00	0.58	11.20
128	128	81.78	0.00	0.58	11.20
128	129	84.54	0.00	0.58	9.60
129	129	84.54	0.00	0.58	9.60
129	130	87.30	0.00	0.58	8.00
130	130	87.30	0.00	0.58	8.00
130	131	90.06	0.00	0.58	6.40
131	131	90.06	0.00	0.58	6.40
131	132	92.82	0.00	0.58	4.80
132	132	92.82	0.00	0.58	4.80
132	133	95.58	0.00	0.58	3.20
133	133	95.58	0.00	0.58	3.20
133	134	98.34	0.00	0.58	1.60
134	134	98.34	0.00	0.58	1.60
134	135	101.10	0.00	0.58	0.00
301	101	0.00	0.00	0.00	0.00
301	2001	0.00	0.00	0.00	0.00
302	102	2.74	0.00	0.00	0.00
302	2002	2.74	0.00	0.00	0.00
303	103	5.48	0.00	0.00	0.00
303	2003	5.48	0.00	0.00	0.00
304	104	8.22	0.00	0.00	0.00
304	2004	8.22	0.00	0.00	0.00
305	105	10.96	0.00	0.00	0.00
305	2005	10.96	0.00	0.00	0.00
306	106	13.70	0.00	0.00	0.00
306	2006	13.70	0.00	0.00	0.00
307	107	16.44	0.00	0.00	0.00
307	2007	16.44	0.00	0.00	0.00
308	108	19.18	0.00	0.00	0.00
308	2008	19.18	0.00	0.00	0.00
309	109	21.92	0.00	0.00	0.00
309	2009	21.92	0.00	0.00	0.00
310	110	24.66	-13.91	3.68	11.67

310	2010	24.66	-13.91	3.68	8.89
311	111	27.40	0.31	1.28	4.11
311	2011	27.40	0.31	1.28	3.15
312	112	30.45	4.37	-0.45	-1.40
312	2012	30.45	4.37	-0.45	-1.05
313	113	33.50	3.87	-0.32	-1.03
313	2013	33.50	3.87	-0.32	-0.79
314	114	36.89	6.91	2.11	6.63
314	2014	36.89	6.91	2.11	5.03
315	115	40.28	0.00	0.00	0.00
315	2015	40.28	0.00	0.00	0.00
316	116	43.67	0.00	0.00	0.00
316	2016	43.67	0.00	0.00	0.00
317	117	47.06	0.00	0.00	0.00
317	2017	47.06	0.00	0.00	0.00
318	118	50.45	0.00	0.00	0.00
318	2018	50.45	0.00	0.00	0.00
319	119	53.84	0.00	0.00	0.00
319	2019	53.84	0.00	0.00	0.00
320	120	57.23	0.00	0.00	0.00
320	2020	57.23	0.00	0.00	0.00
321	121	60.62	0.00	0.00	0.00
321	2021	60.62	0.00	0.00	0.00
322	122	64.01	-4.56	12.29	39.11
322	2022	64.01	-4.56	12.29	29.82
323	123	67.40	4.46	5.92	19.05
323	2023	67.40	4.46	5.92	14.57
324	124	70.45	7.23	2.06	6.67
32	2024	70.45	7.23	2.06	5.11
325	125	73.50	2.99	0.32	0.97
325	2025	73.50	2.99	0.32	0.73
326	126	76.26	-11.68	0.12	0.35
326	2026	76.26	-11.68	0.12	0.26
327	127	79.02	0.00	0.00	0.00
327	2027	79.02	0.00	0.00	0.00
328	128	81.78	0.00	0.00	0.00
328	2028	81.78	0.00	0.00	0.00
329	129	84.54	0.00	0.00	0.00
329	2029	84.54	0.00	0.00	0.00
330	130	87.30	0.00	0.00	0.00
330	2030	87.30	0.00	0.00	0.00
331	131	90.06	0.00	0.00	0.00
331	2031	90.06	0.00	0.00	0.00
332	132	92.82	0.00	0.00	0.00
332	2032	92.82	0.00	0.00	0.00
333	133	95.58	0.00	0.00	0.00
333	2033	95.58	0.00	0.00	0.00
334	134	98.34	0.00	0.00	0.00
334	2034	98.34	0.00	0.00	0.00
335	135	101.10	0.00	0.00	0.00
335	2035	101.10	0.00	0.00	0.00
20	2001	0.00	0.00	0.00	0.00
201	1001	0.00	0.00	0.00	0.00
202	2002	0.00	0.00	0.00	0.00
202	1002	0.00	0.00	0.00	0.00
203	2003	0.00	0.00	0.00	0.00
203	1003	0.00	0.00	0.00	0.00
204	2004	0.00	0.00	0.00	0.00
204	1004	0.00	0.00	0.00	0.00
205	2005	0.00	0.00	0.00	0.00
205	1005	0.00	0.00	0.00	0.00
206	2006	0.00	0.00	0.00	0.00
206	1006	0.00	0.00	0.00	0.00
207	2007	0.00	0.00	0.00	0.00
207	1007	0.00	0.00	0.00	0.00
208	2008	0.00	0.00	0.00	0.00
208	1008	0.00	0.00	0.00	0.00
209	2009	0.00	0.00	0.00	0.00
209	1009	0.00	0.00	0.00	0.00
210	2010	24.66	-13.91	3.68	8.89
210	1010	24.66	-13.91	3.68	-8.72
211	2011	27.40	0.31	1.28	3.15
211	1011	27.40	0.31	1.28	-2.97
212	2012	30.45	4.37	-0.45	-1.05
212	1012	30.45	4.37	-0.45	1.12
213	2013	33.50	3.87	-0.32	-0.79
213	1013	33.50	3.87	-0.32	0.72
214	2014	36.89	6.91	2.11	5.03
214	1014	36.89	6.91	2.11	-5.09
215	2015	0.00	0.00	0.00	0.00
215	1015	0.00	0.00	0.00	0.00
216	2016	0.00	0.00	0.00	0.00
216	1016	0.00	0.00	0.00	0.00

217	2017	0.00	0.00	0.00	0.00
217	1017	0.00	0.00	0.00	0.00
218	2018	0.00	0.00	0.00	0.00
218	1018	0.00	0.00	0.00	0.00
219	2019	0.00	0.00	0.00	0.00
219	1019	0.00	0.00	0.00	0.00
220	2020	0.00	0.00	0.00	0.00
220	1020	0.00	0.00	0.00	0.00
221	2021	0.00	0.00	0.00	0.00
221	1021	0.00	0.00	0.00	0.00
222	2022	64.01	-4.56	12.29	29.82
222	1022	64.01	-4.56	12.29	-29.01
223	2023	67.40	4.46	5.92	14.57
223	1023	67.40	4.46	5.92	-13.80
224	2024	70.45	7.23	2.06	5.11
224	1024	70.45	7.23	2.06	-4.76
225	2025	73.50	2.99	0.32	0.73
225	1025	73.50	2.99	0.32	-0.79
226	2026	76.26	-11.68	0.12	0.26
226	1026	76.26	-11.68	0.12	-0.31
227	2027	0.00	0.00	0.00	0.00
227	1027	0.00	0.00	0.00	0.00
228	2028	0.00	0.00	0.00	0.00
228	1028	0.00	0.00	0.00	0.00
229	2029	0.00	0.00	0.00	0.00
229	1029	0.00	0.00	0.00	0.00
230	2030	0.00	0.00	0.00	0.00
230	1030	0.00	0.00	0.00	0.00
231	2031	0.00	0.00	0.00	0.00
231	1031	0.00	0.00	0.00	0.00
232	2032	0.00	0.00	0.00	0.00
232	1032	0.00	0.00	0.00	0.00
233	2033	0.00	0.00	0.00	0.00
233	1033	0.00	0.00	0.00	0.00
234	2034	0.00	0.00	0.00	0.00
234	1034	0.00	0.00	0.00	0.00
235	2035	0.00	0.00	0.00	0.00
235	1035	0.00	0.00	0.00	0.00
401	1001	0.00	0.00	0.00	0.00
401	1	0.00	0.00	0.00	0.00
402	1002	2.74	0.00	0.00	0.00
402	2	2.74	0.00	0.00	0.00
403	1003	5.48	0.00	0.00	0.00
403	3	5.48	0.00	0.00	0.00
404	1004	8.22	0.00	0.00	0.00
404	4	8.22	0.00	0.00	0.00
405	1005	10.96	0.00	0.00	0.00
405	5	10.96	0.00	0.00	0.00
406	1006	13.70	0.00	0.00	0.00
406	6	13.70	0.00	0.00	0.00
407	1007	16.44	0.00	0.00	0.00
407	7	16.44	0.00	0.00	0.00
408	1008	19.18	0.00	0.00	0.00
408	8	19.18	0.00	0.00	0.00
409	1009	21.92	0.00	0.00	0.00
409	9	21.92	0.00	0.00	0.00
410	1010	24.66	-13.91	3.68	-8.72
410	10	24.66	-13.91	3.68	-11.51
411	1011	27.40	0.31	1.28	-2.97
411	11	27.40	0.31	1.28	-3.94
412	1012	30.45	4.37	-0.45	1.12
412	12	30.45	4.37	-0.45	1.46
413	1013	33.50	3.87	-0.32	0.72
413	13	33.50	3.87	-0.32	0.96
414	1014	36.89	6.91	2.11	-5.09
414	14	36.89	6.91	2.11	-6.69
415	1015	40.28	0.00	0.00	0.00
415	15	40.28	0.00	0.00	0.00
416	1016	43.67	0.00	0.00	0.00
416	16	43.67	0.00	0.00	0.00
417	1017	47.06	0.00	0.00	0.00
417	17	47.06	0.00	0.00	0.00
418	1018	50.45	0.00	0.00	0.00
418	18	50.45	0.00	0.00	0.00
419	1019	53.84	0.00	0.00	0.00
419	19	53.84	0.00	0.00	0.00
420	1020	57.23	0.00	0.00	0.00
420	20	57.23	0.00	0.00	0.00
421	1021	60.62	0.00	0.00	0.00
421	21	60.62	0.00	0.00	0.00
422	1022	64.01	-4.56	12.29	-29.01
422	22	64.01	-4.56	12.29	-38.30
423	1023	67.40	4.46	5.92	-13.80

423	23	67.40	4.46	5.92	-18.27
424	1024	70.45	7.23	2.06	-4.76
424	24	70.45	7.23	2.06	-6.32
425	1025	73.50	2.99	0.32	-0.79
425	25	73.50	2.99	0.32	-1.03
426	1026	76.26	-11.68	0.12	-0.31
426	26	76.26	-11.68	0.12	-0.40
427	1027	79.02	0.00	0.00	0.00
427	27	79.02	0.00	0.00	0.00
428	1028	81.78	0.00	0.00	0.00
428	28	81.78	0.00	0.00	0.00
429	1029	84.54	0.00	0.00	0.00
429	29	84.54	0.00	0.00	0.00
430	1030	87.30	0.00	0.00	0.00
430	30	87.30	0.00	0.00	0.00
431	1031	90.06	0.00	0.00	0.00
431	31	90.06	0.00	0.00	0.00
432	1032	92.82	0.00	0.00	0.00
432	32	92.82	0.00	0.00	0.00
433	1033	95.58	0.00	0.00	0.00
433	33	95.58	0.00	0.00	0.00
434	1034	98.34	0.00	0.00	0.00
434	34	98.34	0.00	0.00	0.00
435	1035	101.10	0.00	0.00	0.00
435	35	101.10	0.00	0.00	0.00

GRÁFICO DE ESFUERZOS



Pretensado Isostático (t=0)

[1; 1]PRETF3D.FAM1.ISO + [1; 1]PRETF3D.FAM2.ISO + [1; 1]PRETF3D.FAM3.ISO + [1; 1]PRETF3D.FAM4.ISO

Coef. exc:

Barra	Nudo	X	N (T)	Vy (T)	Mz (Tm)
1	1	0.00	0.00	0.00	0.00
1	2	2.74	0.00	0.00	0.00
2	2	2.74	0.00	0.00	0.00
2	3	5.48	0.00	0.00	0.00
3	3	5.48	0.00	0.00	0.00
3	4	8.22	0.00	0.00	0.00
4	4	8.22	0.00	0.00	0.00
4	5	10.96	0.00	0.00	0.00
5	5	10.96	0.00	0.00	0.00
5	6	13.70	0.00	0.00	0.00
6	6	13.70	0.00	0.00	0.00
6	7	16.44	0.00	0.00	0.00
7	7	16.44	0.00	0.00	0.00
7	8	19.18	0.00	0.00	0.00
8	8	19.18	0.00	0.00	0.00
8	9	21.92	0.00	0.00	0.00
9	9	21.92	0.00	0.00	0.00
9	10	24.66	0.00	0.00	0.00
10	10	24.66	-998.62	0.00	778.92
10	11	27.40	-1002.40	0.00	781.87
11	11	27.40	-1943.32	0.00	1515.79
11	12	30.45	-1951.13	0.00	1521.88
12	12	30.45	-1951.13	0.00	1521.88
12	10013	33.50	-1905.95	0.00	1486.64
13	13	33.50	-1905.95	0.00	1486.64
13	14	36.89	-1971.93	0.00	1538.10
14	14	36.89	-1971.93	0.00	1538.10
14	15	40.28	-1963.24	0.00	1531.33
15	15	40.28	-887.03	0.00	691.89
15	16	43.67	-882.94	0.00	688.69
16	16	43.67	0.00	0.00	0.00
16	17	47.06	0.00	0.00	0.00
17	17	47.06	0.00	0.00	0.00
17	18	50.45	0.00	0.00	0.00
18	18	50.45	0.00	0.00	0.00
18	19	53.84	0.00	0.00	0.00
19	19	53.84	0.00	0.00	0.00
19	20	57.23	0.00	0.00	0.00
20	20	57.23	0.00	0.00	0.00
20	21	60.62	0.00	0.00	0.00
21	21	60.62	0.00	0.00	0.00
21	22	64.01	0.00	0.00	0.00
22	22	64.01	-1003.52	0.00	782.75
22	23	67.40	-1008.20	0.00	786.39
23	23	67.40	-1951.35	0.00	1522.06
23	24	70.45	-1959.18	0.00	1528.16
24	24	70.45	-1959.18	0.00	1528.16
24	10025	73.50	-1896.90	0.00	1479.58
25	25	73.50	-1896.90	0.00	1479.58
25	26	76.26	-1957.81	0.00	1527.09
26	26	76.26	-1957.81	0.00	1527.09
26	27	79.02	-1950.73	0.00	1521.57
27	27	79.02	-873.70	0.00	681.48
27	28	81.78	-870.36	0.00	678.88
28	28	81.78	0.00	0.00	0.00
28	29	84.54	0.00	0.00	0.00
29	29	84.54	0.00	0.00	0.00
29	30	87.30	0.00	0.00	0.00
30	30	87.30	0.00	0.00	0.00
30	31	90.06	0.00	0.00	0.00
31	31	90.06	0.00	0.00	0.00
31	32	92.82	0.00	0.00	0.00
32	32	92.82	0.00	0.00	0.00
32	33	95.58	0.00	0.00	0.00
33	33	95.58	0.00	0.00	0.00
33	34	98.34	0.00	0.00	0.00
34	34	98.34	0.00	0.00	0.00
34	35	101.10	0.00	0.00	0.00
101	101	0.00	0.00	0.00	0.00
101	102	0.00	0.00	0.00	0.00
102	102	0.00	0.00	0.00	0.00
102	103	0.00	0.00	0.00	0.00

217	2017	0.00	0.00	0.00	0.00
217	1017	0.00	0.00	0.00	0.00
218	2018	0.00	0.00	0.00	0.00
218	1018	0.00	0.00	0.00	0.00
21	2019	0.00	0.00	0.00	0.00
219	1019	0.00	0.00	0.00	0.00
220	2020	0.00	0.00	0.00	0.00
220	1020	0.00	0.00	0.00	0.00
221	2021	0.00	0.00	0.00	0.00
221	1021	0.00	0.00	0.00	0.00
222	2022	0.00	0.00	0.00	0.00
222	1022	0.00	0.00	0.00	0.00
223	2023	0.00	0.00	0.00	0.00
223	1023	0.00	0.00	0.00	0.00
224	2024	0.00	0.00	0.00	0.00
224	1024	0.00	0.00	0.00	0.00
225	2025	0.00	0.00	0.00	0.00
225	1025	0.00	0.00	0.00	0.00
226	2026	0.00	0.00	0.00	0.00
226	1026	0.00	0.00	0.00	0.00
227	2027	0.00	0.00	0.00	0.00
227	1027	0.00	0.00	0.00	0.00
228	2028	0.00	0.00	0.00	0.00
228	1028	0.00	0.00	0.00	0.00
229	2029	0.00	0.00	0.00	0.00
229	1029	0.00	0.00	0.00	0.00
230	2030	0.00	0.00	0.00	0.00
2	1030	0.00	0.00	0.00	0.00
231	2031	0.00	0.00	0.00	0.00
231	1031	0.00	0.00	0.00	0.00
232	2032	0.00	0.00	0.00	0.00
232	1032	0.00	0.00	0.00	0.00
233	2033	0.00	0.00	0.00	0.00
233	1033	0.00	0.00	0.00	0.00
234	2034	0.00	0.00	0.00	0.00
234	1034	0.00	0.00	0.00	0.00
235	2035	0.00	0.00	0.00	0.00
235	1035	0.00	0.00	0.00	0.00
401	1001	0.00	0.00	0.00	0.00
401	1	0.00	0.00	0.00	0.00
402	1002	0.00	0.00	0.00	0.00
402	2	0.00	0.00	0.00	0.00
403	1003	0.00	0.00	0.00	0.00
403	3	0.00	0.00	0.00	0.00
404	1004	0.00	0.00	0.00	0.00
404	4	0.00	0.00	0.00	0.00
405	1005	0.00	0.00	0.00	0.00
405	5	0.00	0.00	0.00	0.00
406	1006	0.00	0.00	0.00	0.00
406	6	0.00	0.00	0.00	0.00
407	1007	0.00	0.00	0.00	0.00
407	7	0.00	0.00	0.00	0.00
408	1008	0.00	0.00	0.00	0.00
408	8	0.00	0.00	0.00	0.00
409	1009	0.00	0.00	0.00	0.00
409	9	0.00	0.00	0.00	0.00
410	1010	0.00	0.00	0.00	0.00
410	10	0.00	0.00	0.00	0.00
411	1011	0.00	0.00	0.00	0.00
411	11	0.00	0.00	0.00	0.00
412	1012	0.00	0.00	0.00	0.00
412	12	0.00	0.00	0.00	0.00
413	1013	0.00	0.00	0.00	0.00
413	13	0.00	0.00	0.00	0.00
414	1014	0.00	0.00	0.00	0.00
414	14	0.00	0.00	0.00	0.00
415	1015	0.00	0.00	0.00	0.00
415	15	0.00	0.00	0.00	0.00
416	1016	0.00	0.00	0.00	0.00
416	16	0.00	0.00	0.00	0.00
417	1017	0.00	0.00	0.00	0.00
417	17	0.00	0.00	0.00	0.00
418	1018	0.00	0.00	0.00	0.00
418	18	0.00	0.00	0.00	0.00
419	1019	0.00	0.00	0.00	0.00
419	19	0.00	0.00	0.00	0.00
420	1020	0.00	0.00	0.00	0.00
420	20	0.00	0.00	0.00	0.00
421	1021	0.00	0.00	0.00	0.00
421	21	0.00	0.00	0.00	0.00
422	1022	0.00	0.00	0.00	0.00
422	22	0.00	0.00	0.00	0.00
423	1023	0.00	0.00	0.00	0.00

423	23	0.00	0.00	0.00	0.00
424	1024	0.00	0.00	0.00	0.00
424	24	0.00	0.00	0.00	0.00
425	1025	0.00	0.00	0.00	0.00
425	25	0.00	0.00	0.00	0.00
426	1026	0.00	0.00	0.00	0.00
426	26	0.00	0.00	0.00	0.00
427	1027	0.00	0.00	0.00	0.00
427	27	0.00	0.00	0.00	0.00
428	1028	0.00	0.00	0.00	0.00
428	28	0.00	0.00	0.00	0.00
429	1029	0.00	0.00	0.00	0.00
429	29	0.00	0.00	0.00	0.00
430	1030	0.00	0.00	0.00	0.00
430	30	0.00	0.00	0.00	0.00
431	1031	0.00	0.00	0.00	0.00
431	31	0.00	0.00	0.00	0.00
432	1032	0.00	0.00	0.00	0.00
432	32	0.00	0.00	0.00	0.00
433	1033	0.00	0.00	0.00	0.00
433	33	0.00	0.00	0.00	0.00
434	1034	0.00	0.00	0.00	0.00
434	34	0.00	0.00	0.00	0.00
435	1035	0.00	0.00	0.00	0.00
435	35	0.00	0.00	0.00	0.00

Prefer to Total (t=0)
1; 1)PRE FAM1.TOT + [1; 1)PRETF3C.FAM2.TOT + [1; 1)PRETF3C.FAM3.TOT + [1; 1)PRETF3C.FAM4.TOT
Coef. exc:

Barra	Nudo	X	N (T)	Vy (T)	Mz (Tm)
1	1	0.00	0.00	-0.59	0.00
1	2	2.74	0.00	-0.59	1.63
2	2	2.74	0.00	-0.59	1.63
2	3	5.48	0.00	-0.59	3.26
3	3	5.48	0.00	-0.59	3.26
3	4	8.22	0.00	-0.59	4.89
4	4	8.22	0.00	-0.59	4.89
4	5	10.96	0.00	-0.59	6.51
5	5	10.96	0.00	-0.59	6.51
5	6	13.70	0.00	-0.59	8.14
6	6	13.70	0.00	-0.59	8.14
6	7	16.44	0.00	-0.59	9.77
7	7	16.44	0.00	-0.59	9.77
7	8	19.18	0.00	-0.59	11.40
8	8	19.18	0.00	-0.59	11.40
8	9	21.92	0.00	-0.59	13.03
9	9	21.92	0.00	-0.59	13.03
10	10	24.66	0.00	-0.59	14.66
10	10	24.66	-91.95	-0.65	15.00
10	11	27.40	-91.95	-0.65	16.77
11	11	27.40	-142.15	-0.96	15.99
11	12	30.45	-142.15	-0.96	18.93
12	12	30.45	-151.78	-3.10	16.74
12	10013	33.50	-151.78	-3.10	26.21
13	13	33.50	-107.91	11.72	22.37
13	14	36.89	-107.91	11.72	-17.38
14	14	36.89	-46.70	-0.74	-21.98
14	15	40.28	-46.70	-0.74	-19.46
15	15	40.28	-46.70	-0.74	-19.46
15	16	43.67	-46.70	-0.74	-16.94
16	16	43.67	-46.70	-0.74	-16.94
16	17	47.06	-46.70	-0.74	-14.42
17	17	47.06	-46.70	-0.74	-14.42
17	18	50.45	-46.70	-0.74	-11.90
18	18	50.45	-46.70	-0.74	-11.90
18	19	53.84	-46.70	-0.74	-9.39
19	19	53.84	-46.70	-0.74	-9.39
19	20	57.23	-46.70	-0.74	-6.87
20	20	57.23	-46.70	-0.74	-6.87
21	21	60.62	-46.70	-0.74	-4.35
21	21	60.62	-46.70	-0.74	-4.35
21	22	64.01	-46.70	-0.74	-1.83
22	22	64.01	-144.87	-2.75	0.61
22	23	67.40	-144.87	-2.75	9.93
23	23	67.40	-164.04	-2.44	10.64
23	24	70.45	-164.04	-2.44	18.09
24	24	70.45	-141.51	-2.10	17.39
24	10025	73.50	-141.51	-2.10	23.78
25	25	73.50	-72.19	4.25	21.72
25	26	76.26	-72.19	4.25	10.00
26	26	76.26	0.00	0.31	7.67
26	27	79.02	0.00	0.31	6.82
27	27	79.02	0.00	0.31	6.82
27	28	81.78	0.00	0.31	5.97
28	28	81.78	0.00	0.31	5.97
28	29	84.54	0.00	0.31	5.12
29	29	84.54	0.00	0.31	5.12
29	30	87.30	0.00	0.31	4.26
30	30	87.30	0.00	0.31	4.26
30	31	90.06	0.00	0.31	3.41
31	31	90.06	0.00	0.31	3.41
31	32	92.82	0.00	0.31	2.56
32	32	92.82	0.00	0.31	2.56
33	33	95.58	0.00	0.31	1.71
33	33	95.58	0.00	0.31	1.71
33	34	98.34	0.00	0.31	0.85
34	34	98.34	0.00	0.31	0.85
34	35	101.10	0.00	0.31	0.00
101	101	0.00	0.00	16.53	0.00
101	102	2.74	0.00	16.53	-45.30
102	102	2.74	0.00	16.53	-45.30
102	103	5.48	0.00	16.53	-90.61

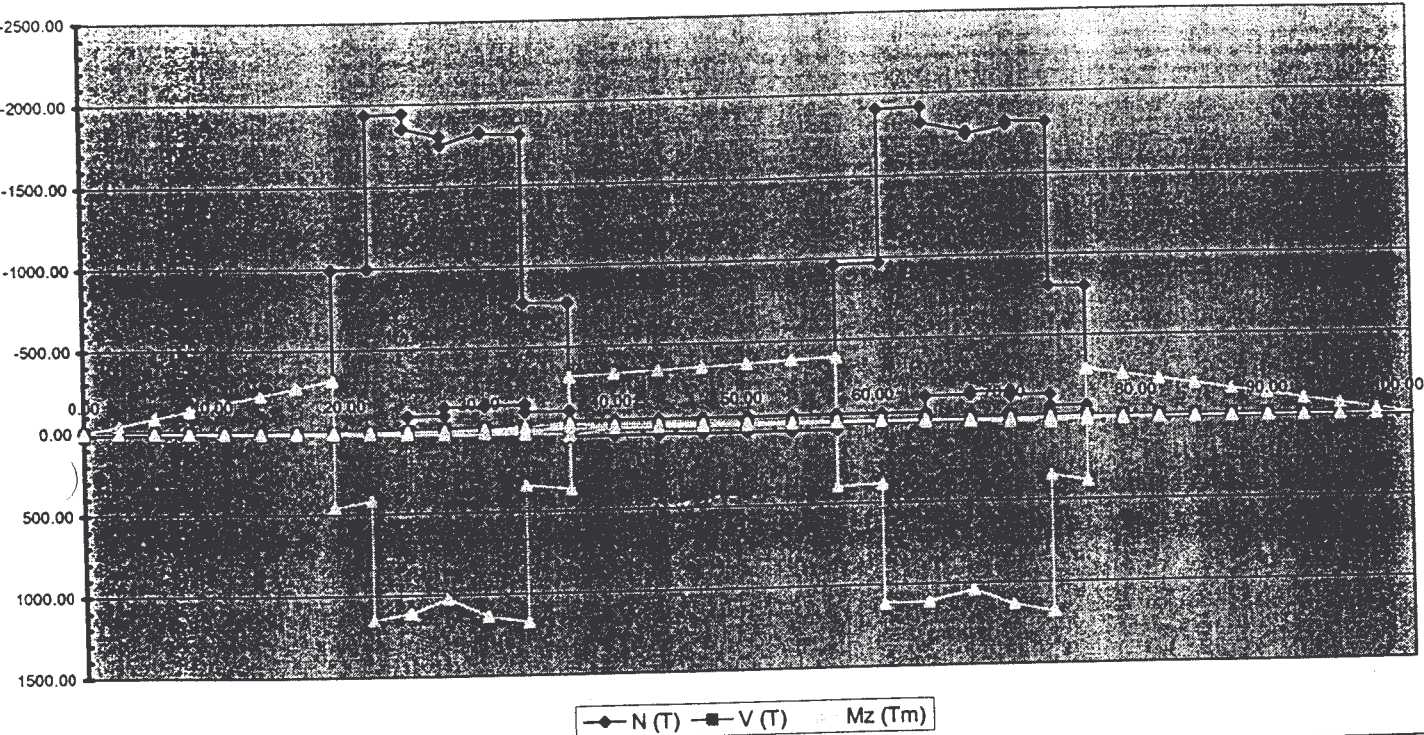
103	103	5.48	0.00	16.53	-90.61
103	104	8.22	0.00	16.53	-135.91
104	104	8.22	0.00	16.53	-135.91
104	105	10.96	0.00	16.53	-181.21
105	105	10.96	0.00	16.53	-181.21
105	106	13.70	0.00	16.53	-226.52
106	106	13.70	0.00	16.53	-226.52
106	107	16.44	0.00	16.53	-271.82
107	107	16.44	0.00	16.53	-271.82
107	108	19.18	0.00	16.53	-317.12
108	108	19.18	-992.74	16.53	457.21
108	109	21.92	-996.52	16.53	414.86
109	109	21.92	-1938.98	16.53	1149.97
109	110	24.66	-1946.01	16.53	1110.15
110	110	24.66	-1854.05	16.59	1109.81
110	10111	27.40	-1801.59	16.59	1023.44
111	111	27.40	-1751.40	-16.78	1024.22
111	112	30.45	-1825.82	-16.78	1133.46
112	112	30.45	-1816.19	-14.64	1135.65
112	113	33.50	-1808.37	-14.64	1174.21
113	113	33.50	-774.26	-8.55	337.23
113	114	36.89	-770.17	-8.55	363.01
114	114	36.89	46.70	3.92	-317.29
114	115	40.28	46.70	3.92	-330.58
115	115	40.28	46.70	3.92	-330.58
115	116	43.67	46.70	3.92	-343.87
116	116	43.67	46.70	3.92	-343.87
116	117	47.06	46.70	3.92	-357.16
117	117	47.06	46.70	3.92	-357.16
117	118	50.45	46.70	3.92	-370.45
118	118	50.45	46.70	3.92	-370.45
118	119	53.84	46.70	3.92	-383.73
119	119	53.84	46.70	3.92	-383.73
119	120	57.23	46.70	3.92	-397.01
120	120	57.23	-962.38	3.92	390.07
120	121	60.62	-967.06	3.92	380.44
121	121	60.62	-1908.72	3.92	1114.93
121	122	64.01	-1917.40	3.92	1108.43
122	122	64.01	-1819.23	5.92	1105.99
122	10123	67.40	-1762.63	5.92	1041.76
123	123	67.40	-1747.47	-16.90	1041.05
123	124	70.45	-1800.23	-16.90	1133.76
124	124	70.45	-1822.76	-17.25	1134.46
124	125	73.50	-1814.95	-17.25	1180.99
125	125	73.50	-804.94	-15.77	344.29
125	126	76.26	-801.60	-15.77	385.23
126	126	76.26	0.00	-11.84	-294.01
126	127	79.02	0.00	-11.84	-261.34
127	127	79.02	0.00	-11.84	-261.34
127	128	81.78	0.00	-11.84	-228.67
128	128	81.78	0.00	-11.84	-228.67
128	129	84.54	0.00	-11.84	-196.00
129	129	84.54	0.00	-11.84	-196.00
129	130	87.30	0.00	-11.84	-163.34
130	130	87.30	0.00	-11.84	-163.34
130	131	90.06	0.00	-11.84	-130.67
131	131	90.06	0.00	-11.84	-130.67
131	132	92.82	0.00	-11.84	-98.00
132	132	92.82	0.00	-11.84	-98.00
132	133	95.58	0.00	-11.84	-65.34
133	133	95.58	0.00	-11.84	-65.34
133	134	98.34	0.00	-11.84	-32.67
134	134	98.34	0.00	-11.84	-32.67
134	135	101.10	0.00	-11.84	0.00
301	101	0.00	0.00	0.00	0.00
301	2001	0.00	0.00	0.00	0.00
302	102	2.74	0.00	0.00	0.00
302	2002	2.74	0.00	0.00	0.00
303	103	5.48	0.00	0.00	0.00
303	2003	5.48	0.00	0.00	0.00
304	104	8.22	0.00	0.00	0.00
304	2004	8.22	0.00	0.00	0.00
305	105	10.96	0.00	0.00	0.00
305	2005	10.96	0.00	0.00	0.00
306	106	13.70	0.00	0.00	0.00
306	2006	13.70	0.00	0.00	0.00
307	107	16.44	0.00	0.00	0.00
307	2007	16.44	0.00	0.00	0.00
308	108	19.18	0.00	0.00	0.00
308	2008	19.18	0.00	0.00	0.00
309	109	21.92	0.00	0.00	0.00
309	2009	21.92	0.00	0.00	0.00
310	110	24.66	13.32	-0.05	-0.19

310	2010	24.66	13.32	-0.05	-0.15
311	111	27.40	-0.28	-0.32	-1.03
311	2011	27.40	-0.28	-0.32	-0.79
312	112	30.45	-4.19	-2.14	-6.56
312	2012	30.45	-4.19	-2.14	-4.94
313	113	33.50	-3.81	-6.10	-18.81
313	2013	33.50	-3.81	-6.10	-14.20
314	114	36.89	-7.05	-12.47	-38.86
314	2014	36.89	-7.05	-12.47	-29.44
315	115	40.28	0.00	0.00	0.00
315	2015	40.28	0.00	0.00	0.00
316	116	43.67	0.00	0.00	0.00
316	2016	43.67	0.00	0.00	0.00
317	117	47.06	0.00	0.00	0.00
317	2017	47.06	0.00	0.00	0.00
318	118	50.45	0.00	0.00	0.00
318	2018	50.45	0.00	0.00	0.00
319	119	53.84	0.00	0.00	0.00
319	2019	53.84	0.00	0.00	0.00
320	120	57.23	0.00	0.00	0.00
320	2020	57.23	0.00	0.00	0.00
321	121	60.62	0.00	0.00	0.00
321	2021	60.62	0.00	0.00	0.00
322	122	64.01	4.87	-2.00	-6.35
322	2022	64.01	4.87	-2.00	-4.83
323	123	67.40	-4.79	0.30	0.93
323	2023	67.40	-4.79	0.30	0.70
324	124	70.45	-7.70	0.35	1.13
324	2024	70.45	-7.70	0.35	0.87
325	125	73.50	-3.08	-1.48	-4.56
325	2025	73.50	-3.08	-1.48	-3.44
326	126	76.26	12.69	-3.94	-12.31
326	2026	76.26	12.69	-3.94	-9.34
327	127	79.02	0.00	0.00	0.00
327	2027	79.02	0.00	0.00	0.00
328	128	81.78	0.00	0.00	0.00
328	2028	81.78	0.00	0.00	0.00
329	129	84.54	0.00	0.00	0.00
329	2029	84.54	0.00	0.00	0.00
330	130	87.30	0.00	0.00	0.00
330	2030	87.30	0.00	0.00	0.00
331	131	90.06	0.00	0.00	0.00
331	2031	90.06	0.00	0.00	0.00
332	132	92.82	0.00	0.00	0.00
332	2032	92.82	0.00	0.00	0.00
333	133	95.58	0.00	0.00	0.00
333	2033	95.58	0.00	0.00	0.00
334	134	98.34	0.00	0.00	0.00
334	2034	98.34	0.00	0.00	0.00
335	135	101.10	0.00	0.00	0.00
335	2035	101.10	0.00	0.00	0.00
201	1001	0.00	0.00	0.00	0.00
202	1002	0.00	0.00	0.00	0.00
202	1002	0.00	0.00	0.00	0.00
203	1003	0.00	0.00	0.00	0.00
203	1003	0.00	0.00	0.00	0.00
204	1004	0.00	0.00	0.00	0.00
204	1004	0.00	0.00	0.00	0.00
205	1005	0.00	0.00	0.00	0.00
205	1005	0.00	0.00	0.00	0.00
206	1006	0.00	0.00	0.00	0.00
206	1006	0.00	0.00	0.00	0.00
207	1007	0.00	0.00	0.00	0.00
207	1007	0.00	0.00	0.00	0.00
208	1008	0.00	0.00	0.00	0.00
208	1008	0.00	0.00	0.00	0.00
209	1009	0.00	0.00	0.00	0.00
209	1009	0.00	0.00	0.00	0.00
210	1010	24.66	13.32	-0.05	-0.15
210	1010	24.66	13.32	-0.05	0.10
211	1011	27.40	-0.28	-0.32	-0.79
211	1011	27.40	-0.28	-0.32	0.74
212	1012	30.45	-4.19	-2.14	-4.94
212	1012	30.45	-4.19	-2.14	5.30
213	1013	33.50	-3.81	-6.10	-14.20
213	1013	33.50	-3.81	-6.10	14.99
214	1014	36.89	-7.05	-12.47	-29.44
214	1014	36.89	-7.05	-12.47	30.26
215	1015	40.28	0.00	0.00	0.00
215	1015	40.28	0.00	0.00	0.00
216	1016	43.67	0.00	0.00	0.00
216	1016	43.67	0.00	0.00	0.00

217	2017	0.00	0.00	0.00	0.00
217	1017	0.00	0.00	0.00	0.00
218	2018	0.00	0.00	0.00	0.00
218	1018	0.00	0.00	0.00	0.00
219	2019	0.00	0.00	0.00	0.00
219	1019	0.00	0.00	0.00	0.00
220	2020	0.00	0.00	0.00	0.00
220	1020	0.00	0.00	0.00	0.00
221	2021	0.00	0.00	0.00	0.00
221	1021	0.00	0.00	0.00	0.00
222	2022	64.01	4.87	-2.01	-4.83
222	1022	64.01	4.87	-2.01	4.77
223	2023	67.40	-4.79	0.30	0.70
223	1023	67.40	-4.79	0.30	-0.76
224	2024	70.45	-7.70	0.35	0.87
224	1024	70.45	-7.70	0.35	-0.80
225	2025	73.50	-3.08	-1.48	-3.44
225	1025	73.50	-3.08	-1.48	3.63
226	2026	76.26	12.69	-3.94	-9.34
226	1026	76.26	12.69	-3.94	9.52
227	2027	0.00	0.00	0.00	0.00
227	1027	0.00	0.00	0.00	0.00
228	2028	0.00	0.00	0.00	0.00
228	1028	0.00	0.00	0.00	0.00
229	2029	0.00	0.00	0.00	0.00
229	1029	0.00	0.00	0.00	0.00
230	2030	0.00	0.00	0.00	0.00
230	1030	0.00	0.00	0.00	0.00
231	2031	0.00	0.00	0.00	0.00
231	1031	0.00	0.00	0.00	0.00
232	2032	0.00	0.00	0.00	0.00
232	1032	0.00	0.00	0.00	0.00
233	2033	0.00	0.00	0.00	0.00
233	1033	0.00	0.00	0.00	0.00
234	2034	0.00	0.00	0.00	0.00
234	1034	0.00	0.00	0.00	0.00
235	2035	0.00	0.00	0.00	0.00
235	1035	0.00	0.00	0.00	0.00
401	1001	0.00	0.00	0.00	0.00
401	1	0.00	0.00	0.00	0.00
402	1002	2.74	0.00	0.00	0.00
402	2	2.74	0.00	0.00	0.00
403	1003	5.48	0.00	0.00	0.00
403	3	5.48	0.00	0.00	0.00
404	1004	8.22	0.00	0.00	0.00
404	4	8.22	0.00	0.00	0.00
405	1005	10.96	0.00	0.00	0.00
405	5	10.96	0.00	0.00	0.00
406	1006	13.70	0.00	0.00	0.00
406	6	13.70	0.00	0.00	0.00
407	1007	16.44	0.00	0.00	0.00
407	7	16.44	0.00	0.00	0.00
408	1008	19.18	0.00	0.00	0.00
408	8	19.18	0.00	0.00	0.00
409	1009	21.92	0.00	0.00	0.00
409	9	21.92	0.00	0.00	0.00
410	1010	24.66	13.32	-0.05	0.10
410	10	24.66	13.32	-0.05	0.14
411	1011	27.40	-0.28	-0.32	0.74
411	11	27.40	-0.28	-0.32	0.98
412	1012	30.45	-4.19	-2.14	5.30
412	12	30.45	-4.19	-2.14	6.92
413	1013	33.50	-3.81	-6.10	14.99
413	13	33.50	-3.81	-6.10	19.60
414	1014	36.89	-7.05	-12.47	30.26
414	14	36.89	-7.05	-12.47	39.69
415	1015	40.28	0.00	0.00	0.00
415	15	40.28	0.00	0.00	0.00
416	1016	43.67	0.00	0.00	0.00
416	16	43.67	0.00	0.00	0.00
417	1017	47.06	0.00	0.00	0.00
417	17	47.06	0.00	0.00	0.00
418	1018	50.45	0.00	0.00	0.00
418	18	50.45	0.00	0.00	0.00
419	1019	53.84	0.00	0.00	0.00
419	19	53.84	0.00	0.00	0.00
420	1020	57.23	0.00	0.00	0.00
420	20	57.23	0.00	0.00	0.00
421	1021	60.62	0.00	0.00	0.00
421	21	60.62	0.00	0.00	0.00
422	1022	64.01	4.87	-2.01	4.77
422	22	64.01	4.87	-2.01	6.28
423	1023	67.40	-4.79	0.30	-0.76

423	23	67.40	-4.79	0.30	-0.99
424	1024	70.45	-7.70	0.35	-0.80
424	24	70.45	-7.70	0.35	-1.06
425	1025	73.50	-3.08	-1.48	3.63
42	25	73.50	-3.08	-1.48	4.75
426	1026	76.26	12.69	-3.94	9.52
426	26	76.26	12.69	-3.94	12.49
427	1027	79.02	0.00	0.00	0.00
427	27	79.02	0.00	0.00	0.00
428	1028	81.78	0.00	0.00	0.00
428	28	81.78	0.00	0.00	0.00
429	1029	84.54	0.00	0.00	0.00
429	29	84.54	0.00	0.00	0.00
430	1030	87.30	0.00	0.00	0.00
430	30	87.30	0.00	0.00	0.00
431	1031	90.05	0.00	0.00	0.00
431	31	90.06	0.00	0.00	0.00
432	1032	92.82	0.00	0.00	0.00
432	32	92.82	0.00	0.00	0.00
433	1033	95.58	0.00	0.00	0.00
433	33	95.58	0.00	0.00	0.00
434	1034	98.34	0.00	0.00	0.00
434	34	98.34	0.00	0.00	0.00
435	1035	101.10	0.00	0.00	0.00
435	35	101.10	0.00	0.00	0.00

GRÁFICO DE ESFUERZOS



Pretensado Hiperestático ($t=0$)

$$(-1; 1) \text{PRETF3C.FAM1.TOT} + (-1; -1) \text{PRETF3C.FAM1.ISO} + [1; 1] \text{PRETF3C.FAM2.TOT} + (-1; -1) \text{PRETF3C.FAM2.ISO} + [1; 1] \text{PRETF3C.FAM3.TOT} + (-1; -1) \text{PRETF3C.FAM3.ISO} + [1; 1] \text{PRETF3C.FAM4.TOT} + (-1; -1) \text{PRETF3C.FAM4.ISO}$$

Coef. exc:

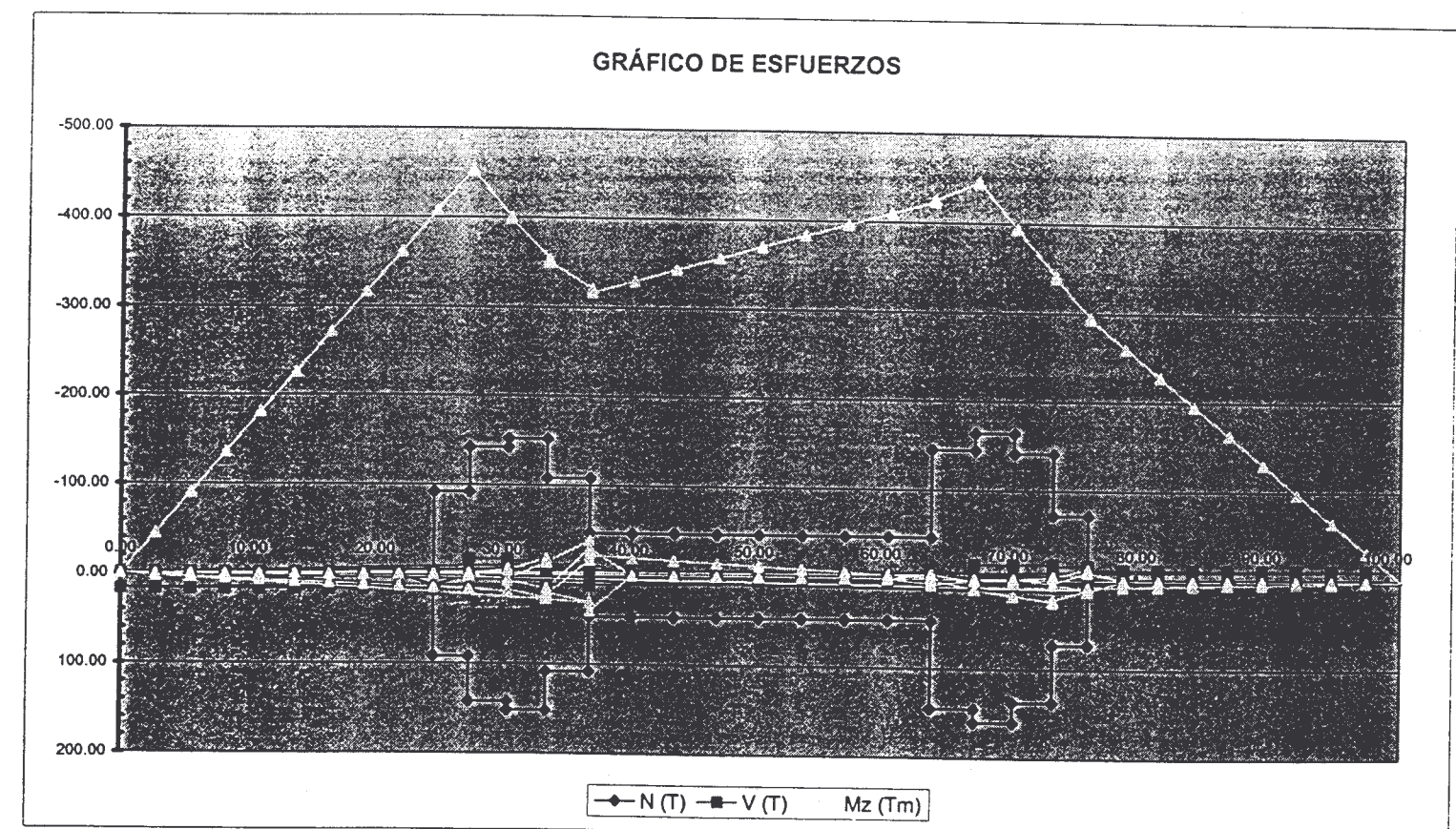
Barra	Nudo	X	N (T)	Vy (T)	Mz (Tm)
1	1	0.00	0.00	-0.59	0.00
1	2	2.74	0.00	-0.59	1.63
2	2	2.74	0.00	-0.59	1.63
2	3	5.48	0.00	-0.59	3.26
3	3	5.48	0.00	-0.59	3.26
3	4	8.22	0.00	-0.59	4.89
4	4	8.22	0.00	-0.59	4.89
4	5	10.96	0.00	-0.59	6.51
5	5	10.96	0.00	-0.59	6.51
5	6	13.70	0.00	-0.59	8.14
6	6	13.70	0.00	-0.59	8.14
6	7	16.44	0.00	-0.59	9.77
7	7	16.44	0.00	-0.59	9.77
7	8	19.18	0.00	-0.59	11.40
8	8	19.18	0.00	-0.59	11.40
8	9	21.92	0.00	-0.59	13.03
9	9	21.92	0.00	-0.59	13.03
9	10	24.66	0.00	-0.59	14.66
10	10	24.66	-91.95	-0.65	15.00
10	11	27.40	-91.95	-0.65	16.77
11	11	27.40	-142.15	-0.96	15.99
11	12	30.45	-142.15	-0.96	18.93
12	12	30.45	-151.78	-3.10	16.74
12	10013	33.50	-151.78	-3.10	26.21
13	13	33.50	-107.91	11.72	22.37
13	14	36.89	-107.91	11.72	-17.38
14	14	36.89	-46.70	-0.74	-21.98
14	15	40.28	-46.70	-0.74	-19.46
15	15	40.28	-46.70	-0.74	-19.46
15	16	43.67	-46.70	-0.74	-16.94
16	16	43.67	-46.70	-0.74	-16.94
16	17	47.06	-46.70	-0.74	-14.42
17	17	47.06	-46.70	-0.74	-14.42
17	18	50.45	-46.70	-0.74	-11.90
18	18	50.45	-46.70	-0.74	-11.90
18	19	53.84	-46.70	-0.74	-9.39
19	19	53.84	-46.70	-0.74	-9.39
19	20	57.23	-46.70	-0.74	-6.87
20	20	57.23	-46.70	-0.74	-6.87
20	21	60.62	-46.70	-0.74	-4.35
21	21	60.62	-46.70	-0.74	-4.35
21	22	64.01	-46.70	-0.74	-1.83
22	22	64.01	-144.87	-2.75	0.61
22	23	67.40	-144.87	-2.75	9.93
23	23	67.40	-164.04	-2.44	10.64
23	24	70.45	-164.04	-2.44	18.09
24	24	70.45	-141.51	-2.10	17.39
24	10025	73.50	-141.51	-2.10	23.78
25	25	73.50	-72.19	4.25	21.72
25	26	76.26	-72.19	4.25	10.00
26	26	76.26	0.00	0.31	7.67
26	27	79.02	0.00	0.31	6.82
27	27	79.02	0.00	0.31	6.82
27	28	81.78	0.00	0.31	5.97
28	28	81.78	0.00	0.31	5.97
28	29	84.54	0.00	0.31	5.12
29	29	84.54	0.00	0.31	5.12
29	30	87.30	0.00	0.31	4.26
30	30	87.30	0.00	0.31	4.26
30	31	90.06	0.00	0.31	3.41
31	31	90.06	0.00	0.31	3.41
31	32	92.82	0.00	0.31	2.56
32	32	92.82	0.00	0.31	2.56
32	33	95.58	0.00	0.31	1.71
33	33	95.58	0.00	0.31	1.71
33	34	98.34	0.00	0.31	0.85
34	34	98.34	0.00	0.31	0.85
34	35	101.10	0.00	0.31	0.00
101	101	0.00	0.00	16.53	0.00
101	102	2.74	0.00	16.53	-45.30
102	102	2.74	0.00	16.53	-45.30
102	103	5.48	0.00	16.53	-90.61

103	103	5.48	0.00	16.53	-90.61
103	104	8.22	0.00	16.53	-135.91
104	104	8.22	0.00	16.53	-135.91
104	105	10.96	0.00	16.53	-181.21
105	105	10.96	0.00	16.53	-181.21
105	106	13.70	0.00	16.53	-226.52
106	106	13.70	0.00	16.53	-226.52
106	107	16.44	0.00	16.53	-271.82
107	107	16.44	0.00	16.53	-271.82
107	108	19.18	0.00	16.53	-317.12
108	108	19.18	0.00	16.53	-317.12
108	109	21.92	0.00	16.53	-362.43
109	109	21.92	0.00	16.53	-362.43
109	110	24.66	0.00	16.53	-407.73
110	110	24.66	91.95	16.59	-408.08
110	10111	27.40	91.95	16.59	-453.52
111	111	27.40	142.15	-16.78	-452.74
111	112	30.45	142.15	-16.78	-401.55
112	112	30.45	151.78	-14.64	-399.37
112	113	33.50	151.78	-14.64	-354.71
113	113	33.50	107.91	-8.55	-350.86
113	114	36.89	107.91	-8.55	-321.89
114	114	36.89	46.70	3.92	-317.29
114	115	40.28	46.70	3.92	-330.58
115	115	40.28	46.70	3.92	-330.58
115	116	43.67	46.70	3.92	-343.87
116	116	43.67	46.70	3.92	-343.87
117	117	47.06	46.70	3.92	-357.16
117	117	47.06	46.70	3.92	-357.16
117	118	50.45	46.70	3.92	-370.45
118	118	50.45	46.70	3.92	-370.45
118	119	53.84	46.70	3.92	-383.73
119	119	53.84	46.70	3.92	-383.73
119	120	57.23	46.70	3.92	-397.01
120	120	57.23	46.70	3.92	-397.01
120	121	60.62	46.70	3.92	-410.29
121	121	60.62	46.70	3.92	-410.29
121	122	64.01	46.70	3.92	-423.57
122	122	64.01	144.87	5.92	-426.01
122	10123	67.40	144.87	5.92	-446.09
123	123	67.40	160.04	-16.90	-446.80
123	124	70.45	160.04	-16.90	-395.25
124	124	70.45	137.51	-17.25	-394.54
124	125	73.50	137.51	-17.25	-341.93
125	125	73.50	72.19	-15.77	-339.87
125	126	76.26	72.19	-15.77	-296.33
126	126	76.26	0.00	-11.84	-294.01
126	127	79.02	0.00	-11.84	-261.34
127	127	79.02	0.00	-11.84	-261.34
127	128	81.78	0.00	-11.84	-228.67
128	128	81.78	0.00	-11.84	-228.67
128	129	84.54	0.00	-11.84	-196.00
129	129	84.54	0.00	-11.84	-196.00
129	130	87.30	0.00	-11.84	-163.34
130	130	87.30	0.00	-11.84	-163.34
130	131	90.06	0.00	-11.84	-130.67
131	131	90.06	0.00	-11.84	-130.67
131	132	92.82	0.00	-11.84	-98.00
132	132	92.82	0.00	-11.84	-98.00
132	133	95.58	0.00	-11.84	-65.34
133	133	95.58	0.00	-11.84	-65.34
133	134	98.34	0.00	-11.84	-32.67
134	134	98.34	0.00	-11.84	-32.67
134	135	101.10	0.00	-11.84	0.00
301	101	0.00	0.00	0.00	0.00
301	2001	0.00	0.00	0.00	0.00
302	102	2.74	0.00	0.00	0.00
302	2002	2.74	0.00	0.00	0.00
303	103	5.48	0.00	0.00	0.00
303	2003	5.48	0.00	0.00	0.00
304	104	8.22	0.00	0.00	0.00
304	2004	8.22	0.00	0.00	0.00
305	105	10.96	0.00	0.00	0.00
305	2005	10.96	0.00	0.00	0.00
306	106	13.70	0.00	0.00	0.00
306	2006	13.70	0.00	0.00	0.00
307	107	16.44	0.00	0.00	0.00
307	2007	16.44	0.00	0.00	0.00
308	108	19.18	0.00	0.00	0.00
308	2008	19.18	0.00	0.00	0.00
309	109	21.92	0.00	0.00	0.00
309	2009	21.92	0.00	0.00	0.00
310	110	24.66	13.32	-0.05	-0.19

310	2010	24.66	13.32	-0.05	-0.19
311	111	27.40	-0.28	-0.32	-1.03
311	2011	27.40	-0.28	-0.32	-0.79
312	112	30.45	-4.19	-2.14	-6.56
312	2012	30.45	-4.19	-2.14	-4.94
313	113	33.50	-3.81	-6.10	-18.81
313	2013	33.50	-3.81	-6.10	-14.20
314	114	36.89	-7.05	-12.47	-38.86
314	2014	36.89	-7.05	-12.47	-29.44
315	115	40.28	0.00	0.00	0.00
315	2015	40.28	0.00	0.00	0.00
316	116	43.67	0.00	0.00	0.00
316	2016	43.67	0.00	0.00	0.00
317	117	47.06	0.00	0.00	0.00
317	2017	47.06	0.00	0.00	0.00
318	118	50.45	0.00	0.00	0.00
318	2018	50.45	0.00	0.00	0.00
319	119	53.84	0.00	0.00	0.00
319	2019	53.84	0.00	0.00	0.00
320	120	57.23	0.00	0.00	0.00
320	2020	57.23	0.00	0.00	0.00
321	121	60.62	0.00	0.00	0.00
321	2021	60.62	0.00	0.00	0.00
322	122	64.01	4.87	-2.00	-6.35
322	2022	64.01	4.87	-2.00	-4.83
323	123	67.40	-4.79	0.30	0.93
323	2023	67.40	-4.79	0.30	0.70
324	124	70.45	-7.70	0.35	1.13
324	2024	70.45	-7.70	0.35	0.87
325	125	73.50	-3.08	-1.48	-4.56
325	2025	73.50	-3.08	-1.48	-3.44
326	126	76.26	12.69	-3.94	-12.31
326	2026	76.26	12.69	-3.94	-9.34
327	127	79.02	0.00	0.00	0.00
327	2027	79.02	0.00	0.00	0.00
328	128	81.78	0.00	0.00	0.00
328	2028	81.78	0.00	0.00	0.00
329	129	84.54	0.00	0.00	0.00
329	2029	84.54	0.00	0.00	0.00
330	130	87.30	0.00	0.00	0.00
330	2030	87.30	0.00	0.00	0.00
331	131	90.06	0.00	0.00	0.00
331	2031	90.06	0.00	0.00	0.00
332	132	92.82	0.00	0.00	0.00
332	2032	92.82	0.00	0.00	0.00
333	133	95.58	0.00	0.00	0.00
333	2033	95.58	0.00	0.00	0.00
334	134	98.34	0.00	0.00	0.00
334	2034	98.34	0.00	0.00	0.00
335	135	101.10	0.00	0.00	0.00
335	2035	101.10	0.00	0.00	0.00
201	2001	0.00	0.00	0.00	0.00
201	1001	0.00	0.00	0.00	0.00
202	2002	0.00	0.00	0.00	0.00
202	1002	0.00	0.00	0.00	0.00
203	2003	0.00	0.00	0.00	0.00
203	1003	0.00	0.00	0.00	0.00
204	2004	0.00	0.00	0.00	0.00
204	1004	0.00	0.00	0.00	0.00
205	2005	0.00	0.00	0.00	0.00
205	1005	0.00	0.00	0.00	0.00
206	2006	0.00	0.00	0.00	0.00
206	1006	0.00	0.00	0.00	0.00
207	2007	0.00	0.00	0.00	0.00
207	1007	0.00	0.00	0.00	0.00
208	2008	0.00	0.00	0.00	0.00
208	1008	0.00	0.00	0.00	0.00
209	2009	0.00	0.00	0.00	0.00
209	1009	0.00	0.00	0.00	0.00
210	2010	24.66	13.32	-0.05	-0.15
210	1010	24.66	13.32	-0.05	0.10
211	2011	27.40	-0.28	-0.32	-0.79
211	1011	27.40	-0.28	-0.32	0.74
212	2012	30.45	-4.19	-2.14	-4.94
212	1012	30.45	-4.19	-2.14	5.30
213	2013	33.50	-3.81	-6.10	-14.20
213	1013	33.50	-3.81	-6.10	14.99
214	2014	36.89	-7.05	-12.47	-29.44
214	1014	36.89	-7.05	-12.47	30.26
215	2015	0.00	0.00	0.00	0.00
215	1015	0.00	0.00	0.00	0.00
216	2016	0.00	0.00	0.00	0.00
216	1016	0.00	0.00	0.00	0.00

217	2017	0.00	0.00	0.00	0.00
217	1017	0.00	0.00	0.00	0.00
218	2018	0.00	0.00	0.00	0.00
218	1018	0.00	0.00	0.00	0.00
2	2019	0.00	0.00	0.00	0.00
219	1019	0.00	0.00	0.00	0.00
220	2020	0.00	0.00	0.00	0.00
220	1020	0.00	0.00	0.00	0.00
221	2021	0.00	0.00	0.00	0.00
221	1021	0.00	0.00	0.00	0.00
222	2022	64.01	4.87	-2.01	-4.83
222	1022	64.01	4.87	-2.01	4.77
223	2023	67.40	-4.79	0.30	0.70
223	1023	67.40	-4.79	0.30	-0.76
224	2024	70.45	-7.70	0.35	0.87
224	1024	70.45	-7.70	0.35	-0.80
225	2025	73.50	-3.08	-1.48	-3.44
225	1025	73.50	-3.08	-1.48	3.63
226	2026	76.26	12.69	-3.94	-9.34
226	1026	76.26	12.69	-3.94	9.52
227	2027	0.00	0.00	0.00	0.00
227	1027	0.00	0.00	0.00	0.00
228	2028	0.00	0.00	0.00	0.00
228	1028	0.00	0.00	0.00	0.00
229	2029	0.00	0.00	0.00	0.00
229	1029	0.00	0.00	0.00	0.00
230	2030	0.00	0.00	0.00	0.00
230	1030	0.00	0.00	0.00	0.00
231	2031	0.00	0.00	0.00	0.00
231	1031	0.00	0.00	0.00	0.00
232	2032	0.00	0.00	0.00	0.00
232	1032	0.00	0.00	0.00	0.00
233	2033	0.00	0.00	0.00	0.00
233	1033	0.00	0.00	0.00	0.00
234	2034	0.00	0.00	0.00	0.00
234	1034	0.00	0.00	0.00	0.00
235	2035	0.00	0.00	0.00	0.00
235	1035	0.00	0.00	0.00	0.00
401	1001	0.00	0.00	0.00	0.00
401	1	0.00	0.00	0.00	0.00
402	1002	2.74	0.00	0.00	0.00
402	2	2.74	0.00	0.00	0.00
403	1003	5.48	0.00	0.00	0.00
403	3	5.48	0.00	0.00	0.00
404	1004	8.22	0.00	0.00	0.00
404	4	8.22	0.00	0.00	0.00
405	1005	10.96	0.00	0.00	0.00
405	5	10.96	0.00	0.00	0.00
406	1006	13.70	0.00	0.00	0.00
406	6	13.70	0.00	0.00	0.00
407	1007	16.44	0.00	0.00	0.00
407	7	16.44	0.00	0.00	0.00
408	1008	19.18	0.00	0.00	0.00
408	8	19.18	0.00	0.00	0.00
409	1009	21.92	0.00	0.00	0.00
409	9	21.92	0.00	0.00	0.00
410	1010	24.66	13.32	-0.05	0.10
410	10	24.66	13.32	-0.05	0.14
411	1011	27.40	-0.28	-0.32	0.74
411	11	27.40	-0.28	-0.32	0.98
412	1012	30.45	-4.19	-2.14	5.30
412	12	30.45	-4.19	-2.14	6.92
413	1013	33.50	-3.81	-6.10	14.99
413	13	33.50	-3.81	-6.10	19.60
414	1014	36.89	-7.05	-12.47	30.26
414	14	36.89	-7.05	-12.47	39.69
415	1015	40.28	0.00	0.00	0.00
415	15	40.28	0.00	0.00	0.00
416	1016	43.67	0.00	0.00	0.00
416	16	43.67	0.00	0.00	0.00
417	1017	47.06	0.00	0.00	0.00
417	17	47.06	0.00	0.00	0.00
418	1018	50.45	0.00	0.00	0.00
418	18	50.45	0.00	0.00	0.00
419	1019	53.84	0.00	0.00	0.00
419	19	53.84	0.00	0.00	0.00
420	1020	57.23	0.00	0.00	0.00
420	20	57.23	0.00	0.00	0.00
421	1021	60.62	0.00	0.00	0.00
421	21	60.62	0.00	0.00	0.00
422	1022	64.01	4.87	-2.01	4.77
422	22	64.01	4.87	-2.01	6.28
423	1023	67.40	-4.79	0.30	-0.76

423	23	67.40	-4.79	0.30	-0.99
424	1024	70.45	-7.70	0.35	-0.80
424	24	70.45	-7.70	0.35	-1.06
425	1025	73.50	-3.08	-1.48	3.63
425	25	73.50	-3.08	-1.48	4.75
426	1026	76.26	12.69	-3.94	9.52
426	26	76.26	12.69	-3.94	12.49
427	1027	79.02	0.00	0.00	0.00
427	27	79.02	0.00	0.00	0.00
428	1028	81.78	0.00	0.00	0.00
428	28	81.78	0.00	0.00	0.00
429	1029	84.54	0.00	0.00	0.00
429	29	84.54	0.00	0.00	0.00
430	1030	87.30	0.00	0.00	0.00
430	30	87.30	0.00	0.00	0.00
431	1031	90.06	0.00	0.00	0.00
431	31	90.06	0.00	0.00	0.00
432	1032	92.82	0.00	0.00	0.00
432	32	92.82	0.00	0.00	0.00
433	1033	95.58	0.00	0.00	0.00
433	33	95.58	0.00	0.00	0.00
434	1034	98.34	0.00	0.00	0.00
434	34	98.34	0.00	0.00	0.00
435	1035	101.10	0.00	0.00	0.00
435	35	101.10	0.00	0.00	0.00



Prezado Isostático (t=0)
1]PRETF3C.FAM1.ISO + [1; 1]PRETF3C.FAM2.ISO + [1; 1]PRETF3C.FAM3.ISO + [1; 1]PRETF3C.FAM4.ISO
def. exc:

Barra	Nudo	X	N (T)	Vy (T)	Mz (Tm)
1	1	0.00	0.00	0.00	0.00
1	2	0.00	0.00	0.00	0.00
2	2	0.00	0.00	0.00	0.00
2	3	0.00	0.00	0.00	0.00
3	3	0.00	0.00	0.00	0.00
3	4	0.00	0.00	0.00	0.00
4	4	0.00	0.00	0.00	0.00
4	5	0.00	0.00	0.00	0.00
5	5	0.00	0.00	0.00	0.00
5	6	0.00	0.00	0.00	0.00
6	6	0.00	0.00	0.00	0.00
6	7	0.00	0.00	0.00	0.00
7	7	0.00	0.00	0.00	0.00
7	8	0.00	0.00	0.00	0.00
8	8	0.00	0.00	0.00	0.00
8	9	0.00	0.00	0.00	0.00
9	9	0.00	0.00	0.00	0.00
9	10	0.00	0.00	0.00	0.00
1	10	0.00	0.00	0.00	0.00
10	11	0.00	0.00	0.00	0.00
11	11	0.00	0.00	0.00	0.00
11	12	0.00	0.00	0.00	0.00
12	12	0.00	0.00	0.00	0.00
12	10013	0.00	0.00	0.00	0.00
13	13	0.00	0.00	0.00	0.00
13	14	0.00	0.00	0.00	0.00
14	14	0.00	0.00	0.00	0.00
14	15	0.00	0.00	0.00	0.00
15	15	0.00	0.00	0.00	0.00
15	16	0.00	0.00	0.00	0.00
16	16	0.00	0.00	0.00	0.00
16	17	0.00	0.00	0.00	0.00
17	17	0.00	0.00	0.00	0.00
17	18	0.00	0.00	0.00	0.00
18	18	0.00	0.00	0.00	0.00
18	19	0.00	0.00	0.00	0.00
19	19	0.00	0.00	0.00	0.00
19	20	0.00	0.00	0.00	0.00
20	20	0.00	0.00	0.00	0.00
20	21	0.00	0.00	0.00	0.00
21	21	0.00	0.00	0.00	0.00
	22	0.00	0.00	0.00	0.00
22	22	0.00	0.00	0.00	0.00
22	23	0.00	0.00	0.00	0.00
23	23	0.00	0.00	0.00	0.00
23	24	0.00	0.00	0.00	0.00
24	24	0.00	0.00	0.00	0.00
24	10025	0.00	0.00	0.00	0.00
25	25	0.00	0.00	0.00	0.00
25	26	0.00	0.00	0.00	0.00
26	26	0.00	0.00	0.00	0.00
26	27	0.00	0.00	0.00	0.00
27	27	0.00	0.00	0.00	0.00
27	28	0.00	0.00	0.00	0.00
28	28	0.00	0.00	0.00	0.00
28	29	0.00	0.00	0.00	0.00
29	29	0.00	0.00	0.00	0.00
29	30	0.00	0.00	0.00	0.00
30	30	0.00	0.00	0.00	0.00
30	31	0.00	0.00	0.00	0.00
31	31	0.00	0.00	0.00	0.00
31	32	0.00	0.00	0.00	0.00
32	32	0.00	0.00	0.00	0.00
32	33	0.00	0.00	0.00	0.00
	33	0.00	0.00	0.00	0.00
33	34	0.00	0.00	0.00	0.00
34	34	0.00	0.00	0.00	0.00
34	35	0.00	0.00	0.00	0.00
101	101	0.00	0.00	0.00	0.00
101	102	2.74	0.00	0.00	0.00
102	102	2.74	0.00	0.00	0.00
102	103	5.48	0.00	0.00	0.00

103	103	5.48	0.00	0.00	0.00
103	104	8.22	0.00	0.00	0.00
104	104	8.22	0.00	0.00	0.00
104	105	10.96	0.00	0.00	0.00
105	105	10.96	0.00	0.00	0.00
105	106	13.70	0.00	0.00	0.00
106	106	13.70	0.00	0.00	0.00
106	107	16.44	0.00	0.00	0.00
107	107	16.44	0.00	0.00	0.00
107	108	19.18	0.00	0.00	0.00
108	108	19.18	-992.74	0.00	774.34
108	109	21.92	-996.52	0.00	777.29
109	109	21.92	-1938.98	0.00	1512.40
109	110	24.66	-1946.01	0.00	1517.89
110	110	24.66	-1946.01	0.00	1517.89
110	10111	27.40	-1893.55	0.00	1476.97
111	111	27.40	-1893.55	0.00	1476.97
111	112	30.45	-1967.97	0.00	1535.01
112	112	30.45	-1967.97	0.00	1535.01
112	113	33.50	-1960.15	0.00	1528.91
113	113	33.50	-882.17	0.00	688.10
113	114	36.89	-878.08	0.00	684.90
114	114	36.89	0.00	0.00	0.00
114	115	40.28	0.00	0.00	0.00
115	115	40.28	0.00	0.00	0.00
115	116	43.67	0.00	0.00	0.00
116	116	43.67	0.00	0.00	0.00
116	117	47.06	0.00	0.00	0.00
117	117	47.06	0.00	0.00	0.00
117	118	50.45	0.00	0.00	0.00
118	118	50.45	0.00	0.00	0.00
118	119	53.84	0.00	0.00	0.00
119	119	53.84	0.00	0.00	0.00
119	120	57.23	0.00	0.00	0.00
120	120	57.23	-1009.07	0.00	787.08
120	121	60.62	-1013.75	0.00	790.73
121	121	60.62	-1955.41	0.00	1525.22
121	122	64.01	-1964.10	0.00	1532.00
122	122	64.01	-1964.10	0.00	1532.00
122	10123	67.40	-1907.50	0.00	1487.85
123	123	67.40	-1907.50	0.00	1487.85
123	124	70.45	-1960.27	0.00	1529.01
124	124	70.45	-1960.27	0.00	1529.01
124	125	73.50	-1952.46	0.00	1522.91
125	125	73.50	-877.13	0.00	684.16
125	126	76.26	-873.79	0.00	681.56
126	126	76.26	0.00	0.00	0.00
126	127	79.02	0.00	0.00	0.00
127	127	79.02	0.00	0.00	0.00
127	128	81.78	0.00	0.00	0.00
128	128	81.78	0.00	0.00	0.00
128	129	84.54	0.00	0.00	0.00
129	129	84.54	0.00	0.00	0.00
129	130	87.30	0.00	0.00	0.00
130	130	87.30	0.00	0.00	0.00
130	131	90.06	0.00	0.00	0.00
131	131	90.06	0.00	0.00	0.00
131	132	92.82	0.00	0.00	0.00
132	132	92.82	0.00	0.00	0.00
132	133	95.58	0.00	0.00	0.00
133	133	95.58	0.00	0.00	0.00
133	134	98.34	0.00	0.00	0.00
134	134	98.34	0.00	0.00	0.00
134	135	101.10	0.00	0.00	0.00
301	101	0.00	0.00	0.00	0.00
301	2001	0.00	0.00	0.00	0.00
302	102	0.00	0.00	0.00	0.00
302	2002	0.00	0.00	0.00	0.00
303	103	0.00	0.00	0.00	0.00
303	2003	0.00	0.00	0.00	0.00
304	104	0.00	0.00	0.00	0.00
304	2004	0.00	0.00	0.00	0.00
305	105	0.00	0.00	0.00	0.00
305	2005	0.00	0.00	0.00	0.00
306	106	0.00	0.00	0.00	0.00
306	2006	0.00	0.00	0.00	0.00
307	107	0.00	0.00	0.00	0.00
307	2007	0.00	0.00	0.00	0.00
308	108	0.00	0.00	0.00	0.00
308	2008	0.00	0.00	0.00	0.00
309	109	0.00	0.00	0.00	0.00
309	2009	0.00	0.00	0.00	0.00
310	110	0.00	0.00	0.00	0.00

310	2010	0.00	0.00	0.00	0.00
311	111	0.00	0.00	0.00	0.00
311	2011	0.00	0.00	0.00	0.00
312	112	0.00	0.00	0.00	0.00
312	2012	0.00	0.00	0.00	0.00
313	113	0.00	0.00	0.00	0.00
313	2013	0.00	0.00	0.00	0.00
314	114	0.00	0.00	0.00	0.00
314	2014	0.00	0.00	0.00	0.00
315	115	0.00	0.00	0.00	0.00
315	2015	0.00	0.00	0.00	0.00
316	116	0.00	0.00	0.00	0.00
316	2016	0.00	0.00	0.00	0.00
317	117	0.00	0.00	0.00	0.00
317	2017	0.00	0.00	0.00	0.00
318	118	0.00	0.00	0.00	0.00
318	2018	0.00	0.00	0.00	0.00
319	119	0.00	0.00	0.00	0.00
319	2019	0.00	0.00	0.00	0.00
320	120	0.00	0.00	0.00	0.00
320	2020	0.00	0.00	0.00	0.00
321	121	0.00	0.00	0.00	0.00
321	2021	0.00	0.00	0.00	0.00
322	122	0.00	0.00	0.00	0.00
322	2022	0.00	0.00	0.00	0.00
323	123	0.00	0.00	0.00	0.00
323	2023	0.00	0.00	0.00	0.00
324	124	0.00	0.00	0.00	0.00
324	2024	0.00	0.00	0.00	0.00
325	125	0.00	0.00	0.00	0.00
325	2025	0.00	0.00	0.00	0.00
326	126	0.00	0.00	0.00	0.00
326	2026	0.00	0.00	0.00	0.00
327	127	0.00	0.00	0.00	0.00
327	2027	0.00	0.00	0.00	0.00
328	128	0.00	0.00	0.00	0.00
328	2028	0.00	0.00	0.00	0.00
329	129	0.00	0.00	0.00	0.00
329	2029	0.00	0.00	0.00	0.00
330	130	0.00	0.00	0.00	0.00
330	2030	0.00	0.00	0.00	0.00
331	131	0.00	0.00	0.00	0.00
331	2031	0.00	0.00	0.00	0.00
332	132	0.00	0.00	0.00	0.00
332	2032	0.00	0.00	0.00	0.00
333	133	0.00	0.00	0.00	0.00
333	2033	0.00	0.00	0.00	0.00
334	134	0.00	0.00	0.00	0.00
334	2034	0.00	0.00	0.00	0.00
335	135	0.00	0.00	0.00	0.00
335	2035	0.00	0.00	0.00	0.00
201	2001	0.00	0.00	0.00	0.00
201	1001	0.00	0.00	0.00	0.00
202	2002	0.00	0.00	0.00	0.00
202	1002	0.00	0.00	0.00	0.00
203	2003	0.00	0.00	0.00	0.00
203	1003	0.00	0.00	0.00	0.00
204	2004	0.00	0.00	0.00	0.00
204	1004	0.00	0.00	0.00	0.00
205	2005	0.00	0.00	0.00	0.00
205	1005	0.00	0.00	0.00	0.00
206	2006	0.00	0.00	0.00	0.00
206	1006	0.00	0.00	0.00	0.00
207	2007	0.00	0.00	0.00	0.00
207	1007	0.00	0.00	0.00	0.00
208	2008	0.00	0.00	0.00	0.00
208	1008	0.00	0.00	0.00	0.00
209	2009	0.00	0.00	0.00	0.00
209	1009	0.00	0.00	0.00	0.00
210	2010	0.00	0.00	0.00	0.00
210	1010	0.00	0.00	0.00	0.00
211	2011	0.00	0.00	0.00	0.00
211	1011	0.00	0.00	0.00	0.00
212	2012	0.00	0.00	0.00	0.00
212	1012	0.00	0.00	0.00	0.00
213	2013	0.00	0.00	0.00	0.00
213	1013	0.00	0.00	0.00	0.00
214	2014	0.00	0.00	0.00	0.00
214	1014	0.00	0.00	0.00	0.00
215	2015	0.00	0.00	0.00	0.00
215	1015	0.00	0.00	0.00	0.00
216	2016	0.00	0.00	0.00	0.00
216	1016	0.00	0.00	0.00	0.00

217	2017	0.00	0.00	0.00	0.00
218	2018	0.00	0.00	0.00	0.00
218	1018	0.00	0.00	0.00	0.00
219	2019	0.00	0.00	0.00	0.00
219	1019	0.00	0.00	0.00	0.00
220	2020	0.00	0.00	0.00	0.00
220	1020	0.00	0.00	0.00	0.00
221	2021	0.00	0.00	0.00	0.00
221	1021	0.00	0.00	0.00	0.00
222	2022	0.00	0.00	0.00	0.00
222	1022	0.00	0.00	0.00	0.00
223	2023	0.00	0.00	0.00	0.00
223	1023	0.00	0.00	0.00	0.00
224	2024	0.00	0.00	0.00	0.00
224	1024	0.00	0.00	0.00	0.00
225	2025	0.00	0.00	0.00	0.00
225	1025	0.00	0.00	0.00	0.00
226	2026	0.00	0.00	0.00	0.00
226	1026	0.00	0.00	0.00	0.00
227	2027	0.00	0.00	0.00	0.00
227	1027	0.00	0.00	0.00	0.00
228	2028	0.00	0.00	0.00	0.00
228	1028	0.00	0.00	0.00	0.00
229	2029	0.00	0.00	0.00	0.00
229	1029	0.00	0.00	0.00	0.00
230	2030	0.00	0.00	0.00	0.00
230	1030	0.00	0.00	0.00	0.00
231	2031	0.00	0.00	0.00	0.00
231	1031	0.00	0.00	0.00	0.00
232	2032	0.00	0.00	0.00	0.00
232	1032	0.00	0.00	0.00	0.00
233	2033	0.00	0.00	0.00	0.00
233	1033	0.00	0.00	0.00	0.00
234	2034	0.00	0.00	0.00	0.00
234	1034	0.00	0.00	0.00	0.00
235	2035	0.00	0.00	0.00	0.00
235	1035	0.00	0.00	0.00	0.00
401	1001	0.00	0.00	0.00	0.00
401	1	0.00	0.00	0.00	0.00
402	1002	0.00	0.00	0.00	0.00
402	2	0.00	0.00	0.00	0.00
403	1003	0.00	0.00	0.00	0.00
403	3	0.00	0.00	0.00	0.00
404	1004	0.00	0.00	0.00	0.00
404	4	0.00	0.00	0.00	0.00
405	1005	0.00	0.00	0.00	0.00
405	5	0.00	0.00	0.00	0.00
406	1006	0.00	0.00	0.00	0.00
406	6	0.00	0.00	0.00	0.00
407	1007	0.00	0.00	0.00	0.00
407	7	0.00	0.00	0.00	0.00
408	1008	0.00	0.00	0.00	0.00
408	8	0.00	0.00	0.00	0.00
409	1009	0.00	0.00	0.00	0.00
409	9	0.00	0.00	0.00	0.00
410	1010	0.00	0.00	0.00	0.00
410	10	0.00	0.00	0.00	0.00
411	1011	0.00	0.00	0.00	0.00
411	11	0.00	0.00	0.00	0.00
412	1012	0.00	0.00	0.00	0.00
412	12	0.00	0.00	0.00	0.00
413	1013	0.00	0.00	0.00	0.00
413	13	0.00	0.00	0.00	0.00
414	1014	0.00	0.00	0.00	0.00
414	14	0.00	0.00	0.00	0.00
415	1015	0.00	0.00	0.00	0.00
415	15	0.00	0.00	0.00	0.00
416	1016	0.00	0.00	0.00	0.00
416	16	0.00	0.00	0.00	0.00
417	1017	0.00	0.00	0.00	0.00
417	17	0.00	0.00	0.00	0.00
418	1018	0.00	0.00	0.00	0.00
418	18	0.00	0.00	0.00	0.00
419	1019	0.00	0.00	0.00	0.00
419	19	0.00	0.00	0.00	0.00
420	1020	0.00	0.00	0.00	0.00
420	20	0.00	0.00	0.00	0.00
421	1021	0.00	0.00	0.00	0.00
421	21	0.00	0.00	0.00	0.00
422	1022	0.00	0.00	0.00	0.00
422	22	0.00	0.00	0.00	0.00
423	1023	0.00	0.00	0.00	0.00

423	23	0.00	0.00	0.00	0.00
424	1024	0.00	0.00	0.00	0.00
424	24	0.00	0.00	0.00	0.00
425	1025	0.00	0.00	0.00	0.00
425	25	0.00	0.00	0.00	0.00
426	1026	0.00	0.00	0.00	0.00
426	26	0.00	0.00	0.00	0.00
427	1027	0.00	0.00	0.00	0.00
427	27	0.00	0.00	0.00	0.00
428	1028	0.00	0.00	0.00	0.00
428	28	0.00	0.00	0.00	0.00
429	1029	0.00	0.00	0.00	0.00
429	29	0.00	0.00	0.00	0.00
430	1030	0.00	0.00	0.00	0.00
430	30	0.00	0.00	0.00	0.00
431	1031	0.00	0.00	0.00	0.00
431	31	0.00	0.00	0.00	0.00
432	1032	0.00	0.00	0.00	0.00
432	32	0.00	0.00	0.00	0.00
433	1033	0.00	0.00	0.00	0.00
433	33	0.00	0.00	0.00	0.00
434	1034	0.00	0.00	0.00	0.00
434	34	0.00	0.00	0.00	0.00
435	1035	0.00	0.00	0.00	0.00
435	35	0.00	0.00	0.00	0.00



Pretensado Total (t=0)

[1; 1]PRETFB.FAM1.TOT + [1; 1]PRETFB.FAM2.TOT + [1; 1]PRETFB.FAM3.TOT + [1; 1]PRETFB.FAM4.TOT + [1; 1]PRETFB.FAM5.TOT + [1; 1]PRETFB.FAM6.TOT + [1; 1]PRETFB.FAM7.TOT + [1; 1]PRETFB.FAM8.

Coef. exc:

Barra	Nudo	X	N (T)	Vy (T)	Mz (Tm)
1	1	0.00	-621.96	-101.80	-814.30
1	2	2.74	-621.96	-101.80	-535.37
2	2	2.74	-1008.38	-107.22	-1399.13
2	3	5.48	-1008.38	-107.22	-1105.34
3	3	5.48	-1268.72	-106.55	-1687.15
3	4	8.22	-1268.72	-106.55	-1395.20
4	4	8.22	-1543.20	-101.43	-1962.88
4	5	10.96	-1543.20	-101.43	-1684.96
5	5	10.96	-1507.78	-93.68	-1683.53
5	6	13.70	-1507.78	-93.68	-1426.84
6	6	13.70	-1481.32	-85.04	-1426.84
6	7	16.44	-1481.32	-85.04	-1193.82
7	7	16.44	-1460.93	-76.88	-1194.99
7	8	19.18	-1460.93	-76.88	-984.34
8	8	19.18	-1445.99	-70.29	-986.49
8	9	21.92	-1445.99	-70.29	-793.89
9	9	21.92	-1437.89	-66.20	-796.86
9	10	24.66	-1437.89	-66.20	-615.46
10	10	24.66	-1115.52	-65.44	-48.28
10	11	27.40	-1115.52	-65.44	131.02
11	11	27.40	-800.57	-68.55	713.61
11	12	30.45	-800.57	-68.55	922.70
12	12	30.45	-344.09	-76.22	1789.19
12	10013	33.50	-344.09	-76.22	2021.67
13	13	33.50	-374.30	11.60	1952.13
13	14	36.89	-374.30	11.60	1912.80
14	14	36.89	-810.44	2.09	1045.04
14	15	40.28	-810.44	2.09	1037.96
15	15	40.28	-1273.76	-3.52	129.03
15	16	43.67	-1273.76	-3.52	140.96
16	16	43.67	-1741.27	-4.28	-743.60
16	17	47.06	-1741.27	-4.28	-729.11
17	17	47.06	-1724.10	-1.05	-726.89
17	18	50.45	-1724.10	-1.05	-723.33
18	18	50.45	-1716.01	4.56	-722.21
18	19	53.84	-1716.01	4.56	-737.68
19	19	53.84	-1712.97	11.18	-737.58
19	20	57.23	-1712.97	11.18	-775.48
20	20	57.23	-1715.41	17.49	-776.44
20	21	60.62	-1715.41	17.49	-835.74
21	21	60.62	-1728.52	22.11	-837.84
21	22	64.01	-1728.52	22.11	-912.77
22	22	64.01	-1261.10	23.36	-28.18
22	23	67.40	-1261.10	23.36	-107.38
23	23	67.40	-800.69	20.45	801.60
23	24	70.45	-800.69	20.45	739.22
24	24	70.45	-370.81	14.47	1606.72
24	10025	73.50	-370.81	14.47	1562.57
25	25	73.50	-374.21	93.26	1631.05
25	26	76.26	-374.21	93.26	1373.66
26	26	76.26	-742.72	87.92	706.07
26	27	79.02	-742.72	87.92	463.40
27	27	79.02	-967.19	84.63	74.34
27	28	81.78	-967.19	84.63	-159.23
28	28	81.78	-980.51	83.55	-157.43
28	29	84.54	-980.51	83.55	-388.04
29	29	84.54	-997.79	84.42	-386.56
29	30	87.30	-997.79	84.42	-619.55
30	30	87.30	-1018.96	86.72	-618.61
30	31	90.06	-1018.96	86.72	-857.94
31	31	90.06	-1045.42	89.70	-857.77
31	32	92.82	-1045.42	89.70	-1105.34
32	32	92.82	-1080.60	92.35	-1106.18
32	33	95.58	-1080.60	92.35	-1361.05
33	33	95.58	-914.58	93.31	-972.21
33	34	98.34	-914.58	93.31	-1229.75
34	34	98.34	-623.46	91.12	-564.08
34	35	101.10	-623.46	91.12	-815.58
101	101	0.00	-13.36	11.60	-3.27
101	102	2.74	-13.36	11.60	-35.06
102	102	2.74	-96.50	17.03	-40.93
102	103	5.48	-96.50	17.03	-87.58

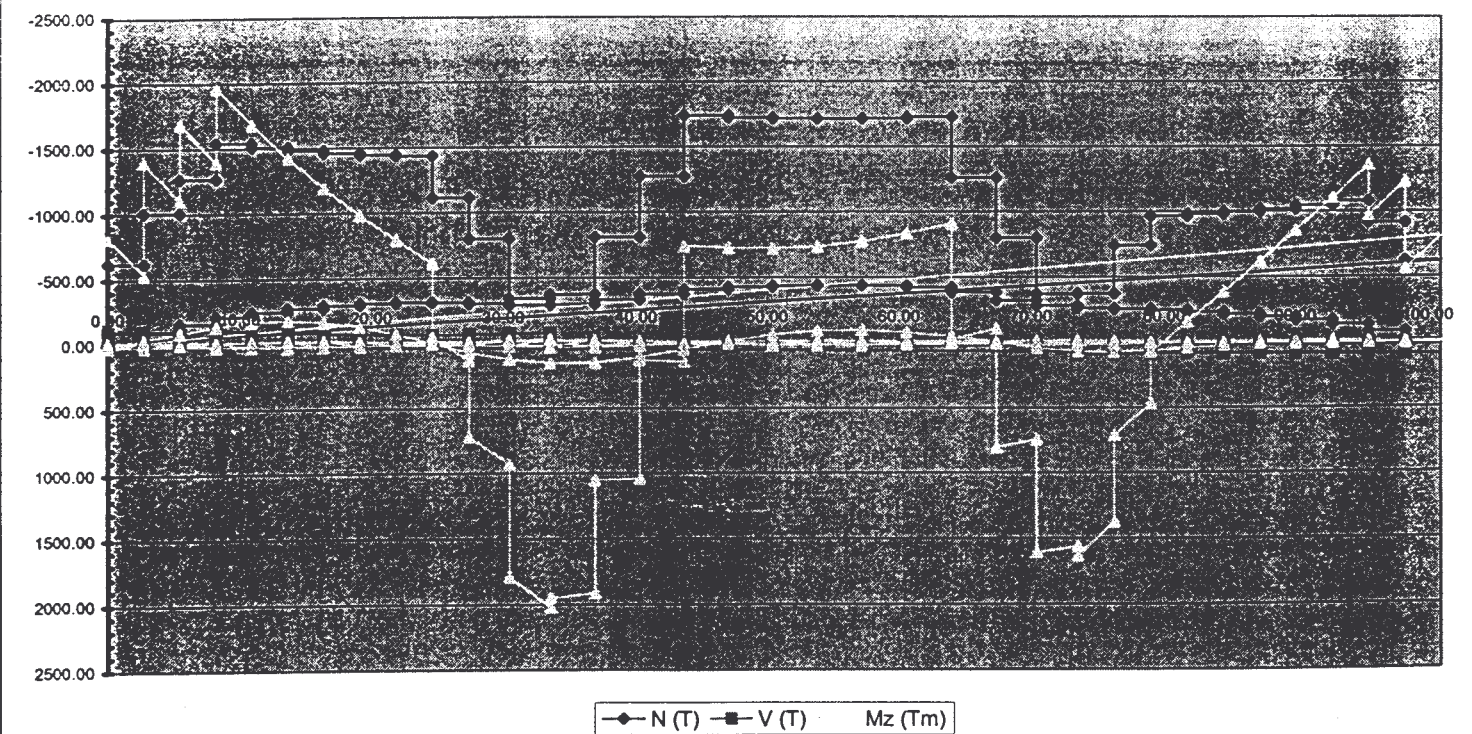
103		5.48	-161.24	16.36	-92.22
103	104	8.22	-161.24	16.36	-137.04
104	104	8.22	-211.84	11.23	-140.19
104	105	10.96	-211.84	11.23	-170.97
105	105	10.96	-247.26	3.49	-172.40
105	106	13.70	-247.26	3.49	-181.96
106	106	13.70	-273.72	-5.15	-181.96
106	107	16.44	-273.72	-5.15	-167.85
107	107	16.44	-294.11	-13.32	-166.67
107	108	19.18	-294.11	-13.32	-130.18
108	108	19.18	-309.05	-19.91	-128.03
108	109	21.92	-309.05	-19.91	-73.49
109	109	21.92	-317.15	-23.99	-70.53
109	110	24.66	-317.15	-23.99	-4.78
110	110	24.66	-314.44	-24.76	-1.13
110	10111	27.40	-314.44	-24.76	66.72
111	111	27.40	-304.31	-16.33	70.57
111	112	30.45	-304.31	-16.38	120.53
112	112	30.45	-291.23	-8.71	123.67
112	113	33.50	-291.23	-8.71	150.23
113	113	33.50	-297.14	1.33	151.14
113	114	36.89	-297.14	1.33	146.64
114	114	36.89	-330.56	10.84	144.77
114	115	40.28	-330.56	10.84	108.01
115	115	40.28	-372.92	16.45	104.70
115	116	43.67	-372.92	16.45	48.93
116	116	43.67	-411.09	17.21	45.52
116	117	47.06	-411.09	17.21	-12.81
117	117	47.06	-428.26	13.98	-15.03
11	118	50.45	-428.26	13.98	-62.42
118	118	50.45	-436.35	8.37	-63.55
118	119	53.84	-436.35	8.37	-91.91
119	119	53.84	-439.39	1.75	-92.01
119	120	57.23	-439.39	1.75	-97.94
120	120	57.23	-436.95	-4.56	-96.99
120	121	60.62	-436.95	-4.56	-81.52
121	121	60.62	-423.85	-9.17	-79.43
121	122	64.01	-423.85	-9.17	-48.33
122	122	64.01	-385.58	-10.43	-44.95
122	10123	67.40	-385.58	-10.43	-9.59
123	123	67.40	-321.47	-14.66	-6.31
123	124	70.45	-321.47	-14.66	38.40
124	124	70.45	-281.78	-8.68	40.53
124	125	73.50	-281.78	-8.68	67.01
125	125	73.50	-261.11	-2.11	67.17
125	126	76.26	-261.11	-2.11	72.98
126	126	76.26	-253.80	3.23	71.62
126	127	79.02	-253.80	3.23	62.71
127	127	79.02	-246.05	6.53	60.81
127	128	81.78	-246.05	6.53	42.80
128	128	81.78	-232.73	7.60	41.00
128	129	84.54	-232.73	7.60	20.03
12	129	84.54	-215.45	6.73	18.55
129	130	87.30	-215.45	6.73	-0.04
130	130	87.30	-194.28	4.44	-0.98
130	131	90.06	-194.28	4.44	-13.23
131	131	90.06	-167.82	1.45	-13.40
131	132	92.82	-167.82	1.45	-17.41
132	132	92.82	-132.64	-1.20	-16.57
132	133	95.58	-132.64	-1.20	-13.27
133	133	95.58	-81.94	-2.16	-11.15
133	134	98.34	-81.94	-2.16	-5.19
134	134	98.34	-11.86	0.03	-1.92
134	135	101.10	-11.86	0.03	-2.00
301	101	0.00	15.00	-6.42	-20.21
301	2001	0.00	15.00	-6.42	-15.36
302	102	2.74	13.43	-5.42	-17.09
302	2002	2.74	13.43	-5.42	-12.99
303	103	5.48	3.19	0.67	2.11
303	2003	5.48	3.19	0.67	1.60
304	104	8.22	-0.88	5.12	16.14
304	2004	8.22	-0.88	5.12	12.26
305	105	10.96	-1.48	7.75	24.40
305	2005	10.96	-1.48	7.75	18.54
306	106	13.70	-0.87	8.64	27.22
306	2006	13.70	-0.87	8.64	20.68
307	107	16.44	-0.40	8.17	25.72
307	2007	16.44	-0.40	8.17	19.55
308	108	19.18	-0.80	6.59	20.75
308	2008	19.18	-0.80	6.59	15.77
309	109	21.92	-2.50	4.09	12.87
309	2009	21.92	-2.50	4.09	9.78
310	110	24.66	-5.28	0.77	2.42

310	2010	24.66	-5.28	0.77	1.84
311	111	27.40	-7.59	-3.12	-9.82
311	2011	27.40	-7.59	-3.12	-7.46
312	112	30.45	-5.75	-7.67	-24.16
312	2012	30.45	-5.75	-7.67	-18.36
313	113	33.50	-2.33	-10.04	-31.62
313	2013	33.50	-2.33	-10.04	-24.03
314	114	36.89	-0.27	-9.52	-29.97
314	2014	36.89	-0.27	-9.52	-22.78
315	115	40.28	0.30	-5.61	-17.66
315	2015	40.28	0.30	-5.61	-13.42
316	116	43.67	0.26	-0.76	-2.38
316	2016	43.67	0.26	-0.76	-1.81
317	117	47.06	0.20	3.23	10.16
317	2017	47.06	0.20	3.23	7.72
318	118	50.45	0.30	5.61	17.68
318	2018	50.45	0.30	5.61	13.44
319	119	53.84	0.40	6.62	20.85
319	2019	53.84	0.40	6.62	15.84
320	120	57.23	-0.12	6.31	19.89
320	2020	57.23	-0.12	6.31	15.11
321	121	60.62	-2.45	4.61	14.52
321	2021	60.62	-2.45	4.61	11.04
322	122	64.01	-7.36	1.26	3.96
322	2022	64.01	-7.36	1.26	3.01
323	123	67.40	-10.79	-2.91	-9.18
323	2023	67.40	-10.79	-2.91	-6.97
324	124	70.45	-7.30	-5.98	-18.83
324	2024	70.45	-7.30	-5.98	-14.31
325	125	73.50	-2.63	-6.58	-20.72
325	2025	73.50	-2.63	-6.58	-15.75
326	126	76.26	-0.46	-5.33	-16.80
326	2026	76.26	-0.46	-5.33	-12.77
327	127	79.02	0.29	-3.30	-10.38
327	2027	79.02	0.29	-3.30	-7.89
328	128	81.78	0.25	-1.07	-3.38
328	2028	81.78	0.25	-1.07	-2.57
329	129	84.54	-0.23	0.86	2.73
329	2029	84.54	-0.23	0.86	2.07
330	130	87.30	-0.96	2.30	7.23
330	2030	87.30	-0.96	2.30	5.50
331	131	90.06	-1.55	2.98	9.40
331	2031	90.06	-1.55	2.98	7.14
332	132	92.82	-0.96	2.65	8.34
332	2032	92.82	-0.96	2.65	6.34
333	133	95.58	2.86	0.97	3.04
333	2033	95.58	2.86	0.97	2.31
334	134	98.34	12.45	-2.19	-6.90
334	2034	98.34	12.45	-2.19	-5.24
335	135	101.10	14.01	-3.28	-10.33
335	2035	101.10	14.01	-3.28	-7.85
201	2001	0.00	15.00	-6.42	-15.36
201	1001	0.00	15.00	-6.42	15.36
202	2002	2.74	13.43	-5.42	-12.99
202	1002	2.74	13.43	-5.42	12.99
203	2003	5.48	3.19	0.67	1.60
203	1003	5.48	3.19	0.67	-1.60
204	2004	8.22	-0.88	5.12	12.26
204	1004	8.22	-0.88	5.12	-12.26
205	2005	10.96	-1.48	7.75	18.54
205	1005	10.96	-1.48	7.75	-18.54
206	2006	13.70	-0.87	8.64	20.68
206	1006	13.70	-0.87	8.64	-20.68
207	2007	16.44	-0.40	8.17	19.55
207	1007	16.44	-0.40	8.17	-19.55
208	2008	19.18	-0.80	6.59	15.77
208	1008	19.18	-0.80	6.59	-15.77
209	2009	21.92	-2.50	4.09	9.78
209	1009	21.92	-2.50	4.09	-9.78
210	2010	24.66	-5.28	0.77	1.84
210	1010	24.66	-5.28	0.77	-1.84
211	2011	27.40	-7.59	-3.12	-7.46
211	1011	27.40	-7.59	-3.12	7.46
212	2012	30.45	-5.75	-7.67	-18.36
212	1012	30.45	-5.75	-7.67	18.36
213	2013	33.50	-2.33	-10.04	-24.03
213	1013	33.50	-2.33	-10.04	24.03
214	2014	36.89	-0.27	-9.52	-22.78
214	1014	36.89	-0.27	-9.52	22.78
215	2015	40.28	0.30	-5.61	-13.42
215	1015	40.28	0.30	-5.61	13.42
216	2016	43.67	0.26	-0.76	-1.81
216	1016	43.67	0.26	-0.76	1.81

217	1017	47.06	0.20	3.23	7.72
217	1017	47.06	0.20	3.23	-7.73
218	2018	50.45	0.30	5.61	13.44
218	1018	50.45	0.30	5.61	-13.44
219	2019	53.84	0.40	6.62	15.84
219	1019	53.84	0.40	6.62	-15.84
220	2020	57.23	-0.12	6.31	15.11
220	1020	57.23	-0.12	6.31	-15.11
221	2021	60.62	-2.45	4.61	11.04
221	1021	60.62	-2.45	4.61	-11.04
222	2022	64.01	-7.36	1.26	3.01
222	1022	64.01	-7.36	1.26	-3.01
223	2023	67.40	-10.79	-2.91	-6.97
223	1023	67.40	-10.79	-2.91	6.97
224	2024	70.45	-7.30	-5.98	-14.31
224	1024	70.45	-7.30	-5.98	14.31
225	2025	73.50	-2.63	-6.58	-15.75
225	1025	73.50	-2.63	-6.58	15.75
226	2026	76.26	-0.46	-5.33	-12.77
226	1026	76.26	-0.46	-5.33	12.77
227	2027	79.02	0.29	-3.30	-7.89
227	1027	79.02	0.29	-3.30	7.89
228	2028	81.78	0.25	-1.07	-2.57
228	1028	81.78	0.25	-1.07	2.57
229	2029	84.54	-0.23	0.87	2.07
229	1029	84.54	-0.23	0.87	-2.07
230	2030	87.30	-0.96	2.30	5.50
230	1030	87.30	-0.96	2.30	-5.50
231	2031	90.06	-1.55	2.98	7.14
231	1031	90.06	-1.55	2.98	-7.14
232	2032	92.82	-0.96	2.65	6.34
232	1032	92.82	-0.96	2.65	-6.34
233	2033	95.58	2.86	0.97	2.31
233	1033	95.58	2.86	0.97	-2.31
234	2034	98.34	12.45	-2.19	-5.24
234	1034	98.34	12.45	-2.19	5.24
235	2035	101.10	14.01	-3.28	-7.85
235	1035	101.10	14.01	-3.28	7.85
401	1001	0.00	15.00	-6.42	15.36
401	1	0.00	15.00	-6.42	20.21
402	1002	2.74	13.43	-5.42	12.99
402	2	2.74	13.43	-5.42	17.09
403	1003	5.48	3.19	0.67	-1.60
403	3	5.48	3.19	0.67	-2.11
404	1004	8.22	-0.88	5.12	-12.26
404	4	8.22	-0.88	5.12	-16.14
405	1005	10.96	-1.48	7.75	-18.54
405	5	10.96	-1.48	7.75	-24.40
406	1006	13.70	-0.87	8.64	-20.68
406	6	13.70	-0.87	8.64	-27.22
407	1007	16.44	-0.40	8.17	-19.55
407	7	16.44	-0.40	8.17	-25.72
408	1008	19.18	-0.80	6.59	-15.77
408	8	19.18	-0.80	6.59	-20.75
409	1009	21.92	-2.50	4.09	-9.78
409	9	21.92	-2.50	4.09	-12.87
410	1010	24.66	-5.28	0.77	-1.84
410	10	24.66	-5.28	0.77	-2.42
411	1011	27.40	-7.59	-3.12	7.46
411	11	27.40	-7.59	-3.12	9.82
412	1012	30.45	-5.75	-7.67	18.36
412	12	30.45	-5.75	-7.67	24.16
413	1013	33.50	-2.33	-10.04	24.03
413	13	33.50	-2.33	-10.04	31.62
414	1014	36.89	-0.27	-9.52	22.78
414	14	36.89	-0.27	-9.52	29.97
415	1015	40.28	0.30	-5.61	13.42
415	15	40.28	0.30	-5.61	17.66
416	1016	43.67	0.26	-0.76	1.81
416	16	43.67	0.26	-0.76	2.38
417	1017	47.06	0.20	3.23	-7.72
417	17	47.06	0.20	3.23	-10.16
418	1018	50.45	0.30	5.61	-13.44
418	18	50.45	0.30	5.61	-17.68
419	1019	53.84	0.40	6.62	-15.84
419	19	53.84	0.40	6.62	-20.85
420	1020	57.23	-0.12	6.31	-15.11
420	20	57.23	-0.12	6.31	-19.89
421	1021	60.62	-2.45	4.61	-11.04
421	21	60.62	-2.45	4.61	-14.52
422	1022	64.01	-7.36	1.26	-3.01
422	22	64.01	-7.36	1.26	-3.96
423	1023	67.40	-10.79	-2.91	6.97

423	23	67.40	-10.79	-2.91	9.18
424	1024	70.45	-7.30	-5.98	14.31
424	24	70.45	-7.30	-5.98	18.83
425	1025	73.50	-2.63	-6.58	15.75
425	25	73.50	-2.63	-6.58	20.72
426	1026	76.26	-0.46	-5.33	12.77
426	26	76.26	-0.46	-5.33	16.80
427	1027	79.02	0.29	-3.30	7.89
427	27	79.02	0.29	-3.30	10.38
428	1028	81.78	0.25	-1.07	2.57
428	28	81.78	0.25	-1.07	3.38
429	1029	84.54	-0.23	0.87	-2.07
429	29	84.54	-0.23	0.87	-2.73
430	1030	87.30	-0.96	2.30	-5.50
430	30	87.30	-0.96	2.30	-7.23
431	1031	90.06	-1.55	2.98	-7.14
431	31	90.06	-1.55	2.98	-9.40
432	1032	92.82	-0.96	2.65	-6.34
432	32	92.82	-0.96	2.65	-8.34
433	1033	95.58	2.86	0.97	-2.31
433	33	95.58	2.86	0.97	-3.04
434	1034	98.34	12.45	-2.19	5.24
434	34	98.34	12.45	-2.19	6.90
435	1035	101.10	14.01	-3.28	7.85
435	35	101.10	14.01	-3.28	10.33

GRÁFICO DE ESFUERZOS



retensado Hiperestático (t=0)

1)PRETFB.M1.TOT + [-1;-1]PRETFB.FAM1.ISO + [1; 1]PRETFB.FAM2.TOT + [-1;-1]PRETFB.FAM2.ISO + [1; 1]PRETFB.FAM3.TOT + [-1;-1]PRETFB.FAM3.ISO + [1; 1]PRETFB.FAM4.TOT + [-1;-1]PRETFB.FAM4.ISO

Barra	Nudo	X	N (T)	Vy (T)	Mz (Tm)
1	1	0.00	13.36	-101.80	3.27
1	2	2.74	13.36	-101.80	282.20
2	2	2.74	96.50	-107.22	288.07
2	3	5.48	96.50	-107.22	581.85
3	3	5.48	161.24	-106.55	586.49
3	4	8.22	161.24	-106.55	878.44
4	4	8.22	211.84	-101.43	881.60
4	5	10.96	211.84	-101.43	1159.52
5	5	10.96	247.26	-93.68	1160.95
5	6	13.70	247.26	-93.68	1417.64
6	6	13.70	273.72	-85.04	1417.64
6	7	16.44	273.72	-85.04	1650.66
7	7	16.44	294.11	-76.88	1649.49
7	8	19.18	294.11	-76.88	1860.14
8	8	19.18	309.05	-70.29	1857.99
8	9	21.92	309.05	-70.29	2050.59
9	9	21.92	317.15	-66.20	2047.62
9	10	24.66	317.15	-66.20	2229.02
10	10	24.66	314.44	-65.44	2225.36
10	11	27.40	314.44	-65.44	2404.66
11	11	27.40	304.31	-68.55	2400.80
11	12	30.45	304.31	-68.55	2609.89
12	12	30.45	291.23	-76.22	2606.76
12	10013	33.50	291.23	-76.22	2839.25
13	13	33.50	297.14	11.60	2838.33
13	14	36.89	297.14	11.60	2799.00
14	14	36.89	330.56	2.09	2800.87
14	15	40.28	330.56	2.09	2793.79
15	15	40.28	372.92	-3.52	2797.11
15	16	43.67	372.92	-3.52	2809.04
16	16	43.67	411.09	-4.28	2812.45
16	17	47.06	411.09	-4.28	2826.94
17	17	47.06	428.26	-1.05	2829.16
17	18	50.45	428.26	-1.05	2832.71
18	18	50.45	436.35	4.56	2833.84
18	19	53.84	436.35	4.56	2818.37
19	19	53.84	439.39	11.18	2818.46
19	20	57.23	439.39	11.18	2780.56
20	20	57.23	436.95	17.49	2779.61
20	21	60.62	436.95	17.49	2720.30
21	21	60.62	423.85	22.11	2718.21
22	22	64.01	423.85	22.11	2643.27
22	22	64.01	385.58	23.36	2639.90
22	23	67.40	385.58	23.36	2560.69
23	23	67.40	340.31	20.45	2557.42
23	24	70.45	340.31	20.45	2495.05
24	24	70.45	300.63	14.47	2492.92
24	10025	73.50	300.63	14.47	2448.77
25	25	73.50	261.11	93.26	2448.62
25	26	76.26	261.11	93.26	2191.23
26	26	76.26	253.80	87.92	2192.58
26	27	79.02	253.80	87.92	1949.92
27	27	79.02	246.05	84.63	1951.82
27	28	81.78	246.05	84.63	1718.25
28	28	81.78	232.73	83.55	1720.05
28	29	84.54	232.73	83.55	1489.44
29	29	84.54	215.45	84.42	1490.92
29	30	87.30	215.45	84.42	1257.93
30	30	87.30	194.28	86.72	1258.87
30	31	90.06	194.28	86.72	1019.53
31	31	90.06	167.82	89.70	1019.71
31	32	92.82	167.82	89.70	772.14
32	32	92.82	132.64	92.35	771.30
33	33	95.58	132.64	92.35	516.43
33	33	95.58	81.94	93.31	514.31
33	34	98.34	81.94	93.31	256.76
34	34	98.34	11.86	91.12	253.50
34	35	101.10	11.86	91.12	2.00
101	101	0.00	-13.36	11.60	-3.27
101	102	2.74	-13.36	11.60	-35.06
102	102	2.74	-96.50	17.03	-40.93
102	103	5.48	-96.50	17.03	-87.58

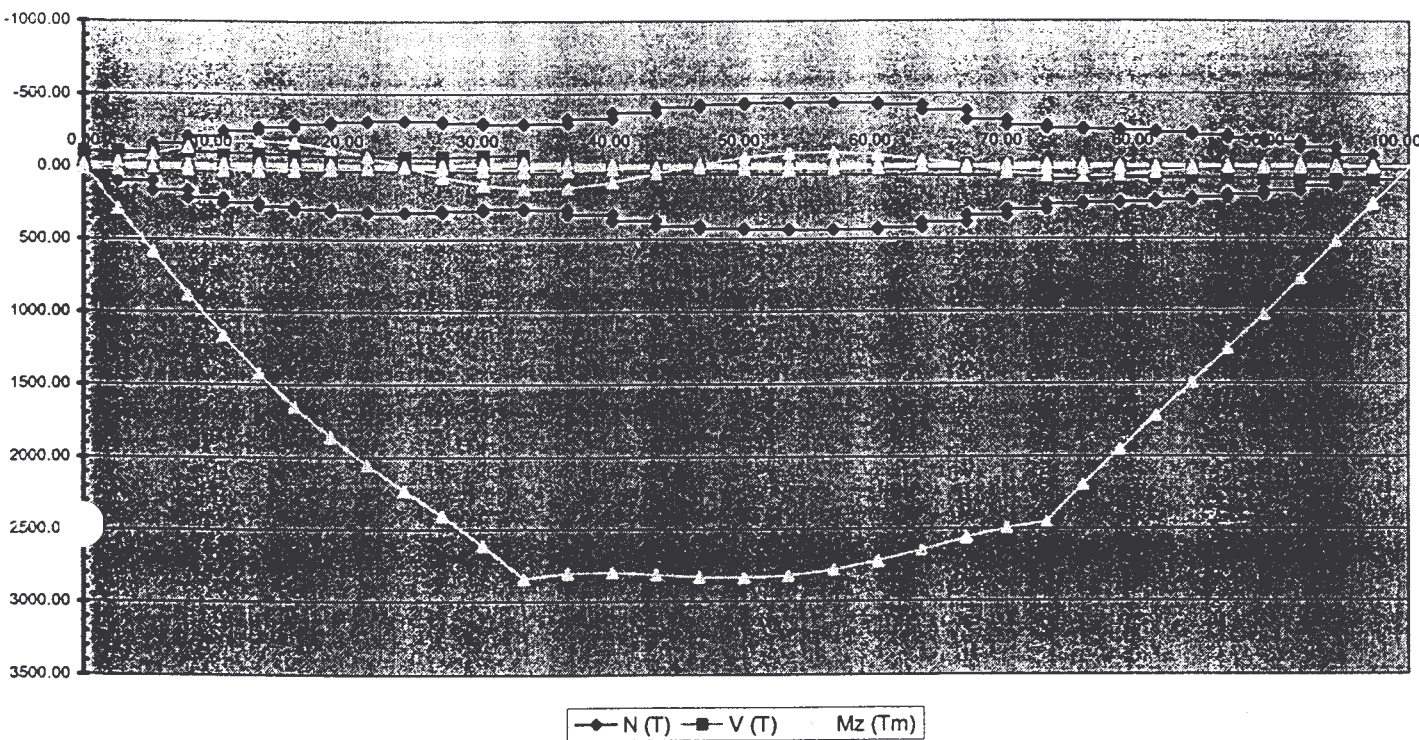
103	103	5.48	-161.24	16.36	-92.22
103	104	8.22	-161.24	16.36	-137.04
104	104	8.22	-211.84	11.23	-140.19
104	105	10.96	-211.84	11.23	-170.97
105	105	10.96	-247.26	3.49	-172.40
105	106	13.70	-247.26	3.49	-181.96
106	106	13.70	-273.72	-5.15	-181.96
106	107	16.44	-273.72	-5.15	-167.85
107	107	16.44	-294.11	-13.32	-166.67
107	108	19.18	-294.11	-13.32	-130.18
108	108	19.18	-309.05	-19.91	-128.03
108	109	21.92	-309.05	-19.91	-73.49
109	109	21.92	-317.15	-23.99	-70.53
109	110	24.66	-317.15	-23.99	-4.78
110	110	24.66	-314.44	-24.76	-1.13
110	10111	27.40	-314.44	-24.76	66.72
111	111	27.40	-304.31	-16.38	70.57
111	112	30.45	-304.31	-16.38	120.53
112	112	30.45	-291.23	-8.71	123.67
112	113	33.50	-291.23	-8.71	150.23
113	113	33.50	-297.14	1.33	151.14
113	114	36.89	-297.14	1.33	146.64
114	114	36.89	-330.56	10.84	144.77
114	115	40.28	-330.56	10.84	108.01
115	115	40.28	-372.92	16.45	104.70
115	116	43.67	-372.92	16.45	48.93
116	116	43.67	-411.09	17.21	45.52
116	117	47.06	-411.09	17.21	-12.81
117	117	47.06	-428.26	13.98	-15.03
117	118	50.45	-428.26	13.98	-62.42
118	118	50.45	-436.35	8.37	-63.55
118	119	53.84	-436.35	8.37	-91.91
119	119	53.84	-439.39	1.75	-92.01
119	120	57.23	-439.39	1.75	-97.94
120	120	57.23	-436.95	-4.56	-96.99
120	121	60.62	-436.95	-4.56	-81.52
121	121	60.62	-423.85	-9.17	-79.43
121	122	64.01	-423.85	-9.17	-48.33
122	122	64.01	-385.58	-10.43	-44.95
122	10123	67.40	-385.58	-10.43	-9.59
123	123	67.40	-321.47	-14.66	-6.31
123	124	70.45	-321.47	-14.66	38.40
124	124	70.45	-281.78	-8.68	40.53
124	125	73.50	-281.78	-8.68	67.01
125	125	73.50	-261.11	-2.11	67.17
125	126	76.26	-261.11	-2.11	72.98
126	126	76.26	-253.80	3.23	71.62
126	127	79.02	-253.80	3.23	62.71
127	127	79.02	-246.05	6.53	60.81
127	128	81.78	-246.05	6.53	42.80
128	128	81.78	-232.73	7.60	41.00
128	129	84.54	-232.73	7.60	20.03
129	129	84.54	-215.45	6.73	18.55
129	130	87.30	-215.45	6.73	-0.04
130	130	87.30	-194.28	4.44	-0.98
130	131	90.06	-194.28	4.44	-13.23
131	131	90.06	-167.82	1.45	-13.40
131	132	92.82	-167.82	1.45	-17.41
132	132	92.82	-132.64	-1.20	-16.57
132	133	95.58	-132.64	-1.20	-13.27
133	133	95.58	-81.94	-2.16	-11.15
133	134	98.34	-81.94	-2.16	-5.19
134	134	98.34	-11.86	0.03	-1.92
134	135	101.10	-11.86	0.03	-2.00
301	101	0.00	15.00	-6.42	-20.21
301	2001	0.00	15.00	-6.42	-15.36
302	102	2.74	13.43	-5.42	-17.09
302	2002	2.74	13.43	-5.42	-12.99
303	103	5.48	3.19	0.67	2.11
303	2003	5.48	3.19	0.67	1.60
304	104	8.22	-0.88	5.12	16.14
304	2004	8.22	-0.88	5.12	12.26
305	105	10.96	-1.48	7.75	24.40
305	2005	10.96	-1.48	7.75	18.54
306	106	13.70	-0.87	8.64	27.22
306	2006	13.70	-0.87	8.64	20.68
307	107	16.44	-0.40	8.17	25.72
307	2007	16.44	-0.40	8.17	19.55
308	108	19.18	-0.80	6.59	20.75
308	2008	19.18	-0.80	6.59	15.77
309	109	21.92	-2.50	4.09	12.87
309	2009	21.92	-2.50	4.09	9.78
310	110	24.66	-5.28	0.77	2.42

310	2010	24.66	-5.28	0.77	1.84
311	111	27.40	-7.59	-3.12	-9.82
311	2011	27.40	-7.59	-3.12	-7.46
312	112	30.45	-5.75	-7.67	-24.16
312	2012	30.45	-5.75	-7.67	-18.36
313	113	33.50	-2.33	-10.04	-31.62
313	2013	33.50	-2.33	-10.04	-24.03
314	114	36.89	-0.27	-9.52	-29.97
314	2014	36.89	-0.27	-9.52	-22.78
315	115	40.28	0.30	-5.61	-17.66
315	2015	40.28	0.30	-5.61	-13.42
316	116	43.67	0.26	-0.76	-2.38
316	2016	43.67	0.26	-0.76	-1.81
317	117	47.06	0.20	3.23	10.16
317	2017	47.06	0.20	3.23	7.72
318	118	50.45	0.30	5.61	17.68
318	2018	50.45	0.30	5.61	13.44
319	119	53.84	0.40	6.62	20.85
319	2019	53.84	0.40	6.62	15.84
320	120	57.23	-0.12	6.31	19.89
320	2020	57.23	-0.12	6.31	15.11
321	121	60.62	-2.45	4.61	14.52
321	2021	60.62	-2.45	4.61	11.04
322	122	64.01	-7.36	1.26	3.96
322	2022	64.01	-7.36	1.26	3.01
323	123	67.40	-10.79	-2.91	-9.18
323	2023	67.40	-10.79	-2.91	-6.97
324	124	70.45	-7.30	-5.98	-18.83
324	2024	70.45	-7.30	-5.98	-14.31
325	125	73.50	-2.63	-6.58	-20.72
325	2025	73.50	-2.63	-6.58	-15.75
326	126	76.26	-0.46	-5.33	-16.80
326	2026	76.26	-0.46	-5.33	-12.77
327	127	79.02	0.29	-3.30	-10.38
327	2027	79.02	0.29	-3.30	-7.89
328	128	81.78	0.25	-1.07	-3.38
328	2028	81.78	0.25	-1.07	-2.57
329	129	84.54	-0.23	0.86	2.73
329	2029	84.54	-0.23	0.86	2.07
330	130	87.30	-0.96	2.30	7.23
330	2030	87.30	-0.96	2.30	5.50
331	131	90.06	-1.55	2.98	9.40
331	2031	90.06	-1.55	2.98	7.14
332	132	92.82	-0.96	2.65	8.34
332	2032	92.82	-0.96	2.65	6.34
333	133	95.58	2.86	0.97	3.04
333	2033	95.58	2.86	0.97	2.31
334	134	98.34	12.45	-2.19	-6.90
334	2034	98.34	12.45	-2.19	-5.24
335	135	101.10	14.01	-3.28	-10.33
335	2035	101.10	14.01	-3.28	-7.85
201	1001	0.00	15.00	-6.42	-15.36
201	1001	0.00	15.00	-6.42	15.36
202	1002	2.74	13.43	-5.42	-12.99
202	1002	2.74	13.43	-5.42	12.99
203	1003	5.48	3.19	0.67	1.60
203	1003	5.48	3.19	0.67	-1.60
204	1004	8.22	-0.88	5.12	12.26
204	1004	8.22	-0.88	5.12	-12.26
205	1005	10.96	-1.48	7.75	18.54
205	1005	10.96	-1.48	7.75	-18.54
206	1006	13.70	-0.87	8.64	20.68
206	1006	13.70	-0.87	8.64	-20.68
207	1007	16.44	-0.40	8.17	19.55
207	1007	16.44	-0.40	8.17	-19.55
208	1008	19.18	-0.80	6.59	15.77
208	1008	19.18	-0.80	6.59	-15.77
209	1009	21.92	-2.50	4.09	9.78
209	1009	21.92	-2.50	4.09	-9.78
210	1010	24.66	-5.28	0.77	1.84
210	1010	24.66	-5.28	0.77	-1.84
211	1011	27.40	-7.59	-3.12	-7.46
211	1011	27.40	-7.59	-3.12	7.46
212	1012	30.45	-5.75	-7.67	-18.36
212	1012	30.45	-5.75	-7.67	18.36
213	1013	33.50	-2.33	-10.04	-24.03
213	1013	33.50	-2.33	-10.04	24.03
214	1014	36.89	-0.27	-9.52	-22.78
214	1014	36.89	-0.27	-9.52	22.78
215	1015	40.28	0.30	-5.61	-13.42
215	1015	40.28	0.30	-5.61	13.42
216	1016	43.67	0.26	-0.76	-1.81
216	1016	43.67	0.26	-0.76	1.81

217	1017	47.06	0.20	3.23	7.72
217	1017	47.06	0.20	3.23	-7.73
218	1018	50.45	0.30	5.61	13.44
218	1018	50.45	0.30	5.61	-13.44
219	1019	53.84	0.40	6.62	15.84
219	1019	53.84	0.40	6.62	-15.84
220	1020	57.23	-0.12	6.31	15.11
220	1020	57.23	-0.12	6.31	-15.11
221	1021	60.62	-2.45	4.61	11.04
221	1021	60.62	-2.45	4.61	-11.04
222	1022	64.01	-7.36	1.26	3.01
222	1022	64.01	-7.36	1.26	-3.01
223	1023	67.40	-10.79	-2.91	-6.97
223	1023	67.40	-10.79	-2.91	6.97
224	1024	70.45	-7.30	-5.98	-14.31
224	1024	70.45	-7.30	-5.98	14.31
225	1025	73.50	-2.63	-6.58	-15.75
225	1025	73.50	-2.63	-6.58	15.75
226	1026	76.26	-0.46	-5.33	-12.77
226	1026	76.26	-0.46	-5.33	12.77
227	1027	79.02	0.29	-3.30	-7.89
227	1027	79.02	0.29	-3.30	7.89
228	1028	81.78	0.25	-1.07	-2.57
228	1028	81.78	0.25	-1.07	2.57
229	1029	84.54	-0.23	0.87	2.07
229	1029	84.54	-0.23	0.87	-2.07
230	1030	87.30	-0.96	2.30	5.50
230	1030	87.30	-0.96	2.30	-5.50
231	1031	90.06	-1.55	2.98	7.14
231	1031	90.06	-1.55	2.98	-7.14
232	1032	92.82	-0.96	2.65	6.34
232	1032	92.82	-0.96	2.65	-6.34
233	1033	95.58	2.86	0.97	2.31
233	1033	95.58	2.86	0.97	-2.31
234	1034	98.34	12.45	-2.19	-5.24
234	1034	98.34	12.45	-2.19	5.24
235	1035	101.10	14.01	-3.28	-7.85
235	1035	101.10	14.01	-3.28	7.85
401	1001	0.00	15.00	-6.42	15.36
401	1	0.00	15.00	-6.42	20.21
402	1002	2.74	13.43	-5.42	12.99
402	2	2.74	13.43	-5.42	17.09
403	1003	5.48	3.19	0.67	-1.60
403	3	5.48	3.19	0.67	-2.11
404	1004	8.22	-0.88	5.12	-12.26
404	4	8.22	-0.88	5.12	-16.14
405	1005	10.96	-1.48	7.75	-18.54
405	5	10.96	-1.48	7.75	-24.40
406	1006	13.70	-0.87	8.64	-20.68
406	6	13.70	-0.87	8.64	-27.22
407	1007	16.44	-0.40	8.17	-19.55
407	7	16.44	-0.40	8.17	-25.72
408	1008	19.18	-0.80	6.59	-15.77
408	8	19.18	-0.80	6.59	-20.75
409	1009	21.92	-2.50	4.09	-9.78
409	9	21.92	-2.50	4.09	-12.87
410	1010	24.66	-5.28	0.77	-1.84
410	10	24.66	-5.28	0.77	-2.42
411	1011	27.40	-7.59	-3.12	7.46
411	11	27.40	-7.59	-3.12	9.82
412	1012	30.45	-5.75	-7.67	18.36
412	12	30.45	-5.75	-7.67	24.16
413	1013	33.50	-2.33	-10.04	24.03
413	13	33.50	-2.33	-10.04	31.62
414	1014	36.89	-0.27	-9.52	22.78
414	14	36.89	-0.27	-9.52	29.97
415	1015	40.28	0.30	-5.61	13.42
415	15	40.28	0.30	-5.61	17.66
416	1016	43.67	0.26	-0.76	1.81
416	16	43.67	0.26	-0.76	2.38
417	1017	47.06	0.20	3.23	-7.72
417	17	47.06	0.20	3.23	-10.16
418	1018	50.45	0.30	5.61	-13.44
418	18	50.45	0.30	5.61	-17.68
419	1019	53.84	0.40	6.62	-15.84
419	19	53.84	0.40	6.62	-20.85
420	1020	57.23	-0.12	6.31	-15.11
420	20	57.23	-0.12	6.31	-19.89
421	1021	60.62	-2.45	4.61	-11.04
421	21	60.62	-2.45	4.61	-14.52
422	1022	64.01	-7.36	1.26	-3.01
422	22	64.01	-7.36	1.26	-3.96
423	1023	67.40	-10.79	-2.91	6.97

423	23	67.40	-10.79	-2.91	9.18
424	1024	70.45	-7.30	-5.98	14.31
424	24	70.45	-7.30	-5.98	18.83
425	1025	73.50	-2.63	-6.58	15.75
425	25	73.50	-2.63	-6.58	20.72
426	1026	76.26	-0.46	-5.33	12.77
426	26	76.26	-0.46	-5.33	16.80
427	1027	79.02	0.29	-3.30	7.89
427	27	79.02	0.29	-3.30	10.38
428	1028	81.78	0.25	-1.07	2.57
428	28	81.78	0.25	-1.07	3.38
429	1029	84.54	-0.23	0.87	-2.07
429	29	84.54	-0.23	0.87	-2.73
430	1030	87.30	-0.96	2.30	-5.50
430	30	87.30	-0.96	2.30	-7.23
431	1031	90.06	-1.55	2.98	-7.14
431	31	90.06	-1.55	2.98	-9.40
432	1032	92.82	-0.96	2.65	-6.34
432	32	92.82	-0.96	2.65	-8.34
433	1033	95.58	2.86	0.97	-2.31
433	33	95.58	2.86	0.97	-3.04
434	1034	98.34	12.45	-2.19	5.24
434	34	98.34	12.45	-2.19	6.90
435	1035	101.10	14.01	-3.28	7.85
435	35	101.10	14.01	-3.28	10.33

GRÁFICO DE ESFUERZOS



Pretensado Isostático (t=0)

[1; 1]PRETFB.FAM1.ISO + [1; 1]PRETFB.FAM2.ISO + [1; 1]PRETFB.FAM3.ISO + [1; 1]PRETFB.FAM4.ISO + [1; 1]PRETFB.FAM5.ISO + [1; 1]PRETFB.FAM6.ISO + [1; 1]PRETFB.FAM7.ISO + [1; 1]PRETFB.FAM8.ISO

Coef. exc:

Barra	Nudo	X	N (T)	Vy (T)	Mz (Tm)
1	1	0.00	-635.32	0.00	-817.57
1	2	2.74	-635.32	0.00	-817.57
2	2	2.74	-1104.88	0.00	-1687.20
2	3	5.48	-1104.88	0.00	-1687.20
3	3	5.48	-1429.96	0.00	-2273.64
3	4	8.22	-1429.96	0.00	-2273.64
4	4	8.22	-1755.04	0.00	-2844.48
4	5	10.96	-1755.04	0.00	-2844.48
5	5	10.96	-1755.04	0.00	-2844.48
5	6	13.70	-1755.04	0.00	-2844.48
6	6	13.70	-1755.04	0.00	-2844.48
6	7	16.44	-1755.04	0.00	-2844.48
7	7	16.44	-1755.04	0.00	-2844.48
7	8	19.18	-1755.04	0.00	-2844.48
8	8	19.18	-1755.04	0.00	-2844.48
8	9	21.92	-1755.04	0.00	-2844.48
9	9	21.92	-1755.04	0.00	-2844.48
9	10	24.66	-1755.04	0.00	-2844.48
10	10	24.66	-1429.96	0.00	-2273.64
10	11	27.40	-1429.96	0.00	-2273.64
11	11	27.40	-1104.88	0.00	-1687.20
11	12	30.45	-1104.88	0.00	-1687.20
12	12	30.45	-635.32	0.00	-817.57
12	10013	33.50	-635.32	0.00	-817.57
13	13	33.50	-671.44	0.00	-886.20
13	14	36.89	-671.44	0.00	-886.20
14	14	36.89	-1141.00	0.00	-1755.83
14	15	40.28	-1141.00	0.00	-1755.83
15	15	40.28	-1646.68	0.00	-2668.07
15	16	43.67	-1646.68	0.00	-2668.07
16	16	43.67	-2152.36	0.00	-3556.05
16	17	47.06	-2152.36	0.00	-3556.05
17	17	47.06	-2152.36	0.00	-3556.05
17	18	50.45	-2152.36	0.00	-3556.05
18	18	50.45	-2152.36	0.00	-3556.05
18	19	53.84	-2152.36	0.00	-3556.05
19	19	53.84	-2152.36	0.00	-3556.05
19	20	57.23	-2152.36	0.00	-3556.05
20	20	57.23	-2152.36	0.00	-3556.05
20	21	60.62	-2152.36	0.00	-3556.05
21	21	60.62	-2152.36	0.00	-3556.05
21	22	64.01	-2152.36	0.00	-3556.05
22	22	64.01	-1646.68	0.00	-2668.07
22	23	67.40	-1646.68	0.00	-2668.07
23	23	67.40	-1141.00	0.00	-1755.83
23	24	70.45	-1141.00	0.00	-1755.83
24	24	70.45	-671.44	0.00	-886.20
24	10025	73.50	-671.44	0.00	-886.20
25	25	73.50	-635.32	0.00	-817.57
25	26	76.26	-635.32	0.00	-817.57
26	26	76.26	-996.52	0.00	-1486.51
26	27	79.02	-996.52	0.00	-1486.51
27	27	79.02	-1213.24	0.00	-1877.48
27	28	81.78	-1213.24	0.00	-1877.48
28	28	81.78	-1213.24	0.00	-1877.48
28	29	84.54	-1213.24	0.00	-1877.48
29	29	84.54	-1213.24	0.00	-1877.48
29	30	87.30	-1213.24	0.00	-1877.48
30	30	87.30	-1213.24	0.00	-1877.48
30	31	90.06	-1213.24	0.00	-1877.48
31	31	90.06	-1213.24	0.00	-1877.48
31	32	92.82	-1213.24	0.00	-1877.48
32	32	92.82	-1213.24	0.00	-1877.48
32	33	95.58	-1213.24	0.00	-1877.48
33	33	95.58	-996.52	0.00	-1486.51
33	34	98.34	-996.52	0.00	-1486.51
34	34	98.34	-635.32	0.00	-817.57
34	35	101.10	-635.32	0.00	-817.57
101	101	0.00	0.00	0.00	0.00
101	102	0.00	0.00	0.00	0.00
102	102	0.00	0.00	0.00	0.00
102	103	0.00	0.00	0.00	0.00

217	1017	0.00	0.00	0.00	0.00
218	2018	0.00	0.00	0.00	0.00
218	1018	0.00	0.00	0.00	0.00
219	2019	0.00	0.00	0.00	0.00
219	1019	0.00	0.00	0.00	0.00
220	2020	0.00	0.00	0.00	0.00
220	1020	0.00	0.00	0.00	0.00
221	2021	0.00	0.00	0.00	0.00
221	1021	0.00	0.00	0.00	0.00
222	2022	0.00	0.00	0.00	0.00
222	1022	0.00	0.00	0.00	0.00
223	2023	0.00	0.00	0.00	0.00
223	1023	0.00	0.00	0.00	0.00
224	2024	0.00	0.00	0.00	0.00
224	1024	0.00	0.00	0.00	0.00
225	2025	0.00	0.00	0.00	0.00
225	1025	0.00	0.00	0.00	0.00
226	2026	0.00	0.00	0.00	0.00
226	1026	0.00	0.00	0.00	0.00
227	2027	0.00	0.00	0.00	0.00
227	1027	0.00	0.00	0.00	0.00
228	2028	0.00	0.00	0.00	0.00
228	1028	0.00	0.00	0.00	0.00
229	2029	0.00	0.00	0.00	0.00
229	1029	0.00	0.00	0.00	0.00
230	2030	0.00	0.00	0.00	0.00
230	1030	0.00	0.00	0.00	0.00
231	2031	0.00	0.00	0.00	0.00
231	1031	0.00	0.00	0.00	0.00
232	2032	0.00	0.00	0.00	0.00
232	1032	0.00	0.00	0.00	0.00
233	2033	0.00	0.00	0.00	0.00
233	1033	0.00	0.00	0.00	0.00
234	2034	0.00	0.00	0.00	0.00
234	1034	0.00	0.00	0.00	0.00
235	2035	0.00	0.00	0.00	0.00
235	1035	0.00	0.00	0.00	0.00
401	1001	0.00	0.00	0.00	0.00
401	1	0.00	0.00	0.00	0.00
402	1002	0.00	0.00	0.00	0.00
402	2	0.00	0.00	0.00	0.00
403	1003	0.00	0.00	0.00	0.00
403	3	0.00	0.00	0.00	0.00
404	1004	0.00	0.00	0.00	0.00
404	4	0.00	0.00	0.00	0.00
405	1005	0.00	0.00	0.00	0.00
405	5	0.00	0.00	0.00	0.00
406	1006	0.00	0.00	0.00	0.00
406	6	0.00	0.00	0.00	0.00
407	1007	0.00	0.00	0.00	0.00
407	7	0.00	0.00	0.00	0.00
40	1008	0.00	0.00	0.00	0.00
408	8	0.00	0.00	0.00	0.00
409	1009	0.00	0.00	0.00	0.00
409	9	0.00	0.00	0.00	0.00
410	1010	0.00	0.00	0.00	0.00
410	10	0.00	0.00	0.00	0.00
411	1011	0.00	0.00	0.00	0.00
411	11	0.00	0.00	0.00	0.00
412	1012	0.00	0.00	0.00	0.00
412	12	0.00	0.00	0.00	0.00
413	1013	0.00	0.00	0.00	0.00
413	13	0.00	0.00	0.00	0.00
414	1014	0.00	0.00	0.00	0.00
414	14	0.00	0.00	0.00	0.00
415	1015	0.00	0.00	0.00	0.00
415	15	0.00	0.00	0.00	0.00
416	1016	0.00	0.00	0.00	0.00
416	16	0.00	0.00	0.00	0.00
417	1017	0.00	0.00	0.00	0.00
417	17	0.00	0.00	0.00	0.00
418	1018	0.00	0.00	0.00	0.00
418	18	0.00	0.00	0.00	0.00
419	1019	0.00	0.00	0.00	0.00
41	19	0.00	0.00	0.00	0.00
420	1020	0.00	0.00	0.00	0.00
420	20	0.00	0.00	0.00	0.00
421	1021	0.00	0.00	0.00	0.00
421	21	0.00	0.00	0.00	0.00
422	1022	0.00	0.00	0.00	0.00
422	22	0.00	0.00	0.00	0.00
423	1023	0.00	0.00	0.00	0.00

423	23	0.00	0.00	0.00	0.00
424	1024	0.00	0.00	0.00	0.00
424	24	0.00	0.00	0.00	0.00
425	1025	0.00	0.00	0.00	0.00
425	25	0.00	0.00	0.00	0.00
426	1026	0.00	0.00	0.00	0.00
426	26	0.00	0.00	0.00	0.00
427	1027	0.00	0.00	0.00	0.00
427	27	0.00	0.00	0.00	0.00
428	1028	0.00	0.00	0.00	0.00
428	28	0.00	0.00	0.00	0.00
429	1029	0.00	0.00	0.00	0.00
429	29	0.00	0.00	0.00	0.00
430	1030	0.00	0.00	0.00	0.00
430	30	0.00	0.00	0.00	0.00
431	1031	0.00	0.00	0.00	0.00
431	31	0.00	0.00	0.00	0.00
432	1032	0.00	0.00	0.00	0.00
432	32	0.00	0.00	0.00	0.00
433	1033	0.00	0.00	0.00	0.00
433	33	0.00	0.00	0.00	0.00
434	1034	0.00	0.00	0.00	0.00
434	34	0.00	0.00	0.00	0.00
435	1035	0.00	0.00	0.00	0.00
435	35	0.00	0.00	0.00	0.00

retensado Total (t=0)

1)PRETFA.FAM1.TOT + [1; 1)PRETFA.FAM2.TOT + [1; 1)PRETFA.FAM3.TOT + [1; 1)PRETFA.FAM4.TOT + [1; 1)PRETFA.FAM5.TOT + [1; 1)PRETFA.FAM6.TOT + [1; 1)PRETFA.FAM7.TOT + [1; 1)PRETFA.FAM8

if, etc:

Barra	Nudo	X	N (T)	Vy (T)	Mz (Tm)
1	1	0.00	-11.47	-0.57	-1.81
1	2	2.74	-11.47	-0.57	-0.25
2	2	2.74	-78.86	1.49	-3.15
2	3	5.48	-78.86	1.49	-7.22
3	3	5.48	-128.63	0.77	-9.10
3	4	8.22	-128.63	0.77	-11.20
4	4	8.22	-163.87	-1.40	-11.91
4	5	10.96	-163.87	-1.40	-8.08
5	5	10.96	-190.84	-3.79	-7.87
5	6	13.70	-190.84	-3.79	2.53
6	6	13.70	-212.73	-5.48	3.43
6	7	16.44	-212.73	-5.48	18.46
7	7	16.44	-230.84	-5.80	19.84
7	8	19.18	-230.84	-5.80	35.74
8	8	19.18	-245.06	-4.30	37.38
8	9	21.92	-245.06	-4.30	49.16
9	9	21.92	-253.83	-0.75	50.86
9	10	24.66	-253.83	-0.75	52.91
10	10	24.66	-262.18	4.62	54.02
10	11	27.40	-262.18	4.62	41.36
11	11	27.40	-280.63	11.08	41.06
11	12	30.45	-280.63	11.08	7.26
12	12	30.45	-315.42	16.90	5.07
12	10013	33.50	-315.42	16.90	-46.49
13	13	33.50	-359.09	5.37	-49.76
13	14	36.89	-359.09	5.37	-67.95
14	14	36.89	-401.17	4.13	-71.28
14	15	40.28	-401.17	4.13	-85.27
15	15	40.28	-420.39	-0.28	-87.29
15	16	43.67	-420.39	-0.28	-86.34
16	16	43.67	-429.88	-6.15	-87.20
16	17	47.06	-429.88	-6.15	-66.34
17	17	47.06	-434.26	-12.06	-66.14
17	18	50.45	-434.26	-12.06	-25.27
18	18	50.45	-433.67	-16.66	-24.05
18	19	53.84	-433.67	-16.66	32.43
19	19	53.84	-423.96	-18.59	34.69
19	20	57.23	-423.96	-18.59	97.70
20	20	57.23	-392.99	-16.28	101.07
20	21	60.62	-392.99	-16.28	156.27
21	21	60.62	-357.12	-9.00	159.40
21	22	64.01	-357.12	-9.00	189.91
22	22	64.01	-328.43	2.11	191.37
22	23	67.40	-328.43	2.11	184.21
23	23	67.40	-322.85	13.26	182.61
23	24	70.45	-322.85	13.26	142.15
24	24	70.45	-333.53	21.35	138.14
24	10025	73.50	-333.53	21.35	73.03
25	25	73.50	-337.44	33.91	68.09
25	26	76.26	-337.44	33.91	-25.50
26	26	76.26	-344.84	31.70	-30.14
26	27	79.02	-344.84	31.70	-117.63
27	27	79.02	-339.05	25.39	-121.27
27	28	81.78	-339.05	25.39	-191.36
28	28	81.78	-324.96	16.13	-193.89
28	29	84.54	-324.96	16.13	-238.41
29	29	84.54	-304.26	5.13	-239.67
29	30	87.30	-304.26	5.13	-253.84
30	30	87.30	-276.12	-6.18	-253.60
30	31	90.06	-276.12	-6.18	-236.55
31	31	90.06	-236.85	-16.08	-234.52
31	32	92.82	-236.85	-16.08	-190.14
32	32	92.82	-178.51	-22.40	-185.97
32	33	95.58	-178.51	-22.40	-124.15
33	33	95.58	-105.02	-22.94	-118.28
33	34	98.34	-105.02	-22.94	-54.96
34	34	98.34	-14.50	-15.92	-47.86
34	35	101.10	-14.50	-15.92	-3.91
101	101	0.00	-623.85	-86.15	-815.76
101	102	2.74	-623.85	-86.15	-579.70
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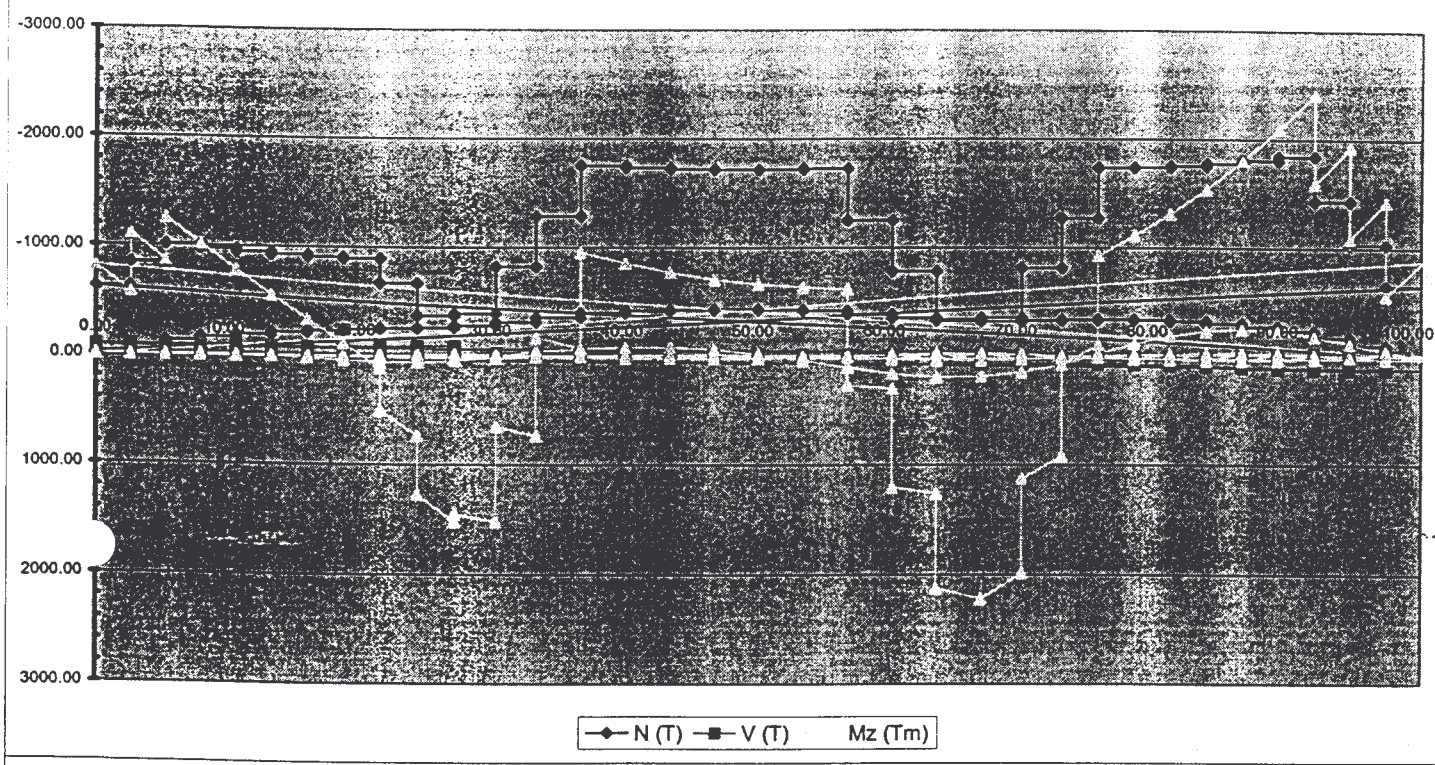
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104	104	8.22	-977.13	-85.32	-1018.90
104	105	10.96	-977.13	-85.32	-785.12
105	105	10.96	-950.16	-82.93	-785.33
105	106	13.70	-950.16	-82.93	-558.10
106	106	13.70	-928.27	-81.24	-559.00
106	107	16.44	-928.27	-81.24	-336.41
107	107	16.44	-910.16	-80.92	-337.79
107	108	19.18	-910.16	-80.92	-116.06
108	108	19.18	-895.94	-82.42	-117.71
108	109	21.92	-895.94	-82.42	108.14
109	109	21.92	-670.45	-85.98	497.40
109	110	24.66	-670.45	-85.98	732.98
110	110	24.66	-373.14	-91.34	1267.02
110	10111	27.40	-373.14	-91.34	1517.31
111	111	27.40	-390.81	-21.70	1448.97
111	112	30.45	-390.81	-21.70	1515.15
112	112	30.45	-825.58	-27.52	647.71
112	113	33.50	-825.58	-27.52	731.65
113	113	33.50	-1287.59	-30.33	-177.33
113	114	36.89	-1287.59	-30.33	-74.52
114	114	36.89	-1751.19	-29.09	-959.16
114	115	40.28	-1751.19	-29.09	-860.57
115	115	40.28	-1731.97	-24.68	-858.55
115	116	43.67	-1731.97	-24.68	-774.89
116	116	43.67	-1722.48	-18.81	-774.03
116	117	47.06	-1722.48	-18.81	-710.28
117	117	47.06	-1718.11	-12.90	-710.47
117	118	50.45	-1718.11	-12.90	-666.74
118	118	50.45	-1718.69	-8.30	-667.96
118	119	53.84	-1718.69	-8.30	-639.82
119	119	53.84	-1728.40	-6.37	-642.08
119	120	57.23	-1728.40	-6.37	-620.48
120	120	57.23	-1253.69	-8.67	264.13
120	121	60.62	-1253.69	-8.67	293.54
121	121	60.62	-783.88	-15.96	1202.66
121	122	64.01	-783.88	-15.96	1256.76
122	122	64.01	-343.01	-27.07	2124.93
122	10123	67.40	-343.01	-27.07	2216.70
123	123	67.40	-357.90	76.12	2218.30
123	124	70.45	-357.90	76.12	1986.15
124	124	70.45	-816.78	68.03	1120.54
124	125	73.50	-816.78	68.03	913.04
125	125	73.50	-1273.12	65.44	70.89
125	126	76.26	-1273.12	65.44	-109.71
126	126	76.26	-1735.28	67.65	-929.62
126	127	79.02	-1735.28	67.65	-1116.33
127	127	79.02	-1741.07	73.95	-1112.68
127	128	81.78	-1741.07	73.95	-1316.79
128	128	81.78	-1755.16	83.21	-1314.25
128	129	84.54	-1755.16	83.21	-1543.93
129	129	84.54	-1775.86	94.21	-1542.67
129	130	87.30	-1775.86	94.21	-1802.69
130	130	87.30	-1804.00	105.52	-1802.93
130	131	90.06	-1804.00	105.52	-2094.17
131	131	90.06	-1843.27	115.42	-2096.19
131	132	92.82	-1843.27	115.42	-2414.76
132	132	92.82	-1432.05	121.74	-1594.39
132	133	95.58	-1432.05	121.74	-1930.40
133	133	95.58	-1035.98	122.29	-1089.17
133	134	98.34	-1035.98	122.29	-1426.68
134	134	98.34	-656.94	115.26	-564.16
134	135	101.10	-656.94	115.26	-882.29
301	101	0.00	-14.75	2.98	9.38
301	2001	0.00	-14.75	2.98	7.13
302	102	2.74	-13.21	2.06	6.48
302	2002	2.74	-13.21	2.06	4.93
303	103	5.48	-3.14	-0.72	-2.26
303	2003	5.48	-3.14	-0.72	-1.72
304	104	8.22	0.87	-2.17	-6.83
304	2004	8.22	0.87	-2.17	-5.19
305	105	10.96	1.46	-2.39	-7.54
305	2005	10.96	1.46	-2.39	-5.73
306	106	13.70	0.87	-1.69	-5.33
306	2006	13.70	0.87	-1.69	-4.05
307	107	16.44	0.40	-0.32	-1.00
307	2007	16.44	0.40	-0.32	-0.76
308	108	19.18	0.76	1.50	4.73
308	2008	19.18	0.76	1.50	3.59
309	109	21.92	2.36	3.55	11.19
309	2009	21.92	2.36	3.55	8.50
310	110	24.66	4.99	5.37	16.91

310	24.00	4.99	5.37	12.85
311	111	27.40	7.18	6.46
311	2011	27.40	7.18	6.46
312	112	30.45	5.44	5.82
312	2012	30.45	5.44	5.82
313	113	33.50	2.20	2.81
313	2013	33.50	2.20	2.81
314	114	36.89	0.26	-1.24
314	2014	36.89	0.26	-1.24
315	115	40.28	-0.28	-4.41
315	2015	40.28	-0.28	-4.41
316	116	43.67	-0.25	-5.87
316	2016	43.67	-0.25	-5.87
317	117	47.06	-0.20	-5.90
317	2017	47.06	-0.20	-5.90
318	118	50.45	-0.32	-4.60
318	2018	50.45	-0.32	-4.60
319	119	53.84	-0.43	-1.93
319	2019	53.84	-0.43	-1.93
320	120	57.23	0.12	2.30
320	2020	57.23	0.12	2.30
321	121	60.62	2.64	7.28
321	2021	60.62	2.64	7.28
322	122	64.01	7.93	11.11
322	2022	64.01	7.93	11.11
323	123	67.40	11.63	11.15
323	2023	67.40	11.63	11.15
324	124	70.45	7.87	8.09
324	2024	70.45	7.87	8.09
325	125	73.50	2.83	2.59
325	2025	73.50	2.83	2.59
326	126	76.26	0.49	-2.21
326	2026	76.26	0.49	-2.21
327	127	79.02	-0.31	-6.30
327	2027	79.02	-0.31	-6.30
328	128	81.78	-0.27	-9.26
328	2028	81.78	-0.27	-9.26
329	129	84.54	0.24	-11.00
329	2029	84.54	0.24	-11.00
330	130	87.30	1.01	-11.31
330	2030	87.30	1.01	-11.31
331	131	90.06	1.64	-9.90
331	2031	90.06	1.64	-9.90
332	132	92.82	1.02	-6.32
332	2032	92.82	1.02	-6.32
333	133	95.58	-3.03	-0.54
333	2033	95.58	-3.03	-0.54
334	134	98.34	-13.19	7.02
334	2034	98.34	-13.19	7.02
335	135	101.10	-14.84	7.99
335	2035	101.10	-14.84	7.99
201	2001	0.00	-14.75	2.98
201	1001	0.00	-14.75	2.98
202	2002	2.74	-13.21	2.06
202	1002	2.74	-13.21	2.06
203	2003	5.48	-3.14	-0.72
203	1003	5.48	-3.14	-0.72
204	2004	8.22	0.87	-2.17
204	1004	8.22	0.87	-2.17
205	2005	10.96	1.46	-2.39
205	1005	10.96	1.46	-2.39
206	2006	13.70	0.87	-1.69
206	1006	13.70	0.87	-1.69
207	2007	16.44	0.40	-0.32
207	1007	16.44	0.40	-0.32
208	2008	19.18	0.76	1.50
208	1008	19.18	0.76	1.50
209	2009	21.92	2.36	3.55
209	1009	21.92	2.36	3.55
210	2010	24.66	4.99	5.37
210	1010	24.66	4.99	5.37
211	2011	27.40	7.18	6.46
211	1011	27.40	7.18	6.46
212	2012	30.45	5.44	5.82
212	1012	30.45	5.44	5.82
213	2013	33.50	2.20	2.81
213	1013	33.50	2.20	2.81
214	2014	36.89	0.26	-1.24
214	1014	36.89	0.26	-1.24
215	2015	40.28	-0.28	-4.41
215	1015	40.28	-0.28	-4.41
216	2016	43.67	-0.25	-5.87
216	1016	43.67	-0.25	-5.87

217	2017	47.06	-0.20	-5.90
217	1017	47.06	-0.20	-5.90
218	2018	50.45	-0.32	-4.60
218	1018	50.45	-0.32	-4.60
219	2019	53.84	-0.43	-1.93
219	1019	53.84	-0.43	-1.93
220	2020	57.23	0.12	2.30
220	1020	57.23	0.12	2.30
221	2021	60.62	2.64	7.28
221	1021	60.62	2.64	7.28
222	2022	64.01	7.93	11.11
222	1022	64.01	7.93	11.11
223	2023	67.40	11.63	11.15
223	1023	67.40	11.63	11.15
224	2024	70.45	7.87	8.09
224	1024	70.45	7.87	8.09
225	2025	73.50	2.83	2.59
225	1025	73.50	2.83	2.59
226	2026	76.26	0.49	-2.21
226	1026	76.26	0.49	-2.21
227	2027	79.02	-0.31	-6.30
227	1027	79.02	-0.31	-6.30
228	2028	81.78	-0.27	-9.26
228	1028	81.78	-0.27	-9.26
229	2029	84.54	0.24	-11.00
229	1029	84.54	0.24	-11.00
230	2030	87.30	1.01	-11.31
230	1030	87.30	1.01	-11.31
231	2031	90.06	1.64	-9.90
231	1031	90.06	1.64	-9.90
232	2032	92.82	1.02	-6.32
232	1032	92.82	1.02	-6.32
233	2033	95.58	-3.03	-0.54
233	1033	95.58	-3.03	-0.54
234	2034	98.34	-13.19	7.02
234	1034	98.34	-13.19	7.02
235	2035	101.10	-14.84	7.99
235	1035	101.10	-14.84	7.99
401	1001	0.00	-14.75	2.98
401	1	0.00	-14.75	2.98
402	1002	2.74	-13.21	2.06
402	2	2.74	-13.21	2.06
403	1003	5.48	-3.14	-0.72
403	3	5.48	-3.14	-0.72
404	1004	8.22	0.87	-2.17
404	4	8.22	0.87	-2.17
405	1005	10.96	1.46	-2.39
405	5	10.96	1.46	-2.39
406	1006	13.70	0.87	-1.69
406	6	13.70	0.87	-1.69
407	1007	16.44	0.40	-0.32
407	7	16.44	0.40	-0.32
408	1008	19.18	0.76	1.50
408	8	19.18	0.76	1.50
409	1009	21.92	2.36	3.55
409	9	21.92	2.36	3.55
410	1010	24.66	4.99	5.37
410	10	24.66	4.99	5.37
411	1011	27.40	7.18	6.46
411	11	27.40	7.18	6.46
412	1012	30.45	5.44	5.82
412	12	30.45	5.44	5.82
413	1013	33.50	2.20	2.81
413	13	33.50	2.20	2.81
414	1014	36.89	0.26	-1.24
414	14	36.89	0.26	-1.24
415	1015	40.28	-0.28	-4.41
415	15	40.28	-0.28	-4.41
416	1016	43.67	-0.25	-5.87
416	16	43.67	-0.25	-5.87
417	1017	47.06	-0.20	-5.90
417	17	47.06	-0.20	-5.90
418	1018	50.45	-0.32	-4.60
418	18	50.45	-0.32	-4.60
419	1019	53.84	-0.43	-1.93
419	19	53.84	-0.43	-1.93
420	1020	57.23	0.12	2.30
420	20	57.23	0.12	2.30
421	1021	60.62	2.64	7.28
421	21	60.62	2.64	7.28
422	1022	64.01	7.93	11.11
422	22	64.01	7.93	11.11
423	1023	67.40	11.63	11.15

424	1024	70.45	7.87	8.09	-19.36
424	24	70.45	7.87	8.09	-25.47
425	1025	73.50	2.83	2.59	-6.21
425	25	73.50	2.83	2.59	-8.17
426	1026	76.26	0.49	-2.21	5.29
426	26	76.26	0.49	-2.21	6.97
427	1027	79.02	-0.31	-6.30	15.09
427	27	79.02	-0.31	-6.30	19.86
428	1028	81.78	-0.27	-9.26	22.18
428	28	81.78	-0.27	-9.26	29.18
429	1029	84.54	0.24	-11.00	26.32
429	29	84.54	0.24	-11.00	34.64
430	1030	87.30	1.01	-11.31	27.08
430	30	87.30	1.01	-11.31	35.63
431	1031	90.06	1.64	-9.90	23.70
431	31	90.06	1.64	-9.90	31.18
432	1032	92.82	1.02	-6.32	15.13
432	32	92.82	1.02	-6.32	19.91
433	1033	95.58	-3.03	-0.54	1.30
433	33	95.58	-3.03	-0.54	1.71
434	1034	98.34	-13.19	7.02	-16.81
434	34	98.34	-13.19	7.02	-22.12
435	1035	101.10	-14.84	7.99	-19.14
435	35	101.10	-14.84	7.99	-25.18

GRÁFICO DE ESFUERZOS



Pretensado Hiperestático (t=0)

[1; 1]PRETFA.FAM1.TOT + [-1;-1]PRETFA.FAM1.ISO + [1; 1]PRETFA.FAM2.TOT + [-1;-1]PRETFA.FAM2.ISO + [1; 1]PRETFA.FAM3.TOT + [-1;-1]PRETFA.FAM3.ISO + [1; 1]PRETFA.FAM4.TOT + [-1;-1]PRETFA.FAM4.ISO
 Coef. exc:

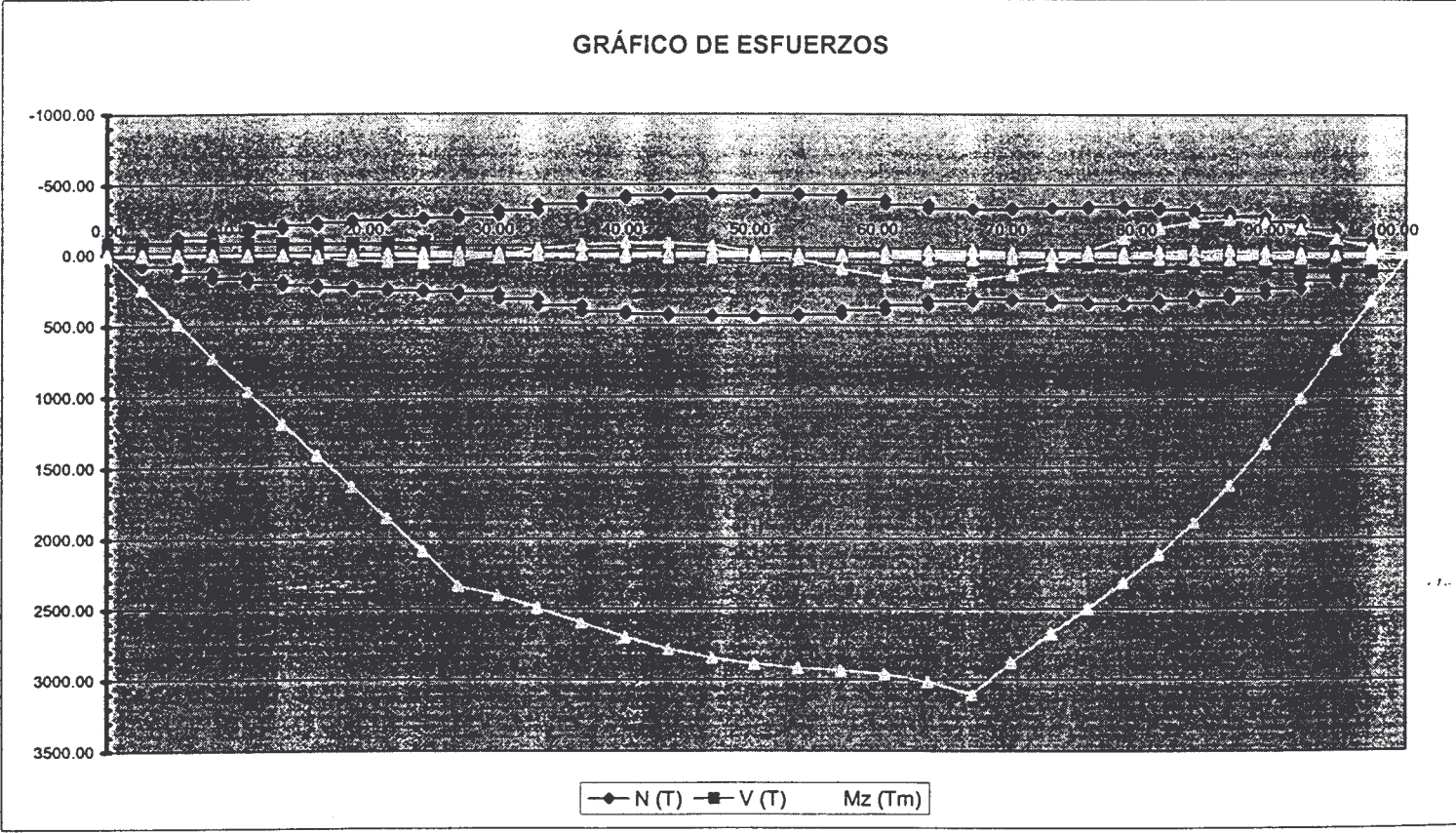
Barra	Nudo	X	N (T)	Vy (T)	Mz (Tm)
1	1	0.00	-11.47	-0.57	-1.81
1	2	2.74	-11.47	-0.57	-0.25
2	2	2.74	-78.86	1.49	-3.15
2	3	5.48	-78.86	1.49	-7.22
3	3	5.48	-128.63	0.77	-9.10
3	4	8.22	-128.63	0.77	-11.20
4	4	8.22	-163.87	-1.40	-11.91
4	5	10.96	-163.87	-1.40	-8.08
5	5	10.96	-190.84	-3.79	-7.87
5	6	13.70	-190.84	-3.79	2.53
6	6	13.70	-212.73	-5.48	3.43
6	7	16.44	-212.73	-5.48	18.46
7	7	16.44	-230.84	-5.80	19.84
7	8	19.18	-230.84	-5.80	35.74
8	8	19.18	-245.06	-4.30	37.38
8	9	21.92	-245.06	-4.30	49.16
9	9	21.92	-253.83	-0.75	50.86
9	10	24.66	-253.83	-0.75	52.91
10	10	24.66	-262.18	4.62	54.02
10	11	27.40	-262.18	4.62	41.36
11	11	27.40	-280.63	11.08	41.06
11	12	30.45	-280.63	11.08	7.26
12	12	30.45	-315.42	16.90	5.07
12	10013	33.50	-315.42	16.90	-46.49
13	13	33.50	-359.09	5.37	-49.76
13	14	36.89	-359.09	5.37	-67.95
14	14	36.89	-401.17	4.13	-71.28
14	15	40.28	-401.17	4.13	-85.27
15	15	40.28	-420.39	-0.28	-87.29
15	16	43.67	-420.39	-0.28	-86.34
16	16	43.67	-429.88	-6.15	-87.20
16	17	47.06	-429.88	-6.15	-66.34
17	17	47.06	-434.26	-12.06	-66.14
17	18	50.45	-434.26	-12.06	-25.27
18	18	50.45	-433.67	-16.66	-24.05
18	19	53.84	-433.67	-16.66	32.43
19	19	53.84	-423.96	-18.59	34.69
19	20	57.23	-423.96	-18.59	97.70
20	20	57.23	-392.99	-16.28	101.07
20	21	60.62	-392.99	-16.28	156.27
21	21	60.62	-357.12	-9.00	159.40
21	22	64.01	-357.12	-9.00	189.91
22	22	64.01	-328.43	2.11	191.37
22	23	67.40	-328.43	2.11	184.21
23	23	67.40	-322.85	13.26	182.61
23	24	70.45	-322.85	13.26	142.15
24	24	70.45	-333.53	21.35	138.14
24	10025	73.50	-333.53	21.35	73.03
25	25	73.50	-337.44	33.91	68.09
25	26	76.26	-337.44	33.91	-25.50
26	26	76.26	-344.84	31.70	-30.14
26	27	79.02	-344.84	31.70	-117.63
27	27	79.02	-339.05	25.39	-121.27
27	28	81.78	-339.05	25.39	-191.36
28	28	81.78	-324.96	16.13	-193.89
28	29	84.54	-324.96	16.13	-238.41
29	29	84.54	-304.26	5.13	-239.67
29	30	87.30	-304.26	5.13	-253.84
30	30	87.30	-276.12	-6.18	-253.60
30	31	90.06	-276.12	-6.18	-236.55
31	31	90.06	-236.85	-16.08	-234.52
31	32	92.82	-236.85	-16.08	-190.14
32	32	92.82	-178.51	-22.40	-185.97
32	33	95.58	-178.51	-22.40	-124.15
33	33	95.58	-105.02	-22.94	-118.28
33	34	98.34	-105.02	-22.94	-54.96
34	34	98.34	-14.50	-15.92	-47.86
34	35	101.10	-14.50	-15.92	-3.91
101	101	0.00	11.47	-86.15	1.81
101	102	2.74	11.47	-86.15	237.87
102	102	2.74	78.86	-88.21	240.77
102	103	5.48	78.86	-88.21	482.46

104		8.22	128.63	-87.49	724.07
104	104	8.22	163.87	-85.32	724.78
104	105	10.96	163.87	-85.32	958.57
105	105	10.96	190.84	-82.93	958.36
105	106	13.70	190.84	-82.93	1185.59
106	106	13.70	212.73	-81.24	1184.68
106	107	16.44	212.73	-81.24	1407.28
107	107	16.44	230.84	-80.92	1405.90
107	108	19.18	230.84	-80.92	1627.63
108	108	19.18	245.06	-82.42	1625.98
108	109	21.92	245.06	-82.42	1851.83
109	109	21.92	253.83	-85.98	1850.13
109	110	24.66	253.83	-85.98	2085.70
110	110	24.66	262.18	-91.34	2084.59
110	10111	27.40	262.18	-91.34	2334.88
111	111	27.40	280.63	-21.70	2335.17
111	112	30.45	280.63	-21.70	2401.35
112	112	30.45	315.42	-27.52	2403.54
112	113	33.50	315.42	-27.52	2487.47
113	113	33.50	359.09	-30.33	2490.74
113	114	36.89	359.09	-30.33	2593.55
114	114	36.89	401.17	-29.09	2596.88
114	115	40.28	401.17	-29.09	2695.48
115	115	40.28	420.39	-24.68	2697.50
115	116	43.67	420.39	-24.68	2781.16
116	116	43.67	429.88	-18.81	2782.02
116	117	47.06	429.88	-18.81	2845.77
117	117	47.06	434.26	-12.90	2845.57
117	118	50.45	434.26	-12.90	2889.31
118	118	50.45	433.67	-8.30	2888.09
118	119	53.84	433.67	-8.30	2916.22
119	119	53.84	423.96	-6.37	2913.96
119	120	57.23	423.96	-6.37	2935.57
120	120	57.23	392.99	-8.67	2932.20
120	121	60.62	392.99	-8.67	2961.61
121	121	60.62	357.12	-15.96	2958.48
121	122	64.01	357.12	-15.96	3012.58
122	122	64.01	328.43	-27.07	3011.13
122	10123	67.40	328.43	-27.07	3102.90
123	123	67.40	313.54	76.12	3104.50
123	124	70.45	313.54	76.12	2872.35
124	124	70.45	324.22	68.03	2876.36
124	125	73.50	324.22	68.03	2668.87
125	125	73.50	337.44	65.44	2673.80
125	126	76.26	337.44	65.44	2493.20
126	126	76.26	344.84	67.65	2497.84
126	127	79.02	344.84	67.65	2311.13
127	127	79.02	339.05	73.95	2314.78
127	128	81.78	339.05	73.95	2110.67
128	128	81.78	324.96	83.21	2113.21
128	129	84.54	324.96	83.21	1883.53
129	129	84.54	304.26	94.21	1884.79
129	130	87.30	304.26	94.21	1624.77
130	130	87.30	276.12	105.52	1624.53
130	131	90.06	276.12	105.52	1333.29
131	131	90.06	236.85	115.42	1331.27
131	132	92.82	236.85	115.42	1012.70
132	132	92.82	178.51	121.74	1008.53
132	133	95.58	178.51	121.74	672.52
133	133	95.58	105.02	122.29	666.65
133	134	98.34	105.02	122.29	329.14
134	134	98.34	14.50	115.26	322.04
134	135	101.10	14.50	115.26	3.91
301	101	0.00	-14.75	2.98	9.38
301	2001	0.00	-14.75	2.98	7.13
302	102	2.74	-13.21	2.06	6.48
302	2002	2.74	-13.21	2.06	4.93
303	103	5.48	-3.14	-0.72	-2.26
303	2003	5.48	-3.14	-0.72	-1.72
304	104	8.22	0.87	-2.17	-6.83
304	2004	8.22	0.87	-2.17	-5.19
305	105	10.96	1.46	-2.39	-7.54
305	2005	10.96	1.46	-2.39	-5.73
306	106	13.70	0.87	-1.69	-5.33
306	2006	13.70	0.87	-1.69	-4.05
307	107	16.44	0.40	-0.32	-1.00
307	2007	16.44	0.40	-0.32	-0.76
308	108	19.18	0.76	1.50	4.73
308	2008	19.18	0.76	1.50	3.59
309	109	21.92	2.36	3.55	11.19
309	2009	21.92	2.36	3.55	8.50
310	110	24.66	4.99	5.37	16.91

310	2010	24.66	4.99	5.37	12.85
311	111	27.40	7.18	6.46	20.36
311	2011	27.40	7.18	6.46	15.47
312	112	30.45	5.44	5.82	18.34
312	2012	30.45	5.44	5.82	13.94
313	113	33.50	2.20	2.81	8.84
313	2013	33.50	2.20	2.81	6.72
314	114	36.89	0.26	-1.24	-3.91
314	2014	36.89	0.26	-1.24	-2.97
315	115	40.28	-0.28	-4.41	-13.88
315	2015	40.28	-0.28	-4.41	-10.55
316	116	43.67	-0.25	-5.87	-18.50
316	2016	43.67	-0.25	-5.87	-14.06
317	117	47.06	-0.20	-5.90	-18.60
317	2017	47.06	-0.20	-5.90	-14.14
318	118	50.45	-0.32	-4.60	-14.50
318	2018	50.45	-0.32	-4.60	-11.02
319	119	53.84	-0.43	-1.93	-6.07
319	2019	53.84	-0.43	-1.93	-4.61
320	120	57.23	0.12	2.30	7.25
320	2020	57.23	0.12	2.30	5.51
321	121	60.62	2.64	7.28	22.94
321	2021	60.62	2.64	7.28	17.44
322	122	64.01	7.93	11.11	35.00
322	2022	64.01	7.93	11.11	26.60
323	123	67.40	11.63	11.15	35.13
323	2023	67.40	11.63	11.15	26.70
324	124	70.45	7.87	8.09	25.47
324	2024	70.45	7.87	8.09	19.36
325	125	73.50	2.83	2.59	8.17
325	2025	73.50	2.83	2.59	6.21
326	126	76.26	0.49	-2.21	-6.97
326	2026	76.26	0.49	-2.21	-5.30
327	127	79.02	-0.31	-6.30	-19.86
327	2027	79.02	-0.31	-6.30	-15.09
328	128	81.78	-0.27	-9.26	-29.18
328	2028	81.78	-0.27	-9.26	-22.18
329	129	84.54	0.24	-11.00	-34.64
329	2029	84.54	0.24	-11.00	-26.33
330	130	87.30	1.01	-11.31	-35.63
330	2030	87.30	1.01	-11.31	-27.08
331	131	90.06	1.64	-9.90	-31.18
331	2031	90.06	1.64	-9.90	-23.70
332	132	92.82	1.02	-6.32	-19.91
332	2032	92.82	1.02	-6.32	-15.13
333	133	95.58	-3.03	-0.54	-1.71
333	2033	95.58	-3.03	-0.54	-1.30
334	134	98.34	-13.19	7.02	22.12
334	2034	98.34	-13.19	7.02	16.81
335	135	101.10	-14.84	7.99	25.18
335	2035	101.10	-14.84	7.99	19.14
201	2001	0.00	-14.75	2.98	7.13
201	1001	0.00	-14.75	2.98	-7.13
202	2002	2.74	-13.21	2.06	4.93
202	1002	2.74	-13.21	2.06	-4.93
203	2003	5.48	-3.14	-0.72	-1.72
203	1003	5.48	-3.14	-0.72	1.72
204	2004	8.22	0.87	-2.17	-5.19
204	1004	8.22	0.87	-2.17	5.19
205	2005	10.96	1.46	-2.39	-5.73
205	1005	10.96	1.46	-2.39	5.73
206	2006	13.70	0.87	-1.69	-4.05
206	1006	13.70	0.87	-1.69	4.05
207	2007	16.44	0.40	-0.32	-0.76
207	1007	16.44	0.40	-0.32	0.76
208	2008	19.18	0.76	1.50	3.59
208	1008	19.18	0.76	1.50	-3.59
209	2009	21.92	2.36	3.55	8.50
209	1009	21.92	2.36	3.55	-8.50
210	2010	24.66	4.99	5.37	12.85
210	1010	24.66	4.99	5.37	-12.85
211	2011	27.40	7.18	6.46	15.47
211	1011	27.40	7.18	6.46	-15.47
212	2012	30.45	5.44	5.82	13.94
212	1012	30.45	5.44	5.82	-13.94
213	2013	33.50	2.20	2.81	6.72
213	1013	33.50	2.20	2.81	-6.72
214	2014	36.89	0.26	-1.24	-2.97
214	1014	36.89	0.26	-1.24	2.97
215	2015	40.28	-0.28	-4.41	-10.55
215	1015	40.28	-0.28	-4.41	10.55
216	2016	43.67	-0.25	-5.87	-14.06
216	1016	43.67	-0.25	-5.87	14.06

217	2017	47.06	-0.20	-5.90	-14.14
217	1017	47.06	-0.20	-5.90	14.14
218	2018	50.45	-0.32	-4.60	-11.02
218	1018	50.45	-0.32	-4.60	11.02
219	2019	53.84	-0.43	-1.93	-4.61
219	1019	53.84	-0.43	-1.93	4.61
220	2020	57.23	0.12	2.30	5.51
220	1020	57.23	0.12	2.30	-5.51
221	2021	60.62	2.64	7.28	17.44
221	1021	60.62	2.64	7.28	-17.44
222	2022	64.01	7.93	11.11	26.60
222	1022	64.01	7.93	11.11	-26.60
223	2023	67.40	11.63	11.15	26.70
223	1023	67.40	11.63	11.15	-26.70
224	2024	70.45	7.87	8.09	19.36
224	1024	70.45	7.87	8.09	-19.36
225	2025	73.50	2.83	2.59	6.21
225	1025	73.50	2.83	2.59	-6.21
226	2026	76.26	0.49	-2.21	-5.29
226	1026	76.26	0.49	-2.21	5.29
227	2027	79.02	-0.31	-6.30	-15.09
227	1027	79.02	-0.31	-6.30	15.09
228	2028	81.78	-0.27	-9.26	-22.18
228	1028	81.78	-0.27	-9.26	22.18
229	2029	84.54	0.24	-11.00	-26.33
229	1029	84.54	0.24	-11.00	26.32
230	2030	87.30	1.01	-11.31	-27.08
230	1030	87.30	1.01	-11.31	27.08
231	2031	90.06	1.64	-9.90	-23.70
231	1031	90.06	1.64	-9.90	23.70
232	2032	92.82	1.02	-6.32	-15.13
232	1032	92.82	1.02	-6.32	15.13
233	2033	95.58	-3.03	-0.54	-1.30
233	1033	95.58	-3.03	-0.54	1.30
234	2034	98.34	-13.19	7.02	16.81
234	1034	98.34	-13.19	7.02	-16.81
235	2035	101.10	-14.84	7.99	19.14
235	1035	101.10	-14.84	7.99	-19.14
401	1001	0.00	-14.75	2.98	-7.13
401	1	0.00	-14.75	2.98	-9.38
402	1002	2.74	-13.21	2.06	-4.93
402	2	2.74	-13.21	2.06	-6.48
403	1003	5.48	-3.14	-0.72	1.72
403	3	5.48	-3.14	-0.72	2.26
404	1004	8.22	0.87	-2.17	5.19
404	4	8.22	0.87	-2.17	6.83
405	1005	10.96	1.46	-2.39	5.73
405	5	10.96	1.46	-2.39	7.54
406	1006	13.70	0.87	-1.69	4.05
406	6	13.70	0.87	-1.69	5.33
407	1007	16.44	0.40	-0.32	0.76
407	7	16.44	0.40	-0.32	1.00
408	1008	19.18	0.76	1.50	-3.59
408	8	19.18	0.76	1.50	-4.73
409	1009	21.92	2.36	3.55	-8.50
409	9	21.92	2.36	3.55	-11.19
410	1010	24.66	4.99	5.37	-12.85
410	10	24.66	4.99	5.37	-16.91
411	1011	27.40	7.18	6.46	-15.47
411	11	27.40	7.18	6.46	-20.36
412	1012	30.45	5.44	5.82	-13.94
412	12	30.45	5.44	5.82	-18.34
413	1013	33.50	2.20	2.81	-6.72
413	13	33.50	2.20	2.81	-8.84
414	1014	36.89	0.26	-1.24	2.97
414	14	36.89	0.26	-1.24	3.91
415	1015	40.28	-0.28	-4.41	10.55
415	15	40.28	-0.28	-4.41	13.88
416	1016	43.67	-0.25	-5.87	14.06
416	16	43.67	-0.25	-5.87	18.50
417	1017	47.06	-0.20	-5.90	14.14
417	17	47.06	-0.20	-5.90	18.60
418	1018	50.45	-0.32	-4.60	11.02
418	18	50.45	-0.32	-4.60	14.50
419	1019	53.84	-0.43	-1.93	4.61
419	19	53.84	-0.43	-1.93	6.07
420	1020	57.23	0.12	2.30	-5.51
420	20	57.23	0.12	2.30	-7.25
421	1021	60.62	2.64	7.28	-17.44
421	21	60.62	2.64	7.28	-22.94
422	1022	64.01	7.93	11.11	-26.60
422	22	64.01	7.93	11.11	-35.00
423	1023	67.40	11.63	11.15	-26.70

423	23	67.40	11.63	11.15	-35.13
424	1024	70.45	7.87	8.09	-19.36
424	24	70.45	7.87	8.09	-25.47
425	1025	73.50	2.83	2.59	-6.21
425	25	73.50	2.83	2.59	-8.17
426	1026	76.26	0.49	-2.21	5.29
426	26	76.26	0.49	-2.21	6.97
427	1027	79.02	-0.31	-6.30	15.09
427	27	79.02	-0.31	-6.30	19.86
428	1028	81.78	-0.27	-9.26	22.18
428	28	81.78	-0.27	-9.26	29.18
429	1029	84.54	0.24	-11.00	26.32
429	29	84.54	0.24	-11.00	34.64
430	1030	87.30	1.01	-11.31	27.08
430	30	87.30	1.01	-11.31	35.63
431	1031	90.06	1.64	-9.90	23.70
431	31	90.06	1.64	-9.90	31.18
432	1032	92.82	1.02	-6.32	15.13
432	32	92.82	1.02	-6.32	19.91
433	1033	95.58	-3.03	-0.54	1.30
433	33	95.58	-3.03	-0.54	1.71
434	1034	98.34	-13.19	7.02	-16.81
434	34	98.34	-13.19	7.02	-22.12
435	1035	101.10	-14.84	7.99	-19.14
435	35	101.10	-14.84	7.99	-25.18



retensado Isostático (t=0)

1)PRETFA.FAM1.ISO + [1; 1)PRETFA.FAM2.ISO + [1; 1)PRETFA.FAM3.ISO + [1; 1)PRETFA.FAM4.ISO + [1; 1)PRETFA.FAM5.ISO + [1; 1)PRETFA.FAM6.ISO + [1; 1)PRETFA.FAM7.ISO + [1; 1)PRETFA.FAM8.ISO
1. etc

Barra	Nudo	X	N (T)	Vy (T)	Mz (Tm)
1	1	0.00	0.00	0.00	0.00
1	2	0.00	0.00	0.00	0.00
2	2	0.00	0.00	0.00	0.00
2	3	0.00	0.00	0.00	0.00
3	3	0.00	0.00	0.00	0.00
3	4	0.00	0.00	0.00	0.00
4	4	0.00	0.00	0.00	0.00
4	5	0.00	0.00	0.00	0.00
5	5	0.00	0.00	0.00	0.00
5	6	0.00	0.00	0.00	0.00
6	6	0.00	0.00	0.00	0.00
6	7	0.00	0.00	0.00	0.00
7	7	0.00	0.00	0.00	0.00
7	8	0.00	0.00	0.00	0.00
8	8	0.00	0.00	0.00	0.00
8	9	0.00	0.00	0.00	0.00
9	9	0.00	0.00	0.00	0.00
9	10	0.00	0.00	0.00	0.00
10	10	0.00	0.00	0.00	0.00
10	11	0.00	0.00	0.00	0.00
11	11	0.00	0.00	0.00	0.00
11	12	0.00	0.00	0.00	0.00
12	12	0.00	0.00	0.00	0.00
12	10013	0.00	0.00	0.00	0.00
13	13	0.00	0.00	0.00	0.00
13	14	0.00	0.00	0.00	0.00
14	14	0.00	0.00	0.00	0.00
14	15	0.00	0.00	0.00	0.00
15	15	0.00	0.00	0.00	0.00
15	16	0.00	0.00	0.00	0.00
16	16	0.00	0.00	0.00	0.00
16	17	0.00	0.00	0.00	0.00
17	17	0.00	0.00	0.00	0.00
17	18	0.00	0.00	0.00	0.00
18	18	0.00	0.00	0.00	0.00
18	19	0.00	0.00	0.00	0.00
19	19	0.00	0.00	0.00	0.00
19	20	0.00	0.00	0.00	0.00
20	20	0.00	0.00	0.00	0.00
20	21	0.00	0.00	0.00	0.00
21	21	0.00	0.00	0.00	0.00
2	22	0.00	0.00	0.00	0.00
22	22	0.00	0.00	0.00	0.00
22	23	0.00	0.00	0.00	0.00
23	23	0.00	0.00	0.00	0.00
23	24	0.00	0.00	0.00	0.00
24	24	0.00	0.00	0.00	0.00
24	10025	0.00	0.00	0.00	0.00
25	25	0.00	0.00	0.00	0.00
25	26	0.00	0.00	0.00	0.00
26	26	0.00	0.00	0.00	0.00
26	27	0.00	0.00	0.00	0.00
27	27	0.00	0.00	0.00	0.00
27	28	0.00	0.00	0.00	0.00
28	28	0.00	0.00	0.00	0.00
28	29	0.00	0.00	0.00	0.00
29	29	0.00	0.00	0.00	0.00
29	30	0.00	0.00	0.00	0.00
30	30	0.00	0.00	0.00	0.00
30	31	0.00	0.00	0.00	0.00
31	31	0.00	0.00	0.00	0.00
31	32	0.00	0.00	0.00	0.00
32	32	0.00	0.00	0.00	0.00
32	33	0.00	0.00	0.00	0.00
33	33	0.00	0.00	0.00	0.00
33	34	0.00	0.00	0.00	0.00
34	34	0.00	0.00	0.00	0.00
34	35	0.00	0.00	0.00	0.00
101	101	0.00	-635.32	0.00	-817.57
101	102	2.74	-635.32	0.00	-817.57
102	102	2.74	-924.28	0.00	-1352.73
102	103	5.48	-924.28	0.00	-1352.73

103	103	5.48	-1141.00	0.00	-1743.69
103	104	8.22	-1141.00	0.00	-1743.69
104	104	8.22	-1141.00	0.00	-1743.69
104	105	10.96	-1141.00	0.00	-1743.69
105	105	10.96	-1141.00	0.00	-1743.69
105	106	13.70	-1141.00	0.00	-1743.69
106	106	13.70	-1141.00	0.00	-1743.69
106	107	16.44	-1141.00	0.00	-1743.69
107	107	16.44	-1141.00	0.00	-1743.69
107	108	19.18	-1141.00	0.00	-1743.69
108	108	19.18	-1141.00	0.00	-1743.69
108	109	21.92	-1141.00	0.00	-1743.69
109	109	21.92	-924.28	0.00	-1352.73
109	110	24.66	-924.28	0.00	-1352.73
110	110	24.66	-635.32	0.00	-817.57
110	10111	27.40	-635.32	0.00	-817.57
111	111	27.40	-671.44	0.00	-886.20
111	112	30.45	-671.44	0.00	-886.20
112	112	30.45	-1141.00	0.00	-1755.83
112	113	33.50	-1141.00	0.00	-1755.83
113	113	33.50	-1646.68	0.00	-2668.07
113	114	36.89	-1646.68	0.00	-2668.07
114	114	36.89	-2152.36	0.00	-3556.05
114	115	40.28	-2152.36	0.00	-3556.05
115	115	40.28	-2152.36	0.00	-3556.05
115	116	43.67	-2152.36	0.00	-3556.05
116	116	43.67	-2152.36	0.00	-3556.05
116	117	47.06	-2152.36	0.00	-3556.05
117	117	47.06	-2152.36	0.00	-3556.05
117	118	50.45	-2152.36	0.00	-3556.05
118	118	50.45	-2152.36	0.00	-3556.05
118	119	53.84	-2152.36	0.00	-3556.05
119	119	53.84	-2152.36	0.00	-3556.05
119	120	57.23	-2152.36	0.00	-3556.05
120	120	57.23	-1646.68	0.00	-2668.07
120	121	60.62	-1646.68	0.00	-2668.07
121	121	60.62	-1141.00	0.00	-1755.83
121	122	64.01	-1141.00	0.00	-1755.83
122	122	64.01	-671.44	0.00	-886.20
122	10123	67.40	-671.44	0.00	-886.20
123	123	67.40	-671.44	0.00	-886.20
123	124	70.45	-671.44	0.00	-886.20
124	124	70.45	-1141.00	0.00	-1755.83
124	125	73.50	-1141.00	0.00	-1755.83
125	125	73.50	-1610.56	0.00	-2602.91
125	126	76.26	-1610.56	0.00	-2602.91
126	126	76.26	-2080.12	0.00	-3427.46
126	127	79.02	-2080.12	0.00	-3427.46
127	127	79.02	-2080.12	0.00	-3427.46
127	128	81.78	-2080.12	0.00	-3427.46
128	128	81.78	-2080.12	0.00	-3427.46
128	129	84.54	-2080.12	0.00	-3427.46
129	129	84.54	-2080.12	0.00	-3427.46
129	130	87.30	-2080.12	0.00	-3427.46
130	130	87.30	-2080.12	0.00	-3427.46
130	131	90.06	-2080.12	0.00	-3427.46
131	131	90.06	-2080.12	0.00	-3427.46
131	132	92.82	-2080.12	0.00	-3427.46
132	132	92.82	-1610.56	0.00	-2602.91
132	133	95.58	-1610.56	0.00	-2602.91
133	133	95.58	-1141.00	0.00	-1755.83
133	134	98.34	-1141.00	0.00	-1755.83
134	134	98.34	-671.44	0.00	-886.20
134	135	101.10	-671.44	0.00	-886.20
301	101	0.00	0.00	0.00	0.00
301	2001	0.00	0.00	0.00	0.00
302	102	0.00	0.00	0.00	0.00
302	2002	0.00	0.00	0.00	0.00
303	103	0.00	0.00	0.00	0.00
303	2003	0.00	0.00	0.00	0.00
304	104	0.00	0.00	0.00	0.00
304	2004	0.00	0.00	0.00	0.00
305	105	0.00	0.00	0.00	0.00
305	2005	0.00	0.00	0.00	0.00
306	106	0.00	0.00	0.00	0.00
306	2006	0.00	0.00	0.00	0.00
307	107	0.00	0.00	0.00	0.00
307	2007	0.00	0.00	0.00	0.00
308	108	0.00	0.00	0.00	0.00
308	2008	0.00	0.00	0.00	0.00
309	109	0.00	0.00	0.00	0.00
309	2009	0.00	0.00	0.00	0.00
310	110	0.00	0.00	0.00	0.00

310	2010	0.00	0.00	0.00	0.00
311	111	0.00	0.00	0.00	0.00
311	2011	0.00	0.00	0.00	0.00
312	112	0.00	0.00	0.00	0.00
312	2012	0.00	0.00	0.00	0.00
312	113	0.00	0.00	0.00	0.00
313	2013	0.00	0.00	0.00	0.00
314	114	0.00	0.00	0.00	0.00
314	2014	0.00	0.00	0.00	0.00
315	115	0.00	0.00	0.00	0.00
315	2015	0.00	0.00	0.00	0.00
316	116	0.00	0.00	0.00	0.00
316	2016	0.00	0.00	0.00	0.00
317	117	0.00	0.00	0.00	0.00
317	2017	0.00	0.00	0.00	0.00
318	118	0.00	0.00	0.00	0.00
318	2018	0.00	0.00	0.00	0.00
319	119	0.00	0.00	0.00	0.00
319	2019	0.00	0.00	0.00	0.00
320	120	0.00	0.00	0.00	0.00
320	2020	0.00	0.00	0.00	0.00
321	121	0.00	0.00	0.00	0.00
321	2021	0.00	0.00	0.00	0.00
322	122	0.00	0.00	0.00	0.00
322	2022	0.00	0.00	0.00	0.00
323	123	0.00	0.00	0.00	0.00
323	2023	0.00	0.00	0.00	0.00
324	124	0.00	0.00	0.00	0.00
324	2024	0.00	0.00	0.00	0.00
325	125	0.00	0.00	0.00	0.00
325	2025	0.00	0.00	0.00	0.00
326	126	0.00	0.00	0.00	0.00
326	2026	0.00	0.00	0.00	0.00
327	127	0.00	0.00	0.00	0.00
327	2027	0.00	0.00	0.00	0.00
328	128	0.00	0.00	0.00	0.00
328	2028	0.00	0.00	0.00	0.00
329	129	0.00	0.00	0.00	0.00
329	2029	0.00	0.00	0.00	0.00
330	130	0.00	0.00	0.00	0.00
330	2030	0.00	0.00	0.00	0.00
331	131	0.00	0.00	0.00	0.00
331	2031	0.00	0.00	0.00	0.00
332	132	0.00	0.00	0.00	0.00
332	2032	0.00	0.00	0.00	0.00
333	133	0.00	0.00	0.00	0.00
333	2033	0.00	0.00	0.00	0.00
334	134	0.00	0.00	0.00	0.00
334	2034	0.00	0.00	0.00	0.00
335	135	0.00	0.00	0.00	0.00
335	2035	0.00	0.00	0.00	0.00
201	1001	0.00	0.00	0.00	0.00
202	1002	0.00	0.00	0.00	0.00
203	1003	0.00	0.00	0.00	0.00
204	1004	0.00	0.00	0.00	0.00
205	1005	0.00	0.00	0.00	0.00
206	1006	0.00	0.00	0.00	0.00
207	1007	0.00	0.00	0.00	0.00
208	1008	0.00	0.00	0.00	0.00
209	1009	0.00	0.00	0.00	0.00
210	1010	0.00	0.00	0.00	0.00
211	1011	0.00	0.00	0.00	0.00
212	1012	0.00	0.00	0.00	0.00
213	1013	0.00	0.00	0.00	0.00
214	1014	0.00	0.00	0.00	0.00
215	1015	0.00	0.00	0.00	0.00
216	1016	0.00	0.00	0.00	0.00

217	1017	0.00	0.00	0.00	0.00
218	1018	0.00	0.00	0.00	0.00
219	1019	0.00	0.00	0.00	0.00
220	1020	0.00	0.00	0.00	0.00
221	1021	0.00	0.00	0.00	0.00
222	1022	0.00	0.00	0.00	0.00
223	1023	0.00	0.00	0.00	0.00
224	1024	0.00	0.00	0.00	0.00
225	1025	0.00	0.00	0.00	0.00
226	1026	0.00	0.00	0.00	0.00
227	1027	0.00	0.00	0.00	0.00
228	1028	0.00	0.00	0.00	0.00
229	1029	0.00	0.00	0.00	0.00
230	1030	0.00	0.00	0.00	0.00
231	1031	0.00	0.00	0.00	0.00
232	1032	0.00	0.00	0.00	0.00
233	1033	0.00	0.00	0.00	0.00
234	1034	0.00	0.00	0.00	0.00
235	1035	0.00	0.00	0.00	0.00
401	1001	0.00	0.00	0.00	0.00
402	1002	0.00	0.00	0.00	0.00
403	1003	0.00	0.00	0.00	0.00
404	1004	0.00	0.00	0.00	0.00
405	1005	0.00	0.00	0.00	0.00
406	1006	0.00	0.00	0.00	0.00
407	1007	0.00	0.00	0.00	0.00
408	1008	0.00	0.00	0.00	0.00
409	1009	0.00	0.00	0.00	0.00
410	1010	0.00	0.00	0.00	0.00
411	1011	0.00	0.00	0.00	0.00
412	1012	0.00	0.00	0.00	0.00
413	1013	0.00	0.00	0.00	0.00
414	1014	0.00	0.00	0.00	0.00
415	1015	0.00	0.00	0.00	0.00
416	1016	0.00	0.00	0.00	0.00
417	1017	0.00	0.00	0.00	0.00
418	1018	0.00	0.00	0.00	0.00
419	1019	0.00	0.00	0.00	0.00
420	1020	0.00	0.00	0.00	0.00
421	1021	0.00	0.00	0.00	0.00
422	1022	0.00	0.00	0.00	0.00
423	1023	0.00	0.00	0.00	0.00

423	23	0.00	0.00	0.00	0.00
424	1024	0.00	0.00	0.00	0.00
424	24	0.00	0.00	0.00	0.00
425	1025	0.00	0.00	0.00	0.00
425	25	0.00	0.00	0.00	0.00
426	1026	0.00	0.00	0.00	0.00
426	26	0.00	0.00	0.00	0.00
427	1027	0.00	0.00	0.00	0.00
427	27	0.00	0.00	0.00	0.00
428	1028	0.00	0.00	0.00	0.00
428	28	0.00	0.00	0.00	0.00
429	1029	0.00	0.00	0.00	0.00
429	29	0.00	0.00	0.00	0.00
430	1030	0.00	0.00	0.00	0.00
430	30	0.00	0.00	0.00	0.00
431	1031	0.00	0.00	0.00	0.00
431	31	0.00	0.00	0.00	0.00
432	1032	0.00	0.00	0.00	0.00
432	32	0.00	0.00	0.00	0.00
433	1033	0.00	0.00	0.00	0.00
433	33	0.00	0.00	0.00	0.00
434	1034	0.00	0.00	0.00	0.00
434	34	0.00	0.00	0.00	0.00
435	1035	0.00	0.00	0.00	0.00
435	35	0.00	0.00	0.00	0.00



Pretensado Total (t=0)
[1; 1]PRETFD.FAM1.TOT + [1; 1]PRETFD.FAM2.TOT + [1; 1]PRETFD.FAM3.TOT + [1; 1]PRETFD.FAM4.TOT
Coef. exc:

Barra	Nudo	X	N (T)	Vy (T)	Mz (Tm)
1	1	0.00	1.57	23.88	0.56
1	2	2.74	1.57	23.88	-64.86
2	2	2.74	12.98	21.95	-63.78
2	3	5.48	12.98	21.95	-123.93
3	3	5.48	23.94	21.21	-122.95
3	4	8.22	23.94	21.21	-181.07
4	4	8.22	35.02	21.47	-180.24
4	5	10.96	35.02	21.47	-239.07
5	5	10.96	46.83	22.52	-238.46
5	6	13.70	46.83	22.52	-300.18
6	6	13.70	60.24	24.09	-299.83
6	7	16.44	60.24	24.09	-365.85
7	7	16.44	76.74	25.85	-365.84
7	8	19.18	76.74	25.85	-436.67
8	8	19.18	98.94	27.37	-437.08
8	9	21.92	98.94	27.37	-512.09
9	9	21.92	131.60	28.14	-513.00
9	10	24.66	131.60	28.14	-590.10
10	10	24.66	-815.25	27.49	187.30
10	11	27.40	-819.03	27.49	114.94
11	11	27.40	-1704.61	24.96	847.36
11	12	30.45	-1712.43	24.96	777.32
12	12	30.45	-1684.43	20.64	776.71
12	10013	33.50	-1639.24	20.64	678.51
13	13	33.50	-1630.39	-8.86	678.77
13	14	36.89	-1696.37	-8.86	760.26
14	14	36.89	-1712.03	-13.05	761.61
14	15	40.28	-1703.34	-13.05	799.07
15	15	40.28	-686.67	-14.83	-37.80
15	16	43.67	-682.58	-14.83	9.29
16	16	43.67	144.15	-13.35	-676.82
16	17	47.06	144.15	-13.35	-631.57
17	17	47.06	122.99	-9.21	-629.91
17	18	50.45	122.99	-9.21	-598.68
18	18	50.45	116.82	-3.58	-597.83
18	19	53.84	116.82	-3.58	-585.69
19	19	53.84	118.69	2.59	-585.59
19	20	57.23	118.69	2.59	-594.37
20	20	57.23	128.68	8.41	-595.03
20	21	60.62	128.68	8.41	-623.54
21	21	60.62	153.93	12.91	-625.04
21	22	64.01	153.93	12.91	-668.81
22	22	64.01	-788.62	14.92	111.48
22	23	67.40	-793.30	14.92	64.56
23	23	67.40	-1689.52	13.91	797.99
23	24	70.45	-1697.34	13.91	761.66
24	24	70.45	-1690.81	11.02	760.48
24	10025	73.50	-1628.53	11.02	678.28
25	25	73.50	-1650.93	-25.41	677.93
25	26	76.26	-1711.84	-25.41	795.56
26	26	76.26	-1740.47	-28.37	795.92
26	27	79.02	-1733.39	-28.37	868.72
27	27	79.02	-710.58	-30.32	29.77
27	28	81.78	-707.25	-30.32	110.85
28	28	81.78	110.17	-30.80	-566.88
28	29	84.54	110.17	-30.80	-481.86
29	29	84.54	77.27	-30.22	-481.33
29	30	87.30	77.27	-30.22	-397.91
30	30	87.30	55.20	-29.25	-397.89
30	31	90.06	55.20	-29.25	-317.15
31	31	90.06	38.92	-28.43	-317.54
31	32	92.82	38.92	-28.43	-239.06
32	32	92.82	25.61	-28.20	-239.77
32	33	95.58	25.61	-28.20	-161.94
33	33	95.58	13.58	-28.88	-162.88
33	34	98.34	13.58	-28.88	-83.17
34	34	98.34	1.63	-30.73	-84.26
34	35	101.10	1.63	-30.73	0.57
101	101	0.00	-1.57	-1.46	-0.56
101	102	2.74	-1.57	-1.46	3.45
102	102	2.74	-12.98	0.46	2.36
102	103	5.48	-12.98	0.46	1.10

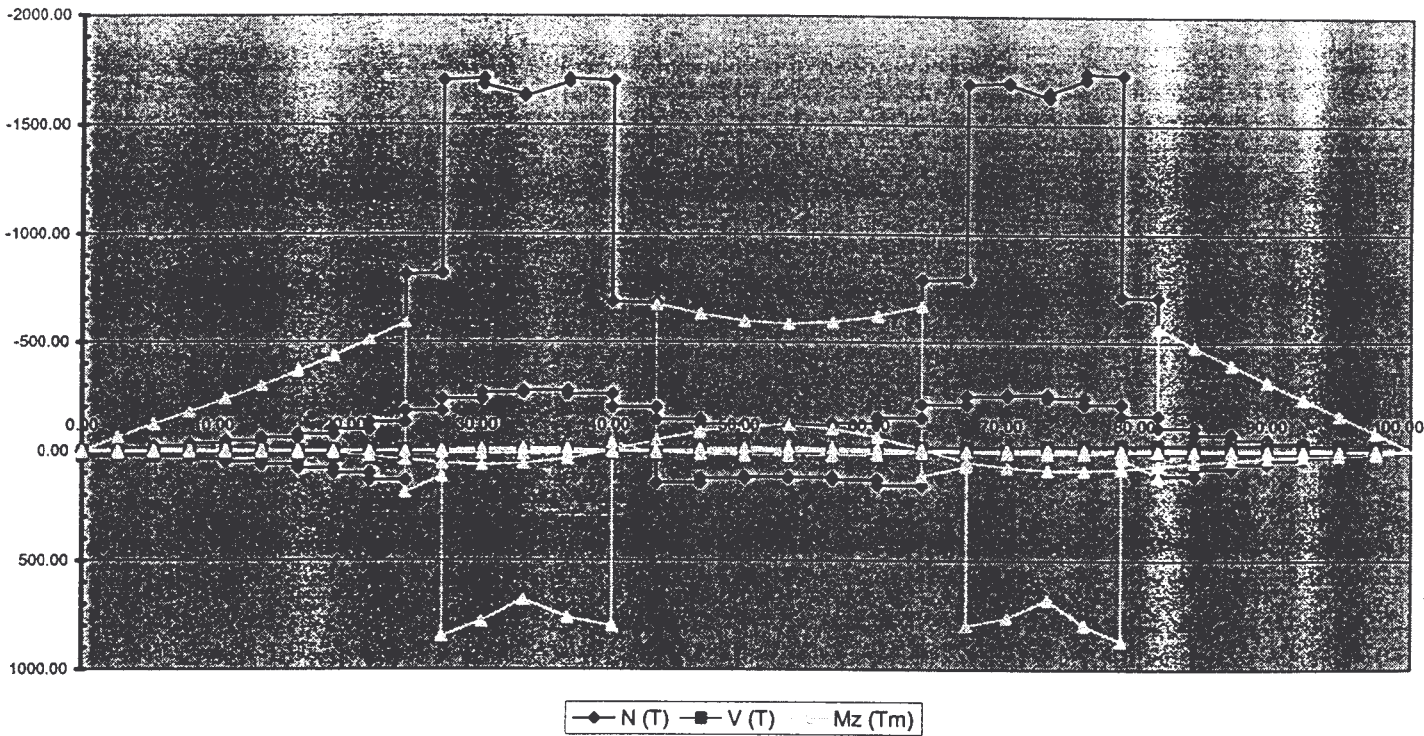
103		5.48	-23.94	1.20	0.11
103	104	8.22	-23.94	1.20	-3.19
104	104	8.22	-35.02	0.94	-4.01
104	105	10.96	-35.02	0.94	-6.59
105	105	10.96	-46.83	-0.11	-7.21
105	106	13.70	-46.83	-0.11	-6.91
106	106	13.70	-60.24	-1.68	-7.25
106	107	16.44	-60.24	-1.68	-2.65
107	107	16.44	-76.74	-3.44	-2.66
107	108	19.18	-76.74	-3.44	6.75
108	108	19.18	-98.94	-4.96	7.17
108	109	21.92	-98.94	-4.96	20.75
109	109	21.92	-131.60	-5.72	21.67
109	110	24.66	-131.60	-5.72	37.35
110	110	24.66	-183.37	-5.07	38.87
110	10111	27.40	-183.37	-5.07	52.77
111	111	27.40	-238.70	-2.50	54.26
111	112	30.45	-238.70	-2.50	61.88
112	112	30.45	-266.70	1.82	62.49
112	113	33.50	-266.70	1.82	56.93
113	113	33.50	-275.55	6.60	56.66
113	114	36.89	-275.55	6.60	34.28
114	114	36.89	-259.90	10.80	32.93
114	115	40.28	-259.90	10.80	-3.67
115	115	40.28	-200.36	12.58	-6.23
115	116	43.67	-200.36	12.58	-48.88
116	116	43.67	-144.15	11.09	-51.47
116	117	47.06	-144.15	11.09	-89.07
117	117	47.06	-122.99	6.96	-90.73
117	118	50.45	-122.99	6.96	-114.32
118	118	50.45	-116.82	1.33	-115.17
118	119	53.84	-116.82	1.33	-119.68
119	119	53.84	-118.69	-4.84	-119.77
119	120	57.23	-118.69	-4.84	-103.36
120	120	57.23	-128.68	-10.66	-102.69
120	121	60.62	-128.68	-10.66	-66.54
121	121	60.62	-153.92	-15.17	-65.05
121	122	64.01	-153.92	-15.17	-13.63
122	122	64.01	-214.90	-17.17	-11.18
122	10123	67.40	-214.90	-17.17	47.03
123	123	67.40	-253.08	-6.82	49.26
123	124	70.45	-253.08	-6.82	70.06
124	124	70.45	-259.61	-3.93	71.25
124	125	73.50	-259.61	-3.93	83.24
125	125	73.50	-245.97	-0.61	83.58
125	126	76.26	-245.97	-0.61	85.27
126	126	76.26	-217.34	2.36	84.91
126	127	79.02	-217.34	2.36	78.40
127	127	79.02	-163.12	4.30	77.26
127	128	81.78	-163.12	4.30	65.38
128	128	81.78	-110.17	4.79	64.24
128	129	84.54	-110.17	4.79	51.03
128	129	84.54	-77.27	4.21	50.49
129	130	87.30	-77.27	4.21	38.88
130	130	87.30	-55.20	3.24	38.86
130	131	90.06	-55.20	3.24	29.92
131	131	90.06	-38.92	2.42	30.31
131	132	92.82	-38.92	2.42	23.64
132	132	92.82	-25.61	2.18	24.35
132	133	95.58	-25.61	2.18	18.33
133	133	95.58	-13.58	2.86	19.27
133	134	98.34	-13.58	2.86	11.36
134	134	98.34	-1.63	4.72	12.45
134	135	101.10	-1.63	4.72	-0.57
301	101	0.00	7.57	-1.62	-5.10
301	2001	0.00	7.57	-1.62	-3.88
302	102	2.74	6.78	-1.92	-6.06
302	2002	2.74	6.78	-1.92	-4.61
303	103	5.48	1.61	-0.74	-2.34
303	2003	5.48	1.61	-0.74	-1.78
304	104	8.22	-0.45	0.26	0.83
304	2004	8.22	-0.45	0.26	0.63
305	105	10.96	-0.75	1.05	3.31
305	2005	10.96	-0.75	1.05	2.52
305	106	13.70	-0.44	1.57	4.94
305	2006	13.70	-0.44	1.57	3.76
307	107	16.44	-0.20	1.76	5.53
307	2007	16.44	-0.20	1.76	4.20
308	108	19.18	-0.40	1.52	4.80
308	2008	19.18	-0.40	1.52	3.65
309	109	21.92	-1.26	0.77	2.41
309	2009	21.92	-1.26	0.77	1.83
310	110	24.66	-2.66	-0.65	-2.05

310	2010	24.66	-2.66	-0.65	-1.56
311	111	27.40	-3.82	-2.52	-7.95
311	2011	27.40	-3.82	-2.52	-6.04
312	112	30.45	-2.90	-4.32	-13.61
312	2012	30.45	-2.90	-4.32	-10.35
313	113	33.50	-1.17	-4.78	-15.05
313	2013	33.50	-1.17	-4.78	-11.44
314	114	36.89	-0.14	-4.19	-13.21
314	2014	36.89	-0.14	-4.19	-10.04
315	115	40.28	0.15	-1.78	-5.62
315	2015	40.28	0.15	-1.78	-4.27
316	116	43.67	0.13	1.49	4.68
316	2016	43.67	0.13	1.49	3.56
317	117	47.06	0.10	4.13	13.02
317	2017	47.06	0.10	4.13	9.89
318	118	50.45	0.15	5.63	17.74
318	2018	50.45	0.15	5.63	13.48
319	119	53.84	0.20	6.17	19.44
319	2019	53.84	0.20	6.17	14.78
320	120	57.23	-0.06	5.82	18.34
320	2020	57.23	-0.06	5.82	13.94
321	121	60.62	-1.25	4.50	14.18
321	2021	60.62	-1.25	4.50	10.78
322	122	64.01	-3.75	2.00	6.31
322	2022	64.01	-3.75	2.00	4.80
323	123	67.40	-5.50	-1.00	-3.16
323	2023	67.40	-5.50	-1.00	-2.41
324	124	70.45	-3.72	-2.89	-9.10
324	2024	70.45	-3.72	-2.89	-6.92
325	125	73.50	-1.34	-3.32	-10.46
325	2025	73.50	-1.34	-3.32	-7.95
326	126	76.26	-0.23	-2.97	-9.35
326	2026	76.26	-0.23	-2.97	-7.11
327	127	79.02	0.15	-1.94	-6.12
327	2027	79.02	0.15	-1.94	-4.65
328	128	81.78	0.13	-0.49	-1.53
328	2028	81.78	0.13	-0.49	-1.16
329	129	84.54	-0.12	0.58	1.83
329	2029	84.54	-0.12	0.58	1.39
330	130	87.30	-0.49	0.97	3.06
330	2030	87.30	-0.49	0.97	2.32
331	131	90.06	-0.79	0.82	2.58
331	2031	90.06	-0.79	0.82	1.96
332	132	92.82	-0.49	0.24	0.74
332	2032	92.82	-0.49	0.24	0.57
333	133	95.58	1.46	-0.68	-2.15
333	2033	95.58	1.46	-0.68	-1.63
334	134	98.34	6.34	-1.85	-5.84
334	2034	98.34	6.34	-1.85	-4.44
335	135	101.10	7.14	-1.60	-5.03
335	2035	101.10	7.14	-1.60	-3.82
201	2001	0.00	7.57	-1.62	-3.88
201	1001	0.00	7.57	-1.62	3.88
202	2002	2.74	6.78	-1.92	-4.61
202	1002	2.74	6.78	-1.92	4.61
203	2003	5.48	1.61	-0.74	-1.78
203	1003	5.48	1.61	-0.74	1.78
204	2004	8.22	-0.45	0.26	0.63
204	1004	8.22	-0.45	0.26	-0.63
205	2005	10.96	-0.75	1.05	2.52
205	1005	10.96	-0.75	1.05	-2.52
206	2006	13.70	-0.44	1.57	3.76
206	1006	13.70	-0.44	1.57	-3.76
207	2007	16.44	-0.20	1.76	4.20
207	1007	16.44	-0.20	1.76	-4.20
208	2008	19.18	-0.40	1.52	3.65
208	1008	19.18	-0.40	1.52	-3.65
209	2009	21.92	-1.26	0.77	1.83
209	1009	21.92	-1.26	0.77	-1.83
210	2010	24.66	-2.66	-0.65	-1.56
210	1010	24.66	-2.66	-0.65	1.56
211	2011	27.40	-3.82	-2.52	-6.04
211	1011	27.40	-3.82	-2.52	6.04
212	2012	30.45	-2.90	-4.32	-10.35
212	1012	30.45	-2.90	-4.32	10.35
213	2013	33.50	-1.17	-4.78	-11.44
213	1013	33.50	-1.17	-4.78	11.44
214	2014	36.89	-0.14	-4.19	-10.04
214	1014	36.89	-0.14	-4.19	10.04
215	2015	40.28	0.15	-1.78	-4.27
215	1015	40.28	0.15	-1.78	4.27
216	2016	43.67	0.13	1.49	3.56
216	1016	43.67	0.13	1.49	-3.56

217	2017	47.06	0.10	4.13	9.89
217	1017	47.06	0.10	4.13	-9.89
218	2018	50.45	0.15	5.63	13.48
218	1018	50.45	0.15	5.63	-13.48
219	2019	53.84	0.20	6.17	14.78
219	1019	53.84	0.20	6.17	-14.78
220	2020	57.23	-0.06	5.82	13.94
220	1020	57.23	-0.06	5.82	-13.94
221	2021	60.62	-1.25	4.50	10.78
221	1021	60.62	-1.25	4.50	-10.78
222	2022	64.01	-3.75	2.00	4.80
222	1022	64.01	-3.75	2.00	-4.80
223	2023	67.40	-5.50	-1.00	-2.41
223	1023	67.40	-5.50	-1.00	2.41
224	2024	70.45	-3.72	-2.89	-6.92
224	1024	70.45	-3.72	-2.89	6.92
225	2025	73.50	-1.34	-3.32	-7.95
225	1025	73.50	-1.34	-3.32	7.95
226	2026	76.26	-0.23	-2.97	-7.11
226	1026	76.26	-0.23	-2.97	7.11
227	2027	79.02	0.15	-1.94	-4.65
227	1027	79.02	0.15	-1.94	4.65
228	2028	81.78	0.13	-0.49	-1.16
228	1028	81.78	0.13	-0.49	1.16
229	2029	84.54	-0.12	0.58	1.39
229	1029	84.54	-0.12	0.58	-1.39
230	2030	87.30	-0.49	0.97	2.32
230	1030	87.30	-0.49	0.97	-2.32
231	2031	90.06	-0.79	0.82	1.96
231	1031	90.06	-0.79	0.82	-1.96
232	2032	92.82	-0.49	0.24	0.57
232	1032	92.82	-0.49	0.24	-0.57
233	2033	95.58	1.46	-0.68	-1.63
233	1033	95.58	1.46	-0.68	1.63
234	2034	98.34	6.34	-1.85	-4.44
234	1034	98.34	6.34	-1.85	4.44
235	2035	101.10	7.14	-1.60	-3.82
235	1035	101.10	7.14	-1.60	3.82
401	1001	0.00	7.57	-1.62	3.88
401	1	0.00	7.57	-1.62	5.10
402	1002	2.74	6.78	-1.92	4.61
402	2	2.74	6.78	-1.92	6.06
403	1003	5.48	1.61	-0.74	1.78
403	3	5.48	1.61	-0.74	2.34
404	1004	8.22	-0.45	0.26	-0.63
404	4	8.22	-0.45	0.26	-0.83
405	1005	10.96	-0.75	1.05	-2.52
405	5	10.96	-0.75	1.05	-3.31
406	1006	13.70	-0.44	1.57	-3.76
406	6	13.70	-0.44	1.57	-4.94
407	1007	16.44	-0.20	1.76	-4.20
407	7	16.44	-0.20	1.76	-5.53
408	1008	19.18	-0.40	1.52	-3.65
408	8	19.18	-0.40	1.52	-4.80
409	1009	21.92	-1.26	0.77	-1.83
409	9	21.92	-1.26	0.77	-2.41
410	1010	24.66	-2.66	-0.65	1.56
410	10	24.66	-2.66	-0.65	2.05
411	1011	27.40	-3.82	-2.52	6.04
411	11	27.40	-3.82	-2.52	7.95
412	1012	30.45	-2.90	-4.32	10.35
412	12	30.45	-2.90	-4.32	13.61
413	1013	33.50	-1.17	-4.78	11.44
413	13	33.50	-1.17	-4.78	15.05
414	1014	36.89	-0.14	-4.19	10.04
414	14	36.89	-0.14	-4.19	13.21
415	1015	40.28	0.15	-1.78	4.27
415	15	40.28	0.15	-1.78	5.62
416	1016	43.67	0.13	1.49	-3.56
416	16	43.67	0.13	1.49	-4.68
417	1017	47.06	0.10	4.13	-9.89
417	17	47.06	0.10	4.13	-13.02
418	1018	50.45	0.15	5.63	-13.48
418	18	50.45	0.15	5.63	-17.74
419	1019	53.84	0.20	6.17	-14.78
419	19	53.84	0.20	6.17	-19.44
420	1020	57.23	-0.06	5.82	-13.94
420	20	57.23	-0.06	5.82	-18.34
421	1021	60.62	-1.25	4.50	-10.78
421	21	60.62	-1.25	4.50	-14.18
422	1022	64.01	-3.75	2.00	-4.80
422	22	64.01	-3.75	2.00	-6.31
423	1023	67.40	-5.50	-1.00	2.41

423	23	67.40	-5.50	-1.00	3.16
424	1024	70.45	-3.72	-2.89	6.92
424	24	70.45	-3.72	-2.89	9.10
425	1025	73.50	-1.34	-3.32	7.95
425	25	73.50	-1.34	-3.32	10.46
426	1026	76.26	-0.23	-2.97	7.11
426	26	76.26	-0.23	-2.97	9.35
427	1027	79.02	0.15	-1.94	4.65
427	27	79.02	0.15	-1.94	6.12
428	1028	81.78	0.13	-0.49	1.16
428	28	81.78	0.13	-0.49	1.53
429	1029	84.54	-0.12	0.58	-1.39
429	29	84.54	-0.12	0.58	-1.83
430	1030	87.30	-0.49	0.97	-2.32
430	30	87.30	-0.49	0.97	-3.06
431	1031	90.06	-0.79	0.82	-1.96
431	31	90.06	-0.79	0.82	-2.58
432	1032	92.82	-0.49	0.24	-0.57
432	32	92.82	-0.49	0.24	-0.74
433	1033	95.58	1.46	-0.68	1.63
433	33	95.58	1.46	-0.68	2.15
434	1034	98.34	6.34	-1.85	4.44
434	34	98.34	6.34	-1.85	5.84
435	1035	101.10	7.14	-1.60	3.82
435	35	101.10	7.14	-1.60	5.03

GRÁFICO DE ESFUERZOS



Pretenso Hiperestático (t=0)

1]PRETFD.FAM1.TOT + [-1;-1]PRETFD.FAM1.ISO + [1; 1]PRETFD.FAM2.TOT + [-1;-1]PRETFD.FAM2.ISO + [1; 1]PRETFD.FAM3.TOT + [-1;-1]PRETFD.FAM3.ISO + [1; 1]PRETFD.FAM4.TOT + [-1;-1]PRETFD.FAM4.ISO

Ref. Exc:

Barra	Nudo	X	N (T)	Vy (T)	Mz (Tm)
1	1	0.00	1.57	23.88	0.56
1	2	2.74	1.57	23.88	-64.86
2	2	2.74	12.98	21.95	-63.78
2	3	5.48	12.98	21.95	-123.93
3	3	5.48	23.94	21.21	-122.95
3	4	8.22	23.94	21.21	-181.07
4	4	8.22	35.02	21.47	-180.24
4	5	10.96	35.02	21.47	-239.07
5	5	10.96	46.83	22.52	-238.46
5	6	13.70	46.83	22.52	-300.18
6	6	13.70	60.24	24.09	-299.83
6	7	16.44	60.24	24.09	-365.85
7	7	16.44	76.74	25.85	-365.84
7	8	19.18	76.74	25.85	-436.67
8	8	19.18	98.94	27.37	-437.08
8	9	21.92	98.94	27.37	-512.09
9	9	21.92	131.60	28.14	-513.00
9	10	24.66	131.60	28.14	-590.10
10	10	24.66	183.37	27.49	-591.62
10	11	27.40	183.37	27.49	-666.94
11	11	27.40	238.71	24.96	-668.43
11	12	30.45	238.71	24.96	-744.57
12	12	30.45	266.70	20.64	-745.17
12	10013	33.50	266.70	20.64	-808.13
13	13	33.50	275.55	-8.86	-807.86
13	14	36.89	275.55	-8.86	-777.84
14	14	36.89	259.90	-13.05	-776.49
14	15	40.28	259.90	-13.05	-732.26
15	15	40.28	200.36	-14.83	-729.69
15	16	43.67	200.36	-14.83	-679.40
16	16	43.67	144.15	-13.35	-676.82
16	17	47.06	144.15	-13.35	-631.57
17	17	47.06	122.99	-9.21	-629.91
17	18	50.45	122.99	-9.21	-598.68
18	18	50.45	116.82	-3.58	-597.83
18	19	53.84	116.82	-3.58	-585.69
19	19	53.84	118.69	2.59	-585.59
19	20	57.23	118.69	2.59	-594.37
20	20	57.23	128.68	8.41	-595.03
20	21	60.62	128.68	8.41	-623.54
21	21	60.62	153.93	12.91	-625.04
2	22	64.01	153.93	12.91	-668.81
22	22	64.01	214.90	14.92	-671.27
22	23	67.40	214.90	14.92	-721.84
23	23	67.40	261.84	13.91	-724.06
23	24	70.45	261.84	13.91	-766.50
24	24	70.45	268.37	11.02	-767.68
24	10025	73.50	268.37	11.02	-801.30
25	25	73.50	245.97	-25.41	-801.65
25	26	76.26	245.97	-25.41	-731.53
26	26	76.26	217.34	-28.37	-731.17
26	27	79.02	217.34	-28.37	-652.86
27	27	79.02	163.12	-30.32	-651.71
27	28	81.78	163.12	-30.32	-568.03
28	28	81.78	110.17	-30.80	-566.88
28	29	84.54	110.17	-30.80	-481.86
29	29	84.54	77.27	-30.22	-481.33
29	30	87.30	77.27	-30.22	-397.91
30	30	87.30	55.20	-29.25	-397.89
30	31	90.06	55.20	-29.25	-317.15
31	31	90.06	38.92	-28.43	-317.54
31	32	92.82	38.92	-28.43	-239.06
32	32	92.82	25.61	-28.20	-239.77
32	33	95.58	25.61	-28.20	-161.94
3	33	95.58	13.58	-28.88	-162.88
33	34	98.34	13.58	-28.88	-83.17
34	34	98.34	1.63	-30.73	-84.26
34	35	101.10	1.63	-30.73	0.57
101	101	0.00	-1.57	-1.46	-0.56
101	102	2.74	-1.57	-1.46	3.45
102	102	2.74	-12.98	0.46	2.36
102	103	5.48	-12.98	0.46	1.10

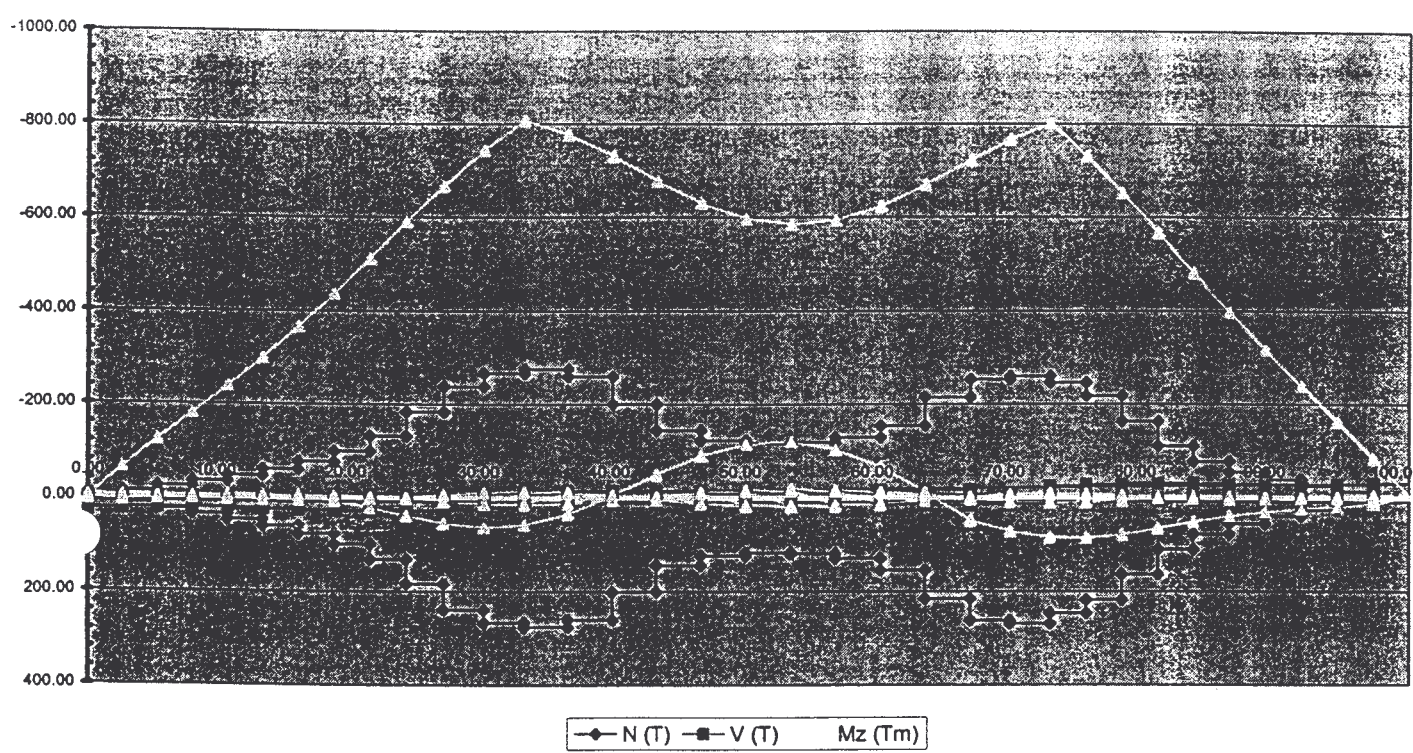
103	103	5.48	-23.94	1.20	0.11
103	104	8.22	-23.94	1.20	-3.19
104	104	8.22	-35.02	0.94	-4.01
104	105	10.96	-35.02	0.94	-6.59
105	105	10.96	-46.83	-0.11	-7.21
105	106	13.70	-46.83	-0.11	-6.91
106	106	13.70	-60.24	-1.68	-7.25
106	107	16.44	-60.24	-1.68	-2.65
107	107	16.44	-76.74	-3.44	-2.66
107	108	19.18	-76.74	-3.44	6.75
108	108	19.18	-98.94	-4.96	7.17
108	109	21.92	-98.94	-4.96	20.75
109	109	21.92	-131.60	-5.72	21.67
109	110	24.66	-131.60	-5.72	37.35
110	110	24.66	-183.37	-5.07	38.87
110	10111	27.40	-183.37	-5.07	52.77
111	111	27.40	-238.70	-2.50	54.26
111	112	30.45	-238.70	-2.50	61.88
112	112	30.45	-266.70	1.82	62.49
112	113	33.50	-266.70	1.82	56.93
113	113	33.50	-275.55	6.60	56.66
113	114	36.89	-275.55	6.60	34.28
114	114	36.89	-259.90	10.80	32.93
114	115	40.28	-259.90	10.80	-3.67
115	115	40.28	-200.36	12.58	-6.23
115	116	43.67	-200.36	12.58	-48.88
116	116	43.67	-144.15	11.09	-51.47
116	117	47.06	-144.15	11.09	-89.07
117	117	47.06	-122.99	6.96	-90.73
117	118	50.45	-122.99	6.96	-114.32
118	118	50.45	-116.82	1.33	-115.17
118	119	53.84	-116.82	1.33	-119.68
119	119	53.84	-118.69	-4.84	-119.77
119	120	57.23	-118.69	-4.84	-103.36
120	120	57.23	-128.68	-10.66	-102.69
120	121	60.62	-128.68	-10.66	-66.54
121	121	60.62	-153.92	-15.17	-65.05
121	122	64.01	-153.92	-15.17	-13.63
122	122	64.01	-214.90	-17.17	-11.18
122	10123	67.40	-214.90	-17.17	47.03
123	123	67.40	-253.08	-6.82	49.26
123	124	70.45	-253.08	-6.82	70.06
124	124	70.45	-259.61	-3.93	71.25
124	125	73.50	-259.61	-3.93	83.24
125	125	73.50	-245.97	-0.61	83.58
125	126	76.26	-245.97	-0.61	85.27
126	126	76.26	-217.34	2.36	84.91
126	127	79.02	-217.34	2.36	78.40
127	127	79.02	-163.12	4.30	77.26
127	128	81.78	-163.12	4.30	65.38
128	128	81.78	-110.17	4.79	64.24
128	129	84.54	-110.17	4.79	51.03
129	129	84.54	-77.27	4.21	50.49
129	130	87.30	-77.27	4.21	38.88
130	130	87.30	-55.20	3.24	38.86
130	131	90.06	-55.20	3.24	29.92
131	131	90.06	-38.92	2.42	30.31
131	132	92.82	-38.92	2.42	23.64
132	132	92.82	-25.61	2.18	24.35
132	133	95.58	-25.61	2.18	18.33
133	133	95.58	-13.58	2.86	19.27
133	134	98.34	-13.58	2.86	11.36
134	134	98.34	-1.63	4.72	12.45
134	135	101.10	-1.63	4.72	-0.57
301	101	0.00	7.57	-1.62	-5.10
301	2001	0.00	7.57	-1.62	-3.88
302	102	2.74	6.78	-1.92	-6.06
302	2002	2.74	6.78	-1.92	-4.61
303	103	5.48	1.61	-0.74	-2.34
303	2003	5.48	1.61	-0.74	-1.78
304	104	8.22	-0.45	0.26	0.83
304	2004	8.22	-0.45	0.26	0.63
305	105	10.96	-0.75	1.05	3.31
305	2005	10.96	-0.75	1.05	2.52
306	106	13.70	-0.44	1.57	4.94
306	2006	13.70	-0.44	1.57	3.76
307	107	16.44	-0.20	1.76	5.53
307	2007	16.44	-0.20	1.76	4.20
308	108	19.18	-0.40	1.52	4.80
308	2008	19.18	-0.40	1.52	3.65
309	109	21.92	-1.26	0.77	2.41
309	2009	21.92	-1.26	0.77	1.83
310	110	24.66	-2.66	-0.65	-2.05

310	2010	24.66	-2.66	-0.65	-1.56
311	111	27.40	-3.82	-2.52	-7.95
311	2011	27.40	-3.82	-2.52	-6.04
312	112	30.45	-2.90	-4.32	-13.61
312	2012	30.45	-2.90	-4.32	-10.35
313	113	33.50	-1.17	-4.78	-15.05
313	2013	33.50	-1.17	-4.78	-11.44
314	114	36.89	-0.14	-4.19	-13.21
314	2014	36.89	-0.14	-4.19	-10.04
315	115	40.28	0.15	-1.78	-5.62
315	2015	40.28	0.15	-1.78	-4.27
316	116	43.67	0.13	1.49	4.68
316	2016	43.67	0.13	1.49	3.56
317	117	47.06	0.10	4.13	13.02
317	2017	47.06	0.10	4.13	9.89
318	118	50.45	0.15	5.63	17.74
318	2018	50.45	0.15	5.63	13.48
319	119	53.84	0.20	6.17	19.44
319	2019	53.84	0.20	6.17	14.78
320	120	57.23	-0.06	5.82	18.34
320	2020	57.23	-0.06	5.82	13.94
321	121	60.62	-1.25	4.50	14.18
321	2021	60.62	-1.25	4.50	10.78
322	122	64.01	-3.75	2.00	6.31
322	2022	64.01	-3.75	2.00	4.80
323	123	67.40	-5.50	-1.00	-3.16
323	2023	67.40	-5.50	-1.00	-2.41
324	124	70.45	-3.72	-2.89	-9.10
324	2024	70.45	-3.72	-2.89	-6.92
325	125	73.50	-1.34	-3.32	-10.46
325	2025	73.50	-1.34	-3.32	-7.95
326	126	76.26	-0.23	-2.97	-9.35
326	2026	76.26	-0.23	-2.97	-7.11
327	127	79.02	0.15	-1.94	-6.12
327	2027	79.02	0.15	-1.94	-4.65
328	128	81.78	0.13	-0.49	-1.53
328	2028	81.78	0.13	-0.49	-1.16
329	129	84.54	-0.12	0.58	1.83
329	2029	84.54	-0.12	0.58	1.39
330	130	87.30	-0.49	0.97	3.06
330	2030	87.30	-0.49	0.97	2.32
331	131	90.06	-0.79	0.82	2.58
331	2031	90.06	-0.79	0.82	1.96
332	132	92.82	-0.49	0.24	0.74
332	2032	92.82	-0.49	0.24	0.57
333	133	95.58	1.46	-0.68	-2.15
333	2033	95.58	1.46	-0.68	-1.63
334	134	98.34	6.34	-1.85	-5.84
334	2034	98.34	6.34	-1.85	-4.44
335	135	101.10	7.14	-1.60	-5.03
335	2035	101.10	7.14	-1.60	-3.82
201	2001	0.00	7.57	-1.62	-3.88
201	1001	0.00	7.57	-1.62	3.88
202	2002	2.74	6.78	-1.92	-4.61
202	1002	2.74	6.78	-1.92	4.61
203	2003	5.48	1.61	-0.74	-1.78
203	1003	5.48	1.61	-0.74	1.78
204	2004	8.22	-0.45	0.26	0.63
204	1004	8.22	-0.45	0.26	-0.63
205	2005	10.96	-0.75	1.05	2.52
205	1005	10.96	-0.75	1.05	-2.52
206	2006	13.70	-0.44	1.57	3.76
206	1006	13.70	-0.44	1.57	-3.76
207	2007	16.44	-0.20	1.76	4.20
207	1007	16.44	-0.20	1.76	-4.20
208	2008	19.18	-0.40	1.52	3.65
208	1008	19.18	-0.40	1.52	-3.65
209	2009	21.92	-1.26	0.77	1.83
209	1009	21.92	-1.26	0.77	-1.83
210	2010	24.66	-2.66	-0.65	-1.56
210	1010	24.66	-2.66	-0.65	1.56
211	2011	27.40	-3.82	-2.52	-6.04
211	1011	27.40	-3.82	-2.52	6.04
212	2012	30.45	-2.90	-4.32	-10.35
212	1012	30.45	-2.90	-4.32	10.35
213	2013	33.50	-1.17	-4.78	-11.44
213	1013	33.50	-1.17	-4.78	11.44
214	2014	36.89	-0.14	-4.19	-10.04
214	1014	36.89	-0.14	-4.19	10.04
215	2015	40.28	0.15	-1.78	-4.27
215	1015	40.28	0.15	-1.78	4.27
216	2016	43.67	0.13	1.49	3.56
216	1016	43.67	0.13	1.49	-3.56

217	2017	47.06	0.10	4.13	9.89
217	1017	47.06	0.10	4.13	-9.89
218	2018	50.45	0.15	5.63	13.48
218	1018	50.45	0.15	5.63	-13.48
219	2019	53.84	0.20	6.17	14.78
219	1019	53.84	0.20	6.17	-14.78
220	2020	57.23	-0.06	5.82	13.94
220	1020	57.23	-0.06	5.82	-13.94
221	2021	60.62	-1.25	4.50	10.78
221	1021	60.62	-1.25	4.50	-10.78
222	2022	64.01	-3.75	2.00	4.80
222	1022	64.01	-3.75	2.00	-4.80
223	2023	67.40	-5.50	-1.00	-2.41
223	1023	67.40	-5.50	-1.00	2.41
224	2024	70.45	-3.72	-2.89	-6.92
224	1024	70.45	-3.72	-2.89	6.92
225	2025	73.50	-1.34	-3.32	-7.95
225	1025	73.50	-1.34	-3.32	7.95
226	2026	76.26	-0.23	-2.97	-7.11
226	1026	76.26	-0.23	-2.97	7.11
227	2027	79.02	0.15	-1.94	-4.65
227	1027	79.02	0.15	-1.94	4.65
228	2028	81.78	0.13	-0.49	-1.16
228	1028	81.78	0.13	-0.49	1.16
229	2029	84.54	-0.12	0.58	1.39
229	1029	84.54	-0.12	0.58	-1.39
230	2030	87.30	-0.49	0.97	2.32
230	1030	87.30	-0.49	0.97	-2.32
231	2031	90.06	-0.79	0.82	1.96
231	1031	90.06	-0.79	0.82	-1.96
232	2032	92.82	-0.49	0.24	0.57
232	1032	92.82	-0.49	0.24	-0.57
233	2033	95.58	1.46	-0.68	-1.63
233	1033	95.58	1.46	-0.68	1.63
234	2034	98.34	6.34	-1.85	-4.44
234	1034	98.34	6.34	-1.85	4.44
235	2035	101.10	7.14	-1.60	-3.82
235	1035	101.10	7.14	-1.60	3.82
401	1001	0.00	7.57	-1.62	3.88
401	1	0.00	7.57	-1.62	5.10
402	1002	2.74	6.78	-1.92	4.61
402	2	2.74	6.78	-1.92	6.06
403	1003	5.48	1.61	-0.74	1.78
403	3	5.48	1.61	-0.74	2.34
404	1004	8.22	-0.45	0.26	-0.63
404	4	8.22	-0.45	0.26	-0.83
405	1005	10.96	-0.75	1.05	-2.52
405	5	10.96	-0.75	1.05	-3.31
406	1006	13.70	-0.44	1.57	-3.76
406	6	13.70	-0.44	1.57	-4.94
407	1007	16.44	-0.20	1.76	-4.20
407	7	16.44	-0.20	1.76	-5.53
408	1008	19.18	-0.40	1.52	-3.65
408	8	19.18	-0.40	1.52	-4.80
409	1009	21.92	-1.26	0.77	-1.83
409	9	21.92	-1.26	0.77	-2.41
410	1010	24.66	-2.66	-0.65	1.56
410	10	24.66	-2.66	-0.65	2.05
411	1011	27.40	-3.82	-2.52	6.04
411	11	27.40	-3.82	-2.52	7.95
412	1012	30.45	-2.90	-4.32	10.35
412	12	30.45	-2.90	-4.32	13.61
413	1013	33.50	-1.17	-4.78	11.44
413	13	33.50	-1.17	-4.78	15.05
414	1014	36.89	-0.14	-4.19	10.04
414	14	36.89	-0.14	-4.19	13.21
415	1015	40.28	0.15	-1.78	4.27
415	15	40.28	0.15	-1.78	5.62
416	1016	43.67	0.13	1.49	-3.56
416	16	43.67	0.13	1.49	-4.68
417	1017	47.06	0.10	4.13	-9.89
417	17	47.06	0.10	4.13	-13.02
418	1018	50.45	0.15	5.63	-13.48
418	18	50.45	0.15	5.63	-17.74
419	1019	53.84	0.20	6.17	-14.78
419	19	53.84	0.20	6.17	-19.44
420	1020	57.23	-0.06	5.82	-13.94
420	20	57.23	-0.06	5.82	-18.34
421	1021	60.62	-1.25	4.50	-10.78
421	21	60.62	-1.25	4.50	-14.18
422	1022	64.01	-3.75	2.00	-4.80
422	22	64.01	-3.75	2.00	-6.31
423	1023	67.40	-5.50	-1.00	2.41

423	23	67.40	-5.50	-1.00	3.16
424	1024	70.45	-3.72	-2.89	6.92
424	24	70.45	-3.72	-2.89	9.10
425	1025	73.50	-1.34	-3.32	7.95
425	25	73.50	-1.34	-3.32	10.46
426	1026	76.26	-0.23	-2.97	7.11
42	26	76.26	-0.23	-2.97	9.35
427	1027	79.02	0.15	-1.94	4.65
427	27	79.02	0.15	-1.94	6.12
428	1028	81.78	0.13	-0.49	1.16
428	28	81.78	0.13	-0.49	1.53
429	1029	84.54	-0.12	0.58	-1.39
429	29	84.54	-0.12	0.58	-1.83
430	1030	87.30	-0.49	0.97	-2.32
430	30	87.30	-0.49	0.97	-3.06
431	1031	90.06	-0.79	0.82	-1.96
431	31	90.06	-0.79	0.82	-2.58
432	1032	92.82	-0.49	0.24	-0.57
432	32	92.82	-0.49	0.24	-0.74
433	1033	95.58	1.46	-0.68	1.63
433	33	95.58	1.46	-0.68	2.15
434	1034	98.34	6.34	-1.85	4.44
434	34	98.34	6.34	-1.85	5.84
435	1035	101.10	7.14	-1.60	3.82
435	35	101.10	7.14	-1.60	5.03

GRÁFICO DE ESFUERZOS



Pretensado Isostático (t=0)
[1; 1]PRETFD.FAM1.ISO + [1; 1]PRETFD.FAM2.ISO + [1; 1]PRETFD.FAM3.ISO + [1; 1]PRETFD.FAM4.ISO
Coef. exc:

Barra	Nudo	X	N (T)	Vy (T)	Mz (Tm)
1	1	0.00	0.00	0.00	0.00
1	2	2.74	0.00	0.00	0.00
2	2	2.74	0.00	0.00	0.00
2	3	5.48	0.00	0.00	0.00
3	3	5.48	0.00	0.00	0.00
3	4	8.22	0.00	0.00	0.00
4	4	8.22	0.00	0.00	0.00
4	5	10.96	0.00	0.00	0.00
5	5	10.96	0.00	0.00	0.00
5	6	13.70	0.00	0.00	0.00
6	6	13.70	0.00	0.00	0.00
6	7	16.44	0.00	0.00	0.00
7	7	16.44	0.00	0.00	0.00
7	8	19.18	0.00	0.00	0.00
8	8	19.18	0.00	0.00	0.00
8	9	21.92	0.00	0.00	0.00
9	9	21.92	0.00	0.00	0.00
9	10	24.66	0.00	0.00	0.00
10	10	24.66	-998.62	0.00	778.92
10	11	27.40	-1002.40	0.00	781.87
11	11	27.40	-1943.32	0.00	1515.79
11	12	30.45	-1951.13	0.00	1521.88
12	12	30.45	-1951.13	0.00	1521.88
12	10013	33.50	-1905.95	0.00	1486.64
13	13	33.50	-1905.95	0.00	1486.64
13	14	36.89	-1971.93	0.00	1538.10
14	14	36.89	-1971.93	0.00	1538.10
14	15	40.28	-1963.24	0.00	1531.33
15	15	40.28	-887.03	0.00	691.89
15	16	43.67	-882.94	0.00	688.69
16	16	43.67	0.00	0.00	0.00
16	17	47.06	0.00	0.00	0.00
17	17	47.06	0.00	0.00	0.00
17	18	50.45	0.00	0.00	0.00
18	18	50.45	0.00	0.00	0.00
18	19	53.84	0.00	0.00	0.00
19	19	53.84	0.00	0.00	0.00
19	20	57.23	0.00	0.00	0.00
20	20	57.23	0.00	0.00	0.00
20	21	60.62	0.00	0.00	0.00
21	21	60.62	0.00	0.00	0.00
21	22	64.01	0.00	0.00	0.00
22	22	64.01	-1003.52	0.00	782.75
22	23	67.40	-1008.20	0.00	786.39
23	23	67.40	-1951.35	0.00	1522.06
23	24	70.45	-1959.18	0.00	1528.16
24	24	70.45	-1959.18	0.00	1528.16
24	10025	73.50	-1896.90	0.00	1479.58
25	25	73.50	-1896.90	0.00	1479.58
25	26	76.26	-1957.81	0.00	1527.09
26	26	76.26	-1957.81	0.00	1527.09
26	27	79.02	-1950.73	0.00	1521.57
27	27	79.02	-873.70	0.00	681.48
27	28	81.78	-870.36	0.00	678.88
28	28	81.78	0.00	0.00	0.00
28	29	84.54	0.00	0.00	0.00
29	29	84.54	0.00	0.00	0.00
29	30	87.30	0.00	0.00	0.00
30	30	87.30	0.00	0.00	0.00
30	31	90.06	0.00	0.00	0.00
31	31	90.06	0.00	0.00	0.00
31	32	92.82	0.00	0.00	0.00
32	32	92.82	0.00	0.00	0.00
32	33	95.58	0.00	0.00	0.00
33	33	95.58	0.00	0.00	0.00
33	34	98.34	0.00	0.00	0.00
34	34	98.34	0.00	0.00	0.00
34	35	101.10	0.00	0.00	0.00
101	101	0.00	0.00	0.00	0.00
101	102	0.00	0.00	0.00	0.00
102	102	0.00	0.00	0.00	0.00
102	103	0.00	0.00	0.00	0.00

103	103	0.00	0.00	0.00	0.00
103	104	0.00	0.00	0.00	0.00
104	104	0.00	0.00	0.00	0.00
104	105	0.00	0.00	0.00	0.00
105	105	0.00	0.00	0.00	0.00
105	106	0.00	0.00	0.00	0.00
106	106	0.00	0.00	0.00	0.00
106	107	0.00	0.00	0.00	0.00
107	107	0.00	0.00	0.00	0.00
107	108	0.00	0.00	0.00	0.00
108	108	0.00	0.00	0.00	0.00
108	109	0.00	0.00	0.00	0.00
109	109	0.00	0.00	0.00	0.00
109	110	0.00	0.00	0.00	0.00
110	110	0.00	0.00	0.00	0.00
110	10111	0.00	0.00	0.00	0.00
111	111	0.00	0.00	0.00	0.00
111	112	0.00	0.00	0.00	0.00
112	112	0.00	0.00	0.00	0.00
112	113	0.00	0.00	0.00	0.00
113	113	0.00	0.00	0.00	0.00
113	114	0.00	0.00	0.00	0.00
114	114	0.00	0.00	0.00	0.00
114	115	0.00	0.00	0.00	0.00
115	115	0.00	0.00	0.00	0.00
115	116	0.00	0.00	0.00	0.00
116	116	0.00	0.00	0.00	0.00
116	117	0.00	0.00	0.00	0.00
117	117	0.00	0.00	0.00	0.00
11	118	0.00	0.00	0.00	0.00
118	118	0.00	0.00	0.00	0.00
118	119	0.00	0.00	0.00	0.00
119	119	0.00	0.00	0.00	0.00
119	120	0.00	0.00	0.00	0.00
120	120	0.00	0.00	0.00	0.00
120	121	0.00	0.00	0.00	0.00
121	121	0.00	0.00	0.00	0.00
121	122	0.00	0.00	0.00	0.00
122	122	0.00	0.00	0.00	0.00
122	10123	0.00	0.00	0.00	0.00
123	123	0.00	0.00	0.00	0.00
123	124	0.00	0.00	0.00	0.00
124	124	0.00	0.00	0.00	0.00
124	125	0.00	0.00	0.00	0.00
125	125	0.00	0.00	0.00	0.00
125	126	0.00	0.00	0.00	0.00
126	126	0.00	0.00	0.00	0.00
126	127	0.00	0.00	0.00	0.00
127	127	0.00	0.00	0.00	0.00
127	128	0.00	0.00	0.00	0.00
128	128	0.00	0.00	0.00	0.00
12	129	0.00	0.00	0.00	0.00
12	129	0.00	0.00	0.00	0.00
129	130	0.00	0.00	0.00	0.00
130	130	0.00	0.00	0.00	0.00
130	131	0.00	0.00	0.00	0.00
131	131	0.00	0.00	0.00	0.00
131	132	0.00	0.00	0.00	0.00
132	132	0.00	0.00	0.00	0.00
132	133	0.00	0.00	0.00	0.00
133	133	0.00	0.00	0.00	0.00
133	134	0.00	0.00	0.00	0.00
134	134	0.00	0.00	0.00	0.00
134	135	0.00	0.00	0.00	0.00
301	101	0.00	0.00	0.00	0.00
301	2001	0.00	0.00	0.00	0.00
302	102	0.00	0.00	0.00	0.00
302	2002	0.00	0.00	0.00	0.00
303	103	0.00	0.00	0.00	0.00
303	2003	0.00	0.00	0.00	0.00
304	104	0.00	0.00	0.00	0.00
304	2004	0.00	0.00	0.00	0.00
305	105	0.00	0.00	0.00	0.00
305	2005	0.00	0.00	0.00	0.00
30	106	0.00	0.00	0.00	0.00
30	2006	0.00	0.00	0.00	0.00
307	107	0.00	0.00	0.00	0.00
307	2007	0.00	0.00	0.00	0.00
308	108	0.00	0.00	0.00	0.00
308	2008	0.00	0.00	0.00	0.00
309	109	0.00	0.00	0.00	0.00
309	2009	0.00	0.00	0.00	0.00
310	110	0.00	0.00	0.00	0.00

310	2010	0.00	0.00	0.00	0.00
311	111	0.00	0.00	0.00	0.00
311	2011	0.00	0.00	0.00	0.00
312	112	0.00	0.00	0.00	0.00
312	2012	0.00	0.00	0.00	0.00
313	113	0.00	0.00	0.00	0.00
313	2013	0.00	0.00	0.00	0.00
314	114	0.00	0.00	0.00	0.00
314	2014	0.00	0.00	0.00	0.00
315	115	0.00	0.00	0.00	0.00
315	2015	0.00	0.00	0.00	0.00
316	116	0.00	0.00	0.00	0.00
316	2016	0.00	0.00	0.00	0.00
317	117	0.00	0.00	0.00	0.00
317	2017	0.00	0.00	0.00	0.00
318	118	0.00	0.00	0.00	0.00
318	2018	0.00	0.00	0.00	0.00
319	119	0.00	0.00	0.00	0.00
319	2019	0.00	0.00	0.00	0.00
320	120	0.00	0.00	0.00	0.00
320	2020	0.00	0.00	0.00	0.00
321	121	0.00	0.00	0.00	0.00
321	2021	0.00	0.00	0.00	0.00
322	122	0.00	0.00	0.00	0.00
322	2022	0.00	0.00	0.00	0.00
323	123	0.00	0.00	0.00	0.00
323	2023	0.00	0.00	0.00	0.00
324	124	0.00	0.00	0.00	0.00
324	2024	0.00	0.00	0.00	0.00
325	125	0.00	0.00	0.00	0.00
325	2025	0.00	0.00	0.00	0.00
326	126	0.00	0.00	0.00	0.00
326	2026	0.00	0.00	0.00	0.00
327	127	0.00	0.00	0.00	0.00
327	2027	0.00	0.00	0.00	0.00
328	128	0.00	0.00	0.00	0.00
328	2028	0.00	0.00	0.00	0.00
329	129	0.00	0.00	0.00	0.00
329	2029	0.00	0.00	0.00	0.00
330	130	0.00	0.00	0.00	0.00
330	2030	0.00	0.00	0.00	0.00
331	131	0.00	0.00	0.00	0.00
331	2031	0.00	0.00	0.00	0.00
332	132	0.00	0.00	0.00	0.00
332	2032	0.00	0.00	0.00	0.00
333	133	0.00	0.00	0.00	0.00
333	2033	0.00	0.00	0.00	0.00
334	134	0.00	0.00	0.00	0.00
334	2034	0.00	0.00	0.00	0.00
335	135	0.00	0.00	0.00	0.00
335	2035	0.00	0.00	0.00	0.00
201	2001	0.00	0.00	0.00	0.00
201	1001	0.00	0.00	0.00	0.00
202	2002	0.00	0.00	0.00	0.00
202	1002	0.00	0.00	0.00	0.00
203	2003	0.00	0.00	0.00	0.00
203	1003	0.00	0.00	0.00	0.00
204	2004	0.00	0.00	0.00	0.00
204	1004	0.00	0.00	0.00	0.00
205	2005	0.00	0.00	0.00	0.00
205	1005	0.00	0.00	0.00	0.00
206	2006	0.00	0.00	0.00	0.00
206	1006	0.00	0.00	0.00	0.00
207	2007	0.00	0.00	0.00	0.00
207	1007	0.00	0.00	0.00	0.00
208	2008	0.00	0.00	0.00	0.00
208	1008	0.00	0.00	0.00	0.00
209	2009	0.00	0.00	0.00	0.00
209	1009	0.00	0.00	0.00	0.00
210	2010	0.00	0.00	0.00	0.00
210	1010	0.00	0.00	0.00	0.00
211	2011	0.00	0.00	0.00	0.00
211	1011	0.00	0.00	0.00	0.00
212	2012	0.00	0.00	0.00	0.00
212	1012	0.00	0.00	0.00	0.00
213	2013	0.00	0.00	0.00	0.00
213	1013	0.00	0.00	0.00	0.00
214	2014	0.00	0.00	0.00	0.00
214	1014	0.00	0.00	0.00	0.00
215	2015	0.00	0.00	0.00	0.00
215	1015	0.00	0.00	0.00	0.00
216	2016	0.00	0.00	0.00	0.00
216	1016	0.00	0.00	0.00	0.00

217	2017	0.00	0.00	0.00	0.00
217	1017	0.00	0.00	0.00	0.00
218	2018	0.00	0.00	0.00	0.00
218	1018	0.00	0.00	0.00	0.00
219	2019	0.00	0.00	0.00	0.00
219	1019	0.00	0.00	0.00	0.00
220	2020	0.00	0.00	0.00	0.00
220	1020	0.00	0.00	0.00	0.00
221	2021	0.00	0.00	0.00	0.00
221	1021	0.00	0.00	0.00	0.00
222	2022	0.00	0.00	0.00	0.00
222	1022	0.00	0.00	0.00	0.00
223	2023	0.00	0.00	0.00	0.00
223	1023	0.00	0.00	0.00	0.00
224	2024	0.00	0.00	0.00	0.00
224	1024	0.00	0.00	0.00	0.00
225	2025	0.00	0.00	0.00	0.00
225	1025	0.00	0.00	0.00	0.00
226	2026	0.00	0.00	0.00	0.00
226	1026	0.00	0.00	0.00	0.00
227	2027	0.00	0.00	0.00	0.00
227	1027	0.00	0.00	0.00	0.00
228	2028	0.00	0.00	0.00	0.00
228	1028	0.00	0.00	0.00	0.00
229	2029	0.00	0.00	0.00	0.00
229	1029	0.00	0.00	0.00	0.00
230	2030	0.00	0.00	0.00	0.00
230	1030	0.00	0.00	0.00	0.00
231	2031	0.00	0.00	0.00	0.00
231	1031	0.00	0.00	0.00	0.00
232	2032	0.00	0.00	0.00	0.00
232	1032	0.00	0.00	0.00	0.00
233	2033	0.00	0.00	0.00	0.00
233	1033	0.00	0.00	0.00	0.00
234	2034	0.00	0.00	0.00	0.00
234	1034	0.00	0.00	0.00	0.00
235	2035	0.00	0.00	0.00	0.00
235	1035	0.00	0.00	0.00	0.00
401	1001	0.00	0.00	0.00	0.00
401	1	0.00	0.00	0.00	0.00
402	1002	0.00	0.00	0.00	0.00
402	2	0.00	0.00	0.00	0.00
403	1003	0.00	0.00	0.00	0.00
403	3	0.00	0.00	0.00	0.00
404	1004	0.00	0.00	0.00	0.00
404	4	0.00	0.00	0.00	0.00
405	1005	0.00	0.00	0.00	0.00
405	5	0.00	0.00	0.00	0.00
406	1006	0.00	0.00	0.00	0.00
406	6	0.00	0.00	0.00	0.00
407	1007	0.00	0.00	0.00	0.00
407	7	0.00	0.00	0.00	0.00
408	1008	0.00	0.00	0.00	0.00
408	8	0.00	0.00	0.00	0.00
409	1009	0.00	0.00	0.00	0.00
409	9	0.00	0.00	0.00	0.00
410	1010	0.00	0.00	0.00	0.00
410	10	0.00	0.00	0.00	0.00
411	1011	0.00	0.00	0.00	0.00
411	11	0.00	0.00	0.00	0.00
412	1012	0.00	0.00	0.00	0.00
412	12	0.00	0.00	0.00	0.00
413	1013	0.00	0.00	0.00	0.00
413	13	0.00	0.00	0.00	0.00
414	1014	0.00	0.00	0.00	0.00
414	14	0.00	0.00	0.00	0.00
415	1015	0.00	0.00	0.00	0.00
415	15	0.00	0.00	0.00	0.00
416	1016	0.00	0.00	0.00	0.00
416	16	0.00	0.00	0.00	0.00
417	1017	0.00	0.00	0.00	0.00
417	17	0.00	0.00	0.00	0.00
418	1018	0.00	0.00	0.00	0.00
418	18	0.00	0.00	0.00	0.00
419	1019	0.00	0.00	0.00	0.00
419	19	0.00	0.00	0.00	0.00
420	1020	0.00	0.00	0.00	0.00
420	20	0.00	0.00	0.00	0.00
421	1021	0.00	0.00	0.00	0.00
421	21	0.00	0.00	0.00	0.00
422	1022	0.00	0.00	0.00	0.00
422	22	0.00	0.00	0.00	0.00
423	1023	0.00	0.00	0.00	0.00

423	23	0.00	0.00	0.00	0.00
424	1024	0.00	0.00	0.00	0.00
424	24	0.00	0.00	0.00	0.00
425	1025	0.00	0.00	0.00	0.00
425	25	0.00	0.00	0.00	0.00
426	1026	0.00	0.00	0.00	0.00
426	26	0.00	0.00	0.00	0.00
427	1027	0.00	0.00	0.00	0.00
427	27	0.00	0.00	0.00	0.00
428	1028	0.00	0.00	0.00	0.00
428	28	0.00	0.00	0.00	0.00
429	1029	0.00	0.00	0.00	0.00
429	29	0.00	0.00	0.00	0.00
430	1030	0.00	0.00	0.00	0.00
430	30	0.00	0.00	0.00	0.00
431	1031	0.00	0.00	0.00	0.00
431	31	0.00	0.00	0.00	0.00
432	1032	0.00	0.00	0.00	0.00
432	32	0.00	0.00	0.00	0.00
433	1033	0.00	0.00	0.00	0.00
433	33	0.00	0.00	0.00	0.00
434	1034	0.00	0.00	0.00	0.00
434	34	0.00	0.00	0.00	0.00
435	1035	0.00	0.00	0.00	0.00
435	35	0.00	0.00	0.00	0.00

retensado Total (t=0)
1)PRETFC.FAM1.TOT + [1; 1)PRETFC.FAM2.TOT + [1; 1)PRETFC.FAM3.TOT + [1; 1)PRETFC.FAM4.TOT
f. exc:

Barra	Nudo	X	N (T)	Vy (T)	Mz (Tm)
1	1	0.00	-1.75	-4.91	-0.56
1	2	2.74	-1.75	-4.91	12.90
2	2	2.74	-14.62	-3.09	11.84
2	3	5.48	-14.62	-3.09	20.32
3	3	5.48	-27.57	-2.41	19.40
3	4	8.22	-27.57	-2.41	25.99
4	4	8.22	-41.83	-2.61	25.31
4	5	10.96	-41.83	-2.61	32.45
5	5	10.96	-59.14	-3.36	32.08
5	6	13.70	-59.14	-3.36	41.28
6	6	13.70	-82.35	-4.23	41.32
6	7	16.44	-82.35	-4.23	52.91
7	7	16.44	-116.55	-4.69	53.46
7	8	19.18	-116.55	-4.69	66.31
8	8	19.18	-170.88	-4.06	67.47
8	9	21.92	-170.88	-4.06	78.60
9	9	21.92	-222.51	-2.02	79.66
9	10	24.66	-222.51	-2.02	85.20
10	10	24.66	-249.43	0.96	85.50
10	11	27.40	-249.43	0.96	82.87
11	11	27.40	-260.72	4.25	82.47
11	12	30.45	-260.72	4.25	69.52
12	12	30.45	-249.90	7.05	68.27
12	10013	33.50	-249.90	7.05	46.78
13	13	33.50	-198.23	17.18	44.47
13	14	36.89	-198.23	17.18	-13.78
14	14	36.89	-141.81	14.97	-16.17
14	15	40.28	-141.81	14.97	-66.94
15	15	40.28	-120.49	10.35	-68.38
15	16	43.67	-120.49	10.35	-103.48
16	16	43.67	-114.21	4.48	-104.10
16	17	47.06	-114.21	4.48	-119.28
17	17	47.06	-116.04	-1.69	-119.14
17	18	50.45	-116.04	-1.69	-113.42
18	18	50.45	-126.17	-7.25	-112.53
18	19	53.84	-126.17	-7.25	-87.93
19	19	53.84	-151.97	-11.26	-86.22
19	20	57.23	-151.97	-11.26	-48.06
20	20	57.23	-214.54	-12.53	-45.41
20	21	60.62	-214.54	-12.53	-2.93
21	21	60.62	-272.93	-10.55	-0.46
2	22	64.01	-272.93	-10.55	35.30
22	22	64.01	-288.42	-6.26	36.58
22	23	67.40	-288.42	-6.26	57.80
23	23	67.40	-277.19	-1.47	58.01
23	24	70.45	-277.19	-1.47	62.49
24	24	70.45	-244.75	2.79	61.83
24	10025	73.50	-244.75	2.79	53.30
25	25	73.50	-180.06	5.39	51.73
25	26	76.26	-180.06	5.39	36.86
26	26	76.26	-128.44	5.90	35.36
26	27	79.02	-128.44	5.90	19.08
27	27	79.02	-96.18	5.01	18.19
27	28	81.78	-96.18	5.01	4.36
28	28	81.78	-74.44	3.38	3.97
28	29	84.54	-74.44	3.38	-5.37
29	29	84.54	-58.38	1.56	-5.34
29	30	87.30	-58.38	1.56	-9.63
30	30	87.30	-45.37	-0.06	-9.27
30	31	90.06	-45.37	-0.06	-9.10
31	31	90.06	-33.94	-1.14	-8.46
31	32	92.82	-33.94	-1.14	-5.33
32	32	92.82	-23.21	-1.39	-4.48
32	33	95.58	-23.21	-1.39	-0.63
33	33	95.58	-12.59	-0.62	0.37
33	34	98.34	-12.59	-0.62	2.09
34	34	98.34	-1.53	1.36	3.19
34	35	101.10	-1.53	1.36	-0.57
101	101	0.00	1.75	31.08	0.56
101	102	2.74	1.75	31.08	-84.59
102	102	2.74	14.62	29.26	-83.53
102	103	5.48	14.62	29.26	-163.70

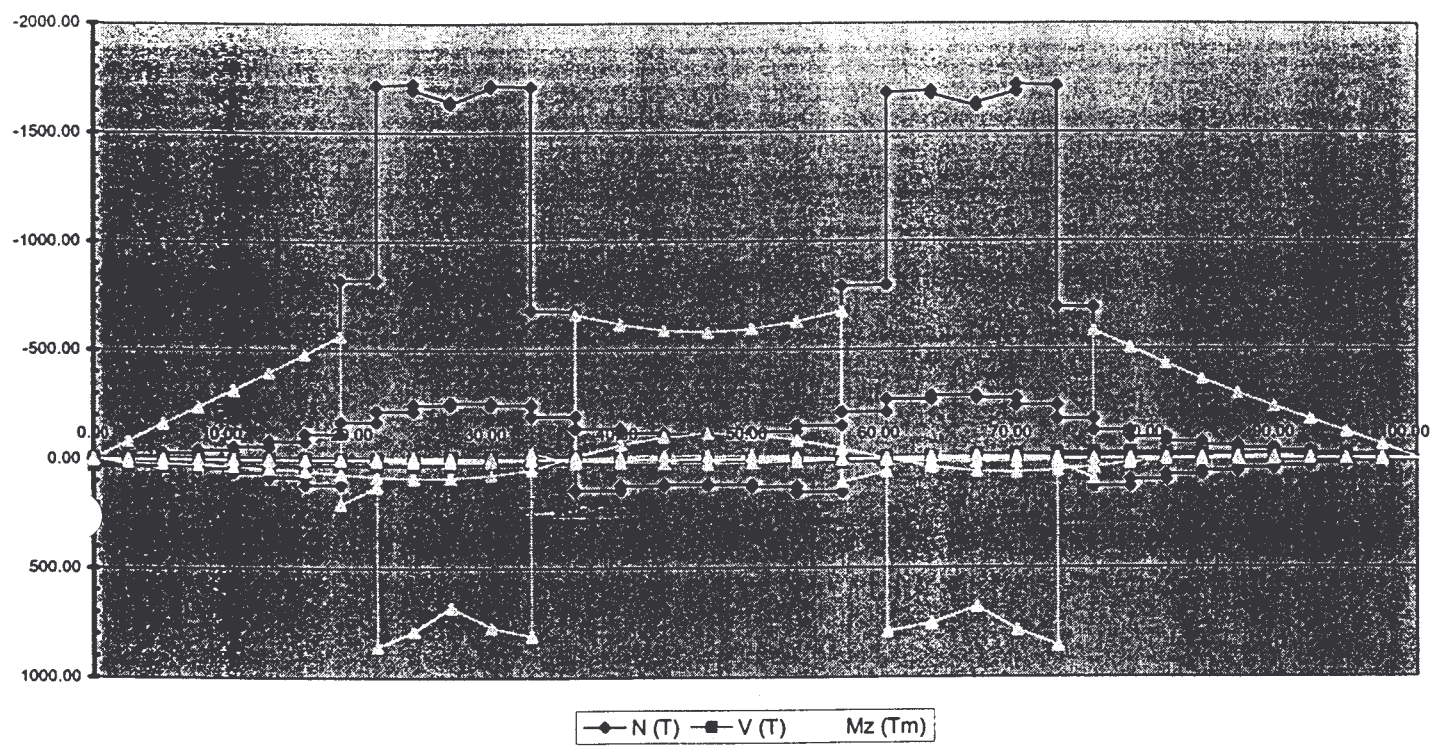
103	103	5.48	27.57	28.57	-162.78
103	104	8.22	27.57	28.57	-241.07
104	104	8.22	41.83	28.77	-240.38
104	105	10.96	41.83	28.77	-319.21
105	105	10.96	59.14	29.52	-318.85
105	106	13.70	59.14	29.52	-399.73
106	106	13.70	82.35	30.39	-399.78
106	107	16.44	82.35	30.39	-483.06
107	107	16.44	116.55	30.85	-483.61
107	108	19.18	116.55	30.85	-568.15
108	108	19.18	-821.86	30.23	205.03
108	109	21.92	-825.64	30.23	125.16
109	109	21.92	-1716.47	28.19	859.21
109	110	24.66	-1723.50	28.19	787.46
110	110	24.66	-1696.57	25.21	787.17
110	10111	27.40	-1644.11	25.21	677.18
111	111	27.40	-1632.82	-11.31	677.58
111	112	30.45	-1707.24	-11.31	770.12
112	112	30.45	-1718.06	-14.11	771.37
112	113	33.50	-1710.24	-14.11	808.30
113	113	33.50	-683.95	-14.93	-30.21
113	114	36.89	-679.85	-14.93	17.23
114	114	36.89	141.81	-12.73	-665.28
114	115	40.28	141.81	-12.73	-622.13
115	115	40.28	120.49	-8.11	-620.69
115	116	43.67	120.49	-8.11	-593.21
116	116	43.67	114.21	-2.23	-592.59
116	117	47.06	114.21	-2.23	-585.03
117	117	47.06	116.04	3.93	-585.17
117	118	50.45	116.04	3.93	-598.51
118	118	50.45	126.17	9.50	-599.40
118	119	53.84	126.17	9.50	-631.61
119	119	53.84	151.97	13.50	-633.32
119	120	57.23	151.97	13.50	-679.10
120	120	57.23	-794.53	14.78	105.33
120	121	60.62	-799.21	14.78	58.89
121	121	60.62	-1682.48	12.79	790.90
121	122	64.01	-1691.17	12.79	754.31
122	122	64.01	-1675.68	8.51	753.03
122	10123	67.40	-1619.08	8.51	680.04
123	123	67.40	-1634.98	-20.94	679.84
123	124	70.45	-1687.74	-20.94	784.86
124	124	70.45	-1720.18	-25.21	785.53
124	125	73.50	-1712.37	-25.21	856.32
125	125	73.50	-697.07	-27.61	19.13
125	126	76.26	-693.73	-27.61	92.73
126	126	76.26	128.44	-28.12	-587.32
126	127	79.02	128.44	-28.12	-509.72
127	127	79.02	96.18	-27.23	-508.82
127	128	81.78	96.18	-27.23	-433.67
128	128	81.78	74.44	-25.61	-433.28
128	129	84.54	74.44	-25.61	-362.61
129	129	84.54	58.38	-23.78	-362.64
129	130	87.30	58.38	-23.78	-297.02
130	130	87.30	45.37	-22.16	-297.38
130	131	90.06	45.37	-22.16	-236.22
131	131	90.06	33.94	-21.09	-236.86
131	132	92.82	33.94	-21.09	-178.66
132	132	92.82	23.21	-20.83	-179.51
132	133	95.58	23.21	-20.83	-122.03
133	133	95.58	12.59	-21.60	-123.03
133	134	98.34	12.59	-21.60	-63.42
134	134	98.34	1.53	-23.58	-64.52
134	135	101.10	1.53	-23.58	0.57
301	101	0.00	-7.71	1.56	4.92
301	2001	0.00	-7.71	1.56	3.74
302	102	2.74	-6.90	1.82	5.73
302	2002	2.74	-6.90	1.82	4.36
303	103	5.48	-1.64	0.69	2.16
303	2003	5.48	-1.64	0.69	1.64
304	104	8.22	0.45	-0.20	-0.63
304	2004	8.22	0.45	-0.20	-0.48
305	105	10.96	0.76	-0.75	-2.36
305	2005	10.96	0.76	-0.75	-1.80
306	106	13.70	0.45	-0.87	-2.75
306	2006	13.70	0.45	-0.87	-2.09
307	107	16.44	0.20	-0.46	-1.45
307	2007	16.44	0.20	-0.46	-1.10
308	108	19.18	0.42	0.63	1.97
308	2008	19.18	0.42	0.63	1.50
309	109	21.92	1.30	2.04	6.43
309	2009	21.92	1.30	2.04	4.88
310	110	24.66	2.75	2.98	9.39

310	2010	24.66	2.75	2.98	7.14
311	111	27.40	3.96	3.29	10.36
311	2011	27.40	3.96	3.29	7.87
312	112	30.45	3.00	2.80	8.82
312	2012	30.45	3.00	2.80	6.70
313	113	33.50	1.21	0.83	2.60
313	2013	33.50	1.21	0.83	1.98
314	114	36.89	0.14	-2.21	-6.95
314	2014	36.89	0.14	-2.21	-5.28
315	115	40.28	-0.16	-4.62	-14.56
315	2015	40.28	-0.16	-4.62	-11.06
316	116	43.67	-0.13	-5.87	-18.50
316	2016	43.67	-0.13	-5.87	-14.06
317	117	47.06	-0.10	-6.17	-19.43
317	2017	47.06	-0.10	-6.17	-14.76
318	118	50.45	-0.15	-5.57	-17.54
318	2018	50.45	-0.15	-5.57	-13.33
319	119	53.84	-0.21	-4.00	-12.61
319	2019	53.84	-0.21	-4.00	-9.58
320	120	57.23	0.06	-1.27	-4.01
320	2020	57.23	0.06	-1.27	-3.05
321	121	60.62	1.26	1.98	6.25
321	2021	60.62	1.26	1.98	4.75
322	122	64.01	3.80	4.29	13.50
322	2022	64.01	3.80	4.29	10.26
323	123	67.40	5.57	4.79	15.09
323	2023	67.40	5.57	4.79	11.47
324	124	70.45	3.77	4.26	13.43
324	2024	70.45	3.77	4.26	10.21
325	125	73.50	1.36	2.40	7.57
325	2025	73.50	1.36	2.40	5.75
326	126	76.26	0.24	0.51	1.60
326	2026	76.26	0.24	0.51	1.21
327	127	79.02	-0.15	-0.89	-2.80
327	2027	79.02	-0.15	-0.89	-2.13
328	128	81.78	-0.13	-1.62	-5.11
328	2028	81.78	-0.13	-1.62	-3.89
329	129	84.54	0.12	-1.83	-5.76
329	2029	84.54	0.12	-1.83	-4.38
330	130	87.30	0.50	-1.62	-5.10
330	2030	87.30	0.50	-1.62	-3.87
331	131	90.06	0.81	-1.07	-3.38
331	2031	90.06	0.81	-1.07	-2.57
332	132	92.82	0.50	-0.26	-0.82
332	2032	92.82	0.50	-0.26	-0.62
333	133	95.58	-1.50	0.77	2.44
333	2033	95.58	-1.50	0.77	1.85
334	134	98.34	-6.53	1.98	6.25
334	2034	98.34	-6.53	1.98	4.75
335	135	101.10	-7.34	1.67	5.25
335	2035	101.10	-7.34	1.67	3.99
201	1001	0.00	-7.71	1.56	3.74
201	1001	0.00	-7.71	1.56	-3.74
202	1002	2.74	-6.90	1.82	4.36
202	1002	2.74	-6.90	1.82	-4.36
203	1003	5.48	-1.64	0.69	1.64
203	1003	5.48	-1.64	0.69	-1.64
204	1004	8.22	0.45	-0.20	-0.48
204	1004	8.22	0.45	-0.20	0.48
205	1005	10.96	0.76	-0.75	-1.80
205	1005	10.96	0.76	-0.75	1.80
206	1006	13.70	0.45	-0.87	-2.09
206	1006	13.70	0.45	-0.87	2.09
207	1007	16.44	0.20	-0.46	-1.10
207	1007	16.44	0.20	-0.46	1.10
208	1008	19.18	0.42	0.63	1.50
208	1008	19.18	0.42	0.63	-1.50
209	1009	21.92	1.30	2.04	4.88
209	1009	21.92	1.30	2.04	-4.88
210	1010	24.66	2.75	2.98	7.14
210	1010	24.66	2.75	2.98	-7.14
211	1011	27.40	3.96	3.29	7.87
211	1011	27.40	3.96	3.29	-7.87
212	1012	30.45	3.00	2.80	6.70
212	1012	30.45	3.00	2.80	-6.70
213	1013	33.50	1.21	0.83	1.98
213	1013	33.50	1.21	0.83	-1.98
214	1014	36.89	0.14	-2.21	-5.28
214	1014	36.89	0.14	-2.21	5.28
215	1015	40.28	-0.16	-4.62	-11.06
215	1015	40.28	-0.16	-4.62	11.06
216	1016	43.67	-0.13	-5.87	-14.06
216	1016	43.67	-0.13	-5.87	14.06

217	2017	47.06	-0.10	-6.17	-14.76
217	1017	47.06	-0.10	-6.17	14.76
218	2018	50.45	-0.15	-5.57	-13.33
218	1018	50.45	-0.15	-5.57	13.33
219	2019	53.84	-0.21	-4.00	-9.58
219	1019	53.84	-0.21	-4.00	9.58
220	2020	57.23	0.06	-1.27	-3.05
220	1020	57.23	0.06	-1.27	3.05
221	2021	60.62	1.26	1.98	4.75
221	1021	60.62	1.26	1.98	-4.75
222	2022	64.01	3.80	4.29	10.26
222	1022	64.01	3.80	4.29	-10.26
223	2023	67.40	5.57	4.79	11.47
223	1023	67.40	5.57	4.79	-11.47
224	2024	70.45	3.77	4.26	10.21
224	1024	70.45	3.77	4.26	-10.21
225	2025	73.50	1.36	2.40	5.75
225	1025	73.50	1.36	2.40	-5.75
226	2026	76.26	0.24	0.51	1.21
226	1026	76.26	0.24	0.51	-1.21
227	2027	79.02	-0.15	-0.89	-2.13
227	1027	79.02	-0.15	-0.89	2.13
228	2028	81.78	-0.13	-1.62	-3.89
228	1028	81.78	-0.13	-1.62	3.88
229	2029	84.54	0.12	-1.83	-4.38
229	1029	84.54	0.12	-1.83	4.38
230	2030	87.30	0.50	-1.62	-3.87
230	1030	87.30	0.50	-1.62	3.87
231	2031	90.06	0.81	-1.07	-2.57
231	1031	90.06	0.81	-1.07	2.57
232	2032	92.82	0.50	-0.26	-0.62
232	1032	92.82	0.50	-0.26	0.62
233	2033	95.58	-1.50	0.77	1.85
233	1033	95.58	-1.50	0.77	-1.85
234	2034	98.34	-6.53	1.98	4.75
234	1034	98.34	-6.53	1.98	-4.75
235	2035	101.10	-7.34	1.67	3.99
235	1035	101.10	-7.34	1.67	-3.99
401	1001	0.00	-7.71	1.56	-3.74
401	1	0.00	-7.71	1.56	-4.92
402	1002	2.74	-6.90	1.82	-4.36
402	2	2.74	-6.90	1.82	-5.73
403	1003	5.48	-1.64	0.69	-1.64
403	3	5.48	-1.64	0.69	-2.16
404	1004	8.22	0.45	-0.20	0.48
404	4	8.22	0.45	-0.20	0.63
405	1005	10.96	0.76	-0.75	1.80
405	5	10.96	0.76	-0.75	2.36
406	1006	13.70	0.45	-0.87	2.09
406	6	13.70	0.45	-0.87	2.75
407	1007	16.44	0.20	-0.46	1.10
407	7	16.44	0.20	-0.46	1.45
408	1008	19.18	0.42	0.63	-1.50
408	8	19.18	0.42	0.63	-1.97
409	1009	21.92	1.30	2.04	-4.88
409	9	21.92	1.30	2.04	-6.43
410	1010	24.66	2.75	2.98	-7.14
410	10	24.66	2.75	2.98	-9.39
411	1011	27.40	3.96	3.29	-7.87
411	11	27.40	3.96	3.29	-10.36
412	1012	30.45	3.00	2.80	-6.70
412	12	30.45	3.00	2.80	-8.82
413	1013	33.50	1.21	0.83	-1.98
413	13	33.50	1.21	0.83	-2.60
414	1014	36.89	0.14	-2.21	5.28
414	14	36.89	0.14	-2.21	6.95
415	1015	40.28	-0.16	-4.62	11.06
415	15	40.28	-0.16	-4.62	14.56
416	1016	43.67	-0.13	-5.87	14.06
416	16	43.67	-0.13	-5.87	18.50
417	1017	47.06	-0.10	-6.17	14.76
417	17	47.06	-0.10	-6.17	19.43
418	1018	50.45	-0.15	-5.57	13.33
418	18	50.45	-0.15	-5.57	17.54
419	1019	53.84	-0.21	-4.00	9.58
419	19	53.84	-0.21	-4.00	12.61
420	1020	57.23	0.06	-1.27	3.05
420	20	57.23	0.06	-1.27	4.01
421	1021	60.62	1.26	1.98	-4.75
421	21	60.62	1.26	1.98	-6.25
422	1022	64.01	3.80	4.29	-10.26
422	22	64.01	3.80	4.29	-13.50
423	1023	67.40	5.57	4.79	-11.47

423	23	67.40	5.57	4.79	-15.09
424	1024	70.45	3.77	4.26	-10.21
424	24	70.45	3.77	4.26	-13.43
425	1025	73.50	1.36	2.40	-5.75
425	25	73.50	1.36	2.40	-7.57
426	1026	76.26	0.24	0.51	-1.21
426	26	76.26	0.24	0.51	-1.60
427	1027	79.02	-0.15	-0.89	2.13
427	27	79.02	-0.15	-0.89	2.80
428	1028	81.78	-0.13	-1.62	3.88
428	28	81.78	-0.13	-1.62	5.11
429	1029	84.54	0.12	-1.83	4.38
429	29	84.54	0.12	-1.83	5.76
430	1030	87.30	0.50	-1.62	3.87
430	30	87.30	0.50	-1.62	5.10
431	1031	90.06	0.81	-1.07	2.57
431	31	90.06	0.81	-1.07	3.38
432	1032	92.82	0.50	-0.26	0.62
432	32	92.82	0.50	-0.26	0.82
433	1033	95.58	-1.50	0.77	-1.85
433	33	95.58	-1.50	0.77	-2.44
434	1034	98.34	-6.53	1.98	-4.75
434	34	98.34	-6.53	1.98	-6.25
435	1035	101.10	-7.34	1.67	-3.99
435	35	101.10	-7.34	1.67	-5.25

GRÁFICO DE ESFUERZOS



Pretensado Hiperestático (t=0)

[1; 1]PRETFC.FAM1.TOT + [-1;-1]PRETFC.FAM1.ISO + [1; 1]PRETFC.FAM2.TOT + [-1;-1]PRETFC.FAM2.ISO + [1; 1]PRETFC.FAM3.TOT + [-1;-1]PRETFC.FAM3.ISO + [1; 1]PRETFC.FAM4.TOT + [-1;-1]PRETFC.FAM4.ISO

Coord. exc:

Barra	Nudo	X	N (T)	Vy (T)	Mz (Tm)
1	1	0.00	-1.75	-4.91	-0.56
1	2	2.74	-1.75	-4.91	12.90
2	2	2.74	-14.62	-3.09	11.84
2	3	5.48	-14.62	-3.09	20.32
3	3	5.48	-27.57	-2.41	19.40
3	4	8.22	-27.57	-2.41	25.99
4	4	8.22	-41.83	-2.61	25.31
4	5	10.96	-41.83	-2.61	32.45
5	5	10.96	-59.14	-3.36	32.08
5	6	13.70	-59.14	-3.36	41.28
6	6	13.70	-82.35	-4.23	41.32
6	7	16.44	-82.35	-4.23	52.91
7	7	16.44	-116.55	-4.69	53.46
7	8	19.18	-116.55	-4.69	66.31
8	8	19.18	-170.88	-4.06	67.47
8	9	21.92	-170.88	-4.06	78.60
9	9	21.92	-222.51	-2.02	79.66
9	10	24.66	-222.51	-2.02	85.20
10	10	24.66	-249.43	0.96	85.50
10	11	27.40	-249.43	0.96	82.87
11	11	27.40	-260.72	4.25	82.47
11	12	30.45	-260.72	4.25	69.52
12	12	30.45	-249.90	7.05	68.27
12	10013	33.50	-249.90	7.05	46.78
13	13	33.50	-198.23	17.18	44.47
13	14	36.89	-198.23	17.18	-13.78
14	14	36.89	-141.81	14.97	-16.17
14	15	40.28	-141.81	14.97	-66.94
15	15	40.28	-120.49	10.35	-68.38
15	16	43.67	-120.49	10.35	-103.48
16	16	43.67	-114.21	4.48	-104.10
16	17	47.06	-114.21	4.48	-119.28
17	17	47.06	-116.04	-1.69	-119.14
17	18	50.45	-116.04	-1.69	-113.42
18	18	50.45	-126.17	-7.25	-112.53
18	19	53.84	-126.17	-7.25	-87.93
19	19	53.84	-151.97	-11.26	-86.22
19	20	57.23	-151.97	-11.26	-48.06
20	20	57.23	-214.54	-12.53	-45.41
20	21	60.62	-214.54	-12.53	-2.93
21	21	60.62	-272.93	-10.55	-0.46
21	22	64.01	-272.93	-10.55	35.30
22	22	64.01	-288.42	-6.26	36.58
22	23	67.40	-288.42	-6.26	57.80
23	23	67.40	-277.19	-1.47	58.01
23	24	70.45	-277.19	-1.47	62.49
24	24	70.45	-244.75	2.79	61.83
24	10025	73.50	-244.75	2.79	53.30
25	25	73.50	-180.06	5.39	51.73
25	26	76.26	-180.06	5.39	36.86
26	26	76.26	-128.44	5.90	35.36
26	27	79.02	-128.44	5.90	19.08
27	27	79.02	-96.18	5.01	18.19
27	28	81.78	-96.18	5.01	4.36
28	28	81.78	-74.44	3.38	3.97
28	29	84.54	-74.44	3.38	-5.37
29	29	84.54	-58.38	1.56	-5.34
29	30	87.30	-58.38	1.56	-9.63
30	30	87.30	-45.37	-0.06	-9.27
30	31	90.06	-45.37	-0.06	-9.10
31	31	90.06	-33.94	-1.14	-8.46
31	32	92.82	-33.94	-1.14	-5.33
32	32	92.82	-23.21	-1.39	-4.48
32	33	95.58	-23.21	-1.39	-0.63
33	33	95.58	-12.59	-0.62	0.37
33	34	98.34	-12.59	-0.62	2.09
34	34	98.34	-1.53	1.36	3.19
34	35	101.10	-1.53	1.36	-0.57
101	101	0.00	1.75	31.08	0.56
101	102	2.74	1.75	31.08	-84.59
102	102	2.74	14.62	29.26	-83.53
102	103	5.48	14.62	29.26	-163.70

103		5.48	27.57	28.57	-162.78
103	104	8.22	27.57	28.57	-241.07
104	104	8.22	41.83	28.77	-240.38
104	105	10.96	41.83	28.77	-319.21
105	105	10.96	59.14	29.52	-318.85
105	106	13.70	59.14	29.52	-399.73
106	106	13.70	82.35	30.39	-399.78
106	107	16.44	82.35	30.39	-483.06
107	107	16.44	116.55	30.85	-483.61
107	108	19.18	116.55	30.85	-568.15
108	108	19.18	170.88	30.23	-569.31
108	109	21.92	170.88	30.23	-652.13
109	109	21.92	222.51	28.19	-653.19
109	110	24.66	222.51	28.19	-730.42
110	110	24.66	249.43	25.21	-730.72
110	111	27.40	249.43	25.21	-799.78
111	111	27.40	260.72	-11.31	-799.39
111	112	30.45	260.73	-11.31	-764.89
112	112	30.45	249.90	-14.11	-763.65
112	113	33.50	249.90	-14.11	-720.61
113	113	33.50	198.23	-14.93	-718.30
113	114	36.89	198.23	-14.93	-667.68
114	114	36.89	141.81	-12.73	-665.28
114	115	40.28	141.81	-12.73	-622.13
115	115	40.28	120.49	-8.11	-620.69
115	116	43.67	120.49	-8.11	-593.21
116	116	43.67	114.21	-2.23	-592.59
116	117	47.06	114.21	-2.23	-585.03
117	117	47.06	116.04	3.93	-585.17
11	118	50.45	116.04	3.93	-598.51
118	118	50.45	126.17	9.50	-599.40
118	119	53.84	126.17	9.50	-631.61
119	119	53.84	151.97	13.50	-633.32
119	120	57.23	151.97	13.50	-679.10
120	120	57.23	214.54	14.78	-681.74
120	121	60.62	214.54	14.78	-731.84
121	121	60.62	272.93	12.79	-734.32
121	122	64.01	272.93	12.79	-777.69
122	122	64.01	288.42	8.51	-778.97
122	123	67.40	288.42	8.51	-807.81
123	123	67.40	272.53	-20.94	-808.01
123	124	70.45	272.53	-20.94	-744.14
124	124	70.45	240.08	-25.21	-743.48
124	125	73.50	240.08	-25.21	-666.60
125	125	73.50	180.06	-27.61	-665.03
125	126	76.26	180.06	-27.61	-588.83
126	126	76.26	128.44	-28.12	-587.32
126	127	79.02	128.44	-28.12	-509.72
127	127	79.02	96.18	-27.23	-508.82
127	128	81.78	96.18	-27.23	-433.67
128	128	81.78	74.44	-25.61	-433.28
128	129	84.54	74.44	-25.61	-362.61
129	129	84.54	58.38	-23.78	-362.64
129	130	87.30	58.38	-23.78	-297.02
130	130	87.30	45.37	-22.16	-297.38
130	131	90.06	45.37	-22.16	-236.22
131	131	90.06	33.94	-21.09	-236.86
131	132	92.82	33.94	-21.09	-178.66
132	132	92.82	23.21	-20.83	-179.51
132	133	95.58	23.21	-20.83	-122.03
133	133	95.58	12.59	-21.60	-123.03
133	134	98.34	12.59	-21.60	-63.42
134	134	98.34	1.53	-23.58	-64.52
134	135	101.10	1.53	-23.58	0.57
301	101	0.00	-7.71	1.56	4.92
301	2001	0.00	-7.71	1.56	3.74
302	102	2.74	-6.90	1.82	5.73
302	2002	2.74	-6.90	1.82	4.36
303	103	5.48	-1.64	0.69	2.16
303	2003	5.48	-1.64	0.69	1.64
304	104	8.22	0.45	-0.20	-0.63
304	2004	8.22	0.45	-0.20	-0.48
305	105	10.96	0.76	-0.75	-2.36
305	2005	10.96	0.76	-0.75	-1.80
306	106	13.70	0.45	-0.87	-2.75
30	2006	13.70	0.45	-0.87	-2.09
307	107	16.44	0.20	-0.46	-1.45
307	2007	16.44	0.20	-0.46	-1.10
308	108	19.18	0.42	0.63	1.97
308	2008	19.18	0.42	0.63	1.50
309	109	21.92	1.30	2.04	6.43
309	2009	21.92	1.30	2.04	4.88
310	110	24.66	2.75	2.98	9.39

310	2010	24.66	2.75	2.98	7.14
311	111	27.40	3.96	3.29	10.36
311	2011	27.40	3.96	3.29	7.87
312	112	30.45	3.00	2.80	8.82
312	2012	30.45	3.00	2.80	6.70
313	113	33.50	1.21	0.83	2.60
313	2013	33.50	1.21	0.83	1.98
314	114	36.89	0.14	-2.21	-6.95
314	2014	36.89	0.14	-2.21	-5.28
315	115	40.28	-0.16	-4.62	-14.56
315	2015	40.28	-0.16	-4.62	-11.06
316	116	43.67	-0.13	-5.87	-18.50
316	2016	43.67	-0.13	-5.87	-14.06
317	117	47.06	-0.10	-6.17	-19.43
317	2017	47.06	-0.10	-6.17	-14.76
318	118	50.45	-0.15	-5.57	-17.54
318	2018	50.45	-0.15	-5.57	-13.33
319	119	53.84	-0.21	-4.00	-12.61
319	2019	53.84	-0.21	-4.00	-9.58
320	120	57.23	0.06	-1.27	-4.01
320	2020	57.23	0.06	-1.27	-3.05
321	121	60.62	1.26	1.98	6.25
321	2021	60.62	1.26	1.98	4.75
322	122	64.01	3.80	4.29	13.50
322	2022	64.01	3.80	4.29	10.26
323	123	67.40	5.57	4.79	15.09
323	2023	67.40	5.57	4.79	11.47
324	124	70.45	3.77	4.26	13.43
324	2024	70.45	3.77	4.26	10.21
325	125	73.50	1.36	2.40	7.57
325	2025	73.50	1.36	2.40	5.75
326	126	76.26	0.24	0.51	1.60
326	2026	76.26	0.24	0.51	1.21
327	127	79.02	-0.15	-0.89	-2.80
327	2027	79.02	-0.15	-0.89	-2.13
328	128	81.78	-0.13	-1.62	-5.11
328	2028	81.78	-0.13	-1.62	-3.89
329	129	84.54	0.12	-1.83	-5.76
329	2029	84.54	0.12	-1.83	-4.38
330	130	87.30	0.50	-1.62	-5.10
330	2030	87.30	0.50	-1.62	-3.87
331	131	90.06	0.81	-1.07	-3.38
331	2031	90.06	0.81	-1.07	-2.57
332	132	92.82	0.50	-0.26	-0.82
332	2032	92.82	0.50	-0.26	-0.62
333	133	95.58	-1.50	0.77	2.44
333	2033	95.58	-1.50	0.77	1.85
334	134	98.34	-6.53	1.98	6.25
334	2034	98.34	-6.53	1.98	4.75
335	135	101.10	-7.34	1.67	5.25
335	2035	101.10	-7.34	1.67	3.99
201	2001	0.00	-7.71	1.56	3.74
201	1001	0.00	-7.71	1.56	-3.74
202	2002	2.74	-6.90	1.82	4.36
202	1002	2.74	-6.90	1.82	-4.36
203	2003	5.48	-1.64	0.69	1.64
203	1003	5.48	-1.64	0.69	-1.64
204	2004	8.22	0.45	-0.20	-0.48
204	1004	8.22	0.45	-0.20	0.48
205	2005	10.96	0.76	-0.75	-1.80
205	1005	10.96	0.76	-0.75	1.80
206	2006	13.70	0.45	-0.87	-2.09
206	1006	13.70	0.45	-0.87	2.09
207	2007	16.44	0.20	-0.46	-1.10
207	1007	16.44	0.20	-0.46	1.10
208	2008	19.18	0.42	0.63	1.50
208	1008	19.18	0.42	0.63	-1.50
209	2009	21.92	1.30	2.04	4.88
209	1009	21.92	1.30	2.04	-4.88
210	2010	24.66	2.75	2.98	7.14
210	1010	24.66	2.75	2.98	-7.14
211	2011	27.40	3.96	3.29	7.87
211	1011	27.40	3.96	3.29	-7.87
212	2012	30.45	3.00	2.80	6.70
212	1012	30.45	3.00	2.80	-6.70
213	2013	33.50	1.21	0.83	1.98
213	1013	33.50	1.21	0.83	-1.98
214	2014	36.89	0.14	-2.21	-5.28
214	1014	36.89	0.14	-2.21	5.28
215	2015	40.28	-0.16	-4.62	-11.06
215	1015	40.28	-0.16	-4.62	11.06
216	2016	43.67	-0.13	-5.87	-14.06
216	1016	43.67	-0.13	-5.87	14.06

217	2017	47.06	-0.10	-6.17	-14.76
217	1017	47.06	-0.10	-6.17	14.76
218	2018	50.45	-0.15	-5.57	-13.33
218	1018	50.45	-0.15	-5.57	13.33
219	2019	53.84	-0.21	-4.00	-9.58
219	1019	53.84	-0.21	-4.00	9.58
220	2020	57.23	0.06	-1.27	-3.05
220	1020	57.23	0.06	-1.27	3.05
221	2021	60.62	1.26	1.98	4.75
221	1021	60.62	1.26	1.98	-4.75
222	2022	64.01	3.80	4.29	10.26
222	1022	64.01	3.80	4.29	-10.26
223	2023	67.40	5.57	4.79	11.47
223	1023	67.40	5.57	4.79	-11.47
224	2024	70.45	3.77	4.26	10.21
224	1024	70.45	3.77	4.26	-10.21
225	2025	73.50	1.36	2.40	5.75
225	1025	73.50	1.36	2.40	-5.75
226	2026	76.26	0.24	0.51	1.21
226	1026	76.26	0.24	0.51	-1.21
227	2027	79.02	-0.15	-0.89	-2.13
227	1027	79.02	-0.15	-0.89	2.13
228	2028	81.78	-0.13	-1.62	-3.88
228	1028	81.78	-0.13	-1.62	3.88
229	2029	84.54	0.12	-1.83	-4.38
229	1029	84.54	0.12	-1.83	4.38
230	2030	87.30	0.50	-1.62	-3.87
230	1030	87.30	0.50	-1.62	3.87
231	2031	90.06	0.81	-1.07	-2.57
231	1031	90.06	0.81	-1.07	2.57
232	2032	92.82	0.50	-0.26	-0.62
232	1032	92.82	0.50	-0.26	0.62
233	2033	95.58	-1.50	0.77	1.85
233	1033	95.58	-1.50	0.77	-1.85
234	2034	98.34	-6.53	1.98	4.75
234	1034	98.34	-6.53	1.98	-4.75
235	2035	101.10	-7.34	1.67	3.99
235	1035	101.10	-7.34	1.67	-3.99
201	1001	0.00	-7.71	1.56	-3.74
201	1	0.00	-7.71	1.56	-4.92
202	1002	2.74	-6.90	1.82	-4.36
202	2	2.74	-6.90	1.82	-5.73
203	1003	5.48	-1.64	0.69	-1.64
203	3	5.48	-1.64	0.69	-2.16
204	1004	8.22	0.45	-0.20	0.48
204	4	8.22	0.45	-0.20	0.63
205	1005	10.96	0.76	-0.75	1.80
205	5	10.96	0.76	-0.75	2.36
206	1006	13.70	0.45	-0.87	2.09
206	6	13.70	0.45	-0.87	2.75
207	1007	16.44	0.20	-0.46	1.10
207	7	16.44	0.20	-0.46	1.45
208	1008	19.18	0.42	0.63	-1.50
208	8	19.18	0.42	0.63	-1.97
209	1009	21.92	1.30	2.04	-4.88
209	9	21.92	1.30	2.04	-6.43
210	1010	24.66	2.75	2.98	-7.14
210	10	24.66	2.75	2.98	-9.39
211	1011	27.40	3.96	3.29	-7.87
211	11	27.40	3.96	3.29	-10.36
212	1012	30.45	3.00	2.80	-6.70
212	12	30.45	3.00	2.80	-8.82
213	1013	33.50	1.21	0.83	-1.98
213	13	33.50	1.21	0.83	-2.60
214	1014	36.89	0.14	-2.21	5.28
214	14	36.89	0.14	-2.21	6.95
215	1015	40.28	-0.16	-4.62	11.06
215	15	40.28	-0.16	-4.62	14.56
216	1016	43.67	-0.13	-5.87	14.06
216	16	43.67	-0.13	-5.87	18.50
217	1017	47.06	-0.10	-6.17	14.76
217	17	47.06	-0.10	-6.17	19.43
218	1018	50.45	-0.15	-5.57	13.33
218	18	50.45	-0.15	-5.57	17.54
219	1019	53.84	-0.21	-4.00	9.58
219	19	53.84	-0.21	-4.00	12.61
220	1020	57.23	0.06	-1.27	3.05
220	20	57.23	0.06	-1.27	4.01
221	1021	60.62	1.26	1.98	-4.75
221	21	60.62	1.26	1.98	-6.25
222	1022	64.01	3.80	4.29	-10.26
222	22	64.01	3.80	4.29	-13.50
223	1023	67.40	5.57	4.79	-11.47

Pretensado Isostático (t=0)
[1; 1]PRETFC.FAM1.ISO + [1; 1]PRETFC.FAM2.ISO + [1; 1]PRETFC.FAM3.ISO + [1; 1]PRETFC.FAM4.ISO
Coef. exc:

Barra	Nudo	X	N (T)	Vy (T)	Mz (Tm)
1	1	0.00	0.00	0.00	0.00
1	2	0.00	0.00	0.00	0.00
2	2	0.00	0.00	0.00	0.00
2	3	0.00	0.00	0.00	0.00
3	3	0.00	0.00	0.00	0.00
3	4	0.00	0.00	0.00	0.00
4	4	0.00	0.00	0.00	0.00
4	5	0.00	0.00	0.00	0.00
5	5	0.00	0.00	0.00	0.00
5	6	0.00	0.00	0.00	0.00
6	6	0.00	0.00	0.00	0.00
6	7	0.00	0.00	0.00	0.00
7	7	0.00	0.00	0.00	0.00
7	8	0.00	0.00	0.00	0.00
8	8	0.00	0.00	0.00	0.00
8	9	0.00	0.00	0.00	0.00
9	9	0.00	0.00	0.00	0.00
9	10	0.00	0.00	0.00	0.00
10	10	0.00	0.00	0.00	0.00
10	11	0.00	0.00	0.00	0.00
11	11	0.00	0.00	0.00	0.00
11	12	0.00	0.00	0.00	0.00
12	12	0.00	0.00	0.00	0.00
12	10013	0.00	0.00	0.00	0.00
13	13	0.00	0.00	0.00	0.00
13	14	0.00	0.00	0.00	0.00
14	14	0.00	0.00	0.00	0.00
14	15	0.00	0.00	0.00	0.00
15	15	0.00	0.00	0.00	0.00
15	16	0.00	0.00	0.00	0.00
16	16	0.00	0.00	0.00	0.00
16	17	0.00	0.00	0.00	0.00
17	17	0.00	0.00	0.00	0.00
17	18	0.00	0.00	0.00	0.00
18	18	0.00	0.00	0.00	0.00
18	19	0.00	0.00	0.00	0.00
19	19	0.00	0.00	0.00	0.00
19	20	0.00	0.00	0.00	0.00
20	20	0.00	0.00	0.00	0.00
20	21	0.00	0.00	0.00	0.00
21	21	0.00	0.00	0.00	0.00
21	22	0.00	0.00	0.00	0.00
22	22	0.00	0.00	0.00	0.00
22	23	0.00	0.00	0.00	0.00
23	23	0.00	0.00	0.00	0.00
23	24	0.00	0.00	0.00	0.00
24	24	0.00	0.00	0.00	0.00
24	10025	0.00	0.00	0.00	0.00
25	25	0.00	0.00	0.00	0.00
25	26	0.00	0.00	0.00	0.00
26	26	0.00	0.00	0.00	0.00
26	27	0.00	0.00	0.00	0.00
27	27	0.00	0.00	0.00	0.00
27	28	0.00	0.00	0.00	0.00
28	28	0.00	0.00	0.00	0.00
28	29	0.00	0.00	0.00	0.00
29	29	0.00	0.00	0.00	0.00
29	30	0.00	0.00	0.00	0.00
30	30	0.00	0.00	0.00	0.00
30	31	0.00	0.00	0.00	0.00
31	31	0.00	0.00	0.00	0.00
31	32	0.00	0.00	0.00	0.00
32	32	0.00	0.00	0.00	0.00
32	33	0.00	0.00	0.00	0.00
33	33	0.00	0.00	0.00	0.00
33	34	0.00	0.00	0.00	0.00
34	34	0.00	0.00	0.00	0.00
34	35	0.00	0.00	0.00	0.00
101	101	0.00	0.00	0.00	0.00
101	102	2.74	0.00	0.00	0.00
102	102	2.74	0.00	0.00	0.00
102	103	5.48	0.00	0.00	0.00

103	103	5.48	0.00	0.00	0.00
103	104	8.22	0.00	0.00	0.00
104	104	8.22	0.00	0.00	0.00
104	105	10.96	0.00	0.00	0.00
105	105	10.96	0.00	0.00	0.00
105	106	13.70	0.00	0.00	0.00
106	106	13.70	0.00	0.00	0.00
106	107	16.44	0.00	0.00	0.00
107	107	16.44	0.00	0.00	0.00
107	108	19.18	0.00	0.00	0.00
108	108	19.18	-992.74	0.00	774.34
108	109	21.92	-996.52	0.00	777.29
109	109	21.92	-1938.98	0.00	1512.40
109	110	24.66	-1946.01	0.00	1517.89
110	110	24.66	-1946.01	0.00	1517.89
110	10111	27.40	-1893.55	0.00	1476.97
111	111	27.40	-1893.55	0.00	1476.97
111	112	30.45	-1967.97	0.00	1535.01
112	112	30.45	-1967.97	0.00	1535.01
112	113	33.50	-1960.15	0.00	1528.91
113	113	33.50	-882.17	0.00	688.10
113	114	36.89	-878.08	0.00	684.90
114	114	36.89	0.00	0.00	0.00
114	115	40.28	0.00	0.00	0.00
115	115	40.28	0.00	0.00	0.00
115	116	43.67	0.00	0.00	0.00
116	116	43.67	0.00	0.00	0.00
116	117	47.06	0.00	0.00	0.00
117	117	47.06	0.00	0.00	0.00
117	118	50.45	0.00	0.00	0.00
118	118	50.45	0.00	0.00	0.00
118	119	53.84	0.00	0.00	0.00
119	119	53.84	0.00	0.00	0.00
119	120	57.23	0.00	0.00	0.00
120	120	57.23	-1009.07	0.00	787.08
120	121	60.62	-1013.75	0.00	790.73
121	121	60.62	-1955.41	0.00	1525.22
121	122	64.01	-1964.10	0.00	1532.00
122	122	64.01	-1964.10	0.00	1532.00
122	10123	67.40	-1907.50	0.00	1487.85
123	123	67.40	-1907.50	0.00	1487.85
123	124	70.45	-1960.27	0.00	1529.01
124	124	70.45	-1960.27	0.00	1529.01
124	125	73.50	-1952.46	0.00	1522.91
125	125	73.50	-877.13	0.00	684.16
125	126	76.26	-873.79	0.00	681.56
126	126	76.26	0.00	0.00	0.00
126	127	79.02	0.00	0.00	0.00
127	127	79.02	0.00	0.00	0.00
127	128	81.78	0.00	0.00	0.00
128	128	81.78	0.00	0.00	0.00
128	129	84.54	0.00	0.00	0.00
129	129	84.54	0.00	0.00	0.00
129	130	87.30	0.00	0.00	0.00
130	130	87.30	0.00	0.00	0.00
130	131	90.06	0.00	0.00	0.00
131	131	90.06	0.00	0.00	0.00
131	132	92.82	0.00	0.00	0.00
132	132	92.82	0.00	0.00	0.00
132	133	95.58	0.00	0.00	0.00
133	133	95.58	0.00	0.00	0.00
133	134	98.34	0.00	0.00	0.00
134	134	98.34	0.00	0.00	0.00
134	135	101.10	0.00	0.00	0.00
301	101	0.00	0.00	0.00	0.00
301	2001	0.00	0.00	0.00	0.00
302	102	0.00	0.00	0.00	0.00
302	2002	0.00	0.00	0.00	0.00
303	103	0.00	0.00	0.00	0.00
303	2003	0.00	0.00	0.00	0.00
304	104	0.00	0.00	0.00	0.00
304	2004	0.00	0.00	0.00	0.00
305	105	0.00	0.00	0.00	0.00
305	2005	0.00	0.00	0.00	0.00
306	106	0.00	0.00	0.00	0.00
306	2006	0.00	0.00	0.00	0.00
307	107	0.00	0.00	0.00	0.00
307	2007	0.00	0.00	0.00	0.00
308	108	0.00	0.00	0.00	0.00
308	2008	0.00	0.00	0.00	0.00
309	109	0.00	0.00	0.00	0.00
309	2009	0.00	0.00	0.00	0.00
310	110	0.00	0.00	0.00	0.00

310	2010	0.00	0.00	0.00	0.00
311	111	0.00	0.00	0.00	0.00
311	2011	0.00	0.00	0.00	0.00
312	112	0.00	0.00	0.00	0.00
312	2012	0.00	0.00	0.00	0.00
313	113	0.00	0.00	0.00	0.00
313	2013	0.00	0.00	0.00	0.00
314	114	0.00	0.00	0.00	0.00
314	2014	0.00	0.00	0.00	0.00
315	115	0.00	0.00	0.00	0.00
315	2015	0.00	0.00	0.00	0.00
316	116	0.00	0.00	0.00	0.00
316	2016	0.00	0.00	0.00	0.00
317	117	0.00	0.00	0.00	0.00
317	2017	0.00	0.00	0.00	0.00
318	118	0.00	0.00	0.00	0.00
318	2018	0.00	0.00	0.00	0.00
319	119	0.00	0.00	0.00	0.00
319	2019	0.00	0.00	0.00	0.00
320	120	0.00	0.00	0.00	0.00
320	2020	0.00	0.00	0.00	0.00
321	121	0.00	0.00	0.00	0.00
321	2021	0.00	0.00	0.00	0.00
322	122	0.00	0.00	0.00	0.00
322	2022	0.00	0.00	0.00	0.00
323	123	0.00	0.00	0.00	0.00
323	2023	0.00	0.00	0.00	0.00
324	124	0.00	0.00	0.00	0.00
324	2024	0.00	0.00	0.00	0.00
325	125	0.00	0.00	0.00	0.00
325	2025	0.00	0.00	0.00	0.00
326	126	0.00	0.00	0.00	0.00
326	2026	0.00	0.00	0.00	0.00
327	127	0.00	0.00	0.00	0.00
327	2027	0.00	0.00	0.00	0.00
328	128	0.00	0.00	0.00	0.00
328	2028	0.00	0.00	0.00	0.00
329	129	0.00	0.00	0.00	0.00
329	2029	0.00	0.00	0.00	0.00
330	130	0.00	0.00	0.00	0.00
330	2030	0.00	0.00	0.00	0.00
331	131	0.00	0.00	0.00	0.00
331	2031	0.00	0.00	0.00	0.00
332	132	0.00	0.00	0.00	0.00
332	2032	0.00	0.00	0.00	0.00
333	133	0.00	0.00	0.00	0.00
333	2033	0.00	0.00	0.00	0.00
334	134	0.00	0.00	0.00	0.00
334	2034	0.00	0.00	0.00	0.00
335	135	0.00	0.00	0.00	0.00
335	2035	0.00	0.00	0.00	0.00
201	2001	0.00	0.00	0.00	0.00
201	1001	0.00	0.00	0.00	0.00
202	2002	0.00	0.00	0.00	0.00
202	1002	0.00	0.00	0.00	0.00
203	2003	0.00	0.00	0.00	0.00
203	1003	0.00	0.00	0.00	0.00
204	2004	0.00	0.00	0.00	0.00
204	1004	0.00	0.00	0.00	0.00
205	2005	0.00	0.00	0.00	0.00
205	1005	0.00	0.00	0.00	0.00
206	2006	0.00	0.00	0.00	0.00
206	1006	0.00	0.00	0.00	0.00
207	2007	0.00	0.00	0.00	0.00
207	1007	0.00	0.00	0.00	0.00
208	2008	0.00	0.00	0.00	0.00
208	1008	0.00	0.00	0.00	0.00
209	2009	0.00	0.00	0.00	0.00
209	1009	0.00	0.00	0.00	0.00
210	2010	0.00	0.00	0.00	0.00
210	1010	0.00	0.00	0.00	0.00
211	2011	0.00	0.00	0.00	0.00
211	1011	0.00	0.00	0.00	0.00
212	2012	0.00	0.00	0.00	0.00
212	1012	0.00	0.00	0.00	0.00
213	2013	0.00	0.00	0.00	0.00
213	1013	0.00	0.00	0.00	0.00
214	2014	0.00	0.00	0.00	0.00
214	1014	0.00	0.00	0.00	0.00
215	2015	0.00	0.00	0.00	0.00
215	1015	0.00	0.00	0.00	0.00
216	2016	0.00	0.00	0.00	0.00
216	1016	0.00	0.00	0.00	0.00

217	2017	0.00	0.00	0.00	0.00
217	1017	0.00	0.00	0.00	0.00
218	2018	0.00	0.00	0.00	0.00
218	1018	0.00	0.00	0.00	0.00
219	2019	0.00	0.00	0.00	0.00
219	1019	0.00	0.00	0.00	0.00
220	2020	0.00	0.00	0.00	0.00
220	1020	0.00	0.00	0.00	0.00
221	2021	0.00	0.00	0.00	0.00
221	1021	0.00	0.00	0.00	0.00
222	2022	0.00	0.00	0.00	0.00
222	1022	0.00	0.00	0.00	0.00
223	2023	0.00	0.00	0.00	0.00
223	1023	0.00	0.00	0.00	0.00
224	2024	0.00	0.00	0.00	0.00
224	1024	0.00	0.00	0.00	0.00
225	2025	0.00	0.00	0.00	0.00
225	1025	0.00	0.00	0.00	0.00
226	2026	0.00	0.00	0.00	0.00
226	1026	0.00	0.00	0.00	0.00
227	2027	0.00	0.00	0.00	0.00
227	1027	0.00	0.00	0.00	0.00
228	2028	0.00	0.00	0.00	0.00
228	1028	0.00	0.00	0.00	0.00
229	2029	0.00	0.00	0.00	0.00
229	1029	0.00	0.00	0.00	0.00
230	2030	0.00	0.00	0.00	0.00
230	1030	0.00	0.00	0.00	0.00
23	2031	0.00	0.00	0.00	0.00
231	1031	0.00	0.00	0.00	0.00
232	2032	0.00	0.00	0.00	0.00
232	1032	0.00	0.00	0.00	0.00
233	2033	0.00	0.00	0.00	0.00
233	1033	0.00	0.00	0.00	0.00
234	2034	0.00	0.00	0.00	0.00
234	1034	0.00	0.00	0.00	0.00
235	2035	0.00	0.00	0.00	0.00
235	1035	0.00	0.00	0.00	0.00
401	1001	0.00	0.00	0.00	0.00
401	1	0.00	0.00	0.00	0.00
402	1002	0.00	0.00	0.00	0.00
402	2	0.00	0.00	0.00	0.00
403	1003	0.00	0.00	0.00	0.00
403	3	0.00	0.00	0.00	0.00
404	1004	0.00	0.00	0.00	0.00
404	4	0.00	0.00	0.00	0.00
405	1005	0.00	0.00	0.00	0.00
405	5	0.00	0.00	0.00	0.00
406	1006	0.00	0.00	0.00	0.00
406	6	0.00	0.00	0.00	0.00
407	1007	0.00	0.00	0.00	0.00
407	7	0.00	0.00	0.00	0.00
408	1008	0.00	0.00	0.00	0.00
408	8	0.00	0.00	0.00	0.00
409	1009	0.00	0.00	0.00	0.00
409	9	0.00	0.00	0.00	0.00
410	1010	0.00	0.00	0.00	0.00
410	10	0.00	0.00	0.00	0.00
411	1011	0.00	0.00	0.00	0.00
411	11	0.00	0.00	0.00	0.00
412	1012	0.00	0.00	0.00	0.00
412	12	0.00	0.00	0.00	0.00
413	1013	0.00	0.00	0.00	0.00
413	13	0.00	0.00	0.00	0.00
414	1014	0.00	0.00	0.00	0.00
414	14	0.00	0.00	0.00	0.00
415	1015	0.00	0.00	0.00	0.00
415	15	0.00	0.00	0.00	0.00
416	1016	0.00	0.00	0.00	0.00
416	16	0.00	0.00	0.00	0.00
417	1017	0.00	0.00	0.00	0.00
417	17	0.00	0.00	0.00	0.00
418	1018	0.00	0.00	0.00	0.00
418	18	0.00	0.00	0.00	0.00
419	1019	0.00	0.00	0.00	0.00
419	19	0.00	0.00	0.00	0.00
420	1020	0.00	0.00	0.00	0.00
420	20	0.00	0.00	0.00	0.00
421	1021	0.00	0.00	0.00	0.00
421	21	0.00	0.00	0.00	0.00
422	1022	0.00	0.00	0.00	0.00
422	22	0.00	0.00	0.00	0.00
423	1023	0.00	0.00	0.00	0.00

423	23	0.00	0.00	0.00	0.00
424	1024	0.00	0.00	0.00	0.00
424	24	0.00	0.00	0.00	0.00
425	1025	0.00	0.00	0.00	0.00
425	25	0.00	0.00	0.00	0.00
426	1026	0.00	0.00	0.00	0.00
426	26	0.00	0.00	0.00	0.00
427	1027	0.00	0.00	0.00	0.00
427	27	0.00	0.00	0.00	0.00
428	1028	0.00	0.00	0.00	0.00
428	28	0.00	0.00	0.00	0.00
429	1029	0.00	0.00	0.00	0.00
429	29	0.00	0.00	0.00	0.00
430	1030	0.00	0.00	0.00	0.00
430	30	0.00	0.00	0.00	0.00
431	1031	0.00	0.00	0.00	0.00
431	31	0.00	0.00	0.00	0.00
432	1032	0.00	0.00	0.00	0.00
432	32	0.00	0.00	0.00	0.00
433	1033	0.00	0.00	0.00	0.00
433	33	0.00	0.00	0.00	0.00
434	1034	0.00	0.00	0.00	0.00
434	34	0.00	0.00	0.00	0.00
435	1035	0.00	0.00	0.00	0.00
435	35	0.00	0.00	0.00	0.00

distribución hiperestáticos de pretensado

$X_{-85}PRF = A.HIP.To + [-85;-85]PRETF1B.HIP.To + [.655;.655]PRETFA.HIP.To + [.655;.655]PRETFB.HIP.To + [-85;-85]PRETF3C.HIP.To + [-85;-85]PRETF3D.HIP.To + [.7;.7]PRETFC.HIP.To + [.7;.7]PRETFD$
f. exc.

