ANEJO Nº 6. ESTRUCTURAS

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ÍNDICE

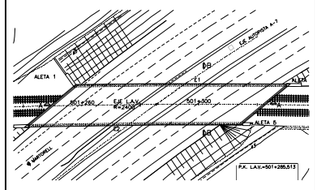
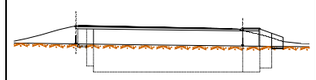
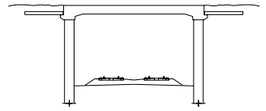
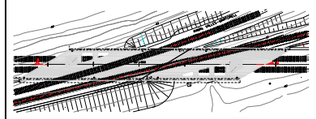
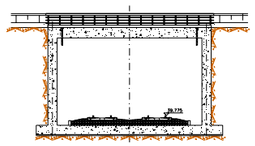
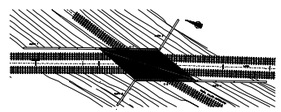
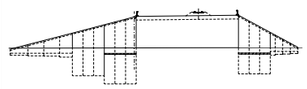
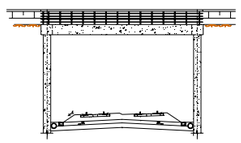
1. CUADRO RESUMEN
2. DESCRIPCIÓN (Tipología, aparatos de apoyo, juntas, impermeabilización, etc.)
3. DEFINICIÓN GEOMÉTRICA
   - 3.1. DEFINICIÓN GEOMÉTRICA
   - 3.2. CLASIFICACIÓN DE LAS ESTRUCTURAS (VIADUCTOS, PUENTES, PASOS SUPERIORES, PASOS INFERIORES, PEQUEÑAS OBRAS DE FÁBRICA, PASOS DE FAUNA)
4. CÁLCULOS
5. PROCESO CONSTRUCTIVO
6. CONTROL DE CALIDAD
   - 6.1. EMPRESA CONSTRUCTORA
     - 6.1.1. ESTRUCTURAS “IN SITU” Y PEQUEÑAS OBRAS DE FÁBRICA
     - 6.1.2. ESTRUCTURAS PREFABRICADAS (EXPEDIENTE DE FABRICACIÓN)
   - 6.2. ASISTENCIA TÉCNICA
     - 6.2.1. ESTRUCTURAS “IN SITU” Y PEQUEÑAS OBRAS DE FÁBRICA
     - 6.2.2. ESTRUCTURAS PREFABRICADAS (EXPEDIENTE DE FABRICACIÓN)
7. ACCESOS Y ELEMENTOS PARA MANTENIMIENTO
8. RECOMENDACIONES PARA LA CONSERVACIÓN Y MANTENIMIENTO
9. MOVIMIENTOS PREVISTOS EN LAS ESTRUCTURAS

1. Cuadro resumen

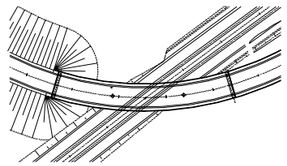
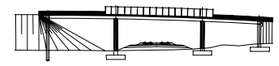
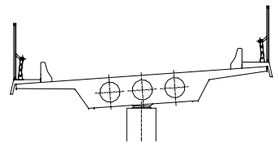
1.- CUADRO RESUMEN

A continuación se adjunta un cuadro resumen de las principales características de todas y cada una de las estructuras ejecutadas en el Proyecto Construido.

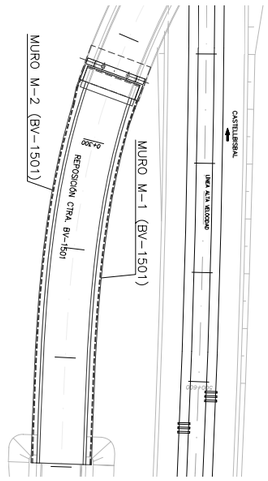
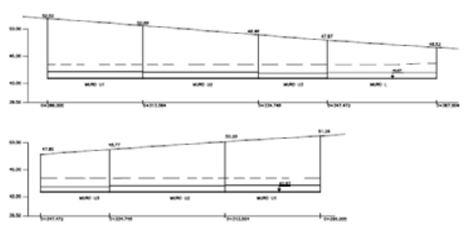
PASO BAJO OTRAS INFRAESTRUCTURAS

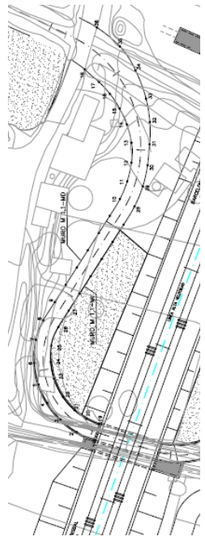
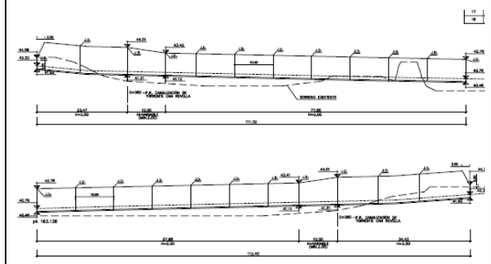
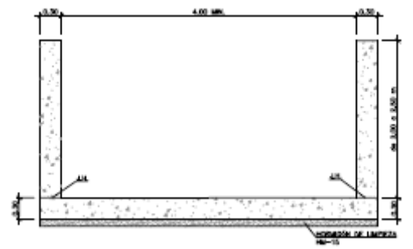
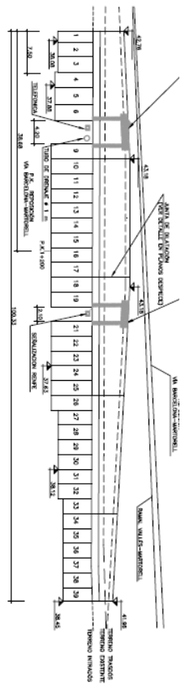
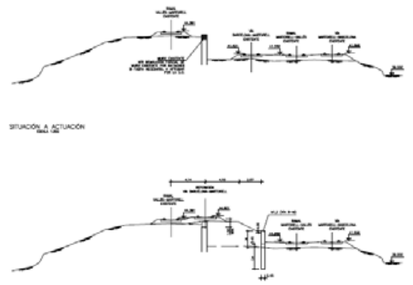
P.K.	Denominación	Tipo de estructura	Tipología	Esviaje (g)	Luces (m)	Longitud (m)	Planta	Perfil	Sección
501+285	P.B.Autopista A-7	Hiperestática	Losa de hormigón armado	100	12.50 (Luz libre)	72.00			
501+747	P.B.Ramal Vallés-Martorell y vía B-M (L.A.V.)	Hiperestática	Cajón armado	100	12.50 (Luz libre)	97.00			
502+267	P.B.Ramal Vallés-Barcelona (L.A.V.)	Hiperestática	Losa armada	100	12.50 (Luz libre)	26.00			

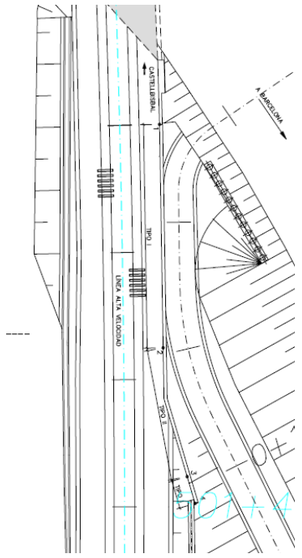
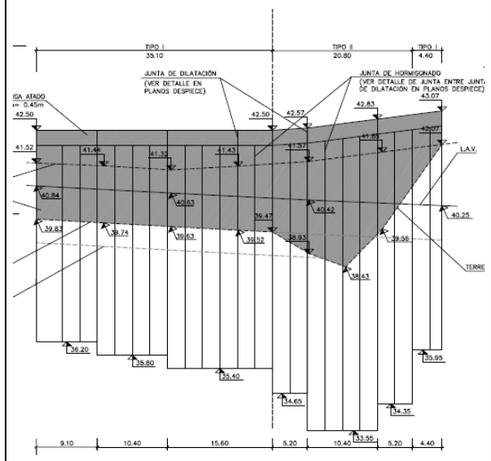
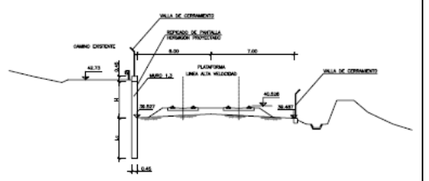
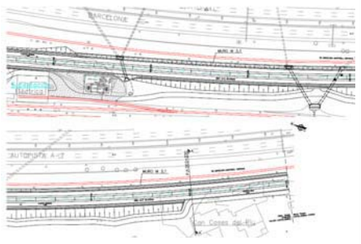
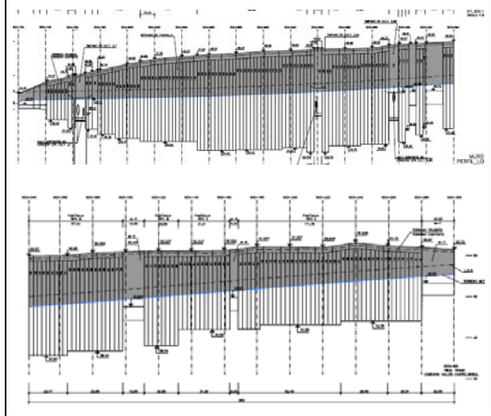
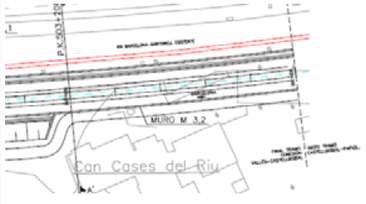
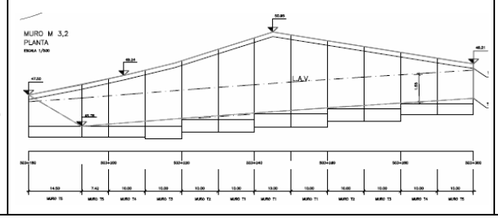
PASOS SUPERIORES

P.K.	Denominación	Estructura	Tipología	Esviaje (g)	Luces (m)	Ancho Tablero (m)	Planta	Perfil	Sección
500+512	P.S. 0,5	Hiperestática	Losa aligerada de hormigón postesado	37	24 – 30 – 20	11.2			

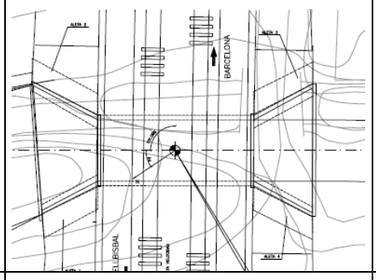
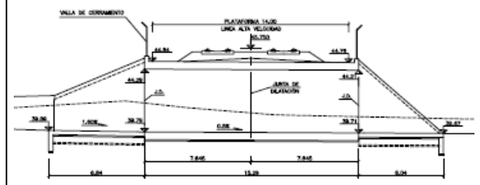
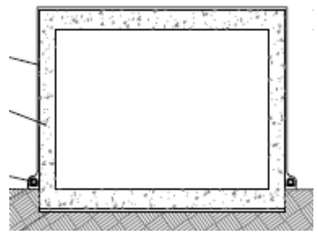
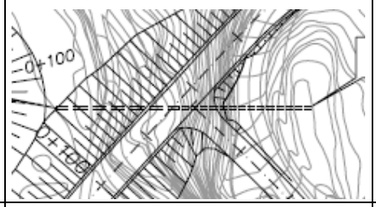
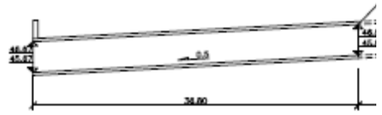
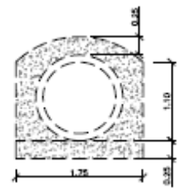
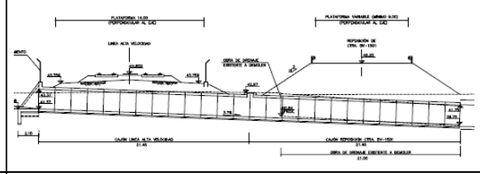
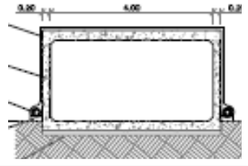
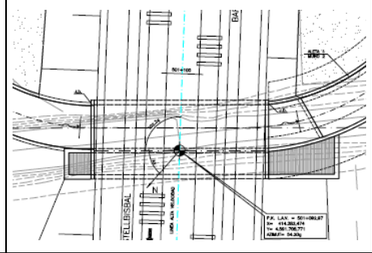
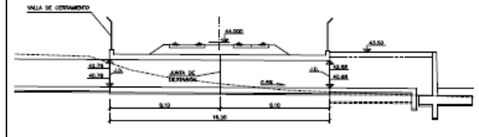
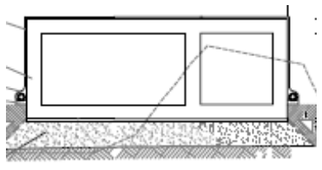
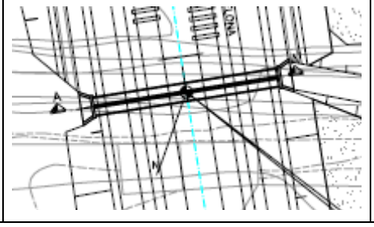
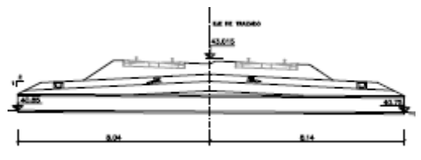
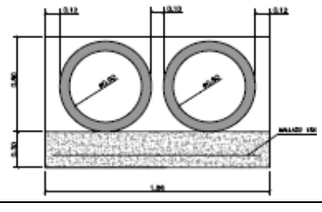
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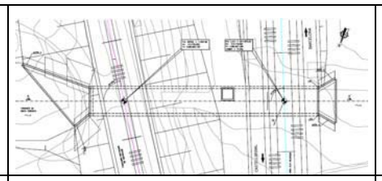
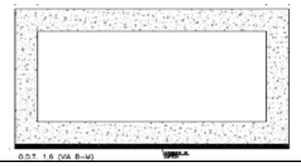
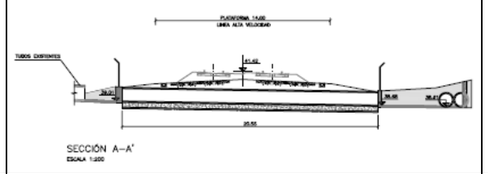
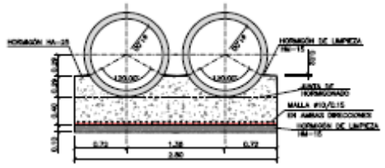
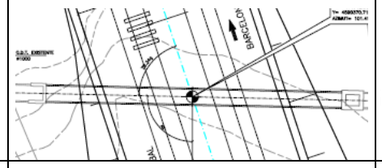
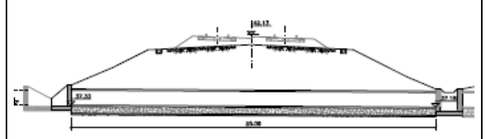
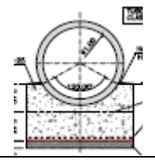
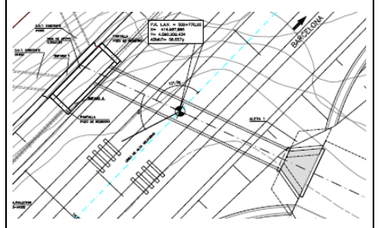
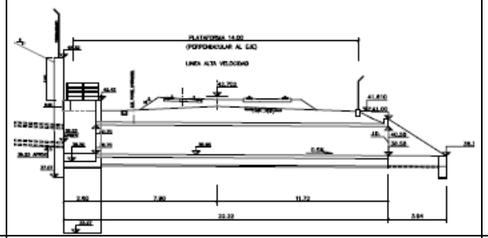
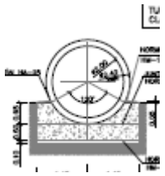
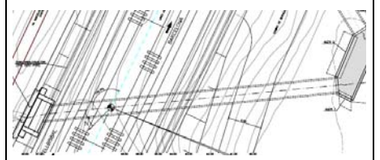
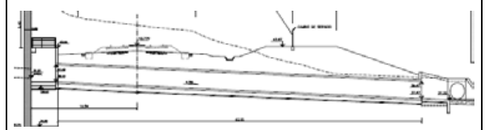
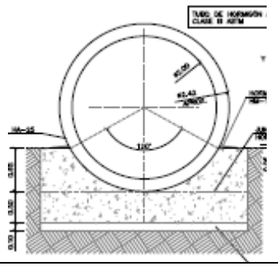
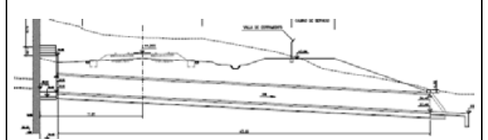
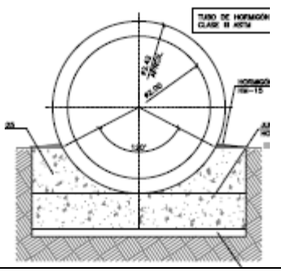
P.K.	Denominación	Tipología	Longitud (m)	Planta	Perfil	Sección
500+550	M1, M2	Muro de Hormigón armado	M1: 65.00 M2: 90.00			Varias secciones tipo, consultar documento nº2 planos 5.7.1.

501+100	M1,1	Muro de Hormigón armado	M1,1 MI: 112.40 M1,1 MD:111.32			
501+500	M1,2	Muro con cimentación profunda (pantallas)	100.33			

501+360	M1,3	Pantalla con viga de atado	60.30			
502+720	M3.1	Muro con diferentes secciones: cimentación superficial y pantallas con viga de atado.	580.00			Varias secciones tipo, consultar documento nº2 planos 5.7.5.
503+190	M3.2	Muro de hormigón armado.	121.92			Varias secciones tipo, consultar documento nº2 planos 5.7.5.

OBRAS DE DRENAJE TRANSVERSAL

P.K.	DENOMINACIÓN	TIPOLOGIA	DIMENSIONES BÁSICAS	PLANTA	PERFIL	SECCIÓN
500+430	ODT 0,4	Cajón de hormigón armado. Estructura Hiperestática.	Sección: 6.0x4.5 m2 Esviaje: 89g			
500+460	ODT BV-1501	Tubos prefabricados clase III ASTM	Diámetro: 1.0 m			
500+644	ODT 0,6	Cajón de hormigón armado. Estructura Hiperestática.	Sección: 4.0x2.0 m2 Esviaje: 65,6g			
501+083	ODT 1,0A Galería ATLL	Cajón de hormigón armado bi-celular: obra de drenaje y Galería ATLL. Estructura Hiperestática.	Sección ODT: 4.0x2.0 m2 Sección galería: 2.0x2.0 m2 Esviaje: 100 g			
501+180	ODT 1.0B	Tubos prefabricados	Diámetro: 0.60 m			

501+970	ODT 1.6-1.9	Cajón de hormigón armado. Estructura Hiperestática.	Varias secciones. Esviaje: 97.6 g			
502+372	ODT 2.4	Tubos prefabricados Clase III ASTM.	Diámetro: 1.0 m Esviaje: 88.40 g			
502+593	ODT 2.6	Tubo prefabricado Clase III ASTM	Diámetro: 1.0 m Esviaje: 78.34 g			
502+770	ODT 2.7	Tubo prefabricado Clase III ASTM	Diámetro: 2.0 m Esviaje: 121.00 g			
502+945	ODT 2.9A	Tubo prefabricado Clase III ASTM	Diámetro: 2.0 m Esviaje: 135.16 g			
502+989	ODT 2.9B	Tubo prefabricado Clase III ASTM	Diámetro: 2.0 m Esviaje: 66.66 g			

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

2.- DESCRIPCIÓN

En el tramo Conexión Valles-Castellbisbal de la línea de alta velocidad Madrid-Zaragoza-Barcelona-Frontera Francesa, la línea se acerca a Barcelona siguiendo el cauce del río Llobregat en una zona bastante congestionada tanto por las vías de Ferrocarril existentes, como por el tráfico rodado tanto de la BV-1501 como de la AP-7. Por lo que el escaso margen en el que se desarrolla la traza obliga en numerosos casos a cruces con esviajes muy pronunciados entre las distintas vías, solucionando estos de la forma más conveniente posible mediante pasos inferiores y/o superiores.

2.1.- OBJETO

Dentro de este anejo se proyectan y calculan las estructuras correspondientes al tramo Conexión Vallés – Castellbisbal de la línea de alta velocidad Madrid-Zaragoza-Barcelona-Frontera Francesa.

2.2.- DESCRIPCIÓN GENERAL DE LAS ESTRUCTURAS CONSTRUIDAS

2.2.1.- Viaductos

En el presente proyecto construido del tramo Conexión Vallés – Castellbisbal de la línea de alta velocidad Madrid-Zaragoza-Barcelona-Frontera Francesa. No existen viaductos.

2.2.2.- Pasos superiores e inferiores

Pasos Superiores

La definición geométrica se establece de acuerdo con los siguientes condicionantes:

Plataforma definida para pasos de carretera:

- Gálibos mínimos:

Horizontal: Se deja un gálibo horizontal entre caras de pilas de 16 m (medidos sobre la perpendicular al eje de la línea de alta velocidad).

Vertical: Entre cota superior de carril e intradós de la estructura la distancia mínima es de 6.50 m

P.S. 0,5

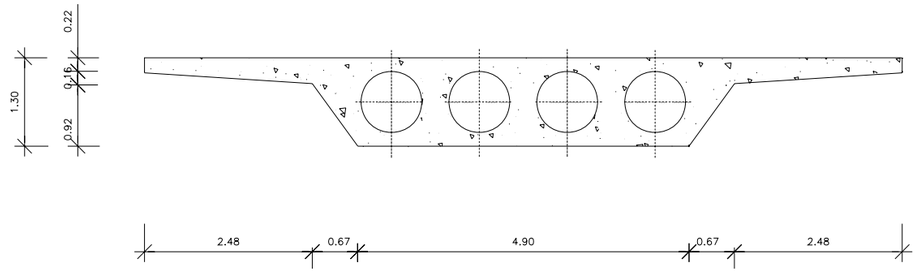
El trazado del paso superior se ha modificado para separar la traza de la carretera BV-1501 del edificio de la estación de Castellbisbal y ganar gálibo horizontal, lo que comporta además una modificación de las luces del paso superior, que son de 24,00 m, 30,00 m y 20,00 m

El estribo 1 se ha construido mediante dos pantallas de 0,65 m de espesor y 1,60 m de longitud, en una profundidad de 19,50 m. También se ha modificado el cargadero, teniendo una altura total de 5,35 m y un ancho de 1,80 m. La longitud total del estribo es de 11,17 m. Los apoyos son de neopreno armado y anclados de dimensiones 350 x 500 x 166 (66) tipo IV.

El estribo 2 se ha construido mediante un muro de hormigón armado de 1,10 m de espesor y 11,20 m de longitud, con una altura variable entre 9,012 y 9,796 m. Los muros de acompañamiento del estribo son de 0,75 m de espesor. Los apoyos son de neopreno armado y anclados de dimensiones 350 x 500 x 166 (66) tipo IV.

Las pilas son de sección elíptica, de eje mayor 1,30 m y de eje menor 1,20 m. Las alturas de las pilas son de 11,243 m y 10,337m. Las zapatas han mantenido la sección de 6,50 x 6,50 m2, pero la altura se ha incrementado hasta 1,60 m. Los apoyos son de neopreno de dimensiones 800 x 800 x 110 (80)

La sección del tablero se ha modificado, colocando cuatro aligeramientos y reduciendo el voladizo de las alas. La disposición de los cuatro aligeramientos también ha comportado la modificación del trazado de los 8 tendones que forman la armadura activa. Estos 8 tendones se han agrupado en tres familias en función de su disposición en el tablero. La sección utilizada es la que se muestra en la siguiente figura.



Pasos bajo otras infraestructuras

La tipología y la definición geométrica se establecen de acuerdo con los siguientes condicionantes:

- Gálibos mínimos :

  L.A.V.:

  Gálibo horizontal: 12.00 m

  Gálibo vertical: 6.50 m entre cota superior de carril e intradós de estructura

Vías de ancho ibérico:
Gálibo horizontal: 8.50 m (para vía única)
Gálibo vertical: 6.50 m entre cota superior de carril e intradós de estructura
Carreteras y caminos:
Gálibo horizontal: 8.00 m (caminos) ó 10.00 m (carreteras)
Gálibo vertical: 5.30 m

En el Proyecto construido estos pasos, se han construido empleando pantallas, excepto en el caso del Paso Bajo Ramal Vallès-Martorell, que se ha resuelto mediante un cajón de hormigón armado in situ. Estos cambios se han podido realizar gracias a que RENFE ha permitido cortar el servicio de las vías afectadas, facilitando el proceso constructivo de los pasos. A los pasos que se han realizado con pantallas se les aplicará un tratamiento superficial consistente en el fresado de la superficie que quedará vista.

Paso bajo autopista A-7 (L.A.V.)

Esta estructura se ha construido empleando pantallas de 0,65 m de espesor y una profundidad de 17,06 m. El estribo 1 tiene una longitud de 72,55 m y el estribo 2 de 73,11 m, sobre los que se construye una losa de 0,80 m de espesor. En este paso no se construye solera de hormigón. Los gálibos de este paso son de 12,60 m x 6,60 m.

Paso bajo ramal Vallés-Martorell y vía Barcelona Martorell (L.A.V.)

Esta estructura se ha construido in situ en dos fases. La primera fase tiene una longitud de 53,79 m en el estribo 1 y de 52,47 m en el estribo 2, mientras que la segunda fase tiene una longitud de 43,11 m en el estribo 1 y de 44,42 m en el estribo 2. La longitud total de la estructura es de 96,89 m. La solera tiene una anchura de 16,10 m y un espesor de 0,80 m. Los muros tienen una altura de 7,53 m y un espesor de 0,80 m. La losa superior tiene una anchura de 14,10 m y un espesor de 0,90 m. Esta estructura se caracteriza por la existencia de dos huecos en el inicio del estribo 1 y tres huecos en el final del estribo 2, que se corresponden con los huecos realizados en la losa superior: dos en el tramo inicial y tres en el final. Los gálibos de la estructura son de 6,50 x 12,50 m.

Paso bajo ramal Vallés-Barcelona (L.A.V.)

Esta estructura se ha construido empleando pantallas de 0,65 m de espesor y de 19,95 m de profundidad. La longitud del cajón es de 25,00 m para el estribo 1 y de 26,03 m para el estribo 2. Se construye una solera entre las aletas, dado que durante la ejecución de las pantallas se determinó disminuir su profundidad por la inestabilidad del terreno, por lo que se hace necesario arriostrarlas en su parte inferior para garantizar su estabilidad. La losa superior tiene un espesor de 0,90 m y una anchura de 14,20 m. Los gálibos de este paso son de 12,50 m x 6,70 m.

2.2.3.- Obras de Drenaje transversal

Las diferentes obras de drenaje transversal han sido modificadas respecto a las definidas en el proyecto original, al realizarse de nuevo los cálculos hidráulicos mediante el método racional modificado por Témez, lo que supone una reducción de las dimensiones de las mismas. Además se han rediseñado teniendo en cuenta los criterios establecidos por la Agència Catalana de l'Aigua, donde se establecen unas dimensiones mínimas de 2,00 x 2,00 m2 para marcos y 2.000 mm de diámetro para tuberías.

Las obras de drenaje transversal están constituidas por:

- Cajones de hormigón armado in situ.
- Tubo de hormigón armado prefabricado.

Aletas esviadas con un ángulo variable en función de la obra de drenaje y ajustándose al talud de tierras. Como medida de protección de la obra de drenaje se dispone de una losa de hormigón de 0.30m de espesor, con un rastrillo de 1.50m de profundidad además de una escollera de protección de piedra calcárea.

A continuación se describen las características esquemáticas de cada una de las Obras de Drenaje Transversal (posicionamiento referido al eje ferroviario):

O.D.T. 0,4

Las dimensiones de esta obra de drenaje son las siguientes: 6,00 x 4,50 m2, formado por una losa de 0,55 m de espesor, hastíales de 0,45 m de ancho y losa superior de 0,55 m de espesor. Se mantienen los valores de la longitud (16,14 m) y de la pendiente de la obra de drenaje (0,5 %). Las aletas se han adaptado a las nuevas cotas del marco. Estas variaciones no han comportado la creación de ningún precio contradictorio

O.D.T. 0,6

Esta obra de drenaje se ha construido mediante cajones prefabricados unicelulares de dimensiones 4,00 x 2,00 m2. Estos marcos tienen un espesor de 0,25 m en la solera y la losa superior y 0,20 m en los hastiales. Las aletas se han construido in situ.
Se han variado las longitudes de los diferentes tramos, siendo de 21,45 m tanto para el tramo bajo la LAV como para el tramo bajo la carretera BV-1501. La pendiente de la obra de drenaje se ha variado hasta el 4,03 %.

O.D.T. 1,0 A

Esta obra de drenaje a pasado a tener un único marco de dimensiones 4,00 x 2,00 m2 al que se le ha adosado una galería de dimensiones 2,00 x 2,00 m2 para realizar el cruce de las instalaciones de Aigües del Ter – Llobregat (ATLL). El espesor de la solera, hastiales y

losa superior es de 0,40 m. Se mantienen los valores de la longitud (16,20 m) y de la pendiente de la obra de drenaje (0,5 %).

O.D.T. 1,0 B

La obra de drenaje 1.0 B ha pasado a ser una obra de cruce de drenaje longitudinal, dado que el Torrente de Can Revella queda completamente encauzado en la ODT 1.0 A y los muros de acompañamiento. Esta obra, formada por dos tuberías de 630 mm de diámetro, recoge las aguas procedentes de las cunetas laterales del Camino del Repeu y las conduce a la salida de la ODT 1.0 A, desaguando en la obra de drenaje existente bajo la autopista AP-7.

O.D.T. 1,6 (VÍA B-M) - ODT 1,9

Esta obra de drenaje se ha reducido a un marco unicelular de dimensiones 5,00 x 2,00 m2. El espesor de la solera, hastíales y losa superior es de 0,50 m, a excepción del primer tramo de la ODT 1.6, que el espesor de la losa superior es variable entre 0,50 y 0,70 m. En esta losa se construye un tímpano de altura comprendida entre 4,60 y 5,30 m y con un espesor variable entre 0,30 y 0,70 m. Las aletas se mantienen igual que en el proyecto original, adaptándolas a las nuevas cotas.

La nueva longitud de la ODT 1.6 es de 24,05 m, y de la ODT 1.9 es de 22,34 m. Se ha mantenido la misma pendiente que en el proyecto original (0,6 %).

O.D.T. 2.6

Se crea esta obra de drenaje transversal para dar continuidad a la obra existente, una tubería de 1.000 mm de diámetro, que también se emplea como cruce drenaje longitudinal.

O.D.T. 2,7

Las obras de drenaje 2.7 A y 2.7 B se unen antes de cruzar la traza de la LAV, por lo que se modifican estas obras de drenaje y se unifican en la ODT2.7, formada por un marco de hormigón de sección 2,00 x 2,00 m2.

O.D.T. 2,9 A

Tubo de hormigón armado prefabricado
Diámetro interior: 2.00 m
Longitud del tubo en proyección: 38.85 m.
Pendiente del tubo: 5.0%
Recubrimiento máximo de tierras a la cota de plataforma: 3.90 m.

O.D.T. 2,9 B

Tubo de hormigón armado prefabricado
Diámetro interior: 2.00 m
Longitud del tubo en proyección: 52.21 m.
Pendiente del tubo: 5.0 %
Recubrimiento máximo de tierras a la cota de plataforma: 3.80 m.

O.D.T. BV-1501

Esta obra de drenaje se ha creado para dar continuidad a la tubería existente que cruza bajo la carretera BV-1501, conectando con la cuneta de la reposición del camino de acceso a Can Coromines. Está formada por una tubería de 1.000 mm de diámetro. Estas modificaciones comportan la creación de los siguientes precios contradictorios:

Canal de Desagüe

El canal de desagüe bajo la plataforma de la L.A.V. se ha construido mediante un cajón prefabricado unicelular de dimensiones 2.00x2.00 m2. El marco tiene un espesor de 0.19m en la solera y la losa superior y 0.15m en los hastiales.

Para la realización del canal de desagüe en el cruce de la playa de vías de RENFE operador, se realizará mediante una hinca de un tubo de 2.0 m de diámetro interior y 28.04 m de longitud.

Se dimensionará todas aquellas instalaciones que sean necesarias para su ejecución.

En primer lugar hace falta realizar una obra de fábrica que se llama pozo de ataque en el inicio de la hinca.

Dentro de este pozo se ha de construir el muro de reacción, una pared con suficiente resistencia para aguantar los empujes de la colocación de la tubería y sus aletas correspondientes.

La ejecución del canal de desagüe con tubo de hormigón armado de □ 2000 mm, se realizará en algunas zonas, tal como muestran los planos con tablestacas.

2.2.4.- Muros

M-1 (BV-1501), M-2 (BV-1501)

Se construyen dos muros de hormigón armado y se ha modificado su emplazamiento para garantizar un gálibo horizontal mínimo que permita la circulación de vehículos entre el muro M2 y el edificio de la estación de Castellbisbal. Se han realizado cuatro tipologías diferentes

de muros: tipo U1, tipo U2, tipo U3 y tipo L. Las características de estos muros se recogen en la tabla siguiente:

TIPO MURO	ALTURA	ANCHO	LONGITUD	LONGITUD ZAPATA	ESPESOR ZAPATA
TIPO U1	7,03 – 9,85	0,70 – 1,20	17,56	15,70	1,20
TIPO U2	5,60 – 7,52	1,00	21,18	11,70	1,10
TIPO U3	4,88 – 6,01	0,80 – 0,90	12,72	11,70	1,00
TIPO L	3,55 – 5,00	0,80	20,03	5,00	1,00

M 1,1-MD, M1,1-MI

Muro en U formando un canal que conduce el agua del torrent de Can Revella. Los hastiales del canal tienen 0.30m de espesor, al igual que la solera que une ambos muros M1,1 MI y M1,1 MD

Longitud: M1,1 MD 111.32 m
M1,1 MI 112.40 m

Estos muros de han modificado en su trazado, dado que la obra de drenaje 1.0 A se ha cambiado por un marco unicelular de dimensiones 2,00 x 2,00 m2. Esta modificación ha comportado la modificación del trazado de los muros en su entronque con la obra de drenaje.

M 1,3

Muro pantalla de pequeña altura con viga de atado de espesor 0.45m dividido en tres tipos en función de la altura libre y fresado de la cara vista de los mismos.

Longitud: Tipo I 14.42 m
Tipo II 10.40 m
Tipo III 20.80 m

Longitud total: 45.62 m

M 1,2 (VÍA B-M)

Este muro se ha modificado respecto el proyecto original, aumentando la altura libre del muro, lo que ha provocado un incremento en la profundidad de las pantallas que forman su cimentación. Este incremento de altura ha sido causado por una modificación en el trazado de la vía Barcelona-Martorell. El incremento de altura de los muros ha sido de 0,65 m en su punto más alto (al inicio del muro), reduciéndose a 0,21 m en su tramo central y se reduce progresivamente hasta la cota final prevista en proyecto.

La viga de atado de las pantallas se ha realizado con una anchura de aproximadamente 0,60 m con el objeto de unir las esperas de las pantallas que habían quedado desalineadas. En dos tramos no se han realizado pantallas por la existencia de una obra de drenaje y una conducción de comunicaciones de RENFE. En estos tramos se han construido dos muros reforzados, empleando zunchos anclados en los tramos contiguos.

Las juntas entre muros se han distanciado hasta 20 m, dejando juntas de dilatación cada 7,0 m aproximadamente.

Longitud total: 100.33 m

M 3,1

El muro 3.1 se ha construido mediante pantallas de 0,65 y 0,80 m de espesor. Los tramos en los que las pantallas de 0,65 m de espesor no tenían la suficiente capacidad portante, se han sustituido por pantallas de 0,85 m de espesor con la suficiente capacidad portante. Las pantallas construidas se agrupan en las siguientes tipologías:

TIPO PANTALLA	LONGITUD	ESPESOR
P-IA	6,81 – 7,78	0,65
P-IB	8,63 – 10,59	0,65
P-IC	5,42 – 8,35	0,65
P-II	6,20 – 10,83	0,65
P-III	11,34 – 11,41	0,65
P-IV	10,87 – 11,75	0,80
P-V	13,05 – 13,66	0,80
P-VIA	11,83 – 11,93	0,80
P-VIB	11,85 – 11,86	0,65
P-VII	14,30 – 14,35	0,80
P-VIIIA	11,68 – 13,53	0,80
P-VIIIB	13,51 – 13,53	0,80

En este muro se construyen una serie de muros in situ, que se corresponden con las obras de drenaje y servicios que cruzan el muro. Los muros in situ se recogen en la siguiente tabla:

TIPO MURO	PK INICIO	PK FINAL	LONGITUD	SERVICIO A SALVAR
M 1	502+720	502+731	11,37	INICIO MURO
M 2	502+731	502+736	4,55	INICIO MURO
M 3	502+736	502+741	5,23	INICIO MURO
TÍMPANO ODT 2.7	502+761	502+768	7,24	ODT 2.7
TÍMPANO ODT 2.9 A	502+942	502+945	2,88	ODT 2.9 A
TÍMPANO ODT 2.9 B	502+992	502+999	6,81	ODT 2.9 B

TIPO MURO	PK INICIO	PK FINAL	LONGITUD	SERVICIO A SALVAR
M 4	503+007	503+012	5,20	DUREZA TERRENO (1)
M 4	503+017	503+032	14,45	DUREZA TERRENO (1)
M 5	503+097	503+110	13,00	INSTALACIONES RENFE
M 6	503+162	503+167	5,20	TELEFÓNICA
M 7	503+280	503+330	20,00	DUREZA TERRENO (1)

(1) La dureza del terreno hizo necesaria la utilización del trépano, que provocaba excesivas vibraciones que comprometían la seguridad de las excavaciones y podían provocar fisuras en las construcciones cercanas (Can Cases)

La tipología de los muros que se ha empleado se corresponde con la del muro 3.2, en función de la altura de tierras que deben contener. Estas tipologías se recogen en la siguiente tabla:

TIPO MURO	ALTURA MÁXIMA	ESPESOR	LONGITUD ZAPATA	ESPESOR ZAPATA	PROFUNDIDAD RASTRILLO
M 1	2,60	0,30	2,90	0,60	0,00
M 2	3,00	0,35	3,25	0,60	0,00
M 3	3,60	0,40	3,70	0,70	0,00
M 4	7,05	0,80	7,55	2,00	1,00
M 5	6,30	0,55	5,55	1,70	1,70
M 6	6,00	0,55	4,80	1,60	1,60
M 7	5,00	0,45	3,95	1,50	1,50

El muro 3.1 recibirá un tratamiento superficial consistente en un fresado de la superficie que quedará vista.

M 3,2

El muro 3.2 se construye mediante muros in situ en lugar de emplear pantallas, dado que la dureza del terreno hace necesaria la utilización de trépano, provocando vibraciones que pueden afectar la estabilidad de Can Cases del Riu, pudiendo aparecer fisuras en la estructura de la masía. Las tipologías de los muros que se emplean se recogen en la siguiente tabla:

TIPO MURO	ALTURA MÁXIMA	ESPESOR	LONGITUD ZAPATA	ESPESOR ZAPATA
T 1	4,50	0,50	4,50	0,70
T 2	4,00	0,45	4,10	0,70
T 3	3,60	0,40	3,70	0,70
T 4	3,00	0,35	3,25	0,60
T 5	2,60	0,30	2,90	0,60

Los muros tipo T1 a T4 se construirán en tramos de 10,00 m, construyéndose 3 tramos del tipo T1, 2 del tipo T2, 2 del tipo T3 y 2 del tipo T4. Del tipo T5 se construirá un tramo de 7,70 m, un tramo de 10,00 m y otro de 14,50 m de longitud.

2.2.5.-Reposición de servicios

Galería ATLL

La galería de ATLL se ha construido adosada a la obra de drenaje transversal 1.0 A, con una sección de 2,00 x 2,00 m2 y una longitud de 16,20 m. Los espesores de la solera, hastíales y losa superior son de 0,40 m. En los extremos de la galería se construyen dos arquetas in situ, de dimensiones útiles 3,10 x 2,00 m para la situada en el margen izquierdo de la LAV y 7,00 x 2,00 m para la situada en el margen derecho de la LAV. La altura de ambas arquetas es de 2,70 m y el espesor de los hastíales y la solera es de 0,40 m.

Galería AICSA

La galería de AICSA se ha construido empleando cajones prefabricados de sección 4,00 x 2,00 m2. Estos cajones tienen un espesor en la solera y en la losa superior de 0,25 m, mientras que en los hastíales es de 0,20 m. La longitud de esta galería es de 28,00 m. A ambos extremos se han construido dos arquetas in situ, una de dimensiones 2,00 x 2,00 m y una altura libre de 6,45 m en el margen derecho de la LAV y la segunda de 2,00 x 6,00 m con una altura libre de 6,55 m en el margen izquierdo. El espesor de la solera y hastíales es de 0,40 m.

3. Definición geométrica

3.- DEFINICIÓN GEOMÉTRICA

3.1.- DEFINICIÓN GEOMÉTRICA

3.1.1.- Viaductos

En el presente proyecto construido del tramo Conexión Vallés – Castellbisbal de la línea de alta velocidad Madrid-Zaragoza-Barcelona-Frontera Francesa. No existen viaductos.

3.1.2.- Pasos superiores e inferiores

Pasos Superiores

P.S. 0,5

Aspectos generales:

Tipología:	Losa aligerada de hormigón postesado
Luces:	21.00 + 32.32 + 21.00
Longitud:	74.32 m

Tablero:

Canto:	1.30 m
Anchura del tablero:	11.20 m
Anchura aceras:	1.20 m
Curva en planta:	R=130 m
Hormigón:	HP-40

Pilas:

Sección:	Elíptica
Capitel en cabeza:	No
Altura de pilas:	P-1: 11.24 m
	P-2: 10.33 m
Hormigón:	HA-30
Apoyos de neopreno:	neopreno armado

Estribos:

Estribo E-1:	Cargadero sobre pantallas
Estribo E-2:	Muro de hormigón Armado
Apoyos de neopreno:	Neopreno anclado en E-1 y E-2
Hormigón:	HA-25

Pasos inferiores

Paso bajo autopista AP-7 (LAV)

Aspectos generales:

Tipología:	Losa de H.A. sobre pantallas
Longitud:	106.0 m
Luz:	12.50 (luz libre)
Hormigón:	HA-25
Dintel:	e=0.90 m con cartelas de 0.30
Cimentación:	
Pantallas	0.65 m
Hormigón:	HA-25

Construcción:
En dos fases, desviando la autopista.

Impermeabilización y drenaje:
La estructura se protege con una capa de impermeabilización.

Paso bajo ramal Vallés-Martorell y vía B-M (LAV)

Aspectos generales:

Tipología:	Losa maciza de hormigón armado
Luz:	13.5 m

Tablero:

Canto:	0.90 m
Anchura del tablero:	14.10 m
Hormigón:	HA-30

Estribos:

Tipología:	Cargaderos sobre pantalla de pilotes y micropilotes
Apoyos de neopreno:	Neoprenos armados
Hormigón:	HA-25

Cimentación:

Pilotes:	□1.00 m
Hormigón:	HA-25
Micropilotes:	□0.15 m con tubo de 5.5'' y e=11 mm

Aparatos de apoyo:

Neoprenos armados	350 x 400 x 69(49) Tipo 1

Construcción del tablero:
Losa construida in situ en dos tramos, el primero se ripa y el segundo se construye en su posición definitiva.

Impermeabilización y drenaje:
La cara superior del tablero lleva una capa de impermeabilización.

Defensas y protecciones:
Barandillas H=1.00 m

Paso bajo ramal Vallés-Barcelona (L.A.V.)

Aspectos generales:

Tipología:	Losa maciza de hormigón armado
Luz:	13.50 m
Longitud:	13.50 m

Tablero:

Canto:	0.90 m
Anchura del tablero:	14.20 m
Hormigón:	HA-30

Estribos:

Tipología:	Cargaderos sobre pantalla de pilotes y micropilotes
Apoyos de neopreno:	Neoprenos armados
Hormigón:	HA-25

Cimentación:

Pilotes:	□1.00 m
Hormigón:	HA-25
Micropilotes:	□0.15 m con tubo de 5.5'' y e=11 mm

Aparatos de apoyo:

Neoprenos armados	350 x 400 x 54(38) Tipo 1

Construcción del tablero:
Losa construida in situ que posteriormente se ripa hasta su posición definitiva.

Impermeabilización y drenaje:
La cara superior del tablero lleva una capa de impermeabilización.

Defensas y protecciones:
Barandillas H=1.00 m

3.1.3.- Obras de Drenaje transversal

O.D.T. BV-1501

Aspectos generales:

Tipología: Tubería 1000mm hormigón vibro prensado diámetro

O.D.T. 0,4

Aspectos generales:

Tipología: Marco de hormigón armado 6x 4.5m
Montera de tierras: 1.0 m
Longitud: 16.14 m
Dimensiones: Anchura interior en la base: 4.00 m
Altura interior máxima: 4.00 m
Hormigón: HA-25

Espesores:

Hastíales: 0.45 m
Losa superior: 0.55 m
Zapata: 0.55 m

Aletas:

Se han dispuesto aletas triangulares rectas
Hormigón: HA-25

Cimentación:

Directa.
Hormigón: HA-25
Dimensiones 16.14 x 13.60 x 0.4
σ_{adm} 0.18 N/mm2

Impermeabilización y drenaje:

La estructura se protege con una capa de impermeabilización. Se ha dispuesto una lámina drenante en todos los paramentos contra el relleno y un tubo dren poroso al nivel de la zapata.

O.D.T. 0,6

Aspectos generales:

Tipología: Marco prefabricado de hormigón armado 2.00mx4.00m
Montera de tierras:
Tramo LAV 0.80m
Tramo Ctra. 2.50m
Longitud:
Tramo LAV 21.45m
Tramo Ctra. 21.45m
Dimensiones: Anchura interior en la base: 3.60 m
Altura interior máxima: 1.50m
Hormigón: HA-25

Espesores:

Hastíales: 0.20 m
Losa superior: 0.25 m
Zapata: 0.25 m

Aletas:

Se han dispuesto aletas triangulares rectas
Hormigón: HA-25

Impermeabilización y drenaje:

La estructura se protege con una capa de impermeabilización. Se ha dispuesto una lámina drenante en todos los paramentos contra el relleno y un tubo dren poroso al nivel de la zapata.

O.D.T. 1,0 A

Aspectos generales:

Tipología: Marco de hormigón armado 4.0m x 2.0m
Montera de tierras: 0.40 m
Longitud: 16.20 m
Dimensiones: Anchura interior en la base: 3.20 m
Altura interior máxima: 1.20 m
Hormigón: HA-25

Espesores:

Hastíales: 0.40 m
Losa superior: 0.40 m
Zapata: 0.40 m

Aletas:

Se han dispuesto aletas triangulares rectas
Hormigón: HA-25

Cimentación:

Directa
Hormigón: HA-25
Dimensiones 16.20 x 9.20 x 0.4
σ_{adm} 0.14 N/mm^2

Impermeabilización y drenaje:

La estructura se protege con una capa de impermeabilización. Se ha dispuesto una lámina drenante en todos los paramentos contra el relleno y un tubo dren poroso al nivel de la zapata.

O.D.T. 1,0 B

Aspectos generales:

Tipología:	2Ø630mm
Montera de tierras:	
Tramo terraplén	0.40 m
Tramo LAV	0.70 m
Tramo terraplén	1.10 m
Longitud:	
Tramo terraplén	24.66 m
Tramo LAV	16.57 m
Tramo terraplén	13.27 m

Aletas:

Se han dispuesto aletas triangulares rectas

Hormigón:	HA-25

Cimentación:

Directa

Hormigón:	HA-25
Dimensiones	54.50 x 3.80 x 0.4
σ_{adm}	0.14 N/mm^2

Impermeabilización y drenaje:

La estructura se protege con una capa de impermeabilización Se ha dispuesto una lámina drenante en todos los paramentos contra el relleno y un tubo dren poroso al nivel de la zapata.

O.D.T. 1,6-1,9

Aspectos generales:

Tipología:	Marco de hormigón armado 5.0m x 2.00m
Montera de tierras:	
Tramo 1,6	6.80 m
Tramo 1,9	2.40 m
Longitud:	
Tramo 1,6	24.05 m
Tramo 1,9	22.34 m
Dimensiones:	Anchura interior en la base: 4.00 m
Altura interior máxima:	1.00m
Hormigón:	HA-25

Espesores:

Hastiales:	0.50 m
Losa superior:	0.50 m
Zapata:	0.50 m

Aletas:

Se han dispuesto aletas triangulares rectas

Hormigón:	HA-25

Cimentación:

Directa

Hormigón:	HA-25
Dimensiones	53.14 x 17.00 x 0.5
σ_{adm}	0.30 N/mm^2

Impermeabilización y drenaje:

La estructura se protege con una capa de impermeabilización. Se ha dispuesto una lámina drenante en todos los paramentos contra el relleno y un tubo dren poroso al nivel de la zapata.

O.D.T. 2,4

Aspectos generales:

Tipología:	Tubería de 1000mm de diámetro

O.D.T. 2,6

Aspectos generales:

Tipología:	Tubería de 1000mm de diámetro

O.D.T. 2,7

Aspectos generales:

Tipología:	Tubería de 2000mm de diámetro
Montera de tierras:	1.10 m
Longitud:	22.22 m
Clase tubería:	Clase III ASTM
Dimensiones:	Diámetro interior: 2.00 m
	Diámetro exetior: 2.42 m
Hormigón:	HA-25

Aletas:

Se han dispuesto aletas triangulares rectas

Hormigón:	HA-25

Cimentación:

Directa
Hormigón: HA-25

Impermeabilización y drenaje:
La estructura se protege con una capa de impermeabilización. Se ha dispuesto una lámina drenante en todos los paramentos contra el relleno y un tubo dren poroso al nivel de la zapata.

O.D.T. 2,9 A
Aspectos generales:
Tipología: Tubería 2000mm diámetro
Montera de tierras: 3.90m
Longitud: 38.85 m
Clase tubería: Clase III ASTM
Dimensiones: Diámetro interior: 2.00 m
Diámetro exterior: 2.42 m
Hormigón: HA-25

Aletas:
Se han dispuesto aletas triangulares rectas
Hormigón: HA-25

Cimentación:
Directa
Hormigón: HA-25

Impermeabilización y drenaje:
La estructura se protege con una capa de impermeabilización. Se ha dispuesto una lámina drenante en todos los paramentos contra el relleno y un tubo dren poroso al nivel de la zapata.

O.D.T. 2,9 B
Aspectos generales:
Tipología: Tubería 2000mm diámetro
Montera de tierras: 5.10m
Longitud: 52.21 m
Dimensiones: Diámetro interior: 2.00 m
Diámetro exterior: 2.42 m
Hormigón: HA-25

Espesores:
Losa inferior: 0.30 m

Aletas:
Se han dispuesto aletas triangulares rectas
Hormigón: HA-25

Cimentación:
Directa
Hormigón: HA-25

Impermeabilización y drenaje:
La estructura se protege con una capa de impermeabilización. Se ha dispuesto una lámina drenante en todos los paramentos contra el relleno y un tubo dren poroso al nivel de la zapata.

Canal de Desagüe
Aspectos generales:
Tipología: Marco prefabricado de 2.00x2.00

3.1.4.- Muros

Seguidamente se detallan las características de cada uno de los muros del tramo de Línea de Alta Velocidad. En los muros de tipología pantalla, la altura libre es la altura teniendo en cuenta el canto de la viga de atado. En el caso en que el perfil de intradós de las tierras se corresponda con el talud de la línea de alta velocidad se ha considerado que el primer metro de tierra no ejerce empuje pasivo, con lo que la altura libre de cálculo es la altura libre geométrica más un metro.

M-1 (BV-1501), M-2 (BV-1501)
Aspectos generales:
Tipología: Muro de hormigón armado
Longitud: M1 67.43 m
M2 70.79 m
Hormigón: HA-25
Acero: B-500S

M 1,1-MD, M1,1-MI
Aspectos generales:
Tipología: Muro en U
Longitud: M1,1 MD 111.32 m
M1,1 MI 112.40 m
Altura libre: de 2.00 a 2.50 m
Hormigón: HA-25
Acero: B-500S

Espesores:

Hastiales: 0.30 m
Solera: 0.30 m

M 1,3
Tipo I
Aspectos generales:
Tipología: Pantalla
Longitud: 14.42 m
Altura libre: de 0.99 a 2.45 m
Longitud de clava de 2.00m min
Longitud de pantalla Lt: de 2.29 a 4.24 m
Hormigón: HA-25
Acero: B-500S

Espesores:
Pantalla: 0.45 m
Viga de atado: 0.45 m

Tipo II
Aspectos generales:
Tipología: Pantalla
Longitud: 10.40 m
Altura libre: de 2.69 a 3.05 m
Longitud de clava de 2.50m min
Longitud de pantalla Lt: de 4.85 a 5.09 m
Hormigón: HA-25
Acero: B-500S

Espesores:
Pantalla: 0.45 m
Viga de atado: 0.45 m

Tipo III
Aspectos generales:
Tipología: Pantalla
Longitud: 20.80 m
Altura libre: de 2.40 a 3.53 m
Longitud de clava de 3.50 m min
Longitud de pantalla Lt: de 1.38 a 3.07 m
Hormigón: HA-25
Acero: B-500S

Espesores:
Pantalla: 0.45 m
Viga de atado: 0.45 m

M 1,2 (VÍA B-M)
Aspectos generales:
Tipología: Pantalla
Longitud: 100.33 m
Altura libre: de 1.44 a 2.44 m
Longitud de clava de 1.85 a 2.60m
Longitud de pantalla Lt: de 1.85 a 2.60 m
Hormigón: HA-25
Acero: B-500S

Espesores:
Pantalla: 0.65 y 0.80 m
Viga de atado: 0.65 y 0.80 m

M 3,1

El muro 3.1 se ha construido mediante pantallas de 0,65 y 0,80 m de espesor. Los tramos en los que las pantallas de 0,65 m de espesor no tenían la suficiente capacidad portante, se han sustituido por pantallas de 0,85 m de espesor con la suficiente capacidad portante. Las pantallas construidas se agrupan en las siguientes tipologías:

TIPO PANTALLA	LONGITUD	ESPESOR
P-IA	6,81 – 7,78	0,65
P-IB	8,63 – 10,59	0,65
P-IC	5,42 – 8,35	0,65
P-II	6,20 – 10,83	0,65
P-III	11,34 – 11,41	0,65
P-IV	10,87 – 11,75	0,80
P-V	13,05 – 13,66	0,80
P-VIA	11,83 – 11,93	0,80
P-VIB	11,85 – 11,86	0,65
P-VII	14,30 – 14,35	0,80
P-VIIIA	11,68 – 13,53	0,80
P-VIIIB	13,51 – 13,53	0,80

En este muro se construyen una serie de muros in situ, que se corresponden con las obras de drenaje y servicios que cruzan el muro. Los muros in situ se recogen en la siguiente tabla:

TIPO MURO	PK INICIO	PK FINAL	LONGITUD	SERVICIO A SALVAR
M 1	502+720	502+731	11,37	INICIO MURO
M 2	502+731	502+736	4,55	INICIO MURO
M 3	502+736	502+741	5,23	INICIO MURO
TÍMPANO ODT 2.7	502+761	502+768	7,24	ODT 2.7

TIPO MURO	PK INICIO	PK FINAL	LONGITUD	SERVICIO A SALVAR
TÍMPANO ODT 2.9 A	502+942	502+945	2,88	ODT 2.9 A
TÍMPANO ODT 2.9 B	502+992	502+999	6,81	ODT 2.9 B
M 4	503+007	503+012	5,20	DUREZA TERRENO (1)
M 4	503+017	503+032	14,45	DUREZA TERRENO (1)
M 5	503+097	503+110	13,00	INSTALACIONES RENFE
M 6	503+162	503+167	5,20	TELEFÓNICA
M 7	503+280	503+330	20,00	DUREZA TERRENO (1)

(1) La dureza del terreno hizo necesaria la utilización del trépano, que provocaba excesivas vibraciones que comprometían la seguridad de las excavaciones y podían provocar fisuras en las construcciones cercanas (Can Cases)

La tipología de los muros que se ha empleado se corresponde con la del muro 3.2, en función de la altura de tierras que deben contener. Estas tipologías se recogen en la siguiente tabla:

TIPO MURO	ALTURA MÁXIMA	ESPESOR	LONGITUD ZAPATA	ESPESOR ZAPATA	PROFUNDIDAD RASTRILLO
M 1	2,60	0,30	2,90	0,60	0,00
M 2	3,00	0,35	3,25	0,60	0,00
M 3	3,60	0,40	3,70	0,70	0,00
M 4	7,05	0,80	7,55	2,00	1,00
M 5	6,30	0,55	5,55	1,70	1,70
M 6	6,00	0,55	4,80	1,60	1,60
M 7	5,00	0,45	3,95	1,50	1,50

El muro 3.1 recibirá un tratamiento superficial consistente en un fresado de la superficie que quedará vista.

M 3,2

El muro 3.2 se construye mediante muros in situ en lugar de emplear pantallas, dado que la dureza del terreno hace necesaria la utilización de trépano, provocando vibraciones que pueden afectar la estabilidad de Can Cases del Riu, pudiendo aparecer fisuras en la estructura de la masía. Las tipologías de los muros que se emplean se recogen en la siguiente tabla:

TIPO MURO	ALTURA MÁXIMA	ESPESOR	LONGITUD ZAPATA	ESPESOR ZAPATA
T 1	4,50	0,50	4,50	0,70
T 2	4,00	0,45	4,10	0,70
T 3	3,60	0,40	3,70	0,70
T 4	3,00	0,35	3,25	0,60
T 5	2,60	0,30	2,90	0,60

Los muros tipo T1 a T4 se construirán en tramos de 10,00 m, construyéndose 3 tramos del tipo T1, 2 del tipo T2, 2 del tipo T3 y 2 del tipo T4. Del tipo T5 se construirá un tramo de 7,70 m, un tramo de 10,00 m y otro de 14,50 m de longitud.

3.1.5.- Reposición de servicios

Galería ATLL

Aspectos generales:

Tipología: Marco de hormigón armado
Longitud: 16.20 m
Dimensiones: Anchura interior en la base: 1.20m
Altura interior máxima: 1.20m
Hormigón: HA-25

Galería AICSA

Aspectos generales:

Tipología: Marco de hormigón armado
Longitud: 28.0 m
Dimensiones: Anchura interior en la base: 3.60m
Altura interior máxima: 1.50m
Hormigón: HA-25

3.2.- CLASIFICACIÓN DE LAS ESTRUCTURAS

La clasificación de las estructuras se encuentra detallada en el epígrafe número 4 del presente PROYECTO CONSTRUIDO DE PLATAFORMA DE L.A.V. MADRID-ZARAGOZA-BARCELONA-FRONTERA FRANCESA. TRAMO: CONEXIÓN VALLÉS – CASTELLBISBAL.

4. Cálculos

4.- CÁLCULOS

4.1.- ACCIONES CONSIDERADAS PARA EL CÁLCULO

Bases de cálculo

Pasos superiores

Instrucciones y Normas aplicadas

- Para establecer las acciones y combinaciones necesarias para la obtención de las solicitaciones de cálculo que se emplean en la comprobación de los diferentes estados límite se ha utilizado la norma:

"Instrucción sobre las Acciones a considerar en el Proyecto de puentes de Carretera" (IAP-98)

- Para dimensionamiento y comprobación de secciones: Se ha actuado en todo momento, de acuerdo con la normativa española:

-"Instrucción de Hormigón Estructural" (EHE) R.D. 2661/1998 de 11 de diciembre

Características de los materiales

- Hormigones:

TIPO	fck (N/mm^2)	ELEMENTO ESTRUCTURAL
HA-40	40	Tableros pretensados
HA-30	30	Alzados de pilas
HA-25	25	Cimentación y estribos
HM-15	15	Limpieza en cimentaciones

Coeficiente parcial de seguridad para E.L.U.: $\gamma_c = 1.50$

- Acero:

- Armaduras pasivas:

B 500 S $f_{yk} = 500\ N/mm^2$

Coeficiente parcial de seguridad para E.L.U.: $\gamma_s = 1.15$

- Armaduras activas

Y 1860 S7 ϕ 15.2 mm $f_{máx} = 1860\ N/mm^2$

- Características del acero de pretensado:

Relajación del 2.5% para una tensión del 70% de $f_{máx}$ aplicada durante 1000 horas.
Tendones de pretensado interior adherentes no reemplazables.

Tensiones máximas de anclajes de 0.75 $f_{máx,k}$ al tesar.
Tensiones máximas de anclajes de 0.75 $f_{máx,k}$ al bloquear
Coeficiente parcial de seguridad para E.L.U.: γ_p= 1.15

Niveles de control de calidad adoptados

Para todos los elementos de las estructuras se ha empleado un nivel de control de ejecución a nivel intenso

El recubrimiento mínimo es de 30 mm para los elementos de cimentación (ambiente IIa), y 35 mm para los demás elementos (ambiente IIb).

Descripción de programas de ordenador utilizados

Para obtener las solicitaciones de cálculo que se emplean para la comprobación de los diferentes estados límite se ha utilizado el programa de análisis estructural ROBOT Millenium V.14.5.

Programa de fuerzas equivalentes de pretensado

El siguiente programa tiene por objeto determinar las cargas equivalentes de pretensado que un tendón produce en una estructura espacial.

Se discretiza cada tendón en una poligonal de n segmentos cuyos n+1 vértices se relacionan con n+1 nudos diferentes de la estructura. Se considera que los vértices del tendón se hallan siempre en la vertical del centro de gravedad de su sección asociada de la estructura.

El programa considera las pérdidas de pretensado por rozamiento y las pérdidas por penetración de cuñas según las fórmulas:

$$Proz(x) = P_0 \, e^{-(\mu \Sigma \alpha + kx)}$$

Donde,
Proz(x) = Fuerza de pretensado a la distancia x del anclaje
P_0 = Fuerza de pretensado en anclaje
$\Sigma \alpha$ = Suma de la desviación angular total a la distancia x del anclaje

$$\Delta Pcu = a \, E_p \, A_p / L$$

Donde,
Pcu(x) = Fuerza de pretensado a la distancia x del anclaje una vez deducidas las pérdidas por rozamiento y por penetración de cuñas
a = penetración de cuñas
E_p = módulo de elasticidad de la armadura activa
A_p = sección de la armadura activa
L = longitud afectada por la penetración de cuñas.

Las pérdidas por acortamiento elástico y las pérdidas diferidas se consideran como un coeficiente global afectando a la fuerza de pretensado del tendón.

Al estar el tendón discretizado como una poligonal, las variaciones angulares se acumulan en los vértices. Así en cada vértice aparecen dos fuerzas P1 y P2, correspondientes a la fuerza de pretensado antes y después del vértice.

Las vectores (Fx, Fy, Fz, Mx, My) son las fuerzas equivalentes de pretensado aplicadas a los nudos asociados de la estructura; comprobándose en todos los casos que dichas fuerzas constituyen un sistema autoequilibrado para la totalidad del tendón.

El programa considera la posibilidad de tesar por un extremo, por el otro o tesar por uno y retesar por el otro.

Verificación de fustes (“pila”)

Se lleva a cabo mediante el análisis, en teoría de segundo orden, de los esfuerzos y deformaciones de la pila del puente sometida a flexocompresión esviada. Tanto las dimensiones de la sección como las armaduras y los esfuerzos de primer orden pueden ser variables a lo largo de la altura de la pila. El análisis es no lineal, tanto en geometría como en cuanto a comportamiento del material.

El proceso está preparado para analizar el caso más simple de pila en ménsula, equivalente a una pieza biarticulada de longitud doble.

La base del método es un algoritmo para el análisis de una pila alta de hormigón armado de sección y armaduras variables, sometida a una solicitación normal general (flexocompresión esviada) también variable a lo largo de la altura de la pila.

El cálculo se realiza aplicando el Método General, también llamado de las diferencias finitas, en el que se efectúan recorridos sucesivos de las distintas secciones de la pieza. En cada sección, en función de las flechas estimadas o conocidas del recorrido anterior, se obtienen los momentos de segundo orden, que se suman a los de primero para obtener los momentos totales. A partir de estos momentos y del axil se efectúa un cálculo de sección, obteniendo las deformaciones de sus fibras y por consiguientes las curvaturas. Estas curvaturas, integradas a lo largo de la pieza, permiten obtener una nueva ley de flechas y el proceso se repite hasta que se alcanza la convergencia.

Se verifican 10 secciones a lo largo de toda la pila, con comprobación de agotamiento, inestabilidad de la pila y análisis del equilibrio o convergencia.

El proceso proporciona un listado de salida con los siguientes datos:

- flecha. x = flecha en la sección considerada, en dirección longitudinal.
- flecha. y = flecha en la sección considerada, en dirección transversal.
- Mom. x = momento actuante total usado como dato para el ajuste de la sección, girando alrededor del eje longitudinal del puente.
- Mom. y = idem girando alrededor de un eje transversal al puente.

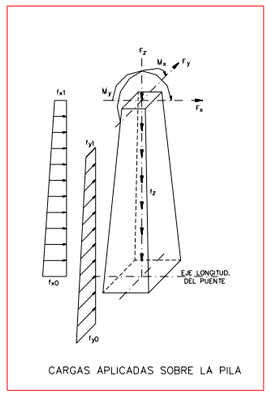
- Axil = esfuerzo axil actuante en la sección, incluyendo peso propio.
- curv. x = curvatura corregida en la sección (después del cálculo semidirecto), girando alrededor del eje longitudinal del puente.
- curv. y = idem girando alrededor de un eje transversal al puente.

Se dan los valores de la última iteración, que indica la situación final de la pila para la hipótesis considerada.

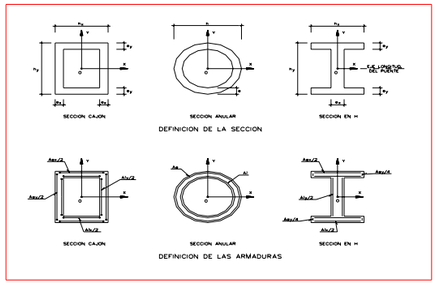
El programa esta preparado para analizar pilas de sección circular, rectangular (ambas huecas o macizas) o en “H”, permitiendo la variación de sus dimensiones a lo largo de la altura. De igual forma, puede variarse la armadura desde la base hasta la cabeza de la pila.

En los siguientes esquemas se muestra la forma de definir las secciones y su armadura y el

Sentido de los esfuerzos que actúan sobre el fuste.

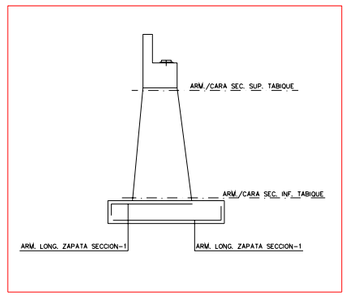


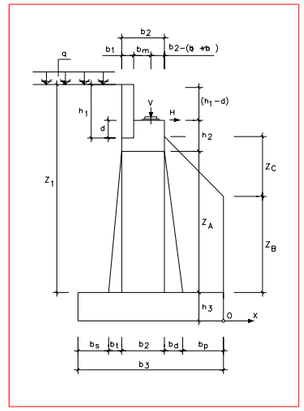
CARGAS APLICADAS SOBRE LA PILA



Zapatas de pilas (“zapata”)

El programa tiene por objeto la determinación de tensiones sobre el terreno en zapatas que soportan fustes sometidos a carga vertical y flexión en las dos direcciones perpendiculares, teniendo en cuenta el peso propio de la zapata y el relleno de tierras existente sobre ella. Las

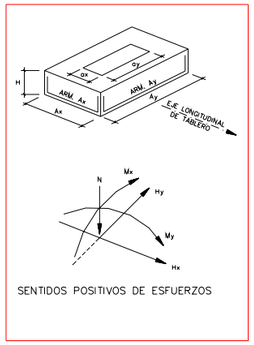




armaduras en ambas direcciones son calculadas de acuerdo con los criterios de la instrucción EHE, verificándose la seguridad frente al cortante y punzonamiento.

Las cargas introducidas son las obtenidas como resultado del programa “pila”.

En el siguiente esquema se muestra el convenio de signos utilizado así como la dirección de las armaduras resultantes del cálculo.



Calculo de estribos (“estribo”)

El programa tiene por objeto el diseño y verificación de Estribos de puente. En el caso más general (Estribos abiertos), las tierras, además de poder derramarse por la parte anterior del estribo, se introducen entre los tabiques verticales que soportan el cargadero.

El programa permite la verificación de estribos cerrados, como un caso particular de estribos abiertos con un solo tabique de sustentación de un cargadero virtual.

Para el caso de estribos abiertos, el número mínimo de tabiques verticales es de 2 y el máximo de 5. Los tabiques pueden tener sección variable a lo largo de su altura.

Para el caso particular de tratarse de un estribo cerrado, existirá un solo tabique vertical.

El derrame anterior de tierras se define por las cotas ZB y ZC, sobre la cara superior de la zapata.
Se consideran las siguientes cargas:

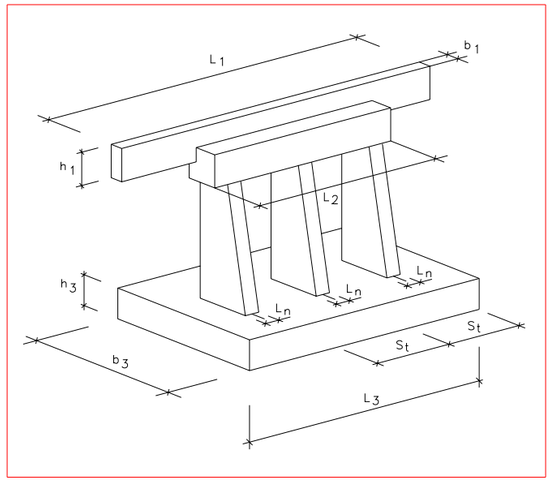
- Peso propio del estribo, en su totalidad, de acuerdo con la definición geométrica realizada
- Peso propio de tierras.
- Empuje activo de tierras
- Carga vertical uniforme sobre el relleno de tierras situadas en el trasdós del estribo (q).
- Carga vertical puntual sobre el cargadero (V), debida a los esfuerzos inducidos por el tablero. Esta carga es la suma de las reacciones verticales sobre cada uno de los apoyos.
- Carga horizontal inducida por el tablero (H). Se considera, como en el caso anterior, la carga total actuante.Para el cálculo del empuje activo se aplica la teoría de Coulomb. La aplicación de dicha teoría a los tabiques verticales del estribo lleva a considerar el "efecto arco", mediante el cual resulta modificada la superficie eficaz de aplicación de presiones del terreno sobre dichos elementos. Debido al "efecto arco", la superficie eficaz que se opone al empuje de tierras en un estribo abierto es la correspondiente a la que tiene una altura igual a la real del elemento, mientras que el ancho a considerar es tres veces el real.

La salida de resultados consta de dos partes:

- Dimensionamiento global del estribo.- Se obtienen valores del empuje de tierras, coeficientes de seguridad al vuelco y al deslizamiento, tensiones sobre el terreno bajo zapata.

- Dimensionamiento estructural del estribo.- Esfuerzos resultantes en distintos elementos del estribo (Se imprimen los resultados de los valores de los esfuerzos característicos, es decir, sin mayorar). Verificación como piezas de hormigón armado. Cálculo de armaduras necesarias y mínimas, de acuerdo con los criterios de cuantía mínima de la EHE, en las secciones más representativas.

En el esquema de la página siguiente se indican los parámetros que hay que introducir en el archivo de entrada, así como la colocación de las armaduras indicadas en el archivo de salida.



Programa de armado a cortante y torsión de losas pretensazas (“robcort”)

El programa ROBCORT está preparado para calcular las armaduras a cortante y torsión de una losa de hormigón pretensada calculada con el programa ROBOT. El cálculo se efectúa según los artículos 44 y 45 de la EHE. Para su ejecución se requieren los siguientes ficheros:

**.PON	Coeficientes de ponderación de cada una de la hipótesis
**.COR	Características de torsión y cortante de la sección

Generando los dos archivos de resultados siguientes:

**.PNC Ponderación y comprobación de esfuerzos de cortante y torsión
**.ARM Resumen de armaduras en los nudos del tablero

Las comprobaciones que efectúa el programa son las siguientes:
1) $(V_{rd}/V_{u1})^{\square} + (T_d/T_{u1})^{\square} \leq 1$
2) $V_{rd} \leq V_{u2}$
3) $T_d \leq T_{u2}$
4) $T_d \leq T_{u3}$

Donde: $\square = 2*(1-h_e/b)$
V_{rd} = Cortante reducido de cálculo
V_{u1}= Cortante de agotamiento por compresión
T_d = Momento torsor de cálculo
T_{u1} = Torsor de agotamiento por compresión
T_{u2} = Torsor de agotamiento por tracción longitudinal
T_{u3} = Torsor de agotamiento por tracción transversal

Partiendo de las comprobaciones anteriores, el programa calcula la cuantía de armadura necesaria de cortante, torsión longitudinal, torsión transversal y rasante.

El programa facilita un listado resumido con las armaduras.

Se utilizan además los programas “robcomb”, “esfulta” y “momcur”, descritos en el apartado 3.1.1. (Bases de cálculo de paso bajo otras infraestructuras)

Paso bajo otras Infraestructuras

Instrucciones y Normas aplicadas

- Para el establecimiento de acciones y combinaciones necesarias para la obtención de las solicitaciones de cálculo empleadas en la comprobación de los diferentes estados límite se han seguido las siguientes instrucciones:

Pasos bajo carreteras:
-“Instrucción sobre las acciones a considerar en el Proyecto de Puentes de Carretera“, (IAP-98)

Paso bajo vías Renfe:
-“Instrucción relativa a las acciones a considerar en el Proyecto de Puentes de Ferrocarril“, correspondiente a la O.M. de 25 de junio de 1975 (IPF-75)

En este caso se han considerado las acciones proporcionadas por las instrucciones indicadas como valores característicos Q_k. Para determinar los valores de combinación, frecuente y cuasipermanente de las acciones se han utilizado los siguientes valores de los coeficientes □:

Acciones	□o	□1	□2
Cargas de Tráfico	0.8	0.8 1 vía cargada 0.6 2 vías cargadas 0.4 3 ó más vías cargadas	0.00
Viento	0.6	0.5	0.00
Temperatura	0.6	0.6	0.5

Para establecer las hipótesis y combinaciones de cálculo y sus correspondientes coeficientes se ha utilizado la siguiente instrucción:

-“Instrucción de Hormigón Estructural (EHE) ” R.D. 2661/1998 de 11 de diciembre
- Para dimensionamiento y comprobación de secciones: Se ha actuado en todo momento, de acuerdo con la normativa española:

-“Instrucción de Hormigón Estructural” (EHE) R.D. 2661/1998 de 11 de diciembre

Características de los materiales

- Hormigones:

TIPO	f_{ck} (N/mm^2)	ELEMENTO ESTRUCTURAL
HA-30	30	Losas ripadas
HA-25	25	Losa paso bajo autopista
HA-25	25	Pilotes
HM-15	15	Limpieza en cimentaciones

Coeficiente parcial de seguridad para E.L.U.: $\square_c$= 1.50

- Acero:

- Armaduras pasivas:
B 500 S f_{yk} = 500 N/mm^2
Coeficiente parcial de seguridad para E.L.U.: $\square_s$= 1.15

Niveles de control de calidad adoptados

Para todos los elementos de las estructuras se ha empleado un nivel de control de ejecución a nivel intenso.

El recubrimiento mínimo es de 30 mm para los elementos de cimentación (ambiente IIa), y 35 mm para los demás elementos (ambiente IIb).

Descripción de programas de ordenador utilizados

Para obtener las solicitaciones de cálculo que se emplean para la comprobación de los diferentes estados límite se ha utilizado el programa de análisis estructural ROBOT Millenium V.14.5

A continuación se describen otros programas utilizados:

Envolvente de Hipótesis de Carga ("robcomb")

Los resultados obtenidos para cada una de las hipótesis de carga mediante el programa ROBOT, son almacenados en un fichero *.TXT.

El programa ROBCOMB se encarga de realizar la combinación de las diferentes hipótesis de carga, al leer el fichero TXT. Para su funcionamiento, precisa unos ficheros *.PON, en los que se define el carácter de cada una de las hipótesis y el coeficiente por el que queda afectada dicha hipótesis.

El carácter de cada hipótesis puede ser:

1 -Permanente: La hipótesis está siempre actuando en la estructura.
2 -Variable: Si la hipótesis puede aparecer o no combinada con las demás hipótesis. Se indica con 2.
3 al 10 -Excluyente: Un conjunto de hipótesis de carga se agrupan bajo un mismo carácter excluyente cuando sólo puede existir una de esas hipótesis simultáneamente. Todo el grupo tiene un carácter variable con las demás hipótesis que tengan carácter diferente al suyo.

Diagrama de interacción N - M en secciones de hormigón armado y pretensado. ("esfulta")

El siguiente programa tiene por objeto determinar el diagrama de interacción axil - flector de secciones de hormigón armado y pretensado sometidas a solicitaciones normales siguiendo los dominios de deformación de la EHE.

La sección transversal se discretiza en "n" trapecios de hormigón. Como diagrama tensión – deformación se adopta en el cálculo el diagrama parábola – rectángulo.

El acero pasivo se introduce en capas, definiéndose sus áreas y sus profundidades respectivas a partir de la fibra superior. Como diagrama tensión – deformación se usa el diagrama bilineal de la norma.

El acero activo se introduce en varias capas, análogamente al pasivo. El programa calcula internamente las deformaciones de neutralización del acero activo

El programa calcula los diferentes planos de rotura variando la fibra neutra y apoyándose en el pivote correspondiente de los diferentes planos de dominios de deformación de la norma.

Diagrama Momento - Curvatura en secciones de hormigón armado y pretensado . ("momcur")

El siguiente programa tiene por objeto determinar el diagrama momento curvatura de secciones de hormigón armado y pretensado sometidas a un axil dado.

La sección transversal se discretiza en n trapecios de hormigón. Como diagrama tensión – deformación se adopta en el cálculo el diagrama definido en el capítulo 21.3.3 de la EHE.

El acero pasivo se introduce en capas, definiéndose sus áreas y sus profundidades respectivas a partir de la fibra superior. Como diagrama tensión – deformación se usa el diagrama bilineal de la norma.

El acero activo se introduce en varias capas, análogamente al pasivo. El programa calcula internamente las deformaciones de neutralización del acero activo

El programa calcula el diagrama momento - curvatura imponiendo distintas curvaturas crecientes en la sección hasta alcanzar las deformaciones últimas permitidas y calculando para cada curvatura el momento flector resultante, verificándose siempre que el axil resultante es igual al axil exterior dado.

Muros

Instrucciones y Normativa utilizada.

En el cálculo de los muros del proyecto se han consultado y utilizado las siguientes normativas:

- Instrucción de hormigón estructural", EHE, (R.D. 2661/1998 de 11 de Diciembre)
- "Instrucción relativa a las acciones a considerar en el Proyecto de Puentes de Ferrocarril", IPF-75, (O.M. de 25 de Junio de 1975)
- "Eurocódigo 1: Bases de proyecto y acciones en estructuras. Parte 3: Cargas de tráfico en puentes" E.C. 1.1.3, UNE-ENV 1991-3,(Octubre de 1997)

Características de los materiales

Las características de los materiales utilizados se especifican en el siguiente cuadro:

MATERIAL	ELEMENTO	TIPO	f_{ck} (Mpa)
Hormigón	Alzados	HA-25/P/20/II.b	25
	Cimentación	HA-25/P/20/II.a	25
	Limpieza	HM-15	15
Acero	Armadura pasiva	B500S	500

Coeficientes de seguridad y niveles de control empleados

Los coeficientes de seguridad a utilizar se aplicarán tanto a los materiales, en los que se minorarán sus resistencias como en las acciones, que serán mayoradas en el caso que sean desfavorables y se minoraran en el caso de ser favorables.

- Coeficientes de minoración de la resistencia del hormigón γ_c = 1.50
- Coeficientes de minoración de la resistencia del acero: γ_s = 1.15

- Coeficientes de mayoración de acciones desfavorables en estructuras de hormigón:
  para carga permanente γ = 1.50
  para carga variable γ = 1.60

- Coeficientes de minoración de acciones favorables en estructuras de hormigón:
  para carga permanente γ = 0.90
  para carga variable γ = 0.00

El control de los materiales es normal, y el de ejecución de alzados es intenso.

Programas de ordenador utilizados

Para el cálculo de los muros se han utilizado los siguientes programas de ordenador:

- SPW99 Sheet Pile Wall Programa de Geotechnic Delft de cálculo de pantallas.
- Pronturario informático del hormigón IECA
- Hojas de cálculo realizadas en base a la normativa EHE.

Cálculos realizados para los muros

Las acciones que actúan sobre la estructura son:

- Peso de las tierras
- Peso propio (pp) de la estructura (γ_h = 2,50 t/m^3).
- Peso del balasto y superestructura en general (cp).
- Empuje de tierras. Para el cálculo de los empujes de relleno las constantes del empuje a utilizar serán:
  $K_a = tg^2(45 - \phi/2)$
- $K_p = 0.6 \cdot tg^2(45 + \phi/2)$
  $K_0 = 1 - sen\phi$
- Sobrecarga: variable de 1.0t/m^2 a 3.0t/m^2 (en el caso en que las sobrecargas actúen a una distancia medida en horizontal igual o menor a las mitad de su altura).

Primero se ha realizado un análisis de estabilidad. El coeficiente de seguridad al deslizamiento se ha tomado de 1.50 en servicio y 1.35 en construcción. El coeficiente de seguridad frente a vuelco adoptado es de 2.00.

Seguidamente, se comprueba que las tensiones en el terreno sean inferiores a la tensión admisible del terreno.

Una vez se cumplan estas tres premisas se pasa al dimensionamiento del muro. Primero se dimensiona el hastial, empezando por la sección más desfavorable, calculando la armadura del trasdós con el momento resultante del empuje de tierras. Se dispone armadura mínima en el intradós. Se coloca una armadura de reparto horizontal mínima. Por último se comprueba la sección más desfavorable a cortante. Seguidamente, se dimensiona la zapata a flexión en la sección S1 definida por la EHE y se comprueba a cortante la sección S2.

Cálculos realizados para los muros pantalla

Utilizando las características del terreno del estudio geotécnico se calculan las constantes de empuje del terreno.

Para calcular la estabilidad de las pantallas se utiliza el programa Sheet Pile Wall que parte de las siguientes hipótesis:

Se admite que la pantalla en Equilibrio límite está sometida a un empuje activo en el trasdós debido al terreno que contiene y ejerce un empuje de tipo pasivo sobre el terreno por debajo del fondo de la excavación, en la parte empotrada.

Los coeficientes de empuje empleados son los que define la teoría de Rankine. Se considera la cohesión de las distintas capas del terreno, lo que supone una disminución de los empujes activos y un aumento de los empujes pasivos. Se calcula también la influencia sobre la pantalla debida al nivel freático, sobrecargas de tierra.

Leyes de empuje

Empuje activo: $E_a = (\gamma \cdot h + q) \cdot K_a - cA + E_w$

Donde: E_a: empuje activo unitario
E_w: empuje hidrostático
γ : Peso específico del terreno
ϕ : Ángulo de rozamiento del terreno
c: Cohesión
q: Sobrecarga de tierras

Empuje activo: $E_a = (\gamma \cdot h + q) \cdot K_p + cA' + E_w$

Donde: E_a: empuje pasivo unitario

Método de cálculo

En el proceso de cálculo se estudia la única fase para todos los tipos de pantalla presentes en el proyecto, que es la fase definitiva de pantalla en voladizo. La estabilidad de la pantalla se analiza en cada uno de los casos siguiendo la teoría de Blum (soporte empotrado).

En el voladizo se considera como pie de pantalla aquel punto en que se anula en momento flector debido a los empujes activos y pasivos. El empotramiento real de la pantalla se obtiene incrementando un 20% el empotramiento teórico definido en los resultados.

De los resultados del programa se deduce el empotramiento teórico de la pantalla así como las leyes de empujes, esfuerzos cortantes y momentos flectores actuantes en la fase de excavación.

Uno de los condicionantes en el diseño del muro estriba en limitar el desplazamiento en cabeza del muro pantalla a 20mm como máximo. En algunos casos, se ha aumentado la longitud de clava de la pantalla para reducir este desplazamiento.

El programa Sheet Pile Wall se basa en la teoría de vigas con apoyos elásticos. Se considera la pantalla como una viga sometida a flexión. Las acciones y reacciones del terreno se describen con muelles no lineales. Para pequeños desplazamientos las tensiones en el terreno son proporcionales a los desplazamientos. La máxima tensión horizontal efectiva se determina a partir de un coeficiente pasivo de empuje lateral. La tensión mínima horizontal se determina con un coeficiente de empuje activo. En la rama elástica el comportamiento del terreno viene definido por la diferencia de desplazamiento provocada por el pasivo y el activo. El problema viene definido por los siguientes datos:

Datos generales: Identificación del problema, y número de estratos de terreno
Datos de los estratos: Espesor y características mecánicas
Datos de los anclajes y fuerzas laterales, actuando únicamente entre estratos
Datos de axiles y momentos en cabeza de pantalla
Datos de las secciones de pantalla

La salida de resultados consiste en listados y gráficas con los desplazamientos a distintas profundidades, las leyes de cortantes, momentos flectores y resultantes de empujes.

Obras de Drenaje transversal

Instrucciones y Normativa utilizada.

En el cálculo de las obras de drenaje del presente proyecto se han consultado y utilizado las siguientes normativas:

- Instrucción de hormigón estructural", EHE, (R.D. 2661/1998 de 11 de Diciembre)
- "Instrucción relativa a las acciones a considerar en el Proyecto de Puentes de Ferrocarril", IPF-75, (O.M. de 25 de Junio de 1975)
- "Eurocódigo 1: Bases de proyecto y acciones en estructuras. Parte 3: Cargas de tráfico en puentes" E.C. 1.1.3, UNE-ENV 1991-3,(Octubre de 1997)
- "Norma de construcción sismorresistente: Parte general y edificación, NCSE-94 (R.D. 29 de Diciembre de 1994)

Características de los materiales

Las características de los materiales utilizados se especifican en el siguiente cuadro:

MATERIAL	ELEMENTO	TIPO	f_{ck} (Mpa)
Hormigón	Losa	HA-25/P/20/II.b	25
	Alzados	HA-25/P/20/II.b	25
	Cimentación	HA-25/P/20/II.a	25
	Limpieza	HM-15	15
Acero	Armadura pasiva	B500S	500

Coeficientes de seguridad y niveles de control empleados

Los coeficientes de seguridad a utilizar se aplicarán tanto a los materiales, en los que se minorarán sus resistencias como en las acciones, que serán mayoradas en el caso que sean desfavorables y se minoraran en el caso de ser favorables

- Coeficientes de minoración de la resistencia del hormigón $\gamma_c = 1.50$
- Coeficientes de minoración de la resistencia del acero armadura pasiva $\gamma_s = 1.15$
- Coeficientes de mayoración de acciones desfavorables en estructuras de hormigón:
  para carga permanente $\gamma = 1.50$
  para carga variable $\gamma = 1.60$

- Coeficientes de minoración de acciones favorables en estructuras de hormigón:
  para carga permanente $\gamma = 0.90$
  para carga variable $\gamma = 0.00$

El control de los materiales es normal, y el de ejecución de losas y alzados también es intenso.

Programas de ordenador utilizados

Para el cálculo de las obras de drenaje y de las obras de fábrica se han utilizado los siguientes programas de ordenador:

- SAP-2000 Programa de cálculo basado en el método de los elementos finitos utilizado para modelizar la interacción de las obras de drenaje tipo cajón abovedado y el bloque técnico.
- Pronturario informático del hormigón IECA
- Hojas de cálculo realizadas en base a la normativa EHE.

Cálculos realizados para las obras de drenaje transversal

Se ha realizado un estudio basado en el método de los elementos finitos con elementos tipo barra para estudiar la interrelación de los cajones con el bloque técnico, el terreno natural y el terraplén.

Las acciones que actúan sobre la estructura son:

- Peso de las tierras
- Peso propio (pp) de la estructura (γ_h = 2,50 t/m^3). El peso propio de la losa no actúa en el esquema como pórtico y éste se añade para la posterior comprobación de tensiones en el terreno.
- Peso del balasto y superestructura en general (cp).
- Tren de cargas. Los trenes considerados y su coeficiente de impacto se detallan a continuación:
  Se han considerado los trenes de carga de la Instrucción IPF-75 y del Eurocódigo EC1.3 con sus correspondientes coeficientes de impacto.

- Peso y empuje del agua en el interior del cajón. A efectos de cálculo se ha considerado situación hidrostática con 0.40m de lámina libre por encima del dintel de los cajones.

Mediante el análisis de elementos finitos se han comprobado las tensiones en el terreno y se han obtenido las leyes de esfuerzos de cálculo que figuran en los listados correspondientes.

Debido a la naturaleza de la obra se han realizado solamente comprobaciones en estado límite último. En particular se ha comprobado el E.L.U. de esfuerzos normales y el E.L.U. de cortante siguiendo la formulación de la Instrucción EHE.

Cálculo de los muros de las aletas

El cálculo de los muros se ha llevado a cabo mediante una hoja de cálculo elaborada en el programa Excel.

El análisis de estabilidad al deslizamiento, estabilidad al vuelco y comprobación del terreno se basa en el libro Muros de contención de J. Calavera que considera el rozamiento entre el terreno y la estructura de hormigón.

Las acciones consideradas son:
- Peso de las tierras
- Empuje lateral de las tierras sobre los hastiales considerando el talud existente.
- Peso propio (pp) de la estructura (γ_h = 2,50 t/m^3).
- Sobrecarga repartida

Reposición de servicios

Instrucciones y Normativa utilizada.

En el cálculo de las estructuras para la reposición de servicios afectados del presente proyecto se han consultado y utilizado las siguientes normativas:
- Instrucción de hormigón estructural", EHE, (R.D. 2661/1998 de 11 de Diciembre)
- "Instrucción relativa a las acciones a considerar en el Proyecto de Puentes de Ferrocarril", IPF-75, (O.M. de 25 de Junio de 1975)
- "Eurocódigo 1: Bases de proyecto y acciones en estructuras. Parte 3: Cargas de tráfico en puentes" E.C. 1.1.3, UNE-ENV 1991-3,(Octubre de 1997)
- "Norma de construcción sismorresistente: Parte general y edificación, NCSE-94 (R.D. 29 de Diciembre de 1994)

Características de los materiales

Las características de los materiales utilizados se especifican en el siguiente cuadro:

MATERIAL	ELEMENTO	TIPO	f_{ck} (Mpa)
Hormigón	Losa	HA-25/P/20/II.b	25
	Alzados	HA-25/P/20/II.b	25
	Cimentación	HA-25/P/20/II.a	25
	Limpieza	HM-15	15
Acero	Armadura pasiva	B500S	500

Coeficientes de seguridad y niveles de control empleados

Los coeficientes de seguridad a utilizar se aplicarán tanto a los materiales, en los que se minorarán sus resistencias como en las acciones, que serán mayoradas en el caso que sean desfavorables y se minoraran en el caso de ser favorables

- Coeficientes de minoración de la resistencia del hormigón $\gamma_c = 1.50$
- Coeficientes de minoración de la resistencia del acero armadura pasiva $\gamma_s = 1.15$
- Coeficientes de mayoración de acciones desfavorables en estructuras de hormigón:
  para carga permanente $\gamma = 1.50$
  para carga variable $\gamma = 1.60$
- Coeficientes de minoración de acciones favorables en estructuras de hormigón:
  para carga permanente $\gamma = 0.90$
  para carga variable $\gamma = 0.00$

El control de los materiales es normal, y el de ejecución de losas y alzados también es intenso.

Programas de ordenador utilizados

Para el cálculo de las estructuras para la reposición de servicios afectados se han utilizado los siguientes programas de ordenador:

- SAP-2000 Programa de cálculo basado en el método de los elementos finitos utilizado para modelizar la interacción de las obras de drenaje tipo cajón abovedado y el bloque técnico.
- Pronturario informático del hormigón IECA
- Hojas de cálculo realizadas en base a la normativa EHE.

Cálculos realizados para las estructuras para la reposición de servicios afectados

Se ha realizado un estudio basado en el método de los elementos finitos con elementos tipo barra para estudiar la interrelación de las estructuras con el bloque técnico, el terreno natural y el terraplén.

Las acciones que actúan sobre la estructura son:

- Peso de las tierras
- Peso propio (pp) de la estructura (γ_h = 2,50 t/m^3). El peso propio de la losa no actúa en el esquema como pórtico y éste se añade para la posterior comprobación de tensiones en el terreno.
- Peso del balasto y superestructura en general (cp).
- Tren de cargas. Los trenes considerados y su coeficiente de impacto se detallan a continuación:
  Se han considerado los trenes de carga de la Instrucción IPF-75 y del Eurocódigo EC1.3 con sus correspondientes coeficientes de impacto.

- Peso y empuje del agua en el interior del cajón. A efectos de cálculo se ha considerado situación hidrostática con 0.40m de lámina libre por encima del dintel de los cajones.

Mediante el análisis de elementos finitos se han comprobado las tensiones en el terreno y se han obtenido las leyes de esfuerzos de cálculo que figuran en los listados correspondientes.

Debido a la naturaleza de la obra se han realizado solamente comprobaciones en estado límite último. En particular se ha comprobado el E.L.U. de esfuerzos normales y el E.L.U. de cortante siguiendo la formulación de la Instrucción.

4.2.- PROGRAMAS DE CÁLCULO UTILIZADOS

Los programas de cálculo utilizados están mencionados en la respectiva memoria de cálculo de cada una de las estructuras del presente PROYECTO CONSTRUIDO DE PLATAFORMA DE LA L.A.V. MADRID-ZARAGOZA-BARCELONA-FRONTERA FRANCESA, TRAMO: CONEXIÓN VALLÉS-CASTELLBISBAL.

4.3.- CÁLCULOS

4.3.1.- Viaductos

No existen viaductos en el PROYECTO CONSTRUIDO DE PLATAFORMA DE LA L.A.V. MADRID-ZARAGOZA-BARCELONA-FRONTERA FRANCESA, TRAMO: CONEXIÓN VALLÉS-CASTELLBISBAL.

4.3.2.-Pasos Superiores e Inferiores

A continuación se adjuntan los anejos de cálculo de los diferentes pasos superiores e inferiores ejecutados

.

PASO SUPERIOR PS 0.5

PASO SUPERIOR 0.5

1.- MEMORIA

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4. CALCULOS ESTRUCTURALES
4.1. MODELO ESTRUCTURAL
4.1.1. Cálculo del tablero
4.1.2. Cálculo de estribos
4.1.3. Cálculo de las pilas
4.2. CÁLCULO DE ESFUERZOS Y DIMENSIONAMIENTO
4.2.1. Cálculo de estribos
4.2.2. Cálculo de pilas
4.2.3. Cálculo del tablero
4.2.4. DIMENSIONAMIENTO DE APOYOS
5. CONCLUSIONES

ANEXOS

A.1. ACCIONES Y MODELO DE CALCULO DEL TABLERO
A.2. LISTADOS DE ESFUERZOS DE TABLERO. HIPÓTESIS SIMPLES
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A.7. TABLERO. FLEXION TRANSVERSAL

A.8. CÁLCULO DE APARATOS DE APOYO

A.9. ESTRIBOS

A.10. PILAS

2.- PLANOS

1. ANTECEDENTES Y OBJETO

A petición de la empresa constructora COPASA, adjudicataria de la ejecución de la obra "PROYECTO DE CONSTRUCCIÓN DE PLATAFORMA LÍNEA DE ALTA VELOCIDAD MADRID-ZARAGOZA-FRONTERA FRANCESA. TRAMO: CONEXIÓN VALLÉS-CASTELLBISBAL", se redacta el presente documento, cuyo objetivo es la comprobación y dimensionamiento, a nivel estructural, del tablero y la subestructura de la estructura del P.S. 0,5 del citado proyecto.

Se ha realizado para ello los cálculos necesarios obteniendo dimensiones y armados y comprobando los coeficientes de seguridad frente a los distintos estados límite, de una manera justificada que se expone en los puntos siguientes.

2. DESCRIPCIÓN

La estructura se encuentra situada entre los P.K. 0+217.985 y P.K. 0+292.035 de la carretera BV.1501 que cruza la línea del tren de alta velocidad. Está formada por 3 vanos continuos (21.00+32.32+21.00) con sección en alas de gaviota, de 11.2 m de ancho. Se trata de un paso superior sobre la línea de alta velocidad. Los estribos son cerrados y las pilas tienen forma circular. La cimentación es superficial con zapatas en todos los casos. La estructura dimensionada mantiene las características generales del proyecto inicial en cuanto a forma y tipología variando sólo las luces. La estructura es un puente postesado.

Se trata de un puente continuo con las siguientes características:

Tipología: 3 vanos continuos.

Luz de cálculo: 21.00+32.32+21.00 m

Tablero: viga con forma de ala de gaviota de canto constante de 1.30 m. Sección con cuatro aligeramientos de 0.90 m de diámetro, macizada en estribos y apoyos sobre pilas.

Ancho total de tablero: El ancho del tablero es de 11.2 m. Con aceras de 1.20 a cada lado y plataforma de 8.00 m.

El puente apoya en dos pilas de sección circulares de diámetro 1.30 m, y altura aproximada de 11.20 metros en el mayor de los casos. La cimentación se mantiene con zapatas aisladas de 6.50x6.50x1.50 m.

Los estribos son cerrados en ambos casos con aletas envuelta y cimentación directa con zapatas.

3. BASES DE CÁLCULO

3.1. NORMATIVA UTILIZADA

Para la redacción del presente documento se ha considerado las siguientes Normas e Instrucciones:

- *NCSE-94. Norma de Construcción Sismorresistente.*
- *IAP-98. Instrucción sobre las acciones a considerar en el proyecto de puentes de carretera. Ministerio de Fomento 1998.*
- *EHE-1998. Instrucción de Hormigón Estructural.*
- *Recomendaciones para el proyecto y puesta en obra de los apoyos elastoméricos para puentes de carretera (MOPU 1982).*

3.2. CARACTERÍSTICAS DE LOS MATERIALES

Las características de los materiales considerados son las que se indican a continuación:

HORMIGÓN ARMADO

Tipo	HA-25 / B / 20 / IIa
Nivel de control	Normal
Resistencia característica f_{ck}	25 N/mm²
Resistencia media f_{cm}	33 N/mm²
Resistencia característica a tracción $f_{ct,k}$	1.80 N/mm²
Resistencia media a tracción $f_{ct,m}$	2.56 N/mm²
SITUACIONES PERSISTENTES O TRANSITORIAS	
Coeficiente de minoración γ_c	1.50
Resistencia de cálculo f_{cd}	16.67 N/mm²
SITUACIONES ACCIDENTALES	
Coeficiente de minoración γ_c	1.30
Resistencia de cálculo f_{cd}	19.23 N/mm²
MODULO DE ELASTICIDAD	
Módulo de Elasticidad inicial E_{co}	32 000 N/mm²
Módulo de Elasticidad secante E_c	27 264 N/mm²
Módulo de Poisson ν_c	0.20

HORMIGÓN PRETENSADO

Tipo	HP-35 / B / 20 / IIa
Nivel de control	Normal
Resistencia característica f_{ck}	35 N/mm²
Resistencia media f_{cm}	43 N/mm²
Resistencia característica a tracción $f_{ct,k}$	2.2 N/mm²
Resistencia media a tracción $f_{ct,m}$	3.2 N/mm²
SITUACIONES PERSISTENTES O TRANSITORIAS	
Coeficiente de minoración γ_c	1.50
Resistencia de cálculo f_{cd}	23.30 N/mm²
SITUACIONES ACCIDENTALES	
Coeficiente de minoración γ_c	1.30
Resistencia de cálculo f_{cd}	26.92 N/mm²
MODULO DE ELASTICIDAD	
Módulo de Elasticidad inicial E_{co}	35000 N/mm²
Módulo de Elasticidad secante E_c	30000 N/mm²
Módulo de Poisson ν_c	0.20

ARMADURAS PASIVAS

Tipo	B - 500 S
Nivel de control	Normal
Resistencia característica fyk	500 MPa
Coeficiente de minoración □s (situac. Persistentes o transitorias)	1.15
Resistencia de cálculo fyd	443.5 MPa
Módulo de Elasticidad Es	210 000 Mpa

ARMADURAS ACTIVAS

Tipo	Y-1860-S7
Nivel de control	Normal
Tension de rotura	>= 1900 N/mm²
Limite elastico al 0.2 %	>= 1710 N/mm²
Coeficiente de minoración γ_s (situac. Persistentes o transitorias)	1.15
Módulo de Elasticidad Es	200 000 N/mm²

RELLENO EN TRASDOS

Tipo	Granular.
Peso específico γ	21 kN/m3
Coeficiente de empuje activo Ka	0.33
Coeficiente de empuje al reposo Kr	0.50

3.3. CARACTERÍSTICAS DEL CIMIENTO

Para el dimensionamiento de la cimentación se ha tenido en cuenta las características del terreno dadas en el proyecto original.

3.4. ACCIONES CONSIDERADAS

3.4.1. Acciones permanentes

Las cargas permanentes están constituidas por los pesos de los distintos elementos que forman parte de la estructura. Corresponden a acciones que actúan en todo momento y son constantes en posición y magnitud. Comprenden el peso propio y las cargas muertas. Sus valores se deducen de las dimensiones de los elementos especificadas en los planos y de sus pesos específicos correspondientes.

3.4.1.1. Peso propio

Corresponde al peso de los elementos estructurales, con su sección bruta, aplicándole el peso específico del material:

Peso del hormigón: 25.00 KN/m³.

3.4.1.2. Cargas muertas

Son las debidas a los elementos no estructurales que gravitan sobre la estructura, tales como: pavimentos, barreras, etc. Se han considerado los siguientes valores característicos:

Aceras (e=0.20m ancho= 1.20 m)	25.00 0.2=5.00 kN/m³
Impostas y barandillas	10.00 kN/m (por borde)

3.4.2. Acciones permanentes de valor no constante

Acciones que actúan en todo momento pero cuya magnitud no es constante.

Se incluyen aquellas acciones cuya variación sea función del tiempo transcurrido y se produzca en un solo sentido, tendiendo hacia un determinado valor límite (acciones reológicas, pretensado, asientos del terreno bajo las cimentaciones), y aquellas otras acciones originadas por el terreno cuya magnitud varía en función de la interacción terreno-estructura.

3.4.2.1. Presolicitaciones

Incluye todas las formas posibles de introducir esfuerzos en una estructura antes de su puesta en servicio, con el fin de mejorar su respuesta frente al conjunto de solicitaciones a las que posteriormente se verá sometida.

Se incluyen las presolicitaciones introducidas por medio de gatos, bloqueo provisional de coacciones, desplazamientos impuestos en los apoyos de la estructura, etc.

3.4.2.2. Pretensado

Las acciones debidas al pretensado se valorarán teniendo en cuenta la forma de introducción del mismo y la posibilidad de deformación de la estructura.

Se considerarán dos tipos de acción del pretensado: Pretensado interior o exterior dentro del canto (P1) y Pretensado exterior fuera del canto (P2).

3.4.2.3. Acciones reológicas

Las acciones reológicas se obtienen a partir de los valores característicos de las deformaciones provocadas por la retracción y la fluencia.

La deformación debida a la retracción del hormigón es función de la humedad relativa del ambiente, del espesor ficticio de la pieza, de la cuantía de armadura, de las condiciones de amasado del hormigón y del tiempo transcurrido desde su puesta en obra.

La deformación debida a la fluencia del hormigón bajo carga constante se considera proporcional a la deformación elástica instantánea.

Los valores del coeficiente de retracción y del coeficiente de fluencia se tienen en cuenta para el cálculo de los aparatos de apoyo.

3.4.2.4. Acciones debidas al terreno

En el cálculo de los elementos de contención de tierras, se tienen en cuenta las acciones debidas al relleno del trasdós,

considerando independientemente los efectos del peso del terreno y de los empujes.

El peso del terreno se determina aplicando al volumen de terreno que gravita sobre la superficie del elemento horizontal, el peso específico del relleno vertido y compactado.

El empuje sobre los elementos estructurales se determinará de acuerdo con los conceptos geotécnicos, en función de las características del terreno y de la interacción terreno-estructura.

Con el fin de quedarnos del lado de la seguridad, se considerará el empuje activo o el empuje en reposo, según sea más desfavorable para los distintos esfuerzos que se estén analizando, con los valores de los coeficientes de empuje indicados anteriormente.

En ningún caso en que su actuación sea desfavorable para el efecto estudiado, el valor del empuje será inferior al equivalente del empuje hidrostático de un fluido de peso específico 5 kN/m³.

En el caso de asientos del terreno, sus valores se deducen de los parámetros o condiciones establecidas en el preceptivo estudio geotécnico, teniendo en cuenta las características del terreno, la tipología y geometría de la cimentación, y las cargas transmitidas.

3.4.3. Sobrecargas de uso

Son acciones externas a la estructura que pueden actuar o no sobre ella por razón de su uso.

Las componentes verticales del tren de cargas corresponden a las tres acciones siguientes actuando simultáneamente: Sobrecarga Uniforme, Vehículo pesado y Sobrecarga en aceras.

En los valores de las cargas definidas a continuación está ya incluido el correspondiente coeficiente de impacto, que tiene en cuenta el carácter dinámico de las cargas, que se suponen aplicadas estáticamente.

3.4.3.1. Sobrecarga uniforme

Se considera una sobrecarga uniforme de 4 KN/m² extendida en toda la plataforma del puente o en parte de ella, según sea más desfavorable para el elemento en estudio.

3.4.3.2. Vehículo pesado

Vehículo pesado de la Instrucción de 600 kN, cuyo eje longitudinal se considerará paralelo al de la calzada, formado por seis cargas puntuales de 100 kN cada una.

La separación entre cargas en sentido longitudinal será de 1.50 m, y en sentido transversal de 2.00 m. La superficie de apoyo sobre la que actuará cada carga será de 0.20 m, paralelamente al eje del vehículo, por 0.60 m de ancho.

La disposición transversal del vehículo pesado dentro de la plataforma cumplirá con la siguiente limitación: la distancia mínima de una de las líneas de carga a bordes de la plataforma será de 0.50 m.

3.4.3.3. Sobrecarga en aceras

Se considera una sobrecarga uniforme de 4 kN/m² extendida en toda la superficie, o en parte de ella, según sea más desfavorable para el elemento en estudio, de aceras, pistas para ciclistas o ciclomotores, zonas reservadas para el paso de animales y medianas, físicamente separadas de la plataforma.

A efectos locales, si dichas zonas no se encuentran protegidas por una defensa rígida que impida el paso accidental de un vehículo, se comprobarán además con una carga de 60 kN, supuesta actuando sobre una superficie de 0.30 x 0.30 m² en la posición más desfavorable, no compatible con la sobrecarga uniforme de aceras, ni con la sobrecarga uniforme de la plataforma, ni con las cargas del vehículo definidas anteriormente.

3.4.3.4. Frenado

El frenado, arranque o cambio de velocidad de los vehículos, dará lugar a una acción cuyo valor se estima en 1/20 de la sobrecarga sobre la plataforma del puente.

Sobrecarga Total Plataforma = $Q_{SU} + Q_{SP}$ = 297.82 Mp

Frenado Tablero = 297.82 / 20 = 14.57 Mp

Dado que la vía dispone de carriles de sentidos opuestos de circulación, se considera como de dirección única, puesto que esta hipótesis resulta más desfavorable.

Según la vigente Instrucción de acciones, los valores mínimo y máximo para la acción de frenado se establecen en función de la anchura de la plataforma, por lo que el frenado mínimo y

máximo que puede actuar sobre un tablero de anchura de plataforma b = 8.00 m son:

Valor mínimo = 20 x 8.00 = 160 kN = 16.00 Mp

Valor máximo = 60 x 8.00 = 480 kN = 48.00 Mp

Estos valores límite se referirán no sólo a los elementos directamente solicitados, sino también a aquellos otros en los que la acción se transmita de forma indirecta.

3.4.3.5. Fuerza centrífuga

En puentes de planta curva, la fuerza centrífuga se supondrá actuando horizontalmente perpendicular al eje de la plataforma del puente, a cota de pavimento y con el valor deducido de la siguiente fórmula:

$$F_c = K * M * \frac{V_e^2}{R}$$

donde:

Fc : fuerza centrífuga (N).

M : masa de la sobrecarga sobre la plataforma del puente.

Ve : velocidad específica en el tramo de ubicación del puente (m/s).

R : radio en planta de la curva correspondiente al eje de la plataforma del puente (m).

K : factor de distancia adimensional que puede suponerse igual a:

$$K = \frac{231}{V_e^2 + 231}$$

resultando

$V_e = 16.67$ m/s

$K = 231/(16.67^2+231) = 0.454$

$R_{máx} = 130$ m

M = 3839.93 kN

Por lo tanto, se ha considerado un valor máximo de la fuerza centrífuga de: Fc = 372.2 kN.

3.4.3.6. Sobrecarga en terraplenes

A efectos del cálculo de empujes del terreno sobre elementos de la estructura en contacto con él, se considerará actuando en la parte superior del terraplén, en la zona por donde pueda discurrir el tráfico, una sobrecarga uniforme de 10 kN/m².

Esta sobrecarga se tendrá en cuenta únicamente en los casos en que las cargas producidas por el tráfico actúen a una distancia, medida en horizontal desde la parte superior de la estructura, menor o igual a la mitad de la altura del elemento de la estructura sobre el que actúe el empuje.

En determinados casos, deberán tenerse en cuenta los empujes locales debidos a la actuación de un eje del vehículo del tren de cargas definido.

3.4.3.7. Empuje sobre barandillas y barreras

Esta acción tiene carácter local y, por tanto, sólo se utilizará para la comprobación del elemento de contención y de sus

anclajes, sin que deba ser considerada a efectos de ninguna otra verificación de la seguridad general de la estructura.

3.4.4. Acciones térmicas

Las acciones térmicas se tendrán la componente de variación uniforme de temperatura (ΔT) que experimenta el elemento estructural, asociada fundamentalmente al rango anual de la temperatura ambiente en el lugar de su emplazamiento.

Para la determinación de los efectos que producen se consideran los coeficientes de dilatación térmica de los materiales utilizados:

Hormigón: $\alpha_h = 10^{-5}\ °C^{-1}$

Acero: $\alpha_a = 1.2\ 10^{-5}\ °C^{-1}$

3.4.4.1. Variación uniforme de temperatura

La componente de variación uniforme de temperatura depende de la temperatura efectiva (temperatura media en sus secciones transversales) mínima y máxima que pueda alcanzar el elemento en un período de tiempo determinado.

Su valor depende de la tipología estructural del elemento, sus dimensiones, los materiales que lo constituyen, y de los valores de la temperatura ambiente de la zona climática en que se vaya a ubicar el puente.

A efectos de la evaluación de las acciones térmicas, la ubicación del puente se encuentra incluida en la Zona III, correspondiente al Litoral Mediterráneo.

El valor característico de la variación uniforme anual de la temperatura del tablero (ΔT), diferencia entre los valores medios mínimos y máximos a lo largo del año de la temperatura media en sus secciones transversales, se obtiene a partir de la siguiente expresión, válida para la verificación de las situaciones persistentes durante la vida útil del puente en el caso de tableros de hormigón:

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

Siendo:

z = Número árabe que corresponde al número romano que designa la zona climática, en nuestro caso 3.

h = Canto del tablero (m), con $h_{min} \le h \le h_{max}$. En el caso de h variable a lo largo de la directriz del puente se tomará el h medio.

s = Separación entre ejes de vigas (m) para tableros de vigas de hormigón, con valor comprendido entre 1.5 m $\le s \le$ 3.5 m. En otro caso s = 1.

Las constantes K, a, b, c, h_{min} y h_{max} se recogen en la siguiente tabla para las tipologías transversales más habituales en el diseño de puentes de hormigón y metálicos.

Coeficientes para la determinación de la Variación Uniforme de Temperatura del tablero						
Tipología	K	a	b	c	h_{min} (m)	h_{max} (m)
Losa maciza hormigón	23.89	0.292	-0.139	0	0.30	1.20
Losa aligerada hormigón	24.91	0.292	-0.172	0	0.60	1.50
Cajón hormigón	29.13	0.301	-0.148	0	1.70	4.00
Vigas hormigón	26.90	0.300	-0.088	0.057	1.00	2.50
Cajón metálico	39.77	0.234	-0.069	0	1.50	4.50
Vigas metálicas	40.11	0.228	-0.072	0	2.00	6.00

En nuestro caso las constantes consideradas son:

K = 24.91
a = 0.292
b = – 0,172
h = 1.3 m
s = 1

Por lo que resulta una variación uniforme de valor:

ΔT = 32.8 °C.

Se tomará un valor de ±2/3 ΔT, como la variación posible desde el momento de construcción y cualquiera de los extremos de temperatura

3.4.4.2. Gradiente térmico positivo

Se define como gradiente térmico vertical positivo del tablero la diferencia de temperatura entre la fibra superior y la inferior del tablero, dividida por la distancia entre ambas fibras, con unidades, por tanto de grados Celsius por metro (°C/m). A efectos de cálculo de las acciones sobre el tablero, esta variación de temperatura se supondrá lineal entre ambas fibras.

Para una losa aligerada, la diferencia de temperaturas vertical positiva entre la fibra superior e inferior ΔT_{SI} se determina con la expresión:

$$\Delta T_{SI} = (K_1 \; K_3 \; K_4) \; \Delta T_{SI,ref}$$

Siendo:
K_1 = Factor de corrección relativo al canto del tablero.
K_3= Factor de corrección relativo a la existencia de aligeramiento.
K_4= Factor de corrección relativo al espesor de pavimento 6cm.
$\Delta T_{SI,ref}$ = Diferencia de temperaturas de referencia.

En nuestro caso, para la localidad de Castellbisbal (Barcelona) se puede adoptar como diferencia de temperatura

de referencia $\Delta T_{SI,ref}$ = 12.0°C, y los coeficientes correctores para una losa de 1.60 m de canto son:

K_1 = 0.78 K_3= 1.06 K_4= 1.40

Con lo que el gradiente térmico vertical positivo será:

ΔT_{SI} = 0.78 x 1.06 x 1.40 x 12.0°C = 13.9°C

$K = \Delta T_{SI} / h = 13.9 \cdot 10^{-5} / 1.30 = 0.000107$

3.4.5. Viento

La acción del viento se asimilará a una carga estática, función de la velocidad de cálculo del viento en la zona de emplazamiento.

3.4.5.1. Velocidad de referencia

La velocidad de referencia v_{ref} es la velocidad media a lo largo de un período de 10 minutos, medida en una zona plana y desprotegida frente al viento equivalente a un entorno del puente tipo II, a una altura de 10 metros, y con un período de retorno de 50 años.

De no existir datos específicos de la zona en la que se ubica el puente, se tomará el valor que se deduce del mapa de isotacas incluido en la Instrucción, que para la localidad de Castelbisbal (Barcelona) corresponde a:

v_{ref} = 28 m/s

3.4.5.2. Cálculo simplificado.

En el caso que nos ocupa la IAPF propone utilizar un método simplificado del lado de la seguridad para las acciones debidas al viento.

Así pues, la IAPF propone para puentes de vano inferiores a 40.0 m de luz y de menos de 20.0 m de altura máxima de pilas, que se podrá analizar el efecto del viento considerando exclusivamente la dirección transversal, con las tablas que propone elaboradas con C_D= 1.8 en tablero y 2.2 en pilas; C_t=1.0 y C_r=1.04.

Tipo de entorno	Empuje sobre el tablero (kN/m²)		Empuje sobre pilas (kN/m²)	
	Vref = 24 m/s	Vref = 28 m/s	Vref = 24 m/s	Vref = 28 m/s
I	1.94	2.64	2.37	3.22
II	1.66	2.25	2.03	2.76
III	1.25	1.71	1.54	2.08
IV	0.85	1.17	1.05	1.42

Valores del empuje según la altura máxima de pilas para H_{max}<10m

Tipo de entorno	Empuje sobre el tablero (kN/m²)		Empuje sobre pilas (kN/m²)	
	Vref = 24 m/s	Vref = 28 m/s	Vref = 24 m/s	Vref = 28 m/s
I	2.25	3.05	2.43	3.30
II	1.97	2.68	2.11	2.87
III	1.60	2.17	1.72	2.35
IV	1.21	1.65	1.41	1.92

Valores del empuje según la altura máxima de pilas hasta H_{max}=20m

En nuestro caso la altura de pila es aproximadamente 10.0 m y el vano mayor menor de 40.0. Por todo ello se adopta el método simplificado de la norma, considerando únicamente empuje transversal sobre el tablero.

Los valores adoptados serán para un entorno II y para una vref = 28 m/s:

Empuje sobre tablero = 2.25 kN/m²

Empuje sobre pilas = 2.76 kN/m²

3.4.6. Nieve

La sobrecarga de nieve se supondrá actuando en todas aquellas superficies del tablero sobre las que no se ha considerado la actuación de la sobrecarga de uso.

De no existir datos suficientes de la zona en la que se ubicará el puente, se podrá tomar como valor característico de la sobrecarga de nieve el que se indica en la Instrucción IAP-98, cuyas especificaciones serán válidas siempre que la ubicación del puente no se encuentre en un lugar conocido por sus condiciones extremas de viento o nieve o en altitudes superiores a los 2000 metros.

En el caso que nos ocupa no es necesario considerar la sobrecarga de nieve, pues ya se ha considerado la actuación de la sobrecarga de uso en toda la superficie del tablero del puente.

3.4.7. Acciones accidentales

Se incluyen aquellas acciones cuya posibilidad de actuación durante un "período de referencia" establecido es pequeña, pero cuya importancia puede ser considerable.

Se incluyen en este tipo de acciones: Impacto de vehículos sobre elementos estructurales, Impacto lateral sobre barreras, Impacto de embarcaciones.

3.4.8. Acciones Sísmicas

Las acciones sísmicas en puentes se considerarán únicamente cuando el valor de la aceleración de cálculo decir igual o superior a 0.06 g. En nuestro caso es 0.04 g y no procede el cálculo sísmico

3.4.9. Acciones indirectas

Este tipo de acciones indirectas originan estados tensionales que son variables tanto en altura (geometría, condiciones de borde) como en planta (grado de soleamiento, etc.). Se ha optado por tener en cuenta su efecto sobre la fisuración de la estructura, disponiendo la armadura necesaria.

La Instrucción EHE define los valores dados en la tabla adjunta:

CUANTÍAS GEOMÉTRICAS MÍNIMAS, EN TANTO POR 1000, REFERIDAS A LA SECCIÓN TOTAL DE HORMIGÓN			
		B 400 S	B 500 S
LOSAS (*)		2.0	1.8
MUROS (**)	HORIZONTAL	4.0	3.2
	VERTICAL	1.2	0.9

(*) Cuantía mínima de cada una de las armaduras, longitudinal y transversal repartida en las dos caras. Las losas apoyadas sobre el terreno requieren un estudio especial.

(**) La cuantía mínima vertical es la correspondiente a la cara de tracción. Se recomienda disponer en la cara opuesta una armadura mínima igual al 30% de la consignada.
La armadura mínima horizontal deberá repartirse en ambas caras. Para muros vistos por ambas caras debe disponerse el 50% en cada cara. Para muros vistos por una sola cara podrán disponerse hasta 2/3 de la armadura total en la cara vista. En el caso de que se dispongan juntas verticales de contracción a distancias no superiores a 7.5 m con la armadura horizontal interrumpida, las cuantías horizontales mínimas pueden reducirse a la mitad.

3.5. HIPÓTESIS DE CARGA

3.5.1. Valores representativos

De acuerdo con la Instrucción IAPF, los valores representativos de las acciones utilizados para la verificación de los estados límites serán:

3.5.1.1. Permanentes (G)

Para las acciones permanentes se considerará un único valor representativo, coincidente con el valor característico G_k, excepto en el caso de la acción correspondiente al peso del pavimento y, en su caso, las acciones producidas por los servicios situados sobre el puente, para la que se considerarán dos valores representativos $G_{k,sup}$ y $G_{k,inf}$.

3.5.1.2. Permanentes de valor no constante (G*)

- *Presolicitaciones*

Para las acciones originadas por las presolicitaciones definidas anteriormente se considerará un único valor representativo, coincidente con el valor característico $P_{k,t}$ correspondiente al instante t en el que se realiza la comprobación del estado límite.

- *Acciones Reológicas*

Para las acciones de origen reológico, fluencia y retracción, se considerará un único valor representativo, coincidente con el valor característico $R_{k,t}$ correspondiente al instante t en el que se realiza la comprobación.

- *Acciones debidas al terreno*

Para las acciones correspondientes al peso del terreno se considerará un único valor representativo, coincidente con el valor característico $G^*_{wt,k}$.

Para las acciones correspondientes al empuje del terreno y movimientos del terreno bajo las cimentaciones se considerará el valor representativo de acuerdo con lo expuesto anteriormente.

3.5.1.3. Variables (Q)

Cada una de las acciones variables podrá considerarse con los siguientes valores representativos:

- *Valor característico* Q_k

será el valor de la acción cuando actúe aisladamente, como ha sido definido anteriormente.

- *Valor de combinación* $\psi_0 Q_k$:

será el valor de la acción cuando actúe con alguna otra acción variable, para tener en cuenta la pequeña probabilidad de que actúen simultáneamente los valores más desfavorables de varias acciones independientes.

- *Valor frecuente* $\psi_1 Q_k$:

será el valor de la acción que sea sobrepasado durante un período de corta duración respecto a la vida útil del puente (5% del tiempo). Corresponde a un período de retorno de una semana.

- *Valor casi-permanente* $\psi_2 Q_k$:

será el valor de la acción que sea sobrepasado durante una gran parte de la vida útil del puente (el 50% o más del tiempo) o bien el valor medio.

Los valores de los coeficientes y se recogen en la siguiente tabla.

VALORES DE LOS COEFICIENTES ψ			
Valores	ψ_0	ψ_1	ψ_2
Cargas de tráfico	0.80	0.60	0.00
Viento	0.60	0.50	0.20
Temperatura	0.60	0.50	0.20

3.5.1.4. Accidentales (A)

Para las acciones accidentales se considerará un único valor representativo coincidente con el valor característico A_k.

3.5.2. Valores de cálculo

Los valores de cálculo de las diferentes acciones serán los obtenidos aplicando el correspondiente coeficiente parcial de seguridad γ_F a los valores representativos de las acciones definidas anteriormente.Los coeficientes parciales de seguridad se indican en la siguiente tabla:

COEFICIENTES DE SEGURIDAD γ_f						
ESTADOS LÍMITES	ÚLTIMOS				DE SERVICIO	
SITUACIONES	PERSISTENTES Y TRANSITORIAS		ACCIDENTALES		PERSISTENTES Y TRANSITORIAS	
ACCIÓN	Favorable	Desfavorable	Favorable	Desfavorable	Favorable	Desfavorable
PERMANENTE γ_G	1.00	1.35	1.00	1.00	1.00	1.00

PERMANENTE DE VALOR NO CONSTANTE γ_{G^*}	Pretensado P_1 Postesas Pretesas	1.00	1.00	1.00	1.00	0.90 0.95	1.10 1.05
	Pretensado P_2	1.00	1.35	1.00	1.00	1.00	1.00
	Presolicitación	0.95	1.05	1.00	1.00	1.00	1.00
	Reológica	1.00	1.35	1.00	1.00	1.00	1.00
	Acción del terreno	1.00	1.50	1.00	1.00	1.00	1.00
VARIABLE γ_Q		0.00	1.50	0.00	1.00	0.00	1.00
ACCIDENTAL γ_A				1.00	1.00		

3.5.3. Hipótesis de Carga

Según la Instrucción IAP, las hipótesis de carga a considerar se formarán combinando los valores de calculo de las acciones cuya actuación pueda ser simultanea, según los criterios generales que se indican a continuación:

A) ESTADOS LÍMITE ÚLTIMOS

Para la comprobación de los Estados Límites Últimos se considerarán las situaciones persistentes y transitorias, y las accidentales con o sin sismo.

A1) Situaciones persistentes o transitorias

Las combinaciones de las distintas acciones consideradas en estas situaciones, excepto en el ELU de fatiga, se realizan de acuerdo con el siguiente criterio:

$$\sum_{j\geq 1} \gamma_{G,j}\, G_{k,j} + \sum_{i\geq 1} \gamma_{G^*,i}\, G^*_{k,i} + \gamma_{Q,1}\, Q_{k,1} + \sum_{i>1} \gamma_{Q,i}\, \Psi_{0,i}\, Q_{k,i}$$

donde:

$G_{k,j}$ = Valor representativo de cada acción permanente.

$G^*_{k,i}$ = Valor representativo de cada acción permanente de valor no constante.

$Q_{k,1}$ = Valor representativo (valor característico) de la acción variable dominante.

$\psi_{0,i}\, Q_{k,i}$ = Valores representativos (valores de combinación) de las acciones variables concomitantes con la acción variable dominante.

En general, deberán realizarse tantas hipótesis o combinaciones como sea necesario, considerando, en cada una de ellas, una de las acciones variables como dominante y el resto como concomitantes.

Además, se deberán tener en cuenta las siguientes observaciones:

- *Si la acción de la sobrecarga de uso es considerada como dominante, se tomará ésta con su valor representativo y la acción del viento con su valor reducido, aplicándose además los coeficientes ψ indicados anteriormente.*
- *Si la acción del viento es considerada como dominante, se tomara esta acción con su valor representativo y no se considerará la actuación simultánea de la acción de la sobrecarga de uso.*

A2) Situaciones accidentales

Se distinguirán dos tipos de situaciones accidentales:

- *Las provocadas por choques de vehículos, locomotoras, barcos, etc., sobre los distintos elementos del puente.*
- *Las provocadas por la acción sísmica.*

A2a) Situaciones accidentales sin sismo

Las combinaciones de las distintas acciones consideradas en estas situaciones se realizarán de acuerdo con el siguiente criterio:

$$\sum_{j\geq 1} \gamma_{G,j}\, G_{k,j} + \sum_{i\geq 1} \gamma_{G^*,i}\, G^{-}_{k,i} + \gamma_{Q,1}\, \Psi_{1,1}\, Q_{k,1} + \sum_{i>1} \gamma_{Q,i}\, \Psi_{2,i}\, Q_{k,i} + \gamma_{A}\, A_k$$

donde:

$G_{k,j}$ = Valor representativo de cada acción permanente.

$G^{*}_{k,i}$ = Valor representativo de cada acción permanente de valor no constante.

$\Psi_{1,1}\, Q_{k,1}$ = Valor representativo frecuente de la acción variable dominante.

$\Psi_{2,i}\, Q_{k,j}$ = Valores representativos casi-permanentes de las acciones variables concomitantes con la acción variable dominante y la acción accidental.

A_k = Valor representativo característico de la acción accidental.

Para estas combinaciones serán de aplicación las observaciones indicadas en el planteamiento de las combinaciones A1).

A2b) Situaciones accidentales de sismo

Las combinaciones de las distintas acciones consideradas en estas situaciones se realizarán de acuerdo con el siguiente criterio:

$$\sum_{j\geq 1} \gamma_{G,j}\, G_{k,j} + \sum_{i\geq 1} \gamma_{G^*,i}\, G^{*}_{k,i} + \gamma_{Q,1}\, \Psi_{2,1}\, Q_{k,1} + \gamma_{A}\, A_{E,k}$$

donde:

$G_{k,j}$ = Valor representativo de cada acción permanente.

$G^{*}_{k,i}$ = Valor representativo de cada acción permanente de valor no constante.

$\Psi_{2,1}\, Q_{k,1}$ = Valor representativo casi-permanentes de la acción relativa a la sobrecarga de uso. En puentes de baja o media intensidad de tráfico, no será necesario considerar esta acción.

$A_{E,k}$ = Valor representativo característico de la acción sísmica.

B) ESTADOS LÍMITE DE SERVICIO

Para las comprobaciones relativas a los Estados Límites de servicio se considerarán únicamente las situaciones persistentes y transitorias, excluyéndose las accidentales.

Las combinaciones de las distintas acciones consideradas en estas situaciones, se realizarán de acuerdo con el siguiente criterio:

B1) Combinación Característica (poco probable o rara)

$$\sum_{j\geq 1} G_{k,j} + \sum_{i\geq 1} \gamma_{G^*,i}\, G^{-}_{k,i} + \gamma_{Q,1}\, Q_{k,1} + \sum_{i>1} \gamma_{Q,i}\, \Psi_{0,i}\, Q_{k,i}$$

B2) Combinación Frecuente

$$\sum_{j\geq 1} G_{k,j} + \sum_{i\geq 1} \gamma_{G^*,i}\, G^{-}_{k,i} + \gamma_{Q,1}\, \Psi_{1,1}\, Q_{k,1} + \sum_{i>1} \gamma_{Q,i}\, \Psi_{2,i}\, Q_{k,i}$$

B3) Combinación Casi-permanente

$$\sum_{j\geq 1} G_{k,j} + \sum_{i\geq 1} \gamma_{G^*,i}\, G^{-}_{k,i} + \sum_{i\geq 1} \gamma_{Q,i}\, \Psi_{2,i}\, Q_{k,i}$$

Para las tres combinaciones serán de aplicación las observaciones indicadas en el planteamiento de las combinaciones A1).

4. CALCULOS ESTRUCTURALES

4.1. MODELO ESTRUCTURAL

4.1.1. Cálculo del tablero

Para el cálculo del tablero se ha empleado un modelo de elementos finitos tipo barra, procesado mediante el programa STATIK del paquete

informático CUBUS. Se ha considerado la geometría real del eje del tablero del puente, así como las secciones transversales del tablero y riostras de apoyo.

Las reacciones sobre los estribos y pilas han servido de base para dimensionar las pilas.

4.1.2. Cálculo de estribos

A partir de las reacciones verticales y horizontales transmitidas por el tablero a los apoyos, se ha dimensionado el estribo, comprobando el cumplimiento de los estados límite. Dichas acciones aparecen en los anexos correspondientes. La comprobación de los estribos se ha realizado con el programa de cálculo CivilCad.

4.1.3. Cálculo de las pilas

Partiendo de las reacciones proporcionadas por el cálculo del tablero y las acciones horizontales del viento, frenado, acciones reológicas, se han dimensionado las pilas, comprobando los estados límite últimos en las mismas. Los resultados se adjuntan en el anexo correspondiente.

También se ha realizado la comprobación de las zapatas, los resultados se adjuntan en el anexo correspondiente.

4.2. CÁLCULO DE ESFUERZOS Y DIMENSIONAMIENTO

Los modelos utilizados emplean el método de rigidez para la obtención de desplazamientos en los nudos, a partir de los cuales se obtienen los esfuerzos en barras y reacciones en apoyos. Los resultados se

obtienen para cada hipótesis simple de carga y combinación, obtenidas éstas según la normativa correspondiente en cada caso.

4.2.1. Cálculo de estribos

Se ha dimensionado los estribos a partir de las cargas de los modelos de acciones horizontales y verticales del tablero, mediante el uso del programa informático CivilCad.

4.2.2. Cálculo de pilas

Con las acciones resultantes de los modelos de acciones verticales y horizontales en las pilas, se ha calculado los esfuerzos en las mismas. Con los esfuerzos obtenidos en las pilas y la envolvente de esfuerzos, se ha realizado el dimensionamiento del armado de las pilas y comprobación de las secciones a cortante. Para ello se ha empleado el "Prontuario Informático del Hormigón", siguiendo la metodología de la EHE. La cimentación se ha calculado con una hoja de cálculo propia, realizando las comprobaciones necesarias según la EHE.

4.2.3. Cálculo del tablero

En cálculo del tablero se ha realizado con Statik, a partir de la envolventes de esfuerzos en ELS, se ha comprobado que se cumplen las limitaciones tensionales incluidas en la normativa EHE, mientras que en el caso de los ELU, la comprobación flexocompresión de la sección se ha realizado con Fagus-3, mientras que para la comprobación a cortante y torsión se ha empleado el "Prontuario Informático del Hormigón", siguiendo la metodología de la EHE.

4.2.4. DIMENSIONAMIENTO DE APOYOS

A partir de los valores más desfavorables de desplazamientos y reacciones, se ha empleado unas hojas de cálculo para el dimensionamiento de los aparatos de apoyo, de acuerdo con las "Recomendaciones para el proyecto y puesta en obra de los apoyos elastoméricos para puentes de carretera (MOPU 1982).

5. CONCLUSIONES

En el presente documento se ha procedido a la definición de la estructura del puente del P.S. 0,5 (tablero, estribos y pilas). Se ha realizado para ello los cálculos necesarios obteniendo dimensiones y armados y comprobando los coeficientes de seguridad frente a los distintos estados límite, de una manera justificada que se ha expuesto en los puntos anteriores.

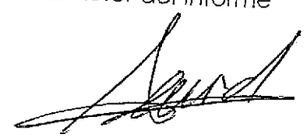
Se ha procedido al dimensionamiento del tablero, mediante un modelo de elementos finitos, dimensionando las armaduras y comprobándose los correspondientes estados límite.

Se ha dimensionado la sección y las armaduras de las pilas y de los estribos, de acuerdo con el articulado de la EHE.

En presente Documento se adjunta el desarrollo de los cálculos, así como Planos de definición, armado y detalles de la estructura del puente.

Valencia, Julio de 2003

El Autor del Informe



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ACCIONES Y MODELO DE CÁLCULO DEL TABLERO

☐ Peso propio

$\gamma_{Hormigón} = 25\ kN/m^3$

☐ Carga muerta

Barreras = 10 kN/m.

Aceras = 1'35 m × 0'20 m × 25 kN/m³ = 6'75 kN/m/acera.

Pavimento$_{mín}$ = 0'06 m × 2'30 × 9'81 × 8 = 18'83 kN/m.

Pavimento$_{max}$ = 1'5 × 18'83 = 28'25 kN/m.

CM Valor mínimo = 2 × (10 + 6'75) + 18'83 = 52'33 kN/m.

CM Valor máximo = 2 × (10 + 6'75) + 28'25 = 61'75 kN/m.

☐ Acciones reológicas.

Ver valores de retracción y fluencia en cálculo de pérdidas de pretensado $\varepsilon_{cd} = 0'00025$ m/m

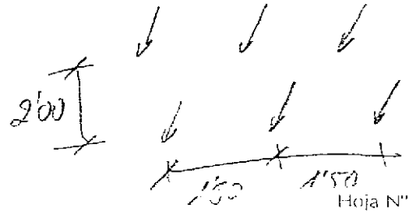
☐ Sobrecarga de uso

a) Verticales

Centrada 4'0 kN/m² × 11'20 m = 44'8 kN/m

Excéntrica 4'0 kN/m² × 11'20/2 = 22'4 kN/m ⇒ M = 22'4 × $\frac{11'20}{2}$ = 62'72 kN·m/m

Carro 600 kN.



b) horizontales.

• Frenado y arranque.

$\frac{1}{20}(400 \times 800 \cdot 72'32 + 600) \simeq 1457\ kN.$

Valor mínimo = 20 × 8 = 160 kN

Valor máximo = 60 × 8 = 480 kN

Se tomará 1457 kN repartidos en el eje

$\frac{1457\ kN}{74'32} = 19'6\ kN/m.$

• Fuerza centrífuga

$F_c = K \cdot M \cdot \frac{V_c^2}{R}$

M = 4'00 × 11'20 × 72'32 + 600 = 3839'93 kN = 383993 kg.

V_c = 60 km/h. = 16'66 m/s

R = 130 m.

$K = \frac{231}{16'66^2 + 231} \simeq 0'454$

$F_c = 0'454 \cdot 383993 \cdot \frac{16'66^2}{130} = 372208\ N = 372'2\ kN$

Se considerará a la altura del pavimento sobre el tablero y cuando actúe se disminuye la sobrecarga vertical por el factor K = 0'454

Acción por metro $\frac{372'2}{74'32} = 5'00\ kN/m.$

M = 5'00 × 0'80 = 2'89 kN·m/m

Acción del viento

$H_{max} < 10m$.
$L_{viano} < 40m$ } → Cálculo simplificado tabla 3 art. 3.23.2.1 4)

Tipo de entorno II } → $E_{cobleo} = 2'25\ KN/m^2$
$V_{ref} = 28 m/s$ $E_{pérdida} = 2'76\ KN/m^2$

$h_{eq_{TSC}} = 1'30 + 2'00 = 3'30\ m$ $h_{eq_{TSinSC}} = 1'30 + 1'25 = 2'55\ m$

Con sobrecarga → $E_{TSC} = 1'25 \times 3'30 \simeq 7'43\ KN/m < 0'50 \simeq 3'71\ KN/m$
Sin sobrecarga → $E_{TSinSC} = 2'76 \times 2'55 = 7'04\ KN/m$
→ $M_{VSC} = 3'71 \times (0'6 \times 3'80 - 0'799) = 4'38\ KN.m/m$.
→ $M_{VSinSC} = 7'04 \times (0'60 \times 2'55 - 0'799) = 5'15\ KN.m/m$.

Acción térmica.

a) Variación uniforme de temperatura.

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

$z = III = 3$	$K = 24'91$	$c = 0$
$h = 1'30$	$a = 0'292$	$h_{min} = 0'60$
$s = 1$	$b = -0'172$	$h_{max} = 1'50$

$\Delta T = 24'91 \cdot 3^{0'292} \cdot 1'30^{-0'172} \cdot 1^{0} = 32'8°C$

Se toma como diferencia máxima

$\frac{2}{3} \Delta T = 21'8°C$

Gradiente térmico.

Losa diferida de hormigón

$$\Delta T_{S1} = (K_1 \cdot K_3 \cdot K_4) \cdot \Delta T_{S1,ref}$$

$\Delta T_{S1} = 12°C$
$K_1 = 0'78$
$K_3 = 1'06$
$K_4 = 1'40$

$\Rightarrow \Delta T_{S1} = 0'78 \times 1'06 \times 1'40 \times 12 \simeq 13'9°C$

$\alpha = 10^{-5}\ °C^{-1}$

$K = \frac{13'9 \cdot 10^{-5}}{1'30} = 0'000107$

Acción sísmica

En la zona de Castellbisbal $a_c = 0'04\,g < 0'08\,g$ NO es necesario calculo sísmico en la estructura.

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

Titulo proy.: PASO SUPERIOR 0,5

D A T O S D E N U D O S:(21 Nudo)

Nudo	X [M]	Y [M]	Z [M]	Apoyo V XYZ	Apoyo R XYZ	Especial
1	0.00000	0.00000	0.00000			
2	4.10600	-0.88500	0.00000			
3	8.23600	-1.64500	0.00000			
4	12.39100	-2.26100	0.00000			
5	16.56300	-2.74400	0.00000			
6	20.74700	-3.09200	0.00000	SSB	FFF	
7	26.14100	-3.35000	0.00000			
8	31.54100	-3.37500	0.00000			
9	36.93700	-3.18300	0.00000			
10	42.32100	-2.75900	0.00000			
11	47.68200	-2.11700	0.00000			
12	52.93700	-1.26200	0.00000	SSB	FFF	
13	57.05400	-0.43500	0.00000			
14	61.14500	0.51600	0.00000			
15	65.20200	1.60200	0.00000			
16	69.22300	2.81800	0.00000			
17	73.19800	4.16800	0.00000			
18	-0.50540	-2.34430	0.00000	SSB	FFF	
19	0.41250	2.36430	0.00000	SSB	FFF	
20	73.97000	1.89560	0.00000	SSB	FFF	
21	72.42700	6.44090	0.00000	SSB	FFF	

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

Nudo	D-X [KN/M]	D-Y [KN/M]	D-Z [KN/M]	R-X [KNM/ARC]	R-Y [KNM/ARC]	R-Z [KNM/ARC]
6	1.128E+04	1.128E+04	B	F	F	F
12	1.128E+04	1.128E+04	B	F	F	F
18	5.249E+03	5.249E+03	B	F	F	F
19	5.249E+03	5.249E+03	B	F	F	F
20	5.249E+03	5.249E+03	B	F	F	F
21	5.249E+03	5.249E+03	B	F	F	F

D A T O S B A R R A S : (20 Barras)

Barra	Incidencias Inicio	Fin	Long.Barras [M]	Nombre-sec. (Cant.var)	Articulaciones Inicio	Fin	Especial
1	1	2	4.20029	SECCION2			oS
2	2	3	4.19935	SECCION2			oS
3	3	4	4.20041	SECCION2			oS
4	4	5	4.19987	SECCION2			oS
5	5	6	4.19845	SECCION2			oS
6	6	7	5.40017	SECCION2			oS
7	7	8	5.40006	SECCION2			oS
8	8	9	5.39941	SECCION2			oS
9	9	10	5.40067	SECCION2			oS
10	10	11	5.39930	SECCION2			oS
11	11	12	5.32410	SECCION2			oS
12	12	13	4.19924	SECCION2			oS
13	13	14	4.20008	SECCION2			oS
14	14	15	4.19984	SECCION2			oS
15	15	16	4.20084	SECCION2			oS
16	16	17	4.19799	SECCION2			oS
17	1	18	2.39816	RIOSTRA			oS
18	1	19	2.40001	RIOSTRA			oS

Barra	Incidencias Inicio	Fin	Long.Barras [M]	Nombre-sec. (Cant.var)	Articulaciones Inicio	Fin	Especial
19	17	20	2.39996	RIOSTRA			oS
20	17	21	2.40011	RIOSTRA			oS

oS = Stäbe ohne Schubverformung

CARACTERISTICAS DE SEC.

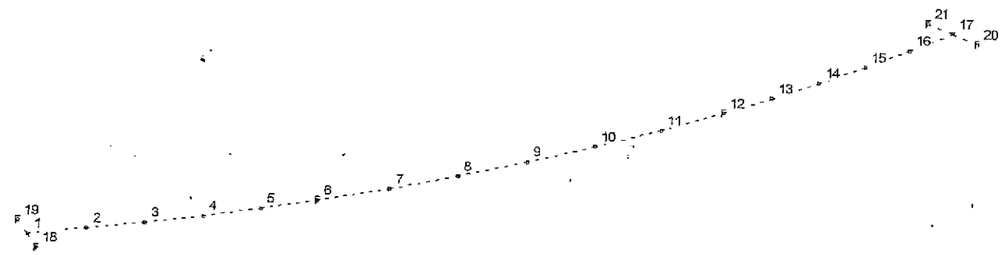
Nombre Sec.	Ax [M2] / Ix [M4] / zi [M1]	Iy [M4] / Fy [M2] / zs [M1]	Iz [M4] / Fz [M2] / yi [M1]	Phi[grados] / yd [M1]
RIOSTRA	1.9500E+00	2.7462E-01	3.6563E-01	0.00
	5.2665E-01	1.6250E+00	1.6250E+00	
	-0.6500	0.6500	-0.7500	0.7500
SECCION2	6.3852E+00	1.1491E+00	4.1889E+01	0.00
	1.6365E+00	6.3852E+00	6.3852E+00	
	-0.7979	0.5021	-5.6000	5.6000

MATERIALES:

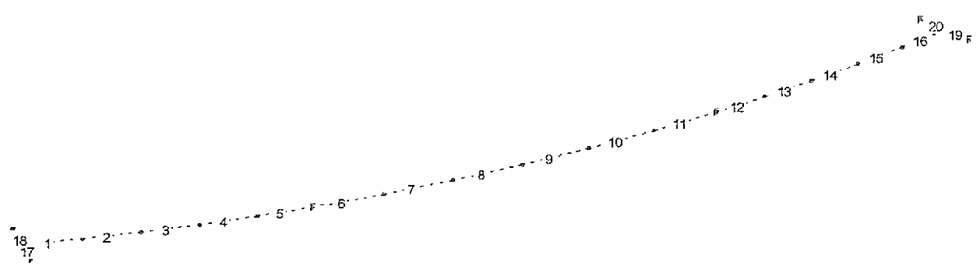
Barra (hasta barra)	E-Módulo [KN/ M2]	G-Módulo [KN/ M2]
1 .. 20	3.0000E+07	9.0000E+06

STS-cálculo ok

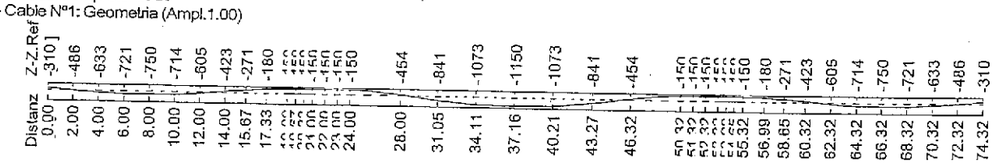
Mstb. 1:398.7
Reactions, Hipótesi 1 (Peso propio), View "LIST"
- Struktur: Staebe



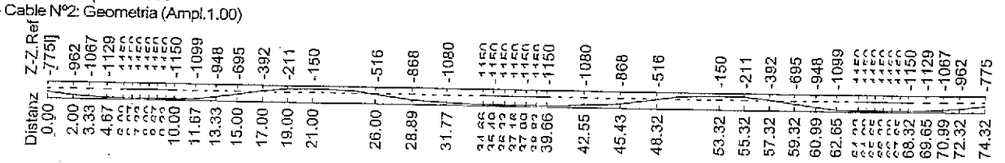
Mstb. 1 :398.7
Reactions, Hipótesi 1 (Peso propio), View "LIST"
- Struktur: Staebe



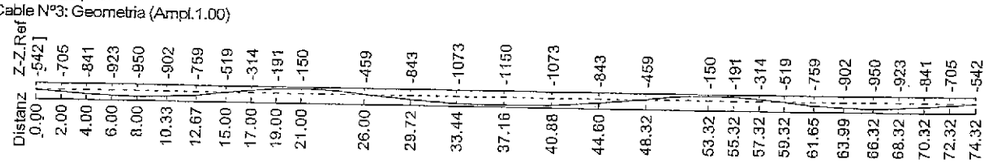
Mstb. 1 :454.9
Cable de pretensado
- Cable N°1: Geometria (Ampl.1.00)



Mstb. 1 :454.9
Cable de pretensado
- Cable N°2: Geometria (Ampl.1.00)



Mstb. 1 :454.9
Cable de pretensado
- Cable N°3: Geometria (Ampl.1.00)



****
* *
* DEFINICION CABLES *
* *
********** Cubus **

Fila con las barras

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16				

Cota de referencia: 0.50210

Valores de rozamiento

Parametro de rozamiento-Mu... 0.2000
Parametro Delta-Alpha..... 0.0060

Tipo cable

Area cable..... 0.0086
Radio min. de curvatura..... 10.0000
Penetración de cuñas..... 0.0050
Modulo de elasticidad..... 2.00E+0008

Definición pretensado: cable 1

Distancia..... 0.0000
Cota inicial..... -0.3100
Pendiente inicial..... 0.0000

Elementtypen	mit den Parametern		
1. Ger-Par	2.0000	8.0000	-0.7500
2. Par-Par	6.0000	11.0000	-0.1500
3. Par-Par	2.0000	5.0000	-0.1500
4. Par-Par	4.0000	13.1600	-1.1500
5. Par-Par	9.1600	13.1600	-0.1500
6. Par-Par	3.0000	5.0000	-0.1500
7. Par-Par	5.0000	11.0000	-0.7500
8. Par-Ger	6.0000	8.0000	-0.3100

Cota de referencia: 0.50210

Valores de rozamiento
Parametro de rozamiento-Mu... 0.2000
Parametro Delta-Alpha..... 0.0060

Tipo cable
Area cable..... 0.0086
Radio min. de curvatura..... 10.0000
Penetración de cuñas..... 0.0050
Modulo de elasticidad..... 2.00E+0008

Definición pretensado: cable 2

Distancia..... 0.0000
Cota inicial..... -0.7750
Pendiente inicial..... 0.0000

Elementtypen	mit den Parametern		
1. Ger-Par	2.0000	6.0000	-1.1500
2. Par-Par	2.0000	4.0000	-1.1500
3. Par-Par	5.0000	11.0000	-0.1500
4. Par-Par	5.0000	13.6600	-1.1500
5. Par-Par	2.5000	5.0000	-1.1500
6. Par-Par	8.6600	13.6600	-0.1500
7. Par-Par	6.0000	11.0000	-1.1500
8. Par-Par	2.0000	4.0000	-1.1500
9. Par-Ger	4.0000	6.0000	-0.7750

Cota de referencia: 0.50210

Valores de rozamiento
Parametro de rozamiento-Mu... 0.2000
Parametro Delta-Alpha..... 0.0060

Tipo cable
Area cable..... 0.0057
Radio min. de curvatura..... 10.0000
Penetración de cuñas..... 0.0050
Modulo de elasticidad..... 2.00E+0008

Definición pretensado: cable 3

Distancia..... 0.0000
Cota inicial..... -0.5420
Pendiente inicial..... 0.0000

Elementtypen	mit den Parametern		
1. Ger-Par	2.0000	8.0000	-0.9500
2. Par-Par	7.0000	13.0000	-0.1500
3. Par-Par	5.0000	16.1600	-1.1500
4. Par-Par	11.1600	16.1600	-0.1500
5. Par-Par	6.0000	13.0000	-0.9500
6. Par-Ger	5.0000	8.0000	-0.5420

S A L I D A C A B L E S : Cable N° 1
****

Cota de referencia 0.50210
Parametro de rozamiento Mu... 0.20000
Parametro Delta-Alpha 0.00600
Area 0.00855
Radio min. de curvatura 10.0000
Penetración de cuña 0.00500
Modulo de elasticidad ..... 2.00E+8
Distancia 0
Longitud cable 74.4963

KABELGEOMETRIE

N°	Barra	X-hor.	bezügl Z-ref.	bezügl.Stab Achse Z-excentr.	Y-excentr.
1G	1	0	-0.31000	0.19210	0
1G	1	1.0000	-0.39800	0.10410	0
1*	1	2.0000	-0.48600	0.01610	0
1P	1	3.0000	-0.56667	-0.06457	0
1P	1	4.0000	-0.63267	-0.13057	0
1P	2	5.0000	-0.68400	-0.18190	0
1P	2	6.0000	-0.72067	-0.21857	0
1P	2	7.0000	-0.74267	-0.24057	0
1P	2	8.0000	-0.75000	-0.24790	0
2P	3	9.0000	-0.74091	-0.23881	0
2P	3	10.0000	-0.71364	-0.21154	0
2P	3	11.0000	-0.65818	-0.16608	0
2P	3	12.0000	-0.60455	-0.10245	0
2P	4	13.0000	-0.52273	-0.02063	0
2*	4	14.0000	-0.42273	0.07937	0
2P	4	15.0000	-0.32455	0.17755	0
2P	4	16.0000	-0.24818	0.25392	0
2P	5	17.0000	-0.19364	0.30846	0
2P	5	18.0000	-0.16091	0.34119	0
2P	5	19.0000	-0.15000	0.35210	0
3P	5	20.0000	-0.15000	0.35210	0
3*	6	21.0000	-0.15000	0.35210	0
3P	6	22.0000	-0.15000	0.35210	0

KABELGEOMETRIE

N°	Barra	X-hor.	bezügl Z-ref.	bezügl.Stab Achse Z-excentr.	Y-excentr.
3P	6	23.0000	-0.15000	0.35210	0
3P	6	24.0000	-0.15000	0.35210	0
4P	6	25.0000	-0.16900	0.33310	0
4P	6	26.0000	-0.22599	0.27611	0
4P	7	27.0000	-0.32097	0.18113	0
4*	7	28.0000	-0.45395	0.04815	0
4P	7	29.0000	-0.59763	-0.09553	0
4P	7	30.0000	-0.72472	-0.22262	0
4P	7	31.0000	-0.83522	-0.33312	0
4P	8	32.0000	-0.92912	-0.42702	0
4P	8	33.0000	-1.0064	-0.50434	0
4P	8	34.0000	-1.0672	-0.56506	0
4P	8	35.0000	-1.1113	-0.60920	0
4P	8	36.0000	-1.1388	-0.63674	0
4P	8	37.0000	-1.1498	-0.64769	0
4P	8	37.1600	-1.1500	-0.64790	0
5P	9	38.0000	-1.1441	-0.64205	0
5P	9	39.0000	-1.1219	-0.61981	0
5P	9	40.0000	-1.0831	-0.58099	0
5P	9	41.0000	-1.0277	-0.52558	0
5P	9	42.0000	-0.95567	-0.45357	0
5P	10	43.0000	-0.86707	-0.36497	0
5P	10	44.0000	-0.76188	-0.25978	0
5P	10	45.0000	-0.64010	-0.13800	0
5P	10	46.0000	-0.50173	3.66E-4	0
5*	10	46.3200	-0.45395	0.04815	0
5P	10	47.0000	-0.35939	0.14271	0
5P	11	48.0000	-0.25225	0.24985	0
5P	11	49.0000	-0.18310	0.31900	0
5P	11	50.0000	-0.15195	0.35015	0
5P	11	50.3200	-0.15000	0.35210	0
6P	11	51.0000	-0.15000	0.35210	0
6P	11	52.0000	-0.15000	0.35210	0
6P	11	53.0000	-0.15000	0.35210	0
6*	11	53.3200	-0.15000	0.35210	0
6P	12	54.0000	-0.15000	0.35210	0
6P	12	55.0000	-0.15000	0.35210	0
6P	12	55.3200	-0.15000	0.35210	0
7P	12	56.0000	-0.15504	0.34706	0
7P	12	57.0000	-0.18079	0.32131	0
7P	13	58.0000	-0.22835	0.27375	0
7P	13	59.0000	-0.29774	0.20436	0
7P	13	60.0000	-0.38894	0.11316	0
7*	13	60.3200	-0.42273	0.07937	0
7P	13	61.0000	-0.49271	0.00939	0
7P	14	62.0000	-0.58034	-0.07824	0
7P	14	63.0000	-0.64980	-0.14770	0
7P	14	64.0000	-0.70107	-0.19897	0
7P	14	65.0000	-0.73416	-0.23206	0
7P	15	66.0000	-0.74907	-0.24697	0
7P	15	66.3200	-0.75000	-0.24790	0
8P	15	67.0000	-0.74661	-0.24451	0
8P	15	68.0000	-0.72930	-0.22720	0
8P	15	69.0000	-0.69733	-0.19523	0
8P	15	70.0000	-0.65069	-0.14859	0
8P	16	71.0000	-0.58938	-0.08728	0
8P	16	72.0000	-0.51341	-0.01131	0
8*	16	72.3200	-0.48600	0.01610	0
8G	16	73.0000	-0.42616	0.07594	0
8G	16	74.0000	-0.33816	0.16394	0
8G	16	74.3200	-0.31000	0.19210	0

INCLINACION, CURVATURA Y PERDIDAS DE ROZAMIENTO DEL CABLE

N°	Barra	X-hor.	Z-incl.	Z-curv.	Y-incl.	Per.r.
1G	1	0	-0.08800	0	0	1.0000
1G	1	1.0000	-0.08800	0	0	0.99736
1*	1	2.0000	-0.08800	0	0	0.99473
1P	1	3.0000	-0.07333	0.01467	0	0.99030

INCLINACION, CURVATURA Y PERDIDAS DE ROZAMIENTO DEL CABLE

N°	Barra	X-hor.	Z-incl.	Z-curv.	Y-incl.	Per.r.
1P	1	4.0000	-0.05867	0.01467	0	0.98588
1P	2	5.0000	-0.04400	0.01467	0	0.98147
1P	2	6.0000	-0.02933	0.01467	0	0.97706
1P	2	7.0000	-0.01467	0.01467	0	0.97266
1P	2	8.0000	0	0.01467	0	0.96827
2P	3	9.0000	0.01818	0.01818	0	0.96330
2P	3	10.0000	0.03636	0.01818	0	0.95833
2P	3	11.0000	0.05455	0.01818	0	0.95340
2P	3	12.0000	0.07273	0.01818	0	0.94847
2P	4	13.0000	0.09091	0.01818	0	0.94361
2*	4	14.0000	0.10909	0.01818	0	0.93874
2P	4	15.0000	0.08727	-0.02182	0	0.93330
2P	4	16.0000	0.06545	-0.02182	0	0.92787
2P	5	17.0000	0.04364	-0.02182	0	0.92247
2P	5	18.0000	0.02182	-0.02182	0	0.91710
2P	5	19.0000	0	-0.02182	0	0.91174
3P	5	20.0000	0	0	0	0.90918
3*	6	21.0000	0	0	0	0.90668
3P	6	22.0000	0	0	0	0.90428
3P	6	23.0000	0	0	0	0.90189
3P	6	24.0000	0	0	0	0.89950
4P	6	25.0000	-0.03799	-0.03799	0	0.89151
4P	6	26.0000	-0.07599	-0.03799	0	0.88358
4P	7	27.0000	-0.11398	-0.03799	0	0.87570
4*	7	28.0000	-0.15198	-0.03799	0	0.86789
4P	7	29.0000	-0.13538	0.01659	0	0.86370
4P	7	30.0000	-0.11879	0.01659	0	0.85951
4P	7	31.0000	-0.10220	0.01659	0	0.85533
4P	8	32.0000	-0.08561	0.01659	0	0.85120
4P	8	33.0000	-0.06902	0.01659	0	0.84707
4P	8	34.0000	-0.05243	0.01659	0	0.84295
4P	8	35.0000	-0.03584	0.01659	0	0.83888
4P	8	36.0000	-0.01925	0.01659	0	0.83482
4P	8	37.0000	-0.00265	0.01659	0	0.83075
4P	8	37.1600	-5.9E-17	0.01659	0	0.83010
5P	9	38.0000	0.01394	0.01659	0	0.82674
5P	9	39.0000	0.03053	0.01659	0	0.82273
5P	9	40.0000	0.04712	0.01659	0	0.81873
5P	9	41.0000	0.06371	0.01659	0	0.81477
5P	9	42.0000	0.08030	0.01659	0	0.81083
5P	10	43.0000	0.09689	0.01659	0	0.80688
5P	10	44.0000	0.11348	0.01659	0	0.80298
5P	10	45.0000	0.13008	0.01659	0	0.79910
5P	10	46.0000	0.14667	0.01659	0	0.79522
5*	10	46.3200	0.15198	0.01659	0	0.79398
5P	10	47.0000	0.12614	-0.03799	0	0.78917
5P	11	48.0000	0.08815	-0.03799	0	0.78214
5P	11	49.0000	0.05015	-0.03799	0	0.77516
5P	11	50.0000	0.01216	-0.03799	0	0.76827
5P	11	50.3200	1.3E-16	-0.03799	0	0.76606
6P	11	51.0000	0	0	0	0.76467
6P	11	52.0000	0	0	0	0.76262
6P	11	53.0000	0	0	0	0.76057
6*	11	53.3200	0	0	0	0.75992
6P	12	54.0000	0	0	0	0.75850
6P	12	55.0000	0	0	0	0.75638
6P	12	55.3200	0	0	0	0.75571
7P	12	56.0000	-0.01484	-0.02182	0	0.75272
7P	12	57.0000	-0.03665	-0.02182	0	0.74832
7P	13	58.0000	-0.05847	-0.02182	0	0.74398
7P	13	59.0000	-0.08029	-0.02182	0	0.73965
7P	13	60.0000	-0.10211	-0.02182	0	0.73536
7*	13	60.3200	-0.10909	-0.02182	0	0.73399
7P	13	61.0000	-0.09673	0.01818	0	0.73143
7P	14	62.0000	-0.07855	0.01818	0	0.72768
7P	14	63.0000	-0.06036	0.01818	0	0.72394
7P	14	64.0000	-0.04218	0.01818	0	0.72021
7P	14	65.0000	-0.02400	0.01818	0	0.71651
7P	15	66.0000	-0.00582	0.01818	0	0.71282
7P	15	66.3200	0	0.01818	0	0.71164
8P	15	67.0000	0.00997	0.01467	0	0.70946

INCLINACION, CURVATURA Y PERDIDAS DE ROZAMIENTO DEL CABLE

N°	Barra	X-hor.	Z-incl.	Z-curv.	Y-incl.	Per.r.
8P	15	68.0000	0.02464	0.01467	0	0.70626
8P	15	69.0000	0.03931	0.01467	0	0.70307
8P	15	70.0000	0.05397	0.01467	0	0.69988
8P	16	71.0000	0.06864	0.01467	0	0.69671
8P	16	72.0000	0.08331	0.01467	0	0.69355
8*	16	72.3200	0.08800	0.01467	0	0.69254
8G	16	73.0000	0.08800	0	0	0.69123
8G	16	74.0000	0.08800	0	0	0.68930
8G	16	74.3200	0.08800	0	0	0.68868

S A L I D A C A B L E S : Cable N° 2
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Cota de referencia	0.50210
Parametro de rozamiento Mu...	0.20000
Parametro Delta-Alpha	0.00600
Area	0.00855
Radio min. de curvatura	10.0000
Penetración de cuña	0.00500
Modulo de elasticidad	2.00E+8
Distancia	0
Longitud cable	74.5679

KABELGEOMETRIE

N°	Barra	X-hor.	bezügl Z-ref.	bezügl.Stab Achse Z-excentr.	Y-excentr.
1G	1	0	-0.77500	-0.27290	0
1G	1	1.0000	-0.86875	-0.36665	0
1*	1	2.0000	-0.96250	-0.46040	0
1P	1	3.0000	-1.0445	-0.54243	0
1P	1	4.0000	-1.1031	-0.60102	0
1P	2	5.0000	-1.1383	-0.63618	0
1P	2	6.0000	-1.1500	-0.64790	0
2P	2	7.0000	-1.1500	-0.64790	0
2*	2	8.0000	-1.1500	-0.64790	0
2P	3	9.0000	-1.1500	-0.64790	0
2P	3	10.0000	-1.1500	-0.64790	0
3P	3	11.0000	-1.1318	-0.62972	0
3P	3	12.0000	-1.0773	-0.57517	0
3P	4	13.0000	-0.98636	-0.48426	0
3P	4	14.0000	-0.85909	-0.35699	0
3*	4	15.0000	-0.69545	-0.19335	0
3P	4	16.0000	-0.52879	-0.02669	0
3P	5	17.0000	-0.39242	0.10968	0
3P	5	18.0000	-0.28636	0.21574	0
3P	5	19.0000	-0.21061	0.29149	0
3P	5	20.0000	-0.16515	0.33695	0
3P	6	21.0000	-0.15000	0.35210	0
4P	6	22.0000	-0.16464	0.33746	0
4P	6	23.0000	-0.20857	0.29353	0
4P	6	24.0000	-0.28177	0.22033	0
4P	6	25.0000	-0.38426	0.11784	0
4*	6	26.0000	-0.51603	-0.01393	0
4P	7	27.0000	-0.65399	-0.15189	0
4P	7	28.0000	-0.77504	-0.27294	0
4P	7	29.0000	-0.87919	-0.37709	0
4P	7	30.0000	-0.96643	-0.46433	0
4P	7	31.0000	-1.0368	-0.53466	0
4P	8	32.0000	-1.0902	-0.58809	0
4P	8	33.0000	-1.1267	-0.62461	0
4P	8	34.0000	-1.1463	-0.64422	0
4P	8	34.6600	-1.1500	-0.64790	0
5P	8	35.0000	-1.1500	-0.64790	0
5P	8	36.0000	-1.1500	-0.64790	0
5P	8	37.0000	-1.1500	-0.64790	0
5*	8	37.1600	-1.1500	-0.64790	0

KABELGEOMETRIE

N°	Barra	X-hor.	bezügl Z-ref.	bezügl.Stab Achse Z-excentr.	Y-excentr.
5P	9	38.0000	-1.1500	-0.64790	0
5P	9	39.0000	-1.1500	-0.64790	0
5P	9	39.6600	-1.1500	-0.64790	0
6P	9	40.0000	-1.1490	-0.64692	0
6P	9	41.0000	-1.1348	-0.63272	0
6P	9	42.0000	-1.1037	-0.60161	0
6P	10	43.0000	-1.0557	-0.55360	0
6P	10	44.0000	-0.99078	-0.48868	0
6P	10	45.0000	-0.90895	-0.40685	0
6P	10	46.0000	-0.81021	-0.30811	0
6P	10	47.0000	-0.69457	-0.19247	0
6P	11	48.0000	-0.56202	-0.05992	0
6*	11	48.3200	-0.51603	-0.01393	0
6P	11	49.0000	-0.42324	0.07886	0
6P	11	50.0000	-0.31138	0.19072	0
6P	11	51.0000	-0.22881	0.27329	0
6P	11	52.0000	-0.17551	0.32659	0
6P	11	53.0000	-0.15150	0.35060	0
6P	11	53.3200	-0.15000	0.35210	0
7P	12	54.0000	-0.15701	0.34509	0
7P	12	55.0000	-0.19276	0.30934	0
7P	12	56.0000	-0.25882	0.24328	0
7P	12	57.0000	-0.35519	0.14691	0
7P	13	58.0000	-0.48185	0.02025	0
7P	13	59.0000	-0.63882	-0.13672	0
7*	13	59.3200	-0.69545	-0.19335	0
7P	13	60.0000	-0.81068	-0.30858	0
7P	13	61.0000	-0.94959	-0.44749	0
7P	14	62.0000	-1.0521	-0.55004	0
7P	14	63.0000	-1.1183	-0.61622	0
7P	14	64.0000	-1.1481	-0.64604	0
7P	14	64.3200	-1.1500	-0.64790	0
8P	14	65.0000	-1.1500	-0.64790	0
8P	15	66.0000	-1.1500	-0.64790	0
8*	15	66.3200	-1.1500	-0.64790	0
8P	15	67.0000	-1.1500	-0.64790	0
8P	15	68.0000	-1.1500	-0.64790	0
8P	15	68.3200	-1.1500	-0.64790	0
9P	15	69.0000	-1.1446	-0.64248	0
9P	15	70.0000	-1.1169	-0.61482	0
9P	16	71.0000	-1.0658	-0.56373	0
9P	16	72.0000	-0.99130	-0.48920	0
9*	16	72.3200	-0.96250	-0.46040	0
9G	16	73.0000	-0.89875	-0.39665	0
9G	16	74.0000	-0.80500	-0.30290	0
9G	16	74.3200	-0.77500	-0.27290	0

INCLINACION, CURVATURA Y PERDIDAS DE ROZAMIENTO DEL CABLE

N°	Barra	X-hor.	Z-incl.	Z-curv.	Y-incl.	Per.r.
1G	1	0	-0.09375	0	0	1.0000
1G	1	1.0000	-0.09375	0	0	0.99736
1*	1	2.0000	-0.09375	0	0	0.99473
1P	1	3.0000	-0.07031	0.02344	0	0.98868
1P	1	4.0000	-0.04687	0.02344	0	0.98265
1P	2	5.0000	-0.02344	0.02344	0	0.97665
1P	2	6.0000	0	0.02344	0	0.97067
2P	2	7.0000	0	0	0	0.96800
2*	2	8.0000	0	0	0	0.96534
2P	3	9.0000	0	0	0	0.96267
2P	3	10.0000	0	0	0	0.95999
3P	3	11.0000	0.03636	0.03636	0	0.95175
3P	3	12.0000	0.07273	0.03636	0	0.94355
3P	4	13.0000	0.10909	0.03636	0	0.93544
3P	4	14.0000	0.14545	0.03636	0	0.92740
3*	4	15.0000	0.18182	0.03636	0	0.91941
3P	4	16.0000	0.15152	-0.03030	0	0.91260
3P	5	17.0000	0.12121	-0.03030	0	0.90579
3P	5	18.0000	0.09091	-0.03030	0	0.89908

INCLINACION, CURVATURA Y PERDIDAS DE ROZAMIENTO DEL CABLE

N°	Barra	X-hor.	Z-incl.	Z-curv.	Y-incl.	Per.r.
3P	5	19.0000	0.06061	-0.03030	0	0.89236
3P	5	20.0000	0.03030	-0.03030	0	0.88576
3P	6	21.0000	0	-0.03030	0	0.87916
4P	6	22.0000	-0.02928	-0.02928	0	0.87284
4P	6	23.0000	-0.05857	-0.02928	0	0.86655
4P	6	24.0000	-0.08785	-0.02928	0	0.86030
4P	6	25.0000	-0.11713	-0.02928	0	0.85410
4*	6	26.0000	-0.14641	-0.02928	0	0.84793
4P	7	27.0000	-0.12951	0.01691	0	0.84381
4P	7	28.0000	-0.11260	0.01691	0	0.83969
4P	7	29.0000	-0.09569	0.01691	0	0.83557
4P	7	30.0000	-0.07879	0.01691	0	0.83148
4P	7	31.0000	-0.06188	0.01691	0	0.82740
4P	8	32.0000	-0.04497	0.01691	0	0.82333
4P	8	33.0000	-0.02807	0.01691	0	0.81931
4P	8	34.0000	-0.01116	0.01691	0	0.81529
4P	8	34.6600	-6.0E-17	0.01691	0	0.81263
5P	8	35.0000	0	0	0	0.81187
5P	8	36.0000	0	0	0	0.80965
5P	8	37.0000	0	0	0	0.80743
5*	8	37.1600	0	0	0	0.80708
5P	9	38.0000	0	0	0	0.80522
5P	9	39.0000	0	0	0	0.80301
5P	9	39.6600	0	0	0	0.80156
6P	9	40.0000	0.00575	0.01691	0	0.80023
6P	9	41.0000	0.02266	0.01691	0	0.79631
6P	9	42.0000	0.03956	0.01691	0	0.79240
6P	10	43.0000	0.05647	0.01691	0	0.78851
6P	10	44.0000	0.07338	0.01691	0	0.78465
6P	10	45.0000	0.09028	0.01691	0	0.78079
6P	10	46.0000	0.10719	0.01691	0	0.77697
6P	10	47.0000	0.12410	0.01691	0	0.77318
6P	11	48.0000	0.14100	0.01691	0	0.76939
6*	11	48.3200	0.14641	0.01691	0	0.76817
6P	11	49.0000	0.12650	-0.02928	0	0.76441
6P	11	50.0000	0.09722	-0.02928	0	0.75888
6P	11	51.0000	0.06794	-0.02928	0	0.75342
6P	11	52.0000	0.03865	-0.02928	0	0.74798
6P	11	53.0000	0.00937	-0.02928	0	0.74258
6P	11	53.3200	1.0E-16	-0.02928	0	0.74086
7P	12	54.0000	-0.02061	-0.03030	0	0.73713
7P	12	55.0000	-0.05091	-0.03030	0	0.73165
7P	12	56.0000	-0.08121	-0.03030	0	0.72621
7P	12	57.0000	-0.11152	-0.03030	0	0.72080
7P	13	58.0000	-0.14182	-0.03030	0	0.71545
7P	13	59.0000	-0.17212	-0.03030	0	0.71013
7*	13	59.3200	-0.18182	-0.03030	0	0.70843
7P	13	60.0000	-0.15709	0.03636	0	0.70430
7P	13	61.0000	-0.12073	0.03636	0	0.69824
7P	14	62.0000	-0.08436	0.03636	0	0.69225
7P	14	63.0000	-0.04800	0.03636	0	0.68629
7P	14	64.0000	-0.01164	0.03636	0	0.68039
7P	14	64.3200	0	0.03636	0	0.67850
8P	14	65.0000	0	0	0	0.67723
8P	15	66.0000	0	0	0	0.67537
8*	15	66.3200	0	0	0	0.67477
8P	15	67.0000	0	0	0	0.67351
8P	15	68.0000	0	0	0	0.67164
8P	15	68.3200	0	0	0	0.67105
9P	15	69.0000	0.01594	0.02344	0	0.66826
9P	15	70.0000	0.03938	0.02344	0	0.66416
9P	16	71.0000	0.06281	0.02344	0	0.66009
9P	16	72.0000	0.08625	0.02344	0	0.65604
9*	16	72.3200	0.09375	0.02344	0	0.65475
9G	16	73.0000	0.09375	0	0	0.65351
9G	16	74.0000	0.09375	0	0	0.65168
9G	16	74.3200	0.09375	0	0	0.65110

S A L I D A C A B L E S : Cable N° 3

Cota de referencia	0.50210
Parametro de rozamiento Mu...	0.20000
Parametro Delta-Alpha	0.00600
Area	0.00570
Radio min. de curvatura	10.0000
Penetración de cuña	0.00500
Modulo de elasticidad	2.00E+8
Distancia	0
Longitud cable	74.4957

KABELGEOMETRIE

N°	Barra	X-hor.	bezügl Z-ref.	bezügl.Stab Achse Z-excentr.	Y-excentr.
1G	1	0	-0.54200	-0.03990	0
1G	1	1.0000	-0.62360	-0.12150	0
1*	1	2.0000	-0.70520	-0.20310	0
1P	1	3.0000	-0.78000	-0.27790	0
1P	1	4.0000	-0.84120	-0.33910	0
1P	2	5.0000	-0.88880	-0.38670	0
1P	2	6.0000	-0.92280	-0.42070	0
1P	2	7.0000	-0.94320	-0.44110	0
1P	2	8.0000	-0.95000	-0.44790	0
2P	3	9.0000	-0.94121	-0.43911	0
2P	3	10.0000	-0.91484	-0.41274	0
2P	3	11.0000	-0.87088	-0.36878	0
2P	3	12.0000	-0.80934	-0.30724	0
2P	4	13.0000	-0.73022	-0.22812	0
2P	4	14.0000	-0.63352	-0.13142	0
2*	4	15.0000	-0.51923	-0.01713	0
2P	4	16.0000	-0.40641	0.09569	0
2P	5	17.0000	-0.31410	0.18800	0
2P	5	18.0000	-0.24231	0.25979	0
2P	5	19.0000	-0.19103	0.31107	0
2P	5	20.0000	-0.16026	0.34184	0
2P	6	21.0000	-0.15000	0.35210	0
3P	6	22.0000	-0.16238	0.33972	0
3P	6	23.0000	-0.19950	0.30260	0
3P	6	24.0000	-0.26139	0.24071	0
3P	6	25.0000	-0.34802	0.15408	0
3*	6	26.0000	-0.45941	0.04269	0
3P	7	27.0000	-0.57762	-0.07552	0
3P	7	28.0000	-0.68475	-0.18265	0
3P	7	29.0000	-0.78079	-0.27869	0
3P	7	30.0000	-0.86574	-0.36364	0
3P	7	31.0000	-0.93960	-0.43750	0
3P	8	32.0000	-1.0024	-0.50026	0
3P	8	33.0000	-1.0540	-0.55194	0
3P	8	34.0000	-1.0946	-0.59253	0
3P	8	35.0000	-1.1241	-0.62203	0
3P	8	36.0000	-1.1425	-0.64044	0
3P	8	37.0000	-1.1499	-0.64776	0
3P	8	37.1600	-1.1500	-0.64790	0
4P	9	38.0000	-1.1461	-0.64399	0
4P	9	39.0000	-1.1312	-0.62913	0
4P	9	40.0000	-1.1053	-0.60318	0
4P	9	41.0000	-1.0682	-0.56614	0
4P	9	42.0000	-1.0201	-0.51801	0
4P	10	43.0000	-0.96089	-0.45879	0
4P	10	44.0000	-0.89058	-0.38848	0
4P	10	45.0000	-0.80918	-0.30708	0
4P	10	46.0000	-0.71669	-0.21459	0
4P	10	47.0000	-0.61311	-0.11101	0
4P	11	48.0000	-0.49844	0.00366	0
4*	11	48.3200	-0.45941	0.04269	0
4P	11	49.0000	-0.38097	0.12113	0
4P	11	50.0000	-0.28642	0.21568	0
4P	11	51.0000	-0.21661	0.28549	0
4P	11	52.0000	-0.17156	0.33054	0
4P	11	53.0000	-0.15127	0.35083	0

KABELGEOMETRIE

N°	Barra	X-hor.	bezügl Z-ref.	bezügl.Stab Achse Z-excentr.	Y-excentr.
4P	11	53.3200	-0.15000	0.35210	0
5P	12	54.0000	-0.15474	0.34736	0
5P	12	55.0000	-0.17895	0.32315	0
5P	12	56.0000	-0.22367	0.27843	0
5P	12	57.0000	-0.28890	0.21320	0
5P	13	58.0000	-0.37464	0.12746	0
5P	13	59.0000	-0.48090	0.02120	0
5*	13	59.3200	-0.51923	-0.01713	0
5P	13	60.0000	-0.59886	-0.09676	0
5P	13	61.0000	-0.70119	-0.19909	0
5P	14	62.0000	-0.78593	-0.28383	0
5P	14	63.0000	-0.85310	-0.35100	0
5P	14	64.0000	-0.90268	-0.40058	0
5P	14	65.0000	-0.93468	-0.43258	0
5P	15	66.0000	-0.94910	-0.44700	0
5P	15	66.3200	-0.95000	-0.44790	0
6P	15	67.0000	-0.94686	-0.44476	0
6P	15	68.0000	-0.93081	-0.42871	0
6P	15	69.0000	-0.90116	-0.39906	0
6P	15	70.0000	-0.85791	-0.35581	0
6P	16	71.0000	-0.80105	-0.29896	0
6P	16	72.0000	-0.73062	-0.22852	0
6*	16	72.3200	-0.70520	-0.20310	0
6G	16	73.0000	-0.64971	-0.14761	0
6G	16	74.0000	-0.56811	-0.06601	0
6G	16	74.3200	-0.54200	-0.03990	0

INCLINACION, CURVATURA Y PERDIDAS DE ROZAMIENTO DEL CABLE

N°	Barra	X-hor.	Z-incl.	Z-curv.	Y-incl.	Per.r.
1G	1	0	-0.08160	0	0	1.0000
1G	1	1.0000	-0.08160	0	0	0.99736
1*	1	2.0000	-0.08160	0	0	0.99473
1P	1	3.0000	-0.06800	0.01360	0	0.99049
1P	1	4.0000	-0.05440	0.01360	0	0.98625
1P	2	5.0000	-0.04080	0.01360	0	0.98202
1P	2	6.0000	-0.02720	0.01360	0	0.97780
1P	2	7.0000	-0.01360	0.01360	0	0.97358
1P	2	8.0000	0	0.01360	0	0.96936
2P	3	9.0000	0.01758	0.01758	0	0.96450
2P	3	10.0000	0.03516	0.01758	0	0.95963
2P	3	11.0000	0.05275	0.01758	0	0.95480
2P	3	12.0000	0.07033	0.01758	0	0.95000
2P	4	13.0000	0.08791	0.01758	0	0.94521
2P	4	14.0000	0.10549	0.01758	0	0.94047
2*	4	15.0000	0.12308	0.01758	0	0.93574
2P	4	16.0000	0.10256	-0.02051	0	0.93053
2P	5	17.0000	0.08205	-0.02051	0	0.92533
2P	5	18.0000	0.06154	-0.02051	0	0.92017
2P	5	19.0000	0.04103	-0.02051	0	0.91501
2P	5	20.0000	0.02051	-0.02051	0	0.90994
2P	6	21.0000	0	-0.02051	0	0.90486
3P	6	22.0000	-0.02475	-0.02475	0	0.89914
3P	6	23.0000	-0.04950	-0.02475	0	0.89343
3P	6	24.0000	-0.07426	-0.02475	0	0.88777
3P	6	25.0000	-0.09901	-0.02475	0	0.88215
3*	6	26.0000	-0.12376	-0.02475	0	0.87654
3P	7	27.0000	-0.11267	0.01109	0	0.87317
3P	7	28.0000	-0.10158	0.01109	0	0.86980
3P	7	29.0000	-0.09049	0.01109	0	0.86642
3P	7	30.0000	-0.07940	0.01109	0	0.86306
3P	7	31.0000	-0.06831	0.01109	0	0.85971
3P	8	32.0000	-0.05722	0.01109	0	0.85637
3P	8	33.0000	-0.04613	0.01109	0	0.85302
3P	8	34.0000	-0.03504	0.01109	0	0.84970
3P	8	35.0000	-0.02395	0.01109	0	0.84640
3P	8	36.0000	-0.01286	0.01109	0	0.84310
3P	8	37.0000	-0.00177	0.01109	0	0.83981
3P	8	37.1600	-3.9E-17	0.01109	0	0.83928

INCLINACION, CURVATURA Y PERDIDAS DE ROZAMIENTO DEL CABLE

N°	Barra	X-hor.	Z-incl.	Z-curv.	Y-incl.	Per.r.
4P	9	38.0000	0.00932	0.01109	0	0.83655
4P	9	39.0000	0.02041	0.01109	0	0.83329
4P	9	40.0000	0.03150	0.01109	0	0.83004
4P	9	41.0000	0.04258	0.01109	0	0.82680
4P	9	42.0000	0.05367	0.01109	0	0.82359
4P	10	43.0000	0.06476	0.01109	0	0.82039
4P	10	44.0000	0.07585	0.01109	0	0.81719
4P	10	45.0000	0.08694	0.01109	0	0.81401
4P	10	46.0000	0.09803	0.01109	0	0.81087
4P	10	47.0000	0.10912	0.01109	0	0.80773
4P	11	48.0000	0.12021	0.01109	0	0.80458
4*	11	48.3200	0.12376	0.01109	0	0.80358
4P	11	49.0000	0.10693	-0.02475	0	0.80012
4P	11	50.0000	0.08218	-0.02475	0	0.79503
4P	11	51.0000	0.05743	-0.02475	0	0.78999
4P	11	52.0000	0.03267	-0.02475	0	0.78497
4P	11	53.0000	0.00792	-0.02475	0	0.77999
4P	11	53.3200	8.8E-17	-0.02475	0	0.77839
5P	12	54.0000	-0.01395	-0.02051	0	0.77545
5P	12	55.0000	-0.03446	-0.02051	0	0.77113
5P	12	56.0000	-0.05497	-0.02051	0	0.76683
5P	12	57.0000	-0.07549	-0.02051	0	0.76255
5P	13	58.0000	-0.09600	-0.02051	0	0.75830
5P	13	59.0000	-0.11651	-0.02051	0	0.75407
5*	13	59.3200	-0.12308	-0.02051	0	0.75272
5P	13	60.0000	-0.11112	0.01758	0	0.75016
5P	13	61.0000	-0.09354	0.01758	0	0.74640
5P	14	62.0000	-0.07596	0.01758	0	0.74265
5P	14	63.0000	-0.05837	0.01758	0	0.73892
5P	14	64.0000	-0.04079	0.01758	0	0.73520
5P	14	65.0000	-0.02321	0.01758	0	0.73151
5P	15	66.0000	-0.00563	0.01758	0	0.72782
5P	15	66.3200	0	0.01758	0	0.72664
6P	15	67.0000	0.00925	0.01360	0	0.72451
6P	15	68.0000	0.02285	0.01360	0	0.72137
6P	15	69.0000	0.03645	0.01360	0	0.71824
6P	15	70.0000	0.05005	0.01360	0	0.71512
6P	16	71.0000	0.06365	0.01360	0	0.71202
6P	16	72.0000	0.07725	0.01360	0	0.70892
6*	16	72.3200	0.08160	0.01360	0	0.70793
6G	16	73.0000	0.08160	0	0	0.70658
6G	16	74.0000	0.08160	0	0	0.70461
6G	16	74.3200	0.08160	0	0	0.70398

Cable N°1 Bild erzeugt

Cable N°2 Bild erzeugt

Cable N°3 Bild erzeugt

Definición de cables terminado correctamente

Hipótesis 1: Peso Propio

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras
P grav. Z glconst.	-25.000		Stab 1 .. 20

Hipótesis 2: Carga muerta mínima

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras
Fuerza Z glconst.	-52.330		Stab 7 .. 8 6 9 5 4 10 3 11 2 12 1 13 .. 16

Hipótesis 3: Carga Muerta Máxima

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras
Fuerza Z glconst.	-61.750		Stab 7 .. 8 6 9 5 4 10 3 11 2 12 1 13 .. 16

Hipótesis 4: Sobrecarga centrada vano 1

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras
Fuerza Z glconst.	-44.800		Stab 5 4 3 2 1

Hipótesis 5: Sobrecarga centrada vano 2

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras
Fuerza Z glconst.	-44.800		Stab 7 .. 8 6 9 .. 11

Hipótesis 6: Sobrecarga centrada vano 3

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras
Fuerza Z glconst.	-44.800		Stab 12 .. 16

Hipótesis 7: Sobrecarga excéntrica vano 1 (

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras
Fuerza Z glconst.	-22.400		Stab 5
Momento X lo const.	62.720		Stab 5
Fuerza Z glconst.	-22.400		Stab 4
Momento X lo const.	62.720		Stab 4
Fuerza Z glconst.	-22.400		Stab 3
Momento X lo const.	62.720		Stab 3
Fuerza Z glconst.	-22.400		Stab 2
Momento X lo const.	62.720		Stab 2
Fuerza Z glconst.	-22.400		Stab 1
Momento X lo const.	62.720		Stab 1

Hipótesis 8: Sobrecarga excentrica vano 2 (

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras
Fuerza Z glconst.	-22.400		Stab 7
Momento X lo const.	62.720		Stab 7
Fuerza Z glconst.	-22.400		Stab 8
Momento X lo const.	62.720		Stab 8
Fuerza Z glconst.	-22.400		Stab 6
Momento X lo const.	62.720		Stab 6
Fuerza Z glconst.	-22.400		Stab 9
Momento X lo const.	62.720		Stab 9

Tipo de carga			Distancia Valor(a)	Valor(b)	Números nudos/barras	
Fuerza	Z	glconst.	-22.400		Stab	10
Momento	X	lo const.	62.720		Stab	10
Fuerza	Z	glconst.	-22.400		Stab	11
Momento	X	lo const.	62.720		Stab	11

Hipótesis 9: Sobrecarga excentrica vano 3 (

Tipo de carga			Distancia Valor(a)	Valor(b)	Números nudos/barras	
Fuerza	Z	lo const.	-22.400		Stab	12
Momento	X	lo const.	62.720		Stab	12
Fuerza	Z	lo const.	-22.400		Stab	13
Momento	X	lo const.	62.720		Stab	13
Fuerza	Z	lo const.	-22.400		Stab	14
Momento	X	lo const.	62.720		Stab	14
Fuerza	Z	lo const.	-22.400		Stab	15
Momento	X	lo const.	62.720		Stab	15
Fuerza	Z	lo const.	-22.400		Stab	16
Momento	X	lo const.	62.720		Stab	16

Hipótesis 10: Sobrecarga excéntrica vano 1 (

Tipo de carga			Distancia Valor(a)	Valor(b)	Números nudos/barras	
Fuerza	Z	glconst.	-22.400		Stab	5
Momento	X	lo const.	-62.720		Stab	5
Fuerza	Z	glconst.	-22.400		Stab	4
Momento	X	lo const.	-62.720		Stab	4
Fuerza	Z	glconst.	-22.400		Stab	3
Momento	X	lo const.	-62.720		Stab	3
Fuerza	Z	glconst.	-22.400		Stab	2
Momento	X	lo const.	-62.720		Stab	2
Fuerza	Z	glconst.	-22.400		Stab	1
Momento	X	lo const.	-62.720		Stab	1

Hipótesis 11: Sobrecarga excentrica vano 2 (

Tipo de carga			Distancia Valor(a)	Valor(b)	Números nudos/barras	
Fuerza	Z	glconst.	-22.400		Stab	7
Momento	X	lo const.	-62.720		Stab	7
Fuerza	Z	glconst.	-22.400		Stab	8
Momento	X	lo const.	-62.720		Stab	8
Fuerza	Z	glconst.	-22.400		Stab	6
Momento	X	lo const.	-62.720		Stab	6
Fuerza	Z	glconst.	-22.400		Stab	9
Momento	X	lo const.	-62.720		Stab	9
Fuerza	Z	glconst.	-22.400		Stab	10
Momento	X	lo const.	-62.720		Stab	10
Fuerza	Z	glconst.	-22.400		Stab	11
Momento	X	lo const.	-62.720		Stab	11

Hipótesis 12: Sobrecarga excentrica vano 3 (

Tipo de carga			Distancia Valor(a)	Valor(b)	Números nudos/barras	
Fuerza	Z	lo const.	-22.400		Stab	12
Momento	X	lo const.	-62.720		Stab	12
Fuerza	Z	lo const.	-22.400		Stab	13
Momento	X	lo const.	-62.720		Stab	13
Fuerza	Z	lo const.	-22.400		Stab	14
Momento	X	lo const.	-62.720		Stab	14
Fuerza	Z	lo const.	-22.400		Stab	15
Momento	X	lo const.	-62.720		Stab	15
Fuerza	Z	lo const.	-22.400		Stab	16
Momento	X	lo const.	-62.720		Stab	16

Hipótesis 13: Frenado

Tipo de carga			Distancia Valor(a)	Valor(b)	Números nudos/barras
Fuerza	X	lo const.	1.960		Stab 7 .. 8 6 9 5 4 10 3 11 2 12 1 13 .. 16

Hipótesis 14: Fuerza centrífuga

Tipo de carga			Distancia Valor(a)	Valor(b)	Números nudos/barras	
Fuerza	Y	lo const.	-5.000		Stab	7
Momento	X	lo const.	2.810		Stab	7
Fuerza	Y	lo const.	-5.000		Stab	8
Momento	X	lo const.	2.810		Stab	8
Fuerza	Y	lo const.	-5.000		Stab	6
Momento	X	lo const.	2.810		Stab	6
Fuerza	Y	lo const.	-5.000		Stab	9
Momento	X	lo const.	2.810		Stab	9
Fuerza	Y	lo const.	-5.000		Stab	5
Momento	X	lo const.	2.810		Stab	5
Fuerza	Y	lo const.	-5.000		Stab	4
Momento	X	lo const.	2.810		Stab	4
Fuerza	Y	lo const.	-5.000		Stab	10
Momento	X	lo const.	2.810		Stab	10
Fuerza	Y	lo const.	-5.000		Stab	3
Momento	X	lo const.	2.810		Stab	3
Fuerza	Y	lo const.	-5.000		Stab	11
Momento	X	lo const.	2.810		Stab	11
Fuerza	Y	lo const.	-5.000		Stab	2
Momento	X	lo const.	2.810		Stab	2
Fuerza	Y	lo const.	-5.000		Stab	12
Momento	X	lo const.	2.810		Stab	12
Fuerza	Y	lo const.	-5.000		Stab	1
Momento	X	lo const.	2.810		Stab	1
Fuerza	Y	lo const.	-5.000		Stab	13
Momento	X	lo const.	2.810		Stab	13
Fuerza	Y	lo const.	-5.000		Stab	14
Momento	X	lo const.	2.810		Stab	14
Fuerza	Y	lo const.	-5.000		Stab	15
Momento	X	lo const.	2.810		Stab	15
Fuerza	Y	lo const.	-5.000		Stab	16
Momento	X	lo const.	2.810		Stab	16

Hipótesis 15: Viento con sobrecarga

Tipo de carga			Distancia Valor(a)	Valor(b)	Números nudos/barras	
Fuerza	Y	glconst.	-3.710		Stab	7
Momento	X	lo const.	4.380		Stab	7
Fuerza	Y	glconst.	-3.710		Stab	8
Momento	X	lo const.	4.380		Stab	8
Fuerza	Y	glconst.	-3.710		Stab	6
Momento	X	lo const.	4.380		Stab	6
Fuerza	Y	glconst.	-3.710		Stab	9
Momento	X	lo const.	4.380		Stab	9
Fuerza	Y	glconst.	-3.710		Stab	5
Momento	X	lo const.	4.380		Stab	5
Fuerza	Y	glconst.	-3.710		Stab	4
Momento	X	lo const.	4.380		Stab	4
Fuerza	Y	glconst.	-3.710		Stab	10
Momento	X	lo const.	4.380		Stab	10
Fuerza	Y	glconst.	-3.710		Stab	3
Momento	X	lo const.	4.380		Stab	3
Fuerza	Y	glconst.	-3.710		Stab	11
Momento	X	lo const.	4.380		Stab	11
Fuerza	Y	glconst.	-3.710		Stab	2
Momento	X	lo const.	4.380		Stab	2

Tipo de carga			Distancia Valor(a)	Valor(b)	Números nudos/barras	
Fuerza	Y	glconst.	-3.710		Stab	12
Momento	X	lo const.	4.380		Stab	12
Fuerza	Y	glconst.	-3.710		Stab	1
Momento	X	lo const.	4.380		Stab	1
Fuerza	Y	glconst.	-3.710		Stab	13
Momento	X	lo const.	4.380		Stab	13
Fuerza	Y	glconst.	-3.710		Stab	14
Momento	X	lo const.	4.380		Stab	14
Fuerza	Y	glconst.	-3.710		Stab	15
Momento	X	lo const.	4.380		Stab	15
Fuerza	Y	glconst.	-3.710		Stab	16
Momento	X	lo const.	4.380		Stab	16

Hipótesis 16: Viento sin sobrecarga

Tipo de carga			Distancia Valor(a)	Valor(b)	Números nudos/barras	
Fuerza	Y	glconst.	-7.040		Stab	7
Momento	X	lo const.	5.150		Stab	7
Fuerza	Y	glconst.	-7.040		Stab	8
Momento	X	lo const.	5.150		Stab	8
Fuerza	Y	glconst.	-7.040		Stab	6
Momento	X	lo const.	5.150		Stab	6
Fuerza	Y	glconst.	-7.040		Stab	9
Momento	X	lo const.	5.150		Stab	9
Fuerza	Y	glconst.	-7.040		Stab	5
Momento	X	lo const.	5.150		Stab	5
Fuerza	Y	glconst.	-7.040		Stab	4
Momento	X	lo const.	5.150		Stab	4
Fuerza	Y	glconst.	-7.040		Stab	10
Momento	X	lo const.	5.150		Stab	10
Fuerza	Y	glconst.	-7.040		Stab	3
Momento	X	lo const.	5.150		Stab	3
Fuerza	Y	glconst.	-7.040		Stab	11
Momento	X	lo const.	5.150		Stab	11
Fuerza	Y	glconst.	-7.040		Stab	2
Momento	X	lo const.	5.150		Stab	2
Fuerza	Y	glconst.	-7.040		Stab	12
Momento	X	lo const.	5.150		Stab	12
Fuerza	Y	glconst.	-7.040		Stab	1
Momento	X	lo const.	5.150		Stab	1
Fuerza	Y	glconst.	-7.040		Stab	13
Momento	X	lo const.	5.150		Stab	13
Fuerza	Y	glconst.	-7.040		Stab	14
Momento	X	lo const.	5.150		Stab	14
Fuerza	Y	glconst.	-7.040		Stab	15
Momento	X	lo const.	5.150		Stab	15
Fuerza	Y	glconst.	-7.040		Stab	16
Momento	X	lo const.	5.150		Stab	16

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Hipótesis 17: Temperatura uniforme
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Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras
Def. x X lo const.	0.000210	Stab	1 .. 16

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Hipótesis 18: Retracción
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Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras
Def. x X lo const.	0.000250	Stab	1 .. 16

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Hipótesis 19: gradiente
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Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras
Giro y/zY lo const.	0.000107	Stab	1 .. 16

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Hipótesis 20: Pretensado
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Cable 1: Unidades: (M)(KN)
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Paso	Lugar	Proceso	Fuerza	Alargamiento/ Pen. de cuñas	sobre fuerza max.
1	Inicio	TENSAR	11927.25	0.4330	
2	Inicio	ANCLAR	10677.29	-0.0050	
3	Fin	TENSAR	11927.25	0.0421	
4	Fin	ANCLAR	10666.92	-0.0050	

Ley de fuerza del pretensado: (Lugar: Dist. a inicio cable)

Lugar Fuerza	Lugar Fuerza	Lugar Fuerza	Lugar Fuerza
0.000 10677.3	2.000 10733.9	4.000 10830.3	6.000 10928.0
8.000 11027.2	10.000 11141.6	12.000 11257.4	14.000 11196.6
15.667 11088.4	17.333 10981.1	19.000 10874.5	19.667 10854.2
20.333 10833.9	21.000 10814.2	22.000 10785.6	23.000 10757.1
24.000 10728.6	25.333 10601.5	26.667 10475.8	28.000 10351.5
31.053 10199.0	34.107 10048.8	37.160 9900.8	40.213 10042.9

Ley de fuerza del pretensado: (Lugar: Dist. a inicio cable)

Lugar Fuerza	Lugar Fuerza	Lugar Fuerza	Lugar Fuerza
43.267 10193.0	46.320 10345.2	47.653 10469.4	48.987 10595.1
50.320 10722.2	51.320 10751.0	52.320 10779.9	53.320 10808.9
53.987 10828.7	54.653 10848.9	55.320 10869.1	56.987 10975.6
58.653 11082.8	60.320 11190.7	62.320 11252.6	64.320 11137.2
66.320 11022.9	68.320 10923.6	70.320 10824.9	72.320 10727.0
74.320 10666.9			

Cable 2: Unidades: (M)(KN)
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Paso	Lugar	Proceso	Fuerza	Alargamiento/ Pen. de cuñas	sobre fuerza max.
1	Inicio	TENSAR	11927.25	0.4217	
2	Inicio	ANCLAR	10625.68	-0.0050	
3	Fin	TENSAR	11927.25	0.0443	
4	Fin	ANCLAR	10617.26	-0.0050	

Ley de fuerza del pretensado: (Lugar: Dist. a inicio cable)

Lugar Fuerza	Lugar Fuerza	Lugar Fuerza	Lugar Fuerza
0.000 10625.7	2.000 10682.0	3.333 10769.3	4.667 10857.5
6.000 10946.8	6.667 10966.8	7.333 10987.0	8.000 11007.1
8.667 11027.5	9.333 11048.0	10.000 11068.6	11.667 11229.2
13.333 11124.9	15.000 10966.0	17.000 10803.6	19.000 10643.4
21.000 10486.0	22.667 10360.3	24.333 10236.2	26.000 10113.5
28.887 9971.5	31.773 9831.0	34.660 9692.4	35.493 9670.3
36.327 9648.3	37.160 9626.3	37.993 9643.9	38.827 9666.0
39.660 9688.1	42.547 9826.7	45.433 9967.1	48.320 10109.2
49.987 10231.9	51.653 10356.2	53.320 10481.9	55.320 10639.4
57.320 10799.4	59.320 10961.7	60.987 11120.5	62.653 11224.9
64.320 11064.5	64.987 11044.2	65.653 11023.9	66.320 11003.6
66.987 10983.4	67.653 10963.1	68.320 10942.9	69.653 10853.6
70.987 10765.0	72.320 10677.0	74.320 10617.3	

Cable 3: Unidades: (M)(KN)
==========

Paso	Lugar	Proceso	Fuerza	Alargamiento/ Pen. de cuñas	sobre fuerza max.
1	Inicio	TENSAR	7951.50	0.4374	
2	Inicio	ANCLAR	7127.45	-0.0050	
3	Fin	TENSAR	7951.50	0.0382	
4	Fin	ANCLAR	7120.39	-0.0050	

Ley de fuerza del pretensado: (Lugar: Dist. a inicio cable)

Lugar Fuerza	Lugar Fuerza	Lugar Fuerza	Lugar Fuerza
0.000 7127.4	2.000 7165.2	4.000 7226.8	6.000 7289.3
8.000 7352.7	10.333 7439.9	12.667 7528.0	15.000 7440.5
17.000 7357.8	19.000 7275.7	21.000 7195.0	22.667 7119.1
24.333 7044.1	26.000 6969.8	29.720 6870.1	33.440 6771.1
37.160 6673.5	40.880 6767.0	44.600 6865.9	48.320 6965.8
49.987 7040.1	51.653 7115.2	53.320 7191.2	55.320 7271.9
57.320 7353.9	59.320 7436.5	61.653 7524.2	63.987 7436.9
66.320 7349.8	68.320 7286.3	70.320 7223.2	72.320 7160.5
74.320 7120.4			

Hipótesis 21: Carro 2 centrado

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras	
Fuerza Z glconc.	-200.000	5.399	Stab	8
Fuerza Z glconc.	-200.000	3.899	Stab	8
Fuerza Z glconc.	-200.000	1.500	Stab	9

Hipótesis 22: Carro 1 centrado

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras	
Fuerza Z glconc.	-200.000	2.100	Stab	3
Fuerza Z glconc.	-200.000	0.600000	Stab	3
Fuerza Z glconc.	-200.000	3.600	Stab	3

Hipótesis 23: Carro 2 apoyo

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras	
Fuerza Z glconc.	-200.000	0.100000	Stab	6
Fuerza Z glconc.	-200.000	1.500	Stab	6
Fuerza Z glconc.	-200.000	3.000	Stab	6

Hipótesis 24: Carro 1 pila

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras	
Fuerza Z glconc.	-200.000	4.198	Stab	5
Fuerza Z glconc.	-200.000	2.700	Stab	5
Fuerza Z glconc.	-200.000	1.200	Stab	5

Hipótesis 25: Carro 1 estribo

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras	
Fuerza Z glconc.	-200.000	0.100000	Stab	1
Fuerza Z glconc.	-200.000	1.500	Stab	1
Fuerza Z glconc.	-200.000	3.000	Stab	1

Hipótesis 26: Carro 2 excéntrico

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras	
Fuerza Z glconc.	-200.000	5.399	Stab	8
Fuerza Z glconc.	-200.000	3.899	Stab	8
Fuerza Z glconc.	-200.000	1.500	Stab	9
Momento X lo conc.	500.000	5.399	Stab	8
Momento X lo conc.	500.000	3.899	Stab	8
Momento X lo conc.	500.000	1.500	Stab	9

Hipótesis 27: Carro 1 excéntrico

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras	
Fuerza Z glconc.	-200.000	2.100	Stab	3
Fuerza Z glconc.	-200.000	0.600000	Stab	3
Fuerza Z glconc.	-200.000	3.600	Stab	3
Momento X lo conc.	500.000	2.100	Stab	3
Momento X lo conc.	500.000	0.600000	Stab	3
Momento X lo conc.	500.000	3.600	Stab	3

Hipótesis 28: Carro 2 apoyo excentrøco

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras	
Fuerza Z glconc.	-200.000	0.100000	Stab	6
Fuerza Z glconc.	-200.000	1.500	Stab	6
Fuerza Z glconc.	-200.000	3.000	Stab	6
Momento X lo conc.	500.000	0.100000	Stab	6
Momento X lo conc.	500.000	1.500	Stab	6
Momento X lo conc.	500.000	3.000	Stab	6

Hipótesis 29: Carro 1 pila excéntrico

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras	
Fuerza Z glconc.	-200.000	4.198	Stab	5
Fuerza Z glconc.	-200.000	2.700	Stab	5
Fuerza Z glconc.	-200.000	1.200	Stab	5
Momento X lo conc.	500.000	4.198	Stab	5
Momento X lo conc.	500.000	2.700	Stab	5
Momento X lo conc.	500.000	1.200	Stab	5

Hipótesis 30: Carro 1 estribo excéntrico

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras	
Fuerza Z glconc.	-200.000	0.100000	Stab	1
Fuerza Z glconc.	-200.000	1.500	Stab	1
Fuerza Z glconc.	-200.000	3.000	Stab	1
Momento X lo conc.	500.000	0.100000	Stab	1
Momento X lo conc.	500.000	1.500	Stab	1
Momento X lo conc.	500.000	3.000	Stab	1

Hipótesis 31: Carro 2 excéntrico

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras	
Fuerza Z glconc.	-200.000	5.399	Stab	8
Fuerza Z glconc.	-200.000	3.899	Stab	8
Fuerza Z glconc.	-200.000	1.500	Stab	9
Momento X lo conc.	-500.000	5.399	Stab	8
Momento X lo conc.	-500.000	3.899	Stab	8
Momento X lo conc.	-500.000	1.500	Stab	9

Hipótesis 32: Carro 1 excéntrico

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras	
Fuerza Z glconc.	-200.000	2.100	Stab	3
Fuerza Z glconc.	-200.000	0.600000	Stab	3
Fuerza Z glconc.	-200.000	3.600	Stab	3
Momento X lo conc.	-500.000	2.100	Stab	3
Momento X lo conc.	-500.000	0.600000	Stab	3
Momento X lo conc.	-500.000	3.600	Stab	3

Hipótesis 33: Carro 2 apoyo excéntrico

Tipo de carga	Valor(a)	Distancia Valor(b)	Números nudos/barras	
Fuerza Z glconc.	-200.000	0.100000	Stab	6
Fuerza Z glconc.	-200.000	1.500	Stab	6
Fuerza Z glconc.	-200.000	3.000	Stab	6
Momento X lo conc.	-500.000	0.100000	Stab	6
Momento X lo conc.	-500.000	1.500	Stab	6
Momento X lo conc.	-500.000	3.000	Stab	6

Cálculo de Pé_idas Diferidas de Tesado

Datos generales

f_{ck}=	35 N/mm²
E_p=	200000 N/mm²
E_c=	35034 N/mm²
n=	5.7
$X_{(coef. envej.)}$=	0.8
A_c=	6.385 m²
A_p=	0.0228 m²
I_c=	1.149 m⁴

Cálculo de la fluencia (Art.39.8. EHE)

ψ_{HR}=	1.503
$\beta(f_{cm})$=	2.562
$\beta(t_0)$=	0.635
β_H=	1500
$\beta_c(t-t_0)$=	0.96
ψ_0=	2.444
$\psi(t-t_0)$=	**2.343**

Cálculo de la relajación (Art.38.9. EHE)

ρ=	**0.058**

Cálculo de la retracción (Art. 39.7. EHE)

t_0=	7 días
t_s=	10000 días
HR=	50 %
u=	12.625 m Perímetro en contacto con atmosfera
e=	1011.485149 mm
ε_s=	0.000395
β_{HR}=	1.35625
ε_{cs0}=	0.000535719
$\beta_s(t-t_s)$=	0.47
$\varepsilon_{cs}(t-t_s)$=	**0.00025 m/m**

Las pérdidas diferidas de tesado se obtienen según el art. 20.2.2.2 EHE

Pérdidas por secciones

Sección	y_p	P_{kl}	$\Delta\sigma_{pr}$	$M_{permanente}$	$M_{pretensado}$	σ_{cp}	ΔP_{dif}	P_0	%
1	-0.04	28264.00	71.90	75.06	-1133.92	4.46	3601.14	30132.00	12.74
2	-0.14	28342.80	72.10	1528.41	-3598.02	4.69	3649.96	30132.00	12.88
3	-0.23	28432.90	72.33	2737.66	-6077.47	5.12	3739.12	30132.00	13.15
4	-0.32	28625.20	72.82	3702.80	-8281.76	5.74	3868.36	30132.00	13.51
5	-0.37	28808.40	73.28	4423.84	-9950.20	6.31	3987.58	30132.00	13.84
6	-0.42	28982.60	73.73	4901.40	-11047.50	6.77	4080.24	30132.00	14.08
7	-0.44	29136.50	74.12	5134.26	-11611.30	7.02	4136.40	30132.00	14.20
8	-0.45	29258.10	74.43	5123.12	-11801.80	7.17	4172.17	30132.00	14.26
9	-0.45	29380.90	74.74	4867.99	-11701.60	7.25	4198.98	30132.00	14.29
10	-0.44	29506.40	75.06	4364.23	-11226.80	7.24	4208.11	30132.00	14.26
11	-0.41	29657.00	75.44	3620.83	-10372.80	7.08	4195.78	30132.00	14.15
12	-0.37	29823.50	75.87	2633.31	-8767.42	6.64	4125.38	30132.00	13.83
13	-0.29	29766.30	75.72	1401.67	-6232.33	5.87	3972.86	30132.00	13.35
14	-0.18	29545.10	75.16	-81.40	-2844.73	5.10	3801.69	30132.00	12.87
15	-0.05	29284.30	74.50	-1801.01	1178.08	4.61	3687.83	30132.00	12.59
16	0.08	29135.70	74.12	-3764.67	5175.15	4.66	3690.30	30132.00	12.67
17	0.19	29018.80	73.82	-5972.39	8389.86	4.94	3733.09	30132.00	12.86
18	0.26	28883.00	73.47	-8428.50	10807.80	5.07	3724.94	30132.00	12.90
19	0.32	28727.70	73.08	-11123.29	12400.30	4.85	3622.81	30132.00	12.61
20	0.34	28588.40	72.72	-14062.03	13313.00	4.25	3433.08	30132.00	12.01
21	0.35	28439.20	72.35	-17244.52	13698.60	3.37	3173.67	30132.00	11.16
22	0.34	28200.00	71.74	-12606.46	13201.90	4.59	3513.41	30132.00	12.46

23	0.30	27964.10	71.[illegible]	-8380.25	11826.30	5.27	-21.26	30132.00	13.31
24	0.23	27628.70	70.28	-4557.53	9372.85	5.27	3749.34	30132.00	13.57
25	0.08	27283.20	69.40	-1138.30	5470.07	4.59	3588.88	30132.00	13.15
26	-0.07	27034.70	68.77	1901.83	1056.50	4.04	3421.94	30132.00	12.66
27	-0.25	26900.80	68.43	4514.05	-3223.31	3.94	3328.51	30132.00	12.37
28	-0.38	26786.80	68.14	6722.79	-6731.56	4.20	3314.68	30132.00	12.37
29	-0.49	26661.60	67.82	8528.06	-9458.13	4.57	3316.80	30132.00	12.44
30	-0.57	26525.60	67.48	9946.55	-11404.60	4.88	3315.78	30132.00	12.50
31	-0.62	26378.70	67.10	10944.83	-12591.50	5.02	3293.88	30132.00	12.49
32	-0.64	26248.20	66.77	11539.73	-13156.90	5.01	3261.82	30132.00	12.43
33	-0.65	26122.20	66.45	11731.25	-13281.50	4.97	3235.72	30132.00	12.39
34	-0.64	26247.00	66.77	11519.08	-13132.40	5.01	3261.30	30132.00	12.43
35	-0.62	26374.70	67.09	10903.57	-12538.30	5.01	3292.40	30132.00	12.48
36	-0.57	26519.40	67.46	9884.49	-11308.20	4.86	3310.58	30132.00	12.48
37	-0.49	26654.60	67.81	8461.85	-9313.24	4.54	3311.71	30132.00	12.42
38	-0.38	26779.20	68.12	6618.73	-6551.31	4.17	3304.74	30132.00	12.34
39	-0.24	26892.30	68.41	4389.68	-3001.34	3.93	3330.26	30132.00	12.38
40	-0.10	27035.00	68.77	1757.27	1308.54	3.95	3390.82	30132.00	12.54
41	0.04	27281.40	69.40	-1278.51	5720.26	4.43	3549.05	30132.00	13.01
42	0.22	27630.10	70.29	-4691.12	9497.86	5.25	3745.52	30132.00	13.56
43	0.30	27956.70	71.12	-8471.79	11865.10	5.26	3717.25	30132.00	13.30
44	0.34	28189.40	71.71	-12644.65	13202.50	4.58	3508.76	30132.00	12.45
45	0.35	28400.70	72.25	-17209.73	13700.60	3.37	3173.51	30132.00	11.17
46	0.34	28575.40	72.69	-14040.17	13298.70	4.26	3433.30	30132.00	12.01
47	0.32	28714.60	73.05	-11106.11	12386.70	4.85	3621.94	30132.00	12.61
48	0.27	28869.70	73.44	-8416.06	10794.80	5.09	3723.56	30132.00	12.90
49	0.22	29005.20	73.79	-5969.99	8395.30	5.00	3735.97	30132.00	12.88
50	0.13	29122.10	74.08	-3762.07	5164.46	4.72	3695.00	30132.00	12.69
51	0.01	29270.70	74.46	-1803.65	1169.20	4.58	3680.84	30132.00	12.58
52	-0.13	29531.60	75.12	-89.31	-2850.51	4.96	3782.30	30132.00	12.81
53	-0.21	29753.00	75.69	1380.95	-6214.51	5.56	3929.33	30132.00	13.21
54	-0.29	29810.90	75.83	2615.25	-8767.96	6.22	4071.77	30132.00	13.66
55	-0.35	29645.00	75.41	3597.31	-10370.80	6.71	4153.38	30132.00	14.01
56	-0.42	29495.00	75.03	4335.33	-11223.00	7.12	4197.64	30132.00	14.23
57	-0.44	29369.70	74.71	4829.29	-11672.30	7.21	4194.83	30132.00	14.28
58	-0.45	29247.00	74.40	5083.92	-11794.20	7.20	4175.67	30132.00	14.28
59	-0.45	29125.10	74.09	5089.69	-11602.20	7.09	4143.75	30132.00	14.23
60	-0.42	28970.30	73.70	4851.29	-11036.40	6.77	4082.51	30132.00	14.09
61	-0.38	28794.90	73.25	4368.73	-9914.57	6.33	3988.93	30132.00	13.85
62	-0.31	28610.50	72.78	3642.39	-8270.71	5.73	3868.67	30132.00	13.52
63	-0.23	28416.40	72.29	2672.40	-6066.69	5.14	3741.39	30132.00	13.17
64	-0.14	28321.90	72.05	1458.56	-3586.53	4.70	3650.61	30132.00	12.89
65	-0.04	28238.30	71.83	0.89	-1126.56	4.46	3599.53	30132.00	12.75
								media (%) =	13.04

LISTADO DE ESFUERZOS Y DIMENSIONAMIENTO DEL TABLERO. HIPOTESIS SIMPLE.

BELASTUNG: 'Peso propio'

Lastfall	Faktor	Bauzustd.	Vorv.	Titel
1	1.0000			Peso Propio

REACCIONES EN APOYOS:

NUDOS	FX [kN]	FY [kN]	FZ [kN]	T [kNm]	MY [kNm]	MZ [kNm]
6	0	0	4850.799			
12	0	0	4845.948			
18	0	0	671.319			
19	0	0	644.273			
20	0	0	671.447			
21	0	0	647.798			

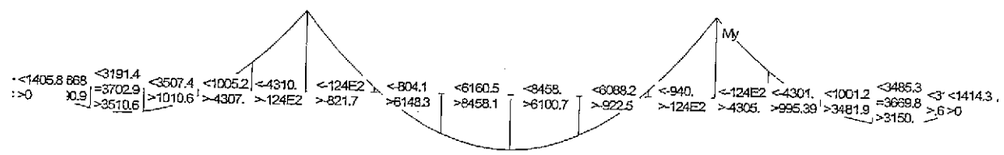
ESFUERZOS: "ALL"

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
1	0	0	0	1081.681	64.984	55.668	0
1	1.050	0	0	914.058	64.984	1103.504	0
1	2.100	0	0	746.436	64.984	1975.324	0
1	3.150	0	0	578.813	64.984	2671.128	0
1	4.200	0	0	411.190	64.984	3190.916	0
2	0	0	0	411.190	-31.739	3191.420	0
2	1.050	0	0	243.606	-31.739	3535.134	0
2	2.100	0	0	76.021	-31.739	3702.912	0
2	3.150	0	0	-91.564	-31.739	3694.753	0
2	4.199	0	0	-259.149	-31.739	3510.658	0
3	0	0	0	-259.149	-153.867	3507.428	0
3	1.050	0	0	-426.776	-153.867	3147.282	0
3	2.100	0	0	-594.404	-153.867	2611.109	0
3	3.150	0	0	-762.031	-153.867	1898.911	0
3	4.200	0	0	-929.658	-153.867	1010.686	0
4	0	0	0	-929.659	-186.049	1005.260	0
4	1.050	0	0	-1097.264	-186.049	-58.840	0
4	2.100	0	0	-1264.870	-186.049	-1298.921	0
4	3.150	0	0	-1432.475	-186.049	-2714.982	0
4	4.200	0	0	-1600.081	-186.049	-4307.023	0
5	0	0	0	-1600.081	-46.964	-4310.784	0
5	1.050	0	0	-1767.630	-46.964	-6078.178	0
5	2.099	0	0	-1935.179	-46.964	-8021.433	0
5	3.149	0	0	-2102.728	-46.964	-10140.6	0
5	4.198	0	0	-2270.276	-46.964	-12435.5	0
6	0	0	0	2580.523	390.562	-12429.5	0
6	1.350	0	0	2365.017	390.562	-9091.141	0
6	2.700	0	0	2149.510	390.562	-6043.741	0
6	4.050	0	0	1934.004	390.562	-3287.284	0
6	5.400	0	0	1718.497	390.562	-821.770	0
7	0	0	0	1718.497	425.659	-804.151	0
7	1.350	0	0	1502.995	425.659	1370.380	0
7	2.700	0	0	1287.493	425.659	3253.980	0
7	4.050	0	0	1071.991	425.659	4846.649	0
7	5.400	0	0	856.489	425.659	6148.387	0
8	0	0	0	856.489	178.238	6160.526	0
8	1.350	0	0	641.013	178.238	7171.230	0
8	2.700	0	0	425.536	178.238	7891.073	0
8	4.050	0	0	210.060	178.238	8320.054	0
8	5.399	0	0	-5.416	178.238	8458.174	0
9	0	0	0	-5.416	-185.708	8458.013	0
9	1.350	0	0	-220.943	-185.708	8305.202	0
9	2.700	0	0	-436.469	-185.708	7861.394	0
9	4.051	0	0	-651.996	-185.708	7126.589	0
9	5.401	0	0	-867.522	-185.708	6100.787	0

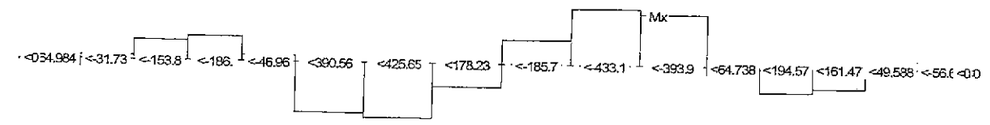
ESFUERZOS: "ALL"

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
10	0	0	0	-867.522	-433.158	6088.223	0
10	1.350	0	0	-1082.994	-433.158	4771.794	0
10	2.700	0	0	-1298.466	-433.158	3164.516	0
10	4.049	0	0	-1513.938	-433.158	1266.388	0
10	5.399	0	0	-1729.410	-433.158	-922.590	0
11	0	0	0	-1729.410	-393.942	-940.004	0
11	1.331	0	0	-1941.881	-393.942	-3383.294	0
11	2.662	0	0	-2154.352	-393.942	-6109.389	0
11	3.993	0	0	-2366.822	-393.942	-9118.287	0
11	5.324	0	0	-2579.293	-393.942	-12410.0	0
12	0	0	0	2266.655	64.738	-12416.1	0
12	1.050	0	0	2099.075	64.738	-10124.5	0
12	2.100	0	0	1931.494	64.738	-8008.812	0
12	3.149	0	0	1763.914	64.738	-6069.074	0
12	4.199	0	0	1596.333	64.738	-4305.264	0
13	0	0	0	1596.333	194.573	-4301.352	0
13	1.050	0	0	1428.719	194.573	-2713.169	0
13	2.100	0	0	1261.105	194.573	-1300.985	0
13	3.150	0	0	1093.491	194.573	-64.798	0
13	4.200	0	0	925.876	194.573	995.390	0
14	0	0	0	925.876	161.477	1001.291	0
14	1.050	0	0	758.272	161.477	1885.435	0
14	2.100	0	0	590.667	161.477	2593.601	0
14	3.150	0	0	423.063	161.477	3125.789	0
14	4.200	0	0	255.458	161.477	3481.999	0
15	0	0	0	255.458	49.588	3485.389	0
15	1.050	0	0	87.814	49.588	3665.643	0
15	2.100	0	0	-79.831	49.588	3669.835	0
15	3.151	0	0	-247.475	49.588	3497.965	0
15	4.201	0	0	-415.120	49.588	3150.032	0
16	0	0	0	-415.120	-56.676	3149.913	0
16	1.049	0	0	-582.651	-56.676	2626.334	0
16	2.099	0	0	-750.181	-56.676	1926.932	0
16	3.148	0	0	-917.712	-56.676	1051.706	0
16	4.198	0	0	-1085.243	-56.676	0.658201	0
17	0	0	0	-554.409	1.93E-13	1469.746	0
17	0.600	0	0	-583.636	1.93E-13	1128.594	0
17	1.199	0	0	-612.864	1.93E-13	769.919	0
17	1.799	0	0	-642.092	1.93E-13	393.721	0
17	2.398	0	0	-671.319	1.93E-13	1.61E-05	0
18	0	0	0	-527.272	5.04E-13	1405.862	0
18	0.600	0	0	-556.522	5.04E-13	1080.722	0
18	1.200	0	0	-585.772	5.04E-13	738.031	0
18	1.800	0	0	-615.022	5.04E-13	377.791	0
18	2.400	0	0	-644.273	5.04E-13	1.55E-05	0
19	0	0	0	-554.450	2.06E-13	1471.049	0
19	0.600	0	0	-583.699	2.06E-13	1129.611	0
19	1.200	0	0	-612.949	2.06E-13	770.623	0
19	1.800	0	0	-642.198	2.06E-13	394.086	0
19	2.400	0	0	-671.447	2.06E-13	1.61E-05	0
20	0	0	0	-530.793	-5.37E-14	1414.373	0
20	0.600	0	0	-560.045	-5.37E-14	1087.107	0
20	1.200	0	0	-589.296	-5.37E-14	742.290	0
20	1.800	0	0	-618.547	-5.37E-14	379.921	0
20	2.400	0	0	-647.798	-5.37E-14	1.55E-05	0

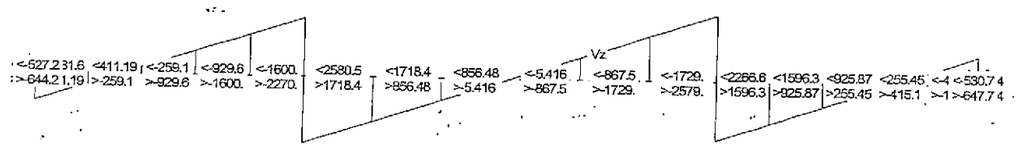
Mstb. 1 :449.9
Section force, Hipótesi 1 (Peso propio), View "ALL"
- Struktur: Staebe
- Moment My, Scaling 5.00E-04
min: -1.24E+04 max: 8.46E+03 [kNm]
- Text Moment My [kNm]



Mstb. 1 :449.9
Section force, Hipótesi 1 (Peso propio), View "ALL"
- Struktur: Staebe
- Tors. MomentMx, Scaling 1.00E-02
min: -4.33E+02 max: 4.26E+02 [kNm]
- Text Tors. MomentMx [kNm]



Mstb. 1 :449.9
Section force, Hipótesi 1 (Peso propio), View "ALL"
- Struktur: Staebe
- Shear Force Vz, Scaling 2.00E-03
min: -2.58E+03 max: 2.58E+03 [kN]
- Text Shear Force Vz [kN]



BELASTUNG: 'Carga Muerta Mínima'

Lastfall	Faktor	Bauzustd. Vorv.	Titel
2	1.0000		Carga muerta mínima

REACCIONES EN APOYOS:

NUDOS	FX [kN]	FY [kN]	FZ [kN]	T [kNm]	MY [kNm]	MZ [kNm]
6	0	0	1590.038			
12	0	0	1588.588			
18	0	0	181.836			
19	0	0	172.907			
20	0	0	181.812			
21	0	0	173.989			

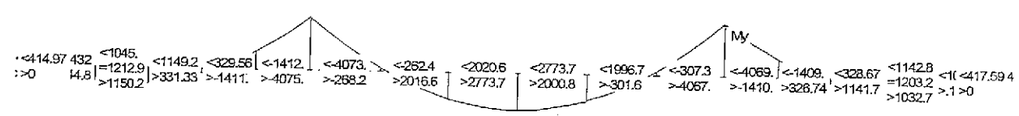
ESFUERZOS: "ALL"

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
1	0	0	0	354.743	21.419	16.432	0
1	1.050	0	0	299.792	21.419	360.087	0
1	2.100	0	0	244.842	21.419	646.040	0
1	3.150	0	0	189.892	21.419	874.291	0
1	4.200	0	0	134.941	21.419	1044.841	0
2	0	0	0	134.941	-10.252	1045.010	0
2	1.050	0	0	80.004	-10.252	1157.839	0
2	2.100	0	0	25.066	-10.252	1212.991	0
2	3.150	0	0	-29.872	-10.252	1210.468	0
2	4.199	0	0	-84.810	-10.252	1150.269	0
3	0	0	0	-84.810	-50.268	1149.216	0
3	1.050	0	0	-139.762	-50.268	1031.304	0
3	2.100	0	0	-194.714	-50.268	855.687	0
3	3.150	0	0	-249.666	-50.268	622.364	0
3	4.200	0	0	-304.618	-50.268	331.336	0
4	0	0	0	-304.618	-60.818	329.563	0
4	1.050	0	0	-359.563	-60.818	-19.121	0
4	2.100	0	0	-414.507	-60.818	-425.495	0
4	3.150	0	0	-469.452	-60.818	-889.559	0
4	4.200	0	0	-524.397	-60.818	-1411.313	0
5	0	0	0	-524.397	-15.243	-1412.540	0
5	1.050	0	0	-579.323	-15.243	-1991.779	0
5	2.099	0	0	-634.249	-15.243	-2628.669	0
5	3.149	0	0	-689.175	-15.243	-3323.210	0
5	4.198	0	0	-744.102	-15.243	-4075.402	0
6	0	0	0	845.936	128.144	-4073.416	0
6	1.350	0	0	775.288	128.144	-2979.056	0
6	2.700	0	0	704.641	128.144	-1980.073	0
6	4.050	0	0	633.993	128.144	-1076.467	0
6	5.400	0	0	563.345	128.144	-268.239	0
7	0	0	0	563.345	139.600	-262.459	0
7	1.350	0	0	492.699	139.600	450.378	0
7	2.700	0	0	422.053	139.600	1067.842	0
7	4.050	0	0	351.407	139.600	1589.933	0
7	5.400	0	0	280.760	139.600	2016.650	0
8	0	0	0	280.760	58.446	2020.631	0
8	1.350	0	0	210.122	58.446	2351.941	0
8	2.700	0	0	139.485	58.446	2587.900	0
8	4.050	0	0	68.847	58.446	2728.508	0
8	5.399	0	0	-1.791	58.446	2773.766	0
9	0	0	0	-1.791	-60.906	2773.713	0
9	1.350	0	0	-72.445	-60.906	2723.597	0
9	2.700	0	0	-143.100	-60.906	2578.086	0
9	4.051	0	0	-213.754	-60.906	2337.180	0
9	5.401	0	0	-284.408	-60.906	2000.879	0

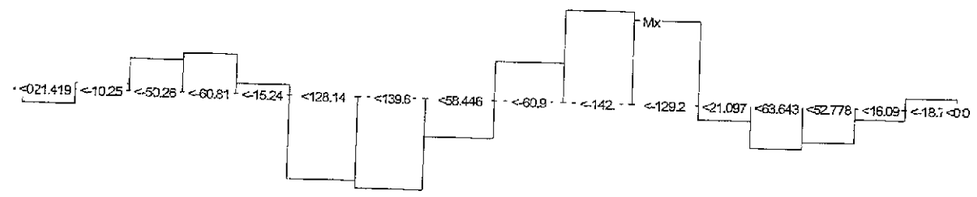
ESFUERZOS: "ALL"

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
10	0	0	0	-284.408	-142.062	1996.759	0
10	1.350	0	0	-355.045	-142.062	1565.184	0
10	2.700	0	0	-425.681	-142.062	1038.262	0
10	4.049	0	0	-496.317	-142.062	415.994	0
10	5.399	0	0	-566.954	-142.062	-301.622	0
11	0	0	0	-566.954	-129.241	-307.334	0
11	1.331	0	0	-636.606	-129.241	-1108.318	0
11	2.662	0	0	-706.259	-129.241	-2002.012	0
11	3.993	0	0	-775.911	-129.241	-2988.415	0
11	5.324	0	0	-845.564	-129.241	-4067.527	0
12	0	0	0	743.024	21.097	-4069.525	0
12	1.050	0	0	688.087	21.097	-3318.328	0
12	2.100	0	0	633.151	21.097	-2624.803	0
12	3.149	0	0	578.214	21.097	-1988.952	0
12	4.199	0	0	523.278	21.097	-1410.773	0
13	0	0	0	523.278	63.643	-1409.495	0
13	1.050	0	0	468.330	63.643	-888.891	0
13	2.100	0	0	413.383	63.643	-425.982	0
13	3.150	0	0	358.435	63.643	-20.770	0
13	4.200	0	0	303.487	63.643	326.746	0
14	0	0	0	303.487	52.778	328.675	0
14	1.050	0	0	248.543	52.778	618.480	0
14	2.100	0	0	193.599	52.778	850.596	0
14	3.150	0	0	138.654	52.778	1025.022	0
14	4.200	0	0	83.710	52.778	1141.758	0
15	0	0	0	83.710	16.090	1142.864	0
15	1.050	0	0	28.752	16.090	1201.919	0
15	2.100	0	0	-26.205	16.090	1203.256	0
15	3.151	0	0	-81.163	16.090	1146.877	0
15	4.201	0	0	-136.120	16.090	1032.780	0
16	0	0	0	-136.120	-18.750	1032.735	0
16	1.049	0	0	-191.041	-18.750	861.058	0
16	2.099	0	0	-245.961	-18.750	631.742	0
16	3.148	0	0	-300.881	-18.750	344.788	0
16	4.198	0	0	-355.801	-18.750	0.194527	0
17	0	0	0	-181.836	5.65E-14	436.073	0
17	2.398	0	0	-181.836	5.65E-14	4.36E-06	0
18	0	0	0	-172.907	8.24E-15	414.978	0
18	2.400	0	0	-172.907	8.24E-15	4.15E-06	0
19	0	0	0	-181.812	4.27E-15	436.342	0
19	2.400	0	0	-181.812	4.27E-15	4.36E-06	0
20	0	0	0	-173.989	9.68E-14	417.592	0
20	2.400	0	0	-173.989	9.68E-14	4.18E-06	0

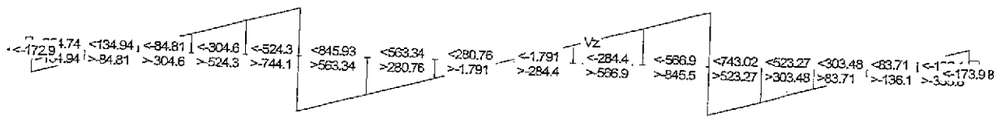
Mstb. 1 :449.9
Section force, Hipótesi 2 (Carga Muerta Mínima), View "ALL",
- Struktur: Staebe
- Moment My, Scaling 1.00E-03
min: -4.08E+03 max: 2.77E+03 [kNm]
- Text Moment My [kNm]



Mstb. 1 :449.9
Section force, Hipótesi 2 (Carga Muerta Mínima), View "ALL"
- Struktur: Staebe
- Tors. MomentMx, Scaling 5.00E-02
min: -1.42E+02 max: 1.40E+02 [kNm]
- Text Tors. MomentMx [kNm]



Mstb. 1 :449.9
Section force, Hipótesi 2 (Carga Muerta Mínima), View "ALL"
- Struktur: Staebe
- Shear Force Vz, Scaling 5.00E-03
min: -8.46E+02 max: 8.46E+02 [kN]
- Text Shear Force Vz [kN]



BELASTUNG: 'Carga Muerta Máxima'

Lastfall	Faktor	Bauzustd.	Vorv.	Titel
3	1.0000			Carga Muerta Máxima

REACCIONES EN APOYOS:

NUDOS	FX [kN]	FY [kN]	FZ [kN]	T [kNm]	MY [kNm]	MZ [kNm]
6	0	0	1876.263			
12	0	0	1874.552			
18	0	0	214.569			
19	0	0	204.032			
20	0	0	214.541			
21	0	0	205.309			

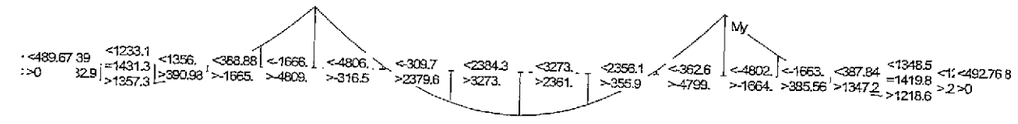
ESFUERZOS: "ALL"

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
1	0	0	0	418.601	25.275	19.390	0
1	1.050	0	0	353.759	25.275	424.907	0
1	2.100	0	0	288.917	25.275	762.335	0
1	3.150	0	0	224.075	25.275	1031.674	0
1	4.200	0	0	159.233	25.275	1232.924	0
2	0	0	0	159.232	-12.098	1233.124	0
2	1.050	0	0	94.405	-12.098	1366.263	0
2	2.100	0	0	29.578	-12.098	1431.344	0
2	3.150	0	0	-35.250	-12.098	1428.366	0
2	4.199	0	0	-100.077	-12.098	1357.331	0
3	0	0	0	-100.077	-59.316	1356.088	0
3	1.050	0	0	-164.921	-59.316	1216.950	0
3	2.100	0	0	-229.765	-59.316	1009.720	0
3	3.150	0	0	-294.609	-59.316	734.397	0
3	4.200	0	0	-359.453	-59.316	390.980	0
4	0	0	0	-359.453	-71.766	388.888	0
4	1.050	0	0	-424.288	-71.766	-22.563	0
4	2.100	0	0	-489.124	-71.766	-502.089	0
4	3.150	0	0	-553.959	-71.766	-1049.689	0
4	4.200	0	0	-618.794	-71.766	-1665.365	0
5	0	0	0	-618.794	-17.987	-1666.814	0
5	1.050	0	0	-683.608	-17.987	-2350.322	0
5	2.099	0	0	-748.421	-17.987	-3101.860	0
5	3.149	0	0	-813.235	-17.987	-3921.426	0
5	4.198	0	0	-878.048	-17.987	-4809.022	0
6	0	0	0	998.214	151.211	-4806.677	0
6	1.350	0	0	914.849	151.211	-3515.320	0
6	2.700	0	0	831.484	151.211	-2336.509	0
6	4.050	0	0	748.119	151.211	-1270.244	0
6	5.400	0	0	664.754	151.211	-316.525	0
7	0	0	0	664.754	164.729	-309.705	0
7	1.350	0	0	581.391	164.729	531.451	0
7	2.700	0	0	498.027	164.729	1260.066	0
7	4.050	0	0	414.664	164.729	1876.139	0
7	5.400	0	0	331.300	164.729	2379.670	0
8	0	0	0	331.300	68.967	2384.368	0
8	1.350	0	0	247.947	68.967	2775.317	0
8	2.700	0	0	164.593	68.967	3053.752	0
8	4.050	0	0	81.240	68.967	3219.671	0
8	5.399	0	0	-2.114	68.967	3273.076	0
9	0	0	0	-2.114	-71.870	3273.013	0
9	1.350	0	0	-85.486	-71.870	3213.876	0
9	2.700	0	0	-168.859	-71.870	3042.172	0
9	4.051	0	0	-252.232	-71.870	2757.900	0
9	5.401	0	0	-335.605	-71.870	2361.061	0
10	0	0	0	-335.605	-167.635	2356.198	0
10	1.350	0	0	-418.957	-167.635	1846.935	0
10	2.700	0	0	-502.308	-167.635	1225.161	0
10	4.049	0	0	-585.660	-167.635	490.877	0
10	5.399	0	0	-669.012	-167.635	-355.917	0
11	0	0	0	-669.012	-152.506	-362.658	0
11	1.331	0	0	-751.203	-152.506	-1307.828	0
11	2.662	0	0	-833.394	-152.506	-2362.397	0
11	3.993	0	0	-915.584	-152.506	-3526.364	0
11	5.324	0	0	-997.775	-152.506	-4799.729	0
12	0	0	0	876.777	24.895	-4802.087	0
12	1.050	0	0	811.951	24.895	-3915.665	0
12	2.100	0	0	747.125	24.895	-3097.298	0
12	3.149	0	0	682.299	24.895	-2346.986	0
12	4.199	0	0	617.474	24.895	-1664.728	0
13	0	0	0	617.474	75.099	-1663.220	0
13	1.050	0	0	552.635	75.099	-1048.901	0
13	2.100	0	0	487.796	75.099	-502.664	0
13	3.150	0	0	422.957	75.099	-24.509	0
13	4.200	0	0	358.119	75.099	385.564	0
14	0	0	0	358.119	62.279	387.841	0
14	1.050	0	0	293.284	62.279	729.814	0
14	2.100	0	0	228.449	62.279	1003.713	0
14	3.150	0	0	163.614	62.279	1209.537	0
14	4.200	0	0	98.779	62.279	1347.288	0

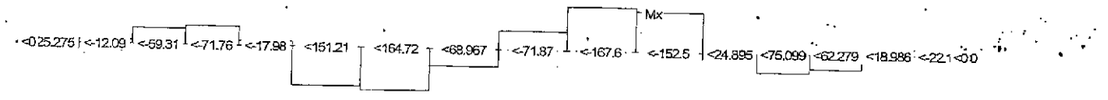
ESFUERZOS: "ALL"

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
15	0	0	0	98.779	18.986	1348.593	0
15	1.050	0	0	33.928	18.986	1418.278	0
15	2.100	0	0	-30.922	18.986	1419.856	0
15	3.151	0	0	-95.773	18.986	1353.328	0
15	4.201	0	0	-160.624	18.986	1218.693	0
16	0	0	0	-160.624	-22.125	1218.640	0
16	1.049	0	0	-225.430	-22.125	1016.059	0
16	2.099	0	0	-290.237	-22.125	745.463	0
16	3.148	0	0	-355.043	-22.125	406.853	0
16	4.198	0	0	-419.849	-22.125	0.229544	0
17	0	0	0	-214.569	5.56E-14	514.571	0
17	2.398	0	0	-214.569	5.56E-14	5.15E-06	0
18	0	0	0	-204.032	6.31E-14	489.679	0
18	2.400	0	0	-204.032	6.31E-14	4.90E-06	0
19	0	0	0	-214.541	2.85E-14	514.888	0
19	2.400	0	0	-214.541	2.85E-14	5.15E-06	0
20	0	0	0	-205.309	2.19E-14	492.763	0
20	2.400	0	0	-205.309	2.19E-14	4.93E-06	0

Mstb. 1 :449.9
Section force, Hipótesi 3 (Carga Muerta Máxima), View "ALL"
- Struktur: Staebe
- Moment My, Scaling 1.00E-03
min: -4.81E+03 max: 3.27E+03 [kNm]
- Text Moment My [kNm]



Mstb. 1 :449.9
Section force, Hipótesi 3 (Carga Muerta Máxima), View "ALL"
- Struktur: Staebe
- Tors. MomentMx, Scaling 2.00E-02
min: -1.68E+02 max: 1.65E+02 [kNm]
- Text Tors. MomentMx [kNm]



BELASTUNG: 'Frenado'

Lastfall	Faktor	Bauzustd.	Vorv.	Titel
13	1.0000			Frenado

REACCIONES EN APOYOS:

NUDOS	FX [kN]	FY [kN]	FZ [kN]	T [kNm]	MY [kNm]	MZ [kNm]
6	-37.885	1.504	0			
12	-37.470	-5.801	0			
18	-17.498	2.948	0			
19	-16.997	2.851	0			
20	-17.050	-4.918	0			
21	-16.567	-4.754	0			

BELASTUNG: 'Fuerza cetrífuga'

Lastfall	Faktor	Bauzustd.	Vorv.	Titel
14	1.0000			Fuerza centrífuga

ESFUERZOS: "ALL"

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
1	0	23.773	82.798	-1.890	97.899	-2.025	2.564
1	1.050	23.773	77.548	-1.890	94.948	-4.009	86.751
1	2.100	23.773	72.297	-1.890	91.997	-5.994	165.426
1	3.150	23.773	67.047	-1.890	89.047	-7.978	238.586
1	4.200	23.773	61.797	-1.890	86.096	-9.962	306.234
2	0	21.890	62.489	-1.890	86.358	-7.349	306.234
2	1.050	21.890	57.239	-1.890	83.408	-9.333	369.082
2	2.100	21.890	51.990	-1.890	80.458	-11.317	426.418
2	3.150	21.890	46.741	-1.890	77.508	-13.300	478.244
2	4.199	21.890	41.492	-1.890	74.558	-15.284	524.559
3	0	20.433	42.228	-1.890	75.045	-12.681	524.559
3	1.050	20.433	36.978	-1.890	72.094	-14.665	566.147
3	2.100	20.433	31.727	-1.890	69.143	-16.650	602.220
3	3.150	20.433	26.477	-1.890	66.192	-18.634	632.781
3	4.200	20.433	21.226	-1.890	63.242	-20.618	657.827
4	0	19.745	21.868	-1.890	63.867	-18.589	657.827
4	1.050	19.745	16.618	-1.890	60.917	-20.573	678.032
4	2.100	19.745	11.368	-1.890	57.967	-22.558	692.724
4	3.150	19.745	6.118	-1.890	55.016	-24.542	701.904
4	4.200	19.745	0.868391	-1.890	52.066	-26.526	705.572
5	0	19.707	1.505	-1.890	52.895	-24.832	705.572
5	1.050	19.707	-3.743	-1.890	49.945	-26.815	704.397
5	2.099	19.707	-8.991	-1.890	46.996	-28.799	697.714
5	3.149	19.707	-14.239	-1.890	44.046	-30.782	685.523
5	4.198	19.707	-19.487	-1.890	41.097	-32.766	667.823
6	0	30.603	77.770	-0.021553	42.224	-31.300	667.823
6	1.350	30.603	71.020	-0.021553	38.431	-31.329	768.260
6	2.700	30.603	64.270	-0.021553	34.637	-31.358	859.584
6	4.050	30.603	57.520	-0.021553	30.843	-31.387	941.794
6	5.400	30.603	50.770	-0.021553	27.050	-31.416	1014.892
7	0	28.384	52.043	-0.021553	28.380	-30.219	1014.892
7	1.350	28.384	45.293	-0.021553	24.587	-30.249	1080.594
7	2.700	28.384	38.543	-0.021553	20.793	-30.278	1137.183
7	4.050	28.384	31.793	-0.021553	17.000	-30.307	1184.660

ESFUERZOS: "ALL"

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
7	5.400	28.384	25.043	-0.021553	13.206	-30.336	1223.024
8	0	27.355	26.163	-0.021553	14.415	-29.781	1223.024
8	1.350	27.355	19.414	-0.021553	10.621	-29.810	1253.785
8	2.700	27.355	12.664	-0.021553	6.828	-29.839	1275.436
8	4.050	27.355	5.915	-0.021553	3.035	-29.868	1287.975
8	5.399	27.355	-0.834144	-0.021553	-0.757793	-29.897	1291.405
9	0	27.365	0.343147	-0.021553	0.528764	-29.902	1291.405
9	1.350	27.365	-6.408	-0.021553	-3.265	-29.931	1287.311
9	2.700	27.365	-13.159	-0.021553	-7.059	-29.960	1274.102
9	4.051	27.365	-19.909	-0.021553	-10.853	-29.989	1251.778
9	5.401	27.365	-26.660	-0.021553	-14.647	-30.018	1220.340
10	0	28.425	-25.528	-0.021553	-13.417	-30.588	1220.340
10	1.350	28.425	-32.277	-0.021553	-17.210	-30.617	1181.327
10	2.700	28.425	-39.026	-0.021553	-21.003	-30.646	1133.204
10	4.049	28.425	-45.775	-0.021553	-24.796	-30.675	1075.971
10	5.399	28.425	-52.524	-0.021553	-28.589	-30.704	1009.627
11	0	30.610	-51.281	-0.021553	-27.271	-31.881	1009.627
11	1.331	30.610	-57.936	-0.021553	-31.011	-31.909	936.942
11	2.662	30.610	-64.591	-0.021553	-34.751	-31.938	855.398
11	3.993	30.610	-71.247	-0.021553	-38.492	-31.967	764.996
11	5.324	30.610	-77.902	-0.021553	-42.232	-31.995	665.736
12	0	19.697	19.427	2.025	-41.021	-33.533	665.736
12	1.050	19.697	14.178	2.025	-43.971	-31.408	683.376
12	2.100	19.697	8.929	2.025	-46.921	-29.282	695.504
12	3.149	19.697	3.680	2.025	-49.871	-27.156	702.123
12	4.199	19.697	-1.569	2.025	-52.821	-25.030	703.231
13	0	19.735	-0.974373	2.025	-52.042	-26.612	703.231
13	1.050	19.735	-6.224	2.025	-54.992	-24.486	699.451
13	2.100	19.735	-11.475	2.025	-57.943	-22.360	690.159
13	3.150	19.735	-16.725	2.025	-60.894	-20.233	675.354
13	4.200	19.735	-21.975	2.025	-63.844	-18.107	655.037
14	0	20.453	-21.309	2.025	-63.209	-20.213	655.037
14	1.050	20.453	-26.558	2.025	-66.159	-18.087	629.907
14	2.100	20.453	-31.808	2.025	-69.110	-15.961	599.266
14	3.150	20.453	-37.058	2.025	-72.060	-13.835	563.113
14	4.200	20.453	-42.308	2.025	-75.011	-11.709	521.447
15	0	21.801	-41.629	2.025	-74.596	-14.111	521.447
15	1.050	21.801	-46.880	2.025	-77.547	-11.984	474.970
15	2.100	21.801	-52.131	2.025	-80.498	-9.858	422.979
15	3.151	21.801	-57.382	2.025	-83.449	-7.731	365.472
15	4.201	21.801	-62.634	2.025	-86.400	-5.604	302.451
16	0	23.900	-61.863	2.025	-86.162	-8.515	302.451
16	1.049	23.900	-67.110	2.025	-89.111	-6.390	234.773
16	2.099	23.900	-72.358	2.025	-92.060	-4.265	161.587
16	3.148	23.900	-77.605	2.025	-95.009	-2.140	82.894
16	4.198	23.900	-82.853	2.025	-97.958	-0.014393	-1.306
17	0	-41.404	11.603	-19.466	-1.75E-16	46.684	-27.826
17	2.398	-41.404	11.603	-19.466	-1.75E-16	4.67E-07	-2.78E-07
18	0	41.843	-10.526	21.356	8.43E-16	-51.255	25.262
18	2.400	41.843	-10.526	21.356	8.43E-16	-5.13E-07	2.53E-07
19	0	-41.425	-11.673	-19.395	1.03E-15	46.548	28.015
19	2.400	-41.425	-11.673	-19.395	1.03E-15	4.65E-07	2.80E-07
20	0	41.431	12.216	21.420	1.97E-15	-51.411	-29.320
20	2.400	41.431	12.216	21.420	1.97E-15	-5.14E-07	-2.93E-07

BELASTUNG: 'Viento con sobrecarga'

Lastfall	Faktor	Bauzustd. Vorv.	Titel
15	1.0000		Viento con sobrecarga

REACCIONES EN APOYOS:

NUDOS	FX [kN]	FY [kN]	FZ [kN]	T [kNm]	MY [kNm]	MZ [kNm]
6	-0.149021	72.969	2.912			
12	0.003854	73.210	3.190			
18	-0.092190	32.193	30.343			
19	-0.541926	32.281	-33.288			
20	0.191193	32.470	30.232			
21	0.588089	32.605	-33.388			

ESFUERZOS: "ALL"

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
1	0	14.204	62.892	-2.946	152.597	-3.156	1.889
1	1.050	13.384	59.084	-2.946	147.997	-6.249	65.931
1	2.100	12.563	55.276	-2.946	143.398	-9.342	125.974
1	3.150	11.742	51.467	-2.946	138.799	-12.435	182.018
1	4.200	10.921	47.659	-2.946	134.199	-15.528	234.063
2	0	9.472	47.968	-2.946	134.608	-11.455	234.064
2	1.050	8.767	44.138	-2.946	130.010	-14.547	282.411
2	2.100	8.062	40.307	-2.946	125.412	-17.639	326.738
2	3.150	7.357	36.476	-2.946	120.813	-20.732	367.043
2	4.199	6.652	32.646	-2.946	116.215	-23.824	403.327
3	0	5.512	32.858	-2.946	116.974	-19.766	403.327
3	1.050	4.941	29.004	-2.946	112.374	-22.859	435.807
3	2.100	4.370	25.150	-2.946	107.775	-25.952	464.241
3	3.150	3.798	21.296	-2.946	103.175	-29.045	488.627
3	4.200	3.227	17.443	-2.946	98.576	-32.138	508.967
4	0	2.669	17.537	-2.946	99.551	-28.976	508.967
4	1.050	2.221	13.667	-2.946	94.953	-32.068	525.349
4	2.100	1.773	9.798	-2.946	90.354	-35.161	537.667
4	3.150	1.325	5.928	-2.946	85.755	-38.254	545.923
4	4.200	0.876667	2.058	-2.946	81.156	-41.346	550.116
5	0	0.809783	2.086	-2.946	82.448	-38.706	550.116
5	1.050	0.487013	-1.795	-2.946	77.851	-41.798	550.268
5	2.099	0.164243	-5.676	-2.946	73.253	-44.889	546.348
5	3.149	-0.158527	-9.556	-2.946	68.656	-47.981	538.354
5	4.198	-0.481297	-13.437	-2.946	64.059	-51.073	526.287
6	0	3.627	59.433	-0.033596	65.816	-48.787	526.287
6	1.350	3.387	54.430	-0.033596	59.903	-48.833	603.147
6	2.700	3.148	49.428	-0.033596	53.990	-48.878	673.254
6	4.050	2.909	44.425	-0.033596	48.076	-48.923	736.606
6	5.400	2.670	39.422	-0.033596	42.163	-48.969	793.204
7	0	0.966016	39.500	-0.033596	44.237	-47.104	793.204
7	1.350	0.942828	34.492	-0.033596	38.324	-47.149	843.149
7	2.700	0.919641	29.483	-0.033596	32.411	-47.194	886.332
7	4.050	0.896453	24.475	-0.033596	26.498	-47.240	922.754
7	5.400	0.873266	19.466	-0.033596	20.585	-47.285	952.414
8	0	0.090301	19.485	-0.033596	22.468	-46.420	952.414
8	1.350	0.268381	14.481	-0.033596	16.556	-46.465	975.339
8	2.700	0.446461	9.476	-0.033596	10.644	-46.510	991.508
8	4.050	0.624541	4.471	-0.033596	4.731	-46.556	1000.921
8	5.399	0.802621	-0.533675	-0.033596	-1.181	-46.601	1003.579
9	0	0.824832	-0.498661	-0.033596	0.824195	-46.609	1003.579
9	1.350	1.218	-5.492	-0.033596	-5.090	-46.654	999.534
9	2.700	1.611	-10.486	-0.033596	-11.003	-46.699	988.747
9	4.051	2.005	-15.480	-0.033596	-16.917	-46.745	971.218
9	5.401	2.398	-20.473	-0.033596	-22.831	-46.790	946.947

ESFUERZOS: "ALL"

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
10	0	3.227	-20.359	-0.033596	-20.913	-47.678	946.947
10	1.350	3.822	-25.331	-0.033596	-26.825	-47.724	916.110
10	2.700	4.418	-30.304	-0.033596	-32.737	-47.769	878.561
10	4.049	5.013	-35.276	-0.033596	-38.650	-47.814	834.300
10	5.399	5.609	-40.248	-0.033596	-44.562	-47.860	783.328
11	0	7.298	-39.977	-0.033596	-42.508	-49.693	783.328
11	1.331	8.091	-44.851	-0.033596	-48.338	-49.738	726.874
11	2.662	8.884	-49.725	-0.033596	-54.168	-49.782	663.933
11	3.993	9.677	-54.599	-0.033596	-59.998	-49.827	594.505
11	5.324	10.470	-59.473	-0.033596	-65.828	-49.872	518.589
12	0	-1.762	12.730	3.156	-63.940	-52.269	518.589
12	1.050	-0.995291	8.912	3.156	-68.539	-48.956	529.949
12	2.100	-0.228249	5.093	3.156	-73.137	-45.642	537.300
12	3.149	0.538794	1.275	3.156	-77.735	-42.329	540.642
12	4.199	1.306	-2.544	3.156	-82.333	-39.015	539.976
13	0	1.382	-2.503	3.156	-81.119	-41.481	539.976
13	1.050	2.264	-6.298	3.156	-85.718	-38.167	535.356
13	2.100	3.146	-10.092	3.156	-90.317	-34.852	526.751
13	3.150	4.028	-13.886	3.156	-94.916	-31.538	514.162
13	4.200	4.910	-17.681	3.156	-99.515	-28.224	497.589
14	0	5.493	-17.508	3.156	-98.525	-31.506	497.589
14	1.050	6.501	-21.271	3.156	-103.124	-28.192	477.230
14	2.100	7.508	-25.034	3.156	-107.723	-24.878	452.921
14	3.150	8.515	-28.797	3.156	-112.321	-21.564	424.660
14	4.200	9.523	-32.560	3.156	-116.920	-18.250	392.449
15	0	10.563	-32.237	3.156	-116.274	-21.995	392.449
15	1.050	11.691	-35.967	3.156	-120.874	-18.680	356.635
15	2.100	12.819	-39.696	3.156	-125.474	-15.365	316.904
15	3.151	13.947	-43.426	3.156	-130.074	-12.051	273.256
15	4.201	15.074	-47.155	3.156	-134.674	-8.736	225.691
16	0	16.656	-46.620	3.156	-134.302	-13.273	225.691
16	1.049	17.908	-50.307	3.156	-138.899	-9.960	174.829
16	2.099	19.160	-53.994	3.156	-143.496	-6.648	120.097
16	3.148	20.413	-57.680	3.156	-148.093	-3.335	61.497
16	4.198	21.665	-61.367	3.156	-152.690	-0.022435	-0.973616
17	0	-31.450	6.875	-30.343	-7.39E-17	72.767	-16.486
17	2.398	-31.450	6.875	-30.343	-7.39E-17	7.28E-07	-1.65E-07
18	0	31.707	-6.082	33.288	2.35E-15	-79.892	14.597
18	2.400	31.707	-6.082	33.288	2.35E-15	-7.99E-07	1.46E-07
19	0	-30.683	-10.626	-30.232	4.41E-15	72.555	25.501
19	2.400	-30.683	-10.626	-30.232	4.41E-15	7.26E-07	2.55E-07
20	0	30.688	11.031	33.388	3.40E-15	-80.135	-26.475
20	2.400	30.688	11.031	33.388	3.40E-15	-8.01E-07	-2.65E-07