Varra	Nudo	X	N (T)	Vy (T)	Mz (Tm)
1	1	0.00	1.71	-63.80	1.12
1	2	2.74	1.71	-63.80	175.91
2	2	2.74	15.00	-66.15	178.17
2	3	5.48	15.00	-66.15	359.40
3	3	5.48	25.91	-66.00	361.43
3	4	8.22	25.91	-66.00	542.24
4	4	8.22	35.41	-63.63	544.05
4	5	10.96	35.41	-63.63	718.37
5	5	10.96	38.28	-59.43	719.65
5	6	13.70	38.28	-59.43	882.46
6	6	13.70	35.31	-53.90	883.30
6	7	16.44	35.31	-53.90	1030.96
7	7	16.44	25.08	-47.39	1031.41
7	8	19.18	25.08	-47.39	1161.24
8	8	19.18	3.49	-40.21	1161.31
8	9	21.92	3.49	-40.21	1271.45
9	9	21.92	-10.16	-32.97	1270.57
9	10	24.66	-10.16	-32.97	1360.90
10	10	24.66	14.16	-30.27	1359.88
10	11	27.40	14.16	-30.27	1442.81
11	11	27.40	14.19	-28.36	1441.00
11	12	30.45	14.19	-28.36	1527.47
12	12	30.45	-417.99	-28.51	989.47
12	10013	33.50	-417.99	-28.51	1076.44
13	13	33.50	-423.13	12.12	1074.73
13	14	36.89	-423.13	12.12	1033.66
14	14	36.89	69.95	9.10	1614.08
14	15	40.28	69.95	9.10	1583.19
15	15	40.28	58.91	-2.27	1584.76
15	16	43.67	58.91	-2.27	1592.44
16	16	43.67	43.39	-10.05	1595.42
16	17	47.06	43.39	-10.05	1629.51
17	17	47.06	36.37	-13.65	1632.29
17	18	50.45	36.37	-13.65	1678.54
18	18	50.45	31.35	-13.40	1681.25
18	19	53.84	31.35	-13.40	1726.68
19	19	53.84	23.65	-9.34	1729.44
19	20	57.23	23.65	-9.34	1761.05
20	20	57.23	6.24	-1.08	1764.00
20	21	60.62	6.24	-1.08	1767.65
21	21	60.62	-1.39	10.60	1769.01
2	22	64.01	-1.39	10.60	1733.05
22	22	64.01	50.62	13.71	1732.90
22	23	67.40	50.62	13.71	1686.45
23	23	67.40	44.95	15.85	1684.56
23	24	70.45	44.95	15.85	1636.20
24	24	70.45	-411.41	15.65	1053.03
24	10025	73.50	-411.41	15.65	1005.25
25	25	73.50	-438.01	79.61	1003.22
25	26	76.26	-438.01	79.61	783.47
26	26	76.26	4.81	76.27	1317.97
26	27	79.02	4.81	76.27	1107.47
27	27	79.02	-10.11	68.32	1106.76
27	28	81.78	-10.11	68.32	918.17
28	28	81.78	-30.47	60.59	918.40
28	29	84.54	-30.47	60.59	751.18
29	29	84.54	-39.48	53.70	751.82
29	30	87.30	-39.48	53.70	603.61
30	30	87.30	-41.08	48.01	604.69
30	31	90.06	-41.08	48.01	472.18
31	31	90.06	-36.24	43.92	473.76
31	32	92.82	-36.24	43.92	352.52
32	32	92.82	-23.53	42.01	354.67
32	33	95.58	-23.53	42.01	238.71
3	33	95.58	-11.08	42.64	240.98
33	34	98.34	-11.08	42.64	123.30
34	34	98.34	-1.31	45.85	125.47
34	35	101.10	-1.31	45.85	-1.09
101	101	0.00	-1.71	-35.67	-1.12
101	102	2.74	-1.71	-35.67	96.65
102	102	2.74	-15.00	-33.33	94.40
102	103	5.48	-15.00	-33.33	185.75

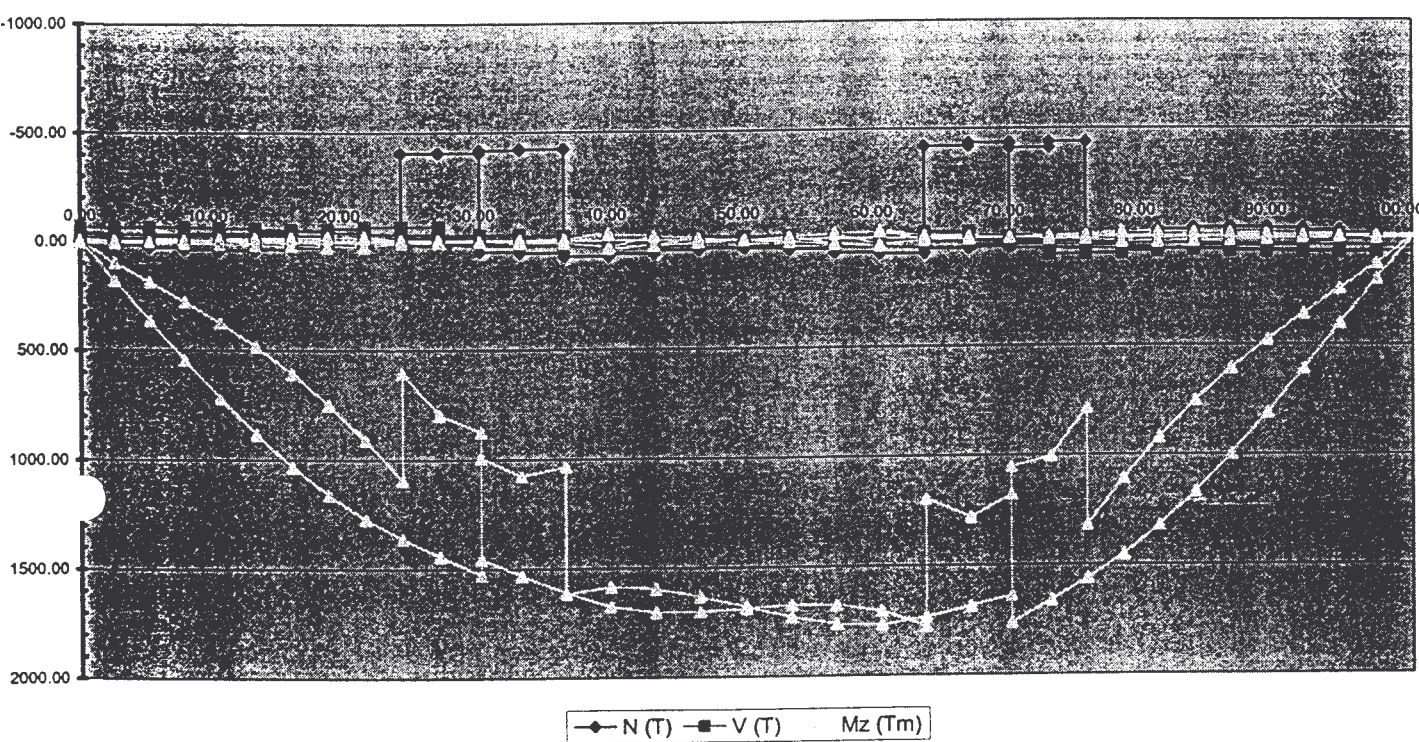
103	103	5.48	-25.91	-33.48	183.70
103	104	8.22	-25.91	-33.48	275.46
104	104	8.22	-35.41	-35.86	273.66
104	105	10.96	-35.41	-35.86	371.92
105	105	10.96	-38.28	-40.05	370.63
105	106	13.70	-38.28	-40.05	480.40
106	106	13.70	-35.31	-45.59	479.56
106	107	16.44	-35.31	-45.59	604.48
107	107	16.44	-25.08	-52.10	604.04
107	108	19.18	-25.08	-52.10	746.78
108	108	19.18	-3.49	-59.28	746.71
108	109	21.92	-3.49	-59.28	909.15
109	109	21.92	10.16	-66.51	910.03
109	110	24.66	10.16	-66.51	1092.29
110	110	24.66	-406.64	-69.21	602.75
110	10111	27.40	-406.64	-69.21	792.39
111	111	27.40	-406.66	-25.12	794.21
111	112	30.45	-406.65	-25.12	870.83
112	112	30.45	49.17	-24.97	1453.80
112	113	33.50	49.17	-24.97	1529.93
113	113	33.50	54.31	-22.72	1531.64
113	114	36.89	54.31	-22.72	1608.67
114	114	36.89	1.02	-19.71	1608.71
114	115	40.28	1.02	-19.71	1675.54
115	115	40.28	12.06	-8.34	1673.98
115	116	43.67	12.06	-8.34	1702.24
116	116	43.67	27.59	-0.55	1699.26
116	117	47.06	27.59	-0.55	1701.09
117	117	47.06	34.61	3.05	1698.32
117	118	50.45	34.61	3.05	1687.97
118	118	50.45	39.62	2.80	1685.27
118	119	53.84	39.62	2.80	1675.73
119	119	53.84	47.32	-1.27	1672.98
119	120	57.23	47.32	-1.27	1677.25
120	120	57.23	64.74	-9.50	1674.33
120	121	60.62	64.74	-9.50	1706.52
121	121	60.62	72.37	-21.19	1705.16
121	122	64.01	72.37	-21.19	1776.98
122	122	64.01	-419.44	-24.27	1196.66
122	10123	67.40	-419.44	-24.27	1278.95
123	123	67.40	-435.58	33.61	1280.87
123	124	70.45	-435.58	33.61	1178.36
124	124	70.45	20.77	33.80	1761.52
124	125	73.50	20.77	33.80	1658.45
125	125	73.50	21.87	36.29	1660.46
125	126	76.26	21.87	36.29	1560.30
126	126	76.26	-4.81	39.66	1561.33
126	127	79.02	-4.81	39.66	1451.88
127	127	79.02	10.11	47.60	1452.61
127	128	81.78	10.11	47.60	1321.25
128	128	81.78	30.47	55.32	1321.03
128	129	84.54	30.47	55.32	1168.35
129	129	84.54	39.48	62.21	1167.69
129	130	87.30	39.48	62.21	996.00
130	130	87.30	41.08	67.91	994.92
130	131	90.06	41.08	67.91	807.50
131	131	90.06	36.24	71.98	805.92
131	132	92.82	36.24	71.98	607.23
132	132	92.82	23.54	73.90	605.08
132	133	95.58	23.54	73.90	401.12
133	133	95.58	11.08	73.26	398.85
133	134	98.34	11.08	73.26	196.63
134	134	98.34	1.31	70.07	194.45
134	135	101.10	1.31	70.07	1.09
301	101	0.00	0.63	-2.52	-7.93
301	2001	0.00	0.63	-2.52	-6.03
302	102	2.74	0.56	-2.34	-7.40
302	2002	2.74	0.56	-2.34	-5.62
303	103	5.48	0.13	0.15	0.47
303	2003	5.48	0.13	0.15	0.35
304	104	8.22	-0.05	2.37	7.48
304	2004	8.22	-0.05	2.37	5.68
305	105	10.96	-0.07	4.20	13.22
305	2005	10.96	-0.07	4.20	10.04
306	106	13.70	-0.04	5.54	17.42
306	2006	13.70	-0.04	5.54	13.25
307	107	16.44	-0.02	6.51	20.50
307	2007	16.44	-0.02	6.51	15.57
308	108	19.18	-0.02	7.18	22.63
308	2008	19.18	-0.02	7.18	17.20
309	109	21.92	-0.08	7.24	22.79
309	2009	21.92	-0.08	7.24	17.32
310	110	24.66	0.34	2.69	8.43

310	2010	24.66	0.34	2.69	6.39
311	111	27.40	-0.26	1.92	5.99
311	2011	27.40	-0.26	1.92	4.53
312	112	30.45	-0.33	-0.16	-0.67
312	2012	30.45	-0.33	-0.16	-0.56
313	113	33.50	-0.12	-2.24	-7.34
313	2013	33.50	-0.12	-2.24	-5.65
314	114	36.89	0.11	-3.00	-9.79
314	2014	36.89	0.11	-3.00	-7.51
315	115	40.28	0.01	-11.38	-35.85
315	2015	40.28	0.01	-11.38	-27.24
316	116	43.67	0.01	-7.78	-24.54
316	2016	43.67	0.01	-7.78	-18.65
317	117	47.06	0.01	-3.60	-11.32
317	2017	47.06	0.01	-3.60	-8.60
318	118	50.45	-0.01	0.24	0.77
318	2018	50.45	-0.01	0.24	0.58
319	119	53.84	-0.02	4.07	12.82
319	2019	53.84	-0.02	4.07	9.74
320	120	57.23	0.00	8.25	25.97
320	2020	57.23	0.00	8.25	19.73
321	121	60.62	0.09	11.68	36.81
321	2021	60.62	0.09	11.68	27.98
322	122	64.01	0.01	3.08	9.42
322	2022	64.01	0.01	3.08	7.08
323	123	67.40	0.68	2.15	6.46
323	2023	67.40	0.68	2.15	4.83
324	124	70.45	0.68	-0.19	-0.77
324	2024	70.45	0.68	-0.19	-0.63
325	125	73.50	0.18	-2.49	-7.91
325	2025	73.50	0.18	-2.49	-6.02
326	126	76.26	-0.84	-3.35	-10.63
326	2026	76.26	-0.84	-3.35	-8.09
327	127	79.02	-0.01	-7.94	-25.02
327	2027	79.02	-0.01	-7.94	-19.02
328	128	81.78	-0.01	-7.73	-24.36
328	2028	81.78	-0.01	-7.73	-18.51
329	129	84.54	0.02	-6.89	-21.69
329	2029	84.54	0.02	-6.89	-16.49
330	130	87.30	0.06	-5.70	-17.94
330	2030	87.30	0.06	-5.70	-13.63
331	131	90.06	0.09	-4.08	-12.85
331	2031	90.06	0.09	-4.08	-9.77
332	132	92.82	0.05	-1.91	-6.03
332	2032	92.82	0.05	-1.91	-4.57
333	133	95.58	-0.17	0.63	2.00
333	2033	95.58	-0.17	0.63	1.52
334	134	98.34	-0.77	3.21	10.10
334	2034	98.34	-0.77	3.21	7.68
335	135	101.10	-0.86	2.90	9.17
335	2035	101.10	-0.86	2.90	6.96
201	1001	0.00	0.63	-2.52	-6.03
201	1001	0.00	0.63	-2.52	6.03
202	1002	2.74	0.56	-2.34	-5.62
202	1002	2.74	0.56	-2.34	5.62
203	1003	5.48	0.13	0.15	0.35
203	1003	5.48	0.13	0.15	-0.35
204	1004	8.22	-0.05	2.37	5.68
204	1004	8.22	-0.05	2.37	-5.68
205	1005	10.96	-0.07	4.20	10.04
205	1005	10.96	-0.07	4.20	-10.04
206	1006	13.70	-0.04	5.54	13.25
206	1006	13.70	-0.04	5.54	-13.25
207	1007	16.44	-0.02	6.51	15.57
207	1007	16.44	-0.02	6.51	-15.58
208	1008	19.18	-0.02	7.18	17.20
208	1008	19.18	-0.02	7.18	-17.20
209	1009	21.92	-0.08	7.24	17.32
209	1009	21.92	-0.08	7.24	-17.32
210	1010	24.66	0.34	2.69	6.39
210	1010	24.66	0.34	2.69	-6.50
211	1011	27.40	-0.26	1.92	4.53
211	1011	27.40	-0.26	1.92	-4.64
212	1012	30.45	-0.33	-0.16	-0.56
212	1012	30.45	-0.33	-0.16	0.20
213	1013	33.50	-0.12	-2.23	-5.65
213	1013	33.50	-0.12	-2.23	5.04
214	1014	36.89	0.11	-3.00	-7.51
214	1014	36.89	0.11	-3.00	6.86
215	1015	40.28	0.01	-11.38	-27.24
215	1015	40.28	0.01	-11.38	27.24
216	1016	43.67	0.01	-7.78	-18.65
216	1016	43.67	0.01	-7.78	18.65

217	2017	47.06	0.01	-3.60	-8.60
217	1017	47.06	0.01	-3.60	8.60
218	2018	50.45	-0.01	0.24	0.58
218	1018	50.45	-0.01	0.24	-0.58
219	2019	53.84	-0.02	4.07	9.74
219	1019	53.84	-0.02	4.07	-9.74
220	2020	57.23	0.00	8.25	19.73
220	1020	57.23	0.00	8.25	-19.73
221	2021	60.62	0.09	11.68	27.98
221	1021	60.62	0.09	11.68	-27.98
222	2022	64.01	0.01	3.09	7.08
222	1022	64.01	0.01	3.09	-7.72
223	2023	67.40	0.68	2.15	4.83
223	1023	67.40	0.68	2.15	-5.44
224	2024	70.45	0.68	-0.19	-0.63
224	1024	70.45	0.68	-0.19	0.27
225	2025	73.50	0.18	-2.49	-6.02
225	1025	73.50	0.18	-2.49	5.91
226	2026	76.26	-0.84	-3.35	-8.09
226	1026	76.26	-0.84	-3.35	7.98
227	2027	79.02	-0.01	-7.94	-19.02
227	1027	79.02	-0.01	-7.94	19.02
228	2028	81.78	-0.01	-7.73	-18.51
228	1028	81.78	-0.01	-7.73	18.51
229	2029	84.54	0.02	-6.89	-16.49
229	1029	84.54	0.02	-6.89	16.49
230	2030	87.30	0.06	-5.70	-13.63
230	1030	87.30	0.06	-5.70	13.63
231	2031	90.06	0.09	-4.08	-9.77
231	1031	90.06	0.09	-4.08	9.77
232	2032	92.82	0.05	-1.91	-4.57
232	1032	92.82	0.05	-1.91	4.57
233	2033	95.58	-0.17	0.63	1.52
233	1033	95.58	-0.17	0.63	-1.52
234	2034	98.34	-0.77	3.21	7.68
234	1034	98.34	-0.77	3.21	-7.68
235	2035	101.10	-0.86	2.90	6.96
235	1035	101.10	-0.86	2.90	-6.96
401	1001	0.00	0.63	-2.52	6.03
401	1	0.00	0.63	-2.52	7.93
402	1002	2.74	0.56	-2.34	5.62
402	2	2.74	0.56	-2.34	7.40
403	1003	5.48	0.13	0.15	-0.35
403	3	5.48	0.13	0.15	-0.47
404	1004	8.22	-0.05	2.37	-5.68
404	4	8.22	-0.05	2.37	-7.48
405	1005	10.96	-0.07	4.20	-10.04
405	5	10.96	-0.07	4.20	-13.22
406	1006	13.70	-0.04	5.54	-13.25
406	6	13.70	-0.04	5.54	-17.42
407	1007	16.44	-0.02	6.51	-15.57
407	7	16.44	-0.02	6.51	-20.49
408	1008	19.18	-0.02	7.18	-17.20
408	8	19.18	-0.02	7.18	-22.63
409	1009	21.92	-0.08	7.24	-17.32
409	9	21.92	-0.08	7.24	-22.79
410	1010	24.66	0.34	2.69	-6.50
410	10	24.66	0.34	2.69	-8.53
411	1011	27.40	-0.26	1.92	-4.64
411	11	27.40	-0.26	1.92	-6.09
412	1012	30.45	-0.33	-0.16	0.20
412	12	30.45	-0.33	-0.16	0.31
413	1013	33.50	-0.12	-2.23	5.04
413	13	33.50	-0.12	-2.23	6.72
414	1014	36.89	0.11	-3.00	6.86
414	14	36.89	0.11	-3.00	9.14
415	1015	40.28	0.01	-11.38	27.24
415	15	40.28	0.01	-11.38	35.85
416	1016	43.67	0.01	-7.78	18.65
416	16	43.67	0.01	-7.78	24.54
417	1017	47.06	0.01	-3.60	8.60
417	17	47.06	0.01	-3.60	11.32
418	1018	50.45	-0.01	0.24	-0.58
418	18	50.45	-0.01	0.24	-0.77
419	1019	53.84	-0.02	4.07	-9.74
419	19	53.84	-0.02	4.07	-12.82
420	1020	57.23	0.00	8.25	-19.73
420	20	57.23	0.00	8.25	-25.97
421	1021	60.62	0.09	11.68	-27.98
421	21	60.62	0.09	11.68	-36.81
422	1022	64.01	0.01	3.09	-7.72
422	22	64.01	0.01	3.09	-10.05
423	1023	67.40	0.68	2.15	-5.44

423	23	67.40	0.68	2.15	-7.07
424	1024	70.45	0.68	-0.19	0.27
424	24	70.45	0.68	-0.19	0.41
425	1025	73.50	0.18	-2.49	5.91
425	25	73.50	0.18	-2.49	7.80
426	1026	76.26	-0.84	-3.35	7.98
426	26	76.26	-0.84	-3.35	10.52
427	1027	79.02	-0.01	-7.94	19.02
427	27	79.02	-0.01	-7.94	25.02
428	1028	81.78	-0.01	-7.73	18.51
428	28	81.78	-0.01	-7.73	24.36
429	1029	84.54	0.02	-6.89	16.49
429	29	84.54	0.02	-6.89	21.69
430	1030	87.30	0.06	-5.70	13.63
430	30	87.30	0.06	-5.70	17.95
431	1031	90.06	0.09	-4.08	9.77
431	31	90.06	0.09	-4.08	12.85
432	1032	92.82	0.05	-1.91	4.57
432	32	92.82	0.05	-1.91	6.03
433	1033	95.58	-0.17	0.63	-1.52
433	33	95.58	-0.17	0.63	-2.00
434	1034	98.34	-0.77	3.21	-7.68
434	34	98.34	-0.77	3.21	-10.10
435	1035	101.10	-0.86	2.90	-6.96
435	35	101.10	-0.86	2.90	-9.17

GRÁFICO DE ESFUERZOS



IDEAM

2.2.3.5. Comprobación en estado límite de servicio

- El presente apartado se estructura en:

1) Definición de hipótesis de combinación en servicio o efectos de combinación

2) Cálculo terminal:

2a) En construcción

2b) En t=0

2c) En t=24F

3) Comprobación de secciones críticas con programa "ELOC"

4) Estudio de redistribuciones a nivel de secciones de los terminales

IDEAM

1) DEFINICIÓN DE HIPÓTESIS DE COMBINACIÓN EN SERVICIO.

Y FICHeros DE COMBINACIÓN

DEAM

A continuación se estructuran el cálculo con 4 ficheros de combinación distintos que son:

"SPRET" = se incluyen los estados de redimensionamiento

"TCOST" = se incluyen los estados de hipotecas constructivas.

"TCIERRE" = se incluyen los estados de hipotecas a $t=0$

"TINF" = se incluyen los estados de hipotecas a $t=INF$.

"SPRET" ESTADOS DE REDISTRIBUCIÓN ?

En estos casos :

ESFUERZOS A T=00 = 0'85 * ESFUERZOS SOBRE ESTRUCTURA

GLOBAL + 0'15 ESTRUCTURA EN FASES CONSTRUCTIVAS

"REDPP" REDISTRIBUCIÓN DE PESO PROPIO

REDPP = 0'85 * (PPVIGAS + PPLOJA) - 0'85 * (

PPCF1 + PPLF3 + PPLF2)

"REDPRE" REDISTRIBUCIÓN DE PRETENSADO

REDPRE = 0'85 * (PRETFA.HIP + PRETFB.HIP + (K))

- 0'85 * (PRETFA.HIP + PRETFB.HIP + (K))

- 0'85 * (PRETFLA.HIP + PRETF2B.HIP + (K))

(K) = (PRETFB + PRETFD) HIP

(K*) = (PRETF3C + PRETF3D) HIP

datos fin: p = 0'15 para PRETFA y PRETFD

p = 0'15 para PRETFA y PRETFB

```
7
"C:\PROYECTOS\StaOliva\V1\Dintel\hip_simp", "-cpret1.coe"
"C:\PROYECTOS\StaOliva\V1\Dintel\hip_simp", "-csimp1.coe"
"C:\PROYECTOS\StaOliva\V1\Dintel\hip_simp", "-csimp2.coe"
"C:\PROYECTOS\StaOliva\V1\Dintel\hip_simp", "-cpret3.coe"
"C:\PROYECTOS\StaOliva\V1\Dintel\hip_simp", "-csimp3.coe"
"C:\PROYECTOS\StaOliva\V1\Dintel\hip_simp", "-csimp4.coe"
"C:\PROYECTOS\StaOliva\V1\Dintel\hip_simp", "-cpret4.coe"
```

2

"ESFUERZOS"

"REDPP", "redistribución de peso propio"

"Mz"

"+"

0

5

"PPVIGAS", "()", ".85, .85, "P", 0, "", ""

"PPLOJA", "()", ".85, .85, "P", 0, "", ""

"PPCF1", "(PESODELCAJÀNFASE1)", "-.85, -.85, "P", 0, "", ""

"PPLF3", "(PESOLOSAFASE3)", "-.85, -.85, "P", 0, "", ""

"PPLF2", "(PESOLOSAFASE2)", "-.85, -.85, "P", 0, "", ""

"ESFUERZOS"

"REDPRE", "Redistribución hiperestáticos de pretensado"

"Mz"

"+"

0

8

"PRETF1A.HIP.To", "(PretensadoHiperest tico A fase1)", "-.85, -.85, "P", 0, "", ""

"PRETF1B.HIP.To", "(PretensadoHiperest tico B fase1)", "-.85, -.85, "P", 0, "", ""

"PRETFA.HIP.To", "(PretensadoHiperest tico A ideal)", ".655, .655, "P", 0, "", ""

"PRETFB.HIP.To", "(PretensadoHiperest tico B ideal)", ".655, .655, "P", 0, "", ""

"PRETF3C.HIP.To", "(PretensadoHiperest tico C fase3)", "-.85, -.85, "P", 0, "", ""

"PRETF3D.HIP.To", "(PretensadoHiperest tico D fase3)", "-.85, -.85, "P", 0, "", ""

"PRETFC.HIP.To", "(PretensadoHiperest tico C ideal)", ".7, .7, "P", 0, "", ""

"PRETFD.HIP.To", "(PretensadoHiperest tico D ideal)", ".7, .7, "P", 0, "", ""

"CONST" hipotesis en Construcción 2

"CONSTA. FASE 1"

PPCF1.1 + 1056095 PRETF1

"CONST B. FASE 2"

PPCF1 + PPLF2 + 1056095 PRETF1

"CONST C. FASE 2"

PPCF1 + PPLF2 + 1056095 PRETF1 + GRAD

"CONST D. FASE 3"

PPCF1 + PPLF2 + 1056095 (PRETF1) + 116095 (PRETF3)

"CONST E. FASE 3"

PPCF1 + PPLF2 + PPLF3 + 1056095 (PRETF1) +

116095 (PRETF3)

"CONST F. FASE 3"

PPCF1 + PPLF2 + PPLF3 + 1056095 (PRETF1) + 116095 (PRETF3)

+ GRAD

```
8
"C:\PROYECTOS\StaOliva\V1\Dintel\hip_simp", "-cpret1.coe"
"C:\PROYECTOS\StaOliva\V1\Dintel\hip_simp", "-csimp1.coe"
"C:\PROYECTOS\StaOliva\V1\Dintel\hip_simp", "-csimp2.coe"
"C:\PROYECTOS\StaOliva\V1\Dintel\hip_simp", "-cpret3.coe"
"C:\PROYECTOS\StaOliva\V1\Dintel\hip_simp", "-csimp3.coe"
"C:\PROYECTOS\StaOliva\V1\Dintel\hip_simp", "-csimp4.coe"
"C:\PROYECTOS\StaOliva\V1\Dintel\hip_simp", "-cpret4.coe"
"C:\PROYECTOS\StaOliva\V1\Dintel", "spret.esf"
```

```
10
"ESFUERZOS"
"CONSTA.F1.T0.MZ+", "Construcción sin gradiente en fase constructiva 1 HIPOTESIS A"
```

```
"MZ"
"+"
0
5
"PPCF1", "(PESODELCAJÓNENFASE1)", 1, 1, "P", 0, "", "CTESF1.C0"
"PRETF1A.ISO.To", "(PretensadoIsostático(t=0))", .95, 1.05, "P", 0, "", "CTESF1.C0"
"PRETF1A.HIP.To", "(PretensadoHiperestático(t=0))", .95, 1.05, "P", 0, "", "CTESF1.C0"
"PRETF1B.ISO.To", "(PretensadoIsostático(t=0))", .95, 1.05, "P", 0, "", "CTESF1.C0"
"PRETF1B.HIP.To", "(PretensadoHiperestático(t=0))", .95, 1.05, "P", 0, "", "CTESF1.C0"
"ESFUERZOS"
```

```
"CONST1A.F1.T0.MZ-", "Construcción sin gradiente en fase constructiva 1 HIPOTESIS A"
```

```
"MZ"
"- "
0
5
"PPCF1", "(PESODELCAJÓNENFASE1)", 1, 1, "P", 0, "", "CTESF1.C0"
"PRETF1A.ISO.To", "(PretensadoIsostático(t=0))", .95, 1.05, "P", 0, "", "CTESF1.C0"
"PRETF1A.HIP.To", "(PretensadoHiperestático(t=0))", .95, 1.05, "P", 0, "", "CTESF1.C0"
"PRETF1B.ISO.To", "(PretensadoIsostático(t=0))", .95, 1.05, "P", 0, "", "CTESF1.C0"
"PRETF1B.HIP.To", "(PretensadoHiperestático(t=0))", .95, 1.05, "P", 0, "", "CTESF1.C0"
"ESFUERZOS"
```

```
"CONST1B.F2.T0.MZ+", "Construcción sin gradiente en fase constructiva 2 HIPOTESIS B"
```

```
"MZ"
"+"
0
6
"PPCF1", "(PESODELCAJÓNENFASE1)", 1, 1, "P", 0, "", "CTESF1.C0"
"PRETF1A.ISO.To", "(PretensadoIsostático(t=0))", .95, 1.05, "P", 0, "", "CTESF1.C0"
"PRETF1A.HIP.To", "(PretensadoHiperestático(t=0))", .95, 1.05, "P", 0, "", "CTESF1.C0"
"PRETF1B.ISO.To", "(PretensadoIsostático(t=0))", .95, 1.05, "P", 0, "", "CTESF1.C0"
"PRETF1B.HIP.To", "(PretensadoHiperestático(t=0))", .95, 1.05, "P", 0, "", "CTESF1.C0"
"PPLF2", "(PESOPROPIODELAFASE2)", 1, 1, "P", 0, "", "CTESF2.C0"
"ESFUERZOS"
```

```
"CONST1B.F1.T0.MZ-", "Construcción sin gradiente en fase constructiva 2 HIPOTESIS B"
```

```
"MZ"
"- "
0
6
"PPCF1", "(PESODELCAJÓNENFASE1)", 1, 1, "P", 0, "", "CTESF1.C0"
"PRETF1A.ISO.To", "(PretensadoIsostático(t=0))", .95, 1.05, "P", 0, "", "CTESF1.C0"
"PRETF1A.HIP.To", "(PretensadoHiperestático(t=0))", .95, 1.05, "P", 0, "", "CTESF1.C0"
"PRETF1B.ISO.To", "(PretensadoIsostático(t=0))", .95, 1.05, "P", 0, "", "CTESF1.C0"
"PRETF1B.HIP.To", "(PretensadoHiperestático(t=0))", .95, 1.05, "P", 0, "", "CTESF1.C0"
"PPLF2", "(PESOPROPIODELAFASE2)", 1, 1, "P", 0, "", "CTESF2.C0"
"ESFUERZOS"
```

```
"CONST1C.F1.T0.MZ+", "Construcción CON gradiente en fase constructiva 2 HIPOTESIS C"
```

```
"MZ"
"+"
0
7
"PPCF1", "(PESODELCAJÓNENFASE1)", 1, 1, "P", 0, "", "CTESF1.C0"
"PRETF1A.ISO.To", "(PretensadoIsostático(t=0))", .95, 1.05, "P", 0, "", "CTESF1.C0"
"PRETF1A.HIP.To", "(PretensadoHiperestático(t=0))", .95, 1.05, "P", 0, "", "CTESF1.C0"
"PRETF1B.ISO.To", "(PretensadoIsostático(t=0))", .95, 1.05, "P", 0, "", "CTESF1.C0"
"PRETF1B.HIP.To", "(PretensadoHiperestático(t=0))", .95, 1.05, "P", 0, "", "CTESF1.C0"
"PPLF2", "(PESOPROPIODELAFASE2)", 1, 1, "P", 0, "", "CTESF2.C0"
"GRADF2", "(GRADIENTE FASE 2)", 0, 1, "P", 0, "", "CTESF2.C0"
"ESFUERZOS"
```

```
"CONST1D.F3.T0.MZ+", "Construcción CON gradiente en fase constructiva 3 HIPOTESIS D"
```


"TIERRE" HIPOTESIS A $T=0$

o Vacío:

$$PPCF1 + PPLF1 + PPLF2 + (1'05 \div 0'95) * (PRETF1 + PRETF3) * (1'059) \\ + (0'6 \div 0) * GRAD + (Munta + (INT2) * 1'08 * 1'20 + PAREOS$$

o Cuasipermanente:

$$PPCF1 + PPLF1 + PPLF2 + (1'05 \div 0'95) * (PRETF1 + PRETF3) * (1'059) \\ + (0'2 \div 0) * GRAD + (0'2 \div 0) * PAREOS + (Munta + 0'2 * TRENES * 1'08 * 1'20$$

o Frecuentes: Los trenes se multiplican por 108 debido a que el peso se a reducido con los trenes hacia dentro.

A su vez dichos trenes se multiplican por 120 que es el coeficiente de impacto.

- TREN DOMINANTE:

$$PPCF1 + PPLF1 + PPLF2 + (1'05 \div 0'95) * (PRETF1 + PRETF3) * (1'059) \\ + (0'5 \div 0) * GRAD + (Munta + (0'8 * INT2 \div 0'8 * DERINT2) * 1'08 * 1'20 + (0'5 \div 0) * PAREOS$$

o INFRECUCIENTES:

- TREN DOMINANTE:

$$PPCF1 + PPLF1 + PPLF2 + (1'05 \div 0'95) * (PRETF1 + PRETF3) * (1'059) \\ + (0'6 \div 0) * GRAD + (Munta + (INT2) * 1'08 * 1'20 + PAREOS$$

- Gradiente dominante:

$$PPCF1 + PPLF1 + PPLF2 + (1'05 \div 0'95) * (PRETF1 + PRETF3) * (1'059) \\ + (1'30) * GRAD + (Munta + 0'8 * (INT2 * 1'08 * 1'20 + (DERINT2) * 1'08 * 1'20 + PAREOS)$$

La carga muerta se toma de norma o se puede por 0'680 + para considerar la misma.

"PPCF1", "(PESODELCAJÓNENFASE1)", 1, 1, "P", 0, "", "CTESF1.CO"
 "PPLF3", "(PESOPROPIODELAFASE3)", 1, 1, "P", 0, "", "CTESF3.CO"
 "PLF2", "(PESOPROPIODELAFASE2)", 1, 1, "P", 0, "", "CTESF2.CO"
 "PRETF1A.ISO.To", "(PretensadoIsostático(t=0))", .95, 1.05, "P", 0, "", "CTESF1.CO"
 "PRETF1A.HIP.To", "(PretensadoHiperestático(t=0))", .95, 1.05, "P", 0, "", "CTESF1.CO"
 "PRETF1B.ISO.To", "(PretensadoIsostático(t=0))", .95, 1.05, "P", 0, "", "CTESF1.CO"
 "PRETF1B.HIP.To", "(PretensadoHiperestático(t=0))", .95, 1.05, "P", 0, "", "CTESF1.CO"
 "PRETF3C.ISO.To", "(PretensadoIsostático(t=0))", .9, 1.1, "P", 0, "", "CTESF3.CO"
 "PRETF3C.HIP.To", "(PretensadoHiperestático(t=0))", .9, 1.1, "P", 0, "", "CTESF3.CO"
 "PRETF3D.ISO.To", "(PretensadoIsostático(t=0))", .9, 1.1, "P", 0, "", "CTESF3.CO"
 "PRETF3D.HIP.To", "(PretensadoHiperestático(t=0))", .9, 1.1, "P", 0, "", "CTESF3.CO"
 "CMmax", "(CARGAMUERTAMAXIMA)", .68, 1, "P", 0, "", "CTESF4.CO"
 "SCUPASEOSIZQU.ENV_TREN_GENERICO.MZ+", "(Envolventedetrendecargasplanogenérico.MZ+)", 0, 1, "P", 0, "", "CTESF4.CO"
 "SCUPASEOSDERE.ENV_TREN_GENERICO.MZ+", "(Envolventedetrendecargasplanogenérico.MZ+)", 0, 1, "P", 0, "", "CTESF4.CO"
 "IZQINT2.EnvTrenGen.MZ+", "(Envolventedetrendecargasplanogen,rico.MZ+)", 0, 1.3, "P", 0, "", "CTESF4.CO"
 "DERINT2.EnvTrenGen.MZ+", "(Envolventedetrendecargasplanogen'rico.MZ+)", 0, 1.3, "P", 0, "", "CTESF4.CO"
 "GRAD", "(GRADIENTE)", 0, .6, "P", 0, "", "CTESF4.CO"
 "ESFUERZOS"
 "INFRECIENTES3.TO.MZ+", "GRADIENTE DOMINATE"

MZ"
 0
 17
 "PPCF1", "(PESODELCAJÓNENFASE1)", 1, 1, "P", 0, "", "CTESF1.CO"
 "PPLF3", "(PESOPROPIODELAFASE3)", 1, 1, "P", 0, "", "CTESF3.CO"
 "PPLF2", "(PESOPROPIODELAFASE2)", 1, 1, "P", 0, "", "CTESF2.CO"
 "PRETF1A.ISO.To", "(PretensadoIsostático(t=0))", .95, 1.05, "P", 0, "", "CTESF1.CO"
 "PRETF1A.HIP.To", "(PretensadoHiperestático(t=0))", .95, 1.05, "P", 0, "", "CTESF1.CO"
 "PRETF1B.ISO.To", "(PretensadoIsostático(t=0))", .95, 1.05, "P", 0, "", "CTESF1.CO"
 "PRETF1B.HIP.To", "(PretensadoHiperestático(t=0))", .95, 1.05, "P", 0, "", "CTESF1.CO"
 "PRETF3C.ISO.To", "(PretensadoIsostático(t=0))", .9, 1.1, "P", 0, "", "CTESF3.CO"
 "PRETF3C.HIP.To", "(PretensadoHiperestático(t=0))", .9, 1.1, "P", 0, "", "CTESF3.CO"
 "PRETF3D.ISO.To", "(PretensadoIsostático(t=0))", .9, 1.1, "P", 0, "", "CTESF3.CO"
 "PRETF3D.HIP.To", "(PretensadoHiperestático(t=0))", .9, 1.1, "P", 0, "", "CTESF3.CO"
 "CMmax", "(CARGAMUERTAMAXIMA)", .68, 1, "P", 0, "", "CTESF4.CO"
 "SCUPASEOSIZQU.ENV_TREN_GENERICO.MZ+", "(Envolventedetrendecargasplanogenérico.MZ+)", 0, .8, "P", 0, "", "CTESF4.CO"
 "SCUPASEOSDERE.ENV_TREN_GENERICO.MZ+", "(Envolventedetrendecargasplanogenérico.MZ+)", 0, .8, "P", 0, "", "CTESF4.CO"
 "IZQINT2.EnvTrenGen.MZ+", "(Envolventedetrendecargasplanogen,rico.MZ+)", 0, 1.03, "P", 0, "", "CTESF4.CO"
 "DERINT2.EnvTrenGen.MZ+", "(Envolventedetrendecargasplanogen'rico.MZ+)", 0, 1.03, "P", 0, "", "CTESF4.CO"
 "GRAD", "(GRADIENTE)", 0, 1, "P", 0, "", "CTESF4.CO"

IDEAM

"TINI" HIPOTESIS A T=INFINITO

Las hipotesis son las mismas que el de TCIREE con las siguientes salvedades:

- A cada estado se le suman los errores:

REDPP y REDPCC reduciendo por 1.

- También se suma un estado que supera los pedidos:

$-(PRETF1 \times 0.195) \times 105 : 0.95$

$-(PRETF3 \times 0.15) \times 110 : 0.90$

- Se ajustan los constantes de las acciones para adecuarse al siguiente apartado.


```
"PRETF1A.HIP.To", "(PretensadoHiperest tico(t=0))", .95,1.05,"P",0,"", "CTESF1.C1"
"PRETF1B.ISO.To", "(PretensadoIsost tico(t=0))", .95,1.05,"P",0,"", "CTESF1.C1"
"PRETF1B.HIP.To", "(PretensadoHiperest tico(t=0))", .95,1.05,"P",0,"", "CTESF1.C1"
"PRETF3C.ISO.To", "(PretensadoIsost tico(t=0))", .9,1.1,"P",0,"", "CTESF3.C1"
"PRETF3C.HIP.To", "(PretensadoHiperest tico(t=0))", .9,1.1,"P",0,"", "CTESF3.C1"
"PRETF3D.ISO.To", "(PretensadoIsost tico(t=0))", .9,1.1,"P",0,"", "CTESF3.C1"
"PRETF3D.HIP.To", "(PretensadoHiperest tico(t=0))", .9,1.1,"P",0,"", "CTESF3.C1"
"CMmax", "(CARGAMUERTAMAXIMA)", .68,1,"P",0,"", "CTESF4.C1"
"SCUPASEOSIZQU.ENV_TREN_GENERICO.MZ+", "(Envolventededetrendecargasplanogen,rico.MZ+)", 0,1
,"P",0,"", "CTESF4.CO"
"SCUPASEOSDERE.ENV_TREN_GENERICO.MZ+", "(Envolventededetrendecargasplanogen,rico.MZ+)", 0,1
,"P",0,"", "CTESF4.CO"
"IZQINT2.EnvTrenGen.MZ+", "(Envolventededetrendecargasplanogen'rico.MZ+)", 0,1.3,"P",0,"", "
CTESF4.CO"
"DERINT2.EnvTrenGen.MZ+", "(Envolventededetrendecargasplanogen'rico.MZ+)", 0,1.3,"P",0,"", "
CTESF4.CO"
"GRAD", "(GRADIENTE)", 0,.6,"P",0,"", "CTESF4.CO"
"REDPP", "(REDISTRIBUCIÃO PESO PROPIO)", 1,1,"P",0,"", "CTESF4.C2"
"REDPRE", "(REDISTRIBUCIÃO HIP PRET)", 1,1,"P",0,"", "CTESF4.C2"
"PRETFA.ISO.To", "(PretensadoIsost tico(t=0))", -.1852,-.20475,"P",0,"", "CTESF4.C2"
"PRETFB.ISO.To", "(PretensadoIsost tico(t=0))", -.1852,-.20475,"P",0,"", "CTESF4.C2"
"PRETFC.ISO.To", "(PretensadoIsost tico(t=0))", -.135,-.165,"P",0,"", "CTESF4.C2"
"PRETFD.ISO.To", "(PretensadoIsost tico(t=0))", -.135,-.165,"P",0,"", "CTESF4.C2"
}ESFUERZOS"
INFRECIENTES3.Tinf.MZ+", "DOMINANTE CON GRADIENTE"
"MZ"
"+"
0
23
"PPCF1", "(PESODELCAJÀNENFASE1)", 1,1,"P",0,"", "CTESF1.C1"
"PPLF3", "(PESOPROPIODELAFASE3)", 1,1,"P",0,"", "CTESF3.C1"
"PPLF2", "(PESOPROPIODELAFASE2)", 1,1,"P",0,"", "CTESF2.C1"
"PRETF1A.ISO.To", "(PretensadoIsost tico(t=0))", .95,1.05,"P",0,"", "CTESF1.C1"
"PRETF1A.HIP.To", "(PretensadoHiperest tico(t=0))", .95,1.05,"P",0,"", "CTESF1.C1"
"PRETF1B.ISO.To", "(PretensadoIsost tico(t=0))", .95,1.05,"P",0,"", "CTESF1.C1"
"PRETF1B.HIP.To", "(PretensadoHiperest tico(t=0))", .95,1.05,"P",0,"", "CTESF1.C1"
"PRETF3C.ISO.To", "(PretensadoIsost tico(t=0))", .9,1.1,"P",0,"", "CTESF3.C1"
"PRETF3C.HIP.To", "(PretensadoHiperest tico(t=0))", .9,1.1,"P",0,"", "CTESF3.C1"
"PRETF3D.ISO.To", "(PretensadoIsost tico(t=0))", .9,1.1,"P",0,"", "CTESF3.C1"
"PRETF3D.HIP.To", "(PretensadoHiperest tico(t=0))", .9,1.1,"P",0,"", "CTESF3.C1"
"CMmax", "(CARGAMUERTAMAXIMA)", .68,1,"P",0,"", "CTESF4.C1"
"SCUPASEOSIZQU.ENV_TREN_GENERICO.MZ+", "(Envolventededetrendecargasplanogen,rico.MZ+)", 0,.
8,"P",0,"", "CTESF4.CO"
"SCUPASEOSDERE.ENV_TREN_GENERICO.MZ+", "(Envolventededetrendecargasplanogen,rico.MZ+)", 0,.
8,"P",0,"", "CTESF4.CO"
"IZQINT2.EnvTrenGen.MZ+", "(Envolventededetrendecargasplanogen'rico.MZ+)", 0,1.04,"P",0,"",
"CTESF4.CO"
"DERINT2.EnvTrenGen.MZ+", "(Envolventededetrendecargasplanogen'rico.MZ+)", 0,1.04,"P",0,"",
"CTESF4.CO"
"GRAD", "(GRADIENTE)", 0,1,"P",0,"", "CTESF4.CO"
"REDPP", "(REDISTRIBUCIÃO PESO PROPIO)", 1,1,"P",0,"", "CTESF4.C2"
"REDPRE", "(REDISTRIBUCIÃO HIP PRET)", 1,1,"P",0,"", "CTESF4.C2"
"PRETFA.ISO.To", "(PretensadoIsost tico(t=0))", -.1852,-.20475,"P",0,"", "CTESF4.C2"
"PRETFB.ISO.To", "(PretensadoIsost tico(t=0))", -.1852,-.20475,"P",0,"", "CTESF4.C2"
"PRETFC.ISO.To", "(PretensadoIsost tico(t=0))", -.135,-.165,"P",0,"", "CTESF4.C2"
"PRETFD.ISO.To", "(PretensadoIsost tico(t=0))", -.135,-.165,"P",0,"", "CTESF4.C2"
```

IDEAM

2) CÁLCULO TENSIONAL

Cálculo tensional

Los resultados del cálculo tensional se analizan a continuación, como resumen se tiene:

CONSTRUCCIÓN

Máximo compresión en el tercio de luz:

$\sigma = 260 \text{ Kg/cm}^2$ por lo que el hormigón en el momento de trazo tiene que ser mayor

$$\frac{260}{0.6} = \underline{430 \text{ Kg/cm}^2}$$

Tensiones y TIRF

- En comparación la EHE establece que el pretensado debe estar comprimido, no obstante en ciertas casos en la hipótesis de comportamiento tiene considerado el 20% del ten, del lado de la seguridad se que según EC-1 - el BIAPE (Vaso B) debe ser el 5%. Por todo ello las pequeñas tensiones que aparecen en este caso no son preocupantes y además para evaluar los valores en la zona efectiva se prolonga el pretensado.

- En frecuencia las tensiones se manejan de la forma

$$Hf-3J \leq f_{ctk} = 2.9 \text{ Kg/cm}^2$$

$$Hf-6a \leq f_{ctk} = 4.2 \text{ Kg/cm}^2$$

- En frecuencia:

$$\text{Compresiones} = \leq f_{ck} \cdot 0.6 = 600 \cdot 0.6 = 360 \text{ Kg/cm}^2$$

Tensiones = 75.6 Kg/cm^2 , estas tensiones en el siguiente apartado con acción tangencial de los cables que se reduce a 68 Kg/cm^2 .

CÁLCULO TENSIONAL

Hipótesis de cálculo:
REDPP

redistribución de peso propio

[.85;.85]PPVIGAS + [.85;.85]PPLOSA + [-.85;-.85]PPCF1 + [-.85;-.85]PPLF3 + [-.85;-.85]PPLF2

Coef. exc:

Barra	Nudo	X	N (T)	Vy (T)	Mz (Tm)
1	1	0.00	0.00	13.37	-0.42
1	2	2.74	0.00	13.38	-37.05
2	2	2.74	0.00	14.25	-37.86
2	3	5.48	0.00	14.25	-76.91
3	3	5.48	0.00	14.20	-77.67
3	4	8.22	0.00	14.21	-116.59
4	4	8.22	0.00	13.34	-117.27
4	5	10.96	0.00	13.33	-153.77
5	5	10.96	0.00	11.71	-154.33
5	6	13.70	0.00	11.72	-186.41
6	6	13.70	0.00	9.50	-186.80
6	7	16.44	0.00	9.49	-212.81
7	7	16.44	0.00	6.85	-212.99
7	8	19.18	0.00	6.85	-231.75
8	8	19.18	0.00	4.02	-231.63
8	9	21.92	0.00	4.02	-242.63
9	9	21.92	0.00	1.33	-242.14
9	10	24.66	0.00	1.34	-245.81
10	10	24.66	0.00	2.98	-246.02
10	11	27.40	0.00	2.98	-254.18
11	11	27.40	0.00	4.44	-253.98
11	12	30.45	0.00	4.45	-267.55
12	12	30.45	0.00	6.55	-267.06
12	10013	33.50	0.00	6.54	-287.00
13	13	33.50	0.00	-4.93	-286.82
13	14	36.89	0.00	-4.92	-270.10
14	14	36.89	0.00	-2.58	-270.50
14	15	40.28	0.00	-2.58	-261.76
15	15	40.28	0.00	1.96	-262.18
15	16	43.67	0.00	1.95	-268.85
16	16	43.67	0.00	5.41	-269.83
16	17	47.06	0.00	5.42	-288.20
17	17	47.06	0.00	7.26	-289.48
17	18	50.45	0.00	7.26	-314.08
18	18	50.45	0.00	7.24	-315.48
18	19	53.84	0.00	7.24	-340.02
19	19	53.84	0.00	5.37	-341.31
19	20	57.23	0.00	5.37	-359.53
20	20	57.23	0.00	1.89	-360.51
20	21	60.62	0.00	1.90	-366.92
21	21	60.62	0.00	-2.69	-367.34
21	22	64.01	0.00	-2.68	-358.26
22	22	64.01	0.00	-5.04	-358.67
22	23	67.40	0.00	-5.04	-341.55
23	23	67.40	0.00	-7.74	-341.37
23	24	70.45	0.00	-7.74	-317.74
24	24	70.45	0.00	-9.89	-317.27
24	10025	73.50	0.00	-9.89	-287.10
25	25	73.50	0.00	-16.73	-286.92
25	26	76.26	0.00	-16.74	-240.75
26	26	76.26	0.00	-18.45	-240.98

CÁLCULO TENSIONAL

Hipótesis de cálculo:
REDPP

redistribución de peso propio

[.85;.85]PPVIGAS + [.85;.85]PPLOSA + [-.85;-.85]PPCF1 + [-.85;-.85]PPLF3 + [-.85;-.85]PPLF2

Coef. exc:

Barra	Nudo	X	N (T)	Vy (T)	Mz (Tm)
26	27	79.02	0.00	-18.45	-190.07
27	27	79.02	0.00	-15.73	-189.58
27	28	81.78	0.00	-15.73	-146.21
28	28	81.78	0.00	-12.85	-146.09
28	29	84.54	0.00	-12.84	-110.64
29	29	84.54	0.00	-10.17	-110.81
29	30	87.30	0.00	-10.17	-82.77
30	30	87.30	0.00	-7.92	-83.17
30	31	90.06	0.00	-7.93	-61.31
31	31	90.06	0.00	-6.30	-61.88
31	32	92.82	0.00	-6.29	-44.52
32	32	92.82	0.00	-5.41	-45.20
32	33	95.58	0.00	-5.41	-30.26
33	33	95.58	0.00	-5.40	-31.04
33	34	98.34	0.00	-5.40	-16.17
34	34	98.34	0.00	-6.32	-17.00
34	35	101.10	0.00	-6.32	0.43
101	101	0.00	0.00	6.36	0.42
101	102	2.74	0.00	6.36	-17.01
102	102	2.74	0.00	5.48	-16.19
102	103	5.48	0.00	5.48	-31.21
103	103	5.48	0.00	5.53	-30.45
103	104	8.22	0.00	5.53	-45.59
104	104	8.22	0.00	6.41	-44.91
104	105	10.96	0.00	6.41	-62.46
105	105	10.96	0.00	8.02	-61.91
105	106	13.70	0.00	8.02	-83.89
106	106	13.70	0.00	10.24	-83.50
106	107	16.44	0.00	10.24	-111.56
107	107	16.44	0.00	12.89	-111.39
107	108	19.18	0.00	12.89	-146.68
108	108	19.18	0.00	15.72	-146.80
108	109	21.92	0.00	15.71	-189.86
109	109	21.92	0.00	18.39	-190.35
109	110	24.66	0.00	18.40	-240.75
110	110	24.66	0.00	16.76	-240.53
110	10111	27.40	0.00	16.75	-286.44
111	111	27.40	0.00	9.78	-286.64
111	112	30.45	0.00	9.78	-316.48
112	112	30.45	0.00	7.69	-316.97
112	113	33.50	0.00	7.68	-340.40
113	113	33.50	0.00	5.01	-340.59
113	114	36.89	0.00	5.02	-357.60
114	114	36.89	0.00	2.67	-357.20
114	115	40.28	0.00	2.67	-366.24
115	115	40.28	0.00	-1.88	-365.81
115	116	43.67	0.00	-1.89	-359.43
116	116	43.67	0.00	-5.33	-358.45
116	117	47.06	0.00	-5.34	-340.34
117	117	47.06	0.00	-7.17	-339.05
117	118	50.45	0.00	-7.17	-314.72

CÁLCULO TENSIONAL

Hipótesis de cálculo:
REDPP

redistribución de peso propio

[.85;.85]PPVIGAS + [.85;.85]PPLOSA + [-.85;-.85]PPCF1 + [-.85;-.85]PPLF3 + [-.85;-.85]PPLF2

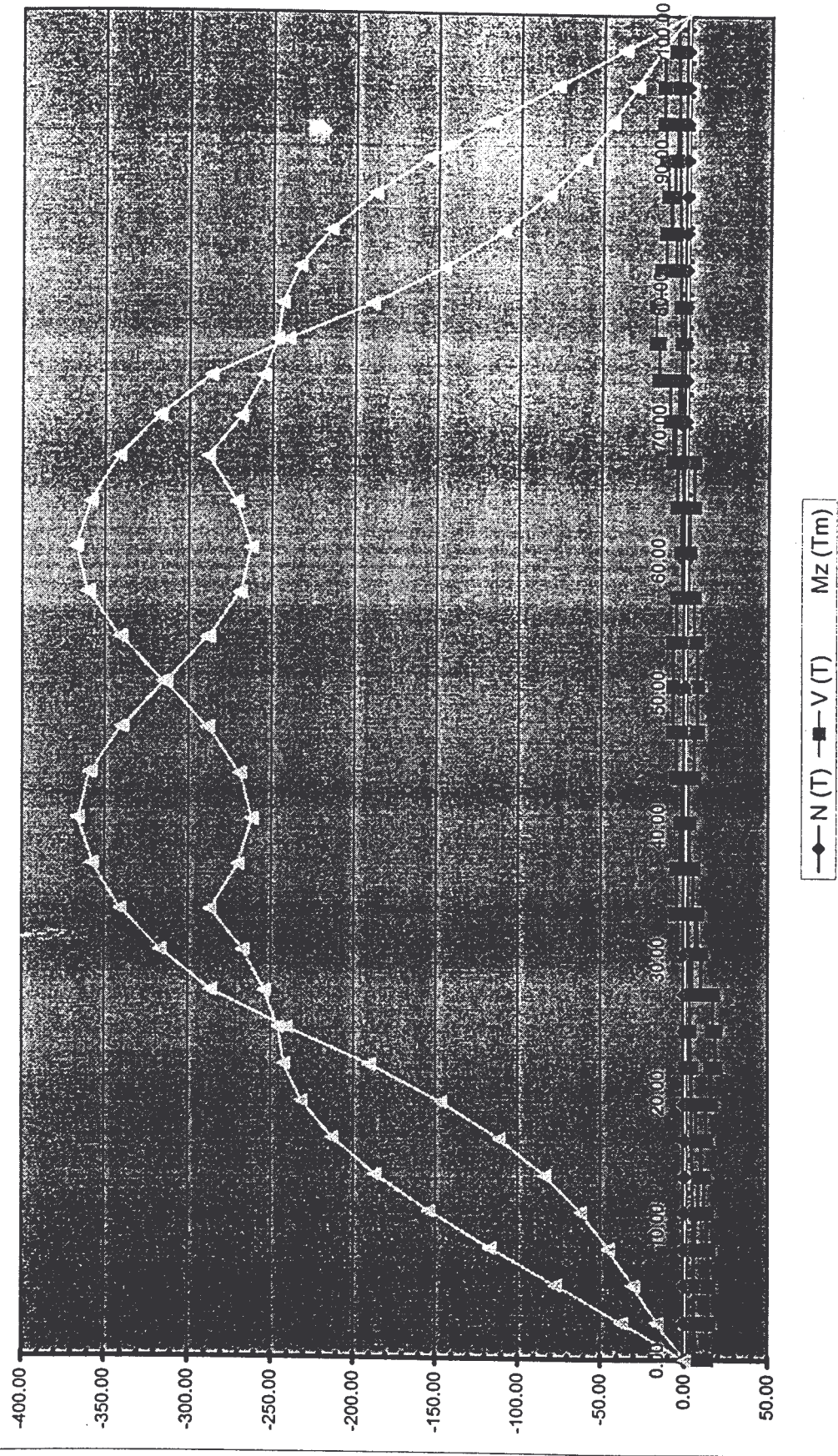
Coef. exc:

Barra	Nudo	X	N (T)	Vy (T)	Mz (Tm)
118	118	50.45	0.00	-7.16	-313.33
118	119	53.84	0.00	-7.16	-289.06
119	119	53.84	0.00	-5.29	-287.77
119	120	57.23	0.00	-5.30	-269.81
120	120	57.23	0.00	-1.82	-268.82
120	121	60.62	0.00	-1.82	-262.66
121	121	60.62	0.00	2.75	-262.23
121	122	64.01	0.00	2.75	-271.57
122	122	64.01	0.00	5.12	-271.17
122	10123	67.40	0.00	5.13	-288.51
123	123	67.40	0.00	-6.60	-288.69
123	124	70.45	0.00	-6.60	-268.57
124	124	70.45	0.00	-4.46	-269.05
124	125	73.50	0.00	-4.46	-255.46
125	125	73.50	0.00	-2.93	-255.64
125	126	76.26	0.00	-2.93	-247.56
126	126	76.26	0.00	-1.22	-247.33
126	127	79.02	0.00	-1.21	-243.99
127	127	79.02	0.00	-3.94	-244.49
127	128	81.78	0.00	-3.94	-233.60
128	128	81.78	0.00	-6.81	-233.71
128	129	84.54	0.00	-6.82	-214.91
129	129	84.54	0.00	-9.49	-214.74
129	130	87.30	0.00	-9.49	-188.52
130	130	87.30	0.00	-11.74	-188.12
130	131	90.06	0.00	-11.73	-155.72
131	131	90.06	0.00	-13.36	-155.16
131	132	92.82	0.00	-13.37	-118.25
132	132	92.82	0.00	-14.25	-117.56
132	133	95.58	0.00	-14.25	-78.25
133	133	95.58	0.00	-14.26	-77.48
133	134	98.34	0.00	-14.26	-38.09
134	134	98.34	0.00	-13.34	-37.26
134	135	101.10	0.00	-13.34	-0.43

08/12/02

Programa DINTEL IDEAM S.A.
REDPP

GRÁFICO DE ESFUERZOS



CÁLCULO TENSIONAL

Hipótesis de cálculo:
REDPRE

Redistribución hiperestáticos de pretensado

$[-.85;-.85]PRETF1A.HIP.To + [-.85;-.85]PRETF1B.HIP.To + [.655;.655]PRETFA.HIP.To + [.655;.655]$

Coef. exc:

Barra	Nudo	X	N (T)	Vy (T)	Mz (Tm)
1	1	0.00	1.11	-63.46	0.96
1	2	2.74	1.11	-63.46	174.83
2	2	2.74	10.41	-65.74	176.79
2	3	5.48	10.41	-65.74	356.92
3	3	5.48	18.82	-65.82	358.77
3	4	8.22	18.82	-65.82	539.08
4	4	8.22	26.65	-63.84	540.79
4	5	10.96	26.65	-63.84	715.70
5	5	10.96	28.34	-60.12	716.94
5	6	13.70	28.34	-60.12	881.66
6	6	13.70	24.47	-55.08	882.52
6	7	16.44	24.47	-55.08	1033.44
7	7	16.44	13.57	-49.03	1033.97
7	8	19.18	13.57	-49.03	1168.31
8	8	19.18	-8.44	-42.23	1168.50
8	9	21.92	-8.44	-42.23	1284.19
9	9	21.92	-22.16	-35.26	1283.46
9	10	24.66	-22.16	-35.26	1380.08
10	10	24.66	2.64	-32.69	1379.24
10	11	27.40	2.64	-32.69	1468.80
11	11	27.40	2.23	-30.79	1467.10
11	12	30.45	2.23	-30.79	1560.98
12	12	30.45	-14.06	-30.85	1558.60
12	10013	33.50	-14.06	-30.85	1652.71
13	13	33.50	-18.93	11.99	1651.13
13	14	36.89	-18.93	11.99	1610.49
14	14	36.89	34.07	9.27	1610.56
14	15	40.28	34.07	9.27	1579.14
15	15	40.28	22.47	-1.77	1580.78
15	16	43.67	22.47	-1.77	1586.80
16	16	43.67	6.30	-9.19	1589.84
16	17	47.06	6.30	-9.19	1620.99
17	17	47.06	-1.41	-12.37	1623.84
17	18	50.45	-1.41	-12.37	1665.73
18	18	50.45	-7.14	-11.65	1668.49
18	19	53.84	-7.14	-11.65	1708.00
19	19	53.84	-15.54	-7.07	1710.80
19	20	57.23	-15.54	-7.07	1734.73
20	20	57.23	-33.65	1.78	1737.71
20	21	60.62	-33.65	1.78	1731.70
21	21	60.62	-41.94	14.11	1733.06
21	22	64.01	-41.94	14.11	1685.25
22	22	64.01	9.48	17.87	1685.06
22	23	67.40	9.48	17.87	1624.47
23	23	67.40	3.49	20.61	1622.47
23	24	70.45	3.49	20.61	1559.55
24	24	70.45	-14.60	20.91	1556.64
24	10025	73.50	-14.60	20.91	1492.82
25	25	73.50	-21.00	79.71	1490.51
25	26	76.26	-21.00	79.71	1270.50
26	26	76.26	2.60	76.30	1269.17

CÁLCULO TENSIONAL

Hipótesis de cálculo:
REDPRE

Redistribución hiperestáticos de pretensado

$[-.85;-.85]PRETF1A.HIP.To + [-.85;-.85]PRETF1B.HIP.To + [.655;.655]PRETFA.HIP.To + [.655;.655]$

Coef. exc:

Barra	Nudo	X	N (T)	Vy (T)	Mz (Tm)
26	27	79.02	2.60	76.30	1058.59
27	27	79.02	-14.06	68.02	1057.63
27	28	81.78	-14.06	68.02	869.86
28	28	81.78	-35.40	59.77	869.91
28	29	84.54	-35.40	59.77	704.92
29	29	84.54	-44.95	52.27	705.46
29	30	87.30	-44.95	52.27	561.20
30	30	87.30	-46.72	45.91	562.24
30	31	90.06	-46.72	45.91	435.51
31	31	90.06	-41.73	41.20	437.14
31	32	92.82	-41.73	41.20	323.42
32	32	92.82	-28.36	38.78	325.70
32	33	95.58	-28.36	38.78	218.66
33	33	95.58	-14.42	39.12	221.16
33	34	98.34	-14.42	39.12	113.19
34	34	98.34	-1.66	42.37	115.71
34	35	101.10	-1.66	42.37	-1.25
101	101	0.00	-1.11	-41.86	-0.96
101	102	2.74	-1.11	-41.86	113.77
102	102	2.74	-10.41	-39.58	111.80
102	103	5.48	-10.41	-39.58	220.27
103	103	5.48	-18.82	-39.51	218.42
103	104	8.22	-18.82	-39.51	326.68
104	104	8.22	-26.65	-41.49	324.99
104	105	10.96	-26.65	-41.49	438.70
105	105	10.96	-28.34	-45.21	437.45
105	106	13.70	-28.34	-45.21	561.34
106	106	13.70	-24.47	-50.25	560.48
106	107	16.44	-24.47	-50.25	698.17
107	107	16.44	-13.57	-56.30	697.64
107	108	19.18	-13.57	-56.30	851.91
108	108	19.18	8.44	-63.10	851.72
108	109	21.92	8.44	-63.10	1024.64
109	109	21.92	22.16	-70.06	1025.37
109	110	24.66	22.16	-70.06	1217.36
110	110	24.66	-2.64	-72.64	1218.20
110	10111	27.40	-2.64	-72.64	1417.25
111	111	27.40	-2.22	-22.09	1418.94
111	112	30.45	-2.21	-22.09	1486.30
112	112	30.45	14.06	-22.02	1488.71
112	113	33.50	14.06	-22.02	1555.85
113	113	33.50	18.93	-19.96	1557.41
113	114	36.89	18.93	-19.96	1625.07
114	114	36.89	-34.07	-17.23	1625.00
114	115	40.28	-34.07	-17.23	1683.39
115	115	40.28	-22.47	-6.19	1681.76
115	116	43.67	-22.47	-6.19	1702.73
116	116	43.67	-6.30	1.23	1699.68
116	117	47.06	-6.30	1.23	1695.51
117	117	47.06	1.41	4.40	1692.66
117	118	50.45	1.41	4.40	1677.72

CÁLCULO TENSIONAL

Hipótesis de cálculo:
REDPRE

Redistribución hiperestáticos de pretensado

$[-.85; -.85] \text{PRETF1A.HIP.To} + [-.85; -.85] \text{PRETF1B.HIP.To} + [.655; .655] \text{PRETFA.HIP.To} + [.655; .655]$

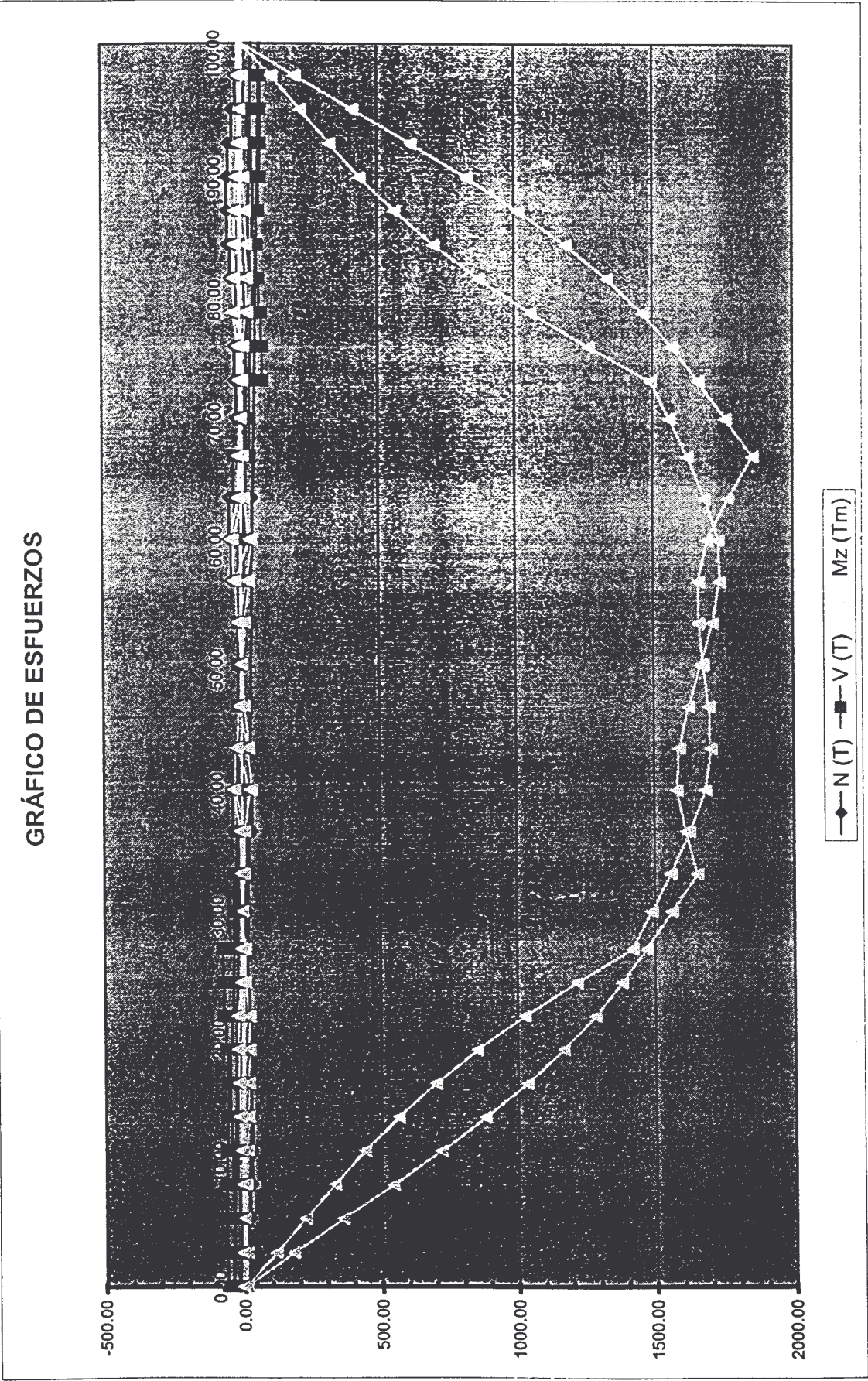
Coef. exc:

Barra	Nudo	X	N (T)	Vy (T)	Mz (Tm)
118	118	50.45	7.14	3.70	1674.96
118	119	53.84	7.14	3.70	1662.39
119	119	53.84	15.54	-0.89	1659.58
119	120	57.23	15.54	-0.89	1662.59
120	120	57.23	33.65	-9.70	1659.62
120	121	60.62	33.65	-9.70	1692.53
121	121	60.62	41.94	-22.04	1691.16
121	122	64.01	41.94	-22.04	1765.88
122	122	64.01	-9.48	-25.80	1766.06
122	10123	67.40	-9.48	-25.80	1853.54
123	123	67.40	-1.20	32.57	1855.56
123	124	70.45	-1.20	32.57	1756.22
124	124	70.45	16.88	32.28	1759.13
124	125	73.50	16.88	32.28	1660.69
125	125	73.50	21.00	34.54	1662.99
125	126	76.26	21.00	34.54	1567.66
126	126	76.26	-2.60	37.97	1569.00
126	127	79.02	-2.60	37.97	1464.22
127	127	79.02	14.06	46.23	1465.20
127	128	81.78	14.06	46.23	1337.59
128	128	81.78	35.40	54.48	1337.55
128	129	84.54	35.40	54.48	1187.18
129	129	84.54	44.95	61.99	1186.64
129	130	87.30	44.95	61.99	1015.56
130	130	87.30	46.72	68.35	1014.52
130	131	90.06	46.72	68.35	825.88
131	131	90.06	41.73	73.05	824.27
131	132	92.82	41.73	73.05	622.63
132	132	92.82	28.36	75.47	620.35
132	133	95.58	28.36	75.47	412.05
133	133	95.58	14.42	75.14	409.55
133	134	98.34	14.42	75.14	202.15
134	134	98.34	1.66	71.88	199.64
134	135	101.10	1.66	71.88	1.25

08/12/02

Programa DINTEL IDEAM S.A.
REDPRE

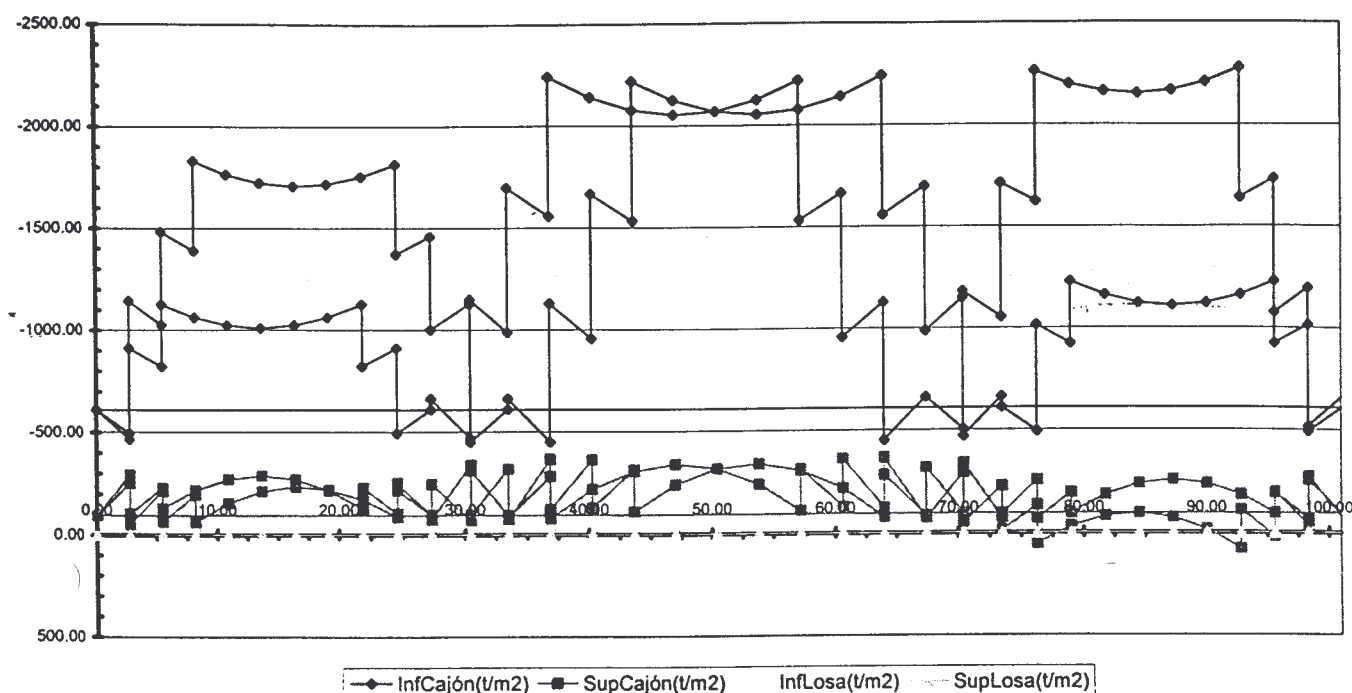
SPRET.xls



Const: **ión sin gradiente en fase constructiva 1 HIPOTESIS A**
[1; 1]PP: [.95; 1.05]PRETF1A.ISO.To + [.95; 1.05]PRETF1A.HP.To + [.95; 1.05]PRETF1B.ISO.To + [.95; 1.05]PRETF1B.HP.To
Cost. exc:

Barra	Nudo	X	N (T)	Vy (T)	Mz (Tm)	Fibra		InfCajón		Fibra		SupCajón		Fibra		InfLosa		Fibra		SupLosa	
						y fibra	sig (t/m2)	y fibra	sig (t/m2)	y fibra	sig (t/m2)	y fibra	sig (t/m2)	y fibra	sig (t/m2)	y fibra	sig (t/m2)				
1	1	0.00	-603.55	-64.07	-241.95	0	-610.78	2.55	-94.19	2.55	0.00	2.85	0.00	0	-467.20	2.55	-294.79	2.55	0.00	2.85	0.00
1	2	2.74	-603.55	-53.59	-80.75	0	-1143.17	2.55	-50.71	2.55	0.00	2.85	0.00	0	-1025.17	2.55	-215.56	2.55	0.00	2.85	0.00
2	2	2.74	-1049.64	-53.59	-511.66	0	-1479.96	2.55	-65.01	2.55	0.00	2.85	0.00	0	-1387.54	2.55	-194.13	2.55	0.00	2.85	0.00
2	3	5.48	-1049.64	-43.11	-379.19	0	-1829.11	2.55	-62.04	2.55	0.00	2.85	0.00	0	-1762.27	2.55	-155.42	2.55	0.00	2.85	0.00
3	3	5.48	-1358.46	-43.11	-662.69	0	-1762.27	2.55	-155.42	2.55	0.00	2.85	0.00	0	-1721.00	2.55	-213.07	2.55	0.00	2.85	0.00
3	4	8.22	-1358.46	-32.63	-558.93	0	-1721.00	2.55	-213.07	2.55	0.00	2.85	0.00	0	-1705.32	2.55	-234.99	2.55	0.00	2.85	0.00
4	4	8.22	-1667.29	-32.63	-827.61	0	-1705.32	2.55	-234.99	2.55	0.00	2.85	0.00	0	-1715.21	2.55	-221.16	2.55	0.00	2.85	0.00
4	5	10.96	-1667.29	-22.15	-752.57	0	-1715.21	2.55	-221.16	2.55	0.00	2.85	0.00	0	-1715.21	2.55	-221.16	2.55	0.00	2.85	0.00
5	5	10.96	-1667.29	-22.15	-752.57	0	-1750.69	2.55	-171.60	2.55	0.00	2.85	0.00	0	-1750.69	2.55	-171.60	2.55	0.00	2.85	0.00
5	6	13.70	-1667.29	-11.67	-706.24	0	-1750.69	2.55	-171.60	2.55	0.00	2.85	0.00	0	-1811.75	2.55	-86.29	2.55	0.00	2.85	0.00
6	6	13.70	-1667.29	-11.67	-706.24	0	-1370.18	2.55	-218.38	2.55	0.00	2.85	0.00	0	-1456.81	2.55	-97.35	2.55	0.00	2.85	0.00
6	7	16.44	-1667.29	-1.19	-688.63	0	-1002.02	2.55	-247.90	2.55	0.00	2.85	0.00	0	-1456.81	2.55	-97.35	2.55	0.00	2.85	0.00
7	7	16.44	-1667.29	-1.19	-688.63	0	-1128.54	2.55	-71.16	2.55	0.00	2.85	0.00	0	-1456.81	2.55	-97.35	2.55	0.00	2.85	0.00
7	8	19.18	-1667.29	9.30	-699.74	0	-452.56	2.55	-315.24	2.55	0.00	2.85	0.00	0	-1456.81	2.55	-97.35	2.55	0.00	2.85	0.00
8	8	19.18	-1667.29	9.29	-699.74	0	-610.78	2.55	-94.19	2.55	0.00	2.85	0.00	0	-610.78	2.55	-94.19	2.55	0.00	2.85	0.00
8	9	21.92	-1667.29	19.78	-739.57	0	-664.25	2.55	-73.38	2.55	0.00	2.85	0.00	0	-664.25	2.55	-73.38	2.55	0.00	2.85	0.00
9	9	21.92	-1667.29	19.77	-739.57	0	-452.56	2.55	-315.24	2.55	0.00	2.85	0.00	0	-452.56	2.55	-315.24	2.55	0.00	2.85	0.00
9	10	24.66	-1667.29	30.26	-808.12	0	-610.78	2.55	-94.19	2.55	0.00	2.85	0.00	0	-610.78	2.55	-94.19	2.55	0.00	2.85	0.00
10	10	24.66	-1358.46	30.26	-539.44	0	-664.25	2.55	-73.38	2.55	0.00	2.85	0.00	0	-664.25	2.55	-73.38	2.55	0.00	2.85	0.00
10	11	27.40	-1358.46	40.74	-636.70	0	-1128.54	2.55	-71.16	2.55	0.00	2.85	0.00	0	-1128.54	2.55	-71.16	2.55	0.00	2.85	0.00
11	11	27.40	-1049.64	40.74	-353.20	0	-452.56	2.55	-315.24	2.55	0.00	2.85	0.00	0	-452.56	2.55	-315.24	2.55	0.00	2.85	0.00
11	12	30.45	-1049.64	52.40	-495.23	0	-610.78	2.55	-94.19	2.55	0.00	2.85	0.00	0	-610.78	2.55	-94.19	2.55	0.00	2.85	0.00
12	12	30.45	-603.55	52.40	-64.32	0	-664.25	2.55	-73.38	2.55	0.00	2.85	0.00	0	-664.25	2.55	-73.38	2.55	0.00	2.85	0.00
12	10013	33.50	-603.55	64.07	-241.95	0	-1128.54	2.55	-71.16	2.55	0.00	2.85	0.00	0	-1128.54	2.55	-71.16	2.55	0.00	2.85	0.00
13	13	33.50	-637.87	-76.50	-276.74	0	-452.56	2.55	-315.24	2.55	0.00	2.85	0.00	0	-452.56	2.55	-315.24	2.55	0.00	2.85	0.00
13	14	36.89	-637.87	-63.53	-39.40	0	-610.78	2.55	-94.19	2.55	0.00	2.85	0.00	0	-610.78	2.55	-94.19	2.55	0.00	2.85	0.00
14	14	36.89	-1083.95	-63.53	-470.32	0	-664.25	2.55	-73.38	2.55	0.00	2.85	0.00	0	-664.25	2.55	-73.38	2.55	0.00	2.85	0.00
14	15	40.28	-1083.95	-50.56	-276.95	0	-956.58	2.55	-365.25	2.55	0.00	2.85	0.00	0	-956.58	2.55	-365.25	2.55	0.00	2.85	0.00
15	15	40.28	-1564.35	-50.56	-717.95	0	-1664.01	2.55	-131.09	2.55	0.00	2.85	0.00	0	-1664.01	2.55	-131.09	2.55	0.00	2.85	0.00
15	16	43.67	-1564.35	-37.59	-568.52	0	-1530.91	2.55	-317.04	2.55	0.00	2.85	0.00	0	-1530.91	2.55	-317.04	2.55	0.00	2.85	0.00
16	16	43.67	-2044.74	-37.59	-986.47	0	-2217.81	2.55	-111.55	2.55	0.00	2.85	0.00	0	-2217.81	2.55	-111.55	2.55	0.00	2.85	0.00
16	17	47.06	-2044.74	-24.63	-881.00	0	-2123.86	2.55	-242.80	2.55	0.00	2.85	0.00	0	-2123.86	2.55	-242.80	2.55	0.00	2.85	0.00
17	17	47.06	-2044.74	-24.63	-881.00	0	-2123.86	2.55	-242.80	2.55	0.00	2.85	0.00	0	-2123.86	2.55	-242.80	2.55	0.00	2.85	0.00
17	18	50.45	-2044.74	-11.66	-819.49	0	-2069.07	2.55	-319.35	2.55	0.00	2.85	0.00	0	-2069.07	2.55	-319.35	2.55	0.00	2.85	0.00
18	18	50.45	-2044.74	-11.67	-819.49	0	-2069.07	2.55	-319.35	2.55	0.00	2.85	0.00	0	-2069.07	2.55	-319.35	2.55	0.00	2.85	0.00
18	19	53.84	-2044.74	1.30	-801.92	0	-2053.42	2.55	-341.21	2.55	0.00	2.85	0.00	0	-2053.42	2.55	-341.21	2.55	0.00	2.85	0.00
19	19	53.84	-2044.74	1.30	-801.92	0	-2053.42	2.55	-341.21	2.55	0.00	2.85	0.00	0	-2053.42	2.55	-341.21	2.55	0.00	2.85	0.00
19	20	57.23	-2044.74	14.27	-828.30	0	-2076.92	2.55	-308.38	2.55	0.00	2.85	0.00	0	-2076.92	2.55	-308.38	2.55	0.00	2.85	0.00
20	20	57.23	-2044.74	14.26	-828.30	0	-2076.92	2.55	-308.38	2.55	0.00	2.85	0.00	0	-2076.92	2.55	-308.38	2.55	0.00	2.85	0.00
20	21	60.62	-2044.74	27.23	-898.63	0	-2139.57	2.55	-220.86	2.55	0.00	2.85	0.00	0	-2139.57	2.55	-220.86	2.55	0.00	2.85	0.00
21	21	60.62	-2044.74	27.23	-898.63	0	-2139.57	2.55	-220.86	2.55	0.00	2.85	0.00	0	-2139.57	2.55	-220.86	2.55	0.00	2.85	0.00
21	22	64.01	-2044.74	40.19	-1012.92	0	-2241.37	2.55	-78.64	2.55	0.00	2.85	0.00	0	-2241.37	2.55	-78.64	2.55	0.00	2.85	0.00
	22	64.01	-1564.35	40.19	-594.97	0	-1554.47	2.55	-284.12	2.55	0.00	2.85	0.00	0	-1554.47	2.55	-284.12	2.55	0.00	2.85	0.00
	23	67.40	-1564.35	53.16	-753.21	0	-1695.42	2.55	-87.21	2.55	0.00	2.85	0.00	0	-1695.42	2.55	-87.21	2.55	0.00	2.85	0.00
23	23	67.40	-1083.95	53.16	-312.21	0	-987.99	2.55	-321.37	2.55	0.00	2.85	0.00	0	-987.99	2.55	-321.37	2.55	0.00	2.85	0.00
23	24	70.45	-1083.95	64.83	-492.14	0	-1148.26	2.55	-97.46	2.55	0.00	2.85	0.00	0	-1148.26	2.55	-97.46	2.55	0.00	2.85	0.00
24	24	70.45	-637.87	64.83	-61.22	0	-4														

GRÁFICO DE TENSIONES



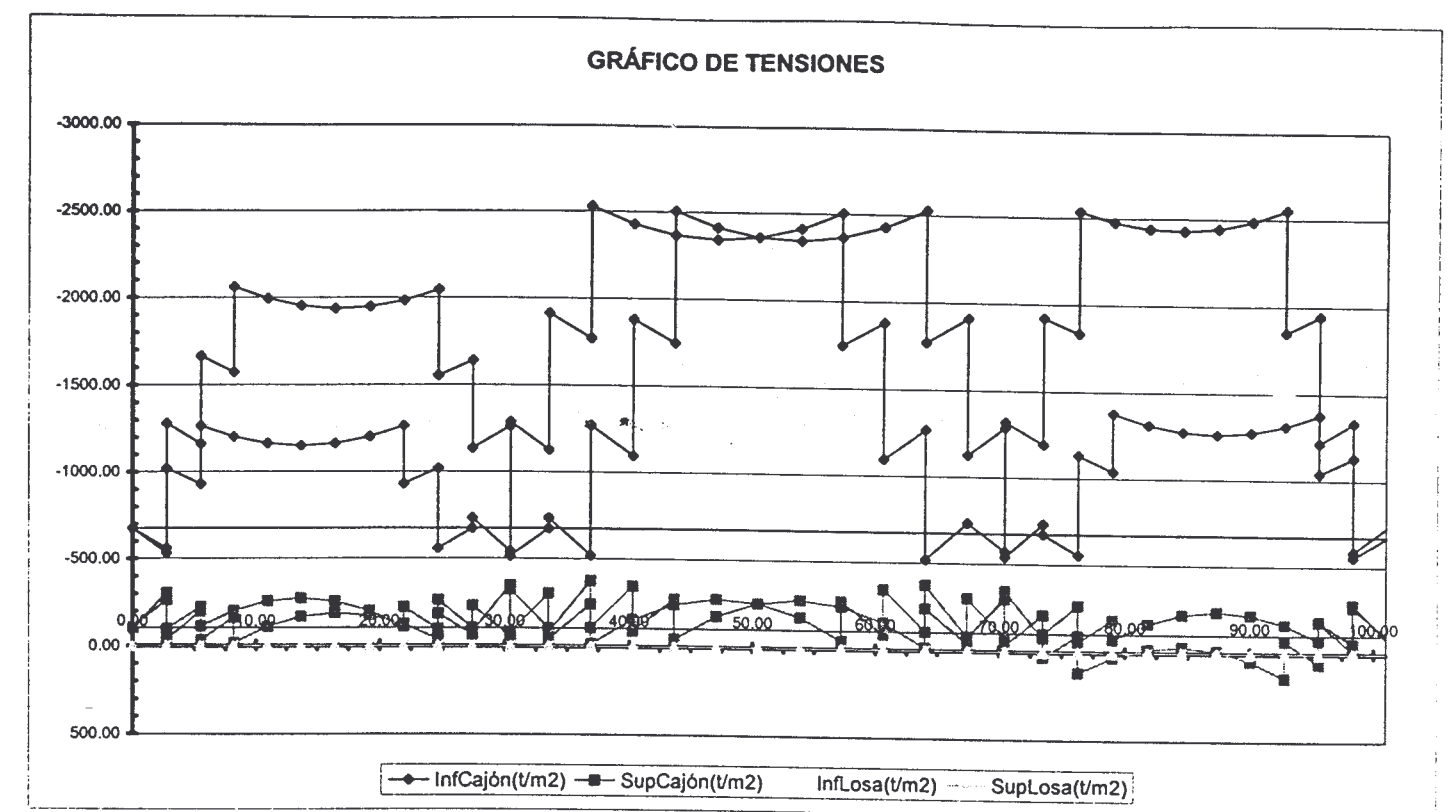
Construcción sin gradiente en fase constructiva 1 HIPOTESIS A

[1: 1PPCF1 + [.95; 1.05]PRETF1A.ISO.To + [.95; 1.05]PRETF1A.HIP.To + [.95; 1.05]PRETF1B.ISO.To + [.95; 1.05]PRETF1B.HIP.To

Coef. ex:

Barra	Nudo	X	N (T)	Vy (T)	Mz (Tm)	Fibra y fibra	InfCajón sig (t/m2)	Fibra y fibra	SupCajón sig (t/m2)	Fibra y fibra	InfLosa sig (t/m2)	Fibra y fibra	SupLosa sig (t/m2)
1	1	0.00	-667.09	-64.07	-267.41	0	-675.08	2.55	-104.11	2.55	0.00	2.85	0.00
1	2	2.74	-667.09	-53.59	-106.21	0	-531.49	2.55	-304.71	2.55	0.00	2.85	0.00
2	2	2.74	-1160.12	-53.59	-582.48	0	-1278.62	2.55	-34.93	2.55	0.00	2.85	0.00
2	3	5.48	-1160.12	-43.11	-450.01	0	-1160.62	2.55	-199.78	2.55	0.00	2.85	0.00
3	3	5.48	-1501.46	-43.11	-763.37	0	-1663.28	2.55	-33.38	2.55	0.00	2.85	0.00
3	4	8.22	-1501.46	-32.63	-659.61	0	-1570.86	2.55	-162.50	2.55	0.00	2.85	0.00
4	4	8.22	-1842.79	-32.63	-956.57	0	-2058.92	2.55	-16.51	2.55	0.00	2.85	0.00
4	5	10.96	-1842.79	-22.15	-881.53	0	-1992.08	2.55	-109.89	2.55	0.00	2.85	0.00
5	5	10.96	-1842.79	-22.15	-881.53	0	-1992.08	2.55	-109.89	2.55	0.00	2.85	0.00
5	6	13.70	-1842.79	-11.67	-835.20	0	-1950.81	2.55	-167.54	2.55	0.00	2.85	0.00
6	6	13.70	-1842.79	-11.67	-835.20	0	-1950.81	2.55	-167.54	2.55	0.00	2.85	0.00
6	7	16.44	-1842.79	-1.19	-817.59	0	-1935.12	2.55	-189.45	2.55	0.00	2.85	0.00
7	7	16.44	-1842.79	-1.19	-817.59	0	-1935.12	2.55	-189.45	2.55	0.00	2.85	0.00
7	8	19.18	-1842.79	9.30	-828.70	0	-1945.02	2.55	-175.63	2.55	0.00	2.85	0.00
8	8	19.18	-1842.79	9.29	-828.70	0	-1945.02	2.55	-175.63	2.55	0.00	2.85	0.00
8	9	21.92	-1842.79	19.78	-868.53	0	-1980.50	2.55	-126.06	2.55	0.00	2.85	0.00
9	9	21.92	-1842.79	19.77	-868.53	0	-1980.50	2.55	-126.06	2.55	0.00	2.85	0.00
9	10	24.66	-1842.79	30.26	-937.08	0	-2041.56	2.55	-40.76	2.55	0.00	2.85	0.00
10	10	24.66	-1501.46	30.26	-640.12	0	-1553.50	2.55	-186.76	2.55	0.00	2.85	0.00
10	11	27.40	-1501.46	40.74	-737.38	0	-1640.13	2.55	-65.73	2.55	0.00	2.85	0.00
11	11	27.40	-1160.12	40.74	-424.02	0	-1137.47	2.55	-232.12	2.55	0.00	2.85	0.00
11	12	30.45	-1160.12	52.40	-566.05	0	-1263.98	2.55	-55.38	2.55	0.00	2.85	0.00
12	12	30.45	-667.09	52.40	-89.78	0	-516.86	2.55	-325.15	2.55	0.00	2.85	0.00
12	10013	33.50	-667.09	64.07	-267.41	0	-675.08	2.55	-104.11	2.55	0.00	2.85	0.00
13	13	33.50	-705.01	-76.50	-305.87	0	-734.17	2.55	-81.10	2.55	0.00	2.85	0.00
13	14	36.89	-705.01	-63.53	-68.54	0	-522.77	2.55	-376.43	2.55	0.00	2.85	0.00
14	14	36.89	-1198.05	-63.53	-544.82	0	-1269.91	2.55	-106.64	2.55	0.00	2.85	0.00
14	15	40.28	-1198.05	-50.56	-351.45	0	-1097.67	2.55	-347.27	2.55	0.00	2.85	0.00
15	15	40.28	-1729.01	-50.56	-838.87	0	-1879.56	2.55	-88.45	2.55	0.00	2.85	0.00
15	16	43.67	-1729.01	-37.59	-689.44	0	-1746.46	2.55	-274.40	2.55	0.00	2.85	0.00
16	16	43.67	-2259.98	-37.59	-1151.39	0	-2505.67	2.55	-47.29	2.55	0.00	2.85	0.00
16	17	47.06	-2259.98	-24.63	-1045.92	0	-2411.73	2.55	-178.53	2.55	0.00	2.85	0.00
17	17	47.06	-2259.98	-24.63	-1045.92	0	-2411.73	2.55	-178.53	2.55	0.00	2.85	0.00
17	18	50.45	-2259.98	-11.66	-984.41	0	-2356.94	2.55	-255.08	2.55	0.00	2.85	0.00
18	18	50.45	-2259.98	-11.67	-984.41	0	-2356.94	2.55	-255.08	2.55	0.00	2.85	0.00
18	19	53.84	-2259.98	1.30	-966.84	0	-2341.29	2.55	-276.94	2.55	0.00	2.85	0.00
19	19	53.84	-2259.98	1.30	-966.84	0	-2341.29	2.55	-276.94	2.55	0.00	2.85	0.00
19	20	57.23	-2259.98	14.27	-993.22	0	-2364.79	2.55	-244.11	2.55	0.00	2.85	0.00
20	20	57.23	-2259.98	14.26	-993.22	0	-2364.79	2.55	-244.11	2.55	0.00	2.85	0.00
20	21	60.62	-2259.98	27.23	-1063.55	0	-2427.43	2.55	-156.60	2.55	0.00	2.85	0.00
21	21	60.62	-2259.98	27.23	-1063.55	0	-2427.43	2.55	-156.60	2.55	0.00	2.85	0.00
21	22	64.01	-2259.98	40.19	-1177.84	0	-2529.23	2.55	-14.37	2.55	0.00	2.85	0.00
22	22	64.01	-1729.01	40.19	-715.89	0	-1770.02	2.55	-241.49	2.55	0.00	2.85	0.00
22	23	67.40	-1729.01	53.16	-874.13	0	-1910.97	2.55	-44.58	2.55	0.00	2.85	0.00
23	23	67.40	-1198.05	53.16	-386.71	0	-1129.07	2.55	-303.39	2.55	0.00	2.85	0.00
23	24	70.45	-1198.05	64.83	-566.64	0	-1289.34	2.55	-79.49	2.55	0.00	2.85	0.00
24	24	70.45	-705.01	64.83	-90.36	0	-542.20	2.55	-349.28	2.55	0.00	2.85	0.00
24	10025	73.50	-705.01	76.50	-305.87	0	-734.17	2.55	-81.10	2.55	0.00	2.85	0.00
25	25	73.50	-667.09	-52.79	-267.41	0	-675.08	2.55	-104.11	2.55	0.00	2.85	0.00
25	26	76.26	-667.09	-42.23	-136.29	0	-558.28	2.55	-267.28	2.55	0.00	2.85	0.00
26	26	76.26	-1046.35	-42.23	-502.66	0	-1133.00	2.55	-59.75	2.55	0.00	2.85	0.00
26	27	79.02	-1046.35	-31.67	-400.68	0	-1042.17	2.55	-186.65	2.55	0.00	2.85	0.00
27	27	79.02	-1273.90	-31.67	-609.58	0	-1377.27	2.55	-75.73	2.55	0.00	2.85	0.00
27	28	81.78	-1273.90	-21.11	-536.74	0	-1312.39	2.55	-166.37	2.55	0.00	2.85	0.00
28	28	81.78	-1273.90	-21.11	-536.74	0	-1312.39	2.55	-166.37	2.55	0.00	2.85	0.00
28	29	84.54	-1273.90	-10.56	-493.03	0	-1273.45	2.55	-220.77	2.55	0.00	2.85	0.00
29	29	84.54	-1273.90	-10.56	-493.03	0	-1273.45	2.55	-220.77	2.55	0.00	2.85	0.00
29	30	87.30	-1273.90	0.00	-478.46	0	-1260.47	2.55	-238.90	2.55	0.00	2.85	0.00
30	30	87.30	-1273.90	0.00	-478.46	0	-1260.47	2.55	-238.90	2.55	0.00	2.85	0.00
30	31	90.06	-1273.90	10.56	-493.03	0	-1273.45	2.55	-220.77	2.55	0.00	2.85	0.00
31	31	90.06	-1273.90	10.56	-493.03	0	-1273.45	2.55	-220.77	2.55	0.00	2.85	0.00
31	32	92.82	-1273.90	21.11	-536.74	0	-1312.39	2.55	-166.37	2.55	0.00	2.85	0.00
32	32	92.82	-1273.90	21.11	-536.74	0	-1312.39	2.55	-166.37	2.55	0.00	2.85	0.00
32	33	95.58	-1273.90	31.67	-609.58	0	-1377.27	2.55	-75.73	2.55	0.00	2.85	0.00
33	33	95.58	-1046.35	31.67	-400.68	0	-1042.17	2.55	-186.65	2.55	0.00	2.85	0.00
33	34	98.34	-1046.35	42.23	-502.66	0	-1133.00	2.55	-59.75	2.55	0.00	2.85	0.00
34	34	98.34	-667.09	42.23	-136.29	0	-558.28	2.55	-267.28	2.55	0.00	2.85	0.00
34	35	101.10	-667.09	52.79	-267.41	0	-675.08	2.55	-104.11	2.55	0.00	2.85	0.00
101	101	0.00	-667.09	-52.40	-267.41	0	-675.08	2.55	-104.11	2.55	0.00	2.85	0.00
101	102	2.74	-667.09	-41.92	-138.19	0	-559.98	2.55	-264.91	2.55	0.00	2.85	0.00
102	102	2.74	-970.49	-41.92	-431.28	0	-1019.75	2.55	-98.90	2.55	0.00	2.85	0.00
102	103	5.48	-970.49	-31.44	-330.77	0	-930.22	2.55	-223.97	2.55	0.00	2.85	0.00
103	103	5.48	-1198.05	-31.44	-539.67	0	-1265.32	2.55	-113.05	2.55	0.00	2.85	0.00
103	104	8.22	-1198.05	-20.96	-467.87	0	-1201.37	2.55	-202.40	2.55	0.00	2.85	0.00
104	104	8.22	-1198.05	-20.96	-467.87	0	-1201.37	2.55	-202.40	2.55	0.00	2.85	0.00
104	105	10.96	-1198.05	-10.48	-424.79	0	-1162.99	2.55	-256.01	2.55	0.00	2.85	0.00
105	105	10.96	-1198.05	-10.48	-424.79	0	-1162.99	2.55	-256.01	2.55	0.00	2.85	0.00

105	106	13.70	-1198.05	0.00	-410.44	0	-1150.21	2.55	-273.86	2.55	0.00	2.85	0.00
106	106	13.70	-1198.05	0.00	-410.44	0	-1150.21	2.55	-273.86	2.55	0.00	2.85	0.00
106	107	16.44	-1198.05	10.48	-424.80	0	-1163.00	2.55	-255.99	2.55	0.00	2.85	0.00
107	107	16.44	-1198.05	10.48	-424.80	0	-1163.00	2.55	-255.99	2.55	0.00	2.85	0.00
108	108	19.18	-1198.05	20.96	-467.88	0	-1201.37	2.55	-202.39	2.55	0.00	2.85	0.00
108	108	19.18	-1198.05	20.96	-467.88	0	-1201.37	2.55	-202.39	2.55	0.00	2.85	0.00
108	109	21.92	-1198.05	31.44	-539.67	0	-1265.32	2.55	-113.05	2.55	0.00	2.85	0.00
109	109	21.92	-970.49	31.44	-330.77	0	-930.22	2.55	-223.97	2.55	0.00	2.85	0.00
109	110	24.66	-970.49	41.92	-431.28	0	-1019.75	2.55	-98.90	2.55	0.00	2.85	0.00
110	110	24.66	-667.09	41.92	-138.19	0	-559.98	2.55	-264.91	2.55	0.00	2.85	0.00
110	10111	27.40	-667.09	52.40	-267.41	0	-675.08	2.55	-104.11	2.55	0.00	2.85	0.00
111	111	27.40	-705.01	-76.49	-305.87	0	-734.17	2.55	-81.10	2.55	0.00	2.85	0.00
111	112	30.45	-705.01	-64.83	-90.36	0	-542.20	2.55	-349.28	2.55	0.00	2.85	0.00
112	112	30.45	-1198.05	-64.83	-566.64	0	-1289.34	2.55	-79.49	2.55	0.00	2.85	0.00
112	113	33.50	-1198.05	-53.16	-386.71	0	-1129.07	2.55	-303.39	2.55	0.00	2.85	0.00
113	113	33.50	-1729.01	-53.16	-874.13	0	-1910.97	2.55	-44.58	2.55	0.00	2.85	0.00
113	114	36.89	-1729.01	-40.19	-715.88	0	-1770.01	2.55	-241.50	2.55	0.00	2.85	0.00
114	114	36.89	-2259.98	-40.20	-1177.83	0	-2529.22	2.55	-14.39	2.55	0.00	2.85	0.00
114	115	40.28	-2259.98	-27.24	-1063.52	0	-2427.40	2.55	-156.64	2.55	0.00	2.85	0.00
115	115	40.28	-2259.98	-27.24	-1063.52	0	-2427.40	2.55	-156.64	2.55	0.00	2.85	0.00
115	116	43.67	-2259.98	-14.27	-993.18	0	-2364.75	2.55	-244.17	2.55	0.00	2.85	0.00
116	116	43.67	-2259.98	-14.27	-993.18	0	-2364.75	2.55	-244.17	2.55	0.00	2.85	0.00
116	117	47.06	-2259.98	-1.30	-966.80	0	-2341.25	2.55	-276.99	2.55	0.00	2.85	0.00
117	117	47.06	-2259.98	-1.30	-966.80	0	-2341.25	2.55	-276.99	2.55	0.00	2.85	0.00
117	118	50.45	-2259.98	11.67	-984.36	0	-2356.89	2.55	-255.14	2.55	0.00	2.85	0.00
118	118	50.45	-2259.98	11.67	-984.36	0	-2356.89	2.55	-255.14	2.55	0.00	2.85	0.00
118	119	53.84	-2259.98	24.63	-1045.88	0	-2411.69	2.55	-178.59	2.55	0.00	2.85	0.00
119	119	53.84	-2259.98	24.63	-1045.88	0	-2411.69	2.55	-178.59	2.55	0.00	2.85	0.00
120	120	57.23	-2259.98	37.60	-1151.36	0	-2505.64	2.55	-47.33	2.55	0.00	2.85	0.00
120	120	57.23	-1729.01	37.59	-689.41	0	-1746.43	2.55	-274.44	2.55	0.00	2.85	0.00
120	121	60.62	-1729.01	50.56	-838.84	0	-1879.54	2.55	-88.49	2.55	0.00	2.85	0.00
121	121	60.62	-1198.05	50.56	-351.42	0	-1097.64	2.55	-347.31	2.55	0.00	2.85	0.00
121	122	64.01	-1198.05	63.53	-544.81	0	-1269.90	2.55	-106.65	2.55	0.00	2.85	0.00
122	122	64.01	-705.01	63.53	-68.53	0	-522.76	2.55	-376.45	2.55	0.00	2.85	0.00
122	10123	67.40	-705.01	76.49	-305.87	0	-734.17	2.55	-81.10	2.55	0.00	2.85	0.00
123	123	67.40	-705.01	-64.45	-305.87	0	-734.17	2.55	-81.10	2.55	0.00	2.85	0.00
123	124	70.45	-705.01	-52.79	-127.09	0	-574.92	2.55	-303.57	2.55	0.00	2.85	0.00
124	124	70.45	-1198.05	-52.79	-603.37	0	-1322.06	2.55	-33.78	2.55	0.00	2.85	0.00
124	125	73.50	-1198.05	-41.12	-460.17	0	-1194.50	2.55	-211.98	2.55	0.00	2.85	0.00
125	125	73.50	-1691.09	-41.12	-912.78	0	-1920.56	2.55	28.36	2.55	0.00	2.85	0.00
125	126	76.26	-1691.09	-30.56	-813.87	0	-1832.46	2.55	-94.73	2.55	0.00	2.85	0.00
126	126	76.26	-2184.13	-30.56	-1242.80	0	-2537.42	2.55	116.15	2.55	0.00	2.85	0.00
126	127	79.02	-2184.13	-20.01	-1173.01	0	-2475.26	2.55	29.30	2.55	0.00	2.85	0.00
127	127	79.02	-2184.13	-20.00	-1173.01	0	-2475.26	2.55	29.30	2.55	0.00	2.85	0.00
127	128	81.78	-2184.13	-9.45	-1132.37	0	-2439.06	2.55	-21.27	2.55	0.00	2.85	0.00
128	128	81.78	-2184.13	-9.45	-1132.37	0	-2439.06	2.55	-21.27	2.55	0.00	2.85	0.00
128	129	84.54	-2184.13	1.11	-1120.86	0	-2428.81	2.55	-35.60	2.55	0.00	2.85	0.00
129	129	84.54	-2184.13	1.11	-1120.86	0	-2428.81	2.55	-35.60	2.55	0.00	2.85	0.00
129	130	87.30	-2184.13	11.67	-1138.49	0	-2444.51	2.55	-13.66	2.55	0.00	2.85	0.00
130	130	87.30	-2184.13	11.67	-1138.49	0	-2444.51	2.55	-13.66	2.55	0.00	2.85	0.00
130	131	90.06	-2184.13	22.22	-1185.26	0	-2486.17	2.55	44.54	2.55	0.00	2.85	0.00
131	131	90.06	-2184.13	22.22	-1185.26	0	-2486.17	2.55	44.54	2.55	0.00	2.85	0.00
131	132	92.82	-2184.13	32.78	-1261.16	0	-2553.78	2.55	138.99	2.55	0.00	2.85	0.00
132	132	92.82	-1691.09	32.78	-832.23	0	-1848.81	2.55	-71.88	2.55	0.00	2.85	0.00
132	133	95.58	-1691.09	43.34	-937.27	0	-1942.37	2.55	58.83	2.55	0.00	2.85	0.00
133	133	95.58	-1198.05	43.34	-484.66	0	-1216.32	2.55	-181.51	2.55	0.00	2.85	0.00
133	134	98.34	-1198.05	53.89	-618.83	0	-1335.83	2.55	-14.55	2.55	0.00	2.85	0.00
134	134	98.34	-705.01	53.89	-142.55	0	-588.69	2.55	-284.34	2.55	0.00	2.85	0.00
134	135	101.10	-705.01	64.45	-305.87	0	-734.17	2.55	-81.10	2.55	0.00	2.85	0.00



onstrón sin gradiente en fase constructiva 2 HIPOTESIS B

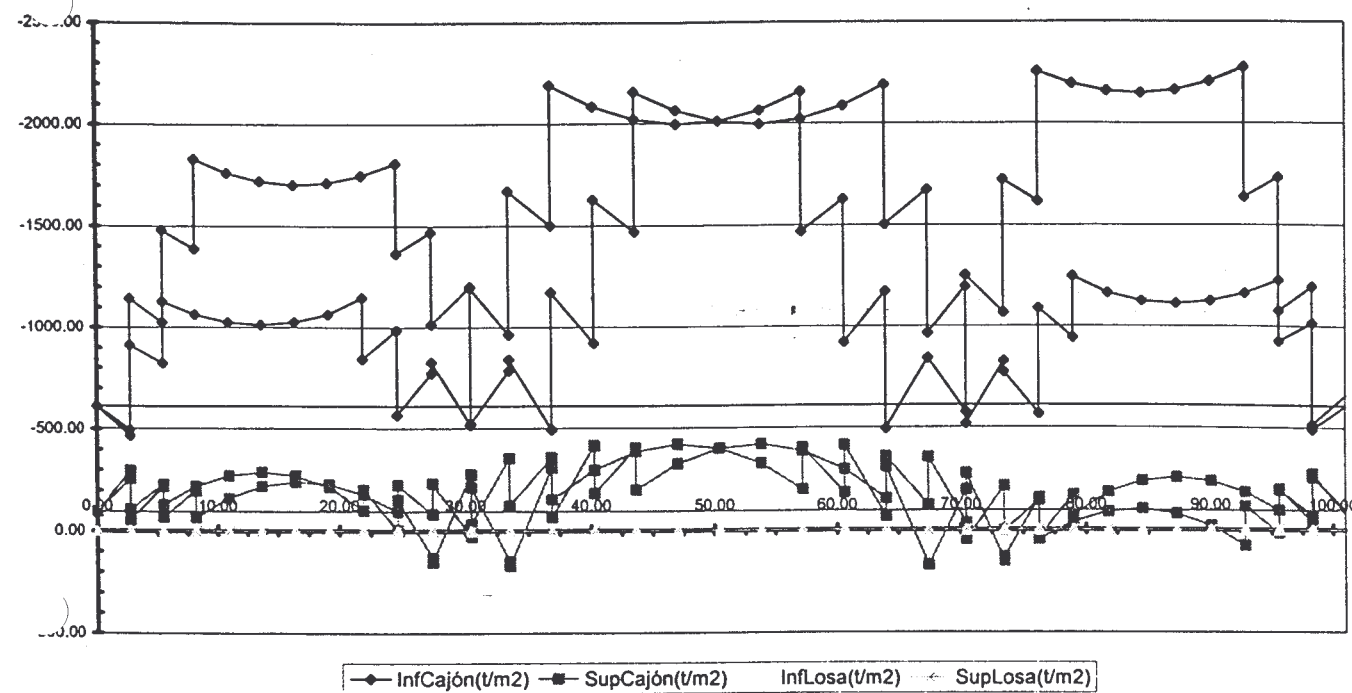
TPPCAS: 1.05PRETF1AISO.To + [.95; 1.05PRETF1AHP.To + [.95; 1.05PRETF1BISO.To + [.95; 1.05PRETF1BHP.To + [1; 1]PLPF2

ref. etc.

Barra	Nudo	X	N (T)	Vy (T)	Mz (Tm)	Fibra		Fibra		Fibra		Fibra		Fibra	
						y fibra	sig (U/m2)	y fibra	sig (U/m2)	y fibra	sig (U/m2)	y fibra	sig (U/m2)	y fibra	sig (U/m2)
1	1	0.00	-603.55	-64.34	-241.95	0	-610.78	2.55	-94.19	2.55	0.00	2.85	0.00		
1	2	2.74	-603.55	-53.86	-80.02	0	-466.55	2.55	-295.70	2.55	0.00	2.85	0.00		
2	2	2.74	-1049.64	-53.86	-510.93	0	-1142.52	2.55	-51.62	2.55	0.00	2.85	0.00		
2	3	5.48	-1049.64	-43.38	-377.72	0	-1023.86	2.55	-217.39	2.55	0.00	2.85	0.00		
3	3	5.48	-1358.46	-43.38	-661.22	0	-1478.65	2.55	-66.84	2.55	0.00	2.85	0.00		
3	4	8.22	-1358.46	-32.90	-556.73	0	-1385.58	2.55	-196.87	2.55	0.00	2.85	0.00		
4	4	8.22	-1667.29	-32.90	-825.41	0	-1827.15	2.55	-64.78	2.55	0.00	2.85	0.00		
4	5	10.96	-1667.29	-22.42	-749.64	0	-1759.66	2.55	-159.06	2.55	0.00	2.85	0.00		
5	5	10.96	-1667.29	-22.42	-749.64	0	-1759.66	2.55	-159.06	2.55	0.00	2.85	0.00		
5	6	13.70	-1667.29	-11.94	-702.58	0	-1717.74	2.55	-217.63	2.55	0.00	2.85	0.00		
6	6	13.70	-1667.29	-11.94	-702.58	0	-1717.74	2.55	-217.63	2.55	0.00	2.85	0.00		
6	7	16.44	-1667.29	-1.46	-684.23	0	-1701.40	2.55	-240.46	2.55	0.00	2.85	0.00		
7	7	16.44	-1667.29	-1.46	-684.23	0	-1701.40	2.55	-240.46	2.55	0.00	2.85	0.00		
7	8	19.18	-1667.29	9.03	-694.61	0	-1710.64	2.55	-227.54	2.55	0.00	2.85	0.00		
8	8	19.18	-1667.29	9.02	-694.61	0	-1710.64	2.55	-227.54	2.55	0.00	2.85	0.00		
8	9	21.92	-1667.29	19.51	-733.71	0	-1745.47	2.55	-178.89	2.55	0.00	2.85	0.00		
9	9	21.92	-1667.29	19.50	-733.71	0	-1745.47	2.55	-178.89	2.55	0.00	2.85	0.00		
9	10	24.66	-1667.29	29.99	-801.53	0	-1805.88	2.55	-94.49	2.55	0.00	2.85	0.00		
	10	24.66	-1358.46	29.99	-532.85	0	-1364.31	2.55	-226.58	2.55	0.00	2.85	0.00		
	11	27.40	-1358.46	54.86	-649.08	0	-1467.84	2.55	-81.95	2.55	0.00	2.85	0.00		
11	11	27.40	-1049.64	54.86	-365.58	0	-1013.05	2.55	-232.49	2.55	0.00	2.85	0.00		
11	12	30.45	-1049.64	82.53	-575.09	0	-1199.67	2.55	28.22	2.55	0.00	2.85	0.00		
12	12	30.45	-603.55	82.53	-144.18	0	-523.70	2.55	-215.86	2.55	0.00	2.85	0.00		
12	10013	33.50	-603.55	110.21	-438.13	0	-785.53	2.55	149.93	2.55	0.00	2.85	0.00		
13	13	33.50	-637.87	-129.38	-472.92	0	-838.99	2.55	170.75	2.55	0.00	2.85	0.00		
13	14	36.89	-637.87	-98.62	-86.47	0	-494.77	2.55	-310.14	2.55	0.00	2.85	0.00		
14	14	36.89	-1083.95	-98.62	-517.39	0	-1170.75	2.55	-66.04	2.55	0.00	2.85	0.00		
14	15	40.28	-1083.95	-67.85	-235.24	0	-919.43	2.55	-417.16	2.55	0.00	2.85	0.00		
15	15	40.28	-1564.35	-67.85	-676.24	0	-1626.86	2.55	-182.99	2.55	0.00	2.85	0.00		
15	16	43.67	-1564.35	-37.08	-498.37	0	-1468.42	2.55	-404.33	2.55	0.00	2.85	0.00		
16	16	43.67	-2044.74	-37.08	-916.32	0	-2155.33	2.55	-198.85	2.55	0.00	2.85	0.00		
16	17	47.06	-2044.74	-24.12	-812.58	0	-2062.92	2.55	-327.94	2.55	0.00	2.85	0.00		
17	17	47.06	-2044.74	-24.12	-812.58	0	-2062.92	2.55	-327.94	2.55	0.00	2.85	0.00		
17	18	50.45	-2044.74	-11.15	-752.79	0	-2009.66	2.55	-402.35	2.55	0.00	2.85	0.00		
18	18	50.45	-2044.74	-11.16	-752.79	0	-2009.66	2.55	-402.35	2.55	0.00	2.85	0.00		
18	19	53.84	-2044.74	1.81	-736.95	0	-1995.55	2.55	-422.06	2.55	0.00	2.85	0.00		
19	19	53.84	-2044.74	1.81	-736.95	0	-1995.55	2.55	-422.06	2.55	0.00	2.85	0.00		
19	20	57.23	-2044.74	14.78	-765.05	0	-2020.58	2.55	-387.09	2.55	0.00	2.85	0.00		
20	20	57.23	-2044.74	14.77	-765.05	0	-2020.58	2.55	-387.09	2.55	0.00	2.85	0.00		
20	21	60.62	-2044.74	27.74	-837.11	0	-2084.77	2.55	-297.42	2.55	0.00	2.85	0.00		
21	21	60.62	-2044.74	27.74	-837.11	0	-2084.77	2.55	-297.42	2.55	0.00	2.85	0.00		
21	22	64.01	-2044.74	40.70	-953.12	0	-2188.11	2.55	-153.05	2.55	0.00	2.85	0.00		
22	22	64.01	-1564.35	40.70	-535.17	0	-1501.20	2.55	-358.54	2.55	0.00	2.85	0.00		
22	23	67.40	-1564.35	71.47	-725.31	0	-1670.57	2.55	-121.93	2.55	0.00	2.85	0.00		
23	23	67.40	-1083.95	71.47	-284.31	0	-963.14	2.55	-356.09	2.55	0.00	2.85	0.00		
23	24	70.45	-1083.95	99.15	-544.49	0	-1194.89	2.55	-32.32	2.55	0.00	2.85	0.00		
24	24	70.45	-637.87	99.15	-113.57	0	-518.91	2.55	-276.42	2.55	0.00	2.85	0.00		
24	10025	73.50	-637.87	126.83	-458.18	0	-825.86	2.55	152.41	2.55	0.00	2.85	0.00		
25	25	73.50	-603.55	-96.31	-423.39	0	-772.40	2.55	131.59	2.55	0.00	2.85	0.00		
25	26	76.26	-603.55	-71.26	-192.15	0	-566.43	2.55	-156.17	2.55	0.00	2.85	0.00		
26	26	76.26	-946.69	-71.26	-523.62	0	-1086.41	2.55	31.60	2.55	0.00	2.85	0.00		
26	27	79.02	-946.69	-46.21	-361.50	0	-942.00	2.55	-170.15	2.55	0.00	2.85	0.00		
27	27	79.02	-1152.58	-46.21	-550.50	0	-1245.19	2.55	-69.79	2.55	0.00	2.85	0.00		
27	28	81.78	-1152.58	-21.16	-457.51	0	-1162.36	2.55	-185.50	2.55	0.00	2.85	0.00		
28	28	81.78	-1152.58	-21.16	-457.51	0	-1162.36	2.55	-185.50	2.55	0.00	2.85	0.00		
28	29	84.54	-1152.58	-10.61	-413.66	0	-1123.30	2.55	-240.07	2.55	0.00	2.85	0.00		
29	29	84.54	-1152.58	-10.61	-413.66	0	-1123.30	2.55	-240.07	2.55	0.00	2.85	0.00		
29	30	87.30	-1152.58	-0.05	-398.94	0	-1110.19	2.55	-258.39	2.55	0.00	2.85	0.00		
30	30	87.30	-1152.58	-0.05	-398.94	0	-1110.19	2.55	-258.39	2.55	0.00	2.85	0.00		
30	31	90.06	-1152.58	10.51	-413.36	0	-1123.03	2.55	-240.44	2.55	0.00	2.85	0.00		
31	31	90.06	-1152.58	10.51	-413.36	0	-1123.03	2.55	-240.44	2.55	0.00	2.85	0.00		
31	32	92.82	-1152.58	21.06	-456.92	0	-1161.84	2.55	-186.24	2.55	0.00	2.85	0.00		
32	32	92.82	-1152.58	21.06	-456.92	0	-1161.84	2.55	-186.24	2.55	0.00	2.85	0.00		
32	33	95.58	-1152.58	31.62	-529.62	0	-1226.59	2.55	-95.77	2.55	0.00	2.85	0.00		
33	33	95.58	-946.69	31.62	-340.62	0	-923.40	2.55	-196.13	2.55	0.00	2.85	0.00		
33	34	98.34	-946.69	42.18	-442.45	0	-1014.11	2.55	-69.41	2.55	0.00	2.85	0.00		
34	34	98.34	-603.55	42.18	-110.98	0	-494.12	2.55	-257.18	2.55	0.00	2.85	0.00		
	35	101.10	-603.55	52.74	-241.95	0	-610.78	2.55	-94.19	2.55	0.00	2.85	0.00		
	101	0.00	-603.55	-52.28	-241.95	0	-610.78	2.55	-94.19	2.55	0.00	2.85	0.00		
101	102	2.74	-603.55	-41.80	-113.06	0	-495.98	2.55	-254.59	2.55	0.00	2.85	0.00		
102	102	2.74	-878.07	-41.80	-378.23	0	-911.96	2.55	-104.38	2.55	0.00	2.85	0.00		
102	103	5.48	-878.07	-31.32	-278.05	0	-822.72	2.55	-229.05	2.55	0.00	2.85	0.00		
103	103	5.48	-1083.95	-31.32	-467.05	0	-1125.91	2.55	-128.69	2.55	0.00	2.85	0.00		
103	104	8.22	-1083.95	-20.84	-395.59	0	-1062.26	2.55	-217.61	2.55	0.00	2.85	0.00		
104	104	8.22	-1083.95	-20.84	-395.59	0	-1062.26	2.55	-217.61	2.55	0.00	2.85	0.00		
104	105	10.96	-1083.95	-10.36	-352.84	0	-1024.18	2.55	-270.81	2.55	0.00	2.85	0.00		
105	105	10.96	-1083.95	-10.36	-352.84	0	-1024.18	2.55	-270.81	2.55	0.00	2.85	0.00		

105	106	13.70	-1083.95	0.12	-338.82	0	-1011.69	2.55	-288.26	2.55	0.00	2.85	0.00
106	106	13.70	-1083.95	0.12	-338.82	0	-1011.69	2.55	-288.26	2.55	0.00	2.85	0.00
106	107	16.44	-1083.95	10.60	-353.51	0	-1024.78	2.55	-269.98	2.55	0.00	2.85	0.00
107	107	16.44	-1083.95	10.60	-353.51	0	-1024.78	2.55	-269.98	2.55	0.00	2.85	0.00
107	108	19.18	-1083.95	21.08	-396.92	0	-1063.45	2.55	-215.96	2.55	0.00	2.85	0.00
108	108	19.18	-1083.95	21.08	-396.92	0	-1063.45	2.55	-215.96	2.55	0.00	2.85	0.00
108	109	21.92	-1083.95	45.95	-488.75	0	-1145.24	2.55	-101.68	2.55	0.00	2.85	0.00
109	109	21.92	-878.07	45.95	-299.75	0	-842.05	2.55	-202.04	2.55	0.00	2.85	0.00
109	110	24.66	-878.07	70.81	-459.72	0	-984.54	2.55	-2.98	2.55	0.00	2.85	0.00
110	110	24.66	-603.55	70.81	-194.55	0	-568.56	2.55	-153.18	2.55	0.00	2.85	0.00
110	10111	27.40	-603.55	95.68	-422.64	0	-771.73	2.55	130.66	2.55	0.00	2.85	0.00
111	111	27.40	-637.87	-126.79	-457.43	0	-825.19	2.55	151.48	2.55	0.00	2.85	0.00
111	112	30.45	-637.87	-99.12	-112.91	0	-518.32	2.55	-277.24	2.55	0.00	2.85	0.00
112	112	30.45	-1083.95	-99.12	-543.83	0	-1194.30	2.55	-33.14	2.55	0.00	2.85	0.00
112	113	33.50	-1083.95	-71.44	-283.74	0	-962.63	2.55	-356.80	2.55	0.00	2.85	0.00
113	113	33.50	-1564.35	-71.44	-724.74	0	-1670.06	2.55	-122.63	2.55	0.00	2.85	0.00
113	114	36.89	-1564.35	-40.67	-534.70	0	-1500.79	2.55	-359.12	2.55	0.00	2.85	0.00
114	114	36.89	-2044.74	-40.68	-952.65	0	-2187.69	2.55	-153.64	2.55	0.00	2.85	0.00
114	115	40.28	-2044.74	-27.72	-836.72	0	-2084.43	2.55	-297.90	2.55	0.00	2.85	0.00
115	115	40.28	-2044.74	-27.72	-836.72	0	-2084.43	2.55	-297.90	2.55	0.00	2.85	0.00
115	116	43.67	-2044.74	-14.75	-764.76	0	-2020.33	2.55	-387.45	2.55	0.00	2.85	0.00
116	116	43.67	-2044.74	-14.75	-764.76	0	-2020.33	2.55	-387.45	2.55	0.00	2.85	0.00
116	117	47.06	-2044.74	-1.78	-736.76	0	-1995.39	2.55	-422.29	2.55	0.00	2.85	0.00
117	117	47.06	-2044.74	-1.78	-736.76	0	-1995.39	2.55	-422.29	2.55	0.00	2.85	0.00
117	118	50.45	-2044.74	11.19	-752.70	0	-2009.59	2.55	-402.46	2.55	0.00	2.85	0.00
118	118	50.45	-2044.74	11.19	-752.70	0	-2009.59	2.55	-402.46	2.55	0.00	2.85	0.00
118	119	53.84	-2044.74	24.15	-812.60	0	-2062.94	2.55	-327.92	2.55	0.00	2.85	0.00
119	119	53.84	-2044.74	24.15	-812.60	0	-2062.94	2.55	-327.92	2.55	0.00	2.85	0.00
119	120	57.23	-2044.74	37.12	-916.46	0	-2155.45	2.55	-198.67	2.55	0.00	2.85	0.00
120	120	57.23	-1564.35	37.11	-498.51	0	-1468.55	2.55	-404.16	2.55	0.00	2.85	0.00
120	121	60.62	-1564.35	67.88	-676.49	0	-1627.09	2.55	-182.68	2.55	0.00	2.85	0.00
121	121	60.62	-1083.95	67.88	-235.49	0	-919.65	2.55	-416.84	2.55	0.00	2.85	0.00
121	122	64.01	-1083.95	98.65	-517.76	0	-1171.08	2.55	-65.58	2.55	0.00	2.85	0.00
122	122	64.01	-637.87	98.65	-86.84	0	-495.10	2.55	-309.68	2.55	0.00	2.85	0.00
122	10123	67.40	-637.87	129.40	-473.41	0	-839.43	2.55	171.36	2.55	0.00	2.85	0.00
123	123	67.40	-637.87	-110.69	-473.41	0	-839.43	2.55	171.36	2.55	0.00	2.85	0.00
123	124	70.45	-637.87	-83.01	-178.02	0	-576.32	2.55	-196.21	2.55	0.00	2.85	0.00
124	124	70.45	-1083.95	-83.01	-608.94	0	-1252.30	2.55	47.88	2.55	0.00	2.85	0.00
124	125	73.50	-1083.95	-55.33	-397.97	0	-1064.38	2.55	-214.65	2.55	0.00	2.85	0.00
125	125	73.50	-1530.03	-55.33	-807.48	0	-1721.29	2.55	2.80	2.55	0.00	2.85	0.00
125	126	76.26	-1530.03	-30.28	-689.34	0	-1616.06	2.55	-144.21	2.55	0.00	2.85	0.00
126	126	76.26	-1976.11	-30.28	-1077.43	0	-2253.88	2.55	46.58	2.55	0.00	2.85	0.00
126	127	79.02	-1976.11	-19.73	-1008.41	0	-2192.40	2.55	-39.31	2.55	0.00	2.85	0.00
127	127	79.02	-1976.11	-19.72	-1008.41	0	-2192.40	2.55	-39.31	2.55	0.00	2.85	0.00
127	128	81.78	-1976.11	-9.17	-968.54	0	-2156.89	2.55	-88.93	2.55	0.00	2.85	0.00
128	128	81.78	-1976.11	-9.17	-968.54	0	-2156.89	2.55	-88.93	2.55	0.00	2.85	0.00
128	129	84.54	-1976.11	1.39	-957.80	0	-2147.32	2.55	-102.29	2.55	0.00	2.85	0.00
129	129	84.54	-1976.11	1.39	-957.80	0	-2147.32	2.55	-102.29	2.55	0.00	2.85	0.00
129	130	87.30	-1976.11	11.95	-976.20	0	-2163.71	2.55	-79.39	2.55	0.00	2.85	0.00
130	130	87.30	-1976.11	11.95	-976.20	0	-2163.71	2.55	-79.39	2.55	0.00	2.85	0.00
130	131	90.06	-1976.11	22.50	-1023.74	0	-2206.06	2.55	-20.23	2.55	0.00	2.85	0.00
131	131	90.06	-1976.11	22.50	-1023.74	0	-2206.06	2.55	-20.23	2.55	0.00	2.85	0.00
131	132	92.82	-1976.11	33.06	-1100.41	0	-2274.35	2.55	75.17	2.55	0.00	2.85	0.00
132	132	92.82	-1530.03	33.06	-712.32	0	-1636.53	2.55	-115.62	2.55	0.00	2.85	0.00
132	133	95.58	-1530.03	43.62	-818.13	0	-1730.78	2.55	16.05	2.55	0.00	2.85	0.00
133	133	95.58	-1083.95	43.62	-408.62	0	-1073.87	2.55	-201.40	2.55	0.00	2.85	0.00
133	134	98.34	-1083.95	54.17	-543.57	0	-1194.07	2.55	-33.47	2.55	0.00	2.85	0.00
134	134	98.34	-637.87	54.17	-112.65	0	-518.08	2.55	-277.57	2.55	0.00	2.85	0.00
134	135	101.10	-637.87	64.73	-276.74	0	-664.25	2.55	-73.38	2.55	0.00	2.85	0.00

GRÁFICO DE TENSIONES



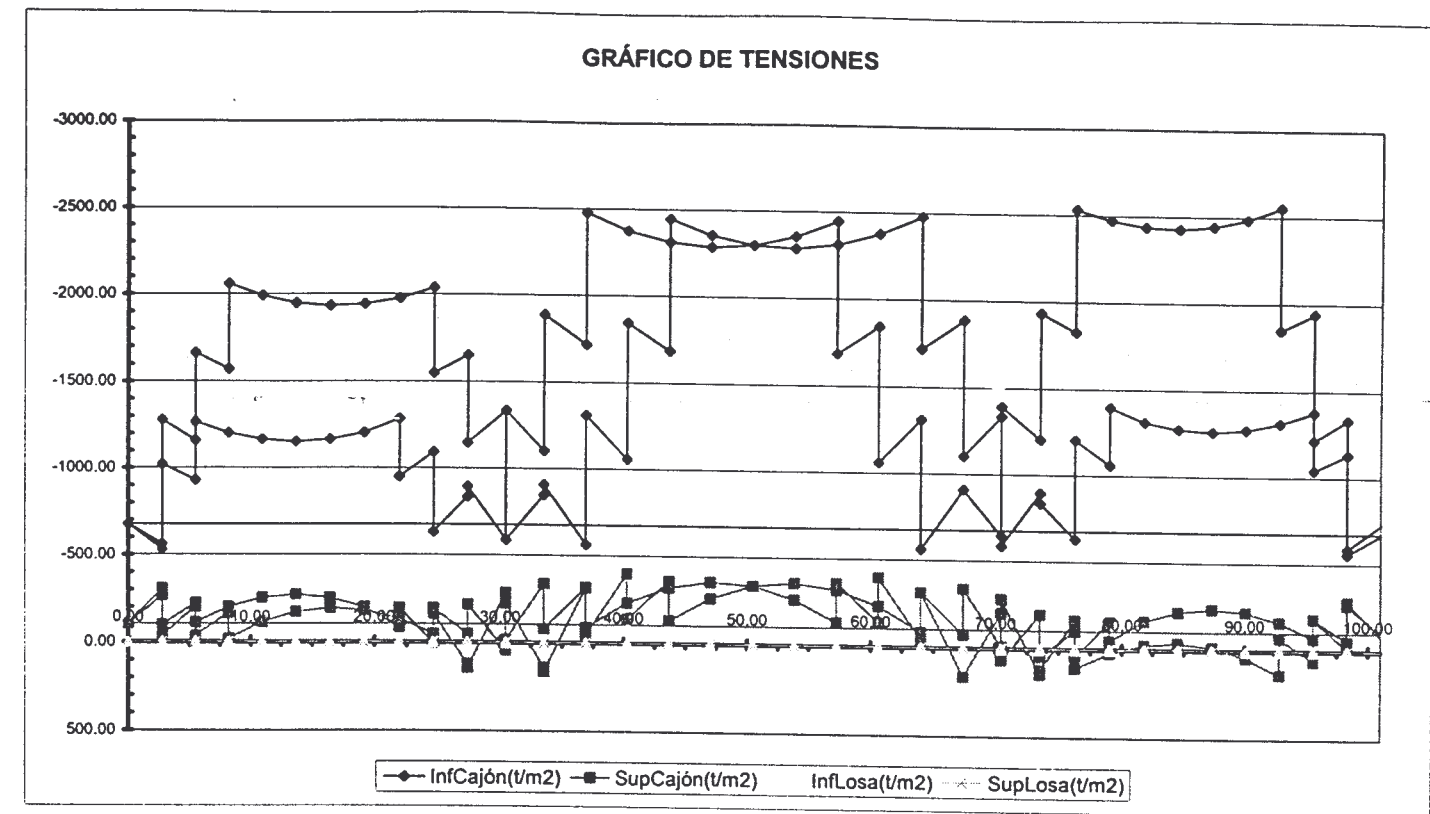
Construcción sin gradiente en fase constructiva 2 HIPOTESIS B

[1; 1]PCF1 + [0.95; 1.05]PRETF1A.ISO.To + [0.95; 1.05]PRETF1A.HIP.To + [0.95; 1.05]PRETF1B.ISO.To + [0.95; 1.05]PRETF1B.HIP.To + [1; 1]PLF2

Coef. exc:

Barra	Nudo	X	N (T)	Vy (T)	Mz (Tm)	Fibra y fibra	InfCajón sig (t/m²)	Fibra y fibra	SupCajón sig (t/m²)	Fibra y fibra	InfLosa sig (t/m²)	Fibra y fibra	SupLosa sig (t/m²)
1	1	0.00	-667.09	-64.34	-267.41	0	-675.08	2.55	-104.11	2.55	0.00	2.85	0.00
1	2	2.74	-667.09	-53.86	-105.48	0	-530.84	2.55	-305.62	2.55	0.00	2.85	0.00
2	2	2.74	-1160.12	-53.86	-581.75	0	-1277.97	2.55	-35.84	2.55	0.00	2.85	0.00
2	3	5.48	-1160.12	-43.38	-448.54	0	-1159.31	2.55	-201.61	2.55	0.00	2.85	0.00
3	3	5.48	-1501.46	-43.38	-761.90	0	-1661.97	2.55	-35.21	2.55	0.00	2.85	0.00
3	4	8.22	-1501.46	-32.90	-657.41	0	-1568.90	2.55	-165.24	2.55	0.00	2.85	0.00
4	4	8.22	-1842.79	-32.90	-954.37	0	-2056.96	2.55	-19.24	2.55	0.00	2.85	0.00
4	5	10.96	-1842.79	-22.42	-878.60	0	-1989.47	2.55	-113.53	2.55	0.00	2.85	0.00
5	5	10.96	-1842.79	-22.42	-878.60	0	-1989.47	2.55	-113.53	2.55	0.00	2.85	0.00
5	6	13.70	-1842.79	-11.94	-831.54	0	-1947.55	2.55	-172.09	2.55	0.00	2.85	0.00
6	6	13.70	-1842.79	-11.94	-831.54	0	-1947.55	2.55	-172.09	2.55	0.00	2.85	0.00
6	7	16.44	-1842.79	-1.46	-813.19	0	-1931.20	2.55	-194.93	2.55	0.00	2.85	0.00
7	7	16.44	-1842.79	-1.46	-813.19	0	-1931.20	2.55	-194.93	2.55	0.00	2.85	0.00
7	8	19.18	-1842.79	9.03	-823.57	0	-1940.45	2.55	-182.01	2.55	0.00	2.85	0.00
8	8	19.18	-1842.79	9.02	-823.57	0	-1940.45	2.55	-182.01	2.55	0.00	2.85	0.00
8	9	21.92	-1842.79	19.51	-862.67	0	-1975.28	2.55	-133.36	2.55	0.00	2.85	0.00
9	9	21.92	-1842.79	19.50	-862.67	0	-1975.28	2.55	-133.36	2.55	0.00	2.85	0.00
9	10	24.66	-1842.79	29.99	-930.49	0	-2035.69	2.55	-48.96	2.55	0.00	2.85	0.00
10	10	24.66	-1501.46	29.99	-633.53	0	-1547.63	2.55	-194.96	2.55	0.00	2.85	0.00
10	11	27.40	-1501.46	54.86	-749.76	0	-1651.16	2.55	-50.32	2.55	0.00	2.85	0.00
11	11	27.40	-1160.12	54.86	-436.40	0	-1148.50	2.55	-216.71	2.55	0.00	2.85	0.00
11	12	30.45	-1160.12	82.53	-645.91	0	-1335.12	2.55	44.00	2.55	0.00	2.85	0.00
12	12	30.45	-667.09	82.53	-169.64	0	-587.99	2.55	-225.78	2.55	0.00	2.85	0.00
12	10013	33.50	-667.09	110.21	-463.59	0	-849.82	2.55	140.02	2.55	0.00	2.85	0.00
13	13	33.50	-705.01	-129.38	-502.05	0	-908.91	2.55	163.03	2.55	0.00	2.85	0.00
13	14	36.89	-705.01	-98.62	-115.61	0	-564.70	2.55	-317.86	2.55	0.00	2.85	0.00
14	14	36.89	-1198.05	-98.62	-591.89	0	-1311.83	2.55	-48.07	2.55	0.00	2.85	0.00
14	15	40.28	-1198.05	-67.85	-309.74	0	-1060.51	2.55	-399.17	2.55	0.00	2.85	0.00
15	15	40.28	-1729.01	-67.85	-797.16	0	-1842.41	2.55	-140.36	2.55	0.00	2.85	0.00
15	16	43.67	-1729.01	-37.08	-619.29	0	-1683.98	2.55	-361.70	2.55	0.00	2.85	0.00
16	16	43.67	-2259.98	-37.08	-1081.24	0	-2443.19	2.55	-134.58	2.55	0.00	2.85	0.00
16	17	47.06	-2259.98	-24.12	-977.50	0	-2350.78	2.55	-263.68	2.55	0.00	2.85	0.00
17	17	47.06	-2259.98	-24.12	-977.50	0	-2350.78	2.55	-263.68	2.55	0.00	2.85	0.00
17	18	50.45	-2259.98	-11.15	-917.71	0	-2297.53	2.55	-338.08	2.55	0.00	2.85	0.00
18	18	50.45	-2259.98	-11.16	-917.71	0	-2297.53	2.55	-338.08	2.55	0.00	2.85	0.00
18	19	53.84	-2259.98	1.81	-901.87	0	-2283.42	2.55	-357.79	2.55	0.00	2.85	0.00
19	19	53.84	-2259.98	1.81	-901.87	0	-2283.42	2.55	-357.79	2.55	0.00	2.85	0.00
19	20	57.23	-2259.98	14.78	-929.97	0	-2308.45	2.55	-322.82	2.55	0.00	2.85	0.00
20	20	57.23	-2259.98	14.77	-929.97	0	-2308.45	2.55	-322.82	2.55	0.00	2.85	0.00
20	21	60.62	-2259.98	27.74	-1002.03	0	-2372.63	2.55	-233.15	2.55	0.00	2.85	0.00
21	21	60.62	-2259.98	27.74	-1002.03	0	-2372.63	2.55	-233.15	2.55	0.00	2.85	0.00
21	22	64.01	-2259.98	40.70	-1118.04	0	-2475.96	2.55	-88.79	2.55	0.00	2.85	0.00
22	22	64.01	-1729.01	40.70	-656.09	0	-1716.76	2.55	-315.91	2.55	0.00	2.85	0.00
22	23	67.40	-1729.01	71.47	-846.23	0	-1886.12	2.55	-79.30	2.55	0.00	2.85	0.00
23	23	67.40	-1198.05	71.47	-358.81	0	-1104.22	2.55	-338.11	2.55	0.00	2.85	0.00
23	24	70.45	-1198.05	99.15	-618.99	0	-1335.97	2.55	-14.34	2.55	0.00	2.85	0.00
24	24	70.45	-705.01	99.15	-142.71	0	-588.83	2.55	-284.13	2.55	0.00	2.85	0.00
24	10025	73.50	-705.01	126.83	-487.31	0	-895.78	2.55	144.69	2.55	0.00	2.85	0.00
25	25	73.50	-667.09	-96.31	-448.85	0	-836.69	2.55	121.68	2.55	0.00	2.85	0.00
25	26	76.26	-667.09	-71.26	-217.61	0	-630.72	2.55	-166.08	2.55	0.00	2.85	0.00
26	26	76.26	-1046.35	-71.26	-583.98	0	-1205.44	2.55	41.45	2.55	0.00	2.85	0.00
26	27	79.02	-1046.35	-46.21	-421.86	0	-1061.03	2.55	-160.30	2.55	0.00	2.85	0.00
27	27	79.02	-1273.90	-46.21	-630.76	0	-1396.13	2.55	-49.37	2.55	0.00	2.85	0.00
27	28	81.78	-1273.90	-21.16	-537.77	0	-1313.30	2.55	-165.09	2.55	0.00	2.85	0.00
28	28	81.78	-1273.90	-21.16	-537.77	0	-1313.30	2.55	-165.09	2.55	0.00	2.85	0.00
28	29	84.54	-1273.90	-10.61	-493.92	0	-1274.24	2.55	-219.66	2.55	0.00	2.85	0.00
29	29	84.54	-1273.90	-10.61	-493.92	0	-1274.24	2.55	-219.66	2.55	0.00	2.85	0.00
29	30	87.30	-1273.90	-0.05	-479.20	0	-1261.13	2.55	-237.98	2.55	0.00	2.85	0.00
30	30	87.30	-1273.90	-0.05	-479.20	0	-1261.13	2.55	-237.98	2.55	0.00	2.85	0.00
30	31	90.06	-1273.90	10.51	-493.62	0	-1273.98	2.55	-220.03	2.55	0.00	2.85	0.00
31	31	90.06	-1273.90	10.51	-493.62	0	-1273.98	2.55	-220.03	2.55	0.00	2.85	0.00
31	32	92.82	-1273.90	21.06	-537.18	0	-1312.78	2.55	-165.82	2.55	0.00	2.85	0.00
32	32	92.82	-1273.90	21.06	-537.18	0	-1312.78	2.55	-165.82	2.55	0.00	2.85	0.00
32	33	95.58	-1273.90	31.62	-609.88	0	-1377.53	2.55	-75.36	2.55	0.00	2.85	0.00
33	33	95.58	-1046.35	31.62	-400.98	0	-1042.43	2.55	-186.28	2.55	0.00	2.85	0.00
33	34	98.34	-1046.35	42.18	-502.81	0	-1133.14	2.55	-59.56	2.55	0.00	2.85	0.00
34	34	98.34	-667.09	42.18	-136.44	0	-558.42	2.55	-267.09	2.55	0.00	2.85	0.00
34	35	101.10	-667.09	52.74	-267.41	0	-675.08	2.55	-104.11	2.55	0.00	2.85	0.00
101	101	0.00	-667.09	-52.28	-267.41	0	-675.08	2.55	-104.11	2.55	0.00	2.85	0.00
101	102	2.74	-667.09	-41.80	-138.52	0	-560.27	2.55	-264.50	2.55	0.00	2.85	0.00
102	102	2.74	-970.49	-41.80	-431.61	0	-1020.04	2.55	-98.49	2.55	0.00	2.85	0.00
102	103	5.48	-970.49	-31.32	-331.43	0	-930.81	2.55	-223.15	2.55	0.00	2.85	0.00
103	103	5.48	-1198.05	-31.32	-540.33	0	-1265.91	2.55	-112.23	2.55	0.00	2.85	0.00
103	104	8.22	-1198.05	-20.84	-468.87	0	-1202.26	2.55	-201.15	2.55	0.00	2.85	0.00
104	104	8.22	-1198.05	-20.84	-468.87	0	-1202.26	2.55	-201.15	2.55	0.00	2.85	0.00
104	105	10.96	-1198.05	-10.36	-426.12	0	-1164.18	2.55	-254.35	2.55	0.00	2.85	0.00
105	105	10.96	-1198.05	-10.36	-426.12	0	-1164.18	2.55	-254.35	2.55	0.00	2.85	0.00

105	106	13.70	-1198.05	0.12	-412.10	0	-1151.69	2.55	-271.80	2.55	0.00	2.85	0.00
106	106	13.70	-1198.05	0.12	-412.10	0	-1151.69	2.55	-271.80	2.55	0.00	2.85	0.00
106	107	16.44	-1198.05	10.60	-426.79	0	-1164.77	2.55	-253.52	2.55	0.00	2.85	0.00
107	107	16.44	-1198.05	10.60	-426.79	0	-1164.77	2.55	-253.52	2.55	0.00	2.85	0.00
108	108	19.18	-1198.05	21.08	-470.20	0	-1203.44	2.55	-199.50	2.55	0.00	2.85	0.00
108	108	19.18	-1198.05	21.08	-470.20	0	-1203.44	2.55	-199.50	2.55	0.00	2.85	0.00
108	109	21.92	-1198.05	45.95	-562.03	0	-1285.24	2.55	-85.22	2.55	0.00	2.85	0.00
109	109	21.92	-970.49	45.95	-353.13	0	-950.13	2.55	-196.15	2.55	0.00	2.85	0.00
109	110	24.66	-970.49	70.81	-513.10	0	-1092.63	2.55	2.92	2.55	0.00	2.85	0.00
110	110	24.66	-667.09	70.81	-220.01	0	-632.86	2.55	-163.10	2.55	0.00	2.85	0.00
110	10111	27.40	-667.09	95.68	-448.10	0	-836.03	2.55	120.74	2.55	0.00	2.85	0.00
111	111	27.40	-705.01	-126.79	-486.56	0	-895.11	2.55	143.75	2.55	0.00	2.85	0.00
111	112	30.45	-705.01	-99.12	-142.05	0	-588.25	2.55	-284.96	2.55	0.00	2.85	0.00
112	112	30.45	-1198.05	-99.12	-618.33	0	-1335.38	2.55	-15.17	2.55	0.00	2.85	0.00
112	113	33.50	-1198.05	-71.44	-358.24	0	-1103.71	2.55	-338.82	2.55	0.00	2.85	0.00
113	113	33.50	-1729.01	-71.44	-845.66	0	-1885.61	2.55	-80.01	2.55	0.00	2.85	0.00
113	114	36.89	-1729.01	-40.67	-655.62	0	-1716.34	2.55	-316.49	2.55	0.00	2.85	0.00
114	114	36.89	-2259.98	-40.68	-1117.57	0	-2475.55	2.55	-89.38	2.55	0.00	2.85	0.00
114	115	40.28	-2259.98	-27.72	-1001.64	0	-2372.28	2.55	-233.64	2.55	0.00	2.85	0.00
115	115	40.28	-2259.98	-27.72	-1001.64	0	-2372.28	2.55	-233.64	2.55	0.00	2.85	0.00
115	116	43.67	-2259.98	-14.75	-929.68	0	-2308.19	2.55	-323.19	2.55	0.00	2.85	0.00
116	116	43.67	-2259.98	-14.75	-929.68	0	-2308.19	2.55	-323.19	2.55	0.00	2.85	0.00
116	117	47.06	-2259.98	-1.78	-901.68	0	-2283.24	2.55	-358.03	2.55	0.00	2.85	0.00
117	117	47.06	-2259.98	-1.78	-901.68	0	-2283.24	2.55	-358.03	2.55	0.00	2.85	0.00
117	118	50.45	-2259.98	11.19	-917.62	0	-2297.44	2.55	-338.19	2.55	0.00	2.85	0.00
118	118	50.45	-2259.98	11.19	-917.62	0	-2297.44	2.55	-338.19	2.55	0.00	2.85	0.00
118	119	53.84	-2259.98	24.15	-977.52	0	-2350.80	2.55	-263.66	2.55	0.00	2.85	0.00
119	119	53.84	-2259.98	24.15	-977.52	0	-2350.80	2.55	-263.66	2.55	0.00	2.85	0.00
120	120	57.23	-2259.98	37.12	-1081.38	0	-2443.31	2.55	-134.41	2.55	0.00	2.85	0.00
120	121	60.62	-1729.01	37.11	-619.43	0	-1684.10	2.55	-361.53	2.55	0.00	2.85	0.00
121	121	60.62	-1198.05	67.88	-797.41	0	-1842.63	2.55	-140.05	2.55	0.00	2.85	0.00
121	122	64.01	-1198.05	98.65	-592.26	0	-1312.16	2.55	-47.61	2.55	0.00	2.85	0.00
122	122	64.01	-705.01	98.65	-115.98	0	-565.03	2.55	-317.40	2.55	0.00	2.85	0.00
122	10123	67.40	-705.01	129.40	-502.54	0	-909.35	2.55	163.64	2.55	0.00	2.85	0.00
123	123	67.40	-705.01	-110.69	-502.54	0	-909.35	2.55	163.64	2.55	0.00	2.85	0.00
123	124	70.45	-705.01	-83.01	-207.16	0	-646.24	2.55	-203.93	2.55	0.00	2.85	0.00
124	124	70.45	-1198.05	-83.01	-683.44	0	-1393.38	2.55	65.86	2.55	0.00	2.85	0.00
124	125	73.50	-1198.05	-55.33	-472.47	0	-1205.46	2.55	-196.68	2.55	0.00	2.85	0.00
125	125	73.50	-1691.09	-55.33	-925.08	0	-1931.52	2.55	43.66	2.55	0.00	2.85	0.00
125	126	76.26	-1691.09	-30.28	-806.94	0	-1826.28	2.55	-103.35	2.55	0.00	2.85	0.00
126	126	76.26	-2184.13	-30.28	-1235.87	0	-2531.25	2.55	107.52	2.55	0.00	2.85	0.00
126	127	79.02	-2184.13	-19.73	-1166.85	0	-2469.77	2.55	21.63	2.55	0.00	2.85	0.00
127	127	79.02	-2184.13	-19.72	-1166.85	0	-2469.77	2.55	21.63	2.55	0.00	2.85	0.00
127	128	81.78	-2184.13	-9.17	-1126.98	0	-2434.26	2.55	-27.98	2.55	0.00	2.85	0.00
128	128	81.78	-2184.13	-9.17	-1126.98	0	-2434.26	2.55	-27.98	2.55	0.00	2.85	0.00
128	129	84.54	-2184.13	1.39	-1116.24	0	-2424.69	2.55	-41.35	2.55	0.00	2.85	0.00
129	129	84.54	-2184.13	1.39	-1116.24	0	-2424.69	2.55	-41.35	2.55	0.00	2.85	0.00
129	130	87.30	-2184.13	11.95	-1134.64	0	-2441.08	2.55	-18.45	2.55	0.00	2.85	0.00
130	130	87.30	-2184.13	11.95	-1134.64	0	-2441.08	2.55	-18.45	2.55	0.00	2.85	0.00
130	131	90.06	-2184.13	22.50	-1182.18	0	-2483.43	2.55	40.71	2.55	0.00	2.85	0.00
131	131	90.06	-2184.13	22.50	-1182.18	0	-2483.43	2.55	40.71	2.55	0.00	2.85	0.00
131	132	92.82	-2184.13	33.06	-1258.85	0	-2551.72	2.55	136.12	2.55	0.00	2.85	0.00
132	132	92.82	-1691.09	33.06	-829.92	0	-1846.75	2.55	-74.76	2.55	0.00	2.85	0.00
132	133	95.58	-1691.09	43.62	-935.73	0	-1941.00	2.55	56.92	2.55	0.00	2.85	0.00
133	133	95.58	-1198.05	43.62	-483.12	0	-1214.95	2.55	-183.42	2.55	0.00	2.85	0.00
133	134	98.34	-1198.05	54.17	-618.06	0	-1335.14	2.55	-15.50	2.55	0.00	2.85	0.00
134	134	98.34	-705.01	54.17	-141.77	0	-588.00	2.55	-285.29	2.55	0.00	2.85	0.00
134	135	101.10	-705.01	64.73	-305.87	0	-734.17	2.55	-81.10	2.55	0.00	2.85	0.00



Construcción CON gradiente en fase constructiva 2 HIPOTESIS C

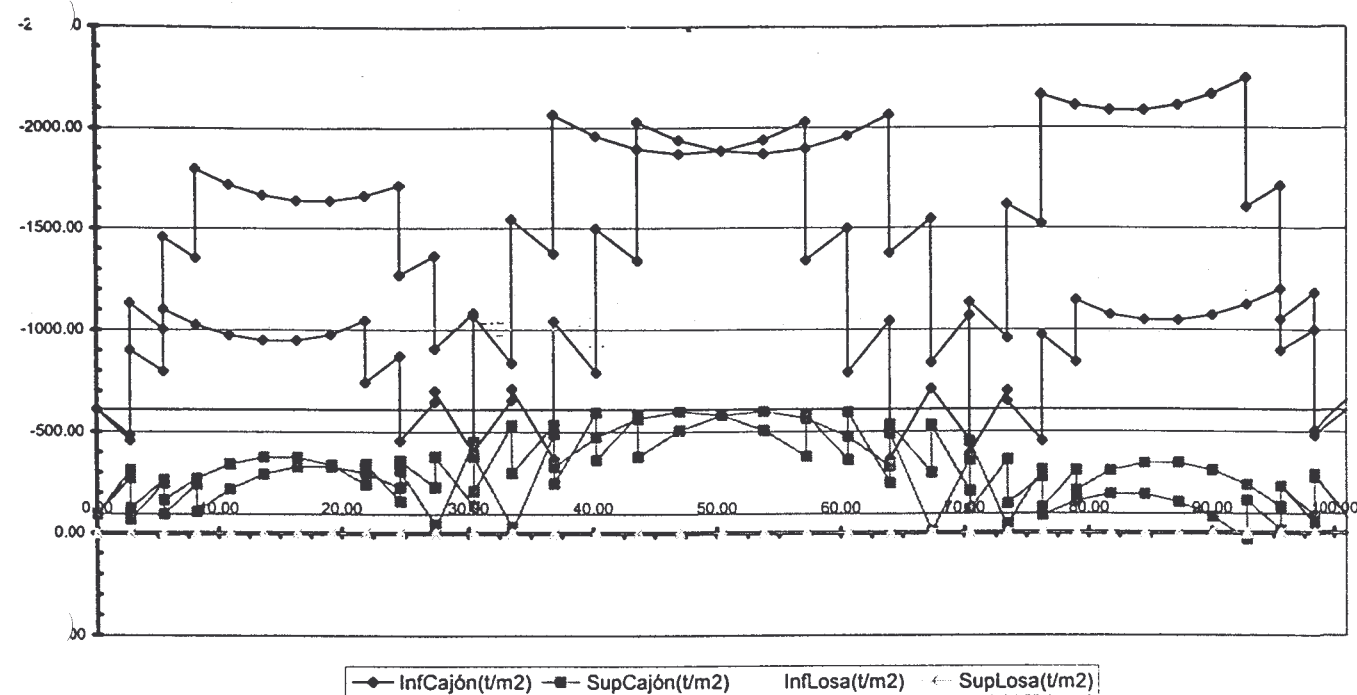
1: 1PPC 15: 1.05PRETF1A.ISO.To + [95: 1.05PRETF1A.HIP.To + [95: 1.05PRETF1B.ISO.To + [95: 1.05PRETF1B.HIP.To + [1: 1]PPLF2 + [0: 1]GRADF2

coef. enc

Barra	Nudo	X	N (T)	Vy (T)	Mz (Tm)	Fibra	InfCajón	Fibra	SupCajón	Fibra	InfLosa	Fibra	SupLosa
						y fibra	sig (t/m2)	y fibra	sig (t/m2)	y fibra	sig (t/m2)	y fibra	sig (t/m2)
1	1	0.00	-603.55	-64.34	-241.95	0	-610.78	2.55	-94.19	2.55	0.00	2.85	0.00
1	2	2.74	-603.55	-58.18	-68.18	0	-456.00	2.55	-310.44	2.55	0.00	2.85	0.00
2	2	2.74	-1049.64	-58.18	-499.09	0	-1131.97	2.55	-66.35	2.55	0.00	2.85	0.00
2	3	5.48	-1049.64	-47.70	-354.05	0	-1002.78	2.55	-246.84	2.55	0.00	2.85	0.00
3	3	5.48	-1358.46	-47.70	-637.55	0	-1457.57	2.55	-96.29	2.55	0.00	2.85	0.00
3	4	8.22	-1358.46	-37.22	-521.22	0	-1353.95	2.55	-241.06	2.55	0.00	2.85	0.00
4	4	8.22	-1667.29	-37.22	-789.90	0	-1795.52	2.55	-108.96	2.55	0.00	2.85	0.00
4	5	10.96	-1667.29	-26.74	-702.30	0	-1717.49	2.55	-217.97	2.55	0.00	2.85	0.00
5	5	10.96	-1667.29	-26.74	-702.30	0	-1717.49	2.55	-217.97	2.55	0.00	2.85	0.00
5	6	13.70	-1667.29	-16.26	-643.40	0	-1665.03	2.55	-291.27	2.55	0.00	2.85	0.00
6	6	13.70	-1667.29	-16.26	-643.40	0	-1665.03	2.55	-291.27	2.55	0.00	2.85	0.00
6	7	16.44	-1667.29	-5.78	-613.21	0	-1638.14	2.55	-328.84	2.55	0.00	2.85	0.00
7	7	16.44	-1667.29	-5.78	-613.21	0	-1638.14	2.55	-328.84	2.55	0.00	2.85	0.00
7	8	19.18	-1667.29	4.71	-611.76	0	-1636.85	2.55	-330.64	2.55	0.00	2.85	0.00
8	8	19.18	-1667.29	4.71	-611.76	0	-1636.85	2.55	-330.64	2.55	0.00	2.85	0.00
8	9	21.92	-1667.29	15.19	-639.02	0	-1661.13	2.55	-296.72	2.55	0.00	2.85	0.00
9	9	21.92	-1667.29	15.19	-639.02	0	-1661.13	2.55	-296.72	2.55	0.00	2.85	0.00
9	10	24.66	-1667.29	25.67	-695.01	0	-1711.00	2.55	-227.05	2.55	0.00	2.85	0.00
10	10	24.66	-1358.46	25.67	-426.33	0	-1269.42	2.55	-359.14	2.55	0.00	2.85	0.00
11	11	27.40	-1358.46	50.54	-530.72	0	-1362.41	2.55	-229.23	2.55	0.00	2.85	0.00
11	12	30.45	-1049.64	50.54	-247.22	0	-907.62	2.55	-379.78	2.55	0.00	2.85	0.00
12	12	30.45	-603.55	78.21	-443.56	0	-1082.51	2.55	-135.45	2.55	0.00	2.85	0.00
12	10013	33.50	-603.55	78.21	-12.65	0	-406.54	2.55	-379.54	2.55	0.00	2.85	0.00
13	13	33.50	-603.55	105.89	-293.42	0	-656.63	2.55	-30.15	2.55	0.00	2.85	0.00
13	14	36.89	-637.87	-129.26	-328.21	0	-710.09	2.55	-9.33	2.55	0.00	2.85	0.00
14	14	36.89	-637.87	57.84	-98.50	0	-366.23	2.55	-489.72	2.55	0.00	2.85	0.00
14	15	40.28	-1083.95	-98.50	-373.08	0	-1042.21	2.55	-245.62	2.55	0.00	2.85	0.00
15	15	40.28	-1564.35	-67.73	-91.33	0	-791.24	2.55	-596.24	2.55	0.00	2.85	0.00
15	16	43.67	-1564.35	-67.73	-532.33	0	-1498.67	2.55	-362.07	2.55	0.00	2.85	0.00
16	16	43.67	-2044.74	-36.96	-354.86	0	-1340.59	2.55	-582.92	2.55	0.00	2.85	0.00
16	17	47.06	-2044.74	-772.81	-772.81	0	-2027.50	2.55	-377.43	2.55	0.00	2.85	0.00
17	17	47.06	-2044.74	-24.00	-669.47	0	-1935.45	2.55	-506.03	2.55	0.00	2.85	0.00
17	18	50.45	-2044.74	-24.00	-669.47	0	-1935.45	2.55	-506.03	2.55	0.00	2.85	0.00
18	18	50.45	-2044.74	-11.03	-610.08	0	-1882.55	2.55	-579.94	2.55	0.00	2.85	0.00
18	19	53.84	-2044.74	-11.04	-610.08	0	-1882.55	2.55	-579.94	2.55	0.00	2.85	0.00
19	19	53.84	-2044.74	1.93	-594.64	0	-1868.79	2.55	-599.15	2.55	0.00	2.85	0.00
19	20	57.23	-2044.74	1.93	-594.64	0	-1868.79	2.55	-599.15	2.55	0.00	2.85	0.00
20	20	57.23	-2044.74	14.90	-623.14	0	-1894.18	2.55	-563.69	2.55	0.00	2.85	0.00
20	21	60.62	-2044.74	14.89	-623.14	0	-1894.18	2.55	-563.69	2.55	0.00	2.85	0.00
21	21	60.62	-2044.74	27.86	-695.60	0	-1958.72	2.55	-473.51	2.55	0.00	2.85	0.00
21	22	64.01	-2044.74	27.86	-695.60	0	-1958.72	2.55	-473.51	2.55	0.00	2.85	0.00
22	22	64.01	-2044.74	40.82	-812.01	0	-2062.41	2.55	-328.65	2.55	0.00	2.85	0.00
23	23	67.40	-1564.35	40.82	-394.06	0	-1375.51	2.55	-534.14	2.55	0.00	2.85	0.00
23	24	70.45	-1083.95	71.59	-584.60	0	-1545.23	2.55	-297.03	2.55	0.00	2.85	0.00
24	24	70.45	-1083.95	71.59	-143.60	0	-837.80	2.55	-531.19	2.55	0.00	2.85	0.00
24	10025	73.50	-637.87	99.27	-404.14	0	-1069.88	2.55	-206.97	2.55	0.00	2.85	0.00
25	25	73.50	-603.55	99.27	-26.78	0	-393.90	2.55	-451.07	2.55	0.00	2.85	0.00
25	26	76.26	-603.55	126.95	-318.19	0	-701.17	2.55	-21.80	2.55	0.00	2.85	0.00
26	26	76.26	-603.55	-66.19	-66.16	0	-454.20	2.55	-312.95	2.55	0.00	2.85	0.00
26	27	79.02	-946.69	-66.19	-397.63	0	-974.18	2.55	-125.19	2.55	0.00	2.85	0.00
27	27	79.02	-946.69	-41.14	-249.51	0	-842.25	2.55	-309.51	2.55	0.00	2.85	0.00
27	28	81.78	-1152.58	-41.14	-438.51	0	-1145.44	2.55	-209.15	2.55	0.00	2.85	0.00
28	28	81.78	-1152.58	-16.09	-359.52	0	-1075.08	2.55	-307.44	2.55	0.00	2.85	0.00
28	29	84.54	-1152.58	-16.09	-359.52	0	-1075.08	2.55	-307.44	2.55	0.00	2.85	0.00
29	29	84.54	-1152.58	-5.54	-329.67	0	-1048.49	2.55	-344.59	2.55	0.00	2.85	0.00
29	30	87.30	-1152.58	-5.54	-329.67	0	-1048.49	2.55	-344.59	2.55	0.00	2.85	0.00
30	30	87.30	-1152.58	5.02	-328.95	0	-1047.85	2.55	-345.49	2.55	0.00	2.85	0.00
30	31	90.06	-1152.58	5.02	-328.95	0	-1047.85	2.55	-345.49	2.55	0.00	2.85	0.00
31	31	90.06	-1152.58	15.58	-357.37	0	-1073.16	2.55	-310.12	2.55	0.00	2.85	0.00
31	32	92.82	-1152.58	15.58	-357.37	0	-1073.16	2.55	-310.12	2.55	0.00	2.85	0.00
32	32	92.82	-1152.58	26.13	-414.92	0	-1124.42	2.55	-238.50	2.55	0.00	2.85	0.00
32	33	95.58	-1152.58	26.13	-414.92	0	-1124.42	2.55	-238.50	2.55	0.00	2.85	0.00
33	33	95.58	-946.69	36.69	-501.62	0	-1201.65	2.55	-130.61	2.55	0.00	2.85	0.00
33	34	98.34	-946.69	36.69	-312.62	0	-898.46	2.55	-230.97	2.55	0.00	2.85	0.00
34	34	98.34	-603.55	47.25	-428.45	0	-1001.64	2.55	-86.83	2.55	0.00	2.85	0.00
35	35	101.10	-603.55	47.25	-96.98	0	-481.65	2.55	-274.60	2.55	0.00	2.85	0.00
101	101	0.00	-603.55	52.74	-241.95	0	-610.78	2.55	-94.19	2.55	0.00	2.85	0.00
101	102	2.74	-603.55	-52.28	-241.95	0	-610.78	2.55	-94.19	2.55	0.00	2.85	0.00
102	102	2.74	-878.07	-46.90	-99.08	0	-483.53	2.55	-271.98	2.55	0.00	2.85	0.00
102	103	5.48	-878.07	-46.90	-364.25	0	-899.51	2.55	-121.78	2.55	0.00	2.85	0.00
103	103	5.48	-1083.95	-36.42	-250.09	0	-797.82	2.55	-263.84	2.55	0.00	2.85	0.00
103	104	8.22	-1083.95	-36.42	-439.09	0	-1101.01	2.55	-163.48	2.55	0.00	2.85	0.00
104	104	8.22	-1083.95	-25.94	-353.64	0	-1024.89	2.55	-269.82	2.55	0.00	2.85	0.00
104	105	10.96	-1083.95	-25.94	-353.64	0	-1024.89	2.55	-269.82	2.55	0.00	2.85	0.00
105	105	10.96	-1083.95	-15.46	-296.91	0	-974.36	2.55	-340.41	2.55	0.00	2.85	0.00
105	105	10.96	-1083.95	-15.46	-296.91	0	-974.36	2.55	-340.41	2.55	0.00	2.85	0.00

105	106	13.70	-1083.95	-4.98	-268.91	0	-949.42	2.55	-375.25	2.55	0.00	2.85	0.00
106	106	13.70	-1083.95	-4.98	-268.91	0	-949.42	2.55	-375.25	2.55	0.00	2.85	0.00
106	107	16.44	-1083.95	5.50	-269.62	0	-950.05	2.55	-374.37	2.55	0.00	2.85	0.00
107	107	16.44	-1083.95	5.50	-269.62	0	-950.05	2.55	-374.37	2.55	0.00	2.85	0.00
107	108	19.18	-1083.95	15.98	-299.05	0	-976.27	2.55	-337.75	2.55	0.00	2.85	0.00
108	108	19.18	-1083.95	15.98	-299.05	0	-976.27	2.55	-337.75	2.55	0.00	2.85	0.00
108	109	21.92	-1083.95	40.85	-376.90	0	-1045.61	2.55	-240.87	2.55	0.00	2.85	0.00
109	109	21.92	-378.07	40.85	-187.90	0	-742.42	2.55	-341.23	2.55	0.00	2.85	0.00
109	110	24.66	-878.07	65.71	-333.89	0	-872.46	2.55	-159.56	2.55	0.00	2.85	0.00
110	110	24.66	-603.55	65.71	-68.72	0	-456.48	2.55	-309.76	2.55	0.00	2.85	0.00
110	10111	27.40	-603.55	90.58	-282.82	0	-647.19	2.55	-43.34	2.55	0.00	2.85	0.00
111	111	27.40	-637.87	-126.92	-317.61	0	-700.65	2.55	-22.52	2.55	0.00	2.85	0.00
111	112	30.45	-637.87	-99.25	27.29	0	-393.44	2.55	-451.70	2.55	0.00	2.85	0.00
112	112	30.45	-1083.95	-99.25	-403.63	0	-1069.42	2.55	-207.61	2.55	0.00	2.85	0.00
112	113	33.50	-1083.95	-71.57	-143.15	0	-837.40	2.55	-531.75	2.55	0.00	2.85	0.00
113	113	33.50	-1564.35	-71.57	-584.15	0	-1544.83	2.55	-297.59	2.55	0.00	2.85	0.00
113	114	36.89	-1564.35	-40.80	-393.69	0	-1375.18	2.55	-534.60	2.55	0.00	2.85	0.00
114	114	36.89	-2044.74	-40.81	-341.64	0	-2062.09	2.55	-329.11	2.55	0.00	2.85	0.00
114	115	40.28	-2044.74	-27.85	-695.28	0	-1958.44	2.55	-473.91	2.55	0.00	2.85	0.00
115	115	40.28	-2044.74	-27.85	-695.28	0	-1958.44	2.55	-473.91	2.55	0.00	2.85	0.00
115	116	43.67	-2044.74	-14.88	-622.89	0	-1893.96	2.55	-563.99	2.55	0.00	2.85	0.00
116	116	43.67	-2044.74	-14.88	-622.89	0	-1893.96	2.55	-563.99	2.55	0.00	2.85	0.00
116	117	47.06	-2044.74	-1.91	-594.46	0	-1868.64	2.55	-599.37	2.55	0.00	2.85	0.00
117	117	47.06	-2044.74	-1.91	-594.46	0	-1868.64	2.55	-599.37	2.55	0.00	2.85	0.00
117	118	50.45	-2044.74	11.06	-609.98	0	-1882.46	2.55	-580.06	2.55	0.00	2.85	0.00
118	118	50.45	-2044.74	11.06	-609.98	0	-1882.46	2.55	-580.06	2.55	0.00	2.85	0.00
118	119	53.84	-2044.74	24.02	-669.45	0	-1935.43	2.55	-506.05	2.55	0.00	2.85	0.00
119	119	53.84	-2044.74	24.02	-669.45	0	-1935.43	2.55	-506.05	2.55	0.00	2.85	0.00
119	120	57.23	-2044.74	36.99	-772.88	0	-2027.56	2.55	-377.34	2.55	0.00	2.85	0.00
120	120	57.23	-1564.35	36.98	-354.93	0	-1340.66	2.55	-582.83	2.55	0.00	2.85	0.00
120	121	60.62	-1564.35	67.75	-532.48	0	-1498.81	2.55	-361.88	2.55	0.00	2.85	0.00
121	121	60.62	-1083.95	67.75	-91.48	0	-791.38	2.55	-596.05	2.55	0.00	2.85	0.00
121	122	64.01	-1083.95	98.52	-373.33	0	-1042.43	2.55	-245.31	2.55	0.00	2.85	0.00
122	122	64.01	-637.87	98.52	57.59	0	-366.45	2.55	-489.41	2.55	0.00	2.85	0.00
122	10123	67.40	-637.87	129.27	-328.55	0	-710.39	2.55	-8.90	2.55	0.00	2.85	0.00
123	123	67.40	-637.87	-106.39	-328.55	0	-710.39	2.55	-8.90	2.55	0.00	2.85	0.00
123	124	70.45	-637.87	-78.71	-46.27	0	-458.97	2.55	-360.16	2.55	0.00	2.85	0.00
124	124	70.45	-1083.95	-78.71	-477.19	0	-1134.95	2.55	-116.07	2.55	0.00	2.85	0.00
124	125	73.50	-1083.95	-51.03	-279.33	0	-958.71	2.55	-362.29	2.55	0.00	2.85	0.00
125	125	73.50	-1530.03	-51.03	-688.84	0	-1615.61	2.55	-144.84	2.55	0.00	2.85	0.00
125	126	76.26	-1530.03	-25.98	-582.57	0	-1520.95	2.55	-277.08	2.55	0.00	2.85	0.00
126	126	76.26	-1976.11	-25.98	-970.66	0	-2158.78	2.55	-86.29	2.55	0.00	2.85	0.00
126	127	79.02	-1976.11	-15.43	-913.50	0	-2107.86	2.55	-157.42	2.55	0.00	2.85	0.00
127	127	79.02	-1976.11	-15.42	-913.50	0	-2107.86	2.55	-157.42	2.55	0.00	2.85	0.00
127	128	81.78	-1976.11	-4.87	-885.49	0	-2082.92	2.55	-192.27	2.55	0.00	2.85	0.00
128	128	81.78	-1976.11	-4.87	-885.49	0	-2082.92	2.55	-192.27	2.55	0.00	2.85	0.00
128	129	84.54	-1976.11	5.69	-886.62	0	-2083.92	2.55	-190.87	2.55	0.00	2.85	0.00
129	129	84.54	-1976.11	5.69	-886.62	0	-2083.92	2.55	-190.87	2.55	0.00	2.85	0.00
129	130	87.30	-1976.11	16.25	-916.88	0	-2110.88	2.55	-153.21	2.55	0.00	2.85	0.00
130	130	87.30	-1976.11	16.25	-916.88	0	-2110.88	2.55	-153.21	2.55	0.00	2.85	0.00
130	131	90.06	-1976.11	26.80	-976.29	0	-2163.79	2.55	-79.28	2.55	0.00	2.85	0.00
131	131	90.06	-1976.11	26.80	-976.29	0	-2163.79	2.55	-79.28	2.55	0.00	2.85	0.00
131	132	92.82	-1976.11	37.36	-1064.82	0	-2242.65	2.55	30.89	2.55	0.00	2.85	0.00
132	132	92.82	-1530.03	37.36	-676.73	0	-1604.83	2.55	-159.91	2.55	0.00	2.85	0.00
132	133	95.58	-1530.03	47.92	-794.40	0	-1709.64	2.55	-13.48	2.55	0.00	2.85	0.00
133	133	95.58	-1083.95	47.92	-384.89	0	-1052.73	2.55	-230.93	2.55	0.00	2.85	0.00
133	134	98.34	-1083.95	58.47	-531.71	0	-1183.50	2.55	-48.23	2.55	0.00	2.85	0.00
134	134	98.34	-637.87	58.47	-100.79	0	-507.52	2.55	-292.33	2.55	0.00	2.85	0.00
134	135	101.10	-637.87	64.73	-276.74	0	-664.25	2.55	-73.38	2.55	0.00	2.85	0.00

GRÁFICO DE TENSIONES



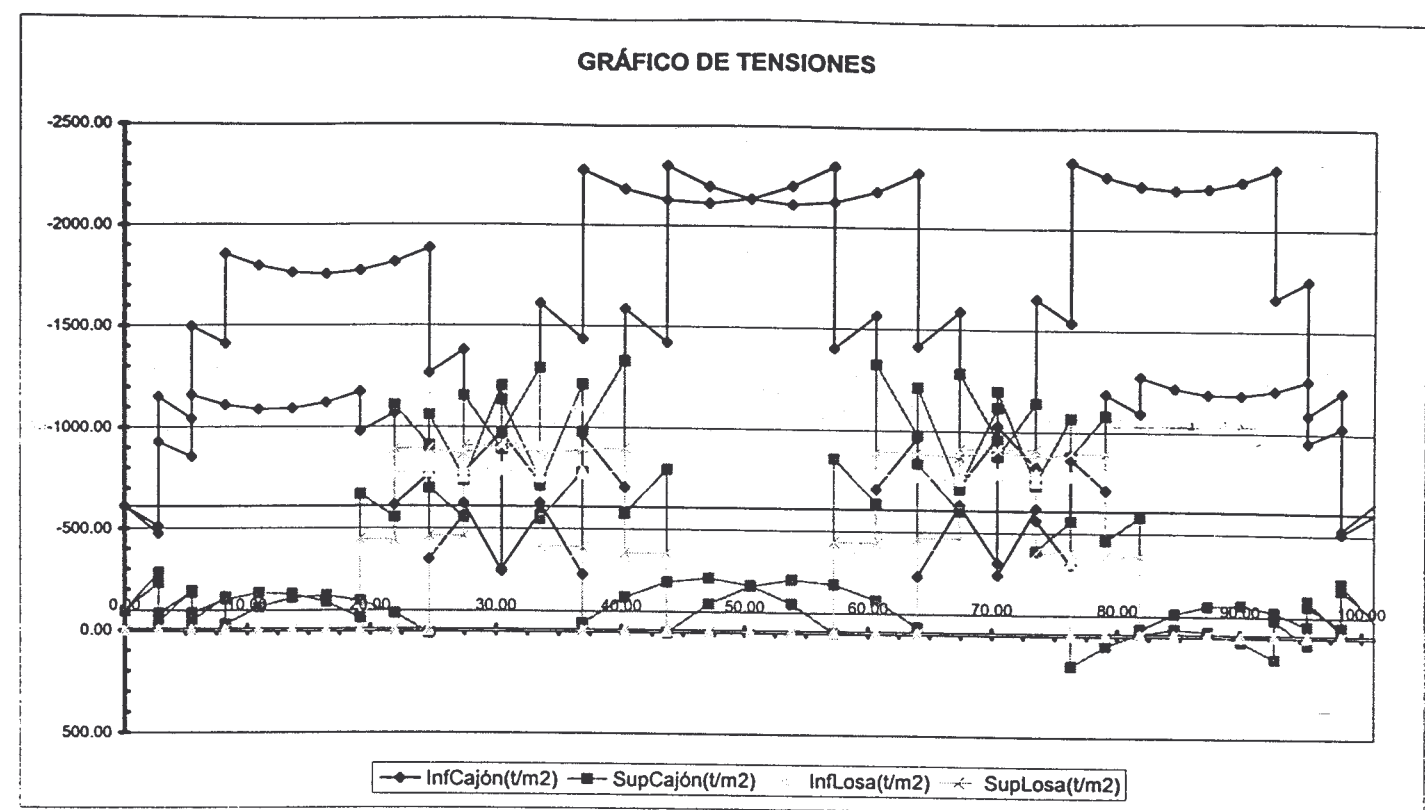
Construcción CON gradiente en fase constructiva 3 HIPOTESIS D

[1; 1]PPCF1 + [.95; 1.05]PRETF1A.ISO.To + [.95; 1.05]PRETF1A.HIP.To + [.95; 1.05]PRETF1B.ISO.To + [.95; 1.05]PRETF1B.HIP.To + [1; 1]PPLF2 + [0; 1]GRAOF3 + [.9; 1.1]PRETF3C.ISO.To + [.9; 1.1]PRETF3C.HIP.To + [0; 1.1]PF

Coef. exc:

Barra	Nudo	X	N (T)	Vy (T)	Mz (Tm)	Fibra y fibra	InfCajón sig (t/m²)	Fibra y fibra	SupCajón sig (t/m²)	Fibra y fibra	InfLosa sig (t/m²)	Fibra y fibra	SupLosa sig (t/m²)
1	1	0.00	-603.55	-54.08	-241.95	0	-610.78	2.55	-94.19	2.55	0.00	2.85	0.00
1	2	2.74	-603.55	-50.37	-89.57	0	-475.06	2.55	-283.82	2.55	0.00	2.85	0.00
2	2	2.74	-1049.64	-50.37	-520.48	0	-1151.03	2.55	-39.73	2.55	0.00	2.85	0.00
2	3	5.48	-1049.64	-39.89	-396.82	0	-1040.88	2.55	-193.61	2.55	0.00	2.85	0.00
3	3	5.48	-1358.46	-39.89	-680.33	0	-1495.67	2.55	-43.07	2.55	0.00	2.85	0.00
3	4	8.22	-1358.46	-29.41	-585.38	0	-1411.09	2.55	-161.22	2.55	0.00	2.85	0.00
4	4	8.22	-1667.29	-29.41	-854.06	0	-1852.67	2.55	-29.13	2.55	0.00	2.85	0.00
4	5	10.96	-1667.29	-18.93	-787.85	0	-1793.70	2.55	-111.52	2.55	0.00	2.85	0.00
5	5	10.96	-1667.29	-18.93	-787.85	0	-1793.70	2.55	-111.52	2.55	0.00	2.85	0.00
5	6	13.70	-1667.29	-8.45	-750.34	0	-1760.29	2.55	-158.19	2.55	0.00	2.85	0.00
6	6	13.70	-1667.29	-8.45	-750.34	0	-1760.29	2.55	-158.19	2.55	0.00	2.85	0.00
6	7	16.44	-1667.29	2.03	-741.55	0	-1752.46	2.55	-169.13	2.55	0.00	2.85	0.00
7	7	16.44	-1667.29	2.03	-741.55	0	-1752.46	2.55	-169.13	2.55	0.00	2.85	0.00
7	8	19.18	-1667.29	12.52	-761.49	0	-1770.21	2.55	-144.33	2.55	0.00	2.85	0.00
8	8	19.18	-1667.29	12.51	-761.49	0	-1770.21	2.55	-144.33	2.55	0.00	2.85	0.00
8	9	21.92	-1667.29	23.00	-810.14	0	-1813.55	2.55	-83.78	2.55	0.00	2.85	0.00
9	9	21.92	-1667.29	22.99	-810.14	0	-1813.55	2.55	-83.78	2.55	0.00	2.85	0.00
9	10	24.66	-1667.29	33.48	-882.51	0	-1882.47	2.55	12.50	2.55	0.00	2.85	0.00
10	10	24.66	-2490.85	37.27	236.56	0	-1265.92	2.55	-701.74	2.55	-407.84	2.85	-465.75
10	11	27.40	-2495.01	62.14	103.64	0	-1380.21	2.55	-555.42	2.55	-406.40	2.85	-463.06
11	11	27.40	-3217.97	63.89	1192.09	0	-776.57	2.55	-1157.14	2.55	-793.65	2.85	-910.90
11	12	30.45	-3226.56	91.56	961.77	0	-977.63	2.55	-895.35	2.55	-792.73	2.85	-908.42
12	12	30.45	-2769.59	90.15	1389.97	0	-299.94	2.55	-1135.69	2.55	-789.51	2.85	-904.99
12	10013	33.50	-2719.89	117.83	1034.03	0	-582.17	2.55	-744.09	2.55	-767.36	2.85	-878.18
13	13	33.50	-2721.61	-123.18	996.00	0	-627.69	2.55	-712.91	2.55	-758.47	2.85	-869.04
13	14	36.89	-2772.60	-94.76	1421.46	0	-276.55	2.55	-1215.97	2.55	-777.50	2.85	-891.00
14	14	36.89	-3250.59	-101.89	989.00	0	-962.99	2.55	-981.18	2.55	-785.49	2.85	-898.88
14	15	40.28	-3241.03	-71.12	1274.79	0	-706.72	2.55	-1330.06	2.55	-783.57	2.85	-897.24
15	15	40.28	-2537.60	-71.12	-89.60	0	-1584.84	2.55	-578.27	2.55	-339.28	2.85	-383.44
15	16	43.67	-2533.10	-40.35	95.82	0	-1420.76	2.55	-799.58	2.55	-339.26	2.85	-383.98
16	16	43.67	-2042.26	-40.35	-1079.70	0	-2299.22	2.55	6.08	2.55	0.00	2.85	0.00
16	17	47.06	-2042.26	-27.39	-964.87	0	-2196.95	2.55	-136.80	2.55	0.00	2.85	0.00
17	17	47.06	-2042.26	-27.39	-964.87	0	-2196.95	2.55	-136.80	2.55	0.00	2.85	0.00
17	18	50.45	-2042.26	-14.42	-894.01	0	-2133.83	2.55	-224.98	2.55	0.00	2.85	0.00
18	18	50.45	-2042.26	-14.43	-894.01	0	-2133.83	2.55	-224.98	2.55	0.00	2.85	0.00
18	19	53.84	-2042.26	-1.46	-867.10	0	-2109.86	2.55	-258.47	2.55	0.00	2.85	0.00
19	19	53.84	-2042.26	-1.45	-867.10	0	-2109.86	2.55	-258.47	2.55	0.00	2.85	0.00
19	20	57.23	-2042.26	11.52	-884.13	0	-2125.02	2.55	-237.28	2.55	0.00	2.85	0.00
20	20	57.23	-2042.26	11.50	-884.13	0	-2125.02	2.55	-237.28	2.55	0.00	2.85	0.00
20	21	60.62	-2042.26	24.47	-945.11	0	-2179.34	2.55	-161.40	2.55	0.00	2.85	0.00
21	21	60.62	-2042.26	24.47	-945.11	0	-2179.34	2.55	-161.40	2.55	0.00	2.85	0.00
21	22	64.01	-2042.26	37.43	-1050.05	0	-2272.82	2.55	-30.81	2.55	0.00	2.85	0.00
22	22	64.01	-2722.09	43.95	227.36	0	-1414.35	2.55	-840.10	2.55	-413.34	2.85	-470.74
22	23	67.40	-2727.23	74.72	30.22	0	-1589.26	2.55	-603.80	2.55	-413.61	2.85	-470.48
23	23	67.40	-3266.20	78.66	1278.12	0	-728.13	2.55	-1285.76	2.55	-797.96	2.85	-915.57
23	24	70.45	-3274.82	106.34	1002.73	0	-971.13	2.55	-961.90	2.55	-797.89	2.85	-914.35
24	24	70.45	-2811.13	107.21	1431.22	0	-291.25	2.55	-1200.28	2.55	-792.98	2.85	-909.26
24	10025	73.50	-2742.62	134.89	1008.58	0	-622.10	2.55	-737.18	2.55	-763.56	2.85	-873.97
25	25	73.50	-2686.43	-98.01	1040.72	0	-563.58	2.55	-750.97	2.55	-757.53	2.85	-867.73
25	26	76.26	-2753.43	-72.96	1328.92	0	-345.26	2.55	-1068.85	2.55	-783.38	2.85	-897.88
26	26	76.26	-3100.29	-77.72	995.56	0	-867.44	2.55	-881.87	2.55	-784.05	2.85	-898.41
26	27	79.02	-3092.50	-52.67	1169.46	0	-713.98	2.55	-1083.34	2.55	-783.82	2.85	-899.06
27	27	79.02	-2113.65	-52.67	56.36	0	-1187.99	2.55	-464.95	2.55	-339.18	2.85	-384.87
27	28	81.78	-2109.97	-27.62	164.34	0	-1095.52	2.55	-582.20	2.55	-340.50	2.85	-387.30
28	28	81.78	-1152.58	-27.62	-582.43	0	-1273.63	2.55	-30.05	2.55	0.00	2.85	0.00
28	29	84.54	-1152.58	-17.07	-520.73	0	-1218.67	2.55	-106.83	2.55	0.00	2.85	0.00
29	29	84.54	-1152.58	-17.07	-520.73	0	-1218.67	2.55	-106.83	2.55	0.00	2.85	0.00
29	30	87.30	-1152.58	-6.51	-488.18	0	-1189.68	2.55	-147.34	2.55	0.00	2.85	0.00
30	30	87.30	-1152.58	-6.51	-488.18	0	-1189.68	2.55	-147.34	2.55	0.00	2.85	0.00
30	31	90.06	-1152.58	4.05	-484.74	0	-1186.61	2.55	-151.62	2.55	0.00	2.85	0.00
31	31	90.06	-1152.58	4.05	-484.74	0	-1186.61	2.55	-151.62	2.55	0.00	2.85	0.00
31	32	92.82	-1152.58	14.60	-510.46	0	-1209.53	2.55	-119.61	2.55	0.00	2.85	0.00
32	32	92.82	-1152.58	14.60	-510.46	0	-1209.53	2.55	-119.61	2.55	0.00	2.85	0.00
32	33	95.58	-1152.58	25.16	-565.31	0	-1258.38	2.55	-51.36	2.55	0.00	2.85	0.00
33	33	95.58	-946.69	25.16	-376.30	0	-955.19	2.55	-151.73	2.55	0.00	2.85	0.00
33	34	98.34	-946.69	35.72	-460.31	0	-1030.01	2.55	-47.19	2.55	0.00	2.85	0.00
34	34	98.34	-603.55	35.72	-128.83	0	-510.03	2.55	-234.95	2.55	0.00	2.85	0.00
34	35	101.10	-603.55	38.26	-241.95	0	-610.78	2.55	-94.19	2.55	0.00	2.85	0.00
101	101	0.00	-603.55	-37.71	-241.95	0	-610.78	2.55	-94.19	2.55	0.00	2.85	0.00
101	102	2.74	-603.55	-35.30	-130.88	0	-511.86	2.55	-232.40	2.55	0.00	2.85	0.00
102	102	2.74	-878.07	-35.30	-396.06	0	-927.84	2.55	-82.20	2.55	0.00	2.85	0.00
102	103	5.48	-878.07	-24.82	-313.69	0	-854.47	2.55	-184.69	2.55	0.00	2.85	0.00
103	103	5.48	-1083.95	-24.82	-502.70	0	-1157.66	2.55	-84.33	2.55	0.00	2.85	0.00
103	104	8.22	-1083.95	-14.34	-449.06	0	-1109.89	2.55	-151.07	2.55	0.00	2.85	0.00
104	104	8.22	-1083.95	-14.34	-449.06	0	-1109.89	2.55	-151.07	2.55	0.00	2.85	0.00
104	105	10.96	-1083.95	-3.86	-424.14	0	-1087.69	2.55	-182.09	2.55	0.00	2.85	0.00
105	105	10.96	-1083.95	-3.86	-424.14	0	-1087.69	2.55	-182.09	2.55	0.00	2.85	0.00

105	106	13.70	-1083.95	6.62	-427.95	0	-1091.08	2.55	-177.35	2.55	0.00	2.85	0.00
106	106	13.70	-1083.95	6.62	-427.95	0	-1091.08	2.55	-177.35	2.55	0.00	2.85	0.00
106	107	16.44	-1083.95	17.10	-460.46	0	-1120.04	2.55	-136.90	2.55	0.00	2.85	0.00
107	107	16.44	-1083.95	17.10	-460.46	0	-1120.04	2.55	-136.90	2.55	0.00	2.85	0.00
107	108	19.18	-1083.95	27.58	-521.69	0	-1174.58	2.55	-60.69	2.55	0.00	2.85	0.00
108	108	19.18	-2175.96	27.58	330.08	0	-977.10	2.55	-671.54	2.55	-391.04	2.85	-445.76
108	109	21.92	-2180.12	52.45	223.66	0	-1068.46	2.55	-555.95	2.55	-389.91	2.85	-443.54
109	109	21.92	-3010.94	52.45	1221.28	0	-615.81	2.55	-1109.61	2.55	-778.99	2.85	-893.48
109	110	24.66	-3018.68	77.31	1049.53	0	-767.33	2.55	-910.80	2.55	-779.21	2.85	-892.82
110	110	24.66	-2743.59	72.79	1316.65	0	-350.07	2.55	-1061.17	2.55	-779.36	2.85	-893.11
110	10111	27.40	-2685.89	97.66	1038.16	0	-564.64	2.55	-751.15	2.55	-756.89	2.85	-866.84
111	111	27.40	-2746.45	-135.21	1005.97	0	-624.50	2.55	-738.68	2.55	-764.05	2.85	-874.20
111	112	30.45	-2828.32	-107.54	1440.02	0	-291.19	2.55	-1207.69	2.55	-798.64	2.85	-915.53
112	112	30.45	-3291.99	-106.47	1011.49	0	-971.09	2.55	-969.30	2.55	-803.53	2.85	-920.61
112	113	33.50	-3283.39	-78.79	1287.29	0	-727.88	2.55	-1293.13	2.55	-803.68	2.85	-921.94
113	113	33.50	-2598.35	-74.68	-76.27	0	-1611.06	2.55	-547.01	2.55	-364.25	2.85	-413.07
113	114	36.89	-2593.85	-43.91	121.24	0	-1436.17	2.55	-783.46	2.55	-364.22	2.85	-413.59
114	114	36.89	-2047.23	-37.35	-1048.58	0	-2274.76	2.55	-35.89	2.55	0.00	2.85	0.00
114	115	40.28	-2047.23	-24.39	-943.93	0	-2181.55	2.55	-166.11	2.55	0.00	2.85	0.00
115	115	40.28	-2047.23	-24.39	-943.93	0	-2181.55	2.55	-166.11	2.55	0.00	2.85	0.00
115	116	43.67	-2047.23	-11.42	-883.26	0	-2127.50	2.55	-241.62	2.55	0.00	2.85	0.00
116	116	43.67	-2047.23	-11.42	-883.26	0	-2127.50	2.55	-241.62	2.55	0.00	2.85	0.00
116	117	47.06	-2047.23	1.55	-866.54	0	-2112.61	2.55	-262.42	2.55	0.00	2.85	0.00
117	117	47.06	-2047.23	1.55	-866.54	0	-2112.61	2.55	-262.42	2.55	0.00	2.85	0.00
117	118	50.45	-2047.23	14.52	-893.77	0	-2136.86	2.55	-228.54	2.55	0.00	2.85	0.00
118	118	50.45	-2047.23	14.52	-893.77	0	-2136.86	2.55	-228.54	2.55	0.00	2.85	0.00
118	119	53.84	-2047.23	27.48	-964.93	0	-2200.25	2.55	-139.98	2.55	0.00	2.85	0.00
119	119	53.84	-2047.23	27.48	-964.93	0	-2200.25	2.55	-139.98	2.55	0.00	2.85	0.00
119	120	57.23	-2047.23	40.45	-1080.08	0	-2302.82	2.55	3.31	2.55	0.00	2.85	0.00
120	120	57.23	-2676.81	40.44	203.66	0	-1402.50	2.55	-861.52	2.55	-392.57	2.85	-445.43
120	121	60.62	-2681.96	71.21	18.42	0	-1566.72	2.55	-640.31	2.55	-392.81	2.85	-445.11
121	121	60.62	-3237.39	71.21	1267.36	0	-709.94	2.55	-1327.39	2.55	-781.55	2.85	-894.68
121	122	64.01	-3246.94	101.98	981.27	0	-966.42	2.55	-978.33	2.55	-783.44	2.85	-896.28
122	122	64.01	-2773.48	94.91	1413.88	0	-281.25	2.55	-1214.50	2.55	-776.64	2.85	-889.60
122	10123	67.40	-2734.67	123.34	995.94	0	-631.80	2.55	-716.30	2.55	-761.90	2.85	-872.51
123	123	67.40	-2755.67	-118.74	999.17	0	-636.27	2.55	-723.17	2.55	-767.81	2.85	-878.65
123	124	70.45	-2813.72	-91.06	1364.38	0	-350.80	2.55	-1120.44	2.55	-793.29	2.85	-909.39
124	124	70.45	-3271.31	-92.29	936.18	0	-1028.69	2.55	-880.28	2.55	-796.67	2.85	-912.97
124	125	73.50	-3262.72	-64.61	1168.73	0	-825.89	2.55	-1144.02	2.55	-797.70	2.85	-915.63
125	125	73.50	-2531.50	-62.67	-161.02	0	-1653.66	2.55	-411.45	2.55	-355.56	2.85	-404.23
125	126	76.26	-2527.83	-37.62	-25.44	0	-1537.38	2.55	-560.42	2.55	-357.25	2.85	-407.22
126	126	76.26	-1976.11	-33.69	-1161.91	0	-2329.14	2.55	151.72	2.55	0.00	2.85	0.00
126	127	79.02	-1976.11	-23.14	-1083.50	0	-2259.30	2.55	54.14	2.55	0.00	2.85	0.00
127	127	79.02	-1976.11	-23.13	-1083.50	0	-2259.30	2.55	54.14	2.55	0.00	2.85	0.00
127	128	81.78	-1976.11	-12.58	-1034.25	0	-2215.42	2.55	-7.15	2.55	0.00	2.85	0.00
128	128	81.78	-1976.11	-12.58	-1034.25	0	-2215.42	2.55	-7.15	2.55	0.00	2.85	0.00
128	129	84.54	-1976.11	-2.02	-1014.12	0	-2197.49	2.55	-32.21	2.55	0.00	2.85	0.00
129	129	84.54	-1976.11	-2.02	-1014.12	0	-2197.49	2.55	-32.21	2.55	0.00	2.85	0.00
129	130	87.30	-1976.11	8.54	-1023.13	0	-2205.52	2.55	-20.99	2.55	0.00	2.85	0.00
130	130	87.30	-1976.11	8.54	-1023.13	0	-2205.52	2.55	-20.99	2.55	0.00	2.85	0.00
130	131	90.06	-1976.11	19.09	-1061.29	0	-2239.51	2.55	26.50	2.55	0.00	2.85	0.00
131	131	90.06	-1976.11	19.09	-1061.29	0	-2239.51	2.55	26.50	2.55	0.00	2.85	0.00
131	132	92.82	-1976.11	29.65	-1128.57	0	-2299.44	2.55	110.22	2.55	0.00	2.85	0.00
132	132	92.82	-1530.03	29.65	-740.48	0	-1661.61	2.55	-80.57	2.55	0.00	2.85	0.00
132	133	95.58	-1530.03	40.21	-836.91	0	-1747.50	2.55	39.42	2.55	0.00	2.85	0.00
133	133	95.58	-1083.95	40.21	-427.40	0	-1090.59	2.55	-178.03	2.55	0.00	2.85	0.00
133	134	98.34	-1083.95	50.76	-552.96	0	-1202.43	2.55	-21.79	2.55	0.00	2.85	0.00
134	134	98.34	-637.87	50.76	-122.04	0	-526.45	2.55	-265.88	2.55	0.00	2.85	0.00
134	135	101.10	-637.87	54.60	-276.74	0	-664.25	2.55	-73.38	2.55	0.00	2.85	0.00



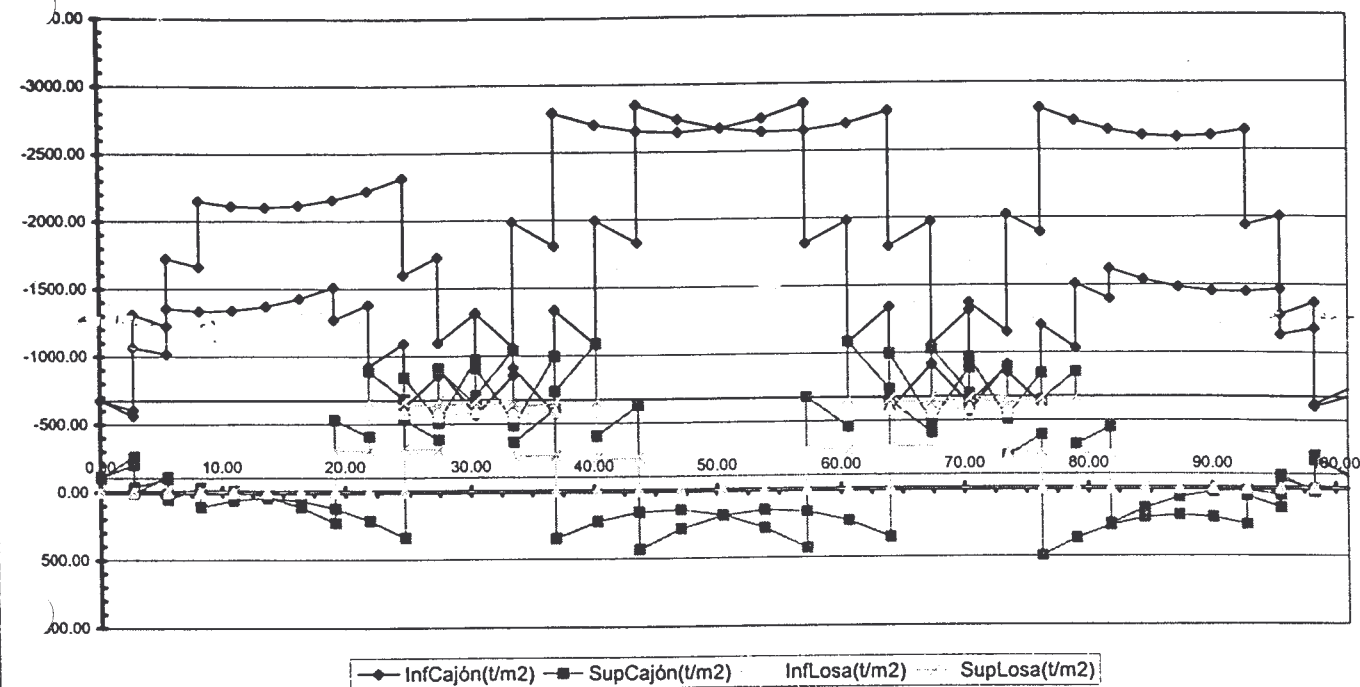
Construcción CON gradiente en fase constructiva 3 HIPOTESIS D
1; 1)PPC1 1; 1.05)PRETF1A.ISO.To + 1; 1.05)PRETF1A.HIP.To + 1; 1.05)PRETF1B.ISO.To + 1; 1.05)PRETF1B.HIP.To + 1; 1)PPF2 + 1; 1)GRADF3 + 1; 1)PRETF3C.ISO.To + 1; 1)PRETF3C.HIP.To + 1; 1)PPF

col. exc

Barra	Nudo	X	N (T)	Vy (T)	Mz (Tm)	Fibra	InfCajón	Fibra	SupCajón	Fibra	InfLosa	Fibra	SupLosa
						y fibra	sig (t/m2)	y fibra	sig (t/m2)	y fibra	sig (t/m2)	y fibra	sig (t/m2)
1	1	0.00	-667.09	-54.08	-267.41	0	-675.08	2.55	-104.11	2.55	0.00	2.85	0.00
1	2	2.74	-667.09	-41.20	-140.15	0	-561.72	2.55	-262.48	2.55	0.00	2.85	0.00
2	2	2.74	-1160.12	-41.20	-616.42	0	-1308.85	2.55	7.30	2.55	0.00	2.85	0.00
2	3	5.48	-1160.12	-30.72	-517.88	0	-1221.07	2.55	-115.32	2.55	0.00	2.85	0.00
3	3	5.48	-1501.46	-30.72	-831.23	0	-1723.73	2.55	51.07	2.55	0.00	2.85	0.00
3	4	8.22	-1501.46	-20.24	-761.41	0	-1661.54	2.55	-35.82	2.55	0.00	2.85	0.00
4	4	8.22	-1842.79	-20.24	-1058.37	0	-2149.60	2.55	110.18	2.55	0.00	2.85	0.00
4	5	10.96	-1842.79	-9.76	-1017.28	0	-2112.99	2.55	59.04	2.55	0.00	2.85	0.00
5	5	10.96	-1842.79	-9.76	-1017.28	0	-2112.99	2.55	59.04	2.55	0.00	2.85	0.00
5	6	13.70	-1842.79	0.72	-1004.89	0	-2101.96	2.55	43.62	2.55	0.00	2.85	0.00
6	6	13.70	-1842.79	0.72	-1004.89	0	-2101.96	2.55	43.62	2.55	0.00	2.85	0.00
6	7	16.44	-1842.79	11.20	-1021.22	0	-2116.50	2.55	63.94	2.55	0.00	2.85	0.00
7	7	16.44	-1842.79	11.20	-1021.22	0	-2116.50	2.55	63.94	2.55	0.00	2.85	0.00
7	8	19.18	-1842.79	21.69	-1066.26	0	-2156.63	2.55	120.00	2.55	0.00	2.85	0.00
8	8	19.18	-1842.79	21.68	-1066.26	0	-2156.63	2.55	120.00	2.55	0.00	2.85	0.00
8	9	21.92	-1842.79	32.17	-1140.03	0	-2222.33	2.55	211.80	2.55	0.00	2.85	0.00
9	9	21.92	-1842.79	32.16	-1140.03	0	-2222.33	2.55	211.80	2.55	0.00	2.85	0.00
9	10	24.66	-1842.79	42.65	-1242.52	0	-2313.62	2.55	339.33	2.55	0.00	2.85	0.00
	10	24.66	-2400.79	46.64	-246.79	0	-1597.34	2.55	-532.95	2.55	-290.11	2.85	-319.22
	11	27.40	-2404.19	71.51	-405.98	0	-1726.37	2.55	-381.79	2.55	-284.51	2.85	-310.39
11	11	27.40	-2883.43	72.64	-565.02	0	-1095.37	2.55	-910.07	2.55	-595.13	2.85	-670.51
11	12	30.45	-2890.46	100.31	306.79	0	-1311.87	2.55	-642.91	2.55	-589.60	2.85	-661.31
12	12	30.45	-2379.83	97.88	780.39	0	-560.98	2.55	-906.94	2.55	-584.67	2.85	-656.18
12	10013	33.50	-2339.17	125.56	407.92	0	-855.35	2.55	-515.15	2.55	-562.35	2.85	-627.96
13	13	33.50	-2356.75	-125.33	366.88	0	-909.80	2.55	-485.58	2.55	-556.72	2.85	-622.13
13	14	36.89	-2437.72	-92.23	782.43	0	-573.31	2.55	-995.89	2.55	-581.98	2.85	-649.58
14	14	36.89	-2969.75	-103.61	303.87	0	-1333.46	2.55	-737.41	2.55	-591.69	2.85	-659.11
14	15	40.28	-2961.93	-72.84	596.85	0	-1073.62	2.55	-1088.07	2.55	-591.30	2.85	-659.55
15	15	40.28	-2524.31	-72.84	-646.06	0	-1995.17	2.55	-405.75	2.55	-227.79	2.85	-239.16
15	16	43.67	-2520.62	-42.07	-454.16	0	-1827.63	2.55	-628.44	2.55	-228.96	2.85	-241.39
16	16	43.67	-2256.94	-42.07	-1535.92	0	-2846.20	2.55	433.22	2.55	0.00	2.85	0.00
16	17	47.06	-2256.94	-29.11	-1415.26	0	-2738.72	2.55	283.06	2.55	0.00	2.85	0.00
17	17	47.06	-2256.94	-29.11	-1415.26	0	-2738.72	2.55	283.06	2.55	0.00	2.85	0.00
17	18	50.45	-2256.94	-16.14	-1338.54	0	-2670.38	2.55	187.59	2.55	0.00	2.85	0.00
18	18	50.45	-2256.94	-16.15	-1338.54	0	-2670.38	2.55	187.59	2.55	0.00	2.85	0.00
18	19	53.84	-2256.94	-3.18	-1305.78	0	-2641.21	2.55	146.83	2.55	0.00	2.85	0.00
19	19	53.84	-2256.94	-3.17	-1305.78	0	-2641.21	2.55	146.83	2.55	0.00	2.85	0.00
19	20	57.23	-2256.94	9.80	-1316.96	0	-2651.17	2.55	160.74	2.55	0.00	2.85	0.00
20	20	57.23	-2256.94	9.78	-1316.96	0	-2651.17	2.55	160.74	2.55	0.00	2.85	0.00
20	21	60.62	-2256.94	22.75	-1372.09	0	-2700.27	2.55	229.35	2.55	0.00	2.85	0.00
21	21	60.62	-2256.94	22.75	-1372.09	0	-2700.27	2.55	229.35	2.55	0.00	2.85	0.00
21	22	64.01	-2256.94	35.71	-1471.17	0	-2788.53	2.55	352.64	2.55	0.00	2.85	0.00
22	22	64.01	-2633.63	47.56	-1307.32	0	-1789.69	2.55	-648.82	2.55	-285.75	2.85	-312.00
23	23	67.40	-2637.85	78.33	-517.47	0	-1971.72	2.55	-409.97	2.55	-283.82	2.85	-308.57
23	23	67.40	-2925.08	85.14	628.55	0	-1060.23	2.55	-1030.12	2.55	-593.97	2.85	-668.29
23	24	70.45	-2932.12	112.82	332.21	0	-1314.70	2.55	-702.12	2.55	-590.34	2.85	-661.94
24	24	70.45	-2427.58	115.39	805.52	0	-565.80	2.55	-967.93	2.55	-586.92	2.85	-658.30
24	10025	73.50	-2371.52	143.07	367.67	0	-909.06	2.55	-505.91	2.55	-558.43	2.85	-622.78
25	25	73.50	-2337.67	-110.66	403.47	0	-852.71	2.55	-529.68	2.55	-559.08	2.85	-623.23
25	26	76.26	-2392.49	-85.61	717.08	0	-616.25	2.55	-848.36	2.55	-585.62	2.85	-655.97
26	26	76.26	-2808.38	-89.02	349.08	0	-1202.90	2.55	-651.54	2.55	-594.81	2.85	-665.05
26	27	79.02	-2802.00	-63.97	555.26	0	-1031.47	2.55	-859.11	2.55	-599.81	2.85	-673.36
27	27	79.02	-2060.23	-63.97	-409.72	0	-1506.34	2.55	-324.34	2.55	-236.02	2.85	-252.65
27	28	81.78	-2057.23	-38.92	-270.03	0	-1395.99	2.55	-447.35	2.55	-242.28	2.85	-262.43
28	28	81.78	-1273.90	-38.92	-881.02	0	-1619.05	2.55	262.05	2.55	0.00	2.85	0.00
28	29	84.54	-1273.90	-28.37	-788.14	0	-1536.32	2.55	146.47	2.55	0.00	2.85	0.00
29	29	84.54	-1273.90	-28.37	-788.14	0	-1536.32	2.55	146.47	2.55	0.00	2.85	0.00
29	30	87.30	-1273.90	-17.81	-724.38	0	-1479.53	2.55	67.13	2.55	0.00	2.85	0.00
30	30	87.30	-1273.90	-17.81	-724.38	0	-1479.53	2.55	67.13	2.55	0.00	2.85	0.00
30	31	90.06	-1273.90	-7.25	-689.76	0	-1448.69	2.55	24.05	2.55	0.00	2.85	0.00
31	31	90.06	-1273.90	-7.25	-689.76	0	-1448.69	2.55	24.05	2.55	0.00	2.85	0.00
31	32	92.82	-1273.90	3.30	-684.29	0	-1443.81	2.55	17.24	2.55	0.00	2.85	0.00
32	32	92.82	-1273.90	3.30	-684.29	0	-1443.81	2.55	17.24	2.55	0.00	2.85	0.00
32	33	95.58	-1273.90	13.86	-707.94	0	-1464.89	2.55	46.68	2.55	0.00	2.85	0.00
33	33	95.58	-1046.35	13.86	-499.05	0	-1129.78	2.55	-64.25	2.55	0.00	2.85	0.00
33	34	98.34	-1046.35	24.42	-551.85	0	-1176.82	2.55	1.47	2.55	0.00	2.85	0.00
34	34	98.34	-667.09	24.42	-185.49	0	-602.10	2.55	-206.06	2.55	0.00	2.85	0.00
34	35	101.10	-667.09	38.26	-267.41	0	-675.08	2.55	-104.11	2.55	0.00	2.85	0.00
101	101	0.00	-667.09	-37.71	-267.41	0	-675.08	2.55	-104.11	2.55	0.00	2.85	0.00
101	102	2.74	-667.09	-23.92	-187.53	0	-603.92	2.55	-203.52	2.55	0.00	2.85	0.00
102	102	2.74	-970.49	-23.92	-480.61	0	-1063.69	2.55	-37.51	2.55	0.00	2.85	0.00
102	103	5.48	-970.49	-13.44	-429.44	0	-1018.10	2.55	-101.19	2.55	0.00	2.85	0.00
103	103	5.48	-1198.05	-13.44	-638.33	0	-1353.21	2.55	9.73	2.55	0.00	2.85	0.00
103	104	8.22	-1198.05	-2.96	-615.88	0	-1333.20	2.55	-18.21	2.55	0.00	2.85	0.00
104	104	8.22	-1198.05	-2.96	-615.88	0	-1333.20	2.55	-18.21	2.55	0.00	2.85	0.00
104	105	10.96	-1198.05	7.52	-622.13	0	-1338.77	2.55	-10.43	2.55	0.00	2.85	0.00
105	105	10.96	-1198.05	7.52	-622.13	0	-1338.77	2.55	-10.43	2.55	0.00	2.85	0.00

105	106	13.70	-1198.05	18.00	-657.11	0	-1369.93	2.55	33.10	2.55	0.00	2.85	0.00
106	106	13.70	-1198.05	18.00	-657.11	0	-1369.93	2.55	33.10	2.55	0.00	2.85	0.00
106	107	16.44	-1198.05	28.48	-720.80	0	-1426.66	2.55	112.36	2.55	0.00	2.85	0.00
107	107	16.44	-1198.05	28.48	-720.80	0	-1426.66	2.55	112.36	2.55	0.00	2.85	0.00
107	108	19.18	-1198.05	38.96	-813.22	0	-1508.98	2.55	227.36	2.55	0.00	2.85	0.00
108	108	19.18	-2091.52	38.96	-116.31	0	-1270.11	2.55	-529.96	2.55	-283.65	2.85	-310.29
108	109	21.92	-2094.92	63.83	-254.50	0	-1379.35	2.55	-408.57	2.55	-277.54	2.85	-300.69
109	109	21.92	-2715.58	63.83	616.00	0	-921.95	2.55	-890.38	2.55	-595.88	2.85	-668.83
109	110	24.66	-2721.90	88.69	411.98	0	-1091.45	2.55	-685.48	2.55	-590.87	2.85	-660.51
110	110	24.66	-2384.59	85.45	706.77	0	-620.53	2.55	-841.61	2.55	-582.39	2.85	-652.15
110	10111	27.40	-2337.38	110.32	401.76	0	-853.35	2.55	-530.09	2.55	-558.63	2.85	-622.60
111	111	27.40	-2378.53	-143.41	365.94	0	-911.90	2.55	-508.51	2.55	-559.86	2.85	-624.03
111	112	30.45	-2445.51	-115.74	813.40	0	-566.48	2.55	-975.40	2.55	-592.63	2.85	-664.55
112	112	30.45	-2949.43	-112.97	340.08	0	-1315.21	2.55	-709.40	2.55	-595.89	2.85	-668.03
112	113	33.50	-2942.40	-85.29	636.95	0	-1060.46	2.55	-1037.40	2.55	-599.61	2.85	-674.52
113	113	33.50	-2535.77	-78.32	-603.67	0	-1990.01	2.55	-364.79	2.55	-244.44	2.85	-262.65
113	114	36.89	-2532.09	-47.55	-393.23	0	-1808.00	2.55	-603.75	2.55	-246.56	2.85	-266.31
114	114	36.89	-2263.01	-35.60	-1469.29	0	-2790.83	2.55	346.33	2.55	0.00	2.85	-600.00
114	115	40.28	-2263.01	-22.64	-1370.58	0	-2702.90	2.55	223.48	2.55	0.00	2.85	0.00
115	115	40.28	-2263.01	-22.64	-1370.58	0	-2702.90	2.55	223.48	2.55	0.00	2.85	0.00
115	116	43.67	-2263.01	-9.67	-1315.84	0	-2654.15	2.55	155.37	2.55	0.00	2.85	0.00
116	116	43.67	-2263.01	-9.67	-1315.84	0	-2654.15	2.55	155.37	2.55	0.00	2.85	0.00
116	117	47.06	-2263.01	3.30	-1305.06	0	-2644.54	2.55	141.95	2.55	0.00	2.85	0.00
117	117	47.06	-2263.01	3.30	-1305.06	0	-2644.54	2.55	141.95	2.55	0.00	2.85	0.00
117	118	50.45	-2263.01	16.27	-1338.21	0	-2674.07	2.55	183.21	2.55	0.00	2.85	0.00
118	118	50.45	-2263.01	16.27	-1338.21	0	-2674.07	2.55	183.21	2.55	0.00	2.85	0.00
118	119	53.84	-2263.01	29.23	-1415.32	0	-2742.75	2.55	279.16	2.55	0.00	2.85	0.00
119	119	53.84	-2263.01	29.23	-1415.32	0	-2742.75	2.55	279.16	2.55	0.00	2.85	0.00
119	120	57.23	-2263.01	42.20	-1536.39	0	-2850.60	2.55	429.82	2.55	0.00	2.85	0.00
120	120	57.23	-2640.21	42.19	-366.07	0	-1813.39	2.55	-679.68	2.55	-273.08	2.85	-292.15
120	121	60.62	-2644.43	72.96	-557.97	0	-1981.12	2.55	-457.02	2.55	-272.06	2.85	-290.09
121	121	60.62	-2960.96	72.96	590.49	0	-1077.03	2.55	-1086.40	2.55	-590.13	2.85	-657.91
121	122	64.01	-2968.78	103.73	297.12	0	-1337.13	2.55	-735.54	2.55	-590.47	2.85	-657.42
122	122	64.01	-2442.28	92.41	775.85	0	-578.55	2.55	-995.71	2.55	-582.22	2.85	-649.35
122	10123	67.40	-2367.89	125.48	366.17	0	-913.71	2.55	-488.28	2.55	-559.56	2.85	-624.95
123	123	67.40	-2379.57	-126.51	368.78	0	-915.73	2.55	-492.24	2.55	-562.96	2.85	-628.55
123	124	70.45	-2427.06	-98.83	749.46	0	-618.27	2.55	-889.05	2.55	-588.05	2.85	-660.06
124	124	70.45	-2937.71	-101.08	275.88	0	-1369.16	2.55	-625.02	2.55	-593.00	2.85	-665.21
124	125	73.50	-2930.68	-73.40	536.44	0	-1150.87	2.55	-894.15	2.55	-598.66	2.85	-674.60
125	125	73.50	-2484.22	-72.05	-668.13	0	-2023.29	2.55	-239.65	2.55	-243.18	2.85	-262.52
125	126	76.26	-2481.21	-47.00	-506.16	0	-1892.18	2.55	-393.46	2.55	-249.01	2.85	-271.65
126	126	76.26	-2184.13	-42.78	-1546.33	0	-2807.78	2.55	493.85	2.55	0.00	2.85	0.00
126	127	79.02	-2184.13	-32.23	-1442.81	0	-2715.57	2.55	365.03	2.55	0.00	2.85	0.00
127	127	79.02	-2184.13	-32.22	-1442.81	0	-2715.57	2.55	365.03	2.55	0.00	2.85	0.00
127	128	81.78	-2184.13	-21.67	-1368.44	0	-2649.33	2.55	272.49	2.55	0.00	2.85	0.00
128	128	81.78	-2184.13	-21.67	-1368.44	0	-2649.33	2.55	272.49	2.55	0.00	2.85	0.00
128	129	84.54	-2184.13	-11.11	-1323.20	0	-2609.04	2.55	216.20	2.55	0.00	2.85	0.00
129	129	84.54	-2184.13	-11.11	-1323.20	0	-2609.04	2.55	216.20	2.55	0.00	2.85	0.00
129	130	87.30	-2184.13	-0.55	-1307.12	0	-2594.71	2.55	196.18	2.55	0.00	2.85	0.00
130	130	87.30	-2184.13	-0.55	-1307.12	0	-2594.71	2.55	196.18	2.55	0.00	2.85	0.00
130	131	90.06	-2184.13	10.00	-1320.16	0	-2606.33	2.55	212.41	2.55	0.00	2.85	0.00
131	131	90.06	-2184.13	10.00	-1320.16	0	-2606.33	2.55	212.41	2.55	0.00	2.85	0.00
131	132	92.82	-2184.13	20.56	-1362.33	0	-2643.89	2.55	264.89	2.55	0.00	2.85	0.00
132	132	92.82	-1691.09	20.56	-933.40	0	-1938.93	2.55	54.02	2.55	0.00	2.85	0.00
132	133	95.58	-1691.09	31.12	-1004.72	0	-2002.46	2.55	142.77	2.55	0.00	2.85	0.00
133	133	95.58	-1198.05	31.12	-552.11	0	-1276.40	2.55	-97.57	2.55	0.00	2.85	0.00
133	134	98.34	-1198.05	41.67	-652.55	0	-1365.87	2.55	27.42	2.55	0.00	2.85	0.00
134	134	98.34	-705.01	41.67	-176.27	0	-618.73	2.55	-242.37	2.55	0.00	2.85	0.00
134	135	101.10	-705.01	54.60	-305.87	0	-734.17	2.55	-81.10	2.55	0.00	2.85	0.00

GRÁFICO DE TENSIONES



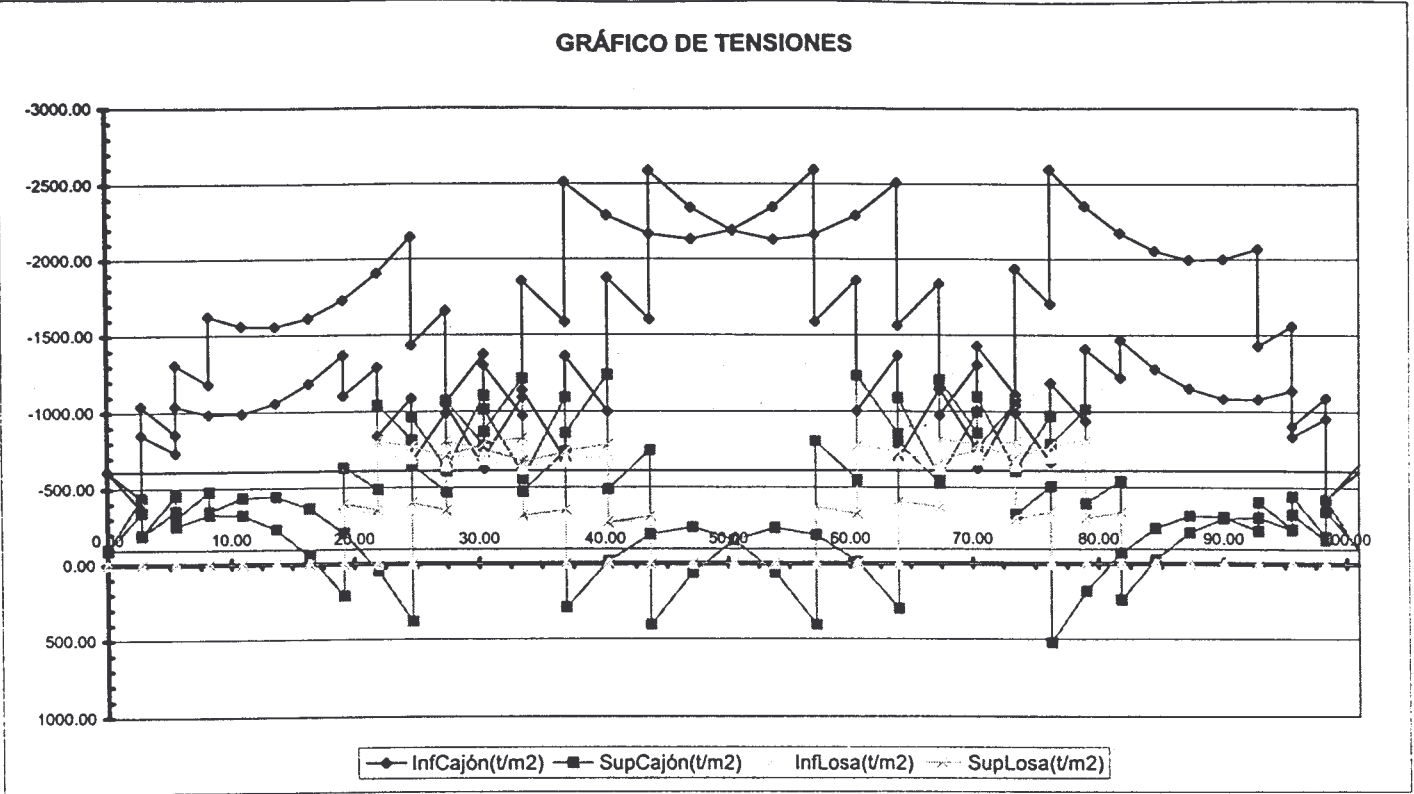
Construcción SIN gradiente en fase constructiva 3 HIPOTESIS E

1; 1)PPCF1 + [.95; 1.05]PRETF1A.ISO.To + [.95; 1.05]PRETF1A.HIP.To + [.95; 1.05]PRETF1B.ISO.To + [.95; 1.05]PRETF1B.HIP.To + [1; 1]PPLF2 + [1; 1]PPLF3 + [.9; 1.1]PRETF3C.ISO.To + [.9; 1.1]PRETF3C.HIP.To + [.9; 1.1]PRE

Coef. are:

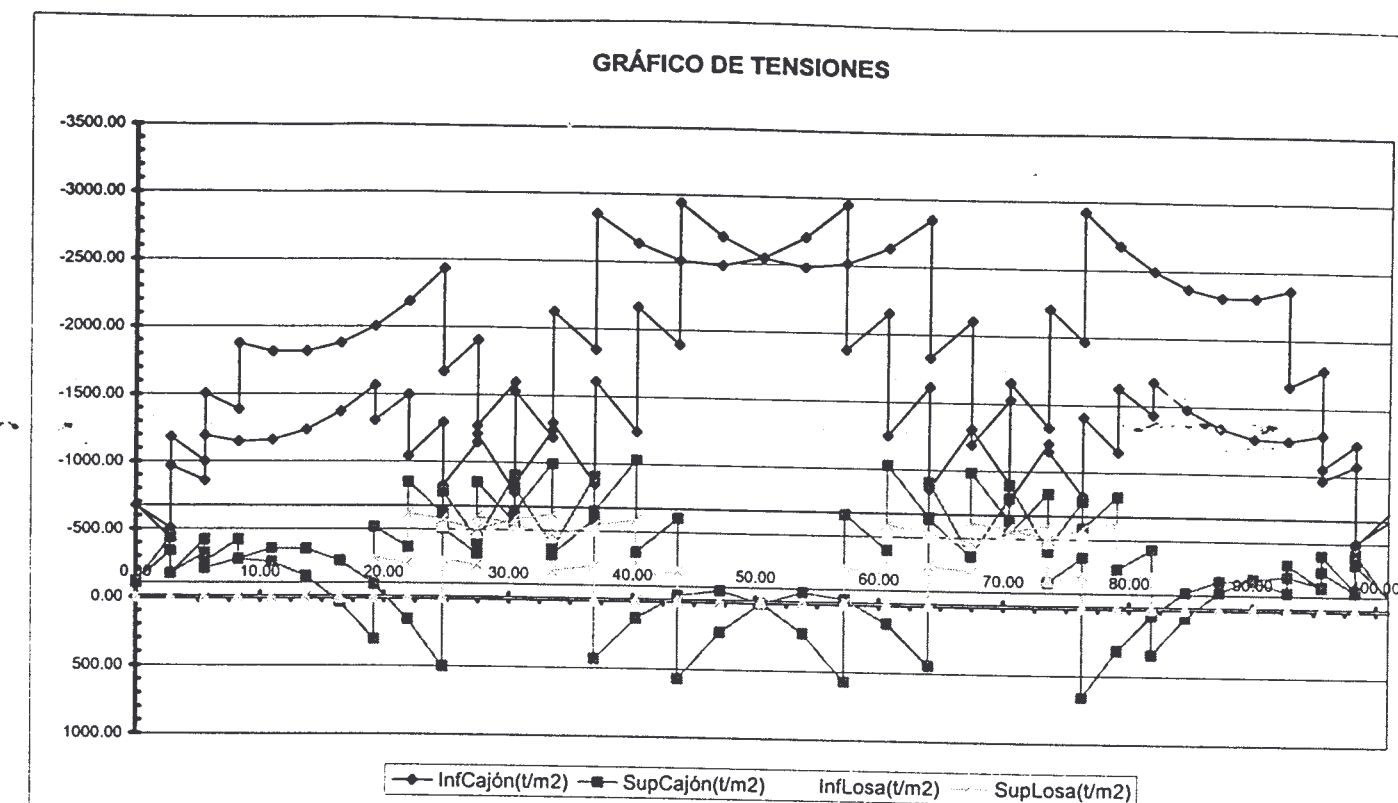
Barra	Nudo	X	N (T)	Vy (T)	Mz (Tm)	Fibra		InfCajón		Fibra		SupCajón		Fibra		InfLosa		Fibra		SupLosa	
						y fibra	sig (t/m2)	y fibra	sig (t/m2)	y fibra	sig (t/m2)	y fibra	sig (t/m2)	y fibra	sig (t/m2)	y fibra	sig (t/m2)				
1	1	0.00	-603.55	-113.52	-241.95	0	-610.78	2.55	-94.19	2.55	0.00	2.85	0.00								
1	2	2.74	-603.55	-88.78	35.38	0	-363.76	2.55	-439.30	2.55	0.00	2.85	0.00								
2	2	2.74	-1049.64	-88.78	-395.53	0	-1039.73	2.55	-195.22	2.55	0.00	2.85	0.00								
2	3	5.48	-1049.64	-63.91	-186.34	0	-853.40	2.55	-455.54	2.55	0.00	2.85	0.00								
3	3	5.48	-1358.46	-63.91	-469.85	0	-1308.18	2.55	-304.99	2.55	0.00	2.85	0.00								
3	4	8.22	-1358.46	-39.05	-328.79	0	-1182.54	2.55	-480.52	2.55	0.00	2.85	0.00								
4	4	8.22	-1667.29	-39.05	-597.47	0	-1624.11	2.55	-348.43	2.55	0.00	2.85	0.00								
4	5	10.96	-1667.29	-14.18	-524.56	0	-1559.17	2.55	-439.16	2.55	0.00	2.85	0.00								
5	5	10.96	-1667.29	-14.18	-524.56	0	-1559.17	2.55	-439.16	2.55	0.00	2.85	0.00								
5	6	13.70	-1667.29	10.68	-519.76	0	-1554.90	2.55	-445.13	2.55	0.00	2.85	0.00								
6	6	13.70	-1667.29	10.68	-519.76	0	-1554.90	2.55	-445.13	2.55	0.00	2.85	0.00								
6	7	16.44	-1667.29	35.55	-583.09	0	-1611.31	2.55	-366.32	2.55	0.00	2.85	0.00								
7	7	16.44	-1667.29	35.55	-583.09	0	-1611.31	2.55	-366.32	2.55	0.00	2.85	0.00								
7	8	19.18	-1667.29	60.42	-714.57	0	-1728.42	2.55	-202.71	2.55	0.00	2.85	0.00								
8	8	19.18	-1667.29	60.41	-714.57	0	-1728.42	2.55	-202.71	2.55	0.00	2.85	0.00								
8	9	21.92	-1667.29	85.29	-914.18	0	-1906.22	2.55	45.69	2.55	0.00	2.85	0.00								
9	9	21.92	-1667.29	85.28	-914.18	0	-1906.22	2.55	45.69	2.55	0.00	2.85	0.00								
9	10	24.66	-1667.29	110.15	-1181.92	0	-2144.71	2.55	378.87	2.55	0.00	2.85	0.00								
10	10	24.66	-2490.85	109.01	-56.77	0	-1433.10	2.55	-650.25	2.55	-363.65	2.85	-399.49								
10	11	27.40	-2495.01	133.88	-386.27	0	-1659.42	2.55	-469.44	2.55	-332.59	2.85	-352.38								
11	11	27.40	-3217.97	131.84	703.61	0	-1054.97	2.55	-1071.41	2.55	-720.07	2.85	-800.55								
11	12	30.45	-3226.56	159.51	266.04	0	-1374.14	2.55	-773.24	2.55	-687.92	2.85	-751.24								
12	12	30.45	-2769.59	155.78	695.83	0	-695.54	2.55	-1013.86	2.55	-684.95	2.85	-748.18								
12	10013	33.50	-2719.89	183.46	139.71	0	-1091.86	2.55	-587.13	2.55	-632.64	2.85	-676.14								
13	13	33.50	-2721.61	-179.98	102.97	0	-1136.64	2.55	-556.18	2.55	-623.94	2.85	-667.29								
13	14	36.89	-2772.60	-151.56	720.98	0	-675.76	2.55	-1093.03	2.55	-671.98	2.85	-732.76								
14	14	36.89	-3250.59	-158.01	289.15	0	-1361.85	2.55	-858.35	2.55	-680.06	2.85	-740.77								
14	15	40.28	-3241.03	-127.24	765.20	0	-997.15	2.55	-1240.62	2.55	-706.81	2.85	-782.11								
15	15	40.28	-2537.60	-127.24	-599.19	0	-1875.27	2.55	-488.83	2.55	-262.51	2.85	-268.31								
15	16	43.67	-2533.10	-96.47	-223.51	0	-1602.75	2.55	-743.54	2.55	-291.15	2.85	-311.84								
16	16	43.67	-2042.26	-96.47	-1399.03	0	-2583.66	2.55	403.46	2.55	0.00	2.85	0.00								
16	17	47.06	-2042.26	-65.72	-1124.11	0	-2338.79	2.55	61.36	2.55	0.00	2.85	0.00								
17	17	47.06	-2042.26	-65.72	-1124.11	0	-2338.79	2.55	61.36	2.55	0.00	2.85	0.00								
17	18	50.45	-2042.26	-34.95	-953.49	0	-2186.81	2.55	-150.97	2.55	0.00	2.85	0.00								
18	18	50.45	-2042.26	-34.96	-953.49	0	-2186.81	2.55	-150.97	2.55	0.00	2.85	0.00								
18	19	53.84	-2042.26	-4.19	-887.16	0	-2127.72	2.55	-233.51	2.55	0.00	2.85	0.00								
19	19	53.84	-2042.26	-4.18	-887.16	0	-2127.72	2.55	-233.51	2.55	0.00	2.85	0.00								
19	20	57.23	-2042.26	26.59	-925.10	0	-2161.52	2.55	-186.30	2.55	0.00	2.85	0.00								
20	20	57.23	-2042.26	26.57	-925.10	0	-2161.52	2.55	-186.30	2.55	0.00	2.85	0.00								
20	21	60.62	-2042.26	57.33	-1067.33	0	-2288.21	2.55	-9.31	2.55	0.00	2.85	0.00								
21	21	60.62	-2042.26	57.33	-1067.33	0	-2288.21	2.55	-9.31	2.55	0.00	2.85	0.00								
21	22	64.01	-2042.26	88.09	-1313.84	0	-2507.78	2.55	297.45	2.55	0.00	2.85	0.00								
22	22	64.01	-2722.09	93.93	-35.78	0	-1564.32	2.55	-793.92	2.55	-373.70	2.85	-411.29								
22	23	67.40	-2727.23	124.70	-402.37	0	-1835.80	2.55	-527.88	2.55	-348.44	2.85	-372.75								
23	23	67.40	-3266.20	129.43	946.83	0	-973.93	2.55	-1210.06	2.55	-732.99	2.85	-818.13								
23	24	70.45	-3274.82	157.11	416.59	0	-1305.19	2.55	-859.03	2.55	-709.59	2.85	-781.93								
24	24	70.45	-2811.13	160.36	846.69	0	-624.38	2.55	-1097.69	2.55	-704.93	2.85	-777.21								
24	10025	73.50	-2742.62	188.04	261.97	0	-1047.61	2.55	-606.15	2.55	-651.09	2.85	-705.30								
25	25	73.50	-2686.43	-165.02	295.55	0	-988.26	2.55	-620.19	2.55	-645.27	2.85	-699.39								
25	26	76.26	-2753.43	-139.97	768.72	0	-664.53	2.55	-970.53	2.55	-698.99	2.85	-771.32								
26	26	76.26	-3100.29	-139.67	436.47	0	-1186.07	2.55	-783.74	2.55	-699.83	2.85	-772.10								
26	27	79.02	-3092.50	-114.62	781.36	0	-935.16	2.55	-1015.22	2.55	-725.36	2.85	-811.38								
27	27	79.02	-2113.65	-114.62	-331.74	0	-1409.17	2.55	-396.84	2.55	-280.72	2.85	-297.19								
27	28	81.78	-2109.97	-89.57	-52.77	0	-1219.25	2.55	-544.09	2.55	-307.79	2.85	-338.26								
28	28	81.78	-1152.58	-89.57	-799.54	0	-1467.02	2.55	240.12	2.55	0.00	2.85	0.00								
28	29	84.54	-1152.58	-64.53	-586.85	0	-1277.57	2.55	-24.55	2.55	0.00	2.85	0.00								
29	29	84.54	-1152.58	-64.53	-586.85	0	-1277.57	2.55	-24.55	2.55	0.00	2.85	0.00								
29	30	87.30	-1152.58	-39.48	-443.29	0	-1149.69	2.55	-203.20	2.55	0.00	2.85	0.00								
30	30	87.30	-1152.58	-39.48	-443.29	0	-1149.69	2.55	-203.20	2.55	0.00	2.85	0.00								
30	31	90.06	-1152.58	-14.43	-368.85	0	-1083.39	2.55	-295.83	2.55	0.00	2.85	0.00								
31	31	90.06	-1152.58	-14.43	-368.85	0	-1083.39	2.55	-295.83	2.55	0.00	2.85	0.00								
31	32	92.82	-1152.58	10.61	-363.55	0	-1078.67	2.55	-302.43	2.55	0.00	2.85	0.00								
32	32	92.82	-1152.58	10.61	-363.55	0	-1078.67	2.55	-302.43	2.55	0.00	2.85	0.00								
32	33	95.58	-1152.58	35.66	-427.38	0	-1135.52	2.55	-223.01	2.55	0.00	2.85	0.00								
33	33	95.58	-946.69	35.66	-238.37	0	-832.33	2.55	-323.37	2.55	0.00	2.85	0.00								
33	34	98.34	-946.69	60.71	-371.34	0	-950.76	2.55	-157.91	2.55	0.00	2.85	0.00								
34	34	98.34	-603.55	60.71	-39.86	0	-430.78	2.55	-345.67	2.55	0.00	2.85	0.00								
34	35	101.10	-603.55	85.70	-241.95	0	-610.78	2.55	-94.19	2.55	0.00	2.85	0.00								
101	101	0.00	-603.55	-84.72	-241.95	0	-610.78	2.55	-94.19	2.55	0.00	2.85	0.00								
101	102	2.74	-603.55	-59.93	-43.71	0	-434.21	2.55	-340.88	2.55	0.00	2.85	0.00								
102	102	2.74	-878.07	-59.93	-308.89	0	-850.19	2.55	-190.67	2.55	0.00	2.85	0.00								
102	103	5.48	-878.07	-35.06	-178.77	0	-734.30	2.55	-352.59	2.55	0.00	2.85	0.00								
103	103	5.48	-1083.95	-35.06	-3																

105	106	13.70	-1083.95	39.53	-386.24	0	-1053.93	2.55	-229.25	2.55	0.00	2.85	0.00
106	106	13.70	-1083.95	39.53	-386.24	0	-1053.93	2.55	-229.25	2.55	0.00	2.85	0.00
106	107	16.44	-1083.95	64.40	-528.66	0	-1180.79	2.55	-52.03	2.55	0.00	2.85	0.00
107	107	16.44	-1083.95	64.40	-528.66	0	-1180.79	2.55	-52.03	2.55	0.00	2.85	0.00
108	108	19.18	-1083.95	89.26	-739.21	0	-1368.34	2.55	209.99	2.55	0.00	2.85	0.00
108	108	19.18	-2175.96	89.26	112.56	0	-1101.07	2.55	-633.36	2.55	-358.27	2.85	-396.62
109	109	21.92	-2180.12	114.13	-162.88	0	-1288.76	2.55	-488.11	2.55	-331.69	2.85	-356.21
109	109	21.92	-3010.94	114.13	834.74	0	-836.10	2.55	-1041.77	2.55	-720.76	2.85	-806.16
109	110	24.66	-3018.68	138.99	493.97	0	-1083.96	2.55	-813.29	2.55	-695.52	2.85	-767.31
110	110	24.66	-2743.59	139.40	760.00	0	-667.32	2.55	-963.48	2.55	-695.50	2.85	-767.35
110	10111	27.40	-2685.89	164.27	298.99	0	-985.90	2.55	-621.43	2.55	-645.54	2.85	-699.85
111	111	27.40	-2746.45	-187.97	265.37	0	-1046.58	2.55	-608.70	2.55	-652.48	2.85	-706.85
111	112	30.45	-2828.32	-160.30	860.33	0	-621.56	2.55	-1105.95	2.55	-711.31	2.85	-784.57
112	112	30.45	-3291.99	-156.91	430.21	0	-1302.37	2.55	-867.28	2.55	-715.97	2.85	-789.25
112	113	33.50	-3283.39	-129.23	859.87	0	-971.47	2.55	-1218.12	2.55	-739.30	2.85	-825.32
113	113	33.50	-2598.35	-124.37	-504.99	0	-1855.38	2.55	-471.77	2.55	-299.67	2.85	-316.21
113	114	36.89	-2593.85	-93.60	-139.04	0	-1584.51	2.55	-737.78	2.55	-325.01	2.85	-354.75
114	114	36.89	-2047.23	37.71	-1309.49	0	-2507.16	2.55	288.79	2.55	0.00	2.85	0.00
114	115	40.28	-2047.23	-56.95	-1064.28	0	-2288.75	2.55	-16.35	2.55	0.00	2.85	0.00
115	115	40.28	-2047.23	-56.95	-1064.28	0	-2288.75	2.55	-16.35	2.55	0.00	2.85	0.00
115	116	43.67	-2047.23	-26.18	-923.39	0	-2163.25	2.55	-191.68	2.55	0.00	2.85	0.00
116	116	43.67	-2047.23	-26.18	-923.39	0	-2163.25	2.55	-191.68	2.55	0.00	2.85	0.00
116	117	47.06	-2047.23	4.58	-886.78	0	-2130.64	2.55	-237.23	2.55	0.00	2.85	0.00
117	117	47.06	-2047.23	4.58	-886.78	0	-2130.64	2.55	-237.23	2.55	0.00	2.85	0.00
117	118	50.45	-2047.23	35.35	-954.45	0	-2190.91	2.55	-153.03	2.55	0.00	2.85	0.00
118	118	50.45	-2047.23	35.35	-954.45	0	-2190.91	2.55	-153.03	2.55	0.00	2.85	0.00
118	119	53.84	-2047.23	66.11	-1126.39	0	-2344.07	2.55	60.94	2.55	0.00	2.85	0.00
119	119	53.84	-2047.23	66.11	-1126.39	0	-2344.07	2.55	60.94	2.55	0.00	2.85	0.00
120	120	57.23	-2047.23	96.88	-1402.65	0	-2590.14	2.55	404.72	2.55	0.00	2.85	0.00
120	120	57.23	-2676.81	96.87	-118.91	0	-1586.34	2.55	-804.91	2.55	-343.98	2.85	-372.55
120	121	60.62	-2681.96	127.64	-495.42	0	-1859.57	2.55	-550.13	2.55	-315.40	2.85	-329.03
121	121	60.62	-3237.39	127.64	753.52	0	-1002.79	2.55	-1237.21	2.55	-704.15	2.85	-778.55
121	122	64.01	-3246.94	158.41	276.15	0	-1368.28	2.55	-854.58	2.55	-677.22	2.85	-736.95
122	122	64.01	-2773.48	152.01	708.11	0	-683.48	2.55	-1090.64	2.55	-670.32	2.85	-730.15
122	10123	67.40	-2734.67	180.44	96.60	0	-1144.35	2.55	-558.46	2.55	-626.43	2.85	-669.33
123	123	67.40	-2755.67	-184.58	98.53	0	-1149.56	2.55	-565.10	2.55	-632.13	2.85	-675.15
123	124	70.45	-2813.72	-156.90	664.56	0	-749.64	2.55	-997.61	2.55	-687.87	2.85	-751.25
124	124	70.45	-3271.31	-160.50	234.75	0	-1428.45	2.55	-757.17	2.55	-691.00	2.85	-754.51
124	125	73.50	-3262.72	-132.82	675.35	0	-1107.08	2.55	-1057.42	2.55	-723.38	2.85	-804.17
125	125	73.50	-2531.50	-134.77	-655.85	0	-1935.67	2.55	-324.60	2.55	-281.02	2.85	-292.44
125	126	76.26	-2527.83	-109.72	-321.28	0	-1705.98	2.55	-508.50	2.55	-312.68	2.85	-340.35
126	126	76.26	-1976.11	-110.85	-1458.87	0	-2593.65	2.55	521.24	2.55	0.00	2.85	0.00
126	127	79.02	-1976.11	-85.81	-1187.49	0	-2351.92	2.55	183.54	2.55	0.00	2.85	0.00
127	127	79.02	-1976.11	-85.80	-1187.49	0	-2351.92	2.55	183.54	2.55	0.00	2.85	0.00
127	128	81.78	-1976.11	-60.76	-985.26	0	-2171.79	2.55	-68.12	2.55	0.00	2.85	0.00
128	128	81.78	-1976.11	-60.76	-985.26	0	-2171.79	2.55	-68.12	2.55	0.00	2.85	0.00
128	129	84.54	-1976.11	-35.71	-852.15	0	-2053.22	2.55	-233.76	2.55	0.00	2.85	0.00
129	129	84.54	-1976.11	-35.71	-852.15	0	-2053.22	2.55	-233.76	2.55	0.00	2.85	0.00
129	130	87.30	-1976.11	-10.66	-788.18	0	-1996.24	2.55	-313.36	2.55	0.00	2.85	0.00
130	130	87.30	-1976.11	-10.66	-788.18	0	-1996.24	2.55	-313.36	2.55	0.00	2.85	0.00
130	131	90.06	-1976.11	14.38	-793.34	0	-2000.84	2.55	-306.94	2.55	0.00	2.85	0.00
131	131	90.06	-1976.11	14.38	-793.34	0	-2000.84	2.55	-306.94	2.55	0.00	2.85	0.00
131	132	92.82	-1976.11	39.43	-867.62	0	-2067.00	2.55	-214.51	2.55	0.00	2.85	0.00
132	132	92.82	-1530.03	39.43	-479.53	0	-1429.17	2.55	-405.30	2.55	0.00	2.85	0.00
132	133	95.58	-1530.03	64.48	-622.95	0	-1556.92	2.55	-226.83	2.55	0.00	2.85	0.00
133	133	95.58	-1083.95	64.48	-213.44	0	-900.01	2.55	-444.28	2.55	0.00	2.85	0.00
133	134	98.34	-1083.95	89.52	-425.98	0	-1089.33	2.55	-179.80	2.55	0.00	2.85	0.00
134	134	98.34	-637.87	89.52	4.94	0	-413.35	2.55	-423.90	2.55	0.00	2.85	0.00
134	135	101.10	-637.87	114.46	-276.74	0	-664.25	2.55	-73.38	2.55	0.00	2.85	0.00



AS; 1.05]PRETF1A.ISO.To + [.95; 1.05]PRETF1A.HIP.To + [.95; 1.05]PRETF1B.ISO.To + [.95; 1.05]PRETF1B.HIP.To + [1; 1]PPLF2 + [1; 1]PPLF3 + [.8; 1.1]PRETF3C.ISO.To + [.9; 1.1]PRETF3C.HIP.To + [.9; 1.1]PRE

Barra	Nudo	X	N (T)	Vy (T)	Mz (Tm)	Fibra		InfCajón		SupCajón		Fibra		InfLosa		Fibra		SupLosa	
						y fibra	sig (t/m2)	y fibra	sig (t/m2)	y fibra	sig (t/m2)	y fibra	sig (t/m2)	y fibra	sig (t/m2)	y fibra	sig (t/m2)		
1	1	0.00	-667.09	-113.52	-267.41	0	-675.08	2.55	-104.11	2.55	0.00	2.85	0.00	0.00	2.85	0.00	0.00	0.00	
1	2	2.74	-667.09	-86.26	3.02	0	-434.19	2.55	-440.64	2.55	0.00	2.85	0.00	0.00	2.85	0.00	0.00	0.00	
2	2	2.74	-1160.12	-86.26	-473.25	0	-1181.32	2.55	-170.86	2.55	0.00	2.85	0.00	0.00	2.85	0.00	0.00	0.00	
2	3	5.48	-1160.12	-61.39	-270.96	0	-1001.13	2.55	-422.59	2.55	0.00	2.85	0.00	0.00	2.85	0.00	0.00	0.00	
3	3	5.48	-1501.46	-61.39	-584.31	0	-1503.79	2.55	-256.20	2.55	0.00	2.85	0.00	0.00	2.85	0.00	0.00	0.00	
3	4	8.22	-1501.46	-36.53	-450.15	0	-1384.29	2.55	-423.15	2.55	0.00	2.85	0.00	0.00	2.85	0.00	0.00	0.00	
4	4	8.22	-1842.79	-36.53	-747.11	0	-1872.35	2.55	-277.15	2.55	0.00	2.85	0.00	0.00	2.85	0.00	0.00	0.00	
4	5	10.96	-1842.79	-11.66	-681.10	0	-1813.55	2.55	-359.30	2.55	0.00	2.85	0.00	0.00	2.85	0.00	0.00	0.00	
5	5	10.96	-1842.79	-11.66	-681.10	0	-1813.55	2.55	-359.30	2.55	0.00	2.85	0.00	0.00	2.85	0.00	0.00	0.00	
5	6	13.70	-1842.79	13.20	-683.20	0	-1815.41	2.55	-356.69	2.55	0.00	2.85	0.00	0.00	2.85	0.00	0.00	0.00	
6	6	13.70	-1842.79	13.20	-683.20	0	-1815.41	2.55	-356.69	2.55	0.00	2.85	0.00	0.00	2.85	0.00	0.00	0.00	
6	7	16.44	-1842.79	38.07	-753.42	0	-1877.97	2.55	-269.30	2.55	0.00	2.85	0.00	0.00	2.85	0.00	0.00	0.00	
7	7	16.44	-1842.79	38.07	-753.42	0	-1877.97	2.55	-269.30	2.55	0.00	2.85	0.00	0.00	2.85	0.00	0.00	0.00	
7	8	19.18	-1842.79	62.94	-891.79	0	-2001.22	2.55	-97.11	2.55	0.00	2.85	0.00	0.00	2.85	0.00	0.00	0.00	
8	8	19.18	-1842.79	62.93	-891.79	0	-2001.22	2.55	-97.11	2.55	0.00	2.85	0.00	0.00	2.85	0.00	0.00	0.00	
8	9	21.92	-1842.79	87.81	-1098.30	0	-2185.16	2.55	159.87	2.55	0.00	2.85	0.00	0.00	2.85	0.00	0.00	0.00	
9	9	21.92	-1842.79	87.80	-1098.30	0	-2185.16	2.55	159.87	2.55	0.00	2.85	0.00	0.00	2.85	0.00	0.00	0.00	
9	10	24.66	-1842.79	112.67	-1372.94	0	-2429.79	2.55	501.63	2.55	0.00	2.85	0.00	0.00	2.85	0.00	0.00	0.00	
10	10	24.66	-2400.79	112.27	-375.83	0	-1670.88	2.55	-510.30	2.55	-270.67	2.85	-290.07	2.85	-240.61	2.85	-290.07	2.85	
11	11	27.40	-2404.19	137.14	-714.85	0	-1902.40	2.55	-327.58	2.55	-548.86	2.85	-601.11	2.85	-548.66	2.85	-601.11	2.85	
11	11	27.40	-2883.43	135.42	-257.85	0	-1270.43	2.55	-856.16	2.55	-514.48	2.85	-543.94	2.85	-473.12	2.85	-543.94	2.85	
12	12	30.45	-2890.46	163.09	-191.86	0	-1596.06	2.55	-555.40	2.55	-509.83	2.85	-467.65	2.85	-539.64	2.85	-467.65	2.85	
12	12	30.45	-2379.83	159.70	283.59	0	-844.11	2.55	-819.75	2.55	-459.11	2.85	-473.12	2.85	-467.65	2.85	-473.12	2.85	
12	10013	33.50	-2339.17	187.38	-277.43	0	-1245.94	2.55	-394.87	2.55	-453.71	2.85	-467.65	2.85	-539.64	2.85	-467.65	2.85	
13	13	33.50	-2356.75	-183.50	-316.91	0	-1299.50	2.55	-365.57	2.55	-508.67	2.85	-539.64	2.85	-549.40	2.85	-539.64	2.85	
13	14	36.89	-2437.72	-150.40	295.82	0	-850.64	2.55	-910.49	2.55	-518.53	2.85	-549.40	2.85	-592.18	2.85	-549.40	2.85	
14	14	36.89	-2969.75	-158.91	-181.79	0	-1610.25	2.55	-652.18	2.55	-546.39	2.85	-592.18	2.85	-171.80	2.85	-592.18	2.85	
14	15	40.28	-2961.93	-128.14	298.68	0	-1243.55	2.55	-1035.74	2.55	-182.87	2.85	-171.80	2.85	-216.38	2.85	-171.80	2.85	
15	15	40.28	-2524.31	-128.14	-944.23	0	-2165.10	2.55	-353.41	2.55	-212.28	2.85	-216.38	2.85	0.00	2.85	0.00	2.85	
15	16	43.67	-2520.62	-97.37	-564.85	0	-1890.71	2.55	-609.02	2.55	0.00	2.85	0.00	2.85	0.00	2.85	0.00	2.85	
16	16	43.67	-2256.94	-97.37	-1646.61	0	-2944.80	2.55	570.96	2.55	0.00	2.85	0.00	2.85	0.00	2.85	0.00	2.85	
16	17	47.06	-2256.94	-66.62	-1368.63	0	-2697.18	2.55	225.03	2.55	0.00	2.85	0.00	2.85	0.00	2.85	0.00	2.85	
17	17	47.06	-2256.94	-66.62	-1368.63	0	-2697.18	2.55	225.03	2.55	0.00	2.85	0.00	2.85	0.00	2.85	0.00	2.85	
17	18	50.45	-2256.94	-35.85	-1194.93	0	-2542.47	2.55	8.88	2.55	0.00	2.85	0.00	2.85	0.00	2.85	0.00	2.85	
18	18	50.45	-2256.94	-35.86	-1194.93	0	-2542.47	2.55	8.88	2.55	0.00	2.85	0.00	2.85	0.00	2.85	0.00	2.85	
18	19	53.84	-2256.94	-5.09	-1125.52	0	-2480.64	2.55	-77.49	2.55	0.00	2.85	0.00	2.85	0.00	2.85	0.00	2.85	
19	19	53.84	-2256.94	-5.08	-1125.52	0	-2480.64	2.55	-77.49	2.55	0.00	2.85	0.00	2.85	0.00	2.85	0.00	2.85	
19	20	57.23	-2256.94	25.69	-1160.38	0	-2511.69	2.55	-34.11	2.55	0.00	2.85	0.00	2.85	0.00	2.85	0.00	2.85	
20	20	57.23	-2256.94	25.67	-1160.38	0	-2511.69	2.55	-34.11	2.55	0.00	2.85	0.00	2.85	0.00	2.85	0.00	2.85	
20	21	60.62	-2256.94	56.43	-1299.53	0	-2635.64	2.55	139.05	2.55	0.00	2.85	0.00	2.85	0.00	2.85	0.00	2.85	
21	21	60.62	-2256.94	56.43	-1299.53	0	-2635.64	2.55	139.05	2.55	0.00	2.85	0.00	2.85	0.00	2.85	0.00	2.85	
21	22	64.01	-2256.94	87.19	-1542.96	0	-2852.47	2.55	441.98	2.55	0.00	2.85	0.00	2.85	0.00	2.85	0.00	2.85	
22	22	64.01	-2633.63	96.17	-378.14	0	-1830.05	2.55	-636.39	2.55	-275.08	2.85	-296.01	2.85	-255.34	2.85	-296.01	2.85	
23	23	67.40	-2637.85	126.94	-753.09	0	-2106.01	2.55	-368.61	2.55	-248.33	2.85	-255.34	2.85	-615.42	2.85	-255.34	2.85	
23	23	67.40	-2925.08	132.81	394.51	0	-1193.61	2.55	-989.04	2.55	-558.71	2.85	-615.42	2.85	-576.22	2.85	-615.42	2.85	
23	24	70.45	-2932.12	160.49	-47.23	0	-1530.95	2.55	-635.52	2.55	-533.18	2.85	-576.22	2.85	-573.00	2.85	-576.22	2.85	
24	24	70.45	-2427.58	164.08	427.95	0	-780.99	2.55	-901.66	2.55	-530.04	2.85	-573.00	2.85	-503.94	2.85	-573.00	2.85	
24	10025	73.50	-2371.52	191.76	-158.39	0	-1208.87	2.55	-413.58	2.55	-479.18	2.85	-503.94	2.85	-504.78	2.85	-503.94	2.85	
25	25	73.50	-2337.67	-169.18	-120.87	0	-1151.54	2.55	-437.65	2.55	-480.09	2.85	-504.78	2.85	-574.01	2.85	-504.78	2.85	
25	26	76.26	-2392.49	-144.13	354.26	0	-823.03	2.55	-784.68	2.55	-530.96	2.85	-574.01	2.85	-583.40	2.85	-574.01	2.85	
26	26	76.26	-2808.38	-143.01	-12.33	0	-1408.88	2.55	-588.11	2.55	-540.37	2.85	-583.40	2.85	-625.38	2.85	-583.40	2.85	
26	27	79.02	-2802.00	-117.96	342.88	0	-1152.51	2.55	-821.83	2.55	-567.81	2.85	-625.38	2.85	-204.67	2.85	-625.38	2.85	
27	27	79.02	-2060.23	-117.96	-622.10	0	-1627.37	2.55	-287.07	2.55	-204.02	2.85	-204.67	2.85	-248.12	2.85	-204.67	2.85	
27	28	81.78	-2057.23	-92.91	-333.39	0	-1432.10	2.55	-436.23	2.55	-232.73	2.85	-248.12	2.85	0.00	2.85	-248.12	2.85	
28	28	81.78	-1273.90	-92.91	-944.38	0	-1675.49	2.55	340.90	2.55	0.00	2.85	0.00	2.85	0.00	2.85	0.00	2.85	
28	29	84.54	-1273.90	-67.87	-722.47	0	-1477.82	2.55	64.75	2.55	0.00	2.85	0.00	2.85	0.00	2.85	0.00	2.85	
29	29	84.54	-1273.90	-67.87	-722.47	0	-1477.82	2.55	64.75	2.55	0.00	2.85	0.00	2.85	0.00	2.85	0.00	2.85	
29	30	87.30	-1273.90	-42.82	-569.67	0	-1341.72	2.55	-125.39	2.55	0.00	2.85	0.00	2.85	0.00	2.85	0.00	2.85	
30	30	87.30	-1273.90	-42.82	-569.67	0	-1341.72	2.55	-125.39	2.55	0.00	2.85	0.00	2.85	0.00	2.85	0.00	2.85	
30	31	90.06	-1273.90	-17.77	-486.01	0	-1267.20	2.55	-229.50	2.55	0.00	2.85	0.00	2.85	0.00	2.85	0.00	2.85	
31	31	90.06	-1273.90	-17.77	-486.01	0	-1267.20	2.55	-229.50	2.55	0.00	2.85	0.00	2.85	0.00	2.85	0.00	2.85	
31	32	92.82	-1273.90	7.27	-471.49	0	-1254.26	2.55	-247.57	2.55	0.00	2.85	0.00	2.85	0.00	2.85	0.00	2.85	
32	32	92.82	-1273.90	7.27	-471.49	0	-1254.26	2.55	-247.57	2.55	0.00	2.85	0.00	2.85	0.00	2.85	0.00	2.85	
32	33	95.58	-1273.90	32.32	-526.08	0	-1302.90	2.55	-179.63	2.55	0.00	2.85	0.00	2.85	0.00	2.85	0.00	2.85	
33	33	95.58	-1046.35	32.32	-317.19	0	-967.79	2.55	-290.56	2.55	0.00	2.85	0.00	2.85	0.00	2.85	0.00	2.85	
33	34	98.34	-1046.35	57.37	-440.92	0	-1078.01	2.55	-136.58	2.55	0.00	2.85	0.00	2.85	0.00	2.85	0.00	2.85	
34	34	98.34	-667.09	57.37	-74.56	0	-503.29	2.55	-344.10	2.55	0								



Construcción CON gradiente en fase constructiva 3 HIPOTESIS E

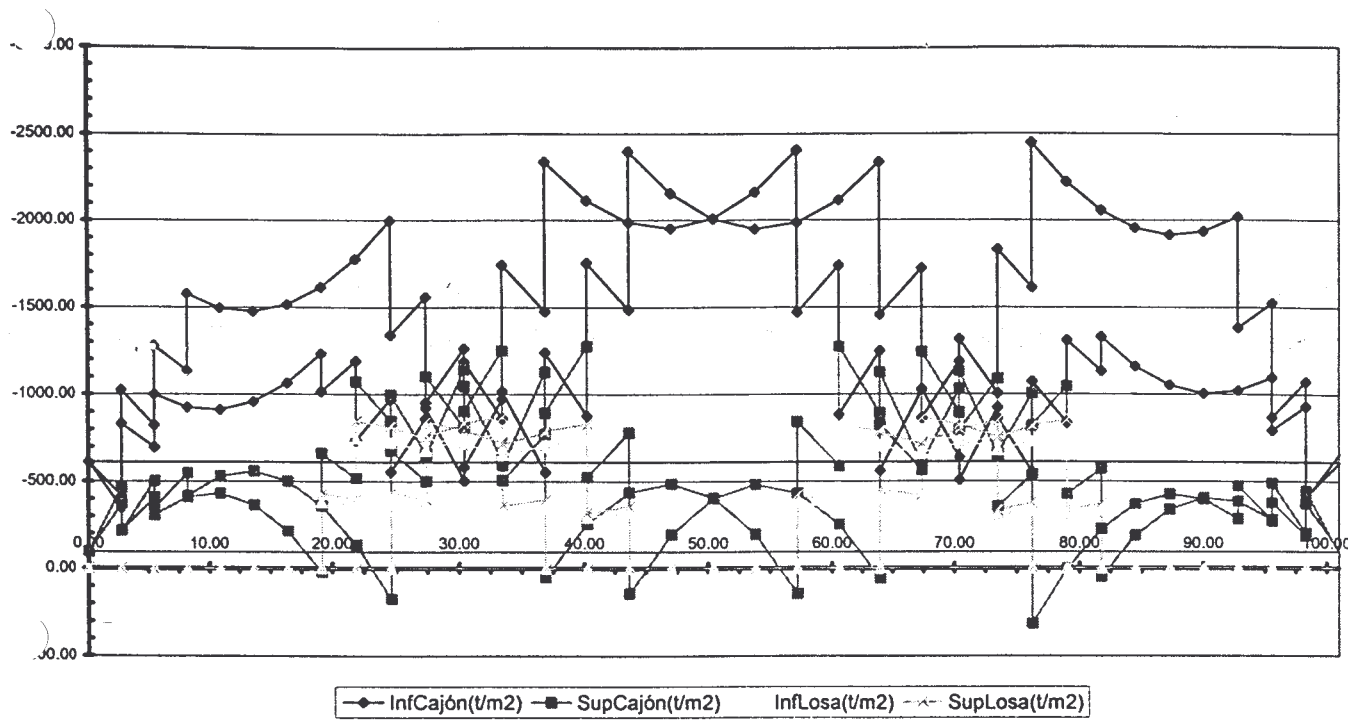
[1; 1]PPF [0.95; 1.05]PRETF1A.ISO.To + [0.95; 1.05]PRETF1A.HIP.To + [0.95; 1.05]PRETF1B.ISO.To + [0.95; 1.05]PRETF1B.HIP.To + [1; 1]PPLF2 + [1; 1]PPLF3 + [0.9; 1.1]PRETF3C.ISO.To + [0.9; 1.1]PRETF3C.HIP.To + [0.9; 1.1]PRE

Coef. ex.