BELASTUNG: 'Viento sin sobrecarga'

Lastfall	Faktor	Bauzustd. Vorv.	Titel
16	1.0000		Viento sin sobrecarga

REACCIONES EN APOYOS:

NUDOS	FX [kN]	FY [kN]	FZ [kN]	T [kNm]	MY [kNm]	MZ [kNm]
6	-0.282778	138.465	3.424			
12	0.007313	138.922	3.751			
18	-0.174937	61.088	35.677			
19	-1.028	61.255	-39.140			
20	0.362804	61.614	35.546			
21	1.116	61.870	-39.258			

ESFUERZOS: "ALL"

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
1	0	26.954	119.343	-3.463	179.423	-3.711	3.585
1	1.050	25.396	112.116	-3.463	174.015	-7.348	125.109
1	2.100	23.839	104.890	-3.463	168.607	-10.985	239.046
1	3.150	22.281	97.663	-3.463	163.199	-14.621	345.393
1	4.200	20.723	90.437	-3.463	157.791	-18.258	444.153
2	0	17.974	91.023	-3.463	158.272	-13.468	444.153
2	1.050	16.636	83.754	-3.463	152.866	-17.104	535.897
2	2.100	15.298	76.486	-3.463	147.459	-20.740	620.010
2	3.150	13.961	69.217	-3.463	142.052	-24.376	696.491
2	4.199	12.623	61.948	-3.463	136.646	-28.012	765.342
3	0	10.460	62.350	-3.463	137.537	-23.241	765.342
3	1.050	9.376	55.037	-3.463	132.129	-26.878	826.976
3	2.100	8.292	47.724	-3.463	126.721	-30.515	880.931
3	3.150	7.208	40.411	-3.463	121.313	-34.151	927.206
3	4.200	6.123	33.098	-3.463	115.905	-37.788	965.803
4	0	5.064	33.277	-3.463	117.052	-34.069	965.803
4	1.050	4.214	25.934	-3.463	111.645	-37.706	996.888
4	2.100	3.364	18.592	-3.463	106.238	-41.342	1020.263
4	3.150	2.514	11.249	-3.463	100.830	-44.979	1035.929
4	4.200	1.664	3.906	-3.463	95.423	-48.615	1043.885
5	0	1.537	3.958	-3.463	96.942	-45.510	1043.885
5	1.050	0.924142	-3.406	-3.463	91.537	-49.146	1044.175
5	2.099	0.311662	-10.770	-3.463	86.131	-52.781	1036.735
5	3.149	-0.300818	-18.134	-3.463	80.726	-56.416	1021.566
5	4.198	-0.913298	-25.498	-3.463	75.320	-60.051	998.668
6	0	6.882	112.779	-0.039502	77.386	-57.364	998.668
6	1.350	6.428	103.286	-0.039502	70.434	-57.417	1144.517
6	2.700	5.974	93.792	-0.039502	63.481	-57.471	1277.549
6	4.050	5.520	84.299	-0.039502	56.528	-57.524	1397.764
6	5.400	5.066	74.805	-0.039502	49.575	-57.577	1505.163
7	0	1.833	74.954	-0.039502	52.014	-55.384	1505.163
7	1.350	1.789	65.450	-0.039502	45.061	-55.438	1599.937
7	2.700	1.745	55.946	-0.039502	38.109	-55.491	1681.881
7	4.050	1.701	46.442	-0.039502	31.156	-55.544	1750.994
7	5.400	1.657	36.938	-0.039502	24.203	-55.598	1807.276
8	0	0.171353	36.975	-0.039502	26.418	-54.580	1807.276
8	1.350	0.509273	27.478	-0.039502	19.466	-54.634	1850.778
8	2.700	0.847193	17.981	-0.039502	12.515	-54.687	1881.460
8	4.050	1.185	8.484	-0.039502	5.563	-54.740	1899.322
8	5.399	1.523	-1.013	-0.039502	-1.389	-54.794	1904.365
9	0	1.565	-0.946247	-0.039502	0.969088	-54.803	1904.365
9	1.350	2.311	-10.422	-0.039502	-5.984	-54.856	1896.690
9	2.700	3.058	-19.898	-0.039502	-12.938	-54.909	1876.221
9	4.051	3.804	-29.374	-0.039502	-19.891	-54.963	1842.959
9	5.401	4.550	-38.850	-0.039502	-26.844	-55.016	1796.902
10	0	6.123	-38.533	-0.039502	-24.589	-56.060	1796.902
10	1.350	7.253	-48.068	-0.039502	-31.541	-56.113	1738.387
10	2.700	8.383	-57.504	-0.039502	-38.493	-56.167	1667.135
10	4.049	9.513	-66.939	-0.039502	-45.444	-56.220	1583.147
10	5.399	10.643	-76.374	-0.039502	-52.396	-56.273	1486.423
11	0	13.848	-75.859	-0.039502	-49.981	-58.429	1486.423
11	1.331	15.353	-85.108	-0.039502	-56.836	-58.481	1379.298
11	2.662	16.858	-94.356	-0.039502	-63.690	-58.534	1259.862
11	3.993	18.362	-103.605	-0.039502	-70.545	-58.587	1128.116
11	5.324	19.867	-112.854	-0.039502	-77.400	-58.639	984.060
12	0	-3.344	24.157	3.711	-75.181	-61.458	984.060
12	1.050	-1.889	16.911	3.711	-80.588	-57.562	1005.617
12	2.100	-0.433119	9.665	3.711	-85.994	-53.666	1019.566
12	3.149	1.022	2.419	3.711	-91.401	-49.770	1025.909
12	4.199	2.478	-4.827	3.711	-96.807	-45.874	1024.645
13	0	2.622	-4.750	3.711	-95.379	-48.773	1024.645
13	1.050	4.296	-11.950	3.711	-100.787	-44.876	1015.877
13	2.100	5.970	-19.150	3.711	-106.195	-40.979	999.549
13	3.150	7.644	-26.351	3.711	-111.602	-37.082	975.660
13	4.200	9.317	-33.551	3.711	-117.010	-33.186	944.211
14	0	10.424	-33.224	3.711	-115.846	-37.045	944.211
14	1.050	12.336	-40.364	3.711	-121.253	-33.149	905.580
14	2.100	14.247	-47.504	3.711	-126.660	-29.252	859.451
14	3.150	16.158	-54.644	3.711	-132.068	-25.355	805.825
14	4.200	18.070	-61.785	3.711	-137.475	-21.459	744.702

ESFUERZOS: "ALL"

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
15	0	20.044	-61.173	3.711	-136.715	-25.862	744.702
15	1.050	22.184	-68.250	3.711	-142.123	-21.964	676.741
15	2.100	24.325	-75.327	3.711	-147.532	-18.067	601.348
15	3.151	26.465	-82.404	3.711	-152.941	-14.169	518.523
15	4.201	28.605	-89.481	3.711	-158.349	-10.272	428.266
16	0	31.606	-88.465	3.711	-157.913	-15.606	428.266
16	1.049	33.982	-95.461	3.711	-163.318	-11.711	331.751
16	2.099	36.358	-102.457	3.711	-168.723	-7.816	227.894
16	3.148	38.734	-109.453	3.711	-174.127	-3.921	116.694
16	4.198	41.110	-116.449	3.711	-179.532	-0.026379	-1.848
17	0	-59.679	13.045	-35.677	-3.35E-16	85.559	-31.284
17	2.398	-59.679	13.045	-35.677	-3.35E-16	8.56E-07	-3.13E-07
18	0	60.167	-11.541	39.140	1.78E-15	-93.937	27.699
18	2.400	60.167	-11.541	39.140	1.78E-15	-9.39E-07	2.77E-07
19	0	-58.223	-20.163	-35.546	-9.88E-16	85.310	48.390
19	2.400	-58.223	-20.163	-35.546	-9.88E-16	8.53E-07	4.84E-07
20	0	58.232	20.932	39.258	2.77E-15	-94.223	-50.238
20	2.400	58.232	20.932	39.258	2.77E-15	-9.42E-07	-5.02E-07

BELASTUNG: 'Pretensado Hiperestático'

Lastfall	Faktor	Bauzustd.	Vorv.	Titel
20Z	1.0000			Pretensado

(Z = Sólo parte hiperestático del pretensado)

REACCIONES EN APOYOS:

NUDOS	FX [kN]	FY [kN]	FZ [kN]	T [kNm]	MY [kNm]	MZ [kNm]
6	-25.413	-5.373	-171.055			
12	25.866	-2.460	-169.684			
18	-28.274	0.370571	240.683			
19	-28.166	0.351736	-69.850			
20	28.045	3.573	243.770			
21	27.942	3.538	-73.864			

ESFUERZOS: "ALL"

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
1	0	55.326	-11.186	170.833	744.708	-6.603	-0.267855
1	1.050	55.326	-11.186	170.833	744.708	172.784	-12.014
1	2.100	55.326	-11.186	170.833	744.708	352.172	-23.760
1	3.150	55.326	-11.186	170.833	744.708	531.559	-35.506
1	4.200	55.326	-11.186	170.833	744.708	710.946	-47.252
2	0	55.640	-9.504	170.833	722.822	733.186	-47.252
2	1.050	55.640	-9.504	170.833	722.822	912.533	-57.230
2	2.100	55.640	-9.504	170.833	722.822	1091.880	-67.208
2	3.150	55.640	-9.504	170.833	722.822	1271.227	-77.186
2	4.199	55.640	-9.504	170.833	722.822	1450.574	-87.164
3	0	55.937	-7.563	170.833	671.914	1474.845	-87.164
3	1.050	55.937	-7.563	170.833	671.914	1654.238	-95.106
3	2.100	55.937	-7.563	170.833	671.914	1833.630	-103.048
3	3.150	55.937	-7.563	170.833	671.914	2013.023	-110.989

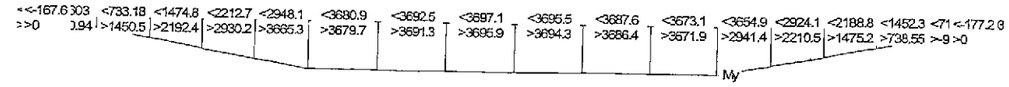
ESFUERZOS: "ALL"

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
3	4.200	55.937	-7.563	170.833	671.914	2192.416	-118.931
4	0	56.150	-5.773	170.833	601.592	2212.745	-118.931
4	1.050	56.150	-5.773	170.833	601.592	2392.114	-124.993
4	2.100	56.150	-5.773	170.833	601.592	2571.484	-131.054
4	3.150	56.150	-5.773	170.833	601.592	2750.853	-137.116
4	4.200	56.150	-5.773	170.833	601.592	2930.222	-143.178
5	0	56.307	-3.958	170.833	506.721	2948.109	-143.178
5	1.050	56.307	-3.958	170.833	506.721	3127.418	-147.333
5	2.099	56.307	-3.958	170.833	506.721	3306.726	-151.488
5	3.149	56.307	-3.958	170.833	506.721	3486.035	-155.643
5	4.198	56.307	-3.958	170.833	506.721	3665.344	-159.798
6	0	81.538	-8.556	-0.221687	377.456	3680.902	-159.798
6	1.350	81.538	-8.556	-0.221687	377.456	3680.602	-171.348
6	2.700	81.538	-8.556	-0.221687	377.456	3680.303	-182.898
6	4.050	81.538	-8.556	-0.221687	377.456	3680.004	-194.449
6	5.400	81.538	-8.556	-0.221687	377.456	3679.705	-205.999
7	0	81.831	-5.029	-0.221687	218.319	3692.565	-205.999
7	1.350	81.831	-5.029	-0.221687	218.319	3692.266	-212.788
7	2.700	81.831	-5.029	-0.221687	218.319	3691.966	-219.578
7	4.050	81.831	-5.029	-0.221687	218.319	3691.667	-226.367
7	5.400	81.831	-5.029	-0.221687	218.319	3691.368	-233.156
8	0	81.967	-1.737	-0.221687	69.803	3697.159	-233.156
8	1.350	81.967	-1.737	-0.221687	69.803	3696.860	-235.501
8	2.700	81.967	-1.737	-0.221687	69.803	3696.561	-237.845
8	4.050	81.967	-1.737	-0.221687	69.803	3696.261	-240.189
8	5.399	81.967	-1.737	-0.221687	69.803	3695.962	-242.533
9	0	81.966	1.790	-0.221687	-89.223	3695.544	-242.533
9	1.350	81.966	1.790	-0.221687	-89.223	3695.245	-240.116
9	2.700	81.966	1.790	-0.221687	-89.223	3694.946	-237.698
9	4.051	81.966	1.790	-0.221687	-89.223	3694.646	-235.281
9	5.401	81.966	1.790	-0.221687	-89.223	3694.347	-232.864
10	0	81.826	5.116	-0.221687	-239.086	3687.682	-232.864
10	1.350	81.826	5.116	-0.221687	-239.086	3687.383	-225.959
10	2.700	81.826	5.116	-0.221687	-239.086	3687.084	-219.054
10	4.049	81.826	5.116	-0.221687	-239.086	3686.784	-212.149
10	5.399	81.826	5.116	-0.221687	-239.086	3686.485	-205.243
11	0	81.538	8.555	-0.221687	-394.039	3673.155	-205.243
11	1.331	81.538	8.555	-0.221687	-394.039	3672.860	-193.856
11	2.662	81.538	8.555	-0.221687	-394.039	3672.565	-182.469
11	3.993	81.538	8.555	-0.221687	-394.039	3672.270	-171.082
11	5.324	81.538	8.555	-0.221687	-394.039	3671.975	-159.695
12	0	56.291	4.055	-169.906	-529.409	3654.913	-159.695
12	1.050	56.291	4.055	-169.906	-529.409	3476.545	-155.438
12	2.100	56.291	4.055	-169.906	-529.409	3298.176	-151.182
12	3.149	56.291	4.055	-169.906	-529.409	3119.808	-146.925
12	4.199	56.291	4.055	-169.906	-529.409	2941.439	-142.668
13	0	56.143	5.751	-169.906	-617.894	2924.131	-142.668
13	1.050	56.143	5.751	-169.906	-617.894	2745.727	-136.629
13	2.100	56.143	5.751	-169.906	-617.894	2567.323	-130.590
13	3.150	56.143	5.751	-169.906	-617.894	2388.919	-124.551
13	4.200	56.143	5.751	-169.906	-617.894	2210.514	-118.513
14	0	55.922	7.609	-169.906	-690.817	2188.822	-118.513
14	1.050	55.922	7.609	-169.906	-690.817	2010.428	-110.524
14	2.100	55.922	7.609	-169.906	-690.817	1832.034	-102.535
14	3.150	55.922	7.609	-169.906	-690.817	1653.640	-94.546
14	4.200	55.922	7.609	-169.906	-690.817	1475.246	-86.558
15	0	55.649	9.400	-169.906	-737.830	1452.303	-86.558
15	1.050	55.649	9.400	-169.906	-737.830	1273.866	-76.685
15	2.100	55.649	9.400	-169.906	-737.830	1095.430	-66.813
15	3.151	55.649	9.400	-169.906	-737.830	916.993	-56.941
15	4.201	55.649	9.400	-169.906	-737.830	738.556	-47.068
16	0	55.300	11.272	-169.906	-762.318	713.253	-47.068
16	1.049	55.300	11.272	-169.906	-762.318	534.937	-35.239
16	2.099	55.300	11.272	-169.906	-762.318	356.622	-23.409
16	3.148	55.300	11.272	-169.906	-762.318	178.306	-11.579
16	4.198	55.300	11.272	-169.906	-762.318	-0.009173	0.250474
17	0	5.596	27.718	-240.683	-4.09E-13	577.197	-66.471
17	2.398	5.596	27.718	-240.683	-4.09E-13	5.77E-06	-6.65E-07
18	0	-4.495	-27.808	69.850	5.31E-13	-167.642	66.739
18	2.400	-4.495	-27.808	69.850	5.31E-13	-1.68E-06	6.67E-07

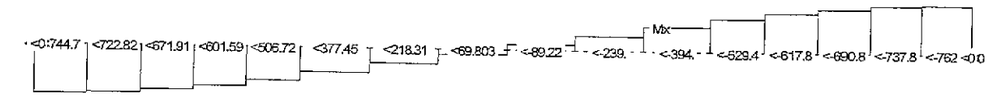
ESFUERZOS: "ALL"

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
19	0	5.639	-27.704	-243.770	5.81E-13	585.036	66.488
19	2.400	5.639	-27.704	-243.770	5.81E-13	5.85E-06	6.65E-07
20	0	-5.626	27.598	73.864	-3.70E-13	-177.282	-66.238
20	2.400	-5.626	27.598	73.864	-3.70E-13	-1.77E-06	-6.62E-07

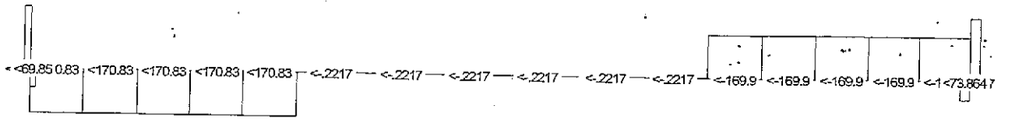
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Section force, Hipótesi 20 (Pretensado Hiperestático), View "ALL"
- Struktur: Staebe
- Moment My, Scaling 1.00E-03
  min: -1.77E+02 max: 3.70E+03 [kNm]
- Text Moment My [kNm]



Mstb. 1:449.9
Section force, Hipótesi 20 (Pretensado Hiperestático), View "ALL"
- Struktur: Staebe
- Tors. MomentMx, Scaling 5.00E-03
  min: -7.62E+02 max: 7.45E+02 [kNm]
- Text Tors. MomentMx [kNm]



Mstb. 1:449.9
Section force, Hipótesi 20 (Pretensado Hiperestático), View "ALL"
- Struktur: Staebe
- Shear Force Vz, Scaling 2.00E-02
  min: -2.44E+02 max: 1.71E+02 [kN]
- Text Shear Force Vz [kN]



BELASTUNG: 'Pretensado Isostático'

Lastfall	Faktor	Bauzustd.	Vorv.	Titel
20V	1.0000			Pretensado

(V = Sólo parte "V*e", sin parte hiperestático del pretensado)

REACCIONES EN APOYOS:

NUDOS	FX [kN]	FY [kN]	FZ [kN]	T [kNm]	MY [kNm]	MZ [kNm]
6	-25.413	-5.373	-171.055			
12	25.866	-2.460	-169.684			
18	-28.274	0.370571	240.683			
19	-28.166	0.351736	-69.850			
20	28.045	3.573	243.770			
21	27.942	3.538	-73.864			

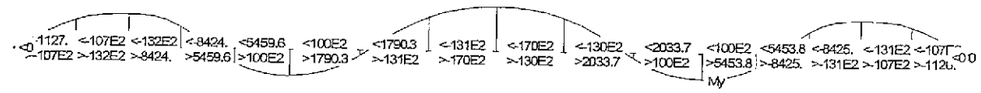
ESFUERZOS: "ALL"

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
1	0	-28319.3	0	-2507.466	0	-1127.319	0
1	1.050	-28398.1	0	-2514.444	0	-3770.806	0
1	2.100	-28488.3	0	-2472.010	0	-6429.639	0
1	3.150	-28680.5	0	-1956.316	0	-8813.320	0
1	4.200	-28863.7	0	-1432.718	0	-10661.1	0
2	0	-28863.7	0	-1432.718	0	-10661.1	0
2	1.050	-29038.2	0	-901.927	0	-11960.1	0
2	2.100	-29192.1	0	-441.470	0	-12703.2	0
2	3.150	-29313.7	0	-169.679	0	-13073.1	0
2	4.199	-29436.6	0	132.058	0	-13152.2	0
3	0	-29436.6	0	132.058	0	-13152.2	0
3	1.050	-29562.3	0	481.489	0	-12881.0	0
3	2.100	-29712.9	0	1036.191	0	-12206.4	0
3	3.150	-29879.4	0	1821.008	0	-10780.4	0
3	4.200	-29822.2	0	2594.900	0	-8424.740	0
4	0	-29822.2	0	2594.900	0	-8424.740	0
4	1.050	-29601.3	0	3345.573	0	-5236.849	0
4	2.100	-29340.5	0	3765.633	0	-1393.405	0
4	3.150	-29191.9	0	3290.671	0	2424.301	0
4	4.200	-29074.9	0	2526.516	0	5459.642	0
5	0	-29074.9	0	2526.516	0	5459.642	0
5	1.050	-28939.3	0	1767.254	0	7680.407	0
5	2.099	-28784.0	0	1014.104	0	9093.562	0
5	3.149	-28644.8	0	492.538	0	9826.928	0
5	4.198	-28495.5	0	0.760544	0	10033.3	0
6	0	-28495.5	0	0.760500	0	10033.3	0
6	1.350	-28281.6	0	-647.667	0	9521.278	0
6	2.700	-28045.6	0	-1281.408	0	8145.963	0
6	4.050	-27710.2	0	-2321.132	0	5692.841	0
6	5.400	-27364.7	0	-3173.996	0	1790.362	0
7	0	-27364.7	0	-3173.996	0	1790.362	0
7	1.350	-27116.6	0	-3345.311	0	-2635.769	0
7	2.700	-26982.6	0	-2910.739	0	-6915.273	0
7	4.050	-26868.7	0	-2343.310	0	-10423.2	0
7	5.400	-26743.4	0	-1779.864	0	-13149.5	0
8	0	-26743.4	0	-1779.864	0	-13149.5	0
8	1.350	-26607.6	0	-1221.213	0	-15101.4	0
8	2.700	-26460.6	0	-667.976	0	-16288.0	0
8	4.050	-26330.2	0	-314.404	0	-16853.1	0
8	5.399	-26204.1	0	9.057	0	-16977.5	0
9	0	-26204.1	0	9.057	0	-16977.5	0
9	1.350	-26329.0	0	332.719	0	-16827.6	0
9	2.700	-26456.7	0	698.879	0	-16233.3	0

ESFUERZOS: "ALL"

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
9	4.051	-26601.4	0	1252.222	0	-15002.9	0
9	5.401	-26736.5	0	1810.992	0	-13007.6	0
10	0	-26736.5	0	1810.992	0	-13007.6	0
10	1.350	-26861.0	0	2374.305	0	-10238.7	0
10	2.700	-26974.1	0	2941.545	0	-6688.425	0
10	4.049	-27116.8	0	3334.324	0	-2378.250	0
10	5.399	-27363.2	0	3162.048	0	2033.778	0
11	0	-27363.2	0	3162.048	0	2033.779	0
11	1.331	-27711.7	0	2271.156	0	5824.999	0
11	2.662	-28038.2	0	1262.985	0	8192.515	0
11	3.993	-28271.0	0	638.129	0	9530.188	0
11	5.324	-28482.3	0	-0.967301	0	10028.6	0
12	0	-28482.3	0	-0.967345	0	10028.6	0
12	1.050	-28631.6	0	-492.630	0	9822.106	0
12	2.100	-28770.9	0	-1014.270	0	9088.514	0
12	3.149	-28926.0	0	-1767.224	0	7674.962	0
12	4.199	-29061.4	0	-2526.283	0	5453.860	0
13	0	-29061.4	0	-2526.283	0	5453.859	0
13	1.050	-29178.2	0	-3290.118	0	2418.728	0
13	2.100	-29326.8	0	-3763.566	0	-1398.119	0
13	3.150	-29587.7	0	-3343.041	0	-5239.431	0
13	4.200	-29809.2	0	-2592.698	0	-8425.020	0
14	0	-29809.2	0	-2592.698	0	-8425.020	0
14	1.050	-29866.8	0	-1819.267	0	-10778.4	0
14	2.100	-29700.9	0	-1034.909	0	-12202.8	0
14	3.150	-29550.9	0	-480.956	0	-12876.7	0
14	4.200	-29425.6	0	-131.715	0	-13147.6	0
15	0	-29425.6	0	-131.715	0	-13147.6	0
15	1.050	-29302.7	0	169.937	0	-13068.1	0
15	2.100	-29180.7	0	441.709	0	-12697.6	0
15	3.151	-29026.0	0	902.564	0	-11953.4	0
15	4.201	-28850.5	0	1433.265	0	-10653.1	0
16	0	-28850.5	0	1433.265	0	-10653.1	0
16	1.049	-28665.8	0	1956.219	0	-8805.645	0
16	2.099	-28471.7	0	2471.196	0	-6423.314	0
16	3.148	-28377.2	0	2512.598	0	-3766.840	0
16	4.198	-28293.6	0	2505.197	0	-1126.547	0
17	0	0	0	0	0	0	0
17	2.398	0	0	0	0	0	0
18	0	0	0	0	0	0	0
18	2.400	0	0	0	0	0	0
19	0	0	0	0	0	0	0
19	2.400	0	0	0	0	0	0
20	0	0	0	0	0	0	0
20	2.400	0	0	0	0	0	0

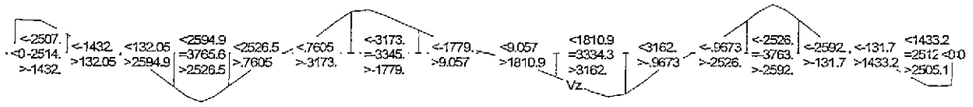
Mstb. 1 :449.9
Section force, Hipótesi 20 (Pretensado Isostático), View "ALL"
- Struktur: Staebe
- Moment My, Scaling 2.00E-04
  min: -1.70E+04 max: 1.00E+04 [kNm]
- Text Moment My [kNm]



Mstb. 1 :449.9
Section force, Hipótesi 20 (Pretensado Isostático), View "ALL"
- Struktur: Staebe
- Tors. MomentMx , Scaling 0.00E+00
  min: 0.00E+00 max: 0.00E+00 [kNm]
- Text Tors. MomentMx [kNm]



Mstb. 1 :449.9
Section force, Hipótesi 20 (Pretensado Isostático), View "ALL"
- Struktur: Staebe
- Shear Force Vz , Scaling 1.00E-03
  min: -3.76E+03 max: 3.77E+03 [kN]
- Text Shear Force Vz [kN]



BELASTUNG: 'Pretensado Total'

Lastfall	Faktor	Bauzustd.	Vorv.	Titel
20	1.0000			Pretensado

REACCIONES EN APOYOS:

NUDOS	FX [kN]	FY [kN]	FZ [kN]	T [kNm]	MY [kNm]	MZ [kNm]
6	-25.413	-5.373	-171.055			
12	25.866	-2.460	-169.684			
18	-28.274	0.370571	240.683			
19	-28.166	0.351736	-69.850			
20	28.045	3.573	243.770			
21	27.942	3.538	-73.864			

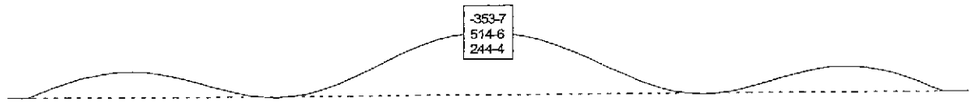
VERSCHIEBUNGEN (im globalen Koordinatensystem): "all"

Barra	Dist. [m]	DX-g [m]	DY-g [m]	DZ-g [m]	RX-g [rad]	RY-g [rad]	RZ-g [rad]
1	0	0.00539	-7.06E-5	4.78E-5	-3.49E-4	-0.00198	4.34E-6
1	1.050	0.00524	-3.35E-5	0.00212	-2.82E-4	-0.00192	4.34E-6
1	2.100	0.00509	3.75E-6	0.00409	-1.99E-4	-0.00179	4.32E-6
1	3.150	0.00493	4.11E-5	0.00586	-1.01E-4	-0.00159	4.30E-6
1	4.200	0.00478	7.87E-5	0.00737	8.83E-6	-0.00133	4.26E-6
2	0	0.00478	7.87E-5	0.00737	8.83E-6	-0.00133	4.26E-6
2	1.050	0.00463	1.12E-4	0.00857	1.17E-4	-0.00102	4.22E-6
2	2.100	0.00447	1.45E-4	0.00943	2.30E-4	-6.95E-4	4.17E-6
2	3.150	0.00431	1.78E-4	0.00991	3.45E-4	-3.56E-4	4.11E-6
2	4.199	0.00416	2.11E-4	0.01003	4.60E-4	-1.39E-5	4.04E-6
3	0	0.00416	2.11E-4	0.01003	4.60E-4	-1.39E-5	4.04E-6
3	1.050	0.00400	2.39E-4	0.00979	5.58E-4	3.22E-4	3.96E-6
3	2.100	0.00384	2.67E-4	0.00919	6.54E-4	6.39E-4	3.88E-6
3	3.150	0.00368	2.95E-4	0.00828	7.43E-4	9.14E-4	3.79E-6
3	4.200	0.00352	3.23E-4	0.00709	8.24E-4	0.00113	3.69E-6
4	0	0.00352	3.23E-4	0.00709	8.24E-4	0.00113	3.69E-6
4	1.050	0.00335	3.45E-4	0.00572	8.82E-4	0.00126	3.59E-6
4	2.100	0.00319	3.68E-4	0.00428	9.27E-4	0.00128	3.48E-6
4	3.150	0.00304	3.90E-4	0.00287	9.59E-4	0.00118	3.37E-6
4	4.200	0.00288	4.11E-4	0.00162	9.78E-4	9.74E-4	3.26E-6
5	0	0.00288	4.11E-4	0.00162	9.78E-4	9.74E-4	3.26E-6
5	1.050	0.00272	4.28E-4	6.67E-4	9.90E-4	6.81E-4	3.13E-6
5	2.099	0.00256	4.44E-4	4.59E-5	9.97E-4	3.32E-4	3.01E-6
5	3.149	0.00241	4.60E-4	-1.86E-4	0.00100	-5.81E-5	2.88E-6
5	4.198	0.00225	4.76E-4	-1.5E-11	0.00100	-4.67E-4	2.75E-6
6	0	0.00225	4.76E-4	2.3E-11	0.00100	-4.67E-4	2.75E-6
6	1.350	0.00205	4.89E-4	9.23E-4	0.00101	-9.93E-4	2.57E-6
6	2.700	0.00186	5.02E-4	0.00253	0.00102	-0.00148	2.38E-6
6	4.050	0.00166	5.14E-4	0.00476	0.00104	-0.00190	2.18E-6
6	5.400	0.00147	5.26E-4	0.00746	0.00106	-0.00219	1.96E-6
7	0	0.00147	5.26E-4	0.00746	0.00106	-0.00219	1.96E-6
7	1.350	0.00128	5.30E-4	0.01052	0.00108	-0.00232	1.74E-6
7	2.700	0.00109	5.33E-4	0.01365	0.00110	-0.00229	1.51E-6
7	4.050	8.96E-4	5.36E-4	0.01662	0.00112	-0.00211	1.27E-6
7	5.400	7.08E-4	5.38E-4	0.01926	0.00114	-0.00179	1.02E-6
8	0	7.08E-4	5.38E-4	0.01926	0.00114	-0.00179	1.02E-6
8	1.350	5.21E-4	5.33E-4	0.02147	0.00113	-0.00139	7.69E-7
8	2.700	3.34E-4	5.27E-4	0.02310	0.00112	-9.28E-4	5.14E-7
8	4.050	1.49E-4	5.21E-4	0.02407	0.00111	-4.34E-4	2.58E-7
8	5.399	-3.53E-5	5.14E-4	0.02437	0.00110	7.72E-5	-1.68E-9
9	0	-3.53E-5	5.14E-4	0.02437	0.00110	7.72E-5	-1.68E-9
9	1.350	-2.19E-4	5.00E-4	0.02403	0.00105	5.86E-4	-2.61E-7
9	2.700	-4.04E-4	4.85E-4	0.02302	0.00100	0.00108	-5.18E-7
9	4.051	-5.90E-4	4.69E-4	0.02136	9.61E-4	0.00153	-7.72E-7
9	5.401	-7.77E-4	4.53E-4	0.01912	9.21E-4	0.00193	-1.02E-6
10	0	-7.77E-4	4.53E-4	0.01912	9.21E-4	0.00193	-1.02E-6
10	1.350	-9.63E-4	4.29E-4	0.01646	8.63E-4	0.00223	-1.27E-6
10	2.700	-0.00115	4.05E-4	0.01348	8.21E-4	0,00240	-1.51E-6
10	4.049	-0.00134	3.80E-4	0.01035	7.96E-4	0.00243	-1.74E-6
10	5.399	-0.00153	3.55E-4	0.00730	7.91E-4	0.00228	-1.96E-6
11	0	-0.00153	3.55E-4	0.00730	7.91E-4	0.00228	-1.96E-6
11	1.331	-0.00172	3.22E-4	0.00466	8.03E-4	0.00199	-2.18E-6
11	2.662	-0.00191	2.88E-4	0.00248	8.34E-4	0.00157	-2.38E-6
11	3.993	-0.00210	2.53E-4	9.06E-4	8.76E-4	0.00109	-2.56E-6
11	5.324	-0.00229	2.18E-4	2.2E-11	9.24E-4	5.76E-4	-2.74E-6
12	0	-0.00229	2.18E-4	-1.6E-11	9.24E-4	5.76E-4	-2.74E-6
12	1.050	-0.00244	1.84E-4	-1.86E-4	9.67E-4	1.69E-4	-2.87E-6
12	2.100	-0.00260	1.50E-4	4.50E-5	0.00101	-2.19E-4	-3.00E-6
12	3.149	-0.00275	1.16E-4	6.65E-4	0.00104	-5.67E-4	-3.12E-6
12	4.199	-0.00291	8.17E-5	0.00162	0.00106	-8.58E-4	-3.24E-6
13	0	-0.00291	8.17E-5	0.00162	0.00106	-8.58E-4	-3.24E-6
13	1.050	-0.00306	4.23E-5	0.00287	0.00106	-0.00107	-3.36E-6
13	2.100	-0.00322	2.57E-6	0.00427	0.00104	-0.00117	-3.47E-6
13	3.150	-0.00337	-3.75E-5	0.00571	9.92E-4	-0.00116	-3.58E-6
13	4.200	-0.00353	-7.80E-5	0.00706	9.18E-4	-0.00103	-3.68E-6
14	0	-0.00353	-7.80E-5	0.00706	9.18E-4	-0.00103	-3.68E-6
14	1.050	-0.00369	-1.24E-4	0.00825	8.12E-4	-8.26E-4	-3.77E-6
14	2.100	-0.00384	-1.70E-4	0.00916	6.90E-4	-5.63E-4	-3.86E-6
14	3.150	-0.00400	-2.16E-4	0.00975	5.58E-4	-2.60E-4	-3.95E-6
14	4.200	-0.00415	-2.62E-4	0.00998	4.21E-4	6.21E-5	-4.02E-6

VERSCHIEBUNGEN (im globalen Koordinatensystem): "all"

Barra	Dist. [m]	DX-g [m]	DY-g [m]	DZ-g [m]	RX-g [rad]	RY-g [rad]	RZ-g [rad]
15	0	-0.00415	-2.62E-4	0.00998	4.21E-4	6.21E-5	-4.02E-6
15	1.050	-0.00431	-3.12E-4	0.00986	2.67E-4	3.89E-4	-4.09E-6
15	2.100	-0.00446	-3.63E-4	0.00937	1.15E-4	7.12E-4	-4.15E-6
15	3.151	-0.00461	-4.13E-4	0.00850	-3.53E-5	0.00103	-4.20E-6
15	4.201	-0.00476	-4.63E-4	0.00729	-1.78E-4	0.00131	-4.25E-6
16	0	-0.00476	-4.63E-4	0.00729	-1.78E-4	0.00131	-4.25E-6
16	1.049	-0.00491	-5.18E-4	0.00578	-3.18E-4	0.00156	-4.28E-6
16	2.099	-0.00505	-5.72E-4	0.00400	-4.39E-4	0.00175	-4.30E-6
16	3.148	-0.00520	-6.27E-4	0.00203	-5.37E-4	0.00187	-4.32E-6
16	4.198	-0.00534	-6.81E-4	-4.64E-5	-6.12E-4	0.00192	-4.32E-6
17	0	0.00539	-7.06E-5	4.78E-5	-3.49E-4	-0.00198	4.34E-6
17	0.600	0.00539	-7.10E-5	1.38E-5	-3.85E-4	-0.00197	1.16E-6
17	1.199	0.00539	-7.11E-5	-1.30E-6	-4.10E-4	-0.00197	-1.11E-6
17	1.799	0.00539	-7.09E-5	-3.80E-6	-4.26E-4	-0.00196	-2.47E-6
17	2.398	0.00539	-7.06E-5	-1.8E-12	-4.31E-4	-0.00196	-2.92E-6
18	0	0.00539	-7.06E-5	4.78E-5	-3.49E-4	-0.00198	4.34E-6
18	0.600	0.00538	-7.00E-5	4.22E-5	-3.59E-4	-0.00198	7.54E-6
18	1.200	0.00538	-6.92E-5	3.12E-5	-3.67E-4	-0.00198	9.82E-6
18	1.800	0.00537	-6.81E-5	1.65E-5	-3.71E-4	-0.00197	1.12E-5
18	2.400	0.00537	-6.70E-5	1.1E-12	-3.73E-4	-0.00197	1.16E-5
19	0	-0.00534	-6.81E-4	-4.64E-5	-6.12E-4	0.00192	-4.32E-6
19	0.600	-0.00535	-6.81E-4	-5.72E-5	-6.47E-4	0.00191	-1.14E-6
19	1.200	-0.00535	-6.81E-4	-4.88E-5	-6.72E-4	0.00190	1.13E-6
19	1.800	-0.00534	-6.81E-4	-2.76E-5	-6.88E-4	0.00189	2.50E-6
19	2.400	-0.00534	-6.81E-4	-2.7E-12	-6.93E-4	0.00189	2.95E-6
20	0	-0.00534	-6.81E-4	-4.64E-5	-6.12E-4	0.00192	-4.32E-6
20	0.600	-0.00534	-6.80E-4	-2.80E-5	-6.23E-4	0.00191	-7.49E-6
20	1.200	-0.00534	-6.78E-4	-1.55E-5	-6.30E-4	0.00191	-9.76E-6
20	1.800	-0.00533	-6.76E-4	-6.76E-6	-6.35E-4	0.00191	-1.11E-5
20	2.400	-0.00532	-6.74E-4	2.2E-13	-6.36E-4	0.00191	-1.16E-5

Mstb. 1:449.9
Deformed structure, Hipótesi 20 (Pretensado Total), View "all"
- Struktur: Staebe
- Verschiebungen, Ueberh: 2.0E2
- V-Max , Text: Vx,Vy,Vz [M]



ESFUERZOS: "ALL"

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
1	0	-28264.0	-11.186	-2336.633	744.708	-1133.922	-0.267855
1	1.050	-28342.8	-11.186	-2343.610	744.708	-3598.021	-12.014
1	2.100	-28432.9	-11.186	-2301.177	744.708	-6077.467	-23.760
1	3.150	-28625.2	-11.186	-1785.482	744.708	-8281.761	-35.506
1	4.200	-28808.4	-11.186	-1261.885	744.708	-9950.199	-47.252
2	0	-28808.1	-9.504	-1261.885	722.822	-9927.959	-47.252
2	1.050	-28982.6	-9.504	-731.094	722.822	-11047.5	-57.230
2	2.100	-29136.5	-9.504	-270.637	722.822	-11611.3	-67.208
2	3.150	-29258.1	-9.504	1.154	722.822	-11801.8	-77.186
2	4.199	-29380.9	-9.504	302.891	722.822	-11701.6	-87.164
3	0	-29380.6	-7.563	302.891	671.914	-11677.3	-87.164
3	1.050	-29506.4	-7.563	652.322	671.914	-11226.8	-95.106
3	2.100	-29657.0	-7.563	1207.025	671.914	-10372.8	-103.048
3	3.150	-29823.5	-7.563	1991.841	671.914	-8767.422	-110.989
3	4.200	-29766.3	-7.563	2765.733	671.914	-6232.325	-118.931
4	0	-29766.1	-5.773	2765.733	601.592	-6211.995	-118.931

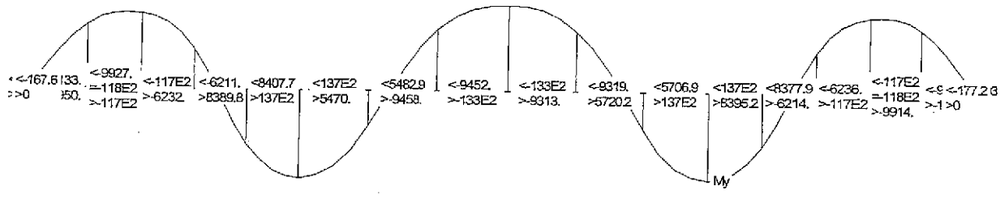
ESFUERZOS: "ALL"

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
4	1.050	-29545.1	-5.773	3516.407	601.592	-2844.734	-124.993
4	2.100	-29284.3	-5.773	3936.466	601.592	1178.079	-131.054
4	3.150	-29135.7	-5.773	3461.505	601.592	5175.154	-137.116
4	4.200	-29018.8	-5.773	2697.349	601.592	8389.864	-143.178
5	0	-29018.6	-3.958	2697.349	506.721	8407.751	-143.178
5	1.050	-28883.0	-3.958	1938.087	506.721	10807.8	-147.333
5	2.099	-28727.7	-3.958	1184.937	506.721	12400.3	-151.488
5	3.149	-28588.4	-3.958	663.371	506.721	13313.0	-155.643
5	4.198	-28439.2	-3.958	171.594	506.721	13698.6	-159.798
6	0	-28413.9	-8.556	0.538813	377.456	13714.2	-159.798
6	1.350	-28200.0	-8.556	-647.889	377.456	13201.9	-171.348
6	2.700	-27964.1	-8.556	-1281.629	377.456	11826.3	-182.898
6	4.050	-27628.7	-8.556	-2321.353	377.456	9372.845	-194.449
6	5.400	-27283.2	-8.556	-3174.217	377.456	5470.066	-205.999
7	0	-27282.9	-5.029	-3174.217	218.319	5482.926	-205.999
7	1.350	-27034.7	-5.029	-3345.533	218.319	1056.497	-212.788
7	2.700	-26900.8	-5.029	-2910.961	218.319	-3223.307	-219.578
7	4.050	-26786.8	-5.029	-2343.532	218.319	-6731.559	-226.367
7	5.400	-26661.6	-5.029	-1780.086	218.319	-9458.133	-233.156
8	0	-26661.5	-1.737	-1780.086	69.803	-9452.342	-233.156
8	1.350	-26525.6	-1.737	-1221.435	69.803	-11404.6	-235.501
8	2.700	-26378.7	-1.737	-668.198	69.803	-12591.5	-237.845
8	4.050	-26248.2	-1.737	-314.625	69.803	-13156.9	-240.189
8	5.399	-26122.2	-1.737	8.835	69.803	-13281.5	-242.533
9	0	-26122.2	1.790	8.835	-89.223	-13281.9	-242.533
9	1.350	-26247.0	1.790	332.497	-89.223	-13132.4	-240.116
9	2.700	-26374.7	1.790	698.658	-89.223	-12538.3	-237.698
9	4.051	-26519.4	1.790	1252.000	-89.223	-11308.2	-235.281
9	5.401	-26654.6	1.790	1810.771	-89.223	-9313.240	-232.864
10	0	-26654.7	5.116	1810.771	-239.086	-9319.905	-232.864
10	1.350	-26779.2	5.116	2374.083	-239.086	-6551.311	-225.959
10	2.700	-26892.3	5.116	2941.323	-239.086	-3001.342	-219.054
10	4.049	-27035.0	5.116	3334.102	-239.086	1308.535	-212.149
10	5.399	-27281.4	5.116	3161.826	-239.086	5720.263	-205.243
11	0	-27281.7	8.555	3161.826	-394.039	5706.934	-205.243
11	1.331	-27630.1	8.555	2270.934	-394.039	9497.858	-193.856
11	2.662	-27956.7	8.555	1262.763	-394.039	11865.1	-182.469
11	3.993	-28189.4	8.555	637.907	-394.039	13202.5	-171.082
11	5.324	-28400.7	8.555	-1.189	-394.039	13700.6	-159.695
12	0	-28426.0	4.055	-170.873	-529.409	13683.5	-159.695
12	1.050	-28575.4	4.055	-662.535	-529.409	13298.7	-155.438
12	2.100	-28714.6	4.055	-1184.176	-529.409	12386.7	-151.182
12	3.149	-28869.7	4.055	-1937.130	-529.409	10794.8	-146.925
12	4.199	-29005.2	4.055	-2696.188	-529.409	8395.299	-142.668
13	0	-29005.3	5.751	-2696.188	-617.894	8377.991	-142.668
13	1.050	-29122.1	5.751	-3460.023	-617.894	5164.456	-136.629
13	2.100	-29270.7	5.751	-3933.471	-617.894	1169.204	-130.590
13	3.150	-29531.6	5.751	-3512.947	-617.894	-2850.512	-124.551
13	4.200	-29753.0	5.751	-2762.604	-617.894	-6214.506	-118.513
14	0	-29753.2	7.609	-2762.603	-690.817	-6236.199	-118.513
14	1.050	-29810.9	7.609	-1989.172	-690.817	-8767.962	-110.524
14	2.100	-29645.0	7.609	-1204.815	-690.817	-10370.8	-102.535
14	3.150	-29495.0	7.609	-650.861	-690.817	-11223.0	-94.546
14	4.200	-29369.7	7.609	-301.620	-690.817	-11672.3	-86.558
15	0	-29370.0	9.400	-301.620	-737.830	-11695.3	-86.558
15	1.050	-29247.0	9.400	0.031313	-737.830	-11794.2	-76.685
15	2.100	-29125.1	9.400	271.804	-737.830	-11602.2	-66.813
15	3.151	-28970.3	9.400	732.658	-737.830	-11036.4	-56.941
15	4.201	-28794.9	9.400	1263.359	-737.830	-9914.574	-47.068
16	0	-28795.2	11.272	1263.360	-762.318	-9939.878	-47.068
16	1.049	-28610.5	11.272	1786.314	-762.318	-8270.708	-35.239
16	2.099	-28416.4	11.272	2301.290	-762.318	-6066.692	-23.409
16	3.148	-28321.9	11.272	2342.692	-762.318	-3588.534	-11.579
16	4.198	-28238.3	11.272	2335.292	-762.318	-1126.556	0.250474
17	0	5.596	27.718	-240.683	-4.09E-13	577.197	-66.471
17	2.398	5.596	27.718	-240.683	-4.09E-13	5.77E-06	-6.65E-07
18	0	-4.495	-27.808	69.850	5.31E-13	-167.642	66.739
18	2.400	-4.495	-27.808	69.850	5.31E-13	-1.68E-06	6.67E-07
19	0	5.639	-27.704	-243.770	5.81E-13	585.036	66.488
19	2.400	5.639	-27.704	-243.770	5.81E-13	5.85E-06	6.65E-07

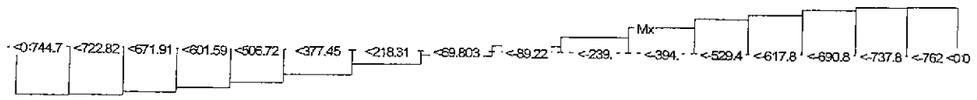
ESFUERZOS: "ALL"

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
20	0	-5.626	27.598	73.864	-3.70E-13	-177.282	-66.238
20	2.400	-5.626	27.598	73.864	-3.70E-13	-1.77E-06	-6.62E-07

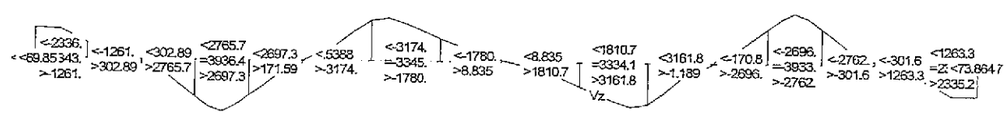
Mstb. 1 :449.9
Section force, Hipótesi 20 (Pretensado Total), View "ALL"
- Struktur: Staebe
- Moment My, Scaling 5.00E-04
min: -1.33E+04 max: 1.37E+04 [kNm]
- Text Moment My [kNm]



Mstb. 1 :449.9
Section force, Hipótesi 20 (Pretensado Total), View "ALL"
- Struktur: Staebe
- Tors. MomentMx, Scaling 5.00E-03
min: -7.52E+02 max: 7.45E+02 [kNm]
- Text Tors. MomentMx [kNm]



Mstb. 1 :449.9
Section force, Hipótesi 20 (Pretensado Total), View "ALL"
- Struktur: Staebe
- Shear Force Vz, Scaling 1.00E-03
min: -3.93E+03 max: 3.94E+03 [kN]
- Text Shear Force Vz [kN]



BELASTUNG: 'Gradiente térmico'

Lastfall	Faktor	Bauzustd.	Vorv.	Titel
19	1.0000			gradiente

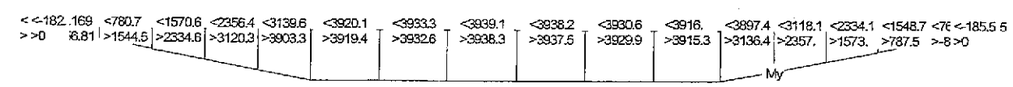
REACCIONES EN APOYOS:

NUDOS	FX [kN]	FY [kN]	FZ [kN]	T [kNm]	MY [kNm]	MZ [kNm]
6	0	0	-182.021			
12	0	0	-181.088			
18	0	0	257.723			
19	0	0	-75.834			
20	0	0	258.529			
21	0	0	-77.308			

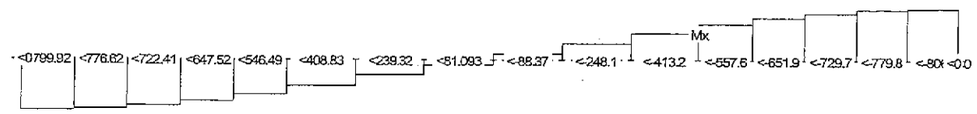
ESFUERZOS: "ALL"

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
1	0	0	0	181.888	799.922	-7.169	0
1	4.200	0	0	181.888	799.922	756.815	0
2	0	0	0	181.888	776.621	780.707	0
2	4.199	0	0	181.888	776.621	1544.519	0
3	0	0	0	181.888	722.412	1570.606	0
3	4.200	0	0	181.888	722.412	2334.612	0
4	0	0	0	181.888	647.526	2356.481	0
4	4.200	0	0	181.888	647.526	3120.388	0
5	0	0	0	181.888	546.493	3139.659	0
5	4.198	0	0	181.888	546.493	3903.307	0
6	0	0	0	-0.132772	408.832	3920.117	0
6	5.400	0	0	-0.132772	408.832	3919.400	0
7	0	0	0	-0.132772	239.323	3933.391	0
7	5.400	0	0	-0.132772	239.323	3932.674	0
8	0	0	0	-0.132772	81.093	3939.115	0
8	5.399	0	0	-0.132772	81.093	3938.398	0
9	0	0	0	-0.132772	-88.371	3938.241	0
9	5.401	0	0	-0.132772	-88.371	3937.524	0
10	0	0	0	-0.132772	-248.104	3930.694	0
10	5.399	0	0	-0.132772	-248.104	3929.977	0
11	0	0	0	-0.132772	-413.298	3916.051	0
11	5.324	0	0	-0.132772	-413.298	3915.344	0
12	0	0	0	-181.221	-557.644	3897.405	0
12	4.199	0	0	-181.221	-557.644	3136.417	0
13	0	0	0	-181.221	-651.998	3118.169	0
13	4.200	0	0	-181.221	-651.998	2357.027	0
14	0	0	0	-181.221	-729.757	2334.124	0
14	4.200	0	0	-181.221	-729.757	1573.027	0
15	0	0	0	-181.221	-779.890	1548.783	0
15	4.201	0	0	-181.221	-779.890	787.504	0
16	0	0	0	-181.221	-806.005	760.754	0
16	4.198	0	0	-181.221	-806.005	-0.008825	0
17	0	0	0	-257.723	-1.04E-13	618.061	0
17	2.398	0	0	-257.723	-1.04E-13	6.18E-06	0
18	0	0	0	75.834	-1.82E-13	-182.004	0
18	2.400	0	0	75.834	-1.82E-13	-1.82E-06	0
19	0	0	0	-258.529	3.36E-13	620.457	0
19	2.400	0	0	-258.529	3.36E-13	6.20E-06	0
20	0	0	0	77.308	-4.20E-13	-185.548	0
20	2.400	0	0	77.308	-4.20E-13	-1.86E-06	0

Mstb. 1 :449.9
Section force, Hipótesi 19 (Gradiente térmico), View "ALL"
- Struktur: Staebe
- Moment My, Scaling 1.00E-03
  min: -1.86E+02 max: 3.94E+03 [kNm]
- Text Moment My [kNm]



Mstb. 1 :449.9
Section force, Hipótesi 19 (Gradiente térmico), View "ALL"
- Struktur: Staebe
- Tors. MomentMx, Scaling 5.00E-03
  min: -8.06E+02 max: 8.00E+02 [kNm]
- Text Tors. MomentMx [kNm]



ENVOLVENTE: HZ 'ENVOLVENTE DE SOBRECARGA'

Grupo	Espe.	Hipótesis	Factor	Etapa	Título
A	PERM.	1	0		Peso Propio
B	MAS	7	1.000		Sobrecarga excéntrica vano 1 (
C	MAS	8	1.000		Sobrecarga excentrica vano 2 (
D	MAS	9	1.000		Sobrecarga excentrica vano 3 (
ALTERNATIVA PARA ENVOLVENTE:					
E	PERM.	1	0		Peso Propio
F	MAS	4	1.000		Sobrecarga centrada vano 1
G	MAS	5	1.000		Sobrecarga centrada vano 2
H	MAS	6	1.000		Sobrecarga centrada vano 3
ALTERNATIVA PARA ENVOLVENTE:					
I	PERM.	1	0		Peso Propio
J	MAS	10	1.000		Sobrecarga excéntrica vano 1 (
K	MAS	11	1.000		Sobrecarga excentrica vano 2 (
L	MAS	12	1.000		Sobrecarga excentrica vano 3 (

AUFLAGERREAKTIONEN: GRENZWERTE fuer < FZ > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos

NUDOS	FX [kN]	FY [kN]	FZ [kN]	MX [kNm]	MY [kNm]	MZ [kNm]
6	0	0	-59.648			
	0	0	1420.888			
12	0	0	-59.978			
	0	0	1419.977			
18	0	0	-356.661			
	0	0	512.332			
19	0	0	-402.663			
	0	0	550.689			
20	0	0	-355.082			
	0	0	510.732			
21	0	0	-403.629			
	0	0	552.581			

ENVOLVENTE para < Vz > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
1	0	0	0	-130.138	-87.514	-4.454	0
		0	0	433.835	105.851	18.521	0
1	1.050	0	0	-130.138	-87.514	-141.108	0
		0	0	386.792	105.851	449.381	0
1	2.100	0	0	-130.138	-87.514	-277.763	0
		0	0	339.749	105.851	830.841	0
1	3.150	0	0	-130.138	-87.514	-414.417	0
		0	0	292.706	105.851	1162.903	0
1	4.200	0	0	-130.138	-87.514	-551.072	0
		0	0	245.662	105.851	1445.566	0
2	0	0	0	-130.138	-70.775	-553.471	0
		0	0	245.662	61.998	1448.110	0
2	1.050	0	0	-130.138	-70.775	-690.094	0
		0	0	198.630	61.998	1681.326	0
2	2.100	0	0	-130.138	-70.775	-826.718	0
		0	0	151.597	61.998	1865.167	0
2	3.150	0	0	-130.138	-70.775	-963.342	0
		0	0	104.564	61.998	1999.630	0
2	4.199	0	0	-130.138	-70.775	-1099.966	0
		0	0	57.532	61.998	2084.717	0
3	0	0	0	-130.138	-32.460	-1101.762	0
		0	0	57.532	-10.574	2085.612	0
3	1.050	0	0	-135.557	-43.618	731.700	0
		0	0	20.301	-680.767	1172.572	0
3	2.100	0	0	-182.601	-43.618	564.650	0
		0	0	15.905	0.583768	167.908	0
3	3.150	0	0	-229.646	-43.618	348.199	0
		0	0	15.905	0.583768	184.610	0
3	4.200	0	0	-276.690	-43.618	82.346	0
		0	0	15.905	0.583768	201.312	0
4	0	0	0	-276.690	-46.224	80.912	0
		0	0	15.905	-5.842	201.228	0
4	1.050	0	0	-323.729	-46.224	-234.298	0
		0	0	15.905	-5.842	217.929	0
4	2.100	0	0	-370.767	-46.224	-598.897	0
		0	0	15.905	-5.842	234.629	0
4	3.150	0	0	-417.806	-46.224	-1012.885	0
		0	0	15.905	-5.842	251.329	0
4	4.200	0	0	-464.844	-46.224	-1476.261	0

ENVOLVENTE para < Vz > (y valores concomitantes) ."ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
		0	0	15.905	-5.842	268.029	0
5	0	0	0	-464.844	1.439	-1476.984	0
		0	0	15.905	-14.488	267.701	0
5	1.050	0	0	-511.867	1.439	-1989.568	0
		0	0	15.905	-14.488	284.395	0
5	2.099	0	0	-558.890	1.439	-2551.508	0
		0	0	15.905	-14.488	301.090	0
5	3.149	0	0	-605.912	1.439	-3162.803	0
		0	0	15.905	-14.488	317.784	0
5	4.198	0	0	-652.935	1.439	-3823.453	0
		0	0	15.905	-14.488	334.479	0
6	0	0	0	-43.743	-26.247	333.762	0
		0	0	767.953	135.952	-3821.036	0
6	1.350	0	0	-43.743	-26.247	274.707	0
		0	0	707.471	135.952	-2825.093	0
6	2.700	0	0	-43.743	-26.247	215.653	0
		0	0	646.990	135.952	-1910.804	0
6	4.050	0	0	-43.743	-26.247	156.598	0
		0	0	586.508	135.952	-1078.167	0
6	5.400	0	0	-43.743	-26.247	97.543	0
		0	0	526.026	135.952	-327.184	0
7	0	0	0	-43.743	-30.432	96.320	0
		0	0	526.026	149.944	-321.013	0
7	1.350	0	0	-43.743	-30.432	37.266	0
		0	0	465.545	149.944	348.305	0
7	2.700	0	0	-43.743	-30.432	-21.787	0
		0	0	405.065	149.944	935.973	0
7	4.050	0	0	-43.743	-30.432	-80.840	0
		0	0	344.584	149.944	1441.991	0
7	5.400	0	0	-43.743	-30.432	-139.894	0
		0	0	284.103	149.944	1866.359	0
8	0	0	0	-43.743	-24.785	-141.004	0
		0	0	284.103	74.822	1870.877	0
8	1.350	0	0	-43.743	-24.785	-200.050	0
		0	0	223.630	74.822	2213.560	0
8	2.700	0	0	-43.743	-24.785	-259.097	0
		0	0	163.156	74.822	2474.612	0
8	4.050	0	0	-43.743	-24.785	-318.143	0
		0	0	102.683	74.822	2654.034	0
8	5.399	0	0	-45.473	40.087	2750.540	0
		0	0	43.940	9.950	-375.903	0
9	0	0	0	-45.473	-78.250	2749.719	0
		0	0	43.940	26.108	-375.128	0
9	1.350	0	0	-105.961	-78.250	2647.488	0
		0	0	43.940	26.108	-315.801	0
9	2.700	0	0	-166.448	-78.250	2463.589	0
		0	0	43.940	26.108	-256.475	0
9	4.051	0	0	-226.936	-78.250	2198.022	0
		0	0	43.940	26.108	-197.149	0
9	5.401	0	0	-287.423	-78.250	1850.786	0
		0	0	43.940	26.108	-137.822	0
10	0	0	0	-287.423	-153.300	1846.085	0
		0	0	43.940	31.680	-136.649	0
10	1.350	0	0	-347.896	-153.300	1417.300	0
		0	0	43.940	31.680	-77.338	0
10	2.700	0	0	-408.368	-153.300	906.888	0
		0	0	43.940	31.680	-18.026	0
10	4.049	0	0	-468.840	-153.300	314.849	0
		0	0	43.940	31.680	41.285	0
10	5.399	0	0	-529.312	-153.300	-358.817	0
		0	0	43.940	31.680	100.596	0
11	0	0	0	-529.312	-138.062	-364.951	0
		0	0	43.940	27.418	101.841	0
11	1.331	0	0	-588.942	-138.062	-1109.163	0
		0	0	43.940	27.418	160.326	0
11	2.662	0	0	-648.572	-138.062	-1932.745	0
		0	0	43.940	27.418	218.811	0
11	3.993	0	0	-708.202	-138.062	-2835.695	0

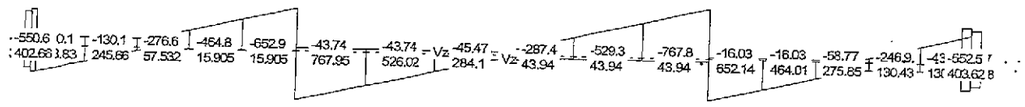
ENVOLVENTE para < Vz > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
		0	0	43.940	27.418	277.296	0
11	5.324	0	0	-767.832	-138.062	-3818.014	0
		0	0	43.940	27.418	335.782	0
12	0	0	0	-16.038	14.996	336.565	0
		0	0	652.145	3.066	-3820.508	0
12	1.050	0	0	-16.038	14.996	319.729	0
		0	0	605.113	3.066	-3160.568	0
12	2.100	0	0	-16.038	14.996	302.892	0
		0	0	558.082	3.066	-2550.001	0
12	3.149	0	0	-16.038	14.996	286.056	0
		0	0	511.050	3.066	-1988.808	0
12	4.199	0	0	-16.038	14.996	269.219	0
		0	0	464.019	3.066	-1476.990	0
13	0	0	0	-16.038	6.868	269.549	0
		0	0	464.019	47.617	-1476.225	0
13	1.050	0	0	-16.038	6.868	252.709	0
		0	0	416.978	47.617	-1013.693	0
13	2.100	0	0	-16.038	6.868	235.869	0
		0	0	369.937	47.617	-600.555	0
13	3.150	0	0	-16.038	6.868	219.029	0
		0	0	322.896	47.617	-236.811	0
13	4.200	0	0	-16.038	6.868	202.189	0
		0	0	275.855	47.617	77.540	0
14	0	0	0	-16.038	0.163337	202.306	0
		0	0	275.855	45.021	79.075	0
14	1.050	0	0	-16.038	0.163337	185.467	0
		0	0	228.817	45.021	344.018	0
14	2.100	0	0	-16.038	0.163337	168.628	0
		0	0	181.779	45.021	559.572	0
14	3.150	0	0	-22.609	681.756	1157.982	0
		0	0	134.740	45.021	725.738	0
14	4.200	0	0	-58.770	13.362	2077.192	0
		0	0	130.435	31.822	-1099.726	0
15	0	0	0	-58.770	-53.342	2076.550	0
		0	0	130.435	67.117	-1098.137	0
15	1.050	0	0	-105.820	-53.342	1990.122	0
		0	0	130.435	67.117	-961.153	0
15	2.100	0	0	-152.869	-53.342	1854.283	0
		0	0	130.435	67.117	-824.169	0
15	3.151	0	0	-199.919	-53.342	1669.033	0
		0	0	130.435	67.117	-687.185	0
15	4.201	0	0	-246.968	-53.342	1434.370	0
		0	0	130.435	67.117	-550.201	0
16	0	0	0	-246.968	-101.687	1431.755	0
		0	0	130.435	85.634	-547.624	0
16	1.049	0	0	-293.986	-101.687	1147.890	0
		0	0	130.435	85.634	-410.734	0
16	2.099	0	0	-341.003	-101.687	814.681	0
		0	0	130.435	85.634	-273.843	0
16	3.148	0	0	-388.021	-101.687	432.126	0
		0	0	130.435	85.634	-136.952	0
16	4.198	0	0	-435.038	-101.687	0.227177	0
		0	0	130.435	85.634	-0.060642	0
17	0	0	0	-512.332	1.00E-13	1228.655	0
		0	0	356.661	4.02E-15	-855.331	0
17	0.600	0	0	-512.332	1.00E-13	921.491	0
		0	0	356.661	4.02E-15	-641.498	0
17	1.199	0	0	-512.332	1.00E-13	614.328	0
		0	0	356.661	4.02E-15	-427.665	0
17	1.799	0	0	-512.332	1.00E-13	307.164	0
		0	0	356.661	4.02E-15	-213.833	0
17	2.398	0	0	-512.332	1.00E-13	1.23E-05	0
		0	0	356.661	4.02E-15	-8.55E-06	0
18	0	0	0	-550.689	-3.34E-14	1321.661	0
		0	0	402.663	-9.35E-15	-966.396	0
18	0.600	0	0	-550.689	-3.34E-14	991.246	0
		0	0	402.663	-9.35E-15	-724.797	0
18	1.200	0	0	-550.689	-3.34E-14	660.831	0

ENVOLVENTE para < Vz > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
18	1.800	0	0	402.663	-9.35E-15	-483.198	0
		0	0	-550.689	-3.34E-14	330.415	0
18	2.400	0	0	402.663	-9.35E-15	-241.599	0
		0	0	-550.689	-3.34E-14	1.32E-05	0
19	0	0	0	402.663	-9.35E-15	-9.66E-06	0
		0	0	-510.732	1.89E-13	1225.735	0
19	0.600	0	0	355.082	-7.39E-14	-852.180	0
		0	0	-510.732	1.89E-13	919.301	0
19	1.200	0	0	355.082	-7.39E-14	-639.135	0
		0	0	-510.732	1.89E-13	612.867	0
19	1.800	0	0	355.082	-7.39E-14	-426.090	0
		0	0	-510.732	1.89E-13	306.434	0
19	2.400	0	0	355.082	-7.39E-14	-213.045	0
		0	0	-510.732	1.89E-13	1.23E-05	0
20	0	0	0	355.082	-7.39E-14	-8.52E-06	0
		0	0	-552.581	5.81E-14	1326.254	0
20	0.600	0	0	403.629	-6.32E-14	-968.752	0
		0	0	-552.581	5.81E-14	994.691	0
20	1.200	0	0	403.629	-6.32E-14	-726.564	0
		0	0	-552.581	5.81E-14	663.127	0
20	1.800	0	0	403.629	-6.32E-14	-484.376	0
		0	0	-552.581	5.81E-14	331.564	0
20	2.400	0	0	403.629	-6.32E-14	-242.188	0
		0	0	-552.581	5.81E-14	1.33E-05	0
		0	0	403.629	-6.32E-14	-9.69E-06	0

Mstb. 1:449.9
Section forces envelope Vz, GWSP HZ (ENVOLVENTE DE SOBRECARGA), View "ALL"
- Struktur: Staebe
- Envelop Shear force Vz-min, Scaling 5.00E-03
  min: -7.68E+02 max: -1.60E+01 [kN]
- Envelop Shear force Vz-max, Scaling 5.00E-03
  min: 1.59E+01 max: 7.68E+02 [kN]
- Text envelopes [kN]



ENVOLVENTE para < T > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
1	0	0	0	194.027	-2175.958	52.230	0
		0	0	109.670	2194.295	-38.163	0
1	1.050	0	0	170.506	-2110.098	243.624	0
		0	0	86.148	2128.435	64.649	0
1	2.100	0	0	146.984	-2044.237	410.317	0
		0	0	62.627	2062.574	142.761	0
1	3.150	0	0	123.463	-1978.376	552.312	0
		0	0	39.105	1996.713	196.174	0
1	4.200	0	0	99.941	-1912.515	669.607	0
		0	0	15.583	1930.853	224.887	0
2	0	0	0	99.941	-1931.928	611.345	0
		0	0	15.583	1923.151	283.293	0
2	1.050	0	0	76.425	-1866.083	703.923	0

ENVOLVENTE para < T > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
2	2.100	0	0	-7.933	1857.306	287.309	0
		0	0	52.908	-1800.237	771.812	0
2	3.150	0	0	-31.449	1791.460	266.637	0
		0	0	29.392	-1734.391	815.013	0
2	4.199	0	0	-54.966	1725.614	221.276	0
		0	0	5.876	-1668.545	833.525	0
3	0	0	0	-78.482	1659.768	151.226	0
		0	0	5.876	-1696.536	774.966	0
3	1.050	0	0	-78.482	1653.502	208.884	0
		0	0	-17.647	-1630.574	768.786	0
3	2.100	0	0	-102.004	1587.639	114.119	0
		0	0	-41.169	-1564.811	737.904	0
3	3.150	0	0	-125.527	1521.777	-5.347	0
		0	0	-54.691	-1498.949	682.322	0
3	4.200	0	0	-149.049	1455.914	-149.513	0
		0	0	-88.214	-1433.086	602.039	0
4	0	0	0	-172.571	1390.052	-318.380	0
		0	0	-88.214	-1451.572	555.990	0
4	1.050	0	0	-172.571	1399.506	-273.849	0
		0	0	-111.733	-1385.719	451.021	0
4	2.100	0	0	-196.091	1333.652	-467.391	0
		0	0	-135.252	-1319.865	321.358	0
4	3.150	0	0	-219.610	1267.798	-685.626	0
		0	0	-158.771	-1254.011	167.001	0
4	4.200	0	0	-243.129	1201.944	-928.557	0
		0	0	-182.291	-1188.157	-12.051	0
5	0	0	0	-266.648	1136.090	-1196.181	0
		0	0	-182.291	-1187.149	-50.387	0
5	1.050	0	0	-266.648	1174.100	-1158.897	0
		0	0	-205.802	-1121.318	-254.060	0
5	2.099	0	0	-87.807	1169.486	-1450.206	0
		0	0	-26.425	-1092.975	-623.090	0
5	3.149	0	0	-87.807	1169.486	-1542.370	0
		0	0	-26.425	-1092.975	-650.826	0
5	4.198	0	0	-87.807	1169.486	-1634.534	0
		0	0	-26.425	-1092.975	-678.563	0
6	0	0	0	-87.807	1169.486	-1726.697	0
		0	0	346.867	-1068.426	-716.595	0
6	1.350	0	0	333.404	1229.509	-1684.485	0
		0	0	316.626	-983.752	-268.724	0
6	2.700	0	0	303.163	1144.834	-1254.789	0
		0	0	286.385	-899.077	138.321	0
6	4.050	0	0	272.922	1060.160	-865.920	0
		0	0	256.144	-814.402	504.539	0
6	5.400	0	0	242.681	975.485	-517.877	0
		0	0	225.903	-729.728	829.931	0
7	0	0	0	212.440	890.810	-210.661	0
		0	0	225.903	-764.861	797.669	0
7	1.350	0	0	212.440	899.071	-172.025	0
		0	0	195.663	-680.188	1082.228	0
7	2.700	0	0	182.200	814.398	94.360	0
		0	0	165.422	-595.515	1325.963	0
7	4.050	0	0	151.959	729.725	319.920	0
		0	0	135.182	-510.842	1528.873	0
7	5.400	0	0	121.719	645.052	504.655	0
		0	0	104.942	-426.169	1690.959	0
8	0	0	0	91.479	560.379	648.565	0
		0	0	104.942	-493.777	1672.467	0
8	1.350	0	0	91.479	533.864	670.560	0
		0	0	74.705	-409.114	1793.715	0
8	2.700	0	0	61.242	449.201	773.636	0
		0	0	44.468	-324.452	1874.148	0
8	4.050	0	0	31.005	364.538	835.896	0
		0	0	14.231	-239.789	1913.766	0
8	5.399	0	0	0.768600	279.875	857.341	0
		0	0	-15.361	-198.617	-48.538	0
9	0	0	0	15.075	240.550	1903.167	0
		0	0	-16.005	-237.241	1904.127	0

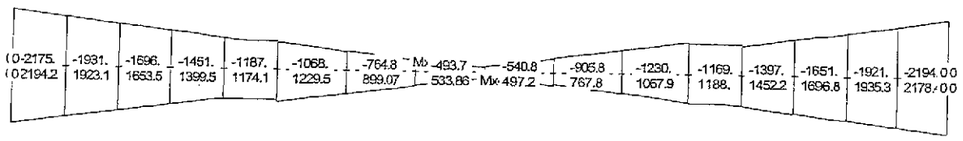
ENVOLVENTE para < T > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
9	1.350	0	0	15.720	199.368	-49.411	0
		0	0	-3.109	-286.758	856.965	0
		0	0	-15.169	243.155	1911.688	0
9	2.700	0	0	-33.353	-371.440	832.350	0
		0	0	-45.412	327.838	1870.791	0
9	4.051	0	0	-63.597	-456.123	766.900	0
		0	0	-75.656	412.520	1789.059	0
9	5.401	0	0	-93.841	-540.805	660.617	0
		0	0	-105.900	497.203	1666.494	0
10	0	0	0	-93.841	-567.171	638.124	0
		0	0	-105.900	429.158	1685.300	0
10	1.350	0	0	-124.077	-651.832	491.049	0
		0	0	-136.136	513.819	1521.947	0
10	2.700	0	0	-154.313	-736.493	303.160	0
		0	0	-166.372	598.480	1317.780	0
10	4.049	0	0	-184.549	-821.154	74.458	0
		0	0	-196.608	683.141	1072.800	0
10	5.399	0	0	-214.785	-905.815	-195.058	0
		0	0	-226.844	767.802	787.006	0
11	0	0	0	-214.785	-896.802	-233.011	0
		0	0	-226.844	733.996	818.626	0
11	1.331	0	0	-244.600	-980.284	-538.738	0
		0	0	-256.659	817.478	496.848	0
11	2.662	0	0	-274.415	-1063.766	-884.149	0
		0	0	-286.474	900.960	135.386	0
11	3.993	0	0	-304.230	-1147.248	-1269.244	0
		0	0	-316.289	984.442	-265.761	0
11	5.324	0	0	-334.045	-1230.730	-1694.024	0
		0	0	-346.104	1067.924	-706.592	0
12	0	0	0	89.533	-1167.315	-1738.330	0
		0	0	24.864	1093.296	-666.662	0
12	1.050	0	0	89.533	-1167.315	-1644.337	0
		0	0	24.864	1093.296	-640.559	0
12	2.100	0	0	89.533	-1167.315	-1550.344	0
		0	0	24.864	1093.296	-614.457	0
12	3.149	0	0	89.533	-1167.315	-1456.352	0
		0	0	202.308	1122.166	-245.247	0
12	4.199	0	0	269.188	-1169.949	-1162.566	0
		0	0	178.793	1188.010	-45.205	0
13	0	0	0	269.188	-1134.348	-1197.327	0
		0	0	178.793	1188.833	-9.349	0
13	1.050	0	0	245.668	-1200.206	-927.023	0
		0	0	155.272	1254.690	166.039	0
13	2.100	0	0	222.147	-1266.063	-681.415	0
		0	0	131.752	1320.548	316.729	0
13	3.150	0	0	198.627	-1331.920	-460.504	0
		0	0	108.231	1386.405	442.723	0
13	4.200	0	0	175.106	-1397.778	-264.290	0
		0	0	84.711	1452.262	544.019	0
14	0	0	0	175.106	-1388.250	-310.471	0
		0	0	84.711	1433.434	591.852	0
14	1.050	0	0	151.587	-1454.104	-138.963	0
		0	0	61.192	1499.288	668.448	0
14	2.100	0	0	128.068	-1519.957	7.850	0
		0	0	37.673	1565.141	720.349	0
14	3.150	0	0	104.549	-1585.811	129.970	0
		0	0	14.154	1630.995	747.557	0
14	4.200	0	0	81.030	-1651.664	227.395	0
		0	0	-9.366	1696.848	750.071	0
15	0	0	0	81.030	-1658.114	174.244	0
		0	0	-9.366	1671.889	804.169	0
15	1.050	0	0	57.505	-1723.983	246.989	0
		0	0	-32.890	1737.758	781.980	0
15	2.100	0	0	33.981	-1789.853	295.029	0
		0	0	-56.415	1803.627	735.085	0
15	3.151	0	0	10.456	-1855.722	318.363	0
		0	0	-79.940	1869.497	663.485	0
15	4.201	0	0	-13.069	-1921.591	316.991	0

ENVOLVENTE para < T > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
16	0	0	0	-103.464	1935.366	567.178	0
		0	0	-13.069	-1931.189	252.004	0
16	1.049	0	0	-103.464	1915.137	632.126	0
		0	0	-36.578	-1997.013	225.952	0
16	2.099	0	0	-126.973	1980.961	511.205	0
		0	0	-60.086	-2062.838	175.228	0
16	3.148	0	0	-150.482	2046.786	365.610	0
		0	0	-83.595	-2128.662	99.831	0
16	4.198	0	0	-173.991	2112.610	195.344	0
		0	0	-107.104	-2194.487	-0.237987	0
17	0	0	0	-197.499	2178.435	0.404522	0
		0	0	-137.219	-3.64E-14	329.073	0
17	0.600	0	0	-146.194	2.47E-13	350.598	0
		0	0	-137.219	-3.64E-14	246.805	0
17	1.199	0	0	-146.194	2.47E-13	262.948	0
		0	0	-137.219	-3.64E-14	164.537	0
17	1.799	0	0	-146.194	2.47E-13	175.299	0
		0	0	-137.219	-3.64E-14	82.268	0
17	2.398	0	0	-146.194	2.47E-13	87.649	0
		0	0	-137.219	-3.64E-14	3.29E-06	0
18	0	0	0	-146.194	2.47E-13	3.51E-06	0
		0	0	-148.026	-1.17E-13	355.265	0
18	0.600	0	0	263.970	4.50E-14	-633.532	0
		0	0	-148.026	-1.17E-13	266.449	0
18	1.200	0	0	263.970	4.50E-14	-475.149	0
		0	0	-148.026	-1.17E-13	177.633	0
18	1.800	0	0	263.970	4.50E-14	-316.766	0
		0	0	-148.026	-1.17E-13	88.816	0
18	2.400	0	0	263.970	4.50E-14	-158.383	0
		0	0	-148.026	-1.17E-13	3.55E-06	0
19	0	0	0	263.970	4.50E-14	-6.34E-06	0
		0	0	325.728	-7.57E-14	-781.733	0
19	0.600	0	0	-510.732	1.89E-13	1225.735	0
		0	0	325.728	-7.57E-14	-586.300	0
19	1.200	0	0	-510.732	1.89E-13	919.301	0
		0	0	325.728	-7.57E-14	-390.867	0
19	1.800	0	0	-510.732	1.89E-13	612.867	0
		0	0	325.728	-7.57E-14	-195.433	0
19	2.400	0	0	-510.732	1.89E-13	306.434	0
		0	0	325.728	-7.57E-14	-7.82E-06	0
20	0	0	0	-510.732	1.89E-13	1.23E-05	0
		0	0	-142.277	-1.05E-13	341.479	0
20	0.600	0	0	-328.371	6.68E-14	788.126	0
		0	0	-142.277	-1.05E-13	256.109	0
20	1.200	0	0	-328.371	6.68E-14	591.095	0
		0	0	-142.277	-1.05E-13	170.740	0
20	1.800	0	0	-328.371	6.68E-14	394.063	0
		0	0	-142.277	-1.05E-13	85.370	0
20	2.400	0	0	-328.371	6.68E-14	197.032	0
		0	0	-142.277	-1.05E-13	3.41E-06	0
		0	0	-328.371	6.68E-14	7.88E-06	0

Mstb. 1 :449.9
Section forces envelope T, GWSPHZ (ENVOLVENTE DE SOBRECARGA), View "ALL"
- Struktur: Staebe
- Envelop Torsion.moment Mx-min, Scaling 2.00E-03
  min: -2.19E+03 max: -3.64E-14 [kNm]
- Envelop Torsion.moment Mx-max, Scaling 2.00E-03
  min: 4.50E-14 max: 2.19E+03 [kNm]
- Text envelopes [kNm]



ENVOLVENTE para < My > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
1	0	0	0	109.670	2194.295	-38.163	0
		0	0	194.027	-2175.958	52.230	0
1	1.050	0	0	-130.138	-87.514	-141.108	0
		0	0	386.792	105.851	449.381	0
1	2.100	0	0	-130.138	-87.514	-277.763	0
		0	0	339.749	105.851	830.841	0
1	3.150	0	0	-130.138	-87.514	-414.417	0
		0	0	292.706	105.851	1162.903	0
1	4.200	0	0	-130.138	-87.514	-551.072	0
		0	0	245.662	105.851	1445.566	0
2	0	0	0	-130.138	-70.775	-553.471	0
		0	0	245.662	61.998	1448.110	0
2	1.050	0	0	-130.138	-70.775	-690.094	0
		0	0	198.630	61.998	1681.326	0
2	2.100	0	0	-130.138	-70.775	-826.718	0
		0	0	151.597	61.998	1865.167	0
2	3.150	0	0	-130.138	-70.775	-963.342	0
		0	0	104.564	61.998	1999.630	0
2	4.199	0	0	-130.138	-70.775	-1099.966	0
		0	0	57.532	61.998	2084.717	0
3	0	0	0	-130.138	-32.460	-1101.762	0
		0	0	57.532	-10.574	2085.612	0
3	1.050	0	0	-130.138	-32.460	-1238.421	0
		0	0	10.487	-10.574	2121.326	0
3	2.100	0	0	-130.138	-32.460	-1375.079	0
		0	0	-36.558	-10.574	2107.637	0
3	3.150	0	0	-130.138	-32.460	-1511.738	0
		0	0	-83.602	-10.574	2044.547	0
3	4.200	0	0	-130.138	-32.460	-1648.396	0
		0	0	-130.647	-10.574	1932.055	0
4	0	0	0	-130.138	20.171	-1648.592	0
		0	0	-130.647	-72.238	1930.733	0
4	1.050	0	0	-130.138	20.171	-1785.233	0
		0	0	-177.685	-72.238	1768.864	0
4	2.100	0	0	-130.138	20.171	-1921.874	0
		0	0	-224.724	-72.238	1557.605	0
4	3.150	0	0	-130.138	20.171	-2058.514	0
		0	0	-271.762	-72.238	1296.958	0
4	4.200	0	0	-130.138	20.171	-2195.155	0
		0	0	-318.801	-72.238	986.923	0
5	0	0	0	-130.138	90.999	-2193.361	0
		0	0	-318.801	-104.048	984.077	0
5	1.050	0	0	-130.138	90.999	-2329.955	0
		0	0	-365.824	-104.048	624.782	0
5	2.099	0	0	-558.890	1.439	-2551.508	0

ENVOLVENTE para < My > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
5	3.149	0	0	-191.366	-146.254	339.735	0
		0	0	-605.912	1.439	-3162.803	0
5	4.198	0	0	15.905	-14.488	317.784	0
		0	0	-652.935	1.439	-3823.453	0
6	0	0	0	15.905	-14.488	334.479	0
		0	0	767.953	135.952	-3821.036	0
6	1.350	0	0	-43.743	-26.247	333.762	0
		0	0	707.471	135.952	-2825.093	0
6	2.700	0	0	-43.743	-26.247	274.707	0
		0	0	646.990	135.952	-1910.804	0
6	4.050	0	0	-43.743	-26.247	215.653	0
		0	0	299.284	578.051	-1163.519	0
6	5.400	0	0	256.144	-814.402	504.539	0
		0	0	43.940	-51.378	-848.911	0
7	0	0	0	225.903	-729.728	829.931	0
		0	0	43.940	-14.698	-850.337	0
7	1.350	0	0	225.903	-764.861	797.669	0
		0	0	43.940	-14.698	-791.017	0
7	2.700	0	0	377.862	134.210	1176.589	0
		0	0	0.197178	-45.130	-753.485	0
7	4.050	0	0	361.125	164.642	1667.670	0
		0	0	0.197178	-45.130	-753.219	0
7	5.400	0	0	300.644	164.642	2114.369	0
		0	0	0.197178	-45.130	-752.952	0
8	0	0	0	240.163	164.642	2479.417	0
		0	0	0.197178	-14.835	-754.158	0
8	1.350	0	0	240.163	64.872	2484.031	0
		0	0	0.197178	-14.835	-753.892	0
8	2.700	0	0	179.690	64.872	2767.401	0
		0	0	0.197178	-14.835	-753.625	0
8	4.050	0	0	119.216	64.872	2969.141	0
		0	0	0.197178	-14.835	-753.359	0
8	5.399	0	0	58.743	64.872	3089.250	0
		0	0	0.197178	-14.835	-753.093	0
9	0	0	0	-1.731	64.872	3127.729	0
		0	0	0.197178	17.568	-753.034	0
9	1.350	0	0	-1.731	-69.710	3127.625	0
		0	0	0.197178	17.568	-752.768	0
9	2.700	0	0	-62.218	-69.710	3084.455	0
		0	0	0.197178	17.568	-752.502	0
9	4.051	0	0	-122.706	-69.710	2959.616	0
		0	0	0.197178	17.568	-752.236	0
9	5.401	0	0	-183.193	-69.710	2753.109	0
		0	0	0.197178	17.568	-751.969	0
10	0	0	0	-243.681	-69.710	2464.933	0
		0	0	0.197178	48.073	-750.637	0
10	1.350	0	0	-243.681	-169.693	2460.073	0
		0	0	0.197178	48.073	-750.371	0
10	2.700	0	0	-304.153	-169.693	2090.333	0
		0	0	0.197178	48.073	-750.104	0
10	4.049	0	0	-364.625	-169.693	1638.966	0
		0	0	-43.743	16.393	-791.123	0
10	5.399	0	0	-381.157	-138.013	1147.258	0
		0	0	-43.743	16.393	-850.169	0
11	0	0	0	-226.844	767.802	787.006	0
		0	0	-43.743	52.162	-848.725	0
11	1.331	0	0	-226.844	733.996	818.626	0
		0	0	-301.202	-582.737	-1189.412	0
11	2.662	0	0	-256.659	817.478	496.848	0
		0	0	-648.572	-138.062	-1932.745	0
11	3.993	0	0	43.940	27.418	218.811	0
		0	0	-708.202	-138.062	-2835.695	0
11	5.324	0	0	43.940	27.418	277.296	0
		0	0	-767.832	-138.062	-3818.014	0
12	0	0	0	43.940	27.418	335.782	0
		0	0	652.145	3.066	-3820.508	0
12	1.050	0	0	-16.038	14.996	336.565	0
		0	0	605.113	3.066	-3160.568	0

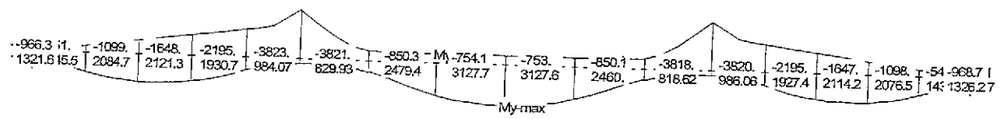
ENVOLVENTE para < My > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
		0	0	-16.038	14.996	319.729	0
12	2.100	0	0	558.082	3.066	-2550.001	0
		0	0	189.062	146.939	346.774	0
12	3.149	0	0	130.435	-89.014	-2330.762	0
		0	0	364.578	107.076	628.009	0
12	4.199	0	0	130.435	-89.014	-2193.830	0
		0	0	317.546	107.076	986.060	0
13	0	0	0	130.435	-22.799	-2195.517	0
		0	0	317.546	77.284	988.841	0
13	1.050	0	0	130.435	-22.799	-2058.558	0
		0	0	270.505	77.284	1297.574	0
13	2.100	0	0	130.435	-22.799	-1921.599	0
		0	0	223.464	77.284	1556.913	0
13	3.150	0	0	130.435	-22.799	-1784.640	0
		0	0	176.423	77.284	1766.858	0
13	4.200	0	0	130.435	-22.799	-1647.680	0
		0	0	129.383	77.284	1927.409	0
14	0	0	0	130.435	31.822	-1647.531	0
		0	0	129.383	13.362	1928.912	0
14	1.050	0	0	130.435	31.822	-1510.580	0
		0	0	82.344	13.362	2040.064	0
14	2.100	0	0	130.435	31.822	-1373.628	0
		0	0	35.306	13.362	2101.828	0
14	3.150	0	0	130.435	31.822	-1236.677	0
		0	0	-11.732	13.362	2114.204	0
14	4.200	0	0	130.435	31.822	-1099.726	0
		0	0	-58.770	13.362	2077.192	0
15	0	0	0	130.435	67.117	-1098.137	0
		0	0	-58.770	-53.342	2076.550	0
15	1.050	0	0	130.435	67.117	-961.153	0
		0	0	-105.820	-53.342	1990.122	0
15	2.100	0	0	130.435	67.117	-824.169	0
		0	0	-152.869	-53.342	1854.283	0
15	3.151	0	0	130.435	67.117	-687.185	0
		0	0	-199.919	-53.342	1669.033	0
15	4.201	0	0	130.435	67.117	-550.201	0
		0	0	-246.968	-53.342	1434.370	0
16	0	0	0	130.435	85.634	-547.624	0
		0	0	-246.968	-101.687	1431.755	0
16	1.049	0	0	130.435	85.634	-410.734	0
		0	0	-293.986	-101.687	1147.890	0
16	2.099	0	0	130.435	85.634	-273.843	0
		0	0	-341.003	-101.687	814.681	0
16	3.148	0	0	130.435	85.634	-136.952	0
		0	0	-388.021	-101.687	432.126	0
16	4.198	0	0	-107.104	-2194.487	-0.237987	0
		0	0	-197.499	2178.435	0.404522	0
17	0	0	0	356.661	4.02E-15	-855.331	0
		0	0	-512.332	1.00E-13	1228.655	0
17	0.600	0	0	356.661	4.02E-15	-641.498	0
		0	0	-512.332	1.00E-13	921.491	0
17	1.199	0	0	356.661	4.02E-15	-427.665	0
		0	0	-512.332	1.00E-13	614.328	0
17	1.799	0	0	356.661	4.02E-15	-213.833	0
		0	0	-512.332	1.00E-13	307.164	0
17	2.398	0	0	356.661	4.02E-15	-8.55E-06	0
		0	0	-512.332	1.00E-13	1.23E-05	0
18	0	0	0	402.663	-9.35E-15	-966.396	0
		0	0	-550.689	-3.34E-14	1321.661	0
18	0.600	0	0	402.663	-9.35E-15	-724.797	0
		0	0	-550.689	-3.34E-14	991.246	0
18	1.200	0	0	402.663	-9.35E-15	-483.198	0
		0	0	-550.689	-3.34E-14	660.831	0
18	1.800	0	0	402.663	-9.35E-15	-241.599	0
		0	0	-550.689	-3.34E-14	330.415	0
18	2.400	0	0	402.663	-9.35E-15	-9.66E-06	0
		0	0	-550.689	-3.34E-14	1.32E-05	0
19	0	0	0	355.082	-7.39E-14	-852.180	0

ENVOLVENTE para < My > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
		0	0	-510.732	1.89E-13	1225.735	0
19	0.600	0	0	355.082	-7.39E-14	-639.135	0
		0	0	-510.732	1.89E-13	919.301	0
19	1.200	0	0	355.082	-7.39E-14	-426.090	0
		0	0	-510.732	1.89E-13	612.867	0
19	1.800	0	0	355.082	-7.39E-14	-213.045	0
		0	0	-510.732	1.89E-13	306.434	0
19	2.400	0	0	355.082	-7.39E-14	-8.52E-06	0
		0	0	-510.732	1.89E-13	1.23E-05	0
20	0	0	0	403.629	-6.32E-14	-968.752	0
		0	0	-552.581	5.81E-14	1326.254	0
20	0.600	0	0	403.629	-6.32E-14	-726.564	0
		0	0	-552.581	5.81E-14	994.691	0
20	1.200	0	0	403.629	-6.32E-14	-484.376	0
		0	0	-552.581	5.81E-14	663.127	0
20	1.800	0	0	403.629	-6.32E-14	-242.188	0
		0	0	-552.581	5.81E-14	331.564	0
20	2.400	0	0	403.629	-6.32E-14	-9.69E-06	0
		0	0	-552.581	5.81E-14	1.33E-05	0

Mstb. 1 :449.9
Section forces envelope My, GWSP HZ (ENVOLVENTE DE SOBRECARGA), View "ALL"
- Struktur: Staebe
- Envelop Moment My-min, Scaling 1.00E-03
  min: -3.82E+03 max: -8.52E-06 [kNm]
- Envelop Moment My-max, Scaling 1.00E-03
  min: 1.23E-05 max: 3.13E+03 [kNm]
- Text envelopes [kNm]



ENVOLVENTE: IA 'ENVOLVENTE DEL CARRO'

Grupo	Espe.	Hipótesis	Factor	Etapa	Título
A	PERM.	1	0		Peso Propio
B	O	21	1.000		Carro 2 centrado
C	O	22	1.000		Carro 1 centrado
D	O	23	1.000		Carro 2 apoyo
E	O	24	1.000		Carro 1 pila
F	O	25	1.000		Carro 1 estribo

ALTERNATIVA PARA ENVOLVENTE:

Grupo	Espe.	Hipótesis	Factor	Título
G	PERM.	1	0	Peso Propio
H	O	26	1.000	Carro 2 excéntrico
I	O	27	1.000	Carro 1 excéntrico
J	O	28	1.000	Carro 2 apoyo excentrøco
K	O	29	1.000	Carro 1 pila excéntrico
L	O	30	1.000	Carro 1 estribo excéntrico

ALTERNATIVA PARA ENVOLVENTE:

Grupo	Espe.	Hipótesis	Factor	Título
M	PERM.	1	0	Peso Propio
N	O	31	1.000	Carro 2 excéntrico
O	O	32	1.000	Carro 1 excéntrico
P	O	33	1.000	Carro 2 apoyo excéntrico

Q	0	34	1.000	Carro 1 pila excéntrico
R	0	35	1.000	Carro 1 estribo excéntrico

AUFLAGERREAKTIONEN: GRENZWERTE fuer < FZ > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos

NUDOS	FX [kN]	FY [kN]	FZ [kN]	MX [kNm]	MY [kNm]	MZ [kNm]
6	0	0	0			
	0	0	638.054			
12	0	0	-60.195			
	0	0	404.148			
18	0	0	-204.483			
	0	0	579.906			
19	0	0	-222.072			
	0	0	568.000			
20	0	0	-180.957			
	0	0	79.398			
21	0	0	-182.878			
	0	0	122.632			

ENVOLVENTE para < Vz > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
1	0	0	0	-102.137	626.399	-17.235	0
		0	0	545.221	-1416.767	53.911	0
1	0.0996	0	0	-102.137	626.399	-27.405	0
		0	0	545.221	-1416.767	108.204	0
1	0.100	0	0	-102.137	626.399	-27.491	0
		0	0	345.221	-916.767	108.578	0
1	1.050	0	0	-102.137	626.399	-124.486	0
		0	0	345.221	-916.767	436.418	0
1	1.500	0	0	-102.137	626.399	-170.397	0
		0	0	345.221	-916.767	591.598	0
1	1.500	0	0	-102.137	626.399	-170.483	0
		0	0	265.145	-1143.114	433.023	0
1	2.100	0	0	-102.137	626.399	-231.737	0
		0	0	265.145	-1143.114	592.037	0
1	3.000	0	0	-102.137	626.399	-323.602	0
		0	0	265.145	-1143.114	830.518	0
1	3.000	0	0	-102.137	626.399	-323.688	0
		0	0	265.145	-1143.114	830.741	0
1	3.150	0	0	-102.137	626.399	-338.988	0
		0	0	265.145	-1143.114	870.459	0
1	4.200	0	0	-102.137	626.399	-446.239	0
		0	0	265.145	-1143.114	1148.881	0
2	0	0	0	-102.137	639.634	-427.052	0
		0	0	265.145	-1177.403	1113.715	0
2	1.050	0	0	-102.137	639.634	-534.279	0
		0	0	265.145	-1177.403	1392.074	0
2	2.100	0	0	-102.137	639.634	-641.506	0
		0	0	265.145	-1177.403	1670.433	0
2	3.150	0	0	-102.137	639.634	-748.733	0
		0	0	265.145	-1177.403	1948.792	0
2	4.199	0	0	-102.137	639.634	-855.960	0
		0	0	265.145	-1177.403	2227.151	0
3	0	0	0	-102.137	669.028	-833.187	0
		0	0	265.145	-1254.180	2184.837	0
3	0.600	0	0	-102.137	669.028	-894.426	0
		0	0	265.145	-1254.180	2343.812	0
3	0.600	0	0	-102.137	669.028	-894.511	0

ENVOLVENTE para < Vz > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
3	1.050	0	0	65.145	-754.180	2343.951	0
		0	0	-102.137	669.028	-940.441	0
3	2.100	0	0	65.145	-754.180	2373.246	0
		0	0	-102.137	669.028	-1047.631	0
3	2.100	0	0	65.145	-754.180	2441.614	0
		0	0	-163.085	235.550	2256.618	0
3	2.100	0	0	50.866	-1046.167	489.423	0
		0	0	-163.085	235.550	2256.583	0
3	3.150	0	0	50.866	-1046.167	489.434	0
		0	0	-163.085	235.550	2085.362	0
3	3.600	0	0	50.866	-1046.167	542.838	0
		0	0	-163.085	235.550	2012.093	0
3	3.600	0	0	50.866	-1046.167	565.691	0
		0	0	-363.085	-264.450	2011.872	0
3	4.200	0	0	50.866	-1046.167	565.734	0
		0	0	-363.085	-264.450	1794.024	0
4	0	0	0	50.866	-1046.167	596.253	0
		0	0	-363.085	-321.579	1784.669	0
4	1.050	0	0	50.866	-1064.666	562.557	0
		0	0	-363.085	-321.579	1403.442	0
4	2.100	0	0	50.866	-1064.666	615.965	0
		0	0	-363.085	-321.579	1022.215	0
4	3.150	0	0	50.866	-1064.666	669.372	0
		0	0	-363.085	-321.579	640.988	0
4	4.200	0	0	50.866	-1064.666	722.780	0
		0	0	-363.085	-321.579	259.762	0
5	0	0	0	50.866	-1064.666	776.188	0
		0	0	-363.085	-329.794	249.249	0
5	1.050	0	0	50.866	-1089.159	741.427	0
		0	0	-363.085	-329.794	-131.849	0
5	1.200	0	0	50.866	-1089.159	794.817	0
		0	0	-363.085	-329.794	-186.300	0
5	1.200	0	0	50.866	-1089.159	802.445	0
		0	0	-363.085	-329.794	-186.605	0
5	2.099	0	0	3.916	-989.767	-37.854	0
		0	0	-363.085	-329.794	-512.947	0
5	2.700	0	0	3.916	-989.767	-34.334	0
		0	0	-363.085	-329.794	-730.927	0
5	2.700	0	0	3.916	-989.767	-31.983	0
		0	0	-395.943	37.266	-106.448	0
5	3.149	0	0	3.916	-989.767	-31.980	0
		0	0	-395.943	37.266	-283.996	0
5	4.198	0	0	3.916	-989.767	-30.224	0
		0	0	-395.943	37.266	-699.416	0
5	4.198	0	0	3.916	-989.767	-26.115	0
		0	0	-595.943	-462.734	-699.582	0
6	0	0	0	3.916	-989.767	-26.114	0
		0	0	0	0	0	0
6	0.0995	0	0	591.197	1041.612	-842.716	0
		0	0	0	0	0	0
6	0.101	0	0	591.197	1041.612	-783.915	0
		0	0	0	0	0	0
6	1.350	0	0	391.197	541.612	-783.385	0
		0	0	0	0	0	0
6	1.499	0	0	391.197	541.612	-294.584	0
		0	0	0	0	0	0
6	1.501	0	0	391.197	541.612	-236.132	0
		0	0	0	0	0	0
6	2.700	0	0	299.332	834.973	-1596.965	0
		0	0	0	0	0	0
6	2.999	0	0	299.332	834.973	-1237.903	0
		0	0	0	0	0	0
6	3.001	0	0	299.332	834.973	-1148.290	0
		0	0	-28.863	511.765	772.477	0
6	4.050	0	0	299.332	834.973	-1147.967	0
		0	0	-28.863	511.765	742.182	0
6	5.400	0	0	299.332	834.973	-833.793	0
		0	0	-28.863	511.765	703.216	0

ENVOLVENTE para < Vz > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
		0	0	299.332	834.973	-429.682	0
7	0	0	0	-28.863	480.943	724.644	0
		0	0	299.332	852.736	-393.251	0
7	1.350	0	0	-28.863	480.943	685.679	0
		0	0	299.332	852.736	10.851	0
7	2.700	0	0	-28.863	480.943	646.713	0
		0	0	299.332	852.736	414.954	0
7	4.050	0	0	-28.863	480.943	607.748	0
		0	0	299.332	852.736	819.057	0
7	5.400	0	0	-28.863	480.943	568.782	0
		0	0	299.332	852.736	1223.159	0
8	0	0	0	-28.863	457.698	587.650	0
		0	0	299.332	802.894	1256.439	0
8	1.350	0	0	-28.863	457.698	548.689	0
		0	0	299.332	802.894	1660.493	0
8	2.700	0	0	-28.863	457.698	509.728	0
		0	0	299.332	802.894	2064.548	0
8	3.899	0	0	-28.863	457.698	475.117	0
		0	0	299.332	802.894	2423.497	0
8	3.900	0	0	-28.863	457.698	475.085	0
		0	0	99.332	302.894	2423.712	0
8	4.050	0	0	-28.863	457.698	470.767	0
		0	0	99.332	302.894	2438.573	0
8	5.399	0	0	-28.863	457.698	431.822	0
		0	0	99.332	302.894	2572.603	0
8	5.399	0	0	-28.863	457.698	431.806	0
		0	0	99.332	302.894	2572.657	0
9	0	0	0	-101.085	181.638	3165.600	0
		0	0	49.246	-187.427	-517.112	0
9	1.350	0	0	-101.085	181.638	3029.118	0
		0	0	49.246	-187.427	-450.622	0
9	1.499	0	0	-101.085	181.638	3014.027	0
		0	0	49.246	-187.427	-443.270	0
9	1.501	0	0	-301.085	681.638	3013.810	0
		0	0	49.246	-187.427	-443.217	0
9	2.700	0	0	-301.085	681.638	2652.570	0
		0	0	49.246	-187.427	-384.132	0
9	4.051	0	0	-301.085	681.638	2246.054	0
		0	0	49.246	-187.427	-317.642	0
9	5.401	0	0	-301.085	681.638	1839.539	0
		0	0	49.246	-187.427	-251.152	0
10	0	0	0	-301.085	606.418	1865.688	0
		0	0	49.246	-177.080	-258.552	0
10	1.350	0	0	-301.085	606.418	1459.276	0
		0	0	49.246	-177.080	-192.079	0
10	2.700	0	0	-301.085	606.418	1052.863	0
		0	0	49.246	-177.080	-125.605	0
10	4.049	0	0	-301.085	606.418	646.451	0
		0	0	49.246	-177.080	-59.132	0
10	5.399	0	0	-301.085	606.418	240.039	0
		0	0	49.246	-177.080	7.341	0
11	0	0	0	-301.085	595.778	265.350	0
		0	0	49.246	-177.232	-0.118838	0
11	1.331	0	0	-301.085	595.778	-135.401	0
		0	0	49.246	-177.232	65.429	0
11	2.662	0	0	-301.085	595.778	-536.153	0
		0	0	49.246	-177.232	130.976	0
11	3.993	0	0	-301.085	595.778	-936.905	0
		0	0	49.246	-177.232	196.523	0
11	5.324	0	0	-301.085	595.778	-1337.657	0
		0	0	49.246	-177.232	262.071	0
12	0	0	0	-19.138	213.565	376.230	0
		0	0	103.480	-762.240	-2085.275	0
12	1.050	0	0	-19.138	213.565	356.139	0
		0	0	103.480	-762.240	-1976.640	0
12	2.100	0	0	-19.138	213.565	336.048	0
		0	0	103.480	-762.240	-1868.006	0
12	3.149	0	0	-19.138	213.565	315.958	0

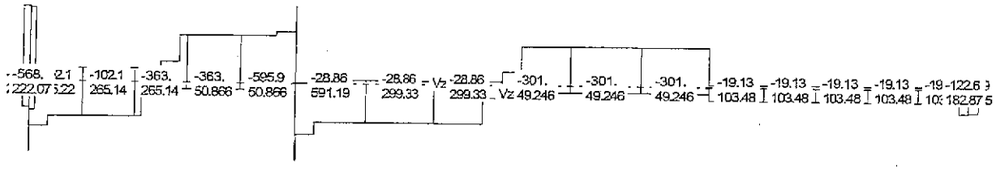
ENVOLVENTE para < Vz > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
		0	0	103.480	-762.240	-1759.371	0
12	4.199	0	0	-19.138	213.565	295.867	0
		0	0	103.480	-762.240	-1650.736	0
13	0	0	0	-19.138	204.543	302.174	0
		0	0	103.480	-712.100	-1672.977	0
13	1.050	0	0	-19.138	204.543	282.079	0
		0	0	103.480	-712.100	-1564.321	0
13	2.100	0	0	-19.138	204.543	261.984	0
		0	0	103.480	-712.100	-1455.665	0
13	3.150	0	0	-19.138	204.543	241.890	0
		0	0	103.480	-712.100	-1347.008	0
13	4.200	0	0	-19.138	204.543	221.795	0
		0	0	103.480	-712.100	-1238.352	0
14	0	0	0	-19.138	197.080	228.452	0
		0	0	103.480	-670.667	-1261.272	0
14	1.050	0	0	-19.138	197.080	208.358	0
		0	0	103.480	-670.667	-1152.622	0
14	2.100	0	0	-19.138	197.080	188.265	0
		0	0	103.480	-670.667	-1043.972	0
14	3.150	0	0	-19.138	197.080	168.171	0
		0	0	103.480	-670.667	-935.322	0
14	4.200	0	0	-19.138	197.080	148.077	0
		0	0	103.480	-670.667	-825.671	0
15	0	0	0	-19.138	192.224	154.329	0
		0	0	103.480	-643.777	-847.780	0
15	1.050	0	0	-19.138	192.224	134.230	0
		0	0	103.480	-643.777	-739.104	0
15	2.100	0	0	-19.138	192.224	114.132	0
		0	0	103.480	-643.777	-630.428	0
15	3.151	0	0	-19.138	192.224	94.033	0
		0	0	103.480	-643.777	-521.752	0
15	4.201	0	0	-19.138	192.224	73.935	0
		0	0	103.480	-643.777	-413.075	0
16	0	0	0	-19.138	189.621	80.376	0
		0	0	103.480	-629.479	-434.552	0
16	1.049	0	0	-19.138	189.621	60.291	0
		0	0	103.480	-629.479	-325.950	0
16	2.099	0	0	-19.138	189.621	40.206	0
		0	0	103.480	-629.479	-217.347	0
16	3.148	0	0	-19.138	189.621	20.121	0
		0	0	103.480	-629.479	-108.745	0
16	4.198	0	0	-19.138	189.621	0.036289	0
		0	0	103.480	-629.479	-0.142596	0
17	0	0	0	-579.906	-4.00E-14	1390.707	0
		0	0	204.483	-1.27E-14	-490.383	0
17	0.600	0	0	-579.906	-4.00E-14	1043.030	0
		0	0	204.483	-1.27E-14	-367.787	0
17	1.199	0	0	-579.906	-4.00E-14	695.354	0
		0	0	204.483	-1.27E-14	-245.192	0
17	1.799	0	0	-579.906	-4.00E-14	347.677	0
		0	0	204.483	-1.27E-14	-122.596	0
17	2.398	0	0	-579.906	-4.00E-14	1.39E-05	0
		0	0	204.483	-1.27E-14	-4.90E-06	0
18	0	0	0	-568.000	1.26E-13	1363.208	0
		0	0	222.072	5.58E-15	-532.977	0
18	0.600	0	0	-568.000	1.26E-13	1022.406	0
		0	0	222.072	5.58E-15	-399.732	0
18	1.200	0	0	-568.000	1.26E-13	681.604	0
		0	0	222.072	5.58E-15	-266.488	0
18	1.800	0	0	-568.000	1.26E-13	340.802	0
		0	0	222.072	5.58E-15	-133.244	0
18	2.400	0	0	-568.000	1.26E-13	1.36E-05	0
		0	0	222.072	5.58E-15	-5.33E-06	0
19	0	0	0	-79.398	-2.55E-14	190.552	0
		0	0	180.957	-4.08E-15	-434.288	0
19	0.600	0	0	-79.398	-2.55E-14	142.914	0
		0	0	180.957	-4.08E-15	-325.716	0
19	1.200	0	0	-79.398	-2.55E-14	95.276	0

ENVOLVENTE para < Vz > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3.,línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
		0	0	180.957	-4.08E-15	-217.144	0
19	1.800	0	0	-79.398	-2.55E-14	47.638	0
		0	0	180.957	-4.08E-15	-108.572	0
19	2.400	0	0	-79.398	-2.55E-14	1.91E-06	0
		0	0	180.957	-4.08E-15	-4.34E-06	0
20	0	0	0	-122.632	1.87E-14	294.329	0
		0	0	182.878	1.31E-14	-438.928	0
20	0.600	0	0	-122.632	1.87E-14	220.747	0
		0	0	182.878	1.31E-14	-329.196	0
20	1.200	0	0	-122.632	1.87E-14	147.164	0
		0	0	182.878	1.31E-14	-219.464	0
20	1.800	0	0	-122.632	1.87E-14	73.582	0
		0	0	182.878	1.31E-14	-109.732	0
20	2.400	0	0	-122.632	1.87E-14	2.94E-06	0
		0	0	182.878	1.31E-14	-4.39E-06	0

Mstb. 1 :449.9
Section forces envelope Vz, GWSP IA (ENVOLVENTE DEL CARRO), View "ALL"
- Struktur: Staebe
- Envelop Shear force Vz-min, Scaling 1.00E-02
  min: -5.96E+02 max: 0.00E+00 [kN]
- Envelop Shear force Vz-max, Scaling 1.00E-02
  min: 3.92E+00 max: 5.91E+02 [kN]
- Text envelopes [kN]



ENVOLVENTE para < T > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
1	0	0	0	545.221	-1416.767	53.911	0
		0	0	544.165	1476.419	-3.328	0
1	0.0996	0	0	545.221	-1416.767	108.204	0
		0	0	544.165	1476.419	50.860	0
1	0.100	0	0	265.145	-1143.114	61.820	0
		0	0	236.915	1336.754	8.625	0
1	1.050	0	0	265.145	-1143.114	313.616	0
		0	0	236.915	1336.754	233.612	0
1	1.500	0	0	265.145	-1143.114	432.800	0
		0	0	236.915	1336.754	340.107	0
1	1.500	0	0	265.145	-1143.114	433.023	0
		0	0	236.915	1336.754	340.306	0
1	2.100	0	0	265.145	-1143.114	592.037	0
		0	0	236.915	1336.754	482.391	0
1	3.000	0	0	265.145	-1143.114	830.518	0
		0	0	236.915	1336.754	695.480	0
1	3.000	0	0	265.145	-1143.114	830.741	0
		0	0	236.915	1336.754	695.679	0
1	3.150	0	0	265.145	-1143.114	870.459	0
		0	0	236.915	1336.754	731.169	0

ENVOLVENTE para < T > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
1	4.200	0	0	265.145	-1143.114	1148.881	0
		0	0	236.915	1336.754	979.948	0
2	0	0	0	265.145	-1177.403	1113.715	0
		0	0	236.915	1306.445	1020.005	0
2	1.050	0	0	265.145	-1177.403	1392.074	0
		0	0	236.915	1306.445	1268.727	0
2	2.100	0	0	265.145	-1177.403	1670.433	0
		0	0	236.915	1306.445	1517.449	0
2	3.150	0	0	265.145	-1177.403	1948.792	0
		0	0	236.915	1306.445	1766.172	0
2	4.199	0	0	265.145	-1177.403	2227.151	0
		0	0	236.915	1306.445	2014.894	0
3	0	0	0	265.145	-1254.180	2184.837	0
		0	0	236.915	1235.550	2059.130	0
3	0.600	0	0	265.145	-1254.180	2343.812	0
		0	0	236.915	1235.550	2201.179	0
3	0.600	0	0	50.866	-1046.167	413.135	0
		0	0	4.057	1046.311	84.209	0
3	1.050	0	0	50.866	-1046.167	436.008	0
		0	0	4.057	1046.311	86.034	0
3	2.100	0	0	50.866	-1046.167	489.391	0
		0	0	4.057	1046.311	90.291	0
3	2.100	0	0	50.866	-1046.167	489.423	0
		0	0	4.057	1046.311	90.294	0
3	2.100	0	0	50.866	-1046.167	489.434	0
		0	0	4.057	1046.311	90.294	0
3	3.150	0	0	50.866	-1046.167	542.838	0
		0	0	4.057	1046.311	94.553	0
3	3.600	0	0	50.866	-1046.167	565.691	0
		0	0	4.057	1046.311	96.376	0
3	3.600	0	0	50.866	-1046.167	565.734	0
		0	0	4.057	1046.311	96.379	0
3	4.200	0	0	50.866	-1046.167	596.253	0
		0	0	4.057	1046.311	98.813	0
4	0	0	0	50.866	-1064.666	562.557	0
		0	0	4.057	1042.623	132.160	0
4	1.050	0	0	50.866	-1064.666	615.965	0
		0	0	4.057	1042.623	136.419	0
4	2.100	0	0	50.866	-1064.666	669.372	0
		0	0	4.057	1042.623	140.679	0
4	3.150	0	0	50.866	-1064.666	722.780	0
		0	0	4.057	1042.623	144.938	0
4	4.200	0	0	50.866	-1064.666	776.188	0
		0	0	4.057	1042.623	149.197	0
5	0	0	0	50.866	-1089.159	741.427	0
		0	0	4.057	1037.266	182.765	0
5	1.050	0	0	50.866	-1089.159	794.817	0
		0	0	4.057	1037.266	187.023	0
5	1.200	0	0	50.866	-1089.159	802.445	0
		0	0	4.057	1037.266	187.631	0
5	1.200	0	0	3.916	-989.767	-37.854	0
		0	0	-46.857	1011.320	-738.360	0
5	2.099	0	0	3.916	-989.767	-34.334	0
		0	0	-46.857	1011.320	-780.475	0
5	2.700	0	0	3.916	-989.767	-31.983	0
		0	0	-46.857	1011.320	-808.607	0
5	2.700	0	0	3.916	-989.767	-31.980	0
		0	0	-46.857	1011.320	-808.646	0
5	3.149	0	0	3.916	-989.767	-30.224	0
		0	0	-46.857	1011.320	-829.657	0
5	4.198	0	0	3.916	-989.767	-26.115	0
		0	0	-46.857	1011.320	-878.820	0
5	4.198	0	0	3.916	-989.767	-26.114	0
		0	0	-46.857	1011.320	-878.839	0
6	0	0	0	571.137	-988.235	-60.919	0
		0	0	591.197	1041.612	-842.716	0
6	0.0995	0	0	571.137	-988.235	-4.113	0
		0	0	591.197	1041.612	-783.915	0

ENVOLVENTE para < T > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
6	0.101	0	0	298.915	-596.381	-1305.474	0
		0	0	299.332	834.973	-2016.030	0
6	1.350	0	0	298.915	-596.381	-931.980	0
		0	0	299.332	834.973	-1642.014	0
6	1.499	0	0	298.915	-596.381	-887.316	0
		0	0	299.332	834.973	-1597.288	0
6	1.501	0	0	298.915	-596.381	-886.993	0
		0	0	299.332	834.973	-1596.965	0
6	2.700	0	0	298.915	-596.381	-528.432	0
		0	0	299.332	834.973	-1237.903	0
6	2.999	0	0	298.915	-596.381	-438.944	0
		0	0	299.332	834.973	-1148.290	0
6	3.001	0	0	298.915	-596.381	-438.621	0
		0	0	299.332	834.973	-1147.967	0
6	4.050	0	0	298.915	-596.381	-124.884	0
		0	0	299.332	834.973	-833.793	0
6	5.400	0	0	298.915	-596.381	278.663	0
		0	0	299.332	834.973	-429.682	0
7	0	0	0	298.915	-607.850	252.669	0
		0	0	299.332	852.736	-393.251	0
7	1.350	0	0	298.915	-607.850	656.209	0
		0	0	299.332	852.736	10.851	0
7	2.700	0	0	298.915	-607.850	1059.748	0
		0	0	299.332	852.736	414.954	0
7	4.050	0	0	298.915	-607.850	1463.288	0
		0	0	299.332	852.736	819.057	0
7	5.400	0	0	298.915	-607.850	1866.827	0
		0	0	299.332	852.736	1223.159	0
8	0	0	0	298.915	-682.379	1840.893	0
		0	0	299.332	802.894	1256.439	0
8	1.350	0	0	298.915	-682.379	2244.384	0
		0	0	299.332	802.894	1660.493	0
8	2.700	0	0	298.915	-682.379	2647.876	0
		0	0	299.332	802.894	2064.548	0
8	3.899	0	0	298.915	-682.379	3006.325	0
		0	0	299.332	802.894	2423.497	0
8	3.900	0	0	-8.803	-457.362	-90.360	0
		0	0	-28.863	457.698	475.085	0
8	4.050	0	0	-8.803	-457.362	-91.677	0
		0	0	-28.863	457.698	470.767	0
8	5.399	0	0	-8.803	-457.362	-103.555	0
		0	0	-28.863	457.698	431.822	0
8	5.399	0	0	-8.803	-457.362	-103.560	0
		0	0	-28.863	457.698	431.806	0
9	0	0	0	-8.803	-452.485	-123.135	0
		0	0	-28.863	438.702	451.092	0
9	1.350	0	0	-8.803	-452.485	-135.021	0
		0	0	-28.863	438.702	412.122	0
9	1.499	0	0	-8.803	-452.485	-136.336	0
		0	0	-28.863	438.702	407.813	0
9	1.501	0	0	-300.668	-807.572	2410.634	0
		0	0	-301.085	681.638	3013.810	0
9	2.700	0	0	-300.668	-807.572	2049.895	0
		0	0	-301.085	681.638	2652.570	0
9	4.051	0	0	-300.668	-807.572	1643.943	0
		0	0	-301.085	681.638	2246.054	0
9	5.401	0	0	-300.668	-807.572	1237.991	0
		0	0	-301.085	681.638	1839.539	0
10	0	0	0	-300.668	-857.151	1204.195	0
		0	0	-301.085	606.418	1865.688	0
10	1.350	0	0	-300.668	-857.151	798.345	0
		0	0	-301.085	606.418	1459.276	0
10	2.700	0	0	-300.668	-857.151	392.496	0
		0	0	-301.085	606.418	1052.863	0
10	4.049	0	0	-300.668	-857.151	-13.353	0
		0	0	-301.085	606.418	646.451	0
10	5.399	0	0	-300.668	-857.151	-419.203	0
		0	0	-301.085	606.418	240.039	0

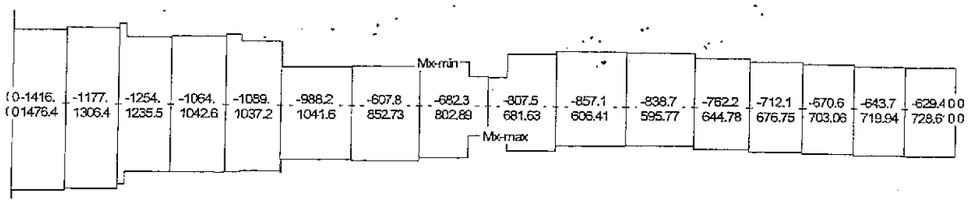
ENVOLVENTE para < T > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
11	0	0	0	-300.668	-838.747	-454.909	0
		0	0	-301.085	595.778	265.350	0
11	1.331	0	0	-300.668	-838.747	-855.106	0
		0	0	-301.085	595.778	-135.401	0
11	2.662	0	0	-300.668	-838.747	-1255.302	0
		0	0	-301.085	595.778	-536.153	0
11	3.993	0	0	-300.668	-838.747	-1655.499	0
		0	0	-301.085	595.778	-936.905	0
11	5.324	0	0	-300.668	-838.747	-2055.696	0
		0	0	-301.085	595.778	-1337.657	0
12	0	0	0	103.480	-762.240	-2085.275	0
		0	0	58.325	644.783	-1314.736	0
12	1.050	0	0	103.480	-762.240	-1976.640	0
		0	0	58.325	644.783	-1253.506	0
12	2.100	0	0	103.480	-762.240	-1868.006	0
		0	0	58.325	644.783	-1192.276	0
12	3.149	0	0	103.480	-762.240	-1759.371	0
		0	0	58.325	644.783	-1131.046	0
12	4.199	0	0	103.480	-762.240	-1650.736	0
		0	0	58.325	644.783	-1069.815	0
13	0	0	0	103.480	-712.100	-1672.977	0
		0	0	58.325	676.759	-1049.879	0
13	1.050	0	0	103.480	-712.100	-1564.321	0
		0	0	58.325	676.759	-988.637	0
13	2.100	0	0	103.480	-712.100	-1455.665	0
		0	0	58.325	676.759	-927.394	0
13	3.150	0	0	103.480	-712.100	-1347.008	0
		0	0	58.325	676.759	-866.152	0
13	4.200	0	0	103.480	-712.100	-1238.352	0
		0	0	58.325	676.759	-804.909	0
14	0	0	0	103.480	-670.667	-1261.272	0
		0	0	58.325	703.064	-782.038	0
14	1.050	0	0	103.480	-670.667	-1152.622	0
		0	0	58.325	703.064	-720.799	0
14	2.100	0	0	103.480	-670.667	-1043.972	0
		0	0	58.325	703.064	-659.560	0
14	3.150	0	0	103.480	-670.667	-935.322	0
		0	0	58.325	703.064	-598.321	0
14	4.200	0	0	103.480	-670.667	-826.671	0
		0	0	58.325	703.064	-537.082	0
15	0	0	0	103.480	-643.777	-847.780	0
		0	0	58.325	719.947	-514.230	0
15	1.050	0	0	103.480	-643.777	-739.104	0
		0	0	58.325	719.947	-452.976	0
15	2.100	0	0	103.480	-643.777	-630.428	0
		0	0	58.325	719.947	-391.723	0
15	3.151	0	0	103.480	-643.777	-521.752	0
		0	0	58.325	719.947	-330.469	0
15	4.201	0	0	103.480	-643.777	-413.075	0
		0	0	58.325	719.947	-269.215	0
16	0	0	0	103.480	-629.479	-434.552	0
		0	0	58.325	728.617	-244.782	0
16	1.049	0	0	103.480	-629.479	-325.950	0
		0	0	58.325	728.617	-183.570	0
16	2.099	0	0	103.480	-629.479	-217.347	0
		0	0	58.325	728.617	-122.358	0
16	3.148	0	0	103.480	-629.479	-108.745	0
		0	0	58.325	728.617	-61.146	0
16	4.198	0	0	103.480	-629.479	-0.142596	0
		0	0	58.325	728.617	0.066408	0
17	0	0	0	181.131	-1.13E-13	-434.382	0
		0	0	105.761	2.22E-13	-253.631	0
17	0.600	0	0	181.131	-1.13E-13	-325.787	0
		0	0	105.761	2.22E-13	-190.223	0
17	1.199	0	0	181.131	-1.13E-13	-217.191	0
		0	0	105.761	2.22E-13	-126.815	0
17	1.799	0	0	181.131	-1.13E-13	-108.596	0
		0	0	105.761	2.22E-13	-63.408	0

ENVOLVENTE para < T > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip..decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
17	2.398	0	0	181.131	-1.13E-13	-4.34E-06	0
		0	0	105.761	2.22E-13	-2.54E-06	0
18	0	0	0	-105.329	-9.32E-14	252.792	0
		0	0	-266.129	1.94E-13	638.715	0
18	0.600	0	0	-105.329	-9.32E-14	189.594	0
		0	0	-266.129	1.94E-13	479.036	0
18	1.200	0	0	-105.329	-9.32E-14	126.396	0
		0	0	-266.129	1.94E-13	319.357	0
18	1.800	0	0	-105.329	-9.32E-14	63.198	0
		0	0	-266.129	1.94E-13	159.679	0
18	2.400	0	0	-105.329	-9.32E-14	2.53E-06	0
		0	0	-266.129	1.94E-13	6.39E-06	0
19	0	0	0	-79.398	-2.55E-14	190.552	0
		0	0	50.779	4.59E-14	-121.868	0
19	0.600	0	0	-79.398	-2.55E-14	142.914	0
		0	0	50.779	4.59E-14	-91.401	0
19	1.200	0	0	-79.398	-2.55E-14	95.276	0
		0	0	50.779	4.59E-14	-60.934	0
19	1.800	0	0	-79.398	-2.55E-14	47.638	0
		0	0	50.779	4.59E-14	-30.467	0
19	2.400	0	0	-79.398	-2.55E-14	1.91E-06	0
		0	0	50.779	4.59E-14	-1.22E-06	0
20	0	0	0	30.123	-1.30E-13	-72.299	0
		0	0	36.833	2.73E-14	-88.404	0
20	0.600	0	0	30.123	-1.30E-13	-54.225	0
		0	0	36.833	2.73E-14	-66.303	0
20	1.200	0	0	30.123	-1.30E-13	-36.150	0
		0	0	36.833	2.73E-14	-44.202	0
20	1.800	0	0	30.123	-1.30E-13	-18.075	0
		0	0	36.833	2.73E-14	-22.101	0
20	2.400	0	0	30.123	-1.30E-13	-7.23E-07	0
		0	0	36.833	2.73E-14	-8.84E-07	0

Mstb. 1 :449.9
Section forces envelope T , GWSP IA (ENVOLVENTE DEL CARRO), View "ALL"
- Struktur: Staebe
- Envelop Torsion.moment Mx-min, Scaling 5.00E-03
  min: -1.42E+03 max: -2.55E-14 [kNm]
- Envelop Torsion.moment Mx-max, Scaling 5.00E-03
  min: 2.73E-14 max: 1.48E+03 [kNm]
- Text envelopes [kNm]



ENVOLVENTE para < My > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
1	0	0	0	-46.857	952.753	-21.059	0
		0	0	545.221	-1416.767	53.911	0
1	0.0996	0	0	-102.137	626.399	-27.405	0
		0	0	545.221	-1416.767	108.204	0
1	0.100	0	0	-102.137	626.399	-27.491	0
		0	0	345.221	-916.767	108.578	0
1	1.050	0	0	-102.137	626.399	-124.486	0
		0	0	345.221	-916.767	436.418	0
1	1.500	0	0	-102.137	626.399	-170.397	0
		0	0	345.221	-916.767	591.598	0
1	1.500	0	0	-102.137	626.399	-170.483	0
		0	0	145.221	-416.767	591.804	0
1	2.100	0	0	-102.137	626.399	-231.737	0
		0	0	145.221	-416.767	678.897	0
1	3.000	0	0	-102.137	626.399	-323.602	0
		0	0	265.145	-1143.114	830.518	0
1	3.000	0	0	-102.137	626.399	-323.688	0
		0	0	265.145	-1143.114	830.741	0
1	3.150	0	0	-102.137	626.399	-338.988	0
		0	0	265.145	-1143.114	870.459	0
1	4.200	0	0	-102.137	626.399	-446.239	0
		0	0	265.145	-1143.114	1148.881	0
2	0	0	0	-102.137	639.634	-427.052	0
		0	0	265.145	-1177.403	1113.715	0
2	1.050	0	0	-102.137	639.634	-534.279	0
		0	0	265.145	-1177.403	1392.074	0
2	2.100	0	0	-102.137	639.634	-641.506	0
		0	0	265.145	-1177.403	1670.433	0
2	3.150	0	0	-102.137	639.634	-748.733	0
		0	0	265.145	-1177.403	1948.792	0
2	4.199	0	0	-102.137	639.634	-855.960	0
		0	0	265.145	-1177.403	2227.151	0
3	0	0	0	-102.137	669.028	-833.187	0
		0	0	265.145	-1254.180	2184.837	0
3	0.600	0	0	-102.137	669.028	-894.426	0
		0	0	265.145	-1254.180	2343.812	0
3	0.600	0	0	-102.137	669.028	-894.511	0
		0	0	65.145	-754.180	2343.951	0
3	1.050	0	0	-102.137	669.028	-940.441	0
		0	0	65.145	-754.180	2373.246	0
3	2.100	0	0	-102.137	669.028	-1047.631	0
		0	0	65.145	-754.180	2441.614	0
3	2.100	0	0	-102.137	669.028	-1047.695	0
		0	0	-134.855	-254.180	2441.614	0
3	2.100	0	0	-102.137	669.028	-1047.717	0
		0	0	-134.855	-254.180	2441.585	0
3	3.150	0	0	-102.137	669.028	-1154.949	0
		0	0	-134.855	-254.180	2300.002	0
3	3.600	0	0	-102.137	669.028	-1200.836	0
		0	0	-134.855	-254.180	2239.416	0
3	3.600	0	0	-102.137	669.028	-1200.922	0
		0	0	-334.855	245.820	2239.219	0
3	4.200	0	0	-102.137	669.028	-1262.203	0
		0	0	-334.855	245.820	2038.308	0
4	0	0	0	-102.137	708.976	-1240.205	0
		0	0	-334.855	180.634	2045.115	0
4	1.050	0	0	-102.137	708.976	-1347.445	0
		0	0	-334.855	180.634	1693.529	0
4	2.100	0	0	-102.137	708.976	-1454.686	0
		0	0	-334.855	180.634	1341.943	0
4	3.150	0	0	-102.137	708.976	-1561.926	0
		0	0	-334.855	180.634	990.357	0
4	4.200	0	0	-102.137	708.976	-1669.166	0
		0	0	50.866	-1064.666	776.188	0
5	0	0	0	-102.137	762.470	-1645.418	0
		0	0	50.866	-1089.159	741.427	0
5	1.050	0	0	-102.137	762.470	-1752.622	0
		0	0	50.866	-1089.159	794.817	0

ENVOLVENTE para < My > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
5	1.200	0	0	-102.137	762.470	-1767.939	0
		0	0	50.866	-1089.159	802.445	0
5	1.200	0	0	-102.137	762.470	-1768.025	0
		0	0	-149.134	-589.159	802.404	0
5	2.099	0	0	-102.137	762.470	-1859.826	0
		0	0	-149.134	-589.159	668.362	0
5	2.700	0	0	-102.137	762.470	-1921.144	0
		0	0	-149.134	-589.159	578.829	0
5	2.700	0	0	-102.137	762.470	-1921.230	0
		0	0	-349.134	-89.159	578.619	0
5	3.149	0	0	-102.137	762.470	-1967.030	0
		0	0	-349.134	-89.159	422.062	0
5	4.198	0	0	-102.137	762.470	-2074.191	0
		0	0	-349.134	-89.159	55.754	0
5	4.198	0	0	-102.137	762.470	-2074.233	0
		0	0	-549.134	410.841	55.607	0
6	0	0	0	299.332	834.973	-2046.125	0
		0	0	2.191	408.630	70.027	0
6	0.0995	0	0	299.332	834.973	-2016.353	0
		0	0	2.191	408.630	70.245	0
6	0.101	0	0	299.332	834.973	-2016.030	0
		0	0	2.191	408.630	70.247	0
6	1.350	0	0	299.332	834.973	-1642.014	0
		0	0	371.137	-488.235	460.132	0
6	1.499	0	0	299.332	834.973	-1597.288	0
		0	0	371.137	-488.235	515.586	0
6	1.501	0	0	299.332	834.973	-1596.965	0
		0	0	171.137	11.765	515.879	0
6	2.700	0	0	299.332	834.973	-1237.903	0
		0	0	171.137	11.765	721.165	0
6	2.999	0	0	299.332	834.973	-1148.290	0
		0	0	171.137	11.765	772.400	0
6	3.001	0	0	299.332	834.973	-1147.967	0
		0	0	-28.863	511.765	772.477	0
6	4.050	0	0	49.246	-284.729	-1086.504	0
		0	0	-28.863	511.765	742.182	0
6	5.400	0	0	49.246	-284.729	-1020.021	0
		0	0	-28.863	511.765	703.216	0
7	0	0	0	49.246	-240.448	-1031.357	0
		0	0	-28.863	480.943	724.644	0
7	1.350	0	0	49.246	-240.448	-964.874	0
		0	0	-28.863	480.943	685.679	0
7	2.700	0	0	49.246	-240.448	-898.392	0
		0	0	298.915	-607.850	1059.748	0
7	4.050	0	0	49.246	-240.448	-831.909	0
		0	0	298.915	-607.850	1463.288	0
7	5.400	0	0	49.246	-240.448	-765.427	0
		0	0	298.915	-607.850	1866.827	0
8	0	0	0	49.246	-209.495	-774.471	0
		0	0	298.915	-682.379	1840.893	0
8	1.350	0	0	49.246	-209.495	-707.997	0
		0	0	298.915	-682.379	2244.384	0
8	2.700	0	0	49.246	-209.495	-641.522	0
		0	0	298.915	-682.379	2647.876	0
8	3.899	0	0	49.246	-209.495	-582.468	0
		0	0	298.915	-682.379	3006.325	0
8	3.900	0	0	49.246	-209.495	-582.415	0
		0	0	98.915	-182.379	3006.540	0
8	4.050	0	0	49.246	-209.495	-575.047	0
		0	0	98.915	-182.379	3021.338	0
8	5.399	0	0	49.246	-209.495	-508.599	0
		0	0	98.915	-182.379	3154.805	0
8	5.399	0	0	49.246	-209.495	-508.573	0
		0	0	98.915	-182.379	3154.859	0
9	0	0	0	49.246	-187.427	-517.112	0
		0	0	-101.085	181.638	3165.600	0
9	1.350	0	0	49.246	-187.427	-450.622	0
		0	0	-101.085	181.638	3029.118	0

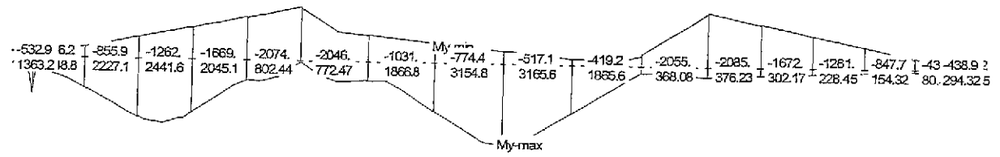
ENVOLVENTE para < My > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
9	1.499	0	0	49.246	-187.427	-443.270	0
		0	0	-101.085	181.638	3014.027	0
9	1.501	0	0	49.246	-187.427	-443.217	0
		0	0	-301.085	681.638	3013.810	0
9	2.700	0	0	49.246	-187.427	-384.132	0
		0	0	-301.085	681.638	2652.570	0
9	4.051	0	0	49.246	-187.427	-317.642	0
		0	0	-301.085	681.638	2246.054	0
9	5.401	0	0	49.246	-187.427	-251.152	0
		0	0	-301.085	681.638	1839.539	0
10	0	0	0	23.934	-366.320	-264.614	0
		0	0	-301.085	606.418	1865.688	0
10	1.350	0	0	23.934	-366.320	-232.307	0
		0	0	-301.085	606.418	1459.276	0
10	2.700	0	0	-8.803	-445.185	-212.669	0
		0	0	-301.085	606.418	1052.863	0
10	4.049	0	0	-8.803	-445.185	-224.552	0
		0	0	-301.085	606.418	646.451	0
10	5.399	0	0	-300.668	-857.151	-419.203	0
		0	0	-301.085	606.418	240.039	0
11	0	0	0	-300.668	-838.747	-454.909	0
		0	0	-301.085	595.778	265.350	0
11	1.331	0	0	-300.668	-838.747	-855.106	0
		0	0	33.319	227.317	235.040	0
11	2.662	0	0	-300.668	-838.747	-1255.302	0
		0	0	33.319	227.317	279.388	0
11	3.993	0	0	-300.668	-838.747	-1655.499	0
		0	0	33.319	227.317	323.736	0
11	5.324	0	0	-300.668	-838.747	-2055.696	0
		0	0	33.319	227.317	368.085	0
12	0	0	0	103.480	-762.240	-2085.275	0
		0	0	-19.138	213.565	376.230	0
12	1.050	0	0	103.480	-762.240	-1976.640	0
		0	0	-19.138	213.565	356.139	0
12	2.100	0	0	103.480	-762.240	-1868.006	0
		0	0	-19.138	213.565	336.048	0
12	3.149	0	0	103.480	-762.240	-1759.371	0
		0	0	-19.138	213.565	315.958	0
12	4.199	0	0	103.480	-762.240	-1650.736	0
		0	0	-19.138	213.565	295.867	0
13	0	0	0	103.480	-712.100	-1672.977	0
		0	0	-19.138	204.543	302.174	0
13	1.050	0	0	103.480	-712.100	-1564.321	0
		0	0	-19.138	204.543	282.079	0
13	2.100	0	0	103.480	-712.100	-1455.665	0
		0	0	-19.138	204.543	261.984	0
13	3.150	0	0	103.480	-712.100	-1347.008	0
		0	0	-19.138	204.543	241.890	0
13	4.200	0	0	103.480	-712.100	-1238.352	0
		0	0	-19.138	204.543	221.795	0
14	0	0	0	103.480	-670.667	-1261.272	0
		0	0	-19.138	197.080	228.452	0
14	1.050	0	0	103.480	-670.667	-1152.622	0
		0	0	-19.138	197.080	208.358	0
14	2.100	0	0	103.480	-670.667	-1043.972	0
		0	0	-19.138	197.080	188.265	0
14	3.150	0	0	103.480	-670.667	-935.322	0
		0	0	-19.138	197.080	168.171	0
14	4.200	0	0	103.480	-670.667	-826.671	0
		0	0	-19.138	197.080	148.077	0
15	0	0	0	103.480	-643.777	-847.780	0
		0	0	-19.138	192.224	154.329	0
15	1.050	0	0	103.480	-643.777	-739.104	0
		0	0	-19.138	192.224	134.230	0
15	2.100	0	0	103.480	-643.777	-630.428	0
		0	0	-19.138	192.224	114.132	0
15	3.151	0	0	103.480	-643.777	-521.752	0
		0	0	-19.138	192.224	94.033	0

ENVOLVENTE para < My > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

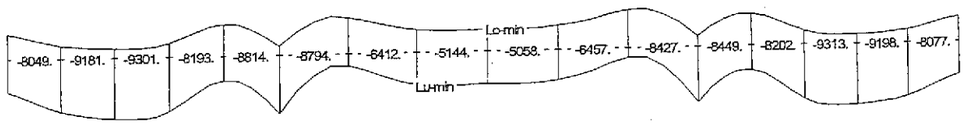
Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
15	4.201	0	0	103.480	-643.777	-413.075	0
		0	0	-19.138	192.224	73.935	0
16	0	0	0	103.480	-629.479	-434.552	0
		0	0	-19.138	189.621	80.376	0
16	1.049	0	0	103.480	-629.479	-325.950	0
		0	0	-19.138	189.621	60.291	0
16	2.099	0	0	103.480	-629.479	-217.347	0
		0	0	-19.138	189.621	40.206	0
16	3.148	0	0	103.480	-629.479	-108.745	0
		0	0	-19.138	189.621	20.121	0
16	4.198	0	0	103.480	-629.479	-0.142596	0
		0	0	58.325	728.617	0.066408	0
17	0	0	0	204.483	-1.27E-14	-490.383	0
		0	0	-579.906	-4.00E-14	1390.707	0
17	0.600	0	0	204.483	-1.27E-14	-367.787	0
		0	0	-579.906	-4.00E-14	1043.030	0
17	1.199	0	0	204.483	-1.27E-14	-245.192	0
		0	0	-579.906	-4.00E-14	695.354	0
17	1.799	0	0	204.483	-1.27E-14	-122.596	0
		0	0	-579.906	-4.00E-14	347.677	0
17	2.398	0	0	204.483	-1.27E-14	-4.90E-06	0
		0	0	-579.906	-4.00E-14	1.39E-05	0
18	0	0	0	222.072	5.58E-15	-532.977	0
		0	0	-568.000	1.26E-13	1363.208	0
18	0.600	0	0	222.072	5.58E-15	-399.732	0
		0	0	-568.000	1.26E-13	1022.406	0
18	1.200	0	0	222.072	5.58E-15	-266.488	0
		0	0	-568.000	1.26E-13	681.604	0
18	1.800	0	0	222.072	5.58E-15	-133.244	0
		0	0	-568.000	1.26E-13	340.802	0
18	2.400	0	0	222.072	5.58E-15	-5.33E-06	0
		0	0	-568.000	1.26E-13	1.36E-05	0
19	0	0	0	180.957	-4.08E-15	-434.288	0
		0	0	-79.398	-2.55E-14	190.552	0
19	0.600	0	0	180.957	-4.08E-15	-325.716	0
		0	0	-79.398	-2.55E-14	142.914	0
19	1.200	0	0	180.957	-4.08E-15	-217.144	0
		0	0	-79.398	-2.55E-14	95.276	0
19	1.800	0	0	180.957	-4.08E-15	-108.572	0
		0	0	-79.398	-2.55E-14	47.638	0
19	2.400	0	0	180.957	-4.08E-15	-4.34E-06	0
		0	0	-79.398	-2.55E-14	1.91E-06	0
20	0	0	0	182.878	1.31E-14	-438.928	0
		0	0	-122.632	1.87E-14	294.329	0
20	0.600	0	0	182.878	1.31E-14	-329.196	0
		0	0	-122.632	1.87E-14	220.747	0
20	1.200	0	0	182.878	1.31E-14	-219.464	0
		0	0	-122.632	1.87E-14	147.164	0
20	1.800	0	0	182.878	1.31E-14	-109.732	0
		0	0	-122.632	1.87E-14	73.582	0
20	2.400	0	0	182.878	1.31E-14	-4.39E-06	0
		0	0	-122.632	1.87E-14	2.94E-06	0

Mstb. 1 :449.9
Section forces envelope My, GWSP IA (ENVOLVENTE DEL CARRO), View "ALL"
- Struktur: Staebe
- Envelop Moment My-min, Scaling 2.00E-03
  min: -2.09E+03 max: -4.34E-06 [kNm]
- Envelop Moment My-max, Scaling 2.00E-03
  min: 1.91E-06 max: 3.17E+03 [kNm]
- Text envelopes [kNm]



ELS DE FISURACIÓN DE TABLERO

Mstb. 1 :442.2
Extreme stresses envel. -A, GWSP IJ (ELS 7 Combinación Frecuente), View "LIST"
- Struktur: Staebe
- Extr.str.ll (z-y-)min., Scaling 5.00E-04
  min: -9.31E+03 max: -1.47E+03 [kN/m2]
- Extr.str.ul (z+y-)min., Scaling 5.00E-04
  min: -5.80E+03 max: -1.35E+03 [kN/m2]
- Text extreme stress envelope [kN/m2]



TENSIONES para ENVOLVENTE de < My > ""
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)
(zi=z-inferior, zs=z-superior, yi=y-izq., yd= y-dch., ce=centro grav.)

Barra	Distancia [m]	Sigma-zi [kN/m2]	Sigma-zs [kN/m2]	Sigma-yi [kN/m2]	Sigma-yd [kN/m2]	Sigma-ce [kN/m2]
1	0	-4951.805	-3785.871	-4236.195	-4236.126	-4236.161
		-4915.402	-3808.776	-4236.195	-4236.126	-4236.161
1	1.050	-5644.057	-3369.544	-4249.509	-4246.435	-4247.972
		-5396.091	-3525.566	-4249.509	-4246.435	-4247.972
1	2.100	-6534.429	-2831.325	-4264.521	-4258.442	-4261.481
		-6058.607	-3130.716	-4264.521	-4258.442	-4261.481
1	3.150	-7426.768	-2316.810	-4294.843	-4285.758	-4290.301
		-6740.240	-2748.780	-4294.843	-4285.758	-4290.301
1	4.200	-8131.159	-1918.336	-4323.803	-4311.713	-4317.758
		-7251.075	-2472.092	-4323.803	-4311.713	-4317.758
2	0	-8124.296	-1922.578	-4323.756	-4311.666	-4317.711
		-7231.559	-2484.295	-4323.756	-4311.666	-4317.711
2	1.050	-8632.193	-1645.607	-4351.182	-4336.538	-4343.860
		-7563.090	-2318.295	-4351.182	-4336.538	-4343.860
2	2.100	-8937.069	-1491.366	-4375.531	-4358.334	-4366.932
		-7708.742	-2264.239	-4375.531	-4358.334	-4366.932
2	3.150	-9158.528	-1381.713	-4395.031	-4375.281	-4385.156
		-7788.121	-2243.984	-4395.031	-4375.281	-4385.156
2	4.199	-9356.354	-1287.231	-4414.717	-4392.413	-4403.565
		-7861.009	-2228.113	-4414.717	-4392.413	-4403.565
3	0	-9352.504	-1289.581	-4414.672	-4392.369	-4403.520
		-7844.008	-2238.738	-4414.672	-4392.369	-4403.520
3	1.050	-9487.546	-1235.321	-4434.537	-4410.202	-4422.370
		-7871.231	-2252.319	-4434.537	-4410.202	-4422.370
3	2.100	-9527.738	-1246.797	-4458.120	-4431.753	-4444.936
		-7820.755	-2320.844	-4458.120	-4431.753	-4444.936
3	3.150	-9240.489	-1468.203	-4484.097	-4455.698	-4469.897
		-7459.991	-2588.507	-4484.097	-4455.698	-4469.897
3	4.200	-8471.404	-1938.144	-4476.536	-4446.105	-4461.321
		-6634.541	-3093.913	-4476.536	-4446.105	-4461.321
4	0	-8470.796	-1938.475	-4476.504	-4446.073	-4461.289
		-6623.643	-3100.718	-4476.504	-4446.073	-4461.289
4	1.050	-7293.537	-2625.263	-4444.164	-4412.181	-4428.173
		-5407.176	-3812.176	-4444.164	-4412.181	-4428.173
4	2.100	-5844.146	-3473.552	-4405.854	-4372.320	-4389.087
		-3935.724	-4674.346	-4405.854	-4372.320	-4389.087
4	3.150	-4598.139	-4221.264	-4384.358	-4349.273	-4366.815
		-2684.804	-5425.150	-4384.358	-4349.273	-4366.815
4	4.200	-4046.242	-4539.961	-4367.602	-4330.966	-4349.284
		-2145.141	-5736.149	-4367.602	-4330.966	-4349.284
5	0	-4044.723	-4540.878	-4367.579	-4330.943	-4349.261
		-2135.159	-5742.391	-4367.579	-4330.943	-4349.261
5	1.050	-4200.216	-4409.925	-4347.784	-4310.085	-4328.934
		-2320.021	-5592.958	-4347.784	-4310.085	-4328.934
5	2.099	-5088.294	-3813.232	-4325.048	-4286.286	-4305.667

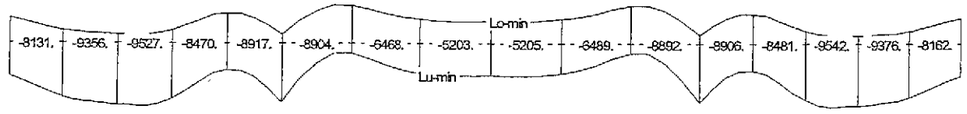
TENSIONES para ENVOLVENTE de < My > ""
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)
(zi=z-inferior, zs=z-superior, yi=y-izq., yd= y-dch., ce=centro grav.)

Barra	Distancia [m]	Sigma-zi [kN/m2]	Sigma-zs [kN/m2]	Sigma-yi [kN/m2]	Sigma-yd [kN/m2]	Sigma-ce [kN/m2]
		-3182.193	-5012.566	-4325.048	-4286.286	-4305.667
5	3.149	-6735.167	-2742.993	-4304.703	-4264.877	-4284.790
		-4576.500	-4101.244	-4304.703	-4264.877	-4284.790
5	4.198	-8917.262	-1333.548	-4282.859	-4241.971	-4262.415
		-6475.476	-2869.940	-4282.859	-4241.971	-4262.415
6	0	-8904.048	-1335.702	-4279.078	-4238.189	-4258.633
		-6453.444	-2877.641	-4279.078	-4238.189	-4258.633
6	1.350	-5511.734	-3417.940	-4248.495	-4204.651	-4226.573
		-3567.549	-4641.237	-4248.495	-4204.651	-4226.573
6	2.700	-2998.356	-4941.770	-4214.614	-4167.814	-4191.214
		-1532.240	-5864.262	-4214.614	-4167.814	-4191.214
6	4.050	-1524.455	-5787.261	-4165.823	-4116.068	-4140.945
		-357.624	-6521.441	-4165.823	-4116.068	-4140.945
6	5.400	-1539.318	-5693.543	-4115.517	-4062.806	-4089.161
		-315.377	-6463.656	-4115.517	-4062.806	-4089.161
7	0	-1514.253	-5709.242	-4115.473	-4062.762	-4089.117
		-308.101	-6468.163	-4115.473	-4062.762	-4089.117
7	1.350	-2303.891	-5151.797	-4079.146	-4024.698	-4051.922
		-846.695	-6068.676	-4079.146	-4024.698	-4051.922
7	2.700	-3300.936	-4491.734	-4059.935	-4003.750	-4031.842
		-1546.192	-5595.833	-4059.935	-4003.750	-4031.842
7	4.050	-4081.374	-3972.857	-4043.728	-3985.806	-4014.767
		-2031.552	-5262.621	-4043.728	-3985.806	-4014.767
7	5.400	-4620.838	-3602.841	-4025.826	-3966.166	-3995.996
		-2304.286	-5060.434	-4025.826	-3966.166	-3995.996
8	0	-4605.696	-3612.335	-4025.805	-3966.146	-3995.976
		-2295.234	-5066.096	-4025.805	-3966.146	-3995.976
8	1.350	-4909.260	-3388.165	-4005.749	-3945.490	-3975.620
		-2360.443	-4991.901	-4005.749	-3945.490	-3975.620
8	2.700	-4982.671	-3306.085	-3984.020	-3923.161	-3953.591
		-2223.840	-5041.964	-3984.020	-3923.161	-3953.591
8	4.050	-4925.667	-3310.107	-3964.773	-3903.314	-3934.044
		-1995.590	-5153.734	-3964.773	-3903.314	-3934.044
8	5.399	-4856.536	-3322.820	-3946.178	-3884.119	-3915.149
		-1866.859	-5203.949	-3946.178	-3884.119	-3915.149
9	0	-4856.949	-3322.561	-3946.178	-3884.120	-3915.149
		-1863.621	-5205.987	-3946.178	-3884.120	-3915.149
9	1.350	-4923.356	-3311.267	-3964.584	-3903.144	-3933.864
		-1992.519	-5155.373	-3964.584	-3903.144	-3933.864
9	2.700	-4975.025	-3309.933	-3983.410	-3922.589	-3953.000
		-2218.383	-5044.434	-3983.410	-3922.589	-3953.000
9	4.051	-4886.827	-3400.765	-4004.791	-3944.588	-3974.689
		-2343.138	-5001.275	-4004.791	-3944.588	-3974.689
9	5.401	-4569.133	-3633.658	-4024.735	-3965.151	-3994.943
		-2266.752	-5082.335	-4024.735	-3965.151	-3994.943
10	0	-4585.221	-3623.570	-4024.756	-3965.172	-3994.964
		-2276.860	-5076.009	-4024.756	-3965.172	-3994.964
10	1.350	-4031.715	-4002.233	-4042.528	-3984.710	-4013.619
		-1992.945	-5285.044	-4042.528	-3984.710	-4013.619
10	2.700	-3237.352	-4529.674	-4058.599	-4002.548	-4030.573
		-1496.512	-5625.025	-4058.599	-4002.548	-4030.573
10	4.049	-2236.868	-5194.036	-4079.105	-4024.821	-4051.963
		-793.631	-6102.132	-4079.105	-4024.821	-4051.963
10	5.399	-1470.585	-5736.353	-4115.152	-4062.635	-4088.893
		-273.052	-6489.850	-4115.152	-4062.635	-4088.893
11	0	-1495.758	-5720.584	-4115.195	-4062.678	-4088.936
		-280.894	-6484.987	-4115.195	-4062.678	-4088.936
11	1.331	-1547.003	-5773.424	-4165.962	-4116.358	-4141.160
		-370.715	-6513.554	-4165.962	-4116.358	-4141.160
11	2.662	-3045.315	-4910.417	-4213.451	-4166.761	-4190.106
		-1568.368	-5839.724	-4213.451	-4166.761	-4190.106
11	3.993	-5541.673	-3396.516	-4246.874	-4203.098	-4224.986
		-3591.811	-4623.384	-4246.874	-4203.098	-4224.986
11	5.324	-8892.419	-1339.799	-4277.088	-4236.226	-4256.657
		-6442.086	-2881.568	-4277.088	-4236.226	-4256.657
12	0	-8906.309	-1337.224	-4280.872	-4240.010	-4260.441
		-6465.287	-2873.134	-4280.872	-4240.010	-4260.441

TENSIONES para ENVOLVENTE de < My > ""
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)
(zi=z-inferior, zs=z-superior, yi=y-izq., yd= y-dch., ce=centro grav.)

Barra	Distancia [m]	Sigma-zi [kN/m2]	Sigma-zs [kN/m2]	Sigma-yi [kN/m2]	Sigma-yd [kN/m2]	Sigma-ce [kN/m2]
12	1.050	-6727.311	-2744.739	-4302.714	-4262.941	-4282.827
		-4568.940	-4102.803	-4302.714	-4262.941	-4282.827
12	2.100	-5083.617	-3812.964	-4323.038	-4284.355	-4303.696
		-3175.518	-5013.555	-4323.038	-4284.355	-4303.696
12	3.149	-4199.433	-4407.173	-4345.740	-4308.145	-4326.943
		-2317.489	-5591.306	-4345.740	-4308.145	-4326.943
12	4.199	-4046.935	-4536.203	-4365.498	-4328.992	-4347.245
		-2135.900	-5738.641	-4365.498	-4328.992	-4347.245
13	0	-4048.358	-4535.343	-4365.520	-4329.014	-4347.267
		-2145.229	-5732.807	-4365.520	-4329.014	-4347.267
13	1.050	-4603.136	-4214.781	-4382.246	-4347.286	-4364.766
		-2688.057	-5419.764	-4382.246	-4347.286	-4364.766
13	2.100	-5851.644	-3465.501	-4403.749	-4370.334	-4387.041
		-3941.765	-4667.213	-4403.749	-4370.334	-4387.041
13	3.150	-7302.720	-2616.176	-4442.077	-4410.207	-4426.142
		-5415.190	-3803.825	-4442.077	-4410.207	-4426.142
13	4.200	-8481.629	-1928.474	-4474.496	-4444.171	-4459.334
		-6633.597	-3091.270	-4474.496	-4444.171	-4459.334
14	0	-8482.406	-1928.039	-4474.529	-4444.204	-4459.367
		-6645.025	-3084.133	-4474.529	-4444.204	-4459.367
14	1.050	-9253.265	-1457.094	-4482.153	-4453.872	-4468.013
		-7472.528	-2577.548	-4482.153	-4453.872	-4468.013
14	2.100	-9542.776	-1234.422	-4456.266	-4430.030	-4443.148
		-7835.829	-2308.446	-4456.266	-4430.030	-4443.148
14	3.150	-9505.348	-1221.343	-4432.762	-4408.570	-4420.666
		-7889.339	-2238.149	-4432.762	-4408.570	-4420.666
14	4.200	-9373.326	-1273.814	-4412.958	-4390.810	-4401.884
		-7865.402	-2222.612	-4412.958	-4390.810	-4401.884
15	0	-9376.867	-1271.652	-4412.999	-4390.851	-4401.925
		-7881.019	-2212.852	-4412.999	-4390.851	-4401.925
15	1.050	-9181.811	-1364.356	-4393.306	-4373.684	-4383.495
		-7811.227	-2226.739	-4393.306	-4373.684	-4383.495
15	2.100	-8963.103	-1472.192	-4373.766	-4356.670	-4365.218
		-7734.938	-2244.963	-4373.766	-4356.670	-4365.218
15	3.151	-8660.673	-1624.698	-4349.310	-4334.741	-4342.025
		-7592.082	-2297.064	-4349.310	-4334.741	-4342.025
15	4.201	-8155.125	-1899.945	-4321.747	-4309.704	-4315.726
		-7263.265	-2461.110	-4321.747	-4309.704	-4315.726
16	0	-8162.734	-1895.242	-4321.800	-4309.756	-4315.778
		-7284.875	-2447.598	-4321.800	-4309.756	-4315.778
16	1.049	-7461.298	-2291.484	-4292.599	-4283.583	-4288.091
		-6777.186	-2721.933	-4292.599	-4283.583	-4288.091
16	2.099	-6572.352	-2803.415	-4261.992	-4256.002	-4258.997
		-6099.120	-3101.176	-4261.992	-4256.002	-4258.997
16	3.148	-5685.479	-3338.367	-4246.314	-4243.352	-4244.833
		-5440.259	-3492.661	-4246.314	-4243.352	-4244.833
16	4.198	-4980.397	-3761.601	-4232.274	-4232.338	-4232.306
		-4980.149	-3761.757	-4232.274	-4232.338	-4232.306

Mstb. 1 :442.2
Extreme stresses envel. -A, GWSP IK (ELS 8 Combinación Frecuente), View "LIST"
- Struktur: Staebe
- Extr.str.ll (z-y-)min., Scaling 5.00E-04
  min: -9.54E+03 max: -1.47E+03 [kN/m2]
- Extr.str.ul (z+y-)min., Scaling 5.00E-04
  min: -5.79E+03 max: -1.22E+03 [kN/m2]
- Text extreme stress envelope [kN/m2]



ENVOLVENTE: IL 'ELS 9 Combinación Frecuente'

Grupo	Espe.	Hipótesis	Factor	Etapa	Título
A	PERM.	1	1.000		Peso Propio
	Y	3	1.000		Carga Muerta Máxima
	Y	20	0.957000		Pretensado
B	MAS	19	0.200000		gradiente
C	MAS	32	0.500000		Carro 1 excéntrico
D	MAS	4	0.500000		Sobrecarga centrada vano 1
E	MAS	5	0.500000		Sobrecarga centrada vano 2
F	MAS	6	0.500000		Sobrecarga centrada vano 3
ALTERNATIVA PARA ENVOLVENTE:					
G	PERM.	1	1.000		Peso Propio
	Y	3	1.000		Carga Muerta Máxima
	Y	20	0.957000		Pretensado
H	MAS	19	0.200000		gradiente
I	MAS	32	0.500000		Carro 1 excéntrico
J	MAS	7	0.500000		Sobrecarga excéntrica vano 1 (
K	MAS	8	0.500000		Sobrecarga excentrica vano 2 (
L	MAS	9	0.500000		Sobrecarga excentrica vano 3 (
ALTERNATIVA PARA ENVOLVENTE:					
M	PERM.	1	1.000		Peso Propio
	Y	3	1.000		Carga Muerta Máxima
	Y	20	0.957000		Pretensado
N	MAS	19	0.200000		gradiente
O	MAS	32	0.500000		Carro 1 excéntrico
P	MAS	10	0.500000		Sobrecarga excéntrica vano 1 (
Q	MAS	11	0.500000		Sobrecarga excentrica vano 2 (
R	MAS	12	0.500000		Sobrecarga excentrica vano 3 (

TENSIONES para ENVOLVENTE de < My > ""
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)
(zi=z-inferior, zs=z-superior, yi=y-izq., yd= y-dch., ce=centro grav.)

Barra	Distancia [m]	Sigma-zi [kN/m2]	Sigma-zs [kN/m2]	Sigma-yi [kN/m2]	Sigma-yd [kN/m2]	Sigma-ce [kN/m2]
1	0	-4951.805	-3785.871	-4236.195	-4236.126	-4236.161
		-4907.207	-3813.933	-4236.195	-4236.126	-4236.161
1	1.050	-5626.633	-3380.507	-4249.509	-4246.435	-4247.972
		-5287.207	-3594.077	-4249.509	-4246.435	-4247.972
1	2.100	-6495.558	-2855.783	-4264.521	-4258.442	-4261.481

TENSIONES para ENVOLVENTE de < My > ""
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)
(zi=z-inferior, zs=z-superior, yi=y-izq., yd= y-dch., ce=centro grav.)

Barra	Distancia [m]	Sigma-zi [kN/m2]	Sigma-zs [kN/m2]	Sigma-yi [kN/m2]	Sigma-yd [kN/m2]	Sigma-ce [kN/m2]
		-5853.057	-3260.050	-4264.521	-4258.442	-4261.481
1	3.150	-7366.450	-2354.763	-4294.843	-4285.758	-4290.301
		-6438.024	-2938.936	-4294.843	-4285.758	-4290.301
1	4.200	-8049.394	-1969.783	-4323.803	-4311.713	-4317.758
		-6852.193	-2723.071	-4323.803	-4311.713	-4317.758
2	0	-8034.912	-1978.819	-4323.756	-4311.666	-4317.711
		-6844.887	-2727.592	-4323.756	-4311.666	-4317.711
2	1.050	-8521.367	-1715.340	-4351.182	-4336.538	-4343.860
		-7079.775	-2622.401	-4351.182	-4336.538	-4343.860
2	2.100	-8804.800	-1574.590	-4375.531	-4358.334	-4366.932
		-7128.783	-2629.154	-4375.531	-4358.334	-4366.932
2	3.150	-9004.818	-1478.429	-4395.031	-4375.281	-4385.156
		-7111.518	-2669.708	-4395.031	-4375.281	-4385.156
2	4.199	-9181.201	-1397.439	-4414.717	-4392.413	-4403.565
		-7087.762	-2714.647	-4414.717	-4392.413	-4403.565
3	0	-9168.757	-1405.196	-4414.672	-4392.369	-4403.520
		-7085.453	-2716.027	-4414.672	-4392.369	-4403.520
3	1.050	-9282.351	-1364.431	-4434.537	-4410.202	-4422.370
		-7047.261	-2770.767	-4434.537	-4410.202	-4422.370
3	2.100	-9301.095	-1389.403	-4458.120	-4431.753	-4444.936
		-6973.049	-2854.228	-4458.120	-4431.753	-4444.936
3	3.150	-8992.398	-1624.304	-4484.097	-4455.698	-4469.897
		-6661.450	-3090.955	-4484.097	-4455.698	-4469.897
3	4.200	-8201.865	-2107.740	-4476.536	-4446.105	-4461.321
		-5926.859	-3539.192	-4476.536	-4446.105	-4461.321
4	0	-8193.612	-2112.881	-4476.504	-4446.073	-4461.289
		-5913.597	-3547.485	-4476.504	-4446.073	-4461.289
4	1.050	-6994.909	-2813.162	-4444.164	-4412.181	-4428.173
		-4819.198	-4182.137	-4444.164	-4412.181	-4428.173
4	2.100	-5524.072	-3674.945	-4405.854	-4372.320	-4389.087
		-3469.813	-4967.501	-4405.854	-4372.320	-4389.087
4	3.150	-4256.621	-4436.150	-4384.358	-4349.273	-4366.815
		-2340.961	-5641.499	-4384.358	-4349.273	-4366.815
4	4.200	-3683.278	-4768.340	-4367.602	-4330.966	-4349.284
		-1923.365	-5875.691	-4367.602	-4330.966	-4349.284
5	0	-3674.362	-4773.912	-4367.579	-4330.943	-4349.261
		-1911.476	-5883.134	-4367.579	-4330.943	-4349.261
5	1.050	-3808.418	-4656.447	-4347.784	-4310.085	-4328.934
		-2218.364	-5656.922	-4347.784	-4310.085	-4328.934
5	2.099	-4695.427	-4060.427	-4325.048	-4286.286	-4305.667
		-3182.193	-5012.566	-4325.048	-4286.286	-4305.667
5	3.149	-6442.888	-2926.897	-4304.703	-4264.877	-4284.790
		-4576.500	-4101.244	-4304.703	-4264.877	-4284.790
5	4.198	-8725.572	-1454.161	-4282.859	-4241.971	-4262.415
		-6475.476	-2869.940	-4282.859	-4241.971	-4262.415
6	0	-8702.669	-1462.411	-4279.078	-4238.189	-4258.633
		-6453.444	-2877.641	-4279.078	-4238.189	-4258.633
6	1.350	-5434.847	-3466.318	-4248.495	-4204.651	-4226.573
		-3567.549	-4641.237	-4248.495	-4204.651	-4226.573
6	2.700	-3045.959	-4911.817	-4214.614	-4167.814	-4191.214
		-1532.240	-5864.262	-4214.614	-4167.814	-4191.214
6	4.050	-1696.549	-5678.978	-4165.823	-4116.068	-4140.945
		-357.624	-6521.441	-4165.823	-4116.068	-4140.945
6	5.400	-1739.154	-5567.805	-4115.517	-4062.806	-4089.161
		-412.127	-6402.781	-4115.517	-4062.806	-4089.161
7	0	-1711.107	-5585.380	-4115.473	-4062.762	-4089.117
		-395.825	-6412.966	-4115.473	-4062.762	-4089.117
7	1.350	-2485.128	-5037.761	-4079.146	-4024.698	-4051.922
		-1074.525	-5925.324	-4079.146	-4024.698	-4051.922
7	2.700	-3466.556	-4387.525	-4059.935	-4003.750	-4031.842
		-1914.127	-5364.325	-4059.935	-4003.750	-4031.842
7	4.050	-4231.377	-3878.474	-4043.728	-3985.806	-4014.767
		-2539.592	-4942.958	-4043.728	-3985.806	-4014.767
7	5.400	-4755.224	-3518.284	-4025.826	-3966.166	-3995.996
		-2952.432	-4652.615	-4025.826	-3966.166	-3995.996
8	0	-4737.026	-3529.701	-4025.805	-3966.146	-3995.976
		-2934.376	-4663.943	-4025.805	-3966.146	-3995.976

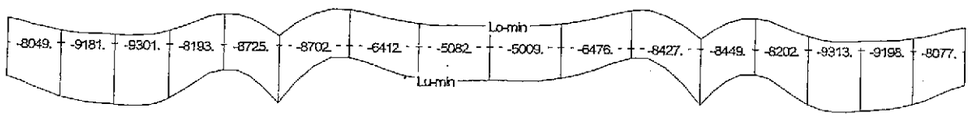
TENSIONES para ENVOLVENTE de < My > ""
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)
(zi=z-inferior, zs=z-superior, yi=y-izq., yd= y-dch., ce=centro grav.)

Barra	Distancia [m]	Sigma-zi [kN/m2]	Sigma-zs [kN/m2]	Sigma-yi [kN/m2]	Sigma-yd [kN/m2]	Sigma-ce [kN/m2]
8	1.350	-5024.975	-3315.357	-4005.749	-3945.490	-3975.620
		-3139.673	-4501.604	-4005.749	-3945.490	-3975.620
8	2.700	-5082.771	-3243.102	-3984.020	-3923.161	-3953.591
		-3143.159	-4463.521	-3984.020	-3923.161	-3953.591
8	4.050	-5010.152	-3256.948	-3964.773	-3903.314	-3934.044
		-3044.572	-4493.707	-3964.773	-3903.314	-3934.044
8	5.399	-4925.406	-3279.487	-3946.178	-3884.119	-3915.149
		-2962.198	-4514.753	-3946.178	-3884.119	-3915.149
9	0	-4922.370	-3281.398	-3946.178	-3884.120	-3915.149
		-2962.689	-4514.444	-3946.178	-3884.120	-3915.149
9	1.350	-4973.158	-3279.931	-3964.584	-3903.144	-3933.864
		-3044.202	-4493.646	-3964.584	-3903.144	-3933.864
9	2.700	-5009.209	-3288.424	-3983.410	-3922.589	-3953.000
		-3139.332	-4464.966	-3983.410	-3922.589	-3953.000
9	4.051	-4905.392	-3389.084	-4004.791	-3944.588	-3974.689
		-3122.948	-4510.612	-4004.791	-3944.588	-3974.689
9	5.401	-4572.080	-3631.804	-4024.735	-3965.151	-3994.943
		-2905.424	-4680.477	-4024.735	-3965.151	-3994.943
10	0	-4585.221	-3623.570	-4024.756	-3965.172	-3994.964
		-2924.243	-4668.670	-4024.756	-3965.172	-3994.964
10	1.350	-4031.715	-4002.233	-4042.528	-3984.710	-4013.619
		-2483.610	-4976.313	-4042.528	-3984.710	-4013.619
10	2.700	-3237.352	-4529.674	-4058.599	-4002.548	-4030.573
		-1830.460	-5414.902	-4058.599	-4002.548	-4030.573
10	4.049	-2236.868	-5194.036	-4079.105	-4024.821	-4051.963
		-970.862	-5990.617	-4079.105	-4024.821	-4051.963
10	5.399	-1470.585	-5736.353	-4115.152	-4062.635	-4088.893
		-293.565	-6476.943	-4115.152	-4062.635	-4088.893
11	0	-1495.758	-5720.584	-4115.195	-4062.678	-4088.936
		-306.814	-6468.677	-4115.195	-4062.678	-4088.936
11	1.331	-1499.993	-5803.003	-4165.962	-4116.358	-4141.160
		-289.111	-6564.900	-4165.962	-4116.358	-4141.160
11	2.662	-2859.167	-5027.543	-4213.451	-4166.761	-4190.106
		-1471.367	-5900.758	-4213.451	-4166.761	-4190.106
11	3.993	-5216.388	-3601.188	-4246.874	-4203.098	-4224.986
		-3479.412	-4694.106	-4246.874	-4203.098	-4224.986
11	5.324	-8427.996	-1632.017	-4277.088	-4236.226	-4256.657
		-6314.290	-2961.978	-4277.088	-4236.226	-4256.657
12	0	-8449.844	-1624.435	-4280.872	-4240.010	-4260.441
		-6334.663	-2955.324	-4280.872	-4240.010	-4260.441
12	1.050	-6292.105	-3018.574	-4302.714	-4262.941	-4282.827
		-4445.291	-4180.604	-4302.714	-4262.941	-4282.827
12	2.100	-4669.669	-4073.424	-4323.038	-4284.355	-4303.696
		-3058.845	-5085.967	-4323.038	-4284.355	-4303.696
12	3.149	-3806.744	-4654.256	-4345.740	-4308.145	-4326.943
		-2207.792	-5660.329	-4345.740	-4308.145	-4326.943
12	4.199	-3675.504	-4769.910	-4365.498	-4328.992	-4347.245
		-2033.178	-5803.274	-4365.498	-4328.992	-4347.245
13	0	-3683.850	-4764.695	-4365.520	-4329.014	-4347.267
		-2040.316	-5798.819	-4365.520	-4329.014	-4347.267
13	1.050	-4259.890	-4430.755	-4382.246	-4347.286	-4364.766
		-2590.122	-5481.386	-4382.246	-4347.286	-4364.766
13	2.100	-5529.661	-3668.096	-4403.749	-4370.334	-4387.041
		-3850.806	-4724.445	-4403.749	-4370.334	-4387.041
13	3.150	-7002.000	-2805.392	-4442.077	-4410.207	-4426.142
		-5331.208	-3856.667	-4442.077	-4410.207	-4426.142
13	4.200	-8202.171	-2104.310	-4474.496	-4444.171	-4459.334
		-6556.591	-3139.722	-4474.496	-4444.171	-4459.334
14	0	-8210.889	-2098.879	-4474.529	-4444.204	-4459.367
		-6565.708	-3134.040	-4474.529	-4444.204	-4459.367
14	1.050	-9003.010	-1614.556	-4482.153	-4453.872	-4468.013
		-7400.188	-2623.065	-4482.153	-4453.872	-4468.013
14	2.100	-9313.783	-1378.507	-4456.266	-4430.030	-4443.148
		-7770.466	-2349.574	-4456.266	-4430.030	-4443.148
14	3.150	-9297.617	-1352.050	-4432.762	-4408.570	-4420.666
		-7830.952	-2274.887	-4432.762	-4408.570	-4420.666
14	4.200	-9186.856	-1391.142	-4412.958	-4390.810	-4401.884

TENSIONES para ENVOLVENTE de < My > ""
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)
(zi=z-inferior, zs=z-superior, yi=y-izq., yd= y-dch., ce=centro grav.)

Barra	Distancia [m]	Sigma-zi [kN/m2]	Sigma-zs [kN/m2]	Sigma-yi [kN/m2]	Sigma-yd [kN/m2]	Sigma-ce [kN/m2]
		-7813.991	-2254.960	-4412.958	-4390.810	-4401.884
15	0	-9198.331	-1383.989	-4412.999	-4390.851	-4401.925
		-7827.437	-2246.566	-4412.999	-4390.851	-4401.925
15	1.050	-9024.542	-1463.312	-4393.306	-4373.684	-4383.495
		-7764.623	-2256.062	-4393.306	-4373.684	-4383.495
15	2.100	-8827.100	-1557.766	-4373.766	-4356.670	-4365.218
		-7695.312	-2269.896	-4373.766	-4356.670	-4365.218
15	3.151	-8545.937	-1696.891	-4349.310	-4334.741	-4342.025
		-7559.435	-2317.606	-4349.310	-4334.741	-4342.025
15	4.201	-8061.656	-1958.756	-4321.747	-4309.704	-4315.726
		-7237.595	-2477.262	-4321.747	-4309.704	-4315.726
16	0	-8077.748	-1948.716	-4321.800	-4309.756	-4315.778
		-7256.969	-2465.157	-4321.800	-4309.756	-4315.778
16	1.049	-7397.564	-2331.586	-4292.599	-4283.583	-4288.091
		-6756.253	-2735.104	-4292.599	-4283.583	-4288.091
16	2.099	-6529.871	-2830.145	-4261.992	-4256.002	-4258.997
		-6085.161	-3109.960	-4261.992	-4256.002	-4258.997
16	3.148	-5664.250	-3351.725	-4246.314	-4243.352	-4244.833
		-5433.273	-3497.057	-4246.314	-4243.352	-4244.833
16	4.198	-4980.397	-3761.601	-4232.274	-4232.338	-4232.306
		-4980.160	-3761.750	-4232.274	-4232.338	-4232.306

Mstb. 1 :442.2
Extreme stresses envel. -A, GWSP IL (ELS 9 Combinación Frecuente), View "LIST"
- Struktur: Staebe
- Extr.str.ll (z-y-)min., Scaling 5.00E-04
  min: -9.31E+03 max -1.47E+03 [kN/m2]
- Extr.str.ul (z+y-)min., Scaling 5.00E-04
  min: -5.80E+03 max -1.35E+03 [kN/m2]
- Text extreme stress envelope [kN/m2]



ENVOLVENTE: IM 'ELS 10 Combinación Frecuente'

Grupo	Espe.	Hipótesis	Factor	Etapa	Título
A	PERM.	1	1.000		Peso Propio
	Y	3	1.000		Carga Muerta Máxima
	Y	20	0.957000		Pretensado
B	MAS	19	0.200000		gradiente
C	MAS	34	0.500000		Carro 1 pila excéntrico
D	MAS	4	0.500000		Sobrecarga centrada vano 1
E	MAS	5	0.500000		Sobrecarga centrada vano 2
F	MAS	6	0.500000		Sobrecarga centrada vano 3

ALTERNATIVA PARA ENVOLVENTE:

G	PERM.	1	1.000		Peso Propio
	Y	3	1.000		Carga Muerta Máxima
	Y	20	0.957000		Pretensado
H	MAS	19	0.200000		gradiente
I	MAS	34	0.500000		Carro 1 pila excéntrico
J	MAS	7	0.500000		Sobrecarga excéntrica vano 1 (
K	MAS	8	0.500000		Sobrecarga excentrica vano 2 (

L	MAS	9	0.500000	Sobrecarga excentrica vano 3 (

ALTERNATIVA PARA ENVOLVENTE:

M	PERM.	1	1.000	Peso Propio
	Y	3	1.000	Carga Muerta Máxima
	Y	20	0.957000	Pretensado
N	MAS	19	0.200000	gradiente
O	MAS	34	0.500000	Carro 1 pila excéntrico
P	MAS	10	0.500000	Sobrecarga excéntrica vano 1 (
Q	MAS	11	0.500000	Sobrecarga excentrica vano 2 (
R	MAS	12	0.500000	Sobrecarga excentrica vano 3 (

TENSIONES para ENVOLVENTE de < My > ""
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)
(zi=z-inferior, zs=z-superior, yi=y-izq., yd= y-dch., ce=centro grav.)

Barra	Distancia [m]	Sigma-zi [kN/m2]	Sigma-zs [kN/m2]	Sigma-yi [kN/m2]	Sigma-yd [kN/m2]	Sigma-ce [kN/m2]
1	0	-4951.805	-3785.871	-4236.195	-4236.126	-4236.161
		-4911.549	-3811.201	-4236.195	-4236.126	-4236.161
1	1.050	-5626.633	-3380.507	-4249.509	-4246.435	-4247.972
		-5369.670	-3542.191	-4249.509	-4246.435	-4247.972
1	2.100	-6495.558	-2855.783	-4264.521	-4258.442	-4261.481
		-6013.640	-3159.009	-4264.521	-4258.442	-4261.481
1	3.150	-7366.450	-2354.763	-4294.843	-4285.758	-4290.301
		-6676.729	-2788.741	-4294.843	-4285.758	-4290.301
1	4.200	-8049.394	-1969.783	-4323.803	-4311.713	-4317.758
		-7169.019	-2523.722	-4323.803	-4311.713	-4317.758
2	0	-8034.912	-1978.819	-4323.756	-4311.666	-4317.711
		-7160.331	-2529.112	-4323.756	-4311.666	-4317.711
2	1.050	-8521.367	-1715.340	-4351.182	-4336.538	-4343.860
		-7473.321	-2374.778	-4351.182	-4336.538	-4343.860
2	2.100	-8804.800	-1574.590	-4375.531	-4358.334	-4366.932
		-7600.433	-2332.388	-4375.531	-4358.334	-4366.932
2	3.150	-9004.818	-1478.429	-4395.031	-4375.281	-4385.156
		-7661.271	-2323.799	-4395.031	-4375.281	-4385.156
2	4.199	-9181.201	-1397.439	-4414.717	-4392.413	-4403.565
		-7715.619	-2319.594	-4414.717	-4392.413	-4403.565
3	0	-9168.757	-1405.196	-4414.672	-4392.369	-4403.520
		-7711.175	-2322.318	-4414.672	-4392.369	-4403.520
3	1.050	-9282.351	-1364.431	-4434.537	-4410.202	-4422.370
		-7719.852	-2347.567	-4434.537	-4410.202	-4422.370
3	2.100	-9301.095	-1389.403	-4458.120	-4431.753	-4444.936
		-7650.832	-2427.762	-4458.120	-4431.753	-4444.936
3	3.150	-8992.398	-1624.304	-4484.097	-4455.698	-4469.897
		-7271.522	-2707.093	-4484.097	-4455.698	-4469.897
3	4.200	-8201.865	-2107.740	-4476.536	-4446.105	-4461.321
		-6427.528	-3224.167	-4476.536	-4446.105	-4461.321
4	0	-8193.612	-2112.881	-4476.504	-4446.073	-4461.289
		-6428.328	-3223.612	-4476.504	-4446.073	-4461.289
4	1.050	-6994.909	-2813.162	-4444.164	-4412.181	-4428.173
		-5193.319	-3946.737	-4444.164	-4412.181	-4428.173
4	2.100	-5524.072	-3674.945	-4405.854	-4372.320	-4389.087
		-3703.324	-4820.574	-4405.854	-4372.320	-4389.087
4	3.150	-4256.621	-4436.150	-4384.358	-4349.273	-4366.815
		-2433.861	-5583.045	-4384.358	-4349.273	-4366.815
4	4.200	-3683.278	-4768.340	-4367.602	-4330.966	-4349.284
		-1875.655	-5905.711	-4367.602	-4330.966	-4349.284
5	0	-3674.362	-4773.912	-4367.579	-4330.943	-4349.261
		-1877.742	-5904.359	-4367.579	-4330.943	-4349.261
5	1.050	-3808.418	-4656.447	-4347.784	-4310.085	-4328.934
		-2044.068	-5766.590	-4347.784	-4310.085	-4328.934
5	2.099	-4675.058	-4073.243	-4325.048	-4286.286	-4305.667
		-2950.144	-5158.573	-4325.048	-4286.286	-4305.667
5	3.149	-6300.493	-3016.494	-4304.703	-4264.877	-4284.790
		-4429.963	-4193.446	-4304.703	-4264.877	-4284.790
5	4.198	-8461.150	-1620.538	-4282.859	-4241.971	-4262.415

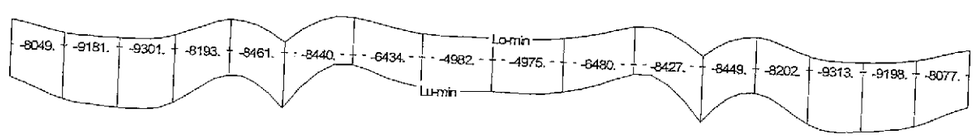
TENSIONES para ENVOLVENTE de < My > ""
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)
(zi=z-inferior, zs=z-superior, yi=y-izq., yd= y-dch., ce=centro grav.)

Barra	Distancia [m]	Sigma-zi [kN/m2]	Sigma-zs [kN/m2]	Sigma-yi [kN/m2]	Sigma-yd [kN/m2]	Sigma-ce [kN/m2]
		-6456.169	-2882.087	-4282.859	-4241.971	-4262.415
6	0	-8440.364	-1627.455	-4279.078	-4238.189	-4258.633
		-6429.131	-2892.939	-4279.078	-4238.189	-4258.633
6	1.350	-5188.159	-3621.536	-4248.495	-4204.651	-4226.573
		-3542.209	-4657.181	-4248.495	-4204.651	-4226.573
6	2.700	-2814.889	-5057.209	-4214.614	-4167.814	-4191.214
		-1505.873	-5880.852	-4214.614	-4167.814	-4191.214
6	4.050	-1481.096	-5814.543	-4165.823	-4116.068	-4140.945
		-330.230	-6538.677	-4165.823	-4116.068	-4140.945
6	5.400	-1539.318	-5693.543	-4115.517	-4062.806	-4089.161
		-383.706	-6420.663	-4115.517	-4062.806	-4089.161
7	0	-1514.253	-5709.242	-4115.473	-4062.762	-4089.117
		-361.309	-6434.684	-4115.473	-4062.762	-4089.117
7	1.350	-2303.891	-5151.797	-4079.146	-4024.698	-4051.922
		-1038.982	-5947.688	-4079.146	-4024.698	-4051.922
7	2.700	-3300.936	-4491.734	-4059.935	-4003.750	-4031.842
		-1877.557	-5387.336	-4059.935	-4003.750	-4031.842
7	4.050	-4081.374	-3972.857	-4043.728	-3985.806	-4014.767
		-2501.995	-4966.614	-4043.728	-3985.806	-4014.767
7	5.400	-4620.838	-3602.841	-4025.826	-3966.166	-3995.996
		-2913.808	-4676.918	-4025.826	-3966.166	-3995.996
8	0	-4605.696	-3612.335	-4025.805	-3966.146	-3995.976
		-2890.136	-4691.779	-4025.805	-3966.146	-3995.976
8	1.350	-4909.260	-3388.165	-4005.749	-3945.490	-3975.620
		-3094.407	-4530.085	-4005.749	-3945.490	-3975.620
8	2.700	-4982.671	-3306.085	-3984.020	-3923.161	-3953.591
		-3096.866	-4492.649	-3984.020	-3923.161	-3953.591
8	4.050	-4925.667	-3310.107	-3964.773	-3903.314	-3934.044
		-2997.252	-4523.481	-3964.773	-3903.314	-3934.044
8	5.399	-4856.536	-3322.820	-3946.178	-3884.119	-3915.149
		-2913.851	-4545.173	-3946.178	-3884.119	-3915.149
9	0	-4856.949	-3322.561	-3946.178	-3884.120	-3915.149
		-2908.415	-4548.594	-3946.178	-3884.120	-3915.149
9	1.350	-4923.356	-3311.267	-3964.584	-3903.144	-3933.864
		-2988.901	-4528.442	-3964.584	-3903.144	-3933.864
9	2.700	-4975.025	-3309.933	-3983.410	-3922.589	-3953.000
		-3083.004	-4500.408	-3983.410	-3922.589	-3953.000
9	4.051	-4886.827	-3400.765	-4004.791	-3944.588	-3974.689
		-3065.593	-4546.700	-4004.791	-3944.588	-3974.689
9	5.401	-4569.133	-3633.658	-4024.735	-3965.151	-3994.943
		-2847.042	-4717.212	-4024.735	-3965.151	-3994.943
10	0	-4585.221	-3623.570	-4024.756	-3965.172	-3994.964
		-2860.730	-4708.633	-4024.756	-3965.172	-3994.964
10	1.350	-4031.715	-4002.233	-4042.528	-3984.710	-4013.619
		-2434.686	-5007.097	-4042.528	-3984.710	-4013.619
10	2.700	-3237.352	-4529.674	-4058.599	-4002.548	-4030.573
		-1796.123	-5436.507	-4058.599	-4002.548	-4030.573
10	4.049	-2236.868	-5194.036	-4079.105	-4024.821	-4051.963
		-951.113	-6003.043	-4079.105	-4024.821	-4051.963
10	5.399	-1470.585	-5736.353	-4115.152	-4062.635	-4088.893
		-288.404	-6480.191	-4115.152	-4062.635	-4088.893
11	0	-1495.758	-5720.584	-4115.195	-4062.678	-4088.936
		-299.447	-6473.313	-4115.195	-4062.678	-4088.936
11	1.331	-1499.993	-5803.003	-4165.962	-4116.358	-4141.160
		-296.129	-6560.484	-4165.962	-4116.358	-4141.160
11	2.662	-2859.167	-5027.543	-4213.451	-4166.761	-4190.106
		-1492.769	-5887.291	-4213.451	-4166.761	-4190.106
11	3.993	-5216.388	-3601.188	-4246.874	-4203.098	-4224.986
		-3515.200	-4671.589	-4246.874	-4203.098	-4224.986
11	5.324	-8427.996	-1632.017	-4277.088	-4236.226	-4256.657
		-6364.462	-2930.409	-4277.088	-4236.226	-4256.657
12	0	-8449.844	-1624.435	-4280.872	-4240.010	-4260.441
		-6382.871	-2924.991	-4280.872	-4240.010	-4260.441
12	1.050	-6292.105	-3018.574	-4302.714	-4262.941	-4282.827
		-4491.450	-4151.561	-4302.714	-4262.941	-4282.827
12	2.100	-4669.669	-4073.424	-4323.038	-4284.355	-4303.696
		-3102.955	-5059.212	-4323.038	-4284.355	-4303.696

TENSIONES para ENVOLVENTE de < My > ""
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)
(zi=z-inferior, zs=z-superior, yi=y-izq., yd= y-dch., ce=centro grav.)

Barra	Distancia [m]	Sigma-zi [kN/m2]	Sigma-zs [kN/m2]	Sigma-yi [kN/m2]	Sigma-yd [kN/m2]	Sigma-ce [kN/m2]
12	3.149	-3806.744	-4654.256	-4345.740	-4308.145	-4326.943
		-2249.853	-5633.864	-4345.740	-4308.145	-4326.943
12	4.199	-3675.504	-4769.910	-4365.498	-4328.992	-4347.245
		-2073.190	-5778.098	-4365.498	-4328.992	-4347.245
13	0	-3683.850	-4764.695	-4365.520	-4329.014	-4347.267
		-2078.680	-5774.680	-4365.520	-4329.014	-4347.267
13	1.050	-4259.890	-4430.755	-4382.246	-4347.286	-4364.766
		-2626.436	-5458.537	-4382.246	-4347.286	-4364.766
13	2.100	-5529.661	-3668.096	-4403.749	-4370.334	-4387.041
		-3885.071	-4702.885	-4403.749	-4370.334	-4387.041
13	3.150	-7002.000	-2805.392	-4442.077	-4410.207	-4426.142
		-5363.423	-3836.397	-4442.077	-4410.207	-4426.142
13	4.200	-8202.171	-2104.310	-4474.496	-4444.171	-4459.334
		-6586.758	-3120.741	-4474.496	-4444.171	-4459.334
14	0	-8210.889	-2098.879	-4474.529	-4444.204	-4459.367
		-6594.027	-3116.222	-4474.529	-4444.204	-4459.367
14	1.050	-9003.010	-1614.556	-4482.153	-4453.872	-4468.013
		-7426.457	-2606.536	-4482.153	-4453.872	-4468.013
14	2.100	-9313.783	-1378.507	-4456.266	-4430.030	-4443.148
		-7794.686	-2334.334	-4456.266	-4430.030	-4443.148
14	3.150	-9297.617	-1352.050	-4432.762	-4408.570	-4420.666
		-7853.123	-2260.936	-4432.762	-4408.570	-4420.666
14	4.200	-9186.856	-1391.142	-4412.958	-4390.810	-4401.884
		-7834.113	-2242.299	-4412.958	-4390.810	-4401.884
15	0	-9198.331	-1383.989	-4412.999	-4390.851	-4401.925
		-7845.744	-2235.047	-4412.999	-4390.851	-4401.925
15	1.050	-9024.542	-1463.312	-4393.306	-4373.684	-4383.495
		-7780.880	-2245.833	-4393.306	-4373.684	-4383.495
15	2.100	-8827.100	-1557.766	-4373.766	-4356.670	-4365.218
		-7709.520	-2260.956	-4373.766	-4356.670	-4365.218
15	3.151	-8545.937	-1696.891	-4349.310	-4334.741	-4342.025
		-7571.593	-2309.956	-4349.310	-4334.741	-4342.025
15	4.201	-8061.656	-1958.756	-4321.747	-4309.704	-4315.726
		-7247.704	-2470.901	-4321.747	-4309.704	-4315.726
16	0	-8077.748	-1948.716	-4321.800	-4309.756	-4315.778
		-7265.155	-2460.006	-4321.800	-4309.756	-4315.778
16	1.049	-7397.564	-2331.586	-4292.599	-4283.583	-4288.091
		-6762.391	-2731.242	-4292.599	-4283.583	-4288.091
16	2.099	-6529.871	-2830.145	-4261.992	-4256.002	-4258.997
		-6089.251	-3107.386	-4261.992	-4256.002	-4258.997
16	3.148	-5664.250	-3351.725	-4246.314	-4243.352	-4244.833
		-5435.315	-3495.772	-4246.314	-4243.352	-4244.833
16	4.198	-4980.397	-3761.601	-4232.274	-4232.338	-4232.306
		-4980.153	-3761.754	-4232.274	-4232.338	-4232.306

Mstb. 1 :442.2
Extreme stresses envel. -A, GWSP IM (ELS 10 Combinación Frecuente), View "LIST"
- Struktur: Staebe
- Extr.str.ll (z-y-)min., Scaling 5.00E-04
  min: -9.31E+03 max: -1.47E+03 [kN/m2]
- Extr.str.ul (z+y-)min., Scaling 5.00E-04
  min: -5.81E+03 max: -1.35E+03 [kN/m2]
- Text extreme stress envelope [kN/m2]



ENVOLVENTE: IN 'ELS 11 Comb cuasipermanente'

Grupo	Espe.	Hipótesis	Factor	Etapa	Título
A	PERM.	1	1.000		Peso Propio
	Y	3	1.000		Carga Muerta Máxima
	Y	20	0.780000		Pretensado
B	MAS	19	0.200000		gradiente
C	MAS	21	0.200000		Carro 2 centrado
D	MAS	4	0.200000		Sobrecarga centrada vano 1
E	MAS	5	0.200000		Sobrecarga centrada vano 2
F	MAS	6	0.200000		Sobrecarga centrada vano 3

ALTERNATIVA PARA ENVOLVENTE:

G	PERM.	1	1.000		Peso Propio
	Y	3	1.000		Carga Muerta Máxima
	Y	20	0.780000		Pretensado
H	MAS	19	0.200000		gradiente
I	MAS	21	0.200000		Carro 2 centrado
J	MAS	7	0.200000		Sobrecarga excéntrica vano 1 (
K	MAS	8	0.200000		Sobrecarga excentrica vano 2 (
L	MAS	9	0.200000		Sobrecarga excentrica vano 3 (

ALTERNATIVA PARA ENVOLVENTE:

M	PERM.	1	1.000		Peso Propio
	Y	3	1.000		Carga Muerta Máxima
	Y	20	0.780000		Pretensado
N	MAS	19	0.200000		gradiente
O	MAS	21	0.200000		Carro 2 centrado
P	MAS	10	0.200000		Sobrecarga excéntrica vano 1 (
Q	MAS	11	0.200000		Sobrecarga excentrica vano 2 (
R	MAS	12	0.200000		Sobrecarga excentrica vano 3 (

TENSIONES para ENVOLVENTE de < My > ""
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Barra	Distancia [m]	Sigma-zi [kN/m2]	Sigma-zs [kN/m2]	Sigma-yi [kN/m2]	Sigma-yd [kN/m2]	Sigma-ce [kN/m2]
1	0	-4021.391	-3094.826	-3452.698	-3452.642	-3452.670
		-4007.450	-3103.598	-3452.698	-3452.642	-3452.670
1	1.050	-4381.475	-2883.943	-3463.550	-3461.044	-3462.297
		-4261.812	-2959.236	-3463.550	-3461.044	-3462.297
1	2.100	-4926.433	-2558.990	-3475.785	-3470.830	-3473.308
		-4696.554	-2703.631	-3475.785	-3470.830	-3473.308
1	3.150	-5504.344	-2233.632	-3500.499	-3493.094	-3496.797
		-5171.110	-2443.305	-3500.499	-3493.094	-3496.797
1	4.200	-5960.418	-1983.127	-3524.103	-3514.249	-3519.176
		-5530.689	-2253.516	-3524.103	-3514.249	-3519.176
2	0	-5948.370	-1990.645	-3524.065	-3514.210	-3519.138
		-5514.446	-2263.674	-3524.065	-3514.210	-3519.138
2	1.050	-6275.660	-1819.435	-3546.418	-3534.483	-3540.450
		-5752.120	-2148.850	-3546.418	-3534.483	-3540.450
2	2.100	-6468.812	-1728.539	-3566.263	-3552.247	-3559.255
		-5862.514	-2110.026	-3566.263	-3552.247	-3559.255
2	3.150	-6625.312	-1654.267	-3582.157	-3566.060	-3574.109
		-5943.114	-2083.512	-3582.157	-3566.060	-3574.109
2	4.199	-6793.885	-1572.644	-3598.202	-3580.023	-3589.112
		-6042.643	-2045.332	-3598.202	-3580.023	-3589.112
3	0	-6784.196	-1578.682	-3598.165	-3579.987	-3589.076
		-6028.820	-2053.970	-3598.165	-3579.987	-3589.076
3	1.050	-6932.947	-1510.116	-3614.357	-3594.522	-3604.439
		-6115.370	-2024.542	-3614.357	-3594.522	-3604.439
3	2.100	-7035.742	-1475.402	-3633.578	-3612.087	-3622.832
		-6162.825	-2024.649	-3633.578	-3612.087	-3622.832
3	3.150	-6903.010	-1592.063	-3654.750	-3631.603	-3643.177
		-5981.613	-2171.814	-3654.750	-3631.603	-3643.177

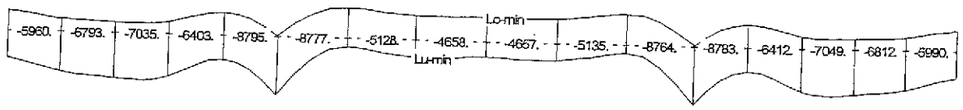
TENSIONES para ENVOLVENTE de < My > ""
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)
(zi=z-inferior, zs=z-superior, yi=y-izq., yd= y-dch., ce=centro grav.)

Barra	Distancia [m]	Sigma-zi [kN/m2]	Sigma-zs [kN/m2]	Sigma-yi [kN/m2]	Sigma-yd [kN/m2]	Sigma-ce [kN/m2]
3	4.200	-6408.910	-1891.566	-3648.588	-3623.784	-3636.186
		-5445.894	-2497.503	-3648.588	-3623.784	-3636.186
4	0	-6403.123	-1895.165	-3648.562	-3623.758	-3636.160
		-5437.225	-2502.916	-3648.562	-3623.758	-3636.160
4	1.050	-5607.671	-2351.696	-3622.203	-3596.135	-3609.169
		-4607.019	-2981.314	-3622.203	-3596.135	-3609.169
4	2.100	-4621.761	-2920.137	-3590.978	-3563.646	-3577.312
		-3593.214	-3567.307	-3590.978	-3563.646	-3577.312
4	3.150	-3832.963	-3386.880	-3573.458	-3544.862	-3559.160
		-2783.380	-4047.286	-3573.458	-3544.862	-3559.160
4	4.200	-3641.241	-3484.235	-3559.801	-3529.941	-3544.871
		-2577.480	-4153.561	-3559.801	-3529.941	-3544.871
5	0	-3634.732	-3488.299	-3559.782	-3529.922	-3544.852
		-2569.109	-4158.797	-3559.782	-3529.922	-3544.852
5	1.050	-4050.806	-3199.511	-3543.648	-3512.922	-3528.285
		-2977.866	-3874.613	-3543.648	-3512.922	-3528.285
5	2.099	-5083.051	-2519.117	-3525.117	-3493.524	-3509.321
		-3980.684	-3212.735	-3525.117	-3493.524	-3509.321
5	3.149	-6708.910	-1468.392	-3508.535	-3476.075	-3492.305
		-5486.453	-2237.572	-3508.535	-3476.075	-3492.305
5	4.198	-8795.211	-125.964	-3490.732	-3457.406	-3474.069
		-7440.441	-978.396	-3490.732	-3457.406	-3474.069
6	0	-8777.103	-132.336	-3487.649	-3454.323	-3470.986
		-7420.871	-985.687	-3487.649	-3454.323	-3470.986
6	1.350	-5619.253	-2076.708	-3462.724	-3426.989	-3444.856
		-4465.643	-2802.569	-3462.724	-3426.989	-3444.856
6	2.700	-3217.829	-3540.750	-3435.108	-3396.965	-3416.037
		-2255.501	-4146.255	-3435.108	-3396.965	-3416.037
6	4.050	-1691.383	-4434.451	-3395.341	-3354.789	-3375.065
		-848.822	-4964.597	-3395.341	-3354.789	-3375.065
6	5.400	-1288.963	-4618.894	-3354.340	-3311.378	-3332.859
		-501.013	-5114.679	-3354.340	-3311.378	-3332.859
7	0	-1264.466	-4634.250	-3354.304	-3311.342	-3332.823
		-479.579	-5128.106	-3354.304	-3311.342	-3332.823
7	1.350	-1519.545	-4424.361	-3324.696	-3280.318	-3302.507
		-653.741	-4969.132	-3324.696	-3280.318	-3302.507
7	2.700	-2002.111	-4094.063	-3309.038	-3263.244	-3286.141
		-1017.263	-4713.737	-3309.038	-3263.244	-3286.141
7	4.050	-2354.578	-3849.614	-3295.828	-3248.619	-3272.224
		-1251.675	-4543.569	-3295.828	-3248.619	-3272.224
7	5.400	-2562.457	-3693.889	-3281.237	-3232.612	-3256.925
		-1352.838	-4454.991	-3281.237	-3232.612	-3256.925
8	0	-2547.780	-3703.097	-3281.221	-3232.595	-3256.908
		-1335.948	-4465.591	-3281.221	-3232.595	-3256.908
8	1.350	-2615.226	-3633.629	-3264.874	-3215.760	-3240.317
		-1308.028	-4456.128	-3264.874	-3215.760	-3240.317
8	2.700	-2546.891	-3647.375	-3247.164	-3197.561	-3222.362
		-1155.663	-4522.746	-3247.164	-3197.561	-3222.362
8	4.050	-2424.066	-3698.701	-3231.477	-3181.385	-3206.431
		-964.316	-4617.187	-3231.477	-3181.385	-3206.431
8	5.399	-2343.162	-3724.516	-3216.321	-3165.740	-3191.030
		-859.548	-4658.017	-3216.321	-3165.740	-3191.030
9	0	-2343.536	-3724.281	-3216.321	-3165.740	-3191.031
		-859.974	-4657.750	-3216.321	-3165.740	-3191.031
9	1.350	-2424.919	-3697.925	-3231.322	-3181.246	-3206.284
		-966.330	-4615.681	-3231.322	-3181.246	-3206.284
9	2.700	-2546.120	-3647.075	-3246.667	-3197.094	-3221.881
		-1157.184	-4521.004	-3246.667	-3197.094	-3221.881
9	4.051	-2605.150	-3638.734	-3264.093	-3215.025	-3239.559
		-1301.372	-4459.081	-3264.093	-3215.025	-3239.559
9	5.401	-2528.961	-3713.567	-3280.349	-3231.784	-3256.067
		-1321.681	-4473.197	-3280.349	-3231.784	-3256.067
10	0	-2544.503	-3703.816	-3280.366	-3231.802	-3256.084
		-1339.563	-4461.974	-3280.366	-3231.802	-3256.084
10	1.350	-2327.878	-3864.890	-3294.850	-3247.726	-3271.288
		-1230.750	-4555.211	-3294.850	-3247.726	-3271.288
10	2.700	-1966.746	-4114.630	-3307.949	-3262.265	-3285.107

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(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)
(zi=z-inferior, zs=z-superior, yi=y-izq., yd= y-dch., ce=centro grav.)

Barra	Distancia [m]	Sigma-zi [kN/m2]	Sigma-zs [kN/m2]	Sigma-yi [kN/m2]	Sigma-yd [kN/m2]	Sigma-ce [kN/m2]
		-988.766	-4729.983	-3307.949	-3262.265	-3285.107
10	4.049	-1483.469	-4447.115	-3324.663	-3280.419	-3302.541
		-624.507	-4987.581	-3324.663	-3280.419	-3302.541
10	5.399	-1252.723	-4641.340	-3354.042	-3311.238	-3332.640
		-467.136	-5135.638	-3354.042	-3311.238	-3332.640
11	0	-1277.272	-4625.951	-3354.077	-3311.273	-3332.675
		-488.706	-5122.123	-3354.077	-3311.273	-3332.675
11	1.331	-1722.420	-4415.207	-3395.455	-3355.026	-3375.240
		-875.637	-4948.010	-3395.455	-3355.026	-3375.240
11	2.662	-3264.257	-3510.066	-3434.160	-3396.106	-3415.133
		-2297.263	-4118.506	-3434.160	-3396.106	-3415.133
11	3.993	-5646.916	-2057.194	-3461.402	-3425.722	-3443.562
		-4490.809	-2784.626	-3461.402	-3425.722	-3443.562
11	5.324	-8764.874	-137.406	-3486.028	-3452.723	-3469.376
		-7408.632	-990.764	-3486.028	-3452.723	-3469.376
12	0	-8783.868	-130.479	-3489.112	-3455.807	-3472.460
		-7429.200	-982.847	-3489.112	-3455.807	-3472.460
12	1.050	-6700.365	-1471.162	-3506.914	-3474.497	-3490.706
		-5477.902	-2240.346	-3506.914	-3474.497	-3490.706
12	2.100	-5077.380	-2520.069	-3523.480	-3491.950	-3507.715
		-3974.170	-3214.218	-3523.480	-3491.950	-3507.715
12	3.149	-4048.375	-3198.396	-3541.982	-3511.341	-3526.662
		-2974.770	-3873.916	-3541.982	-3511.341	-3526.662
12	4.199	-3635.201	-3485.327	-3558.086	-3528.332	-3543.209
		-2569.105	-4156.123	-3558.086	-3528.332	-3543.209
13	0	-3641.224	-3481.567	-3558.104	-3528.350	-3543.227
		-2576.881	-4151.260	-3558.104	-3528.350	-3543.227
13	1.050	-3835.800	-3382.374	-3571.737	-3543.242	-3557.489
		-2785.825	-4043.027	-3571.737	-3543.242	-3557.489
13	2.100	-4627.145	-2914.033	-3589.262	-3562.028	-3575.645
		-3598.398	-3561.328	-3589.262	-3562.028	-3575.645
13	3.150	-5614.939	-2344.426	-3620.501	-3594.526	-3607.514
		-4614.280	-2974.049	-3620.501	-3594.526	-3607.514
13	4.200	-6412.251	-1886.826	-3646.925	-3622.209	-3634.567
		-5446.539	-2494.459	-3646.925	-3622.209	-3634.567
14	0	-6418.331	-1883.044	-3646.952	-3622.236	-3634.594
		-5455.608	-2488.797	-3646.952	-3622.236	-3634.594
14	1.050	-6914.417	-1582.384	-3653.165	-3630.115	-3641.640
		-5993.499	-2161.833	-3653.165	-3630.115	-3641.640
14	2.100	-7049.524	-1464.356	-3632.067	-3610.683	-3621.375
		-6177.269	-2013.186	-3632.067	-3610.683	-3621.375
14	3.150	-6949.505	-1497.435	-3612.909	-3593.192	-3603.051
		-6132.772	-2011.330	-3612.909	-3593.192	-3603.051
14	4.200	-6803.729	-1564.219	-3596.769	-3578.717	-3587.743
		-6049.377	-2038.863	-3596.769	-3578.717	-3587.743
15	0	-6812.587	-1558.700	-3596.802	-3578.750	-3587.776
		-6062.032	-2030.954	-3596.802	-3578.750	-3587.776
15	1.050	-6646.781	-1638.553	-3580.751	-3564.758	-3572.755
		-5965.484	-2067.230	-3580.751	-3564.758	-3572.755
15	2.100	-6493.056	-1711.008	-3564.825	-3550.891	-3557.858
		-5887.878	-2091.791	-3564.825	-3550.891	-3557.858
15	3.151	-6302.451	-1800.141	-3544.892	-3533.017	-3538.955
		-5780.254	-2128.711	-3544.892	-3533.017	-3538.955
15	4.201	-5977.655	-1969.583	-3522.427	-3512.611	-3517.519
		-5545.302	-2241.622	-3522.427	-3512.611	-3517.519
16	0	-5990.959	-1961.281	-3522.470	-3512.654	-3517.562
		-5563.247	-2230.400	-3522.470	-3512.654	-3517.562
16	1.049	-5537.770	-2209.666	-3498.670	-3491.321	-3494.996
		-5206.696	-2417.980	-3498.670	-3491.321	-3494.996
16	2.099	-4963.069	-2532.639	-3473.724	-3468.842	-3471.283
		-4735.485	-2675.836	-3473.724	-3468.842	-3471.283
16	3.148	-4421.372	-2854.671	-3460.946	-3458.531	-3459.738
		-4304.132	-2928.440	-3460.946	-3458.531	-3459.738
16	4.198	-4059.115	-3065.971	-3449.502	-3449.554	-3449.528
		-4059.019	-3066.032	-3449.502	-3449.554	-3449.528

Mstb. 1:442.2
Extreme stresses envel. -A, GWSP IN (ELS 11 Comb cuasipermanente), View "LIST"
- Struktur: Staebe
- Extr.str.ll (z-y-)min., Scaling 5.00E-04
  min: -8.80E+03 max: -1.25E+03 [kN/m2]
- Extr.str.ul (z+y-)min., Scaling 5.00E-04
  min: -4.64E+03 max: -1.26E+02 [kN/m2]
- Text extreme stress envelope [kN/m2]



ENVOLVENTE: IO 'ELS 12 Comb Cuasipermanente'

Grupo	Espe.	Hipótesis	Factor	Etapa	Título
A	PERM.	1	1.000		Peso Propio
	Y	3	1.000		Carga Muerta Máxima
	Y	20	0.780000		Pretensado
B	MAS	19	0.200000		gradiente
C	MAS	22	0.200000		Carro 1 centrado
D	MAS	4	0.200000		Sobrecarga centrada vano 1
E	MAS	5	0.200000		Sobrecarga centrada vano 2
F	MAS	6	0.200000		Sobrecarga centrada vano 3
ALTERNATIVA PARA ENVOLVENTE:					
G	PERM.	1	1.000		Peso Propio
	Y	3	1.000		Carga Muerta Máxima
	Y	20	0.780000		Pretensado
H	MAS	19	0.200000		gradiente
I	MAS	22	0.200000		Carro 1 centrado
J	MAS	7	0.200000		Sobrecarga excéntrica vano 1 (
K	MAS	8	0.200000		Sobrecarga excentrica vano 2 (
L	MAS	9	0.200000		Sobrecarga excentrica vano 3 (
ALTERNATIVA PARA ENVOLVENTE:					
M	PERM.	1	1.000		Peso Propio
	Y	3	1.000		Carga Muerta Máxima
	Y	20	0.780000		Pretensado
N	MAS	19	0.200000		gradiente
O	MAS	22	0.200000		Carro 1 centrado
P	MAS	10	0.200000		Sobrecarga excéntrica vano 1 (
Q	MAS	11	0.200000		Sobrecarga excentrica vano 2 (
R	MAS	12	0.200000		Sobrecarga excentrica vano 3 (

TENSIONES para ENVOLVENTE de < My > ""
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)
(zi=z-inferior, zs=z-superior, yi=y-izq., yd= y-dch., ce=centro grav.)

Barra	Distancia [m]	Sigma-zi [kN/m2]	Sigma-zs [kN/m2]	Sigma-yi [kN/m2]	Sigma-yd [kN/m2]	Sigma-ce [kN/m2]
1	0	-4020.999	-3095.073	-3452.698	-3452.642	-3452.670
		-4006.059	-3104.473	-3452.698	-3452.642	-3452.670
1	1.050	-4369.346	-2891.575	-3463.550	-3461.044	-3462.297
		-4223.813	-2983.145	-3463.550	-3461.044	-3462.297
1	2.100	-4902.567	-2574.006	-3475.785	-3470.830	-3473.308

TENSIONES para ENVOLVENTE de < My > ""
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)
(zi=z-inferior, zs=z-superior, yi=y-izq., yd= y-dch., ce=centro grav.)

Barra	Distancia [m]	Sigma-zi [kN/m2]	Sigma-zs [kN/m2]	Sigma-yi [kN/m2]	Sigma-yd [kN/m2]	Sigma-ce [kN/m2]
		-4621.948	-2750.574	-3475.785	-3470.830	-3473.308
1	3.150	-5468.742	-2256.033	-3500.499	-3493.094	-3496.797
		-5059.896	-2513.282	-3500.499	-3493.094	-3496.797
1	4.200	-5913.079	-2012.913	-3524.103	-3514.249	-3519.176
		-5382.867	-2346.526	-3524.103	-3514.249	-3519.176
2	0	-5900.840	-2020.552	-3524.065	-3514.210	-3519.138
		-5366.284	-2356.898	-3524.065	-3514.210	-3519.138
2	1.050	-6216.395	-1856.725	-3546.418	-3534.483	-3540.450
		-5567.358	-2265.104	-3546.418	-3534.483	-3540.450
2	2.100	-6397.813	-1773.212	-3566.263	-3552.247	-3559.255
		-5641.153	-2249.308	-3566.263	-3552.247	-3559.255
2	3.150	-6542.579	-1706.323	-3582.157	-3566.060	-3574.109
		-5685.153	-2245.823	-3582.157	-3566.060	-3574.109
2	4.199	-6699.418	-1632.084	-3598.202	-3580.023	-3589.112
		-5748.083	-2230.671	-3598.202	-3580.023	-3589.112
3	0	-6689.591	-1638.208	-3598.165	-3579.987	-3589.076
		-5734.126	-2239.394	-3598.165	-3579.987	-3589.076
3	1.050	-6826.605	-1577.027	-3614.357	-3594.522	-3604.439
		-5796.569	-2225.134	-3614.357	-3594.522	-3604.439
3	2.100	-6917.664	-1549.698	-3633.578	-3612.087	-3622.832
		-5836.588	-2229.919	-3633.578	-3612.087	-3622.832
3	3.150	-6773.194	-1673.744	-3654.750	-3631.603	-3643.177
		-5677.101	-2363.415	-3654.750	-3631.603	-3643.177
3	4.200	-6267.357	-1980.632	-3648.588	-3623.784	-3636.186
		-5179.784	-2664.942	-3648.588	-3623.784	-3636.186
4	0	-6261.568	-1984.232	-3648.562	-3623.758	-3636.160
		-5171.291	-2670.243	-3648.562	-3623.758	-3636.160
4	1.050	-5454.381	-2448.147	-3622.203	-3596.135	-3609.169
		-4391.970	-3116.624	-3622.203	-3596.135	-3609.169
4	2.100	-4456.736	-3023.972	-3590.978	-3563.646	-3577.312
		-3429.051	-3670.599	-3590.978	-3563.646	-3577.312
4	3.150	-3656.202	-3498.100	-3573.458	-3544.862	-3559.160
		-2670.102	-4118.562	-3573.458	-3544.862	-3559.160
4	4.200	-3452.744	-3602.838	-3559.801	-3529.941	-3544.871
		-2515.087	-4192.819	-3559.801	-3529.941	-3544.871
5	0	-3446.405	-3606.796	-3559.782	-3529.922	-3544.852
		-2507.065	-4197.836	-3559.782	-3529.922	-3544.852
5	1.050	-3850.748	-3325.389	-3543.648	-3512.922	-3528.285
		-2966.690	-3881.645	-3543.648	-3512.922	-3528.285
5	2.099	-4910.953	-2627.403	-3525.117	-3493.524	-3509.321
		-3980.684	-3212.735	-3525.117	-3493.524	-3509.321
5	3.149	-6575.949	-1552.052	-3508.535	-3476.075	-3492.305
		-5486.453	-2237.572	-3508.535	-3476.075	-3492.305
5	4.198	-8701.386	-184.999	-3490.732	-3457.406	-3474.069
		-7440.441	-978.396	-3490.732	-3457.406	-3474.069
6	0	-8684.042	-190.890	-3487.649	-3454.323	-3470.986
		-7420.871	-985.687	-3487.649	-3454.323	-3470.986
6	1.350	-5574.535	-2104.845	-3462.724	-3426.989	-3444.856
		-4465.643	-2802.569	-3462.724	-3426.989	-3444.856
6	2.700	-3221.454	-3538.470	-3435.108	-3396.965	-3416.037
		-2255.501	-4146.255	-3435.108	-3396.965	-3416.037
6	4.050	-1743.349	-4401.753	-3395.341	-3354.789	-3375.065
		-848.822	-4964.597	-3395.341	-3354.789	-3375.065
6	5.400	-1389.272	-4555.779	-3354.340	-3311.378	-3332.859
		-501.013	-5114.679	-3354.340	-3311.378	-3332.859
7	0	-1365.690	-4570.558	-3354.304	-3311.342	-3332.823
		-479.579	-5128.106	-3354.304	-3311.342	-3332.823
7	1.350	-1622.791	-4359.397	-3324.696	-3280.318	-3302.507
		-700.060	-4939.987	-3324.696	-3280.318	-3302.507
7	2.700	-2097.617	-4033.970	-3309.038	-3263.244	-3286.141
		-1119.663	-4649.306	-3309.038	-3263.244	-3286.141
7	4.050	-2442.345	-3794.390	-3295.828	-3248.619	-3272.224
		-1410.157	-4443.851	-3295.828	-3248.619	-3272.224
7	5.400	-2642.484	-3643.535	-3281.237	-3232.612	-3256.925
		-1567.401	-4319.986	-3281.237	-3232.612	-3256.925
8	0	-2627.824	-3652.733	-3281.221	-3232.595	-3256.908
		-1551.022	-4330.265	-3281.221	-3232.595	-3256.908

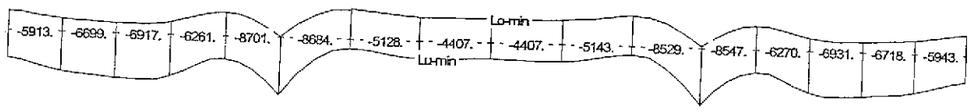
TENSIONES para ENVOLVENTE de < My > ""
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)
(zi=z-inferior, zs=z-superior, yi=y-izq., yd= y-dch., ce=centro grav.)

Barra	Distancia [m]	Sigma-zi [kN/m2]	Sigma-zs [kN/m2]	Sigma-yi [kN/m2]	Sigma-yd [kN/m2]	Sigma-ce [kN/m2]
8	1.350	-2687.531	-3588.134	-3264.874	-3215.760	-3240.317
		-1579.176	-4285.520	-3264.874	-3215.760	-3240.317
8	2.700	-2611.457	-3606.749	-3247.164	-3197.561	-3222.362
		-1482.885	-4316.855	-3247.164	-3197.561	-3222.362
8	4.050	-2480.893	-3662.945	-3231.477	-3181.385	-3206.431
		-1343.443	-4378.638	-3231.477	-3181.385	-3206.431
8	5.399	-2392.251	-3693.629	-3216.321	-3165.740	-3191.030
		-1257.257	-4407.776	-3216.321	-3165.740	-3191.030
9	0	-2392.527	-3693.455	-3216.321	-3165.740	-3191.031
		-1257.674	-4407.514	-3216.321	-3165.740	-3191.031
9	1.350	-2466.170	-3671.969	-3231.322	-3181.246	-3206.284
		-1345.115	-4377.346	-3231.322	-3181.246	-3206.284
9	2.700	-2579.630	-3625.990	-3246.667	-3197.094	-3221.881
		-1483.715	-4315.548	-3246.667	-3197.094	-3221.881
9	4.051	-2630.920	-3622.519	-3264.093	-3215.025	-3239.559
		-1571.486	-4289.123	-3264.093	-3215.025	-3239.559
9	5.401	-2546.989	-3702.223	-3280.349	-3231.784	-3256.067
		-1535.379	-4338.737	-3280.349	-3231.784	-3256.067
10	0	-2562.383	-3692.566	-3280.366	-3231.802	-3256.084
		-1552.730	-4327.847	-3280.366	-3231.802	-3256.084
10	1.350	-2338.019	-3858.509	-3294.850	-3247.726	-3271.288
		-1387.515	-4456.573	-3294.850	-3247.726	-3271.288
10	2.700	-1969.148	-4113.118	-3307.949	-3262.265	-3285.107
		-1089.129	-4666.833	-3307.949	-3262.265	-3285.107
10	4.049	-1483.469	-4447.115	-3324.663	-3280.419	-3302.541
		-663.131	-4963.278	-3324.663	-3280.419	-3302.541
10	5.399	-1240.283	-4649.168	-3354.042	-3311.238	-3332.640
		-454.061	-5143.865	-3354.042	-3311.238	-3332.640
11	0	-1264.110	-4634.233	-3354.077	-3311.273	-3332.675
		-475.473	-5130.449	-3354.077	-3311.273	-3332.675
11	1.331	-1653.641	-4458.484	-3395.455	-3355.026	-3375.240
		-854.773	-4961.138	-3395.455	-3355.026	-3375.240
11	2.662	-3139.861	-3588.336	-3434.160	-3396.106	-3415.133
		-2268.768	-4136.436	-3434.160	-3396.106	-3415.133
11	3.993	-5466.904	-2170.459	-3461.402	-3425.722	-3443.562
		-4454.683	-2807.357	-3461.402	-3425.722	-3443.562
11	5.324	-8529.246	-285.665	-3486.028	-3452.723	-3469.376
		-7364.875	-1018.296	-3486.028	-3452.723	-3469.376
12	0	-8547.777	-279.030	-3489.112	-3455.807	-3472.460
		-7385.344	-1010.442	-3489.112	-3455.807	-3472.460
12	1.050	-6476.070	-1612.291	-3506.914	-3474.497	-3490.706
		-5436.239	-2266.561	-3506.914	-3474.497	-3490.706
12	2.100	-4864.880	-2653.776	-3523.480	-3491.950	-3507.715
		-3934.701	-3239.052	-3523.480	-3491.958	-3507.715
12	3.149	-3847.669	-3324.681	-3541.982	-3511.341	-3526.662
		-2937.495	-3897.370	-3541.982	-3511.341	-3526.662
12	4.199	-3446.291	-3604.191	-3558.086	-3528.332	-3543.209
		-2534.022	-4178.197	-3558.086	-3528.332	-3543.209
13	0	-3452.154	-3600.531	-3558.104	-3528.350	-3543.227
		-2541.759	-4173.359	-3558.104	-3528.350	-3543.227
13	1.050	-3658.527	-3493.916	-3571.737	-3543.242	-3557.489
		-2752.896	-4063.746	-3571.737	-3543.242	-3557.489
13	2.100	-4461.670	-3018.151	-3589.262	-3562.028	-3575.645
		-3567.663	-3580.667	-3589.262	-3562.028	-3575.645
13	3.150	-5461.261	-2441.121	-3620.501	-3594.526	-3607.514
		-4585.738	-2992.007	-3620.501	-3594.526	-3607.514
13	4.200	-6270.370	-1976.098	-3646.925	-3622.209	-3634.567
		-5420.191	-2511.037	-3646.925	-3622.209	-3634.567
14	0	-6276.447	-1972.319	-3646.952	-3622.236	-3634.594
		-5429.248	-2505.383	-3646.952	-3622.236	-3634.594
14	1.050	-6784.330	-1664.235	-3653.165	-3630.115	-3641.640
		-5969.332	-2177.038	-3653.165	-3630.115	-3641.640
14	2.100	-6931.234	-1538.785	-3632.067	-3610.683	-3621.375
		-6155.296	-2027.011	-3632.067	-3610.683	-3621.375
14	3.150	-6843.011	-1564.442	-3612.909	-3593.192	-3603.051
		-6112.992	-2023.775	-3612.909	-3593.192	-3603.051
14	4.200	-6709.032	-1623.803	-3596.769	-3578.717	-3587.743

TENSIONES para ENVOLVENTE de < My > ""
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)
(zi=z-inferior, zs=z-superior, yi=y-izq., yd= y-dch., ce=centro grav.)

Barra	Distancia [m]	Sigma-zi [kN/m2]	Sigma-zs [kN/m2]	Sigma-yi [kN/m2]	Sigma-yd [kN/m2]	Sigma-ce [kN/m2]
		-6031.791	-2049.928	-3596.769	-3578.717	-3587.743
15	0	-6718.011	-1618.207	-3596.802	-3578.750	-3587.776
		-6044.458	-2042.012	-3596.802	-3578.750	-3587.776
15	1.050	-6564.005	-1690.636	-3580.751	-3564.758	-3572.755
		-5950.104	-2076.908	-3580.751	-3564.758	-3572.755
15	2.100	-6422.079	-1755.667	-3564.825	-3550.891	-3557.858
		-5874.692	-2100.087	-3564.825	-3550.891	-3557.858
15	3.151	-6243.274	-1837.376	-3544.892	-3533.017	-3538.955
		-5769.262	-2135.628	-3544.892	-3533.017	-3538.955
15	4.201	-5930.278	-1999.393	-3522.427	-3512.611	-3517.519
		-5536.504	-2247.158	-3522.427	-3512.611	-3517.519
16	0	-5943.787	-1990.962	-3522.470	-3512.654	-3517.562
		-5554.476	-2235.919	-3522.470	-3512.654	-3517.562
16	1.049	-5502.390	-2231.927	-3498.670	-3491.321	-3494.996
		-5200.117	-2422.120	-3498.670	-3491.321	-3494.996
16	2.099	-4939.480	-2547.481	-3473.724	-3468.842	-3471.283
		-4731.099	-2678.596	-3473.724	-3468.842	-3471.283
16	3.148	-4409.575	-2862.094	-3460.946	-3458.531	-3459.738
		-4301.938	-2929.820	-3460.946	-3458.531	-3459.738
16	4.198	-4059.109	-3065.975	-3449.502	-3449.554	-3449.528
		-4059.018	-3066.032	-3449.502	-3449.554	-3449.528

Mstb. 1 :442.2
Extreme stresses envel. -A, GWSP IO (ELS 12 Comb Cuasipermanente), View "LIST"
- Struktur: Staebe
- Extr.str.ll (z-y-)min., Scaling 5.00E-04
min: -8.70E+03 max: -1.24E+03 [kN/m2]
- Extr.str.ul (z+y-)min., Scaling 5.00E-04
min: -4.65E+03 max: -1.85E+02 [kN/m2]
- Text extreme stress envelope [kN/m2]



ENVOLVENTE: IP 'ELS 13 Comb Cuasipermante'

Grupo	Espe.	Hipótesis	Factor	Etapa	Título
A	PERM.	1	1.000		Peso Propio
	Y	3	1.000		Carga Muerta Máxima
	Y	20	0.780000		Pretensado
B	MAS	19	0.200000		gradiente
C	MAS	31	0.200000		Carro 2 excéntrico
D	MAS	4	0.200000		Sobrecarga centrada vano 1
E	MAS	5	0.200000		Sobrecarga centrada vano 2
F	MAS	6	0.200000		Sobrecarga centrada vano 3

ALTERNATIVA PARA ENVOLVENTE:

G	PERM.	1	1.000		Peso Propio
	Y	3	1.000		Carga Muerta Máxima
	Y	20	0.780000		Pretensado
H	MAS	19	0.200000		gradiente
I	MAS	31	0.200000		Carro 2 excéntrico
J	MAS	7	0.200000		Sobrecarga excéntrica vano 1 (
K	MAS	8	0.200000		Sobrecarga excentrica vano 2 (

L	MAS	9	0.200000	Sobrecarga excentrica vano 3 (

ALTERNATIVA PARA ENVOLVENTE:

M	PERM.	1	1.000	Peso Propio
	Y	3	1.000	Carga Muerta Máxima
	Y	20	0.780000	Pretensado
N	MAS	19	0.200000	gradiente
O	MAS	31	0.200000	Carro 2 excéntrico
P	MAS	10	0.200000	Sobrecarga excéntrica vano 1 (
Q	MAS	11	0.200000	Sobrecarga excentrica vano 2 (
R	MAS	12	0.200000	Sobrecarga excentrica vano 3 (

TENSIONES para ENVOLVENTE de < My > ""
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)
(zi=z-inferior, zs=z-superior, yi=y-izq., yd= y-dch., ce=centro grav.)

Barra	Distancia [m]	Sigma-zi [kN/m2]	Sigma-zs [kN/m2]	Sigma-yi [kN/m2]	Sigma-yd [kN/m2]	Sigma-ce [kN/m2]
1	0	-4020.999	-3095.073	-3452.698	-3452.642	-3452.670
		-4005.841	-3104.611	-3452.698	-3452.642	-3452.670
1	1.050	-4376.315	-2887.189	-3463.550	-3461.044	-3462.297
		-4261.812	-2959.236	-3463.550	-3461.044	-3462.297
1	2.100	-4918.116	-2564.223	-3475.785	-3470.830	-3473.308
		-4696.554	-2703.631	-3475.785	-3470.830	-3473.308
1	3.150	-5492.869	-2240.852	-3500.499	-3493.094	-3496.797
		-5171.110	-2443.305	-3500.499	-3493.094	-3496.797
1	4.200	-5945.785	-1992.334	-3524.103	-3514.249	-3519.176
		-5530.689	-2253.516	-3524.103	-3514.249	-3519.176
2	0	-5936.593	-1998.055	-3524.065	-3514.210	-3519.138
		-5514.446	-2263.674	-3524.065	-3514.210	-3519.138
2	1.050	-6260.725	-1828.832	-3546.418	-3534.483	-3540.450
		-5752.120	-2148.850	-3546.418	-3534.483	-3540.450
2	2.100	-6450.720	-1739.922	-3566.263	-3552.247	-3559.255
		-5862.514	-2110.026	-3566.263	-3552.247	-3559.255
2	3.150	-6604.064	-1667.637	-3582.157	-3566.060	-3574.109
		-5943.114	-2083.512	-3582.157	-3566.060	-3574.109
2	4.199	-6769.479	-1588.000	-3598.202	-3580.023	-3589.112
		-6042.643	-2045.332	-3598.202	-3580.023	-3589.112
3	0	-6763.090	-1591.961	-3598.165	-3579.987	-3589.076
		-6028.820	-2053.970	-3598.165	-3579.987	-3589.076
3	1.050	-6908.683	-1525.383	-3614.357	-3594.522	-3604.439
		-6115.370	-2024.542	-3614.357	-3594.522	-3604.439
3	2.100	-7008.321	-1492.656	-3633.578	-3612.087	-3622.832
		-6162.825	-2024.649	-3633.578	-3612.087	-3622.832
3	3.150	-6872.431	-1611.304	-3654.750	-3631.603	-3643.177
		-5981.613	-2171.814	-3654.750	-3631.603	-3643.177
3	4.200	-6375.173	-1912.794	-3648.588	-3623.784	-3636.186
		-5445.894	-2497.503	-3648.588	-3623.784	-3636.186
4	0	-6372.442	-1914.470	-3648.562	-3623.758	-3636.160
		-5437.225	-2502.916	-3648.562	-3623.758	-3636.160
4	1.050	-5573.832	-2372.987	-3622.203	-3596.135	-3609.169
		-4607.019	-2981.314	-3622.203	-3596.135	-3609.169
4	2.100	-4584.765	-2943.415	-3590.978	-3563.646	-3577.312
		-3593.214	-3567.307	-3590.978	-3563.646	-3577.312
4	3.150	-3792.810	-3412.145	-3573.458	-3544.862	-3559.160
		-2783.380	-4047.286	-3573.458	-3544.862	-3559.160
4	4.200	-3597.929	-3511.486	-3559.801	-3529.941	-3544.871
		-2577.480	-4153.561	-3559.801	-3529.941	-3544.871
5	0	-3594.549	-3513.582	-3559.782	-3529.922	-3544.852
		-2569.109	-4158.797	-3559.782	-3529.922	-3544.852
5	1.050	-4007.467	-3226.780	-3543.648	-3512.922	-3528.285
		-2977.866	-3874.613	-3543.648	-3512.922	-3528.285
5	2.099	-5036.556	-2548.373	-3525.117	-3493.524	-3509.321
		-3980.684	-3212.735	-3525.117	-3493.524	-3509.321
5	3.149	-6659.258	-1499.633	-3508.535	-3476.075	-3492.305
		-5486.453	-2237.572	-3508.535	-3476.075	-3492.305
5	4.198	-8742.402	-159.191	-3490.732	-3457.406	-3474.069

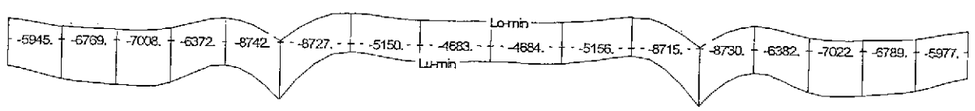
TENSIONES para ENVOLVENTE de < My > ""
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)
(zi=z-inferior, zs=z-superior, yi=y-izq., yd= y-dch., ce=centro grav.)

Barra	Distancia [m]	Sigma-zi [kN/m2]	Sigma-zs [kN/m2]	Sigma-yi [kN/m2]	Sigma-yd [kN/m2]	Sigma-ce [kN/m2]
		-7440.441	-978.396	-3490.732	-3457.406	-3474.069
6	0	-8727.760	-163.383	-3487.649	-3454.323	-3470.986
		-7420.871	-985.687	-3487.649	-3454.323	-3470.986
6	1.350	-5569.950	-2107.730	-3462.724	-3426.989	-3444.856
		-4465.643	-2802.569	-3462.724	-3426.989	-3444.856
6	2.700	-3168.565	-3571.748	-3435.108	-3396.965	-3416.037
		-2255.501	-4146.255	-3435.108	-3396.965	-3416.037
6	4.050	-1642.157	-4465.424	-3395.341	-3354.789	-3375.065
		-848.822	-4964.597	-3395.341	-3354.789	-3375.065
6	5.400	-1278.477	-4625.492	-3354.340	-3311.378	-3332.859
		-462.313	-5139.029	-3354.340	-3311.378	-3332.859
7	0	-1254.704	-4640.392	-3354.304	-3311.342	-3332.823
		-444.490	-5150.185	-3354.304	-3311.342	-3332.823
7	1.350	-1519.545	-4424.361	-3324.696	-3280.318	-3302.507
		-608.928	-4997.328	-3324.696	-3280.318	-3302.507
7	2.700	-2002.111	-4094.063	-3309.038	-3263.244	-3286.141
		-972.489	-4741.909	-3309.038	-3263.244	-3286.141
7	4.050	-2354.578	-3849.614	-3295.828	-3248.619	-3272.224
		-1206.940	-4571.716	-3295.828	-3248.619	-3272.224
7	5.400	-2562.457	-3693.889	-3281.237	-3232.612	-3256.925
		-1308.143	-4483.114	-3281.237	-3232.612	-3256.925
8	0	-2547.780	-3703.097	-3281.221	-3232.595	-3256.908
		-1295.365	-4491.126	-3281.221	-3232.595	-3256.908
8	1.350	-2615.226	-3633.629	-3264.874	-3215.760	-3240.317
		-1267.484	-4481.639	-3264.874	-3215.760	-3240.317
8	2.700	-2546.891	-3647.375	-3247.164	-3197.561	-3222.362
		-1115.158	-4548.232	-3247.164	-3197.561	-3222.362
8	4.050	-2424.066	-3698.701	-3231.477	-3181.385	-3206.431
		-923.850	-4642.649	-3231.477	-3181.385	-3206.431
8	5.399	-2343.162	-3724.516	-3216.321	-3165.740	-3191.030
		-819.121	-4683.454	-3216.321	-3165.740	-3191.030
9	0	-2343.536	-3724.281	-3216.321	-3165.740	-3191.031
		-818.047	-4684.130	-3216.321	-3165.740	-3191.031
9	1.350	-2424.919	-3697.925	-3231.322	-3181.246	-3206.284
		-924.442	-4642.037	-3231.322	-3181.246	-3206.284
9	2.700	-2546.120	-3647.075	-3246.667	-3197.094	-3221.881
		-1115.335	-4547.336	-3246.667	-3197.094	-3221.881
9	4.051	-2605.150	-3638.734	-3264.093	-3215.025	-3239.559
		-1259.562	-4485.388	-3264.093	-3215.025	-3239.559
9	5.401	-2528.961	-3713.567	-3280.349	-3231.784	-3256.067
		-1279.910	-4499.480	-3280.349	-3231.784	-3256.067
10	0	-2544.503	-3703.816	-3280.366	-3231.802	-3256.084
		-1293.630	-4490.875	-3280.366	-3231.802	-3256.084
10	1.350	-2327.878	-3864.890	-3294.850	-3247.726	-3271.288
		-1184.856	-4584.088	-3294.850	-3247.726	-3271.288
10	2.700	-1966.746	-4114.630	-3307.949	-3262.265	-3285.107
		-942.911	-4758.835	-3307.949	-3262.265	-3285.107
10	4.049	-1483.469	-4447.115	-3324.663	-3280.419	-3302.541
		-578.691	-5016.409	-3324.663	-3280.419	-3302.541
10	5.399	-1240.283	-4649.168	-3354.042	-3311.238	-3332.640
		-433.801	-5156.613	-3354.042	-3311.238	-3332.640
11	0	-1264.110	-4634.233	-3354.077	-3311.273	-3332.675
		-451.856	-5145.310	-3354.077	-3311.273	-3332.675
11	1.331	-1672.445	-4446.652	-3395.455	-3355.026	-3375.240
		-875.637	-4948.010	-3395.455	-3355.026	-3375.240
11	2.662	-3214.320	-3541.486	-3434.160	-3396.106	-3415.133
		-2297.263	-4118.506	-3434.160	-3396.106	-3415.133
11	3.993	-5597.018	-2088.590	-3461.402	-3425.722	-3443.562
		-4490.809	-2784.626	-3461.402	-3425.722	-3443.562
11	5.324	-8715.015	-168.778	-3486.028	-3452.723	-3469.376
		-7408.632	-990.764	-3486.028	-3452.723	-3469.376
12	0	-8730.363	-164.145	-3489.112	-3455.807	-3472.460
		-7429.200	-982.847	-3489.112	-3455.807	-3472.460
12	1.050	-6650.152	-1502.757	-3506.914	-3474.497	-3490.706
		-5477.902	-2240.346	-3506.914	-3474.497	-3490.706
12	2.100	-5030.459	-2549.593	-3523.480	-3491.950	-3507.715
		-3974.170	-3214.218	-3523.480	-3491.950	-3507.715

TENSIONES para ENVOLVENTE de < My > ""
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)
(zi=z-inferior, zs=z-superior, yi=y-izq., yd= y-dch., ce=centro grav.)

Barra	Distancia [m]	Sigma-zi [kN/m2]	Sigma-zs [kN/m2]	Sigma-yi [kN/m2]	Sigma-yd [kN/m2]	Sigma-ce [kN/m2]
12	3.149	-4004.745	-3225.848	-3541.982	-3511.341	-3526.662
		-2974.770	-3873.916	-3541.982	-3511.341	-3526.662
12	4.199	-3594.863	-3510.708	-3558.086	-3528.332	-3543.209
		-2569.105	-4156.123	-3558.086	-3528.332	-3543.209
13	0	-3597.957	-3508.790	-3558.104	-3528.350	-3543.227
		-2576.881	-4151.260	-3558.104	-3528.350	-3543.227
13	1.050	-3795.825	-3407.527	-3571.737	-3543.242	-3557.489
		-2785.825	-4043.027	-3571.737	-3543.242	-3557.489
13	2.100	-4590.463	-2937.114	-3589.262	-3562.028	-3575.645
		-3598.398	-3561.328	-3589.262	-3562.028	-3575.645
13	3.150	-5581.549	-2365.435	-3620.501	-3594.526	-3607.514
		-4614.280	-2974.049	-3620.501	-3594.526	-3607.514
13	4.200	-6382.153	-1905.763	-3646.925	-3622.209	-3634.567
		-5446.539	-2494.459	-3646.925	-3622.209	-3634.567
14	0	-6385.053	-1903.983	-3646.952	-3622.236	-3634.594
		-5455.608	-2488.797	-3646.952	-3622.236	-3634.594
14	1.050	-6884.431	-1601.251	-3653.165	-3630.115	-3641.640
		-5993.499	-2161.833	-3653.165	-3630.115	-3641.640
14	2.100	-7022.831	-1481.151	-3632.067	-3610.683	-3621.375
		-6177.269	-2013.186	-3632.067	-3610.683	-3621.375
14	3.150	-6926.104	-1512.159	-3612.909	-3593.192	-3603.051
		-6132.772	-2011.330	-3612.909	-3593.192	-3603.051
14	4.200	-6783.620	-1576.871	-3596.769	-3578.717	-3587.743
		-6049.377	-2038.863	-3596.769	-3578.717	-3587.743
15	0	-6789.426	-1573.273	-3596.802	-3578.750	-3587.776
		-6062.032	-2030.954	-3596.802	-3578.750	-3587.776
15	1.050	-6626.913	-1651.054	-3580.751	-3564.758	-3572.755
		-5965.484	-2067.230	-3580.751	-3564.758	-3572.755
15	2.100	-6476.480	-1721.437	-3564.825	-3550.891	-3557.858
		-5887.878	-2091.791	-3564.825	-3550.891	-3557.858
15	3.151	-6289.169	-1808.499	-3544.892	-3533.017	-3538.955
		-5780.254	-2128.711	-3544.892	-3533.017	-3538.955
15	4.201	-5967.665	-1975.868	-3522.427	-3512.611	-3517.519
		-5545.302	-2241.622	-3522.427	-3512.611	-3517.519
16	0	-5977.781	-1969.572	-3522.470	-3512.654	-3517.562
		-5563.247	-2230.400	-3522.470	-3512.654	-3517.562
16	1.049	-5527.884	-2215.887	-3498.670	-3491.321	-3494.996
		-5206.696	-2417.980	-3498.670	-3491.321	-3494.996
16	2.099	-4956.473	-2536.789	-3473.724	-3468.842	-3471.283
		-4735.485	-2675.836	-3473.724	-3468.842	-3471.283
16	3.148	-4418.067	-2856.751	-3460.946	-3458.531	-3459.738
		-4304.132	-2928.440	-3460.946	-3458.531	-3459.738
16	4.198	-4059.109	-3065.975	-3449.502	-3449.554	-3449.528
		-4059.010	-3066.037	-3449.502	-3449.554	-3449.528

Mstb. 1 :442.2
Extreme stresses envel.-A, GWSP IP (ELS 13 Comb Cuasipermante), View "LIST"
- Struktur: Staebe
- Extr.str.ll (z-y-)min., Scaling 5.00E-04
  min: -8.74E+03 max: -1.24E+03 [kN/m2]
- Extr.str.ul (z+y-)min., Scaling 5.00E-04
  min: -4.65E+03 max: -1.59E+02 [kN/m2]
- Text extreme stress envelope [kN/m2]



ENVOLVENTE: IQ 'ELS 14 Comb Cusipermanente'

Grupo	Espe.	Hipótesis	Factor	Etapa	Título
A	PERM.	1	1.000		Peso Propio
	Y	3	1.000		Carga Muerta Máxima
	Y	20	0.780000		Pretensado
B	MAS	19	0.200000		gradiente
C	MAS	32	0.200000		Carro 1 excéntrico
D	MAS	4	0.200000		Sobrecarga centrada vano 1
E	MAS	5	0.200000		Sobrecarga centrada vano 2
F	MAS	6	0.200000		Sobrecarga centrada vano 3
ALTERNATIVA PARA ENVOLVENTE:					
G	PERM.	1	1.000		Peso Propio
	Y	3	1.000		Carga Muerta Máxima
	Y	20	0.780000		Pretensado
H	MAS	19	0.200000		gradiente
I	MAS	32	0.200000		Carro 1 excéntrico
J	MAS	7	0.200000		Sobrecarga excéntrica vano 1 (
K	MAS	8	0.200000		Sobrecarga excentrica vano 2 (
L	MAS	9	0.200000		Sobrecarga excentrica vano 3 (
ALTERNATIVA PARA ENVOLVENTE:					
M	PERM.	1	1.000		Peso Propio
	Y	3	1.000		Carga Muerta Máxima
	Y	20	0.780000		Pretensado
N	MAS	19	0.200000		gradiente
O	MAS	32	0.200000		Carro 1 excéntrico
P	MAS	10	0.200000		Sobrecarga excéntrica vano 1 (
Q	MAS	11	0.200000		Sobrecarga excentrica vano 2 (
R	MAS	12	0.200000		Sobrecarga excentrica vano 3 (

TENSIONES para ENVOLVENTE de < My > ""
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)
(zi=z-inferior, zs=z-superior, yi=y-izq., yd= y-dch., ce=centro grav.)

Barra	Distancia [m]	Sigma-zi [kN/m2]	Sigma-zs [kN/m2]	Sigma-yi [kN/m2]	Sigma-yd [kN/m2]	Sigma-ce [kN/m2]
1	0	-4020.999	-3095.073	-3452.698	-3452.642	-3452.670
		-4002.563	-3106.673	-3452.698	-3452.642	-3452.670
1	1.050	-4369.346	-2891.575	-3463.550	-3461.044	-3462.297
		-4218.258	-2986.640	-3463.550	-3461.044	-3462.297
1	2.100	-4902.567	-2574.006	-3475.785	-3470.830	-3473.308
		-4614.334	-2755.365	-3475.785	-3470.830	-3473.308
1	3.150	-5468.742	-2256.033	-3500.499	-3493.094	-3496.797
		-5050.224	-2519.368	-3500.499	-3493.094	-3496.797
1	4.200	-5913.079	-2012.913	-3524.103	-3514.249	-3519.176
		-5371.137	-2353.907	-3524.103	-3514.249	-3519.176
2	0	-5900.840	-2020.552	-3524.065	-3514.210	-3519.138
		-5359.777	-2360.993	-3524.065	-3514.210	-3519.138
2	1.050	-6216.395	-1856.725	-3546.418	-3534.483	-3540.450
		-5558.793	-2270.493	-3546.418	-3534.483	-3540.450
2	2.100	-6397.813	-1773.212	-3566.263	-3552.247	-3559.255
		-5630.530	-2255.992	-3566.263	-3552.247	-3559.255
2	3.150	-6542.579	-1706.323	-3582.157	-3566.060	-3574.109
		-5672.472	-2253.801	-3582.157	-3566.060	-3574.109
2	4.199	-6699.418	-1632.084	-3598.202	-3580.023	-3589.112
		-5733.344	-2239.945	-3598.202	-3580.023	-3589.112
3	0	-6689.591	-1638.208	-3598.165	-3579.987	-3589.076
		-5725.398	-2244.886	-3598.165	-3579.987	-3589.076
3	1.050	-6826.605	-1577.027	-3614.357	-3594.522	-3604.439
		-5785.782	-2231.921	-3614.357	-3594.522	-3604.439
3	2.100	-6917.664	-1549.698	-3633.578	-3612.087	-3622.832
		-5823.742	-2238.002	-3633.578	-3612.087	-3622.832
3	3.150	-6773.194	-1673.744	-3654.750	-3631.603	-3643.177
		-5662.197	-2372.793	-3654.750	-3631.603	-3643.177

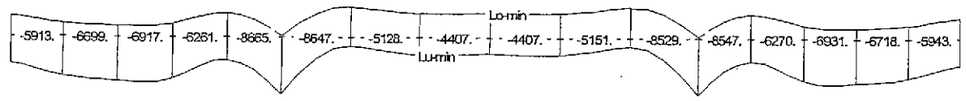
TENSIONES para ENVOLVENTE de < My > ""
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)
(zi=z-inferior, zs=z-superior, yi=y-izq., yd= y-dch., ce=centro grav.)

Barra	Distancia [m]	Sigma-zi [kN/m2]	Sigma-zs [kN/m2]	Sigma-yi [kN/m2]	Sigma-yd [kN/m2]	Sigma-ce [kN/m2]
3	4.200	-6267.357	-1980.632	-3648.588	-3623.784	-3636.186
		-5162.821	-2675.615	-3648.588	-3623.784	-3636.186
4	0	-6261.568	-1984.232	-3648.562	-3623.758	-3636.160
		-5153.206	-2681.622	-3648.562	-3623.758	-3636.160
4	1.050	-5454.381	-2448.147	-3622.203	-3596.135	-3609.169
		-4371.827	-3129.299	-3622.203	-3596.135	-3609.169
4	2.100	-4456.736	-3023.972	-3590.978	-3563.646	-3577.312
		-3406.850	-3684.569	-3590.978	-3563.646	-3577.312
4	3.150	-3656.202	-3498.100	-3573.458	-3544.862	-3559.160
		-2645.843	-4133.826	-3573.458	-3544.862	-3559.160
4	4.200	-3452.744	-3602.838	-3559.801	-3529.941	-3544.871
		-2488.770	-4209.378	-3559.801	-3529.941	-3544.871
5	0	-3446.405	-3606.796	-3559.782	-3529.922	-3544.852
		-2479.635	-4215.095	-3559.782	-3529.922	-3544.852
5	1.050	-3850.748	-3325.389	-3543.648	-3512.922	-3528.285
		-2937.203	-3900.198	-3543.648	-3512.922	-3528.285
5	2.099	-4879.409	-2647.251	-3525.117	-3493.524	-3509.321
		-3980.684	-3212.735	-3525.117	-3493.524	-3509.321
5	3.149	-6542.347	-1573.195	-3508.535	-3476.075	-3492.305
		-5486.453	-2237.572	-3508.535	-3476.075	-3492.305
5	4.198	-8665.726	-207.436	-3490.732	-3457.406	-3474.069
		-7440.441	-978.396	-3490.732	-3457.406	-3474.069
6	0	-8647.209	-214.066	-3487.649	-3454.323	-3470.986
		-7420.871	-985.687	-3487.649	-3454.323	-3470.986
6	1.350	-5539.195	-2127.082	-3462.724	-3426.989	-3444.856
		-4465.643	-2802.569	-3462.724	-3426.989	-3444.856
6	2.700	-3187.606	-3559.767	-3435.108	-3396.965	-3416.037
		-2255.501	-4146.255	-3435.108	-3396.965	-3416.037
6	4.050	-1710.995	-4422.111	-3395.341	-3354.789	-3375.065
		-848.822	-4964.597	-3395.341	-3354.789	-3375.065
6	5.400	-1358.411	-4575.197	-3354.340	-3311.378	-3332.859
		-501.013	-5114.679	-3354.340	-3311.378	-3332.859
7	0	-1333.446	-4590.847	-3354.304	-3311.342	-3332.823
		-479.579	-5128.106	-3354.304	-3311.342	-3332.823
7	1.350	-1592.040	-4378.747	-3324.696	-3280.318	-3302.507
		-700.060	-4939.987	-3324.696	-3280.318	-3302.507
7	2.700	-2068.359	-4052.379	-3309.038	-3263.244	-3286.141
		-1119.663	-4649.306	-3309.038	-3263.244	-3286.141
7	4.050	-2414.579	-3811.860	-3295.828	-3248.619	-3272.224
		-1410.157	-4443.851	-3295.828	-3248.619	-3272.224
7	5.400	-2616.212	-3660.066	-3281.237	-3232.612	-3256.925
		-1567.401	-4319.986	-3281.237	-3232.612	-3256.925
8	0	-2600.312	-3670.043	-3281.221	-3232.595	-3256.908
		-1551.022	-4330.265	-3281.221	-3232.595	-3256.908
8	1.350	-2661.512	-3604.506	-3264.874	-3215.760	-3240.317
		-1579.176	-4285.520	-3264.874	-3215.760	-3240.317
8	2.700	-2586.930	-3622.181	-3247.164	-3197.561	-3222.362
		-1482.885	-4316.855	-3247.164	-3197.561	-3222.362
8	4.050	-2457.860	-3677.437	-3231.477	-3181.385	-3206.431
		-1343.443	-4378.638	-3231.477	-3181.385	-3206.431
8	5.399	-2370.710	-3707.182	-3216.321	-3165.740	-3191.030
		-1257.257	-4407.776	-3216.321	-3165.740	-3191.030
9	0	-2369.704	-3707.816	-3216.321	-3165.740	-3191.031
		-1257.674	-4407.514	-3216.321	-3165.740	-3191.031
9	1.350	-2444.840	-3685.390	-3231.322	-3181.246	-3206.284
		-1345.115	-4377.346	-3231.322	-3181.246	-3206.284
9	2.700	-2559.793	-3638.471	-3246.667	-3197.094	-3221.881
		-1483.715	-4315.548	-3246.667	-3197.094	-3221.881
9	4.051	-2612.576	-3634.061	-3264.093	-3215.025	-3239.559
		-1571.486	-4289.123	-3264.093	-3215.025	-3239.559
9	5.401	-2530.139	-3712.826	-3280.349	-3231.784	-3256.067
		-1535.379	-4338.737	-3280.349	-3231.784	-3256.067
10	0	-2544.503	-3703.816	-3280.366	-3231.802	-3256.084
		-1552.583	-4327.940	-3280.366	-3231.802	-3256.084
10	1.350	-2327.878	-3864.890	-3294.850	-3247.726	-3271.288
		-1381.122	-4460.596	-3294.850	-3247.726	-3271.288
10	2.700	-1966.746	-4114.630	-3307.949	-3262.265	-3285.107

TENSIONES para ENVOLVENTE de < My > ""
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)
(zi=z-inferior, zs=z-superior, yi=y-izq.; yd= y-dch., ce=centro grav.)