Barra	Nudo	X	N (T)	Vy (T)	Mz (Tm)	Fibra y fibra	InfCajón sig (t/m2)	Fibra y fibra	SupCajón sig (t/m2)	Fibra y fibra	InfLosa sig (t/m2)	Fibra y fibra	SupLosa sig (t/m2)
1	1	0.00	-603.55	-113.52	-241.95	0	-610.78	2.55	-94.19	2.55	0.00	2.85	0.00
1	2	2.74	-603.55	-95.43	53.60	0	-347.53	2.55	-461.98	2.55	0.00	2.85	0.00
2	2	2.74	-1049.64	-95.43	-377.31	0	-1023.50	2.55	-217.89	2.55	0.00	2.85	0.00
2	3	5.48	-1049.64	-70.56	-149.90	0	-820.94	2.55	-500.88	2.55	0.00	2.85	0.00
3	3	5.48	-1358.46	-70.56	-433.41	0	-1275.73	2.55	-350.34	2.55	0.00	2.85	0.00
3	4	8.22	-1358.46	-45.70	-274.12	0	-1133.84	2.55	-548.56	2.55	0.00	2.85	0.00
4	4	8.22	-1667.29	-45.70	-542.80	0	-1575.42	2.55	-416.46	2.55	0.00	2.85	0.00
4	5	10.96	-1667.29	-20.83	-451.67	0	-1494.25	2.55	-529.86	2.55	0.00	2.85	0.00
5	5	10.96	-1667.29	-20.83	-451.67	0	-1494.25	2.55	-529.86	2.55	0.00	2.85	0.00
5	6	13.70	-1667.29	4.03	-428.65	0	-1473.74	2.55	-558.51	2.55	0.00	2.85	0.00
6	6	13.70	-1667.29	4.03	-428.65	0	-1473.74	2.55	-558.51	2.55	0.00	2.85	0.00
6	7	16.44	-1667.29	28.90	-473.76	0	-1513.93	2.55	-502.37	2.55	0.00	2.85	0.00
7	7	16.44	-1667.29	28.90	-473.76	0	-1513.93	2.55	-502.37	2.55	0.00	2.85	0.00
7	8	19.18	-1667.29	53.77	-587.02	0	-1614.80	2.55	-361.44	2.55	0.00	2.85	0.00
8	8	19.18	-1667.29	53.76	-587.02	0	-1614.80	2.55	-361.44	2.55	0.00	2.85	0.00
8	9	21.92	-1667.29	78.64	-768.41	0	-1776.38	2.55	-135.71	2.55	0.00	2.85	0.00
9	9	21.92	-1667.29	78.63	-768.41	0	-1776.38	2.55	-135.71	2.55	0.00	2.85	0.00
9	10	24.66	-1667.29	103.50	-1017.93	0	-1998.64	2.55	174.80	2.55	0.00	2.85	0.00
10	10	24.66	-2490.85	102.90	107.52	0	-1339.46	2.55	-679.09	2.55	-388.40	2.85	-436.60
	11	27.40	-2495.01	127.77	-205.23	0	-1556.24	2.55	-501.21	2.55	-359.87	2.85	-393.28
	11	27.40	-3217.97	126.67	884.92	0	-951.64	2.55	-1103.23	2.55	-747.38	2.85	-841.51
11	12	30.45	-3226.56	154.34	463.12	0	-1261.82	2.55	-807.83	2.55	-717.61	2.85	-795.76
12	12	30.45	-2769.59	151.97	893.17	0	-583.07	2.55	-1048.50	2.55	-714.68	2.85	-792.76
12	10013	33.50	-2719.89	179.65	348.68	0	-972.76	2.55	-623.80	2.55	-664.12	2.85	-723.35
13	13	33.50	-2721.61	-181.35	312.21	0	-1017.39	2.55	-592.90	2.55	-655.46	2.85	-714.56
13	14	36.89	-2772.60	-152.93	934.85	0	-553.87	2.55	-1130.56	2.55	-704.19	2.85	-781.07
14	14	36.89	-3250.59	-157.19	503.34	0	-1239.78	2.55	-895.94	2.55	-712.33	2.85	-789.16
14	15	40.28	-3241.03	-126.42	976.62	0	-876.66	2.55	-1277.73	2.55	-738.66	2.85	-829.88
15	15	40.28	-2537.60	-126.42	-387.77	0	-1754.77	2.55	-525.94	2.55	-294.36	2.85	-316.08
15	16	43.67	-2533.10	-95.65	-14.87	0	-1483.84	2.55	-780.16	2.55	-322.58	2.85	-358.97
16	16	43.67	-2042.26	-95.65	-1190.39	0	-2397.82	2.55	143.83	2.55	0.00	2.85	0.00
16	17	47.06	-2042.26	-64.90	-918.24	0	-2155.41	2.55	-194.83	2.55	0.00	2.85	0.00
17	17	47.06	-2042.26	-64.90	-918.24	0	-2155.41	2.55	-194.83	2.55	0.00	2.85	0.00
17	18	50.45	-2042.26	-34.13	-750.40	0	-2005.91	2.55	-403.69	2.55	0.00	2.85	0.00
18	18	50.45	-2042.26	-34.14	-750.40	0	-2005.91	2.55	-403.69	2.55	0.00	2.85	0.00
18	19	53.84	-2042.26	-3.37	-686.84	0	-1949.29	2.55	-482.79	2.55	0.00	2.85	0.00
19	19	53.84	-2042.26	-3.36	-686.84	0	-1949.29	2.55	-482.79	2.55	0.00	2.85	0.00
19	20	57.23	-2042.26	27.41	-727.55	0	-1985.55	2.55	-432.13	2.55	0.00	2.85	0.00
20	20	57.23	-2042.26	27.39	-727.55	0	-1985.55	2.55	-432.13	2.55	0.00	2.85	0.00
20	21	60.62	-2042.26	58.15	-872.55	0	-2114.71	2.55	-251.69	2.55	0.00	2.85	0.00
21	21	60.62	-2042.26	58.15	-872.55	0	-2114.71	2.55	-251.69	2.55	0.00	2.85	0.00
21	22	64.01	-2042.26	88.91	-1121.84	0	-2336.76	2.55	58.53	2.55	0.00	2.85	0.00
22	22	64.01	-2722.09	92.56	156.54	0	-1454.72	2.55	-827.67	2.55	-402.67	2.85	-454.74
23	23	67.40	-2727.23	123.33	-205.40	0	-1723.54	2.55	-562.45	2.55	-378.12	2.85	-417.25
23	24	70.45	-3266.20	126.33	1044.08	0	-861.51	2.55	-1244.68	2.55	-762.70	2.85	-862.69
24	24	70.45	-3274.82	154.01	623.29	0	-1187.38	2.55	-895.31	2.55	-740.73	2.85	-828.63
24	10025	73.50	-2811.13	155.90	1053.65	0	-506.43	2.55	-1134.02	2.55	-736.10	2.85	-823.96
25	25	73.50	-2742.62	183.58	482.52	0	-921.91	2.55	-644.86	2.55	-684.32	2.85	-755.13
25	26	76.26	-2686.43	-156.53	516.38	0	-862.41	2.55	-658.94	2.55	-678.54	2.85	-749.28
26	26	76.26	-2753.43	-131.48	966.10	0	-552.04	2.55	-1005.17	2.55	-728.72	2.85	-815.91
26	27	79.02	-3100.29	-131.71	634.15	0	-1073.41	2.55	-818.44	2.55	-729.61	2.85	-816.76
26	27	79.02	-3092.50	-106.66	957.08	0	-835.02	2.55	-1046.06	2.55	-751.83	2.85	-851.08
27	27	79.02	-2113.65	-106.66	-156.02	0	-1309.03	2.55	-427.68	2.55	-307.19	2.85	-336.89
27	28	81.78	-2109.97	-81.61	100.98	0	-1131.63	2.55	-571.08	2.55	-330.95	2.85	-372.99
28	28	81.78	-1152.58	-81.61	-645.79	0	-1330.07	2.55	48.79	2.55	0.00	2.85	0.00
28	29	84.54	-1152.58	-56.57	-455.06	0	-1160.18	2.55	-188.55	2.55	0.00	2.85	0.00
29	29	84.54	-1152.58	-56.57	-455.06	0	-1160.18	2.55	-188.55	2.55	0.00	2.85	0.00
29	30	87.30	-1152.58	-31.52	-333.47	0	-1051.87	2.55	-339.87	2.55	0.00	2.85	0.00
30	30	87.30	-1152.58	-31.52	-333.47	0	-1051.87	2.55	-339.87	2.55	0.00	2.85	0.00
30	31	90.06	-1152.58	-6.47	-280.99	0	-1005.13	2.55	-405.17	2.55	0.00	2.85	0.00
31	31	90.06	-1152.58	-6.47	-280.99	0	-1005.13	2.55	-405.17	2.55	0.00	2.85	0.00
31	32	92.82	-1152.58	18.57	-297.66	0	-1019.98	2.55	-384.42	2.55	0.00	2.85	0.00
32	32	92.82	-1152.58	18.57	-297.66	0	-1019.98	2.55	-384.42	2.55	0.00	2.85	0.00
32	33	95.58	-1152.58	43.62	-383.45	0	-1096.39	2.55	-277.67	2.55	0.00	2.85	0.00
33	33	95.58	-946.69	43.62	-194.44	0	-793.20	2.55	-378.03	2.55	0.00	2.85	0.00
33	34	98.34	-946.69	68.67	-349.38	0	-931.20	2.55	-185.23	2.55	0.00	2.85	0.00
34	34	98.34	-603.55	68.67	-17.90	0	-411.22	2.55	-373.00	2.55	0.00	2.85	0.00
34	35	101.10	-603.55	85.70	-241.95	0	-610.78	2.55	-94.19	2.55	0.00	2.85	0.00
101	101	0.00	-603.55	-84.72	-241.95	0	-610.78	2.55	-94.19	2.55	0.00	2.85	0.00
102	102	2.74	-603.55	-67.93	-21.78	0	-414.68	2.55	-368.17	2.55	0.00	2.85	0.00
102	102	2.74	-878.07	-67.93	-286.96	0	-830.66	2.55	-217.96	2.55	0.00	2.85	0.00
102	103	5.48	-878.07	-43.06	-134.90	0	-695.22	2.55	-407.18	2.55	0.00	2.85	0.00
103	103	5.48	-1083.95	-43.06	-323.91	0	-998.41	2.55	-306.82	2.55	0.00	2.85	0.00
103	104	8.22	-1083.95	-18.20	-239.99	0	-923.66	2.55	-411.24	2.55	0.00	2.85	0.00
104	104	8.22	-1083.95	-18.20	-239.99	0	-923.66	2.55	-411.24	2.55	0.00	2.85	0.00
104	105	10.96	-1083.95	6.67	-224.21	0	-909.60	2.55	-430.88	2.55	0.00	2.85	0.00
105	105	10.96	-1083.95	6.67	-224.21	0	-909.60	2.55	-430.88	2.55	0.00	2.85	0.00

105	106	13.70	-1083.95	31.53	-276.58	0	-956.25	2.55	-365.72	2.55	0.00	2.85	0.00
106	106	13.70	-1083.95	31.53	-276.58	0	-956.25	2.55	-365.72	2.55	0.00	2.85	0.00
106	107	16.44	-1083.95	56.40	-397.06	0	-1063.56	2.55	-215.79	2.55	0.00	2.85	0.00
107	107	16.44	-1083.95	56.40	-397.06	0	-1063.56	2.55	-215.79	2.55	0.00	2.85	0.00
107	108	19.18	-1083.95	81.26	-585.68	0	-1231.58	2.55	18.94	2.55	0.00	2.85	0.00
108	108	19.18	-2175.96	81.26	266.09	0	-1013.57	2.55	-660.31	2.55	-381.40	2.85	-431.31
108	109	21.92	-2180.12	106.13	12.58	0	-1188.76	2.55	-518.91	2.55	-358.12	2.85	-395.85
109	109	21.92	-3010.94	106.13	1010.20	0	-736.11	2.55	-1072.57	2.55	-747.19	2.85	-845.80
109	110	24.66	-3018.68	130.99	691.36	0	-971.46	2.55	-847.94	2.55	-725.26	2.85	-811.90
110	110	24.66	-2743.59	130.86	957.10	0	-554.98	2.55	-998.07	2.55	-725.19	2.85	-

GRÁFICO DE TENSIONES



COMBINACIÓN "TCIERRE"

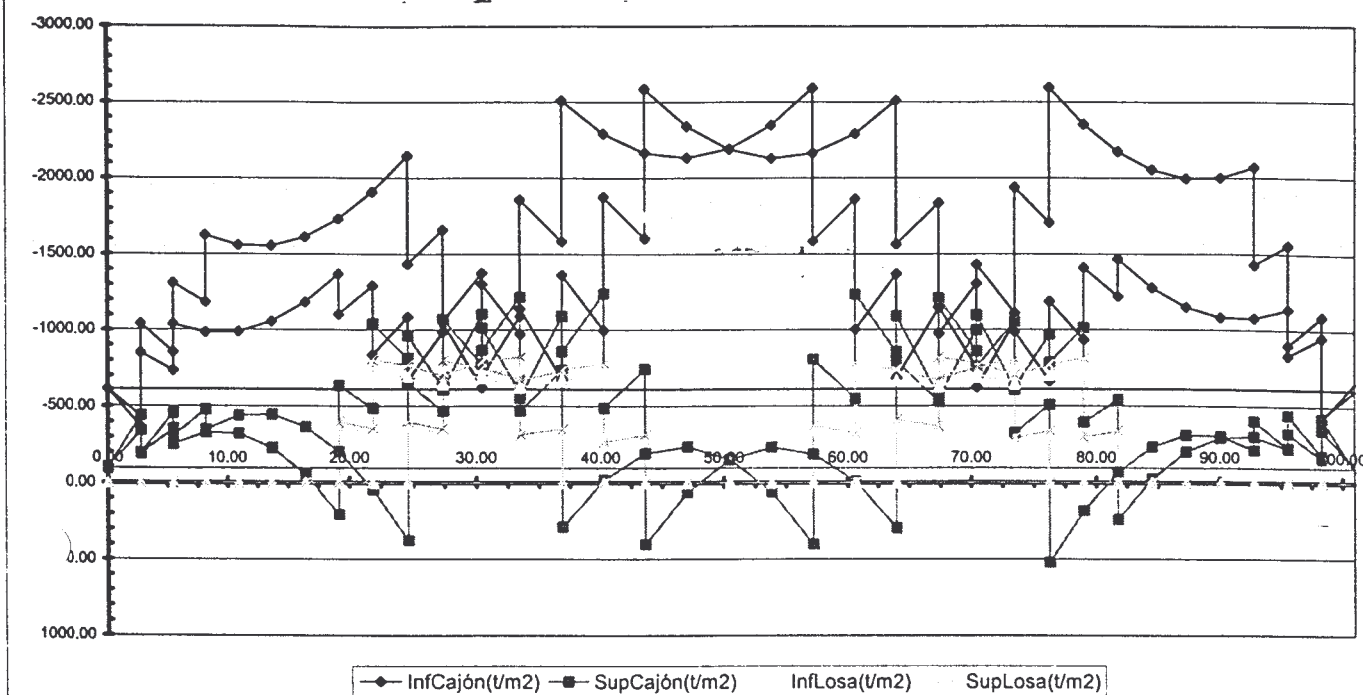
(tiempo $t=0$)

PP sin gradiente
1: 1PPF3 + 1: 1PPF2 + 1: 0.5PRETF1A.ISO.To + 1: 0.5PRETF1A.HP.To + 1: 0.5PRETF1B.ISO.To + 1: 0.5PRETF1B.HP.To + 1: 0.5PRETF3C.ISO.To + 1: 0.5PRETF3C.HP.To + 1: 1PRE
Coef. exc

Barra	Nudo	X	N (T)	Vy (T)	Mz (Tm)	Fibra y fibra	InfCajón sig (t/m2)	Fibra y fibra	SupCajón sig (t/m2)	Fibra y fibra	InfLosa sig (t/m2)	Fibra y fibra	SupLosa sig (t/m2)
1	1	0.00	-603.55	-113.52	-241.95	0	-610.78	2.55	-94.19	2.55	0.00	2.85	0.00
1	2	2.74	-603.55	-88.78	35.38	0	-363.76	2.55	-439.30	2.55	0.00	2.85	0.00
2	2	2.74	-1049.64	-88.78	-395.53	0	-1039.73	2.55	-195.22	2.55	0.00	2.85	0.00
2	3	5.48	-1049.64	-63.91	-186.34	0	-853.40	2.55	-455.54	2.55	0.00	2.85	0.00
3	3	5.48	-1358.46	-63.91	-469.85	0	-1308.18	2.55	-304.99	2.55	0.00	2.85	0.00
3	4	8.22	-1358.46	-39.05	-328.79	0	-1182.54	2.55	-480.52	2.55	0.00	2.85	0.00
4	4	8.22	-1667.29	-39.05	-597.47	0	-1624.11	2.55	-348.43	2.55	0.00	2.85	0.00
4	5	10.96	-1667.29	-14.18	-524.56	0	-1559.17	2.55	-439.16	2.55	0.00	2.85	0.00
5	5	10.96	-1667.29	-14.18	-524.56	0	-1559.17	2.55	-439.16	2.55	0.00	2.85	0.00
5	6	13.70	-1667.29	10.68	-519.76	0	-1554.90	2.55	-445.13	2.55	0.00	2.85	0.00
6	6	13.70	-1667.29	10.68	-519.76	0	-1554.90	2.55	-445.13	2.55	0.00	2.85	0.00
6	7	16.44	-1667.29	35.55	-583.09	0	-1611.31	2.55	-366.32	2.55	0.00	2.85	0.00
7	7	16.44	-1667.29	35.55	-583.09	0	-1611.31	2.55	-366.32	2.55	0.00	2.85	0.00
7	8	19.18	-1667.29	60.42	-714.57	0	-1728.42	2.55	-202.71	2.55	0.00	2.85	0.00
8	8	19.18	-1667.29	60.41	-714.57	0	-1728.42	2.55	-202.71	2.55	0.00	2.85	0.00
8	9	21.92	-1667.29	85.29	-914.18	0	-1906.22	2.55	45.69	2.55	0.00	2.85	0.00
9	9	21.92	-1667.29	85.28	-914.18	0	-1906.22	2.55	45.69	2.55	0.00	2.85	0.00
9	10	24.66	-1667.29	110.15	-1181.92	0	-2144.71	2.55	378.87	2.55	0.00	2.85	0.00
	10	24.66	-2490.85	109.01	-56.77	0	-1433.10	2.55	-650.25	2.55	-363.65	2.85	-399.49
	11	27.40	-2495.01	133.88	-386.27	0	-1659.42	2.55	-469.44	2.55	-332.59	2.85	-352.38
11	11	27.40	-3217.97	131.84	703.61	0	-1054.97	2.55	-1071.41	2.55	-720.07	2.85	-800.55
11	12	30.45	-3226.56	159.51	266.04	0	-1374.14	2.55	-773.24	2.55	-687.92	2.85	-751.24
12	12	30.45	-2769.59	155.78	695.83	0	-695.54	2.55	-1013.86	2.55	-684.95	2.85	-748.18
12	10013	33.50	-2719.89	183.46	139.71	0	-1091.86	2.55	-587.13	2.55	-632.64	2.85	-676.14
13	13	33.50	-2721.61	-179.98	102.97	0	-1136.64	2.55	-556.18	2.55	-623.94	2.85	-667.29
13	14	36.89	-2772.60	-151.56	720.98	0	-675.76	2.55	-1093.03	2.55	-671.98	2.85	-732.76
14	14	36.89	-3250.59	-158.01	289.15	0	-1361.85	2.55	-858.35	2.55	-680.06	2.85	-740.77
14	15	40.28	-3241.03	-127.24	765.20	0	-997.15	2.55	-1240.62	2.55	-706.81	2.85	-782.11
15	15	40.28	-2537.60	-127.24	-599.19	0	-1875.27	2.55	-488.83	2.55	-262.51	2.85	-268.31
15	16	43.67	-2533.10	-96.47	-223.51	0	-1602.75	2.55	-743.54	2.55	-291.15	2.85	-311.84
16	16	43.67	-2042.26	-96.47	-1399.03	0	-2583.66	2.55	403.46	2.55	0.00	2.85	0.00
16	17	47.06	-2042.26	-65.72	-1124.11	0	-2338.79	2.55	61.36	2.55	0.00	2.85	0.00
17	17	47.06	-2042.26	-65.72	-1124.11	0	-2338.79	2.55	61.36	2.55	0.00	2.85	0.00
17	18	50.45	-2042.26	-34.95	-953.49	0	-2186.81	2.55	-150.97	2.55	0.00	2.85	0.00
18	18	50.45	-2042.26	-34.96	-953.49	0	-2186.81	2.55	-150.97	2.55	0.00	2.85	0.00
18	19	53.84	-2042.26	-4.19	-887.16	0	-2127.72	2.55	-233.51	2.55	0.00	2.85	0.00
19	19	53.84	-2042.26	-4.18	-887.16	0	-2127.72	2.55	-233.51	2.55	0.00	2.85	0.00
19	20	57.23	-2042.26	26.59	-925.10	0	-2161.52	2.55	-186.30	2.55	0.00	2.85	0.00
20	20	57.23	-2042.26	26.57	-925.10	0	-2161.52	2.55	-186.30	2.55	0.00	2.85	0.00
20	21	60.62	-2042.26	57.33	-1067.33	0	-2288.21	2.55	-9.31	2.55	0.00	2.85	0.00
21	21	60.62	-2042.26	57.33	-1067.33	0	-2288.21	2.55	-9.31	2.55	0.00	2.85	0.00
21	22	64.01	-2042.26	88.09	-1313.84	0	-2507.78	2.55	297.45	2.55	0.00	2.85	0.00
22	22	64.01	-2722.09	93.93	-35.78	0	-1564.32	2.55	-793.92	2.55	-373.70	2.85	-411.29
23	23	67.40	-2727.23	124.70	-402.37	0	-1835.80	2.55	-527.88	2.55	-348.44	2.85	-372.75
23	23	67.40	-3266.20	-129.43	846.83	0	-973.93	2.55	-1210.06	2.55	-732.99	2.85	-818.13
23	24	70.45	-3274.82	157.11	416.59	0	-1305.19	2.55	-859.03	2.55	-709.59	2.85	-781.93
24	24	70.45	-2811.13	160.36	846.69	0	-624.38	2.55	-1097.69	2.55	-704.93	2.85	-777.21
24	10025	73.50	-2742.62	188.04	261.97	0	-1047.61	2.55	-606.15	2.55	-651.09	2.85	-705.30
25	25	73.50	-2686.43	-165.02	295.55	0	-988.26	2.55	-620.19	2.55	-645.27	2.85	-699.39
25	26	76.26	-2753.43	-139.97	768.72	0	-664.53	2.55	-970.53	2.55	-698.99	2.85	-771.32
26	26	76.26	-3100.29	-139.67	436.47	0	-1186.07	2.55	-783.74	2.55	-699.83	2.85	-772.10
26	27	79.02	-3092.50	-114.62	781.36	0	-935.16	2.55	-1015.22	2.55	-725.36	2.85	-811.38
27	27	79.02	-2113.65	-114.62	-331.74	0	-1409.17	2.55	-396.84	2.55	-280.72	2.85	-297.19
27	28	81.78	-2109.97	-89.57	-52.77	0	-1219.25	2.55	-544.09	2.55	-307.79	2.85	-338.26
28	28	81.78	-1152.58	-89.57	-799.54	0	-1467.02	2.55	240.12	2.55	0.00	2.85	0.00
28	29	84.54	-1152.58	-64.53	-586.85	0	-1277.57	2.55	-24.55	2.55	0.00	2.85	0.00
29	29	84.54	-1152.58	-64.53	-586.85	0	-1277.57	2.55	-24.55	2.55	0.00	2.85	0.00
29	30	87.30	-1152.58	-39.48	-443.29	0	-1149.69	2.55	-203.20	2.55	0.00	2.85	0.00
30	30	87.30	-1152.58	-39.48	-443.29	0	-1149.69	2.55	-203.20	2.55	0.00	2.85	0.00
30	31	90.06	-1152.58	-14.43	-368.85	0	-1083.39	2.55	-295.83	2.55	0.00	2.85	0.00
31	31	90.06	-1152.58	-14.43	-368.85	0	-1083.39	2.55	-295.83	2.55	0.00	2.85	0.00
31	32	92.82	-1152.58	10.61	-363.55	0	-1078.67	2.55	-302.43	2.55	0.00	2.85	0.00
32	32	92.82	-1152.58	10.61	-363.55	0	-1078.67	2.55	-302.43	2.55	0.00	2.85	0.00
32	33	95.58	-1152.58	35.66	-427.38	0	-1135.52	2.55	-223.01	2.55	0.00	2.85	0.00
33	33	95.58	-946.69	35.66	-238.37	0	-832.33	2.55	-323.37	2.55	0.00	2.85	0.00
33	34	98.34	-946.69	60.71	-371.34	0	-950.76	2.55	-157.91	2.55	0.00	2.85	0.00
34	34	98.34	-603.55	60.71	-39.86	0	-430.78	2.55	-345.67	2.55	0.00	2.85	0.00
	35	101.10	-603.55	85.70	-241.95	0	-610.78	2.55	-94.19	2.55	0.00	2.85	0.00
101	101	0.00	-603.55	-84.72	-241.95	0	-610.78	2.55	-94.19	2.55	0.00	2.85	0.00
102	102	2.74	-603.55	-59.93	-43.71	0	-434.21	2.55	-340.88	2.55	0.00	2.85	0.00
102	102	2.74	-878.07	-59.93	-308.89	0	-850.19	2.55	-190.67	2.55	0.00	2.85	0.00
102	103	5.48	-878.07	-35.06	-178.77	0	-734.30	2.55	-352.59	2.55	0.00	2.85	0.00
103	103	5.48	-1083.95	-35.06	-367.78	0	-1037.48	2.55	-252.23	2.55	0.00	2.85	0.00
103	104	8.22	-1083.95	-10.20	-305.79	0	-982.27	2.55	-329.36	2.55	0.00	2.85	0.00
104	104	8.22	-1083.95	-10.20	-305.79	0	-982.27	2.55	-329.36	2.55	0.00	2.85	0.00
104	105	10.96	-1083.95	14.67	-311.94	0	-987.75	2.55	-321.71	2.55	0.00	2.85	0.00
105	105	10.96	-1083.95	14.67	-311.94	0	-987.75	2.55	-321.71	2.55	0.00	2.85	0.00

105	106	13.70	-1083.95	39.53	-386.24	0	-1053.93	2.55	-229.25	2.55	0.00	2.85	0.00
106	106	13.70	-1083.95	39.53	-386.24	0	-1053.93	2.55	-229.25	2.55	0.00	2.85	0.00
106	107	16.44	-1083.95	64.40	-528.66	0	-1180.79	2.55	-52.03	2.55	0.00	2.85	0.00
107	107	16.44	-1083.95	64.40	-528.66	0	-1180.79	2.55	-52.03	2.55	0.00	2.85	0.00
107	108	19.18	-1083.95	89.26	-739.21	0	-1368.34	2.55	209.99	2.55	0.00	2.85	0.00
108	108	19.18	-2175.96	89.26	112.56	0	-1101.07	2.55	-633.36	2.55	-358.27	2.85	-396.62
108	109	21.92	-2180.12	114.13	-162.88	0	-1288.76	2.55	-488.11	2.55	-331.69	2.85	-356.21
109	109	21.92	-3010.94	114.13	834.74	0	-836.10	2.55	-1041.77	2.55	-720.76	2.85	-806.16
109	110	24.66	-3018.68	138.99	493.97	0	-1083.96	2.55	-813.29	2.55	-695.52	2.85	-767.31
110	110	24.66	-2743.59	139.40	760.00	0	-667.32	2.55	-963.48	2.55	-695.50	2.85	-767.35
110	10111	27.40	-2685.89	164.27	298.99	0	-985.90	2.55	-621.43	2.55	-645.54	2.85	-699.85
111	111	27.40	-2746.45	-187.97	265.37	0	-1046.58	2.55	-608.70	2.55	-652.48	2.85	-706.89
111	112	30.45	-2828.32	-160.30	860.33	0	-621.56	2.55	-1105.95	2.55	-711.31	2.85	-784.57
112	112	30.45	-3291.99	-156.91	430.21	0	-1302.37	2.55	-867.28	2.55	-715.97	2.85	-789.29
112	113	33.50	-3283.39	-129.23	859.87	0	-971.47	2.55	-1218.12	2.55	-739.30	2.85	-825.38
113	113	33.50	-2598.35	-124.37	-504.99	0	-1855.38	2.55	-471.77	2.55	-299.67	2.85	-316.21
113	114	36.89	-2593.85	-93.60	-139.04	0	584.51	2.55	-737.78	2.55	-325.01	2.85	-354.79
114	114	36.89	-2047.23	-87.71	-1309.49	0	-2507.16	2.55	288.79	2.55	0.00	2.85	0.00
114	115	40.28	-2047.23	-56.95	-1064.28	0	-2288.75	2.55	-16.35	2.55	0.00	2.85	0.00
115	115	40.28	-2047.23	-56.95	-1064.28	0	-2288.75	2.55	-16.35	2.55	0.00	2.85	0.00
115	116	43.67	-2047.23	-26.18	-923.39	0	-2163.25	2.55	-191.68	2.55	0.00	2.85	0.00
116	116	43.67	-2047.23	-26.18	-923.39	0	-2163.25	2.55	-191.68	2.55	0.00	2.85	0.00
116	117	47.06	-2047.23	4.58	-886.78	0	-2130.64	2.55	-237.23	2.55	0.00	2.85	0.00
117	117	47.06	-2047.23	4.58	-886.78	0	-2130.64	2.55	-237.23	2.55	0.00	2.85	0.00
117	118	50.45	-2047.23	35.35	-954.45	0	-2190.91	2.55	-153.03	2.55	0.00	2.85	0.00
118	118	50.45	-2047.23	35.35	-954.45	0	-2190.91	2.55	-153.03	2.55	0.00	2.85	0.00
118	119	53.84	-2047.23	66.11	-1126.39	0	-2344.07	2.55	60.94	2.55	0.00	2.85	0.00
119	119	53.84	-2047.23	66.11	-1126.39	0	-2344.07	2.55	60.94	2.55	0.00	2.85	0.00
119	120	57.23	-2047.23	96.88	-1402.65	0	-2590.14	2.55	404.72	2.55	0.00	2.85	0.00
120	120	57.23	-2676.81	96.87	-118.91	0	-1586.34	2.55	-804.91	2.55	-343.98	2.85	-372.55
120	121	60.62	-2681.96	127.64	-495.42	0	-1859.57	2.55	-550.13	2.55	-315.40	2.85	-329.03
121	121	60.62	-3237.39	127.64	753.52	0	-1002.79	2.55	-1237.21	2.55	-704.15	2.85	-778.59
121	122	64.01	-3246.94	158.41	276.15	0	-1368.28	2.55	-854.58	2.55	-677.22	2.85	-736.98
122	122	64.01	-2773.48	152.01	708.11	0	-683.48	2.55	-1090.64	2.55	-670.32	2.85	-730.16
122	10123	67.40	-2734.67	180.44	96.60	0	-1144.35	2.55	-558.46	2.55	-626.43	2.85	-669.33
123	123	67.40	-2755.67	-184.58	98.53	0	-1149.56	2.55	-565.10	2.55	-632.13	2.85	-675.18
123	124	70.45	-2813.72	-156.90	664.56	0	-749.64	2.55	-997.61	2.55	-687.87	2.85	-751.29
124	124	70.45	-3271.31	-160.50	234.75	0	-1428.45	2.55	-757.17	2.55	-691.00	2.85	-754.51
124	125	73.50	-3262.72	-132.82	675.35	0	-1107.08	2.55	-1057.42	2.55	-723.38	2.85	-804.17
125	125	73.50	-2531.50	-134.77	-655.85	0	-1935.67	2.55	-324.60	2.55	-281.02	2.85	-292.44
125	126	76.26	-2527.83	-109.72	-321.28	0	-1705.98	2.55	-508.50	2.55	-312.68	2.85	-340.38
126	126	76.26	-1976.11	-110.85	-1458.87	0	-2593.65	2.55	521.24	2.55	0.00	2.85	0.00
126	127	79.02	-1976.11	-85.81	-1187.49	0	-2351.92	2.55	183.54	2.55	0.00	2.85	0.00
127	127	79.02	-1976.11	-85.80	-1187.49	0	-2351.92	2.55	183.54	2.55	0.00	2.85	0.00
127	128	81.78	-1976.11	-60.76	-985.26	0	-2171.79	2.55	-68.12	2.55	0.00	2.85	0.00
128	128	81.78	-1976.11	-60.76	-985.26	0	-2171.79	2.55	-68.12	2.55	0.00	2.85	0.00
128	129	84.54	-1976.11	-35.71	-852.15	0	-2053.22	2.55	-233.76	2.55	0.00	2.85	0.00
129	129	84.54	-1976.11	-35.71	-852.15	0	-2053.22	2.55	-233.76	2.55	0.00	2.85	0.00
129	130	87.30	-1976.11	-10.66	-788.18	0	-1996.24	2.55	-313.36	2.55	0.00	2.85	0.00
130	130	87.30	-1976.11	-10.66	-788.18	0	-1996.24	2.55	-313.36	2.55	0.00	2.85	0.00
130	131	90.06	-1976.11	14.38	-793.34	0	-2000.84	2.55	-306.94	2.55	0.00	2.85	0.00
131	131	90.06	-1976.11	14.38	-793.34	0	-2000.84	2.55	-306.94	2.55	0.00	2.85	0.00
131	132	92.82	-1976.11	39.43	-867.62	0	-2067.00	2.55	-214.51	2.55	0.00	2.85	0.00
132	132	92.82	-1530.03	39.43	-479.53	0	-1429.17	2.55	-405.30	2.55	0.00	2.85	0.00
132	133	95.58	-1530.03	64.48	-622.95	0	-1556.92	2.55	-226.83	2.55	0.00	2.85	0.00
133	133	95.58	-1083.95	64.48	-213.44	0	-900.01	2.55	-444.28	2.55	0.00	2.85	0.00
133	134	98.34	-1083.95	89.52	-425.98	0	-1089.33	2.55	-179.80	2.55	0.00	2.85	0.00
134	134	98.34	-637.87	89.52	4.94	0	-413.35	2.55	-423.90	2.55	0.00	2.85	0.00
134	135	101.10	-637.87	114.46	-276.74	0	-664.25	2.55	-73.38	2.55	0.00	2.85	0.00

GRÁFICO DE TENSIONES

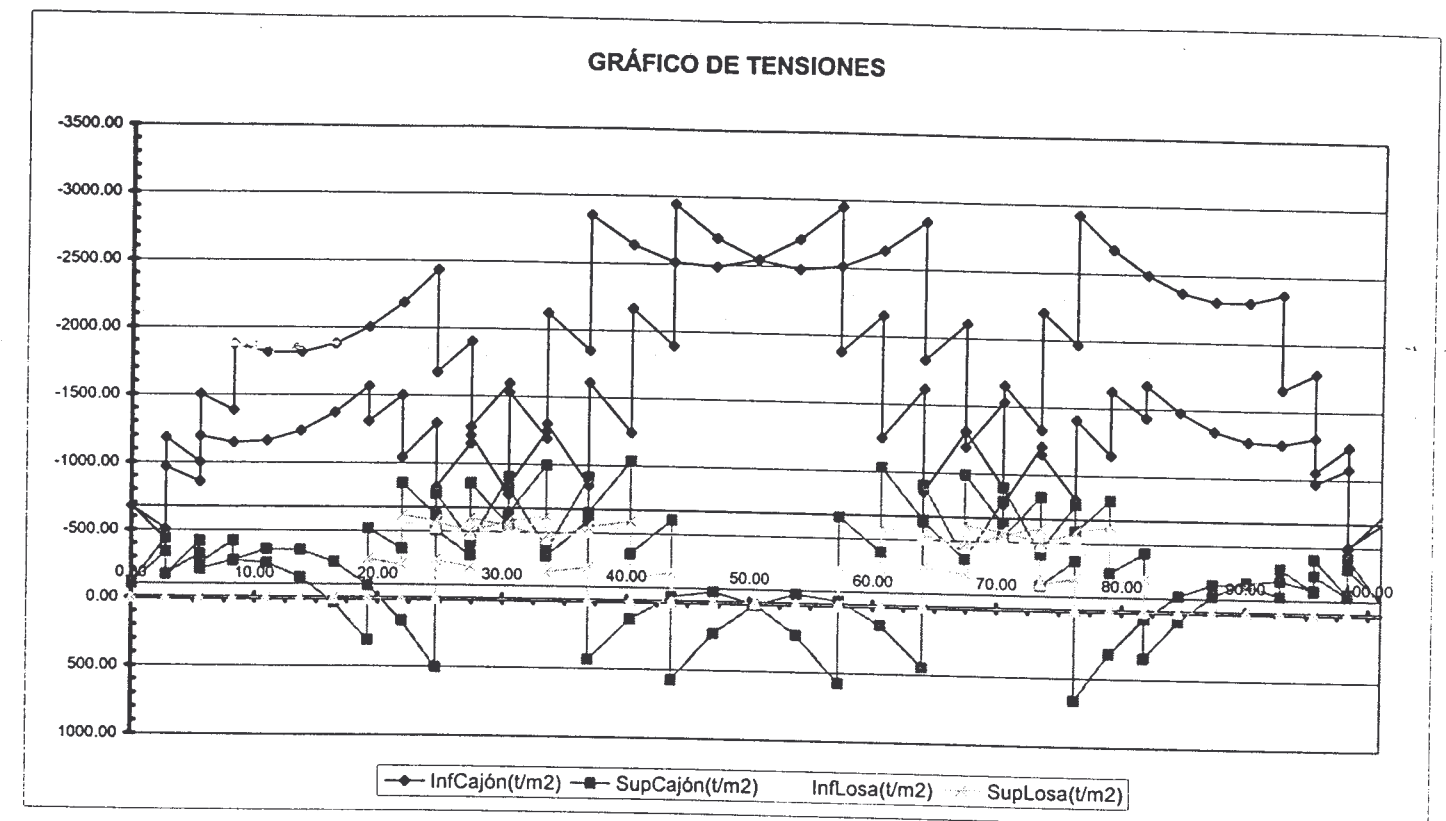


PP sin gradiente

[1; 1]PPCF1 + [1; 1]PPLF3 + [1; 1]PPLF2 + [0.95; 1.05]PRETF1A.ISO.To + [0.95; 1.05]PRETF1A.HIP.To + [0.95; 1.05]PRETF1B.ISO.To + [0.95; 1.05]PRETF1B.HIP.To + [0.9; 1.1]PRETF3C.ISO.To + [0.9; 1.1]PRETF3C.HIP.To + [0.9; 1.1]PRE

Barra	Nudo	X	N (T)	Vy (T)	Mz (Tm)	Fibra y fibra	InfCajón sig (t/m2)	Fibra y fibra	SupCajón sig (t/m2)	Fibra y fibra	InfLosa sig (t/m2)	Fibra y fibra	SupLosa sig (t/m2)
1	1	0.00	-667.09	-113.52	-267.41	0	-675.08	2.55	-104.11	2.55	0.00	2.85	0.00
1	2	2.74	-667.09	-86.26	3.02	0	-434.19	2.55	-440.64	2.55	0.00	2.85	0.00
2	2	2.74	-1160.12	-86.26	-473.25	0	-1181.32	2.55	-170.86	2.55	0.00	2.85	0.00
2	3	5.48	-1160.12	-61.39	-270.96	0	-1001.13	2.55	-422.59	2.55	0.00	2.85	0.00
3	3	5.48	-1501.46	-61.39	-584.31	0	-1503.79	2.55	-256.20	2.55	0.00	2.85	0.00
3	4	8.22	-1501.46	-36.53	-450.15	0	-1384.29	2.55	-423.15	2.55	0.00	2.85	0.00
4	4	8.22	-1842.79	-36.53	-747.11	0	-1872.35	2.55	-277.15	2.55	0.00	2.85	0.00
4	5	10.96	-1842.79	-11.66	-681.10	0	-1813.55	2.55	-359.30	2.55	0.00	2.85	0.00
5	5	10.96	-1842.79	-11.66	-681.10	0	-1813.55	2.55	-359.30	2.55	0.00	2.85	0.00
5	6	13.70	-1842.79	13.20	-683.20	0	-1815.41	2.55	-356.69	2.55	0.00	2.85	0.00
6	6	13.70	-1842.79	13.20	-683.20	0	-1815.41	2.55	-356.69	2.55	0.00	2.85	0.00
6	7	16.44	-1842.79	38.07	-753.42	0	-1877.97	2.55	-269.30	2.55	0.00	2.85	0.00
7	7	16.44	-1842.79	38.07	-753.42	0	-1877.97	2.55	-269.30	2.55	0.00	2.85	0.00
7	8	19.18	-1842.79	62.94	-891.79	0	-2001.22	2.55	-97.11	2.55	0.00	2.85	0.00
8	8	19.18	-1842.79	62.93	-891.79	0	-2001.22	2.55	-97.11	2.55	0.00	2.85	0.00
8	9	21.92	-1842.79	87.81	-1098.30	0	-2185.16	2.55	159.87	2.55	0.00	2.85	0.00
9	9	21.92	-1842.79	87.80	-1098.30	0	-2185.16	2.55	159.87	2.55	0.00	2.85	0.00
9	10	24.66	-1842.79	112.67	-1372.94	0	-2429.79	2.55	501.63	2.55	0.00	2.85	0.00
10	10	24.66	-2400.79	112.27	-375.83	0	-1670.88	2.55	-510.30	2.55	-270.67	2.85	-290.07
10	11	27.40	-2404.19	137.14	-714.85	0	-1902.40	2.55	-327.58	2.55	-237.98	2.85	-240.61
11	11	27.40	-2883.43	135.42	257.85	0	-1270.43	2.55	-856.16	2.55	-548.86	2.85	-601.11
11	12	30.45	-2890.46	163.09	-191.86	0	-1596.06	2.55	-555.40	2.55	-514.48	2.85	-548.66
12	12	30.45	-2379.83	159.70	283.59	0	-844.11	2.55	-819.75	2.55	-509.83	2.85	-543.94
12	10013	33.50	-2339.17	187.38	-277.43	0	-1245.94	2.55	-394.87	2.55	-459.11	2.85	-473.12
13	13	33.50	-2356.75	-183.50	-316.91	0	-1299.50	2.55	-365.57	2.55	-453.71	2.85	-467.65
13	14	36.89	-2437.72	-150.40	295.82	0	-850.64	2.55	-910.49	2.55	-508.67	2.85	-539.64
14	14	36.89	-2969.75	-158.91	-181.79	0	-1610.25	2.55	-652.18	2.55	-518.53	2.85	-549.40
14	15	40.28	-2961.93	-128.14	298.68	0	-1243.55	2.55	-1035.74	2.55	-546.39	2.85	-592.18
15	15	40.28	-2524.31	-128.14	-944.23	0	-2165.10	2.55	-353.41	2.55	-182.87	2.85	-171.80
15	16	43.67	-2520.62	-97.37	-564.85	0	-1890.71	2.55	-609.02	2.55	-212.28	2.85	-216.38
16	16	43.67	-2256.94	-97.37	-1646.61	0	-2944.80	2.55	570.96	2.55	0.00	2.85	0.00
16	17	47.06	-2256.94	-66.62	-1368.63	0	-2697.18	2.55	225.03	2.55	0.00	2.85	0.00
17	17	47.06	-2256.94	-66.62	-1368.63	0	-2697.18	2.55	225.03	2.55	0.00	2.85	0.00
17	18	50.45	-2256.94	-35.85	-1194.93	0	-2542.47	2.55	8.88	2.55	0.00	2.85	0.00
18	18	50.45	-2256.94	-35.86	-1194.93	0	-2542.47	2.55	8.88	2.55	0.00	2.85	0.00
18	19	53.84	-2256.94	-5.09	-1125.52	0	-2480.64	2.55	-77.49	2.55	0.00	2.85	0.00
19	19	53.84	-2256.94	-5.08	-1125.52	0	-2480.64	2.55	-77.49	2.55	0.00	2.85	0.00
19	20	57.23	-2256.94	25.69	-1160.38	0	-2511.69	2.55	-34.11	2.55	0.00	2.85	0.00
20	20	57.23	-2256.94	25.67	-1160.38	0	-2511.69	2.55	-34.11	2.55	0.00	2.85	0.00
20	21	60.62	-2256.94	56.43	-1299.53	0	-2635.64	2.55	139.05	2.55	0.00	2.85	0.00
21	21	60.62	-2256.94	56.43	-1299.53	0	-2635.64	2.55	139.05	2.55	0.00	2.85	0.00
21	22	64.01	-2256.94	87.19	-1542.96	0	-2852.47	2.55	441.98	2.55	0.00	2.85	0.00
22	22	64.01	-2633.63	96.17	-378.14	0	-1830.05	2.55	-636.39	2.55	-275.08	2.85	-296.01
22	23	67.40	-2637.85	126.94	-753.09	0	-2106.01	2.55	-368.61	2.55	-248.33	2.85	-255.34
23	23	67.40	-2925.08	132.81	394.51	0	-1193.61	2.55	-989.04	2.55	-558.71	2.85	-615.42
23	24	70.45	-2932.12	160.49	-47.23	0	-1530.95	2.55	-635.52	2.55	-533.18	2.85	-576.22
24	24	70.45	-2427.58	164.08	427.95	0	-780.99	2.55	-901.66	2.55	-530.04	2.85	-573.00
24	10025	73.50	-2371.52	191.76	-158.39	0	-1208.87	2.55	-413.58	2.55	-479.18	2.85	-503.94
25	25	73.50	-2337.67	-169.18	-120.87	0	-1151.54	2.55	-437.65	2.55	-480.09	2.85	-504.78
25	26	76.26	-2392.49	-144.13	354.26	0	-823.03	2.55	-784.68	2.55	-530.96	2.85	-574.01
26	26	76.26	-2808.38	-143.01	-12.33	0	-1408.88	2.55	-588.11	2.55	-540.37	2.85	-583.40
26	27	79.02	-2802.00	-117.96	342.88	0	-1152.51	2.55	-821.83	2.55	-567.81	2.85	-625.38
27	27	79.02	-2060.23	-117.96	-622.10	0	-1627.37	2.55	-287.07	2.55	-204.02	2.85	-204.67
27	28	81.78	-2057.23	-92.91	-333.39	0	-1432.10	2.55	-436.23	2.55	-232.73	2.85	-248.12
28	28	81.78	-1273.90	-92.91	-944.38	0	-1675.49	2.55	340.90	2.55	0.00	2.85	0.00
28	29	84.54	-1273.90	-67.87	-722.47	0	-1477.82	2.55	64.75	2.55	0.00	2.85	0.00
29	29	84.54	-1273.90	-67.87	-722.47	0	-1477.82	2.55	64.75	2.55	0.00	2.85	0.00
29	30	87.30	-1273.90	-42.82	-569.67	0	-1341.72	2.55	-125.39	2.55	0.00	2.85	0.00
30	30	87.30	-1273.90	-42.82	-569.67	0	-1341.72	2.55	-125.39	2.55	0.00	2.85	0.00
30	31	90.06	-1273.90	-17.77	-486.01	0	-1267.20	2.55	-229.50	2.55	0.00	2.85	0.00
31	31	90.06	-1273.90	-17.77	-486.01	0	-1267.20	2.55	-229.50	2.55	0.00	2.85	0.00
31	32	92.82	-1273.90	7.27	-471.49	0	-1254.26	2.55	-247.57	2.55	0.00	2.85	0.00
32	32	92.82	-1273.90	7.27	-471.49	0	-1254.26	2.55	-247.57	2.55	0.00	2.85	0.00
32	33	95.58	-1273.90	32.32	-526.08	0	-1302.90	2.55	-179.63	2.55	0.00	2.85	0.00
33	33	95.58	-1046.35	32.32	-317.19	0	-967.79	2.55	-290.56	2.55	0.00	2.85	0.00
33	34	98.34	-1046.35	57.37	-440.92	0	-1078.01	2.55	-136.58	2.55	0.00	2.85	0.00
34	34	98.34	-667.09	57.37	-74.56	0	-503.29	2.55	-344.10	2.55	0.00	2.85	0.00
34	35	101.10	-667.09	85.70	-267.41	0	-675.08	2.55	-104.11	2.55	0.00	2.85	0.00
101	101	0.00	-667.09	-84.72	-267.41	0	-675.08	2.55	-104.11	2.55	0.00	2.85	0.00
101	102	2.74	-667.09	-56.55	-78.43	0	-506.74	2.55	-339.29	2.55	0.00	2.85	0.00
102	102	2.74	-970.49	-56.55	-371.51	0	-966.51	2.55	-173.27	2.55	0.00	2.85	0.00
102	103	5.48	-970.49	-31.68	-250.65	0	-858.85	2.55	-323.68	2.55	0.00	2.85	0.00
103	103	5.48	-1198.05	-31.68	-459.54	0	-1193.95	2.55	-212.76	2.55	0.00	2.85	0.00
103	104	8.22	-1198.05	-6.82	-406.81	0	-1146.97	2.55	-278.38	2.55	0.00	2.85	0.00
104	104	8.22	-1198.05	-6.82	-406.81	0	-1146.97	2.55	-278.38	2.55	0.00	2.85	0.00
104	105	10.96	-1198.05	18.05	-422.20	0	-1160.69	2.55	-259.23	2.55	0.00	2.85	0.00
105	105	10.96	-1198.05	18.05	-422.20	0	-1160.69	2.55	-259.23	2.55	0.00	2.85	0.00

105	106	13.70	-1198.05	42.91	-505.74	0	-1235.10	2.55	-155.27	2.55	0.00	2.85	0.00
106	106	13.70	-1198.05	42.91	-505.74	0	-1235.10	2.55	-155.27	2.55	0.00	2.85	0.00
106	107	16.44	-1198.05	67.78	-657.40	0	-1370.19	2.55	33.46	2.55	0.00	2.85	0.00
107	107	16.44	-1198.05	67.78	-657.40	0	-1370.19	2.55	33.46	2.55	0.00	2.85	0.00
107	108	19.18	-1198.05	92.64	-877.21	0	-1565.98	2.55	306.99	2.55	0.00	2.85	0.00
10	108	19.18	-2091.52	92.64	-180.30	0	-1306.58	2.55	-518.73	2.55	-274.01	2.85	-295.83
106	109	21.92	-2094.92	117.51	-465.58	0	-1499.64	2.55	-371.53	2.55	-245.74	2.85	-253.00
109	109	21.92	-2715.58	117.51	404.92	0	-1042.25	2.55	-853.33	2.55	-564.08	2.85	-621.14
109	110	24.66	-2721.90	142.37	53.81	0	-1295.58	2.55	-622.62	2.55	-536.92	2.85	-579.59
110	110	24.66	-2384.59	143.52	347.22	0	-825.44	2.55	-778.50	2.55	-528.22	2.85	-570.92
110	10111	27.40	-2337.38	168.39	-116.91	0	-1148.95	2.55	-439.06	2.55	-480.50	2.85	-505.43
111	111	27.40	-2378.53	-191.73	-154.43	0	-1208.47	2.55	-417.18	2.55	-481.47	2.85	-506.47
111	112	30.45	-2445.51	-164.06	440.41	0	-779.06	2.55	-909.94	2.55	-536.45	2.85	-580.29
112	112	30.45	-2949.43	-160.33	-34.76	0	-1528.83	2.55	-643.62	2.55	-539.42	2.85	-583.35
112	113	33.50	-2942.40	-132.65	406.57	0	-1191.75	2.55	-996.97	2.55	-564.91	2.85	-622.48
113	113	33.50	-2535.77	-126.65	-835.61	0	-2122.20	2.55	-324.08	2.55	-209.50	2.85	-210.25
113	114	36.89	-2532.09	-95.88	-461.34	0	-1846.82	2.55	-591.80	2.55	-236.30	2.85	-250.93
114	114	36.89	-2263.01	-86.79	-1538.35	0	-2852.34	2.55	432.26	2.55	0.00	2.85	0.00
114	115	40.28	-2263.01	-56.03	-1296.28	0	-2636.72	2.55	131.02	2.55	0.00	2.85	0.00
115	115	40.28	-2263.01	-56.03	-1296.28	0	-2636.72	2.55	131.02	2.55	0.00	2.85	0.00
115	116	43.67	-2263.01	-25.26	-1158.51	0	-2514.01	2.55	-40.41	2.55	0.00	2.85	0.00
116	116	43.67	-2263.01	-25.26	-1158.51	0	-2514.01	2.55	-40.41	2.55	0.00	2.85	0.00
116	117	47.06	-2263.01	5.50	-1125.04	0	-2484.19	2.55	-82.07	2.55	0.00	2.85	0.00
117	117	47.06	-2263.01	5.50	-1125.04	0	-2484.19	2.55	-82.07	2.55	0.00	2.85	0.00
117	118	50.45	-2263.01	36.27	-1195.83	0	-2547.25	2.55	6.03	2.55	0.00	2.85	0.00
118	118	50.45	-2263.01	36.27	-1195.83	0	-2547.25	2.55	6.03	2.55	0.00	2.85	0.00
118	119	53.84	-2263.01	67.03	-1370.91	0	-1370.91	2.55	223.89	2.55	0.00	2.85	0.00
119	119	53.84	-2263.01	67.03	-1370.91	0	-2703.19	2.55	223.89	2.55	0.00	2.85	0.00
119	120	57.23	-2263.01	97.80	-1650.29	0	-2952.05	2.55	571.56	2.55	0.00	2.85	0.00
120	120	57.23	-2640.21	97.79	-479.97	0	-1878.30	2.55	-659.69	2.55	-255.92	2.85	-266.41
12	121	60.62	-2644.43	128.56	-860.34	0	-2153.45	2.55	-403.95	2.55	-226.51	2.85	-221.78
121	121	60.62	-2960.96	128.56	288.12	0	-1249.36	2.55	-1033.33	2.55	-544.58	2.85	-589.60
121	122	64.01	-2968.78	159.33	-193.73	0	-1616.88	2.55	-649.39	2.55	-516.53	2.85	-546.53
122	122	64.01	-2442.28	150.87	284.03	0	-858.84	2.55	-909.39	2.55	-508.13	2.85	-538.24
122	10123	67.40	-2367.89	183.94	-323.84	0	-1306.96	2.55	-367.18	2.55	-455.61	2.85	-469.06
123	123	67.40	-2379.57	-188.58	-322.81	0	-1309.87	2.55	-370.86	2.55	-458.78	2.85	-472.31
123	124	70.45	-2427.06	-160.90	247.18	0	-904.53	2.55	-800.89	2.55	-512.39	2.85	-546.59
124	124	70.45	-2937.71	-164.16	-228.27	0	-1656.48	2.55	-536.54	2.55	-517.05	2.85	-551.32
124	125	73.50	-2930.68	-136.48	224.69	0	-1328.54	2.55	-839.43	2.55	-551.70	2.85	-604.17
125	125	73.50	-2484.22	-138.07	-981.61	0	-2201.95	2.55	-184.64	2.55	-195.96	2.85	-191.70
125	126	76.26	-2481.21	-113.02	-637.42	0	-1966.99	2.55	-370.42	2.55	-229.23	2.85	-241.99
126	126	76.26	-2184.13	-113.33	-1679.00	0	-2925.95	2.55	658.95	2.55	0.00	2.85	0.00
126	127	79.02	-2184.13	-88.29	-1400.77	0	-2678.13	2.55	312.72	2.55	0.00	2.85	0.00
127	127	79.02	-2184.13	-88.28	-1400.77	0	-2678.13	2.55	312.72	2.55	0.00	2.85	0.00
127	128	81.78	-2184.13	-63.24	-1191.68	0	-2491.89	2.55	52.53	2.55	0.00	2.85	0.00
128	128	81.78	-2184.13	-63.24	-1191.68	0	-2491.89	2.55	52.53	2.55	0.00	2.85	0.00
128	129	84.54	-2184.13	-38.19	-1051.71	0	-2367.21	2.55	-121.65	2.55	0.00	2.85	0.00
129	129	84.54	-2184.13	-38.19	-1051.71	0	-2367.21	2.55	-121.65	2.55	0.00	2.85	0.00
129	130	87.30	-2184.13	-13.14	-980.90	0	-2304.13	2.55	-209.77	2.55	0.00	2.85	0.00
130	130	87.30	-2184.13	-13.14	-980.90	0	-2304.13	2.55	-209.77	2.55	0.00	2.85	0.00
130	131	90.06	-2184.13	11.90	-979.20	0	-2302.62	2.55	-211.88	2.55	0.00	2.85	0.00
131	131	90.06	-2184.13	11.90	-979.20	0	-2302.62	2.55	-211.88	2.55	0.00	2.85	0.00
131	132	92.82	-2184.13	36.95	-1046.62	0	-2362.68	2.55	-127.98	2.55	0.00	2.85	0.00
132	132	92.82	-1691.09	36.95	-617.69	0	-1657.71	2.55	-338.86	2.55	0.00	2.85	0.00
13	133	95.58	-1691.09	62.00	-754.25	0	-1779.35	2.55	-168.91	2.55	0.00	2.85	0.00
13	133	95.58	-1198.05	62.00	-301.64	0	-1053.30	2.55	-409.25	2.55	0.00	2.85	0.00
133	134	98.34	-1198.05	87.04	-507.32	0	-1236.51	2.55	-153.30	2.55	0.00	2.85	0.00
134	134	98.34	-705.01	87.04	-31.04	0	-489.37	2.55	-423.09	2.55	0.00	2.85	0.00
134	135	101.10	-705.01	114.46	-305.87	0	-734.17	2.55	-81.10	2.55	0.00	2.85	0.00



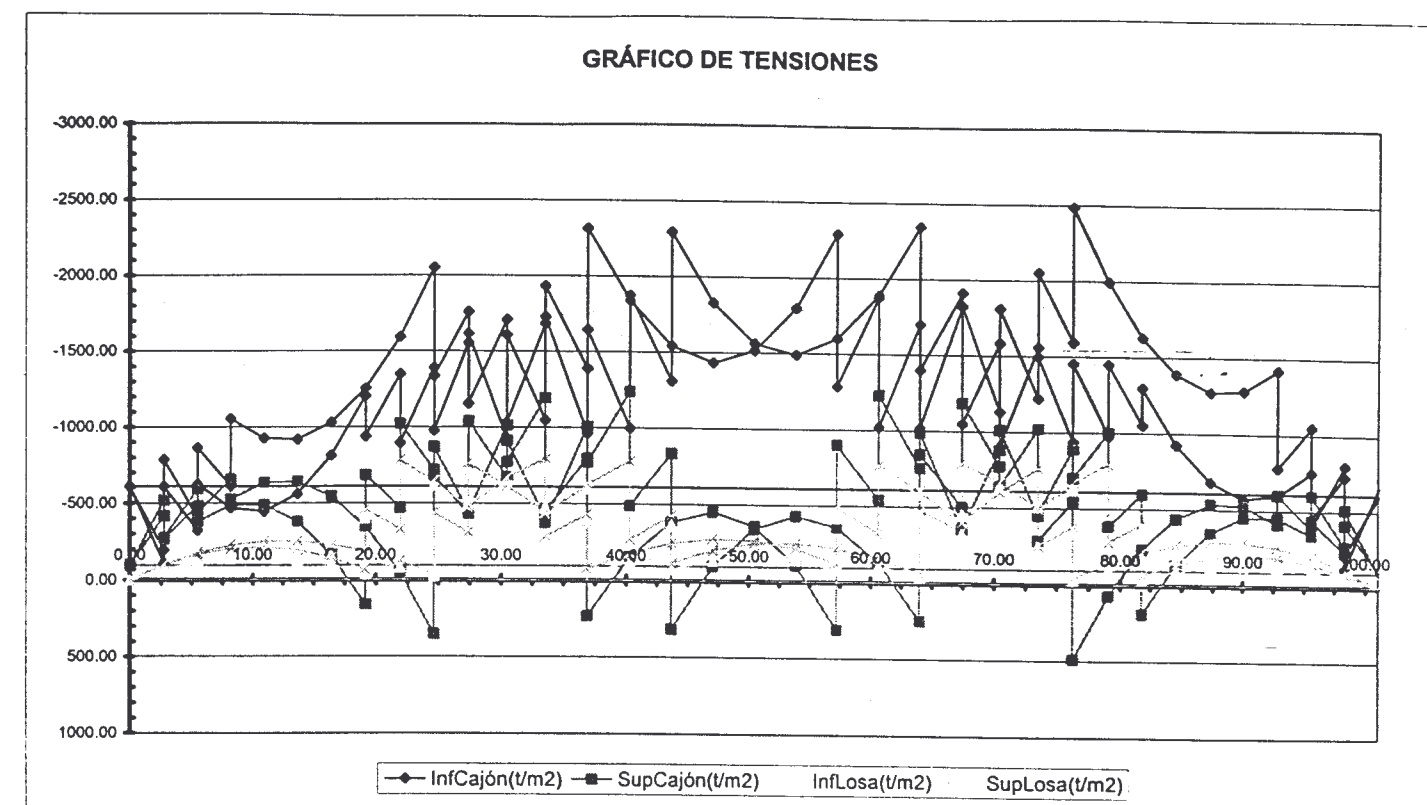
PP CON gradiente

[1: 1]PPC [1: 1]PPLF3 + [1: 1]PPLF2 + [1: 0.5; 1.05]PRETF1A.ISO.To + [1: 0.5; 1.05]PRETF1A.HIP.To + [1: 0.5; 1.05]PRETF1B.ISO.To + [1: 0.5; 1.05]PRETF1B.HIP.To + [1: 0; 1.1]PRETF3C.ISO.To + [1: 0; 1.1]PRETF3C.HIP.To + [1: 0; 1.1]PRE

Barra	Nudo	X	N (T)	Vy (T)	Mz (Tm)	Fibra	InfCajón	Fibra	SupCajón	Fibra	InfLosa	Fibra	SupLosa
						y fibra	sig (t/m2)	y fibra	sig (t/m2)	y fibra	sig (t/m2)	y fibra	sig (t/m2)
1	1	0.00	-603.55	-124.79	-241.87	0	-610.74	2.55	-94.21	2.55	-0.01	2.85	-0.02
1	2	2.74	-603.55	-100.05	66.33	0	-346.12	2.55	-444.74	2.55	-4.66	2.85	-6.99
2	2	2.74	-1049.64	-100.42	-364.42	0	-1022.00	2.55	-200.68	2.55	-4.69	2.85	-7.03
2	3	5.48	-1049.64	-75.55	-123.34	0	-817.49	2.55	-466.59	2.55	-9.49	2.85	-14.23
3	3	5.48	-1358.46	-75.75	-406.70	0	-1272.19	2.55	-316.07	2.55	-9.51	2.85	-14.27
3	4	8.22	-1358.46	-50.89	-233.21	0	-1128.07	2.55	-497.30	2.55	-14.40	2.85	-21.59
4	4	8.22	-1667.29	-50.93	-501.75	0	-1569.56	2.55	-365.23	2.55	-14.42	2.85	-21.62
4	5	10.96	-1667.29	-26.06	-396.28	0	-1486.06	2.55	-461.67	2.55	-19.32	2.85	-28.98
5	5	10.96	-1667.29	-25.96	-396.16	0	-1486.00	2.55	-461.69	2.55	-19.34	2.85	-29.01
5	6	13.70	-1667.29	-1.10	-359.07	0	-1463.32	2.55	-473.33	2.55	-24.21	2.85	-36.30
6	6	13.70	-1667.29	-0.88	-358.96	0	-1463.26	2.55	-473.35	2.55	-24.22	2.85	-36.33
6	7	16.44	-1667.29	23.99	-390.61	0	-1501.61	2.55	-400.10	2.55	-29.00	2.85	-43.48
7	7	16.44	-1667.29	24.32	-390.51	0	-1501.56	2.55	-400.12	2.55	-29.01	2.85	-43.51
7	8	19.18	-1667.29	49.19	-491.22	0	-1601.13	2.55	-241.91	2.55	-33.65	2.85	-50.46
8	8	19.18	-1667.29	49.60	-491.15	0	-1601.09	2.55	-241.92	2.55	-33.66	2.85	-50.47
8	9	21.92	-1667.29	74.48	-661.15	0	-1762.01	2.55	1.28	2.55	-38.12	2.85	-57.16
9	9	21.92	-1667.29	74.97	-661.11	0	-1761.99	2.55	1.27	2.55	-38.12	2.85	-57.17
9	10	24.66	-1667.29	99.84	-900.59	0	-1984.37	2.55	329.49	2.55	-42.38	2.85	-63.56
10	10	24.66	-2490.85	99.23	224.55	0	-1272.77	2.55	-699.63	2.55	-406.03	2.85	-463.04
	11	27.40	-2495.01	124.10	-78.14	0	-1483.81	2.55	-523.52	2.55	-379.01	2.85	-421.99
11	11	27.40	-3217.97	122.61	1011.68	0	-879.39	2.55	-1125.48	2.55	-766.47	2.85	-870.14
11	12	30.45	-3226.56	150.28	602.26	0	-1182.52	2.55	-832.25	2.55	-738.57	2.85	-827.20
12	12	30.45	-2769.59	147.08	1031.93	0	-503.99	2.55	-1072.85	2.55	-735.58	2.85	-824.11
12	10013	33.50	-2719.89	174.76	502.36	0	-885.18	2.55	-650.77	2.55	-687.27	2.85	-758.07
13	13	33.50	-2721.61	-180.43	465.47	0	-930.05	2.55	-619.80	2.55	-678.55	2.85	-749.19
13	14	36.89	-2772.60	-152.01	1085.01	0	-468.30	2.55	-1156.92	2.55	-726.81	2.85	-815.00
14	14	36.89	-3250.59	-158.15	653.04	0	-1154.46	2.55	-922.22	2.55	-734.88	2.85	-822.98
14	15	40.28	-3241.03	-127.38	1129.55	0	-789.50	2.55	-1304.57	2.55	-761.69	2.85	-864.43
15	15	40.28	-2537.60	-127.16	-234.99	0	-1667.70	2.55	-552.75	2.55	-317.38	2.85	-350.59
15	16	43.67	-2533.10	-96.39	140.43	0	-1395.33	2.55	-807.41	2.55	-345.98	2.85	-394.06
16	16	43.67	-2042.26	-96.26	-1035.22	0	-2376.32	2.55	339.61	2.55	-54.81	2.85	-82.19
16	17	47.06	-2042.26	-65.51	-761.01	0	-2131.85	2.55	-2.37	2.55	-54.70	2.85	-82.03
17	17	47.06	-2042.26	-65.45	-761.14	0	-2131.93	2.55	-2.35	2.55	-54.68	2.85	-82.00
17	18	50.45	-2042.26	-34.68	-591.43	0	-1980.47	2.55	-214.51	2.55	-54.54	2.85	-81.79
18	18	50.45	-2042.26	-34.69	-591.56	0	-1980.54	2.55	-214.49	2.55	-54.52	2.85	-81.77
18	19	53.84	-2042.26	-3.92	-526.15	0	-1921.98	2.55	-296.87	2.55	-54.38	2.85	-81.56
19	19	53.84	-2042.26	-3.97	-526.28	0	-1922.05	2.55	-296.85	2.55	-54.36	2.85	-81.53
19	20	57.23	-2042.26	26.80	-564.92	0	-1956.25	2.55	-249.51	2.55	-54.26	2.85	-81.37
20	20	57.23	-2042.26	26.65	-565.06	0	-1956.33	2.55	-249.49	2.55	-54.24	2.85	-81.34
20	21	60.62	-2042.26	57.41	-707.55	0	-2083.16	2.55	-72.45	2.55	-54.20	2.85	-81.28
21	21	60.62	-2042.26	57.19	-707.69	0	-2083.24	2.55	-72.43	2.55	-54.18	2.85	-81.25
21	22	64.01	-2042.26	87.95	-953.74	0	-2302.56	2.55	234.25	2.55	-54.25	2.85	-81.35
22	22	64.01	-2722.09	93.48	324.17	0	-1359.18	2.55	-857.09	2.55	-427.92	2.85	-492.61
22	23	67.40	-2727.23	124.25	-40.89	0	-1629.78	2.55	-591.32	2.55	-402.90	2.85	-454.42
23	23	67.40	-3266.20	128.56	1208.17	0	-767.99	2.55	-1273.48	2.55	-787.42	2.85	-899.76
23	24	70.45	-3274.82	156.24	780.58	0	-1097.74	2.55	-922.91	2.55	-764.42	2.85	-864.16
24	24	70.45	-2811.13	158.96	1210.56	0	-417.01	2.55	-1161.55	2.55	-759.74	2.85	-859.41
24	10025	73.50	-2742.62	186.64	630.09	0	-837.81	2.55	-670.75	2.55	-706.55	2.85	-788.46
25	25	73.50	-2686.43	-150.22	663.61	0	-778.50	2.55	-684.78	2.55	-700.72	2.85	-782.54
25	26	76.26	-2753.43	-125.17	1095.92	0	-478.05	2.55	-1027.95	2.55	-748.28	2.85	-845.24
26	26	76.26	-3100.29	-125.40	763.67	0	-999.59	2.55	-841.17	2.55	-749.12	2.85	-846.02
26	27	79.02	-3092.50	-100.35	1069.17	0	-771.14	2.55	-1065.74	2.55	-768.71	2.85	-876.40
27	27	79.02	-2113.65	-100.85	-43.89	0	-1245.12	2.55	-447.36	2.55	-324.08	2.85	-362.22
27	28	81.78	-2109.97	-75.80	197.06	0	-1076.87	2.55	-587.94	2.55	-345.42	2.85	-394.70
28	28	81.78	-1152.58	-76.22	-549.64	0	-1324.60	2.55	196.26	2.55	-37.65	2.85	-56.46
28	29	84.54	-1152.58	-51.18	-373.79	0	-1156.14	2.55	-61.94	2.55	-32.10	2.85	-48.13
29	29	84.54	-1152.58	-51.51	-373.70	0	-1156.09	2.55	-61.96	2.55	-32.11	2.85	-48.15
29	30	87.30	-1152.58	-26.46	-266.07	0	-1048.69	2.55	-234.31	2.55	-26.70	2.85	-40.04
30	30	87.30	-1152.58	-26.69	-265.95	0	-1048.62	2.55	-234.33	2.55	-26.71	2.85	-40.06
30	31	90.06	-1152.58	-1.64	-226.82	0	-1002.44	2.55	-320.76	2.55	-21.40	2.85	-32.09
31	31	90.06	-1152.58	-1.73	-226.70	0	-1002.37	2.55	-320.78	2.55	-21.41	2.85	-32.11
31	32	92.82	-1152.58	23.31	-256.44	0	-1017.62	2.55	-321.23	2.55	-16.14	2.85	-24.20
32	32	92.82	-1152.58	23.35	-256.30	0	-1017.54	2.55	-321.25	2.55	-16.16	2.85	-24.23
32	33	95.58	-1152.58	48.40	-355.29	0	-1094.43	2.55	-235.66	2.55	-10.86	2.85	-16.29
33	33	95.58	-946.69	48.60	-166.13	0	-791.16	2.55	-336.04	2.55	-10.88	2.85	-16.32
33	34	98.34	-946.69	73.65	-334.82	0	-929.95	2.55	-164.32	2.55	-5.50	2.85	-8.25
34	34	98.34	-603.55	74.03	-3.19	0	-409.88	2.55	-352.10	2.55	-5.52	2.85	-8.28
34	35	101.10	-603.55	85.70	-241.95	0	-610.78	2.55	-94.19	2.55	0.00	2.85	0.00
101	101	0.00	-603.55	-84.72	-241.95	0	-610.78	2.55	-94.19	2.55	0.00	2.85	0.00
101	102	2.74	-603.55	-73.32	-7.09	0	-413.34	2.55	-347.30	2.55	-5.52	2.85	-8.27
102	102	2.74	-878.07	-72.95	-272.43	0	-829.41	2.55	-197.07	2.55	-5.49	2.85	-8.24
102	103	5.48	-878.07	-48.08	-106.62	0	-693.18	2.55	-365.25	2.55	-10.87	2.85	-16.30
103	103	5.48	-1083.95	-47.88	-295.78	0	-996.45	2.55	-264.86	2.55	-10.85	2.85	-16.27
103	104	8.22	-1083.95	-23.02	-198.65	0	-921.21	2.55	-348.16	2.55	-16.14	2.85	-24.20
104	104	8.22	-1083.95	-22.98	-198.79	0	-921.29	2.55	-348.14	2.55	-16.12	2.85	-24.17
104	105	10.96	-1083.95	1.89	-169.92	0	-906.81	2.55	-346.63	2.55	-21.39	2.85	-32.08
105	105	10.96	-1083.95	1.79	-170.04	0	-906.88	2.55	-346.61	2.55	-21.38	2.85	-32.06

105	106	13.70	-1083.95	26.65	-209.06	0	-952.95	2.55	-260.35	2.55	-26.69	2.85	-40.03
106	106	13.70	-1083.95	26.43	-209.17	0	-953.01	2.55	-260.33	2.55	-26.67	2.85	-40.00
106	107	16.44	-1083.95	51.30	-315.70	0	-1059.42	2.55	-89.40	2.55	-32.08	2.85	-48.11
107	107	16.44	-1083.95	50.97	-315.79	0	-1059.47	2.55	-89.39	2.55	-32.07	2.85	-48.09
107	108	19.18	-1083.95	75.83	-489.54	0	-1226.05	2.55	166.17	2.55	-37.61	2.85	-56.40
108	108	19.18	-2175.96	75.40	362.17	0	-958.81	2.55	-677.17	2.55	-395.87	2.85	-453.01
108	109	21.92	-2180.12	100.27	124.69	0	-1124.87	2.55	-538.59	2.55	-375.01	2.85	-421.18
109	109	21.92	-3010.94	99.78	1122.27	0	-672.24	2.55	-1092.23	2.55	-764.08	2.85	-871.12
109	110	24.66	-3018.68	124.64	820.82	0	-897.68	2.55	-870.66	2.55	-744.76	2.85	-841.15
110	110	24.66	-2743.59	124.52	1086.85	0	-481.04	2.55	-1020.84	2.55	-744.74	2.85	-841.19
110	10111	27.40	-2685.89	149.39	666.61	0	-776.39	2.55	-685.95	2.55	-700.92	2.85	-782.91
111	111	27.40	-2746.45	-186.59	633.05	0	-837.03	2.55	-673.23	2.55	-707.87	2.85	-789.95
111	112	30.45	-2828.32	-158.92	1223.81	0	-414.41	2.55	-1169.75	2.55	-766.07	2.85	-866.69
112	112	30.45	-3291.99	-156.06	793.81	0	-1095.15	2.55	-931.10	2.55	-770.74	2.85	-871.43
112	113	33.50	-3283.39	-128.38	1220.87	0	-765.73	2.55	-1281.48	2.55	-793.68	2.85	-906.93
113	113	33.50	-2598.35	-123.94	-143.84	0	-1649.56	2.55	-535.15	2.55	-354.08	2.85	-397.80
113	114	36.89	-2593.85	-93.17	220.64	0	-1379.52	2.55	-800.90	2.55	-379.19	2.85	-436.05
114	114	36.89	-2047.23	-87.59	-949.66	0	-2302.09	2.55	225.63	2.55	-54.21	2.85	-81.29
114	115	40.28	-2047.23	-56.83	-704.65	0	-2083.90	2.55	-79.43	2.55	-54.15	2.85	-81.20
115	115	40.28	-2047.23	-57.05	-704.70	0	-2083.82	2.55	-79.46	2.55	-54.17	2.85	-81.23
115	116	43.67	-2047.23	-26.28	-563.49	0	-1958.13	2.55	-254.85	2.55	-54.22	2.85	-81.31
116	116	43.67	-2047.23	-26.41	-563.35	0	-1958.05	2.55	-254.87	2.55	-54.24	2.85	-81.34
116	117	47.06	-2047.23	4.35	-525.97	0	-1925.01	2.55	-300.56	2.55	-54.35	2.85	-81.51
117	117	47.06	-2047.23	4.29	-525.84	0	-1924.94	2.55	-300.58	2.55	-54.37	2.85	-81.54
117	118	50.45	-2047.23	35.06	-592.53	0	-1984.65	2.55	-216.55	2.55	-54.52	2.85	-81.76
118	118	50.45	-2047.23	35.06	-592.40	0	-1984.58	2.55	-216.57	2.55	-54.54	2.85	-81.79
118	119	53.84	-2047.23	65.82	-763.37	0	-2137.18	2.55	-2.77	2.55	-54.69	2.85	-82.01
119	119	53.84	-2047.23	65.88	-763.23	0	-2137.10	2.55	-2.80	2.55	-54.71	2.85	-82.04
119	120	57.23	-2047.23	96.65	-1038.73	0	-2382.74	2.55	340.85	2.55	-54.82	2.85	-82.22
120	120	57.23	-2676.81	96.77	245.15	0	-1378.86	2.55	-868.81	2.55	-398.82	2.85	-454.80
120	121	60.62	-2681.96	127.54	-131.03	0	-1651.89	2.55	-614.09	2.55	-370.29	2.85	-411.35
121	121	60.62	-3237.39	127.76	1118.05	0	-795.04	2.55	-1301.19	2.55	-759.06	2.85	-860.95
121	122	64.01	-3246.94	158.53	640.28	0	-1160.76	2.55	-918.49	2.55	-732.07	2.85	-819.24
122	122	64.01	-2773.48	152.44	1072.39	0	-475.87	2.55	-1154.57	2.55	-725.20	2.85	-812.45
122	10123	67.40	-2734.67	180.87	459.41	0	-937.58	2.55	-622.13	2.55	-681.08	2.85	-751.30
123	123	67.40	-2755.67	-175.94	461.49	0	-942.70	2.55	-628.81	2.55	-686.81	2.85	-757.18
123	124	70.45	-2813.72	-148.26	1001.16	0	-557.81	2.55	-1056.69	2.55	-738.57	2.85	-827.34
124	124	70.45	-3271.31	-151.33	571.48	0	-1236.54	2.55	-816.27	2.55	-741.73	2.85	-830.58
124	125	73.50	-3262.72	-123.65	984.12	0	-931.10	2.55	-1111.62	2.55	-769.89	2.85	-873.93
125	125	73.50	-2531.50	-125.05	-347.02	0	-1759.66	2.55	-378.81	2.55	-327.54	2.85	-362.20
125	126	76.26	-2527.83	-100.00	-39.28	0	-1545.27	2.55	-557.99	2.55	-355.16	2.85	-404.09
126	126	76.26	-1976.11	-100.59	-1176.87	0	-2432.93	2.55	471.75	2.55	-42.48	2.85	-63.71
126	127	79.02	-1976.11	-75.55	-933.79	0	-2207.34	2.55	139.02	2.55	-38.22	2.85	-57.31
127	127	79.02	-1976.11	-75.05	-933.83	0	-2207.36	2.55	139.03	2.55	-38.21	2.85	-57.31
127	128	81.78	-1976.11	-50.01	-761.27	0	-2044.13	2.55	-107.43	2.55	-33.74	2.85	-50.60
128	128	81.78	-1976.11	-49.58	-761.34	0	-2044.17	2.55	-107.42	2.55	-33.73	2.85	-50.59
128	129	84.54	-1976.11	-24.53	-659.07	0	-1943.18	2.55	-267.65	2.55	-29.09	2.85	-43.62
129	129	84.54	-1976.11	-24.20	-659.17	0	-1943.24	2.55	-267.63	2.55	-29.07	2.85	-43.60
129	130	87.30	-1976.11	-0.85	-626.96	0	-1904.36	2.55	-341.66	2.55	-24.29	2.85	-36.42
130	130	87.30	-1976.11	1.07	-627.07	0	-1904.42	2.55	-341.64	2.55	-24.27	2.85	-36.40
130	131	90.06	-1976.11	26.11	-664.61	0	-1927.47	2.55	-329.54	2.55	-19.39	2.85	-29.08
131	131	90.06	-1976.11	26.21	-664.74	0	-1927.55	2.55	-329.51	2.55	-19.37	2.85	-29.05
131	132	92.82	-1976.11	51.26	-771.67	0	-2012.31	2.55	-231.35	2.55	-14.45	2.85	-21.68
132	132	92.82	-1530.03	51.21	-383.72	0	-1374.57	2.55	-422.12	2.55	-14.43	2.85	-21.64
132	133	95.58	-1530.03	76.26	-559.66	0	-1520.85	2.55	-237.94	2.55	-9.53	2.85	-14.30
133	133	95.58	-1083.95	76.06	-150.30	0	-864.03	2.55	-455.37	2.55	-9.51	2.85	-14.26
133	134	98.34	-1083.95	101.10	-394.81	0	-1071.56	2.55	-185.27	2.55	-4.70	2.85	-7.04
134	134	98.34	-637.87	100.73	35.95	0	-395.67	2.55	-429.34	2.55	-4.67	2.85	-7.01
134	135	101.10	-637.87	125.67	-276.66	0	-664.20	2.55	-73.39	2.55	-0.01	2.85	-0.02

105	106	13.70	-1083.95	92.84	480.59	0	-559.91	2.55	-381.39	2.55	-130.58	2.85	-195.83
106	106	13.70	-1083.95	97.42	481.53	0	-559.37	2.55	-381.55	2.55	-130.72	2.85	-196.04
106	107	16.44	-1083.95	167.22	118.95	0	-811.70	2.55	-165.69	2.55	-97.56	2.85	-146.30
107	107	16.44	-1083.95	172.84	119.58	0	-811.35	2.55	-165.80	2.55	-97.65	2.85	-146.45
107	108	19.18	-1083.95	242.61	-449.63	0	-1203.30	2.55	159.17	2.55	-43.62	2.85	-65.42
10	108	19.18	-2175.96	248.91	402.29	0	-935.95	2.55	-684.21	2.55	-401.92	2.85	-462.08
106	109	21.92	-2180.12	262.94	-265.86	0	-1347.45	2.55	-470.04	2.55	-316.17	2.85	-332.95
109	109	21.92	-3010.94	267.76	731.40	0	-895.00	2.55	-1023.63	2.55	-705.20	2.85	-782.81
109	110	24.66	-3018.68	301.28	-43.45	0	-1390.24	2.55	-718.97	2.55	-614.56	2.85	-645.90
110	110	24.66	-2743.59	305.79	221.38	0	-974.29	2.55	-868.94	2.55	-614.36	2.85	-645.67
110	10111	27.40	-2685.89	337.10	-699.83	0	-1555.14	2.55	-446.13	2.55	-495.07	2.85	-474.21
111	111	27.40	-2746.45	-349.99	-735.15	0	-1616.79	2.55	-433.10	2.55	-501.76	2.85	-480.85
111	112	30.45	-2828.32	-300.61	324.41	0	-926.99	2.55	-1011.90	2.55	-630.58	2.85	-663.50
112	112	30.45	-3291.99	-298.07	-108.06	0	-1609.14	2.55	-772.81	2.55	-634.88	2.85	-667.68
112	113	33.50	-3283.39	-259.58	728.59	0	-1046.29	2.55	-1195.08	2.55	-719.52	2.85	-795.72
113	113	33.50	-2598.35	-258.24	-638.34	0	-1931.39	2.55	-448.36	2.55	-279.58	2.85	-286.09
113	114	36.89	-2593.85	-240.52	204.16	0	-1388.91	2.55	-798.01	2.55	-376.71	2.85	-432.33
114	114	36.89	-2047.23	-242.89	-967.08	0	-2312.02	2.55	228.69	2.55	-51.58	2.85	-77.35
114	115	40.28	-2047.23	-163.16	-274.76	0	-1838.79	2.55	-154.92	2.55	-118.94	2.85	-178.37
115	115	40.28	-2047.23	-171.89	-273.96	0	-1838.33	2.55	-155.06	2.55	-119.06	2.85	-178.55
115	116	43.67	-2047.23	-86.21	163.65	0	-1543.73	2.55	-382.46	2.55	-163.75	2.85	-245.58
116	116	43.67	-2047.23	-93.06	165.61	0	-1542.61	2.55	-382.81	2.55	-164.05	2.85	-246.02
116	117	47.06	-2047.23	-6.75	334.73	0	-1434.48	2.55	-451.62	2.55	-184.01	2.85	-275.96
117	117	47.06	-2047.23	-10.53	337.43	0	-1432.94	2.55	-452.09	2.55	-184.42	2.85	-276.57
117	118	50.45	-2047.23	75.47	226.88	0	-1517.66	2.55	-360.36	2.55	-177.96	2.85	-266.88
118	118	50.45	-2047.23	75.46	229.89	0	-1515.94	2.55	-360.89	2.55	-178.41	2.85	-267.56
118	119	53.84	-2047.23	161.72	-172.03	0	-1800.17	2.55	-106.56	2.55	-143.77	2.85	-215.61
119	119	53.84	-2047.23	165.60	-169.06	0	-1798.47	2.55	-107.08	2.55	-144.22	2.85	-216.28
119	120	57.23	-2047.23	251.47	-876.34	0	-2290.19	2.55	312.35	2.55	-79.28	2.85	-118.90
120	120	57.23	-2676.81	258.92	409.86	0	-1284.98	2.55	-897.71	2.55	-423.63	2.85	-492.01
121	121	60.62	-2681.96	279.35	-525.56	0	-1876.74	2.55	-544.84	2.55	-310.86	2.85	-322.22
121	121	60.62	-3237.39	287.00	724.18	0	-1019.51	2.55	-1232.06	2.55	-699.73	2.85	-771.96
121	122	64.01	-3246.94	326.19	-308.88	0	-1701.70	2.55	-751.90	2.55	-589.09	2.85	-604.81
122	122	64.01	-2773.48	325.74	122.71	0	-1017.11	2.55	-987.89	2.55	-582.13	2.85	-597.91
122	10123	67.40	-2734.67	367.28	-1090.24	0	-1820.75	2.55	-350.16	2.55	-447.64	2.85	-401.21
123	123	67.40	-2755.67	-362.20	-1090.01	0	-1826.93	2.55	-356.51	2.55	-453.09	2.85	-406.67
123	124	70.45	-2813.72	-320.77	-3.94	0	-1130.63	2.55	-880.29	2.55	-587.16	2.85	-600.27
124	124	70.45	-3271.31	-318.15	-436.19	0	-1810.83	2.55	-639.42	2.55	-589.93	2.85	-602.93
124	125	73.50	-3262.72	-283.55	475.54	0	-1220.95	2.55	-1022.36	2.55	-693.28	2.85	-759.03
125	125	73.50	-2531.50	-287.05	-857.72	0	-2050.72	2.55	-289.18	2.55	-250.61	2.85	-246.83
125	126	76.26	-2527.83	-285.78	-124.02	0	-1593.56	2.55	-543.12	2.55	-342.39	2.85	-384.95
126	126	76.26	-1976.11	-290.84	-1263.55	0	-2482.33	2.55	486.96	2.55	-29.42	2.85	-44.13
126	127	79.02	-1976.11	-220.51	-557.91	0	-1993.11	2.55	73.05	2.55	-94.84	2.85	-142.23
127	127	79.02	-1976.11	-225.63	-558.94	0	-1993.70	2.55	73.23	2.55	-94.69	2.85	-142.00
127	128	81.78	-1976.11	-155.55	-32.69	0	-1628.90	2.55	-235.30	2.55	-143.50	2.85	-215.20
128	128	81.78	-1976.11	-161.04	-32.95	0	-1629.05	2.55	-235.25	2.55	-143.46	2.85	-215.14
128	129	84.54	-1976.11	-90.69	314.44	0	-1388.36	2.55	-438.51	2.55	-175.74	2.85	-263.55
129	129	84.54	-1976.11	-95.82	314.82	0	-1388.14	2.55	-438.57	2.55	-175.80	2.85	-263.64
129	130	87.30	-1976.11	-25.46	482.14	0	-1272.26	2.55	-536.31	2.55	-191.36	2.85	-286.99
130	130	87.30	-1976.11	-29.63	483.06	0	-1271.74	2.55	-536.47	2.55	-191.50	2.85	-287.19
130	131	90.06	-1976.11	40.72	467.73	0	-1282.13	2.55	-528.27	2.55	-189.97	2.85	-284.90
131	131	90.06	-1976.11	37.97	469.11	0	-1281.35	2.55	-528.51	2.55	-190.18	2.85	-285.21
131	132	92.82	-1976.11	108.20	267.27	0	-1420.21	2.55	-413.69	2.55	-170.96	2.85	-256.39
132	132	92.82	-1530.03	107.30	657.09	0	-781.39	2.55	-604.79	2.55	-171.22	2.85	-256.78
132	133	95.58	-1530.03	177.66	263.83	0	-1051.53	2.55	-382.47	2.55	-133.59	2.85	-200.34
132	133	95.58	-1083.95	178.92	675.35	0	-393.47	2.55	-600.27	2.55	-133.89	2.85	-200.79
133	134	98.34	-1083.95	249.27	84.43	0	-798.43	2.55	-269.38	2.55	-76.89	2.85	-115.31
134	134	98.34	-637.87	253.02	517.57	0	-121.19	2.55	-513.87	2.55	-77.22	2.85	-115.81
134	135	101.10	-637.87	226.79	-277.02	0	-664.41	2.55	-73.33	2.55	0.04	2.85	0.06



SIN GRADIENTE

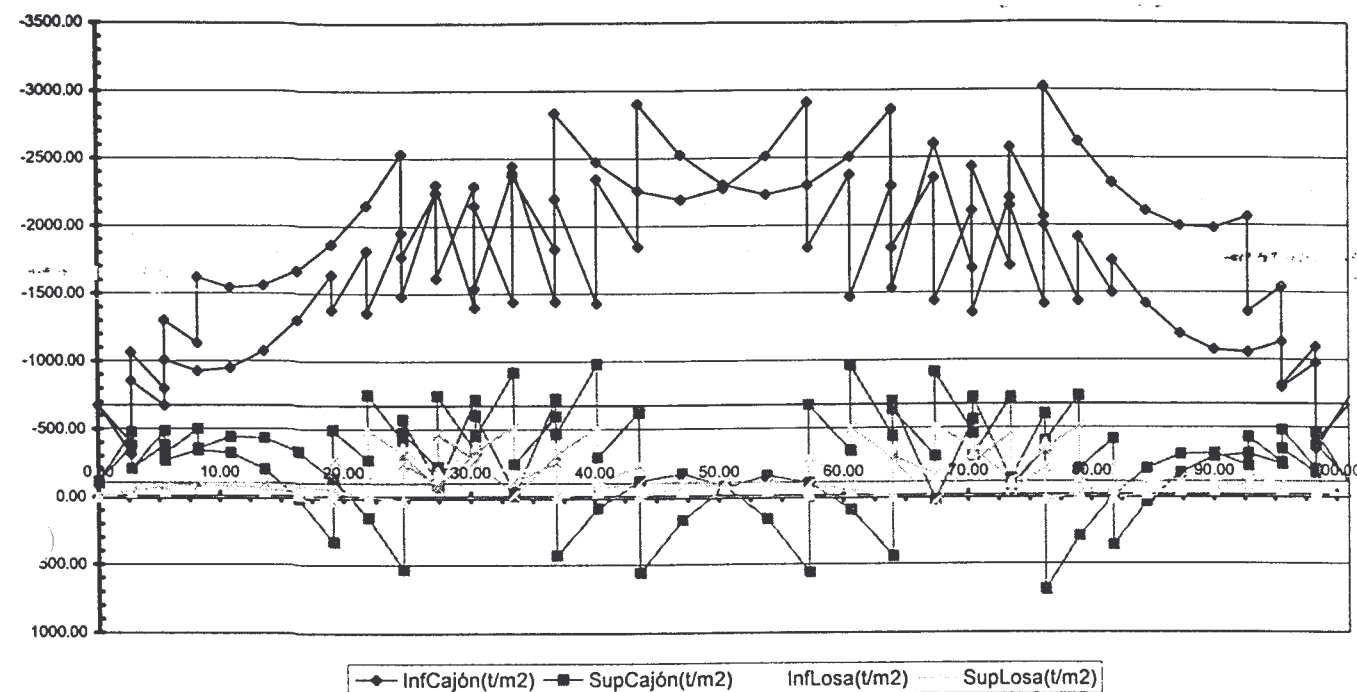
1: 1)PPC 2: 1)PPUF3 + 1: 1)PPUF2 + 1: 0.5; 1.05)PRETF1A.ISO.To + 1: 0.5; 1.05)PRETF1A.HIP.To + 1: 0.5; 1.05)PRETF1B.ISO.To + 1: 0.5; 1.05)PRETF1B.HIP.To + 1: 0.5; 1.1)PRETF3C.ISO.To + 1: 0.5; 1.1)PRETF3C.HIP.To + 1: 0.5; 1.1)PRE

Def. etc:

Barra	Nudo	X	N (T)	Vy (T)	Mz (Tm)	Fibra		Fibra		Fibra		Fibra		Fibra	
						y fibra	sig (t/m2)	y fibra	sig (t/m2)	y fibra	sig (t/m2)	y fibra	sig (t/m2)	y fibra	sig (t/m2)
1	1	0.00	-667.09	-288.54	-268.39	0	-675.63	2.55	-103.94	2.55	0.15	2.85	0.22		
1	2	2.74	-667.09	-151.32	212.05	0	-315.07	2.55	-477.32	2.55	-31.49	2.85	-47.22		
2	2	2.74	-1160.12	-151.73	-264.79	0	-1062.51	2.55	-207.45	2.55	-31.40	2.85	-47.10		
2	3	5.48	-1160.12	-104.17	85.81	0	-797.80	2.55	-485.21	2.55	-53.74	2.85	-80.60		
3	3	5.48	-1501.46	-105.26	-228.09	0	-1300.77	2.55	-318.72	2.55	-53.66	2.85	-80.48		
3	4	8.22	-1501.46	-57.72	-4.80	0	-1130.48	2.55	-501.31	2.55	-67.09	2.85	-100.61		
4	4	8.22	-1842.79	-59.47	-302.28	0	-1618.83	2.55	-355.22	2.55	-67.01	2.85	-100.49		
4	5	10.96	-1842.79	-11.90	-204.54	0	-1541.95	2.55	-442.94	2.55	-71.79	2.85	-107.66		
5	5	10.96	-1842.79	-14.28	-204.99	0	-1542.20	2.55	-442.86	2.55	-71.72	2.85	-107.56		
5	6	13.70	-1842.79	33.35	-231.11	0	-1557.76	2.55	-436.03	2.55	-68.10	2.85	-102.13		
6	6	13.70	-1842.79	30.47	-231.44	0	-1557.95	2.55	-435.98	2.55	-68.05	2.85	-102.06		
6	7	16.44	-1842.79	78.04	-380.11	0	-1665.21	2.55	-334.82	2.55	-56.24	2.85	-84.34		
7	7	16.44	-1842.79	74.75	-380.23	0	-1665.28	2.55	-334.80	2.55	-56.22	2.85	-84.31		
7	8	19.18	-1842.79	122.45	-650.25	0	-1863.56	2.55	-139.50	2.55	-36.39	2.85	-54.57		
8	8	19.18	-1842.79	118.91	-650.05	0	-1863.45	2.55	-139.54	2.55	-36.42	2.85	-54.61		
8	9	21.92	-1842.79	166.50	-1041.05	0	-2152.54	2.55	149.82	2.55	-8.62	2.85	-12.93		
9	9	21.92	-1842.79	163.18	-1040.43	0	-2152.18	2.55	149.71	2.55	-8.72	2.85	-13.07		
9	10	24.66	-1842.79	252.55	-1554.34	0	-2533.18	2.55	533.47	2.55	27.33	2.85	40.98		
	10	24.66	-2400.79	248.33	-555.55	0	-1773.31	2.55	-478.76	2.55	-243.60	2.85	-249.46		
	11	27.40	-2404.19	315.42	-1320.95	0	-2247.83	2.55	-221.21	2.55	-146.68	2.85	-103.69		
11	11	27.40	-2883.43	311.82	-345.05	0	-1614.04	2.55	-750.35	2.55	-458.03	2.85	-464.91		
11	12	30.45	-2890.46	393.44	-1417.88	0	-2294.79	2.55	-340.22	2.55	-329.79	2.85	-271.69		
12	12	30.45	-2379.83	392.39	-938.39	0	-1540.54	2.55	-605.28	2.55	-325.74	2.85	-267.88		
12	10013	33.50	-2339.17	474.86	-2294.62	0	-2395.57	2.55	-40.84	2.55	-155.24	2.85	-17.41		
13	13	33.50	-2356.75	-507.28	-2330.63	0	-2447.16	2.55	-12.15	2.55	-150.36	2.85	-12.72		
13	14	36.89	-2437.72	-401.18	-743.29	0	-1442.85	2.55	-728.12	2.55	-352.14	2.85	-304.89		
14	14	36.89	-2969.75	-399.99	-1219.80	0	-2201.83	2.55	-470.00	2.55	-362.16	2.85	-314.89		
14	15	40.28	-2961.93	-306.53	-24.79	0	-1427.91	2.55	-978.97	2.55	-497.66	2.85	-519.11		
15	15	40.28	-2524.31	-299.92	-1268.18	0	-2349.72	2.55	-296.56	2.55	-134.07	2.85	-98.62		
15	16	43.67	-2520.62	-181.51	-487.53	0	-1846.65	2.55	-622.59	2.55	-223.93	2.85	-233.85		
16	16	43.67	-2256.94	-177.98	-1570.03	0	-2901.15	2.55	557.52	2.55	-11.54	2.85	-17.30		
16	17	47.06	-2256.94	-118.18	-1067.28	0	-2525.44	2.55	172.15	2.55	-45.39	2.85	-68.08		
17	17	47.06	-2256.94	-116.30	-1068.48	0	-2526.13	2.55	172.36	2.55	-45.21	2.85	-67.81		
17	18	50.45	-2256.94	-57.38	-774.08	0	-2302.62	2.55	-64.98	2.55	-63.40	2.85	-95.08		
18	18	50.45	-2256.94	-57.54	-775.48	0	-2303.42	2.55	-64.73	2.55	-63.19	2.85	-94.76		
18	19	53.84	-2256.94	1.40	-680.30	0	-2226.90	2.55	-155.63	2.55	-67.07	2.85	-100.58		
19	19	53.84	-2256.94	-0.84	-681.67	0	-2227.68	2.55	-155.39	2.55	-66.86	2.85	-100.27		
19	20	57.23	-2256.94	59.38	-782.73	0	-2296.46	2.55	-100.39	2.55	-56.89	2.85	-85.32		
20	20	57.23	-2256.94	55.10	-783.77	0	-2297.05	2.55	-100.21	2.55	-56.73	2.85	-85.08		
20	21	60.62	-2256.94	114.31	-1070.69	0	-2505.22	2.55	98.89	2.55	-34.47	2.85	-51.70		
21	21	60.62	-2256.94	108.59	-1071.11	0	-2505.46	2.55	98.96	2.55	-34.41	2.85	-51.60		
21	22	64.01	-2256.94	173.68	-1545.40	0	-2853.86	2.55	442.40	2.55	0.37	2.85	0.55		
	22	64.01	-2633.63	175.96	-379.93	0	-1831.07	2.55	-636.08	2.55	-274.81	2.85	-295.60		
	23	67.40	-2637.85	295.74	-1184.84	0	-2352.07	2.55	-292.84	2.55	-183.29	2.85	-157.80		
23	23	67.40	-2925.08	293.88	-34.43	0	-1438.07	2.55	-913.75	2.55	-494.10	2.85	-518.51		
23	24	70.45	-2932.12	378.02	-1053.17	0	-2104.25	2.55	-458.98	2.55	-381.64	2.85	-348.96		
24	24	70.45	-2427.58	377.82	-574.03	0	-1352.03	2.55	-725.81	2.55	-379.10	2.85	-346.64		
24	10025	73.50	-2371.52	461.97	-1898.73	0	-2200.72	2.55	-108.14	2.55	-217.01	2.85	-110.77		
25	25	73.50	-2337.67	-450.10	-1857.81	0	-2141.45	2.55	-132.81	2.55	-218.43	2.85	-112.38		
25	26	76.26	-2392.49	-367.13	-686.09	0	-1415.94	2.55	-602.09	2.55	-374.24	2.85	-338.98		
26	26	76.26	-2808.38	-364.02	-1050.81	0	-2000.72	2.55	-405.85	2.55	-383.93	2.85	-348.79		
26	27	79.02	-2802.00	-289.04	-153.53	0	-1435.42	2.55	-734.71	2.55	-493.03	2.85	-513.23		
27	27	79.02	-2060.23	-285.59	-1117.27	0	-1909.58	2.55	-200.16	2.55	-129.43	2.85	-92.81		
27	28	81.78	-2057.23	-187.25	-445.33	0	-1495.89	2.55	-416.59	2.55	-215.87	2.85	-222.83		
28	28	81.78	-1273.90	-184.50	-1055.86	0	-1739.02	2.55	360.46	2.55	16.79	2.85	25.19		
28	29	84.54	-1273.90	-136.56	-612.79	0	-1415.31	2.55	45.50	2.55	-16.52	2.85	-24.78		
29	29	84.54	-1273.90	-133.74	-612.75	0	-1415.29	2.55	45.49	2.55	-16.53	2.85	-24.79		
29	30	87.30	-1273.90	-85.81	-309.73	0	-1193.57	2.55	-171.01	2.55	-39.16	2.85	-58.73		
30	30	87.30	-1273.90	-83.30	-310.02	0	-1193.74	2.55	-170.96	2.55	-39.11	2.85	-58.66		
30	31	90.06	-1273.90	-35.36	-146.21	0	-1073.54	2.55	-289.14	2.55	-51.19	2.85	-76.76		
31	31	90.06	-1273.90	-33.47	-146.79	0	-1073.87	2.55	-289.04	2.55	-51.10	2.85	-76.63		
31	32	92.82	-1273.90	14.48	-120.56	0	-1054.26	2.55	-309.16	2.55	-52.86	2.85	-79.28		
32	32	92.82	-1273.90	15.49	-121.38	0	-1054.73	2.55	-309.02	2.55	-52.74	2.85	-79.09		
32	33	95.58	-1273.90	63.41	-230.25	0	-1134.29	2.55	-231.55	2.55	-44.57	2.85	-66.83		
33	33	95.58	-1046.35	63.29	-22.37	0	-799.77	2.55	-342.30	2.55	-44.41	2.85	-66.60		
33	34	98.34	-1046.35	111.25	-263.14	0	-976.69	2.55	-167.78	2.55	-26.78	2.85	-40.17		
34	34	98.34	-667.09	109.73	102.08	0	-402.62	2.55	-375.10	2.55	-26.61	2.85	-39.91		
	35	101.10	-667.09	197.81	-267.13	0	-674.91	2.55	-104.16	2.55	-0.04	2.85	-0.06		
	101	0.00	-667.09	-207.62	-267.37	0	-675.06	2.55	-104.12	2.55	-0.01	2.85	-0.01		
101	102	2.74	-667.09	-115.73	118.31	0	-394.62	2.55	-373.82	2.55	-29.64	2.85	-44.45		
102	102	2.74	-970.49	-115.94	-174.06	0	-853.97	2.55	-207.93	2.55	-29.75	2.85	-44.61		
102	103	5.48	-970.49	-66.09	75.30	0	-673.08	2.55	-380.89	2.55	-49.10	2.85	-73.64		
103	103	5.48	-1198.05	-65.46	-132.92	0	-1007.80	2.55	-270.08	2.55	-49.20	2.85	-73.79		
103	104	8.22	-1198.05	-15.56	-21.93	0	-927.63	2.55	-345.93	2.55	-57.98	2.85	-86.95		
104	104	8.22	-1198.05	-14.06	-21.34	0	-927.29	2.55	-346.04	2.55	-58.07	2.85	-87.08		
104	105	10.96	-1198.05	35.85	-51.18	0	-949.24	2.55	-324.34	2.55	-55.89	2.85	-83.82		
105	105	10.96	-1198.05	38.06	-50.71	0	-948.97	2.55	-324.43	2.55	-55.96	2.85	-83.93		

105	106	13.70	-1198.05	87.92	-223.32	0	-1074.14	2.55	-204.83	2.55	-42.55	2.85	-63.80
106	106	13.70	-1198.05	90.70	-223.00	0	-1073.96	2.55	-204.89	2.55	-42.59	2.85	-63.88
106	107	16.44	-1198.05	140.59	-539.89	0	-1303.22	2.55	12.84	2.55	-17.70	2.85	-26.55
107	107	16.44	-1198.05	143.79	-539.79	0	-1303.16	2.55	12.82	2.55	-17.72	2.85	-26.57
107	108	19.18	-1198.05	193.68	-1002.13	0	-1637.17	2.55	328.91	2.55	18.82	2.85	28.22
108	108	19.18	-2091.52	197.04	-305.45	0	-1377.90	2.55	-496.77	2.55	-255.16	2.85	-267.56
108	109	21.92	-2094.92	302.72	-1017.39	0	-1814.13	2.55	-274.68	2.55	-162.62	2.85	-128.34
109	109	21.92	-2715.58	307.47	-147.73	0	-1357.21	2.55	-756.34	2.55	-430.83	2.85	-496.29
109	110	24.66	-2721.90	386.06	-1094.31	0	-1949.91	2.55	-421.12	2.55	-363.96	2.85	-320.21
110	110	24.66	-2384.59	390.97	-802.39	0	-1480.62	2.55	-576.74	2.55	-355.04	2.85	-311.21
110	10111	27.40	-2337.38	477.90	-2034.20	0	-2241.64	2.55	-102.56	2.55	-191.67	2.85	-72.28
111	111	27.40	-2378.53	-496.07	-2074.84	0	-2302.95	2.55	-80.14	2.55	-192.17	2.85	-72.62
111	112	30.45	-2445.51	-407.16	-643.67	0	-1396.89	2.55	-719.68	2.55	-373.14	2.85	-335.38
112	112	30.45	-2949.43	-404.39	-1122.78	0	-2148.91	2.55	-452.66	2.55	-375.52	2.85	-337.55
112	113	33.50	-2942.40	-315.28	-30.14	0	-1440.65	2.55	-920.32	2.55	-499.12	2.85	-523.82
113	113	33.50	-2535.77	-314.64	-1275.39	0	-2372.84	2.55	-246.90	2.55	-143.25	2.85	-110.90
113	114	36.89	-2532.09	-185.91	-429.48	0	-1828.66	2.55	-597.39	2.55	-241.10	2.85	-258.12
114	114	36.89	-2263.01	-182.00	-1507.49	0	-2834.75	2.55	426.85	2.55	-4.65	2.85	-6.97
114	115	40.28	-2263.01	-113.79	-1010.07	0	-2473.60	2.55	80.79	2.55	-43.12	2.85	-64.66
115	115	40.28	-2263.01	-118.47	-1010.02	0	-2473.57	2.55	80.78	2.55	-43.12	2.85	-64.67
115	116	43.67	-2263.01	-56.36	-714.05	0	-2260.70	2.55	-118.42	2.55	-66.96	2.85	-100.41
116	116	43.67	-2263.01	-60.06	-713.32	0	-2260.28	2.55	-118.54	2.55	-67.07	2.85	-100.58
116	117	47.06	-2263.01	3.06	-615.00	0	-2193.51	2.55	-171.58	2.55	-76.83	2.85	-115.23
117	117	47.06	-2263.01	1.05	-613.79	0	-2192.82	2.55	-171.79	2.55	-77.02	2.85	-115.50
117	118	50.45	-2263.01	62.86	-721.95	0	-2277.17	2.55	-77.14	2.55	-71.39	2.85	-107.06
118	118	50.45	-2263.01	62.83	-720.54	0	-2276.37	2.55	-77.39	2.55	-71.60	2.85	-107.38
118	119	53.84	-2263.01	125.14	-1038.48	0	-2513.74	2.55	165.55	2.55	-50.08	2.85	-75.10
119	119	53.84	-2263.01	127.31	-1037.14	0	-2512.97	2.55	165.32	2.55	-50.28	2.85	-75.40
119	120	57.23	-2263.01	189.39	-1573.60	0	-2908.34	2.55	558.10	2.55	-11.55	2.85	-17.33
120	120	57.23	-2640.21	193.49	-402.25	0	-1834.01	2.55	-673.33	2.55	-267.63	2.85	-283.97
120	121	60.62	-2644.43	321.07	-1244.11	0	-2372.16	2.55	-336.60	2.55	-168.70	2.85	-135.08
121	121	60.62	-2960.96	329.08	-94.63	0	-1467.49	2.55	-966.16	2.55	-486.92	2.85	-503.13
121	122	64.01	-2968.78	428.39	-1374.99	0	-2290.10	2.55	-442.08	2.55	-338.58	2.85	-279.67
122	122	64.01	-2442.28	430.54	-897.76	0	-1532.37	2.55	-701.98	2.55	-330.10	2.85	-271.25
122	10123	67.40	-2367.89	542.09	-2588.12	0	-2597.41	2.55	30.22	2.55	-114.52	2.85	42.47
123	123	67.40	-2379.57	-515.40	-2590.09	0	-2602.04	2.55	27.06	2.55	-117.23	2.85	39.91
123	124	70.45	-2427.06	-428.24	-1110.97	0	-1678.56	2.55	-562.53	2.55	-307.79	2.85	-239.76
124	124	70.45	-2937.71	-431.33	-1590.55	0	-2432.87	2.55	-297.45	2.55	-311.84	2.85	-243.56
124	125	73.50	-2930.68	-339.60	-423.33	0	-1697.85	2.55	-725.70	2.55	-454.08	2.85	-457.78
125	125	73.50	-2484.22	-340.85	-1633.04	0	-2573.22	2.55	-70.31	2.55	-97.82	2.85	-44.53
125	126	76.26	-2481.21	-222.74	-803.67	0	-2061.74	2.55	-341.24	2.55	-204.19	2.85	-204.44
126	126	76.26	-2184.13	-224.34	-1846.71	0	-3021.54	2.55	688.38	2.55	25.26	2.85	37.89
126	127	79.02	-2184.13	-174.12	-1296.83	0	-2618.89	2.55	294.48	2.55	-15.66	2.85	-23.48
127	127	79.02	-2184.13	-176.50	-1297.72	0	-2619.40	2.55	294.63	2.55	-15.52	2.85	-23.28
127	128	81.78	-2184.13	-126.13	-880.20	0	-2314.37	2.55	-2.14	2.55	-46.92	2.85	-70.37
128	128	81.78	-2184.13	-129.00	-880.61	0	-2314.60	2.55	-2.07	2.55	-46.86	2.85	-70.28
128	129	84.54	-2184.13	-78.79	-593.87	0	-2106.28	2.55	-202.00	2.55	-68.97	2.85	-103.43
129	129	84.54	-2184.13	-81.71	-593.90	0	-2106.29	2.55	-202.00	2.55	-68.97	2.85	-103.43
129	130	87.30	-2184.13	-31.48	-437.74	0	-1994.57	2.55	-305.10	2.55	-81.82	2.85	-122.71
130	130	87.30	-2184.13	-34.11	-437.43	0	-1994.40	2.55	-305.15	2.55	-81.87	2.85	-122.78
130	131	90.06	-2184.13	16.10	-412.61	0	-1979.71	2.55	-311.32	2.55	-85.35	2.85	-128.00
131	131	90.06	-2184.13	14.06	-412.06	0	-1979.40	2.55	-311.42	2.55	-85.44	2.85	-128.13
131	132	92.82	-2184.13	64.35	-520.20	0	-2062.66	2.55	-220.37	2.55	-79.30	2.85	-118.93
132	132	92.82	-1691.09	63.08	-90.51	0	-1357.26	2.55	-431.38	2.55	-79.42	2.85	-119.10
132	133	95.58	-1691.09	113.29	-333.91	0	-1539.79	2.55	-242.69	2.55	-63.32	2.85	-94.96
133	133	95.58	-1198.05	113.00	119.59	0	-813.23	2.55	-483.18	2.55	-63.46	2.85	-95.16
133	134	98.34	-1198.05	163.20	-261.58	0	-1096.45	2.55	-196.43	2.55	-37.02	2.85	-55.52
134	134	98.34	-705.01	164.02	215.67	0	-348.76	2.55	-466.39	2.55	-37.17	2.85	-55.74
134	135	101.10	-705.01	312.64	-307.22	0	-734.94	2.55	-80.86	2.55	0.20	2.85	0.31

GRÁFICO DE TENSIONES



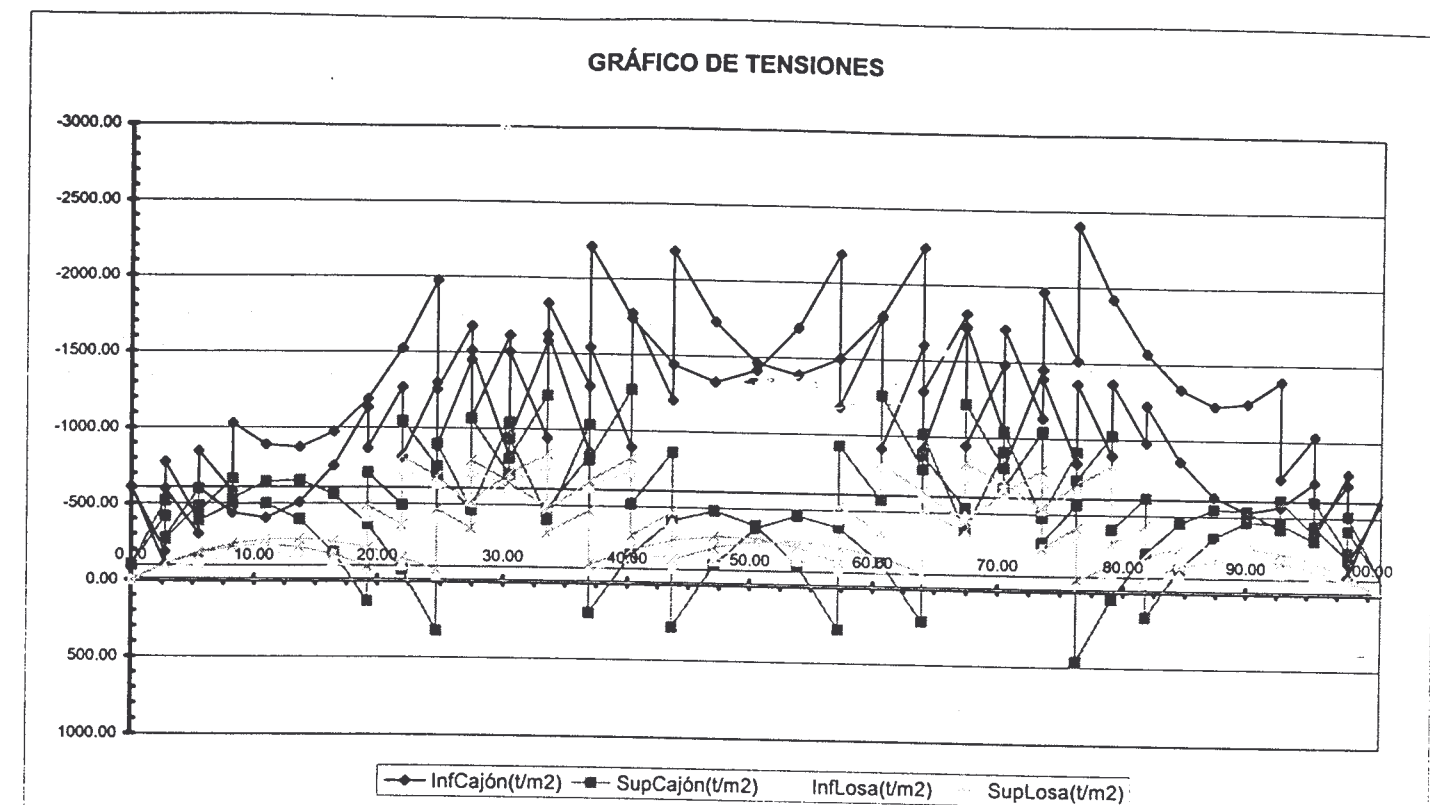
CON GRADIENTE

[1; 1]PPCF1 + [1; 1]PPLF3 + [1; 1]PPLF2 + [.85; 1.05]PRETF1A.ISO.To + [.85; 1.05]PRETF1A.HIP.To + [.85; 1.05]PRETF1B.ISO.To + [.85; 1.05]PRETF1B.HIP.To + [.8; 1.1]PRETF3C.ISO.To + [.8; 1.1]PRETF3C.HIP.To + [.8; 1.1]PRE

Coef. esc:

Barra	Nudo	X	N (T)	Vy (T)	Mz (Tm)	Fibra y fibra	InfCajón sig (t/m2)	Fibra y fibra	SupCajón sig (t/m2)	Fibra y fibra	InfLosa sig (t/m2)	Fibra y fibra	SupLosa sig (t/m2)
1	1	0.00	-603.55	-216.79	-241.95	0	-610.78	2.55	-94.19	2.55	0.00	2.85	0.00
1	2	2.74	-603.55	-238.39	501.16	0	-98.30	2.55	-521.05	2.55	-70.17	2.85	-105.23
2	2	2.74	-1049.64	-237.02	68.87	0	-775.06	2.55	-276.72	2.55	-69.96	2.85	-104.91
2	3	5.48	-1049.64	-170.85	627.67	0	-389.48	2.55	-598.40	2.55	-122.62	2.85	-183.90
3	3	5.48	-1358.46	-171.07	342.82	0	-845.03	2.55	-447.62	2.55	-122.42	2.85	-183.59
3	4	8.22	-1358.46	-104.92	720.93	0	-584.28	2.55	-664.76	2.55	-158.13	2.85	-237.15
4	4	8.22	-1667.29	-106.62	451.01	0	-1026.57	2.55	-532.44	2.55	-157.94	2.85	-236.87
4	5	10.96	-1667.29	-40.51	652.63	0	-888.27	2.55	-645.76	2.55	-177.33	2.85	-265.94
5	5	10.96	-1667.29	-43.59	651.52	0	-888.90	2.55	-645.57	2.55	-177.17	2.85	-265.69
5	6	13.70	-1667.29	22.47	680.46	0	-870.87	2.55	-655.77	2.55	-180.80	2.85	-271.15
6	6	13.70	-1667.29	18.11	679.57	0	-871.38	2.55	-655.62	2.55	-180.67	2.85	-270.95
6	7	16.44	-1667.29	84.28	539.30	0	-971.64	2.55	-563.30	2.55	-169.08	2.85	-253.57
7	7	16.44	-1667.29	78.92	538.75	0	-971.95	2.55	-563.21	2.55	-169.00	2.85	-253.44
7	8	19.18	-1667.29	144.93	231.96	0	-1188.98	2.55	-368.83	2.55	-142.59	2.85	-213.84
8	8	19.18	-1667.29	139.00	231.90	0	-1189.01	2.55	-368.82	2.55	-142.58	2.85	-213.82
8	9	21.92	-1667.29	205.04	-239.48	0	-1521.70	2.55	-72.73	2.55	-101.64	2.85	-152.42
9	9	21.92	-1667.29	199.02	-238.89	0	-1521.36	2.55	-72.83	2.55	-101.73	2.85	-152.56
9	10	24.66	-1667.29	223.35	-873.18	0	-1968.75	2.55	324.68	2.55	-46.51	2.85	-69.75
10	10	24.66	-2490.85	218.20	253.03	0	-1256.54	2.55	-704.63	2.55	-410.32	2.85	-469.47
10	11	27.40	-2495.01	263.71	-407.79	0	-1671.68	2.55	-465.66	2.55	-329.35	2.85	-347.52
11	11	27.40	-3217.97	258.88	683.90	0	-1671.68	2.55	-465.66	2.55	-329.35	2.85	-347.52
11	12	30.45	-3226.56	297.35	-152.99	0	-1612.95	2.55	-699.70	2.55	-624.80	2.85	-796.09
12	12	30.45	-2769.59	293.49	279.13	0	-933.02	2.55	-940.73	2.55	-622.17	2.85	-654.04
12	10013	33.50	-2719.89	336.02	-718.24	0	-1580.82	2.55	-436.55	2.55	-503.40	2.85	-482.31
13	13	33.50	-2721.61	-347.34	-753.02	0	-1624.49	2.55	-405.94	2.55	-495.00	2.85	-473.91
13	14	36.89	-2772.60	-306.36	403.48	0	-856.71	2.55	-1037.30	2.55	-624.15	2.85	-661.03
14	14	36.89	-3250.59	-309.34	-27.67	0	-1542.40	2.55	-802.75	2.55	-632.34	2.85	-669.20
14	15	40.28	-3241.03	-271.38	949.73	0	-891.98	2.55	-1273.01	2.55	-734.61	2.85	-823.80
15	15	40.28	-2537.60	-264.50	-415.09	0	-1770.34	2.55	-521.14	2.55	-290.25	2.85	-309.90
15	16	43.67	-2533.10	-242.32	473.02	0	-1205.78	2.55	-865.79	2.55	-396.08	2.85	-469.20
16	16	43.67	-2042.26	-235.26	-704.52	0	-2187.85	2.55	281.57	2.55	-104.62	2.85	-156.90
16	17	47.06	-2042.26	-153.92	-44.70	0	-1723.61	2.55	-128.09	2.55	-162.61	2.85	-243.86
17	17	47.06	-2042.26	-149.99	-47.47	0	-1725.19	2.55	-127.60	2.55	-162.19	2.85	-243.23
17	18	50.45	-2042.26	-68.22	322.38	0	-1459.67	2.55	-374.89	2.55	-192.20	2.85	-288.24
18	18	50.45	-2042.26	-68.10	319.29	0	-1461.43	2.55	-374.35	2.55	-191.74	2.85	-287.54
18	19	53.84	-2042.26	13.38	412.23	0	-1387.18	2.55	-461.56	2.55	-195.74	2.85	-293.55
19	19	53.84	-2042.26	9.62	409.20	0	-1388.91	2.55	-461.03	2.55	-195.29	2.85	-292.87
19	20	57.23	-2042.26	91.37	238.08	0	-1498.60	2.55	-390.44	2.55	-175.22	2.85	-262.78
20	20	57.23	-2042.26	83.97	235.54	0	-1500.05	2.55	-390.00	2.55	-174.84	2.85	-262.21
20	21	60.62	-2042.26	165.14	-186.74	0	-1786.35	2.55	-163.85	2.55	-132.65	2.85	-198.94
21	21	60.62	-2042.26	155.09	-188.24	0	-1787.20	2.55	-163.59	2.55	-132.43	2.85	-198.60
21	22	64.01	-2042.26	230.53	-846.10	0	-2241.21	2.55	215.36	2.55	-70.46	2.85	-105.67
22	22	64.01	-2722.09	225.90	432.08	0	-1297.68	2.55	-876.03	2.55	-444.18	2.85	-516.98
22	23	67.40	-2727.23	245.21	-354.88	0	-1808.73	2.55	-536.21	2.55	-355.60	2.85	-383.48
23	23	67.40	-3266.20	244.26	896.11	0	-945.84	2.55	-1218.71	2.55	-740.41	2.85	-829.26
23	24	70.45	-3274.82	281.52	106.59	0	-1481.86	2.55	-804.62	2.55	-662.89	2.85	-711.90
24	24	70.45	-2811.13	282.02	538.99	0	-799.75	2.55	-1043.69	2.55	-658.57	2.85	-707.69
24	10025	73.50	-2742.62	329.25	-450.68	0	-1453.76	2.55	-481.07	2.55	-543.74	2.85	-544.30
25	25	73.50	-2686.43	-313.48	-415.24	0	-1393.35	2.55	-495.44	2.55	-538.20	2.85	-538.81
25	26	76.26	-2753.43	-285.12	459.87	0	-840.55	2.55	-916.32	2.55	-652.46	2.85	-701.54
26	26	76.26	-3100.29	-281.76	129.21	0	-1361.19	2.55	-729.82	2.55	-653.54	2.85	-702.68
26	27	79.02	-3092.50	-247.87	853.80	0	-893.88	2.55	-1027.94	2.55	-736.27	2.85	-827.75
27	27	79.02	-2113.65	-244.04	-258.59	0	-1367.48	2.55	-409.68	2.55	-291.74	2.85	-313.71
27	28	81.78	-2109.97	-227.85	368.09	0	-979.39	2.55	-617.96	2.55	-371.19	2.85	-433.33
28	28	81.78	-1152.58	-222.45	-378.42	0	-1227.02	2.55	166.21	2.55	-63.44	2.85	-95.14
28	29	84.54	-1152.58	-155.88	143.72	0	-861.20	2.55	-152.77	2.55	-110.06	2.85	-165.05
29	29	84.54	-1152.58	-150.82	143.35	0	-861.41	2.55	-152.71	2.55	-110.00	2.85	-164.96
29	30	87.30	-1152.58	-84.22	467.75	0	-630.47	2.55	-363.10	2.55	-137.24	2.85	-205.82
30	30	87.30	-1152.58	-80.06	466.89	0	-630.96	2.55	-362.95	2.55	-137.11	2.85	-205.62
30	31	90.06	-1152.58	-13.47	595.96	0	-533.52	2.55	-465.17	2.55	-145.34	2.85	-217.97
31	31	90.06	-1152.58	-10.61	594.67	0	-534.26	2.55	-464.94	2.55	-145.15	2.85	-217.67
31	32	92.82	-1152.58	55.96	532.13	0	-568.20	2.55	-459.63	2.55	-134.93	2.85	-202.35
32	32	92.82	-1152.58	57.14	530.55	0	-569.10	2.55	-459.35	2.55	-134.69	2.85	-201.99
32	33	95.58	-1152.58	123.76	280.96	0	-731.82	2.55	-347.32	2.55	-106.71	2.85	-160.02
33	33	95.58	-946.69	122.98	468.14	0	-429.68	2.55	-447.36	2.55	-106.43	2.85	-159.61
33	34	98.34	-946.69	189.59	36.76	0	-718.18	2.55	-229.53	2.55	-61.48	2.85	-92.19
34	34	98.34	-603.55	186.69	366.26	0	-199.32	2.55	-416.95	2.55	-61.18	2.85	-91.75
34	35	101.10	-603.55	209.80	-240.59	0	-610.01	2.55	-94.43	2.55	-0.20	2.85	-0.31
101	101	0.00	-603.55	-222.35	-240.97	0	-610.23	2.55	-94.37	2.55	-0.15	2.85	-0.22
101	102	2.74	-603.55	-197.91	396.60	0	-183.27	2.55	-418.15	2.55	-66.33	2.85	-99.47
102	102	2.74	-878.07	-198.66	132.66	0	-598.55	2.55	-268.17	2.55	-66.52	2.85	-99.75
102	103	5.48	-878.07	-128.82	581.30	0	-301.12	2.55	-485.99	2.55	-114.50	2.85	-171.71
103	103	5.48	-1083.95	-128.16	393.51	0	-603.61	2.55	-385.84	2.55	-114.68	2.85	-171.99
103	104	8.22	-1083.95	-58.39	648.06	0	-438.08	2.55	-496.94	2.55	-143.84	2.85	-215.72
104	104	8.22	-1083.95	-56.44	650.23	0	-437.42	2.55	-497.15	2.55	-144.02	2.85	-215.98
104	105	10.96	-1083.95	13.34	709.25	0	-405.75	2.55	-500.94	2.55	-153.84	2.85	-230.70
105	105	10.96	-1083.95	16.59	710.34	0	-405.13	2.55	-501.13	2.55	-154.00	2.85	-230.94

105	106	13.70	-1083.95	86.40	569.18	0	-509.42	2.55	-396.94	2.55	-143.93	2.85	-215.84
106	106	13.70	-1083.95	90.87	570.07	0	-508.91	2.55	-397.09	2.55	-144.06	2.85	-216.04
106	107	16.44	-1083.95	160.67	225.43	0	-751.02	2.55	-184.37	2.55	-113.60	2.85	-170.36
107	107	16.44	-1083.95	166.13	226.01	0	-750.69	2.55	-184.48	2.55	-113.69	2.85	-170.49
107	108	19.18	-1083.95	235.89	-324.79	0	-1132.15	2.55	137.26	2.55	-62.43	2.85	-93.62
108	108	19.18	-2175.96	241.98	527.09	0	-864.82	2.55	-706.12	2.55	-420.72	2.85	-490.27
108	109	21.92	-2180.12	256.01	-122.07	0	-1265.50	2.55	-495.28	2.55	-337.83	2.85	-365.43
109	109	21.92	-3010.94	260.59	875.17	0	-813.06	2.55	-1048.87	2.55	-726.85	2.85	-815.29
109	110	24.66	-3018.68	294.10	119.98	0	-1297.10	2.55	-747.66	2.55	-639.18	2.85	-682.82
110	110	24.66	-2743.59	298.35	384.80	0	-881.15	2.55	-897.63	2.55	-638.98	2.85	-682.59
110	10111	27.40	-2685.89	329.66	-516.02	0	-1450.39	2.55	-478.39	2.55	-522.76	2.85	-515.73
111	111	27.40	-2746.45	-349.30	-551.31	0	-1512.02	2.55	-465.37	2.55	-529.45	2.85	-522.39
111	112	30.45	-2828.32	-299.92	506.15	0	-823.41	2.55	-1043.79	2.55	-657.96	2.85	-704.56
112	112	30.45	-3291.99	-297.65	73.74	0	-1505.53	2.55	-804.72	2.55	-662.27	2.85	-708.76
112	113	33.50	-3283.39	-259.15	909.09	0	-943.42	2.55	-1226.76	2.55	-746.71	2.85	-836.50
113	113	33.50	-2598.35	-258.02	-457.77	0	-1828.47	2.55	-480.06	2.55	-306.79	2.85	-326.88
113	114	36.89	-2523.85	-240.30	384.00	0	-1286.41	2.55	-829.57	2.55	-403.80	2.85	-472.96
114	114	36.89	-2047.23	-242.83	-787.17	0	-2209.48	2.55	197.12	2.55	-78.68	2.85	-118.00
114	115	40.28	-2047.23	-163.10	-95.05	0	-1736.36	2.55	-186.46	2.55	-146.01	2.85	-218.97
115	115	40.28	-2047.23	-171.94	-94.17	0	-1735.87	2.55	-186.61	2.55	-146.14	2.85	-219.16
115	116	43.67	-2047.23	-86.26	343.60	0	-1441.17	2.55	-414.05	2.55	-190.86	2.85	-286.23
116	116	43.67	-2047.23	-93.17	345.63	0	-1440.01	2.55	-414.40	2.55	-191.17	2.85	-286.69
116	117	47.06	-2047.23	-6.87	515.14	0	-1331.66	2.55	-483.28	2.55	-211.19	2.85	-316.72
117	117	47.06	-2047.23	-10.67	517.90	0	-1330.09	2.55	-483.76	2.55	-211.60	2.85	-317.34
117	118	50.45	-2047.23	75.33	407.84	0	-1414.52	2.55	-392.12	2.55	-205.22	2.85	-307.76
118	118	50.45	-2047.23	75.31	410.92	0	-1412.77	2.55	-392.66	2.55	-205.68	2.85	-308.46
118	119	53.84	-2047.23	161.58	9.48	0	-1696.72	2.55	-138.41	2.55	-171.11	2.85	-256.61
119	119	53.84	-2047.23	165.49	12.52	0	-1694.99	2.55	-138.95	2.55	-171.57	2.85	-257.30
11	120	57.23	-2047.23	251.35	-694.38	0	-2186.49	2.55	280.41	2.55	-106.70	2.85	-160.01
12	120	57.23	-2676.81	258.87	591.89	0	-1181.24	2.55	-929.66	2.55	-451.06	2.85	-533.13
120	121	60.62	-2681.96	279.30	-343.36	0	-1772.91	2.55	-576.82	2.55	-338.31	2.85	-363.38
121	121	60.62	-3237.39	287.06	906.44	0	-915.63	2.55	-1264.05	2.55	-727.18	2.85	-813.14
121	122	64.01	-3246.94	326.25	-126.82	0	-1597.94	2.55	-783.86	2.55	-616.52	2.85	-645.94
122	122	64.01	-2773.48	325.96	304.85	0	-913.31	2.55	-1019.86	2.55	-609.57	2.85	-639.06
122	10123	67.40	-2734.67	367.49	-908.84	0	-1717.37	2.55	-382.00	2.55	-474.96	2.85	-442.19
123	123	67.40	-2755.67	-357.88	-908.53	0	-1723.50	2.55	-388.36	2.55	-480.43	2.85	-447.67
123	124	70.45	-2813.72	-316.45	164.36	0	-1034.71	2.55	-909.83	2.55	-612.52	2.85	-638.29
124	124	70.45	-3271.31	-313.57	-267.83	0	-1714.87	2.55	-668.96	2.55	-615.29	2.85	-640.97
124	125	73.50	-3262.72	-278.96	629.92	0	-1132.97	2.55	-1049.45	2.55	-716.54	2.85	-793.91
125	125	73.50	-2531.50	-282.19	-703.31	0	-1962.71	2.55	-316.28	2.55	-273.87	2.85	-281.72
125	126	76.26	-2527.83	-280.92	16.98	0	-1513.20	2.55	-567.87	2.55	-363.64	2.85	-416.80
126	126	76.26	-1976.11	-285.71	-1122.55	0	-2401.97	2.55	462.22	2.55	-50.66	2.85	-75.98
126	127	79.02	-1976.11	-215.38	-431.06	0	-1920.82	2.55	50.79	2.55	-113.95	2.85	-170.89
127	127	79.02	-1976.11	-220.25	-432.11	0	-1921.42	2.55	50.97	2.55	-113.79	2.85	-170.65
127	128	81.78	-1976.11	-150.18	79.30	0	-1565.08	2.55	-254.95	2.55	-160.37	2.85	-240.50
128	128	81.78	-1976.11	-155.45	79.01	0	-1565.24	2.55	-254.90	2.55	-160.32	2.85	-240.43
128	129	84.54	-1976.11	-85.10	410.98	0	-1333.34	2.55	-455.45	2.55	-190.28	2.85	-285.36
129	129	84.54	-1976.11	-90.06	411.31	0	-1333.15	2.55	-455.51	2.55	-190.33	2.85	-285.43
129	130	87.30	-1976.11	-19.70	562.75	0	-1226.32	2.55	-550.46	2.55	-203.51	2.85	-305.20
130	130	87.30	-1976.11	-23.77	563.62	0	-1225.83	2.55	-550.61	2.55	-203.64	2.85	-305.39
130	131	90.06	-1976.11	46.58	532.10	0	-1245.45	2.55	-539.57	2.55	-199.67	2.85	-299.44
131	131	90.06	-1976.11	43.88	533.41	0	-1244.70	2.55	-539.80	2.55	-199.86	2.85	-299.73
131	132	92.82	-1976.11	114.11	315.25	0	-1392.86	2.55	-422.11	2.55	-178.19	2.85	-267.23
1	132	92.82	-1530.03	113.19	704.99	0	-754.09	2.55	-613.19	2.55	-178.44	2.85	-267.60
132	133	95.58	-1530.03	183.55	295.48	0	-1033.49	2.55	-388.02	2.55	-138.35	2.85	-207.49
133	133	95.58	-1083.95	154.71	706.92	0	-375.48	2.55	-605.81	2.55	-138.65	2.85	-207.92
133	134	98.34	-1083.95	255.06	100.02	0	-789.55	2.55	-272.12	2.55	-79.24	2.85	-118.83
134	134	98.34	-637.87	258.62	533.08	0	-112.35	2.55	-516.59	2.55	-79.56	2.85	-119.31
134	135	101.10	-637.87	232.40	-276.98	0	-664.39	2.55	-73.33	2.55	0.04	2.85	0.06



TRE MINANTE SIN GRADIENTE

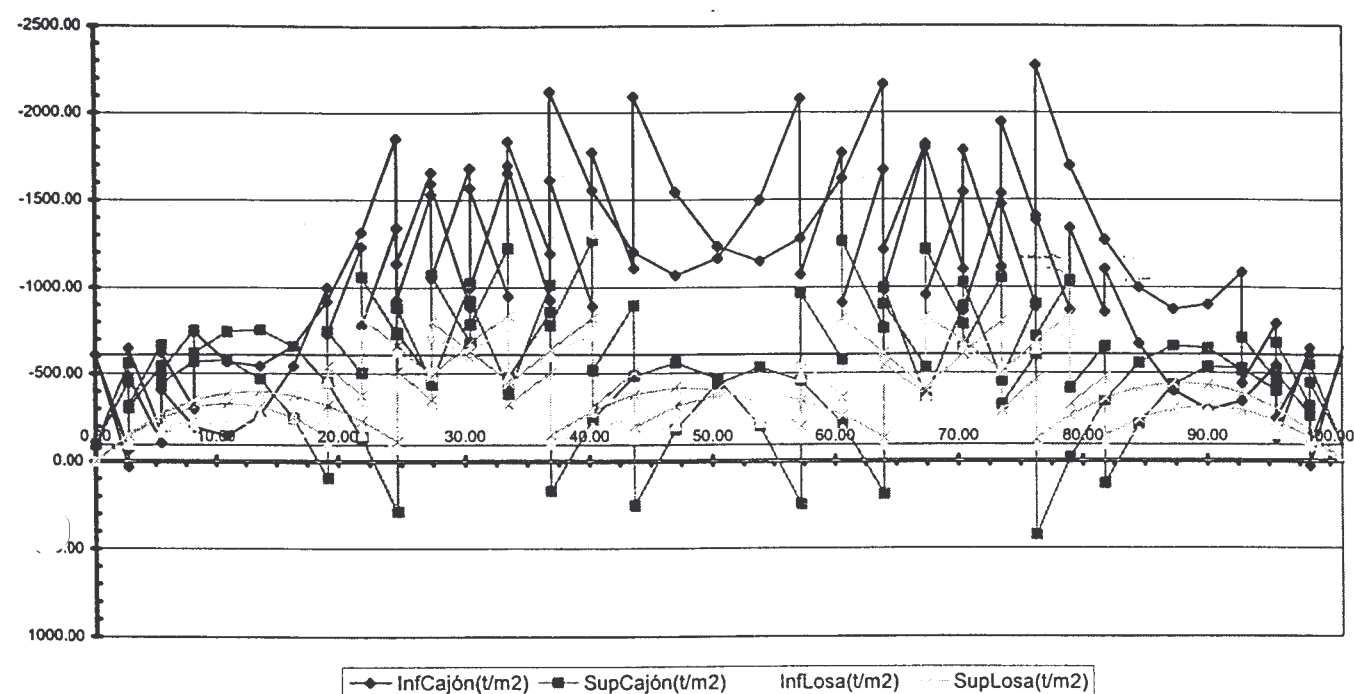
[1; 1]PPCF1 + [1; 1]PPLF3 + [1; 1]PPLF2 + [0.95; 1.05]PRETF1A.ISO.To + [0.95; 1.05]PRETF1A.HIP.To + [0.95; 1.05]PRETF1B.ISO.To + [0.95; 1.05]PRETF1B.HIP.To + [0.9; 1.1]PRETF3C.ISO.To + [0.9; 1.1]PRETF3C.HIP.To + [0.9; 1.1]PRE

Coef. exc.

Barra	Nudo	X	N (T)	Vy (T)	Mz (Tm)	Fibra	InfCajón	Fibra	SupCajón	Fibra	InfLosa	Fibra	SupLosa
						y fibra	sig (t/m2)	y fibra	sig (t/m2)	y fibra	sig (t/m2)	y fibra	sig (t/m2)
1	1	0.00	-603.55	-231.04	-241.41	0	-610.48	2.55	-94.29	2.55	-0.08	2.85	-0.12
1	2	2.74	-603.55	-309.71	730.78	0	32.56	2.55	-561.35	2.55	-104.76	2.85	-157.10
2	2	2.74	-1049.64	-310.79	295.82	0	-645.72	2.55	-316.56	2.55	-104.15	2.85	-156.19
2	3	5.48	-1049.64	-218.64	1021.16	0	-165.22	2.55	-667.46	2.55	-181.90	2.85	-272.79
3	3	5.48	-1358.46	-224.19	734.02	0	-622.08	2.55	-516.28	2.55	-181.35	2.85	-271.97
3	4	8.22	-1358.46	-132.06	1222.09	0	-298.67	2.55	-752.71	2.55	-233.63	2.85	-350.37
4	4	8.22	-1667.29	-141.39	950.39	0	-741.96	2.55	-620.09	2.55	-233.17	2.85	-349.69
4	5	10.96	-1667.29	-49.45	1212.05	0	-569.45	2.55	-743.94	2.55	-261.61	2.85	-392.33
5	5	10.96	-1667.29	-61.80	1209.79	0	-570.74	2.55	-743.55	2.55	-261.27	2.85	-391.82
5	6	13.70	-1667.29	29.98	1253.36	0	-544.36	2.55	-756.32	2.55	-267.11	2.85	-400.58
6	6	13.70	-1667.29	15.23	1251.95	0	-545.17	2.55	-756.07	2.55	-266.90	2.85	-400.26
6	7	16.44	-1667.29	107.37	1084.00	0	-661.21	2.55	-658.90	2.55	-251.14	2.85	-376.62
7	7	16.44	-1667.29	91.33	1083.57	0	-661.45	2.55	-658.83	2.55	-251.07	2.85	-376.53
7	8	19.18	-1667.29	182.84	707.50	0	-917.96	2.55	-452.29	2.55	-214.22	2.85	-321.27
8	8	19.18	-1667.29	166.78	708.17	0	-917.57	2.55	-452.41	2.55	-214.33	2.85	-321.42
8	9	21.92	-1667.29	258.49	125.41	0	-1313.74	2.55	-136.77	2.55	-156.61	2.85	-234.86
9	9	21.92	-1667.29	243.24	127.28	0	-1312.67	2.55	-137.10	2.55	-156.89	2.85	-235.28
10	10	24.66	-1667.29	293.53	-663.70	0	-1849.37	2.55	287.92	2.55	-78.07	2.85	-117.07
10	10	24.66	-2490.85	280.59	464.21	0	-1136.18	2.55	-741.69	2.55	-442.13	2.85	-517.18
10	11	27.40	-2495.01	328.49	-382.24	0	-1657.12	2.55	-470.14	2.55	-333.20	2.85	-353.29
11	11	27.40	-3217.97	318.39	710.86	0	-1050.84	2.55	-1072.68	2.55	-721.16	2.85	-802.18
11	12	30.45	-3226.56	336.68	-266.78	0	-1677.80	2.55	-679.73	2.55	-607.66	2.85	-630.87
12	12	30.45	-2769.59	329.73	165.94	0	-997.53	2.55	-920.86	2.55	-605.12	2.85	-628.47
12	10013	33.50	-2719.89	335.88	-841.78	0	-1651.23	2.55	-414.87	2.55	-484.79	2.85	-454.40
13	13	33.50	-2721.61	-336.98	-876.58	0	-1694.90	2.55	-384.26	2.55	-476.38	2.85	-446.00
13	14	36.89	-2772.60	-336.90	281.88	0	-926.01	2.55	-1015.96	2.55	-605.83	2.85	-633.55
14	14	36.89	-3250.59	-342.20	-149.43	0	-1611.80	2.55	-781.38	2.55	-613.99	2.85	-641.69
14	15	40.28	-3241.03	-317.99	951.58	0	-890.93	2.55	-1273.34	2.55	-734.88	2.85	-824.22
15	15	40.28	-2537.60	-318.67	-414.73	0	-1770.14	2.55	-521.20	2.55	-290.30	2.85	-309.99
15	16	43.67	-2533.10	-290.73	645.29	0	-1107.60	2.55	-896.02	2.55	-422.03	2.85	-508.12
16	16	43.67	-2042.26	-294.07	-534.28	0	-2090.83	2.55	251.69	2.55	-130.27	2.85	-195.36
16	17	47.06	-2042.26	-181.81	273.05	0	-1542.52	2.55	-183.85	2.55	-210.47	2.85	-315.64
17	17	47.06	-2042.26	-190.41	268.84	0	-1544.92	2.55	-183.11	2.55	-209.84	2.85	-314.69
17	18	50.45	-2042.26	-76.62	721.40	0	-1232.26	2.55	-444.92	2.55	-252.31	2.85	-378.38
18	18	50.45	-2042.26	-90.19	717.65	0	-1234.40	2.55	-444.26	2.55	-251.75	2.85	-377.54
18	19	53.84	-2042.26	22.36	833.41	0	-1147.14	2.55	-535.48	2.55	-259.19	2.85	-388.70
19	19	53.84	-2042.26	4.41	830.50	0	-1148.80	2.55	-534.97	2.55	-258.75	2.85	-388.05
19	20	57.23	-2042.26	118.24	622.77	0	-1279.36	2.55	-457.96	2.55	-233.18	2.85	-349.69
20	20	57.23	-2042.26	97.35	621.18	0	-1280.27	2.55	-457.68	2.55	-232.94	2.85	-349.33
20	21	60.62	-2042.26	209.15	101.97	0	-1621.81	2.55	-214.52	2.55	-176.15	2.85	-264.16
21	21	60.62	-2042.26	187.45	102.18	0	-1621.69	2.55	-214.56	2.55	-176.18	2.85	-264.21
21	22	64.01	-2042.26	279.86	-702.88	0	-2159.59	2.55	190.23	2.55	-92.04	2.85	-138.02
22	22	64.01	-2722.09	267.34	577.21	0	-1214.97	2.55	-901.50	2.55	-466.04	2.85	-549.77
22	23	67.40	-2727.23	299.80	-369.30	0	-1816.95	2.55	-533.68	2.55	-353.43	2.85	-380.22
23	23	67.40	-3266.20	294.27	882.76	0	-953.45	2.55	-1216.37	2.55	-738.40	2.85	-826.25
23	24	70.45	-3274.82	297.23	0.17	0	-1542.51	2.55	-785.94	2.55	-646.86	2.85	-687.86
24	24	70.45	-2811.13	296.07	432.65	0	-860.35	2.55	-1025.03	2.55	-642.56	2.85	-683.67
24	10025	73.50	-2742.62	330.00	-592.64	0	-1534.66	2.55	-456.16	2.55	-522.35	2.85	-512.23
25	25	73.50	-2686.43	-324.92	-557.28	0	-1474.31	2.55	-470.51	2.55	-516.80	2.85	-506.72
25	26	76.26	-2753.43	-313.89	379.01	0	-886.64	2.55	-902.13	2.55	-640.28	2.85	-683.27
26	26	76.26	-3100.29	-313.82	47.63	0	-1407.68	2.55	-715.50	2.55	-641.25	2.85	-684.25
26	27	79.02	-3092.50	-313.32	906.04	0	-864.11	2.55	-1037.11	2.55	-744.14	2.85	-839.55
27	27	79.02	-2113.65	-315.47	-207.69	0	-1338.47	2.55	-418.61	2.55	-299.41	2.85	-325.21
27	28	81.78	-2109.97	-276.09	587.84	0	-854.15	2.55	-656.53	2.55	-404.29	2.85	-482.98
28	28	81.78	-1152.58	-278.12	-159.76	0	-1102.40	2.55	127.84	2.55	-96.38	2.85	-144.54
28	29	84.54	-1152.58	-185.46	480.06	0	-669.52	2.55	-211.80	2.55	-160.72	2.85	-241.03
29	29	84.54	-1152.58	-188.75	479.02	0	-670.11	2.55	-211.62	2.55	-160.57	2.85	-240.80
29	30	87.30	-1152.58	-96.05	872.06	0	-400.05	2.55	-434.06	2.55	-198.15	2.85	-297.16
30	30	87.30	-1152.58	-100.65	871.03	0	-400.64	2.55	-433.88	2.55	-197.99	2.85	-296.92
30	31	90.06	-1152.58	-8.00	1020.89	0	-291.35	2.55	-539.74	2.55	-209.35	2.85	-313.96
31	31	90.06	-1152.58	-13.71	1019.98	0	-291.87	2.55	-539.58	2.55	-209.22	2.85	-313.76
31	32	92.82	-1152.58	78.93	930.05	0	-341.42	2.55	-529.46	2.55	-194.87	2.85	-292.24
32	32	92.82	-1152.58	72.33	929.39	0	-341.80	2.55	-529.35	2.55	-194.77	2.85	-292.10
32	33	95.58	-1152.58	165.07	601.89	0	-548.92	2.55	-403.65	2.55	-155.05	2.85	-232.53
33	33	95.58	-946.69	157.96	790.48	0	-245.97	2.55	-503.94	2.55	-154.99	2.85	-232.43
33	34	98.34	-946.69	250.58	226.48	0	-610.06	2.55	-262.83	2.55	-90.06	2.85	-135.06
34	34	98.34	-603.55	243.32	557.73	0	-90.20	2.55	-450.55	2.55	-90.02	2.85	-135.01
34	35	101.10	-603.55	233.49	-239.34	0	-609.30	2.55	-94.65	2.55	-0.39	2.85	-0.59
101	101	0.00	-603.55	-247.45	-239.84	0	-609.59	2.55	-94.56	2.55	-0.32	2.85	-0.48
101	102	2.74	-603.55	-258.88	599.66	0	-67.54	2.55	-453.79	2.55	-96.92	2.85	-145.35
102	102	2.74	-878.07	-263.68	333.94	0	-483.83	2.55	-303.49	2.55	-96.84	2.85	-145.22
102	103	5.48	-878.07	-166.85	923.76	0	-105.94	2.55	-546.09	2.55	-166.09	2.85	-249.08
103	103	5.48	-1083.95	-172.16	734.53	0	-409.26	2.55	-445.69	2.55	-166.05	2.85	-249.03
103	104	8.22	-1083.95	-75.39	1073.66	0	-196.10	2.55	-571.46	2.55	-207.80	2.85	-311.64
104	104	8.22	-1083.95	-80.86	1073.87	0	-195.98	2.55	-571.50	2.55	-207.84	2.85	-311.69
104	105	10.96	-1083.95	15.83	1162.93	0	-147.20	2.55	-580.56	2.55	-222.18	2.85	-333.20
105	105	10.96	-1083.95	10.83	1163.63	0	-146.80	2.55	-580.68	2.55	-222.28	2.85	-333.35

105	106	13.70	-1083.95	107.59	1001.31	0	-263.14	2.55	-472.78	2.55	-209.02	2.85	-313.47
106	106	13.70	-1083.95	103.67	1002.37	0	-262.53	2.55	-472.96	2.55	-209.18	2.85	-313.71
106	107	16.44	-1083.95	200.39	585.79	0	-545.64	2.55	-247.62	2.55	-167.88	2.85	-251.77
107	107	16.44	-1083.95	197.87	587.07	0	-544.91	2.55	-247.84	2.55	-168.08	2.85	-252.06
107	108	19.18	-1083.95	294.56	-87.65	0	-997.00	2.55	95.64	2.55	-98.15	2.85	-147.20
108	108	19.18	-2175.96	293.62	765.36	0	-729.03	2.55	-747.93	2.55	-456.61	2.85	-544.10
108	109	21.92	-2180.12	331.63	-61.97	0	-1231.25	2.55	-505.83	2.55	-346.89	2.85	-379.01
109	109	21.92	-3010.94	330.71	936.65	0	-778.03	2.55	-1059.66	2.55	-736.11	2.85	-829.18
109	110	24.66	-3018.68	329.53	41.99	0	-1341.55	2.55	-733.97	2.55	-627.43	2.85	-665.20
110	110	24.66	-2743.59	331.00	307.45	0	-925.24	2.55	-884.05	2.55	-627.33	2.85	-665.11
110	10111	27.40	-2685.89	341.93	-658.68	0	-1531.69	2.55	-453.35	2.55	-501.27	2.85	-483.50
111	111	27.40	-2746.45	-350.81	-693.89	0	-1593.28	2.55	-440.34	2.55	-507.98	2.85	-490.18
111	112	30.45	-2828.32	-315.77	401.59	0	-883.01	2.55	-1025.44	2.55	-642.21	2.85	-680.93
112	112	30.45	-3291.99	-314.88	-30.93	0	-1565.18	2.55	-786.35	2.55	-646.50	2.85	-685.11
112	113	33.50	-3283.39	-312.74	903.34	0	-946.70	2.55	-1225.75	2.55	-745.84	2.85	-835.20
113	113	33.50	-2598.35	-316.06	-464.65	0	-1832.40	2.55	-478.85	2.55	-305.75	2.85	-325.33
113	114	36.89	-2593.85	-285.12	548.07	0	-1192.91	2.55	-858.37	2.55	-428.52	2.85	-510.02
114	114	36.89	-2047.23	-295.29	-625.07	0	-2117.10	2.55	168.67	2.55	-103.10	2.85	-154.62
114	115	40.28	-2047.23	-198.32	224.92	0	-1554.01	2.55	-242.61	2.55	-194.21	2.85	-291.25
115	115	40.28	-2047.23	-218.72	224.02	0	-1554.52	2.55	-242.46	2.55	-194.07	2.85	-291.05
115	116	43.67	-2047.23	-101.19	766.31	0	-1200.26	2.55	-488.24	2.55	-254.54	2.85	-381.73
116	116	43.67	-2047.23	-121.54	767.37	0	-1199.66	2.55	-488.42	2.55	-254.70	2.85	-381.97
116	117	47.06	-2047.23	-1.90	976.46	0	-1068.75	2.55	-564.25	2.55	-280.68	2.85	-420.94
117	117	47.06	-2047.23	-19.85	979.12	0	-1067.23	2.55	-564.71	2.55	-281.08	2.85	-421.54
117	118	50.45	-2047.23	98.41	844.14	0	-1165.87	2.55	-468.69	2.55	-270.94	2.85	-406.33
118	118	50.45	-2047.23	84.70	847.96	0	-1163.69	2.55	-469.36	2.55	-271.52	2.85	-407.19
118	119	53.84	-2047.23	204.27	358.17	0	-1497.99	2.55	-199.61	2.55	-223.64	2.85	-335.39
119	119	53.84	-2047.23	195.80	362.75	0	-1495.39	2.55	-200.41	2.55	-224.33	2.85	-336.42
119	120	57.23	-2047.23	313.72	-501.97	0	-2076.83	2.55	-246.64	2.55	-135.68	2.85	-203.48
120	120	57.23	-2676.81	311.07	786.45	0	-1070.36	2.55	-963.81	2.55	-480.36	2.85	-577.09
120	121	60.62	-2681.96	337.57	-334.09	0	-1767.62	2.55	-578.45	2.55	-339.70	2.85	-365.48
121	121	60.62	-3237.39	338.10	917.30	0	-909.45	2.55	-1265.95	2.55	-728.82	2.85	-815.59
121	122	64.01	-3246.94	362.86	-250.89	0	-1668.65	2.55	-762.08	2.55	-597.83	2.85	-617.92
122	122	64.01	-2773.48	359.16	180.97	0	-983.91	2.55	-998.12	2.55	-590.91	2.85	-611.07
122	10123	67.40	-2734.67	359.81	-1043.41	0	-1794.06	2.55	-358.38	2.55	-454.69	2.85	-411.79
123	123	67.40	-2755.67	-361.17	-1043.15	0	-1800.22	2.55	-364.73	2.55	-460.15	2.85	-417.26
123	124	70.45	-2813.72	-355.71	47.89	0	-1101.09	2.55	-889.38	2.55	-594.97	2.85	-611.98
124	124	70.45	-3271.31	-340.90	-384.87	0	-1781.58	2.55	-648.42	2.55	-597.66	2.85	-614.53
124	125	73.50	-3262.72	-343.06	662.94	0	-1114.15	2.55	-1055.25	2.55	-721.51	2.85	-801.37
125	125	73.50	-2531.50	-351.34	-671.78	0	-1944.74	2.55	-321.81	2.55	-278.62	2.85	-288.84
125	126	76.26	-2527.83	-348.24	248.19	0	-1381.43	2.55	-608.45	2.55	-398.47	2.85	-469.04
126	126	76.26	-1976.11	-360.69	-893.17	0	-2271.25	2.55	421.96	2.55	-85.22	2.85	-127.80
126	127	79.02	-1976.11	-263.20	-32.24	0	-1693.53	2.55	-19.21	2.55	-174.03	2.85	-260.99
127	127	79.02	-1976.11	-277.24	-34.67	0	-1694.91	2.55	-18.78	2.55	-173.66	2.85	-260.44
127	128	81.78	-1976.11	-180.73	598.21	0	-1269.34	2.55	-346.02	2.55	-238.54	2.85	-357.73
128	128	81.78	-1976.11	-196.34	597.11	0	-1269.97	2.55	-345.83	2.55	-238.37	2.85	-357.48
128	129	84.54	-1976.11	-98.79	1004.40	0	-995.14	2.55	-559.60	2.55	-279.68	2.85	-419.42
129	129	84.54	-1976.11	-114.47	1004.58	0	-995.04	2.55	-559.63	2.55	-279.70	2.85	-419.46
129	130	87.30	-1976.11	-16.92	1185.86	0	-871.20	2.55	-659.82	2.55	-297.38	2.85	-445.97
130	130	87.30	-1976.11	-31.37	1187.29	0	-870.39	2.55	-660.07	2.55	-297.59	2.85	-446.29
130	131	90.06	-1976.11	66.16	1139.23	0	-899.43	2.55	-646.12	2.55	-291.13	2.85	-436.60
131	131	90.06	-1976.11	54.14	1141.80	0	-897.96	2.55	-646.57	2.55	-291.51	2.85	-437.18
131	132	92.82	-1976.11	151.21	857.94	0	-1083.57	2.55	-517.36	2.55	-259.94	2.85	-389.83
132	132	92.82	-1530.03	142.88	1249.59	0	-443.71	2.55	-708.78	2.55	-260.48	2.85	-390.64
132	133	95.58	-1530.03	240.43	720.61	0	-791.20	2.55	-462.64	2.55	-202.40	2.85	-303.53
133	133	95.58	-1083.95	236.68	1134.53	0	-131.78	2.55	-680.86	2.55	-203.06	2.85	-304.53
133	134	98.34	-1083.95	334.21	346.68	0	-648.98	2.55	-315.41	2.55	-116.39	2.85	-174.56
134	134	98.34	-637.87	335.98	782.60	0	29.85	2.55	-560.38	2.55	-117.15	2.85	-175.68
134	135	101.10	-637.87	248.79	-276.52	0	-664.12	2.55	-73.41	2.55	-0.03	2.85	-0.05

GRÁFICO DE TENSIONES

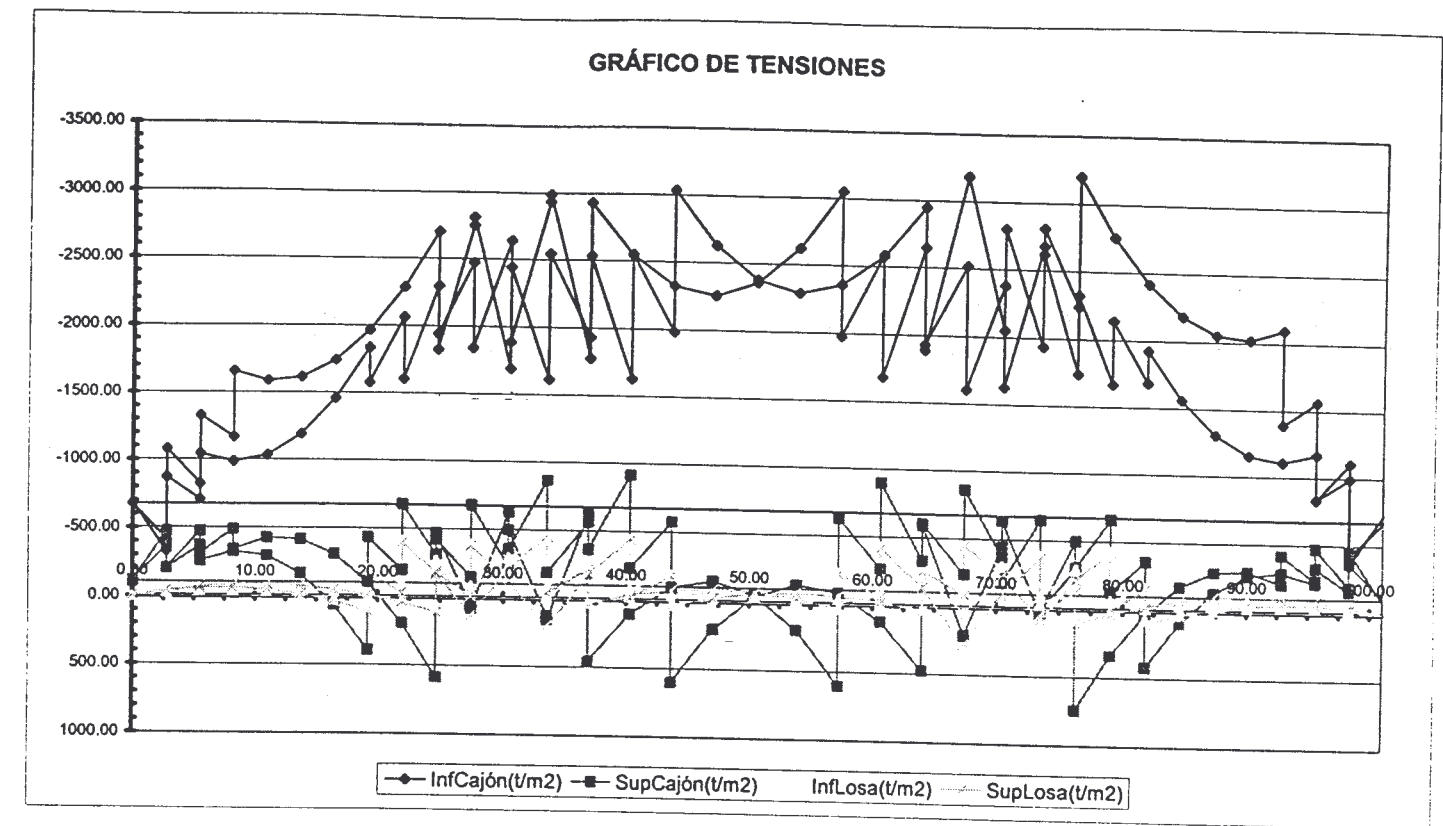


TREN DOMINANTE SIN GRADIENTE

Cost, \$/m³: 1.1)PPCF1 + (1.1)PLF3 + (1.1)PLF2 + (.95; 1.05)PRETF1A.ISO.To + (.95; 1.05)PRETF1A.HP.To + (.95; 1.05)PRETF1B.ISO.To + (.95; 1.05)PRETF1B.HP.To + (.9; 1.1)PRETF3C.ISO.To + (.9; 1.1)PRETF3C.HP.To + (.9; 1.1)PRU

Barra	Nudo	X	N (T)	Vy (T)	Mz (Tm)	Fibra	InfCajón	Fibra	SupCajón	Fibra	InfLosa	Fibra	SupLosa
						y fibra	sig (t/m2)	y fibra	sig (t/m2)	y fibra	sig (t/m2)	y fibra	sig (t/m2)
1	1	0.00	-667.09	-398.71	-269.52	0	-676.28	2.55	-103.74	2.55	0.32	2.85	0.48
1	2	2.74	-667.09	-143.21	188.72	0	-328.36	2.55	-473.23	2.55	-27.97	2.85	-41.95
2	2	2.74	-1160.12	-143.63	-288.39	0	-1075.97	2.55	-203.30	2.55	-27.85	2.85	-41.76
2	3	5.48	-1160.12	-96.79	41.01	0	-823.34	2.55	-477.35	2.55	-47.00	2.85	-70.48
3	3	5.48	-1501.46	-98.24	-273.16	0	-1326.46	2.55	-310.81	2.55	-46.87	2.85	-70.29
3	4	8.22	-1501.46	-51.41	-68.15	0	-1166.58	2.55	-490.20	2.55	-57.55	2.85	-86.30
4	4	8.22	-1842.79	-53.86	-365.90	0	-1655.09	2.55	-344.06	2.55	-57.43	2.85	-86.12
4	5	10.96	-1842.79	-6.98	-282.59	0	-1586.43	2.55	-429.24	2.55	-60.03	2.85	-90.03
5	5	10.96	-1842.79	-10.41	-283.28	0	-1586.82	2.55	-429.12	2.55	-59.93	2.85	-89.87
5	6	13.70	-1842.79	44.77	-328.34	0	-1613.18	2.55	-418.97	2.55	-53.46	2.85	-80.17
6	6	13.70	-1842.79	42.43	-328.28	0	-1613.14	2.55	-418.98	2.55	-53.47	2.85	-80.18
6	7	16.44	-1842.79	92.14	-512.69	0	-1740.77	2.55	-311.55	2.55	-36.27	2.85	-54.39
7	7	16.44	-1842.79	89.84	-512.51	0	-1740.67	2.55	-311.58	2.55	-36.29	2.85	-54.43
7	8	19.18	-1842.79	140.12	-827.06	0	-1964.33	2.55	-108.47	2.55	-9.75	2.85	-14.62
8	8	19.18	-1842.79	137.72	-826.72	0	-1964.14	2.55	-108.53	2.55	-9.80	2.85	-14.70
8	9	21.92	-1842.79	187.47	-1272.22	0	-2284.28	2.55	190.39	2.55	26.20	2.85	39.29
9	9	21.92	-1842.79	185.53	-1271.65	0	-2283.96	2.55	190.29	2.55	26.11	2.85	39.16
9	10	24.66	-1842.79	277.02	-1849.71	0	-2701.52	2.55	585.31	2.55	71.82	2.85	107.71
10	10	24.66	-2400.79	274.16	-851.25	0	-1941.83	2.55	-426.86	2.55	-199.05	2.85	-182.66
10	11	27.40	-2404.19	367.89	-1713.10	0	-2471.32	2.55	-152.39	2.55	-87.61	2.85	-15.09
11	11	27.40	-2883.43	364.37	-737.30	0	-1837.59	2.55	-681.51	2.55	-398.94	2.85	-376.30
11	12	30.45	-2890.46	478.35	-2024.35	0	-2640.42	2.55	-233.79	2.55	-238.43	2.85	-134.68
12	12	30.45	-2379.83	476.67	-1544.82	0	-1886.16	2.55	-498.85	2.55	-234.39	2.85	-130.88
12	10013	33.50	-2339.17	612.97	-3243.98	0	-2936.63	2.55	125.78	2.55	-12.22	2.85	197.06
13	13	33.50	-2356.75	-656.87	-3280.65	0	-2988.59	2.55	154.59	2.55	-7.25	2.85	201.91
13	14	36.89	-2437.72	-479.20	-1325.84	0	-1774.85	2.55	-625.88	2.55	-264.38	2.85	-173.29
14	14	36.89	-2969.75	-479.91	-1802.89	0	-2534.14	2.55	-367.66	2.55	-274.32	2.85	-183.16
14	15	40.28	-2961.93	-355.17	-375.70	0	-1627.89	2.55	-917.38	2.55	-444.80	2.85	-439.83
15	15	40.28	-2524.31	-347.89	-1619.24	0	-2549.80	2.55	-234.95	2.55	-81.19	2.85	-19.31
15	16	43.67	-2520.62	-200.80	-722.56	0	-1980.60	2.55	-581.34	2.55	-188.52	2.85	-180.75
16	16	43.67	-2256.94	-196.00	-1804.63	0	-3034.86	2.55	598.70	2.55	23.80	2.85	35.70
16	17	47.06	-2256.94	-133.43	-1246.78	0	-2627.74	2.55	203.65	2.55	-18.36	2.85	-27.53
17	17	47.06	-2256.94	-130.00	-1247.73	0	-2628.28	2.55	203.81	2.55	-18.21	2.85	-27.31
17	18	50.45	-2256.94	-68.36	-911.47	0	-2380.92	2.55	-40.87	2.55	-42.70	2.85	-64.04
18	18	50.45	-2256.94	-66.97	-912.78	0	-2381.66	2.55	-40.64	2.55	-42.50	2.85	-63.74
18	19	53.84	-2256.94	-5.15	-790.31	0	-2289.60	2.55	-136.32	2.55	-50.50	2.85	-75.73
19	19	53.84	-2256.94	-5.82	-791.70	0	-2290.39	2.55	-136.08	2.55	-50.29	2.85	-75.42
19	20	57.23	-2256.94	60.89	-892.64	0	-2359.10	2.55	-81.10	2.55	-40.33	2.85	-60.49
20	20	57.23	-2256.94	57.88	-893.75	0	-2359.74	2.55	-80.90	2.55	-40.17	2.85	-60.24
20	21	60.62	-2256.94	120.39	-1195.46	0	-2576.33	2.55	120.79	2.55	-15.68	2.85	-23.51
21	21	60.62	-2256.94	115.47	-1196.17	0	-2576.73	2.55	120.91	2.55	-15.57	2.85	-23.35
21	22	64.01	-2256.94	198.15	-1714.88	0	-2950.45	2.55	472.15	2.55	25.90	2.85	38.84
22	22	64.01	-2633.63	199.40	-549.60	0	-1927.77	2.55	-606.30	2.55	-249.26	2.85	-257.27
22	23	67.40	-2637.85	341.71	-1474.38	0	-2517.08	2.55	-242.02	2.55	-139.67	2.85	-92.39
23	23	67.40	-2925.08	337.86	-323.60	0	-1602.87	2.55	-863.01	2.55	-450.54	2.85	-453.19
23	24	70.45	-2932.12	466.56	-1538.92	0	-2381.09	2.55	-373.72	2.55	-308.47	2.85	-239.22
24	24	70.45	-2427.58	463.86	-1059.07	0	-1628.46	2.55	-640.68	2.55	-306.04	2.85	-237.06
24	10025	73.50	-2371.52	606.70	-2736.15	0	-2677.98	2.55	38.83	2.55	-90.86	2.85	78.42
25	25	73.50	-2337.67	-571.47	-2694.77	0	-2618.45	2.55	14.08	2.55	-92.35	2.85	76.71
25	26	76.26	-2392.49	-445.37	-1251.21	0	-1738.01	2.55	-502.91	2.55	-289.11	2.85	-211.31
26	26	76.26	-2808.38	-442.71	-1615.59	0	-2322.60	2.55	-306.73	2.55	-298.85	2.85	-221.20
26	27	79.02	-2802.00	-322.89	-560.04	0	-1667.10	2.55	-663.36	2.55	-431.80	2.85	-421.40
27	27	79.02	-2060.23	-318.51	-1523.30	0	-2140.98	2.55	-128.90	2.55	-68.26	2.85	-1.08
27	28	81.78	-2057.23	-215.05	-771.25	0	-1681.64	2.55	-359.39	2.55	-166.77	2.85	-149.20
28	28	81.78	-1273.90	-211.03	-1381.56	0	-1924.64	2.55	417.63	2.55	65.86	2.85	98.77
28	29	84.54	-1273.90	-160.89	-868.32	0	-1560.95	2.55	90.35	2.55	21.97	2.85	32.95
29	29	84.54	-1273.90	-156.85	-868.29	0	-1560.93	2.55	90.34	2.55	21.97	2.85	32.94
29	30	87.30	-1273.90	-106.72	-504.52	0	-1304.59	2.55	-136.82	2.55	-9.81	2.85	-14.72
30	30	87.30	-1273.90	-103.22	-504.99	0	-1304.86	2.55	-136.74	2.55	-9.74	2.85	-14.61
30	31	90.06	-1273.90	-53.10	-289.19	0	-1155.03	2.55	-264.04	2.55	-29.65	2.85	-44.46
31	31	90.06	-1273.90	-50.58	-290.06	0	-1155.53	2.55	-263.89	2.55	-29.52	2.85	-44.27
31	32	92.82	-1273.90	-0.42	-219.69	0	-1110.76	2.55	-291.76	2.55	-37.93	2.85	-56.88
32	32	92.82	-1273.90	0.74	-220.91	0	-1111.46	2.55	-291.55	2.55	-37.75	2.85	-56.61
32	33	95.58	-1273.90	50.83	-292.10	0	-1169.55	2.55	-220.70	2.55	-35.25	2.85	-52.86
33	33	95.58	-1046.35	50.24	-84.71	0	-835.30	2.55	-331.36	2.55	-35.02	2.85	-52.52
33	34	98.34	-1046.35	100.48	-292.41	0	-993.37	2.55	-162.64	2.55	-22.37	2.85	-33.55
34	34	98.34	-667.09	97.76	72.29	0	-419.60	2.55	-369.88	2.55	-22.12	2.85	-33.17
34	35	101.10	-667.09	292.89	-267.63	0	-675.20	2.55	-104.07	2.55	0.03	2.85	0.05
101	101	0.00	-667.09	-307.89	-267.95	0	-675.38	2.55	-104.02	2.55	0.08	2.85	0.12
101	102	2.74	-667.09	-103.50	88.05	0	-411.86	2.55	-368.51	2.55	-25.08	2.85	-37.61
102	102	2.74	-970.49	-104.46	-203.83	0	-870.94	2.55	-202.70	2.55	-25.26	2.85	-37.88
102	103	5.48	-970.49	-52.42	11.07	0	-709.69	2.55	-369.61	2.55	-39.43	2.85	-59.13
103	103	5.48	-1198.05	-51.96	-196.70	0	-1044.15	2.55	-258.89	2.55	-39.60	2.85	-59.38
103	104	8.22	-1198.05	0.11	-125.65	0	-986.74	2.55	-327.73	2.55	-42.35	2.85	-63.52
104	104	8.22	-1198.05	2.00	-124.66	0	-986.18	2.55	-327.90	2.55	-42.50	2.85	-63.74
104	105	10.96	-1198.05	54.18	-201.62	0	-1034.97	2.55	-297.94	2.55	-33.23	2.85	-42.28
105	105	10.96	-1198.05	57.28	-200.85	0	-1034.54	2.55	-298.08	2.55	-33.34	2.85	-50.01

105	106	13.70	-1198.05	109.38	-429.17	0	-1191.46	2.55	-168.71	2.55	-11.54	2.85	-17.30
106	106	13.70	-1198.05	113.39	-428.67	0	-1191.18	2.55	-168.79	2.55	-11.61	2.85	-17.41
106	107	16.44	-1198.05	165.55	-810.85	0	-1457.64	2.55	60.39	2.55	23.11	2.85	34.66
10	107	16.44	-1198.05	170.24	-810.73	0	-1457.58	2.55	60.37	2.55	23.10	2.85	34.64
107	108	19.18	-1198.05	222.40	-1348.63	0	-1834.65	2.55	389.72	2.55	71.02	2.85	106.50
108	108	19.18	-2091.52	227.33	-652.19	0	-1575.51	2.55	-435.91	2.55	-202.92	2.85	-189.22
108	109	21.92	-2094.92	338.23	-1450.44	0	-2060.93	2.55	-198.68	2.55	-97.38	2.85	-30.51
109	109	21.92	-2715.58	344.16	-581.27	0	-1604.30	2.55	-680.25	2.55	-415.52	2.85	-398.34
109	110	24.66	-2721.90	470.40	-1698.21	0	-2294.08	2.55	-315.13	2.55	-272.99	2.85	-183.78
110	110	24.66	-2384.59	475.39	-1406.60	0	-1824.97	2.55	-470.70	2.55	-264.02	2.85	-174.71
110	10111	27.40	-2337.38	607.45	-2927.77	0	-2750.90	2.55	54.26	2.55	-57.06	2.85	129.59
111	111	27.40	-2378.53	-650.43	-2968.90	0	-2812.49	2.55	76.77	2.55	-57.49	2.85	129.36
111	112	30.45	-2445.51	-499.78	-1157.54	0	-1689.75	2.55	-629.49	2.55	-295.73	2.85	-219.29
112	112	30.45	-2949.43	-499.02	-1637.40	0	-2442.20	2.55	-362.34	2.55	-297.99	2.85	-221.29
112	113	33.50	-2942.40	-363.17	-1332.58	0	-1613.01	2.55	-867.24	2.55	-453.56	2.85	-455.49
113	113	33.50	-2535.77	-363.90	-1578.28	0	-2545.46	2.55	-193.74	2.55	-97.62	2.85	-42.47
113	114	36.89	-2532.09	-211.33	-603.50	0	-1927.84	2.55	-566.85	2.55	-214.89	2.85	-218.81
114	114	36.89	-2263.01	-208.09	-1681.38	0	-2933.86	2.55	457.37	2.55	21.55	2.85	32.31
114	115	40.28	-2263.01	-121.31	-1136.17	0	-2545.47	2.55	102.92	2.55	-24.12	2.85	-36.17
115	115	40.28	-2263.01	-124.81	-1135.87	0	-2545.30	2.55	102.87	2.55	-24.16	2.85	-36.24
115	116	43.67	-2263.01	-59.21	-824.91	0	-2323.88	2.55	-98.96	2.55	-50.25	2.85	-75.37
116	116	43.67	-2263.01	-61.34	-824.14	0	-2323.44	2.55	-99.09	2.55	-50.37	2.85	-75.54
116	117	47.06	-2263.01	8.56	-727.93	0	-2257.87	2.55	-151.76	2.55	-59.82	2.85	-89.71
117	117	47.06	-2263.01	8.40	-726.71	0	-2257.17	2.55	-151.98	2.55	-60.01	2.85	-89.99
117	118	50.45	-2263.01	73.24	-864.47	0	-2358.40	2.55	-52.12	2.55	-49.92	2.85	-74.86
118	118	50.45	-2263.01	75.08	-863.17	0	-2357.66	2.55	-52.35	2.55	-50.11	2.85	-75.15
118	119	53.84	-2263.01	139.71	-1227.20	0	-2621.29	2.55	198.67	2.55	-21.65	2.85	-32.47
11	119	53.84	-2263.01	143.72	-1226.09	0	-2620.66	2.55	198.48	2.55	-21.82	2.85	-32.72
1	120	57.23	-2263.01	209.40	-1823.59	0	-3050.82	2.55	601.98	2.55	26.11	2.85	39.15
120	120	57.23	-2640.21	215.23	-652.65	0	-1976.72	2.55	-629.38	2.55	-229.90	2.85	-227.40
120	121	60.62	-2644.43	372.50	-1620.71	0	-2586.79	2.55	-270.50	2.55	-111.97	2.85	-50.00
121	121	60.62	-2960.96	381.70	-471.02	0	-1682.01	2.55	-900.10	2.55	-430.22	2.85	-418.10
121	122	64.01	-2968.78	513.37	-2001.66	0	-2647.25	2.55	-332.09	2.55	-244.18	2.85	-138.09
122	122	64.01	-2442.28	515.70	-1523.84	0	-1889.18	2.55	-592.10	2.55	-235.79	2.85	-129.81
122	10123	67.40	-2367.89	702.15	-3611.77	0	-3180.80	2.55	209.88	2.55	39.69	2.85	273.73
123	123	67.40	-2379.57	-663.55	-3613.08	0	-3185.06	2.55	206.60	2.55	36.88	2.85	271.02
123	124	70.45	-2427.06	-519.83	-1760.66	0	-2048.83	2.55	-448.51	2.55	-209.92	2.85	-92.99
124	124	70.45	-2937.71	-537.65	-2240.38	0	-2803.22	2.55	-183.40	2.55	-213.94	2.85	-96.75
124	125	73.50	-2930.68	-397.07	-840.18	0	-1935.43	2.55	-652.54	2.55	-391.28	2.85	-363.60
125	125	73.50	-2484.22	-397.67	-2049.88	0	-2810.78	2.55	2.85	2.55	-35.03	2.85	49.64
125	126	76.26	-2481.21	-250.93	-1114.50	0	-2238.89	2.55	-286.69	2.55	-157.36	2.85	-134.21
126	126	76.26	-2184.13	-250.78	-2157.24	0	-3198.51	2.55	742.88	2.55	72.04	2.85	108.04
126	127	79.02	-2184.13	-198.34	-1537.43	0	-2756.01	2.55	336.70	2.55	20.59	2.85	30.87
127	127	79.02	-2184.13	-199.01	-1538.30	0	-2756.51	2.55	336.86	2.55	20.72	2.85	31.07
127	128	81.78	-2184.13	-145.98	-1062.62	0	-2418.33	2.55	29.88	2.55	-19.44	2.85	-29.16
128	128	81.78	-2184.13	-147.26	-1063.21	0	-2418.66	2.55	29.98	2.55	-19.35	2.85	-29.02
128	129	84.54	-2184.13	-94.84	-729.12	0	-2183.36	2.55	-178.26	2.55	-48.60	2.85	-72.88
129	129	84.54	-2184.13	-96.56	-729.46	0	-2183.55	2.55	-178.21	2.55	-48.55	2.85	-72.80
129	130	87.30	-2184.13	-44.08	-535.45	0	-2050.26	2.55	-287.95	2.55	-67.10	2.85	-100.63
130	130	87.30	-2184.13	-46.01	-535.56	0	-2050.33	2.55	-287.93	2.55	-67.09	2.85	-100.61
130	131	90.06	-2184.13	12.79	-481.34	0	-2018.88	2.55	-299.26	2.55	-75.00	2.85	-112.47
131	131	90.06	-2184.13	4.53	-480.88	0	-2018.62	2.55	-299.34	2.55	-75.07	2.85	-112.58
1	132	92.82	-2184.13	59.38	-576.10	0	-2094.52	2.55	-210.56	2.55	-70.88	2.85	-106.30
132	132	92.82	-1691.09	57.60	-146.14	0	-1388.97	2.55	-421.62	2.55	-71.03	2.85	-106.53
132	133	95.58	-1691.09	107.07	-373.40	0	-1562.30	2.55	-235.76	2.55	-57.37	2.85	-86.04
133	133	95.58	-1198.05	106.62	80.38	0	-835.58	2.55	-476.30	2.55	-57.55	2.85	-86.30
133	134	98.34	-1198.05	156.08	-282.16	0	-1108.18	2.55	-192.82	2.55	-33.92	2.85	-50.87
134	134	98.34	-705.01	157.07	195.33	0	-360.36	2.55	-462.82	2.55	-34.10	2.85	-51.14
134	135	101.10	-705.01	430.20	-308.47	0	-735.65	2.55	-80.64	2.55	0.39	2.85	0.59



TREN INANTE CON GRADIENTE

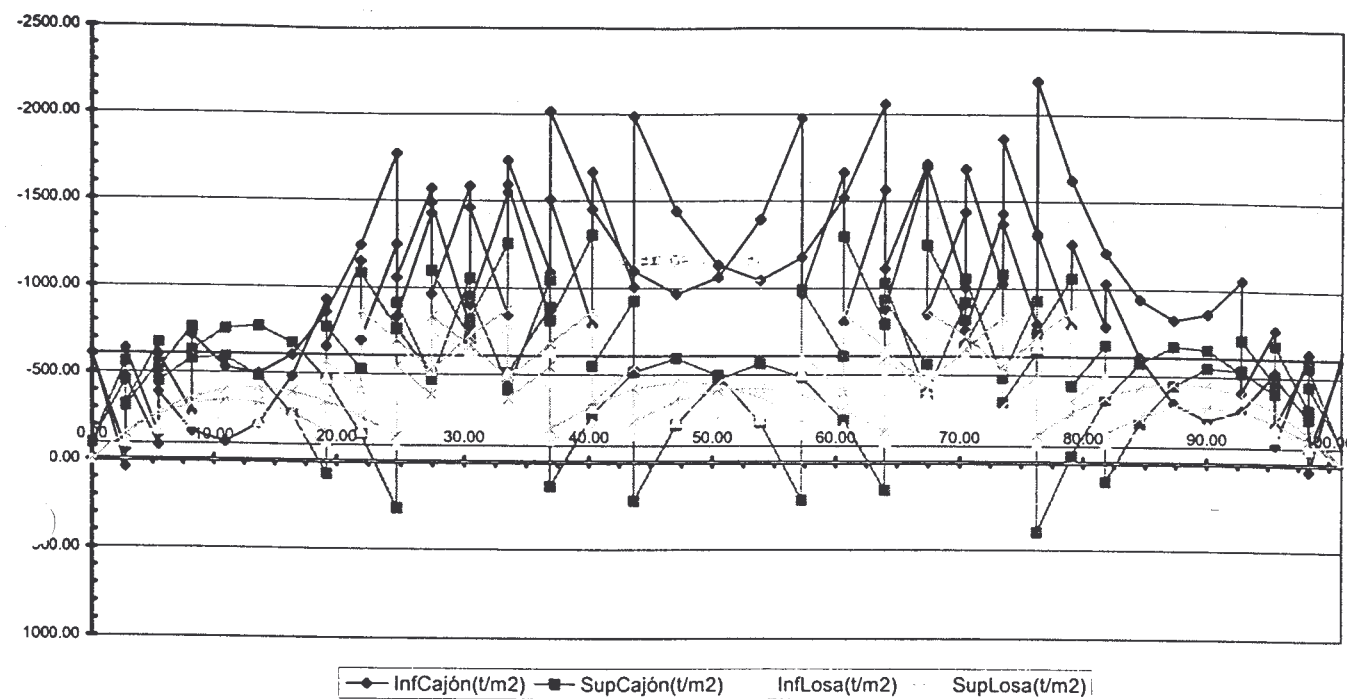
1; 1)PPC 1; 1)PLF3 + 1; 1)PLF2 + [.95; 1.05]PRETF1A.ISO.To + [.95; 1.05]PRETF1A.HIP.To + [.95; 1.05]PRETF1B.ISO.To + [.95; 1.05]PRETF1B.HIP.To + [.9; 1.1]PRETF3C.ISO.To + [.9; 1.1]PRETF3C.HIP.To + [.9; 1.1]PRE

Coef. esc.

Barra	Nudo	X	N (T)	Vy (T)	Mz (Tm)	Fibra y fibra	InfCajón sig (U/m2)	Fibra y fibra	SupCajón sig (U/m2)	Fibra y fibra	InfLosa sig (U/m2)	Fibra y fibra	SupLosa sig (U/m2)
1	1	0.00	-603.55	-236.67	-241.37	0	-610.46	2.55	-94.30	2.55	-0.09	2.85	-0.13
1	2	2.74	-603.55	-315.35	746.25	0	41.38	2.55	-564.07	2.55	-107.09	2.85	-160.60
2	2	2.74	-1049.64	-316.61	311.38	0	-636.85	2.55	-319.29	2.55	-106.49	2.85	-159.70
2	3	5.48	-1049.64	-224.46	1052.66	0	-147.27	2.55	-672.99	2.55	-186.65	2.85	-279.91
3	3	5.48	-1358.46	-230.11	765.60	0	-604.08	2.55	-521.82	2.55	-186.11	2.85	-279.11
3	4	8.22	-1358.46	-137.98	1269.88	0	-271.43	2.55	-761.10	2.55	-240.83	2.85	-361.16
4	4	8.22	-1667.29	-147.33	998.25	0	-714.69	2.55	-628.49	2.55	-240.38	2.85	-360.50
4	5	10.96	-1667.29	-55.39	1276.19	0	-532.89	2.55	-755.20	2.55	-271.27	2.85	-406.82
5	5	10.96	-1667.29	-67.69	1273.99	0	-534.15	2.55	-754.81	2.55	-270.94	2.85	-406.32
5	6	13.70	-1667.29	24.09	1333.71	0	-498.57	2.55	-770.42	2.55	-279.21	2.85	-418.73
6	6	13.70	-1667.29	9.45	1332.35	0	-499.35	2.55	-770.19	2.55	-279.01	2.85	-418.42
6	7	16.44	-1667.29	101.59	1180.24	0	-606.36	2.55	-675.79	2.55	-265.63	2.85	-398.36
7	7	16.44	-1667.29	85.71	1179.86	0	-606.57	2.55	-675.73	2.55	-265.58	2.85	-398.28
7	8	19.18	-1667.29	177.23	819.17	0	-854.31	2.55	-471.89	2.55	-231.05	2.85	-346.50
8	8	19.18	-1667.29	161.37	819.88	0	-853.91	2.55	-472.02	2.55	-231.15	2.85	-346.66
8	9	21.92	-1667.29	253.08	251.92	0	-1241.64	2.55	-158.97	2.55	-175.66	2.85	-263.44
9	9	21.92	-1667.29	238.08	253.82	0	-1240.56	2.55	-159.30	2.55	-175.95	2.85	-263.87
9	10	24.66	-1667.29	288.37	-523.04	0	-1769.20	2.55	263.23	2.55	-99.26	2.85	-148.85
10	10	24.66	-2490.85	275.70	604.87	0	-1056.01	2.55	-766.38	2.55	-463.32	2.85	-548.96
10	11	27.40	-2495.01	323.60	-228.18	0	-1569.32	2.55	-497.18	2.55	-356.41	2.85	-388.09
11	11	27.40	-3217.97	313.78	864.89	0	-963.05	2.55	-1099.71	2.55	-744.36	2.85	-836.98
11	12	30.45	-3226.56	332.07	-98.67	0	-1581.99	2.55	-709.24	2.55	-632.98	2.85	-668.85
12	12	30.45	-2769.59	325.38	333.99	0	-901.75	2.55	-950.36	2.55	-630.44	2.85	-666.43
12	10013	33.50	-2719.89	331.53	-660.46	0	-1547.89	2.55	-446.69	2.55	-512.10	2.85	-495.37
13	13	33.50	-2721.61	-337.21	-695.33	0	-1591.60	2.55	-416.07	2.55	-503.69	2.85	-486.95
13	14	36.89	-2772.60	-337.13	463.89	0	-822.28	2.55	-1047.91	2.55	-633.25	2.85	-674.67
14	14	36.89	-3250.59	-342.27	32.51	0	-1508.11	2.55	-813.31	2.55	-641.40	2.85	-682.80
14	15	40.28	-3241.03	-318.06	1133.75	0	-787.10	2.55	-1305.31	2.55	-762.33	2.85	-865.38
15	15	40.28	-2537.60	-318.63	-232.63	0	-1666.36	2.55	-553.16	2.55	-317.73	2.85	-351.12
15	16	43.67	-2533.10	-290.69	827.26	0	-1003.89	2.55	-927.96	2.55	-449.44	2.85	-549.23
16	16	43.67	-2042.26	-293.96	-352.38	0	-1987.16	2.55	219.77	2.55	-157.67	2.85	-236.45
16	17	47.06	-2042.26	-181.71	454.60	0	-1439.05	2.55	-215.72	2.55	-237.82	2.85	-356.66
17	17	47.06	-2042.26	-190.28	450.33	0	-1441.49	2.55	-214.97	2.55	-237.18	2.85	-355.69
17	18	50.45	-2042.26	-76.49	902.43	0	-1129.09	2.55	-476.69	2.55	-279.58	2.85	-419.28
18	18	50.45	-2042.26	-90.06	898.62	0	-1131.26	2.55	-476.02	2.55	-279.01	2.85	-418.42
18	19	53.84	-2042.26	22.49	1013.92	0	-1044.27	2.55	-567.16	2.55	-286.38	2.85	-429.48
19	19	53.84	-2042.26	4.52	1010.94	0	-1045.97	2.55	-566.64	2.55	-285.93	2.85	-428.81
19	20	57.23	-2042.26	118.35	802.86	0	-1176.72	2.55	-489.57	2.55	-260.30	2.85	-390.37
20	20	57.23	-2042.26	97.39	801.20	0	-1177.67	2.55	-489.27	2.55	-260.05	2.85	-390.00
20	21	60.62	-2042.26	209.19	281.86	0	-1519.28	2.55	-246.10	2.55	-203.24	2.85	-304.80
21	21	60.62	-2042.26	187.38	282.00	0	-1519.20	2.55	-246.12	2.55	-203.27	2.85	-304.83
21	22	64.01	-2042.26	279.79	-522.83	0	-2056.98	2.55	158.63	2.55	-119.16	2.85	-178.70
22	22	64.01	-2722.09	267.11	757.18	0	-1112.40	2.55	-933.09	2.55	-493.15	2.85	-590.43
23	23	67.40	-2727.23	299.57	-188.56	0	-1713.94	2.55	-565.41	2.55	-380.65	2.85	-421.05
23	23	67.40	-3266.20	293.84	1063.43	0	-850.48	2.55	-1248.08	2.55	-765.62	2.85	-867.07
23	24	70.45	-3274.82	296.80	182.16	0	-1438.79	2.55	-817.89	2.55	-674.28	2.85	-728.97
24	24	70.45	-2811.13	295.37	614.59	0	-756.66	2.55	-1056.96	2.55	-669.96	2.85	-724.77
24	10025	73.50	-2742.62	329.30	-408.58	0	-1429.77	2.55	-488.46	2.55	-550.08	2.85	-553.81
25	25	73.50	-2686.43	-317.52	-373.25	0	-1369.42	2.55	-502.81	2.55	-544.52	2.85	-548.30
26	26	76.26	-2753.43	-306.49	542.61	0	-793.40	2.55	-930.84	2.55	-664.93	2.85	-720.23
26	26	76.26	-3100.29	-306.68	211.23	0	-1314.44	2.55	-744.21	2.55	-665.90	2.85	-721.21
26	27	79.02	-3092.50	-306.18	1049.94	0	-782.10	2.55	-1062.36	2.55	-765.82	2.85	-872.06
27	27	79.02	-2113.65	-308.58	-63.76	0	-1256.45	2.55	-443.87	2.55	-321.09	2.85	-357.73
27	28	81.78	-2109.97	-269.21	712.75	0	-782.96	2.55	-678.45	2.55	-423.11	2.85	-511.20
28	28	81.78	-1152.58	-271.44	-34.81	0	-1031.19	2.55	105.91	2.55	-115.20	2.85	-172.76
28	29	84.54	-1152.58	-178.78	586.59	0	-608.80	2.55	-230.50	2.55	-176.77	2.85	-265.10
29	29	84.54	-1152.58	-182.24	585.59	0	-609.37	2.55	-230.32	2.55	-176.62	2.85	-264.87
29	30	87.30	-1152.58	-89.54	960.67	0	-349.55	2.55	-449.61	2.55	-211.50	2.85	-317.18
30	30	87.30	-1152.58	-94.25	959.70	0	-350.10	2.55	-449.44	2.55	-211.35	2.85	-316.96
30	31	90.06	-1152.58	-1.61	1091.91	0	-250.88	2.55	-552.21	2.55	-220.05	2.85	-330.01
31	31	90.06	-1152.58	-7.36	1091.06	0	-251.36	2.55	-552.06	2.55	-219.92	2.85	-329.82
31	32	92.82	-1152.58	85.28	983.60	0	-310.90	2.55	-538.86	2.55	-202.94	2.85	-304.34
32	32	92.82	-1152.58	78.70	983.01	0	-311.24	2.55	-538.76	2.55	-202.85	2.85	-304.21
32	33	95.58	-1152.58	171.44	637.94	0	-528.38	2.55	-409.97	2.55	-160.48	2.85	-240.67
33	33	95.58	-946.69	164.43	826.60	0	-225.38	2.55	-510.28	2.55	-160.43	2.85	-240.59
33	34	98.34	-946.69	257.05	244.74	0	-599.65	2.55	-266.03	2.55	-92.81	2.85	-139.18
34	34	98.34	-603.55	249.98	576.07	0	-79.75	2.55	-453.77	2.55	-92.79	2.85	-139.15
34	35	101.10	-603.55	233.49	-239.34	0	-609.30	2.55	-94.65	2.55	-0.39	2.85	-0.59
101	101	0.00	-603.55	-247.45	-239.84	0	-609.59	2.55	-94.56	2.55	-0.32	2.85	-0.48
101	102	2.74	-603.55	-265.57	617.97	0	-57.11	2.55	-457.01	2.55	-99.68	2.85	-149.48
102	102	2.74	-878.07	-270.19	352.17	0	-473.44	2.55	-306.69	2.55	-99.58	2.85	-149.34
102	103	5.48	-878.07	-173.36	959.83	0	-85.38	2.55	-552.42	2.55	-171.52	2.85	-257.23
103	103	5.48	-1083.95	-178.57	770.53	0	-388.74	2.55	-452.01	2.55	-171.48	2.85	-257.16
103	104	8.22	-1083.95	-81.80	1127.23	0	-165.57	2.55	-580.86	2.55	-215.87	2.85	-323.74
104	104	8.22	-1083.95	-87.25	1127.37	0	-165.49	2.55	-580.89	2.55	-215.90	2.85	-323.77
104	105	10.96	-1083.95	9.44	1233.94	0	-106.73	2.55	-593.02	2.55	-232.87	2.85	-349.24
105	105	10.96	-1083.95	4.39	1234.58	0	-106.36	2.55	-593.13	2.55	-232.97	2.85	-349.38

105	106	13.70	-1083.95	101.15	1089.90	0	-212.65	2.55	-488.32	2.55	-222.37	2.85	-333.48
106	106	13.70	-1083.95	97.12	1090.91	0	-212.08	2.55	-488.50	2.55	-222.52	2.85	-333.71
106	107	16.44	-1083.95	193.84	692.27	0	-484.96	2.55	-266.31	2.55	-183.92	2.85	-275.83
107	107	16.44	-1083.95	191.16	693.51	0	-484.25	2.55	-266.52	2.55	-184.11	2.85	-276.11
107	108	19.18	-1083.95	287.85	37.18	0	-925.86	2.55	73.73	2.55	-116.96	2.85	-175.40
108	108	19.18	-2175.96	286.69	890.16	0	-657.90	2.55	-769.84	2.55	-475.41	2.85	-572.30
108	109	21.92	-2180.12	324.70	81.82	0	-1149.30	2.55	-531.06	2.55	-368.55	2.85	-411.50
109	109	21.92	-3010.94	323.53	1080.41	0	-696.09	2.55	-1084.89	2.55	-757.77	2.85	-861.66
109	110	24.66	-3018.68	322.36	205.42	0	-1248.41	2.55	-762.65	2.55	-652.05	2.85	-702.12
110	110	24.66	-2743.59	323.56	470.87	0	-832.10	2.55	-912.73	2.55	-651.95	2.85	-702.02
110	10111	27.40	-2685.89	334.49	-474.87	0	-1426.94	2.55	-485.61	2.55	-528.96	2.85	-525.03
111	111	27.40	-2746.45	-350.12	-510.05	0	-1488.51	2.55	-472.61	2.55	-535.67	2.85	-531.71
111	112	30.45	-2828.32	-315.08	583.33	0	-779.43	2.55	-1057.34	2.55	-669.58	2.85	-721.99
112	112	30.45	-3291.99	-314.45	150.87	0	-1461.57	2.55	-818.26	2.55	-673.89	2.85	-726.18
112	113	33.50	-3283.39	-312.32	1083.84	0	-843.83	2.55	-1257.43	2.55	-773.04	2.85	-875.98
113	113	33.50	-2598.35	-315.84	-284.08	0	-1729.49	2.55	-510.54	2.55	-332.95	2.85	-366.12
113	114	36.89	-2593.85	-284.91	727.91	0	-1090.42	2.55	-889.93	2.55	-455.61	2.85	-550.65
114	114	36.89	-2047.23	-295.23	-445.16	0	-2014.56	2.55	137.09	2.55	-130.21	2.85	-195.27
114	115	40.28	-2047.23	-198.26	404.64	0	-1452.06	2.55	-274.15	2.55	-221.28	2.85	-331.85
115	115	40.28	-2047.23	-218.77	403.81	0	-1452.06	2.55	-274.01	2.55	-221.16	2.85	-331.67
115	116	43.67	-2047.23	-101.24	946.26	0	-1097.70	2.55	-519.82	2.55	-281.65	2.85	-422.38
116	116	43.67	-2047.23	-121.66	947.39	0	-1097.06	2.55	-520.02	2.55	-281.82	2.85	-422.64
116	117	47.06	-2047.23	-2.01	1156.87	0	-965.93	2.55	-595.91	2.55	-307.86	2.85	-461.69
117	117	47.06	-2047.23	-19.99	1159.59	0	-964.38	2.55	-596.39	2.55	-308.27	2.85	-462.31
117	118	50.45	-2047.23	98.27	1025.10	0	-1062.73	2.55	-500.45	2.55	-298.20	2.85	-447.21
118	118	50.45	-2047.23	84.56	1028.99	0	-1060.52	2.55	-501.14	2.55	-298.79	2.85	-448.09
118	119	53.84	-2047.23	204.13	539.68	0	-1394.55	2.55	-231.47	2.55	-250.98	2.85	-376.39
119	119	53.84	-2047.23	195.69	544.33	0	-1391.90	2.55	-232.28	2.55	-251.68	2.85	-377.44
119	120	57.23	-2047.23	313.61	-320.01	0	-1973.13	2.55	214.71	2.55	-163.09	2.85	-244.58
120	120	57.23	-2676.81	311.02	968.48	0	-966.62	2.55	-995.75	2.55	-507.79	2.85	-618.21
120	121	60.62	-2681.96	337.52	-151.89	0	-1663.78	2.55	-610.42	2.55	-367.15	2.85	-406.64
121	121	60.62	-3237.39	338.16	1099.56	0	-805.57	2.55	-1297.94	2.55	-756.28	2.85	-856.77
121	122	64.01	-3246.94	362.92	-68.82	0	-1564.88	2.55	-794.04	2.55	-625.25	2.85	-659.05
122	122	64.01	-2773.48	359.37	363.11	0	-880.10	2.55	-1030.09	2.55	-618.35	2.85	-652.22
122	10123	67.40	-2734.67	360.03	-862.01	0	-1690.68	2.55	-390.21	2.55	-482.02	2.85	-452.77
123	123	67.40	-2755.67	-356.85	-861.67	0	-1696.80	2.55	-396.58	2.55	-487.49	2.85	-458.26
123	124	70.45	-2813.72	-351.39	216.19	0	-1005.18	2.55	-918.92	2.55	-620.32	2.85	-650.00
124	124	70.45	-3271.31	-336.31	-216.50	0	-1685.62	2.55	-677.97	2.55	-623.03	2.85	-652.57
124	125	73.50	-3262.72	-338.48	817.33	0	-1026.16	2.55	-1082.34	2.55	-744.77	2.85	-836.25
125	125	73.50	-2531.50	-346.48	-517.36	0	-1856.74	2.55	-348.91	2.55	-301.88	2.85	-323.72
125	126	76.26	-2527.83	-343.38	389.19	0	-1301.08	2.55	-633.19	2.55	-419.71	2.85	-500.89
126	126	76.26	-1976.11	-355.56	-752.17	0	-2190.89	2.55	397.21	2.55	-106.46	2.85	-159.65
126	127	79.02	-1976.11	-258.07	94.61	0	-1621.23	2.55	-41.47	2.55	-193.14	2.85	-289.65
127	127	79.02	-1976.11	-271.87	92.16	0	-1622.63	2.55	-41.04	2.55	-192.77	2.85	-289.09
127	128	81.78	-1976.11	-175.36	710.21	0	-1205.51	2.55	-365.68	2.55	-255.41	2.85	-383.03
128	128	81.78	-1976.11	-190.75	709.07	0	-1206.16	2.55	-365.48	2.55	-255.24	2.85	-382.77
128	129	84.54	-1976.11	-93.20	1100.94	0	-940.12	2.55	-576.54	2.55	-294.22	2.85	-441.23
129	129	84.54	-1976.11	-108.71	1101.07	0	-940.04	2.55	-576.57	2.55	-294.24	2.85	-441.26
129	130	87.30	-1976.11	-11.17	1266.47	0	-825.26	2.55	-673.97	2.55	-309.52	2.85	-464.18
130	130	87.30	-1976.11	-25.51	1267.84	0	-824.48	2.55	-674.21	2.55	-309.72	2.85	-464.49
130	131	90.06	-1976.11	72.03	1203.60	0	-862.75	2.55	-657.42	2.55	-300.82	2.85	-451.14
131	131	90.06	-1976.11	60.06	1206.10	0	-861.32	2.55	-657.86	2.55	-301.20	2.85	-451.71
131	132	92.82	-1976.11	157.12	905.92	0	-1056.23	2.55	-525.78	2.55	-267.17	2.85	-400.67
132	132	92.82	-1530.03	148.77	1297.50	0	-416.41	2.55	-717.18	2.55	-267.70	2.85	-401.46
132	133	95.58	-1530.03	246.32	752.26	0	-773.16	2.55	-468.19	2.55	-207.16	2.85	-310.68
133	133	95.58	-1083.95	242.47	1166.10	0	-1134.79	2.55	-686.40	2.55	-207.82	2.85	-311.66
133	134	98.34	-1083.95	340.00	362.26	0	-640.09	2.55	-318.14	2.55	-118.74	2.85	-178.08
134	134	98.34	-637.87	341.59	798.10	0	38.69	2.55	-563.10	2.55	-119.48	2.85	-179.19
134	135	101.10	-637.87	254.40	-276.48	0	-664.10	2.55	-73.42	2.55	-0.04	2.85	-0.06

GRÁFICO DE TENSIONES

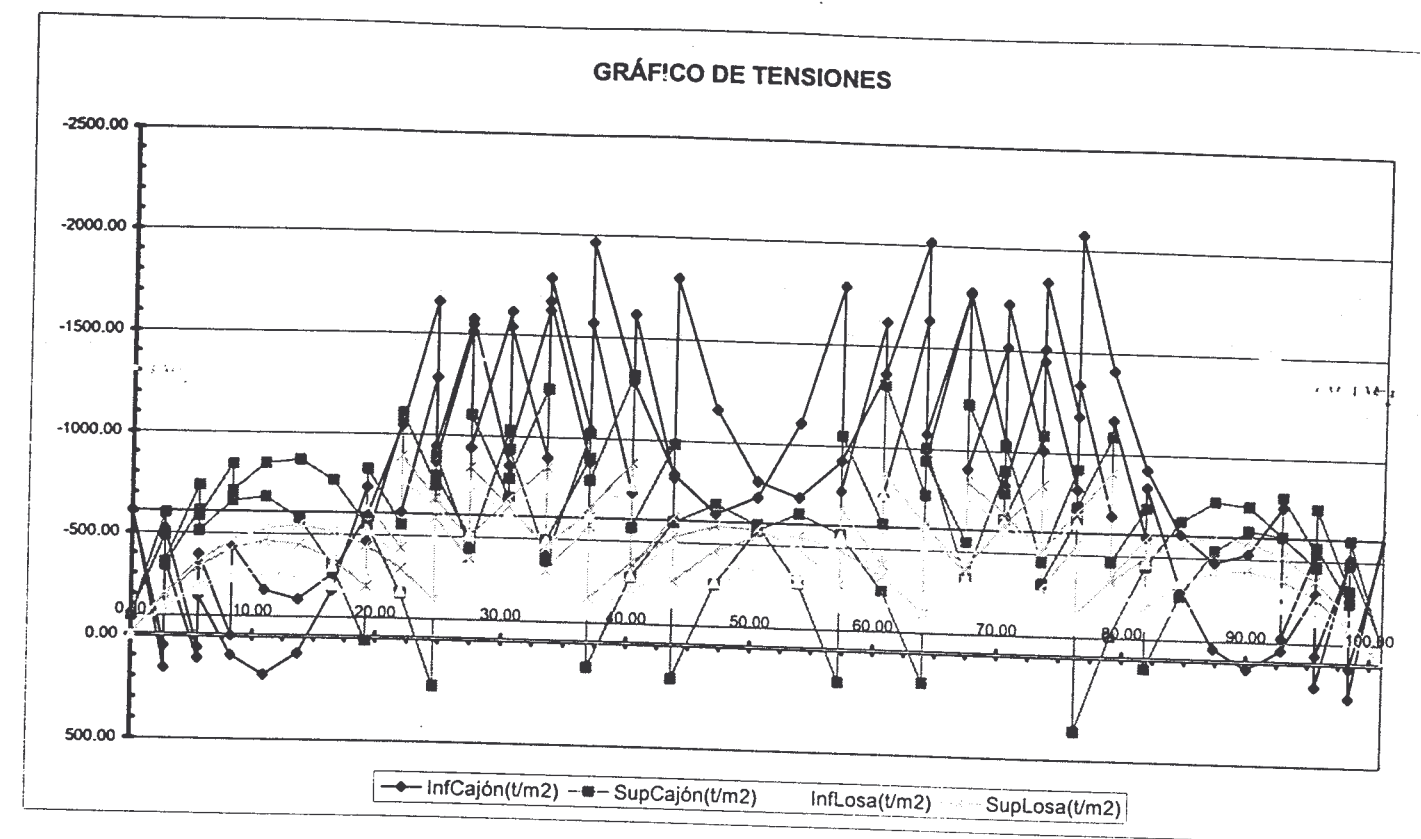


TREN DOMINANTE SIN GRADIENTE

Cost. eq.: $[1; 1]PPCF1 + [1; 1]PPLF3 + [1; 1]PPLF2 + [.95; 1.05]PRETF1A.ISO.To + [.95; 1.05]PRETF1A.HIP.To + [.95; 1.05]PRETF1B.ISO.To + [.95; 1.05]PRETF1B.HIP.To + [.9; 1.1]PRETF3C.ISO.To + [.9; 1.1]PRETF3C.HIP.To + [.9; 1.1]PRE$

Barra	Nudo	X	N (T)	Vy (T)	Mz (Tm)	Fibra	InfCajón	Fibra	SupCajón	Fibra	InfLosa	Fibra	SupLosa
						y fibra	sig (t/m2)	y fibra	sig (t/m2)	y fibra	sig (t/m2)	y fibra	sig (t/m2)
1	1	0.00	-603.55	-225.64	-240.75	0	-610.11	2.55	-94.40	2.55	-0.18	2.85	-0.27
1	2	2.74	-603.55	-384.84	950.77	0	157.94	2.55	-599.96	2.55	-137.90	2.85	-206.80
2	2	2.74	-1049.64	-379.71	516.64	0	-519.87	2.55	-355.31	2.55	-137.41	2.85	-206.07
2	3	5.48	-1049.64	-277.60	1417.19	0	60.48	2.55	-736.97	2.55	-241.56	2.85	-362.26
3	3	5.48	-1358.46	-276.09	1130.59	0	-396.07	2.55	-585.88	2.55	-241.09	2.85	-361.56
3	4	8.22	-1358.46	-173.99	1747.23	0	0.62	2.55	-844.88	2.55	-312.74	2.85	-469.00
4	4	8.22	-1667.29	-175.81	1475.69	0	-442.59	2.55	-712.28	2.55	-312.31	2.85	-468.36
4	5	10.96	-1667.29	-73.97	1818.19	0	-224.00	2.55	-850.33	2.55	-352.92	2.85	-529.26
5	5	10.96	-1667.29	-78.82	1815.64	0	-225.45	2.55	-849.88	2.55	-352.53	2.85	-528.69
5	6	13.70	-1667.29	22.84	1892.29	0	-180.23	2.55	-868.46	2.55	-363.36	2.85	-544.92
6	6	13.70	-1667.29	15.06	1890.16	0	-181.44	2.55	-868.08	2.55	-363.04	2.85	-544.44
6	7	16.44	-1667.29	117.18	1709.03	0	-304.99	2.55	-768.60	2.55	-345.29	2.85	-517.83
7	7	16.44	-1667.29	107.13	1707.50	0	-305.86	2.55	-768.33	2.55	-345.06	2.85	-517.48
7	8	19.18	-1667.29	208.46	1274.58	0	-594.77	2.55	-551.82	2.55	-299.65	2.85	-449.38
8	8	19.18	-1667.29	197.09	1273.92	0	-595.15	2.55	-551.70	2.55	-299.55	2.85	-449.23
8	9	21.92	-1667.29	298.60	594.62	0	-1046.33	2.55	-219.12	2.55	-227.29	2.85	-340.86
9	9	21.92	-1667.29	286.43	595.08	0	-1046.07	2.55	-219.20	2.55	-227.36	2.85	-340.96
9	10	24.66	-1667.29	346.62	-327.80	0	-1657.93	2.55	228.96	2.55	-128.67	2.85	-192.96
10	10	24.66	-2490.85	335.11	798.90	0	-945.43	2.55	-800.43	2.55	-492.55	2.85	-592.80
10	11	27.40	-2495.01	375.33	-190.39	0	-1547.78	2.55	-503.81	2.55	-362.10	2.85	-396.63
11	11	27.40	-3217.97	364.56	901.78	0	-942.03	2.55	-1106.19	2.55	-749.92	2.85	-845.31
11	12	30.45	-3226.56	348.44	-155.62	0	-1614.45	2.55	-699.24	2.55	-624.40	2.85	-655.98
12	12	30.45	-2769.59	340.04	277.12	0	-934.17	2.55	-940.37	2.55	-621.87	2.85	-653.58
12	10013	33.50	-2719.89	344.14	-797.14	0	-1625.79	2.55	-422.70	2.55	-491.51	2.85	-464.49
13	13	33.50	-2721.61	-336.02	-831.55	0	-1669.24	2.55	-392.16	2.55	-483.17	2.85	-456.17
13	14	36.89	-2772.60	-353.48	355.34	0	-884.15	2.55	-1028.86	2.55	-616.90	2.85	-650.15
14	14	36.89	-3250.59	-362.13	-75.24	0	-1569.52	2.55	-794.40	2.55	-625.17	2.85	-658.45
14	15	40.28	-3241.03	-404.12	1218.67	0	-738.70	2.55	-1320.21	2.55	-775.12	2.85	-88

105	106	13.70	-1083.95	106.31	1607.20	0	82.17	2.55	-579.11	2.55	-300.30	2.85	-450.35
106	106	13.70	-1083.95	114.64	1609.33	0	83.38	2.55	-579.49	2.55	-300.62	2.85	-450.83
106	107	16.44	-1083.95	221.57	1148.71	0	-224.83	2.55	-346.42	2.55	-252.68	2.85	-378.94
107	107	16.44	-1083.95	232.12	1150.35	0	-223.89	2.55	-346.70	2.55	-252.93	2.85	-379.31
107	108	19.18	-1083.95	338.94	367.91	0	-737.37	2.55	15.68	2.55	-166.78	2.85	-250.12
108	108	19.18	-2175.96	351.15	1220.55	0	-469.61	2.55	-827.82	2.55	-525.18	2.85	-646.93
108	109	21.92	-2180.12	396.46	222.80	0	-1068.96	2.55	-555.80	2.55	-389.78	2.85	-443.35
109	109	21.92	-3010.94	407.56	1220.24	0	-616.40	2.55	-1109.43	2.55	-778.83	2.85	-893.25
109	110	24.66	-3018.68	378.73	142.67	0	-1284.17	2.55	-751.64	2.55	-642.60	2.85	-687.94
110	110	24.66	-2743.59	388.67	406.40	0	-868.84	2.55	-901.42	2.55	-642.23	2.85	-687.47
110	10111	27.40	-2685.89	348.76	-625.95	0	-1513.04	2.55	-459.09	2.55	-506.20	2.85	-490.90
111	111	27.40	-2746.45	-350.42	-661.41	0	-1574.77	2.55	-446.04	2.55	-512.87	2.85	-497.51
111	112	30.45	-2828.32	-322.13	445.81	0	-857.80	2.55	-1033.20	2.55	-648.87	2.85	-690.93
112	112	30.45	-3291.99	-320.32	12.92	0	-1540.19	2.55	-794.04	2.55	-653.11	2.85	-695.01
112	113	33.50	-3283.39	-346.49	987.80	0	-898.56	2.55	-1240.57	2.55	-758.57	2.85	-854.28
113	113	33.50	-2598.35	-346.71	-380.46	0	-1784.42	2.55	-493.62	2.55	-318.43	2.85	-344.35
113	114	36.89	-2593.85	-347.26	811.35	0	-1042.86	2.55	-904.58	2.55	-468.18	2.85	-569.50
114	114	36.89	-2047.23	-355.12	-359.43	0	-1965.71	2.55	122.04	2.55	-143.12	2.85	-214.63
114	115	40.28	-2047.23	-255.92	696.65	0	-1285.16	2.55	-325.40	2.55	-265.27	2.85	-397.82
115	115	40.28	-2047.23	-272.09	698.96	0	-1283.85	2.55	-325.81	2.55	-265.62	2.85	-398.34
115	116	43.67	-2047.23	-143.19	1403.64	0	-837.04	2.55	-600.09	2.55	-350.55	2.85	-525.71
116	116	43.67	-2047.23	-155.75	1408.01	0	-834.55	2.55	-600.86	2.55	-351.21	2.85	-526.70
116	117	47.06	-2047.23	-23.68	1711.92	0	-649.60	2.55	-693.32	2.55	-391.47	2.85	-587.09
117	117	47.06	-2047.23	-30.38	1717.56	0	-646.38	2.55	-694.31	2.55	-392.32	2.85	-588.36
117	118	50.45	-2047.23	100.14	1596.98	0	-736.81	2.55	-600.82	2.55	-384.35	2.85	-576.41
118	118	50.45	-2047.23	100.63	1603.13	0	-733.30	2.55	-601.90	2.55	-385.28	2.85	-577.80
118	119	53.84	-2047.23	232.45	1038.94	0	-1110.01	2.55	-319.09	2.55	-326.19	2.85	-489.18
119	119	53.84	-2047.23	240.23	1045.04	0	-1106.54	2.55	-320.16	2.55	-327.11	2.85	-490.56
11	120	57.23	-2047.23	370.06	8.86	0	-1785.70	2.55	156.99	2.55	-212.63	2.85	-318.88
120	120	57.23	-2676.81	384.45	1297.78	0	-778.94	2.55	-1053.55	2.55	-557.39	2.85	-692.60
120	121	60.62	-2681.96	410.83	-72.41	0	-1618.49	2.55	-624.37	2.55	-379.12	2.85	-424.59
121	121	60.62	-3237.39	427.80	1177.96	0	-760.89	2.55	-1311.70	2.55	-768.09	2.85	-874.48
121	122	64.01	-3246.94	380.75	-191.04	0	-1634.54	2.55	-772.59	2.55	-606.84	2.85	-631.44
122	122	64.01	-2773.48	380.93	240.24	0	-950.13	2.55	-1008.52	2.55	-599.84	2.85	-624.46
122	10123	67.40	-2734.67	354.94	-1006.88	0	-1773.24	2.55	-364.79	2.55	-460.19	2.85	-420.04
123	123	67.40	-2755.67	-357.54	-1006.69	0	-1779.45	2.55	-371.13	2.55	-465.64	2.85	-425.50
123	124	70.45	-2813.72	-369.03	142.70	0	-1047.06	2.55	-609.02	2.55	-609.25	2.85	-633.39
124	124	70.45	-3271.31	-350.06	-290.07	0	-1727.55	2.55	-665.06	2.55	-611.94	2.85	-635.94
124	125	73.50	-3262.72	-395.67	844.72	0	-1010.55	2.55	-1087.15	2.55	-748.89	2.85	-842.43
125	125	73.50	-2531.50	-403.61	-489.23	0	-1840.70	2.55	-353.85	2.55	-306.12	2.85	-330.08
125	126	76.26	-2527.83	-409.27	593.42	0	-1184.68	2.55	-669.04	2.55	-450.47	2.85	-547.03
126	126	76.26	-1976.11	-419.14	-546.96	0	-2073.93	2.55	361.20	2.55	-137.37	2.85	-206.01
126	127	79.02	-1976.11	-311.29	460.98	0	-1412.43	2.55	-105.77	2.55	-248.33	2.85	-372.41
127	127	79.02	-1976.11	-321.27	459.75	0	-1413.13	2.55	-105.56	2.55	-248.14	2.85	-372.14
127	128	81.78	-1976.11	-214.69	1200.53	0	-926.07	2.55	-451.74	2.55	-329.27	2.85	-493.80
128	128	81.78	-1976.11	-224.79	1200.60	0	-926.03	2.55	-451.75	2.55	-329.28	2.85	-493.82
128	129	84.54	-1976.11	-116.84	1672.08	0	-614.62	2.55	-676.78	2.55	-380.26	2.85	-570.26
129	129	84.54	-1976.11	-125.72	1673.26	0	-613.95	2.55	-676.99	2.55	-380.43	2.85	-570.53
129	130	87.30	-1976.11	-17.78	1871.23	0	-480.60	2.55	-780.10	2.55	-400.62	2.85	-600.80
130	130	87.30	-1976.11	-24.44	1873.37	0	-479.38	2.55	-780.48	2.55	-400.94	2.85	-601.29
130	131	90.06	-1976.11	83.50	1791.82	0	-527.51	2.55	-760.65	2.55	-389.43	2.85	-584.03
131	131	90.06	-1976.11	79.86	1794.78	0	-525.82	2.55	-761.17	2.55	-389.88	2.85	-584.70
131	132	92.82	-1976.11	187.18	1425.66	0	-760.02	2.55	-617.00	2.55	-345.46	2.85	-518.09
131	132	92.82	-1530.03	187.46	1817.33	0	-120.15	2.55	-808.42	2.55	-346.00	2.85	-518.90
132	133	95.58	-1530.03	295.41	1150.95	0	-545.94	2.55	-538.17	2.55	-267.22	2.85	-400.75
133	133	95.58	-1083.95	300.08	1564.60	0	113.32	2.55	-756.34	2.55	-267.85	2.85	-401.69
133	134	98.34	-1083.95	408.02	587.40	0	-511.78	2.55	-357.66	2.55	-152.66	2.85	-228.94
134	134	98.34	-637.87	417.76	1022.90	0	166.81	2.55	-602.56	2.55	-153.35	2.85	-229.97
134	135	101.10	-637.87	245.79	-275.89	0	-663.76	2.55	-73.52	2.55	-0.13	2.85	-0.19



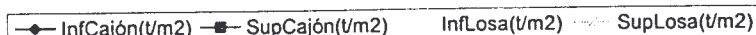
TREN DOMINANTE SIN GRADIENTE

[1; 1]PPF [1; 1]PPF3 + [1; 1]PPF2 + [0.95; 1.05]PRETF1A.ISO.To + [0.95; 1.05]PRETF1A.HIP.To + [0.95; 1.05]PRETF1B.ISO.To + [0.95; 1.05]PRETF1B.HIP.To + [0.9; 1.1]PRETF3C.ISO.To + [0.9; 1.1]PRETF3C.HIP.To + [0.9; 1.1]PRE

Barra	Nudo	X	N (T)	Vy (T)	Mz (Tm)	Fibra y fibra	InfCajón sig (U/m2)	Fibra y fibra	SupCajón sig (U/m2)	Fibra y fibra	InfLosa sig (U/m2)	Fibra y fibra	SupLosa sig (U/m2)
1	1	0.00	-667.09	-435.62	-270.26	0	-676.70	2.55	-103.61	2.55	0.43	2.85	0.64
1	2	2.74	-667.09	-123.36	139.60	0	-356.35	2.55	-464.61	2.55	-20.58	2.85	-30.86
2	2	2.74	-1160.12	-127.20	-336.71	0	-1103.50	2.55	-194.82	2.55	-20.57	2.85	-30.85
2	3	5.48	-1160.12	-76.80	-57.23	0	-879.33	2.55	-460.10	2.55	-32.20	2.85	-48.28
3	3	5.48	-1501.46	-80.80	-370.63	0	-1382.01	2.55	-293.70	2.55	-32.19	2.85	-48.27
3	4	8.22	-1501.46	-30.41	-218.28	0	-1252.14	2.55	-463.85	2.55	-34.93	2.85	-52.38
4	4	8.22	-1842.79	-34.65	-515.32	0	-1740.25	2.55	-317.84	2.55	-34.92	2.85	-52.36
5	5	10.96	-1842.79	15.82	-489.58	0	-1704.40	2.55	-392.91	2.55	-28.85	2.85	-43.27
5	5	10.96	-1842.79	11.29	-489.61	0	-1704.41	2.55	-392.91	2.55	-28.85	2.85	-43.26
6	6	13.70	-1842.79	62.11	-590.15	0	-1762.39	2.55	-373.02	2.55	-14.02	2.85	-21.02
6	6	13.70	-1842.79	57.62	-590.04	0	-1762.32	2.55	-373.04	2.55	-14.03	2.85	-21.05
7	7	16.44	-1842.79	108.09	-816.71	0	-1914.26	2.55	-258.12	2.55	9.59	2.85	14.39
7	7	16.44	-1842.79	103.57	-816.71	0	-1914.04	2.55	-258.19	2.55	9.53	2.85	14.30
8	8	19.18	-1842.79	154.75	-1169.94	0	-2159.74	2.55	-48.29	2.55	41.90	2.85	62.84
8	8	19.18	-1842.79	150.20	-1169.09	0	-2159.26	2.55	-48.44	2.55	41.77	2.85	62.65
9	9	21.92	-1842.79	200.79	-1649.91	0	-2499.53	2.55	256.68	2.55	83.10	2.85	124.62
9	9	21.92	-1842.79	197.27	-1648.41	0	-2498.68	2.55	256.42	2.55	82.87	2.85	124.28
10	10	24.66	-1842.79	289.53	-2259.73	0	-2935.19	2.55	657.27	2.55	133.59	2.85	200.34
10	10	24.66	-2400.79	286.21	-2259.78	0	-2174.66	2.55	-355.16	2.55	-137.51	2.85	-90.37
11	11	27.40	-2404.19	392.99	-2166.22	0	-2729.56	2.55	-72.86	2.55	-19.35	2.85	87.27
11	11	27.40	-2883.43	391.56	-1187.66	0	-2094.25	2.55	-602.46	2.55	-331.10	2.85	-274.55
12	12	30.45	-2890.46	545.22	-2624.84	0	-2982.65	2.55	-128.40	2.55	-147.97	2.85	0.99
12	10013	33.50	-2339.17	707.33	-4099.37	0	-2226.76	2.55	-393.96	2.55	-144.36	2.85	4.14
13	13	33.50	-2339.17	707.33	-4099.37	0	-3424.13	2.55	275.90	2.55	116.64	2.85	390.31
13	14	36.89	-2356.75	-802.92	-4133.05	0	-3474.39	2.55	304.19	2.55	121.16	2.85	394.48
14	14	36.89	-2437.72	-564.65	-1764.51	0	-2024.86	2.55	-548.89	2.55	-198.30	2.85	-74.18
14	15	40.28	-2969.75	-552.22	-2240.38	0	-2783.47	2.55	-290.88	2.55	-208.42	2.85	-84.33
15	15	40.28	-2961.93	-367.88	-669.15	0	-1795.14	2.55	-865.88	2.55	-400.59	2.85	-373.53
15	16	43.67	-2524.31	-362.30	-1912.74	0	-2717.07	2.55	-183.43	2.55	-36.97	2.85	47.00
16	16	43.67	-2520.62	-201.97	-991.27	0	-2133.74	2.55	-534.18	2.55	-148.04	2.85	-120.04
16	17	47.06	-2256.94	-199.04	-2072.98	0	-3187.79	2.55	645.79	2.55	64.23	2.85	96.32
17	17	47.06	-2256.94	-131.79	-1508.52	0	-2776.91	2.55	249.59	2.55	21.07	2.85	31.60
17	18	50.45	-2256.94	-130.62	-1509.18	0	-2777.29	2.55	249.70	2.55	21.17	2.85	31.75
18	18	50.45	-2256.94	-67.86	-1172.68	0	-2529.78	2.55	4.98	2.55	-3.35	2.85	-5.03
18	19	53.84	-2256.94	-68.96	-1173.64	0	-2530.33	2.55	5.14	2.55	-3.21	2.85	-4.81
19	19	53.84	-2256.94	-6.08	-1046.20	0	-2435.44	2.55	-91.41	2.55	-11.95	2.85	-17.92
19	20	57.23	-2256.94	-9.39	-1047.08	0	-2435.94	2.55	-91.26	2.55	-11.82	2.85	-17.72
20	20	57.23	-2256.94	59.92	-1142.14	0	-2501.29	2.55	-37.31	2.55	-2.75	2.85	-4.12
20	21	60.62	-2256.94	54.18	-1142.47	0	-2501.48	2.55	-37.25	2.55	-2.70	2.85	-4.05
21	21	60.62	-2256.94	118.48	-1433.93	0	-2712.24	2.55	162.64	2.55	20.25	2.85	30.36
21	22	64.01	-2256.94	111.10	-1433.45	0	-2711.96	2.55	162.55	2.55	20.17	2.85	30.25
22	22	64.01	-2633.63	204.81	-1948.03	0	-3083.33	2.55	513.07	2.55	61.02	2.85	91.51
23	23	67.40	-2637.85	203.39	-781.11	0	-2059.71	2.55	-565.67	2.55	-214.38	2.85	-204.97
23	23	67.40	-2925.08	382.09	-1766.12	0	-2683.35	2.55	-190.82	2.55	-95.72	2.85	-26.48
24	24	70.45	-2932.12	375.91	-613.74	0	-1768.23	2.55	-812.09	2.55	-405.83	2.85	-387.64
24	10025	73.50	-2427.58	542.04	-2006.20	0	-2647.40	2.55	-291.71	2.55	-238.07	2.85	-133.65
25	25	73.50	-2371.52	539.19	-1524.50	0	-1893.72	2.55	-559.00	2.55	-235.92	2.85	-131.91
25	26	76.26	-2337.67	705.37	-3468.12	0	-3095.14	2.55	167.30	2.55	19.41	2.85	243.78
26	26	76.26	-2392.49	-671.55	-3424.43	0	-3034.29	2.55	142.14	2.55	17.57	2.85	241.55
26	27	79.02	-2808.38	-487.04	-1776.94	0	-2037.64	2.55	-410.64	2.55	-209.91	2.85	-92.54
27	27	79.02	-2802.00	-486.88	-2141.11	0	-2622.10	2.55	-214.50	2.55	-219.68	2.85	-102.47
27	28	81.78	-342.38	-996.67	-1915.94	0	-1915.94	2.55	-586.73	2.55	-366.02	2.85	-322.75
28	28	81.78	-2057.23	-340.79	-1959.40	0	-2389.52	2.55	-52.36	2.55	-2.57	2.85	97.44
28	29	84.54	-1273.90	-234.69	-1151.58	0	-1898.40	2.55	-292.64	2.55	-109.48	2.85	-63.27
29	29	84.54	-1273.90	-181.72	-1189.36	0	-2141.03	2.55	484.26	2.55	123.05	2.85	184.54
29	30	87.30	-1273.90	-179.01	-1188.64	0	-1743.91	2.55	146.69	2.55	70.33	2.85	105.48
30	30	87.30	-1273.90	-128.04	-764.87	0	-1743.50	2.55	146.57	2.55	70.23	2.85	105.32
30	31	90.06	-1273.90	-125.15	-764.65	0	-1452.97	2.55	-91.13	2.55	29.40	2.85	44.10
31	31	90.06	-1273.90	-74.18	-489.48	0	-1452.84	2.55	-91.17	2.55	29.37	2.85	44.05
31	32	92.82	-1273.90	-71.62	-489.70	0	-1269.18	2.55	-228.89	2.55	0.52	2.85	0.79
32	32	92.82	-1273.90	-20.50	-362.59	0	-1269.30	2.55	-228.85	2.55	0.56	2.85	0.83
32	33	95.58	-1273.90	-18.71	-363.26	0	-1192.20	2.55	-266.68	2.55	-16.40	2.85	-24.60
33	33	95.58	-1046.35	32.19	-381.93	0	-1192.58	2.55	-266.57	2.55	-16.30	2.85	-24.45
33	34	98.34	-1046.35	32.74	-174.09	0	-1220.74	2.55	-204.93	2.55	-21.72	2.85	-32.57
34	34	98.34	-1046.35	83.78	-334.53	0	-886.24	2.55	-315.67	2.55	-21.56	2.85	-32.33
34	35	101.10	-667.09	82.32	30.53	0	-1017.37	2.55	-155.25	2.55	-16.03	2.85	-24.04
101	101	0.00	-667.09	320.93	-268.26	0	-443.40	2.55	-362.55	2.55	-15.83	2.85	-23.74
101	102	2.74	-667.09	338.81	-268.61	0	-675.56	2.55	-103.96	2.55	0.13	2.85	0.19
102	102	2.74	-667.09	88.99	49.14	0	-675.76	2.55	-103.90	2.55	0.18	2.85	0.27
102	103	5.48	-970.49	-88.25	-243.12	0	-434.04	2.55	-361.68	2.55	-19.22	2.85	-28.82
103	103	5.48	-970.49	-35.44	-73.71	0	-893.34	2.55	-195.81	2.55	-19.34	2.85	-29.00
103	104	8.22	-1198.05	-33.70	-281.90	0	-758.01	2.55	-354.73	2.55	-26.65	2.85	-39.97
104	104	8.22	-1198.05	19.41	-262.30	0	-1092.71	2.55	-243.93	2.55	-26.76	2.85	-40.13
104	105	10.96	-1198.05	22.39	-261.84	0	-1064.62	2.55	-303.75	2.55	-21.77	2.85	-32.65
105	105	10.96	-1198.05	75.52	-395.94	0	-1064.36	2.55	-303.83	2.55	-21.84	2.85	-32.75
				79.22	-395.80	0	-1145.72	2.55	-263.84	2.55	-3.96	2.85	-5.93
						0	-1145.64	2.55	-263.86	2.55	-3.98	2.85	-5.96

105	106	13.70	-1198.05	132.15	-685.30	0	-1337.44	2.55	-123.75	2.55	27.05	2.85	40.57
106	106	13.70	-1198.05	136.11	-685.45	0	-1337.52	2.55	-123.73	2.55	27.07	2.85	40.60
106	107	16.44	-1198.05	189.15	-1131.08	0	-1640.15	2.55	116.59	2.55	71.36	2.85	107.01
107	107	16.44	-1198.05	193.19	-1131.59	0	-1640.44	2.55	116.68	2.55	71.43	2.85	107.13
107	108	19.18	-1198.05	246.25	-1733.55	0	-2054.02	2.55	457.28	2.55	129.00	2.85	193.46
108	108	19.18	-2091.52	249.93	-1037.69	0	-1795.22	2.55	-368.25	2.55	-144.85	2.85	-102.13
108	109	21.92	-2094.92	364.61	-1900.25	0	-2317.29	2.55	-119.73	2.55	-29.62	2.85	-71.11
109	109	21.92	-2715.58	369.19	-1031.57	0	-1860.93	2.55	-601.22	2.55	-347.68	2.85	-296.62
109	110	24.66	-2721.90	520.09	-2251.78	0	-2609.57	2.55	-217.97	2.55	-189.60	2.85	-58.72
110	110	24.66	-2384.59	523.87	-1960.34	0	-2140.56	2.55	-373.51	2.55	-180.61	2.85	-49.61
110	10111	27.40	-2337.38	716.48	-3719.36	0	-3202.05	2.55	193.19	2.55	62.19	2.85	308.42
111	111	27.40	-2378.53	-760.96	-3762.63	0	-3264.85	2.55	216.08	2.55	62.08	2.85	308.68
111	112	30.45	-2445.51	-585.84	-1648.96	0	-1969.83	2.55	-543.24	2.55	-221.70	2.85	-108.27
112	112	30.45	-2949.43	-582.95	-2130.62	0	-2723.30	2.55	-275.78	2.55	-223.69	2.85	-109.86
112	113	33.50	-2942.40	-406.82	-623.60	0	-1778.87	2.55	-816.17	2.55	-409.72	2.85	-389.75
113	113	33.50	-2535.77	-409.27	-1870.82	0	-2712.18	2.55	-142.40	2.55	-53.55	2.85	23.61
113	114	36.89	-2532.09	-219.00	-822.68	0	-2052.76	2.55	-528.38	2.55	-181.87	2.85	-169.29
114	114	36.89	-2263.01	-217.11	-1902.17	0	-3059.69	2.55	496.12	2.55	54.81	2.85	82.19
114	115	40.28	-2263.01	-119.04	-1352.17	0	-2668.57	2.55	140.83	2.55	8.42	2.85	12.63
115	115	40.28	-2263.01	-123.73	-1353.07	0	-2669.08	2.55	140.99	2.55	8.56	2.85	12.83
115	116	43.67	-2263.01	-56.24	-1049.74	0	-2452.01	2.55	-59.50	2.55	-16.39	2.85	-24.57
116	116	43.67	-2263.01	-60.00	-1049.77	0	-2452.03	2.55	-59.49	2.55	-16.38	2.85	-24.57
116	117	47.06	-2263.01	12.62	-960.88	0	-2390.63	2.55	-110.88	2.55	-24.73	2.85	-37.09
117	117	47.06	-2263.01	10.80	-960.18	0	-2390.24	2.55	-111.00	2.55	-24.83	2.85	-37.24
117	118	50.45	-2263.01	76.84	-1107.93	0	-2497.15	2.55	-9.40	2.55	-13.24	2.85	-19.86
118	118	50.45	-2263.01	77.08	-1106.96	0	-2496.60	2.55	-9.57	2.55	-13.39	2.85	-20.08
118	119	53.84	-2263.01	145.61	-1481.17	0	-2766.03	2.55	243.25	2.55	16.61	2.85	24.91
119	119	53.84	-2263.01	148.53	-1480.45	0	-2765.62	2.55	243.12	2.55	16.50	2.85	24.75
119	120	57.23	-2263.01	215.89	-2096.46	0	-3206.33	2.55	649.87	2.55	67.21	2.85	100.80
120	120	57.23	-2640.21	220.86	-925.82	0	-2132.40	2.55	-581.44	2.55	-188.75	2.85	-165.69
120	121	60.62	-2644.43	392.02	-1935.51	0	-2766.20	2.55	-215.25	2.55	-64.55	2.85	21.12
121	121	60.62	-2960.96	400.81	-785.69	0	-1861.34	2.55	-844.87	2.55	-382.82	2.85	-347.01
121	122	64.01	-2968.78	597.92	-2485.34	0	-2922.91	2.55	-247.20	2.55	-171.32	2.85	-28.82
122	122	64.01	-2442.28	608.40	-2008.56	0	-2165.43	2.55	-507.03	2.55	-162.77	2.85	-20.31
122	10123	67.40	-2367.89	857.46	-4541.27	0	-3710.54	2.55	373.01	2.55	179.71	2.85	483.72
123	123	67.40	-2379.57	-770.99	-4545.32	0	-3716.36	2.55	370.22	2.55	177.31	2.85	481.62
123	124	70.45	-2427.06	-604.66	-2395.55	0	-2410.67	2.55	-337.08	2.55	-114.28	2.85	50.45
124	124	70.45	-2937.71	-619.59	-2878.05	0	-3166.64	2.55	-71.49	2.55	-117.89	2.85	47.31
124	125	73.50	-2930.68	-430.36	-1297.11	0	-2195.84	2.55	-572.35	2.55	-322.45	2.85	-260.38
125	125	73.50	-2484.22	-427.64	-2509.43	0	-3072.68	2.55	83.51	2.55	34.20	2.85	153.46
125	126	76.26	-2481.21	-266.76	-1517.34	0	-2468.47	2.55	-215.99	2.55	-96.68	2.85	-43.21
126	126	76.26	-2184.13	-266.04	-2561.53	0	-3428.93	2.55	813.84	2.55	132.95	2.85	199.38
126	127	79.02	-2184.13	-212.78	-1900.68	0	-2963.04	2.55	400.46	2.55	75.31	2.85	112.94
127	127	79.02	-2184.13	-214.09	-1902.48	0	-2964.06	2.55	400.77	2.55	75.58	2.85	113.34
127	128	81.78	-2184.13	-160.06	-1386.67	0	-2603.02	2.55	86.75	2.55	29.37	2.85	44.05
128	128	81.78	-2184.13	-162.60	-1387.80	0	-2603.66	2.55	86.95	2.55	29.54	2.85	44.31
128	129	84.54	-2184.13	-109.40	-1012.44	0	-2344.83	2.55	-128.54	2.55	-5.92	2.85	-8.87
129	129	84.54	-2184.13	-112.63	-1013.05	0	-2345.17	2.55	-128.43	2.55	-5.82	2.85	-8.74
129	130	87.30	-2184.13	-59.37	-775.78	0	-2187.23	2.55	-245.77	2.55	-30.90	2.85	-46.34
130	130	87.30	-2184.13	-62.83	-775.95	0	-2187.33	2.55	-245.74	2.55	-30.87	2.85	-46.30
130	131	90.06	-2184.13	-9.64	-675.97	0	-2129.80	2.55	-265.10	2.55	-45.68	2.85	-68.50
131	131	90.06	-2184.13	-12.95	-675.88	0	-2129.75	2.55	-265.12	2.55	-45.69	2.85	-68.53
131	132	92.82	-2184.13	40.61	-713.68	0	-2172.93	2.55	-186.42	2.55	-50.16	2.85	-75.22
132	132	92.82	-1691.09	37.49	-284.44	0	-1467.79	2.55	-397.34	2.55	-50.20	2.85	-75.29
132	133	95.58	-1691.09	90.69	-461.34	0	-1612.42	2.55	-220.32	2.55	-44.13	2.85	-66.17
133	133	95.58	-1198.05	38.11	-8.31	0	-886.12	2.55	-460.74	2.55	-44.19	2.85	-66.27
133	134	98.34	-1198.05	141.30	-324.89	0	-1132.54	2.55	-185.32	2.55	-27.48	2.85	-41.21
134	134	98.34	-705.01	139.28	151.80	0	-385.17	2.55	-455.18	2.55	-27.54	2.85	-41.31
134	135	101.10	-705.01	472.51	-309.28	0	-736.11	2.55	-80.50	2.55	0.52	2.85	0.77

GRÁFICO DE TENSIONES

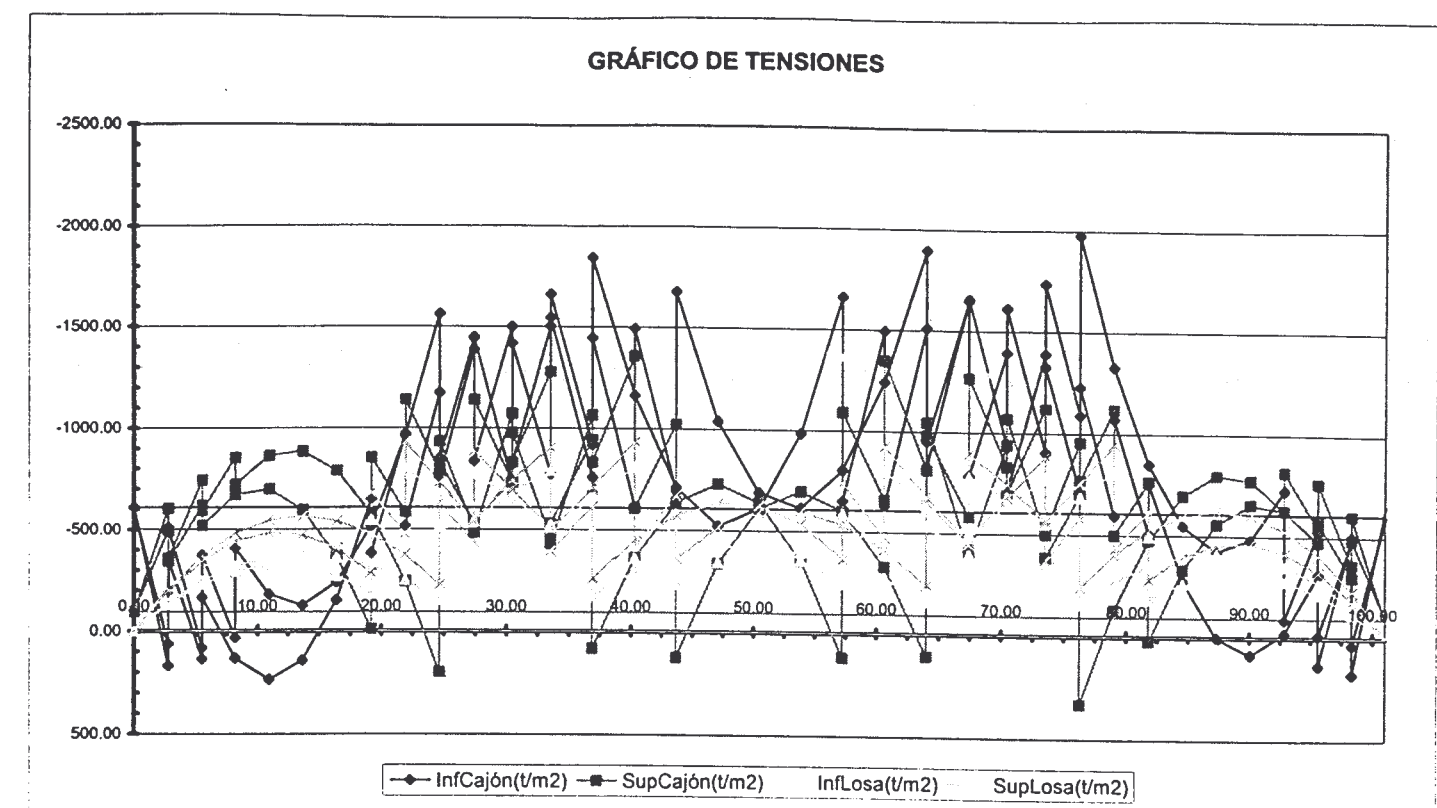


TREN DOMINANTE CON GRADIENTE

Coef. exp:

Barra	Nudo	X	N (T)	Vy (T)	Mz (Tm)	Fibra		InfCajón		Fibra		SupCajón		Fibra		InfLosa		Fibra		SupLosa	
						y fibra	sig (t/m2)	y fibra	sig (t/m2)	y fibra	sig (t/m2)	y fibra	sig (t/m2)	y fibra	sig (t/m2)						
1	1	0.00	-603.55	-232.40	-240.71	0	-610.08	2.55	-94.41	2.55	-0.19	2.85	-0.28								
1	2	2.74	-603.55	-391.61	969.34	0	168.52	2.55	-603.22	2.55	-140.69	2.85	-211.00								
2	2	2.74	-1049.64	-386.70	535.31	0	-509.23	2.55	-358.59	2.55	-140.22	2.85	-210.29								
2	3	5.48	-1049.64	-284.58	1454.99	0	82.02	2.55	-743.60	2.55	-247.25	2.85	-370.80								
3	3	5.48	-1358.46	-283.20	1168.48	0	-374.47	2.55	-592.53	2.55	-246.80	2.85	-370.12								
3	4	8.22	-1358.46	-181.09	1804.58	0	33.30	2.55	-854.94	2.55	-321.38	2.85	-481.96								
4	4	8.22	-1667.29	-182.94	1533.12	0	-409.85	2.55	-722.36	2.55	-320.96	2.85	-481.33								
4	5	10.96	-1667.29	-81.10	1895.16	0	-1801.13	2.55	-863.83	2.55	-364.51	2.85	-546.65								
5	5	10.96	-1667.29	-85.89	1892.68	0	-1811.55	2.55	-863.40	2.55	-364.14	2.85	-546.09								
5	6	13.70	-1667.29	15.78	1988.70	0	-125.28	2.55	-885.38	2.55	-377.88	2.85	-566.70								
6	6	13.70	-1667.29	8.12	1986.64	0	-126.45	2.55	-885.02	2.55	-377.57	2.85	-566.21								
6	7	16.44	-1667.29	110.25	1824.51	0	-239.17	2.55	-788.87	2.55	-362.69	2.85	-543.92								
7	7	16.44	-1667.29	100.39	1823.05	0	-240.01	2.55	-788.61	2.55	-362.47	2.85	-543.59								
7	8	19.18	-1667.29	201.73	1408.59	0	-518.40	2.55	-575.34	2.55	-319.84	2.85	-479.65								
8	8	19.18	-1667.29	190.61	1407.97	0	-518.75	2.55	-575.23	2.55	-319.74	2.85	-479.51								
8	9	21.92	-1667.29	292.11	746.44	0	-959.80	2.55	-245.76	2.55	-250.16	2.85	-375.16								
9	9	21.92	-1667.29	280.24	746.92	0	-959.53	2.55	-245.85	2.55	-250.23	2.85	-375.27								
9	10	24.66	-1667.29	340.43	-159.00	0	-1561.73	2.55	199.34	2.55	-154.10	2.85	-231.09								
10	10	24.66	-2490.85	329.24	967.69	0	-849.23	2.55	-830.06	2.55	-517.98	2.85	-630.93								
10	11	27.40	-2495.01	369.46	-5.51	0	-1442.42	2.55	-536.26	2.55	-389.95	2.85	-438.40								
11	11	27.40	-3217.97	359.02	1086.62	0	-836.68	2.55	-1138.63	2.55	-777.76	2.85	-887.07								
11	12	30.45	-3226.56	342.90	46.11	0	-1499.48	2.55	-734.65	2.55	-654.79	2.85	-701.55								
12	12	30.45	-2769.59	334.82	478.78	0	-819.24	2.55	-975.77	2.55	-652.25	2.85	-699.14								
12	10013	33.50	-2719.89	338.92	-579.55	0	-1501.78	2.55	-460.89	2.55	-524.29	2.85	-513.65								
13	13	33.50	-2721.61	-336.29	-614.05	0	-1545.28	2.55	-430.33	2.55	-515.93	2.85	-505.31								
13	14	36.89	-2772.60	-353.75	573.76	0	-759.67	2.55	-1067.19	2.55	-649.80	2.85	-699.50								
14	14	36.89	-3250.59	-362.22	143.09	0	-1445.09	2.55	-832.72	2.55	-658.06	2.85	-707.78								
14	15	40.28	-3241.03	-404.20	1437.28	0	-614.11	2.55	-1358.58	2.55	-808.05	2.85	-933.95								
15	15	40.28	-2537.60	-388.89	72.17	0	-1492.65	2.55	-606.66	2.55	-363.65	2.85	-419.98								
15	16	43.67	-2533.10	-361.06	1372.05	0	-693.41	2.55	-1023.57	2.55	-531.51	2.85	-672.30								
16	16	43.67	-2042.26	-347.66	192.09	0	-1676.86	2.55	124.21	2.55	-239.69	2.85	-359.46								
16	17	47.06	-2042.26	-223.84	1161.57	0	-1036.14	2.55	-339.79	2.55	-344.32	2.85	-516.37								
17	17	47.06	-2042.26	-216.49	1155.83	0	-1039.41	2.55	-338.79	2.55	-343.46	2.85	-515.07								
17	18	50.45	-2042.26	-90.56	1676.17	0	-688.12	2.55	-612.49	2.55	-396.14	2.85	-594.08								
18	18	50.45	-2042.26	-90.52	1669.93	0	-691.67	2.55	-611.39	2.55	-395.20	2.85	-592.67								
18	19	53.84	-2042.26	33.94	1766.83	0	-615.17	2.55	-699.30	2.55	-399.80	2.85	-599.58								
19	19	53.84	-2042.26	26.84	1760.66	0	-618.68	2.55	-698.22	2.55	-398.87	2.85	-598.18								
19	20	57.23	-2042.26	152.66	1456.41	0	-804.26	2.55	-604.27	2.55	-358.76	2.85	-538.02								
20	20	57.23	-2042.26	138.86	1451.13	0	-807.27	2.55	-603.34	2.55	-357.96	2.85	-536.83								
20	21	60.62	-2042.26	261.82	771.73	0	-1240.09	2.55	-332.07	2.55	-277.04	2.85	-415.47								
21	21	60.62	-2042.26	243.20	768.27	0	-1242.07	2.55	-331.46	2.55	-276.52	2.85	-414.69								
21	22	64.01	-2042.26	337.48	-237.14	0	-1894.16	2.55	108.49	2.55	-162.20	2.85	-243.24								
22	22	64.01	-2722.09	325.69	1040.14	0	-951.14	2.55	-982.75	2.55	-535.78	2.85	-654.35								
22	23	67.40	-2727.23	327.70	-72.65	0	-1647.88	2.55	-585.75	2.55	-398.11	2.85	-447.24								
23	23	67.40	-3266.20	322.85	1179.45	0	-784.36	2.55	-1268.44	2.55	-783.09	2.85	-893.28								
23	24	70.45	-3274.82	300.63	263.11	0	-1392.66	2.55	-832.09	2.55	-686.47	2.85	-747.26								
24	24	70.45	-2811.13	299.66	695.90	0	-710.32	2.55	-1071.23	2.55	-682.21	2.85	-743.14								
24	10025	73.50	-2742.62	327.30	-334.15	0	-1387.34	2.55	-501.53	2.55	-561.29	2.85	-570.63								
25	25	73.50	-2686.43	-321.90	-298.54	0	-1326.85	2.55	-515.92	2.55	-555.78	2.85	-565.17								
25	26	76.26	-2753.43	-368.84	690.75	0	-708.97	2.55	-956.84	2.55	-687.24	2.85	-753.70								
26	26	76.26	-3100.29	-359.63	361.73	0	-1228.67	2.55	-770.63	2.55	-688.57	2.85	-755.21								
26	27	79.02	-3092.50	-378.92	1373.62	0	-597.62	2.55	-1119.17	2.55	-814.58	2.85	-945.18								
27	27	79.02	-2113.65	-369.48	261.32	0	-1071.18	2.55	-500.93	2.55	-370.06	2.85	-431.17								
27	28	81.78	-2109.97	-321.96	1196.73	0	-507.14	2.55	-763.39	2.55	-496.02	2.85	-620.54								
28	28	81.78	-1152.58	-311.52	449.73	0	-755.04	2.55	20.87	2.55	-188.19	2.85	-282.23								
28	29	84.54	-1152.58	-209.01	1168.18	0	-277.35	2.55	-332.57	2.55	-264.38	2.85	-396.49								
29	29	84.54	-1152.58	-199.82	1166.91	0	-278.07	2.55	-332.35	2.55	-264.19	2.85	-396.20								
29	30	87.30	-1152.58	-97.18	1576.80	0	1.59	2.55	-557.74	2.55	-304.31	2.85	-456.37								
30	30	87.30	-1152.58	-90.11	1574.73	0	0.41	2.55	-557.38	2.55	-304.00	2.85	-455.90								
30	31	90.06	-1152.58	12.47	1681.74	0	85.28	2.55	-655.73	2.55	-308.91	2.85	-463.26								
31	31	90.06	-1152.58	16.84	1679.00	0	83.72	2.55	-655.25	2.55	-308.49	2.85	-462.64								
31	32	92.82	-1152.58	119.36	1491.16	0	-21.64	2.55	-627.94	2.55	-279.40	2.85	-419.01								
32	32	92.82	-1152.58	120.43	1488.01	0	-23.43	2.55	-627.39	2.55	-278.92	2.85	-418.30								
32	33	95.58	-1152.58	223.16	1014.04	0	-314.03	2.55	-475.98	2.55	-217.14	2.85	-325.64								
33	33	95.58	-946.69	220.56	1199.61	0	-12.80	2.55	-575.74	2.55	-216.62	2.85	-324.86								
33	34	98.34	-946.69	323.18	448.95	0	-483.27	2.55	-301.87	2.55	-123.57	2.85	-185.31								
34	34	98.34	-603.55	317.03	776.81	0	34.65	2.55	-489.00	2.55	-123.03	2.85	-184.50								
34	35	101.10	-603.55	227.78	-238.53	0	-608.84	2.55	-94.79	2.55	-0.52	2.85	-0.77								
101	101	0.00	-603.55	-242.86	-239.10	0	-609.17	2.55	-94.69	2.55	-0.43	2.85	-0.64								
101	102	2.74	-603.55	-336.96	829.28	0	63.32	2.55	-494.09	2.55	-131.51	2.85	-197.22								
102	102	2.74	-878.07	-338.81	566.50	0	-351.30	2.55	-344.31	2.55	-131.87	2.85	-197.76								
102	103	5.48	-878.07	-231.65	1348.03	0	135.85	2.55	-620.55	2.55	-230.00	2.85	-344.93								
103	103	5.48	-1083.95	-230.81	1161.40	0	-165.98	2.55	-520.61	2.55	-230.36	2.85	-345.46								
103	104	8.22	-1083.95	-124.00	1647.48	0	130.93	2.55	-672.17	2.55	-294.25	2.85	-441.27								
104	104	8.22	-1083.95	-120.94	1649.89	0	132.30	2.55	-672.59	2.55	-294.61	2.85	-441.82								
104	105	10.96	-1083.95	-14.05	1834.76	0	235.69	2.55	-698.47	2.55	-323.38	2.85	-484.97								
105	105	10.96	-1083.95	-8.44	1837.13	0	237.04	2.55	-698.88	2.55	-323.74	2.85	-485.51								