Barra	Distancia [m]	Sigma-zi [kN/m2]	Sigma-zs [kN/m2]	Sigma-yi [kN/m2]	Sigma-yd [kN/m2]	Sigma-ce [kN/m2]
		-1076.490	-4674.786	-3307.949	-3262.265	-3285.107
10	4.049	-1483.469	-4447.115	-3324.663	-3280.419	-3302.541
		-649.583	-4971.803	-3324.663	-3280.419	-3302.541
10	5.399	-1240.283	-4649.168	-3354.042	-3311.238	-3332.640
		-442.006	-5151.450	-3354.042	-3311.238	-3332.640
11	0	-1264.110	-4634.233	-3354.077	-3311.273	-3332.675
		-462.224	-5138.786	-3354.077	-3311.273	-3332.675
11	1.331	-1653.641	-4458.484	-3395.455	-3355.026	-3375.240
		-842.995	-4968.549	-3395.455	-3355.026	-3375.240
11	2.662	-3139.861	-3588.336	-3434.160	-3396.106	-3415.133
		-2258.462	-4142.920	-3434.160	-3396.106	-3415.133
11	3.993	-5466.904	-2170.459	-3461.402	-3425.722	-3443.562
		-4445.850	-2812.915	-3461.402	-3425.722	-3443.562
11	5.324	-8529.246	-285.665	-3486.028	-3452.723	-3469.376
		-7357.514	-1022.928	-3486.028	-3452.723	-3469.376
12	0	-8547.777	-279.030	-3489.112	-3455.807	-3472.460
		-7376.950	-1015.723	-3489.112	-3455.807	-3472.460
12	1.050	-6476.070	-1612.291	-3506.914	-3474.497	-3490.706
		-5428.442	-2271.467	-3506.914	-3474.497	-3490.706
12	2.100	-4864.880	-2653.776	-3523.480	-3491.950	-3507.715
		-3927.500	-3243.583	-3523.480	-3491.950	-3507.715
12	3.149	-3847.669	-3324.681	-3541.982	-3511.341	-3526.662
		-2930.891	-3901.525	-3541.982	-3511.341	-3526.662
12	4.199	-3446.291	-3604.191	-3558.086	-3528.332	-3543.209
		-2528.016	-4181.977	-3558.086	-3528.332	-3543.209
13	0	-3452.154	-3600.531	-3558.104	-3528.350	-3543.227
		-2534.916	-4177.664	-3558.104	-3528.350	-3543.227
13	1.050	-3658.527	-3493.916	-3571.737	-3543.242	-3557.489
		-2746.651	-4067.675	-3571.737	-3543.242	-3557.489
13	2.100	-4461.670	-3018.151	-3589.262	-3562.028	-3575.645
		-3562.015	-3584.221	-3589.262	-3562.028	-3575.645
13	3.150	-5461.261	-2441.121	-3620.501	-3594.526	-3607.514
		-4580.687	-2995.185	-3620.501	-3594.526	-3607.514
13	4.200	-6270.370	-1976.098	-3646.925	-3622.209	-3634.567
		-5415.737	-2513.840	-3646.925	-3622.209	-3634.567
14	0	-6276.447	-1972.319	-3646.952	-3622.236	-3634.594
		-5423.882	-2508.759	-3646.952	-3622.236	-3634.594
14	1.050	-6784.330	-1664.235	-3653.165	-3630.115	-3641.640
		-5964.562	-2180.039	-3653.165	-3630.115	-3641.640
14	2.100	-6931.234	-1538.785	-3632.067	-3610.683	-3621.375
		-6151.124	-2029.637	-3632.067	-3610.683	-3621.375
14	3.150	-6843.011	-1564.442	-3612.909	-3593.192	-3603.051
		-6109.417	-2026.025	-3612.909	-3593.192	-3603.051
14	4.200	-6709.032	-1623.803	-3596.769	-3578.717	-3587.743
		-6028.812	-2051.802	-3596.769	-3578.717	-3587.743
15	0	-6718.011	-1618.207	-3596.802	-3578.750	-3587.776
		-6040.600	-2044.440	-3596.802	-3578.750	-3587.776
15	1.050	-6564.005	-1690.636	-3580.751	-3564.758	-3572.755
		-5946.842	-2078.960	-3580.751	-3564.758	-3572.755
15	2.100	-6422.079	-1755.667	-3564.825	-3550.891	-3557.858
		-5872.028	-2101.764	-3564.825	-3550.891	-3557.858
15	3.151	-6243.274	-1837.376	-3544.892	-3533.017	-3538.955
		-5767.195	-2136.928	-3544.892	-3533.017	-3538.955
15	4.201	-5930.278	-1999.393	-3522.427	-3512.611	-3517.519
		-5535.034	-2248.083	-3522.427	-3512.611	-3517.519
16	0	-5943.787	-1990.962	-3522.470	-3512.654	-3517.562
		-5552.085	-2237.424	-3522.470	-3512.654	-3517.562
16	1.049	-5502.390	-2231.927	-3498.670	-3491.321	-3494.996
		-5198.323	-2423.249	-3498.670	-3491.321	-3494.996
16	2.099	-4939.480	-2547.481	-3473.724	-3468.842	-3471.283
		-4729.902	-2679.350	-3473.724	-3468.842	-3471.283
16	3.148	-4409.575	-2862.094	-3460.946	-3458.531	-3459.738
		-4301.337	-2930.198	-3460.946	-3458.531	-3459.738
16	4.198	-4059.109	-3065.975	-3449.502	-3449.554	-3449.528
		-4059.014	-3066.035	-3449.502	-3449.554	-3449.528

Mstb. 1 :442.2
Extreme stresses envel. -A. GWSP IQ (ELS 14 Comb Cusipermanente), View "LIST"
- Struktur: Staebe
- Extr.str.ll (z-y-)min., Scaling 5.00E-04
  min: -8.67E+03 max: -1.24E+03 [kN/m2]
- Extr.str.ul (z+y-)min., Scaling 5.00E-04
  min: -4.65E+03 max: -2.07E+02 [kN/m2]
- Text extreme stress envelope [kN/m2]



ENVOLVENTE: IR 'ELS 15 Comb Cusipermanente'

Grupo	Espe.	Hipótesis	Factor	Etapa Título
A	PERM.	1	1.000	Peso Propio
	Y	3	1.000	Carga Muerta Máxima
	Y	20	0.780000	Pretensado
B	MAS	19	0.200000	gradiente
C	MAS	34	0.200000	Carro 1 pila excéntrico
D	MAS	4	0.200000	Sobrecarga centrada vano 1
E	MAS	5	0.200000	Sobrecarga centrada vano 2
F	MAS	6	0.200000	Sobrecarga centrada vano 3

ALTERNATIVA PARA ENVOLVENTE:

G	PERM.	1	1.000	Peso Propio
	Y	3	1.000	Carga Muerta Máxima
	Y	20	0.780000	Pretensado
H	MAS	19	0.200000	gradiente
I	MAS	34	0.200000	Carro 1 pila excéntrico
J	MAS	7	0.200000	Sobrecarga excéntrica vano 1 (
K	MAS	8	0.200000	Sobrecarga excentrica vano 2 (
L	MAS	9	0.200000	Sobrecarga excentrica vano 3 (

ALTERNATIVA PARA ENVOLVENTE:

M	PERM.	1	1.000	Peso Propio
	Y	3	1.000	Carga Muerta Máxima
	Y	20	0.780000	Pretensado
N	MAS	19	0.200000	gradiente
O	MAS	34	0.200000	Carro 1 pila excéntrico
P	MAS	10	0.200000	Sobrecarga excéntrica vano 1 (
Q	MAS	11	0.200000	Sobrecarga excentrica vano 2 (
R	MAS	12	0.200000	Sobrecarga excentrica vano 3 (

TENSIONES para ENVOLVENTE de < My > ""
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)
(zi=z-inferior, zs=z-superior, yi=y-izq., yd= y-dch., ce=centro grav.)

Barra	Distancia [m]	Sigma-zi [kN/m2]	Sigma-zs [kN/m2]	Sigma-yi [kN/m2]	Sigma-yd [kN/m2]	Sigma-ce [kN/m2]
1	0	-4020.999	-3095.073	-3452.698	-3452.642	-3452.670
		-4004.299	-3105.581	-3452.698	-3452.642	-3452.670
1	1.050	-4369.346	-2891.575	-3463.550	-3461.044	-3462.297
		-4251.243	-2965.886	-3463.550	-3461.044	-3462.297
1	2.100	-4902.567	-2574.006	-3475.785	-3470.830	-3473.308

TENSIONES para ENVOLVENTE de < My > ""
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)
(zi=z-inferior, zs=z-superior, yi=y-izq., yd= y-dch., ce=centro grav.)

Barra	Distancia [m]	Sigma-zi [kN/m2]	Sigma-zs [kN/m2]	Sigma-yi [kN/m2]	Sigma-yd [kN/m2]	Sigma-ce [kN/m2]
		-4678.568	-2714.949	-3475.785	-3470.830	-3473.308
1	3.150	-5468.742	-2256.033	-3500.499	-3493.094	-3496.797
		-5145.706	-2459.290	-3500.499	-3493.094	-3496.797
1	4.200	-5913.079	-2012.913	-3524.103	-3514.249	-3519.176
		-5497.867	-2274.168	-3524.103	-3514.249	-3519.176
2	0	-5900.840	-2020.552	-3524.065	-3514.210	-3519.138
		-5485.954	-2281.601	-3524.065	-3514.210	-3519.138
2	1.050	-6216.395	-1856.725	-3546.418	-3534.483	-3540.450
		-5716.212	-2171.444	-3546.418	-3534.483	-3540.450
2	2.100	-6397.813	-1773.212	-3566.263	-3552.247	-3559.255
		-5819.190	-2137.286	-3566.263	-3552.247	-3559.255
2	3.150	-6542.579	-1706.323	-3582.157	-3566.060	-3574.109
		-5892.374	-2115.438	-3582.157	-3566.060	-3574.109
2	4.199	-6699.418	-1632.084	-3598.202	-3580.023	-3589.112
		-5984.487	-2081.924	-3598.202	-3580.023	-3589.112
3	0	-6689.591	-1638.208	-3598.165	-3579.987	-3589.076
		-5975.687	-2087.402	-3598.165	-3579.987	-3589.076
3	1.050	-6826.605	-1577.027	-3614.357	-3594.522	-3604.439
		-6054.818	-2062.641	-3614.357	-3594.522	-3604.439
3	2.100	-6917.664	-1549.698	-3633.578	-3612.087	-3622.832
		-6094.856	-2067.415	-3633.578	-3612.087	-3622.832
3	3.150	-6773.194	-1673.744	-3654.750	-3631.603	-3643.177
		-5906.226	-2219.248	-3654.750	-3631.603	-3643.177
3	4.200	-6267.357	-1980.632	-3648.588	-3623.784	-3636.186
		-5363.089	-2549.605	-3648.588	-3623.784	-3636.186
4	0	-6261.568	-1984.232	-3648.562	-3623.758	-3636.160
		-5359.099	-2552.073	-3648.562	-3623.758	-3636.160
4	1.050	-5454.381	-2448.147	-3622.203	-3596.135	-3609.169
		-4521.476	-3035.139	-3622.203	-3596.135	-3609.169
4	2.100	-4456.736	-3023.972	-3590.978	-3563.646	-3577.312
		-3500.254	-3625.798	-3590.978	-3563.646	-3577.312
4	3.150	-3656.202	-3498.100	-3573.458	-3544.862	-3559.160
		-2683.003	-4110.445	-3573.458	-3544.862	-3559.160
4	4.200	-3452.744	-3602.838	-3559.801	-3529.941	-3544.871
		-2469.686	-4221.386	-3559.801	-3529.941	-3544.871
5	0	-3446.405	-3606.796	-3559.782	-3529.922	-3544.852
		-2466.142	-4223.585	-3559.782	-3529.922	-3544.852
5	1.050	-3850.748	-3325.389	-3543.648	-3512.922	-3528.285
		-2867.485	-3944.066	-3543.648	-3512.922	-3528.285
5	2.099	-4871.261	-2652.377	-3525.117	-3493.524	-3509.321
		-3887.865	-3271.138	-3525.117	-3493.524	-3509.321
5	3.149	-6485.389	-1609.033	-3508.535	-3476.075	-3492.305
		-5427.838	-2274.453	-3508.535	-3476.075	-3492.305
5	4.198	-8559.958	-273.987	-3490.732	-3457.406	-3474.069
		-7432.719	-983.255	-3490.732	-3457.406	-3474.069
6	0	-8542.287	-280.084	-3487.649	-3454.323	-3470.986
		-7411.146	-991.807	-3487.649	-3454.323	-3470.986
6	1.350	-5440.520	-2189.169	-3462.724	-3426.989	-3444.856
		-4455.507	-2808.946	-3462.724	-3426.989	-3444.856
6	2.700	-3095.178	-3617.923	-3435.108	-3396.965	-3416.037
		-2244.955	-4152.891	-3435.108	-3396.965	-3416.037
6	4.050	-1624.814	-4476.337	-3395.341	-3354.789	-3375.065
		-837.865	-4971.491	-3395.341	-3354.789	-3375.065
6	5.400	-1278.477	-4625.492	-3354.340	-3311.378	-3332.859
		-489.645	-5121.832	-3354.340	-3311.378	-3332.859
7	0	-1254.704	-4640.392	-3354.304	-3311.342	-3332.823
		-465.773	-5136.794	-3354.304	-3311.342	-3332.823
7	1.350	-1519.545	-4424.361	-3324.696	-3280.318	-3302.507
		-685.843	-4948.933	-3324.696	-3280.318	-3302.507
7	2.700	-2002.111	-4094.063	-3309.038	-3263.244	-3286.141
		-1105.035	-4658.510	-3309.038	-3263.244	-3286.141
7	4.050	-2354.578	-3849.614	-3295.828	-3248.619	-3272.224
		-1395.118	-4453.313	-3295.828	-3248.619	-3272.224
7	5.400	-2562.457	-3693.889	-3281.237	-3232.612	-3256.925
		-1551.952	-4329.707	-3281.237	-3232.612	-3256.925
8	0	-2547.780	-3703.097	-3281.221	-3232.595	-3256.908
		-1533.326	-4341.400	-3281.221	-3232.595	-3256.908

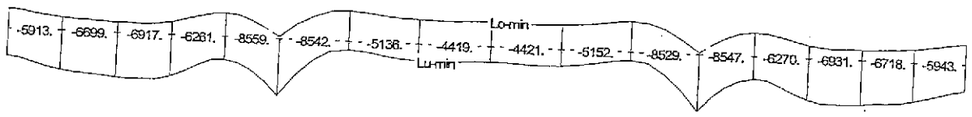
TENSIONES para ENVOLVENTE de < My > ""
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)
(zi=z-inferior, zs=z-superior, yi=y-izq., yd= y-dch., ce=centro grav.)

Barra	Distancia [m]	Sigma-zi [kN/m2]	Sigma-zs [kN/m2]	Sigma-yi [kN/m2]	Sigma-yd [kN/m2]	Sigma-ce [kN/m2]
8	1.350	-2615.226	-3633.629	-3264.874	-3215.760	-3240.317
		-1561.069	-4296.913	-3264.874	-3215.760	-3240.317
8	2.700	-2546.891	-3647.375	-3247.164	-3197.561	-3222.362
		-1464.368	-4328.506	-3247.164	-3197.561	-3222.362
8	4.050	-2424.066	-3698.701	-3231.477	-3181.385	-3206.431
		-1324.514	-4390.547	-3231.477	-3181.385	-3206.431
8	5.399	-2343.162	-3724.516	-3216.321	-3165.740	-3191.030
		-1237.918	-4419.944	-3216.321	-3165.740	-3191.030
9	0	-2343.536	-3724.281	-3216.321	-3165.740	-3191.031
		-1235.965	-4421.173	-3216.321	-3165.740	-3191.031
9	1.350	-2424.919	-3697.925	-3231.322	-3181.246	-3206.284
		-1322.995	-4391.264	-3231.322	-3181.246	-3206.284
9	2.700	-2546.120	-3647.075	-3246.667	-3197.094	-3221.881
		-1461.183	-4329.725	-3246.667	-3197.094	-3221.881
9	4.051	-2605.150	-3638.734	-3264.093	-3215.025	-3239.559
		-1548.544	-4303.559	-3264.093	-3215.025	-3239.559
9	5.401	-2528.961	-3713.567	-3280.349	-3231.784	-3256.067
		-1512.026	-4353.431	-3280.349	-3231.784	-3256.067
10	0	-2544.503	-3703.816	-3280.366	-3231.802	-3256.084
		-1527.178	-4343.925	-3280.366	-3231.802	-3256.084
10	1.350	-2327.878	-3864.890	-3294.850	-3247.726	-3271.288
		-1361.553	-4472.909	-3294.850	-3247.726	-3271.288
10	2.700	-1966.746	-4114.630	-3307.949	-3262.265	-3285.107
		-1062.755	-4683.428	-3307.949	-3262.265	-3285.107
10	4.049	-1483.469	-4447.115	-3324.663	-3280.419	-3302.541
		-641.684	-4976.773	-3324.663	-3280.419	-3302.541
10	5.399	-1240.283	-4649.168	-3354.042	-3311.238	-3332.640
		-439.941	-5152.749	-3354.042	-3311.238	-3332.640
11	0	-1264.110	-4634.233	-3354.077	-3311.273	-3332.675
		-459.277	-5140.640	-3354.077	-3311.273	-3332.675
11	1.331	-1653.641	-4458.484	-3395.455	-3355.026	-3375.240
		-845.802	-4966.782	-3395.455	-3355.026	-3375.240
11	2.662	-3139.861	-3588.336	-3434.160	-3396.106	-3415.133
		-2267.023	-4137.533	-3434.160	-3396.106	-3415.133
11	3.993	-5466.904	-2170.459	-3461.402	-3425.722	-3443.562
		-4460.164	-2803.908	-3461.402	-3425.722	-3443.562
11	5.324	-8529.246	-285.665	-3486.028	-3452.723	-3469.376
		-7377.582	-1010.301	-3486.028	-3452.723	-3469.376
12	0	-8547.777	-279.030	-3489.112	-3455.807	-3472.460
		-7396.233	-1003.590	-3489.112	-3455.807	-3472.460
12	1.050	-6476.070	-1612.291	-3506.914	-3474.497	-3490.706
		-5446.906	-2259.849	-3506.914	-3474.497	-3490.706
12	2.100	-4864.880	-2653.776	-3523.480	-3491.950	-3507.715
		-3945.144	-3232.481	-3523.480	-3491.950	-3507.715
12	3.149	-3847.669	-3324.681	-3541.982	-3511.341	-3526.662
		-2947.716	-3890.939	-3541.982	-3511.341	-3526.662
12	4.199	-3446.291	-3604.191	-3558.086	-3528.332	-3543.209
		-2544.021	-4171.906	-3558.086	-3528.332	-3543.209
13	0	-3452.154	-3600.531	-3558.104	-3528.350	-3543.227
		-2550.262	-4168.009	-3558.104	-3528.350	-3543.227
13	1.050	-3658.527	-3493.916	-3571.737	-3543.242	-3557.489
		-2761.176	-4058.536	-3571.737	-3543.242	-3557.489
13	2.100	-4461.670	-3018.151	-3589.262	-3562.028	-3575.645
		-3575.721	-3575.597	-3589.262	-3562.028	-3575.645
13	3.150	-5461.261	-2441.121	-3620.501	-3594.526	-3607.514
		-4593.573	-2987.077	-3620.501	-3594.526	-3607.514
13	4.200	-6270.370	-1976.098	-3646.925	-3622.209	-3634.567
		-5427.804	-2506.248	-3646.925	-3622.209	-3634.567
14	0	-6276.447	-1972.319	-3646.952	-3622.236	-3634.594
		-5435.209	-2501.632	-3646.952	-3622.236	-3634.594
14	1.050	-6784.330	-1664.235	-3653.165	-3630.115	-3641.640
		-5975.070	-2173.428	-3653.165	-3630.115	-3641.640
14	2.100	-6931.234	-1538.785	-3632.067	-3610.683	-3621.375
		-6160.812	-2023.541	-3632.067	-3610.683	-3621.375
14	3.150	-6843.011	-1564.442	-3612.909	-3593.192	-3603.051
		-6118.285	-2020.445	-3612.909	-3593.192	-3603.051
14	4.200	-6709.032	-1623.803	-3596.769	-3578.717	-3587.743

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Barra	Distancia [m]	Sigma-zi [kN/m2]	Sigma-zs [kN/m2]	Sigma-yi [kN/m2]	Sigma-yd [kN/m2]	Sigma-ce [kN/m2]
		-6036.861	-2046.738	-3596.769	-3578.717	-3587.743
15	0	-6718.011	-1618.207	-3596.802	-3578.750	-3587.776
		-6047.923	-2039.832	-3596.802	-3578.750	-3587.776
15	1.050	-6564.005	-1690.636	-3580.751	-3564.758	-3572.755
		-5953.345	-2074.868	-3580.751	-3564.758	-3572.755
15	2.100	-6422.079	-1755.667	-3564.825	-3550.891	-3557.858
		-5877.711	-2098.188	-3564.825	-3550.891	-3557.858
15	3.151	-6243.274	-1837.376	-3544.892	-3533.017	-3538.955
		-5772.059	-2133.868	-3544.892	-3533.017	-3538.955
15	4.201	-5930.278	-1999.393	-3522.427	-3512.611	-3517.519
		-5539.077	-2245.539	-3522.427	-3512.611	-3517.519
16	0	-5943.787	-1990.962	-3522.470	-3512.654	-3517.562
		-5555.359	-2235.364	-3522.470	-3512.654	-3517.562
16	1.049	-5502.390	-2231.927	-3498.670	-3491.321	-3494.996
		-5200.778	-2421.704	-3498.670	-3491.321	-3494.996
16	2.099	-4939.480	-2547.481	-3473.724	-3468.842	-3471.283
		-4731.537	-2678.320	-3473.724	-3468.842	-3471.283
16	3.148	-4409.575	-2862.094	-3460.946	-3458.531	-3459.738
		-4302.154	-2929.684	-3460.946	-3458.531	-3459.738
16	4.198	-4059.109	-3065.975	-3449.502	-3449.554	-3449.528
		-4059.011	-3066.037	-3449.502	-3449.554	-3449.528

Mstb. 1 :442.2
Extreme stresses envel. -A, GWSP IR (ELS 15 Comb Cusipermanente), View "LIST"
- Struktur: Staebe
- Extr.str.ll (z-y-)min., Scaling 5.00E-04
  min: -8.56E+03 max: -1.24E+03 [kN/m2]
- Extr.str.ul (z+y-)min., Scaling 5.00E-04
  min: -4.65E+03 max: -2.74E+02 [kN/m2]
- Text extreme stress envelope [kN/m2]



ENVOLVENTE: IS 'ELS 16 Comb Cuasipermanente'

Grupo	Espe.	Hipótesis	Factor	Etapa	Título
A	PERM.	1	1.000		Peso Propio
	Y	3	1.000		Carga Muerta Máxima
	Y	20	0.957000		Pretensado
B	MAS	19	0.200000		gradiente
C	MAS	21	0.200000		Carro 2 centrado
D	MAS	4	0.200000		Sobrecarga centrada vano 1
E	MAS	5	0.200000		Sobrecarga centrada vano 2
F	MAS	6	0.200000		Sobrecarga centrada vano 3

ALTERNATIVA PARA ENVOLVENTE:

G	PERM.	1	1.000		Peso Propio
	Y	3	1.000		Carga Muerta Máxima
	Y	20	0.957000		Pretensado
H	MAS	19	0.200000		gradiente
I	MAS	21	0.200000		Carro 2 centrado
J	MAS	7	0.200000		Sobrecarga excéntrica vano 1 (
K	MAS	8	0.200000		Sobrecarga excentrica vano 2 (

L	MAS	9	0.200000	Sobrecarga excentrica vano 3 (

ALTERNATIVA PARA ENVOLVENTE:

M	PERM.	1	1.000	Peso Propio
	Y	3	1.000	Carga Muerta Máxima
	Y	20	0.957000	Pretensado
N	MAS	19	0.200000	gradiente
O	MAS	21	0.200000	Carro 2 centrado
P	MAS	10	0.200000	Sobrecarga excéntrica vano 1 (
Q	MAS	11	0.200000	Sobrecarga excentrica vano 2 (
R	MAS	12	0.200000	Sobrecarga excentrica vano 3 (

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(zi=z-inferior, zs=z-superior, yi=y-izq., yd= y-dch., ce=centro grav.)

Barra	Distancia [m]	Sigma-zi [kN/m2]	Sigma-zs [kN/m2]	Sigma-yi [kN/m2]	Sigma-yd [kN/m2]	Sigma-ce [kN/m2]
		-4944.247	-3790.627	-4236.195	-4236.126	-4236.161
1	0	-4930.306	-3799.399	-4236.195	-4236.126	-4236.161
		-5609.367	-3391.371	-4249.509	-4246.435	-4247.972
1	1.050	-5489.704	-3466.664	-4249.509	-4246.435	-4247.972
		-6461.562	-2877.173	-4264.521	-4258.442	-4261.481
1	2.100	-6231.683	-3021.815	-4264.521	-4258.442	-4261.481
		-7315.723	-2386.681	-4294.843	-4285.758	-4290.301
1	3.150	-6982.489	-2596.354	-4294.843	-4285.758	-4290.301
		-7981.936	-2012.228	-4323.803	-4311.713	-4317.758
1	4.200	-7552.207	-2282.617	-4323.803	-4311.713	-4317.758
		-7967.146	-2021.457	-4323.756	-4311.666	-4317.711
2	0	-7533.222	-2294.486	-4323.756	-4311.666	-4317.711
		-8436.875	-1768.503	-4351.182	-4336.538	-4343.860
2	1.050	-7913.335	-2097.918	-4351.182	-4336.538	-4343.860
		-8703.581	-1638.278	-4375.531	-4358.334	-4366.932
2	2.100	-8097.284	-2019.765	-4375.531	-4358.334	-4366.932
		-8886.872	-1552.641	-4395.031	-4375.281	-4385.156
2	3.150	-8204.674	-1981.886	-4395.031	-4375.281	-4385.156
		-9046.529	-1482.175	-4414.717	-4392.413	-4403.565
2	4.199	-8295.287	-1954.863	-4414.717	-4392.413	-4403.565
		-9033.848	-1490.082	-4414.672	-4392.369	-4403.520
3	0	-8278.472	-1965.370	-4414.672	-4392.369	-4403.520
		-9130.711	-1459.844	-4434.537	-4410.202	-4422.370
3	1.050	-8313.134	-1974.270	-4434.537	-4410.202	-4422.370
		-9132.724	-1495.343	-4458.120	-4431.753	-4444.936
3	2.100	-8259.807	-2044.590	-4458.120	-4431.753	-4444.936
		-8807.297	-1740.771	-4484.097	-4455.698	-4469.897
3	3.150	-7885.900	-2320.521	-4484.097	-4455.698	-4469.897
		-8000.033	-2234.735	-4476.536	-4446.105	-4461.321
3	4.200	-7037.017	-2840.672	-4476.536	-4446.105	-4461.321
		-7991.741	-2239.900	-4476.504	-4446.073	-4461.289
4	0	-7025.843	-2847.651	-4476.504	-4446.073	-4461.289
		-6776.308	-2950.707	-4444.164	-4412.181	-4428.173
4	1.050	-5775.656	-3580.326	-4444.164	-4412.181	-4428.173
		-5288.743	-3823.016	-4405.854	-4372.320	-4389.087
4	2.100	-4260.196	-4470.186	-4405.854	-4372.320	-4389.087
		-4004.563	-4594.747	-4384.358	-4349.273	-4366.815
4	3.150	-2954.980	-5255.153	-4384.358	-4349.273	-4366.815
		-3414.492	-4937.463	-4367.602	-4330.966	-4349.284
4	4.200	-2350.731	-5606.789	-4367.602	-4330.966	-4349.284
		-3405.780	-4942.906	-4367.579	-4330.943	-4349.261
5	0	-2340.157	-5613.404	-4367.579	-4330.943	-4349.261
		-3523.113	-4835.964	-4347.784	-4310.085	-4328.934
5	1.050	-2450.173	-5511.066	-4347.784	-4310.085	-4328.934
		-4355.332	-4274.417	-4325.048	-4286.286	-4305.667
5	2.099	-3252.965	-4968.035	-4325.048	-4286.286	-4305.667
		-5865.156	-3290.411	-4304.703	-4264.877	-4284.790
5	3.149	-4642.699	-4059.591	-4304.703	-4264.877	-4284.790
		-7899.922	-1973.667	-4282.859	-4241.971	-4262.415

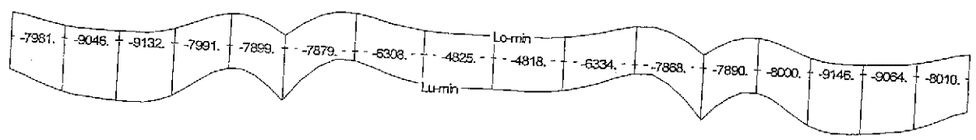
TENSIONES para ENVOLVENTE de < My > ""
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)
(zi=z-inferior, zs=z-superior, yi=y-izq., yd= y-dch., ce=centro grav.)

Barra	Distancia [m]	Sigma-zi [kN/m2]	Sigma-zs [kN/m2]	Sigma-yi [kN/m2]	Sigma-yd [kN/m2]	Sigma-ce [kN/m2]
		-6545.152	-2826.098	-4282.859	-4241.971	-4262.415
6	0	-7879.203	-1980.542	-4279.078	-4238.189	-4258.633
		-6522.971	-2833.894	-4279.078	-4238.189	-4258.633
6	1.350	-4778.385	-3879.369	-4248.495	-4204.651	-4226.573
		-3624.775	-4605.230	-4248.495	-4204.651	-4226.573
6	2.700	-2539.492	-5230.491	-4214.614	-4167.814	-4191.214
		-1577.164	-5835.995	-4214.614	-4167.814	-4191.214
6	4.050	-1305.287	-5925.164	-4165.823	-4116.068	-4140.945
		-462.727	-6455.309	-4165.823	-4116.068	-4140.945
6	5.400	-1372.964	-5798.214	-4115.517	-4062.806	-4089.161
		-585.013	-6293.999	-4115.517	-4062.806	-4089.161
7	0	-1346.878	-5814.556	-4115.473	-4062.762	-4089.117
		-561.991	-6308.413	-4115.473	-4062.762	-4089.117
7	1.350	-2139.111	-5255.478	-4079.146	-4024.698	-4051.922
		-1273.306	-5800.249	-4079.146	-4024.698	-4051.922
7	2.700	-3143.975	-4590.496	-4059.935	-4003.750	-4031.842
		-2159.127	-5210.170	-4059.935	-4003.750	-4031.842
7	4.050	-3924.467	-4071.584	-4043.728	-3985.806	-4014.767
		-2821.564	-4765.539	-4043.728	-3985.806	-4014.767
7	5.400	-4463.987	-3701.533	-4025.826	-3966.166	-3995.996
		-3254.368	-4462.635	-4025.826	-3966.166	-3995.996
8	0	-4448.594	-3711.185	-4025.805	-3966.146	-3995.976
		-3236.762	-4473.679	-4025.805	-3966.146	-3995.976
8	1.350	-4752.214	-3486.980	-4005.749	-3945.490	-3975.620
		-3445.016	-4309.480	-4005.749	-3945.490	-3975.620
8	2.700	-4825.680	-3404.866	-3984.020	-3923.161	-3953.591
		-3434.452	-4280.237	-3984.020	-3923.161	-3953.591
8	4.050	-4768.731	-3408.852	-3964.773	-3903.314	-3934.044
		-3308.981	-4327.338	-3964.773	-3903.314	-3934.044
8	5.399	-4699.656	-3421.531	-3946.178	-3884.119	-3915.149
		-3216.042	-4355.033	-3946.178	-3884.119	-3915.149
9	0	-4700.080	-3421.264	-3946.178	-3884.120	-3915.149
		-3216.519	-4354.733	-3946.178	-3884.120	-3915.149
9	1.350	-4766.543	-3409.935	-3964.584	-3903.144	-3933.864
		-3307.954	-4327.691	-3964.584	-3903.144	-3933.864
9	2.700	-4818.268	-3408.566	-3983.410	-3922.589	-3953.000
		-3429.332	-4282.495	-3983.410	-3922.589	-3953.000
9	4.051	-4730.125	-3499.363	-4004.791	-3944.588	-3974.689
		-3426.346	-4319.711	-4004.791	-3944.588	-3974.689
9	5.401	-4412.487	-3732.221	-4024.735	-3965.151	-3994.943
		-3205.207	-4491.851	-4024.735	-3965.151	-3994.943
10	0	-4428.852	-3721.958	-4024.756	-3965.172	-3994.964
		-3223.912	-4480.116	-4024.756	-3965.172	-3994.964
10	1.350	-3875.402	-4100.587	-4042.528	-3984.710	-4013.619
		-2778.274	-4790.908	-4042.528	-3984.710	-4013.619
10	2.700	-3081.094	-4627.993	-4058.599	-4002.548	-4030.573
		-2103.114	-5243.346	-4058.599	-4002.548	-4030.573
10	4.049	-2072.066	-5297.731	-4079.105	-4024.821	-4051.963
		-1213.103	-5838.197	-4079.105	-4024.821	-4051.963
10	5.399	-1305.924	-5839.960	-4115.152	-4062.635	-4088.893
		-520.336	-6334.257	-4115.152	-4062.635	-4088.893
11	0	-1332.119	-5823.548	-4115.195	-4062.678	-4088.936
		-543.553	-6319.719	-4115.195	-4062.678	-4088.936
11	1.331	-1321.000	-5915.627	-4165.962	-4116.358	-4141.160
		-474.216	-6448.430	-4165.962	-4116.358	-4141.160
11	2.662	-2580.944	-5202.603	-4213.451	-4166.761	-4190.106
		-1613.950	-5811.044	-4213.451	-4166.761	-4190.106
11	3.993	-4805.683	-3859.607	-4246.874	-4203.098	-4224.986
		-3649.576	-4587.038	-4246.874	-4203.098	-4224.986
11	5.324	-7868.276	-1984.198	-4277.088	-4236.226	-4256.657
		-6512.034	-2837.556	-4277.088	-4236.226	-4256.657
12	0	-7890.067	-1976.651	-4280.872	-4240.010	-4260.441
		-6535.399	-2829.019	-4280.872	-4240.010	-4260.441
12	1.050	-5858.008	-3291.712	-4302.714	-4262.941	-4282.827
		-4635.544	-4060.896	-4302.714	-4262.941	-4282.827
12	2.100	-4350.967	-4273.953	-4323.038	-4284.355	-4303.696
		-3247.757	-4968.102	-4323.038	-4284.355	-4303.696

TENSIONES para ENVOLVENTE de < My > ""
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)
(zi=z-inferior, zs=z-superior, yi=y-izq., yd= y-dch., ce=centro grav.)

Barra	Distancia [m]	Sigma-zi [kN/m2]	Sigma-zs [kN/m2]	Sigma-yi [kN/m2]	Sigma-yd [kN/m2]	Sigma-ce [kN/m2]
		-3521.917	-4833.471	-4345.740	-4308.145	-4326.943
12	3.149	-2448.313	-5508.991	-4345.740	-4308.145	-4326.943
		-3407.407	-4938.598	-4365.498	-4328.992	-4347.245
12	4.199	-2341.311	-5609.394	-4365.498	-4328.992	-4347.245
		-3415.562	-4933.504	-4365.520	-4329.014	-4347.267
13	0	-2351.219	-5603.197	-4365.520	-4329.014	-4347.267
		-4008.335	-4589.035	-4382.246	-4347.286	-4364.766
13	1.050	-2958.361	-5249.687	-4382.246	-4347.286	-4364.766
		-5294.840	-3815.847	-4403.749	-4370.334	-4387.041
13	2.100	-4266.093	-4463.143	-4403.749	-4370.334	-4387.041
		-6783.911	-2942.615	-4442.077	-4410.207	-4426.142
13	3.150	-5783.252	-3572.237	-4442.077	-4410.207	-4426.142
		-8000.816	-2231.005	-4474.496	-4444.171	-4459.334
13	4.200	-7035.104	-2838.638	-4474.496	-4444.171	-4459.334
		-8009.568	-2225.552	-4474.529	-4444.204	-4459.367
14	0	-7046.846	-2831.305	-4474.529	-4444.204	-4459.367
		-8818.421	-1730.701	-4482.153	-4453.872	-4468.013
14	1.050	-7897.503	-2310.150	-4482.153	-4453.872	-4468.013
		-9145.926	-1484.123	-4456.266	-4430.030	-4443.148
14	2.100	-8273.671	-2032.953	-4456.266	-4430.030	-4443.148
		-9146.492	-1447.139	-4432.762	-4408.570	-4420.666
14	3.150	-8329.759	-1961.033	-4432.762	-4408.570	-4420.666
		-9052.463	-1475.703	-4412.958	-4390.810	-4401.884
14	4.200	-8298.111	-1950.347	-4412.958	-4390.810	-4401.884
		-9064.149	-1468.417	-4412.999	-4390.851	-4401.925
15	0	-8313.594	-1940.672	-4412.999	-4390.851	-4401.925
		-8907.096	-1537.210	-4393.306	-4373.684	-4383.495
15	1.050	-8225.798	-1965.887	-4393.306	-4373.684	-4383.495
		-8726.390	-1621.133	-4373.766	-4356.670	-4365.218
15	2.100	-8121.212	-2001.916	-4373.766	-4356.670	-4365.218
		-8461.963	-1749.728	-4349.310	-4334.741	-4342.025
15	3.151	-7939.766	-2078.299	-4349.310	-4334.741	-4342.025
		-7994.418	-2001.063	-4321.747	-4309.704	-4315.726
15	4.201	-7562.065	-2273.103	-4321.747	-4309.704	-4315.726
		-8010.842	-1990.814	-4321.800	-4309.756	-4315.778
16	0	-7583.130	-2259.934	-4321.800	-4309.756	-4315.778
		-7347.382	-2363.161	-4292.599	-4283.583	-4288.091
16	1.049	-7016.308	-2571.475	-4292.599	-4283.583	-4288.091
		-6496.414	-2851.196	-4261.992	-4256.002	-4258.997
16	2.099	-6268.830	-2994.394	-4261.992	-4256.002	-4258.997
		-5647.518	-3362.253	-4246.314	-4243.352	-4244.833
16	3.148	-5530.277	-3436.021	-4246.314	-4243.352	-4244.833
		-4980.352	-3761.629	-4232.274	-4232.338	-4232.306
16	4.198	-4980.257	-3761.689	-4232.274	-4232.338	-4232.306

Mstb. 1 :442.2
Extreme stresses envel. -A, GWSP IS (ELS 16 Comb Cuasipermanente), View "LIST"
- Struktur: Staebe
- Extr.str.ll (z-y-)min., Scaling 5.00E-04
  min: -9,15E+03 max: -1.31E+03 [kN/m2]
- Extr.str.ul (z+y-)min., Scaling 5.00E-04
  min: -5,93E+03 max: -1.45E+03 [kN/m2]
- Text extreme stress envelope [kN/m2]



ENVOLVENTE: IT 'ELS 17 Comb Cusipermanente'

Grupo	Espe.	Hipótesis	Factor Etapa	Título
A	PERM.	1	1.000	Peso Propio
	Y	3	1.000	Carga Muerta Máxima
	Y	20	0.957000	Pretensado
B	MAS	19	0.200000	gradiente
C	MAS	22	0.200000	Carro 1 centrado
D	MAS	4	0.200000	Sobrecarga centrada vano 1
E	MAS	5	0.200000	Sobrecarga centrada vano 2
F	MAS	6	0.200000	Sobrecarga centrada vano 3
ALTERNATIVA PARA ENVOLVENTE:				
G	PERM.	1	1.000	Peso Propio
	Y	3	1.000	Carga Muerta Máxima
	Y	20	0.957000	Pretensado
H	MAS	19	0.200000	gradiente
I	MAS	22	0.200000	Carro 1 centrado
J	MAS	7	0.200000	Sobrecarga excéntrica vano 1 (
K	MAS	8	0.200000	Sobrecarga excentrica vano 2 (
L	MAS	9	0.200000	Sobrecarga excentrica vano 3 (
ALTERNATIVA PARA ENVOLVENTE:				
M	PERM.	1	1.000	Peso Propio
	Y	3	1.000	Carga Muerta Máxima
	Y	20	0.957000	Pretensado
N	MAS	19	0.200000	gradiente
O	MAS	22	0.200000	Carro 1 centrado
P	MAS	10	0.200000	Sobrecarga excéntrica vano 1 (
Q	MAS	11	0.200000	Sobrecarga excentrica vano 2 (
R	MAS	12	0.200000	Sobrecarga excentrica vano 3 (

TENSIONES para ENVOLVENTE de < My > ""
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(zi=z-inferior, zs=z-superior, yi=y-izq., yd= y-dch., ce=centro grav.)

Barra	Distancia [m]	Sigma-zi [kN/m2]	Sigma-zs [kN/m2]	Sigma-yi [kN/m2]	Sigma-yd [kN/m2]	Sigma-ce [kN/m2]
1	0	-4943.855	-3790.873	-4236.195	-4236.126	-4236.161
		-4928.915	-3800.274	-4236.195	-4236.126	-4236.161
1	1.050	-5597.238	-3399.003	-4249.509	-4246.435	-4247.972
		-5451.705	-3490.573	-4249.509	-4246.435	-4247.972
1	2.100	-6437.696	-2892.190	-4264.521	-4258.442	-4261.481
		-6157.077	-3068.758	-4264.521	-4258.442	-4261.481
1	3.150	-7280.121	-2409.082	-4294.843	-4285.758	-4290.301
		-6871.275	-2666.331	-4294.843	-4285.758	-4290.301
1	4.200	-7934.597	-2042.014	-4323.803	-4311.713	-4317.758
		-7404.385	-2375.628	-4323.803	-4311.713	-4317.758
2	0	-7919.616	-2051.364	-4323.756	-4311.666	-4317.711
		-7385.060	-2387.711	-4323.756	-4311.666	-4317.711
2	1.050	-8377.610	-1805.792	-4351.182	-4336.538	-4343.860
		-7728.574	-2214.171	-4351.182	-4336.538	-4343.860
2	2.100	-8632.583	-1682.951	-4375.531	-4358.334	-4366.932
		-7875.923	-2159.047	-4375.531	-4358.334	-4366.932
2	3.150	-8804.139	-1604.697	-4395.031	-4375.281	-4385.156
		-7946.713	-2144.196	-4395.031	-4375.281	-4385.156
2	4.199	-8952.062	-1541.615	-4414.717	-4392.413	-4403.565
		-8000.727	-2140.202	-4414.717	-4392.413	-4403.565
3	0	-8939.244	-1549.607	-4414.672	-4392.369	-4403.520
		-7983.779	-2150.794	-4414.672	-4392.369	-4403.520
3	1.050	-9024.369	-1526.755	-4434.537	-4410.202	-4422.370
		-7994.333	-2174.862	-4434.537	-4410.202	-4422.370
3	2.100	-9014.646	-1569.639	-4458.120	-4431.753	-4444.936
		-7933.570	-2249.860	-4458.120	-4431.753	-4444.936
3	3.150	-8677.481	-1822.452	-4484.097	-4455.698	-4469.897
		-7581.388	-2512.123	-4484.097	-4455.698	-4469.897

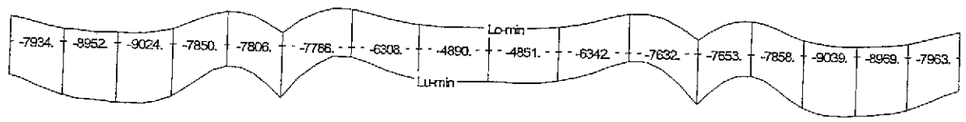
TENSIONES para ENVOLVENTE de < My > ""
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)
(zi=z-inferior, zs=z-superior, yi=y-izq., yd= y-dch., ce=centro grav.)

Barra	Distancia [m]	Sigma-zi [kN/m2]	Sigma-zs [kN/m2]	Sigma-yi [kN/m2]	Sigma-yd [kN/m2]	Sigma-ce [kN/m2]
3	4.200	-7858.480	-2323.801	-4476.536	-4446.105	-4461.321
		-6770.906	-3008.111	-4476.536	-4446.105	-4461.321
4	0	-7850.186	-2328.967	-4476.504	-4446.073	-4461.289
		-6759.909	-3014.978	-4476.504	-4446.073	-4461.289
4	1.050	-6623.019	-3047.158	-4444.164	-4412.181	-4428.173
		-5560.608	-3715.636	-4444.164	-4412.181	-4428.173
4	2.100	-5123.718	-3926.851	-4405.854	-4372.320	-4389.087
		-4096.033	-4573.479	-4405.854	-4372.320	-4389.087
4	3.150	-3827.802	-4705.966	-4384.358	-4349.273	-4366.815
		-2841.702	-5326.428	-4384.358	-4349.273	-4366.815
4	4.200	-3225.995	-5056.066	-4367.602	-4330.966	-4349.284
		-2288.339	-5646.047	-4367.602	-4330.966	-4349.284
5	0	-3217.453	-5061.403	-4367.579	-4330.943	-4349.261
		-2278.113	-5652.443	-4367.579	-4330.943	-4349.261
5	1.050	-3323.054	-4961.842	-4347.784	-4310.085	-4328.934
		-2438.997	-5518.098	-4347.784	-4310.085	-4328.934
5	2.099	-4183.233	-4382.703	-4325.048	-4286.286	-4305.667
		-3252.965	-4968.035	-4325.048	-4286.286	-4305.667
5	3.149	-5732.195	-3374.071	-4304.703	-4264.877	-4284.790
		-4642.699	-4059.591	-4304.703	-4264.877	-4284.790
5	4.198	-7806.097	-2032.702	-4282.859	-4241.971	-4262.415
		-6545.152	-2826.098	-4282.859	-4241.971	-4262.415
6	0	-7786.142	-2039.097	-4279.078	-4238.189	-4258.633
		-6522.971	-2833.894	-4279.078	-4238.189	-4258.633
6	1.350	-4733.667	-3907.506	-4248.495	-4204.651	-4226.573
		-3624.775	-4605.230	-4248.495	-4204.651	-4226.573
6	2.700	-2543.116	-5228.210	-4214.614	-4167.814	-4191.214
		-1577.164	-5835.995	-4214.614	-4167.814	-4191.214
6	4.050	-1357.254	-5892.466	-4165.823	-4116.068	-4140.945
		-462.727	-6455.309	-4165.823	-4116.068	-4140.945
6	5.400	-1473.273	-5735.099	-4115.517	-4062.806	-4089.161
		-585.013	-6293.999	-4115.517	-4062.806	-4089.161
7	0	-1448.102	-5750.865	-4115.473	-4062.762	-4089.117
		-561.991	-6308.413	-4115.473	-4062.762	-4089.117
7	1.350	-2242.357	-5190.515	-4079.146	-4024.698	-4051.922
		-1319.626	-5771.105	-4079.146	-4024.698	-4051.922
7	2.700	-3239.481	-4530.402	-4059.935	-4003.750	-4031.842
		-2261.527	-5145.738	-4059.935	-4003.750	-4031.842
7	4.050	-4012.234	-4016.360	-4043.728	-3985.806	-4014.767
		-2980.046	-4665.821	-4043.728	-3985.806	-4014.767
7	5.400	-4544.014	-3651.179	-4025.826	-3966.166	-3995.996
		-3468.931	-4327.630	-4025.826	-3966.166	-3995.996
8	0	-4528.638	-3660.820	-4025.805	-3966.146	-3995.976
		-3451.836	-4338.353	-4025.805	-3966.146	-3995.976
8	1.350	-4824.519	-3441.486	-4005.749	-3945.490	-3975.620
		-3716.164	-4138.871	-4005.749	-3945.490	-3975.620
8	2.700	-4890.246	-3364.240	-3984.020	-3923.161	-3953.591
		-3761.675	-4074.346	-3984.020	-3923.161	-3953.591
8	4.050	-4825.559	-3373.096	-3964.773	-3903.314	-3934.044
		-3688.108	-4088.789	-3964.773	-3903.314	-3934.044
8	5.399	-4748.744	-3390.644	-3946.178	-3884.119	-3915.149
		-3613.750	-4104.791	-3946.178	-3884.119	-3915.149
9	0	-4749.072	-3390.438	-3946.178	-3884.120	-3915.149
		-3614.219	-4104.496	-3946.178	-3884.120	-3915.149
9	1.350	-4807.794	-3383.980	-3964.584	-3903.144	-3933.864
		-3686.739	-4089.356	-3964.584	-3903.144	-3933.864
9	2.700	-4851.778	-3387.481	-3983.410	-3922.589	-3953.000
		-3755.863	-4077.039	-3983.410	-3922.589	-3953.000
9	4.051	-4755.894	-3483.149	-4004.791	-3944.588	-3974.689
		-3696.461	-4149.753	-4004.791	-3944.588	-3974.689
9	5.401	-4430.516	-3720.877	-4024.735	-3965.151	-3994.943
		-3418.906	-4357.390	-4024.735	-3965.151	-3994.943
10	0	-4446.732	-3710.708	-4024.756	-3965.172	-3994.964
		-3437.080	-4345.990	-4024.756	-3965.172	-3994.964
10	1.350	-3885.543	-4094.206	-4042.528	-3984.710	-4013.619
		-2935.039	-4692.270	-4042.528	-3984.710	-4013.619
10	2.700	-3083.496	-4626.481	-4058.599	-4002.548	-4030.573

TENSIONES para ENVOLVENTE de < My > ""
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)
(zi=z-inferior, zs=z-superior, yi=y-izq., yd= y-dch., ce=centro grav.)

Barra	Distancia [m]	Sigma-zi [kN/m2]	Sigma-zs [kN/m2]	Sigma-yi [kN/m2]	Sigma-yd [kN/m2]	Sigma-ce [kN/m2]
		-2203.477	-5180.196	-4058.599	-4002.548	-4030.573
10	4.049	-2072.066	-5297.731	-4079.105	-4024.821	-4051.963
		-1251.728	-5813.894	-4079.105	-4024.821	-4051.963
10	5.399	-1293.483	-5847.787	-4115.152	-4062.635	-4088.893
		-507.262	-6342.484	-4115.152	-4062.635	-4088.893
11	0	-1318.956	-5831.830	-4115.195	-4062.678	-4088.936
		-530.320	-6328.046	-4115.195	-4062.678	-4088.936
11	1.331	-1252.221	-5958.904	-4165.962	-4116.358	-4141.160
		-453.352	-6461.558	-4165.962	-4116.358	-4141.160
11	2.662	-2456.548	-5280.874	-4213.451	-4166.761	-4190.106
		-1585.455	-5828.973	-4213.451	-4166.761	-4190.106
11	3.993	-4625.671	-3972.872	-4246.874	-4203.098	-4224.986
		-3613.450	-4609.769	-4246.874	-4203.098	-4224.986
11	5.324	-7632.648	-2132.457	-4277.088	-4236.226	-4256.657
		-6468.277	-2865.088	-4277.088	-4236.226	-4256.657
12	0	-7653.976	-2125.202	-4280.872	-4240.010	-4260.441
		-6491.543	-2856.614	-4280.872	-4240.010	-4260.441
12	1.050	-5633.712	-3432.840	-4302.714	-4262.941	-4282.827
		-4593.882	-4087.110	-4302.714	-4262.941	-4282.827
12	2.100	-4138.467	-4407.660	-4323.038	-4284.355	-4303.696
		-3208.288	-4992.936	-4323.038	-4284.355	-4303.696
12	3.149	-3321.212	-4959.756	-4345.740	-4308.145	-4326.943
		-2411.037	-5532.445	-4345.740	-4308.145	-4326.943
12	4.199	-3218.497	-5057.462	-4365.498	-4328.992	-4347.245
		-2306.228	-5631.469	-4365.498	-4328.992	-4347.245
13	0	-3226.491	-5052.468	-4365.520	-4329.014	-4347.267
		-2316.096	-5625.296	-4365.520	-4329.014	-4347.267
13	1.050	-3831.062	-4700.576	-4382.246	-4347.286	-4364.766
		-2925.432	-5270.406	-4382.246	-4347.286	-4364.766
13	2.100	-5129.364	-3919.966	-4403.749	-4370.334	-4387.041
		-4235.358	-4482.482	-4403.749	-4370.334	-4387.041
13	3.150	-6630.233	-3039.310	-4442.077	-4410.207	-4426.142
		-5754.710	-3590.196	-4442.077	-4410.207	-4426.142
13	4.200	-7858.935	-2320.277	-4474.496	-4444.171	-4459.334
		-7008.756	-2855.217	-4474.496	-4444.171	-4459.334
14	0	-7867.684	-2314.827	-4474.529	-4444.204	-4459.367
		-7020.486	-2847.890	-4474.529	-4444.204	-4459.367
14	1.050	-8688.334	-1812.553	-4482.153	-4453.872	-4468.013
		-7873.337	-2325.356	-4482.153	-4453.872	-4468.013
14	2.100	-9027.636	-1558.552	-4456.266	-4430.030	-4443.148
		-8251.698	-2046.778	-4456.266	-4430.030	-4443.148
14	3.150	-9039.999	-1514.145	-4432.762	-4408.570	-4420.666
		-8309.980	-1973.479	-4432.762	-4408.570	-4420.666
14	4.200	-8957.767	-1535.287	-4412.958	-4390.810	-4401.884
		-8280.526	-1961.412	-4412.958	-4390.810	-4401.884
15	0	-8969.573	-1527.925	-4412.999	-4390.851	-4401.925
		-8296.020	-1951.730	-4412.999	-4390.851	-4401.925
15	1.050	-8824.320	-1589.293	-4393.306	-4373.684	-4383.495
		-8210.418	-1975.565	-4393.306	-4373.684	-4383.495
15	2.100	-8655.414	-1665.792	-4373.766	-4356.670	-4365.218
		-8108.026	-2010.213	-4373.766	-4356.670	-4365.218
15	3.151	-8402.786	-1786.963	-4349.310	-4334.741	-4342.025
		-7928.774	-2085.215	-4349.310	-4334.741	-4342.025
15	4.201	-7947.041	-2030.873	-4321.747	-4309.704	-4315.726
		-7553.267	-2278.639	-4321.747	-4309.704	-4315.726
16	0	-7963.670	-2020.495	-4321.800	-4309.756	-4315.778
		-7574.359	-2265.453	-4321.800	-4309.756	-4315.778
16	1.049	-7312.002	-2385.422	-4292.599	-4283.583	-4288.091
		-7009.729	-2575.615	-4292.599	-4283.583	-4288.091
16	2.099	-6472.825	-2866.038	-4261.992	-4256.002	-4258.997
		-6264.444	-2997.153	-4261.992	-4256.002	-4258.997
16	3.148	-5635.721	-3369.675	-4246.314	-4243.352	-4244.833
		-5528.084	-3437.401	-4246.314	-4243.352	-4244.833
16	4.198	-4980.347	-3761.632	-4232.274	-4232.338	-4232.306
		-4980.255	-3761.690	-4232.274	-4232.338	-4232.306

Mstb. 1:442.2
Extreme stresses envel. -A, GWSP IT (ELS 17 Comb Cusipermanente), View "LIST"
- Struktur: Staebe
- Extr.str.ll (z-y-)min., Scaling 5.00E-04
  min: -9.04E+03 max: -1.25E+03 [kN/m2]
- Extr.str.ul (z+y-)min., Scaling 5.00E-04
  min: -5.96E+03 max: -1.51E+03 [kN/m2]
- Text extreme stress envelope [kN/m2]



ENVOLVENTE: IU 'ELS 18 Comb Cuasipermanente'

Grupo	Espe.	Hipótesis	Factor	Etapa	Título
A	PERM.	1	1.000		Peso Propio
	Y	3	1.000		Carga Muerta Máxima
	Y	20	0.957000		Pretensado
B	MAS	19	0.200000		gradiente
C	MAS	31	0.200000		Carro 2 excéntrico
D	MAS	4	0.200000		Sobrecarga centrada vano 1
E	MAS	5	0.200000		Sobrecarga centrada vano 2
F	MAS	6	0.200000		Sobrecarga centrada vano 3

ALTERNATIVA PARA ENVOLVENTE:

G	PERM.	1	1.000	Peso Propio
	Y	3	1.000	Carga Muerta Máxima
	Y	20	0.957000	Pretensado
H	MAS	19	0.200000	gradiente
I	MAS	31	0.200000	Carro 2 excéntrico
J	MAS	7	0.200000	Sobrecarga excéntrica vano 1 (
K	MAS	8	0.200000	Sobrecarga excentrica vano 2 (
L	MAS	9	0.200000	Sobrecarga excentrica vano 3 (

ALTERNATIVA PARA ENVOLVENTE:

M	PERM.	1	1.000	Peso Propio
	Y	3	1.000	Carga Muerta Máxima
	Y	20	0.957000	Pretensado
N	MAS	19	0.200000	gradiente
O	MAS	31	0.200000	Carro 2 excéntrico
P	MAS	10	0.200000	Sobrecarga excéntrica vano 1 (
Q	MAS	11	0.200000	Sobrecarga excentrica vano 2 (
R	MAS	12	0.200000	Sobrecarga excentrica vano 3 (

TENSIONES para ENVOLVENTE de < My > ""
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)
(zi=z-inferior, zs=z-superior, yi=y-izq., yd= y-dch., ce=centro grav.)

Barra	Distancia [m]	Sigma-zi [kN/m2]	Sigma-zs [kN/m2]	Sigma-yi [kN/m2]	Sigma-yd [kN/m2]	Sigma-ce [kN/m2]
1	0	-4943.855	-3790.873	-4236.195	-4236.126	-4236.161
		-4928.697	-3800.411	-4236.195	-4236.126	-4236.161
1	1.050	-5604.208	-3394.618	-4249.509	-4246.435	-4247.972
		-5489.704	-3466.664	-4249.509	-4246.435	-4247.972
1	2.100	-6453.245	-2882.407	-4264.521	-4258.442	-4261.481

TENSIONES para ENVOLVENTE de < My > ""
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)
(zi=z-inferior, zs=z-superior, yi=y-izq., yd= y-dch., ce=centro grav.)

Barra	Distancia [m]	Sigma-zi [kN/m2]	Sigma-zs [kN/m2]	Sigma-yi [kN/m2]	Sigma-yd [kN/m2]	Sigma-ce [kN/m2]
		-6231.683	-3021.815	-4264.521	-4258.442	-4261.481
1	3.150	-7304.248	-2393.901	-4294.843	-4285.758	-4290.301
		-6982.489	-2596.354	-4294.843	-4285.758	-4290.301
1	4.200	-7967.303	-2021.435	-4323.803	-4311.713	-4317.758
		-7552.207	-2282.617	-4323.803	-4311.713	-4317.758
2	0	-7955.369	-2028.868	-4323.756	-4311.666	-4317.711
		-7533.222	-2294.486	-4323.756	-4311.666	-4317.711
2	1.050	-8421.941	-1777.899	-4351.182	-4336.538	-4343.860
		-7913.335	-2097.918	-4351.182	-4336.538	-4343.860
2	2.100	-8685.490	-1649.661	-4375.531	-4358.334	-4366.932
		-8097.284	-2019.765	-4375.531	-4358.334	-4366.932
2	3.150	-8865.624	-1566.011	-4395.031	-4375.281	-4385.156
		-8204.674	-1981.886	-4395.031	-4375.281	-4385.156
2	4.199	-9022.123	-1497.532	-4414.717	-4392.413	-4403.565
		-8295.287	-1954.863	-4414.717	-4392.413	-4403.565
3	0	-9012.742	-1503.361	-4414.672	-4392.369	-4403.520
		-8278.472	-1965.370	-4414.672	-4392.369	-4403.520
3	1.050	-9106.447	-1475.111	-4434.537	-4410.202	-4422.370
		-8313.134	-1974.270	-4434.537	-4410.202	-4422.370
3	2.100	-9105.303	-1512.597	-4458.120	-4431.753	-4444.936
		-8259.807	-2044.590	-4458.120	-4431.753	-4444.936
3	3.150	-8776.717	-1760.012	-4484.097	-4455.698	-4469.897
		-7885.900	-2320.521	-4484.097	-4455.698	-4469.897
3	4.200	-7966.295	-2255.963	-4476.536	-4446.105	-4461.321
		-7037.017	-2840.672	-4476.536	-4446.105	-4461.321
4	0	-7961.060	-2259.205	-4476.504	-4446.073	-4461.289
		-7025.843	-2847.651	-4476.504	-4446.073	-4461.289
4	1.050	-6742.470	-2971.999	-4444.164	-4412.181	-4428.173
		-5775.656	-3580.326	-4444.164	-4412.181	-4428.173
4	2.100	-5251.747	-3846.294	-4405.854	-4372.320	-4389.087
		-4260.196	-4470.186	-4405.854	-4372.320	-4389.087
4	3.150	-3964.409	-4620.012	-4384.358	-4349.273	-4366.815
		-2954.980	-5255.153	-4384.358	-4349.273	-4366.815
4	4.200	-3371.181	-4964.715	-4367.602	-4330.966	-4349.284
		-2350.731	-5606.789	-4367.602	-4330.966	-4349.284
5	0	-3365.597	-4968.189	-4367.579	-4330.943	-4349.261
		-2340.157	-5613.404	-4367.579	-4330.943	-4349.261
5	1.050	-3479.773	-4863.233	-4347.784	-4310.085	-4328.934
		-2450.173	-5511.066	-4347.784	-4310.085	-4328.934
5	2.099	-4308.836	-4303.673	-4325.048	-4286.286	-4305.667
		-3252.965	-4968.035	-4325.048	-4286.286	-4305.667
5	3.149	-5815.504	-3321.652	-4304.703	-4264.877	-4284.790
		-4642.699	-4059.591	-4304.703	-4264.877	-4284.790
5	4.198	-7847.113	-2006.894	-4282.859	-4241.971	-4262.415
		-6545.152	-2826.098	-4282.859	-4241.971	-4262.415
6	0	-7829.860	-2011.589	-4279.078	-4238.189	-4258.633
		-6522.971	-2833.894	-4279.078	-4238.189	-4258.633
6	1.350	-4729.081	-3910.392	-4248.495	-4204.651	-4226.573
		-3624.775	-4605.230	-4248.495	-4204.651	-4226.573
6	2.700	-2490.227	-5261.488	-4214.614	-4167.814	-4191.214
		-1577.164	-5835.995	-4214.614	-4167.814	-4191.214
6	4.050	-1256.062	-5956.137	-4165.823	-4116.068	-4140.945
		-462.727	-6455.309	-4165.823	-4116.068	-4140.945
6	5.400	-1362.477	-5804.813	-4115.517	-4062.806	-4089.161
		-546.314	-6318.349	-4115.517	-4062.806	-4089.161
7	0	-1337.116	-5820.699	-4115.473	-4062.762	-4089.117
		-526.901	-6330.492	-4115.473	-4062.762	-4089.117
7	1.350	-2139.111	-5255.478	-4079.146	-4024.698	-4051.922
		-1228.494	-5828.446	-4079.146	-4024.698	-4051.922
7	2.700	-3143.975	-4590.496	-4059.935	-4003.750	-4031.842
		-2114.353	-5238.342	-4059.935	-4003.750	-4031.842
7	4.050	-3924.467	-4071.584	-4043.728	-3985.806	-4014.767
		-2776.830	-4793.686	-4043.728	-3985.806	-4014.767
7	5.400	-4463.987	-3701.533	-4025.826	-3966.166	-3995.996
		-3209.672	-4490.757	-4025.826	-3966.166	-3995.996
8	0	-4448.594	-3711.185	-4025.805	-3966.146	-3995.976
		-3196.179	-4499.214	-4025.805	-3966.146	-3995.976

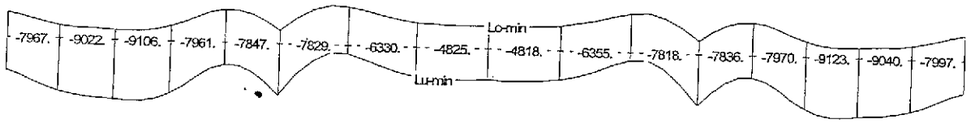
TENSIONES para ENVOLVENTE de < My > ""
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)
(zi=z-inferior, zs=z-superior, yi=y-izq., yd= y-dch., ce=centro grav.)

Barra	Distancia [m]	Sigma-zi [kN/m2]	Sigma-zs [kN/m2]	Sigma-yi [kN/m2]	Sigma-yd [kN/m2]	Sigma-ce [kN/m2]
		-4752.214	-3486.980	-4005.749	-3945.490	-3975.620
8	1.350	-3404.472	-4334.990	-4005.749	-3945.490	-3975.620
		-4825.680	-3404.866	-3984.020	-3923.161	-3953.591
8	2.700	-3393.947	-4305.723	-3984.020	-3923.161	-3953.591
		-4768.731	-3408.852	-3964.773	-3903.314	-3934.044
8	4.050	-3268.515	-4352.800	-3964.773	-3903.314	-3934.044
		-4699.656	-3421.531	-3946.178	-3884.119	-3915.149
9	0	-3175.615	-4380.470	-3946.178	-3884.119	-3915.149
		-4700.080	-3421.264	-3946.178	-3884.120	-3915.149
9	1.350	-3174.592	-4381.113	-3946.178	-3884.120	-3915.149
		-4766.543	-3409.935	-3964.584	-3903.144	-3933.864
9	2.700	-3266.066	-4354.047	-3964.584	-3903.144	-3933.864
		-4818.268	-3408.566	-3983.410	-3922.589	-3953.000
9	4.051	-3387.484	-4308.827	-3983.410	-3922.589	-3953.000
		-4730.125	-3499.363	-4004.791	-3944.588	-3974.689
9	5.401	-3384.537	-4346.018	-4004.791	-3944.588	-3974.689
		-4412.487	-3732.221	-4024.735	-3965.151	-3994.943
10	0	-3163.437	-4518.133	-4024.735	-3965.151	-3994.943
		-4428.852	-3721.958	-4024.756	-3965.172	-3994.964
10	1.350	-3177.979	-4509.017	-4024.756	-3965.172	-3994.964
		-3875.402	-4100.587	-4042.528	-3984.710	-4013.619
10	2.700	-2732.380	-4819.785	-4042.528	-3984.710	-4013.619
		-3081.094	-4627.993	-4058.599	-4002.548	-4030.573
10	4.049	-2057.259	-5272.198	-4058.599	-4002.548	-4030.573
		-2072.066	-5297.731	-4079.105	-4024.821	-4051.963
10	5.399	-1167.287	-5867.024	-4079.105	-4024.821	-4051.963
		-1293.483	-5847.787	-4115.152	-4062.635	-4088.893
11	0	-487.001	-6355.232	-4115.152	-4062.635	-4088.893
		-1318.956	-5831.830	-4115.195	-4062.678	-4088.936
11	1.331	-506.702	-6342.906	-4115.195	-4062.678	-4088.936
		-1271.025	-5947.072	-4165.962	-4116.358	-4141.160
11	2.662	-474.216	-6448.430	-4165.962	-4116.358	-4141.160
		-2531.007	-5234.024	-4213.451	-4166.761	-4190.106
11	3.993	-1613.950	-5811.044	-4213.451	-4166.761	-4190.106
		-4755.785	-3891.003	-4246.874	-4203.098	-4224.986
11	5.324	-3649.576	-4587.038	-4246.874	-4203.098	-4224.986
		-7818.417	-2015.570	-4277.088	-4236.226	-4256.657
12	0	-6512.034	-2837.556	-4277.088	-4236.226	-4256.657
		-7836.562	-2010.317	-4280.872	-4240.010	-4260.441
12	1.050	-6535.399	-2829.019	-4280.872	-4240.010	-4260.441
		-5807.794	-3323.306	-4302.714	-4262.941	-4282.827
12	2.100	-4635.544	-4060.896	-4302.714	-4262.941	-4282.827
		-4304.046	-4303.477	-4323.038	-4284.355	-4303.696
12	3.149	-3247.757	-4968.102	-4323.038	-4284.355	-4303.696
		-3478.288	-4860.923	-4345.740	-4308.145	-4326.943
12	4.199	-2448.313	-5508.991	-4345.740	-4308.145	-4326.943
		-3367.069	-4963.979	-4365.498	-4328.992	-4347.245
13	0	-2341.311	-5609.394	-4365.498	-4328.992	-4347.245
		-3372.295	-4960.727	-4365.520	-4329.014	-4347.267
13	1.050	-2351.219	-5603.197	-4365.520	-4329.014	-4347.267
		-3968.361	-4614.187	-4382.246	-4347.286	-4364.766
13	2.100	-2958.361	-5249.687	-4382.246	-4347.286	-4364.766
		-5258.157	-3838.928	-4403.749	-4370.334	-4387.041
13	3.150	-4266.093	-4463.143	-4403.749	-4370.334	-4387.041
		-6750.521	-2963.624	-4442.077	-4410.207	-4426.142
13	4.200	-5783.252	-3572.237	-4442.077	-4410.207	-4426.142
		-7970.718	-2249.942	-4474.496	-4444.171	-4459.334
14	0	-7035.104	-2838.638	-4474.496	-4444.171	-4459.334
		-7976.291	-2246.490	-4474.529	-4444.204	-4459.367
14	1.050	-7046.846	-2831.305	-4474.529	-4444.204	-4459.367
		-8788.436	-1749.568	-4482.153	-4453.872	-4468.013
14	2.100	-7897.503	-2310.150	-4482.153	-4453.872	-4468.013
		-9119.233	-1500.919	-4456.266	-4430.030	-4443.148
14	3.150	-8273.671	-2032.953	-4456.266	-4430.030	-4443.148
		-9123.091	-1461.863	-4432.762	-4408.570	-4420.666
14	4.200	-8329.759	-1961.033	-4432.762	-4408.570	-4420.666
		-9032.355	-1488.356	-4412.958	-4390.810	-4401.884

TENSIONES para ENVOLVENTE de < My > ""
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)
(zi=z-inferior, zs=z-superior, yi=y-izq., yd= y-dch., ce=centro grav.)

Barra	Distancia [m]	Sigma-zi [kN/m2]	Sigma-zs [kN/m2]	Sigma-yi [kN/m2]	Sigma-yd [kN/m2]	Sigma-ce [kN/m2]
		-8298.111	-1950.347	-4412.958	-4390.810	-4401.884
15	0	-9040.988	-1482.990	-4412.999	-4390.851	-4401.925
		-8313.594	-1940.672	-4412.999	-4390.851	-4401.925
15	1.050	-8887.227	-1549.711	-4393.306	-4373.684	-4383.495
		-8225.798	-1965.887	-4393.306	-4373.684	-4383.495
15	2.100	-8709.815	-1631.563	-4373.766	-4356.670	-4365.218
		-8121.212	-2001.916	-4373.766	-4356.670	-4365.218
15	3.151	-8448.680	-1758.086	-4349.310	-4334.741	-4342.025
		-7939.766	-2078.299	-4349.310	-4334.741	-4342.025
15	4.201	-7984.429	-2007.348	-4321.747	-4309.704	-4315.726
		-7562.065	-2273.103	-4321.747	-4309.704	-4315.726
16	0	-7997.665	-1999.105	-4321.800	-4309.756	-4315.778
		-7583.130	-2259.934	-4321.800	-4309.756	-4315.778
16	1.049	-7337.496	-2369.381	-4292.599	-4283.583	-4288.091
		-7016.308	-2571.475	-4292.599	-4283.583	-4288.091
16	2.099	-6489.818	-2855.346	-4261.992	-4256.002	-4258.997
		-6268.830	-2994.394	-4261.992	-4256.002	-4258.997
16	3.148	-5644.212	-3364.332	-4246.314	-4243.352	-4244.833
		-5530.277	-3436.021	-4246.314	-4243.352	-4244.833
16	4.198	-4980.347	-3761.632	-4232.274	-4232.338	-4232.306
		-4980.247	-3761.695	-4232.274	-4232.338	-4232.306

Mstb. 1:442.2
Extreme stresses envel. -A, GWSP IU (ELS 18 Comb Cuasipermanente), View "LIST"
- Struktur: Staebe
- Extr.str.ll (z-y-)min., Scaling 5.00E-04
  min: -9.12E+03 max -1.26E+03 [kN/m2]
- Extr.str.ul (z+y-)min., Scaling 5.00E-04
  min: -5.96E+03 max -1.46E+03 [kN/m2]
- Text extreme stress envelope [kN/m2]



ENVOLVENTE: IV 'ELS 19 Comb Cuasipermanente'

Grupo	Espe.	Hipótesis	Factor	Etapa	Título
A	PERM.	1	1.000		Peso Propio
	Y	3	1.000		Carga Muerta Máxima
	Y	20	0.957000		Pretensado
B	MAS	19	0.200000		gradiente
C	MAS	32	0.200000		Carro 1 excéntrico
D	MAS	4	0.200000		Sobrecarga centrada vano 1
E	MAS	5	0.200000		Sobrecarga centrada vano 2
F	MAS	6	0.200000		Sobrecarga centrada vano 3

ALTERNATIVA PARA ENVOLVENTE:

G	PERM.	1	1.000	Peso Propio
	Y	3	1.000	Carga Muerta Máxima
	Y	20	0.957000	Pretensado
H	MAS	19	0.200000	gradiente
I	MAS	32	0.200000	Carro 1 excéntrico
J	MAS	7	0.200000	Sobrecarga excéntrica vano 1 (
K	MAS	8	0.200000	Sobrecarga excentrica vano 2 (

L	MAS	9	0.200000	Sobrecarga excentrica vano 3 (

ALTERNATIVA PARA ENVOLVENTE:

M	PERM.	1	1.000	Peso Propio
	Y	3	1.000	Carga Muerta Máxima
	Y	20	0.957000	Pretensado
N	MAS	19	0.200000	gradiente
O	MAS	32	0.200000	Carro 1 excéntrico
P	MAS	10	0.200000	Sobrecarga excéntrica vano 1 (
Q	MAS	11	0.200000	Sobrecarga excentrica vano 2 (
R	MAS	12	0.200000	Sobrecarga excentrica vano 3 (

TENSIONES para ENVOLVENTE de < My > ""
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)
(zi=z-inferior, zs=z-superior, yi=y-izq., yd= y-dch., ce=centro grav.)

Barra	Distancia [m]	Sigma-zi [kN/m2]	Sigma-zs [kN/m2]	Sigma-yi [kN/m2]	Sigma-yd [kN/m2]	Sigma-ce [kN/m2]
		-4943.855	-3790.873	-4236.195	-4236.126	-4236.161
1	0	-4925.418	-3802.474	-4236.195	-4236.126	-4236.161
		-5597.238	-3399.003	-4249.509	-4246.435	-4247.972
1	1.050	-5446.150	-3494.069	-4249.509	-4246.435	-4247.972
		-6437.696	-2892.190	-4264.521	-4258.442	-4261.481
1	2.100	-6149.463	-3073.548	-4264.521	-4258.442	-4261.481
		-7280.121	-2409.082	-4294.843	-4285.758	-4290.301
1	3.150	-6861.603	-2672.417	-4294.843	-4285.758	-4290.301
		-7934.597	-2042.014	-4323.803	-4311.713	-4317.758
1	4.200	-7392.655	-2383.009	-4323.803	-4311.713	-4317.758
		-7919.616	-2051.364	-4323.756	-4311.666	-4317.711
2	0	-7378.553	-2391.805	-4323.756	-4311.666	-4317.711
		-8377.610	-1805.792	-4351.182	-4336.538	-4343.860
2	1.050	-7720.009	-2219.561	-4351.182	-4336.538	-4343.860
		-8632.583	-1682.951	-4375.531	-4358.334	-4366.932
2	2.100	-7865.300	-2165.731	-4375.531	-4358.334	-4366.932
		-8804.139	-1604.697	-4395.031	-4375.281	-4385.156
2	3.150	-7934.032	-2152.175	-4395.031	-4375.281	-4385.156
		-8952.062	-1541.615	-4414.717	-4392.413	-4403.565
2	4.199	-7985.988	-2149.476	-4414.717	-4392.413	-4403.565
		-8939.244	-1549.607	-4414.672	-4392.369	-4403.520
3	0	-7975.050	-2156.286	-4414.672	-4392.369	-4403.520
		-9024.369	-1526.755	-4434.537	-4410.202	-4422.370
3	1.050	-7983.546	-2181.649	-4434.537	-4410.202	-4422.370
		-9014.646	-1569.639	-4458.120	-4431.753	-4444.936
3	2.100	-7920.724	-2257.943	-4458.120	-4431.753	-4444.936
		-8677.488	-1822.452	-4484.097	-4455.698	-4469.897
3	3.150	-7566.484	-2521.501	-4484.097	-4455.698	-4469.897
		-7858.480	-2323.801	-4476.536	-4446.105	-4461.321
3	4.200	-6753.944	-3018.784	-4476.536	-4446.105	-4461.321
		-7850.186	-2328.967	-4476.504	-4446.073	-4461.289
4	0	-6741.824	-3026.357	-4476.504	-4446.073	-4461.289
		-6623.019	-3047.158	-4444.164	-4412.181	-4428.173
4	1.050	-5540.465	-3728.310	-4444.164	-4412.181	-4428.173
		-5123.718	-3926.851	-4405.854	-4372.320	-4389.087
4	2.100	-4073.832	-4587.448	-4405.854	-4372.320	-4389.087
		-3827.802	-4705.966	-4384.358	-4349.273	-4366.815
4	3.150	-2817.442	-5341.693	-4384.358	-4349.273	-4366.815
		-3225.995	-5056.066	-4367.602	-4330.966	-4349.284
4	4.200	-2262.021	-5662.607	-4367.602	-4330.966	-4349.284
		-3217.453	-5061.403	-4367.579	-4330.943	-4349.261
5	0	-2250.684	-5669.702	-4367.579	-4330.943	-4349.261
		-3323.054	-4961.842	-4347.784	-4310.085	-4328.934
5	1.050	-2409.510	-5536.652	-4347.784	-4310.085	-4328.934
		-4151.689	-4402.551	-4325.048	-4286.286	-4305.667
5	2.099	-3252.965	-4968.035	-4325.048	-4286.286	-4305.667
		-5698.593	-3395.214	-4304.703	-4264.877	-4284.790
5	3.149	-4642.699	-4059.591	-4304.703	-4264.877	-4284.790
		-7770.438	-2055.139	-4282.859	-4241.971	-4262.415

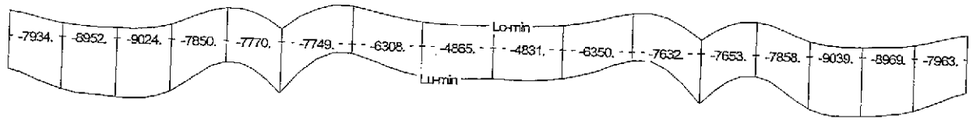
TENSIONES para ENVOLVENTE de < My > ""
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)
(zi=z-inferior, zs=z-superior, yi=y-izq., yd= y-dch., ce=centro grav.)

Barra	Distancia [m]	Sigma-zi [kN/m2]	Sigma-zs [kN/m2]	Sigma-yi [kN/m2]	Sigma-yd [kN/m2]	Sigma-ce [kN/m2]
		-6545.152	-2826.098	-4282.859	-4241.971	-4262.415
6	0	-7749.309	-2062.273	-4279.078	-4238.189	-4258.633
		-6522.971	-2833.894	-4279.078	-4238.189	-4258.633
6	1.350	-4698.326	-3929.743	-4248.495	-4204.651	-4226.573
		-3624.775	-4605.230	-4248.495	-4204.651	-4226.573
6	2.700	-2509.269	-5249.507	-4214.614	-4167.814	-4191.214
		-1577.164	-5835.995	-4214.614	-4167.814	-4191.214
6	4.050	-1324.899	-5912.823	-4165.823	-4116.068	-4140.945
		-462.727	-6455.309	-4165.823	-4116.068	-4140.945
6	5.400	-1442.412	-5754.517	-4115.517	-4062.806	-4089.161
		-585.013	-6293.999	-4115.517	-4062.806	-4089.161
7	0	-1415.857	-5771.154	-4115.473	-4062.762	-4089.117
		-561.991	-6308.413	-4115.473	-4062.762	-4089.117
7	1.350	-2211.605	-5209.864	-4079.146	-4024.698	-4051.922
		-1319.626	-5771.105	-4079.146	-4024.698	-4051.922
7	2.700	-3210.223	-4548.812	-4059.935	-4003.750	-4031.842
		-2261.527	-5145.738	-4059.935	-4003.750	-4031.842
7	4.050	-3984.469	-4033.830	-4043.728	-3985.806	-4014.767
		-2980.046	-4665.821	-4043.728	-3985.806	-4014.767
7	5.400	-4517.741	-3667.710	-4025.826	-3966.166	-3995.996
		-3468.931	-4327.630	-4025.826	-3966.166	-3995.996
8	0	-4501.126	-3678.131	-4025.805	-3966.146	-3995.976
		-3451.836	-4338.353	-4025.805	-3966.146	-3995.976
8	1.350	-4798.500	-3457.857	-4005.749	-3945.490	-3975.620
		-3716.164	-4138.871	-4005.749	-3945.490	-3975.620
8	2.700	-4865.720	-3379.672	-3984.020	-3923.161	-3953.591
		-3761.675	-4074.346	-3984.020	-3923.161	-3953.591
8	4.050	-4802.525	-3387.588	-3964.773	-3903.314	-3934.044
		-3688.108	-4088.789	-3964.773	-3903.314	-3934.044
8	5.399	-4727.204	-3404.197	-3946.178	-3884.119	-3915.149
		-3613.750	-4104.791	-3946.178	-3884.119	-3915.149
9	0	-4726.249	-3404.798	-3946.178	-3884.120	-3915.149
		-3614.219	-4104.496	-3946.178	-3884.120	-3915.149
9	1.350	-4786.464	-3397.401	-3964.584	-3903.144	-3933.864
		-3686.739	-4089.356	-3964.584	-3903.144	-3933.864
9	2.700	-4831.942	-3399.962	-3983.410	-3922.589	-3953.000
		-3755.863	-4077.039	-3983.410	-3922.589	-3953.000
9	4.051	-4737.551	-3494.691	-4004.791	-3944.588	-3974.689
		-3696.461	-4149.753	-4004.791	-3944.588	-3974.689
9	5.401	-4413.666	-3731.480	-4024.735	-3965.151	-3994.943
		-3418.906	-4357.390	-4024.735	-3965.151	-3994.943
10	0	-4428.852	-3721.958	-4024.756	-3965.172	-3994.964
		-3436.933	-4346.082	-4024.756	-3965.172	-3994.964
10	1.350	-3875.402	-4100.587	-4042.528	-3984.710	-4013.619
		-2928.647	-4696.293	-4042.528	-3984.710	-4013.619
10	2.700	-3081.094	-4627.993	-4058.599	-4002.548	-4030.573
		-2190.839	-5188.149	-4058.599	-4002.548	-4030.573
10	4.049	-2072.066	-5297.731	-4079.105	-4024.821	-4051.963
		-1238.180	-5822.419	-4079.105	-4024.821	-4051.963
10	5.399	-1293.483	-5847.787	-4115.152	-4062.635	-4088.893
		-495.206	-6350.069	-4115.152	-4062.635	-4088.893
11	0	-1318.956	-5831.830	-4115.195	-4062.678	-4088.936
		-517.070	-6336.383	-4115.195	-4062.678	-4088.936
11	1.331	-1252.221	-5958.904	-4165.962	-4116.358	-4141.160
		-441.574	-6468.969	-4165.962	-4116.358	-4141.160
11	2.662	-2456.548	-5280.874	-4213.451	-4166.761	-4190.106
		-1575.149	-5835.457	-4213.451	-4166.761	-4190.106
11	3.993	-4625.671	-3972.872	-4246.874	-4203.098	-4224.986
		-3604.616	-4615.327	-4246.874	-4203.098	-4224.986
11	5.324	-7632.648	-2132.457	-4277.088	-4236.226	-4256.657
		-6460.916	-2869.720	-4277.088	-4236.226	-4256.657
12	0	-7653.976	-2125.202	-4280.872	-4240.010	-4260.441
		-6483.149	-2861.895	-4280.872	-4240.010	-4260.441
12	1.050	-5633.712	-3432.840	-4302.714	-4262.941	-4282.827
		-4586.084	-4092.016	-4302.714	-4262.941	-4282.827
12	2.100	-4138.467	-4407.660	-4323.038	-4284.355	-4303.696
		-3201.087	-4997.467	-4323.038	-4284.355	-4303.696

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(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)
(zi=z-inferior, zs=z-superior, yi=y-izq., yd= y-dch., ce=centro grav.)

Barra	Distancia [m]	Sigma-zi [kN/m2]	Sigma-zs [kN/m2]	Sigma-yi [kN/m2]	Sigma-yd [kN/m2]	Sigma-ce [kN/m2]
		-3321.212	-4959.756	-4345.740	-4308.145	-4326.943
12	3.149	-2404.434	-5536.600	-4345.740	-4308.145	-4326.943
		-3218.497	-5057.462	-4365.498	-4328.992	-4347.245
12	4.199	-2300.222	-5635.248	-4365.498	-4328.992	-4347.245
		-3226.491	-5052.468	-4365.520	-4329.014	-4347.267
13	0	-2309.254	-5629.601	-4365.520	-4329.014	-4347.267
		-3831.062	-4700.576	-4382.246	-4347.286	-4364.766
13	1.050	-2919.186	-5274.336	-4382.246	-4347.286	-4364.766
		-5129.364	-3919.966	-4403.749	-4370.334	-4387.041
13	2.100	-4229.709	-4486.036	-4403.749	-4370.334	-4387.041
		-6630.233	-3039.310	-4442.077	-4410.207	-4426.142
13	3.150	-5749.659	-3593.374	-4442.077	-4410.207	-4426.142
		-7858.935	-2320.277	-4474.496	-4444.171	-4459.334
13	4.200	-7004.302	-2858.019	-4474.496	-4444.171	-4459.334
		-7867.684	-2314.827	-4474.529	-4444.204	-4459.367
14	0	-7015.119	-2851.267	-4474.529	-4444.204	-4459.367
		-8688.334	-1812.553	-4482.153	-4453.872	-4468.013
14	1.050	-7868.567	-2328.357	-4482.153	-4453.872	-4468.013
		-9027.636	-1558.552	-4456.266	-4430.030	-4443.148
14	2.100	-8247.525	-2049.404	-4456.266	-4430.030	-4443.148
		-9039.999	-1514.145	-4432.762	-4408.570	-4420.666
14	3.150	-8306.404	-1975.729	-4432.762	-4408.570	-4420.666
		-8957.767	-1535.287	-4412.958	-4390.810	-4401.884
14	4.200	-8277.547	-1963.287	-4412.958	-4390.810	-4401.884
		-8969.573	-1527.925	-4412.999	-4390.851	-4401.925
15	0	-8292.162	-1954.158	-4412.999	-4390.851	-4401.925
		-8824.320	-1589.293	-4393.306	-4373.684	-4383.495
15	1.050	-8207.157	-1977.617	-4393.306	-4373.684	-4383.495
		-8655.414	-1665.792	-4373.766	-4356.670	-4365.218
15	2.100	-8105.362	-2011.889	-4373.766	-4356.670	-4365.218
		-8402.786	-1786.963	-4349.310	-4334.741	-4342.025
15	3.151	-7926.707	-2086.515	-4349.310	-4334.741	-4342.025
		-7947.041	-2030.873	-4321.747	-4309.704	-4315.726
15	4.201	-7551.797	-2279.563	-4321.747	-4309.704	-4315.726
		-7963.670	-2020.495	-4321.800	-4309.756	-4315.778
16	0	-7571.968	-2266.957	-4321.800	-4309.756	-4315.778
		-7312.002	-2385.422	-4292.599	-4283.583	-4288.091
16	1.049	-7007.935	-2576.743	-4292.599	-4283.583	-4288.091
		-6472.825	-2866.038	-4261.992	-4256.002	-4258.997
16	2.099	-6263.247	-2997.907	-4261.992	-4256.002	-4258.997
		-5635.721	-3369.675	-4246.314	-4243.352	-4244.833
16	3.148	-5527.483	-3437.779	-4246.314	-4243.352	-4244.833
		-4980.347	-3761.632	-4232.274	-4232.338	-4232.306
16	4.198	-4980.251	-3761.692	-4232.274	-4232.338	-4232.306

Mstb. 1 :442.2
Extreme stresses envel. -A, GWSP IV (ELS 19 Comb Cuasipermanente), View "LIST"
- Struktur: Staebe
- Extr.str.II (z-y-)min., Scaling 5.00E-04
  min: -9.04E+03 max: -1.25E+03 [kN/m2]
- Extr.str.uI (z+y-)min., Scaling 5.00E-04
  min: -5.96E+03 max: -1.51E+03 [kN/m2]
- Text extreme stress envelope [kN/m2]



ENVOLVENTE: IW 'ELS 20 Comb Cuasipermanente'

Grupo	Espe.	Hipótesis	Factor	Etapa	Título
A	PERM.	1	1.000		Peso Propio
	Y	3	1.000		Carga Muerta Máxima
	Y	20	0.957000		Pretensado
B	MAS	19	0.200000		gradiente
C	MAS	34	0.200000		Carro 1 pila excéntrico
D	MAS	4	0.200000		Sobrecarga centrada vano 1
E	MAS	5	0.200000		Sobrecarga centrada vano 2
F	MAS	6	0.200000		Sobrecarga centrada vano 3
ALTERNATIVA PARA ENVOLVENTE:					
G	PERM.	1	1.000		Peso Propio
	Y	3	1.000		Carga Muerta Máxima
	Y	20	0.957000		Pretensado
H	MAS	19	0.200000		gradiente
I	MAS	34	0.200000		Carro 1 pila excéntrico
J	MAS	7	0.200000		Sobrecarga excéntrica vano 1 (
K	MAS	8	0.200000		Sobrecarga excentrica vano 2 (
L	MAS	9	0.200000		Sobrecarga excentrica vano 3 (
ALTERNATIVA PARA ENVOLVENTE:					
M	PERM.	1	1.000		Peso Propio
	Y	3	1.000		Carga Muerta Máxima
	Y	20	0.957000		Pretensado
N	MAS	19	0.200000		gradiente
O	MAS	34	0.200000		Carro 1 pila excéntrico
P	MAS	10	0.200000		Sobrecarga excéntrica vano 1 (
Q	MAS	11	0.200000		Sobrecarga excentrica vano 2 (
R	MAS	12	0.200000		Sobrecarga excentrica vano 3 (

TENSIONES para ENVOLVENTE de < My > ""
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)
(zi=z-inferior, zs=z-superior, yi=y-izq., yd= y-dch., ce=centro grav.)

Barra	Distancia [m]	Sigma-zi [kN/m2]	Sigma-zs [kN/m2]	Sigma-yi [kN/m2]	Sigma-yd [kN/m2]	Sigma-ce [kN/m2]
1	0	-4943.855	-3790.873	-4236.195	-4236.126	-4236.161
		-4927.155	-3801.381	-4236.195	-4236.126	-4236.161
1	1.050	-5597.238	-3399.003	-4249.509	-4246.435	-4247.972
		-5479.135	-3473.314	-4249.509	-4246.435	-4247.972
1	2.100	-6437.696	-2892.190	-4264.521	-4258.442	-4261.481
		-6213.697	-3033.132	-4264.521	-4258.442	-4261.481
1	3.150	-7280.121	-2409.082	-4294.843	-4285.758	-4290.301
		-6957.085	-2612.339	-4294.843	-4285.758	-4290.301
1	4.200	-7934.597	-2042.014	-4323.803	-4311.713	-4317.758
		-7519.385	-2303.269	-4323.803	-4311.713	-4317.758
2	0	-7919.616	-2051.364	-4323.756	-4311.666	-4317.711
		-7504.730	-2312.413	-4323.756	-4311.666	-4317.711
2	1.050	-8377.610	-1805.792	-4351.182	-4336.538	-4343.860
		-7877.428	-2120.511	-4351.182	-4336.538	-4343.860
2	2.100	-8632.583	-1682.951	-4375.531	-4358.334	-4366.932
		-8053.960	-2047.025	-4375.531	-4358.334	-4366.932
2	3.150	-8804.139	-1604.697	-4395.031	-4375.281	-4385.156
		-8153.934	-2013.812	-4395.031	-4375.281	-4385.156
2	4.199	-8952.062	-1541.615	-4414.717	-4392.413	-4403.565
		-8237.131	-1991.455	-4414.717	-4392.413	-4403.565
3	0	-8939.244	-1549.607	-4414.672	-4392.369	-4403.520
		-8225.339	-1998.802	-4414.672	-4392.369	-4403.520
3	1.050	-9024.369	-1526.755	-4434.537	-4410.202	-4422.370
		-8252.583	-2012.369	-4434.537	-4410.202	-4422.370
3	2.100	-9014.646	-1569.639	-4458.120	-4431.753	-4444.936
		-8191.838	-2087.356	-4458.120	-4431.753	-4444.936
3	3.150	-8677.481	-1822.452	-4484.097	-4455.698	-4469.897
		-7810.512	-2367.956	-4484.097	-4455.698	-4469.897

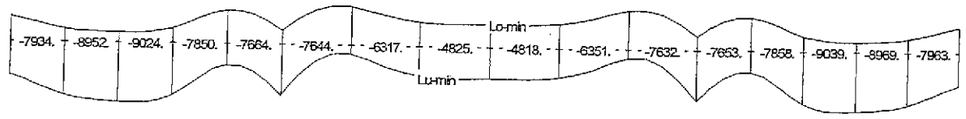
TENSIONES para ENVOLVENTE de < My > ""
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)
(zi=z-inferior, zs=z-superior, yi=y-izq., yd= y-dch., ce=centro grav.)

Barra	Distancia [m]	Sigma-zi [kN/m2]	Sigma-zs [kN/m2]	Sigma-yi [kN/m2]	Sigma-yd [kN/m2]	Sigma-ce [kN/m2]
3	4.200	-7858.480	-2323.801	-4476.536	-4446.105	-4461.321
		-6954.211	-2892.774	-4476.536	-4446.105	-4461.321
4	0	-7850.186	-2328.967	-4476.504	-4446.073	-4461.289
		-6947.717	-2896.808	-4476.504	-4446.073	-4461.289
4	1.050	-6623.019	-3047.158	-4444.164	-4412.181	-4428.173
		-5690.113	-3634.150	-4444.164	-4412.181	-4428.173
4	2.100	-5123.718	-3926.851	-4405.854	-4372.320	-4389.087
		-4167.236	-4528.677	-4405.854	-4372.320	-4389.087
4	3.150	-3827.802	-4705.966	-4384.358	-4349.273	-4366.815
		-2854.602	-5318.311	-4384.358	-4349.273	-4366.815
4	4.200	-3225.995	-5056.066	-4367.602	-4330.966	-4349.284
		-2242.937	-5674.614	-4367.602	-4330.966	-4349.284
5	0	-3217.453	-5061.403	-4367.579	-4330.943	-4349.261
		-2237.190	-5678.192	-4367.579	-4330.943	-4349.261
5	1.050	-3323.054	-4961.842	-4347.784	-4310.085	-4328.934
		-2339.791	-5580.519	-4347.784	-4310.085	-4328.934
5	2.099	-4143.541	-4407.678	-4325.048	-4286.286	-4305.667
		-3160.145	-5026.438	-4325.048	-4286.286	-4305.667
5	3.149	-5641.635	-3431.052	-4304.703	-4264.877	-4284.790
		-4584.084	-4096.471	-4304.703	-4264.877	-4284.790
5	4.198	-7664.669	-2121.690	-4282.859	-4241.971	-4262.415
		-6537.430	-2830.958	-4282.859	-4241.971	-4262.415
6	0	-7644.387	-2128.291	-4279.078	-4238.189	-4258.633
		-6513.246	-2840.013	-4279.078	-4238.189	-4258.633
6	1.350	-4599.651	-3991.830	-4248.495	-4204.651	-4226.573
		-3614.639	-4611.608	-4248.495	-4204.651	-4226.573
6	2.700	-2416.841	-5307.664	-4214.614	-4167.814	-4191.214
		-1566.617	-5842.631	-4214.614	-4167.814	-4191.214
6	4.050	-1238.718	-5967.049	-4165.823	-4116.068	-4140.945
		-451.769	-6462.204	-4165.823	-4116.068	-4140.945
6	5.400	-1362.477	-5804.813	-4115.517	-4062.806	-4089.161
		-573.645	-6301.152	-4115.517	-4062.806	-4089.161
7	0	-1337.116	-5820.699	-4115.473	-4062.762	-4089.117
		-548.185	-6317.100	-4115.473	-4062.762	-4089.117
7	1.350	-2139.111	-5255.478	-4079.146	-4024.698	-4051.922
		-1305.409	-5780.050	-4079.146	-4024.698	-4051.922
7	2.700	-3143.975	-4590.496	-4059.935	-4003.750	-4031.842
		-2246.899	-5154.943	-4059.935	-4003.750	-4031.842
7	4.050	-3924.467	-4071.584	-4043.728	-3985.806	-4014.767
		-2965.007	-4675.283	-4043.728	-3985.806	-4014.767
7	5.400	-4463.987	-3701.533	-4025.826	-3966.166	-3995.996
		-3453.481	-4337.351	-4025.826	-3966.166	-3995.996
8	0	-4448.594	-3711.185	-4025.805	-3966.146	-3995.976
		-3434.140	-4349.487	-4025.805	-3966.146	-3995.976
8	1.350	-4752.214	-3486.980	-4005.749	-3945.490	-3975.620
		-3698.057	-4150.264	-4005.749	-3945.490	-3975.620
8	2.700	-4825.680	-3404.866	-3984.020	-3923.161	-3953.591
		-3743.157	-4085.997	-3984.020	-3923.161	-3953.591
8	4.050	-4768.731	-3408.852	-3964.773	-3903.314	-3934.044
		-3669.180	-4100.698	-3964.773	-3903.314	-3934.044
8	5.399	-4699.656	-3421.531	-3946.178	-3884.119	-3915.149
		-3594.411	-4116.959	-3946.178	-3884.119	-3915.149
9	0	-4700.080	-3421.264	-3946.178	-3884.120	-3915.149
		-3592.510	-4118.156	-3946.178	-3884.120	-3915.149
9	1.350	-4766.543	-3409.935	-3964.584	-3903.144	-3933.864
		-3664.619	-4103.275	-3964.584	-3903.144	-3933.864
9	2.700	-4818.268	-3408.566	-3983.410	-3922.589	-3953.000
		-3733.332	-4091.216	-3983.410	-3922.589	-3953.000
9	4.051	-4730.125	-3499.363	-4004.791	-3944.588	-3974.689
		-3673.519	-4164.188	-4004.791	-3944.588	-3974.689
9	5.401	-4412.487	-3732.221	-4024.735	-3965.151	-3994.943
		-3395.553	-4372.084	-4024.735	-3965.151	-3994.943
10	0	-4428.852	-3721.958	-4024.756	-3965.172	-3994.964
		-3411.528	-4362.067	-4024.756	-3965.172	-3994.964
10	1.350	-3875.402	-4100.587	-4042.528	-3984.710	-4013.619
		-2909.077	-4708.606	-4042.528	-3984.710	-4013.619
10	2.700	-3081.094	-4627.993	-4058.599	-4002.548	-4030.573

TENSIONES para ENVOLVENTE de < My > ""
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)
(zi=z-inferior, zs=z-superior, yi=y-izq., yd= y-dch., ce=centro grav.)

Barra	Distancia [m]	Sigma-zi [kN/m2]	Sigma-zs [kN/m2]	Sigma-yi [kN/m2]	Sigma-yd [kN/m2]	Sigma-ce [kN/m2]
		-2177.104	-5196.791	-4058.599	-4002.548	-4030.573
10	4.049	-2072.066	-5297.731	-4079.105	-4024.821	-4051.963
		-1230.280	-5827.389	-4079.105	-4024.821	-4051.963
10	5.399	-1293.483	-5847.787	-4115.152	-4062.635	-4088.893
		-493.142	-6351.368	-4115.152	-4062.635	-4088.893
11	0	-1318.956	-5831.830	-4115.195	-4062.678	-4088.936
		-514.123	-6338.237	-4115.195	-4062.678	-4088.936
11	1.331	-1252.221	-5958.904	-4165.962	-4116.358	-4141.160
		-444.381	-6467.202	-4165.962	-4116.358	-4141.160
11	2.662	-2456.548	-5280.874	-4213.451	-4166.761	-4190.106
		-1583.710	-5830.071	-4213.451	-4166.761	-4190.106
11	3.993	-4625.671	-3972.872	-4246.874	-4203.098	-4224.986
		-3618.931	-4606.320	-4246.874	-4203.098	-4224.986
11	5.324	-7632.648	-2132.457	-4277.088	-4236.226	-4256.657
		-6480.984	-2857.093	-4277.088	-4236.226	-4256.657
12	0	-7653.976	-2125.202	-4280.872	-4240.010	-4260.441
		-6502.432	-2849.762	-4280.872	-4240.010	-4260.441
12	1.050	-5633.712	-3432.840	-4302.714	-4262.941	-4282.827
		-4604.548	-4080.398	-4302.714	-4262.941	-4282.827
12	2.100	-4138.467	-4407.660	-4323.038	-4284.355	-4303.696
		-3218.731	-4986.365	-4323.038	-4284.355	-4303.696
12	3.149	-3321.212	-4959.756	-4345.740	-4308.145	-4326.943
		-2421.258	-5526.014	-4345.740	-4308.145	-4326.943
12	4.199	-3218.497	-5057.462	-4365.498	-4328.992	-4347.245
		-2316.227	-5625.178	-4365.498	-4328.992	-4347.245
13	0	-3226.491	-5052.468	-4365.520	-4329.014	-4347.267
		-2324.599	-5619.946	-4365.520	-4329.014	-4347.267
13	1.050	-3831.062	-4700.576	-4382.246	-4347.286	-4364.766
		-2933.712	-5265.196	-4382.246	-4347.286	-4364.766
13	2.100	-5129.364	-3919.966	-4403.749	-4370.334	-4387.041
		-4243.415	-4477.412	-4403.749	-4370.334	-4387.041
13	3.150	-6630.233	-3039.310	-4442.077	-4410.207	-4426.142
		-5762.545	-3585.266	-4442.077	-4410.207	-4426.142
13	4.200	-7858.935	-2320.277	-4474.496	-4444.171	-4459.334
		-7016.369	-2850.427	-4474.496	-4444.171	-4459.334
14	0	-7867.684	-2314.827	-4474.529	-4444.204	-4459.367
		-7026.446	-2844.140	-4474.529	-4444.204	-4459.367
14	1.050	-8688.334	-1842.553	-4482.153	-4453.872	-4468.013
		-7879.075	-2321.745	-4482.153	-4453.872	-4468.013
14	2.100	-9027.636	-1558.552	-4456.266	-4430.030	-4443.148
		-8257.214	-2043.308	-4456.266	-4430.030	-4443.148
14	3.150	-9039.999	-1514.145	-4432.762	-4408.570	-4420.666
		-8315.273	-1970.148	-4432.762	-4408.570	-4420.666
14	4.200	-8957.767	-1535.287	-4412.958	-4390.810	-4401.884
		-8285.596	-1958.222	-4412.958	-4390.810	-4401.884
15	0	-8969.573	-1527.925	-4412.999	-4390.851	-4401.925
		-8299.484	-1949.550	-4412.999	-4390.851	-4401.925
15	1.050	-8824.320	-1589.293	-4393.306	-4373.684	-4383.495
		-8213.660	-1973.525	-4393.306	-4373.684	-4383.495
15	2.100	-8655.414	-1665.792	-4373.766	-4356.670	-4365.218
		-8111.045	-2008.313	-4373.766	-4356.670	-4365.218
15	3.151	-8402.786	-1786.963	-4349.310	-4334.741	-4342.025
		-7931.570	-2083.455	-4349.310	-4334.741	-4342.025
15	4.201	-7947.041	-2030.873	-4321.747	-4309.704	-4315.726
		-7555.841	-2277.019	-4321.747	-4309.704	-4315.726
16	0	-7963.670	-2020.495	-4321.800	-4309.756	-4315.778
		-7575.242	-2264.897	-4321.800	-4309.756	-4315.778
16	1.049	-7312.002	-2385.422	-4292.599	-4283.583	-4288.091
		-7010.390	-2575.199	-4292.599	-4283.583	-4288.091
16	2.099	-6472.825	-2866.038	-4261.992	-4256.002	-4258.997
		-6264.882	-2996.878	-4261.992	-4256.002	-4258.997
16	3.148	-5635.721	-3369.675	-4246.314	-4243.352	-4244.833
		-5528.300	-3437.266	-4246.314	-4243.352	-4244.833
16	4.198	-4980.347	-3761.632	-4232.274	-4232.338	-4232.306
		-4980.249	-3761.694	-4232.274	-4232.338	-4232.306

Mstb. 1:442.2
Extreme stresses envel. -A, GWSP IW (ELS 20 Comb Cuasipermanente), View "LIST"
- Struktur: Staebe
- Extr.str.ll (z-y-)min., Scaling 5.00E-04
  min: -9.04E+03 max: -1.24E+03 [kN/m2]
- Extr.str.ul (z+y-)min., Scaling 5.00E-04
  min: -5.97E+03 max: -1.51E+03 [kN/m2]
- Text extreme stress envelope [kN/m2]



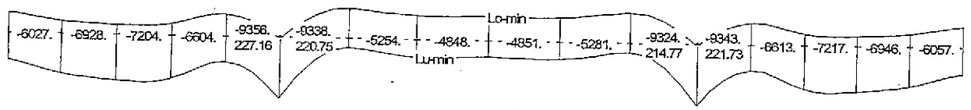
TENSIONES para ENVOLVENTE de < My > ""
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)
(zi=z-inferior, zs=z-superior, yi=y-izq., yd= y-dch., ce=centro grav.)

Barra	Distancia [m]	Sigma-zi [kN/m2]	Sigma-zs [kN/m2]	Sigma-yi [kN/m2]	Sigma-yd [kN/m2]	Sigma-ce [kN/m2]
8	1.350	-2772.273	-3534.814	-3264.874	-3215.760	-3240.317
		-957.419	-4676.734	-3264.874	-3215.760	-3240.317
8	2.700	-2703.882	-3548.595	-3247.164	-3197.561	-3222.362
		-818.077	-4735.158	-3247.164	-3197.561	-3222.362
8	4.050	-2581.002	-3599.955	-3231.477	-3181.385	-3206.431
		-652.586	-4813.330	-3231.477	-3181.385	-3206.431
8	5.399	-2500.043	-3625.805	-3216.321	-3165.740	-3191.030
		-557.358	-4848.158	-3216.321	-3165.740	-3191.030
9	0	-2500.404	-3625.578	-3216.321	-3165.740	-3191.031
		-551.870	-4851.611	-3216.321	-3165.740	-3191.031
9	1.350	-2581.732	-3599.257	-3231.322	-3181.246	-3206.284
		-647.277	-4816.431	-3231.322	-3181.246	-3206.284
9	2.700	-2702.877	-3548.442	-3246.667	-3197.094	-3221.881
		-810.855	-4738.917	-3246.667	-3197.094	-3221.881
9	4.051	-2761.852	-3540.136	-3264.093	-3215.025	-3239.559
		-940.618	-4686.071	-3264.093	-3215.025	-3239.559
9	5.401	-2685.607	-3615.004	-3280.349	-3231.784	-3256.067
		-963.515	-4698.558	-3280.349	-3231.784	-3256.067
10	0	-2700.871	-3605.428	-3280.366	-3231.802	-3256.084
		-976.381	-4690.491	-3280.366	-3231.802	-3256.084
10	1.350	-2484.191	-3766.536	-3294.850	-3247.726	-3271.288
		-887.161	-4771.400	-3294.850	-3247.726	-3271.288
10	2.700	-2123.003	-4016.311	-3307.949	-3262.265	-3285.107
		-681.775	-4923.144	-3307.949	-3262.265	-3285.107
10	4.049	-1648.272	-4343.420	-3324.663	-3280.419	-3302.541
		-362.517	-5152.427	-3324.663	-3280.419	-3302.541
10	5.399	-1417.385	-4537.734	-3354.042	-3311.238	-3332.640
		-235.204	-5281.571	-3354.042	-3311.238	-3332.640
11	0	-1440.912	-4522.988	-3354.077	-3311.273	-3332.675
		-244.601	-5275.716	-3354.077	-3311.273	-3332.675
11	1.331	-1901.413	-4302.584	-3395.455	-3355.026	-3375.240
		-697.550	-5060.064	-3395.455	-3355.026	-3375.240
11	2.662	-3542.480	-3335.005	-3434.160	-3396.106	-3415.133
		-2176.082	-4194.754	-3434.160	-3396.106	-3415.133
11	3.993	-6057.621	-1798.776	-3461.402	-3425.722	-3443.562
		-4356.433	-2869.177	-3461.402	-3425.722	-3443.562
11	5.324	-9324.594	214.774	-3486.028	-3452.723	-3469.376
		-7261.060	-1083.618	-3486.028	-3452.723	-3469.376
12	0	-9343.645	221.737	-3489.112	-3455.807	-3472.460
		-7276.672	-1078.819	-3489.112	-3455.807	-3472.460
12	1.050	-7134.462	-1198.025	-3506.914	-3474.497	-3490.706
		-5333.808	-2331.011	-3506.914	-3474.497	-3490.706
12	2.100	-5396.082	-2319.539	-3523.480	-3491.950	-3507.715
		-3829.368	-3305.328	-3523.480	-3491.950	-3507.715
12	3.149	-4333.201	-3019.181	-3541.982	-3511.341	-3526.662
		-2776.310	-3998.789	-3541.982	-3511.341	-3526.662
12	4.199	-3903.298	-3316.638	-3558.086	-3528.332	-3543.209
		-2300.984	-4324.827	-3558.086	-3528.332	-3543.209
13	0	-3909.512	-3312.758	-3558.104	-3528.350	-3543.227
		-2304.342	-4322.743	-3558.104	-3528.350	-3543.227
13	1.050	-4087.355	-3224.094	-3571.737	-3543.242	-3557.489
		-2453.900	-4251.877	-3571.737	-3543.242	-3557.489
13	2.100	-4861.967	-2766.281	-3589.262	-3562.028	-3575.645
		-3217.377	-3801.070	-3589.262	-3562.028	-3575.645
13	3.150	-5833.028	-2207.203	-3620.501	-3594.526	-3607.514
		-4194.451	-3238.208	-3620.501	-3594.526	-3607.514
13	4.200	-6613.607	-1760.131	-3646.925	-3622.209	-3634.567
		-4998.193	-2776.562	-3646.925	-3622.209	-3634.567
14	0	-6619.652	-1756.371	-3646.952	-3622.236	-3634.594
		-5002.790	-2773.714	-3646.952	-3622.236	-3634.594
14	1.050	-7099.005	-1466.239	-3653.165	-3630.115	-3641.640
		-5522.453	-2458.218	-3653.165	-3630.115	-3641.640
14	2.100	-7217.381	-1358.739	-3632.067	-3610.683	-3621.375
		-5698.284	-2314.567	-3632.067	-3610.683	-3621.375
14	3.150	-7100.629	-1402.346	-3612.909	-3593.192	-3603.051
		-5656.136	-2311.233	-3612.909	-3593.192	-3603.051
14	4.200	-6938.121	-1479.658	-3596.769	-3578.717	-3587.743

TENSIONES para ENVOLVENTE de < My > ""
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)
(zi=z-inferior, zs=z-superior, yi=y-izq., yd= y-dch., ce=centro grav.)

Barra	Distancia [m]	Sigma-zi [kN/m2]	Sigma-zs [kN/m2]	Sigma-yi [kN/m2]	Sigma-yd [kN/m2]	Sigma-ce [kN/m2]
		-5585.379	-2330.814	-3596.769	-3578.717	-3587.743
15	0	-6946.769	-1474.271	-3596.802	-3578.750	-3587.776
		-5594.182	-2325.330	-3596.802	-3578.750	-3587.776
15	1.050	-6764.227	-1564.655	-3580.751	-3564.758	-3572.755
		-5520.566	-2347.176	-3580.751	-3564.758	-3572.755
15	2.100	-6593.766	-1647.640	-3564.825	-3550.891	-3557.858
		-5476.185	-2350.831	-3564.825	-3550.891	-3557.858
15	3.151	-6386.425	-1747.304	-3544.892	-3533.017	-3538.955
		-5412.081	-2360.369	-3544.892	-3533.017	-3538.955
15	4.201	-6044.892	-1927.276	-3522.427	-3512.611	-3517.519
		-5230.940	-2439.421	-3522.427	-3512.611	-3517.519
16	0	-6057.865	-1919.183	-3522.470	-3512.654	-3517.562
		-5245.272	-2430.473	-3522.470	-3512.654	-3517.562
16	1.049	-5587.952	-2178.091	-3498.670	-3491.321	-3494.996
		-4952.779	-2577.747	-3498.670	-3491.321	-3494.996
16	2.099	-4996.526	-2511.588	-3473.724	-3468.842	-3471.283
		-4555.906	-2788.829	-3473.724	-3468.842	-3471.283
16	3.148	-4438.104	-2844.143	-3460.946	-3458.531	-3459.738
		-4209.169	-2988.191	-3460.946	-3458.531	-3459.738
16	4.198	-4059.159	-3065.944	-3449.502	-3449.554	-3449.528
		-4058.915	-3066.097	-3449.502	-3449.554	-3449.528

Mstb. 1 :442.2
Extreme stresses envel. -A, GWSP IH (ELS 5 Combinación Frecuente), View "LIST"
- Struktur: Staebe
- Extr.str.li (z-y-)min., Scaling 5.00E-04
  min: -9.36E+03 max: -1.42E+03 [kN/m2]
- Extr.str.ui (z+y-)min., Scaling 5.00E-04
  min: -4.54E+03 max: 2.27E+02 [kN/m2]
- Text extreme stress envelope [kN/m2]



ENVOLVENTE: II 'ELS 6 Combinación Frecuente'

Grupo	Espe.	Hipótesis	Factor	Etapa	Título
A	PERM.	1	1.000		Peso Propio
	Y	3	1.000		Carga Muerta Máxima
	Y	20	0.957000		Pretensado
B	MAS	19	0.200000		gradiente
C	MAS	21	0.500000		Carro 2 centrado
D	MAS	4	0.500000		Sobrecarga centrada vano 1
E	MAS	5	0.500000		Sobrecarga centrada vano 2
F	MAS	6	0.500000		Sobrecarga centrada vano 3

ALTERNATIVA PARA ENVOLVENTE:

Grupo	Espe.	Hipótesis	Factor	Etapa	Título
G	PERM.	1	1.000		Peso Propio
	Y	3	1.000		Carga Muerta Máxima
	Y	20	0.957000		Pretensado
H	MAS	19	0.200000		gradiente
I	MAS	21	0.500000		Carro 2 centrado
J	MAS	7	0.500000		Sobrecarga excéntrica vano 1 (
K	MAS	8	0.500000		Sobrecarga excentrica vano 2 (

L	MAS	9	0.500000	Sobrecarga excentrica vano 3 (

ALTERNATIVA PARA ENVOLVENTE:

M	PERM.	1	1.000	Peso Propio
	Y	3	1.000	Carga Muerta Máxima
	Y	20	0.957000	Pretensado
N	MAS	19	0.200000	gradiente
O	MAS	21	0.500000	Carro 2 centrado
P	MAS	10	0.500000	Sobrecarga excéntrica vano 1 (
Q	MAS	11	0.500000	Sobrecarga excentrica vano 2 (
R	MAS	12	0.500000	Sobrecarga excentrica vano 3 (

TENSIONES para ENVOLVENTE de < My > ""
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)
(zi=z-inferior, zs=z-superior, yi=y-izq., yd= y-dch., ce=centro grav.)

Barra	Distancia [m]	Sigma-zi [kN/m2]	Sigma-zs [kN/m2]	Sigma-yi [kN/m2]	Sigma-yd [kN/m2]	Sigma-ce [kN/m2]
1	0	-4952.785	-3785.255	-4236.195	-4236.126	-4236.161
		-4919.426	-3806.245	-4236.195	-4236.126	-4236.161
1	1.050	-5656.955	-3361.429	-4249.509	-4246.435	-4247.972
		-5396.091	-3525.566	-4249.509	-4246.435	-4247.972
1	2.100	-6555.222	-2818.241	-4264.521	-4258.442	-4261.481
		-6058.607	-3130.716	-4264.521	-4258.442	-4261.481
1	3.150	-7455.456	-2298.760	-4294.843	-4285.758	-4290.301
		-6740.240	-2748.780	-4294.843	-4285.758	-4290.301
1	4.200	-8167.741	-1895.318	-4323.803	-4311.713	-4317.758
		-7251.075	-2472.092	-4323.803	-4311.713	-4317.758
2	0	-8153.738	-1904.052	-4323.756	-4311.666	-4317.711
		-7231.559	-2484.295	-4323.756	-4311.666	-4317.711
2	1.050	-8669.529	-1622.115	-4351.182	-4336.538	-4343.860
		-7563.090	-2318.295	-4351.182	-4336.538	-4343.860
2	2.100	-8982.297	-1462.908	-4375.531	-4358.334	-4366.932
		-7708.742	-2264.239	-4375.531	-4358.334	-4366.932
2	3.150	-9211.650	-1348.288	-4395.031	-4375.281	-4385.156
		-7788.121	-2243.984	-4395.031	-4375.281	-4385.156
2	4.199	-9417.368	-1248.840	-4414.717	-4392.413	-4403.565
		-7861.009	-2228.113	-4414.717	-4392.413	-4403.565
3	0	-9405.268	-1256.381	-4414.672	-4392.369	-4403.520
		-7844.008	-2238.738	-4414.672	-4392.369	-4403.520
3	1.050	-9548.205	-1197.154	-4434.537	-4410.202	-4422.370
		-7871.231	-2252.319	-4434.537	-4410.202	-4422.370
3	2.100	-9596.291	-1203.663	-4458.120	-4431.753	-4444.936
		-7820.755	-2320.844	-4458.120	-4431.753	-4444.936
3	3.150	-9316.938	-1420.101	-4484.097	-4455.698	-4469.897
		-7459.991	-2588.507	-4484.097	-4455.698	-4469.897
3	4.200	-8555.747	-1885.075	-4476.536	-4446.105	-4461.321
		-6634.541	-3093.913	-4476.536	-4446.105	-4461.321
4	0	-8547.498	-1890.213	-4476.504	-4446.073	-4461.289
		-6623.643	-3100.718	-4476.504	-4446.073	-4461.289
4	1.050	-7378.134	-2572.034	-4444.164	-4412.181	-4428.173
		-5407.176	-3812.176	-4444.164	-4412.181	-4428.173
4	2.100	-5936.636	-3415.357	-4405.854	-4372.320	-4389.087
		-3935.724	-4674.346	-4405.854	-4372.320	-4389.087
4	3.150	-4698.523	-4158.102	-4384.358	-4349.273	-4366.815
		-2684.804	-5425.150	-4384.358	-4349.273	-4366.815
4	4.200	-4154.520	-4471.831	-4367.602	-4330.966	-4349.284
		-2145.141	-5736.149	-4367.602	-4330.966	-4349.284
5	0	-4145.180	-4477.670	-4367.579	-4330.943	-4349.261
		-2135.159	-5742.391	-4367.579	-4330.943	-4349.261
5	1.050	-4308.565	-4341.751	-4347.784	-4310.085	-4328.934
		-2320.021	-5592.958	-4347.784	-4310.085	-4328.934
5	2.099	-5204.533	-3740.093	-4325.048	-4286.286	-4305.667
		-3182.193	-5012.566	-4325.048	-4286.286	-4305.667
5	3.149	-6859.297	-2664.889	-4304.703	-4264.877	-4284.790
		-4576.500	-4101.244	-4304.703	-4264.877	-4284.790
5	4.198	-9049.284	-1250.479	-4282.859	-4241.971	-4262.415

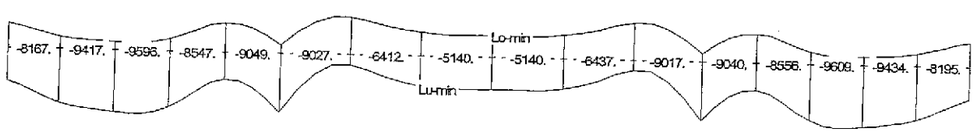
TENSIONES para ENVOLVENTE de < My > ""
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)
(zi=z-inferior, zs=z-superior, yi=y-izq., yd= y-dch., ce=centro grav.)

Barra	Distancia [m]	Sigma-zi [kN/m2]	Sigma-zs [kN/m2]	Sigma-yi [kN/m2]	Sigma-yd [kN/m2]	Sigma-ce [kN/m2]
		-6475.476	-2869.940	-4282.859	-4241.971	-4262.415
6	0	-9027.404	-1258.085	-4279.078	-4238.189	-4258.633
		-6453.444	-2877.641	-4279.078	-4238.189	-4258.633
6	1.350	-5634.993	-3340.384	-4248.495	-4204.651	-4226.573
		-3567.549	-4641.237	-4248.495	-4204.651	-4226.573
6	2.700	-3121.517	-4864.276	-4214.614	-4167.814	-4191.214
		-1532.240	-5864.262	-4214.614	-4167.814	-4191.214
6	4.050	-1647.518	-5709.829	-4165.823	-4116.068	-4140.945
		-357.624	-6521.441	-4165.823	-4116.068	-4140.945
6	5.400	-1565.534	-5677.048	-4115.517	-4062.806	-4089.161
		-412.127	-6402.781	-4115.517	-4062.806	-4089.161
7	0	-1538.658	-5693.887	-4115.473	-4062.762	-4089.117
		-395.825	-6412.966	-4115.473	-4062.762	-4089.117
7	1.350	-2303.891	-5151.797	-4079.146	-4024.698	-4051.922
		-958.727	-5998.185	-4079.146	-4024.698	-4051.922
7	2.700	-3300.936	-4491.734	-4059.935	-4003.750	-4031.842
		-1658.125	-5525.404	-4059.935	-4003.750	-4031.842
7	4.050	-4081.374	-3972.857	-4043.728	-3985.806	-4014.767
		-2143.387	-5192.253	-4043.728	-3985.806	-4014.767
7	5.400	-4620.838	-3602.841	-4025.826	-3966.166	-3995.996
		-2416.024	-4990.127	-4025.826	-3966.166	-3995.996
8	0	-4605.696	-3612.335	-4025.805	-3966.146	-3995.976
		-2396.693	-5002.257	-4025.805	-3966.146	-3995.976
8	1.350	-4909.260	-3388.165	-4005.749	-3945.490	-3975.620
		-2461.804	-4928.124	-4005.749	-3945.490	-3975.620
8	2.700	-4982.671	-3306.085	-3984.020	-3923.161	-3953.591
		-2325.103	-4978.248	-3984.020	-3923.161	-3953.591
8	4.050	-4925.667	-3310.107	-3964.773	-3903.314	-3934.044
		-2096.755	-5090.080	-3964.773	-3903.314	-3934.044
8	5.399	-4856.536	-3322.820	-3946.178	-3884.119	-3915.149
		-1967.927	-5140.356	-3946.178	-3884.119	-3915.149
9	0	-4856.949	-3322.561	-3946.178	-3884.120	-3915.149
		-1968.438	-5140.035	-3946.178	-3884.120	-3915.149
9	1.350	-4923.356	-3311.267	-3964.584	-3903.144	-3933.864
		-2097.239	-5089.483	-3964.584	-3903.144	-3933.864
9	2.700	-4975.025	-3309.933	-3983.410	-3922.589	-3953.000
		-2323.005	-4978.605	-3983.410	-3922.589	-3953.000
9	4.051	-4886.827	-3400.765	-4004.791	-3944.588	-3974.689
		-2447.662	-4935.507	-4004.791	-3944.588	-3974.689
9	5.401	-4569.133	-3633.658	-4024.735	-3965.151	-3994.943
		-2371.178	-5016.629	-4024.735	-3965.151	-3994.943
10	0	-4585.221	-3623.570	-4024.756	-3965.172	-3994.964
		-2391.692	-5003.756	-4024.756	-3965.172	-3994.964
10	1.350	-4031.715	-4002.233	-4042.528	-3984.710	-4013.619
		-2107.679	-5212.852	-4042.528	-3984.710	-4013.619
10	2.700	-3237.352	-4529.674	-4058.599	-4002.548	-4030.573
		-1611.148	-5552.894	-4058.599	-4002.548	-4030.573
10	4.049	-2236.868	-5194.036	-4079.105	-4024.821	-4051.963
		-908.171	-6030.063	-4079.105	-4024.821	-4051.963
10	5.399	-1501.687	-5716.783	-4115.152	-4062.635	-4088.893
		-356.392	-6437.413	-4115.152	-4062.635	-4088.893
11	0	-1528.665	-5699.879	-4115.195	-4062.678	-4088.936
		-373.021	-6427.019	-4115.195	-4062.678	-4088.936
11	1.331	-1671.940	-5694.813	-4165.962	-4116.358	-4141.160
		-370.715	-6513.554	-4165.962	-4116.358	-4141.160
11	2.662	-3170.156	-4831.866	-4213.451	-4166.761	-4190.106
		-1568.368	-5839.724	-4213.451	-4166.761	-4190.106
11	3.993	-5666.417	-3318.025	-4246.874	-4203.098	-4224.986
		-3591.811	-4623.384	-4246.874	-4203.098	-4224.986
11	5.324	-9017.067	-1261.369	-4277.088	-4236.226	-4256.657
		-6442.086	-2881.568	-4277.088	-4236.226	-4256.657
12	0	-9040.071	-1253.060	-4280.872	-4240.010	-4260.441
		-6465.287	-2873.134	-4280.872	-4240.010	-4260.441
12	1.050	-6852.844	-2665.753	-4302.714	-4262.941	-4282.827
		-4568.940	-4102.803	-4302.714	-4262.941	-4282.827
12	2.100	-5200.921	-3739.156	-4323.038	-4284.355	-4303.696
		-3175.518	-5013.555	-4323.038	-4284.355	-4303.696

TENSIONES para ENVOLVENTE de < My > ""
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)
(zi=z-inferior, zs=z-superior, yi=y-izq., yd= y-dch., ce=centro grav.)

Barra	Distancia [m]	Sigma-zi [kN/m2]	Sigma-zs [kN/m2]	Sigma-yi [kN/m2]	Sigma-yd [kN/m2]	Sigma-ce [kN/m2]
12	3.149	-4308.507	-4338.542	-4345.740	-4308.145	-4326.943
		-2317.489	-5591.306	-4345.740	-4308.145	-4326.943
12	4.199	-4147.780	-4472.750	-4365.498	-4328.992	-4347.245
		-2135.900	-5738.641	-4365.498	-4328.992	-4347.245
13	0	-4156.525	-4467.283	-4365.520	-4329.014	-4347.267
		-2145.229	-5732.807	-4365.520	-4329.014	-4347.267
13	1.050	-4703.072	-4151.901	-4382.246	-4347.286	-4364.766
		-2688.057	-5419.764	-4382.246	-4347.286	-4364.766
13	2.100	-5943.350	-3407.800	-4403.749	-4370.334	-4387.041
		-3941.765	-4667.213	-4403.749	-4370.334	-4387.041
13	3.150	-7386.195	-2563.653	-4442.077	-4410.207	-4426.142
		-5415.190	-3803.825	-4442.077	-4410.207	-4426.142
13	4.200	-8556.873	-1881.130	-4474.496	-4444.171	-4459.334
		-6633.597	-3091.270	-4474.496	-4444.171	-4459.334
14	0	-8565.598	-1875.693	-4474.529	-4444.204	-4459.367
		-6645.025	-3084.133	-4474.529	-4444.204	-4459.367
14	1.050	-9328.227	-1409.927	-4482.153	-4453.872	-4468.013
		-7472.528	-2577.548	-4482.153	-4453.872	-4468.013
14	2.100	-9609.508	-1192.434	-4456.266	-4430.030	-4443.148
		-7835.829	-2308.446	-4456.266	-4430.030	-4443.148
14	3.150	-9563.850	-1184.534	-4432.762	-4408.570	-4420.666
		-7889.339	-2238.149	-4432.762	-4408.570	-4420.666
14	4.200	-9423.597	-1242.183	-4412.958	-4390.810	-4401.884
		-7865.402	-2222.612	-4412.958	-4390.810	-4401.884
15	0	-9434.770	-1235.219	-4412.999	-4390.851	-4401.925
		-7881.019	-2212.852	-4412.999	-4390.851	-4401.925
15	1.050	-9231.482	-1333.103	-4393.306	-4373.684	-4383.495
		-7811.227	-2226.739	-4393.306	-4373.684	-4383.495
15	2.100	-9004.541	-1446.119	-4373.766	-4356.670	-4365.218
		-7734.938	-2244.963	-4373.766	-4356.670	-4365.218
15	3.151	-8693.878	-1603.805	-4349.310	-4334.741	-4342.025
		-7592.082	-2297.064	-4349.310	-4334.741	-4342.025
15	4.201	-8180.099	-1884.231	-4321.747	-4309.704	-4315.726
		-7263.265	-2461.110	-4321.747	-4309.704	-4315.726
16	0	-8195.678	-1874.514	-4321.800	-4309.756	-4315.778
		-7284.875	-2447.598	-4321.800	-4309.756	-4315.778
16	1.049	-7486.014	-2275.932	-4292.599	-4283.583	-4288.091
		-6777.186	-2721.933	-4292.599	-4283.583	-4288.091
16	2.099	-6588.842	-2793.040	-4261.992	-4256.002	-4258.997
		-6099.120	-3101.176	-4261.992	-4256.002	-4258.997
16	3.148	-5693.742	-3333.168	-4246.314	-4243.352	-4244.833
		-5440.259	-3492.661	-4246.314	-4243.352	-4244.833
16	4.198	-4980.410	-3761.593	-4232.274	-4232.338	-4232.306
		-4980.172	-3761.742	-4232.274	-4232.338	-4232.306

Mstb. 1 :442.2
Extreme stresses envel. -A, GWSP II (ELS 6 Combinación Frecuente), View "LIST"
- Struktur: Staebe
- Extr.str.II (z-y-)min., Scaling 5.00E-04
  min: -9.61E+03 max: -1.50E+03 [kN/m2]
- Extr.str.ul (z+y-)min., Scaling 5.00E-04
  min: -5.72E+03 max: -1.18E+03 [kN/m2]
- Text extreme stress envelope [kN/m2]



ENVOLVENTE: IJ 'ELS 7 Combinación Frecuente'

Grupo	Espe.	Hipótesis	Factor	Etapa	Título
A	PERM.	1	1.000		Peso Propio
	Y	3	1.000		Carga Muerta Máxima
	Y	20	0.957000		Pretensado
B	MAS	19	0.200000		gradiente
C	MAS	22	0.500000		Carro 1 centrado
D	MAS	4	0.500000		Sobrecarga centrada vano 1
E	MAS	5	0.500000		Sobrecarga centrada vano 2
F	MAS	6	0.500000		Sobrecarga centrada vano 3

ALTERNATIVA PARA ENVOLVENTE:

G	PERM.	1	1.000		Peso Propio
	Y	3	1.000		Carga Muerta Máxima
	Y	20	0.957000		Pretensado
H	MAS	19	0.200000		gradiente
I	MAS	22	0.500000		Carro 1 centrado
J	MAS	7	0.500000		Sobrecarga excéntrica vano 1 (
K	MAS	8	0.500000		Sobrecarga excentrica vano 2 (
L	MAS	9	0.500000		Sobrecarga excentrica vano 3 (

ALTERNATIVA PARA ENVOLVENTE:

M	PERM.	1	1.000		Peso Propio
	Y	3	1.000		Carga Muerta Máxima
	Y	20	0.957000		Pretensado
N	MAS	19	0.200000		gradiente
O	MAS	22	0.500000		Carro 1 centrado
P	MAS	10	0.500000		Sobrecarga excéntrica vano 1 (
Q	MAS	11	0.500000		Sobrecarga excentrica vano 2 (
R	MAS	12	0.500000		Sobrecarga excentrica vano 3 (

TENSIONES para ENVOLVENTE de < My > ""
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)
(zi=z-inferior, zs=z-superior, yi=y-izq., yd= y-dch., ce=centro grav.)

Barra	Distancia [m]	Sigma-zi [kN/m2]	Sigma-zs [kN/m2]	Sigma-yi [kN/m2]	Sigma-yd [kN/m2]	Sigma-ce [kN/m2]
1	0	-4951.805	-3785.871	-4236.195	-4236.126	-4236.161
		-4915.949	-3808.432	-4236.195	-4236.126	-4236.161
1	1.050	-5626.633	-3380.507	-4249.509	-4246.435	-4247.972
		-5301.095	-3585.336	-4249.509	-4246.435	-4247.972
1	2.100	-6495.558	-2855.783	-4264.521	-4258.442	-4261.481
		-5872.091	-3248.073	-4264.521	-4258.442	-4261.481
1	3.150	-7366.450	-2354.763	-4294.843	-4285.758	-4290.301
		-6462.204	-2923.722	-4294.843	-4285.758	-4290.301
1	4.200	-8049.394	-1969.783	-4323.803	-4311.713	-4317.758
		-6881.520	-2704.619	-4323.803	-4311.713	-4317.758
2	0	-8034.912	-1978.819	-4323.756	-4311.666	-4317.711
		-6861.155	-2717.356	-4323.756	-4311.666	-4317.711
2	1.050	-8521.367	-1715.340	-4351.182	-4336.538	-4343.860
		-7101.187	-2608.928	-4351.182	-4336.538	-4343.860
2	2.100	-8804.800	-1574.590	-4375.531	-4358.334	-4366.932
		-7155.340	-2612.444	-4375.531	-4358.334	-4366.932
2	3.150	-9004.818	-1478.429	-4395.031	-4375.281	-4385.156
		-7143.220	-2649.761	-4395.031	-4375.281	-4385.156
2	4.199	-9181.201	-1397.439	-4414.717	-4392.413	-4403.565
		-7124.609	-2691.462	-4414.717	-4392.413	-4403.565
3	0	-9168.757	-1405.196	-4414.672	-4392.369	-4403.520
		-7107.275	-2702.297	-4414.672	-4392.369	-4403.520
3	1.050	-9282.351	-1364.431	-4434.537	-4410.202	-4422.370
		-7074.229	-2753.799	-4434.537	-4410.202	-4422.370
3	2.100	-9301.095	-1389.403	-4458.120	-4431.753	-4444.936
		-7005.163	-2834.022	-4458.120	-4431.753	-4444.936
3	3.150	-8992.398	-1624.304	-4484.097	-4455.698	-4469.897
		-6698.711	-3067.510	-4484.097	-4455.698	-4469.897

TENSIONES para ENVOLVENTE de < My > ""
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)
(zi=z-inferior, zs=z-superior, yi=y-izq., yd= y-dch., ce=centro grav.)

Barra	Distancia [m]	Sigma-zi [kN/m2]	Sigma-zs [kN/m2]	Sigma-yi [kN/m2]	Sigma-yd [kN/m2]	Sigma-ce [kN/m2]
3	4.200	-8201.865	-2107.740	-4476.536	-4446.105	-4461.321
		-5969.266	-3512.510	-4476.536	-4446.105	-4461.321
4	0	-8193.612	-2112.881	-4476.504	-4446.073	-4461.289
		-5958.809	-3519.037	-4476.504	-4446.073	-4461.289
4	1.050	-6994.909	-2813.162	-4444.164	-4412.181	-4428.173
		-4869.556	-4150.451	-4444.164	-4412.181	-4428.173
4	2.100	-5524.072	-3674.945	-4405.854	-4372.320	-4389.087
		-3525.317	-4932.578	-4405.854	-4372.320	-4389.087
4	3.150	-4256.621	-4436.150	-4384.358	-4349.273	-4366.815
		-2401.610	-5603.338	-4384.358	-4349.273	-4366.815
4	4.200	-3683.278	-4768.340	-4367.602	-4330.966	-4349.284
		-1989.160	-5834.293	-4367.602	-4330.966	-4349.284
5	0	-3674.362	-4773.912	-4367.579	-4330.943	-4349.261
		-1980.049	-5839.987	-4367.579	-4330.943	-4349.261
5	1.050	-3808.418	-4656.447	-4347.784	-4310.085	-4328.934
		-2292.081	-5610.539	-4347.784	-4310.085	-4328.934
5	2.099	-4774.288	-4010.807	-4325.048	-4286.286	-4305.667
		-3182.193	-5012.566	-4325.048	-4286.286	-4305.667
5	3.149	-6526.893	-2874.041	-4304.703	-4264.877	-4284.790
		-4576.500	-4101.244	-4304.703	-4264.877	-4284.790
5	4.198	-8814.720	-1398.068	-4282.859	-4241.971	-4262.415
		-6475.476	-2869.940	-4282.859	-4241.971	-4262.415
6	0	-8794.753	-1404.471	-4279.078	-4238.189	-4258.633
		-6453.444	-2877.641	-4279.078	-4238.189	-4258.633
6	1.350	-5523.198	-3410.727	-4248.495	-4204.651	-4226.573
		-3567.549	-4641.237	-4248.495	-4204.651	-4226.573
6	2.700	-3130.578	-4858.575	-4214.614	-4167.814	-4191.214
		-1532.240	-5864.262	-4214.614	-4167.814	-4191.214
6	4.050	-1777.435	-5628.084	-4165.823	-4116.068	-4140.945
		-357.624	-6521.441	-4165.823	-4116.068	-4140.945
6	5.400	-1816.307	-5519.259	-4115.517	-4062.806	-4089.161
		-412.127	-6402.781	-4115.517	-4062.806	-4089.161
7	0	-1791.719	-5534.658	-4115.473	-4062.762	-4089.117
		-395.825	-6412.966	-4115.473	-4062.762	-4089.117
7	1.350	-2562.007	-4989.388	-4079.146	-4024.698	-4051.922
		-1074.525	-5925.324	-4079.146	-4024.698	-4051.922
7	2.700	-3539.703	-4341.500	-4059.935	-4003.750	-4031.842
		-1914.127	-5364.325	-4059.935	-4003.750	-4031.842
7	4.050	-4300.791	-3834.798	-4043.728	-3985.806	-4014.767
		-2539.592	-4942.958	-4043.728	-3985.806	-4014.767
7	5.400	-4820.905	-3476.956	-4025.826	-3966.166	-3995.996
		-2952.432	-4652.615	-4025.826	-3966.166	-3995.996
8	0	-4805.806	-3486.424	-4025.805	-3966.146	-3995.976
		-2934.376	-4663.943	-4025.805	-3966.146	-3995.976
8	1.350	-5090.023	-3274.428	-4005.749	-3945.490	-3975.620
		-3139.673	-4501.604	-4005.749	-3945.490	-3975.620
8	2.700	-5144.086	-3204.522	-3984.020	-3923.161	-3953.591
		-3143.159	-4463.521	-3984.020	-3923.161	-3953.591
8	4.050	-5067.735	-3220.716	-3964.773	-3903.314	-3934.044
		-3044.572	-4493.707	-3964.773	-3903.314	-3934.044
8	5.399	-4979.257	-3245.604	-3946.178	-3884.119	-3915.149
		-2962.198	-4514.753	-3946.178	-3884.119	-3915.149
9	0	-4979.428	-3245.496	-3946.178	-3884.120	-3915.149
		-2962.689	-4514.444	-3946.178	-3884.120	-3915.149
9	1.350	-5026.483	-3246.379	-3964.584	-3903.144	-3933.864
		-3044.202	-4493.646	-3964.584	-3903.144	-3933.864
9	2.700	-5058.801	-3257.221	-3983.410	-3922.589	-3953.000
		-3139.332	-4464.966	-3983.410	-3922.589	-3953.000
9	4.051	-4951.250	-3360.229	-4004.791	-3944.588	-3974.689
		-3122.948	-4510.612	-4004.791	-3944.588	-3974.689
9	5.401	-4614.205	-3605.298	-4024.735	-3965.151	-3994.943
		-2905.424	-4680.477	-4024.735	-3965.151	-3994.943
10	0	-4629.921	-3595.444	-4024.756	-3965.172	-3994.964
		-2924.610	-4668.439	-4024.756	-3965.172	-3994.964
10	1.350	-4057.068	-3986.281	-4042.528	-3984.710	-4013.619
		-2499.592	-4966.257	-4042.528	-3984.710	-4013.619
10	2.700	-3243.358	-4525.895	-4058.599	-4002.548	-4030.573

TENSIONES para ENVOLVENTE de < My > ""
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)
(zi=z-inferior, zs=z-superior, yi=y-izq., yd= y-dch., ce=centro grav.)

Barra	Distancia [m]	Sigma-zi [kN/m2]	Sigma-zs [kN/m2]	Sigma-yi [kN/m2]	Sigma-yd [kN/m2]	Sigma-ce [kN/m2]
10	4.049	-1862.056	-5395.021	-4058.599	-4002.548	-4030.573
		-2236.868	-5194.036	-4079.105	-4024.821	-4051.963
10	5.399	-1004.733	-5969.305	-4079.105	-4024.821	-4051.963
		-1470.585	-5736.353	-4115.152	-4062.635	-4088.893
11	0	-323.704	-6457.980	-4115.152	-4062.635	-4088.893
		-1495.758	-5720.584	-4115.195	-4062.678	-4088.936
11	1.331	-339.938	-6447.835	-4115.195	-4062.678	-4088.936
		-1499.993	-5803.003	-4165.962	-4116.358	-4141.160
11	2.662	-318.555	-6546.373	-4165.962	-4116.358	-4141.160
		-2859.167	-5027.543	-4213.451	-4166.761	-4190.106
11	3.993	-1497.131	-5884.547	-4213.451	-4166.761	-4190.106
		-5216.388	-3601.188	-4246.874	-4203.098	-4224.986
11	5.324	-3501.496	-4680.211	-4246.874	-4203.098	-4224.986
		-8427.996	-1632.017	-4277.088	-4236.226	-4256.657
12	0	-6332.694	-2950.398	-4277.088	-4236.226	-4256.657
		-8449.844	-1624.435	-4280.872	-4240.010	-4260.441
12	1.050	-6355.649	-2942.120	-4280.872	-4240.010	-4260.441
		-6292.105	-3018.574	-4302.714	-4262.941	-4282.827
12	2.100	-4464.784	-4168.339	-4302.714	-4262.941	-4282.827
		-4669.669	-4073.424	-4323.038	-4284.355	-4303.696
12	3.149	-3076.846	-5075.641	-4323.038	-4284.355	-4303.696
		-3806.744	-4654.256	-4345.740	-4308.145	-4326.943
12	4.199	-2224.300	-5649.942	-4345.740	-4308.145	-4326.943
		-3675.504	-4769.910	-4365.498	-4328.992	-4347.245
13	0	-2048.194	-5793.826	-4365.498	-4328.992	-4347.245
		-3683.850	-4764.695	-4365.520	-4329.014	-4347.267
13	1.050	-2057.422	-5788.056	-4365.520	-4329.014	-4347.267
		-4259.890	-4430.755	-4382.246	-4347.286	-4364.766
13	2.100	-2605.735	-5471.562	-4382.246	-4347.286	-4364.766
		-5529.661	-3668.096	-4403.749	-4370.334	-4387.041
13	3.150	-3864.927	-4715.560	-4403.749	-4370.334	-4387.041
		-7002.000	-2805.392	-4442.077	-4410.207	-4426.142
13	4.200	-5343.836	-3848.722	-4442.077	-4410.207	-4426.142
		-8202.171	-2104.310	-4474.496	-4444.171	-4459.334
14	0	-6567.727	-3132.716	-4474.496	-4444.171	-4459.334
		-8210.889	-2098.879	-4474.529	-4444.204	-4459.367
14	1.050	-6579.125	-3125.598	-4474.529	-4444.204	-4459.367
		-9003.010	-1614.556	-4482.153	-4453.872	-4468.013
14	2.100	-7412.112	-2615.562	-4482.153	-4453.872	-4468.013
		-9313.783	-1378.507	-4456.266	-4430.030	-4443.148
14	3.150	-7780.897	-2343.010	-4456.266	-4430.030	-4443.148
		-9297.617	-1352.050	-4432.762	-4408.570	-4420.666
14	4.200	-7839.891	-2269.262	-4432.762	-4408.570	-4420.666
		-9186.856	-1391.142	-4412.958	-4390.810	-4401.884
15	0	-7821.438	-2250.274	-4412.958	-4390.810	-4401.884
		-9198.331	-1383.989	-4412.999	-4390.851	-4401.925
15	1.050	-7837.083	-2240.497	-4412.999	-4390.851	-4401.925
		-9024.542	-1463.312	-4393.306	-4373.684	-4383.495
15	2.100	-7772.776	-2250.932	-4393.306	-4373.684	-4383.495
		-8827.100	-1557.766	-4373.766	-4356.670	-4365.218
15	3.151	-7701.973	-2265.705	-4373.766	-4356.670	-4365.218
		-8545.937	-1696.891	-4349.310	-4334.741	-4342.025
15	4.201	-7564.602	-2314.355	-4349.310	-4334.741	-4342.025
		-8061.656	-1958.756	-4321.747	-4309.704	-4315.726
16	0	-7241.270	-2474.950	-4321.747	-4309.704	-4315.726
		-8077.748	-1948.716	-4321.800	-4309.756	-4315.778
16	1.049	-7262.946	-2461.396	-4321.800	-4309.756	-4315.778
		-7397.564	-2331.586	-4292.599	-4283.583	-4288.091
16	2.099	-6760.739	-2732.281	-4292.599	-4283.583	-4288.091
		-6529.871	-2830.145	-4261.992	-4256.002	-4258.997
16	3.148	-6088.155	-3108.076	-4261.992	-4256.002	-4258.997
		-5664.250	-3351.725	-4246.314	-4243.352	-4244.833
16	4.198	-5434.775	-3496.112	-4246.314	-4243.352	-4244.833
		-4980.397	-3761.601	-4232.274	-4232.338	-4232.306
		-4980.170	-3761.744	-4232.274	-4232.338	-4232.306

ESFUERZOS ELU DEL TABLERO

ENVOLVENTE: IB 'Vacio 1'

Grupo	Espe.	Hipótesis	Factor	Etapa	Título
A	PERM.	1	1.000		Peso Propio
	Y	20	0.900000		Pretensado

TENSIONES para ENVOLVENTE de < My > ""
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)
(zi=z-inferior, zs=z-superior, yi=y-izq., yd= y-dch., ce=centro grav.)

Barra	Distancia [m]	Sigma-zi [kN/m2]	Sigma-zs [kN/m2]	Sigma-yi [kN/m2]	Sigma-yd [kN/m2]	Sigma-ce [kN/m2]
1	0	-4653.833	-3562.292	-3983.882	-3983.818	-3983.850
		-4653.833	-3562.292	-3983.882	-3983.818	-3983.850
1	1.050	-5477.266	-3062.278	-3996.403	-3993.512	-3994.958
		-5477.266	-3062.278	-3996.403	-3993.512	-3994.958
1	2.100	-6434.110	-2480.923	-4010.522	-4004.804	-4007.663
		-6434.110	-2480.923	-4010.522	-4004.804	-4007.663
1	3.150	-7355.619	-1945.258	-4039.038	-4030.493	-4034.765
		-7355.619	-1945.258	-4039.038	-4030.493	-4034.765
1	4.200	-8063.190	-1542.119	-4066.273	-4054.902	-4060.588
		-8063.190	-1542.119	-4066.273	-4054.902	-4060.588
2	0	-8048.897	-1551.040	-4066.229	-4054.858	-4060.543
		-8048.897	-1551.040	-4066.229	-4054.858	-4060.543
2	1.050	-8534.497	-1285.561	-4092.021	-4078.249	-4085.135
		-8534.497	-1285.561	-4092.021	-4078.249	-4085.135
2	2.100	-8791.999	-1158.889	-4114.919	-4098.746	-4106.833
		-8791.999	-1158.889	-4114.919	-4098.746	-4106.833
2	3.150	-8933.887	-1097.534	-4133.258	-4114.684	-4123.971
		-8933.887	-1097.534	-4133.258	-4114.684	-4123.971
2	4.199	-9016.381	-1073.834	-4151.771	-4130.796	-4141.284
		-9016.381	-1073.834	-4151.771	-4130.796	-4141.284
3	0	-9003.414	-1081.924	-4151.729	-4130.754	-4141.242
		-9003.414	-1081.924	-4151.729	-4130.754	-4141.242
3	1.050	-8989.656	-1119.461	-4170.411	-4147.525	-4158.968
		-8989.656	-1119.461	-4170.411	-4147.525	-4158.968
3	2.100	-8849.512	-1242.217	-4192.589	-4167.792	-4180.191
		-8849.512	-1242.217	-4192.589	-4167.792	-4180.191
3	3.150	-8364.243	-1585.796	-4217.019	-4190.311	-4203.665
		-8364.243	-1585.796	-4217.019	-4190.311	-4203.665
3	4.200	-7388.651	-2186.506	-4209.909	-4181.290	-4195.599
		-7388.651	-2186.506	-4209.909	-4181.290	-4195.599
4	0	-7379.684	-2192.099	-4209.879	-4181.260	-4195.569
		-7379.684	-2192.099	-4209.879	-4181.260	-4195.569
4	1.050	-5983.084	-3020.112	-4179.465	-4149.387	-4164.426
		-5983.084	-3020.112	-4179.465	-4149.387	-4164.426
4	2.100	-4293.383	-4023.399	-4143.436	-4111.900	-4127.668
		-4293.383	-4023.399	-4143.436	-4111.900	-4127.668
4	3.150	-2757.776	-4955.490	-4123.220	-4090.225	-4106.723
		-2757.776	-4955.490	-4123.220	-4090.225	-4106.723
4	4.200	-1837.761	-5507.511	-4107.463	-4073.009	-4090.236
		-1837.761	-5507.511	-4107.463	-4073.009	-4090.236
5	0	-1829.171	-5512.880	-4107.441	-4072.987	-4090.214
		-1829.171	-5512.880	-4107.441	-4072.987	-4090.214
5	1.050	-1537.391	-5665.327	-4088.825	-4053.371	-4071.098
		-1537.391	-5665.327	-4088.825	-4053.371	-4071.098
5	2.099	-1869.671	-5420.604	-4067.443	-4030.990	-4049.216
		-1869.671	-5420.604	-4067.443	-4030.990	-4049.216
5	3.149	-2751.144	-4833.987	-4048.310	-4010.856	-4029.583
		-2751.144	-4833.987	-4048.310	-4010.856	-4029.583
5	4.198	-4082.695	-3961.882	-4027.767	-3989.314	-4008.541
		-4082.695	-3961.882	-4027.767	-3989.314	-4008.541
6	0	-4065.217	-3967.085	-4024.211	-3985.758	-4004.984
		-4065.217	-3967.085	-4024.211	-3985.758	-4004.984
6	1.350	-2037.124	-5194.056	-3995.450	-3954.218	-3974.834
		-2037.124	-5194.056	-3995.450	-3954.218	-3974.834

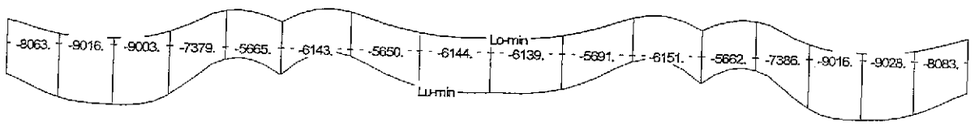
TENSIONES para ENVOLVENTE de < My > ""
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)
(zi=z-inferior, zs=z-superior, yi=y-izq., yd= y-dch., ce=centro grav.)

Barra	Distancia [m]	Sigma-zi [kN/m2]	Sigma-zs [kN/m2]	Sigma-yi [kN/m2]	Sigma-yd [kN/m2]	Sigma-ce [kN/m2]
6	2.700	-747.493	-5951.326	-3963.587	-3919.575	-3941.581
		-747.493	-5951.326	-3963.587	-3919.575	-3941.581
6	4.050	-319.434	-6143.643	-3917.701	-3870.910	-3894.306
		-319.434	-6143.643	-3917.701	-3870.910	-3894.306
6	5.400	-997.743	-5637.504	-3870.392	-3820.821	-3845.606
		-997.743	-5637.504	-3870.392	-3820.821	-3845.606
7	0	-977.431	-5650.218	-3870.350	-3820.780	-3845.565
		-977.431	-5650.218	-3870.350	-3820.780	-3845.565
7	1.350	-2198.766	-4824.754	-3836.187	-3784.983	-3810.585
		-2198.766	-4824.754	-3836.187	-3784.983	-3810.585
7	2.700	-3546.582	-3945.932	-3818.120	-3765.282	-3791.701
		-3546.582	-3945.932	-3818.120	-3765.282	-3791.701
7	4.050	-4617.063	-3246.214	-3802.879	-3748.406	-3775.643
		-4617.063	-3246.214	-3802.879	-3748.406	-3775.643
7	5.400	-5399.463	-2725.162	-3786.043	-3729.937	-3757.990
		-5399.463	-2725.162	-3786.043	-3729.937	-3757.990
8	0	-5387.396	-2732.724	-3786.024	-3729.918	-3757.971
		-5387.396	-2732.724	-3786.024	-3729.918	-3757.971
8	1.350	-5886.465	-2387.517	-3767.162	-3710.492	-3738.827
		-5886.465	-2387.517	-3767.162	-3710.492	-3738.827
8	2.700	-6107.643	-2214.598	-3746.728	-3689.493	-3718.111
		-6107.643	-2214.598	-3746.728	-3689.493	-3718.111
8	4.050	-6144.729	-2161.314	-3728.627	-3670.829	-3699.728
		-6144.729	-2161.314	-3728.627	-3670.829	-3699.728
8	5.399	-6108.964	-2154.867	-3711.139	-3652.777	-3681.958
		-6108.964	-2154.867	-3711.139	-3652.777	-3681.958
9	0	-6109.337	-2154.632	-3711.139	-3652.777	-3681.958
		-6109.337	-2154.632	-3711.139	-3652.777	-3681.958
9	1.350	-6139.578	-2164.279	-3728.449	-3670.668	-3699.558
		-6139.578	-2164.279	-3728.449	-3670.668	-3699.558
9	2.700	-6094.484	-2221.971	-3746.154	-3688.955	-3717.554
		-6094.484	-2221.971	-3746.154	-3688.955	-3717.554
9	4.051	-5856.380	-2405.021	-3766.261	-3709.644	-3737.952
		-5856.380	-2405.021	-3766.261	-3709.644	-3737.952
9	5.401	-5340.975	-2760.350	-3785.018	-3728.982	-3757.000
		-5340.975	-2760.350	-3785.018	-3728.982	-3757.000
10	0	-5353.884	-2752.260	-3785.037	-3729.002	-3757.020
		-5353.884	-2752.260	-3785.037	-3729.002	-3757.020
10	1.350	-4555.317	-3283.307	-3801.750	-3747.377	-3774.564
		-4555.317	-3283.307	-3801.750	-3747.377	-3774.564
10	2.700	-3468.794	-3992.932	-3816.864	-3764.152	-3790.508
		-3468.794	-3992.932	-3816.864	-3764.152	-3790.508
10	4.049	-2113.506	-4878.464	-3836.149	-3785.099	-3810.624
		-2113.506	-4878.464	-3836.149	-3785.099	-3810.624
10	5.399	-911.139	-5691.585	-3870.049	-3820.659	-3845.354
		-911.139	-5691.585	-3870.049	-3820.659	-3845.354
11	0	-931.603	-5678.776	-3870.089	-3820.700	-3845.395
		-931.603	-5678.776	-3870.089	-3820.700	-3845.395
11	1.331	-308.177	-6151.055	-3917.832	-3871.183	-3894.508
		-308.177	-6151.055	-3917.832	-3871.183	-3894.508
11	2.662	-767.779	-5936.864	-3962.493	-3918.584	-3940.538
		-767.779	-5936.864	-3962.493	-3918.584	-3940.538
11	3.993	-2054.120	-5180.930	-3993.925	-3952.756	-3973.341
		-2054.120	-5180.930	-3993.925	-3952.756	-3973.341
11	5.324	-4058.304	-3968.407	-4022.340	-3983.911	-4003.126
		-4058.304	-3968.407	-4022.340	-3983.911	-4003.126
12	0	-4076.748	-3962.600	-4025.899	-3987.470	-4006.684
		-4076.748	-3962.600	-4025.899	-3987.470	-4006.684
12	1.050	-2747.083	-4833.535	-4046.439	-4009.035	-4027.737
		-2747.083	-4833.535	-4046.439	-4009.035	-4027.737
12	2.100	-1867.552	-5418.918	-4065.553	-4029.174	-4047.363
		-1867.552	-5418.918	-4065.553	-4029.174	-4047.363
12	3.149	-1537.356	-5662.297	-4086.903	-4051.547	-4069.225
		-1537.356	-5662.297	-4086.903	-4051.547	-4069.225
12	4.199	-1831.225	-5508.499	-4105.484	-4071.153	-4088.318
		-1831.225	-5508.499	-4105.484	-4071.153	-4088.318
13	0	-1839.346	-5503.423	-4105.504	-4071.173	-4088.339

TENSIONES para ENVOLVENTE de < My > ""
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip.. decicivos)
(zi=z-inferior, zs=z-superior, yi=y-izq., yd= y-dch., ce=centro grav.)

Barra	Distancia [m]	Sigma-zi [kN/m2]	Sigma-zs [kN/m2]	Sigma-yi [kN/m2]	Sigma-yd [kN/m2]	Sigma-ce [kN/m2]
		-1839.346	-5503.423	-4105.504	-4071.173	-4088.339
13	1.050	-2761.276	-4950.148	-4121.234	-4088.357	-4104.795
		-2761.276	-4950.148	-4121.234	-4088.357	-4104.795
13	2.100	-4298.438	-4017.084	-4141.457	-4110.032	-4125.744
		-4298.438	-4017.084	-4141.457	-4110.032	-4125.744
13	3.150	-5988.921	-3013.327	-4177.502	-4147.530	-4162.516
		-5988.921	-3013.327	-4177.502	-4147.530	-4162.516
13	4.200	-7386.268	-2184.961	-4207.990	-4179.471	-4193.731
		-7386.268	-2184.961	-4207.990	-4179.471	-4193.731
14	0	-7395.758	-2179.040	-4208.021	-4179.503	-4193.762
		-7395.758	-2179.040	-4208.021	-4179.503	-4193.762
14	1.050	-8372.166	-1577.924	-4215.191	-4188.595	-4201.893
		-8372.166	-1577.924	-4215.191	-4188.595	-4201.893
14	2.100	-8858.719	-1233.684	-4190.846	-4166.173	-4178.509
		-8858.719	-1233.684	-4190.846	-4166.173	-4178.509
14	3.150	-9000.630	-1109.946	-4168.742	-4145.990	-4157.366
		-9000.630	-1109.946	-4168.742	-4145.990	-4157.366
14	4.200	-9016.405	-1071.244	-4150.118	-4129.289	-4139.703
		-9016.405	-1071.244	-4150.118	-4129.289	-4139.703
15	0	-9028.428	-1063.742	-4150.156	-4129.327	-4139.742
		-9028.428	-1063.742	-4150.156	-4129.327	-4139.742
15	1.050	-8947.767	-1086.255	-4131.636	-4113.182	-4122.409
		-8947.767	-1086.255	-4131.636	-4113.182	-4122.409
15	2.100	-8807.670	-1146.402	-4113.259	-4097.182	-4105.220
		-8807.670	-1146.402	-4113.259	-4097.182	-4105.220
15	3.151	-8551.643	-1271.962	-4090.261	-4076.559	-4083.410
		-8551.643	-1271.962	-4090.261	-4076.559	-4083.410
15	4.201	-8067.403	-1536.353	-4064.339	-4053.013	-4058.676
		-8067.403	-1536.353	-4064.339	-4053.013	-4058.676
16	0	-8083.349	-1526.400	-4064.388	-4053.062	-4058.725
		-8083.349	-1526.400	-4064.388	-4053.062	-4058.725
16	1.049	-7377.738	-1927.955	-4036.927	-4028.448	-4032.687
		-7377.738	-1927.955	-4036.927	-4028.448	-4032.687
16	2.099	-6458.642	-2461.680	-4008.143	-4002.510	-4005.326
		-6458.642	-2461.680	-4008.143	-4002.510	-4005.326
16	3.148	-5504.353	-3040.425	-3993.399	-3990.613	-3992.006
		-5504.353	-3040.425	-3993.399	-3990.613	-3992.006
16	4.198	-4683.802	-3537.528	-3980.195	-3980.255	-3980.225
		-4683.802	-3537.528	-3980.195	-3980.255	-3980.225

Mstb. 1:442.2
Extreme stresses envel. -A,.GWSP IB (Vacio 1), View "LIST"
- Struktur: Staebe
- Extr.str.ll (z-y-)min., Scaling 5.00E-04
  min: -9.03E+03 max: -3.08E+02 [kN/m2]
- Extr.str.ul (z+y-)min., Scaling 5.00E-04
  min: -6.15E+03 max: -1.06E+03 [kN/m2]
- Text extreme stress envelope [kN/m2]



ENVOLVENTE: IC 'Vacio 2'

Grupo	Espe.	Hipótesis	Factor	Etapa	Título
A	PERM.	1	1.000		Peso Propio
	Y	20	1.100		Pretensado

TENSIONES para ENVOLVENTE de < My > ""
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)
(zi=z-inferior, zs=z-superior, yi=y-izq., yd= y-dch., ce=centro grav.)

Barra	Distancia [m]	Sigma-zi [kN/m2]	Sigma-zs [kN/m2]	Sigma-yi [kN/m2]	Sigma-yd [kN/m2]	Sigma-ce [kN/m2]
1	0	-5696.608	-4348.507	-4869.189	-4869.111	-4869.150
		-5696.608	-4348.507	-4869.189	-4869.111	-4869.150
1	1.050	-6864.715	-3635.643	-4884.493	-4880.960	-4882.726
		-6864.715	-3635.643	-4884.493	-4880.960	-4882.726
1	2.100	-8168.719	-2840.453	-4901.749	-4894.760	-4898.255
		-8168.719	-2840.453	-4901.749	-4894.760	-4898.255
1	3.150	-9402.375	-2118.195	-4936.601	-4926.159	-4931.380
		-9402.375	-2118.195	-4936.601	-4926.159	-4931.380
1	4.200	-10347.4	-1575.001	-4969.889	-4955.992	-4962.940
		-10347.4	-1575.001	-4969.889	-4955.992	-4962.940
2	0	-10330.0	-1585.856	-4969.835	-4955.938	-4962.886
		-10330.0	-1585.856	-4969.835	-4955.938	-4962.886
2	1.050	-10976.5	-1228.011	-5001.359	-4984.527	-4992.943
		-10976.5	-1228.011	-5001.359	-4984.527	-4992.943
2	2.100	-11317.2	-1056.899	-5029.346	-5009.579	-5019.462
		-11317.2	-1056.899	-5029.346	-5009.579	-5019.462
2	3.150	-11489.3	-982.703	-5051.760	-5029.059	-5040.409
		-11489.3	-982.703	-5051.760	-5029.059	-5040.409
2	4.199	-11561.7	-971.609	-5074.387	-5048.751	-5061.569
		-11561.7	-971.609	-5074.387	-5048.751	-5061.569
3	0	-11545.4	-981.811	-5074.336	-5048.700	-5061.518
		-11545.4	-981.811	-5074.336	-5048.700	-5061.518
3	1.050	-11473.0	-1062.657	-5097.169	-5069.198	-5083.184
		-11473.0	-1062.657	-5097.169	-5069.198	-5083.184
3	2.100	-11219.0	-1264.750	-5124.276	-5093.969	-5109.122
		-11219.0	-1264.750	-5124.276	-5093.969	-5109.122
3	3.150	-10516.0	-1753.828	-5154.135	-5121.491	-5137.813
		-10516.0	-1753.828	-5154.135	-5121.491	-5137.813
3	4.200	-9186.529	-2574.267	-5145.444	-5110.465	-5127.955
		-9186.529	-2574.267	-5145.444	-5110.465	-5127.955
4	0	-9174.732	-2581.630	-5145.407	-5110.429	-5127.918
		-9174.732	-2581.630	-5145.407	-5110.429	-5127.918
4	1.050	-7303.578	-3696.961	-5108.235	-5071.473	-5089.854
		-7303.578	-3696.961	-5108.235	-5071.473	-5089.854
4	2.100	-5047.035	-5043.602	-5064.200	-5025.655	-5044.927
		-5047.035	-5043.602	-5064.200	-5025.655	-5044.927
4	3.150	-2951.674	-6320.312	-5039.491	-4999.164	-5019.328
		-2951.674	-6320.312	-5039.491	-4999.164	-5019.328
4	4.200	-1581.547	-7149.577	-5020.232	-4978.122	-4999.177
		-1581.547	-7149.577	-5020.232	-4978.122	-4999.177
5	0	-1570.469	-7156.504	-5020.205	-4978.095	-4999.150
		-1570.469	-7156.504	-5020.205	-4978.095	-4999.150
5	1.050	-941.127	-7514.426	-4997.453	-4954.120	-4975.787
		-941.127	-7514.426	-4997.453	-4954.120	-4975.787
5	2.099	-1047.389	-7403.994	-4971.320	-4926.765	-4949.042
		-1047.389	-7403.994	-4971.320	-4926.765	-4949.042
5	3.149	-1797.750	-6892.765	-4947.934	-4902.158	-4925.046
		-1797.750	-6892.765	-4947.934	-4902.158	-4925.046
5	4.198	-3071.069	-6049.682	-4922.827	-4875.828	-4899.328
		-3071.069	-6049.682	-4922.827	-4875.828	-4899.328
6	0	-3050.641	-6055.454	-4918.480	-4871.482	-4894.981
		-3050.641	-6055.454	-4918.480	-4871.482	-4894.981
6	1.350	-1086.991	-7230.961	-4883.328	-4832.933	-4858.130
		-1086.991	-7230.961	-4883.328	-4832.933	-4858.130

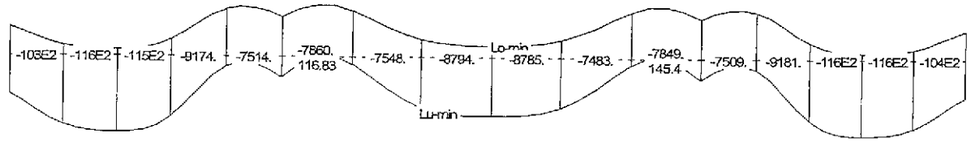
TENSIONES para ENVOLVENTE de < My > ""
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)
(zi=z-inferior, zs=z-superior, yi=y-izq., yd= y-dch., ce=centro grav.)

Barra	Distancia [m]	Sigma-zi [kN/m2]	Sigma-zs [kN/m2]	Sigma-yi [kN/m2]	Sigma-yd [kN/m2]	Sigma-ce [kN/m2]
6	2.700	18.991	-7860.638	-4844.384	-4790.591	-4817.488
		18.991	-7860.638	-4844.384	-4790.591	-4817.488
6	4.050	116.832	-7828.064	-4788.302	-4731.112	-4759.707
		116.832	-7828.064	-4788.302	-4731.112	-4759.707
6	5.400	-1092.659	-6970.070	-4730.479	-4669.892	-4700.185
		-1092.659	-6970.070	-4730.479	-4669.892	-4700.185
7	0	-1070.551	-6983.898	-4730.428	-4669.842	-4700.135
		-1070.551	-6983.898	-4730.428	-4669.842	-4700.135
7	1.350	-2898.840	-5763.870	-4688.673	-4626.090	-4657.382
		-2898.840	-5763.870	-4688.673	-4626.090	-4657.382
7	2.700	-4836.824	-4506.873	-4666.592	-4602.011	-4634.301
		-4836.824	-4506.873	-4666.592	-4602.011	-4634.301
7	4.050	-6390.950	-3497.028	-4647.963	-4581.386	-4614.674
		-6390.950	-3497.028	-4647.963	-4581.386	-4614.674
7	5.400	-7548.084	-2733.799	-4627.386	-4558.812	-4593.099
		-7548.084	-2733.799	-4627.386	-4558.812	-4593.099
8	0	-7535.208	-2741.862	-4627.362	-4558.788	-4593.075
		-7535.208	-2741.862	-4627.362	-4558.788	-4593.075
8	1.350	-8301.140	-2221.812	-4604.309	-4535.046	-4569.678
		-8301.140	-2221.812	-4604.309	-4535.046	-4569.678
8	2.700	-8682.546	-1940.576	-4579.334	-4509.381	-4544.357
		-8682.546	-1940.576	-4579.334	-4509.381	-4544.357
8	4.050	-8794.068	-1833.801	-4557.211	-4486.568	-4521.890
		-8794.068	-1833.801	-4557.211	-4486.568	-4521.890
8	5.399	-8771.668	-1812.511	-4535.837	-4464.505	-4500.171
		-8771.668	-1812.511	-4535.837	-4464.505	-4500.171
9	0	-8772.099	-1812.240	-4535.837	-4464.505	-4500.171
		-8772.099	-1812.240	-4535.837	-4464.505	-4500.171
9	1.350	-8785.481	-1838.867	-4556.993	-4486.372	-4521.683
		-8785.481	-1838.867	-4556.993	-4486.372	-4521.683
9	2.700	-8661.884	-1952.470	-4578.633	-4508.723	-4543.678
		-8661.884	-1952.470	-4578.633	-4508.723	-4543.678
9	4.051	-8257.481	-2247.540	-4603.208	-4534.009	-4568.608
		-8257.481	-2247.540	-4603.208	-4534.009	-4568.608
9	5.401	-7469.254	-2781.428	-4626.133	-4557.645	-4591.889
		-7469.254	-2781.428	-4626.133	-4557.645	-4591.889
10	0	-7483.093	-2772.759	-4626.157	-4557.669	-4591.913
		-7483.093	-2772.759	-4626.157	-4557.669	-4591.913
10	1.350	-6303.932	-3549.631	-4646.584	-4580.127	-4613.355
		-6303.932	-3549.631	-4646.584	-4580.127	-4613.355
10	2.700	-4727.945	-4573.004	4665.056	-4600.630	-4632.843
		-4727.945	-4573.004	-4665.056	-4600.630	-4632.843
10	4.049	-2778.586	-5839.612	-4688.627	-4626.232	-4657.429
		-2778.586	-5839.612	-4688.627	-4626.232	-4657.429
10	5.399	-971.253	-7045.957	-4730.059	-4669.695	-4699.877
		-971.253	-7045.957	-4730.059	-4669.695	-4699.877
11	0	-993.576	-7031.992	-4730.109	-4669.744	-4699.927
		-993.576	-7031.992	-4730.109	-4669.744	-4699.927
11	1.331	145.405	-7846.445	-4788.462	-4731.446	-4759.954
		145.405	-7846.445	-4788.462	-4731.446	-4759.954
11	2.662	4.326	-7849.335	-4843.047	-4789.380	-4816.213
		4.326	-7849.335	-4843.047	-4789.380	-4816.213
11	3.993	-1103.574	-7217.554	-4881.464	-4831.147	-4856.305
		-1103.574	-7217.554	-4881.464	-4831.147	-4856.305
11	5.324	-3045.198	-6055.178	-4916.193	-4869.225	-4892.709
		-3045.198	-6055.178	-4916.193	-4869.225	-4892.709
12	0	-3066.803	-6048.670	-4920.543	-4873.574	-4897.059
		-3066.803	-6048.670	-4920.543	-4873.574	-4897.059
12	1.050	-1795.266	-6890.653	-4945.648	-4899.932	-4922.790
		-1795.266	-6890.653	-4945.648	-4899.932	-4922.790
12	2.100	-1046.747	-7400.708	-4969.010	-4924.545	-4946.778
		-1046.747	-7400.708	-4969.010	-4924.545	-4946.778
12	3.149	-942.489	-7509.840	-4995.103	-4951.891	-4973.497
		-942.489	-7509.840	-4995.103	-4951.891	-4973.497
12	4.199	-1573.831	-7150.613	-5017.813	-4975.853	-4996.833
		-1573.831	-7150.613	-5017.813	-4975.853	-4996.833
13	0	-1584.360	-7144.030	-5017.839	-4975.879	-4996.859

TENSIONES para ENVOLVENTE de < My > ""
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)
(zi=z-inferior, zs=z-superior, yi=y-izq., yd= y-dch., ce=centro grav.)

Barra	Distancia [m]	Sigma-zi [kN/m2]	Sigma-zs [kN/m2]	Sigma-yi [kN/m2]	Sigma-yd [kN/m2]	Sigma-ce [kN/m2]
		-1584.360	-7144.030	-5017.839	-4975.879	-4996.859
13	1.050	-2956.232	-6313.606	-5037.064	-4996.880	-5016.972
		-2956.232	-6313.606	-5037.064	-4996.880	-5016.972
13	2.100	-5052.895	-5036.084	-5061.780	-5023.372	-5042.576
		-5052.895	-5036.084	-5061.780	-5023.372	-5042.576
13	3.150	-7309.794	-3689.247	-5105.835	-5069.203	-5087.519
		-7309.794	-3689.247	-5105.835	-5069.203	-5087.519
13	4.200	-9181.257	-2573.864	-5143.099	-5108.243	-5125.671
		-9181.257	-2573.864	-5143.099	-5108.243	-5125.671
14	0	-9193.766	-2566.055	-5143.137	-5108.281	-5125.709
		-9193.766	-2566.055	-5143.137	-5108.281	-5125.709
14	1.050	-10523.6	-1745.514	-5151.900	-5119.394	-5135.647
		-10523.6	-1745.514	-5151.900	-5119.394	-5135.647
14	2.100	-11227.5	-1256.020	-5122.145	-5091.989	-5107.067
		-11227.5	-1256.020	-5122.145	-5091.989	-5107.067
14	3.150	-11483.1	-1053.114	-5095.129	-5067.322	-5081.225
		-11483.1	-1053.114	-5095.129	-5067.322	-5081.225
14	4.200	-11557.3	-971.226	-5072.366	-5046.908	-5059.637
		-11557.3	-971.226	-5072.366	-5046.908	-5059.637
15	0	-11572.6	-961.728	-5072.413	-5046.955	-5059.684
		-11572.6	-961.728	-5072.413	-5046.955	-5059.684
15	1.050	-11501.8	-971.743	-5049.777	-5027.223	-5038.500
		-11501.8	-971.743	-5049.777	-5027.223	-5038.500
15	2.100	-11331.2	-1044.849	-5027.317	-5007.666	-5017.492
		-11331.2	-1044.849	-5027.317	-5007.666	-5017.492
15	3.151	-10991.8	-1214.998	-4999.207	-4982.460	-4990.834
		-10991.8	-1214.998	-4999.207	-4982.460	-4990.834
15	4.201	-10346.2	-1571.924	-4967.526	-4953.682	-4960.604
		-10346.2	-1571.924	-4967.526	-4953.682	-4960.604
16	0	-10365.7	-1559.771	-4967.586	-4953.742	-4960.664
		-10365.7	-1559.771	-4967.586	-4953.742	-4960.664
16	1.049	-9422.497	-2101.396	-4934.022	-4923.658	-4928.840
		-9422.497	-2101.396	-4934.022	-4923.658	-4928.840
16	2.099	-8191.235	-2821.632	-4898.841	-4891.956	-4895.399
		-8191.235	-2821.632	-4898.841	-4891.956	-4895.399
16	3.148	-6889.828	-3613.964	-4880.821	-4877.416	-4879.118
		-6889.828	-3613.964	-4880.821	-4877.416	-4879.118
16	4.198	-5724.749	-4323.582	-4864.682	-4864.756	-4864.719
		-5724.749	-4323.582	-4864.682	-4864.756	-4864.719

Mstb. 1:442.2
Extreme stresses envel. -A, GWSP IC (Vacio 2), View "LIST"
- Struktur: Staebe
- Extr.str.ll (z-y-)min., Scaling 5.00E-04
  min: -1.16E+04 max: 1.45E+02 [kN/m2]
- Extr.str.ul (z+y-)min., Scaling 5.00E-04
  min: -7.86E+03 max: -9.62E+02 [kN/m2]
- Text extreme stress envelope [kN/m2]



ENVOLVENTE: ID 'ELS 1 Combinación Frecuente'

Grupo	Espe.	Hipótesis	Factor	Etapa	Título
A	PERM.	1	1.000		Peso Propio
	Y	3	1.000		Carga Muerta Máxima
	Y	20	0.780000		Pretensado
B	MAS	19	0.200000		gradiente
C	MAS	21	0.500000		Carro 2 centrado
D	MAS	4	0.500000		Sobrecarga centrada vano 1
E	MAS	5	0.500000		Sobrecarga centrada vano 2
F	MAS	6	0.500000		Sobrecarga centrada vano 3
ALTERNATIVA PARA ENVOLVENTE:					
G	PERM.	1	1.000		Peso Propio
	Y	3	1.000		Carga Muerta Máxima
	Y	20	0.780000		Pretensado
H	MAS	19	0.200000		gradiente
I	MAS	21	0.500000		Carro 2 centrado
J	MAS	7	0.500000		Sobrecarga excéntrica vano 1 (
K	MAS	8	0.500000		Sobrecarga excentrica vano 2 (
L	MAS	9	0.500000		Sobrecarga excentrica vano 3 (
ALTERNATIVA PARA ENVOLVENTE:					
M	PERM.	1	1.000		Peso Propio
	Y	3	1.000		Carga Muerta Máxima
	Y	20	0.780000		Pretensado
N	MAS	19	0.200000		gradiente
O	MAS	21	0.500000		Carro 2 centrado
P	MAS	10	0.500000		Sobrecarga excéntrica vano 1 (
Q	MAS	11	0.500000		Sobrecarga excentrica vano 2 (
R	MAS	12	0.500000		Sobrecarga excentrica vano 3 (

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(zi=z-inferior, zs=z-superior, yi=y-izq., yd= y-dch., ce=centro grav.)

Barra	Distancia [m]	Sigma-zi [kN/m2]	Sigma-zs [kN/m2]	Sigma-yi [kN/m2]	Sigma-yd [kN/m2]	Sigma-ce [kN/m2]
1	0	-4029.929	-3089.454	-3452.698	-3452.642	-3452.670
		-3996.570	-3110.444	-3452.698	-3452.642	-3452.670
1	1.050	-4429.063	-2854.000	-3463.550	-3461.044	-3462.297
		-4168.199	-3018.138	-3463.550	-3461.044	-3462.297
1	2.100	-5020.094	-2500.058	-3475.785	-3470.830	-3473.308
		-4523.478	-2812.532	-3475.785	-3470.830	-3473.308
1	3.150	-5644.077	-2145.711	-3500.499	-3493.094	-3496.797
		-4928.860	-2595.731	-3500.499	-3493.094	-3496.797
1	4.200	-6146.223	-1866.217	-3524.103	-3514.249	-3519.176
		-5229.557	-2442.991	-3524.103	-3514.249	-3519.176
2	0	-6134.962	-1873.240	-3524.065	-3514.210	-3519.138
		-5212.783	-2453.482	-3524.065	-3514.210	-3519.138
2	1.050	-6508.313	-1673.047	-3546.418	-3534.483	-3540.450
		-5401.875	-2369.227	-3546.418	-3534.483	-3540.450
2	2.100	-6747.527	-1553.169	-3566.263	-3552.247	-3559.255
		-5473.972	-2354.500	-3566.263	-3552.247	-3559.255
2	3.150	-6950.090	-1449.914	-3582.157	-3566.060	-3574.109
		-5526.561	-2345.610	-3582.157	-3566.060	-3574.109
2	4.199	-7164.724	-1339.309	-3598.202	-3580.023	-3589.112
		-5608.366	-2318.582	-3598.202	-3580.023	-3589.112
3	0	-7155.616	-1344.981	-3598.165	-3579.987	-3589.076
		-5594.356	-2327.338	-3598.165	-3579.987	-3589.076
3	1.050	-7350.440	-1247.426	-3614.357	-3594.522	-3604.439
		-5673.466	-2302.591	-3614.357	-3594.522	-3604.439
3	2.100	-7499.310	-1183.722	-3633.578	-3612.087	-3622.832
		-5723.773	-2300.903	-3633.578	-3612.087	-3622.832
3	3.150	-7412.651	-1271.393	-3654.750	-3631.603	-3643.177
		-5555.704	-2439.799	-3654.750	-3631.603	-3643.177

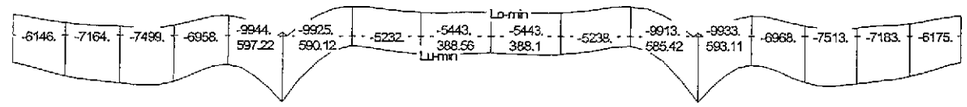
TENSIONES para ENVOLVENTE de < My > ""
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)
(zi=z-inferior, zs=z-superior, yi=y-izq., yd= y-dch., ce=centro grav.)

Barra	Distancia [m]	Sigma-zi [kN/m2]	Sigma-zs [kN/m2]	Sigma-yi [kN/m2]	Sigma-yd [kN/m2]	Sigma-ce [kN/m2]
3	4.200	-6964.625	-1541.906	-3648.588	-3623.784	-3636.186
		-5043.419	-2750.744	-3648.588	-3623.784	-3636.186
4	0	-6958.880	-1545.478	-3648.562	-3623.758	-3636.160
		-5035.025	-2755.983	-3648.562	-3623.758	-3636.160
4	1.050	-6209.496	-1973.023	-3622.203	-3596.135	-3609.169
		-4238.538	-3213.165	-3622.203	-3596.135	-3609.169
4	2.100	-5269.654	-2512.477	-3590.978	-3563.646	-3577.312
		-3268.742	-3771.467	-3590.978	-3563.646	-3577.312
4	3.150	-4526.924	-2950.235	-3573.458	-3544.862	-3559.160
		-2513.204	-4217.283	-3573.458	-3544.862	-3559.160
4	4.200	-4381.269	-3018.603	-3559.801	-3529.941	-3544.871
		-2371.889	-4282.920	-3559.801	-3529.941	-3544.871
5	0	-4374.131	-3023.063	-3559.782	-3529.922	-3544.852
		-2364.111	-4287.783	-3559.782	-3529.922	-3544.852
5	1.050	-4836.258	-2705.298	-3543.648	-3512.922	-3528.285
		-2847.715	-3956.505	-3543.648	-3512.922	-3528.285
5	2.099	-5932.253	-1984.793	-3525.117	-3493.524	-3509.321
		-3909.913	-3257.265	-3525.117	-3493.524	-3509.321
5	3.149	-7703.051	-842.870	-3508.535	-3476.075	-3492.305
		-5420.254	-2279.225	-3508.535	-3476.075	-3492.305
5	4.198	-9944.573	597.224	-3490.732	-3457.406	-3474.069
		-7370.764	-1022.237	-3490.732	-3457.406	-3474.069
6	0	-9925.305	590.122	-3487.649	-3454.323	-3470.986
		-7351.344	-1029.435	-3487.649	-3454.323	-3470.986
6	1.350	-6475.862	-1537.723	-3462.724	-3426.989	-3444.856
		-4408.418	-2838.576	-3462.724	-3426.989	-3444.856
6	2.700	-3799.855	-3174.535	-3435.108	-3396.965	-3416.037
		-2210.578	-4174.521	-3435.108	-3396.965	-3416.037
6	4.050	-2033.614	-4219.117	-3395.341	-3354.789	-3375.065
		-743.720	-5030.728	-3395.341	-3354.789	-3375.065
6	5.400	-1481.534	-4497.727	-3354.340	-3311.378	-3332.859
		-328.126	-5223.460	-3354.340	-3311.378	-3332.859
7	0	-1456.246	-4513.580	-3354.304	-3311.342	-3332.823
		-313.413	-5232.659	-3354.304	-3311.342	-3332.823
7	1.350	-1684.325	-4320.680	-3324.696	-3280.318	-3302.507
		-339.161	-5167.068	-3324.696	-3280.318	-3302.507
7	2.700	-2159.073	-3995.302	-3309.038	-3263.244	-3286.141
		-516.262	-5028.971	-3309.038	-3263.244	-3286.141
7	4.050	-2511.484	-3750.887	-3295.828	-3248.619	-3272.224
		-573.498	-4970.283	-3295.828	-3248.619	-3272.224
7	5.400	-2719.300	-3595.197	-3281.237	-3232.612	-3256.925
		-514.494	-4982.484	-3281.237	-3232.612	-3256.925
8	0	-2704.882	-3604.247	-3281.221	-3232.595	-3256.908
		-495.879	-4994.170	-3281.221	-3232.595	-3256.908
8	1.350	-2772.273	-3534.814	-3264.874	-3215.760	-3240.317
		-324.816	-5074.773	-3264.874	-3215.760	-3240.317
8	2.700	-2703.882	-3548.595	-3247.164	-3197.561	-3222.362
		-46.314	-5220.757	-3247.164	-3197.561	-3222.362
8	4.050	-2581.002	-3599.955	-3231.477	-3181.385	-3206.431
		247.910	-5379.929	-3231.477	-3181.385	-3206.431
8	5.399	-2500.043	-3625.805	-3216.321	-3165.740	-3191.030
		388.566	-5443.341	-3216.321	-3165.740	-3191.030
9	0	-2500.404	-3625.578	-3216.321	-3165.740	-3191.031
		388.107	-5443.052	-3216.321	-3165.740	-3191.031
9	1.350	-2581.732	-3599.257	-3231.322	-3181.246	-3206.284
		244.385	-5377.472	-3231.322	-3181.246	-3206.284
9	2.700	-2702.877	-3548.442	-3246.667	-3197.094	-3221.881
		-50.856	-5217.114	-3246.667	-3197.094	-3221.881
9	4.051	-2761.852	-3540.136	-3264.093	-3215.025	-3239.559
		-322.687	-5074.878	-3264.093	-3215.025	-3239.559
9	5.401	-2685.607	-3615.004	-3280.349	-3231.784	-3256.067
		-487.652	-4997.975	-3280.349	-3231.784	-3256.067
10	0	-2700.871	-3605.428	-3280.366	-3231.802	-3256.084
		-507.342	-4985.613	-3280.366	-3231.802	-3256.084
10	1.350	-2484.191	-3766.536	-3294.850	-3247.726	-3271.288
		-560.155	-4977.155	-3294.850	-3247.726	-3271.288
10	2.700	-2123.003	-4016.311	-3307.949	-3262.265	-3285.107

TENSIONES para ENVOLVENTE de < My > ""
(1. línea: MIN,, 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)
(zi=z-inferior, zs=z-superior, yi=y-izq., yd= y-dch., ce=centro grav.)

Barra	Distancia [m]	Sigma-zi [kN/m2]	Sigma-zs [kN/m2]	Sigma-yi [kN/m2]	Sigma-yd [kN/m2]	Sigma-ce [kN/m2]
		-496.800	-5039.531	-3307.949	-3262.265	-3285.107
10	4.049	-1648.272	-4343.420	-3324.663	-3280.419	-3302.541
		-319.574	-5179.447	-3324.663	-3280.419	-3302.541
10	5.399	-1448.487	-4518.164	-3354.042	-3311.238	-3332.640
		-303.191	-5238.793	-3354.042	-3311.238	-3332.640
11	0	-1473.818	-4502.283	-3354.077	-3311.273	-3332.675
		-318.175	-5229.423	-3354.077	-3311.273	-3332.675
11	1.331	-2073.361	-4194.393	-3395.455	-3355.026	-3375.240
		-772.136	-5013.134	-3395.455	-3355.026	-3375.240
11	2.662	-3853.469	-3139.329	-3434.160	-3396.106	-3415.133
		-2251.681	-4147.187	-3434.160	-3396.106	-3415.133
11	3.993	-6507.651	-1515.613	-3461.402	-3425.722	-3443.562
		-4433.044	-2820.972	-3461.402	-3425.722	-3443.562
11	5.324	-9913.665	585.422	-3486.028	-3452.723	-3469.376
		-7338.684	-1034.776	-3486.028	-3452.723	-3469.376
12	0	-9933.872	593.112	-3489.112	-3455.807	-3472.460
		-7359.088	-1026.962	-3489.112	-3455.807	-3472.460
12	1.050	-7695.202	-845.204	-3506.914	-3474.497	-3490.706
		-5411.297	-2282.254	-3506.914	-3474.497	-3490.706
12	2.100	-5927.333	-1985.272	-3523.480	-3491.950	-3507.715
		-3901.931	-3259.671	-3523.480	-3491.950	-3507.715
12	3.149	-4834.965	-2703.467	-3541.982	-3511.341	-3526.662
		-2843.947	-3956.231	-3541.982	-3511.341	-3526.662
12	4.199	-4375.574	-3019.479	-3558.086	-3528.332	-3543.209
		-2363.694	-4285.369	-3558.086	-3528.332	-3543.209
13	0	-4382.188	-3015.346	-3558.104	-3528.350	-3543.227
		-2370.891	-4280.870	-3558.104	-3528.350	-3543.227
13	1.050	-4530.537	-2945.240	-3571.737	-3543.242	-3557.489
		-2515.521	-4213.104	-3571.737	-3543.242	-3557.489
13	2.100	-5275.655	-2505.985	-3589.262	-3562.028	-3575.645
		-3274.071	-3765.398	-3589.262	-3562.028	-3575.645
13	3.150	-6217.222	-1965.464	-3620.501	-3594.526	-3607.514
		-4246.217	-3205.636	-3620.501	-3594.526	-3607.514
13	4.200	-6968.308	-1536.950	-3646.925	-3622.209	-3634.567
		-5045.032	-2747.091	-3646.925	-3622.209	-3634.567
14	0	-6974.361	-1533.185	-3646.952	-3622.236	-3634.594
		-5053.788	-2741.625	-3646.952	-3622.236	-3634.594
14	1.050	-7424.223	-1261.609	-3653.165	-3630.115	-3641.640
		-5568.523	-2429.230	-3653.165	-3630.115	-3641.640
14	2.100	-7513.106	-1172.666	-3632.067	-3610.683	-3621.375
		-5739.428	-2288.679	-3632.067	-3610.683	-3621.375
14	3.150	-7366.863	-1234.830	-3612.909	-3593.192	-3603.051
		-5692.352	-2288.446	-3612.909	-3593.192	-3603.051
14	4.200	-7174.863	-1330.698	-3596.769	-3578.717	-3587.743
		-5616.667	-2311.127	-3596.769	-3578.717	-3587.743
15	0	-7183.208	-1325.502	-3596.802	-3578.750	-3587.776
		-5629.457	-2303.134	-3596.802	-3578.750	-3587.776
15	1.050	-6971.167	-1434.446	-3580.751	-3564.758	-3572.755
		-5550.912	-2328.082	-3580.751	-3564.758	-3572.755
15	2.100	-6771.207	-1535.993	-3564.825	-3550.891	-3557.858
		-5501.603	-2334.837	-3564.825	-3550.891	-3557.858
15	3.151	-6534.367	-1654.218	-3544.892	-3533.017	-3538.955
		-5432.570	-2347.477	-3544.892	-3533.017	-3538.955
15	4.201	-6163.335	-1852.751	-3522.427	-3512.611	-3517.519
		-5246.501	-2429.630	-3522.427	-3512.611	-3517.519
16	0	-6175.795	-1844.981	-3522.470	-3512.654	-3517.562
		-5264.991	-2418.065	-3522.470	-3512.654	-3517.562
16	1.049	-5676.402	-2122.438	-3498.670	-3491.321	-3494.996
		-4967.574	-2568.438	-3498.670	-3491.321	-3494.996
16	2.099	-5055.497	-2474.482	-3473.724	-3468.842	-3471.283
		-4565.775	-2782.619	-3473.724	-3468.842	-3471.283
16	3.148	-4467.596	-2825.586	-3460.946	-3458.531	-3459.738
		-4214.114	-2985.080	-3460.946	-3458.531	-3459.738
16	4.198	-4059.172	-3065.935	-3449.502	-3449.554	-3449.528
		-4058.935	-3066.085	-3449.502	-3449.554	-3449.528

Mstb. 1:442.2
Extreme stresses envel. -A, GWSP ID (ELS 1 Combinación Frecuente), View "LIST"
- Struktur: Staebe
- Extr.str.il (z-y-)min., Scaling 5.00E-04
  min: -9.94E+03 max: -1.45E+03 [kN/m2]
- Extr.str.ul (z+y-)min., Scaling 5.00E-04
  min: -4.52E+03 max: 5.97E+02 [kN/m2]
- Text extreme stress envelope [kN/m2]



ENVOLVENTE: IE 'ELS 2 Combinación Frecuente'

Grupo	Espe.	Hipótesis	Factor	Etapa	Título
A	PERM.	1	1.000		Peso Propio
	Y	3	1.000		Carga Muerta Máxima
	Y	20	0.780000		Pretensado
B	MAS	19	0.200000		gradiente
C	MAS	22	0.500000		Carro 1 centrado
D	MAS	4	0.500000		Sobrecarga centrada vano 1
E	MAS	5	0.500000		Sobrecarga centrada vano 2
F	MAS	6	0.500000		Sobrecarga centrada vano 3
ALTERNATIVA PARA ENVOLVENTE:					
G	PERM.	1	1.000		Peso Propio
	Y	3	1.000		Carga Muerta Máxima
	Y	20	0.780000		Pretensado
H	MAS	19	0.200000		gradiente
I	MAS	22	0.500000		Carro 1 centrado
J	MAS	7	0.500000		Sobrecarga excéntrica vano 1 (
K	MAS	8	0.500000		Sobrecarga excentrica vano 2 (
L	MAS	9	0.500000		Sobrecarga excentrica vano 3 (
ALTERNATIVA PARA ENVOLVENTE:					
M	PERM.	1	1.000		Peso Propio
	Y	3	1.000		Carga Muerta Máxima
	Y	20	0.780000		Pretensado
N	MAS	19	0.200000		gradiente
O	MAS	22	0.500000		Carro 1 centrado
P	MAS	10	0.500000		Sobrecarga excéntrica vano 1 (
Q	MAS	11	0.500000		Sobrecarga excentrica vano 2 (
R	MAS	12	0.500000		Sobrecarga excentrica vano 3 (

TENSIONES para ENVOLVENTE de < My > ""
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)
(zi=z-inferior, zs=z-superior, yi=y-izq., yd= y-dch., ce=centro grav.)

Barra	Distancia [m]	Sigma-zi [kN/m2]	Sigma-zs [kN/m2]	Sigma-yi [kN/m2]	Sigma-yd [kN/m2]	Sigma-ce [kN/m2]
1	0	-4028.949	-3090.071	-3452.698	-3452.642	-3452.670
		-3993.093	-3112.632	-3452.698	-3452.642	-3452.670
1	1.050	-4398.741	-2873.079	-3463.550	-3461.044	-3462.297
		-4073.203	-3077.910	-3463.550	-3461.044	-3462.297
1	2.100	-4960.430	-2537.599	-3475.785	-3470.830	-3473.308

TENSIONES para ENVOLVENTE de < My > ""
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)
(zi=z-inferior, zs=z-superior, yi=y-izq., yd= y-dch., ce=centro grav.)

Barra	Distancia [m]	Sigma-zi [kN/m2]	Sigma-zs [kN/m2]	Sigma-yi [kN/m2]	Sigma-yd [kN/m2]	Sigma-ce [kN/m2]
		-4336.962	-2929.890	-3475.785	-3470.830	-3473.308
1	3.150	-5555.071	-2201.714	-3500.499	-3493.094	-3496.797
		-4650.825	-2770.673	-3500.499	-3493.094	-3496.797
1	4.200	-6027.876	-1940.682	-3524.103	-3514.249	-3519.176
		-4860.002	-2675.518	-3524.103	-3514.249	-3519.176
2	0	-6016.136	-1948.006	-3524.065	-3514.210	-3519.138
		-4842.379	-2686.544	-3524.065	-3514.210	-3519.138
2	1.050	-6360.152	-1766.272	-3546.418	-3534.483	-3540.450
		-4939.972	-2659.860	-3546.418	-3534.483	-3540.450
2	2.100	-6570.031	-1664.851	-3566.263	-3552.247	-3559.255
		-4920.570	-2702.705	-3566.263	-3552.247	-3559.255
2	3.150	-6743.257	-1580.055	-3582.157	-3566.060	-3574.109
		-4881.660	-2751.387	-3582.157	-3566.060	-3574.109
2	4.199	-6928.557	-1487.907	-3598.202	-3580.023	-3589.112
		-4871.966	-2781.931	-3598.202	-3580.023	-3589.112
3	0	-6919.105	-1493.796	-3598.165	-3579.987	-3589.076
		-4857.623	-2790.897	-3598.165	-3579.987	-3589.076
3	1.050	-7084.586	-1414.703	-3614.357	-3594.522	-3604.439
		-4876.465	-2804.071	-3614.357	-3594.522	-3604.439
3	2.100	-7204.113	-1369.462	-3633.578	-3612.087	-3622.832
		-4908.181	-2814.080	-3633.578	-3612.087	-3622.832
3	3.150	-7088.112	-1475.596	-3654.750	-3631.603	-3643.177
		-4794.424	-2918.802	-3654.750	-3631.603	-3643.177
3	4.200	-6610.742	-1764.572	-3648.588	-3623.784	-3636.186
		-4378.143	-3169.341	-3648.588	-3623.784	-3636.186
4	0	-6604.995	-1768.146	-3648.562	-3623.758	-3636.160
		-4370.191	-3174.302	-3648.562	-3623.758	-3636.160
4	1.050	-5826.271	-2214.151	-3622.203	-3596.135	-3609.169
		-3700.918	-3551.440	-3622.203	-3596.135	-3609.169
4	2.100	-4857.090	-2772.066	-3590.978	-3563.646	-3577.312
		-2858.334	-4029.699	-3590.978	-3563.646	-3577.312
4	3.150	-4085.021	-3228.283	-3573.458	-3544.862	-3559.160
		-2230.010	-4395.471	-3573.458	-3544.862	-3559.160
4	4.200	-3910.027	-3315.112	-3559.801	-3529.941	-3544.871
		-2215.908	-4381.065	-3559.801	-3529.941	-3544.871
5	0	-3903.314	-3319.305	-3559.782	-3529.922	-3544.852
		-2209.001	-4385.380	-3559.782	-3529.922	-3544.852
5	1.050	-4336.112	-3019.994	-3543.648	-3512.922	-3528.285
		-2819.775	-3974.085	-3543.648	-3512.922	-3528.285
5	2.099	-5502.008	-2255.507	-3525.117	-3493.524	-3509.321
		-3909.913	-3257.265	-3525.117	-3493.524	-3509.321
5	3.149	-7370.647	-1052.022	-3508.535	-3476.075	-3492.305
		-5420.254	-2279.225	-3508.535	-3476.075	-3492.305
5	4.198	-9710.009	449.635	-3490.732	-3457.406	-3474.069
		-7370.764	-1022.237	-3490.732	-3457.406	-3474.069
6	0	-9692.653	443.736	-3487.649	-3454.323	-3470.986
		-7351.344	-1029.435	-3487.649	-3454.323	-3470.986
6	1.350	-6364.067	-1608.066	-3462.724	-3426.989	-3444.856
		-4408.418	-2838.576	-3462.724	-3426.989	-3444.856
6	2.700	-3808.916	-3168.834	-3435.108	-3396.965	-3416.037
		-2210.578	-4174.521	-3435.108	-3396.965	-3416.037
6	4.050	-2163.531	-4137.372	-3395.341	-3354.789	-3375.065
		-743.720	-5030.728	-3395.341	-3354.789	-3375.065
6	5.400	-1732.306	-4339.939	-3354.340	-3311.378	-3332.859
		-328.126	-5223.460	-3354.340	-3311.378	-3332.859
7	0	-1709.308	-4354.352	-3354.304	-3311.342	-3332.823
		-313.413	-5232.659	-3354.304	-3311.342	-3332.823
7	1.350	-1942.442	-4158.271	-3324.696	-3280.318	-3302.507
		-454.960	-5094.207	-3324.696	-3280.318	-3302.507
7	2.700	-2397.839	-3845.068	-3309.038	-3263.244	-3286.141
		-772.263	-4867.893	-3309.038	-3263.244	-3286.141
7	4.050	-2730.902	-3612.828	-3295.828	-3248.619	-3272.224
		-969.703	-4720.988	-3295.828	-3248.619	-3272.224
7	5.400	-2919.376	-3469.313	-3281.237	-3232.612	-3256.925
		-1050.902	-4644.972	-3281.237	-3232.612	-3256.925
8	0	-2904.992	-3478.336	-3281.221	-3232.595	-3256.908
		-1033.562	-4655.855	-3281.221	-3232.595	-3256.908

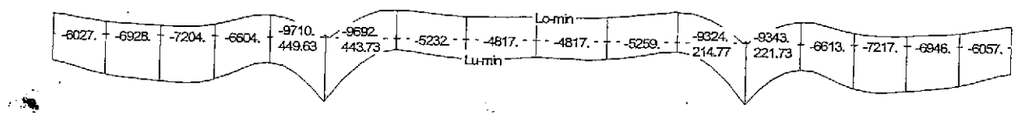
TENSIONES para ENVOLVENTE de < My > ""
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)
(zi=z-inferior, zs=z-superior, yi=y-izq., yd= y-dch., ce=centro grav.)

Barra	Distancia [m]	Sigma-zi [kN/m2]	Sigma-zs [kN/m2]	Sigma-yi [kN/m2]	Sigma-yd [kN/m2]	Sigma-ce [kN/m2]
8	1.350	-2953.035	-3421.077	-3264.874	-3215.760	-3240.317
		-1002.686	-4648.252	-3264.874	-3215.760	-3240.317
8	2.700	-2865.297	-3447.031	-3247.164	-3197.561	-3222.362
		-864.370	-4706.030	-3247.164	-3197.561	-3222.362
8	4.050	-2723.070	-3510.565	-3231.477	-3181.385	-3206.431
		-699.906	-4783.556	-3231.477	-3181.385	-3206.431
8	5.399	-2622.763	-3548.588	-3216.321	-3165.740	-3191.030
		-605.705	-4817.738	-3216.321	-3165.740	-3191.030
9	0	-2622.883	-3548.514	-3216.321	-3165.740	-3191.031
		-606.144	-4817.462	-3216.321	-3165.740	-3191.031
9	1.350	-2684.859	-3534.369	-3231.322	-3181.246	-3206.284
		-702.578	-4781.635	-3231.322	-3181.246	-3206.284
9	2.700	-2786.652	-3495.730	-3246.667	-3197.094	-3221.881
		-867.183	-4703.475	-3246.667	-3197.094	-3221.881
9	4.051	-2826.276	-3499.600	-3264.093	-3215.025	-3239.559
		-997.973	-4649.982	-3264.093	-3215.025	-3239.559
9	5.401	-2730.679	-3586.645	-3280.349	-3231.784	-3256.067
		-1021.897	-4661.823	-3280.349	-3231.784	-3256.067
10	0	-2745.571	-3577.302	-3280.366	-3231.802	-3256.084
		-1040.261	-4650.297	-3280.366	-3231.802	-3256.084
10	1.350	-2509.544	-3750.584	-3294.850	-3247.726	-3271.288
		-952.068	-4730.560	-3294.850	-3247.726	-3271.288
10	2.700	-2129.010	-4012.532	-3307.949	-3262.265	-3285.107
		-747.708	-4881.658	-3307.949	-3262.265	-3285.107
10	4.049	-1648.272	-4343.420	-3324.663	-3280.419	-3302.541
		-416.136	-5118.689	-3324.663	-3280.419	-3302.541
10	5.399	-1417.385	-4537.734	-3354.042	-3311.238	-3332.640
		-270.504	-5259.361	-3354.042	-3311.238	-3332.640
11	0	-1440.912	-4522.988	-3354.077	-3311.273	-3332.675
		-285.092	-5250.239	-3354.077	-3311.273	-3332.675
11	1.331	-1901.413	-4302.584	-3395.455	-3355.026	-3375.240
		-719.976	-5045.953	-3395.455	-3355.026	-3375.240
11	2.662	-3542.480	-3335.005	-3434.160	-3396.106	-3415.133
		-2180.444	-4192.010	-3434.160	-3396.106	-3415.133
11	3.993	-6057.621	-1798.776	-3461.402	-3425.722	-3443.562
		-4342.729	-2877.799	-3461.402	-3425.722	-3443.562
11	5.324	-9324.594	214.774	-3486.028	-3452.723	-3469.376
		-7229.292	-1103.607	-3486.028	-3452.723	-3469.376
12	0	-9343.645	221.737	-3489.112	-3455.807	-3472.460
		-7249.450	-1095.948	-3489.112	-3455.807	-3472.460
12	1.050	-7134.462	-1198.025	-3506.914	-3474.497	-3490.706
		-5307.142	-2347.790	-3506.914	-3474.497	-3490.706
12	2.100	-5396.082	-2319.539	-3523.480	-3491.950	-3507.715
		-3803.259	-3321.756	-3523.480	-3491.950	-3507.715
12	3.149	-4333.201	-3019.181	-3541.982	-3511.341	-3526.662
		-2750.757	-4014.867	-3541.982	-3511.341	-3526.662
12	4.199	-3903.298	-3316.638	-3558.086	-3528.332	-3543.209
		-2275.988	-4340.555	-3558.086	-3528.332	-3543.209
13	0	-3909.512	-3312.758	-3558.104	-3528.350	-3543.227
		-2283.085	-4336.119	-3558.104	-3528.350	-3543.227
13	1.050	-4087.355	-3224.094	-3571.737	-3543.242	-3557.489
		-2433.199	-4264.902	-3571.737	-3543.242	-3557.489
13	2.100	-4861.967	-2766.281	-3589.262	-3562.028	-3575.645
		-3197.232	-3813.745	-3589.262	-3562.028	-3575.645
13	3.150	-5833.028	-2207.203	-3620.501	-3594.526	-3607.514
		-4174.864	-3250.533	-3620.501	-3594.526	-3607.514
13	4.200	-6613.607	-1760.131	-3646.925	-3622.209	-3634.567
		-4979.162	-2788.537	-3646.925	-3622.209	-3634.567
14	0	-6619.652	-1756.371	-3646.952	-3622.236	-3634.594
		-4987.888	-2783.090	-3646.952	-3622.236	-3634.594
14	1.050	-7099.005	-1466.239	-3653.165	-3630.115	-3641.640
		-5508.107	-2467.245	-3653.165	-3630.115	-3641.640
14	2.100	-7217.381	-1358.739	-3632.067	-3610.683	-3621.375
		-5684.496	-2323.243	-3632.067	-3610.683	-3621.375
14	3.150	-7100.629	-1402.346	-3612.909	-3593.192	-3603.051
		-5642.904	-2319.559	-3612.909	-3593.192	-3603.051
14	4.200	-6938.121	-1479.658	-3596.769	-3578.717	-3587.743

TENSIONES para ENVOLVENTE de < My > ""
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)
(zi=z-inferior, zs=z-superior, yi=y-izq., yd= y-dch., ce=centro grav.)

Barra	Distancia [m]	Sigma-zi [kN/m2]	Sigma-zs [kN/m2]	Sigma-yi [kN/m2]	Sigma-yd [kN/m2]	Sigma-ce [kN/m2]
		-5572.703	-2338.790	-3596.769	-3578.717	-3587.743
15	0	-6946.769	-1474.271	-3596.802	-3578.750	-3587.776
		-5585.521	-2330.779	-3596.802	-3578.750	-3587.776
15	1.050	-6764.227	-1564.655	-3580.751	-3564.758	-3572.755
		-5512.462	-2352.276	-3580.751	-3564.758	-3572.755
15	2.100	-6593.766	-1647.640	-3564.825	-3550.891	-3557.858
		-5468.638	-2355.579	-3564.825	-3550.891	-3557.858
15	3.151	-6386.425	-1747.304	-3544.892	-3533.017	-3538.955
		-5405.090	-2364.768	-3544.892	-3533.017	-3538.955
15	4.201	-6044.892	-1927.276	-3522.427	-3512.611	-3517.519
		-5224.507	-2443.469	-3522.427	-3512.611	-3517.519
16	0	-6057.865	-1919.183	-3522.470	-3512.654	-3517.562
		-5243.063	-2431.863	-3522.470	-3512.654	-3517.562
16	1.049	-5587.952	-2178.091	-3498.670	-3491.321	-3494.996
		-4951.127	-2578.787	-3498.670	-3491.321	-3494.996
16	2.099	-4996.526	-2511.588	-3473.724	-3468.842	-3471.283
		-4554.810	-2789.519	-3473.724	-3468.842	-3471.283
16	3.148	-4438.104	-2844.143	-3460.946	-3458.531	-3459.738
		-4208.630	-2988.530	-3460.946	-3458.531	-3459.738
16	4.198	-4059.159	-3065.944	-3449.502	-3449.554	-3449.528
		-4058.932	-3066.086	-3449.502	-3449.554	-3449.528

Mstb. 1:442.2
Extreme stresses envel. -A, GWSP IE (ELS 2 Combinación Frecuente), View "LIST"
- Struktur: Staebe
- Extr.str.ll (z-y-)min., Scaling 5.00E-04
  min: -9.71E+03 max: -1.42E+03 [kN/m2]
- Extr.str.ul (z+y-)min., Scaling 5.00E-04
  min: -4.54E+03 max: 4.50E+02 [kN/m2]
- Text extreme stress envelope [kN/m2]



ENVOLVENTE: IF 'ELS 3 Combinación Frecuente'

Grupo	Espe.	Hipótesis	Factor	Etapa	Título
A	PERM.	1	1.000		Peso Propio
	Y	3	1.000		Carga Muerta Máxima
	Y	20	0.780000		Pretensado
B	MAS	19	0.200000		gradiente
C	MAS	31	0.500000		Carro 2 excéntrico
D	MAS	4	0.500000		Sobrecarga centrada vano 1
E	MAS	5	0.500000		Sobrecarga centrada vano 2
F	MAS	6	0.500000		Sobrecarga centrada vano 3

ALTERNATIVA PARA ENVOLVENTE:

G	PERM.	1	1.000		Peso Propio
	Y	3	1.000		Carga Muerta Máxima
	Y	20	0.780000		Pretensado
H	MAS	19	0.200000		gradiente
I	MAS	31	0.500000		Carro 2 excéntrico
J	MAS	7	0.500000		Sobrecarga excéntrica vano 1 (
K	MAS	8	0.500000		Sobrecarga excentrica vano 2 (

L	MAS	9	0.500000	Sobrecarga excentrica vano 3 (

ALTERNATIVA PARA ENVOLVENTE:

M	PERM.	1	1.000	Peso Propio
	Y	3	1.000	Carga Muerta Máxima
	Y	20	0.780000	Pretensado
N	MAS	19	0.200000	gradiente
O	MAS	31	0.500000	Carro 2 excéntrico
P	MAS	10	0.500000	Sobrecarga excéntrica vano 1 (
Q	MAS	11	0.500000	Sobrecarga excentrica vano 2 (
R	MAS	12	0.500000	Sobrecarga excentrica vano 3 (

TENSIONES para ENVOLVENTE de < My > ""
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(zi=z-inferior, zs=z-superior, yi=y-izq., yd= y-dch., ce=centro grav.)

Barra	Distancia [m]	Sigma-zi [kN/m2]	Sigma-zs [kN/m2]	Sigma-yi [kN/m2]	Sigma-yd [kN/m2]	Sigma-ce [kN/m2]
1	0	-4028.949	-3090.071	-3452.698	-3452.642	-3452.670
		-3992.546	-3112.976	-3452.698	-3452.642	-3452.670
1	1.050	-4416.165	-2862.116	-3463.550	-3461.044	-3462.297
		-4168.199	-3018.138	-3463.550	-3461.044	-3462.297
1	2.100	-4999.301	-2513.141	-3475.785	-3470.830	-3473.308
		-4523.478	-2812.532	-3475.785	-3470.830	-3473.308
1	3.150	-5615.389	-2163.762	-3500.499	-3493.094	-3496.797
		-4928.860	-2595.731	-3500.499	-3493.094	-3496.797
1	4.200	-6109.641	-1889.235	-3524.103	-3514.249	-3519.176
		-5229.557	-2442.991	-3524.103	-3514.249	-3519.176
2	0	-6105.520	-1891.765	-3524.065	-3514.210	-3519.138
		-5212.783	-2453.482	-3524.065	-3514.210	-3519.138
2	1.050	-6470.978	-1696.539	-3546.418	-3534.483	-3540.450
		-5401.875	-2369.227	-3546.418	-3534.483	-3540.450
2	2.100	-6702.299	-1581.627	-3566.263	-3552.247	-3559.255
		-5473.972	-2354.500	-3566.263	-3552.247	-3559.255
2	3.150	-6896.968	-1483.339	-3582.157	-3566.060	-3574.109
		-5526.561	-2345.610	-3582.157	-3566.060	-3574.109
2	4.199	-7103.710	-1377.700	-3598.202	-3580.023	-3589.112
		-5608.366	-2318.582	-3598.202	-3580.023	-3589.112
3	0	-7102.852	-1378.181	-3598.165	-3579.987	-3589.076
		-5594.356	-2327.338	-3598.165	-3579.987	-3589.076
3	1.050	-7289.781	-1285.593	-3614.357	-3594.522	-3604.439
		-5673.466	-2302.591	-3614.357	-3594.522	-3604.439
3	2.100	-7430.756	-1226.856	-3633.578	-3612.087	-3622.832
		-5723.773	-2300.903	-3633.578	-3612.087	-3622.832
3	3.150	-7336.202	-1319.495	-3654.750	-3631.603	-3643.177
		-5555.704	-2439.799	-3654.750	-3631.603	-3643.177
3	4.200	-6880.281	-1594.976	-3648.588	-3623.784	-3636.186
		-5043.419	-2750.744	-3648.588	-3623.784	-3636.186
4	0	-6882.178	-1593.740	-3648.562	-3623.758	-3636.160
		-5035.025	-2755.983	-3648.562	-3623.758	-3636.160
4	1.050	-6124.899	-2026.252	-3622.203	-3596.135	-3609.169
		-4238.538	-3213.165	-3622.203	-3596.135	-3609.169
4	2.100	-5177.164	-2570.673	-3590.978	-3563.646	-3577.312
		-3268.742	-3771.467	-3590.978	-3563.646	-3577.312
4	3.150	-4426.540	-3013.397	-3573.458	-3544.862	-3559.160
		-2513.204	-4217.283	-3573.458	-3544.862	-3559.160
4	4.200	-4272.991	-3086.733	-3559.801	-3529.941	-3544.871
		-2371.889	-4282.920	-3559.801	-3529.941	-3544.871
5	0	-4273.674	-3086.271	-3559.782	-3529.922	-3544.852
		-2364.111	-4287.783	-3559.782	-3529.922	-3544.852
5	1.050	-4727.910	-2773.472	-3543.648	-3512.922	-3528.285
		-2847.715	-3956.505	-3543.648	-3512.922	-3528.285
5	2.099	-5816.014	-2057.932	-3525.117	-3493.524	-3509.321
		-3909.913	-3257.265	-3525.117	-3493.524	-3509.321
5	3.149	-7578.921	-920.974	-3508.535	-3476.075	-3492.305
		-5420.254	-2279.225	-3508.535	-3476.075	-3492.305
5	4.198	-9812.551	514.154	-3490.732	-3457.406	-3474.069

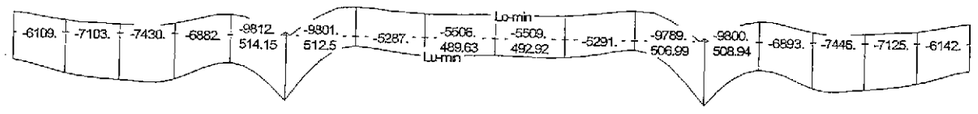
TENSIONES para ENVOLVENTE de < My > ""
(1. línea:.MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)
(zi=z-inferior, zs=z-superior, yi=y-izq., yd= y-dch., ce=centro grav.)

Barra	Distancia [m]	Sigma-zi [kN/m2]	Sigma-zs [kN/m2]	Sigma-yi [kN/m2]	Sigma-yd [kN/m2]	Sigma-ce [kN/m2]
		-7370.764	-1022.237	-3490.732	-3457.406	-3474.069
6	0	-9801.948	512.505	-3487.649	-3454.323	-3470.986
		-7351.344	-1029.435	-3487.649	-3454.323	-3470.986
6	1.350	-6352.603	-1615.279	-3462.724	-3426.989	-3444.856
		-4408.418	-2838.576	-3462.724	-3426.989	-3444.856
6	2.700	-3676.694	-3252.029	-3435.108	-3396.965	-3416.037
		-2210.578	-4174.521	-3435.108	-3396.965	-3416.037
6	4.050	-1910.551	-4296.549	-3395.341	-3354.789	-3375.065
		-743.720	-5030.728	-3395.341	-3354.789	-3375.065
6	5.400	-1455.317	-4514.223	-3354.340	-3311.378	-3332.859
		-231.377	-5284.336	-3354.340	-3311.378	-3332.859
7	0	-1431.842	-4528.935	-3354.304	-3311.342	-3332.823
		-225.689	-5287.856	-3354.304	-3311.342	-3332.823
7	1.350	-1684.325	-4320.680	-3324.696	-3280.318	-3302.507
		-227.130	-5237.559	-3324.696	-3280.318	-3302.507
7	2.700	-2159.073	-3995.302	-3309.038	-3263.244	-3286.141
		-404.328	-5099.401	-3309.038	-3263.244	-3286.141
7	4.050	-2511.484	-3750.887	-3295.828	-3248.619	-3272.224
		-461.662	-5040.651	-3295.828	-3248.619	-3272.224
7	5.400	-2719.308	-3595.197	-3281.237	-3232.612	-3256.925
		-402.756	-5052.790	-3281.237	-3232.612	-3256.925
8	0	-2704.882	-3604.247	-3281.221	-3232.595	-3256.908
		-394.420	-5058.008	-3281.221	-3232.595	-3256.908
8	1.350	-2772.273	-3534.814	-3264.874	-3215.760	-3240.317
		-223.455	-5138.550	-3264.874	-3215.760	-3240.317
8	2.700	-2703.882	-3548.595	-3247.164	-3197.561	-3222.362
		54.949	-5284.473	-3247.164	-3197.561	-3222.362
8	4.050	-2581.002	-3599.955	-3231.477	-3181.385	-3206.431
		349.075	-5443.583	-3231.477	-3181.385	-3206.431
8	5.399	-2500.043	-3625.805	-3216.321	-3165.740	-3191.030
		489.634	-5506.934	-3216.321	-3165.740	-3191.030
9	0	-2500.404	-3625.578	-3216.321	-3165.740	-3191.031
		492.924	-5509.004	-3216.321	-3165.740	-3191.031
9	1.350	-2581.732	-3599.257	-3231.322	-3181.246	-3206.284
		349.105	-5443.363	-3231.322	-3181.246	-3206.284
9	2.700	-2702.877	-3548.442	-3246.667	-3197.094	-3221.881
		53.765	-5282.943	-3246.667	-3197.094	-3221.881
9	4.051	-2761.852	-3540.136	-3264.093	-3215.025	-3239.559
		-218.163	-5140.645	-3264.093	-3215.025	-3239.559
9	5.401	-2685.607	-3615.004	-3280.349	-3231.784	-3256.067
		-383.226	-5063.681	-3280.349	-3231.784	-3256.067
10	0	-2700.871	-3605.428	-3280.366	-3231.802	-3256.084
		-392.510	-5057.867	-3280.366	-3231.802	-3256.084
10	1.350	-2484.191	-3766.536	-3294.850	-3247.726	-3271.288
		-445.421	-5049.347	-3294.850	-3247.726	-3271.288
10	2.700	-2123.003	-4016.311	-3307.949	-3262.265	-3285.107
		-382.163	-5111.662	-3307.949	-3262.265	-3285.107
10	4.049	-1648.272	-4343.420	-3324.663	-3280.419	-3302.541
		-205.035	-5251.516	-3324.663	-3280.419	-3302.541
10	5.399	-1417.385	-4537.734	-3354.042	-3311.238	-3332.640
		-219.852	-5291.231	-3354.042	-3311.238	-3332.640
11	0	-1440.912	-4522.988	-3354.077	-3311.273	-3332.675
		-226.047	-5287.390	-3354.077	-3311.273	-3332.675
11	1.331	-1948.424	-4273.004	-3395.455	-3355.026	-3375.240
		-772.136	-5013.134	-3395.455	-3355.026	-3375.240
11	2.662	-3728.628	-3217.880	-3434.160	-3396.106	-3415.133
		-2251.681	-4147.187	-3434.160	-3396.106	-3415.133
11	3.993	-6382.906	-1594.104	-3461.402	-3425.722	-3443.562
		-4433.044	-2820.972	-3461.402	-3425.722	-3443.562
11	5.324	-9789.017	506.993	-3486.028	-3452.723	-3469.376
		-7338.684	-1034.776	-3486.028	-3452.723	-3469.376
12	0	-9800.110	508.948	-3489.112	-3455.807	-3472.460
		-7359.088	-1026.962	-3489.112	-3455.807	-3472.460
12	1.050	-7569.669	-924.190	-3506.914	-3474.497	-3490.706
		-5411.297	-2282.254	-3506.914	-3474.497	-3490.706
12	2.100	-5810.030	-2059.080	-3523.480	-3491.950	-3507.715
		-3901.931	-3259.671	-3523.480	-3491.950	-3507.715

TENSIONES para ENVOLVENTE de < My > ""
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)
(zi=z-inferior, zs=z-superior, yi=y-izq., yd= y-dch., ce=centro grav.)

Barra	Distancia [m]	Sigma-zi [kN/m2]	Sigma-zs [kN/m2]	Sigma-yi [kN/m2]	Sigma-yd [kN/m2]	Sigma-ce [kN/m2]
12	3.149	-4725.890	-2772.097	-3541.982	-3511.341	-3526.662
		-2843.947	-3956.231	-3541.982	-3511.341	-3526.662
12	4.199	-4274.729	-3082.931	-3558.086	-3528.332	-3543.209
		-2363.694	-4285.369	-3558.086	-3528.332	-3543.209
13	0	-4274.021	-3083.406	-3558.104	-3528.350	-3543.227
		-2370.891	-4280.870	-3558.104	-3528.350	-3543.227
13	1.050	-4430.600	-3008.121	-3571.737	-3543.242	-3557.489
		-2515.521	-4213.104	-3571.737	-3543.242	-3557.489
13	2.100	-5183.950	-2563.687	-3589.262	-3562.028	-3575.645
		-3274.071	-3765.398	-3589.262	-3562.028	-3575.645
13	3.150	-6133.748	-2017.987	-3620.501	-3594.526	-3607.514
		-4246.217	-3205.636	-3620.501	-3594.526	-3607.514
13	4.200	-6893.064	-1584.294	-3646.925	-3622.209	-3634.567
		-5045.032	-2747.091	-3646.925	-3622.209	-3634.567
14	0	-6891.168	-1585.531	-3646.952	-3622.236	-3634.594
		-5053.788	-2741.625	-3646.952	-3622.236	-3634.594
14	1.050	-7349.260	-1308.776	-3653.165	-3630.115	-3641.640
		-5568.523	-2429.230	-3653.165	-3630.115	-3641.640
14	2.100	-7446.374	-1214.655	-3632.067	-3610.683	-3621.375
		-5739.428	-2288.679	-3632.067	-3610.683	-3621.375
14	3.150	-7308.361	-1271.640	-3612.909	-3593.192	-3603.051
		-5692.352	-2288.446	-3612.909	-3593.192	-3603.051
14	4.200	-7124.591	-1362.330	-3596.769	-3578.717	-3587.743
		-5616.667	-2311.127	-3596.769	-3578.717	-3587.743
15	0	-7125.305	-1361.935	-3596.802	-3578.750	-3587.776
		-5629.457	-2303.134	-3596.802	-3578.750	-3587.776
15	1.050	-6921.497	-1465.699	-3580.751	-3564.758	-3572.755
		-5550.912	-2328.082	-3580.751	-3564.758	-3572.755
15	2.100	-6729.768	-1562.066	-3564.825	-3550.891	-3557.858
		-5501.603	-2334.837	-3564.825	-3550.891	-3557.858
15	3.151	-6501.161	-1675.111	-3544.892	-3533.017	-3538.955
		-5432.570	-2347.477	-3544.892	-3533.017	-3538.955
15	4.201	-6138.362	-1868.464	-3522.427	-3512.611	-3517.519
		-5246.501	-2429.630	-3522.427	-3512.611	-3517.519
16	0	-6142.851	-1865.709	-3522.470	-3512.654	-3517.562
		-5264.991	-2418.065	-3522.470	-3512.654	-3517.562
16	1.049	-5651.686	-2137.989	-3498.670	-3491.321	-3494.996
		-4967.574	-2568.438	-3498.670	-3491.321	-3494.996
16	2.099	-5039.007	-2484.858	-3473.724	-3468.842	-3471.283
		-4565.775	-2782.619	-3473.724	-3468.842	-3471.283
16	3.148	-4459.333	-2830.786	-3460.946	-3458.531	-3459.738
		-4214.114	-2985.080	-3460.946	-3458.531	-3459.738
16	4.198	-4059.159	-3065.944	-3449.502	-3449.554	-3449.528
		-4058.912	-3066.099	-3449.502	-3449.554	-3449.528

Mstb. 1 :442.2
Extreme stresses envel. -A, GWSP IF (ELS 3 Combinación Frecuente), View "LIST"
- Struktur: Staebe
- Extr.str.II (z-y-)min., Scaling 5.00E-04
  min: -9.81E+03 max: -1.42E+03 [kN/m2]
- Extr.str.ul (z+y-)min., Scaling 5.00E-04
  min: -4.54E+03 max: 5.14E+02 [kN/m2]
- Text extreme stress envelope [kN/m2]



ENVOLVENTE: IG 'ELS 4 Combinación Frecuente'

Grupo	Espe.	Hipótesis	Factor	Etapa	Título
A	PERM.	1	1.000		Peso Propio
	Y	3	1.000		Carga Muerta Máxima
	Y	20	0.780000		Pretensado
B	MAS	19	0.200000		gradiente
C	MAS	32	0.500000		Carro 1 excéntrico
D	MAS	4	0.500000		Sobrecarga centrada vano 1
E	MAS	5	0.500000		Sobrecarga centrada vano 2
F	MAS	6	0.500000		Sobrecarga centrada vano 3
ALTERNATIVA PARA ENVOLVENTE:					
G	PERM.	1	1.000		Peso Propio
	Y	3	1.000		Carga Muerta Máxima
	Y	20	0.780000		Pretensado
H	MAS	19	0.200000		gradiente
I	MAS	32	0.500000		Carro 1 excéntrico
J	MAS	7	0.500000		Sobrecarga excéntrica vano 1 (
K	MAS	8	0.500000		Sobrecarga excentrica vano 2 (
L	MAS	9	0.500000		Sobrecarga excentrica vano 3 (
ALTERNATIVA PARA ENVOLVENTE:					
M	PERM.	1	1.000		Peso Propio
	Y	3	1.000		Carga Muerta Máxima
	Y	20	0.780000		Pretensado
N	MAS	19	0.200000		gradiente
O	MAS	32	0.500000		Carro 1 excéntrico
P	MAS	10	0.500000		Sobrecarga excéntrica vano 1 (
Q	MAS	11	0.500000		Sobrecarga excentrica vano 2 (
R	MAS	12	0.500000		Sobrecarga excentrica vano 3 (

TENSIONES para ENVOLVENTE de < My > ""
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(zi=z-inferior, zs=z-superior, yi=y-izq., yd= y-dch., ce=centro grav.)

Barra	Distancia [m]	Sigma-zi [kN/m2]	Sigma-zs [kN/m2]	Sigma-yi [kN/m2]	Sigma-yd [kN/m2]	Sigma-ce [kN/m2]
1	0	-4028.949	-3090.071	-3452.698	-3452.642	-3452.670
		-3984.351	-3118.132	-3452.698	-3452.642	-3452.670
1	1.050	-4398.741	-2873.079	-3463.550	-3461.044	-3462.297
		-4059.315	-3086.649	-3463.550	-3461.044	-3462.297
1	2.100	-4960.430	-2537.599	-3475.785	-3470.830	-3473.308
		-4317.928	-2941.856	-3475.785	-3470.830	-3473.308
1	3.150	-5555.071	-2201.714	-3500.499	-3493.094	-3496.797
		-4626.645	-2785.888	-3500.499	-3493.094	-3496.797
1	4.200	-6027.876	-1940.682	-3524.103	-3514.249	-3519.176
		-4830.675	-2693.970	-3524.103	-3514.249	-3519.176
2	0	-6016.136	-1948.006	-3524.065	-3514.210	-3519.138
		-4826.111	-2696.779	-3524.065	-3514.210	-3519.138
2	1.050	-6360.152	-1766.272	-3546.418	-3534.483	-3540.450
		-4918.559	-2673.333	-3546.418	-3534.483	-3540.450
2	2.100	-6570.031	-1664.851	-3566.263	-3552.247	-3559.255
		-4894.013	-2719.415	-3566.263	-3552.247	-3559.255
2	3.150	-6743.257	-1580.055	-3582.157	-3566.060	-3574.109
		-4849.958	-2771.334	-3582.157	-3566.060	-3574.109
2	4.199	-6928.557	-1487.907	-3598.202	-3580.023	-3589.112
		-4835.119	-2805.115	-3598.202	-3580.023	-3589.112
3	0	-6919.105	-1493.796	-3598.165	-3579.987	-3589.076
		-4835.800	-2804.627	-3598.165	-3579.987	-3589.076
3	1.050	-7084.586	-1414.703	-3614.357	-3594.522	-3604.439
		-4849.497	-2821.039	-3614.357	-3594.522	-3604.439
3	2.100	-7204.113	-1369.462	-3633.578	-3612.087	-3622.832
		-4876.067	-2834.287	-3633.578	-3612.087	-3622.832
3	3.150	-7088.112	-1475.596	-3654.750	-3631.603	-3643.177
		-4757.164	-2942.247	-3654.750	-3631.603	-3643.177

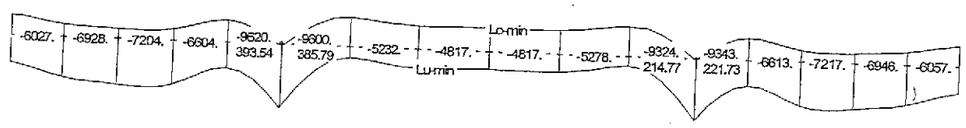
TENSIONES para ENVOLVENTE de < My > ""
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)
(zi=z-inferior, zs=z-superior, yi=y-izq., yd= y-dch., ce=centro grav.)

Barra	Distancia [m]	Sigma-zi [kN/m2]	Sigma-zs [kN/m2]	Sigma-yi [kN/m2]	Sigma-yd [kN/m2]	Sigma-ce [kN/m2]
3	4.200	-6610.742	-1764.572	-3648.588	-3623.784	-3636.186
		-4335.736	-3196.023	-3648.588	-3623.784	-3636.186
4	0	-6604.995	-1768.146	-3648.562	-3623.758	-3636.160
		-4324.979	-3202.750	-3648.562	-3623.758	-3636.160
4	1.050	-5826.271	-2214.151	-3622.203	-3596.135	-3609.169
		-3650.560	-3583.126	-3622.203	-3596.135	-3609.169
4	2.100	-4857.090	-2772.066	-3590.978	-3563.646	-3577.312
		-2802.831	-4064.622	-3590.978	-3563.646	-3577.312
4	3.150	-4085.021	-3228.283	-3573.458	-3544.862	-3559.160
		-2169.361	-4433.632	-3573.458	-3544.862	-3559.160
4	4.200	-3910.027	-3315.112	-3559.801	-3529.941	-3544.871
		-2150.114	-4422.463	-3559.801	-3529.941	-3544.871
5	0	-3903.314	-3319.305	-3559.782	-3529.922	-3544.852
		-2140.427	-4428.527	-3559.782	-3529.922	-3544.852
5	1.050	-4336.112	-3019.994	-3543.648	-3512.922	-3528.285
		-2746.058	-4020.469	-3543.648	-3512.922	-3528.285
5	2.099	-5423.147	-2305.127	-3525.117	-3493.524	-3509.321
		-3909.913	-3257.265	-3525.117	-3493.524	-3509.321
5	3.149	-7286.642	-1104.878	-3508.535	-3476.075	-3492.305
		-5420.254	-2279.225	-3508.535	-3476.075	-3492.305
5	4.198	-9620.861	393.542	-3490.732	-3457.406	-3474.069
		-7370.764	-1022.237	-3490.732	-3457.406	-3474.069
6	0	-9600.570	385.796	-3487.649	-3454.323	-3470.986
		-7351.344	-1029.435	-3487.649	-3454.323	-3470.986
6	1.350	-6275.715	-1663.657	-3462.724	-3426.989	-3444.856
		-4408.418	-2838.576	-3462.724	-3426.989	-3444.856
6	2.700	-3724.297	-3222.077	-3435.108	-3396.965	-3416.037
		-2210.578	-4174.521	-3435.108	-3396.965	-3416.037
6	4.050	-2082.645	-4188.266	-3395.341	-3354.789	-3375.065
		-743.720	-5030.728	-3395.341	-3354.789	-3375.065
6	5.400	-1655.153	-4388.484	-3354.340	-3311.378	-3332.859
		-328.126	-5223.460	-3354.340	-3311.378	-3332.859
7	0	-1628.696	-4405.073	-3354.304	-3311.342	-3332.823
		-313.413	-5232.659	-3354.304	-3311.342	-3332.823
7	1.350	-1865.562	-4206.644	-3324.696	-3280.318	-3302.507
		-454.960	-5094.207	-3324.696	-3280.318	-3302.507
7	2.700	-2324.692	-3891.092	-3309.038	-3263.244	-3286.141
		-772.263	-4867.893	-3309.038	-3263.244	-3286.141
7	4.050	-2661.487	-3656.504	-3295.828	-3248.619	-3272.224
		-969.703	-4720.988	-3295.828	-3248.619	-3272.224
7	5.400	-2853.694	-3510.640	-3281.237	-3232.612	-3256.925
		-1050.902	-4644.972	-3281.237	-3232.612	-3256.925
8	0	-2836.212	-3521.613	-3281.221	-3232.595	-3256.908
		-1033.562	-4655.855	-3281.221	-3232.595	-3256.908
8	1.350	-2887.987	-3462.005	-3264.874	-3215.760	-3240.317
		-1002.686	-4648.252	-3264.874	-3215.760	-3240.317
8	2.700	-2803.981	-3485.611	-3247.164	-3197.561	-3222.362
		-864.370	-4706.030	-3247.164	-3197.561	-3222.362
8	4.050	-2665.487	-3546.797	-3231.477	-3181.385	-3206.431
		-699.906	-4783.556	-3231.477	-3181.385	-3206.431
8	5.399	-2568.912	-3582.472	-3216.321	-3165.740	-3191.030
		-605.705	-4817.738	-3216.321	-3165.740	-3191.030
9	0	-2565.825	-3584.415	-3216.321	-3165.740	-3191.031
		-606.144	-4817.462	-3216.321	-3165.740	-3191.031
9	1.350	-2631.534	-3567.921	-3231.322	-3181.246	-3206.284
		-702.578	-4781.635	-3231.322	-3181.246	-3206.284
9	2.700	-2737.061	-3526.933	-3246.667	-3197.094	-3221.881
		-867.183	-4703.475	-3246.667	-3197.094	-3221.881
9	4.051	-2780.417	-3528.454	-3264.093	-3215.025	-3239.559
		-997.973	-4649.982	-3264.093	-3215.025	-3239.559
9	5.401	-2688.553	-3613.150	-3280.349	-3231.784	-3256.067
		-1021.897	-4661.823	-3280.349	-3231.784	-3256.067
10	0	-2700.871	-3605.428	-3280.366	-3231.802	-3256.084
		-1039.893	-4650.528	-3280.366	-3231.802	-3256.084
10	1.350	-2484.191	-3766.536	-3294.850	-3247.726	-3271.288
		-936.086	-4740.616	-3294.850	-3247.726	-3271.288
10	2.700	-2123.003	-4016.311	-3307.949	-3262.265	-3285.107

TENSIONES para ENVOLVENTE de < My > ""
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)
(zi=z-inferior, zs=z-superior, yi=y-izq., yd= y-dch., ce=centro grav.)

Barra	Distancia [m]	Sigma-zi [kN/m2]	Sigma-zs [kN/m2]	Sigma-yi [kN/m2]	Sigma-yd [kN/m2]	Sigma-ce [kN/m2]
		-716.111	-4901.539	-3307.949	-3262.265	-3285.107
10	4.049	-1648.272	-4343.420	-3324.663	-3280.419	-3302.541
		-382.266	-5140.001	-3324.663	-3280.419	-3302.541
10	5.399	-1417.385	-4537.734	-3354.042	-3311.238	-3332.640
		-240.365	-5278.324	-3354.042	-3311.238	-3332.640
11	0	-1440.912	-4522.988	-3354.077	-3311.273	-3332.675
		-251.968	-5271.081	-3354.077	-3311.273	-3332.675
11	1.331	-1901.413	-4302.584	-3395.455	-3355.026	-3375.240
		-690.532	-5064.480	-3395.455	-3355.026	-3375.240
11	2.662	-3542.480	-3335.005	-3434.160	-3396.106	-3415.133
		-2154.680	-4208.221	-3434.160	-3396.106	-3415.133
11	3.993	-6057.621	-1798.776	-3461.402	-3425.722	-3443.562
		-4320.646	-2891.694	-3461.402	-3425.722	-3443.562
11	5.324	-9324.594	214.774	-3486.028	-3452.723	-3469.376
		-7210.888	-1115.186	-3486.028	-3452.723	-3469.376
12	0	-9343.645	221.737	-3489.112	-3455.807	-3472.460
		-7228.465	-1109.152	-3489.112	-3455.807	-3472.460
12	1.050	-7134.462	-1198.025	-3506.914	-3474.497	-3490.706
		-5287.649	-2360.055	-3506.914	-3474.497	-3490.706
12	2.100	-5396.082	-2319.539	-3523.480	-3491.950	-3507.715
		-3785.258	-3333.083	-3523.480	-3491.950	-3507.715
12	3.149	-4333.201	-3019.181	-3541.982	-3511.341	-3526.662
		-2734.249	-4025.254	-3541.982	-3511.341	-3526.662
12	4.199	-3903.298	-3316.638	-3558.086	-3528.332	-3543.209
		-2260.972	-4350.003	-3558.086	-3528.332	-3543.209
13	0	-3909.512	-3312.758	-3558.104	-3528.350	-3543.227
		-2265.979	-4346.882	-3558.104	-3528.350	-3543.227
13	1.050	-4087.355	-3224.094	-3571.737	-3543.242	-3557.489
		-2417.586	-4274.726	-3571.737	-3543.242	-3557.489
13	2.100	-4861.967	-2766.281	-3589.262	-3562.028	-3575.645
		-3183.112	-3822.630	-3589.262	-3562.028	-3575.645
13	3.150	-5833.028	-2207.203	-3620.501	-3594.526	-3607.514
		-4162.235	-3258.478	-3620.501	-3594.526	-3607.514
13	4.200	-6613.607	-1760.131	-3646.925	-3622.209	-3634.567
		-4968.026	-2795.543	-3646.925	-3622.209	-3634.567
14	0	-6619.652	-1756.371	-3646.952	-3622.236	-3634.594
		-4974.471	-2791.532	-3646.952	-3622.236	-3634.594
14	1.050	-7099.005	-1466.239	-3653.165	-3630.115	-3641.640
		-5496.183	-2474.747	-3653.165	-3630.115	-3641.640
14	2.100	-7217.381	-1358.739	-3632.067	-3610.683	-3621.375
		-5674.064	-2329.807	-3632.067	-3610.683	-3621.375
14	3.150	-7100.629	-1402.346	-3612.909	-3593.192	-3603.051
		-5633.964	-2325.183	-3612.909	-3593.192	-3603.051
14	4.200	-6938.121	-1479.658	-3596.769	-3578.717	-3587.743
		-5565.256	-2343.476	-3596.769	-3578.717	-3587.743
15	0	-6946.769	-1474.271	-3596.802	-3578.750	-3587.776
		-5575.875	-2336.848	-3596.802	-3578.750	-3587.776
15	1.050	-6764.227	-1564.655	-3580.751	-3564.758	-3572.755
		-5504.308	-2357.406	-3580.751	-3564.758	-3572.755
15	2.100	-6593.766	-1647.640	-3564.825	-3550.891	-3557.858
		-5461.978	-2359.770	-3564.825	-3550.891	-3557.858
15	3.151	-6386.425	-1747.304	-3544.892	-3533.017	-3538.955
		-5399.923	-2368.019	-3544.892	-3533.017	-3538.955
15	4.201	-6044.892	-1927.276	-3522.427	-3512.611	-3517.519
		-5220.832	-2445.781	-3522.427	-3512.611	-3517.519
16	0	-6057.865	-1919.183	-3522.470	-3512.654	-3517.562
		-5237.086	-2435.624	-3522.470	-3512.654	-3517.562
16	1.049	-5587.952	-2178.091	-3498.670	-3491.321	-3494.996
		-4946.641	-2581.609	-3498.670	-3491.321	-3494.996
16	2.099	-4996.526	-2511.588	-3473.724	-3468.842	-3471.283
		-4551.816	-2791.402	-3473.724	-3468.842	-3471.283
16	3.148	-4438.104	-2844.143	-3460.946	-3458.531	-3459.738
		-4207.128	-2989.475	-3460.946	-3458.531	-3459.738
16	4.198	-4059.159	-3065.944	-3449.502	-3449.554	-3449.528
		-4058.922	-3066.093	-3449.502	-3449.554	-3449.528

Mstb. 1:442.2
Extreme stresses envel. -A, GWSP IG (ELS 4 Combinación Frecuente), View "LIST"
- Struktur: Staebe
- Extr.str.ll (z-y-)min., Scaling 5.00E-04
  min: -9.62E+03 max: -1.42E+03 [kN/m2]
- Extr.str.ul (z+y-)min., Scaling 5.00E-04
  min: -4.54E+03 max: 3.94E+02 [kN/m2]
- Text extreme stress envelope [kN/m2]



ENVOLVENTE: IH 'ELS 5 Combinación Frecuente'

Grupo	Espe.	Hipótesis	Factor	Etapa	Título
A	PERM.	1	1.000		Peso Propio
	Y	3	1.000		Carga Muerta Máxima
	Y	20	0.780000		Pretensado
B	MAS	19	0.200000		gradiente
C	MAS	34	0.500000		Carro 1 pila excéntrico
D	MAS	4	0.500000		Sobrecarga centrada vano 1
E	MAS	5	0.500000		Sobrecarga centrada vano 2
F	MAS	6	0.500000		Sobrecarga centrada vano 3
ALTERNATIVA PARA ENVOLVENTE:					
G	PERM.	1	1.000		Peso Propio
	Y	3	1.000		Carga Muerta Máxima
	Y	20	0.780000		Pretensado
H	MAS	19	0.200000		gradiente
I	MAS	34	0.500000		Carro 1 pila excéntrico
J	MAS	7	0.500000		Sobrecarga excéntrica vano 1 (
K	MAS	8	0.500000		Sobrecarga excentrica vano 2 (
L	MAS	9	0.500000		Sobrecarga excentrica vano 3 (
ALTERNATIVA PARA ENVOLVENTE:					
M	PERM.	1	1.000		Peso Propio
	Y	3	1.000		Carga Muerta Máxima
	Y	20	0.780000		Pretensado
N	MAS	19	0.200000		gradiente
O	MAS	34	0.500000		Carro 1 pila excéntrico
P	MAS	10	0.500000		Sobrecarga excéntrica vano 1 (
Q	MAS	11	0.500000		Sobrecarga excentrica vano 2 (
R	MAS	12	0.500000		Sobrecarga excentrica vano 3 (

TENSIONES para ENVOLVENTE de < My > ""
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)
(zi=z-inferior, zs=z-superior, yi=y-izq., yd= y-dch., ce=centro grav.)

Barra	Distancia [m]	Sigma-zi [kN/m2]	Sigma-zs [kN/m2]	Sigma-yi [kN/m2]	Sigma-yd [kN/m2]	Sigma-ce [kN/m2]
1	0	-4028.949	-3090.071	-3452.698	-3452.642	-3452.670
		-3988.693	-3115.400	-3452.698	-3452.642	-3452.670
1	1.050	-4398.741	-2873.079	-3463.550	-3461.044	-3462.297
		-4141.777	-3034.762	-3463.550	-3461.044	-3462.297
1	2.100	-4960.430	-2537.599	-3475.785	-3470.830	-3473.308

TENSIONES para ENVOLVENTE de < My > ""
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)
(zi=z-inferior, zs=z-superior, yi=y-izq., yd= y-dch., ce=centro grav.)