105	106	13.70	-1083.95	98.59	1713.51	0	142.75	2.55	-597.77	2.55	-316.31	2.85	-474.37
106	106	13.70	-1083.95	106.78	1715.57	0	143.93	2.55	-598.13	2.55	-316.62	2.85	-474.83
106	107	16.44	-1083.95	213.71	1276.49	0	-152.00	2.55	-368.84	2.55	-271.93	2.85	-407.81
107	107	16.44	-1083.95	224.06	1278.07	0	-151.10	2.55	-369.12	2.55	-272.17	2.85	-408.17
107	108	19.18	-1083.95	330.88	517.72	0	-651.99	2.55	-10.61	2.55	-189.35	2.85	-283.96
106	108	19.18	-2175.96	342.84	1370.31	0	-384.26	2.55	-854.11	2.55	-547.74	2.85	-680.77
108	109	21.92	-2180.12	388.14	395.34	0	-970.62	2.55	-586.09	2.55	-415.78	2.85	-482.33
109	109	21.92	-3010.94	398.95	1392.75	0	-518.08	2.55	-1139.71	2.55	-804.82	2.85	-932.22
109	110	24.66	-3018.68	370.12	338.78	0	-1172.41	2.55	-786.06	2.55	-672.14	2.85	-732.25
110	110	24.66	-2743.59	379.74	602.51	0	-757.07	2.55	-935.83	2.55	-671.78	2.85	-731.77
110	10111	27.40	-2685.89	339.83	-405.38	0	-1387.33	2.55	-497.81	2.55	-539.43	2.85	-540.73
111	111	27.40	-2746.45	-349.59	-440.80	0	-1449.04	2.55	-484.76	2.55	-546.10	2.85	-547.35
111	112	30.45	-2828.32	-321.30	663.90	0	-733.51	2.55	-1071.48	2.55	-681.72	2.85	-740.20
112	112	30.45	-3291.99	-319.81	231.08	0	-1415.86	2.55	-832.33	2.55	-685.97	2.85	-744.30
112	113	33.50	-3283.39	-345.98	1204.40	0	-775.12	2.55	-1278.59	2.55	-791.20	2.85	-903.21
113	113	33.50	-2598.35	-346.46	-163.77	0	-1660.92	2.55	-531.65	2.55	-351.07	2.85	-393.30
113	114	36.89	-2593.85	-347.00	1027.16	0	-919.87	2.55	-942.45	2.55	-500.69	2.85	-618.26
114	114	36.89	-2047.23	-355.05	-143.53	0	-1842.66	2.55	84.15	2.55	-175.64	2.85	-263.41
114	115	40.28	-2047.23	-255.85	912.31	0	-1162.26	2.55	-363.25	2.55	-297.76	2.85	-446.54
115	115	40.28	-2047.23	-272.15	914.70	0	-1160.89	2.55	-363.67	2.55	-298.12	2.85	-447.08
115	116	43.67	-2047.23	-143.25	1619.58	0	-713.97	2.55	-637.99	2.55	-383.08	2.85	-574.49
116	116	43.67	-2047.23	-155.89	1624.03	0	-711.43	2.55	-638.77	2.55	-383.75	2.85	-575.50
116	117	47.06	-2047.23	-23.81	1928.40	0	-526.22	2.55	-731.32	2.55	-424.09	2.85	-635.99
117	117	47.06	-2047.23	-30.55	1934.12	0	-522.96	2.55	-732.32	2.55	-424.95	2.85	-637.29
117	118	50.45	-2047.23	99.96	1814.13	0	-613.05	2.55	-638.93	2.55	-417.07	2.85	-625.46
118	118	50.45	-2047.23	100.45	1820.36	0	-609.50	2.55	-640.03	2.55	-418.00	2.85	-626.87
118	119	53.84	-2047.23	232.28	1256.75	0	-985.88	2.55	-357.32	2.55	-359.00	2.85	-538.39
119	119	53.84	-2047.23	240.09	1262.93	0	-982.35	2.55	-358.40	2.55	-359.93	2.85	-539.79
119	120	57.23	-2047.23	369.92	227.21	0	-1661.26	2.55	118.66	2.55	-245.53	2.85	-368.21
12	120	57.23	-2676.81	384.39	1516.22	0	-654.45	2.55	-1091.89	2.55	-590.30	2.85	-741.95
120	121	60.62	-2681.96	410.77	146.22	0	-1493.88	2.55	-662.74	2.55	-412.06	2.85	-473.99
121	121	60.62	-3237.39	427.88	1396.68	0	-636.24	2.55	-1350.09	2.55	-801.03	2.85	-923.89
121	122	64.01	-3246.94	380.82	27.44	0	-1510.02	2.55	-810.93	2.55	-639.75	2.85	-680.79
122	122	64.01	-2773.48	381.19	458.80	0	-825.57	2.55	-1046.88	2.55	-632.76	2.85	-673.84
122	10123	67.40	-2734.67	355.20	-789.19	0	-1649.18	2.55	-402.99	2.55	-492.99	2.85	-469.22
123	123	67.40	-2755.67	-352.35	-788.92	0	-1655.33	2.55	-409.35	2.55	-498.45	2.85	-474.70
123	124	70.45	-2813.72	-363.85	344.66	0	-931.96	2.55	-941.47	2.55	-639.68	2.85	-679.02
124	124	70.45	-3271.31	-344.56	-88.03	0	-1612.41	2.55	-700.52	2.55	-642.38	2.85	-681.59
124	125	73.50	-3262.72	-390.17	1029.98	0	-904.97	2.55	-1119.66	2.55	-776.80	2.85	-884.29
125	125	73.50	-2531.50	-397.78	-303.93	0	-1735.10	2.55	-386.37	2.55	-334.04	2.85	-371.94
125	126	76.26	-2527.83	-403.43	762.62	0	-1088.25	2.55	-698.73	2.55	-475.96	2.85	-585.25
126	126	76.26	-1976.11	-412.99	-377.76	0	-1977.50	2.55	331.50	2.55	-162.86	2.85	-244.24
126	127	79.02	-1976.11	-305.13	613.20	0	-1325.68	2.55	-132.49	2.55	-271.26	2.85	-406.80
127	127	79.02	-1976.11	-314.82	611.95	0	-1326.39	2.55	-132.27	2.55	-271.07	2.85	-406.52
127	128	81.78	-1976.11	-208.24	1334.92	0	-849.48	2.55	-475.32	2.55	-349.52	2.85	-524.16
128	128	81.78	-1976.11	-218.08	1334.95	0	-849.46	2.55	-475.33	2.55	-349.52	2.85	-524.17
128	129	84.54	-1976.11	-110.13	1787.93	0	-548.59	2.55	-697.11	2.55	-397.71	2.85	-596.43
129	129	84.54	-1976.11	-118.82	1789.05	0	-547.96	2.55	-697.31	2.55	-397.88	2.85	-596.69
129	130	87.30	-1976.11	-10.87	1967.97	0	-425.47	2.55	-797.08	2.55	-415.19	2.85	-622.66
130	130	87.30	-1976.11	-17.41	1970.04	0	-424.29	2.55	-797.44	2.55	-415.50	2.85	-623.12
130	131	90.06	-1976.11	90.54	1869.06	0	-483.49	2.55	-774.21	2.55	-401.07	2.85	-601.48
131	131	90.06	-1976.11	86.96	1871.94	0	-481.85	2.55	-774.72	2.55	-401.50	2.85	-602.13
131	132	92.82	-1976.11	194.28	1483.23	0	-727.21	2.55	-627.10	2.55	-354.14	2.85	-531.09
1?	132	92.82	-1530.03	194.53	1874.82	0	-87.39	2.55	-818.51	2.55	-354.66	2.85	-531.88
13	133	95.58	-1530.03	302.48	1188.93	0	-524.30	2.55	-544.83	2.55	-272.95	2.85	-409.33
133	133	95.58	-1083.95	307.03	1602.48	0	134.91	2.55	-762.99	2.55	-273.56	2.85	-410.24
133	134	98.34	-1083.95	414.97	606.11	0	-501.12	2.55	-360.94	2.55	-155.48	2.85	-233.16
134	134	98.34	-637.87	424.48	1041.51	0	177.41	2.55	-605.82	2.55	-156.15	2.85	-234.18
134	135	101.10	-637.87	252.52	-275.84	0	-663.73	2.55	-73.53	2.55	-0.14	2.85	-0.20



GRADIENTE DOMINANTE

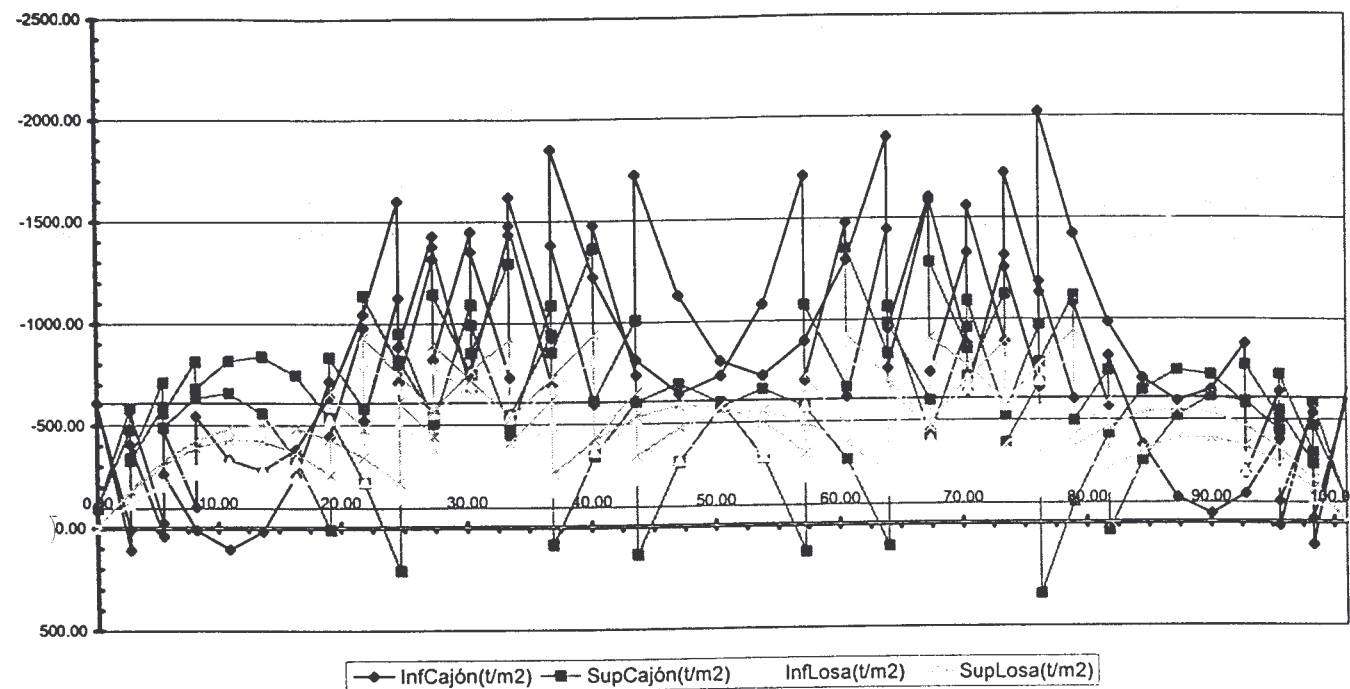
1; 1PPC 1; 1PPLJ3 + 1; 1PPLF2 + [.95; 1.05]PRETF1A.ISO.To + [.95; 1.05]PRETF1A.HIP.To + [.95; 1.05]PRETF1B.ISO.To + [.95; 1.05]PRETF1B.HIP.To + [.9; 1.1]PRETF3C.ISO.To + [.9; 1.1]PRETF3C.HIP.To + [.9; 1.1]PRE

Coef. esc

Barra	Nudo	X	N (T)	Vy (T)	Mz (Tm)	Fibra	InfCajón	Fibra	SupCajón	Fibra	InfLosa	Fibra	SupLosa
						y fibra	sig (t/m2)	y fibra	sig (t/m2)	y fibra	sig (t/m2)	y fibra	sig (t/m2)
1	1	0.00	-603.55	-233.12	-240.99	0	-610.24	2.55	-94.36	2.55	-0.14	2.85	-0.22
1	2	2.74	-603.55	-356.72	861.26	0	106.93	2.55	-584.25	2.55	-124.41	2.85	-186.58
2	2	2.74	-1049.64	-352.88	427.74	0	-570.53	2.55	-339.71	2.55	-124.02	2.85	-185.99
2	3	5.48	-1049.64	-260.08	1267.53	0	-24.81	2.55	-710.70	2.55	-219.02	2.85	-328.45
3	3	5.48	-1358.46	-259.19	981.52	0	-481.03	2.55	-559.71	2.55	-218.64	2.85	-327.89
3	4	8.22	-1358.46	-166.41	1564.59	0	-103.47	2.55	-812.82	2.55	-285.22	2.85	-427.74
4	4	8.22	-1667.29	-168.22	1293.59	0	-546.36	2.55	-680.32	2.55	-284.87	2.85	-427.22
4	5	10.96	-1667.29	-75.65	1627.95	0	-332.42	2.55	-816.94	2.55	-324.26	2.85	-486.28
5	5	10.96	-1667.29	-79.95	1625.87	0	-333.61	2.55	-816.57	2.55	-323.95	2.85	-485.82
5	6	13.70	-1667.29	12.49	1718.27	0	-279.41	2.55	-837.92	2.55	-337.14	2.85	-505.61
6	6	13.70	-1667.29	5.79	1716.56	0	-280.38	2.55	-837.62	2.55	-336.88	2.85	-505.22
6	7	16.44	-1667.29	98.60	1573.58	0	-382.18	2.55	-744.83	2.55	-324.89	2.85	-487.23
7	7	16.44	-1667.29	90.05	1572.40	0	-382.86	2.55	-744.62	2.55	-324.71	2.85	-486.96
7	8	19.18	-1667.29	182.23	1198.93	0	-637.88	2.55	-538.54	2.55	-288.25	2.85	-432.29
8	8	19.18	-1667.29	172.64	1198.49	0	-638.13	2.55	-538.47	2.55	-288.19	2.85	-432.19
8	9	21.92	-1667.29	264.95	598.83	0	-1043.93	2.55	-219.86	2.55	-227.92	2.85	-341.81
9	9	21.92	-1667.29	254.81	599.35	0	-1043.63	2.55	-219.95	2.55	-228.00	2.85	-341.93
9	10	24.66	-1667.29	305.71	-224.16	0	-1598.86	2.55	210.77	2.55	-144.28	2.85	-216.37
	10	24.66	-2490.85	296.32	902.40	0	-886.45	2.55	-818.60	2.55	-508.14	2.85	-616.18
	11	27.40	-2495.01	337.88	21.53	0	-1427.01	2.55	-541.01	2.55	-394.03	2.85	-444.51
11	11	27.40	-3217.97	329.12	1113.52	0	-821.35	2.55	-1143.35	2.55	-781.82	2.85	-893.15
11	12	30.45	-3226.56	327.12	137.85	0	-1447.20	2.55	-750.75	2.55	-668.61	2.85	-722.28
12	12	30.45	-2769.59	320.35	570.32	0	-767.07	2.55	-991.83	2.55	-666.04	2.85	-719.82
12	10013	33.50	-2719.89	334.39	-460.69	0	-1434.04	2.55	-481.75	2.55	-542.20	2.85	-540.50
13	13	33.50	-2721.61	-339.30	-495.33	0	-1477.62	2.55	-451.17	2.55	-533.82	2.85	-532.13
13	14	36.89	-2772.60	-341.62	684.88	0	-696.34	2.55	-1086.69	2.55	-666.54	2.85	-724.60
14	14	36.89	-3250.59	-348.54	254.03	0	-1381.86	2.55	-852.19	2.55	-674.77	2.85	-732.84
14	15	40.28	-3241.03	-369.82	1466.19	0	-597.64	2.55	-1363.65	2.55	-812.41	2.85	-940.48
15	15	40.28	-2537.60	-356.60	101.09	0	-1476.17	2.55	-611.73	2.55	-368.00	2.85	-426.52
15	16	43.67	-2533.10	-330.25	1294.12	0	-737.82	2.55	-1009.90	2.55	-519.77	2.85	-654.70
16	16	43.67	-2042.26	-318.44	114.74	0	-1720.94	2.55	137.79	2.55	-228.04	2.85	-341.98
16	17	47.06	-2042.26	-205.63	1003.67	0	-1126.13	2.55	-312.08	2.55	-320.53	2.85	-480.70
17	17	47.06	-2042.26	-199.14	998.64	0	-1128.99	2.55	-311.20	2.55	-319.78	2.85	-479.56
17	18	50.45	-2042.26	-84.66	1479.60	0	-800.15	2.55	-577.99	2.55	-366.53	2.85	-549.67
18	18	50.45	-2042.26	-84.60	1474.12	0	-803.27	2.55	-577.03	2.55	-365.70	2.85	-548.44
18	19	53.84	-2042.26	28.73	1569.61	0	-727.57	2.55	-664.69	2.55	-370.09	2.85	-555.02
19	19	53.84	-2042.26	22.47	1564.20	0	-730.65	2.55	-663.74	2.55	-369.28	2.85	-553.80
19	20	57.23	-2042.26	136.87	1294.15	0	-896.73	2.55	-575.79	2.55	-334.31	2.85	-501.36
20	20	57.23	-2042.26	124.67	1289.52	0	-899.37	2.55	-574.98	2.55	-333.62	2.85	-500.32
20	21	60.62	-2042.26	236.79	676.65	0	-1294.29	2.55	-315.38	2.55	-262.72	2.85	-393.99
21	21	60.62	-2042.26	220.31	673.63	0	-1296.01	2.55	-314.86	2.55	-262.26	2.85	-393.31
21	22	64.01	-2042.26	309.71	-241.52	0	-1896.65	2.55	109.25	2.55	-161.54	2.85	-242.25
22	22	64.01	-2722.09	299.65	1035.94	0	-953.53	2.55	-982.01	2.55	-535.14	2.85	-653.40
23	23	67.40	-2727.23	306.13	8.22	0	-1601.80	2.55	-599.94	2.55	-410.30	2.85	-465.51
23	23	67.40	-3266.20	302.12	1259.97	0	-738.47	2.55	-1282.57	2.55	-795.22	2.85	-911.47
23	24	70.45	-3274.82	295.27	377.69	0	-1327.36	2.55	-852.20	2.55	-703.73	2.85	-773.15
24	24	70.45	-2811.13	294.45	810.33	0	-645.11	2.55	-1091.31	2.55	-699.45	2.85	-768.99
24	10025	73.50	-2742.62	327.16	-207.27	0	-1315.03	2.55	-523.79	2.55	-580.41	2.85	-599.29
25	25	73.50	-2686.43	-313.37	-171.73	0	-1254.57	2.55	-538.17	2.55	-574.88	2.85	-593.82
25	26	76.26	-2753.43	-340.79	770.43	0	-663.56	2.55	-970.82	2.55	-699.25	2.85	-771.70
26	26	76.26	-3100.29	-333.33	440.98	0	-1183.50	2.55	-784.53	2.55	-700.51	2.85	-773.12
26	27	79.02	-3092.50	-338.86	1361.55	0	-604.50	2.55	-1117.05	2.55	-812.76	2.85	-942.46
27	27	79.02	-2113.65	-331.09	249.24	0	-1078.06	2.55	-498.81	2.55	-368.24	2.85	-428.44
27	28	81.78	-2109.97	-291.70	1088.44	0	-568.85	2.55	-744.38	2.55	-479.70	2.85	-596.07
28	28	81.78	-1152.58	-282.75	341.59	0	-816.67	2.55	39.84	2.55	-171.90	2.85	-257.80
28	29	84.54	-1152.58	-189.56	993.48	0	-376.91	2.55	-301.91	2.55	-238.06	2.85	-357.02
29	29	84.54	-1152.58	-181.58	992.48	0	-377.48	2.55	-301.73	2.55	-237.91	2.85	-356.80
29	30	87.30	-1152.58	-88.28	1364.91	0	-119.17	2.55	-520.56	2.55	-272.39	2.85	-408.50
30	30	87.30	-1152.58	-82.06	1363.21	0	-120.14	2.55	-520.26	2.55	-272.14	2.85	-408.12
30	31	90.06	-1152.58	11.19	1460.90	0	-40.58	2.55	-616.97	2.55	-275.64	2.85	-413.37
31	31	90.06	-1152.58	15.13	1458.58	0	-41.90	2.55	-616.56	2.55	-275.29	2.85	-412.85
31	32	92.82	-1152.58	108.34	1288.29	0	-137.25	2.55	-592.34	2.55	-248.84	2.85	-373.18
32	32	92.82	-1152.58	109.46	1285.61	0	-138.78	2.55	-591.87	2.55	-248.43	2.85	-372.57
32	33	95.58	-1152.58	202.82	854.82	0	-404.77	2.55	-448.04	2.55	-193.15	2.85	-289.67
33	33	95.58	-946.69	200.79	1040.87	0	-103.26	2.55	-547.88	2.55	-192.71	2.85	-289.00
33	34	98.34	-946.69	294.07	357.72	0	-535.26	2.55	-285.86	2.55	-109.83	2.85	-164.71
34	34	98.34	-603.55	288.94	686.08	0	-17.06	2.55	-473.08	2.55	-109.36	2.85	-164.00
	35	101.10	-603.55	223.10	-239.06	0	-609.14	2.55	-94.70	2.55	-0.43	2.85	-0.65
101	101	0.00	-603.55	-237.52	-239.59	0	-609.44	2.55	-94.61	2.55	-0.36	2.85	-0.53
101	102	2.74	-603.55	-306.64	732.78	0	8.32	2.55	-477.16	2.55	-116.97	2.85	-175.42
102	102	2.74	-878.07	-308.04	469.62	0	-406.51	2.55	-327.31	2.55	-117.28	2.85	-175.88
102	103	5.48	-878.07	-210.55	1180.09	0	40.15	2.55	-591.08	2.55	-204.70	2.85	-306.99
103	103	5.48	-1083.95	-209.67	993.10	0	-261.90	2.55	-491.07	2.55	-205.01	2.85	-307.44
103	104	8.22	-1083.95	-112.45	1434.40	0	9.49	2.55	-634.77	2.55	-262.15	2.85	-393.14
104	104	8.22	-1083.95	-109.67	1436.43	0	10.65	2.55	-635.13	2.55	-262.45	2.85	-393.59
104	105	10.96	-1083.95	-12.40	1603.60	0	103.95	2.55	-657.90	2.55	-288.56	2.85	-432.75
105	105	10.96	-1083.95	-7.44	1605.58	0	105.08	2.55	-658.25	2.55	-288.86	2.85	-433.20

105	106	13.70	-1083.95	89.94	1492.44	0	16.76	2.55	-558.97	2.55	-283.01	2.85	-424.42
106	106	13.70	-1083.95	97.07	1494.15	0	17.74	2.55	-559.27	2.55	-283.27	2.85	-424.81
106	107	16.44	-1083.95	194.39	1094.83	0	-255.53	2.55	-336.96	2.55	-244.57	2.85	-366.77
107	107	16.44	-1083.95	203.32	1096.12	0	-254.80	2.55	-337.19	2.55	-244.76	2.85	-367.06
107	108	19.18	-1083.95	300.54	405.75	0	-715.80	2.55	9.04	2.55	-172.48	2.85	-258.67
108	108	19.18	-2175.96	310.79	1258.14	0	-448.19	2.55	-834.42	2.55	-530.85	2.85	-655.43
108	109	21.92	-2180.12	347.98	383.79	0	-977.20	2.55	-584.06	2.55	-414.04	2.85	-479.72
109	109	21.92	-3010.94	356.96	1381.14	0	-524.70	2.55	-1137.67	2.55	-803.07	2.85	-929.60
109	110	24.66	-3018.68	344.26	421.44	0	-1125.29	2.55	-800.56	2.55	-684.59	2.85	-750.92
110	110	24.66	-2743.59	352.26	685.46	0	-709.80	2.55	-950.39	2.55	-684.27	2.85	-750.51
110	10111	27.40	-2685.89	330.81	-277.18	0	-1314.27	2.55	-520.31	2.55	-558.74	2.85	-569.69
111	111	27.40	-2746.45	-348.87	-312.55	0	-1375.94	2.55	-507.27	2.55	-565.42	2.85	-576.33
111	112	30.45	-2828.32	-315.13	777.94	0	-668.51	2.55	-1091.50	2.55	-698.90	2.85	-765.96
112	112	30.45	-3291.99	-313.68	345.28	0	-1350.77	2.55	-852.38	2.55	-703.17	2.85	-770.10
112	113	33.50	-3283.39	-323.11	1281.67	0	-731.08	2.55	-1292.15	2.55	-802.84	2.85	-920.67
113	113	33.50	-2598.35	-323.35	-86.10	0	-1616.65	2.55	-545.29	2.55	-362.77	2.85	-410.85
113	114	36.89	-2593.85	-319.18	1013.73	0	-927.52	2.55	-940.10	2.55	-498.67	2.85	-615.22
114	114	36.89	-2047.23	-325.92	-157.03	0	-1850.35	2.55	86.52	2.55	-173.61	2.85	-260.36
114	115	40.28	-2047.23	-231.76	804.38	0	-1223.77	2.55	-344.31	2.55	-281.50	2.85	-422.16
115	115	40.28	-2047.23	-246.21	806.45	0	-1222.59	2.55	-344.67	2.55	-281.81	2.85	-422.63
115	116	43.67	-2047.23	-128.52	1442.23	0	-815.04	2.55	-606.86	2.55	-356.36	2.85	-534.43
116	116	43.67	-2047.23	-139.73	1446.12	0	-812.83	2.55	-607.54	2.55	-356.95	2.85	-535.31
116	117	47.06	-2047.23	-19.52	1715.86	0	-647.35	2.55	-694.01	2.55	-392.07	2.85	-587.98
117	117	47.06	-2047.23	-25.52	1720.87	0	-644.50	2.55	-694.89	2.55	-392.82	2.85	-589.11
117	118	50.45	-2047.23	93.45	1603.87	0	-732.88	2.55	-602.03	2.55	-385.39	2.85	-577.96
118	118	50.45	-2047.23	93.82	1609.34	0	-729.77	2.55	-602.99	2.55	-386.21	2.85	-579.20
118	119	53.84	-2047.23	213.83	1088.17	0	-1081.96	2.55	-327.73	2.55	-333.61	2.85	-500.30
119	119	53.84	-2047.23	220.66	1093.60	0	-1078.86	2.55	-328.68	2.55	-334.42	2.85	-501.53
119	120	57.23	-2047.23	339.09	143.42	0	-1709.01	2.55	133.37	2.55	-232.90	2.85	-349.28
120	120	57.23	-2676.81	351.81	1431.78	0	-702.58	2.55	-1077.07	2.55	-577.58	2.85	-722.88
120	121	60.62	-2681.96	376.63	174.62	0	-1477.70	2.55	-667.73	2.55	-416.34	2.85	-480.40
121	121	60.62	-3237.39	391.41	1424.97	0	-620.12	2.55	-1355.05	2.55	-805.30	2.85	-930.28
121	122	64.01	-3246.94	366.69	142.76	0	-1444.30	2.55	-831.17	2.55	-657.13	2.85	-706.85
122	122	64.01	-2773.48	367.01	574.27	0	-759.76	2.55	-1067.15	2.55	-650.16	2.85	-699.92
122	10123	67.40	-2734.67	358.53	-665.32	0	-1578.58	2.55	-424.73	2.55	-511.65	2.85	-497.20
123	123	67.40	-2755.67	-350.04	-664.97	0	-1584.69	2.55	-431.11	2.55	-517.12	2.85	-502.70
123	124	70.45	-2813.72	-347.83	441.44	0	-876.80	2.55	-958.46	2.55	-654.26	2.85	-700.89
124	124	70.45	-3271.31	-332.58	8.94	0	-1557.14	2.55	-717.54	2.55	-656.99	2.85	-703.50
124	125	73.50	-3262.72	-357.42	1057.87	0	-889.07	2.55	-1124.56	2.55	-781.00	2.85	-890.59
125	125	73.50	-2531.50	-363.66	-275.83	0	-1719.09	2.55	-391.30	2.55	-338.27	2.85	-378.29
125	126	76.26	-2527.83	-367.55	689.57	0	-1129.88	2.55	-685.91	2.55	-464.96	2.85	-568.75
126	126	76.26	-1976.11	-375.64	-450.58	0	-2019.01	2.55	344.28	2.55	-151.89	2.85	-227.79
126	127	79.02	-1976.11	-277.51	450.73	0	-1418.27	2.55	-103.97	2.55	-246.79	2.85	-370.10
127	127	79.02	-1976.11	-285.74	449.51	0	-1418.97	2.55	-103.76	2.55	-246.60	2.85	-369.82
127	128	81.78	-1976.11	-188.62	1105.04	0	-980.49	2.55	-434.98	2.55	-314.89	2.85	-472.23
128	128	81.78	-1976.11	-197.09	1104.95	0	-980.54	2.55	-434.96	2.55	-314.87	2.85	-472.21
128	129	84.54	-1976.11	-98.88	1513.44	0	-705.03	2.55	-648.94	2.55	-356.36	2.85	-534.42
129	129	84.54	-1976.11	-106.46	1514.32	0	-704.53	2.55	-649.09	2.55	-356.49	2.85	-534.62
129	130	87.30	-1976.11	-8.26	1672.59	0	-593.81	2.55	-745.24	2.55	-370.70	2.85	-555.93
130	130	87.30	-1976.11	-14.06	1674.30	0	-592.83	2.55	-745.54	2.55	-370.95	2.85	-556.31
130	131	90.06	-1976.11	84.14	1577.52	0	-649.64	2.55	-723.04	2.55	-357.15	2.85	-535.61
131	131	90.06	-1976.11	80.84	1579.94	0	-648.26	2.55	-723.47	2.55	-357.52	2.85	-536.16
131	132	92.82	-1976.11	178.54	1221.51	0	-876.37	2.55	-581.17	2.55	-314.71	2.85	-471.97
132	132	92.82	-1530.03	178.47	1612.57	0	-236.85	2.55	-772.48	2.55	-315.16	2.85	-472.64
132	133	95.58	-1530.03	276.68	984.43	0	-640.85	2.55	-508.94	2.55	-242.14	2.85	-363.13
133	133	95.58	-1083.95	280.27	1397.37	0	18.02	2.55	-726.99	2.55	-242.68	2.85	-363.91
133	134	98.34	-1083.95	378.47	488.28	0	-568.27	2.55	-340.26	2.55	-137.73	2.85	-206.54
134	134	98.34	-637.87	386.29	923.01	0	109.88	2.55	-585.02	2.55	-138.30	2.85	-207.41
134	135	101.10	-637.87	252.04	-276.10	0	-663.88	2.55	-73.49	2.55	-0.10	2.85	-0.14

GRÁFICO DE TENSIONES



COMBINACIÓN "TINF"

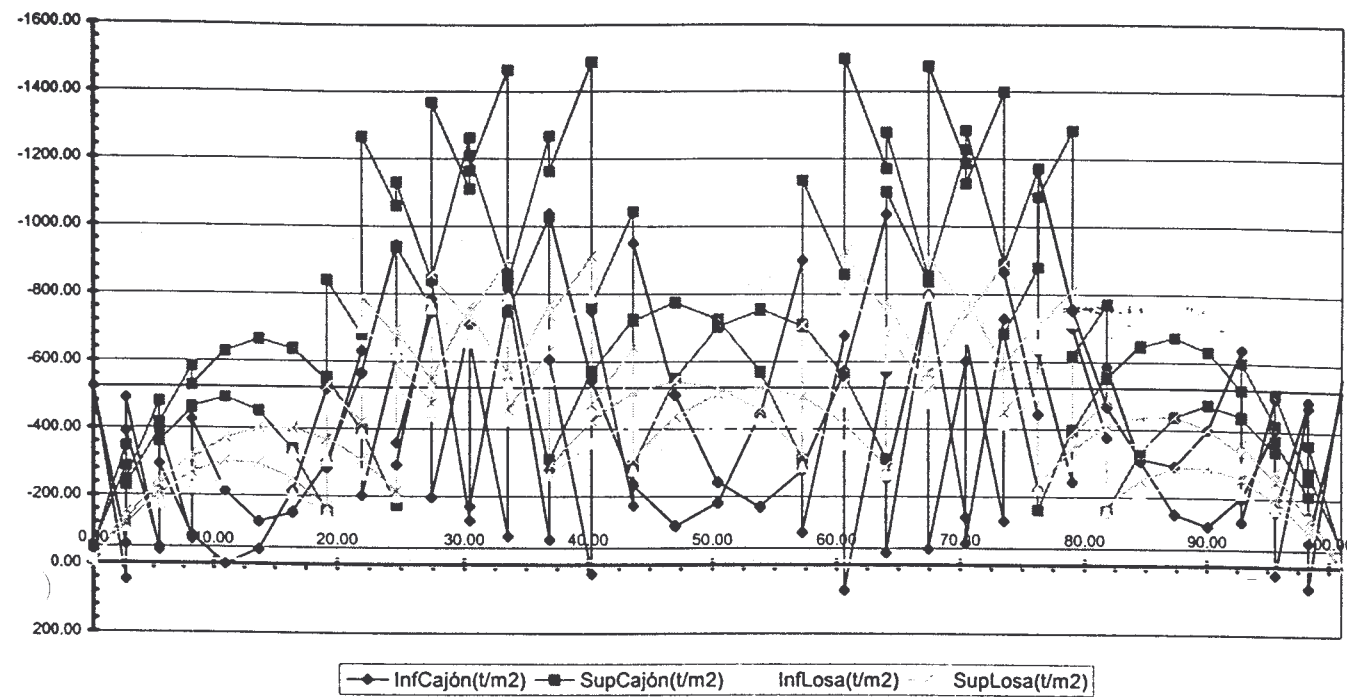
(tiempo tinf)

IN GF ENTE
1PPCF1 + [1; 1]PPF3 + [1; 1]PPF2 + [.95; 1.05]PRETF1A.ISO.To + [.95; 1.05]PRETF1A.HIP.To + [.95; 1.05]PRETF1B.ISO.To + [.95; 1.05]PRETF1B.HIP.To + [.9; 1.1]PRETF3C.ISO.To + [.9; 1.1]PRETF3C.HIP.To + [.9; 1.1]PRE

Barra	Nudo	X	N (T)	Vy (T)	Mz (Tm)	Fibra		Fibra		Fibra		Fibra		Fibra	
						y fibra	sig (t/m2)	y fibra	sig (t/m2)	y fibra	sig (t/m2)	y fibra	sig (t/m2)	y fibra	sig (t/m2)
1	1	0.00	-472.36	-261.24	-74.05	0	-523.06	2.55	-47.69	2.55	-12.50	2.85	7.24		
1	2	2.74	-472.36	-282.83	790.86	0	46.76	2.55	-347.87	2.55	-125.86	2.85	-154.80		
2	2	2.74	-813.00	-282.69	537.70	0	-489.37	2.55	-245.87	2.55	-116.54	2.85	-123.81		
2	3	5.48	-813.00	-216.52	1221.63	0	-39.77	2.55	-479.70	2.55	-206.70	2.85	-252.68		
3	3	5.48	-1046.86	-216.77	1057.88	0	-401.49	2.55	-416.16	2.55	-200.72	2.85	-232.09		
3	4	8.22	-1046.86	-150.61	1561.16	0	-71.95	2.55	-583.71	2.55	-267.73	2.85	-327.87		
4	4	8.22	-1281.29	-151.18	1409.07	0	-424.90	2.55	-528.27	2.55	-262.87	2.85	-308.82		
4	5	10.96	-1281.29	-85.08	1732.82	0	-214.78	2.55	-629.75	2.55	-306.88	2.85	-371.75		
5	5	10.96	-1279.60	-86.11	1732.34	0	-214.56	2.55	-628.98	2.55	-306.41	2.85	-371.23		
5	6	13.70	-1279.60	-20.04	1877.77	0	-123.16	2.55	-664.66	2.55	-327.62	2.85	-401.58		
6	6	13.70	-1283.47	-21.69	1639.29	0	-124.60	2.55	-666.06	2.55	-328.46	2.85	-402.42		
6	7	16.44	-1283.47	44.47	1846.09	0	-150.91	2.55	-636.29	2.55	-327.10	2.85	-400.55		
7	7	16.44	-1294.37	42.36	1845.84	0	-154.33	2.55	-640.48	2.55	-329.64	2.85	-403.14		
7	8	19.18	-1294.37	108.36	1639.25	0	-297.60	2.55	-545.54	2.55	-305.91	2.85	-369.32		
8	8	19.18	-1316.38	106.19	1639.46	0	-304.09	2.55	-554.16	2.55	-311.13	2.85	-374.71		
8	9	21.92	-1316.38	172.24	1257.97	0	-564.07	2.55	-394.13	2.55	-265.09	2.85	-309.05		
9	9	21.92	-1330.10	170.25	1258.30	0	-567.98	2.55	-399.55	2.55	-268.38	2.85	-312.45		
10	10	24.66	-1330.10	194.59	702.83	0	-944.10	2.55	-174.65	2.55	-200.18	2.85	-215.14		
10	11	27.40	-2064.26	238.89	1012.74	0	-744.37	2.55	-758.54	2.55	-439.92	2.85	-479.06		
11	11	27.40	-2727.17	237.15	1883.80	0	-197.95	2.55	-1368.30	2.55	-757.60	2.85	-859.86		
11	12	30.45	-2734.70	275.63	1112.33	0	-708.52	2.55	-1109.58	2.55	-656.82	2.85	-716.20		
12	12	30.45	-2390.16	273.54	1364.56	0	-171.84	2.55	-1209.69	2.55	-665.13	2.85	-746.07		
12	10013	33.50	-2346.56	316.06	432.85	0	-780.08	2.55	-858.87	2.55	-533.37	2.85	-563.60		
13	13	33.50	-2345.76	-340.05	410.79	0	-815.17	2.55	-838.80	2.55	-526.07	2.85	-554.33		
13	14	36.89	-2387.84	-299.07	1535.66	0	-73.90	2.55	-1268.60	2.55	-681.15	2.85	-769.91		
14	14	36.89	-2716.69	-302.58	1282.31	0	-606.47	2.55	-1162.45	2.55	-668.92	2.85	-735.93		
14	15	40.28	-2708.30	-264.62	2237.71	0	26.65	2.55	-1488.58	2.55	-792.98	2.85	-913.06		
15	15	40.28	-2058.22	-264.35	1174.29	0	-750.66	2.55	-769.61	2.55	-430.02	2.85	-471.98		
15	16	43.67	-2054.27	-242.18	2062.31	0	-173.99	2.55	-1044.00	2.55	-650.51	2.85	-643.92		
16	16	43.67	-1595.26	-239.14	1161.68	0	-950.34	2.55	-293.39	2.55	-278.67	2.85	-313.85		
16	17	47.06	-1595.26	-157.79	1834.64	0	-499.77	2.55	-548.54	2.55	-363.82	2.85	-435.37		
17	17	47.06	-1602.97	-155.24	1833.51	0	-502.77	2.55	-551.29	2.55	-365.48	2.85	-437.00		
17	18	50.45	-1602.97	-73.46	2221.10	0	-241.58	2.55	-702.71	2.55	-413.90	2.85	-506.04		
18	18	50.45	-1608.70	-72.65	2219.44	0	-244.31	2.55	-704.56	2.55	-415.01	2.85	-507.08		
18	19	53.84	-1608.70	8.84	2327.81	0	-168.77	2.55	-753.65	2.55	-427.60	2.85	-524.96		
19	19	53.84	-1617.10	7.81	2326.35	0	-172.18	2.55	-756.59	2.55	-429.36	2.85	-526.69		
19	20	57.23	-1617.10	89.56	2161.29	0	-278.75	2.55	-704.73	2.55	-406.98	2.85	-494.62		
20	20	57.23	-1635.21	87.60	2160.82	0	-284.47	2.55	-711.68	2.55	-411.18	2.85	-498.92		
20	21	60.62	-1635.21	168.78	1726.25	0	-570.85	2.55	-559.70	2.55	-354.39	2.85	-417.75		
21	21	60.62	-1643.50	166.58	1725.76	0	-573.62	2.55	-562.83	2.55	-356.27	2.85	-419.66		
21	22	64.01	-1643.50	242.03	1028.94	0	-1035.72	2.55	-312.02	2.55	-266.18	2.85	-291.03		
22	22	64.01	-2239.97	238.95	2019.12	0	-255.42	2.55	-1101.93	2.55	-588.92	2.85	-680.63		
22	23	67.40	-2244.49	258.26	1187.42	0	-799.02	2.55	-836.89	2.55	-477.44	2.85	-521.56		
23	23	67.40	-2765.66	257.56	2150.57	0	-47.45	2.55	-1477.44	2.55	-795.85	2.85	-911.19		
23	24	70.45	-2773.22	294.82	1319.61	0	-601.95	2.55	-1186.83	2.55	-688.85	2.85	-758.76		
24	24	70.45	-2423.76	293.74	1571.58	0	-63.99	2.55	-1284.86	2.55	-695.97	2.85	-787.40		
24	10025	73.50	-2363.66	340.97	552.68	0	-727.98	2.55	-889.33	2.55	-550.05	2.85	-586.26		
25	25	73.50	-2321.27	-257.90	571.98	0	-681.92	2.55	-891.05	2.55	-546.90	2.85	-584.62		
25	26	76.26	-2380.04	-229.55	1287.26	0	-222.64	2.55	-1172.59	2.55	-653.63	2.85	-730.37		
26	26	76.26	-2629.34	-231.04	1092.01	0	-631.56	2.55	-1089.08	2.55	-643.36	2.85	-703.33		
26	27	79.02	-2622.51	-197.16	1677.37	0	-245.40	2.55	-1284.51	2.55	-719.47	2.85	-812.23		
27	27	79.02	-1761.35	-198.64	757.95	0	-701.20	2.55	-620.38	2.55	-360.83	2.85	-388.34		
27	28	81.78	-1758.13	-182.44	1259.59	0	-376.79	2.55	-772.67	2.55	-428.98	2.85	-485.71		
28	28	81.78	-939.57	-182.20	604.86	0	-586.44	2.55	-159.02	2.55	-159.94	2.85	-178.33		
28	29	84.54	-939.57	-115.63	1015.89	0	-306.39	2.55	-331.02	2.55	-209.63	2.85	-249.15		
29	29	84.54	-949.12	-115.23	1015.84	0	-309.28	2.55	-334.74	2.55	-211.87	2.85	-251.45		
29	30	87.30	-949.12	-48.63	1241.99	0	-151.99	2.55	-439.06	2.55	-237.84	2.85	-288.37		
30	30	87.30	-950.89	-48.46	1241.70	0	-152.69	2.55	-439.69	2.55	-238.22	2.85	-288.74		
30	31	90.06	-950.89	18.12	1283.56	0	-117.83	2.55	-476.43	2.55	-240.56	2.85	-291.89		
31	31	90.06	-945.90	17.94	1283.27	0	-116.49	2.55	-474.44	2.55	-239.34	2.85	-290.62		
31	32	92.82	-945.90	84.52	1141.89	0	-203.45	2.55	-443.81	2.55	-218.20	2.85	-260.24		
32	32	92.82	-932.53	84.14	1141.84	0	-199.44	2.55	-438.61	2.55	-215.03	2.85	-256.97		
32	33	95.58	-932.53	150.76	817.73	0	-407.95	2.55	-340.73	2.55	-170.49	2.85	-193.17		
33	33	95.58	-757.08	150.23	926.50	0	-161.13	2.55	-375.41	2.55	-169.80	2.85	-202.06		
33	34	98.34	-757.08	216.84	419.88	0	-491.12	2.55	-210.29	2.55	-101.89	2.85	-104.88		
34	34	98.34	-475.13	216.08	614.03	0	-73.04	2.55	-280.89	2.55	-104.28	2.85	-123.75		
35	35	101.10	-475.13	245.85	-74.01	0	-523.88	2.55	-48.78	2.55	-13.16	2.85	6.56		
101	101	0.00	-474.58	-257.85	-74.11	0	-523.78	2.55	-48.54	2.55	-13.02	2.85	6.71		
101	102	2.74	-474.58	-226.71	642.45	0	-55.59	2.55	-286.21	2.55	-108.51	2.85	-129.84		
102	102	2.74	-699.23	-226.25	487.01	0	-389.84	2.55	-229.36	2.55	-106.37	2.85	-114.50		
102	103	5.48	-699.23	-156.41	1011.26	0	-49.18	2.55	-397.74	2.55	-177.01	2.85	-215.56		
103	103	5.48	-869.15	-155.73	902.50	0	-294.32	2.55	-360.92	2.55	-176.40	2.85	-205.34		
103	104	8.22	-869.15	-85.96	1233.60	0	-81.66	2.55	-459.84	2.55	-222.06	2.85	-270.74		
104	104	8.22	-876.98	-85.13	1233.84	0	-83.88	2.55	-462.93	2.55	-223.94	2.85	-272.70		
104	105	10.96	-876.98	-15.35	1371.51	0	0.62	2.55	-492.32	2.55	-244.58	2.85	-302.37		

105	106	13.70	-878.67	55.65	1315.06	0	-43.93	2.55	-452.68	2.55	-240.50	2.85	-296.59
106	106	13.70	-874.80	57.41	1315.53	0	-42.48	2.55	-451.28	2.55	-239.65	2.85	-295.75
106	107	16.44	-874.80	127.21	1062.58	0	-216.51	2.55	-340.78	2.55	-209.70	2.85	-253.17
107	107	16.44	-863.90	129.43	1062.85	0	-213.08	2.55	-336.59	2.55	-207.16	2.85	-250.57
107	108	19.18	-863.90	199.20	612.62	0	-517.55	2.55	-155.72	2.55	-151.62	2.85	-171.44
108	108	19.18	-1799.88	201.53	1359.69	0	-283.87	2.55	-840.90	2.55	-461.43	2.85	-525.92
108	109	21.92	-1803.53	215.55	821.01	0	-631.49	2.55	-680.26	2.55	-387.88	2.85	-420.82
109	109	21.92	-2537.78	216.09	1639.22	0	-202.55	2.55	-1266.77	2.55	-702.25	2.85	-793.50
109	110	24.66	-2544.56	249.62	1005.22	0	-619.11	2.55	-1060.12	2.55	-618.89	2.85	-674.31
110	110	24.66	-2353.44	249.91	1161.53	0	-294.40	2.55	-1130.23	2.55	-629.07	2.85	-697.98
110	10111	27.40	-2302.81	281.21	398.99	0	-785.82	2.55	-841.16	2.55	-517.17	2.85	-544.20
111	111	27.40	-2355.57	-362.30	379.21	0	-835.29	2.55	-843.42	2.55	-522.68	2.85	-548.25
111	112	30.45	-2427.37	-312.92	1468.45	0	-130.21	2.55	-1261.39	2.55	-681.61	2.85	-766.73
112	112	30.45	-2778.63	-312.40	1215.96	0	-669.05	2.55	-1163.93	2.55	-674.84	2.85	-738.42
112	113	33.50	-2771.09	-273.92	2097.15	0	-82.86	2.55	-1467.01	2.55	-789.20	2.85	-901.27
113	113	33.50	-2123.17	-273.19	1031.87	0	-861.90	2.55	-748.71	2.55	-426.42	2.85	-460.28
113	114	36.89	-2119.22	-255.46	1925.46	0	-279.57	2.55	-1029.13	2.55	-547.11	2.85	-632.38
114	114	36.89	-1640.60	-257.45	1028.82	0	-1037.41	2.55	-312.03	2.55	-264.42	2.85	-288.98
114	115	40.28	-1640.60	-177.72	1770.49	0	-547.25	2.55	-573.36	2.55	-361.16	2.85	-427.05
115	115	40.28	-1629.00	-179.96	1770.09	0	-544.04	2.55	-568.73	2.55	-358.36	2.85	-424.15
115	116	43.67	-1629.00	-94.29	2235.05	0	-238.70	2.55	-727.61	2.55	-419.68	2.85	-511.76
116	116	43.67	-1612.83	-97.16	2234.94	0	-233.94	2.55	-721.27	2.55	-415.85	2.85	-507.82
116	117	47.06	-1612.83	-10.86	2418.01	0	-116.16	2.55	-777.00	2.55	-440.95	2.85	-543.75
117	117	47.06	-1605.12	-13.30	2419.14	0	-113.16	2.55	-774.25	2.55	-439.30	2.85	-542.12
117	118	50.45	-1605.12	72.70	2317.98	0	-184.23	2.55	-726.38	2.55	-427.84	2.85	-525.86
118	118	50.45	-1599.39	72.00	2319.63	0	-181.51	2.55	-724.52	2.55	-426.73	2.85	-524.82
118	119	53.84	-1599.39	158.26	1929.40	0	-444.41	2.55	-571.88	2.55	-378.01	2.85	-455.36
119	119	53.84	-1590.99	159.42	1930.85	0	-441.00	2.55	-568.94	2.55	-376.24	2.85	-453.62
119	120	57.23	-1590.99	245.28	1244.54	0	-899.97	2.55	-309.93	2.55	-289.22	2.85	-329.46
120	120	57.23	-2169.78	247.40	2240.69	0	-95.37	2.55	-1135.28	2.55	-603.48	2.85	-708.62
120	121	60.62	-2174.29	267.83	1343.85	0	-677.57	2.55	-858.83	2.55	-481.84	2.85	-535.01
121	121	60.62	-2697.85	267.71	2306.71	0	73.19	2.55	-1500.50	2.55	-800.72	2.85	-925.11
121	122	64.01	-2706.23	306.90	1338.11	0	-568.15	2.55	-1170.84	2.55	-674.76	2.85	-745.30
122	122	64.01	-2380.33	305.06	1592.23	0	-35.95	2.55	-1278.40	2.55	-687.79	2.85	-780.15
122	10123	67.40	-2349.16	346.61	455.38	0	-788.15	2.55	-849.47	2.55	-533.55	2.85	-564.84
123	123	67.40	-2361.88	-336.23	457.45	0	-790.57	2.55	-855.26	2.55	-536.79	2.85	-568.30
123	124	70.45	-2412.81	-294.80	1458.74	0	-140.14	2.55	-1227.28	2.55	-680.34	2.85	-766.75
124	124	70.45	-2756.18	-290.33	1206.98	0	-676.17	2.55	-1126.84	2.55	-671.83	2.85	-736.68
124	125	73.50	-2748.64	-255.73	2034.68	0	-130.00	2.55	-1400.05	2.55	-780.76	2.85	-891.90
125	125	73.50	-2062.33	-255.44	990.21	0	-863.52	2.55	-684.44	2.55	-416.13	2.85	-450.76
125	126	76.26	-2059.10	-254.17	1637.02	0	-445.10	2.55	-880.48	2.55	-504.35	2.85	-576.67
126	126	76.26	-1552.81	-254.09	759.90	0	-1162.65	2.55	-162.16	2.55	-223.71	2.85	-237.61
126	127	79.02	-1552.81	-183.75	1364.09	0	-755.65	2.55	-400.19	2.55	-298.88	2.85	-344.82
127	127	79.02	-1536.15	-183.34	1363.54	0	-750.98	2.55	-393.57	2.55	-294.87	2.85	-340.66
127	128	81.78	-1536.15	-113.26	1773.07	0	-473.24	2.55	-561.31	2.55	-344.88	2.85	-411.99
128	128	81.78	-1514.81	-113.37	1772.66	0	-467.08	2.55	-552.90	2.55	-339.78	2.85	-406.72
128	129	84.54	-1514.81	-43.03	1988.49	0	-317.95	2.55	-650.66	2.55	-364.78	2.85	-442.35
129	129	84.54	-1505.26	-43.32	1988.50	0	-315.08	2.55	-646.94	2.55	-362.53	2.85	-440.04
129	130	87.30	-1505.26	27.04	2010.95	0	-294.29	2.55	-674.82	2.55	-362.57	2.85	-440.03
130	130	87.30	-1503.49	26.98	2011.24	0	-293.60	2.55	-674.19	2.55	-362.19	2.85	-439.66
130	131	90.06	-1503.49	97.34	1839.67	0	-401.53	2.55	-632.09	2.55	-337.16	2.85	-403.87
131	131	90.06	-1508.48	97.66	1839.99	0	-402.85	2.55	-634.09	2.55	-338.39	2.85	-405.16
131	132	92.82	-1508.48	167.88	1473.42	0	-640.05	2.55	-521.81	2.55	-288.15	2.85	-333.37
132	132	92.82	-1171.91	168.52	1692.83	0	-131.02	2.55	-602.62	2.55	-295.62	2.85	-361.33
132	133	95.58	-1171.91	238.88	1130.58	0	-497.87	2.55	-420.01	2.55	-220.07	2.85	-253.39
133	133	95.58	-835.91	239.80	1366.93	0	23.96	2.55	-512.44	2.55	-229.09	2.85	-283.52
133	134	98.34	-835.91	310.15	608.00	0	-473.06	2.55	-259.35	2.55	-128.09	2.85	-139.21
134	134	98.34	-498.73	311.56	861.40	0	62.18	2.55	-362.75	2.55	-138.27	2.85	-171.09
134	135	101.10	-498.73	285.33	-94.75	0	-565.31	2.55	-39.05	2.55	-11.72	2.85	9.72

GRÁFICO DE TENSIONES



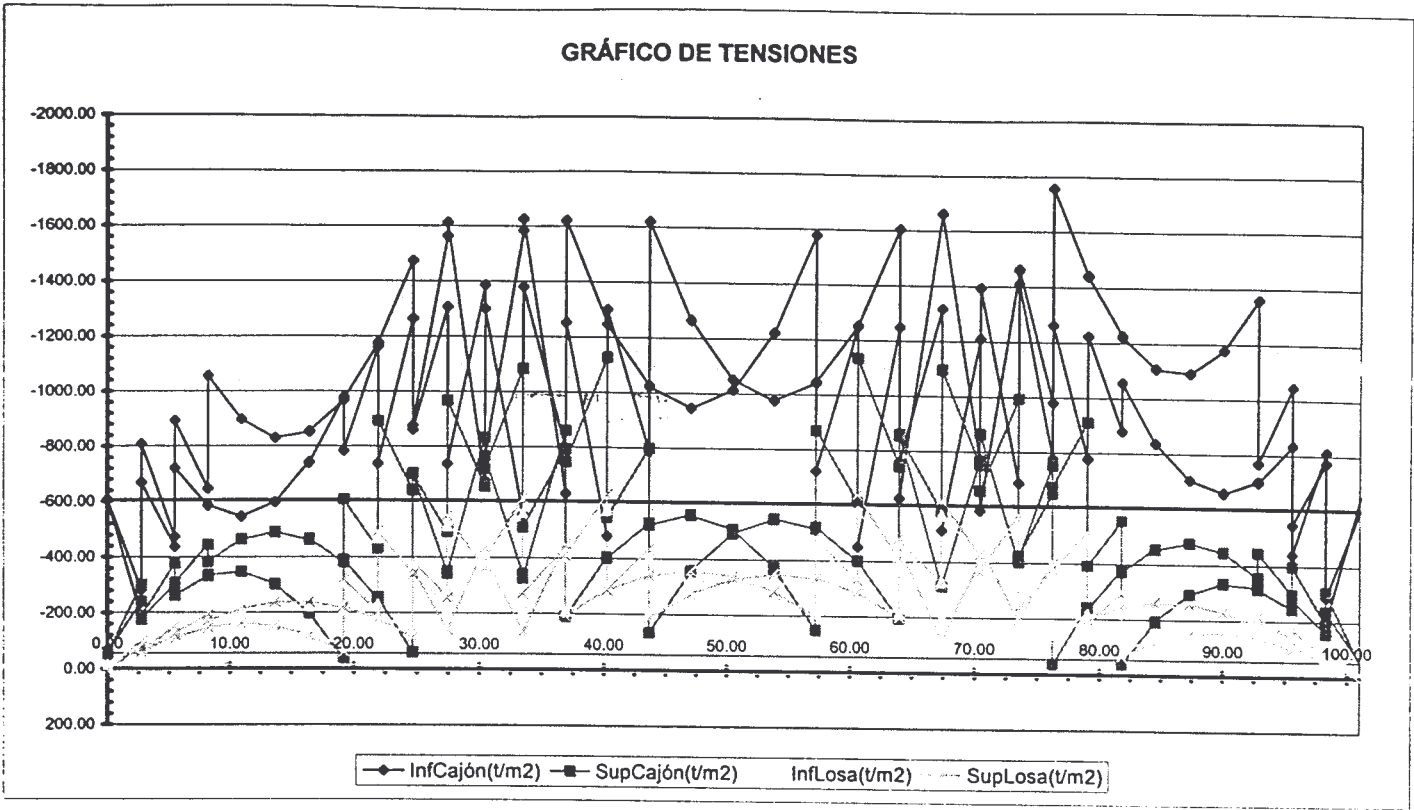
SIN GRADIENTE

[1; 1]PPCF1 + [1; 1]PPLF3 + [1; 1]PPLF2 + [0.95; 1.05]PRETF1A.ISO.To + [0.95; 1.05]PRETF1A.HIP.To + [0.95; 1.05]PRETF1B.ISO.To + [0.95; 1.05]PRETF1B.HIP.To + [0.9; 1.1]PRETF3C.ISO.To + [0.9; 1.1]PRETF3C.HIP.To + [0.9; 1.1]PRE

Coef. exc:

Barra	Nudo	X	N (T)	Vy (T)	Mz (Tm)	Fibra y fibra	InfCajón sig (t/m2)	Fibra y fibra	SupCajón sig (t/m2)	Fibra y fibra	InfLosa sig (t/m2)	Fibra y fibra	SupLosa sig (t/m2)
1	1	0.00	-548.31	-338.63	-116.44	0	-607.83	2.55	-54.60	2.55	-14.92	2.85	8.87
1	2	2.74	-548.31	-201.40	501.24	0	-187.01	2.55	-300.20	2.55	-91.90	2.85	-100.05
2	2	2.74	-945.09	-203.22	186.61	0	-807.72	2.55	-186.89	2.55	-81.26	2.85	-63.45
2	3	5.48	-945.09	-155.66	678.29	0	-473.94	2.55	-378.03	2.55	-143.19	2.85	-151.05
3	3	5.48	-1217.81	-156.88	474.09	0	-892.73	2.55	-307.69	2.55	-136.55	2.85	-126.92
3	4	8.22	-1217.81	-109.33	838.77	0	-646.61	2.55	-444.16	2.55	-183.27	2.85	-192.99
4	4	8.22	-1491.11	-109.97	648.03	0	-1055.33	2.55	-382.89	2.55	-177.92	2.85	-170.66
4	5	10.96	-1491.11	-62.41	884.19	0	-897.81	2.55	-464.35	2.55	-209.22	2.85	-214.87
5	5	10.96	-1489.42	-62.69	884.42	0	-897.17	2.55	-463.73	2.55	-208.86	2.85	-214.51
5	6	13.70	-1489.42	-15.05	990.94	0	-828.93	2.55	-489.97	2.55	-224.56	2.85	-236.63
6	6	13.70	-1493.29	-15.11	991.08	0	-830.02	2.55	-491.49	2.55	-225.49	2.85	-237.60
6	7	16.44	-1493.29	32.45	967.32	0	-851.43	2.55	-462.39	2.55	-225.50	2.85	-237.46
7	7	16.44	-1504.19	32.57	967.55	0	-854.58	2.55	-466.68	2.55	-228.11	2.85	-240.16
8	8	19.18	-1504.19	80.27	813.11	0	-965.89	2.55	-382.17	2.55	-212.36	2.85	-217.69
8	8	19.18	-1526.20	80.70	813.61	0	-972.21	2.55	-390.85	2.55	-217.63	2.85	-223.15
8	9	21.92	-1526.20	128.29	527.30	0	-1174.14	2.55	-250.69	2.55	-185.94	2.85	-178.08
9	9	21.92	-1539.92	129.25	527.69	0	-1178.04	2.55	-256.11	2.55	-189.24	2.85	-181.49
9	10	24.66	-1539.92	218.63	106.73	0	-1472.33	2.55	-59.63	2.55	-141.22	2.85	-113.25
10	10	24.66	-1968.55	218.62	870.22	0	-860.76	2.55	-700.89	2.55	-371.34	2.85	-390.98
10	11	27.40	-1971.33	285.71	185.74	0	-1306.15	2.55	-491.72	2.55	-277.66	2.85	-258.08
11	11	27.40	-2355.93	285.47	930.43	0	-737.58	2.55	-969.56	2.55	-515.77	2.85	-550.47
11	12	30.45	-2361.67	367.10	-63.09	0	-1386.05	2.55	-656.82	2.55	-381.98	2.85	-359.85
12	12	30.45	-1954.30	368.09	253.45	0	-761.08	2.55	-766.16	2.55	-390.45	2.85	-394.33
12	10013	33.50	-1921.09	450.55	-1022.79	0	-1582.44	2.55	-342.54	2.55	-210.19	2.85	-140.72
13	13	33.50	-1936.85	-500.22	-1047.49	0	-1626.39	2.55	-327.00	2.55	-205.97	2.85	-134.40
13	14	36.89	-2006.93	-394.11	507.44	0	-632.50	2.55	-862.71	2.55	-431.22	2.85	-449.02
14	14	36.89	-2399.00	-393.30	191.65	0	-1252.34	2.55	-747.91	2.55	-419.18	2.85	-410.92
14	15	40.28	-2392.61	-299.84	1365.10	0	-482.31	2.55	-1129.06	2.55	-575.61	2.85	-633.75
15	15	40.28	-2050.51	-299.73	430.38	0	-1300.18	2.55	-547.68	2.55	-297.37	2.85	-286.19
15	16	43.67	-2047.50	-181.33	1210.91	0	-787.62	2.55	-800.46	2.55	-402.07	2.85	-434.87
16	16	43.67	-1852.03	-181.76	408.57	0	-1618.67	2.55	-135.44	2.55	-204.16	2.85	-186.93
16	17	47.06	-1852.03	-121.95	924.09	0	-1263.73	2.55	-356.48	2.55	-265.88	2.85	-274.57
17	17	47.06	-1859.74	-121.41	924.46	0	-1265.82	2.55	-359.54	2.55	-267.76	2.85	-276.53
17	18	50.45	-1859.74	-62.49	1236.15	0	-1050.74	2.55	-494.83	2.55	-304.82	2.85	-329.19
18	18	50.45	-1865.47	-61.95	1236.11	0	-1052.51	2.55	-497.02	2.55	-306.17	2.85	-330.58
18	19	53.84	-1865.47	-3.01	1346.26	0	-975.98	2.55	-547.02	2.55	-318.90	2.85	-348.76
19	19	53.84	-1873.87	-2.54	1346.40	0	-978.43	2.55	-550.30	2.55	-320.91	2.85	-350.84
19	20	57.23	-1873.87	57.68	1251.05	0	-1042.68	2.55	-514.42	2.55	-308.71	2.85	-333.61
20	20	57.23	-1891.98	58.77	1252.01	0	-1047.54	2.55	-521.67	2.55	-313.13	2.85	-338.22
20	21	60.62	-1891.98	117.99	952.67	0	-1251.85	2.55	-400.10	2.55	-276.22	2.85	-285.96
21	21	60.62	-1900.27	120.01	953.19	0	-1254.03	2.55	-403.43	2.55	-278.26	2.85	-288.09
21	22	64.01	-1900.27	185.11	440.18	0	-1604.10	2.55	-194.29	2.55	-215.20	2.85	-198.64
22	22	64.01	-2153.61	188.79	1311.44	0	-760.60	2.55	-855.04	2.55	-443.36	2.85	-484.01
22	23	67.40	-2157.05	308.57	462.45	0	-1317.24	2.55	-582.31	2.55	-329.28	2.85	-321.85
23	23	67.40	-2388.30	306.75	1320.71	0	-515.39	2.55	-1098.52	2.55	-570.67	2.85	-627.22
23	24	70.45	-2394.06	390.89	261.67	0	-1210.17	2.55	-754.09	2.55	-429.66	2.85	-426.15
24	24	70.45	-1994.56	388.84	577.32	0	-588.10	2.55	-866.37	2.55	-439.85	2.85	-462.34
24	10025	73.50	-1948.78	472.99	-773.02	0	-1457.42	2.55	-403.76	2.55	-248.20	2.85	-193.49
25	25	73.50	-1928.02	-387.12	-746.94	0	-1411.24	2.55	-417.39	2.55	-251.50	2.85	-198.93
25	26	76.26	-1972.79	-304.16	243.10	0	-779.15	2.55	-756.07	2.55	-395.48	2.85	-399.69
26	26	76.26	-2298.18	-306.17	0.71	0	-1262.74	2.55	-677.28	2.55	-391.90	2.85	-376.25
26	27	79.02	-2292.98	-231.19	739.24	0	-779.09	2.55	-913.13	2.55	-490.70	2.85	-516.88
27	27	79.02	-1705.44	-233.30	-13.96	0	-1223.81	2.55	-393.06	2.55	-217.65	2.85	-190.05
27	28	81.78	-1702.99	-134.96	514.02	0	-880.02	2.55	-555.82	2.55	-289.62	2.85	-292.14
28	28	81.78	-1084.61	-137.58	15.67	0	-1056.49	2.55	-41.02	2.55	-93.31	2.85	-69.56
28	29	84.54	-1084.61	-89.63	329.20	0	-836.25	2.55	-192.69	2.55	-128.24	2.85	-119.31
29	29	84.54	-1094.16	-91.64	329.61	0	-838.88	2.55	-196.49	2.55	-130.55	2.85	-121.72
29	30	87.30	-1094.16	-43.71	516.41	0	-706.13	2.55	-293.23	2.55	-150.36	2.85	-150.06
30	30	87.30	-1095.93	-45.31	516.76	0	-706.46	2.55	-293.99	2.55	-150.83	2.85	-150.57
30	31	90.06	-1095.93	2.62	575.70	0	-661.91	2.55	-335.56	2.55	-155.36	2.85	-157.26
31	31	90.06	-1090.94	1.43	576.18	0	-660.11	2.55	-333.72	2.55	-154.26	2.85	-156.15
31	32	92.82	-1090.94	49.39	506.05	0	-704.50	2.55	-319.86	2.55	-143.33	2.85	-140.93
32	32	92.82	-1077.57	48.86	506.83	0	-699.99	2.55	-314.84	2.55	-140.29	2.85	-137.85
32	33	95.58	-1077.57	96.78	305.86	0	-834.42	2.55	-245.17	2.55	-113.63	2.85	-100.33
33	33	95.58	-876.21	97.01	443.05	0	-548.68	2.55	-284.68	2.55	-113.61	2.85	-111.90
33	34	98.34	-876.21	144.97	109.19	0	-774.46	2.55	-158.71	2.55	-70.93	2.85	-51.65
34	34	98.34	-551.08	145.78	352.21	0	-290.37	2.55	-238.35	2.55	-74.56	2.85	-75.18
34	35	101.10	-551.08	233.86	-116.53	0	-608.73	2.55	-55.65	2.55	-15.56	2.85	8.21
101	101	0.00	-550.53	-243.12	-116.50	0	-608.55	2.55	-55.44	2.55	-15.43	2.85	8.34
101	102	2.74	-550.53	-151.23	366.48	0	-281.57	2.55	-240.46	2.55	-76.71	2.85	-78.26
102	102	2.74	-809.73	-150.04	172.08	0	-668.56	2.55	-176.41	2.55	-73.59	2.85	-59.22
102	103	5.48	-809.73	-100.19	514.89	0	-437.41	2.55	-303.69	2.55	-117.72	2.85	-121.50
103	103	5.48	-1005.56	-99.44	377.99	0	-721.30	2.55	-262.09	2.55	-116.48	2.85	-108.66
103	104	8.22	-1005.56	-49.54	582.09	0	-585.05	2.55	-331.96	2.55	-143.68	2.85	-146.94
104	104	8.22	-1013.39	-49.14	581.68	0	-587.67	2.55	-334.91	2.55	-145.46	2.85	-148.75
104	105	10.96	-1013.39	0.77	647.89	0	-545.74	2.55	-347.58	2.55	-155.88	2.85	-163.21
105	105	10.96	-1015.08	0.87	647.76	0	-546.38	2.55	-348.20	2.55	-156.24	2.85	-163.59

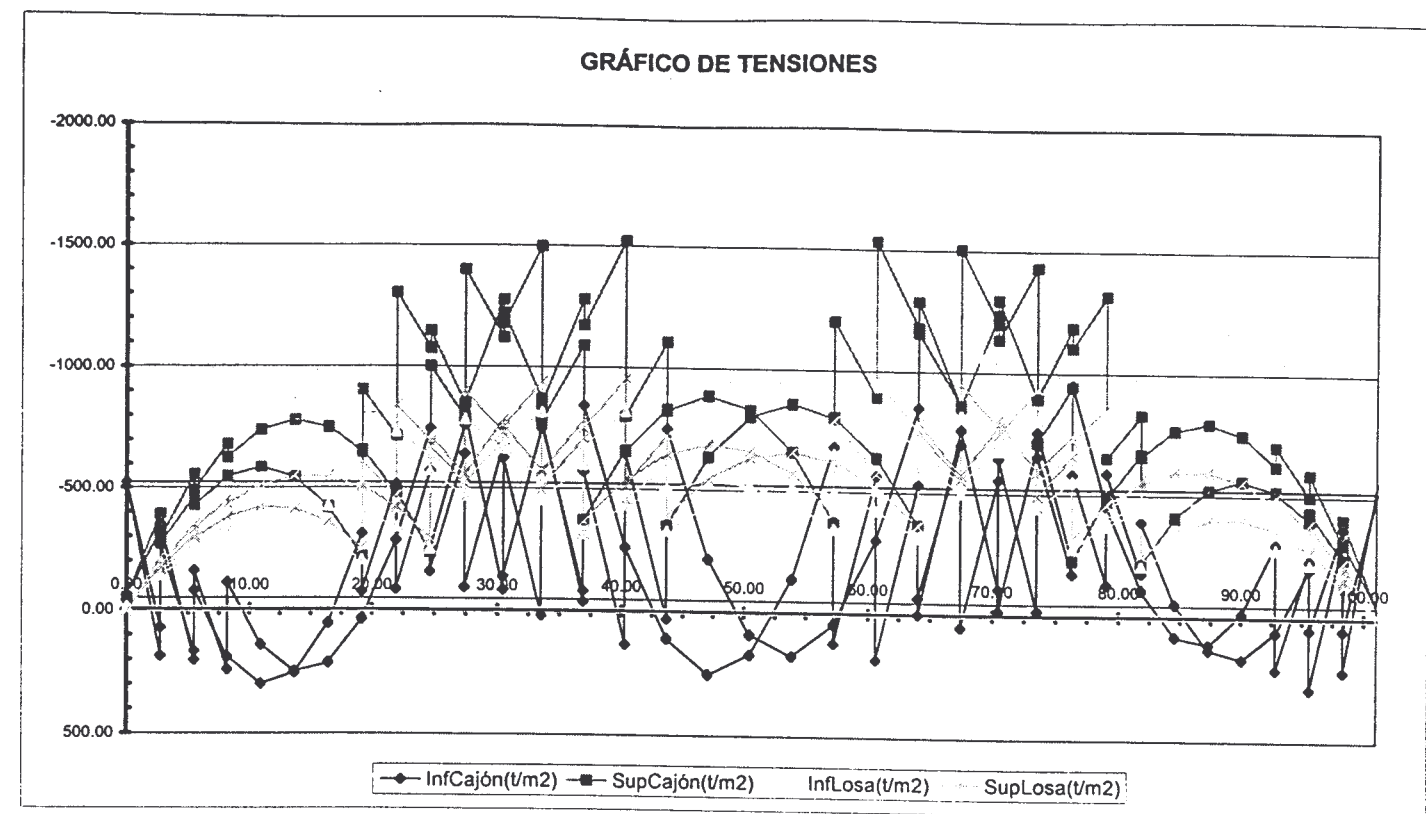
105	106	13.70	-1015.08	50.73	577.06	0	-598.28	2.55	-303.83	2.55	-149.98	2.85	-154.43
106	106	13.70	-1011.21	50.69	576.91	0	-597.20	2.55	-302.30	2.55	-149.04	2.85	-153.45
106	107	16.44	-1011.21	100.58	369.66	0	-742.67	2.55	-200.97	2.55	-126.17	2.85	-120.76
107	107	16.44	-1000.31	100.38	369.39	0	-739.54	2.55	-196.68	2.55	-123.56	2.85	-118.05
107	108	19.18	-1000.31	150.27	26.04	0	-978.30	2.55	-38.46	2.55	-84.16	2.85	-61.93
108	108	19.18	-1707.96	149.66	594.63	0	-783.46	2.55	-607.92	2.55	-311.43	2.85	-320.28
108	109	21.92	-1710.74	255.33	12.07	0	-1161.60	2.55	-432.27	2.55	-231.47	2.85	-206.82
109	109	21.92	-2202.31	255.80	688.27	0	-737.54	2.55	-893.31	2.55	-471.01	2.85	-494.88
109	110	24.66	-2207.47	334.40	-117.63	0	-1263.26	2.55	-641.78	2.55	-362.21	2.85	-340.04
110	110	24.66	-1948.48	335.09	76.24	0	-876.83	2.55	-705.24	2.55	-365.40	2.85	-359.11
110	10111	27.40	-1909.92	422.01	-995.67	0	-1561.52	2.55	-350.60	2.55	-210.67	2.85	-142.43
111	111	27.40	-1943.96	-508.38	-1022.11	0	-1611.88	2.55	-342.18	2.55	-210.43	2.85	-140.12
111	112	30.45	-1998.65	-419.47	437.00	0	-677.17	2.55	-834.75	2.55	-420.10	2.85	-433.84
112	112	30.45	-2399.34	-418.72	120.87	0	-1299.92	2.55	-722.81	2.55	-410.13	2.85	-397.84
112	113	33.50	-2393.60	-329.62	1258.22	0	-556.09	2.55	-1086.25	2.55	-562.63	2.85	-615.27
113	113	33.50	-2066.32	-329.59	322.02	0	-1379.18	2.55	-510.78	2.55	-287.57	2.85	-270.92
113	114	36.89	-2063.31	-200.85	1219.11	0	-722.51	2.55	-795.35	2.55	-408.82	2.85	-443.24
114	114	36.89	-1898.47	-196.56	418.89	0	-1619.65	2.55	-189.89	2.55	-210.38	2.85	-492.12
114	115	40.28	-1898.47	-128.35	965.66	0	-1248.52	2.55	-406.79	2.55	-278.46	2.85	-288.71
115	115	40.28	-1886.87	-126.54	964.51	0	-1245.74	2.55	-402.02	2.55	-275.55	2.85	-285.64
115	116	43.67	-1886.87	-64.44	1287.83	0	-1026.44	2.55	-529.00	2.55	-316.04	2.85	-343.00
116	116	43.67	-1870.70	-64.16	1286.50	0	-1022.41	2.55	-522.41	2.55	-312.03	2.85	-338.78
116	117	47.06	-1870.70	-1.05	1398.75	0	-947.56	2.55	-561.95	2.55	-326.78	2.85	-359.63
117	117	47.06	-1862.99	-1.72	1398.40	0	-945.46	2.55	-558.89	2.55	-324.91	2.85	-357.67
117	118	50.45	-1862.99	60.09	1299.64	0	-1014.85	2.55	-511.18	2.55	-313.92	2.85	-341.97
118	118	50.45	-1857.26	59.37	1299.67	0	-1013.09	2.55	-508.98	2.55	-312.57	2.85	-340.58
118	119	53.84	-1857.26	121.68	993.43	0	-1224.70	2.55	-374.56	2.55	-276.39	2.85	-289.16
119	119	53.84	-1848.86	121.13	993.25	0	-1222.27	2.55	-371.28	2.55	-274.37	2.85	-287.07
119	120	57.23	-1848.86	183.20	477.76	0	-1577.15	2.55	-149.74	2.55	-212.73	2.85	-199.54
120	120	57.23	-2135.10	181.97	1352.81	0	-723.15	2.55	-872.16	2.55	-443.14	2.85	-485.11
120	121	60.62	-2138.54	309.55	549.42	0	-1250.03	2.55	-613.78	2.55	-335.21	2.85	-331.81
121	121	60.62	-2385.06	309.79	1407.82	0	-452.52	2.55	-1136.44	2.55	-580.14	2.85	-640.84
121	122	64.01	-2391.45	409.10	191.72	0	-1249.07	2.55	-744.75	2.55	-417.48	2.85	-409.15
122	122	64.01	-2003.33	409.86	508.48	0	-629.78	2.55	-861.42	2.55	-430.58	2.85	-448.39
122	10123	67.40	-1938.29	521.42	-1104.47	0	-1661.14	2.55	-313.66	2.55	-198.00	2.85	-122.87
123	123	67.40	-1941.68	-489.43	-1104.59	0	-1662.16	2.55	-315.15	2.55	-198.75	2.85	-123.62
123	124	70.45	-1980.46	-402.27	288.52	0	-769.19	2.55	-769.90	2.55	-397.37	2.85	-402.88
124	124	70.45	-2386.07	-403.51	-27.57	0	-1393.36	2.55	-659.99	2.55	-388.55	2.85	-368.07
124	125	73.50	-2380.33	-311.78	1055.80	0	-688.47	2.55	-995.12	2.55	-535.45	2.85	-577.33
125	125	73.50	-2020.22	-309.24	143.48	0	-1463.51	2.55	-426.75	2.55	-260.71	2.85	-235.29
125	126	76.26	-2017.76	-191.13	886.04	0	-981.48	2.55	-651.08	2.55	-362.86	2.85	-380.18
126	126	76.26	-1801.49	-187.59	109.73	0	-1755.83	2.55	-37.95	2.55	-162.00	2.85	-129.10
126	127	79.02	-1801.49	-137.36	558.17	0	-1443.92	2.55	-242.43	2.55	-213.87	2.85	-202.81
127	127	79.02	-1784.83	-134.21	557.76	0	-1439.15	2.55	-235.85	2.55	-209.88	2.85	-198.67
127	128	81.78	-1784.83	-83.84	858.55	0	-1227.86	2.55	-380.52	2.55	-243.55	2.85	-246.56
128	128	81.78	-1763.49	-81.33	857.99	0	-1221.78	2.55	-372.09	2.55	-238.43	2.85	-241.25
128	129	84.54	-1763.49	-31.13	1013.16	0	-1109.88	2.55	-457.39	2.55	-254.20	2.85	-263.75
129	129	84.54	-1753.94	-29.21	1012.77	0	-1107.24	2.55	-453.59	2.55	-251.88	2.85	-261.34
129	130	87.30	-1753.94	21.02	1024.07	0	-1093.66	2.55	-479.91	2.55	-250.01	2.85	-258.82
130	130	87.30	-1752.17	22.50	1023.73	0	-1093.33	2.55	-479.15	2.55	-249.54	2.85	-258.32
130	131	90.06	-1752.17	72.72	892.32	0	-1177.36	2.55	-446.73	2.55	-230.21	2.85	-231.04
131	131	90.06	-1757.16	73.75	891.82	0	-1179.16	2.55	-448.57	2.55	-231.31	2.85	-232.14
131	132	92.82	-1757.16	124.03	618.95	0	-1360.03	2.55	-357.67	2.55	-194.69	2.85	-180.37
132	132	92.82	-1364.45	124.30	894.34	0	-770.36	2.55	-446.93	2.55	-202.89	2.85	-213.11
133	133	95.58	-1364.45	174.51	481.95	0	-1046.87	2.55	-297.97	2.55	-149.28	2.85	-137.27
133	133	95.58	-972.32	173.88	776.84	0	-442.54	2.55	-400.25	2.55	-159.30	2.85	-172.55
133	134	98.34	-972.32	224.08	227.66	0	-813.00	2.55	-193.84	2.55	-89.10	2.85	-73.22
134	134	98.34	-579.00	222.56	542.18	0	-193.39	2.55	-308.47	2.55	-100.54	2.85	-110.63
134	135	101.10	-579.00	371.18	-142.28	0	-656.85	2.55	-44.93	2.55	-13.99	2.85	11.86



Def. 8.2.2

105	106	13.70	-878.67	53.08	1350.50	0	-23.73	2.55	-458.90	2.55	-245.84	2.85	-304.59
106	106	13.70	-874.80	54.79	1350.95	0	-22.30	2.55	-457.49	2.55	-244.99	2.85	-303.75
106	107	16.44	-874.80	124.59	1105.18	0	-192.24	2.55	-348.26	2.55	-216.11	2.85	-262.79
107	107	16.44	-863.90	126.75	1105.42	0	-188.81	2.55	-344.07	2.55	-213.58	2.85	-260.19
107	108	19.18	-863.90	196.51	662.56	0	-489.09	2.55	-164.48	2.55	-159.14	2.85	-182.72
108	108	19.18	-1799.88	198.76	1409.61	0	-255.42	2.55	-849.66	2.55	-468.95	2.85	-537.20
108	109	21.92	-1803.53	212.77	878.52	0	-598.72	2.55	-690.36	2.55	-396.54	2.85	-433.81
109	109	21.92	-2537.78	213.22	1696.72	0	-169.77	2.55	-1276.87	2.55	-710.91	2.85	-806.49
109	110	24.66	-2544.56	246.75	1070.59	0	-581.86	2.55	-1071.59	2.55	-628.74	2.85	-689.08
110	110	24.66	-2353.44	246.94	1226.90	0	-257.14	2.55	-1141.70	2.55	-638.92	2.85	-712.75
110	10111	27.40	-2302.81	278.23	472.51	0	-743.92	2.55	-854.07	2.55	-528.25	2.85	-560.81
111	111	27.40	-2355.57	-362.02	452.74	0	-793.38	2.55	-856.33	2.55	-533.76	2.85	-564.86
111	112	30.45	-2427.37	-312.64	1541.15	0	-88.78	2.55	-1274.15	2.55	-692.57	2.85	-783.16
112	112	30.45	-2778.63	-312.23	1288.68	0	-627.60	2.55	-1176.70	2.55	-685.79	2.85	-754.84
112	113	33.50	-2771.09	-273.75	2169.35	0	-41.71	2.55	-1479.68	2.55	-800.07	2.85	-917.58
113	113	33.50	-2123.17	-273.10	1104.10	0	-820.73	2.55	-761.39	2.55	-437.30	2.85	-476.60
113	114	36.89	-2119.22	-255.37	1997.40	0	-238.57	2.55	-1041.76	2.55	-557.95	2.85	-648.63
114	111	36.89	-1640.60	-257.43	1100.78	0	-996.39	2.55	-324.66	2.55	-275.26	2.85	-305.24
114	115	40.28	-1640.60	-177.70	1842.38	0	-506.28	2.55	-585.97	2.55	-371.99	2.85	-443.29
115	115	40.28	-1629.00	-179.98	1842.01	0	-503.05	2.55	-581.35	2.55	-369.19	2.85	-440.40
115	116	43.67	-1629.00	-94.31	2307.03	0	-197.68	2.55	-740.25	2.55	-430.52	2.85	-528.03
116	116	43.67	-1612.83	-97.20	2306.95	0	-192.90	2.55	-733.91	2.55	-426.69	2.85	-524.09
116	117	47.06	-1612.83	-10.91	2490.17	0	-75.03	2.55	-789.67	2.55	-451.82	2.85	-560.06
117	117	47.06	-1605.12	-13.35	2491.33	0	-72.02	2.55	-786.92	2.55	-450.17	2.85	-558.43
117	118	50.45	-1605.12	72.65	2390.36	0	-142.98	2.55	-739.08	2.55	-438.75	2.85	-542.22
118	118	50.45	-1599.39	71.94	2392.04	0	-140.24	2.55	-737.23	2.55	-437.64	2.85	-541.18
118	119	53.84	-1599.39	158.20	2002.00	0	-403.03	2.55	-584.62	2.55	-388.95	2.85	-471.76
119	119	53.84	-1590.99	159.38	2003.48	0	-399.61	2.55	-581.69	2.55	-387.18	2.85	-470.03
119	120	57.23	-1590.99	245.23	1317.33	0	-858.49	2.55	-322.70	2.55	-300.18	2.85	-3

105	106	13.70	-878.67	70.40	1835.78	0	252.83	2.55	-544.07	2.55	-318.94	2.85	-414.22
106	106	13.70	-874.80	63.66	1836.37	0	254.35	2.55	-542.69	2.55	-318.11	2.85	-413.41
106	107	16.44	-874.80	160.38	1529.42	0	49.55	2.55	-422.71	2.55	-280.02	2.85	-358.63
107	107	16.44	-863.90	154.46	1530.34	0	53.36	2.55	-418.64	2.55	-277.59	2.85	-356.19
10	108	19.18	-863.90	251.15	974.60	0	-311.25	2.55	-219.25	2.55	-206.15	2.85	-253.22
10	108	19.18	-1799.88	246.24	1722.76	0	-76.95	2.55	-904.62	2.55	-516.13	2.85	-607.94
108	109	21.92	-1803.53	284.24	1024.90	0	-515.29	2.55	-716.05	2.55	-418.59	2.85	-466.88
109	109	21.92	-2537.78	279.04	1844.46	0	-85.57	2.55	-1302.79	2.55	-733.16	2.85	-839.86
109	110	24.66	-2544.56	277.87	1090.66	0	-570.42	2.55	-1075.12	2.55	-631.76	2.85	-693.61
110	110	24.66	-2353.44	275.12	1247.60	0	-245.35	2.55	-1145.33	2.55	-642.04	2.85	-717.43
110	10111	27.40	-2302.81	286.04	440.13	0	-762.37	2.55	-848.38	2.55	-523.37	2.85	-553.50
111	111	27.40	-2355.57	-363.12	420.47	0	-811.78	2.55	-850.67	2.55	-528.90	2.85	-557.57
111	112	30.45	-2427.37	-328.08	1545.63	0	-86.22	2.55	-1274.93	2.55	-693.24	2.85	-784.17
112	112	30.45	-2778.63	-329.21	1293.09	0	-625.09	2.55	-1177.47	2.55	-686.46	2.85	-755.84
112	113	33.50	-2771.09	-327.08	2271.90	0	16.74	2.55	-1497.68	2.55	-815.52	2.85	-940.75
113	113	33.50	-2123.17	-331.01	1205.56	0	-762.91	2.55	-779.20	2.55	-452.58	2.85	-499.52
113	114	36.89	-2119.22	-300.06	2269.36	0	-83.57	2.55	-1089.49	2.55	-598.92	2.85	-710.07
114	114	36.89	-1640.60	-309.85	1370.83	0	-842.49	2.55	-372.06	2.55	-315.94	2.85	-366.25
114	115	40.28	-1640.60	-212.88	2270.18	0	-262.47	2.55	-661.06	2.55	-436.43	2.85	-539.94
115	115	40.28	-1629.00	-226.79	2268.07	0	-260.23	2.55	-656.13	2.55	-433.38	2.85	-536.65
115	116	43.67	-1629.00	-109.27	2837.72	0	104.77	2.55	-833.39	2.55	-510.47	2.85	-647.92
116	116	43.67	-1612.83	-125.64	2836.70	0	109.02	2.55	-826.89	2.55	-506.50	2.85	-643.76
116	117	47.06	-1612.83	-6.01	3059.74	0	249.58	2.55	-889.63	2.55	-537.62	2.85	-688.73
117	117	47.06	-1605.12	-22.62	3060.83	0	252.55	2.55	-886.87	2.55	-535.97	2.85	-687.09
117	118	50.45	-1605.12	95.64	2935.24	0	167.56	2.55	-834.71	2.55	-520.83	2.85	-665.31
118	118	50.45	-1599.39	81.24	2937.69	0	170.74	2.55	-833.00	2.55	-519.84	2.85	-664.45
118	119	53.84	-1599.39	200.81	2459.60	0	-142.23	2.55	-664.93	2.55	-457.88	2.85	-575.14
119	119	53.84	-1590.99	189.62	2462.66	0	-137.92	2.55	-662.27	2.55	-456.35	2.85	-573.77
11	120	57.23	-1590.99	307.53	1618.91	0	-686.61	2.55	-375.63	2.55	-345.61	2.85	-414.03
1	120	57.23	-2169.78	299.55	2617.28	0	119.26	2.55	-1201.37	2.55	-660.21	2.85	-793.70
120	121	60.62	-2174.29	326.05	1535.32	0	-568.45	2.55	-892.44	2.55	-510.69	2.85	-578.26
121	121	60.62	-2697.85	318.81	2499.83	0	183.25	2.55	-1534.39	2.55	-829.82	2.85	-968.74
121	122	64.01	-2706.23	343.57	1396.11	0	-535.09	2.55	-1181.02	2.55	-683.50	2.85	-758.40
122	122	64.01	-2380.33	338.48	1650.49	0	-2.75	2.55	-1288.63	2.55	-696.57	2.85	-793.31
122	10123	67.40	-2349.16	339.14	502.21	0	-761.46	2.55	-857.69	2.55	-540.60	2.85	-575.42
123	123	67.40	-2361.88	-335.20	504.31	0	-763.86	2.55	-863.48	2.55	-543.85	2.85	-578.89
123	124	70.45	-2412.81	-329.74	1510.57	0	-110.60	2.55	-1236.38	2.55	-688.15	2.85	-778.46
124	124	70.45	-2756.18	-313.08	1258.30	0	-646.92	2.55	-1135.85	2.55	-679.56	2.85	-748.28
124	125	73.50	-2748.64	-315.24	2222.09	0	-23.19	2.55	-1432.94	2.55	-808.99	2.85	-934.23
125	125	73.50	-2062.33	-319.73	1176.16	0	-757.55	2.55	-717.08	2.55	-444.14	2.85	-492.76
125	126	76.26	-2059.10	-316.63	2009.22	0	-232.97	2.55	-945.81	2.55	-560.42	2.85	-660.75
126	126	76.26	-1552.81	-323.94	1130.28	0	-951.56	2.55	-227.16	2.55	-279.51	2.85	-321.28
126	127	79.02	-1552.81	-226.44	1889.76	0	-456.06	2.55	-492.45	2.55	-378.07	2.85	-463.58
127	127	79.02	-1536.15	-234.95	1887.81	0	-452.19	2.55	-485.58	2.55	-373.84	2.85	-459.10
127	128	81.78	-1536.15	-138.44	2403.97	0	-113.68	2.55	-672.04	2.55	-439.92	2.85	-554.52
128	128	81.78	-1514.81	-148.67	2402.72	0	-108.00	2.55	-663.48	2.55	-434.70	2.85	-549.06
128	129	84.54	-1514.81	-51.13	2678.45	0	75.27	2.55	-771.75	2.55	-468.72	2.85	-598.22
129	129	84.54	-1505.26	-61.97	2678.26	0	78.03	2.55	-767.99	2.55	-466.44	2.85	-595.86
129	130	87.30	-1505.26	35.58	2714.68	0	106.77	2.55	-798.33	2.55	-468.58	2.85	-599.01
130	130	87.30	-1503.49	25.24	2715.46	0	107.75	2.55	-797.78	2.55	-468.28	2.85	-598.76
130	131	90.06	-1503.49	122.78	2511.16	0	-18.83	2.55	-749.94	2.55	-438.32	2.85	-555.57
131	131	90.06	-1508.48	113.83	2512.69	0	-19.47	2.55	-752.16	2.55	-439.72	2.85	-557.13
131	132	92.82	-1508.48	210.89	2064.09	0	-303.42	2.55	-625.47	2.55	-377.13	2.85	-466.81
1	132	92.82	-1171.91	204.10	2285.33	0	206.65	2.55	-706.60	2.55	-384.87	2.85	-495.19
1	133	95.58	-1171.91	301.65	1587.36	0	-237.54	2.55	-500.18	2.55	-288.88	2.85	-356.59
133	133	95.58	-835.91	297.56	1826.10	0	285.66	2.55	-593.03	2.55	-298.26	2.85	-387.25
133	134	98.34	-835.91	395.09	870.25	0	-323.60	2.55	-305.37	2.55	-167.59	2.85	-198.45
134	134	98.34	-498.73	394.52	1126.43	0	213.22	2.55	-409.27	2.55	-178.19	2.85	-230.96
134	135	101.10	-498.73	307.33	-94.25	0	-565.02	2.55	-39.14	2.55	-11.80	2.85	9.61



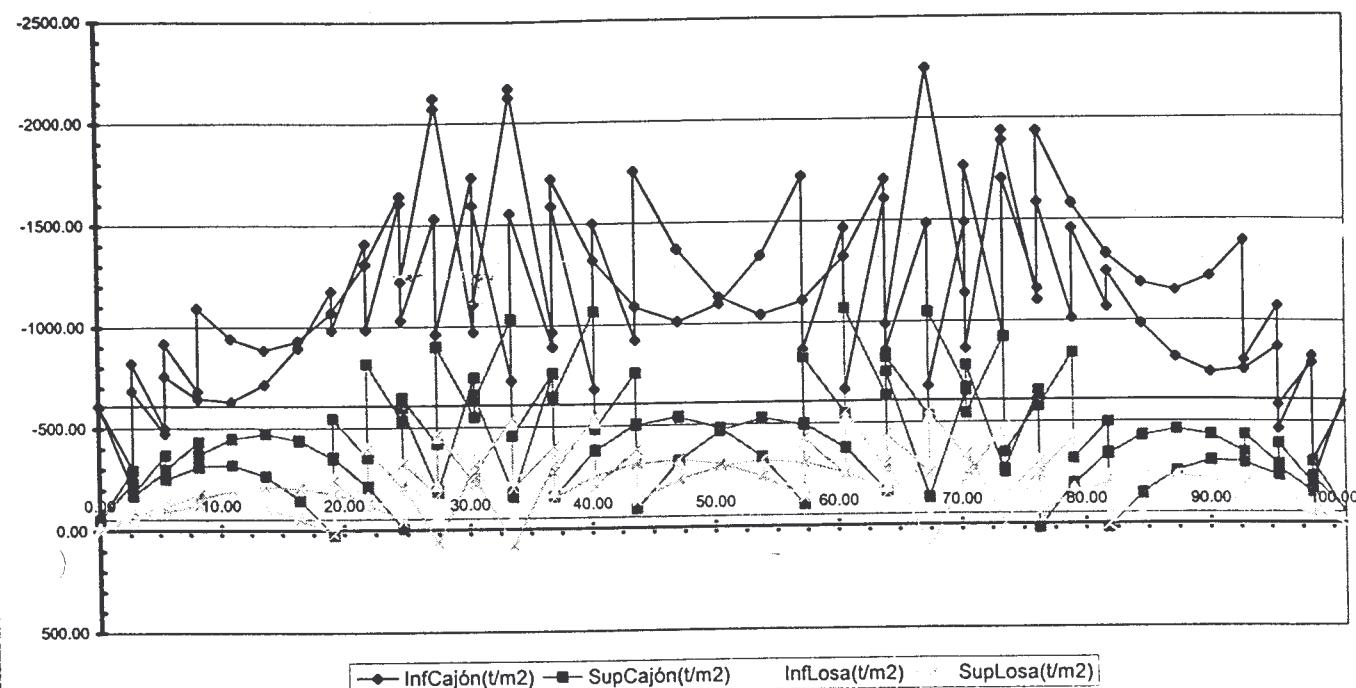
EN DOMINANTE SIN GRADIENTE

PPCF1 PPLF3 + [1; 1]PPLF2 + [.95; 1.05]PRETF1A.ISO.To + [.95; 1.05]PRETF1A.HIP.To + [.95; 1.05]PRETF1B.ISO.To + [.95; 1.05]PRETF1B.HIP.To + [.9; 1.1]PRETF3C.ISO.To + [.9; 1.1]PRETF3C.HIP.To + [.9; 1.1]PRE

Barra		Nudo	X	N (T)	Vy (T)	Mz (Tm)	Fibra	InfCajón	Fibra	SupCajón	Fibra	InfLosa	Fibra	SupLosa
							y fibra	sig (t/m2)	y fibra	sig (t/m2)	y fibra	sig (t/m2)	y fibra	sig (t/m2)
1	1	0.00	-548.31	-448.80	-117.56		0	-608.47	2.55	-54.40	2.55	-14.75	2.85	9.12
1	2	2.74	-548.31	-193.29	477.91		0	-200.31	2.55	-296.10	2.55	-88.39	2.85	-94.77
2	2	2.74	-945.09	-195.12	163.01		0	-821.18	2.55	-182.75	2.55	-77.71	2.85	-58.12
2	3	5.48	-945.09	-148.28	633.49		0	-499.47	2.55	-370.17	2.55	-136.45	2.85	-140.93
3	3	5.48	-1217.81	-149.86	429.02		0	-918.42	2.55	-299.78	2.55	-129.76	2.85	-116.74
3	4	8.22	-1217.81	-103.02	775.42		0	-682.71	2.55	-433.04	2.55	-173.73	2.85	-178.68
4	4	8.22	-1491.11	-104.36	584.41		0	-1091.58	2.55	-371.73	2.55	-168.34	2.85	-156.28
4	5	10.96	-1491.11	-57.49	806.14		0	-942.29	2.55	-450.65	2.55	-197.46	2.85	-197.24
5	5	10.96	-1489.42	-58.82	806.13		0	-941.79	2.55	-449.99	2.55	-197.06	2.85	-196.83
5	6	13.70	-1489.42	-3.63	893.71		0	-884.34	2.55	-472.90	2.55	-209.91	2.85	-214.66
6	6	13.70	-1493.29	-3.15	894.24		0	-885.21	2.55	-474.50	2.55	-210.90	2.85	-215.72
6	7	16.44	-1493.29	46.55	834.74		0	-926.99	2.55	-439.12	2.55	-205.53	2.85	-207.51
7	7	16.44	-1504.19	47.66	835.27		0	-929.97	2.55	-443.46	2.55	-208.18	2.85	-210.28
7	8	19.18	-1504.19	97.94	636.30		0	-1066.66	2.55	-351.14	2.55	-185.72	2.85	-177.75
8	8	19.18	-1526.20	99.51	636.94		0	-1072.90	2.55	-359.84	2.55	-191.01	2.85	-183.23
8	9	21.92	-1526.20	149.26	296.14		0	-1305.88	2.55	-210.12	2.55	-151.12	2.85	-125.85
9	9	21.92	-1539.92	151.60	296.47		0	-1309.81	2.55	-215.53	2.55	-154.41	2.85	-129.26
9	10	24.66	-1539.92	243.10	-188.64		0	-1640.67	2.55	-7.79	2.55	-96.72	2.85	-46.52
10	10	24.66	-1968.55	244.45	574.53		0	-1029.28	2.55	-648.99	2.55	-326.80	2.85	-324.18
10	11	27.40	-1971.33	338.18	-206.41		0	-1529.64	2.55	-422.89	2.55	-218.59	2.85	-169.49
11	11	27.40	-2355.93	338.02	538.19		0	-961.13	2.55	-900.72	2.55	-456.68	2.85	-461.86
11	12	30.45	-2361.67	452.01	-669.56		0	-1731.69	2.55	-550.39	2.55	-290.62	2.85	-222.84
12	12	30.45	-1954.30	452.37	-352.98		0	-1106.69	2.55	-659.72	2.55	-299.10	2.85	-257.33
12	10013	33.50	-1921.09	588.66	-1972.15		0	-2123.50	2.55	-175.92	2.55	-67.18	2.85	73.76
13	13	33.50	-1936.85	-649.81	-1997.51		0	-2167.82	2.55	-160.27	2.55	-62.85	2.85	80.22
13	14	36.89	-2006.93	-472.13	-75.11		0	-964.51	2.55	-760.47	2.55	-343.46	2.85	-317.41
14	14	36.89	-2399.00	-473.22	-391.44		0	-1584.65	2.55	-645.57	2.55	-331.34	2.85	-279.19
14	15	40.28	-2392.61	-348.48	1014.19		0	-682.30	2.55	-1067.47	2.55	-522.75	2.85	-554.47
15	15	40.28	-2050.51	-347.70	79.33		0	-1500.25	2.55	-486.07	2.55	-244.48	2.85	-206.88
15	16	43.67	-2047.50	-200.62	975.88		0	-921.57	2.55	-759.21	2.55	-366.67	2.85	-381.77
16	16	43.67	-1852.03	-199.78	173.96		0	-1752.38	2.55	-94.27	2.55	-168.81	2.85	-133.93
16	17	47.06	-1852.03	-137.20	744.59		0	-1366.02	2.55	-324.98	2.55	-238.84	2.85	-234.02
17	17	47.06	-1859.74	-135.11	745.21		0	-1367.98	2.55	-328.09	2.55	-240.76	2.85	-236.04
17	18	50.45	-1859.74	-73.47	1098.76		0	-1129.05	2.55	-470.71	2.55	-284.13	2.85	-298.15
18	18	50.45	-1865.47	-71.38	1098.81		0	-1130.75	2.55	-472.92	2.55	-285.49	2.85	-299.56
18	19	53.84	-1865.47	-9.56	1236.25		0	-1038.68	2.55	-527.71	2.55	-302.33	2.85	-323.90
19	19	53.84	-1873.87	-7.52	1236.37		0	-1041.14	2.55	-530.99	2.55	-304.33	2.85	-325.98
19	20	57.23	-1873.87	59.19	1141.14		0	-1105.32	2.55	-495.13	2.55	-292.15	2.85	-308.78
20	20	57.23	-1891.98	61.55	1142.03		0	-1110.23	2.55	-502.37	2.55	-296.56	2.85	-313.37
20	21	60.62	-1891.98	124.07	827.90		0	-1322.96	2.55	-378.20	2.55	-257.43	2.85	-257.77
21	21	60.62	-1900.27	126.89	828.13		0	-1325.31	2.55	-381.48	2.55	-259.42	2.85	-259.83
21	22	64.01	-1900.27	209.58	270.69		0	-1700.69	2.55	-164.54	2.55	-189.67	2.85	-160.35
22	22	64.01	-2153.61	212.23	1141.77		0	-857.30	2.55	-825.26	2.55	-417.81	2.85	-445.68
22	23	67.40	-2157.05	354.54	172.91		0	-1482.26	2.55	-531.50	2.55	-285.66	2.85	-256.43
23	23	67.40	-2388.30	350.73	1031.54		0	-680.19	2.55	-1047.76	2.55	-527.11	2.85	-581.90
23	24	70.45	-2394.06	479.43	-224.08		0	-1487.01	2.55	-668.84	2.55	-356.49	2.85	-316.41
24	24	70.45	-1994.56	474.88	92.27		0	-864.54	2.55	-781.24	2.55	-366.78	2.85	-352.76
24	10025	73.50	-1948.78	617.72	-1610.44		0	-1934.67	2.55	-256.79	2.55	-122.05	2.85	-4.30
25	25	73.50	-1928.02	-508.49	-1583.90		0	-1888.24	2.55	-270.50	2.55	-125.42	2.85	-9.85
25	26	76.26	-1972.79	-382.40	-322.01		0	-1101.21	2.55	-656.89	2.55	-310.36	2.85	-272.02
26	26	76.26	-2298.18	-384.86	-564.07		0	-1584.62	2.55	-578.16	2.55	-306.82	2.85	-248.66
26	27	79.02	-2292.98	-265.04	332.73		0	-1010.76	2.55	-841.79	2.55	-429.46	2.85	-425.04
27	27	79.02	-1705.44	-266.22	-419.98		0	-1455.21	2.55	-321.80	2.55	-156.49	2.85	-98.32
27	28	81.78	-1702.99	-162.76	188.10		0	-1065.77	2.55	-498.61	2.55	-240.53	2.85	-218.51
28	28	81.78	-1084.61	-164.11	-310.03		0	-1242.11	2.55	16.15	2.55	-44.25	2.85	4.02
28	29	84.54	-1084.61	-113.96	73.67		0	-981.88	2.55	-147.84	2.55	-89.74	2.85	-61.58
29	29	84.54	-1094.16	-114.75	74.07		0	-984.51	2.55	-151.64	2.55	-92.06	2.85	-63.99
29	30	87.30	-1094.16	-64.62	321.62		0	-817.15	2.55	-259.05	2.55	-121.02	2.85	-106.06
30	30	87.30	-1095.93	-65.23	321.79		0	-817.57	2.55	-259.77	2.55	-121.46	2.85	-106.52
30	31	90.06	-1095.93	-15.12	432.72		0	-743.40	2.55	-310.47	2.55	-133.82	2.85	-124.96
31	31	90.06	-1090.94	-15.68	432.91		0	-741.76	2.55	-308.58	2.55	-132.67	2.85	-123.78
31	32	92.82	-1090.94	34.49	406.92		0	-761.00	2.55	-302.47	2.55	-128.39	2.85	-118.54
32	32	92.82	-1077.57	34.11	407.30		0	-756.71	2.55	-297.37	2.55	-125.29	2.85	-115.36
32	33	95.58	-1077.57	84.20	244.01		0	-869.67	2.55	-234.31	2.55	-104.31	2.85	-86.36
33	33	95.58	-876.21	83.96	380.71		0	-584.21	2.55	-273.74	2.55	-104.22	2.85	-97.81
33	34	98.34	-876.21	134.20	79.91		0	-791.14	2.55	-153.58	2.55	-66.52	2.85	-45.04
34	34	98.34	-551.08	133.81	322.41		0	-307.35	2.55	-233.12	2.55	-70.07	2.85	-68.45
34	35	101.10	-551.08	328.94	-117.04		0	-609.02	2.55	-55.56	2.55	-15.48	2.85	8.33
34	101	0.00	-550.53	-343.39	-117.08		0	-608.87	2.55	-55.34	2.55	-15.35	2.85	8.47
101	102	2.74	-550.53	-139.00	336.22		0	-298.82	2.55	-235.15	2.55	-72.15	2.85	-71.42
102	102	2.74	-809.73	-138.56	142.31		0	-685.53	2.55	-171.18	2.55	-69.10	2.85	-52.49
102	103	5.48	-809.73	-86.52	450.65		0	-474.02	2.55	-292.42	2.55	-108.04	2.85	-106.99
103	103	5.48	-1005.56	-85.94	314.20		0	-757.65	2.55	-250.89	2.55	-106.87	2.85	-94.25
103	104	8.22	-1005.56	-33.87	478.37		0	-644.16	2.55	-313.75	2.55	-128.05	2.85	-123.51
104	104	8.22	-1013.39	-33.08	478.35		0	-646.55	2.55	-316.78	2.55	-129.90	2.85	-125.41
104	105	10.96	-1013.39	19.10	497.55		0	-631.47	2.55	-321.18	2.55	-133.21	2.85	-129.24
105	105	10.96	-1015.08	20.09	497.62		0	-631.95	2.55	-321.85	2.55	-133.62	2.85	-129.67

105	106	13.70	-1015.08	72.19	371.22	0	-715.60	2.55	-267.70	2.55	-118.97	2.85	-107.93
106	106	13.70	-1011.21	73.38	371.24	0	-714.42	2.55	-266.20	2.55	-118.06	2.85	-106.99
106	107	16.44	-1011.21	125.54	98.70	0	-897.09	2.55	-153.41	2.55	-85.36	2.85	-59.55
107	107	16.44	-1000.31	126.83	98.45	0	-893.96	2.55	-149.13	2.55	-82.75	2.85	-56.84
107	108	19.18	-1000.31	178.99	-320.47	0	-1175.78	2.55	22.35	2.55	-31.96	2.85	16.35
108	108	19.18	-1707.96	179.95	247.90	0	-981.07	2.55	-547.06	2.55	-259.20	2.85	-241.94
108	109	21.92	-1710.74	290.84	-420.98	0	-1408.40	2.55	-356.27	2.55	-166.24	2.85	-108.98
109	109	21.92	-2202.31	292.49	254.73	0	-984.62	2.55	-817.22	2.55	-405.70	2.85	-396.93
109	110	24.66	-2207.47	418.74	-721.53	0	-1607.43	2.55	-535.79	2.55	-271.24	2.85	-203.61
110	110	24.66	-1948.48	419.51	-527.97	0	-1221.18	2.55	-599.20	2.55	-274.38	2.85	-222.61
110	10111	27.40	-1909.92	551.56	-1889.24	0	-2070.78	2.55	-193.78	2.55	-76.06	2.85	59.44
111	111	27.40	-1943.96	-662.74	-1916.17	0	-2121.42	2.55	-185.26	2.55	-75.75	2.85	61.86
111	112	30.45	-1998.65	-512.09	-76.87	0	-970.03	2.55	-744.56	2.55	-342.69	2.85	-317.75
112	112	30.45	-2399.34	-513.35	-393.76	0	-1593.21	2.55	-632.49	2.55	-332.61	2.85	-281.58
112	113	33.50	-2393.60	-377.51	955.78	0	-728.46	2.55	-1033.17	2.55	-517.07	2.85	-546.95
113	113	33.50	-2066.32	-378.85	19.13	0	-1551.80	2.55	-457.62	2.55	-241.95	2.85	-202.49
113	114	36.89	-2063.31	-226.27	1045.09	0	-891.69	2.55	-764.81	2.55	-382.61	2.85	-403.92
114	114	36.89	-1898.47	-222.65	245.00	0	-1718.76	2.55	-159.38	2.55	-184.19	2.85	-152.84
114	115	40.28	-1898.47	-135.87	839.56	0	-1320.39	2.55	-384.66	2.55	-259.46	2.85	-260.22
115	115	40.28	-1886.87	-132.88	838.67	0	-1317.46	2.55	-379.93	2.55	-256.60	2.85	-257.21
115	116	43.67	-1886.87	-67.29	1176.97	0	-1089.63	2.55	-509.54	2.55	-299.34	2.85	-317.95
116	116	43.67	-1870.70	-65.44	1175.67	0	-1085.57	2.55	-502.96	2.55	-295.33	2.85	-313.75
116	117	47.06	-1870.70	4.45	1285.83	0	-1011.92	2.55	-542.13	2.55	-309.77	2.85	-334.11
117	117	47.06	-1862.99	5.63	1285.48	0	-1009.81	2.55	-539.07	2.55	-307.90	2.85	-332.16
117	118	50.45	-1862.99	70.47	1157.11	0	-1096.08	2.55	-486.16	2.55	-292.45	2.85	-309.77
118	118	50.45	-1857.26	71.62	1157.04	0	-1094.37	2.55	-483.95	2.55	-291.09	2.85	-308.36
118	119	53.84	-1857.26	136.25	804.71	0	-1332.26	2.55	-341.44	2.55	-247.96	2.85	-246.52
119	119	53.84	-1848.86	137.54	804.30	0	-1329.96	2.55	-338.12	2.55	-245.91	2.85	-244.38
119	120	57.23	-1848.86	203.21	227.77	0	-1719.63	2.55	-105.86	2.55	-175.07	2.85	-143.07
120	120	57.23	-2135.10	203.71	1102.40	0	-865.86	2.55	-828.21	2.55	-405.42	2.85	-428.54
120	121	60.62	-2138.54	360.98	172.82	0	-1464.66	2.55	-547.68	2.55	-278.48	2.85	-246.73
121	121	60.62	-2385.06	362.41	1031.42	0	-667.03	2.55	-1070.38	2.55	-523.44	2.85	-555.80
121	122	64.01	-2391.45	494.08	-434.95	0	-1606.22	2.55	-634.77	2.55	-323.08	2.85	-267.57
122	122	64.01	-2003.33	495.02	-117.60	0	-986.60	2.55	-751.53	2.55	-336.27	2.85	-306.95
122	10123	67.40	-1938.29	681.48	-2128.11	0	-2244.53	2.55	-134.00	2.55	-43.80	2.85	108.39
123	123	67.40	-1941.68	-637.58	-2127.58	0	-2245.17	2.55	-135.61	2.55	-44.64	2.85	107.48
123	124	70.45	-1980.46	-493.86	-361.17	0	-1139.46	2.55	-655.88	2.55	-299.50	2.85	-256.11
124	124	70.45	-2386.07	-509.83	-677.41	0	-1763.71	2.55	-545.94	2.55	-290.66	2.85	-221.26
124	125	73.50	-2380.33	-369.25	638.95	0	-926.04	2.55	-921.95	2.55	-472.65	2.85	-483.16
125	125	73.50	-2020.22	-366.06	-273.36	0	-1701.07	2.55	-353.60	2.55	-197.91	2.85	-141.12
125	126	76.26	-2017.76	-219.32	575.20	0	-1158.63	2.55	-596.52	2.55	-316.04	2.85	-309.96
126	126	76.26	-1801.49	-214.03	-200.81	0	-1932.81	2.55	16.55	2.55	-115.22	2.85	-58.95
126	127	79.02	-1801.49	-161.58	317.57	0	-1581.04	2.55	-200.20	2.55	-177.63	2.85	-148.45
127	127	79.02	-1784.83	-156.72	317.18	0	-1576.26	2.55	-193.63	2.55	-173.64	2.85	-144.32
127	128	81.78	-1784.83	-103.69	676.14	0	-1331.82	2.55	-348.50	2.55	-216.07	2.85	-205.35
128	128	81.78	-1763.49	-99.59	675.40	0	-1325.84	2.55	-340.04	2.55	-210.92	2.85	-200.00
128	129	84.54	-1763.49	-47.18	877.92	0	-1186.96	2.55	-433.66	2.55	-233.82	2.85	-233.19
129	129	84.54	-1753.94	-44.06	877.21	0	-1184.50	2.55	-429.80	2.55	-231.46	2.85	-230.72
129	130	87.30	-1753.94	8.42	926.36	0	-1149.35	2.55	-462.76	2.55	-235.29	2.85	-236.75
130	130	87.30	-1752.17	10.60	925.61	0	-1149.25	2.55	-461.93	2.55	-234.76	2.85	-236.15
130	131	90.06	-1752.17	69.41	823.58	0	-1216.53	2.55	-434.67	2.55	-219.85	2.85	-215.51
131	131	90.06	-1757.16	64.22	823.00	0	-1218.39	2.55	-436.49	2.55	-220.94	2.85	-216.59
131	132	92.82	-1757.16	119.06	563.04	0	-1391.89	2.55	-347.86	2.55	-186.27	2.85	-167.74
132	132	92.82	-1364.45	118.82	838.71	0	-802.07	2.55	-437.16	2.55	-194.51	2.85	-200.55
132	133	95.58	-1364.45	168.29	442.46	0	-1069.38	2.55	-291.04	2.55	-143.33	2.85	-128.35
133	133	95.58	-972.32	167.50	737.63	0	-464.88	2.55	-393.37	2.55	-153.39	2.85	-163.69
133	134	98.34	-972.32	216.96	207.08	0	-824.73	2.55	-190.22	2.55	-86.00	2.85	-68.57
134	134	98.34	-579.00	215.61	521.84	0	-204.99	2.55	-304.90	2.55	-97.48	2.85	-106.04
134	135	101.10	-579.00	488.74	-143.53	0	-657.57	2.55	-44.71	2.55	-13.80	2.85	12.14

GRÁFICO DE TENSIONES

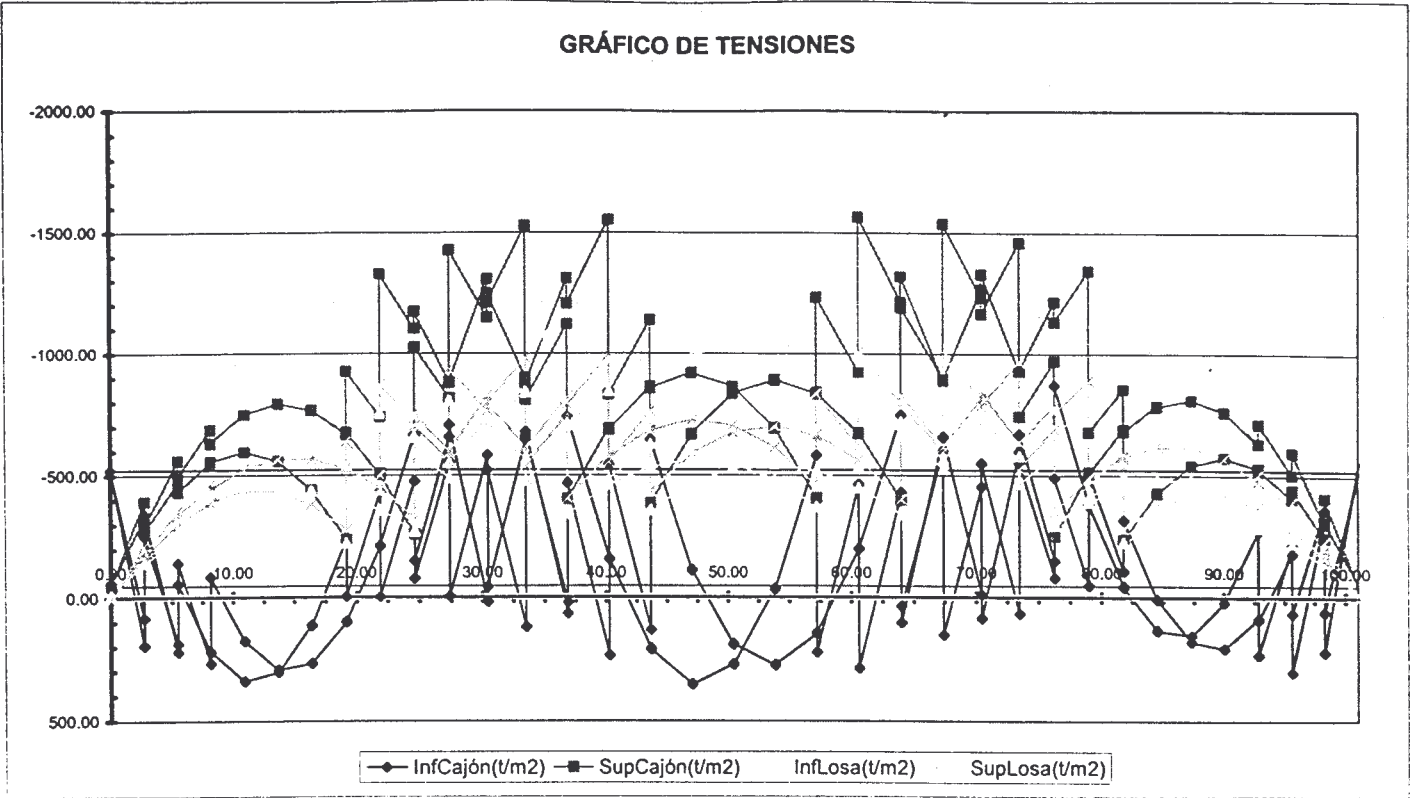


TREN DOMINANTE CON GRADIENTE

$$[1; 1]PPCF1 + [1; 1]PLPF3 + [1; 1]PLPF2 + [.95; 1.05]PRETF1A.ISO.To + [.95; 1.05]PRETF1A.HP.To + [.95; 1.05]PRETF1B.ISO.To + [.95; 1.05]PRETF1B.HP.To + [.9; 1.1]PRETF3C.ISO.To + [.9; 1.1]PRETF3C.HP.To + [.9; 1.1]PRE$$

Barra	Nudo	X	N (T)	Vy (T)	Mz (Tm)	Fibra	InfCajón	Fibra	SupCajón	Fibra	InfLosa	Fibra	SupLosa
						y fibra	sig (t/m2)	y fibra	sig (t/m2)	y fibra	sig (t/m2)	y fibra	sig (t/m2)
1	1	0.00	-472.36	-286.76	-73.43	0	-522.71	2.55	-47.80	2.55	-12.59	2.85	7.10
1	2	2.74	-472.36	-365.43	1051.43	0	195.27	2.55	-393.60	2.55	-165.12	2.85	-213.66
2	2	2.74	-813.00	-368.10	795.76	0	-342.30	2.55	-291.16	2.55	-155.41	2.85	-182.11
2	3	5.48	-813.00	-275.95	1678.13	0	220.40	2.55	-559.82	2.55	-275.46	2.85	-355.81
3	3	5.48	-1046.86	-281.73	1512.23	0	-142.55	2.55	-495.90	2.55	-269.17	2.85	-334.74
3	4	8.22	-1046.86	-189.59	2157.89	0	268.14	2.55	-688.44	2.55	-357.62	2.85	-462.68
4	4	8.22	-1281.29	-197.83	2004.18	0	-85.74	2.55	-632.72	2.55	-352.51	2.85	-443.26
4	5	10.96	-1281.29	-105.90	2420.53	0	177.15	2.55	-750.44	2.55	-410.48	2.85	-527.11
5	5	10.96	-1279.60	-116.10	2419.01	0	176.78	2.55	-749.50	2.55	-409.85	2.85	-526.36
5	6	13.70	-1279.60	-24.31	2611.36	0	294.93	2.55	-793.41	2.55	-438.13	2.85	-567.31
6	6	13.70	-1283.47	-36.13	2610.48	0	293.25	2.55	-794.74	2.55	-438.91	2.85	-568.06
6	7	16.44	-1283.47	56.00	2583.28	0	269.23	2.55	-765.67	2.55	-438.15	2.85	-567.09
7	7	16.44	-1294.37	43.53	2583.25	0	265.93	2.55	-769.90	2.55	-440.72	2.85	-569.73
7	8	19.18	-1294.37	135.05	2338.14	0	100.70	2.55	-668.20	2.55	-411.19	2.85	-527.21
8	8	19.18	-1316.38	123.16	2339.16	0	94.68	2.55	-676.96	2.55	-416.53	2.85	-532.78
8	9	21.92	-1316.38	214.87	1875.89	0	-211.90	2.55	-502.57	2.55	-358.18	2.85	-448.65
9	9	21.92	-1330.10	204.15	1877.54	0	-215.07	2.55	-508.23	2.55	-361.66	2.85	-452.35
9	10	24.66	-1330.10	254.45	1193.64	0	-664.38	2.55	-260.78	2.55	-274.11	2.85	-326.02
10	10	24.66	-2060.61	245.99	2098.47	0	-78.82	2.55	-1027.19	2.55	-594.47	2.85	-705.07
10	11	27.40	-2064.26	293.89	1346.42	0	-554.20	2.55	-817.10	2.55	-490.19	2.85	-554.44
11	11	27.40	-2727.17	287.43	2218.83	0	-7.01	2.55	-1427.10	2.55	-808.07	2.85	-935.55
11	12	30.45	-2734.70	305.73	1334.76	0	-581.75	2.55	-1148.62	2.55	-690.33	2.85	-766.45
12	12	30.45	-2390.16	301.08	1587.48	0	-44.80	2.55	-1248.81	2.55	-698.71	2.85	-796.43
12	10013	33.50	-2346.56	307.22	671.96	0	-643.81	2.55	-900.83	2.55	-569.39	2.85	-617.62
13	13	33.50	-2345.76	-330.15	649.74	0	-678.99	2.55	-880.74	2.55	-562.07	2.85	-608.31
13	14	36.89	-2387.84	-330.06	1778.09	0	64.26	2.55	-1311.15	2.55	-717.67	2.85	-824.68
14	14	36.89	-2716.69	-335.58	1524.43	0	-468.48	2.55	-1204.94	2.55	-705.39	2.85	-790.63
14	15	40.28	-2708.30	-311.37	2603.91	0	235.36	2.55	-1552.85	2.55	-848.14	2.85	-99

105	106	13.70	-878.67	63.96	1924.37	0	303.32	2.55	-559.62	2.55	-332.28	2.85	-434.24
106	106	13.70	-874.80	57.11	1924.91	0	304.81	2.55	-558.23	2.55	-331.45	2.85	-433.42
106	107	16.44	-874.80	153.83	1635.90	0	110.23	2.55	-441.40	2.55	-296.06	2.85	-382.69
107	107	16.44	-863.90	147.75	1636.78	0	114.02	2.55	-437.32	2.55	-293.62	2.85	-380.23
107	108	19.18	-863.90	244.44	1099.43	0	-240.10	2.55	-241.16	2.55	-224.95	2.85	-281.42
10	108	19.18	-1799.88	239.31	1847.57	0	-5.82	2.55	-926.53	2.55	-534.93	2.85	-636.14
108	109	21.92	-1803.53	277.31	1168.69	0	-433.35	2.55	-741.28	2.55	-440.25	2.85	-499.36
109	109	21.92	-2537.78	271.86	1988.23	0	-3.64	2.55	-1328.03	2.55	-754.82	2.85	-872.34
109	110	24.66	-2544.56	270.70	1254.09	0	-477.28	2.55	-1103.80	2.55	-656.38	2.85	-730.53
110	110	24.66	-2353.44	267.68	1411.02	0	-152.21	2.55	-1174.02	2.55	-666.66	2.85	-754.35
110	10111	27.40	-2302.81	278.60	623.94	0	-657.62	2.55	-880.64	2.55	-551.06	2.85	-595.02
111	111	27.40	-2355.57	-362.43	604.31	0	-707.01	2.55	-882.93	2.55	-556.59	2.85	-599.10
111	112	30.45	-2427.37	-327.39	1727.37	0	17.35	2.55	-1306.83	2.55	-720.62	2.85	-825.23
112	112	30.45	-2778.63	-328.78	1474.89	0	-521.48	2.55	-1209.38	2.55	-713.85	2.85	-796.91
112	113	33.50	-2771.09	-326.66	2452.40	0	119.61	2.55	-1529.35	2.55	-842.71	2.85	-981.53
113	113	33.50	-2123.17	-330.79	1386.14	0	-660.00	2.55	-810.89	2.55	-479.79	2.85	-540.31
113	114	36.89	-2119.22	-299.85	2449.20	0	18.92	2.55	-1121.05	2.55	-626.01	2.85	-750.70
114	114	36.89	-1640.60	-309.79	1550.75	0	-739.95	2.55	-403.63	2.55	-343.04	2.85	-406.89
114	115	40.28	-1640.60	-212.82	2449.89	0	-160.05	2.55	-692.60	2.55	-463.50	2.85	-580.54
115	115	40.28	-1629.00	-226.84	2447.86	0	-157.76	2.55	-687.68	2.55	-460.46	2.85	-577.27
115	116	43.67	-1629.00	-109.32	3017.67	0	207.32	2.55	-864.97	2.55	-537.57	2.85	-688.57
116	116	43.67	-1612.83	-125.76	3016.72	0	211.61	2.55	-858.48	2.55	-533.62	2.85	-684.43
116	117	47.06	-1612.83	-6.12	3240.14	0	352.39	2.55	-921.29	2.55	-564.80	2.85	-729.49
117	117	47.06	-1605.12	-22.76	3241.30	0	355.41	2.55	-918.55	2.55	-563.15	2.85	-727.86
117	118	50.45	-1605.12	95.50	3116.20	0	270.69	2.55	-866.47	2.55	-548.09	2.85	-706.20
118	118	50.45	-1599.39	81.10	3118.72	0	273.91	2.55	-864.77	2.55	-547.11	2.85	-705.35
118	119	53.84	-1599.39	200.67	2641.11	0	-38.79	2.55	-696.79	2.55	-485.22	2.85	-616.14
119	119	53.84	-1590.99	189.51	2644.24	0	-34.43	2.55	-694.14	2.55	-483.71	2.85	-614.79
119	120	57.23	-1590.99	307.42	1800.87	0	-582.91	2.55	-407.57	2.55	-373.02	2.85	-455.14
1	120	57.23	-2169.78	299.50	2799.31	0	223.00	2.55	-1233.32	2.55	-687.63	2.85	-834.82
120	121	60.62	-2174.29	326.00	1717.52	0	-464.61	2.55	-924.41	2.55	-538.13	2.85	-619.43
121	121	60.62	-2697.85	318.87	2682.09	0	287.13	2.55	-1566.38	2.55	-857.27	2.85	-1009.91
121	122	64.01	-2706.23	343.63	1578.17	0	-431.33	2.55	-1212.97	2.55	-710.93	2.85	-799.54
122	122	64.01	-2380.33	338.69	1832.63	0	101.06	2.55	-1320.59	2.55	-724.01	2.85	-834.46
122	10123	67.40	-2349.16	339.36	683.61	0	-658.08	2.55	-889.53	2.55	-567.93	2.85	-616.40
123	123	67.40	-2361.88	-330.88	685.79	0	-660.43	2.55	-895.34	2.55	-571.19	2.85	-619.89
123	124	70.45	-2412.81	-325.42	1678.87	0	-14.68	2.55	-1265.92	2.55	-713.50	2.85	-816.48
124	124	70.45	-2756.18	-308.49	1426.67	0	-550.96	2.55	-1165.40	2.55	-704.92	2.85	-786.31
124	125	73.50	-2748.64	-310.66	2376.47	0	64.80	2.55	-1460.04	2.55	-832.25	2.85	-969.11
125	125	73.50	-2062.33	-314.87	1330.57	0	-669.55	2.55	-744.18	2.55	-467.40	2.85	-527.65
125	126	76.26	-2059.10	-311.77	2150.22	0	-152.61	2.55	-970.55	2.55	-581.66	2.85	-692.61
126	126	76.26	-1552.81	-318.81	1271.28	0	-871.20	2.55	-251.91	2.55	-300.75	2.85	-353.14
126	127	79.02	-1552.81	-221.31	2016.61	0	-383.77	2.55	-514.71	2.55	-397.17	2.85	-492.23
127	127	79.02	-1536.15	-229.58	2014.64	0	-379.91	2.55	-507.84	2.55	-392.95	2.85	-487.75
127	128	81.78	-1536.15	-133.07	2515.97	0	-49.85	2.55	-691.70	2.55	-456.79	2.85	-579.82
128	128	81.78	-1514.81	-143.08	2514.68	0	-44.19	2.55	-683.13	2.55	-451.56	2.85	-574.35
128	129	84.54	-1514.81	-45.54	2774.99	0	130.29	2.55	-788.70	2.55	-483.26	2.85	-620.03
129	129	84.54	-1505.26	-56.21	2774.75	0	133.02	2.55	-784.93	2.55	-480.97	2.85	-617.66
129	130	87.30	-1505.26	41.33	2795.29	0	152.71	2.55	-812.48	2.55	-480.72	2.85	-617.22
130	130	87.30	-1503.49	31.10	2796.01	0	153.66	2.55	-811.92	2.55	-480.41	2.85	-616.96
130	131	90.06	-1503.49	128.65	2575.53	0	17.85	2.55	-761.24	2.55	-448.01	2.85	-570.11
131	131	90.06	-1508.48	119.75	2576.99	0	17.18	2.55	-763.44	2.55	-449.41	2.85	-571.65
131	132	92.82	-1508.48	216.80	2112.07	0	-276.08	2.55	-633.89	2.55	-384.36	2.85	-477.65
131	132	92.82	-1171.91	209.99	2333.24	0	233.96	2.55	-715.01	2.55	-392.09	2.85	-506.01
131	133	95.58	-1171.91	307.54	1619.00	0	-219.51	2.55	-505.73	2.55	-293.65	2.85	-363.74
133	133	95.58	-835.91	303.35	1857.67	0	303.55	2.55	-598.57	2.55	-303.02	2.85	-394.39
133	134	98.34	-835.91	400.88	885.83	0	-314.72	2.55	-308.11	2.55	-169.94	2.85	-201.97
134	134	98.34	-498.73	400.13	1141.93	0	222.06	2.55	-411.99	2.55	-180.53	2.85	-234.46
134	135	101.10	-498.73	312.94	-94.21	0	-564.99	2.55	-39.15	2.55	-11.81	2.85	9.60



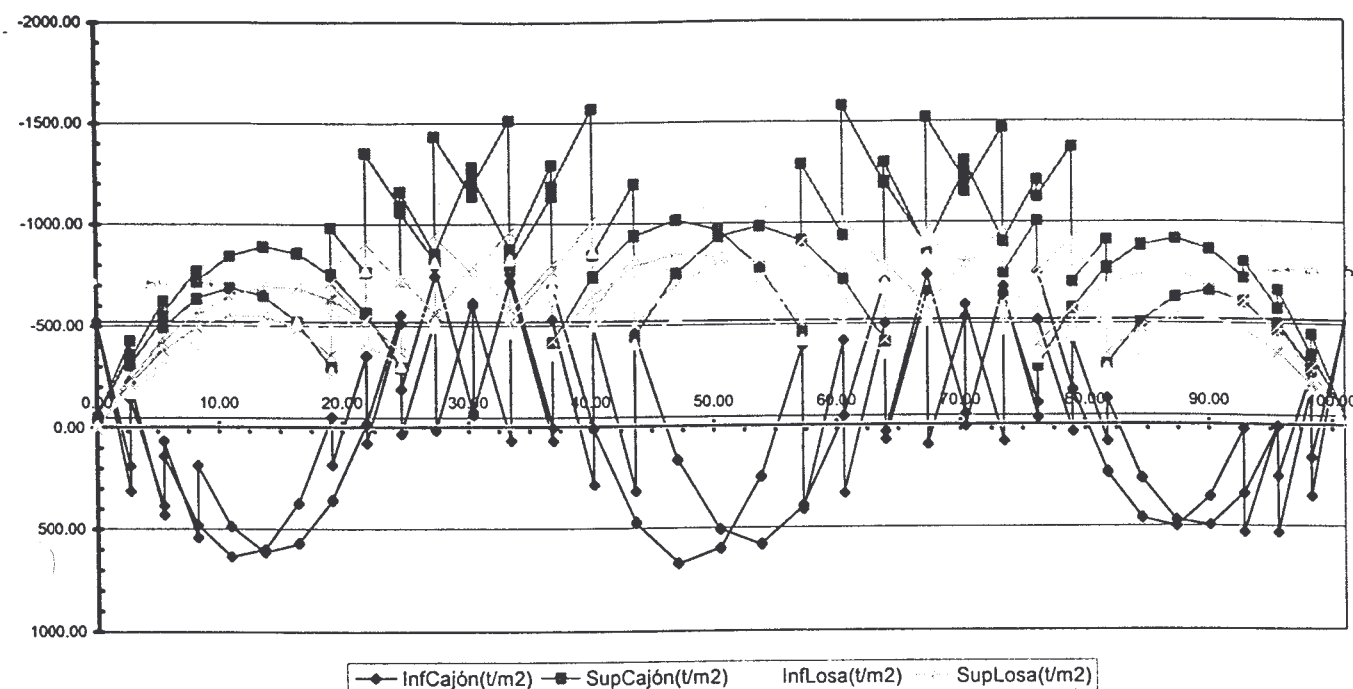
REN DOMINANTE SIN GRADIENTE

1)PPCI 1)PPLF3 + [1; 1)PPLF2 + [.95; 1.05]PRETF1A.ISO.To + [.95; 1.05]PRETF1A.HIP.To + [.95; 1.05]PRETF1B.ISO.To + [.95; 1.05]PRETF1B.HIP.To + [.9; 1.1]PRETF3C.ISO.To + [.9; 1.1]PRETF3C.HIP.To + [.9; 1.1]PRE

Barra	Nudo	X	N (T)	Vy (T)	Mz (Tm)	Fibra	InfCajón	Fibra	SupCajón	Fibra	InfLosa	Fibra	SupLosa
						y fibra	sig (t/m2)	y fibra	sig (t/m2)	y fibra	sig (t/m2)	y fibra	sig (t/m2)
1	1	0.00	-472.36	-275.73	-72.82	0	-522.36	2.55	-47.91	2.55	-12.69	2.85	6.96
1	2	2.74	-472.36	-434.92	1255.95	0	311.82	2.55	-429.50	2.55	-195.93	2.85	-259.87
2	2	2.74	-813.00	-431.20	1001.02	0	-225.31	2.55	-327.19	2.55	-186.33	2.85	-228.48
2	3	5.48	-813.00	-329.09	2042.66	0	428.15	2.55	-623.80	2.55	-330.38	2.85	-438.16
3	3	5.48	-1046.86	-327.71	1877.22	0	65.47	2.55	-559.96	2.55	-324.15	2.85	-417.20
3	4	8.22	-1046.86	-225.60	2635.25	0	540.19	2.55	-772.22	2.55	-429.53	2.85	-570.52
4	4	8.22	-1281.29	-226.31	2481.62	0	186.36	2.55	-716.51	2.55	-424.44	2.85	-551.12
4	5	10.96	-1281.29	-124.48	2962.53	0	486.05	2.55	-845.57	2.55	-492.13	2.85	-649.56
5	5	10.96	-1279.60	-127.23	2960.66	0	485.48	2.55	-844.56	2.55	-491.45	2.85	-648.73
5	6	13.70	-1279.60	-25.56	3169.95	0	613.28	2.55	-891.44	2.55	-522.27	2.85	-693.50
6	6	13.70	-1283.47	-30.52	3168.29	0	611.16	2.55	-892.64	2.55	-522.94	2.85	-694.07
6	7	16.44	-1283.47	71.59	3112.06	0	570.59	2.55	-858.48	2.55	-517.81	2.85	-686.55
7	7	16.44	-1294.37	64.95	3110.89	0	566.64	2.55	-862.51	2.55	-520.21	2.85	-688.94
7	8	19.18	-1294.37	166.28	2793.54	0	360.25	2.55	-748.13	2.55	-479.79	2.85	-630.09
8	8	19.18	-1316.38	158.88	2793.20	0	353.45	2.55	-756.65	2.55	-484.93	2.85	-635.36
8	9	21.92	-1316.38	260.39	2218.59	0	-16.59	2.55	-562.72	2.55	-409.80	2.85	-526.07
9	9	21.92	-1330.10	252.50	2218.80	0	-20.58	2.55	-568.13	2.55	-413.07	2.85	-529.44
9	10	24.66	-1330.10	312.70	1388.88	0	-553.11	2.55	-295.05	2.55	-303.52	2.85	-370.13
10	10	24.66	-2060.61	305.40	2292.50	0	31.76	2.55	-1061.25	2.55	-623.69	2.85	-748.91
11	11	27.40	-2064.26	345.62	1384.20	0	-532.66	2.55	-823.73	2.55	-495.88	2.85	-562.98
11	11	27.40	-2727.17	338.21	2255.72	0	14.01	2.55	-1433.57	2.55	-813.63	2.85	-943.88
11	12	30.45	-2734.70	322.10	1277.81	0	-614.21	2.55	-1138.63	2.55	-681.75	2.85	-753.58
12	12	30.45	-2390.16	315.74	1530.60	0	-77.21	2.55	-1238.83	2.55	-690.14	2.85	-783.58
12	10013	33.50	-2346.56	319.83	535.27	0	-721.71	2.55	-876.84	2.55	-548.79	2.85	-586.74
13	13	33.50	-2345.76	-328.96	513.51	0	-756.62	2.55	-856.83	2.55	-541.55	2.85	-577.54
13	14	36.89	-2387.84	-346.41	1669.54	0	2.40	2.55	-1292.10	2.55	-701.32	2.85	-800.16
14	14	36.89	-2716.69	-355.44	1416.68	0	-529.89	2.55	-1186.03	2.55	-689.16	2.85	-766.29
14	15	40.28	-2708.30	-397.43	2688.83	0	283.76	2.55	-1567.75	2.55	-860.94	2.85	-1014.97
15	15	40.28	-2058.22	-388.75	1625.13	0	-493.72	2.55	-848.73	2.55	-497.93	2.85	-573.83
15	16	43.67	-2054.27	-360.92	2924.95	0	317.64	2.55	-1195.39	2.55	-680.46	2.85	-838.81
16	16	43.67	-1595.26	-351.56	2021.91	0	-460.08	2.55	-444.37	2.55	-408.26	2.85	-508.19
16	17	47.06	-1595.26	-227.74	3004.60	0	167.01	2.55	-753.88	2.55	-540.07	2.85	-699.68
17	17	47.06	-1602.97	-221.76	3000.51	0	162.32	2.55	-756.11	2.55	-541.28	2.85	-700.64
17	18	50.45	-1602.97	-95.84	3538.69	0	509.34	2.55	-933.96	2.55	-612.38	2.85	-803.71
18	18	50.45	-1608.70	-95.09	3533.89	0	504.82	2.55	-935.26	2.55	-613.02	2.85	-804.03
18	19	53.84	-1608.70	29.37	3646.31	0	582.66	2.55	-985.06	2.55	-626.22	2.85	-822.83
19	19	53.84	-1617.10	25.02	3641.73	0	577.47	2.55	-987.45	2.55	-627.52	2.85	-823.85
19	20	57.23	-1617.10	150.84	3343.60	0	395.06	2.55	-912.23	2.55	-585.08	2.85	-761.72
20	20	57.23	-1635.21	142.48	3340.41	0	387.80	2.55	-918.71	2.55	-588.87	2.85	-765.40
20	21	60.62	-1635.21	265.45	2648.75	0	-45.10	2.55	-721.61	2.55	-493.36	2.85	-626.16
21	21	60.62	-1643.50	254.71	2646.30	0	-48.99	2.55	-724.39	2.55	-494.95	2.85	-627.62
21	22	64.01	-1643.50	348.99	1601.89	0	-709.19	2.55	-412.58	2.55	-352.49	2.85	-420.47
22	22	64.01	-2239.97	338.79	2591.17	0	70.61	2.55	-1202.33	2.55	-675.10	2.85	-809.86
23	23	67.40	-2244.49	340.80	1433.51	0	-658.77	2.55	-880.08	2.55	-514.51	2.85	-577.15
23	24	70.45	-2773.22	314.02	1439.73	0	93.43	2.55	-1520.83	2.55	-833.09	2.85	-967.03
24	24	70.45	-2423.76	311.52	1692.10	0	-533.49	2.55	-1207.91	2.55	-706.94	2.85	-785.90
24	10025	73.50	-2363.66	339.16	632.41	0	4.70	2.55	-1306.01	2.55	-714.13	2.85	-814.63
25	25	73.50	-2321.27	-267.80	651.86	0	-682.55	2.55	-903.33	2.55	-562.06	2.85	-604.27
25	26	76.26	-2380.04	-314.75	1485.42	0	-636.39	2.55	-905.08	2.55	-558.93	2.85	-602.67
26	26	76.26	-2629.34	-310.34	1291.81	0	-109.70	2.55	-1207.37	2.55	-683.48	2.85	-775.14
26	27	79.02	-2622.51	-329.63	2168.41	0	-517.69	2.55	-1124.15	2.55	-673.46	2.85	-748.47
27	27	79.02	-1761.35	-325.46	1249.07	0	34.45	2.55	-1370.69	2.55	-793.44	2.85	-923.16
27	28	81.78	-1758.13	-277.93	2063.25	0	-421.30	2.55	-706.58	2.55	-434.82	2.85	-499.30
28	28	81.78	-939.57	-272.61	1408.02	0	81.23	2.55	-913.72	2.55	-550.05	2.85	-667.27
28	29	84.54	-939.57	-170.09	2019.03	0	-128.70	2.55	-299.98	2.55	-280.93	2.85	-359.78
29	29	84.54	-949.12	-165.53	2018.08	0	265.32	2.55	-507.08	2.55	-360.74	2.85	-475.77
29	30	87.30	-949.12	-62.89	2333.31	0	261.91	2.55	-510.64	2.55	-362.85	2.85	-477.87
30	30	87.30	-950.89	-59.80	2331.81	0	469.97	2.55	-630.59	2.55	-402.24	2.85	-534.92
30	31	90.06	-950.89	42.77	2355.14	0	468.58	2.55	-631.01	2.55	-402.44	2.85	-535.01
31	31	90.06	-945.90	44.12	2353.38	0	492.89	2.55	-664.50	2.55	-401.98	2.85	-533.98
31	32	92.82	-945.90	146.65	2090.20	0	493.39	2.55	-662.25	2.55	-400.54	2.85	-532.37
32	32	92.82	-932.53	146.16	2088.57	0	337.01	2.55	-610.25	2.55	-361.05	2.85	-474.48
32	33	95.58	-932.53	248.88	1543.60	0	340.12	2.55	-604.77	2.55	-357.65	2.85	-470.86
33	33	95.58	-757.08	246.51	1650.75	0	5.74	2.55	-468.12	2.55	-279.84	2.85	-357.16
33	34	98.34	-757.08	349.13	828.42	0	251.63	2.55	-502.52	2.55	-278.91	2.85	-365.67
34	34	98.34	-475.13	345.09	1020.92	0	-258.28	2.55	-282.00	2.55	-163.44	2.85	-197.18
35	35	101.10	-475.13	263.83	-71.95	0	158.85	2.55	-352.30	2.55	-165.58	2.85	-215.68
101	101	0.00	-474.58	-278.36	-72.25	0	-522.71	2.55	-49.14	2.55	-13.47	2.85	6.09
101	102	2.74	-474.58	-364.42	1071.47	0	-522.71	2.55	-48.87	2.55	-13.30	2.85	6.29
102	102	2.74	-699.23	-365.10	917.20	0	188.92	2.55	-361.51	2.55	-173.14	2.85	-226.76
102	103	5.48	-699.23	-257.94	1770.77	0	-144.67	2.55	-304.86	2.55	-171.18	2.85	-211.68
103	103	5.48	-869.15	-257.10	1663.19	0	383.68	2.55	-531.04	2.55	-291.42	2.85	-387.15
103	104	8.22	-869.15	-150.28	2221.31	0	139.21	2.55	-494.42	2.55	-290.99	2.85	-377.19
104	104	8.22	-876.98	-148.36	2222.79	0	481.25	2.55	-633.18	2.55	-370.85	2.85	-493.88
104	105	10.96	-876.98	-41.47	2482.81	0	479.74	2.55	-636.50	2.55	-372.92	2.85	-496.12
105	105	10.96	-878.67	-37.90	2484.55	0	633.98	2.55	-687.36	2.55	-411.99	2.85	-553.43
						0	634.47	2.55	-688.34	2.55	-412.65	2.85	-554.23

105	106	13.70	-878.67	69.12	2441.67	0	598.14	2.55	-650.41	2.55	-410.21	2.85	-551.11
106	106	13.70	-874.80	74.63	2443.33	0	600.27	2.55	-649.21	2.55	-409.55	2.85	-550.53
106	107	16.44	-874.80	181.56	2092.34	0	370.37	2.55	-521.51	2.55	-364.82	2.85	-485.80
107	107	16.44	-863.90	188.71	2093.62	0	374.38	2.55	-517.50	2.55	-362.44	2.85	-483.44
107	108	19.18	-863.90	295.53	1430.17	0	-51.61	2.55	-299.20	2.55	-274.78	2.85	-356.14
108	108	19.18	-1799.88	303.77	2177.95	0	182.47	2.55	-984.51	2.55	-584.70	2.85	-710.78
108	109	21.92	-1803.53	349.07	1309.66	0	-353.00	2.55	-766.03	2.55	-461.49	2.85	-531.21
109	109	21.92	-2537.78	355.89	2128.05	0	76.05	2.55	-1352.57	2.55	-775.89	2.85	-903.93
109	110	24.66	-2544.56	327.07	1191.34	0	-513.04	2.55	-1092.78	2.55	-646.93	2.85	-716.36

GRÁFICO DE TENSIONES

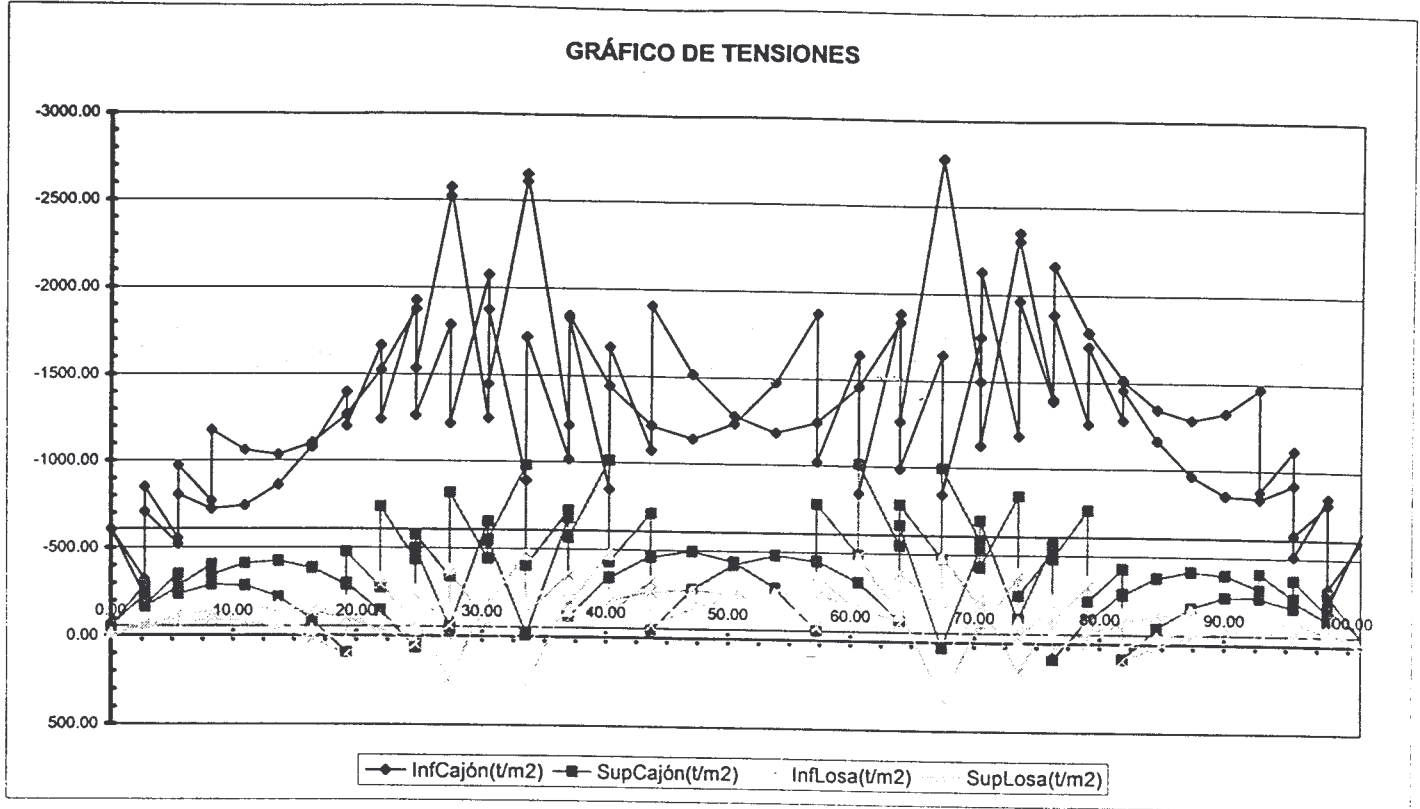


TREN DOMINANTE SIN GRADIENTE

Coef. est.

Barra	Nudo	X	N (T)	Vy (T)	Mz (Tm)	Fibra		InfCajón		Fibra		SupCajón		Fibra		InfLosa		Fibra		SupLosa	
						y fibra	sig (t/m2)	y fibra	sig (t/m2)	y fibra	sig (t/m2)	y fibra	sig (t/m2)	y fibra	sig (t/m2)	y fibra	sig (t/m2)				
1	1	0.00	-548.31	-485.71	-118.30	0	-608.89	2.55	-54.27	2.55	-14.64	2.85	9.29								
1	2	2.74	-548.31	-173.44	428.79	0	-228.30	2.55	-287.48	2.55	-80.99	2.85	-83.68								
2	2	2.74	-945.09	-178.69	114.69	0	-848.71	2.55	-174.26	2.55	-70.43	2.85	-47.20								
2	3	5.48	-945.09	-128.29	535.25	0	-555.46	2.55	-352.92	2.55	-121.65	2.85	-118.73								
3	3	5.48	-1217.81	-132.42	331.55	0	-973.97	2.55	-282.68	2.55	-115.07	2.85	-94.72								
3	4	8.22	-1217.81	-82.02	625.29	0	-768.27	2.55	-406.69	2.55	-151.12	2.85	-144.77								
4	4	8.22	-1491.11	-85.15	435.00	0	-1176.74	2.55	-345.50	2.55	-145.83	2.85	-122.53								
4	5	10.96	-1491.11	-34.69	399.15	0	-1060.26	2.55	-414.32	2.55	-166.28	2.85	-150.48								
5	5	10.96	-1489.42	-37.12	599.80	0	-1059.38	2.55	-413.78	2.55	-165.98	2.85	-150.21								
5	6	13.70	-1489.42	13.71	631.90	0	-1033.55	2.55	-426.95	2.55	-170.47	2.85	-155.51								
6	6	13.70	-1493.29	12.04	632.48	0	-1034.39	2.55	-428.56	2.55	-171.47	2.85	-156.59								
6	7	16.44	-1493.29	62.50	530.32	0	-1100.49	2.55	-385.70	2.55	-159.67	2.85	-138.74								
7	7	16.44	-1504.19	61.39	531.07	0	-1103.34	2.55	-390.07	2.55	-162.35	2.85	-141.56								
7	8	19.18	-1504.19	112.57	293.42	0	-1262.07	2.55	-290.96	2.55	-134.07	2.85	-100.28								
8	8	19.18	-1526.20	111.99	294.58	0	-1268.02	2.55	-299.75	2.55	-139.44	2.85	-105.89								
8	9	21.92	-1526.20	162.58	-81.55	0	-1521.13	2.55	-143.83	2.55	-94.22	2.85	-40.53								
9	9	21.92	-1539.92	163.34	-80.29	0	-1524.53	2.55	-149.40	2.55	-97.65	2.85	-44.14								
9	10	24.66	-1539.92	255.61	-598.66	0	-1874.34	2.55	64.17	2.55	-34.95	2.85	46.11								
10	10	24.66	-1968.55	256.50	166.00	0	-1262.11	2.55	-577.29	2.55	-265.25	2.85	-231.88								
10	11	27.40	-1971.33	363.28	-659.53	0	-1787.88	2.55	-343.37	2.55	-150.33	2.85	-67.12								
11	11	27.40	-2355.93	365.21	87.83	0	-1217.80	2.55	-821.68	2.55	-388.84	2.85	-360.11								
11	12	30.45	-2361.67	518.88	-1270.05	0	-2073.92	2.55	-445.00	2.55	-200.16	2.85	-87.18								
12	12	30.45	-1954.30	525.25	-950.61	0	-1447.29	2.55	-554.84	2.55	-209.07	2.85	-122.31								
12	10013	33.50	-1921.09	683.02	-2827.54	0	-2611.00	2.55	-25.80	2.55	61.68	2.85	267.01								
13	13	33.50	-1936.85	-795.86	-2849.92	0	-2653.62	2.55	-10.67	2.55	65.55	2.85	272.79								
13	14	36.89	-2006.93	-557.58	-513.78	0	-1214.52	2.55	-683.48	2.55	-277.38	2.85	-218.31								
14	14	36.89	-2399.00	-545.53	-828.92	0	-1833.98	2.55	-568.79	2.55	-265.44	2.85	-180.36								
14	15	40.28	-2392.61	-361.19	720.74	0	-849.54	2.55	-1015.97	2.55	-478.54	2.85	-488.18								
15	15	40.28	-2050.51	-362.11	-214.18	0	-1667.52	2.55	-434.55	2.55	-200.27	2.85	-140.58								
15	16	43.67	-2047.50	-201.79	707.17	0	-1074.71	2.55	-712.05	2.55	-326.19	2.85	-321.07								
16	16	43.67	-1852.03	-202.82	-94.39	0	-1905.31	2.55	-47.17	2.55	-128.39	2.85	-73.31								
16	17	47.06	-1852.03	-135.56	482.85	0	-1515.19	2.55	-279.04	2.55	-199.42	2.85	-174.89								
17	17	47.06	-1859.74	-135.73	483.76	0	-1516.98	2.55	-282.20	2.55	-201.37	2.85	-176.97								
17	18	50.45	-1859.74	-72.97	837.55	0	-1277.91	2.55	-424.87	2.55	-244.78	2.85	-239.14								
18	18	50.45	-1865.47	-73.37	837.95	0	-1279.42	2.55	-427.14	2.55	-246.19	2.85	-240.63								
18	19	53.84	-1865.47	-10.49	980.36	0	-1184.52	2.55	-482.80	2.55	-263.78	2.85	-266.09								
19	19	53.84	-1873.87	-11.09	980.99	0	-1186.69	2.55	-486.17	2.55	-265.86	2.85	-268.28								
19	20	57.23	-1873.87	58.22	891.65	0	-1247.52	2.55	-451.35	2.55	-254.57	2.85	-252.42								
20	20	57.23	-1891.98	57.85	893.31	0	-1251.97	2.55	-458.72	2.55	-259.09	2.85	-257.18								
20	21	60.62	-1891.98	122.16	589.43	0	-1458.87	2.55	-336.35	2.55	-221.50	2.85	-203.89								
21	21	60.62	-1900.27	122.52	590.85	0	-1460.53	2.55	-339.83	2.55	-223.67	2.85	-206.23								
21	22	64.01	-1900.27	216.24	37.54	0	-1833.57	2.55	-123.62	2.55	-154.55	2.85	-107.68								
22	22	64.01	-2153.61	216.22	910.25	0	-989.24	2.55	-784.63	2.55	-382.93	2.85	-393.38								
22	23	67.40	-2157.05	394.92	-118.83	0	-1648.53	2.55	-480.29	2.55	-241.71	2.85	-190.52								
23	23	67.40	-2388.30	388.78	741.40	0	-845.55	2.55	-996.84	2.55	-483.40	2.85	-496.35								
23	24	70.45	-2394.06	554.91	-691.36	0	-1753.32	2.55	-586.83	2.55	-286.09	2.85	-210.84								
24	24	70.45	-1994.56	550.21	-373.15	0	-1129.79	2.55	-699.56	2.55	-296.66	2.85	-247.61								
24	10025	73.50	-1948.78	716.39	-2342.40	0	-2351.83	2.55	-128.33	2.55	-11.79	2.85	161.06								
25	25	73.50	-1928.02	-608.57	-2313.56	0	-2300.49	2.55	-142.44	2.55	-15.50	2.85	154.99								
25	26	76.26	-1972.79	-424.07	-847.75	0	-1400.84	2.55	-564.62	2.55	-231.16	2.85	-153.25								
26	26	76.26	-2298.18	-429.03	-1089.59	0	-1884.12	2.55	-485.92	2.55	-227.65	2.85	-129.94								
26	27	79.02	-2292.98	-284.53	-103.91	0	-1259.61	2.55	-765.15	2.55	-363.68	2.85	-326.40								
27	27	79.02	-1705.44	-288.50	-856.08	0	-1703.75	2.55	-245.26	2.55	-90.79	2.85	0.20								
27	28	81.78	-1702.99	-182.40	-192.23	0	-1282.52	2.55	-431.86	2.55	-183.23	2.85	-132.59								
28	28	81.78	-1084.61	-185.82	-689.71	0	-1458.50	2.55	82.78	2.55	12.95	2.85	89.80								
28	29	84.54	-1084.61	-134.79	-247.37	0	-1164.84	2.55	-91.50	2.55	-41.38	2.85	10.95								
29	29	84.54	-1094.16	-136.91	-246.28	0	-1167.09	2.55	-95.42	2.55	-43.80	2.85	8.38								
29	30	87.30	-1094.16	-85.94	61.27	0	-965.52	2.55	-213.35	2.55	-81.80	2.85	-47.24								
30	30	87.30	-1095.93	-87.16	62.13	0	-965.56	2.55	-214.20	2.55	-82.34	2.85	-47.86								
30	31	90.06	-1095.93	-36.20	232.43	0	-857.55	2.55	-275.31	2.55	-103.65	2.85	-79.71								
31	31	90.06	-1090.94	-36.72	233.27	0	-855.54	2.55	-273.54	2.55	-102.60	2.85	-78.68								
31	32	92.82	-1090.94	14.41	264.02	0	-842.44	2.55	-277.39	2.55	-106.87	2.85	-86.25								
32	32	92.82	-1077.57	14.66	264.95	0	-837.84	2.55	-272.39	2.55	-103.85	2.85	-83.20								
32	33	95.58	-1077.57	65.56	154.18	0	-920.87	2.55	-218.54	2.55	-90.78	2.85	-66.07								
33	33	95.58	-876.21	66.46	291.33	0	-635.15	2.55	-258.06	2.55	-90.75	2.85	-77.62								
33	34	98.34	-876.21	117.50	37.79	0	-815.15	2.55	-146.18	2.55	-60.17	2.85	-35.53								
34	34	98.34	-551.08	118.37	280.66	0	-331.15	2.55	-225.79	2.55	-63.78	2.85	-59.02								
34	35	101.10	-551.08	356.98	-117.67	0	-609.38	2.55	-55.45	2.55	-15.39	2.85	8.47								
101	101	0.00	-550.53	-374.31	-117.73	0	-609.25	2.55	-55.23	2.55	-15.25	2.85	8.62								
101	102	2.74	-550.53	-124.49	297.31	0	-320.99	2.55	-228.32	2.55	-66.29	2.85	-62.63								
102	102	2.74	-809.73	-122.35	103.01	0	-707.92	2.55	-164.29	2.55	-63.18	2.85	-43.61								
102	103	5.48	-809.73	-69.54	365.88	0	-522.33	2.55	-277.54	2.55	-95.27	2.85	-87.84								
103	103	5.48	-1005.56	-67.68	229.00	0	-806.21	2.55	-235.94	2.55	-94.03	2.85	-75.00								
103	104	8.22	-1005.56	-14.57	341.72	0	-722.04	2.55	-289.77	2.55	-107.47	2.85	-92.64								
104	104	8.22	-1013.39	-12.69	341.17	0	-724.74	2.55	-292.70	2.55	-109.23	2.85	-94.42								
104	105	10.96	-1013.39	40.44	303.23	0	-742.22	2.55	-287.08	2.55	-103.94	2.85	-85.34								
105	105	10.96	-1015.08	42.03	302.67	0	-743.05	2.55	-287.63	2.55	-104.26	2.85	-84.47								

105	106	13.70	-1015.08	94.96	115.08	0	-861.58	2.55	-222.74	2.55	-80.38	2.85	-50.06
106	106	13.70	-1011.21	96.10	114.46	0	-860.76	2.55	-221.13	2.55	-79.38	2.85	-48.98
106	107	16.44	-1011.21	149.14	-221.53	0	-1079.60	2.55	-97.21	2.55	-37.12	2.85	12.80
107	107	16.44	-1000.31	149.78	-222.41	0	-1076.82	2.55	-92.81	2.55	-34.41	2.85	15.64
107	108	19.18	-1000.31	202.84	-705.39	0	-1395.15	2.55	89.91	2.55	26.02	2.85	103.31
108	108	19.18	-1707.96	202.55	-137.61	0	-1200.77	2.55	-479.40	2.55	-201.12	2.85	-154.85
108	109	21.92	-1710.74	317.22	-870.79	0	-1664.76	2.55	-277.32	2.55	-98.48	2.85	-7.36
109	109	21.92	-2202.31	317.52	-195.57	0	-1241.25	2.55	-738.19	2.55	-337.87	2.85	-295.21
109	110	24.66	-2207.47	468.43	-1275.10	0	-1922.92	2.55	-438.63	2.55	-187.85	2.85	-78.55
110	110	24.66	-1948.48	467.99	-1081.71	0	-1536.77	2.55	-502.01	2.55	-190.96	2.85	-97.51
110	10111	27.40	-1909.92	660.59	-2680.84	0	-2521.92	2.55	-54.85	2.55	43.19	2.85	238.27
111	111	27.40	-1943.96	-773.27	-2709.91	0	-2573.78	2.55	-45.96	2.55	43.82	2.85	241.18
111	112	30.45	-1998.65	-598.15	-568.30	0	-1250.11	2.55	-658.32	2.55	-268.66	2.85	-206.73
112	112	30.45	-2399.34	-597.28	-886.97	0	-1874.30	2.55	-545.92	2.55	-258.31	2.85	-170.16
112	113	33.50	-2393.60	-421.16	664.76	0	-894.31	2.55	-982.09	2.55	-473.23	2.85	-481.20
113	113	33.50	-2066.32	-424.22	-273.41	0	-1718.52	2.55	-406.28	2.55	-197.88	2.85	-136.40
113	114	36.89	-2063.31	-233.94	825.90	0	-1016.61	2.55	-726.34	2.55	-349.59	2.85	-354.40
114	114	36.89	-1898.47	-231.67	24.21	0	-1844.58	2.55	-120.63	2.55	-150.93	2.85	-102.96
114	115	40.28	-1898.47	-133.60	623.56	0	-1443.49	2.55	-346.75	2.55	-226.93	2.85	-211.42
115	115	40.28	-1886.87	-131.80	621.46	0	-1441.25	2.55	-341.81	2.55	-223.88	2.85	-208.14
115	116	43.67	-1886.87	-64.32	952.14	0	-1217.76	2.55	-470.08	2.55	-265.47	2.85	-267.16
116	116	43.67	-1870.70	-64.09	950.04	0	-1214.16	2.55	-463.36	2.55	-261.34	2.85	-262.77
116	117	47.06	-1870.70	8.51	1052.87	0	-1144.69	2.55	-501.25	2.55	-274.68	2.85	-281.49
117	117	47.06	-1862.99	8.03	1052.01	0	-1142.87	2.55	-498.10	2.55	-272.73	2.85	-279.42
117	118	50.45	-1862.99	74.07	913.65	0	-1234.83	2.55	-443.43	2.55	-255.77	2.85	-254.77
118	118	50.45	-1857.26	73.62	913.25	0	-1233.31	2.55	-441.16	2.55	-254.36	2.85	-253.28
118	119	53.84	-1857.26	142.15	550.74	0	-1477.00	2.55	-296.87	2.55	-209.70	2.85	-189.14
119	119	53.84	-1848.86	142.35	549.94	0	-1474.92	2.55	-293.48	2.55	-207.59	2.85	-186.92
119	120	57.23	-1848.86	209.70	-45.10	0	-1875.14	2.55	-57.97	2.55	-133.97	2.85	-81.42
120	120	57.23	-2135.10	209.34	829.24	0	-1021.54	2.55	-780.27	2.55	-364.27	2.85	-366.82
120	121	60.62	-2138.54	380.50	-141.98	0	-1644.08	2.55	-492.43	2.55	-231.06	2.85	-175.61
121	121	60.62	-2385.06	381.52	716.75	0	-846.37	2.55	-1015.16	2.55	-476.04	2.85	-484.71
121	122	64.01	-2391.45	578.63	-918.63	0	-1881.88	2.55	-549.88	2.55	-250.22	2.85	-158.30
122	122	64.01	-2003.33	587.72	-602.32	0	-1262.85	2.55	-666.46	2.55	-263.25	2.85	-197.44
122	10123	67.40	-1938.29	836.79	-3057.61	0	-2774.27	2.55	29.13	2.55	96.22	2.85	318.38
123	123	67.40	-1941.68	-745.02	-3059.82	0	-2776.47	2.55	28.00	2.55	95.79	2.85	318.09
123	124	70.45	-1980.46	-578.69	-996.06	0	-1501.30	2.55	-544.45	2.55	-203.86	2.85	-112.68
124	124	70.45	-2386.07	-591.77	-1315.08	0	-2127.13	2.55	-434.02	2.55	-194.60	2.85	-77.20
124	125	73.50	-2380.33	-402.54	182.02	0	-1186.45	2.55	-841.76	2.55	-403.82	2.85	-379.93
125	125	73.50	-2020.22	-396.03	-732.90	0	-1962.98	2.55	-272.94	2.55	-128.69	2.85	-37.30
125	126	76.26	-2017.76	-235.15	172.36	0	-1388.22	2.55	-525.82	2.55	-255.35	2.85	-218.95
126	126	76.26	-1801.49	-229.29	-605.10	0	-2163.23	2.55	87.51	2.55	-54.32	2.85	32.39
126	127	79.02	-1801.49	-176.02	-45.69	0	-1788.07	2.55	-136.45	2.55	-122.90	2.85	-66.39
127	127	79.02	-1784.83	-171.80	-47.01	0	-1783.82	2.55	-129.71	2.55	-118.78	2.85	-62.05
127	128	81.78	-1784.83	-117.77	352.08	0	-1516.51	2.55	-291.63	2.55	-167.25	2.85	-132.14
128	128	81.78	-1763.49	-114.93	350.81	0	-1510.83	2.55	-283.08	2.55	-162.02	2.85	-126.67
128	129	84.54	-1763.49	-61.74	594.60	0	-1348.43	2.55	-383.93	2.55	-191.14	2.85	-169.19
129	129	84.54	-1753.94	-60.13	593.62	0	-1346.12	2.55	-380.03	2.55	-188.74	2.85	-166.65
129	130	87.30	-1753.94	-6.87	686.03	0	-1286.31	2.55	-420.58	2.55	-199.09	2.85	-182.45
130	130	87.30	-1752.17	-6.22	685.21	0	-1286.26	2.55	-419.74	2.55	-198.55	2.85	-181.84
130	131	90.06	-1752.17	46.98	628.96	0	-1327.45	2.55	-400.51	2.55	-190.53	2.85	-171.54
131	131	90.06	-1757.16	46.74	628.00	0	-1329.52	2.55	-402.26	2.55	-191.57	2.85	-172.54
131	132	92.82	-1757.16	100.29	425.47	0	-1470.30	2.55	-323.71	2.55	-165.54	2.85	-136.66
132	132	92.82	-1364.45	98.71	700.41	0	-880.89	2.55	-412.89	2.55	-173.68	2.85	-169.30
132	133	95.58	-1364.45	151.91	354.52	0	-1119.49	2.55	-275.61	2.55	-130.08	2.85	-108.48
133	133	95.58	-972.32	143.99	648.94	0	-515.43	2.55	-377.80	2.55	-140.03	2.85	-143.65
133	134	98.34	-972.32	202.18	164.35	0	-849.08	2.55	-182.72	2.55	-79.57	2.85	-58.92
134	134	98.34	-579.00	197.82	478.31	0	-229.80	2.55	-297.26	2.55	-90.92	2.85	-96.20
134	135	101.10	-579.00	531.05	-144.34	0	-658.03	2.55	-44.57	2.55	-13.68	2.85	12.32



TREN DOMINANTE CON GRADIENTE

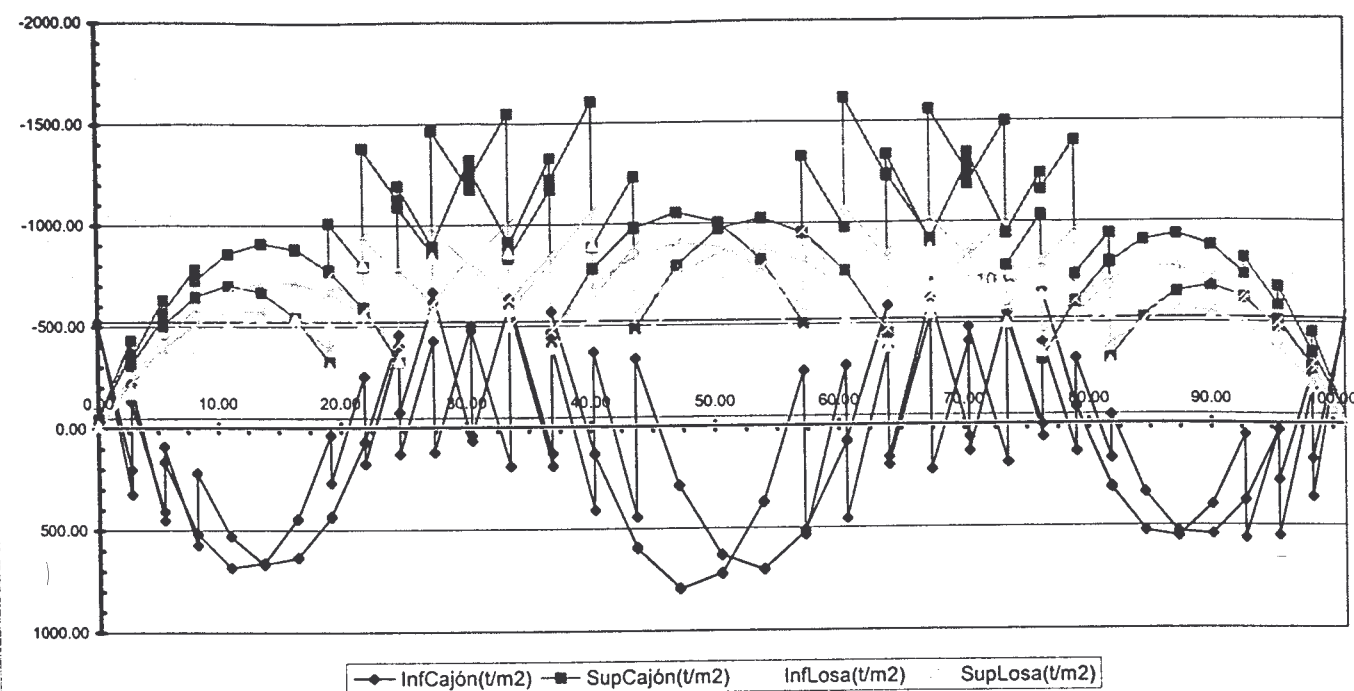
[1; 1]PPF [1; 1]PPLF2 + [1; 1]PPLF3 + [0.95; 1.05]PRETF1A.ISO.To + [0.95; 1.05]PRETF1A.HIP.To + [0.95; 1.05]PRETF1B.ISO.To + [0.95; 1.05]PRETF1B.HIP.To + [0.9; 1.1]PRETF3C.ISO.To + [0.9; 1.1]PRETF3C.HIP.To + [0.9; 1.1]PRE

Coord. exc.

Barra	Nudo	X	N (T)	Vy (T)	Mz (Tm)	Fibra y fibra	InfCajón sig (t/m2)	Fibra y fibra	SupCajón sig (t/m2)	Fibra y fibra	InfLosa sig (t/m2)	Fibra y fibra	SupLosa sig (t/m2)
1	1	0.00	-472.36	-282.49	-72.77	0	-522.33	2.55	-47.92	2.55	-12.69	2.85	6.95
1	2	2.74	-472.36	-441.69	1274.52	0	322.41	2.55	-432.76	2.55	-198.72	2.85	-264.06
2	2	2.74	-813.00	-438.19	1019.69	0	-214.67	2.55	-330.46	2.55	-189.14	2.85	-232.70
2	3	5.48	-813.00	-336.07	2080.46	0	449.69	2.55	-630.43	2.55	-336.07	2.85	-446.70
3	3	5.48	-1046.86	-334.82	1915.11	0	87.06	2.55	-566.61	2.55	-329.86	2.85	-425.76
3	4	8.22	-1046.86	-232.70	2692.59	0	572.88	2.55	-782.28	2.55	-438.17	2.85	-583.48
4	4	8.22	-1281.29	-233.44	2539.05	0	219.09	2.55	-726.59	2.55	-433.09	2.85	-564.09
4	5	10.96	-1281.29	-131.61	3039.50	0	529.92	2.55	-859.08	2.55	-503.72	2.85	-666.95
5	5	10.96	-1279.60	-134.30	3037.70	0	529.38	2.55	-858.08	2.55	-503.05	2.85	-666.13
5	6	13.70	-1279.60	-32.62	3266.36	0	668.23	2.55	-908.36	2.55	-536.80	2.85	-715.28
6	6	13.70	-1283.47	-37.46	3264.77	0	666.14	2.55	-909.57	2.55	-537.47	2.85	-715.87
6	7	16.44	-1283.47	64.66	3227.55	0	636.41	2.55	-878.75	2.55	-535.21	2.85	-712.64
7	7	16.44	-1294.37	58.21	3226.44	0	632.49	2.55	-882.79	2.55	-537.61	2.85	-715.04
7	8	19.18	-1294.37	159.55	2927.55	0	436.62	2.55	-771.65	2.55	-499.98	2.85	-660.37
8	8	19.18	-1316.38	152.40	2927.25	0	429.84	2.55	-780.18	2.55	-505.13	2.85	-665.64
8	9	21.92	-1316.38	253.90	2370.41	0	69.93	2.55	-589.36	2.55	-432.67	2.85	-560.36
9	9	21.92	-1330.10	246.31	2370.64	0	65.96	2.55	-594.77	2.55	-435.95	2.85	-563.74
9	10	24.66	-1330.10	306.51	1557.68	0	-456.90	2.55	-324.68	2.55	-328.95	2.85	-408.26
	10	24.66	-2060.61	299.53	2461.29	0	127.96	2.55	-1090.87	2.55	-649.12	2.85	-787.04
	11	27.40	-2064.26	339.75	1569.08	0	-427.30	2.55	-856.18	2.55	-523.73	2.85	-604.74
11	11	27.40	-2727.17	332.67	2440.56	0	119.35	2.55	-1466.01	2.55	-841.47	2.85	-985.64
11	12	30.45	-2734.70	316.56	1479.54	0	-499.24	2.55	-1174.03	2.55	-712.14	2.85	-799.16
12	12	30.45	-2390.16	310.52	1732.26	0	37.72	2.55	-1274.22	2.55	-720.52	2.85	-829.14
12	10013	33.50	-2346.56	314.61	752.86	0	-597.70	2.55	-915.03	2.55	-581.57	2.85	-635.90
13	13	33.50	-2345.76	-329.23	731.01	0	-632.67	2.55	-895.00	2.55	-574.31	2.85	-626.68
13	14	36.89	-2387.84	-346.68	1887.96	0	126.88	2.55	-1330.43	2.55	-734.23	2.85	-849.50
14	14	36.89	-2716.69	-355.53	1635.01	0	-405.46	2.55	-1224.35	2.55	-722.05	2.85	-815.61
14	15	40.28	-2708.30	-397.51	2907.44	0	408.35	2.55	-1606.12	2.55	-893.87	2.85	-1064.36
15	15	40.28	-2058.22	-388.70	1843.65	0	-369.19	2.55	-887.08	2.55	-530.85	2.85	-623.20
15	16	43.67	-2054.27	-360.88	3143.31	0	442.09	2.55	-1233.72	2.55	-713.35	2.85	-888.14
16	16	43.67	-1595.26	-351.44	2240.20	0	-335.67	2.55	-482.68	2.55	-441.14	2.85	-557.51
16	17	47.06	-1595.26	-227.61	3222.46	0	291.17	2.55	-792.11	2.55	-572.89	2.85	-748.90
17	17	47.06	-1602.97	-221.60	3218.29	0	286.44	2.55	-794.33	2.55	-574.08	2.85	-749.84
17	18	50.45	-1602.97	-95.67	3755.93	0	633.15	2.55	-972.08	2.55	-645.11	2.85	-852.78
18	18	50.45	-1608.70	-94.93	3751.04	0	628.58	2.55	-973.37	2.55	-645.73	2.85	-853.09
18	19	53.84	-1608.70	29.53	3862.91	0	706.11	2.55	-1023.07	2.55	-658.85	2.85	-871.76
19	19	53.84	-1617.10	25.14	3858.26	0	700.88	2.55	-1025.45	2.55	-660.13	2.85	-872.77
19	20	57.23	-1617.10	150.96	3559.71	0	518.23	2.55	-950.16	2.55	-617.64	2.85	-810.55
20	20	57.23	-1635.21	142.53	3556.43	0	510.92	2.55	-956.62	2.55	-621.42	2.85	-814.21
20	21	60.62	-1635.21	265.50	2864.62	0	77.93	2.55	-759.49	2.55	-525.88	2.85	-674.93
21	21	60.62	-1643.50	254.62	2862.09	0	73.99	2.55	-762.26	2.55	-527.45	2.85	-676.37
21	22	64.01	-1643.50	348.91	1817.95	0	-586.05	2.55	-450.50	2.55	-385.03	2.85	-469.28
22	22	64.01	-2239.97	338.52	2807.14	0	193.69	2.55	-1240.24	2.55	-707.63	2.85	-858.66
	23	67.40	-2244.49	340.53	1650.40	0	-535.17	2.55	-918.14	2.55	-547.19	2.85	-626.15
23	23	67.40	-2765.66	335.72	2614.58	0	217.00	2.55	-1558.88	2.55	-865.75	2.85	-1016.01
23	24	70.45	-2773.22	313.50	1658.13	0	-409.03	2.55	-1246.24	2.55	-739.84	2.85	-835.23
24	24	70.45	-2423.76	310.68	1910.42	0	129.13	2.55	-1344.33	2.55	-747.01	2.85	-863.95
24	10025	73.50	-2363.66	338.32	853.28	0	-556.67	2.55	-942.09	2.55	-595.33	2.85	-654.17
25	25	73.50	-2321.27	-258.92	872.70	0	-510.53	2.55	-943.83	2.55	-592.20	2.85	-652.56
25	26	76.26	-2380.04	-305.87	1681.74	0	2.18	2.55	-1241.83	2.55	-713.05	2.85	-819.49
26	26	76.26	-2629.34	-301.78	1488.13	0	-405.81	2.55	-1158.60	2.55	-703.03	2.85	-792.82
26	27	79.02	-2622.51	-321.07	2341.09	0	132.86	2.55	-1401.00	2.55	-819.46	2.85	-962.17
27	27	79.02	-1761.35	-317.19	1421.78	0	-322.87	2.55	-736.89	2.55	-460.83	2.85	-538.31
27	28	81.78	-1758.13	-269.67	2213.14	0	166.66	2.55	-940.03	2.55	-572.63	2.85	-701.13
28	28	81.78	-939.57	-264.60	1557.96	0	-43.25	2.55	-326.29	2.55	-303.52	2.85	-393.65
28	29	84.54	-939.57	-162.08	2146.87	0	338.17	2.55	-529.51	2.55	-380.00	2.85	-504.65
29	29	84.54	-949.12	-157.72	2145.97	0	334.80	2.55	-533.08	2.55	-382.12	2.85	-506.77
29	30	87.30	-949.12	-55.08	2439.64	0	530.57	2.55	-649.25	2.55	-418.26	2.85	-558.94
30	30	87.30	-950.89	-52.12	2438.22	0	529.22	2.55	-649.69	2.55	-418.47	2.85	-559.05
30	31	90.06	-950.89	50.45	2440.36	0	541.45	2.55	-679.46	2.55	-414.82	2.85	-553.23
31	31	90.06	-945.90	51.74	2438.67	0	542.00	2.55	-677.22	2.55	-413.39	2.85	-551.64
31	32	92.82	-945.90	154.27	2154.47	0	373.64	2.55	-621.53	2.55	-370.74	2.85	-488.99
32	32	92.82	-932.53	153.80	2152.92	0	376.80	2.55	-616.06	2.55	-367.35	2.85	-485.39
32	33	95.58	-932.53	256.53	1586.86	0	30.39	2.55	-475.72	2.55	-286.36	2.85	-366.93
33	33	95.58	-757.08	254.28	1694.09	0	276.33	2.55	-510.13	2.55	-285.44	2.85	-375.47
33	34	98.34	-757.08	356.90	850.33	0	-245.79	2.55	-285.84	2.55	-166.74	2.85	-202.13
34	34	98.34	-475.13	353.08	1042.92	0	171.38	2.55	-356.16	2.55	-168.89	2.85	-220.65
	35	101.10	-475.13	263.83	-71.95	0	-522.71	2.55	-49.14	2.55	-13.47	2.85	6.09
101	101	0.00	-474.58	-278.36	-72.25	0	-522.71	2.55	-48.87	2.55	-13.30	2.85	6.29
101	102	2.74	-474.58	-372.46	1093.44	0	201.44	2.55	-365.37	2.55	-176.45	2.85	-231.73
102	102	2.74	-699.23	-372.91	939.08	0	-132.20	2.55	-308.70	2.55	-174.47	2.85	-216.63
102	103	5.48	-699.23	-265.75	1814.06	0	408.35	2.55	-538.64	2.55	-297.95	2.85	-396.93
103	103	5.48	-869.15	-264.79	1706.39	0	163.83	2.55	-502.00	2.55	-297.50	2.85	-386.95
103	104	8.22	-869.15	-157.98	2285.59	0	517.89	2.55	-644.47	2.55	-380.53	2.85	-508.40
104	104	8.22	-876.98	-156.02	2286.99	0	516.33	2.55	-647.76	2.55	-382.59	2.85	-510.62
104	105	10.96	-876.98	-49.13	2568.02	0	682.54	2.55	-702.32	2.55	-424.83	2.85	-572.68
105	105	10.96	-878.67	-45.63	2569.69	0	682.99	2.55	-703.28	2.55	-425.47	2.85	-573.47

105	106	13.70	-878.67	61.40	2547.98	0	658.73	2.55	-669.07	2.55	-426.23	2.85	-575.12
106	106	13.70	-874.80	66.77	2549.57	0	660.82	2.55	-667.86	2.55	-425.55	2.85	-574.54
106	107	16.44	-874.80	173.70	2220.12	0	443.19	2.55	-543.94	2.55	-384.07	2.85	-514.67
107	107	16.44	-863.90	180.65	2221.34	0	447.17	2.55	-539.92	2.55	-381.68	2.85	-512.30
107	108	19.18	-863.90	287.47	1579.97	0	33.76	2.55	-325.49	2.55	-297.34	2.85	-389.98
108	108	19.18	-1799.88	295.46	2327.72	0	267.83	2.55	-1010.80	2.55	-607.26	2.85	-744.61
108	109	21.92	-1803.53	340.75	1482.21	0	-254.67	2.55	-796.31	2.55	-487.48	2.85	-570.19
109	109	21.92	-2537.78	347.28	2300.57	0	174.37	2.55	-1382.84	2.55	-801.87	2.85	-9

GRÁFICO DE TENSIONES

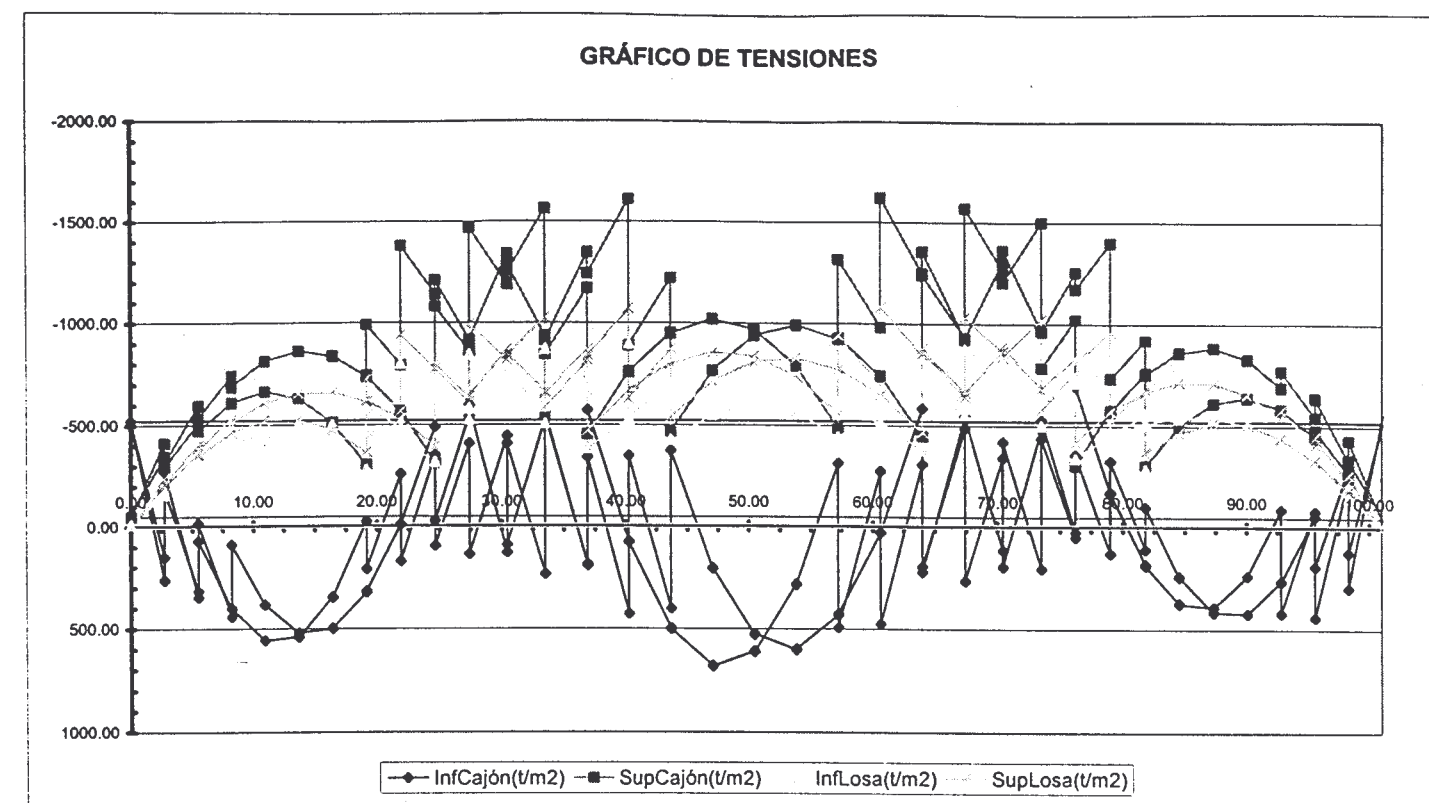


DOMINANTE CON GRADIENTE

Coef. eqs:

Barra	Nudo	X	N (T)	Vy (T)	Mz (Tm)	Fibra	InfCajón	Fibra	SupCajón	Fibra	InfLosa	Fibra	SupLosa
						y fibra	sig (t/m2)	y fibra	sig (t/m2)	y fibra	sig (t/m2)	y fibra	sig (t/m2)
1	1	0.00	-472.36	-283.38	-73.04	0	-522.49	2.55	-47.87	2.55	-12.65	2.85	7.01
1	2	2.74	-472.36	-408.17	1170.63	0	263.20	2.55	-414.52	2.55	-183.07	2.85	-240.59
2	2	2.74	-813.00	-405.71	916.30	0	-273.60	2.55	-312.32	2.55	-173.57	2.85	-209.34
2	3	5.48	-813.00	-312.59	1900.40	0	347.07	2.55	-598.83	2.55	-308.95	2.85	-406.02
3	3	5.48	-1046.86	-311.82	1735.53	0	-15.28	2.55	-535.09	2.55	-302.81	2.85	-385.19
3	4	8.22	-1046.86	-218.69	2462.30	0	441.63	2.55	-741.86	2.55	-403.48	2.85	-531.45
4	4	8.22	-1281.29	-219.41	2309.20	0	88.10	2.55	-686.25	2.55	-398.46	2.85	-512.17
4	5	10.96	-1281.29	-126.51	2783.38	0	383.95	2.55	-814.13	2.55	-465.14	2.85	-609.09
5	5	10.96	-1279.60	-128.73	2781.98	0	383.65	2.55	-813.20	2.55	-464.53	2.85	-608.36
5	6	13.70	-1279.60	-35.96	3007.59	0	520.75	2.55	-862.95	2.55	-497.82	2.85	-656.83
6	6	13.70	-1283.47	-39.87	3006.34	0	518.86	2.55	-864.22	2.55	-498.54	2.85	-657.49
6	7	16.44	-1283.47	53.25	2988.05	0	499.92	2.55	-836.71	2.55	-499.13	2.85	-658.53
7	7	16.44	-1294.37	48.07	2987.21	0	496.15	2.55	-840.80	2.55	-501.58	2.85	-660.99
7	8	19.18	-1294.37	140.57	2728.32	0	323.08	2.55	-736.68	2.55	-469.97	2.85	-615.36
8	8	19.18	-1316.38	134.90	2728.18	0	316.39	2.55	-745.24	2.55	-475.14	2.85	-620.67
8	9	21.92	-1316.38	227.54	2231.46	0	-9.26	2.55	-564.98	2.55	-411.74	2.85	-528.98
9	9	21.92	-1330.10	221.62	2231.75	0	-13.20	2.55	-570.40	2.55	-415.02	2.85	-532.37
9	10	24.66	-1330.10	272.86	1498.70	0	-490.52	2.55	-314.32	2.55	-320.07	2.85	-394.94
10	10	24.66	-2060.61	267.61	2402.18	0	94.27	2.55	-1080.50	2.55	-640.22	2.85	-773.69
10	11	27.40	-2064.26	309.16	1599.47	0	-409.98	2.55	-861.51	2.55	-528.31	2.85	-611.61
11	11	27.40	-2727.17	303.71	2470.81	0	136.59	2.55	-1471.32	2.55	-846.03	2.85	-992.47
11	12	30.45	-2734.70	301.25	1572.66	0	-446.17	2.55	-1190.37	2.55	-726.17	2.85	-820.19
12	12	30.45	-2390.16	296.49	1825.19	0	90.68	2.55	-1290.53	2.55	-734.52	2.85	-850.14
12	10013	33.50	-2346.56	310.18	872.31	0	-529.62	2.55	-935.99	2.55	-599.57	2.85	-662.89
13	13	33.50	-2345.76	-332.18	850.33	0	-564.67	2.55	-915.94	2.55	-592.29	2.85	-653.63
13	14	36.89	-2387.84	-335.03	2000.10	0	190.79	2.55	-1350.12	2.55	-751.12	2.85	-874.84
14	14	36.89	-2716.69	-342.37	1746.98	0	-341.65	2.55	-1244.00	2.55	-738.92	2.85	-840.90
14	15	40.28	-2708.30	-364.37	2940.40	0	-427.13	2.55	-1611.91	2.55	-898.83	2.85	-1071.81
15	15	40.28	-2058.22	-357.57	1876.62	0	-350.40	2.55	-892.87	2.55	-535.82	2.85	-630.65
15	16	43.67	-2054.27	-331.16	3073.23	0	402.15	2.55	-1221.42	2.55	-702.80	2.85	-872.31
16	16	43.67	-1595.26	-323.25	2170.67	0	-375.30	2.55	-470.48	2.55	-430.67	2.85	-541.80
16	17	47.06	-1595.26	-210.04	3075.21	0	207.25	2.55	-766.27	2.55	-550.71	2.85	-715.63
17	17	47.06	-1602.97	-204.86	3071.73	0	202.91	2.55	-768.61	2.55	-552.01	2.85	-716.73
17	18	50.45	-1602.97	-89.97	3571.35	0	527.95	2.55	-939.69	2.55	-617.30	2.85	-811.09
18	18	50.45	-1608.70	-89.21	3567.20	0	523.81	2.55	-941.11	2.55	-618.04	2.85	-811.56
18	19	53.84	-1608.70	24.51	3677.69	0	600.55	2.55	-990.57	2.55	-630.95	2.85	-829.92
19	19	53.84	-1617.10	20.93	3673.76	0	595.73	2.55	-993.07	2.55	-632.34	2.85	-831.09
19	20	57.23	-1617.10	135.73	3408.20	0	431.88	2.55	-923.57	2.55	-594.81	2.85	-776.32
20	20	57.23	-1635.21	128.84	3405.55	0	424.93	2.55	-930.14	2.55	-598.69	2.85	-780.12
20	21	60.62	-1635.21	241.36	2777.90	0	28.51	2.55	-744.28	2.55	-512.81	2.85	-655.34
21	21	60.62	-1643.50	232.53	2775.81	0	24.82	2.55	-747.12	2.55	-514.46	2.85	-656.88
21	22	64.01	-1643.50	322.11	1818.75	0	-585.60	2.55	-450.64	2.55	-385.15	2.85	-469.46
22	22	64.01	-2239.97	313.38	2808.11	0	194.24	2.55	-1240.41	2.55	-707.78	2.85	-858.87
22	23	67.40	-2244.49	319.72	1733.47	0	-487.82	2.55	-932.72	2.55	-559.70	2.85	-644.92
23	23	67.40	-2765.66	315.70	2697.31	0	264.15	2.55	-1573.40	2.55	-878.21	2.85	-1034.70
23	24	70.45	-2773.22	308.35	1773.69	0	-343.16	2.55	-1266.52	2.55	-757.25	2.85	-861.34
24	24	70.45	-2423.76	305.67	2025.84	0	194.90	2.55	-1364.58	2.55	-764.40	2.85	-890.03
24	10025	73.50	-2363.66	338.22	980.60	0	-484.11	2.55	-964.43	2.55	-614.51	2.85	-682.93
25	25	73.50	-2321.27	-250.52	999.95	0	-438.01	2.55	-966.17	2.55	-611.37	2.85	-681.31
25	26	76.26	-2380.04	-278.65	1763.08	0	48.54	2.55	-1256.10	2.55	-725.31	2.85	-837.87
26	26	76.26	-2629.34	-276.24	1569.06	0	-359.68	2.55	-1172.80	2.55	-715.23	2.85	-811.10
26	27	79.02	-2622.51	-282.24	2333.46	0	128.51	2.55	-1399.66	2.55	-818.31	2.85	-960.45
27	27	79.02	-1761.35	-279.98	1414.14	0	-327.23	2.55	-735.55	2.55	-459.68	2.85	-536.59
27	28	81.78	-1758.13	-240.29	2112.16	0	109.11	2.55	-922.30	2.55	-557.42	2.85	-678.32
28	28	81.78	-939.57	-236.66	1457.13	0	-100.71	2.55	-308.59	2.55	-288.33	2.85	-370.87
28	29	84.54	-939.57	-143.13	1981.31	0	243.82	2.55	-500.46	2.55	-355.06	2.85	-467.25
29	29	84.54	-949.12	-139.94	1980.67	0	240.59	2.55	-504.07	2.55	-357.22	2.85	-469.42
29	30	87.30	-949.12	-46.31	2237.70	0	415.48	2.55	-613.81	2.55	-387.84	2.85	-513.32
30	30	87.30	-950.89	-44.17	2236.62	0	414.33	2.55	-614.31	2.55	-388.10	2.85	-513.51
30	31	90.06	-950.89	49.40	2229.27	0	421.15	2.55	-642.41	2.55	-383.02	2.85	-505.54
31	31	90.06	-945.90	50.27	2228.00	0	421.93	2.55	-640.24	2.55	-381.65	2.85	-504.05
31	32	92.82	-945.90	143.82	1960.24	0	262.94	2.55	-587.44	2.55	-341.48	2.85	-445.11
32	32	92.82	-932.53	143.39	1959.14	0	266.36	2.55	-582.05	2.55	-338.15	2.85	-441.62
32	33	95.58	-932.53	237.09	1434.23	0	-56.60	2.55	-448.93	2.55	-263.36	2.85	-332.45
33	33	95.58	-757.08	235.38	1541.93	0	189.61	2.55	-483.42	2.55	-262.51	2.85	-341.09
33	34	98.34	-757.08	329.00	762.80	0	-295.68	2.55	-270.48	2.55	-153.55	2.85	-182.35
34	34	98.34	-475.13	326.16	955.87	0	121.77	2.55	-340.88	2.55	-155.78	2.85	-200.98
34	35	101.10	-475.13	259.34	-72.47	0	-523.00	2.55	-49.05	2.55	-13.39	2.85	6.21
101	101	0.00	-474.58	-273.23	-72.71	0	-522.98	2.55	-48.78	2.55	-13.23	2.85	6.39
101	102	2.74	-474.58	-343.39	1000.83	0	148.66	2.55	-349.11	2.55	-162.50	2.85	-210.81
102	102	2.74	-699.23	-343.41	846.12	0	-185.18	2.55	-292.38	2.55	-160.47	2.85	-195.62
102	103	5.48	-699.23	-245.58	1653.04	0	316.58	2.55	-510.38	2.55	-273.69	2.85	-360.55
103	103	5.48	-869.15	-244.58	1545.02	0	71.86	2.55	-473.68	2.55	-273.19	2.85	-350.49
103	104	8.22	-869.15	-147.02	2081.52	0	401.59	2.55	-608.65	2.55	-349.79	2.85	-462.30
104	104	8.22	-876.98	-145.33	2082.55	0	399.81	2.55	-611.88	2.55	-351.79	2.85	-464.43
104	105	10.96	-876.98	-47.72	2347.00	0	556.58	2.55	-663.53	2.55	-391.53	2.85	-522.75
105	105	10.96	-878.67	-44.85	2348.30	0	556.82	2.55	-664.43	2.55	-392.12	2.85	-524.08

105	106	13.70	-878.67	52.88	2337.20	0	538.60	2.55	-632.07	2.55	-394.47	2.85	-527.50
106	106	13.70	-874.80	57.22	2338.45	0	540.49	2.55	-630.81	2.55	-393.75	2.85	-526.84
106	107	16.44	-874.80	154.88	2047.86	0	345.02	2.55	-513.70	2.55	-358.12	2.85	-475.75
107	107	16.44	-863.90	160.46	2048.79	0	348.83	2.55	-509.63	2.55	-355.69	2.85	-473.32
1	108	19.18	-863.90	258.02	1475.45	0	-25.80	2.55	-307.15	2.55	-281.60	2.85	-366.37
1	108	19.18	-1799.88	264.35	2223.00	0	208.14	2.55	-992.42	2.55	-591.48	2.85	-720.95
108	109	21.92	-1803.53	301.83	1475.07	0	-258.73	2.55	-795.06	2.55	-486.41	2.85	-568.58
109	109	21.92	-2537.78	306.59	2293.37	0	170.27	2.55	-1381.58	2.55	-800.79	2.85	-941.28
109	110	24.66	-2544.56	293.35	1471.66	0	-353.28	2.55	-1141.98	2.55	-689.15	2.85	-779.69
110	110	24.66	-2353.44	297.19	1627.15	0	-29.03	2.55	-1211.95	2.55	-699.21	2.85	-803.17
110	10111	27.40	-2302.81	275.07	822.02	0	-544.73	2.55	-915.41	2.55	-580.90	2.85	-639.77
111	111	27.40	-2355.57	-361.24	802.19	0	-594.23	2.55	-917.66	2.55	-586.40	2.85	-643.80
111	112	30.45	-2427.37	-327.68	1922.99	0	128.84	2.55	-1341.16	2.55	-750.09	2.85	-869.42
112	112	30.45	-2778.63	-328.24	1670.29	0	-410.11	2.55	-1243.67	2.55	-743.28	2.85	-841.06
112	113	33.50	-2771.09	-338.25	2652.55	0	233.68	2.55	-1564.48	2.55	-872.87	2.85	-1026.74
113	113	33.50	-2123.17	-339.12	1586.43	0	-545.84	2.55	-846.04	2.55	-509.96	2.85	-585.56
113	114	36.89	-2119.22	-335.09	2740.53	0	184.95	2.55	-1112.18	2.55	-669.89	2.85	-816.52
114	114	36.89	-1640.60	-341.50	1844.39	0	-572.60	2.55	-455.17	2.55	-387.27	2.85	-473.23
114	115	40.28	-1640.60	-247.17	2858.48	0	72.81	2.55	-764.31	2.55	-525.05	2.85	-672.84
115	115	40.28	-1629.00	-255.21	2859.36	0	76.76	2.55	-759.90	2.55	-522.45	2.85	-670.23
115	116	43.67	-1629.00	-137.12	3524.94	0	496.43	2.55	-954.00	2.55	-613.99	2.85	-803.17
116	116	43.67	-1612.83	-144.41	3526.78	0	502.30	2.55	-948.00	2.55	-610.45	2.85	-799.66
116	117	47.06	-1612.83	-23.78	3811.70	0	678.14	2.55	-1021.61	2.55	-650.90	2.85	-858.61
117	117	47.06	-1605.12	-28.47	3815.18	0	682.47	2.55	-1019.27	2.55	-649.60	2.85	-857.51
117	118	50.45	-1605.12	90.91	3707.48	0	607.67	2.55	-970.25	2.55	-637.16	2.85	-839.77
118	118	50.45	-1599.39	90.59	3711.60	0	611.81	2.55	-968.83	2.55	-636.42	2.85	-839.29
118	119	53.84	-1599.39	211.02	3200.65	0	280.10	2.55	-794.99	2.55	-569.51	2.85	-742.55
119	119	53.84	-1590.99	215.16	3204.58	0	284.92	2.55	-792.49	2.55	-568.12	2.85	-741.38
119	120	57.23	-1590.99	333.99	2272.36	0	-314.20	2.55	-490.32	2.55	-444.05	2.85	-561.66
120	120	57.23	-2169.78	341.44	3270.69	0	491.65	2.55	-1316.05	2.55	-758.64	2.85	-941.31
120	121	60.62	-2174.29	366.34	2048.10	0	-276.21	2.55	-982.43	2.55	-587.93	2.85	-694.11
121	121	60.62	-2697.85	373.43	3011.58	0	474.91	2.55	-1624.21	2.55	-906.91	2.85	-1084.35
121	122	64.01	-2706.23	347.94	1790.63	0	-310.25	2.55	-1250.26	2.55	-742.93	2.85	-847.53
122	122	64.01	-2380.33	346.88	2044.65	0	221.89	2.55	-1357.80	2.55	-755.95	2.85	-882.36
122	10123	67.40	-2349.16	337.79	880.71	0	-545.75	2.55	-924.12	2.55	-597.62	2.85	-660.93
123	123	67.40	-2361.88	-324.09	882.90	0	-548.10	2.55	-929.93	2.55	-600.88	2.85	-664.42
123	124	70.45	-2412.81	-322.36	1905.32	0	114.38	2.55	-1305.66	2.55	-747.61	2.85	-867.64
124	124	70.45	-2756.18	-305.09	1653.30	0	-421.80	2.55	-1205.17	2.55	-739.06	2.85	-837.51
124	125	73.50	-2748.64	-330.65	2620.34	0	203.78	2.55	-1502.84	2.55	-868.98	2.85	-1024.20
125	125	73.50	-2062.33	-333.14	1575.41	0	-530.01	2.55	-787.15	2.55	-504.29	2.85	-582.96
125	126	76.26	-2059.10	-337.06	2457.09	0	22.28	2.55	-1024.41	2.55	-627.88	2.85	-761.94
126	126	76.26	-1552.81	-340.06	1579.34	0	-695.63	2.55	-305.97	2.55	-347.16	2.85	-422.73
126	127	79.02	-1552.81	-241.57	2381.96	0	-175.55	2.55	-578.83	2.55	-452.21	2.85	-574.77
127	127	79.02	-1536.15	-244.32	2381.22	0	-170.99	2.55	-572.18	2.55	-448.17	2.85	-570.57
127	128	81.78	-1536.15	-146.87	2921.97	0	181.54	2.55	-762.95	2.55	-517.95	2.85	-671.54
128	128	81.78	-1514.81	-150.00	2921.74	0	187.80	2.55	-754.57	2.55	-512.88	2.85	-666.32
128	129	84.54	-1514.81	-51.46	3199.79	0	372.40	2.55	-863.25	2.55	-547.26	2.85	-716.00
129	129	84.54	-1505.26	-54.24	3200.30	0	375.55	2.55	-859.62	2.55	-545.08	2.85	-713.80
129	130	87.30	-1505.26	44.31	3213.99	0	391.34	2.55	-885.96	2.55	-543.80	2.85	-711.82
130	130	87.30	-1503.49	42.60	3215.08	0	392.49	2.55	-885.47	2.55	-543.54	2.85	-711.63
130	131	90.06	-1503.49	141.16	2961.46	0	237.80	2.55	-828.97	2.55	-506.15	2.85	-657.30
131	131	90.06	-1508.48	140.91	2962.84	0	237.09	2.55	-831.16	2.55	-507.54	2.85	-658.83
131	132	92.82	-1508.48	238.94	2438.17	0	-90.23	2.55	-691.12	2.55	-433.48	2.85	-551.32
	132	92.82	-1171.91	240.42	2658.82	0	419.51	2.55	-772.15	2.55	-441.14	2.85	-579.56
	133	95.58	-1171.91	338.97	1859.21	0	-82.61	2.55	-547.89	2.55	-329.83	2.85	-418.00
133	133	95.58	-835.91	342.25	2097.00	0	440.05	2.55	-640.58	2.55	-339.07	2.85	-448.45
133	134	98.34	-835.91	440.79	1016.40	0	-240.30	2.55	-331.02	2.55	-189.61	2.85	-231.47
134	134	98.34	-498.73	446.32	1271.41	0	295.85	2.55	-434.71	2.55	-200.03	2.85	-263.72
134	135	101.10	-498.73	310.79	-93.82	0	-564.77	2.55	-39.21	2.55	-11.86	2.85	9.51



3) COMPROBACIÓN DE LA SECCIÓN CRÍTICA DE CENTRO de VANO CON "CSEC".

En el presente apartado se estudia la sección de centro de vano considerando con más precisión tanto pérdidas como la sección homogénea.

de esta manera a comprobar que las tensiones σ τ = inf. con:

$$\begin{aligned} \text{Tensión en inflexiones} &= 563 + 10 \text{ (perd prot)} + \frac{200}{393} \times 118 \text{ (tracción)} = \\ &= 720 \text{ kg/cm}^2 \text{ (TRACCIÓN)} \end{aligned}$$

- ESTUDIO DE SECCIÓN DE CENTRO DE VANO. (CUBO 117)

A continuación se refleja el cálculo de CSEC de la sección de centro de vano. En dicho cálculo se estudia la sección con un cálculo más preciso de las pérdidas diferidas y con sección homogeneizada.

ANÁLISIS SIN FISURACIÓN:

Sobre sección abierta: (C+P) $M_{pp} = 764'82 + 65'12 + 180'02 = 1009'96 \text{ mt.}$

Retracción lose: (LOS; TOT) 4'08

Retracción ción: (CAS; TOT) 29'11.

Retenido superior: (PS, C+P) 166'0. (5%)

Retenido inferior: (PI, C+P) 2285'5 (5%)

Sobre sección cerrada: $M_{CH} = 779'18 \text{ mt.}$; TOT ; CARGA PERMANENTE

$M_{CEU} = (82'18 + 344'17 + 915'42) \times 12 \times 108 = 1740$; TOT ; SE TO y TIRP

$M_{CEAB} = (360'94) \times 0.6 = 217$; TOT ; SE TO y TIRP

Redistribución $M_{RED} = 1692'66$ TOT ; CTE (2)

Tensión en infrecuentes: (tiempo infinito)

$$\sigma_{inf. ción} = 56'3 + 10 \cdot (\text{perd. perd}) + 6 = 72 \text{ kg/cm}^2$$

(tiempo)

$$F_{breake} = 200 \times 1'19 / 393 = 6'0 \text{ kg/cm}^2$$

Proyecto:
Viaducto V-1. Santa Oliva.

Seccion:CDV117

MATERIALES

Num.	Fck	Gamma	M.El.	J _{II} 1	J _{II} 2
	(Kg/cm2)		(Kg/cm2)		
1(HO)	300.0	1.50	285770	2.60	1.45
2(HO)	550.0	1.50	338219	2.60	1.45
3(RD)	5100.0	1.15	2100000		
4(PR)	17100.0	1.15	1800000		

SECCIONES PARCIALES

Num	Mat.	B(cm)	H(cm)	Yo(cm)	Mc	Nsr
Num η (mm)						
1	1	700.0	30.0	0.0	C*	0
2	2	90.0	30.0	30.0	C*	0
3	2	36.0	198.0	60.0	C*	0
4	2	179.0	27.0	258.0	C*	0
5	4	28.0	13.4	280.0	*T	0
6	4	26.0	13.4	275.2	*T	0
7	4	28.0	13.4	270.4	*T	0
8	4	28.0	13.4	265.4	*T	0
9	4	8.0	13.4	45.0	*T	0
10	3	2.0	25.0	280.0	CT	0
11	3	2.0	25.0	270.0	CT	0
12	3	2.0	25.0	260.0	CT	0

SECCIONES INTERMEDIAS

Num.	Codigo	Componentes
1	CAJ	2 3 4
2	LOS	1
3	C+P	2 3 4 5 6 7
		8 9 10 11 12
4	PS	9
5	PI	6 7 8 5

* CONSTANTES ESTATICAS *

S.COMPLETA

Tipo	Acciones	Area(cm2)	Xcg(cm)	Inercia(cm4)
F.pura +	(0)	2916.9	28.83	10392775.8
	(1)	1073.4	56.95	9024167.6
	(2)	1431.0	45.81	9539730.3
F.pura -	(0)	522.8	272.79	518686.7
	(1)	311.6	267.44	497554.9
	(2)	359.0	269.02	503431.4
C.Simple	(0)	5390.0	92.91	57491833.0
	(1)	1620.7	105.67	19506722.0
	(2)	2301.2	100.27	26455632.5
T.Simple	(0)	171.0	260.23	474206.0
	(1)	171.0	260.23	474206.0
	(2)	171.0	260.23	474206.0

*** Nota: Homogeneizadas a E=2100000 Kp/cm

** CALCULO ELASTICO **

Título Sección: CDV117

Análisis SIN FISURACION

Secuencia Incrementos de Carga:

Incremento de Carga 1 :

Flector : 1009.96m.T PP

Tipo de Sollicitacion: CP

Seccion Afectada: C+P

TENSIONES (Kg/cm2):

ESTADO INICIAL (To)						ESTADO FINAL (Tinf)					
Nsp	Yn(cm)	Tsup.	Tinf.	Tao	Tcomp	Nsp	Yn(cm)	Tsup.	Tinf.	Tao	Tcomp
1	\$\$\$\$\$	0.0	0.0	0.0	0.0	1	117.2	-20.4	-15.2	0.0	0.0
2	180.8	-120.6	-96.6	0.0	0.0	2	101.8	-15.3	-8.9	0.0	0.0
3	180.8	-96.6	61.7	0.0	0.0	3	101.8	-8.9	33.4	0.0	0.0
4	180.8	61.7	83.2	0.0	0.0	4	101.8	33.4	39.1	0.0	0.0
5	180.8	421.8	427.5	0.0	427.5	5	156.2	858.9	868.2	0.0	868.2
6	180.8	401.4	407.0	0.0	407.0	6	156.2	825.6	834.8	0.0	834.8
7	180.8	380.9	386.6	0.0	386.6	7	156.2	792.3	801.5	0.0	801.5
8	180.8	359.7	365.4	0.0	365.4	8	156.2	757.6	766.9	0.0	766.9
9	180.8	-577.8	-572.1	0.0	577.8	9	156.2	-771.7	-762.4	0.0	771.7
10	180.8	492.1	504.5	0.0	504.5	10	156.2	1002.0	1022.3	0.0	1022.3
11	180.8	442.4	454.9	0.0	454.9	11	156.2	921.1	941.3	0.0	941.3
12	180.8	392.8	405.2	0.0	405.2	12	156.2	840.1	860.4	0.0	860.4

Incrementos de Carga:

1

Incremento de Carga 2 :

Retraccion(Eso/η;Tinf.): 41.08(*1.E-05)

Actua sobre la Sintermedia LOS

Seccion Afectada: TOTAL

Incremento de Carga 3 :

Retraccion(Eso/η;Tinf.): 29.11(*1.E-05)

Actua sobre la Sintermedia CAJ

Seccion Afectada: TOTAL

TENSIONES (Kg/cm2):

ESTADO INICIAL (To)						ESTADO FINAL (Tinf)					
Nsp	Yn(cm)	Tsup.	Tinf.	Tao	Tcomp	Nsp	Yn(cm)	Tsup.	Tinf.	Tao	Tcomp
1	\$\$\$\$\$	0.0	0.0	0.0	0.0	1	51.3	-17.8	-7.4	0.0	0.0
2	180.8	-120.6	-96.6	0.0	0.0	2	141.2	-46.6	-34.0	0.0	0.0
3	180.8	-96.6	61.7	0.0	0.0	3	141.2	-34.0	49.0	0.0	0.0
4	180.8	61.7	83.2	0.0	0.0	4	141.2	49.0	60.3	0.0	0.0
5	180.8	421.8	427.5	0.0	427.5	5	225.0	442.2	452.9	0.0	452.9
6	180.8	401.4	407.0	0.0	407.0	6	225.0	403.6	414.4	0.0	414.4
7	180.8	380.9	386.6	0.0	386.6	7	225.0	365.1	375.8	0.0	375.8
8	180.8	359.7	365.4	0.0	365.4	8	225.0	324.9	335.6	0.0	335.6
9	180.8	-577.8	-572.1	0.0	577.8	9	225.0	-1445.8	-1435.0	0.0	1445.8
10	180.8	492.1	504.5	0.0	504.5	10	225.0	515.9	539.3	0.0	539.3
11	180.8	442.4	454.9	0.0	454.9	11	225.0	422.2	445.6	0.0	445.6
12	180.8	392.8	405.2	0.0	405.2	12	225.0	328.5	351.9	0.0	351.9

Incrementos de Carga:

1 2 3

Incremento de Carga 4 :

Pretensado: 166.00Tn.

P.relajacion: 5.00(%)

Alfa: 0.00(gsex.)

Actua sobre la Sintermedia PS

Seccion Afectada: C+P

Incremento de Carga 5 :
Pretensado: 2285.50Tn.
P.relajacion: 5.00(%)
Alfa: 0.00(gsex.)
Actua sobre la Sintermedia PI
Seccion Afectada: C+P

TENSIONES (Kg/cm2):

ESTADO INICIAL (To)					ESTADO FINAL (Tinf)				
Nsp	Yn(cm)	Tsup.	Tinf.	Tao	Tcomp	Nsp	Yn(cm)	Tsup.	Tinf.
1	92.9	-19.3	-13.1	0.0	0.0	1	92.9	-19.3	-13.1
2	-117.2	-66.3	-79.8	0.0	0.0	2	-117.2	-66.3	-79.8
3	-117.2	-79.8	-169.0	0.0	0.0	3	-117.2	-79.8	-169.0
4	-117.2	-169.0	-181.2	0.0	0.0	4	-117.2	-169.0	-181.2
5	13891.2	213888.0	0.013891.2	0.013891.2	0.013891.2	5	13891.2	213888.0	0.013891.2
6	13902.7	713899.5	0.013902.7	0.013902.7	0.013902.7	6	13902.7	713899.5	0.013902.7
7	13914.2	213911.0	0.013914.2	0.013914.2	0.013914.2	7	13914.2	213911.0	0.013914.2
8	13926.2	213923.0	0.013926.2	0.013926.2	0.013926.2	8	13926.2	213923.0	0.013926.2
9	14435.1	114431.9	0.014435.1	0.014435.1	0.014435.1	9	14435.1	114431.9	0.014435.1
10	-117.2	-1111.0	-1118.0	0.0	1118.0	10	-117.2	-1111.0	-1118.0
11	-117.2	-1083.0	-1090.0	0.0	1090.0	11	-117.2	-1083.0	-1090.0
12	-117.2	-1055.0	-1062.0	0.0	1062.0	12	-117.2	-1055.0	-1062.0

Incrementos de Carga:
1 2 3 4 5

Incremento de Carga 6 :
Flector : 879.18m.T CM
Tipo de Solicitud: CP
Seccion Afectada: TOTAL

TENSIONES (Kg/cm2):

ESTADO INICIAL (To)					ESTADO FINAL (Tinf)				
Nsp	Yn(cm)	Tsup.	Tinf.	Tao	Tcomp	Nsp	Yn(cm)	Tsup.	Tinf.
1	92.9	-19.3	-13.1	0.0	0.0	1	92.9	-19.3	-13.1
2	-117.2	-66.3	-79.8	0.0	0.0	2	-117.2	-66.3	-79.8
3	-117.2	-79.8	-169.0	0.0	0.0	3	-117.2	-79.8	-169.0
4	-117.2	-169.0	-181.2	0.0	0.0	4	-117.2	-169.0	-181.2
5	13891.2	213888.0	0.013891.2	0.013891.2	0.013891.2	5	13891.2	213888.0	0.013891.2
6	13902.7	713899.5	0.013902.7	0.013902.7	0.013902.7	6	13902.7	713899.5	0.013902.7
7	13914.2	213911.0	0.013914.2	0.013914.2	0.013914.2	7	13914.2	213911.0	0.013914.2
8	13926.2	213923.0	0.013926.2	0.013926.2	0.013926.2	8	13926.2	213923.0	0.013926.2
9	14435.1	114431.9	0.014435.1	0.014435.1	0.014435.1	9	14435.1	114431.9	0.014435.1
10	-117.2	-1111.0	-1118.0	0.0	1118.0	10	-117.2	-1111.0	-1118.0
11	-117.2	-1083.0	-1090.0	0.0	1090.0	11	-117.2	-1083.0	-1090.0
12	-117.2	-1055.0	-1062.0	0.0	1062.0	12	-117.2	-1055.0	-1062.0

Incrementos de Carga:
1 2 3 4 5 6

Incremento de Carga 7 :
Flector : 1692.66m.T RED
Tipo de Solicitud: CP:tf[2]
Seccion Afectada: TOTAL

TENSIONES (Kg/cm2):

ESTADO INICIAL (To)					ESTADO FINAL (Tinf)				
Nsp	Yn(cm)	Tsup.	Tinf.	Tao	Tcomp	Nsp	Yn(cm)	Tsup.	Tinf.
1	92.9	-19.3	-13.1	0.0	0.0	1	92.9	-19.3	-13.1
2	-117.2	-66.3	-79.8	0.0	0.0	2	-117.2	-66.3	-79.8
3	-117.2	-79.8	-169.0	0.0	0.0	3	-117.2	-79.8	-169.0
4	-117.2	-169.0	-181.2	0.0	0.0	4	-117.2	-169.0	-181.2
5	13891.2	213888.0	0.013891.2	0.013891.2	0.013891.2	5	13891.2	213888.0	0.013891.2
6	13902.7	713899.5	0.013902.7	0.013902.7	0.013902.7	6	13902.7	713899.5	0.013902.7
7	13914.2	213911.0	0.013914.2	0.013914.2	0.013914.2	7	13914.2	213911.0	0.013914.2
8	13926.2	213923.0	0.013926.2	0.013926.2	0.013926.2	8	13926.2	213923.0	0.013926.2
9	14435.1	114431.9	0.014435.1	0.014435.1	0.014435.1	9	14435.1	114431.9	0.014435.1
10	-117.2	-1111.0	-1118.0	0.0	1118.0	10	-117.2	-1111.0	-1118.0
11	-117.2	-1083.0	-1090.0	0.0	1090.0	11	-117.2	-1083.0	-1090.0
12	-117.2	-1055.0	-1062.0	0.0	1062.0	12	-117.2	-1055.0	-1062.0

11 -117.2-1083.0-1090.0 0.0 1090.0 11 \$\$\$\$\$-2236.8-2236.8 0.0 2236.8
12 -117.2-1055.0-1062.0 0.0 1062.0 12 \$\$\$\$\$-2236.9-2236.9 0.0 2236.9

Incrementos de Carga:
1 2 3 4 5 6 7

Incremento de Carga 8 :
Flector : 1740.00m.T SC INFREC
Tipo de Solicitud: SC
Seccion Afectada: TOTAL

TENSIONES (Kg/cm2):

ESTADO INICIAL (To)					ESTADO FINAL (Tinf)				
Nsp	Yn(cm)	Tsup.	Tinf.	Tao	Tcomp	Nsp	Yn(cm)	Tsup.	Tinf.
1	92.9	-57.6	-39.0	0.0	0.0	1	92.9	-57.6	-39.0
2	139.8	-94.4	-74.1	0.0	0.0	2	139.8	-94.4	-74.1
3	201.6	-116.0	-95.7	0.0	0.0	3	201.6	-116.0	-95.7
4	201.6	-95.7	-88.6	0.0	0.0	4	201.6	-95.7	-88.6
5	201.6	-88.6	-87.6	0.0	0.0	5	201.6	-88.6	-87.6
6	14376.6	614376.8	0.014376.8	0.014376.8	0.014376.8	6	14376.6	614376.8	0.014376.8
7	14375.6	614375.9	0.014375.9	0.014375.9	0.014375.9	7	14375.6	614375.9	0.014375.9
8	14374.7	614374.9	0.014374.9	0.014374.9	0.014374.9	8	14374.7	614374.9	0.014374.9
9	14373.7	614373.9	0.014373.9	0.014373.9	0.014373.9	9	14373.7	614373.9	0.014373.9
10	14310.8	814311.1	0.014311.1	0.014311.1	0.014311.1	10	14310.8	814311.1	0.014311.1
11	830.8	-1670.5	-1663.0	0.0	1670.5	11	830.8	-1670.5	-1663.0
12	830.8	-1700.9	-1693.3	0.0	1700.9	12	830.8	-1700.9	-1693.3

Incrementos de Carga:
1 2 3 4 5 6 7 8

**** CALCULO ELASTICO ****

Título Sección: CDV131

Análisis SIN FISURACION

Secuencia Incrementos de Carga:

Incremento de Carga 1 :

Flector : 1009.96m.T PP

Tipo de Solicitación: CP

Sección Afectada: C+P

TENSIONES (Kg/cm2):

ESTADO INICIAL (To)						ESTADO FINAL (Tinf)					
Nsp	Yn(cm)	Tsup.	Tinf.	Tao	Tcomp	Nsp	Yn(cm)	Tsup.	Tinf.	Tao	Tcomp
1	\$\$\$\$\$	0.0	0.0	0.0	0.0	1	117.2	-20.4	-15.2	0.0	0.0
2	180.8	-120.6	-96.6	0.0	0.0	2	101.8	-15.3	-8.9	0.0	0.0
3	180.8	-96.6	61.7	0.0	0.0	3	101.8	-8.9	33.4	0.0	0.0
4	180.8	61.7	83.2	0.0	0.0	4	101.8	33.4	39.1	0.0	0.0
5	180.8	421.8	427.5	0.0	427.5	5	156.2	858.9	868.2	0.0	868.2
6	180.8	401.4	407.0	0.0	407.0	6	156.2	825.6	834.8	0.0	834.8
7	180.8	380.9	386.6	0.0	386.6	7	156.2	792.3	801.5	0.0	801.5
8	180.8	359.7	365.4	0.0	365.4	8	156.2	757.6	766.9	0.0	766.9
9	180.8	-577.8	-572.1	0.0	577.8	9	156.2	-771.7	-762.4	0.0	771.7
10	180.8	492.1	504.5	0.0	504.5	10	156.2	1002.0	1022.3	0.0	1022.3
11	180.8	442.4	454.9	0.0	454.9	11	156.2	921.1	941.3	0.0	941.3
12	180.8	392.8	405.2	0.0	405.2	12	156.2	840.1	860.4	0.0	860.4

Incrementos de Carga:

1

Incremento de Carga 2 :

Retracción(Eso/ε;Tinf.): 41.08(*1.E-05)

Actúa sobre la Sintermedia LOS

Sección Afectada: TOTAL

Incremento de Carga 3 :

Retracción(Eso/ε;Tinf.): 29.11(*1.E-05)

Actúa sobre la Sintermedia CAJ

Sección Afectada: TOTAL

TENSIONES (Kg/cm2):

ESTADO INICIAL (To)						ESTADO FINAL (Tinf)					
Nsp	Yn(cm)	Tsup.	Tinf.	Tao	Tcomp	Nsp	Yn(cm)	Tsup.	Tinf.	Tao	Tcomp
1	180.8	-120.6	-96.6	0.0	0.0	1	51.3	-17.8	-7.4	0.0	0.0
2	180.8	-96.6	61.7	0.0	0.0	2	141.2	-46.6	-34.0	0.0	0.0
3	180.8	61.7	83.2	0.0	0.0	3	141.2	-34.0	49.0	0.0	0.0
4	180.8	421.8	427.5	0.0	427.5	4	141.2	49.0	60.3	0.0	0.0
5	180.8	401.4	407.0	0.0	407.0	5	225.0	442.2	452.9	0.0	452.9
6	180.8	380.9	386.6	0.0	386.6	6	225.0	403.6	414.4	0.0	414.4
7	180.8	359.7	365.4	0.0	365.4	7	225.0	365.1	375.8	0.0	375.8
8	180.8	-577.8	-572.1	0.0	577.8	8	225.0	324.9	335.6	0.0	335.6
9	180.8	492.1	504.5	0.0	504.5	9	225.0	-1445.8	-1435.0	0.0	1445.8
10	180.8	442.4	454.9	0.0	454.9	10	225.0	515.9	539.3	0.0	539.3
11	180.8	392.8	405.2	0.0	405.2	11	225.0	422.2	445.6	0.0	445.6
12	180.8	392.8	405.2	0.0	405.2	12	225.0	328.5	351.9	0.0	351.9

Incrementos de Carga:

1 2 3

Incremento de Carga 4 :

Pretensado: 166.00Tn.

P.relajación: 5.00(%)

Alfa: 0.00(gsex.)

Actúa sobre la Sintermedia PS

Sección Afectada: C+P

Incremento de Carga 5 :

Pretensado: 2285.50Tn.

P.relajación: 5.00(%)

Alfa: 0.00(gsex.)

Actúa sobre la Sintermedia PI

Sección Afectada: TOTAL

TENSIONES (Kg/cm2):

ESTADO INICIAL (To)					ESTADO FINAL (Tinf)						
Nsp	Yn(cm)	Tsup.	Tinf.	Tao	Tcomp	Nsp	Yn(cm)	Tsup.	Tinf.	Tao	Tcomp
1	33.8	33.0	3.7	0.0	0.0	1	1.5	.5	-9.8	0.0	0.0
2	-829.5	-153.5	-158.9	0.0	0.0	2	-92.2	-48.8	-60.7	0.0	0.0
3	-829.5	-158.9	-194.2	0.0	0.0	3	-92.2	-60.7	-139.8	0.0	0.0
4	-829.5	-194.2	-199.0	0.0	0.0	4	-92.2	-139.8	-150.5	0.0	0.0
5	13788.9	13787.7		0.013788.9		5	10620.6	10611.5		0.010620.6	
6	13793.5	13792.2		0.013793.5		6	10653.2	10644.1		0.010653.2	
7	13798.1	13796.8		0.013798.1		7	10685.8	10676.8		0.010685.8	
8	13802.8	13801.5		0.013802.8		8	10719.8	10710.7		0.010719.8	
9	13992.8	13991.5		0.013992.8		9	12199.2	12190.1		0.012199.2	
10	-829.5	-1230.3	-1233.1	0.0	1233.1	10	-232.2	-4060.9	-4080.7	0.0	4080.7
11	-829.5	-1219.2	-1222.0	0.0	1222.0	11	-232.2	-3981.6	-4001.4	0.0	4001.4
12	-829.5	-1208.1	-1210.9	0.0	1210.9	12	-232.2	-3902.3	-3922.1	0.0	3922.1

Incrementos de Carga:

1 2 3 4 5

5% pérdidas pretensado = 10 kg/cm² (995)

De esta manera, es este requisito el que genera el efecto mediante el empleo del programa CSEC que utiliza los puntos del Contador Google. Trabajando en los puntos sobre el libro "CONSTRUCCIÓN DE LA

4) ESTUDIO DE REDISTRIBUCIONES A NIVEL DE SECCIÓN
DE LAS TENSIONES

	Fiber deflection	Fiber deflection	Fiber deflection	
			Sup	INF
M = 1000 in-lb	73'8	-58'3	-13'8	-9'7
N = -2000 lb-in c.c.g. def c.c.g. def	-81'2	-33	-3'8	-7'5

- Las acciones que actúan en la sección cajan + los tienen des vanates:

- Las que son constante con el tiempo (Constantes)

En el caso de los muros

	Tem. ref.	Tem. m.	Tem. LOSA		
			SUP	INF	
M=1000 m	+13.1	-23.2	-25.6	-15.60	Kg/cm ³
N=1000 m en c.d.g de Losa y muros	-13.6	-25.5	-25.1	-23.3	Kg/cm ³

- las acciones variables en el tiempo (carga de personas y viento) [constante c]

	Tem. ref.	Tem. m.	Tem. LOSA		
			SUP	INF	
M=1000 m	63.20	-23.2	-60.9	-13.70	Kg/cm ³
N=1000 m en c.d.g de Losa y muros	-13.6	-38.9	-25.3	-23.4	Kg/cm ³

A continuación se indican las unidades del CSOC en dichos cálculos.

Las constantes que se han adoptado son: $\alpha = 0.2$

LOSA: J_{H1} = FLUENCIA de 3.360000 J_{H2} = 57.371

CASON: J_{H1} = FLUENCIA de 38.360000 J_{H2} = 57.371

LOSA: J_{H1} = 2.28 J_{H2} = 1.59

CASON: J_{H1} = 1.23 J_{H2} = 0.860

CASON

RETRACCIÓN DEL HORMIGÓN

(Según la instrucción EHE)

Área de la sección de hormigón en m ²	1.529
Perímetro de la sección en contacto con la atmósfera (m)	12.148
Resistencia característica del hormigón (en N/mm ²)	55

$$e = \frac{2 \cdot A_c}{u}$$

Espesor medio en mm de la sección (mm):	251.729
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Valor de la humedad relativa (%)	70
(para estructuras al aire se introducirá un valor menor que cien para estructuras sumergidas se introducirá un valor 100)	

Formulación

La retracción entre los instantes t_0 y t_1 se obtiene siguiendo la siguiente formulación: (siendo t_0 la edad del hormigón al comienzo de la retracción)

$$\epsilon_{cs} = \epsilon_{cs0} \cdot \beta_s(t_1 - t_0)$$

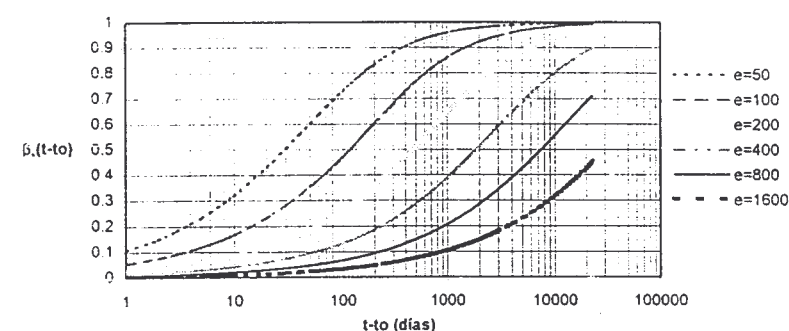
$$\epsilon_{cs0} = \epsilon_s \cdot \beta_{HR}$$

$$\epsilon_s = (570 - 5 \cdot f_{ck}) \cdot 10^{-6}$$

$$\beta_{HR} = -1.55 \cdot \left(1 - \left(\frac{HR}{100}\right)^3\right) \quad \text{para estructuras al aire}$$

$$\beta_{HR} = 0.2 \quad \text{para estructuras sumergidas}$$

$$\beta_s(t_1 - t_0) = \frac{t_1 - t_0}{0.035 e^2 + (t_1 - t_0)}$$



Caso	1	2	3	4	5
t_0 (días)	3	28			
t_1 (días)	36000	36000			
$\beta_s(t_1 - t_0)$	0.971	0.971			
β_{HR}	-1.018	-1.018			
ϵ_s	0.000295	0.000295			
ϵ_{cs0}	-0.000300	-0.000300			
$\epsilon_{cs}(t_1, t_0)^*$	-29.16	-29.16			
t_2 (días)					
$\beta_s(t_1 - t_0)$					
β_{HR}					
ϵ_s					
ϵ_{cs0}					
$\epsilon_{cs}(t_2, t_0)^*$					
$\epsilon_{cs}(t_2, t_1)^*$					

RETRACCIÓN DEL HORMIGÓN

(Según la instrucción EHE)

Área de la sección de hormigón en m ²	4.2
Perímetro de la sección en contacto con la atmósfera (m)	28.6
Resistencia característica del hormigón (en N/mm ²)	30

$$e = \frac{2 \cdot A_c}{u}$$

Espesor medio en mm de la sección (mm):	293.706
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Valor de la humedad relativa (%)	70
(para estructuras al aire se introducirá un valor menor que cien para estructuras sumergidas se introducirá un valor 100)	

Formulación

La retracción entre los instantes t_0 y t_1 se obtiene siguiendo la siguiente formulación:
(siendo t_0 la edad del hormigón al comienzo de la retracción)

$$\varepsilon_{cs} = \varepsilon_{cs0} \cdot \beta(t_1 - t_0)$$

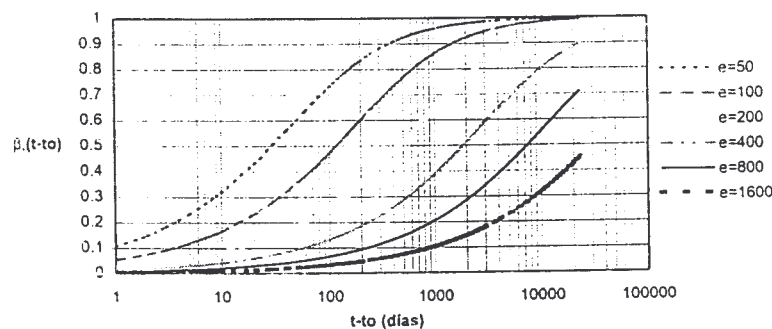
$$\varepsilon_{cs0} = \varepsilon_s \cdot \beta_{HR}$$

$$\varepsilon_s = (570 - 5 \cdot f_{ck}) \cdot 10^{-6}$$

$$\beta_{HR} = -1.55 \cdot \left(1 - \left(\frac{HR}{100} \right)^3 \right) \quad \text{para estructuras al aire}$$

$$\beta_{HR} = 0.2 \quad \text{para estructuras sumergidas}$$

$$\beta(t_1 - t_0) = \frac{t_1 - t_0}{0.035 \cdot e^2 + (t_1 - t_0)}$$



Caso	1	2	3	4	5
t_0 (días)	3	28			
t_1 (días)	36000	36000			
$\beta_s(t_1 - t_0)$	0.961	0.961			
β_{HR}	-1.018	-1.018			
ε_s	0.000470	0.000420			
ε_{cs0}	-0.000423	-0.000428			
$\varepsilon_{cs}(t_1, t_0)^*$	-41.08	-41.08			
t_2 (días)					
$\beta_s(t_1 - t_0)$					
β_{HR}					
ε_s					
ε_{cs0}					
$\varepsilon_{cs}(t_2, t_0)^*$					
$\varepsilon_{cs}(t_2, t_1)^*$					

FLUENCIA DEL HORMIGÓN

(Según la instrucción EHE)

Área de la sección de hormigón en m ²	4.2
Perímetro de la sección en contacto con la atmósfera (m)	28.6
Resistencia característica del hormigón (en N/mm ²)	30

$$e = \frac{2 \cdot A_c}{u}$$

Espesor medio en mm de la sección:	293.706
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Valor de la humedad relativa (%)	70
(para estructuras al aire se introducirá un valor menor que cien para estructuras sumergidas se introducirá un valor 100)	

Tipo de cemento

- ☐ Cemento normal
☒ Cemento rápido

Formulación

La fluencia entre los instantes t_0 y t_1 se obtiene siguiendo la siguiente formulación:
(siendo t_0 el instante de aplicación de la carga)

$$\varphi(t_1, t_0) = \varphi_s \cdot \beta_s(t_1 - t_0)$$

$$\varphi_s = \varphi_{HR} \cdot \beta(f_{cm}) \cdot \beta(t_0) \quad \text{Coeficiente básico de fluencia}$$

$$\varphi_{HR} = 1 + \frac{100 - HR}{9.9 \cdot e^{0.5}}$$

$$\beta(f_{cm}) = \frac{16.8}{f_{ck} + 8}$$

$$\beta(t_0) = \frac{1}{0.1 + t_0^{0.2}}$$

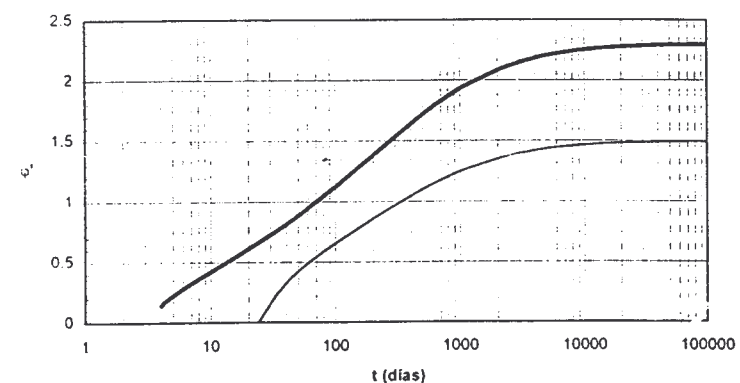
$$\beta_s(t_1 - t_0) = \left[\frac{(t_1 - t_0)}{\beta_{HR} + (t_1 - t_0)} \right]^{0.2} \quad \text{Función que describe el desarrollo de la fluencia con el tiempo}$$

$$\beta_{HR} = 1.5 \cdot e \cdot (1 + (0.012 \cdot HR)^4) + 250 \leq 150$$

Esta formulación es válida para tensiones en el instante t_0 menores que $0.45 \cdot f_{cm}$.
para tensiones mayores la no linealidad de la fluencia se ha de evaluar multiplicando
el coeficiente básico de fluencia por una expresión que depende de la relación
tensión aplicada/resistencia.

La deformación dependiente de la tensión, en el instante t_1 puede evaluarse con
el criterio siguiente:

$$\varepsilon_s(t_1, t_0) = \varepsilon_s(t_0) \cdot \left(\frac{1}{E_{s,0}} + \frac{\varphi(t_1, t_0)}{E_{s,28}} \right)$$



El modelo de obtención del coeficiente de fluencia está referido al módulo de
deformación longitudinal tangente, por lo que para obtener el coeficiente fluencia
referido al secante se igualan las deformaciones totales y se obtiene:

$$\varphi'(t, t_0) = \left(\frac{1}{E_{0,t_0}} - \frac{1}{E_{0,t_0}} + \frac{\varphi(t, t_0)}{E_{0,28}} \right) \cdot E_{28}$$

LOSA

Caso	1	2	3	4	5
t_0 (días)	3	28	3		
t_1 (días)	36000	36000	28		
φ_{HR}	1.455878	1.455878	1.455878		
$\beta(f_{cm})$	2.725320	2.725320	2.725320		
$\beta(t_0)$	0.743091	0.488450	0.743091		
β_H	709.659366	709.659366	709.659366		
$\beta_c(t_1-t_0)$	0.994160	0.994156	0.362707		
φ_0	2.948385	1.938037	2.948385		
$\varphi(t_1-t_0)$	2.931	1.927	1.069		
$\varphi'(t_1-t_0)$	2.289	1.488	0.706		
t_2 (días)					
φ_{HR}					
$\beta(f_{cm})$					
β_H					
$\beta_c(t_1-t_0)$					
φ_0					
$\varphi(t_2-t_0)$					
$\varphi'(t_2-t_0)$					
$\varphi(t_2-t_1)$					
$\varphi'(t_2-t_1)$					

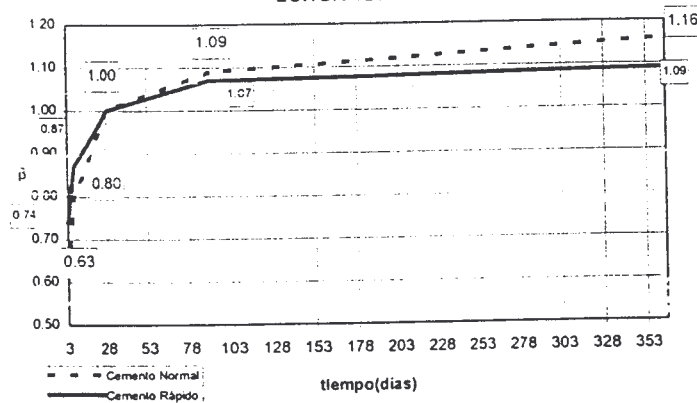
MÓDULO DE DEFORMACIÓN LONGITUDINAL

β	0.74	1.0000	0.7400
Módulo tangente			
$E_{0.28}$ (N/mm ²)	33620	33620	33620
$E_{0.10}$ (N/mm ²)	24879	33620	24879
Modulo secante			
E_{28} (N/mm ²)	28577	28577	28577
E_{10} (N/mm ²)	21147	28577	21147

$$E_{0.28} = 10000 \cdot \beta \cdot f_{ck} + 8 \quad E_{28} = 8500 \cdot \beta \cdot f_{ck} + 8$$

$F_{ct,k}$ (N/mm ²)	2.028
$F_{ct,m}$ (N/mm ²)	2.896
$F_{ct,k,0.95}$ (N/mm ²)	3.765

EVOLUCION DEL MODULO DE DEFORMACION LONGITUDINAL



Proyecto:

Seccion:CONS

MATERIALES

Num.	Fck (Kg/cm ²)	Gamma	M.El. (Kg/cm ²)	J _{II} 1	J _{II} 2
1(HO)	300.0	1.50	285770	2.28	1.59
2(HO)	550.0	1.50	338219	1.23	.86
3(RD)	5100.0	1.15	2100000		

SECCIONES PARCIALES

Num	Mat.	D(cm)	H(cm)	eo(cm)	Mc	Nsr
		Num	II (mm)			
1	1	700.0	30.0	0.0	C*	0
2	2	90.0	30.0	30.0	C*	0
3	2	36.0	198.0	60.0	C*	0
4	2	179.0	27.0	258.0	C*	0

SECCIONES INTERMEDIAS

Num.	Codigo	Componentes
1	CAJ	2 3 4

* CONSTANTES ESTATICAS *

S.COMPLETA

Tipo	Acciones	Area (cm ²)	Xcg (cm)	Inercia (cm ⁴)
F.pura +	(0)	0.0	0.00	0.0
	(1)	0.0	0.00	0.0
	(2)	0.0	0.00	0.0
F.pura -	(0)	0.0	0.00	0.0
	(1)	0.0	0.00	0.0
	(2)	0.0	0.00	0.0
C.Simple	(0)	5219.0	87.43	52072987.5
	(1)	1930.1	102.83	20710730.3
	(2)	2372.8	100.65	25277296.1
T.Simple	(0)	0.0	0.00	0.0
	(1)	0.0	0.00	0.0
	(2)	0.0	0.00	0.0

*** Nota: Homogeneizadas a E=2100000 Kp/cm² ***

* CONSTANTES ESTATICAS *

Título Sección: CONS

S.COMPLETA

Tipo	Acciones	Area (cm ²)	Xcg (cm)	Inercia (cm ⁴)
F.pura +	(0)	0.0	0.00	0.0
	(1)	0.0	0.00	0.0
	(2)	0.0	0.00	0.0
F.pura -	(0)	0.0	0.00	0.0
	(1)	0.0	0.00	0.0
	(2)	0.0	0.00	0.0
C.Simple	(0)	5219.0	87.43	52072987.5
	(1)	1930.1	102.83	20710730.3

(2) 2372.8 100.65 25277296.1

T.Simple (0) 0.0 0.00 0.0
(1) 0.0 0.00 0.0
(2) 0.0 0.00 0.0

S.Intermedia CAJ

Tipo	Acciones	Area(cm2)	Xcg(cm)	Inercia(cm4)
F.pura +	(0)	0.0	0.00	0.0
	(1)	0.0	0.00	0.0
	(2)	0.0	0.00	0.0
F.pura -	(0)	0.0	0.00	0.0
	(1)	0.0	0.00	0.0
	(2)	0.0	0.00	0.0
C.Simple	(0)	2361.3	175.09	18721876.2
	(1)	1058.9	175.09	8395460.2
	(2)	1269.5	175.09	10065524.8
T.Simple	(0)	0.0	0.00	0.0
	(1)	0.0	0.00	0.0
	(2)	0.0	0.00	0.0

*** Nota: Homogeneizadas a E=2100000 Kp/cm2 ***

** CALCULO ELASTICO **

Título Sección: CONS

Analisis SIN FISURACION

Secuencia Incrementos de Carga:

Incremento de Carga 1 :
Flector : 1000.00m.T C1 CAJON
Tipo de Solicitud: CP
Sección Afectada: CAJ

TENSIONES (Kg/cm2):

ESTADO INICIAL (To)					ESTADO FINAL (Tinf)						
Nsp	Yn(cm)	Tsup.	Tinf.	Tao	Tcomp	Nsp	Yn(cm)	Tsup.	Tinf.	Tao	Tcomp
1	100.6	-13.8	-9.7	0.0	0.0	1	100.6	-13.8	-9.7	0.0	0.0
2	142.5	-58.3	-42.7	0.0	0.0	2	142.5	-58.3	-42.7	0.0	0.0
3	142.5	-42.7	59.8	0.0	0.0	3	142.5	-42.7	59.8	0.0	0.0
4	142.5	59.8	73.8	0.0	0.0	4	142.5	59.8	73.8	0.0	0.0

Incrementos de Carga:

1

** CALCULO ELASTICO **

Título Sección: CONS

Analisis SIN FISURACION

Secuencia Incrementos de Carga:

Incremento de Carga 1 :
Axil : -1000.00Tn. C1 CAJON
Excentricidad: 179.00cm.(respecto a la directriz)
Tipo de Solicitud: CP
Sección Afectada: CAJ

TENSIONES (Kg/cm2):

ESTADO INICIAL (To)					ESTADO FINAL (Tinf)						
Nsp	Yn(cm)	Tsup.	Tinf.	Tao	Tcomp	Nsp	Yn(cm)	Tsup.	Tinf.	Tao	Tcomp
1	-35.3	-3.8	-7.0	0.0	0.0	1	-35.3	-3.8	-7.0	0.0	0.0
2	-144.9	-33.0	-38.7	0.0	0.0	2	-144.9	-33.0	-38.7	0.0	0.0
3	-144.9	-38.7	-76.1	0.0	0.0	3	-144.9	-38.7	-76.1	0.0	0.0
4	-144.9	-76.1	-81.2	0.0	0.0	4	-144.9	-76.1	-81.2	0.0	0.0

Incrementos de Carga:

1

** CALCULO ELASTICO **

Título Sección: CONS

Analisis SIN FISURACION

Secuencia Incrementos de Carga:

Incremento de Carga 1 :
Flector : 1000.00m.T C1 C+LOS
Tipo de Solicitud: CP
Sección Afectada: TOTAL

TENSIONES (Kg/cm2):

ESTADO INICIAL (To)					ESTADO FINAL (Tinf)						
Nsp	Yn(cm)	Tsup.	Tinf.	Tao	Tcomp	Nsp	Yn(cm)	Tsup.	Tinf.	Tao	Tcomp
1	102.8	-20.6	-14.6	0.0	0.0	1	102.8	-20.6	-14.6	0.0	0.0
2	102.8	-25.4	-14.9	0.0	0.0	2	102.8	-25.4	-14.9	0.0	0.0
3	102.8	-14.9	54.1	0.0	0.0	3	102.8	-14.9	54.1	0.0	0.0
4	102.8	54.1	63.5	0.0	0.0	4	102.8	54.1	63.5	0.0	0.0

Incrementos de Carga:

1

** CALCULO ELASTICO **

Título Sección: CONS

Analisis SIN FISURACION

Secuencia Incrementos de Carga:

Incremento de Carga 1 :
Axil : -1000.00Tn. C1 C+LOS
Excentricidad: 90.50cm.(respecto a la directriz)
Tipo de Solicitud: CP
Sección Afectada: TOTAL

TENSIONES (Kg/cm2):

ESTADO INICIAL (To)					ESTADO FINAL (Tinf)						
Nsp	Yn(cm)	Tsup.	Tinf.	Tao	Tcomp	Nsp	Yn(cm)	Tsup.	Tinf.	Tao	Tcomp
1	973.4	-24.0	-23.3	0.0	0.0	1	973.4	-24.0	-23.3	0.0	0.0
2	973.4	-40.5	-39.3	0.0	0.0	2	973.4	-40.5	-39.3	0.0	0.0
3	973.4	-39.3	-30.7	0.0	0.0	3	973.4	-39.3	-30.7	0.0	0.0
4	973.4	-30.7	-29.6	0.0	0.0	4	973.4	-30.7	-29.6	0.0	0.0

Incrementos de Carga:

1

** CALCULO ELASTICO **

Título Sección: CONS

Analisis SIN FISURACION

Secuencia Incrementos de Carga:

Incremento de Carga 1 :
Flector : 1000.00m.T C2 C+LOS
Tipo de Solicitud: CP:tf[2]
Seccion Afectada: TOTAL

TENSIONES (Kg/cm2):

ESTADO INICIAL (To)					ESTADO FINAL (Tinf)						
Nsp	Yn(cm)	Tsup.	Tinf.	Tao	Tcomp	Nsp	Yn(cm)	Tsup.	Tinf.	Tao	Tcomp
1	\$\$\$\$\$	0.0	0.0	0.0	0.0	1	100.6	-20.9	-14.7	0.0	0.0
2	\$\$\$\$\$	0.0	0.0	0.0	0.0	2	100.6	-24.2	-13.9	0.0	0.0
3	\$\$\$\$\$	0.0	0.0	0.0	0.0	3	100.6	-13.9	53.9	0.0	0.0
4	\$\$\$\$\$	0.0	0.0	0.0	0.0	4	100.6	53.9	63.2	0.0	0.0

Incrementos de Carga:
1

** CALCULO ELASTICO **

Titulo Seccion: CONS

Analisis SIN FISURACION

Secuencia Incrementos de Carga:

Incremento de Carga 1 :
Axil : -1000.00Tn. C2 C+LOS
Excentricidad: 90-50cm.(respecto a la directriz)
Tipo de Solicitud: CP:tf[2]
Seccion Afectada: TOTAL

TENSIONES (Kg/cm2):

ESTADO INICIAL (To)					ESTADO FINAL (Tinf)						
Nsp	Yn(cm)	Tsup.	Tinf.	Tao	Tcomp	Nsp	Yn(cm)	Tsup.	Tinf.	Tao	Tcomp
1	\$\$\$\$\$	0.0	0.0	0.0	0.0	1	\$\$\$\$\$	-24.3	-23.6	0.0	0.0
2	\$\$\$\$\$	0.0	0.0	0.0	0.0	2	\$\$\$\$\$	-38.9	-37.9	0.0	0.0
3	\$\$\$\$\$	0.0	0.0	0.0	0.0	3	\$\$\$\$\$	-37.9	-31.0	0.0	0.0
4	\$\$\$\$\$	0.0	0.0	0.0	0.0	4	\$\$\$\$\$	-31.0	-30.1	0.0	0.0

Incrementos de Carga:
1

5) Comprobación de fisuras

B) COMPROBACIÓN DE FISURACIÓN

A continuación se comprueba fisuración, para ello se analizan las siguientes fibras:

- Fibra superior de cegón: En fases constructivas se produce tracción en esta fibra, que a $t = \infty$ desaparecen por completo. En el presente apartado se comprueba la apertura de fisura en la fibra superior de cegón.
- Fibra inferior de cegón a $t = \infty$. Esta sección en frentes tiene tracciones menores que f_{ctm} siendo:

$$f_{ctm} = 0.3 \sqrt[3]{60^2} = 45.98 \text{ kg/cm}^2$$

No obstante se comprueba la sección en inferiores para saber a qué abertura de fisura se llega.

En sus permanentes a tiempo infinito aparecen pequeñas tracciones de intorno a 7 kg/cm^2 debidas a considerar en la

hipótesis de variaciones permanentes el 20% del tren.
Tanto el actual tonelaje de la IAPF como en el
Eurocódigo 1, no es necesario considerar el tren en
variaciones permanentes, por esto, dichas tensiones son admisibles.

- Fibra superior de losa: en frentes las tensiones son
siempre menores de $f_{ctm} = 0.30 \sqrt{35^2} \times 10 = 32.1 \text{ kp/cm}^2$

Las fuerzas horizontales debidas al rozamiento de tellones
y fuerza de frenado se estiman (a falta de datos) en
el máximo de la estructura V-2 de Santa Oliva que es de
200 tn/capón.

Dicha fuerza produce tensiones adicionales a las indicadas
en los listados de combinaciones. A continuación se justifica

razonablemente que no son condicionantes en ninguna de
las fibras antes consideradas.

Así, la fibra de 200tn supone a infinitamente me
tensión de:

$$\Delta \sigma = 200 / 3853 = 50 \text{ tn/m}^2 \text{ que es totalmente admisible.}$$

En la combinación de frentes se tiene:

- Para la fibra inferior de capón (centro de vano) mas
tensiones de valor:

$$\sigma_{(tracción)} = 35.5 + 0.6 \times 5 = 38.5 \text{ kp/cm}^2 < f_{ctm} = 40.7 \text{ kp/cm}^2 \text{ (HP-60)}$$

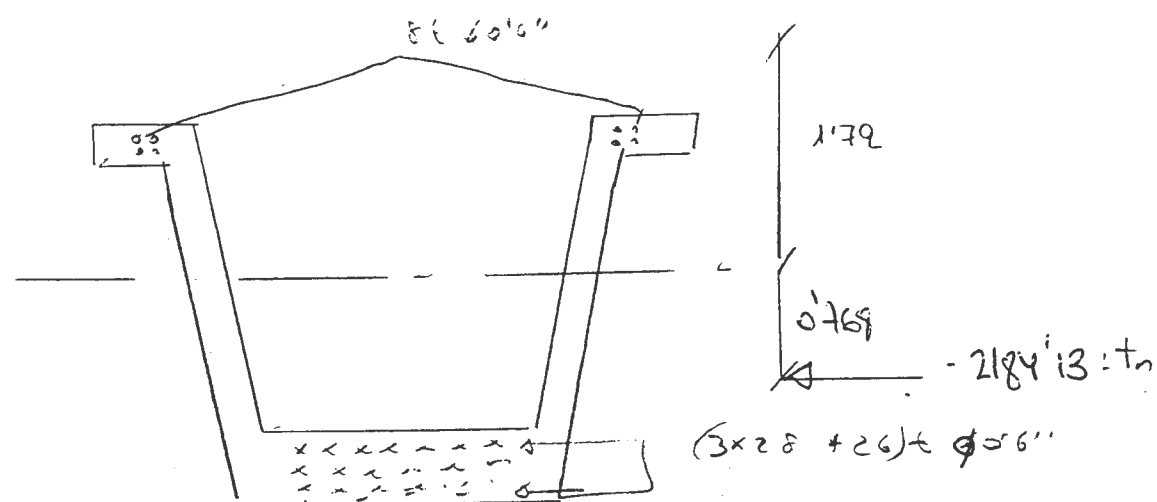
- Para la fibra superior de pila (losa)

$$\sigma_{(tracción)} = 24.3 + 0.6 \times 5 = 30.3 < f_{ctm} = 32.1 \text{ kp/cm}^2 \text{ (HP-35)}$$

0 Fibra superior de cajón (INF1)

Se comprueba la sección cajón con 3

$$\begin{cases} N = -218413 \text{ tn} \\ M = -1679 \text{ mt} \end{cases} \quad \text{Nudo 126}$$



Con 4φ20 en cabeza: (en cada cabeza)

$$S_m = 2c + 0'2 \cdot s + 0'4 \cdot K_1 \cdot \frac{\phi \cdot A_{c\phi\phi\phi\phi}}{A_s} =$$

$$= 2 \cdot 35 \text{ mm} + 0'2 \cdot 200 \text{ mm} + 0'4 \cdot 0'125 \cdot \frac{20 \cdot 174 \cdot 46'5}{1 \cdot 201 + 2 \cdot 314}$$

$$= 70 \text{ mm} + 40 \text{ mm} + 95'92 = 205'92 \text{ mm}$$

$$\epsilon_{su} = \frac{\sigma_s}{E_s} = \frac{8172}{2'1 \cdot 10^4} = 3'89 \cdot 10^{-4}$$

$$W_k = 1'7 \cdot S_m \cdot \epsilon_{su} = 1'7 \cdot 205'92 \cdot 3'89 \cdot 10^{-4} = 0'136 \text{ mm}$$

VÁLIDO.

Proyecto:
Viaducto V-1. Santa Oliva.

Seccion: INF1

MATERIALES

Num.	Fck (Kg/cm2)	Gamma	M.El. (Kg/cm2)	J _{II} 1	J _{II} 2
1 (HO)	300.0	1.50	285770	2.60	1.45
2 (HO)	550.0	1.50	338219	2.60	1.45
3 (RD)	5100.0	1.15	2100000		
4 (PR)	17100.0	1.15	1800000		

SECCIONES PARCIALES

Num	Mat.	B(cm) Num	H(cm) II (mm)	Yo (cm)	Mc	Nsr
1	1	700.0	30.0	0.0	C*	0
2	2	90.0	30.0	30.0	C*	0
3	2	36.0	198.0	60.0	C*	0
4	2	179.0	27.0	258.0	C*	0
5	4	28.0	13.4	280.0	*T	0
6	4	26.0	13.4	275.2	*T	0
7	4	28.0	13.4	270.4	*T	0
8	4	28.0	13.4	265.4	*T	0
9	4	8.0	13.4	45.0	*T	0
10	3	35.0	12.0	5.0	CT	0
11	3	35.0	12.0	19.0	CT	0
12	3	6.0	25.0	265.0	CT	0
13	3	2.0	16.0	35.0	CT	0
14	3	4.0	20.0	35.0	CT	0
15	3	4.0	20.0	55.0	CT	0

SECCIONES INTERMEDIAS

Num. Codigo Componentes

1	CAJ	2	3	4			
2	LOS	1					
3	C+P	2	3	4	5	6	7
		8	9	13	14	15	
4	PS	9					
5	PI	6	7	8	5		

* CONSTANTES ESTATICAS *

S.COMPLETA

Tipo	Acciones	Area (cm2)	Xcg (cm)	Inercia (cm4)
F.pura +	(0)	2994.4	28.50	10354698.6
	(1)	1167.9	53.53	9113071.7
	(2)	1528.4	43.97	9561068.5
F.pura -	(0)	1136.5	244.41	6556204.6
	(1)	564.0	215.53	5648689.0
	(2)	675.6	224.80	5933404.2
C.Simple	(0)	5498.3	91.47	58012199.0
	(1)	1729.1	100.29	20207956.4

	(2)	2409.5	96.66	27078251.5
Simple	(0)	279.3	167.02	4259678.7
	(1)	279.3	167.02	4259678.7
	(2)	279.3	167.02	4259678.7

* Nota: Homogeneizadas a E=2100000 Kp/cm2 ***

**** CALCULO ELASTICO ****

Tftulo Secci|n: INF1

Analisis CON FISURACION

Secuencia Incrementos de Carga:

Incremento de Carga 1 :
 Axil : -2184.13Tn.
 Excentricidad: 256.00cm.(respecto a la directriz)
 Tipo de Solicitacion: SO
 Seccion Afectada: C+P

TENSIONES (Kg/cm2):

ESTADO INICIAL (To)						ESTADO FINAL (Tinf)					
Nsp	Yn(cm)	Tsup.	Tinf.	Tao	Tcomp	Nsp	Yn(cm)	Tsup.	Tinf.	Tao	Tcomp
1	\$\$\$\$\$	0.0	0.0	0.0	0.0	1	\$\$\$\$\$	0.0	0.0	0.0	0.0
2	111.7	0.0	0.0	0.0	0.0	2	\$\$\$\$\$	0.0	0.0	0.0	0.0
3	111.7	0.0	-250.8	0.0	0.0	3	\$\$\$\$\$	0.0	0.0	0.0	0.0
4	111.7	-250.8	-297.1	0.0	0.0	4	\$\$\$\$\$	0.0	0.0	0.0	0.0
5	111.7	-1535.8	-1547.9	0.0	1547.9	5	\$\$\$\$\$	0.0	0.0	0.0	0.0
6	111.7	-1491.9	-1504.1	0.0	1504.1	6	\$\$\$\$\$	0.0	0.0	0.0	0.0
7	111.7	-1448.1	-1460.3	0.0	1460.3	7	\$\$\$\$\$	0.0	0.0	0.0	0.0
8	111.7	-1402.5	-1414.7	0.0	1414.7	8	\$\$\$\$\$	0.0	0.0	0.0	0.0
9	111.7	609.1	597.0	0.0	609.1	9	\$\$\$\$\$	0.0	0.0	0.0	0.0
10	\$\$\$\$\$	0.0	0.0	0.0	0.0	10	\$\$\$\$\$	0.0	0.0	0.0	0.0
11	\$\$\$\$\$	0.0	0.0	0.0	0.0	11	\$\$\$\$\$	0.0	0.0	0.0	0.0
12	\$\$\$\$\$	0.0	0.0	0.0	0.0	12	\$\$\$\$\$	0.0	0.0	0.0	0.0
13	111.7	817.2	800.1	0.0	817.2	13	\$\$\$\$\$	0.0	0.0	0.0	0.0
14	111.7	817.2	795.9	0.0	817.2	14	\$\$\$\$\$	0.0	0.0	0.0	0.0
15	111.7	604.2	582.9	0.0	604.2	15	\$\$\$\$\$	0.0	0.0	0.0	0.0

Incrementos de Carga:

1

0 Fibras sueltas de Cera (P/L)

Nudo 10123 → Nd = -2367'69 tn
Infrecuentes a to Nd = -4541'27 tn

48 kg/cm² fuerza
Pcbm = 32'2 kg/cm² (AP-35)

Car 620 a 0'10 y 105 ton.

Ts = 693 kg/cm²

$$S_m = 2 \cdot 55 + 0'2 \cdot 100 \text{ mm} + 0'2 \cdot 0'25 \frac{7'5 \cdot 10}{8'12} \cdot 20 =$$

$$= 110 + 20 + 48 = 178 \text{ mm}$$

$$\varepsilon_s = \frac{683}{2'110^6} = 3'25 \cdot 10^{-4}$$

$$W_k = 178 \cdot 325 \cdot 10^{-4} \cdot 1'7 = 0'098 \text{ mm} < 0'2 \text{ mm}$$

En INFRECVENTES válido

Proyecto:
Viaducto V-1. Santa Oliva.

Seccion: PIL

MATERIALES

Num.	Fck (Kg/cm²)	Gamma	M.El. (Kg/cm²)	J _{π1}	J _{π2}
1(HO)	350.0	1.50	285770	2.60	1.45
2(HO)	550.0	1.50	338219	2.60	1.45
3(RD)	5100.0	1.15	2100000		
4(PR)	17100.0	1.15	1800000		

SECCIONES PARCIALES

Num	Mat.	B (cm)	H (cm)	Yo (cm)	Mc	Nsr
		Num	η (mm)			
1	1	700.0	30.0	0.0	C*	0
2	2	90.0	30.0	30.0	C*	0
3	2	36.0	198.0	60.0	C*	0
4	2	179.0	27.0	258.0	C*	0
5	4	28.0	13.4	280.0	*T	0
6	4	0.0	0.0	0.0	*T	0
7	4	0.0	0.0	0.0	*T	0
8	4	0.0	0.0	0.0	*T	0
9	4	8.0	13.4	45.0	*T	0
10	3	70.0	20.0	5.0	CT	0
11	3	70.0	20.0	19.0	CT	0
12	4	105.0	13.4	18.0	*T	0
13	1	130.0	25.0	233.0	C*	0

SECCIONES INTERMEDIAS

Num.	Codigo	Componentes
1	CAJ	2 3 4
2	LOS	1
3	C+P	2 3 4 5 6 7
		8 9
4	PS	9
5	PI	6 7 8 5

* CONSTANTES ESTATICAS *

S.COMPLETA

Tipo	Acciones	Area (cm²)	Xcg (cm)	Inercia (cm⁴)
F.pura +	(0)	1946.2	14.04	2510590.3
	(1)	1148.9	20.41	2402833.1
	(2)	1328.7	18.51	2433160.0
F.pura -	(0)	2214.5	191.63	25179764.2
	(1)	1158.7	127.19	15539101.4
	(2)	1369.3	147.24	18476183.7
C.Simple	(0)	6270.2	92.95	67280546.5
	(1)	2181.6	80.15	21750086.1
	(2)	2919.7	85.11	30083460.2
T.Simple	(0)	609.0	29.45	2278045.8
	(1)	609.0	29.45	2278045.8
	(2)	609.0	29.45	2278045.8

*** Nota: Homogeneizadas a E=2100000 Kp/cm² **

** CALCULO ELASTICO **

Título Sección: PIL

Análisis CON FISURACION

Secuencia Incrementos de Carga:

Incremento de Carga 1 :

Axil : -2367.69Tn.
Excentricidad: 284.00cm.(respecto a la directriz)
Tipo de Sollicitacion: SO
Seccion Afectada: TOTAL

TENSIONES (Kg/cm2):

ESTADO INICIAL (To)						ESTADO FINAL (Tinf)					
Nsp	Yn(cm)	Tsup.	Tinf.	Tao	Tcomp	Nsp	Yn(cm)	Tsup.	Tinf.	Tao	Tcomp
1	87.9	0.0	0.0	0.0	0.0	1	87.9	0.0	0.0	0.0	0.0
2	87.9	0.0	0.0	0.0	0.0	2	87.9	0.0	0.0	0.0	0.0
3	87.9	0.0	-248.6	0.0	0.0	3	87.9	0.0	0.0	0.0	0.0
4	87.9	-248.6	-288.1	0.0	0.0	4	87.9	0.0	0.0	0.0	0.0
5	87.9	-1494.2	-1504.6	0.0	1504.6	5	87.9	0.0	0.0	0.0	0.0
6	87.9	683.6	683.6	0.0	683.6	6	87.9	0.0	0.0	0.0	0.0
7	87.9	683.6	683.6	0.0	683.6	7	87.9	0.0	0.0	0.0	0.0
8	87.9	683.6	683.6	0.0	683.6	8	87.9	0.0	0.0	0.0	0.0
9	87.9	333.6	323.2	0.0	333.6	9	87.9	0.0	0.0	0.0	0.0
10	87.9	752.2	734.1	0.0	752.2	10	87.9	0.0	0.0	0.0	0.0
11	87.9	625.2	607.0	0.0	625.2	11	87.9	0.0	0.0	0.0	0.0
12	87.9	543.6	533.3	0.0	543.6	12	87.9	0.0	0.0	0.0	0.0
13	87.9	-179.2	-210.1	0.0	0.0	13	87.9	0.0	0.0	0.0	0.0

Incrementos de Carga:

1

o Fibra inferior de caja (Nudo 112)

$$N_d = -1605'12 \text{ tn}$$

$$T_{ax} = 79'6 \text{ Kg/cm}^2$$

$$N_d = 4015'8 \text{ tn}$$

$$\text{(Interválate a tinf)}$$

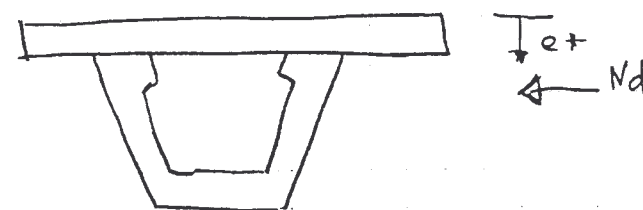
Se estudio con G sección correspondiente a $N_d = -1605'12$ excentricidad que produce a fibra inferior sin fisuración.

$$\text{Tracción } F_{ct,m} = 45'97 \text{ Kg/cm}^2 \Rightarrow \left. \begin{array}{l} N_d = -1605'12 \text{ tn} \\ e = -0'17 \text{ m} \end{array} \right\}$$

o Tracción de 74 Kg/cm²

$$N_d = -1632'91 \text{ tn}$$

$$e = -0'50 \text{ m}$$



Entonces en sección fisurada $\sigma = 0$

$$\left. \begin{array}{l} N_d = -1605'12 \text{ tn} \\ e = -0'17 \text{ m} \end{array} \right\} \Rightarrow \sigma_R = 1017 \text{ Kg/cm}^2$$

$$\left. \begin{array}{l} N_d = -1605'12 \text{ tn} \\ e = -0'50 \text{ m} \end{array} \right\} \Rightarrow \sigma_c = 1974 \text{ Kg/cm}^2$$

$$S_m = Z_c + 0'2 \cdot s + 0'4 \cdot K_1 \cdot \frac{A_{c,el,cc} + A_s}{A_s} =$$

$$= 2 \cdot 36'5 + 0'2 \cdot 48 + 0'4 \cdot 0'25 \cdot 13'35 \cdot \frac{6'75 + 48}{1'40} =$$

$$= 113'49 \text{ mm}$$

$$E_m = \frac{F_c}{E_s} \left(1 - 0'5 \left(\frac{F_{s2}}{s_s} \right)^2 \right) = 8'15 \cdot 10^{-3} \text{ mm}$$

$$W_k = 1'7 \cdot S_m \cdot E_m = 0'157 \text{ mm} \text{ válido en inferior.}$$

Proyecto:
Viaducto V-1. Santa Oliva.