Barra	Distancia [m]	Sigma-zi [kN/m2]	Sigma-zs [kN/m2]	Sigma-yi [kN/m2]	Sigma-yd [kN/m2]	Sigma-ce [kN/m2]
		-4478.512	-2840.826	-3475.785	-3470.830	-3473.308
1	3.150	-5555.071	-2201.714	-3500.499	-3493.094	-3496.797
		-4865.349	-2635.693	-3500.499	-3493.094	-3496.797
1	4.200	-6027.876	-1940.682	-3524.103	-3514.249	-3519.176
		-5147.501	-2494.621	-3524.103	-3514.249	-3519.176
2	0	-6016.136	-1948.006	-3524.065	-3514.210	-3519.138
		-5141.555	-2498.300	-3524.065	-3514.210	-3519.138
2	1.050	-6360.152	-1766.272	-3546.418	-3534.483	-3540.450
		-5312.106	-2425.711	-3546.418	-3534.483	-3540.450
2	2.100	-6570.031	-1664.851	-3566.263	-3552.247	-3559.255
		-5365.663	-2422.649	-3566.263	-3552.247	-3559.255
2	3.150	-6743.257	-1580.055	-3582.157	-3566.060	-3574.109
		-5399.711	-2425.425	-3582.157	-3566.060	-3574.109
2	4.199	-6928.557	-1487.907	-3598.202	-3580.023	-3589.112
		-5462.976	-2410.063	-3598.202	-3580.023	-3589.112
3	0	-6919.105	-1493.796	-3598.165	-3579.987	-3589.076
		-5461.523	-2410.918	-3598.165	-3579.987	-3589.076
3	1.050	-7084.586	-1414.703	-3614.357	-3594.522	-3604.439
		-5522.088	-2397.839	-3614.357	-3594.522	-3604.439
3	2.100	-7204.113	-1369.462	-3633.578	-3612.087	-3622.832
		-5553.850	-2407.821	-3633.578	-3612.087	-3622.832
3	3.150	-7088.112	-1475.596	-3654.750	-3631.603	-3643.177
		-5367.235	-2558.385	-3654.750	-3631.603	-3643.177
3	4.200	-6610.742	-1764.572	-3648.588	-3623.784	-3636.186
		-4836.405	-2880.999	-3648.588	-3623.784	-3636.186
4	0	-6604.995	-1768.146	-3648.562	-3623.758	-3636.160
		-4839.710	-2878.877	-3648.562	-3623.758	-3636.160
4	1.050	-5826.271	-2214.151	-3622.203	-3596.135	-3609.169
		-4024.681	-3347.726	-3622.203	-3596.135	-3609.169
4	2.100	-4857.090	-2772.066	-3590.978	-3563.646	-3577.312
		-3036.342	-3917.695	-3590.978	-3563.646	-3577.312
4	3.150	-4085.021	-3228.283	-3573.458	-3544.862	-3559.160
		-2262.261	-4375.178	-3573.458	-3544.862	-3559.160
4	4.200	-3910.027	-3315.112	-3559.801	-3529.941	-3544.871
		-2102.404	-4452.483	-3559.801	-3529.941	-3544.871
5	0	-3903.314	-3319.305	-3559.782	-3529.922	-3544.852
		-2106.694	-4449.752	-3559.782	-3529.922	-3544.852
5	1.050	-4336.112	-3019.994	-3543.648	-3512.922	-3528.285
		-2571.762	-4130.137	-3543.648	-3512.922	-3528.285
5	2.099	-5402.778	-2317.943	-3525.117	-3493.524	-3509.321
		-3677.863	-3403.273	-3525.117	-3493.524	-3509.321
5	3.149	-7144.247	-1194.475	-3508.535	-3476.075	-3492.305
		-5273.717	-2371.427	-3508.535	-3476.075	-3492.305
5	4.198	-9358.439	227.165	-3490.732	-3457.406	-3474.069
		-7351.458	-1034.385	-3490.732	-3457.406	-3474.069
6	0	-9338.265	220.752	-3487.649	-3454.323	-3470.986
		-7327.031	-1044.732	-3487.649	-3454.323	-3470.986
6	1.350	-6029.028	-1818.875	-3462.724	-3426.989	-3444.856
		-4383.078	-2854.519	-3462.724	-3426.989	-3444.856
6	2.700	-3493.227	-3367.468	-3435.108	-3396.965	-3416.037
		-2184.211	-4191.111	-3435.108	-3396.965	-3416.037
6	4.050	-1867.192	-4323.831	-3395.341	-3354.789	-3375.065
		-716.326	-5047.965	-3395.341	-3354.789	-3375.065
6	5.400	-1455.317	-4514.223	-3354.340	-3311.378	-3332.859
		-299.706	-5241.343	-3354.340	-3311.378	-3332.859
7	0	-1431.842	-4528.935	-3354.304	-3311.342	-3332.823
		-278.897	-5254.377	-3354.304	-3311.342	-3332.823
7	1.350	-1684.325	-4320.680	-3324.696	-3280.318	-3302.507
		-419.416	-5116.571	-3324.696	-3280.318	-3302.507
7	2.700	-2159.073	-3995.302	-3309.038	-3263.244	-3286.141
		-735.693	-4890.903	-3309.038	-3263.244	-3286.141
7	4.050	-2511.484	-3750.887	-3295.828	-3248.619	-3272.224
		-932.105	-4744.644	-3295.828	-3248.619	-3272.224
7	5.400	-2719.308	-3595.197	-3281.237	-3232.612	-3256.925
		-1012.278	-4669.274	-3281.237	-3232.612	-3256.925
8	0	-2704.882	-3604.247	-3281.221	-3232.595	-3256.908
		-989.322	-4683.691	-3281.221	-3232.595	-3256.908

ENVOLVENTE: IX 'ELU 1'

Grupo	Espe.	Hipótesis	Factor	Etapa	Título
A	PERM.	1	1.350		Peso Propio
	Y	3	1.350		Carga Muerta Máxima
	Y	20	0.850000		Pretensado
B	MAS	19	0.900000		gradiente
C	MAS	21	1.500		Carro 2 centrado
D	MAS	4	1.500		Sobrecarga centrada vano 1
E	MAS	5	1.500		Sobrecarga centrada vano 2
F	MAS	6	1.500		Sobrecarga centrada vano 3
ALTERNATIVA PARA ENVOLVENTE:					
G	PERM.	1	1.350		Peso Propio
	Y	3	1.350		Carga Muerta Máxima
	Y	20	0.850000		Pretensado
H	MAS	19	0.900000		gradiente
I	MAS	21	1.500		Carro 2 centrado
J	MAS	7	1.500		Sobrecarga excéntrica vano 1 (
K	MAS	8	1.500		Sobrecarga excentrica vano 2 (
L	MAS	9	1.500		Sobrecarga excentrica vano 3 (
ALTERNATIVA PARA ENVOLVENTE:					
M	PERM.	1	1.350		Peso Propio
	Y	3	1.350		Carga Muerta Máxima
	Y	20	0.850000		Pretensado
N	MAS	19	0.900000		gradiente
O	MAS	21	1.500		Carro 2 centrado
P	MAS	10	1.500		Sobrecarga excéntrica vano 1 (
Q	MAS	11	1.500		Sobrecarga excentrica vano 2 (
R	MAS	12	1.500		Sobrecarga excentrica vano 3 (

ENVOLVENTE para < Vz > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
1	0	-24024.4	-9.508	-276.689	547.617	-873.420	-0.227677
		-24024.4	-9.508	853.695	1633.556	-841.176	-0.227677
1	1.050	-24091.4	-9.508	-596.447	547.617	-1337.629	-10.212
		-24091.4	-9.508	463.371	1633.556	-155.448	-10.212
1	2.100	-24168.0	-9.508	-874.206	547.617	-2144.423	-20.196
		-24168.0	-9.508	115.046	1633.556	113.595	-20.196
1	3.150	-24331.4	-9.508	-749.693	547.617	-3046.880	-30.180
		-24331.4	-9.508	168.996	1633.556	212.877	-30.180
1	4.200	-24487.2	-9.508	-618.462	547.617	-3823.401	-40.164
		-24487.2	-9.508	229.662	1633.556	363.997	-40.164
2	0	-24486.9	-8.079	-618.462	388.624	-3809.213	-40.164
		-24486.9	-8.079	229.662	1347.176	409.170	-40.164
2	1.050	-24635.2	-8.079	-481.046	388.624	-4448.782	-48.646
		-24635.2	-8.079	296.528	1347.176	622.958	-48.646
2	2.100	-24766.0	-8.079	-403.414	388.624	-4945.279	-57.127
		-24766.0	-8.079	303.611	1347.176	905.756	-57.127
2	3.150	-24869.4	-8.079	-486.148	388.624	-5453.956	-65.608
		-24869.4	-8.079	150.329	1347.176	1102.306	-65.608
2	4.199	-24973.8	-8.079	-543.428	388.624	-6044.846	-74.090
		-24973.8	-8.079	22.499	1347.176	1142.581	-74.090
3	0	-24973.5	-6.428	-543.428	209.742	-6034.433	-74.090
		-24973.5	-6.428	22.499	917.639	1181.993	-74.090
3	1.050	-25080.4	-6.428	-568.375	193.005	-3702.085	-80.840
		-25080.4	-6.428	-50.167	-87.650	-306.738	-80.840
3	2.100	-25208.4	-6.428	-481.282	193.005	-4357.162	-87.590
		-25208.4	-6.428	100.901	934.376	-1919.564	-87.590
3	3.150	-25350.0	-6.428	-198.591	193.005	-4777.181	-94.341
		-25350.0	-6.428	454.159	934.376	-1691.179	-94.341
3	4.200	-25301.3	-6.428	74.814	193.005	-4810.614	-101.091

ENVOLVENTE para < Vz > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
4	0	-25301.3	-6.428	798.131	934.376	-1002.107	-101.091
		-25301.2	-4.907	74.814	117.884	-4805.651	-101.091
		-25301.2	-4.907	798.131	737.314	-975.421	-101.091
4	1.050	-25113.3	-4.907	328.533	117.884	-4535.045	-106.244
		-25113.3	-4.907	1122.408	737.314	91.686	-106.244
4	2.100	-24891.7	-4.907	301.231	117.884	-4110.776	-111.396
		-24891.7	-4.907	1165.663	737.314	1386.538	-111.396
4	3.150	-24765.4	-4.907	-486.839	117.884	-4111.943	-116.549
		-24765.4	-4.907	448.151	737.314	2330.038	-116.549
4	4.200	-24665.9	-4.907	-1520.725	117.884	-5181.677	-121.701
		-24665.9	-4.907	-515.177	737.314	2279.053	-121.701
5	0	-24665.8	-3.365	-1520.725	434.792	-5172.758	-121.701
		-24665.8	-3.365	-515.177	813.140	2304.076	-121.701
5	1.050	-24550.5	-3.365	-2550.321	434.792	-7337.003	-125.233
		-24550.5	-3.365	-1474.239	813.140	1232.283	-125.233
5	2.099	-24418.6	-3.365	-3574.721	434.792	-10591.0	-128.765
		-24418.6	-3.365	-2428.106	813.140	-855.231	-128.765
5	3.149	-24300.2	-3.365	-4402.276	434.792	-14826.1	-132.296
		-24300.2	-3.365	-3185.126	813.140	-3849.818	-132.296
5	4.198	-24173.3	-3.365	-5204.510	434.792	-19912.5	-135.828
		-24173.3	-3.365	-3916.826	813.140	-7621.641	-135.828
6	0	-24151.8	-7.272	4766.019	1380.810	-7583.036	-135.828
		-24151.8	-7.272	6432.368	1435.103	-19879.6	-135.828
6	1.350	-23970.0	-7.272	3811.380	1380.810	-1857.118	-145.646
		-23970.0	-7.272	5387.006	1435.103	-11965.3	-145.646
6	2.700	-23769.5	-7.272	2869.224	1380.810	2590.251	-155.464
		-23769.5	-7.272	4354.127	1435.103	-5451.968	-155.464
6	4.050	-23484.4	-7.272	1581.982	1380.810	5576.774	-165.281
		-23484.4	-7.272	2976.162	1435.103	-522.003	-165.281
6	5.400	-23190.7	-7.272	453.571	1380.810	6786.634	-175.099
		-23190.7	-7.272	1757.029	1435.103	2508.818	-175.099
7	0	-23190.5	-4.275	453.571	1152.339	6841.314	-175.099
		-23190.5	-4.275	1757.029	1391.175	2569.826	-175.099
7	1.350	-22979.5	-4.275	-95.516	1152.339	7061.285	-180.870
		-22979.5	-4.275	1117.221	1391.175	4488.247	-180.870
7	2.700	-22865.6	-4.275	-129.598	1152.339	6861.200	-186.641
		-22865.6	-4.275	992.418	1391.175	5864.136	-186.641
7	4.050	-22768.8	-4.275	-50.752	1152.339	6772.246	-192.412
		-22768.8	-4.275	980.543	1391.175	7228.683	-192.412
7	5.400	-22662.4	-4.275	24.709	1152.339	6803.030	-198.183
		-22662.4	-4.275	965.283	1391.175	8590.492	-198.183
8	0	-22662.2	-1.476	24.709	428.865	6834.814	-198.183
		-22662.2	-1.476	965.283	595.679	8630.430	-198.183
8	1.350	-22546.8	-1.476	96.142	428.865	6978.929	-200.175
		-22546.8	-1.476	946.006	595.679	9982.960	-200.175
8	2.700	-22421.9	-1.476	162.974	428.865	7229.015	-202.168
		-22421.9	-1.476	922.127	595.679	11319.0	-202.168
8	3.899	-22323.3	-1.476	74.236	428.865	7444.828	-203.938
		-22323.3	-1.476	752.806	595.679	12396.9	-203.938
8	3.900	-22323.2	-1.476	74.135	428.865	7444.964	-203.940
		-22323.2	-1.476	452.632	595.679	12397.6	-203.940
8	4.050	-22311.0	-1.476	60.090	428.865	7462.807	-204.161
		-22311.0	-1.476	428.533	595.679	12471.3	-204.161
8	5.399	-22203.8	-1.476	-70.896	526.173	12218.3	-206.152
		-22203.8	-1.476	211.992	498.371	8279.583	-206.152
8	5.399	-22203.8	-1.476	-70.985	526.173	12218.3	-206.153
		-22203.8	-1.476	211.940	498.371	8279.669	-206.153
9	0	-22203.8	1.522	-222.299	-714.929	16511.8	-206.153
		-22203.8	1.522	63.255	-384.408	3984.540	-206.153
9	1.350	-22310.0	1.522	-441.432	-714.929	15995.0	-204.098
		-22310.0	1.522	-65.147	-384.408	3914.528	-204.098
9	1.499	-22321.8	1.522	-465.478	-714.929	15919.8	-203.871
		-22321.8	1.522	-79.160	-384.408	3896.244	-203.871
9	1.501	-22321.9	1.522	-765.652	-714.929	15919.0	-203.870
		-22321.9	1.522	-79.261	-384.408	3896.104	-203.870
9	2.700	-22418.5	1.522	-924.441	-714.929	14828.6	-202.044
		-22418.5	1.522	-157.424	-384.408	3677.537	-202.044
9	4.051	-22541.5	1.522	-948.345	-714.929	13490.5	-199.989

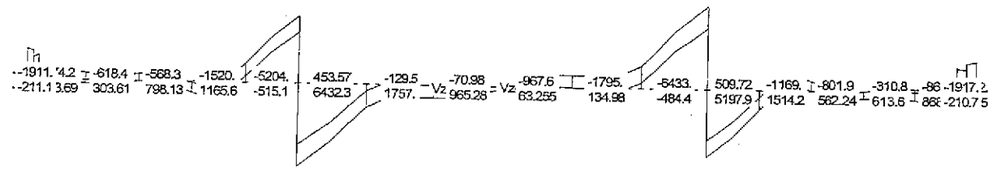
ENVOLVENTE para < Vz > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
9	5.401	-22541.5	1.522	-90.597	-384.408	3436.350	-199.989
		-22656.4	1.522	-967.636	-714.929	12135.3	-197.934
		-22656.4	1.522	-19.156	-384.408	3300.507	-197.934
10	0	-22656.5	4.348	-967.636	-1655.588	12087.2	-197.934
		-22656.5	4.348	-19.156	-966.774	3273.076	-197.934
10	1.350	-22762.3	4.348	-982.941	-1655.588	10723.3	-192.065
		-22762.3	4.348	56.247	-966.774	3250.664	-192.065
10	2.700	-22858.4	4.348	-994.907	-1655.588	9356.578	-186.196
		-22858.4	4.348	134.989	-966.774	3347.884	-186.196
10	4.049	-22979.8	4.348	-1155.165	-1655.588	7968.800	-180.326
		-22979.8	4.348	65.439	-966.774	3546.490	-180.326
10	5.399	-23189.2	4.348	-1795.720	-1655.588	6000.620	-174.457
		-23189.2	4.348	-484.408	-966.774	3287.134	-174.457
11	0	-23189.4	7.272	-1795.720	-1833.926	5927.150	-174.457
		-23189.4	7.272	-484.408	-1031.512	3245.061	-174.457
11	1.331	-23485.6	7.272	-3040.216	-1833.926	2857.825	-164.778
		-23485.6	7.272	-1639.459	-1031.512	1980.653	-164.778
11	2.662	-23763.2	7.272	-4384.400	-1833.926	-2070.174	-155.099
		-23763.2	7.272	-2894.197	-1031.512	-1023.377	-155.099
11	3.993	-23961.0	7.272	-5402.765	-1833.926	-8522.066	-145.420
		-23961.0	7.272	-3823.118	-1031.512	-5432.245	-145.420
11	5.324	-24140.6	7.272	-6433.235	-1833.926	-16335.8	-135.741
		-24140.6	7.272	-4764.143	-1031.512	-11084.0	-135.741
12	0	-24162.1	3.447	3911.236	-808.379	-7601.006	-135.741
		-24162.1	3.447	5197.962	-412.487	-19894.3	-135.741
12	1.050	-24289.0	3.447	3179.575	-808.379	-3834.304	-132.123
		-24289.0	3.447	4395.753	-412.487	-14813.8	-132.123
12	2.100	-24407.4	3.447	2422.431	-808.379	-845.004	-128.504
		-24407.4	3.447	3568.063	-412.487	-10584.8	-128.504
12	3.149	-24539.2	3.447	1468.672	-808.379	1236.954	-124.886
		-24539.2	3.447	2543.756	-412.487	-7337.152	-124.886
12	4.199	-24654.4	3.447	509.724	-808.379	2303.118	-121.268
		-24654.4	3.447	1514.261	-412.487	-5179.384	-121.268
13	0	-24654.5	4.888	509.724	-737.649	2279.795	-121.268
		-24654.5	4.888	1514.261	-116.233	-5187.360	-121.268
13	1.050	-24753.7	4.888	-453.347	-737.649	2325.150	-116.135
		-24753.7	4.888	480.628	-116.233	-4124.266	-116.135
13	2.100	-24880.1	4.888	-1169.590	-737.649	1376.539	-111.002
		-24880.1	4.888	-306.175	-116.233	-4129.229	-111.002
13	3.150	-25101.8	4.888	-1125.955	-737.649	77.624	-105.869
		-25101.8	4.888	-333.102	-116.233	-4558.587	-105.869
13	4.200	-25290.1	4.888	-801.975	-737.649	-993.435	-100.736
		-25290.1	4.888	-79.683	-116.233	-4834.180	-100.736
14	0	-25290.3	6.467	-801.975	-941.660	-1021.271	-100.736
		-25290.3	6.467	-79.683	-193.254	-4839.310	-100.736
14	1.050	-25339.3	6.467	-458.352	-941.660	-1714.517	-93.945
		-25339.3	6.467	193.383	-193.294	-4811.221	-93.945
14	2.100	-25198.3	6.467	-105.441	-941.660	-1947.634	-87.155
		-25198.3	6.467	475.736	-193.294	-4397.084	-87.155
14	3.150	-25070.8	6.467	41.770	80.729	-362.929	-80.364
		-25070.8	6.467	562.246	-193.294	-3748.497	-80.364
14	4.200	-24964.3	6.467	-29.411	-921.861	1129.586	-73.574
		-24964.3	6.467	538.849	-213.093	-6074.329	-73.574
15	0	-24964.5	7.990	-29.411	-1316.495	1093.641	-73.574
		-24964.5	7.990	538.849	-376.777	-6083.802	-73.574
15	1.050	-24860.0	7.990	-157.450	-1316.495	1046.023	-65.183
		-24860.0	7.990	481.384	-376.777	-5497.567	-65.183
15	2.100	-24756.3	7.990	-310.886	-1316.495	841.978	-56.791
		-24756.3	7.990	398.523	-376.777	-4993.642	-56.791
15	3.151	-24624.8	7.990	-303.603	-1316.495	551.860	-48.400
		-24624.8	7.990	476.380	-376.777	-4501.673	-48.400
15	4.201	-24475.6	7.990	-236.949	-1316.495	330.699	-40.008
		-24475.6	7.990	613.608	-376.777	-3866.629	-40.008
16	0	-24475.9	9.581	-236.949	-1632.287	280.960	-40.008
		-24475.9	9.581	613.608	-551.548	-3882.287	-40.008
16	1.049	-24318.9	9.581	-176.619	-1632.287	122.470	-29.953
		-24318.9	9.581	744.464	-551.548	-3111.112	-29.953
16	2.099	-24153.9	9.581	-123.071	-1632.287	15.400	-19.898

ENVOLVENTE para < Vz > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
		-24153.9	9.581	868.539	-551.548	-2214.498	-19.898
16	3.148	-24073.6	9.581	-472.060	-1632.287	-261.845	-9.842
		-24073.6	9.581	590.075	-551.548	-1414.044	-9.842
16	4.198	-24002.5	9.581	-862.532	-1632.287	-956.042	0.212903
		-24002.5	9.581	270.129	-551.548	-956.522	0.212903
17	0	4.757	23.560	-2243.150	4.48E-14	5568.682	-56.500
		4.757	23.560	-631.510	-6.11E-14	1703.711	-56.500
17	0.600	4.757	23.560	-2282.607	4.48E-14	4211.996	-42.375
		4.757	23.560	-670.967	-6.11E-14	1313.267	-42.375
17	1.199	4.757	23.560	-2322.064	4.48E-14	2831.654	-28.250
		4.757	23.560	-710.424	-6.11E-14	899.168	-28.250
17	1.799	4.757	23.560	-2361.522	4.48E-14	1427.655	-14.125
		4.757	23.560	-749.881	-6.11E-14	461.412	-14.125
17	2.398	4.757	23.560	-2400.979	4.48E-14	5.76E-05	-5.65E-07
		4.757	23.560	-789.339	-6.11E-14	1.89E-05	-5.65E-07
18	0	-3.820	-23.637	-1753.920	1.17E-12	4398.977	56.728
		-3.820	-23.637	-211.118	1.21E-12	696.229	56.728
18	0.600	-3.820	-23.637	-1793.408	1.17E-12	3334.772	42.546
		-3.820	-23.637	-250.606	1.21E-12	557.711	42.546
18	1.200	-3.820	-23.637	-1832.896	1.17E-12	2246.874	28.364
		-3.820	-23.637	-290.094	1.21E-12	395.500	28.364
18	1.800	-3.820	-23.637	-1872.384	1.17E-12	1135.283	14.182
		-3.820	-23.637	-329.581	1.21E-12	209.596	14.182
18	2.400	-3.820	-23.637	-1911.871	1.17E-12	4.59E-05	5.67E-07
		-3.820	-23.637	-369.069	1.21E-12	8.86E-06	5.67E-07
19	0	4.793	-23.548	-2244.116	1.40E-12	5575.311	56.515
		4.793	-23.548	-636.550	7.68E-13	1717.224	56.515
19	0.600	4.793	-23.548	-2283.603	1.40E-12	4217.020	42.386
		4.793	-23.548	-676.037	7.68E-13	1323.455	42.386
19	1.200	4.793	-23.548	-2323.089	1.40E-12	2835.039	28.257
		4.793	-23.548	-715.523	7.68E-13	905.995	28.257
19	1.800	4.793	-23.548	-2362.576	1.40E-12	1429.365	14.129
		4.793	-23.548	-755.010	7.68E-13	464.843	14.129
19	2.400	4.793	-23.548	-2402.063	1.40E-12	5.76E-05	5.65E-07
		4.793	-23.548	-794.497	7.68E-13	1.91E-05	5.65E-07
20	0	-4.782	23.458	-1759.825	-2.70E-13	4413.326	-56.302
		-4.782	23.458	-210.748	-1.02E-12	695.374	-56.302
20	0.600	-4.782	23.458	-1799.314	-2.70E-13	3345.536	-42.226
		-4.782	23.458	-250.237	-1.02E-12	557.073	-42.226
20	1.200	-4.782	23.458	-1838.803	-2.70E-13	2254.052	-28.151
		-4.782	23.458	-289.726	-1.02E-12	395.076	-28.151
20	1.800	-4.782	23.458	-1878.293	-2.70E-13	1138.873	-14.075
		-4.782	23.458	-329.216	-1.02E-12	209.386	-14.075
20	2.400	-4.782	23.458	-1917.782	-2.70E-13	4.60E-05	-5.63E-07
		-4.782	23.458	-368.705	-1.02E-12	8.85E-06	-5.63E-07

Mstb. 1 :449.9
Section forces envelope Vz, GWSP IX (ELU 1), View "ALL"
- Struktur: Staebe
- Envelop Shear force Vz-min, Scaling 1.00E-03
  min: -6.43E+03 max: 4.77E+03 [kN]
- Envelop Shear force Vz-max, Scaling 1.00E-03
  min: -4.76E+03 max: 6.43E+03 [kN]
- Text envelopes [kN]



ENVOLVENTE para < T > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
1	0	-24024.4	-9.508	209.560	-2585.050	-788.394	-0.227677
		-24024.4	-9.508	367.446	4766.223	-926.202	-0.227677
1	1.050	-24091.4	-9.508	-145.481	-2486.259	-760.531	-10.212
		-24091.4	-9.508	12.405	4667.432	-732.546	-10.212
1	2.100	-24168.0	-9.508	-458.522	-2387.468	-1112.303	-20.196
		-24168.0	-9.508	-300.636	4568.641	-918.526	-20.196
1	3.150	-24331.4	-9.508	-369.291	-2288.677	-1596.786	-30.180
		-24331.4	-9.508	-211.405	4469.850	-1237.216	-30.180
1	4.200	-24487.2	-9.508	-273.343	-2189.886	-1992.383	-40.164
		-24487.2	-9.508	-115.457	4371.059	-1467.021	-40.164
2	0	-24486.9	-8.079	-273.343	-2403.107	-2061.988	-40.164
		-24486.9	-8.079	-115.457	4138.906	-1338.054	-40.164
2	1.050	-24635.2	-8.079	-171.202	-2304.338	-2357.757	-48.646
		-24635.2	-8.079	-13.315	4040.138	-1468.068	-48.646
2	2.100	-24766.0	-8.079	-128.845	-2205.570	-2547.483	-57.127
		-24766.0	-8.079	29.042	3941.369	-1492.039	-57.127
2	3.150	-24869.4	-8.079	-246.853	-2106.801	-2786.424	-65.608
		-24869.4	-8.079	-88.966	3842.600	-1565.226	-65.608
2	4.199	-24973.8	-8.079	-339.408	-2008.032	-3144.610	-74.090
		-24973.8	-8.079	-181.521	3743.832	-1757.656	-74.090
3	0	-24973.5	-6.428	-339.408	-2286.372	-3219.341	-74.090
		-24973.5	-6.428	-181.521	3413.753	-1633.100	-74.090
3	1.050	-25080.4	-6.428	-391.511	-2187.578	-3646.456	-80.840
		-25080.4	-6.428	-233.624	3314.959	-1894.418	-80.840
3	2.100	-25208.4	-6.428	-269.134	-2088.784	-4097.280	-87.590
		-25208.4	-6.428	-111.247	3216.165	-2179.445	-87.590
3	3.150	-25350.0	-6.428	48.841	-1989.991	-4275.996	-94.341
		-25350.0	-6.428	206.727	3117.372	-2192.364	-94.341
3	4.200	-25301.3	-6.428	357.529	-1891.197	-4031.075	-101.091
		-25301.3	-6.428	515.416	3018.578	-1781.646	-101.091
4	0	-25301.2	-4.907	478.253	-2014.055	-2564.111	-101.091
		-25301.2	-4.907	394.692	2869.253	-3216.961	-101.091
4	1.050	-25113.3	-4.907	767.251	-1915.274	-1851.387	-106.244
		-25113.3	-4.907	683.690	2770.472	-2591.972	-106.244
4	2.100	-24891.7	-4.907	775.227	-1816.493	-947.959	-111.396
		-24891.7	-4.907	691.667	2671.691	-1776.279	-111.396
4	3.150	-24765.4	-4.907	22.436	-1717.712	-432.924	-116.549
		-24765.4	-4.907	-61.125	2572.910	-1348.980	-116.549
4	4.200	-24665.9	-4.907	-976.171	-1618.932	-949.416	-121.701
		-24665.9	-4.907	-1059.731	2474.130	-1953.208	-121.701
5	0	-24665.8	-3.365	-976.171	-1437.695	-998.748	-121.701
		-24665.8	-3.365	-1059.731	2685.627	-1869.933	-121.701

ENVOLVENTE para < T > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
5	1.050	-24550.5	-3.365	-1970.500	-1338.947	-2572.914	-125.233
		-24550.5	-3.365	-1750.532	2678.706	-3530.446	-125.233
5	2.099	-24418.6	-3.365	-2655.301	-1295.434	-5410.835	-128.765
		-24418.6	-3.365	-2704.398	2678.706	-5907.960	-128.765
5	3.149	-24300.2	-3.365	-3412.322	-1296.434	-8643.889	-132.296
		-24300.2	-3.365	-3461.419	2678.706	-9192.546	-132.296
5	4.198	-24173.3	-3.365	-4144.022	-1296.434	-12654.2	-135.828
		-24173.3	-3.365	-4193.119	2678.706	-13254.4	-135.828
6	0	-24151.8	-7.272	5352.053	-550.407	-12686.7	-135.828
		-24151.8	-7.272	5780.425	3443.388	-13146.6	-135.828
6	1.350	-23970.0	-7.272	4352.052	-423.395	-6200.209	-145.646
		-23970.0	-7.272	4780.423	3316.376	-6081.858	-145.646
6	2.700	-23769.5	-7.272	3364.535	-296.383	-1053.529	-155.464
		-23769.5	-7.272	3792.906	3189.364	-356.858	-155.464
6	4.050	-23484.4	-7.272	2031.931	-169.372	2571.064	-165.281
		-23484.4	-7.272	2460.303	3062.352	3846.054	-165.281
6	5.400	-23190.7	-7.272	858.159	-42.360	4357.754	-175.099
		-23190.7	-7.272	1286.531	2935.340	6211.064	-175.099
7	0	-23190.5	-4.275	858.159	-164.696	4353.285	-175.099
		-23190.5	-4.275	1286.530	2730.257	6333.360	-175.099
7	1.350	-22979.5	-4.275	263.712	-37.686	5088.837	-180.870
		-22979.5	-4.275	692.083	2603.248	7647.220	-180.870
7	2.700	-22865.6	-4.275	184.269	89.323	5343.096	-186.641
		-22865.6	-4.275	612.640	2476.239	8479.787	-186.641
7	4.050	-22768.8	-4.275	217.755	216.333	5647.249	-192.412
		-22768.8	-4.275	646.126	2349.229	9362.247	-192.412
7	5.400	-22662.4	-4.275	247.855	343.342	6009.902	-198.183
		-22662.4	-4.275	676.227	2222.220	10303.2	-198.183
8	0	-22662.2	-1.476	247.855	-347.606	6009.816	-198.183
		-22662.2	-1.476	676.227	1357.225	10375.2	-198.183
8	1.350	-22546.8	-1.476	273.933	-220.612	6424.535	-200.175
		-22546.8	-1.476	702.305	1230.231	11368.1	-200.175
8	2.700	-22421.9	-1.476	295.410	-93.617	6884.001	-202.168
		-22421.9	-1.476	723.781	1103.237	12405.8	-202.168
8	3.899	-22323.3	-1.476	166.380	19.200	7234.469	-203.938
		-22323.3	-1.476	594.752	990.419	13270.0	-203.938
8	3.900	-22323.2	-1.476	166.243	19.302	7234.705	-203.940
		-22323.2	-1.476	594.614	990.317	13270.5	-203.940
8	4.050	-22311.0	-1.476	147.171	33.377	7265.951	-204.161
		-22311.0	-1.476	275.542	976.242	13321.0	-204.161
8	5.399	-22203.8	-1.476	-25.644	95.134	4475.123	-206.152
		-22203.8	-1.476	168.593	917.203	15242.8	-206.152
8	5.399	-22203.8	-1.476	-25.696	95.134	4475.081	-206.153
		-22203.8	-1.476	168.523	917.254	15242.8	-206.153
9	0	-22203.8	1.522	-178.097	-953.416	15243.4	-206.153
		-22203.8	1.522	20.924	-124.518	4473.115	-206.153
9	1.350	-22310.0	1.522	-287.155	-1027.691	13309.2	-204.098
		-22310.0	1.522	-153.810	-58.837	7255.762	-204.098
9	1.499	-22321.8	1.522	-306.184	-1041.736	13257.4	-203.871
		-22321.8	1.522	-172.839	-44.792	7223.867	-203.871
9	1.501	-22321.9	1.522	-606.322	-1041.838	13256.8	-203.870
		-22321.9	1.522	-172.977	-44.690	7223.626	-203.870
9	2.700	-22418.5	1.522	-724.798	-1154.714	12381.7	-202.044
		-22418.5	1.522	-291.453	68.187	6868.436	-202.044
9	4.051	-22541.5	1.522	-703.337	-1281.738	11343.9	-199.989
		-22541.5	1.522	-269.991	195.210	6415.662	-199.989
9	5.401	-22656.4	1.522	-677.262	-1408.762	10350.1	-197.934
		-22656.4	1.522	-243.916	322.234	6006.981	-197.934
10	0	-22656.5	4.348	-677.262	-2276.394	10275.3	-197.934
		-22656.5	4.348	-243.916	-370.557	6006.000	-197.934
10	1.350	-22762.3	4.348	-647.212	-2403.385	9333.922	-192.065
		-22762.3	4.348	-213.867	-243.566	5649.590	-192.065
10	2.700	-22858.4	4.348	-613.824	-2530.377	8450.985	-186.196
		-22858.4	4.348	-180.479	-116.574	5351.594	-186.196
10	4.049	-22979.8	4.348	-728.728	-2657.369	7608.212	-180.326
		-22979.8	4.348	-295.383	10.418	5093.762	-180.326
10	5.399	-23189.2	4.348	-1323.929	-2784.360	6246.258	-174.457
		-23189.2	4.348	-890.584	137.409	4316.749	-174.457

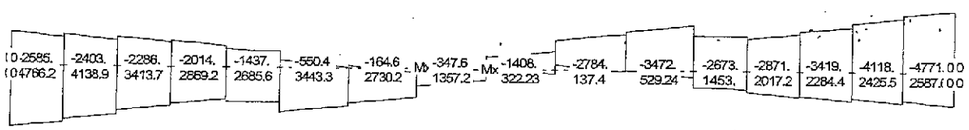
ENVOLVENTE para < T > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
11	0	-23189.4	7.272	-1323.929	-2972.037	6125.060	-174.457
		-23189.4	7.272	-890.584	28.356	4320.239	-174.457
11	1.331	-23485.6	7.272	-2523.703	-3097.260	3713.464	-164.778
		-23485.6	7.272	-2090.358	153.579	2485.436	-164.778
11	2.662	-23763.2	7.272	-3823.164	-3222.483	-497.280	-155.099
		-23763.2	7.272	-3389.819	278.802	-1148.515	-155.099
11	3.993	-23961.0	7.272	-4796.807	-3347.706	-6172.390	-145.420
		-23961.0	7.272	-4363.462	404.025	-6246.831	-145.420
11	5.324	-24140.6	7.272	-5782.554	-3472.929	-13149.9	-135.741
		-24140.6	7.272	-5349.209	529.248	-12647.5	-135.741
12	0	-24162.1	3.447	4190.946	-2669.938	-13263.4	-135.741
		-24162.1	3.447	4135.687	1310.951	-12613.5	-135.741
12	1.050	-24289.0	3.447	3459.285	-2669.938	-9203.013	-132.123
		-24289.0	3.447	3404.026	1310.951	-8611.179	-132.123
12	2.100	-24407.4	3.447	2702.142	-2669.938	-5920.070	-128.504
		-24407.4	3.447	2646.882	1310.951	-5386.247	-128.504
12	3.149	-24539.2	3.447	1748.382	-2669.938	-3544.470	-124.886
		-24539.2	3.447	1959.290	1354.256	-2553.997	-124.886
12	4.199	-24654.4	3.447	1058.917	-2673.889	-1884.974	-121.268
		-24654.4	3.447	965.068	1453.022	-991.293	-121.268
13	0	-24654.5	4.888	1058.917	-2475.979	-1962.662	-121.268
		-24654.5	4.888	965.068	1622.097	-944.903	-121.268
13	1.050	-24753.7	4.888	60.565	-2574.765	-1359.165	-116.135
		-24753.7	4.888	-33.284	1720.883	-439.950	-116.135
13	2.100	-24880.1	4.888	-690.958	-2673.551	-1786.681	-111.002
		-24880.1	4.888	-784.807	1819.669	-966.009	-111.002
13	3.150	-25101.8	4.888	-682.604	-2772.337	-2601.546	-105.869
		-25101.8	4.888	-776.453	1918.455	-1879.417	-105.869
13	4.200	-25290.1	4.888	-393.905	-2871.123	-3225.600	-100.736
		-25290.1	4.888	-487.753	2017.241	-2602.014	-100.736
14	0	-25290.3	6.467	-515.259	-3024.280	-1790.435	-100.736
		-25290.3	6.467	-366.399	1889.327	-4070.146	-100.736
14	1.050	-25339.3	6.467	-206.914	-3123.060	-2201.162	-93.945
		-25339.3	6.467	-58.055	1988.107	-4324.576	-93.945
14	2.100	-25198.3	6.467	110.718	-3221.841	-2188.800	-87.155
		-25198.3	6.467	259.577	2086.887	-4155.918	-87.155
14	3.150	-25070.8	6.467	232.507	-3320.621	-1904.947	-80.364
		-25070.8	6.467	381.366	2185.667	-3715.768	-80.364
14	4.200	-24964.3	6.467	180.289	-3419.401	-1645.109	-73.574
		-24964.3	6.467	329.148	2284.447	-3299.634	-73.574
15	0	-24964.5	7.990	180.289	-3723.653	-1759.819	-73.574
		-24964.5	7.990	329.148	2030.381	-3230.343	-73.574
15	1.050	-24860.0	7.990	87.538	-3822.457	-1568.677	-65.183
		-24860.0	7.990	236.397	2129.185	-2882.867	-65.183
15	2.100	-24756.3	7.990	-30.611	-3921.260	-1496.903	-56.791
		-24756.3	7.990	118.248	2227.988	-2654.760	-56.791
15	3.151	-24624.8	7.990	11.959	-4020.064	-1474.145	-48.400
		-24624.8	7.990	160.818	2326.792	-2475.668	-48.400
15	4.201	-24475.6	7.990	113.900	-4118.868	-1345.370	-40.008
		-24475.6	7.990	262.759	2425.596	-2190.560	-40.008
16	0	-24475.9	9.581	113.900	-4376.540	-1488.666	-40.008
		-24475.9	9.581	262.759	2192.705	-2112.661	-40.008
16	1.049	-24318.9	9.581	209.493	-4475.277	-1260.437	-29.953
		-24318.9	9.581	358.352	2291.442	-1728.205	-29.953
16	2.099	-24153.9	9.581	298.305	-4574.014	-943.779	-19.898
		-24153.9	9.581	447.164	2390.179	-1255.319	-19.898
16	3.148	-24073.6	9.581	-15.422	-4672.751	-760.288	-9.842
		-24073.6	9.581	133.437	2488.916	-915.601	-9.842
16	4.198	-24002.5	9.581	-370.631	-4771.487	-956.739	0.212903
		-24002.5	9.581	-221.772	2587.652	-955.825	0.212903
17	0	4.757	23.560	-1604.281	-2.16E-13	4036.572	-56.500
		4.757	23.560	-1461.992	3.59E-13	3695.341	-56.500
17	0.600	4.757	23.560	-1643.738	-2.16E-13	3062.913	-42.375
		4.757	23.560	-1501.450	3.59E-13	2806.990	-42.375
17	1.199	4.757	23.560	-1683.195	-2.16E-13	2065.598	-28.250
		4.757	23.560	-1540.907	3.59E-13	1894.983	-28.250
17	1.799	4.757	23.560	-1722.653	-2.16E-13	1044.627	-14.125
		4.757	23.560	-1580.364	3.59E-13	959.320	-14.125

ENVOLVENTE para < T > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
17	2.398	4.757	23.560	-1762.110	-2.16E-13	4.23E-05	-5.65E-07
		4.757	23.560	-1619.821	3.59E-13	3.88E-05	-5.65E-07
18	0	-3.820	-23.637	-1081.675	8.78E-13	2785.579	56.728
		-3.820	-23.637	-487.408	1.46E-12	1359.328	56.728
18	0.600	-3.820	-23.637	-1121.163	8.78E-13	2124.724	42.546
		-3.820	-23.637	-526.896	1.46E-12	1055.035	42.546
18	1.200	-3.820	-23.637	-1160.651	8.78E-13	1440.175	28.364
		-3.820	-23.637	-566.383	1.46E-12	727.050	28.364
18	1.800	-3.820	-23.637	-1200.139	8.78E-13	731.934	14.182
		-3.820	-23.637	-605.871	1.46E-12	375.371	14.182
18	2.400	-3.820	-23.637	-1239.626	8.78E-13	2.98E-05	5.67E-07
		-3.820	-23.637	-645.359	1.46E-12	1.55E-05	5.67E-07
19	0	4.793	-23.548	-756.749	6.97E-13	2005.696	56.515
		4.793	-23.548	-2167.947	1.47E-12	5392.509	56.515
19	0.600	4.793	-23.548	-796.236	6.97E-13	1539.810	42.386
		4.793	-23.548	-2207.434	1.47E-12	4079.919	42.386
19	1.200	4.793	-23.548	-835.722	6.97E-13	1050.231	28.257
		4.793	-23.548	-2246.920	1.47E-12	2743.638	28.257
19	1.800	4.793	-23.548	-875.209	6.97E-13	536.962	14.129
		4.793	-23.548	-2286.407	1.47E-12	1383.665	14.129
19	2.400	4.793	-23.548	-914.696	6.97E-13	2.20E-05	5.65E-07
		4.793	-23.548	-2325.894	1.47E-12	5.58E-05	5.65E-07
20	0	-4.782	23.458	-1029.606	-1.09E-12	2660.721	-56.302
		-4.782	23.458	-1423.510	-2.57E-13	3606.133	-56.302
20	0.600	-4.782	23.458	-1069.095	-1.09E-12	2031.083	-42.226
		-4.782	23.458	-1462.999	-2.57E-13	2740.142	-42.226
20	1.200	-4.782	23.458	-1108.584	-1.09E-12	1377.750	-28.151
		-4.782	23.458	-1502.488	-2.57E-13	1850.456	-28.151
20	1.800	-4.782	23.458	-1148.073	-1.09E-12	700.722	-14.075
		-4.782	23.458	-1541.978	-2.57E-13	937.075	-14.075
20	2.400	-4.782	23.458	-1187.563	-1.09E-12	2.85E-05	-5.63E-07
		-4.782	23.458	-1581.467	-2.57E-13	3.80E-05	-5.63E-07

Mstb. 1 :449.9
Section forces envelope T , GWSP IX (ELU 1), View "ALL"
- Struktur: Staebe
- Envelop Torsion.moment Mx-min, Scaling 1.00E-03
  min: -4.77E+03 max: 3.43E+02 [kNm]
- Envelop Torsion.moment Mx-max, Scaling 1.00E-03
  min: -3.71E+02 max: 4.77E+03 [kNm]
- Text envelopes [kNm]



ENVOLVENTE para < My > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
1	0	-24024.4	-9.508	246.723	4690.260	-930.436	-0.227677
		-24024.4	-9.508	330.283	-2509.087	-784.160	-0.227677
1	1.050	-24091.4	-9.508	-596.447	547.617	-1337.629	-10.212
		-24091.4	-9.508	463.371	1633.556	-155.448	-10.212
1	2.100	-24168.0	-9.508	-874.206	547.617	-2144.423	-20.196
		-24168.0	-9.508	115.048	1633.556	113.595	-20.196
1	3.150	-24331.4	-9.508	-749.693	547.617	-3046.880	-30.180
		-24331.4	-9.508	168.996	1633.556	212.877	-30.180
1	4.200	-24487.2	-9.508	-618.462	547.617	-3823.401	-40.164
		-24487.2	-9.508	229.662	1633.556	363.997	-40.164
2	0	-24486.9	-8.079	-618.462	388.624	-3809.213	-40.164
		-24486.9	-8.079	229.662	1347.176	409.170	-40.164
2	1.050	-24635.2	-8.079	-481.046	388.624	-4448.782	-48.646
		-24635.2	-8.079	296.528	1347.176	622.958	-48.646
2	2.100	-24766.0	-8.079	-403.414	388.624	-4945.279	-57.127
		-24766.0	-8.079	303.611	1347.176	905.756	-57.127
2	3.150	-24869.4	-8.079	-486.148	388.624	-5453.956	-65.608
		-24869.4	-8.079	150.329	1347.176	1102.306	-65.608
2	4.199	-24973.8	-8.079	-543.428	388.624	-6044.846	-74.090
		-24973.8	-8.079	22.499	1347.176	1142.581	-74.090
3	0	-24973.5	-6.428	-543.428	209.742	-6034.433	-74.090
		-24973.5	-6.428	22.499	917.639	1181.993	-74.090
3	1.050	-25080.4	-6.428	-560.248	209.742	-6657.266	-80.840
		-25080.4	-6.428	-64.887	917.639	1116.392	-80.840
3	2.100	-25208.4	-6.428	-402.587	209.742	-7266.756	-87.590
		-25208.4	-6.428	22.206	917.639	990.030	-87.590
3	3.150	-25350.0	-6.428	-49.329	209.742	-7567.086	-94.341
		-25350.0	-6.428	304.898	917.639	1098.726	-94.341
3	4.200	-25301.3	-6.428	294.643	209.742	-7406.728	-101.091
		-25301.3	-6.428	578.302	917.639	1594.007	-101.091
4	0	-25301.2	-4.907	294.643	217.478	-7399.908	-101.091
		-25301.2	-4.907	578.302	637.720	1618.836	-101.091
4	1.050	-25113.3	-4.907	618.920	217.478	-6861.448	-106.244
		-25113.3	-4.907	832.022	637.720	2418.089	-106.244
4	2.100	-24891.7	-4.907	662.175	217.478	-6095.242	-111.396
		-24891.7	-4.907	804.719	637.720	3371.003	-111.396
4	3.150	-24765.4	-4.907	-55.338	217.478	-5680.387	-116.549
		-24765.4	-4.907	16.649	637.720	3898.483	-116.549
4	4.200	-24665.9	-4.907	-1018.665	217.478	-6260.018	-121.701
		-24665.9	-4.907	-1017.237	637.720	3357.394	-121.701
5	0	-24665.8	-3.365	-1018.666	569.131	-6247.323	-121.701
		-24665.8	-3.365	-1017.237	678.801	3378.641	-121.701
5	1.050	-24550.5	-3.365	-1977.727	569.131	-7847.583	-125.233
		-24550.5	-3.365	-2046.832	678.801	1742.863	-125.233
5	2.099	-24418.6	-3.365	-3574.721	434.792	-10591.0	-128.765
		-24418.6	-3.365	-2739.013	615.492	-797.263	-128.765
5	3.149	-24300.2	-3.365	-4402.276	434.792	-14826.1	-132.296
		-24300.2	-3.365	-3185.126	813.140	-3849.818	-132.296
5	4.198	-24173.3	-3.365	-5204.510	434.792	-19912.5	-135.828
		-24173.3	-3.365	-3916.826	813.140	-7621.641	-135.828
6	0	-24151.8	-7.272	6432.368	1435.103	-19879.6	-135.828
		-24151.8	-7.272	4766.019	1380.810	-7583.036	-135.828
6	1.350	-23970.0	-7.272	5387.006	1435.103	-11965.3	-145.646
		-23970.0	-7.272	3811.380	1380.810	-1857.118	-145.646
6	2.700	-23769.5	-7.272	4354.127	1435.103	-5451.968	-155.464
		-23769.5	-7.272	2869.224	1380.810	2590.251	-155.464
6	4.050	-23484.4	-7.272	2545.326	2098.252	-650.030	-165.281
		-23484.4	-7.272	2031.812	198.577	6098.686	-165.281
6	5.400	-23190.7	-7.272	1033.900	1154.109	1726.228	-175.099
		-23190.7	-7.272	858.040	325.589	7885.215	-175.099
7	0	-23190.5	-4.275	1033.900	1144.213	1775.840	-175.099
		-23190.5	-4.275	858.039	50.695	7893.337	-175.099
7	1.350	-22979.5	-4.275	36.128	960.548	2278.968	-180.870
		-22979.5	-4.275	985.577	1582.966	9270.563	-180.870
7	2.700	-22865.6	-4.275	-63.569	914.901	2223.924	-186.641
		-22865.6	-4.275	926.388	1628.614	10501.4	-186.641
7	4.050	-22768.8	-4.275	15.278	914.901	2224.111	-192.412
		-22768.8	-4.275	914.514	1628.614	11776.8	-192.412

ENVOLVENTE para < My > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
7	5.400	-22662.4	-4.275	90.739	914.901	2344.036	-198.183
		-22662.4	-4.275	899.254	1628.614	13049.5	-198.183
8	0	-22662.2	-1.476	90.739	370.807	2369.879	-198.183
		-22662.2	-1.476	899.254	653.737	13095.4	-198.183
8	1.350	-22546.8	-1.476	162.172	370.807	2603.125	-200.175
		-22546.8	-1.476	879.977	653.737	14358.8	-200.175
8	2.700	-22421.9	-1.476	229.003	370.807	2942.341	-202.168
		-22421.9	-1.476	856.098	653.737	15605.7	-202.168
8	3.899	-22323.3	-1.476	140.266	370.807	3237.335	-203.938
		-22323.3	-1.476	686.776	653.737	16604.4	-203.938
8	3.900	-22323.2	-1.476	140.164	370.807	3237.542	-203.940
		-22323.2	-1.476	386.602	653.737	16605.0	-203.940
8	4.050	-22311.0	-1.476	126.119	370.807	3265.263	-204.161
		-22311.0	-1.476	362.504	653.737	16668.8	-204.161
8	5.399	-22203.8	-1.476	-2.307	370.807	3418.277	-206.152
		-22203.8	-1.476	143.403	653.737	17079.6	-206.152
8	5.399	-22203.8	-1.476	-2.359	370.807	3418.249	-206.153
		-22203.8	-1.476	143.315	653.737	17079.7	-206.153
9	0	-22203.8	1.522	-2.359	-397.217	3417.680	-206.153
		-22203.8	1.522	-156.685	-702.120	17078.6	-206.153
9	1.350	-22310.0	1.522	-130.761	-397.217	3259.078	-204.098
		-22310.0	1.522	-375.818	-702.120	16650.4	-204.098
9	1.499	-22321.8	1.522	-144.774	-397.217	3230.998	-203.871
		-22321.8	1.522	-399.864	-702.120	16585.0	-203.871
9	1.501	-22321.9	1.522	-144.875	-397.217	3230.787	-203.870
		-22321.9	1.522	-700.037	-702.120	16584.4	-203.870
9	2.700	-22418.5	1.522	-223.039	-397.217	2933.497	-202.044
		-22418.5	1.522	-858.827	-702.120	15572.6	-202.044
9	4.051	-22541.5	1.522	-156.211	-397.217	2603.719	-199.989
		-22541.5	1.522	-882.731	-702.120	14323.2	-199.989
9	5.401	-22656.4	1.522	-84.771	-397.217	2379.286	-197.934
		-22656.4	1.522	-902.022	-702.120	13056.6	-197.934
10	0	-22656.5	4.348	-84.771	-942.185	2352.095	-197.934
		-22656.5	4.348	-902.022	-1680.177	13008.2	-197.934
10	1.350	-22762.3	4.348	-9.367	-942.185	2241.114	-192.065
		-22762.3	4.348	-917.326	-1680.177	11732.8	-192.065
10	2.700	-22858.4	4.348	69.375	-942.185	2249.767	-186.196
		-22858.4	4.348	-929.293	-1680.177	10454.7	-186.196
10	4.049	-22979.8	4.348	-66.085	-989.705	2297.877	-180.326
		-22979.8	4.348	-1023.641	-1632.657	9217.412	-180.326
10	5.399	-23189.2	4.348	-1067.247	-1177.754	1726.613	-174.457
		-23189.2	4.348	-890.704	-85.884	7853.728	-174.457
11	0	-23189.4	7.272	-1067.247	-1176.622	1677.043	-174.457
		-23189.4	7.272	-890.704	-343.612	7844.685	-174.457
11	1.331	-23485.6	7.272	-2608.487	-2128.972	-786.835	-164.778
		-23485.6	7.272	-2090.477	-218.389	6009.723	-164.778
11	2.662	-23763.2	7.272	-4384.280	-1461.958	-5594.302	-155.099
		-23763.2	7.272	-2894.317	-1403.480	2500.751	-155.099
11	3.993	-23961.0	7.272	-5402.646	-1461.958	-12046.0	-145.420
		-23961.0	7.272	-3823.237	-1403.480	-1908.276	-145.420
11	5.324	-24140.6	7.272	-6433.116	-1461.958	-19859.7	-135.741
		-24140.6	7.272	-4764.262	-1403.480	-7560.140	-135.741
12	0	-24162.1	3.447	5197.962	-412.487	-19894.3	-135.741
		-24162.1	3.447	3911.236	-808.379	-7601.006	-135.741
12	1.050	-24289.0	3.447	4395.753	-412.487	-14813.8	-132.123
		-24289.0	3.447	3179.575	-808.379	-3834.304	-132.123
12	2.100	-24407.4	3.447	3568.063	-412.487	-10584.8	-128.504
		-24407.4	3.447	2730.081	-610.464	-779.180	-128.504
12	3.149	-24539.2	3.447	1972.833	-550.607	-7850.083	-124.886
		-24539.2	3.447	2039.595	-670.259	1749.884	-124.886
12	4.199	-24654.4	3.447	1013.885	-550.607	-6254.645	-121.268
		-24654.4	3.447	1010.100	-670.259	3378.378	-121.268
13	0	-24654.5	4.888	1013.885	-221.856	-6266.298	-121.268
		-24654.5	4.888	1010.100	-632.025	3358.733	-121.268
13	1.050	-24753.7	4.888	50.814	-221.856	-5691.563	-116.135
		-24753.7	4.888	-23.533	-632.025	3892.447	-116.135
13	2.100	-24880.1	4.888	-665.428	-221.856	-6110.795	-111.002
		-24880.1	4.888	-810.337	-632.025	3358.104	-111.002

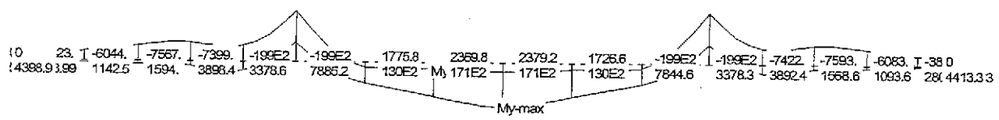
ENVOLVENTE para < My > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
13	3.150	-25101.8	4.888	-621.794	-221.856	-6880.330	-105.869
		-25101.8	4.888	-837.264	-632.025	2399.368	-105.869
13	4.200	-25290.1	4.888	-297.814	-221.856	-7422.010	-100.736
		-25290.1	4.888	-583.844	-632.025	1594.395	-100.736
14	0	-25290.3	6.467	-297.814	-213.093	-7429.219	-100.736
		-25290.3	6.467	-583.844	-921.861	1568.638	-100.736
14	1.050	-25339.3	6.467	45.810	-213.093	-7593.117	-93.945
		-25339.3	6.467	-310.779	-921.861	1067.379	-93.945
14	2.100	-25198.3	6.467	398.720	-213.093	-7296.885	-87.155
		-25198.3	6.467	-28.425	-921.861	952.166	-87.155
14	3.150	-25070.8	6.467	555.787	-213.093	-6692.120	-80.364
		-25070.8	6.467	58.085	-921.861	1071.405	-80.364
14	4.200	-24964.3	6.467	538.849	-213.093	-6074.329	-73.574
		-24964.3	6.467	-29.411	-921.861	1129.586	-73.574
15	0	-24964.5	7.990	538.849	-376.777	-6083.802	-73.574
		-24964.5	7.990	-29.411	-1316.495	1093.641	-73.574
15	1.050	-24860.0	7.990	481.384	-376.777	-5497.567	-65.183
		-24860.0	7.990	-157.450	-1316.495	1046.023	-65.183
15	2.100	-24756.3	7.990	398.523	-376.777	-4993.642	-56.791
		-24756.3	7.990	-310.886	-1316.495	841.978	-56.791
15	3.151	-24624.8	7.990	476.380	-376.777	-4501.673	-48.400
		-24624.8	7.990	-303.603	-1316.495	551.860	-48.400
15	4.201	-24475.6	7.990	613.608	-376.777	-3866.629	-40.008
		-24475.6	7.990	-236.949	-1316.495	330.699	-40.008
16	0	-24475.9	9.581	613.608	-551.548	-3882.287	-40.008
		-24475.9	9.581	-236.949	-1632.287	280.960	-40.008
16	1.049	-24318.9	9.581	744.464	-551.548	-3111.112	-29.953
		-24318.9	9.581	-176.619	-1632.287	122.470	-29.953
16	2.099	-24153.9	9.581	868.539	-551.548	-2214.498	-19.898
		-24153.9	9.581	-123.071	-1632.287	15.400	-19.898
16	3.148	-24073.6	9.581	590.075	-551.548	-1414.044	-9.842
		-24073.6	9.581	-472.060	-1632.287	-261.845	-9.842
16	4.198	-24002.5	9.581	-249.277	-4697.134	-956.796	0.212903
		-24002.5	9.581	-343.126	2513.299	-955.768	0.212903
17	0	4.757	23.560	-631.510	-6.11E-14	1703.711	-56.500
		4.757	23.560	-2243.150	4.48E-14	5568.682	-56.500
17	0.600	4.757	23.560	-670.967	-6.11E-14	1313.267	-42.375
		4.757	23.560	-2282.607	4.48E-14	4211.996	-42.375
17	1.199	4.757	23.560	-710.424	-6.11E-14	899.168	-28.250
		4.757	23.560	-2322.064	4.48E-14	2831.654	-28.250
17	1.799	4.757	23.560	-749.881	-6.11E-14	461.412	-14.125
		4.757	23.560	-2361.522	4.48E-14	1427.655	-14.125
17	2.398	4.757	23.560	-789.339	-6.11E-14	1.89E-05	-5.65E-07
		4.757	23.560	-2400.979	4.48E-14	5.76E-05	-5.65E-07
18	0	-3.820	-23.637	-211.118	1.21E-12	696.229	56.728
		-3.820	-23.637	-1753.920	1.17E-12	4398.977	56.728
18	0.600	-3.820	-23.637	-250.606	1.21E-12	557.711	42.546
		-3.820	-23.637	-1793.408	1.17E-12	3334.772	42.546
18	1.200	-3.820	-23.637	-290.094	1.21E-12	395.500	28.364
		-3.820	-23.637	-1832.896	1.17E-12	2246.874	28.364
18	1.800	-3.820	-23.637	-329.581	1.21E-12	209.596	14.182
		-3.820	-23.637	-1872.384	1.17E-12	1135.283	14.182
18	2.400	-3.820	-23.637	-369.069	1.21E-12	8.86E-06	5.67E-07
		-3.820	-23.637	-1911.871	1.17E-12	4.59E-05	5.67E-07
19	0	4.793	-23.548	-636.550	7.68E-13	1717.224	56.515
		4.793	-23.548	-2244.116	1.40E-12	5575.311	56.515
19	0.600	4.793	-23.548	-676.037	7.68E-13	1323.455	42.386
		4.793	-23.548	-2283.603	1.40E-12	4217.020	42.386
19	1.200	4.793	-23.548	-715.523	7.68E-13	905.995	28.257
		4.793	-23.548	-2323.089	1.40E-12	2835.039	28.257
19	1.800	4.793	-23.548	-755.010	7.68E-13	464.843	14.129
		4.793	-23.548	-2362.576	1.40E-12	1429.365	14.129
19	2.400	4.793	-23.548	-794.497	7.68E-13	1.91E-05	5.65E-07
		4.793	-23.548	-2402.063	1.40E-12	5.76E-05	5.65E-07
20	0	-4.782	23.458	-210.748	-1.02E-12	695.374	-56.302
		-4.782	23.458	-1759.825	-2.70E-13	4413.326	-56.302
20	0.600	-4.782	23.458	-250.237	-1.02E-12	557.073	-42.226
		-4.782	23.458	-1799.314	-2.70E-13	3345.536	-42.226

ENVOLVENTE para < My > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kNm]	T [kNm]	My [kNm]	Mz [kNm]
20	1.200	-4.782	23.458	-289.726	-1.02E-12	395.076	-28.151
		-4.782	23.458	-1838.803	-2.70E-13	2254.052	-28.151
20	1.800	-4.782	23.458	-329.216	-1.02E-12	209.386	-14.075
		-4.782	23.458	-1878.293	-2.70E-13	1138.873	-14.075
20	2.400	-4.782	23.458	-368.705	-1.02E-12	8.85E-06	-5.63E-07
		-4.782	23.458	-1917.782	-2.70E-13	4.60E-05	-5.63E-07

Mstb. 1 :449.9
Section forces envelope My, GWSP fX (ELU 1), View "ALL"
- Struktur: Staebe
- Envelop Moment My-min, Scaling 2.00E-04
  min: -1.99E+04 max: 3.42E+03 [kNm]
- Envelop Moment My-max, Scaling 2.00E-04
  min: -7.62E+03 max: 1.71E+04 [kNm]
- Text envelopes [kNm]



ENVOLVENTE: IY 'ELU 2'

Grupo	Espe.	Hipótesis	Factor	Etapa	Título
A	PERM.	1	1.350		Peso Propio
	Y	3	1.350		Carga Muerta Máxima
	Y	20	0.850000		Pretensado
B	MAS	19	0.900000		gradiente
C	MAS	22	1.500		Carro 1 centrado
D	MAS	4	1.500		Sobrecarga centrada vano 1
E	MAS	5	1.500		Sobrecarga centrada vano 2
F	MAS	6	1.500		Sobrecarga centrada vano 3
ALTERNATIVA PARA ENVOLVENTE:					
G	PERM.	1	1.350		Peso Propio
	Y	3	1.350		Carga Muerta Máxima
	Y	20	0.850000		Pretensado
H	MAS	19	0.900000		gradiente
I	MAS	22	1.500		Carro 1 centrado
J	MAS	7	1.500		Sobrecarga excéntrica vano 1 (
K	MAS	8	1.500		Sobrecarga excentrica vano 2 (
L	MAS	9	1.500		Sobrecarga excentrica vano 3 (
ALTERNATIVA PARA ENVOLVENTE:					
M	PERM.	1	1.350		Peso Propio
	Y	3	1.350		Carga Muerta Máxima
	Y	20	0.850000		Pretensado
N	MAS	19	0.900000		gradiente
O	MAS	22	1.500		Carro 1 centrado
P	MAS	10	1.500		Sobrecarga excéntrica vano 1 (
Q	MAS	11	1.500		Sobrecarga excentrica vano 2 (
R	MAS	12	1.500		Sobrecarga excentrica vano 3 (

ENVOLVENTE para < Vz > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
1	0	-24024.4	-9.508	-155.965	623.580	-869.185	-0.227677
		-24024.4	-9.508	1230.240	1778.787	-826.155	-0.227677
1	1.050	-24091.4	-9.508	-475.724	623.580	-1206.626	-10.212
		-24091.4	-9.508	839.917	1778.787	254.973	-10.212
1	2.100	-24168.0	-9.508	-753.482	623.580	-1886.652	-20.196
		-24168.0	-9.508	491.593	1778.787	919.416	-20.196
1	3.150	-24331.4	-9.508	-628.969	623.580	-2662.340	-30.180
		-24331.4	-9.508	545.541	1778.787	1414.099	-30.180
1	4.200	-24487.2	-9.508	-497.738	623.580	-3312.093	-40.164
		-24487.2	-9.508	606.207	1778.787	1960.619	-40.164
2	0	-24486.9	-8.079	-497.738	449.058	-3295.837	-40.164
		-24486.9	-8.079	606.207	1443.958	2009.459	-40.164
2	1.050	-24635.2	-8.079	-360.323	449.058	-3808.667	-48.646
		-24635.2	-8.079	673.074	1443.958	2618.559	-48.646
2	2.100	-24766.0	-8.079	-282.591	449.058	-4178.424	-57.127
		-24766.0	-8.079	680.157	1443.958	3296.667	-57.127
2	3.150	-24869.4	-8.079	-365.424	449.058	-4560.362	-65.608
		-24869.4	-8.079	526.874	1443.958	3888.529	-65.608
2	4.199	-24973.8	-8.079	-422.705	449.058	-5024.511	-74.090
		-24973.8	-8.079	399.045	1443.958	4324.114	-74.090
3	0	-24973.5	-6.428	-422.705	234.639	-5012.614	-74.090
		-24973.5	-6.428	399.045	903.666	4364.968	-74.090
3	0.600	-25035.2	-6.428	-432.663	234.639	-5294.069	-77.944
		-25035.2	-6.428	348.795	903.666	4564.138	-77.944
3	0.600	-25035.3	-6.428	-432.676	234.639	-5294.467	-77.949
		-25035.3	-6.428	48.725	903.666	4564.271	-77.949
3	1.050	-25080.4	-6.428	-447.652	217.902	-2553.494	-80.840
		-25080.4	-6.428	26.379	-101.623	3136.617	-80.840
3	2.100	-25208.3	-6.428	-360.725	217.902	-3081.529	-87.586
		-25208.3	-6.428	177.238	920.403	1604.103	-87.586
3	2.100	-25208.4	-6.428	-584.013	203.929	441.876	-87.590
		-25208.4	-6.428	100.901	934.376	-1919.564	-87.590
3	2.100	-25208.4	-6.428	-583.956	203.929	441.737	-87.592
		-25208.4	-6.428	100.972	934.376	-1919.557	-87.592
3	3.150	-25350.0	-6.428	-301.322	203.929	-86.022	-94.341
		-25350.0	-6.428	454.159	934.376	-1691.179	-94.341
3	3.600	-25359.7	-6.428	-181.586	203.929	-189.365	-97.229
		-25359.7	-6.428	604.085	934.376	-1448.327	-97.229
3	3.600	-25359.7	-6.428	-481.365	203.929	-189.615	-97.234
		-25359.7	-6.428	604.363	934.376	-1447.791	-97.234
3	4.200	-25301.3	-6.428	-327.917	203.929	-407.458	-101.091
		-25301.3	-6.428	798.131	934.376	-1002.107	-101.091
4	0	-25301.2	-4.907	-327.917	-11.741	-404.390	-101.091
		-25301.2	-4.907	798.131	737.314	-975.421	-101.091
4	1.050	-25113.3	-4.907	-74.198	-11.741	-556.637	-106.244
		-25113.3	-4.907	1122.408	737.314	91.686	-106.244
4	2.100	-24891.7	-4.907	-101.500	-11.741	-555.223	-111.396
		-24891.7	-4.907	1165.663	737.314	1386.538	-111.396
4	3.150	-24765.4	-4.907	-889.571	-11.741	-979.244	-116.549
		-24765.4	-4.907	448.151	737.314	2330.038	-116.549
4	4.200	-24665.9	-4.907	-1923.456	-11.741	-2471.833	-121.701
		-24665.9	-4.907	-515.177	737.314	2279.053	-121.701
5	0	-24665.8	-3.365	-1923.456	217.787	-2468.507	-121.701
		-24665.8	-3.365	-515.177	813.140	2304.076	-121.701
5	1.050	-24550.5	-3.365	-2953.052	217.787	-5055.464	-125.233
		-24550.5	-3.365	-1474.239	813.140	1232.283	-125.233
5	2.099	-24418.6	-3.365	-3977.452	217.787	-8732.173	-128.765
		-24418.6	-3.365	-2428.106	813.140	-855.231	-128.765
5	3.149	-24300.2	-3.365	-4805.007	217.787	-13390.0	-132.296
		-24300.2	-3.365	-3185.126	813.140	-3849.818	-132.296
5	4.198	-24173.3	-3.365	-5607.241	217.787	-18899.1	-135.828
		-24173.3	-3.365	-3916.826	813.140	-7621.641	-135.828
6	0	-24151.8	-7.272	4766.019	1380.810	-7583.036	-135.828
		-24151.8	-7.272	6045.606	1182.579	-18874.4	-135.828
6	1.350	-23970.0	-7.272	3811.380	1380.810	-1857.118	-145.646
		-23970.0	-7.272	5000.244	1182.579	-11482.3	-145.646
6	2.700	-23769.5	-7.272	2869.224	1380.810	2590.251	-155.464
		-23769.5	-7.272	3967.365	1182.579	-5491.114	-155.464

ENVOLVENTE para < Vz > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
6	4.050	-23484.4	-7.272	1581.982	1380.810	5576.774	-165.281
		-23484.4	-7.272	2589.400	1182.579	-1083.294	-165.281
6	5.400	-23190.7	-7.272	453.571	1380.810	6786.634	-175.099
		-23190.7	-7.272	1370.267	1182.579	1425.382	-175.099
7	0	-23190.5	-4.275	453.571	1152.339	6841.314	-175.099
		-23190.5	-4.275	1370.267	1185.639	1476.503	-175.099
7	1.350	-22979.5	-4.275	-95.516	1152.339	7061.285	-180.870
		-22979.5	-4.275	730.459	1185.639	2872.789	-180.870
7	2.700	-22865.6	-4.275	-129.598	1152.339	6861.200	-186.641
		-22865.6	-4.275	605.656	1185.639	3726.545	-186.641
7	4.050	-22768.8	-4.275	-50.752	1152.339	6772.246	-192.412
		-22768.8	-4.275	593.781	1185.639	4568.957	-192.412
7	5.400	-22662.4	-4.275	24.709	1152.339	6803.030	-198.183
		-22662.4	-4.275	578.521	1185.639	5408.632	-198.183
8	0	-22662.2	-1.476	24.709	428.865	6834.814	-198.183
		-22662.2	-1.476	578.521	518.173	5442.881	-198.183
8	1.350	-22546.8	-1.476	96.142	428.865	6978.929	-200.175
		-22546.8	-1.476	559.244	518.173	6273.338	-200.175
8	2.700	-22421.9	-1.476	162.974	428.865	7229.015	-202.168
		-22421.9	-1.476	535.365	518.173	7087.321	-202.168
8	4.050	-22311.0	-1.476	60.090	428.865	7462.807	-204.161
		-22311.0	-1.476	341.771	518.173	7762.564	-204.161
8	5.399	-22203.8	-1.476	-70.985	526.173	12218.3	-206.153
		-22203.8	-1.476	125.178	420.865	3453.832	-206.153
9	0	-22203.8	1.522	-70.985	-620.479	12216.2	-206.153
		-22203.8	1.522	125.178	-348.736	3455.384	-206.153
9	1.350	-22310.0	1.522	-290.117	-620.479	11903.7	-204.098
		-22310.0	1.522	-3.223	-348.736	3468.978	-204.098
9	2.700	-22418.5	1.522	-473.127	-620.479	11301.7	-202.044
		-22418.5	1.522	-95.501	-348.736	3315.594	-202.044
9	4.051	-22541.5	1.522	-497.031	-620.479	10573.0	-199.989
		-22541.5	1.522	-28.674	-348.736	3158.014	-199.989
9	5.401	-22656.4	1.522	-516.321	-620.479	9827.191	-197.934
		-22656.4	1.522	42.767	-348.736	3105.778	-197.934
10	0	-22656.5	4.348	-516.321	-1467.538	9784.802	-197.934
		-22656.5	4.348	42.767	-923.228	3079.956	-197.934
10	1.350	-22762.3	4.348	-531.626	-1467.538	9030.084	-192.065
		-22762.3	4.348	118.170	-923.228	3141.129	-192.065
10	2.700	-22858.4	4.348	-543.592	-1467.538	8272.558	-186.196
		-22858.4	4.348	196.912	-923.228	3321.935	-186.196
10	4.049	-22979.8	4.348	-703.850	-1467.538	7493.976	-180.326
		-22979.8	4.348	127.363	-923.228	3604.126	-180.326
10	5.399	-23189.2	4.348	-1344.405	-1467.538	6134.993	-174.457
		-23189.2	4.348	-422.484	-923.228	3428.356	-174.457
11	0	-23189.4	7.272	-1344.405	-1651.699	6069.319	-174.457
		-23189.4	7.272	-422.484	-993.948	3387.991	-174.457
11	1.331	-23485.6	7.272	-2588.902	-1651.699	3600.706	-164.778
		-23485.6	7.272	-1577.536	-993.948	2206.004	-164.778
11	2.662	-23763.2	7.272	-3933.085	-1651.699	-726.583	-155.099
		-23763.2	7.272	-2832.274	-993.948	-715.603	-155.099
11	3.993	-23961.0	7.272	-4951.450	-1651.699	-6577.764	-145.420
		-23961.0	7.272	-3761.194	-993.948	-5042.050	-145.420
11	5.324	-24140.6	7.272	-5981.920	-1651.699	-13790.8	-135.741
		-24140.6	7.272	-4702.220	-993.948	-10611.3	-135.741
12	0	-24162.1	3.447	3888.671	-788.299	-7127.325	-135.741
		-24162.1	3.447	5076.608	-324.394	-17344.3	-135.741
12	1.050	-24289.0	3.447	3157.009	-788.299	-3384.312	-132.123
		-24289.0	3.447	4274.399	-324.394	-12391.2	-132.123
12	2.100	-24407.4	3.447	2399.866	-788.299	-418.701	-128.504
		-24407.4	3.447	3446.709	-324.394	-8289.563	-128.504
12	3.149	-24539.2	3.447	1446.107	-788.299	1639.568	-124.886
		-24539.2	3.447	2422.402	-324.394	-5169.339	-124.886
12	4.199	-24654.4	3.447	487.159	-788.299	2682.042	-121.268
		-24654.4	3.447	1392.907	-324.394	-3138.971	-121.268
13	0	-24654.5	4.888	487.159	-729.008	2659.153	-121.268
		-24654.5	4.888	1392.907	-89.728	-3145.218	-121.268
13	1.050	-24753.7	4.888	-475.913	-729.008	2680.815	-116.135
		-24753.7	4.888	359.274	-89.728	-2209.548	-116.135

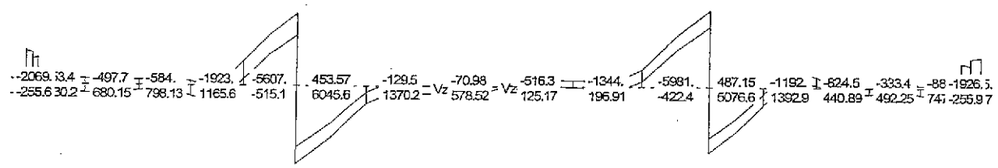
ENVOLVENTE para < Vz > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
13	2.100	-24880.1	4.888	-1192.155	-729.008	1708.509	-111.002
		-24880.1	4.888	-427.529	-89.728	-2341.935	-111.002
13	3.150	-25101.8	4.888	-1148.521	-729.008	385.901	-105.869
		-25101.8	4.888	-454.456	-89.728	-2898.717	-105.869
13	4.200	-25290.1	4.888	-824.540	-729.008	-708.852	-100.736
		-25290.1	4.888	-201.037	-89.728	-3301.734	-100.736
14	0	-25290.3	6.467	-824.540	-942.455	-736.558	-100.736
		-25290.3	6.467	-201.037	-217.592	-3306.828	-100.736
14	1.050	-25339.3	6.467	-480.917	-942.455	-1453.497	-93.945
		-25339.3	6.467	72.029	-217.592	-3406.155	-93.945
14	2.100	-25198.3	6.467	-128.006	-942.455	-1710.307	-87.155
		-25198.3	6.467	354.382	-217.592	-3119.435	-87.155
14	3.150	-25070.8	6.467	19.205	79.934	-149.294	-80.364
		-25070.8	6.467	440.892	-217.592	-2598.265	-80.364
14	4.200	-24964.3	6.467	-51.976	-922.657	1319.529	-73.574
		-24964.3	6.467	417.495	-237.391	-5051.514	-73.574
15	0	-24964.5	7.990	-51.976	-1323.389	1283.459	-73.574
		-24964.5	7.990	417.495	-433.905	-5062.294	-73.574
15	1.050	-24860.0	7.990	-180.015	-1323.389	1212.144	-65.183
		-24860.0	7.990	360.030	-433.905	-4603.507	-65.183
15	2.100	-24756.3	7.990	-333.451	-1323.389	984.401	-56.791
		-24756.3	7.990	277.169	-433.905	-4227.029	-56.791
15	3.151	-24624.8	7.990	-326.168	-1323.389	670.584	-48.400
		-24624.8	7.990	355.026	-433.905	-3862.507	-48.400
15	4.201	-24475.6	7.990	-259.514	-1323.389	425.725	-40.008
		-24475.6	7.990	492.254	-433.905	-3354.911	-40.008
16	0	-24475.9	9.581	-259.514	-1642.382	375.700	-40.008
		-24475.9	9.581	492.254	-625.901	-3372.787	-40.008
16	1.049	-24318.9	9.581	-199.184	-1642.382	193.527	-29.953
		-24318.9	9.581	623.110	-625.901	-2728.972	-29.953
16	2.099	-24153.9	9.581	-145.636	-1642.382	62.776	-19.898
		-24153.9	9.581	747.185	-625.901	-1959.720	-19.898
16	3.148	-24073.6	9.581	-494.626	-1642.382	-238.152	-9.842
		-24073.6	9.581	468.721	-625.901	-1286.626	-9.842
16	4.198	-24002.5	9.581	-885.098	-1642.382	-956.030	0.212903
		-24002.5	9.581	148.775	-625.901	-956.465	0.212903
17	0	4.757	23.560	-2461.702	2.93E-13	6092.804	-56.500
		4.757	23.560	-707.709	-5.64E-15	1886.449	-56.500
17	0.600	4.757	23.560	-2501.159	2.93E-13	4605.087	-42.375
		4.757	23.560	-747.166	-5.64E-15	1450.321	-42.375
17	1.199	4.757	23.560	-2540.616	2.93E-13	3093.714	-28.250
		4.757	23.560	-786.623	-5.64E-15	990.537	-28.250
17	1.799	4.757	23.560	-2580.073	2.93E-13	1558.685	-14.125
		4.757	23.560	-826.081	-5.64E-15	507.096	-14.125
17	2.398	4.757	23.560	-2619.530	2.93E-13	6.28E-05	-5.65E-07
		4.757	23.560	-865.538	-5.64E-15	2.08E-05	-5.65E-07
18	0	-3.820	-23.637	-1911.914	1.03E-12	4778.165	56.728
		-3.820	-23.637	-255.642	1.04E-12	803.088	56.728
18	0.600	-3.820	-23.637	-1951.402	1.03E-12	3619.163	42.546
		-3.820	-23.637	-295.130	1.04E-12	637.855	42.546
18	1.200	-3.820	-23.637	-1990.890	1.03E-12	2436.468	28.364
		-3.820	-23.637	-334.618	1.04E-12	448.929	28.364
18	1.800	-3.820	-23.637	-2030.378	1.03E-12	1230.080	14.182
		-3.820	-23.637	-374.106	1.04E-12	236.311	14.182
18	2.400	-3.820	-23.637	-2069.865	1.03E-12	4.97E-05	5.67E-07
		-3.820	-23.637	-413.593	1.04E-12	9.93E-06	5.67E-07
19	0	4.793	-23.548	-2257.502	1.38E-12	5607.437	56.515
		4.793	-23.548	-712.719	6.99E-13	1900.026	56.515
19	0.600	4.793	-23.548	-2296.989	1.38E-12	4241.115	42.386
		4.793	-23.548	-752.205	6.99E-13	1460.557	42.386
19	1.200	4.793	-23.548	-2336.475	1.38E-12	2851.102	28.257
		4.793	-23.548	-791.692	6.99E-13	997.396	28.257
19	1.800	4.793	-23.548	-2375.962	1.38E-12	1437.397	14.129
		4.793	-23.548	-831.179	6.99E-13	510.544	14.129
19	2.400	4.793	-23.548	-2415.449	1.38E-12	5.80E-05	5.65E-07
		4.793	-23.548	-870.666	6.99E-13	2.09E-05	5.65E-07
20	0	-4.782	23.458	-1769.004	-2.40E-13	4435.357	-56.302
		-4.782	23.458	-255.933	-8.30E-13	803.823	-56.302

ENVOLVENTE para < Vz > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
20	0.600	-4.782	23.458	-1808.493	-2.40E-13	3362.059	-42.226
		-4.782	23.458	-295.422	-8.30E-13	638.409	-42.226
20	1.200	-4.782	23.458	-1847.983	-2.40E-13	2265.068	-28.151
		-4.782	23.458	-334.911	-8.30E-13	449.301	-28.151
20	1.800	-4.782	23.458	-1887.472	-2.40E-13	1144.381	-14.075
		-4.782	23.458	-374.401	-8.30E-13	236.498	-14.075
20	2.400	-4.782	23.458	-1926.961	-2.40E-13	4.62E-05	-5.63E-07
		-4.782	23.458	-413.890	-8.30E-13	9.93E-06	-5.63E-07

Mstb. 1:449.9
Section forces envelope Vz, GWSP IY (ELU 2), View "ALL"
- Struktur: Staebe
- Envelop Shear force Vz-min, Scaling 1.00E-03
  min: -5.98E+03 max: 4.77E+03 [kN]
- Envelop Shear force Vz-max, Scaling 1.00E-03
  min: -4.70E+03 max: 6.05E+03 [kN]
- Text envelopes [kN]



ENVOLVENTE para < T > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
1	0	-24024.4	-9.508	330.283	-2509.087	-784.160	-0.227677
		-24024.4	-9.508	743.992	4911.453	-911.181	-0.227677
1	1.050	-24091.4	-9.508	-24.758	-2410.296	-629.528	-10.212
		-24091.4	-9.508	388.951	4812.662	-322.125	-10.212
1	2.100	-24168.0	-9.508	-837.799	-2311.505	-854.532	-20.196
		-24168.0	-9.508	75.910	4713.872	-112.704	-20.196
1	3.150	-24331.4	-9.508	-248.568	-2212.714	-1212.246	-30.180
		-24331.4	-9.508	165.140	4615.081	-35.995	-30.180
1	4.200	-24487.2	-9.508	-152.620	-2113.923	-1481.075	-40.164
		-24487.2	-9.508	261.089	4516.290	129.601	-40.164
2	0	-24486.9	-8.079	-152.620	-2342.673	-1548.613	-40.164
		-24486.9	-8.079	261.089	4235.688	262.235	-40.164
2	1.050	-24635.2	-8.079	-50.479	-2243.904	-1717.641	-48.646
		-24635.2	-8.079	363.230	4136.920	527.533	-48.646
2	2.100	-24766.0	-8.079	-8.121	-2145.135	-1780.628	-57.127
		-24766.0	-8.079	405.587	4038.151	898.872	-57.127
2	3.150	-24869.4	-8.079	-126.129	-2046.367	-1892.830	-65.608
		-24869.4	-8.079	287.579	3939.382	1220.997	-65.608
2	4.199	-24973.8	-8.079	-218.684	-1947.598	-2124.275	-74.090
		-24973.8	-8.079	195.024	3840.614	1423.878	-74.090
3	0	-24973.5	-6.428	157.861	-2275.448	985.454	-74.090
		-24973.5	-6.428	-181.521	3413.753	-1633.100	-74.090
3	0.600	-25035.2	-6.428	127.757	-2219.040	1046.055	-77.944
		-25035.2	-6.428	-211.625	3357.344	-1775.986	-77.944
3	0.600	-25035.3	-6.428	-172.284	-2218.961	1046.002	-77.949
		-25035.3	-6.428	-211.667	3357.265	-1776.198	-77.949
3	1.050	-25080.4	-6.428	-194.242	-2176.654	945.491	-80.840

ENVOLVENTE para < T > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
		-25080.4	-6.428	-233.624	3314.959	-1894.418	-80.840
3	2.100	-25208.3	-6.428	-72.052	-2077.920	701.907	-87.586
		-25208.3	-6.428	-111.435	3216.224	-2179.333	-87.586
3	2.100	-25208.4	-6.428	-371.865	-2077.861	701.757	-87.590
		-25208.4	-6.428	-111.247	3216.165	-2179.445	-87.590
3	2.100	-25208.4	-6.428	-371.801	-2077.841	701.664	-87.592
		-25208.4	-6.428	-111.183	3216.145	-2179.483	-87.592
3	3.150	-25350.0	-6.428	-53.890	-1979.067	415.163	-94.341
		-25350.0	-6.428	206.727	3117.372	-2192.364	-94.341
3	3.600	-25359.7	-6.428	80.941	-1936.800	426.374	-97.229
		-25359.7	-6.428	341.558	3075.104	-2064.066	-97.229
3	3.600	-25359.7	-6.428	-218.810	-1936.721	426.344	-97.234
		-25359.7	-6.428	341.808	3075.025	-2063.750	-97.234
3	4.200	-25301.3	-6.428	-45.202	-1880.273	372.081	-101.091
		-25301.3	-6.428	515.416	3018.578	-1781.646	-101.091
4	0	-25301.2	-4.907	-45.202	-2119.764	308.227	-101.091
		-25301.2	-4.907	515.416	2845.336	-1688.037	-101.091
4	1.050	-25113.3	-4.907	243.796	-2020.983	471.341	-106.244
		-25113.3	-4.907	804.414	2746.555	-936.293	-106.244
4	2.100	-24891.7	-4.907	251.773	-1922.202	825.159	-111.396
		-24891.7	-4.907	812.390	2647.774	6.155	-111.396
4	3.150	-24765.4	-4.907	-501.019	-1823.421	790.585	-116.549
		-24765.4	-4.907	59.599	2548.993	560.210	-116.549
4	4.200	-24665.9	-4.907	-1499.625	-1724.640	-275.517	-121.701
		-24665.9	-4.907	-939.008	2450.212	82.738	-121.701
5	0	-24665.8	-3.365	-1499.626	-1565.095	-328.611	-121.701
		-24665.8	-3.365	-939.008	2596.022	164.180	-121.701
5	1.050	-24550.5	-3.365	-2493.954	-1466.348	-2452.202	-125.233
		-24550.5	-3.365	-1629.808	2589.101	-1369.620	-125.233
5	2.099	-24418.6	-3.365	-3178.756	-1423.835	-5839.547	-128.765
		-24418.6	-3.365	-2583.675	2589.101	-3620.421	-128.765
5	3.149	-24300.2	-3.365	-3935.776	-1423.835	-9622.025	-132.296
		-24300.2	-3.365	-3340.695	2589.101	-6778.295	-132.296
5	4.198	-24173.3	-3.365	-4667.477	-1423.835	-14181.7	-135.828
		-24173.3	-3.365	-4072.396	2589.101	-10713.4	-135.828
6	0	-24151.8	-7.272	5413.976	-623.987	-14217.8	-135.828
		-24151.8	-7.272	5331.739	3264.444	-10610.4	-135.828
6	1.350	-23970.0	-7.272	4413.975	-496.975	-7647.706	-145.646
		-23970.0	-7.272	4331.738	3137.432	-4151.363	-145.646
6	2.700	-23769.5	-7.272	3426.458	-369.964	-2417.427	-155.464
		-23769.5	-7.272	3344.221	3010.420	967.893	-155.464
6	4.050	-23484.4	-7.272	2093.854	-242.952	1290.765	-165.281
		-23484.4	-7.272	2011.617	2883.408	4565.062	-165.281
6	5.400	-23190.7	-7.272	920.082	-115.940	3161.055	-175.099
		-23190.7	-7.272	837.845	2756.396	6324.328	-175.099
7	0	-23190.5	-4.275	920.082	-186.568	3154.525	-175.099
		-23190.5	-4.275	837.845	2546.593	6438.797	-175.099
7	1.350	-22979.5	-4.275	325.635	-59.558	3973.675	-180.870
		-22979.5	-4.275	243.398	2419.584	7146.925	-180.870
7	2.700	-22865.6	-4.275	246.192	67.451	4311.531	-186.641
		-22865.6	-4.275	163.955	2292.574	7373.760	-186.641
7	4.050	-22768.8	-4.275	279.678	194.460	4699.281	-192.412
		-22768.8	-4.275	197.441	2165.565	7650.489	-192.412
7	5.400	-22662.4	-4.275	309.779	321.470	5145.532	-198.183
		-22662.4	-4.275	227.542	2038.556	7985.718	-198.183
8	0	-22662.2	-1.476	247.855	-347.606	6009.816	-198.183
		-22662.2	-1.476	289.465	1279.720	7187.609	-198.183
8	1.350	-22546.8	-1.476	273.933	-220.612	6424.535	-200.175
		-22546.8	-1.476	315.543	1152.725	7658.494	-200.175
8	2.700	-22421.9	-1.476	295.410	-93.617	6884.001	-202.168
		-22421.9	-1.476	337.019	1025.731	8174.127	-202.168
8	4.050	-22311.0	-1.476	147.171	33.377	7265.951	-204.161
		-22311.0	-1.476	188.780	898.737	8612.244	-204.161
8	5.399	-22203.8	-1.476	-25.696	95.134	4475.081	-206.153
		-22203.8	-1.476	81.761	839.748	10417.0	-206.153
9	0	-22203.8	1.522	-26.783	-858.965	10947.8	-206.153
		-22203.8	1.522	82.848	-88.846	3943.959	-206.153
9	1.350	-22310.0	1.522	-135.840	-933.240	9217.933	-204.098

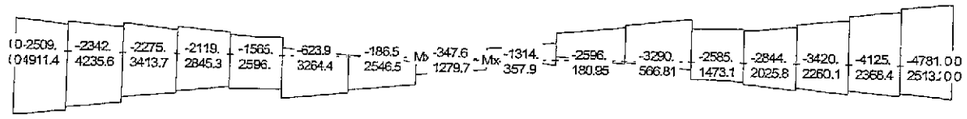
ENVOLVENTE para < T > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
		-22310.0	1.522	-91.886	-23.165	6810.213	-204.098
9	2.700	-22418.5	1.522	-273.484	-1060.264	8854.869	-202.044
		-22418.5	1.522	-229.530	103.859	6506.493	-202.044
9	4.051	-22541.5	1.522	-252.022	-1187.288	8426.357	-199.989
		-22541.5	1.522	-208.068	230.883	6137.326	-199.989
9	5.401	-22656.4	1.522	-225.947	-1314.311	8041.938	-197.934
		-22656.4	1.522	-181.993	357.907	5812.252	-197.934
10	0	-22656.5	4.348	-225.947	-2088.344	7972.860	-197.934
		-22656.5	4.348	-181.993	-327.011	5812.879	-197.934
10	1.350	-22762.3	4.348	-195.898	-2215.336	7640.706	-192.065
		-22762.3	4.348	-151.944	-200.019	5540.056	-192.065
10	2.700	-22858.4	4.348	-162.510	-2342.327	7366.965	-186.196
		-22858.4	4.348	-118.556	-73.028	5325.645	-186.196
10	4.049	-22979.8	4.348	-277.414	-2469.319	7133.389	-180.326
		-22979.8	4.348	-233.460	53.964	5151.399	-180.326
10	5.399	-23189.2	4.348	-872.615	-2596.310	6380.631	-174.457
		-23189.2	4.348	-828.661	180.956	4457.971	-174.457
11	0	-23189.4	7.272	-872.615	-2789.810	6267.229	-174.457
		-23189.4	7.272	-828.661	65.920	4463.169	-174.457
11	1.331	-23485.6	7.272	-2072.388	-2915.033	4456.344	-164.778
		-23485.6	7.272	-2028.435	191.143	2710.788	-164.778
11	2.662	-23763.2	7.272	-3371.849	-3040.256	846.312	-155.099
		-23763.2	7.272	-3327.895	316.366	-840.741	-155.099
11	3.993	-23961.0	7.272	-4345.492	-3165.479	-4228.087	-145.420
		-23961.0	7.272	-4301.538	441.589	-5856.636	-145.420
11	5.324	-24140.6	7.272	-5331.240	-3290.702	-10604.8	-135.741
		-24140.6	7.272	-5287.286	566.811	-12174.9	-135.741
12	0	-24162.1	3.447	4069.592	-2581.845	-10713.3	-135.741
		-24162.1	3.447	4113.122	1331.031	-12139.8	-135.741
12	1.050	-24289.0	3.447	3337.931	-2581.845	-6780.403	-132.123
		-24289.0	3.447	3381.460	1331.031	-8161.187	-132.123
12	2.100	-24407.4	3.447	2580.788	-2581.845	-3624.859	-128.504
		-24407.4	3.447	2624.317	1331.031	-4959.944	-128.504
12	3.149	-24539.2	3.447	1627.028	-2581.845	-1376.657	-124.886
		-24539.2	3.447	1936.725	1374.336	-2151.383	-124.886
12	4.199	-24654.4	3.447	937.563	-2585.796	155.440	-121.268
		-24654.4	3.447	942.503	1473.102	-612.368	-121.268
13	0	-24654.5	4.888	937.563	-2449.474	79.481	-121.268
		-24654.5	4.888	942.503	1630.738	-565.545	-121.268
13	1.050	-24753.7	4.888	-60.789	-2548.259	555.553	-116.135
		-24753.7	4.888	-55.849	1729.524	-84.286	-116.135
13	2.100	-24880.1	4.888	-812.312	-2647.045	0.612866	-111.002
		-24880.1	4.888	-807.372	1828.310	-634.039	-111.002
13	3.150	-25101.8	4.888	-803.958	-2745.831	-941.676	-105.869
		-25101.8	4.888	-799.019	1927.096	-1571.140	-105.869
13	4.200	-25290.1	4.888	-515.259	-2844.617	-1693.154	-100.736
		-25290.1	4.888	-510.319	2025.882	-2317.432	-100.736
14	0	-25290.3	6.467	-537.824	-3025.076	-1505.723	-100.736
		-25290.3	6.467	-487.753	1865.029	-2537.663	-100.736
14	1.050	-25339.3	6.467	-229.479	-3123.856	-1940.142	-93.945
		-25339.3	6.467	-179.409	1963.809	-2919.510	-93.945
14	2.100	-25198.3	6.467	88.153	-3222.636	-1951.473	-87.155
		-25198.3	6.467	138.223	2062.589	-2878.269	-87.155
14	3.150	-25070.8	6.467	209.941	-3321.416	-1691.312	-80.364
		-25070.8	6.467	260.012	2161.369	-2565.537	-80.364
14	4.200	-24964.3	6.467	157.724	-3420.197	-1455.166	-73.574
		-24964.3	6.467	207.794	2260.149	-2276.819	-73.574
15	0	-24964.5	7.990	157.724	-3730.547	-1570.000	-73.574
		-24964.5	7.990	207.794	1973.253	-2208.835	-73.574
15	1.050	-24860.0	7.990	64.972	-3829.351	-1402.556	-65.183
		-24860.0	7.990	115.043	2072.057	-1988.807	-65.183
15	2.100	-24756.3	7.990	-53.176	-3928.154	-1354.481	-56.791
		-24756.3	7.990	-3.106	2170.861	-1888.148	-56.791
15	3.151	-24624.8	7.990	-10.606	-4026.958	-1355.420	-48.400
		-24624.8	7.990	39.464	2269.665	-1836.503	-48.400
15	4.201	-24475.6	7.990	91.335	-4125.762	-1250.344	-40.008
		-24475.6	7.990	141.405	2368.469	-1678.842	-40.008
16	0	-24475.9	9.581	91.335	-4386.635	-1393.926	-40.008

ENVOLVENTE para < T > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
		-24475.9	9.581	141.405	2118.352	-1603.161	-40.008
16	1.049	-24318.9	9.581	186.928	-4485.372	-1189.380	-29.953
		-24318.9	9.581	236.998	2217.089	-1346.065	-29.953
16	2.099	-24153.9	9.581	275.739	-4584.109	-896.404	-19.898
		-24153.9	9.581	325.810	2315.826	-1000.540	-19.898
16	3.148	-24073.6	9.581	-37.987	-4682.846	-736.595	-9.842
		-24073.6	9.581	12.083	2414.563	-788.183	-9.842
16	4.198	-24002.5	9.581	-393.196	-4781.582	-956.728	0.212903
		-24002.5	9.581	-343.126	2513.299	-955.768	0.212903
17	0	4.757	23.560	-1680.480	-1.60E-13	4219.310	-56.500
		4.757	23.560	-1680.544	6.07E-13	4219.463	-56.500
17	0.600	4.757	23.560	-1719.937	-1.60E-13	3199.967	-42.375
		4.757	23.560	-1720.001	6.07E-13	3200.081	-42.375
17	1.199	4.757	23.560	-1759.395	-1.60E-13	2156.967	-28.250
		4.757	23.560	-1759.458	6.07E-13	2157.044	-28.250
17	1.799	4.757	23.560	-1798.852	-1.60E-13	1090.312	-14.125
		4.757	23.560	-1798.916	6.07E-13	1090.350	-14.125
17	2.398	4.757	23.560	-1838.309	-1.60E-13	4.41E-05	-5.65E-07
		4.757	23.560	-1838.373	6.07E-13	4.41E-05	-5.65E-07
18	0	-3.820	-23.637	-1239.669	7.38E-13	3164.767	56.728
		-3.820	-23.637	-531.932	1.28E-12	1466.187	56.728
18	0.600	-3.820	-23.637	-1279.157	7.38E-13	2409.115	42.546
		-3.820	-23.637	-571.420	1.28E-12	1135.179	42.546
18	1.200	-3.820	-23.637	-1318.645	7.38E-13	1629.769	28.364
		-3.820	-23.637	-610.907	1.28E-12	780.479	28.364
18	1.800	-3.820	-23.637	-1358.133	7.38E-13	826.731	14.182
		-3.820	-23.637	-650.395	1.28E-12	402.086	14.182
18	2.400	-3.820	-23.637	-1397.620	7.38E-13	3.35E-05	5.67E-07
		-3.820	-23.637	-689.883	1.28E-12	1.66E-05	5.67E-07
19	0	4.793	-23.548	-770.135	6.79E-13	2037.822	56.515
		4.793	-23.548	-2244.116	1.40E-12	5575.311	56.515
19	0.600	4.793	-23.548	-809.622	6.79E-13	1563.904	42.386
		4.793	-23.548	-2283.603	1.40E-12	4217.020	42.386
19	1.200	4.793	-23.548	-849.108	6.79E-13	1066.294	28.257
		4.793	-23.548	-2323.089	1.40E-12	2835.039	28.257
19	1.800	4.793	-23.548	-888.595	6.79E-13	544.993	14.129
		4.793	-23.548	-2362.576	1.40E-12	1429.365	14.129
19	2.400	4.793	-23.548	-928.082	6.79E-13	2.23E-05	5.65E-07
		4.793	-23.548	-2402.063	1.40E-12	5.76E-05	5.65E-07
20	0	-4.782	23.458	-1074.791	-8.93E-13	2769.170	-56.302
		-4.782	23.458	-1432.689	-2.27E-13	3628.164	-56.302
20	0.600	-4.782	23.458	-1114.280	-8.93E-13	2112.419	-42.226
		-4.782	23.458	-1472.178	-2.27E-13	2756.665	-42.226
20	1.200	-4.782	23.458	-1153.769	-8.93E-13	1431.974	-28.151
		-4.782	23.458	-1511.667	-2.27E-13	1861.471	-28.151
20	1.800	-4.782	23.458	-1193.258	-8.93E-13	727.834	-14.075
		-4.782	23.458	-1551.157	-2.27E-13	942.583	-14.075
20	2.400	-4.782	23.458	-1232.748	-8.93E-13	2.96E-05	-5.63E-07
		-4.782	23.458	-1590.646	-2.27E-13	3.82E-05	-5.63E-07

Mstb. 1 :449.9
- Section forces envelope T , GWSP IY (ELU 2), View "ALL"
- Struktur: Staebe
- Envelop Torsion.moment Mx-min, Scaling 1.00E-03
  min: -4.78E+03 max: 3.21E+02 [kNm]
- Envelop Torsion.moment Mx-max, Scaling 1.00E-03
  min: -3.27E+02 max: 4.91E+03 [kNm]
- Text envelopes [kNm]



ENVOLVENTE para < My > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
1	0	-24024.4	-9.508	367.446	4766.223	-926.202	-0.227677
		-24024.4	-9.508	706.829	-2363.857	-769.139	-0.227677
1	1.050	-24091.4	-9.508	-475.724	623.580	-1206.626	-10.212
		-24091.4	-9.508	839.917	1778.787	254.973	-10.212
1	2.100	-24168.0	-9.508	-753.482	623.580	-1886.652	-20.196
		-24168.0	-9.508	491.593	1778.787	919.416	-20.196
1	3.150	-24331.4	-9.508	-628.969	623.580	-2662.340	-30.180
		-24331.4	-9.508	545.541	1778.787	1414.099	-30.180
1	4.200	-24487.2	-9.508	-497.738	623.580	-3312.093	-40.164
		-24487.2	-9.508	606.207	1778.787	1960.619	-40.164
2	0	-24486.9	-8.079	-497.738	449.058	-3295.837	-40.164
		-24486.9	-8.079	606.207	1443.958	2009.459	-40.164
2	1.050	-24635.2	-8.079	-360.323	449.058	-3808.667	-48.646
		-24635.2	-8.079	673.074	1443.958	2618.559	-48.646
2	2.100	-24766.0	-8.079	-282.691	449.058	-4178.424	-57.127
		-24766.0	-8.079	680.157	1443.958	3296.667	-57.127
2	3.150	-24869.4	-8.079	-365.424	449.058	-4560.362	-65.608
		-24869.4	-8.079	526.874	1443.958	3888.529	-65.608
2	4.199	-24973.8	-8.079	-422.705	449.058	-5024.511	-74.090
		-24973.8	-8.079	399.045	1443.958	4324.114	-74.090
3	0	-24973.5	-6.428	-422.705	234.639	-5012.614	-74.090
		-24973.5	-6.428	399.045	903.666	4364.968	-74.090
3	0.600	-25035.2	-6.428	-432.663	234.639	-5294.069	-77.944
		-25035.2	-6.428	348.795	903.666	4564.138	-77.944
3	0.600	-25035.3	-6.428	-432.676	234.639	-5294.467	-77.949
		-25035.3	-6.428	48.725	903.666	4564.271	-77.949
3	1.050	-25080.4	-6.428	-439.524	234.639	-5508.674	-80.840
		-25080.4	-6.428	11.658	903.666	4559.747	-80.840
3	2.100	-25208.3	-6.428	-282.073	234.639	-5991.173	-87.586
		-25208.3	-6.428	98.585	903.666	4513.747	-87.586
3	2.100	-25208.4	-6.428	-281.864	234.639	-5991.392	-87.590
		-25208.4	-6.428	-201.248	903.666	4513.704	-87.590
3	2.100	-25208.4	-6.428	-281.793	234.639	-5991.466	-87.592
		-25208.4	-6.428	-201.192	903.666	4513.647	-87.592
3	3.150	-25350.0	-6.428	71.394	234.639	-6164.950	-94.341
		-25350.0	-6.428	81.443	903.666	4387.749	-94.341
3	3.600	-25359.7	-6.428	221.321	234.639	-6094.062	-97.229
		-25359.7	-6.428	201.178	903.666	4456.370	-97.229
3	3.600	-25359.7	-6.428	221.598	234.639	-6093.848	-97.234
		-25359.7	-6.428	-98.600	903.666	4456.442	-97.234
3	4.200	-25301.3	-6.428	415.366	234.639	-5877.820	-101.091
		-25301.3	-6.428	54.848	903.666	4468.256	-101.091
4	0	-25301.2	-4.907	415.366	193.560	-5870.985	-101.091
		-25301.2	-4.907	54.848	532.012	4491.174	-101.091

ENVOLVENTE para < My > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
4	1.050	-25113.3	-4.907	739.643	193.560	-5205.768	-106.244
		-25113.3	-4.907	308.567	532.012	4740.817	-106.244
4	2.100	-24891.7	-4.907	782.898	193.560	-4312.807	-111.396
		-24891.7	-4.907	281.264	532.012	5144.122	-111.396
4	3.150	-24765.4	-4.907	65.386	193.560	-3771.197	-116.549
		-24765.4	-4.907	-506.806	532.012	5121.991	-116.549
4	4.200	-24665.9	-4.907	-897.942	193.560	-4224.072	-121.701
		-24665.9	-4.907	-1540.691	532.012	4031.293	-121.701
5	0	-24665.8	-3.365	-897.942	479.527	-4213.209	-121.701
		-24665.8	-3.365	-1540.691	551.400	4048.778	-125.233
5	1.050	-24550.5	-3.365	-1857.004	479.527	-5686.757	-125.233
		-24550.5	-3.365	-2570.287	551.400	1863.576	-128.765
5	2.099	-24418.6	-3.365	-3977.452	217.787	-8732.173	-128.765
		-24418.6	-3.365	-2739.013	615.492	-797.263	-132.296
5	3.149	-24300.2	-3.365	-4805.007	217.787	-13390.0	-132.296
		-24300.2	-3.365	-3185.126	813.140	-3849.818	-135.828
5	4.198	-24173.3	-3.365	-5607.241	217.787	-18899.1	-135.828
		-24173.3	-3.365	-3916.826	813.140	-7621.641	-135.828
6	0	-24151.8	-7.272	6045.606	1182.579	-18874.4	-135.828
		-24151.8	-7.272	4766.019	1380.810	-7583.036	-145.646
6	1.350	-23970.0	-7.272	5000.244	1182.579	-11482.3	-145.646
		-23970.0	-7.272	3811.380	1380.810	-1857.118	-155.464
6	2.700	-23769.5	-7.272	3967.365	1182.579	-5491.114	-155.464
		-23769.5	-7.272	2869.224	1380.810	2590.251	-165.281
6	4.050	-23484.4	-7.272	2158.564	1845.728	-1211.321	-165.281
		-23484.4	-7.272	2031.812	198.577	6098.686	-175.099
6	5.400	-23190.7	-7.272	647.138	901.585	642.793	-175.099
		-23190.7	-7.272	858.040	325.589	7885.215	-175.099
7	0	-23190.5	-4.275	647.138	938.676	682.516	-175.099
		-23190.5	-4.275	858.039	50.695	7893.337	-180.870
7	1.350	-22979.5	-4.275	98.051	938.676	1163.806	-180.870
		-22979.5	-4.275	536.892	1399.302	8770.268	-186.641
7	2.700	-22865.6	-4.275	-1.645	893.029	1192.359	-186.641
		-22865.6	-4.275	477.703	1444.949	9395.386	-192.412
7	4.050	-22768.8	-4.275	77.201	893.029	1276.143	-192.412
		-22768.8	-4.275	465.828	1444.949	10065.1	-198.183
7	5.400	-22662.4	-4.275	152.662	893.029	1479.665	-198.183
		-22662.4	-4.275	450.568	1444.949	10732.0	-198.183
8	0	-22662.2	-1.476	152.662	383.688	1505.329	-198.183
		-22662.2	-1.476	450.568	563.351	10772.4	-198.183
8	1.350	-22546.8	-1.476	224.095	383.688	1822.161	-200.175
		-22546.8	-1.476	431.291	563.351	11430.1	-200.175
8	2.700	-22421.9	-1.476	290.926	383.688	2244.965	-202.168
		-22421.9	-1.476	407.412	563.351	12071.4	-202.168
8	4.050	-22311.0	-1.476	188.043	383.688	2651.474	-204.161
		-22311.0	-1.476	213.818	563.351	12573.9	-204.161
8	5.399	-22203.8	-1.476	59.564	383.688	2888.048	-206.153
		-22203.8	-1.476	-5.370	563.351	12784.0	-206.153
9	0	-22203.8	1.522	59.564	-361.545	2888.524	-206.153
		-22203.8	1.522	-5.370	-607.669	12783.1	-206.153
9	1.350	-22310.0	1.522	-68.837	-361.545	2813.528	-204.098
		-22310.0	1.522	-224.503	-607.669	12559.2	-204.098
9	2.700	-22418.5	1.522	-161.115	-361.545	2571.554	-202.044
		-22418.5	1.522	-407.512	-607.669	12045.8	-202.044
9	4.051	-22541.5	1.522	-94.288	-361.545	2325.384	-199.989
		-22541.5	1.522	-431.416	-607.669	11405.7	-199.989
9	5.401	-22656.4	1.522	-22.847	-361.545	2184.557	-197.934
		-22656.4	1.522	-450.707	-607.669	10748.4	-197.934
10	0	-22656.5	4.348	-22.847	-898.638	2158.974	-197.934
		-22656.5	4.348	-450.707	-1492.127	10705.8	-197.934
10	1.350	-22762.3	4.348	52.556	-898.638	2131.579	-192.065
		-22762.3	4.348	-466.012	-1492.127	10039.6	-192.065
10	2.700	-22858.4	4.348	131.298	-898.638	2223.818	-186.196
		-22858.4	4.348	-477.978	-1492.127	9370.675	-186.196
10	4.049	-22979.8	4.348	-66.085	-989.705	2297.877	-180.326
		-22979.8	4.348	-510.403	-1401.061	8800.226	-180.326
10	5.399	-23189.2	4.348	-615.932	-989.705	1860.986	-174.457
		-23189.2	4.348	-828.780	-42.338	7994.950	-174.457

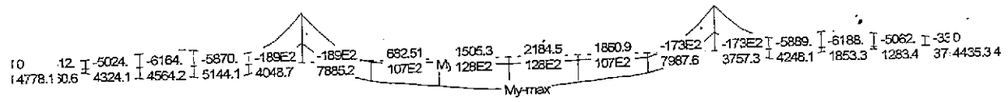
ENVOLVENTE para < My > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
11	0	-23189.4	7.272	-615.932	-994.395	1819.212	-174.457
		-23189.4	7.272	-828.780	-306.048	7987.615	-174.457
11	1.331	-23485.6	7.272	-2157.173	-1946.744	-43.955	-164.778
		-23485.6	7.272	-2028.554	-180.825	6235.075	-164.778
11	2.662	-23763.2	7.272	-3932.965	-1279.731	-4250.711	-155.099
		-23763.2	7.272	-2832.393	-1365.916	2808.525	-155.099
11	3.993	-23961.0	7.272	-4951.331	-1279.731	-10101.7	-145.420
		-23961.0	7.272	-3761.314	-1365.916	-1518.081	-145.420
11	5.324	-24140.6	7.272	-5981.801	-1279.731	-17314.6	-135.741
		-24140.6	7.272	-4702.339	-1365.916	-7087.524	-135.741
12	0	-24162.1	3.447	5076.608	-324.394	-17344.3	-135.741
		-24162.1	3.447	3888.671	-788.299	-7127.325	-135.741
12	1.050	-24289.0	3.447	4274.399	-324.394	-12391.2	-132.123
		-24289.0	3.447	3157.009	-788.299	-3384.312	-132.123
12	2.100	-24407.4	3.447	3446.709	-324.394	-8289.563	-128.504
		-24407.4	3.447	2707.516	-590.384	-352.877	-128.504
12	3.149	-24539.2	3.447	1851.479	-462.515	-5682.270	-124.886
		-24539.2	3.447	2017.030	-650.179	2152.498	-124.886
12	4.199	-24654.4	3.447	892.531	-462.515	-4214.231	-121.268
		-24654.4	3.447	987.535	-650.179	3757.303	-121.268
13	0	-24654.5	4.888	892.531	-195.351	-4224.155	-121.268
		-24654.5	4.888	987.534	-623.384	3738.091	-121.268
13	1.050	-24753.7	4.888	-70.540	-195.351	-3776.845	-116.135
		-24753.7	4.888	-46.098	-623.384	4248.112	-116.135
13	2.100	-24880.1	4.888	-786.782	-195.351	-4323.501	-111.002
		-24880.1	4.888	-832.902	-623.384	3690.075	-111.002
13	3.150	-25101.8	4.888	-743.148	-195.351	-5220.460	-105.869
		-25101.8	4.888	-859.829	-623.384	2707.644	-105.869
13	4.200	-25290.1	4.888	-419.168	-195.351	-5889.564	-100.736
		-25290.1	4.888	-606.410	-623.384	1878.978	-100.736
14	0	-25290.3	6.467	-419.168	-237.391	-5896.737	-100.736
		-25290.3	6.467	-606.410	-922.657	1853.351	-100.736
14	1.050	-25339.3	6.467	-75.544	-237.391	-6188.051	-93.945
		-25339.3	6.467	-333.344	-922.657	1328.399	-93.945
14	2.100	-25198.3	6.467	277.366	-237.391	-6019.236	-87.155
		-25198.3	6.467	-50.991	-922.657	1189.494	-87.155
14	3.150	-25070.8	6.467	434.433	-237.391	-5541.888	-80.364
		-25070.8	6.467	35.520	-922.657	1285.039	-80.364
14	4.200	-24964.3	6.467	417.495	-237.391	-5051.514	-73.574
		-24964.3	6.467	-51.976	-922.657	1319.529	-73.574
15	0	-24964.5	7.990	417.495	-433.905	-5062.294	-73.574
		-24964.5	7.990	-51.976	-1323.389	1283.459	-73.574
15	1.050	-24860.0	7.990	360.030	-433.905	-4603.507	-65.183
		-24860.0	7.990	-180.015	-1323.389	1212.144	-65.183
15	2.100	-24756.3	7.990	277.169	-433.905	-4227.029	-56.791
		-24756.3	7.990	-333.451	-1323.389	984.401	-56.791
15	3.151	-24624.8	7.990	355.026	-433.905	-3862.507	-48.400
		-24624.8	7.990	-326.168	-1323.389	670.584	-48.400
15	4.201	-24475.6	7.990	492.254	-433.905	-3354.911	-40.008
		-24475.6	7.990	-259.514	-1323.389	425.725	-40.008
16	0	-24475.9	9.581	492.254	-625.901	-3372.787	-40.008
		-24475.9	9.581	-259.514	-1642.382	375.700	-40.008
16	1.049	-24318.9	9.581	623.110	-625.901	-2728.972	-29.953
		-24318.9	9.581	-199.184	-1642.382	193.527	-29.953
16	2.099	-24153.9	9.581	747.185	-625.901	-1959.720	-19.898
		-24153.9	9.581	-145.636	-1642.382	62.776	-19.898
16	3.148	-24073.6	9.581	468.721	-625.901	-1286.626	-9.842
		-24073.6	9.581	-494.626	-1642.382	-238.152	-9.842
16	4.198	-24002.5	9.581	-370.631	-4771.487	-956.739	0.212903
		-24002.5	9.581	-365.691	2503.204	-955.756	0.212903
17	0	4.757	23.560	-707.709	-5.64E-15	1886.449	-56.500
		4.757	23.560	-2461.702	2.93E-13	6092.804	-56.500
17	0.600	4.757	23.560	-747.166	-5.64E-15	1450.321	-42.375
		4.757	23.560	-2501.159	2.93E-13	4605.087	-42.375
17	1.199	4.757	23.560	-786.623	-5.64E-15	990.537	-28.250
		4.757	23.560	-2540.616	2.93E-13	3093.714	-28.250
17	1.799	4.757	23.560	-826.081	-5.64E-15	507.096	-14.125
		4.757	23.560	-2580.073	2.93E-13	1558.685	-14.125

ENVOLVENTE para < My > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
17	2.398	4.757	23.560	-865.538	-5.64E-15	2.08E-05	-5.65E-07
		4.757	23.560	-2619.530	2.93E-13	6.28E-05	-5.65E-07
18	0	-3.820	-23.637	-255.642	1.04E-12	803.088	56.728
		-3.820	-23.637	-1911.914	1.03E-12	4778.165	56.728
18	0.600	-3.820	-23.637	-295.130	1.04E-12	637.855	42.546
		-3.820	-23.637	-1951.402	1.03E-12	3619.163	42.546
18	1.200	-3.820	-23.637	-334.618	1.04E-12	448.929	28.364
		-3.820	-23.637	-1990.890	1.03E-12	2436.468	28.364
18	1.800	-3.820	-23.637	-374.106	1.04E-12	236.311	14.182
		-3.820	-23.637	-2030.378	1.03E-12	1230.080	14.182
18	2.400	-3.820	-23.637	-413.593	1.04E-12	9.93E-06	5.67E-07
		-3.820	-23.637	-2069.865	1.03E-12	4.97E-05	5.67E-07
19	0	4.793	-23.548	-712.719	6.99E-13	1900.026	56.515
		4.793	-23.548	-2257.502	1.38E-12	5607.437	56.515
19	0.600	4.793	-23.548	-752.205	6.99E-13	1460.557	42.386
		4.793	-23.548	-2296.989	1.38E-12	4241.115	42.386
19	1.200	4.793	-23.548	-791.692	6.99E-13	997.396	28.257
		4.793	-23.548	-2336.475	1.38E-12	2851.102	28.257
19	1.800	4.793	-23.548	-831.179	6.99E-13	510.544	14.129
		4.793	-23.548	-2375.962	1.38E-12	1437.397	14.129
19	2.400	4.793	-23.548	-870.666	6.99E-13	2.09E-05	5.65E-07
		4.793	-23.548	-2415.449	1.38E-12	5.80E-05	5.65E-07
20	0	-4.782	23.458	-255.933	-8.30E-13	803.823	-56.302
		-4.782	23.458	-1769.004	-2.40E-13	4435.357	-56.302
20	0.600	-4.782	23.458	-295.422	-8.30E-13	638.409	-42.226
		-4.782	23.458	-1808.493	-2.40E-13	3362.059	-42.226
20	1.200	-4.782	23.458	-334.911	-8.30E-13	449.301	-28.151
		-4.782	23.458	-1847.983	-2.40E-13	2265.068	-28.151
20	1.800	-4.782	23.458	-374.401	-8.30E-13	236.498	-14.075
		-4.782	23.458	-1887.472	-2.40E-13	1144.381	-14.075
20	2.400	-4.782	23.458	-413.890	-8.30E-13	9.93E-06	-5.63E-07
		-4.782	23.458	-1926.961	-2.40E-13	4.62E-05	-5.63E-07

Mstb. 1 :449.9
Section forces envelope My, GWSP IY (ELU 2), View "ALL"
- Struktur: Staebe
- Envelop Moment My-min, Scaling 2.00E-04
  min: -1.89E+04 max: 2.89E+03 [kNm]
- Envelop Moment My-max, Scaling 2.00E-04
  min: -7.62E+03 max: 1.28E+04 [kNm]
- Text envelopes [kNm]



ENVOLVENTE: IZ 'ELU 3'

Grupo	Espe.	Hipótesis	Factor	Etapa	Título
A	PERM.	1	1.350		Peso Propio
	Y	3	1.350		Carga Muerta Máxima
	Y	20	0.850000		Pretensado
B	MAS	19	0.900000		gradiente
C	MAS	23	1.500		Carro 2 apoyo
D	MAS	4	1.500		Sobrecarga centrada vano 1
E	MAS	5	1.500		Sobrecarga centrada vano 2
F	MAS	6	1.500		Sobrecarga centrada vano 3
ALTERNATIVA PARA ENVOLVENTE:					
G	PERM.	1	1.350		Peso Propio
	Y	3	1.350		Carga Muerta Máxima
	Y	20	0.850000		Pretensado
H	MAS	19	0.900000		gradiente
I	MAS	23	1.500		Carro 2 apoyo
J	MAS	7	1.500		Sobrecarga excéntrica vano 1 (
K	MAS	8	1.500		Sobrecarga excentrica vano 2 (
L	MAS	9	1.500		Sobrecarga excentrica vano 3 (
ALTERNATIVA PARA ENVOLVENTE:					
M	PERM.	1	1.350		Peso Propio
	Y	3	1.350		Carga Muerta Máxima
	Y	20	0.850000		Pretensado
N	MAS	19	0.900000		gradiente
O	MAS	23	1.500		Carro 2 apoyo
P	MAS	10	1.500		Sobrecarga excéntrica vano 1 (
Q	MAS	11	1.500		Sobrecarga excentrica vano 2 (
R	MAS	12	1.500		Sobrecarga excentrica vano 3 (

ENVOLVENTE para < Vz > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
1	0	-24024.4	-9.508	-188.171	595.530	-870.161	-0.227677
		-24024.4	-9.508	853.695	1633.556	-841.176	-0.227677
1	1.050	-24091.4	-9.508	-507.929	595.530	-1241.420	-10.212
		-24091.4	-9.508	463.371	1633.556	-155.448	-10.212
1	2.100	-24168.0	-9.508	-785.688	595.530	-1955.265	-20.196
		-24168.0	-9.508	115.048	1633.556	113.595	-20.196
1	3.150	-24331.4	-9.508	-661.175	595.530	-2764.772	-30.180
		-24331.4	-9.508	168.996	1633.556	212.877	-30.180
1	4.200	-24487.2	-9.508	-529.944	595.530	-3448.343	-40.164
		-24487.2	-9.508	229.662	1633.556	363.997	-40.164
2	0	-24486.9	-8.079	-529.944	425.149	-3432.875	-40.164
		-24486.9	-8.079	229.662	1347.176	409.170	-40.164
2	1.050	-24635.2	-8.079	-392.529	425.149	-3979.515	-48.646
		-24635.2	-8.079	296.528	1347.176	622.958	-48.646
2	2.100	-24766.0	-8.079	-314.897	425.149	-4383.083	-57.127
		-24766.0	-8.079	303.611	1347.176	905.756	-57.127
2	3.150	-24869.4	-8.079	-397.630	425.149	-4798.832	-65.608
		-24869.4	-8.079	150.329	1347.176	1102.306	-65.608
2	4.199	-24973.8	-8.079	-454.911	425.149	-5296.792	-74.090
		-24973.8	-8.079	22.499	1347.176	1142.581	-74.090
3	0	-24973.5	-6.428	-454.911	220.219	-5285.562	-74.090
		-24973.5	-6.428	22.499	917.639	1181.993	-74.090
3	1.050	-25080.4	-6.428	-479.858	203.482	-2860.261	-80.840
		-25080.4	-6.428	-50.167	-87.650	-306.738	-80.840
3	2.100	-25208.4	-6.428	-392.764	203.482	-3422.385	-87.590
		-25208.4	-6.428	100.901	934.376	-1919.564	-87.590
3	3.150	-25350.0	-6.428	-110.073	203.482	-3749.451	-94.341
		-25350.0	-6.428	454.159	934.376	-1691.179	-94.341
3	4.200	-25301.3	-6.428	163.332	203.482	-3689.932	-101.091

ENVOLVENTE para < Vz > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
		-25301.3	-6.428	798.131	934.376	-1002.107	-101.091
4	0	-25301.2	-4.907	163.332	92.585	-3685.206	-101.091
		-25301.2	-4.907	798.131	737.314	-975.421	-101.091
4	1.050	-25113.3	-4.907	417.051	92.585	-3321.659	-106.244
		-25113.3	-4.907	1122.408	737.314	91.686	-106.244
4	2.100	-24891.7	-4.907	389.748	92.585	-2804.450	-111.396
		-24891.7	-4.907	1165.663	737.314	1386.538	-111.396
4	3.150	-24765.4	-4.907	-398.322	92.585	-2712.676	-116.549
		-24765.4	-4.907	448.151	737.314	2330.038	-116.549
4	4.200	-24665.9	-4.907	-1432.207	92.585	-3689.470	-121.701
		-24665.9	-4.907	-515.177	737.314	2279.053	-121.701
5	0	-24665.8	-3.365	-1432.207	361.352	-3682.144	-121.701
		-24665.8	-3.365	-515.177	813.140	2304.076	-121.701
5	1.050	-24550.5	-3.365	-2461.803	361.352	-5753.480	-125.233
		-24550.5	-3.365	-1474.239	813.140	1232.283	-125.233
5	2.099	-24418.6	-3.365	-3486.204	361.352	-8914.569	-128.765
		-24418.6	-3.365	-2428.106	813.140	-855.231	-128.765
5	3.149	-24300.2	-3.365	-4313.758	361.352	-13056.8	-132.296
		-24300.2	-3.365	-3185.126	813.140	-3849.818	-132.296
5	4.198	-24173.3	-3.365	-5115.992	361.352	-18050.2	-135.828
		-24173.3	-3.365	-3916.826	813.140	-7621.641	-135.828
6	0	-24151.8	-7.272	4766.019	1380.810	-7583.036	-135.828
		-24151.8	-7.272	6855.433	1296.192	-18021.1	-135.828
6	0.0995	-24139.1	-7.272	4695.334	1380.810	-7116.992	-136.551
		-24139.1	-7.272	6778.064	1296.192	-17347.5	-136.551
6	0.101	-24139.0	-7.272	4694.567	1380.810	-7111.970	-136.559
		-24139.0	-7.272	6477.224	1296.192	-17340.4	-136.559
6	1.350	-23970.0	-7.272	3811.380	1380.810	-1857.118	-145.646
		-23970.0	-7.272	5510.071	1296.192	-9910.603	-145.646
6	1.499	-23948.7	-7.272	3706.454	1380.810	-1302.495	-146.732
		-23948.7	-7.272	5395.104	1296.192	-9102.914	-146.732
6	1.501	-23948.5	-7.272	3705.696	1380.810	-1298.543	-146.740
		-23948.5	-7.272	5094.274	1296.192	-9097.300	-146.740
6	2.700	-23769.5	-7.272	2869.224	1380.810	2590.251	-155.464
		-23769.5	-7.272	4177.192	1296.192	-3591.194	-155.464
6	2.999	-23722.5	-7.272	2662.204	1380.810	3406.135	-157.641
		-23722.5	-7.272	3950.054	1296.192	-2386.747	-157.641
6	3.001	-23722.3	-7.272	2633.208	1420.843	4026.477	-157.649
		-23722.3	-7.272	3677.485	1256.160	-3000.195	-157.649
6	4.050	-23484.4	-7.272	1553.732	1420.843	6164.633	-165.281
		-23484.4	-7.272	2527.477	1256.160	197.004	-165.281
6	5.400	-23190.7	-7.272	425.321	1420.843	7336.354	-175.099
		-23190.7	-7.272	1308.343	1256.160	2622.082	-175.099
7	0	-23190.5	-4.275	425.321	1168.613	7392.250	-175.099
		-23190.5	-4.275	1308.343	1207.511	2675.263	-175.099
7	1.350	-22979.5	-4.275	-123.766	1168.613	7574.083	-180.870
		-22979.5	-4.275	668.536	1207.511	3987.952	-180.870
7	2.700	-22865.6	-4.275	-157.848	1168.613	7335.860	-186.641
		-22865.6	-4.275	543.732	1207.511	4758.110	-186.641
7	4.050	-22768.8	-4.275	-79.002	1168.613	7208.769	-192.412
		-22768.8	-4.275	531.858	1207.511	5516.925	-192.412
7	5.400	-22662.4	-4.275	-3.541	1168.613	7201.415	-198.183
		-22662.4	-4.275	516.598	1207.511	6273.003	-198.183
8	0	-22662.2	-1.476	-3.541	429.117	7233.531	-198.183
		-22662.2	-1.476	516.598	505.292	6307.432	-198.183
8	1.350	-22546.8	-1.476	67.892	429.117	7339.513	-200.175
		-22546.8	-1.476	497.321	505.292	7054.302	-200.175
8	2.700	-22421.9	-1.476	134.724	429.117	7551.466	-202.168
		-22421.9	-1.476	473.442	505.292	7784.697	-202.168
8	4.050	-22311.0	-1.476	31.840	429.117	7747.124	-204.161
		-22311.0	-1.476	279.848	505.292	8376.353	-204.161
8	5.399	-22203.8	-1.476	-99.235	526.425	12464.4	-206.153
		-22203.8	-1.476	63.255	407.985	3984.033	-206.153
9	0	-22203.8	1.522	-99.235	-630.816	12462.2	-206.153
		-22203.8	1.522	63.255	-384.408	3984.540	-206.153
9	1.350	-22310.0	1.522	-318.367	-630.816	12111.5	-204.098
		-22310.0	1.522	-65.147	-384.408	3914.528	-204.098
9	2.700	-22418.5	1.522	-501.376	-630.816	11471.4	-202.044

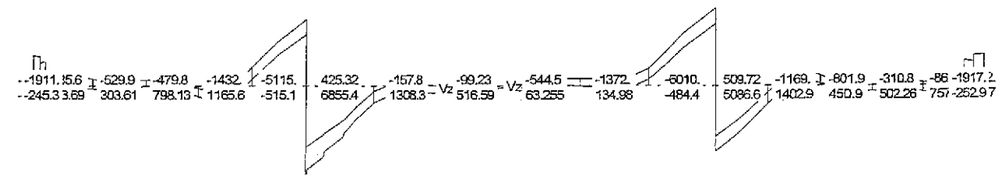
ENVOLVENTE para < Vz > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
		-22418.5	1.522	-157.424	-384.408	3677.537	-202.044
9	4.051	-22541.5	1.522	-525.280	-630.816	10704.6	-199.989
		-22541.5	1.522	-90.597	-384.408	3436.350	-199.989
9	5.401	-22656.4	1.522	-544.571	-630.816	9920.591	-197.934
		-22656.4	1.522	-19.156	-384.408	3300.507	-197.934
10	0	-22656.5	4.348	-544.571	-1481.657	9877.705	-197.934
		-22656.5	4.348	-19.156	-966.774	3273.076	-197.934
10	1.350	-22762.3	4.348	-559.876	-1481.657	9084.855	-192.065
		-22762.3	4.348	56.247	-966.774	3250.664	-192.065
10	2.700	-22858.4	4.348	-571.842	-1481.657	8289.197	-186.196
		-22858.4	4.348	134.989	-966.774	3347.884	-186.196
10	4.049	-22979.8	4.348	-732.100	-1481.657	7472.483	-180.326
		-22979.8	4.348	65.439	-966.774	3546.490	-180.326
10	5.399	-23189.2	4.348	-1372.655	-1481.657	6075.367	-174.457
		-23189.2	4.348	-484.408	-966.774	3287.134	-174.457
11	0	-23189.4	7.272	-1372.655	-1663.296	6009.152	-174.457
		-23189.4	7.272	-484.408	-1031.512	3245.061	-174.457
11	1.331	-23485.6	7.272	-2617.151	-1663.296	3502.937	-164.778
		-23485.6	7.272	-1639.459	-1031.512	1980.653	-164.778
11	2.662	-23763.2	7.272	-3961.335	-1663.296	-861.953	-155.099
		-23763.2	7.272	-2894.197	-1031.512	-1023.377	-155.099
11	3.993	-23961.0	7.272	-4979.700	-1663.296	-6750.735	-145.420
		-23961.0	7.272	-3823.118	-1031.512	-5432.245	-145.420
11	5.324	-24140.6	7.272	-6010.170	-1663.296	-14001.4	-135.741
		-24140.6	7.272	-4764.143	-1031.512	-11084.0	-135.741
12	0	-24162.1	3.447	3911.236	-808.379	-7601.006	-135.741
		-24162.1	3.447	5086.621	-328.205	-17555.1	-135.741
12	1.050	-24289.0	3.447	3179.575	-808.379	-3834.304	-132.123
		-24289.0	3.447	4284.413	-328.205	-12591.5	-132.123
12	2.100	-24407.4	3.447	2422.431	-808.379	-845.004	-128.504
		-24407.4	3.447	3456.722	-328.205	-8479.396	-128.504
12	3.149	-24539.2	3.447	1468.672	-808.379	1236.954	-124.886
		-24539.2	3.447	2432.416	-328.205	-5348.660	-124.886
12	4.199	-24654.4	3.447	509.724	-808.379	2303.118	-121.268
		-24654.4	3.447	1402.920	-328.205	-3307.780	-121.268
13	0	-24654.5	4.888	509.724	-737.649	2279.795	-121.268
		-24654.5	4.888	1402.920	-88.445	-3314.065	-121.268
13	1.050	-24753.7	4.888	-453.347	-737.649	2325.150	-116.135
		-24753.7	4.888	369.288	-88.445	-2367.880	-116.135
13	2.100	-24880.1	4.888	-1169.590	-737.649	1376.539	-111.002
		-24880.1	4.888	-417.516	-88.445	-2489.754	-111.002
13	3.150	-25101.8	4.888	-1125.955	-737.649	77.624	-105.869
		-25101.8	4.888	-444.443	-88.445	-3036.021	-105.869
13	4.200	-25290.1	4.888	-801.975	-737.649	-993.435	-100.736
		-25290.1	4.888	-191.024	-88.445	-3428.524	-100.736
14	0	-25290.3	6.467	-801.975	-941.660	-1021.271	-100.736
		-25290.3	6.467	-191.024	-212.108	-3433.506	-100.736
14	1.050	-25339.3	6.467	-458.352	-941.660	-1714.517	-93.945
		-25339.3	6.467	82.042	-212.108	-3522.320	-93.945
14	2.100	-25198.3	6.467	-105.441	-941.660	-1947.634	-87.155
		-25198.3	6.467	364.395	-212.108	-3225.087	-87.155
14	3.150	-25070.8	6.467	41.770	80.729	-362.929	-80.364
		-25070.8	6.467	450.905	-212.108	-2693.403	-80.364
14	4.200	-24964.3	6.467	-29.411	-921.861	1129.586	-73.574
		-24964.3	6.467	427.508	-231.906	-5136.138	-73.574
15	0	-24964.5	7.990	-29.411	-1316.495	1093.641	-73.574
		-24964.5	7.990	427.508	-425.706	-5146.699	-73.574
15	1.050	-24860.0	7.990	-157.450	-1316.495	1046.023	-65.183
		-24860.0	7.990	370.044	-425.706	-4677.396	-65.183
15	2.100	-24756.3	7.990	-310.886	-1316.495	841.978	-56.791
		-24756.3	7.990	287.182	-425.706	-4290.402	-56.791
15	3.151	-24624.8	7.990	-303.603	-1316.495	551.860	-48.400
		-24624.8	7.990	365.039	-425.706	-3915.364	-48.400
15	4.201	-24475.6	7.990	-236.949	-1316.495	330.699	-40.008
		-24475.6	7.990	502.267	-425.706	-3397.251	-40.008
16	0	-24475.9	9.581	-236.949	-1632.287	280.960	-40.008
		-24475.9	9.581	502.267	-616.279	-3414.827	-40.008
16	1.049	-24318.9	9.581	-176.619	-1632.287	122.470	-29.953