Seccion: SECL

MATERIALES

Num.	Fck (Kg/cm2)	Gamma	M.El. (Kg/cm2)	J _{π1}	J _{π2}
1(HO)	300.0	1.50	285770	2.60	1.45
2(HO)	550.0	1.50	338219	2.60	1.45
3(RD)	5100.0	1.15	2100000		
4(PR)	17100.0	1.15	1800000		

SECCIONES PARCIALES

Num	Mat.	B (cm)	H (cm)	Yo (cm)	Mc	Nsr
		Num	π (mm)			
1	1	700.0	30.0	0.0	C*	0
2	2	90.0	30.0	30.0	C*	0
3	2	36.0	198.0	60.0	C*	0
4	2	179.0	27.0	258.0	C*	0
5	4	28.0	13.4	280.0	*T	0
6	4	26.0	13.4	275.2	*T	0
7	4	28.0	13.4	270.4	*T	0
8	4	28.0	13.4	265.4	*T	0
9	4	8.0	13.4	45.0	*T	0
10	3	35.0	12.0	5.0	CT	0
11	3	35.0	12.0	19.0	CT	0
12	3	6.0	25.0	265.0	CT	0
13	3	14.0	16.0	260.0	CT	0

SECCIONES INTERMEDIAS

Num.	Codigo	Componentes
1	CAJ	2 3 4
2	LOS	1
3	C+P	2 3 4 5 6 7
		8 9
4	PS	9
5	PI	6 7 8 5

* CONSTANTES ESTATICAS *

S.COMPLETA

Tipo	Acciones	Area (cm2)	Xcg (cm)	Inercia (cm4)
F.pura +	(0)	3142.9	30.47	11851171.7
	(1)	1187.7	58.71	10285479.4
	(2)	1550.8	47.93	10857433.0
F.pura -	(0)	1102.9	250.03	5361693.2
	(1)	544.8	226.83	4781263.6
	(2)	652.3	234.25	4961378.1
C.Simple	(0)	5497.3	92.59	58745452.5
	(1)	1728.1	103.84	20818022.1
	(2)	2408.5	99.21	27739096.3
T.Simple	(0)	278.3	189.33	3928906.3
	(1)	278.3	189.33	3928906.3
	(2)	278.3	189.33	3928906.3

*** Nota: Homogeneizadas a E=2100000 Kp/cm2 *

**** CALCULO ELASTICO ****

Título Sección: SEC1

Análisis SIN FISURACION

Secuencia Incrementos de Carga:

Incremento de Carga 1 :
Axil : -1605.12Tn.
Excentricidad: -17.00cm.(respecto a la directriz)
Tipo de Solicitacion: SO
Sección Afectada: TOTAL

TENSIONES (Kg/cm2):

ESTADO INICIAL (To)						ESTADO FINAL (Tinf)					
Nsp	Yn(cm)	Tsup.	Tinf.	Tao	Tcomp	Nsp	Yn(cm)	Tsup.	Tinf.	Tao	Tcomp
1	190.1	-77.5	-65.2	0.0	0.0	1	\$\$\$\$\$\$	0.0	0.0	0.0	0.0
2	190.1	-77.2	-62.7	0.0	0.0	2	\$\$\$\$\$\$	0.0	0.0	0.0	0.0
3	190.1	-62.7	32.7	0.0	0.0	3	\$\$\$\$\$\$	0.0	0.0	0.0	0.0
4	190.1	32.7	45.8	0.0	0.0	4	\$\$\$\$\$\$	0.0	0.0	0.0	0.0
5	190.1	230.7	234.2	0.0	234.2	5	\$\$\$\$\$\$	0.0	0.0	0.0	0.0
6	190.1	218.4	221.8	0.0	221.8	6	\$\$\$\$\$\$	0.0	0.0	0.0	0.0
7	190.1	206.1	209.5	0.0	209.5	7	\$\$\$\$\$\$	0.0	0.0	0.0	0.0
8	190.1	193.3	196.7	0.0	196.7	8	\$\$\$\$\$\$	0.0	0.0	0.0	0.0
9	190.1	-372.4	-369.0	0.0	372.4	9	\$\$\$\$\$\$	0.0	0.0	0.0	0.0
10	190.1	-554.3	-550.7	0.0	554.3	10	\$\$\$\$\$\$	0.0	0.0	0.0	0.0
11	190.1	-512.3	-508.7	0.0	512.3	11	\$\$\$\$\$\$	0.0	0.0	0.0	0.0
12	190.1	224.3	231.8	0.0	231.8	12	\$\$\$\$\$\$	0.0	0.0	0.0	0.0
13	190.1	209.3	214.1	0.0	214.1	13	\$\$\$\$\$\$	0.0	0.0	0.0	0.0

Incrementos de Carga:
1

**** CALCULO ELASTICO ****

Título Sección: SEC1

Análisis SIN FISURACION

Secuencia Incrementos de Carga:

Incremento de Carga 1 :
Axil : -1605.12Tn.
Excentricidad: -50.00cm.(respecto a la directriz)
Tipo de Solicitacion: SO
Sección Afectada: TOTAL

TENSIONES (Kg/cm2):

ESTADO INICIAL (To)						ESTADO FINAL (Tinf)					
Nsp	Yn(cm)	Tsup.	Tinf.	Tao	Tcomp	Nsp	Yn(cm)	Tsup.	Tinf.	Tao	Tcomp
1	167.5	-88.8	-72.9	0.0	0.0	1	\$\$\$\$\$	0.0	0.0	0.0	0.0
2	167.5	-86.3	-67.5	0.0	0.0	2	\$\$\$\$\$	0.0	0.0	0.0	0.0
3	167.5	-67.5	56.8	0.0	0.0	3	\$\$\$\$\$	0.0	0.0	0.0	0.0
4	167.5	56.8	73.7	0.0	0.0	4	\$\$\$\$\$	0.0	0.0	0.0	0.0
5	167.5	375.6	380.0	0.0	380.0	5	\$\$\$\$\$	0.0	0.0	0.0	0.0
6	167.5	359.5	364.0	0.0	364.0	6	\$\$\$\$\$	0.0	0.0	0.0	0.0
7	167.5	343.5	348.0	0.0	348.0	7	\$\$\$\$\$	0.0	0.0	0.0	0.0
8	167.5	326.8	331.3	0.0	331.3	8	\$\$\$\$\$	0.0	0.0	0.0	0.0
9	167.5	-409.2	-404.7	0.0	409.2	9	\$\$\$\$\$	0.0	0.0	0.0	0.0
10	167.5	-633.2	-628.6	0.0	633.2	10	\$\$\$\$\$	0.0	0.0	0.0	0.0
11	167.5	-578.7	-574.0	0.0	578.7	11	\$\$\$\$\$	0.0	0.0	0.0	0.0
12	167.5	379.7	389.5	0.0	389.5	12	\$\$\$\$\$	0.0	0.0	0.0	0.0
13	167.5	360.3	366.5	0.0	366.5	13	\$\$\$\$\$	0.0	0.0	0.0	0.0

Incrementos de Carga:
1

**** CALCULO ELASTICO ****

Título Sección: SEC1

Análisis CON FISURACION

Secuencia Incrementos de Carga:

Incremento de Carga 1 :
Axil : -1605.12Tn.
Excentricidad: -17.00cm.(respecto a la directriz)
Tipo de Solicitacion: SO
Sección Afectada: TOTAL

TENSIONES (Kg/cm2):

ESTADO INICIAL (To)					ESTADO FINAL (Tinf)						
Nsp	Yn(cm)	Tsup.	Tinf.	Tao	Tcomp	Nsp	Yn(cm)	Tsup.	Tinf.	Tao	Tcomp
1	98.1	-89.5	-62.1	0.0	0.0	1	\$\$\$\$\$	0.0	0.0	0.0	0.0
2	98.1	-73.5	-41.2	0.0	0.0	2	\$\$\$\$\$	0.0	0.0	0.0	0.0
3	98.1	-41.2	0.0	0.0	0.0	3	\$\$\$\$\$	0.0	0.0	0.0	0.0
4	98.1	0.0	0.0	0.0	0.0	4	\$\$\$\$\$	0.0	0.0	0.0	0.0
5	98.1	1044.7	1052.4	0.0	1052.4	5	\$\$\$\$\$	0.0	0.0	0.0	0.0
6	98.1	1017.1	1024.8	0.0	1024.8	6	\$\$\$\$\$	0.0	0.0	0.0	0.0
7	98.1	989.6	997.2	0.0	997.2	7	\$\$\$\$\$	0.0	0.0	0.0	0.0
8	98.1	960.8	968.5	0.0	968.5	8	\$\$\$\$\$	0.0	0.0	0.0	0.0
9	98.1	-305.2	-297.5	0.0	305.2	9	\$\$\$\$\$	0.0	0.0	0.0	0.0
10	98.1	-624.2	-616.1	0.0	624.2	10	\$\$\$\$\$	0.0	0.0	0.0	0.0
11	98.1	-530.3	-522.3	0.0	530.3	11	\$\$\$\$\$	0.0	0.0	0.0	0.0
12	98.1	1118.3	1135.0	0.0	1135.0	12	\$\$\$\$\$	0.0	0.0	0.0	0.0
13	98.1	1084.8	1095.5	0.0	1095.5	13	\$\$\$\$\$	0.0	0.0	0.0	0.0

Incrementos de Carga:
1

**** CALCULO ELASTICO ****

Título Sección: SEC1

Análisis CON FISURACION

Secuencia Incrementos de TAL

TENSIONES (Kg/cm2):

ESTADO INICIAL (To)						ESTADO FINAL (Tinf)					
Nsp	Yn(cm)	Tsup.	Tinf.	Tao	Tcomp	Nsp	Yn(cm)	Tsup.	Tinf.	Tao	Tcomp
1	72.8	-109.4	-64.3	0.0	0.0	1	\$\$\$\$\$	0.0	0.0	0.0	0.0
2	72.8	-76.1	-22.8	0.0	0.0	2	\$\$\$\$\$	0.0	0.0	0.0	0.0
3	72.8	-22.8	0.0	0.0	0.0	3	\$\$\$\$\$	0.0	0.0	0.0	0.0
4	72.8	0.0	0.0	0.0	0.0	4	\$\$\$\$\$	0.0	0.0	0.0	0.0
5	72.8	1962.1	1974.7	0.0	1974.7	5	\$\$\$\$\$	0.0	0.0	0.0	0.0
6	72.8	1916.6	1929.2	0.0	1929.2	6	\$\$\$\$\$	0.0	0.0	0.0	0.0
7	72.8	1871.1	1883.8	0.0	1883.8	7	\$\$\$\$\$	0.0	0.0	0.0	0.0
8	72.8	1823.8	1836.4	0.0	1836.4	8	\$\$\$\$\$	0.0	0.0	0.0	0.0
9	72.8	-263.2	-250.6	0.0	263.2	9	\$\$\$\$\$	0.0	0.0	0.0	0.0
10	72.8	-749.0	-735.7	0.0	749.0	10	\$\$\$\$\$	0.0	0.0	0.0	0.0
11	72.8	-594.3	-581.1	0.0	594.3	11	\$\$\$\$\$	0.0	0.0	0.0	0.0
12	72.8	2123.3	2151.0	0.0	2151.0	12	\$\$\$\$\$	0.0	0.0	0.0	0.0
13	72.8	2068.1	2085.8	0.0	2085.8	13	\$\$\$\$\$	0.0	0.0	0.0	0.0

Incrementos de Carga:
1

c) CONTROL DE DEFORMACIONES

DEPLAZAMIENTOS VERTICALES

A continuación se comprueba que la deflexión del
trazado con suficiente precisión a nivel de: $(\epsilon \pm 1)$

$$L/2100 \quad 30 \leq L \leq 50m \quad 280km/h < V < 350km/h$$

o Centro del vano de 40'00m

$$\begin{cases} \text{IQRINT2} \rightarrow u_y = -1'11 \text{ cm.} \\ \text{DERINT2} \rightarrow u_y = -0'40 \text{ cm.} \end{cases}$$

$$\text{Aten } u = \underbrace{(-1'11)}_{\substack{\text{Para considerar} \\ \text{ten excentricidad} \\ \text{de extrin.}}} \times \underbrace{1'08}_{\substack{\text{COEFICIENTE} \\ \text{dinámico}}} + 1'20 = 1'43 \text{ cm} \leq \frac{4000}{2100} = 1'90 \text{ cm} \times 1'10 = \underline{\underline{OK}}$$

o Centro de vano de 33'53m.

$$\text{DERINT2} = u_y = -0'24$$

$$\text{IQRINT2} = u_y = -0'82 \text{ cm}$$

$$\text{Aten } u = (-0'82) \times 1'08 + 1'20 = 1'06 \leq \frac{3353}{2100} = 1'59 \text{ cm} \times 1'10 = \underline{\underline{OK}}$$

Giro en radianes entre carriles y tablas

Vado 35 $G_+ - G_{+1}$ (radianes.)

$$\text{IQRINT2} = 0'0008 \quad 0'0002 < 3'5 \cdot 10^{-3} \text{ radianes} = \underline{\underline{OK}}$$

CÁLCULO DE DESPLAZAMIENTOS

Hipótesis de cálculo:
IZQINT2.EnvTrenGen.UY-

Envolvente de tren de cargas plano genérico. UY-

[0; 1]IZQINT2.PaseoTren.Nudo1.Pos2.Mx+ + [0; 1]IZQINT2.PaseoTren.Nudo1.Pos3.Mx+ + [0;

Coef. exc:

Nudo	X	Uy (cm)	Gx (Rad)	Gz (Rad)
1	0.0000	0.0000	0.0002	-0.0001
2	2.7400	-0.2289	0.0018	-0.0008
3	5.4800	-0.4374	0.0018	-0.0007
4	8.2200	-0.6095	0.0017	-0.0005
5	10.9600	-0.7343	0.0017	-0.0003
6	13.7000	-0.8050	0.0017	-0.0001
7	16.4400	-0.8191	0.0016	0.0001
8	19.1800	-0.7777	0.0016	0.0003
9	21.9200	-0.6849	0.0016	0.0004
10	24.6600	-0.5499	0.0016	0.0005
11	27.4000	-0.3849	0.0016	0.0006
12	30.4500	-0.1863	0.0016	0.0007
13	33.5000	0.0000	0.0002	0.0000
14	36.8900	-0.2229	0.0014	-0.0007
15	40.2800	-0.4692	0.0014	-0.0007
16	43.6700	-0.6968	0.0013	-0.0006
17	47.0600	-0.8748	0.0013	-0.0004
18	50.4500	-0.9840	0.0013	-0.0002
19	53.8400	-1.0128	0.0013	0.0000
20	57.2300	-0.9582	0.0012	0.0003
21	60.6200	-0.8270	0.0012	0.0005
22	64.0100	-0.6338	0.0012	0.0006
23	67.4000	-0.4019	0.0012	0.0007
24	70.4500	-0.1882	0.0012	0.0007
25	73.5000	0.0000	0.0002	0.0000
26	76.2600	-0.1225	0.0019	-0.0005
27	79.0200	-0.2451	0.0019	-0.0004
28	81.7800	-0.3491	0.0020	-0.0003
29	84.5400	-0.4215	0.0020	-0.0002
30	87.3000	-0.4530	0.0020	0.0000
31	90.0600	-0.4393	0.0020	0.0001
32	92.8200	-0.3805	0.0020	0.0003
33	95.5800	-0.2806	0.0020	0.0004
34	98.3400	-0.1492	0.0021	0.0005
35	101.1000	0.0000	0.0003	0.0000
1001	0.0000	-0.1908	0.0025	-0.0006
1002	2.7400	-0.3708	0.0021	-0.0007
1003	5.4800	-0.5713	0.0019	-0.0007
1004	8.2200	-0.7400	0.0017	-0.0005
1005	10.9600	-0.8629	0.0017	-0.0003
1006	13.7000	-0.9314	0.0017	-0.0001
1007	16.4400	-0.9445	0.0017	0.0001
1008	19.1800	-0.9019	0.0017	0.0003
1009	21.9200	-0.8088	0.0017	0.0004
1010	24.6600	-0.6739	0.0017	0.0005
1011	27.4000	-0.5091	0.0018	0.0006
1012	30.4500	-0.3165	0.0018	0.0006
1013	33.5000	-0.1959	0.0026	0.0000
1014	36.8900	-0.3422	0.0018	-0.0007
1015	40.2800	-0.5783	0.0016	-0.0007
1016	43.6700	-0.8008	0.0014	-0.0006
1017	47.0600	-0.9750	0.0014	-0.0004
1018	50.4500	-1.0816	0.0013	-0.0002

CÁLCULO DE DESPLAZAMIENTOS

Hipótesis de cálculo:
IZQINT2.EnvTrenGen.UY-

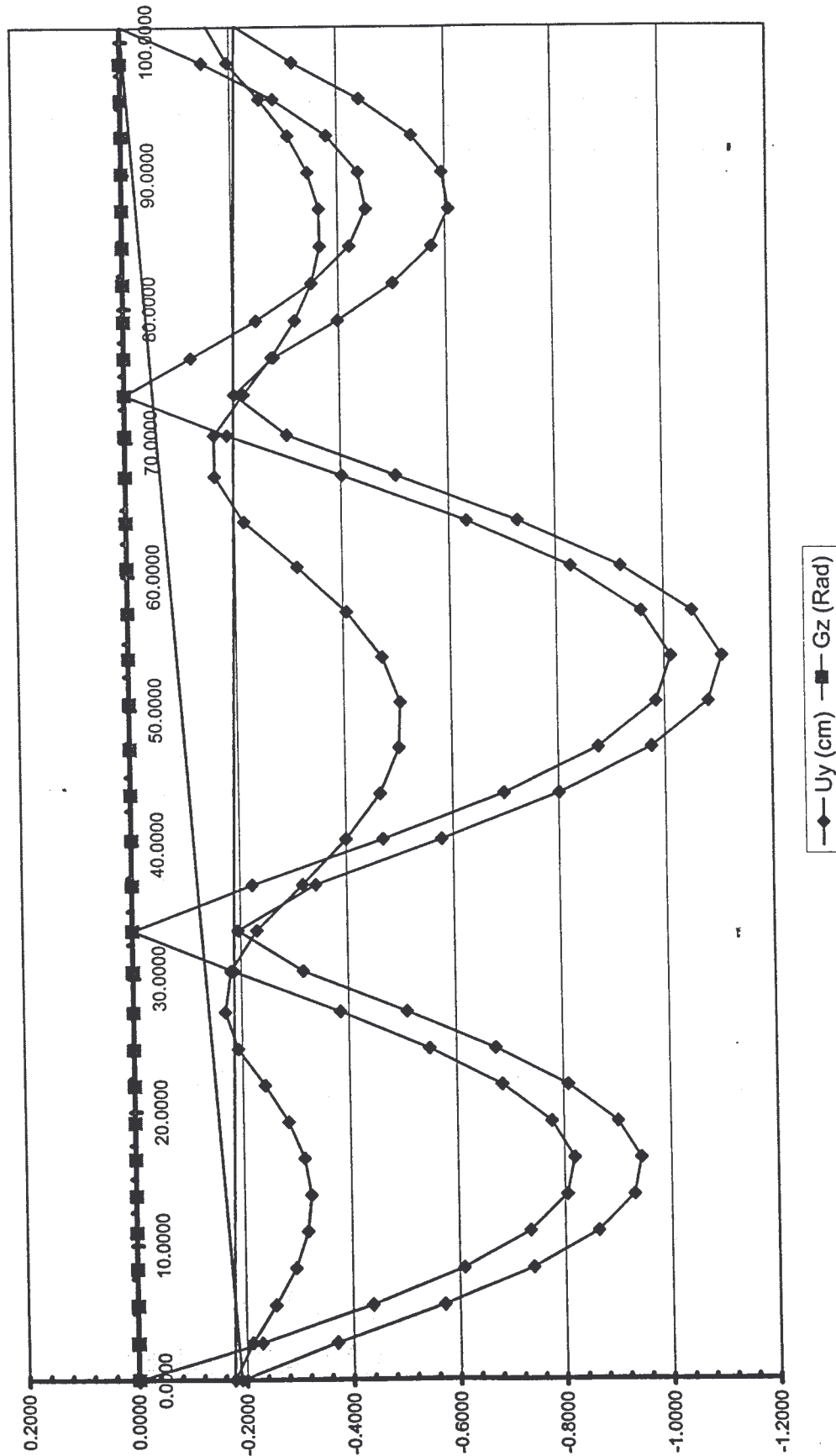
Envolvente de tren de cargas plano genérico. UY-

[0; 1]IZQINT2.PaseoTren.Nudo1.Pos2.Mx+ + [0; 1]IZQINT2.PaseoTren.Nudo1.Pos3.Mx+ + [0;

Coef. exc:

Nudo	X	Uy (cm)	Gx (Rad)	Gz (Rad)
1019	53.8400	-1.1081	0.0013	0.0000
1020	57.2300	-1.0523	0.0013	0.0003
1021	60.6200	-0.9209	0.0013	0.0005
1022	64.0100	-0.7286	0.0013	0.0006
1023	67.4000	-0.5026	0.0015	0.0007
1024	70.4500	-0.3002	0.0018	0.0006
1025	73.5000	-0.2029	0.0027	0.0000
1026	76.2600	-0.2772	0.0022	-0.0004
1027	79.0200	-0.3981	0.0021	-0.0004
1028	81.7800	-0.5015	0.0021	-0.0003
1029	84.5400	-0.5741	0.0021	-0.0002
1030	87.3000	-0.6067	0.0022	0.0000
1031	90.0600	-0.5944	0.0022	0.0001
1032	92.8200	-0.5386	0.0022	0.0003
1033	95.5800	-0.4419	0.0022	0.0004
1034	98.3400	-0.3175	0.0024	0.0004
1035	101.1000	-0.2103	0.0028	0.0003
2001	0.0000	-0.1774	-0.0023	-0.0001
2002	2.7400	-0.2117	-0.0022	-0.0002
2003	5.4800	-0.2567	-0.0021	-0.0001
2004	8.2200	-0.2953	-0.0020	-0.0001
2005	10.9600	-0.3185	-0.0020	-0.0001
2006	13.7000	-0.3253	-0.0020	0.0000
2007	16.4400	-0.3136	-0.0020	0.0001
2008	19.1800	-0.2847	-0.0020	0.0001
2009	21.9200	-0.2420	-0.0019	0.0001
2010	24.6600	-0.1925	-0.0020	0.0001
2011	27.4000	-0.1698	-0.0023	0.0000
2012	30.4500	-0.1810	-0.0022	-0.0001
2013	33.5000	-0.2309	-0.0015	-0.0003
2014	36.8900	-0.3177	-0.0013	-0.0003
2015	40.2800	-0.4003	-0.0014	-0.0002
2016	43.6700	-0.4650	-0.0014	-0.0001
2017	47.0600	-0.5016	-0.0015	-0.0001
2018	50.4500	-0.5049	-0.0016	0.0001
2019	53.8400	-0.4720	-0.0016	0.0002
2020	57.2300	-0.4066	-0.0016	0.0002
2021	60.6200	-0.3161	-0.0017	0.0003
2022	64.0100	-0.2177	-0.0018	0.0003
2023	67.4000	-0.1640	-0.0022	0.0001
2024	70.4500	-0.1635	-0.0017	-0.0001
2025	73.5000	-0.2201	-0.0013	-0.0002
2026	76.2600	-0.2732	-0.0014	-0.0001
2027	79.0200	-0.3178	-0.0014	-0.0001
2028	81.7800	-0.3504	-0.0015	-0.0001
2029	84.5400	-0.3665	-0.0015	0.0000
2030	87.3000	-0.3655	-0.0016	0.0000
2031	90.0600	-0.3449	-0.0016	0.0001
2032	92.8200	-0.3080	-0.0016	0.0001
2033	95.5800	-0.2551	-0.0016	0.0002
2034	98.3400	-0.1961	-0.0019	0.0002
2035	101.1000	-0.1576	-0.0021	0.0001

GRÁFICO DE DESPLAZAMIENTOS



CÁLCULO DE DESPLAZAMIENTOS

Hipótesis de cálculo:

DERINT2.EnvTrenGen.UY-

Envolvente de tren de cargas plano genérico. UY-

[0; 1]DERINT2.PaseoTren.Nudo101.Pos2.Mx- + [0; 1]DERINT2.PaseoTren.Nudo101.Pos3.Mx-

Coef. exc:

Nudo	X	Uy (cm)	Gx (Rad)	Gz (Rad)
1	0.0000	0.0000	0.0002	0.0000
2	2.7400	-0.0654	0.0013	-0.0002
3	5.4800	-0.1259	0.0013	-0.0002
4	8.2200	-0.1762	0.0013	-0.0001
5	10.9600	-0.2128	0.0013	-0.0001
6	13.7000	-0.2342	0.0013	0.0000
7	16.4400	-0.2387	0.0013	0.0000
8	19.1800	-0.2271	0.0012	0.0001
9	21.9200	-0.2007	0.0012	0.0001
10	24.6600	-0.1623	0.0011	0.0001
11	27.4000	-0.1152	0.0011	0.0001
12	30.4500	-0.0576	0.0010	0.0002
13	33.5000	0.0000	0.0002	0.0000
14	36.8900	-0.0977	0.0013	-0.0003
15	40.2800	-0.1994	0.0014	-0.0003
16	43.6700	-0.2891	0.0014	-0.0002
17	47.0600	-0.3542	0.0014	-0.0002
18	50.4500	-0.3882	0.0013	-0.0001
19	53.8400	-0.3883	0.0013	0.0001
20	57.2300	-0.3562	0.0012	0.0001
21	60.6200	-0.2979	0.0011	0.0002
22	64.0100	-0.2212	0.0010	0.0003
23	67.4000	-0.1368	0.0009	0.0003
24	70.4500	-0.0636	0.0008	0.0002
25	73.5000	0.0000	0.0002	0.0000
26	76.2600	-0.0528	0.0016	-0.0002
27	79.0200	-0.1029	0.0016	-0.0002
28	81.7800	-0.1439	0.0017	-0.0001
29	84.5400	-0.1702	0.0017	-0.0001
30	87.3000	-0.1795	0.0018	0.0000
31	90.0600	-0.1708	0.0018	0.0001
32	92.8200	-0.1450	0.0018	0.0001
33	95.5800	-0.1049	0.0018	0.0002
34	98.3400	-0.0552	0.0018	0.0002
35	101.1000	0.0000	0.0002	0.0000
1001	0.0000	-0.1364	0.0018	-0.0001
1002	2.7400	-0.1706	0.0015	-0.0002
1003	5.4800	-0.2269	0.0014	-0.0002
1004	8.2200	-0.2755	0.0014	-0.0001
1005	10.9600	-0.3104	0.0014	-0.0001
1006	13.7000	-0.3295	0.0013	0.0000
1007	16.4400	-0.3316	0.0013	0.0000
1008	19.1800	-0.3172	0.0012	0.0001
1009	21.9200	-0.2876	0.0012	0.0001
1010	24.6600	-0.2469	0.0012	0.0001
1011	27.4000	-0.1984	0.0012	0.0001
1012	30.4500	-0.1431	0.0013	0.0002
1013	33.5000	-0.1443	0.0019	-0.0001
1014	36.8900	-0.2049	0.0015	-0.0003
1015	40.2800	-0.3063	0.0015	-0.0003
1016	43.6700	-0.3964	0.0015	-0.0002
1017	47.0600	-0.4603	0.0014	-0.0002
1018	50.4500	-0.4913	0.0014	-0.0001

CÁLCULO DE DESPLAZAMIENTOS

Hipótesis de cálculo:
DERINT2.EnvTrenGen.UY-

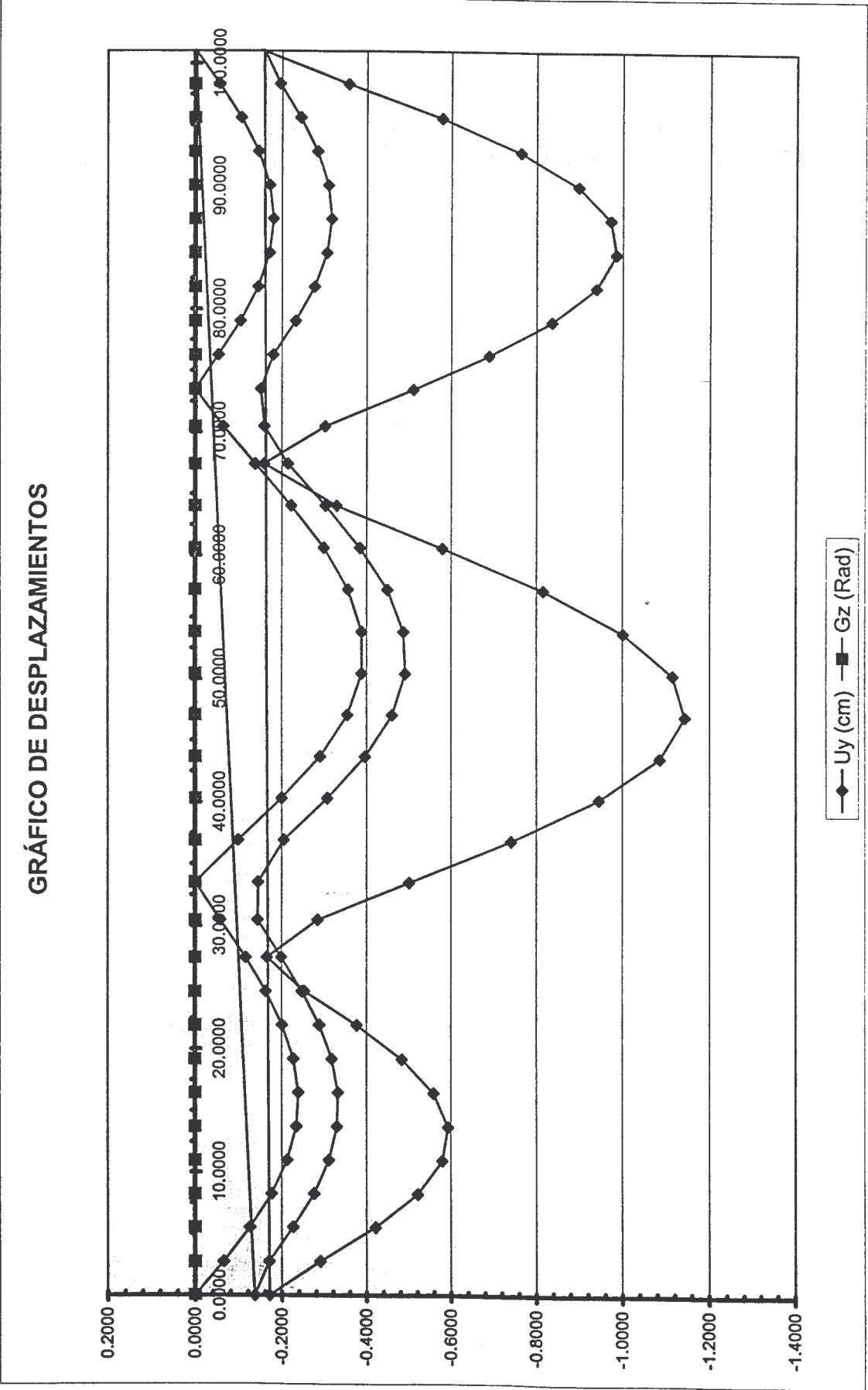
Envolvente de tren de cargas plano genérico. UY-

[0; 1]DERINT2.PaseoTren.Nudo101.Pos2.Mx- + [0; 1]DERINT2.PaseoTren.Nudo101.Pos3.Mx-

Coef. exc:

Nudo	X	Uy (cm)	Gx (Rad)	Gz (Rad)
1019	53.8400	-0.4870	0.0014	0.0001
1020	57.2300	-0.4495	0.0013	0.0001
1021	60.6200	-0.3846	0.0012	0.0002
1022	64.0100	-0.3016	0.0011	0.0003
1023	67.4000	-0.2138	0.0012	0.0003
1024	70.4500	-0.1583	0.0018	0.0001
1025	73.5000	-0.1503	0.0020	0.0000
1026	76.2600	-0.1793	0.0017	-0.0002
1027	79.0200	-0.2319	0.0017	-0.0002
1028	81.7800	-0.2758	0.0018	-0.0001
1029	84.5400	-0.3047	0.0018	-0.0001
1030	87.3000	-0.3160	0.0018	0.0000
1031	90.0600	-0.3083	0.0018	0.0001
1032	92.8200	-0.2831	0.0019	0.0001
1033	95.5800	-0.2436	0.0019	0.0002
1034	98.3400	-0.1955	0.0020	0.0002
1035	101.1000	-0.1577	0.0021	0.0001
2001	0.0000	-0.1713	-0.0023	-0.0003
2002	2.7400	-0.2901	-0.0019	-0.0005
2003	5.4800	-0.4212	-0.0018	-0.0004
2004	8.2200	-0.5213	-0.0018	-0.0003
2005	10.9600	-0.5797	-0.0017	-0.0001
2006	13.7000	-0.5928	-0.0017	0.0000
2007	16.4400	-0.5590	-0.0017	0.0002
2008	19.1800	-0.4837	-0.0017	0.0003
2009	21.9200	-0.3766	-0.0018	0.0004
2010	24.6600	-0.2521	-0.0017	0.0004
2011	27.4000	-0.1651	-0.0022	0.0000
2012	30.4500	-0.2832	-0.0013	-0.0007
2013	33.5000	-0.5002	-0.0012	-0.0007
2014	36.8900	-0.7414	-0.0010	-0.0007
2015	40.2800	-0.9451	-0.0009	-0.0005
2016	43.6700	-1.0845	-0.0009	-0.0003
2017	47.0600	-1.1429	-0.0010	0.0000
2018	50.4500	-1.1145	-0.0010	0.0002
2019	53.8400	-1.0010	-0.0010	0.0005
2020	57.2300	-0.8162	-0.0011	0.0006
2021	60.6200	-0.5793	-0.0011	0.0008
2022	64.0100	-0.3279	-0.0014	0.0007
2023	67.4000	-0.1578	-0.0021	0.0000
2024	70.4500	-0.3006	-0.0014	-0.0007
2025	73.5000	-0.5100	-0.0013	-0.0007
2026	76.2600	-0.6892	-0.0013	-0.0006
2027	79.0200	-0.8366	-0.0012	-0.0004
2028	81.7800	-0.9385	-0.0012	-0.0003
2029	84.5400	-0.9852	-0.0013	-0.0001
2030	87.3000	-0.9723	-0.0013	0.0002
2031	90.0600	-0.8974	-0.0013	0.0004
2032	92.8200	-0.7635	-0.0013	0.0006
2033	95.5800	-0.5780	-0.0014	0.0007
2034	98.3400	-0.3565	-0.0015	0.0008
2035	101.1000	-0.1510	-0.0020	0.0007

GRÁFICO DE DESPLAZAMIENTOS



CÁLCULO DE DESPLAZAMIENTOS

Hipótesis de cálculo:

IZQINT2.EnvTrenGen.GZ+

Envolvente de tren de cargas plano genérico. GZ+

[0; 1]IZQINT2.PaseoTren.Nudo1.Pos2.Mx+ + [0; 1]IZQINT2.PaseoTren.Nudo1.Pos3.Mx+ + [0;

Coef. exc:

Nudo	X	Uy (cm)	Gx (Rad)	Gz (Rad)
1	0.0000	0.0000	0.0011	0.0002
2	2.7400	0.0575	0.0011	0.0002
3	5.4800	0.1132	0.0011	0.0002
4	8.2200	0.1659	0.0011	0.0002
5	10.9600	0.2139	0.0011	0.0002
6	13.7000	0.1483	0.0012	0.0001
7	16.4400	-0.1835	0.0013	0.0002
8	19.1800	-0.5966	0.0009	0.0003
9	21.9200	-0.6114	0.0011	0.0004
10	24.6600	-0.5080	0.0011	0.0005
11	27.4000	-0.3514	0.0011	0.0006
12	30.4500	-0.1804	0.0014	0.0007
13	33.5000	0.0000	0.0014	0.0005
14	36.8900	0.1544	0.0014	0.0004
15	40.2800	0.2668	0.0015	0.0003
16	43.6700	0.3053	0.0013	0.0002
17	47.0600	0.1019	0.0008	0.0001
18	50.4500	-0.0778	0.0010	0.0001
19	53.8400	-0.3796	0.0011	0.0002
20	57.2300	-0.7709	0.0009	0.0003
21	60.6200	-0.7788	0.0010	0.0005
22	64.0100	-0.6173	0.0010	0.0006
23	67.4000	-0.3945	0.0010	0.0007
24	70.4500	-0.1869	0.0011	0.0007
25	73.5000	0.0000	0.0011	0.0005
26	76.2600	0.1198	0.0011	0.0004
27	79.0200	0.1998	0.0011	0.0002
28	81.7800	0.2110	0.0009	0.0001
29	84.5400	-0.0131	0.0003	0.0000
30	87.3000	-0.1150	0.0006	0.0000
31	90.0600	-0.3326	0.0012	0.0001
32	92.8200	-0.3456	0.0015	0.0003
33	95.5800	-0.2555	0.0015	0.0004
34	98.3400	-0.1391	0.0017	0.0005
35	101.1000	0.0000	0.0017	0.0005
1001	0.0000	-0.0797	0.0011	0.0002
1002	2.7400	-0.0225	0.0011	0.0002
1003	5.4800	0.0326	0.0011	0.0002
1004	8.2200	0.0843	0.0011	0.0002
1005	10.9600	0.1307	0.0011	0.0002
1006	13.7000	0.0596	0.0012	0.0001
1007	16.4400	-0.2816	0.0013	0.0002
1008	19.1800	-0.6664	0.0009	0.0003
1009	21.9200	-0.6910	0.0011	0.0004
1010	24.6600	-0.5934	0.0011	0.0005
1011	27.4000	-0.4352	0.0011	0.0006
1012	30.4500	-0.2833	0.0014	0.0007
1013	33.5000	-0.1063	0.0014	0.0005
1014	36.8900	0.0495	0.0014	0.0004
1015	40.2800	0.1562	0.0015	0.0003
1016	43.6700	0.2092	0.0013	0.0002
1017	47.0600	0.0446	0.0008	0.0001
1018	50.4500	-0.1543	0.0010	0.0001

CÁLCULO DE DESPLAZAMIENTOS

Hipótesis de cálculo:

IZQINT2.EnvTrenGen.GZ+

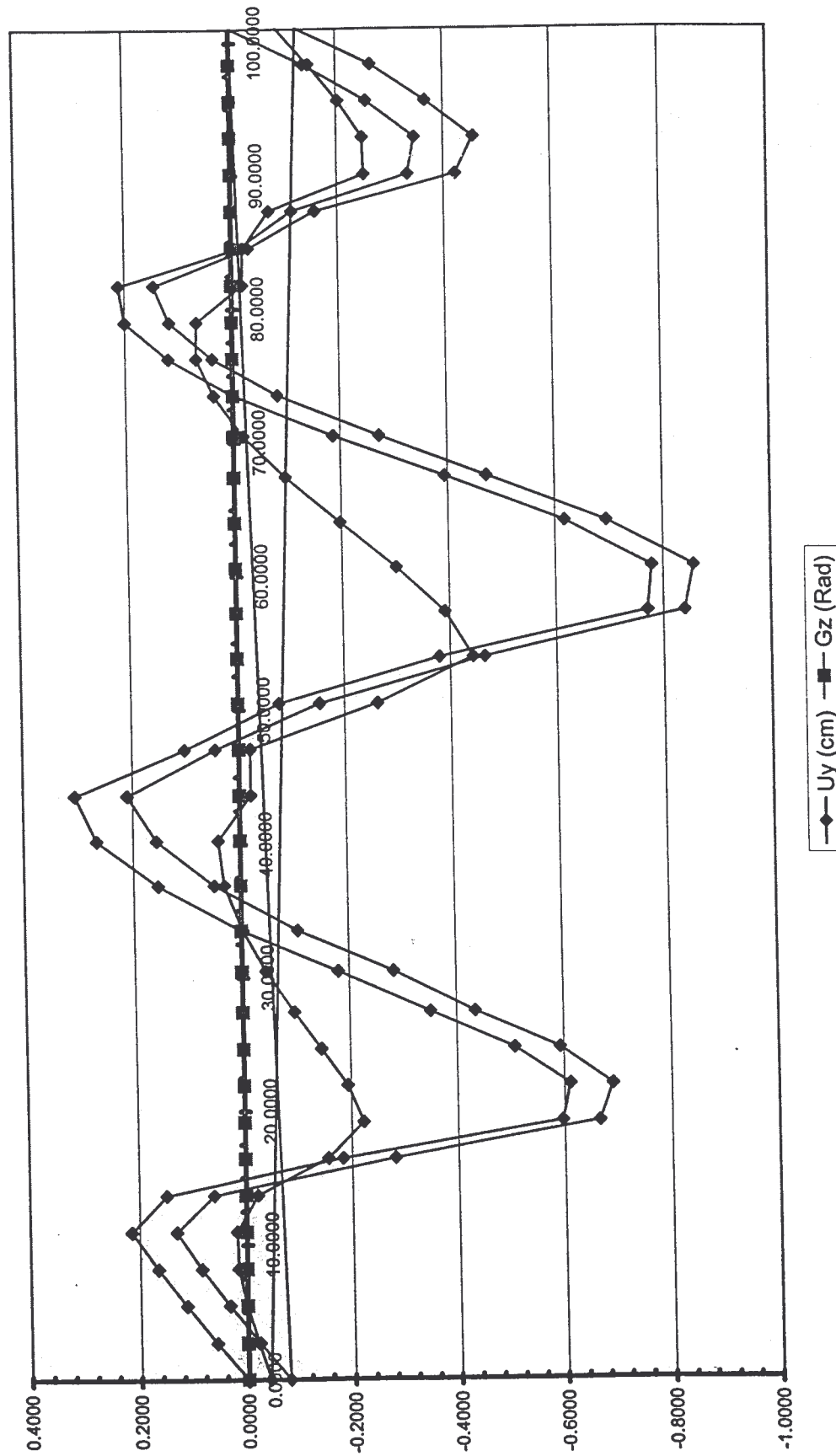
Envolvente de tren de cargas plano genérico. GZ+

[0; 1]IZQINT2.PaseoTren.Nudo1.Pos2.Mx+ + [0; 1]IZQINT2.PaseoTren.Nudo1.Pos3.Mx+ + [0;

Coef. exc:

Nudo	X	Uy (cm)	Gx (Rad)	Gz (Rad)
1019	53.8400	-0.4649	0.0011	0.0002
1020	57.2300	-0.8394	0.0009	0.0003
1021	60.6200	-0.8563	0.0010	0.0005
1022	64.0100	-0.6954	0.0010	0.0006
1023	67.4000	-0.4724	0.0010	0.0007
1024	70.4500	-0.2726	0.0011	0.0007
1025	73.5000	-0.0845	0.0011	0.0005
1026	76.2600	0.0376	0.0011	0.0004
1027	79.0200	0.1175	0.0011	0.0002
1028	81.7800	0.1461	0.0009	0.0001
1029	84.5400	-0.0318	0.0003	0.0000
1030	87.3000	-0.1583	0.0006	0.0000
1031	90.0600	-0.4221	0.0012	0.0001
1032	92.8200	-0.4564	0.0015	0.0003
1033	95.5800	-0.3666	0.0015	0.0004
1034	98.3400	-0.2645	0.0017	0.0005
1035	101.1000	-0.1258	0.0017	0.0005
2001	0.0000	-0.0423	-0.0005	0.0001
2002	2.7400	-0.0204	-0.0005	0.0001
2003	5.4800	0.0010	-0.0005	0.0001
2004	8.2200	0.0157	-0.0005	0.0001
2005	10.9600	0.0175	-0.0004	0.0001
2006	13.7000	-0.0223	-0.0002	0.0000
2007	16.4400	-0.1565	-0.0009	0.0001
2008	19.1800	-0.2230	-0.0014	0.0001
2009	21.9200	-0.1943	-0.0014	0.0001
2010	24.6600	-0.1467	-0.0014	0.0002
2011	27.4000	-0.0976	-0.0013	0.0002
2012	30.4500	-0.0449	-0.0011	0.0001
2013	33.5000	-0.0030	-0.0010	0.0001
2014	36.8900	0.0308	-0.0009	0.0001
2015	40.2800	0.0408	-0.0007	0.0001
2016	43.6700	-0.0214	-0.0003	0.0000
2017	47.0600	-0.0213	-0.0003	0.0000
2018	50.4500	-0.2619	-0.0008	0.0001
2019	53.8400	-0.4430	-0.0014	0.0002
2020	57.2300	-0.3915	-0.0014	0.0002
2021	60.6200	-0.3010	-0.0014	0.0003
2022	64.0100	-0.1975	-0.0013	0.0003
2023	67.4000	-0.0972	-0.0013	0.0003
2024	70.4500	-0.0184	-0.0011	0.0002
2025	73.5000	0.0360	-0.0010	0.0002
2026	76.2600	0.0679	-0.0010	0.0001
2027	79.0200	0.0666	-0.0007	0.0001
2028	81.7800	-0.0200	-0.0002	0.0000
2029	84.5400	-0.0213	-0.0002	0.0000
2030	87.3000	-0.0710	-0.0004	0.0000
2031	90.0600	-0.2501	-0.0010	0.0001
2032	92.8200	-0.2481	-0.0012	0.0001
2033	95.5800	-0.2029	-0.0012	0.0002
2034	98.3400	-0.1488	-0.0012	0.0002
2035	101.1000	-0.0890	-0.0012	0.0002

GRÁFICO DE DESPLAZAMIENTOS

**CÁLCULO DE DESPLAZAMIENTOS**

Hipótesis de cálculo:

IZQINT2.EnvTrenGen.GZ-

Envolvente de tren de cargas plano genérico. GZ-

[0; 1] IZQINT2.PaseoTren.Nudo1.Pos2.Mx+ + [0; 1] IZQINT2.PaseoTren.Nudo1.Pos3.Mx+ + [0;

Coef. exc:

Nudo	X	Uy (cm)	Gx (Rad)	Gz (Rad)
1	0.0000	0.0000	0.0015	-0.0008
2	2.7400	-0.2211	0.0015	-0.0008
3	5.4800	-0.4170	0.0013	-0.0007
4	8.2200	-0.5811	0.0013	-0.0005
5	10.9600	-0.6689	0.0011	-0.0003
6	13.7000	-0.5313	0.0008	-0.0002
7	16.4400	-0.2471	0.0005	0.0000
8	19.1800	-0.0363	0.0002	0.0000
9	21.9200	0.2360	0.0009	0.0000
10	24.6600	0.2824	0.0012	-0.0001
11	27.4000	0.2345	0.0012	-0.0002
12	30.4500	0.1445	0.0013	-0.0004
13	33.5000	0.0000	0.0013	-0.0006
14	36.8900	-0.2217	0.0013	-0.0007
15	40.2800	-0.4682	0.0013	-0.0007
16	43.6700	-0.6843	0.0012	-0.0006
17	47.0600	-0.8221	0.0011	-0.0004
18	50.4500	-0.6610	0.0011	-0.0003
19	53.8400	-0.1978	0.0011	-0.0002
20	57.2300	0.0735	0.0009	-0.0001
21	60.6200	0.1204	0.0007	-0.0001
22	64.0100	0.2418	0.0014	-0.0002
23	67.4000	0.1959	0.0016	-0.0002
24	70.4500	0.1092	0.0016	-0.0003
25	73.5000	0.0000	0.0016	-0.0004
26	76.2600	-0.1158	0.0016	-0.0005
27	79.0200	-0.2092	0.0013	-0.0004
28	81.7800	-0.3052	0.0014	-0.0003
29	84.5400	-0.3201	0.0012	-0.0002
30	87.3000	0.0124	0.0012	-0.0001
31	90.0600	0.1934	0.0009	-0.0001
32	92.8200	0.1595	0.0010	-0.0002
33	95.5800	0.1144	0.0010	-0.0002
34	98.3400	0.0587	0.0010	-0.0002
35	101.1000	0.0000	0.0010	-0.0002
1001	0.0000	-0.1111	0.0015	-0.0008
1002	2.7400	-0.3313	0.0015	-0.0008
1003	5.4800	-0.5128	0.0013	-0.0007
1004	8.2200	-0.6757	0.0013	-0.0005
1005	10.9600	-0.7527	0.0011	-0.0003
1006	13.7000	-0.5942	0.0008	-0.0002
1007	16.4400	-0.2864	0.0005	0.0000
1008	19.1800	-0.0536	0.0002	0.0000
1009	21.9200	0.1670	0.0009	0.0000
1010	24.6600	0.1908	0.0012	-0.0001
1011	27.4000	0.1416	0.0012	-0.0002
1012	30.4500	0.0467	0.0013	-0.0004
1013	33.5000	-0.0997	0.0013	-0.0006
1014	36.8900	-0.3226	0.0013	-0.0007
1015	40.2800	-0.5672	0.0013	-0.0007
1016	43.6700	-0.7723	0.0012	-0.0006
1017	47.0600	-0.9007	0.0011	-0.0004
1018	50.4500	-0.7412	0.0011	-0.0003

CÁLCULO DE DESPLAZAMIENTOS

Hipótesis de cálculo:

IZQINT2.EnvTrenGen.GZ-

Envolvente de tren de cargas plano genérico. GZ-

[0; 1]IZQINT2.PaseoTren.Nudo1.Pos2.Mx+ + [0; 1]IZQINT2.PaseoTren.Nudo1.Pos3.Mx+ + [0;

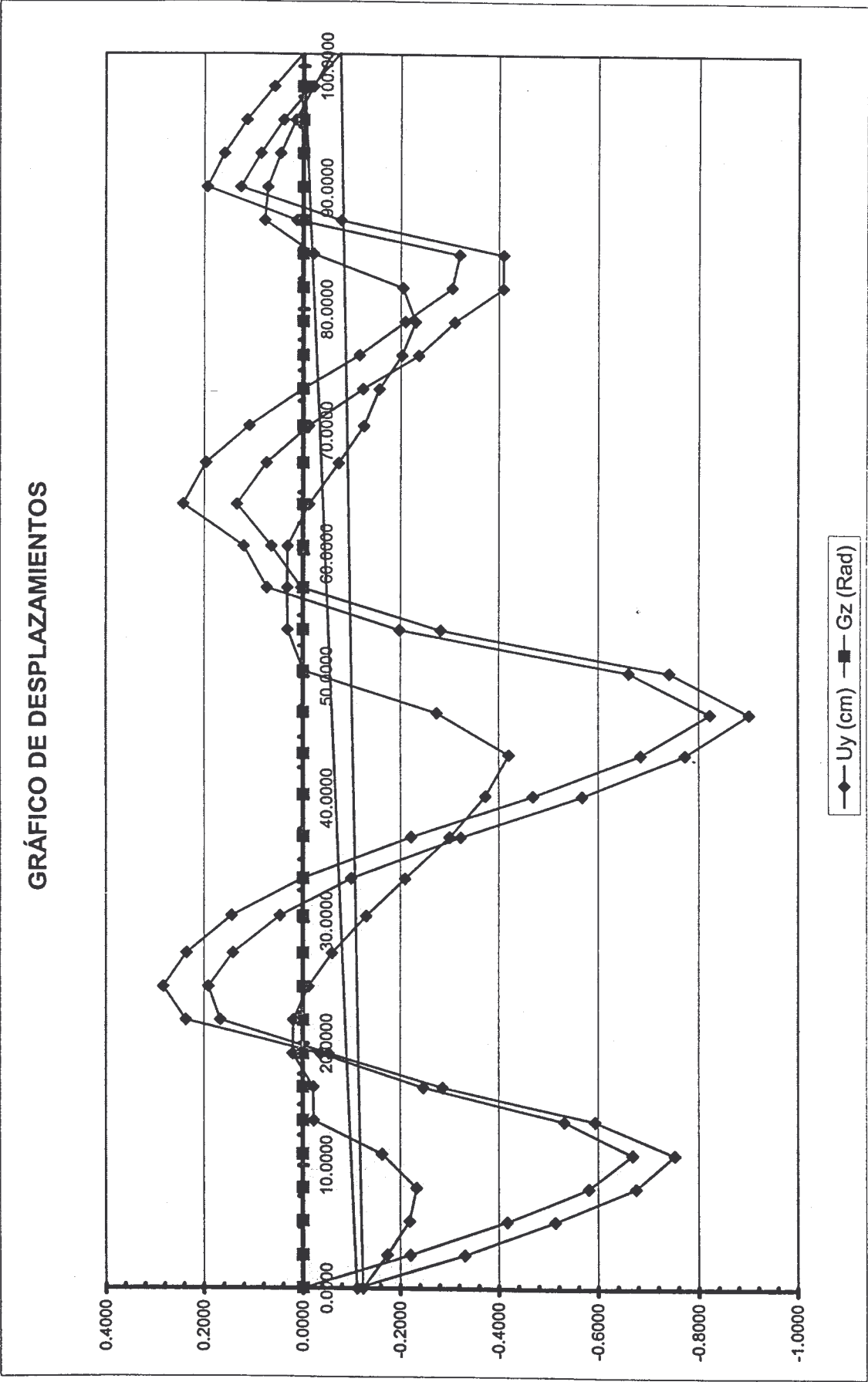
Coef. exc:

Nudo	X	Uy (cm)	Gx (Rad)	Gz (Rad)
1019	53.8400	-0.2823	0.0011	-0.0002
1020	57.2300	0.0029	0.0009	-0.0001
1021	60.6200	0.0642	0.0007	-0.0001
1022	64.0100	0.1341	0.0014	-0.0002
1023	67.4000	0.0744	0.0016	-0.0002
1024	70.4500	-0.0118	0.0016	-0.0003
1025	73.5000	-0.1232	0.0016	-0.0004
1026	76.2600	-0.2373	0.0016	-0.0005
1027	79.0200	-0.3100	0.0013	-0.0004
1028	81.7800	-0.4091	0.0014	-0.0003
1029	84.5400	-0.4096	0.0012	-0.0002
1030	87.3000	-0.0784	0.0012	-0.0001
1031	90.0600	0.1265	0.0009	-0.0001
1032	92.8200	0.0858	0.0010	-0.0002
1033	95.5800	0.0401	0.0010	-0.0002
1034	98.3400	-0.0172	0.0010	-0.0002
1035	101.1000	-0.0759	0.0010	-0.0002
2001	0.0000	-0.1235	-0.0016	-0.0002
2002	2.7400	-0.1735	-0.0016	-0.0002
2003	5.4800	-0.2191	-0.0016	-0.0002
2004	8.2200	-0.2337	-0.0015	-0.0001
2005	10.9600	-0.1630	-0.0010	-0.0001
2006	13.7000	-0.0223	-0.0002	0.0000
2007	16.4400	-0.0213	-0.0002	0.0000
2008	19.1800	0.0203	-0.0005	0.0000
2009	21.9200	0.0191	-0.0006	-0.0001
2010	24.6600	-0.0116	-0.0007	-0.0001
2011	27.4000	-0.0600	-0.0008	-0.0002
2012	30.4500	-0.1306	-0.0009	-0.0002
2013	33.5000	-0.2096	-0.0010	-0.0003
2014	36.8900	-0.3004	-0.0010	-0.0003
2015	40.2800	-0.3730	-0.0011	-0.0002
2016	43.6700	-0.4201	-0.0011	-0.0001
2017	47.0600	-0.2743	-0.0008	-0.0001
2018	50.4500	-0.0010	-0.0004	0.0000
2019	53.8400	0.0314	-0.0005	-0.0001
2020	57.2300	0.0317	-0.0005	-0.0001
2021	60.6200	0.0312	-0.0008	-0.0002
2022	64.0100	-0.0124	-0.0009	-0.0002
2023	67.4000	-0.0732	-0.0010	-0.0002
2024	70.4500	-0.1252	-0.0009	-0.0002
2025	73.5000	-0.1565	-0.0009	-0.0002
2026	76.2600	-0.2027	-0.0010	-0.0001
2027	79.0200	-0.2307	-0.0009	-0.0001
2028	81.7800	-0.2046	-0.0009	-0.0001
2029	84.5400	-0.0213	-0.0002	0.0000
2030	87.3000	0.0778	-0.0007	-0.0001
2031	90.0600	0.0716	-0.0008	-0.0001
2032	92.8200	0.0461	-0.0008	-0.0001
2033	95.5800	0.0152	-0.0008	-0.0001
2034	98.3400	-0.0211	-0.0008	-0.0002
2035	101.1000	-0.0594	-0.0008	-0.0002

08/12/02

Programa DINTEL IDEAM S.A.
IZQINT2.EnvTrenGen.GZ-

Desplazamientos fase 4.xls



2.2.3.6. Comprobación en estado límite último de agotamiento

En este apartado lo primero que se obtienen son los envoltorios de rotura con los siguientes coeficientes de seguridad γ (para flexión o corte, no para fatiga)

	γ_{min}	γ_{max}	
Cargas permanentes	0'9	1'35	
Pretensado	0'95 0'90	1'05 1'10	PRETENSADO PROTENSADO
Redistribuciones	0'9	1'35	
Pasos	0'0	1'5	
TREN	0	1'5 *	
GRADIENTE	0	1'5	

El tren cuando se combine con todo el gradiente se multiplica por 0'8, mientras que cuando el gradiente se combine con todo el tren, dicho gradiente se multiplica por 0'6.

(*) La acción de tren se multiplica a su vez 1'2 (coeficiente de impacto) y 1'08 (para considerar tren excéntrico sobre el eje central)

la comprobación del estado límite último se ha
realizado considerando en estado inicial sin pérdidas defensas
de pretensado ni redistribuciones y en estado final que
incluye dichas pérdidas defensas de pretensado y redistri-
buciones de esfuerzos.

A continuación se indican los listados de combinaciones
y dichas combinaciones (listados de esfuerzos y tensiones en
el programa DINTEL)

8

"C:\PROYECTOS\StaOliva\V1\Dintel\hip_simp", "~cpret1.coe"
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14

"ESFUERZOS"

"ELU.T0.MZ+", " SIN GRADIENTE DOMINANTE"

"MZ"

"+"

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"ESFUERZOS"

"ELU.T0.MZ+", " CON GRADIENTE DOMINANTE"

"MZ"

"+"

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"ESFUERZOS"
"ELU.TO.VY-"," CON GRADIENTE"
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"ELU.TINF.VY+"," CON GRADIENTE"
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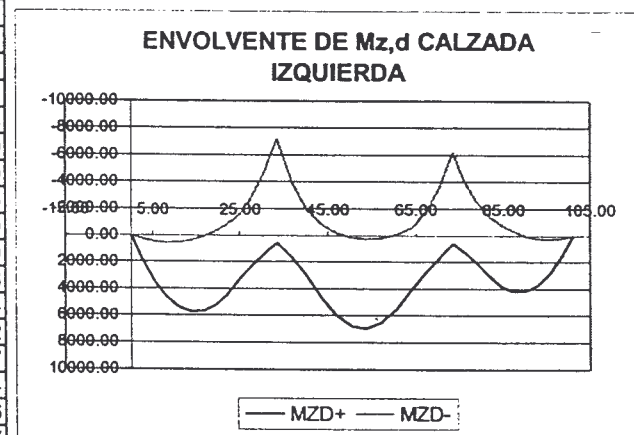
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"ESFUERZOS"
"ELU.TINF.MX+"," CON GRADIENTE"

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"PRETF1A.HIP.To","(PretensadoHiperest tico(t=0))",.95,1.05,"P",0,"",""
"PRETF1B.ISO.To","(PretensadoIsost tico(t=0))",.95,1.05,"P",0,"",""
"PRETF1B.HIP.To","(PretensadoHiperest tico(t=0))",.95,1.05,"P",0,"",""
"PRETF3C.ISO.To","(PretensadoIsost tico(t=0))",.9,1.1,"P",0,"",""
"PRETF3C.HIP.To","(PretensadoHiperest tico(t=0))",.9,1.1,"P",0,"",""
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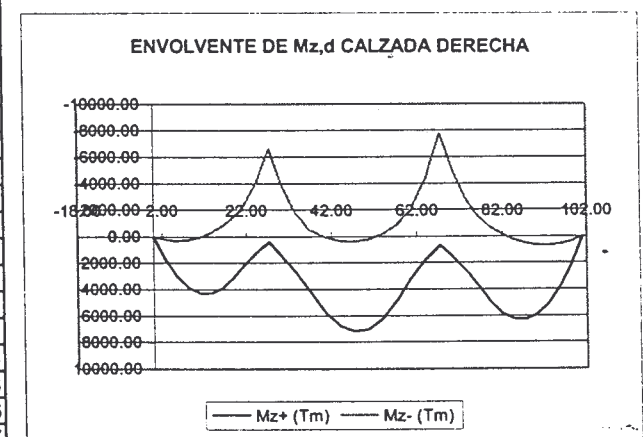
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"ELU.TINF.MX-", " CON GRADIENTE"
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Barra	Nudo	X	Mz+ (Tm)	Mz- (Tm)
1	1	0.00	3.03	-4.26
1	2	2.74	1956.05	305.92
2	2	2.74	1953.37	306.29
2	3	5.48	3496.83	498.36
3	3	5.48	3494.23	498.71
3	4	8.22	4631.89	576.43
4	4	8.22	4629.50	576.70
4	5	10.96	5369.92	539.56
5	5	10.96	5367.44	539.87
5	6	13.70	5717.72	387.12
6	6	13.70	5715.49	387.57
6	7	16.44	5683.83	117.75
7	7	16.44	5682.21	118.53
7	8	19.18	5274.47	-268.68
8	8	19.18	5273.87	-267.39
8	9	21.92	4495.58	-774.69
9	9	21.92	4495.65	-772.65
9	10	24.66	3409.92	-1464.40
10	10	24.66	3409.88	-1460.70
10	11	27.40	2397.70	-2657.58
11	11	27.40	2396.63	-2649.64
11	12	30.45	1443.11	-4596.92
12	12	30.45	1441.73	-4587.07
12	10013	33.50	548.68	-7225.54
13	13	33.50	546.59	-7217.66
13	14	36.89	1644.11	-4006.27
14	14	36.89	1643.94	-4004.75
14	15	40.28	3017.93	-1901.98
15	15	40.28	3018.84	-1902.94
15	16	43.67	4689.50	-800.44
16	16	43.67	4686.16	-799.76
16	17	47.06	6036.31	-191.44
17	17	47.06	6030.57	-191.61
17	18	50.45	6796.81	146.23
18	18	50.45	6790.13	145.72
18	19	53.84	6948.17	287.61
19	19	53.84	6941.74	287.21
19	20	57.23	6511.66	208.07
20	20	57.23	6507.05	208.33
20	21	60.62	5512.55	-55.93
21	21	60.62	5508.86	-54.78
21	22	64.01	4043.51	-580.40
22	22	64.01	4040.59	-578.62
22	23	67.40	2682.47	-1815.91
23	23	67.40	2681.66	-1810.37
23	24	70.45	1641.14	-3674.24
24	24	70.45	1639.09	-3665.29
24	10025	73.50	587.16	-6255.99
25	25	73.50	584.65	-6247.36
25	26	76.26	1243.79	-4046.24
26	26	76.26	1244.44	-4042.58
26	27	79.02	2068.46	-2498.03
27	27	79.02	2068.40	-2494.75
27	28	81.78	3011.28	-1449.13
28	28	81.78	3011.03	-1447.25
28	29	84.54	3789.84	-797.26



Barra	Nudo	X	Mz+ (Tm)	Mz- (Tm)
29	29	84.54	3788.51	-796.08
29	30	87.30	4175.40	-314.26
30	30	87.30	4173.39	-313.67
30	31	90.06	4145.03	26.98
31	31	90.06	4142.69	27.07
31	32	92.82	3706.29	226.18
32	32	92.82	3704.15	225.71
32	33	95.58	2865.77	285.13
33	33	95.58	2863.44	284.17
33	34	98.34	1628.62	208.13
34	34	98.34	1626.02	206.84
34	35	101.10	5.08	-3.03

Barra	Nudo	X	Mz+ (Tm)	Mz- (Tm)
101	101	0.00	4.26	-3.03
101	102	2.74	1699.39	225.39
102	102	2.74	1700.95	226.21
102	103	5.48	2981.18	310.55
103	103	5.48	2982.84	311.20
103	104	8.22	3840.53	251.58
104	104	8.22	3842.39	251.87
104	105	10.96	4274.79	43.72
105	105	10.96	4277.07	43.58
105	106	13.70	4278.09	-314.43
106	106	13.70	4280.32	-314.93
106	107	16.44	3843.13	-822.82
107	107	16.44	3844.93	-823.76
107	108	19.18	2992.51	-1509.75
108	108	19.18	2993.42	-1511.34
108	109	21.92	1986.19	-2638.18
109	109	21.92	1986.67	-2640.84
109	110	24.66	1096.74	-4294.41
110	110	24.66	1096.56	-4297.35
110	10111	27.40	389.72	-6669.57
111	111	27.40	391.54	-6677.60
111	112	30.45	1509.33	-3854.62
112	112	30.45	1510.64	-3863.50
112	113	33.50	2613.23	-1836.11
113	113	33.50	2612.98	-1841.94
113	114	36.89	4094.76	-529.08
114	114	36.89	4095.81	-531.46
114	115	40.28	5648.59	34.52
115	115	40.28	5650.37	32.95
115	116	43.67	6701.81	310.10
116	116	43.67	6705.15	309.46
116	117	47.06	7162.44	380.33
117	117	47.06	7168.16	380.54
117	118	50.45	7010.64	214.53
118	118	50.45	7017.30	215.06
118	119	53.84	6229.33	-167.97
119	119	53.84	6235.77	-167.80
119	120	57.23	4839.08	-838.13
120	120	57.23	4843.70	-838.41
120	121	60.62	3139.02	-2064.18
121	121	60.62	3139.32	-2062.28
121	122	64.01	1748.01	-4348.35
122	122	64.01	1749.23	-4348.63
122	10123	67.40	651.77	-7804.37
123	123	67.40	655.07	-7811.24
123	124	70.45	1603.80	-4904.58
124	124	70.45	1605.92	-4914.58
124	125	73.50	2630.64	-2762.71
125	125	73.50	2632.03	-2770.85
125	126	76.26	3754.27	-1460.37
126	126	76.26	3752.69	-1463.37
126	127	79.02	4948.87	-717.57
127	127	79.02	4948.02	-719.91
127	128	81.78	5798.02	-174.42
128	128	81.78	5797.98	-176.00
128	129	84.54	6239.20	235.39



Barra	Nudo	X	Mz+ (Tm)	Mz- (Tm)
129	129	84.54	6240.31	234.38
129	130	87.30	6268.94	515.50
130	130	87.30	6270.96	514.97
130	131	90.06	5881.48	667.78
131	131	90.06	5884.04	667.50
131	132	92.82	5069.62	692.44
132	132	92.82	5072.30	692.37
132	133	95.58	3825.80	589.03
133	133	95.58	3829.05	589.04
133	134	98.34	2139.01	358.37
134	134	98.34	2142.94	358.32
134	135	101.10	3.03	-5.08

ENVOLVENTE MX,d

Barra	Nudo	X	Mx (Tm)	Vy (T)
1	1	0.00	-62.12	-355.40
1	2	2.74	-128.48	-384.69
2	2	2.74	144.66	-364.75
2	3	5.48	-192.66	-215.41
3	3	5.48	202.29	-303.76
3	4	8.22	-248.71	-120.91
4	4	8.22	260.56	-229.16
4	5	10.96	-294.74	-5.06
5	5	10.96	320.30	-141.88
5	6	13.70	-329.47	20.79
6	6	13.70	395.98	-12.83
6	7	16.44	-378.75	108.92
7	7	16.44	474.03	73.89
7	8	19.18	443.02	177.75
8	8	19.18	541.76	170.55
8	9	21.92	506.73	270.77
9	9	21.92	595.20	256.97
9	10	24.66	554.00	356.44
10	10	24.66	634.71	330.95
10	11	27.40	591.54	426.94
11	11	27.40	658.23	411.43
11	12	30.45	617.04	499.20
12	12	30.45	658.74	496.04
12	10013	33.50	626.63	592.39
13	13	33.50	496.46	-785.26
13	14	36.89	536.31	-644.79
14	14	36.89	503.99	-659.31
14	15	40.28	474.85	-522.37
15	15	40.28	444.31	-502.74
15	16	43.67	-452.50	-270.92
16	16	43.67	-450.97	-327.54
16	17	47.06	-513.03	-200.45
17	17	47.06	-522.20	-191.32
17	18	50.45	-580.51	-60.21
18	18	50.45	-574.10	-49.66
18	19	53.84	-626.56	85.67
19	19	53.84	-599.75	89.01
19	20	57.23	-647.90	219.61
20	20	57.23	619.43	23.43
20	21	60.62	-653.97	350.96
21	21	60.62	691.61	156.22
21	22	64.01	-649.44	402.52
22	22	64.01	731.63	264.90
22	23	67.40	676.69	385.32
23	23	67.40	737.26	378.39
23	24	70.45	690.73	478.62
24	24	70.45	717.75	521.49
24	10025	73.50	670.63	618.60
25	25	73.50	613.46	-882.80
25	26	76.26	614.44	-756.68
26	26	76.26	590.85	-736.84
26	27	79.02	548.74	-615.27

ENVOLVENTE MX,d

Barra	Nudo	X	Mx (Tm)	Vy (T)
27	27	79.02	517.20	-555.97
27	28	81.78	477.77	-438.49
28	28	81.78	444.70	-408.64
28	29	84.54	403.00	-295.21
29	29	84.54	370.91	-273.25
29	30	87.30	326.21	-163.91
30	30	87.30	302.15	-149.88
30	31	90.06	-261.73	8.02
31	31	90.06	256.07	-6.85
31	32	92.82	-244.28	116.81
32	32	92.82	217.47	65.42
32	33	95.58	-218.80	269.59
33	33	95.58	168.87	136.03
33	34	98.34	-174.68	390.32
34	34	98.34	107.28	164.43
34	35	101.10	-65.64	512.43
101	101	0.00	-52.67	-546.85
101	102	2.74	96.41	-173.32
102	102	2.74	-148.58	-420.15
102	103	5.48	-145.97	-297.36
103	103	5.48	-187.11	-294.87
103	104	8.22	187.81	-51.36
104	104	8.22	-208.28	-161.21
104	105	10.96	224.37	25.74
105	105	10.96	-231.98	-20.30
105	106	13.70	270.88	179.42
106	106	13.70	303.79	191.64
106	107	16.44	335.33	306.64
107	107	16.44	376.98	330.74
107	108	19.18	405.21	451.81
108	108	19.18	449.74	483.28
108	109	21.92	475.69	609.56
109	109	21.92	518.05	626.25
109	110	24.66	547.20	757.78
110	110	24.66	576.59	777.82
110	10111	27.40	611.41	909.89
111	111	27.40	687.62	-727.17
111	112	30.45	664.68	-627.74
112	112	30.45	648.72	-579.97
112	113	33.50	683.62	-475.01
113	113	33.50	639.43	-417.93
113	114	36.89	682.40	-291.20
114	114	36.89	612.46	-302.00
114	115	40.28	650.09	-172.88
115	115	40.28	-564.57	-305.35
115	116	43.67	579.55	-58.86
116	116	43.67	-573.15	-230.05
116	117	47.06	-537.56	-91.83
117	117	47.06	-568.68	-83.20
117	118	50.45	-528.47	59.39
118	118	50.45	-533.87	71.40

ENVOLVENTE MX,d

Barra	Nudo	X	Mx (Tm)	Vy (T)
118	119	53.84	-487.42	209.52
119	119	53.84	-477.57	245.16
119	120	57.23	-427.15	378.99
120	120	57.23	-436.16	430.82
120	121	60.62	388.54	360.68
121	121	60.62	-441.13	419.10
121	122	64.01	446.42	682.58
122	122	64.01	492.15	678.62
122	10123	67.40	514.67	828.64
123	123	67.40	688.55	-730.43
123	124	70.45	621.19	-628.45
124	124	70.45	589.14	-600.75
124	125	73.50	617.31	-529.99
125	125	73.50	561.64	-460.14
125	126	76.26	596.43	-353.93
126	126	76.26	524.93	-369.73
126	127	79.02	558.27	-264.33
127	127	79.02	479.24	-294.71
127	128	81.78	506.83	-188.42
128	128	81.78	418.07	-192.60
128	129	84.54	441.56	-82.44
129	129	84.54	344.97	-98.74
129	130	87.30	362.78	12.65
130	130	87.30	-297.78	-96.20
130	131	90.06	287.30	157.62
131	131	90.06	-272.86	8.01
131	132	92.82	235.98	254.14
132	132	92.82	-234.73	133.34
132	133	95.58	-185.36	246.56
133	133	95.58	-186.07	300.94
133	134	98.34	134.11	351.90
134	134	98.34	-123.88	458.08
134	135	101.10	-72.41	548.21

ENVOLVENTE VY,d

Barra	Nudo	X	VY(tn)	MX(MTN)
1	1	0.00	-778.86	-10.86
1	2	2.74	-641.71	-15.05
2	2	2.74	-635.30	7.73
2	3	5.48	-504.17	-3.72
3	3	5.48	-499.69	21.03
3	4	8.22	-374.53	6.33
4	4	8.22	-371.56	38.06
4	5	10.96	-251.65	19.08
5	5	10.96	-249.92	72.86
5	6	13.70	174.29	-85.88
6	6	13.70	163.22	-54.62
6	7	16.44	275.41	-94.91
7	7	16.44	268.74	-71.93
7	8	19.18	388.49	-106.77
8	8	19.18	381.07	-47.57
8	9	21.92	504.62	-78.06
9	9	21.92	497.01	-48.34
9	10	24.66	623.90	-76.28
10	10	24.66	615.36	-12.76
10	11	27.40	745.69	-41.79
11	11	27.40	740.20	37.22
11	12	30.45	890.18	9.55
12	12	30.45	892.86	134.87
12	10013	33.50	1047.02	101.06
13	13	33.50	-1150.15	115.50
13	14	36.89	-978.79	80.99
14	14	36.89	-951.43	21.48
14	15	40.28	-786.34	-7.74
15	15	40.28	-756.13	-59.41
15	16	43.67	-598.79	-77.56
16	16	43.67	-579.26	-75.90
16	17	47.06	-424.89	-102.43
17	17	47.06	-403.57	-56.98
17	18	50.45	-260.82	-81.06
18	18	50.45	-259.90	8.34
18	19	53.84	161.69	-192.46
19	19	53.84	158.42	-182.38
19	20	57.23	303.00	-227.43
20	20	57.23	296.68	-249.99
20	21	60.62	446.65	-286.73
21	21	60.62	440.92	-247.82
21	22	64.01	595.64	-283.35
22	22	64.01	583.05	-220.50
22	23	67.40	742.76	-242.56
23	23	67.40	729.22	-133.78
23	24	70.45	877.88	-159.71
24	24	70.45	867.90	-54.74
24	10025	73.50	1022.13	-85.04
25	25	73.50	-1004.73	452.36
25	26	76.26	-864.20	423.34
26	26	76.26	-843.93	398.57
26	27	79.02	-707.83	362.83

ENVOLVENTE VY,d

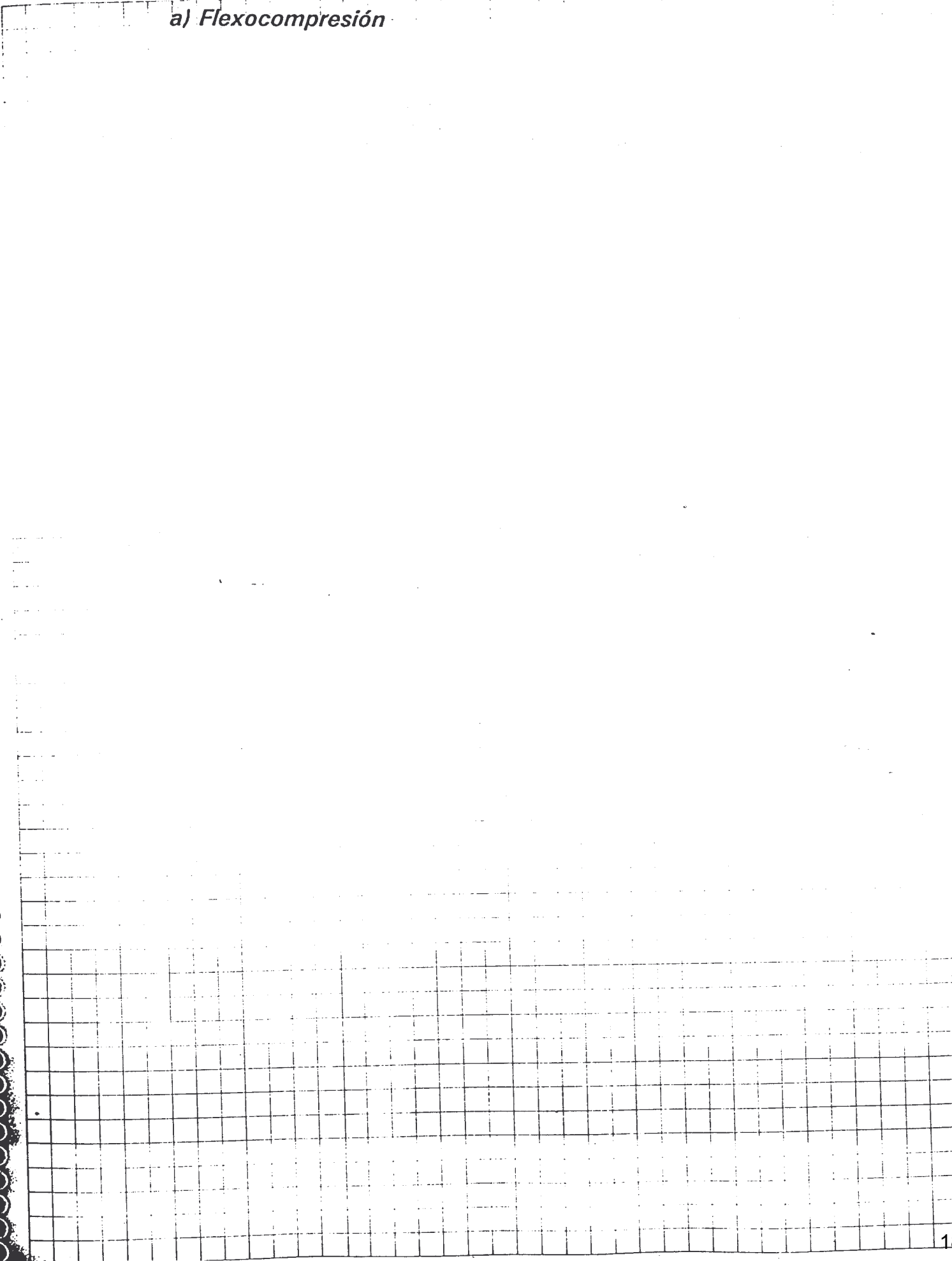
Barra	Nudo	X	VY(tn)	MX(MTN)
27	27	79.02	-690.81	283.79
27	28	81.78	-559.46	250.02
28	28	81.78	-541.78	253.77
28	29	84.54	-415.23	219.57
29	29	84.54	-398.33	190.29
29	30	87.30	-276.57	153.33
30	30	87.30	-271.58	157.23
30	31	90.06	-160.42	83.19
31	31	90.06	-159.24	97.93
31	32	92.82	261.97	-121.16
32	32	92.82	264.48	-89.17
32	33	95.58	389.55	-107.39
33	33	95.58	388.32	-65.72
33	34	98.34	520.19	-71.00
34	34	98.34	515.77	-9.84
34	35	101.10	654.69	-20.94
101	101	0.00	-688.53	-11.89
101	102	2.74	-543.17	-8.35
102	102	2.74	-542.50	-52.46
102	103	5.48	-404.45	-51.78
103	103	5.48	-401.82	-82.39
103	104	8.22	-271.05	-71.45
104	104	8.22	-265.36	-94.20
104	105	10.96	167.44	83.78
105	105	10.96	171.07	79.25
105	106	13.70	287.13	131.76
106	106	13.70	295.09	139.95
106	107	16.44	422.43	163.82
107	107	16.44	442.36	198.05
107	108	19.18	574.73	219.33
108	108	19.18	595.77	224.28
108	109	21.92	733.18	245.38
109	109	21.92	753.36	244.52
109	110	24.66	895.79	267.87
110	110	24.66	919.71	381.70
110	10111	27.40	1066.84	395.02
111	111	27.40	-1098.98	-1.90
111	112	30.45	-936.49	16.44
112	112	30.45	-938.47	-96.99
112	113	33.50	-781.81	-82.00
113	113	33.50	-789.23	-141.13
113	114	36.89	-620.97	-130.61
114	114	36.89	-629.29	-199.79
114	115	40.28	-466.46	-182.25
115	115	40.28	-470.32	-203.59
115	116	43.67	-312.54	-179.72
116	116	43.67	-315.84	-184.57
116	117	47.06	-163.88	-152.11
117	117	47.06	-166.34	-159.88
117	118	50.45	268.89	-31.55
118	118	50.45	270.32	-124.27

ENVOLVENTE VY,d

Barra	Nudo	X	VY(tn)	MX(MTN)
118	119	53.84	425.73	-113.53
119	119	53.84	446.58	-164.04
119	120	57.23	608.97	-151.65
120	120	57.23	638.06	-117.08
120	121	60.62	803.72	-111.78
121	121	60.62	838.38	-76.86
121	122	64.01	1012.20	-60.74
122	122	64.01	1044.79	42.32
122	10123	67.40	1225.31	64.47
123	123	67.40	-1139.76	118.06
123	124	70.45	-977.43	138.73
124	124	70.45	-965.18	61.26
124	125	73.50	-807.11	75.84
125	125	73.50	-806.37	25.82
125	126	76.26	-668.00	42.51
126	126	76.26	-671.43	-12.24
126	127	79.02	-536.81	3.02
127	127	79.02	-540.73	-21.64
127	128	81.78	-409.72	-3.96
128	128	81.78	-413.66	-71.40
128	129	84.54	-286.62	-49.41
129	129	84.54	-290.31	-65.05
129	130	87.30	-171.16	-37.57
130	130	87.30	-179.95	-70.52
130	131	90.06	269.78	58.60
131	131	90.06	274.55	0.33
131	132	92.82	401.51	11.56
132	132	92.82	407.84	-10.75
132	133	95.58	540.48	-3.43
133	133	95.58	548.76	-16.04
133	134	98.34	687.85	-11.12
134	134	98.34	699.40	-18.85
134	135	101.10	845.08	-21.35

IDEAM

a) Flexocompresión



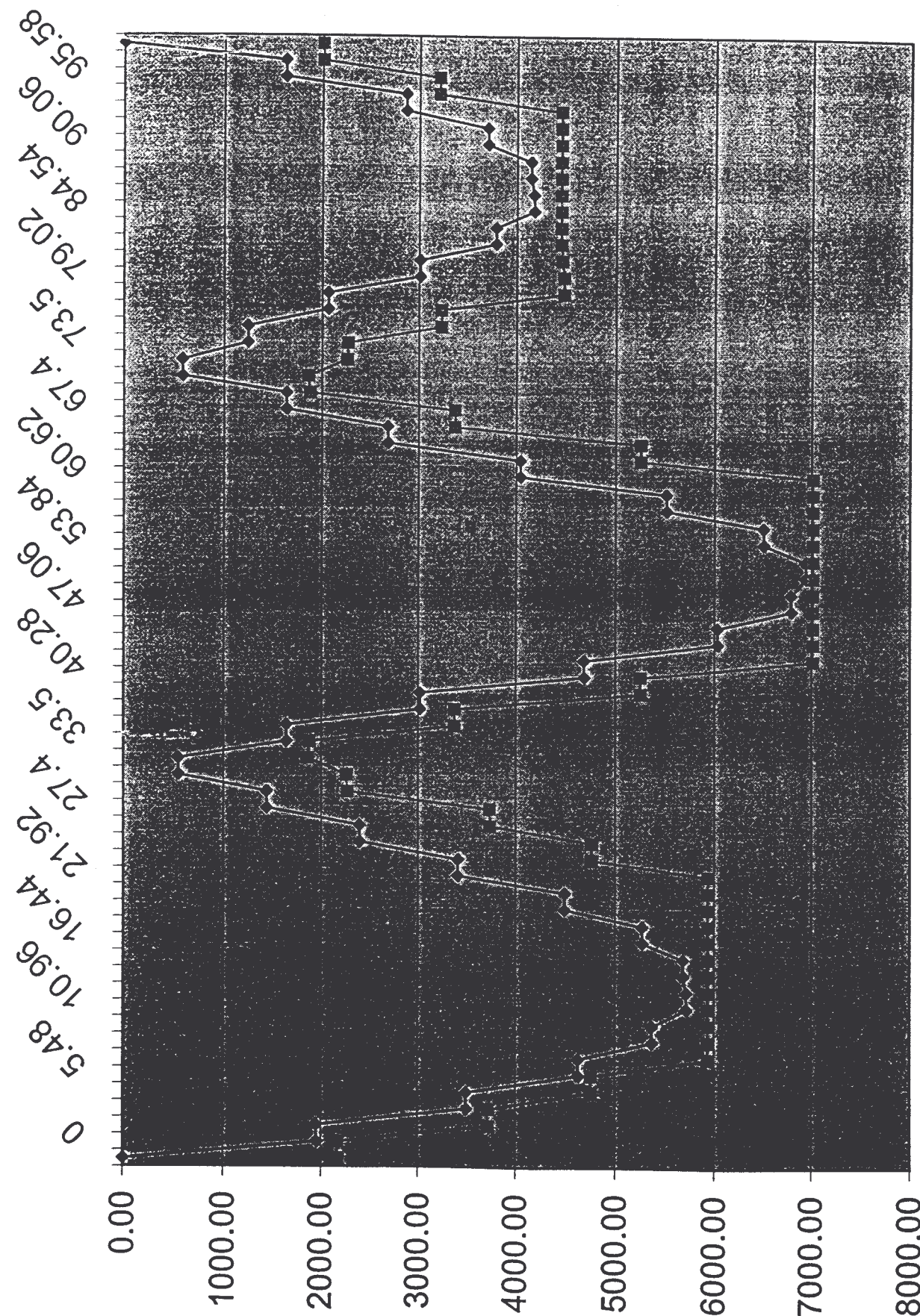
A continuación, para cada vano tipo se estudia las diferentes secciones, para ello se incluye para cada uno de ellos:

- un croquis con el anudo resultante
- un hoja con los momentos de cables
- otra hoja con los momentos al fin de
- después de listados de secciones

Hay casos en que las secciones son las mismas para las distintas vanos, por lo que no se repite en listados de secciones.

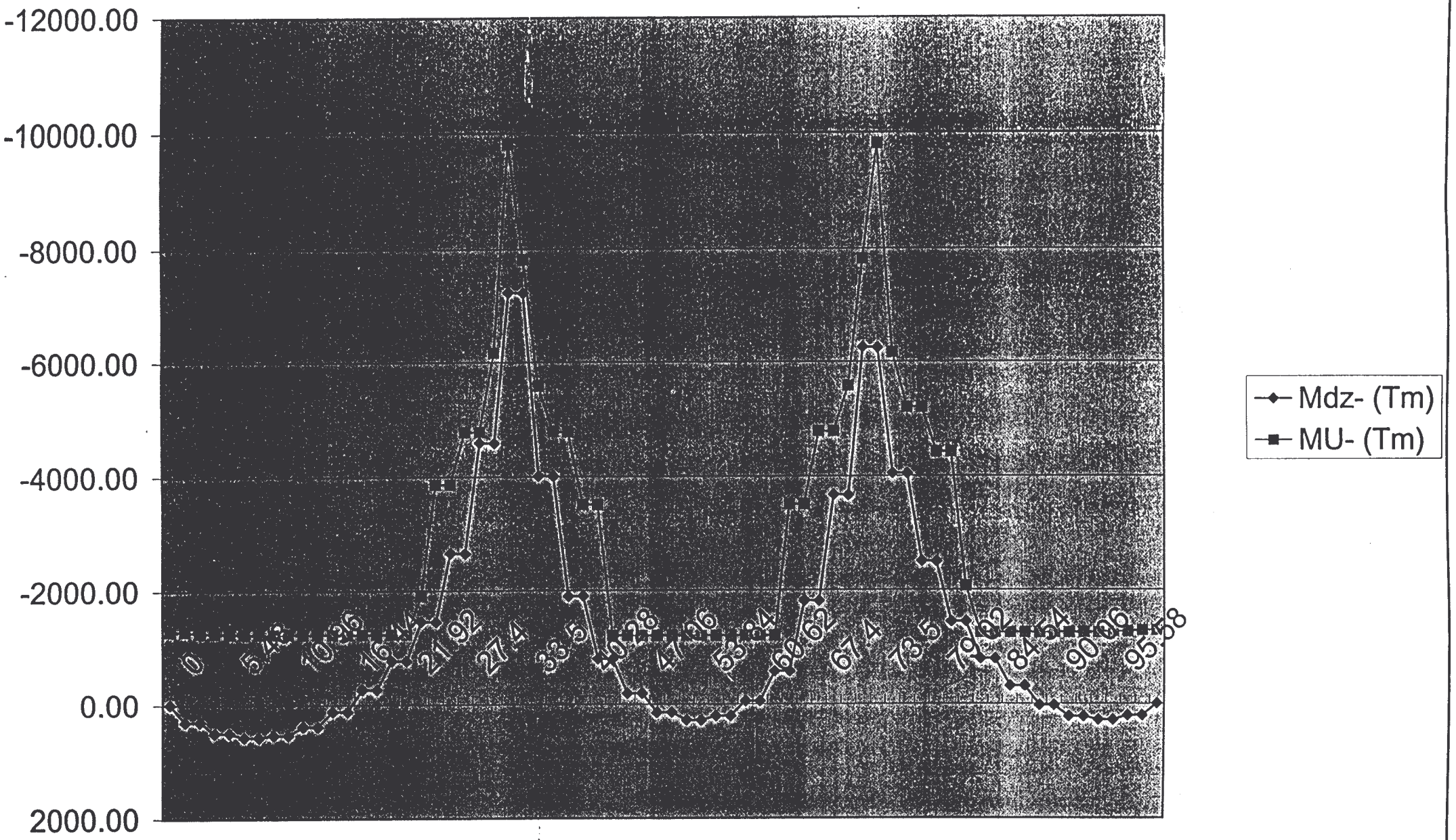
Las armaduras finalmente dispuestas coinciden en cuanto a la de los croquis.

PUENTE CONSTRUIDO CALZADA IZQUIERDA

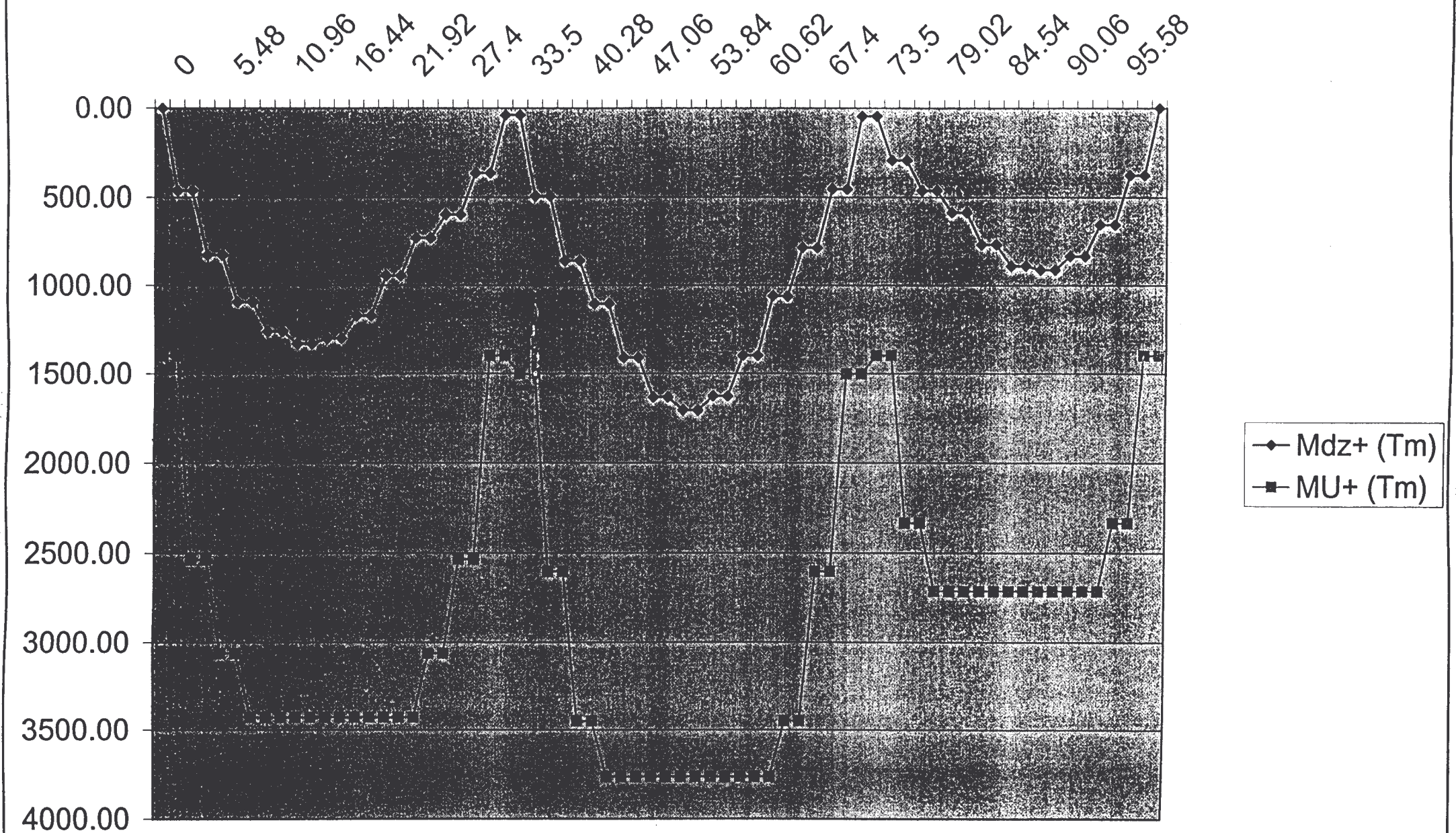


PUENTE CONSTRUIDO CALZADA IZQUIERDA

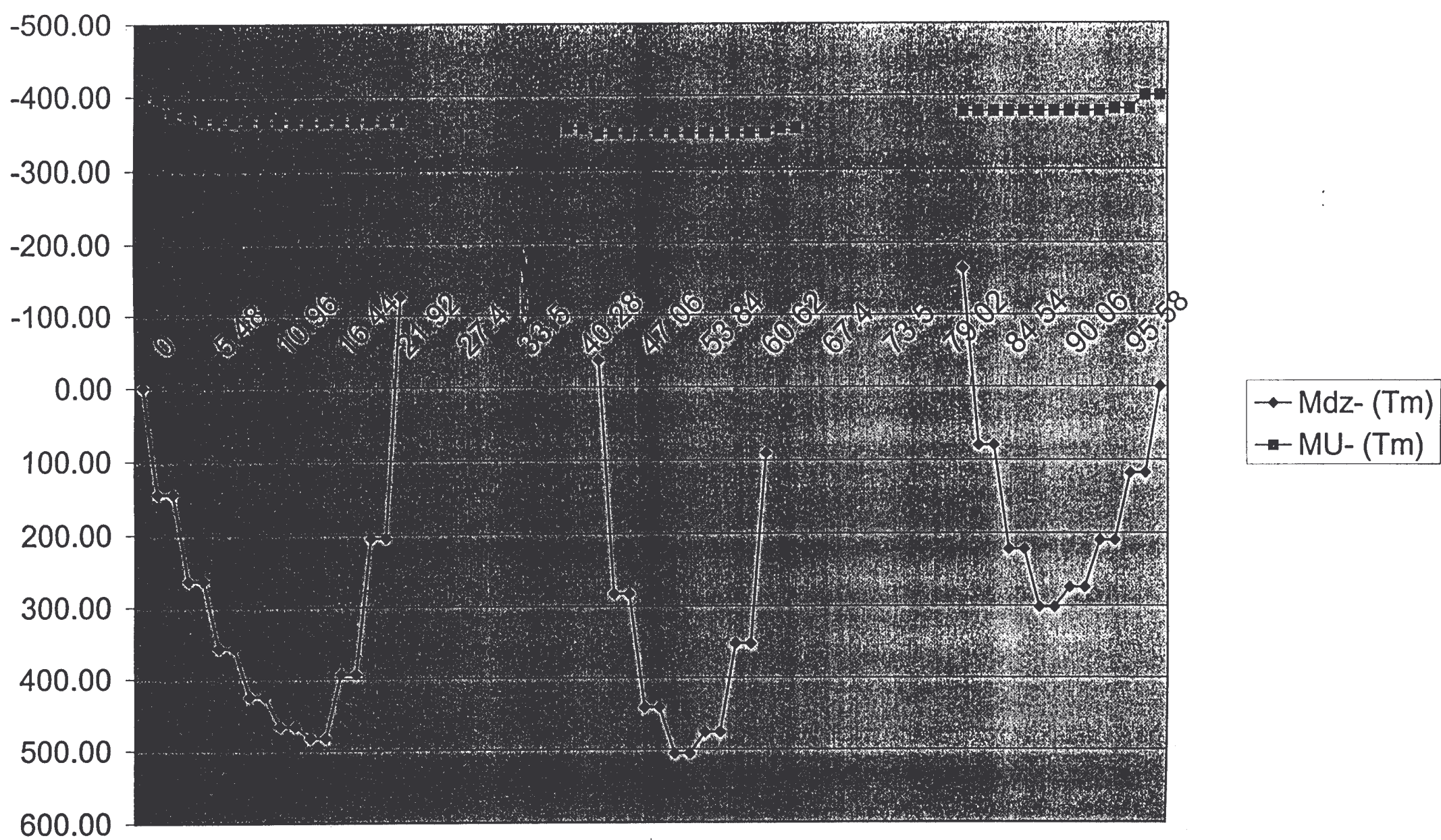
187



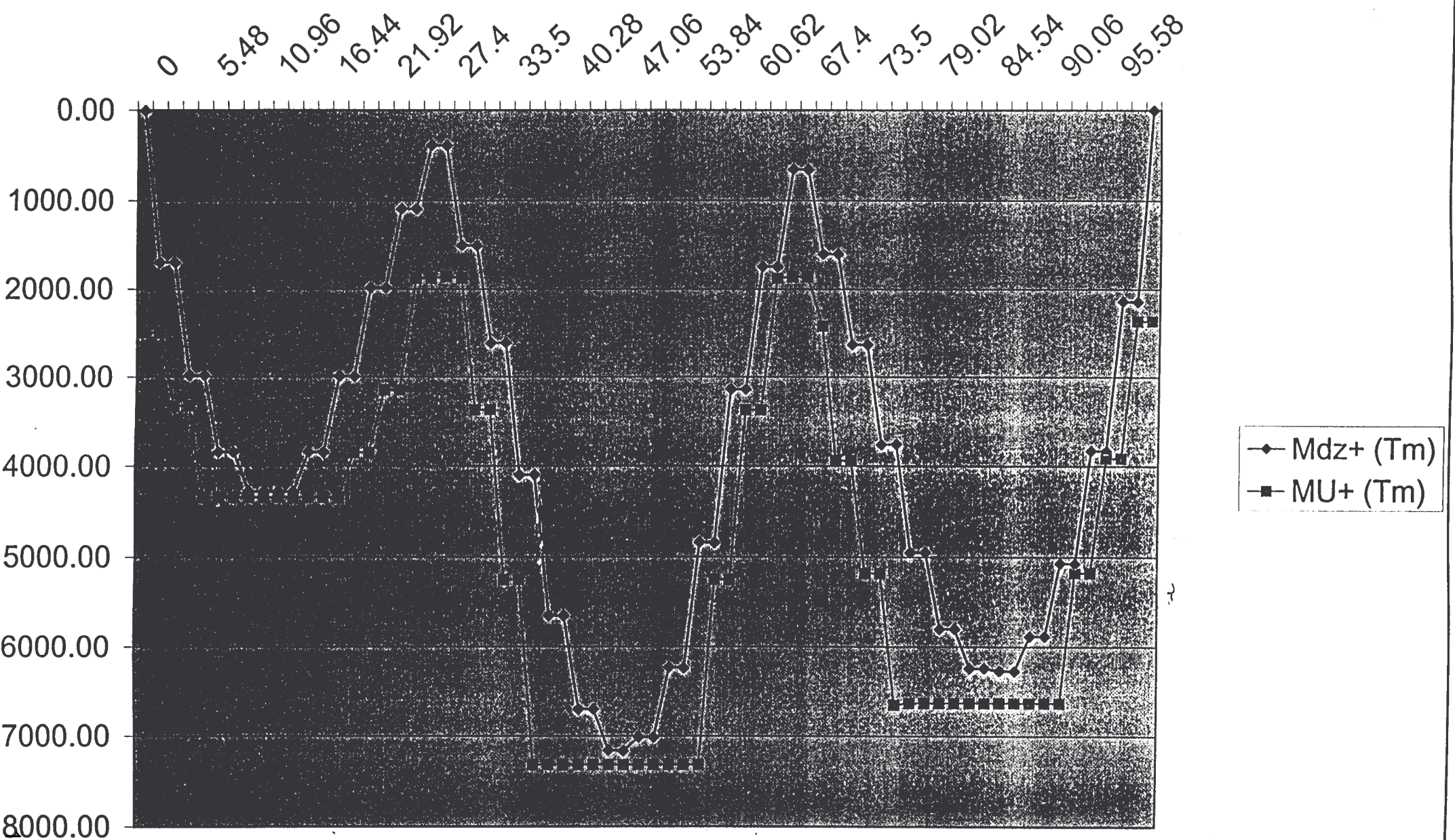
PUENTE EN CONSTRUCCIÓN CALZADA IZQUIERDA



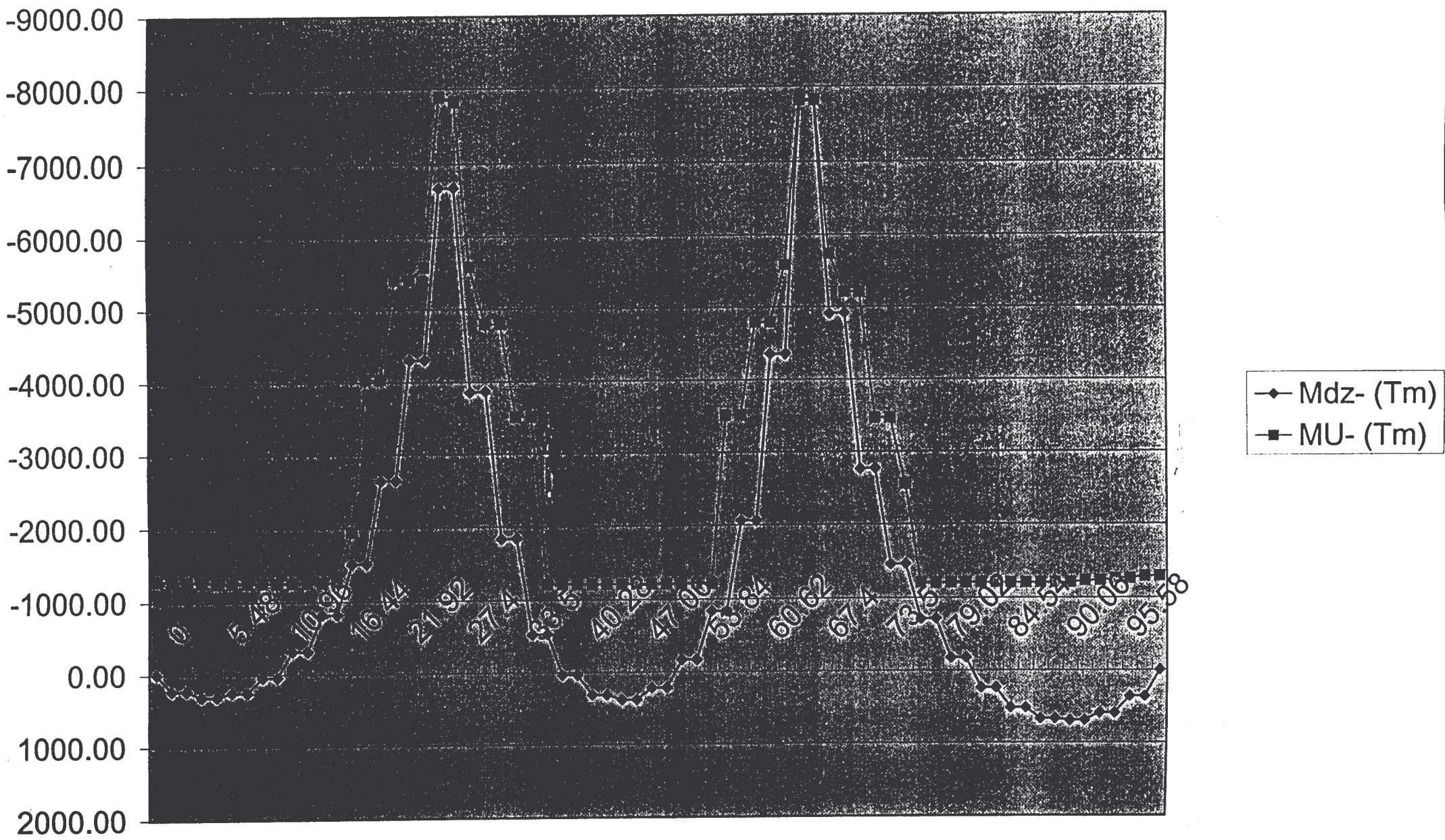
PUENTE EN CONSTRUCCIÓN CALZADA IZQUIERDA



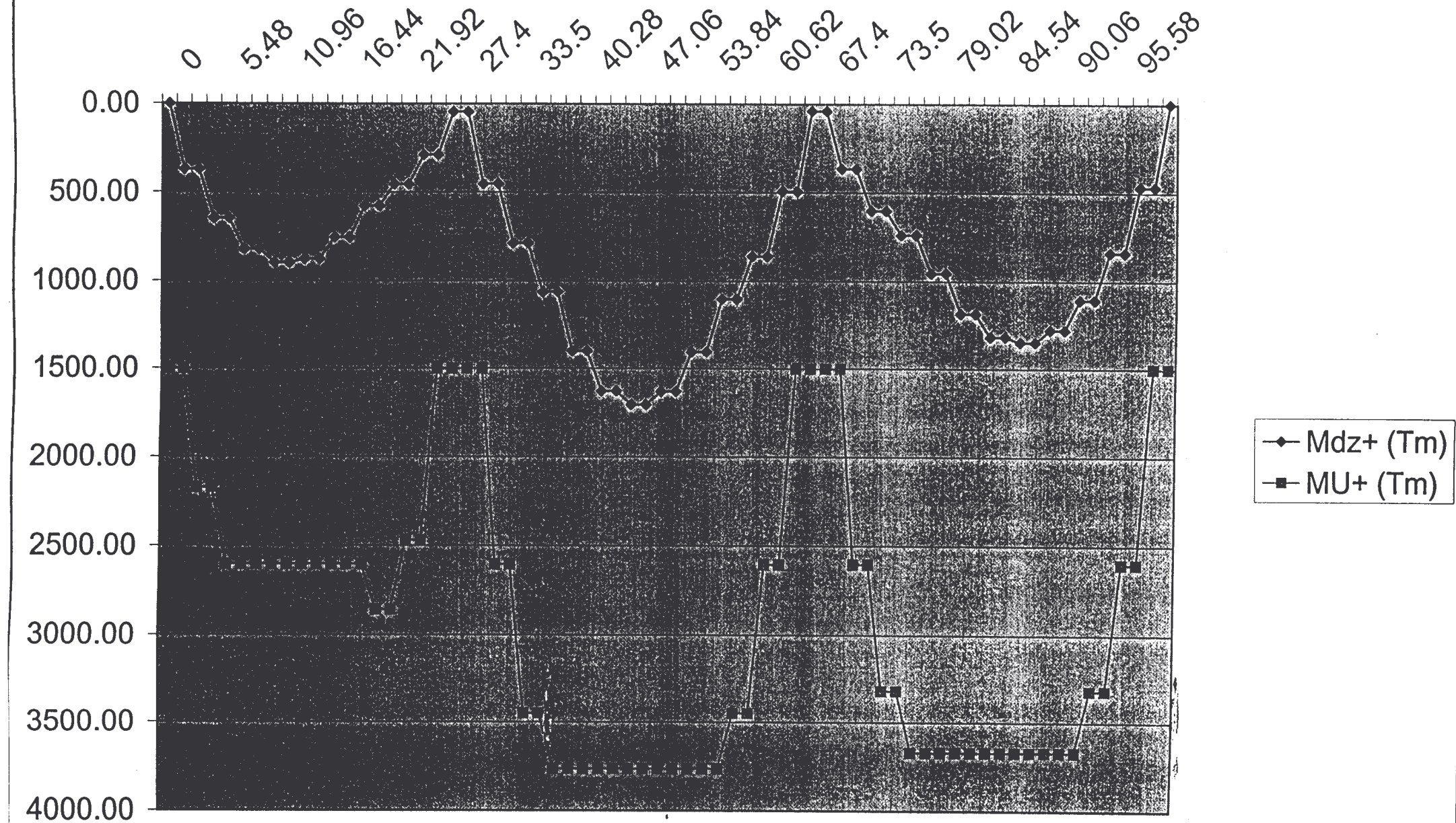
PUENTE CONSTRUIDO CALZADA DERECHA



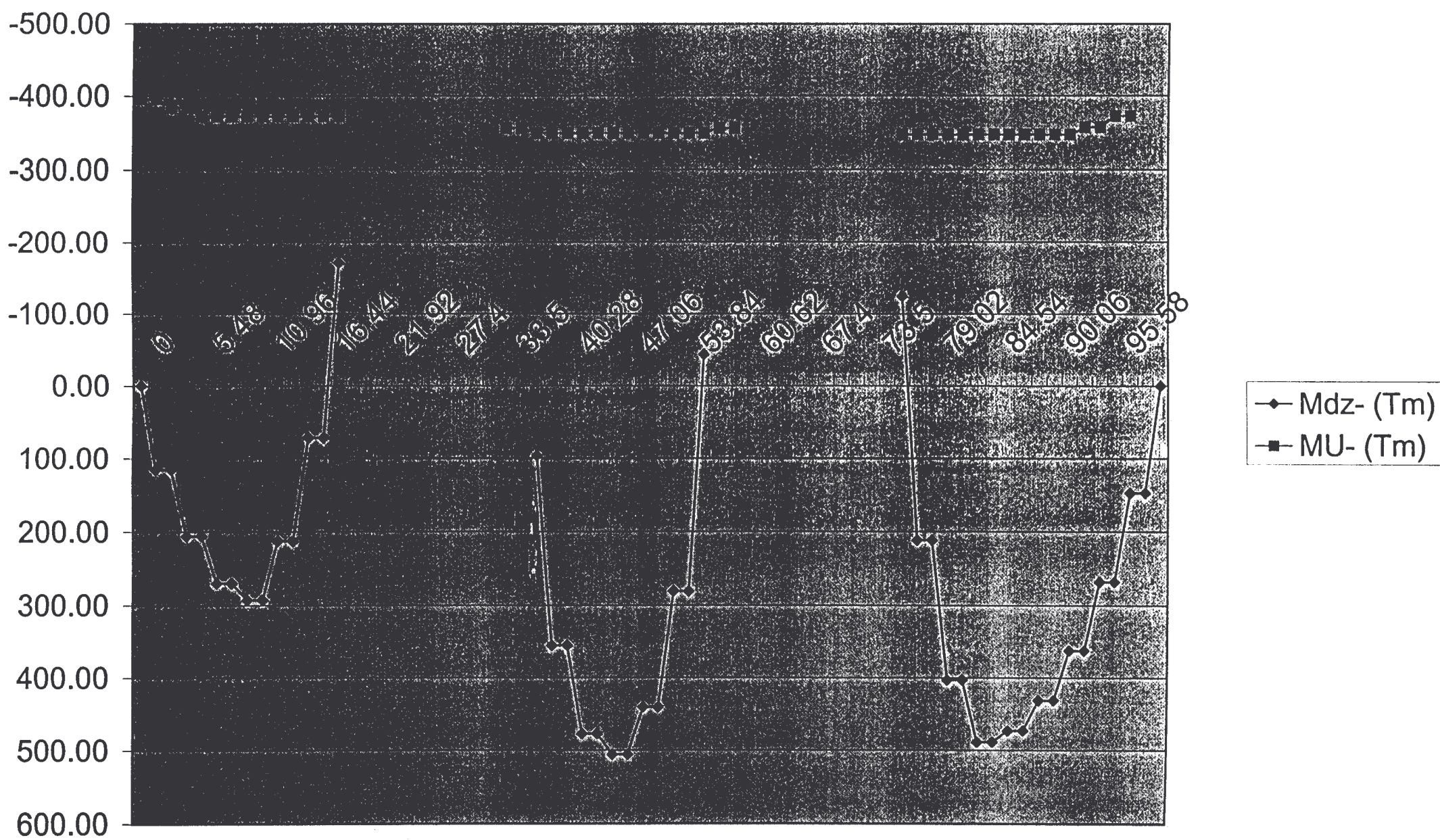
PUENTE CONSTRUIDO
CALZADA DERECHA



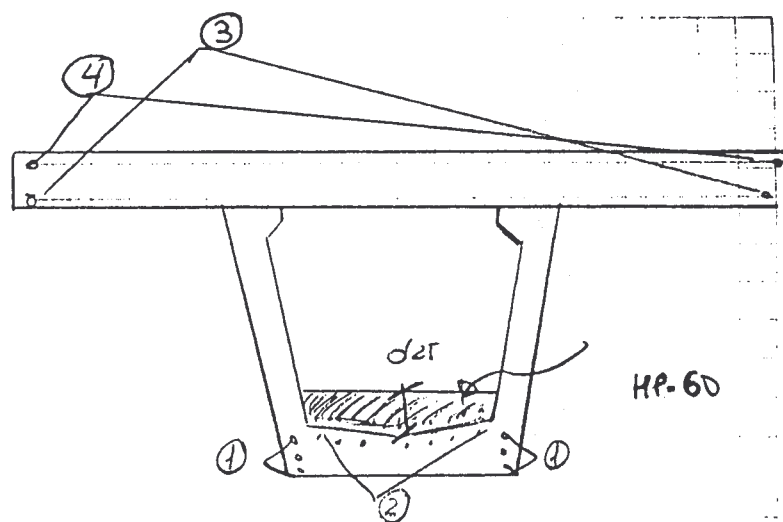
PUENTE EN CONSTRUCCIÓN
CALZADA DERECHA



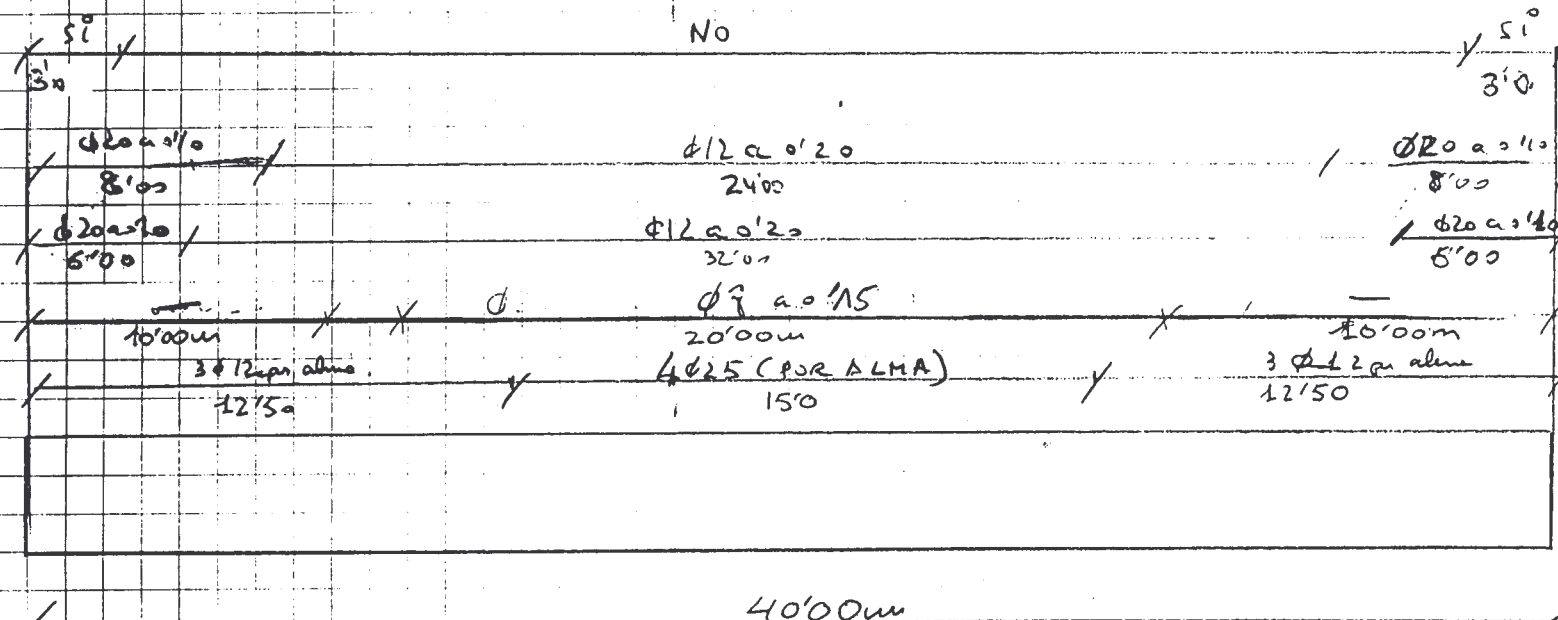
PUENTE EN CONSTRUCCIÓN CALZADA DERECHA



VIGAS EN
VANOS DE
40'00m



IDEAM



Fuerza de
HP-60
dado no hay mamparo

④
③
②
①

VIGAS EN
VANOS DE 40'00m

CÁLCULO MZ EN ROTURA

Modulo de cálculo:

ELU-MZ

Barra	Nudo	X	PUENTE CONSTRUIDO		PUENTE EN CONSTRUCCIÓN		PRETENSADO INF DE CAJÓN				PRET SUP CAJÓN		PUENTE CONSTRUIDO		PUENTE EN CONSTRUCCIÓN	
			Mdz+ (Tm)	Mdz- (Tm)	Mdz+ (Tm)	Mdz- (Tm)	PRET	PRET	PRET	PRET	PRET	PRET	MU+ (Tm)	MU- (Tm)	MU+ (Tm)	MU- (Tm)
							2.8	2.752	2.704	2.656	0.45	0.12				
13	13	33.5	546.59	-7217.66	40.50		28				8	105	1861	-7823	1501	
13	14	36.89	1644.11	-4006.27	494.56		28				8	105	1878	-5582.4	1501	
14	14	36.89	1643.94	-4004.75	494.56		28	26			8	105	3374	-4786.7	2602.8	
14	15	40.28	3017.93	-1901.98	860.78		28	26			8	105	3374	-4786.7	2602.8	
15	15	40.28	3018.84	-1902.94	860.78		28	26	28		8	49	5252	-3510	3449	-355.7
15	16	43.67	4689.50	-800.44	1105.14		28	26	28		8	49	5252	-3510	3449	-355.7
16	16	43.67	4688.16	-799.76	1105.14	-37.43	28	26	28	28	8		7324	-1212	3765	-349.2
16	17	47.06	6030.31	-191.44	1409.30	-282.96	28	26	28	28	8		7324	-1212	3765	-349.2
17	17	47.06	6030.57	-191.61	1409.30	-282.96	28	26	28	28	8		7324	-1212	3765	-349.2
17	18	50.45	6796.81	146.23	1632.88	441.00	28	26	28	28	8		7324	-1212	3765	-349.2
18	18	50.45	6790.13	145.72	1632.88	441.00	28	26	28	28	8		7324	-1212	3765	-349.2
18	19	53.84	6948.17	287.81	1705.48	505.17	28	26	28	28	8		7324	-1212	3765	-349.2
19	19	53.84	6941.74	287.21	1705.48	505.17	28	26	28	28	8		7324	-1212	3765	-349.2
19	20	57.23	8511.86	208.07	1627.10	475.47	28	26	28	28	8		7324	-1212	3765	-349.2
20	20	57.23	8507.05	208.33	1627.10	475.47	28	26	28	28	8		7324	-1212	3765	-349.2
20	21	60.62	5512.55	-55.93	1397.74	351.90	28	26	28	28	8		7324	-1212	3765	-349.2
21	21	60.62	5508.86	-54.78	1397.74	351.90	28	26	28	28	8		7324	-1212	3765	-349.2
21	22	64.01	4043.51	-580.40	1081.82	90.05	28	26	28	28	8		7324	-1212	3765	-349.2
22	22	64.01	4040.59	-578.62	1083.17		28	26	28		8	56	5252	-3510	3449	-355.7
22	23	67.4	2682.47	-1815.91	787.39		28	26	28		8	56	5252	-3510	3449	-355.7
23	23	67.4	2681.86	-1810.37	787.39		28	26			8	105	3374	-4786.7	2602.8	
23	24	70.45	1641.14	-3674.24	454.40		28	26			8	105	3374	-4786.7	2602.8	
24	24	70.45	1639.09	-3665.29	454.40		28				8	105	1878	-5582.4	1501	
24	###	73.5	587.16	-6255.99	46.68		28				8	105	1861	-7823	1501	

CÁLCULO MZ EN ROTURA

Modulo de cálculo:

ELU-MZ

Barra	Nudo	X	PUENTE CONSTRUIDO		PUENTE EN CONSTRUCCIÓN		PRETENSADO INF DE CAJÓN				PRET SUP CAJÓN		PUENTE CONSTRUIDO		PUENTE EN CONSTRUCCIÓN	
			Mdz+ (Tm)	Mdz- (Tm)	Mdz+ (Tm)	Mdz- (Tm)	PRET	PRET	PRET	PRET	PRET	PRET	MU+ (Tm)	MU- (Tm)	MU+ (Tm)	MU- (Tm)
							2.8	2.752	2.704	2.656	0.45	0.12				
111	111	27.4	391.54	-6677.60	47.10		28				8	105	1861	-7823	1501	
111	112	30.45	1509.33	-3854.62	454.77		28				8	105	1878	-5582.4	1501	
112	112	30.45	1510.64	-3863.50	454.77		28	26			8	105	3374	-4786.7	2602.8	
112	113	33.5	2613.23	-1836.11	788.06		28	26			8	105	3374	-4786.7	2602.8	
113	113	33.5	2612.98	-1841.94	788.06		28	26	28		8	49	5252	-3510	3449	-355.7
113	114	36.89	4094.76	-529.08	1066.07		28	26	28		8	49	5252	-3510	3449	-355.7
114	114	36.89	4095.81	-531.46	1064.74	96.02	28	26	28	28	8		7324	-1212	3765	-349.2
114	115	40.28	5648.59	34.52	1400.72	354.89	28	26	28	28	8		7324	-1212	3765	-349.2
115	115	40.28	5650.37	32.95	1400.72	354.89	28	26	28	28	8		7324	-1212	3765	-349.2
115	116	43.67	6701.81	310.10	1628.45	477.17	28	26	28	28	8		7324	-1212	3765	-349.2
116	116	43.67	6705.15	309.46	1628.45	477.17	28	26	28	28	8		7324	-1212	3765	-349.2
116	117	47.06	7162.44	380.33	1705.21	505.59	28	26	28	28	8		7324	-1212	3765	-349.2
117	117	47.06	7168.16	380.54	1705.21	505.59	28	26	28	28	8		7324	-1212	3765	-349.2
117	118	50.45	7010.64	214.53	1630.98	440.14	28	26	28	28	8		7324	-1212	3765	-349.2
118	118	50.45	7017.30	215.08	1630.98	440.14	28	26	28	28	8		7324	-1212	3765	-349.2
118	119	53.84	6229.33	-167.97	1405.77	280.83	28	26	28	28	8		7324	-1212	3765	-349.2
119	119	53.84	6235.77	-167.80	1405.77	280.83	28	26	28	28	8		7324	-1212	3765	-349.2
119	120	57.23	4838.08	-838.13	1104.95	-42.81	28	26	28	28	8		7324	-1212	3765	-349.2
120	120	57.23	4843.70	-838.41	1104.95		28	26	28		8	56	5252	-3510	3449	-355.7
120	121	60.62	3139.02	-2064.18	860.47		28	26	28		8	56	5252	-3510	3449	-355.7
121	121	60.62	3139.32	-2062.28	860.47		28	26			8	105	3374	-4786.7	2602.8	
121	122	64.01	1748.01	-4348.35	494.39		28	26			8	105	3374	-4786.7	2602.8	
122	122	64.01	1749.23	-4348.63	494.39		28				8	105	1878	-5582.4	1501	
122	###	67.4	651.77	-7804.37	40.29		28				8	105	1861	-7823	1501	

Secciones del CSEC

• SEC 1

8 tonners $\phi 0'6''$ a $0'45$
 28 tonners $\phi 0'6''$ a $2'8$
 26 tonners $\phi 0'6''$ a $2'752$
 28 tonners $\phi 0'6''$ a $2'704$
 28 tonners $\phi 0'6''$ a $2'656$
 Los $-(\phi 12 \text{ a } 0'20) \times 2$

Completa $\left\{ \begin{array}{l} M_{ut} = 7016 \text{ mtr} \\ M_{u-} = -1204 \text{ mtr} \end{array} \right\} \begin{array}{l} \text{NEG: } 2 \times \phi 12 \text{ a } 20. \\ \text{POS: } 8 \phi 25 + \phi 8 \text{ a } 15. \end{array}$

EN CONSTRUCCIÓN $\left\{ \begin{array}{l} M_{ut} = 3465'4 \\ M_{u-} = -349'2. \end{array} \right.$

SEC 1A: Con $\phi 20 \text{ a } 20 + \phi 12 \text{ a } 20$ en losa

• SEC 2

8 tonners $\phi 0'6''$ a $0'45$
 28 tonners $\phi 0'6''$ a $2'80$
 26 tonners $\phi 0'6''$ a $2'752$
 28 tonners $\phi 0'6''$ a $2'704$
 49 tonners $\phi 0'6''$ a $0'12$
 Completa = $\left\{ \begin{array}{l} M_{ut} = 5252 \text{ mtr} \\ M_{u-} = -3510 \text{ mtr} \end{array} \right\} \begin{array}{l} \text{NEG: } 2 \times 12 \phi 20 \\ \text{POS } \phi 8 \text{ a } 15. \end{array}$

En construcción $\left\{ \begin{array}{l} M_{ut} = 3449 \text{ mtr} \\ M_{u-} = -355'7 \text{ mtr} \end{array} \right.$

• SEC 3

8 tonners $\phi 0'6''$ a $0'45$
 28 tonners $\phi 0'6''$ a $2'80$
 26 tonners $\phi 0'6''$ a $2'752$
 105 tonners $\phi 0'6''$ a $0'12$
 ($\phi 12 \text{ a } 0'20$) $\times 2$ en negativos.

Completa $\left\{ \begin{array}{l} M_{ut} = 3374 \text{ mtr} \\ M_{u-} = -47867 \text{ mtr} \end{array} \right.$

En construcción $M_{ut} = 2602 \text{ mtr}$

• SEC 4

8 tonners $\phi 0'6''$ a $0'45$
 28 tonners $\phi 0'6''$ a $2'80$
 105 tonners $\phi 0'6''$ a $0'12$
 ($\phi 20 \text{ a } 0'20$) $\times 2$ en negativos.

Completa $\left\{ \begin{array}{l} M_{ut} = 1878 \text{ mtr} \\ M_{u-} = -55824 \text{ mtr} \end{array} \right.$

En construcción $M_{ut} = 1501 \text{ mtr}$

SEC 4A Con un recubrido de abeto de compresión de 0'25
 con HP-55 y ($\phi 20 \text{ a } 0'20$) $\times 2$

$M_{u-} = 7823 \text{ mtr}$

10'25

SEC 4B Sección de manzano 9. (con 620 a 0'20) x 2
a regular.

$$Kd = - 9635'9 \text{ mts}$$

Proyecto:
Viaducto V-1. Santa Oliva

Sección: SEC1

MATERIALES

Num.	Fck (Kg/cm ²)	Gamma	M.El. (Kg/cm ²)	J _{II} 1	J _{II} 2
1(HO)	300.0	1.50	285770	2.60	1.45
2(HO)	550.0	1.50	338219	2.60	1.45
3(RD)	5100.0	1.15	2100000		
4(PR)	17100.0	1.15	1800000		

SECCIONES PARCIALES

Num	Mat.	B (cm)	H (cm)	Yo (cm)	Mc	Nsr
		Num	II (mm)			
1	1	700.0	30.0	0.0	C*	0
2	2	90.0	30.0	30.0	C*	0
3	2	36.0	198.0	60.0	C*	0
4	2	179.0	27.0	258.0	C*	0
5	4	28.0	13.4	280.0	*T	0
6	4	26.0	13.4	275.2	*T	0
7	4	28.0	13.4	270.4	*T	0
8	4	28.0	13.4	265.4	*T	0
9	4	8.0	13.4	45.0	*T	0
10	3	35.0	12.0	5.0	CT	0
11	3	35.0	12.0	19.0	CT	0
12	3	8.0	25.0	265.0	CT	0
13	3	9.0	8.0	260.0	CT	0
14	3	9.0	20.0	265.0	CT	0

SECCIONES INTERMEDIAS

Num.	Codigo	Componentes
1	CAJ	-2 3 4
2	LOS	1
3	C+P	2 3 4 5 6 7 8 9 12 13
4	PS	9
5	PI	6 7 8 5

* CONSTANTES ESTATICAS *

S.COMPLETA

Tipo	Acciones	Area (cm ²)	Xcg (cm)	Inercia (cm ⁴)
F.pura +	(0)	3173.5	31.59	12707328.4
	(1)	1209.5	61.30	10949618.9
	(2)	1577.6	50.01	11591826.1
F.pura -	(0)	1115.6	250.35	5368605.3
	(1)	557.2	228.07	4811667.9
	(2)	664.7	235.12	4982688.0
C.Simple	(0)	5511.8	93.07	59221451.6
	(1)	1742.5	105.26	21234368.6
	(2)	2423.0	100.25	28179499.3
T.Simple	(0)	292.8	193.54	4027095.9
	(1)	292.8	193.54	4027095.9
	(2)	292.8	193.54	4027095.9

*** Nota: Homogeneizadas a E=2100000 Kp/cm² ***

ANALISIS EN ROTURA (ELASTOPLASTICO)

Título Sección: SEC1

* PRESOLICITACIONES ELASTICAS

Análisis SIN FISURACION

Pretensado: 2259.54Tn.

(Todas las Armaduras activas a .80*Fyk)

ESTUDIO SECCION COMPLETA

Análisis con Resistencia de materiales MINORADAS

Def. Última Acero Estructural (COMPRESION) (%): 2.50

Def. Última Acero Estructural (TRACCION) (%): 2.50

Deformación Última Hormigón (COMPRESION): Pivote en Bloque de Hormigón

Deformación Última Hormigón (TRACCION) (%): 1.00

Coefficiente Ideal Fluencia [μ * (Cperm./Ctot.)]: 0.00

FLEXION PURA POSITIVA:

Mu(m.T): 7324.8 Xu(cm.): 40.2

Nu(Tn.): -.1 Qu(Tn.): 0.0

Deformaciones Últimas: Ecmx= -.00169 Etmx= .01000

Rompe la fibra inferior de la S.parcial 4

FLEXION PURA NEGATIVA:

Mu(m.T): -1212.9 Xu(cm.): 237.5

Nu(Tn.): -.6 Qu(Tn.): 0.0

Deformaciones Últimas: Ecmx= -.00275 Etmx= .01000

Rompe la fibra superior de la S.parcial 1

COMPRESION SIMPLE(Rigido/Plastico):

Nu(Tn.): -8810.0 aplicado en Yo(cm)= 107.0

TRACCION SIMPLE(Rigido/Plastico):

Nu(Tn.): 3126.7 aplicado en Yo(cm)= 231.2

CORTANTE ULTIMO(Rigido/Plastico):

Vu(Tn.): 0.0 Ru(Kg/cm): 0.0

Xv1(cm): 0.0 Xv2(cm): 0.0

S.parciales resistentes: Rcu(Kg/cm):

ANALISIS EN ROTURA(ELASTOPLASTICO)

Título Sección: SEC1

* PRESOLICITACIONES ELASTICAS

Análisis SIN FISURACION

Pretensado: 2259.54Tn.

(Todas las Armaduras activas a .80*Fyk)

ESTUDIO SECCION C+P

Análisis con Resistencia de materiales MINORADAS

Def. Última Acero Estructural (COMPRESION) (%): 2.50

Def. Última Acero Estructural (TRACCION) (%): 2.50

Deformación Última Hormigón (COMPRESION): Pivote en Bloque de Hormigón

Deformación Última Hormigón (TRACCION) (%): 1.00

Coefficiente Ideal Fluencia [μ * (Cperm./Ctot.)]: 0.00

FLEXION PURA POSITIVA:

Mu(m.T): 3765.4 Xu(cm.): 191.1

Nu(Tn.): -0.0 Qu(Tn.): 0.0

Deformaciones Últimas: Ecmx= -.00350 Etmx= .00127

Rompe la fibra superior de la S.parcial 2

FLEXION PURA NEGATIVA:

Mu(m.T): -349.2 Xu(cm.): 247.1

Nu(Tn.): -.5 Qu(Tn.): 0.0

Deformaciones Últimas: Ecmx= -.00252 Etmx= .01000

Rompe la fibra superior de la S.parcial 2

COMPRESION SIMPLE(Rigido/Plastico):

Nu(Tn.): -4763.6 aplicado en Yo(cm)= 178.8

TRACCION SIMPLE(Rigido/Plastico):

Nu(Tn.): 2650.2 aplicado en Yo(cm)= 258.5

CORTANTE ULTIMO(Rigido/Plastico):

Vu(Tn.): 0.0 Ru(Kg/cm): 0.0

Xv1(cm): 0.0 Xv2(cm): 0.0

S.parciales resistentes: Rcu(Kg/cm):

Proyecto:
Viaducto V-1. Santa Oliva

Seccion:SEC2

MATERIALES

Num.	Fck	Gamma	M.El.	J _{r1}	J _{r2}
	(Kg/cm2)		(Kg/cm2)		
1(HO)	300.0	1.50	285770	2.60	1.45
2(HO)	550.0	1.50	338219	2.60	1.45
3(RD)	5100.0	1.15	2100000		
4(PR)	17100.0	1.15	1800000		

SECCIONES PARCIALES

Num	Mat.	B(cm)	H(cm)	Yo(cm)	Mc	Nsr
		Num	r(mm)			
1	1	700.0	30.0	0.0	C*	0
2	2	90.0	30.0	30.0	C*	0
3	2	36.0	198.0	60.0	C*	0
4	2	179.0	27.0	258.0	C*	0
5	4	28.0	13.4	280.0	*T	0
6	4	26.0	13.4	275.2	*T	0
7	4	28.0	13.4	270.4	*T	0
8	4	0.0	13.4	265.4	*T	0
9	4	8.0	13.4	45.0	*T	0
10	3	35.0	12.0	5.0	CT	0
11	3	35.0	12.0	19.0	CT	0
12	3	8.0	20.0	265.0	CT	0
13	3	9.0	8.0	260.0	CT	0

SECCIONES INTERMEDIAS

Num.	Codigo	Componentes
1	CAJ	2 3 4
2	LOS	1
3	C+P	2 3 4 5 6 7
		8 9 12 13
4	PS	9
5	PI	6 7 8 5

* CONSTANTES ESTATICAS *

S.COMPLETA

Tipo	Acciones	Area(cm2)	Xcg(cm)	Inercia(cm4)
F.pura +	(0)	2643.7	25.48	8419357.7
	(1)	1080.1	47.25	7542818.2
	(2)	1435.4	38.83	7858498.5
F.pura -	(0)	1046.2	249.19	5348188.6
	(1)	490.8	222.11	4684068.7
	(2)	598.1	231.15	4900040.8
C.Simple	(0)	5435.8	90.65	56912419.0
	(1)	1666.5	97.92	19176953.6
	(2)	2347.0	94.88	26019699.7
I.Simple	(0)	216.8	168.08	3485668.0
	(1)	216.8	168.08	3485668.0
	(2)	216.8	168.08	3485668.0

*** Nota: Homogeneizadas a E=2100000 Kp/cm2 ***

ANALISIS EN ROTURA(ELASTOPLASTICO)

Título Sección: SEC2

* PRESOLICITACIONES ELASTICAS

Analisis SIN FISURACION

Pretensado: 1723.38Tn.
(Todas las Armaduras activas a .80*Fyk)

ESTUDIO SECCION COMPLETA

Analisis con Resistencia de materiales MINORADAS

Def. Ultima Acero Estructural(COMPRESION) (%): 2.50

Def. Ultima Acero Estructural(TRACCION) (%): 2.50

Deformacion Ultima Hormigon(COMPRESION) : Pivote en Bloque de Hormigon

Deformacion Ultima Hormigon(TRACCION) (%): 1.00

Coefficiente Ideal Fluencia[μ^* (Cperm./Ctot.)]: 0.00

FLEXION PURA POSITIVA:

Mu(m.T): 5296.2 Xu(cm.): 32.7

Nu(Tn.): -.1 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00131 Etmx= .01000

Rompe la fibra inferior de la S.parcial 4

FLEXION PURA NEGATIVA:

Mu(m.T): -1226.7 Xu(cm.): 242.4

Nu(Tn.): -.8 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00236 Etmx= .01000

Rompe la fibra superior de la S.parcial 1

COMPRESION SIMPLE(Rigido/Plastico):

Nu(Tn.): -8622.0 aplicado en Yo(cm)= 103.6

TRACCION SIMPLE(Rigido/Plastico):

Nu(Tn.): 2355.9 aplicado en Yo(cm)= 219.8

CORTANTE ULTIMO(Rigido/Plastico):

Vu(Tn.): 0.0 Ru(Kg/cm): 0.0

Xv1(cm): 0.0 Xv2(cm): 0.0

S.parciales resistentes: Rcu(Kg/cm):

ANALISIS EN ROTURA(ELASTOPLASTICO)

Título Sección: SEC2

* PRESOLICITACIONES ELASTICAS

Analisis SIN FISURACION

Pretensado: 1723.38Tn.

(Todas las Armaduras activas a .80*Fyk)

ESTUDIO SECCION C+P

Analisis con Resistencia de materiales MINORADAS

Def. Ultima Acero Estructural(COMPRESION) (%): 2.50

Def. Ultima Acero Estructural(TRACCION) (%): 2.50

Deformacion Ultima Hormigon(COMPRESION) : Pivote en Bloque de Hormigon

Deformacion Ultima Hormigon(TRACCION) (%): 1.00

Coefficiente Ideal Fluencia[μ^* (Cperm./Ctot.)]: 0.00

FLEXION PURA POSITIVA:

Mu(m.T): 3449.1 Xu(cm.): 165.9

Nu(Tn.): -0.0 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00350 Etmx= .00245
Rompe la fibra superior de la S.parcial 2

FLEXION PURA NEGATIVA:

Mu(m.T): -355.7 Xu(cm.): 254.6

Nu(Tn.): -.9 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00197 Etmx= .01000
Rompe la fibra superior de la S.parcial 2

COMPRESION SIMPLE(Rigido/Plastico):

Nu(Tn.): -4700.9 aplicado en Yo(cm)= 177.6

TRACCION SIMPLE(Rigido/Plastico):

Nu(Tn.): 2004.8 aplicado en Yo(cm)= 256.0

CORTANTE ULTIMO(Rigido/Plastico):

Vu(Tn.): 0.0 Ru(Kg/cm): 0.0

Xv1(cm): 0.0 Xv2(cm): 0.0
S.parciales resistentes: Rcu(Kg/cm):

Título Sección: SEC2

* PRESOLICITACIONES ELASTICAS

Análisis SIN FISURACION

Pretensado: 2661.66Tn.
(Todas las Armaduras activas a .80*Fyk)

ESTUDIO SECCION COMPLETA

Análisis con Resistencia de materiales MINORADAS

Def. Ultima Acero Estructural(COMPRESION)(%): 2.50

Def. Ultima Acero Estructural(TRACCION)(%): 2.50

Deformacion Ultima Hormigon(COMPRESION) : Pivote en Bloque de Hormigon

Deformacion Ultima Hormigon(TRACCION)(%): 1.00

Coefficiente Ideal Fluencia[μ *(Cperm./Ctot.)]: 0.00

FLEXION PURA POSITIVA:

Mu(m.T): 5252.7 Xu(cm.): 37.1

Nu(Tn.): -0.0 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00165 Etmx= .01000
Rompe la fibra inferior de la S.parcial 4

FLEXION PURA NEGATIVA:

Mu(m.T): -3510.3 Xu(cm.): 175.4

Nu(Tn.): .9 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00350 Etmx= .00461
Rompe la fibra inferior de la S.parcial 4

COMPRESION SIMPLE(Rigido/Plastico):

Nu(Tn.): -8622.0 aplicado en Yo(cm)= 103.6

TRACCION SIMPLE(Rigido/Plastico):

Nu(Tn.): 3375.7 aplicado en Yo(cm)= 157.2

CORTANTE ULTIMO(Rigido/Plastico):

Vu(Tn.): 0.0 Ru(Kg/cm): 0.0

Xv1(cm): 0.0 Xv2(cm): 0.0
S.parciales resistentes: Rcu(Kg/cm):

ANALISIS EN ROTURA(ELASTOPLASTICO)

Título Sección: SEC2

* PRESOLICITACIONES ELASTICAS

Análisis SIN FISURACION

Pretensado: 2661.66Tn.
(Todas las Armaduras activas a .80*Fyk)

ESTUDIO SECCION C+P

Análisis con Resistencia de materiales MINORADAS

Def. Ultima Acero Estructural(COMPRESION)(%): 2.50

Def. Ultima Acero Estructural(TRACCION)(%): 2.50

Deformacion Ultima Hormigon(COMPRESION) : Pivote en Bloque de Hormigon

Deformacion Ultima Hormigon(TRACCION)(%): 1.00

Coefficiente Ideal Fluencia[μ *(Cperm./Ctot.)]: 0.00

FLEXION PURA POSITIVA:

Mu(m.T): 3449.1 Xu(cm.): 164.4

Nu(Tn.): -0.0 Qu(Tn.): 0.0

Proyecto:
Viaducto V-1. Santa Oliva

Seccion:SEC2

MATERIALES

Num.	Fck (Kg/cm2)	Gamma	M.El. (Kg/cm2)	J _{π1}	J _{π2}
1(HO)	300.0	1.50	285770	2.60	1.45
2(HO)	550.0	1.50	338219	2.60	1.45
3(RD)	5100.0	1.15	2100000		
4(PR)	17100.0	1.15	1800000		

SECCIONES PARCIALES

Num	Mat.	B (cm)	H (cm)	Yo (cm)	Mc	Nsr
Num π (mm)						
1	1	700.0	30.0	0.0	C*	0
2	2	90.0	30.0	30.0	C*	0
3	2	36.0	198.0	60.0	C*	0
4	2	179.0	27.0	258.0	C*	0
5	4	28.0	13.4	280.0	*T	0
6	4	26.0	13.4	275.2	*T	0
7	4	28.0	13.4	270.4	*T	0
8	4	0.0	13.4	265.4	*T	0
9	4	8.0	13.4	45.0	*T	0
10	3	35.0	12.0	5.0	CT	0
11	3	35.0	12.0	19.0	CT	0
12	3	8.0	20.0	265.0	CT	0
13	3	9.0	8.0	260.0	CT	0
14	4	49.0	13.4	12.0	*T	0

SECCIONES INTERMEDIAS

Num.	Codigo	Componentes
1	CAJ	2 3 4
2	LOS	1
3	C+P	2 3 4 5 6 7 8 9 12 13
4	PS	9
5	PI	6 7 8 5

* CONSTANTES ESTATICAS *

S.COMPLETA

Tipo	Acciones	Area (cm2)	Xcg (cm)	Inercia (cm4)
F.pura +	(0)	2675.8	25.20	8428803.3
	(1)	1131.6	45.46	7609486.6
	(2)	1488.1	37.80	7897151.9
F.pura -	(0)	1175.7	237.00	8465885.4
	(1)	584.6	200.40	6992925.3
	(2)	701.6	212.24	7460703.7
C.Simple	(0)	5494.5	89.81	57266099.1
	(1)	1725.3	95.02	19589712.9
	(2)	2405.8	92.87	26407361.0
I.Simple	(0)	275.6	134.92	4602664.3
	(1)	275.6	134.92	4602664.3
	(2)	275.6	134.92	4602664.3

*** Nota: Homogeneizadas a E=2100000 Kp/cm2 ***

ANALISIS EN ROTURA(ELASTOPLASTICO)

Deformaciones Ultimas: Ecmx= -.00350 Etmx= .00245
Rompe la fibra superior de la S.parcial 2

FLEXION PURA NEGATIVA:

Mu(m.T): -355.7 Xu(cm.): 254.2

Nu(Tn.): -.8 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00197 Etmx= .01000
Rompe la fibra superior de la S.parcial 2

COMPRESION SIMPLE(Rigido/Plastico):

Nu(Tn.): -4700.9 aplicado en Yo(cm)= 177.6

TRACCION SIMPLE(Rigido/Plastico):

Nu(Tn.): 2004.8 aplicado en Yo(cm)= 256.0

CORTANTE ULTIMO(Rigido/Plastico):

Vu(Tn.): 0.0 Ru(Kg/cm): 0.0

Xv1(cm): 0.0 Xv2(cm): 0.0

S.parciales resistentes: Rcu(Kg/cm):

Proyecto:
Viaducto V-1. Santa Oliva

Seccion: SEC3

MATERIALES

Num.	Fck (Kg/cm2)	Gamma	M.El. (Kg/cm2)	J _{II} 1	J _{II} 2
1(HO)	300.0	1.50	285770	2.60	1.45
2(HO)	550.0	1.50	338219	2.60	1.45
3(RD)	5100.0	1.15	2100000		
4(PR)	17100.0	1.15	1800000		

SECCIONES PARCIALES

Num	Mat.	B(cm)	H(cm)	Yo(cm)	Mc	Nsr
Num π (mm)						
1	1	700.0	30.0	0.0	C*	0
2	2	90.0	30.0	30.0	C*	0
3	2	36.0	198.0	60.0	C*	0
4	2	179.0	27.0	258.0	C*	0
5	4	28.0	13.4	280.0	*T	0
6	4	26.0	13.4	275.2	*T	0
7	4	0.0	0.0	0.0	*T	0
8	4	0.0	0.0	0.0	*T	0
9	4	8.0	13.4	45.0	*T	0
10	3	35.0	12.0	5.0	CT	0
11	3	35.0	12.0	19.0	CT	0
12	4	105.0	13.4	18.0	*T	0
13	3	0.0	0.0	0.0	CT	0

SECCIONES INTERMEDIAS

Num.	Codigo	Componentes
1	CAJ	2 3 4
2	LOS	1
3	C+P	2 3 4 5 6 7
		8 9
4	PS	9
5	PI	6 7 8 5

* CONSTANTES ESTATICAS *

S.COMPLETA

Tipo	Acciones	Area(cm2)	Xcg(cm)	Inercia(cm4)
F.pura +	(0)	2058.0	18.67	4589998.6
	(1)	1079.1	31.42	4278989.1
	(2)	1332.3	27.08	4381237.9
F.pura -	(0)	1257.2	223.63	11229713.7
	(1)	631.2	173.92	8356637.8
	(2)	757.9	190.10	9277218.4
C.Simple	(0)	5498.5	86.96	55493479.2
	(1)	1729.2	85.92	17882493.3
	(2)	2409.7	86.34	24673174.5
I.Simple	(0)	279.5	78.07	3397218.0
	(1)	279.5	78.07	3397218.0
	(2)	279.5	78.07	3397218.0

*** Nota: Homogeneizadas a E=2100000 Kp/cm2 ***

ANALISIS EN ROTURA(ELASTOPLASTICO)

Título Sección: SEC3

* PRESOLICITACIONES ELASTICAS

Análisis SIN FISURACION

Pretensado: 3197.83Tn.
(Todas las Armaduras activas a .80*Fyk)

ESTUDIO SECCION COMPLETA

Análisis con Resistencia de materiales MINORADAS

Def. Ultima Acero Estructural (COMPRESION) (%): 2.50

Def. Ultima Acero Estructural (TRACCION) (%): 2.50

Deformacion Ultima Hormigon (COMPRESION) : Pivote en Bloque de Hormigon

Deformacion Ultima Hormigon (TRACCION) (%): 1.00

Coefficiente Ideal Fluencia [π^* (Cperm./Ctot.)]: 0.00

FLEXION PURA POSITIVA:

Mu(m.T): 3374.4 Xu(cm.): 35.7

Nu(Tn.): -0.0 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00172 Etmx= .01000

Rompe la fibra inferior de la S.parcial 4

FLEXION PURA NEGATIVA:

Mu(m.T): -4786.7 Xu(cm.): 108.6

Nu(Tn.): -.1 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00350 Etmx= .00169

Rompe la fibra inferior de la S.parcial 4

COMPRESION SIMPLE(Rigido/Plastico):

Nu(Tn.): -8490.4 aplicado en Yo(cm)= 101.1

TRACCION SIMPLE(Rigido/Plastico):

Nu(Tn.): 3827.0 aplicado en Yo(cm)= 95.6

CORTANTE ULTIMO(Rigido/Plastico):

Vu(Tn.): 0.0 Ru(Kg/cm): 0.0

Xv1(cm): 0.0 Xv2(cm): 0.0

S.parciales resistentes: Rcu(Kg/cm):

ANALISIS EN ROTURA(ELASTOPLASTICO)

Título Sección: SEC3

* PRESOLICITACIONES ELASTICAS

Análisis SIN FISURACION

Pretensado: 3197.83Tn.

(Todas las Armaduras activas a .80*Fyk)

ESTUDIO SECCION C+P

Análisis con Resistencia de materiales MINORADAS

Def. Ultima Acero Estructural (COMPRESION) (%): 2.50

Def. Ultima Acero Estructural (TRACCION) (%): 2.50

Deformacion Ultima Hormigon (COMPRESION) : Pivote en Bloque de Hormigon

Deformacion Ultima Hormigon (TRACCION) (%): 1.00

Coefficiente Ideal Fluencia [π^* (Cperm./Ctot.)]: 0.00

FLEXION PURA POSITIVA:

Mu(m.T): 2602.6 Xu(cm.): 108.1

Nu(Tn.): -1.0 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00350 Etmx= .00699
Rompe la fibra superior de la S.parcial 2

FLEXION PURA NEGATIVA:

Mu(m.T): -372.2 Xu(cm.): 259.5

Nu(Tn.): -0.0 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00151 Etmx= .00699
Rompe la fibra superior de la S.parcial 2

COMPRESION SIMPLE(Rigido/Plastico):

Nu(Tn.): -4569.3 aplicado en Yo(cm)= 175.1

TRACCION SIMPLE(Rigido/Plastico):

Nu(Tn.): 1290.5 aplicado en Yo(cm)= 248.3

CORTANTE ULTIMO(Rigido/Plastico):

Vu(Tn.): 0.0 Ru(Kg/cm): 0.0

Xv1(cm): 0.0 Xv2(cm): 0.0
S.parciales resistentes: Rcu(Kg/cm):

Proyecto:
Viaducto V-1. Santa Oliva

Seccion:SEC4

MATERIALES

Num.	Fck (Kg/cm2)	Gamma	M.El. (Kg/cm2)	J _{r1}	J _{r2}
1(HO)	300.0	1.50	285770	2.60	1.45
2(HO)	550.0	1.50	338219	2.60	1.45
3(RD)	5100.0	1.15	2100000		
4(PR)	17100.0	1.15	1800000		

SECCIONES PARCIALES

Num	Mat.	B(cm)	H(cm)	Yo(cm)	Mc	Nsr
Num r(mm)						
1	1	700.0	30.0	0.0	C*	0
2	2	90.0	30.0	30.0	C*	0
3	2	36.0	198.0	60.0	C*	0
4	2	179.0	27.0	258.0	C*	0
5	4	28.0	13.4	280.0	*T	0
6	4	0.0	0.0	0.0	*T	0
7	4	0.0	0.0	0.0	*T	0
8	4	0.0	0.0	0.0	*T	0
9	4	8.0	13.4	45.0	*T	0
10	3	35.0	20.0	5.0	CT	0
11	3	35.0	20.0	19.0	CT	0
12	4	105.0	13.4	18.0	*T	0
13	3	0.0	0.0	0.0	CT	0

SECCIONES INTERMEDIAS

Num.	Codigo	Componentes
1	CAJ	2 3 4
2	LOS	1
3	C+P	2 3 4 5 6 7
		8 9
4	PS	9
5	PI	6 7 8 5

* CONSTANTES ESTATICAS *

S.COMPLETA

Tipo	Acciones	Area(cm2)	Xcg(cm)	Inercia(cm4)
F.pura +	(0)	1738.8	14.17	2499473.9
	(1)	974.3	22.12	2377111.8
	(2)	1150.5	19.59	2414319.3
F.pura -	(0)	1493.4	201.78	16689465.8
	(1)	794.8	140.32	10796605.1
	(2)	939.7	159.59	12605395.3
C.Simple	(0)	5608.0	84.05	55105044.9
	(1)	1838.8	77.13	17365651.4
	(2)	2519.3	79.91	24207909.5
T.Simple	(0)	389.1	38.75	2174022.9
	(1)	389.1	38.75	2174022.9
	(2)	389.1	38.75	2174022.9

*** Nota: Homogeneizadas a E=2100000 Kp/cm2 ***

ANALISIS EN ROTURA(ELASTOPLASTICO)

Título Sección: SEC4

* PRESOLICITACIONES ELASTICAS

Análisis SIN FISURACION

Pretensado: 2699.96Tn.

(Todas las Armaduras activas a .80*Fyk)

ESTUDIO SECCION COMPLETA

Análisis con Resistencia de materiales MINORADAS

Def. Última Acero Estructural (COMPRESION) (%): 2.50

Def. Última Acero Estructural (TRACCION) (%): 2.50

Deformación Última Hormigón (COMPRESION) : Pivote en Bloque de Hormigón

Deformación Última Hormigón (TRACCION) (%): 1.00

Coefficiente Ideal Fluencia [μ *(Cperm./Ctot.)]: 0.00

FLEXION PURA POSITIVA:

Mu(m.T): 1878.4 Xu(cm.): 27.9

Nu(Tn.): -0.0 Qu(Tn.): 0.0

Deformaciones Últimas: Ecmx= -.00136 Etmx= .01000

Rompe la fibra inferior de la S.parcial 4

FLEXION PURA NEGATIVA:

Mu(m.T): -5582.4 Xu(cm.): 99.2

Nu(Tn.): -.6 Qu(Tn.): 0.0

Deformaciones Últimas: Ecmx= -.00350 Etmx= .00152

Rompe la fibra inferior de la S.parcial 4

COMPRESION SIMPLE(Rigido/Plastico):

Nu(Tn.): -9114.6 aplicado en Yo(cm)= 95.0

TRACCION SIMPLE(Rigido/Plastico):

Nu(Tn.): 3910.0 aplicado en Yo(cm)= 57.5

CORTANTE ULTIMO(Rigido/Plastico):

Vu(Tn.): 0.0 Ru(Kg/cm): 0.0

Xv1(cm): 0.0 Xv2(cm): 0.0

S.parciales resistentes: Rcu(Kg/cm):

ANALISIS EN ROTURA(ELASTOPLASTICO)

Título Sección: SEC4

* PRESOLICITACIONES ELASTICAS

Análisis SIN FISURACION

Pretensado: 2699.96Tn.

(Todas las Armaduras activas a .80*Fyk)

ESTUDIO SECCION C+P

Análisis con Resistencia de materiales MINORADAS

Def. Última Acero Estructural (COMPRESION) (%): 2.50

Def. Última Acero Estructural (TRACCION) (%): 2.50

Deformación Última Hormigón (COMPRESION) : Pivote en Bloque de Hormigón

Deformación Última Hormigón (TRACCION) (%): 1.00

Coefficiente Ideal Fluencia [μ *(Cperm./Ctot.)]: 0.00

FLEXION PURA POSITIVA:

Mu(m.T): 1501.6 Xu(cm.): 68.5

Nu(Tn.): -0.0 Qu(Tn.): 0.0

Deformaciones Últimas: Ecmx= -.00350 Etmx= .01000
Rompe la fibra inferior de la S.parcial 4

FLEXION PURA NEGATIVA:

Mu(m.T): -396.5 Xu(cm.): 264.1

Nu(Tn.): .6 Qu(Tn.): 0.0

Deformaciones Últimas: Ecmx= -.00109 Etmx= .01000

Rompe la fibra superior de la S.parcial 2

COMPRESION SIMPLE(Rigido/Plastico):

Nu(Tn.): -4569.3 aplicado en Yo(cm)= 175.1

TRACCION SIMPLE(Rigido/Plastico):

Nu(Tn.): 749.3 aplicado en Yo(cm)= 228.4

CORTANTE ULTIMO(Rigido/Plastico):

Vu(Tn.): 0.0 Ru(Kg/cm): 0.0

Xv1(cm): 0.0 Xv2(cm): 0.0

S.parciales resistentes: Rcu(Kg/cm):

Proyecto:
Viaducto V-1. Santa Oliva

Seccion:SEC4A

MATERIALES

Num.	Fck (Kg/cm2)	Gamma	M.El. (Kg/cm2)	J _{II} 1	J _{II} 2
1(HO)	350.0	1.50	285770	2.60	1.45
2(HO)	550.0	1.50	338219	2.60	1.45
3(RD)	5100.0	1.15	2100000		
4(PR)	17100.0	1.15	1800000		

SECCIONES PARCIALES

Num	Mat.	B(cm)	H(cm)	Yo(cm)	Mc	Nsr
Num II (mm)						
1	1	700.0	30.0	0.0	C*	0
2	2	90.0	30.0	30.0	C*	0
3	2	36.0	198.0	60.0	C*	0
4	2	179.0	27.0	258.0	C*	0
5	4	28.0	13.4	280.0	*T	0
6	4	0.0	0.0	0.0	*T	0
7	4	0.0	0.0	0.0	*T	0
8	4	0.0	0.0	0.0	*T	0
9	4	8.0	13.4	45.0	*T	0
10	3	70.0	20.0	5.0	CT	0
11	3	70.0	20.0	19.0	CT	0
12	4	105.0	13.4	18.0	*T	0
13	2	130.0	25.0	233.0	C*	0

SECCIONES INTERMEDIAS

Num.	Codigo	Componentes
1	CAJ	2 3 4
2	LOS	1
3	C+P	2 3 4 5 6 7 8 9 13
4	PS	9
5	PI	6 7 8 5

* CONSTANTES ESTATICAS *

S.COMPLETA

Tipo	Acciones	Area(cm2)	Xcg(cm)	Inercia(cm4)
F.pura +	(0)	1946.2	14.04	2510590.3
	(1)	1148.9	20.41	2402833.1
	(2)	1328.7	18.51	2433160.0
F.pura -	(0)	2284.6	193.54	25411207.2
	(1)	1177.7	129.45	15849871.5
	(2)	1397.0	149.57	18790222.0
C.Simple	(0)	6351.4	94.90	69149621.2
	(1)	2204.1	81.84	22361434.8
	(2)	2952.8	86.91	30927907.5
T.Simple	(0)	609.0	29.45	2278045.8
	(1)	609.0	29.45	2278045.8
	(2)	609.0	29.45	2278045.8

*** Nota: Homogeneizadas a E=2100000 Kp/cm2 ***

ANALISIS EN ROTURA(ELASTOPLASTICO)

Título Sección: SEC4A

* PRESOLICITACIONES ELASTICAS

Analisis SIN FISURACION

Pretensado: 2699.96Tn.
(Todas las Armaduras activas a .80*Fyk)

ESTUDIO SECCION COMPLETA

Analisis con Resistencia de materiales MINORADAS

Def. Ultima Acero Estructural(COMPRESION) (%): 2.50

Def. Ultima Acero Estructural(TRACCION) (%): 2.50

Deformacion Ultima Hormigon(COMPRESION) : Pivote en Bloque de Hormigon

Deformacion Ultima Hormigon(TRACCION) (%): 1.00

Coefficiente Ideal Fluencia[μ^* (Cperm./Ctot.)]: 0.00

FLEXION PURA POSITIVA:

Mu(m.T): 1915.5 Xu(cm.): 23.6

Nu(Tn.): .9 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00116 Etmx= .01000

Rompe la fibra inferior de la S.parcial 4

FLEXION PURA NEGATIVA:

Mu(m.T): -7823.7 Xu(cm.): 108.3

Nu(Tn.): -0.0 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00350 Etmx= .00183

Rompe la fibra inferior de la S.parcial 4

COMPRESION SIMPLE(Rigido/Plastico):

Nu(Tn.): -11697.8 aplicado en Yo(cm)= 97.2

TRACCION SIMPLE(Rigido/Plastico):

Nu(Tn.): 4885.3 aplicado en Yo(cm)= 48.6

CORTANTE ULTIMO(Rigido/Plastico):

Vu(Tn.): 0.0 Ru(Kg/cm): 0.0

Xv1(cm): 0.0 Xv2(cm): 0.0

S.parciales resistentes: Rcu(Kg/cm):

ANALISIS EN ROTURA(ELASTOPLASTICO)

Título Sección: SEC4A

* PRESOLICITACIONES ELASTICAS

Analisis SIN FISURACION

Pretensado: 2699.96Tn.
(Todas las Armaduras activas a .80*Fyk)

ESTUDIO SECCION C+P

Analisis con Resistencia de materiales MINORADAS

Def. Ultima Acero Estructural(COMPRESION) (%): 2.50

Def. Ultima Acero Estructural(TRACCION) (%): 2.50

Deformacion Ultima Hormigon(COMPRESION) : Pivote en Bloque de Hormigon

Deformacion Ultima Hormigon(TRACCION) (%): 1.00

Coefficiente Ideal Fluencia[μ^* (Cperm./Ctot.)]: 0.00

FLEXION PURA POSITIVA:

Mu(m.T): 1501.6 Xu(cm.): 68.9

Nu(Tn.): -0.0 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00350 Etmx= .01000
Rompe la fibra inferior de la S.parcial 4

FLEXION PURA NEGATIVA:

Mu(m.T): -396.6 Xu(cm.): 262.9

Nu(Tn.): .1 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00109 Etmx= .01000
Rompe la fibra superior de la S.parcial 2

COMPRESION SIMPLE(Rigido/Plastico):

Nu(Tn.): -5582.3 aplicado en Yo(cm)= 187.9

TRACCION SIMPLE(Rigido/Plastico):

Nu(Tn.): 749.3 aplicado en Yo(cm)= 228.4

CORTANTE ULTIMO(Rigido/Plastico):

Vu(Tn.): 0.0 Ru(Kg/cm): 0.0

Xv1(cm): 0.0 Xv2(cm): 0.0
S.parciales resistentes: Rcu(Kg/cm):

Proyecto:
Viaducto V-1. Santa Oliva

Seccion:SEC4B

MATERIALES

Num.	Fck (Kg/cm2)	Gamma	M.El. (Kg/cm2)	J _{π1}	J _{π2}
1(HO)	350.0	1.50	285770	2.60	1.45
2(HO)	550.0	1.50	338219	2.60	1.45
3(RD)	5100.0	1.15	2100000		
4(PR)	17100.0	1.15	1800000		

SECCIONES PARCIALES

Num	Mat.	B(cm)	H(cm)	Yo(cm)	Mc	Nsr
		Num	π(mm)			
1	1	700.0	30.0	0.0	C*	0
2	2	90.0	30.0	30.0	C*	0
3	2	36.0	198.0	60.0	C*	0
4	2	179.0	27.0	258.0	C*	0
5	4	28.0	13.4	280.0	*T	0
6	4	0.0	0.0	0.0	*T	0
7	4	0.0	0.0	0.0	*T	0
8	4	0.0	0.0	0.0	*T	0
9	4	8.0	13.4	45.0	*T	0
10	3	70.0	20.0	5.0	CT	0
11	3	70.0	20.0	19.0	CT	0
12	4	105.0	13.4	18.0	*T	0
13	2	130.0	64.8	193.2	C*	0

SECCIONES INTERMEDIAS

Num.	Codigo	Componentes
1	CAJ	2 3 4
2	LOS	1
3	C+P	2 3 4 5 6 7
		8 9
4	PS	9
5	PI	6 7 8 5

* CONSTANTES ESTATICAS *

S.COMPLETA

Tipo	Acciones	Area(cm2)	Xcg(cm)	Inercia(cm4)
F.pura +	(0)	1946.2	14.04	2510590.3
	(1)	1148.9	20.41	2402833.1
	(2)	1328.7	18.51	2433160.0
F.pura -	(0)	2967.4	198.90	25753297.3
	(1)	1386.8	143.30	17232734.3
	(2)	1707.4	162.11	19937693.4
C.Simple	(0)	7184.7	108.61	79551811.3
	(1)	2435.6	94.31	26001123.2
	(2)	3292.9	99.94	35829465.4
T.Simple	(0)	609.0	29.45	2278045.8
	(1)	609.0	29.45	2278045.8
	(2)	609.0	29.45	2278045.8

*** Nota: Homogeneizadas a E=2100000 Kp/cm2 ***

ANALISIS EN ROTURA(ELASTOPLASTICO)

Título Sección: SEC4B

* PRESOLICITACIONES ELASTICAS

Analisis SIN FISURACION

Pretensado: 2699.96Tn.

(Todas las Armaduras activas a $.80 \cdot F_{yk}$)

ESTUDIO SECCION COMPLETA

Analisis con Resistencia de materiales MINORADAS

Def. Ultima Acero Estructural (COMPRESION) (%): 2.50

Def. Ultima Acero Estructural (TRACCION) (%): 2.50

Deformacion Ultima Hormigon (COMPRESION) : Pivote en Bloque de Hormigon

Deformacion Ultima Hormigon (TRACCION) (%): 1.00

Coefficiente Ideal Fluencia [μ *($C_{perm.}/C_{tot.}$): 0.00

FLEXION PURA POSITIVA:

Mu(m.T): 1915.5 Xu(cm.): 23.7

Nu(Tn.): .9 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00116 Etmx= .01000

Rompe la fibra inferior de la S.parcial 4

FLEXION PURA NEGATIVA:

Mu(m.T): -9635.9 Xu(cm.): 173.5

Nu(Tn.): -.5 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00350 Etmx= .00509

Rompe la fibra inferior de la S.parcial 4

COMPRESION SIMPLE(Rigido/Plastico):

Nu(Tn.): -13310.3 aplicado en Yo(cm)= 111.2

TRACCION SIMPLE(Rigido/Plastico):

Nu(Tn.): 4885.3 aplicado en Yo(cm)= 48.6

CORTANTE ULTIMO(Rigido/Plastico):

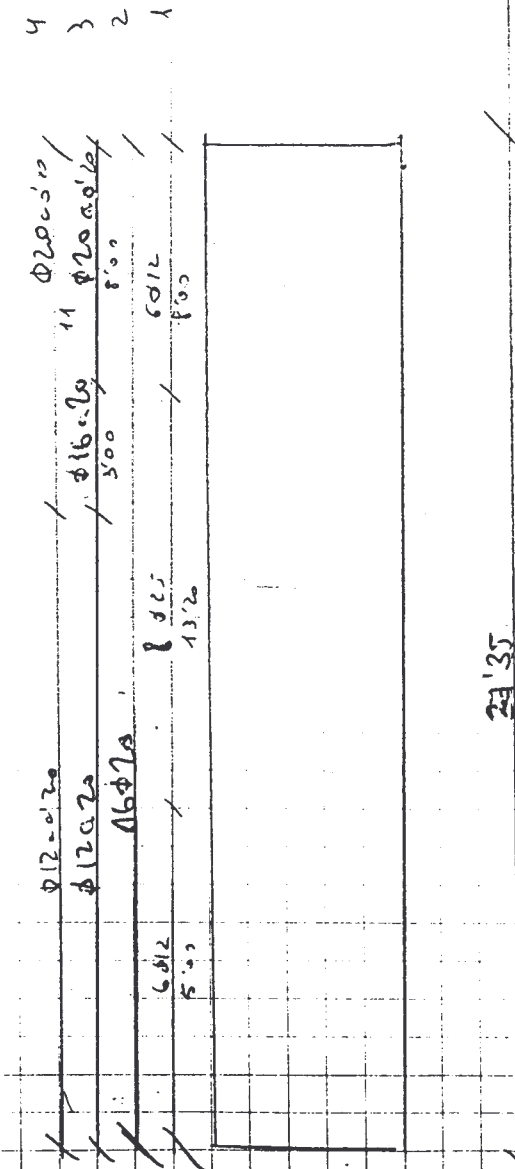
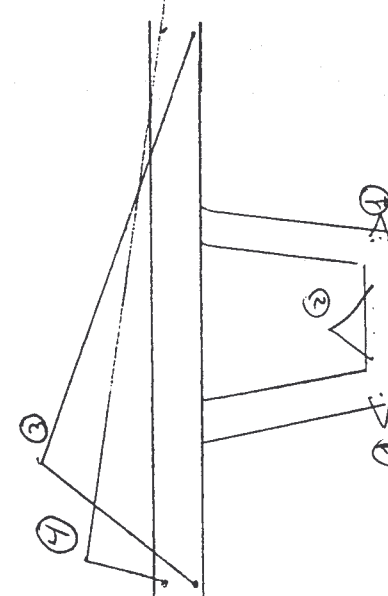
Vu(Tn.): 0.0 Ru(Kg/cm): 0.0

Xv1(cm): 0.0 Xv2(cm): 0.0

S.parciales resistentes: Rcu(Kg/cm)

IDEAM

KIGAS EN
VANO DE 21'35



CÁLCULO MZ EN ROTURA
 Método de cálculo:
 E.L.U. MZ

Barra	Nudo	X	PUENTE CONSTRUIDO		PUENTE EN CONSTRUCCIÓN		PRETENDIDO INF DE CAJÓN				PRET SUP CAJÓN	PRET LOSA SUP	PUENTE CONSTRUIDO		PUENTE EN CONSTRUCCIÓN	
			Mdz+ (Tm)	Mdz- (Tm)	Mdz+ (Tm)	Mdz- (Tm)	PRET	PRET	PRET	PRET	PRET	PRET	MU+ (Tm)	MU- (Tm)	MU+ (Tm)	MU- (Tm)
							2.8	2.752	2.704	2.656	0.45	0.12				
101	101	0	4.26	-3.03	0.00	0.00	28				8		2494	-1288	1501	-396
101	102	2.74	1699.39	225.39	372.75	115.80	28				8		2494	-1288	1501	-396
102	102	2.74	1700.95	226.21	372.75	115.80	28	14			8		3327.4	-1270.6	2173	-384
102	103	5.48	2981.18	310.55	646.88	205.75	28	14			8		3327.4	-1270.6	2173	-384
103	103	5.48	2982.84	311.20	646.88	205.75	28	26			8		4339	-1253	2602	-372
103	104	8.22	3840.53	251.58	822.38	269.86	28	26			8		4339	-1253	2602	-372
104	104	8.22	3842.39	251.87	822.38	269.86	28	26			8		4339	-1253	2602	-372
104	105	10.96	4274.79	43.72	899.24	292.78	28	26			8		4339	-1253	2602	-372
105	105	10.96	4277.07	43.58	899.24	292.78	28	26			8		4339	-1253	2602	-372
105	106	13.7	4278.09	-314.43	877.49	212.68	28	26			8		4339	-1253	2602	-372
106	106	13.7	4280.32	-314.93	877.49	212.68	28	26			8		4339	-1253	2602	-372
106	107	16.44	3843.13	-822.82	757.10	71.26	28	26			8		4339	-1253	2602	-372
107	107	16.44	3844.93	-823.76	757.10	71.26	28	26			8		4339	-1253	2602	-372
107	108	19.18	2992.51	-1509.75	577.67	-171.07	28	26			8		4344	-1942	2602	-372
108	108	19.18	2993.42	-1511.34	577.67		28	26			8	56	3849	-4030	2857	
108	109	21.92	1986.19	-2638.18	457.79		28	26			8	56	3849	-4030	2857	
109	109	21.92	1986.67	-2640.84	457.79		28	14			8	105	3148	-5407	2469	
109	110	24.66	1096.74	-4294.41	289.57		28	14			8	105	3148	-5407	2469	
110	110	24.66	1096.56	-4297.35	289.57		28				8	105	1878	-5582	1501	
110	###	27.4	389.72	-6669.57	47.10		28				8	105	1878	-7887	1501	

IDEAM

CSEC 1

28φ06" a 2'80m

26φ06" a 2'752m

8φ06" a 0'45"

CSEC: Con 2xφ16+6 anclaje

Mu 4339 mts con 8φ25 y 16φ20.

Mu = -1253 mts con (φ12 a 5'20 arriba) x 2

construcción: Mu+ = 2602 mts

CSEC 2

28φ06" a 2'80m

14φ06" a 2'752m.

8φ06" a 0'45".

105φ06" a 0'18m

Mu = 3148 con 5'20 a 0'10

Mu = -5407.5 mts con (φ12 a 5'20) anclaje

CSEC 3

28φ06" a 2'80m

8φ06" a 2'752m.

105φ06" a 0'18m.

Mu = 1558 mts sin parir

Mu = -5637 con (φ20 a 0'20) x 2

En momento (CSEC 4)

Mu > 2000 mts.

CSEC 1A:

28 ϕ 06" a 28 m

14 ϕ 06" a 2752 m

8 ϕ 06" a 045 m

$M_{u+} = 3324$

RS: 6 ϕ 12 + 16 ϕ 20

$M_{u-} = -12706$

NEG: ϕ 12 a 20 $\times 2$

CSEC 1B

28 ϕ 06" a 28 m

8 ϕ 06" a 045 m

$M_{u+} = 2494$

RS: 6 ϕ 12 + 16 a 20

$M_{u-} = -1288$

NEG: ϕ 12 a 20 $\times 2$

CSEC 2A

28 ϕ 06" a 28 m

26 ϕ 06" a 2732 m

56 ϕ 06" a 018 m

8 ϕ 06" a 045 m

$M_{u+} = 32497 \text{ mt}$

RS: 14 ϕ 20

$M_{u-} = -40306 \text{ mt}$

NEG: ϕ 12 a 20

Proyecto:
Viaducto V-1. Santa Oliva

Seccion: CSEC1

MATERIALES

Num.	Fck (Kg/cm2)	Gamma	M.El. (Kg/cm2)	J _{II} 1	J _{II} 2
1(HO)	300.0	1.50	285770	2.60	1.45
2(HO)	550.0	1.50	338219	2.60	1.45
3(RD)	5100.0	1.15	2100000		
4(PR)	17100.0	1.15	1800000		

SECCIONES PARCIALES

Num	Mat.	B (cm)	H (cm)	Yo (cm)	Mc	Nsr
Num II (mm)						
1	1	700.0	30.0	0.0	C*	0
2	2	90.0	30.0	30.0	C*	0
3	2	36.0	198.0	60.0	C*	0
4	2	179.0	27.0	258.0	C*	0
5	4	28.0	13.4	280.0	*T	0
6	4	26.0	13.4	275.2	*T	0
7	4	0.0	0.0	0.0	*T	0
8	4	0.0	0.0	0.0	*T	0
9	4	8.0	13.4	45.0	*T	0
10	3	35.0	12.0	5.0	CT	0
11	3	35.0	12.0	19.0	CT	0
12	3	16.0	20.0	260.0	CT	0
13	3	8.0	25.0	265.0	CT	0

SECCIONES INTERMEDIAS

Num.	Codigo	Componentes
1	CAJ	2 3 4
2	LOS	1
3	C+P	2 3 4 5 6 7
		8 9
4	PS	9
5	PI	6 7 8 5

* CONSTANTES ESTATICAS *

S.COMPLETA

Tipo	Acciones	Area (cm2)	Xcg (cm)	Inercia (cm4)
F.pura +	(0)	2874.0	27.62	9741478.0
	(1)	1125.7	52.05	8605984.2
	(2)	1484.2	42.62	9018471.4
F.pura -	(0)	1072.2	249.25	5342899.6
	(1)	514.7	223.60	4699916.2
	(2)	622.3	232.00	4904863.3
C.Simple	(0)	5462.0	91.42	57582124.5
	(1)	1692.8	100.30	19780274.7
	(2)	2373.3	96.61	26650268.5
T.Simple	(0)	243.1	177.07	3642630.4
	(1)	243.1	177.07	3642630.4
	(2)	243.1	177.07	3642630.4

*** Nota: Homogeneizadas a E=2100000 Kp/cm2 ***

ANALISIS EN ROTURA(ELASTOPLASTICO)

Título Sección: CSEC1

* PRESOLICITACIONES ELASTICAS

Análisis SIN FISURACION

Pretensado: 1187.22Tn.
(Todas las Armaduras activas a .80*Fyk)

ESTUDIO SECCION COMPLETA

Análisis con Resistencia de materiales MINORADAS

Def. Ultima Acero Estructural (COMPRESION) (%): 2.50

Def. Ultima Acero Estructural (TRACCION) (%): 2.50

Deformacion Ultima Hormigon (COMPRESION) : Pivote en Bloque de Hormigon

Deformacion Ultima Hormigon (TRACCION) (%): 1.00

Coefficiente Ideal Fluencia [μ^* (Cperm./Ctot.)]: 0.00

FLEXION PURA POSITIVA:

Mu(m.T): 4339.1 Xu(cm.): 29.5

Nu(Tn.): 0.0 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00116 Etmx= .01000

Rompe la fibra inferior de la S.parcial 4

FLEXION PURA NEGATIVA:

Mu(m.T): -1253.8 Xu(cm.): 253.1

Nu(Tn.): -0.0 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00166 Etmx= .01000

Rompe la fibra superior de la S.parcial 1

COMPRESION SIMPLE(Rigido/Plastico):

Nu(Tn.): -8887.5 aplicado en Yo(cm)= 108.3

TRACCION SIMPLE(Rigido/Plastico):

Nu(Tn.): 2038.6 aplicado en Yo(cm)= 210.6

CORTANTE ULTIMO(Rigido/Plastico):

Vu(Tn.): 0.0 Ru(Kg/cm): 0.0

Xv1(cm): 0.0 Xv2(cm): 0.0

S.parciales resistentes: Rcu(Kg/cm):

ANALISIS EN ROTURA(ELASTOPLASTICO)

Título Sección: CSEC1

* PRESOLICITACIONES ELASTICAS

Análisis SIN FISURACION

Pretensado: 1187.22Tn.

(Todas las Armaduras activas a .80*Fyk)

ESTUDIO SECCION C+P

Análisis con Resistencia de materiales MINORADAS

Def. Ultima Acero Estructural (COMPRESION) (%): 2.50

Def. Ultima Acero Estructural (TRACCION) (%): 2.50

Deformacion Ultima Hormigon (COMPRESION) : Pivote en Bloque de Hormigon

Deformacion Ultima Hormigon (TRACCION) (%): 1.00

Coefficiente Ideal Fluencia [μ^* (Cperm./Ctot.)]: 0.00

FLEXION PURA POSITIVA:

Mu(m.T): 2602.7 Xu(cm.): 111.8

Nu(Tn.): -.5 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00166 Etmx= .00699
Rompe la fibra superior de la S.parcial 2

FLEXION PURA NEGATIVA:

Mu(m.T): -372.2 Xu(cm.): 259.6

Nu(Tn.): -0.0 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00151 Etmx= .00699
Rompe la fibra superior de la S.parcial 2

COMPRESION SIMPLE(Rigido/Plastico):

Nu(Tn.): -4569.3 aplicado en Yo(cm)= 175.1

TRACCION SIMPLE(Rigido/Plastico):

Nu(Tn.): 1290.5 aplicado en Yo(cm)= 248.3

CORTANTE ULTIMO(Rigido/Plastico):

Vu(Tn.): 0.0 Ru(Kg/cm): 0.0

Xv1(cm): 0.0 Xv2(cm): 0.0
S.parciales resistentes: Rcu(Kg/cm)

Proyecto:
Viaducto V-1. Santa Oliva

Seccion:CSECL

MATERIALES

Num.	Fck (Kg/cm2)	Gamma	M.El. (Kg/cm2)	Jn1	Jn2
1(HO)	300.0	1.50	285770	2.60	1.45
2(HO)	550.0	1.50	338219	2.60	1.45
3(RD)	5100.0	1.15	2100000		
4(PR)	17100.0	1.15	1800000		

SECCIONES PARCIALES

Num	Mat.	B(cm)	H(cm)	Yo(cm)	Mc	Nsr
		Num	n (mm)			
1	1	700.0	30.0	0.0	C*	0
2	2	90.0	30.0	30.0	C*	0
3	2	36.0	198.0	60.0	C*	0
4	2	179.0	27.0	258.0	C*	0
5	4	28.0	13.4	280.0	*T	0
6	4	14.0	13.4	275.2	*T	0
7	4	0.0	0.0	0.0	*T	0
8	4	0.0	0.0	0.0	*T	0
9	4	8.0	13.4	45.0	*T	0
10	3	35.0	12.0	5.0	CT	0
11	3	35.0	12.0	19.0	CT	0
12	3	16.0	20.0	260.0	CT	0
13	3	6.0	16.0	265.0	CT	0

SECCIONES INTERMEDIAS

Num.	Codigo Componentes							
1	CAJ	2	3	4				
2	LOS	1						
3	C+P	2	3	4	5	6	7	
		8	9					
4	PS	9						
5	PI	6	7	8	5			

* CONSTANTES ESTATICAS *

S.COMPLETA

Tipo	Acciones	Area(cm2)	Xcg(cm)	Inercia(cm4)
F.pura +	(0)	2470.5	23.82	7264951.1
	(1)	1049.9	43.57	6557752.0
	(2)	1403.3	35.98	6809669.3
F.pura -	(0)	1035.4	248.42	5323925.6
	(1)	479.6	219.57	4602870.8
	(2)	587.1	229.31	4840617.1
C.Simple	(0)	5420.4	90.05	56248685.2
	(1)	1651.2	96.04	18555403.5
	(2)	2331.7	93.52	25380644.2
T.Simple	(0)	201.5	157.95	3211056.3
	(1)	201.5	157.95	3211056.3
	(2)	201.5	157.95	3211056.3

*** Nota: Homogeneizadas a E=2100000 Kp/cm2 ***

ANALISIS EN ROTURA(ELASTOPLASTICO)

Título Sección: CSECLIA

* PRESOLICITACIONES ELASTICAS

Análisis SIN FISURACION

Pretensado: 957.43Tn.

(Todas las Armaduras activas a .80*Fyk)

ESTUDIO SECCION COMPLETA

Análisis con Resistencia de materiales MINORADAS

Def. Última Acero Estructural (COMPRESION) (%): 2.50

Def. Última Acero Estructural (TRACCION) (%): 2.50

Deformación Última Hormigón (COMPRESION) : Pivote en Bloque de Hormigón

Deformación Última Hormigón (TRACCION) (%): 1.00

Coefficiente Ideal Fluencia [μ *(Cperm./Ctot.)]: 0.00

FLEXION PURA POSITIVA:

Mu(m.T): 3327.4 Xu(cm.): 25.8

Nu(Tn.): .1 Qu(Tn.): 0.0

Deformaciones Últimas: Ecmx= -.00100 Etmx= .01000

Rompe la fibra inferior de la S.parcial 4

FLEXION PURA NEGATIVA:

Mu(m.T): -1270.6 Xu(cm.): 254.5

Nu(Tn.): -0.0 Qu(Tn.): 0.0

Deformaciones Últimas: Ecmx= -.00152 Etmx= .01000

Rompe la fibra superior de la S.parcial 1

COMPRESION SIMPLE(Rigido/Plastico):

Nu(Tn.): -8766.9 aplicado en Yo(cm)= 106.1

TRACCION SIMPLE(Rigido/Plastico):

Nu(Tn.): 1668.2 aplicado en Yo(cm)= 196.8

CORTANTE ULTIMO(Rigido/Plastico):

Vu(Tn.): 0.0 Ru(Kg/cm): 0.0

Xv1(cm): 0.0 Xv2(cm): 0.0

S.parciales resistentes: Rcu(Kg/cm):

ANALISIS EN ROTURA(ELASTOPLASTICO)

Título Sección: CSECLIA

* PRESOLICITACIONES ELASTICAS

Análisis SIN FISURACION

Pretensado: 957.43Tn.

(Todas las Armaduras activas a .80*Fyk)

ESTUDIO SECCION C+P

Análisis con Resistencia de materiales MINORADAS

Def. Última Acero Estructural (COMPRESION) (%): 2.50

Def. Última Acero Estructural (TRACCION) (%): 2.50

Deformación Última Hormigón (COMPRESION) : Pivote en Bloque de Hormigón

Deformación Última Hormigón (TRACCION) (%): 1.00

Coefficiente Ideal Fluencia [μ *(Cperm./Ctot.)]: 0.00

FLEXION PURA POSITIVA:

Mu(m.T): 2173.8 Xu(cm.): 90.6

Nu(Tn.): -.8 Qu(Tn.): 0.0

Deformaciones Últimas: Ecmx= -.00152 Etmx= .01000

Rompe la fibra inferior de la S.parcial 4

FLEXION PURA NEGATIVA:

Mu(m.T): -384.3 Xu(cm.): 262.1

Nu(Tn.): -0.0 Qu(Tn.): 0.0

Deformaciones Últimas: Ecmx= -.00131 Etmx= .01000

Rompe la fibra superior de la S.parcial 2

COMPRESION SIMPLE(Rigido/Plastico):

Nu(Tn.): -4569.3 aplicado en Yo(cm)= 175.1

TRACCION SIMPLE(Rigido/Plastico):

Nu(Tn.): 1040.7 aplicado en Yo(cm)= 241.7

CORTANTE ULTIMO(Rigido/Plastico):

Vu(Tn.): 0.0 Ru(Kg/cm): 0.0

Xv1(cm): 0.0 Xv2(cm): 0.0

S.parciales resistentes: Rcu(Kg)

Proyecto:
Viaducto V-1. Santa Oliva

Seccion:CSEC1B

MATERIALES

Num.	Fck	Gamma	M.El.	J _{II} 1	J _{II} 2
	(Kg/cm2)		(Kg/cm2)		
1(HO)	300.0	1.50	285770	2.60	1.45
2(HO)	550.0	1.50	338219	2.60	1.45
3(RD)	5100.0	1.15	2100000		
4(PR)	17100.0	1.15	1800000		

SECCIONES PARCIALES

Num	Mat.	B(cm)	H(cm)	Yo(cm)	Mc	Nsr
		Num	II(mm)			
1	1	700.0	30.0	0.0	C*	0
2	2	90.0	30.0	30.0	C*	0
3	2	36.0	198.0	60.0	C*	0
4	2	179.0	27.0	258.0	C*	0
5	4	28.0	13.4	280.0	*T	0
6	4	0.0	13.4	275.2	*T	0
7	4	0.0	0.0	0.0	*T	0
8	4	0.0	0.0	0.0	*T	0
9	4	8.0	13.4	45.0	*T	0
10	3	35.0	12.0	5.0	CT	0
11	3	35.0	12.0	19.0	CT	0
12	3	16.0	20.0	260.0	CT	0
13	3	6.0	16.0	265.0	CT	0

SECCIONES INTERMEDIAS

Num.	Codigo	Componentes
1	CAJ	2 3 4
2	LOS	1
3	C+P	2 3 4 5 6 7
		8 9
4	PS	9
5	PI	6 7 8 5

* CONSTANTES ESTATICAS *

S.COMPLETA

Tipo	Acciones	Area(cm2)	Xcg(cm)	Inercia(cm4)
F.pura +	(0)	2283.4	22.03	6190391.3
	(1)	1017.8	39.76	5636501.1
	(2)	1369.2	33.05	5831289.4
F.pura -	(0)	1021.2	247.97	5311062.2
	(1)	466.1	217.54	4547709.1
	(2)	573.5	227.94	4803133.3
C.Simple	(0)	5403.6	89.47	55666923.7
	(1)	1634.4	94.19	18006611.4
	(2)	2314.9	92.20	24818105.6
T.Simple	(0)	184.7	147.22	2956243.6
	(1)	184.7	147.22	2956243.6
	(2)	184.7	147.22	2956243.6

*** Nota: Homogeneizadas a E=2100000 Kp/cm2 ***

ANALISIS EN ROTURA(ELASTOPLASTICO)

Tftulo Sección: CSEC1B

* PRESOLICITACIONES ELASTICAS

Analisis SIN FISURACION

Pretensado: 689.35Tn.
(Todas las Armaduras activas a .80*Fyk)

ESTUDIO SECCION COMPLETA

Analisis con Resistencia de materiales MINORADAS

Def. Ultima Acero Estructural(COMPRESION) (%): 2.50

Def. Ultima Acero Estructural(TRACCION) (%): 2.50

Deformacion Ultima Hormigon(COMPRESION) : Pivote en Bloque de Hormigon

Deformacion Ultima Hormigon(TRACCION) (%): 1.00

Coficiente Ideal Fluencia[II*(Cperm./Ctot.)]: 0.00

FLEXION PURA POSITIVA:

Mu(m.T): 2494.1 Xu(cm.): 22.5

Nu(Tn.): .1 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00086 Etmx= .01000

Rompe la fibra inferior de la S.parcial 4

FLEXION PURA NEGATIVA:

Mu(m.T): -1288.0 Xu(cm.): 257.0

Nu(Tn.): -0.0 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00131 Etmx= .01000

Rompe la fibra superior de la S.parcial 1

COMPRESION SIMPLE(Rigido/Plastico):

Nu(Tn.): -8766.9 aplicado en Yo(cm)= 106.1

TRACCION SIMPLE(Rigido/Plastico):

Nu(Tn.): 1376.8 aplicado en Yo(cm)= 180.1

CORTANTE ULTIMO(Rigido/Plastico):

Vu(Tn.): 0.0 Ru(Kg/cm): 0.0

Xv1(cm): 0.0 Xv2(cm): 0.0

S.parciales resistentes: Rcu(Kg/cm):

ANALISIS EN ROTURA(ELASTOPLASTICO)

Tftulo Sección: CSEC1B

* PRESOLICITACIONES ELASTICAS

Analisis SIN FISURACION

Pretensado: 689.35Tn.

(Todas las Armaduras activas a .80*Fyk)

ESTUDIO SECCION C+P

Analisis con Resistencia de materiales MINORADAS

Def. Ultima Acero Estructural(COMPRESION) (%): 2.50

Def. Ultima Acero Estructural(TRACCION) (%): 2.50

Deformacion Ultima Hormigon(COMPRESION) : Pivote en Bloque de Hormigon

Deformacion Ultima Hormigon(TRACCION) (%): 1.00

Coficiente Ideal Fluencia[II*(Cperm./Ctot.)]: 0.00

FLEXION PURA POSITIVA:

Mu(m.T): 1501.7 Xu(cm.): 72.4

Nu(Tn.): -.4 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00131 Etmx= .01000
Rompe la fibra inferior de la S.parcial 4

FLEXION PURA NEGATIVA:

Mu(m.T): -396.5 Xu(cm.): 264.6

Nu(Tn.): .8 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00109 Etmx= .01000
Rompe la fibra superior de la S.parcial 2

COMPRESION SIMPLE(Rigido/Plastico):

Nu(Tn.): -4569.3 aplicado en Yo(cm)= 175.1

TRACCION SIMPLE(Rigido/Plastico):

Nu(Tn.): 749.3 aplicado en Yo(cm)= 228.4

CORTANTE ULTIMO(Rigido/Plastico):

Vu(Tn.): 0.0 Ru(Kg/cm): 0.0

Xv1(cm): 0.0 Xv2(cm): 0.0
S.parciales resistentes: Rcu(Kg/cm):

Proyecto:
Viaducto V-1.Santa Oliva

Seccion:CSEC1C

MATERIALES

Num.	Fck (Kg/cm2)	Gamma	M.El. (Kg/cm2)	Jn1	Jn2
1(HO)	300.0	1.50	285770	2.60	1.45
2(HO)	550.0	1.50	338219	2.60	1.45
3(RD)	5100.0	1.15	2100000		
4(PR)	17100.0	1.15	1800000		

SECCIONES PARCIALES

Num	Mat.	B(cm)	H(cm)	Yo(cm)	Mc	Nsr
		Num	n(mm)			
1	1	700.0	30.0	0.0	C*	0
2	2	90.0	30.0	30.0	C*	0
3	2	36.0	198.0	60.0	C*	0
4	2	179.0	27.0	258.0	C*	0
5	4	28.0	13.4	280.0	*T	0
6	4	26.0	13.4	275.2	*T	0
7	4	0.0	0.0	0.0	*T	0
8	4	0.0	0.0	0.0	*T	0
9	4	8.0	13.4	45.0	*T	0
10	3	35.0	16.0	5.0	CT	0
11	3	35.0	16.0	19.0	CT	0
12	3	16.0	20.0	260.0	CT	0
13	3	8.0	25.0	265.0	CT	0

SECCIONES INTERMEDIAS

Num.	Codigo	Componentes
1	CAJ	2 3 4
2	LOS	1
3	C+P	2 3 4 5 6 7
		8 9
4	PS	9
5	PI	6 7 8 5

* CONSTANTES ESTATICAS *

S.COMPLETA

Tipo	Acciones	Area(cm2)	Xcg(cm)	Inercia(cm4)
F.pura +	(0)	2906.3	27.31	9757290.5
	(1)	1179.1	50.02	8697781.5
	(2)	1538.7	41.44	9073162.9
F.pura -	(0)	1205.9	236.81	8598260.0
	(1)	611.4	201.77	7146661.5
	(2)	729.1	212.91	7599466.2
C.Simple	(0)	5523.6	90.55	57959065.9
	(1)	1754.4	97.24	20235568.8
	(2)	2434.9	94.50	27072322.7
T.Simple	(0)	304.7	143.93	4967349.8
	(1)	304.7	143.93	4967349.8
	(2)	304.7	143.93	4967349.8

*** Nota: Homogeneizadas a E=2100000 Kp/cm2 ***

ANALISIS EN ROTURA(ELASTOPLASTICO)

Título Sección: CSEC1C

* PRESOLICITACIONES ELASTICAS

Análisis SIN FISURACION

Pretensado: 1187.22Tn.

(Todas las Armaduras activas a .80*Fyk)

ESTUDIO SECCION COMPLETA

Análisis con Resistencia de materiales MINORADAS

Def. Última Acero Estructural (COMPRESION) (%): 2.50

Def. Última Acero Estructural (TRACCION) (%): 2.50

Deformación Última Hormigón (COMPRESION) : Pivote en Bloque de Hormigón

Deformación Última Hormigón (TRACCION) (%): 1.00

Coefficiente Ideal Fluencia [π^* (Cperm./Ctot.)]: 0.00

FLEXION PURA POSITIVA:

Mu(m.T): 4344.1 Xu(cm.): 28.8

Nu(Tn.): 0.0 Qu(Tn.): 0.0

Deformaciones Últimas: Ecmx= -.00113 Etmx= .01000

Rompe la fibra inferior de la S.parcial 4

FLEXION PURA NEGATIVA:

Mu(m.T): -1942.8 Xu(cm.): 246.6

Nu(Tn.): -.5 Qu(Tn.): 0.0

Deformaciones Últimas: Ecmx= -.00195 Etmx= .01000

Rompe la fibra superior de la S.parcial 1

COMPRESION SIMPLE (Rigido/Plastico):

Nu(Tn.): -9160.6 aplicado en Yo(cm)= 105.5

TRACCION SIMPLE (Rigido/Plastico):

Nu(Tn.): 2311.7 aplicado en Yo(cm)= 187.3

CORTANTE ULTIMO (Rigido/Plastico):

Vu(Tn.): 0.0 Ru(Kg/cm): 0.0

Xv1(cm): 0.0 Xv2(cm): 0.0

S.parciales resistentes: Rcu(Kg/c

Proyecto:

Viaducto V-1. Santa Oliva

Sección: CSEC2

MATERIALES

Num.	Fck (Kg/cm2)	Gamma	M.El. (Kg/cm2)	J π 1	J π 2
1(HO)	300.0	1.50	285770	2.60	1.45
2(HO)	550.0	1.50	338219	2.60	1.45
3(RD)	5100.0	1.15	2100000		
4(PR)	17100.0	1.15	1800000		

SECCIONES PARCIALES

Num	Mat.	B(cm)	H(cm)	Yo(cm)	Mc	Nsr
Num π (mm)						
1	1	700.0	30.0	0.0	C*	0
2	2	90.0	30.0	30.0	C*	0
3	2	36.0	198.0	60.0	C*	0
4	2	179.0	27.0	258.0	C*	0
5	4	28.0	13.4	280.0	*T	0
6	4	14.0	13.4	275.2	*T	0
7	4	0.0	0.0	0.0	*T	0
8	4	0.0	0.0	0.0	*T	0
9	4	8.0	13.4	45.0	*T	0
10	3	35.0	12.0	5.0	CT	0
11	3	35.0	12.0	19.0	CT	0
12	3	14.0	20.0	260.0	CT	0
13	3	0.0	0.0	0.0	CT	0
14	4	105.0	13.4	18.0	*T	0

SECCIONES INTERMEDIAS

Num.	Código	Componentes
1	CAJ	2 3 4
2	LOS	1
3	C+P	2 3 4 5 6 7
		8 9 12
4	PS	9
5	PI	6 7 8 5

* CONSTANTES ESTATICAS *

S.COMPLETA

Tipo	Acciones	Area(cm2)	Xcg(cm)	Inercia(cm4)
F.pura +	(0)	2383.9	21.78	6198294.7
	(1)	1132.3	37.29	5698097.9
	(2)	1485.8	31.73	5865124.5
F.pura -	(0)	1282.8	224.32	11251248.4
	(1)	655.0	177.51	8532079.5
	(2)	781.8	192.50	9387899.4
C.Simple	(0)	5528.1	87.85	56307564.5
	(1)	1758.8	88.74	18697239.9
	(2)	2439.3	88.38	25487642.9
T.Simple	(0)	309.1	94.88	4218380.3
	(1)	309.1	94.88	4218380.3
	(2)	309.1	94.88	4218380.3

*** Nota: Homogeneizadas a E=2100000 Kp/cm2 ***

ANÁLISIS EN ROTURA (ELASTOPLÁSTICO)

Título Sección: CSEC2

* PRESOLICITACIONES ELASTICAS

Análisis SIN FISURACION

Pretensado: 2968.04Tn.

(Todas las Armaduras activas a .80*Fyk)

ESTUDIO SECCION COMPLETA

Análisis con Resistencia de materiales MINORADAS

Def. Ultima Acero Estructural (COMPRESION) (%): 2.50

Def. Ultima Acero Estructural (TRACCION) (%): 2.50

Deformacion Ultima Hormigon (COMPRESION) : Pivote en Bloque de Hormigon

Deformacion Ultima Hormigon (TRACCION) (%): 1.00

Coefficiente Ideal Fluencia [μ *(Cperm./Ctot.)]: 0.00

FLEXION PURA POSITIVA:

Mu(m.T): 3148.5 Xu(cm.): 34.9

Nu(Tn.): -0.0 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00168 Etmx= .01000

Rompe la fibra inferior de la S.parcial 4

FLEXION PURA NEGATIVA:

Mu(m.T): -5407.5 Xu(cm.): 123.3

Nu(Tn.): -0.0 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00350 Etmx= .00221

Rompe la fibra inferior de la S.parcial 4

COMPRESION SIMPLE(Rigido/Plastico):

Nu(Tn.): -8685.5 aplicado en Yo(cm)= 104.6

TRACCION SIMPLE(Rigido/Plastico):

Nu(Tn.): 3772.3 aplicado en Yo(cm)= 92.2

CORTANTE ULTIMO(Rigido/Plastico):

Vu(Tn.): 0.0 Ru(Kg/cm): 0.0

Xv1(cm): 0.0 Xv2(cm): 0.0

S.parciales resistentes: Rcu(Kg/cm):

ANALISIS EN ROTURA(ELASTOPLASTICO)

Título Sección: CSEC2

* PRESOLICITACIONES ELASTICAS

Análisis SIN FISURACION

Pretensado: 2968.04Tn.

(Todas las Armaduras activas a .80*Fyk)

ESTUDIO SECCION C+P

Análisis con Resistencia de materiales MINORADAS

Def. Ultima Acero Estructural (COMPRESION) (%): 2.50

Def. Ultima Acero Estructural (TRACCION) (%): 2.50

Deformacion Ultima Hormigon (COMPRESION) : Pivote en Bloque de Hormigon

Deformacion Ultima Hormigon (TRACCION) (%): 1.00

Coefficiente Ideal Fluencia [μ *(Cperm./Ctot.)]: 0.00

FLEXION PURA POSITIVA:

Mu(m.T): 2469.8 Xu(cm.): 103.0

Nu(Tn.): -.9 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00350 Etmx= .00782

Rompe la fibra superior de la S.parcial 2

FLEXION PURA NEGATIVA:

Mu(m.T): -382.4 Xu(cm.): 261.9

Nu(Tn.): -0.0 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00129 Etmx= .00782

Rompe la fibra superior de la S.parcial 2

COMPRESION SIMPLE(Rigido/Plastico):

Nu(Tn.): -4764.4 aplicado en Yo(cm)= 178.6

TRACCION SIMPLE(Rigido/Plastico):

Nu(Tn.): 1235.7 aplicado en Yo(cm)= 244.8

CORTANTE ULTIMO(Rigido/Plastico):

Vu(Tn.): 0.0 Ru(Kg/cm): 0.0

Xv1(cm): 0.0 Xv2(cm): 0.0

S.parciales resistentes: Rcu(Kg/cm):

Proyecto:
Viaducto V-1. Santa Oliva

Seccion:CSEC2A

MATERIALES

Num.	Fck (Kg/cm2)	Gamma	M.El. (Kg/cm2)	J _{II} 1	J _{II} 2
1(HO)	300.0	1.50	285770	2.60	1.45
2(HO)	550.0	1.50	338219	2.60	1.45
3(RD)	5100.0	1.15	2100000		
4(PR)	17100.0	1.15	1800000		

SECCIONES PARCIALES

Num	Mat.	B(cm)	H(cm)	Yo(cm)	Mc	Nsr
Num η (mm)						
1	1	700.0	30.0	0.0	C*	0
2	2	90.0	30.0	30.0	C*	0
3	2	36.0	198.0	60.0	C*	0
4	2	179.0	27.0	258.0	C*	0
5	4	28.0	13.4	280.0	*T	0
6	4	26.0	13.4	275.2	*T	0
7	4	0.0	0.0	0.0	*T	0
8	4	0.0	0.0	0.0	*T	0
9	4	8.0	13.4	45.0	*T	0
10	3	35.0	12.0	5.0	CT	0
11	3	35.0	12.0	19.0	CT	0
12	3	14.0	20.0	260.0	CT	0
13	3	0.0	0.0	0.0	CT	0
14	4	56.0	13.4	18.0	*T	0

SECCIONES INTERMEDIAS

Num.	Codigo	Componentes
1	CAJ	2 3 4
2	LOS	1
3	C+P	2 3 4 5 6 7
		8 9 12
4	PS	9
5	PI	6 7 8 5

* CONSTANTES ESTATICAS *

S.COMPLETA

Tipo	Acciones	Area(cm2)	Xcg(cm)	Inercia(cm4)
F.pura +	(0)	2491.0	23.37	7121043.0
	(1)	1104.5	41.42	6478419.4
	(2)	1458.8	34.68	6700557.1
F.pura -	(0)	1176.8	234.95	8667882.3
	(1)	581.5	195.55	6995664.5
	(2)	699.8	208.39	7531580.9
C.Simple	(0)	5483.7	89.08	56526797.3
	(1)	1714.4	92.71	18885630.3
	(2)	2394.9	91.21	25688791.4
T.Simple	(0)	264.7	121.65	4158806.1
	(1)	264.7	121.65	4158806.1
	(2)	264.7	121.65	4158806.1

*** Nota: Homogeneizadas a E=2100000 Kp/cm2 ***

ANALISIS EN ROTURA(ELASTOPLASTICO)

Título Sección: CSEC2A

* PRESOLICITACIONES ELASTICAS

Analisis SIN FISURACION

Pretensado: 2259.54Tn.
(Todas las Armaduras activas a .80*Fyk)

ESTUDIO SECCION COMPLETA

Analisis con Resistencia de materiales MINORADAS

Def. Ultima Acero Estructural(COMPRESION) (%): 2.50

Def. Ultima Acero Estructural(TRACCION) (%): 2.50

Deformacion Ultima Hormigon(COMPRESION) : Pivote en Bloque de Hormigon

Deformacion Ultima Hormigon(TRACCION) (%): 1.00

Coefficiente Ideal Fluencia[η^* (Cperm./Ctot.)]: 0.00

FLEXION PURA POSITIVA:

Mu(m.T): 3849.7 Xu(cm.): 32.6

Nu(Tn.): -0.0 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00145 Etmx= .01000

Rompe la fibra inferior de la S.parcial 4

FLEXION PURA NEGATIVA:

Mu(m.T): -4030.6 Xu(cm.): 192.2

Nu(Tn.): .3 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00350 Etmx= .00634

Rompe la fibra inferior de la S.parcial 4

COMPRESION SIMPLE(Rigido/Plastico):

Nu(Tn.): -8685.5 aplicado en Yo(cm)= 104.6

TRACCION SIMPLE(Rigido/Plastico):

Nu(Tn.): 3002.2 aplicado en Yo(cm)= 132.4

CORTANTE ULTIMO(Rigido/Plastico):

Vu(Tn.): 0.0 Ru(Kg/cm): 0.0

Xv1(cm): 0.0 Xv2(cm): 0.0

S.parciales resistentes: Rcu(Kg/cm):

ANALISIS EN ROTURA(ELASTOPLASTICO)

Título Sección: CSEC2A

* PRESOLICITACIONES ELASTICAS

Analisis SIN FISURACION

Pretensado: 2259.54Tn.

(Todas las Armaduras activas a .80*Fyk)

ESTUDIO SECCION C+P

Analisis con Resistencia de materiales MINORADAS

Def. Ultima Acero Estructural(COMPRESION) (%): 2.50

Def. Ultima Acero Estructural(TRACCION) (%): 2.50

Deformacion Ultima Hormigon(COMPRESION) : Pivote en Bloque de Hormigon

Deformacion Ultima Hormigon(TRACCION) (%): 1.00

Coefficiente Ideal Fluencia[η^* (Cperm./Ctot.)]: 0.00

FLEXION PURA POSITIVA:

Mu(m.T): 2857.5 Xu(cm.): 126.5

Nu(Tn.): .4 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00350 Etmx= .00514
Rompe la fibra superior de la S.parcial 2

FLEXION PURA NEGATIVA:

Mu(m.T): -369.3 Xu(cm.): 260.4

Nu(Tn.): -0.0 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00147 Etmx= .00514
Rompe la fibra superior de la S.parcial 2

COMPRESION SIMPLE(Rigido/Plastico):

Nu(Tn.): -4764.4 aplicado en Yo(cm)= 178.6

TRACCION SIMPLE(Rigido/Plastico):

Nu(Tn.): 1485.5 aplicado en Yo(cm)= 250.0

CORTANTE ULTIMO(Rigido/Plastico):

Vu(Tn.): 0.0 Ru(Kg/cm): 0.0

Xv1(cm): 0.0 Xv2(cm): 0.0
S.parciales resistentes: Rcu(Kg/cm):

Proyecto:
Viaducto V-1. Santa Oliva

Seccion:CSEC3

MATERIALES

Num.	Fck (Kg/cm2)	Gamma	M.El. (Kg/cm2)	J _{II} 1	J _{II} 2
1(HO)	300.0	1.50	285770	2.60	1.45
2(HO)	550.0	1.50	338219	2.60	1.45
3(RD)	5100.0	1.15	2100000		
4(PR)	17100.0	1.15	1800000		

SECCIONES PARCIALES

Num	Mat.	B(cm)	H(cm)	Yo(cm)	Mc	Nsr
Num II (mm)						
1	1	700.0	30.0	0.0	C*	0
2	2	90.0	30.0	30.0	C*	0
3	2	36.0	198.0	60.0	C*	0
4	2	179.0	27.0	258.0	C*	0
5	4	28.0	13.4	280.0	*T	0
6	4	0.0	13.4	275.3	*T	0
7	4	0.0	0.0	0.0	*T	0
8	4	0.0	0.0	0.0	*T	0
9	4	8.0	13.4	45.0	*T	0
10	3	35.0	20.0	5.0	CT	0
11	3	35.0	20.0	19.0	CT	0
12	4	105.0	13.4	18.0	*T	0
13	2	0.0	64.5	193.0	C*	0

SECCIONES INTERMEDIAS

Num.	Codigo	Componentes
1	CAJ	2 3 4
2	LOS	1
3	C+P	2 3 4 5 6 7
		8 9
4	PS	9
5	PI	6 7 8 5

* CONSTANTES ESTATICAS *

S.COMPLETA

Tipo	Acciones	Area(cm2)	Xcg(cm)	Inercia(cm4)
F.pura +	(0)	1738.8	14.17	2499473.9
	(1)	974.3	22.12	2377111.8
	(2)	1150.5	19.59	2414319.3
F.pura -	(0)	1493.4	201.78	16689465.8
	(1)	794.8	140.32	10796605.1
	(2)	939.7	159.59	12605395.3
C.Simple	(0)	5608.0	84.05	55105044.9
	(1)	1838.8	77.13	17365651.4
	(2)	2519.3	79.91	24207909.5
I.Simple	(0)	389.1	38.75	2174022.9
	(1)	389.1	38.75	2174022.9
	(2)	389.1	38.75	2174022.9

*** Nota: Homogeneizadas a E=2100000 Kp/cm2 ***

ANALISIS EN ROTURA(ELASTOPLASTICO)

Título Sección: CSEC3

* PRESOLICITACIONES ELASTICAS

Análisis SIN FISURACION

Pretensado: 2699.96Tn.

(Todas las Armaduras activas a $.80 \cdot f_{yk}$)

ESTUDIO SECCION COMPLETA

Análisis con Resistencia de materiales MINORADAS

Def. Última Acero Estructural (COMPRESION) (%): 2.50

Def. Última Acero Estructural (TRACCION) (%): 2.50

Deformación Última Hormigón (COMPRESION): Pivote en Bloque de Hormigón

Deformación Última Hormigón (TRACCION) (%): 1.00

Coefficiente Ideal Fluencia [$\mu \cdot (C_{perm.}/C_{tot.})$]: 0.00

FLEXION PURA POSITIVA:

$M_u(m.T): 1878.4 \quad X_u(cm.): 27.9$

$N_u(Tn.): -0.0 \quad Q_u(Tn.): 0.0$

Deformaciones Últimas: $E_{cmx} = -.00136 \quad E_{tmx} = .01000$

Rompe la fibra inferior de la S.parcial 4

FLEXION PURA NEGATIVA:

$M_u(m.T): -5582.4 \quad X_u(cm.): 99.2$

$N_u(Tn.): -.6 \quad Q_u(Tn.): 0.0$

Deformaciones Últimas: $E_{cmx} = -.00350 \quad E_{tmx} = .00152$

Rompe la fibra inferior de la S.parcial 4

COMPRESION SIMPLE(Rigido/Plastico):

$N_u(Tn.): -9114.6$ aplicado en $Y_o(cm) = 95.0$

TRACCION SIMPLE(Rigido/Plastico):

$N_u(Tn.): 3910.0$ aplicado en $Y_o(cm) = 57.5$

CORTANTE ULTIMO(Rigido/Plastico):

$V_u(Tn.): 0.0 \quad R_u(Kg/cm): 0.0$

$X_{v1}(cm): 0.0 \quad X_{v2}(cm): 0.0$

S.parciales resistentes: $R_{cu}(Kg/cm):$

ANALISIS EN ROTURA(ELASTOPLASTICO)

Título Sección: CSEC3

* PRESOLICITACIONES ELASTICAS

Análisis SIN FISURACION

Pretensado: 2699.96Tn.

(Todas las Armaduras activas a $.80 \cdot f_{yk}$)

ESTUDIO SECCION C+P

Análisis con Resistencia de materiales MINORADAS

Def. Última Acero Estructural (COMPRESION) (%): 2.50

Def. Última Acero Estructural (TRACCION) (%): 2.50

Deformación Última Hormigón (COMPRESION): Pivote en Bloque de Hormigón

Deformación Última Hormigón (TRACCION) (%): 1.00

Coefficiente Ideal Fluencia [$\mu \cdot (C_{perm.}/C_{tot.})$]: 0.00

FLEXION PURA POSITIVA:

$M_u(m.T): 1501.6 \quad X_u(cm.): 68.5$

$N_u(Tn.): -0.0 \quad Q_u(Tn.): 0.0$

Deformaciones Últimas: $E_{cmx} = -.00350 \quad E_{tmx} = .01000$
Rompe la fibra inferior de la S.parcial 4

FLEXION PURA NEGATIVA:

$M_u(m.T): -396.5 \quad X_u(cm.): 264.1$

$N_u(Tn.): .6 \quad Q_u(Tn.): 0.0$

Deformaciones Últimas: $E_{cmx} = -.00109 \quad E_{tmx} = .01000$

Rompe la fibra superior de la S.parcial 2

COMPRESION SIMPLE(Rigido/Plastico):

$N_u(Tn.): -4569.3$ aplicado en $Y_o(cm) = 175.1$

TRACCION SIMPLE(Rigido/Plastico):

$N_u(Tn.): 749.3$ aplicado en $Y_o(cm) = 228.4$

CORTANTE ULTIMO(Rigido/Plastico):

$V_u(Tn.): 0.0 \quad R_u(Kg/cm): 0.0$

$X_{v1}(cm): 0.0 \quad X_{v2}(cm): 0.0$

S.parciales resistentes: $R_{cu}(Kg/cm):$

Proyecto:
Viaducto V-1. Santa Oliva

Seccion:CSEC3

MATERIALES

Num.	Fck (Kg/cm2)	Gamma	M.El. (Kg/cm2)	Jr1	Jr2
1(HO)	300.0	1.50	285770	2.60	1.45
2(HO)	550.0	1.50	338219	2.60	1.45
3(RD)	5100.0	1.15	2100000		
4(PR)	17100.0	1.15	1800000		

SECCIONES PARCIALES

Num	Mat.	B(cm)	H(cm)	Yo(cm)	Mc	Nsr
Num r (mm)						
1	1	700.0	30.0	0.0	C*	0
2	2	90.0	30.0	30.0	C*	0
3	2	36.0	198.0	60.0	C*	0
4	2	179.0	27.0	258.0	C*	0
5	4	28.0	13.4	280.0	*T	0
6	4	0.0	13.4	275.3	*T	0
7	4	0.0	0.0	0.0	*T	0
8	4	0.0	0.0	0.0	*T	0
9	4	8.0	13.4	45.0	*T	0
10	3	35.0	20.0	5.0	CT	0
11	3	35.0	20.0	19.0	CT	0
12	4	105.0	13.4	18.0	*T	0
13	2	130.0	64.5	193.0	C*	0

SECCIONES INTERMEDIAS

Num.	Codigo	Componentes
1	CAJ	2 3 4
2	LOS	1
3	C+P	2 3 4 5 6 7
		8 9 13
4	PS	9
5	PI	6 7 8 5

* CONSTANTES ESTATICAS *

S.COMPLETA

Tipo	Acciones	Area(cm2)	Xcg(cm)	Inercia(cm4)
F:pura +	(0)	1738.8	14.17	2499473.9
	(1)	974.3	22.12	2377111.8
	(2)	1150.5	19.59	2414319.3
F.pura -	(0)	2310.4	214.86	17481697.0
	(1)	1125.3	168.08	12753907.5
	(2)	1432.3	184.35	14282748.0
C.Simple	(0)	6958.5	111.46	77271354.4
	(1)	2213.9	102.23	24331230.8
	(2)	3070.5	106.00	33951919.7
T.Simple	(0)	389.1	38.75	2174022.9
	(1)	389.1	38.75	2174022.9
	(2)	389.1	38.75	2174022.9

*** Nota: Homogeneizadas a E=2100000 Kp/cm2 ***

ANALISIS EN ROTURA(ELASTOPLASTICO)

Título Sección: CSEC3

* PRESOLICITACIONES ELASTICAS

Analisis SIN FISURACION

Pretensado: 2699.96Tn.
(Todas las Armaduras activas a .80*Fyk)

ESTUDIO SECCION COMPLETA

Analisis con Resistencia de materiales MINORADAS

Def. Ultima Acero Estructural(COMPRESION)(%): 2.50

Def. Ultima Acero Estructural(TRACCION)(%): 2.50

Deformacion Ultima Hormigon(COMPRESION) : Pivote en Bloque de Hormigon

Deformacion Ultima Hormigon(TRACCION)(%): 1.00

Coefficiente Ideal Fluencia[μ *(Cperm./Ctot.)]: 0.00

FLEXION PURA POSITIVA:

Mu(m.T): 1878.4 Xu(cm.): 28.0

Nu(Tn.): -0.0 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00136 Etmx= .01000

Rompe la fibra inferior de la S.parcial 4

FLEXION PURA NEGATIVA:

Mu(m.T): -7887.4 Xu(cm.): 200.5

Nu(Tn.): -.4 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00350 Etmx= .00788

Rompe la fibra inferior de la S.parcial 4

COMPRESION SIMPLE(Rigido/Plastico):

Nu(Tn.): -11727.9 aplicado en Yo(cm)= 124.1

TRACCION SIMPLE(Rigido/Plastico):

Nu(Tn.): 3910.0 aplicado en Yo(cm)= 57.5

CORTANTE ULTIMO(Rigido/Plastico):

Vu(Tn.): 0.0 Ru(Kg/cm): 0.0

Xv1(cm): 0.0 Xv2(cm): 0.0

S.parciales resistentes: Rcu(Kg/cm):

ANALISIS EN ROTURA(ELASTOPLASTICO)

Título Sección: CSEC3

* PRESOLICITACIONES ELASTICAS

Analisis SIN FISURACION

Pretensado: 2699.96Tn.

(Todas las Armaduras activas a .80*Fyk)

ESTUDIO SECCION C+P

Analisis con Resistencia de materiales MINORADAS

Def. Ultima Acero Estructural(COMPRESION)(%): 2.50

Def. Ultima Acero Estructural(TRACCION)(%): 2.50

Deformacion Ultima Hormigon(COMPRESION) : Pivote en Bloque de Hormigon

Deformacion Ultima Hormigon(TRACCION)(%): 1.00

Coefficiente Ideal Fluencia[μ *(Cperm./Ctot.)]: 0.00

FLEXION PURA POSITIVA:

Mu(m.T): 1501.6 Xu(cm.): 68.9

Nu(Tn.): -0.0 Qu(Tn.): 0.0

CÁLCULO MZ EN ROTURA

Modelo de cálculo:

ELU MZ

Barra	Nudo	X	PUENTE CONSTRUIDO		PUENTE EN CONSTRUCCIÓN		PRETENBADO INF DE CAJÓN				PRET SUP CAJÓN		PUENTE CONSTRUIDO		PUENTE EN CONSTRUCCIÓN	
			Mdz+ (Tm)	Mdz- (Tm)	Mdz+ (Tm)	Mdz- (Tm)	PRET	PRET	PRET	PRET	PRET	PRET	MU+ (Tm)	MU- (Tm)	MU+ (Tm)	MU- (Tm)
							2.8	2.752	2.704	2.656	0.45	0.12				
25	25	73.5	584.65	-6247.36	46.68		26				8	105	2264	-9815	1398	
25	26	76.26	1243.79	-4046.24	292.81		26				8	105	2270	-6165	1398	
26	26	76.26	1244.44	-4042.58	292.81		26	20			8	105	3229	-5209	2333	
26	27	79.02	2068.48	-2498.03	463.61		26	20			8	105	3229	-5209	2333	
27	27	79.02	2068.40	-2494.75	463.61		26	20	12		8	49	4478	-4424	2714	
27	28	81.78	3011.28	-1449.13	585.70		26	20	12		8	49	4478	-4424	2714	
28	28	81.78	3011.03	-1447.25	585.70	-164.51	26	20	12		8		4461	-2063	2714	-378
28	29	84.54	3789.84	-797.26	768.65	79.24	26	20	12		8		4448.3	-1257	2714	-378
29	29	84.54	3788.51	-796.06	768.65	79.24	26	20	12		8		4448.3	-1257	2714	-378
29	30	87.3	4175.40	-314.26	890.72	221.58	26	20	12		8		4448.3	-1257	2714	-378
30	30	87.3	4173.39	-313.67	890.72	221.58	26	20	12		8		4448.3	-1257	2714	-378
30	31	90.06	4145.03	26.98	912.73	301.70	26	20	12		8		4448.3	-1257	2714	-378
31	31	90.06	4142.69	27.07	912.73	301.70	26	20	12		8		4448.3	-1257	2714	-378
31	32	92.82	3706.29	226.18	834.66	274.67	26	20	12		8		4448.3	-1257	2714	-378
32	32	92.82	3704.15	225.71	834.66	274.67	26	20	12		8		4448.3	-1257	2714	-378
32	33	95.58	2865.77	285.13	656.51	209.34	26	20	12		8		3207	-1270	2334	-381
33	33	95.58	2863.44	284.17	656.51	209.34	26	20			8		3207	-1270	2334	-381
33	34	98.34	1628.62	208.13	378.29	117.78	26	20			8		2012	-1294	1398	-399
34	34	98.34	1626.02	206.84	378.29	117.78	26				8		2012	-1294	1398	-399
34	35	101.1	5.08	-3.03	0.00	0.00	26				8					

IDEA

Vano de 28'20m

DSEC 3

2630'6" a 2'8m

830'6" a 0'25m

Ampliación a 28'20m (d12a2'8m) + 2

sin carga a 28'20m $M_d = 1679'2 \text{ m}^2$

con 6 d25 a 2'8m $M_d = 2012'8 \text{ m}^2$

DSEC 2

2630'6" a 2'8m

2040'6" a 2'752m

830'6" a 0'25m

sin carga a 28'20m $M_d = 3233'4 \text{ m}^2$

con 6 d25 a 2'8m $M_d = 3206 \text{ m}^2$

DSEC 4

2630'6" a 2'8m

2040'6" a 2'752m

830'6" a 0'45m

1230'6" a 2'704m

sin carga a 28'20m $M_d = 3129'0 \text{ m}^2$

con 6 d25 a 2'8m + 1 d32 a 2'6m $M_d = 4448 \text{ m}^2$

DSEC 1: con $\phi 20$ a 2'8m + $\phi 16$ a 2'0m en base a $M_d =$

DSEC 1B:

26 $\phi 06''$ a 2'80
 20 $\phi 06''$ a 2'752
 12 $\phi 06''$ a 2'704
 8 $\phi 06''$ a 0'45
 49 $\phi 06''$ a 0'19

$M_{ut} = 4470 \text{ mt}$

$M_{ur} = -4424 \text{ mt}$

DSEC 2A

26 $\phi 06''$ a 2'80
 20 $\phi 06''$ a 2'752
 8 $\phi 06''$ a 0'45
 105 $\phi 06''$ a 0'19

$M_{ut} = 3229 \text{ mt}$

$M_{ur} = -5209 \text{ mt}$

Proyecto:
 Viaducto V-1. Santa Oliva

Seccion: DSEC1

MATERIALES

Num.	Fck (Kg/cm2)	Gamma	M.El. (Kg/cm2)	J _{II} 1	J _{II} 2
1(HO)	300.0	1.50	285770	2.60	1.45
2(HO)	550.0	1.50	338219	2.60	1.45
3(RD)	5100.0	1.15	2100000		
4(PR)	17100.0	1.15	1800000		

SECCIONES PARCIALES

Num	Mat.	B(cm)	H(cm)	Yo(cm)	Mc	Nsr
		Num	II (mm)			
1	1	700.0	30.0	0.0	C*	0
2	2	90.0	30.0	30.0	C*	0
3	2	36.0	198.0	60.0	C*	0
4	2	179.0	27.0	258.0	C*	0
5	4	26.0	13.4	280.0	*T	0
6	4	20.0	13.4	275.2	*T	0
7	4	12.0	13.4	270.4	*T	0
8	4	0.0	0.0	0.0	*T	0
9	4	8.0	13.4	45.0	*T	0
10	3	35.0	12.0	5.0	CT	0
11	3	35.0	12.0	19.0	CT	0
12	3	6.0	25.0	265.0	CT	0
13	3	16.0	20.0	260.0	CT	0

SECCIONES INTERMEDIAS

Num.	Codigo	Componentes
1	CAJ	2 3 4
2	LOS	1
3	C+P	2 3 4 5 6 7
		8 9
4	PS	9
5	PI	6 7 8 5

* CONSTANTES ESTATICAS *

S.COMPLETA

Tipo	Acciones	Area(cm2)	Xcg(cm)	Inercia(cm4)
F.pura +	(0)	2827.7	27.19	9437893.6
	(1)	1116.7	51.06	8359040.2
	(2)	1474.5	41.83	8750341.9
F.pura -	(0)	1067.9	249.13	5339428.0
	(1)	510.5	223.11	4686891.4
	(2)	618.1	231.66	4895709.8
C.Simple	(0)	5457.0	91.25	57415698.8
	(1)	1687.8	99.79	19629359.7
	(2)	2368.3	96.24	26492997.5
T.Simple	(0)	238.1	175.05	3594764.8
	(1)	238.1	175.05	3594764.8
	(2)	238.1	175.05	3594764.8

*** Nota: Homogeneizadas a E=2100000 Kp/cm2 ***

ANALISIS EN ROTURA (ELASTOPLASTICO)

Título Sección: DSEC1

* PRESOLICITACIONES ELASTICAS

Análisis SIN FISURACION

Pretensado: 1263.81Tn.

(Todas las Armaduras activas a .80*Fyk)

ESTUDIO SECCION COMPLETA

Análisis con Resistencia de materiales MINORADAS

Def. Ultima Acero Estructural(COMPRESION) (%): 2.50

Def. Ultima Acero Estructural(TRACCION) (%): 2.50

Deformacion Ultima Hormigon(COMPRESION) : Pivote en Bloque de Hormigon

Deformacion Ultima Hormigon(TRACCION) (%): 1.00

Coefficiente Ideal Fluencia[$\mu^*(Cperm./Ctot.)$]: 0.00

FLEXION PURA POSITIVA:

Mu(m.T): 4448.3 Xu(cm.): 29.9

Nu(Tn.): -0.0 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00118 Etmx= .01000
Rompe la fibra inferior de la S.parcial 4

FLEXION PURA NEGATIVA:

Mu(m.T): -1257.9 Xu(cm.): 251.8

Nu(Tn.): -0.0 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00174 Etmx= .01000
Rompe la fibra superior de la S.parcial 1

COMPRESION SIMPLE(Rigido/Plastico):

Nu(Tn.): -8844.0 aplicado en Yo(cm)= 107.5

TRACCION SIMPLE(Rigido/Plastico):

Nu(Tn.): 2078.3 aplicado en Yo(cm)= 211.4

CORTANTE ULTIMO(Rigido/Plastico):

Vu(Tn.): 0.0 Ru(Kg/cm): 0.0

Xv1(cm): 0.0 Xv2(cm): 0.0

S.parciales resistentes: Rcu(Kg/cm):

ANALISIS EN ROTURA(ELASTOPLASTICO)

Título Sección: DSEC1

* PRESOLICITACIONES ELASTICAS

Análisis SIN FISURACION

Pretensado: 1263.81Tn.

(Todas las Armaduras activas a .80*Fyk)

ESTUDIO SECCION C+P

Análisis con Resistencia de materiales MINORADAS

Def. Ultima Acero Estructural(COMPRESION) (%): 2.50

Def. Ultima Acero Estructural(TRACCION) (%): 2.50

Deformacion Ultima Hormigon(COMPRESION) : Pivote en Bloque de Hormigon

Deformacion Ultima Hor

migon(TRACCION) (%): 1.00

Coefficiente Ideal Fluencia[$\mu^*(Cperm./Ctot.)$]: 0.00

FLEXION PURA POSITIVA:

Mu(m.T): 2714.4 Xu(cm.): 118.8

Nu(Tn.): -.3 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00174 Etmx= .00610
Rompe la fibra superior de la S.parcial 2

FLEXION PURA NEGATIVA:

Mu(m.T): -378.0 Xu(cm.): 258.7

Nu(Tn.): -0.0 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00158 Etmx= .00610
Rompe la fibra superior de la S.parcial 2

COMPRESION SIMPLE(Rigido/Plastico):

Nu(Tn.): -4569.3 aplicado en Yo(cm)= 175.1

TRACCION SIMPLE(Rigido/Plastico):

Nu(Tn.): 1373.7 aplicado en Yo(cm)= 249.0

CORTANTE ULTIMO(Rigido/Plastico):

Vu(Tn.): 0.0 Ru(Kg/cm): 0.0

Xv1(cm): 0.0 Xv2(cm): 0.0

S.parciales resistentes: Rcu(Kg

Proyecto:
Viaducto V-1.Santa Oliva

Seccion:DSECI1A

MATERIALES

Num.	Fck	Gamma	M.El.	Jr1	Jr2
	(Kg/cm2)		(Kg/cm2)		
1(HO)	300.0	1.50	285770	2.60	1.45
2(HO)	550.0	1.50	338219	2.60	1.45
3(RD)	5100.0	1.15	2100000		
4(PR)	17100.0	1.15	1800000		

SECCIONES PARCIALES

Num	Mat.	B(cm)	H(cm)	Yo(cm)	Mc	Nsr
		Num	rr(mm)			
1	1	700.0	30.0	0.0	C*	0
2	2	90.0	30.0	30.0	C*	0
3	2	36.0	198.0	60.0	C*	0
4	2	179.0	27.0	258.0	C*	0
5	4	26.0	13.4	280.0	*T	0
6	4	20.0	13.4	275.2	*T	0
7	4	12.0	13.4	270.4	*T	0
8	4	0.0	0.0	0.0	*T	0
9	4	8.0	13.4	45.0	*T	0
10	3	35.0	20.0	5.0	CT	0
11	3	35.0	12.0	19.0	CT	0
12	3	6.0	25.0	265.0	CT	0
13	3	16.0	20.0	260.0	CT	0

SECCIONES INTERMEDIAS

Num.	Codigo	Componentes
1	CAJ	2 3 4
2	LOS	1
3	C+P	2 3 4 5 6 7
		8 9
4	PS	9
5	PI	6 7 8 5

* CONSTANTES ESTATICAS *

S.COMPLETA

Tipo	Acciones	Area(cm2)	Xcg(cm)	Inercia(cm4)
F.pura +	(0)	2849.2	26.67	9468080.6
	(1)	1176.3	48.39	8492115.6
	(2)	1535.2	40.21	8835526.5
F.pura -	(0)	1222.2	234.65	9241194.8
	(1)	621.7	197.73	7605404.0
	(2)	741.0	209.47	8115711.1
C.Simple	(0)	5527.4	90.17	57918023.6
	(1)	1758.2	96.05	20220791.6
	(2)	2438.6	93.64	27046757.0
T.Simple	(0)	308.4	136.53	5142901.7
	(1)	308.4	136.53	5142901.7
	(2)	308.4	136.53	5142901.7

*** Nota: Homogeneizadas a E=2100000 Kp/cm2 ***

ANALISIS EN ROTURA(ELASTOPLASTICO)

Titulo Seccion: DSECI1

* PRESOLICITACIONES ELASTICAS

Analisis SIN FISURACION

Pretensado: 1263.81Tn.

(Todas las Armaduras activas a .80*Fyk)

ESTUDIO SECCION COMPLETA

Analisis con Resistencia de materiales MINORADAS

Def. Ultima Acero Estructural(COMPRESION)(%): 2.50

Def. Ultima Acero Estructural(TRACCION)(%): 2.50

Deformacion Ultima Hormigon(COMPRESION) : Pivote en Bloque de Hormigon

Deformacion Ultima Hormigon(TRACCION)(%): 1.00

Coefficiente Ideal Fluencia[rr*(Cperm./Ctot.)]: 0.00

FLEXION PURA POSITIVA:

Mu(m.T): 4461.6 Xu(cm.): 28.7

Nu(Tn.): 0.0 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00113 Etmx= .01000

Rompe la fibra inferior de la S.parcial 4

FLEXION PURA NEGATIVA:

Mu(m.T): -2063.1 Xu(cm.): 243.8

Nu(Tn.): -.2 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00211 Etmx= .01000

Rompe la fibra superior de la S.parcial 1

COMPRESION SIMPLE(Rigido/Plastico):

Nu(Tn.): -9156.1 aplicado en Yo(cm)= 104.1

TRACCION SIMPLE(Rigido/Plastico):

Nu(Tn.): 2390.4 aplicado en Yo(cm)= 184.6

CORTANTE ULTIMO(Rigido/Plastico):

Vu(Tn.): 0.0 Ru(Kg/cm): 0.0

Xv1(cm): 0.0 Xv2(cm): 0.0

S.parciales resistentes:

Proyecto:
Viaducto V-1.Santa Oliva

Seccion:DSEC2

MATERIALES

Num.	Fck (Kg/cm2)	Gamma	M.El. (Kg/cm2)	J _{r1}	J _{r2}
1(HQ)	300.0	1.50	285770	2.60	1.45
2(HQ)	550.0	1.50	338219	2.60	1.45
3(RD)	5100.0	1.15	2100000		
4(PR)	17100.0	1.15	1800000		

SECCIONES PARCIALES

Num	Mat.	B (cm)	H (cm)	Yo (cm)	Mc	Nsr
Num r (mm)						
1	1	700.0	30.0	0.0	C*	0
2	2	90.0	30.0	30.0	C*	0
3	2	36.0	198.0	60.0	C*	0
4	2	179.0	27.0	258.0	C*	0
5	4	26.0	13.4	280.0	*T	0
6	4	20.0	13.4	275.2	*T	0
7	4	0.0	0.0	0.0	*T	0
8	4	0.0	0.0	0.0	*T	0
9	4	8.0	13.4	45.0	*T	0
10	3	35.0	12.0	5.0	CT	0
11	3	35.0	12.0	19.0	CT	0
12	3	6.0	25.0	265.0	CT	0
13	2	0.0	0.0	0.0	C*	0

SECCIONES INTERMEDIAS

Num.	Codigo	Componentes
1	CAJ	2_3_4
2	LOS	1
3	C+P	2_3_4_5_6_7 8_9
4	PS	9
5	PI	6_7_8_5

* CONSTANTES ESTATICAS *

S.COMPLETA

Tipo	Acciones	Area (cm2)	Xcg (cm)	Inercia (cm4)
F.pura +	(0)	2174.0	21.00	5742959.4
	(1)	998.1	37.68	5264686.6
	(2)	1348.4	31.45	5431829.8
F.pura -	(0)	1008.5	248.23	5324577.1
	(1)	455.1	217.35	4566609.8
	(2)	562.1	228.00	4822574.4
C.Simple	(0)	5392.4	89.19	55478892.2
	(1)	1623.1	93.28	17831829.8
	(2)	2303.6	91.55	24637785.9
T.Simple	(0)	173.4	142.16	2903136.8
	(1)	173.4	142.16	2903136.8
	(2)	173.4	142.16	2903136.8

*** Nota: Homogeneizadas a E=2100000 Kp/cm2 ***

ANALISIS EN ROTURA (ELASTOPLASTICO)

Título Sección: DSEC2

* PRESOLICITACIONES ELASTICAS

Analisis SIN FISURACION

Pretensado: 1034.03Tn.
(Todas las Armaduras activas a .80*Fyk)

ESTUDIO SECCION COMPLETA

Analisis con Resistencia de materiales MINORADAS

Def. Ultima Acero Estructural (COMPRESION) (%): 2.50
Def. Ultima Acero Estructural (TRACCION) (%): 2.50
Deformacion Ultima Hormigon (COMPRESION): Pivote en Bloque de Hormigon
Deformacion Ultima Hormigon (TRACCION) (%): 1.00
Coeficiente Ideal Fluencia [μ^* (Cperm./Ctot.)]: 0.00

FLEXION PURA POSITIVA:

Mu (m.T): 3206.7 Xu (cm.): 25.3

Nu (Tn.): .1 Qu (Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00098 Etmx= .01000
Rompe la fibra inferior de la S.parcial 4

FLEXION PURA NEGATIVA:

Mu (m.T): -1270.5 Xu (cm.): 253.1

Nu (Tn.): -0.0 Qu (Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00162 Etmx= .01000
Rompe la fibra superior de la S.parcial 1

COMPRESION SIMPLE (Rigido/Plastico):

Nu (Tn.): -8621.1 aplicado en Yo (cm)= 103.6

TRACCION SIMPLE (Rigido/Plastico):

Nu (Tn.): 1605.7 aplicado en Yo (cm)= 195.3

CORTANTE ULTIMO (Rigido/Plastico):

Vu (Tn.): 0.0 Ru (Kg/cm): 0.0

Xv1 (cm): 0.0 Xv2 (cm): 0.0
S.parciales resistentes: Rcu (Kg/cm):

ANALISIS EN ROTURA (ELASTOPLASTICO)

Título Sección: DSEC2

* PRESOLICITACIONES ELASTICAS

Analisis SIN FISURACION

Pretensado: 1034.03Tn.
(Todas las Armaduras activas a .80*Fyk)

ESTUDIO SECCION C+P

Analisis con Resistencia de materiales MINORADAS

Def. Ultima Acero Estructural (COMPRESION) (%): 2.50
Def. Ultima Acero Estructural (TRACCION) (%): 2.50
Deformacion Ultima Hormigon (COMPRESION): Pivote en Bloque de Hormigon
Deformacion Ultima Hormigon (TRACCION) (%): 1.00
Coeficiente Ideal Fluencia [μ^* (Cperm./Ctot.)]: 0.00

FLEXION PURA POSITIVA:

Mu (m.T): 2334.0 Xu (cm.): 97.2

Nu (Tn.): -.3 Qu (Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00162 Etmx= .00939
Rompe la fibra superior de la S.parcial 2

FLEXION PURA NEGATIVA:

Mu(m.T): -381.8 Xu(cm.): 261.5

Nu(Tn.): -0.0 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00137 Etmx= .00939
Rompe la fibra superior de la S.parcial 2

COMPRESION SIMPLE(Rigido/Plastico):

Nu(Tn.): -4569.3 aplicado en Yo(cm)= 175.1

TRACCION SIMPLE(Rigido/Plastico):

Nu(Tn.): 1123.9 aplicado en Yo(cm)= 244.1

CORTANTE ULTIMO(Rigido/Plastico):

Vu(Tn.): 0.0 Ru(Kg/cm): 0.0

Xv1(cm): 0.0 Xv2(cm): 0.0

S.parciales resistentes: Rcu

Proyecto:
Viaducto V-1.Santa Oliva

Seccion:DSEC3

MATERIALES

Num.	Fck (Kg/cm2)	Gamma	M.El. (Kg/cm2)	J _{II} 1	J _{II} 2
1(HO)	300.0	1.50	285770	2.60	1.45
2(HO)	550.0	1.50	338219	2.60	1.45
3(RD)	5100.0	1.15	2100000		
4(PR)	17100.0	1.15	1800000		

SECCIONES PARCIALES

Num	Mat.	B(cm)	H(cm)	Yo(cm)	Mc	Nsr
		Num	II(mm)			
1	1	700.0	30.0	0.0	C*	0
2	2	90.0	30.0	30.0	C*	0
3	2	36.0	198.0	60.0	C*	0
4	2	179.0	27.0	258.0	C*	0
5	4	26.0	13.4	280.0	*T	0
6	4	0.0	0.0	0.0	*T	0
7	4	0.0	0.0	0.0	*T	0
8	4	0.0	0.0	0.0	*T	0
9	4	8.0	13.4	45.0	*T	0
10	3	35.0	12.0	5.0	CT	0
11	3	35.0	12.0	19.0	CT	0
12	3	6.0	25.0	265.0	CT	0
13	2	0.0	0.0	0.0	C*	0

SECCIONES INTERMEDIAS

Num.	Codigo	Componentes
1	CAJ	2 3 4
2	LOS	1
3	C+P	2 3 4 5 6 7
		8 9
4	PS	9
5	PI	6 7 8 5

* CONSTANTES ESTATICAS *

S.COMPLETA

Tipo	Acciones	Area(cm2)	Xcg(cm)	Inercia(cm4)
F:pura +	(0)	1859.3	17.95	4166081.9
	(1)	950.2	31.74	3869466.1
	(2)	1193.5	26.86	3971896.5
F.pura -	(0)	988.4	247.55	5305794.4
	(1)	436.3	214.11	4479888.2
	(2)	543.1	225.88	4765147.3
C.Simple	(0)	5368.4	88.36	54638945.5
	(1)	1599.1	90.54	17019833.8
	(2)	2279.6	89.61	23814005.6
I.Simple	(0)	149.4	120.69	2405276.0
	(1)	149.4	120.69	2405276.0
	(2)	149.4	120.69	2405276.0

*** Nota: Homogeneizadas a E=2100000 Kp/cm2 ***

ANALISIS EN ROTURA(ELASTOPLASTICO)

Título Sección: DSEC3

* PRESOLICITACIONES ELASTICAS

Análisis SIN FISURACION

Pretensado: 651.05Tn.

(Todas las Armaduras activas a .80*Fyk)

ESTUDIO SECCION COMPLETA

Análisis con Resistencia de materiales MINORADAS

Def. Ultima Acero Estructural (COMPRESION) (%): 2.50

Def. Ultima Acero Estructural (TRACCION) (%): 2.50

Deformacion Ultima Hormigon (COMPRESION) : Pivote en Bloque de Hormigon

Deformacion Ultima Hormigon (TRACCION) (%): 1.00

Coefficiente Ideal Fluencia [μ *(Cperm./Ctot.)]: 0.00

FLEXION PURA POSITIVA:

Mu(m.T): 2012.8 Xu(cm.): 20.3

Nu(Tn.): 0.0 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00077 Etmx= .01000
Rompe la fibra inferior de la S.parcial 4

FLEXION PURA NEGATIVA:

Mu(m.T): -1294.2 Xu(cm.): 257.1

Nu(Tn.): -0.0 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00130 Etmx= .01000
Rompe la fibra superior de la S.parcial 1

COMPRESION SIMPLE(Rigido/Plastico):

Nu(Tn.): -8621.1 aplicado en Yo(cm)= 103.6

TRACCION SIMPLE(Rigido/Plastico):

Nu(Tn.): 1189.4 aplicado en Yo(cm)= 167.1

CORTANTE ULTIMO(Rigido/Plastico):

Vu(Tn.): 0.0 Ru(Kg/cm): 0.0

Xv1(cm): 0.0 Xv2(cm): 0.0
S.parciales resistentes: Rcu(Kg/cm):

ANALISIS EN ROTURA(ELASTOPLASTICO)

Título Sección: DSEC3

* PRESOLICITACIONES ELASTICAS

Análisis SIN FISURACION

Pretensado: 651.05Tn.

(Todas las Armaduras activas a .80*Fyk)

ESTUDIO SECCION C+P

Análisis con Resistencia de materiales MINORADAS

Def. Ultima Acero Estructural (COMPRESION) (%): 2.50

Def. Ultima Acero Estructural (TRACCION) (%): 2.50

Deformacion Ultima Hormigon (COMPRESION) : Pivote en Bloque de Hormigon

Deformacion Ultima Hormigon (TRACCION) (%): 1.00

Coefficiente Ideal Fluencia [μ *(Cperm./Ctot.)]: 0.00

FLEXION PURA POSITIVA:

Mu(m.T): 1398.7 Xu(cm.): 70.4

Nu(Tn.): -.2 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00130 Etmx= .01000
Rompe la fibra inferior de la S.parcial 4

FLEXION PURA NEGATIVA:

Mu(m.T): -399.4 Xu(cm.): 265.1

Nu(Tn.): .4 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00106 Etmx= .01000
Rompe la fibra superior de la S.parcial 2

COMPRESION SIMPLE(Rigido/Plastico):

Nu(Tn.): -4569.3 aplicado en Yo(cm)= 175.1

TRACCION SIMPLE(Rigido/Plastico):

Nu(Tn.): 707.7 aplicado en Yo(cm)= 225.4

CORTANTE ULTIMO(Rigido/Plastico):

Vu(Tn.): 0.0 Ru(Kg/cm): 0.0

Xv1(cm): 0.0 Xv2(cm): 0.0
S.parciales resistentes: Rcu(Kg/cm):

Proyecto:
Viaducto V-1.Santa Oliva

Seccion:DSECLB

MATERIALES

Num.	Fck (Kg/cm2)	Gamma	M.El. (Kg/cm2)	J _{II} 1	J _{II} 2
1(HO)	300.0	1.50	285770	2.60	1.45
2(HO)	550.0	1.50	338219	2.60	1.45
3(RD)	5100.0	1.15	2100000		
4(PR)	17100.0	1.15	1800000		

SECCIONES PARCIALES

Num	Mat.	B(cm)	H(cm)	Yo(cm)	Mc	Nsr
Num II (mm)						
1	1	700.0	30.0	0.0	C*	0
2	2	90.0	30.0	30.0	C*	0
3	2	36.0	198.0	60.0	C*	0
4	2	179.0	27.0	258.0	C*	0
5	4	26.0	13.4	280.0	*T	0
6	4	20.0	13.4	275.2	*T	0
7	4	12.0	13.4	270.4	*T	0
8	4	0.0	0.0	0.0	*T	0
9	4	8.0	13.4	45.0	*T	0
10	3	35.0	20.0	5.0	CT	0
11	3	35.0	12.0	19.0	CT	0
12	3	6.0	25.0	265.0	CT	0
13	3	16.0	20.0	260.0	CT	0
14	4	49.0	13.4	18.0	*T	0

SECCIONES INTERMEDIAS

Num.	Codigo	Componentes
1	CAJ	2 3 4
2	LOS	1
3	C+P	2 3 4 5 6 7
		8 9
4	PS	9
5	PI	6 7 8 5

* CONSTANTES ESTATICAS *

S.COMPLETA

Tipo	Acciones	Area(cm2)	Xcg(cm)	Inercia(cm4)
F.pura +	(0)	2892.5	26.51	9471780.8
	(1)	1229.4	46.97	8541587.5
	(2)	1589.3	39.41	8861805.6
F.pura -	(0)	1337.2	224.95	11859622.5
	(1)	705.0	182.53	9329489.0
	(2)	832.3	195.72	10100703.8
C.Simple	(0)	5586.2	89.42	58215448.8
	(1)	1816.9	93.54	20561405.5
	(2)	2497.4	91.88	27369451.8
T.Simple	(0)	367.2	117.66	5828878.7
	(1)	367.2	117.66	5828878.7
	(2)	367.2	117.66	5828878.7

*** Nota: Homogeneizadas a E=2100000

ANALISIS EN ROTURA(ELASTOPLASTICO)

Titulo Seccion: DSECLB

* PRESOLICITACIONES ELASTICAS

Analisis SIN FISURACION

Pretensado: 2202.10Tn.
(Todas las Armaduras activas a .80*Fyk)

ESTUDIO SECCION COMPLETA

Analisis con Resistencia de materiales MINORADAS

Def. Ultima Acero Estructural(COMPRESION)(%): 2.50

Def. Ultima Acero Estructural(TRACCION)(%): 2.50

Deformacion Ultima Hormigon(COMPRESION) : Pivote en Bloque de Hormigon

Deformacion Ultima Hormigon(TRACCION)(%): 1.00

Coefficiente Ideal Fluencia[μ *(Cperm./Ctot.)]: 0.00

FLEXION PURA POSITIVA:

Mu(m.T): 4478.3 Xu(cm.): 32.7

Nu(Tn.): -0.0 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00144 Etmx= .01000

Rompe la fibra inferior de la S.parcial 4

FLEXION PURA NEGATIVA:

Mu(m.T): -4424.1 Xu(cm.): 187.8

Nu(Tn.): .5 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00350 Etmx= .00590

Rompe la fibra inferior de la S.parcial 4

COMPRESION SIMPLE(Rigido/Plastico):

Nu(Tn.): -9156.1 aplicado en Yo(cm)= 104.1

TRACCION SIMPLE(Rigido/Plastico):

Nu(Tn.): 3410.3 aplicado en Yo(cm)= 135.0

CORTANTE ULTIMO(Rigido/Plastico):

Vu(Tn.): 0.0 Ru(Kg/cm): 0.0

Xv1(cm): 0.0 Xv2(cm): 0.0

S.parciales resistentes: Rcu(Kg/cm):

Proyecto:
Viaducto V-1.Santa Oliva

Seccion:DSEC2A

MATERIALES

Num.	Fck (Kg/cm2)	Gamma	M.El. (Kg/cm2)	J ₁₁ ¹	J ₁₁ ²
1(HO)	300.0	1.50	285770	2.60	1.45
2(HO)	550.0	1.50	338219	2.60	1.45
3(RD)	5100.0	1.15	2100000		
4(PR)	17100.0	1.15	1800000		

SECCIONES PARCIALES

Num	Mat.	B(cm)	H(cm)	Yo(cm)	Mc	Nsr
Num r(mm)						
1	1	700.0	30.0	0.0	C*	0
2	2	90.0	30.0	30.0	C*	0
3	2	36.0	198.0	60.0	C*	0
4	2	179.0	27.0	258.0	C*	0
5	4	26.0	13.4	280.0	*T	0
6	4	20.0	13.4	275.2	*T	0
7	4	0.0	0.0	0.0	*T	0
8	4	0.0	0.0	0.0	*T	0
9	4	8.0	13.4	45.0	*T	0
10	3	35.0	12.0	5.0	CT	0
11	3	35.0	12.0	19.0	CT	0
12	3	6.0	25.0	265.0	CT	0
13	2	0.0	0.0	0.0	C*	0
14	4	105.0	13.4	18.0	*T	0

SECCIONES INTERMEDIAS

Num. Codigo Componentes

1	CAJ	2	3	4
2	LOS	1		
3	C+P	2	3	4 5 6 7
		8	9	
4	PS	9		
5	PI	6	7	8 5

* CONSTANTES ESTATICAS *

S.COMPLETA

Tipo	Acciones	Area(cm2)	Xcg(cm)	Inercia(cm4)
F.pura +	(0)	2287.8	20.87	5743627.6
	(1)	1115.5	35.54	5305110.7
	(2)	1467.9	30.36	5450682.4
F.pura -	(0)	1273.7	224.21	11255349.7
	(1)	646.7	176.58	8500979.0
	(2)	773.5	191.91	9372832.8
C.Simple	(0)	5518.3	87.58	56091174.4
	(1)	1749.1	87.90	18482637.7
	(2)	2429.6	87.77	25272309.4
T.Simple	(0)	299.4	90.20	4016019.2
	(1)	299.4	90.20	4016019.2
	(2)	299.4	90.20	4016019.2

*** Nota: Homogeneizadas a E=2100000 Kp/cm2 ***

ANALISIS EN ROTURA(ELASTOPLASTICO)*

Titulo Seccion: DSEC2A

* PRESOLICITACIONES ELASTICAS

Analisis SIN FISURACION

Pretensado: 3044.64Tn.
(Todas las Armaduras activas a .80*Fyk)

ESTUDIO SECCION COMPLETA

Analisis con Resistencia de materiales MINORADAS

Def. Ultima Acero Estructural(COMPRESION) (%): 2.50
Def. Ultima Acero Estructural(TRACCION) (%): 2.50
Deformacion Ultima Hormigon(COMPRESION) : Pivote en Bloque de Hormigon
Deformacion Ultima Hormigon(TRACCION) (%): 1.00
Coeficiente Ideal Fluencia[μ^* (Cperm./Ctot.)]: 0.00

FLEXION PURA POSITIVA:

Mu(m.T): 3229.6 Xu(cm.): 35.2

Nu(Tn.): -0.0 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00170 Etmx= .01000
Rompe la fibra inferior de la S.parcial 4

FLEXION PURA NEGATIVA:

Mu(m.T): -5209.0 Xu(cm.): 118.6

Nu(Tn.): -0.0 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00350 Etmx= .00203
Rompe la fibra inferior de la S.parcial 4

COMPRESION SIMPLE(Rigido/Plastico):

Nu(Tn.): -8621.1 aplicado en Yo(cm)= 103.6

TRACCION SIMPLE(Rigido/Plastico):

Nu(Tn.): 3791.1 aplicado en Yo(cm)= 93.5

CORTANTE ULTIMO(Rigido/Plastico):

Vu(Tn.): 0.0 Ru(Kg/cm): 0.0

Xv1(cm): 0.0 Xv2(cm): 0.0
S.parciales resistentes: Rcu(Kg/cm):

ANALISIS EN ROTURA(ELASTOPLASTICO)

Titulo Seccion: DSEC2A

* PRESOLICITACIONES ELASTICAS

Analisis SIN FISURACION

Pretensado: 3044.64Tn.
(Todas las Armaduras activas a .80*Fyk)

ESTUDIO SECCION C+P

Analisis con Resistencia de materiales MINORADAS

Def. Ultima Acero Estructural(COMPRESION) (%): 2.50
Def. Ultima Acero Estructural(TRACCION) (%): 2.50
Deformacion Ultima Hormigon(COMPRESION) : Pivote en Bloque de Hormigon
Deformacion Ultima Hormigon(TRACCION) (%): 1.00
Coeficiente Ideal Fluencia[μ^* (Cperm./Ctot.)]: 0.00

FLEXION PURA POSITIVA:

Mu(m.T): 2333.9 Xu(cm.): 94.0

Nu(Tn.): -.3 Qu(Tn.): 0.0

FLEXION PURA NEGATIVA:

μ_B (m.T) : -381.8 χ_B (cm.) : 260.8

Nu(Tn.): -0.0 Qu(Tn.): 0.0

COMPRESION SIMPLE (Rigido/Plastico):

Nu(Tn.): -4569.3 aplicado en Yo(cm) = 175.1

TRACCION SIMPLE (Rigido/Plastico):

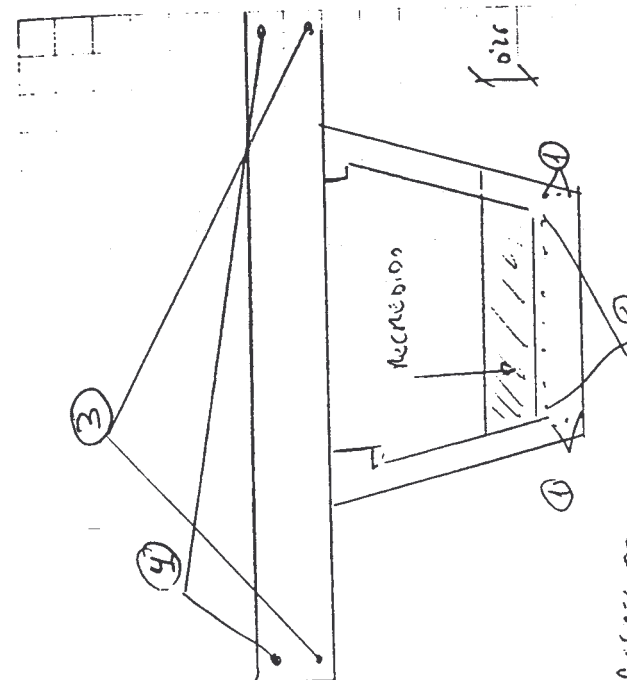
Nu(Tn.): 1123.9 aplicado en Yo(cm) = 244.1

CORTANTE ULTIMO (Rigido/Plastico):

Vu (Tn.) : 0.0 Ru (Kg/cm) : 0.0

Xv1(cm): 0.0 Xv2(cm): 0.0
S.parciales resistentes: Rcu

IDEAM



VAMO DE
34'11.0m

No.	Si	Residual
4120.510	6600.00 / 4120.510	4
4120.510	6600.00 / 4120.510	3
4800.15	6600.00 / 4800.15	2
1202.15	6600.00 / 1202.15	1

→ Vano hQm

3411.

CÁLCULO MZ EN ROTURA
 Hoja de cálculo:
 ELU MZ

			PUENTE CONSTRUIDO				PUENTE EN CONSTRUCCIÓN				PRETENSADO INF DE CAJÓN				PRET SUP CAJÓN	PRET LOBA SUP	PUENTE CONSTRUIDO		PUENTE EN CONSTRUCCIÓN	
Barra	Nudo	X	Mdz+ (Tm)	Mdz- (Tm)	Mdz+ (Tm)	Mdz- (Tm)	PRET	PRET	PRET	PRET	PRET	PRET	MU+ (Tm)	MU- (Tm)	MU+ (Tm)	MU- (Tm)				
							2.8	2.752	2.704	2.656	0.45	0.12								
1	1	0	3.03	-4.26	0.00	0.00	26					8		2173	-1293	1398	-399			
1	2	2.74	1958.05	305.92	463.49	145.07	26					8		2173	-1293	1398	-399			
2	2	2.74	1953.37	306.29	463.49	145.07	26	26				8		3721	-1261	2535	-375			
2	3	5.48	3496.83	498.36	828.34	264.29	26	26				8		3721	-1261	2535	-375			
3	3	5.48	3494.23	498.71	828.34	264.29	26	26	18			8		4758	-1245	3063	-367			
3	4	8.22	4631.89	576.43	1094.57	357.67	26	26	18			8		4758	-1245	3063	-367			
4	4	8.22	4629.50	576.70	1094.57	357.67	26	26	18	18		8		5936	-1238	3429	-365			
4	5	10.96	5368.92	539.56	1262.18	425.21	26	26	18	18		8		5936	-1238	3429	-365			
5	5	10.96	5367.44	539.87	1262.18	425.21	26	26	18	18		8		5936	-1238	3429	-365			
5	6	13.7	5717.72	387.12	1331.15	466.90	26	26	18	18		8		5936	-1238	3429	-365			
6	6	13.7	5715.49	387.57	1331.15	466.90	26	26	18	18		8		5936	-1238	3429	-365			
6	7	16.44	5683.83	117.75	1301.50	482.75	26	26	18	18		8		5936	-1238	3429	-365			
7	7	16.44	5682.21	118.53	1301.50	482.75	26	26	18	18		8		5936	-1238	3429	-365			
7	8	19.18	5274.47	-268.68	1173.21	393.97	26	26	18	18		8		5936	-1238	3429	-365			
8	8	19.18	5273.87	-267.39	1173.21	393.97	26	26	18	18		8		5936	-1238	3429	-365			
8	9	21.92	4495.56	-774.69	946.30	204.98	26	26	18	18		8		5936	-1238	3429	-365			
9	9	21.92	4495.65	-772.65	946.30	204.98	26	26	18	18		8		5936	-1238	3429	-365			
9	10	24.66	3409.92	-1464.40	732.63	-126.03	26	26	18	18		8		5944	-1913	3429	-365			
10	10	24.66	3409.88	-1460.70	732.63		26	26	18			8	56	4764	-3865	3063				
10	11	27.4	2397.70	-2657.58	597.93		26	26	18			8	56	4764	-3865	3063				
11	11	27.4	2396.63	-2649.64	597.93		26	26				8	105	3738	-4784	2535				
11	12	30.45	1443.11	-4596.92	365.21		26	26				8	105	3738	-4784	2535				
12	12	30.45	1441.73	-4587.07	365.21		26					8	105	2270	-6165	1398				
12	####	33.5	548.68	-7225.54	40.50		26					8	105	2264	-9815	1398				

IDEAM

ESECI

26 ϕ 0'6" a 2'80

26 ϕ 0'6" a 2'752

18 ϕ 0'6" a 2'204

8 ϕ 0'6" = 0'45

$M_u + = 4758$ mts con $\phi 25 + \phi 8 a 15$

$M_u - = -1245$ mts

ESECI

26 ϕ 0'6" a 2'80

26 ϕ 0'6" a 2'752

18 ϕ 0'6" a 2'204

18 ϕ 0'6" a 2'752

8 ϕ 0'6" = 0'45

Con 12 $\phi 25$ a 2'20 $M_u = 5936$ mts

ESTE 2A : con 2x $\phi 16 a 20$ mts

$M_u - = -1245$

ESECAA

26 ϕ 0'6" a 2'80

26 ϕ 0'6" a 2'752

18 ϕ 0'6" a 2'704

8 ϕ 0'6" a 0'45

56 ϕ 0'6" a 0'18

IDEAM

$$M_{u+} = 4764.6 \text{ mt.} \quad \text{con } 8 \phi 25 + \phi 8 \text{ a } 15$$

$$M_{u-} = -3865.7 \text{ mt.} \quad \text{con } \phi 12 \text{ a } 20.$$

ESEC 18.

$$26 \phi 06'' \text{ a } 2'80$$

$$26 \phi 06'' \text{ a } 2'72$$

$$8 \phi 06'' \text{ a } 0'45$$

$$105 \phi 06'' \text{ a } 0'8.$$

$$M_{u+} = 3738 \text{ mt.}$$

$$M_{u-} = -4781 \text{ mt.}$$

$$M_{E2} = \phi 20 \text{ a } 10 + \phi 16 \text{ a } 20$$

ESEC 10

$$26 \phi 06'' \text{ a } 2'80$$

$$8 \phi 06'' \text{ a } 2'52$$

$$105 \phi 06'' \text{ a } 0'8.$$

$$M_{u+} = 2276 \text{ mt.}$$

$$M_{u-} = -616 \text{ mt.}$$

$$\text{con Mampar } M_{u-} = -9814 \text{ (ESEC3)}$$

IDEAM

ESEC 4

$$26 \phi 06'' \text{ a } 2'80$$

$$26 \phi 06'' \text{ a } 2'52 \text{ m}$$

$$8 \phi 06'' \text{ a } 0'45 \text{ m}$$

$$M_{u+} = 3721 \text{ mt.}$$

$$M_{u-} = -1261 \text{ mt}$$

ESEC 5

$$26 \phi 06'' \text{ a } 2'80 \text{ m}$$

$$8 \phi 06'' \text{ a } 2'52 \text{ m}$$

$$M_{u+} = 2173.7$$

$$M_{u-} = -1293$$

Proyecto:
Viaducto V-1. Santa Oliva

Seccion:ESEC1

MATERIALES

Num.	Fck (Kg/cm2)	Gamma	M.El. (Kg/cm2)	J _{π1}	J _{π2}
1(HO)	300.0	1.50	285770	2.60	1.45
2(HO)	550.0	1.50	338219	2.60	1.45
3(RD)	5100.0	1.15	2100000		
4(PR)	17100.0	1.15	1800000		

SECCIONES PARCIALES

Num	Mat.	B(cm)	H(cm)	Yo(cm)	Mc	Nsr
Num r(mm)						
1	1	700.0	30.0	0.0	C*	0
2	2	90.0	30.0	30.0	C*	0
3	2	36.0	198.0	60.0	C*	0
4	2	179.0	27.0	258.0	C*	0
5	4	26.0	13.4	280.0	*T	0
6	4	26.0	13.4	275.2	*T	0
7	4	18.0	13.4	270.4	*T	0
8	4	0.0	0.0	0.0	*T	0
9	4	8.0	13.4	45.0	*T	0
10	3	35.0	12.0	5.0	CT	0
11	3	35.0	12.0	19.0	CT	0
12	3	8.0	25.0	265.0	CT	0
13	3	9.0	8.0	260.0	CT	0

SECCIONES INTERMEDIAS

Num.	Codigo	Componentes
1	CAJ	2 3 4
2	LOS	1
3	C+P	2 3 4 5 6 7
		8 9
4	PS	9
5	PI	6 7 8 5

* CONSTANTES ESTATICAS *

S.COMPLETA

Tipo	Acciones	Area(cm2)	Xcg(cm)	Inercia(cm4)
F.pura +	(0)	2638.1	25.42	8362021.9
	(1)	1079.3	47.11	7491826.5
	(2)	1434.6	38.73	7805082.4
F.pura -	(0)	1046.5	249.11	5344398.8
	(1)	490.9	221.91	4675171.8
	(2)	598.2	230.99	4892890.2
C.Simple	(0)	5435.5	90.62	56873376.3
	(1)	1666.3	97.84	19139808.3
	(2)	2346.7	94.83	25981764.3
T.Simple	(0)	216.5	167.56	3465424.3
	(1)	216.5	167.56	3465424.3
	(2)	216.5	167.56	3465424.3

*** Nota: Homogeneizadas a E=2100000 Kp/cm2 ***

ANALISIS EN ROTURA(ELASTOPLASTICO)

Título Sección: ESEC1

* PRESOLICITACIONES ELASTICAS

Analisis SIN FISURACION

Pretensado: 1493.60Tn.
(Todas las Armaduras activas a .80*Fyk)

ESTUDIO SECCION COMPLETA

Analisis con Resistencia de materiales MINORADAS

Def. Ultima Acero Estructural(COMPRESION)(%): 2.50

Def. Ultima Acero Estructural(TRACCION)(%): 2.50

Deformacion Ultima Hormigon(COMPRESION) : Pivote en Bloque de Hormigon

Deformacion Ultima Hormigon(TRACCION)(%): 1.00

Coefficiente Ideal Fluencia[η^*](Cperm./Ctot.): 0.00

FLEXION PURA POSITIVA:

Mu(m.T): 4758.8 Xu(cm.): 30.9

Nu(Tn.): -.3 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00123 Etmx= .01000

Rompe la fibra inferior de la S.parcial 4

FLEXION PURA NEGATIVA:

Mu(m.T): -1245.8 Xu(cm.): 247.4

Nu(Tn.): -.2 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00203 Etmx= .01000

Rompe la fibra superior de la S.parcial 1

COMPRESION SIMPLE(Rigido/Plastico):

Nu(Tn.): -8684.7 aplicado en Yo(cm)= 104.7

TRACCION SIMPLE(Rigido/Plastico):

Nu(Tn.): 2168.8 aplicado en Yo(cm)= 215.0

CORTANTE ULTIMO(Rigido/Plastico):

Vu(Tn.): 0.0 Ru(Kg/cm): 0.0

Xv1(cm): 0.0 Xv2(cm): 0.0

S.parciales resistentes: Rcu(Kg/cm):

ANALISIS EN ROTURA(ELASTOPLASTICO)

Título Sección: ESEC1

* PRESOLICITACIONES ELASTICAS

Analisis SIN FISURACION

Pretensado: 1493.60Tn.

(Todas las Armaduras activas a .80*Fyk)

ESTUDIO SECCION C+P

Analisis con Resistencia de materiales MINORADAS

Def. Ultima Acero Estructural(COMPRESION)(%): 2.50

Def. Ultima Acero Estructural(TRACCION)(%): 2.50

Deformacion Ultima Hormigon(COMPRESION) : Pivote en Bloque de Hormigon

Deformacion Ultima Hormigon(TRACCION)(%): 1.00

Coefficiente Ideal Fluencia[η^*](Cperm./Ctot.): 0.00

FLEXION PURA POSITIVA:

Mu(m.T): 3063.7 Xu(cm.): 139.6

Nu(Tn.): -.5 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00203 Etmx= .00411
Rompe la fibra superior de la S.parcial 2

FLEXION PURA NEGATIVA:

Mu(m.T): -367.7 Xu(cm.): 256.1

Nu(Tn.): -.3 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00181 Etmx= .00411
Rompe la fibra superior de la S.parcial 2

COMPRESION SIMPLE(Rigido/Plastico):

Nu(Tn.): -4569.3 aplicado en Yo(cm)= 175.1

TRACCION SIMPLE(Rigido/Plastico):

Nu(Tn.): 1623.5 aplicado en Yo(cm)= 252.7

CORTANTE ULTIMO(Rigido/Plastico):

Vu(Tn.): 0.0 Ru(Kg/cm): 0.0

Xv1(cm): 0.0 Xv2(cm): 0.0
S.parciales resistentes: Rcu(Kg/cm)

Proyecto:
Viaducto V-1. Santa Oliva

Seccion: ESECLA

MATERIALES

Num.	Fck (Kg/cm2)	Gamma	M.El. (Kg/cm2)	Jr1	Jr2
1(HO)	300.0	1.50	285770	2.60	1.45
2(HO)	550.0	1.50	338219	2.60	1.45
3(RD)	5100.0	1.15	2100000		
4(PR)	17100.0	1.15	1800000		

SECCIONES PARCIALES

Num	Mat.	B(cm)	H(cm)	Yo(cm)	Mc	Nsr
		Num	r(mm)			
1	1	700.0	30.0	0.0	C*	0
2	2	90.0	30.0	30.0	C*	0
3	2	36.0	198.0	60.0	C*	0
4	2	179.0	27.0	258.0	C*	0
5	4	26.0	13.4	280.0	*T	0
6	4	26.0	13.4	275.2	*T	0
7	4	18.0	13.4	270.4	*T	0
8	4	0.0	0.0	0.0	*T	0
9	4	8.0	13.4	45.0	*T	0
10	3	35.0	12.0	5.0	CT	0
11	3	35.0	12.0	19.0	CT	0
12	3	8.0	25.0	265.0	CT	0
13	3	9.0	8.0	260.0	CT	0
14	4	56.0	13.4	18.0	*T	0

SECCIONES INTERMEDIAS

Num.	Codigo	Componentes
1	CAJ	2 3 4
2	LOS	1
3	C+P	2 3 4 5 6 7
		8 9
4	PS	9
5	PI	6 7 8 5

* CONSTANTES ESTATICAS *

S.COMPLETA

Tipo	Acciones	Area(cm2)	Xcg(cm)	Inercia(cm4)
F.pura +	(0)	2689.2	25.25	8365020.3
	(1)	1139.7	45.44	7543013.4
	(2)	1496.4	37.83	7830912.4
F.pura -	(0)	1191.6	235.68	8701976.1
	(1)	596.2	198.25	7123994.2
	(2)	714.3	210.31	7623231.7
C.Simple	(0)	5502.7	89.74	57217017.9
	(1)	1733.4	94.78	19544698.8
	(2)	2413.9	92.71	26360619.8
I.Simple	(0)	283.7	132.30	4602217.3
	(1)	283.7	132.30	4602217.3
	(2)	283.7	132.30	4602217.3

*** Nota: Homogeneizadas a E=2100000 Kp/cm2 ***

ANALISIS EN ROTURA(ELASTOPLASTICO)

Título Sección: ESECLIA

* PRESOLICITACIONES ELASTICAS

Análisis SIN FISURACION

Pretensado: 2565.92Tn.

(Todas las Armaduras activas a $.80 \cdot f_{yk}$)

ESTUDIO SECCION COMPLETA

Análisis con Resistencia de materiales MINORADAS

Def. Última Acero Estructural (COMPRESION) (%): 2.50

Def. Última Acero Estructural (TRACCION) (%): 2.50

Deformación Última Hormigón (COMPRESION) : Pivote en Bloque de Hormigón

Deformación Última Hormigón (TRACCION) (%): 1.00

Coefficiente Ideal Fluencia [$\mu \cdot (C_{perm.}/C_{tot.})$]: 0.00

FLEXION PURA POSITIVA:

Mu(m.T): 4764.6 Xu(cm.): 36.0

Nu(Tn.): -0.0 Qu(Tn.): 0.0

Deformaciones Últimas: Ecmx= -.00162 Etmx= .01000

Rompe la fibra inferior de la S.parcial 4

FLEXION PURA NEGATIVA:

Mu(m.T): -3865.7 Xu(cm.): 178.3

Nu(Tn.): 1.0 Qu(Tn.): 0.0

Deformaciones Últimas: Ecmx= -.00350 Etmx= .00493

Rompe la fibra inferior de la S.parcial 4

COMPRESION SIMPLE(Rigido/Plastico):

Nu(Tn.): -8684.7 aplicado en Yo(cm)= 104.7

TRACCION SIMPLE(Rigido/Plastico):

Nu(Tn.): 3334.4 aplicado en Yo(cm)= 146.4

CORTANTE ULTIMO(Rigido/Plastico):

Vu(Tn.): 0.0 Ru(Kg/cm): 0.0

Xv1(cm): 0.0 Xv2(cm): 0.0

S.parciales resistentes: Rcu(Kg/cm):

ANALISIS EN ROTURA(ELASTOPLASTICO)

Título Sección: ESECLIA

* PRESOLICITACIONES ELASTICAS

Análisis SIN FISURACION

Pretensado: 2565.92Tn.

(Todas las Armaduras activas a $.80 \cdot f_{yk}$)

ESTUDIO SECCION C+P

Análisis con Resistencia de materiales MINORADAS

Def. Última Acero Estructural (COMPRESION) (%): 2.50

Def. Última Acero Estructural (TRACCION) (%): 2.50

Deformación Última Hormigón (COMPRESION) : Pivote en Bloque de Hormigón

Deformación Última Hormigón (TRACCION) (%): 1.00

Coefficiente Ideal Fluencia [$\mu \cdot (C_{perm.}/C_{tot.})$]: 0.00

FLEXION PURA POSITIVA:

Mu(m.T): 3063.7 Xu(cm.): 137.6

Nu(Tn.): -.3 Qu(Tn.): 0.0

Deformaciones Últimas: Ecmx= -.00350 Etmx= .00411

Rompe la fibra superior de la S.parcial 2

FLEXION PURA NEGATIVA:

Mu(m.T): -367.6 Xu(cm.): 255.8

Nu(Tn.): -.2 Qu(Tn.): 0.0

Deformaciones Últimas: Ecmx= -.00181 Etmx= .00411

Rompe la fibra superior de la S.parcial 2

COMPRESION SIMPLE(Rigido/Plastico):

Nu(Tn.): -4569.3 aplicado en Yo(cm)= 175.1

TRACCION SIMPLE(Rigido/Plastico):

Nu(Tn.): 1623.5 aplicado en Yo(cm)= 252.7

CORTANTE ULTIMO(Rigido/Plastico):

Vu(Tn.): 0.0 Ru(Kg/cm): 0.0

Xv1(cm): 0.0 Xv2(cm): 0.0

S.parciales resistentes: Rcu(Kg/cm):

Proyecto:
Viaducto V-1. Santa Oliva

Seccion: ESEC2

MATERIALES

Num.	Fck (Kg/cm2)	Gamma	M.El. (Kg/cm2)	J _{π1}	J _{π2}
1(HO)	300.0	1.50	285770	2.60	1.45
2(HO)	550.0	1.50	338219	2.60	1.45
3(RD)	5100.0	1.15	2100000		
4(PR)	17100.0	1.15	1800000		

SECCIONES PARCIALES

Num	Mat.	B(cm)	H(cm)	Yo(cm)	Mc	Nsr
Num r(mm)						
1	1	700.0	30.0	0.0	C*	0
2	2	90.0	30.0	30.0	C*	0
3	2	36.0	198.0	60.0	C*	0
4	2	179.0	27.0	258.0	C*	0
5	4	26.0	13.4	280.0	*T	0
6	4	26.0	13.4	275.2	*T	0
7	4	18.0	13.4	270.4	*T	0
8	4	18.0	13.4	265.6	*T	0
9	4	8.0	13.4	45.0	*T	0
10	3	35.0	12.0	5.0	CT	0
11	3	35.0	12.0	19.0	CT	0
12	3	12.0	25.0	265.0	CT	0
13	3	0.0	0.0	0.0	CT	0

SECCIONES INTERMEDIAS

Num.	Codigo	Componentes
1	CAJ	2 3 4
2	LOS	1
3	C+P	2 3 4 5 6 7
		8 9
4	PS	9
5	PI	6 7 8 5

* CONSTANTES ESTATICAS *

S.COMPLETA

Tipo	Acciones	Area(cm2)	Xcg(cm)	Inercia(cm4)
F.pura +	(0)	2973.9	28.56	10475446.4
	(1)	1144.7	54.25	9208283.4
	(2)	1504.6	44.36	9670043.5
F.pura -	(0)	1079.7	249.71	5355566.0
	(1)	522.5	225.06	4744361.7
	(2)	629.9	233.08	4937529.9
C.Simple	(0)	5472.2	91.81	58007228.5
	(1)	1703.0	101.49	20167103.3
	(2)	2383.4	97.48	27052768.0
T.Simple	(0)	253.3	181.97	3775508.7
	(1)	253.3	181.97	3775508.7
	(2)	253.3	181.97	3775508.7

*** Nota: Homogeneizadas a E=2100000 Kp/cm2 ***

ANALISIS EN ROTURA(ELASTOPLASTICO)

Título Sección: ESEC2

* PRESOLICITACIONES ELASTICAS

Análisis SIN FISURACION

Pretensado: 1838.27Tn.
(Todas las Armaduras activas a .80*Fyk)

ESTUDIO SECCION COMPLETA

Análisis con Resistencia de materiales MINORADAS

Def. Ultima Acero Estructural(COMPRESION) (%): 2.50

Def. Ultima Acero Estructural(TRACCION) (%): 2.50

Deformacion Ultima Hormigon(COMPRESION) : Pivote en Bloque de Hormigon

Deformacion Ultima Hormigon(TRACCION) (%): 1.00

Coefficiente Ideal Fluencia[μ^* (Cperm./Ctot.)]: 0.00

FLEXION PURA POSITIVA:

Mu(m.T): 5936.9 Xu(cm.): 35.0

Nu(Tn.): -0.0 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00142 Etmx= .01000

Rompe la fibra inferior de la S.parcial 4

FLEXION PURA NEGATIVA:

Mu(m.T): -1238.6 Xu(cm.): 243.0

Nu(Tn.): -.6 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00235 Etmx= .01000

Rompe la fibra superior de la S.parcial 1

COMPRESION SIMPLE(Rigido/Plastico):

Nu(Tn.): -8751.7 aplicado en Yo(cm)= 106.0

TRACCION SIMPLE(Rigido/Plastico):

Nu(Tn.): 2610.4 aplicado en Yo(cm)= 223.7

CORTANTE ULTIMO(Rigido/Plastico):

Vu(Tn.): 0.0 Ru(Kg/cm): 0.0

Xv1(cm): 0.0 Xv2(cm): 0.0

S.parciales resistentes: Rcu(Kg/cm):

ANALISIS EN ROTURA(ELASTOPLASTICO)

Título Sección: ESEC2

* PRESOLICITACIONES ELASTICAS

Análisis SIN FISURACION

Pretensado: 1838.27Tn.

(Todas las Armaduras activas a .80*Fyk)

ESTUDIO SECCION C+P

Análisis con Resistencia de materiales MINORADAS

Def. Ultima Acero Estructural(COMPRESION) (%): 2.50

Def. Ultima Acero Estructural(TRACCION) (%): 2.50

Deformacion Ultima Hormigon(COMPRESION) : Pivote en Bloque de Hormigon

Deformacion Ultima Hormigon(TRACCION) (%): 1.00

Coefficiente Ideal Fluencia[μ^* (Cperm./Ctot.)]: 0.00

FLEXION PURA POSITIVA:

Mu(m.T): 3429.6 Xu(cm.): 164.9

Nu(Tn.): -.1 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00350 Etmx= .00247
Rompe la fibra superior de la S.parcial 2

FLEXION PURA NEGATIVA:

Mu(m.T): -365.6 Xu(cm.): 250.3

Nu(Tn.): -.6 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00221 Etmx= .01000
Rompe la fibra superior de la S.parcial 2

COMPRESION SIMPLE(Rigido/Plastico):

Nu(Tn.): -4569.3 aplicado en Yo(cm)= 175.1

TRACCION SIMPLE(Rigido/Plastico):

Nu(Tn.): 1998.1 aplicado en Yo(cm)= 255.3

CORTANTE ULTIMO(Rigido/Plastico):

Vu(Tn.): 0.0 Ru(Kg/cm): 0.0

Xv1(cm): 0.0 Xv2(cm): 0.0
S.parciales resistentes: Rcu(Kg/cm):

* CONSTANTES ESTATICAS *

Tftulo Sección: ESEC2

S.COMPLETA

Tipo Acciones Area(cm2) Xcg(cm) Inercia(cm4)

*** Nota: Homogeneizadas a E=2100000 Kp/c

Proyecto:
Viaducto V-1.Santa Oliva

Seccion:ESEC2A

MATERIALES

Num.	Fck (Kg/cm2)	Gamma	M.El. (Kg/cm2)	J _{II} 1	J _{II} 2
1(HO)	300.0	1.50	285770	2.60	1.45
2(HO)	550.0	1.50	338219	2.60	1.45
3(RD)	5100.0	1.15	2100000		
4(PR)	17100.0	1.15	1800000		

SECCIONES PARCIALES

Num	Mat.	B (cm)	H (cm)	Yo (cm)	Mc	Nsr
		Num	II (mm)			
1	1	700.0	30.0	0.0	C*	0
2	2	90.0	30.0	30.0	C*	0
3	2	36.0	198.0	60.0	C*	0
4	2	179.0	27.0	258.0	C*	0
5	4	26.0	13.4	280.0	*T	0
6	4	26.0	13.4	275.2	*T	0
7	4	18.0	13.4	270.4	*T	0
8	4	18.0	13.4	265.6	*T	0
9	4	8.0	13.4	45.0	*T	0
10	3	35.0	16.0	5.0	CT	0
11	3	35.0	16.0	19.0	CT	0
12	3	12.0	25.0	265.0	CT	0
13	3	0.0	0.0	0.0	CT	0

SECCIONES INTERMEDIAS

Num.	Codigo	Componentes
1	CAJ	2 3 4
2	LOS	1
3	C+P	2 3 4 5 6 7
		8 9
4	PS	9
5	PI	6 7 8 5

* CONSTANTES ESTATICAS *

S.COMPLETA

Tipo	Acciones	Area (cm2)	Xcg (cm)	Inercia (cm4)
F.pura +	(0)	3005.3	28.24	10492976.2
	(1)	1197.8	52.14	9310472.2
	(2)	1558.9	43.12	9731020.3
F.pura -	(0)	1213.0	237.34	8624998.5
	(1)	619.0	203.36	7228990.9
	(2)	736.4	214.10	7661551.0
C.Simple	(0)	5533.8	90.93	58387867.0
	(1)	1764.5	98.40	20634876.5
	(2)	2445.0	95.35	27483571.8
T.Simple	(0)	314.8	148.93	5191775.1
	(1)	314.8	148.93	5191775.1
	(2)	314.8	148.93	5191775.1

*** Nota: Homogeneizadas a E=2100000 Kp/cm2 ***

ANALISIS EN ROTURA (ELASTOPLASTICO)

Título Sección: ESEC1A

* PRESOLICITACIONES ELASTICAS

Análisis SIN FISURACION

Pretensado: 1838.27Tn.

(Todas las Armaduras activas a .80*Fyk)

ESTUDIO SECCION COMPLETA

Análisis con Resistencia de materiales MINORADAS

Def. Ultima Acero Estructural (COMPRESION) (%): 2.50

Def. Ultima Acero Estructural (TRACCION) (%): 2.50

Deformacion Ultima Hormigon (COMPRESION) : Pivote en Bloque de Hormigon

Deformacion Ultima Hormigon (TRACCION) (%): 1.00

Coefficiente Ideal Fluencia [μ^* (Cperm./Ctot.)]: 0.00

FLEXION PURA POSITIVA:

Mu(m.T): 5944.9 Xu(cm.): 34.0

Nu(Tn.): -0.0 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00138 Etmx= .01000

Rompe la fibra inferior de la S.parcial 4

FLEXION PURA NEGATIVA:

Mu(m.T): -1913.6 Xu(cm.): 234.3

Nu(Tn.): -.3 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00279 Etmx= .01000

Rompe la fibra superior de la S.parcial 1

COMPRESION SIMPLE (Rigido/Plastico):

Nu(Tn.): -9024.7 aplicado en Yo(cm)= 103.2

TRACCION SIMPLE (Rigido/Plastico):

Nu(Tn.): 2883.5 aplicado en Yo(cm)= 203.8

CORTANTE ULTIMO (Rigido/Plastico):

Vu(Tn.): 0.0 Ru(Kg/cm): 0.0

Xv1(cm): 0.0 Xv2(cm): 0.0

S.parciales resistentes: Rcu(Kg/c

Proyecto:

Viaducto V-1. Santa Oliva

Sección: ESEC1B

MATERIALES

Num.	Fck (Kg/cm2)	Gamma	M.El. (Kg/cm2)	J π 1	J π 2
1(HO)	300.0	1.50	285770	2.60	1.45
2(HU)	550.0	1.50	338219	2.60	1.45
3(RD)	5100.0	1.15	2100000		
4(PR)	17100.0	1.15	1800000		

SECCIONES PARCIALES

Num	Mat.	B (cm)	H (cm)	Yo (cm)	Mc	Nsr
Num π (mm)						
1	1	700.0	30.0	0.0	C*	0
2	2	90.0	30.0	30.0	C*	0
3	2	36.0	198.0	60.0	C*	0
4	2	179.0	27.0	258.0	C*	0
5	4	26.0	13.4	280.0	*T	0
6	4	26.0	13.4	275.2	*T	0
7	4	0.0	13.4	270.4	*T	0
8	4	0.0	0.0	0.0	*T	0
9	4	8.0	13.4	45.0	*T	0
10	3	70.0	20.0	5.0	CT	0
11	3	35.0	16.0	19.0	CT	0
12	3	8.0	25.0	265.0	CT	0
13	3	9.0	8.0	260.0	CT	0
14	3	105.0	13.4	18.0	CT	0

SECCIONES INTERMEDIAS

Num.	Codigo	Componentes
1	CAJ	2 3 4
2	LOS	1
3	C+P	2 3 4 5 6 7
		8 9
4	PS	9
5	PI	6 7 8 5

* CONSTANTES ESTATICAS *

S. COMPLETA

Tipo	Acciones	Area (cm2)	Xcg (cm)	Inercia (cm4)
F.pura +	(0)	2636.8	21.88	7099367.9
	(1)	1365.8	34.71	6641103.2
	(2)	1722.2	30.47	6782695.1
F.pura -	(0)	1703.2	193.88	20534978.0
	(1)	964.1	136.99	13724741.2
	(2)	1117.2	153.87	15691729.6
C.Simple	(0)	5772.0	85.10	58197075.2
	(1)	2002.7	80.71	20529701.4
	(2)	2683.2	82.41	27342216.9
T.Simple	(0)	553.0	63.09	5827724.3
	(1)	553.0	63.09	5827724.3
	(2)	553.0	63.09	5827724.3

*** Nota: Homogeneizadas a E=2100000 Kp/cm2 ***

ANÁLISIS EN ROTURA (ELASTOPLÁSTICO)

Título Sección: ESEC1B

* PRESOLICITACIONES ELASTICAS

Análisis SIN FISURACION

Pretensado: 1148.92Tn.

(Todas las Armaduras activas a $.80 \cdot F_{yk}$)

ESTUDIO SECCION COMPLETA

Análisis con Resistencia de materiales MINORADAS

Def. Última Acero Estructural (COMPRESION) (%): 2.50

Def. Última Acero Estructural (TRACCION) (%): 2.50

Deformación Última Hormigón (COMPRESION): Pivote en Bloque de Hormigón

Deformación Última Hormigón (TRACCION) (%): 1.00

Coefficiente Ideal Fluencia [μ (Cperm./Ctot.)]: 0.00

FLEXION PURA POSITIVA:

Mu(m.T): 3738.7 Xu(cm.): 24.0

Nu(Tn.): 0.0 Qu(Tn.): 0.0

Deformaciones Últimas: Ecmx= -.00092 Etmx= .01000
Rompe la fibra inferior de la S.parcial 4

FLEXION PURA NEGATIVA:

Mu(m.T): -4784.3 Xu(cm.): 153.9

Nu(Tn.): .8 Qu(Tn.): 0.0

Deformaciones Últimas: Ecmx= -.00350 Etmx= .00367
Rompe la fibra inferior de la S.parcial 4

COMPRESION SIMPLE(Rigido/Plastico):

Nu(Tn.): -10272.7 aplicado en Yo(cm)= 90.5

TRACCION SIMPLE(Rigido/Plastico):

Nu(Tn.): 3382.2 aplicado en Yo(cm)= 113.7

CORTANTE ULTIMO(Rigido/Plastico):

Vu(Tn.): 0.0 Ru(Kg/cm): 0.0

Xv1(cm): 0.0 Xv2(cm): 0.0

S.parciales resistentes: Rcu(Kg/cm):

ANALISIS EN ROTURA(ELASTOPLASTICO)

Título Sección: ESEC1B

* PRESOLICITACIONES ELASTICAS

Análisis SIN FISURACION

Pretensado: 1148.92Tn.

(Todas las Armaduras activas a $.80 \cdot F_{yk}$)

ESTUDIO SECCION C+P

Análisis con Resistencia de materiales MINORADAS

Def. Última Acero Estructural (COMPRESION) (%): 2.50

Def. Última Acero Estructural (TRACCION) (%): 2.50

Deformación Última Hormigón (COMPRESION): Pivote en Bloque de Hormigón

Deformación Última Hormigón (TRACCION) (%): 1.00

Coefficiente Ideal Fluencia [μ (Cperm./Ctot.)]: 0.00

FLEXION PURA POSITIVA:

Mu(m.T): 2535.2 Xu(cm.): 108.1

Nu(Tn.): -.6 Qu(Tn.): 0.0

Deformaciones Últimas: Ecmx= -.00350 Etmx= .00751

Rompe la fibra superior de la S.parcial 2

FLEXION PURA NEGATIVA:

Mu(m.T): -375.7 Xu(cm.): 260.3

Nu(Tn.): -0.0 Qu(Tn.): 0.0

Deformaciones Últimas: Ecmx= -.00147 Etmx= .00751

Rompe la fibra superior de la S.parcial 2

COMPRESION SIMPLE(Rigido/Plastico):

Nu(Tn.): -4569.3 aplicado en Yo(cm)= 175.1

TRACCION SIMPLE(Rigido/Plastico):

Nu(Tn.): 1248.8 aplicado en Yo(cm)= 247.3

CORTANTE ULTIMO(Rigido/Plastico):

Vu(Tn.): 0.0 Ru(Kg/cm): 0.0

Xv1(cm): 0.0 Xv2(cm): 0.0

S.parciales resistentes: Rcu(Kg/cm):

Proyecto:
Viaducto V-1. Santa Oliva

Seccion: ESEC1C

MATERIALES

Num.	Fck (Kg/cm2)	Gamma	M.El. (Kg/cm2)	J _{II} ¹	J _{II} ²
1(HO)	300.0	1.50	285770	2.60	1.45
2(HO)	550.0	1.50	338219	2.60	1.45
3(RD)	5100.0	1.15	2100000		
4(PR)	17100.0	1.15	1800000		

SECCIONES PARCIALES

Num	Mat.	B (cm)	H (cm)	Yo (cm)	Mc	Nsr
Num II (mm)						
1	1	700.0	30.0	0.0	C*	0
2	2	90.0	30.0	30.0	C*	0
3	2	36.0	198.0	60.0	C*	0
4	2	179.0	27.0	258.0	C*	0
5	4	26.0	13.4	280.0	*T	0
6	4	0.0	13.4	275.2	*T	0
7	4	0.0	13.4	270.4	*T	0
8	4	0.0	0.0	0.0	*T	0
9	4	8.0	13.4	45.0	*T	0
10	3	70.0	20.0	5.0	CT	0
11	3	35.0	16.0	19.0	CT	0
12	3	8.0	25.0	265.0	CT	0
13	3	9.0	8.0	260.0	CT	0
14	4	105.0	13.4	18.0	*T	0

SECCIONES INTERMEDIAS

Num.	Codigo	Componentes
1	CAJ	2 3 4
2	LOS	1
3	C+P	2 3 4 5 6 7
		8 9
4	PS	9
5	PI	6 7 8 5

* CONSTANTES ESTATICAS *

S. COMPLETA

Tipo	Acciones	Area (cm2)	Xcg (cm)	Inercia (cm4)
F.pura +	(0)	2276.7	18.64	5061864.7
	(1)	1273.2	29.19	4782005.3
	(2)	1504.7	25.82	4867386.9
F.pura -	(0)	1647.1	194.56	19679939.5
	(1)	915.2	134.97	12825408.8
	(2)	1067.1	152.96	14842748.6
C.Simple	(0)	5719.8	84.30	56965523.9
	(1)	1950.6	78.26	19249031.2
	(2)	2631.0	80.63	26081068.4
T.Simple	(0)	500.8	51.70	4308949.4
	(1)	500.8	51.70	4308949.4
	(2)	500.8	51.70	4308949.4

*** Nota: Homogeneizadas a E=2100000 Kp/cm2 ***

ANALISIS EN ROTURA(ELASTOPLASTICO)

Título Sección: ESEC1C

* PRESOLICITACIONES ELASTICAS

Análisis SIN FISURACION

Pretensado: 2661.66Tn.
(Todas las Armaduras activas a .80*Fyk)

ESTUDIO SECCION COMPLETA

Análisis con Resistencia de materiales MINORADAS

Def. Ultima Acero Estructural (COMPRESION) (%): 2.50
Def. Ultima Acero Estructural (TRACCION) (%): 2.50
Deformacion Ultima Hormigon (COMPRESION) : Pivote en Bloque de Hormigon
Deformacion Ultima Hormigon (TRACCION) (%): 1.00
Coeficiente Ideal Fluencia [μ * (Cperm./Ctot.)]: 0.00

FLEXION PURA POSITIVA:

Mu (m.T): 2270.8 Xu (cm.): 27.5

Nu (Tn.): -0.0 Qu (Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00133 Etmx= .01000
Rompe la fibra inferior de la S.parcial 4

FLEXION PURA NEGATIVA:

Mu (m.T): -6165.1 Xu (cm.): 98.2

Nu (Tn.): -.1 Qu (Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00350 Etmx= .00151
Rompe la fibra inferior de la S.parcial 4

COMPRESION SIMPLE (Rigido/Plastico):

Nu (Tn.): -9620.9 aplicado en Yo (cm)= 95.3

TRACCION SIMPLE (Rigido/Plastico):

Nu (Tn.): 4374.7 aplicado en Yo (cm)= 60.3

CORTANTE ULTIMO (Rigido/Plastico):

Vu (Tn.): 0.0 Ru (Kg/cm): 0.0

Xv1 (cm): 0.0 Xv2 (cm): 0.0
S.parciales resistentes: Rcu (Kg/cm):

ANALISIS EN ROTURA(ELASTOPLASTICO)

Título Sección: ESEC1C

* PRESOLICITACIONES ELASTICAS

Análisis SIN FISURACION

Pretensado: 2661.66Tn.
(Todas las Armaduras activas a .80*Fyk)

ESTUDIO SECCION C+P

Análisis con Resistencia de materiales MINORADAS

Def. Ultima Acero Estructural (COMPRESION) (%): 2.50
Def. Ultima Acero Estructural (TRACCION) (%): 2.50
Deformacion Ultima Hormigon (COMPRESION) : Pivote en Bloque de Hormigon
Deformacion Ultima Hormigon (TRACCION) (%): 1.00
Coeficiente Ideal Fluencia [μ * (Cperm./Ctot.)]: 0.00

FLEXION PURA POSITIVA:

Mu (m.T): 1398.6 Xu (cm.): 66.5

Nu (Tn.): -.2 Qu (Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00350 Etmx= .01000
Rompe la fibra inferior de la S.parcial 4

FLEXION PURA NEGATIVA:

Mu(m.T): -399.4 Xu(cm.): 264.3

Nu(Tn.): .2 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00106 Etmx= .01000
Rompe la fibra superior de la S.parcial 2

COMPRESION SIMPLE(Rigido/Plastico):

Nu(Tn.): -4569.3 aplicado en Yo(cm)= 175.1

TRACCION SIMPLE(Rigido/Plastico):

Nu(Tn.): 707.7 aplicado en Yo(cm)= 225.4

CORTANTE ULTIMO(Rigido/Plastico):

Vu(Tn.): 0.0 Ru(Kg/cm): 0.0

Xv1(cm): 0.0 Xv2(cm): 0.0
S.parciales resistentes: Rcu(Kg/cm):

Proyecto:
Viaducto V-1. Santa Oliva

Seccion:ESEC3

MATERIALES

Num.	Fck (Kg/cm2)	Gamma	M.El. (Kg/cm2)	J _{II} 1	J _{II} 2
1(HO)	300.0	1.50	285770	2.60	1.45
2(HO)	550.0	1.50	338219	2.60	1.45
3(RD)	5100.0	1.15	2100000		
4(PR)	17100.0	1.15	1800000		

SECCIONES PARCIALES

Num	Mat.	B(cm)	H(cm)	Yo(cm)	Mc	Nsr
		Num	II(mm)			
1	1	700.0	30.0	0.0	C*	0
2	2	90.0	30.0	30.0	C*	0
3	2	36.0	198.0	60.0	C*	0
4	2	179.0	27.0	258.0	C*	0
5	4	26.0	13.4	280.0	*T	0
6	4	0.0	13.4	275.2	*T	0
7	4	0.0	13.4	270.4	*T	0
8	4	0.0	0.0	0.0	*T	0
9	4	8.0	13.4	45.0	*T	0
10	3	70.0	20.0	5.0	CT	0
11	3	70.0	20.0	19.0	CT	0
12	3	8.0	25.0	265.0	CT	0
13	3	9.0	8.0	260.0	CT	0
14	4	105.0	13.4	18.0	*T	0
15	2	130.0	64.8	193.2	C*	0

SECCIONES INTERMEDIAS

Num.	Codigo	Componentes				
1	CAJ	2	3	4		
2	LOS	1				
3	C+P	2	3	4	5	6 7
		8	9			
4	PS	9				
5	PI	6	7	8	5	

* CONSTANTES ESTATICAS *

S.COMPLETA

Tipo	Acciones	Area(cm2)	Xcg(cm)	Inercia(cm4)
F.pura +	(0)	2434.7	18.73	5062214.2
	(1)	1397.2	28.22	4793122.1
	(2)	1634.0	25.30	4871898.5
F.pura -	(0)	2984.4	199.81	25930018.8
	(1)	1422.5	146.83	17825427.3
	(2)	1743.0	164.55	20363211.3
C.Simple	(0)	7226.1	109.50	80555136.0
	(1)	2477.0	97.16	27183396.8
	(2)	3334.3	101.99	36939731.6
T.Simple	(0)	650.4	44.43	4424007.9
	(1)	650.4	44.43	4424007.9
	(2)	650.4	44.43	4424007.9

*** Nota: Homogeneizadas a E=2100000 Kp/cm2 ***

ANALISIS EN ROTURA(ELASTOPLASTICO)

Título Sección: ESEC3

* PRESOLICITACIONES ELASTICAS

Análisis SIN FISURACION

Pretensado: 2661.66Tn.

(Todas las Armaduras activas a .80*Fyk)

ESTUDIO SECCION COMPLETA

Análisis con Resistencia de materiales MINORADAS

Def. Ultima Acero Estructural(COMPRESION) (%): 2.50

Def. Ultima Acero Estructural(TRACCION) (%): 2.50

Deformacion Ultima Hormigon(COMPRESION) : Pivote en Bloque de Hormigon

Deformacion Ultima Hormigon(TRACCION) (%): 1.00

Coefficiente Ideal Fluencia[μ *(Cperm./Ctot.)]: 0.00

FLEXION PURA POSITIVA:

Mu(m.T): 2264.6 Xu(cm.): 26.6

Nu(Tn.): -0.0 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00128 Etmx= .01000
Rompe la fibra inferior de la S.parcial 4

FLEXION PURA NEGATIVA:

Mu(m.T): -9814.0 Xu(cm.): 181.6

Nu(Tn.): -.5 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00350 Etmx= .00579
Rompe la fibra inferior de la S.parcial 4

COMPRESION SIMPLE(Rigido/Plastico):

Nu(Tn.): -12909.6 aplicado en Yo(cm)= 118.0

TRACCION SIMPLE(Rigido/Plastico):

Nu(Tn.): 5037.8 aplicado en Yo(cm)= 55.0

CORTANTE ULTIMO(Rigido/Plastico):

Vu(Tn.): 0.0 Ru(Kg/cm): 0.0

Xv1(cm): 0.0 Xv2(cm): 0.0
S.parciales resistentes: Rcu(Kg/cm):

ANALISIS EN ROTURA(ELASTOPLASTICO)

Título Sección: ESEC3

* PRESOLICITACIONES ELASTICAS

Análisis SIN FISURACION

Pretensado: 2661.66Tn.

(Todas las Armaduras activas a .80*Fyk)

ESTUDIO SECCION C+P

Análisis con Resistencia de materiales MINORADAS

Def. Ultima Acero Estructural(COMPRESION) (%): 2.50

Def. Ultima Acero Estructural(TRACCION) (%): 2.50

Deformacion Ultima Hormigon(COMPRESION) : Pivote en Bloque de Hormigon

Deformacion Ultima Hormigon(TRACCION) (%): 1.00

Coefficiente Ideal Fluencia[μ *(Cperm./Ctot.)]: 0.00

FLEXION PURA POSITIVA:

Mu(m.T): 1398.6 Xu(cm.): 67.0

Nu(Tn.): -.1 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00350 Etmx= .01000
Rompe la fibra inferior de la S.parcial 4

FLEXION PURA NEGATIVA:

Mu(m.T): -399.5 Xu(cm.): 262.4

Nu(Tn.): .2 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00106 Etmx= .01000
Rompe la fibra superior de la S.parcial 2

COMPRESION SIMPLE(Rigido/Plastico):

Nu(Tn.): -4569.3 aplicado en Yo(cm)= 175.1

TRACCION SIMPLE(Rigido/Plastico):

Nu(Tn.): 707.7 aplicado en Yo(cm)= 225.4

CORTANTE ULTIMO(Rigido/Plastico):

Vu(Tn.): 0.0 Ru(Kg/cm): 0.0

Xv1(cm): 0.0 Xv2(cm): 0.0
S.parciales resistentes: Rcu(Kg/cm):

Proyecto:
Viaducto V-1. Santa Oliva

Seccion: ESEC4

MATERIALES

Num.	Fck (Kg/cm2)	Gamma	M.El. (Kg/cm2)	J _{II} 1	J _{II} 2
1(HO)	300.0	1.50	285770	2.60	1.45
2(HO)	550.0	1.50	338219	2.60	1.45
3(RD)	5100.0	1.15	2100000		
4(PR)	17100.0	1.15	1800000		

SECCIONES PARCIALES

Num	Mat.	B(cm)	H(cm)	Yo(cm)	Mc	Nsr
Num II (mm)						
1	1	700.0	30.0	0.0	C*	0
2	2	90.0	30.0	30.0	C*	0
3	2	36.0	198.0	60.0	C*	0
4	2	179.0	27.0	258.0	C*	0
5	4	26.0	13.4	280.0	*T	0
6	4	26.0	13.4	275.2	*T	0
7	4	0.0	13.4	270.4	*T	0
8	4	0.0	0.0	0.0	*T	0
9	4	8.0	13.4	45.0	*T	0
10	3	35.0	12.0	5.0	CT	0
11	3	35.0	12.0	19.0	CT	0
12	3	8.0	25.0	265.0	CT	0
13	3	9.0	8.0	260.0	CT	0

SECCIONES INTERMEDIAS

Num.	Codigo	Componentes
1	CAJ	2 3 4
2	LOS	1
3	C+P	2 3 4 5 6 7
		8 9
4	PS	9
5	PI	6 7 8 5

* CONSTANTES ESTATICAS *

S.COMPLETA

Tipo	Acciones	Area(cm2)	Xcg(cm)	Inercia(cm4)
F.pura +	(0)	2415.6	23.31	7047820.9
	(1)	1039.1	42.50	6386414.6
	(2)	1391.8	35.15	6621343.6
F.pura -	(0)	1027.6	248.65	5333762.2
	(1)	472.9	219.66	4620595.3
	(2)	580.1	229.49	4856896.9
C.Simple	(0)	5413.9	89.90	56167394.3
	(1)	1644.7	95.57	18483276.9
	(2)	2325.1	93.19	25304722.4
I.Simple	(0)	194.9	156.09	3208411.6
	(1)	194.9	156.09	3208411.6
	(2)	194.9	156.09	3208411.6

*** Nota: Homogeneizadas a E=2100000 Kp/cm2 ***

ANALISIS EN ROTURA(ELASTOPLASTICO)

Título Sección: ESEC4

* PRESOLICITACIONES ELASTICAS

Analisis SIN FISURACION

Pretensado: 1148.92Tn.

(Todas las Armaduras activas a .80*Fyk)

ESTUDIO SECCION COMPLETA

Analisis con Resistencia de materiales MINORADAS

Def. Ultima Acero Estructural (COMPRESION) (%): 2.50

Def. Ultima Acero Estructural (TRACCION) (%): 2.50

Deformacion Ultima Hormigon (COMPRESION) : Pivote en Bloque de Hormigon

Deformacion Ultima Hormigon (TRACCION) (%): 1.00

Coefficiente Ideal Fluencia [μ * (Cperm./Ctot.)]: 0.00

FLEXION PURA POSITIVA:

Mu(m.T): 3721.1 Xu(cm.): 27.2

Nu(Tn.): .1 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00106 Etmx= .01000

Rompe la fibra inferior de la S.parcial 4

FLEXION PURA NEGATIVA:

Mu(m.T): -1261.8 Xu(cm.): 252.2

Nu(Tn.): -.6 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00169 Etmx= .01000

Rompe la fibra superior de la S.parcial 1

COMPRESION SIMPLE(Rigido/Plastico):

Nu(Tn.): -8684.7 aplicado en Yo(cm)= 104.7

TRACCION SIMPLE(Rigido/Plastico):

Nu(Tn.): 1794.1 aplicado en Yo(cm)= 203.3

CORTANTE ULTIMO(Rigido/Plastico):

Vu(Tn.): 0.0 Ru(Kg/cm): 0.0

Xv1(cm): 0.0 Xv2(cm): 0.0

S.parciales resistentes: Rcu(Kg/cm):

ANALISIS EN ROTURA(ELASTOPLASTICO)

Título Sección: ESEC4

* PRESOLICITACIONES ELASTICAS

Analisis SIN FISURACION

Pretensado: 1148.92Tn.

(Todas las Armaduras activas a .80*Fyk)

ESTUDIO SECCION C+P

Analisis con Resistencia de materiales MINORADAS

Def. Ultima Acero Estructural (COMPRESION) (%): 2.50

Def. Ultima Acero Estructural (TRACCION) (%): 2.50

Deformacion Ultima Hormigon (COMPRESION) : Pivote en Bloque de Hormigon

Deformacion Ultima Hormigon (TRACCION) (%): 1.00

Coefficiente Ideal Fluencia [μ * (Cperm./Ctot.)]: 0.00

FLEXION PURA POSITIVA:

Mu(m.T): 2535.2 Xu(cm.): 108.1

Nu(Tn.): -.6 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00169 Etmx= .00751
pe la fibra superior de la S.parcial 2

FLEXION PURA NEGATIVA:

Mu(m.T): -375.7 Xu(cm.): 260.3

Nu(Tn.): -0.0 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00147 Etmx= .00751
Rompe la fibra superior de la S.parcial 2

COMPRESION SIMPLE(Rigido/Plastico):

Nu(Tn.): -4569.3 aplicado en Yo(cm)= 175.1

TRACCION SIMPLE(Rigido/Plastico):

Nu(Tn.): 1248.8 aplicado en Yo(cm)= 247.3

CORTANTE ULTIMO(Rigido/Plastico):

Vu(Tn.): 0.0 Ru(Kg/cm): 0.0

Xv1(cm): 0.0 Xv2(cm): 0.0
S.parciales resistentes: Rcu(Kg/cm)

Proyecto:
Viaducto V-1. Santa Oliva

Seccion: ESEC5

MATERIALES

Num.	Fck (Kg/cm2)	Gamma	M.El. (Kg/cm2)	Jr1	Jr2
1(HO)	300.0	1.50	285770	2.60	1.45
2(HO)	550.0	1.50	338219	2.60	1.45
3(RD)	5100.0	1.15	2100000		
4(PR)	17100.0	1.15	1800000		

SECCIONES PARCIALES

Num	Mat.	B(cm)	H(cm)	Yo(cm)	Mc	Nsr
		Num	r(mm)			
1	1	700.0	30.0	0.0	C*	0
2	2	90.0	30.0	30.0	C*	0
3	2	36.0	198.0	60.0	C*	0
4	2	179.0	27.0	258.0	C*	0
5	4	26.0	13.4	280.0	*T	0
6	4	0.0	13.4	275.2	*T	0
7	4	0.0	13.4	270.4	*T	0
8	4	0.0	0.0	0.0	*T	0
9	4	8.0	13.4	45.0	*T	0
10	3	35.0	12.0	5.0	CT	0
11	3	35.0	12.0	19.0	CT	0
12	3	8.0	25.0	265.0	CT	0
13	3	9.0	8.0	260.0	CT	0

SECCIONES INTERMEDIAS

Num.	Codigo	Componentes
1	CAJ	2 3 4
2	LOS	1
3	C+P	2 3 4 5 6 7
		8 9
4	PS	9
5	PI	6 7 8 5

* CONSTANTES ESTATICAS *

S.COMPLETA

Tipo	Acciones	Area(cm2)	Xcg(cm)	Inercia(cm4)
F.pura +	(0)	2045.5	19.76	5030800.3
	(1)	978.4	35.17	4634455.7
	(2)	1313.0	29.56	4771951.3
F.pura -	(0)	1001.3	247.80	5309919.4
	(1)	448.1	215.72	4515113.8
	(2)	555.1	226.87	4785999.0
C.Simple	(0)	5382.7	88.83	55082351.4
	(1)	1613.5	92.08	17449621.2
	(2)	2293.9	90.70	24249545.5
T.Simple	(0)	163.8	133.28	2675647.6
	(1)	163.8	133.28	2675647.6
	(2)	163.8	133.28	2675647.6

*** Nota: Homogeneizadas a E=2100000 Kp/cm2 ***

ANALISIS EN ROTURA(ELASTOPLASTICO)

Título Sección: ESEC5

* PRESOLICITACIONES ELASTICAS

Análisis SIN FISURACION

Pretensado: 651.05Tn.
(Todas las Armaduras activas a .80*Fyk)

ESTUDIO SECCION COMPLETA

Análisis con Resistencia de materiales MINORADAS

Def. Última Acero Estructural (COMPRESION) (%): 2.50

Def. Última Acero Estructural (TRACCION) (%): 2.50

Deformación Última Hormigón (COMPRESION) : Pivote en Bloque de Hormigón

Deformación Última Hormigón (TRACCION) (%): 1.00

Coefficiente Ideal Fluencia [μ * (Cperm./Ctot.)]: 0.00

FLEXION PURA POSITIVA:

Mu(m.T): 2173.7 Xu(cm.): 21.1

Nu(Tn.): 0.0 Qu(Tn.): 0.0

Deformaciones Últimas: Ecmx= -.00080 Etmx= .01000
Rompe la fibra inferior de la S.parcial 4

FLEXION PURA NEGATIVA:

Mu(m.T): -1293.6 Xu(cm.): 257.3

Nu(Tn.): -0.0 Qu(Tn.): 0.0

Deformaciones Últimas: Ecmx= -.00128 Etmx= .01000
Rompe la fibra superior de la S.parcial 1

COMPRESION SIMPLE(Rigido/Plastico):

Nu(Tn.): -8684.7 aplicado en Yo(cm)= 104.7

TRACCION SIMPLE(Rigido/Plastico):

Nu(Tn.): 1253.0 aplicado en Yo(cm)= 172.0

CORTANTE ULTIMO(Rigido/Plastico):

Vu(Tn.): 0.0 Ru(Kg/cm): 0.0

Xv1(cm): 0.0 Xv2(cm): 0.0
S.parciales resistentes: Rcu(Kg/cm):

ANALISIS EN ROTURA(ELASTOPLASTICO)

Título Sección: ESEC5

* PRESOLICITACIONES ELASTICAS

Análisis SIN FISURACION

Pretensado: 651.05Tn.
(Todas las Armaduras activas a .80*Fyk)

ESTUDIO SECCION C+P

Análisis con Resistencia de materiales MINORADAS

Def. Última Acero Estructural (COMPRESION) (%): 2.50

Def. Última Acero Estructural (TRACCION) (%): 2.50

Deformación Última Hormigón (COMPRESION) : Pivote en Bloque de Hormigón

Deformación Última Hormigón (TRACCION) (%): 1.00

Coefficiente Ideal Fluencia [μ * (Cperm./Ctot.)]: 0.00

FLEXION PURA POSITIVA:

Mu(m.T): 1398.7 Xu(cm.): 70.4

Nu(Tn.): -.2 Qu(Tn.): 0.0

Deformaciones Últimas: Ecmx= -.00128 Etmx= .01000
Rompe la fibra inferior de la S.parcial 4

FLEXION PURA NEGATIVA:

Mu(m.T): -399.4 Xu(cm.): 265.0

Nu(Tn.): .4 Qu(Tn.): 0.0

Deformaciones Últimas: Ecmx= -.00106 Etmx= .01000
Rompe la fibra superior de la S.parcial 2

COMPRESION SIMPLE(Rigido/Plastico):

Nu(Tn.): -4569.3 aplicado en Yo(cm)= 175.1

TRACCION SIMPLE(Rigido/Plastico):

Nu(Tn.): 707.7 aplicado en Yo(cm)= 225.4

CORTANTE ULTIMO(Rigido/Plastico):

Vu(Tn.): 0.0 Ru(Kg/cm): 0.0

Xv1(cm): 0.0 Xv2(cm): 0.0
S.parciales resistentes: Rcu(Kg/cm):

- Viga de 34'29 m.

BSEC1

8 tonares $\phi 0'6''$ a 0'45
 28 tonares $\phi 0'6''$ a 2'80
 26 tonares $\phi 0'6''$ a 2'752
 26 tonares $\phi 0'6''$ a 2'704
 26 tonares $\phi 0'6''$ a 2'656
 Lora ($\phi 12 \times 0'2$) $\times 2$

Con 6 $\phi 25$ abajo $\Rightarrow M_u = 6634'9 \text{ mtn}$
 BSEC1A: Lora $\phi 20 \times 20 \times 2 \quad M_u = -255'7 \text{ mtn}$

BSEC2

8 tonares $\phi 0'6''$ a 5'45
 28 tonares $\phi 0'6''$ a 2'80
 26 tonares $\phi 0'6''$ a 2'752
 26 tonares $\phi 0'6''$ a 2'656
 Lora ($\phi 12 \times 0'2$) $\times 2$

Con 6 $\phi 25$ abajo $\Rightarrow M_u = 5180'7 \text{ mtn}$

BSEC2A $\Rightarrow M_u = -346'7 \text{ mtn}$ (con 4 $\phi 0'6''$ a 0'18)

BSEC3

8 tonares $\phi 0'6''$ a 5'45
 28 tonares $\phi 0'6''$ a 2'80
 26 tonares $\phi 0'6''$ a 2'752
 105 tonares $\phi 0'6''$ a 0'18
 BSEC3A: con 105 $\phi 0'6''$
 $M_u =$

Con 4 $\phi 25$ abajo $\Rightarrow M_u = 3940 \text{ mtn}$
 $M_u = -5202$

CÁLCULO MZ EN ROTURA
 Hoja de cálculo:
 ELU.MZ

			PUENTE CONSTRUIDO		PUENTE EN CONSTRUCCIÓN		PRETENSADO INF DE CAJÓN				PRET SUP CAJÓN	PRET LOSA SUP	PUENTE CONSTRUIDO		PUENTE EN CONSTRUCCIÓN	
Barra	Nudo	X	Mdz+ (Tm)	Mdz- (Tm)	Mdz+ (Tm)	Mdz- (Tm)	PRET	PRET	PRET	PRET	PRET	PRET	MU+ (Tm)	MU- (Tm)	MU+ (Tm)	MU- (Tm)
							2.8	2.752	2.704	2.656	0.45	0.12				
123	123	67.4	655.07	-7811.24	40.29		28				8	105	1861	-7823	1501	
123	124	70.45	1603.80	-4904.58	366.93		28				8	105	2423	-5740	1501	
124	124	70.45	1605.92	-4914.58	366.93		28	26			8	105	3940	-5202	2602	
124	125	73.5	2630.64	-2762.71	601.58		28	26			8	105	3940	-5202	2602	
125	125	73.5	2632.03	-2770.85	601.58		28	26	26		8	49	5183	-3467	3318	
125	126	76.26	3754.27	-1460.37	738.91		28	26	26		8	49	5183	-3467	3318	
126	126	76.26	3752.69	-1463.37	738.91	-124.01	28	26	26	26	8		6654	-2557	3672	-347
126	127	79.02	4948.87	-717.57	954.88	211.61	28	26	26	26	8		6634	-1206	3672	-347
127	127	79.02	4948.02	-718.91	954.88	211.61	28	26	26	26	8		6634	-1206	3672	-347
127	128	81.78	5798.02	-174.42	1185.60	402.92	28	26	26	26	8		6634	-1206	3672	-347
128	128	81.78	5797.98	-176.00	1185.60	402.92	28	26	26	26	8		6634	-1206	3672	-347
128	129	84.54	6239.20	235.39	1316.46	488.56	28	26	26	26	8		6634	-1206	3672	-347
129	129	84.54	6240.31	234.38	1316.46	488.56	28	26	26	26	8		6634	-1206	3672	-347
129	130	87.3	6268.94	515.50	1347.23	472.89	28	26	26	26	8		6634	-1206	3672	-347
130	130	87.3	6270.96	514.97	1347.23	472.89	28	26	26	26	8		6634	-1206	3672	-347
130	131	90.06	5881.48	667.78	1277.94	430.60	28	26	26	26	8		6634	-1206	3672	-347
131	131	90.06	5884.04	667.50	1277.94	430.60	28	26	26	26	8		6634	-1206	3672	-347
131	132	92.82	5089.82	662.44	1108.56	362.29	28	26	26	26	8		6634	-1206	3672	-347
132	132	92.82	5072.30	662.37	1108.56	362.29	28	26	26		8		5180	-1230	3318	-357
132	133	95.58	3825.80	589.03	839.12	267.75	28	26	26		8		5180	-1230	3318	-357
133	133	95.58	3829.05	589.04	839.12	267.75	28	26			8		3914	-1258	2602	-372
133	134	98.34	2139.01	358.37	469.60	148.99	28	26			8		3914	-1258	2602	-372
134	134	98.34	2142.94	358.32	469.60	148.99	28				8		2363	-1289	1501	
134	135	101.1	3.03	-5.08	0.00	0.00	28				8		2363	-1289	1501	

BSEC 4

8 tramos $\phi 0'6''$ a $0'45''$

28 tramos $\phi 0'6''$ a $2'80''$

105 tramos $\phi 0'6''$ a $0'17''$

Con $\phi 25$ abajo $\Rightarrow M_u^+ = 2423 \text{ mt.}$

$M_u^- = -5740 \text{ mt.}$

Cualquier exceso = neg. $F_{vm} = \phi 20 - 0'45$ en ambas caras $\Rightarrow$
 $M_d = -1870$

BSEC 4A

En 105 $\phi 0'6''$

$M_u^+ =$

$M_u^- =$

Proyecto:

Viaducto V-1. Santa Oliva

Seccion: BSEC1

MATERIALES

Num.	Fck (Kg/cm ²)	Gamma	M.El. (Kg/cm ²)	J _{g1}	J _{g2}
1(HO)	300.0	1.50	285770	2.60	1.45
2(HO)	550.0	1.50	338219	2.60	1.45
3(RD)	5100.0	1.15	2100000		
4(PR)	17100.0	1.15	1800000		

SECCIONES PARCIALES

Num	Mat.	B (cm)	H (cm)	Yo (cm)	Mc	Nsr
			r (mm)			
1	1	700.0	30.0	0.0	C*	0
2	2	90.0	30.0	30.0	C*	0
3	2	36.0	198.0	60.0	C*	0
4	2	179.0	27.0	258.0	C*	0
5	4	28.0	13.4	280.0	*T	0
6	4	26.0	13.4	275.2	*T	0
7	4	26.0	13.4	270.4	*T	0
8	4	26.0	13.4	265.4	*T	0
9	4	8.0	13.4	45.0	*T	0
10	3	35.0	12.0	5.0	CT	0
11	3	35.0	12.0	19.0	CT	0
12	3	6.0	25.0	265.0	CT	0
13	3	0.0	0.0	0.0	CT	0

SECCIONES INTERMEDIAS

Num.	Codigo	Componentes
1	CAJ	2 3 4
2	LOS	1
3	C+P	2 3 4 5 6 7
		8 9
4	PS	9
5	PI	6 7 8 5

* CONSTANTES ESTATICAS *

S.COMPLETA

Tipo	Acciones	Area (cm ²)	Xcg (cm)	Inercia (cm ⁴)
F.pura +	(0)	2907.8	27.95	10066763.5
	(1)	1131.2	52.85	8885389.4
	(2)	1490.1	43.24	9315257.4
F.pura -	(0)	1072.1	249.66	5356598.2
	(1)	515.4	224.58	4737784.5
	(2)	622.8	232.78	4934499.6
C.Simple	(0)	5464.3	91.57	57794648.3
	(1)	1695.1	100.77	19978311.0
	(2)	2375.6	96.95	26854276.8
T.Simple	(0)	245.4	179.58	3731612.8
	(1)	245.4	179.58	3731612.8
	(2)	245.4	179.58	3731612.8

*** Nota: Homogeneizadas a $E=2100000 \text{ Kg/cm}^2$ ***

ANALISIS EN ROTURA (ELASTOPLASTICO)

Título Sección: BSEC1

* PRESOLICITACIONES ELASTICAS

Análisis SIN FISURACION

Pretensado: 2182.95Tn.

(Todas las Armaduras activas a .80*Fyk)

ESTUDIO SECCION COMPLETA

Análisis con Resistencia de materiales MINORADAS

Def. Ultima Acero Estructural (COMPRESION) (%): 2.50

Def. Ultima Acero Estructural (TRACCION) (%): 2.50

Deformacion Ultima Hormigon (COMPRESION) : Pivote en Bloque de Hormigon

Deformacion Ultima Hormigon (TRACCION) (%): 1.00

Coefficiente Ideal Fluencia [μ *(Cperm./Ctot.)]: 0.00

FLEXION PURA POSITIVA:

Mu(m.T): 6634.9 Xu(cm.): 37.5

Nu(Tn.): -.1 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00155 Etmx= .01000

Rompe la fibra inferior de la S.parcial 4

FLEXION PURA NEGATIVA:

Mu(m.T): -1206.5 Xu(cm.): 233.5

Nu(Tn.): -.5 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00296 Etmx= .01000

Rompe la fibra superior de la S.parcial 1

COMPRESION SIMPLE(Rigido/Plastico):

Nu(Tn.): -8621.1 aplicado en Yo(cm)= 103.6

TRACCION SIMPLE(Rigido/Plastico):

Nu(Tn.): 2854.5 aplicado en Yo(cm)= 227.8

CORTANTE ULTIMO(Rigido/Plastico):

Vu(Tn.): 0.0 Ru(Kg/cm): 0.0

Xv1(cm): 0.0 Xv2(cm): 0.0

S.parciales resistentes: Rcu(Kg/cm):

ANALISIS EN ROTURA(ELASTOPLASTICO)

Título Sección: BSEC1

* PRESOLICITACIONES ELASTICAS

Análisis SIN FISURACION

Pretensado: 2182.95Tn.

(Todas las Armaduras activas a .80*Fyk)

ESTUDIO SECCION C+P

Análisis con Resistencia de materiales MINORADAS

Def. Ultima Acero Estructural (COMPRESION) (%): 2.50

Def. Ultima Acero Estructural (TRACCION) (%): 2.50

Deformacion Ultima Hormigon (COMPRESION) : Pivote en Bloque de Hormigon

Deformacion Ultima Hormigon (TRACCION) (%): 1.00

Coefficiente Ideal Fluencia [μ *(Cperm./Ctot.)]: 0.00

FLEXION PURA POSITIVA:

Mu(m.T): 3672.7 Xu(cm.): 182.1

Nu(Tn.): -0.0 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00350 Etmx= .00160
Rompe la fibra superior de la S.parcial 2

FLEXION PURA NEGATIVA:

Mu(m.T): -347.6 Xu(cm.): 244.1

Nu(Tn.): -.9 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00268 Etmx= .01000

Rompe la fibra superior de la S.parcial 2

COMPRESION SIMPLE(Rigido/Plastico):

Nu(Tn.): -4569.3 aplicado en Yo(cm)= 175.1

TRACCION SIMPLE(Rigido/Plastico):

Nu(Tn.): 2372.8 aplicado en Yo(cm)= 257.6

CORTANTE ULTIMO(Rigido/Plastico):

Vu(Tn.): 0.0 Ru(Kg/cm): 0.0

Xv1(cm): 0.0 Xv2(cm): 0.0

S.parciales resistentes: Rcu(Kg/cm)

Proyecto:
Viaducto V-1. Santa Oliva

Seccion: BSECL1A

MATERIALES

Num.	Fck (Kg/cm2)	Gamma	M.El. (Kg/cm2)	J _{II} 1	J _{II} 2
1(HO)	300.0	1.50	285770	2.60	1.45
2(HO)	550.0	1.50	338219	2.60	1.45
3(RD)	5100.0	1.15	2100000		
4(PR)	17100.0	1.15	1800000		

SECCIONES PARCIALES

Num	Mat.	B(cm)	H(cm)	Yo(cm)	Mc	Nar
Num π (mm)						
1	1	700.0	30.0	0.0	C*	0
2	2	90.0	30.0	30.0	C*	0
3	2	36.0	198.0	60.0	C*	0
4	2	179.0	27.0	258.0	C*	0
5	4	28.0	13.4	280.0	*T	0
6	4	26.0	13.4	275.2	*T	0
7	4	26.0	13.4	270.4	*T	0
8	4	26.0	13.4	265.4	*T	0
9	4	8.0	13.4	45.0	*T	0
10	3	35.0	20.0	5.0	CT	0
11	3	35.0	20.0	19.0	CT	0
12	3	6.0	25.0	265.0	CT	0
13	3	0.0	0.0	0.0	CT	0

SECCIONES INTERMEDIAS

Num.	Codigo	Componentes
1	CAJ	2 3 4
2	LOS	1
3	C+P	2 3 4 5 6 7 8 9
4	PS	9
5	PI	6 7 8 5

* CONSTANTES ESTATICAS *

S.COMPLETA

Tipo	Acciones	Area(cm2)	Xcg(cm)	Inercia(cm4)
F.pura +	(0)	2983.1	27.26	10102803.6
	(1)	1254.2	48.44	9088764.9
	(2)	1615.5	40.64	9438010.0
F.pura -	(0)	1362.7	223.82	12354940.1
	(1)	725.5	181.52	9729670.5
	(2)	854.0	194.57	10523092.8
C.Simple	(0)	5605.1	89.60	58643759.3
	(1)	1835.8	94.06	20981254.6
	(2)	2516.3	92.27	27792626.8
T.Simple	(0)	386.1	118.94	6213738.8
	(1)	386.1	118.94	6213738.8
	(2)	386.1	118.94	6213738.8

*** Nota: Homogeneizadas a E=2100000 Kp/cm2 ***

ANALISIS EN ROTURA(ELASTOPLASTICO)

Título Sección: BSECL1A

* PRESOLICITACIONES ELASTICAS

Análisis SIN FISURACION

Pretensado: 2182.95Tn.
(Todas las Armaduras activas a .80*Fyk)

ESTUDIO SECCION COMPLETA

Análisis con Resistencia de materiales MINORADAS

Def. Ultima Acero Estructural(COMPRESION) (%): 2.50

Def. Ultima Acero Estructural(TRACCION) (%): 2.50

Deformacion Ultima Hormigon(COMPRESION) : Pivote en Bloque de Hormigon

Deformacion Ultima Hormigon(TRACCION) (%): 1.00

Coefficiente Ideal Fluencia[μ *(Cperm./Ctot.)]: 0.00

FLEXION PURA POSITIVA:

Mu(m.T): 6654.9 Xu(cm.): 35.1

Nu(Tn.): -0.0 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00143 Etmx= .01000

Rompe la fibra inferior de la S.parcial 4

FLEXION PURA NEGATIVA:

Mu(m.T): -2557.0 Xu(cm.): 190.9

Nu(Tn.): .7 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00350 Etmx= .00563

Rompe la fibra inferior de la S.parcial 4

COMPRESION SIMPLE(Rigido/Plastico):

Nu(Tn.): -9245.2 aplicado en Yo(cm)= 97.5

TRACCION SIMPLE(Rigido/Plastico):

Nu(Tn.): 3478.6 aplicado en Yo(cm)= 189.3

CORTANTE ULTIMO(Rigido/Plastico):

Vu(Tn.): 0.0 Ru(Kg/cm): 0.0

Xv1(cm): 0.0 Xv2(cm): 0.0

S.parciales resistentes: Rcu(Kg/cm):

ANALISIS EN ROTURA(ELASTOPLASTICO)

Título Sección: BSECL1A

* PRESOLICITACIONES ELASTICAS

Análisis SIN FISURACION

Pretensado: 2182.95Tn.

(Todas las Armaduras activas a .80*Fyk)

ESTUDIO SECCION C+P

Análisis con Resistencia de materiales MINORADAS

Def. Ultima Acero Estructural(COMPRESION) (%): 2.50

Def. Ultima Acero Estructural(TRACCION) (%): 2.50

Deformacion Ultima Hormigon(COMPRESION) : Pivote en Bloque de Hormigon

Deformacion Ultima Hormigon(TRACCION) (%): 1.00

Coefficiente Ideal Fluencia[μ *(Cperm./Ctot.)]: 0.00

FLEXION PURA POSITIVA:

Mu(m.T): 3672.8 Xu(cm.): 182.1

Nu(Tn.): -0.0 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00350 Etmx= .00159
Rompe la fibra superior de la S.parcial 2

FLEXION PURA NEGATIVA:

Mu(m.T): -347.6 Xu(cm.): 244.1

Nu(Tn.): -.9 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00268 Etmx= .01000
Rompe la fibra superior de la S.parcial 2

COMPRESION SIMPLE(Rigido/Plastico):

Nu(Tn.): -4569.3 aplicado en Yo(cm)= 175.1

TRACCION SIMPLE(Rigido/Plastico):

Nu(Tn.): 2372.8 aplicado en Yo(cm)= 257.6

CORTANTE ULTIMO(Rigido/Plastico):

Vu(Tn.): 0.0 Ru(Kg/cm): 0.0

Xv1(cm): 0.0 Xv2(cm): 0.0
S.parciales resistentes: Rcu(Kg

Proyecto:
Viaducto V-1. Santa Oliva

Seccion:BSKC2

MATERIALES

Num.	Fck (Kg/cm2)	Gamma	M.El. (Kg/cm2)	J _π 1	J _π 2
1(HO)	300.0	1.50	285770	2.60	1.45
2(HO)	550.0	1.50	338219	2.60	1.45
3(RD)	5100.0	1.15	2100000		
4(PR)	17100.0	1.15	1800000		

SECCIONES PARCIALES

Num	Mat.	B (cm)	H (cm)	Yo (cm)	Mc	Nsr
		Num	π (mm)			
1	1	700.0	30.0	0.0	C*	0
2	2	90.0	30.0	30.0	C*	0
3	2	36.0	198.0	60.0	C*	0
4	2	179.0	27.0	258.0	C*	0
5	4	28.0	13.4	280.0	*T	0
6	4	26.0	13.4	275.2	*T	0
7	4	26.0	13.4	270.4	*T	0
8	4	0.0	0.0	0.0	*T	0
9	4	8.0	13.4	45.0	*T	0
10	3	35.0	12.0	5.0	CT	0
11	3	35.0	12.0	19.0	CT	0
12	3	6.0	25.0	265.0	CT	0
13	3	0.0	0.0	0.0	CT	0

SECCIONES INTERMEDIAS

Num.	Codigo	Componentes
1	CAJ	2 3 4
2	LOS	1
3	C+P	2 3 4 5 6 7
		8 9
4	PS	9
5	PI	6 7 8 5

* CONSTANTES ESTATICAS *

S.COMPLETA

Tipo	Acciones	Area (cm2)	Xcg (cm)	Inercia (cm4)
F.pura +	(0)	2619.1	25.25	8278270.7
	(1)	1075.4	46.74	7426729.1
	(2)	1430.5	38.43	7733030.9
F.pura -	(0)	1043.8	249.17	5347947.7
	(1)	488.5	221.92	4680643.0
	(2)	595.7	231.03	4898105.8
C.Simple	(0)	5433.2	90.57	56839328.9
	(1)	1663.9	97.67	19110000.5
	(2)	2344.4	94.70	25950212.5
T.Simple	(0)	214.2	166.98	3464270.1
	(1)	214.2	166.98	3464270.1
	(2)	214.2	166.98	3464270.1

*** Nota: Homogeneizadas a E=2100000 Kp/cm2 ***

ANALISIS EN ROTURA(ELASTOPLASTICO)

Título Sección: BSEC2

* PRESOLICITACIONES ELASTICAS

Análisis SIN FISURACION

Pretensado: 1685.08Tn.
(Todas las Armaduras activas a .80*Fyk)

ESTUDIO SECCION COMPLETA

Análisis con Resistencia de materiales MINORADAS

Def. Ultima Acero Estructural (COMPRESION) (%): 2.50

Def. Ultima Acero Estructural (TRACCION) (%): 2.50

Deformacion Ultima Hormigon (COMPRESION) : Pivote en Bloque de Hormigon

Deformacion Ultima Hormigon (TRACCION) (%): 1.00

Coefficiente Ideal Fluencia [μ *(Cperm./Ctot.)]: 0.00

FLEXION PURA POSITIVA:

Mu(m.T): 5180.7 Xu(cm.): 32.3

Nu(Tn.): -0.0 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00129 Etmx= .01000

Rompe la fibra inferior de la S.parcial 4

FLEXION PURA NEGATIVA:

Mu(m.T): -1230.5 Xu(cm.): 243.2

Nu(Tn.): -.8 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00231 Etmx= .01000

Rompe la fibra superior de la S.parcial 1

COMPRESION SIMPLE(Rigido/Plastico):

Nu(Tn.): -8621.1 aplicado en Yo(cm)= 103.6

TRACCION SIMPLE(Rigido/Plastico):

Nu(Tn.): 2313.3 aplicado en Yo(cm)= 218.9

CORTANTE ULTIMO(Rigido/Plastico):

Vu(Tn.): 0.0 Ru(Kg/cm): 0.0

Xv1(cm): 0.0 Xv2(cm): 0.0

S.parciales resistentes: Rcu(Kg/cm):

ANALISIS EN ROTURA(ELASTOPLASTICO)

Título Sección: BSEC2

* PRESOLICITACIONES ELASTICAS

Análisis SIN FISURACION

Pretensado: 1685.08Tn.
(Todas las Armaduras activas a .80*Fyk)

ESTUDIO SECCION C+P

Análisis con Resistencia de materiales MINORADAS

Def. Ultima Acero Estructural (COMPRESION) (%): 2.50

Def. Ultima Acero Estructural (TRACCION) (%): 2.50

Deformacion Ultima Hormigon (COMPRESION) : Pivote en Bloque de Hormigon

Deformacion Ultima Hormigon (TRACCION) (%): 1.00

Coefficiente Ideal Fluencia [μ *(Cperm./Ctot.)]: 0.00

FLEXION PURA POSITIVA:

Mu(m.T): 3318.8 Xu(cm.): 155.7

Nu(Tn.): .8 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00231 Etmx= .00300

Rompe la fibra superior de la S.parcial 2

FLEXION PURA NEGATIVA:

Mu(m.T): -357.4 Xu(cm.): 253.4

Nu(Tn.): -.3 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00202 Etmx= .00300

Rompe la fibra superior de la S.parcial 2

COMPRESION SIMPLE(Rigido/Plastico):

Nu(Tn.): -4569.3 aplicado en Yo(cm)= 175.1

TRACCION SIMPLE(Rigido/Plastico):

Nu(Tn.): 1831.6 aplicado en Yo(cm)= 255.0

CORTANTE ULTIMO(Rigido/Plastico):

Vu(Tn.): 0.0 Ru(Kg/cm): 0.0

Xv1(cm): 0.0 Xv2(cm): 0.0

S.parciales resistentes: Rcu

Proyecto:
Viaducto V-1. Santa Oliva

Seccion: BSEC2 A

MATERIALES

Num.	Fck (Kg/cm2)	Gamma	M.El. (Kg/cm2)	J _{II} 1	J _{II} 2
1(HO)	300.0	1.50	285770	2.60	1.45
2(HO)	550.0	1.50	338219	2.60	1.45
3(RD)	5100.0	1.15	2100000		
4(PR)	17100.0	1.15	1800000		

SECCIONES PARCIALES

Num	Mat.	B(cm)	H(cm)	Yo(cm)	Mc	Nsr
Num II (mm)						
1	1	700.0	30.0	0.0	C*	0
2	2	90.0	30.0	30.0	C*	0
3	2	36.0	198.0	60.0	C*	0
4	2	179.0	27.0	258.0	C*	0
5	4	28.0	13.4	280.0	*T	0
6	4	26.0	13.4	275.2	*T	0
7	4	26.0	13.4	270.4	*T	0
8	4	0.0	0.0	0.0	*T	0
9	4	8.0	13.4	45.0	*T	0
10	3	35.0	12.0	5.0	CT	0
11	3	35.0	12.0	19.0	CT	0
12	3	6.0	25.0	265.0	CT	0
13	4	49.0	13.4	18.0	*T	0

SECCIONES INTEREDIAS

Num.	Codigo	Componentes
1	CAJ	2 3 4
2	LOS	1
3	C+P	2 3 4 5 6 7
		8 9
4	PS	9
5	PI	6 7 8 5

* CONSTANTES ESTATICAS *

S.COMPLETA

Tipo	Acciones	Area(cm2)	Xcg(cm)	Inercia(cm4)
F.pura +	(0)	2664.1	25.10	8280768.8
	(1)	1128.3	45.28	7470651.8
	(2)	1484.6	37.65	7755088.0
F.pura -	(0)	1171.7	237.25	8308470.2
	(1)	581.4	200.75	6853824.4
	(2)	698.2	212.57	7316437.8
C.Simple	(0)	5491.9	89.80	57140005.0
	(1)	1722.7	94.98	19464436.3
	(2)	2403.2	92.84	26281764.2
T.Simple	(0)	273.0	135.04	4478981.0
	(1)	273.0	135.04	4478981.0
	(2)	273.0	135.04	4478981.0

*** Nota: Homogeneizadas a E=2100000 Kp/cm2 *

**

ANALISIS EN ROTURA(ELASTOPLASTICO)

Título Sección: BSEC2 A

* PRESOLICITACIONES ELASTICAS

Análisis SIN FISURACION

Pretensado: 2623.37Tn.

(Todas las Armaduras activas a .80*f_{yk})

ESTUDIO SECCION COMPLETA

Análisis con Resistencia de materiales MINORADAS

Def. Ultima Acero Estructural(COMPRESION) (%): 2.50

Def. Ultima Acero Estructural(TRACCION) (%): 2.50

Deformacion Ultima Hormigon(COMPRESION) : Pivote en Bloque de Hormigon

Deformacion Ultima Hormigon(TRACCION) (%): 1.00

Coefficiente Ideal Fluencia[μ *(Cperm./Ctot.)]: 0.00

FLEXION PURA POSITIVA:

Mu(m.T): 5183.4 Xu(cm.): 36.9

Nu(Tn.): -0.0 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00164 Etmx= .01000

Rompe la fibra inferior de la S.parcial 4

FLEXION PURA NEGATIVA:

Mu(m.T): -3467.2 Xu(cm.): 177.4

Nu(Tn.): .8 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00350 Etmx= .00476

Rompe la fibra inferior de la S.parcial 4

COMPRESION SIMPLE(Rigido/Plastico):

Nu(Tn.): -8621.1 aplicado en Yo(cm)= 103.6

TRACCION SIMPLE(Rigido/Plastico):

Nu(Tn.): 3333.2 aplicado en Yo(cm)= 157.6

CORTANTE ULTIMO(Rigido/Plastico):

Vu(Tn.): 0.0 Ru(Kg/cm): 0.0

Xv1(cm): 0.0 Xv2(cm): 0.0

S.parciales resistentes: Rcu(Kg/cm):

ANALISIS EN ROTURA(ELASTOPLASTICO)

Título Sección: BSEC2

* PRESOLICITACIONES ELASTICAS

Análisis SIN FISURACION

Pretensado: 2623.37Tn.

(Todas las Armaduras activas a .80*f_{yk})

ESTUDIO SECCION C+P

Análisis con Resistencia de materiales MINORADAS

Def. Ultima Acero Estructural(COMPRESION) (%): 2.50

Def. Ultima Acero Estructural(TRACCION) (%): 2.50

Deformacion Ultima Hormigon(COMPRESION) : Pivote en Bloque de Hormigon

Deformacion Ultima Hormigon(TRACCION) (%): 1.00

Coefficiente Ideal Fluencia[μ *(Cperm./Ctot.)]: 0.00

FLEXION PURA POSITIVA:

Mu(m.T): 3318.8 Xu(cm.): 154.0

Nu(Tn.): .7 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00350 Etmx= .00300
Rompe la fibra superior de la S.parcial 2

FLEXION PURA NEGATIVA:

Mu(m.T): -357.4 Xu(cm.): 253.2

Nu(Tn.): -.3 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00202 Etmx= .00300
Rompe la fibra superior de la S.parcial 2

COMPRESION SIMPLE(Rigido/Plastico):

Nu(Tn.): -4569.3 aplicado en Yo(cm)= 175.1

TRACCION SIMPLE(Rigido/Plastico):

Nu(Tn.): 1831.6 aplicado en Yo(cm)= 255.0

CORTANTE ULTIMO(Rigido/Plastico):

Vu(Tn.): 0.0 Ru(Kg/cm): 0.0

Xv1(cm): 0.0 Xv2(cm): 0.0
S.parciales resistentes: Rcu(Kg/cm):

Proyecto:
Viaducto V-1. Santa Oliva

Seccion:BSEC3

MATERIALES

Num.	Fck (Kg/cm2)	Gamma	M.El. (Kg/cm2)	J _{II} 1	J _{II} 2
1(HO)	350.0	1.50	285770	2.60	1.45
2(HO)	550.0	1.50	338219	2.60	1.45
3(RD)	5100.0	1.15	2100000		
4(PR)	17100.0	1.15	1800000		

SECCIONES PARCIALES

Num	Mat.	B(cm)	H(cm)	Yo(cm)	Mc	Nsr
Num II (mm)						
1	1	700.0	30.0	0.0	C*	0
2	2	90.0	30.0	30.0	C*	0
3	2	36.0	198.0	60.0	C*	0
4	2	179.0	27.0	258.0	C*	0
5	4	28.0	13.4	280.0	*T	0
6	4	26.0	13.4	275.2	*T	0
7	4	0.0	0.0	0.0	*T	0
8	4	0.0	0.0	0.0	*T	0
9	4	8.0	13.4	45.0	*T	0
10	3	35.0	12.0	5.0	CT	0
11	3	35.0	12.0	19.0	CT	0
12	4	105.0	13.4	18.0	*T	0
13	3	10.0	25.0	265.0	CT	0

SECCIONES INTERMEDIAS

Num.	Codigo	Componentes
1	CAJ	2 3 4
2	LOS	1
3	C+P	2 3 4 5 6 7
		8 9
4	PS	9
5	PI	6 7 8 5

* CONSTANTES ESTATICAS *

S.COMPLETA

Tipo	Acciones	Area(cm2)	Xcg(cm)	Inercia(cm4)
F.pura +	(0)	2599.0	23.84	7533909.1
	(1)	1168.6	41.46	6869543.5
	(2)	1524.6	34.99	7094991.0
F.pura -	(0)	1297.0	225.23	11315559.5
	(1)	669.4	180.63	8744808.3
	(2)	796.0	194.76	9544504.4
C.Simple	(0)	5547.6	88.54	57057536.2
	(1)	1778.3	90.90	19434771.2
	(2)	2458.8	89.94	26230237.7
T.Simple	(0)	328.6	106.18	4875930.7
	(1)	328.6	106.18	4875930.7
	(2)	328.6	106.18	4875930.7

*** Nota: Homogeneizadas a E=2100000 Kp/cm2 ***

ANALISIS EN ROTURA(ELASTOPLASTICO)

Título Sección: BSEC3

* PRESOLICITACIONES ELASTICAS

Analisis SIN FISURACION

Pretensado: 3197.83Tn.
(Todas las Armaduras activas a .80*Fyk)

ESTUDIO SECCION COMPLETA

Analisis con Resistencia de materiales MINORADAS

Def. Ultima Acero Estructural(COMPRESION) (%): 2.50

Def. Ultima Acero Estructural(TRACCION) (%): 2.50

Deformacion Ultima Hormigon(COMPRESION) : Pivote en Bloque de Hormigon

Deformacion Ultima Hormigon(TRACCION) (%): 1.00

Coefficiente Ideal Fluencia[μ^* (Cperm./Ctot.)]: 0.00

FLEXION PURA POSITIVA:

Mu(m.T): 3940.5 Xu(cm.): 33.6

Nu(Tn.): -0.0 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00162 Etmx= .01000

Rompe la fibra inferior de la S.parcial 4

FLEXION PURA NEGATIVA:

Mu(m.T): -5202.8 Xu(cm.): 119.7

Nu(Tn.): -0.0 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00350 Etmx= .00204

Rompe la fibra inferior de la S.parcial 4

COMPRESION SIMPLE(Rigido/Plastico):

Nu(Tn.): -9303.1 aplicado en Yo(cm)= 99.4

TRACCION SIMPLE(Rigido/Plastico):

Nu(Tn.): 4044.7 aplicado en Yo(cm)= 104.7

CORTANTE ULTIMO(Rigido/Plastico):

Vu(Tn.): 0.0 Ru(Kg/cm): 0.0

Xv1(cm): 0.0 Xv2(cm): 0.0

S.parciales resistentes: Rcu(Kg/cm):

ANALISIS EN ROTURA(ELASTOPLASTICO)

Título Sección: BSEC3

* PRESOLICITACIONES ELASTICAS

Analisis SIN FISURACION

Pretensado: 3197.83Tn.

(Todas las Armaduras activas a .80*Fyk)

ESTUDIO SECCION C+P

Analisis con Resistencia de materiales MINORADAS

Def. Ultima Acero Estructural(COMPRESION) (%): 2.50

Def. Ultima Acero Estructural(TRACCION) (%): 2.50

Deformacion Ultima Hormigon(COMPRESION) : Pivote en Bloque de Hormigon

Deformacion Ultima Hormigon(TRACCION) (%): 1.00

Coefficiente Ideal Fluencia[μ^* (Cperm./Ctot.)]: 0.00

FLEXION PURA POSITIVA:

Mu(m.T): 2602.7 Xu(cm.): 108.2

Nu(Tn.): -.1 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00350 Etmx= .00700
Rompe la fibra superior de la S.parcial 2

FLEXION PURA NEGATIVA:

Mu(m.T): -372.2 Xu(cm.): 259.2

Mu(Tn.): -0.0 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00151 Etmx= .00700
Rompe la fibra superior de la S.parcial 2

COMPRESION SIMPLE(Rigido/Plastico):

Nu(Tn.): -4569.3 aplicado en Yo(cm)= 175.1

TRACCION SIMPLE(Rigido/Plastico):

Nu(Tn.): 1290.5 aplicado en Yo(cm)= 248.3

CORTANTE ULTIMO(Rigido/Plastico):

Vu(Tn.): 0.0 Ru(Kg/cm): 0.0

Xv1(cm): 0.0 Xv2(cm): 0.0
S.parciales resistentes: Rcu(Kg/cm):

Proyecto:
Viaducto V-1. Santa Oliva

Seccion:BSEC4

MATERIALES

Num.	Fck (Kg/cm2)	Gamma	M.El. (Kg/cm2)	Jr1	Jr2
1(HO)	350.0	1.50	285770	2.60	1.45
2(HO)	550.0	1.50	338219	2.60	1.45
3(RD)	5100.0	1.15	2100000		
4(PR)	17100.0	1.15	1800000		

SECCIONES PARCIALES

Num	Mat.	B (cm)	H (cm)	Yo (cm)	Mc	Nsr
		Num	rr (mm)			
1	1	700.0	30.0	0.0	C*	0
2	2	90.0	30.0	30.0	C*	0
3	2	36.0	198.0	60.0	C*	0
4	2	179.0	27.0	258.0	C*	0
5	4	28.0	13.4	280.0	*T	0
6	4	0.0	13.4	275.2	*T	0
7	4	0.0	0.0	0.0	*T	0
8	4	0.0	0.0	0.0	*T	0
9	4	8.0	13.4	45.0	*T	0
10	3	35.0	12.0	5.0	CT	0
11	3	35.0	12.0	19.0	CT	0
12	4	105.0	13.4	18.0	*T	0
13	3	10.0	25.0	265.0	CT	0

SECCIONES INTERMEDIAS

Num.	Codigo	Componentes
1	CAJ	2 3 4
2	LOS	1
3	C+P	2 3 4 5 6 7
		8 9
4	PS	9
5	PI	6 7 8 5

* CONSTANTES ESTATICAS *

S.COMPLETA

Tipo	Acciones	Area (cm2)	Xcg (cm)	Inercia (cm4)
F.pura +	(0)	2257.4	20.58	5527348.1
	(1)	1111.2	34.95	5108099.1
	(2)	1460.3	29.91	5246981.4
F.pura -	(0)	1273.0	223.99	11233612.9
	(1)	645.7	176.00	8448097.3
	(2)	772.6	191.47	9330963.3
C.Simple	(0)	5516.4	87.48	55956693.7
	(1)	1747.1	87.59	18348394.0
	(2)	2427.6	87.55	25137968.6
I.Simple	(0)	297.4	88.38	3883454.2
	(1)	297.4	88.38	3883454.2
	(2)	297.4	88.38	3883454.2

*** Nota: Homogeneizadas a E=2100000 Kp/cm2 ***

ANALISIS EN ROTURA(ELASTOPLASTICO)

Título Sección: BSEC4

* PRESOLICITACIONES ELASTICAS

Análisis SIN FISURACION

Pretensado: 2699.96Tn.

(Todas las Armaduras activas a .80*Fyk)

ESTUDIO SECCION COMPLETA

Análisis con Resistencia de materiales MINORADAS

Def. Última Acero Estructural (COMPRESION) (%): 2.50

Def. Última Acero Estructural (TRACCION) (%): 2.50

Deformación Última Hormigón (COMPRESION) : Pivote en Bloque de Hormigón

Deformación Última Hormigón (TRACCION) (%): 1.00

Coefficiente Ideal Fluencia [μ * (Cperm./Ctot.)]: 0.00

FLEXION PURA POSITIVA:

Mu(m.T): 2423.2 Xu(cm.): 28.6

Nu(Tn.): -0.0 Qu(Tn.): 0.0

Deformaciones Últimas: Ecmx= -.00140 Etmx= .01000

Rompe la fibra inferior de la S.parcial 4

FLEXION PURA NEGATIVA:

Mu(m.T): -5740.9 Xu(cm.): 130.9

Nu(Tn.): .3 Qu(Tn.): 0.0

Deformaciones Últimas: Ecmx= -.00350 Etmx= .00257

Rompe la fibra inferior de la S.parcial 4

COMPRESION SIMPLE(Rigido/Plastico):

Nu(Tn.): -9303.1 aplicado en Yo(cm)= 99.4

TRACCION SIMPLE(Rigido/Plastico):

Nu(Tn.): 3503.5 aplicado en Yo(cm)= 78.3

CORTANTE ULTIMO(Rigido/Plastico):

Vu(Tn.): 0.0 Ru(Kg/cm): 0.0

Xv1(cm): 0.0 Xv2(cm): 0.0

S.parciales resistentes: Rcu(Kg/cm):

ANALISIS EN ROTURA(ELASTOPLASTICO)

Título Sección: BSEC4

* PRESOLICITACIONES ELASTICAS

Análisis SIN FISURACION

Pretensado: 2699.96Tn.

(Todas las Armaduras activas a .80*Fyk)

ESTUDIO SECCION C+P

Análisis con Resistencia de materiales MINORADAS

Def. Última Acero Estructural (COMPRESION) (%): 2.50

Def. Última Acero Estructural (TRACCION) (%): 2.50

Deformación Última Hormigón (COMPRESION) : Pivote en Bloque de Hormigón

Deformación Última Hormigón (TRACCION) (%): 1.00

Coefficiente Ideal Fluencia [μ * (Cperm./Ctot.)]: 0.00

FLEXION PURA POSITIVA:

Mu(m.T): 1501.6 Xu(cm.): 68.3

Nu(Tn.): -0.0 Qu(Tn.): 0.0

Deformaciones Últimas: Ecmx= -.00350 Etmx= .01000

Rompe la fibra inferior de la S.parcial 4

FLEXION PURA NEGATIVA:

Mu(m.T): -396.5 Xu(cm.): 263.9

Nu(Tn.): .5 Qu(Tn.): 0.0

Deformaciones Últimas: Ecmx= -.00109 Etmx= .01000

Rompe la fibra superior de la S.parcial 2

COMPRESION SIMPLE(Rigido/Plastico):

Nu(Tn.): -4569.3 aplicado en Yo(cm)= 175.1

TRACCION SIMPLE(Rigido/Plastico):

Nu(Tn.): 749.3 aplicado en Yo(cm)= 228.4

CORTANTE ULTIMO(Rigido/Plastico):

Vu(Tn.): 0.0 Ru(Kg/cm): 0.0

Xv1(cm): 0.0 Xv2(cm): 0.0

S.parciales resistentes: Rcu(Kg/cm):

Proyecto:
Viaducto V-1. Santa Oliva

Seccion: BSEC3A

MATERIALES

Num.	Fck (Kg/cm2)	Gamma	M.El. (Kg/cm2)	Jr1	Jr2
1(HO)	350.0	1.50	285770	2.60	1.45
2(HO)	550.0	1.50	338219	2.60	1.45
3(RD)	5100.0	1.15	2100000		
4(PR)	17100.0	1.15	1800000		

SECCIONES PARCIALES

Num	Mat.	B(cm)	H(cm)	Yo(cm)	Mc	Nsr
Num r (mm)						
1	1	700.0	30.0	0.0	C*	0
2	2	90.0	30.0	30.0	C*	0
3	2	36.0	198.0	60.0	C*	0
4	2	179.0	27.0	258.0	C*	0
5	4	28.0	13.4	280.0	*T	0
6	4	26.0	13.4	275.2	*T	0
7	4	0.0	0.0	0.0	*T	0
8	4	0.0	0.0	0.0	*T	0
9	4	8.0	13.4	45.0	*T	0
10	3	35.0	12.0	5.0	CT	0
11	3	35.0	12.0	19.0	CT	0
12	4	0.0	13.4	18.0	*T	0
13	3	10.0	25.0	265.0	CT	0

SECCIONES INTERMEDIAS

Num.	Codigo	Componentes
1	CAJ	2 3 4
2	LOS	1
3	C+P	2 3 4 5 6 7
		8 9
4	PS	9
5	PI	6 7 8 5

* CONSTANTES ESTATICAS *

S.COMPLETA

Tipo	Acciones	Area(cm2)	Xcg(cm)	Inercia(cm4)
F.pura +	(0)	2498.0	24.10	7530355.2
	(1)	1053.6	44.20	6796208.6
	(2)	1407.3	36.46	7058383.4
F.pura -	(0)	1034.2	248.84	5338608.1
	(1)	479.2	220.53	4642966.2
	(2)	586.4	230.08	4871929.5
C.Simple	(0)	5421.6	90.17	56428150.5
	(1)	1652.4	96.40	18727441.2
	(2)	2332.8	93.79	25555788.2
T.Simple	(0)	202.6	160.58	3311492.4
	(1)	202.6	160.58	3311492.4
	(2)	202.6	160.58	3311492.4

*** Nota: Homogeneizadas a E=2100000 Kp/cm2 ***

ANALISIS EN ROTURA(ELASTOPLASTICO)

Tftulo Seccion: BSEC3A

* PRESOLICITACIONES ELASTICAS

Analisis SIN FISURACION

Pretensado: 1187.22Tn.
(Todas las Armaduras activas a .80*Fyk)

ESTUDIO SECCION COMPLETA

Analisis con Resistencia de materiales MINORADAS

Def. Ultima Acero Estructural(COMPRESION) (%): 2.50

Def. Ultima Acero Estructural(TRACCION) (%): 2.50

Deformacion Ultima Hormigon(COMPRESION) : Pivote en Bloque de Hormigon

Deformacion Ultima Hormigon(TRACCION) (%): 1.00

Coefficiente Ideal Fluencia[μ^* (Cperm./Ctot.)]: 0.00

FLEXION PURA POSITIVA:

Mu(m.T): 3914.3 Xu(cm.): 25.9

Nu(Tn.): .2 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00100 Etmx= .01000

Rompe la fibra inferior de la S.parcial 4

FLEXION PURA NEGATIVA:

Mu(m.T): -1258.0 Xu(cm.): 252.1

Nu(Tn.): -.9 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00171 Etmx= .01000

Rompe la fibra superior de la S.parcial 1

COMPRESION SIMPLE(Rigido/Plastico):

Nu(Tn.): -9303.1 aplicado en Yo(cm)= 99.4

TRACCION SIMPLE(Rigido/Plastico):

Nu(Tn.): 1859.2 aplicado en Yo(cm)= 205.9

CORTANTE ULTIMO(Rigido/Plastico):

Vu(Tn.): 0.0 Ru(Kg/cm): 0.0

Xv1(cm): 0.0 Xv2(cm): 0.0

S.parciales resistentes: Rcu(Kg/cm):

ANALISIS EN ROTURA(ELASTOPLASTICO)

Tftulo Seccion: BSEC3A

* PRESOLICITACIONES ELASTICAS

Analisis SIN FISURACION

Pretensado: 1187.22Tn.
(Todas las Armaduras activas a .80*Fyk)

ESTUDIO SECCION C+P

Analisis con Resistencia de materiales MINORADAS

Def. Ultima Acero Estructural(COMPRESION) (%): 2.50

Def. Ultima Acero Estructural(TRACCION) (%): 2.50

Deformacion Ultima Hormigon(COMPRESION) : Pivote en Bloque de Hormigon

Deformacion Ultima Hormigon(TRACCION) (%): 1.00

Coefficiente Ideal Fluencia[μ^* (Cperm./Ctot.)]: 0.00

FLEXION PURA POSITIVA:

Mu(m.T): 2602.7 Xu(cm.): 111.7

Nu(Tn.): -.5 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00171 Etmx= .00699
Rompe la fibra superior de la S.parcial 2

FLEXION PURA NEGATIVA:

Mu(m.T): -372.2 Xu(cm.): 259.9

Nu(Tn.): -0.0 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00151 Etmx= .00699
Rompe la fibra superior de la S.parcial 2

COMPRESION SIMPLE(Rigido/Plastico):

Nu(Tn.): -4569.3 aplicado en Yo(cm)= 175.1

TRACCION SIMPLE(Rigido/Plastico):

Nu(Tn.): 1290.5 aplicado en Yo(cm)= 248.3

CORTANTE ULTIMO(Rigido/Plastico):

Vu(Tn.): 0.0 Ru(Kg/cm): 0.0

Xv1(cm): 0.0 Xv2(cm): 0.0

S.parciales resistentes: Rcu(Kg

Proyecto:
Viaducto V-1. Santa Oliva

Seccion:BSEC4A

MATERIALES

Num.	Fck (Kg/cm2)	Gamma	M.El. (Kg/cm2)	Jπ1	Jπ2
1(HO)	350.0	1.50	285770	2.60	1.45
2(HO)	550.0	1.50	338219	2.60	1.45
3(RD)	5100.0	1.15	2100000		
4(PR)	17100.0	1.15	1800000		

SECCIONES PARCIALES

Num	Mat.	B (cm)	H (cm)	Yo (cm)	Mc	Nsr
		Num	π (mm)			
1	1	700.0	30.0	0.0	C*	0
2	2	90.0	30.0	30.0	C*	0
3	2	36.0	198.0	60.0	C*	0
4	2	179.0	27.0	258.0	C*	0
5	4	28.0	13.4	280.0	*T	0
6	4	0.0	13.4	275.2	*T	0
7	4	0.0	0.0	0.0	*T	0
8	4	0.0	0.0	0.0	*T	0
9	4	8.0	13.4	45.0	*T	0
10	3	35.0	12.0	5.0	CT	0
11	3	35.0	12.0	19.0	CT	0
12	4	0.0	13.4	18.0	*T	0
13	3	10.0	25.0	265.0	CT	0

SECCIONES INTERMEDIAS

Num.	Codigo	Componentes
1	CAJ	2 3 4
2	LOS	1
3	C+P	2 3 4 5 6 7
		8 9
4	PS	9
5	PI	6 7 8 5

* CONSTANTES ESTATICAS *

S.COMPLETA

Tipo	Acciones	Area (cm2)	Xcg (cm)	Inercia (cm4)
F.pura +	(0)	2142.2	20.69	5526843.1
	(1)	993.6	37.03	5070401.4
	(2)	1343.6	30.97	5229545.0
F.pura -	(0)	1007.8	248.00	5315101.4
	(1)	454.2	216.71	4540832.5
	(2)	561.3	227.52	4802852.4
C.Simple	(0)	5390.4	89.09	55346165.8
	(1)	1621.2	92.95	17703391.1
	(2)	2301.6	91.32	24507542.4
T.Simple	(0)	171.4	139.60	2821410.1
	(1)	171.4	139.60	2821410.1
	(2)	171.4	139.60	2821410.1

*** Nota: Homogeneizadas a E=2100000 Kp/cm2 ***

ANALISIS EN ROTURA(ELASTOPLASTICO)

Título Sección: BSEC4A

* PRESOLICITACIONES ELASTICAS

Análisis SIN FISURACION

Pretensado: 689.35Tn.

(Todas las Armaduras activas a .80*Fyk)

ESTUDIO SECCION COMPLETA

Análisis con Resistencia de materiales MINORADAS

Def. Ultima Acero Estructural (COMPRESION) (%): 2.50

Def. Ultima Acero Estructural (TRACCION) (%): 2.50

Deformacion Ultima Hormigon (COMPRESION) : Pivote en Bloque de Hormigon

Deformacion Ultima Hormigon (TRACCION) (%): 1.00

Coefficiente Ideal Fluencia [μ *(Cperm./Ctot.)]: 0.00

FLEXION PURA POSITIVA:

Mu(m.T): 2363.0 Xu(cm.): 20.3

Nu(Tn.): 0.0 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00077 Etmx= .01000
Rompe la fibra inferior de la S.parcial 4

FLEXION PURA NEGATIVA:

Mu(m.T): -1289.9 Xu(cm.): 257.2

Nu(Tn.): -0.0 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00130 Etmx= .01000
Rompe la fibra superior de la S.parcial 1

COMPRESION SIMPLE(Rigido/Plastico):

Nu(Tn.): -9303.1 aplicado en Yo(cm)= 99.4

TRACCION SIMPLE(Rigido/Plastico):

Nu(Tn.): 1118.1 aplicado en Yo(cm)= 177.2

CORTANTE ULTIMO(Rigido/Plastico):

Vu(Tn.): 0.0 Ru(Kg/cm): 0.0

Xv1(cm): 0.0 Xv2(cm): 0.0

S.parciales resistentes: Rcu(Kg/cm):

ANALISIS EN ROTURA(ELASTOPLASTICO)

Título Sección: BSEC4A

* PRESOLICITACIONES ELASTICAS

Análisis SIN FISURACION

Pretensado: 689.35Tn.

(Todas las Armaduras activas a .80*Fyk)

ESTUDIO SECCION C+P

Análisis con Resistencia de materiales MINORADAS

Def. Ultima Acero Estructural (COMPRESION) (%): 2.50

Def. Ultima Acero Estructural (TRACCION) (%): 2.50

Deformacion Ultima Hormigon (COMPRESION) : Pivote en Bloque de Hormigon

Deformacion Ultima Hormigon (TRACCION) (%): 1.00

Coefficiente Ideal Fluencia [μ *(Cperm./Ctot.)]: 0.00

FLEXION PURA POSITIVA:

Mu(m.T): 1501.7 Xu(cm.): 72.4

Nu(Tn.): -.4 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00130 Etmx= .01000
Rompe la fibra inferior de la S.parcial 4

FLEXION PURA NEGATIVA:

Mu(m.T): -396.5 Xu(cm.): 264.7

Nu(Tn.): .8 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00109 Etmx= .01000
Rompe la fibra superior de la S.parcial 2

COMPRESION SIMPLE(Rigido/Plastico):

Nu(Tn.): -4569.3 aplicado en Yo(cm)= 175.1

TRACCION SIMPLE(Rigido/Plastico):

Nu(Tn.): 749.3 aplicado en Yo(cm)= 228.4

CORTANTE ULTIMO(Rigido/Plastico):

Vu(Tn.): 0.0 Ru(Kg/cm): 0.0

Xv1(cm): 0.0 Xv2(cm): 0.0

S.parciales resistentes: Rcu(Kg/cm):

En todas las secciones anteriores se han obtenido los
fuerzas horizontales debidas a rotamiento de faldones, frenado y
arranque.

Ante la falta de datos, se supone el valor máximo
de dicha fuerza para el conducto V-2 de Santa Oliva (del
bolsa de la seguridad) de 2000 kg/cm.

Para la sección de C.V. y pila, con maxil de tracción
se obtienen momentos últimos de valor:

$$M_{u+} = 7262 \text{ mtr (con armadura de albañal)}$$

$$y \quad M_{u-} = -8551 \text{ mtr}$$

son los valores máximos de cables de:

$$M_{u+} = 7163 \text{ mtr}$$

$$M_{u-} = -7311 \text{ mtr}$$

Verificándose que $M_d < M_u$ en todos los casos.

Proyecto:

Seccion: SEC1

SECCIÓN C.D.V

MATERIALES

Num.	Fck (Kg/cm ²)	Gamma	M.El. (Kg/cm ²)	J _{II} 1	J _{II} 2
1 (HO)	300.0	1.50	285770	2.60	1.45
2 (HO)	550.0	1.50	338219	2.60	1.45
3 (RD)	5100.0	1.15	2100000		
4 (PR)	17100.0	1.15	1800000		

SECCIONES PARCIALES

Num	Mat.	B (cm) Num	H (cm) II (mm)	Yo (cm)	Mc	Nsr
1	1	700.0	30.0	0.0	C*	0
2	2	90.0	30.0	30.0	C*	0
3	2	36.0	198.0	60.0	C*	0
4	2	179.0	27.0	258.0	C*	0
5	4	28.0	13.4	280.0	*T	0
6	4	26.0	13.4	275.2	*T	0
7	4	28.0	13.4	270.4	*T	0
8	4	28.0	13.4	265.4	*T	0
9	4	8.0	13.4	45.0	*T	0
10	3	35.0	12.0	5.0	CT	0
11	3	35.0	12.0	19.0	CT	0
12	3	14.0	16.0	271.4	CT	0
13	3	6.0	25.0	271.4	CT	0
14	3	4.0	16.0	250.0	CT	0
15	3	4.0	16.0	235.0	CT	0
16	3	4.0	16.0	220.0	CT	0
17	3	4.0	16.0	205.0	CT	0

SECCIONES INTERMEDIAS

Num.	Codigo	Componentes
1	CAJ	2 3 4
2	LOS	1
3	C+P	2 3 4 5 6 7
		8 9
4	PS	9
5	PI	6 7 8 5

* CONSTANTES ESTATICAS *

S.COMPLETA

Tipo	Acciones	Area (cm ²)	Xcg (cm)	Inercia (cm ⁴)
F.pura +	(0)	3206.3	32.63	13345966.7
	(1)	1230.9	63.57	11403526.4
	(2)	1606.4	51.89	12111858.9
F.pura -	(0)	1136.1	249.86	5403797.8
	(1)	575.4	227.80	4831374.1
	(2)	683.3	234.71	5005393.9

Simple	(0)	5529.5	93.47	59520972.0
	(1)	1760.2	106.41	21480619.3
	(2)	2440.7	101.12	28446905.2
Simple	(0)	310.5	195.00	4056552.0
	(1)	310.5	195.00	4056552.0
	(2)	310.5	195.00	4056552.0

** Nota: Homogeneizadas a $E=2100000 \text{ Kp/cm}^2$ ***

INTERACCION ROTURA (ELASTOPLASTICO)*

Titulo Sección: SEC1

PRESOLICITACIONES ELASTICAS

Analisis SIN FISURACION

Retensado: 2259.54Tn.
Todas las Armaduras activas a $.80 \cdot F_{yk}$

STUT y SECCION COMPLETA

Analisis con Resistencia de materiales MINORADAS

ef. Ultima Acero Estructural (COMPRESION) (%): 2.50

ef. Ultima Acero Estructural (TRACCION) (%): 2.50

deformacion Ultima Hormigon (COMPRESION): Pivote en Bloque de Hormigon

deformacion Ultima Hormigon (TRACCION) (%): 1.00

coeficiente Ideal Fluencia [μ^* (Cperm./Ctot.)]: 0.00

INTERACCION M-N-V

Flexion POSITIVA

Mu(m.T): 7262.7 Xu(cm.): 38.1

Mu(Tn.): 299.9 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00158 Etmx= .01000

Rompe la fibra inferior de la S.parcial 4

Fibr referencia Momento Ultimo: Yo= 92.6 cm.

Proyecto:

Seccion:lpila

MATERIALES

Num.	Fck (Kg/cm ²)	Gamma	M.El. (Kg/cm ²)	J _{II} 1	J _{II} 2
1 (HO)	350.0	1.50	285770	2.60	1.45
2 (HO)	550.0	1.50	338219	2.60	1.45
3 (RD)	5100.0	1.15	2100000		
4 (PR)	17100.0	1.15	1800000		

SECCIONES PARCIALES

Num	Mat.	B (cm)	H (cm)	Yo (cm)	Mc	Nsr
		Num	II (mm)			
1	1	700.0	30.0	0.0	C*	0
2	2	90.0	30.0	30.0	C*	0
3	2	36.0	198.0	60.0	C*	0
4	2	179.0	27.0	258.0	C*	0
5	4	28.0	13.4	280.0	*T	0
6	4	0.0	0.0	0.0	*T	0
7	4	0.0	0.0	0.0	*T	0
8	4	0.0	0.0	0.0	*T	0
9	4	8.0	13.4	45.0	*T	0
10	3	70.0	20.0	5.0	CT	0
11	3	70.0	20.0	19.0	CT	0
12	4	105.0	13.4	18.0	*T	0
13	2	130.0	32.5	225.3	C*	0

SECCIONES INTERMEDIAS

Num.	Codigo	Componentes
1	CAJ	2 3 4
2	LOS	1
3	C+P	2 3 4 5 6 7
		8 9
4	PS	9
5	PI	6 7 8 5
6	ARM	10

* CONSTANTES ESTATICAS *

S.COMPLETA

Tipo	Acciones	Area (cm ²)	Xcg (cm)	Inercia (cm ⁴)
F.pura +	(0)	1946.2	14.04	2510590.3
	(1)	1148.9	20.41	2402833.1
	(2)	1328.7	18.51	2433160.0
F.pura -	(0)	2428.6	195.79	25586818.7
	(1)	1215.6	132.99	16260793.5
	(2)	1452.9	153.03	19169759.2
C.Simple	(0)	6508.4	98.12	71877333.1
	(1)	2247.7	84.68	23279228.0
	(2)	3016.9	89.92	32182341.3

sección de pila

.Simple (0) 609.0 29.45 2278045.8
(1) 609.0 29.45 2278045.8
(2) 609.0 29.45 2278045.8

** Nota: Homogeneizadas a $E=2100000 \text{ Kp/cm}^2$ ***

INTERACCION ROTURA(ELASTOPLASTICO)*

ftulo Secci|n: lpila

PRESOLICITACIONES ELASTICAS

nalisis SIN FISURACION

retensado: 2699.96Tn.

Todas las Armaduras activas a $.80 \cdot F_{yk}$

STUDIO SECCION COMPLETA

nalisis con Resistencia de materiales MINORADAS

ef. ltima Acero Estructural(COMPRESION)(%): 2.50

ef. ltima Acero Estructural(TRACCION)(%): 2.50

eformacion Ultima Hormigon(COMPRESION) : Pivote en Bloque de Hormigon

eformacion Ultima Hormigon(TRACCION)(%): 1.00

coeficiente Ideal Fluencia[μ^* ($C_{perm}/C_{tot.}$)] : 0.00

INTERACCION M-N-V

lexion NEGATIVA

u(m.T): -8551.7 Xu(cm.): 122.5

u(Tn.): 300.7 Qu(Tn.): 0.0

eformaciones Ultimas: $E_{cmx} = -.00350$ $E_{tmx} = .00231$

ompe la fibra inferior de la S.parcial 4

ibra referencia Momento Ultimo: $Y_o = 98.1 \text{ cm.}$

IDEAM

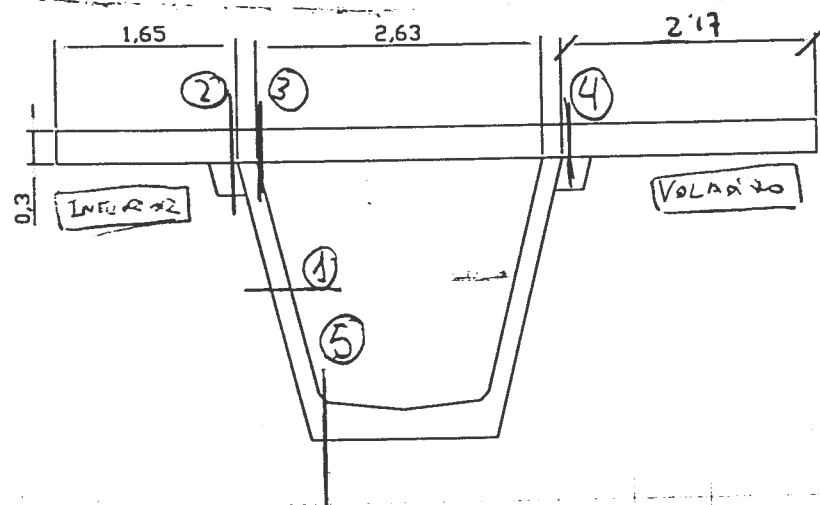
b) Cortante y torsión

- Cálculo de Constante - Torsor -

o Interacción Cortante - torsor :

o Constante :

de primero que se realiza es asignar el coeficiente α (% de columna que recibe cada fibra):



Fibra:		Hormigón fck (kg/cm²)
1	$\alpha_1 = 0.50$	600
2	$\alpha_2 = 1.65/7 = 0.236$	350
3	$\alpha_3 = 2.63/7 = 0.376$	350
4	$\alpha_4 = 2.17/7 = 0.31$	350
5	$\alpha_5 = 0.50$	600

De esta manera el cortante de cada fibra es:

$$V_d = \alpha_i \cdot V_d(\text{CADA VIGA})$$

la resistencia a compresión es:

$$V_{ud} = K \cdot f_{cd} \cdot b_o \cdot d \cdot \frac{\cot \theta + \cot \theta'}{1 + \cot \theta \cot \theta'}$$

$$K = 1$$

$$\cot \theta = \sqrt{1 + \frac{1596 \cdot 0.17}{40.2 \cdot 3.62}} = 1.40 \quad (\text{del lado de la segunda})$$

EN ENTRIZOS SE ADOPTA 1.

$$f_{cd} = 0.4 f_{ck} \quad \text{Fibra tracción}$$

$$0.6 f_{cd} \quad \text{Fibra 1 y fibra compresión}$$

$$b_o = -$$

$$b_o = 0.24 / 0.18 \quad \text{fibra 1 y fibra tracción}$$

$$b_o = 0.30 \quad \text{lado superior (fibra 2, 3, 4)}$$

$$b_o = 0.345 \quad \text{fibra 5}$$

$$d = 2.70 \text{ m}$$

$$\cot \theta = 1 \quad \text{en fibras 2, 3, 4 y 5}$$

0 Torsión:

$$T_{ul} = \alpha \cdot J_{cd} \cdot A_e \cdot k_e \cdot \frac{\cot \theta}{1 + \cot^2 \theta}$$

$k_e = 1/5$ cercos en ambas caras.

$$A_e = (1'52 + 2'81)/2 \cdot 2'55 = 5'52 \text{ m}^2$$

$$k_e = b_0$$

0 Integración Constante - Torsión:

$$\left(\frac{V_d \cdot \alpha}{V_{ul}} \right) + \left(\frac{T_d}{T_{ul}} \right) \leq 1'00$$

ARMADO A COMPRESION

- Cálculo de armado en las fibras 2, 3, 4 y 5? En estas fibras se prescinde de la capacidad a compresión del hormigón (V_{cu}) por ello el armado es:

Para cada fibra 3 $\Rightarrow$

$$A_s = \frac{\alpha_i \cdot V_d (\text{cada viga})}{0.9 \cdot d \cdot \sigma_{fs} \cdot b \cdot d} \quad f_{yk,d} = 400 \text{ N/mm}^2$$

mínimo =

Los A superior: $A_s = \frac{0.02 \cdot f_{cd} \cdot b \cdot d}{f_{yk,d}} = 3 \text{ cm}^2/\text{m}$

Los A inferior: $A_s = \frac{0.02 \cdot f_{cd} \cdot b \cdot d}{f_{yk,d}} = 5.5 \text{ cm}^2/\text{m}$

Armado a torsión: (solo fibra 1, 3 y 5)

Armado transversal (a su vez a la de citada constante)

$$\frac{A_t}{s} = \frac{V_d}{\cot \theta \cdot f_{yk,d} \cdot 2 A_e}$$

Armado longitudinal por torsión

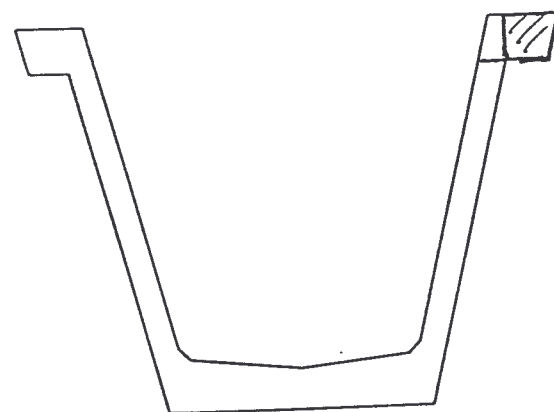
$$\frac{A_e}{u_e} = \frac{V_d}{2 A_e \cdot f_{yk,d} \cdot \cot \theta}$$

A continuación se completa el cálculo con el armado de resorte a cabeza de viga.

ARMADURA DE RIGIANTO DE CABEZA DE VIGA

la cabeza de la viga tiene un rigiante el cual ahora comprobamos:

EN LA CONSTRUCCIÓN (LA ENVOLVENTE SE INCLUYE A CONTINUACIÓN)



$$\alpha = 0.5 \frac{0.302 \times 0.30}{0.1335} = 0.339$$

$$As_{arante} = \frac{V_d \times \alpha}{0.9 \times 2.43 \times 40.9} = \frac{17471 \times 0.339}{0.9 \times 2.43 \times 40.9} = 662 \text{ cm}^2/\text{m}$$

Valor de construcción = 17471 kg

cd 10 a 0.20

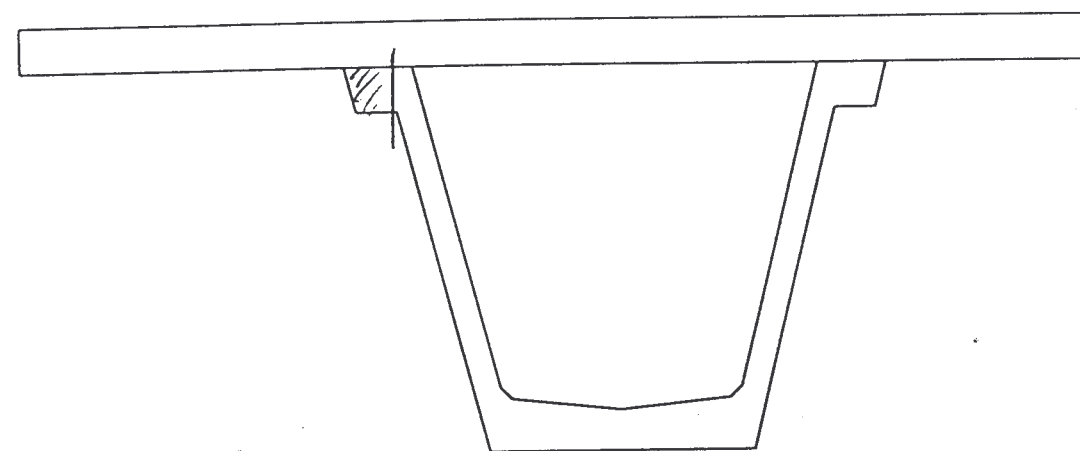
(785 cm²)

Barra	Nudo	X	PPCF1 Vy (T)	PPLF2 Vy (T)	PPLF3 Vy (T)	ppcf1+pplf2 Vd (T)	ppcf1+pplf2+pplf3 Vd (T)
1	1	0.00	-64.07	-0.27	-59.44	-86.85	-167.10
1	2	2.74	-53.59	-0.27	-45.06	-72.70	-133.53
2	2	2.74	-53.59	-0.27	-45.06	-72.70	-133.53
2	3	5.48	-43.11	-0.27	-30.67	-58.56	-99.97
3	3	5.48	-43.11	-0.27	-30.67	-58.56	-99.97
3	4	8.22	-32.63	-0.27	-16.29	-44.41	-66.40
4	4	8.22	-32.63	-0.27	-16.29	-44.41	-66.40
4	5	10.96	-22.15	-0.27	-1.90	-30.26	-32.83
5	5	10.96	-22.15	-0.27	-1.90	-30.26	-32.83
5	6	13.70	-11.67	-0.27	12.48	-16.11	16.85
6	6	13.70	-11.67	-0.27	12.48	-16.11	16.85
6	7	16.44	-1.19	-0.27	26.87	-1.96	36.27
7	7	16.44	-1.19	-0.27	26.87	-1.96	36.27
7	8	19.18	9.30	-0.27	41.25	12.55	68.24
8	8	19.18	9.29	-0.27	41.25	12.55	68.24
8	9	21.92	19.78	-0.27	55.64	26.70	101.81
9	9	21.92	19.77	-0.27	55.64	26.70	101.80
9	10	24.66	30.26	-0.27	70.02	40.84	
10	10	24.66	30.26	-0.27	65.63	40.84	
10	11	27.40	40.74	14.12	65.63	74.05	
11	11	27.40	40.74	14.12	62.78	74.05	
11	12	30.45	52.40	30.13	62.78	111.42	
12	12	30.45	52.40	30.13	61.82	111.42	
12	10013	33.50	64.07	46.14	61.82	148.78	
13	13	33.50	-76.51	-52.88	-58.17	-174.68	
13	14	36.89	-63.54	-35.09	-58.17	-133.14	
14	14	36.89	-63.54	-35.09	-55.30	-133.14	
14	15	40.28	-50.57	-17.29	-55.30	-91.61	
15	15	40.28	-50.57	-17.29	-55.30	-91.61	
15	16	43.67	-37.60	0.51	-55.30	-50.77	-125.43
16	16	43.67	-37.60	0.51	-55.30	-50.77	-125.43
16	17	47.06	-24.64	0.51	-37.51	-33.26	-83.90
17	17	47.06	-24.64	0.51	-37.51	-33.26	-83.89
17	18	50.45	-11.67	0.51	-19.71	-15.75	-42.36
18	18	50.45	-11.67	0.51	-19.71	-15.75	-42.36
18	19	53.84	1.30	0.51	-1.91	2.44	-2.58
19	19	53.84	1.30	0.51	-1.91	2.44	-2.58
19	20	57.23	14.27	0.51	15.89	19.95	41.39
20	20	57.23	14.27	0.51	15.89	19.95	41.40
20	21	60.62	27.24	0.51	33.68	37.46	82.93
21	21	60.62	27.24	0.51	33.68	37.46	82.93
21	22	64.01	40.20	0.51	51.48	54.96	
22	22	64.01	40.20	0.51	48.61	54.96	
22	23	67.40	53.17	18.31	48.61	96.50	
23	23	67.40	53.17	18.31	47.67	96.50	
23	24	70.45	64.84	34.32	47.67	133.86	
24	24	70.45	64.84	34.32	48.69	133.86	
24	10025	73.50	76.51	50.33	48.69	171.23	
25	25	73.50	-52.79	-43.52	-58.52	-130.02	
25	26	76.26	-42.23	-29.03	-58.52	-96.20	
26	26	76.26	-42.23	-29.03	-53.99	-96.20	
26	27	79.02	-31.67	-14.54	-53.99	-62.39	
27	27	79.02	-31.67	-14.54	-53.99	-62.39	
27	28	81.78	-21.11	-0.05	-53.99	-28.58	-101.47
28	28	81.78	-21.11	-0.05	-53.99	-28.58	-101.47
28	29	84.54	-10.56	-0.05	-39.50	-14.32	-67.66
29	29	84.54	-10.56	-0.05	-39.50	-14.32	-67.66
29	30	87.30	0.00	-0.05	-25.01	-0.07	-33.84
30	30	87.30	0.00	-0.05	-25.01	-0.07	-33.84
30	31	90.06	10.56	-0.05	-10.52	14.25	-14.28
31	31	90.06	10.56	-0.05	-10.52	14.25	-14.28
31	32	92.82	21.11	-0.05	3.97	28.50	33.86
32	32	92.82	21.11	-0.05	3.97	28.50	33.86
32	33	95.58	31.67	-0.05	18.46	42.76	67.67

33	33	95.58	31.67	-0.05	18.46	42.76	67.67
33	34	98.34	42.23	-0.05	32.95	57.01	101.48
34	34	98.34	42.23	-0.05	32.95	57.01	101.48
34	35	101.10	52.79	-0.05	47.44	71.26	135.30
101	101	0.00	-52.40	0.12	-47.01	-70.74	-134.21
101	102	2.74	-41.92	0.12	-32.63	-56.59	-100.64
102	102	2.74	-41.92	0.12	-32.63	-56.59	-100.64
102	103	5.48	-31.44	0.12	-18.24	-42.45	-67.07
103	103	5.48	-31.44	0.12	-18.24	-42.45	-67.07
103	104	8.22	-20.96	0.12	-3.86	-28.30	-33.50
104	104	8.22	-20.96	0.12	-3.86	-28.30	-33.50
104	105	10.96	-10.48	0.12	10.53	-14.15	14.38
105	105	10.96	-10.48	0.12	10.53	-14.15	14.38
105	106	13.70	0.00	0.12	24.91	0.16	33.80
106	106	13.70	0.00	0.12	24.91	0.16	33.80
106	107	16.44	10.48	0.12	39.30	14.31	67.37
107	107	16.44	10.48	0.12	39.30	14.31	67.37
107	108	19.18	20.96	0.12	53.68	28.46	100.93
108	108	19.18	20.96	0.12	53.68	28.46	
108	109	21.92	31.44	14.51	53.68	62.03	
109	109	21.92	31.44	14.51	53.68	62.03	
109	110	24.66	41.92	28.89	53.68	95.60	
110	110	24.66	41.92	28.89	58.07	95.60	
110	10111	27.40	52.40	43.28	58.07	129.17	
111	111	27.40	-76.50	-50.30	-48.32	-171.19	
111	112	30.45	-64.84	-34.29	-48.32	-133.82	
112	112	30.45	-64.84	-34.29	-47.36	-133.82	
112	113	33.50	-53.17	-18.28	-47.36	-96.45	
113	113	33.50	-53.17	-18.28	-48.33	-96.45	
113	114	36.89	-40.20	-0.48	-48.33	-54.92	-120.16
114	114	36.89	-40.20	-0.48	-51.19	-54.92	-124.02
114	115	40.28	-27.24	-0.48	-33.39	-37.41	-82.49
115	115	40.28	-27.24	-0.48	-33.39	-37.41	-82.49
115	116	43.67	-14.27	-0.48	-15.59	-19.91	-40.96
116	116	43.67	-14.27	-0.48	-15.59	-19.91	-40.96
116	117	47.06	-1.30	-0.48	2.20	-2.40	2.98
117	117	47.06	-1.30	-0.48	2.20	-2.40	2.98
117	118	50.45	11.67	-0.48	20.00	15.75	42.75
118	118	50.45	11.67	-0.48	20.00	15.75	42.75
118	119	53.84	24.63	-0.48	37.80	33.26	84.29
119	119	53.84	24.63	-0.48	37.80	33.26	84.29
119	120	57.23	37.60	-0.48	55.60	50.76	
120	120	57.23	37.60	-0.48	55.60	50.76	
120	121	60.62	50.57	17.32	55.60	91.65	
121	121	60.62	50.57	17.32	55.60	91.65	
121	122	64.01	63.54	35.12	55.60	133.18	
122	122	64.01	63.54	35.12	58.46	133.18	
122	10123	67.40	76.50	52.91	58.46	174.71	
123	123	67.40	-64.45	-46.24	-62.07	-149.43	
123	124	70.45	-52.79	-30.22	-62.07	-112.06	
124	124	70.45	-52.79	-30.22	-63.08	-112.06	
124	125	73.50	-41.12	-14.21	-63.08	-74.70	
125	125	73.50	-41.12	-14.21	-66.02	-74.70	
125	126	76.26	-30.56	0.28	-66.02	-41.26	-130.39
126	126	76.26	-30.56	0.28	-70.55	-41.26	-136.50
126	127	79.02	-20.01	0.28	-56.06	-27.01	-102.68
127	127	79.02	-20.00	0.28	-56.06	-27.01	-102.68
127	128	81.78	-9.45	0.28	-41.57	-12.75	-68.87
128	128	81.78	-9.45	0.28	-41.57	-12.75	-68.87
128	129	84.54	1.11	0.28	-27.08	1.87	-36.55
129	129	84.54	1.11	0.28	-27.08	1.87	-36.55
129	130	87.30	11.67	0.28	-12.59	16.13	-16.99
130	130	87.30	11.67	0.28	-12.59	16.13	-16.99
130	131	90.06	22.22	0.28	1.90	30.38	32.95
131	131	90.06	22.22	0.28	1.90	30.38	32.95
131	132	92.82	32.78	0.28	16.39	44.63	66.76
132	132	92.82	32.78	0.28	16.39	44.63	66.76
132	133	95.58	43.34	0.28	30.88	58.88	100.58
133	133	95.58	43.34	0.28	30.88	58.88	100.58
133	134	98.34	53.89	0.28	45.37	73.13	134.39
134	134	98.34	53.89	0.28	45.37	73.13	134.39
134	135	101.10	64.45	0.28	59.86	87.39	168.20

IDEAM

En servicio (puente terminado)



$$\alpha = \frac{0'0906}{(7 \times 0'30 + 0'13) \cdot 5.2} = 0'0352$$

$$A_{\text{varante}} = \frac{V_d \cdot \alpha}{0'9 \cdot 273 \cdot 2.09} = \frac{1225 \cdot 0'0352}{0'9 \cdot 273 \cdot 2} = 476 \text{ cm}^2/\text{m}$$

c6/0.20/20

$$V_{d_{\text{max}}} = 1225 \text{ t}$$

ESTADO LÍMITE DE AGOTAMIENTO FRENTE A CORTANTE (según EHE)

Se deberá cumplir que :

$$V_{rd} \leq V_{u1} \quad \text{y} \quad V_{rd} \leq V_{u2}$$

V_{rd} cortante efectivo

V_{u1} esfuerzo cortante que agota por compresión las bielas de hormigón,

$$V_{u1} = K \cdot f_{cd} \cdot b_0 \cdot d \cdot \frac{\cotg \theta + \cotg \alpha}{1 + \cotg^2 \theta}$$

V_{u2} cortante que agota el alma por tracción.

$$V_{u2} = V_{cu} + V_{su}$$

$$V_{cu} = \left(0.10 \cdot \zeta \cdot (100 \cdot \rho_1 \cdot f_{ck})^{\frac{1}{3}} - 0.15 \cdot \sigma'_{cd} \right) \cdot b_0 \cdot d \cdot \beta$$

$$V_{su} = z \cdot \sin \alpha \cdot (\cotg \alpha + \cotg \theta) \cdot A_{s,\alpha} \cdot f_{y\alpha,d}$$

ESTADO LÍMITE DE AGOTAMIENTO POR TORSIÓN (según EHE)

Se deberá cumplir que :

$T_d \leq T_{u1}$ Comprobación de bielas comprimidas de hormigón.

$T_d \leq T_{u2}$ Comprobación de armaduras transversales.

$T_d \leq T_{u3}$ Comprobación de armaduras longitudinales.

Donde T_d es el momento Torsor de cálculo,

T_{u1} esfuerzo torsor que agota por compresión las bielas de hormigón,

T_{u2} máximo torsor resistido por las armaduras transversales,

T_{u3} máximo torsor que resisten las armaduras longitudinales.

$$T_{u1} = \alpha \cdot f_{cd} \cdot A_c \cdot h_e \cdot \frac{\cotg \theta}{1 + \cotg^2 \theta}$$

$$T_{u2} = 2 \cdot A_s \cdot \frac{A_t}{s_t} \cdot f_{yt,d} \cdot \cotg \theta$$

$$T_{u3} = 2 \cdot A_s \cdot \frac{A_t}{u_s} \cdot f_{yt,d} \cdot \cotg \theta$$

Donde:

f_{cd} 0.6 f_{cd} Con f_{cd} la resistencia característica del hormigón a compresión simple.

b_0 anchura neta del alma.

K coeficiente de reducción por efecto del esfuerzo axial.

$$K = \frac{5}{3} \cdot \left(1 + \frac{\sigma'_{cd}}{f_{cd}} \right) \leq 1$$

Donde $\sigma'_{cd} = \frac{N_d}{A_c}$ con el axil positivo de tracción.

z brazo mecánico, se tomará igual a $0.9 \cdot d$

θ ángulo de inclinación de las bielas de hormigón. El valor de $\cotg(\theta)$ debe estar entre 0.5 y 2

α ángulo que forman las armaduras con el eje de la pieza.

ζ $\zeta = 1 + \sqrt{\frac{200}{d}}$ Con d en mm.

ρ_1 cuantía geométrica de la armadura longitudinal traccionada. $\rho_1 = \frac{A_s + A_p \cdot \frac{f_{pd}}{f_{yd}}}{b_0 \cdot d} \leq 0.02$

β $(2 \cotg(\theta) - 1) / (2 \cotg(\theta_e) - 1)$ si $0.5 \leq \cotg(\theta) < \cotg(\theta_e)$
 $(\cotg(\theta) - 2) / (\cotg(\theta_e) - 2)$ si $\cotg(\theta_e) \leq \cotg(\theta) \leq 2$

θ_e valor de referencia de inclinación de las fisuras.

A_e área encerrada por la línea media de la sección hueca eficaz de cálculo.

h_e espesor eficaz de la pared de la sección de cálculo.

$$h_e \leq \frac{A}{u}$$

Con la limitación de no mayor de h_0 y no menor de $2c$

Con A Área de la sección de cálculo, u su perímetro exterior, h_0 el espesor real de la pared hueca, y c el recubrimiento de las armaduras longitudinales.

a 1.20 si los estribos se colocan únicamente en el perímetro exterior de la pieza
 1.50 si se colocan estribos cerrados en ambas caras de la pared de la sección hueca equivalente o la real.

A/s_t área de la armadura transversal a colocar en la sección.

A/s_l área de la armadura longitudinal a colocar en el perímetro de la sección.

INTERACCIÓN CORTANTE-TORSOR

Se debe cumplir respecto de las bielas comprimidas de hormigón que:

$$\left(\frac{V_{rd}}{V_{u1}} \right)^{\beta} + \left(\frac{T_d}{T_{u1}} \right)^{\beta} \leq 1$$

Con $\beta = 2 \cdot (1 - h_0/b)$ con b es espesor bruto de la sección de cálculo (total en sec. maciza y suma de almas en hueca)

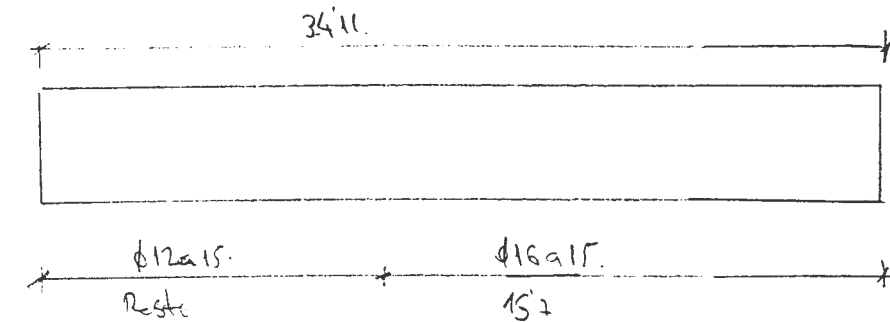
CUANTÍAS MÍNIMAS DE ARMADURAS TRANSVERSALES

$$\sum \frac{A_s \cdot f_{y\alpha,d}}{\sin \alpha} \geq 0.02 \cdot f_{cd} \cdot b_0$$

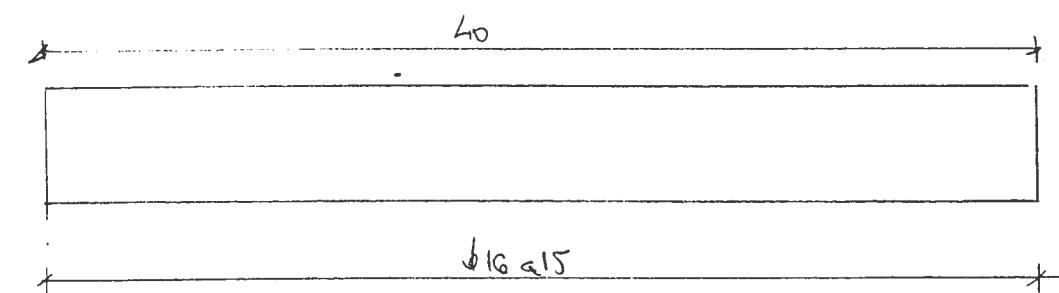
IDEAM

ARMADO LONGITUDINAL POR TORSIÓN

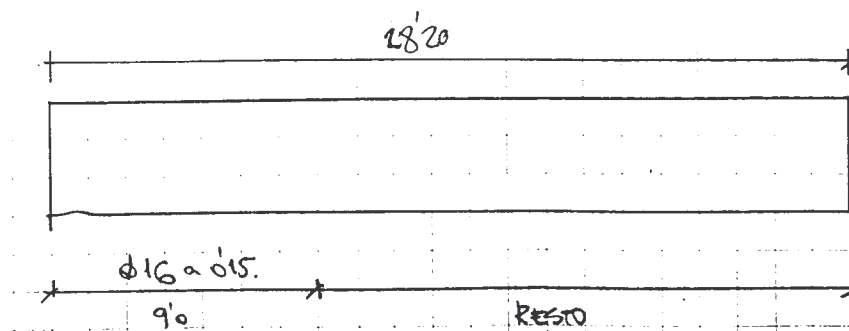
Viga V1.



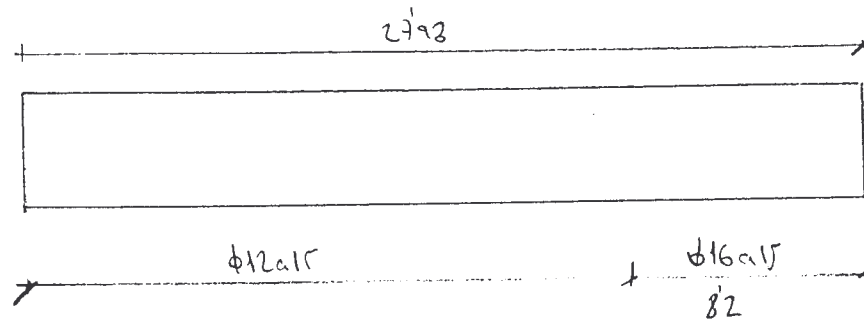
Viga V3



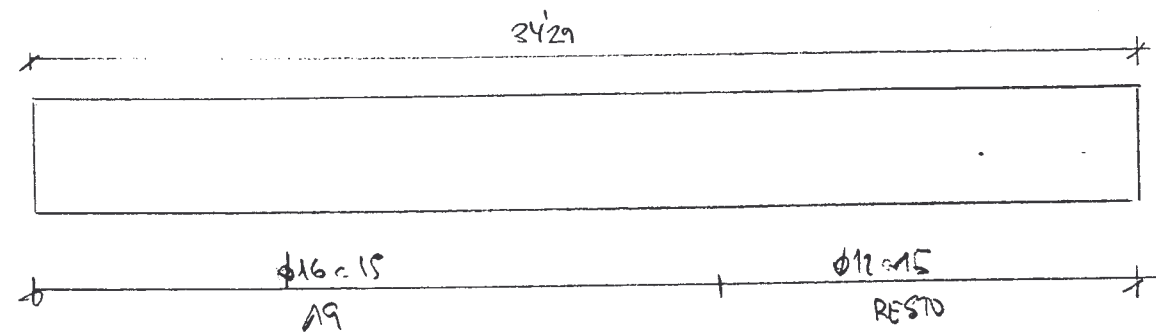
Viga V4.



Viga V2



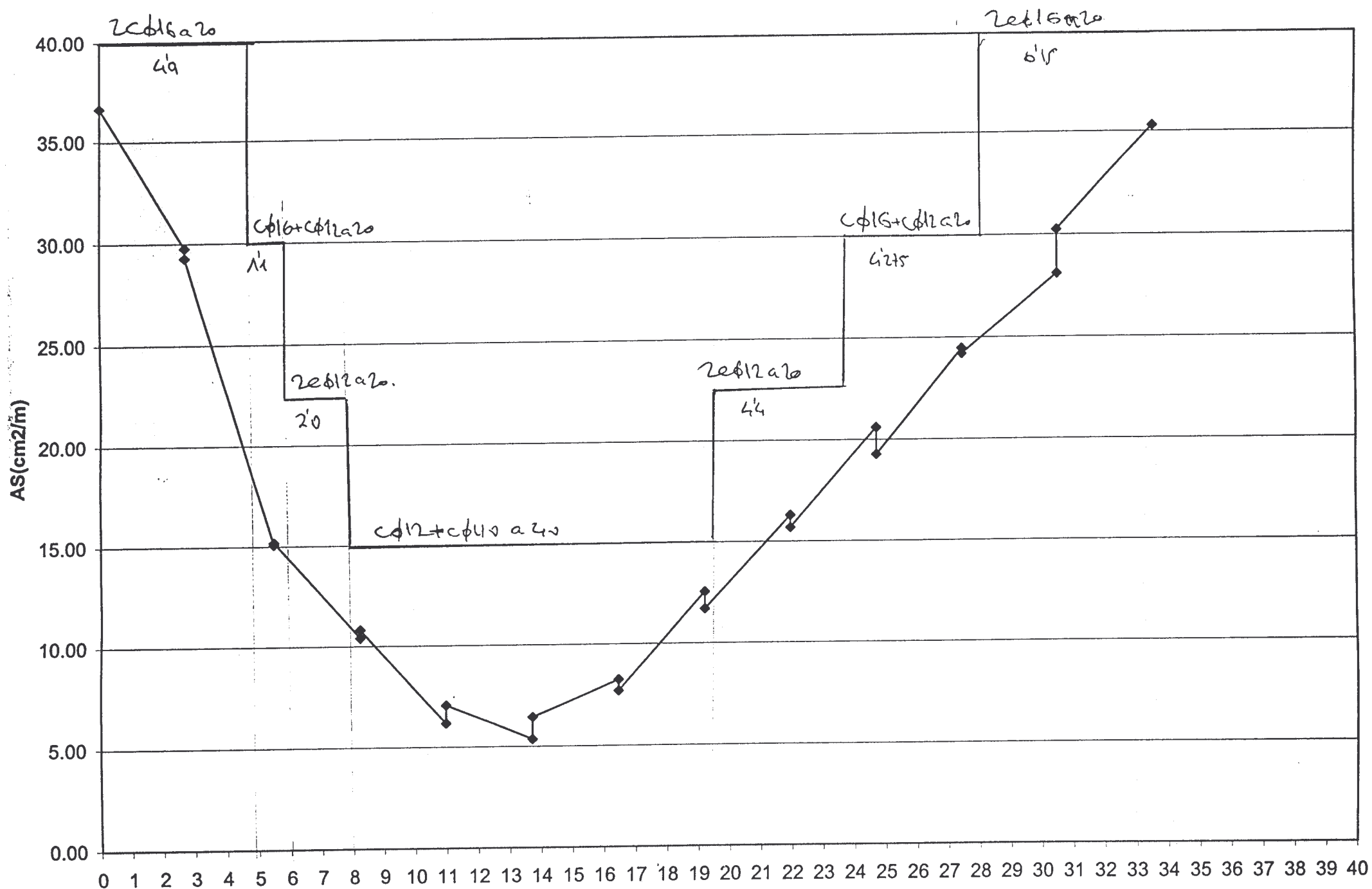
Viga V5



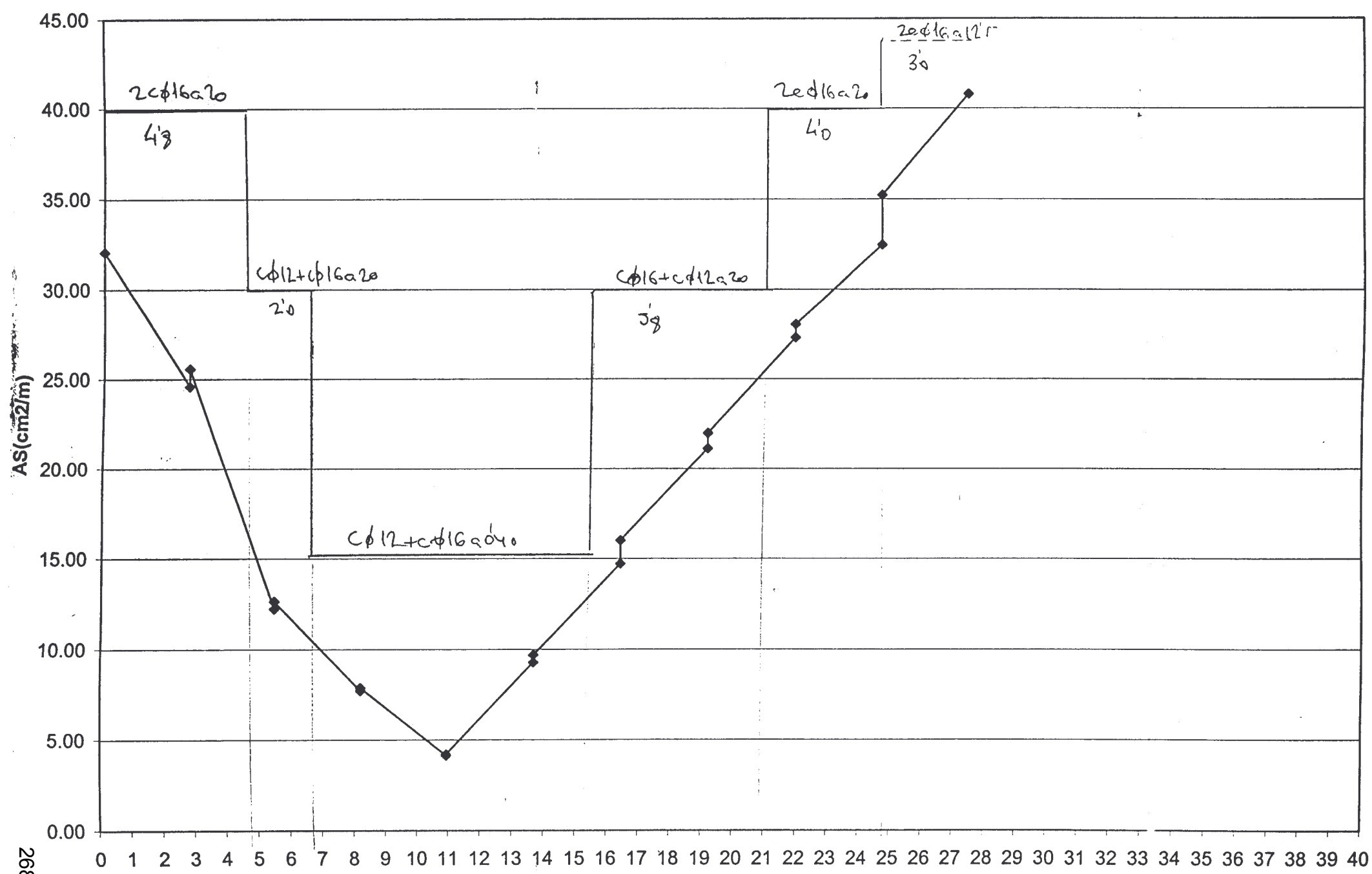
Fibra 1 - ALMA DE CAJÓN

Se consideran almas de 0.13 salm, en el caso de 6 pane de pta interiores a un mínimo de 2'5m a cada lado que se considera almas de 0'62.

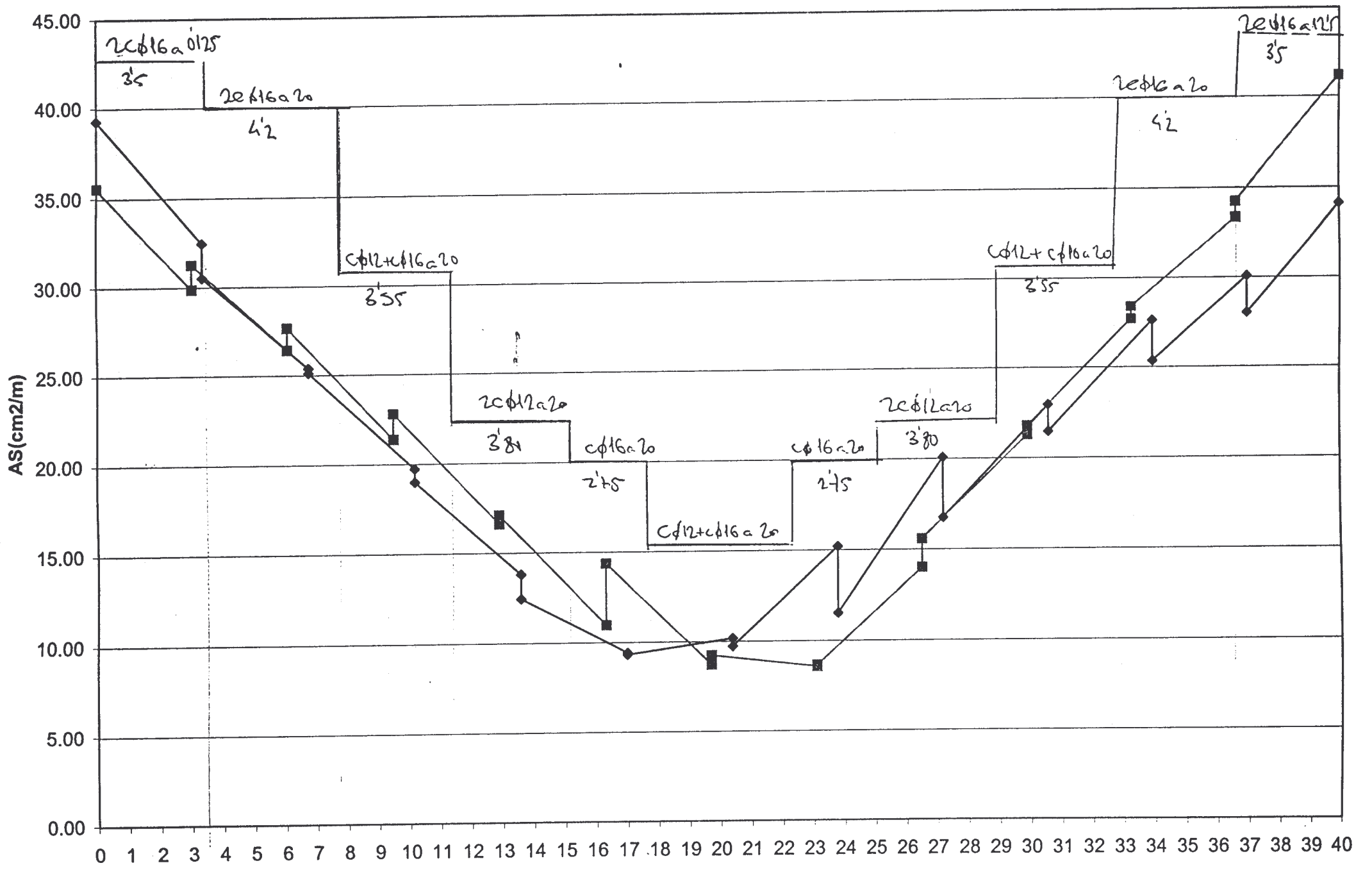
FIBRA DE ALMA. AF ADURA TRANSVERSAL A CORTANTE /IGA V1



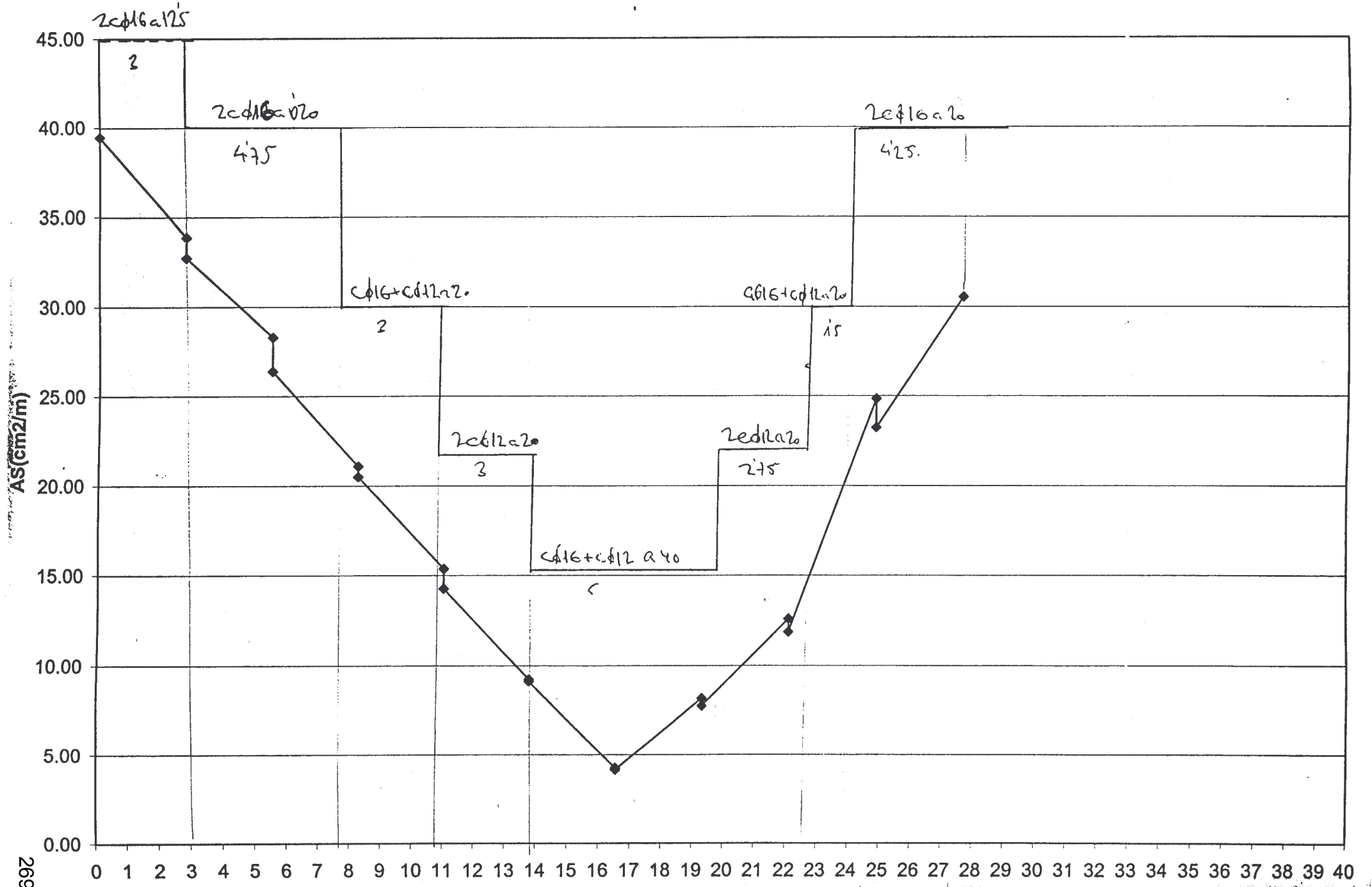
FIBRA DE ALMA. ARMADURA TRANSVERSAL A CORTANTE. VIGA V2

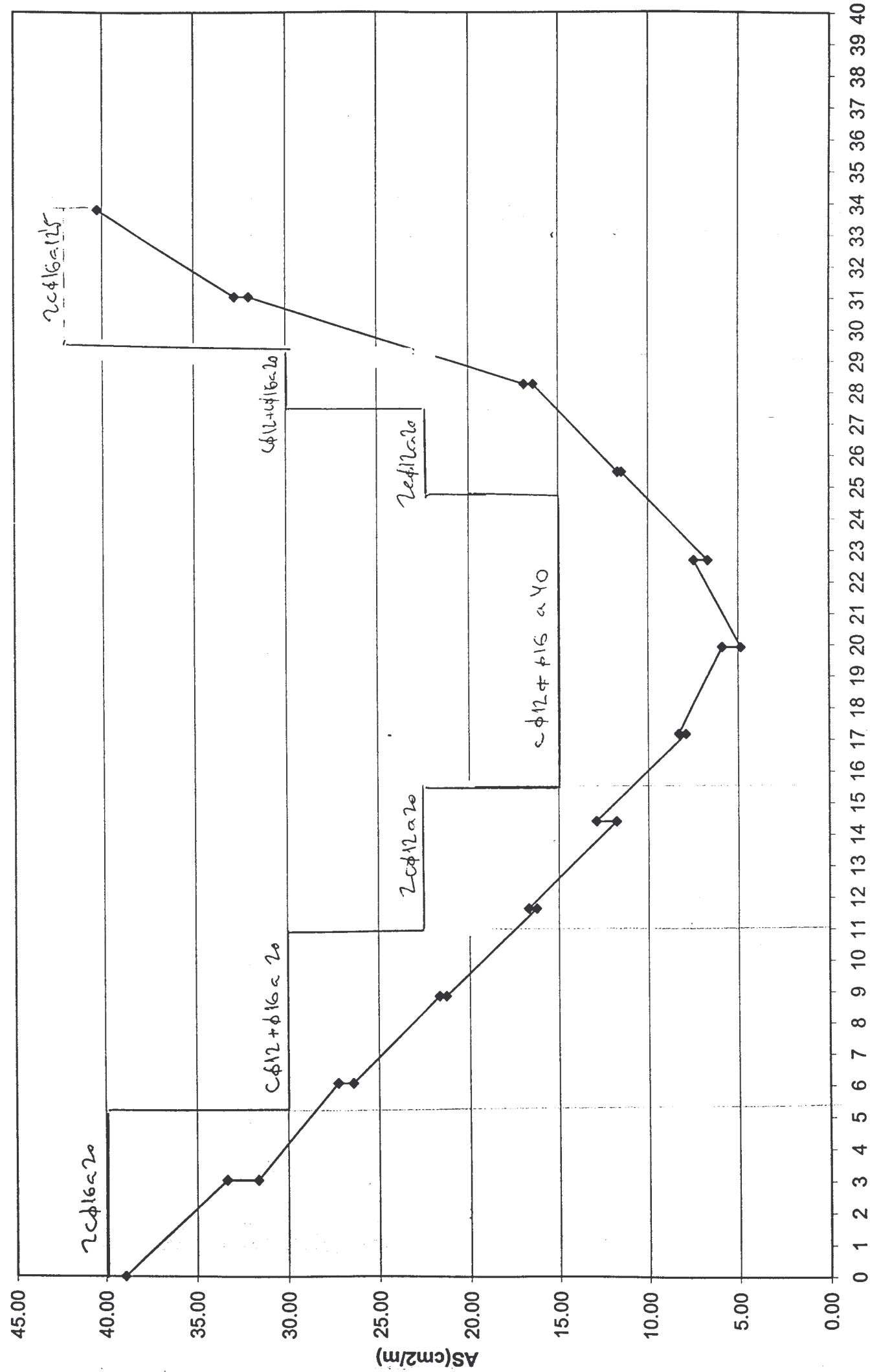


FIBRA DE ALMA. ARMADURA TRANSVERSAL A CORTANTE. VIGA V3



FIBRA DE ALMA. ARMADURA TRANSVERSAL A CORTANTE. VIGA V4





CARACTERISTICAS DE LAS SECCIONES TIPO

		SECCIONES TIPO		
		CDV	PILA	ESTRIBO
A _s 5100/17100+A _s	Canto	(m.)	2.73	2.73
	A _c	(m ² .)	5.500	5.500
	A _{sc}	(cm ² .)	0.000	0.000
	A _{st}	(cm ² .)	98.000	98.000
	A _{st}	(cm ² .)	98.000	98.000
	α		1.500	1.500
	A	(m ² .)	5.500	5.500
	u	(m.)	9.430	9.430
	σ _{ed}	(N/mm ²)	-3.090	-3.090
	σ _{ed}	(N/mm ²)	-3.090	-1.050
1 Descripción Fibra lateral del alma	b _w (m.)	0.180	0.240	0.180
	b (m)	0.360	0.480	0.360
	n° equiv. almas	2.000	2.000	2.000
	ρ _{conv}	0.500	0.500	0.500
	ρ _{conv}	0.500	0.500	0.500
	f _{yk} (N/mm ²)	60	60	60
	cotg θ (tracción)	1.000	1.000	1.000
	cotg θ (comp.)	1.400	1.400	1.000
	V _{ed} (sí o no)	SI	SI	SI
	h _e	0.180	0.240	0.180
	f _{td,cr} (N/mm ²)	4.598	4.598	4.598
	cotg θ _e	1.293	1.293	1.108
	Torsión	SI	SI	SI

CALCULO DE CORTANTE-TORSOR SEGÚN EHE

Fibra: FIBRA 1
Fibra lateral del alma

Características generales de la sección:

Coefficiente de minoración γ_x 1.5

Comprobación de bielas a compresión

$V_{ed}=K f_{tcd} b_y d 1/(ctg\theta+tg\theta)$																			$T_{ed}=\alpha f_{tcd} A_y h_y 1/(ctg\theta+tg\theta)$																			Hipótesis 1						Hipótesis 2	
Hipótesis 1				Hipótesis 2																																									
x(m)	Vmax	Tconc	Vcon	Tmax	Sección	C/T	coef. F1cd	β_{comp}	$\beta_{tracción}$	cotg0	cotg0 _s	$A_{s,eq}+A_p$ (cm ²)	f_{td} (N/mm ²)	f_{ed} (N/mm ²)	f_{tcd} (N/mm ²)	σ'_{ed} (N/mm ²)	b_w (m)	b (m)	d_s (m)	K	Vu1 (tn)	h_w (m)	A_w (m ²)	α	Tu1 (m tn)	T _{v,hyp 1}	T _{t,hyp 1}	T _{tracción,hyp 1}	T _{v,hyp 2}	T _{t,hyp 2}	T _{tracción,hyp 2}	β_{v-t}													
0.00	1778.86	110.86	335.40	62.12	ESTRIBO	C	0.6	0.5	0.5	1	1.11	33.6	60	40.00	24.00	-1.05	0.18	0.36	2.73	1	589.68	0.18	5.5	1.5	1782.00	0.66	0.01	0.87	0.30	0.03	0.34	1.00													
2.74	1641.71	115.06	364.68	128.48	ESTRIBO	C	0.6	0.5	0.5	1	1.11	33.6	60	40.00	24.00	-1.05	0.18	0.36	2.73	1	589.68	0.18	5.5	1.5	1782.00	0.54	0.01	0.55	0.33	0.07	0.40	1.00													
2.74	1633.30	117.93	364.75	144.66	ESTRIBO	C	0.6	0.5	0.5	1	1.11	33.6	60	40.00	24.00	-1.05	0.18	0.36	2.73	1	589.68	0.18	5.5	1.5	1782.00	0.54	0.00	0.54	0.31	0.08	0.39	1.00													
5.48	1504.17	113.72	215.41	192.65	CDV	C	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.45	0.00	0.45	0.19	0.11	0.31	1.00													
5.48	1499.89	111.03	203.76	202.29	CDV	C	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.45	0.01	0.46	0.27	0.12	0.39	1.00													
5.48	1371.56	113.06	229.18	280.58	CDV	C	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.34	0.00	0.34	0.11	0.15	0.26	1.00													
5.48	1374.53	110.34	209.18	248.71	CDV	C	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.33	0.02	0.36	0.21	0.15	0.36	1.00													
5.48	1371.56	113.06	229.18	280.58	CDV	C	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.23	0.01	0.24	0.00	0.17	0.18	1.00													
5.48	1371.56	113.06	229.18	280.58	CDV	C	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.22	0.04	0.27	0.13	0.19	0.32	1.00													
5.48	1371.56	113.06	229.18	280.58	CDV	C	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.16	0.05	0.21	0.02	0.20	0.21	1.00													
5.48	1371.56	113.06	229.18	280.58	CDV	C	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.15	0.03	0.18	0.01	0.23	0.25	1.00													
5.48	1371.56	113.06	229.18	280.58	CDV	C	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.25	0.06	0.30	0.10	0.22	0.32	1.00													
5.48	1371.56	113.06	229.18	280.58	CDV	C	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.24	0.04	0.28	0.07	0.28	0.35	1.00													
5.48	1371.56	113.06	229.18	280.58	CDV	C	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.35	0.06	0.41	0.18	0.26	0.42	1.00													
5.48	1371.56	113.06	229.18	280.58	CDV	C	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.34	0.03	0.37	0.15	0.32	0.47	1.00													
5.48	1371.56	113.06	229.18	280.58	CDV	C	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.45	0.05	0.50	0.24	0.30	0.54	1.00													
5.48	1371.56	113.06	229.18	280.58	CDV	C	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.45	0.03	0.47	0.23	0.35	0.58	1.00													
5.48	1371.56	113.06	229.18	280.58	CDV	C	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.56	0.05	0.60	0.32	0.33	0.65	1.00													
5.48	1371.56	113.06	229.18	280.58	CDV	C	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.55	0.01	0.56	0.30	0.38	0.67	1.00													
5.48	1371.56	113.06	229.18	280.58	CDV	C	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.67	0.02	0.69	0.38	0.35	0.73	1.00													
5.48	1371.56	113.06	229.18	280.58	CDV	C	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.68	0.02	0.69	0.37	0.39	0.76	1.00													
5.48	1371.56	113.06	229.18	280.58	CDV	C	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.80	0.00	0.80	0.34	0.27	0.81	1.00													
5.48	1371.56	113.06	229.18	280.58	CDV	C	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.80	0.06	0.86	0.33	0.29	0.83	1.00													
5.48	1371.56	113.06	229.18	280.58	CDV	C	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.70	0.04	0.75	0.40	0.28	0.68	1.00													

CALCULO DE CORTANTE-TORSOR SEGÚN EHE

Fibra: FIBRA 1
Fibra lateral del alma

Características generales de la sección:

Coefficiente de minoración γ_x 1.5

Comprobación de bielas a compresión

$V_{ed}=K f_{tcd} b_y d 1/(ctg\theta+tg\theta)$										$T_{ed}=\alpha f_{tcd} A_y h_y 1/(ctg\theta+tg\theta)$										Hipótesis 1						Hipótesis 2						
Hipótesis 1		Hipótesis 2																														
x(m)	Vmax	Tconc	Vcon	Tmax	Sección	C/T	coef. F1cd	β_{comp}	$\beta_{tracción}$	cotg0	cotg0s	$A_{s,eq}+A_p$ (cm2)	f_{td} (N/mm²)	f_{tcd} (N/mm²)	σ'_{ed} (N/mm²)	b_w (m)	b (m)	d_s (m)	K	Vu1 (tn)	h_w (m)	A_w (m²)	α	Tu1 (m tn)	Tv.hip 1	Tt.hip 1	Tv.tracción.hip 1	Tv.hip 2	Tt.hip 2	Tv.tracción.hip 2	β_{v-t}	
33.50	1150.15	115.60	1785.26	406.46	PILA	C	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.24	0.48	2.73	1	743.74	0.24	5.5	1.5	2247.57	0.77	0.05	0.82	0.33	0.25	0.75	1.00
33.50	978.79	100.99	1644.79	536.31	PILA	C	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.24	0.48	2.73	1	743.74	0.24	5.5	1.5	2247.57	0.66	0.04	0.69	0.43	0.24	0.67	1.00
33.50	951.43	111.48	1654.31	503.99	PILA	C	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.24	0.48	2.73	1	743.74	0.24	5.5	1.5	2247.57	0.64	0.01	0.65	0.44	0.22	0.67	1.00
33.50	1078.79	110.99	1644.79	536.31	CDV	C	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.70	0.00	0.71	0.47	0.28	0.75	1.00
33.50	1078.79	110.99	1644.79	536.31	CDV	C	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.68	0.04	0.71	0.45	0.26	0.71	1.00
33.50	1078.79	110.99	1644.79	536.31	CDV	C	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.54	0.05	0.58	0.24	0.27	0.51	1.00
33.50	1078.79	110.99	1644.79	536.31	CDV	C	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.52	0.05	0.56	0.29	0.27	0.56	1.00
33.50	1078.79	110.99	1644.79	536.31	CDV	C	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.38	0.06	0.44	0.18	0.30	0.48	1.00
33.50	1078.79	110.99	1644.79	536.31	CDV	C	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.37	0.03	0.40	0.17	0.31	0.48	1.00
33.50	1078.79	110.99	1644.79	536.31	CDV	C	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.23	0.05	0.28	0.05	0.34	0.40	1.00
33.50	1078.79	110.99	1644.79	536.31	CDV	C	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.23	0.00	0.24	0.04	0.34	0.39	1.00
33.50	1078.79	110.99	1644.79	536.31	CDV	C	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.14	0.11	0.26	0.08	0.37	0.45	1.00
33.50	1078.79	110.99	1644.79	536.31	CDV	C	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.14	0.11	0.25	0.08	0.36	0.44	1.00
33.50	1078.79	110.99	1644.79	536.31	CDV	C	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.27	0.13	0.21	0.20	0.38	0.58	1.00
33.50	1078.79	110.99	1644.79	536.31	CDV	C	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.27	0.15	0.41	0.02	0.37	0.39	1.00
33.50	1078.79	110.99	1644.79	536.31	CDV	C	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.40	0.17	0.57	0.31	0.39	0.70	1.00
33.50	1078.79	110.99	1644.79	536.31	CDV	C	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.40	0.15	0.54	0.14	0.41	0.55	1.00
33.50	1078.79	110.99	1644.79	536.31	CDV	C	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.53	0.17	0.70	0.36	0.39	0.75	1.00
33.50	1078.79	110.99	1644.79	536.31	CDV	C	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.52	0.13	0.65	0.24	0.43	0.67	1.00
33.50	1078.79	110.99	1644.79	536.31	CDV	C	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.67	0.14	0.81	0.35	0.40	0.75	1.00
33.50	1078.79	110.99	1644.79	536.31	CDV	C	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.65	0.08	0.73	0.34	0.44	0.78	1.00
33.50	1078.79	110.99	1644.79	536.31	PILA	C	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.24	0.48	2.73	1	743.74	0.24	5.5	1.5	2247.57	0.59	0.07	0.66	0.32	0.31	0.63	1.00
33.50	1078.79	110.99	1644.79	536.31	PILA	C	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.24	0.48	2.73	1	743.74	0.24	5.5	1.5	2247.57	0.58	0.02	0.61	0.35	0.32	0.67	1.00
33.50	1078.79	110.99	1644.79	536.31	PILA	C	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.24	0.48	2.73	1	743.74	0.24	5.5	1.5	2247.57	0.69	0.04	0.72	0.42	0.30	0.71	1.00

CALCULO DE CORTANTE-TORSOR SEGÚN EHE

Fibra lateral del alma

Características generales de la sección:

Coefficiente de minoración γ_x 1.5

Comprobación de bielas a compresión

		$V_{ed}=K f_{tcd} b_w d 1/(ctg\theta+tg\theta)$										$T_{ed}=\alpha f_{tcd} A_s h_w 1/(ctg\theta+tg\theta)$										Hipótesis 1					Hipótesis 2							
		Hipótesis 1		Hipótesis 2		Sección	C/T	coef. F1cd	$\beta_{comp.}$	$\beta_{resist.}$	cotg θ	cotg θ_0	$A_{s,eq}+A_p$ (cm ²)	f_{ctd} (N/mm ²)	f_{tcd} (N/mm ²)	f_{tcd} (N/mm ²)	σ'_{tcd} (N/mm ²)	b_w (m)	b (m)	d_1 (m)	K	Vu1 (tn)	h_w (m)	A_s (m ²)	α	Tu1 (m tn)	Tv _{sup 1}	Hipótesis 1			Hipótesis 2			β_{v-t}
x(m)		Vmax	Tconc	Vcon	Tmax																							T _{1, sup 1}	T _{1, sup 2}	T _{1, sup 3}	T _{2, sup 1}	T _{2, sup 2}	T _{2, sup 3}	
73.50	1004.73	1452.36	1882.80	1613.46	PILA	c	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.24	0.48	2.73	1	743.74	0.24	5.5	1.5	2247.57	0.68	0.20	0.88	0.59	0.27	0.78	1.00		
78.26	984.20	1423.34	1766.88	1614.44	PILA	c	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.24	0.48	2.73	1	743.74	0.24	5.5	1.5	2247.57	0.57	0.18	0.74	0.50	0.26	0.78	1.00		
83.02	843.93	1396.57	1736.84	1590.85	PILA	c	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.63	0.22	0.85	0.55	0.33	0.88	1.00		
87.78	707.83	1362.63	1615.27	1648.74	CDV	c	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.62	0.17	0.79	0.50	0.31	0.81	1.00		
92.54	690.81	1363.70	1605.97	1617.20	CDV	c	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.50	0.15	0.85	0.39	0.28	0.68	1.00		
97.30	598.48	1250.02	1436.49	1477.77	CDV	c	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.49	0.15	0.84	0.37	0.26	0.83	1.00		
102.06	541.78	1263.72	1408.04	1444.70	CDV	c	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.37	0.13	0.50	0.26	0.24	0.50	1.00		
106.82	515.23	1219.57	1295.21	1403.00	CDV	c	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.36	0.11	0.47	0.24	0.22	0.48	1.00		
111.58	398.33	1190.29	1273.23	1370.91	CDV	c	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.25	0.09	0.34	0.15	0.19	0.34	1.00		
116.34	278.57	1153.83	1183.91	1325.21	CDV	c	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.24	0.09	0.34	0.13	0.18	0.31	1.00		
121.10	273.59	1157.23	1149.89	1302.19	CDV	c	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.14	0.05	0.19	0.01	0.16	0.16	1.00		
125.86	189.45	1153.19	1148.02	1291.73	CDV	c	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.14	0.06	0.20	0.01	0.15	0.18	1.00		
130.62	159.94	1171.92	1158.83	1286.07	CDV	c	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.23	0.07	0.31	0.10	0.14	0.25	1.00		
135.38	121.97	1121.16	1116.51	1244.28	CDV	c	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.24	0.05	0.29	0.06	0.13	0.19	1.00		
140.14	104.46	1094.17	1065.42	1217.47	CDV	c	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.35	0.06	0.41	0.24	0.13	0.37	1.00		
144.90	1059.54	1107.89	1099.59	1218.80	CDV	c	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.35	0.04	0.39	0.12	0.10	0.22	1.00		
149.66	1088.32	1057.23	1136.03	1166.87	CDV	c	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	589.68	0.18	5.5	1.5	1782.00	0.44	0.04	0.48	0.33	0.10	0.43	1.00		
154.42	1020.19	1111.00	1130.32	1174.88	ESTRIBO	c	0.6	0.5	0.5	1	1.11	33.6	60	40.00	24.00	-1.05	0.18	0.36	2.73	1	589.68	0.18	5.5	1.5	1782.00	0.44	0.01	0.44	0.14	0.06	0.29	1.00		
159.18	1115.77	1184.88	1194.43	1107.28	ESTRIBO	c	0.6	0.5	0.5	1	1.11	33.6	60	40.00	24.00	-1.05	0.18	0.36	2.73	1	589.68	0.18	5.5	1.5	1782.00	0.56	0.01	0.57	0.43	0.04	0.47	1.00		
163.94	1054.69	1201.94	1212.43	105.64	ESTRIBO	c	0.6	0.5	0.5	1	1.11	33.6	60	40.00	24.00	-1.05	0.18	0.36	2.73	1	589.68	0.18	5.5	1.5	1782.00	0.56	0.01	0.57	0.43	0.04	0.47	1.00		

CALCULO DE CORTANTE-TORSOR SEGÚN EHE

Fibra lateral del alma

Características generales de la sección:

Coefficiente de minoración γ_x 1.5

Comprobación de bielas a compresión

		$V_{ed}=K f_{tcd} b_w d 1/(ctg\theta+tg\theta)$										$T_{ed}=\alpha f_{tcd} A_s h_w 1/(ctg\theta+tg\theta)$										Hipótesis 1					Hipótesis 2							
		Hipótesis 1		Hipótesis 2		Sección	C/T	coef. F1cd	β_{comp}	$\beta_{resistencia}$	cotg θ	cotg θ_0	$A_{s,eq}+A_p$ (cm ²)	f_{ctk} (N/mm ²)	f_{tcd} (N/mm ²)	f_{tcd} (N/mm ²)	σ'_{tcd} (N/mm ²)	b_w (m)	b (m)	d_1 (m)	K	Vu1 (tn)	h_w (m)	A_s (m ²)	α	Tu1 (m tn)	Tv _{sup 1}	Hipótesis 1			Hipótesis 2			β_{v-t}
x(m)		Vmax	Tconc	Vcon	Tmax																							T _{1, sup 1}	T _{1, sup 2}	T _{1, sup 3}	T _{2, sup 1}	T _{2, sup 2}	T _{2, sup 3}	
0.00	688.53	111.89	1548.85	152.67	ESTRIBO	c	0.6	0.5	0.5	1	1.11	33.6	60	40.00	24.00	-1.05	0.18	0.36	2.73	1	589.68	0.18	5.5	1.5	1782.00	0.46	0.00	0.47	0.15	0.05	0.20	1.00		
2.74	643.17	118.35	173.32	198.41	ESTRIBO	c	0.6	0.5	0.5	1	1.11	33.6	60	40.00	24.00	-1.05	0.18	0.36	2.73	1	589.68	0.18	5.5	1.5	1782.00	0.46	0.03	0.49	0.36	0.08	0.44	1.00		
5.48	642.50	152.48	140.15	148.58	ESTRIBO	c	0.6	0.5	0.5	1	1.11	33.6	60	40.00	24.00	-1.05	0.18	0.36	2.73	1	589.68	0.18	5.5	1.5	1782.00	0.46	0.03	0.49	0.36	0.08	0.44	1.00		
8.22	404.45	151.78	297.38	145.97	CDV	c	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.36	0.03	0.39	0.27	0.09	0.35	1.00		
10.96	401.82	182.99	1294.87	1167.11	CDV	c	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.36	0.05	0.41	0.26	0.11	0.38	1.00		
13.70	271.05	171.45	151.36	167.81	CDV	c	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.24	0.04	0.29	0.05	0.11	0.16	1.00		
16.44	206.36	194.20	161.21	1208.28	CDV	c	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.24	0.06	0.29	0.14	0.12	0.27	1.00		
19.18	271.05	171.45	151.36	167.81	CDV	c	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.15	0.05	0.20	0.02	0.13	0.16	1.00		
21.92	167.44	173.78	125.74	1224.37	CDV	c	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.15	0.05	0.20	0.02	0.14	0.16	1.00		
24.66	167.44	173.78	125.74	1224.37	CDV	c	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.15	0.05	0.20	0.02	0.14	0.16	1.00		
27.40	228.13	131.78	179.42	1270.88	CDV	c	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.15	0.05	0.20	0.02	0.14	0.16	1.00		
30.14	228.13	131.78	179.42	1270.88	CDV	c	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.15	0.05	0.20	0.02	0.14	0.16	1.00		
32.88	206.36	194.20	161.21	1208.28	CDV	c	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.15	0.05	0.20	0.02	0.14	0.16	1.00		
35.62	206.36	194.20	161.21	1208.28	CDV	c	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.15	0.05	0.20	0.02	0.14	0.16	1.00		
38.36	228.13	131.78	179.42	1270.88	CDV	c	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.15	0.05	0.20	0.02	0.14	0.16	1.00		
41.10	228.13	131.78	179.42	1270.88	CDV	c	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.15	0.05	0.20	0.02	0.14	0.16	1.00		
43.84	228.13	131.78	179.42	1270.88	CDV	c	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.15	0.05	0.20	0.02	0.14	0.16	1.00		
46.58	228.13	131.78	179.42	1270.88	CDV	c	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.15	0.05	0.20	0.02	0.14	0.16	1.00		
49.32	228.13	131.78	179.42	1270.88	CDV	c	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.15	0.05	0.20	0.02	0.14	0.16	1.00		
52.06	228.13	131.78	179.42	1270.88	CDV	c	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.15	0.05	0.20	0.02	0.14	0.16	1.00		
54.80	228.13	131.78	179.42	1270.88	CDV	c	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.15	0.05	0.20	0.02	0.14	0.16	1.00		
57.54	228.13	131.78	179.42	1270.88	CDV	c	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.15	0.05	0.20	0.02	0.14	0.16	1.00		
60.28	228.13	131.78	179.42	1270.88	CDV	c	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.15	0.05	0.20	0.02	0.14	0.16	1.00		
63.02	228.13	131.78	179.42	1270.88	CDV	c	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.15	0.05	0.20	0.02	0.14	0.16	1.00		
65.76	228.13	131.78	179.42	1270.88	CDV	c	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.15	0.05	0.20	0.02	0.14	0.16	1.00		
68.50	228.13	131.78	179.42	1270.88	CDV	c	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.15	0.05	0.20	0.02	0.14	0.16	1.00		
71.24	228.13	131.78	179.42	1270.88	CDV	c	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.15	0.05	0.20	0.02	0.14	0.16	1.00		
73.98	228.13	131.78	179.42	1270.88	CDV	c	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.15	0.05	0.20	0.02	0.14	0.16	1.00		
76.72	228.13	131.78	179.42	1270.88	CDV	c	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.15	0.05	0.20	0.02	0.14	0.16	1.00		
79.46	228.13	131.78	179.42	1270.88	CDV	c	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.15	0.05	0.20	0.02	0.14	0.16	1.00		
82.20	228.13	131.78	179.42	1270.88	CDV	c	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.15	0.05	0.20	0.02	0.14	0.16	1.00		
84.94	228.13	131.78	179.42	1270.88	CDV	c	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.15	0.05	0.20	0.02	0.14	0.16	1.00		
87.68	228.13	131.78	179.42	1270.88	CDV	c	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.15	0.05	0.20	0.02	0.14	0.16	1.00		
90.42	228.13	131.78	179.42	1270.88	CDV	c	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.15	0.05	0.20	0.02	0.14	0.16	1.00		
93.16	228.13	131.78	179.42	1270.88	CDV	c	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.15	0.05	0.20	0.02	0.14	0.16	1.00		
95.90	228.13	131.78	179.42	1270.88	CDV	c	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.15	0.05	0.20	0.02	0.14	0.16	1.00		
98.64	228.13	131.78	179.42	1270.88	CDV	c	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.15	0.05	0.20	0.02	0.14	0.16	1.00		
101.38	228.13	131.78	179.42	1270.88	CDV	c	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.15	0.05	0.20	0.02	0.14	0.16	1.00		
104.12	228.13	131.78	179.42	1270.88	CDV	c	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.15	0.05	0.20	0.02	0.14	0.16	1.00		
106.86	228.13																																	

CALCULO DE CORTANTE-TORSOR SEGÚN EHE

Fibra lateral del alma

Características generales de la sección:

Coefficiente de minoración γ_x 1.5

Comprobación de bielas a compresión

		$V_{Ed}=K f_{tcd} b_y d 1/(ctg\theta+tg\theta)$										$T_{Ed}=a f_{tcd} A_y h_y 1/(ctg\theta+tg\theta)$										Hipótesis 1				Hipótesis 2							
		Hipótesis 1		Hipótesis 2		Sección	C/T	coef. F1cd	$\beta_{comp.}$	$\beta_{tracción}$	cotgθ	cotgθ ₀	$A_{s,eq}+A_p$ (cm ²)	f_{ct} (N/mm ²)	f_{td} (N/mm ²)	f_{tcd} (N/mm ²)	σ'_{tcd} (N/mm ²)	b_w (m)	b (m)	d_s (m)	K	V_{u1} (tn)	h_u (m)	A_y (m ²)	α	T_{u1} (m tn)	$T_{v,hip 1}$	$T_{t,hip 1}$	$T_{tensor,hip 1}$	$T_{v,hip 2}$	$T_{t,hip 2}$	$T_{tensor,hip 2}$	β_{v4}
x(m)		Vmax	Tconc	Vcon	Tmax																												
27.40	1008.98	116.90	727.17	687.82	PILA	c	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.24	0.48	2.73	1	743.74	0.24	5.5	1.5	2247.57	0.72	0.66	0.72	0.49	0.31	0.72	1.00	
30.45	838.49	16.44	827.74	864.88	PILA	c	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.24	0.48	2.73	1	743.74	0.24	5.5	1.5	2247.57	0.63	0.04	0.67	0.39	0.29	0.68	1.00	
30.45	838.47	198.09	578.97	648.72	PILA	c	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.70	0.05	0.75	0.43	0.41	0.83	1.00	
33.50	781.81	82.00	475.01	683.62	CDV	c	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.71	0.08	0.79	0.37	0.38	0.75	1.00	
33.50	788.23	141.13	417.93	639.43	CDV	c	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.56	0.08	0.63	0.26	0.40	0.67	1.00	
36.89	620.97	130.81	1291.20	682.40	CDV	c	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.56	0.12	0.68	0.27	0.36	0.63	1.00	
36.89	620.20	199.78	1302.00	612.48	CDV	c	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.42	0.11	0.53	0.15	0.39	0.54	1.00	
40.28	468.48	182.28	1172.88	650.09	CDV	c	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.42	0.12	0.54	0.27	0.33	0.61	1.00	
40.28	470.32	203.59	1305.35	664.57	CDV	c	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.28	0.11	0.39	0.05	0.34	0.40	1.00	
43.67	312.54	179.73	98.88	679.55	CDV	c	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.28	0.11	0.39	0.21	0.34	0.55	1.00	
43.67	315.84	184.57	920.05	573.15	CDV	c	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.15	0.09	0.24	0.08	0.32	0.40	1.00	
47.06	163.88	152.11	191.83	637.56	CDV	c	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.15	0.09	0.24	0.07	0.34	0.41	1.00	
47.06	166.34	158.88	183.20	668.88	CDV	c	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.24	0.02	0.26	0.05	0.31	0.37	1.00	
50.45	288.89	151.25	698.39	628.47	CDV	c	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.24	0.07	0.32	0.06	0.32	0.38	1.00	
50.45	270.32	124.67	671.40	633.87	CDV	c	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.38	0.07	0.45	0.19	0.29	0.48	1.00	
53.84	425.73	119.53	609.52	487.42	CDV	c	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.40	0.10	0.50	0.22	0.28	0.50	1.00	
53.84	446.68	184.01	6245.16	477.57	CDV	c	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.55	0.09	0.64	0.34	0.25	0.59	1.00	
57.23	608.97	151.89	1078.96	427.16	CDV	c	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.57	0.07	0.64	0.39	0.26	0.64	1.00	
57.23	608.06	117.08	1430.82	436.10	CDV	c	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.72	0.07	0.79	0.32	0.23	0.55	1.00	
60.62	608.72	111.78	1360.68	388.54	CDV	c	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.75	0.05	0.80	0.38	0.26	0.64	1.00	
60.62	608.99	170.88	1419.10	441.13	CDV	c	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.24	0.48	2.73	1	743.74	0.24	5.5	1.5	2247.57	0.68	0.03	0.71	0.46	0.20	0.66	1.00	
64.01	1012.20	160.74	888.28	448.42	PILA	c	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.24	0.48	2.73	1	743.74	0.24	5.5	1.5	2247.57	0.70	0.02	0.72	0.46	0.22	0.68	1.00	
64.01	1044.70	142.32	6678.62	492.15	PILA	c	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.24	0.48	2.73	1	743.74	0.24	5.5	1.5	2247.57	0.82	0.03	0.85	0.56	0.23	0.79	1.00	
67.40	1225.37	64.47	628.64	514.67	PILA	c	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.24	0.48	2.73	1	743.74	0.24	5.5	1.5	2247.57	0.82	0.03	0.85	0.56	0.23	0.79	1.00	

CALCULO DE CORTANTE-TORSOR SEGÚN EHE

Fibra lateral del alma

Características generales de la sección:

Coefficiente de minoración γ_x 1.5

Comprobación de bielas a compresión

		$V_{u1}=K \cdot f_{tcd} \cdot b_y \cdot d \cdot 1/(ctg\theta+tg\theta)$										$T_{u1}=a \cdot f_{tcd} \cdot A_y \cdot h_y \cdot 1/(ctg\theta+tg\theta)$										Hipótesis 1				Hipótesis 2						
		Hipótesis 1		Hipótesis 2		Sección	C/T	coef. F1cd	$\beta_{comp.}$	$\beta_{tracción}$	cotgθ	cotgθ ₀	$A_{s,eq}+A_p$ (cm ²)	f_{ctk} (N/mm ²)	f_{td} (N/mm ²)	f_{tcd} (N/mm ²)	σ'_{tcd} (N/mm ²)	b_w (m)	b (m)	d_s (m)	K	V_{u1} (tn)	h_u (m)	A_y (m ²)	α	T_{u1} (m tn)	Hipótesis 1		Hipótesis 2		β_{v4}	
x(m)		Vmax	Tconc	Vcon	Tmax																						Tv,hip 1	Tt,hip 1	Ttensor,hip 1	Tv,hip 2		Tt,hip 2
27.40	1130.76	118.00	730.43	688.55	PILA	c	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.24	0.48	2.73	1	743.74	0.24	5.5	1.5	2247.57	0.77	0.06	0.82	0.49	0.31	0.80	1.00
30.45	877.43	138.73	828.49	823.19	PILA	c	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.24	0.48	2.73	1	743.74	0.24	5.5	1.5	2247.57	0.66	0.06	0.72	0.42	0.28	0.70	1.00
30.45	865.18	161.29	500.76	658.14	PILA	c	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.24	0.48	2.73	1	743.74	0.24	5.5	1.5	2247.57	0.65	0.03	0.88	0.40	0.28	0.67	1.00
33.50	807.11	75.84	629.98	617.81	CDV	c	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.72	0.04	0.77	0.48	0.37	0.84	1.00
33.50	808.37	125.82	489.14	651.54	CDV	c	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.72	0.02	0.74	0.41	0.33	0.75	1.00
36.89	668.00	142.19	1353.93	588.43	CDV	c	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.60	0.03	0.62	0.32	0.35	0.67	1.00
36.89	671.43	142.24	1399.73	524.93	CDV	c	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.60	0.01	0.61	0.33	0.31	0.64	1.00
39.02	535.81	133.02	1264.33	568.27	CDV	c	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.48	0.00	0.48	0.24	0.33	0.57	1.00
39.02	540.73	121.84	1294.71	479.24	CDV	c	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.48	0.01	0.50	0.26	0.28	0.55	1.00
41.70	409.74	139.96	1188.42	606.83	CDV	c	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.37	0.00	0.37	0.17	0.30	0.47	1.00
41.70	413.66	111.40	1182.60	418.07	CDV	c	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.37	0.04	0.41	0.17	0.25	0.42	1.00
44.54	295.62	199.41	1624.44	441.56	CDV	c	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.28	0.03	0.29	0.07	0.26	0.34	1.00
44.54	290.31	195.05	1593.74	344.97	CDV	c	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.26	0.04	0.30	0.09	0.20	0.29	1.00
47.30	171.81	357.52	1121.25	362.78	CDV	c	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.15	0.02	0.18	0.01	0.22	0.23	1.00
47.30	179.85	370.52	1196.20	129.78	CDV	c	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.16	0.04	0.20	0.09	0.18	0.26	1.00
50.05	269.78	156.00	1157.62	287.30	CDV	c	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.24	0.03	0.28	0.14	0.17	0.31	1.00
50.05	272.65	130.33	1181.01	272.86	CDV	c	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.25	0.00	0.25	0.01	0.16	0.17	1.00
52.80	401.61	111.66	1254.14	235.96	CDV	c	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.36	0.01	0.37	0.23	0.14	0.37	1.00
52.80	407.84	101.75	1333.34	234.73	CDV	c	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.37	0.01	0.37	0.12	0.14	0.26	1.00
55.64	340.48	135.43	1245.54	185.36	CDV	c	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.48	0.00	0.49	0.22	0.11	0.33	1.00
55.64	345.76	116.04	1300.94	189.07	CDV	c	0.6	0.5	0.5	1.4	1.29	98	60	40.00	24.00	-3.09	0.18	0.36	2.73	1	557.81	0.18	5.5	1.5	1685.68	0.49	0.01	0.50	0.27	0.11	0.38	1.00
58.49	188.95	111.12	1051.00	134.11	ESTRIBO	c	0.6	0.5	0.5	1	1.11	33.8	60	40.00	24.00	-1.05	0.18	0.36	2.73	1	589.68	0.18	5.5	1.5	1782.00	0.58	0.01	0.59	0.30	0.08	0.37	1.00
58.49	189.40	104.84	1048.01	123.88	ESTRIBO	c	0.6	0.5	0.5	1	1.11	33.8	60	40.00	24.00	-1.05	0.18	0.36	2.73	1	589.68	0.18	5.5	1.5	1782.00	0.59	0.01	0.60	0.39	0.07	0.46	1.00
106.10	845.08	21.95	1458.21	72.41	ESTRIBO	c	0.6	0.5	0.5	1	1.11	33.8	60	40.00	24.00	-1.05	0.18	0.36	2.73	1	589.68	0.18	5.5	1.5	1782.00	0.72	0.01	0.73	0.46	0.04	0.51	1.00

CALCULO DE CORTANTE-TORSOR SEG

Fibra lateral del alma

Características generales de la sección:

Coefficiente de minoración γ_x 1.5

Dimensionamiento A_{trans} .

Dimensionamiento A_{long}

Vu2=Vcu+Vsu										V _{ed} =0.1 ξ (100 ρ _l) ^{1/2} 0.15 σ' _{ps} b _w d β										V _{ed} =z ctgθ A _w f _{td}										Tu2=2 Ae A _{ps} f _{ps} ctgθ										Tu3=2 Ae A _u f _{ut} ctgθ																
Hipótesis 1					Hipótesis 2					Hipótesis 1										Hipótesis 2										Hipótesis 1										Hipótesis 2																
x(m)	Vmax	Tconc	Vcon	Tmax	ξ	ρ _l	β	Vu2 sin	Vcu (sl,no)	Vcu (tn)	Vrd	Vu2-Vcu hip1	A _{eort} (cm2/m)	A _{itor} (cm2/m)	A _{emin} (cm2/m)	A _{etotal} (cm2/m)	Vrd	Vu2-Vcu hip2	A _{eort} (cm2/m)	A _{itor} (cm2/m)	A _{emin} (cm2/m)	A _{etotal} (cm2/m)	St máx (cm) hip.1	St máx (cm) hip.2	A _{long} (cm2/m)	A _{long} (cm2/m)	Vrd	Vu2-Vcu hip1	A _{eort} (cm2/m)	A _{itor} (cm2/m)	A _{emin} (cm2/m)	A _{etotal} (cm2/m)	St máx (cm) hip.1	St máx (cm) hip.2	A _{long} (cm2/m)	A _{long} (cm2/m)																				
0.00	178.86	140.88	155.40	162.12	1.27	0.020	0.821939	44.7	SI	31.7	389.4	357.8	36.40	0.25	3.60	36.65	177.70	146.0	14.86	1.41	3.60	16.27	30.0	30.00	0.25	1.41	177.70	146.0	14.86	1.41	3.60	16.27	30.0	30.00	0.25	1.41	177.70	146.0	14.86	1.41	3.60	16.27	30.0	30.00	0.25	1.41										
2.74	164.71	145.08	154.60	162.48	1.27	0.020	0.821939	44.7	SI	31.7	320.9	289.2	29.42	0.34	3.60	29.77	192.35	160.7	16.35	2.92	3.60	19.27	30.0	30.00	0.34	2.92	192.35	160.7	16.35	2.92	3.60	19.27	30.0	30.00	0.34	2.92	192.35	160.7	16.35	2.92	3.60	19.27	30.0	30.00	0.34	2.92										
5.48	153.30	147.73	154.75	164.86	1.27	0.020	0.821939	44.7	SI	31.7	317.6	286.0	29.10	0.18	3.60	29.27	182.38	150.7	15.33	3.29	3.60	18.62	30.0	30.00	0.18	3.29	182.38	150.7	15.33	3.29	3.60	18.62	30.0	30.00	0.18	3.29	182.38	150.7	15.33	3.29	3.60	18.62	30.0	30.00	0.18	3.29										
8.22	150.47	143.72	151.41	162.86	1.27	0.020	0.848751	59.7	SI	45.5	252.1	206.6	15.02	0.06	3.60	15.08	107.71	62.2	4.52	3.13	3.60	7.65	30.0	30.00	0.06	4.52	107.71	62.2	4.52	3.13	3.60	7.65	30.0	30.00	0.06	4.52	107.71	62.2	4.52	3.13	3.60	7.65	30.0	30.00	0.06	4.52										
10.96	149.69	143.03	150.78	162.29	1.27	0.020	0.848751	59.7	SI	45.5	249.8	204.4	14.85	0.34	3.60	15.19	151.88	106.4	7.73	3.28	3.60	11.02	30.0	30.00	0.34	7.73	151.88	106.4	7.73	3.28	3.60	11.02	30.0	30.00	0.34	7.73	151.88	106.4	7.73	3.28	3.60	11.02	30.0	30.00	0.34	7.73										
13.70	149.53	143.03	150.91	162.71	1.27	0.020	0.848751	59.7	SI	45.5	187.3	141.8	10.31	0.10	3.60	10.41	60.46	15.0	1.09	4.04	3.60	5.13	30.0	30.00	0.10	1.09	60.46	15.0	1.09	4.04	3.60	5.13	30.0	30.00	0.10	1.09	60.46	15.0	1.09	4.04	3.60	5.13	30.0	30.00	0.10	1.09										
16.44	149.08	143.03	150.91	162.71	1.27	0.020	0.848751	59.7	SI	45.5	185.8	140.3	10.20	0.62	3.60	10.82	114.58	69.1	5.02	4.23	3.60	9.25	30.0	30.00	0.62	5.02	114.58	69.1	5.02	4.23	3.60	9.25	30.0	30.00	0.62	5.02	114.58	69.1	5.02	4.23	3.60	9.25	30.0	30.00	0.62	5.02										
19.18	149.08	143.03	150.91	162.71	1.27	0.020	0.848751	59.7	SI	45.5	125.8	80.4	5.84	0.31	3.60	6.15	2.53	-57.2	0.00	4.78	3.60	7.05	30.0	30.00	0.31	2.53	80.4	5.84	0.31	3.60	6.15	2.53	3.60	7.05	30.0	30.00	0.31	2.53	80.4	5.84	0.31	3.60	6.15	2.53	3.60	7.05	30.0	30.00	0.31	2.53						
21.92	149.08	143.03	150.91	162.71	1.27	0.020	0.848751	59.7	SI	45.5	125.0	79.5	5.78	1.18	3.60	6.96	70.94	25.5	1.85	5.20	3.60	5.35	30.0	30.00	1.18	1.85	79.5	5.78	1.18	3.60	6.96	70.94	25.5	1.85	5.20	3.60	5.35	30.0	30.00	1.18	1.85	79.5	5.78	1.18	3.60	6.96	70.94	25.5	1.85	5.20	3.60	5.35	30.0	30.00	1.18	1.85
24.66	149.08	143.03	150.91	162.71	1.27	0.020	0.848751	59.7	SI	45.5	87.1	41.7	3.03	1.39	3.60	4.42	10.40	-49.3	0.00	5.35	3.60	6.43	30.0	30.00	1.39	4.42	41.7	3.03	1.39	3.60	4.42	10.40	-49.3	0.00	5.35	3.60	6.43	30.0	30.00	1.39	4.42	41.7	3.03	1.39	3.60	4.42	10.40	-49.3	0.00	5.35	3.60	6.43	30.0	30.00	1.39	4.42
27.40	149.08	143.03	150.91	162.71	1.27	0.020	0.848751	59.7	SI	45.5	81.6	36.1	2.63	0.89	3.60	3.60	6.41	-53.3	0.00	6.43	3.60	6.43	30.0	30.00	0.89	3.60	36.1	2.63	0.89	3.60	3.60	6.41	-53.3	0.00	6.43	3.60	6.43	30.0	30.00	0.89	3.60	36.1	2.63	0.89	3.60	3.60	6.41	-53.3	0.00	6.43	3.60	6.43	30.0	30.00	0.89	3.60
30.14	149.08	143.03	150.91	162.71	1.27	0.020	0.848751	59.7	SI	45.5	137.7	92.2	6.70	1.54	3.60	8.24	54.46	-5.3	0.00	6.15	3.60	7.70	30.0	30.00	1.54	6.15	92.2	6.70	1.54	3.60	8.24	54.46	-5.3	0.00	6.15	3.60	7.70	30.0	30.00	1.54	6.15	92.2	6.70	1.54	3.60	8.24	54.46	-5.3	0.00	6.15	3.60	7.70	30.0	30.00	1.54	6.15
32.88	149.08	143.03	150.91	162.71	1.27	0.020	0.848751	59.7	SI	45.5	134.4	88.9	6.46	1.17	3.60	7.63	36.94	-22.8	0.00	7.70	3.60	10.35	30.0	30.00	1.17	7.63	88.9	6.46	1.17	3.60	7.63	36.94	-22.8	0.00	7.70	3.60	10.35	30.0	30.00	1.17	7.63	88.9	6.46	1.17	3.60	7.63	36.94	-22.8	0.00	7.70	3.60	10.35	30.0	30.00	1.17	7.63
35.62	149.08	143.03	150.91	162.71	1.27	0.020	0.848751	59.7	SI	45.5	194.2	148.8	10.81	1.73	3.60	12.55	88.87	43.4	3.15	7.19	3.60	11.69	30.0	30.00	1.73	3.15	148.8	10.81	1.73	3.60	12.55	88.87	43.4	3.15	7.19	3.60	11.69	30.0	30.00	1.73	3.15	148.8	10.81	1.73	3.60	12.55	88.87	43.4	3.15	7.19	3.60	11.69	30.0	30.00	1.73	3.15
38.36	149.08	143.03	150.91	162.71	1.27	0.020	0.848751	59.7	SI	45.5	190.5	145.1	10.54	0.77	3.60	11.32	85.28	39.8	2.89	8.79	3.60	14.76	30.0	30.00	0.77	2.89	145.1	10.54	0.77	3.60	11.32	85.28	39.8	2.89	8.79	3.60	14.76	30.0	30.00	0.77	2.89	145.1	10.54	0.77	3.60	11.32	85.28	39.8	2.89	8.79	3.60	14.76	30.0	30.00	0.77	2.89
41.10	149.08	143.03	150.91	162.71	1.27	0.020	0.848751	59.7	SI	45.5	252.3	206.8	15.03	1.27	3.60	16.30	135.38	89.9	8.53	8.23	3.60	15.70	30.0	30.00	1.27	8.53	206.8	15.03	1.27	3.60	16.30	135.38	89.9	8.53	8.23	3.60	15.70	30.0	30.00	1.27	8.53	206.8	15.03	1.27	3.60	16.30	135.38	89.9	8.53	8.23	3.60	15.70	30.0	30.00	1.27	8.53
43.84	149.08	143.03	150.91	162.71	1.27	0.020	0.848751	59.7	SI	45.5	248.5	203.0	14.76	0.78	3.60	15.64	128.49	83.0	8.03	9.66	3.60	18.64	30.0	30.00	0.78	8.03	203.0	14.76	0.78	3.60	15.64	128.49	83.0	8.03	9.66	3.60	18.64	30.0	30.00	0.78	8.03	203.0	14.76	0.78	3.60	15.64	128.49	83.0	8.03	9.66	3.60	18.64	30.0	30.00	0.78	8.03
46.58	149.08	143.03	150.91	162.71	1.27	0.020	0.848751	59.7	SI	45.5	311.9	266.5	19.37	1.24	3.60	20.61	178.22	132.7	9.65	8.99	3.60	19.03	30.0	30.00	1.24	9.65	266.5	19.37	1.24	3.60	20.61	178.22	132.7	9.65	8.99	3.60	19.03	30.0	30.00	1.24	9.65	266.5	19.37	1.24	3.60	20.61	178.22	132.7	9.65	8.99	3.60	19.03	30.0	30.00	1.24	9.65
49.32	149.08	143.03	150.91	162.71	1.27	0.020	0.848751	59.7	SI	45.5	307.7	262.2	19.06	0.21	3.60	19.26	165.47	120.0	8.72	10.30	3.60	21.81	30.0	30.00	0.21	8.72	262.2	19.06	0.21	3.60	19.26	165.47	120.0	8.72	10.30	3.60	21.81	30.0	30.00	0.21	8.72	262.2	19.06	0.21	3.60	19.26	165.47	120.0	8.72	10.30	3.60	21.81	30.0	30.00	0.21	8.72
52.06	149.08	143.03	150.91	162.71	1.27	0.020	0.848751	59.7	SI	45.5	372.8	327.4	23.79	0.68	3.60	24.47	213.47	168.0	12.21	9.60	3.60	21.81	30.0	30.00	0.68	12.21	327.4	23.79	0.68	3.60	24.47	213.47	168.0	12.21	9.60	3.60	21.81	30.0	30.00	0.68	12.21	327.4	23.79	0.68	3.60	24.47	213.47	168.0	12.21	9.60	3.60	21.81	30.0	30.00	0.68	12.21
54.80	149.08	143.03	150.91	162.71	1.27	0.020	0.848751	59.7	SI	45.5	370.1	324.6	23.59	0.60	3.60	24.20	205.71	160.2	11.65	10.69	3.60	22.33	30.0	30.00	0.60	11.65	324.6	23.59	0.60	3.60	24.20	205.71	160.2	11.65	10.69	3.60	22.33	30.0	30.00	0.60	11.65	324.6	23.59	0.60	3.60	24.20	205.71	160.2	11.65	10.69	3.60	22.33	30.0	30.00	0.60	11.65
57.54	149.08	143.03	150.91	162.71	1.27	0.020	0.848751	79.8	SI	60.6	445.1	384.5	27.94	0.16	4.80	28.10	249.80	189.0	13.73	10.02	4.80	23.75	30.0	30.00	0.16	13.73	384.5	27.94	0.16	4.80	28.10	249.80	189.0	13.73	10.02	4.80	23.75	30.0	30.00	0.16	13.73	384.5	27.94	0.16	4.80	28.10	249.80	189.0	13.73	10.02	4.80	23.75	30.0	30.00	0.16	13.73
60.28	149.08	143.03	150.91	162.71	1.27	0.020	0.848751	79.8	SI	60.6	446.4	385.8	28.04	2.19	4.80	30.23	248.02	187.4	13.62	10.69	4																																			

CALCULO DE CORTANTE-TORSOR SEG

Fibra: Fibra lateral del alma

Características generales de la sección:

Coefficiente de minoración γ_c 1.5

Dimensionamiento A_{trans} .

Dimensionamiento A_{long}

Vu2=Vcu+Vsu										V _{ed} =[0.1 ξ (100 ρ _l f _{td}) ^{1/3} 0.15 σ' _{ed}] b _y d β										V _{ed} =x ctg θ A _w f _{td}					Tu2=2 Ae A _{ys} f _{td} ctg θ					Tu3=2 Ae A _{ys} f _{td} ctg θ			
Hipótesis 1					Hipótesis 2					Hipótesis 1										Hipótesis 2					Hipótesis 1					Hipótesis 2			
x(m)	Vmax	Tconc	Vcon	Tmax	ξ	ρ _l	β	Vu2 sin	Vcu (sl,no)	Vcu (ln)	Vrd	Vu2-Vcu hip1	A _s ort (cm2/m)	A _s tor (cm2/m)	A _s min (cm2/m)	A _s total (cm2/m)	Vrd	Vu2-Vcu hip2	A _s ort (cm2/m)	A _s tor (cm2/m)	A _s min (cm2/m)	A _s total (cm2/m)	St máx (cm) hip.1	St máx (cm) hip.2	A _s long (cm2/m)	A _s long (cm2/m)	St máx (cm) hip.1	St máx (cm) hip.2	A _s long (cm2/m)	A _s long (cm2/m)			
73.60	4004.73	452.96	882.80	813.48	1.27	0.020	0.848751	79.6	SI	60.6	509.4	431.7	42.10	7.34	2.80	19.35	311.48	310.8	27.87	9.96	4.80	37.83	20.0	30.00	13.49	19.55	30.0	30.00	13.47	19.55	30.0	30.00	
76.26	884.20	423.94	756.68	814.44	1.27	0.020	0.848751	79.6	SI	60.6	432.1	371.5	27.00	6.87	4.80	33.87	378.34	317.7	23.09	9.97	4.80	33.07	30.0	30.00	12.88	18.80	30.0	30.00	12.88	18.80	30.0	30.00	
76.26	843.93	396.52	736.84	850.85	1.27	0.020	0.848751	79.6	SI	60.6	422.0	361.3	26.26	6.47	4.80	32.73	368.42	307.8	22.37	9.59	4.80	31.98	30.0	30.00	11.54	17.48	30.0	30.00	11.54	17.48	30.0	30.00	
79.02	707.83	382.33	615.27	4548.74	1.27	0.020	0.848751	59.7	SI	45.5	353.9	308.4	22.42	5.89	3.60	28.31	307.64	262.2	19.05	8.91	3.60	27.98	30.0	30.00	9.03	16.48	30.0	30.00	9.03	16.48	30.0	30.00	
79.02	690.81	363.70	555.97	517.20	1.27	0.020	0.848751	59.7	SI	45.5	345.4	299.9	21.80	4.61	3.60	26.41	277.99	232.5	16.90	8.40	3.60	25.29	30.0	30.00	7.96	15.20	30.0	30.00	7.96	15.20	30.0	30.00	
81.78	559.48	250.02	436.48	4477.77	1.27	0.020	0.848751	59.7	SI	45.5	279.7	234.3	17.03	4.06	3.60	21.08	219.24	173.8	12.63	7.76	3.60	18.78	30.0	30.00	8.07	14.15	30.0	30.00	8.07	14.15	30.0	30.00	
81.78	541.78	253.77	408.64	4444.70	1.27	0.020	0.848751	59.7	SI	45.5	270.9	225.4	16.38	4.12	3.60	20.50	204.32	158.8	11.54	7.22	3.60	13.97	30.0	30.00	6.99	12.82	30.0	30.00	6.99	12.82	30.0	30.00	
84.54	415.23	218.57	295.21	4403.00	1.27	0.020	0.848751	59.7	SI	45.5	207.8	182.1	11.78	3.56	3.60	15.35	147.60	102.1	7.42	6.54	3.60	12.85	30.0	30.00	6.05	11.80	30.0	30.00	6.05	11.80	30.0	30.00	
84.54	396.33	230.20	273.25	370.91	1.27	0.020	0.848751	59.7	SI	45.5	199.2	153.7	11.17	3.09	3.60	14.26	136.62	91.2	6.82	6.02	3.60	7.95	30.0	30.00	4.88	10.38	30.0	30.00	4.88	10.38	30.0	30.00	
87.30	276.57	163.33	163.91	326.21	1.27	0.020	0.848751	59.7	SI	45.5	138.3	92.8	6.75	2.49	3.60	9.23	81.96	36.5	2.65	5.30	3.60	7.05	30.0	30.00	5.00	9.61	30.0	30.00	5.00	9.61	30.0	30.00	
87.30	227.59	167.23	149.88	302.15	1.27	0.020	0.848751	59.7	SI	45.5	135.8	90.3	6.56	2.55	3.60	9.12	74.94	29.5	2.14	4.90	3.60	4.25	30.0	30.00	2.65	8.33	30.0	30.00	2.65	8.33	30.0	30.00	
90.06	160.42	63.19	8.02	281.73	1.27	0.020	0.848751	59.7	SI	45.5	80.2	34.7	2.52	1.35	3.60	3.88	4.01	-55.7	0.00	4.25	3.60	4.18	30.0	30.00	3.12	6.15	30.0	30.00	3.12	6.15	30.0	30.00	
90.06	159.24	67.63	8.83	256.07	1.27	0.020	0.848751	59.7	SI	45.5	79.6	34.1	2.48	1.59	3.60	4.07	3.42	-56.3	0.00	4.18	3.60	3.97	30.0	30.00	3.86	7.77	30.0	30.00	3.86	7.77	30.0	30.00	
92.82	159.24	67.63	8.83	256.07	1.27	0.020	0.848751	59.7	SI	45.5	131.0	85.5	6.21	1.97	3.60	8.18	58.40	-1.3	0.00	3.97	3.60	3.80	30.0	30.00	2.84	6.92	30.0	30.00	2.84	6.92	30.0	30.00	
92.82	120.41	68.17	55.42	217.47	1.27	0.020	0.848751	59.7	SI	45.5	132.2	86.8	6.31	1.45	3.60	7.75	32.71	-27.0	0.00	3.53	3.60	10.04	30.0	30.00	3.42	6.96	30.0	30.00	3.42	6.96	30.0	30.00	
95.66	1306.53	107.05	265.39	4218.80	1.27	0.020	0.848751	59.7	SI	45.5	194.8	148.3	10.85	1.74	3.60	12.59	134.79	89.3	6.49	3.55	3.60	4.38	30.0	30.00	2.09	5.37	30.0	30.00	2.09	5.37	30.0	30.00	
95.66	1306.53	107.05	265.39	4218.80	1.27	0.020	0.848751	59.7	SI	45.5	194.2	148.7	10.81	1.07	3.60	11.87	88.02	22.5	1.84	2.74	3.60	20.80	30.0	30.00	1.81	3.97	30.0	30.00	1.81	3.97	30.0	30.00	
98.46	1306.53	107.05	265.39	4218.80	1.27	0.020	0.821939	44.7	SI	31.7	260.1	228.4	23.24	1.61	3.60	24.86	195.16	163.5	16.63	5.14	2.44	3.60	7.58	30.0	30.00	0.22	2.44	30.0	30.00	0.22	2.44	30.0	30.00
101.10	1306.53	107.05	265.39	4218.80	1.27	0.020	0.821939	44.7	SI	31.7	260.1	228.4	23.24	1.61	3.60	24.86	195.16	163.5	16.63	5.14	2.44	3.60	7.58	30.0	30.00	0.22	2.44	30.0	30.00	0.22	2.44	30.0	30.00
101.10	654.69	20.94	342.43	365.64	1.27	0.020	0.821939	44.7	SI	31.7	327.3	295.7	30.08	0.48	3.60	30.56	256.21	224.5	22.85	1.49	3.60	24.34	30.0	30.00	0.48	1.49	30.0	30.00	0.48	1.49	30.0	30.00	

CALCULO DE CORTANTE-TORSOR SEG

Fibra: Fibra lateral del alma

Características generales de la sección:

Coefficiente de minoración γ_c 1.5

Dimensionamiento A_{trans} .

Dimensionamiento A_{long}

Vu2=Vcu+Vsu										$V_{ed}=[0.1 \xi (100 \rho_l f_{td})^{1/3} 0.15 \sigma'_{ed}] b_y d \beta$							$V_{ed}=x \operatorname{ctg} \theta A_w f_{td}$					Tu2=2 Ae $A_{ys} f_{td} \operatorname{ctg} \theta$					Tu3=2 Ae $A_{ys} f_{td} \operatorname{ctg} \theta$							
Hipótesis 1					Hipótesis 2					Hipótesis 1												Hipótesis 2					Hipótesis 1				Hipótesis 2			
x(m)	Vmax	Tconc	Vcon	Tmax	ξ	ρ_l	β	Vu2 sin	Vcu (sl,no)	Vcu (tn)	Vrd	Vu2-Vcu hip1	$A_{s\text{ort}}$ (cm2/m)	$A_{s\text{tor}}$ (cm2/m)	$A_{s\text{min}}$ (cm2/m)	$A_{s\text{total}}$ (cm2/m)	Vrd	Vu2-Vcu hip2	$A_{s\text{ort}}$ (cm2/m)	$A_{s\text{tor}}$ (cm2/m)	$A_{s\text{min}}$ (cm2/m)	$A_{s\text{total}}$ (cm2/m)	St máx (cm) hip.1	St máx (cm) hip.2	$A_{s\text{long}}$ (cm2/m)	$A_{s\text{long}}$ (cm2/m)	St máx (cm) hip.1	St máx (cm) hip.2	$A_{s\text{long}}$ (cm2/m)	$A_{s\text{long}}$ (cm2/m)				
0.00	698.53	411.89	848.65	52.67	1.27	0.020	0.821939	44.7	SI	31.7	344.3	312.6	31.87	0.27	3.60	32.08	273.32	241.7	24.60	1.20	3.60	25.79	30.0	30.00	0.27	1.20	30.0	30.00	0.27	1.20	30.0	30.00		
2.74	843.17	8.95	73.32	98.41	1.27	0.020	0.821939	44.7	SI	31.7	271.6	239.9	24.41	0.19	3.60	24.60	86.66	55.0	5.59	2.19	3.60	7.79	30.0	30.00	0.19	2.19	30.0	30.00	0.19	2.19	30.0	30.00		
2.74	842.50	82.48	420.16	148.58	1.27	0.020	0.821939	44.7	SI	31.7	271.3	239.6	24.38	1.19	3.60	25.57	210.08	178.4	18.15	3.38	3.60	21.53	30.0	30.00	1.19	3.38	30.0	30.00	1.19	3.38	30.0	30.00		
5.48	404.45	161.78	297.36	145.97	1.27	0.020	0.848751	59.7	SI	45.5	202.2	158.6	11.39	0.84	3.60	12.23	148.68	103.2	7.50	2.37	3.60	9.87	30.0	30.00	1.65	4.64	30.0	30.00	1.65	4.64	30.0	30.00		
5.48	401.82	162.90	294.87	137.11	1.27	0.020	0.848751	59.7	SI	45.5	200.9	155.4	11.30	1.34	3.60	12.63	147.44	102.0	7.41	3.04	3.60	10.45	30.0	30.00	2.62	5.95	30.0	30.00	2.62	5.95	30.0	30.00		
8.22	327.10	171.45	161.36	187.81	1.27	0.020	0.848751	59.7	SI	45.5	135.5	90.1	6.55	1.16	3.60	7.71	25.68	-34.1	0.00	3.05	3.60	3.60	30.0	30.00	2.27	5.98	30.0	30.00	2.27	5.98	30.0	30.00		
8.22	265.36	194.20	161.21	208.28	1.27	0.020	0.848751	59.7	SI	45.5	132.7	87.2	6.34	1.53	3.60	7.87	80.61	35.1	2.55	3.38	3.60	5.93	30.0	30.00	3.00	6.63	30.0	30.00	3.00	6.63	30.0	30.00		
10.96	167.44	353.78	25.74	224.37	1.27	0.020	0.848751	59.7	SI	45.5	83.2	38.2	2.78	1.36	3.60	4.14	12.87	-46.9	0.00	3.64	3.60	3.64	30.0	30.00	2.67	7.14	30.0	30.00	2.67	7.14	30.0	30.00		
10.96	173.07	70.29	203.04	231.96	1.27	0.020	0.848751	59.7	SI	45.5	85.5	40.1	2.91	1.29	3.60	4.20	10.15	-49.6	0.00	3.77	3.60	3.77	30.0	30.00	2.52	7.38	30.0	30.00	2.52	7.38	30.0	30.00		
13.70	287.63	213.16	79.42	270.89	1.27	0.020	0.848751	59.7	SI	45.5	143.6	98.1	7.13	2.14	3.60	9.27	89.71	44.2	3.22	4.40	3.60	7.61	30.0	30.00	4.19	8.62	30.0	30.00	4.19	8.62	30.0	30.00		
13.70	295.09	139.95	161.84	303.79	1.27	0.020	0.848751	59.7	SI	45.5	147.5	102.1	7.42	2.27	3.60	9.69	95.82	50.3	3.66	4.93	3.60	8.59	30.0	30.00	4.45	9.67	30.0	30.00	4.45	9.67	30.0	30.00		
16.44	1432.43	163.62	308.64	335.33	1.27	0.020	0.848751	59.7	SI	45.5	211.2	165.7	12.05	2.68	3.60	14.71	153.32	107.6	7.84	5.44	3.60	13.28	30.0	30.00	5.21	10.67	30.0	30.00	5.21	10.67	30.0	30.00		
16.44	1442.36	168.05	303.74	376.96	1.27	0.020	0.848751	59.7	SI	45.5	221.2	175.7	12.77	3.22	3.60	15.99	165.37	119.9	8.71	6.12	3.60	14.83	30.0	30.00	6.30	11.99	30.0	30.00	6.30	11.99	30.0	30.00		
19.18	574.73	191.93	431.61	405.21	1.27	0.020	0.848751	59.7	SI	45.5	287.4	247.9	17.58	3.56	3.60	21.14	225.90	180.4	13.11	8.58	3.60	19.69	30.0	30.00	6.98	12.99	30.0	30.00	6.98	12.99	30.0	30.00		
19.18	569.77	224.68	443.29	449.74	1.27	0.020	0.848751	59.7	SI	45.5	297.9	252.4	18.35	3.64	3.60	21.99	241.64	196.2	14.26	7.30	3.60	21.56	30.0	30.00	7.14	14.31	30.0	30.00	7.14	14.31	30.0	30.00		
21.92	733.16	345.08	408.59	547.66	1.27	0.020	0.848751	59.7	SI	45.5	366.6	321.1	23.34	3.98	3.60	27.32	304.78	259.3	18.85	7.72	3.60	26.57	30.0	30.00	7.81	15.74	30.0	30.00	7.81	15.74	30.0	30.00		
21.92	755.36	329.25	399.25	618.05	1.27	0.020	0.848751	59.7	SI	45.5	376.7	331.2	24.07	3.97	3.60	28.04	313.13	267.7	19.45	8.41	3.60	27.66	20.0	30.00	7.78	16.48	30.0	30.00	7.78	16.48	30.0	30.00		
24.66	995.79	448.67	476.78	647.20	1.27	0.020	0.848751	79.6	SI	60.6	447.9	387.3	28.15	4.35	4.80	32.49	378.89	318.3	23.13	8.88	4.80	32.01	30.0	30.00	8.52	17.41	30.0	30.00	8.52	17.41	30.0	30.00		
24.66	916.71	431.70	477.82	635.35	1.27	0.020	0.848751	79.6	SI	60.6	459.9	399.2	29.02	6.20	4.80	35.21	388.91	328.3	23.86	9.36	4.80	33.22	30.0	30.00	12.14	18.35	30.0	30.00	12.14	18.35	30.0	30.00		
27.40	1008.64	335.02	509.69	611.41	1.27	0.020	0.848751	79.6	SI	60.6	537.5	472.8	34.36	6.41	4.80	40.77	454.94	393.3	28.66	9.30	4.80	38.58	20.0	30.00	12.57	19.45	30.0	30.00	12.57	19.45	30.0	30.00		

Dimensionamiento A_{long}

Vu2=Vcu+Vsu										$V_{cu}=0.1 \cdot \xi \cdot (100 \cdot f_{ck})^{1/2} \cdot 0.15 \cdot \sigma'_{ed} / b_d \cdot d \cdot \beta$						$V_{su}=z \cdot c_{ig0} \cdot A_s \cdot f_{td}$						Tu2=2 Ae As $f_{ctd} c_{ig0}$				Tu3=2 Ae As $f_{ctd} c_{ig0}$			
Hipótesis 1			Hipótesis 2			Hipótesis 1																Hipótesis 2				Hipótesis 1		Hipótesis 2	
x(m)	Vmax	Tconc	Vcon	Tmax	ξ	ρ_l	β	Vu2 sin	Vcu (sl/m)	Vcu (tn)	Vrd	Vu2-Vcu h1	A _{esort} (cm2/m)	A _{esort} (cm2/m)	A _{emin} (cm2/m)	A _{emot} (cm2/m)	Vrd	Vu2-Vcu h2	A _{esort} (cm2/m)	A _{esort} (cm2/m)	A _{emin} (cm2/m)	A _{emot} (cm2/m)	St máx (cm) h1p.1	St máx (cm) h1p.2	A _{long} (cm2/m)	A _{long} (cm2/m)			
27.40	3068.08	3100.45	4727.17	4687.82	1.27	0.020	0.848751	79.6	SI	60.6	529.5	288.9	35.54	0.05	4.80	35.56	383.58	303.0	22.02	11.16	4.80	33.18	20.0	30.00	0.06	21.88			
30.45	336.49	316.44	4627.74	4664.68	1.27	0.020	0.848751	79.6	SI	60.6	468.2	407.6	29.63	0.27	4.80	29.89	313.87	253.2	18.41	10.79	4.80	29.20	30.0	30.00	0.52	21.55			
30.45	3638.42	3669.91	4579.92	4648.72	1.27	0.020	0.848751	79.6	SI	60.6	468.2	408.8	29.70	1.57	4.80	31.27	289.99	229.4	16.67	10.53	4.80	27.20	30.0	30.00	3.09	20.84			
33.60	3781.81	3720.00	4473.01	4683.62	1.27	0.020	0.848751	59.7	SI	45.5	390.9	345.4	25.11	1.33	3.60	28.44	237.50	192.0	13.96	11.10	3.60	25.05	20.0	30.00	2.61	21.75			
33.60	3789.23	3411.81	4417.93	4639.43	1.27	0.020	0.848751	59.7	SI	45.5	394.6	349.1	25.38	2.29	3.60	27.67	208.63	155.5	11.88	10.38	3.60	22.26	20.0	30.00	4.49	20.35			
36.89	3820.97	3308.81	4291.20	4662.40	1.27	0.020	0.848751	59.7	SI	45.5	310.5	265.0	19.26	2.12	3.60	21.38	145.60	100.1	7.28	11.08	3.60	18.35	30.0	30.00	4.18	21.71			
36.89	4629.29	3990.79	4121.46	4612.46	1.27	0.020	0.848751	59.7	SI	45.5	314.6	281.2	19.56	3.24	3.60	22.81	151.00	105.5	7.67	9.94	3.60	17.61	30.0	30.00	6.36	19.49			
40.28	3486.48	3102.25	4172.86	4650.09	1.27	0.020	0.848751	59.7	SI	45.5	233.2	187.8	13.65	2.96	3.60	16.60	86.44	41.0	2.98	10.55	3.60	13.53	30.0	30.00	5.80	20.68			
40.28	3470.32	3000.60	4056.33	4604.67	1.27	0.020	0.848751	59.7	SI	45.5	235.2	189.7	13.79	3.30	3.60	17.09	152.87	107.2	7.79	9.17	3.60	16.96	30.0	30.00	6.48	17.96			
43.67	3512.84	3070.75	4056.33	4679.55	1.27	0.020	0.848751	59.7	SI	45.5	156.3	110.8	8.05	2.92	3.60	10.97	29.43	-30.3	0.00	9.41	3.60	9.41	30.0	30.00	5.72	18.44			
43.67	3512.84	3070.75	4056.33	4679.55	1.27	0.020	0.848751	59.7	SI	45.5	157.0	112.4	8.17	3.00	3.60	11.17	115.02	69.6	5.05	9.30	3.60	14.38	30.0	30.00	5.87	18.24			
47.06	3635.88	3051.16	4056.33	4679.55	1.27	0.020	0.848751	59.7	SI	45.5	81.9	36.5	2.65	2.47	3.60	5.12	45.91	-13.8	0.00	8.73	3.60	9.73	30.0	30.00	4.84	17.10			
47.06	3635.88	3051.16	4056.33	4679.55	1.27	0.020	0.848751	59.7	SI	45.5	83.2	37.7	2.74	2.60	3.60	5.34	41.60	-18.1	0.00	9.23	3.60	9.23	30.0	30.00	5.09	18.09			
50.45	3106.34	3159.69	4653.08	4659.98	1.27	0.020	0.848751	59.7	SI	45.5	134.4	69.0	6.47	0.51	3.60	6.98	29.30	-30.0	0.00	8.58	3.60	8.58	30.0	30.00	1.00	16.82			
50.45	3268.88	3315.66	4569.39	4628.47	1.27	0.020	0.848751	59.7	SI	45.5	135.2	69.7	6.52	2.02	3.60	8.54	35.70	-24.0	0.00	8.67	3.60	8.67	30.0	30.00	3.95	16.99			
50.45	2720.32	3124.67	4714.08	4633.87	1.27	0.020	0.848751	59.7	SI	45.5	212.9	167.4	12.17	1.84	3.60	14.01	104.78	59.3	4.31	7.91	3.60	12.22	30.0	30.00	3.81	15.51			
53.64	3223.73	3119.53	4607.52	4687.42	1.27	0.020	0.848751	59.7	SI	45.5	223.3	177.9	12.92	2.66	3.60	15.99	122.58	77.1	5.60	7.75	3.60	13.36	30.0	30.00	5.22	15.20			
53.64	3446.58	3164.01	4545.16	4677.57	1.27	0.020	0.848751	59.7	SI	45.5	223.3	175.8	12.92	2.66	3.60	15.99	122.58	77.1	5.60	7.75	3.60	13.36	30.0	30.00	5.22	15.20			
56.73	3008.96	3155.55	4787.91	4627.35	1.27	0.020	0.848751	59.7	SI	45.5	304.5	259.0	18.82	2.46	3.60	21.29	189.50	144.0	10.47	6.93	3.60	17.40	30.0	30.00	4.83	13.59			
56.73	3008.96	3155.55	4787.91	4627.35	1.27	0.020	0.848751	59.7	SI	45.5	319.0	273.8	19.88	1.90	3.60	21.78	215.41	169.9	12.35	7.08	3.60	18.43	30.0	30.00	3.73	13.88			
60.02	3003.72	3147.81	4600.68	4688.04	1.27	0.020	0.848751	59.7	SI	45.5	401.9	356.4	25.90	1.81	3.60	27.72	180.34	134.9	9.80	6.31	3.60	18.11	20.0	30.00	3.58	12.36			
60.02	3003.72	3147.81	4600.68	4688.04	1.27	0.020	0.848751	59.7	SI	45.5	406.2	373.7	27.16	1.25	3.60	28.41	209.55	164.1	11.93	7.18	3.60	19.09	20.0	30.00	2.45	14.04			
63.04	3012.20	3070.49	4683.58	4644.42	1.27	0.020	0.848751	79.6	SI	60.6	519.1	445.5	32.38	0.99	4.80	33.36	341.29	280.7	20.40	7.25	4.80	27.85	20.0	30.00	1.93	14.20			
63.04	3044.79	3123.22	4678.62	4692.15	1.27	0.020	0.848751	79.6	SI	60.6	522.4	481.8	33.56	0.89	4.80	34.25	339.31	278.7	20.25	7.99	4.80	28.24	20.0	30.00	1.35	15.66			
67.40	1223.31	944.47	4628.64	4514.87	1.27	0.020	0.848751	79.6	SI	60.6	612.7	552.0	40.12	1.05	4.80	41.17	414.32	353.7	25.71	8.36	4.80	34.06	20.0	30.00	2.05	16.38			

Dimensionamiento A_{long}

Vu2=Vcu+Vsu										Vsu=0.1 ξ (100 pt f _{yk}) ^{1/2} ·0.15 σ _{yk} D _g d β										Vsu=2 ctgθ A _{sv} f _{yk}										Tu2=2 Ae A _{sv} f _{yk} ctgθ										Tu3=2 Ae A _{sv} f _{yk} ctgθ			
Hipótesis 1					Hipótesis 2					Hipótesis 1										Hipótesis 2										Hipótesis 1				Hipótesis 2									
x(m)	Vmax	Tcomc	Vcon	Tmax	ξ	pl	β	Vu2 sin	Vcu (sl,no)	Vcu (tn)	Vrd	Vu2-Vcu Hp1	A _{svort} (cm2/m)	A _{svtor} (cm2/m)	A _{svtotal} (cm2/m)	Vrd	Vu2-Vcu Hp2	A _{svort} (cm2/m)	A _{svtor} (cm2/m)	A _{svmin} (cm2/m)	A _{svtotal} (cm2/m)	St máx (cm) hip.1	St máx (cm) hip.2	A _{svlong} (cm2/m)	A _{svtotal} (cm2/m)																		
67.40	1139.76	1118.00	1730.43	1688.55	1.27	0.020	0.848751	79.8	SI	80.8	589.9	509.2	37.07	7.82	4.80	48.93	385.21	404.6	22.12	11.16	4.80	33.31	20.0	30.00	4.76	21.91																	
70.46	1077.43	1055.78	1628.43	1621.19	1.27	0.020	0.848751	79.8	SI	80.8	488.7	428.1	31.11	2.25	4.80	33.36	314.23	253.6	18.43	10.08	4.80	28.52	30.0	30.00	4.41	19.77																	
73.50	1066.18	1044.53	1600.75	1588.14	1.27	0.020	0.848751	79.8	SI	80.8	482.6	420.2	30.67	0.99	4.80	31.66	300.38	239.7	17.42	9.56	4.80	26.99	30.0	30.00	1.95	18.75																	
76.54	1007.11	985.46	1529.69	1517.31	1.27	0.020	0.848751	59.7	SI	65.5	403.8	358.1	26.02	1.23	3.60	27.26	264.99	219.5	15.95	10.02	3.60	25.98	20.0	30.00	2.41	19.64																	
79.58	1006.37	984.82	1490.14	1501.64	1.27	0.020	0.848751	59.7	SI	65.5	403.2	357.7	26.00	0.42	3.60	26.42	230.07	184.6	13.42	9.12	3.60	22.53	20.0	30.00	0.82	17.87																	
82.62	1008.00	987.25	1553.63	1560.43	1.27	0.020	0.848751	59.7	SI	65.5	334.0	258.5	20.97	0.69	3.60	21.66	176.96	131.5	9.56	9.68	3.60	19.24	30.0	30.00	1.35	18.98																	
85.66	1071.43	1050.22	1608.73	1624.93	1.27	0.020	0.848751	59.7	SI	65.5	335.7	290.2	21.09	0.20	3.60	21.29	184.86	139.4	10.13	8.52	3.60	18.56	30.0	30.00	0.39	16.70																	
88.70	1036.81	1015.04	1643.33	1658.27	1.27	0.020	0.848751	59.7	SI	65.5	268.4	222.9	16.20	0.05	3.60	16.25	132.17	86.7	6.30	9.06	3.60	15.36	30.0	30.00	1.00	17.78																	
91.74	1040.73	1018.96	1644.73	1679.24	1.27	0.020	0.848751	59.7	SI	65.5	270.4	224.9	16.35	0.35	3.60	16.70	147.36	101.9	7.40	7.78	3.60	15.18	30.0	30.00	0.89	15.25																	
94.78	1008.72	986.95	1689.42	1606.83	1.27	0.020	0.848751	59.7	SI	65.5	204.9	159.4	11.58	0.08	3.60	11.65	94.21	48.7	3.54	8.23	3.60	11.77	30.0	30.00	0.13	18.13																	
97.82	1413.66	1391.40	1922.60	1818.07	1.27	0.020	0.848751	59.7	SI	65.5	206.8	161.4	11.73	1.16	3.60	12.89	96.30	50.8	3.69	6.79	3.60	10.48	30.0	30.00	2.27	13.30																	
100.86	1286.62	1264.36	1824.44	1641.66	1.27	0.020	0.848751	59.7	SI	65.5	143.3	97.8	7.11	0.80	3.60	7.91	41.22	-18.5	0.00	7.17	3.60	7.17	30.0	30.00	1.57	14.05																	
103.90	1290.31	1268.05	1967.74	1644.97	1.27	0.020	0.848751	59.7	SI	65.5	145.2	99.7	7.24	1.06	3.60	8.30	49.37	-10.4	0.00	5.60	3.60	5.60	30.0	30.00	2.07	10.98																	
106.94	1171.16	1149.24	1825.65	1627.78	1.27	0.020	0.848751	59.7	SI	65.5	85.6	40.1	2.92	0.61	3.60	3.60	6.33	-53.4	0.00	5.89	3.60	5.89	30.0	30.00	1.20	11.54																	
109.98	1179.95	1157.03	1905.20	1697.78	1.27	0.020	0.848751	59.7	SI	65.5	90.0	44.5	3.23	1.14	3.60	4.38	48.10	-11.6	0.00	4.83	3.60	4.83	30.0	30.00	2.24	9.47																	
113.02	1258.78	1236.86	1957.62	1687.50	1.27	0.020	0.848751	59.7	SI	65.5	134.9	89.4	6.50	0.95	3.60	7.45	78.81	33.3	2.42	4.66	3.60	7.09	30.0	30.00	1.88	9.14																	
116.06	1274.55	1252.63	1980.08	1722.86	1.27	0.020	0.848751	59.7	SI	65.5	137.3	91.8	6.67	0.01	3.60	6.68	4.00	-55.7	0.00	4.43	3.60	4.43	30.0	30.00	0.01	8.68																	
119.10	1201.81	1179.89	1944.14	1695.98	1.27	0.020	0.848751	59.7	SI	65.5	200.8	155.3	11.29	0.19	3.60	11.47	127.07	81.6	5.93	3.83	3.60	9.76	30.0	30.00	0.37	7.51																	
122.14	1079.44	1057.52	1833.94	1624.73	1.27	0.020	0.848751	59.7	SI	65.5	203.9	158.4	11.52	0.17	3.60	11.69	66.67	21.2	1.54	3.81	3.60	5.35	30.0	30.00	0.34	7.47																	
125.18	1040.48	1018.56	1806.56	1605.36	1.27	0.020	0.848751	59.7	SI	65.5	202.2	154.8	16.34	0.06	3.60	16.39	123.28	77.8	5.65	3.01	3.60	6.66	30.0	30.00	0.11	5.90																	
128.22	1046.76	1024.84	1800.94	1606.07	1.27	0.020	0.848751	59.7	SI	65.5	274.4	228.9	16.64	0.26	3.60	16.90	150.47	105.0	7.63	3.02	3.60	10.65	30.0	30.00	0.51	5.92																	
131.26	1087.85	1065.93	1811.28	1634.11	1.27	0.020	0.821939	44.7	SI	31.7	343.9	312.2	31.77	0.25	3.80	32.02	175.95	144.3	14.68	3.05	3.60	17.73	30.0	30.00	0.25	3.05																	
134.30	1099.40	1077.48	1858.08	1623.88	1.27	0.020	0.821939	44.7	SI	31.7	349.7	318.0	32.36	0.43	3.80	32.79	229.04	197.4	20.08	2.82	3.60	22.90	30.0	30.00	0.43	2.82																	
137.34	1045.08	1023.15	1848.21	1722.41	1.27	0.020	0.821939	44.7	SI	31.7	422.5	390.9	39.77	0.49	3.80	40.26	274.11	242.4	24.67	1.65	3.60	26.31	20.0	30.00	0.49	1.65																	

FIBRA 4 INTERACCIÓN CORTANTE TORSOR

FIBRA 4 INTERACCIÓN CORTANTE TORSOR																					
Barra	Nudo	X	Hipótesis 1		Hipótesis 2		CÁLCULO Vrd(tn)							CÁLCULO Trd(tn)				factor colaboración de fibra	Interacción hlp 1	Interacción hlp 2	
			Vmax	Tconc	Vcon	Tmax	K	Fcd(TN/M2)	COEF F1cd	bo	d	Cotg θ	Vrd(tn)	α	Ae	he	Trd(tn)				
V3	13	13	33.50	1150.15	0.00	785.26	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.83	0.64
	13	14	36.89	978.78	0.00	644.79	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.80	0.52
	14	14	36.89	951.43	0.00	659.31	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.77	0.54
	14	15	40.28	786.34	0.00	522.37	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.84	0.42
	15	15	40.28	756.13	0.00	502.74	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.81	0.41
	15	16	43.67	596.79	0.00	270.92	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.49	0.22
	16	16	43.67	579.28	0.00	327.54	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.47	0.27
	16	17	47.06	424.89	0.00	200.45	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.35	0.16
	17	17	47.06	408.57	0.00	191.32	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.33	0.16
	17	18	50.45	260.62	0.00	60.21	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.21	0.05
	18	18	50.45	259.90	0.00	49.68	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.21	0.04
	18	19	53.84	161.69	0.00	85.67	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.13	0.07
	19	19	53.84	158.42	0.00	89.01	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.13	0.07
	19	20	57.23	303.00	0.00	219.61	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.25	0.18
	20	20	57.23	296.66	0.00	23.43	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.24	0.02
	20	21	60.62	446.65	0.00	350.96	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.36	0.29
	21	21	60.62	440.92	0.00	156.22	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.36	0.13
	21	22	64.01	595.64	0.00	402.52	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.48	0.33
	22	22	64.01	583.05	0.00	284.90	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.47	0.22
	22	23	67.40	742.76	0.00	385.32	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.60	0.31
	23	23	67.40	729.22	0.00	378.39	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.59	0.31
	23	24	70.45	877.66	0.00	478.62	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.71	0.39
	24	24	70.45	867.90	0.00	521.49	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.71	0.42
	24	10025	73.50	1022.13	0.00	618.60	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.83	0.50

FIBRA 4 INTERACCIÓN CORTANTE TORSOR

	Barra	Nudo	X	Hipótesis 1		Hipótesis 2		CÁLCULO Vrd(tn)							CÁLCULO Trd(tn)				factor colaboración de fibra	Interacción hlp 1	Interacción hlp 2
				Vmax	Tconc	Vcon	Tmax	K	Fcd(TN/M2)	COEF F1cd	bo	d	Cotg θ	Vrd(tn)	α	Ae	he	Trd(tn)			
V4	25	25	73.50	1004.73	0.00	882.80	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.82	0.72
	25	26	76.26	864.20	0.00	756.68	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.70	0.61
	26	26	76.26	843.93	0.00	736.64	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.69	0.60
	26	27	79.02	707.83	0.00	615.27	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.58	0.50
	27	27	79.02	690.81	0.00	555.97	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.58	0.45
	27	28	81.78	559.46	0.00	438.49	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.45	0.36
	28	28	81.78	541.78	0.00	408.64	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.44	0.33
	28	29	84.54	415.23	0.00	295.21	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.34	0.24
	29	29	84.54	398.33	0.00	273.25	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.32	0.22
	29	30	87.30	276.67	0.00	163.91	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.22	0.13
	30	30	87.30	271.58	0.00	149.88	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.22	0.12
	30	31	90.06	160.42	0.00	8.02	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.13	0.01
	31	31	90.06	159.24	0.00	6.85	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.13	0.01
	31	32	92.82	261.97	0.00	116.81	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.21	0.09
	32	32	92.82	264.48	0.00	65.42	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.21	0.05
	32	33	95.58	389.55	0.00	269.59	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.32	0.22
	33	33	95.58	388.32	0.00	136.03	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.32	0.11
	33	34	98.34	520.19	0.00	390.32	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.42	0.32
	34	34	98.34	515.77	0.00	164.43	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.42	0.13
	34	35	101.10	654.69	0.00	512.43	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.53	0.42

FIBRA 4 INTERACCIÓN CORTANTE TORSOR																					
Barra	Nudo	X	Hipótesis 1		Hipótesis 2		CÁLCULO Vrd(tn)							CÁLCULO Trd(tn)				factor colaboración de fibra	Interacción hip 1	Interacción hip 2	
			Vmax	Tconc	Vcon	Tmax	K	Fcd(TN/M2)	COEF F1cd	bo	d	Colg θ	Vrd(tn)	α	Aθ	he	Trd(tn)				
V2	101	101	0.00	688.53	0.00	548.85	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.58	0.44
	101	102	2.74	543.17	0.00	173.32	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.44	0.14
	102	102	2.74	542.50	0.00	420.15	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.44	0.34
	102	103	5.48	404.45	0.00	297.36	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.33	0.24
	103	103	5.48	401.82	0.00	294.87	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.33	0.24
	103	104	8.22	271.05	0.00	51.36	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.22	0.04
	104	104	8.22	265.36	0.00	161.21	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.22	0.13
	104	105	10.96	167.44	0.00	25.74	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.14	0.02
	105	105	10.96	171.07	0.00	20.30	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.14	0.02
	105	106	13.70	287.13	0.00	179.42	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.23	0.15
	106	106	13.70	295.09	0.00	191.64	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.24	0.16
	106	107	16.44	422.43	0.00	306.64	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.34	0.25
	107	107	16.44	442.36	0.00	330.74	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.36	0.27
	107	108	19.18	574.73	0.00	451.81	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.47	0.37
	108	108	19.18	595.77	0.00	483.28	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.48	0.39
	108	109	21.92	733.16	0.00	609.56	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.60	0.50
	109	109	21.92	753.36	0.00	626.25	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.61	0.51
	109	110	24.66	695.79	0.00	757.78	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.73	0.62
110	110	24.66	619.71	0.00	777.82	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.75	0.63	
110	10111	27.40	1066.64	0.00	909.89	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.87	0.74	

FIBRA 4 INTERACCIÓN CORTANTE TORSOR																					
Barra	Nudo	X	Hipótesis 1		Hipótesis 2		CÁLCULO Vrd(tn)							CÁLCULO Trd(tn)				factor colaboración de fibra	Interacción hip 1	Interacción hip 2	
			Vmax	Tconc	Vcon	Tmax	K	Fcd(TN/M2)	COEF F1cd	bo	d	Cotg θ	Vrd(tn)	α	Ae	he	Trd(tn)				
V3	111	111	27.40	1098.98	0.00	727.17	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.89	0.59
	111	112	30.45	1836.49	0.00	627.74	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.76	0.51
	112	112	30.45	938.47	0.00	579.97	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.76	0.47
	112	113	33.50	781.81	0.00	475.01	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.64	0.39
	113	113	33.50	789.23	0.00	417.93	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.64	0.34
	113	114	36.89	620.97	0.00	291.20	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.50	0.24
	114	114	36.89	629.29	0.00	302.00	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.51	0.25
	114	115	40.28	466.46	0.00	172.88	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.38	0.14
	115	115	40.28	470.32	0.00	305.35	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.38	0.25
	115	116	43.67	312.54	0.00	58.86	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.25	0.05
	116	116	43.67	315.64	0.00	230.05	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.26	0.19
	116	117	47.06	163.88	0.00	91.83	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.13	0.07
	117	117	47.06	166.34	0.00	83.20	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.14	0.07
	117	118	50.45	268.69	0.00	59.39	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.22	0.05
	118	118	50.45	270.32	0.00	71.40	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.22	0.06
	118	119	53.84	425.73	0.00	209.52	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.35	0.17
	119	119	53.84	446.58	0.00	245.16	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.36	0.20
	119	120	57.23	606.97	0.00	378.99	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.49	0.31
	120	120	57.23	638.06	0.00	430.82	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.52	0.35
	120	121	60.62	803.72	0.00	360.68	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.65	0.29
	121	121	60.62	838.38	0.00	419.10	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.68	0.34
	121	122	64.01	1012.20	0.00	682.58	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.82	0.55
	122	122	64.01	1044.79	0.00	678.62	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.85	0.55
	122	10123	67.40	1225.31	0.00	828.64	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	1.00	0.67

FIBRA 4 INTERACCIÓN CORTANTE TORSOR																					
Barra	Nudo	X	Hipótesis 1		Hipótesis 2		CÁLCULO Vrd(tn)							CÁLCULO Trd(tn)				factor colaboración de fibra	Interacción hip 1	Interacción hip 2	
			Vmax	Tconc	Vcon	Tmax	K	Fcd(TN/M2)	COEF F1cd	bo	d	Cotg θ	Vrd(tn)	α	Ae	he	Trd(tn)				
V5	123	123	67.40	1139.76	0.00	730.43	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.93	0.59
	123	124	70.45	977.43	0.00	628.45	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.79	0.51
	124	124	70.45	965.18	0.00	600.75	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.78	0.49
	124	125	73.50	807.11	0.00	529.99	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.66	0.43
	125	125	73.50	806.37	0.00	460.14	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.66	0.37
	125	126	76.26	666.00	0.00	353.93	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.54	0.29
	126	126	76.26	671.43	0.00	369.73	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.55	0.30
	126	127	79.02	536.81	0.00	264.33	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.44	0.21
	127	127	79.02	540.73	0.00	294.71	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.44	0.24
	127	128	81.78	409.72	0.00	188.42	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.33	0.15
	128	128	81.78	413.66	0.00	192.60	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.34	0.16
	128	129	84.54	266.62	0.00	82.44	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.23	0.07
	129	129	84.54	290.31	0.00	98.74	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.24	0.08
	129	130	87.30	171.16	0.00	12.65	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.14	0.01
	130	130	87.30	179.95	0.00	98.20	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.15	0.08
	130	131	90.06	269.78	0.00	157.62	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.22	0.13
	131	131	90.06	274.55	0.00	8.01	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.22	0.01
	131	132	92.82	401.51	0.00	254.14	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.33	0.21
	132	132	92.82	407.84	0.00	133.34	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.33	0.11
	132	133	95.58	540.48	0.00	246.56	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.44	0.20
	133	133	95.58	548.76	0.00	300.94	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.45	0.24
	133	134	98.34	667.85	0.00	351.90	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.56	0.29
	134	134	98.34	669.40	0.00	458.08	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.57	0.37
	134	135	101.10	845.08	0.00	548.21	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.69	0.45

ARMADO CORTANTE - TORSOR																	ARMAD. TOTAL TRANSV.		ARMAD. TORSIÓN LONG	
Barra	Nudo	X	Hipótesis 1		Hipótesis 2		ARMADURA POR CORTANTE				HIP1	HIP2	ARMADURA POR TORSOR		HIP1	HIP2	HIP1	HIP2	HIP1	HIP2
			Vmax	Tconc	Vcon	Tmax	d	Cotg θ	factor colaboración de fibra	A (cm2/m)	A (cm2/m)	Ae(m2)	Cotg q	A (cm2/m)	A (cm2/m)	A (cm2/m)	A (cm2/m)	A (cm2/m)	A (cm2/m)	
V1	1	1	0.00	778.9	0.0	355.4	0.0	2.7	1.0	0.31	24.6	11.2	5.5	1.0	0.0	0.0	24.6	11.2	0.0	0.0
	1	2	2.74	641.7	0.0	384.7	0.0	2.7	1.0	0.31	20.3	12.2	5.5	1.0	0.0	0.0	20.3	12.2	0.0	0.0
	2	2	2.74	635.3	0.0	384.8	0.0	2.7	1.0	0.31	20.1	11.5	5.5	1.0	0.0	0.0	20.1	11.5	0.0	0.0
	2	3	5.48	504.2	0.0	215.4	0.0	2.7	1.0	0.31	15.9	6.8	5.5	1.0	0.0	0.0	15.9	6.8	0.0	0.0
	3	3	5.48	499.7	0.0	303.8	0.0	2.7	1.0	0.31	15.8	9.6	5.5	1.0	0.0	0.0	15.8	9.6	0.0	0.0
	3	4	8.22	374.5	0.0	120.9	0.0	2.7	1.0	0.31	11.8	3.8	5.5	1.0	0.0	0.0	11.8	3.8	0.0	0.0
	4	4	8.22	371.6	0.0	229.2	0.0	2.7	1.0	0.31	11.7	7.2	5.5	1.0	0.0	0.0	11.7	7.2	0.0	0.0
	4	5	10.96	251.7	0.0	5.1	0.0	2.7	1.0	0.31	8.0	0.2	5.5	1.0	0.0	0.0	8.0	0.2	0.0	0.0
	5	5	10.96	249.9	0.0	141.9	0.0	2.7	1.0	0.31	7.9	4.5	5.5	1.0	0.0	0.0	7.9	4.5	0.0	0.0
	5	6	13.70	174.3	0.0	20.8	0.0	2.7	1.0	0.31	5.5	0.7	5.5	1.0	0.0	0.0	5.5	0.7	0.0	0.0
	6	6	13.70	163.2	0.0	12.8	0.0	2.7	1.0	0.31	5.2	0.4	5.5	1.0	0.0	0.0	5.2	0.4	0.0	0.0
	6	7	16.44	275.4	0.0	108.9	0.0	2.7	1.0	0.31	8.7	3.4	5.5	1.0	0.0	0.0	8.7	3.4	0.0	0.0
	7	7	16.44	268.7	0.0	73.9	0.0	2.7	1.0	0.31	8.5	2.3	5.5	1.0	0.0	0.0	8.5	2.3	0.0	0.0
	7	8	19.18	388.5	0.0	177.7	0.0	2.7	1.0	0.31	12.3	5.6	5.5	1.0	0.0	0.0	12.3	5.6	0.0	0.0
	8	8	19.18	381.1	0.0	170.6	0.0	2.7	1.0	0.31	12.0	5.4	5.5	1.0	0.0	0.0	12.0	5.4	0.0	0.0
	8	9	21.92	504.6	0.0	270.8	0.0	2.7	1.0	0.31	15.9	8.6	5.5	1.0	0.0	0.0	15.9	8.6	0.0	0.0
	9	9	21.92	497.0	0.0	257.0	0.0	2.7	1.0	0.31	15.7	8.1	5.5	1.0	0.0	0.0	15.7	8.1	0.0	0.0
	9	10	24.66	623.9	0.0	356.4	0.0	2.7	1.0	0.31	19.7	11.3	5.5	1.0	0.0	0.0	19.7	11.3	0.0	0.0
	10	10	24.66	615.4	0.0	330.9	0.0	2.7	1.0	0.31	19.4	10.5	5.5	1.0	0.0	0.0	19.4	10.5	0.0	0.0
	10	11	27.40	745.7	0.0	428.9	0.0	2.7	1.0	0.31	23.6	13.5	5.5	1.0	0.0	0.0	23.6	13.5	0.0	0.0
11	11	27.40	740.2	0.0	411.4	0.0	2.7	1.0	0.31	23.4	13.0	5.5	1.0	0.0	0.0	23.4	13.0	0.0	0.0	
11	12	30.45	890.2	0.0	499.2	0.0	2.7	1.0	0.31	28.1	15.8	5.5	1.0	0.0	0.0	28.1	15.8	0.0	0.0	
12	12	30.45	892.9	0.0	496.0	0.0	2.7	1.0	0.31	28.2	15.7	5.5	1.0	0.0	0.0	28.2	15.7	0.0	0.0	
12	10013	33.50	1047.0	0.0	592.4	0.0	2.7	1.0	0.31	33.1	18.7	5.5	1.0	0.0	0.0	33.1	18.7	0.0	0.0	

ARMADO CORTANTE - TORSOR																	ARMAD. TOTAL TRANSV.		ARMAD. TORSIÓN LONG	
	Barra	Nudo	X	Hipótesis 1		Hipótesis 2		ARMADURA POR CORTANTE			HIP1	HIP2	ARMADURA POR TC		HIP1	HIP2	HIP1	HIP2	HIP1	HIP2
				Vmax	Tconc	Vcon	Tmax	d	Cotg θ	factor colaboración de fibra	A (cm2/m)	A (cm2/m)	Ae(m2)	Cotg q	A (cm2/m)	A (cm2/m)	A (cm2/m)	A (cm2/m)	A (cm2/m)	A (cm2/m)
V3	13	13	33.50	1150.2	0.0	785.3	0.0	2.7	1.0	0.31	36.3	24.8	5.5	1.0	0.0	0.0	36.3	24.8	0.0	0.0
	13	14	36.89	978.8	0.0	644.8	0.0	2.7	1.0	0.31	30.9	20.4	5.5	1.0	0.0	0.0	30.9	20.4	0.0	0.0
	14	14	36.89	951.4	0.0	659.3	0.0	2.7	1.0	0.31	30.1	20.8	5.5	1.0	0.0	0.0	30.1	20.8	0.0	0.0
	14	15	40.28	786.3	0.0	522.4	0.0	2.7	1.0	0.31	24.8	16.5	5.5	1.0	0.0	0.0	24.8	16.5	0.0	0.0
	15	15	40.28	756.1	0.0	502.7	0.0	2.7	1.0	0.31	23.9	15.9	5.5	1.0	0.0	0.0	23.9	15.9	0.0	0.0
	15	16	43.67	598.8	0.0	270.9	0.0	2.7	1.0	0.31	18.9	8.6	5.5	1.0	0.0	0.0	18.9	8.6	0.0	0.0
	16	16	43.67	579.3	0.0	327.5	0.0	2.7	1.0	0.31	18.3	10.4	5.5	1.0	0.0	0.0	18.3	10.4	0.0	0.0
	16	17	47.06	424.9	0.0	200.5	0.0	2.7	1.0	0.31	13.4	6.3	5.5	1.0	0.0	0.0	13.4	6.3	0.0	0.0
	17	17	47.06	408.6	0.0	191.3	0.0	2.7	1.0	0.31	12.9	6.0	5.5	1.0	0.0	0.0	12.9	6.0	0.0	0.0
	17	18	50.45	260.8	0.0	60.2	0.0	2.7	1.0	0.31	8.2	1.9	5.5	1.0	0.0	0.0	8.2	1.9	0.0	0.0
	18	18	50.45	259.9	0.0	49.7	0.0	2.7	1.0	0.31	8.2	1.6	5.5	1.0	0.0	0.0	8.2	1.6	0.0	0.0
	18	19	53.84	161.7	0.0	85.7	0.0	2.7	1.0	0.31	5.1	2.7	5.5	1.0	0.0	0.0	5.1	2.7	0.0	0.0
	19	19	53.84	158.4	0.0	89.0	0.0	2.7	1.0	0.31	5.0	2.8	5.5	1.0	0.0	0.0	5.0	2.8	0.0	0.0
	19	20	57.23	303.0	0.0	219.6	0.0	2.7	1.0	0.31	9.6	6.9	5.5	1.0	0.0	0.0	9.6	6.9	0.0	0.0
	20	20	57.23	296.7	0.0	23.4	0.0	2.7	1.0	0.31	9.4	0.7	5.5	1.0	0.0	0.0	9.4	0.7	0.0	0.0
	20	21	60.62	446.6	0.0	351.0	0.0	2.7	1.0	0.31	14.1	11.1	5.5	1.0	0.0	0.0	14.1	11.1	0.0	0.0
	21	21	60.62	440.9	0.0	156.2	0.0	2.7	1.0	0.31	13.9	4.9	5.5	1.0	0.0	0.0	13.9	4.9	0.0	0.0
	21	22	64.01	595.6	0.0	402.5	0.0	2.7	1.0	0.31	18.8	12.7	5.5	1.0	0.0	0.0	18.8	12.7	0.0	0.0
	22	22	64.01	583.0	0.0	264.9	0.0	2.7	1.0	0.31	18.4	8.4	5.5	1.0	0.0	0.0	18.4	8.4	0.0	0.0
	22	23	67.40	742.8	0.0	385.3	0.0	2.7	1.0	0.31	23.5	12.2	5.5	1.0	0.0	0.0	23.5	12.2	0.0	0.0
	23	23	67.40	729.2	0.0	378.4	0.0	2.7	1.0	0.31	23.0	12.0	5.5	1.0	0.0	0.0	23.0	12.0	0.0	0.0
	23	24	70.45	877.9	0.0	478.6	0.0	2.7	1.0	0.31	27.7	15.1	5.5	1.0	0.0	0.0	27.7	15.1	0.0	0.0
	24	24	70.45	867.9	0.0	521.5	0.0	2.7	1.0	0.31	27.4	16.5	5.5	1.0	0.0	0.0	27.4	16.5	0.0	0.0
	24	10025	73.50	1022.1	0.0	618.6	0.0	2.7	1.0	0.31	32.3	19.5	5.5	1.0	0.0	0.0	32.3	19.5	0.0	0.0

ARMADO CORTANTE - TORSOR																	ARMAD. TOTAL TRANSV.		ARMAD. TORSIÓN LONG	
	Barra	Nudo	X	Hipótesis 1		Hipótesis 2		ARMADURA POR CORTANTE			HIP1	HIP2	ARMADURA POR TC		HIP1	HIP2	HIP1	HIP2	HIP1	HIP2
				Vmax	Tconc	Vcon	Tmax	d	Cotg θ	factor colaboración de fibra	A (cm2/m)	A (cm2/m)	Ae(m2)	Cotg q	A (cm2/m)	A (cm2/m)	A (cm2/m)	A (cm2/m)	A (cm2/m)	A (cm2/m)
V4	25	25	73.50	1004.7	0.0	882.8	0.0	2.7	1.0	0.31	31.7	27.9	5.5	1.0	0.0	0.0	31.7	27.9	0.0	0.0
	25	26	76.28	884.2	0.0	756.7	0.0	2.7	1.0	0.31	27.3	23.9	5.5	1.0	0.0	0.0	27.3	23.9	0.0	0.0
	26	26	76.28	843.9	0.0	736.8	0.0	2.7	1.0	0.31	26.7	23.3	5.5	1.0	0.0	0.0	26.7	23.3	0.0	0.0
	26	27	79.02	707.8	0.0	615.3	0.0	2.7	1.0	0.31	22.4	19.4	5.5	1.0	0.0	0.0	22.4	19.4	0.0	0.0
	27	27	79.02	690.8	0.0	556.0	0.0	2.7	1.0	0.31	21.8	17.6	5.5	1.0	0.0	0.0	21.8	17.6	0.0	0.0
	27	28	81.78	559.5	0.0	438.5	0.0	2.7	1.0	0.31	17.7	13.9	5.5	1.0	0.0	0.0	17.7	13.9	0.0	0.0
	28	28	81.78	541.8	0.0	408.6	0.0	2.7	1.0	0.31	17.1	12.9	5.5	1.0	0.0	0.0	17.1	12.9	0.0	0.0
	28	29	84.54	415.2	0.0	295.2	0.0	2.7	1.0	0.31	13.1	9.3	5.5	1.0	0.0	0.0	13.1	9.3	0.0	0.0
	29	29	84.54	398.3	0.0	273.2	0.0	2.7	1.0	0.31	12.6	8.6	5.5	1.0	0.0	0.0	12.6	8.6	0.0	0.0
	29	30	87.30	276.6	0.0	163.9	0.0	2.7	1.0	0.31	8.7	5.2	5.5	1.0	0.0	0.0	8.7	5.2	0.0	0.0
	30	30	87.30	271.6	0.0	149.9	0.0	2.7	1.0	0.31	8.6	4.7	5.5	1.0	0.0	0.0	8.6	4.7	0.0	0.0
	30	31	90.06	160.4	0.0	8.0	0.0	2.7	1.0	0.31	5.1	0.3	5.5	1.0	0.0	0.0	5.1	0.3	0.0	0.0
	31	31	90.06	159.2	0.0	6.8	0.0	2.7	1.0	0.31	5.0	0.2	5.5	1.0	0.0	0.0	5.0	0.2	0.0	0.0
	31	32	92.82	262.0	0.0	116.8	0.0	2.7	1.0	0.31	8.3	3.7	5.5	1.0	0.0	0.0	8.3	3.7	0.0	0.0
	32	32	92.82	264.5	0.0	65.4	0.0	2.7	1.0	0.31	8.4	2.1	5.5	1.0	0.0	0.0	8.4	2.1	0.0	0.0
	32	33	95.58	389.6	0.0	269.6	0.0	2.7	1.0	0.31	12.3	8.5	5.5	1.0	0.0	0.0	12.3	8.5	0.0	0.0
	33	33	95.58	388.3	0.0	136.0	0.0	2.7	1.0	0.31	12.3	4.3	5.5	1.0	0.0	0.0	12.3	4.3	0.0	0.0
	33	34	98.34	520.2	0.0	390.3	0.0	2.7	1.0	0.31	16.4	12.3	5.5	1.0	0.0	0.0	16.4	12.3	0.0	0.0
34	34	98.34	515.8	0.0	164.4	0.0	2.7	1.0	0.31	16.3	5.2	5.5	1.0	0.0	0.0	16.3	5.2	0.0	0.0	
34	35	101.10	654.7	0.0	512.4	0.0	2.7	1.0	0.31	20.7	16.2	5.5	1.0	0.0	0.0	20.7	16.2	0.0	0.0	

ARMADO CORTANTE - TORSOR														ARMAD. TOTAL TRANSV. ARMAD. TORSIÓN LONG				
Barra	Nudo	X	Hipótesis 1			ARMADURA POR CORTANTE				HIP1	ARMADURA POR TORSOR		HIP2	ARMAD. TOTAL TRANSV.		ARMAD. TORSIÓN LONG		
			Vmax	Tconc	Vcon	Tmax	d	Cotg θ	factor colaboración de fibra		A (cm2/m)	Ae(m2)		Cotg q	A (cm2/m)	HIP1	HIP2	A (cm2/m)
101	101	0.00	888.5	0.0	546.8	0.0	2.7	1.0	0.31	21.8	17.3	5.5	1.0	0.0	0.0	21.8	17.3	0.0
101	102	2.74	543.2	0.0	173.3	0.0	2.7	1.0	0.31	17.2	5.5	5.5	1.0	0.0	0.0	17.2	5.5	0.0
102	102	2.74	542.5	0.0	420.2	0.0	2.7	1.0	0.31	17.1	13.3	5.5	1.0	0.0	0.0	17.1	13.3	0.0
102	103	5.48	404.5	0.0	297.4	0.0	2.7	1.0	0.31	12.8	9.4	5.5	1.0	0.0	0.0	12.8	9.4	0.0
103	103	5.48	401.8	0.0	294.9	0.0	2.7	1.0	0.31	12.7	9.3	5.5	1.0	0.0	0.0	12.7	9.3	0.0
103	104	8.22	271.1	0.0	51.4	0.0	2.7	1.0	0.31	8.6	1.6	5.5	1.0	0.0	0.0	8.6	1.6	0.0
104	104	8.22	265.4	0.0	161.2	0.0	2.7	1.0	0.31	8.4	5.1	5.5	1.0	0.0	0.0	8.4	5.1	0.0
104	105	10.96	167.4	0.0	25.7	0.0	2.7	1.0	0.31	5.3	0.8	5.5	1.0	0.0	0.0	5.3	0.8	0.0
105	105	10.96	171.1	0.0	20.3	0.0	2.7	1.0	0.31	5.4	0.6	5.5	1.0	0.0	0.0	5.4	0.6	0.0
105	106	13.70	287.1	0.0	179.4	0.0	2.7	1.0	0.31	9.1	5.7	5.5	1.0	0.0	0.0	9.1	5.7	0.0
106	106	13.70	295.1	0.0	191.6	0.0	2.7	1.0	0.31	9.3	6.1	5.5	1.0	0.0	0.0	9.3	6.1	0.0
106	107	16.44	422.4	0.0	306.6	0.0	2.7	1.0	0.31	13.3	9.7	5.5	1.0	0.0	0.0	13.3	9.7	0.0
107	107	16.44	442.4	0.0	330.7	0.0	2.7	1.0	0.31	14.0	10.5	5.5	1.0	0.0	0.0	14.0	10.5	0.0
107	108	19.18	574.7	0.0	451.8	0.0	2.7	1.0	0.31	18.2	14.3	5.5	1.0	0.0	0.0	18.2	14.3	0.0
108	108	19.18	595.8	0.0	483.3	0.0	2.7	1.0	0.31	18.8	15.3	5.5	1.0	0.0	0.0	18.8	15.3	0.0
108	109	21.92	733.2	0.0	609.6	0.0	2.7	1.0	0.31	23.2	19.3	5.5	1.0	0.0	0.0	23.2	19.3	0.0
109	109	21.92	753.4	0.0	626.3	0.0	2.7	1.0	0.31	23.8	19.8	5.5	1.0	0.0	0.0	23.8	19.8	0.0
109	110	24.66	895.8	0.0	757.8	0.0	2.7	1.0	0.31	28.3	23.9	5.5	1.0	0.0	0.0	28.3	23.9	0.0
110	110	24.66	919.7	0.0	777.8	0.0	2.7	1.0	0.31	29.1	24.6	5.5	1.0	0.0	0.0	29.1	24.6	0.0
110	10111	27.40	1066.8	0.0	909.9	0.0	2.7	1.0	0.31	33.7	28.8	5.5	1.0	0.0	0.0	33.7	28.8	0.0

V2

V2

ID

Fibra 2 - Losa

A continuación se refleja el cálculo de esta fibra, el armado necesario máximo es de $29.5 \text{ cm}^2/\text{m}$, no obstante condiciona el cálculo transversal el cual es mayor.

Esta fibra no tiene tensar ni tension y es por eso por lo que no se incluye

En todo caso el coeficiente de interacción es menor que 1 de ahí que el coeficiente adoptado es de $\cotg \theta = 1$.

FIBRA 2 INTERACCIÓN CORTANTE TORSOR

FIBRA 2 INTERACCIÓN CORTANTE TORSOR																					
Barra	Nudo	X	Hipótesis 1		Hipótesis 2		CÁLCULO Vrd(tn)							CÁLCULO Trd(tn)				factor colaboración de fibra	Interacción hip 1	Interacción hip 2	
			Vmax	Tconc	Vcon	Tmax	K	Fcd(TN/M2)	COEF F1cd	bo	d	Cotg θ	Vrd(tn)	α	Ae	he	Trd(tn)				
			778.86	0.00	355.40	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.48	0.22	
1	1	0.00	778.86	0.00	355.40	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.40	0.24	
1	2	2.74	641.71	0.00	384.69	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.39	0.23	
2	2	2.74	635.30	0.00	364.75	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.31	0.13	
2	3	5.48	504.17	0.00	215.41	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.31	0.19	
3	3	5.48	499.69	0.00	303.76	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.23	0.07	
3	4	8.22	374.53	0.00	120.91	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.23	0.14	
4	4	8.22	371.66	0.00	229.16	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.16	0.00	
4	5	10.96	251.65	0.00	5.08	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.15	0.09	
5	5	10.96	249.92	0.00	141.88	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.11	0.01	
5	6	13.70	174.29	0.00	20.79	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.10	0.01	
6	6	13.70	163.22	0.00	12.83	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.17	0.07	
6	7	16.44	275.41	0.00	108.92	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.17	0.05	
7	7	16.44	268.74	0.00	73.89	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.24	0.11	
7	8	19.18	388.49	0.00	177.75	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.24	0.11	
8	8	19.18	381.07	0.00	170.55	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.31	0.17	
8	9	21.92	504.62	0.00	270.77	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.31	0.16	
9	9	21.92	497.01	0.00	256.97	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.39	0.22	
9	10	24.66	623.90	0.00	356.44	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.38	0.20	
10	10	24.66	615.36	0.00	330.95	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.46	0.26	
10	11	27.40	745.69	0.00	426.94	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.46	0.25	
11	11	27.40	740.20	0.00	411.43	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.55	0.31	
11	12	30.45	890.18	0.00	499.20	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.55	0.31	
12	12	30.45	892.86	0.00	496.04	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.65	0.37	
12	10013	33.50	1047.02	0.00	592.39	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24			

FIBRA 2 INTERACCIÓN CORTANTE TORSOR

Barra	Nudo	X	Hipótesis 1		Hipótesis 2		CÁLCULO Vrd(tn)							CÁLCULO Trd(tn)				factor colaboración de fibra	Interacción hip 1	Interacción hip 2
			Vmax	Tconc	Vcon	Tmax	K	Fcd(TN/M2)	COEF F1cd	bo	d	Cotg θ	Vrd(tn)	α	Ae	he	Trd(tn)			
13	13	33.50	1150.15	0.00	785.26	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.71	0.49
13	14	36.89	978.79	0.00	644.79	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.61	0.40
14	14	36.89	951.43	0.00	659.31	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.59	0.41
14	15	40.28	786.34	0.00	522.37	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.49	0.32
15	15	40.28	756.13	0.00	502.74	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.47	0.31
15	16	43.67	598.79	0.00	270.92	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.37	0.17
16	16	43.67	579.26	0.00	327.64	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.36	0.20
16	17	47.06	424.89	0.00	200.45	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.26	0.12
17	17	47.06	408.57	0.00	191.32	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.25	0.12
17	18	50.45	260.82	0.00	60.21	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.16	0.04
18	18	50.45	259.90	0.00	49.66	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.16	0.03
18	19	53.84	161.69	0.00	85.67	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.10	0.05
19	19	53.84	158.42	0.00	89.01	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.10	0.06
19	20	57.23	303.00	0.00	219.61	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.19	0.14
20	20	57.23	296.68	0.00	23.43	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.18	0.01
20	21	60.62	446.65	0.00	350.96	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.28	0.22
21	21	60.62	440.92	0.00	166.22	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.27	0.10
21	22	64.01	595.64	0.00	402.52	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.37	0.25
22	22	64.01	583.05	0.00	264.90	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.36	0.16
22	23	67.40	742.76	0.00	385.32	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.46	0.24
23	23	67.40	729.22	0.00	378.39	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.45	0.23
23	24	70.45	877.88	0.00	478.62	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.54	0.30
24	24	70.45	867.90	0.00	521.49	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.54	0.32
24	10025	73.50	1022.13	0.00	618.60	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.63	0.38

FIBRA 2 INTERACCIÓN CORTANTE TORSOR																					
Barra	Nudo	X	Hipótesis 1		Hipótesis 2		CÁLCULO Vrd(tn)							CÁLCULO Trd(tn)				factor colaboración de fibra	Interacción hip 1	Interacción hip 2	
			Vmax	Tconc	Vcon	Tmax	K	Fcd(TN/M2)	COEF F1cd	bo	d	Colg θ	Vrd(tn)	α	Ae	he	Trd(tn)				
V4	25	25	73.50	1004.73	0.00	882.80	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.62	0.55
	25	26	78.26	864.20	0.00	756.68	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.53	0.47
	26	26	76.26	843.93	0.00	736.84	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.52	0.46
	26	27	79.02	707.83	0.00	615.27	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.44	0.38
	27	27	79.02	690.81	0.00	555.97	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.43	0.34
	27	28	81.78	559.46	0.00	438.48	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.35	0.27
	28	28	81.78	541.78	0.00	408.84	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.34	0.25
	28	29	84.54	415.23	0.00	295.21	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.28	0.18
	29	29	84.54	398.33	0.00	273.25	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.25	0.17
	29	30	87.30	276.57	0.00	163.91	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.17	0.10
	30	30	87.30	271.58	0.00	149.88	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.17	0.09
	30	31	90.06	160.42	0.00	8.02	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.10	0.00
	31	31	90.06	159.24	0.00	6.85	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.10	0.00
	31	32	92.82	261.97	0.00	116.81	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.16	0.07
	32	32	92.82	264.46	0.00	65.42	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.16	0.04
	32	33	95.58	389.55	0.00	269.59	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.24	0.17
	33	33	95.58	388.32	0.00	136.03	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.24	0.08
	33	34	98.34	520.19	0.00	390.32	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.32	0.24
	34	34	98.34	515.77	0.00	164.43	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.32	0.10
	34	35	101.10	654.69	0.00	512.43	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.40	0.32

FIBRA 2 INTERACCIÓN CORTANTE TORSOR																					
Barra	Nudo	X	Hipótesis 1		Hipótesis 2		CÁLCULO Vrd(tn)							CÁLCULO Trd(tn)				factor colaboración de fibra	Interacción hip 1	Interacción hip 2	
			Vmax	Tconc	Vcon	Tmax	R	Fcd(TN/M2)	COEF F1cd	bo	d	Colg θ	Vrd(tn)	α	Ae	he	Trd(tn)				
V2	101	101	0.00	688.63	0.00	546.85	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.43	0.34
	101	102	2.74	543.17	0.00	173.32	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.34	0.11
	102	102	2.74	542.50	0.00	420.15	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.34	0.26
	102	103	5.48	404.45	0.00	297.36	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.25	0.18
	103	103	5.48	401.82	0.00	294.87	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.25	0.18
	103	104	8.22	271.05	0.00	51.36	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.17	0.03
	104	104	8.22	265.36	0.00	181.21	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.16	0.10
	104	105	10.96	167.44	0.00	25.74	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.10	0.02
	105	105	10.96	171.07	0.00	20.30	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.11	0.01
	105	106	13.70	287.13	0.00	179.42	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.18	0.11
	106	106	13.70	295.09	0.00	191.64	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.18	0.12
	106	107	16.44	422.43	0.00	306.64	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.26	0.19
	107	107	16.44	442.36	0.00	330.74	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.27	0.20
	107	108	19.18	574.73	0.00	451.81	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.36	0.28
	108	108	19.18	595.77	0.00	483.28	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.37	0.30
	108	109	21.92	733.18	0.00	609.56	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.45	0.38
	109	109	21.92	753.36	0.00	626.25	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.47	0.39
	109	110	24.66	895.79	0.00	757.78	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.55	0.47
110	110	24.66	919.71	0.00	777.82	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.57	0.48	
110	10111	27.40	1066.84	0.00	909.89	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.66	0.56	

FIBRA 2 INTERACCIÓN CORTANTE TORSOR

FIBRA Z INTERACCION CONTANTE PERSON																					
	Barra	Nudo	X	Hipótesis 1		Hipótesis 2		CÁLCULO Vrd(tn)							CÁLCULO Trd(tn)				factor colaboración de fibra	Interacción hlp 1	Interacción hlp 2
				Vmax	Tconc	Vcon	Tmax	K	Fcd(TN/M2)	COEF F1cd	bo	d	Cotg θ	Vrd(tn)	α	Ae	he	Trd(tr)			
V3	111	111	27.40	1098.98	0.00	727.17	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.45	
	111	112	30.45	936.49	0.00	627.74	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.39	
	112	112	30.45	938.47	0.00	579.97	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.36	
	112	113	33.50	781.81	0.00	475.01	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.29	
	113	113	33.50	789.23	0.00	417.93	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.26	
	113	114	36.89	620.97	0.00	291.20	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.18	
	114	114	36.89	629.29	0.00	302.00	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.19	
	114	115	40.28	466.46	0.00	172.88	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.11	
	115	115	40.28	470.32	0.00	305.35	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.19	
	115	116	43.67	312.54	0.00	58.86	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.04	
	116	116	43.67	315.84	0.00	230.05	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.14	
	116	117	47.06	163.88	0.00	91.83	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.06	
	117	117	47.06	166.34	0.00	83.20	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.05	
	117	118	50.45	268.89	0.00	59.39	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.04	
	118	118	50.45	270.32	0.00	71.40	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.04	
	118	119	53.84	425.73	0.00	209.52	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.13	
	119	119	53.84	446.58	0.00	245.16	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.15	
	119	120	57.23	608.97	0.00	378.99	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.23	
	120	120	57.23	638.06	0.00	430.82	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.27	
	120	121	60.62	803.72	0.00	360.68	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.22	
	121	121	60.62	838.38	0.00	419.10	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.26	
	121	122	64.01	1012.20	0.00	682.58	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.42	
	122	122	64.01	1044.79	0.00	678.62	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.42	
	122	10123	67.40	1225.31	0.00	828.64	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.51	

FIBRA 2 INTERACCIÓN CORTANTE TORSOR

	Barra	Nudo	X	Hipótesis 1		Hipótesis 2		CÁLCULO Vrd(tn)						CÁLCULO Trd(tn)				factor colaboración de fibra	interacción hip 1	interacción hip 2	
				Vmax	Tconc	Vcon	Tmax	K	Fcd(TN/M2)	COEF F1cd	bo	d	Cotg θ	Vrd(tn)	α	Ae	he				Trd(tn)
V5	123	123	67.40	1139.76	0.00	730.43	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.71	0.45
	123	124	70.45	977.43	0.00	628.45	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.60	0.39
	124	124	70.45	965.18	0.00	600.75	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.60	0.37
	124	125	73.50	807.11	0.00	529.99	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.50	0.33
	125	125	73.50	806.37	0.00	460.14	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.50	0.28
	125	126	76.26	668.00	0.00	353.93	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.41	0.22
	126	126	76.26	671.43	0.00	369.73	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.42	0.23
	126	127	79.02	536.81	0.00	264.33	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.33	0.16
	127	127	79.02	540.73	0.00	294.71	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.33	0.18
	127	128	81.78	409.72	0.00	188.42	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.25	0.12
	128	128	81.78	413.66	0.00	192.60	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.26	0.12
	128	129	84.54	286.62	0.00	82.44	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.18	0.05
	129	129	84.54	290.31	0.00	98.74	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.18	0.06
	129	130	87.30	171.16	0.00	12.65	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.11	0.01
	130	130	87.30	179.95	0.00	96.20	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.11	0.06
	130	131	90.06	269.78	0.00	157.62	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.17	0.10
	131	131	90.06	274.55	0.00	8.01	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.17	0.00
	131	132	92.82	401.51	0.00	254.14	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.25	0.16
	132	132	92.82	407.84	0.00	133.34	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.25	0.08
	132	133	95.58	540.48	0.00	246.56	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.33	0.15
	133	133	95.58	548.76	0.00	300.94	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.34	0.19
	133	134	98.34	687.85	0.00	361.90	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.43	0.22
	134	134	98.34	699.40	0.00	468.08	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.43	0.28
	134	135	101.10	845.08	0.00	548.21	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.24	0.52	0.34

ARMADO CORTANTE - TORSOR																	ARMAD. TOTAL TRANSV.		ARMAD. TORSIÓN LONG	
Barra	Nudo	X	Hipótesis 1		Hipótesis 2		ARMADURA POR CORTANTE			HIP1	HIP2	ARMADURA POR TC		HIP1	HIP2	HIP1	HIP2	HIP1	HIP2	
			Vmax	Tconc	Vcon	Tmax	d	Cotg θ	factor colaboración de fibra	A (cm2/m)	A (cm2/m)	Ae(m2)	Cotg q	A (cm2/m)	A (cm2/m)	A (cm2/m)	A (cm2/m)	A (cm2/m)	A (cm2/m)	
V1	1	1	0.00	778.9	0.0	355.4	0.0	2.7	1.0	0.24	18.7	8.5	5.5	1.0	0.0	0.0	18.7	8.5	0.0	0.0
	1	2	2.74	641.7	0.0	384.7	0.0	2.7	1.0	0.24	15.4	9.3	5.5	1.0	0.0	0.0	15.4	9.3	0.0	0.0
	2	2	2.74	635.3	0.0	364.8	0.0	2.7	1.0	0.24	15.3	8.8	5.5	1.0	0.0	0.0	15.3	8.8	0.0	0.0
	2	3	5.48	504.2	0.0	215.4	0.0	2.7	1.0	0.24	12.1	5.2	5.5	1.0	0.0	0.0	12.1	5.2	0.0	0.0
	3	3	5.48	499.7	0.0	303.8	0.0	2.7	1.0	0.24	12.0	7.3	5.5	1.0	0.0	0.0	12.0	7.3	0.0	0.0
	3	4	8.22	374.5	0.0	120.9	0.0	2.7	1.0	0.24	9.0	2.9	5.5	1.0	0.0	0.0	9.0	2.9	0.0	0.0
	4	4	8.22	371.6	0.0	229.2	0.0	2.7	1.0	0.24	8.9	5.5	5.5	1.0	0.0	0.0	8.9	5.5	0.0	0.0
	4	5	10.96	251.7	0.0	5.1	0.0	2.7	1.0	0.24	6.1	0.1	5.5	1.0	0.0	0.0	6.1	0.1	0.0	0.0
	5	5	10.96	249.9	0.0	141.9	0.0	2.7	1.0	0.24	6.0	3.4	5.5	1.0	0.0	0.0	6.0	3.4	0.0	0.0
	5	6	13.70	174.3	0.0	20.8	0.0	2.7	1.0	0.24	4.2	0.5	5.5	1.0	0.0	0.0	4.2	0.5	0.0	0.0
	6	6	13.70	163.2	0.0	12.8	0.0	2.7	1.0	0.24	3.9	0.3	5.5	1.0	0.0	0.0	3.9	0.3	0.0	0.0
	6	7	16.44	275.4	0.0	108.9	0.0	2.7	1.0	0.24	6.6	2.6	5.5	1.0	0.0	0.0	6.6	2.6	0.0	0.0
	7	7	16.44	268.7	0.0	73.9	0.0	2.7	1.0	0.24	6.5	1.8	5.5	1.0	0.0	0.0	6.5	1.8	0.0	0.0
	7	8	19.18	388.5	0.0	177.7	0.0	2.7	1.0	0.24	9.3	4.3	5.5	1.0	0.0	0.0	9.3	4.3	0.0	0.0
	8	8	19.18	381.1	0.0	170.6	0.0	2.7	1.0	0.24	9.2	4.1	5.5	1.0	0.0	0.0	9.2	4.1	0.0	0.0
	8	9	21.92	504.6	0.0	270.8	0.0	2.7	1.0	0.24	12.1	6.5	5.5	1.0	0.0	0.0	12.1	6.5	0.0	0.0
	9	9	21.92	497.0	0.0	257.0	0.0	2.7	1.0	0.24	12.0	6.2	5.5	1.0	0.0	0.0	12.0	6.2	0.0	0.0
	9	10	24.66	623.9	0.0	356.4	0.0	2.7	1.0	0.24	15.0	8.6	5.5	1.0	0.0	0.0	15.0	8.6	0.0	0.0
	10	10	24.66	615.4	0.0	330.9	0.0	2.7	1.0	0.24	14.8	8.0	5.5	1.0	0.0	0.0	14.8	8.0	0.0	0.0
	10	11	27.40	745.7	0.0	426.9	0.0	2.7	1.0	0.24	17.9	10.3	5.5	1.0	0.0	0.0	17.9	10.3	0.0	0.0
	11	11	27.40	740.2	0.0	411.4	0.0	2.7	1.0	0.24	17.8	9.9	5.5	1.0	0.0	0.0	17.8	9.9	0.0	0.0
	11	12	30.45	890.2	0.0	499.2	0.0	2.7	1.0	0.24	21.4	12.0	5.5	1.0	0.0	0.0	21.4	12.0	0.0	0.0
	12	12	30.45	892.9	0.0	496.0	0.0	2.7	1.0	0.24	21.5	11.9	5.5	1.0	0.0	0.0	21.5	11.9	0.0	0.0
	12	10013	33.50	1047.0	0.0	592.4	0.0	2.7	1.0	0.24	25.2	14.3	5.5	1.0	0.0	0.0	25.2	14.3	0.0	0.0

ARMADO CORTANTE - TORSOR																		ARMAD. TOTAL TRANSV.		ARMAD. TORSIÓN LONG	
	Barra	Nudo	X	Hipótesis 1		Hipótesis 2		ARMADURA POR CORTANTE				HIP1	HIP2	ARMADURA POR TC		HIP1	HIP2	HIP1	HIP2	HIP1	HIP2
				Vmax	Tconc	Vcon	Tmax	d	Cotg θ	factor colaboració n de fibra	A (cm2/m)	A (cm2/m)	Ae(m2)	Cotg q	A (cm2/m)	A (cm2/m)	A (cm2/m)	A (cm2/m)	A (cm2/m)	A (cm2/m)	
V3	13	13	33.50	1150.2	0.0	785.3	0.0	2.7	1.0	0.24	27.7	18.9	5.5	1.0	0.0	0.0	27.7	18.9	0.0	0.0	
	13	14	36.89	978.8	0.0	644.8	0.0	2.7	1.0	0.24	23.5	15.5	5.5	1.0	0.0	0.0	23.5	15.5	0.0	0.0	
	14	14	36.89	951.4	0.0	659.3	0.0	2.7	1.0	0.24	22.9	15.9	5.5	1.0	0.0	0.0	22.9	15.9	0.0	0.0	
	14	15	40.28	786.3	0.0	522.4	0.0	2.7	1.0	0.24	18.9	12.6	5.5	1.0	0.0	0.0	18.9	12.6	0.0	0.0	
	15	15	40.28	756.1	0.0	502.7	0.0	2.7	1.0	0.24	18.2	12.1	5.5	1.0	0.0	0.0	18.2	12.1	0.0	0.0	
	15	16	43.67	598.8	0.0	270.9	0.0	2.7	1.0	0.24	14.4	6.5	5.5	1.0	0.0	0.0	14.4	6.5	0.0	0.0	
	16	16	43.67	579.3	0.0	327.5	0.0	2.7	1.0	0.24	13.9	7.9	5.5	1.0	0.0	0.0	13.9	7.9	0.0	0.0	
	16	17	47.06	424.9	0.0	200.5	0.0	2.7	1.0	0.24	10.2	4.8	5.5	1.0	0.0	0.0	10.2	4.8	0.0	0.0	
	17	17	47.06	408.6	0.0	191.3	0.0	2.7	1.0	0.24	9.8	4.6	5.5	1.0	0.0	0.0	9.8	4.6	0.0	0.0	
	17	18	50.45	260.8	0.0	60.2	0.0	2.7	1.0	0.24	6.3	1.4	5.5	1.0	0.0	0.0	6.3	1.4	0.0	0.0	
	18	18	50.45	259.9	0.0	49.7	0.0	2.7	1.0	0.24	6.3	1.2	5.5	1.0	0.0	0.0	6.3	1.2	0.0	0.0	
	18	19	53.84	161.7	0.0	85.7	0.0	2.7	1.0	0.24	3.9	2.1	5.5	1.0	0.0	0.0	3.9	2.1	0.0	0.0	
	19	19	53.84	158.4	0.0	89.0	0.0	2.7	1.0	0.24	3.8	2.1	5.5	1.0	0.0	0.0	3.8	2.1	0.0	0.0	
	19	20	57.23	303.0	0.0	219.6	0.0	2.7	1.0	0.24	7.3	5.3	5.5	1.0	0.0	0.0	7.3	5.3	0.0	0.0	
	20	20	57.23	296.7	0.0	23.4	0.0	2.7	1.0	0.24	7.1	0.6	5.5	1.0	0.0	0.0	7.1	0.6	0.0	0.0	
	20	21	60.62	446.6	0.0	351.0	0.0	2.7	1.0	0.24	10.7	8.4	5.5	1.0	0.0	0.0	10.7	8.4	0.0	0.0	
	21	21	60.62	440.9	0.0	156.2	0.0	2.7	1.0	0.24	10.6	3.8	5.5	1.0	0.0	0.0	10.6	3.8	0.0	0.0	
	21	22	64.01	595.6	0.0	402.5	0.0	2.7	1.0	0.24	14.3	9.7	5.5	1.0	0.0	0.0	14.3	9.7	0.0	0.0	
	22	22	64.01	583.0	0.0	264.9	0.0	2.7	1.0	0.24	14.0	6.4	5.5	1.0	0.0	0.0	14.0	6.4	0.0	0.0	
	22	23	67.40	742.8	0.0	385.3	0.0	2.7	1.0	0.24	17.9	9.3	5.5	1.0	0.0	0.0	17.9	9.3	0.0	0.0	
	23	23	67.40	729.2	0.0	378.4	0.0	2.7	1.0	0.24	17.5	9.1	5.5	1.0	0.0	0.0	17.5	9.1	0.0	0.0	
	23	24	70.45	877.9	0.0	478.6	0.0	2.7	1.0	0.24	21.1	11.5	5.5	1.0	0.0	0.0	21.1	11.5	0.0	0.0	
	24	24	70.45	867.9	0.0	521.5	0.0	2.7	1.0	0.24	20.9	12.5	5.5	1.0	0.0	0.0	20.9	12.5	0.0	0.0	
	24	10025	73.50	1022.1	0.0	618.6	0.0	2.7	1.0	0.24	24.6	14.9	5.5	1.0	0.0	0.0	24.6	14.9	0.0	0.0	

ARMADO CORTANTE - TORSOR																	ARMAD. TOT/L TRANSV.		ARMAD. TORSIÓN LONG	
	Barra	Nudo	X	Hipótesis 1		Hipótesis 2		ARMADURA POR CORTANTE			HIP1	HIP2	ARMADURA POR TC		HIP1	HIP2	HIP1	HIP2	HIP1	HIP2
				Vmax	Tconc	Vcon	Tmax	d	Cotg θ	factor colaboración de fibra	A (cm2/m)	A (cm2/m)	Ae(m2)	Cotg q	A (cm2/m)	A (cm2/m)	A (cm2/m)	A (cm2/m)	A (cm2/m)	A (cm2/m)
V4	25	25	73.50	1004.7	0.0	882.8	0.0	2.7	1.0	0.24	24.2	21.2	5.5	1.0	0.0	0.0	24.2	21.2	0.0	0.0
	25	26	76.26	864.2	0.0	756.7	0.0	2.7	1.0	0.24	20.8	18.2	5.5	1.0	0.0	0.0	20.8	18.2	0.0	0.0
	26	26	76.26	843.9	0.0	736.8	0.0	2.7	1.0	0.24	20.3	17.7	5.5	1.0	0.0	0.0	20.3	17.7	0.0	0.0
	26	27	79.02	707.8	0.0	615.3	0.0	2.7	1.0	0.24	17.0	14.8	5.5	1.0	0.0	0.0	17.0	14.8	0.0	0.0
	27	27	79.02	690.8	0.0	556.0	0.0	2.7	1.0	0.24	16.6	13.4	5.5	1.0	0.0	0.0	16.6	13.4	0.0	0.0
	27	28	81.78	559.5	0.0	438.5	0.0	2.7	1.0	0.24	13.5	10.5	5.5	1.0	0.0	0.0	13.5	10.5	0.0	0.0
	28	28	81.78	541.8	0.0	408.6	0.0	2.7	1.0	0.24	13.0	9.8	5.5	1.0	0.0	0.0	13.0	9.8	0.0	0.0
	28	29	84.54	415.2	0.0	295.2	0.0	2.7	1.0	0.24	10.0	7.1	5.5	1.0	0.0	0.0	10.0	7.1	0.0	0.0
	29	29	84.54	398.3	0.0	273.2	0.0	2.7	1.0	0.24	9.6	6.6	5.5	1.0	0.0	0.0	9.6	6.6	0.0	0.0
	29	30	87.30	276.6	0.0	183.9	0.0	2.7	1.0	0.24	6.7	3.9	5.5	1.0	0.0	0.0	6.7	3.9	0.0	0.0
	30	30	87.30	271.6	0.0	149.9	0.0	2.7	1.0	0.24	6.5	3.6	5.5	1.0	0.0	0.0	6.5	3.6	0.0	0.0
	30	31	90.06	160.4	0.0	8.0	0.0	2.7	1.0	0.24	3.9	0.2	5.5	1.0	0.0	0.0	3.9	0.2	0.0	0.0
	31	31	90.06	159.2	0.0	6.8	0.0	2.7	1.0	0.24	3.8	0.2	5.5	1.0	0.0	0.0	3.8	0.2	0.0	0.0
	31	32	92.82	262.0	0.0	116.8	0.0	2.7	1.0	0.24	6.3	2.8	5.5	1.0	0.0	0.0	6.3	2.8	0.0	0.0
	32	32	92.82	264.5	0.0	65.4	0.0	2.7	1.0	0.24	6.4	1.6	5.5	1.0	0.0	0.0	6.4	1.6	0.0	0.0
	32	33	95.58	389.6	0.0	269.6	0.0	2.7	1.0	0.24	9.4	6.5	5.5	1.0	0.0	0.0	9.4	6.5	0.0	0.0
	33	33	95.58	388.3	0.0	136.0	0.0	2.7	1.0	0.24	9.3	3.3	5.5	1.0	0.0	0.0	9.3	3.3	0.0	0.0
	33	34	98.34	520.2	0.0	390.3	0.0	2.7	1.0	0.24	12.5	9.4	5.5	1.0	0.0	0.0	12.5	9.4	0.0	0.0
34	34	98.34	515.8	0.0	164.4	0.0	2.7	1.0	0.24	12.4	4.0	5.5	1.0	0.0	0.0	12.4	4.0	0.0	0.0	
34	35	101.10	654.7	0.0	512.4	0.0	2.7	1.0	0.24	15.7	12.3	5.5	1.0	0.0	0.0	15.7	12.3	0.0	0.0	

ARMADO CORTANTE - TORSOR																	ARMAD. TOTAL TRANSV.		ARMAD. TORSIÓN LONG	
	Barra	Nudo	X	Hipótesis 1		Hipótesis 2		ARMADURA POR CORTANTE			HIP1	HIP2	ARMADURA POR TC		HIP1	HIP2	HIP1	HIP2	HIP1	HIP2
				Vmax	Tconc	Vcon	Tmax	d	Cotg θ	factor colaboración de fibra	A (cm2/m)	A (cm2/m)	Ae(m2)	Cotg q	A (cm2/m)	A (cm2/m)	A (cm2/m)	A (cm2/m)	A (cm2/m)	A (cm2/m)
V2	101	101	0.00	888.5	0.0	546.8	0.0	2.7	1.0	0.24	16.6	13.2	5.5	1.0	0.0	0.0	16.6	13.2	0.0	0.0
	101	102	2.74	543.2	0.0	173.3	0.0	2.7	1.0	0.24	13.1	4.2	5.5	1.0	0.0	0.0	13.1	4.2	0.0	0.0
	102	102	2.74	542.5	0.0	420.2	0.0	2.7	1.0	0.24	13.1	10.1	5.5	1.0	0.0	0.0	13.1	10.1	0.0	0.0
	102	103	5.48	404.5	0.0	297.4	0.0	2.7	1.0	0.24	9.7	7.2	5.5	1.0	0.0	0.0	9.7	7.2	0.0	0.0
	103	103	5.48	401.8	0.0	294.9	0.0	2.7	1.0	0.24	9.7	7.1	5.5	1.0	0.0	0.0	9.7	7.1	0.0	0.0
	103	104	8.22	271.1	0.0	51.4	0.0	2.7	1.0	0.24	6.5	1.2	5.5	1.0	0.0	0.0	6.5	1.2	0.0	0.0
	104	104	8.22	265.4	0.0	161.2	0.0	2.7	1.0	0.24	6.4	3.9	5.5	1.0	0.0	0.0	6.4	3.9	0.0	0.0
	104	105	10.96	167.4	0.0	25.7	0.0	2.7	1.0	0.24	4.0	0.6	5.5	1.0	0.0	0.0	4.0	0.6	0.0	0.0
	105	105	10.96	171.1	0.0	20.3	0.0	2.7	1.0	0.24	4.1	0.5	5.5	1.0	0.0	0.0	4.1	0.5	0.0	0.0
	105	106	13.70	287.1	0.0	179.4	0.0	2.7	1.0	0.24	6.9	4.3	5.5	1.0	0.0	0.0	6.9	4.3	0.0	0.0
	106	106	13.70	295.1	0.0	191.6	0.0	2.7	1.0	0.24	7.1	4.6	5.5	1.0	0.0	0.0	7.1	4.6	0.0	0.0
	106	107	16.44	422.4	0.0	306.6	0.0	2.7	1.0	0.24	10.2	7.4	5.5	1.0	0.0	0.0	10.2	7.4	0.0	0.0
	107	107	16.44	442.4	0.0	330.7	0.0	2.7	1.0	0.24	10.6	8.0	5.5	1.0	0.0	0.0	10.6	8.0	0.0	0.0
	107	108	19.18	574.7	0.0	451.8	0.0	2.7	1.0	0.24	13.8	10.9	5.5	1.0	0.0	0.0	13.8	10.9	0.0	0.0
	108	108	19.18	595.8	0.0	483.3	0.0	2.7	1.0	0.24	14.3	11.6	5.5	1.0	0.0	0.0	14.3	11.6	0.0	0.0
	108	109	21.92	733.2	0.0	609.6	0.0	2.7	1.0	0.24	17.6	14.7	5.5	1.0	0.0	0.0	17.6	14.7	0.0	0.0
	109	109	21.92	753.4	0.0	626.3	0.0	2.7	1.0	0.24	18.1	15.1	5.5	1.0	0.0	0.0	18.1	15.1	0.0	0.0
109	110	24.66	895.8	0.0	757.8	0.0	2.7	1.0	0.24	21.5	18.2	5.5	1.0	0.0	0.0	21.5	18.2	0.0	0.0	
110	110	24.66	919.7	0.0	777.8	0.0	2.7	1.0	0.24	22.1	18.7	5.5	1.0	0.0	0.0	22.1	18.7	0.0	0.0	
110	10111	27.40	1066.8	0.0	909.9	0.0	2.7	1.0	0.24	25.7	21.9	5.5	1.0	0.0	0.0	25.7	21.9	0.0	0.0	

ARMADO CORTANTE - TORSOR																ARMAD. TOTAL TRANSV.		ARMAD. TORSIÓN LONG		
Barra	Nudo	X	Hipótesis 1		Hipótesis 2		ARMADURA POR CORTANTE			HIP1	HIP2	ARMADURA POR TC		HIP1	HIP2	HIP1	HIP2	HIP1	HIP2	
			Vmax	Tconc	Vcon	Tmax	d	Cotg θ	factor colaboración de fibra	A (cm2/m)	A (cm2/m)	Ae(m2)	Cotg q	A (cm2/m)	A (cm2/m)	A (cm2/m)	A (cm2/m)	A (cm2/m)	A (cm2/m)	
V3	111	111	27.40	1089.0	0.0	727.2	0.0	2.7	1.0	0.24	26.4	17.5	5.5	1.0	0.0	0.0	26.4	17.5	0.0	0.0
	111	112	30.45	936.5	0.0	627.7	0.0	2.7	1.0	0.24	22.5	15.1	5.5	1.0	0.0	0.0	22.5	15.1	0.0	0.0
	112	112	30.45	938.5	0.0	580.0	0.0	2.7	1.0	0.24	22.6	14.0	5.5	1.0	0.0	0.0	22.6	14.0	0.0	0.0
	112	113	33.50	781.8	0.0	475.0	0.0	2.7	1.0	0.24	18.8	11.4	5.5	1.0	0.0	0.0	18.8	11.4	0.0	0.0
	113	113	33.50	789.2	0.0	417.9	0.0	2.7	1.0	0.24	19.0	10.1	5.5	1.0	0.0	0.0	19.0	10.1	0.0	0.0
	113	114	36.89	621.0	0.0	291.2	0.0	2.7	1.0	0.24	14.9	7.0	5.5	1.0	0.0	0.0	14.9	7.0	0.0	0.0
	114	114	36.89	629.3	0.0	302.0	0.0	2.7	1.0	0.24	15.1	7.3	5.5	1.0	0.0	0.0	15.1	-7.3	0.0	0.0
	114	115	40.28	466.5	0.0	172.9	0.0	2.7	1.0	0.24	11.2	4.2	5.5	1.0	0.0	0.0	11.2	-4.2	0.0	0.0
	115	115	40.28	470.3	0.0	305.3	0.0	2.7	1.0	0.24	11.3	7.3	5.5	1.0	0.0	0.0	11.3	-7.3	0.0	0.0
	115	116	43.67	312.5	0.0	58.9	0.0	2.7	1.0	0.24	7.5	1.4	5.5	1.0	0.0	0.0	7.5	1.4	0.0	0.0
	116	116	43.67	315.8	0.0	230.0	0.0	2.7	1.0	0.24	7.6	5.5	5.5	1.0	0.0	0.0	7.6	5.5	0.0	0.0
	116	117	47.06	163.9	0.0	91.8	0.0	2.7	1.0	0.24	3.9	2.2	5.5	1.0	0.0	0.0	3.9	2.2	0.0	0.0
	117	117	47.06	166.3	0.0	83.2	0.0	2.7	1.0	0.24	4.0	2.0	5.5	1.0	0.0	0.0	4.0	2.0	0.0	0.0
	117	118	50.45	268.9	0.0	59.4	0.0	2.7	1.0	0.24	6.5	1.4	5.5	1.0	0.0	0.0	6.5	1.4	0.0	0.0
	118	118	50.45	270.3	0.0	71.4	0.0	2.7	1.0	0.24	6.5	1.7	5.5	1.0	0.0	0.0	6.5	1.7	0.0	0.0
	118	119	53.84	425.7	0.0	209.5	0.0	2.7	1.0	0.24	10.2	5.0	5.5	1.0	0.0	0.0	10.2	5.0	0.0	0.0
	119	119	53.84	446.6	0.0	245.2	0.0	2.7	1.0	0.24	10.7	5.9	5.5	1.0	0.0	0.0	10.7	5.9	0.0	0.0
	119	120	57.23	609.0	0.0	379.0	0.0	2.7	1.0	0.24	14.7	9.1	5.5	1.0	0.0	0.0	14.7	9.1	0.0	0.0
	120	120	57.23	638.1	0.0	430.8	0.0	2.7	1.0	0.24	15.3	10.4	5.5	1.0	0.0	0.0	15.3	10.4	0.0	0.0
	120	121	60.62	803.7	0.0	360.7	0.0	2.7	1.0	0.24	19.3	8.7	5.5	1.0	0.0	0.0	19.3	8.7	0.0	0.0
121	121	60.62	838.4	0.0	419.1	0.0	2.7	1.0	0.24	20.2	10.1	5.5	1.0	0.0	0.0	20.2	10.1	0.0	0.0	
121	122	64.01	1012.2	0.0	682.6	0.0	2.7	1.0	0.24	24.4	16.4	5.5	1.0	0.0	0.0	24.4	16.4	0.0	0.0	
122	122	64.01	1044.8	0.0	678.6	0.0	2.7	1.0	0.24	25.1	16.3	5.5	1.0	0.0	0.0	25.1	16.3	0.0	0.0	
122	10123	67.40	1225.3	0.0	828.6	0.0	2.7	1.0	0.24	29.5	19.9	5.5	1.0	0.0	0.0	29.5	19.9	0.0	0.0	

ARMADO CORTANTE - TORSOR																ARMAD. TOTAL TRANSV.		ARMAD. TORSIÓN LONG		
	Barra	Nudo	X	Hipótesis 1		Hipótesis 2		ARMADURA POR CORTANTE			HIP1	HIP2	ARMADURA POR TC		HIP1	HIP2	HIP1	HIP2	HIP1	HIP2
				Vmax	Tconc	Vcon	Tmax	d	Cotg θ	factor colaboració n de fibra	A (cm2/m)	A (cm2/m)	Ae(m2)	Cotg q	A (cm2/m)	A (cm2/m)	A (cm2/m)	A (cm2/m)	A (cm2/m)	A (cm2/m)
V5	123	123	67.40	1139.8	0.0	730.4	0.0	2.7	1.0	0.24	27.4	17.6	5.5	1.0	0.0	0.0	27.4	17.6	0.0	0.0
	123	124	70.45	977.4	0.0	628.5	0.0	2.7	1.0	0.24	23.5	15.1	5.5	1.0	0.0	0.0	23.5	15.1	0.0	0.0
	124	124	70.45	965.2	0.0	600.8	0.0	2.7	1.0	0.24	23.2	14.5	5.5	1.0	0.0	0.0	23.2	14.5	0.0	0.0
	124	125	73.50	807.1	0.0	530.0	0.0	2.7	1.0	0.24	19.4	12.7	5.5	1.0	0.0	0.0	19.4	12.7	0.0	0.0
	125	125	73.50	806.4	0.0	460.1	0.0	2.7	1.0	0.24	19.4	11.1	5.5	1.0	0.0	0.0	19.4	11.1	0.0	0.0
	125	126	76.26	668.0	0.0	353.9	0.0	2.7	1.0	0.24	16.1	8.5	5.5	1.0	0.0	0.0	16.1	8.5	0.0	0.0
	126	126	76.26	671.4	0.0	369.7	0.0	2.7	1.0	0.24	16.2	8.9	5.5	1.0	0.0	0.0	16.2	8.9	0.0	0.0
	126	127	79.02	536.8	0.0	264.3	0.0	2.7	1.0	0.24	12.9	6.4	5.5	1.0	0.0	0.0	12.9	6.4	0.0	0.0
	127	127	79.02	540.7	0.0	294.7	0.0	2.7	1.0	0.24	13.0	7.1	5.5	1.0	0.0	0.0	13.0	7.1	0.0	0.0
	127	128	81.78	409.7	0.0	188.4	0.0	2.7	1.0	0.24	9.9	4.5	5.5	1.0	0.0	0.0	9.9	4.5	0.0	0.0
	128	128	81.78	413.7	0.0	192.6	0.0	2.7	1.0	0.24	10.0	4.6	5.5	1.0	0.0	0.0	10.0	4.6	0.0	0.0
	128	129	84.54	286.6	0.0	82.4	0.0	2.7	1.0	0.24	6.9	2.0	5.5	1.0	0.0	0.0	6.9	2.0	0.0	0.0
	129	129	84.54	290.3	0.0	98.7	0.0	2.7	1.0	0.24	7.0	2.4	5.5	1.0	0.0	0.0	7.0	2.4	0.0	0.0
	129	130	87.30	171.2	0.0	12.7	0.0	2.7	1.0	0.24	4.1	0.3	5.5	1.0	0.0	0.0	4.1	0.3	0.0	0.0
	130	130	87.30	180.0	0.0	96.2	0.0	2.7	1.0	0.24	4.3	2.3	5.5	1.0	0.0	0.0	4.3	2.3	0.0	0.0
	130	131	90.06	269.8	0.0	157.6	0.0	2.7	1.0	0.24	6.5	3.8	5.5	1.0	0.0	0.0	6.5	3.8	0.0	0.0
	131	131	90.06	274.5	0.0	8.0	0.0	2.7	1.0	0.24	6.6	0.2	5.5	1.0	0.0	0.0	6.6	0.2	0.0	0.0
	131	132	92.82	401.5	0.0	254.1	0.0	2.7	1.0	0.24	9.7	6.1	5.5	1.0	0.0	0.0	9.7	6.1	0.0	0.0
132	132	92.82	407.8	0.0	133.3	0.0	2.7	1.0	0.24	9.8	3.2	5.5	1.0	0.0	0.0	9.8	3.2	0.0	0.0	
132	133	95.58	540.5	0.0	246.6	0.0	2.7	1.0	0.24	13.0	5.9	5.5	1.0	0.0	0.0	13.0	5.9	0.0	0.0	
133	133	95.58	548.8	0.0	300.9	0.0	2.7	1.0	0.24	13.2	7.2	5.5	1.0	0.0	0.0	13.2	7.2	0.0	0.0	
133	134	98.34	687.8	0.0	351.9	0.0	2.7	1.0	0.24	16.5	8.5	5.5	1.0	0.0	0.0	16.5	8.5	0.0	0.0	
134	134	98.34	699.4	0.0	458.1	0.0	2.7	1.0	0.24	16.8	11.0	5.5	1.0	0.0	0.0	16.8	11.0	0.0	0.0	
134	135	101.10	845.1	0.0	548.2	0.0	2.7	1.0	0.24	20.3	13.2	5.5	1.0	0.0	0.0	20.3	13.2	0.0	0.0	

Fibra 3 - Losa en zona central del cajón.

La armadura es válida en el refuerzo que se dispone debido a la fibra 4.

El coeficiente de interacción es siempre menor que 1.

La cotización de D elegida es de 1.

Longitudinal de tornillo a colocar 6L2 a 0'125 arriba y abajo. (VALU con 0'16 arriba)

FIBRA 3 INTERACCIÓN CORTANTE TORSOR

Barra	Nudo	X	Hipótesis 1		Hipótesis 2		CÁLCULO Vrd(tn)						CÁLCULO Trd(tn)				factor colaboración de fibra	Interacción hip 1	Interacción hip 2
			Vmax	Tconc	Vcon	Tmax	K	Fcd(TN/M2)	COEF F1cd	bo	d	Colg θ	Vrd(tn)	α	Ae	he	Trd(tn)		
1	1	0.00	778.86	0.00	355.40	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.18
1	2	2.74	641.71	0.00	384.69	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.19
2	2	2.74	635.30	0.00	384.75	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.18
2	3	5.48	604.17	0.00	215.41	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.11
3	3	5.48	499.89	0.00	303.76	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.15
3	4	8.22	374.63	0.00	120.91	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.08
4	4	8.22	371.56	0.00	229.16	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.11
4	5	10.96	251.65	0.00	5.06	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.00
5	5	10.96	248.92	0.00	141.88	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.07
5	6	13.70	174.29	0.00	20.79	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.01
6	6	13.70	163.22	0.00	12.83	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.01
6	7	16.44	275.41	0.00	108.92	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.05
7	7	16.44	268.74	0.00	73.89	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.04
7	8	19.18	388.49	0.00	177.75	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.09
8	8	19.18	381.07	0.00	170.55	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.08
8	9	21.92	504.82	0.00	270.77	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.13
9	9	21.92	497.01	0.00	256.97	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.13
9	10	24.66	623.90	0.00	358.44	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.18
10	10	24.66	615.36	0.00	350.95	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.16
10	11	27.40	745.89	0.00	426.94	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.21
11	11	27.40	740.20	0.00	411.43	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.20
12	12	30.45	890.18	0.00	499.20	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.44
12	12	30.45	892.86	0.00	496.04	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.25
12	10013	33.50	1047.02	0.00	592.39	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.52

V1

FIBRA 3 INTERACCIÓN CORTANTE TORSOR

FIBRA 3 INTERACCION CORTANTE TORSION																					
Barra	Nudo	X	Hipótesis 1		Hipótesis 2		CÁLCULO Vrd(tn)							CÁLCULO Trd(tn)				factor colaboración de fibra	Interacción hip 1	Interacción hip 2	
			Vmax	Tconc	Vcon	Tmax	K	Fcd(TN/M2)	COEF F1cd	bo	d	Cotg θ	Vrd(tn)	α	Ae	he	Trd(tn)				
V3	13	13	33.50	1150.15	0.00	785.26	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.57	0.39
	13	14	36.89	978.79	0.00	644.79	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.49	0.32
	14	14	36.89	951.43	0.00	659.31	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.47	0.33
	14	15	40.28	786.34	0.00	522.37	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.39	0.26
	15	15	40.28	756.13	0.00	502.74	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.38	0.25
	15	16	43.67	596.79	0.00	270.92	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.30	0.13
	16	16	43.67	579.26	0.00	327.54	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.29	0.16
	16	17	47.06	424.89	0.00	200.45	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.21	0.10
	17	17	47.06	408.57	0.00	191.32	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.20	0.10
	17	18	50.45	260.82	0.00	60.21	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.13	0.03
	18	18	50.45	259.90	0.00	49.66	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.13	0.02
	18	19	53.84	161.69	0.00	85.67	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.08	0.04
	19	19	53.84	158.42	0.00	89.01	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.08	0.04
	19	20	57.23	303.00	0.00	219.61	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.15	0.11
	20	20	57.23	296.68	0.00	23.43	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.15	0.01
	20	21	60.62	446.65	0.00	350.96	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.22	0.17
	21	21	60.62	440.92	0.00	156.22	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.22	0.08
	21	22	64.01	595.64	0.00	402.52	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.30	0.20
	22	22	64.01	583.05	0.00	264.90	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.29	0.13
	22	23	67.40	742.78	0.00	385.32	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.37	0.19
	23	23	67.40	729.22	0.00	378.39	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.36	0.19
	23	24	70.45	877.88	0.00	478.62	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.44	0.24
	24	24	70.45	867.90	0.00	521.49	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.43	0.26
	24	10025	73.50	1022.13	0.00	618.60	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.51	0.31

FIBRA 3 INTERACCIÓN CORTANTE TORSOR

FIBRA 3 INTERACCIÓN CORTANTE TORSOR																					
	Barra	Nudo	X	Hipótesis 1		Hipótesis 2		CÁLCULO Vrd(tn)							CÁLCULO Trd(tn)				factor colaboración de fibra	Interacción hip 1	Interacción hip 2
				Vmax	Tconc	Vcon	Tmax	R	Fcd(TN/M2)	COEF F1cd	bo	d	Cotg θ	Vrd(tn)	α	Ae	he	Trd(tn)			
V4	25	25	73.50	1004.73	0.00	882.80	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.50	0.44
	25	26	76.26	864.20	0.00	756.68	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.43	0.38
	26	26	76.26	843.93	0.00	736.84	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.42	0.37
	26	27	79.02	707.83	0.00	615.27	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.35	0.31
	27	27	79.02	690.81	0.00	555.97	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.34	0.28
	27	28	81.78	559.46	0.00	438.49	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.28	0.22
	28	28	81.78	541.78	0.00	408.64	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.27	0.20
	28	29	84.54	415.23	0.00	295.21	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.21	0.15
	29	29	84.54	398.33	0.00	273.25	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.20	0.14
	29	30	87.30	276.57	0.00	163.91	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.14	0.08
	30	30	87.30	271.58	0.00	149.88	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.14	0.07
	30	31	90.06	160.42	0.00	8.02	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.08	0.00
	31	31	90.06	159.24	0.00	6.85	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.08	0.00
	31	32	92.82	261.97	0.00	116.81	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.13	0.06
	32	32	92.82	264.48	0.00	65.42	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.13	0.03
	32	33	95.58	389.55	0.00	269.59	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.19	0.13
	33	33	95.58	388.32	0.00	136.03	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.19	0.07
	33	34	98.34	520.19	0.00	390.32	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.26	0.19
	34	34	98.34	515.77	0.00	164.43	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.26	0.08
	34	35	101.10	654.69	0.00	512.43	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.33	0.26

FIBRA 3 INTERACCIÓN CORTANTE TORSOR

Barra	Nudo	X	Hipótesis 1		Hipótesis 2		CÁLCULO Vrd(tn)							CÁLCULO Trd(tn)				factor colaboración de fibra	Interacción hlp 1	Interacción hlp 2
			Vmax	Tconc	Vcon	Tmax	K	Fcd(TN/M2)	COEF F1cd	bo	d	Cotg θ	Vrd(tn)	α	Ae	he	Trd(ln)			
101	101	0.00	688.53	0.00	546.85	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.34	0.27
101	102	2.74	543.17	0.00	173.32	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.27	0.09
102	102	2.74	542.50	0.00	420.15	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.27	0.21
102	103	5.48	404.45	0.00	297.36	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.20	0.15
103	103	5.48	401.82	0.00	294.87	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.20	0.15
103	104	8.22	271.05	0.00	51.36	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.13	0.03
104	104	8.22	265.36	0.00	161.21	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.13	0.08
104	105	10.96	167.44	0.00	25.74	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.08	0.01
105	105	10.96	171.07	0.00	20.30	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.09	0.01
105	106	13.70	287.13	0.00	179.42	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.14	0.09
106	106	13.70	295.09	0.00	191.64	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.15	0.10
106	107	16.44	422.43	0.00	306.64	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.21	0.15
107	107	16.44	442.36	0.00	330.74	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.22	0.16
107	108	19.18	574.73	0.00	451.81	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.29	0.23
108	108	19.18	595.77	0.00	483.28	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.30	0.24
108	109	21.92	733.18	0.00	609.56	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.37	0.30
109	109	21.92	753.36	0.00	626.25	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.38	0.31
109	110	24.66	895.79	0.00	757.78	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.45	0.38
110	110	24.66	919.71	0.00	777.82	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.46	0.39
110	10111	27.40	1066.64	0.00	909.89	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.53	0.45

FIBRA 3 INTERACCIÓN CORTANTE TORSOR

Barra	Nudo	X	Hipótesis 1		Hipótesis 2		CÁLCULO Vrd(tn)							CÁLCULO Trd(tn)				factor colaboración de fibra	Interacción hlp 1	Interacción hlp 2
			Vmax	Tconc	Vcon	Tmax	K	Fcd(TN/M2)	COEF F1cd	bo	d	Cotg θ	Vrd(tn)	α	Ae	he	Trd(tn)			
111	111	27.40	1098.98	0.00	727.17	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.55	0.38
111	112	30.45	936.49	0.00	627.74	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.47	0.31
112	112	30.45	938.47	0.00	579.97	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.47	0.29
112	113	33.50	781.81	0.00	475.01	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.39	0.24
113	113	33.50	789.23	0.00	417.93	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.39	0.21
113	114	36.89	620.97	0.00	291.20	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.31	0.15
114	114	36.89	629.29	0.00	302.00	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.31	0.15
114	115	40.28	466.46	0.00	172.88	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.23	0.09
115	115	40.28	470.32	0.00	305.35	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.23	0.15
115	116	43.67	312.54	0.00	58.86	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.16	0.03
116	116	43.67	315.84	0.00	230.05	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.16	0.11
116	117	47.06	163.88	0.00	91.83	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.08	0.05
117	117	47.06	166.34	0.00	83.20	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.08	0.04
117	118	50.45	268.89	0.00	59.39	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.13	0.03
118	118	50.45	270.32	0.00	71.40	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.13	0.04
118	119	53.84	425.73	0.00	209.52	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.21	0.10
119	119	53.84	446.58	0.00	245.16	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.22	0.12
119	120	57.23	608.97	0.00	378.99	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.30	0.19
120	120	57.23	638.06	0.00	430.82	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.32	0.21
120	121	60.62	803.72	0.00	360.68	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.40	0.18
121	121	60.62	838.38	0.00	419.10	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.42	0.21
121	122	64.01	1012.20	0.00	682.58	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.50	0.34
122	122	64.01	1044.79	0.00	678.62	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.52	0.34
122	10123	67.40	1225.31	0.00	828.64	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.61	0.41

FIBRA 3 INTERACCIÓN CORTANTE TORSOR

FIBRA 3 INTERACCION CORTANTE TORSOR																					
Barra	Nudo	X	Hipótesis 1		Hipótesis 2		CÁLCULO Vrd(tn)							CÁLCULO Trd(tn)				factor colaboración de fibra	Interacción hip 1	Interacción hip 2	
			Vmax	Tconc	Vcon	Tmax	K	Fcd(TN/M2)	COEF F1cd	bo	d	Cotg θ	Vrd(tn)	α	Ae	he	Trd(tn)				
V5	123	123	67.40	1139.76	0.00	730.43	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.57	0.38
	123	124	70.45	977.43	0.00	628.45	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.49	0.31
	124	124	70.45	985.18	0.00	600.75	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.48	0.30
	124	125	73.50	807.11	0.00	529.99	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.40	0.26
	125	125	73.50	806.37	0.00	460.14	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.40	0.23
	125	126	76.26	666.00	0.00	353.93	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.33	0.18
	126	126	76.26	671.43	0.00	369.73	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.33	0.18
	126	127	79.02	536.81	0.00	264.33	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.27	0.13
	127	127	79.02	540.73	0.00	294.71	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.27	0.15
	127	128	81.78	409.72	0.00	188.42	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.20	0.09
	128	128	81.78	413.66	0.00	192.60	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.21	0.10
	128	129	84.54	286.62	0.00	82.44	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.14	0.04
	129	129	84.54	290.31	0.00	98.74	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.14	0.05
	129	130	87.30	171.16	0.00	12.65	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.09	0.01
	130	130	87.30	179.95	0.00	96.20	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.09	0.05
	130	131	90.06	269.78	0.00	157.62	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.13	0.08
	131	131	90.06	274.55	0.00	8.01	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.14	0.00
	131	132	92.82	401.51	0.00	254.14	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.20	0.13
	132	132	92.82	407.84	0.00	133.34	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.20	0.07
	132	133	95.58	540.48	0.00	246.56	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.27	0.12
	133	133	95.58	546.76	0.00	300.94	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.27	0.15
	133	134	98.34	667.65	0.00	351.90	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.34	0.18
	134	134	98.34	699.40	0.00	458.08	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.35	0.23
	134	135	101.10	845.08	0.00	548.21	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.19	0.42	0.27

ARMADO CORTANTE - TORSOR

ARMADO CORTANTE - TORSOR																	ARMAD. TOTAL TRANSV.		ARMAD. TORSIÓN LONG		
	Barra	Nudo	X	Hipótesis 1		Hipótesis 2		ARMADURA POR CORTANTE				HIP1	HIP2	ARMADURA POR TORSOR		HIP1	HIP2	HIP1	HIP2	HIP1	HIP2
				Vmax	Tconc	Vcon	Tmax	d	Cotg θ	factor colaboración de fibra	A (cm2/m)	A (cm2/m)	Ae(m2)	Cotg q	A (cm2/m)	A (cm2/m)	A (cm2/m)	A (cm2/m)	A (cm2/m)	A (cm2/m)	A (cm2/m)
V1	1	1	0.00	778.9	0.0	355.4	0.0	2.7	1.0	0.19	15.1	6.9	5.5	1.0	0.0	0.0	15.1	6.9	0.0	0.0	
	1	2	2.74	641.7	0.0	384.7	0.0	2.7	1.0	0.19	12.4	7.5	5.5	1.0	0.0	0.0	12.4	7.5	0.0	0.0	
	2	2	2.74	635.3	0.0	364.8	0.0	2.7	1.0	0.19	12.3	7.1	5.5	1.0	0.0	0.0	12.3	7.1	0.0	0.0	
	2	3	5.48	504.2	0.0	215.4	0.0	2.7	1.0	0.19	9.8	4.2	5.5	1.0	0.0	0.0	9.8	4.2	0.0	0.0	
	3	3	5.48	499.7	0.0	303.8	0.0	2.7	1.0	0.19	9.7	5.9	5.5	1.0	0.0	0.0	9.7	5.9	0.0	0.0	
	3	4	8.22	374.5	0.0	120.9	0.0	2.7	1.0	0.19	7.3	2.3	5.5	1.0	0.0	0.0	7.3	2.3	0.0	0.0	
	4	4	8.22	371.6	0.0	229.2	0.0	2.7	1.0	0.19	7.2	4.4	5.5	1.0	0.0	0.0	7.2	4.4	0.0	0.0	
	4	5	10.96	251.7	0.0	5.1	0.0	2.7	1.0	0.19	4.9	0.1	5.5	1.0	0.0	0.0	4.9	0.1	0.0	0.0	
	5	5	10.96	249.9	0.0	141.9	0.0	2.7	1.0	0.19	4.8	2.7	5.5	1.0	0.0	0.0	4.8	2.7	0.0	0.0	
	5	6	13.70	174.3	0.0	20.8	0.0	2.7	1.0	0.19	3.4	0.4	5.5	1.0	0.0	0.0	3.4	0.4	0.0	0.0	
	6	6	13.70	163.2	0.0	12.8	0.0	2.7	1.0	0.19	3.2	0.2	5.5	1.0	0.0	0.0	3.2	0.2	0.0	0.0	
	6	7	16.44	275.4	0.0	108.9	0.0	2.7	1.0	0.19	5.3	2.1	5.5	1.0	0.0	0.0	5.3	2.1	0.0	0.0	
	7	7	16.44	268.7	0.0	73.9	0.0	2.7	1.0	0.19	5.2	1.4	5.5	1.0	0.0	0.0	5.2	1.4	0.0	0.0	
	7	8	19.18	388.5	0.0	177.7	0.0	2.7	1.0	0.19	7.5	3.4	5.5	1.0	0.0	0.0	7.5	3.4	0.0	0.0	
	8	8	19.18	381.1	0.0	170.6	0.0	2.7	1.0	0.19	7.4	3.3	5.5	1.0	0.0	0.0	7.4	3.3	0.0	0.0	
	8	9	21.92	504.6	0.0	270.8	0.0	2.7	1.0	0.19	9.8	5.2	5.5	1.0	0.0	0.0	9.8	5.2	0.0	0.0	
	9	9	21.92	497.0	0.0	257.0	0.0	2.7	1.0	0.19	9.6	5.0	5.5	1.0	0.0	0.0	9.6	5.0	0.0	0.0	
	9	10	24.66	623.9	0.0	356.4	0.0	2.7	1.0	0.19	12.1	6.9	5.5	1.0	0.0	0.0	12.1	6.9	0.0	0.0	
	10	10	24.66	615.4	0.0	330.9	0.0	2.7	1.0	0.19	11.9	6.4	5.5	1.0	0.0	0.0	11.9	6.4	0.0	0.0	
	10	11	27.40	745.7	0.0	426.9	0.0	2.7	1.0	0.19	14.4	8.3	5.5	1.0	0.0	0.0	14.4	8.3	0.0	0.0	
11	11	27.40	740.2	0.0	411.4	0.0	2.7	1.0	0.19	14.3	8.0	5.5	1.0	0.0	0.0	14.3	8.0	0.0	0.0		
11	12	30.45	890.2	0.0	499.2	0.0	2.7	1.0	0.19	17.2	9.7	5.5	1.0	0.0	0.0	17.2	9.7	0.0	0.0		
12	12	30.45	892.9	0.0	496.0	0.0	2.7	1.0	0.19	17.3	9.6	5.5	1.0	0.0	0.0	17.3	9.6	0.0	0.0		
12	10013	33.50	1047.0	0.0	592.4	0.0	2.7	1.0	0.19	20.3	11.5	5.5	1.0	0.0	0.0	20.3	11.5	0.0	0.0		

ARMADO CORTANTE - TORSOR																	ARMAD. TOTAL TRANSV.		ARMAD. TORSIÓN LONG	
	Barra	Nudo	X	Hipótesis 1		Hipótesis 2		ARMADURA POR CORTANTE			HIP1	HIP2	ARMADURA POR TORSIÓN		HIP1	HIP2	HIP1	HIP2	HIP1	HIP2
				Vmax	Tconc	Vcon	Tmax	d	Cotg θ	factor colaboración de fibra	A (cm2/m)	A (cm2/m)	Ae(m2)	Cotg q	A (cm2/m)	A (cm2/m)	A (cm2/m)	A (cm2/m)	A (cm2/m)	A (cm2/m)
V3	13	13	33.50	1150.2	0.0	785.3	0.0	2.7	1.0	0.19	22.3	15.2	5.5	1.0	0.0	0.0	22.3	15.2	0.0	0.0
	13	14	38.89	978.8	0.0	644.8	0.0	2.7	1.0	0.19	19.0	12.5	5.5	1.0	0.0	0.0	19.0	12.5	0.0	0.0
	14	14	38.89	951.4	0.0	659.3	0.0	2.7	1.0	0.19	18.4	12.8	5.5	1.0	0.0	0.0	18.4	12.8	0.0	0.0
	14	15	40.28	786.3	0.0	522.4	0.0	2.7	1.0	0.19	15.2	10.1	5.5	1.0	0.0	0.0	15.2	10.1	0.0	0.0
	15	15	40.28	756.1	0.0	502.7	0.0	2.7	1.0	0.19	14.6	9.7	5.5	1.0	0.0	0.0	14.6	9.7	0.0	0.0
	15	16	43.67	598.8	0.0	270.9	0.0	2.7	1.0	0.19	11.6	5.2	5.5	1.0	0.0	0.0	11.6	5.2	0.0	0.0
	16	16	43.67	579.3	0.0	327.5	0.0	2.7	1.0	0.19	11.2	6.3	5.5	1.0	0.0	0.0	11.2	6.3	0.0	0.0
	16	17	47.06	424.9	0.0	200.5	0.0	2.7	1.0	0.19	8.2	3.9	5.5	1.0	0.0	0.0	8.2	3.9	0.0	0.0
	17	17	47.06	408.6	0.0	191.3	0.0	2.7	1.0	0.19	7.9	3.7	5.5	1.0	0.0	0.0	7.9	3.7	0.0	0.0
	17	18	50.45	260.8	0.0	60.2	0.0	2.7	1.0	0.19	5.1	1.2	5.5	1.0	0.0	0.0	5.1	1.2	0.0	0.0
	18	18	50.45	259.9	0.0	49.7	0.0	2.7	1.0	0.19	5.0	1.0	5.5	1.0	0.0	0.0	5.0	1.0	0.0	0.0
	18	19	53.84	161.7	0.0	85.7	0.0	2.7	1.0	0.19	3.1	1.7	5.5	1.0	0.0	0.0	3.1	1.7	0.0	0.0
	19	19	53.84	158.4	0.0	89.0	0.0	2.7	1.0	0.19	3.1	1.7	5.5	1.0	0.0	0.0	3.1	1.7	0.0	0.0
	19	20	57.23	303.0	0.0	219.6	0.0	2.7	1.0	0.19	5.9	4.3	5.5	1.0	0.0	0.0	5.9	4.3	0.0	0.0
	20	20	57.23	296.7	0.0	23.4	0.0	2.7	1.0	0.19	5.7	0.5	5.5	1.0	0.0	0.0	5.7	0.5	0.0	0.0
	20	21	60.62	446.6	0.0	351.0	0.0	2.7	1.0	0.19	8.7	6.8	5.5	1.0	0.0	0.0	8.7	6.8	0.0	0.0
	21	21	60.62	440.9	0.0	156.2	0.0	2.7	1.0	0.19	8.5	3.0	5.5	1.0	0.0	0.0	8.5	3.0	0.0	0.0
	21	22	64.01	595.6	0.0	402.5	0.0	2.7	1.0	0.19	11.5	7.8	5.5	1.0	0.0	0.0	11.5	7.8	0.0	0.0
	22	22	64.01	583.0	0.0	264.9	0.0	2.7	1.0	0.19	11.3	5.1	5.5	1.0	0.0	0.0	11.3	5.1	0.0	0.0
	22	23	67.40	742.8	0.0	385.3	0.0	2.7	1.0	0.19	14.4	7.5	5.5	1.0	0.0	0.0	14.4	7.5	0.0	0.0
	23	23	67.40	729.2	0.0	378.4	0.0	2.7	1.0	0.19	14.1	7.3	5.5	1.0	0.0	0.0	14.1	7.3	0.0	0.0
	23	24	70.45	877.9	0.0	478.6	0.0	2.7	1.0	0.19	17.0	9.3	5.5	1.0	0.0	0.0	17.0	9.3	0.0	0.0
	24	24	70.45	867.9	0.0	521.5	0.0	2.7	1.0	0.19	16.8	10.1	5.5	1.0	0.0	0.0	16.8	10.1	0.0	0.0
	24	10025	73.50	1022.1	0.0	618.6	0.0	2.7	1.0	0.19	19.8	12.0	5.5	1.0	0.0	0.0	19.8	12.0	0.0	0.0

ARMADO CORTANTE - TORSOR																	ARMAD. TOTAL TRANSV.		ARMAD. TORSIÓN LONG	
	Barra	Nudo	X	Hipótesis 1		Hipótesis 2		ARMADURA POR CORTANTE			HIP1	HIP2	ARMADURA POR TORSIÓN		HIP1	HIP2	HIP1	HIP2	HIP1	HIP2
				Vmax	Tconc	Vcon	Tmax	d	Cotg θ	factor colaboración de fibra	A (cm2/m)	A (cm2/m)	Ae(m2)	Cotg q	A (cm2/m)	A (cm2/m)	A (cm2/m)	A (cm2/m)	A (cm2/m)	A (cm2/m)
V4	25	25	73.50	1004.7	0.0	882.8	0.0	2.7	1.0	0.19	19.5	17.1	5.5	1.0	0.0	0.0	19.5	17.1	0.0	0.0
	25	26	76.26	864.2	0.0	756.7	0.0	2.7	1.0	0.19	16.7	14.7	5.5	1.0	0.0	0.0	16.7	14.7	0.0	0.0
	26	26	76.26	843.9	0.0	736.8	0.0	2.7	1.0	0.19	16.3	14.3	5.5	1.0	0.0	0.0	16.3	14.3	0.0	0.0
	26	27	79.02	707.8	0.0	615.3	0.0	2.7	1.0	0.19	13.7	11.9	5.5	1.0	0.0	0.0	13.7	11.9	0.0	0.0
	27	27	79.02	690.8	0.0	556.0	0.0	2.7	1.0	0.19	13.4	10.8	5.5	1.0	0.0	0.0	13.4	10.8	0.0	0.0
	27	28	81.78	559.5	0.0	438.5	0.0	2.7	1.0	0.19	10.8	8.5	5.5	1.0	0.0	0.0	10.8	8.5	0.0	0.0
	28	28	81.78	541.8	0.0	408.6	0.0	2.7	1.0	0.19	10.5	7.9	5.5	1.0	0.0	0.0	10.5	7.9	0.0	0.0
	28	29	84.54	415.2	0.0	295.2	0.0	2.7	1.0	0.19	8.0	5.7	5.5	1.0	0.0	0.0	8.0	5.7	0.0	0.0
	29	29	84.54	398.3	0.0	273.2	0.0	2.7	1.0	0.19	7.7	5.3	5.5	1.0	0.0	0.0	7.7	5.3	0.0	0.0
	29	30	87.30	276.6	0.0	163.9	0.0	2.7	1.0	0.19	5.4	3.2	5.5	1.0	0.0	0.0	5.4	3.2	0.0	0.0
	30	30	87.30	271.6	0.0	149.9	0.0	2.7	1.0	0.19	5.3	2.9	5.5	1.0	0.0	0.0	5.3	2.9	0.0	0.0
	30	31	90.06	160.4	0.0	8.0	0.0	2.7	1.0	0.19	3.1	0.2	5.5	1.0	0.0	0.0	3.1	0.2	0.0	0.0
	31	31	90.06	159.2	0.0	6.8	0.0	2.7	1.0	0.19	3.1	0.1	5.5	1.0	0.0	0.0	3.1	0.1	0.0	0.0
	31	32	92.82	262.0	0.0	116.8	0.0	2.7	1.0	0.19	5.1	2.3	5.5	1.0	0.0	0.0	5.1	2.3	0.0	0.0
	32	32	92.82	264.5	0.0	65.4	0.0	2.7	1.0	0.19	5.1	1.3	5.5	1.0	0.0	0.0	5.1	1.3	0.0	0.0
	32	33	95.58	389.6	0.0	269.6	0.0	2.7	1.0	0.19	7.5	5.2	5.5	1.0	0.0	0.0	7.5	5.2	0.0	0.0
	33	33	95.58	388.3	0.0	136.0	0.0	2.7	1.0	0.19	7.5	2.6	5.5	1.0	0.0	0.0	7.5	2.6	0.0	0.0
	33	34	98.34	520.2	0.0	390.3	0.0	2.7	1.0	0.19	10.1	7.6	5.5	1.0	0.0	0.0	10.1	7.6	0.0	0.0
34	34	98.34	515.8	0.0	164.4	0.0	2.7	1.0	0.19	10.0	3.2	5.5	1.0	0.0	0.0	10.0	3.2	0.0	0.0	
34	35	101.10	654.7	0.0	512.4	0.0	2.7	1.0	0.19	12.7	9.9	5.5	1.0	0.0	0.0	12.7	9.9	0.0	0.0	

ARMADO CORTANTE - TORSOR																	ARMAD. TOTAL TRANSV.		ARMAD. TORSIÓN LONG	
	Barra	Nudo	X	Hipótesis 1		Hipótesis 2		ARMADURA POR CORTANTE			HIP1	HIP2	ARMADURA POR TORSIÓN		HIP1	HIP2	HIP1	HIP2	HIP1	HIP2
				Vmax	Tconc	Vcon	Tmax	d	Cotg θ	factor colaboración de fibra	A (cm2/m)	A (cm2/m)	Ae(m2)	Cotg q	A (cm2/m)	A (cm2/m)	A (cm2/m)	A (cm2/m)	A (cm2/m)	A (cm2/m)
V2	101	101	0.00	888.5	0.0	546.8	0.0	2.7	1.0	0.19	13.3	10.6	5.5	1.0	0.0	0.0	13.3	10.6	0.0	0.0
	101	102	2.74	543.2	0.0	173.3	0.0	2.7	1.0	0.19	10.5	3.4	5.5	1.0	0.0	0.0	10.5	3.4	0.0	0.0
	102	102	2.74	542.5	0.0	420.2	0.0	2.7	1.0	0.19	10.5	8.1	5.5	1.0	0.0	0.0	10.5	8.1	0.0	0.0
	102	103	5.48	404.5	0.0	297.4	0.0	2.7	1.0	0.19	7.8	5.8	5.5	1.0	0.0	0.0	7.8	5.8	0.0	0.0
	103	103	5.48	401.8	0.0	294.9	0.0	2.7	1.0	0.19	7.8	5.7	5.5	1.0	0.0	0.0	7.8	5.7	0.0	0.0
	103	104	8.22	271.1	0.0	51.4	0.0	2.7	1.0	0.19	5.2	1.0	5.5	1.0	0.0	0.0	5.2	1.0	0.0	0.0
	104	104	8.22	265.4	0.0	161.2	0.0	2.7	1.0	0.19	5.1	3.1	5.5	1.0	0.0	0.0	5.1	3.1	0.0	0.0
	104	105	10.96	167.4	0.0	25.7	0.0	2.7	1.0	0.19	3.2	0.5	5.5	1.0	0.0	0.0	3.2	0.5	0.0	0.0
	105	105	10.96	171.1	0.0	20.3	0.0	2.7	1.0	0.19	3.3	0.4	5.5	1.0	0.0	0.0	3.3	0.4	0.0	0.0
	105	106	13.70	287.1	0.0	179.4	0.0	2.7	1.0	0.19	5.6	3.5	5.5	1.0	0.0	0.0	5.6	3.5	0.0	0.0
	106	106	13.70	295.1	0.0	191.6	0.0	2.7	1.0	0.19	5.7	3.7	5.5	1.0	0.0	0.0	5.7	3.7	0.0	0.0
	106	107	16.44	422.4	0.0	306.6	0.0	2.7	1.0	0.19	8.2	5.9	5.5	1.0	0.0	0.0	8.2	5.9	0.0	0.0
	107	107	16.44	442.4	0.0	330.7	0.0	2.7	1.0	0.19	8.6	6.4	5.5	1.0	0.0	0.0	8.6	6.4	0.0	0.0
	107	108	19.18	574.7	0.0	451.8	0.0	2.7	1.0	0.19	11.1	8.8	5.5	1.0	0.0	0.0	11.1	8.8	0.0	0.0
	108	108	19.18	595.8	0.0	483.3	0.0	2.7	1.0	0.19	11.5	9.4	5.5	1.0	0.0	0.0	11.5	9.4	0.0	0.0
	108	109	21.92	733.2	0.0	609.6	0.0	2.7	1.0	0.19	14.2	11.8	5.5	1.0	0.0	0.0	14.2	11.8	0.0	0.0
	109	109	21.92	753.4	0.0	626.3	0.0	2.7	1.0	0.19	14.6	12.1	5.5	1.0	0.0	0.0	14.6	12.1	0.0	0.0
	109	110	24.66	895.8	0.0	757.8	0.0	2.7	1.0	0.19	17.3	14.7	5.5	1.0	0.0	0.0	17.3	14.7	0.0	0.0
	110	110	24.66	919.7	0.0	777.8	0.0	2.7	1.0	0.19	17.8	15.1	5.5	1.0	0.0	0.0	17.8	15.1	0.0	0.0
	110	10111	27.40	1066.8	0.0	909.9	0.0	2.7	1.0	0.19	20.7	17.6	5.5	1.0	0.0	0.0	20.7	17.6	0.0	0.0

ARMADO CORTANTE - TORSOR																	ARMAD. TOTAL TRANSV.		ARMAD. TORSIÓN LONG	
	Barra	Nudo	X	Hipótesis 1		Hipótesis 2		ARMADURA POR CORTANTE			HIP1	HIP2	ARMADURA POR TORSIÓN		HIP1	HIP2	HIP1	HIP2	HIP1	HIP2
				Vmax	Tconc	Vcon	Tmax	d	Cotg θ	factor colaboración de fibra	A (cm2/m)	A (cm2/m)	Ae(m2)	Cotg q	A (cm2/m)	A (cm2/m)	A (cm2/m)	A (cm2/m)	A (cm2/m)	A (cm2/m)
V3	111	111	27.40	1099.0	0.0	727.2	0.0	2.7	1.0	0.19	21.3	14.1	5.5	1.0	0.0	0.0	21.3	14.1	0.0	0.0
	111	112	30.45	936.5	0.0	627.7	0.0	2.7	1.0	0.19	18.1	12.2	5.5	1.0	0.0	0.0	18.1	12.2	0.0	0.0
	112	112	30.45	938.5	0.0	580.0	0.0	2.7	1.0	0.19	18.2	11.2	5.5	1.0	0.0	0.0	18.2	11.2	0.0	0.0
	112	113	33.50	781.8	0.0	475.0	0.0	2.7	1.0	0.19	15.1	9.2	5.5	1.0	0.0	0.0	15.1	9.2	0.0	0.0
	113	113	33.50	789.2	0.0	417.9	0.0	2.7	1.0	0.19	15.3	8.1	5.5	1.0	0.0	0.0	15.3	8.1	0.0	0.0
	113	114	36.89	621.0	0.0	291.2	0.0	2.7	1.0	0.19	12.0	5.6	5.5	1.0	0.0	0.0	12.0	5.6	0.0	0.0
	114	114	36.89	629.3	0.0	302.0	0.0	2.7	1.0	0.19	12.2	5.8	5.5	1.0	0.0	0.0	12.2	5.8	0.0	0.0
	114	115	40.28	466.5	0.0	172.9	0.0	2.7	1.0	0.19	9.0	3.3	5.5	1.0	0.0	0.0	9.0	3.3	0.0	0.0
	115	115	40.28	470.3	0.0	305.3	0.0	2.7	1.0	0.19	9.1	5.9	5.5	1.0	0.0	0.0	9.1	5.9	0.0	0.0
	115	116	43.67	312.5	0.0	58.9	0.0	2.7	1.0	0.19	6.1	1.1	5.5	1.0	0.0	0.0	6.1	1.1	0.0	0.0
	116	116	43.67	315.8	0.0	230.0	0.0	2.7	1.0	0.19	6.1	4.5	5.5	1.0	0.0	0.0	6.1	4.5	0.0	0.0
	116	117	47.06	163.9	0.0	91.8	0.0	2.7	1.0	0.19	3.2	1.8	5.5	1.0	0.0	0.0	3.2	1.8	0.0	0.0
	117	117	47.06	166.3	0.0	83.2	0.0	2.7	1.0	0.19	3.2	1.6	5.5	1.0	0.0	0.0	3.2	1.6	0.0	0.0
	117	118	50.45	268.9	0.0	59.4	0.0	2.7	1.0	0.19	5.2	1.2	5.5	1.0	0.0	0.0	5.2	1.2	0.0	0.0
	118	118	50.45	270.3	0.0	71.4	0.0	2.7	1.0	0.19	5.2	1.4	5.5	1.0	0.0	0.0	5.2	1.4	0.0	0.0
	118	119	53.84	425.7	0.0	209.5	0.0	2.7	1.0	0.19	8.2	4.1	5.5	1.0	0.0	0.0	8.2	4.1	0.0	0.0
	119	119	53.84	446.6	0.0	245.2	0.0	2.7	1.0	0.19	8.6	4.7	5.5	1.0	0.0	0.0	8.6	4.7	0.0	0.0
	119	120	57.23	609.0	0.0	379.0	0.0	2.7	1.0	0.19	11.8	7.3	5.5	1.0	0.0	0.0	11.8	7.3	0.0	0.0
	120	120	57.23	638.1	0.0	430.8	0.0	2.7	1.0	0.19	12.4	8.3	5.5	1.0	0.0	0.0	12.4	8.3	0.0	0.0
	120	121	60.62	803.7	0.0	360.7	0.0	2.7	1.0	0.19	15.6	7.0	5.5	1.0	0.0	0.0	15.6	7.0	0.0	0.0
	121	121	60.62	838.4	0.0	419.1	0.0	2.7	1.0	0.19	16.2	8.1	5.5	1.0	0.0	0.0	16.2	8.1	0.0	0.0
	121	122	64.01	1012.2	0.0	682.6	0.0	2.7	1.0	0.19	19.6	13.2	5.5	1.0	0.0	0.0	19.6	13.2	0.0	0.0
	122	122	64.01	1044.8	0.0	678.6	0.0	2.7	1.0	0.19	20.2	13.1	5.5	1.0	0.0	0.0	20.2	13.1	0.0	0.0
	122	10123	67.40	1225.3	0.0	828.6	0.0	2.7	1.0	0.19	23.7	16.0	5.5	1.0	0.0	0.0	23.7	16.0	0.0	0.0

ARMADO CORTANTE - TORSOR																ARMAD. TOTAL TRANSV.		ARMAD. TORSIÓN LONG		
	Barra	Nudo	X	Hipótesis 1		Hipótesis 2		ARMADURA POR CORTANTE			HIP1	HIP2	ARMADURA POR TORSIÓN		HIP1	HIP2	HIP1	HIP2	HIP1	HIP2
				Vmax	Tconc	Vcon	Tmax	d	Cotg θ	factor colaboración de fibra	A (cm2/m)	A (cm2/m)	Ae(m2)	Cotg q	A (cm2/m)	A (cm2/m)	A (cm2/m)	A (cm2/m)	A (cm2/m)	A (cm2/m)
V5	123	123	67.40	1139.8	0.0	730.4	0.0	2.7	1.0	0.19	22.1	14.1	5.5	1.0	0.0	0.0	22.1	14.1	0.0	0.0
	123	124	70.45	977.4	0.0	628.5	0.0	2.7	1.0	0.19	18.9	12.2	5.5	1.0	0.0	0.0	18.9	12.2	0.0	0.0
	124	124	70.45	965.2	0.0	600.8	0.0	2.7	1.0	0.19	18.7	11.6	5.5	1.0	0.0	0.0	18.7	11.6	0.0	0.0
	124	125	73.50	807.1	0.0	530.0	0.0	2.7	1.0	0.19	15.6	10.3	5.5	1.0	0.0	0.0	15.6	10.3	0.0	0.0
	125	125	73.50	806.4	0.0	460.1	0.0	2.7	1.0	0.19	15.6	8.9	5.5	1.0	0.0	0.0	15.6	8.9	0.0	0.0
	125	126	76.26	668.0	0.0	353.9	0.0	2.7	1.0	0.19	12.9	6.9	5.5	1.0	0.0	0.0	12.9	6.9	0.0	0.0
	126	126	76.26	671.4	0.0	369.7	0.0	2.7	1.0	0.19	13.0	7.2	5.5	1.0	0.0	0.0	13.0	7.2	0.0	0.0
	126	127	79.02	536.8	0.0	264.3	0.0	2.7	1.0	0.19	10.4	5.1	5.5	1.0	0.0	0.0	10.4	5.1	0.0	0.0
	127	127	79.02	540.7	0.0	294.7	0.0	2.7	1.0	0.19	10.5	5.7	5.5	1.0	0.0	0.0	10.5	5.7	0.0	0.0
	127	128	81.78	409.7	0.0	188.4	0.0	2.7	1.0	0.19	7.9	3.6	5.5	1.0	0.0	0.0	7.9	3.6	0.0	0.0
	128	128	81.78	413.7	0.0	192.6	0.0	2.7	1.0	0.19	8.0	3.7	5.5	1.0	0.0	0.0	8.0	3.7	0.0	0.0
	128	129	84.54	286.6	0.0	82.4	0.0	2.7	1.0	0.19	5.6	1.6	5.5	1.0	0.0	0.0	5.6	1.6	0.0	0.0
	129	129	84.54	290.3	0.0	98.7	0.0	2.7	1.0	0.19	5.6	1.9	5.5	1.0	0.0	0.0	5.6	1.9	0.0	0.0
	129	130	87.30	171.2	0.0	12.7	0.0	2.7	1.0	0.19	3.3	0.2	5.5	1.0	0.0	0.0	3.3	0.2	0.0	0.0
	130	130	87.30	180.0	0.0	96.2	0.0	2.7	1.0	0.19	3.5	1.9	5.5	1.0	0.0	0.0	3.5	1.9	0.0	0.0
	130	131	90.06	269.8	0.0	157.6	0.0	2.7	1.0	0.19	5.2	3.1	5.5	1.0	0.0	0.0	5.2	3.1	0.0	0.0
	131	131	90.06	274.5	0.0	8.0	0.0	2.7	1.0	0.19	5.3	0.2	5.5	1.0	0.0	0.0	5.3	0.2	0.0	0.0
	131	132	92.82	401.5	0.0	254.1	0.0	2.7	1.0	0.19	7.8	4.9	5.5	1.0	0.0	0.0	7.8	4.9	0.0	0.0
	132	132	92.82	407.8	0.0	133.3	0.0	2.7	1.0	0.19	7.9	2.6	5.5	1.0	0.0	0.0	7.9	2.6	0.0	0.0
	132	133	95.58	540.5	0.0	246.6	0.0	2.7	1.0	0.19	10.5	4.8	5.5	1.0	0.0	0.0	10.5	4.8	0.0	0.0
	133	133	95.58	548.8	0.0	300.9	0.0	2.7	1.0	0.19	10.6	5.8	5.5	1.0	0.0	0.0	10.6	5.8	0.0	0.0
	133	134	98.34	687.8	0.0	351.9	0.0	2.7	1.0	0.19	13.3	6.8	5.5	1.0	0.0	0.0	13.3	6.8	0.0	0.0
	134	134	98.34	699.4	0.0	458.1	0.0	2.7	1.0	0.19	13.5	8.9	5.5	1.0	0.0	0.0	13.5	8.9	0.0	0.0
	134	135	101.10	845.1	0.0	548.2	0.0	2.7	1.0	0.19	16.4	10.6	5.5	1.0	0.0	0.0	16.4	10.6	0.0	0.0

FIBRA 4 INTERACCIÓN CORTANTE TORSOR																				
Barra	Nudo	X	Hipótesis 1		Hipótesis 2		CÁLCULO Vrd(tn)							CÁLCULO Trd(tn)				factor colaboración de fibra	Interacción hip 1	Interacción hip 2
			Vmax	Tconc	Vcon	Tmax	K	Fcd(TN/M2)	COEF F1cd	bo	d	Cotg θ	Vrd(tn)	α	Ae	he	Trd(tn)			
V1	1	1	0.00	778.88	0.00	355.40	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.29
	1	2	2.74	841.71	0.00	384.69	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.31
	2	2	2.74	635.30	0.00	364.76	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.30
	2	3	5.48	504.17	0.00	215.41	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.41
	3	3	5.48	499.89	0.00	303.76	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.41
	3	4	8.22	374.63	0.00	120.91	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.30
	4	4	8.22	371.66	0.00	229.16	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.19
	4	5	10.96	251.65	0.00	5.06	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.20
	5	5	10.96	249.92	0.00	141.88	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.12
	5	6	13.70	174.29	0.00	20.79	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.14
	6	6	13.70	163.22	0.00	12.83	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.13
	6	7	16.44	275.41	0.00	108.92	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.22
	7	7	16.44	268.74	0.00	73.89	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.22
	7	8	19.18	388.49	0.00	177.75	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.32
	8	8	19.18	381.07	0.00	170.55	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.31
	8	9	21.92	504.62	0.00	270.77	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.41
	9	9	21.92	497.01	0.00	256.97	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.40
	9	10	24.66	623.90	0.00	356.44	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.51
	10	10	24.66	615.36	0.00	330.95	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.50
	10	11	27.40	745.69	0.00	426.94	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.81
	11	11	27.40	740.20	0.00	411.43	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.60
	11	12	30.45	890.18	0.00	499.20	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.72
	12	12	30.45	892.86	0.00	496.04	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.73
	12	10013	33.50	1047.02	0.00	592.39	0.00	1.0	2333.3	0.4	0.30	2.73	1.0	381.5	1.5	5.5	0.30	1159.2	0.31	0.85

Fibra 4 - VLADIZO

La armadura general por flexión es de $\phi 12 \text{ a } 0'10 + \phi 20 \text{ a } 0'20$, por lo que es necesario refuerzos locales en zona de pila.

Además el coeficiente de interacción en todos casos es menor que 1.

El refuerzo se coloca a $6'50 \text{ m}$ a cada lado de cada pila y como disponer 3

$\phi 12 \text{ a } 0'20 + \phi 20 \text{ a } 0'20$ (arriba) y $\phi 16 \text{ a } 0'10$ abajo a $0'20$ (arriba)

Barra	Nudo	X	ARMADO CORTANTE - TORSOR										ARMAD. TOTAL TRANSV. ARMAD. TORSIÓN LONG			
			Hipótesis 1		Hipótesis 2		ARMADURA POR CORTANTE		ARMADURA POR TC		HIP1		HIP2		HIP1	
			Vmax	Tconc	Vcon	Tmax	d	Cotg θ	factor colaboración de fibra	A (cm ² /m)	A (cm ² /m)	A (cm ² /m)	A (cm ² /m)	A (cm ² /m)	A (cm ² /m)	A (cm ² /m)
111	111	27.40	1099.0	0.0	927.2	0.0	2.7	1.0	0.31	34.7	23.0	5.5	1.0	0.0	34.7	23.0
111	112	30.45	938.5	0.0	827.7	0.0	2.7	1.0	0.31	29.6	19.8	5.5	1.0	0.0	29.6	19.8
112	112	30.45	938.5	0.0	580.0	0.0	2.7	1.0	0.31	29.7	18.3	5.5	1.0	0.0	29.7	18.3
112	113	33.50	781.8	0.0	475.0	0.0	2.7	1.0	0.31	24.7	15.0	5.5	1.0	0.0	24.7	15.0
113	113	33.50	789.2	0.0	417.9	0.0	2.7	1.0	0.31	24.9	13.2	5.5	1.0	0.0	24.9	13.2
113	114	36.89	621.0	0.0	291.2	0.0	2.7	1.0	0.31	19.6	9.2	5.5	1.0	0.0	19.6	9.2
114	114	36.89	629.3	0.0	302.0	0.0	2.7	1.0	0.31	19.9	9.5	5.5	1.0	0.0	19.9	9.5
114	115	40.28	466.5	0.0	172.9	0.0	2.7	1.0	0.31	14.7	5.5	5.5	1.0	0.0	14.7	5.5
115	115	40.28	470.3	0.0	305.3	0.0	2.7	1.0	0.31	14.9	9.6	5.5	1.0	0.0	14.9	9.6
115	116	43.67	312.5	0.0	58.9	0.0	2.7	1.0	0.31	9.9	1.9	5.5	1.0	0.0	9.9	1.9
116	116	43.67	315.8	0.0	230.0	0.0	2.7	1.0	0.31	10.0	7.3	5.5	1.0	0.0	10.0	7.3
116	117	47.06	163.9	0.0	91.8	0.0	2.7	1.0	0.31	5.2	2.9	5.5	1.0	0.0	5.2	2.9
117	117	47.06	166.3	0.0	83.2	0.0	2.7	1.0	0.31	5.3	2.6	5.5	1.0	0.0	5.3	2.6
117	118	50.45	268.9	0.0	59.4	0.0	2.7	1.0	0.31	8.5	1.9	5.5	1.0	0.0	8.5	1.9
118	118	50.45	270.3	0.0	71.4	0.0	2.7	1.0	0.31	8.5	2.3	5.5	1.0	0.0	8.5	2.3
118	119	53.84	425.7	0.0	209.5	0.0	2.7	1.0	0.31	13.5	6.6	5.5	1.0	0.0	13.5	6.6
119	119	53.84	446.6	0.0	245.2	0.0	2.7	1.0	0.31	14.1	7.7	5.5	1.0	0.0	14.1	7.7
119	120	57.23	609.0	0.0	379.0	0.0	2.7	1.0	0.31	19.2	12.0	5.5	1.0	0.0	19.2	12.0
120	120	57.23	638.1	0.0	430.8	0.0	2.7	1.0	0.31	20.2	13.6	5.5	1.0	0.0	20.2	13.6
120	121	60.62	803.7	0.0	360.7	0.0	2.7	1.0	0.31	25.4	11.4	5.5	1.0	0.0	25.4	11.4
121	121	60.62	838.4	0.0	419.1	0.0	2.7	1.0	0.31	26.5	13.2	5.5	1.0	0.0	26.5	13.2
121	122	64.01	1012.2	0.0	682.6	0.0	2.7	1.0	0.31	32.0	21.6	5.5	1.0	0.0	32.0	21.6
122	122	64.01	1044.8	0.0	678.6	0.0	2.7	1.0	0.31	33.0	21.4	5.5	1.0	0.0	33.0	21.4
122	10123	67.40	1225.3	0.0	828.6	0.0	2.7	1.0	0.31	38.7	26.2	5.5	1.0	0.0	38.7	26.2

V3

ARMADO CORTANTE - TORSOR													ARMAD. TOTAL TRANSV.			ARMAD. TORSIÓN LONG					
Barra	Nudo	X	Hipótesis 1				Hipótesis 2				ARMADURA POR TC			HIP1	HIP2	HIP1	HIP2				
			Vmax	Tconc	Vcon	Tmax	d	Cotg θ	factor colaboración n de fibra	A (cm2/m)	A (cm2/m)	Ae(m2)	Cotg q					A (cm2/m)			
123	123	67.40	1139.8	0.0	730.4	0.0	2.7	1.0	0.31	36.0	23.1	5.5	1.0	0.0	0.0	36.0	23.1	5.5	1.0	0.0	0.0
123	124	70.45	977.4	0.0	628.5	0.0	2.7	1.0	0.31	30.9	19.9	5.5	1.0	0.0	0.0	30.9	19.9	5.5	1.0	0.0	0.0
124	124	70.45	965.2	0.0	600.8	0.0	2.7	1.0	0.31	30.5	19.0	5.5	1.0	0.0	0.0	30.5	19.0	5.5	1.0	0.0	0.0
124	125	73.50	807.1	0.0	530.0	0.0	2.7	1.0	0.31	25.5	16.7	5.5	1.0	0.0	0.0	25.5	16.7	5.5	1.0	0.0	0.0
125	125	73.50	806.4	0.0	460.1	0.0	2.7	1.0	0.31	25.5	14.5	5.5	1.0	0.0	0.0	25.5	14.5	5.5	1.0	0.0	0.0
125	126	76.26	688.0	0.0	353.9	0.0	2.7	1.0	0.31	21.1	11.2	5.5	1.0	0.0	0.0	21.1	11.2	5.5	1.0	0.0	0.0
126	126	76.26	671.4	0.0	369.7	0.0	2.7	1.0	0.31	21.2	11.7	5.5	1.0	0.0	0.0	21.2	11.7	5.5	1.0	0.0	0.0
126	127	79.02	536.8	0.0	264.3	0.0	2.7	1.0	0.31	17.0	8.4	5.5	1.0	0.0	0.0	17.0	8.4	5.5	1.0	0.0	0.0
127	127	79.02	540.7	0.0	294.7	0.0	2.7	1.0	0.31	17.1	9.3	5.5	1.0	0.0	0.0	17.1	9.3	5.5	1.0	0.0	0.0
127	128	81.78	409.7	0.0	188.4	0.0	2.7	1.0	0.31	12.9	6.0	5.5	1.0	0.0	0.0	12.9	6.0	5.5	1.0	0.0	0.0
128	128	81.78	413.7	0.0	192.6	0.0	2.7	1.0	0.31	13.1	6.1	5.5	1.0	0.0	0.0	13.1	6.1	5.5	1.0	0.0	0.0
128	129	84.54	286.6	0.0	82.4	0.0	2.7	1.0	0.31	9.1	2.6	5.5	1.0	0.0	0.0	9.1	2.6	5.5	1.0	0.0	0.0
129	129	84.54	290.3	0.0	98.7	0.0	2.7	1.0	0.31	9.2	3.1	5.5	1.0	0.0	0.0	9.2	3.1	5.5	1.0	0.0	0.0
129	130	87.30	171.2	0.0	12.7	0.0	2.7	1.0	0.31	5.4	0.4	5.5	1.0	0.0	0.0	5.4	0.4	5.5	1.0	0.0	0.0
130	130	87.30	180.0	0.0	96.2	0.0	2.7	1.0	0.31	5.7	3.0	5.5	1.0	0.0	0.0	5.7	3.0	5.5	1.0	0.0	0.0
130	131	90.06	269.8	0.0	157.6	0.0	2.7	1.0	0.31	8.5	5.0	5.5	1.0	0.0	0.0	8.5	5.0	5.5	1.0	0.0	0.0
131	131	90.06	274.5	0.0	8.0	0.0	2.7	1.0	0.31	8.7	0.3	5.5	1.0	0.0	0.0	8.7	0.3	5.5	1.0	0.0	0.0
131	132	92.82	401.5	0.0	254.1	0.0	2.7	1.0	0.31	12.7	8.0	5.5	1.0	0.0	0.0	12.7	8.0	5.5	1.0	0.0	0.0
132	132	92.82	407.8	0.0	133.3	0.0	2.7	1.0	0.31	12.9	4.2	5.5	1.0	0.0	0.0	12.9	4.2	5.5	1.0	0.0	0.0
132	133	95.58	540.5	0.0	246.6	0.0	2.7	1.0	0.31	17.1	7.8	5.5	1.0	0.0	0.0	17.1	7.8	5.5	1.0	0.0	0.0
133	133	95.58	548.8	0.0	300.9	0.0	2.7	1.0	0.31	17.3	9.5	5.5	1.0	0.0	0.0	17.3	9.5	5.5	1.0	0.0	0.0
133	134	98.34	687.8	0.0	351.9	0.0	2.7	1.0	0.31	21.7	11.1	5.5	1.0	0.0	0.0	21.7	11.1	5.5	1.0	0.0	0.0
134	134	98.34	699.4	0.0	458.1	0.0	2.7	1.0	0.31	22.1	14.5	5.5	1.0	0.0	0.0	22.1	14.5	5.5	1.0	0.0	0.0
134	135	101.10	845.1	0.0	548.2	0.0	2.7	1.0	0.31	26.7	17.3	5.5	1.0	0.0	0.0	26.7	17.3	5.5	1.0	0.0	0.0

V5

V5

IDEAM

FIBRA 5 Fibra de fibra interior de algodón.

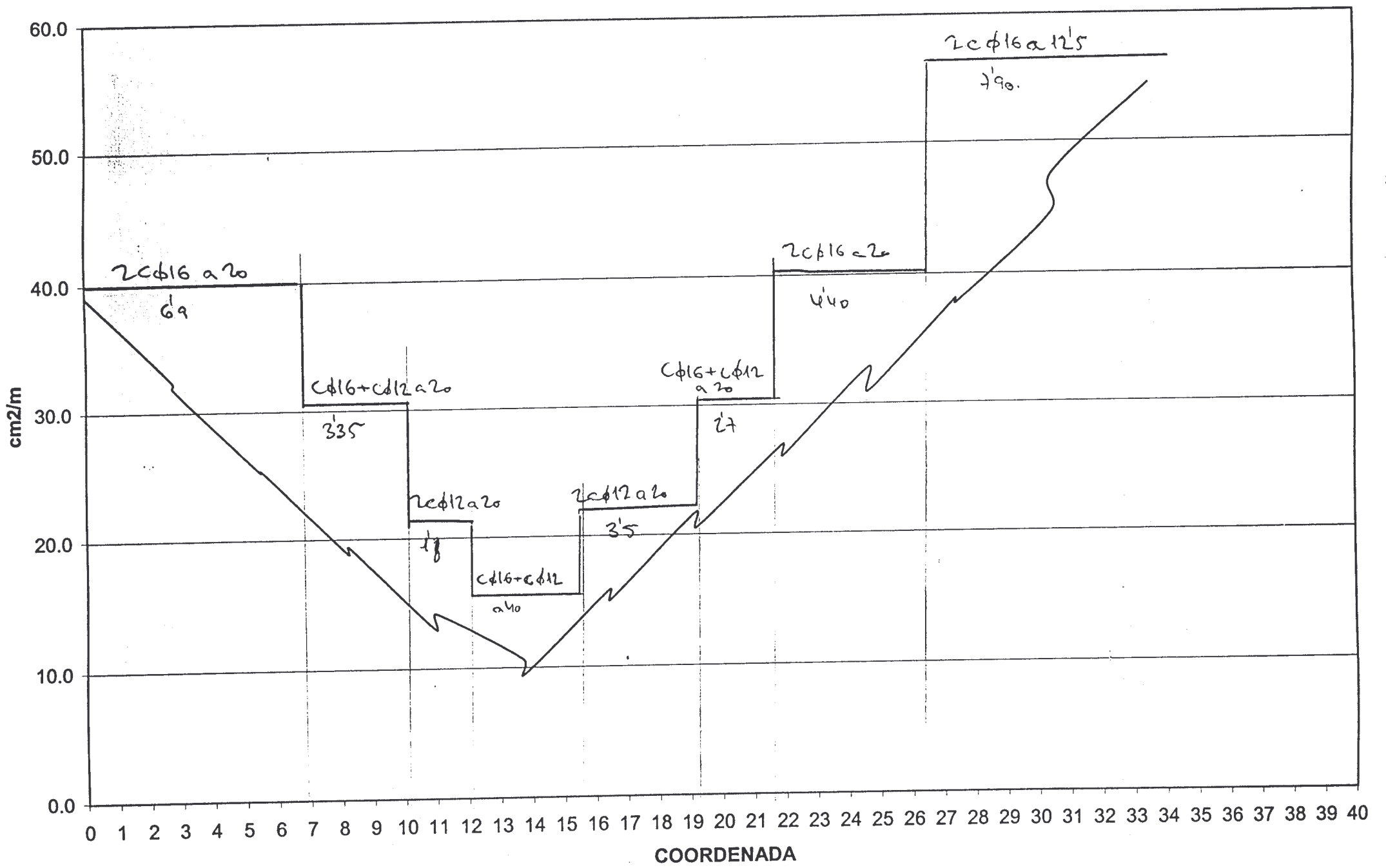
La interacción torsor - cortante es siempre menor que 1.

A continuación se muestra la armadura longitudinal y transversal por cortante - torsor.

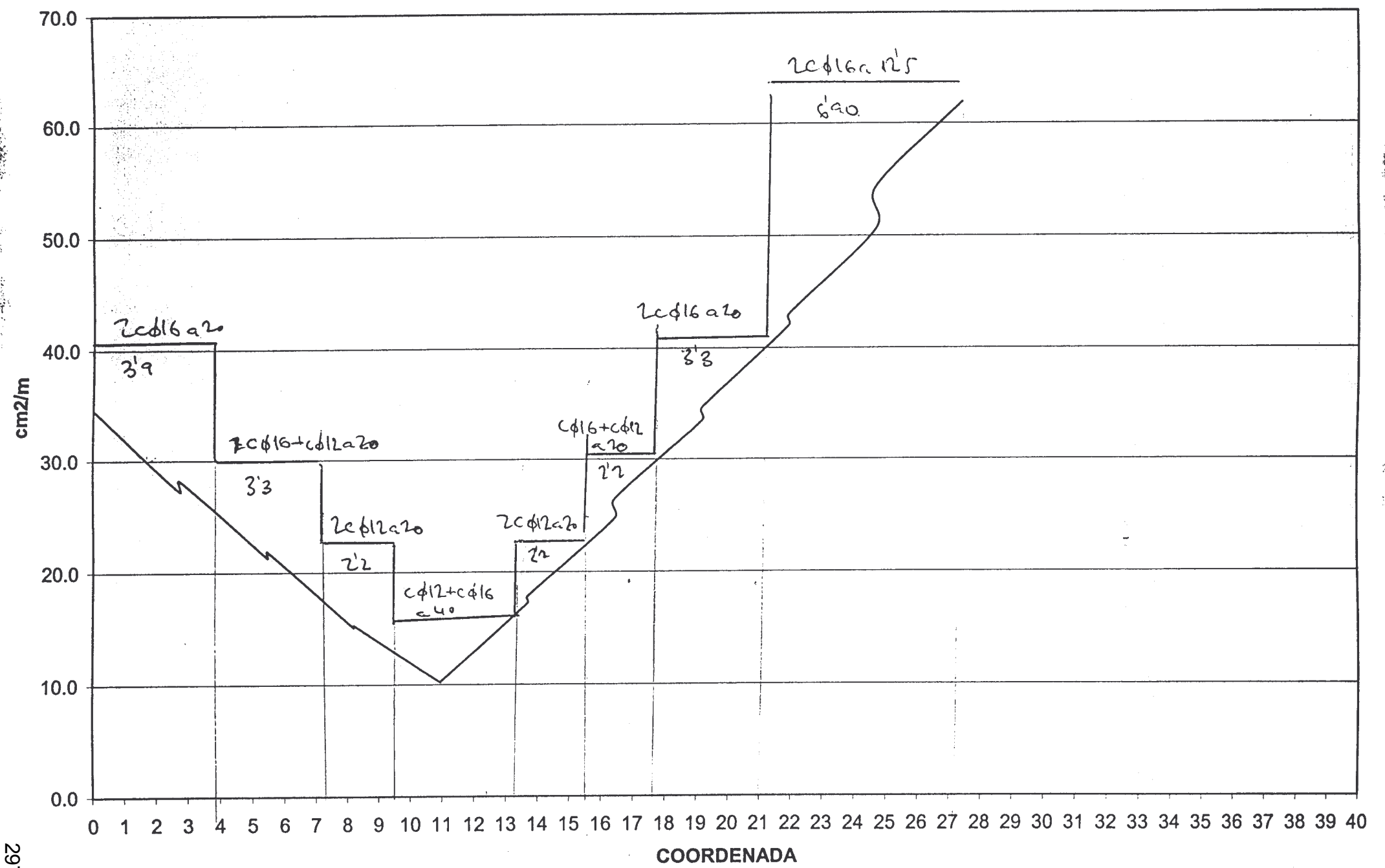
La armadura longitudinal máxima necesaria es de 16.7 cm²/ml que está suficientemente cubierta en el pretensado y la armadura de rotura dispuesta ($26 \times 14 / 172 = 21.16 \text{ cm}^2/\text{ml}$ de pretensado) pretensado mínimo

La armadura transversal necesaria en fibra 5 se describe a continuación:

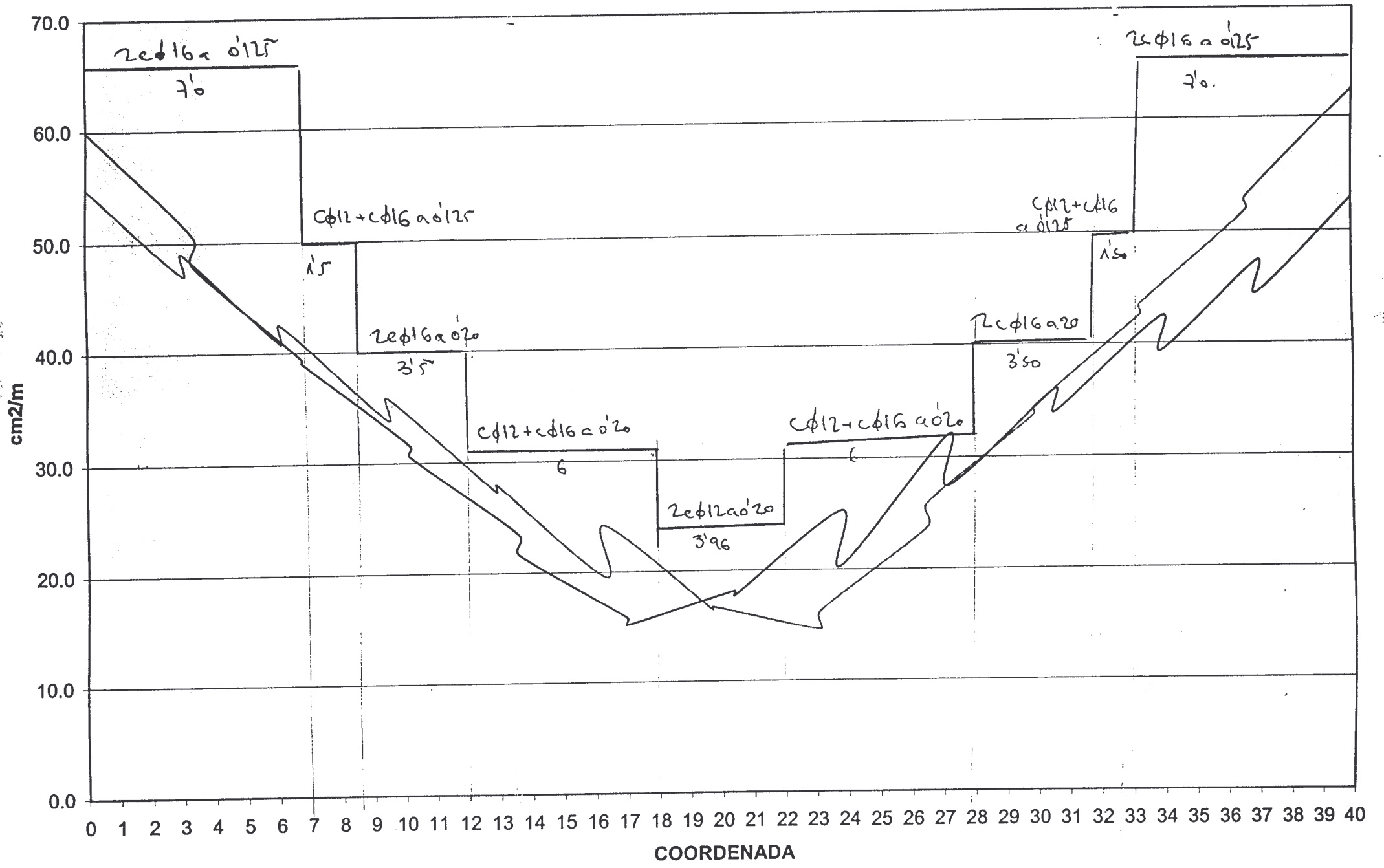
FIBRA 5. ARMADURA TRANSVERSAL POR CORTANTE Y TORSIÓN. VIGA V1.



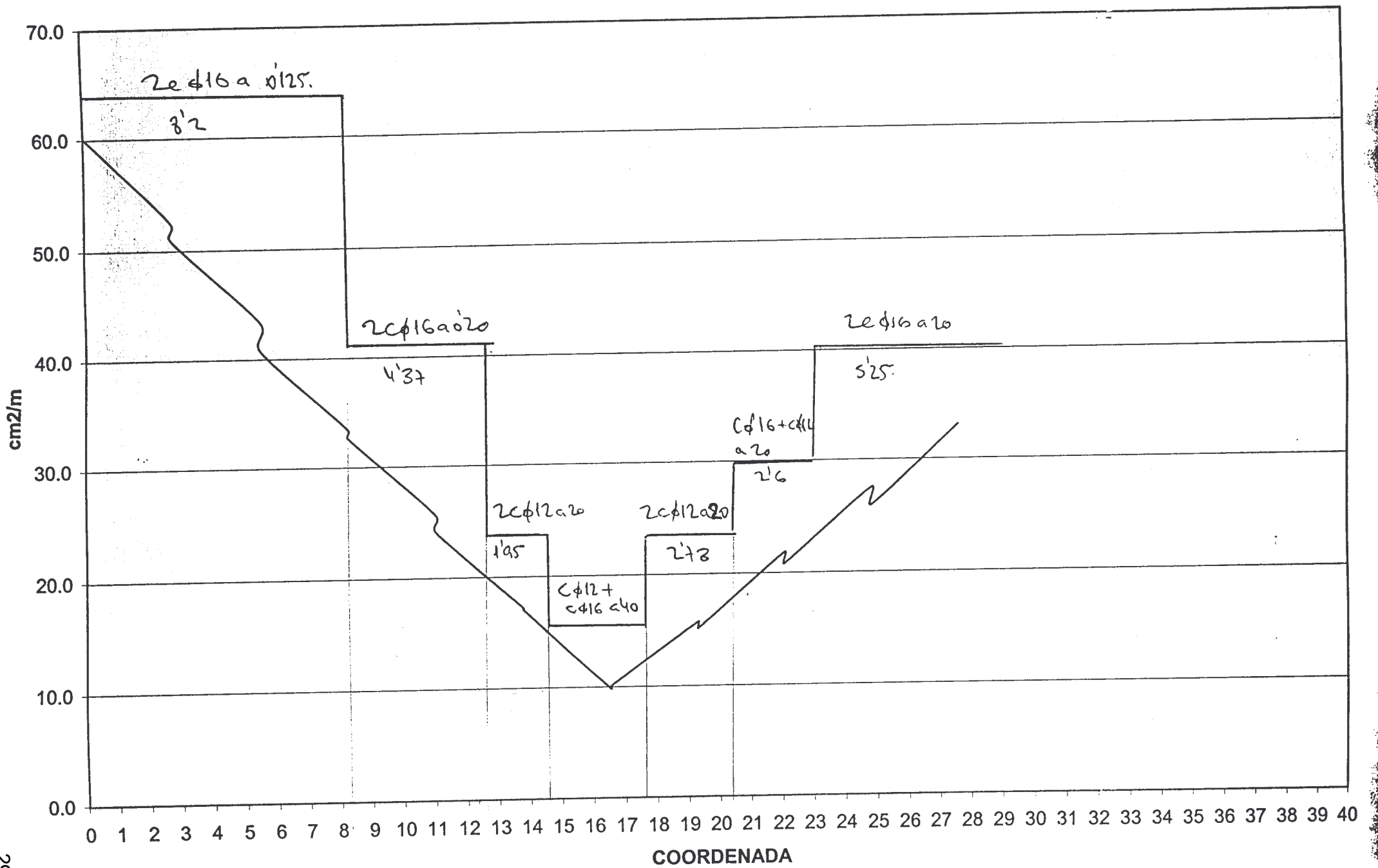
FIBRA 5. ARMADURA TRANSVERSAL POR CORTANTE Y TORSIÓN. VIGA "V2".



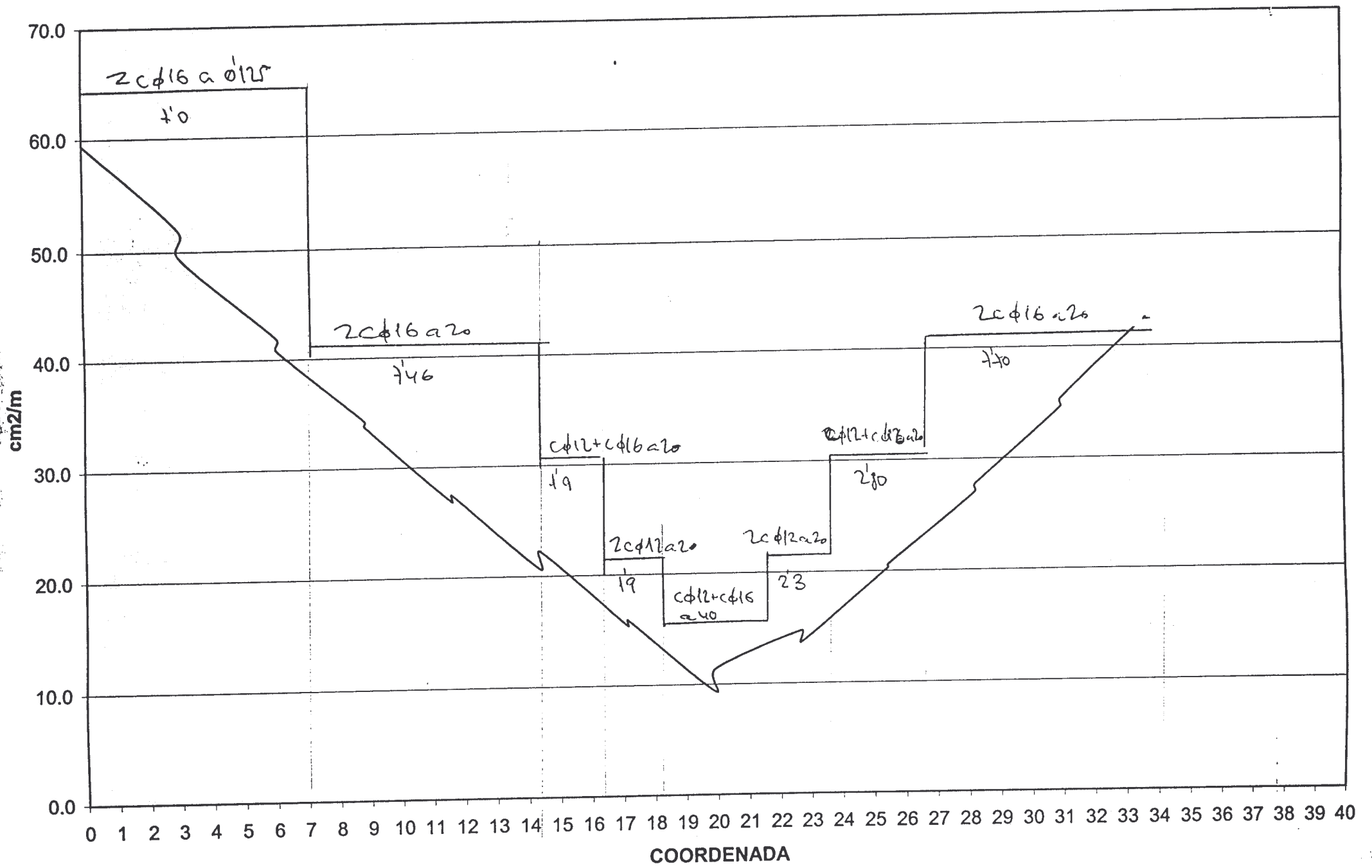
FIBRA 5. ARMADURA TRANSVERSAL POR CORTANTE Y TORSIÓN. VIGA "V3".



FIBRA 5. ARMADURA TRANSVERSAL POR CORTANTE Y TORSIÓN. VIGA "V4".



FIBRA 5. ARMADURA TRANSVERSAL POR CORTANTE Y TORSIÓN. VIGA "V5".



FIBRA 5 INTERACCIÓN CORTANTE TORSOR

	Barra	Nudo	X	Hipótesis 1		Hipótesis 2		CÁLCULO Vrd(tn)							CÁLCULO Trd(tn)				factor colaboración de fibra	Interacción hlp 1	Interacción hlp 2
				Vmax	Tconc	Vcon	Tmax	K	Fcd(TN/M2)	COEF F1cd	bo	d	Colg θ	Vrd(ln)	α	Ae	he	Trd(ln)			
V1	1	1	0.00	778.88	10.88	355.40	62.12	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.52	0.28
	1	2	2.74	641.71	15.06	384.89	128.48	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.43	0.31
	2	2	2.74	635.30	7.73	364.75	144.66	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.43	0.31
	2	3	5.48	504.17	3.72	215.41	192.68	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.34	0.23
	3	3	5.48	499.69	21.03	303.76	202.29	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.34	0.29
	3	4	8.22	374.53	6.33	120.91	248.71	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.25	0.19
	4	4	8.22	371.58	38.06	229.16	280.56	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.26	0.27
	4	5	10.96	251.65	19.08	5.08	294.74	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.18	0.13
	5	5	10.96	249.92	72.88	141.88	320.30	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.20	0.23
	5	6	13.70	174.29	85.88	20.79	329.47	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.15	0.16
	6	6	13.70	183.22	54.62	12.83	395.98	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.13	0.18
	6	7	16.44	275.41	94.91	108.92	378.75	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.22	0.24
7	7	16.44	288.74	71.93	73.89	474.03	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.21	0.26	
7	8	19.18	388.49	106.77	177.75	443.02	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.30	0.31	
8	8	19.18	381.07	47.57	170.55	541.76	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.27	0.35	
8	9	21.92	504.62	78.06	270.77	506.73	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.37	0.40	
9	9	21.92	497.01	46.34	256.97	595.20	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.35	0.43	
9	10	24.66	623.90	76.28	356.44	554.00	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.45	0.48	
10	10	24.66	615.36	12.76	330.95	634.71	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.41	0.50	
10	11	27.40	745.69	41.79	428.94	591.54	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.51	0.54	
11	11	27.40	740.20	37.22	411.43	658.23	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.51	0.58	
11	12	30.45	890.18	9.55	499.20	617.04	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.60	0.60	
12	12	30.45	892.86	134.87	496.04	658.74	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.65	0.62	
12	10013	33.50	1047.02	101.06	592.39	626.63	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.74	0.67	

FIBRA 5 INTERACCIÓN CORTANTE TORSOR

	Barra	Nudo	X	Hipótesis 1		Hipótesis 2		CÁLCULO Vrd(tn)							CÁLCULO Trd(tn)				factor colaboración de fibra	Interacción hip 1	Interacción hip 2
				Vmax	Tconc	Vcon	Tmax	K	Fcd(TN/M2)	COEF F1cd	bo	d	Cotg θ	Vrd(tn)	α	Ae	he	Trd(tn)			
V3	13	13	33.50	1150.15	115.50	785.28	496.46	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.82	0.74
	13	14	38.89	978.79	80.99	644.79	536.31	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.69	0.66
	14	14	38.89	951.43	21.48	659.31	503.99	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.64	0.66
	14	15	40.28	786.34	7.74	522.37	474.85	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.53	0.56
	15	15	40.28	756.13	59.41	502.74	444.31	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.53	0.53
	15	16	43.67	598.79	77.56	270.92	452.50	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.43	0.38
	16	16	43.67	579.26	75.90	327.54	450.97	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.42	0.42
	16	17	47.06	424.89	102.43	200.45	513.03	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.33	0.36
	17	17	47.06	408.57	66.98	191.32	522.20	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.30	0.36
	17	18	50.45	280.82	81.06	60.21	580.51	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.21	0.29
	18	18	50.45	259.90	8.34	49.66	574.10	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.18	0.28
	18	19	53.84	181.89	192.46	85.67	626.56	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.19	0.33
	19	19	53.84	158.42	182.38	89.01	599.75	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.19	0.32
	19	20	57.23	303.00	227.43	219.61	647.90	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.30	0.43
	20	20	57.23	296.68	249.99	23.43	619.43	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.31	0.29
	20	21	60.62	440.85	288.73	350.98	653.97	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.42	0.52
	21	21	60.62	440.92	247.82	158.22	691.61	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.40	0.41
	21	22	64.01	595.64	283.35	402.52	649.44	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.52	0.55
	22	22	64.01	563.05	220.50	264.90	731.63	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.48	0.50
	22	23	67.40	742.76	242.56	385.32	676.69	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.60	0.55
	23	23	67.40	729.22	133.78	378.39	737.26	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.54	0.57
	23	24	70.45	677.88	159.71	478.62	690.73	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.65	0.62
	24	24	70.45	667.90	54.74	521.49	717.75	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.60	0.66
	24	10025	73.50	1022.13	85.04	618.60	670.63	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.72	0.70

FIBRA 5 INTERACCIÓN CORTANTE TORSOR

	Barra	Nudo	X	Hipótesis 1		Hipótesis 2		CÁLCULO Vrd(tn)							CÁLCULO Trd(tn)				factor colaboración de fibra	Interacción hlp 1	Interacción hlp 2
				Vmax	Tconc	Vcon	Tmax	K	Fcd(TN/M2)	COEF F1cd	bo	d	Cotg θ	Vrd(tn)	α	Ae	he	Trd(tn)			
V4	25	25	73.50	1004.73	452.36	882.80	613.46	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.87	0.88
	25	26	76.26	864.20	423.34	756.88	614.44	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.78	0.77
	26	26	76.26	843.93	398.57	736.84	590.85	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.74	0.75
	26	27	79.02	707.83	382.83	615.27	548.74	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.63	0.65
	27	27	79.02	690.81	283.79	555.97	517.20	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.58	0.60
	27	28	81.78	559.46	250.02	438.49	477.77	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.48	0.50
	28	28	81.78	541.78	253.77	408.64	444.70	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.47	0.47
	28	29	84.54	415.23	219.57	295.21	403.00	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.37	0.37
	29	29	84.54	398.33	190.29	273.25	370.91	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.35	0.34
	29	30	87.30	278.57	153.33	183.91	326.21	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.25	0.25
	30	30	87.30	271.58	157.23	149.88	302.15	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.25	0.23
	30	31	90.06	160.42	83.19	8.02	261.73	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.14	0.12
	31	31	90.06	159.24	97.93	6.85	256.07	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.15	0.12
	31	32	92.82	261.97	121.16	116.81	244.28	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.23	0.18
	32	32	92.82	264.46	89.17	65.42	217.47	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.21	0.14
	32	33	95.58	389.55	107.39	269.59	218.80	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.31	0.27
	33	33	95.58	388.32	65.72	136.03	168.87	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.29	0.16
	33	34	98.34	520.19	71.00	390.32	174.68	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.38	0.34
	34	34	98.34	515.77	9.64	164.43	107.28	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.35	0.16
	34	35	101.10	654.69	20.94	512.43	65.64	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.44	0.37

FIBRA 5 INTERACCIÓN CORTANTE TORSOR

Barra	Nudo	X	Hipótesis 1		Hipótesis 2		CÁLCULO Vrd(tn)							CÁLCULO Trd(tn)				factor colaboración de fibra	Interacción hip 1	Interacción hip 2
			Vmax	Tconc	Vcon	Tmax	K	Fcd(TN/M2)	COEF F1cd	bo	d	Cotg θ	Vrd(tn)	α	Ae	he	Trd(tn)			
101	101	0.00	688.53	11.89	546.85	52.67	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.48	0.39
101	102	2.74	543.17	8.35	173.32	96.41	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.36	0.16
102	102	2.74	542.50	52.48	420.15	148.58	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.38	0.34
102	103	5.48	404.45	51.78	297.36	145.97	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.29	0.26
103	103	5.48	401.82	82.39	294.87	187.11	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.30	0.28
103	104	8.22	271.05	71.45	51.36	187.81	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.21	0.12
104	104	8.22	285.36	94.20	161.21	208.28	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.22	0.20
104	105	10.96	167.44	83.78	25.74	224.37	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.15	0.12
105	105	10.96	171.07	79.25	20.30	231.98	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.15	0.12
105	106	13.70	287.13	131.76	179.42	270.88	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.25	0.24
106	106	13.70	295.09	139.95	191.64	303.79	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.26	0.26
106	107	16.44	422.43	163.82	306.64	335.33	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.35	0.35
107	107	16.44	442.36	198.05	330.74	376.98	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.38	0.38
107	108	19.18	574.73	219.33	451.81	405.21	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.48	0.48
108	108	19.18	595.77	224.28	483.28	449.74	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.49	0.52
108	109	21.92	733.18	245.38	609.56	475.69	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.59	0.61
109	109	21.92	753.36	244.52	626.25	518.05	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.61	0.64
109	110	24.66	895.79	267.87	757.78	547.20	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.71	0.74
110	110	24.66	919.71	381.70	777.82	576.59	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.78	0.77
110	10111	27.40	1066.64	395.02	909.89	611.41	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.88	0.87

FIBRA 5 INTERACCIÓN CORTANTE TORSOR

Barra	Nudo	X	Hipótesis 1		Hipótesis 2		CÁLCULO Vrd(tn)							CÁLCULO Trd(tn)				factor colaboración de fibra	Interacción hip 1	Interacción hip 2
			Vmax	Tconc	Vcon	Tmax	K	Fcd(TN/M2)	COEF F1cd	bo	d	Cotg θ	Vrd(tn)	α	Ae	he	Trd(tn)			
111	111	27.40	1098.98	1.90	727.17	687.62	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.73	0.78
111	112	30.45	936.49	16.44	627.74	664.68	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.63	0.71
112	112	30.45	938.47	96.99	579.97	648.72	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.67	0.67
112	113	33.50	781.81	82.00	475.01	683.82	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.56	0.61
113	113	33.50	789.23	141.13	417.93	639.43	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.59	0.56
113	114	36.89	620.97	130.61	291.20	682.40	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.47	0.49
114	114	36.89	629.29	199.79	302.00	612.46	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.51	0.47
114	115	40.28	466.46	182.25	172.88	650.09	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.39	0.40
115	115	40.28	470.32	203.59	305.35	564.57	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.40	0.45
115	116	43.67	312.54	179.72	58.86	579.55	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.29	0.29
116	116	43.67	315.84	184.57	230.05	573.15	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.29	0.40
116	117	47.06	163.88	152.11	91.83	537.56	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.18	0.30
117	117	47.06	166.34	159.88	83.20	568.68	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.18	0.30
117	118	50.45	268.89	31.55	59.39	528.47	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.19	0.27
118	118	50.45	270.32	124.27	71.40	533.87	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.23	0.28
118	119	53.84	425.73	113.53	209.52	487.42	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.33	0.35
119	119	53.84	446.58	164.04	245.16	477.57	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.37	0.37
119	120	57.23	608.97	151.65	378.99	427.15	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.47	0.44
120	120	57.23	638.06	117.08	430.82	436.16	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.48	0.48
120	121	60.62	803.72	111.78	360.68	388.54	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.58	0.41
121	121	60.62	838.38	76.86	419.10	441.13	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.59	0.47
121	122	64.01	1012.20	60.74	682.58	446.42	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.70	0.65
122	122	64.01	1044.79	42.32	678.62	492.15	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.71	0.67
122	10123	67.40	1225.31	64.47	828.64	514.67	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.84	0.78

FIBRA 5 INTERACCIÓN CORTANTE TORSOR																					
Barra	Nudo	X	Hipótesis 1		Hipótesis 2		CÁLCULO Vrd(tn)							CÁLCULO Trd(tn)				factor colaboración de fibra	Interacción hip 1	Interacción hip 2	
			Vmax	Tconc	Vcon	Tmax	K	Fcd(TN/M2)	COEF F1cd	bo	d	Cotg θ	Vrd(tn)	α	Ae	he	Trd(tn)				
V5	123	123	67.40	1139.76	118.06	730.43	688.55	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.81	0.79
	123	124	70.45	977.43	138.73	628.45	621.19	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.71	0.69
	124	124	70.45	865.18	61.26	800.75	589.14	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.67	0.66
	124	125	73.50	807.11	75.84	529.99	617.31	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.57	0.62
	125	125	73.50	806.37	25.82	460.14	561.64	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.55	0.55
	125	126	76.26	668.00	42.51	353.93	596.43	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.48	0.50
	126	126	76.26	671.43	12.24	369.73	524.93	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.45	0.48
	126	127	79.02	536.81	3.02	264.33	558.27	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.36	0.42
	127	127	79.02	540.73	21.64	294.71	479.24	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.37	0.41
	127	128	81.78	409.72	3.96	188.42	506.83	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.27	0.35
	128	128	81.78	413.66	71.40	192.60	418.07	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.31	0.31
	128	129	84.54	286.62	49.41	82.44	441.56	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.21	0.25
	129	129	84.54	290.31	65.05	98.74	344.97	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.22	0.22
	129	130	87.30	171.16	37.57	12.85	362.78	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.13	0.17
	130	130	87.30	179.95	70.52	98.20	297.78	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.15	0.19
	130	131	90.06	269.78	58.60	157.62	287.30	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.20	0.23
	131	131	90.06	274.55	0.33	8.01	272.66	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.18	0.12
	131	132	92.82	401.51	11.56	254.14	235.98	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.27	0.27
	132	132	92.82	407.84	10.75	133.34	234.73	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.28	0.19
	132	133	95.58	540.48	3.43	246.56	185.36	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.36	0.25
	133	133	95.58	548.78	16.04	300.94	186.07	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.38	0.28
	133	134	98.34	667.66	11.12	351.90	134.11	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.46	0.29
	134	134	98.34	699.40	18.85	458.08	123.88	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.47	0.36
	134	135	101.10	845.08	21.35	548.21	72.41	1.0	4000.0	0.4	0.35	2.73	1.0	752.1	1.5	5.5	0.35	2285.3	0.50	0.57	0.40

ARMADO CORTANTE - TORSOR																	ARMAD. TOTAL TRANSV.		ARMAD. TORSIÓN LONG		
	Barra	Nudo	X	Hipótesis 1		Hipótesis 2		ARMADURA POR CORTANTE			HIP1	HIP2	ARMADURA POR TC		HIP1	HIP2	HIP1	HIP2		HIP1	HIP2
				Vmax	Tconc	Vcon	Tmax	d	Cotg θ	factor colaboración de fibra	A (cm2/m)	A (cm2/m)	Ae(m2)	Cotg q	A (cm2/m)	A (cm2/m)	A (cm2/m)	A (cm2/m)		A (cm2/m)	A (cm2/m)
V1	1	1	0.0	778.9	10.9	355.4	62.1	2.7	1.0	0.50	38.8	17.7	5.52	1.0	0.2	1.38	39.1	19.1		0.2	1.4
	1	2	2.7	641.7	15.1	384.7	128.5	2.7	1.0	0.50	32.0	19.2	5.52	1.0	0.3	2.85	32.3	22.0		0.3	2.9
	2	2	2.7	635.3	7.7	364.8	144.7	2.7	1.0	0.50	31.7	18.2	5.52	1.0	0.2	3.20	31.8	21.4		0.2	3.3
	2	3	5.5	504.2	3.7	215.4	192.7	2.7	1.0	0.50	25.1	10.7	5.52	1.0	0.1	4.27	25.2	15.0		0.1	4.4
	3	3	5.5	499.7	21.0	303.8	202.3	2.7	1.0	0.50	24.9	15.1	5.52	1.0	0.5	4.48	25.4	19.6		0.5	4.6
	3	4	8.2	374.5	6.3	120.9	248.7	2.7	1.0	0.50	18.7	6.0	5.52	1.0	0.1	5.51	18.8	11.5		0.1	5.6
	4	4	8.2	371.6	38.1	229.2	260.6	2.7	1.0	0.50	18.5	11.4	5.52	1.0	0.8	5.77	19.4	17.2		0.9	5.9
	4	5	11.0	251.7	19.1	5.1	294.7	2.7	1.0	0.50	12.5	0.3	5.52	1.0	0.4	6.53	13.0	6.8		0.4	6.7
	5	5	11.0	249.9	72.9	141.9	320.3	2.7	1.0	0.50	12.5	7.1	5.52	1.0	1.6	7.09	14.1	14.2		1.6	7.3
	5	6	13.7	174.3	85.9	20.8	329.5	2.7	1.0	0.50	8.7	1.0	5.52	1.0	1.9	7.30	10.6	8.3		1.9	7.5
	6	6	13.7	163.2	54.6	12.8	396.0	2.7	1.0	0.50	8.1	0.6	5.52	1.0	1.2	8.77	9.3	9.4		1.2	9.0
	6	7	16.4	275.4	94.9	108.9	378.8	2.7	1.0	0.50	13.7	5.4	5.52	1.0	2.1	8.39	15.8	13.8		2.1	8.6
	7	7	16.4	268.7	71.9	73.9	474.0	2.7	1.0	0.50	13.4	3.7	5.52	1.0	1.6	10.50	15.0	14.2		1.6	10.7
	7	8	19.2	388.5	106.8	177.7	443.0	2.7	1.0	0.50	19.4	8.9	5.52	1.0	2.4	9.81	21.7	18.7		2.4	10.0
	8	8	19.2	381.1	47.6	170.6	541.8	2.7	1.0	0.50	19.0	8.5	5.52	1.0	1.1	12.00	20.0	20.5		1.1	12.3
	8	9	21.9	504.6	78.1	270.8	506.7	2.7	1.0	0.50	25.2	13.5	5.52	1.0	1.7	11.22	26.9	24.7		1.8	11.5
	9	9	21.9	497.0	48.3	257.0	595.2	2.7	1.0	0.50	24.8	12.8	5.52	1.0	1.1	13.18	25.8	26.0		1.1	13.5
	9	10	24.7	623.9	76.3	358.4	554.0	2.7	1.0	0.50	31.1	17.8	5.52	1.0	1.7	12.27	32.8	30.0		1.7	12.5
	10	10	24.7	615.4	12.8	330.9	634.7	2.7	1.0	0.50	30.7	16.5	5.52	1.0	0.3	14.06	31.0	30.6		0.3	14.4
	10	11	27.4	745.7	41.8	426.9	591.5	2.7	1.0	0.50	37.2	21.3	5.52	1.0	0.9	13.10	38.1	34.4		0.9	13.4
	11	11	27.4	740.2	37.2	411.4	658.2	2.7	1.0	0.50	36.9	20.5	5.52	1.0	0.8	14.58	37.7	35.1		0.8	14.9
	11	12	30.5	890.2	9.6	499.2	617.0	2.7	1.0	0.50	44.4	24.9	5.52	1.0	0.2	13.67	44.6	38.5		0.2	14.0
	12	12	30.5	892.9	134.9	496.0	658.7	2.7	1.0	0.50	44.5	24.7	5.52	1.0	3.0	14.59	47.5	39.3		3.1	14.9
	12	10013	33.5	1047.0	101.1	592.4	626.6	2.7	1.0	0.50	52.2	29.5	5.52	1.0	2.2	13.88	54.4	43.4		2.3	14.2

ARMADO CORTANTE - TORSOR																ARMAD. TOTAL TRANSV.		ARMAD. TORSIÓN LONG			
Barra	Nudo	X	Hipótesis 1		Hipótesis 2		ARMADURA POR CORTANTE				HIP1	HIP2	ARMADURA POR TC		HIP1	HIP2	HIP1	HIP2		HIP1	HIP2
			Vmax	Tconc	Vcon	Tmax	d	Cotg θ	factor colaboración de fibra	A (cm2/m)	A (cm2/m)	Ae(m2)	Cotg q	A (cm2/m)	A (cm2/m)	A (cm2/m)	A (cm2/m)		A (cm2/m)	A (cm2/m)	
V3	13	13	33.5	1150.2	115.5	785.3	496.5	2.7	1.0	0.50	57.3	39.1	5.52	1.0	2.6	11.00	59.9	50.1		2.6	11.2
	13	14	36.9	978.8	81.0	644.8	536.3	2.7	1.0	0.50	48.8	32.1	5.52	1.0	1.8	11.88	50.6	44.0		1.8	12.1
	14	14	36.9	951.4	21.5	659.3	504.0	2.7	1.0	0.50	47.4	32.9	5.52	1.0	0.5	11.16	47.9	44.0		0.5	11.4
	14	15	40.3	786.3	7.7	522.4	474.9	2.7	1.0	0.50	39.2	26.0	5.52	1.0	0.2	10.52	39.4	36.6		0.2	10.8
	15	15	40.3	756.1	59.4	502.7	444.3	2.7	1.0	0.50	37.7	25.1	5.52	1.0	1.3	9.84	39.0	34.9		1.3	10.1
	15	16	43.7	598.8	77.6	270.9	452.5	2.7	1.0	0.50	29.8	13.5	5.52	1.0	1.7	10.02	31.8	23.5		1.8	10.2
	16	16	43.7	579.3	75.9	327.5	451.0	2.7	1.0	0.50	28.9	16.3	5.52	1.0	1.7	9.99	30.6	26.3		1.7	10.2
	16	17	47.1	424.9	102.4	200.5	513.0	2.7	1.0	0.50	21.2	10.0	5.52	1.0	2.3	11.36	23.4	21.4		2.3	11.8
	17	17	47.1	408.6	57.0	191.3	522.2	2.7	1.0	0.50	20.4	9.5	5.52	1.0	1.3	11.56	21.6	21.1		1.3	11.8
	17	18	50.5	280.8	81.1	60.2	580.5	2.7	1.0	0.50	13.0	3.0	5.52	1.0	1.8	12.86	14.8	15.9		1.8	13.1
	18	18	50.5	259.9	8.3	49.7	574.1	2.7	1.0	0.50	13.0	2.5	5.52	1.0	0.2	12.71	13.1	15.2		0.2	13.0
	18	19	53.8	161.7	192.5	85.7	626.6	2.7	1.0	0.50	8.1	4.3	5.52	1.0	4.3	13.88	12.3	18.1		4.4	14.2
	19	19	53.8	158.4	182.4	89.0	599.8	2.7	1.0	0.50	7.9	4.4	5.52	1.0	4.0	13.28	11.9	17.7		4.1	13.6
	19	20	57.2	303.0	227.4	219.6	647.9	2.7	1.0	0.50	15.1	10.9	5.52	1.0	5.0	14.35	20.1	25.3		5.2	14.7
	20	20	57.2	296.7	250.0	23.4	619.4	2.7	1.0	0.50	14.8	1.2	5.52	1.0	5.5	13.72	20.3	14.9		5.7	14.0
	20	21	60.6	446.6	286.7	351.0	654.0	2.7	1.0	0.50	22.3	17.5	5.52	1.0	6.4	14.48	28.6	32.0		6.5	14.8
	21	21	60.6	440.9	247.8	156.2	691.6	2.7	1.0	0.50	22.0	7.8	5.52	1.0	5.5	15.32	27.5	23.1		5.6	15.7
	21	22	64.0	595.6	283.3	402.5	649.4	2.7	1.0	0.50	29.7	20.1	5.52	1.0	6.3	14.38	36.0	34.4		6.4	14.7
	22	22	64.0	583.0	220.5	264.9	731.6	2.7	1.0	0.50	29.1	13.2	5.52	1.0	4.9	16.20	33.9	29.4		5.0	16.6
	22	23	67.4	742.8	242.6	385.3	676.7	2.7	1.0	0.50	37.0	19.2	5.52	1.0	5.4	14.99	42.4	34.2		5.5	15.3
	23	23	67.4	729.2	133.8	378.4	737.3	2.7	1.0	0.50	36.3	18.9	5.52	1.0	3.0	16.33	39.3	35.2		3.0	16.7
	23	24	70.5	877.9	159.7	478.6	690.7	2.7	1.0	0.50	43.8	23.9	5.52	1.0	3.5	15.30	47.3	39.2		3.6	15.6
	24	24	70.5	867.9	54.7	521.5	717.8	2.7	1.0	0.50	43.3	26.0	5.52	1.0	1.2	15.90	44.5	41.9		1.2	16.3
	24	10025	73.5	1022.1	85.0	618.6	670.6	2.7	1.0	0.50	51.0	30.8	5.52	1.0	1.9	14.85	52.8	45.7		1.9	15.2

ARMADO CORTANTE - TORSOR																ARMAD. TOTAL TRANSV.		ARMAD. TORSIÓN LONG			
Barra	Nudo	X	Hipótesis 1		Hipótesis 2		ARMADURA POR CORTANTE			HIP1	HIP2	ARMADURA POR TC		HIP1	HIP2	HIP1	HIP2		HIP1	HIP2	
			Vmax	Tconc	Vcon	Tmax	d	Cotg θ	factor colaboración de fibra	A (cm2/m)	A (cm2/m)	Ae(m2)	Cotg q	A (cm2/m)	A (cm2/m)	A (cm2/m)	A (cm2/m)		A (cm2/m)	A (cm2/m)	
V4	25	25	73.5	1004.7	452.4	882.8	613.5	2.7	1.0	0.50	50.1	44.0	5.52	1.0	10.0	13.59	60.1	57.6		10.2	13.9
	25	26	76.3	864.2	423.3	756.7	614.4	2.7	1.0	0.50	43.1	37.7	5.52	1.0	9.4	13.61	52.5	51.3		9.6	13.9
	26	26	76.3	843.9	398.6	736.8	590.8	2.7	1.0	0.50	42.1	36.7	5.52	1.0	8.8	13.09	50.9	49.8		9.0	13.4
	26	27	79.0	707.8	362.8	615.3	548.7	2.7	1.0	0.50	35.3	30.7	5.52	1.0	8.0	12.15	43.3	42.8		8.2	12.4
	27	27	79.0	690.8	283.8	556.0	517.2	2.7	1.0	0.50	34.4	27.7	5.52	1.0	6.3	11.45	40.7	39.2		6.4	11.7
	27	28	81.8	559.5	250.0	438.5	477.8	2.7	1.0	0.50	27.9	21.9	5.52	1.0	5.5	10.58	33.4	32.4		5.7	10.8
	28	28	81.8	541.8	253.8	408.6	444.7	2.7	1.0	0.50	27.0	20.4	5.52	1.0	5.6	9.85	32.6	30.2		5.7	10.1
	28	29	84.5	415.2	219.6	295.2	403.0	2.7	1.0	0.50	20.7	14.7	5.52	1.0	4.9	8.93	25.6	23.6		5.0	9.1
	29	29	84.5	398.3	190.3	273.2	370.9	2.7	1.0	0.50	19.9	13.6	5.52	1.0	4.2	8.21	24.1	21.8		4.3	8.4
	29	30	87.3	276.6	153.3	163.9	326.2	2.7	1.0	0.50	13.8	8.2	5.52	1.0	3.4	7.22	17.2	15.4		3.5	7.4
	30	30	87.3	271.6	157.2	149.9	302.1	2.7	1.0	0.50	13.5	7.5	5.52	1.0	3.5	6.69	17.0	14.2		3.6	6.8
	30	31	90.1	160.4	83.2	8.0	261.7	2.7	1.0	0.50	8.0	0.4	5.52	1.0	1.8	5.80	9.8	6.2		1.9	5.9
	31	31	90.1	159.2	97.9	6.8	256.1	2.7	1.0	0.50	7.9	0.3	5.52	1.0	2.2	5.67	10.1	6.0		2.2	5.8
	31	32	92.8	262.0	121.2	116.8	244.3	2.7	1.0	0.50	13.1	5.8	5.52	1.0	2.7	5.41	15.7	11.2		2.7	5.5
	32	32	92.8	264.5	89.2	65.4	217.5	2.7	1.0	0.50	13.2	3.3	5.52	1.0	2.0	4.82	15.2	8.1		2.0	4.9
	32	33	95.6	389.6	107.4	269.6	218.8	2.7	1.0	0.50	19.4	13.4	5.52	1.0	2.4	4.85	21.8	18.3		2.4	5.0
	33	33	95.6	388.3	65.7	136.0	168.9	2.7	1.0	0.50	19.4	6.8	5.52	1.0	1.5	3.74	20.8	10.5		1.5	3.8
	33	34	98.3	520.2	71.0	390.3	174.7	2.7	1.0	0.50	25.9	19.5	5.52	1.0	1.6	3.87	27.5	23.3		1.6	4.0
34	34	98.3	515.8	9.8	164.4	107.3	2.7	1.0	0.50	25.7	8.2	5.52	1.0	0.2	2.38	25.9	10.6		0.2	2.4	
34	35	101.1	654.7	20.9	512.4	65.6	2.7	1.0	0.50	32.6	25.5	5.52	1.0	0.5	1.45	33.1	27.0		0.5	1.5	

ARMADO CORTANTE - TORSOR																	ARMAD. TOTAL TRANSV.		ARMAD. TORSIÓN LÓNG		
	Barra	Nudo	X	Hipótesis 1		Hipótesis 2		ARMADURA POR CORTANTE			HIP1	HIP2	ARMADURA POR TC		HIP1	HIP2	HIP1	HIP2		HIP1	HIP2
				Vmax	Tconc	Vcon	Tmax	d	Cotg θ	factor colaboración de fibra	A (cm2/m)	A (cm2/m)	Ae(m2)	Cotg q	A (cm2/m)	A (cm2/m)	A (cm2/m)	A (cm2/m)		A (cm2/m)	A (cm2/m)
V2	101	101	0.0	888.5	11.9	546.8	52.7	2.7	1.0	0.50	34.3	27.3	5.52	1.0	0.3	1.17	34.6	28.4		0.3	1.2
	101	102	2.7	543.2	8.4	173.3	96.4	2.7	1.0	0.50	27.1	8.6	5.52	1.0	0.2	2.14	27.3	10.8		0.2	2.2
	102	102	2.7	542.5	52.5	420.2	148.6	2.7	1.0	0.50	27.0	20.9	5.52	1.0	1.2	3.29	28.2	24.2		1.2	3.4
	102	103	5.5	404.5	51.8	297.4	146.0	2.7	1.0	0.50	20.2	14.8	5.52	1.0	1.1	3.23	21.3	18.1		1.2	3.3
	103	103	5.5	401.8	82.4	294.9	187.1	2.7	1.0	0.50	20.0	14.7	5.52	1.0	1.8	4.14	21.9	18.8		1.9	4.2
	103	104	8.2	271.1	71.5	51.4	187.8	2.7	1.0	0.50	13.5	2.6	5.52	1.0	1.6	4.16	15.1	6.7		1.6	4.3
	104	104	8.2	265.4	94.2	161.2	208.3	2.7	1.0	0.50	13.2	8.0	5.52	1.0	2.1	4.61	15.3	12.6		2.1	4.7
	104	105	11.0	167.4	83.8	25.7	224.4	2.7	1.0	0.50	8.3	1.3	5.52	1.0	1.9	4.97	10.2	6.3		1.9	5.1
	105	105	11.0	171.1	79.2	20.3	232.0	2.7	1.0	0.50	8.5	1.0	5.52	1.0	1.8	5.14	10.3	6.1		1.8	5.3
	105	106	13.7	287.1	131.8	179.4	270.9	2.7	1.0	0.50	14.3	8.9	5.52	1.0	2.9	6.00	17.2	14.9		3.0	6.1
	106	106	13.7	295.1	139.9	191.6	303.8	2.7	1.0	0.50	14.7	9.6	5.52	1.0	3.1	6.73	17.8	16.3		3.2	6.9
	106	107	16.4	422.4	163.8	306.6	335.3	2.7	1.0	0.50	21.1	15.3	5.52	1.0	3.8	7.43	24.7	22.7		3.7	7.6
	107	107	16.4	442.4	198.0	330.7	377.0	2.7	1.0	0.50	22.1	16.5	5.52	1.0	4.4	8.35	26.4	24.8		4.5	8.5
	107	108	19.2	574.7	219.3	451.8	405.2	2.7	1.0	0.50	28.6	22.5	5.52	1.0	4.9	8.97	33.5	31.5		5.0	9.2
	108	108	19.2	595.8	224.3	483.3	449.7	2.7	1.0	0.50	29.7	24.1	5.52	1.0	5.0	9.96	34.7	34.1		5.1	10.2
	108	109	21.9	733.2	245.4	609.6	475.7	2.7	1.0	0.50	36.5	30.4	5.52	1.0	5.4	10.53	42.0	40.9		5.6	10.8
	109	109	21.9	753.4	244.5	626.3	518.0	2.7	1.0	0.50	37.6	31.2	5.52	1.0	5.4	11.47	43.0	42.7		5.5	11.7
109	110	24.7	895.8	267.9	757.8	547.2	2.7	1.0	0.50	44.7	37.8	5.52	1.0	5.9	12.12	50.6	49.9		6.1	12.4	
110	110	24.7	919.7	381.7	777.8	576.6	2.7	1.0	0.50	45.8	38.8	5.52	1.0	8.5	12.77	54.3	51.5		8.6	13.1	
	110	10111	27.4	1066.8	395.0	909.9	611.4	2.7	1.0	0.50	53.2	45.4	5.52	1.0	8.7	13.54	61.9	58.9		8.9	13.8

ARMADO CORTANTE - TORSOR																	ARMAD. TOTAL TRANSV.		ARMAD. TORSIÓN LONG		
	Barra	Nudo	X	Hipótesis 1		Hipótesis 2		ARMADURA POR CORTANTE			HIP1	HIP2	ARMADURA POR TC		HIP1	HIP2	HIP1	HIP2		HIP1	HIP2
				Vmax	Tconc	Vcon	Tmax	d	Cotg θ	factor colaboración de fibra	A (cm2/m)	A (cm2/m)	Ae(m2)	Cotg q	A (cm2/m)	A (cm2/m)	A (cm2/m)	A (cm2/m)		A (cm2/m)	A (cm2/m)
V3	111	111	27.4	1099.0	1.9	727.2	687.6	2.7	1.0	0.50	54.8	36.2	5.52	1.0	0.0	15.23	54.8	51.5		0.0	15.6
	111	112	30.5	936.5	16.4	627.7	664.7	2.7	1.0	0.50	46.7	31.3	5.52	1.0	0.4	14.72	47.0	46.0		0.4	15.1
	112	112	30.5	938.5	97.0	580.0	648.7	2.7	1.0	0.50	46.8	28.9	5.52	1.0	2.1	14.37	48.9	43.3		2.2	14.7
	112	113	33.5	781.8	82.0	475.0	683.6	2.7	1.0	0.50	39.0	23.7	5.52	1.0	1.8	15.14	40.8	38.8		1.9	15.5
	113	113	33.5	789.2	141.1	417.9	639.4	2.7	1.0	0.50	39.3	20.8	5.52	1.0	3.1	14.16	42.5	35.0		3.2	14.5
	113	114	36.9	621.0	130.6	291.2	682.4	2.7	1.0	0.50	31.0	14.5	5.52	1.0	2.9	15.11	33.8	29.6		3.0	15.5
	114	114	36.9	629.3	199.8	302.0	612.5	2.7	1.0	0.50	31.4	15.1	5.52	1.0	4.4	13.56	35.8	28.6		4.5	13.9
	114	115	40.3	466.5	182.2	172.9	650.1	2.7	1.0	0.50	23.3	8.6	5.52	1.0	4.0	14.40	27.3	23.0		4.1	14.7
	115	115	40.3	470.3	203.6	305.3	584.6	2.7	1.0	0.50	23.4	15.2	5.52	1.0	4.5	12.50	28.0	27.7		4.6	12.8
	115	116	43.7	312.5	179.7	58.9	579.6	2.7	1.0	0.50	15.6	2.9	5.52	1.0	4.0	12.84	19.6	15.8		4.1	13.1
	116	116	43.7	315.8	184.6	230.0	573.1	2.7	1.0	0.50	15.7	11.5	5.52	1.0	4.1	12.69	19.8	24.2		4.2	13.0
	116	117	47.1	163.9	152.1	91.8	537.6	2.7	1.0	0.50	8.2	4.6	5.52	1.0	3.4	11.91	11.5	16.5		3.4	12.2
	117	117	47.1	166.3	159.9	83.2	568.7	2.7	1.0	0.50	8.3	4.1	5.52	1.0	3.5	12.59	11.8	16.7		3.6	12.9
	117	118	50.5	268.9	31.5	59.4	528.5	2.7	1.0	0.50	13.4	3.0	5.52	1.0	0.7	11.70	14.1	14.7		0.7	12.0
	118	118	50.5	270.3	124.3	71.4	533.9	2.7	1.0	0.50	13.5	3.6	5.52	1.0	2.8	11.82	16.2	15.4		2.8	12.1
	118	119	53.8	425.7	113.5	209.5	487.4	2.7	1.0	0.50	21.2	10.4	5.52	1.0	2.5	10.79	23.7	21.2		2.6	11.0
	119	119	53.8	446.6	164.0	245.2	477.6	2.7	1.0	0.50	22.3	12.2	5.52	1.0	3.6	10.58	25.9	22.8		3.7	10.8
	119	120	57.2	609.0	151.6	379.0	427.1	2.7	1.0	0.50	30.4	18.9	5.52	1.0	3.4	9.46	33.7	28.4		3.4	9.7
	120	120	57.2	638.1	117.1	430.8	436.2	2.7	1.0	0.50	31.8	21.5	5.52	1.0	2.6	9.66	34.4	31.1		2.7	9.9
	120	121	60.6	803.7	111.8	360.7	388.5	2.7	1.0	0.50	40.1	18.0	5.52	1.0	2.5	8.60	42.5	26.6		2.5	8.8
	121	121	60.6	838.4	76.9	419.1	441.1	2.7	1.0	0.50	41.8	20.9	5.52	1.0	1.7	9.77	43.5	30.7		1.7	10.0
	121	122	64.0	1012.2	60.7	682.6	446.4	2.7	1.0	0.50	50.5	34.0	5.52	1.0	1.3	9.89	51.8	43.9		1.4	10.1
	122	122	64.0	1044.8	42.3	678.6	492.1	2.7	1.0	0.50	52.1	33.8	5.52	1.0	0.9	10.90	53.0	44.7		1.0	11.1
122	10123	67.4	1225.3	64.5	828.6	514.7	2.7	1.0	0.50	61.1	41.3	5.52	1.0	1.4	11.40	62.5	52.7		1.5	11.7	

ARMADO CORTANTE - TORSOR										ARMAD. TOTAL TRANSV.				ARMAD. TORSIÓN LONG			
Barra	Nudo	X	Hipótesis 1	Hipótesis 2	ARMADURA POR CORTANTE				factor colaboración de fibra	HIP1	HIP2	ARMADURA POR TORSIÓN		HIP1	HIP2	ARMAD. TORSIÓN LONG	
			Vmax	Tconc	Vcon	Tmax	d	Cotg θ		A (cm ² /m)	A (cm ² /m)	A _{st} (m ²)	Cotg φ	A (cm ² /m)	A (cm ² /m)	A (cm ² /m)	A (cm ² /m)
123	123	67.4	1139.8	116.1	730.4	688.5	2.7	1.0	0.50	56.8	36.4	5.52	1.0	59.4	51.7	2.7	15.6
123	124	70.5	977.4	136.7	628.5	621.2	2.7	1.0	0.50	48.7	31.3	5.52	1.0	51.8	45.1	3.1	14.1
124	124	70.5	965.2	61.3	600.8	589.1	2.7	1.0	0.50	48.1	29.9	5.52	1.0	49.5	43.0	1.4	13.3
124	125	73.5	807.1	75.8	530.0	617.3	2.7	1.0	0.50	40.2	26.4	5.52	1.0	41.9	40.1	1.7	14.0
125	125	73.5	808.4	25.8	460.1	561.6	2.7	1.0	0.50	40.2	22.9	5.52	1.0	40.8	35.4	0.6	12.7
125	126	76.3	668.0	42.5	353.9	598.4	2.7	1.0	0.50	33.3	17.6	5.52	1.0	34.2	30.9	1.0	13.5
126	126	76.3	671.4	12.2	369.7	524.9	2.7	1.0	0.50	33.5	18.4	5.52	1.0	33.7	30.1	0.3	11.9
126	127	79.0	538.8	3.0	264.3	558.3	2.7	1.0	0.50	26.8	13.2	5.52	1.0	26.8	25.5	0.1	12.6
127	127	79.0	540.7	21.6	294.7	479.2	2.7	1.0	0.50	27.0	14.7	5.52	1.0	27.4	25.3	0.5	10.9
127	128	81.8	409.7	4.0	188.4	506.8	2.7	1.0	0.50	20.4	9.4	5.52	1.0	20.5	20.6	0.1	11.5
128	128	81.8	413.7	71.4	192.6	418.1	2.7	1.0	0.50	20.6	9.6	5.52	1.0	22.2	18.9	1.8	9.5
128	129	84.5	288.6	49.4	82.4	441.6	2.7	1.0	0.50	14.3	4.1	5.52	1.0	15.4	13.9	1.1	10.0
128	129	84.5	290.3	65.1	98.7	345.0	2.7	1.0	0.50	14.5	4.9	5.52	1.0	15.9	12.6	1.5	7.8
129	130	87.3	171.2	37.6	12.7	362.8	2.7	1.0	0.50	8.5	0.6	5.52	1.0	9.4	8.7	0.8	8.2
130	130	87.3	180.0	70.5	96.2	297.8	2.7	1.0	0.50	9.0	4.8	5.52	1.0	10.5	11.4	1.8	6.7
130	131	90.1	269.8	58.6	157.6	287.3	2.7	1.0	0.50	13.4	7.9	5.52	1.0	14.7	14.2	1.3	6.5
131	131	90.1	274.5	0.3	8.0	272.9	2.7	1.0	0.50	13.7	0.4	5.52	1.0	13.7	6.4	0.0	6.2
131	132	92.8	401.5	11.6	254.1	236.0	2.7	1.0	0.50	20.0	12.7	5.52	1.0	20.3	17.9	0.3	5.3
132	132	92.8	407.8	10.7	133.3	234.7	2.7	1.0	0.50	20.3	6.6	5.52	1.0	20.6	11.8	0.2	5.3
132	133	95.6	540.5	3.4	246.6	185.4	2.7	1.0	0.50	26.9	12.3	5.52	1.0	27.0	16.4	0.1	4.2
133	133	95.6	548.8	16.0	300.9	186.1	2.7	1.0	0.50	27.4	15.0	5.52	1.0	27.7	19.1	0.4	4.2
133	134	98.3	687.8	11.1	351.9	134.1	2.7	1.0	0.50	34.3	17.5	5.52	1.0	34.5	20.5	0.3	3.0
134	134	98.3	699.4	18.9	458.1	123.9	2.7	1.0	0.50	34.9	22.8	5.52	1.0	35.3	25.6	0.4	2.8
134	135	101.1	845.1	21.4	548.2	72.4	2.7	1.0	0.50	42.1	27.3	5.52	1.0	42.6	28.9	0.5	1.6

V5

IDEAM

COMPROBACIÓN DE RASANTE VIGA - LOSA

A NEGATIVOS

El momento de cálculo máximo negativo en pilas vale:

$$M_{d_{max}} = - 781124 \text{ mt.}$$

la armadura necesaria de rasante entre viga y losa será la que se monitorea en el M_d último de negativos:

$$T_d = \frac{M_{d-}}{\text{brzo mecánico}} = \frac{781124}{(205-012) \times 0.9} = 3179'18 \text{ tn.}$$

Este es el rasante que se debe recoger con la armadura existente entre losa y viga, dicha armadura se (repartir entre anclaje de pretensar y pila):

$$\text{En alma } 3179'18 / 2 = 1589'59 \text{ tn.}$$

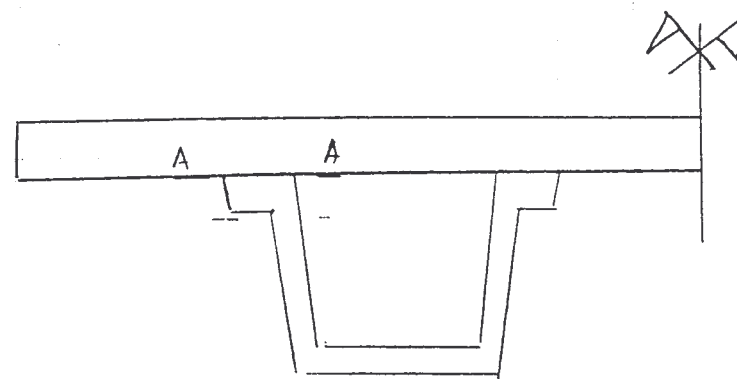
VIGA	M _k	T _d /2	L	ΔMADURA PASANTE x 4'09 = Resante máximo prima.
V1	-7275	11170	892	$(61'352 \times 15 + 40'21 \times 465 + 2'77 \times 31'42) \times 4'09 = 1515'5 \text{ tn}$
V3	-7811	1590	915	$(61'352 \times 35 + 40'21 \times 412 + 1'8 \times 31'42) \times 4'09 = 181324 \text{ tn}$
V4	-6247	1241	828	$(61'352 \times 3 + 5'28 \times 40'21) \times 4'09 = 165794 \text{ tn}$
V2	-6670	1357	822	$(61'352 \times 3 + 40'21 \times 4 + 1'22 \times 31'42) \times 4'09 = 160421 \text{ tn}$
V5	-7804	1588	835	$(61'352 \times 3 + 40'21 \times 2'5 + 3'35 \times 31'42) \times 4'09 = 163125 \text{ tn}$

Valido el armado de resante de poste.

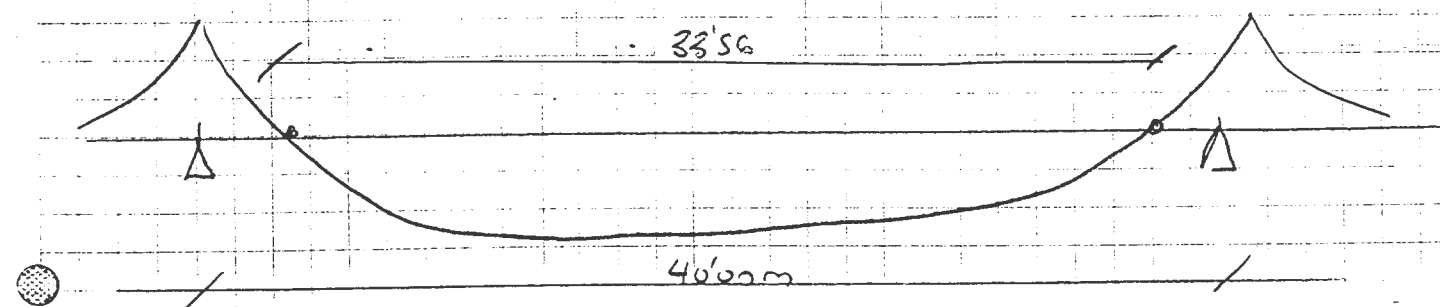
Santa Oliva

Viaducto V-1

-COMPROBACIÓN PASANTE A POSITIVOS



En este apartado se comprueba la sección A-A a rasante máximo debido a la flexión positiva del puente:



La distancia entre puntos de inflexión resulta de (ver hojas adjuntas con cargas permanentes a $t = INF$, en las cuales se puede comprobar que el punto de inflexión está en el lugar indicado)

El rasante necesario a cubrir es $M_k = 2200 \text{ mts}$

$$T_d = \frac{2200 \text{ mts}}{0'9 + (2'85 - (0'05 + 0'05 + 1'5))} = \frac{2532 \text{ tn}}{2 \text{ calzadas}}$$

CÁLCULO TENSIONAL

Hipótesis de cálculo:

Cpatinf

SIN GRADIENTE

[1; 1]PPCF1 + [1; 1]PPUF3 + [1; 1]PPUF2 + [1; 1]PRETF1A.HIP.To + [1; 1]PRETF1B.HIP.To + [1; 1]PRETF3C.HIP.To + [1; 1]PRETF3D.HIP.To + [.66; 1]CMmax + [1; 1]REDPP + [1; 1]REDPRE

Coef. exc

Barra	Nudo	X	N (T)	Vy (T)	Mz (Tm)	Fibra y fibra	InfCajón sig (t/m2)	Fibra y fibra	SupCajón sig (t/m2)	Fibra y fibra	InfLosa sig (t/m2)	Fibra y fibra	SupLosa sig (t/m2)
1	1	0.00	1.11	-256.48	0.19	0	0.46	2.55	0.39	2.55	0.23	2.85	0.23
1	2	2.74	1.11	-243.55	745.69	0	501.64	2.55	-277.43	2.55	-95.33	2.85	-135.13
2	2	2.74	10.41	-244.30	745.82	0	504.52	2.55	-273.83	2.55	-93.15	2.85	-132.90
2	3	5.48	10.41	-187.12	1336.88	0	900.61	2.55	-489.95	2.55	-169.51	2.85	-241.09
3	3	5.48	18.82	-187.78	1336.90	0	903.20	2.55	-486.69	2.55	-167.54	2.85	-239.07
3	4	8.22	18.82	-130.60	1773.13	0	1193.91	2.55	-641.05	2.55	-224.61	2.85	-319.99
4	4	8.22	26.65	-131.14	1773.23	0	1196.33	2.55	-638.02	2.55	-222.78	2.85	-318.11
4	5	10.96	26.65	-73.97	2054.24	0	1381.51	2.55	-730.59	2.55	-260.54	2.85	-371.69
5	5	10.96	28.34	-74.57	2054.10	0	1381.93	2.55	-729.89	2.55	-260.13	2.85	-371.25
5	6	13.70	28.34	-17.40	2180.12	0	1461.69	2.55	-760.75	2.55	-278.59	2.85	-397.52
6	6	13.70	24.47	-18.22	2179.94	0	1460.41	2.55	-762.20	2.55	-279.48	2.85	-398.42
6	7	16.44	24.47	38.95	2151.55	0	1435.13	2.55	-731.52	2.55	-278.73	2.85	-397.49
7	7	16.44	13.57	37.97	2151.53	0	1431.83	2.55	-735.75	2.55	-281.30	2.85	-400.13
7	8	19.18	13.57	95.14	1969.18	0	1301.80	2.55	-643.66	2.55	-261.40	2.85	-372.09
8	8	19.18	-8.44	94.28	1969.53	0	1295.39	2.55	-652.31	2.55	-266.65	2.85	-377.51
8	9	21.92	-8.44	151.46	1632.87	0	1060.39	2.55	-498.73	2.55	-227.55	2.85	-322.28
9	9	21.92	-22.16	150.94	1633.23	0	1056.49	2.55	-504.16	2.55	-230.84	2.85	-325.69
9	10	24.66	-22.16	166.32	1142.93	0	716.93	2.55	-289.29	2.55	-172.64	2.85	-243.41
10	10	24.66	-14.60	167.01	1142.20	0	761.21	2.55	-421.81	2.55	-150.54	2.85	-213.39
10	11	27.40	-14.60	213.85	620.44	0	417.68	2.55	-250.07	2.55	-80.14	2.85	-114.06
11	11	27.40	-0.27	213.67	619.60	0	421.39	2.55	-244.06	2.55	-76.67	2.85	-110.44
11	12	30.45	-0.27	265.80	-111.60	0	-64.74	2.55	11.56	2.55	19.73	2.85	25.70
12	12	30.45	-2.32	264.95	-112.21	0	-65.81	2.55	11.12	2.55	19.30	2.85	25.29
12	10013	33.50	-2.32	317.07	-999.99	0	-660.05	2.55	334.21	2.55	134.44	2.85	187.96
13	13	33.50	19.28	-344.59	-1000.92	0	-654.27	2.55	343.26	2.55	139.59	2.85	193.33
13	14	36.89	19.28	-286.65	69.01	0	65.01	2.55	-55.93	2.55	2.34	2.85	-0.73
14	14	36.89	36.83	-289.82	68.19	0	69.95	2.55	-49.46	2.55	6.71	2.85	3.81
14	15	40.28	36.83	-231.87	952.46	0	660.59	2.55	-367.17	2.55	-108.55	2.85	-159.09
15	15	40.28	25.23	-233.70	953.40	0	657.69	2.55	-371.90	2.55	-111.42	2.85	-162.11
15	16	43.67	25.23	-212.95	1743.09	0	1177.47	2.55	-631.01	2.55	-218.00	2.85	-312.69
16	16	43.67	9.06	-211.49	1743.79	0	1120.49	2.55	-465.25	2.55	-248.05	2.85	-352.96
16	17	47.06	9.06	-140.76	2340.85	0	1528.06	2.55	-707.71	2.55	-321.69	2.85	-457.19
17	17	47.06	1.35	-139.06	2340.46	0	1525.48	2.55	-710.59	2.55	-323.45	2.85	-458.99
17	18	50.45	1.35	-68.32	2691.94	0	1766.35	2.55	-856.30	2.55	-366.35	2.85	-519.74
18	18	50.45	-4.38	-67.49	2691.07	0	1764.07	2.55	-858.29	2.55	-367.57	2.85	-520.96
18	19	53.84	-4.38	3.25	2799.96	0	1840.16	2.55	-908.10	2.55	-380.16	2.85	-538.82
19	19	53.84	-12.78	3.06	2799.28	0	1837.20	2.55	-911.17	2.55	-382.05	2.85	-540.73
19	20	57.23	-12.78	73.79	2669.03	0	1750.72	2.55	-866.04	2.55	-364.82	2.85	-516.39
20	20	57.23	-30.89	73.42	2669.24	0	1745.40	2.55	-873.12	2.55	-369.12	2.85	-520.84
20	21	60.62	-30.89	144.16	2300.48	0	1496.78	2.55	-733.32	2.55	-322.17	2.85	-454.40
21	21	60.62	-39.18	144.09	2300.48	0	1494.29	2.55	-736.53	2.55	-324.12	2.85	-456.42
21	22	64.01	-39.18	214.83	1692.10	0	1082.85	2.55	-501.87	2.55	-247.27	2.85	-347.64
22	22	64.01	-18.18	215.12	1690.66	0	1127.45	2.55	-622.86	2.55	-222.31	2.85	-314.87
22	23	67.40	-18.18	238.75	933.14	0	626.96	2.55	-368.42	2.55	-120.98	2.85	-171.62
23	23	67.40	0.20	239.58	931.42	0	631.29	2.55	-360.46	2.55	-116.47	2.85	-166.87
23	24	70.45	0.20	291.71	121.21	0	90.12	2.55	-69.54	2.55	-10.89	2.85	-17.54
24	24	70.45	-3.33	291.15	120.07	0	88.27	2.55	-70.42	2.55	-11.59	2.85	-18.20
24	10025	73.50	-3.33	343.28	-847.41	0	-561.47	2.55	288.29	2.55	112.81	2.85	157.77
25	25	73.50	-0.83	-257.50	-848.76	0	-561.61	2.55	289.72	2.55	113.57	2.85	158.63
25	26	76.26	-0.83	-210.33	-203.17	0	-127.32	2.55	47.58	2.55	30.82	2.85	41.89
26	26	76.26	2.60	-212.89	-204.04	0	-126.74	2.55	48.79	2.55	31.82	2.85	42.97
26	27	79.02	2.60	-165.71	318.45	0	222.22	2.55	-139.17	2.55	-36.36	2.85	-53.16
27	27	79.02	-14.06	-168.60	318.64	0	217.33	2.55	-145.71	2.55	-40.32	2.85	-57.25
27	28	81.78	-14.06	-160.24	749.27	0	500.79	2.55	-287.42	2.55	-98.49	2.85	-139.20
28	28	81.78	-35.40	-161.27	749.79	0	456.14	2.55	-172.70	2.55	-121.95	2.85	-169.95
28	29	84.54	-35.40	-103.68	1115.43	0	711.09	2.55	-338.61	2.55	-164.55	2.85	-230.11
29	29	84.54	-44.95	-104.33	1115.61	0	708.33	2.55	-342.37	2.55	-166.84	2.85	-232.47
29	30	87.30	-44.95	-46.74	1324.10	0	856.33	2.55	-445.47	2.55	-189.90	2.85	-264.99
30	30	87.30	-46.72	-47.30	1324.12	0	855.81	2.55	-446.16	2.55	-190.32	2.85	-265.43
30	31	90.06	-46.72	10.28	1375.22	0	896.72	2.55	-486.40	2.55	-193.80	2.85	-270.26
31	31	90.06	-41.73	9.73	1375.30	0	898.27	2.55	-484.47	2.55	-192.64	2.85	-269.07
31	32	92.82	-41.73	67.32	1268.98	0	832.06	2.55	-461.88	2.55	-176.53	2.85	-246.20
32	32	92.82	-28.36	66.97	1269.32	0	836.30	2.55	-456.75	2.55	-173.43	2.85	-243.03
32	33	95.58	-28.36	124.56	1005.04	0	662.66	2.55	-371.25	2.55	-137.65	2.85	-192.34
33	33	95.58	-14.42	124.49	1005.27	0	667.00	2.55	-365.86	2.55	-134.40	2.85	-189.00
33	34	98.34	-14.42	182.09	582.19	0	385.40	2.55	-217.29	2.55	-78.82	2.85	-110.30
34	34	98.34	-1.66	182.16	582.25	0	389.27	2.55	-212.32	2.55	-75.82	2.85	-107.22
34	35	101.10	-1.66	239.75	0.02	0	-0.48	2.55	-0.66	2.55	-0.39	2.85	-0.41
101	101	0.00	-1.11	-251.11	-0.03	0	-0.35	2.55	-0.43	2.55	-0.26	2.85	-0.26
101	102	2.74	-1.11	-190.60	605.12	0	403.57	2.55	-216.67	2.55	-79.22	2.85	-112.05
102	102	2.74	-10.41	-189.85	604.99	0	400.69	2.55	-220.27	2.55	-81.39	2.85	-114.28
102	103	5.48	-10.41	-129.34	1042.28	0	691.01	2.55	-371.50	2.55	-139.18	2.85	-196.11
103	103	5.48	-18.82	-128.70	1042.18	0	688.42	2.55	-374.76	2.55	-141.15	2.85	-198.13
103	104	8.22	-18.82	-68.19	1311.91	0	865.33	2.55	-461.03	2.55	-177.81	2.85	-250.07
104	104	8.22	-26.65	-67.64	1311.83	0	862.93	2.55	-464.07	2.55	-179.65	2.85	-251.95
104	105	10.96	-26.65	-7.13	1414.29	0	928.59	2.55	-485.39	2.55	-195.23	2.85	-274.08

Por alma resulta en resante a coser de positivos de

valor:

$$2932 \frac{1}{2} = 1466 \text{ tn/alma.}$$

la armadura que se tiene a resante en positivo entre

puntos de inflexión es de:

$$\left[\frac{4'36 \times 15'41 + 2'75 \times 20'11 + 3'8 \times 22'62 + 3'42 \times 3'57 + 4'2 \times 40'21}{2} \right] = 496'16 \text{ cm}^2/\text{alma}$$

Por tanto el resante que es capaz de recoger con

redistribución plástica es de:

$$496'16 \times 408 = 1657'12 \text{ tn} > \text{td} = 1466 \text{ tn}$$

VÁLIDO

CÁLCULO TENSIONAL

Hipótesis de cálculo:

Cp.

SIN GRADIENTE

[1: 1PPCF1 + [1: 1PPLF3 + [1: 1PPLF2 + [1: 1PRETF1A.HIP.To + [1: 1PRETF1B.HIP.To + [1: 1PRETF3C.HIP.To + [1: 1PRETF3D.HIP.To + [.86: 1JCMmax + [1: 1JREDPP + [1: 1JREDPRE

Coef. exc:

Barra	Nudo	X	N (T)	Vy (T)	Mz (Tm)	Fibra	InfCajón	Fibra	SupCajón	Fibra	InfLosa	Fibra	SupLosa
						y fibra	sig (t/m2)	y fibra	sig (t/m2)	y fibra	sig (t/m2)	y fibra	sig (t/m2)
105	105	10.96	-28.34	-6.54	1414.41	0	926.16	2.55	-486.09	2.55	-195.65	2.85	-274.51
105	106	13.70	-28.34	53.97	1349.40	0	876.44	2.55	-442.39	2.55	-190.13	2.85	-266.80
106	106	13.70	-24.47	54.79	1349.57	0	877.72	2.55	-440.93	2.55	-189.24	2.85	-265.89
106	107	16.44	-24.47	115.31	1116.51	0	714.25	2.55	-332.04	2.55	-162.53	2.85	-228.21
107	107	16.44	-13.57	116.30	1116.52	0	717.54	2.55	-327.81	2.55	-159.95	2.85	-225.56
107	108	19.18	-13.57	176.80	714.98	0	440.04	2.55	-153.60	2.55	-111.99	2.85	-157.83
108	108	19.18	8.44	177.66	714.63	0	485.03	2.55	-268.21	2.55	-88.39	2.85	-126.93
108	109	21.92	8.44	183.85	250.88	0	180.70	2.55	-118.65	2.55	-25.31	2.85	-38.03
109	109	21.92	22.16	182.83	250.71	0	184.73	2.55	-113.26	2.55	-22.05	2.85	-34.67
109	110	24.66	22.16	231.94	-317.53	0	-193.01	2.55	85.40	2.55	52.94	2.85	71.09
110	110	24.66	14.60	231.26	-316.81	0	-194.92	2.55	82.56	2.55	50.99	2.85	69.05
110	10111	27.40	14.60	280.35	-1017.72	0	-663.95	2.55	337.47	2.55	142.00	2.85	197.47
111	111	27.40	0.28	-364.07	-1016.85	0	-667.64	2.55	331.46	2.55	138.53	2.85	193.85
111	112	30.45	0.29	-309.42	10.21	0	19.92	2.55	-42.30	2.55	5.43	2.85	5.59
112	112	30.45	2.32	-308.56	10.84	0	21.00	2.55	-41.87	2.55	5.86	2.85	5.99
112	113	33.50	2.32	-253.90	868.58	0	592.32	2.55	-344.79	2.55	-106.67	2.85	-153.15
113	113	33.50	-19.28	-252.20	869.70	0	586.66	2.55	-353.88	2.55	-111.86	2.85	-158.55
113	114	36.89	-19.28	-229.91	1682.90	0	1122.46	2.55	-622.35	2.55	-221.32	2.85	-313.30
114	114	36.89	-36.83	-228.93	1683.43	0	1075.87	2.55	-500.61	2.55	-244.25	2.85	-343.66
114	115	40.28	-36.83	-154.07	2332.60	0	1513.04	2.55	-745.07	2.55	-327.14	2.85	-460.97
115	115	40.28	-25.23	-154.45	2331.82	0	1516.04	2.55	-740.37	2.55	-324.29	2.85	-457.99
115	116	43.67	-25.23	-79.58	2728.45	0	1782.17	2.55	-886.63	2.55	-375.40	2.85	-530.30
116	116	43.67	-9.06	-81.02	2727.74	0	1786.59	2.55	-880.18	2.55	-371.47	2.85	-526.22
116	117	47.06	-9.06	-6.17	2875.54	0	1884.01	2.55	-929.08	2.55	-391.35	2.85	-554.33
117	117	47.06	-1.35	-7.87	2875.94	0	1886.59	2.55	-926.20	2.55	-389.59	2.85	-552.53
117	118	50.45	-1.35	67.00	2775.72	0	1815.79	2.55	-877.86	2.55	-378.36	2.85	-536.62
118	118	50.45	4.38	66.17	2776.58	0	1818.07	2.55	-875.86	2.55	-377.13	2.85	-535.40
118	119	53.84	4.38	141.04	2425.36	0	1577.13	2.55	-729.43	2.55	-334.36	2.85	-474.89
119	119	53.84	12.78	141.23	2426.03	0	1580.09	2.55	-726.35	2.55	-332.48	2.85	-472.98
119	120	57.23	12.78	216.09	1820.38	0	1166.83	2.55	-480.86	2.55	-257.69	2.85	-367.17
120	120	57.23	30.89	216.48	1820.18	0	1227.92	2.55	-647.56	2.55	-227.98	2.85	-327.41
120	121	60.62	30.89	235.42	1026.94	0	705.76	2.55	-387.05	2.55	-120.93	2.85	-176.22
121	121	60.62	39.18	232.96	1026.64	0	708.07	2.55	-383.76	2.55	-118.93	2.85	-174.14
121	122	64.01	39.18	293.72	133.92	0	111.93	2.55	-63.36	2.55	-2.49	2.85	-9.63
122	122	64.01	18.18	290.70	135.48	0	106.44	2.55	-71.43	2.55	-7.76	2.85	-15.15
122	10123	67.40	18.18	351.44	-952.82	0	-624.66	2.55	333.02	2.55	132.12	2.85	182.55
123	123	67.40	10.12	-339.40	-951.19	0	-625.97	2.55	329.23	2.55	130.02	2.85	180.30
123	124	70.45	10.12	-284.73	0.65	0	9.11	2.55	-10.67	2.55	5.61	2.85	4.54
124	124	70.45	13.64	-284.18	1.74	0	10.92	2.55	-9.78	2.55	6.32	2.85	5.21
124	125	73.50	13.64	-229.52	785.13	0	530.36	2.55	-279.19	2.55	-97.63	2.85	-141.57
125	125	73.50	0.83	-227.95	786.43	0	527.41	2.55	-284.75	2.55	-100.80	2.85	-144.91
125	126	76.26	0.83	-224.94	1353.05	0	899.64	2.55	-468.59	2.55	-177.65	2.85	-253.33
126	126	76.26	-2.60	-223.25	1353.38	0	856.25	2.55	-334.02	2.55	-198.77	2.85	-282.34
126	127	79.02	-2.60	-162.30	1885.43	0	1222.71	2.55	-560.79	2.55	-262.88	2.85	-372.95
127	127	79.02	14.06	-160.67	1884.93	0	1227.41	2.55	-554.18	2.55	-258.88	2.85	-368.80
127	128	81.78	14.06	-99.72	2244.25	0	1477.11	2.55	-714.51	2.55	-301.14	2.85	-428.48
128	128	81.78	35.40	-98.68	2243.76	0	1483.22	2.55	-706.08	2.55	-296.03	2.85	-423.20
128	129	84.54	35.40	-37.73	2431.99	0	1617.20	2.55	-800.39	2.55	-316.69	2.85	-452.29
129	129	84.54	44.95	-37.08	2431.80	0	1619.96	2.55	-796.63	2.55	-314.41	2.85	-449.93
129	130	87.30	44.95	23.88	2450.02	0	1638.90	2.55	-825.17	2.55	-313.63	2.85	-448.67
130	130	87.30	46.72	24.44	2450.00	0	1639.43	2.55	-824.49	2.55	-313.20	2.85	-448.23
130	131	90.06	46.72	85.40	2298.41	0	1543.46	2.55	-787.29	2.55	-291.00	2.85	-416.65
131	131	90.06	41.73	85.94	2298.34	0	1541.91	2.55	-789.22	2.55	-292.17	2.85	-417.85
131	132	92.82	41.73	146.89	1977.02	0	1331.07	2.55	-686.28	2.55	-248.56	2.85	-355.98
132	132	92.82	28.36	147.24	1976.70	0	1326.85	2.55	-691.41	2.55	-251.67	2.85	-359.16
132	133	95.58	28.36	208.20	1486.16	0	1001.45	2.55	-522.79	2.55	-186.74	2.85	-267.12
133	133	95.58	14.42	208.27	1485.91	0	997.10	2.55	-528.17	2.55	-189.99	2.85	-270.45
133	134	98.34	14.42	269.22	826.98	0	557.64	2.55	-294.02	2.55	-103.87	2.85	-148.43
134	134	98.34	1.66	269.13	826.93	0	553.77	2.55	-298.99	2.55	-106.87	2.85	-151.51
134	135	101.10	1.66	279.46	0.25	0	0.66	2.55	0.59	2.55	0.35	2.85	0.35

c) Fatiga

c) Fatiga

Se utiliza el procedimiento de la curva de tensión equivalente contemplado en la BIAPEF, para una vida útil de la estructura de 100 años y una intensidad de tráfico de $25 \cdot 10^6$.

$$Y_F \cdot Y_{sd} \cdot \Delta \sigma_{s,eq} \leq \frac{\Delta \sigma_{esk}}{Y_{s,fat}} \quad \text{EC-2 PARTE 2}$$

$$Y_F = 1.00$$

$$Y_{sd} = 1.00$$

$$Y_{s,fat} = 1.15$$

$$\Delta \sigma_{esk} \text{ (N/mm}^2\text{)} = 170 \text{ N/mm}^2 \text{ Anclados Activa.}$$

$$180 \text{ N/mm}^2 \text{ Anclados Pasiva.}$$

$\Delta \sigma_{s,eq}$ = (rango tensional de daño equivalente para acero de armadura y pretensado) $\sigma = D$

$$\Delta \sigma_{s,eq} = k_s \cdot \Delta \sigma_{s,71}$$

k_s = coeficiente corrector para cálculo el momento tensional de daño equivalente a partir del rango tensional del trazo de cálculo.

$$k_s = k_{s,1} \cdot k_{s,2} \cdot k_{s,3} \cdot k_{s,4}$$

$k_{s,1}$ = tiene en cuenta la luz del elemento y la composición del tráfico.

$$L_{ut} \geq 20m \quad k_{s,1} = 0.75 \text{ PILA} \\ 0.55 \text{ EN CENTROS DE MANO INTERMEDIOS}$$

$k_{s,2}$ = tiene en cuenta el volumen anual de tráfico

$$k_{s,2} = \sqrt{\frac{k_2 \cdot Vol}{25 \cdot 10^6}} = 1 \quad Vol = 25 \text{ t/año y más}$$

$k_{s,3}$ = tiene en cuenta la vida en servicio:

$$k_{s,3} = \sqrt{\frac{k_2 \cdot N}{100}} = 1 \quad N = 100 \text{ años de vida útil.}$$

$k_{s,4}$ = tiene en cuenta la influencia de vías múltiples

$$k_{s,4} = \sqrt{\frac{k_2}{n + (1-n) \cdot s_1 \cdot k_2 + (1-n) \cdot s_2 \cdot k_2}}$$

$$n = 0.12 \text{ (EC-3, parte 2)}$$

$$s_1 = \frac{600}{718'25} = 0.84$$

$$s_2 = \frac{112}{718'25} = 0.15$$

$$k_2 = 2$$

$$k_{s,4} = 0.845$$

se tiene relación de momentos (ver gráficas de modo de cálculo)

= An' la limite de $\Delta T_{s,71}$ debido al tráfico:

$$\Delta T_{s,71} \leq$$

353'01 N/mm ²	C.D.V	ACTIVA
374'02 N/mm ²	C.D.V	PASIVA
259'04 N/mm ²	PILA	ACTIVA
274'28 N/mm ²	PILA	PASIVA

→ $\Delta T_{s,71}$ EN PILA (N.º 10123) (PIL)



ESFUERZO EN SERVICIO:

COR TEN Y COEF ELASTICO

$$Nd = -2367'69 \text{ tn}$$

$$e = 284'5 \text{ cm}$$

$$\text{sin tracción: } Md_{\text{trac}} = -365 - 1370'7 = -1735'7 \text{ mt.} \Rightarrow$$

$$\Rightarrow \begin{cases} e = +210'6 \text{ cm.} \\ Md = -2367'69 \text{ tn} \end{cases}$$

$$\Delta T_{s,71} = 549'8 + 623 = 612 \text{ kg/cm}^2 \leq 259'04 \text{ kg/cm}^2 \quad \underline{\text{OK}}$$

→ $\Delta T_{s,71}$ EN C.D.V (N.º 117) (SEC 1)

ESFUERZO EN SERVICIO:

COR TEN Y COEF ELASTICO DE SERVICIO

$$Nd = -1605'12 \text{ tn}$$

$$e = -50 \text{ cm}$$

$$\text{sin tracción: } Md_{\text{trac}} = 915 + 26842 = 11734$$

$$\Delta T_{s,71} = 2370 - 1887'7 = 502'3 \text{ kg/cm}^2 < 353'01 \text{ kg/cm}^2$$

OK

$$Md = -1605'12 \text{ tn}$$

$$e = -0'353 \text{ m}$$

Título Sección: PIL

Análisis CON FISURACION

Secuencia Incrementos de Carga:

Incremento de Carga 1 :

Axil : -2367.69Tn.
Excentricidad: 284.50cm.(respecto a la directriz)
Tipo de Solicitud: SO
Sección Afectada: TOTAL

TENSIONES (Kg/cm2):

ESTADO INICIAL (To)					ESTADO FINAL (Tinf)						
Nsp	Yn(cm)	Tsup.	Tinf.	Tao	Tcomp	Nsp	Yn(cm)	Tsup.	Tinf.	Tao	Tcomp
1	88.3	0.0	0.0	0.0	0.0	1	\$\$\$\$\$	0.0	0.0	0.0	0.0
2	88.3	0.0	0.0	0.0	0.0	2	\$\$\$\$\$	0.0	0.0	0.0	0.0
3	88.3	0.0	-249.2	0.0	0.0	3	\$\$\$\$\$	0.0	0.0	0.0	0.0
4	88.3	-249.2	-288.8	0.0	0.0	4	\$\$\$\$\$	0.0	0.0	0.0	0.0
5	88.3	-1498.0	-1508.4	0.0	1508.4	5	\$\$\$\$\$	0.0	0.0	0.0	0.0
6	88.3	690.4	690.4	0.0	690.4	6	\$\$\$\$\$	0.0	0.0	0.0	0.0
7	88.3	690.4	690.4	0.0	690.4	7	\$\$\$\$\$	0.0	0.0	0.0	0.0
8	88.3	690.4	690.4	0.0	690.4	8	\$\$\$\$\$	0.0	0.0	0.0	0.0
9	88.3	338.7	328.3	0.0	338.7	9	\$\$\$\$\$	0.0	0.0	0.0	0.0
10	88.3	759.9	741.7	0.0	759.9	10	\$\$\$\$\$	0.0	0.0	0.0	0.0
11	88.3	632.3	614.0	0.0	632.3	11	\$\$\$\$\$	0.0	0.0	0.0	0.0
12	88.3	549.8	539.3	0.0	549.8	12	\$\$\$\$\$	0.0	0.0	0.0	0.0
13	88.3	-179.5	-210.5	0.0	0.0	13	\$\$\$\$\$	0.0	0.0	0.0	0.0

Incrementos de Carga:

1

** CALCULO ELASTICO **

Título Sección: PIL

Análisis CON FISURACION

Secuencia Incrementos de Carga:

Incremento de Carga 1 :

Axil : -2367.69Tn.
Excentricidad: 210.60cm.(respecto a la directriz)
Tipo de Solicitud: SO
Sección Afectada: TOTAL

TENSIONES (Kg/cm2):

ESTADO INICIAL (To)						ESTADO FINAL (Tinf)					
Nap	Yn(cm)	Tsup.	Tinf.	Tao	Tcomp	Nsp	Yn(cm)	Tsup.	Tinf.	Tao	Tcomp
1	1.8	0.0	-15.9	0.0	0.0	1	\$\$\$\$\$	0.0	0.0	0.0	0.0
2	1.8	-18.8	-38.8	0.0	0.0	2	\$\$\$\$\$	0.0	0.0	0.0	0.0
3	1.8	-38.8	-170.9	0.0	0.0	3	\$\$\$\$\$	0.0	0.0	0.0	0.0
4	1.8	-170.9	-188.9	0.0	0.0	4	\$\$\$\$\$	0.0	0.0	0.0	0.0
5	1.8	-987.5	-992.3	0.0	992.3	5	\$\$\$\$\$	0.0	0.0	0.0	0.0
6	1.8	6.3	6.3	0.0	6.3	6	\$\$\$\$\$	0.0	0.0	0.0	0.0
7	1.8	6.3	6.3	0.0	6.3	7	\$\$\$\$\$	0.0	0.0	0.0	0.0
8	1.8	6.3	6.3	0.0	6.3	8	\$\$\$\$\$	0.0	0.0	0.0	0.0
9	1.8	-153.4	-158.1	0.0	158.1	9	\$\$\$\$\$	0.0	0.0	0.0	0.0
10	1.8	-13.3	-21.6	0.0	21.6	10	\$\$\$\$\$	0.0	0.0	0.0	0.0
11	1.8	-71.3	-79.6	0.0	79.6	11	\$\$\$\$\$	0.0	0.0	0.0	0.0
12	1.8	-57.5	-62.3	0.0	62.3	12	\$\$\$\$\$	0.0	0.0	0.0	0.0
13	1.8	-130.3	-144.4	0.0	0.0	13	\$\$\$\$\$	0.0	0.0	0.0	0.0

Incrementos de Carga:

Proyecto:

Viaducto V-1. Santa Oliva

Sección: PIL

MATERIALES

Num.	Fck (Kg/cm2)	Gamma	M.El. (Kg/cm2)	Jr1	Jr2
1(HO)	350.0	1.50	285770	2.60	1.45
2(HO)	550.0	1.50	338219	2.60	1.45
3(RD)	5100.0	1.15	2100000		
4(PR)	17100.0	1.15	1800000		

SECCIONES PARCIALES

Num	Mat.	B(cm)	H(cm)	Yo(cm)	Mc	Nsr
		Num	g(mm)			
1	1	700.0	30.0	0.0	C*	0
2	2	90.0	30.0	30.0	C*	0
3	2	36.0	198.0	60.0	C*	0
4	2	179.0	27.0	258.0	C*	0
5	4	28.0	13.4	280.0	*T	0
6	4	0.0	0.0	0.0	*T	0
7	4	0.0	0.0	0.0	*T	0
8	4	0.0	0.0	0.0	*T	0
9	4	8.0	13.4	45.0	*T	0
10	3	70.0	20.0	5.0	CT	0
11	3	70.0	20.0	19.0	CT	0
12	4	105.0	13.4	18.0	*T	0
13	1	130.0	25.0	233.0	C*	0

SECCIONES INTERMEDIAS

Num.	Codigo	Componentes						
1	CAJ	2	3	4				
2	LOS	1						
3	C+P	2	3	4	5	6	7	
		8	9					
4	PS	9						
5	PI	6	7	8	5			

* CONSTANTES ESTATICAS *

S.COMPLETA

Tipo	Acciones	Area(cm2)	Xcg(cm)	Inercia(cm4)
F.pura +	(0)	1946.2	14.04	2510590.3
	(1)	1148.9	20.41	2402833.1
	(2)	1328.7	18.51	2433160.0
F.pura -	(0)	2214.5	191.63	25179764.2
	(1)	1158.7	127.19	15539101.4
	(2)	1369.3	147.24	18476183.7
C.Simple	(0)	6270.2	92.95	67280546.5
	(1)	2181.6	80.15	21750086.1
	(2)	2919.7	85.11	30083460.2
T.Simple	(0)	609.0	29.45	2278045.8
	(1)	609.0	29.45	2278045.8
	(2)	609.0	29.45	2278045.8

*** Nota: Homogeneizadas a E=2100000 Kp/cm2 ***

** CALCULO ELASTICO **

Proyecto:
Viaducto V-1. Santa Oliva

Seccion:CSECI

MATERIALES

Num.	Fck (Kg/cm2)	Gamma	M.El. (Kg/cm2)	J _{π1}	J _{π2}
1(HO)	300.0	1.50	285770	2.60	1.45
2(HO)	550.0	1.50	338219	2.60	1.45
3(RD)	5100.0	1.15	2100000		
4(PR)	17100.0	1.15	1800000		

SECCIONES PARCIALES

Num	Mat.	B(cm)	H(cm)	Yo(cm)	Mc	Nsr
Num π(mm)						
1	1	700.0	30.0	0.0	C*	0
2	2	90.0	30.0	30.0	C*	0
3	2	36.0	198.0	60.0	C*	0
4	2	179.0	27.0	258.0	C*	0
5	4	28.0	13.4	280.0	*T	0
6	4	26.0	13.4	275.2	*T	0
7	4	0.0	0.0	0.0	*T	0
8	4	0.0	0.0	0.0	*T	0
9	4	8.0	13.4	45.0	*T	0
10	3	35.0	12.0	5.0	CT	0
11	3	35.0	12.0	19.0	CT	0
12	3	16.0	20.0	260.0	CT	0
13	3	8.0	25.0	265.0	CT	0

SECCIONES INTERMEDIAS

Num.	Codigo	Componentes
1	CAJ	2 3 4
2	LOS	1
3	C+P	2 3 4 5 6 7
		8 9
4	PS	9
5	PI	6 7 8 5

* CONSTANTES ESTATICAS *

S.COMPLETA

Tipo	Acciones	Area(cm2)	Xcg(cm)	Inercia(cm4)
F.pura +	(0)	2874.0	27.62	9741478.0
	(1)	1125.7	52.05	8605984.2
	(2)	1484.2	42.62	9018471.4
F.pura -	(0)	1072.2	249.25	5342899.6
	(1)	514.7	223.60	4699916.2
	(2)	622.3	232.00	4904863.3
C.Simple	(0)	5462.0	91.42	57582124.5
	(1)	1692.8	100.30	19780274.7
	(2)	2373.3	96.61	26650268.5
T.Simple	(0)	243.1	177.07	3642630.4
	(1)	243.1	177.07	3642630.4
	(2)	243.1	177.07	3642630.4

*** Nota: Homogeneizadas a E=2100000 Kp/cm2 ***

** CALCULO ELASTICO **

Título Sección: CSECI

Análisis CON FISURACION

Secuencia Incrementos de Carga:

Incremento de Carga 1 :

Axil : -1605.12Tn.
Excentricidad: -50.00cm.(respecto a la directriz)
Tipo de Solicitacion: SO
Seccion Afectada: TOTAL

TENSIONES (Kg/cm2):

ESTADO INICIAL (To)						ESTADO FINAL (Tinf)					
Nsp	Yn(cm)	Tsup.	Tinf.	Tao	Tcomp	Nsp	Yn(cm)	Tsup.	Tinf.	Tao	Tcomp
1	64.8	-114.4	-61.5	0.0	0.0	1	64.8	0.0	0.0	0.0	0.0
2	64.8	-72.7	-10.1	0.0	0.0	2	64.8	0.0	0.0	0.0	0.0
3	64.8	-10.1	0.0	0.0	0.0	3	64.8	0.0	0.0	0.0	0.0
4	64.8	0.0	0.0	0.0	0.0	4	64.8	0.0	0.0	0.0	0.0
5	64.8	2390.4	2405.2	0.0	2405.2	5	64.8	0.0	0.0	0.0	0.0
6	64.8	2337.1	2351.9	0.0	2351.9	6	64.8	0.0	0.0	0.0	0.0
7	64.8	-720.4	-720.4	0.0	720.4	7	64.8	0.0	0.0	0.0	0.0
8	64.8	-720.4	-720.4	0.0	720.4	8	64.8	0.0	0.0	0.0	0.0
9	64.8	-220.4	-205.6	0.0	220.4	9	64.8	0.0	0.0	0.0	0.0
10	64.8	-775.6	-760.1	0.0	775.6	10	64.8	0.0	0.0	0.0	0.0
11	64.8	-594.1	-578.6	0.0	594.1	11	64.8	0.0	0.0	0.0	0.0
12	64.8	2529.6	2555.5	0.0	2555.5	12	64.8	0.0	0.0	0.0	0.0
13	64.8	2594.4	2626.8	0.0	2626.8	13	64.8	0.0	0.0	0.0	0.0

Incrementos de Carga:

1

** CALCULO ELASTICO **

Título Sección: CSECI

Análisis CON FISURACION

Secuencia Incrementos de Carga:

Incremento de Carga 1 :

Axil : -1605.12Tn.
Excentricidad: -35.30cm.(respecto a la directriz)
Tipo de Solicitacion: SO
Seccion Afectada: TOTAL

TENSIONES (Kg/cm2):

ESTADO INICIAL (To)						ESTADO FINAL (Tinf)					
Nsp	Yn(cm)	Tsup.	Tinf.	Tao	Tcomp	Nsp	Yn(cm)	Tsup.	Tinf.	Tao	Tcomp
1	72.6	-104.6	-61.4	0.0	0.0	1	72.6	0.0	0.0	0.0	0.0
2	72.6	-72.6	-21.4	0.0	0.0	2	72.6	0.0	0.0	0.0	0.0
3	72.6	-21.4	0.0	0.0	0.0	3	72.6	0.0	0.0	0.0	0.0
4	72.6	0.0	0.0	0.0	0.0	4	72.6	0.0	0.0	0.0	0.0
5	72.6	1882.7	1894.8	0.0	1894.8	5	72.6	0.0	0.0	0.0	0.0
6	72.6	1839.1	1851.3	0.0	1851.3	6	72.6	0.0	0.0	0.0	0.0
7	72.6	-658.7	-658.7	0.0	658.7	7	72.6	0.0	0.0	0.0	0.0
8	72.6	-658.7	-658.7	0.0	658.7	8	72.6	0.0	0.0	0.0	0.0
9	72.6	-250.3	-238.2	0.0	250.3	9	72.6	0.0	0.0	0.0	0.0
10	72.6	-715.6	-702.9	0.0	715.6	10	72.6	0.0	0.0	0.0	0.0
11	72.6	-567.3	-554.6	0.0	567.3	11	72.6	0.0	0.0	0.0	0.0
12	72.6	1984.7	2005.9	0.0	2005.9	12	72.6	0.0	0.0	0.0	0.0
13	72.6	2037.6	2064.1	0.0	2064.1	13	72.6	0.0	0.0	0.0	0.0

Incrementos de Carga:

1

2.2.4. Tablero. Cálculo transversal

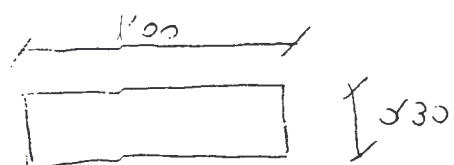
2.2.4.1. Modelo de cálculo y acciones consideradas

A continuación se especifican las acciones y modelo de cálculo utilizados para los efectos locales de losa.

Los efectos globales de losa se obtienen de los modelos de losa del puente.

El modelo de cálculo utilizado refleja 1'00m en longitud y la losa apoyada en los alfileres.

La sección utilizada es de:



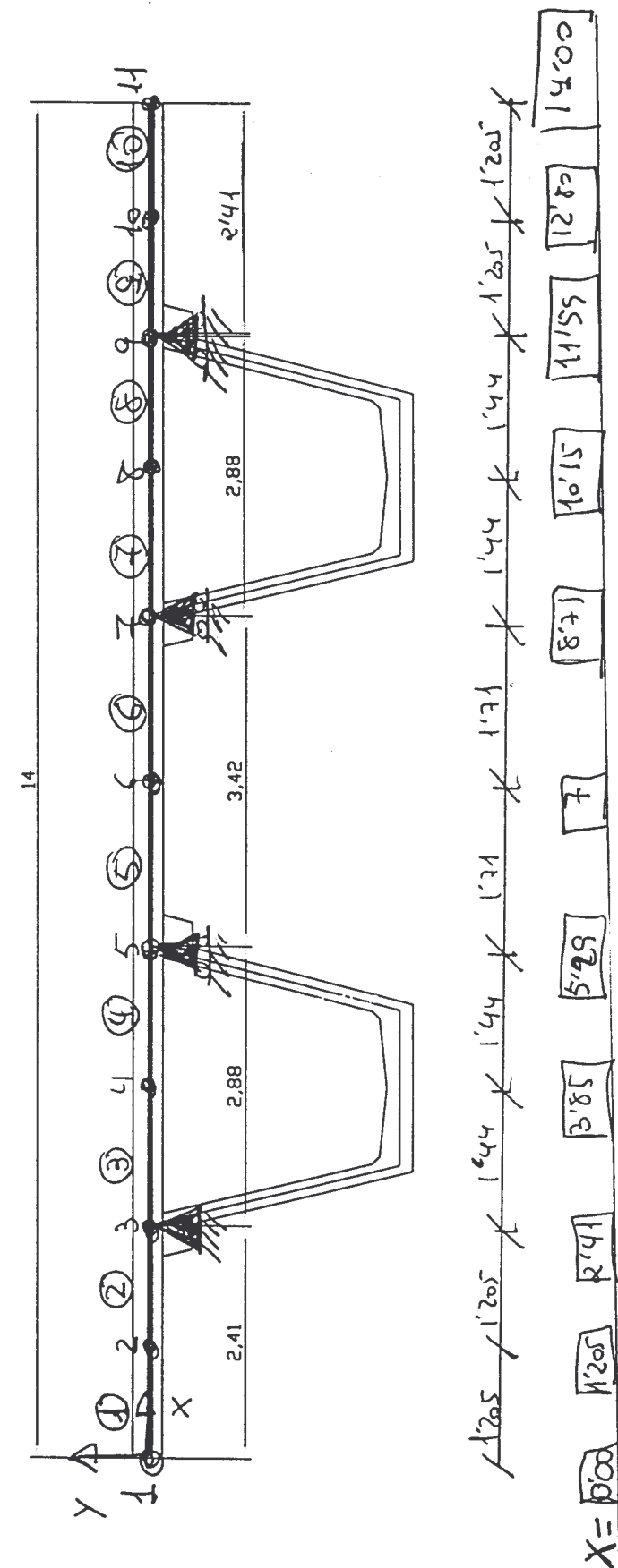
$$A = 0'30 \text{ m}^2$$

$$I_F = 0'00225 \text{ m}^4$$

$$E = 285770 \text{ Kg/cm}^2$$

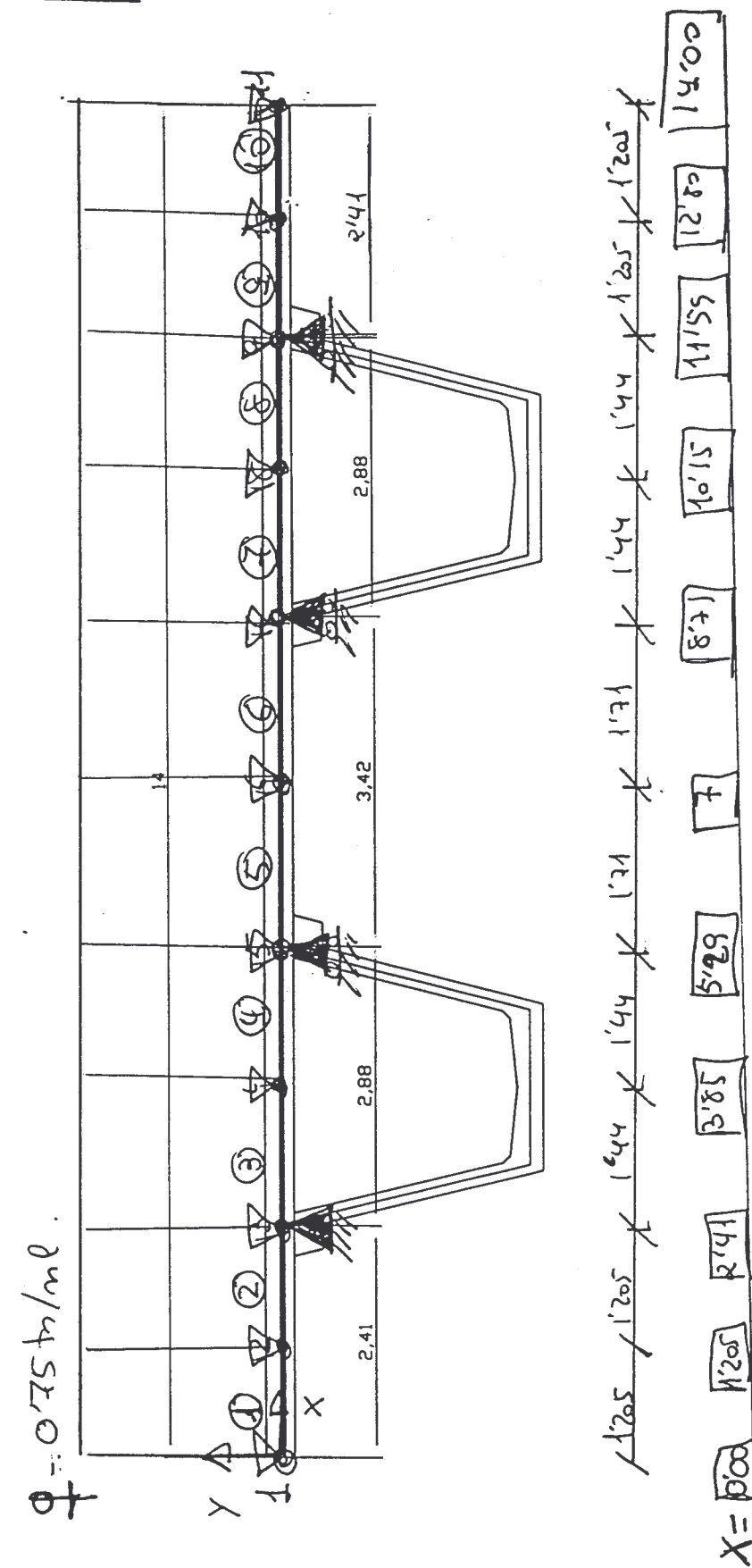
La numeración de nodos y elementos se corresponde a continuación:

- Modelo de cálculo. Nodos y Elementos (mod E)

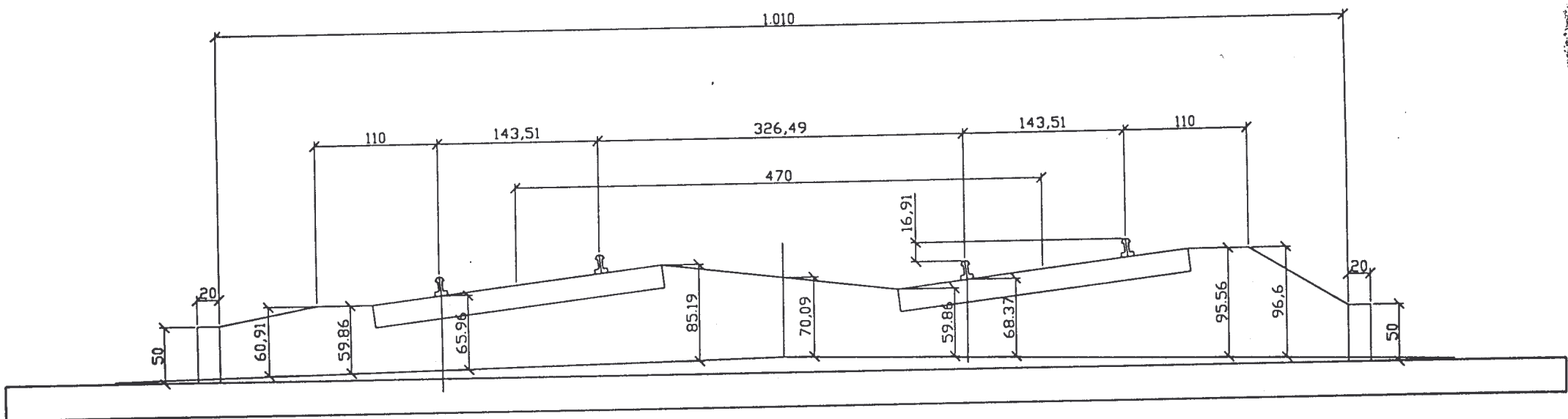


ACCIONES CONSIDERADAS

- PESO PROPIO LOSA



→ BALASTO

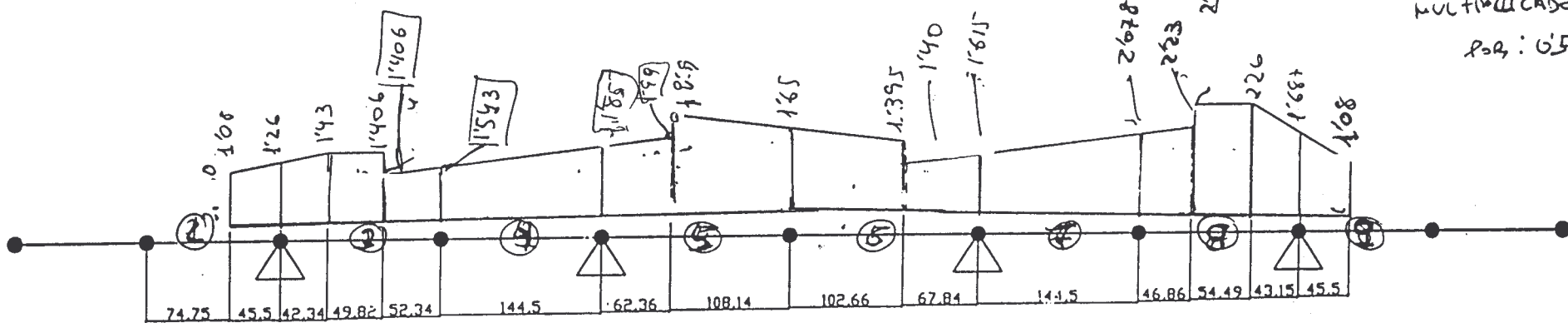


Balasto
máximo

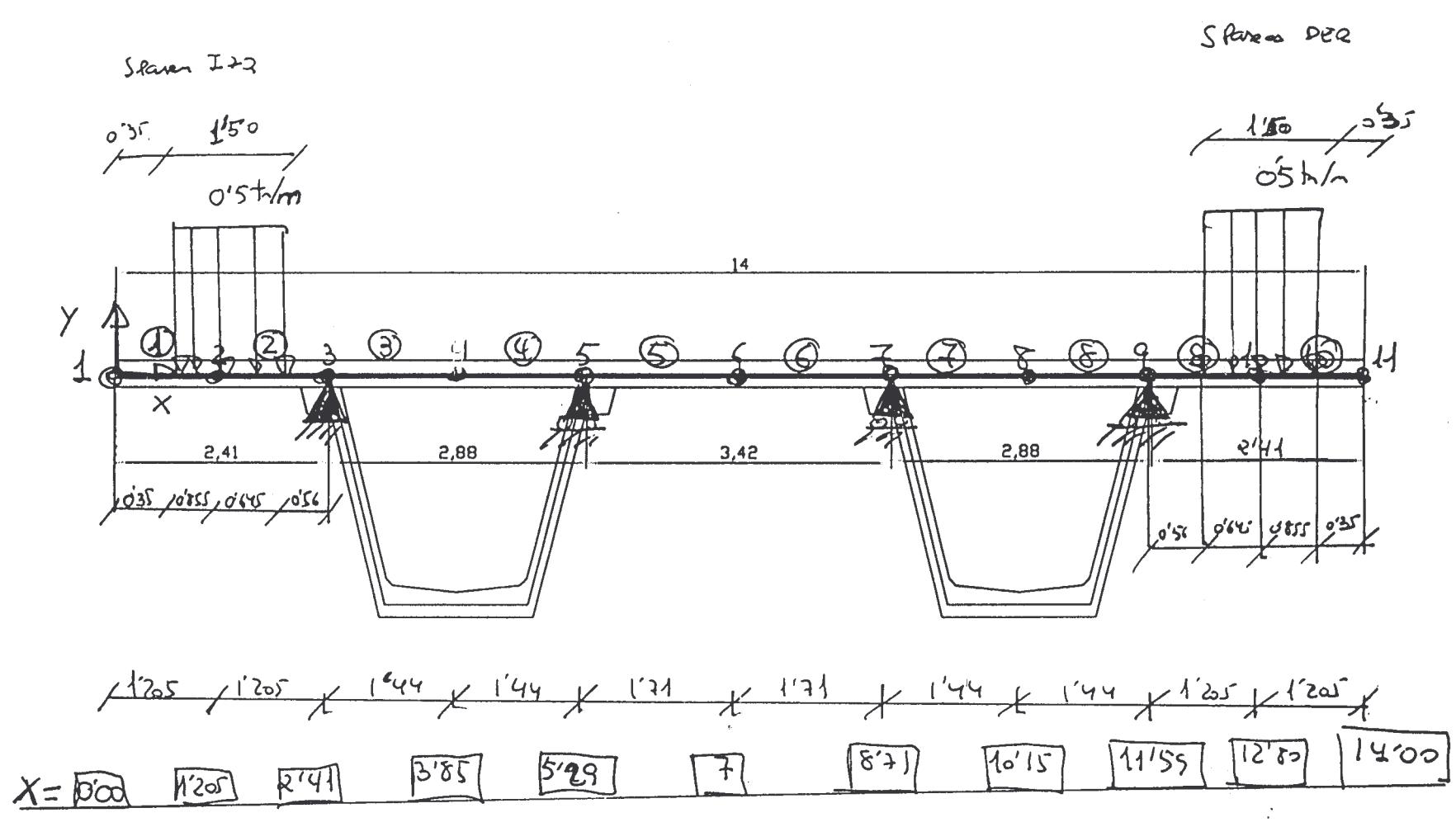
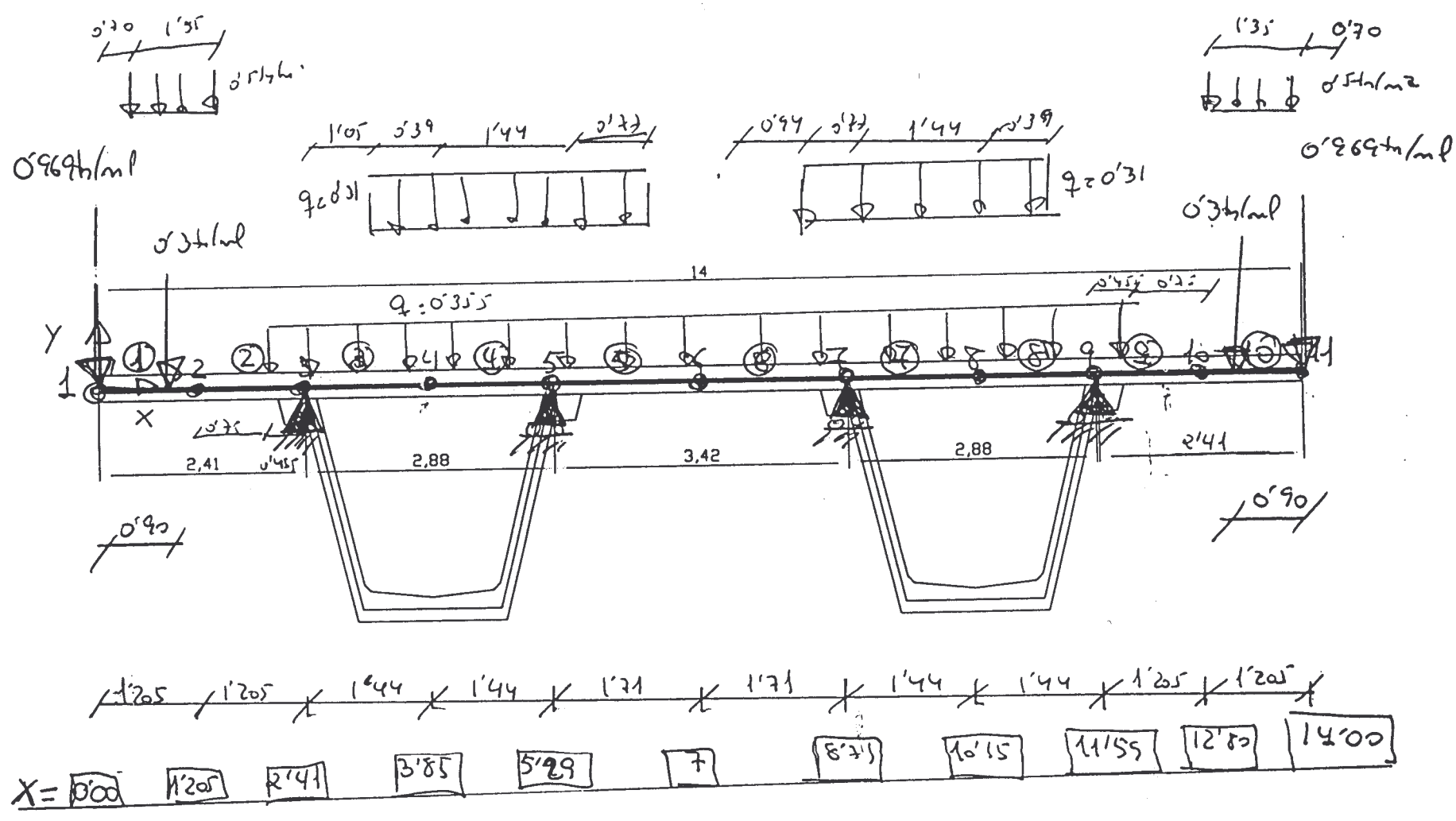
VIADUCTO DE SANTA OLIVA

-BALASTO MAXIMO (CARGAS: $e \times \gamma_{sup}$); γ_{sup} 234 T/m² EL MINIMO

ES 6536
MULTIPLICADO
POR: 0.538



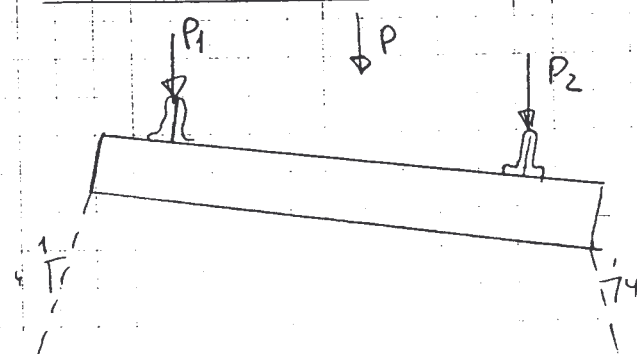
Resumo de
Cargas
no Tab



- Substituição de parâmetros

- Cálculo Local de Trenes en Losa

o Ancho de reparto en travesaer $\Rightarrow$



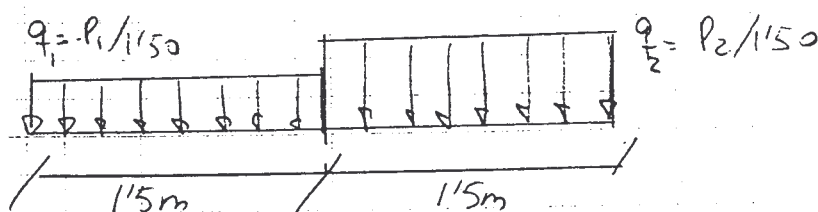
o Sin penalte =

$$P_1 = P_2 = P/2$$

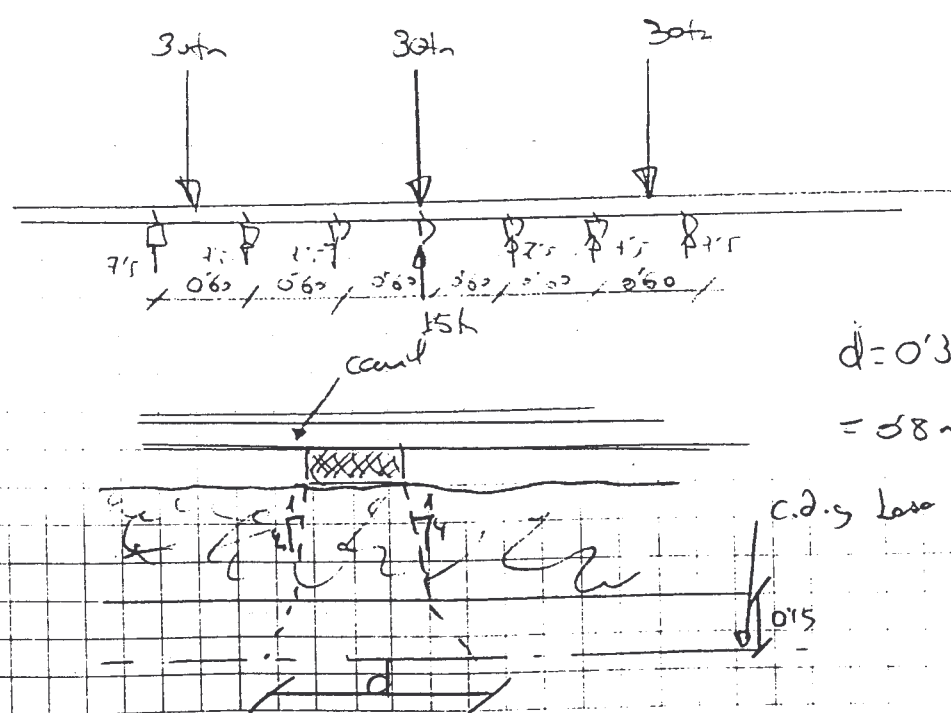
o Con penalte =

$$P_1 = 0.352P$$

$$P_2 = 0.648P$$



o Ancho de reparto en losa longitudinal $\Rightarrow$ Condiciona el tren A de 6 IPF:



$$d = 0.30 + 0.10 + 0.15 \times 2 = 0.8m$$

Entonces como el cálculo se realiza por ml se tiene:

- sin tener en cuenta el penalte:

$$q_1 = q_2 = 0.5 \cdot \frac{15k}{0.8} \cdot \frac{1}{1.5} = 6.25 \text{ tn/m}$$

(18.75 tn/m en las vigas por travesaer - las 12 tn/m de 6 IPF a el tren B; también es mejor que el SW2 del ECI)

- teniendo en cuenta el penalte:

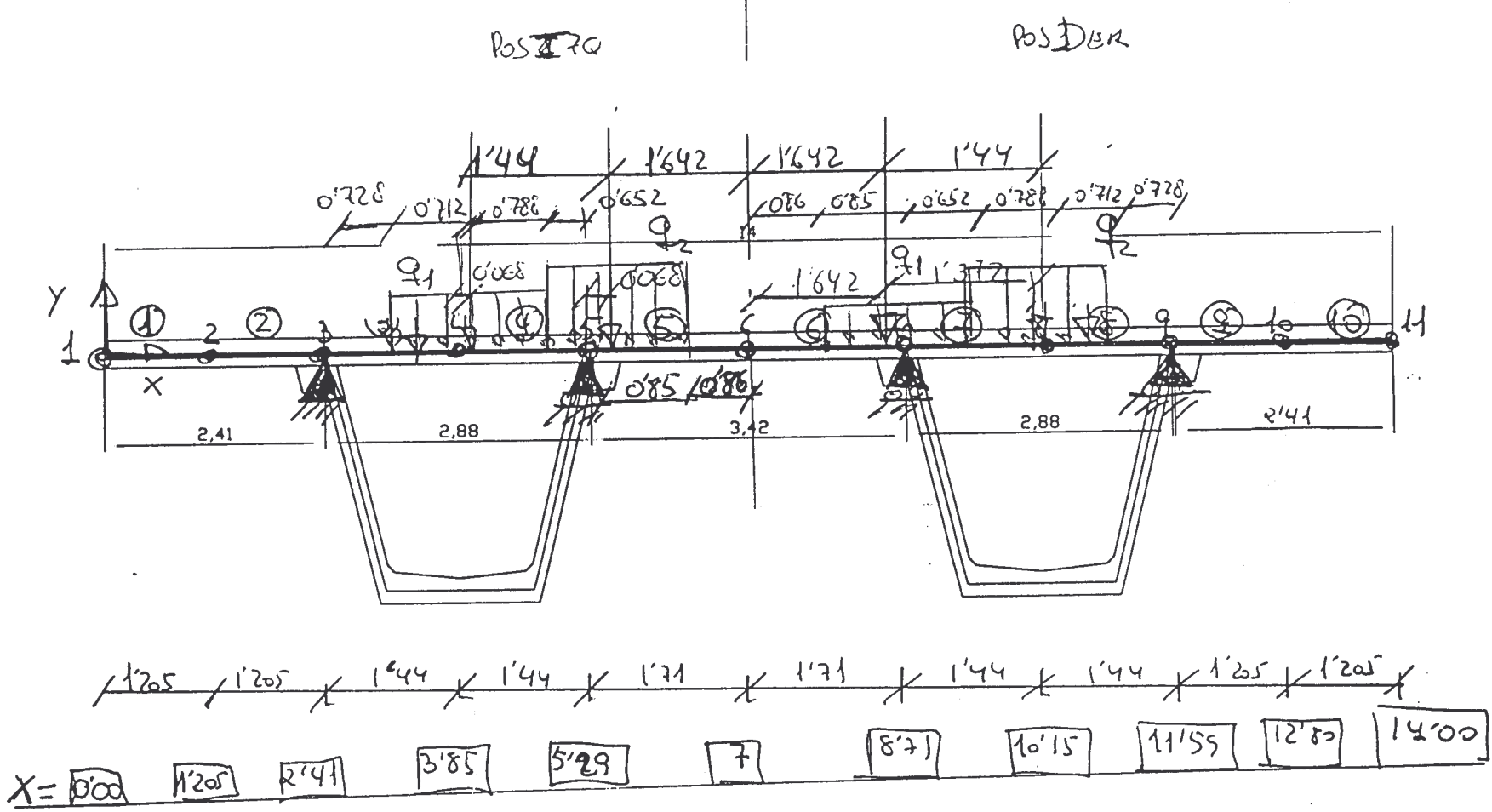
$$q_1 = 0.352 \cdot \frac{15}{0.8} \cdot \frac{1}{1.5} = 4.4 \text{ tn/m}$$

$$q_2 = 0.648 \cdot \frac{15}{0.8} \cdot \frac{1}{1.5} = 8.1 \text{ tn/m}$$

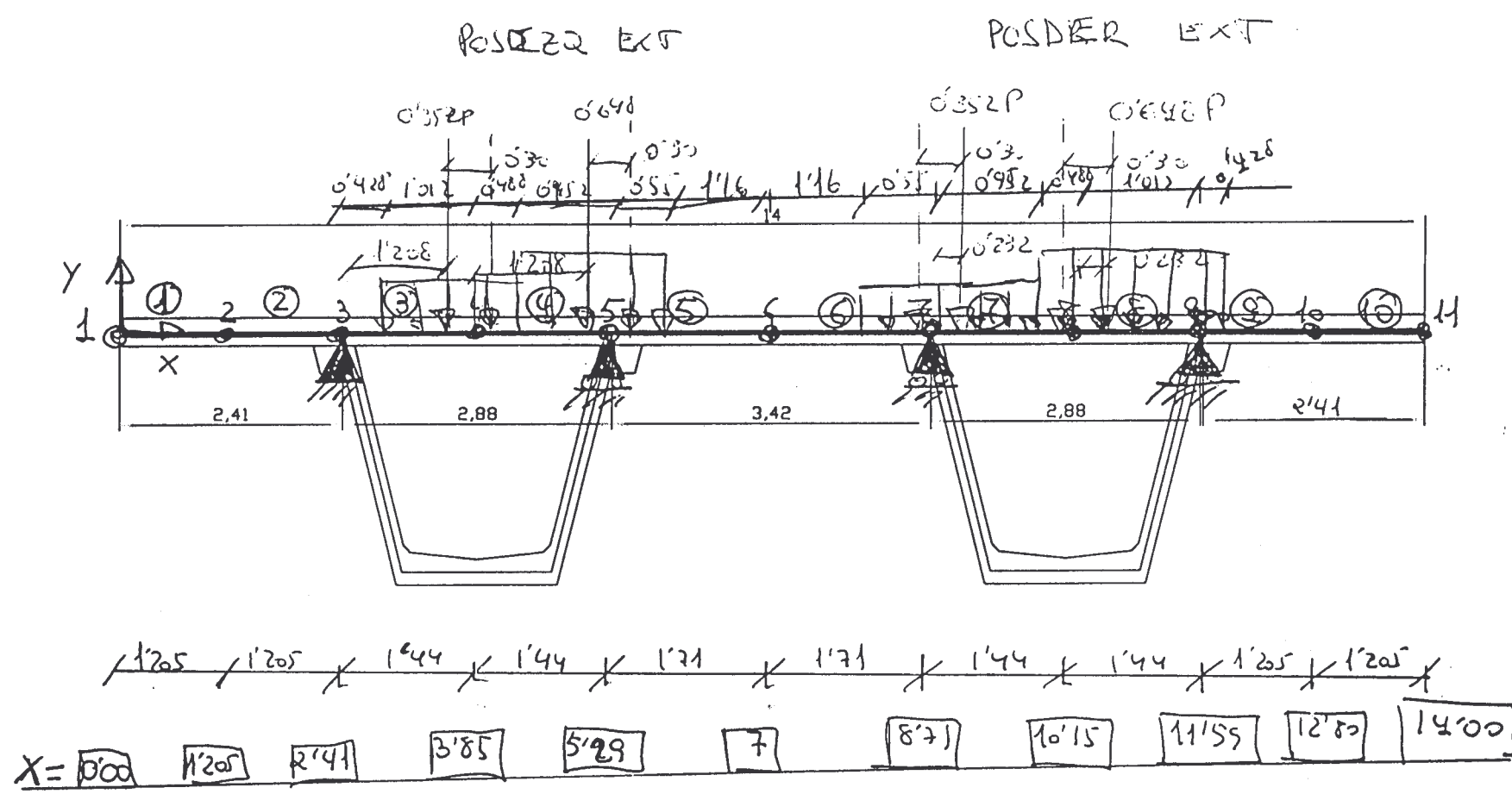
Con todo ello, la contracción se realiza el esquema de cargas de cada posición del tren.

También, para introducir las cargas en el modelo transversal se establecen las cargas del tren considerando las introduciendo con el penalte, esto no de usar acciones que sean las que se introducen en el modelo longitudinal, del lado de la viga se introduce las mas excentricas.

- Posição de trechos



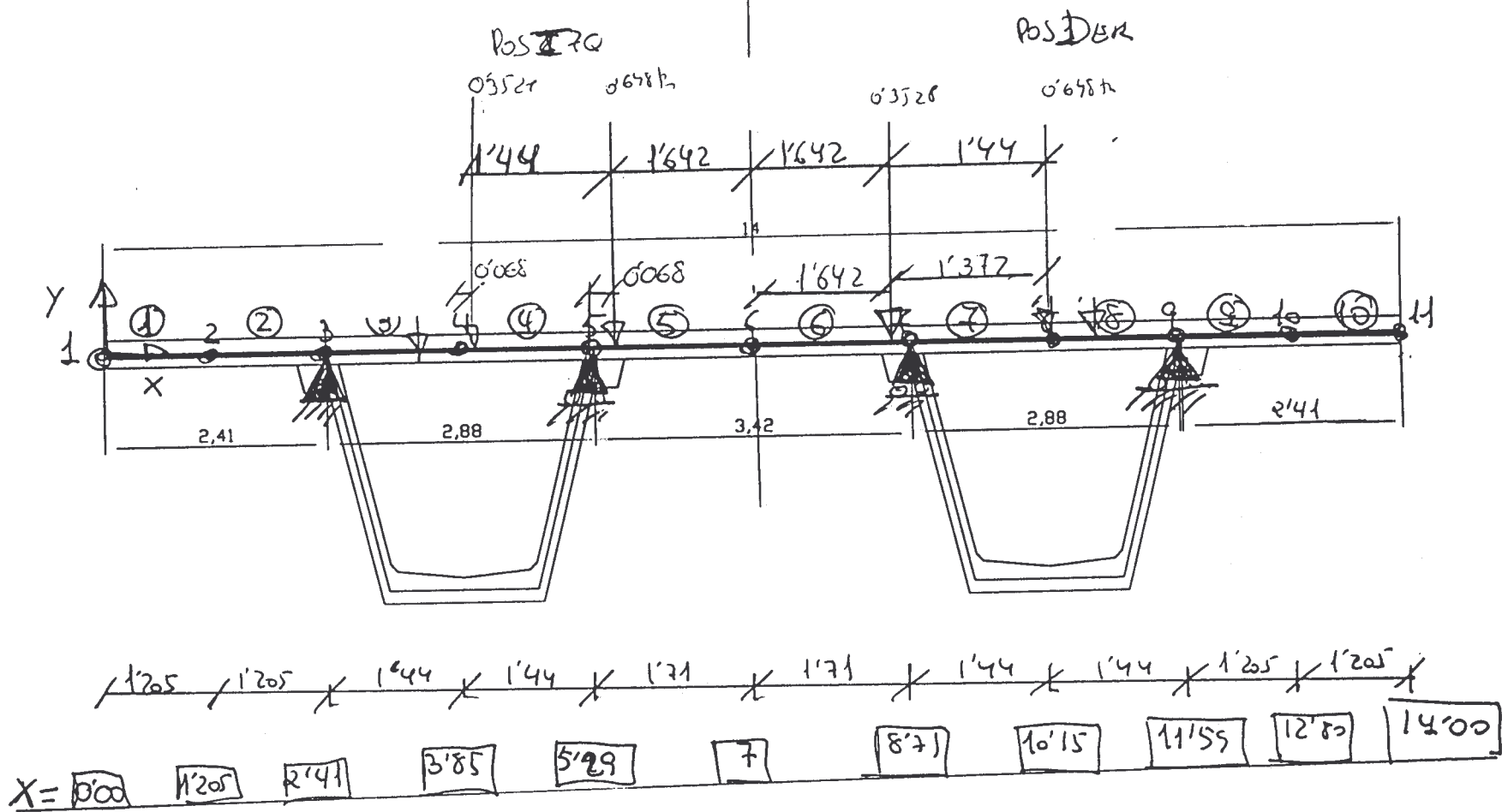
- Trechos rígidos de extremos



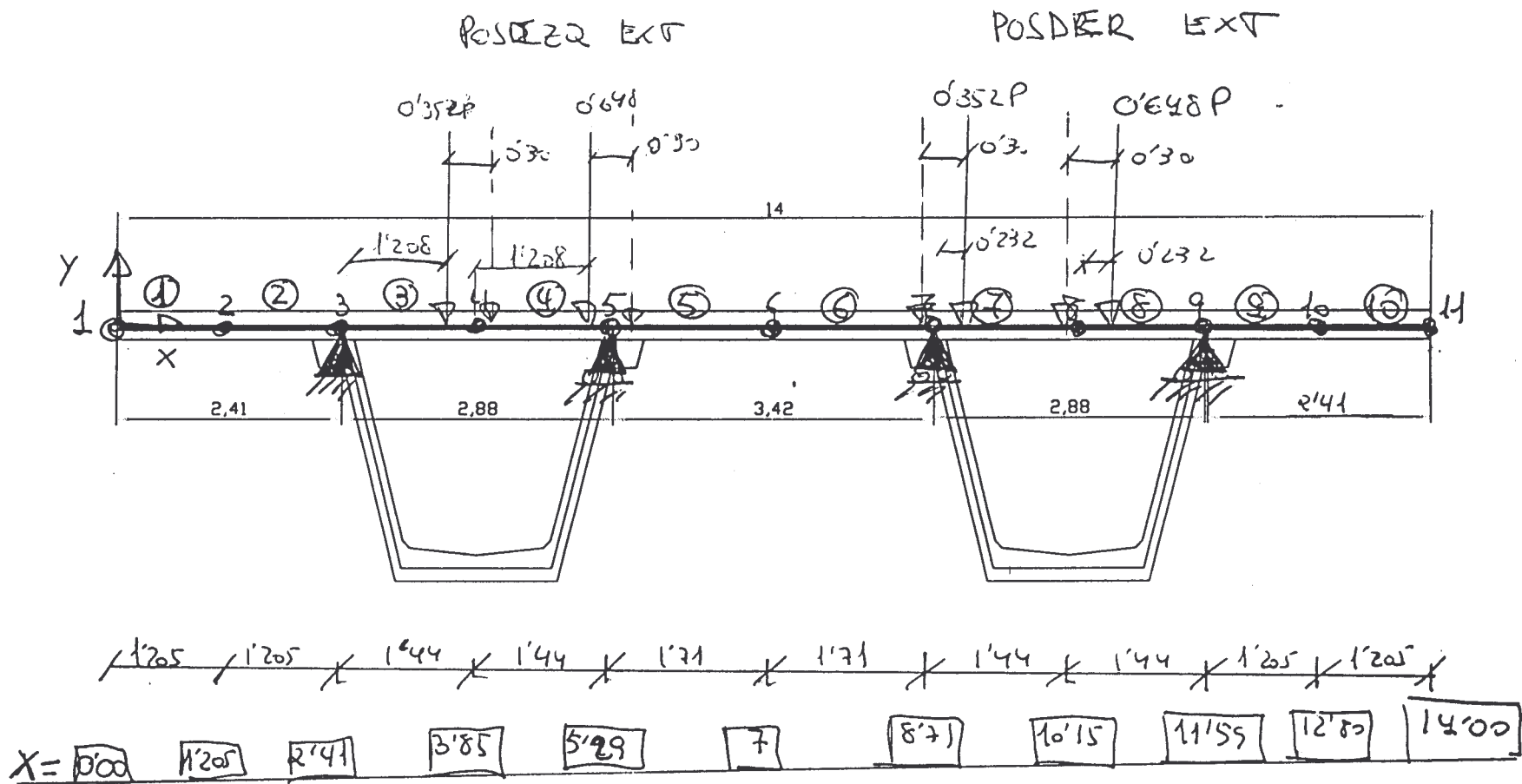
Indicada

DERCMA

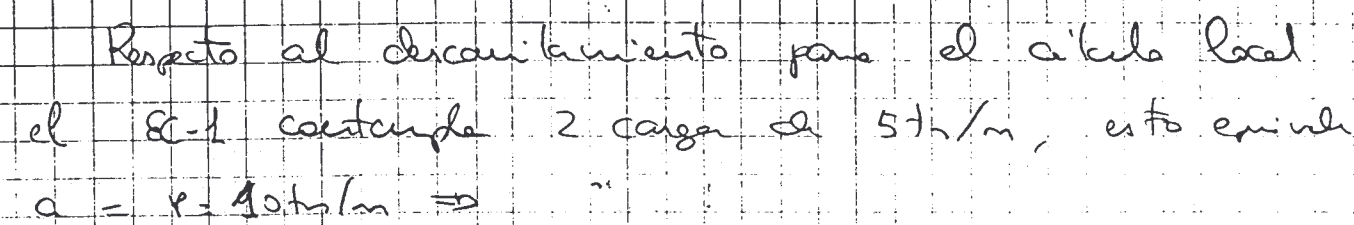
- Posição traço de trechos



- Trechos n.º 2 da base 2 exterioro

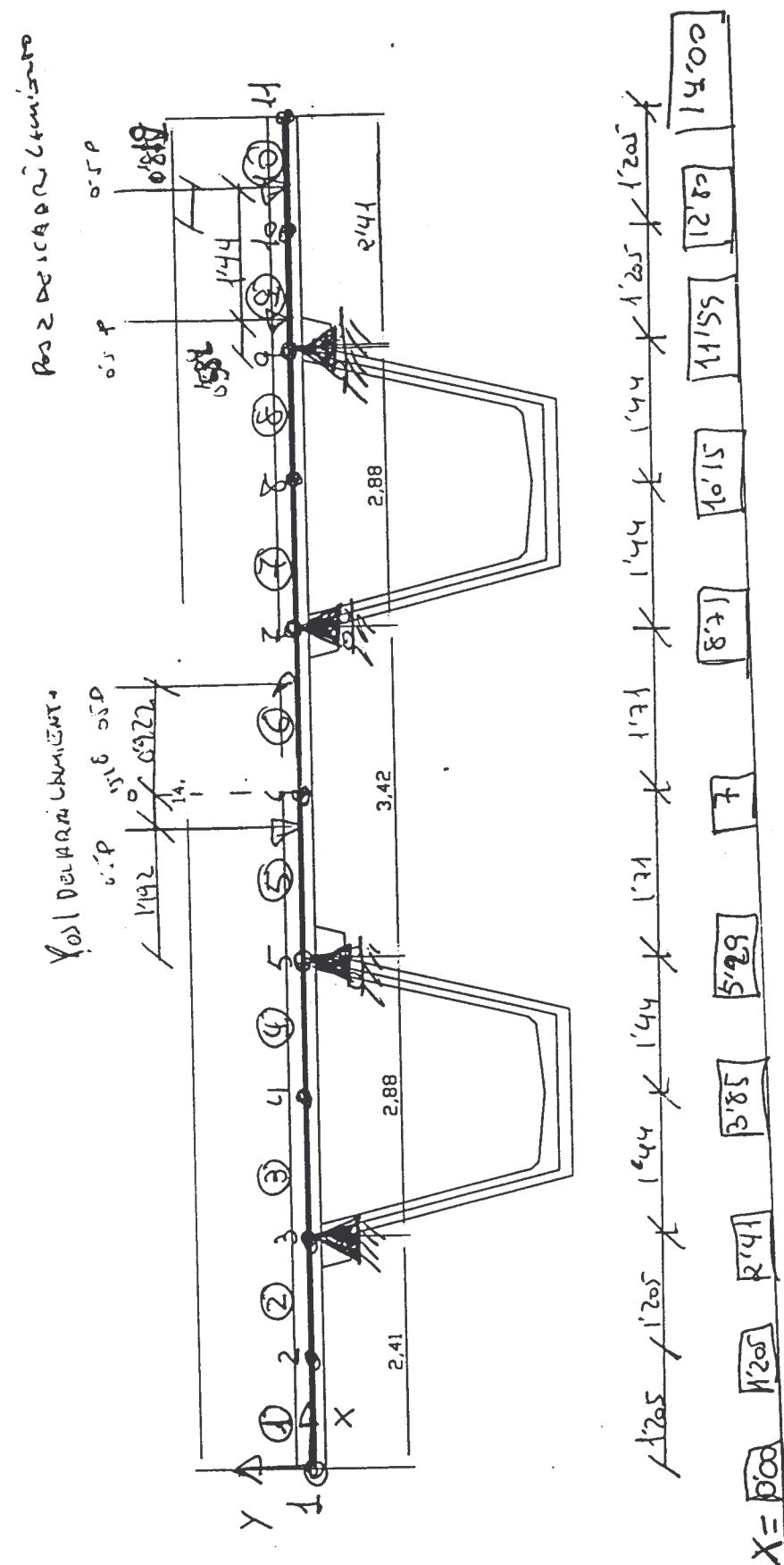


IDEAM



das des quieren qui contempler le monde se
reflèger a continuer.

SITUACIONES DE
DESCAPACITAMIENTO



IDEAM

Reccover and models transversal. (LOCALS)

El resumen de reacciones que se incluye a continuación es el que se ha utilizado para introducir las cargas en el modelo del cálculo longitudinal.

RESUMEN DE REACCIONES MODELO TRANSVERSAL

	VIGA IZQUIERDA				VIGA DERECHA			
	3	5	FY(tn)	MX(mtn)	7	9	FY(tn)	MX(mtn)
PESO PROPIO	3.52	1.73		-2.58	1.73	3.52		2.58
CARGA MUERTA				0.00				0.00
BALASTO MÁXIMO	2.09	5.84		-7.93	6.10	3.04		-9.14
BALASTO MÍNIMO	1.13	3.14		-4.27	3.28	1.63		-4.92
RESTO CM	3.11	0.76		-3.86	0.76	3.11		-3.87
TRENES DE 1 TN/M								
POS DER	0.02	-0.08		0.06	0.82	0.24		-1.06
POS DER EXT	0.02	-0.09		0.07	0.73	0.34		-1.07
POS DER INT	0.01	-0.05		0.04	0.88	0.16		-1.04
POS IZQ	0.13	0.90		-1.03	-0.03	0.01		0.03
POS IZQ EXT	0.20	0.85		-1.06	-0.07	0.01		0.06
POS IZQ INT	0.06	0.92		-0.98	0.02	-0.04		0.02
SCU PASEOS								
DERECHA	-0.02	0.10		-0.08	-0.47	1.21		-0.74
IZQUIERDA	1.20	-0.52		-0.69	0.11	-0.02		-0.19

ESFUERZOS MODELO DE CÁLCULO LOCALES

ESFUERZOS LOCALES DE LOSA																						
BARRA (NUDO)	APOYO					APOYO					APOYO					APOYO			APOYO			
	1(1)	2(1)	2(3)	3(1)	3(2)	4(1)	4(2)	4(3)	5(1)	5(2)	6(1)	6(2)	6(3)	7(1)	7(2)	8(1)	8(2)	8(3)	9(1)	9(3)	10(3)	
CARGAS PERMANENTES																						
PP LOSA	Q (tn)	0.00	0.90	1.80	-1.70	-1.20	-0.60	-0.10	0.40	-1.30	-0.60	0.00	0.60	1.30	-0.40	0.10	0.60	1.20	1.70	-1.80	-0.90	0.00
	M(min)	0.00	-0.50	-2.20	-2.20	-1.10	-0.50	-0.20	-0.40	-0.40	0.50	0.70	0.50	-0.40	-0.40	-0.20	-0.50	-1.10	-2.20	-2.20	-0.50	0.00
MAX BALASTO	Q (tn)	0	0	0.5	-1.6	-0.6	0.4	1.6	2.9	-3	-1.3	0.2	1.5	2.8	-3.3	-2.1	-0.7	0.9	2.4	-0.6	0	0
	M(min)	0	0	-0.1	-0.1	0.7	0.8	0	-1.6	-1.6	0.3	0.7	0	-1.8	-1.8	0.2	1.2	1.1	-0.1	-0.1	0	0
MIN BALASTO	Q (tn)	0	0	0.296	-0.95	-0.36	0.237	0.947	1.716	-1.78	-0.77	0.118	0.888	1.657	-1.95	-1.24	-0.41	0.533	1.42	-0.36	0	0
	M(min)	0	0	-0.06	-0.06	0.414	0.473	0	-0.95	-0.95	0.178	0.414	0	-1.07	-1.07	0.118	0.71	0.651	-0.06	-0.06	0	0
RESTO CARGAS MUERTAS																						
	Q (tn)	1	1.3	1.4	-1.7	-1.4	-1	-0.6	-0.1	-0.8	-0.3	0	0.3	0.8	0.1	0.6	1	1.4	1.7	-1.4	-1.3	-1
	M(min)	0	-1.3	-2.8	-2.8	-1.7	-0.8	-0.2	0	0	0.5	0.6	0.5	0	0	-0.2	-0.8	-1.7	-2.8	-2.8	-1.3	0
CM MAXIMA	Q (tn)	1	1.3	1.9	-3.3	-2	-0.6	1	2.8	-3.8	-1.6	0.2	1.8	3.6	-3.2	-1.5	0.3	2.3	4.1	-2	-1.3	-1
	M(min)	0	-1.3	-2.9	-2.9	-1	0	-0.2	-1.6	-1.6	0.8	1.3	0.5	-1.8	-1.8	0	0.4	-0.6	-2.9	-2.9	-1.3	0
CM MINIMA	Q (tn)	1	1.3	1.696	-2.65	-1.76	-0.76	0.347	1.616	-2.58	-1.07	0.118	1.188	2.457	-1.85	-0.64	0.586	1.933	3.12	-1.76	-1.3	-1
	M(min)	0	-1.3	-2.86	-2.86	-1.29	-0.33	-0.2	-0.95	-0.95	0.678	1.014	0.5	-1.07	-1.07	-0.08	-0.09	-1.05	-2.86	-2.86	-1.3	0
C PERMANENTE MAX	Q (tn)	1.00	2.20	3.70	-5.00	-3.20	-1.20	0.90	3.20	-5.10	-2.20	0.20	2.40	4.90	-3.60	-1.40	0.90	3.50	5.80	-3.80	-2.20	-1.00
	M(min)	0.00	-1.80	-5.10	-5.10	-2.10	-0.50	-0.40	-2.00	-2.00	1.30	2.00	1.00	-2.20	-2.20	-0.20	-0.10	-1.70	-5.10	-5.10	-1.80	0.00
C. PERMANETE MIN	Q (tn)	1.00	2.20	3.50	-4.35	-2.96	-1.36	0.25	2.02	-3.88	-1.67	0.12	1.79	3.76	-2.25	-0.54	1.19	3.13	4.82	-3.56	-2.20	-1.00
	M(min)	0.00	-1.80	-5.06	-5.06	-2.39	-0.83	-0.40	-1.35	-1.35	1.18	1.71	1.00	-1.47	-1.47	-0.28	-0.59	-2.15	-5.06	-5.06	-1.80	0.00

ESFUERZOS LOCALES DE LOSA																							
				APOYO				APOYO				APOYO								APOYO			
BARRA (NUDO)		1(1)	2(1)	2(3)	3(1)	3(2)	4(1)	4(2)	4(3)	5(1)	5(2)	6(1)	6(2)	6(3)	7(1)	7(2)	8(1)	8(2)	8(3)	9(1)	9(3)	10(3)	
TRENES DE 18.75 TN/M CALZADA DERECHA, SIN COEFICIENTE DE IMPACTO																							
POS DER	Q (tn)	0	0	0	-0.2	-0.2	-0.2	-0.2	-0.2	0.9	0.9	0.9	0.9	4.6	-10.1	-6.7	-0.9	4.9	4.9	0	0	0	
	M(mtn)	0	0	0	0	0.2	0.3	0.5	0.6	0.6	-0.1	-0.8	-1.6	-3.9	-3.9	2.2	5	3.5	0	0	0		
POS DER EXT	Q (tn)	0	0	0	-0.3	-0.3	-0.3	-0.3	-0.3	1.1	1.1	1.1	1.1	3.5	-9.7	-6.6	-1.6	4.2	6.6	0	0	0	
	M(mtn)	0	0	0	0	0.2	0.4	0.6	0.8	0.8	-0.1	-1.1	-2	-3.7	-3.7	2.2	5.3	4.4	0	0	0		
POS DER INT	Q (tn)	0	0	0	-0.1	-0.1	-0.1	-0.1	-0.1	0.4	0.4	0.4	1.7	5.5	-10.3	-5.8	0	3.3	3.3	0	0	0	
	M(mtn)	0	0	0	0	0.1	0.2	0.3	0.3	0.3	0	-0.4	-0.9	-4	-4	2	4.1	2.4	0	0	0		
POS DER	Q (tn)	0	0	0	-0.1	-0.1	-0.1	-0.1	-0.1	0.5	0.5	0.5	0.5	5.8	-9.7	-5.2	-0.7	3.8	3.8	0	0	0	
	M(mtn)	0	0	0	0	0.1	0.2	0.3	0.4	0.4	0	-0.5	-0.9	-3.6	-3.6	1.7	3.8	2.7	0	0	0		
POS DER EXT	Q (tn)	0	0	0	-0.2	-0.2	-0.2	-0.2	-0.2	0.9	0.9	0.9	0.9	4.3	-10	-5.5	-1	3.5	5.3	0	0	0	
	M(mtn)	0	0	0	0	0.2	0.3	0.5	0.7	0.7	-0.1	-0.9	-1.7	-3.4	-3.4	2.1	4.5	3.6	0	0	0		
POS DER INT	Q (tn)	0	0	0	0	0	0	0	0	-0.1	-0.1	-0.1	1.7	7	-9.2	-4.7	-0.2	2.4	2.4	0	0	0	
	M(mtn)	0	0	0	0	0	0	0	0	0	0.1	0.2	0	-3.8	-3.8	1.2	2.9	1.7	0	0	0		
MÁXIMO	Q (tn)	0	0	0	0	0	0	0	0	1.1	1.1	1.1	1.7	7	-9.2	-4.7	0	4.9	6.6	0	0	0	
	M(mtn)	0	0	0	0	0.2	0.4	0.6	0.8	0.8	0.1	0.2	0	-3.4	-3.4	2.2	5.3	4.4	0	0	0		
MÍNIMO	Q (tn)	0	0	0	-0.3	-0.3	-0.3	-0.3	-0.3	-0.1	-0.1	-0.1	0.5	3.5	-10.3	-6.7	-1.6	2.4	2.4	0	0	0	
	M(mtn)	0	0	0	0	0	0	0	0	0	-0.1	-1.1	-2	-4	-4	1.2	2.9	1.7	0	0	0		

TRENES DE 18.75 TN/M CALZADA IZQUIERDA, SIN COEFICIENTE DE IMPACTO																						
POS IZQ	Q (tn)	0	0	0	-2.6	-2.6	0.5	3.7	9.2	-7.1	-0.2	-0.2	-0.2	-0.2	0.1	0.1	0.1	0.1	0.1	0	0	0
	M(mtn)	0	0	0	0	1.9	2.7	1.2	-3.4	-3.4	-0.3	-0.2	0	0.1	0.1	0.1	0.1	0	0	0	0	
POS IZQ EXT	Q (tn)	0	0	0	-4	-2.8	0.4	4.4	10.3	-5.2	-0.8	-0.8	-0.8	-0.8	0.2	0.2	0.2	0.2	0.2	0	0	0
	M(mtn)	0	0	0	0	2.7	3.6	2	-3.2	-3.2	-1.4	-0.7	-0.1	0.6	0.6	0.4	0.3	0.1	0	0	0	
POS IZQ INT	Q (tn)	0	0	0	-1.5	-1.5	0.4	3.5	8	-8.7	-1.8	0.6	0.6	0.6	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	0
	M(mtn)	0	0	0	0	1	1.7	0.3	-3.6	-3.6	0.9	0.7	0.1	-0.4	-0.4	-0.3	-0.2	-0.1	0	0	0	
POS IZQ	Q (tn)	0	0	0	-3.8	-3.8	0.7	5.2	9.6	-5.8	-0.5	-0.5	-0.5	-0.5	0.1	0.1	0.1	0.1	0.1	0	0	0
	M(mtn)	0	0	0	0	2.7	3.8	1.7	-3.6	-3.6	-0.9	-0.5	-0.1	0.4	0.4	0.3	0.2	0.1	0	0	0	
POS IZQ EXT	Q (tn)	0	0	0	-5.3	-3.5	1	5.5	10	-4.4	-0.9	-0.9	-0.9	-0.9	0.2	0.2	0.2	0.2	0.2	0	0	0
	M(mtn)	0	0	0	0	3.6	4.5	2.1	-3.5	-3.5	-1.7	-0.9	-0.1	0.7	0.7	0.5	0.3	0.2	0	0	0	
POS IZQ INT	Q (tn)	0	0	0	-2.4	-2.4	0.2	4.7	9.2	-7.1	-1.7	0.1	0.1	0.1	0	0	0	0	0	0	0	0
	M(mtn)	0	0	0	0	1.7	2.9	1.2	-3.8	-3.8	0	0.2	0.1	0	0	0	0	0	0	0	0	0
MÁXIMO	Q (tn)	0	0	0	-1.5	-1.5	1	5.5	10.3	-4.4	-0.2	0.6	0.6	0.6	0.2	0.2	0.2	0.2	0.2	0	0	0
	M(mtn)	0	0	0	0	3.6	4.5	2.1	-3.2	-3.2	0.9	0.7	0.1	0.7	0.7	0.5	0.3	0.2	0	0	0	
MÍNIMO	Q (tn)	0	0	0	-5.3	-3.8	0.2	3.5	8	-8.7	-1.8	-0.9	-0.9	-0.9	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	0
	M(mtn)	0	0	0	0	1	1.7	0.3	-3.8	-3.8	-1.7	-0.9	-0.1	-0.4	-0.4	-0.3	-0.2	-0.1	0	0	0	

ESFUERZOS LOCALES DE LOSA																								
				APOYO					APOYO						APOYO						APOYO			
BARRA (NUDO)		1(1)	2(1)	2(3)	3(1)	3(2)	4(1)	4(2)	4(3)	5(1)	5(2)	6(1)	6(2)	6(3)	7(1)	7(2)	8(1)	8(2)	8(3)	9(1)	9(3)	10(3)		
DESCARRILAMIENTO 10tn/m																								
POS 1	Q (tn)	0	0	0	0.7	0.7	0.7	0.7	0.7	-4.4	-4.4	0.6	0.6	5.6	-0.8	-0.8	-0.8	-0.8	-0.8	0	0	0		
	M(mtn)	0	0	0	0	-0.5	-1.1	-1.6	-2.1	-2.1	1.6	2.7	2.2	-2.3	-2.3	-1.7	-1.1	-0.6	0	0	0	0		
POS2	Q (tn)	0	0	0	0.3	0.3	0.3	0.3	0.3	-1.2	-1.2	-1.2	-1.2	-1.2	5.7	5.7	5.7	5.7	5.7	-10	-5	0		
	M(mtn)	0	0	0	0	-0.2	-0.4	-0.7	-0.9	-0.9	0.1	1.2	2.2	3.2	3.2	-0.8	-4.9	-9	-13.1	-13.1	-4.1	0		
MAX	Q (tn)	0.00	0.00	0.00	0.70	0.70	0.70	0.70	0.70	-1.20	-1.20	0.60	0.60	5.60	5.70	5.70	5.70	5.70	5.70	0.00	0.00	0.00		
	M(mtn)	0.00	0.00	0.00	0.00	-0.20	-0.40	-0.70	-0.90	-0.90	1.60	2.70	2.20	3.20	3.20	-0.80	-1.10	-0.60	0.00	0.00	0.00	0.00		
MINIMO	Q (tn)	0.00	0.00	0.00	0.30	0.30	0.30	0.30	0.30	-4.40	-4.40	-1.20	-1.20	-1.20	-0.80	-0.80	-0.80	-0.80	-0.80	-10.00	-5.00	0.00		
	M(mtn)	0.00	0.00	0.00	0.00	-0.50	-1.10	-1.60	-2.10	-2.10	0.10	1.20	2.20	-2.30	-2.30	-1.70	-4.90	-9.00	-13.10	-13.10	-4.10	0.00		
PARA UNA CARGA DE		10	TN/M																					
MAX	Q (tn)	0.00	0.00	0.00	0.70	0.70	0.70	0.70	0.70	-1.20	-1.20	0.60	0.60	5.60	5.70	5.70	5.70	5.70	5.70	0.00	0.00	0.00		
	M(mtn)	0.00	0.00	0.00	0.00	-0.20	-0.40	-0.70	-0.90	-0.90	1.60	2.70	2.20	3.20	3.20	-0.80	-1.10	-0.60	0.00	0.00	0.00	0.00		
MINIMO	Q (tn)	0.00	0.00	0.00	0.30	0.30	0.30	0.30	0.30	-4.40	-4.40	-1.20	-1.20	-1.20	-0.80	-0.80	-0.80	-0.80	-0.80	-10.00	-5.00	0.00		
	M(mtn)	0.00	0.00	0.00	0.00	-0.50	-1.10	-1.60	-2.10	-2.10	0.10	1.20	2.20	-2.30	-2.30	-1.70	-4.90	-9.00	-13.10	-13.10	-4.10	0.00		
SCU PASEOS																								
DERECHA	Q (tn)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.10	-0.10	-0.10	-0.10	-0.10	0.40	0.40	0.40	0.40	0.40	-0.80	-0.50	0.00		
	M(mtn)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.10	-0.10	0.00	0.10	0.10	0.20	0.20	-0.10	-0.30	-0.60	-0.90	-0.90	0.00		
IZQUIERDA	Q (tn)	0.00	0.40	0.70	-0.40	-0.40	-0.40	-0.40	-0.40	0.10	0.10	0.10	0.10	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
	M(mtn)	0.00	-0.20	-1.00	-1.00	-0.70	-0.40	-0.10	0.20	0.20	0.20	0.10	0.00	-0.10	-0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00		

ESFUERZOS LOCALES DE LOSA																						
APOYO		APOYO		APOYO		APOYO		APOYO		APOYO		APOYO		APOYO		APOYO		APOYO				
1(1)	2(1)	2(3)	3(1)	3(2)	4(1)	4(2)	4(3)	5(1)	5(2)	6(1)	6(2)	6(3)	7(1)	7(2)	8(1)	8(2)	8(3)	9(1)	9(3)	10(3)		
BARRA (NUDO)																						
E.L.U SIN HIPOTESIS DE DESCARRILAMIENTO																						
MAXIMO																						
MAXIMO CORTANTE (tn)		1.35	3.27	5.52	-3.91	-2.66	0.72	11.12	22.86	-1.43	0.553	3.405	7.455	20.37	-1.37	0.172	2.261	14.21	20.37	-3.2	-1.98	-0.9
MAXIMO FLECTOR (mtn)		0	-1.62	-4.55	-4.55	4.95	8.37	4.5	0.378	0.378	3.705	4.47	1.605	0.091	0.091	4.68	9.99	6.75	-4.55	-4.55	-1.62	0
MINIMO																						
MINIMO CORTANTE (tn)		0.9	1.98	3.146	-17.1	-12	-2.68	-0.62	0.974	-22.8	-6.47	-1.77	-0.09	1.686	-23.6	-14.1	-2.25	2.639	4.158	-5.73	-3.35	-1.35
MINIMO FLECTOR (mtn)		0	-2.58	-7.64	-7.64	-3.75	-1.42	-0.62	-9.62	-9.62	-2.18	-2.06	-2.88	-11	-11	-1	-1.38	-3.53	-7.56	-7.56	-2.43	0

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*** PROGRAMA BARRA [MARCOS] ***
Version Noviembre 88

Proyecto:
santa oliva

Comentario:
calculo transversal

Material Base Homogeneizacion:
E1 (Tn/m2) : 2857700.00

DATOS DE LOS NUDOS

Nudo	Xi (m.)	Yi (m.)	Movimientos Impuestos			
			Peso (Tn)	Ux	Vy	rz
1	0.00	0.00				
2	1.21	0.00				
3	2.41	0.00				
4	3.85	0.00				
5	5.29	0.00				
6	7.00	0.00				
7	8.71	0.00				
8	10.15	0.00				
9	11.59	0.00				
10	12.80	0.00				
11	14.00	0.00				

VINCULACIONES NUDOS

Nudo	Coaccion-Ux	Coaccion-Vy	Coaccion-rz
3	*****	*****	
5		*****	
7		*****	
9		*****	

DATOS DE SECCIONES TIPO

No	Area (m2)	M.Iner. (m4)	S.Cort. (m2)	Peso (T/ml)
1	.300000	.002250		

DATOS DE LOS ELEMENTOS

Num	Nd-i	Nd-d	Sti	Std	Vin	Var	Vp	Long (m)	Alf (sx)
1	1	2	1	1	1.0	1.0	0.0	1.205	0.00
2	2	3	1	1	1.0	1.0	0.0	1.205	0.00
3	3	4	1	1	1.0	1.0	0.0	1.440	0.00
4	4	5	1	1	1.0	1.0	0.0	1.440	0.00
5	5	6	1	1	1.0	1.0	0.0	1.710	0.00
6	6	7	1	1	1.0	1.0	0.0	1.710	0.00
7	7	8	1	1	1.0	1.0	0.0	1.440	0.00
8	8	9	1	1	1.0	1.0	0.0	1.440	0.00
9	9	10	1	1	1.0	1.0	0.0	1.210	0.00
10	10	11	1	1	1.0	1.0	0.0	1.200	0.00

Nota: En Elementos Curvos [Long] y [Alf]
corresponden a la Cuerda

DATOS DE LOS ESTADOS DE CARGA

ESTADO DE CARGA 1 :

Título:
peso propio losa e=30 cm
Tipo: [1]Cargas Exteriores/Movimientos Apoyo

PP/CM/TRENES CON
PERALTE Y COMO CARGAS
PUNTUALES

ACCIONES EN ELEMENTOS (m.;Tn;qsex.) :

Nel aj	Parametros de Carga:						
1 -1	.750						(Carga Repartida)
Misma Accion en Elementos : 2 <= j <= 10							

ESTADO DE CARGA 2 :

Titulo:
BALASTO MAXIMO
Tipo: [1]Cargas Exteriores/Movimientos Apoyo

ACCIONES EN ELEMENTOS (m.;Tn;qsex.) :

Nel aj	Parametros de Carga:						
2 -1	1.080	1.080	0.000	.748	.455		(Carga Repartida)
3 -1	1.260	1.430	0.000	0.000	.423		(Carga Repartida)
3 -1	1.430	1.406	0.000	.423	.498		(Carga Repartida)
3 -1	1.406	1.540	0.000	.922	.518		(Carga Repartida)
4 -1	1.540	1.850	0.000	0.000	1.430		(Carga Repartida)
5 -1	1.850	1.990	0.000	0.000	.624		(Carga Repartida)
5 -1	1.990	1.650	0.000	.624	1.084		(Carga Repartida)
6 -1	1.650	1.395	0.000	0.000	1.026		(Carga Repartida)
6 -1	1.395	1.615	0.000	1.027	.678		(Carga Repartida)
7 -1	1.615	2.078	0.000	0.000	1.439		(Carga Repartida)
8 -1	2.078	2.230	0.000	0.000	.469		(Carga Repartida)
8 -1	2.230	2.260	0.000	.469	.545		(Carga Repartida)
8 -1	2.260	1.687	0.000	1.008	.432		(Carga Repartida)
9 -1	1.687	1.080	0.000	0.000	.455		(Carga Repartida)

ESTADO DE CARGA 3 :

Titulo:
RESTO DE CARGAS MUERTAS
Tipo: [1]Cargas Exteriores/Movimientos Apoyo

ACCIONES EN NUDOS (m.;Tn;Rad) :

Nudo Accion	Fx[Dx]	Fy[Dy]	Mz[Dπ]
1 fuerza		-.969	
11 fuerza		-.969	

ACCIONES EN ELEMENTOS (m.;Tn;qsex.) :

Nel aj	Parametros de Carga:						
1 -2	.300	.900					(Carga Concentrada)
10 -2	.300	.305					(Carga Concentrada)
3 -1	.355	.355					(Carga Repartida)
Misma Accion en Elementos : 4 <= j <= 8							

2 -1	.355	.355	0.000	.750	.450		(Carga Repartida)
9 -1	.355	.355	0.000	0.000	.455		(Carga Repartida)
3 -1	.310	.310	0.000	1.050	.390		(Carga Repartida)
4 -1	.310	.310					(Carga Repartida)
5 -1	.310	.310	0.000	0.000	.770		(Carga Repartida)
6 -1	.310	.310	0.000	.940	.770		(Carga Repartida)
7 -1	.310	.310					(Carga Repartida)
8 -1	.310	.310	0.000	0.000	.390		(Carga Repartida)

ESTADO DE CARGA 4 :

Titulo:
1tn tren POSDER
Tipo: [1]Cargas Exteriores/Movimientos Apoyo

ACCIONES EN ELEMENTOS (m.;Tn;qsex.) :

Nel aj	Parametros de Carga:						
6 -2	.352	1.642					(Carga Concentrada)
7 -2	.648	1.372					(Carga Concentrada)

ESTADO DE CARGA 5 :

Titulo:
1tn tren POSIZQ
Tipo: [1]Cargas Exteriores/Movimientos Apoyo

ACCIONES EN ELEMENTOS (m.;Tn;qsex.) :

Nel aj	Parametros de Carga:						
4 -2	.352	.068					(Carga Concentrada)
5 -2	.648	.068					(Carga Concentrada)

ESTADO DE CARGA 6 :

Titulo:
1tn tren POSDER EXT
Tipo: [1]Cargas Exteriores/Movimientos Apoyo

ACCIONES EN ELEMENTOS (m.;Tn;qsex.) :

Nel aj	Parametros de Carga:						
7 -2	.352	.232					(Carga Concentrada)
8 -2	.648	.232					(Carga Concentrada)

ESTADO DE CARGA 7 :

Titulo:
1tn tren POSIZQ EXT
Tipo: [1]Cargas Exteriores/Movimientos Apoyo

ACCIONES EN ELEMENTOS (m.;Tn;qsex.) :

Nel a j	Parametros de Carga:			
3 -2	.352	1.208		(Carga Concentrada)
4 -2	.648	1.208		(Carga Concentrada)

ESTADO DE CARGA 8 :

Titulo:
ltn tren POSDER INT
Tipo: [1]Cargas Exteriores/Movimientos Apoyo

ACCIONES EN ELEMENTOS (m.;Tn;qsex.) :

Nel a j	Parametros de Carga:			
6 -2	.352	1.342		(Carga Concentrada)
7 -2	.648	1.072		(Carga Concentrada)

ESTADO DE CARGA 9 :

Titulo:
ltn tren POSIZQ INT
Tipo: [1]Cargas Exteriores/Movimientos Apoyo

ACCIONES EN ELEMENTOS (m.;Tn;qsex.) :

Nel a j	Parametros de Carga:			
4 -2	.352	.368		(Carga Concentrada)
5 -2	.648	.368		(Carga Concentrada)

ESTADO DE CARGA 10 :

Titulo:
SC PASEOS DER
Tipo: [1]Cargas Exteriores/Movimientos Apoyo

ACCIONES EN ELEMENTOS (m.;Tn;qsex.) :

Nel a j	Parametros de Carga:						
9 -1	.500	.500	0.000	.560	.644		(Carga Repartida)
10 -1	.500	.500	0.000	0.000	0.000	855.000	(Carga Repartida)

ESTADO DE CARGA 11 :

Titulo:
SC PASEOS IZQ
Tipo: [1]Cargas Exteriores/Movimientos Apoyo

ACCIONES EN ELEMENTOS (m.;Tn;qsex.) :

Nel a j	Parametros de Carga:						
1 -1	.500	.500	0.000	.350	.854		(Carga Repartida)
2 -1	.500	.500	0.000	0.000	.645		(Carga Repartida)

*** BARRA (RESULTADOS) ***

Proyecto:
santa oliva

Comentario:
calculo transversal

Estado de Carga 1:
peso propio losa e=30 cm

** MOVIMIENTOS NUDOS (Ejes Generales) **

Nudo	Ux (m.)	Vy (m.)	rz (rad.)
1	0.000000	-.001060	.000508
2	0.000000	-.000458	.000474
3	0.000000	0.000000	.000236
4	0.000000	.000100	-.000034
5	0.000000	0.000000	-.000100
6	0.000000	-.000127	0.000000
7	0.000000	0.000000	.000100
8	0.000000	.000100	.000034
9	0.000000	0.000000	-.000236
10	0.000000	-.000461	-.000474
11	0.000000	-.001060	-.000508

** ESFUERZOS ELEMENTOS (Ejes Locales) **

Nel N-i N-d	Axil(T)	Cortante(T)	Flector(mT)
1 1 2			
S-izquierda	0.000	0.000	-0.000
S- centro	0.000	.452	-.136
S- derecha	0.000	.904	-.545
2 2 3			
S-izquierda	0.000	.904	-.545
S- centro	0.000	1.356	-1.225
S- derecha	0.000	1.808	-2.178
3 3 4			
S-izquierda	0.000	-1.713	-2.178
S- centro	0.000	-1.173	-1.139
S- derecha	0.000	-.633	-.490
4 4 5			
S-izquierda	0.000	-.633	-.490
S- centro	0.000	-.093	-.228
S- derecha	0.000	.447	-.356
5 5 6			
S-izquierda	0.000	-1.282	-.356
S- centro	0.000	-.641	.466
S- derecha	0.000	0.000	.740
6 6 7			
S-izquierda	0.000	0.000	.740
S- centro	0.000	.641	.466
S- derecha	0.000	1.283	-.356
7 7 8			
S-izquierda	0.000	-.447	-.356
S- centro	0.000	.093	-.228
S- derecha	0.000	.633	-.490
8 8 9			
S-izquierda	0.000	.633	-.490
S- centro	0.000	1.173	-1.139

S- derecha	0.000	1.713	-2.178
9 9 10			
S-izquierda	0.000	-1.808	-2.178
S- centro	0.000	-1.354	-1.222
S- derecha	0.000	-.900	-.540
10 10 11			
S-izquierda	0.000	-.900	-.540
S- centro	0.000	-.450	-.135
S- derecha	0.000	0.000	0.000

Nota: Los esfuerzos se refieren a los extremos del elemento, excluyendo zonas rígidas en nudos de tamaño finito

** REACCIONES EXTERIORES (Ejes Generales) **

Nudo	Fx (Tn)	Fy (Tn)	Mz (mT)
3	0.000	3.520	0.000
5	0.000	1.730	0.000
7	0.000	1.730	0.000
9	0.000	3.520	0.000

Nota: Se han controlado Errores de Cierre en Nudos y Reacciones (respecto a [0,0])...(<1%)

*** BARRA (RESULTADOS) ***

Proyecto:
santa oliva

Comentario:
calculo transversal

Estado de Carga 2:
BALASTO MAXIMO

** MOVIMIENTOS NUDOS (Ejes Generales) **

Nudo	Ux (m.)	Vy (m.)	rz (rad.)
1	0.000000	.000241	-.000100
2	0.000000	.000121	-.000100
3	0.000000	0.000000	-.000103
4	0.000000	-.000080	.000025
5	0.000000	0.000000	-.000001
6	0.000000	-.000078	.000011
7	0.000000	0.000000	-.000033
8	0.000000	-.000129	-.000035
9	0.000000	0.000000	.000165
10	0.000000	.000197	.000162
11	0.000000	.000391	.000162

** ESFUERZOS ELEMENTOS (Ejes Locales) **

Nel	N-i	N-d	Axil(T)	Cortante(T)	Flector(mT)
1	1	2			
S-izquierda			0.000	0.000	0.000
S- centro			0.000	0.000	0.000
S- derecha			0.000	0.000	0.000
2	2	3			
S-izquierda			0.000	-0.000	0.000
S- centro			0.000	-0.000	0.000
S- derecha			0.000	.491	-.113
3	3	4			
S-izquierda			0.000	-1.602	-.113
S- centro			0.000	-.611	.691
S- derecha			0.000	.437	.760
4	4	5			
S-izquierda			0.000	.437	.760
S- centro			0.000	1.602	.032
S- derecha			0.000	2.861	-1.574
5	5	6			
S-izquierda			0.000	-2.982	-1.574
S- centro			0.000	-1.333	.277
S- derecha			0.000	.188	.749
6	6	7			
S-izquierda			0.000	.188	.749
S- centro			0.000	1.508	.011
S- derecha			0.000	2.771	-1.808
7	7	8			
S-izquierda			0.000	-3.332	-1.808
S- centro			0.000	-2.086	.153
S- derecha			0.000	-.675	1.156
8	8	9			
S-izquierda			0.000	-.675	1.156
S- centro			0.000	.896	1.085

S- derecha	0.000	2.409	-.133
9 9 10			
S-izquierda	0.000	-.629	-.133
S- centro	0.000	0.000	-0.000
S- derecha	0.000	0.000	-0.000
10 10 11			
S-izquierda	0.000	0.000	0.000
S- centro	0.000	0.000	0.000
S- derecha	0.000	0.000	0.000

Nota: Los esfuerzos se refieren a los extremos del elemento, excluyendo zonas rígidas en nudos de tamaño finito

** REACCIONES EXTERIORES (Ejes Generales) **

Nudo	Fx (Tn)	Fy (Tn)	Mz (mT)
3	0.000	2.094	0.000
5	0.000	5.843	0.000
7	0.000	6.103	0.000
9	0.000	3.038	0.000

Nota: Se han controlado Errores de Cierre en Nudos y Reacciones (respecto a [0,0])...(<1%)

*** BARRA (RESULTADOS) ***

Proyecto:
santa oliva

Comentario:
calculo transversal

Estado de Carga 3:
RESTO DE CARGAS MUERTAS

** MOVIMIENTOS NUDOS (Ejes Generales) **

Nudo	Ux (m.)	Vy (m.)	rz (rad.)
1	0.000000	-.001613	.000826
2	0.000000	-.000661	.000715
3	0.000000	0.000000	.000335
4	0.000000	.000146	-.000055
5	0.000000	0.000000	-.000117
6	0.000000	-.000122	-0.000000
7	0.000000	0.000000	.000117
8	0.000000	.000146	.000055
9	0.000000	0.000000	-.000335
10	0.000000	-.000665	-.000716
11	0.000000	-.001614	-.000827

** ESFUERZOS ELEMENTOS (Ejes Locales) **

Nel	N-i	N-d	Axil(T)	Costante(T)	Flector(mT)
1	1	2			
S-izquierda			0.000	.969	-0.000
S- centro			0.000	.969	-.584
S- derecha			0.000	1.269	-1.259
2	2	3			
S-izquierda			0.000	1.269	-1.259
S- centro			0.000	1.269	-2.024
S- derecha			0.000	1.429	-2.825
3	3	4			
S-izquierda			0.000	-1.678	-2.825
S- centro			0.000	-1.423	-1.709
S- derecha			0.000	-1.046	-.800
4	4	5			
S-izquierda			0.000	-1.046	-.800
S- centro			0.000	-.567	-.219
S- derecha			0.000	-.089	.017
5	5	6			
S-izquierda			0.000	-.846	.017
S- centro			0.000	-.304	.498
S- derecha			0.000	-0.000	.628
6	6	7			
S-izquierda			0.000	-0.000	.628
S- centro			0.000	.303	.498
S- derecha			0.000	.846	.017
7	7	8			
S-izquierda			0.000	.089	.017
S- centro			0.000	.568	-.219
S- derecha			0.000	1.047	-.801
8	8	9			
S-izquierda			0.000	1.047	-.801
S- centro			0.000	1.423	-1.710

S- derecha	0.000	1.679	-2.827
9 9 10			
S-izquierda	0.000	-1.431	-2.827
S- centro	0.000	-1.269	-2.022
S- derecha	0.000	-1.269	-1.254
10 10 11			
S-izquierda	0.000	-1.269	-1.254
S- centro	0.000	-.969	-.581
S- derecha	0.000	-.969	-0.000

Nota: Los esfuerzos se refieren a los extremos del elemento, excluyendo zonas rígidas en nudos de tamaño finito

** REACCIONES EXTERIORES (Ejes Generales) **

Nudo	Fx (Tn)	Fy (Tn)	Mz (mT)
3	0.000	3.107	0.000
5	0.000	.757	0.000
7	0.000	.756	0.000
9	0.000	3.109	0.000

Nota: Se han controlado Errores de Cierre en Nudos y Reacciones (respecto a [0,0])...(<1%)

*** BARRA (RESULTADOS) ***

Proyecto:
santa oliva

Comentario:
calculo transversal

Estado de Carga 4:
1tn tren POSDER

** MOVIMIENTOS NUDOS (Ejes Generales) **

Nudo	Ux (m.)	Vy (m.)	rz (rad.)
1	0.000000	.000008	-.000003
2	0.000000	.000004	-.000003
3	0.000000	0.000000	-.000003
4	0.000000	-.000004	-.000001
5	0.000000	0.000000	.000007
6	0.000000	.000013	.000005
7	0.000000	0.000000	-.000025
8	0.000000	-.000035	-.000002
9	0.000000	0.000000	.000037
10	0.000000	.000045	.000037
11	0.000000	.000090	.000037

** ESFUERZOS ELEMENTOS (Ejes Locales) **

Nel	N-i	N-d	Axil(T)	Cortante(T)	Flector(mT)
1	1	2			
S-izquierda			0.000	-0.000	0.000
S- centro			0.000	-0.000	0.000
S- derecha			0.000	-0.000	0.000
2	2	3			
S-izquierda			0.000	-0.000	0.000
S- centro			0.000	-0.000	0.000
S- derecha			0.000	-0.000	0.000
3	3	4			
S-izquierda			0.000	-.015	0.000
S- centro			0.000	-.015	.011
S- derecha			0.000	-.015	.022
4	4	5			
S-izquierda			0.000	-.015	.022
S- centro			0.000	-.015	.033
S- derecha			0.000	-.015	.044
5	5	6			
S-izquierda			0.000	.061	.044
S- centro			0.000	.061	-.008
S- derecha			0.000	.061	-.059
6	6	7			
S-izquierda			0.000	.061	-.059
S- centro			0.000	.061	-.111
S- derecha			0.000	.413	-.187
7	7	8			
S-izquierda			0.000	-.404	-.187
S- centro			0.000	-.404	.104
S- derecha			0.000	.244	.351
8	8	9			
S-izquierda			0.000	.244	.351
S- centro			0.000	.244	.176

S- derecha	0.000	.244	-0.000
9 9 10			
S-izquierda	0.000	0.000	0.000
S- centro	0.000	0.000	-0.000
S- derecha	0.000	0.000	-0.000
10 10 11			
S-izquierda	0.000	0.000	0.000
S- centro	0.000	0.000	-0.000
S- derecha	0.000	0.000	-0.000

Nota: Los esfuerzos se refieren a los extremos del elemento, excluyendo zonas rígidas en nudos de tamaño finito

** REACCIONES EXTERIORES (Ejes Generales) **

Nudo	Fx (Tn)	Fy (Tn)	Mz (mT)
3	0.000	.015	0.000
5	0.000	-.076	0.000
7	0.000	.817	0.000
9	0.000	.244	0.000

Nota: Se han controlado Errores de Cierre en Nudos y Reacciones (respecto a [0,0])...(<1%)

*** BARRA (RESULTADOS) ***

Proyecto:
santa oliva

Comentario:
calculo transversal

Estado de Carga 5:
1tn tren POSIZQ

** MOVIMIENTOS NUDOS (Ejes Generales) **

Nudo	Ux (m.)	Vy (m.)	rz (rad.)
1	0.000000	.000046	-.000019
2	0.000000	.000023	-.000019
3	0.000000	0.000000	-.000019
4	0.000000	-.000018	.000001
5	0.000000	0.000000	.000011
6	0.000000	.000006	-.000002
7	0.000000	0.000000	-.000003
8	0.000000	-.000002	0.000000
9	0.000000	0.000000	.000001
10	0.000000	.000002	.000001
11	0.000000	.000004	.000001

** ESFUERZOS ELEMENTOS (Ejes Locales) **

Nel	N-i	N-d	Axil (T)	Cortante (T)	Flector (mT)
1	1	2			
S-izquierda			0.000	0.000	0.000
S- centro			0.000	0.000	0.000
S- derecha			0.000	0.000	0.000
2	2	3			
S-izquierda			0.000	-0.000	0.000
S- centro			0.000	-0.000	0.000
S- derecha			0.000	-0.000	0.000
3	3	4			
S-izquierda			0.000	-.127	0.000
S- centro			0.000	-.127	.092
S- derecha			0.000	-.127	.183
4	4	5			
S-izquierda			0.000	-.127	.183
S- centro			0.000	.225	.045
S- derecha			0.000	.225	-.117
5	5	6			
S-izquierda			0.000	-.675	-.117
S- centro			0.000	-.027	-.049
S- derecha			0.000	-.027	-.026
6	6	7			
S-izquierda			0.000	-.027	-.026
S- centro			0.000	-.027	-.003
S- derecha			0.000	-.027	.020
7	7	8			
S-izquierda			0.000	.007	.020
S- centro			0.000	.007	.015
S- derecha			0.000	.007	.010
8	8	9			
S-izquierda			0.000	.007	.010
S- centro			0.000	.007	.005

g- derecha	0.000	.007	0.000
9 9 10			
S-izquierda	0.000	0.000	0.000
S- centro	0.000	0.000	-0.000
S- derecha	0.000	0.000	-0.000
10 10 11			
S-izquierda	0.000	0.000	-0.000
S- centro	0.000	0.000	-0.000
S- derecha	0.000	0.000	-0.000

Nota: Los esfuerzos se refieren a los extremos del elemento, excluyendo zonas rígidas en nudos de tamaño finito

** REACCIONES EXTERIORES (Ejes Generales) **

Nudo	Fx (Tn)	Fy (Tn)	Mz (mT)
3	0.000	.127	0.000
5	0.000	.900	0.000
7	0.000	-.034	0.000
9	0.000	.007	0.000

Nota: Se han controlado Errores de Cierre en Nudos y Reacciones (respecto a [0,0])...(<1%)

*** BARRA (RESULTADOS) ***

Proyecto:
santa oliva

Comentario:
calculo transversal

Estado de Carga 6:
1tn tren POSDER EXT

** MOVIMIENTOS NUDOS (Ejes Generales) **

Nudo	Ux (m.)	Vy (m.)	rz (rad.)
1	0.000000	.000010	-.000004
2	0.000000	.000005	-.000004
3	0.000000	0.000000	-.000004
4	0.000000	-.000004	-.000001
5	0.000000	0.000000	.000008
6	0.000000	.000016	.000005
7	0.000000	0.000000	-.000030
8	0.000000	-.000039	-.000006
9	0.000000	0.000000	.000045
10	0.000000	.000055	.000045
11	0.000000	.000109	.000045

** ESFUERZOS ELEMENTOS (Ejes Locales) **

Nel	N-i	N-d	Axil(T)	Cortante(T)	Flector(mT)
1	1	2			
S-izquierda			0.000	0.000	0.000
S- centro			0.000	0.000	0.000
S- derecha			0.000	0.000	0.000
2	2	3			
S-izquierda			0.000	-0.000	0.000
S- centro			0.000	-0.000	0.000
S- derecha			0.000	-0.000	0.000
3	3	4			
S-izquierda			0.000	-.018	0.000
S- centro			0.000	-.018	.013
S- derecha			0.000	-.018	.026
4	4	5			
S-izquierda			0.000	-.018	.026
S- centro			0.000	-.018	.040
S- derecha			0.000	-.018	.053
5	5	6			
S-izquierda			0.000	.072	.053
S- centro			0.000	.072	-.009
S- derecha			0.000	.072	-.071
6	6	7			
S-izquierda			0.000	.072	-.071
S- centro			0.000	.072	-.133
S- derecha			0.000	.072	-.195
7	7	8			
S-izquierda			0.000	-.663	-.195
S- centro			0.000	-.311	.111
S- derecha			0.000	-.311	.335
8	8	9			
S-izquierda			0.000	-.311	.335
S- centro			0.000	.337	.243

S- derecha	0.000	.337	-0.000
9 9 10			
S-izquierda	0.000	0.000	0.000
S- centro	0.000	0.000	-0.000
S- derecha	0.000	0.000	-0.000
10 10 11			
S-izquierda	0.000	0.000	-0.000
S- centro	0.000	0.000	-0.000
S- derecha	0.000	0.000	-0.000

Nota: Los esfuerzos se refieren a los extremos del elemento, excluyendo zonas rígidas en nudos de tamaño finito

** REACCIONES EXTERIORES (Ejes Generales) **

Nudo	Fx (Tn)	Fy (Tn)	Mz (mT)
3	0.000	.018	0.000
5	0.000	-.091	0.000
7	0.000	.735	0.000
9	0.000	.337	0.000

Nota: Se han controlado Errores de Cierre en Nudos y Reacciones (respecto a [0,0])...(<1%)

*** BARRA (RESULTADOS) ***

Proyecto:
santa oliva

Comentario:
calculo transversal

Estado de Carga 7:
1tn tren POSIZQ EXT

** MOVIMIENTOS NUDOS (Ejes Generales) **

Nudo	Ux (m.)	Vy (m.)	rz (rad.)
1	0.000000	.000070	-.000029
2	0.000000	.000035	-.000029
3	0.000000	0.000000	-.000029
4	0.000000	-.000026	.000002
5	0.000000	0.000000	.000023
6	0.000000	.000013	-.000004
7	0.000000	0.000000	-.000006
8	0.000000	-.000003	.000001
9	0.000000	0.000000	.000003
10	0.000000	.000004	.000003
11	0.000000	.000007	.000003

** ESFUERZOS ELEMENTOS (Ejes Locales) **

Nel	N-i	N-d	Axil(T)	Cortante(T)	Flector(mT)
1	1	2			
S-izquierda			0.000	-0.000	0.000
S- centro			0.000	-0.000	0.000
S- derecha			0.000	-0.000	0.000
2	2	3			
S-izquierda			0.000	-0.000	0.000
S- centro			0.000	-0.000	0.000
S- derecha			0.000	-0.000	0.000
3	3	4			
S-izquierda			0.000	-.204	0.000
S- centro			0.000	-.204	.147
S- derecha			0.000	.148	.212
4	4	5			
S-izquierda			0.000	.148	.212
S- centro			0.000	.148	.105
S- derecha			0.000	.796	-.152
5	5	6			
S-izquierda			0.000	-.056	-.152
S- centro			0.000	-.056	-.104
S- derecha			0.000	-.056	-.055
6	6	7			
S-izquierda			0.000	-.056	-.055
S- centro			0.000	-.056	-.007
S- derecha			0.000	-.056	.041
7	7	8			
S-izquierda			0.000	.014	.041
S- centro			0.000	.014	.031
S- derecha			0.000	.014	.021
8	8	9			
S-izquierda			0.000	.014	.021
S- centro			0.000	.014	.010

s- derecha	0.000	.014	0.000
9 9 10			
s-izquierda	0.000	0.000	0.000
s- centro	0.000	0.000	-0.000
s- derecha	0.000	0.000	-0.000
10 10 11			
s-izquierda	0.000	-0.000	-0.000
s- centro	0.000	-0.000	-0.000
s- derecha	0.000	-0.000	-0.000

Nota: Los esfuerzos se refieren a los extremos del elemento, excluyendo zonas rígidas en nudos de tamaño finito

** REACCIONES EXTERIORES (Ejes Generales) **

Nudo	Fx (Tn)	Fy (Tn)	Mz (mT)
3	0.000	.204	0.000
5	0.000	.853	0.000
7	0.000	-.071	0.000
9	0.000	.014	0.000

Nota: Se han controlado Errores de Cierre en Nudos y Reacciones (respecto a [0,0])... (<1%)

*** BARRA (RESULTADOS) ***

Proyecto:
santa oliva

Comentario:
calculo transversal

Estado de Carga 8:
1tn tren POSDER INT

** MOVIMIENTOS NUDOS (Ejes Generales) **

Nudo	Ux (m.)	Vy (m.)	rz (rad.)
1	0.000000	.000005	-.000002
2	0.000000	.000002	-.000002
3	0.000000	0.000000	-.000002
4	0.000000	-.000002	-.000001
5	0.000000	0.000000	.000004
6	0.000000	.000008	.000003
7	0.000000	0.000000	-.000019
8	0.000000	-.000027	.000002
9	0.000000	0.000000	.000028
10	0.000000	.000033	.000028
11	0.000000	.000066	.000028

** ESFUERZOS ELEMENTOS (Ejes Locales) **

Nel	N-i	N-d	Axial (T)	Cortante (T)	Flector (mT)
1	1	2			
S-izquierda			0.000	0.000	0.000
S- centro			0.000	0.000	0.000
S- derecha			0.000	0.000	0.000
2	2	3			
S-izquierda			0.000	-0.000	0.000
S- centro			0.000	-0.000	0.000
S- derecha			0.000	-0.000	0.000
3	3	4			
S-izquierda			0.000	-.010	0.000
S- centro			0.000	-.010	.007
S- derecha			0.000	-.010	.014
4	4	5			
S-izquierda			0.000	-.010	.014
S- centro			0.000	-.010	.021
S- derecha			0.000	-.010	.027
5	5	6			
S-izquierda			0.000	.037	.027
S- centro			0.000	.037	-.004
S- derecha			0.000	.037	-.036
6	6	7			
S-izquierda			0.000	.037	-.036
S- centro			0.000	.037	-.068
S- derecha			0.000	.389	-.229
7	7	8			
S-izquierda			0.000	-.486	-.229
S- centro			0.000	-.486	.121
S- derecha			0.000	.162	.233
8	8	9			
S-izquierda			0.000	.162	.233
S- centro			0.000	.162	.116

s- derecha	0.000	.162	-0.000
9 9 10			
s-izquierda	0.000	0.000	0.000
s- centro	0.000	0.000	0.000
s- derecha	0.000	0.000	-0.000
10 10 11			
s-izquierda	0.000	0.000	-0.000
s- centro	0.000	0.000	-0.000
s- derecha	0.000	0.000	-0.000

Nota: Los esfuerzos se refieren a los extremos del elemento, excluyendo zonas rígidas en nudos de tamaño finito

**** REACCIONES EXTERIORES (Ejes Generales) ****

Nudo	Fx (Tn)	Fy (Tn)	Mz (mT)
3	0.000	.010	0.000
5	0.000	-.047	0.000
7	0.000	.875	0.000
9	0.000	.162	0.000

Nota: Se han controlado Errores de Cierre en Nudos y Reacciones (respecto a [0,0])...(<1%)

***** BARRA (RESULTADOS) *****

Proyecto:
santa oliva

Comentario:
calculo transversal

Estado de Carga 9:
1tn tren POSIZQ INT

**** MOVIMIENTOS NUDOS (Ejes Generales) ****

Nudo	Ux (m.)	Vy (m.)	rz (rad.)
1	0.000000	.000024	-.000010
2	0.000000	.000012	-.000010
3	0.000000	0.000000	-.000010
4	0.000000	-.000009	0.000000
5	0.000000	0.000000	-0.000000
6	0.000000	-.000003	.000001
7	0.000000	0.000000	.000002
8	0.000000	.000001	-0.000000
9	0.000000	0.000000	-.000001
10	0.000000	-.000001	-.000001
11	0.000000	-.000002	-.000001

**** ESFUERZOS ELEMENTOS (Ejes Locales) ****

Nel N-i N-d	Axil (T)	Cortante (T)	Flector (mT)
1 1 2			
S-izquierda	0.000	-0.000	0.000
S- centro	0.000	-0.000	0.000
S- derecha	0.000	-0.000	0.000
2 2 3			
S-izquierda	0.000	0.000	0.000
S- centro	0.000	0.000	0.000
S- derecha	0.000	0.000	0.000
3 3 4			
S-izquierda	0.000	-.064	0.000
S- centro	0.000	-.064	.046
S- derecha	0.000	-.064	.091
4 4 5			
S-izquierda	0.000	-.064	.091
S- centro	0.000	.288	.013
S- derecha	0.000	.288	-.194
5 5 6			
S-izquierda	0.000	-.632	-.194
S- centro	0.000	.016	.030
S- derecha	0.000	.016	.016
6 6 7			
S-izquierda	0.000	.016	.016
S- centro	0.000	.016	.003
S- derecha	0.000	.016	-.011
7 7 8			
S-izquierda	0.000	-.004	-.011
S- centro	0.000	-.004	-.008
S- derecha	0.000	-.004	-.006
8 8 9			
S-izquierda	0.000	-.004	-.006
S- centro	0.000	-.004	-.003

S- derecha	0.000	-0.004	-0.000
9 9 10			
S-izquierda	0.000	-0.000	-0.000
S- centro	0.000	-0.000	-0.000
S- derecha	0.000	-0.000	0.000
10 10 11			
S-izquierda	0.000	0.000	0.000
S- centro	0.000	0.000	-0.000
S- derecha	0.000	0.000	-0.000

Nota: Los esfuerzos se refieren a los extremos del elemento, excluyendo zonas rígidas en nudos de tamaño finito

** REACCIONES EXTERIORES (Ejes Generales) **

Nudo	Fx (Tn)	Fy (Tn)	Mz (mT)
3	0.000	.064	0.000
5	0.000	.920	0.000
7	0.000	.020	0.000
9	0.000	-.004	0.000

Nota: Se han controlado Errores de Cierre en Nudos y Reacciones (respecto a [0,0])...(<1%)

*** BARRA (RESULTADOS) ***

Proyecto:
santa oliva

Comentario:
calculo transversal

Estado de Carga 10:
SC PASEOS DER

** MOVIMIENTOS NUDOS (Ejes Generales) **

Nudo	Ux (m.)	Vy (m.)	πz (rad.)
1	0.000000	-.000011	.000004
2	0.000000	-.000005	.000004
3	0.000000	0.000000	.000004
4	0.000000	.000005	.000001
5	0.000000	0.000000	-.000009
6	0.000000	-.000018	-.000006
7	0.000000	0.000000	.000034
8	0.000000	.000054	.000021
9	0.000000	0.000000	-.000116
10	0.000000	-.000205	-.000194
11	0.000000	-.000437	-.000194

** ESFUERZOS ELEMENTOS (Ejes Locales) **

Nel	N-i	N-d	Axil (T)	Cortante (T)	Flector (mT)
1	1	2			
S-izquierda			0.000	0.000	-0.000
S- centro			0.000	0.000	-0.000
S- derecha			0.000	0.000	-0.000
2	2	3			
S-izquierda			0.000	0.000	-0.000
S- centro			0.000	0.000	-0.000
S- derecha			0.000	0.000	-0.000
3	3	4			
S-izquierda			0.000	.021	-0.000
S- centro			0.000	.021	-.015
S- derecha			0.000	.021	-.030
4	4	5			
S-izquierda			0.000	.021	-.030
S- centro			0.000	.021	-.045
S- derecha			0.000	.021	-.060
5	5	6			
S-izquierda			0.000	-.082	-.060
S- centro			0.000	-.082	.010
S- derecha			0.000	-.082	.080
6	6	7			
S-izquierda			0.000	-.082	.080
S- centro			0.000	-.082	.150
S- derecha			0.000	-.082	.219
7	7	8			
S-izquierda			0.000	.385	.219
S- centro			0.000	.385	-.058
S- derecha			0.000	.385	-.335
8	8	9			
S-izquierda			0.000	.385	-.335
S- centro			0.000	.385	-.612

S- derecha	0.000	.385	-.889
9 9 10			
S-izquierda	0.000	-.822	-.889
S- centro	0.000	-.800	-.392
S- derecha	0.000	-.500	0.000
10 10 11			
S-izquierda	0.000	-.500	0.000
S- centro	0.000	0.000	0.000
S- derecha	0.000	0.000	0.000

Nota: Los esfuerzos se refieren a los extremos del elemento, excluyendo zonas rígidas en nudos de tamaño finito

** REACCIONES EXTERIORES (Ejes Generales) **

Nudo	Fx (Tn)	Fy (Tn)	Mz (mT)
3	0.000	-.021	0.000
5	0.000	.102	0.000
7	0.000	-.466	0.000
9	0.000	1.207	0.000

Nota: Se han controlado Errores de Cierre en Nudos y Reacciones (respecto a [0,0])...(<1%)

*** BARRA (RESULTADOS) ***

Proyecto:
santa oliva

Comentario:
calculo transversal

Estado de Carga 11:
SC PASEOS IZQ

** MOVIMIENTOS NUDOS (Ejes Generales) **

Nudo	Ux (m.)	Vy (m.)	rz (rad.)
1	0.000000	-.000519	.000239
2	0.000000	-.000232	.000231
3	0.000000	0.000000	.000129
4	0.000000	.000060	-.000023
5	0.000000	0.000000	-.000037
6	0.000000	-.000020	.000007
7	0.000000	0.000000	.000010
8	0.000000	.000005	-.000001
9	0.000000	0.000000	-.000005
10	0.000000	-.000006	-.000005
11	0.000000	-.000012	-.000005

** ESFUERZOS ELEMENTOS (Ejes Locales) **

Nel N-i N-d	Axil (T)	Cortante (T)	Flector (mT)
1 1 2			
S-izquierda	0.000	0.000	-0.000
S- centro	0.000	.126	-.016
S- derecha	0.000	.427	-.183
2 2 3			
S-izquierda	0.000	.427	-.183
S- centro	0.000	.728	-.531
S- derecha	0.000	.750	-.982
3 3 4			
S-izquierda	0.000	-.425	-.982
S- centro	0.000	-.425	-.676
S- derecha	0.000	-.425	-.370
4 4 5			
S-izquierda	0.000	-.425	-.370
S- centro	0.000	-.425	-.064
S- derecha	0.000	-.425	.242
5 5 6			
S-izquierda	0.000	.090	.242
S- centro	0.000	.090	.165
S- derecha	0.000	.090	.088
6 6 7			
S-izquierda	0.000	.090	.088
S- centro	0.000	.090	.011
S- derecha	0.000	.090	-.066
7 7 8			
S-izquierda	0.000	-.023	-.066
S- centro	0.000	-.023	-.049
S- derecha	0.000	-.023	-.033
8 8 9			
S-izquierda	0.000	-.023	-.033
S- centro	0.000	-.023	-.016

derecha	0.000	-.023	-0.000
9 9 10			
s-izquierda	0.000	-0.000	-0.000
s- centro	0.000	-0.000	-0.000
s- derecha	0.000	-0.000	0.000
10 10 11			
s-izquierda	0.000	0.000	0.000
s- centro	0.000	0.000	0.000
s- derecha	0.000	0.000	0.000

Nota: Los esfuerzos se refieren a los extremos del elemento, excluyendo zonas rígidas en nudos de tamaño finito

** REACCIONES EXTERIORES (Ejes Generales) **

Nudo	Fx (Tn)	Fy (Tn)	Mz (mT)
3	0.000	1.175	0.000
5	0.000	-.515	0.000
7	0.000	.113	0.000
9	0.000	-.023	0.000

Nota: Se han controlado Errores de Cierre en Nudos y Reacciones (respecto a [0,0])...(<1%)

*** PROGRAMA BARRA (MARCOS) ***
Version Noviembre 88

Proyecto:
santa oliva

Comentario:
calculo transversal

Material Base Homogeneizacion:
E1 (Tn/m2) : 2857700.00

TRENES SIN PERALTE
Y DESCARRILAMIENTOS
COMO CARGAS PUNTUALES

DATOS DE LOS NUDOS

Nudo	Xi(m.)	Yi(m.)	Peso(Tn)	Ux	Vy	rz
1	0.00	0.00				
2	1.21	0.00				
3	2.41	0.00				
4	3.85	0.00				
5	5.29	0.00				
6	7.00	0.00				
7	8.71	0.00				
8	10.15	0.00				
9	11.59	0.00				
10	12.80	0.00				
11	14.00	0.00				

VINCULACIONES NUDOS

Nudo	Coaccion-Ux	Coaccion-Vy	Coaccion-rz
3	*****	*****	
5		*****	
7		*****	
9		*****	

DATOS DE SECCIONES TIPO

No	Area(m2)	M.Iner.(m4)	S.Cort.(m2)	Peso(T/ml)
1	.300000	.002250		

DATOS DE LOS ELEMENTOS

Num	Nd-i	Nd-d	Sti	Std	Vin	Var	Vp	Long(m)	Alf(sx)
1	1	2	1	1	1.0	1.0	0.0	1.205	0.00
2	2	3	1	1	1.0	1.0	0.0	1.205	0.00
3	3	4	1	1	1.0	1.0	0.0	1.440	0.00
4	4	5	1	1	1.0	1.0	0.0	1.440	0.00
5	5	6	1	1	1.0	1.0	0.0	1.710	0.00
6	6	7	1	1	1.0	1.0	0.0	1.710	0.00
7	7	8	1	1	1.0	1.0	0.0	1.440	0.00
8	8	9	1	1	1.0	1.0	0.0	1.440	0.00
9	9	10	1	1	1.0	1.0	0.0	1.210	0.00
10	10	11	1	1	1.0	1.0	0.0	1.200	0.00

Nota: En Elementos Curvos [Long] y [Alf] corresponden a la Cuerda

DATOS DE LOS ESTADOS DE CARGA

ESTADO DE CARGA 1 :

Titulo:
10tn tren POSDER sin peralte
Tipo: [1]Cargas Exteriores/Movimientos Apoyo

ACCIONES EN ELEMENTOS (m.;Tn;qsex.) :

Nel aj	Parametros de Carga:		
6 -2	5.000	1.642	(Carga Concentrada)
7 -2	5.000	1.372	(Carga Concentrada)

ESTADO DE CARGA 2 :

Titulo:
10tn tren POSIZQ sin peralte
Tipo: [1]Cargas Exteriores/Movimientos Apoyo

ACCIONES EN ELEMENTOS (m.;Tn;qsex.) :

Nel aj	Parametros de Carga:		
4 -2	5.000	.068	(Carga Concentrada)
5 -2	5.000	.068	(Carga Concentrada)

ESTADO DE CARGA 3 :

Titulo:
10tn tren POSDER EXT sin peralte
Tipo: [1]Cargas Exteriores/Movimientos Apoyo

ACCIONES EN ELEMENTOS (m.;Tn;qsex.) :

Nel aj	Parametros de Carga:		
7 -2	5.000	.232	(Carga Concentrada)
8 -2	5.000	.232	(Carga Concentrada)

ESTADO DE CARGA 4 :

Titulo:
10tn tren POSIZQ EXT sin peralte
Tipo: [1]Cargas Exteriores/Movimientos Apoyo

ACCIONES EN ELEMENTOS (m.;Tn;qsex.) :

Nel aj	Parametros de Carga:		
3 -2	5.000	1.208	(Carga Concentrada)
4 -2	5.000	1.208	(Carga Concentrada)

ESTADO DE CARGA 5 :

Titulo:
10tn tren POSDER INT sin peralte
Tipo: [1]Cargas Exteriores/Movimientos Apoyo

ACCIONES EN ELEMENTOS (m.;Tn;qsex.) :

Nel aj	Parametros de Carga:		
6 -2	5.000	1.342	(Carga Concentrada)
7 -2	5.000	1.072	(Carga Concentrada)

ESTADO DE CARGA 6 :

Titulo:
10tn tren POSIZQ INT si peralte
Tipo: [1]Cargas Exteriores/Movimientos Apoyo

ACCIONES EN ELEMENTOS (m.;Tn;qsex.) :

Nel aj	Parametros de Carga:		
4 -2	5.000	.368	(Carga Concentrada)
5 -2	5.000	.368	(Carga Concentrada)

ESTADO DE CARGA 7 :

Titulo:
10tn tren posl descarrilado
Tipo: [1]Cargas Exteriores/Movimientos Apoyo

ACCIONES EN ELEMENTOS (m.;Tn;qsex.) :

Nel aj	Parametros de Carga:		
5 -2	5.000	1.192	(Carga Concentrada)
6 -2	5.000	.922	(Carga Concentrada)

ESTADO DE CARGA 8 :

Titulo:
10tn tren pos2 descarrilado
Tipo: [1]Cargas Exteriores/Movimientos Apoyo

ACCIONES EN ELEMENTOS (m.;Tn;qsex.) :

Nel aj	Parametros de Carga:		
9 -2	5.000	.584	(Carga Concentrada)
10 -2	5.000	.819	(Carga Concentrada)

*** BARRA (RESULTADOS) ***

Proyecto:

santa oliva

Comentario:

calculo transversal

Estado de Carga 1:

10tn tren POSDER sin peralte

** MOVIMIENTOS NUDOS (Ejes Generales) **

Nudo	Ux (m.)	Vy (m.)	πz (rad.)
1	0.000000	.000057	-.000024
2	0.000000	.000029	-.000024
3	0.000000	0.000000	-.000024
4	0.000000	-.000026	-.000006
5	0.000000	0.000000	.000048
6	0.000000	.000097	.000033
7	0.000000	0.000000	-.000182
8	0.000000	-.000263	-.000017
9	0.000000	0.000000	.000283
10	0.000000	.000342	.000283
11	0.000000	.000681	.000283

** ESFUERZOS ELEMENTOS (Ejes Locales) **

Nel N-i N-d	Axil (T)	Cortante (T)	Flector (mT)
1 1 2			
S-izquierda	0.000	-0.000	0.000
S- centro	0.000	-0.000	0.000
S- derecha	0.000	-0.000	0.000
2 2 3			
S-izquierda	0.000	-0.000	0.000
S- centro	0.000	-0.000	0.000
S- derecha	0.000	-0.000	0.000
3 3 4			
S-izquierda	0.000	-.111	0.000
S- centro	0.000	-.111	.080
S- derecha	0.000	-.111	.160
4 4 5			
S-izquierda	0.000	-.111	.160
S- centro	0.000	-.111	.240
S- derecha	0.000	-.111	.319
5 5 6			
S-izquierda	0.000	.437	.319
S- centro	0.000	.437	-.055
S- derecha	0.000	.437	-.429
6 6 7			
S-izquierda	0.000	.437	-.429
S- centro	0.000	.437	-.803
S- derecha	0.000	5.437	-1.517
7 7 8			
S-izquierda	0.000	-3.145	-1.517
S- centro	0.000	-3.145	.747
S- derecha	0.000	1.855	2.672
8 8 9			
S-izquierda	0.000	1.855	2.672
S- centro	0.000	1.855	1.336

S- derecha	0.000	1.855	0.000
9 9 10			
S-izquierda	0.000	0.000	0.000
S- centro	0.000	0.000	-0.000
S- derecha	0.000	0.000	-0.000
10 10 11			
S-izquierda	0.000	0.000	0.000
S- centro	0.000	0.000	-0.000
S- derecha	0.000	0.000	-0.000

Nota: Los esfuerzos se refieren a los extremos del elemento, excluyendo zonas rígidas en nudos de tamaño finito

** REACCIONES EXTERIORES (Ejes Generales) **

Nudo	Fx (Tn)	Fy (Tn)	Mz (mT)
3	0.000	.111	0.000
5	0.000	-.548	0.000
7	0.000	8.582	0.000
9	0.000	1.855	0.000

Nota: Se han controlado Errores de Cierre en Nudos y Reacciones (respecto a [0,0])...(<1%)

*** BARRA (RESULTADOS) ***

Proyecto:
santa oliva

Comentario:
calculo transversal

Estado de Carga 2:
10tn tren POSIZQ sin peralte

** MOVIMIENTOS NUDOS (Ejes Generales) **

Nudo	Ux (m.)	Vy (m.)	rz (rad.)
1	0.000000	.000681	-.000283
2	0.000000	.000341	-.000283
3	0.000000	0.000000	-.000283
4	0.000000	-.000263	.000017
5	0.000000	0.000000	.000182
6	0.000000	.000097	-.000033
7	0.000000	0.000000	-.000048
8	0.000000	-.000026	.000006
9	0.000000	0.000000	.000024
10	0.000000	.000029	.000024
11	0.000000	.000057	.000024

** ESFUERZOS ELEMENTOS (Ejes Locales) **

Nel	N-i	N-d	Axil(T)	Cortante(T)	Flector(mT)
1	1	2			
S-izquierda			0.000	-0.000	0.000
S- centro			0.000	-0.000	0.000
S- derecha			0.000	-0.000	0.000
2	2	3			
S-izquierda			0.000	-0.000	0.000
S- centro			0.000	-0.000	0.000
S- derecha			0.000	-0.000	0.000
3	3	4			
S-izquierda			0.000	-1.855	0.000
S- centro			0.000	-1.855	1.336
S- derecha			0.000	-1.855	2.672
4	4	5			
S-izquierda			0.000	-1.855	2.672
S- centro			0.000	3.145	.747
S- derecha			0.000	3.145	-1.517
5	5	6			
S-izquierda			0.000	-5.437	-1.517
S- centro			0.000	-.437	-.803
S- derecha			0.000	-.437	-.429
6	6	7			
S-izquierda			0.000	-.437	-.429
S- centro			0.000	-.437	-.055
S- derecha			0.000	-.437	.319
7	7	8			
S-izquierda			0.000	.111	.319
S- centro			0.000	.111	.240
S- derecha			0.000	.111	.160
8	8	9			
S-izquierda			0.000	.111	.160
S- centro			0.000	.111	.080

S- derecha	0.000	.111	-0.000
9 9 10			
S-izquierda	0.000	0.000	0.000
S- centro	0.000	0.000	-0.000
S- derecha	0.000	0.000	-0.000
10 10 11			
S-izquierda	0.000	0.000	0.000
S- centro	0.000	0.000	-0.000
S- derecha	0.000	0.000	-0.000

Nota: Los esfuerzos se refieren a los extremos del elemento, excluyendo zonas rígidas en nudos de tamaño finito

** REACCIONES EXTERIORES (Ejes Generales) **

Nudo	Fx (Tn)	Fy (Tn)	Mz (mT)
3	0.000	1.855	0.000
5	0.000	8.582	0.000
7	0.000	-.548	0.000
9	0.000	.111	0.000

Nota: Se han controlado Errores de Cierre en Nudos y Reacciones (respecto a [0,0])...(<1%)

*** BARRA (RESULTADOS) ***

Proyecto:
santa oliva

Comentario:
calculo transversal

Estado de Carga 3:
10tn tren POSDER EXT sin peralte

** MOVIMIENTOS NUDOS (Ejes Generales) **

Nudo	Ux (m.)	Vy (m.)	rz (rad.)
1	0.000000	.000085	-.000035
2	0.000000	.000042	-.000035
3	0.000000	0.000000	-.000035
4	0.000000	-.000038	-.000009
5	0.000000	0.000000	.000070
6	0.000000	.000144	.000049
7	0.000000	0.000000	-.000266
8	0.000000	-.000326	-.000045
9	0.000000	0.000000	.000370
10	0.000000	.000448	.000370
11	0.000000	.000893	.000370

** ESFUERZOS ELEMENTOS (Ejes Locales) **

Nel	N-i	N-d	Axil(T)	Cortante(T)	Flector(mT)
1	1	2			
S-izquierda			0.000	-0.000	0.000
S- centro			0.000	-0.000	0.000
S- derecha			0.000	-0.000	0.000
2	2	3			
S-izquierda			0.000	-0.000	0.000
S- centro			0.000	-0.000	0.000
S- derecha			0.000	-0.000	0.000
3	3	4			
S-izquierda			0.000	-.163	0.000
S- centro			0.000	-.163	.118
S- derecha			0.000	-.163	.235
4	4	5			
S-izquierda			0.000	-.163	.235
S- centro			0.000	-.163	.353
S- derecha			0.000	-.163	.470
5	5	6			
S-izquierda			0.000	.644	.470
S- centro			0.000	.644	-.080
S- derecha			0.000	.644	-.631
6	6	7			
S-izquierda			0.000	.644	-.631
S- centro			0.000	.644	-1.182
S- derecha			0.000	.644	-1.733
7	7	8			
S-izquierda			0.000	-7.296	-1.733
S- centro			0.000	-2.296	1.080
S- derecha			0.000	-2.296	2.733
8	8	9			
S-izquierda			0.000	-2.296	2.733
S- centro			0.000	2.704	1.947

S- derecha	0.000	2.704	-0.000
9 9 10			
S-izquierda	0.000	0.000	0.000
S- centro	0.000	0.000	-0.000
S- derecha	0.000	0.000	-0.000
10 10 11			
S-izquierda	0.000	0.000	-0.000
S- centro	0.000	0.000	-0.000
S- derecha	0.000	0.000	-0.000

Nota: Los esfuerzos se refieren a los extremos del elemento, excluyendo zonas rígidas en nudos de tamaño finito

** REACCIONES EXTERIORES (Ejes Generales) **

Nudo	Fx (Tn)	Fy (Tn)	Mz (mT)
3	0.000	.163	0.000
5	0.000	-.808	0.000
7	0.000	7.941	0.000
9	0.000	2.704	0.000

Nota: Se han controlado Errores de Cierre en Nudos y Reacciones (respecto a [0,0])...(<1%)

*** BARRA (RESULTADOS) ***

Proyecto:
santa oliva

Comentario:
cálculo transversal

Estado de Carga 4:
10tn tren POSIZQ EXT sin peralte

** MOVIMIENTOS NUDOS (Ejes Generales) **

Nudo	Ux (m.)	Vy (m.)	rz (rad.)
1	0.000000	.000893	-.000370
2	0.000000	.000446	-.000370
3	0.000000	0.000000	-.000370
4	0.000000	-.000326	.000045
5	0.000000	0.000000	.000266
6	0.000000	.000144	-.000049
7	0.000000	0.000000	-.000070
8	0.000000	-.000038	.000009
9	0.000000	0.000000	.000035
10	0.000000	.000042	.000035
11	0.000000	.000085	.000035

** ESFUERZOS ELEMENTOS (Ejes Locales) **

Nel	N-i	N-d	Axial(T)	Cortante(T)	Flector(mT)
1	1	2			
S-izquierda			0.000	0.000	0.000
S- centro			0.000	0.000	0.000
S- derecha			0.000	0.000	0.000
2	2	3			
S-izquierda			0.000	-0.000	0.000
S- centro			0.000	-0.000	0.000
S- derecha			0.000	-0.000	0.000
3	3	4			
S-izquierda			0.000	-2.704	0.000
S- centro			0.000	-2.704	1.947
S- derecha			0.000	2.296	2.733
4	4	5			
S-izquierda			0.000	2.296	2.733
S- centro			0.000	2.296	1.080
S- derecha			0.000	7.296	-1.733
5	5	6			
S-izquierda			0.000	-.644	-1.733
S- centro			0.000	-.644	-1.182
S- derecha			0.000	-.644	-.631
6	6	7			
S-izquierda			0.000	-.644	-.631
S- centro			0.000	-.644	-.080
S- derecha			0.000	-.644	.470
7	7	8			
S-izquierda			0.000	.163	.470
S- centro			0.000	.163	.353
S- derecha			0.000	.163	.235
8	8	9			
S-izquierda			0.000	.163	.235
S- centro			0.000	.163	.118

S- derecha	0.000	.163	0.000
9 9 10			
S-izquierda	0.000	0.000	0.000
S- centro	0.000	0.000	0.000
S- derecha	0.000	0.000	-0.000
10 10 11			
S-izquierda	0.000	0.000	-0.000
S- centro	0.000	0.000	-0.000
S- derecha	0.000	0.000	-0.000

Nota: Los esfuerzos se refieren a los extremos del elemento, excluyendo zonas rígidas en nudos de tamaño finito

** REACCIONES EXTERIORES (Ejes Generales) **

Nudo	Fx (Tn)	Fy (Tn)	Mz (mT)
3	0.000	2.704	0.000
5	0.000	7.941	0.000
7	0.000	-.808	0.000
9	0.000	.163	0.000

Nota: Se han controlado Errores de Cierre en Nudos y Reacciones (respecto a [0,0])...(<1%)

*** BARRA (RESULTADOS) ***

Proyecto:
santa oliva

Comentario:
calculo transversal

Estado de Carga 5:
10tn tren POSDER INT sin peralte

** MOVIMIENTOS NUDOS (Ejes Generales) **

Nudo	Ux (m.)	Vy (m.)	πz (rad.)
1	0.000000	.000015	-.000006
2	0.000000	.000007	-.000006
3	0.000000	0.000000	-.000006
4	0.000000	-.000007	-.000002
5	0.000000	0.000000	.000012
6	0.000000	.000026	.000010
7	0.000000	0.000000	-.000093
8	0.000000	-.000182	.000005
9	0.000000	0.000000	.000187
10	0.000000	.000226	.000187
11	0.000000	.000450	.000187

** ESFUERZOS ELEMENTOS (Ejes Locales) **

Nel	N-i	N-d	Axil(T)	Cortante(T)	Flector(mT)
1	1	2			
S-izquierda			0.000	0.000	0.000
S- centro			0.000	0.000	0.000
S- derecha			0.000	0.000	0.000
2	2	3			
S-izquierda			0.000	-0.000	0.000
S- centro			0.000	-0.000	0.000
S- derecha			0.000	-0.000	0.000
3	3	4			
S-izquierda			0.000	-.028	0.000
S- centro			0.000	-.028	.020
S- derecha			0.000	-.028	.041
4	4	5			
S-izquierda			0.000	-.028	.041
S- centro			0.000	-.028	.061
S- derecha			0.000	-.028	.081
5	5	6			
S-izquierda			0.000	.105	.081
S- centro			0.000	.105	-.009
S- derecha			0.000	.105	-.098
6	6	7			
S-izquierda			0.000	.105	-.098
S- centro			0.000	.105	-.188
S- derecha			0.000	5.105	-2.117
7	7	8			
S-izquierda			0.000	-3.874	-2.117
S- centro			0.000	-3.874	.672
S- derecha			0.000	1.126	1.621
8	8	9			
S-izquierda			0.000	1.126	1.621
S- centro			0.000	1.126	.811

S- derecha	0.000	1.126	0.000
9 9 10			
S-izquierda	0.000	0.000	0.000
S- centro	0.000	0.000	-0.000
S- derecha	0.000	0.000	-0.000
10 10 11			
S-izquierda	0.000	-0.000	-0.000
S- centro	0.000	-0.000	-0.000
S- derecha	0.000	-0.000	-0.000

Nota: Los esfuerzos se refieren a los extremos del elemento, excluyendo zonas rígidas en nudos de tamaño finito

** REACCIONES EXTERIORES (Ejes Generales) **

Nudo	Fx (Tn)	Fy (Tn)	Mz (mT)
3	0.000	.028	0.000
5	0.000	-.133	0.000
7	0.000	8.979	0.000
9	0.000	1.126	0.000

Nota: Se han controlado Errores de Cierre en Nudos y Reacciones (respecto a [0,0])...(<1%)

*** BARRA (RESULTADOS) ***

Proyecto:
 santa oliva

Comentario:
 calculo transversal

Estado de Carga 6:
 10tn tren POSIZQ INT si peralte

** MOVIMIENTOS NUDOS (Ejes Generales) **

Nudo	Ux (m.)	Vy (m.)	rz (rad.)
1	0.000000	.000450	-.000187
2	0.000000	.000225	-.000187
3	0.000000	0.000000	-.000187
4	0.000000	-.000182	-.000005
5	0.000000	0.000000	.000093
6	0.000000	.000026	-.000010
7	0.000000	0.000000	-.000012
8	0.000000	-.000007	.000002
9	0.000000	0.000000	.000006
10	0.000000	.000007	.000006
11	0.000000	.000015	.000006

** ESFUERZOS ELEMENTOS (Ejes Locales) **

Nel	N-i	N-d	Axil(T)	Cortante(T)	Flector(mT)
1	1	2			
S-izquierda			0.000	0.000	0.000
S- centro			0.000	0.000	0.000
S- derecha			0.000	0.000	0.000
2	2	3			
S-izquierda			0.000	-0.000	0.000
S- centro			0.000	-0.000	0.000
S- derecha			0.000	-0.000	0.000
3	3	4			
S-izquierda			0.000	-1.126	0.000
S- centro			0.000	-1.126	.811
S- derecha			0.000	-1.126	1.621
4	4	5			
S-izquierda			0.000	-1.126	1.621
S- centro			0.000	3.874	.672
S- derecha			0.000	3.874	-2.117
5	5	6			
S-izquierda			0.000	-5.105	-2.117
S- centro			0.000	-.105	-.188
S- derecha			0.000	-.105	-.098
6	6	7			
S-izquierda			0.000	-.105	-.098
S- centro			0.000	-.105	-.009
S- derecha			0.000	-.105	.081
7	7	8			
S-izquierda			0.000	.028	.081
S- centro			0.000	.028	.061
S- derecha			0.000	.028	.041
8	8	9			
S-izquierda			0.000	.028	.041
S- centro			0.000	.028	.020

S- derecha	0.000	.028	0.000
9 9 10			
S-izquierda	0.000	0.000	0.000
S- centro	0.000	0.000	-0.000
S- derecha	0.000	0.000	-0.000
10 10 11			
S-izquierda	0.000	0.000	-0.000
S- centro	0.000	0.000	-0.000
S- derecha	0.000	0.000	-0.000

Nota: Los esfuerzos se refieren a los extremos del elemento, excluyendo zonas rígidas en nudos de tamaño finito

** REACCIONES EXTERIORES (Ejes Generales) **

Nudo	Fx (Tn)	Fy (Tn)	Mz (mT)
3	0.000	1.126	0.000
5	0.000	8.979	0.000
7	0.000	-.133	0.000
9	0.000	.028	0.000

Nota: Se han controlado Errores de Cierre en Nudos y Reacciones (respecto a [0,0])...(<1%)

*** BARRA (RESULTADOS) ***

Proyecto:
santa oliva

Comentario:
calculo transversal

Estado de Carga 7:
10tn tren posl descarrilado

** MOVIMIENTOS NUDOS (Ejes Generales) **

Nudo	Ux (m.)	Vy (m.)	rz (rad.)
1	0.000000	-.000383	.000159
2	0.000000	-.000192	.000159
3	0.000000	0.000000	.000159
4	0.000000	.000172	.000040
5	0.000000	0.000000	-.000318
6	0.000000	-.000481	.000003
7	0.000000	0.000000	.000343
8	0.000000	.000185	-.000043
9	0.000000	0.000000	-.000172
10	0.000000	-.000208	-.000172
11	0.000000	-.000414	-.000172

** ESFUERZOS ELEMENTOS (Ejes Locales) **

Nel	N-i	N-d	Axil (T)	Cortante (T)	Flector (mT)
1	1	2			
S-izquierda			0.000	0.000	-0.000
S- centro			0.000	0.000	-0.000
S- derecha			0.000	0.000	-0.000
2	2	3			
S-izquierda			0.000	0.000	-0.000
S- centro			0.000	0.000	-0.000
S- derecha			0.000	0.000	-0.000
3	3	4			
S-izquierda			0.000	.739	-0.000
S- centro			0.000	.739	-.532
S- derecha			0.000	.739	-1.064
4	4	5			
S-izquierda			0.000	.739	-1.064
S- centro			0.000	.739	-1.597
S- derecha			0.000	.739	-2.129
5	5	6			
S-izquierda			0.000	-4.359	-2.129
S- centro			0.000	-4.359	1.598
S- derecha			0.000	.641	2.736
6	6	7			
S-izquierda			0.000	.641	2.736
S- centro			0.000	.641	2.188
S- derecha			0.000	5.641	-2.300
7	7	8			
S-izquierda			0.000	-.799	-2.300
S- centro			0.000	-.799	-1.725
S- derecha			0.000	-.799	-1.150
8	8	9			
S-izquierda			0.000	-.799	-1.150
S- centro			0.000	-.799	-.575

S- derecha	0.000	-.799	-0.000
9 9 10			
S-izquierda	0.000	0.000	0.000
S- centro	0.000	0.000	0.000
S- derecha	0.000	0.000	0.000
10 10 11			
S-izquierda	0.000	-0.000	-0.000
S- centro	0.000	-0.000	0.000
S- derecha	0.000	-0.000	0.000

Nota: Los esfuerzos se refieren a los extremos del elemento, excluyendo zonas rígidas en nudos de tamaño finito

** REACCIONES EXTERIORES (Ejes Generales) **

Nudo	Fx (Tn)	Fy (Tn)	Mz (mT)
3	0.000	-.739	0.000
5	0.000	5.099	0.000
7	0.000	6.439	0.000
9	0.000	-.799	0.000

Nota: Se han controlado Errores de Cierre en Nudos y Reacciones (respecto a [0,0])...(<1%)

*** BARRA (RESULTADOS) ***

Proyecto:
santa oliva

Comentario:
calculo transversal

Estado de Carga 8:
10tn tren pos2 descarrilado

** MOVIMIENTOS NUDOS (Ejes Generales) **

Nudo	Ux (m.)	Vy (m.)	πz (rad.)
1	0.000000	-.000157	.000065
2	0.000000	-.000079	.000065
3	0.000000	0.000000	.000065
4	0.000000	.000071	.000016
5	0.000000	0.000000	-.000131
6	0.000000	-.000267	-.000091
7	0.000000	0.000000	.000494
8	0.000000	.000793	.000304
9	0.000000	0.000000	-.001710
10	0.000000	-.003129	-.003182
11	0.000000	-.007190	-.003443

** ESFUERZOS ELEMENTOS (Ejes Locales) **

Nel	N-i	N-d	Axil (T)	Cortante (T)	Flector (mT)
1	1	2			
S-izquierda			0.000	0.000	-0.000
S- centro			0.000	0.000	-0.000
S- derecha			0.000	0.000	-0.000
2	2	3			
S-izquierda			0.000	0.000	-0.000
S- centro			0.000	0.000	-0.000
S- derecha			0.000	0.000	-0.000
3	3	4			
S-izquierda			0.000	.304	-0.000
S- centro			0.000	.304	-.219
S- derecha			0.000	.304	-.438
4	4	5			
S-izquierda			0.000	.304	-.438
S- centro			0.000	.304	-.656
S- derecha			0.000	.304	-.875
5	5	6			
S-izquierda			0.000	-1.198	-.875
S- centro			0.000	-1.198	.150
S- derecha			0.000	-1.198	1.174
6	6	7			
S-izquierda			0.000	-1.198	1.174
S- centro			0.000	-1.198	2.199
S- derecha			0.000	-1.198	3.224
7	7	8			
S-izquierda			0.000	5.656	3.224
S- centro			0.000	5.656	-.848
S- derecha			0.000	5.656	-4.921
8	8	9			
S-izquierda			0.000	5.656	-4.921
S- centro			0.000	5.656	-8.993

S- derecha	0.000	5.656	-13.065
9 9 10			
S-izquierda	0.000	-10.000	-13.065
S- centro	0.000	-5.000	-7.120
S- derecha	0.000	-5.000	-4.095
10 10 11			
S-izquierda	0.000	-5.000	-4.095
S- centro	0.000	-5.000	-1.095
S- derecha	0.000	0.000	0.000

Nota: Los esfuerzos se refieren a los extremos del elemento, excluyendo zonas rígidas en nudos de tamaño finito

** REACCIONES EXTERIORES (Ejes Generales) **

Nudo	Fx (Tn)	Fy (Tn)	Mz (mT)
3	0.000	-.304	0.000
5	0.000	1.502	0.000
7	0.000	-6.854	0.000
9	0.000	15.656	0.000

Nota: Se han controlado Errores de Cierre en Nudos y Reacciones (respecto a [0,0])...(<1%)

*** PROGRAMA BARRA [MARCOS] ***
Version Noviembre 88

Proyecto:
santa oliva

Comentario:
calculo transversal

Material Base Homogeneizacion:
E1 (Tn/m2) : 2857700.00

DATOS DE LOS NUDOS

Nudo	Xi(m.)	Yi(m.)	Movimientos Impuestos			
			Peso(Tn)	Ux	Vy	πz
1	0.00	0.00				
2	1.21	0.00				
3	2.41	0.00				
4	3.85	0.00				
5	5.29	0.00				
6	7.00	0.00				
7	8.71	0.00				
8	10.15	0.00				
9	11.59	0.00				
10	12.80	0.00				
11	14.00	0.00				

VINCULACIONES NUDOS

Nudo	Coaccion-Ux	Coaccion-Vy	Coaccion- πz
3	*****	*****	
5		*****	
7		*****	
9		*****	

DATOS DE SECCIONES TIPO

No	Area(m2)	M.Iner.(m4)	S.Cort.(m2)	Peso(T/ml)
1	.300000	.002250		

DATOS DE LOS ELEMENTOS

Num	Nd-i	Nd-d	Sti	Std	Vin	Var	Vp	Long(m)	Alf(sx)
1	1	2	1	1	1.0	1.0	0.0	1.205	0.00
2	2	3	1	1	1.0	1.0	0.0	1.205	0.00
3	3	4	1	1	1.0	1.0	0.0	1.440	0.00
4	4	5	1	1	1.0	1.0	0.0	1.440	0.00
5	5	6	1	1	1.0	1.0	0.0	1.710	0.00
6	6	7	1	1	1.0	1.0	0.0	1.710	0.00
7	7	8	1	1	1.0	1.0	0.0	1.440	0.00
8	8	9	1	1	1.0	1.0	0.0	1.440	0.00
9	9	10	1	1	1.0	1.0	0.0	1.210	0.00
10	10	11	1	1	1.0	1.0	0.0	1.200	0.00

Nota: En Elementos Curvos [Long] y [Alf]
corresponden a la Cuerda

DATOS DE LOS ESTADOS DE CARGA

ESTADO DE CARGA 1 :

Titulo:
tren POSDER CON PERALTE
Tipo: [1]Cargas Exteriores/Movimientos Apoyo

TRENES COMO
S.C.U. CON Y SIN
PERALTE

ACCIONES EN ELEMENTOS (m.;Tn;qsex.) :

Nel	aj	Parametros de Carga:					
		4.400	4.400	0.000	.728	.712	
3	-1						(Carga Repartida)
4	-1	4.400	4.400	0.000	0.000	.778	(Carga Repartida)
4	-1	8.100	8.100	0.000	.778	.652	(Carga Repartida)
5	-1	8.100	8.100	0.000	0.000	.850	(Carga Repartida)

ESTADO DE CARGA 2 :

Titulo:
tren POSDER CON PERALTE
Tipo: [1]Cargas Exteriores/Movimientos Apoyo

ACCIONES EN ELEMENTOS (m.;Tn;qsex.) :

Nel	aj	Parametros de Carga:					
		4.400	4.400	0.000	.860	.845	
6	-1						(Carga Repartida)
7	-1	4.400	4.400	0.000	0.000	.652	(Carga Repartida)
7	-1	8.100	8.100	0.000	.652	.785	(Carga Repartida)
8	-1	8.100	8.100	0.000	0.000	.712	(Carga Repartida)

ESTADO DE CARGA 3 :

Titulo:
tren POSDER SIN PERALTE
Tipo: [1]Cargas Exteriores/Movimientos Apoyo

ACCIONES EN ELEMENTOS (m.;Tn;qsex.) :

Nel	aj	Parametros de Carga:					
		6.250	6.250	0.000	.728	.712	
3	-1						(Carga Repartida)
4	-1	6.250	6.250	0.000	0.000	.778	(Carga Repartida)
4	-1	6.250	6.250	0.000	.778	.652	(Carga Repartida)
5	-1	6.250	6.250	0.000	0.000	.850	(Carga Repartida)

ESTADO DE CARGA 4 :

Titulo:
tren POSDER SIN PERALTE
Tipo: [1]Cargas Exteriores/Movimientos Apoyo

ACCIONES EN ELEMENTOS (m.;Tn;qsex.) :

Nel	aj	Parametros de Carga:					
		6.250	6.250	0.000	.860	.845	
6	-1						(Carga Repartida)
7	-1	6.250	6.250	0.000	0.000	.652	(Carga Repartida)
7	-1	6.250	6.250	0.000	.652	.785	(Carga Repartida)
8	-1	6.250	6.250	0.000	0.000	.712	(Carga Repartida)

ESTADO DE CARGA 5 :

Título:
tren POSDEREXT CON PERALTE
Tipo: [1]Cargas Exteriores/Movimientos Apoyo

ACCIONES EN ELEMENTOS (m.;Tn;qsex.) :

Nel aj	Parametros de Carga:					
3 -1	4.400	4.400	0.000	.428	1.012	(Carga Repartida)
4 -1	4.400	4.400	0.000	0.000	.488	(Carga Repartida)
4 -1	8.100	8.100	0.000	.488	.952	(Carga Repartida)
5 -1	8.100	8.100	0.000	0.000	.550	(Carga Repartida)

ESTADO DE CARGA 6 :

Título:
tren POSDEREXT CON PERALTE
Tipo: [1]Cargas Exteriores/Movimientos Apoyo

ACCIONES EN ELEMENTOS (m.;Tn;qsex.) :

Nel aj	Parametros de Carga:					
6 -1	4.400	4.400	0.000	1.160	.545	(Carga Repartida)
7 -1	4.400	4.400	0.000	0.000	.952	(Carga Repartida)
7 -1	8.100	8.100	0.000	.952	.485	(Carga Repartida)
8 -1	8.100	8.100	0.000	0.000	1.012	(Carga Repartida)

ESTADO DE CARGA 7 :

Título:
tren POSDEREXT SIN PERALTE
Tipo: [1]Cargas Exteriores/Movimientos Apoyo

ACCIONES EN ELEMENTOS (m.;Tn;qsex.) :

Nel aj	Parametros de Carga:					
3 -1	6.250	6.250	0.000	.428	1.012	(Carga Repartida)
4 -1	6.250	6.250	0.000	0.000	.488	(Carga Repartida)
4 -1	6.250	6.250	0.000	.488	.952	(Carga Repartida)
5 -1	6.250	6.250	0.000	0.000	.550	(Carga Repartida)

ESTADO DE CARGA 8 :

Título:
tren POSDEREXT SIN PERALTE
Tipo: [1]Cargas Exteriores/Movimientos Apoyo

ACCIONES EN ELEMENTOS (m.;Tn;qsex.) :

Nel aj	Parametros de Carga:					
6 -1	6.250	6.250	0.000	1.160	.545	(Carga Repartida)
7 -1	6.250	6.250	0.000	0.000	.952	(Carga Repartida)

7 -1	6.250	6.250	0.000	.952	.485	(Carga Repartida)
8 -1	6.250	6.250	0.000	0.000	1.012	(Carga Repartida)

ESTADO DE CARGA 9 :

Título:
tren POSDERINT CON PERALTE
Tipo: [1]Cargas Exteriores/Movimientos Apoyo

ACCIONES EN ELEMENTOS (m.;Tn;qsex.) :

Nel aj	Parametros de Carga:					
3 -1	4.400	4.400	0.000	1.028	.412	(Carga Repartida)
4 -1	4.400	4.400	0.000	0.000	1.088	(Carga Repartida)
4 -1	8.100	8.100	0.000	1.088	.352	(Carga Repartida)
5 -1	8.100	8.100	0.000	0.000	1.150	(Carga Repartida)

ESTADO DE CARGA 10 :

Título:
tren POSDERINT CON PERALTE
Tipo: [1]Cargas Exteriores/Movimientos Apoyo

ACCIONES EN ELEMENTOS (m.;Tn;qsex.) :

Nel aj	Parametros de Carga:					
6 -1	4.400	4.400	0.000	.560	1.145	(Carga Repartida)
7 -1	4.400	4.400	0.000	0.000	.352	(Carga Repartida)
7 -1	8.100	8.100	0.000	.352	1.085	(Carga Repartida)
8 -1	8.100	8.100	0.000	0.000	.412	(Carga Repartida)

ESTADO DE CARGA 11 :

Título:
tren POSDERINT SIN PERALTE
Tipo: [1]Cargas Exteriores/Movimientos Apoyo

ACCIONES EN ELEMENTOS (m.;Tn;qsex.) :

Nel aj	Parametros de Carga:					
3 -1	6.250	6.250	0.000	1.028	.412	(Carga Repartida)
4 -1	6.250	6.250	0.000	0.000	1.088	(Carga Repartida)
4 -1	6.250	6.250	0.000	1.088	.352	(Carga Repartida)
5 -1	6.250	6.250	0.000	0.000	1.150	(Carga Repartida)

ESTADO DE CARGA 12 :

Título:
tren POSDERINT SIN PERALTE
Tipo: [1]Cargas Exteriores/Movimientos Apoyo

ACCIONES EN ELEMENTOS (m./Tn/qsex.) :

Nel a)	Parametros de Carga:					
6 -1	6.250	6.250	0.000	.560	1.145	(Carga Repartida)
7 -1	6.250	6.250	0.000	0.000	.352	(Carga Repartida)
7 -1	6.250	6.250	0.000	.352	1.085	(Carga Repartida)
8 -1	6.250	6.250	0.000	0.000	.412	(Carga Repartida)

*** BARRA (RESULTADOS) ***

Proyecto:
santa oliva

Comentario:
calculo transversal

Estado de Carga 1:
tren POSDER CON PERALTE

** MOVIMIENTOS NUDOS (Ejes Generales) **

Nudo	Ux (m.)	Vy (m.)	rx (rad.)
1	0.000000	.000856	-.000355
2	0.000000	.000428	-.000355
3	0.000000	0.000000	-.000355
4	0.000000	-.000314	.000030
5	0.000000	0.000000	.000188
6	0.000000	.000048	-.000021
7	0.000000	0.000000	-.000022
8	0.000000	-.000012	.000003
9	0.000000	0.000000	.000011
10	0.000000	.000013	.000011
11	0.000000	.000026	.000011

** ESFUERZOS ELEMENTOS (Ejes Locales) **

Nel N-i N-d	Axil(T)	Cortante(T)	Flector(mT)
1 1 2			
S-izquierda	0.000	0.000	0.000
S- centro	0.000	0.000	0.000
S- derecha	0.000	0.000	0.000
2 2 3			
S-izquierda	0.000	-0.000	0.000
S- centro	0.000	-0.000	0.000
S- derecha	0.000	-0.000	0.000
3 3 4			
S-izquierda	0.000	-2.647	0.000
S- centro	0.000	-2.647	1.906
S- derecha	0.000	.486	2.696
4 4 5			
S-izquierda	0.000	.486	2.696
S- centro	0.000	3.654	1.206
S- derecha	0.000	9.190	-3.376
5 5 6			
S-izquierda	0.000	-7.059	-3.376
S- centro	0.000	-.174	-.300
S- derecha	0.000	-.174	-.151
6 6 7			
S-izquierda	0.000	-.174	-.151
S- centro	0.000	-.174	-.002
S- derecha	0.000	-.174	.147
7 7 8			
S-izquierda	0.000	.051	.147
S- centro	0.000	.051	.110
S- derecha	0.000	.051	.073
8 8 9			
S-izquierda	0.000	.051	.073
S- centro	0.000	.051	.037

S- derecha	0.000	.051	0.000
9 9 10			
S-izquierda	0.000	0.000	0.000
S- centro	0.000	0.000	-0.000
S- derecha	0.000	0.000	-0.000
10 10 11			
S-izquierda	0.000	0.000	-0.000
S- centro	0.000	0.000	-0.000
S- derecha	0.000	0.000	-0.000

Nota: Los esfuerzos se refieren a los extremos del elemento, excluyendo zonas rígidas en nudos de tamaño finito

** REACCIONES EXTERIORES (Ejes Generales) **

Nudo	Fx (Tn)	Fy (Tn)	Mz (mT)
3	0.000	2.647	0.000
5	0.000	16.250	0.000
7	0.000	-.225	0.000
9	0.000	.051	0.000

Nota: Se han controlado Errores de Cierre en Nudos y Reacciones (respecto a [0,0])...(<1%)

*** BARRA (RESULTADOS) ***

Proyector:
santa oliva

Comentario:
calculo transversal

Estado de Carga 2:
tren POSDER CON PERALTE

** MOVIMIENTOS NUDOS (Ejes Generales) **

Nudo	Ux (m.)	Vy (m.)	πz (rad.)
1	0.000000	.000116	-.000048
2	0.000000	.000058	-.000048
3	0.000000	0.000000	-.000048
4	0.000000	-.000052	-.000012
5	0.000000	0.000000	.000096
6	0.000000	.000198	.000070
7	0.000000	0.000000	-.000420
8	0.000000	-.000584	-.000051
9	0.000000	0.000000	.000658
10	0.000000	.000796	.000658
11	0.000000	.001586	.000658

** ESFUERZOS ELEMENTOS (Ejes Locales) **

Nel N-i N-d	Axil (T)	Cortante (T)	Flector (mT)
1 1 2			
S-izquierda	0.000	0.000	0.000
S- centro	0.000	0.000	0.000
S- derecha	0.000	0.000	0.000
2 2 3			
S-izquierda	0.000	-0.000	0.000
S- centro	0.000	-0.000	0.000
S- derecha	0.000	-0.000	0.000
3 3 4			
S-izquierda	0.000	-.224	0.000
S- centro	0.000	-.224	.161
S- derecha	0.000	-.224	.322
4 4 5			
S-izquierda	0.000	-.224	.322
S- centro	0.000	-.224	.483
S- derecha	0.000	-.224	.644
5 5 6			
S-izquierda	0.000	.867	.644
S- centro	0.000	.867	-.098
S- derecha	0.000	.867	-.839
6 6 7			
S-izquierda	0.000	.867	-.839
S- centro	0.000	.867	-1.581
S- derecha	0.000	4.585	-3.912
7 7 8			
S-izquierda	0.000	-10.126	-3.912
S- centro	0.000	-6.706	2.229
S- derecha	0.000	-.898	4.958
8 8 9			
S-izquierda	0.000	-.898	4.958
S- centro	0.000	4.869	3.506

S- derecha	0.000	4.869	0.000
9 9 10			
S-izquierda	0.000	0.000	0.000
S- centro	0.000	0.000	0.000
S- derecha	0.000	0.000	0.000
10 10 11			
S-izquierda	0.000	0.000	-0.000
S- centro	0.000	0.000	-0.000
S- derecha	0.000	0.000	-0.000

Nota: Los esfuerzos se refieren a los extremos del elemento, excluyendo zonas rígidas en nudos de tamaño finito

** REACCIONES EXTERIORES (Ejes Generales) **

Nudo	Fx (Tn)	Fy (Tn)	Mz (mT)
3	0.000	.224	0.000
5	0.000	-1.091	0.000
7	0.000	14.711	0.000
9	0.000	4.869	0.000

Nota: Se han controlado Errores de Cierre en Nudos y Reacciones (respecto a [0,0])...(<1%)

*** BARRA (RESULTADOS) ***

Proyecto:
santa oliva

Comentario:
calculo transversal

Estado de Carga 3:
tren POSDER SIN PERALTE

** MOVIMIENTOS NUDOS (Ejes Generales) **

Nudo	Ux (m.)	Vy (m.)	rz (rad.)
1	0.000000	.001221	-.000507
2	0.000000	.000611	-.000507
3	0.000000	0.000000	-.000507
4	0.000000	-.000449	.000041
5	0.000000	0.000000	.000304
6	0.000000	.000123	-.000046
7	0.000000	0.000000	-.000059
8	0.000000	-.000032	.000007
9	0.000000	0.000000	.000029
10	0.000000	.000036	.000029
11	0.000000	.000071	.000029

** ESFUERZOS ELEMENTOS (Ejes Locales) **

Nel	N-i	N-d	Axil (T)	Cortante (T)	Flector (mT)
1	1	2			
S-izquierda			0.000	-0.000	0.000
S- centro			0.000	-0.000	0.000
S- derecha			0.000	-0.000	0.000
2	2	3			
S-izquierda			0.000	-0.000	0.000
S- centro			0.000	-0.000	0.000
S- derecha			0.000	-0.000	0.000
3	3	4			
S-izquierda			0.000	-3.760	0.000
S- centro			0.000	-3.760	2.707
S- derecha			0.000	.690	3.830
4	4	5			
S-izquierda			0.000	.690	3.830
S- centro			0.000	5.190	1.714
S- derecha			0.000	9.627	-3.643
5	5	6			
S-izquierda			0.000	-5.833	-3.643
S- centro			0.000	-.520	-.940
S- derecha			0.000	-.520	-.495
6	6	7			
S-izquierda			0.000	-.520	-.495
S- centro			0.000	-.520	-.050
S- derecha			0.000	-.520	.395
7	7	8			
S-izquierda			0.000	.137	.395
S- centro			0.000	.137	.296
S- derecha			0.000	.137	.197
8	8	9			
S-izquierda			0.000	.137	.197
S- centro			0.000	.137	.099

S- derecha	0.000	.137	0.000
9 9 10			
S-izquierda	0.000	0.000	0.000
S- centro	0.000	0.000	-0.000
S- derecha	0.000	0.000	-0.000
10 10 11			
S-izquierda	0.000	0.000	-0.000
S- centro	0.000	0.000	-0.000
S- derecha	0.000	0.000	-0.000

Nota: Los esfuerzos se refieren a los extremos del elemento, excluyendo zonas rígidas en nudos de tamaño finito

** REACCIONES EXTERIORES (Ejes Generales) **

Nudo	Fx (Tn)	Fy (Tn)	Mz (mT)
3	0.000	3.760	0.000
5	0.000	15.460	0.000
7	0.000	-.658	0.000
9	0.000	.137	0.000

Nota: Se han controlado Errores de Cierre en Nudos y Reacciones (respecto a [0,0])...(<1%)

*** BARRA (RESULTADOS) ***

Proyecto:
santa oliva

Comentario:
calculo transversal

Estado de Carga 4:
tren POSDER SIN PERALTE

** MOVIMIENTOS NUDOS (Ejes Generales) **

Nudo	Ux (m.)	Vy (m.)	πz (rad.)
1	0.000000	.000071	-.000029
2	0.000000	.000035	-.000029
3	0.000000	0.000000	-.000029
4	0.000000	-.000032	-.000007
5	0.000000	0.000000	.000059
6	0.000000	.000123	.000045
7	0.000000	0.000000	-.000303
8	0.000000	-.000448	-.000041
9	0.000000	0.000000	.000506
10	0.000000	.000612	.000506
11	0.000000	.001219	.000506

** ESFUERZOS ELEMENTOS (Ejes Locales) **

Nel	N-i	N-d	Axil(T)	Cortante(T)	Flector(mT)
1	1	2			
S-izquierda			0.000	0.000	0.000
S- centro			0.000	0.000	0.000
S- derecha			0.000	0.000	0.000
2	2	3			
S-izquierda			0.000	-0.000	0.000
S- centro			0.000	-0.000	0.000
S- derecha			0.000	-0.000	0.000
3	3	4			
S-izquierda			0.000	-.137	0.000
S- centro			0.000	-.137	.098
S- derecha			0.000	-.137	.197
4	4	5			
S-izquierda			0.000	-.137	.197
S- centro			0.000	-.137	.295
S- derecha			0.000	-.137	.394
5	5	6			
S-izquierda			0.000	.519	.394
S- centro			0.000	.519	-.050
S- derecha			0.000	.519	-.493
6	6	7			
S-izquierda			0.000	.519	-.493
S- centro			0.000	.519	-.937
S- derecha			0.000	5.800	-3.638
7	7	8			
S-izquierda			0.000	-9.679	-3.638
S- centro			0.000	-5.179	1.711
S- derecha			0.000	-.697	3.819
8	8	9			
S-izquierda			0.000	-.697	3.819
S- centro			0.000	3.753	2.702

S- derecha	0.000	3.753	0.000
9 9 10			
S-izquierda	0.000	0.000	0.000
S- centro	0.000	0.000	0.000
S- derecha	0.000	0.000	-0.000
10 10 11			
S-izquierda	0.000	0.000	0.000
S- centro	0.000	0.000	0.000
S- derecha	0.000	0.000	0.000

Nota: Los esfuerzos se refieren a los extremos del elemento, excluyendo zonas rígidas en nudos de tamaño finito

**** REACCIONES EXTERIORES (Ejes Generales) ****

Nudo	Fx (Tn)	Fy (Tn)	Mz (mT)
3	0.000	.137	0.000
5	0.000	-.655	0.000
7	0.000	15.479	0.000
9	0.000	3.753	0.000

Nota: Se han controlado Errores de Cierre en Nudos y Reacciones (respecto a [0,0])...(<1%)

***** BARRA (RESULTADOS) *****

Proyecto:
santa oliva

Comentario:
calculo transversal

Estado de Carga 5:
tren POSDEREXT CON PERALTE

**** MOVIMIENTOS NUDOS (Ejes Generales) ****

Nudo	Ux (m.)	Vy (m.)	πz (rad.)
1	0.000000	.001219	-.000506
2	0.000000	.000610	-.000506
3	0.000000	0.000000	-.000506
4	0.000000	-.000445	.000029
5	0.000000	0.000000	.000342
6	0.000000	.000169	-.000058
7	0.000000	0.000000	-.000082
8	0.000000	-.000044	.000010
9	0.000000	0.000000	.000041
10	0.000000	.000050	.000041
11	0.000000	.000099	.000041

**** ESFUERZOS ELEMENTOS (Ejes Locales) ****

Nel	N-i	N-d	Axil(T)	Cortante(T)	Flector(mT)
1	1	2			
S-izquierda			0.000	0.000	0.000
S- centro			0.000	0.000	0.000
S- derecha			0.000	0.000	0.000
2	2	3			
S-izquierda			0.000	-0.000	0.000
S- centro			0.000	-0.000	0.000
S- derecha			0.000	-0.000	0.000
3	3	4			
S-izquierda			0.000	-4.050	0.000
S- centro			0.000	-2.765	2.728
S- derecha			0.000	.403	3.579
4	4	5			
S-izquierda			0.000	.403	3.579
S- centro			0.000	4.429	2.048
S- derecha			0.000	10.261	-3.240
5	5	6			
S-izquierda			0.000	-5.205	-3.240
S- centro			0.000	-.750	-1.374
S- derecha			0.000	-.750	-.732
6	6	7			
S-izquierda			0.000	-.750	-.732
S- centro			0.000	-.750	-.090
S- derecha			0.000	-.750	.551
7	7	8			
S-izquierda			0.000	.191	.551
S- centro			0.000	.191	.413
S- derecha			0.000	.191	.276
8	8	9			
S-izquierda			0.000	.191	.276
S- centro			0.000	.191	.138

S- derecha	0.000	.191	0.000
9 9 10			
S-izquierda	0.000	0.000	0.000
S- centro	0.000	0.000	-0.000
S- derecha	0.000	0.000	-0.000
10 10 11			
S-izquierda	0.000	0.000	-0.000
S- centro	0.000	0.000	-0.000
S- derecha	0.000	0.000	-0.000

Nota: Los esfuerzos se refieren a los extremos del elemento, excluyendo zonas rígidas en nudos de tamaño finito

** REACCIONES EXTERIORES (Ejes Generales) **

Nudo	Fx (Tn)	Fy (Tn)	Mz (mT)
3	0.000	4.050	0.000
5	0.000	15.467	0.000
7	0.000	-.942	0.000
9	0.000	.191	0.000

Nota: Se han controlado Errores de Cierre en Nudos y Reacciones (respecto a [0,0])...(<1%)

*** BARRA (RESULTADOS) ***

Proyecto:
santa oliva

Comentario:
calculo transversal

Estado de Carga 6:
tren POSDEREXT CON PERALTE

** MOVIMIENTOS NUDOS (Ejes Generales) **

Nudo	Ux (m.)	Vy (m.)	rz (rad.)
1	0.000000	.000147	-.000061
2	0.000000	.000073	-.000061
3	0.000000	0.000000	-.000061
4	0.000000	-.000066	-.000015
5	0.000000	0.000000	.000122
6	0.000000	.000249	.000085
7	0.000000	0.000000	-.000477
8	0.000000	-.000647	-.000079
9	0.000000	0.000000	.000766
10	0.000000	.000926	.000766
11	0.000000	.001845	.000766

** ESFUERZOS ELEMENTOS (Ejes Locales) **

Nel N-i N-d	Axil(T)	Cortante(T)	Flector(mT)
1 1 2			
S-izquierda	0.000	-0.000	0.000
S- centro	0.000	-0.000	0.000
S- derecha	0.000	-0.000	0.000
2 2 3			
S-izquierda	0.000	-0.000	0.000
S- centro	0.000	-0.000	0.000
S- derecha	0.000	-0.000	0.000
3 3 4			
S-izquierda	0.000	-.283	0.000
S- centro	0.000	-.283	.204
S- derecha	0.000	-.283	.407
4 4 5			
S-izquierda	0.000	-.283	.407
S- centro	0.000	-.283	.611
S- derecha	0.000	-.283	.815
5 5 6			
S-izquierda	0.000	1.113	.815
S- centro	0.000	1.113	-.137
S- derecha	0.000	1.113	-1.089
6 6 7			
S-izquierda	0.000	1.113	-1.089
S- centro	0.000	1.113	-2.041
S- derecha	0.000	3.511	-3.658
7 7 8			
S-izquierda	0.000	-9.724	-3.658
S- centro	0.000	-6.556	2.203
S- derecha	0.000	-1.607	5.342
8 8 9			
S-izquierda	0.000	-1.607	5.342
S- centro	0.000	4.225	4.400

S- derecha	0.000	6.590	-0.000
9 9 10			
S-izquierda	0.000	0.000	0.000
S- centro	0.000	0.000	0.000
S- derecha	0.000	0.000	0.000
10 10 11			
S-izquierda	0.000	0.000	-0.000
S- centro	0.000	0.000	-0.000
S- derecha	0.000	0.000	-0.000

Nota: Los esfuerzos se refieren a los extremos del elemento, excluyendo zonas rígidas en nudos de tamaño finito

** REACCIONES EXTERIORES (Ejes Generales) **

Nudo	Fx (Tn)	Fy (Tn)	Mz (mT)
3	0.000	.283	0.000
5	0.000	-1.396	0.000
7	0.000	13.235	0.000
9	0.000	6.590	0.000

Nota: Se han controlado Errores de Cierre en Nudos y Reacciones (respecto a [0,0])...(<1%)

*** BARRA (RESULTADOS) ***

Proyecto:
santa oliva

Comentario:
calculo transversal

Estado de Carga 7:
tren POSDEREXT SIN PERALTE

** MOVIMIENTOS NUDOS (Ejes Generales) **

Nudo	Ux (m.)	Vy (m.)	πz (rad.)
1	0.000000	.001534	-.000637
2	0.000000	.000767	-.000637
3	0.000000	0.000000	-.000637
4	0.000000	-.000547	.000054
5	0.000000	0.000000	.000410
6	0.000000	.000209	-.000072
7	0.000000	0.000000	-.000102
8	0.000000	-.000055	.000013
9	0.000000	0.000000	.000051
10	0.000000	.000062	.000051
11	0.000000	.000123	.000051

** ESFUERZOS ELEMENTOS (Ejes Locales) **

Nel	N-i	N-d	Axil (T)	Cortante (T)	Flector (mT)
1	1	2			
S-izquierda			0.000	-0.000	0.000
S- centro			0.000	-0.000	0.000
S- derecha			0.000	-0.000	0.000
2	2	3			
S-izquierda			0.000	-0.000	0.000
S- centro			0.000	-0.000	0.000
S- derecha			0.000	-0.000	0.000
3	3	4			
S-izquierda			0.000	-5.325	0.000
S- centro			0.000	-3.500	3.568
S- derecha			0.000	1.000	4.468
4	4	5			
S-izquierda			0.000	1.000	4.468
S- centro			0.000	5.500	2.128
S- derecha			0.000	10.000	-3.452
5	5	6			
S-izquierda			0.000	-4.371	-3.452
S- centro			0.000	-.933	-1.709
S- derecha			0.000	-.933	-.912
6	6	7			
S-izquierda			0.000	-.933	-.912
S- centro			0.000	-.933	-.114
S- derecha			0.000	-.933	.684
7	7	8			
S-izquierda			0.000	.237	.684
S- centro			0.000	.237	.513
S- derecha			0.000	.237	.342
8	8	9			
S-izquierda			0.000	.237	.342
S- centro			0.000	.237	.171

S- derecha	0.000	.237	0.000
9 9 10			
S-izquierda	0.000	0.000	0.000
S- centro	0.000	0.000	-0.000
S- derecha	0.000	0.000	-0.000
10 10 11			
S-izquierda	0.000	0.000	-0.000
S- centro	0.000	0.000	-0.000
S- derecha	0.000	0.000	-0.000

Nota: Los esfuerzos se refieren a los extremos del elemento, excluyendo zonas rígidas en nudos de tamaño finito

** REACCIONES EXTERIORES (Ejes Generales) **

Nudo	Fx (Tn)	Fy (Tn)	Mz (mT)
3	0.000	5.325	0.000
5	0.000	14.371	0.000
7	0.000	-1.170	0.000
9	0.000	.237	0.000

Nota: Se han controlado Errores de Cierre en Nudos y Reacciones (respecto a [0,0])...(<1%)

*** BARRA (RESULTADOS) ***

Proyecto:
santa oliva

Comentario:
calculo transversal

Estado de Carga 8:
tren POSDEREXT SIN PERALTE

** MOVIMIENTOS NUDOS (Ejes Generales) **

Nudo	Ux (m.)	Vy (m.)	rz (rad.)
1	0.000000	.000123	-.000051
2	0.000000	.000061	-.000051
3	0.000000	0.000000	-.000051
4	0.000000	-.000055	-.000013
5	0.000000	0.000000	.000102
6	0.000000	.000209	.000072
7	0.000000	0.000000	-.000409
8	0.000000	-.000546	-.000054
9	0.000000	0.000000	.000635
10	0.000000	.000769	.000635
11	0.000000	.001531	.000635

** ESFUERZOS ELEMENTOS (Ejes Locales) **

Nel N-i N-d	Axial(T)	Cortante(T)	Flector(mT)
1 1 2			
S-izquierda	0.000	-0.000	0.000
S- centro	0.000	-0.000	0.000
S- derecha	0.000	-0.000	0.000
2 2 3			
S-izquierda	0.000	0.000	0.000
S- centro	0.000	0.000	0.000
S- derecha	0.000	0.000	0.000
3 3 4			
S-izquierda	0.000	-.237	0.000
S- centro	0.000	-.237	.171
S- derecha	0.000	-.237	.341
4 4 5			
S-izquierda	0.000	-.237	.341
S- centro	0.000	-.237	.512
S- derecha	0.000	-.237	.682
5 5 6			
S-izquierda	0.000	.931	.682
S- centro	0.000	.931	-.114
S- derecha	0.000	.931	-.910
6 6 7			
S-izquierda	0.000	.931	-.910
S- centro	0.000	.931	-1.706
S- derecha	0.000	4.337	-3.447
7 7 8			
S-izquierda	0.000	-9.989	-3.447
S- centro	0.000	-5.489	2.125
S- derecha	0.000	-1.008	4.457
8 8 9			
S-izquierda	0.000	-1.008	4.457
S- centro	0.000	3.492	3.562

S- derecha	0.000	5.317	-0.000
9 9 10			
S-izquierda	0.000	0.000	0.000
S- centro	0.000	0.000	0.000
S- derecha	0.000	0.000	0.000
10 10 11			
S-izquierda	0.000	0.000	-0.000
S- centro	0.000	0.000	-0.000
S- derecha	0.000	0.000	-0.000

Nota: Los esfuerzos se refieren a los extremos del elemento, excluyendo zonas rígidas en nudos de tamaño finito

** REACCIONES EXTERIORES (Ejes Generales) **

Nudo	Fx (Tn)	Fy (Tn)	Mz (mT)
3	0.000	.237	0.000
5	0.000	-1.168	0.000
7	0.000	14.326	0.000
9	0.000	5.317	0.000

Nota: Se han controlado Errores de Cierre en Nudos y Reacciones (respecto a [0,0])...(<1%)

*** BARRA (RESULTADOS) ***

Proyecto:
santa oliva

Comentario:
calculo transversal

Estado de Carga 9:
tren POSDERINT CON PERALTE

** MOVIMIENTOS NUDOS (Ejes Generales) **

Nudo	Ux (m.)	Vy (m.)	rz (rad.)
1	0.000000	.000473	-.000196
2	0.000000	.000236	-.000196
3	0.000000	0.000000	-.000196
4	0.000000	-.000171	.000030
5	0.000000	0.000000	.000014
6	0.000000	-.000110	.000021
7	0.000000	0.000000	.000060
8	0.000000	.000032	-.000007
9	0.000000	0.000000	-.000030
10	0.000000	-.000036	-.000030
11	0.000000	-.000072	-.000030

** ESFUERZOS ELEMENTOS (Ejes Locales) **

Nel N-i N-d	Axil (T)	Cortante (T)	Flector (mT)
1 1 2			
S-izquierda	0.000	0.000	0.000
S- centro	0.000	0.000	0.000
S- derecha	0.000	0.000	0.000
2 2 3			
S-izquierda	0.000	-0.000	0.000
S- centro	0.000	-0.000	0.000
S- derecha	0.000	-0.000	0.000
3 3 4			
S-izquierda	0.000	-1.455	0.000
S- centro	0.000	-1.455	1.048
S- derecha	0.000	.358	1.722
4 4 5			
S-izquierda	0.000	.358	1.722
S- centro	0.000	3.526	.324
S- derecha	0.000	7.996	-3.584
5 5 6			
S-izquierda	0.000	-8.680	-3.584
S- centro	0.000	-1.755	.877
S- derecha	0.000	.635	.687
6 6 7			
S-izquierda	0.000	.635	.687
S- centro	0.000	.635	.144
S- derecha	0.000	.635	-.399
7 7 8			
S-izquierda	0.000	-.138	-.399
S- centro	0.000	-.138	-.299
S- derecha	0.000	-.138	-.199
8 8 9			
S-izquierda	0.000	-.138	-.199
S- centro	0.000	-.138	-.100

S- derecha	0.000	-.138	-0.000
9 9 10			
S-izquierda	0.000	-0.000	-0.000
S- centro	0.000	-0.000	0.000
S- derecha	0.000	-0.000	0.000
10 10 11			
S-izquierda	0.000	0.000	0.000
S- centro	0.000	0.000	0.000
S- derecha	0.000	0.000	0.000

Nota: Los esfuerzos se refieren a los extremos del elemento, excluyendo zonas rígidas en nudos de tamaño finito

**** REACCIONES EXTERIORES (Ejes Generales) ****

Nudo	Fx (Tn)	Fy (Tn)	Mz (mT)
3	0.000	1.455	0.000
5	0.000	16.676	0.000
7	0.000	.773	0.000
9	0.000	-.138	0.000

Nota: Se han controlado Errores de Cierre en Nudos y Reacciones (respecto a [0,0])...(<1%)

***** BARRA (RESULTADOS) *****

Proyecto:
santa oliva

Comentario:
calculo transversal

Estado de Carga 10:
tren POSDERINT CON PERALTE

**** MOVIMIENTOS NUDOS (Ejes Generales) ****

Nudo	Ux (m.)	Vy (m.)	πz (rad.)
1	0.000000	.000062	-.000026
2	0.000000	.000031	-.000026
3	0.000000	0.000000	-.000026
4	0.000000	-.000028	-.000006
5	0.000000	0.000000	.000051
6	0.000000	.000111	.000047
7	0.000000	0.000000	-.000324
8	0.000000	-.000469	-.000019
9	0.000000	0.000000	.000504
10	0.000000	.000610	.000504
11	0.000000	.001215	.000504

**** ESFUERZOS ELEMENTOS (Ejes Locales) ****

Nel	N-i	N-d	Axil (T)	Cortante (T)	Flector (mT)
1	1	2			
S-izquierda			0.000	-0.000	0.000
S- centro			0.000	-0.000	0.000
S- derecha			0.000	-0.000	0.000
2	2	3			
S-izquierda			0.000	-0.000	0.000
S- centro			0.000	-0.000	0.000
S- derecha			0.000	-0.000	0.000
3	3	4			
S-izquierda			0.000	-.119	0.000
S- centro			0.000	-.119	.086
S- derecha			0.000	-.119	.172
4	4	5			
S-izquierda			0.000	-.119	.172
S- centro			0.000	-.119	.258
S- derecha			0.000	-.119	.344
5	5	6			
S-izquierda			0.000	.423	.344
S- centro			0.000	.423	-.018
S- derecha			0.000	.423	-.379
6	6	7			
S-izquierda			0.000	.423	-.379
S- centro			0.000	1.721	-.932
S- derecha			0.000	5.461	-4.011
7	7	8			
S-izquierda			0.000	-10.336	-4.011
S- centro			0.000	-5.806	2.040
S- derecha			0.000	.002	4.120
8	8	9			
S-izquierda			0.000	.002	4.120
S- centro			0.000	3.339	2.404

S- derecha	0.000	3.339	0.000
9 9 10			
S-izquierda	0.000	0.000	0.000
S- centro	0.000	0.000	-0.000
S- derecha	0.000	0.000	-0.000
10 10 11			
S-izquierda	0.000	-0.000	-0.000
S- centro	0.000	-0.000	-0.000
S- derecha	0.000	-0.000	0.000

Nota: Los esfuerzos se refieren a los extremos del elemento, excluyendo zonas rígidas en nudos de tamaño finito

** REACCIONES EXTERIORES (Ejes Generales) **

Nudo	Fx (Tn)	Fy (Tn)	Mz (mT)
3	0.000	.119	0.000
5	0.000	-.542	0.000
7	0.000	15.796	0.000
9	0.000	3.339	0.000

Nota: Se han controlado Errores de Cierre en Nudos y Reacciones (respecto a [0,0])...(<1%)

*** BARRA (RESULTADOS) ***

Proyecto:
santa oliva

Comentario:
calculo transversal

Estado de Carga 11:
tren POSDERINT SIN PERALTE

** MOVIMIENTOS NUDOS (Ejes Generales) **

Nudo	Ux (m.)	Vy (m.)	rz (rad.)
1	0.000000	.000846	-.000351
2	0.000000	.000423	-.000351
3	0.000000	0.000000	-.000351
4	0.000000	-.000321	.000025
5	0.000000	0.000000	.000169
6	0.000000	.000001	-.000013
7	0.000000	0.000000	.000004
8	0.000000	.000002	-0.000000
9	0.000000	0.000000	-.000002
10	0.000000	-.000002	-.000002
11	0.000000	-.000005	-.000002

** ESFUERZOS ELEMENTOS (Ejes Locales) **

Nel N-i N-d	Axil(T)	Cortante(T)	Flector(mT)
1 1 2			
S-izquierda	0.000	0.000	0.000
S- centro	0.000	0.000	0.000
S- derecha	0.000	0.000	0.000
2 2 3			
S-izquierda	0.000	-0.000	0.000
S- centro	0.000	-0.000	0.000
S- derecha	0.000	-0.000	0.000
3 3 4			
S-izquierda	0.000	-2.402	0.000
S- centro	0.000	-2.402	1.729
S- derecha	0.000	.173	2.928
4 4 5			
S-izquierda	0.000	.173	2.928
S- centro	0.000	4.673	1.184
S- derecha	0.000	9.173	-3.801
5 5 6			
S-izquierda	0.000	-7.083	-3.801
S- centro	0.000	-1.739	-.030
S- derecha	0.000	.105	.153
6 6 7			
S-izquierda	0.000	.105	.153
S- centro	0.000	.105	.063
S- derecha	0.000	.105	-.027
7 7 8			
S-izquierda	0.000	-.009	-.027
S- centro	0.000	-.009	-.020
S- derecha	0.000	-.009	-.013
8 8 9			
S-izquierda	0.000	-.009	-.013
S- centro	0.000	-.009	-.007

S- derecha	0.000	-.009	-0.000
9 9 10			
S-izquierda	0.000	0.000	-0.000
S- centro	0.000	0.000	-0.000
S- derecha	0.000	0.000	-0.000
10 10 11			
S-izquierda	0.000	-0.000	0.000
S- centro	0.000	-0.000	0.000
S- derecha	0.000	-0.000	0.000

Nota: Los esfuerzos se refieren a los extremos del elemento, excluyendo zonas rígidas en nudos de tamaño finito

** REACCIONES EXTERIORES (Ejes Generales) **

Nudo	Fx (Tn)	Fy (Tn)	Mz (mT)
3	0.000	2.402	0.000
5	0.000	16.256	0.000
7	0.000	.114	0.000
9	0.000	-.009	0.000

Nota: Se han controlado Errores de Cierre en Nudos y Reacciones (respecto a [0,0])...(<1%)

*** BARRA (RESULTADOS) ***

Proyecto:
santa oliva

Comentario:
calculo transversal

Estado de Carga 12:
tren POSDERINT SIN PERALTE

** MOVIMIENTOS NUDOS (Ejes Generales) **

Nudo	Ux (m.)	Vy (m.)	rz (rad.)
1	0.000000	-.000005	.000002
2	0.000000	-.000003	.000002
3	0.000000	0.000000	.000002
4	0.000000	.000002	.000001
5	0.000000	0.000000	-.000004
6	0.000000	0.000000	.000013
7	0.000000	0.000000	-.000168
8	0.000000	-.000320	-.000025
9	0.000000	0.000000	.000350
10	0.000000	.000423	.000350
11	0.000000	.000843	.000350

** ESFUERZOS ELEMENTOS (Ejes Locales) **

Nel N-i N-d	Axial(T)	Cortante(T)	Flector(mT)
1 1 2			
S-izquierda	0.000	0.000	-0.000
S- centro	0.000	0.000	-0.000
S- derecha	0.000	0.000	-0.000
2 2 3			
S-izquierda	0.000	0.000	-0.000
S- centro	0.000	0.000	-0.000
S- derecha	0.000	0.000	-0.000
3 3 4			
S-izquierda	0.000	.010	-0.000
S- centro	0.000	.010	-.007
S- derecha	0.000	.010	-.014
4 4 5			
S-izquierda	0.000	.010	-.014
S- centro	0.000	.010	-.021
S- derecha	0.000	.010	-.028
5 5 6			
S-izquierda	0.000	-.107	-.028
S- centro	0.000	-.107	.063
S- derecha	0.000	-.107	.154
6 6 7			
S-izquierda	0.000	-.107	.154
S- centro	0.000	1.737	-.026
S- derecha	0.000	7.050	-3.796
7 7 8			
S-izquierda	0.000	-9.162	-3.796
S- centro	0.000	-4.662	1.181
S- derecha	0.000	-.181	2.917
8 8 9			
S-izquierda	0.000	-.181	2.917
S- centro	0.000	2.394	1.724

2.2.4.2. Esfuerzos globales de losa transversal

Los esfuerzos globales de la losa son más esfuerzos que se producen por compatibilidad de momentos que introduce dicha losa entre los de las vigas longitudinales.

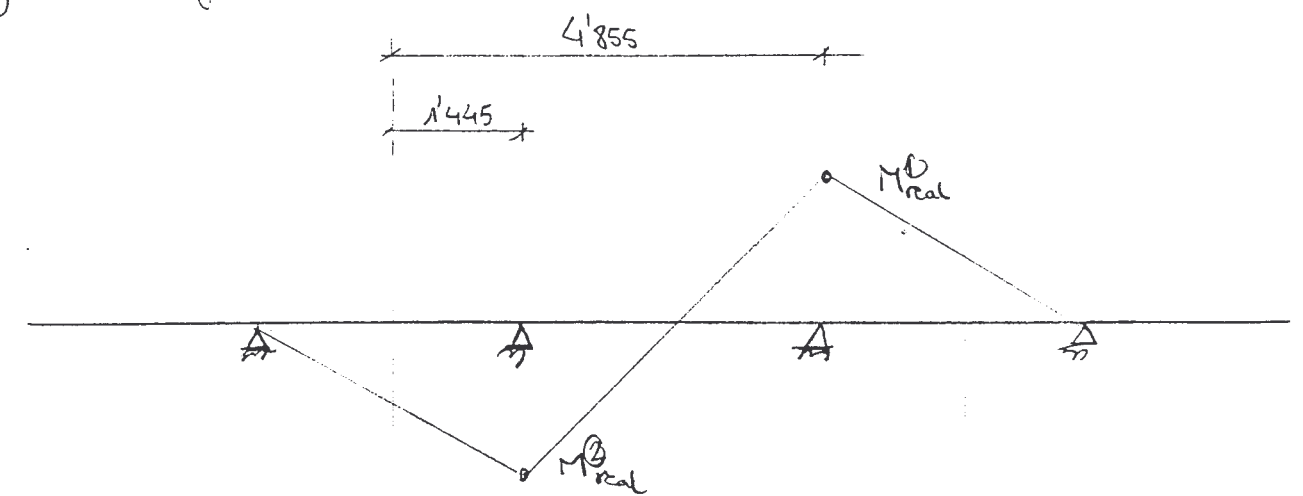
Dichos esfuerzos son obtenidos a partir del modelo de cálculo longitudinal en los cuales se han introducido las reacciones del modelo de losa local en las vigas longitudinales.

Los primeros resultados que se miden son los esfuerzos globales con inercias brutas de las barras transversales.

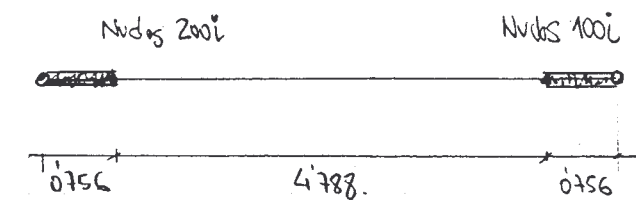
Al final del apartado se obtienen los listados finales de cálculo (los del modelo longitudinal).

Los esfuerzos que se listan a continuación se han obtenido linealmente a partir de los del modelo longitudinal.

Los resultados globales:



Modelo de cálculo:

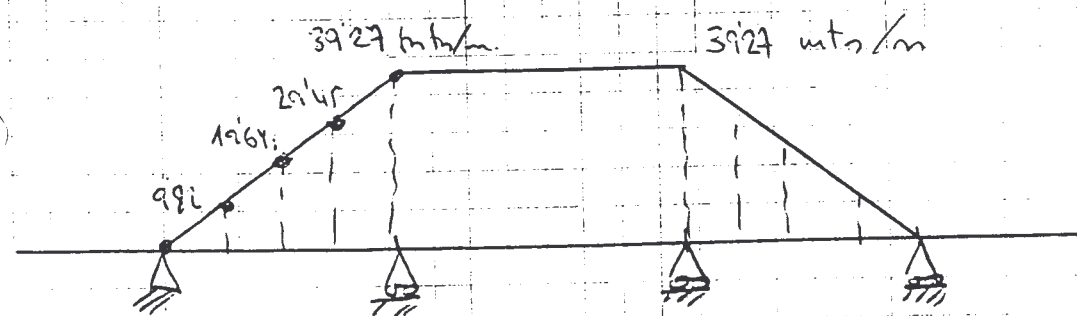


$$M_{real}^{\text{II}} = M_{\text{Nudo 200i}} - V_{\text{Nudo 200i}} \times (1'445 - 0'756)$$

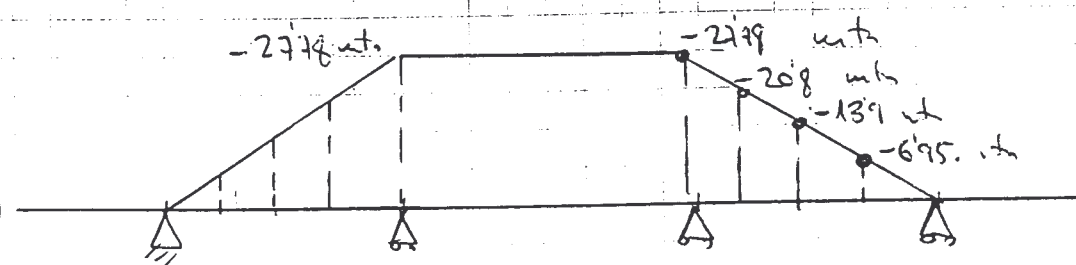
$$M_{real}^{\text{I}} = M_{\text{Nudo 200i}} - V_{\text{Nudo 200i}} \times (4'855 - 0'756)$$

- Reducir esfuerzos globales (LOSA TRANSVERSAL)
(PARA TRUEN ICF-75 con coeficiente de impacto)

- Momento máximo: Md+



- Momento mínimo: Md-



Como la estructura de truen este con las ripas hacia dentro el global mínimo obtenido queda reducido, por ello se considera el global en la estructura de truen que sea:

$$-\left(\frac{196.1 + 392.7}{2}\right) = -27.78 \text{ mt}$$

- Corte máximo y mínimo: Vd = 13.92 tn

PESO PROPIO CAJONES

X	Vy (T)	GLOBALES	
		Mz 2(Tm)	Mz1 (Tm)
0.00	0.46	0.79	-0.79
0.00	0.46	0.79	-0.79
2.74	0.44	0.75	-0.75
2.74	0.44	0.75	-0.74
5.48	-0.02	-0.04	0.04
5.48	-0.02	-0.04	0.04
8.22	-0.44	-0.75	0.75
8.22	-0.44	-0.75	0.75
10.96	-0.80	-1.37	1.37
10.96	-0.80	-1.37	1.37
13.70	-1.10	-1.88	1.88
13.70	-1.10	-1.88	1.88
16.44	-1.31	-2.23	2.23
16.44	-1.31	-2.23	2.23
19.18	-1.40	-2.39	2.39
19.18	-1.40	-2.39	2.39
21.92	-1.33	-2.27	2.27
21.92	-1.33	-2.27	2.27
24.66	-1.04	-1.77	1.77
24.66	-1.04	-1.77	1.77
27.40	-0.47	-0.81	0.81
27.40	-0.47	-0.81	0.81
30.45	0.63	1.08	-1.08
30.45	0.63	1.08	-1.08
33.50	1.73	2.95	-2.95
33.50	1.73	2.95	-2.95
36.89	2.37	4.04	-4.04
36.89	2.37	4.04	-4.04
40.28	2.26	3.85	-3.85
40.28	2.26	3.85	-3.85
43.67	1.71	2.92	-2.92
43.67	1.71	2.92	-2.92
47.06	0.91	1.55	-1.55
47.06	0.91	1.55	-1.55
50.45	-0.01	-0.01	0.01
50.45	-0.01	-0.01	0.01
53.84	-0.92	-1.58	1.58
53.84	-0.92	-1.58	1.58
57.23	-1.72	-2.94	2.94
57.23	-1.72	-2.94	2.94
60.62	-2.27	-3.87	3.87
60.62	-2.27	-3.87	3.87
64.01	-2.38	-4.06	4.06
64.01	-2.38	-4.06	4.06
67.40	-1.74	-2.96	2.96
67.40	-1.74	-2.96	2.96
70.45	-0.63	-1.08	1.08
70.45	-0.63	-1.08	1.08
73.50	0.48	0.82	-0.82
73.50	0.48	0.82	-0.82
76.26	1.06	1.80	-1.80
76.26	1.06	1.80	-1.80
79.02	1.35	2.31	-2.31
79.02	1.35	2.31	-2.31
81.78	1.42	2.43	-2.43
81.78	1.42	2.43	-2.43
84.54	1.33	2.27	-2.27
84.54	1.33	2.27	-2.27
87.30	1.11	1.90	-1.90
87.30	1.11	1.90	-1.90
90.06	0.81	1.38	-1.38
90.06	0.81	1.38	-1.38
92.82	0.44	0.74	-0.74
92.82	0.44	0.74	-0.74
95.58	0.01	0.02	-0.02
95.58	0.01	0.02	-0.02
98.34	-0.46	-0.78	0.78
98.34	-0.46	-0.78	0.78
101.10	-0.48	-0.82	0.82
101.10	-0.48	-0.82	0.82

PESO PROPIO LOSA

X	Vy (T)	GLOBALES	
		Mz 2(Tm)	Mz1 (Tm)
0.00	0.64	-2.44	-4.61
0.00	0.64	-2.44	-4.61
2.74	0.60	-6.03	-8.08
2.74	0.60	-6.03	-8.08
5.48	-0.03	-7.10	-7.00
5.48	-0.03	-7.10	-7.00
8.22	-0.60	-8.08	-6.03
8.22	-0.60	-8.08	-6.03
10.96	-1.10	-8.93	-5.18
10.96	-1.10	-8.93	-5.18
13.70	-1.51	-9.63	-4.48
13.70	-1.51	-9.63	-4.48
16.44	-1.80	-10.12	-3.98
16.44	-1.80	-10.12	-3.98
19.18	-1.92	-10.33	-3.77
19.18	-1.92	-10.33	-3.77
21.92	-1.83	-10.16	-3.94
21.92	-1.83	-10.16	-3.94
24.66	-1.42	-9.48	-4.62
24.66	-1.42	-9.48	-4.62
27.40	-0.65	-8.56	-6.34
27.40	-0.65	-8.56	-6.34
30.45	0.87	-6.69	-9.66
30.45	0.87	-6.69	-9.66
33.50	2.38	-4.23	-12.33
33.50	2.38	-4.23	-12.33
36.89	3.25	-3.18	-14.27
36.89	3.25	-3.18	-14.27
40.28	3.10	-3.44	-14.00
40.28	3.10	-3.44	-14.00
43.67	2.35	-4.72	-12.73
43.67	2.35	-4.72	-12.73
47.06	1.25	-6.59	-10.86
47.06	1.25	-6.59	-10.86
50.45	-0.01	-8.74	-8.71
50.45	-0.01	-8.74	-8.71
53.84	-1.27	-10.89	-6.56
53.84	-1.27	-10.89	-6.56
57.23	-2.37	-12.76	-4.69
57.23	-2.37	-12.76	-4.69
60.62	-3.11	-14.03	-3.41
60.62	-3.11	-14.03	-3.41
64.01	-3.27	-14.29	-3.15
64.01	-3.27	-14.29	-3.15
67.40	-2.38	-12.35	-4.22
67.40	-2.38	-12.35	-4.22
70.45	-0.87	-9.66	-6.69
70.45	-0.87	-9.66	-6.69
73.50	0.66	-6.35	-8.60
73.50	0.66	-6.35	-8.60
76.26	1.45	-4.63	-9.57
76.26	1.45	-4.63	-9.57
79.02	1.86	-3.94	-10.27
79.02	1.86	-3.94	-10.27
81.78	1.96	-3.77	-10.44
81.78	1.96	-3.77	-10.44
84.54	1.82	-3.99	-10.21
84.54	1.82	-3.99	-10.21
87.30	1.53	-4.50	-9.71
87.30	1.53	-4.50	-9.71
90.06	1.11	-5.21	-8.99
90.06	1.11	-5.21	-8.99
92.82	0.60	-6.09	-8.12
92.82	0.60	-6.09	-8.12
95.58	0.01	-7.08	-7.13
95.58	0.01	-7.08	-7.13
98.34	-0.63	-8.18	-6.04
98.34	-0.63	-8.18	-6.04
101.10	-0.66	-4.68	-2.43
101.10	-0.66	-4.68	-2.43

ESFUERZOS GLOBALES DE LOSA TRANSVERSAL

CM max			
X	Vy (T)	GLOBALES	
		Mz 2(Tm)	Mz1 (Tm)
0.00	0.94	3.68	0.46
0.00	0.94	3.68	0.46
2.74	0.66	5.26	3.02
2.74	0.66	5.26	3.02
5.48	-0.52	3.25	5.03
5.48	-0.52	3.25	5.03
8.22	-1.65	1.34	6.95
8.22	-1.65	1.34	6.95
10.96	-2.70	-0.46	8.74
10.96	-2.70	-0.46	8.74
13.70	-3.64	-2.06	10.35
13.70	-3.64	-2.06	10.35
16.44	-4.39	-3.34	11.62
16.44	-4.39	-3.34	11.62
19.18	-4.83	-4.09	12.38
19.18	-4.83	-4.09	12.38
21.92	-4.79	-4.03	12.31
21.92	-4.79	-4.03	12.31
24.66	-4.05	-2.76	11.04
24.66	-4.05	-2.76	11.04
27.40	-2.44	0.22	8.53
27.40	-2.44	0.22	8.53
30.45	0.99	6.49	3.11
30.45	0.99	6.49	3.11
33.50	4.60	12.71	-2.98
33.50	4.60	12.71	-2.98
36.89	6.89	16.87	-6.62
36.89	6.89	16.87	-6.62
40.28	6.87	16.84	-6.59
40.28	6.87	16.83	-6.59
43.67	5.42	14.37	-4.12
43.67	5.42	14.37	-4.12
47.06	3.04	10.31	-0.06
47.06	3.04	10.31	-0.06
50.45	0.14	5.36	4.88
50.45	0.14	5.36	4.88
53.84	-2.91	0.16	10.09
53.84	-2.91	0.16	10.09
57.23	-5.72	-4.64	14.88
57.23	-5.72	-4.64	14.88
60.62	-7.81	-8.19	18.43
60.62	-7.81	-8.19	18.43
64.01	-8.52	-9.40	19.64
64.01	-8.52	-9.40	19.64
67.40	-6.64	-6.46	16.19
67.40	-6.64	-6.46	16.19
70.45	-3.13	-0.53	10.14
70.45	-3.13	-0.53	10.14
73.50	0.66	5.51	3.27
73.50	0.66	5.51	3.27
76.26	2.74	8.83	-0.49
76.26	2.74	8.83	-0.49
79.02	3.91	10.84	-2.50
79.02	3.91	10.84	-2.50
81.78	4.34	11.57	-3.23
81.78	4.34	11.57	-3.23
84.54	4.18	11.30	-2.96
84.54	4.18	11.30	-2.96
87.30	3.55	10.22	-1.88
87.30	3.55	10.22	-1.88
90.06	2.53	8.49	-0.14
90.06	2.53	8.49	-0.14
92.82	1.19	6.20	2.14
92.82	1.19	6.20	2.14
95.58	-0.42	3.46	4.88
95.58	-0.42	3.46	4.88
98.34	-2.25	0.33	8.01
98.34	-2.25	0.33	8.01
101.10	-2.13	-1.55	5.72
101.10	-2.13	-1.55	5.72

ESFUERZOS GLOBALES DE LOSA TRANSVERSAL

TREN IZQUIERDA ENVOLVENTE MÁXIMA			
X	Vy (T)	GLOBALES	
		Mz 2(Tm)	Mz1 (Tm)
0.00	1.19	8.45	8.85
0.00	1.19	7.93	10.26
2.74	-0.02	12.03	20.96
2.74	-0.02	12.15	25.14
5.48	-0.53	8.93	29.10
5.48	-0.53	8.17	29.10
8.22	-0.49	8.07	30.39
8.22	-0.49	5.82	32.22
10.96	-0.06	8.56	32.05
10.96	-0.06	6.95	34.37
13.70	0.45	9.46	33.33
13.70	0.45	7.16	35.38
16.44	0.97	10.39	34.03
16.44	0.97	8.16	35.30
19.18	1.46	11.29	33.64
19.18	1.46	9.15	34.70
21.92	1.89	12.07	32.17
21.92	1.89	10.06	33.24
24.66	2.21	12.64	29.76
24.66	2.21	10.80	30.91
27.40	2.47	13.93	28.70
27.40	2.47	12.88	29.43
30.45	2.53	16.35	26.81
30.45	2.53	13.29	28.08
33.50	1.82	17.93	22.25
33.50	1.82	13.02	25.28
36.89	1.35	18.20	22.49
36.89	1.35	17.32	27.58
40.28	1.57	17.23	28.77
40.28	1.57	14.69	30.43
43.67	1.81	16.39	33.24
43.67	1.81	14.29	34.84
47.06	1.77	16.06	35.49
47.06	1.77	14.72	38.83
50.45	1.69	15.84	38.44
50.45	1.69	13.38	41.95
53.84	1.55	15.46	39.94
53.84	1.55	13.41	43.63
57.23	1.40	14.88	40.09
57.23	1.40	13.09	43.85
60.62	1.22	14.72	38.56
60.62	1.22	12.80	42.75
64.01	1.06	14.47	36.34
64.01	1.06	11.80	40.26
67.40	0.75	13.39	30.62
67.40	0.75	11.74	34.60
70.45	0.32	13.26	26.58
70.45	0.32	11.76	30.55
73.50	-0.18	12.92	23.38
73.50	-0.18	12.98	25.72
76.26	0.30	12.81	21.05
76.26	0.30	12.45	24.48
79.02	0.92	12.82	23.14
79.02	0.92	11.31	25.76
81.78	1.24	12.73	25.86
81.78	1.24	10.50	27.14
84.54	1.32	12.46	26.85
84.54	1.32	10.49	28.80
87.30	1.20	12.24	28.06
87.30	1.20	9.20	29.95
90.06	0.95	11.43	28.41
90.06	0.95	8.65	30.40
92.82	0.64	10.71	28.46
92.82	0.64	9.25	30.59
95.58	0.35	10.08	27.74
95.58	0.35	8.57	29.73
98.34	0.16	10.09	26.43
98.34	0.16	9.34	28.24
101.10	0.04	5.69	12.41
101.10	0.04	5.62	13.18

TREN IZQUIERDA ENVOLVENTE MÍNIMA			
X	Vy (T)	GLOBALES	
		Mz 2(Tm)	Mz1 (Tm)
0.00	-1.96	0.73	2.96
0.00	-1.96	1.24	1.08
2.74	-4.19	1.36	6.04
2.74	-4.19	1.09	2.27
5.48	-6.14	0.31	2.58
5.48	-6.14	0.78	2.58
8.22	-8.13	-1.80	5.28
8.22	-8.13	0.53	2.83
10.96	-9.84	-4.38	5.86
10.96	-9.84	-2.73	3.00
13.70	-10.98	-6.37	5.62
13.70	-10.98	-4.09	3.19
16.44	-11.48	-7.30	4.86
16.44	-11.48	-5.12	3.35
19.18	-11.35	-7.16	4.17
19.18	-11.35	-5.06	3.10
21.92	-10.61	-5.99	3.60
21.92	-10.61	-4.02	2.54
24.66	-9.33	-3.88	3.26
24.66	-9.33	-2.04	2.11
27.40	-8.00	-1.30	2.76
27.40	-8.00	-0.25	2.01
30.45	-6.21	1.57	3.65
30.45	-6.21	4.66	2.31
33.50	-4.15	1.78	6.17
33.50	-4.15	5.76	2.62
36.89	-4.44	1.74	8.48
36.89	-4.44	1.66	2.50
40.28	-6.57	0.03	5.49
40.28	-6.57	2.78	3.16
43.67	-9.37	-3.60	5.36
43.67	-9.37	-2.63	3.26
47.06	-11.83	-7.63	7.28
47.06	-11.83	-7.02	3.55
50.45	-13.73	-10.85	7.62
50.45	-13.73	-8.40	3.75
53.84	-14.81	-12.59	8.12
53.84	-14.81	-10.56	4.05
57.23	-14.91	-12.52	8.33
57.23	-14.91	-10.75	4.14
60.62	-14.04	-10.99	8.63
60.62	-14.04	-9.32	3.96
64.01	-12.20	-7.81	8.19
64.01	-12.20	-5.26	3.55
67.40	-9.06	-3.15	7.76
67.40	-9.06	-2.08	3.08
70.45	-6.30	0.68	7.61
70.45	-6.30	1.15	2.75
73.50	-3.87	1.56	4.99
73.50	-3.87	1.23	2.33
76.26	-4.04	1.41	6.43
76.26	-4.04	1.19	2.20
79.02	-5.27	0.92	5.32
79.02	-5.27	1.11	2.28
81.78	-6.53	-0.54	4.41
81.78	-6.53	1.66	2.69
84.54	-7.55	-1.87	5.05
84.54	-7.55	-0.12	2.73
87.30	-8.17	-2.88	5.10
87.30	-8.17	0.22	2.85
90.06	-8.29	-2.71	5.41
90.06	-8.29	0.14	3.01
92.82	-7.93	-1.93	5.29
92.82	-7.93	-0.47	2.66
95.58	-7.14	-0.48	5.11
95.58	-7.14	0.79	2.60
98.34	-6.06	0.81	4.84
98.34	-6.06	0.90	2.48
101.10	-2.41	0.52	2.25
101.10	-2.41	0.52	1.17

ESFUERZOS GLOBALES DE LOSA TRANSVERSAL

TREN DERECHA ENVOLVENTE MÁXIMA

X	Vy (T)	GLOBALES	
		Mz 2(Tm)	Mz1 (Tm)
0.00	1.70	10.29	5.32
0.00	1.70	9.59	5.28
2.74	4.91	22.89	8.34
2.74	4.91	21.33	9.02
5.48	6.23	24.43	7.66
5.48	6.23	23.06	8.85
8.22	7.17	25.58	8.53
8.22	7.17	24.16	9.64
10.96	7.65	25.98	8.10
10.96	7.65	24.89	10.38
13.70	7.57	25.59	8.69
13.70	7.57	24.64	10.99
16.44	6.96	24.44	9.95
16.44	6.96	23.46	11.51
19.18	5.88	22.70	9.98
19.18	5.88	21.46	11.66
21.92	4.51	20.62	9.25
21.92	4.51	19.28	11.74
24.66	3.15	19.30	11.40
24.66	3.15	16.79	11.72
27.40	2.79	20.18	12.11
27.40	2.79	15.82	12.20
30.45	5.17	24.64	10.88
30.45	5.17	21.04	12.41
33.50	8.14	28.55	11.59
33.50	8.14	26.11	12.66
36.89	11.50	34.24	12.21
36.89	11.50	31.75	13.66
40.28	13.57	37.28	12.20
40.28	13.57	35.38	13.78
43.67	14.61	39.07	12.28
43.67	14.61	37.19	13.81
47.06	14.59	39.37	12.55
47.06	14.59	37.18	14.12
50.45	13.51	37.81	12.91
50.45	13.51	35.28	14.50
53.84	11.50	34.69	13.60
53.84	11.50	32.43	14.84
57.23	8.82	30.23	13.30
57.23	8.82	29.47	15.36
60.62	5.78	25.24	14.00
60.62	5.78	23.96	16.20
64.01	3.53	21.05	13.88
64.01	3.53	17.50	17.51
67.40	3.11	19.63	13.28
67.40	3.11	17.04	17.03
70.45	5.10	22.81	12.93
70.45	5.10	22.29	15.71
73.50	7.20	25.02	12.46
73.50	7.20	24.37	13.44
76.26	8.78	27.19	10.76
76.26	8.78	26.67	12.13
79.02	10.23	29.79	9.91
79.02	10.23	29.32	11.48
81.78	11.08	31.50	8.88
81.78	11.08	30.95	10.62
84.54	11.26	32.02	7.78
84.54	11.26	31.40	9.43
87.30	10.73	31.62	6.68
87.30	10.73	30.64	8.57
90.06	9.46	30.55	6.26
90.06	9.46	28.58	7.60
92.82	7.51	28.10	5.11
92.82	7.51	26.18	6.83
95.58	5.16	24.52	6.93
95.58	5.16	24.52	7.74
98.34	3.30	19.95	11.51
98.34	3.30	16.48	11.35
101.10	1.65	8.13	8.25
101.10	1.65	7.07	8.58

TREN DERECHA ENVOLVENTE MÍNIMA

X	Vy (T)	GLOBALES	
		Mz 2(Tm)	Mz1 (Tm)
0.00	-0.17	0.92	0.49
0.00	-0.17	1.83	0.53
2.74	-0.44	2.01	0.81
2.74	-0.44	3.95	0.78
5.48	-0.66	2.41	0.46
5.48	-0.66	4.10	-0.74
8.22	-0.97	2.44	-1.50
8.22	-0.97	4.13	-2.57
10.96	-1.31	2.53	-1.19
10.96	-1.31	3.62	-3.53
13.70	-1.60	2.29	-1.17
13.70	-1.60	3.23	-3.53
16.44	-1.77	2.09	-1.21
16.44	-1.77	3.06	-2.73
19.18	-1.74	2.03	0.57
19.18	-1.74	3.26	-1.10
21.92	-1.43	1.96	3.09
21.92	-1.43	3.61	0.60
24.66	-0.81	1.72	1.09
24.66	-0.81	4.74	1.40
27.40	-0.25	1.83	1.15
27.40	-0.25	5.37	1.29
30.45	-0.86	2.21	1.06
30.45	-0.86	6.42	0.46
33.50	-1.38	2.84	-3.15
33.50	-1.38	5.80	-3.73
36.89	-1.73	3.40	-7.48
36.89	-1.73	6.30	-8.82
40.28	-1.83	3.70	-10.90
40.28	-1.83	5.96	-12.34
43.67	-1.94	3.72	-12.62
43.67	-1.94	5.65	-14.15
47.06	-2.08	3.24	-12.58
47.06	-2.08	5.47	-14.14
50.45	-2.23	2.80	-10.79
50.45	-2.23	5.32	-12.37
53.84	-2.35	2.34	-8.59
53.84	-2.35	4.62	-9.02
57.23	-2.42	2.10	-3.89
57.23	-2.42	2.94	-4.76
60.62	-2.28	2.21	1.82
60.62	-2.28	3.62	-0.58
64.01	-2.25	2.14	4.23
64.01	-2.25	6.20	1.37
67.40	-2.66	1.61	6.42
67.40	-2.66	4.22	1.93
70.45	-3.24	0.57	4.19
70.45	-3.24	1.13	1.39
73.50	-3.17	0.37	-0.82
73.50	-3.17	1.03	-1.78
76.26	-2.84	0.57	-3.28
76.26	-2.84	1.09	-4.63
79.02	-2.44	1.13	-5.56
79.02	-2.44	1.59	-7.09
81.78	-1.92	1.78	-6.83
81.78	-1.92	2.33	-8.53
84.54	-1.35	2.58	-7.00
84.54	-1.35	3.18	-8.60
87.30	-0.76	3.10	-5.95
87.30	-0.76	4.07	-7.82
90.06	-0.18	2.65	-4.26
90.06	-0.18	4.98	-5.64
92.82	0.32	2.46	-0.67
92.82	0.32	4.88	-2.47
95.58	0.44	2.17	0.66
95.58	0.44	2.17	0.09
98.34	-0.50	1.81	1.02
98.34	-0.50	6.04	1.28
101.10	-1.82	0.43	0.88
101.10	-1.82	1.49	0.55

ESFUERZOS GLOBALES DE LOSA TRANSVERSAL

ENVOLVENTE MÁXIMA

X	Vy (T)	GLOBALES		NUDO		Vy (T)	GLOBALES	
		Mz 2(Tm)	Mz1 (Tm)				Mz 2(Tm)	Mz1 (Tm)
0.00	7.96	37.56	21.27	201	1.37	5.81	27.42	15.53
0.00	7.96	35.37	23.72	201	1.37	5.81	25.82	17.32
2.74	11.13	65.52	48.90	202	2.74	4.06	23.91	17.85
2.74	11.13	62.94	57.63	202	2.74	4.06	22.97	21.03
5.48	10.84	58.00	66.70	203	2.74	3.96	21.17	24.34
5.48	10.84	54.19	68.85	203	2.74	3.96	19.78	25.13
8.22	10.97	54.45	75.03	204	2.74	4.00	19.87	27.38
8.22	10.97	47.85	80.32	204	2.74	4.00	17.46	29.31
10.96	10.40	52.63	81.25	205	2.74	3.80	19.21	29.65
10.96	10.40	47.76	89.54	205	2.74	3.80	17.43	32.68
13.70	9.86	51.46	88.10	206	2.74	3.60	18.78	32.15
13.70	9.86	45.62	95.94	206	2.74	3.60	16.65	35.01
16.44	8.78	49.53	94.30	207	2.74	3.21	18.08	34.42
16.44	8.78	43.76	99.37	207	2.74	3.21	15.97	36.27
19.18	7.27	47.21	95.05	208	2.74	2.65	17.23	34.69
19.18	7.27	41.15	100.00	208	2.74	2.65	15.02	36.50
21.92	5.76	45.19	90.69	209	2.74	2.10	16.49	33.10
21.92	5.76	39.15	97.10	209	2.74	2.10	14.29	35.44
24.66	4.96	45.68	87.23	210	2.74	1.81	16.67	31.83
24.66	4.96	37.86	89.88	210	2.74	1.81	13.82	32.80
27.40	6.98	53.28	80.36	211	2.90	2.41	18.40	27.76
27.40	6.98	43.52	81.82	211	2.90	2.41	15.03	28.26
30.45	17.23	77.99	62.38	212	3.05	5.65	25.57	20.45
30.45	17.23	65.98	67.42	212	3.05	5.65	21.63	22.11
33.50	29.67	100.99	45.33	213	3.22	9.22	31.36	14.08
33.50	29.67	87.77	52.71	213	3.22	9.22	27.26	16.37
36.89	40.03	119.76	41.93	214	3.39	11.81	35.33	12.37
36.89	40.03	113.68	53.71	214	3.39	11.81	33.53	15.84
40.28	43.75	122.96	53.64	215	3.39	12.91	36.27	15.82
40.28	43.75	114.95	59.48	215	3.39	12.91	33.91	17.55
43.67	42.35	118.91	65.33	216	3.39	12.49	35.08	19.27
43.67	42.35	111.77	70.95	216	3.39	12.49	32.97	20.93
47.06	36.47	109.87	75.28	217	3.39	10.76	32.41	22.21
47.06	36.47	103.50	84.10	217	3.39	10.76	30.53	24.81
50.45	27.54	95.93	91.20	218	3.39	8.12	28.30	26.90
50.45	27.54	86.96	100.38	218	3.39	8.12	25.65	29.61
53.84	19.74	79.26	106.21	219	3.39	5.82	23.38	31.33
53.84	19.74	71.51	115.10	219	3.39	5.82	21.10	33.95
57.23	11.20	64.24	115.95	220	3.39	3.30	18.95	34.20
57.23	11.20	59.63	126.43	220	3.39	3.30	17.59	37.29
60.62	2.99	50.80	121.64	221	3.39	0.88	14.98	35.88
60.62	2.99	45.06	133.14	221	3.39	0.88	13.29	39.27
64.01	-2.03	41.67	119.55	222	3.39	-0.60	12.29	35.27
64.01	-2.03	30.48	133.14	222	3.39	-0.60	8.99	39.27
67.40	-0.82	41.70	101.07	223	3.22	-0.26	12.95	31.39
67.40	-0.82	34.07	114.99	223	3.22	-0.26	10.58	35.71
70.45	6.48	54.94	80.24	224	3.05	2.12	18.01	26.31
70.45	6.48	51.29	92.39	224	3.05	2.12	16.82	30.29
73.50	15.39	71.12	60.46	225	2.91	5.30	24.48	20.81
73.50	15.39	70.05	66.42	225	2.91	5.30	24.11	22.87
76.26	23.43	82.20	46.72	226	2.76	8.49	29.78	16.93
76.26	23.43	80.61	55.35	226	2.76	8.49	29.21	20.06
79.02	29.68	90.90	46.64	227	2.76	10.75	32.93	16.90
79.02	29.68	87.34	54.19	227	2.76	10.75	31.65	19.64
81.78	32.60	95.12	48.98	228	2.76	11.81	34.47	17.75
81.78	32.60	90.12	54.40	228	2.76	11.81	32.65	19.71
84.54	32.55	94.77	49.30	229	2.76	11.79	34.34	17.86
84.54	32.55	90.14	55.78	229	2.76	11.79	32.66	20.21
87.30	29.83	91.25	50.94	230	2.76	10.81	33.06	18.45
87.30	29.83	84.02	57.74	230	2.76	10.81	30.44	20.92
90.06	24.74	84.18	52.99	231	2.76	8.96	30.50	19.20
90.06	24.74	75.64	58.97	231	2.76	8.96	27.41	21.37
92.82	17.68	73.76	55.32	232	2.76	6.41	26.72	20.04
92.82	17.68	67.68	62.28	232	2.76	6.41	24.52	22.56
95.58	9.70	60.59	62.56	233	2.76	3.51	21.95	22.67
95.58	9.70	57.87	67.59	233	2.76	3.51	20.97	24.49
98.34	3.88	46.48	74.74	234	2.76	1.40	16.84	27.08
98.34	3.88	38.86	77.71	234	2.76	1.40	14.08	28.15
101.10	0.71	18.98	43.83	235	1.38	0.51	13.76	31.76
101.10	0.71	16.95	45.82	235	1.38	0.51	12.28	33.20
					MAX	12.91	36.27	39.27
					MIN	-0.60	8.99	12.37

ESFUERZOS GLOBALES DE LOSA TRANSVERSAL

IDEAM

ENVOLVENTE MÍNIMA				POR ML			
X	Vy (T)	GLOBALES Mz 2(Tm)	Mz1 (Tm)		Vy (T)	GLOBALES Mz 2(Tm)	Mz1 (Tm)
0.00	-2.27	-0.33	-7.01	NUDO	201	1.37	-1.65
0.00	-2.27	-0.33	-7.01	201	1.37	-1.65	-0.24
2.74	-7.01	-4.25	-10.06	202	2.74	-2.56	-1.55
2.74	-7.01	-4.25	-10.06	202	2.74	-2.56	-1.55
5.48	-13.01	-7.65	-6.34	203	2.74	-4.75	-2.79
5.48	-13.01	-7.65	-7.67	203	2.74	-4.75	-2.79
8.22	-20.00	-14.33	-5.91	204	2.74	-7.30	-5.23
8.22	-20.00	-11.09	-7.84	204	2.74	-7.30	-4.05
10.96	-26.28	-22.40	-2.55	205	2.74	-9.59	-8.17
10.96	-26.28	-19.43	-6.76	205	2.74	-9.59	-7.09
13.70	-31.07	-29.77	-0.13	206	2.74	-11.34	-10.87
13.70	-31.07	-25.68	-4.39	206	2.74	-11.34	-9.37
16.44	-33.97	-34.34	1.57	207	2.74	-12.40	-12.53
16.44	-33.97	-30.40	-1.16	207	2.74	-12.40	-11.10
19.18	-34.57	-35.59	4.64	208	2.74	-12.62	-12.99
19.18	-34.57	-31.82	2.66	208	2.74	-12.62	-11.61
21.92	-32.41	-33.01	4.26	209	2.74	-11.83	-12.05
21.92	-32.41	-29.46	4.26	209	2.74	-11.83	-10.75
24.66	-27.04	-25.90	2.11	210	2.74	-9.87	-9.45
24.66	-27.04	-22.59	2.11	210	2.74	-9.87	-8.24
27.40	-19.65	-14.86	-2.61	211	2.90	-6.79	-5.13
27.40	-19.65	-12.96	-2.61	211	2.90	-6.79	-4.48
30.45	-10.76	-4.09	-12.60	212	3.05	-3.53	-1.34
30.45	-10.76	-4.09	-12.60	212	3.05	-3.53	-1.34
33.50	-3.44	4.72	-30.33	213	3.22	-1.07	1.46
33.50	-3.44	4.72	-31.36	213	3.22	-1.07	1.46
36.89	-1.83	9.67	-47.12	214	3.39	-0.54	2.85
36.89	-1.83	9.67	-49.53	214	3.39	-0.54	2.85
40.28	-6.10	9.12	-52.62	215	3.39	-1.80	2.69
40.28	-6.10	9.12	-55.22	215	3.39	-1.80	2.69
43.67	-13.40	-1.43	-49.40	216	3.39	-3.95	-0.42
43.67	-13.40	0.32	-52.15	216	3.39	-3.95	0.10
47.06	-21.23	-14.92	-39.49	217	3.39	-6.26	-4.40
47.06	-21.23	-13.83	-42.30	217	3.39	-6.26	-4.08
50.45	-28.66	-28.06	-28.18	218	3.39	-8.46	-8.28
50.45	-28.66	-23.64	-31.02	218	3.39	-8.46	-6.97
53.84	-37.77	-39.39	-16.72	219	3.39	-11.14	-11.62
53.84	-37.77	-35.73	-17.51	219	3.39	-11.14	-10.54
57.23	-44.45	-50.00	-1.57	220	3.39	-13.11	-14.75
57.23	-44.45	-46.80	-3.14	220	3.39	-13.11	-13.81
60.62	-47.19	-55.00	10.15	221	3.39	-13.92	-16.22
60.62	-47.19	-52.00	9.10	221	3.39	-13.92	-15.34
64.01	-45.13	-51.51	11.42	222	3.39	-13.31	-15.20
64.01	-45.13	-46.94	11.42	222	3.39	-13.31	-13.85
67.40	-35.63	-35.06	6.88	223	3.22	-11.06	-10.89
67.40	-35.63	-33.14	6.88	223	3.22	-11.06	-10.29
70.45	-23.43	-15.22	-1.86	224	3.05	-7.68	-4.99
70.45	-23.43	-15.22	-1.86	224	3.05	-7.68	-4.99
73.50	-11.25	-4.46	-12.19	225	2.91	-3.87	-1.54
73.50	-11.25	-4.46	-13.93	225	2.91	-3.87	-1.54
76.26	-8.45	0.78	-21.92	226	2.76	-3.06	0.28
76.26	-8.45	0.78	-24.35	226	2.76	-3.06	0.28
79.02	-8.60	3.40	-30.35	227	2.76	-3.12	1.23
79.02	-8.60	3.40	-33.12	227	2.76	-3.12	1.23
81.78	-9.51	3.21	-34.03	228	2.76	-3.45	1.16
81.78	-9.51	4.18	-37.08	228	2.76	-3.45	1.51
84.54	-10.63	0.20	-33.44	229	2.76	-3.85	0.07
84.54	-10.63	3.35	-36.33	229	2.76	-3.85	1.21
87.30	-11.52	-3.30	-28.90	230	2.76	-4.18	-1.20
87.30	-11.52	1.89	-32.27	230	2.76	-4.18	0.68
90.06	-11.98	-5.48	-21.86	231	2.76	-4.34	-1.99
90.06	-11.98	-0.61	-24.35	231	2.76	-4.34	-0.22
92.82	-12.62	-7.23	-11.86	232	2.76	-4.57	-2.62
92.82	-12.62	-4.59	-15.11	232	2.76	-4.57	-1.66
95.58	-13.40	-8.29	-6.66	233	2.76	-4.85	-3.00
95.58	-13.40	-7.42	-6.66	233	2.76	-4.85	-2.69
98.34	-16.31	-11.89	-2.54	234	2.76	-5.91	-4.31
98.34	-16.31	-11.89	-2.54	234	2.76	-5.91	-4.31
101.10	-12.02	-9.50	0.96	235	1.38	-8.71	-6.89
101.10	-12.02	-9.50	0.96	235	1.38	-8.71	-6.89
				MAX		-0.54	2.85
				MIN		-13.92	-16.22

2.2.2.3. Comprobación en estado límite de servicio

a) Control de flecha:

Se controla la acción de autogravimétrica

$$s_m = 2c + 0.2 \cdot s + 0.4 \cdot K_{\text{acc}} \cdot \frac{\sigma}{A_s}$$

$$= 2.3'6 + 0.2 \cdot 10 + 0.4 \cdot 0.125 \cdot 25 \cdot \frac{100 \cdot 20/4}{49'0}$$

$$= 8 + 2 + 1.91 = 10.91 \text{ mm}$$

$$M_k \text{ flecha} = \frac{2'94 - 4'69 + 14'88 + (43'85 + 15'36) \cdot 0.06}{3.39} +$$

$$+ \frac{4'42}{1.5} = 17.59 \text{ mts/m}$$

$$M_k = 17.59 \text{ mts} = 0 \quad f = 15.44'5 \text{ mts}$$

$$f_{\text{adm}} = 0.30 \sqrt{30^2} \times 10 = 29 \text{ kg/cm}^2$$

$$M_{\text{fis}} = 290 \text{ tn/m} = M_{\text{fis}} \times \frac{0.15}{12 \cdot 0.30^3}$$

$$M_{\text{fis}} = 4'35 \text{ mts} = 0 \quad f = 4'35 \text{ mts}$$

$$= 430'25 \text{ kg/cm}^2$$

$$f_{\text{adm}} = \frac{15.44'5}{27 \cdot 10^6} \cdot \left(1 - \left(\frac{430}{15.44'5}\right)^2\right) = 6'48 \cdot 10^{-7}$$

- W/K = 1.7 m. f_{\text{adm}} = 0.115 m. a flecha

en desplazamiento (EHE) M_k = 10'35 mts

W/K = 0.057 mm en desplazamiento < 0.30 mm
Válida para acción autogravimétrica

Proyecto:
Viaducto V-1. Santa Oliiva

Seccion:LOSA

MATERIALES

Num.	Fck (Kg/cm2)	Gamma	M.El. (Kg/cm2)	J _{II} ¹	J _{II} ²
1(HO)	300.0	1.50	285770	2.60	1.45
2(HO)	550.0	1.50	338219	2.60	1.45
3(RD)	5100.0	1.15	2100000		

SECCIONES PARCIALES

Num	Mat.	B(cm)	H(cm)	Yo(cm)	Mc	Nsr
		Num	II (mm)			
1	1	100.0	30.0	0.0	C*	0
2	3	10.0	25.0	25.5	*T	0

* CONSTANTES ESTATICAS *

S.COMPLETA

Tipo	Acciones	Area(cm2)	Xcg(cm)	Inercia(cm4)
F.pura +	(0)	195.3	10.75	18227.0
	(1)	111.1	16.40	10841.8
	(2)	130.4	14.63	13033.8
F.pura -	(0)	73.6	27.54	123.1
	(1)	38.2	26.87	55.5
	(2)	46.6	27.06	71.9
C.Simple	(0)	408.2	15.00	30618.2
	(1)	113.4	15.00	8505.1
	(2)	166.6	15.00	12497.2
T.Simple	(0)	49.1	26.75	25.6
	(1)	49.1	26.75	25.6
	(2)	49.1	26.75	25.6

*** Nota: Homogeneizadas a E=2100000 Kp/cm2 ***

** CALCULO ELASTICO **

Tftulo Secci|a: LOSA

Analisis CON FISURACION

Secuencia Incrementos de Carga:

Incremento de Carga 1 :
Flector : 17.59m.T Mk
Tipo de Solicitud: SO
Seccion Afectada: TOTAL

TENSIONES (Kg/cm2):

ESTADO INICIAL (To)						ESTADO FINAL (Tinf)					
Nsp	Yn(cm)	Tsup.	Tinf.	Tao	Tcomp	Nsp	Yn(cm)	Tsup.	Tinf.	Tao	Tcomp
1	10.7	-141.1	0.0	0.0	0.0	1	\$\$\$\$\$	0.0	0.0	0.0	0.0
2	10.7	1423.9	1665.2	0.0	1665.2	2	\$\$\$\$\$	0.0	0.0	0.0	0.0

Incrementos de Carga:

1

** CALCULO ELASTICO **

Tftulo Secci|a: LOSA

Analisis CON FISURACION

Secuencia Incrementos de Carga:

Incremento de Carga 1 :
Flector : 4.90m.T Mfis
Tipo de Solicitud: SO
Seccion Afectada: TOTAL

TENSIONES (Kg/cm2):

ESTADO INICIAL (To)						ESTADO FINAL (Tinf)					
Nsp	Yn(cm)	Tsup.	Tinf.	Tao	Tcomp	Nsp	Yn(cm)	Tsup.	Tinf.	Tao	Tcomp
1	10.7	-39.3	0.0	0.0	0.0	1	10.7	0.0	0.0	0.0	0.0
2	10.7	396.6	463.9	0.0	463.9	2	10.7	0.0	0.0	0.0	0.0

Incrementos de Carga:

1

** CALCULO ELASTICO **

Título Sección: LOSA

Análisis CON FISURACION

Secuencia Incrementos de Carga:

Incremento de Carga 1 :
 Flector : 10.35m.T Mkcuasip
 Tipo de Solicitud: SO
 Sección Afectada: TOTAL

TENSIONES (Kg/cm2):

ESTADO INICIAL (To)						ESTADO FINAL (Tinf)					
Nsp	Yn(cm)	Tsup.	Tinf.	Tao	Tcomp	Nsp	Yn(cm)	Tsup.	Tinf.	Tao	Tcomp
1	10.7	-83.0	0.0	0.0	0.0	1	\$\$\$\$\$	0.0	0.0	0.0	0.0
2	10.7	837.8	979.8	0.0	979.8	2	\$\$\$\$\$	0.0	0.0	0.0	0.0

Incrementos de Carga:

1

2.2.4.4 Comprobación en estado límite último de agotamiento

Los coeficientes utilizamos tanto a flexión como

constantemente son 2

	γ_{min}	γ_{max}
Peso propio	0.9	1.35
Carga muerta	0.9	1.35
Sobrecarga de truen	0.0	$1.50 \times C_D$
Sobrecarga de viento	0.0	1.50
Precipitación de truen	0.0	1.00

$C_D = \text{coeficiente de impacto} = 1.20$

a) Flexión:

Se suman los esfuerzos obtenidos del cálculo de locales (con el tren A de I.P.F.) con los esfuerzos globales del tren B de I.P.F. Del lado de la seguridad se adoptan los máximos y mínimos por cada caso y no se consideran las concentraciones.

A continuación se encuentra una hoja con la sección del CSEC a Mdtz en la que se demuestra que es válida con éxito, también se incluye hoja de cálculo con la dicha sección.

- Mínimo,

$$- \text{Mecánica} = 0.04 \cdot A_c \cdot \frac{I_{cd}}{I_{sd}} =$$

$$= 0.04 \cdot 100 \cdot 30 \cdot \frac{3000/15}{5100/15} = 5.41 \text{ cm}^2/\text{m}$$

- Geométrica: 1.8% en la de conos, en un caso.

$$\frac{1.8}{1000} \cdot 1000 \cdot 30 \cdot \frac{1}{2} = 2.7 \text{ cm}^2/\text{m}$$

CÁLCULO A FLEXIÓN GLOBALES + LOCALES

BARRA (NUDO)	1(1)	2(1)	2(3)	3(1)	3(2)	3(3)	4(2)	4(3)	5(1)	5(2)	5(3)	6(2)	6(3)	7(1)	7(2)	7(3)	8(2)	8(3)	9(1)	10(1)	10(3)
	E.L.U. TREN A I.P.F.-75. LOCALES. POR ml.																				
	MÁXIMO																				
MÁXIMO FLECTOR (mtm)	0	-1.62	-4.55	-4.55	4.95	8.37	4.5	0.378	0.378	3.705	4.47	1.605	0.091	0.091	4.68	9.99	6.75	-4.55	-4.55	-1.62	0
	MÍNIMO																				
MÍNIMO FLECTOR (mtm)	0	-2.58	-7.64	-7.64	-3.75	-1.42	-0.62	-9.62	-9.62	-2.18	-2.06	-2.88	-11	-11	-1	-1.38	-3.53	-7.56	-7.56	-2.43	0
	E.L.U. TREN B I.P.F. GLOBALES. POR ml.																				
	MÁXIMO																				
MÁXIMO FLECTOR (mtm)	0	0	0	0	9.82	19.64	29.45	39.27	39.27	39.27	39.27	39.27	39.27	39.27	29.45	19.64	9.82	0	0	0	0
	MÍNIMO																				
MÍNIMO FLECTOR (mtm)	0	0	0	0	-6.95	-13.9	-20.8	-27.8	-27.8	-27.8	-27.8	-27.8	-27.8	-27.8	-20.8	-13.9	-6.95	0	0	0	0
	E.L.U. GLOBALES+LOCALES POR ml.																				
	MÁXIMO																				
MÁXIMO FLECTOR (mtm)	0	-1.62	-4.55	-4.55	14.77	28.01	33.95	39.65	39.65	42.98	43.74	40.88	39.36	39.36	34.13	29.63	16.57	-4.55	-4.55	-1.62	0
	MÍNIMO																				
MÍNIMO FLECTOR (mtm)	0.0	-2.6	-18.0	-7.6	-10.7	-15.3	-21.5	-37.4	-37.4	-30.0	-29.8	-30.7	-38.7	-38.7	-21.8	-15.3	-10.5	-7.6	-7.6	-2.4	0.0

d (m)	0.255	0.255	0.255	0.215	0.215	0.215	0.215	0.255	0.255	0.255	0.255	0.255	0.255	0.255	0.215	0.215	0.215	0.255	0.255	0.255	0.255
Uo (tn)	505.8	505.8	505.8	426.4	426.4	426.4	426.4	505.8	505.8	505.8	505.8	505.8	505.8	505.8	426.4	426.4	426.4	505.8	505.8	505.8	505.8
Us (tn)+	0	-6.31	-17.6	75.34	160.4	209.3	191.9	191.9	191.9	191.9	191.9	191.9	191.9	191.9	172.8	172.8	172.8	191.9	191.9	191.9	191.9
As (cm2/m)+	0	-1.42	-3.96	16.99	36.18	47.19	43.27	43.27	43.27	43.27	43.27	43.27	43.27	43.27	38.97	38.97	38.97	42.86	42.86	42.86	42.86
Us (tn)-	0	10.22	76.35	30.88	53.02	78.4	115.4	178	178	178	135	139.5	186.2	186.2	117.8	78.2	51.88	30.57	30.57	30.57	30.57
As (cm2/m)-	0	2.305	17.22	6.964	11.96	17.68	26.02	40.13	40.13	40.13	30.6	30.45	41.99	41.99	26.57	17.63	11.7	6.893	6.893	6.893	6.893

Proyecto:
Viaducto V-1. Santa Oliva

Seccion: LOSA

MATERIALES

Num.	Fck (Kg/cm2)	Gamma	M.El. (Kg/cm2)	J _{II} 1	J _{II} 2
1(HO)	300.0	1.50	285770	2.60	1.45
2(HO)	550.0	1.50	338219	2.60	1.45
3(RD)	5100.0	1.15	2100000		

SECCIONES PARCIALES

Num	Mat.	B(cm)	H(cm)	Yo(cm)	Mc	Nsr
		Num	II (mm)			
1	1	100.0	30.0	0.0	C*	0
2	3	10.0	25.0	25.5	*T	0

* CONSTANTES ESTATICAS *

S.COMPLETA

Tipo	Acciones	Area (cm2)	Xcg (cm)	Inercia (cm4)
F.pura +	(0)	195.3	10.75	18227.0
	(1)	111.1	16.40	10841.8
	(2)	130.4	14.63	13033.8
F.pura -	(0)	73.6	27.54	123.1
	(1)	38.2	26.87	55.5
	(2)	46.6	27.06	71.9
C.Simple	(0)	408.2	15.00	30618.2
	(1)	113.4	15.00	8505.1
	(2)	166.6	15.00	12497.2
T.Simple	(0)	49.1	26.75	25.6
	(1)	49.1	26.75	25.6
	(2)	49.1	26.75	25.6

*** Nota: Homogeneizadas a E=2100000 Kp/cm2 ***

ANALISIS EN ROTURA (ELASTOPLASTICO)

Titulo Seccion: LOSA

ESTUDIO SECCION COMPLETA

Analisis con Resistencia de materiales MINORADAS

Def. Ultima Acero Estructural (COMPRESION) (%): 2.50

Def. Ultima Acero Estructural (TRACCION) (%): 2.50

Deformacion Ultima Hormigon (COMPRESION) : Pivote en Bloque de Hormigon

Deformacion Ultima Hormigon (TRACCION) (%): 1.00

Coefficiente Ideal Fluencia [μ^* (Cperm./Ctot.)]: 0.00

FLEXION PURA POSITIVA:

Mu(m.T): 43.9 Xu(cm.): 15.8

Nu(Tn.): .7 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00350 Etmx= .00316

Rompe la fibra superior de la S.parcial 1

FLEXION PURA NEGATIVA:

Mu(m.T): -.4 Xu(cm.): 27.3

Nu(Tn.): 0.0 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00100 Etmx= .01000

Rompe la fibra superior de la S.parcial 1

COMPRESION SIMPLE (Rigido/Plastico):

Nu(Tn.): -510.0 aplicado en Yo(cm)= 15.0

TRACCION SIMPLE (Rigido/Plastico):

Nu(Tn.): 217.7 aplicado en Yo(cm)= 26.8

CORTANTE ULTIMO (Rigido/Plastico):

Vu(Tn.): 0.0 Ru(Kg/cm): 0.0

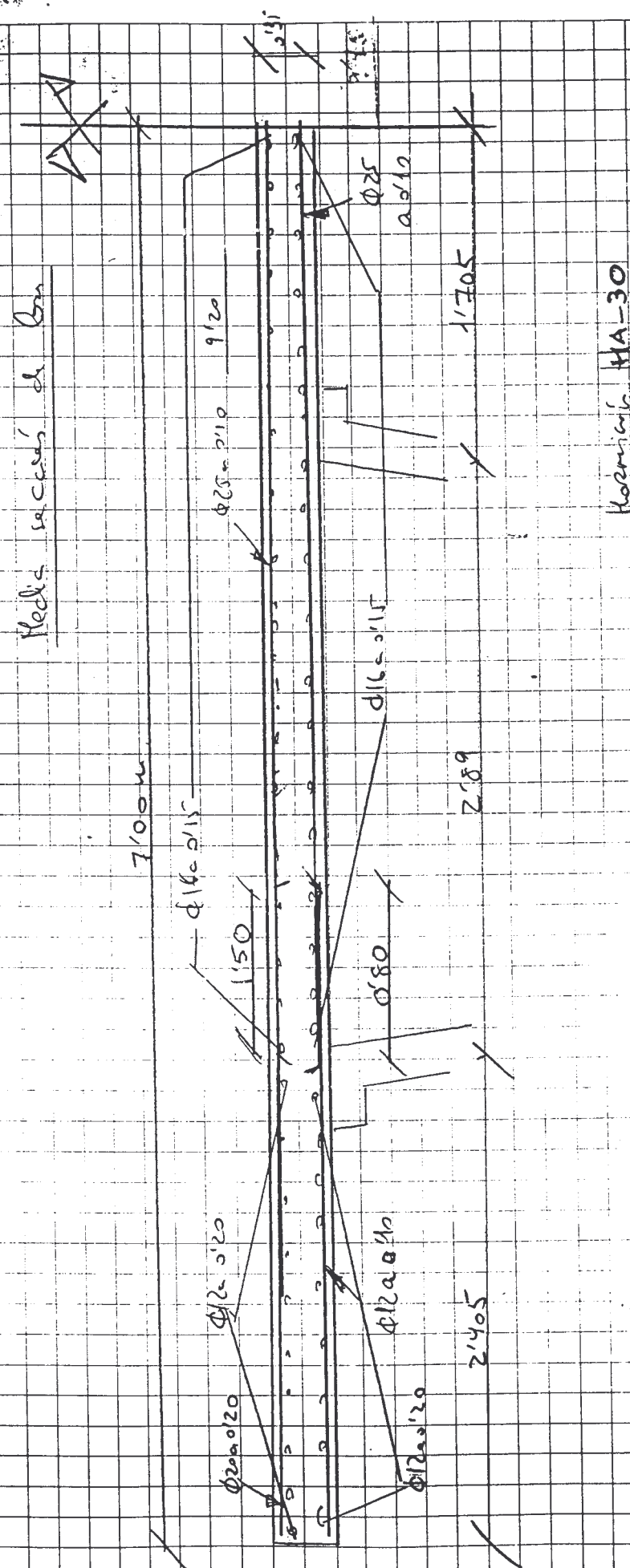
Xv1(cm): 0.0 Xv2(cm): 0.0

S.parciales resistentes: Rcu(Kg/cm):

En la hipotesis de descuentos, negativo en valores:

$$Md = \frac{PP}{100} \left(\frac{R\&L}{100} - 0.1 - 2.8 \right) - \frac{R\&M}{100} - \frac{D\&C}{100} = 18.22 \text{ mts}$$

$$\rightarrow U_0 = 77.52 \quad b_0 = 15.2 \text{ mts en negativos.}$$



b) Constante

$$V_{d, \max} = 13.92 \text{ tn}$$

a) Cuando no se requiere armadura a cortante:

$$V_{u2} = (0.12 \cdot 3 \cdot (100 \cdot f_{ck})^{1/3}) \cdot b_0 \cdot d =$$

$$= 15.20 \text{ tn con } \phi 20 \text{ a } 0.20$$

$$22.5 \text{ tn con } \phi 25 \text{ a } 0.10$$

Con canto de 0.215m:

$$0.215 \Rightarrow 12.01 \text{ tn } \phi 20 \text{ a } 0.20$$

$$0.215 \Rightarrow 18.97 \text{ tn } \phi 25 \text{ a } 0.20$$

$$\beta = 1 + \sqrt{\frac{203}{255}} = 1.88$$

$$j = \frac{99}{100 \cdot 25.5} = 0.020 \text{ con } \phi 25 \text{ a } 0.10$$

$$j = \frac{15.7}{100 \cdot 25.5} = 0.00615 \text{ con } \phi 20 \text{ a } 0.20$$

b) Con armadura a cortante:

$$A_s = \frac{V_d - V_{u2}/i_c}{0.9 \cdot 0.255 \cdot 409}$$

$$A_{s, \min} = A_s = 0.02 \cdot b \cdot d \cdot \frac{b_0}{b \cdot d} = 6 \text{ cm}^2$$

Entonces:

$$\Delta \sigma_{s,21} \leq \frac{\Delta \sigma_{s,21}}{1.15 \cdot 0.92} = \frac{1701.32 \text{ Kg/cm}^2}{1.15 \cdot 0.92} = \frac{1800}{1.15 \cdot 0.92}$$

$$\Delta M = \left(\frac{14.76}{1.15} \right) \cdot \frac{0.9}{1.20} = 15.51 \text{ mtn}$$

$$\Delta \sigma = 1468.3 \text{ Kg/cm}^2 < 1701.32 \text{ Kg/cm}^2 \quad \text{OK}$$

Globales $\rightarrow$ Nudo 13 $\rightarrow$

$$\text{Recha Irf} = -0.000659 \text{ m} + 0.01127 \cdot \frac{9}{8} - 0.0024 = 0.0157 \text{ m}$$

$$\text{Recha LM-71} = -0.0026 - 0.01127 = 0.01387 \text{ m}$$

$$\text{Globales LM-71} = \frac{0.01387}{0.0157} \cdot \text{Globales term 2 Irf}$$

$$= \frac{0.01387}{0.0157} \cdot 16.71 = 14.76 \text{ mtn}$$

$$M_{\text{Irf}} = (4286 + 1879) / 339 = 16.71 \text{ mtn/m}$$

Proyecto:
Viaducto V-1. Santa Oliva

Seccion: LOSA

MATERIALES

Num.	Fck (Kg/cm ²)	Gamma	M.El. (Kg/cm ²)	J _{r1}	J _{r2}
1(HO)	300.0	1.50	285770	2.60	1.45
2(HO)	550.0	1.50	338219	2.60	1.45
3(RD)	5100.0	1.15	2100000		

SECCIONES PARCIALES

Num	Mat.	B(cm)	H(cm)	Yo(cm)	Mc	Nsr
			Num	r(mm)		
1	1	100.0	30.0	0.0	C*	0
2	3	10.0	25.0	25.5	*T	0

* CONSTANTES ESTATICAS *

S.COMPLETA

Tipo	Acciones	Area(cm ²)	Xcg(cm)	Inercia(cm ⁴)
F.pura +	(0)	195.3	10.75	18227.0
	(1)	111.1	16.40	10841.8
	(2)	130.4	14.63	13033.8
F.pura -	(0)	73.6	27.54	123.1
	(1)	38.2	26.87	55.5
	(2)	46.6	27.06	71.9
C.Simple	(0)	408.2	15.00	30618.2
	(1)	113.4	15.00	8505.1
	(2)	166.6	15.00	12497.2
T.Simple	(0)	49.1	26.75	25.6
	(1)	49.1	26.75	25.6
	(2)	49.1	26.75	25.6

*** Nota: Homogeneizadas a E=2100000 Kp/cm² ***

** CALCULO ELASTICO **

Título Sección: LOSA

Análisis CON FISURACION

Secuencia Incrementos de Carga:

Incremento de Carga 1 :

Flector : 15.51m.T
 Tipo de Solicitacion: SO
 Seccion Afectada: TOTAL

TENSIONES (Kg/cm²):

ESTADO INICIAL (To)					ESTADO FINAL (Tinf)						
Nsp	Yn(cm)	Tsup.	Tinf.	Tao	Tcomp	Nsp	Yn(cm)	Tsup.	Tinf.	Tao	Tcomp
1	10.7	-124.4	0.0	0.0	0.0	1	10.7	0.0	0.0	0.0	0.0
2	10.7	1255.5	1468.3	0.0	1468.3	2	10.7	0.0	0.0	0.0	0.0

Incrementos de Carga:

1

2.2.5. Tablero. Cálculos locales

2.2.5.1. Armaduras locales de apoyos y anclajes de pretensado

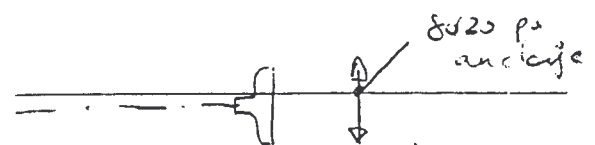
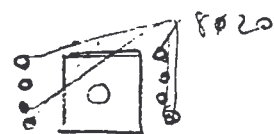
Detalles locales de pretensado

Se dimensiona con $f_k = 1.1 \cdot 19.95 \text{ kg/mm}^2 \cdot 1.2 = 25.93 \text{ kg/mm}^2$
 $= 153.81 \text{ kg/m}^2 \Rightarrow 50.6''$

o Armadura de anclaje $\Rightarrow$ la parte de pretensado sobre un espesor base es de

$$0.33 f_k \cdot 0.22 \cdot 1.2 \cdot 1.2 = 24.15 \text{ m}^2$$

$\Rightarrow 8020 \text{ kg m}^2$



o Armadura superficial $\Rightarrow 0.04 f_k \cdot 2.100 \text{ kg/m}^2 \Rightarrow$

$$0.04 \cdot 154 / 2.100 = 2.93 \text{ m}^2/\text{m} \Rightarrow 4010 \text{ kg m}^2$$

86 para anclaje activa

o Armadura de difusión primaria $\Rightarrow$

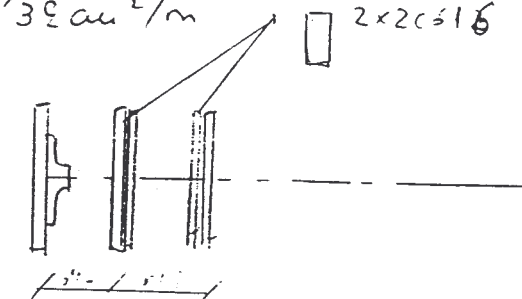
- En Vertical $\Rightarrow$

$$0.33 \cdot \frac{f_k}{2.1} \cdot \left(1 - \frac{d_1}{d_2}\right)$$

$$\text{Anclaje pasivos} = d_1/d_2 = 0.16/0.30 = 0.53$$

$$\text{Anclaje activos} = d_1/d_2 = 0.19/0.36 = 0.52$$

$$A_s = 11.39 \text{ m}^2/\text{m} \quad 2 \times 20 \times 16$$



- En Horizontal $\Rightarrow$

- Anclaje pasivos

$$\frac{d_1}{d_2} = \frac{0.26}{0.30} = 0.867$$

$$A_s = 16.08 \text{ m}^2 \Rightarrow 8016$$

- Anclaje activos
 $A = 2500 \text{ kg/m}^2$

$$\frac{d_1}{d_2} = \frac{0.19}{0.30} = 0.633$$

$$A_s = 18.67 \text{ m}^2 \Rightarrow 2 \times 20 \times 20$$

2.2.5.2. Análisis de mamparos

Este apartado se estructura en:

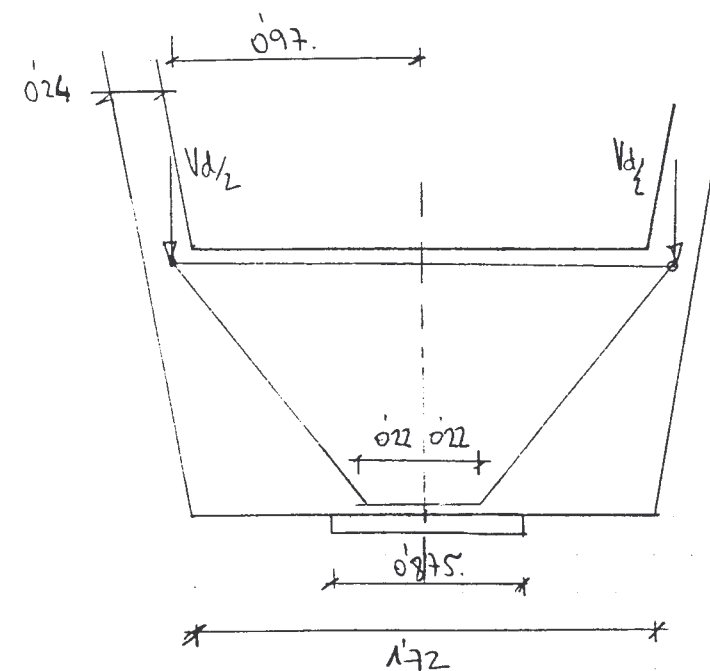
- Aparatos de apoyo.
- Mamparos intermedios
- Mamparos extremos
- Dimensionamiento sección pila. Barras MACALLOY.
- Estudio de mamparos frente a cargas horizontales.

APARATOS DE APOYO

La definición de los aparatos de apoyo así como los abajamientos de los pernos en las vigas no se definen en los planos de proyecto.

No obstante PACADAR, en su adaptación de los planos de proyecto a los planos de taller para la fabricación de las vigas incluye dichos aparatos de apoyo.

Asimismo, en las vigas, para entrar el vulo durante la construcción PACADAR tiene previsto la colocación de unos tacos metálicos de apoyo.

MAMPAROS INTERMEDIOS (de continuidad)

$$V_d = 1225'31 \text{ t.}$$

A) ARMADO COMO MENJILA CORTA.

$$V_{\text{vuelo}} = 0.97 - 0.875/4 = 0.751 \text{ m.}$$

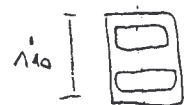
$$\text{Canto útil} = 0.92 - 0.15 = 0.77 \text{ m}$$

$$T_{\text{nd}} = 1225'31 \frac{1}{2} \times 0.751 \frac{1}{0.77} \times \frac{1}{4.09} = 14609 \text{ cm}^2.$$

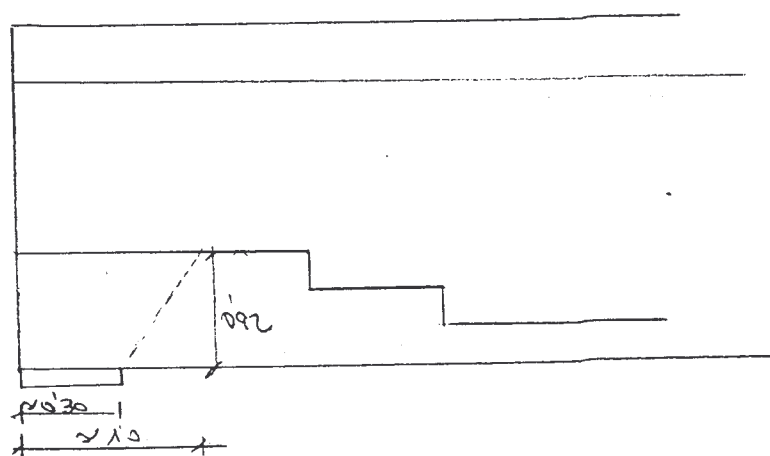
3 capas de 10 ϕ 25 $\checkmark$ / 100%

$$T_{2d} = 0.2 \cdot F_{2d} = 0.2 \times 1225.31 \frac{1}{2} = 122.53 \text{ t} \Rightarrow 2995 \text{ cm}^2$$

$$2 \times 3 \phi 16 + 2 \times 3 \phi 20$$



B) ARMADURA DE UELGUE:



Se comprueba que con la armadura dispuesta a cortante se puede colgar el cortante del recreado (en aproximadamente 1m)

$$A_{s \text{ prima}} = 10 \times 4 = 160.88 \text{ t/alma}$$

"
2cφ16 a 0.20

$$\text{Cortante a colgar} : 1225.31 \frac{1}{2} \times 0.92 \frac{1}{2.55} = 221.04 \text{ t}$$

Aumentamos la cerra en mampara a 2cφ16 a 12.5 (257 b.)

C) ARMADURA de APOYOS

- Superficial:

$$0.04 \times \frac{F_k}{Z_1} = 0.04 \times \frac{1225/1.5}{2.1} = 15.56 \text{ cm}^2$$

- Difusión primaria:

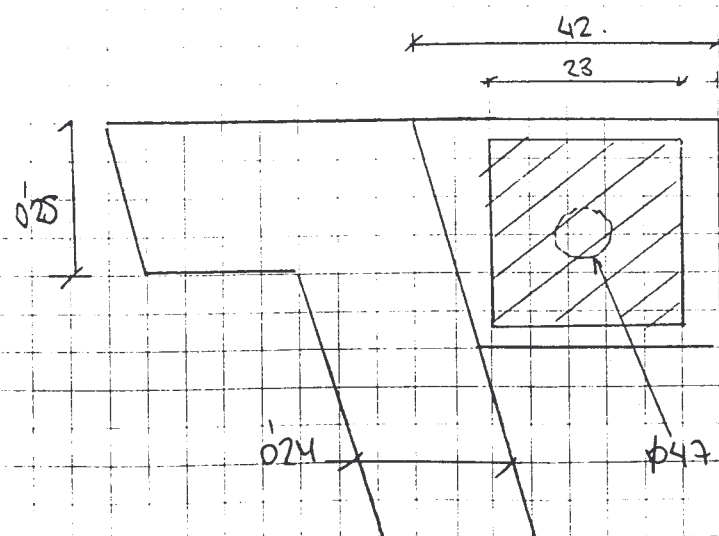
En transversal este contemplado en el cálculo del brante

En longitudinal:

$$0.33 \times F_k (1 - 0.60/2) = 128.7 \text{ t}$$

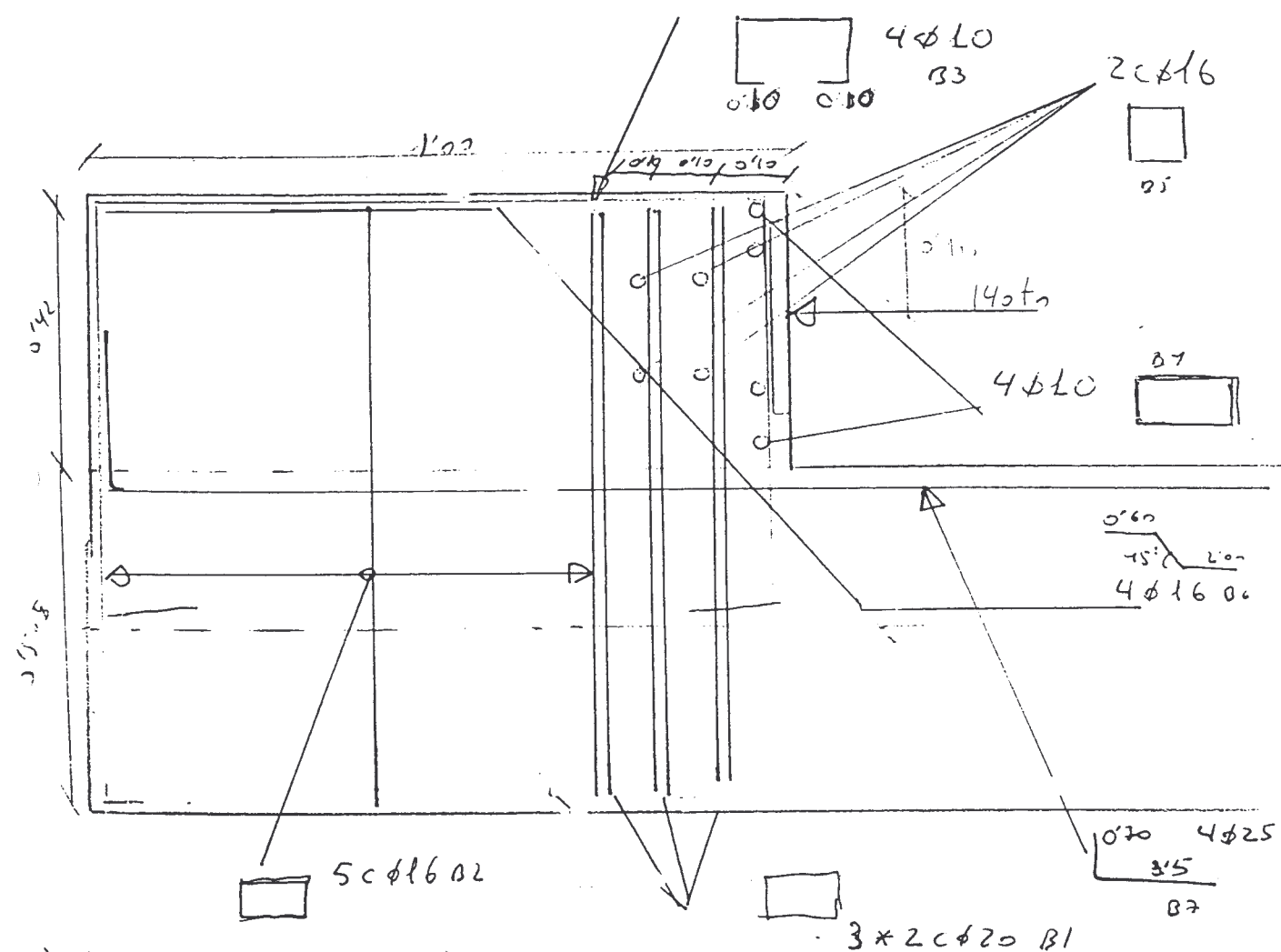
recogido por las barras Macalloy.

D) ARMADURA de REVERSO de BARRAS MACALLOY SUPERIORES



$$F_d = \pi \frac{47^2}{4} \times 3.5 \times 1.1 = 140 \text{ tn}$$

"
fuerza de tracción 1.1



d1) Armo dno superficial =

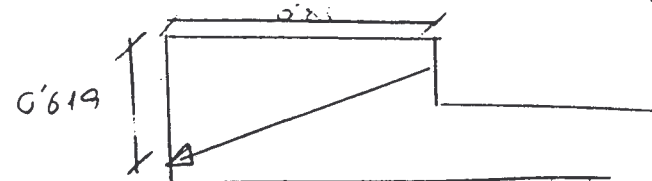
$$) \quad \frac{0.04 \text{ Pa}}{\text{cm}} = 0.04 \cdot \frac{145 \text{ N}}{\text{cm}^2} = 286 \text{ cm}^2 \quad 4610$$

d2) Planta $\Rightarrow$ *amodio* principal:

$$\text{difusión primaria} = 0.33 \cdot \frac{140 \text{ t}}{2.1} \left(1 - \frac{23/2}{74.5} \right) = 18.6 \text{ cm}^2/\text{año}$$

$$5\% \text{ RASANTE} = \frac{0'5 \cdot 140}{2'8 \cdot 1'4} = 17'81 \text{ cm}^2/\text{cm}^2 \text{ p}$$

$$\text{Hemlock cork} = 150 \times \frac{0.619}{0.85} \cdot \frac{1}{2.8} = \boxed{39.01} \text{ mdsje}$$



amoden xander's

O'S Rosante = $\boxed{17.85 \text{ gm}^2/\text{m}}$ 50616

$$0.2 \cdot \frac{150}{2.8} = 10.71 \text{ cm}^2/\text{m}$$

d3) diffusion en vertical

$$0.33 \cdot \frac{150}{2.1} \cdot \left(1 - \frac{23}{35}\right) = 8.08 \text{ m}^2 \quad 4 \text{ p } 16$$

44) Campo de cultivo de camote.

$$\frac{150}{0.3 \cdot 10^3} < \sigma_{\text{red}} = \sigma_c \cdot \frac{6000}{115} = 800 \text{ t/m}^2$$

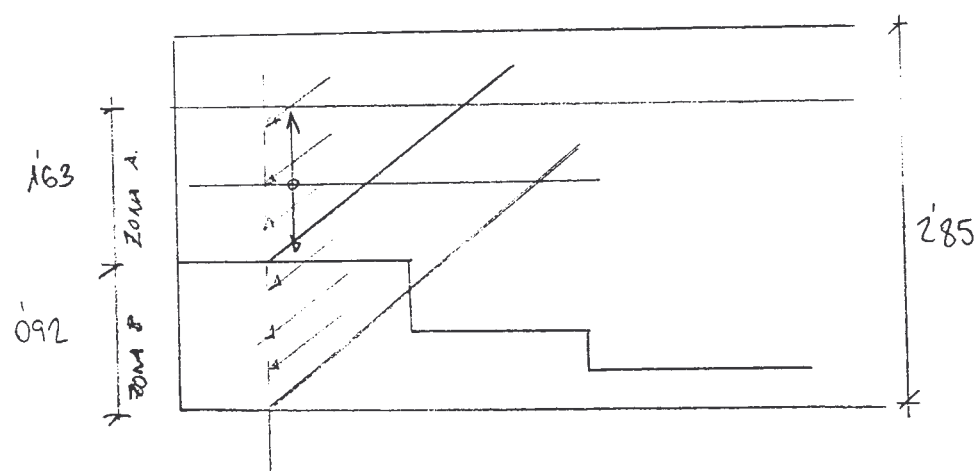
d5) Inverse: $\frac{0'35 \cdot 150}{3'5} = 21 \text{ m}^2$

2/3 16 cm² 40 25

$$1/3 \quad 7 \text{ cm}^2 = 0 \quad 4516$$

E) COMPROBACIÓN DEL ANCLAJE DE LA BIELA.

Al existir continuidad en el apoyo, se considera a efectos de anclaje la diferencia de cortante máximo por un lado y mínimo por el otro.



ZONA A: los cerros tienen recoger:

$$\frac{V_d}{2} \times \frac{1'63}{2'55} \times \frac{1}{4} = \frac{955'4}{2} \times \frac{1'63}{2'55} \times \frac{1}{4} = 76'34 \text{ cm}^2 \Rightarrow 19 \text{ U } \phi 16.$$

ZONA B:

$$V_d \times \frac{0'92}{2'55} = 344'89 \text{ t} \Rightarrow \text{se cogen con } 26 \phi 0'6''$$

$$26 \times \frac{171}{115} \times 1'4 = 541'25 \text{ t.}$$

CÁLCULO TENSIONAL

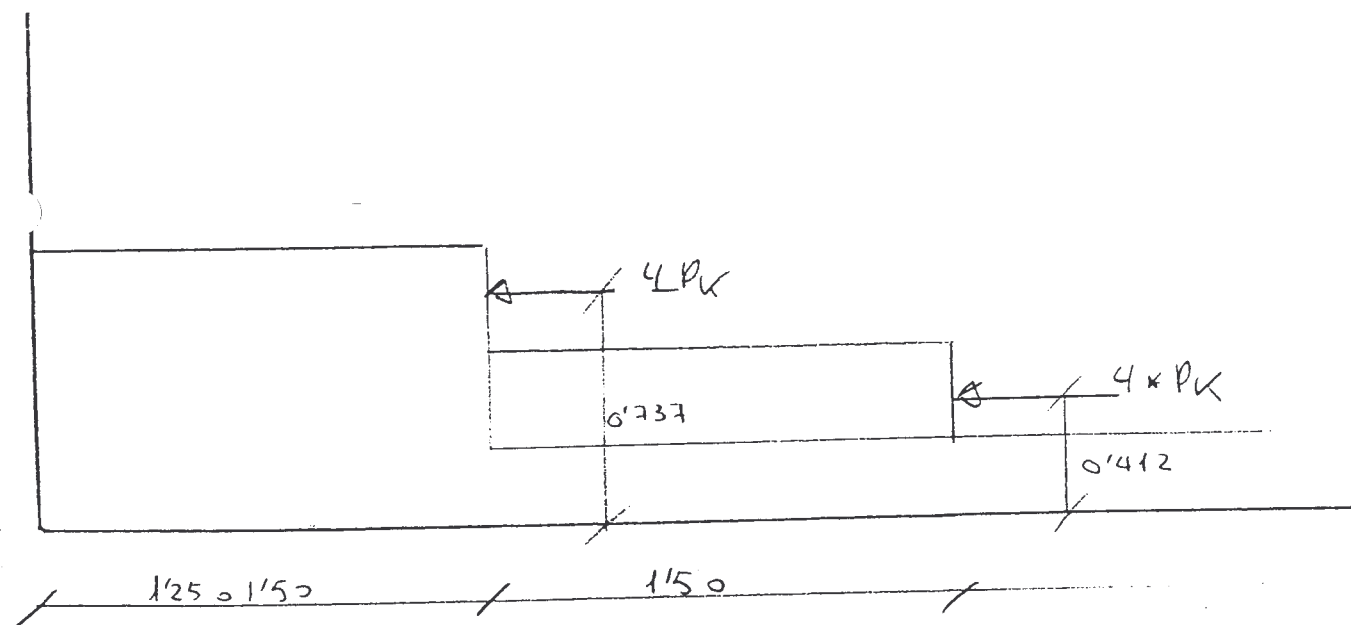
Hipótesis de cálculo:

CON GRADIENTE

Coef. exc:

Barra	Nudo	X	ENVOLVENTE VY+		ENVOLVENTE VY-		DIFERENCIAS
			Vy (T)	Mx (Tm)	Vy (T)	Mx (Tm)	
12	10013	33.50	1047.016	101.0595	250.5548	-47.07356	-899.5992
13	13	33.50	-271.356	-63.67978	-1150.154	115.4958	775.66
24	10025	73.50	1022.133	-85.04314	281.6844	249.9204	-723.0426
25	25	73.50	-173.8812	-76.67958	-1004.727	452.359	848.2518
110	10111	27.40	1066.835	395.0225	197.5744	-54.79112	-901.4046
111	111	27.40	-303.5818	48.76847	-1098.979	-1.901291	763.2532
122	10123	67.40	1225.31	64.46812	277.6331	-74.15189	-862.1219
123	123	67.40	-269.8975	-74.67499	-1139.755	118.0564	955.4129

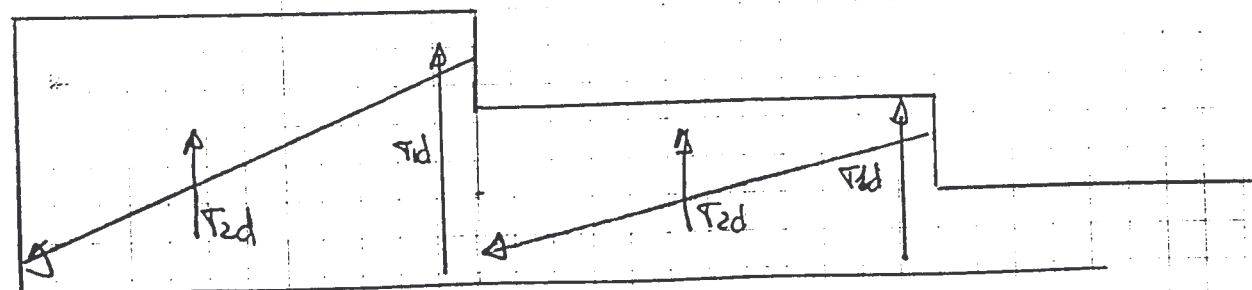
f) Armadura de difusión de bases de cimientos interiores:
 $P_K = 140 \text{ tn}$



f1) Armadura superficial $\Rightarrow$

$$\frac{0'04 P_K}{2'1} = \frac{0'02 \cdot 140}{2'1} = 2'66 \quad 4 \phi 10 \text{ por andaje}$$

f2) ARMADO COMO MEMBRULA CORTA $\Rightarrow$



Andaje superior $\Rightarrow$ (Tabl. inferior)

$$\square T_{id} (\text{Por ANCLAJE}) = \frac{0'734}{1'10} \times \frac{140 \text{ tn}}{2'80} = \boxed{3'80} \text{ m}^2/\text{andaje}$$

Se comprueba que es menor que:

o Difusión PRIMARIA:

$$0'33 \cdot P_K \cdot \frac{1}{2'5} - \left(1 - \frac{0'22}{0'114} \right) = 12'96 \text{ m}^2/\text{andaje}$$

o 50% del rasante:

$$0'5 \cdot \frac{140 \text{ tn}}{2'8 \cdot 1'4} = 17'85 \text{ m}^2/\text{andaje}$$

$\square$ En el resto se dispone la misma cantidad de cables $\Rightarrow$

$$T_{ed} - \text{Rasante corte} = 0'2 \cdot \frac{140 \text{ tn}}{2'80} = 10 \text{ m}^2/\text{andaje}$$

$$T_{ed} - 50\% \text{ rasante} = 0'5 \cdot \frac{140 \text{ tn}}{2'8 \cdot 1'4} = \boxed{17'85} \text{ m}^2/\text{andaje}$$

Realizando el mismo cálculo para los andajes inferiores (ver refer.)

$$T_{ed} = \frac{140 \text{ tn}}{2'0} (\cotg \theta - 1) = 46 \text{ m}^2/\text{andaje}$$

$$\text{Resto} = 50\% \text{ rasante} \Rightarrow 0'5 \cdot \frac{140}{2'8 \cdot 1'4} = 17'85 \text{ m}^2/\text{andaje}$$

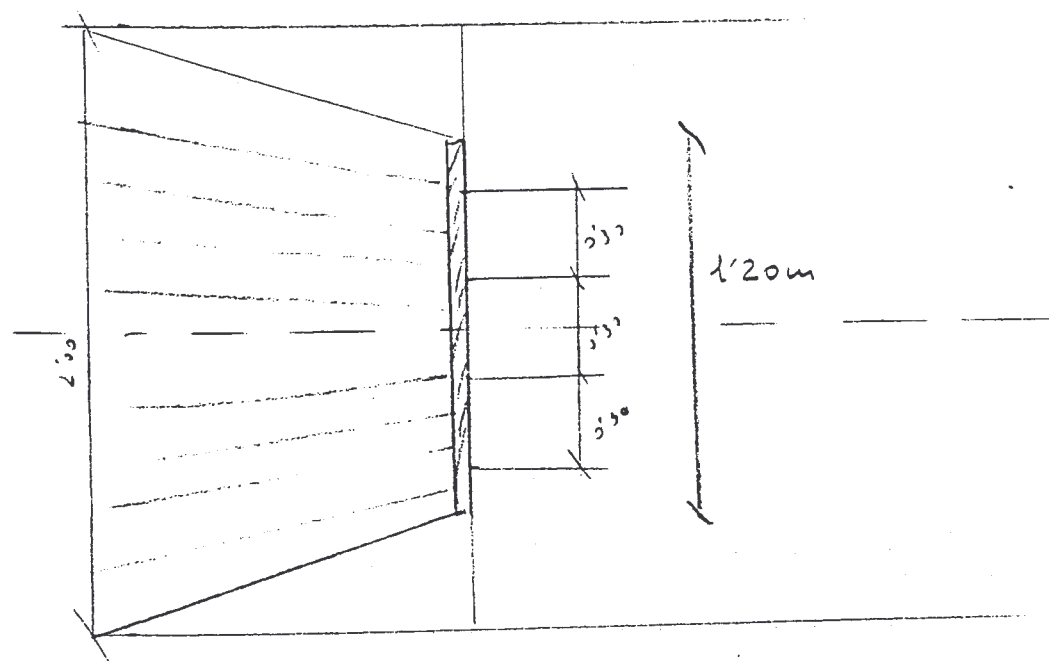
13) Anchura = $\frac{0.35 \cdot P_k}{2.5} = 19.60 \text{ cm/m}$ por anclaje

14) Comprobación de compresión

$$\frac{140 \text{ t/m} \cdot 4 \text{ anclajes}}{1.30 \text{ m} \cdot 1.25 \text{ m}} = 344.62 \text{ t/m}^2 < 0.2 f_{cd} = 466.17 \text{ t/m}^2$$

$$f_{cd} = \frac{23200}{1.5}$$

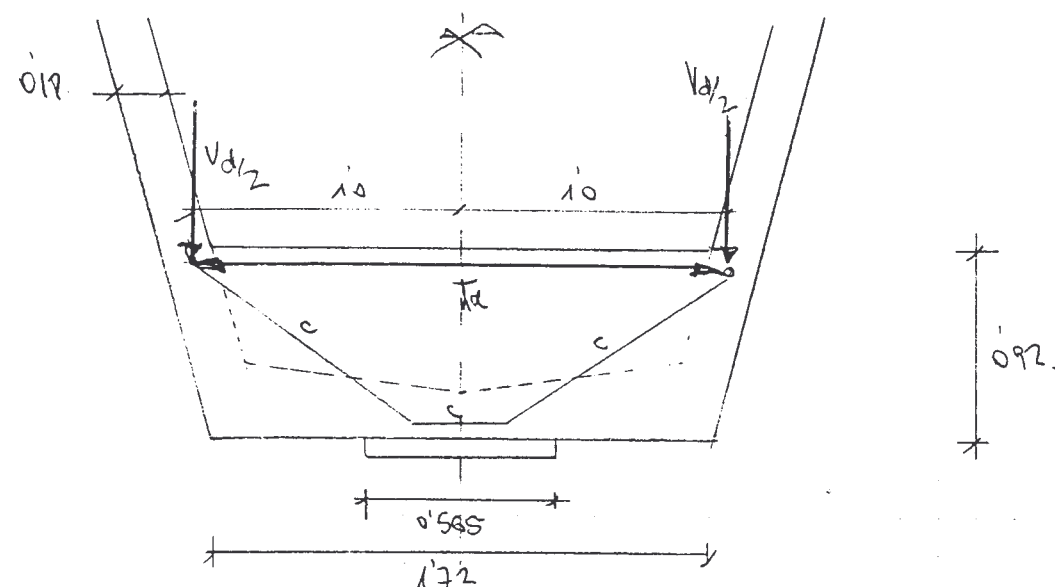
15) Difusión en planta



$$0.33 \cdot 4 \cdot P_k \cdot \left(1 - \frac{d}{d'}\right) = 0.33 \cdot 4 \cdot 170 \cdot \left(1 - \frac{1.20}{2}\right)$$

$$= 73.92 \text{ t} \quad \text{a } 2500 \text{ kg/cm}^2 \Rightarrow 29.56 \text{ cm}^2$$

MANOS EXTREMOS



$$V_{dmax} = 85.08 \text{ t. (modo 135)}$$

c) ARMADO COMO MENSLA CORTA:

$$V_{uelo} = 1 - \frac{0.585}{2} = 0.7175 \text{ m. ; Canto útil} = 0.92 - 0.10 = 0.82$$

$$T_{ad} = F_{vd} \cdot t_g \theta = A_s \cdot f_{yad}$$

$$A_s = \frac{845}{2} \times \frac{0.7175}{0.82} \times \frac{1}{4} = 92.42 \text{ cm}^2$$

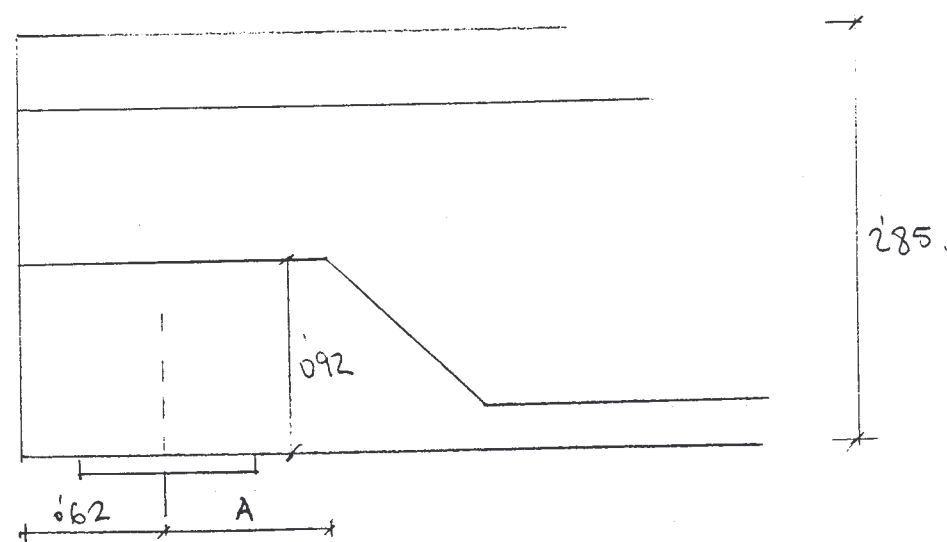
3 capas de 10 # 20.

$$T_{rel} = 0.28 F_{rel} = 0.28 \times 845 \frac{1}{2} = 84.5 \text{ tn} \Rightarrow 21125 \text{ cm}^2/\text{m.}$$

↓

3x4φ12.

B) ARMADURA de CUELGE



Se comprueba que con la armadura de constante existente se cubra el constante que llega por la parte inferior del macizado.

$$A_{s(\text{constante por cima})} \times (A + 0.62) \times 4 \geq \frac{V_d}{2} \times \frac{0.92}{285}$$

VIGA	Δ	A _s	V _d	A _s × (1 + 0.62) × 4	V _d / 2 × 0.92 / 2.15
V1	0.232	2φ16a20.	778.16.	233.28	> 125.71 tn
V2	0.652	2φ16a20.	688.53	204.32	> 111.13. tn
V4	0.922	2φ16a20.	654.79	247.75	> 105.62. tn
V5	0.512	2φ16a20.	845.09.	181.79.	> 136.39. tn

C) ARMADURA de Apoyos:

- Superficial:

$$0.04 \times P_k / 2.1 = 0.04 \times (845.08 / 1.5) / 2.1 = 10.73 \text{ cm}^2$$

- Difusión primaria:

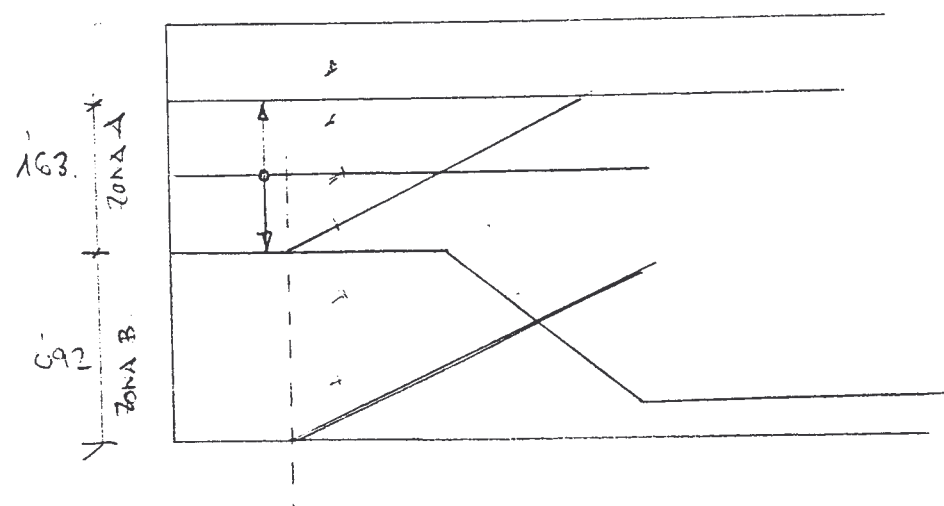
Esta ya considerada en el cálculo de mensula corta en transversal. En longitudinal:

$$0.33 \times P_k (1 - 0.66 / 1.0) / 4.0 = 18.60 \text{ cm}^2$$

↓

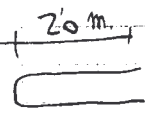
3 capas de 3φ12.

d) Comprobación del anclaje de la biela:



ZONA A: Se introducen cerchas en horizontal para recoger:

$$V_d \times \frac{163}{2} \times \frac{1}{2.55} \times \frac{1}{4} = \frac{845}{2} \times \frac{163}{2.55} \times \frac{1}{4} = 67.52 \text{ cm}^2/\text{alma}$$

↓
17 u φ16 / alma 

ZONA B: Se comprueba que la armadura de pretensado

es suficiente para recoger la biela de:

$$V_d \times \frac{692}{2.55} = 845 \times \frac{692}{2.55} = 304.86 \text{ tn}$$

$$26 \text{ tornes } 0.6'' \Rightarrow \frac{17.1}{1.15} \times 140 \text{ cm}^2 \times 26 = 541.25 \text{ tn}$$

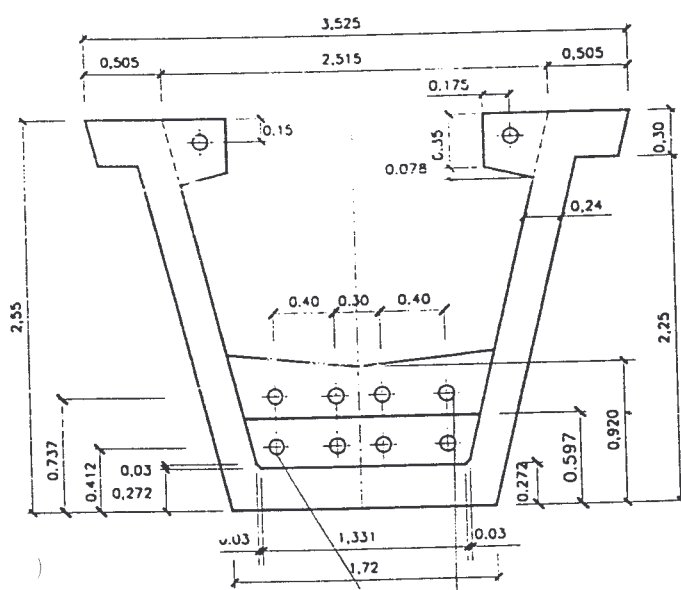
Realmente no se puede contar con todo el pretensado porque no está anclado (el pretensado se considera anclado a partir de 57 metros) luego

$$304.86 < 497 \times 0.6 / 0.7 = 427.7 \text{ t.}$$

DIMENSIONAMIENTO SECCIÓN PIA.

BARRAS MACALLOY.

la sección en pie es:

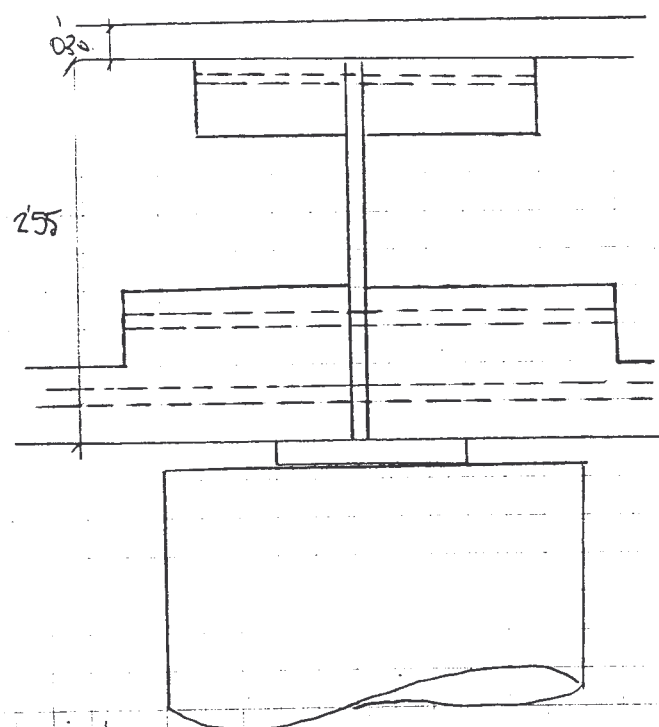


TRANSVERSAL

8φ47

47 mm diametro nominal

$f_y \geq 8350 \text{ kg/cm}^2$



LONGITUDINAL

Para el dimensionamiento de la junta de continuidad entre viga se

realizan 3 comprobaciones:

A) En construcción se produce un momento negativo con sección abierta. Se comprueba dicha sección a rotura.

B) Con el puente construido existe un momento positivo. Dicho momento se comprueba a estado límite último.

C) La torsión debe ser capaz de pasar de una viga a otra. Se comprueba el paso de dicha torsión sin contar con la armadura del alma.

Para las comprobaciones se utiliza el cálculo de la rotura de la sección tipo con manperas.

A) En construcción debido a las distintas fases existe un pequeño momento flector negativo que debe recoger la sección según arriba con 2 barras macallay $\phi 40$ arriba (MAE)

$$M_{u+} = 703 \text{ mt.} > M_{d+} = 14486 \times 15 = 21729 \text{ mt}$$

$$M_{u-} = -647 \text{ mt.} > M_{d-} = -19667 \times 15 \times 112 = 33041 \text{ mt}$$

Estos momentos últimos se alcanzan con 2 barras Macallay arriba y 4 barras abajo.

A continuación se incluye los esteros en esta fase así como el cálculo del momento último con CSE.

Peso de losa hormigonada en fase 2

[1: 1]PPLF2

Coef. exc:

Barra	Nudo	X	PPLF2	GRADF2
			Mz (Tm)	Mz (Tm)
12	10013	33.50	-196.18	144.71
13	13	33.50	-196.18	144.71
24	10025	73.50	-181.44	139.99
25	25	73.50	-181.44	139.99
110	10111	27.40	-180.69	139.82
111	111	27.40	-180.69	139.82
122	10123	67.40	-196.67	144.86
123	123	67.40	-196.67	144.86

Deformaciones Ultimas: $E_{cmx} = -.00350$ $E_{tmx} = .01000$
 Rompe la fibra inferior de la S.parcial 4

FLEXION PURA NEGATIVA:

$M_u(m.T): -647.3$ $X_u(cm.): 262.3$

$N_u(Tn.): 0.0$ $Q_u(Tn.): 0.0$

Deformaciones Ultimas: $E_{cmx} = -.00100$ $E_{tmx} = .01000$
 Rompe la fibra superior de la S.parcial 2

COMPRESION SIMPLE(Rigido/Plastico):

$N_u(Tn.): -4569.3$ aplicado en $Y_o(cm) = 175.1$

TRACCION SIMPLE(Rigido/Plastico):

$N_u(Tn.): 544.2$ aplicado en $Y_o(cm) = 163.3$

CORTANTE ULTIMO(Rigido/Plastico):

$V_u(Tn.): 0.0$ $R_u(Kg/cm): 0.0$

$X_{v1}(cm): 0.0$ $X_{v2}(cm): 0.0$
 S.parciales resistentes: $R_{cu}(Kg/cm):$

IDEAM

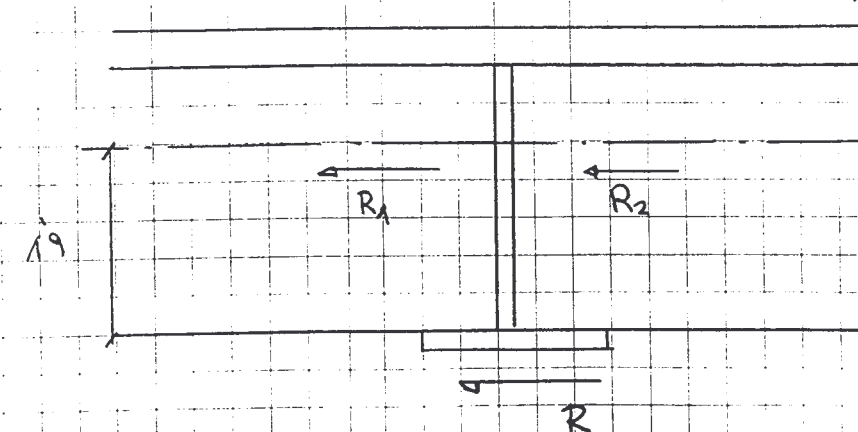
B) la sección completa con los y cajón, junto con los borses
 Macalloy definidos en el apartado anterior deben resistir
 el momento último el momento positivo máximo en junta,
 de valor:

$$M_{d+} = 655.07 \text{ mt.}$$

El momento último con 2 borses Macalloy arriba y 4 borses
 abajo vale.

$$M_{ut} = 1034.2 \text{ mt} > 655.07 \text{ mt.}$$

No obstante a dicho momento habrá que sumar
 el momento positivo y tracción local debido a frenado,
 térmico y reológico.



Se estiman las reacciones en:

$$R = 2 \text{ t/m} \times 12 \times 102 + (262'98 + 844'36 - 217'68) \times 0'05 + 110 \times 0'6$$

$$R_1 = 2 \times 12 \times 24'38 + (262'98 + 844'36) \times 0'05 + 110 \times 0'6 \times 0'8$$

$$R_2 = 2 \times 12 \times 27'62 + (-217'68) \times 0'05 + 0'2 \times 110 \times 0'6 =$$

$$R = 244'9 + 44'48 + 66 = 355'28 \text{ t}$$

$$R_1 = 178'51 + 55'37 + 52'8 = 286'68 \text{ t}$$

$$R_2 = 66'29 - 10'88 + 13'2 = 68'6 \text{ t}$$

Los valores de cálculo serán:

$$R_d = 532'92 \text{ t.}$$

$$R_{1d} = 430'02 \text{ t.}$$

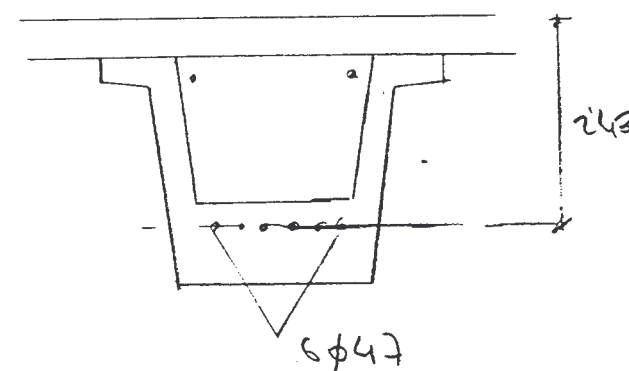
El momento y axial de cálculo para la sección derecha del apoyo resulta:

$$M_d = 655'07 + 1'9 \times 430'02 \times 0'7 = 1472'74 \text{ mt.}$$

reparto entre
las dos secciones

$$M_d = 430'02 \text{ t.}$$

Con 6 $\phi 47$ abajo (a 9500 kg/cm^2 de límite elástico)



$$N_u = 534 \text{ tn.} \Rightarrow M_u = 1447'3 \text{ mt} \Rightarrow \text{no es suficiente}$$

Con 8 $\phi 47$ abajo (a 8300 de límite elástico)

$$N_u = 791 \text{ tn}$$

$$M_u = 1851 \text{ mt} > M_d = 1472'74 \text{ mt} \Rightarrow \text{va bien}$$

Barra	Nudo	X	Mz+ (Tm)	Mz- (Tm)
12	10013	33.50	548.68	-7225.54
13	13	33.50	546.59	-7217.66
24	10025	73.50	587.16	-6255.99
25	25	73.50	584.65	-6247.36
110	10111	27.40	389.72	-6669.57
111	111	27.40	391.54	-6677.60
122	10123	67.40	651.77	-7804.37
123	123	67.40	655.07	-7811.24

Proyecto:
Viaducto V-1.Santa Oliva

Seccion:MAC

MATERIALES

Num.	Fck (Kg/cm2)	Gamma	M.El. (Kg/cm2)	J _{II} 1	J _{II} 2
1(HO)	350.0	1.50	285770	2.60	1.45
2(HO)	550.0	1.50	338219	2.60	1.45
3(RD)	5100.0	1.15	2100000		
4(PR)	17100.0	1.15	1950000		
5(PR)	8300.0	1.15	2100000		

SECCIONES PARCIALES

Num	Mat.	B (cm)	H (cm)	Yo (cm)	Mc	Nsr
	Num	II (mm)				
1	1	700.0	30.0	0.0	C*	0
2	2	90.0	30.0	30.0	C*	0
3	2	36.0	198.0	60.0	C*	0
4	2	179.0	27.0	258.0	C*	0
5	5	4.0	40.0	220.5	*T	0
6	4	0.0	0.0	0.0	*T	0
7	4	0.0	0.0	0.0	*T	0
8	4	0.0	0.0	0.0	*T	0
9	5	2.0	40.0	43.0	*T	0
10	3	70.0	20.0	5.0	CT	0
11	3	70.0	20.0	19.0	CT	0
12	4	105.0	13.4	18.0	*T	0
13	2	130.0	64.8	193.2	C*	0

SECCIONES INTERMEDIAS

Num.	Codigo	Componentes
1	CAJ	2 3 4
2	LOS	1
3	C+P	2 3 4 5 6 7
		8 9
4	PS	9
5	PI	6 7 8 5

* CONSTANTES ESTATICAS *

S.COMPLETA

Tipo	Acciones	Area (cm2)	Xcg (cm)	Inercia (cm4)
F.pura +	(0)	2084.5	15.04	2319436.3
	(1)	1230.3	21.87	2186835.4
	(2)	1423.0	19.84	2224163.1
F.pura -	(0)	3061.6	196.98	26256436.8
	(1)	1433.4	140.87	17220192.5
	(2)	1755.9	159.67	20069042.8
C.Simple	(0)	7227.4	108.33	79357419.7
	(1)	2478.3	93.76	25758226.2
	(2)	3335.7	99.46	35603485.5
T.Simple	(0)	651.7	31.58	2033133.5
	(1)	651.7	31.58	2033133.5
	(2)	651.7	31.58	2033133.5

*** Nota: Homogeneizadas a E=2100000 Kp/cm2 ***

ANALISIS EN ROTURA (ELASTOPLASTICO)

Proyecto:
Viaducto V-1.Santa Oliva

Seccion:MAC

MATERIALES

Num.	Fck (Kg/cm2)	Gamma	M.El. (Kg/cm2)	J _{II} 1	J _{II} 2
1(HO)	350.0	1.50	285770	2.60	1.45
2(HO)	550.0	1.50	338219	2.60	1.45
3(RD)	5100.0	1.15	2100000		
4(PR)	17100.0	1.15	1950000		
5(PR)	8300.0	1.15	2100000		

SECCIONES PARCIALES

Num	Mat.	B(cm)	H(cm)	Yo(cm)	Mc	Nsr
Num η (mm)						
1	1	700.0	30.0	0.0	C*	0
2	2	90.0	30.0	30.0	C*	0
3	2	36.0	198.0	60.0	C*	0
4	2	179.0	27.0	258.0	C*	0
5	5	4.0	40.0	220.5	*T	0
6	4	0.0	0.0	0.0	*T	0
7	4	0.0	0.0	0.0	*T	0
8	4	0.0	0.0	0.0	*T	0
9	5	2.0	40.0	43.0	*T	0
10	3	70.0	20.0	5.0	CT	0
11	3	70.0	20.0	19.0	CT	0
12	4	105.0	13.4	18.0	*T	0
13	2	130.0	64.8	193.2	C*	0

SECCIONES INTERMEDIAS

Num.	Codigo	Componentes
1	CAJ	2 3 4
2	LOS	1
3	C+P	2 3 4 5 6 7
		8 9
4	PS	9
5	PI	6 7 8 5

* CONSTANTES ESTATICAS *

S.COMPLETA

Tipo	Acciones	Area(cm2)	Xcg(cm)	Inercia(cm4)
F.pura +	(0)	2084.5	15.04	2319436.3
	(1)	1230.3	21.87	2186835.4
	(2)	1423.0	19.84	2224163.1
F.pura -	(0)	3061.6	196.98	26256436.8
	(1)	1433.4	140.87	17220192.5
	(2)	1755.9	159.67	20069042.8
C.Simple	(0)	7227.4	108.33	79357419.7
	(1)	2478.3	93.76	25758226.2
	(2)	3335.7	99.46	35603485.5
T.Simple	(0)	651.7	31.58	2033133.5
	(1)	651.7	31.58	2033133.5
	(2)	651.7	31.58	2033133.5

*** Nota: Homogeneizadas a E=2100000 Kp/cm2 ***

ANALISIS EN ROTURA(ELASTOPLASTICO)

Título Sección: MAC

* PRESOLICITACIONES ELASTICAS

Analisis SIN FISURACION

Pretensado: 2511.25Tn.

(Todas las Armaduras activas a .80*Fyk)

ESTUDIO SECCION COMPLETA

Analisis con Resistencia de materiales MINORADAS

Def. Ultima Acero Estructural(COMPRESION) (%): 2.50

Def. Ultima Acero Estructural(TRACCION) (%): 2.50

Deformacion Ultima Hormigon(COMPRESION) : Pivote en Bloque de Hormigon

Deformacion Ultima Hormigon(TRACCION) (%): 1.00

Coefficiente Ideal Fluencia[η*(Cperm./Ctot.)]: 0.00

FLEXION PURA POSITIVA:

Mu(m.T): 1034.2 Xu(cm.): 21.7

Nu(Tn.): 1.0 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00109 Etmx= .01000

Rompe la fibra inferior de la S.parcial 4

FLEXION PURA NEGATIVA:

Mu(m.T): -9887.9 Xu(cm.): 176.8

Nu(Tn.): -.8 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00350 Etmx= .00545

Rompe la fibra inferior de la S.parcial 4

COMPRESION SIMPLE(Rigido/Plastico):

Nu(Tn.): -13310.3 aplicado en Yo(cm)= 111.2

TRACCION SIMPLE(Rigido/Plastico):

Nu(Tn.): 4680.1 aplicado en Yo(cm)= 33.1

CORTANTE ULTIMO(Rigido/Plastico):

Vu(Tn.): 0.0 Ru(Kg/cm): 0.0

Xv1(cm): 0.0 Xv2(cm): 0.0

S.parciales resistentes: Rcu(Kg/cm):

ANALISIS EN ROTURA(ELASTOPLASTICO)

Título Sección: MAC

* PRESOLICITACIONES ELASTICAS

Analisis SIN FISURACION

Pretensado: 2511.25Tn.

(Todas las Armaduras activas a .80*Fyk)

ESTUDIO SECCION C+P

Analisis con Resistencia de materiales MINORADAS

Def. Ultima Acero Estructural(COMPRESION) (%): 2.50

Def. Ultima Acero Estructural(TRACCION) (%): 2.50

Deformacion Ultima Hormigon(COMPRESION) : Pivote en Bloque de Hormigon

Deformacion Ultima Hormigon(TRACCION) (%): 1.00

Coefficiente Ideal Fluencia[η*(Cperm./Ctot.)]: 0.00

FLEXION PURA POSITIVA:

Mu(m.T): 703.9 Xu(cm.): 58.2

Nu(Tn.): -0.0 Qu(Tn.): 0.0

Título Sección: MAC

* PRESOLICITACIONES ELASTICAS

Análisis SIN FISURACION

Pretensado: 2511.25Tn.

(Todas las Armaduras activas a .80*Fyk)

ESTUDIO SECCION COMPLETA

Análisis con Resistencia de materiales MINORADAS

Def. Última Acero Estructural (COMPRESION) (%): 2.50

Def. Última Acero Estructural (TRACCION) (%): 2.50

Deformación Última Hormigón (COMPRESION) : Pivote en Bloque de Hormigón

Deformación Última Hormigón (TRACCION) (%): 1.00

Coefficiente Ideal Fluencia [η^* (Cperm./Ctot.)]: 0.00

FLEXION PURA POSITIVA:

Mu(m.T): 1034.2 Xu(cm.): 21.7

Nu(Tn.): 1.0 Qu(Tn.): 0.0

Deformaciones Últimas: Ecmx = -.00109 Etmx = .01000

Rompe la fibra inferior de la S.parcial 4

FLEXION PURA NEGATIVA:

Mu(m.T): -9887.9 Xu(cm.): 176.8

Nu(Tn.): -.8 Qu(Tn.): 0.0

Deformaciones Últimas: Ecmx = -.00350 Etmx = .00545

Rompe la fibra inferior de la S.parcial 4

COMPRESION SIMPLE (Rigido/Plastico):

Nu(Tn.): -13310.3 aplicado en Yo(cm) = 111.2

TRACCION SIMPLE (Rigido/Plastico):

Nu(Tn.): 4680.1 aplicado en Yo(cm) = 33.1

CORTANTE ULTIMO (Rigido/Plastico):

Vu(Tn.): 0.0 Ru(Kg/cm): 0.0

Xv1(cm): 0.0 Xv2(cm): 0.0

S.parciales resistentes: Rcu(Kg/

Proyecto:

Sección: MAC

MATERIALES

Num.	Fck (Kg/cm2)	Gamma	M.El. (Kg/cm2)	J η 1	J η 2
1(HO)	350.0	1.50	285770	2.60	1.45
2(HO)	550.0	1.50	338219	2.60	1.45
3(RD)	5100.0	1.15	2100000		
4(PR)	17100.0	1.15	1950000		
5(PR)	8300.0	1.15	2100000		

SECCIONES PARCIALES

Num	Mat.	B(cm)	H(cm)	Yo(cm)	Mc	Nsr
		Num	η (mm)			
1	1	700.0	30.0	0.0	C*	0
2	2	90.0	30.0	30.0	C*	0
3	2	36.0	198.0	60.0	C*	0
4	2	179.0	27.0	258.0	C*	0
5	5	6.0	47.0	243.0	*1	0
6	4	0.0	0.0	0.0	*T	0
7	4	0.0	0.0	0.0	*T	0
8	4	0.0	0.0	0.0	*T	0
9	5	2.0	47.0	43.0	*T	0
10	3	70.0	20.0	5.0	CT	0
11	3	70.0	20.0	19.0	CT	0
12	4	105.0	13.4	18.0	*T	0
13	2	130.0	64.8	193.2	C*	0

SECCIONES INTERMEDIAS

Num.	Código	Componentes
1	CAJ	2 3 4
2	LOS	1
3	C+P	2 3 4 5 6 7
		8 9
4	PS	9
5	PI	6 7 8 5

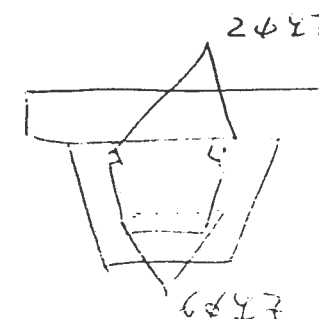
* CONSTANTES ESTATICAS *

S.COMPLETA

Tipo	Acciones	Area (cm2)	Xcg (cm)	Inercia (cm4)
F.pura +	(0)	2692.8	20.76	5604833.5
	(1)	1514.3	31.34	5237776.3
	(2)	1806.2	28.06	5345391.3
F.pura -	(0)	3105.1	197.72	26682981.9
	(1)	1490.5	144.80	18084288.2
	(2)	1813.2	162.25	20745901.8
C.Simple	(0)	7290.8	109.42	80684902.6
	(1)	2541.7	97.24	27308164.9
	(2)	3399.1	101.96	37064133.1
I.Simple	(0)	715.1	49.47	4731124.4
	(1)	715.1	49.47	4731124.4
	(2)	715.1	49.47	4731124.4

*** Nota: Homogeneizadas a E=2100000 Kp/cm2 ***

ANÁLISIS EN ROTURA (ELASTOPLASTICO)



Título Sección: MAC

* PRESOLICITACIONES ELASTICAS

Análisis SIN FISURACION

Pretensado: 2932.21Tn.

(Todas las Armaduras activas a $.80 \cdot F_{yk}$)

ESTUDIO SECCION C+P

Análisis con Resistencia de materiales MINORADAS

Def. Última Acero Estructural (COMPRESION) (%): 2.50

Def. Última Acero Estructural (TRACCION) (%): 2.50

Deformación Última Hormigón (COMPRESION): Pivote en Bloque de Hormigón

Deformación Última Hormigón (TRACCION) (%): 1.00

Coefficiente Ideal Fluencia [μ^* (Cperm./Ctot.)]: 0.00

FLEXION PURA POSITIVA:

Mu(m.T): 1604.5 Xu(cm.): 77.4

Nu(Tn.): -3 Qu(Tn.): 0.0

Deformaciones Últimas: Ecmx = -.00136 Etmx = .01000

Rompe la fibra inferior de la S.parcial 4

FLEXION PURA NEGATIVA:

Mu(m.T): -805.7 Xu(cm.): 256.7

Nu(Tn.): -0.0 Qu(Tn.): 0.0

Deformaciones Últimas: Ecmx = -.00136 Etmx = .01000

Rompe la fibra superior de la S.parcial 2

COMPRESION SIMPLE (Rigido/Plastico):

Nu(Tn.): -4569.3 aplicado en Yo(cm) = 175.1

TRACCION SIMPLE (Rigido/Plastico):

Nu(Tn.): 1001.7 aplicado en Yo(cm) = 195.4

CORTANTE ULTIMO (Rigido/Plastico):

Vu(Tn.): 0.0 Ru(Kg/cm): 0.0

Xv1(cm): 0.0 Xv2(cm): 0.0

S.parciales resistentes: Rcu(Kg/cm):

ANÁLISIS EN ROTURA (ELASTOPLÁSTICO)

Título Sección: MAC

* PRESOLICITACIONES ELASTICAS

Análisis SIN FISURACION

Pretensado: 2932.21Tn.

(Todas las Armaduras activas a $.80 \cdot F_{yk}$)

ESTUDIO SECCION COMPLETA

Análisis con Resistencia de materiales MINORADAS

Def. Última Acero Estructural (COMPRESION) (%): 2.50

Def. Última Acero Estructural (TRACCION) (%): 2.50

Deformación Última Hormigón (COMPRESION): Pivote en Bloque de Hormigón

Deformación Última Hormigón (TRACCION) (%): 1.00

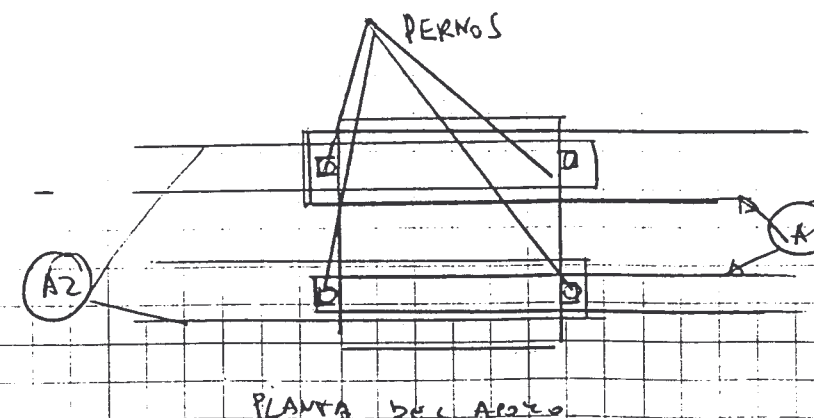
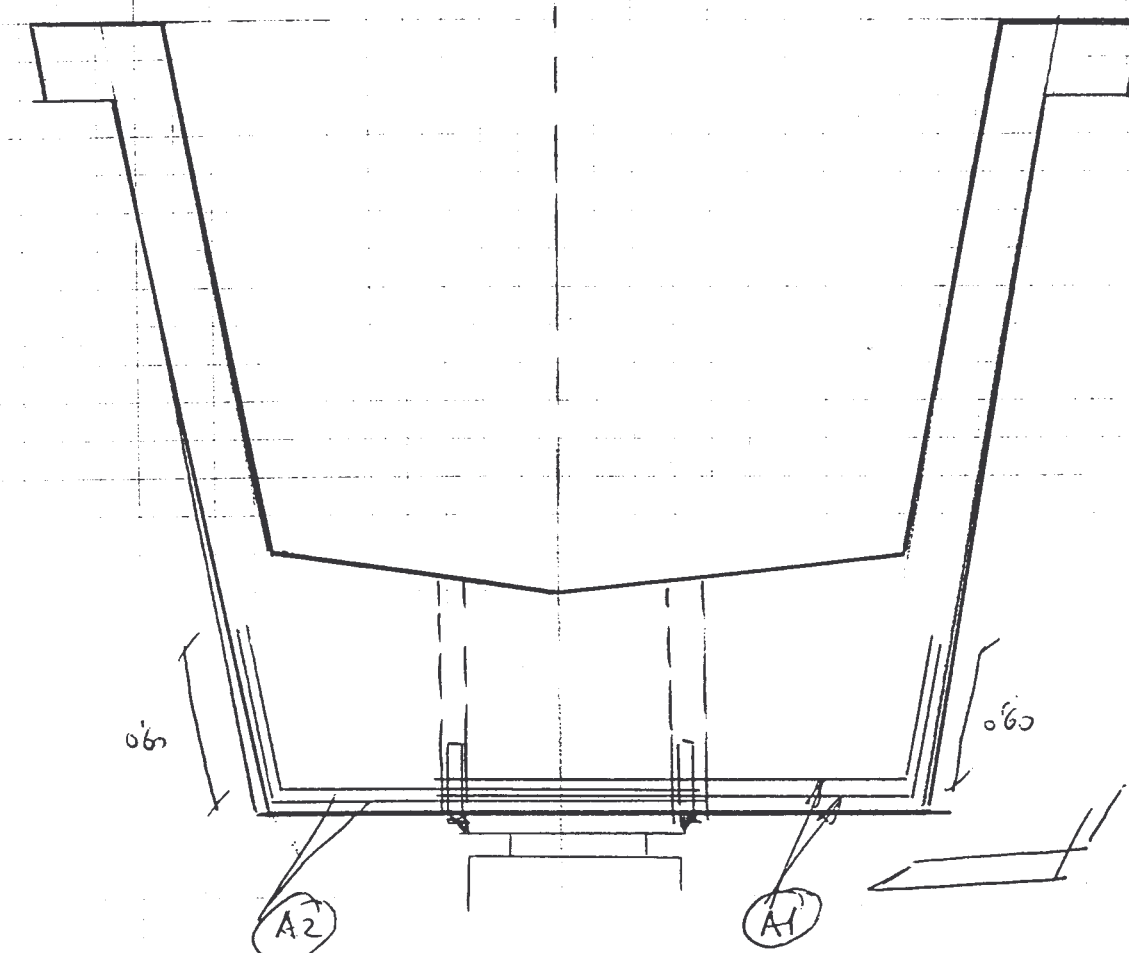
Coefficiente Ideal Fluencia [μ^* (Cperm./Ctot.)]: 0.00

FLEXION PURA POSITIVA:

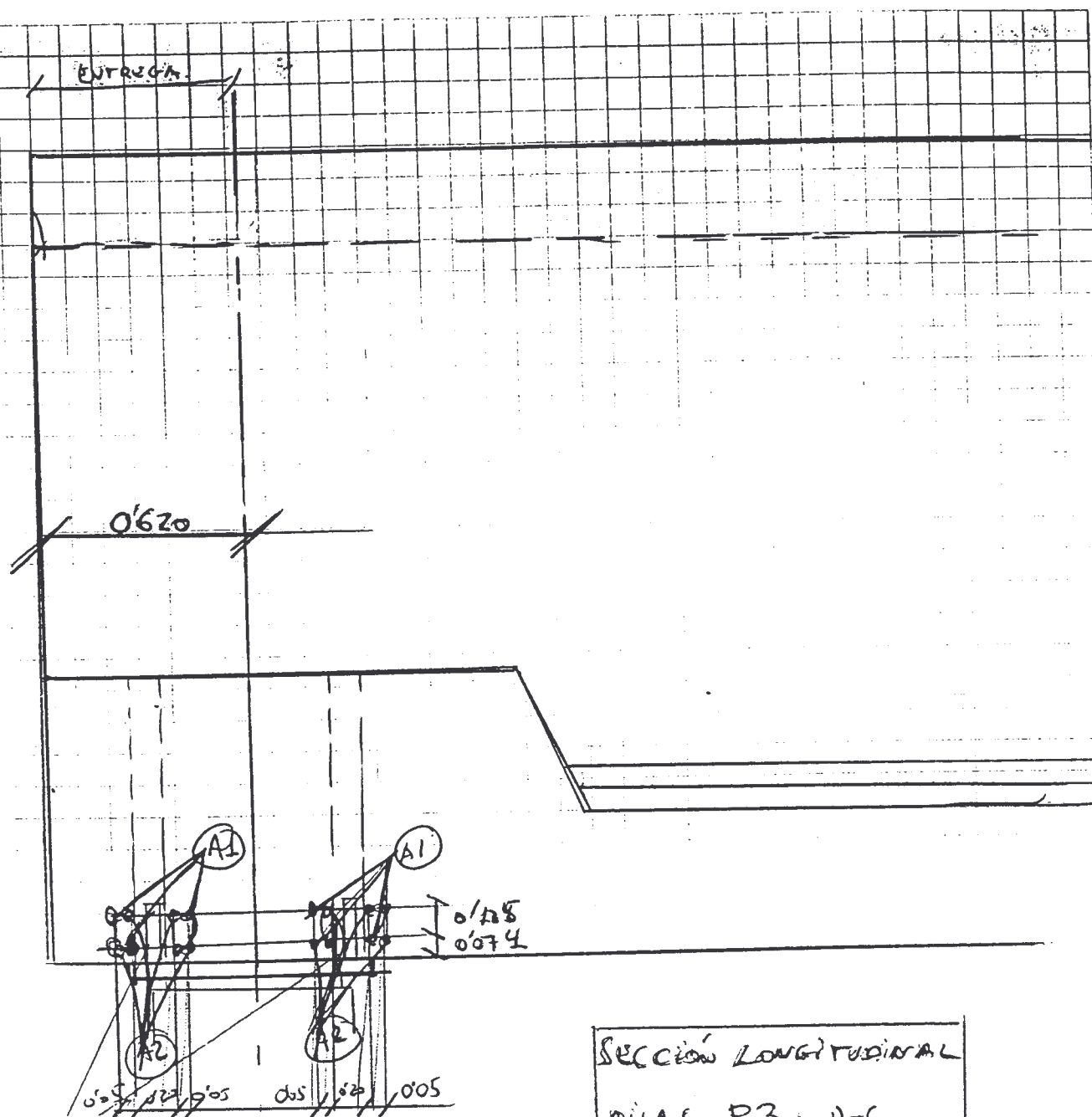
Mu(m.T): 2117.8 Xu(cm.): 24.8

Nu(Tn.): -0.0 Qu(Tn.): 0.0

IDEAM



SECCION
TRANSVERSAL
PILAS P-3 y P-4



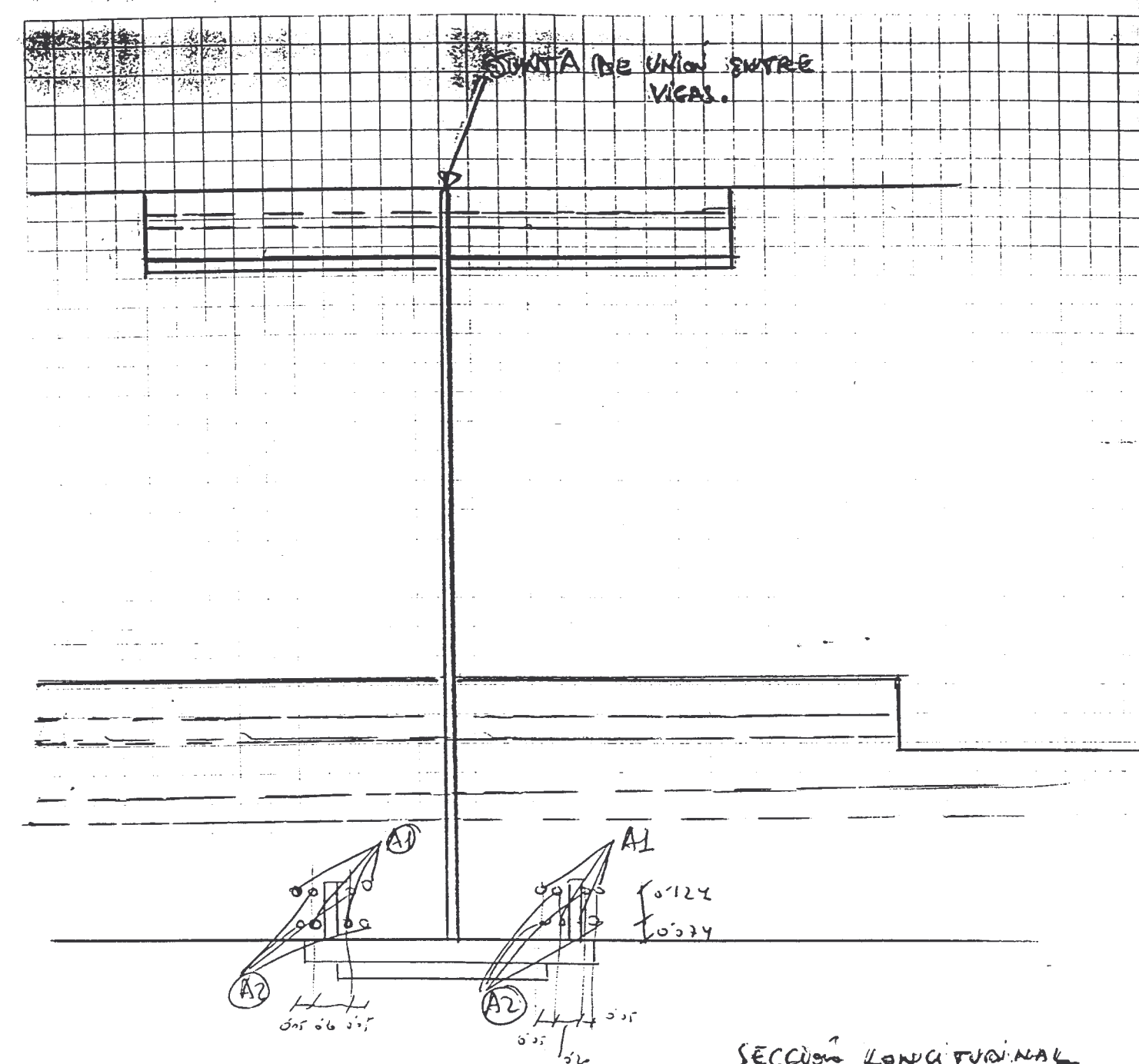
SECCION LONGITUDINAL
PILAS P3 y P-6

Deben darse vainas
para el protección
de las vigas.

Para 35th: (En sección) (En transversal) por A.C.N

A1 2 LI $\phi 16$ por perno

A2 2 LI $\phi 16$ por perno.

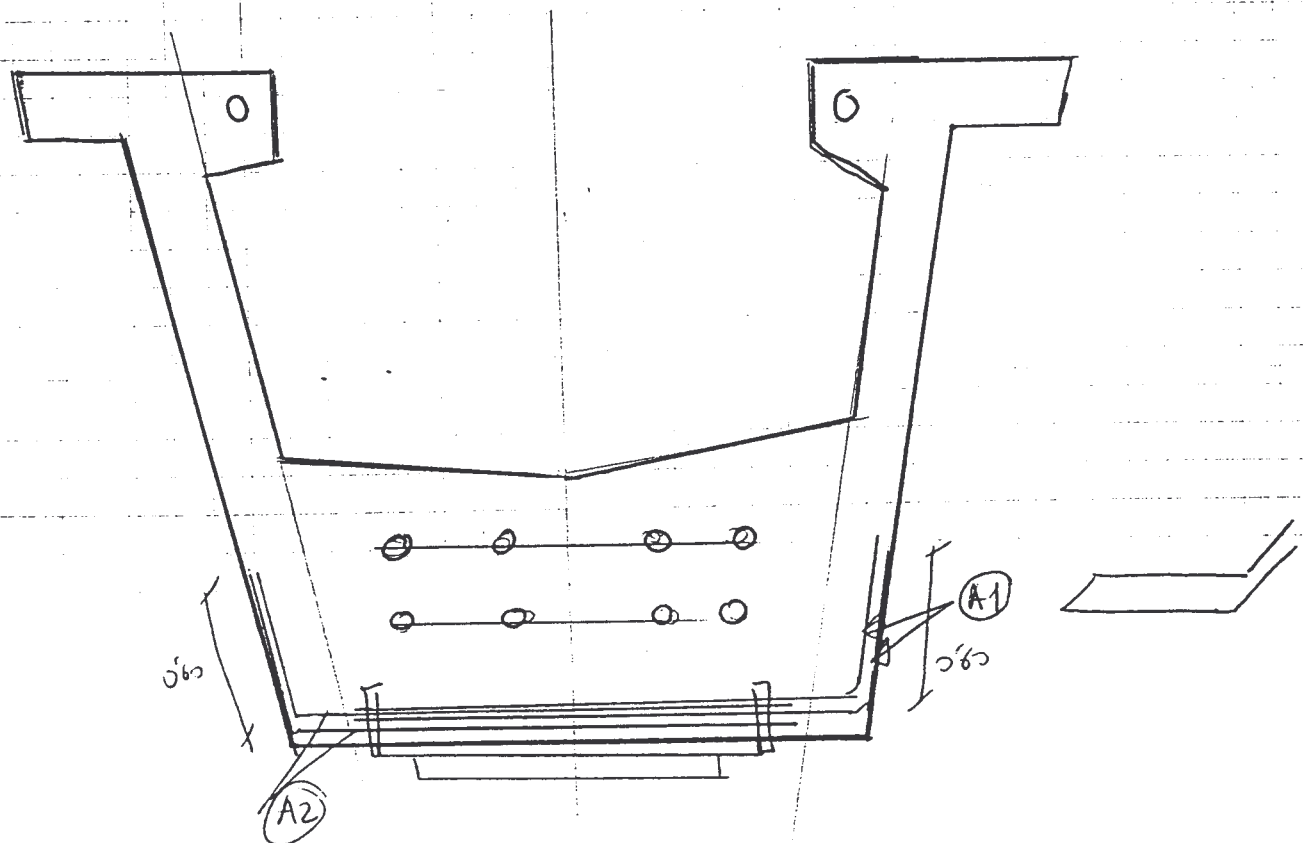


SECCION LONGITUDINAL
PILAS P4

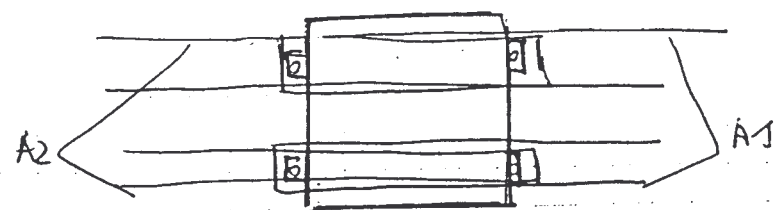
Para 50th (en sección): (En transversal) por A.C.N

A1 2 LI $\phi 20$ por perno

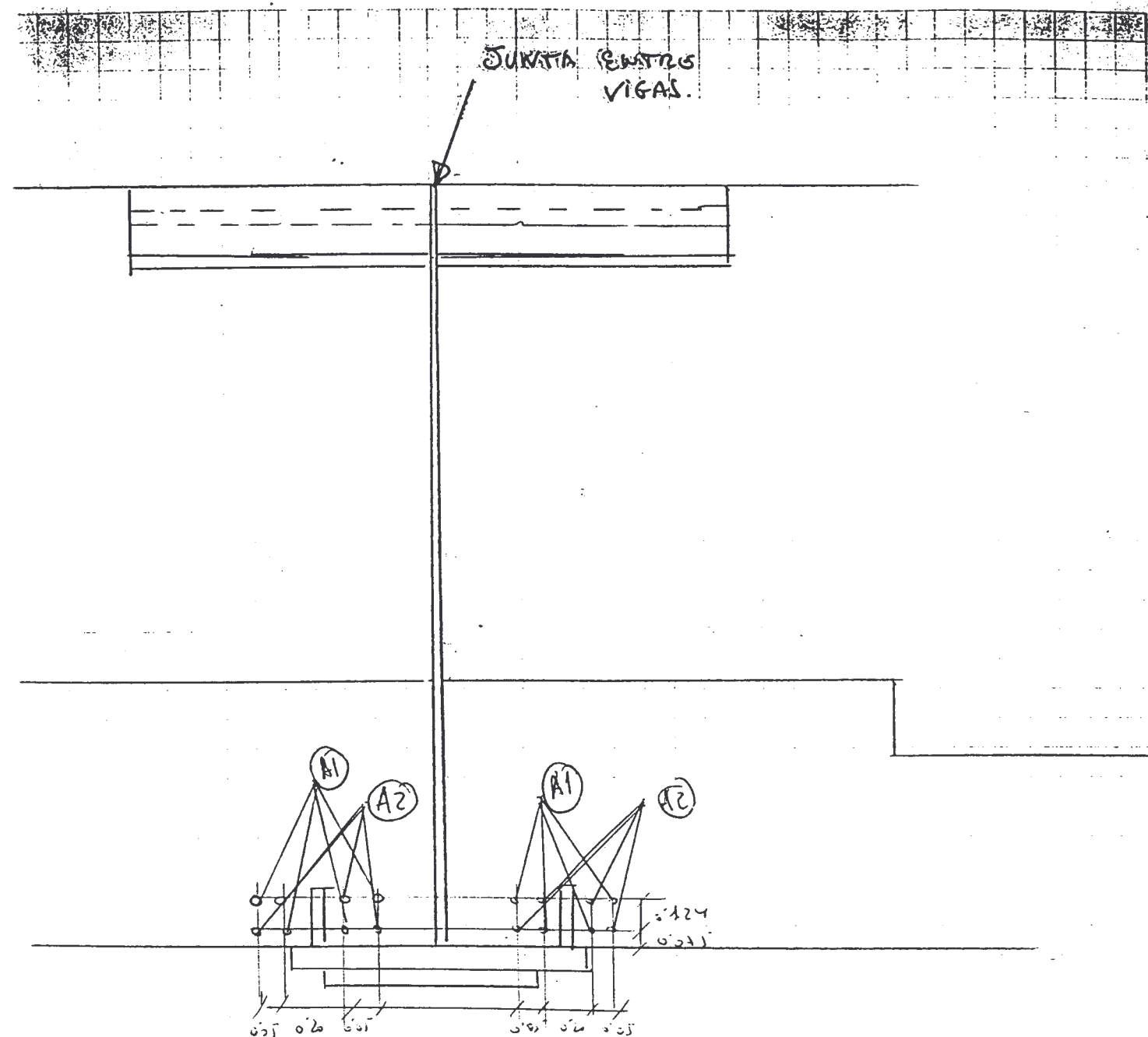
A2 2 LI $\phi 20$ por perno.



SECCION TRANSVERSAL
PILAS 04



PLANTA

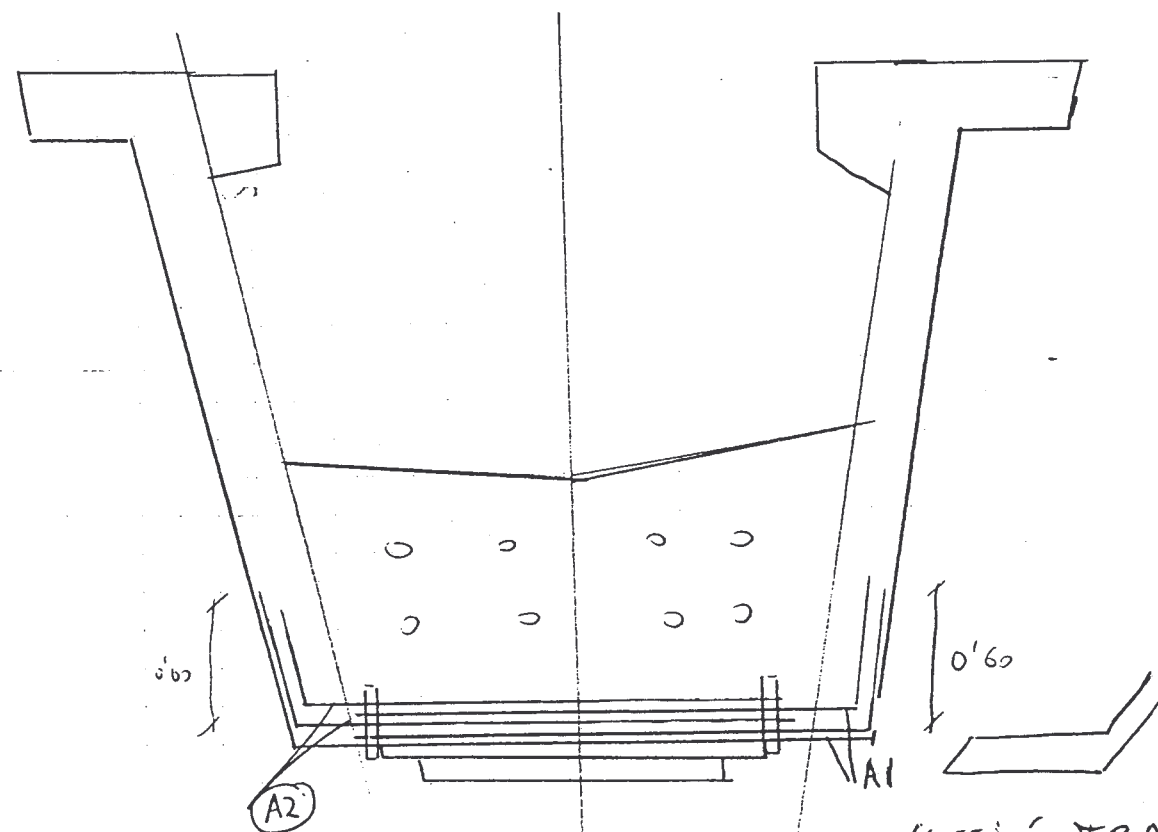


SECCION LONGITUDINAL
PILAS 05

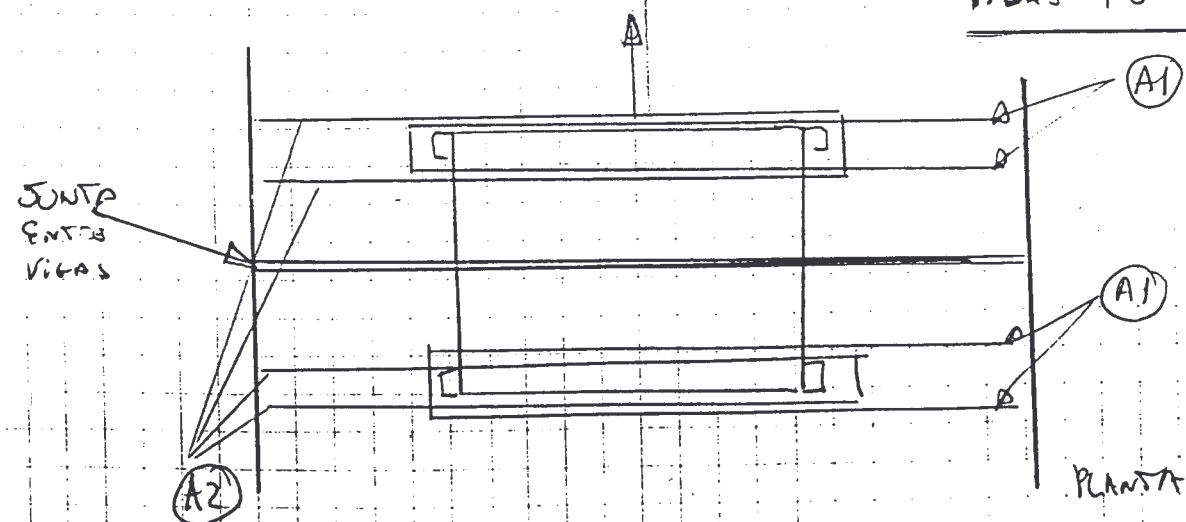
Para 50m en transversal y 200m en longitudinal. Por P.L.A. (En x)

A1 24 ϕ 20 p. pino

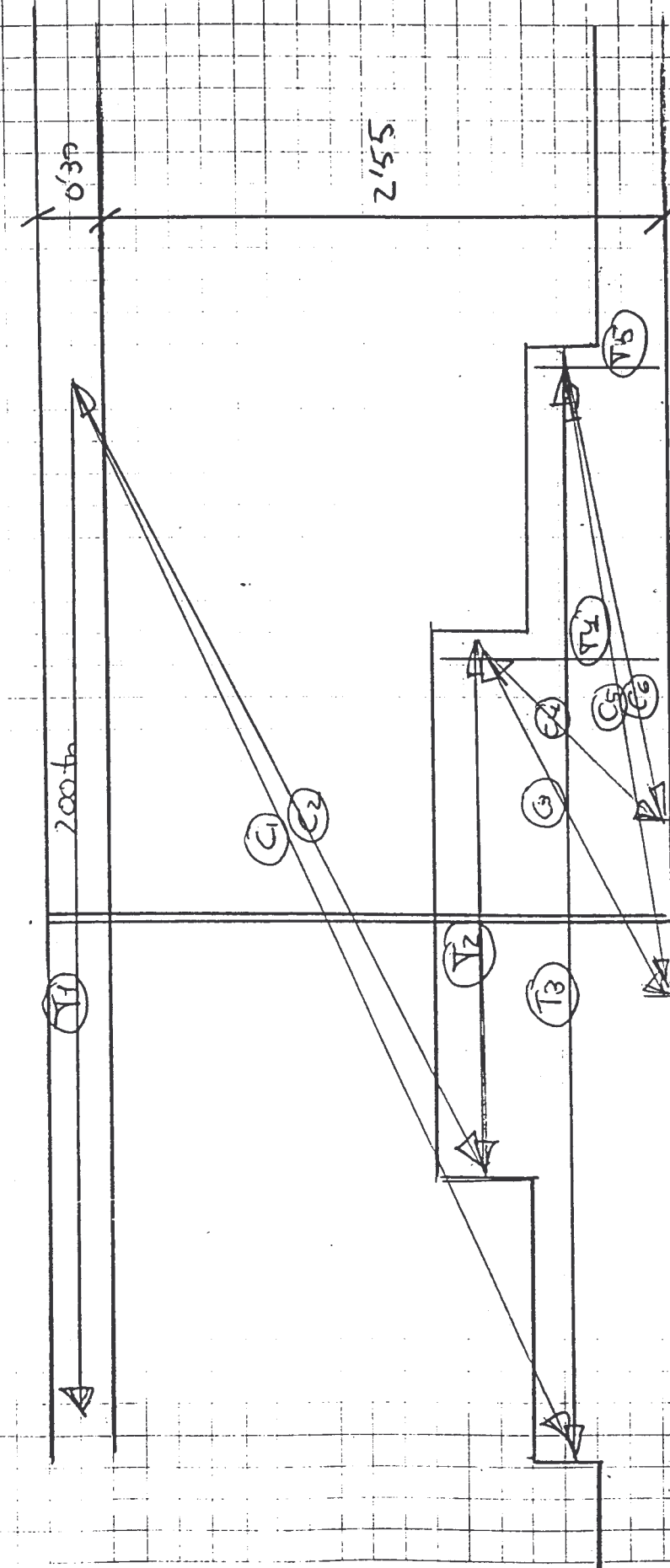
A2 24 ϕ 20 p. pino.



SECCIÓN TRANSVERSAL
PILAS PS

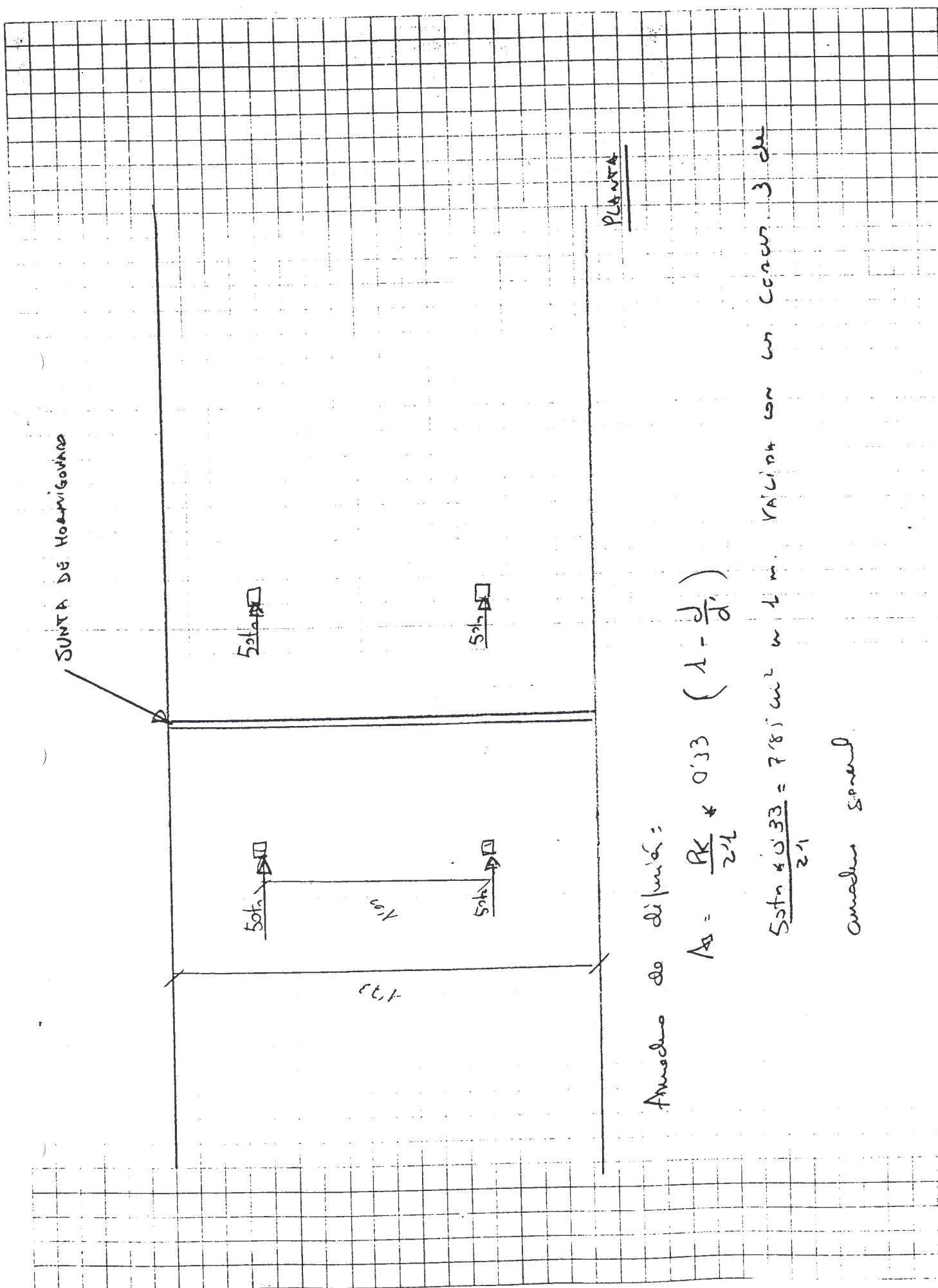


PLANTA



Sección Longitudinal

ESQUEMA GENERAL DEL FRENO



Deformaciones Ultimas: $E_{cmx} = -.00122$ $E_{tmx} = .01000$
 Rompe la fibra inferior de la S.parcial 4

FLEXION PURA NEGATIVA:

$M_u(m.T): -9933.4$ $X_u(cm.): 174.8$

$N_u(Tn.): -.5$ $Q_u(Tn.): 0.0$

Deformaciones Ultimas: $E_{cmx} = -.00350$ $E_{tmx} = .00516$
 Rompe la fibra inferior de la S.parcial 4

COMPRESION SIMPLE(Rigido/Plastico):

$N_u(Tn.): -13310.3$ aplicado en $Y_o(cm) = 111.2$

TRACCION SIMPLE(Rigido/Plastico):

$N_u(Tn.): 5137.7$ aplicado en $Y_o(cm) = 51.0$

CORTANTE ULTIMO(Rigido/Plastico):

$V_u(Tn.): 0.0$ $R_u(Kg/cm): 0.0$

$X_{v1}(cm): 0.0$ $X_{v2}(cm): 0.0$

S.parciales resistentes: $R_{cu}(Kg/cm):$

INTERACCION ROTURA(ELASTOPLASTICO)

Título Sección: MAC

* PRESOLICITACIONES ELASTICAS

Analisis SIN FISURACION

Pretensado: 2932.21Tn.

(Todas las Armaduras activas a $.80 \cdot f_{yk}$)

ESTUDIO SECCION COMPLETA

Analisis con Resistencia de materiales MINORADAS

Def. Ultima Acero Estructural (COMPRESION) (%): 2.50

Def. Ultima Acero Estructural (TRACCION) (%): 2.50

Deformacion Ultima Hormigon (COMPRESION): Pivote en Bloque de Hormigon

Deformacion Ultima Hormigon (TRACCION) (%): 1.00

Coefficiente Ideal Fluencia $[f_r^* (C_{perm}/C_{tot})]: 0.00$

INTERACCION M-N-V

Flexion POSITIVA Axil de TRACCION

Fibra referencia Momentos: $Y_o(cm) = 108.33$

DIAGRAMA M_u-N_u :

Cortante Total (Tn) = 0.0(0.0 + 0.0)

MOMENTO (m.T.)	AXIL (Tn.)	$X_n(cm)$	E_{cmx}	E_{tmx}	Fibra Rot.	Spar.
-2787.73	5137.66	-75.6	.00186	.01000	Inferior	4
-2538.71	4880.77	-58.8	.00147	.01000	Inferior	4
-2297.02	4623.89	-48.9	.00122	.01000	Inferior	4
-2052.67	4367.01	-39.4	.00097	.01000	Inferior	4
-1811.07	4110.12	-30.5	.00072	.01000	Inferior	4
-1570.57	3853.24	-22.3	.00047	.01000	Inferior	4
-1336.47	3596.36	-14.6	.00023	.01000	Inferior	4
-1103.88	3339.48	-7.4	-0.00000	.01000	Inferior	4
-846.35	3082.59	-1.9	-.00019	.01000	Inferior	4
-597.07	2825.71	1.7	-.00032	.01000	Inferior	4
-338.59	2568.83	4.8	-.00043	.01000	Inferior	4
-83.21	2311.94	7.5	-.00053	.01000	Inferior	4
169.86	2055.06	10.0	-.00062	.01000	Inferior	4
420.76	1798.18	12.2	-.00071	.01000	Inferior	4
663.69	1541.30	14.2	-.00079	.01000	Inferior	4
912.79	1284.41	16.2	-.00086	.01000	Inferior	4
1158.98	1027.53	18.0	-.00094	.01000	Inferior	4

1402.26	770.65	19.8	-.00101	.01000	Inferior	4
1642.77	513.77	21.5	-.00108	.01000	Inferior	4
1881.10	256.88	23.2	-.00115	.01000	Inferior	4
2117.82	0.00	24.8	-.00122	.01000	Inferior	4

INTERACCION M-N-V

Flexion POSITIVA Axil de COMPRESION
Fibra referencia Momentos: Yo(cm) = 108.33

DIAGRAMA Mu-Nu:
Cortante Total(Tn) = 0.0(0.0 + 0.0)

MOMENTO(m.T.)	AXIL(Tn.)	Xn(cm)	Ecmx	Etmx	Fibra Rot.	Spar.
-1168.07	-11488.14	1585.1	-.00223	-.00170	Superior	1
-776.65	-11313.68	706.0	-.00246	-.00139	Superior	1
441.79	-10648.17	396.2	-.00288	-.00082	Superior	1
1564.99	-9982.66	326.2	-.00316	-.00045	Superior	1
2653.52	-9317.15	290.8	-.00339	-.00015	Superior	1
3642.12	-8651.64	269.8	-.00350	.00010	Superior	1
4463.30	-7986.13	251.5	-.00350	.00035	Superior	1
5180.37	-7320.62	231.7	-.00348	.00066	Superior	1
5819.06	-6655.11	207.5	-.00350	.00113	Superior	1
6251.26	-5989.60	163.5	-.00350	.00233	Superior	1
6339.32	-5324.08	109.5	-.00350	.00511	Superior	1
6131.19	-4658.57	69.5	-.00350	.00998	Superior	1
5639.00	-3993.06	57.0	-.00278	.01000	Inferior	4
5100.15	-3327.55	49.0	-.00235	.01000	Inferior	4
4525.24	-2662.04	43.3	-.00206	.01000	Inferior	4
3933.22	-1996.53	38.1	-.00182	.01000	Inferior	4
3335.66	-1331.02	33.5	-.00160	.01000	Inferior	4
2728.06	-665.51	29.0	-.00140	.01000	Inferior	4
2117.82	0.00	24.8	-.00122	.01000	Inferior	4

Proyecto:

Seccion:MAC

MATERIALES

Num.	Fck (Kg/cm2)	Gamma	M.El. (Kg/cm2)	J ₁₁	J ₂₂
1(HO)	350.0	1.50	285770	2.60	1.45
2(HO)	550.0	1.50	338219	2.60	1.45
3(RD)	5100.0	1.15	2100000		
4(PR)	17100.0	1.15	1950000		
5(RD)	8300.0	1.15	2100000		

SECCIONES PARCIALES

Num	Mat.	B(cm)	H(cm)	Yo(cm)	Mc	Nsr
		Num	n (mm)			
1	1	700.0	30.0	0.0	C*	0
2	2	90.0	30.0	30.0	C*	0
3	2	36.0	198.0	60.0	C*	0
4	2	179.0	27.0	258.0	C*	0
5	5	6.0	47.0	243.0	*T	0
6	4	0.0	0.0	0.0	*T	0
7	4	0.0	0.0	0.0	*T	0
8	4	0.0	0.0	0.0	*T	0
9	5	2.0	47.0	43.0	*T	0
10	3	70.0	20.0	5.0	CT	0
11	3	70.0	20.0	19.0	CT	0
12	4	105.0	13.4	18.0	*T	0
13	2	130.0	64.8	193.2	C*	0

SECCIONES INTERMEDIAS

Num.	Codigo	Componentes
1	CAJ	2 3 4
2	LOS	1
3	C+P	2 3 4 5 6 7
		8 9
4	PS	9
5	PI	6 7 8 5

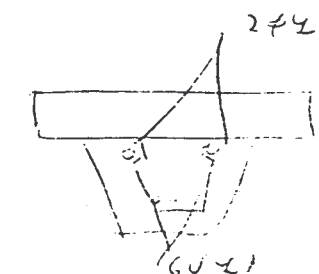
* CONSTANTES ESTATICAS *

S.COMPLETA

Tipo	Acciones	Area(cm2)	Xcg(cm)	Inercia(cm4)
F.pura +	(0)	2692.8	20.76	5604833.5
	(1)	1514.3	31.34	5237776.3
	(2)	1806.2	28.06	5345391.3
F.pura -	(0)	3044.9	196.08	26438462.8
	(1)	1398.5	137.28	16952835.0
	(2)	1721.0	157.20	19983120.9
C.Simple	(0)	7152.0	107.75	78598935.6
	(1)	2402.9	91.57	24853774.0
	(2)	3260.3	97.98	34760745.4
T.Simple	(0)	715.1	49.47	4731124.4
	(1)	715.1	49.47	4731124.4
	(2)	715.1	49.47	4731124.4

*** Nota: Homogeneizadas a E=2100000 Kp/cm2 ***

ANALISIS EN ROTURA(ELASTOPLASTICO)



Título Sección: MAC

* PRESOLICITACIONES ELASTICAS

Análisis SIN FISURACION

Pretensado: 2010.61Tn.

(Todas las Armaduras activas a .80*Fyk)

ESTUDIO SECCION COMPLETA

Análisis con Resistencia de materiales MINORADAS

Def. Última Acero Estructural (COMPRESION) (%): 2.50

Def. Última Acero Estructural (TRACCION) (%): 2.50

Deformación Última Hormigón (COMPRESION) : Pivote en Bloque de Hormigón

Deformación Última Hormigón (TRACCION) (%): 1.00

Coefficiente Ideal Fluencia [μ * (Cperm./Ctot.)]: 0.00

FLEXION PURA POSITIVA:

Mu (m.T): 1924.4 Xu (cm.): 23.8

Nu (Tn.): .8 Qu (Tn.): 0.0

Deformaciones Últimas: Ecmx = -.00116 Etmx = .01000
Rompe la fibra inferior de la S.parcial 4

FLEXION PURA NEGATIVA:

Mu (m.T): -10039.7 Xu (cm.): 179.4

Nu (Tn.): -.5 Qu (Tn.): 0.0

Deformaciones Últimas: Ecmx = -.00350 Etmx = .00579
Rompe la fibra inferior de la S.parcial 4

COMPRESION SIMPLE (Rigido/Plastico):

Nu (Tn.): -13310.3 aplicado en Yo (cm) = 111.2

TRACCION SIMPLE (Rigido/Plastico):

Nu (Tn.): 5137.7 aplicado en Yo (cm) = 51.0

CORTANTE ULTIMO (Rigido/Plastico):

Vu (Tn.): 0.0 Ru (Kg/cm): 0.0

Xv1 (cm): 0.0 Xv2 (cm): 0.0
S.parciales resistentes: Rcu (Kg/cm):

ANALISIS EN ROTURA (ELASTOPLASTICO)

Título Sección: MAC

* PRESOLICITACIONES ELASTICAS

Análisis SIN FISURACION

Pretensado: 2010.61Tn.

(Todas las Armaduras activas a .80*Fyk)

ESTUDIO SECCION C+P

Análisis con Resistencia de materiales MINORADAS

Def. Última Acero Estructural (COMPRESION) (%): 2.50

Def. Última Acero Estructural (TRACCION) (%): 2.50

Deformación Última Hormigón (COMPRESION) : Pivote en Bloque de Hormigón

Deformación Última Hormigón (TRACCION) (%): 1.00

Coefficiente Ideal Fluencia [μ * (Cperm./Ctot.)]: 0.00

FLEXION PURA POSITIVA:

Mu (m.T): 1507.4 Xu (cm.): 69.4

Nu (Tn.): -0.0 Qu (Tn.): 0.0

Deformaciones Últimas: Ecmx = -.00350 Etmx = .01000
Rompe la fibra inferior de la S.parcial 4

FLEXION PURA NEGATIVA:

Mu (m.T): -640.2 Xu (cm.): 263.6

Nu (Tn.): 0.0 Qu (Tn.): 0.0

Deformaciones Últimas: Ecmx = -.00088 Etmx = .01000
Rompe la fibra superior de la S.parcial 2

COMPRESION SIMPLE (Rigido/Plastico):

Nu (Tn.): -4569.3 aplicado en Yo (cm) = 175.1

TRACCION SIMPLE (Rigido/Plastico):

Nu (Tn.): 1001.7 aplicado en Yo (cm) = 195.4

CORTANTE ULTIMO (Rigido/Plastico):

Vu (Tn.): 0.0 Ru (Kg/cm): 0.0

Xv1 (cm): 0.0 Xv2 (cm): 0.0
S.parciales resistentes: Rcu (Kg/cm):

INTERACCION ROTURA (ELASTOPLASTICO)

Título Sección: MAC

* PRESOLICITACIONES ELASTICAS

Análisis SIN FISURACION

Pretensado: 2010.61Tn.

(Todas las Armaduras activas a .80*Fyk)

ESTUDIO SECCION COMPLETA

Análisis con Resistencia de materiales MINORADAS

Def. Última Acero Estructural (COMPRESION) (%): 2.50

Def. Última Acero Estructural (TRACCION) (%): 2.50

Deformación Última Hormigón (COMPRESION) : Pivote en Bloque de Hormigón

Deformación Última Hormigón (TRACCION) (%): 1.00

Coefficiente Ideal Fluencia [μ * (Cperm./Ctot.)]: 0.00

INTERACCION M-N-V

Flexión POSITIVA Axil de TRACCION

Fibra referencia Momentos: Yo (cm) = 108.33

DIAGRAMA Mu-Nu:

Cortante Total (Tn) = 0.0 (0.0 + 0.0)

MOMENTO (m.T.)	AXIL (Tn.)	Xn (cm)	Ecmx	Etmx	Fibra Rot.	Spar.
-2951.31	5137.66	-96.5	.00226	.01000	Inferior	4
-2707.82	4880.77	-65.5	.00161	.01000	Inferior	4
-2467.02	4623.89	-54.1	.00133	.01000	Inferior	4
-2228.38	4367.01	-44.7	.00110	.01000	Inferior	4
-1989.75	4110.12	-35.9	.00086	.01000	Inferior	4
-1751.12	3853.24	-27.5	.00062	.01000	Inferior	4
-1513.74	3596.36	-19.6	.00039	.01000	Inferior	4
-1285.58	3339.48	-12.4	.00016	.01000	Inferior	4
-1040.50	3082.59	-5.3	-.00007	.01000	Inferior	4
-789.08	2825.71	-.7	-.00023	.01000	Inferior	4
-540.81	2568.83	2.8	-.00035	.01000	Inferior	4
-284.62	2311.94	5.7	-.00046	.01000	Inferior	4
-31.05	2055.06	8.4	-.00055	.01000	Inferior	4
220.51	1798.18	10.7	-.00064	.01000	Inferior	4
470.05	1541.30	12.9	-.00072	.01000	Inferior	4
712.35	1284.41	14.9	-.00080	.01000	Inferior	4
960.10	1027.53	16.9	-.00088	.01000	Inferior	4

1205.10	770.65	18.7	-.00095	.01000	Inferior	4
1447.32	513.77	20.5	-.00102	.01000	Inferior	4
1686.90	256.88	22.2	-.00109	.01000	Inferior	4
1924.39	0.00	23.8	-.00116	.01000	Inferior	4

INTERACCION M-N-V

Flexion POSITIVA Axil de COMPRESION
Fibra referencia Momentos: Yo(cm)= 108.33

DIAGRAMA Mu-Nu:

Cortante Total (Tn)= 0.0(0.0 + 0.0)

MOMENTO(m.T.)	AXIL(Tn.)	Xn(cm)	Ecmx	Etmx	Fibra Rot.	Spar.
-1477.06	-11846.09	1686.7	-.00228	-.00163	Superior	1
-436.95	-11313.68	472.0	-.00279	-.00095	Superior	1
687.90	-10648.17	356.5	-.00311	-.00052	Superior	1
1765.02	-9982.66	310.1	-.00336	-.00019	Superior	1
2773.27	-9317.15	284.4	-.00350	.00007	Superior	1
3609.72	-8651.64	264.2	-.00350	.00031	Superior	1
4353.58	-7986.13	242.4	-.00350	.00063	Superior	1
5024.51	-7320.62	219.3	-.00350	.00103	Superior	1
5592.00	-6655.11	185.5	-.00350	.00180	Superior	1
6054.75	-5989.60	143.9	-.00350	.00324	Superior	1
6338.85	-5324.08	102.6	-.00350	.00584	Superior	1
5981.34	-4658.57	65.2	-.00312	.00974	Superior	1
5481.41	-3993.06	54.8	-.00262	.01000	Inferior	4
4923.24	-3327.55	47.5	-.00224	.01000	Inferior	4
4336.38	-2662.04	41.9	-.00196	.01000	Inferior	4
3740.73	-1996.53	36.9	-.00173	.01000	Inferior	4
3140.37	-1331.02	32.4	-.00152	.01000	Inferior	4
2534.67	-665.51	28.0	-.00134	.01000	Inferior	4
1924.39	0.00	23.8	-.00116	.01000	Inferior	4

Proyecto:

Seccion:MAC

MATERIALES

Num.	Fck (Kg/cm2)	Gamma	M.El. (Kg/cm2)	J _{π1}	J _{π2}
1(HO)	350.0	1.50	285770	2.60	1.45
2(HO)	550.0	1.50	338219	2.60	1.45
3(RD)	5100.0	1.15	2100000		
4(PR)	17100.0	1.15	1950000		
5(PR)	8300.0	1.15	2100000		

SECCIONES PARCIALES

Num	Mat.	B(cm)	H(cm)	Yo(cm)	Mc	Nsr
		Num π (mm)				
1	1	700.0	30.0	0.0	C*	0
2	2	90.0	30.0	30.0	C*	0
3	2	36.0	198.0	60.0	C*	0
4	2	179.0	27.0	258.0	C*	0
5	5	4.0	47.0	239.8	*T	0
6	5	4.0	47.0	217.8	*T	0
7	4	0.0	0.0	0.0	*T	0
8	4	0.0	0.0	0.0	*T	0
9	5	2.0	40.0	43.0	*T	0
10	3	70.0	20.0	5.0	CT	0
11	3	70.0	20.0	19.0	CT	0
12	4	105.0	13.4	18.0	*T	0
13	2	130.0	64.8	193.2	C*	0

SECCIONES INTEREDIAS

Num. Codigo Componentes

1	CAJ	2	3	4				
2	LOS	1						
3	C+P	2	3	4	5	6	7	
		8	9					
4	PS	9						
5	PI	6	7	8	5			

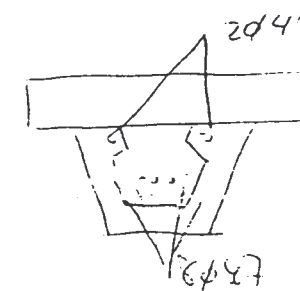
* CONSTANTES ESTATICAS *

S.COMPLETA

Tipo	Acciones	Area(cm2)	Xcg(cm)	Inercia(cm4)
F.pura +	(0)	2906.9	22.75	6497166.1
	(1)	1553.2	34.77	6007872.9
	(2)	1912.1	30.93	6153214.0
F.pura -	(0)	3120.6	198.08	26398953.0
	(1)	1513.0	146.42	17986719.4
	(2)	1835.7	163.35	20571889.6
C.Simple	(0)	7315.9	109.88	80795365.4
	(1)	2566.8	98.66	27500289.4
	(2)	3424.2	102.99	37223880.9
T.Simple	(0)	740.2	56.04	5303187.4
	(1)	740.2	56.04	5303187.4
	(2)	740.2	56.04	5303187.4

*** Nota: Homogeneizadas a E=2100000 Kp/cm2 ***

INTERACCION ROTURA(ELASTOPLASTICO)



Título Sección: MAC

* PRESOLICITACIONES ELASTICAS

Analisis SIN FISURACION

Pretensado: 3099.09Tn.

(Todas las Armaduras activas a .80*Fyk)

ESTUDIO SECCION COMPLETA

Analisis con Resistencia de materiales MINORADAS

Def. Ultima Acero Estructural (COMPRESION) (%): 2.50

Def. Ultima Acero Estructural (TRACCION) (%): 2.50

Deformacion Ultima Hormigon (COMPRESION) : Pivote en Bloque de Hormigon

Deformacion Ultima Hormigon (TRACCION) (%): 1.00

Coefficiente Ideal Fluencia [μ *(Cperm./Ctot.)]: 0.00

INTERACCION M-N-V

Flexion POSITIVA Axil de TRACCION

Fibra referencia Momentos: Yo(cm)= 108.00

DIAGRAMA Mu-Nu:

Cortante Total (Tn)= 0.0(0.0 + 0.0)

MOMENTO (m.T.)	AXIL (Tn.)	Xn (cm)	Ecmx	Etmx	Fibra Rot. Spar.
-2498.51	5319.05	-74.0	.00183	.01000	Inferior 4
-2242.69	5053.09	-57.5	.00144	.01000	Inferior 4
-1993.99	4787.14	-47.3	.00118	.01000	Inferior 4
-1745.31	4521.19	-37.7	.00093	.01000	Inferior 4
-1494.07	4255.24	-28.6	.00067	.01000	Inferior 4
-1246.68	3989.28	-20.2	.00041	.01000	Inferior 4
-1007.96	3723.33	-12.5	.00017	.01000	Inferior 4
-754.25	3457.38	-5.1	-.00008	.01000	Inferior 4
-493.01	3191.43	-.4	-.00024	.01000	Inferior 4
-235.16	2925.48	3.1	-.00037	.01000	Inferior 4
30.21	2659.52	6.1	-.00048	.01000	Inferior 4
292.60	2393.57	8.8	-.00058	.01000	Inferior 4
552.64	2127.62	11.2	-.00067	.01000	Inferior 4
803.16	1861.67	13.3	-.00075	.01000	Inferior 4
1061.46	1595.71	15.4	-.00083	.01000	Inferior 4
1316.65	1329.76	17.4	-.00091	.01000	Inferior 4
1568.68	1063.81	19.2	-.00099	.01000	Inferior 4
1815.91	797.86	21.0	-.00106	.01000	Inferior 4
2064.07	531.90	22.7	-.00113	.01000	Inferior 4
2308.57	265.95	24.4	-.00120	.01000	Inferior 4
2552.16	0.00	26.1	-.00127	.01000	Inferior 4

ANALISIS EN ROTURA (ELASTOPLASTICO)

Título Sección: MAC

* PRESOLICITACIONES ELASTICAS

Analisis SIN FISURACION

Pretensado: 3099.09Tn.

(Todas las Armaduras activas a .80*Fyk)

ESTUDIO SECCION COMPLETA

Analisis con Resistencia de materiales MINORADAS

Def. Ultima Acero Estructural (COMPRESION) (%): 2.50

Def. Ultima Acero Estructural (TRACCION) (%): 2.50

Deformacion Ultima Hormigon (COMPRESION) : Pivote en Bloque de Hormigon

Deformacion Ultima Hormigon (TRACCION) (%): 1.00

Coefficiente Ideal Fluencia [μ *(Cperm./Ctot.)]: 0.00

FLEXION PURA POSITIVA:

Mu(m.T): 2552.2 Xu(cm.): 26.1

Nu(Tn.): -0.0 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00127 Etmx= .01000
Rompe la fibra inferior de la S.parcial 4

FLEXION PURA NEGATIVA:

Mu(m.T): -9789.7 Xu(cm.): 171.0

Nu(Tn.): -.7 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00350 Etmx= .00482
Rompe la fibra inferior de la S.parcial 4

COMPRESION SIMPLE(Rigido/Plastico):

Nu(Tn.): -13310.3 aplicado en Yo(cm)= 111.2

TRACCION SIMPLE(Rigido/Plastico):

Nu(Tn.): 5319.1 aplicado en Yo(cm)= 57.5

CORTANTE ULTIMO(Rigido/Plastico):

Vu(Tn.): 0.0 Ru(Kg/cm): 0.0

Xv1(cm): 0.0 Xv2(cm): 0.0

S.parciales resistentes: Rcu(Kg/cm):

ANALISIS EN ROTURA (ELASTOPLASTICO)

Título Sección: MAC

* PRESOLICITACIONES ELASTICAS

Analisis SIN FISURACION

Pretensado: 3099.09Tn.

(Todas las Armaduras activas a .80*Fyk)

ESTUDIO SECCION C+P

Analisis con Resistencia de materiales MINORADAS

Def. Ultima Acero Estructural (COMPRESION) (%): 2.50

Def. Ultima Acero Estructural (TRACCION) (%): 2.50

Deformacion Ultima Hormigon (COMPRESION) : Pivote en Bloque de Hormigon

Deformacion Ultima Hormigon (TRACCION) (%): 1.00

Coefficiente Ideal Fluencia [μ *(Cperm./Ctot.)]: 0.00

FLEXION PURA POSITIVA:

Mu(m.T): 1919.2 Xu(cm.): 91.3

Nu(Tn.): -.7 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00350 Etmx= .01000
Rompe la fibra inferior de la S.parcial 4

FLEXION PURA NEGATIVA:

Mu(m.T): -823.4 Xu(cm.): 253.4

Nu(Tn.): -0.0 Qu(Tn.): 0.0

Deformaciones Ultimas: Ecmx= -.00157 Etmx= .01000
Rompe la fibra superior de la S.parcial 2

COMPRESION SIMPLE(Rigido/Plastico):

Nu(Tn.): -4569.3 aplicado en Yo(cm)= 175.1

TRACCION SIMPLE(Rigido/Plastico):

Nu(Tn.): 1183.1 aplicado en Yo(cm)= 202.6

CORTANTE ULTIMO(Rigido/Plastico):

Vu(Tn.): 0.0 Ru(Kg/cm): 0.0

Xv1(cm): 0.0 Xv2(cm): 0.0

S.parciales resistentes: Rcu(Kg/cm):

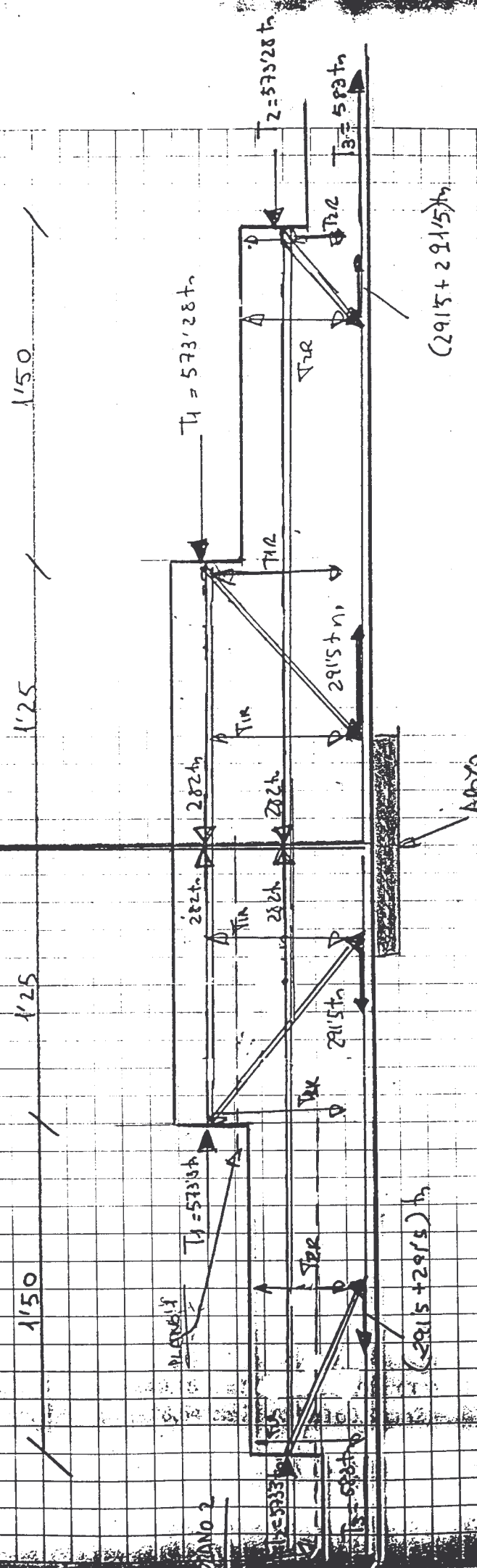
IDEAM

A continuación se adjunta el esquema detallado de
funcionamiento del modelo de bielas y tirantes en las
manipulas de continuidad de pilas con las barras Macalby.

JUNTA DE CONTINUIDAD ENTRE VIGAS

$$T_1 = T_2 = (4647) = 1734 \text{ cm}^2 \times 9'5 / 1'15 \times 4 = 573'28 \text{ tn}$$

$$T_3 = (28 \phi 0'6") = 28 \times \frac{17'1}{1'15} = 582'88 \text{ tn}$$



Funcionamiento de las barras Macalloy en los mamparos de continuidad de pila:

- La fuerza máxima que pueden recoger las barras Macalloy son las que aparecen como $T_1 = 573'28 \text{ tn}$ y $T_2 = 573'28 \text{ tn}$

Dichas fuerzas deben separarse con los $28 \phi 0'6"$ inferiores cuya fuerza máxima de dimensionamiento es de $582'88 \text{ tn}$ el resto de las fuerzas de las barras Macalloy son mas fuerzas autoequilibradas.

Para realizar dicho golpe es necesario recoger las fuerzas $T_{1R} = 291'5 \text{ tn}$ y $T_{2R} = 291'5 \text{ tn}$ por lo que en cada caso se necesitan $291'5 / 409 = 71'27 \text{ cm}^2$ perfectamente admisible con la armadura ya dispuesta $E1 (80'4 \text{ cm}^2)$ y $E3 (121'64 \text{ cm}^2)$ junto con $E4 (128'64 \text{ cm}^2)$ y $E6 (160'8 \text{ cm}^2)$

Finalmente se comprueba que se tiene cosidos los planos indicados como 1 y 2 en el croquis con la armadura diagonal:

- Plano 1: $R_{sante} = 573'27$

$$A_{neces} = 573'27 / 4'09 = 140'16 \text{ cm}^2$$

$$A_{disponible} = E1 (70'4 \text{ cm}^2) + E3 (128'64 \text{ cm}^2) = 209 \text{ cm}^2$$

VALE

- Plano 2: $R_{sante} = 573'28 \text{ tn}$

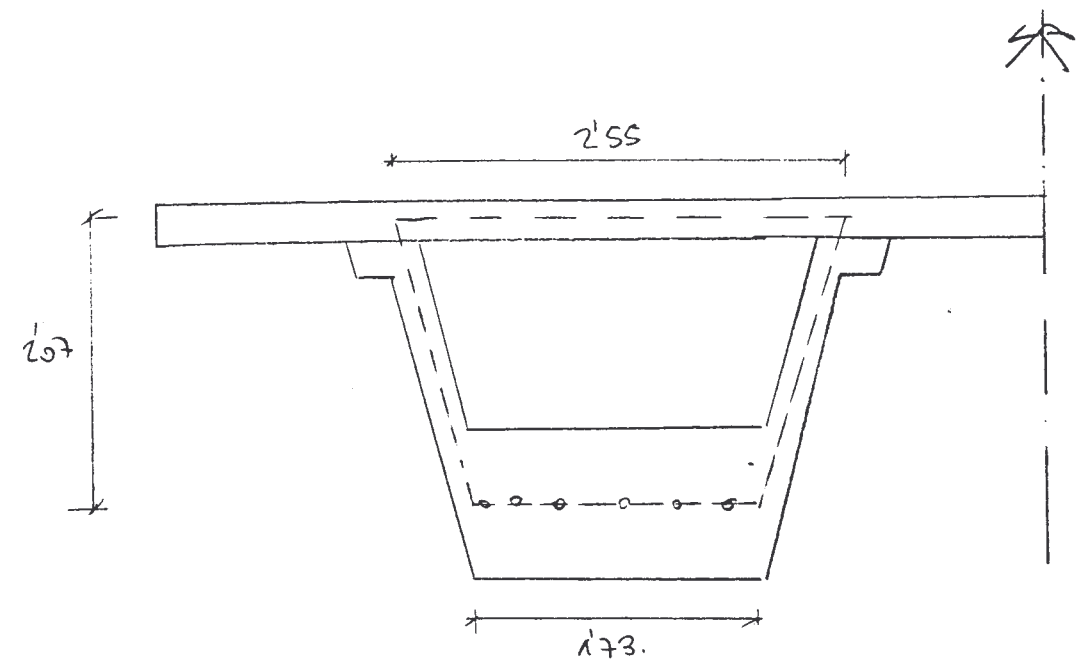
$$A_{neces} = 573'27 / 4'09 = 140'16 \text{ cm}^2$$

$$A_{disponible} = E4 (128'64 \text{ cm}^2) + E5 (160'8 \text{ cm}^2) = 289'44 \text{ cm}^2$$

VALE

c) la torsión tiene que ser capaz de pasar de una viga a otra debido a la inexistencia de armadura pasante entre las almas

la sección a comprobar es:



sin considerar la colaboración en longitudinal a torsión de las almas:

$$A_e = \frac{(255 + 173)}{2} \times 207 = 442 \text{ m}^2$$

$$T_d = \frac{A_e}{n_e} \times A_e \times f_{y,d} \times t_{g0} = 539'8 \text{ mt}$$

Entonces:

$$\frac{A_e}{n_e A_e t_g \phi f_y} = \frac{5398}{442 \times 1 \times 4} = 3053 \text{ cm}^2$$

Arriba (losa) $\Rightarrow$ $\phi 20$ a 10 $\Rightarrow$ varios.

$$\text{Abajo: } 170 \text{ tn/m} \times 173 = 2941 \text{ tn}$$

A esto hay que añadir la tracción debido al frenado.

, realigero y termico.

$$2941 \text{ tn} + R_{nd} = 2941 + 43002 = 72403$$

$$\text{Se necesita: } 72403 / 835/115 = 997 \text{ cm}^2 \text{ de Macalloy.}$$

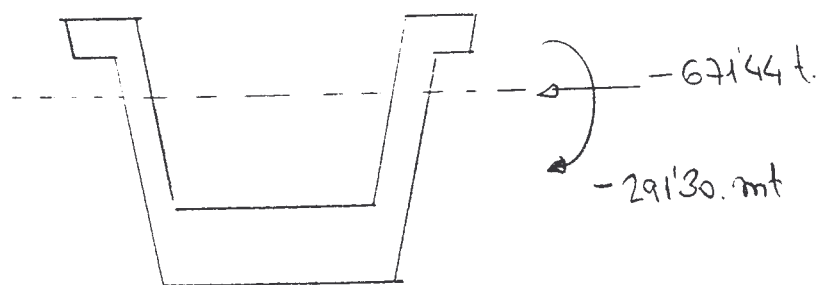
$\downarrow$

$$8\phi 47 \quad (12879 \text{ cm}^2)$$

ENVOLVENTE MX,d

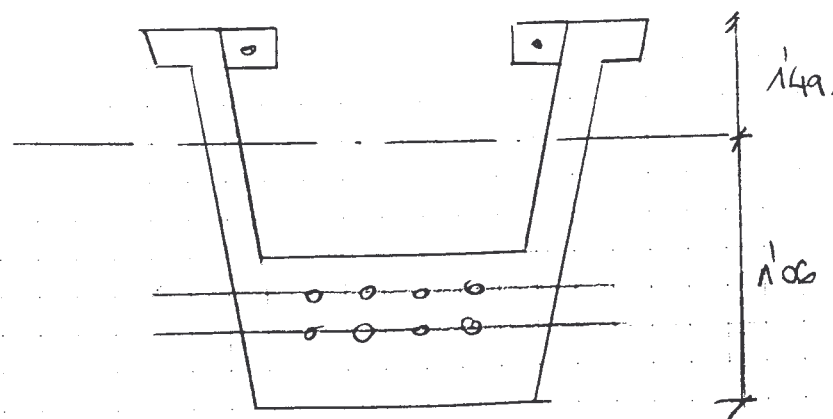
Barra	Nudo	X	Mx (Tm)	Vy (T)
12	10013	33.50	-483.4	698.8
13	13	33.50	-474.8	-560.4
24	10025	73.50	-539.8	597.2
25	25	73.50	-504.1	-287.7
110	10111	27.40	409.0	544.0
111	111	27.40	511.4	-565.4
122	10123	67.40	-405.0	588.5
123	123	67.40	557.6	-607.9

D) En la sección de continuidad en pile no existe continuidad del pretensado, por ello la fibra inferior del cajón habrá que restarle en el cálculo de tensiones la tensión producida por el pretensado del cajón.



$$A \quad t=0 \Rightarrow \sigma_{inf} = -671'44 / 1'779 - 291'30 \times 106 / 1'39 = 59'96 \text{ Kp/cm}^2$$

El tensado de las barras Macalloy produce:



$$\sigma_{se} \text{ tens al } 0'70 f_{py} = 0'70 \times 10500 = 7350 \text{ Kp/cm}^2$$

con un 10% de pérdidas instantáneas

$$F = 17'35 \text{ cm}^2_{\text{barras}} \times 7350 \times 10^{-3} = 127'52 \text{ t/barras} \times 0'9 = 115 \text{ t/barras}$$

$$N = (7+2) \times 127'52 \times 0'9 = 1150 \text{ t}$$

$$M = -(1'06 - 0'557) \times 8 \times 115 + (1'49 - 0'15) \times 2 \times 115 = -453'56 + 308'2 = -145'36 \text{ mt}$$

$$\sigma_{inf} = -1150 / 1'779 - 145'36 \times 106 / 1'39 = 75'73 \text{ Kp/cm}^2$$

la falta de continuidad de pretensado queda recogida por las barras Macalloy : $75'73 - 59'96 = 15'57 \text{ Kp/cm}^2$ (compresión)

ARMADURA DE REFUERZO EN LOS APOYOS PERMANENTES, VIADUCTO V-2. VIADUCTO DE SANTA OLIVA.

- LA ARMADURA INDICADA ES A SUPLEMENTAR A LA GENERAL DE ARMADO Y A LA INDICADA EN LOS PLANOS DE ARMADO DE MAMPAROS.
- SE DEBERÁ PREVEER VAINAS PARA LA ENTRADA DE LOS PERNOS EN EL CAJÓN QUE POSTERIORMENTE SE RELLENARÁN CON GROUT, EL REPLANTEO SE REALIZARÁ CON LOS DATOS SUMINISTRADOS POR EL FABRICANTE DE LOS APOYOS.
- LA HOLGURA ENTRE ESTE TRAMO Y LOS ISOSTÁTICOS CONTIGUOS TENDRÁ QUE SER LA SUFICIENTE PARA QUE SE PUEDAN PRODUCIR LOS MOVIMIENTOS LONGITUDINALES CON LOS COEFICIENTES DE SEGURIDAD PERTINENTES.
- LAS REACCIONES TRANSVERSALES UTILIZADAS SON LA PROVENIENTES DEL CÁLCULO DE LA SUBESTRUCTURA Y PREVIAMENTE A LA EJECUCIÓN DE LAS VIGAS DEBERÁ SER CONFIRMADAS POR PARTE DEL CÁLCULISTA DE ESTA:
 - PARA LAS PILAS P16 y P20 SE HA CONSIDERADO UNA FUERZA HORIZONTAL EN TRANSVERSAL DE 35 tn/apoyo (EN SERVICIO)
 - EN EL CASO DE LAS PILAS P17 y P18 SE HA CONSIDERADO UNA FUERZA HORIZONTAL EN TRANSVERSAL DE 50 tn/apoyo (EN SERVICIO).
 - LAS PILA P19 SE HAN ADOPTADO COMO PUNTO FIJO EN TRANSVERSAL CON UNA FUERZA LONGITUDINAL DE 200 tn/apoyo (EN SERVICIO) Y DE 45 tn/apoyo EN TRANSVERSAL (EN SERVICIO)

IDEAM

A continuación se estudia la introducción de las
fuerzas transversales desde los apoyos, esta fuerza se
recoge con unas $\perp$ que sobran en la armadura de
tensores.

Respecto a la fuerza horizontal a longitud
se comprueba que con un esgruo de bidas es suficiente
con la armadura ya dispuesta. Además se comprueba
una deformación local de la pila en la cabeza,
esta deformación queda cubierta con la armadura ya
dispuesta.

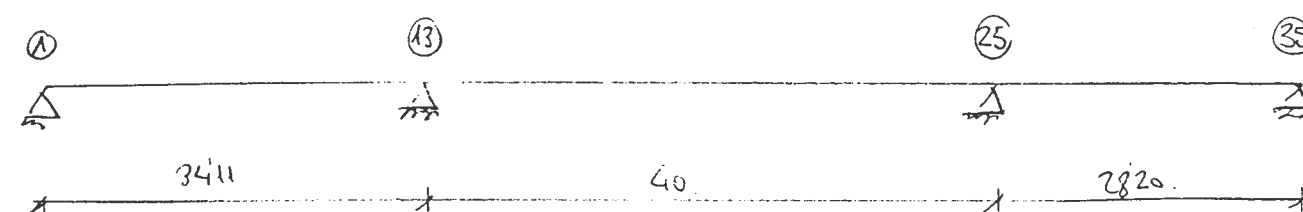
A falta de datos de reacciones horizontales en
apoyos se tomarán del libro de la Seguridad (capítulo
mayor) de los viaductos V-2 de Santa Oliva.

2.2.6. Reacciones

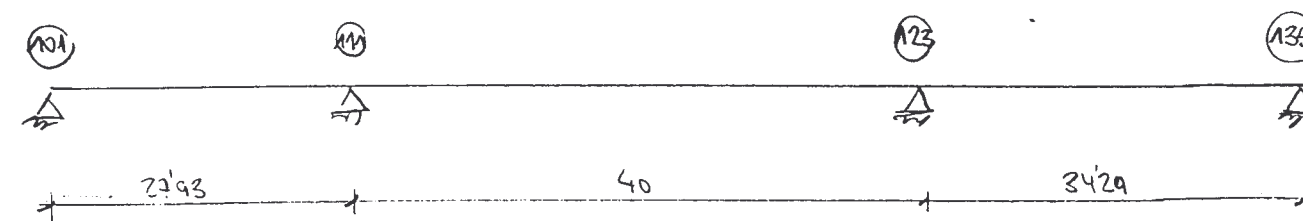
A continuación se adjuntan los listados de reacciones sobre pilas y estribos así como un resumen de cada estado de carga y cada apoyo junto a un croquis indicativo de los mismos.

ESQUEMA DE APOYOS

CALZADA IZQUIERDA



CALZADA DERECHA



Para considerar el apoyo exterior del tren se deben multiplicar las reacciones de éste por 1.08 (1.08x reacciones con apoyo interior)

RESUMEN DE REACCIONES VERTICALES . VIADUCTO V-1 DE SANTA OLIVA.

LOS VALORES DE TREN INCLUIDOS SON PARA TRENES RIPADOS HACIA DENTRO, PARA CONSIDERAR EL RIPADO HACIA EL EXTERIOR LOS VALORES DE LA TABLA HAY QUE MULTIPLICARLOS POR 1,08.

UNIDADES= tn

NUDO		1	13	25	35	101	111	123	135
PILA		P3-1	P4-1	P-5-1	P-6-1	P-3-2	P4-2	P-5-2	P-6-2
FASE 1. COLOCACIÓN DE CAJONES PRETENSADOS									
PESO PROPIO CAJON FASE1		64.07	140.58	129.3	52.79	52.4	128.9	140.95	64.45
FASE 2. HORMIGONADO DE LOSA EN ZONA DE PILAS									
PESO PROPIO LOSA FASE 2		0.27	99.03	93.86	-0.05	-0.12	93.58	99.15	0.28
FASE 3. HORMIGONADO DE RESTO DE LOSA									
PESO PROPIO LOSA FASE 3		59.44	120.95	110.14	47.44	47.01	109.25	121.47	59.86
SUMA PESO PROPIO A T=0		123.78	360.56	333.3	100.18	99.29	331.73	361.57	124.59
FASE 4. PUENTE CERRADO									
PESO PROPIO VIGAS SOBRE ESTRUCTURA FINAL		46.01	158.98	143.11	38.61	38.23	142.55	159.55	46.38
PESO PROPIO LOSA SOBRE ESTRUCTURA FINAL		63.15	218.21	196.43	52.99	52.48	195.66	218.99	63.65
SUMA PESO PROPIO A T=INF		111.35	374.70	338.60	92.89	92.00	337.24	375.99	112.21
CARGA MUERTA MAX		139.2	483.8	435.6	117.5	131.6	490.4	548.9	160.4
GRADIENTE		10.99	-7.83	-16.75	13.6	13.67	-16.81	-7.79	10.93
FY+		15.35	48.9	44.18	12.68	12.6	44.05	49.05	15.43
FY-		-5.56	-15.55	-13.97	-3.83	-3.81	-13.95	-15.58	-5.57
IZQUINT2. TREN EN CALZADA IZQ RIPADO HACIA EL INTERIOR									
FY+		138.96	398.11	361.07	119.23	30.17	83.2	106.1	36.59
FY-		-9.41	11.09	10.79	-14.16	-5.09	7.14	-5.41	-10.15
DERINT2. TREN EN CALZADA DERECHA RIPADO HACIA EL INTERIOR									
FY+		32.58	93.98	71.05	27.31	127.19	389.04	430.91	150.2
FY-		-12.12	-9.31	5.85	-5.93	-13.83	14.16	15.7	-7.96
PRETENSADO		79.91	-68.11	-62.41	50.61	48.43	-48.2	-91.88	91.64
REACCIÓN MÁXIMA EN SERVICIO		559.87	1431.37	1279.36	455.69	477.93	1375.07	1545.40	610.91
REACCIÓN MÍNIMA EN SERVICIO		177.09	585.89	534.32	147.57	157.60	586.17	609.82	196.12
		tn	tn	tn	tn	tn	tn	tn	tn

CÁLCULO DE REACCIONES

Hipótesis de cálculo:

PPCF1

Peso propio de los cajones en fase 1.

[1; 1]PPCF1

Coef. exc:

Nudo	X	Fy (T)	Mx (Tm)
1	0.00	64.07	0.00
13	0.00	76.51	0.00
25	0.00	52.79	0.00
35	0.00	52.79	0.00
10013	0.00	64.07	0.00
10025	0.00	76.51	0.00
101	0.00	52.40	0.00
111	0.00	76.50	0.00
123	0.00	64.45	0.00
135	0.00	64.45	0.00
10111	0.00	52.40	0.00
10123	0.00	76.50	0.00

CÁLCULO DE REACCIONES

Hipótesis de cálculo:
PPLF2

Peso de losa hormigonada en fase 2

[1; 1]PPLF2
Coef. exc:

Nudo	X	Fy (T)	Mx (Tm)
1	0.00	0.27	3.01
13	0.00	99.03	45.61
25	0.00	93.86	43.07
35	0.00	-0.05	3.20
101	0.00	-0.12	-3.18
111	0.00	93.58	-42.94
123	0.00	99.15	-45.66
135	0.00	0.28	-3.00

CÁLCULO DE REACCIONES

Hipótesis de cálculo:
GRADF2

Gradiente en fase 2

[1; 1]GRADF2
Coef. exc:

Nudo	X	Fy (T)	Mx (Tm)
1	0.00	4.32	0.00
13	0.00	-4.44	0.00
25	0.00	-4.95	0.00
35	0.00	5.07	0.00
101	0.00	5.10	0.00
111	0.00	-4.98	0.00
123	0.00	-4.42	0.00
135	0.00	4.30	0.00

CÁLCULO DE REACCIONES

Hipótesis de cálculo:
PPLF3

Peso propio de losa hormigonada en fase 3.

[1; 1]PPLF3

Coef. exc:

Nudo	X	Fy (T)	Mx (Tm)
1	0.00	59.44	31.95
13	0.00	120.95	70.00
25	0.00	110.14	34.60
35	0.00	47.44	24.99
10013	0.00	0.00	0.00
10025	0.00	0.00	0.00
101	0.00	47.01	-24.81
111	0.00	109.25	-35.36
123	0.00	121.47	-71.14
135	0.00	59.86	-32.19
10111	0.00	0.00	0.00
10123	0.00	0.00	0.00

CÁLCULO DE REACCIONES

Hipótesis de cálculo:
GRADF3

Gradiente en fase 3

[1; 1]GRADF3

Coef. exc:

Nudo	X	Fy (T)	Mx (Tm)
1	0.00	6.65	-0.01
13	0.00	-0.72	-21.32
25	0.00	-13.90	21.10
35	0.00	7.96	0.00
10013	0.00	0.00	0.00
10025	0.00	0.00	0.00
101	0.00	8.00	0.00
111	0.00	-13.92	-21.06
123	0.00	-0.68	21.36
135	0.00	6.61	0.01
10111	0.00	0.00	0.00
10123	0.00	0.00	0.00

CÁLCULO DE REACCIONES

Hipótesis de cálculo:
PPVIGAS

Peso propio de vigas sobre estructura final

[1; 1]PPVIGAS
Coef. exc:

Nudo	X	Fy (T)	Mx (Tm)
1	0.00	46.01	0.00
13	0.00	158.98	0.00
25	0.00	143.11	0.00
35	0.00	38.61	0.00
101	0.00	38.23	0.00
111	0.00	142.55	0.00
123	0.00	159.55	0.00
135	0.00	46.38	0.00

CÁLCULO DE REACCIONES

Hipótesis de cálculo:
PPLOSA

Peso propio de losa sobre estructura final

[1; 1]PPLOSA
Coef. exc:

Nudo	X	Fy (T)	Mx (Tm)
1	0.00	63.15	0.00
13	0.00	218.21	0.00
25	0.00	196.43	0.00
35	0.00	52.99	0.00
101	0.00	52.48	0.00
111	0.00	195.66	0.00
123	0.00	218.99	0.00
135	0.00	63.65	0.00

CÁLCULO DE REACCIONES

Hipótesis de cálculo:

CMmax

Carga muerta máxima

[1; 1]CMmax

Coef. exc:

Nudo	X	Fy (T)	Mx (Tm)
1	0.00	139.19	0.00
13	0.00	483.84	0.00
25	0.00	435.57	0.00
35	0.00	117.48	0.00
101	0.00	131.56	0.00
111	0.00	490.42	0.00
123	0.00	548.87	0.00
135	0.00	160.35	0.00

CÁLCULO DE REACCIONES

Hipótesis de cálculo:

GRAD

Gradiente termico

[1; 1]GRAD

Coef. exc:

Nudo	X	Fy (T)	Mx (Tm)
1	0.00	10.99	0.00
13	0.00	-7.83	0.00
25	0.00	-16.75	0.00
35	0.00	13.60	0.00
101	0.00	13.67	0.00
111	0.00	-16.81	0.00
123	0.00	-7.79	0.00
135	0.00	10.93	0.00

CÁLCULO DE REACCIONES

Hipótesis de cálculo:

SCUPASEOSIZQU.ENV_TREN_GENERICO.FY+

Envolvente de tren de cargas plano genérico. FY+

[0; 1]SCUPASEOSIZQUSCuniTneg.Barra1.Mx- + [0; 1]SCUPASEOSIZQUSCuniTneg.

Coef. exc:

Nudo	X	Fy (T)	Mx (Tm)
1	0.00	15.35	0.00
13	0.00	48.90	0.00
25	0.00	44.18	0.00
35	0.00	12.68	0.00
101	0.00	0.03	0.00
111	0.00	0.00	0.00
123	0.00	0.00	0.00
135	0.00	0.21	0.00

CÁLCULO DE REACCIONES

Hipótesis de cálculo:

SCUPASEOSIZQU.ENV_TREN_GENERICO.MX+

Envolvente de tren de cargas plano genérico. MX+

[0; 1]SCUPASEOSIZQUSCuniTneg.Barra1.Mx- + [0; 1]SCUPASEOSIZQUSCuniTneg.

Coef. exc:

Nudo	X	Fy (T)	Mx (Tm)
1	0.00	0.00	0.00
13	0.00	0.00	0.00
25	0.00	0.00	0.00
35	0.00	0.00	0.00
101	0.00	0.00	0.00
111	0.00	0.00	0.00
123	0.00	0.00	0.00
135	0.00	0.00	0.00

CÁLCULO DE REACCIONES

Hipótesis de cálculo:
SCUPASEOSIZQU.ENV_TREN_GENERICO.FY-
Envolvente de tren de cargas plano genérico. FY-
[0; 1]SCUPASEOSIZQUSCuniTneg.Barra1.Mx- + [0; 1]SCUPASEOSIZQUSCuniTneg.
Coef. exc:

Nudo	X	Fy (T)	Mx (Tm)
1	0.00	-0.38	0.00
13	0.00	-0.10	0.00
25	0.00	-0.28	0.00
35	0.00	-0.80	0.00
101	0.00	-3.81	0.00
111	0.00	-13.95	0.00
123	0.00	-15.58	0.00
135	0.00	-5.57	0.00

CÁLCULO DE REACCIONES

Hipótesis de cálculo:
SCUPASEOSIZQU.ENV_TREN_GENERICO.MX-
Envolvente de tren de cargas plano genérico. MX-
[0; 1]SCUPASEOSIZQUSCuniTneg.Barra1.Mx- + [0; 1]SCUPASEOSIZQUSCuniTneg.
Coef. exc:

Nudo	X	Fy (T)	Mx (Tm)
1	0.00	0.00	0.00
13	0.00	0.00	0.00
25	0.00	0.00	0.00
35	0.00	0.00	0.00
101	0.00	0.00	0.00
111	0.00	0.00	0.00
123	0.00	0.00	0.00
135	0.00	0.00	0.00

CÁLCULO DE REACCIONES

Hipótesis de cálculo:
SCUPASEOSDERE.ENV_TREN_GENERICO.FY+
Envolvente de tren de cargas plano genérico. FY+
[0; 1]SCUPASEOSDERE.SCuniTpos.Barra101.Mx+ + [0; 1]SCUPASEOSDERE.SCuni
Coef. exc:

Nudo	X	Fy (T)	Mx (Tm)
1	0.00	0.21	0.00
13	0.00	0.00	0.00
25	0.00	0.00	0.00
35	0.00	0.02	0.00
101	0.00	12.60	0.00
111	0.00	44.05	0.00
123	0.00	49.05	0.00
135	0.00	15.43	0.00

CÁLCULO DE REACCIONES

Hipótesis de cálculo:
SCUPASEOSDERE.ENV_TREN_GENERICO.MX+
Envolvente de tren de cargas plano genérico. MX+
[0; 1]SCUPASEOSDERE.SCuniTpos.Barra101.Mx+ + [0; 1]SCUPASEOSDERE.SCuni
Coef. exc:

Nudo	X	Fy (T)	Mx (Tm)
1	0.00	0.00	0.00
13	0.00	0.00	0.00
25	0.00	0.00	0.00
35	0.00	0.00	0.00
101	0.00	0.00	0.00
111	0.00	0.00	0.00
123	0.00	0.00	0.00
135	0.00	0.00	0.00

CÁLCULO DE REACCIONES

Hipótesis de cálculo:

SCUPASEOSDERE.ENV_TREN_GENERICO.FY-

Envolvente de tren de cargas plano genérico. FY-

[0; 1]SCUPASEOSDERE.SCuniTpos.Barra101.Mx+ + [0; 1]SCUPASEOSDERE.SCuni
Coef. exc:

Nudo	X	Fy (T)	Mx (Tm)
1	0.00	-5.56	0.00
13	0.00	-15.55	0.00
25	0.00	-13.97	0.00
35	0.00	-3.83	0.00
101	0.00	-0.83	0.00
111	0.00	-0.29	0.00
123	0.00	-0.10	0.00
135	0.00	-0.37	0.00

CÁLCULO DE REACCIONES

Hipótesis de cálculo:

SCUPASEOSDERE.ENV_TREN_GENERICO.MX-

Envolvente de tren de cargas plano genérico. MX-

[0; 1]SCUPASEOSDERE.SCuniTpos.Barra101.Mx+ + [0; 1]SCUPASEOSDERE.SCuni
Coef. exc:

Nudo	X	Fy (T)	Mx (Tm)
1	0.00	0.00	0.00
13	0.00	0.00	0.00
25	0.00	0.00	0.00
35	0.00	0.00	0.00
101	0.00	0.00	0.00
111	0.00	0.00	0.00
123	0.00	0.00	0.00
135	0.00	0.00	0.00

CÁLCULO DE REACCIONES

Hipótesis de cálculo:
IZQINT2.EnvTrenGen.FY+

Envolvente de tren de cargas plano genérico. FY+

[0; 1]IZQINT2.PaseoTren.Nudo1.Pos2.Mx+ + [0; 1]IZQINT2.PaseoTren.Nudo1.Pos3.Mx
Coef. exc:

Nudo	X	Fy (T)	Mx (Tm)
1	0.00	138.96	0.00
13	0.00	398.11	0.00
25	0.00	361.07	0.00
35	0.00	119.23	0.00
101	0.00	30.17	0.00
111	0.00	83.20	0.00
123	0.00	106.10	0.00
135	0.00	36.59	0.00

CÁLCULO DE REACCIONES

Hipótesis de cálculo:
IZQINT2.EnvTrenGen.FY-

Envolvente de tren de cargas plano genérico. FY-

[0; 1]IZQINT2.PaseoTren.Nudo1.Pos2.Mx+ + [0; 1]IZQINT2.PaseoTren.Nudo1.Pos3.Mx
Coef. exc:

Nudo	X	Fy (T)	Mx (Tm)
1	0.00	-9.41	0.00
13	0.00	11.09	0.00
25	0.00	10.79	0.00
35	0.00	-14.16	0.00
101	0.00	-5.09	0.00
111	0.00	7.14	0.00
123	0.00	-5.41	0.00
135	0.00	-10.15	0.00

CÁLCULO DE REACCIONES

Hipótesis de cálculo:

IZQINT2.EnvTrenGen.MX+

Envolvente de tren de cargas plano genérico. MX+

[0; 1]IZQINT2.PaseoTren.Nudo1.Pos2.Mx+ + [0; 1]IZQINT2.PaseoTren.Nudo1.Pos3.Mx

Coef. exc:

Nudo	X	Fy (T)	Mx (Tm)
1	0.00	50.92	0.00
13	0.00	79.28	0.00
25	0.00	29.98	0.00
35	0.00	8.09	0.00
101	0.00	1.97	0.00
111	0.00	16.22	0.00
123	0.00	8.28	0.00
135	0.00	2.09	0.00

CÁLCULO DE REACCIONES

Hipótesis de cálculo:

IZQINT2.EnvTrenGen.MX-

Envolvente de tren de cargas plano genérico. MX-

[0; 1]IZQINT2.PaseoTren.Nudo1.Pos2.Mx+ + [0; 1]IZQINT2.PaseoTren.Nudo1.Pos3.Mx

Coef. exc:

Nudo	X	Fy (T)	Mx (Tm)
1	0.00	9.96	0.00
13	0.00	33.32	0.00
25	0.00	29.98	0.00
35	0.00	24.75	0.00
101	0.00	6.46	0.00
111	0.00	7.39	0.00
123	0.00	8.28	0.00
135	0.00	2.09	0.00

CÁLCULO DE REACCIONES

Hipótesis de cálculo:
DERINT2.EnvTrenGen.FY+

Envolvente de tren de cargas plano genérico. FY+

[0; 1]DERINT2.PaseoTren.Nudo101.Pos2.Mx- + [0; 1]DERINT2.PaseoTren.Nudo101.P

Coef. exc:

Nudo	X	Fy (T)	Mx (Tm)
1	0.00	32.58	0.00
13	0.00	93.98	0.00
25	0.00	71.05	0.00
35	0.00	27.31	0.00
101	0.00	127.19	0.00
111	0.00	389.04	0.00
123	0.00	430.91	0.00
135	0.00	150.20	0.00

CÁLCULO DE REACCIONES

Hipótesis de cálculo:
DERINT2.EnvTrenGen.FY-

Envolvente de tren de cargas plano genérico. FY-

[0; 1]DERINT2.PaseoTren.Nudo101.Pos2.Mx- + [0; 1]DERINT2.PaseoTren.Nudo101.P

Coef. exc:

Nudo	X	Fy (T)	Mx (Tm)
1	0.00	-12.12	0.00
13	0.00	-9.31	0.00
25	0.00	5.85	0.00
35	0.00	-5.93	0.00
101	0.00	-13.83	0.00
111	0.00	14.16	0.00
123	0.00	15.70	0.00
135	0.00	-7.96	0.00

CÁLCULO DE REACCIONES

Hipótesis de cálculo:
DERINT2.EnvTrenGen.MX+

Envolvente de tren de cargas plano genérico. MX+

[0; 1]DERINT2.PaseoTren.Nudo101.Pos2.Mx- + [0; 1]DERINT2.PaseoTren.Nudo101.P

Coef. exc:

Nudo	X	Fy (T)	Mx (Tm)
1	0.00	1.63	0.00
13	0.00	6.95	0.00
25	0.00	14.28	0.00
35	0.00	4.93	0.00
101	0.00	8.74	0.00
111	0.00	32.53	0.00
123	0.00	36.40	0.00
135	0.00	10.95	0.00

CÁLCULO DE REACCIONES

Hipótesis de cálculo:
DERINT2.EnvTrenGen.MX-

Envolvente de tren de cargas plano genérico. MX-

[0; 1]DERINT2.PaseoTren.Nudo101.Pos2.Mx- + [0; 1]DERINT2.PaseoTren.Nudo101.P

Coef. exc:

Nudo	X	Fy (T)	Mx (Tm)
1	0.00	1.63	0.00
13	0.00	6.95	0.00
25	0.00	6.27	0.00
35	0.00	1.68	0.00
101	0.00	26.75	0.00
111	0.00	32.53	0.00
123	0.00	36.40	0.00
135	0.00	10.95	0.00

CÁLCULO DE REACCIONES

Hipótesis de cálculo:
PRETFB.TOT.To
Pretensado Total (t=0)
[1; 1]PRETFB.FAM1.TOT + [1; 1]PRETFB.FAM2.TOT + [1; 1]PRETFB.FAM3.TOT + [1
Coef. exc:

Nudo	X	Fy (T)	Mx (Tm)
1	0.00	95.38	0.00
13	0.00	-97.87	0.00
25	0.00	-85.36	0.00
35	0.00	87.84	0.00
101	0.00	-5.19	0.00
111	0.00	-5.26	0.00
123	0.00	7.14	0.00
135	0.00	3.31	0.00

CÁLCULO DE REACCIONES

Hipótesis de cálculo:
PRETFA.TOT.To
Pretensado Total (t=0)
[1; 1]PRETFA.FAM1.TOT + [1; 1]PRETFA.FAM2.TOT + [1; 1]PRETFA.FAM3.TOT + [1
Coef. exc:

Nudo	X	Fy (T)	Mx (Tm)
1	0.00	3.55	0.00
13	0.00	14.34	0.00
25	0.00	-9.97	0.00
35	0.00	-7.93	0.00
101	0.00	83.17	0.00
111	0.00	-76.11	0.00
123	0.00	-114.34	0.00
135	0.00	107.27	0.00

CÁLCULO DE REACCIONES

Hipótesis de cálculo:
PRETFD.TOT.To

Pretensado Total (t=0)

[1; 1]PRETFD.FAM1.TOT + [1; 1]PRETFD.FAM2.TOT + [1; 1]PRETFD.FAM3.TOT + [

Coef. exc:

Nudo	X	Fy (T)	Mx (Tm)
1	0.00	-25.50	0.00
13	0.00	24.72	0.00
25	0.00	33.11	0.00
35	0.00	-32.33	0.00
101	0.00	3.08	0.00
111	0.00	-0.05	0.00
123	0.00	-9.34	0.00
135	0.00	6.31	0.00

CÁLCULO DE REACCIONES

Hipótesis de cálculo:
PRETFC.TOT.To

Pretensado Total (t=0)

[1; 1]PRETFC.FAM1.TOT + [1; 1]PRETFC.FAM2.TOT + [1; 1]PRETFC.FAM3.TOT + [

Coef. exc:

Nudo	X	Fy (T)	Mx (Tm)
1	0.00	6.47	0.00
13	0.00	-9.31	0.00
25	0.00	-0.19	0.00
35	0.00	3.03	0.00
101	0.00	-32.64	0.00
111	0.00	33.23	0.00
123	0.00	24.66	0.00
135	0.00	-25.25	0.00