ENVOLVENTE para < Vz > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
		-24318.9	9.581	633.123	-616.279	-2760.503	-29.953
16	2.099	-24153.9	9.581	-123.071	-1632.287	15.400	-19.898
		-24153.9	9.581	757.198	-616.279	-1980.742	-19.898
16	3.148	-24073.6	9.581	-472.060	-1632.287	-261.845	-9.842
		-24073.6	9.581	478.734	-616.279	-1297.139	-9.842
16	4.198	-24002.5	9.581	-862.532	-1632.287	-956.042	0.212903
		-24002.5	9.581	158.789	-616.279	-956.470	0.212903
17	0	4.757	23.560	-2243.150	4.48E-14	5568.682	-56.500
		4.757	23.560	-685.758	-4.33E-14	1833.806	-56.500
17	0.600	4.757	23.560	-2282.607	4.48E-14	4211.996	-42.375
		4.757	23.560	-725.215	-4.33E-14	1410.839	-42.375
17	1.199	4.757	23.560	-2322.064	4.48E-14	2831.654	-28.250
		4.757	23.560	-764.672	-4.33E-14	964.216	-28.250
17	1.799	4.757	23.560	-2361.522	4.48E-14	1427.655	-14.125
		4.757	23.560	-804.129	-4.33E-14	493.936	-14.125
17	2.398	4.757	23.560	-2400.979	4.48E-14	5.76E-05	-5.65E-07
		4.757	23.560	-843.587	-4.33E-14	2.02E-05	-5.65E-07
18	0	-3.820	-23.637	-1753.920	1.17E-12	4398.977	56.728
		-3.820	-23.637	-245.387	1.01E-12	778.476	56.728
18	0.600	-3.820	-23.637	-1793.408	1.17E-12	3334.772	42.546
		-3.820	-23.637	-284.875	1.01E-12	619.396	42.546
18	1.200	-3.820	-23.637	-1832.896	1.17E-12	2246.874	28.364
		-3.820	-23.637	-324.363	1.01E-12	436.624	28.364
18	1.800	-3.820	-23.637	-1872.384	1.17E-12	1135.283	14.182
		-3.820	-23.637	-363.851	1.01E-12	230.158	14.182
18	2.400	-3.820	-23.637	-1911.871	1.17E-12	4.59E-05	5.67E-07
		-3.820	-23.637	-403.338	1.01E-12	9.68E-06	5.67E-07
19	0	4.793	-23.548	-2244.116	1.40E-12	5575.311	56.515
		4.793	-23.548	-705.707	6.97E-13	1883.199	56.515
19	0.600	4.793	-23.548	-2283.603	1.40E-12	4217.020	42.386
		4.793	-23.548	-745.194	6.97E-13	1447.937	42.386
19	1.200	4.793	-23.548	-2323.089	1.40E-12	2835.039	28.257
		4.793	-23.548	-784.681	6.97E-13	988.983	28.257
19	1.800	4.793	-23.548	-2362.576	1.40E-12	1429.365	14.129
		4.793	-23.548	-824.168	6.97E-13	506.337	14.129
19	2.400	4.793	-23.548	-2402.063	1.40E-12	5.76E-05	5.65E-07
		4.793	-23.548	-863.654	6.97E-13	2.07E-05	5.65E-07
20	0	-4.782	23.458	-1759.825	-2.70E-13	4413.326	-56.302
		-4.782	23.458	-252.931	-8.37E-13	796.618	-56.302
20	0.600	-4.782	23.458	-1799.314	-2.70E-13	3345.536	-42.226
		-4.782	23.458	-292.420	-8.37E-13	633.006	-42.226
20	1.200	-4.782	23.458	-1838.803	-2.70E-13	2254.052	-28.151
		-4.782	23.458	-331.910	-8.37E-13	445.698	-28.151
20	1.800	-4.782	23.458	-1878.293	-2.70E-13	1138.873	-14.075
		-4.782	23.458	-371.399	-8.37E-13	234.697	-14.075
20	2.400	-4.782	23.458	-1917.782	-2.70E-13	4.60E-05	-5.63E-07
		-4.782	23.458	-410.888	-8.37E-13	9.86E-06	-5.63E-07

Mstb. 1 :449.9
Section forces envelope Vz, GWSP IZ (ELU 3), View "ALL"
- Struktur: Staebe
- Envelop Shear force Vz-min, Scaling 1.00E-03
  min: -6.01E+03 max: 4.77E+03 [kN]
- Envelop Shear force Vz-max, Scaling 1.00E-03
  min: -4.76E+03 max: 6.86E+03 [kN]
- Text envelopes [kN]



ENVOLVENTE para < T > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
1	0	-24024.4	-9.508	298.077	-2537.137	-785.135	-0.227677
		-24024.4	-9.508	367.446	4766.223	-926.202	-0.227677
1	1.050	-24091.4	-9.508	-56.963	-2438.346	-664.322	-10.212
		-24091.4	-9.508	12.405	4667.432	-732.546	-10.212
1	2.100	-24168.0	-9.508	-370.005	-2339.555	-923.145	-20.196
		-24168.0	-9.508	-300.636	4568.641	-918.526	-20.196
1	3.150	-24331.4	-9.508	-280.774	-2240.764	-1314.678	-30.180
		-24331.4	-9.508	-211.405	4469.850	-1237.216	-30.180
1	4.200	-24487.2	-9.508	-184.826	-2141.973	-1617.325	-40.164
		-24487.2	-9.508	-115.457	4371.059	-1467.021	-40.164
2	0	-24486.9	-8.079	-184.826	-2366.581	-1685.650	-40.164
		-24486.9	-8.079	-115.457	4138.906	-1338.054	-40.164
2	1.050	-24635.2	-8.079	-82.685	-2267.812	-1888.490	-48.646
		-24635.2	-8.079	-13.316	4040.138	-1468.068	-48.646
2	2.100	-24766.0	-8.079	-40.327	-2169.044	-1985.288	-57.127
		-24766.0	-8.079	29.042	3941.369	-1492.039	-57.127
2	3.150	-24869.4	-8.079	-158.335	-2070.275	-2131.300	-65.608
		-24869.4	-8.079	-88.966	3842.600	-1565.226	-65.608
2	4.199	-24973.8	-8.079	-250.890	-1971.506	-2396.556	-74.090
		-24973.8	-8.079	-181.521	3743.832	-1757.656	-74.090
3	0	-24973.5	-6.428	-250.890	-2275.895	-2470.469	-74.090
		-24973.5	-6.428	-181.521	3413.753	-1633.100	-74.090
3	1.050	-25080.4	-6.428	-302.993	-2177.102	-2804.632	-80.840
		-25080.4	-6.428	-233.624	3314.959	-1894.418	-80.840
3	2.100	-25208.4	-6.428	-180.616	-2078.308	-3162.503	-87.590
		-25208.4	-6.428	-111.247	3216.165	-2179.445	-87.590
3	3.150	-25350.0	-6.428	137.359	-1979.514	-3248.267	-94.341
		-25350.0	-6.428	206.727	3117.372	-2192.364	-94.341
3	4.200	-25301.3	-6.428	446.047	-1880.720	-2910.393	-101.091
		-25301.3	-6.428	515.416	3018.578	-1781.646	-101.091
4	0	-25301.2	-4.907	446.047	-2015.438	-2972.590	-101.091
		-25301.2	-4.907	515.416	2845.336	-1688.037	-101.091
4	1.050	-25113.3	-4.907	735.045	-1916.657	-2293.680	-106.244
		-25113.3	-4.907	804.414	2746.555	-936.293	-106.244
4	2.100	-24891.7	-4.907	743.021	-1817.876	-1424.068	-111.396
		-24891.7	-4.907	812.390	2647.774	6.155	-111.396
4	3.150	-24765.4	-4.907	-9.770	-1719.095	-942.848	-116.549
		-24765.4	-4.907	59.599	2548.993	560.210	-116.549
4	4.200	-24665.9	-4.907	-1008.377	-1620.314	-1493.155	-121.701
		-24665.9	-4.907	-939.008	2450.212	82.738	-121.701
5	0	-24665.8	-3.365	-976.171	-1437.695	-998.748	-121.701
		-24665.8	-3.365	-971.214	2612.187	-379.320	-121.701

ENVOLVENTE para < T > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
5	1.050	-24550.5	-3.365	-1970.500	-1338.947	-2572.914	-125.233
		-24550.5	-3.365	-1662.014	2605.266	-1946.924	-125.233
5	2.099	-24418.6	-3.365	-2655.301	-1296.434	-5410.835	-128.765
		-24418.6	-3.365	-2615.881	2605.266	-4231.528	-128.765
5	3.149	-24300.2	-3.365	-3412.322	-1296.434	-8643.889	-132.296
		-24300.2	-3.365	-3372.901	2605.266	-7423.206	-132.296
5	4.198	-24173.3	-3.365	-4144.022	-1296.434	-12654.2	-135.828
		-24173.3	-3.365	-4104.601	2605.266	-11392.1	-135.828
6	0	-24151.8	-7.272	5352.053	-550.407	-12686.7	-135.828
		-24151.8	-7.272	6203.489	3304.477	-11288.1	-135.828
6	0.0995	-24139.1	-7.272	5278.026	-541.050	-12162.5	-136.551
		-24139.1	-7.272	6129.462	3295.119	-10679.3	-136.551
6	0.101	-24139.0	-7.272	5277.222	-540.949	-12156.9	-136.559
		-24139.0	-7.272	5828.659	3295.018	-10672.9	-136.559
6	1.350	-23970.0	-7.272	4352.052	-423.395	-6200.209	-145.646
		-23970.0	-7.272	4903.488	3177.465	-4027.202	-145.646
6	1.499	-23948.7	-7.272	4242.106	-409.338	-5565.174	-146.732
		-23948.7	-7.272	4793.542	3163.407	-3309.772	-146.732
6	1.501	-23948.5	-7.272	4241.312	-409.237	-5560.644	-146.740
		-23948.5	-7.272	4492.748	3163.306	-3304.808	-146.740
6	2.700	-23769.5	-7.272	3364.535	-296.383	-1053.529	-155.464
		-23769.5	-7.272	3615.971	3050.453	1503.915	-155.464
6	2.999	-23722.5	-7.272	3147.455	-268.218	-90.867	-157.641
		-23722.5	-7.272	3398.892	3022.287	2541.852	-157.641
6	3.001	-23722.3	-7.272	3146.674	-268.117	-87.510	-157.649
		-23722.3	-7.272	3098.110	3022.186	2545.318	-157.649
6	4.050	-23484.4	-7.272	2031.931	-169.372	2571.064	-165.281
		-23484.4	-7.272	1983.367	2923.441	5152.921	-165.281
6	5.400	-23190.7	-7.272	858.159	-42.360	4357.754	-175.099
		-23190.7	-7.272	809.595	2796.429	6874.048	-175.099
7	0	-23190.5	-4.275	858.159	-164.696	4353.285	-175.099
		-23190.5	-4.275	809.595	2562.867	6989.733	-175.099
7	1.350	-22979.5	-4.275	263.712	-37.686	5088.837	-180.870
		-22979.5	-4.275	215.148	2435.858	7659.724	-180.870
7	2.700	-22865.6	-4.275	184.269	89.323	5343.096	-186.641
		-22865.6	-4.275	135.705	2308.848	7848.421	-186.641
7	4.050	-22768.8	-4.275	217.755	216.333	5647.249	-192.412
		-22768.8	-4.275	169.191	2181.839	8087.012	-192.412
7	5.400	-22662.4	-4.275	247.855	343.342	6009.902	-198.183
		-22662.4	-4.275	199.292	2054.830	8384.103	-198.183
8	0	-22662.2	-1.476	247.855	-347.606	6009.816	-198.183
		-22662.2	-1.476	199.292	1267.090	8450.877	-198.183
8	1.350	-22546.8	-1.476	273.933	-220.612	6424.535	-200.175
		-22546.8	-1.476	225.370	1140.096	8800.042	-200.175
8	2.700	-22421.9	-1.476	295.410	-93.617	6884.001	-202.168
		-22421.9	-1.476	246.846	1013.102	9193.955	-202.168
8	4.050	-22311.0	-1.476	147.171	33.377	7265.951	-204.161
		-22311.0	-1.476	98.607	886.108	9510.351	-204.161
8	5.399	-22203.8	-1.476	-25.696	95.134	4475.081	-206.153
		-22203.8	-1.476	-8.412	827.119	11193.4	-206.153
9	0	-22203.8	1.522	-55.032	-869.302	11193.8	-206.153
		-22203.8	1.522	20.924	-124.518	4473.115	-206.153
9	1.350	-22310.0	1.522	-164.090	-943.577	9425.759	-204.098
		-22310.0	1.522	-153.810	-58.837	7255.762	-204.098
9	2.700	-22418.5	1.522	-301.733	-1070.601	9024.552	-202.044
		-22418.5	1.522	-291.453	68.187	6868.436	-202.044
9	4.051	-22541.5	1.522	-280.272	-1197.625	8557.899	-199.989
		-22541.5	1.522	-269.991	195.210	6415.662	-199.989
9	5.401	-22656.4	1.522	-254.197	-1324.648	8135.337	-197.934
		-22656.4	1.522	-243.916	322.234	6006.981	-197.934
10	0	-22656.5	4.348	-254.197	-2102.463	8065.763	-197.934
		-22656.5	4.348	-243.916	-370.557	6006.000	-197.934
10	1.350	-22762.3	4.348	-224.147	-2229.455	7695.477	-192.065
		-22762.3	4.348	-213.867	-243.566	5649.590	-192.065
10	2.700	-22858.4	4.348	-190.760	-2356.446	7383.604	-186.196
		-22858.4	4.348	-180.479	-116.574	5351.594	-186.196
10	4.049	-22979.8	4.348	-305.663	-2483.438	7111.895	-180.326
		-22979.8	4.348	-295.383	10.418	5093.762	-180.326

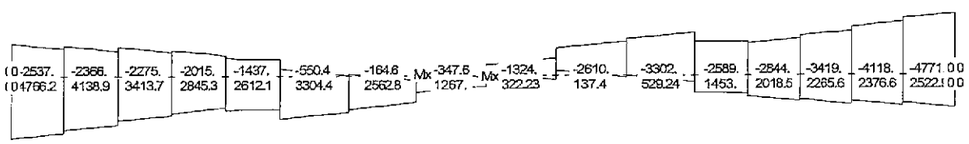
ENVOLVENTE para < T > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
10	5.399	-23189.2	4.348	-900.864	-2610.430	6321.005	-174.457
		-23189.2	4.348	-890.584	137.409	4316.749	-174.457
11	0	-23189.4	7.272	-900.865	-2801.407	6207.062	-174.457
		-23189.4	7.272	-890.584	28.356	4320.239	-174.457
11	1.331	-23485.6	7.272	-2100.638	-2926.630	4358.576	-164.778
		-23485.6	7.272	-2090.358	153.579	2485.436	-164.778
11	2.662	-23763.2	7.272	-3400.099	-3051.853	710.942	-155.099
		-23763.2	7.272	-3389.819	278.802	-1148.515	-155.099
11	3.993	-23961.0	7.272	-4373.742	-3177.076	-4401.058	-145.420
		-23961.0	7.272	-4363.462	404.025	-6246.831	-145.420
11	5.324	-24140.6	7.272	-5359.490	-3302.298	-10815.4	-135.741
		-24140.6	7.272	-5349.209	529.248	-12647.5	-135.741
12	0	-24162.1	3.447	4079.606	-2585.656	-10924.2	-135.741
		-24162.1	3.447	4135.687	1310.951	-12613.5	-135.741
12	1.050	-24289.0	3.447	3347.944	-2585.656	-6980.748	-132.123
		-24289.0	3.447	3404.026	1310.951	-8611.179	-132.123
12	2.100	-24407.4	3.447	2590.801	-2585.656	-3814.692	-128.504
		-24407.4	3.447	2646.882	1310.951	-5386.247	-128.504
12	3.149	-24539.2	3.447	1637.041	-2585.656	-1555.978	-124.886
		-24539.2	3.447	1959.290	1354.256	-2553.997	-124.886
12	4.199	-24654.4	3.447	947.576	-2589.607	-13.369	-121.268
		-24654.4	3.447	965.068	1453.022	-991.293	-121.268
13	0	-24654.5	4.888	937.563	-2449.474	79.481	-121.268
		-24654.5	4.888	975.081	1623.380	-1113.750	-121.268
13	1.050	-24753.7	4.888	-60.789	-2548.259	555.553	-116.135
		-24753.7	4.888	-23.271	1722.166	-598.283	-116.135
13	2.100	-24880.1	4.888	-812.312	-2647.045	0.612866	-111.002
		-24880.1	4.888	-774.794	1820.952	-1113.828	-111.002
13	3.150	-25101.8	4.888	-803.958	-2745.831	-941.676	-105.869
		-25101.8	4.888	-766.440	1919.738	-2016.721	-105.869
13	4.200	-25290.1	4.888	-515.259	-2844.617	-1693.154	-100.736
		-25290.1	4.888	-477.740	2018.524	-2728.805	-100.736
14	0	-25290.3	6.467	-515.259	-3024.280	-1790.435	-100.736
		-25290.3	6.467	-477.740	1870.513	-2664.342	-100.736
14	1.050	-25339.3	6.467	-206.914	-3123.060	-2201.162	-93.945
		-25339.3	6.467	-169.396	1969.293	-3035.675	-93.945
14	2.100	-25198.3	6.467	110.718	-3221.841	-2188.800	-87.155
		-25198.3	6.467	148.236	2068.073	-2983.921	-87.155
14	3.150	-25070.8	6.467	232.507	-3320.621	-1904.947	-80.364
		-25070.8	6.467	270.025	2166.854	-2660.674	-80.364
14	4.200	-24964.3	6.467	180.289	-3419.401	-1645.109	-73.574
		-24964.3	6.467	217.808	2265.634	-2361.444	-73.574
15	0	-24964.5	7.990	180.289	-3723.653	-1759.819	-73.574
		-24964.5	7.990	217.808	1981.452	-2293.240	-73.574
15	1.050	-24860.0	7.990	87.538	-3822.457	-1568.677	-65.183
		-24860.0	7.990	125.056	2080.256	-2062.696	-65.183
15	2.100	-24756.3	7.990	-30.611	-3921.260	-1496.903	-56.791
		-24756.3	7.990	6.907	2179.060	-1951.520	-56.791
15	3.151	-24624.8	7.990	11.959	-4020.064	-1474.145	-48.400
		-24624.8	7.990	49.478	2277.864	-1889.359	-48.400
15	4.201	-24475.6	7.990	113.900	-4118.868	-1345.370	-40.008
		-24475.6	7.990	151.418	2376.667	-1721.182	-40.008
16	0	-24475.9	9.581	113.900	-4376.540	-1488.666	-40.008
		-24475.9	9.581	151.418	2127.975	-1645.200	-40.008
16	1.049	-24318.9	9.581	209.493	-4475.277	-1260.437	-29.953
		-24318.9	9.581	247.011	2226.711	-1377.596	-29.953
16	2.099	-24153.9	9.581	298.305	-4574.014	-943.779	-19.898
		-24153.9	9.581	335.823	2325.448	-1021.562	-19.898
16	3.148	-24073.6	9.581	-15.422	-4672.751	-760.288	-9.842
		-24073.6	9.581	22.096	2424.185	-798.696	-9.842
16	4.198	-24002.5	9.581	-370.631	-4771.487	-956.739	0.212903
		-24002.5	9.581	-333.113	2522.921	-955.772	0.212903
17	0	4.757	23.560	-1658.529	-1.98E-13	4166.668	-56.500
		4.757	23.560	-1461.992	3.59E-13	3695.341	-56.500
17	0.600	4.757	23.560	-1697.986	-1.98E-13	3160.485	-42.375
		4.757	23.560	-1501.450	3.59E-13	2806.990	-42.375
17	1.199	4.757	23.560	-1737.443	-1.98E-13	2130.646	-28.250
		4.757	23.560	-1540.907	3.59E-13	1894.983	-28.250

ENVOLVENTE para < T > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
17	1.799	4.757	23.560	-1776.901	-1.98E-13	1077.151	-14.125
		4.757	23.560	-1580.364	3.59E-13	959.320	-14.125
17	2.398	4.757	23.560	-1816.358	-1.98E-13	4.36E-05	-5.65E-07
		4.757	23.560	-1619.821	3.59E-13	3.88E-05	-5.65E-07
18	0	-3.820	-23.637	-1071.421	8.45E-13	2760.968	56.728
		-3.820	-23.637	-531.932	1.28E-12	1466.187	56.728
18	0.600	-3.820	-23.637	-1110.908	8.45E-13	2106.265	42.546
		-3.820	-23.637	-571.420	1.28E-12	1135.179	42.546
18	1.200	-3.820	-23.637	-1150.396	8.45E-13	1427.869	28.364
		-3.820	-23.637	-610.907	1.28E-12	780.479	28.364
18	1.800	-3.820	-23.637	-1189.884	8.45E-13	725.781	14.182
		-3.820	-23.637	-650.395	1.28E-12	402.086	14.182
18	2.400	-3.820	-23.637	-1229.372	8.45E-13	2.95E-05	5.67E-07
		-3.820	-23.637	-689.883	1.28E-12	1.66E-05	5.67E-07
19	0	4.793	-23.548	-749.737	6.94E-13	1988.869	56.515
		4.793	-23.548	-2244.116	1.40E-12	5575.311	56.515
19	0.600	4.793	-23.548	-789.224	6.94E-13	1527.189	42.386
		4.793	-23.548	-2283.603	1.40E-12	4217.020	42.386
19	1.200	4.793	-23.548	-828.711	6.94E-13	1041.818	28.257
		4.793	-23.548	-2323.089	1.40E-12	2835.039	28.257
19	1.800	4.793	-23.548	-868.198	6.94E-13	532.755	14.129
		4.793	-23.548	-2362.576	1.40E-12	1429.365	14.129
19	2.400	4.793	-23.548	-907.684	6.94E-13	2.18E-05	5.65E-07
		4.793	-23.548	-2402.063	1.40E-12	5.76E-05	5.65E-07
20	0	-4.782	23.458	-1071.789	-9.00E-13	2761.965	-56.302
		-4.782	23.458	-1423.510	-2.57E-13	3606.133	-56.302
20	0.600	-4.782	23.458	-1111.278	-9.00E-13	2107.016	-42.226
		-4.782	23.458	-1462.999	-2.57E-13	2740.142	-42.226
20	1.200	-4.782	23.458	-1150.767	-9.00E-13	1428.372	-28.151
		-4.782	23.458	-1502.488	-2.57E-13	1850.456	-28.151
20	1.800	-4.782	23.458	-1190.257	-9.00E-13	726.033	-14.075
		-4.782	23.458	-1541.978	-2.57E-13	937.075	-14.075
20	2.400	-4.782	23.458	-1229.746	-9.00E-13	2.95E-05	-5.63E-07
		-4.782	23.458	-1581.467	-2.57E-13	3.80E-05	-5.63E-07

Mstb. 1 :449.9
Section forces envelope T , GWSP IZ (ELU 3), View "ALL"
- Struktur: Staebe
- Envelop Torsion.moment Mx-min, Scaling 1.00E-03
  min: -4.77E+03 max: 3.43E+02 [kNm]
- Envelop Torsion.moment Mx-max, Scaling 1.00E-03
  min: -3.71E+02 max: 4.77E+03 [kNm]
- Text envelopes [kNm]



ENVOLVENTE para < My > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
1	0	-24024.4	-9.508	335.240	4738.173	-927.177	-0.227677
		-24024.4	-9.508	330.283	-2509.087	-784.160	-0.227677
1	1.050	-24091.4	-9.508	-507.929	595.530	-1241.420	-10.212
		-24091.4	-9.508	463.371	1633.556	-155.448	-10.212
1	2.100	-24168.0	-9.508	-785.688	595.530	-1955.265	-20.196
		-24168.0	-9.508	115.048	1633.556	113.595	-20.196
1	3.150	-24331.4	-9.508	-661.175	595.530	-2764.772	-30.180
		-24331.4	-9.508	168.996	1633.556	212.877	-30.180
1	4.200	-24487.2	-9.508	-529.944	595.530	-3448.343	-40.164
		-24487.2	-9.508	229.662	1633.556	363.997	-40.164
2	0	-24486.9	-8.079	-529.944	425.149	-3432.875	-40.164
		-24486.9	-8.079	229.662	1347.176	409.170	-40.164
2	1.050	-24635.2	-8.079	-392.529	425.149	-3979.515	-48.646
		-24635.2	-8.079	296.528	1347.176	622.958	-48.646
2	2.100	-24766.0	-8.079	-314.897	425.149	-4383.083	-57.127
		-24766.0	-8.079	303.611	1347.176	905.756	-57.127
2	3.150	-24869.4	-8.079	-397.630	425.149	-4798.832	-65.608
		-24869.4	-8.079	150.329	1347.176	1102.306	-65.608
2	4.199	-24973.8	-8.079	-454.911	425.149	-5296.792	-74.090
		-24973.8	-8.079	22.499	1347.176	1142.581	-74.090
3	0	-24973.5	-6.428	-454.911	220.219	-5285.562	-74.090
		-24973.5	-6.428	22.499	917.639	1181.993	-74.090
3	1.050	-25080.4	-6.428	-471.730	220.219	-5815.441	-80.840
		-25080.4	-6.428	-64.887	917.639	1116.392	-80.840
3	2.100	-25208.4	-6.428	-314.070	220.219	-6331.979	-87.590
		-25208.4	-6.428	22.206	917.639	990.030	-87.590
3	3.150	-25350.0	-6.428	39.188	220.219	-6539.357	-94.341
		-25350.0	-6.428	304.898	917.639	1098.726	-94.341
3	4.200	-25301.3	-6.428	383.160	220.219	-6286.046	-101.091
		-25301.3	-6.428	578.302	917.639	1594.007	-101.091
4	0	-25301.2	-4.907	383.160	192.178	-6279.463	-101.091
		-25301.2	-4.907	578.302	637.720	1618.836	-101.091
4	1.050	-25113.3	-4.907	707.437	192.178	-5648.062	-106.244
		-25113.3	-4.907	832.022	637.720	2418.089	-106.244
4	2.100	-24891.7	-4.907	750.692	192.178	-4788.915	-111.396
		-24891.7	-4.907	804.719	637.720	3371.003	-111.396
4	3.150	-24765.4	-4.907	33.180	192.178	-4281.120	-116.549
		-24765.4	-4.907	16.649	637.720	3898.483	-116.549
4	4.200	-24665.9	-4.907	-930.148	192.178	-4767.811	-121.701
		-24665.9	-4.907	-1017.237	637.720	3357.394	-121.701
5	0	-24665.8	-3.365	-930.148	495.691	-4756.709	-121.701
		-24665.8	-3.365	-1017.237	678.801	3378.641	-121.701
5	1.050	-24550.5	-3.365	-1889.210	495.691	-6264.061	-125.233
		-24550.5	-3.365	-2046.832	678.801	1742.863	-125.233
5	2.099	-24418.6	-3.365	-3486.204	361.352	-8914.559	-128.765
		-24418.6	-3.365	-2739.013	615.492	-797.263	-128.765
5	3.149	-24300.2	-3.365	-4313.758	361.352	-13056.8	-132.296
		-24300.2	-3.365	-3185.126	813.140	-3849.818	-132.296
5	4.198	-24173.3	-3.365	-5115.992	361.352	-18050.2	-135.828
		-24173.3	-3.365	-3916.826	813.140	-7621.641	-135.828
6	0	-24151.8	-7.272	6855.433	1296.192	-18021.1	-135.828
		-24151.8	-7.272	4766.019	1380.810	-7583.036	-135.828
6	0.0995	-24139.1	-7.272	6778.064	1296.192	-17347.5	-136.551
		-24139.1	-7.272	4695.334	1380.810	-7116.992	-136.551
6	0.101	-24139.0	-7.272	6477.224	1296.192	-17340.4	-136.559
		-24139.0	-7.272	4694.567	1380.810	-7111.970	-136.559
6	1.350	-23970.0	-7.272	4938.321	1256.160	-10034.8	-145.646
		-23970.0	-7.272	4383.130	1420.843	-1732.958	-145.646
6	1.499	-23948.7	-7.272	4823.354	1256.160	-9312.504	-146.732
		-23948.7	-7.272	4278.204	1420.843	-1092.904	-146.732
6	1.501	-23948.5	-7.272	4822.524	1256.160	-9307.346	-146.740
		-23948.5	-7.272	3977.447	1420.843	-1088.497	-146.740
6	2.700	-23769.5	-7.272	3905.442	1256.160	-4127.216	-155.464
		-23769.5	-7.272	3140.974	1420.843	3126.274	-155.464
6	2.999	-23722.5	-7.272	3678.304	1256.160	-3004.125	-157.641
		-23722.5	-7.272	3419.086	139.763	4054.258	-157.641
6	3.001	-23722.3	-7.272	3677.485	1256.160	-3000.195	-157.649
		-23722.3	-7.272	3118.304	139.865	4057.746	-157.649

ENVOLVENTE para < My > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
6	4.050	-23484.4	-7.272	2096.641	1919.308	68.977	-165.281
		-23484.4	-7.272	2003.562	238.610	6686.544	-165.281
6	5.400	-23190.7	-7.272	585.215	975.165	1839.492	-175.099
		-23190.7	-7.272	829.790	365.622	8434.935	-175.099
7	0	-23190.5	-4.275	585.215	960.548	1881.276	-175.099
		-23190.5	-4.275	829.790	66.969	8444.273	-175.099
7	1.350	-22979.5	-4.275	36.128	960.548	2278.968	-180.870
		-22979.5	-4.275	508.642	1415.576	9283.066	-180.870
7	2.700	-22865.6	-4.275	-63.569	914.901	2223.924	-186.641
		-22865.6	-4.275	449.453	1461.223	9870.046	-186.641
7	4.050	-22768.8	-4.275	15.278	914.901	2224.111	-192.412
		-22768.8	-4.275	437.578	1461.223	10501.6	-192.412
7	5.400	-22662.4	-4.275	90.739	914.901	2344.036	-198.183
		-22662.4	-4.275	422.318	1461.223	11130.4	-198.183
8	0	-22662.2	-1.476	90.739	370.807	2369.879	-198.183
		-22662.2	-1.476	422.318	563.602	11171.1	-198.183
8	1.350	-22546.8	-1.476	162.172	370.807	2603.125	-200.175
		-22546.8	-1.476	403.041	563.602	11790.7	-200.175
8	2.700	-22421.9	-1.476	229.003	370.807	2942.341	-202.168
		-22421.9	-1.476	379.162	563.602	12393.8	-202.168
8	4.050	-22311.0	-1.476	126.119	370.807	3265.263	-204.161
		-22311.0	-1.476	185.568	563.602	12858.2	-204.161
8	5.399	-22203.8	-1.476	-2.359	370.807	3418.249	-206.153
		-22203.8	-1.476	-33.620	563.602	13030.2	-206.153
9	0	-22203.8	1.522	-2.359	-397.217	3417.680	-206.153
		-22203.8	1.522	-33.620	-618.006	13029.1	-206.153
9	1.350	-22310.0	1.522	-130.761	-397.217	3259.078	-204.098
		-22310.0	1.522	-252.753	-618.006	12767.0	-204.098
9	2.700	-22418.5	1.522	-223.039	-397.217	2933.497	-202.044
		-22418.5	1.522	-435.762	-618.006	12215.5	-202.044
9	4.051	-22541.5	1.522	-156.211	-397.217	2603.719	-199.989
		-22541.5	1.522	-459.666	-618.006	11537.2	-199.989
9	5.401	-22656.4	1.522	-84.771	-397.217	2379.286	-197.934
		-22656.4	1.522	-478.957	-618.006	10841.8	-197.934
10	0	-22656.5	4.348	-84.771	-942.185	2352.095	-197.934
		-22656.5	4.348	-478.957	-1506.246	10798.7	-197.934
10	1.350	-22762.3	4.348	-9.367	-942.185	2241.114	-192.065
		-22762.3	4.348	-494.262	-1506.246	10094.4	-192.065
10	2.700	-22858.4	4.348	69.375	-942.185	2249.767	-186.196
		-22858.4	4.348	-506.228	-1506.246	9387.314	-186.196
10	4.049	-22979.8	4.348	-94.335	-1003.824	2276.383	-180.326
		-22979.8	4.348	-572.326	-1444.607	8742.589	-180.326
10	5.399	-23189.2	4.348	-644.182	-1003.824	1801.360	-174.457
		-23189.2	4.348	-890.704	-85.884	7853.728	-174.457
11	0	-23189.4	7.272	-644.182	-1005.992	1759.045	-174.457
		-23189.4	7.272	-890.704	-343.612	7844.685	-174.457
11	1.331	-23485.6	7.272	-2185.423	-1958.341	-141.723	-164.778
		-23485.6	7.272	-2090.477	-218.389	6009.723	-164.778
11	2.662	-23763.2	7.272	-3961.215	-1291.328	-4386.081	-155.099
		-23763.2	7.272	-2894.317	-1403.480	2500.751	-155.099
11	3.993	-23961.0	7.272	-4979.581	-1291.328	-10274.7	-145.420
		-23961.0	7.272	-3823.237	-1403.480	-1908.276	-145.420
11	5.324	-24140.6	7.272	-6010.051	-1291.328	-17525.2	-135.741
		-24140.6	7.272	-4764.262	-1403.480	-7560.140	-135.741
12	0	-24162.1	3.447	5086.621	-328.205	-17555.1	-135.741
		-24162.1	3.447	3911.236	-808.379	-7601.006	-135.741
12	1.050	-24289.0	3.447	4284.413	-328.205	-12591.5	-132.123
		-24289.0	3.447	3179.575	-808.379	-3834.304	-132.123
12	2.100	-24407.4	3.447	3456.722	-328.205	-8479.396	-128.504
		-24407.4	3.447	2730.081	-610.464	-779.180	-128.504
12	3.149	-24539.2	3.447	1861.492	-466.325	-5861.591	-124.886
		-24539.2	3.447	2039.595	-670.259	1749.884	-124.886
12	4.199	-24654.4	3.447	902.544	-466.325	-4383.040	-121.268
		-24654.4	3.447	1010.100	-670.259	3378.378	-121.268
13	0	-24654.5	4.888	902.544	-194.068	-4393.003	-121.268
		-24654.5	4.888	1010.100	-632.025	3358.733	-121.268
13	1.050	-24753.7	4.888	-60.527	-194.068	-3935.178	-116.135
		-24753.7	4.888	-23.533	-632.025	3892.447	-116.135

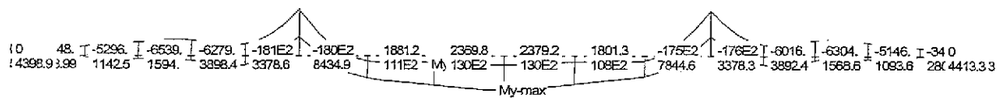
ENVOLVENTE para < My > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
13	2.100	-24880.1	4.888	-776.769	-194.068	-4471.320	-111.002
		-24880.1	4.888	-810.337	-632.025	3358.104	-111.002
13	3.150	-25101.8	4.888	-733.135	-194.068	-5357.765	-105.869
		-25101.8	4.888	-837.264	-632.025	2399.368	-105.869
13	4.200	-25290.1	4.888	-409.154	-194.068	-6016.354	-100.736
		-25290.1	4.888	-583.844	-632.025	1594.395	-100.736
14	0	-25290.3	6.467	-409.154	-231.906	-6023.415	-100.736
		-25290.3	6.467	-583.844	-921.861	1568.638	-100.736
14	1.050	-25339.3	6.467	-65.531	-231.906	-6304.216	-93.945
		-25339.3	6.467	-310.779	-921.861	1067.379	-93.945
14	2.100	-25198.3	6.467	287.379	-231.906	-6124.887	-87.155
		-25198.3	6.467	-28.425	-921.861	952.166	-87.155
14	3.150	-25070.8	6.467	444.447	-231.906	-5637.026	-80.364
		-25070.8	6.467	58.085	-921.861	1071.405	-80.364
14	4.200	-24964.3	6.467	427.508	-231.906	-5136.138	-73.574
		-24964.3	6.467	-29.411	-921.861	1129.586	-73.574
15	0	-24964.5	7.990	427.508	-425.706	-5146.699	-73.574
		-24964.5	7.990	-29.411	-1316.495	1093.641	-73.574
15	1.050	-24860.0	7.990	370.044	-425.706	-4677.396	-65.183
		-24860.0	7.990	-157.450	-1316.495	1046.023	-65.183
15	2.100	-24756.3	7.990	287.182	-425.706	-4290.402	-56.791
		-24756.3	7.990	-310.886	-1316.495	841.978	-56.791
15	3.151	-24624.8	7.990	365.039	-425.706	-3915.364	-48.400
		-24624.8	7.990	-303.603	-1316.495	551.860	-48.400
15	4.201	-24475.6	7.990	502.267	-425.706	-3397.251	-40.008
		-24475.6	7.990	-236.949	-1316.495	330.699	-40.008
16	0	-24475.9	9.581	502.267	-616.279	-3414.827	-40.008
		-24475.9	9.581	-236.949	-1632.287	280.960	-40.008
16	1.049	-24318.9	9.581	633.123	-616.279	-2760.503	-29.953
		-24318.9	9.581	-176.619	-1632.287	122.470	-29.953
16	2.099	-24153.9	9.581	757.198	-616.279	-1980.742	-19.898
		-24153.9	9.581	-123.071	-1632.287	15.400	-19.898
16	3.148	-24073.6	9.581	478.734	-616.279	-1297.139	-9.842
		-24073.6	9.581	-472.060	-1632.287	-261.845	-9.842
16	4.198	-24002.5	9.581	-360.618	-4761.865	-956.744	0.212903
		-24002.5	9.581	-343.126	2513.299	-955.768	0.212903
17	0	4.757	23.560	-685.758	-4.33E-14	1833.806	-56.500
		4.757	23.560	-2243.150	4.48E-14	5568.682	-56.500
17	0.600	4.757	23.560	-725.215	-4.33E-14	1410.839	-42.375
		4.757	23.560	-2282.607	4.48E-14	4211.996	-42.375
17	1.199	4.757	23.560	-764.672	-4.33E-14	964.216	-28.250
		4.757	23.560	-2322.064	4.48E-14	2831.654	-28.250
17	1.799	4.757	23.560	-804.129	-4.33E-14	493.936	-14.125
		4.757	23.560	-2361.522	4.48E-14	1427.655	-14.125
17	2.398	4.757	23.560	-843.587	-4.33E-14	2.02E-05	-5.65E-07
		4.757	23.560	-2400.979	4.48E-14	5.76E-05	-5.65E-07
18	0	-3.820	-23.637	-245.387	1.01E-12	778.476	56.728
		-3.820	-23.637	-1753.920	1.17E-12	4398.977	56.728
18	0.600	-3.820	-23.637	-284.875	1.01E-12	619.396	42.546
		-3.820	-23.637	-1793.408	1.17E-12	3334.772	42.546
18	1.200	-3.820	-23.637	-324.363	1.01E-12	436.624	28.364
		-3.820	-23.637	-1832.896	1.17E-12	2246.874	28.364
18	1.800	-3.820	-23.637	-363.851	1.01E-12	230.158	14.182
		-3.820	-23.637	-1872.384	1.17E-12	1135.283	14.182
18	2.400	-3.820	-23.637	-403.338	1.01E-12	9.68E-06	5.67E-07
		-3.820	-23.637	-1911.871	1.17E-12	4.59E-05	5.67E-07
19	0	4.793	-23.548	-705.707	6.97E-13	1883.199	56.515
		4.793	-23.548	-2244.116	1.40E-12	5575.311	56.515
19	0.600	4.793	-23.548	-745.194	6.97E-13	1447.937	42.386
		4.793	-23.548	-2283.603	1.40E-12	4217.020	42.386
19	1.200	4.793	-23.548	-784.681	6.97E-13	988.983	28.257
		4.793	-23.548	-2323.089	1.40E-12	2835.039	28.257
19	1.800	4.793	-23.548	-824.168	6.97E-13	506.337	14.129
		4.793	-23.548	-2362.576	1.40E-12	1429.365	14.129
19	2.400	4.793	-23.548	-863.654	6.97E-13	2.07E-05	5.65E-07
		4.793	-23.548	-2402.063	1.40E-12	5.76E-05	5.65E-07
20	0	-4.782	23.458	-252.931	-8.37E-13	796.618	-56.302
		-4.782	23.458	-1759.825	-2.70E-13	4413.326	-56.302

ENVOLVENTE para < My > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
20	0.600	-4.782	23.458	-292.420	-8.37E-13	633.006	-42.226
		-4.782	23.458	-1799.314	-2.70E-13	3345.536	-42.226
20	1.200	-4.782	23.458	-331.910	-8.37E-13	445.698	-28.151
		-4.782	23.458	-1838.803	-2.70E-13	2254.052	-28.151
20	1.800	-4.782	23.458	-371.399	-8.37E-13	234.697	-14.075
		-4.782	23.458	-1878.293	-2.70E-13	1138.873	-14.075
20	2.400	-4.782	23.458	-410.888	-8.37E-13	9.86E-06	-5.63E-07
		-4.782	23.458	-1917.782	-2.70E-13	4.60E-05	-5.63E-07

Mstb. 1 :449.9
Section forces envelope My, GWSP IZ (ELU 3), View "ALL"
- Struktur: Staebe
- Envelop Moment My-min, Scaling 2.00E-04
  min: -1.81E+04 max: 3.42E+03 [kNm]
- Envelop Moment My-max, Scaling 2.00E-04
  min: -7.62E+03 max: 1.30E+04 [kNm]
- Text envelopes [kNm]



ENVOLVENTE: JA 'ELU 4'

Grupo	Espe.	Hipótesis	Factor	Etapa	Título
A	PERM.	1	1.350		Peso Propio
	Y	3	1.350		Carga Muerta Máxima
	Y	20	0.850000		Pretensado
B	MAS	19	0.900000		gradiente
C	MAS	24	1.500		Carro 1 pila
D	MAS	4	1.500		Sobrecarga centrada vano 1
E	MAS	5	1.500		Sobrecarga centrada vano 2
F	MAS	6	1.500		Sobrecarga centrada vano 3
ALTERNATIVA PARA ENVOLVENTE:					
G	PERM.	1	1.350		Peso Propio
	Y	3	1.350		Carga Muerta Máxima
	Y	20	0.850000		Pretensado
H	MAS	19	0.900000		gradiente
I	MAS	24	1.500		Carro 1 pila
J	MAS	7	1.500		Sobrecarga excéntrica vano 1 (
K	MAS	8	1.500		Sobrecarga excentrica vano 2 (
L	MAS	9	1.500		Sobrecarga excentrica vano 3 (
ALTERNATIVA PARA ENVOLVENTE:					
M	PERM.	1	1.350		Peso Propio
	Y	3	1.350		Carga Muerta Máxima
	Y	20	0.850000		Pretensado
N	MAS	19	0.900000		gradiente
O	MAS	24	1.500		Carro 1 pila
P	MAS	10	1.500		Sobrecarga excéntrica vano 1 (
Q	MAS	11	1.500		Sobrecarga excentrica vano 2 (
R	MAS	12	1.500		Sobrecarga excentrica vano 3 (

ENVOLVENTE para < Vz > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
1	0	-24024.4	-9.508	-155.965	623.580	-869.185	-0.227677
		-24024.4	-9.508	894.887	1651.081	-839.565	-0.227677
1	1.050	-24091.4	-9.508	-475.724	623.580	-1206.626	-10.212
		-24091.4	-9.508	504.564	1651.081	-110.583	-10.212
1	2.100	-24168.0	-9.508	-753.482	623.580	-1886.652	-20.196
		-24168.0	-9.508	156.240	1651.081	201.715	-20.196
1	3.150	-24331.4	-9.508	-628.969	623.580	-2662.340	-30.180
		-24331.4	-9.508	210.188	1651.081	344.253	-30.180
1	4.200	-24487.2	-9.508	-497.738	623.580	-3312.093	-40.164
		-24487.2	-9.508	270.854	1651.081	538.627	-40.164
2	0	-24486.9	-8.079	-497.738	449.058	-3295.837	-40.164
		-24486.9	-8.079	270.854	1359.401	584.250	-40.164
2	1.050	-24635.2	-8.079	-360.323	449.058	-3808.667	-48.646
		-24635.2	-8.079	337.721	1359.401	841.284	-48.646
2	2.100	-24766.0	-8.079	-282.691	449.058	-4178.424	-57.127
		-24766.0	-8.079	344.804	1359.401	1167.327	-57.127
2	3.150	-24869.4	-8.079	-365.424	449.058	-4560.362	-65.608
		-24869.4	-8.079	191.521	1359.401	1407.122	-65.608
2	4.199	-24973.8	-8.079	-422.705	449.058	-5024.511	-74.090
		-24973.8	-8.079	63.691	1359.401	1490.642	-74.090
3	0	-24973.5	-6.428	-422.705	234.639	-5012.614	-74.090
		-24973.5	-6.428	63.691	917.746	1530.268	-74.090
3	1.050	-25080.4	-6.428	-447.652	217.902	-2553.494	-80.840
		-25080.4	-6.428	-8.975	-87.543	84.793	-80.840
3	2.100	-25208.4	-6.428	-360.558	217.902	-3081.798	-87.590
		-25208.4	-6.428	142.093	934.483	-1484.776	-87.590
3	3.150	-25350.0	-6.428	-77.867	217.902	-3375.045	-94.341
		-25350.0	-6.428	495.351	934.483	-1213.136	-94.341
3	4.200	-25301.3	-6.428	195.537	217.902	-3281.706	-101.091
		-25301.3	-6.428	839.323	934.483	-480.807	-101.091
4	0	-25301.2	-4.907	195.538	93.967	-3276.728	-101.091
		-25301.2	-4.907	839.323	720.782	-454.383	-101.091
4	1.050	-25113.3	-4.907	449.257	93.967	-2879.366	-106.244
		-25113.3	-4.907	1163.600	720.782	655.974	-106.244
4	2.100	-24891.7	-4.907	421.954	93.967	-2328.342	-111.396
		-24891.7	-4.907	1206.855	720.782	1994.076	-111.396
4	3.150	-24765.4	-4.907	-366.116	93.967	-2202.752	-116.549
		-24765.4	-4.907	489.343	720.782	2980.827	-116.549
4	4.200	-24665.9	-4.907	-1400.002	93.967	-3145.732	-121.701
		-24665.9	-4.907	-473.985	720.782	2973.092	-121.701
5	0	-24665.8	-3.365	-1400.002	345.187	-3138.644	-121.701
		-24665.8	-3.365	-473.985	774.220	2997.220	-121.701
5	1.050	-24550.5	-3.365	-2429.597	345.187	-5176.176	-125.233
		-24550.5	-3.365	-1433.047	774.220	1968.663	-125.233
5	1.200	-24532.7	-3.365	-2576.312	345.187	-5556.416	-125.738
		-24532.7	-3.365	-1569.684	774.220	1738.629	-125.738
5	1.200	-24532.6	-3.365	-2835.941	306.267	-4816.142	-125.741
		-24532.6	-3.365	-1611.641	813.140	994.691	-125.741
5	2.099	-24418.6	-3.365	-3712.806	306.267	-7793.613	-128.765
		-24418.6	-3.365	-2428.106	813.140	-855.231	-128.765
5	2.700	-24351.0	-3.365	-4195.410	306.267	-10194.3	-130.785
		-24351.0	-3.365	-2870.366	813.140	-2472.508	-130.785
5	2.700	-24350.9	-3.365	-4496.055	306.267	-10198.0	-130.788
		-24350.9	-3.365	-2870.955	813.140	-2474.949	-130.788
5	3.149	-24300.2	-3.365	-4840.360	306.267	-12308.3	-132.296
		-24300.2	-3.365	-3185.126	813.140	-3849.818	-132.296
5	4.198	-24173.3	-3.365	-5642.274	306.267	-17852.1	-135.827
		-24173.3	-3.365	-3916.535	813.140	-7619.977	-135.827
5	4.198	-24173.3	-3.365	-5942.594	306.267	-17854.5	-135.828
		-24173.3	-3.365	-3916.826	813.140	-7621.641	-135.828
6	0	-24151.8	-7.272	4766.019	1380.810	-7583.036	-135.828
		-24151.8	-7.272	6003.277	1234.255	-17827.4	-135.828
6	1.350	-23970.0	-7.272	3811.380	1380.810	-1857.118	-145.646
		-23970.0	-7.272	4957.914	1234.255	-10492.4	-145.646
6	2.700	-23769.5	-7.272	2869.224	1380.810	2590.251	-155.464
		-23769.5	-7.272	3925.035	1234.255	-4558.363	-155.464
6	4.050	-23484.4	-7.272	1581.982	1380.810	5576.774	-165.281
		-23484.4	-7.272	2547.071	1234.255	-207.690	-165.281

ENVOLVENTE para < Vz > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
6	5.400	-23190.7	-7.272	453.571	1380.810	6786.634	-175.099
		-23190.7	-7.272	1327.937	1234.255	2243.840	-175.099
7	0	-23190.5	-4.275	453.571	1152.339	6841.314	-175.099
		-23190.5	-4.275	1327.937	1201.949	2296.427	-175.099
7	1.350	-22979.5	-4.275	-95.516	1152.339	7061.285	-180.870
		-22979.5	-4.275	688.130	1201.949	3635.568	-180.870
7	2.700	-22865.6	-4.275	-129.598	1152.339	6861.200	-186.641
		-22865.6	-4.275	563.326	1201.949	4432.178	-186.641
7	4.050	-22768.8	-4.275	-50.752	1152.339	6772.246	-192.412
		-22768.8	-4.275	551.451	1201.949	5217.445	-192.412
7	5.400	-22662.4	-4.275	24.709	1152.339	6803.030	-198.183
		-22662.4	-4.275	536.191	1201.949	5999.975	-198.183
8	0	-22662.2	-1.476	24.709	428.865	6834.814	-198.183
		-22662.2	-1.476	536.191	510.707	6034.401	-198.183
8	1.350	-22546.8	-1.476	96.142	428.865	6978.929	-200.175
		-22546.8	-1.476	516.914	510.707	6807.720	-200.175
8	2.700	-22421.9	-1.476	162.974	428.865	7229.015	-202.168
		-22421.9	-1.476	493.036	510.707	7564.563	-202.168
8	4.050	-22311.0	-1.476	60.090	428.865	7462.807	-204.161
		-22311.0	-1.476	299.441	510.707	8182.668	-204.161
8	5.399	-22203.8	-1.476	-70.985	526.173	12218.3	-206.153
		-22203.8	-1.476	82.849	413.399	3816.797	-206.153
9	0	-22203.8	1.522	-70.985	-620.479	12216.2	-206.153
		-22203.8	1.522	82.849	-371.806	3817.692	-206.153
9	1.350	-22310.0	1.522	-290.117	-620.479	11903.7	-204.098
		-22310.0	1.522	-45.553	-371.806	3774.134	-204.098
9	2.700	-22418.5	1.522	-473.127	-620.479	11301.7	-202.044
		-22418.5	1.522	-137.831	-371.806	3563.598	-202.044
9	4.051	-22541.5	1.522	-497.031	-620.479	10573.0	-199.989
		-22541.5	1.522	-71.003	-371.806	3348.866	-199.989
9	5.401	-22656.4	1.522	-516.321	-620.479	9827.191	-197.934
		-22656.4	1.522	0.437279	-371.806	3239.477	-197.934
10	0	-22656.5	4.348	-516.321	-1467.538	9784.802	-197.934
		-22656.5	4.348	0.437284	-951.705	3212.609	-197.934
10	1.350	-22762.3	4.348	-531.626	-1467.538	9030.084	-192.065
		-22762.3	4.348	75.841	-951.705	3216.644	-192.065
10	2.700	-22858.4	4.348	-543.592	-1467.538	8272.558	-186.196
		-22858.4	4.348	154.583	-951.705	3340.313	-186.196
10	4.049	-22979.8	4.348	-703.850	-1467.538	7493.976	-180.326
		-22979.8	4.348	85.033	-951.705	3565.366	-180.326
10	5.399	-23189.2	4.348	-1344.405	-1467.538	6134.993	-174.457
		-23189.2	4.348	-464.814	-951.705	3332.459	-174.457
11	0	-23189.4	7.272	-1344.405	-1651.699	6069.319	-174.457
		-23189.4	7.272	-464.814	-1018.364	3290.980	-174.457
11	1.331	-23485.6	7.272	-2588.902	-1651.699	3600.706	-164.778
		-23485.6	7.272	-1619.865	-1018.364	2052.651	-164.778
11	2.662	-23763.2	7.272	-3933.085	-1651.699	-726.583	-155.099
		-23763.2	7.272	-2874.604	-1018.364	-925.298	-155.099
11	3.993	-23961.0	7.272	-4951.450	-1651.699	-6577.764	-145.420
		-23961.0	7.272	-3803.524	-1018.364	-5308.087	-145.420
11	5.324	-24140.6	7.272	-5981.920	-1651.699	-13790.8	-135.741
		-24140.6	7.272	-4744.549	-1018.364	-10933.7	-135.741
12	0	-24162.1	3.447	3904.053	-800.791	-7450.385	-135.741
		-24162.1	3.447	5076.608	-324.394	-17344.3	-135.741
12	1.050	-24289.0	3.447	3172.392	-800.791	-3691.224	-132.123
		-24289.0	3.447	4274.399	-324.394	-12391.2	-132.123
12	2.100	-24407.4	3.447	2415.249	-800.791	-709.464	-128.504
		-24407.4	3.447	3446.709	-324.394	-8289.563	-128.504
12	3.149	-24539.2	3.447	1461.489	-800.791	1364.953	-124.886
		-24539.2	3.447	2422.402	-324.394	-5169.339	-124.886
12	4.199	-24654.4	3.447	502.541	-800.791	2423.577	-121.268
		-24654.4	3.447	1392.907	-324.394	-3138.971	-121.268
13	0	-24654.5	4.888	502.541	-733.697	2400.428	-121.268
		-24654.5	4.888	1392.907	-89.728	-3145.218	-121.268
13	1.050	-24753.7	4.888	-460.530	-733.697	2438.242	-116.135
		-24753.7	4.888	359.274	-89.728	-2209.548	-116.135
13	2.100	-24880.1	4.888	-1176.772	-733.697	1482.088	-111.002
		-24880.1	4.888	-427.529	-89.728	-2341.935	-111.002

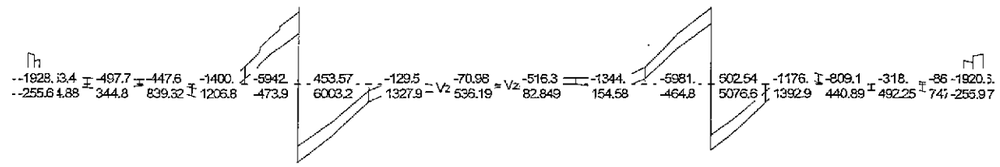
ENVOLVENTE para < Vz > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
13	3.150	-25101.8	4.888	-1133.138	-733.697	175.632	-105.869
		-25101.8	4.888	-454.456	-89.728	-2898.717	-105.869
13	4.200	-25290.1	4.888	-809.158	-733.697	-902.969	-100.736
		-25290.1	4.888	-201.037	-89.728	-3301.734	-100.736
14	0	-25290.3	6.467	-809.158	-940.708	-930.724	-100.736
		-25290.3	6.467	-201.037	-217.592	-3306.828	-100.736
14	1.050	-25339.3	6.467	-465.534	-940.708	-1631.512	-93.945
		-25339.3	6.467	72.029	-217.592	-3406.155	-93.945
14	2.100	-25198.3	6.467	-112.624	-940.708	-1872.170	-87.155
		-25198.3	6.467	354.382	-217.592	-3119.435	-87.155
14	3.150	-25070.8	6.467	34.587	81.680	-295.006	-80.364
		-25070.8	6.467	440.892	-217.592	-2598.265	-80.364
14	4.200	-24964.3	6.467	-36.594	-920.910	1189.967	-73.574
		-24964.3	6.467	417.495	-237.391	-5051.514	-73.574
15	0	-24964.5	7.990	-36.594	-1317.483	1154.021	-73.574
		-24964.5	7.990	417.495	-433.905	-5062.294	-73.574
15	1.050	-24860.0	7.990	-164.633	-1317.483	1098.860	-65.183
		-24860.0	7.990	360.030	-433.905	-4603.507	-65.183
15	2.100	-24756.3	7.990	-318.068	-1317.483	887.272	-56.791
		-24756.3	7.990	277.169	-433.905	-4227.029	-56.791
15	3.151	-24624.8	7.990	-310.785	-1317.483	589.610	-48.400
		-24624.8	7.990	355.026	-433.905	-3862.507	-48.400
15	4.201	-24475.6	7.990	-244.132	-1317.483	360.906	-40.008
		-24475.6	7.990	492.254	-433.905	-3354.911	-40.008
16	0	-24475.9	9.581	-244.132	-1634.293	311.117	-40.008
		-24475.9	9.581	492.254	-625.901	-3372.787	-40.008
16	1.049	-24318.9	9.581	-183.802	-1634.293	145.088	-29.953
		-24318.9	9.581	623.110	-625.901	-2728.972	-29.953
16	2.099	-24153.9	9.581	-130.253	-1634.293	30.480	-19.898
		-24153.9	9.581	747.185	-625.901	-1959.720	-19.898
16	3.148	-24073.6	9.581	-479.243	-1634.293	-254.303	-9.842
		-24073.6	9.581	468.721	-625.901	-1286.626	-9.842
16	4.198	-24002.5	9.581	-869.715	-1634.293	-956.038	0.212903
		-24002.5	9.581	148.775	-625.901	-956.465	0.212903
17	0	4.757	23.560	-2267.400	8.21E-14	5626.837	-56.500
		4.757	23.560	-707.709	-5.64E-15	1886.449	-56.500
17	0.600	4.757	23.560	-2306.857	8.21E-14	4255.612	-42.375
		4.757	23.560	-747.166	-5.64E-15	1450.321	-42.375
17	1.199	4.757	23.560	-2346.314	8.21E-14	2860.731	-28.250
		4.757	23.560	-786.623	-5.64E-15	990.537	-28.250
17	1.799	4.757	23.560	-2385.771	8.21E-14	1442.194	-14.125
		4.757	23.560	-826.081	-5.64E-15	507.096	-14.125
17	2.398	4.757	23.560	-2425.229	8.21E-14	5.82E-05	-5.65E-07
		4.757	23.560	-865.538	-5.64E-15	2.08E-05	-5.65E-07
18	0	-3.820	-23.637	-1770.863	1.15E-12	4439.639	56.728
		-3.820	-23.637	-255.642	1.04E-12	803.088	56.728
18	0.600	-3.820	-23.637	-1810.350	1.15E-12	3365.268	42.546
		-3.820	-23.637	-295.130	1.04E-12	637.855	42.546
18	1.200	-3.820	-23.637	-1849.838	1.15E-12	2267.205	28.364
		-3.820	-23.637	-334.618	1.04E-12	448.929	28.364
18	1.800	-3.820	-23.637	-1889.326	1.15E-12	1145.449	14.182
		-3.820	-23.637	-374.106	1.04E-12	236.311	14.182
18	2.400	-3.820	-23.637	-1928.814	1.15E-12	4.63E-05	5.67E-07
		-3.820	-23.637	-413.593	1.04E-12	9.93E-06	5.67E-07
19	0	4.793	-23.548	-2248.125	1.40E-12	5584.933	56.515
		4.793	-23.548	-712.719	6.99E-13	1900.026	56.515
19	0.600	4.793	-23.548	-2287.612	1.40E-12	4224.237	42.386
		4.793	-23.548	-752.205	6.99E-13	1460.557	42.386
19	1.200	4.793	-23.548	-2327.099	1.40E-12	2839.850	28.257
		4.793	-23.548	-791.692	6.99E-13	997.396	28.257
19	1.800	4.793	-23.548	-2366.585	1.40E-12	1431.771	14.129
		4.793	-23.548	-831.179	6.99E-13	510.544	14.129
19	2.400	4.793	-23.548	-2406.072	1.40E-12	5.77E-05	5.65E-07
		4.793	-23.548	-870.666	6.99E-13	2.09E-05	5.65E-07
20	0	-4.782	23.458	-1762.998	-2.76E-13	4420.942	-56.302
		-4.782	23.458	-255.933	-8.30E-13	803.823	-56.302
20	0.600	-4.782	23.458	-1802.487	-2.76E-13	3351.248	-42.226
		-4.782	23.458	-295.422	-8.30E-13	638.409	-42.226

ENVOLVENTE para < Vz > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
20	1.200	-4.782	23.458	-1841.977	-2.76E-13	2257.860	-28.151
		-4.782	23.458	-334.911	-8.30E-13	449.301	-28.151
20	1.800	-4.782	23.458	-1881.466	-2.76E-13	1140.777	-14.075
		-4.782	23.458	-374.401	-8.30E-13	236.498	-14.075
20	2.400	-4.782	23.458	-1920.955	-2.76E-13	4.61E-05	-5.63E-07
		-4.782	23.458	-413.890	-8.30E-13	9.93E-06	-5.63E-07

Mstb. 1 :449.9
Section forces envelope Vz, GWSP JA (ELU 4), View "ALL"
- Struktur: Staebe
- Envelop Shear force Vz-min, Scaling 1.00E-03
  min: -5.98E+03 max: 4.77E+03 [kN]
- Envelop Shear force Vz-max, Scaling 1.00E-03
  min: -4.74E+03 max: 6.00E+03 [kN]
- Text envelopes [kN]



ENVOLVENTE para < T > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
1	0	-24024.4	-9.508	330.283	-2509.087	-784.160	-0.227677
		-24024.4	-9.508	408.638	4783.748	-924.591	-0.227677
1	1.050	-24091.4	-9.508	-24.758	-2410.296	-629.528	-10.212
		-24091.4	-9.508	53.598	4684.957	-687.680	-10.212
1	2.100	-24168.0	-9.508	-337.799	-2311.505	-854.532	-20.196
		-24168.0	-9.508	-259.444	4586.166	-830.405	-20.196
1	3.150	-24331.4	-9.508	-246.568	-2212.714	-1212.246	-30.180
		-24331.4	-9.508	-170.213	4487.375	-1105.841	-30.180
1	4.200	-24487.2	-9.508	-152.620	-2113.923	-1481.075	-40.164
		-24487.2	-9.508	-74.264	4388.584	-1292.391	-40.164
2	0	-24486.9	-8.079	-152.620	-2342.673	-1548.613	-40.164
		-24486.9	-8.079	-74.264	4151.131	-1162.974	-40.164
2	1.050	-24635.2	-8.079	-50.479	-2243.904	-1717.641	-48.646
		-24635.2	-8.079	27.877	4052.362	-1249.742	-48.646
2	2.100	-24766.0	-8.079	-8.121	-2145.135	-1780.628	-57.127
		-24766.0	-8.079	70.234	3953.594	-1230.469	-57.127
2	3.150	-24869.4	-8.079	-126.129	-2046.367	-1892.830	-65.608
		-24869.4	-8.079	-47.774	3854.825	-1260.410	-65.608
2	4.199	-24973.8	-8.079	-218.684	-1947.598	-2124.275	-74.090
		-24973.8	-8.079	-140.329	3756.057	-1409.595	-74.090
3	0	-24973.5	-6.428	-218.684	-2261.475	-2197.521	-74.090
		-24973.5	-6.428	-140.329	3413.860	-1284.824	-74.090
3	1.050	-25080.4	-6.428	-270.787	-2162.681	-2497.864	-80.840
		-25080.4	-6.428	-192.432	3315.066	-1502.886	-80.840
3	2.100	-25208.4	-6.428	-148.410	-2063.888	-2821.916	-87.590
		-25208.4	-6.428	-70.055	3216.273	-1744.657	-87.590
3	3.150	-25350.0	-6.428	169.564	-1965.094	-2873.860	-94.341
		-25350.0	-6.428	247.920	3117.479	-1714.320	-94.341
3	4.200	-25301.3	-6.428	478.253	-1866.300	-2502.167	-101.091

ENVOLVENTE para < T > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
4	0	-25301.3	-6.428	556.608	3018.685	-1260.346	-101.091
		-25301.2	-4.907	519.445	-2030.587	-2043.074	-101.091
4	1.050	-25301.2	-4.907	515.416	2845.336	-1688.037	-101.091
		-25113.3	-4.907	808.443	-1931.806	-1287.099	-106.244
4	2.100	-25113.3	-4.907	804.414	2746.555	-936.293	-106.244
		-24891.7	-4.907	816.419	-1833.025	-340.421	-111.396
4	3.150	-24891.7	-4.907	812.390	2647.774	6.155	-111.396
		-24765.4	-4.907	63.628	-1734.245	217.864	-116.549
4	4.200	-24765.4	-4.907	59.599	2548.993	560.210	-116.549
		-24665.9	-4.907	-934.979	-1635.464	-255.377	-121.701
5	0	-24665.9	-4.907	-939.008	2450.212	82.738	-121.701
		-24665.8	-3.365	-934.979	-1476.615	-305.604	-121.701
5	1.050	-24665.8	-3.365	-939.008	2596.022	164.180	-121.701
		-24550.5	-3.365	-1929.307	-1377.868	-1836.535	-125.233
5	1.200	-24550.5	-3.365	-1629.808	2589.101	-1369.620	-125.233
		-24532.7	-3.365	-2070.983	-1363.759	-2141.369	-125.738
5	1.200	-24532.7	-3.365	-1766.445	2589.101	-1629.161	-125.738
		-24532.6	-3.365	-2371.776	-1363.680	-2143.262	-125.741
5	2.099	-24532.6	-3.365	-1767.210	2589.101	-1630.673	-125.741
		-24418.6	-3.365	-2914.109	-1335.355	-4900.987	-128.765
5	2.700	-24418.6	-3.365	-2583.675	2589.101	-3620.421	-128.765
		-24351.0	-3.365	-3356.369	-1335.355	-6810.039	-130.785
5	2.700	-24351.0	-3.365	-3025.935	2589.101	-5331.095	-130.785
		-24350.9	-3.365	-3656.959	-1335.355	-6813.014	-130.788
5	3.149	-24350.9	-3.365	-3026.524	2589.101	-5333.666	-130.788
		-24300.2	-3.365	-3971.130	-1335.355	-8540.339	-132.296
5	4.198	-24300.2	-3.365	-3340.695	2589.101	-6778.295	-132.296
		-24173.3	-3.365	-4702.538	-1335.355	-13135.2	-135.827
5	4.198	-24173.3	-3.365	-4072.104	2589.101	-10711.7	-135.827
		-24173.3	-3.365	-5002.830	-1335.355	-13137.2	-135.828
6	0	-24173.3	-3.365	-4072.396	2589.101	-10713.4	-135.828
		-24151.8	-7.272	5371.647	-572.312	-13170.7	-135.828
6	1.350	-24151.8	-7.272	5331.739	3264.444	-10610.4	-135.828
		-23970.0	-7.272	4371.646	-445.300	-6657.809	-145.646
6	2.700	-23970.0	-7.272	4331.738	3137.432	-4151.363	-145.646
		-23769.5	-7.272	3384.128	-318.288	-1484.676	-155.464
6	4.050	-23769.5	-7.272	3344.221	3010.420	967.893	-155.464
		-23484.4	-7.272	2051.525	-191.276	2166.370	-165.281
6	5.400	-23484.4	-7.272	2011.617	2883.408	4565.062	-165.281
		-23190.7	-7.272	877.753	-64.264	3979.512	-175.099
7	0	-23190.7	-7.272	837.845	2756.396	6324.328	-175.099
		-23190.5	-4.275	877.753	-170.258	3974.450	-175.099
7	1.350	-23190.5	-4.275	837.845	2546.593	6438.797	-175.099
		-22979.5	-4.275	283.306	-43.248	4736.454	-180.870
7	2.700	-22979.5	-4.275	243.398	2419.584	7146.925	-180.870
		-22865.6	-4.275	203.863	83.761	5017.165	-186.641
7	4.050	-22865.6	-4.275	163.955	2292.574	7373.760	-186.641
		-22768.8	-4.275	237.349	210.770	5347.769	-192.412
7	5.400	-22768.8	-4.275	197.441	2165.565	7650.489	-192.412
		-22662.4	-4.275	267.449	337.780	5736.874	-198.183
8	0	-22662.4	-4.275	227.542	2038.556	7985.718	-198.183
		-22662.2	-1.476	247.855	-347.606	6009.816	-198.183
8	1.350	-22662.2	-1.476	247.135	1272.253	7779.129	-198.183
		-22546.8	-1.476	273.933	-220.612	6424.535	-200.175
8	2.700	-22546.8	-1.476	273.213	1145.259	8192.876	-200.175
		-22421.9	-1.476	295.410	-93.617	6884.001	-202.168
8	4.050	-22421.9	-1.476	294.690	1018.265	8651.370	-202.168
		-22311.0	-1.476	147.171	33.377	7265.951	-204.161
8	5.399	-22311.0	-1.476	146.451	891.270	9032.348	-204.161
		-22203.8	-1.476	-25.696	95.134	4475.081	-206.153
9	0	-22203.8	-1.476	39.432	832.282	10780.0	-206.153
		-22203.8	1.522	-26.783	-858.965	10947.8	-206.153
9	1.350	-22310.0	1.522	40.518	-111.916	4306.266	-206.153
		-22310.0	1.522	-134.216	-46.235	7115.368	-204.098
9	2.700	-22418.5	1.522	-273.484	-1060.264	8854.869	-202.044
		-22418.5	1.522	-271.859	80.789	6754.497	-202.044
9	4.051	-22541.5	1.522	-252.022	-1187.288	8426.357	-199.989

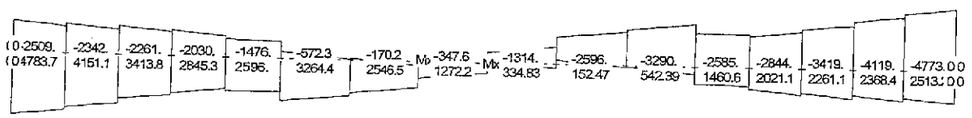
ENVOLVENTE para < T > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
9	5.401	-22541.5	1.522	-250.398	207.812	6328.178	-199.989
		-22656.4	1.522	-225.947	-1314.311	8041.938	-197.934
		-22656.4	1.522	-224.323	334.836	5945.952	-197.934
10	0	-22656.5	4.348	-225.947	-2088.344	7972.860	-197.934
		-22656.5	4.348	-224.323	-355.489	5945.532	-197.934
10	1.350	-22762.3	4.348	-195.898	-2215.336	7640.706	-192.065
		-22762.3	4.348	-194.273	-228.497	5615.571	-192.065
10	2.700	-22858.4	4.348	-162.510	-2342.327	7366.965	-186.196
		-22858.4	4.348	-160.886	-101.506	5344.023	-186.196
10	4.049	-22979.8	4.348	-277.414	-2469.319	7133.389	-180.326
		-22979.8	4.348	-275.789	25.486	5112.639	-180.326
10	5.399	-23189.2	4.348	-872.615	-2596.310	6380.631	-174.457
		-23189.2	4.348	-870.990	152.478	4362.074	-174.457
11	0	-23189.4	7.272	-872.615	-2789.810	6267.229	-174.457
		-23189.4	7.272	-870.990	41.504	4366.158	-174.457
11	1.331	-23485.6	7.272	-2072.388	-2915.033	4456.344	-164.778
		-23485.6	7.272	-2070.764	166.727	2557.435	-164.778
11	2.662	-23763.2	7.272	-3371.849	-3040.256	846.312	-155.099
		-23763.2	7.272	-3370.225	291.949	-1050.436	-155.099
11	3.993	-23961.0	7.272	-4345.492	-3165.479	-4228.087	-145.420
		-23961.0	7.272	-4343.868	417.172	-6122.673	-145.420
11	5.324	-24140.6	7.272	-5331.240	-3290.702	-10604.8	-135.741
		-24140.6	7.272	-5329.615	542.395	-12497.3	-135.741
12	0	-24162.1	3.447	4069.592	-2581.845	-10713.3	-135.741
		-24162.1	3.447	4128.505	1318.540	-12462.9	-135.741
12	1.050	-24289.0	3.447	3337.931	-2581.845	-6780.403	-132.123
		-24289.0	3.447	3396.843	1318.540	-8468.099	-132.123
12	2.100	-24407.4	3.447	2580.788	-2581.845	-3624.859	-128.504
		-24407.4	3.447	2639.700	1318.540	-5250.707	-128.504
12	3.149	-24539.2	3.447	1627.028	-2581.845	-1376.657	-124.886
		-24539.2	3.447	1952.107	1361.845	-2425.997	-124.886
12	4.199	-24654.4	3.447	937.563	-2585.796	155.440	-121.268
		-24654.4	3.447	957.885	1460.611	-870.834	-121.268
13	0	-24654.5	4.888	937.563	-2449.474	79.481	-121.268
		-24654.5	4.888	957.885	1626.049	-824.270	-121.268
13	1.050	-24753.7	4.888	-60.789	-2548.259	555.553	-116.135
		-24753.7	4.888	-40.467	1724.835	-326.859	-116.135
13	2.100	-24880.1	4.888	-812.312	-2647.045	0.612866	-111.002
		-24880.1	4.888	-791.990	1823.621	-860.460	-111.002
13	3.150	-25101.8	4.888	-803.958	-2745.831	-941.676	-105.869
		-25101.8	4.888	-783.636	1922.407	-1781.409	-105.869
13	4.200	-25290.1	4.888	-515.259	-2844.617	-1693.154	-100.736
		-25290.1	4.888	-494.936	2021.193	-2511.549	-100.736
14	0	-25290.3	6.467	-515.259	-3024.280	-1790.435	-100.736
		-25290.3	6.467	-494.936	1865.980	-2447.116	-100.736
14	1.050	-25339.3	6.467	-206.914	-3123.060	-2201.162	-93.945
		-25339.3	6.467	-186.592	1964.760	-2836.505	-93.945
14	2.100	-25198.3	6.467	110.718	-3221.841	-2188.800	-87.155
		-25198.3	6.467	131.040	2063.540	-2802.806	-87.155
14	3.150	-25070.8	6.467	232.507	-3320.621	-1904.947	-80.364
		-25070.8	6.467	252.829	2162.321	-2497.614	-80.364
14	4.200	-24964.3	6.467	180.289	-3419.401	-1645.109	-73.574
		-24964.3	6.467	200.612	2261.101	-2216.438	-73.574
15	0	-24964.5	7.990	173.107	-3724.641	-1699.438	-73.574
		-24964.5	7.990	207.794	1973.253	-2208.835	-73.574
15	1.050	-24860.0	7.990	80.355	-3823.444	-1515.840	-65.183
		-24860.0	7.990	115.043	2072.057	-1988.807	-65.183
15	2.100	-24756.3	7.990	-37.794	-3922.248	-1451.610	-56.791
		-24756.3	7.990	-3.106	2170.861	-1888.148	-56.791
15	3.151	-24624.8	7.990	4.777	-4021.052	-1436.394	-48.400
		-24624.8	7.990	39.464	2269.665	-1836.503	-48.400
15	4.201	-24475.6	7.990	106.717	-4119.856	-1315.163	-40.008
		-24475.6	7.990	141.405	2368.469	-1678.842	-40.008
16	0	-24475.9	9.581	106.717	-4378.547	-1458.510	-40.008
		-24475.9	9.581	141.405	2118.352	-1603.161	-40.008
16	1.049	-24318.9	9.581	202.310	-4477.283	-1237.819	-29.953
		-24318.9	9.581	236.998	2217.089	-1346.065	-29.953
16	2.099	-24153.9	9.581	291.122	-4576.020	-928.699	-19.898

ENVOLVENTE para < T > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
16	3.148	-24153.9	9.581	325.810	2315.826	-1000.540	-19.898
		-24073.6	9.581	-22.605	-4674.757	-752.746	-9.842
		-24073.6	9.581	12.083	2414.563	-788.183	-9.842
16	4.198	-24002.5	9.581	-377.814	-4773.493	-956.736	0.212903
		-24002.5	9.581	-343.126	2513.299	-955.768	0.212903
17	0	4.757	23.560	-1680.480	-1.60E-13	4219.310	-56.500
		4.757	23.560	-1486.242	3.96E-13	3753.496	-56.500
17	0.600	4.757	23.560	-1719.937	-1.60E-13	3199.967	-42.375
		4.757	23.560	-1525.699	3.96E-13	2850.606	-42.375
17	1.199	4.757	23.560	-1759.395	-1.60E-13	2156.967	-28.250
		4.757	23.560	-1565.157	3.96E-13	1924.061	-28.250
17	1.799	4.757	23.560	-1798.852	-1.60E-13	1090.312	-14.125
		4.757	23.560	-1604.614	3.96E-13	973.858	-14.125
17	2.398	4.757	23.560	-1838.309	-1.60E-13	4.41E-05	-5.65E-07
		4.757	23.560	-1644.071	3.96E-13	3.94E-05	-5.65E-07
18	0	-3.820	-23.637	-1098.618	8.62E-13	2826.241	56.728
		-3.820	-23.637	-531.932	1.28E-12	1466.187	56.728
18	0.600	-3.820	-23.637	-1138.106	8.62E-13	2155.220	42.546
		-3.820	-23.637	-571.420	1.28E-12	1135.179	42.546
18	1.200	-3.820	-23.637	-1177.593	8.62E-13	1460.506	28.364
		-3.820	-23.637	-610.907	1.28E-12	780.479	28.364
18	1.800	-3.820	-23.637	-1217.081	8.62E-13	742.100	14.182
		-3.820	-23.637	-650.395	1.28E-12	402.086	14.182
18	2.400	-3.820	-23.637	-1256.569	8.62E-13	3.02E-05	5.67E-07
		-3.820	-23.637	-689.883	1.28E-12	1.66E-05	5.67E-07
19	0	4.793	-23.548	-760.758	6.96E-13	2015.319	56.515
		4.793	-23.548	-2244.116	1.40E-12	5575.311	56.515
19	0.600	4.793	-23.548	-800.245	6.96E-13	1547.026	42.386
		4.793	-23.548	-2283.603	1.40E-12	4217.020	42.386
19	1.200	4.793	-23.548	-839.732	6.96E-13	1055.043	28.257
		4.793	-23.548	-2323.089	1.40E-12	2835.039	28.257
19	1.800	4.793	-23.548	-879.218	6.96E-13	539.367	14.129
		4.793	-23.548	-2362.576	1.40E-12	1429.365	14.129
19	2.400	4.793	-23.548	-918.705	6.96E-13	2.20E-05	5.65E-07
		4.793	-23.548	-2402.063	1.40E-12	5.76E-05	5.65E-07
20	0	-4.782	23.458	-1077.964	-8.99E-13	2776.786	-56.302
		-4.782	23.458	-1423.510	-2.57E-13	3606.133	-56.302
20	0.600	-4.782	23.458	-1117.453	-8.99E-13	2118.132	-42.226
		-4.782	23.458	-1462.999	-2.57E-13	2740.142	-42.226
20	1.200	-4.782	23.458	-1156.942	-8.99E-13	1435.782	-28.151
		-4.782	23.458	-1502.488	-2.57E-13	1850.456	-28.151
20	1.800	-4.782	23.458	-1196.432	-8.99E-13	729.738	-14.075
		-4.782	23.458	-1541.978	-2.57E-13	937.075	-14.075
20	2.400	-4.782	23.458	-1235.921	-8.99E-13	2.97E-05	-5.63E-07
		-4.782	23.458	-1581.467	-2.57E-13	3.80E-05	-5.63E-07

Mstb. 1 :449.9
Section forces envelope T , GWSP JA (ELU 4), View "ALL"
- Struktur: Staebe
- Envelop Torsion.moment Mx-min, Scaling 1.00E-03
  min: -4.77E+03 max: 3.38E+02 [kNm]
- Envelop Torsion.moment Mx-max, Scaling 1.00E-03
  min: -3.55E+02 max: 4.78E+03 [kNm]
- Text envelopes [kNm]



ENVOLVENTE para < My > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
1	0	-24024.4	-9.508	367.446	4766.223	-926.202	-0.227677
		-24024.4	-9.508	371.475	-2491.562	-782.549	-0.227677
1	1.050	-24091.4	-9.508	-475.724	623.580	-1206.626	-10.212
		-24091.4	-9.508	504.564	1651.081	-110.583	-10.212
1	2.100	-24168.0	-9.508	-753.482	623.580	-1886.652	-20.196
		-24168.0	-9.508	156.240	1651.081	201.715	-20.196
1	3.150	-24331.4	-9.508	-628.969	623.580	-2662.340	-30.180
		-24331.4	-9.508	210.188	1651.081	344.253	-30.180
1	4.200	-24487.2	-9.508	-497.738	623.580	-3312.093	-40.164
		-24487.2	-9.508	270.854	1651.081	538.627	-40.164
2	0	-24486.9	-8.079	-497.738	449.058	-3295.837	-40.164
		-24486.9	-8.079	270.854	1359.401	584.250	-40.164
2	1.050	-24635.2	-8.079	-360.323	449.058	-3808.667	-48.646
		-24635.2	-8.079	337.721	1359.401	841.284	-48.646
2	2.100	-24766.0	-8.079	-282.691	449.058	-4178.424	-57.127
		-24766.0	-8.079	344.804	1359.401	1167.327	-57.127
2	3.150	-24869.4	-8.079	-365.424	449.058	-4560.362	-65.608
		-24869.4	-8.079	191.521	1359.401	1407.122	-65.608
2	4.199	-24973.8	-8.079	-422.705	449.058	-5024.511	-74.090
		-24973.8	-8.079	63.691	1359.401	1490.642	-74.090
3	0	-24973.5	-6.428	-422.705	234.639	-5012.614	-74.090
		-24973.5	-6.428	63.691	917.746	1530.268	-74.090
3	1.050	-25080.4	-6.428	-439.524	234.639	-5508.674	-80.840
		-25080.4	-6.428	-23.695	917.746	1507.923	-80.840
3	2.100	-25208.4	-6.428	-281.864	234.639	-5991.392	-87.590
		-25208.4	-6.428	63.399	917.746	1424.818	-87.590
3	3.150	-25350.0	-6.428	71.394	234.639	-6164.950	-94.341
		-25350.0	-6.428	346.090	917.746	1576.770	-94.341
3	4.200	-25301.3	-6.428	415.366	234.639	-5877.820	-101.091
		-25301.3	-6.428	619.494	917.746	2115.307	-101.091
4	0	-25301.2	-4.907	415.366	193.560	-5870.985	-101.091
		-25301.2	-4.907	619.495	621.188	2139.874	-101.091
4	1.050	-25113.3	-4.907	739.643	193.560	-5205.768	-106.244
		-25113.3	-4.907	873.214	621.188	2982.377	-106.244
4	2.100	-24891.7	-4.907	782.898	193.560	-4312.807	-111.396
		-24891.7	-4.907	845.911	621.188	3978.541	-111.396
4	3.150	-24765.4	-4.907	65.386	193.560	-3771.197	-116.549
		-24765.4	-4.907	57.841	621.188	4549.271	-116.549
4	4.200	-24665.9	-4.907	-897.942	193.560	-4224.072	-121.701
		-24665.9	-4.907	-976.045	621.188	4051.433	-121.701
5	0	-24665.8	-3.365	-897.942	479.527	-4213.209	-121.701
		-24665.8	-3.365	-976.045	639.880	4071.785	-121.701
5	1.050	-24550.5	-3.365	-1857.004	479.527	-5686.757	-125.233
		-24550.5	-3.365	-2005.640	639.880	2479.243	-125.233
5	1.200	-24532.7	-3.365	-1993.641	479.527	-5980.371	-125.738
		-24532.7	-3.365	-2152.355	639.880	2162.583	-125.738
5	1.200	-24532.6	-3.365	-1994.405	479.527	-5982.073	-125.741
		-24532.6	-3.365	-2453.176	639.880	2160.622	-125.741
5	2.099	-24418.6	-3.365	-3453.998	345.187	-8303.462	-128.765
		-24418.6	-3.365	-2997.821	576.572	-287.414	-128.765
5	2.700	-24351.0	-3.365	-3936.602	345.187	-10548.8	-130.785
		-24351.0	-3.365	-3129.174	774.220	-2118.036	-130.785
5	2.700	-24350.9	-3.365	-3937.248	345.187	-10552.1	-130.788
		-24350.9	-3.365	-3429.763	774.220	-2120.821	-130.788
5	3.149	-24300.2	-3.365	-4281.552	345.187	-12411.9	-132.296
		-24300.2	-3.365	-3743.934	774.220	-3746.268	-132.296
5	4.198	-24173.3	-3.365	-5642.274	306.267	-17852.1	-135.827
		-24173.3	-3.365	-3916.535	813.140	-7619.977	-135.827
5	4.198	-24173.3	-3.365	-5942.594	306.267	-17854.5	-135.828
		-24173.3	-3.365	-3916.826	813.140	-7621.641	-135.828
6	0	-24151.8	-7.272	6003.277	1234.255	-17827.4	-135.828
		-24151.8	-7.272	4766.019	1380.810	-7583.036	-135.828
6	1.350	-23970.0	-7.272	4957.914	1234.255	-10492.4	-145.646
		-23970.0	-7.272	3811.380	1380.810	-1857.118	-145.646
6	2.700	-23769.5	-7.272	3925.035	1234.255	-4558.363	-155.464
		-23769.5	-7.272	2869.224	1380.810	2590.251	-155.464
6	4.050	-23484.4	-7.272	2116.234	1897.404	-335.717	-165.281
		-23484.4	-7.272	2031.812	198.577	6098.686	-165.281

ENVOLVENTE para < My > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
6	5.400	-23190.7	-7.272	604.808	953.261	1461.250	-175.099
		-23190.7	-7.272	858.040	325.589	7885.215	-175.099
7	0	-23190.5	-4.275	604.808	954.986	1502.441	-175.099
		-23190.5	-4.275	858.039	50.695	7893.337	-175.099
7	1.350	-22979.5	-4.275	55.722	954.986	1926.585	-180.870
		-22979.5	-4.275	536.892	1399.302	8770.268	-180.870
7	2.700	-22865.6	-4.275	-43.975	909.339	1897.992	-186.641
		-22865.6	-4.275	477.703	1444.949	9395.386	-186.641
7	4.050	-22768.8	-4.275	34.871	909.339	1924.631	-192.412
		-22768.8	-4.275	465.828	1444.949	10065.1	-192.412
7	5.400	-22662.4	-4.275	110.332	909.339	2071.008	-198.183
		-22662.4	-4.275	450.568	1444.949	10732.0	-198.183
8	0	-22662.2	-1.476	110.332	376.221	2096.849	-198.183
		-22662.2	-1.476	450.568	563.351	10772.4	-198.183
8	1.350	-22546.8	-1.476	181.766	376.221	2356.543	-200.175
		-22546.8	-1.476	431.291	563.351	11430.1	-200.175
8	2.700	-22421.9	-1.476	248.597	376.221	2722.207	-202.168
		-22421.9	-1.476	407.412	563.351	12071.4	-202.168
8	4.050	-22311.0	-1.476	145.713	376.221	3071.578	-204.161
		-22311.0	-1.476	213.818	563.351	12573.9	-204.161
8	5.399	-22203.8	-1.476	17.234	376.221	3251.012	-206.153
		-22203.8	-1.476	-5.370	563.351	12784.0	-206.153
9	0	-22203.8	1.522	17.234	-384.616	3250.832	-206.153
		-22203.8	1.522	-5.370	-607.669	12783.1	-206.153
9	1.350	-22310.0	1.522	-111.167	-384.616	3118.684	-204.098
		-22310.0	1.522	-224.503	-607.669	12559.2	-204.098
9	2.700	-22418.5	1.522	-203.445	-384.616	2819.558	-202.044
		-22418.5	1.522	-407.512	-607.669	12045.8	-202.044
9	4.051	-22541.5	1.522	-136.618	-384.616	2516.235	-199.989
		-22541.5	1.522	-431.416	-607.669	11405.7	-199.989
9	5.401	-22656.4	1.522	-65.177	-384.616	2318.257	-197.934
		-22656.4	1.522	-450.707	-607.669	10748.4	-197.934
10	0	-22656.5	4.348	-65.177	-927.116	2291.627	-197.934
		-22656.5	4.348	-450.707	-1492.127	10705.8	-197.934
10	1.350	-22762.3	4.348	10.226	-927.116	2207.095	-192.065
		-22762.3	4.348	-466.012	-1492.127	10039.6	-192.065
10	2.700	-22858.4	4.348	88.968	-927.116	2242.196	-186.196
		-22858.4	4.348	-477.978	-1492.127	9370.675	-186.196
10	4.049	-22979.8	4.348	-66.085	-989.705	2297.877	-180.326
		-22979.8	4.348	-552.732	-1429.539	8761.466	-180.326
10	5.399	-23189.2	4.348	-615.932	-989.705	1860.986	-174.457
		-23189.2	4.348	-871.110	-70.816	7899.053	-174.457
11	0	-23189.4	7.272	-615.932	-994.395	1819.212	-174.457
		-23189.4	7.272	-871.110	-330.464	7890.604	-174.457
11	1.331	-23485.6	7.272	-2157.173	-1946.744	-43.955	-164.778
		-23485.6	7.272	-2070.884	-205.242	6081.722	-164.778
11	2.662	-23763.2	7.272	-3932.965	-1279.731	-4250.711	-155.099
		-23763.2	7.272	-2874.723	-1390.332	2598.830	-155.099
11	3.993	-23961.0	7.272	-4951.331	-1279.731	-10101.7	-145.420
		-23961.0	7.272	-3803.644	-1390.332	-1784.118	-145.420
11	5.324	-24140.6	7.272	-5981.801	-1279.731	-17314.6	-135.741
		-24140.6	7.272	-4744.669	-1390.332	-7409.902	-135.741
12	0	-24162.1	3.447	5076.608	-324.394	-17344.3	-135.741
		-24162.1	3.447	3904.053	-800.791	-7450.385	-135.741
12	1.050	-24289.0	3.447	4274.399	-324.394	-12391.2	-132.123
		-24289.0	3.447	3172.392	-800.791	-3691.224	-132.123
12	2.100	-24407.4	3.447	3446.709	-324.394	-8289.563	-128.504
		-24407.4	3.447	2722.898	-602.875	-643.640	-128.504
12	3.149	-24539.2	3.447	1851.479	-462.515	-5682.270	-124.886
		-24539.2	3.447	2032.412	-662.670	1877.884	-124.886
12	4.199	-24654.4	3.447	892.531	-462.515	-4214.231	-121.268
		-24654.4	3.447	1002.917	-662.670	3498.837	-121.268
13	0	-24654.5	4.888	892.531	-195.351	-4224.155	-121.268
		-24654.5	4.888	1002.917	-628.074	3479.366	-121.268
13	1.050	-24753.7	4.888	-70.540	-195.351	-3776.845	-116.135
		-24753.7	4.888	-30.716	-628.074	4005.539	-116.135
13	2.100	-24880.1	4.888	-786.782	-195.351	-4323.501	-111.002
		-24880.1	4.888	-817.519	-628.074	3463.654	-111.002

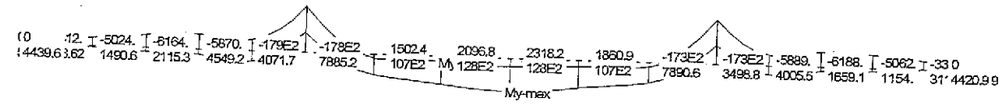
ENVOLVENTE para < My > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
13	3.150	-25101.8	4.888	-743.148	-195.351	-5220.460	-105.869
		-25101.8	4.888	-844.446	-628.074	2497.375	-105.869
13	4.200	-25290.1	4.888	-419.168	-195.351	-5889.564	-100.736
		-25290.1	4.888	-591.027	-628.074	1684.861	-100.736
14	0	-25290.3	6.467	-419.168	-237.391	-5896.737	-100.736
		-25290.3	6.467	-591.027	-920.910	1659.185	-100.736
14	1.050	-25339.3	6.467	-75.544	-237.391	-6188.051	-93.945
		-25339.3	6.467	-317.961	-920.910	1150.384	-93.945
14	2.100	-25198.3	6.467	277.366	-237.391	-6019.236	-87.155
		-25198.3	6.467	-35.608	-920.910	1027.630	-87.155
14	3.150	-25070.8	6.467	434.433	-237.391	-5541.888	-80.364
		-25070.8	6.467	50.902	-920.910	1139.327	-80.364
14	4.200	-24964.3	6.467	417.495	-237.391	-5051.514	-73.574
		-24964.3	6.467	-36.594	-920.910	1189.967	-73.574
15	0	-24964.5	7.990	417.495	-433.905	-5062.294	-73.574
		-24964.5	7.990	-36.594	-1317.483	1154.021	-73.574
15	1.050	-24860.0	7.990	360.030	-433.905	-4603.507	-65.183
		-24860.0	7.990	-164.633	-1317.483	1098.860	-65.183
15	2.100	-24756.3	7.990	277.169	-433.905	-4227.029	-56.791
		-24756.3	7.990	-318.068	-1317.483	887.272	-56.791
15	3.151	-24624.8	7.990	355.026	-433.905	-3862.507	-48.400
		-24624.8	7.990	-310.785	-1317.483	589.610	-48.400
15	4.201	-24475.6	7.990	492.254	-433.905	-3354.911	-40.008
		-24475.6	7.990	-244.132	-1317.483	360.906	-40.008
16	0	-24475.9	9.581	492.254	-625.901	-3372.787	-40.008
		-24475.9	9.581	-244.132	-1634.293	311.117	-40.008
16	1.049	-24318.9	9.581	623.110	-625.901	-2728.972	-29.953
		-24318.9	9.581	-183.802	-1634.293	145.088	-29.953
16	2.099	-24153.9	9.581	747.185	-625.901	-1959.720	-19.898
		-24153.9	9.581	-130.253	-1634.293	30.480	-19.898
16	3.148	-24073.6	9.581	468.721	-625.901	-1286.626	-9.842
		-24073.6	9.581	-479.243	-1634.293	-254.303	-9.842
16	4.198	-24002.5	9.581	-370.631	-4771.487	-956.739	0.212903
		-24002.5	9.581	-350.309	2511.293	-955.764	0.212903
17	0	4.757	23.560	-707.709	-5.64E-15	1886.449	-56.500
		4.757	23.560	-2267.400	8.21E-14	5626.837	-56.500
17	0.600	4.757	23.560	-747.166	-5.64E-15	1450.321	-42.375
		4.757	23.560	-2306.857	8.21E-14	4255.612	-42.375
17	1.199	4.757	23.560	-786.623	-5.64E-15	990.537	-28.250
		4.757	23.560	-2346.314	8.21E-14	2860.731	-28.250
17	1.799	4.757	23.560	-826.081	-5.64E-15	507.096	-14.125
		4.757	23.560	-2385.771	8.21E-14	1442.194	-14.125
17	2.398	4.757	23.560	-865.538	-5.64E-15	2.08E-05	-5.65E-07
		4.757	23.560	-2425.229	8.21E-14	5.82E-05	-5.65E-07
18	0	-3.820	-23.637	-255.642	1.04E-12	803.088	56.728
		-3.820	-23.637	-1770.863	1.15E-12	4439.639	56.728
18	0.600	-3.820	-23.637	-295.130	1.04E-12	637.855	42.546
		-3.820	-23.637	-1810.350	1.15E-12	3365.268	42.546
18	1.200	-3.820	-23.637	-334.618	1.04E-12	448.929	28.364
		-3.820	-23.637	-1849.838	1.15E-12	2267.205	28.364
18	1.800	-3.820	-23.637	-374.106	1.04E-12	236.311	14.182
		-3.820	-23.637	-1889.326	1.15E-12	1145.449	14.182
18	2.400	-3.820	-23.637	-413.593	1.04E-12	9.93E-06	5.67E-07
		-3.820	-23.637	-1928.814	1.15E-12	4.63E-05	5.67E-07
19	0	4.793	-23.548	-712.719	6.99E-13	1900.026	56.515
		4.793	-23.548	-2248.125	1.40E-12	5584.933	56.515
19	0.600	4.793	-23.548	-752.205	6.99E-13	1460.557	42.386
		4.793	-23.548	-2287.612	1.40E-12	4224.237	42.386
19	1.200	4.793	-23.548	-791.692	6.99E-13	997.396	28.257
		4.793	-23.548	-2327.099	1.40E-12	2839.850	28.257
19	1.800	4.793	-23.548	-831.179	6.99E-13	510.544	14.129
		4.793	-23.548	-2366.585	1.40E-12	1431.771	14.129
19	2.400	4.793	-23.548	-870.666	6.99E-13	2.09E-05	5.65E-07
		4.793	-23.548	-2406.072	1.40E-12	5.77E-05	5.65E-07
20	0	-4.782	23.458	-255.933	-8.30E-13	803.823	-56.302
		-4.782	23.458	-1762.998	-2.76E-13	4420.942	-56.302
20	0.600	-4.782	23.458	-295.422	-8.30E-13	638.409	-42.226
		-4.782	23.458	-1802.487	-2.76E-13	3351.248	-42.226

ENVOLVENTE para < My > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
20	1.200	-4.782	23.458	-334.911	-8.30E-13	449.301	-28.151
		-4.782	23.458	-1841.977	-2.76E-13	2257.860	-28.151
20	1.800	-4.782	23.458	-374.401	-8.30E-13	236.498	-14.075
		-4.782	23.458	-1881.466	-2.76E-13	1140.777	-14.075
20	2.400	-4.782	23.458	-413.890	-8.30E-13	9.93E-06	-5.63E-07
		-4.782	23.458	-1920.955	-2.76E-13	4.61E-05	-5.63E-07

Mstb. 1:449.9
Section forces envelope My, GWSP JA (ELU 4), View "ALL"
- Struktur: Staebe
- Envelop Moment My-min, Scaling 2.00E-04
  min: -1.79E+04 max: 3.25E+03 [kNm]
- Envelop Moment My-max, Scaling 2.00E-04
  min: -7.62E+03 max: 1.28E+04 [kNm]
- Text envelopes [kNm]



ENVOLVENTE: JB 'ELU 5'

Grupo	Espe.	Hipótesis	Factor	Etapa	Título
A	PERM.	1	1.350		Peso Propio
	Y	3	1.350		Carga Muerta Máxima
	Y	20	0.850000		Pretensado
B	MAS	19	0.900000		gradiente
C	MAS	25	1.500		Carro 1 estribo
D	MAS	4	1.500		Sobrecarga centrada vano 1
E	MAS	5	1.500		Sobrecarga centrada vano 2
F	MAS	6	1.500		Sobrecarga centrada vano 3
ALTERNATIVA PARA ENVOLVENTE:					
G	PERM.	1	1.350		Peso Propio
	Y	3	1.350		Carga Muerta Máxima
	Y	20	0.850000		Pretensado
H	MAS	19	0.900000		gradiente
I	MAS	25	1.500		Carro 1 estribo
J	MAS	7	1.500		Sobrecarga excéntrica vano 1 (
K	MAS	8	1.500		Sobrecarga excentrica vano 2 (
L	MAS	9	1.500		Sobrecarga excentrica vano 3 (
ALTERNATIVA PARA ENVOLVENTE:					
M	PERM.	1	1.350		Peso Propio
	Y	3	1.350		Carga Muerta Máxima
	Y	20	0.850000		Pretensado
N	MAS	19	0.900000		gradiente
O	MAS	25	1.500		Carro 1 estribo
P	MAS	10	1.500		Sobrecarga excéntrica vano 1 (
Q	MAS	11	1.500		Sobrecarga excentrica vano 2 (
R	MAS	12	1.500		Sobrecarga excentrica vano 3 (

ENVOLVENTE para < Vz > (y valores concomitantes) "ALL"
(1.,línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
1	0	-24024.4	-9.508	-155.965	623.580	-869.185	-0.227677
		-24024.4	-9.508	1670.735	1678.295	-803.239	-0.227677
1	0.0996	-24030.7	-9.508	-186.288	623.580	-886.507	-1.174
		-24030.7	-9.508	1633.720	1678.295	-638.991	-1.174
1	0.100	-24030.8	-9.508	-186.544	623.580	-886.666	-1.182
		-24030.8	-9.508	1333.407	1678.295	-637.747	-1.182
1	1.050	-24091.4	-9.508	-475.724	623.580	-1206.626	-10.212
		-24091.4	-9.508	980.411	1678.295	455.418	-10.212
1	1.500	-24120.1	-9.508	-612.603	623.580	-1455.609	-14.486
		-24120.1	-9.508	813.325	1678.295	854.188	-14.486
1	1.500	-24120.1	-9.508	-612.859	623.580	-1456.133	-14.494
		-24120.1	-9.508	513.013	1678.295	854.736	-14.494
1	2.100	-24168.0	-9.508	-753.482	623.580	-1886.652	-20.196
		-24168.0	-9.508	332.088	1678.295	1087.347	-20.196
1	3.000	-24308.5	-9.508	-647.258	623.580	-2558.549	-28.748
		-24308.5	-9.508	377.870	1678.295	1364.667	-28.748
1	3.000	-24308.6	-9.508	-730.117	668.318	-1390.113	-28.756
		-24308.6	-9.508	160.875	1633.556	195.794	-28.756
1	3.150	-24331.4	-9.508	-711.929	668.318	-1505.746	-30.180
		-24331.4	-9.508	168.996	1633.556	212.877	-30.180
1	4.200	-24487.2	-9.508	-580.698	668.318	-2242.613	-40.164
		-24487.2	-9.508	229.662	1633.556	363.997	-40.164
2	0	-24486.9	-8.079	-580.698	461.368	-2225.493	-40.164
		-24486.9	-8.079	229.662	1347.176	409.170	-40.164
2	1.050	-24635.2	-8.079	-443.283	461.368	-2825.417	-48.646
		-24635.2	-8.079	296.528	1347.176	622.958	-48.646
2	2.100	-24766.0	-8.079	-365.651	461.368	-3282.268	-57.127
		-24766.0	-8.079	303.611	1347.176	905.756	-57.127
2	3.150	-24869.4	-8.079	-448.384	461.368	-3751.301	-65.608
		-24869.4	-8.079	150.329	1347.176	1102.306	-65.608
2	4.199	-24973.8	-8.079	-505.665	461.368	-4302.545	-74.090
		-24973.8	-8.079	22.499	1347.176	1142.581	-74.090
3	0	-24973.5	-6.428	-505.665	221.822	-4290.656	-74.090
		-24973.5	-6.428	22.499	917.639	1181.993	-74.090
3	1.050	-25080.4	-6.428	-530.612	205.085	-1918.653	-80.840
		-25080.4	-6.428	-50.167	-87.650	-306.738	-80.840
3	2.100	-25208.4	-6.428	-443.519	205.085	-2534.074	-87.590
		-25208.4	-6.428	100.901	934.376	-1919.564	-87.590
3	3.150	-25350.0	-6.428	-160.827	205.085	-2914.438	-94.341
		-25350.0	-6.428	454.159	934.376	-1691.179	-94.341
3	4.200	-25301.3	-6.428	112.577	205.085	-2908.216	-101.091
		-25301.3	-6.428	798.131	934.376	-1002.107	-101.091
4	0	-25301.2	-4.907	112.577	69.235	-2903.837	-101.091
		-25301.2	-4.907	798.131	737.314	-975.421	-101.091
4	1.050	-25113.3	-4.907	366.297	69.235	-2593.580	-106.244
		-25113.3	-4.907	1122.408	737.314	91.686	-106.244
4	2.100	-24891.7	-4.907	338.994	69.235	-2129.661	-111.396
		-24891.7	-4.907	1165.663	737.314	1386.538	-111.396
4	3.150	-24765.4	-4.907	-449.076	69.235	-2091.177	-116.549
		-24765.4	-4.907	448.151	737.314	2330.038	-116.549
4	4.200	-24665.9	-4.907	-1482.962	69.235	-3121.262	-121.701
		-24665.9	-4.907	-515.177	737.314	2279.053	-121.701
5	0	-24665.8	-3.365	-1482.962	319.678	-3114.985	-121.701
		-24665.8	-3.365	-515.177	813.140	2304.076	-121.701
5	1.050	-24550.5	-3.365	-2512.557	319.678	-5239.593	-125.233
		-24550.5	-3.365	-1474.239	813.140	1232.283	-125.233
5	2.099	-24418.6	-3.365	-3536.958	319.678	-8453.955	-128.765
		-24418.6	-3.365	-2428.106	813.140	-855.231	-128.765
5	3.149	-24300.2	-3.365	-4364.512	319.678	-12649.4	-132.296
		-24300.2	-3.365	-3185.126	813.140	-3849.818	-132.296
5	4.198	-24173.3	-3.365	-5166.746	319.678	-17696.2	-135.828
		-24173.3	-3.365	-3916.826	813.140	-7621.641	-135.828
6	0	-24151.8	-7.272	4766.019	1380.810	-7583.036	-135.828
		-24151.8	-7.272	5996.860	1242.088	-17668.7	-135.828
6	1.350	-23970.0	-7.272	3811.380	1380.810	-1857.118	-145.646
		-23970.0	-7.272	4951.498	1242.088	-10342.3	-145.646
6	2.700	-23769.5	-7.272	2869.224	1380.810	2590.251	-155.464
		-23769.5	-7.272	3918.619	1242.088	-4416.978	-155.464

ENVOLVENTE para < Vz > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
6	4.050	-23484.4	-7.272	1581.982	1380.810	5576.774	-165.281
		-23484.4	-7.272	2540.654	1242.088	-74.967	-165.281
6	5.400	-23190.7	-7.272	453.571	1380.810	6786.634	-175.099
		-23190.7	-7.272	1321.521	1242.088	2367.901	-175.099
7	0	-23190.5	-4.275	453.571	1152.339	6841.314	-175.099
		-23190.5	-4.275	1321.521	1204.421	2420.711	-175.099
7	1.350	-22979.5	-4.275	-95.516	1152.339	7061.285	-180.870
		-22979.5	-4.275	681.713	1204.421	3751.190	-180.870
7	2.700	-22865.6	-4.275	-129.598	1152.339	6861.200	-186.641
		-22865.6	-4.275	556.910	1204.421	4539.138	-186.641
7	4.050	-22768.8	-4.275	-50.752	1152.339	6772.246	-192.412
		-22768.8	-4.275	545.035	1204.421	5315.742	-192.412
7	5.400	-22662.4	-4.275	24.709	1152.339	6803.030	-198.183
		-22662.4	-4.275	529.775	1204.421	6089.610	-198.183
8	0	-22662.2	-1.476	24.709	428.865	6834.814	-198.183
		-22662.2	-1.476	529.775	509.575	6124.063	-198.183
8	1.350	-22546.8	-1.476	96.142	428.865	6978.929	-200.175
		-22546.8	-1.476	510.498	509.575	6888.721	-200.175
8	2.700	-22421.9	-1.476	162.974	428.865	7229.015	-202.168
		-22421.9	-1.476	486.619	509.575	7636.903	-202.168
8	4.050	-22311.0	-1.476	60.090	428.865	7462.807	-204.161
		-22311.0	-1.476	293.025	509.575	8246.347	-204.161
8	5.399	-22203.8	-1.476	-70.985	526.173	12218.3	-206.153
		-22203.8	-1.476	76.432	412.267	3871.815	-206.153
9	0	-22203.8	1.522	-70.985	-620.479	12216.2	-206.153
		-22203.8	1.522	76.432	-375.303	3872.610	-206.153
9	1.350	-22310.0	1.522	-290.117	-620.479	11903.7	-204.098
		-22310.0	1.522	-51.969	-375.303	3820.389	-204.098
9	2.700	-22418.5	1.522	-473.127	-620.479	11301.7	-202.044
		-22418.5	1.522	-144.247	-375.303	3601.190	-202.044
9	4.051	-22541.5	1.522	-497.031	-620.479	10573.0	-199.989
		-22541.5	1.522	-77.420	-375.303	3377.795	-199.989
9	5.401	-22656.4	1.522	-516.321	-620.479	9827.191	-197.934
		-22656.4	1.522	-5.979	-375.303	3259.743	-197.934
10	0	-22656.5	4.348	-516.321	-1467.538	9784.802	-197.934
		-22656.5	4.348	-5.979	-956.022	3232.716	-197.934
10	1.350	-22762.3	4.348	-531.626	-1467.538	9030.084	-192.065
		-22762.3	4.348	69.424	-956.022	3228.091	-192.065
10	2.700	-22858.4	4.348	-543.592	-1467.538	8272.558	-186.196
		-22858.4	4.348	148.166	-956.022	3343.099	-186.196
10	4.049	-22979.8	4.348	-703.850	-1467.538	7493.976	-180.326
		-22979.8	4.348	78.617	-956.022	3559.491	-180.326
10	5.399	-23189.2	4.348	-1344.405	-1467.538	6134.993	-174.457
		-23189.2	4.348	-471.230	-956.022	3317.922	-174.457
11	0	-23189.4	7.272	-1344.405	-1651.699	6069.319	-174.457
		-23189.4	7.272	-471.230	-1022.065	3276.275	-174.457
11	1.331	-23485.6	7.272	-2588.902	-1651.699	3600.706	-164.778
		-23485.6	7.272	-1626.281	-1022.065	2029.406	-164.778
11	2.662	-23763.2	7.272	-3933.085	-1651.699	-726.583	-155.099
		-23763.2	7.272	-2881.020	-1022.065	-957.084	-155.099
11	3.993	-23961.0	7.272	-4951.450	-1651.699	-6577.764	-145.420
		-23961.0	7.272	-3809.940	-1022.065	-5348.413	-145.420
11	5.324	-24140.6	7.272	-5981.920	-1651.699	-13790.8	-135.741
		-24140.6	7.272	-4750.965	-1022.065	-10982.6	-135.741
12	0	-24162.1	3.447	3906.385	-802.684	-7499.354	-135.741
		-24162.1	3.447	5076.608	-324.394	-17344.3	-135.741
12	1.050	-24289.0	3.447	3174.724	-802.684	-3737.745	-132.123
		-24289.0	3.447	4274.399	-324.394	-12391.2	-132.123
12	2.100	-24407.4	3.447	2417.580	-802.684	-753.537	-128.504
		-24407.4	3.447	3446.709	-324.394	-8289.563	-128.504
12	3.149	-24539.2	3.447	1463.821	-802.684	1323.327	-124.886
		-24539.2	3.447	2422.402	-324.394	-5169.339	-124.886
12	4.199	-24654.4	3.447	504.873	-802.684	2384.399	-121.268
		-24654.4	3.447	1392.907	-324.394	-3138.971	-121.268
13	0	-24654.5	4.888	504.873	-734.408	2361.211	-121.268
		-24654.5	4.888	1392.907	-89.728	-3145.218	-121.268
13	1.050	-24753.7	4.888	-458.198	-734.408	2401.473	-116.135
		-24753.7	4.888	359.274	-89.728	-2209.548	-116.135

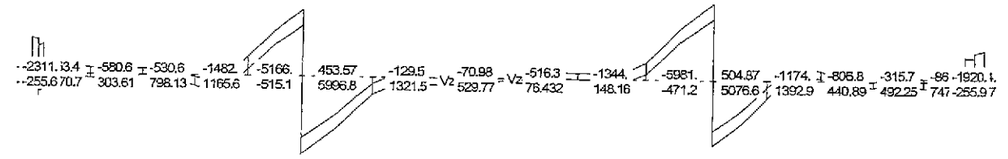
ENVOLVENTE para < Vz > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
13	2.100	-24880.1	4.888	-1174.441	-734.408	1447.768	-111.002
		-24880.1	4.888	-427.529	-89.728	-2341.935	-111.002
13	3.150	-25101.8	4.888	-1130.806	-734.408	143.759	-105.869
		-25101.8	4.888	-454.456	-89.728	-2898.717	-105.869
13	4.200	-25290.1	4.888	-806.826	-734.408	-932.394	-100.736
		-25290.1	4.888	-201.037	-89.728	-3301.734	-100.736
14	0	-25290.3	6.467	-806.826	-940.444	-960.155	-100.736
		-25290.3	6.467	-201.037	-217.592	-3306.828	-100.736
14	1.050	-25339.3	6.467	-463.203	-940.444	-1658.495	-93.945
		-25339.3	6.467	72.029	-217.592	-3406.155	-93.945
14	2.100	-25198.3	6.467	-110.292	-940.444	-1896.706	-87.155
		-25198.3	6.467	354.382	-217.592	-3119.435	-87.155
14	3.150	-25070.8	6.467	36.919	81.945	-317.094	-80.364
		-25070.8	6.467	440.892	-217.592	-2598.265	-80.364
14	4.200	-24964.3	6.467	-34.262	-920.645	1170.328	-73.574
		-24964.3	6.467	417.495	-237.391	-5051.514	-73.574
15	0	-24964.5	7.990	-34.262	-1316.588	1134.400	-73.574
		-24964.5	7.990	417.495	-433.905	-5062.294	-73.574
15	1.050	-24860.0	7.990	-162.301	-1316.588	1081.689	-65.183
		-24860.0	7.990	360.030	-433.905	-4603.507	-65.183
15	2.100	-24756.3	7.990	-315.737	-1316.588	872.549	-56.791
		-24756.3	7.990	277.169	-433.905	-4227.029	-56.791
15	3.151	-24624.8	7.990	-308.453	-1316.588	577.336	-48.400
		-24624.8	7.990	355.026	-433.905	-3862.507	-48.400
15	4.201	-24475.6	7.990	-241.800	-1316.588	351.081	-40.008
		-24475.6	7.990	492.254	-433.905	-3354.911	-40.008
16	0	-24475.9	9.581	-241.800	-1633.068	301.327	-40.008
		-24475.9	9.581	492.254	-625.901	-3372.787	-40.008
16	1.049	-24318.9	9.581	-181.470	-1633.068	137.745	-29.953
		-24318.9	9.581	623.110	-625.901	-2728.972	-29.953
16	2.099	-24153.9	9.581	-127.922	-1633.068	25.585	-19.898
		-24153.9	9.581	747.185	-625.901	-1959.720	-19.898
16	3.148	-24073.6	9.581	-476.911	-1633.068	-256.752	-9.842
		-24073.6	9.581	468.721	-625.901	-1286.626	-9.842
16	4.198	-24002.5	9.581	-867.383	-1633.068	-956.039	0.212903
		-24002.5	9.581	148.775	-625.901	-956.465	0.212903
17	0	4.757	23.560	-2660.996	1.03E-13	6570.743	-56.500
		4.757	23.560	-707.709	-5.64E-15	1886.449	-56.500
17	0.600	4.757	23.560	-2700.453	1.03E-13	4963.542	-42.375
		4.757	23.560	-747.166	-5.64E-15	1450.321	-42.375
17	1.199	4.757	23.560	-2739.910	1.03E-13	3332.684	-28.250
		4.757	23.560	-786.623	-5.64E-15	990.537	-28.250
17	1.799	4.757	23.560	-2779.367	1.03E-13	1678.170	-14.125
		4.757	23.560	-826.081	-5.64E-15	507.096	-14.125
17	2.398	4.757	23.560	-2818.825	1.03E-13	6.76E-05	-5.65E-07
		4.757	23.560	-865.538	-5.64E-15	2.08E-05	-5.65E-07
18	0	-3.820	-23.637	-2153.115	1.46E-12	5357.049	56.728
		-3.820	-23.637	-255.642	1.04E-12	803.088	56.728
18	0.600	-3.820	-23.637	-2192.602	1.46E-12	4053.326	42.546
		-3.820	-23.637	-295.130	1.04E-12	637.855	42.546
18	1.200	-3.820	-23.637	-2232.090	1.46E-12	2725.910	28.364
		-3.820	-23.637	-334.618	1.04E-12	448.929	28.364
18	1.800	-3.820	-23.637	-2271.578	1.46E-12	1374.801	14.182
		-3.820	-23.637	-374.106	1.04E-12	236.311	14.182
18	2.400	-3.820	-23.637	-2311.066	1.46E-12	5.55E-05	5.67E-07
		-3.820	-23.637	-413.593	1.04E-12	9.93E-06	5.67E-07
19	0	4.793	-23.548	-2246.704	1.39E-12	5581.522	56.515
		4.793	-23.548	-712.719	6.99E-13	1900.026	56.515
19	0.600	4.793	-23.548	-2286.191	1.39E-12	4221.679	42.386
		4.793	-23.548	-752.205	6.99E-13	1460.557	42.386
19	1.200	4.793	-23.548	-2325.677	1.39E-12	2838.144	28.257
		4.793	-23.548	-791.692	6.99E-13	997.396	28.257
19	1.800	4.793	-23.548	-2365.164	1.39E-12	1430.918	14.129
		4.793	-23.548	-831.179	6.99E-13	510.544	14.129
19	2.400	4.793	-23.548	-2404.651	1.39E-12	5.77E-05	5.65E-07
		4.793	-23.548	-870.666	6.99E-13	2.09E-05	5.65E-07
20	0	-4.782	23.458	-1762.088	-2.70E-13	4418.757	-56.302
		-4.782	23.458	-255.933	-8.30E-13	803.823	-56.302

ENVOLVENTE para < Vz > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
20	0.600	-4.782	23.458	-1801.577	-2.70E-13	3349.609	-42.226
		-4.782	23.458	-295.422	-8.30E-13	638.409	-42.226
20	1.200	-4.782	23.458	-1841.066	-2.70E-13	2256.768	-28.151
		-4.782	23.458	-334.911	-8.30E-13	449.301	-28.151
20	1.800	-4.782	23.458	-1880.556	-2.70E-13	1140.231	-14.075
		-4.782	23.458	-374.401	-8.30E-13	236.498	-14.075
20	2.400	-4.782	23.458	-1920.045	-2.70E-13	4.61E-05	-5.63E-07
		-4.782	23.458	-413.890	-8.30E-13	9.93E-06	-5.63E-07

Mstb. 1 :449.9
Section forces envelope Vz, GWSP JB (ELU 5), View "ALL"
- Struktur: Staebe
- Envelop Shear force Vz-min, Scaling 1.00E-03
  min: -5.98E+03 max: 4.77E+03 [kN]
- Envelop Shear force Vz-max, Scaling 1.00E-03
  min: -4.75E+03 max: 6.00E+03 [kN]
- Text envelopes [kN]



ENVOLVENTE para < T > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
1	0	-24024.4	-9.508	330.283	-2509.087	-784.160	-0.227677
		-24024.4	-9.508	1184.486	4810.962	-888.265	-0.227677
1	0.0996	-24030.7	-9.508	296.614	-2499.718	-753.227	-1.174
		-24030.7	-9.508	1150.817	4801.593	-772.271	-1.174
1	0.100	-24030.8	-9.508	296.330	-2499.639	-752.981	-1.182
		-24030.8	-9.508	850.533	4801.514	-771.433	-1.182
1	1.050	-24091.4	-9.508	-24.758	-2410.296	-629.528	-10.212
		-24091.4	-9.508	529.445	4712.171	-121.679	-10.212
1	1.500	-24120.1	-9.508	-176.741	-2368.006	-679.194	-14.486
		-24120.1	-9.508	377.462	4669.881	77.773	-14.486
1	1.500	-24120.1	-9.508	-177.025	-2367.927	-679.352	-14.494
		-24120.1	-9.508	77.178	4669.802	77.955	-14.494
1	2.100	-24168.0	-9.508	-337.799	-2311.505	-854.532	-20.196
		-24168.0	-9.508	-83.596	4613.380	55.227	-20.196
1	3.000	-24308.5	-9.508	-261.796	-2226.886	-1166.140	-28.748
		-24308.5	-9.508	-7.593	4528.761	-27.742	-28.748
1	3.000	-24308.6	-9.508	-261.722	-2226.807	-1166.402	-28.756
		-24308.6	-9.508	-307.519	4528.682	-27.917	-28.756
1	3.150	-24331.4	-9.508	-248.568	-2212.714	-1212.246	-30.180
		-24331.4	-9.508	-294.365	4514.589	-80.622	-30.180
1	4.200	-24487.2	-9.508	-152.620	-2113.923	-1481.075	-40.164
		-24487.2	-9.508	-198.417	4415.798	-397.541	-40.164
2	0	-24486.9	-8.079	-152.620	-2342.673	-1548.613	-40.164
		-24486.9	-8.079	-198.417	4151.216	-267.710	-40.164
2	1.050	-24635.2	-8.079	-50.479	-2243.904	-1717.641	-48.646
		-24635.2	-8.079	-96.276	4052.448	-484.818	-48.646
2	2.100	-24766.0	-8.079	-8.121	-2145.135	-1780.628	-57.127

ENVOLVENTE para < T > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
		-24766.0	-8.079	-53.918	3953.679	-595.884	-57.127
2	3.150	-24869.4	-8.079	-126.129	-2046.367	-1892.830	-65.608
		-24869.4	-8.079	-171.926	3854.910	-756.165	-65.608
2	4.199	-24973.8	-8.079	-218.684	-1947.598	-2124.275	-74.090
		-24973.8	-8.079	-264.481	3756.142	-1035.689	-74.090
3	0	-24973.5	-6.428	-301.644	-2274.292	-1475.564	-74.090
		-24973.5	-6.428	-181.521	3413.753	-1633.100	-74.090
3	1.050	-25080.4	-6.428	-353.747	-2175.498	-1863.023	-80.840
		-25080.4	-6.428	-233.624	3314.959	-1894.418	-80.840
3	2.100	-25208.4	-6.428	-231.370	-2076.705	-2274.192	-87.590
		-25208.4	-6.428	-111.247	3216.165	-2179.445	-87.590
3	3.150	-25350.0	-6.428	86.604	-1977.911	-2413.253	-94.341
		-25350.0	-6.428	206.727	3117.372	-2192.364	-94.341
3	4.200	-25301.3	-6.428	395.292	-1879.117	-2128.677	-101.091
		-25301.3	-6.428	515.416	3018.578	-1781.646	-101.091
4	0	-25301.2	-4.907	395.293	-2038.787	-2191.220	-101.091
		-25301.2	-4.907	515.416	2845.336	-1688.037	-101.091
4	1.050	-25113.3	-4.907	684.291	-1940.006	-1565.601	-106.244
		-25113.3	-4.907	804.414	2746.555	-936.293	-106.244
4	2.100	-24891.7	-4.907	692.267	-1841.225	-749.279	-111.396
		-24891.7	-4.907	812.390	2647.774	6.155	-111.396
4	3.150	-24765.4	-4.907	-60.524	-1742.444	-321.349	-116.549
		-24765.4	-4.907	59.599	2548.993	560.210	-116.549
4	4.200	-24665.9	-4.907	-1059.131	-1643.664	-924.947	-121.701
		-24665.9	-4.907	-939.008	2450.212	82.738	-121.701
5	0	-24665.8	-3.365	-1059.131	-1463.204	-975.089	-121.701
		-24665.8	-3.365	-939.008	2596.022	164.180	-121.701
5	1.050	-24550.5	-3.365	-2053.460	-1364.456	-2636.331	-125.233
		-24550.5	-3.365	-1629.808	2589.101	-1369.620	-125.233
5	2.099	-24418.6	-3.365	-2738.261	-1321.943	-5561.328	-128.765
		-24418.6	-3.365	-2583.675	2589.101	-3620.421	-128.765
5	3.149	-24300.2	-3.365	-3495.282	-1321.943	-8881.458	-132.296
		-24300.2	-3.365	-3340.695	2589.101	-6778.295	-132.296
5	4.198	-24173.3	-3.365	-4226.982	-1321.943	-12978.8	-135.828
		-24173.3	-3.365	-4072.396	2589.101	-10713.4	-135.828
6	0	-24151.8	-7.272	5365.230	-564.479	-13012.0	-135.828
		-24151.8	-7.272	5331.739	3264.444	-10610.4	-135.828
6	1.350	-23970.0	-7.272	4365.229	-437.467	-6507.761	-145.646
		-23970.0	-7.272	4331.738	3137.432	-4151.363	-145.646
6	2.700	-23769.5	-7.272	3377.712	-310.455	-1343.290	-155.464
		-23769.5	-7.272	3344.221	3010.420	967.893	-155.464
6	4.050	-23484.4	-7.272	2045.108	-183.443	2299.093	-165.281
		-23484.4	-7.272	2011.617	2883.408	4565.062	-165.281
6	5.400	-23190.7	-7.272	871.336	-56.431	4103.573	-175.099
		-23190.7	-7.272	837.845	2756.396	6324.328	-175.099
7	0	-23190.5	-4.275	871.336	-167.786	4098.733	-175.099
		-23190.5	-4.275	837.845	2546.593	6438.797	-175.099
7	1.350	-22979.5	-4.275	276.889	-40.776	4852.075	-180.870
		-22979.5	-4.275	243.398	2419.584	7146.925	-180.870
7	2.700	-22865.6	-4.275	197.446	86.233	5124.124	-186.641
		-22865.6	-4.275	163.955	2292.574	7373.760	-186.641
7	4.050	-22768.8	-4.275	230.932	213.242	5446.066	-192.412
		-22768.8	-4.275	197.441	2165.565	7650.489	-192.412
7	5.400	-22662.4	-4.275	261.033	340.252	5826.509	-198.183
		-22662.4	-4.275	227.542	2038.556	7985.718	-198.183
8	0	-22662.2	-1.476	247.855	-347.606	6009.816	-198.183
		-22662.2	-1.476	240.719	1271.121	7868.791	-198.183
8	1.350	-22546.8	-1.476	273.933	-220.612	6424.535	-200.175
		-22546.8	-1.476	266.797	1144.127	8273.877	-200.175
8	2.700	-22421.9	-1.476	295.410	-93.617	6884.001	-202.168
		-22421.9	-1.476	288.273	1017.133	8723.710	-202.168
8	4.050	-22311.0	-1.476	147.171	33.377	7265.951	-204.161
		-22311.0	-1.476	140.034	890.138	9096.027	-204.161
8	5.399	-22203.8	-1.476	-25.696	95.134	4475.081	-206.153
		-22203.8	-1.476	33.015	831.150	10835.0	-206.153
9	0	-22203.8	1.522	-26.783	-858.965	10947.8	-206.153
		-22203.8	1.522	34.102	-115.414	4361.185	-206.153
9	1.350	-22310.0	1.522	-135.840	-933.240	9217.933	-204.098

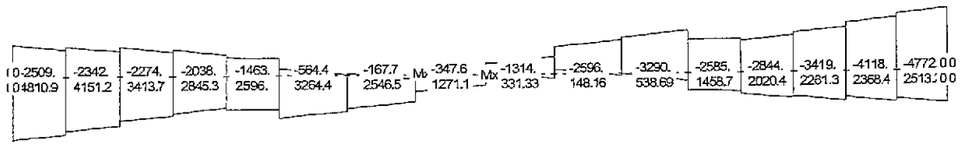
ENVOLVENTE para < T > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
		-22310.0	1.522	-140.632	-49.733	7161.624	-204.098
9	2.700	-22418.5	1.522	-273.484	-1060.264	8854.869	-202.044
		-22418.5	1.522	-278.276	77.291	6792.089	-202.044
9	4.051	-22541.5	1.522	-252.022	-1187.288	8426.357	-199.989
		-22541.5	1.522	-256.814	204.315	6357.107	-199.989
9	5.401	-22656.4	1.522	-225.947	-1314.311	8041.938	-197.934
		-22656.4	1.522	-230.739	331.339	5966.218	-197.934
10	0	-22656.5	4.348	-225.947	-2088.344	7972.860	-197.934
		-22656.5	4.348	-230.739	-359.806	5965.640	-197.934
10	1.350	-22762.3	4.348	-195.898	-2215.336	7640.706	-192.065
		-22762.3	4.348	-200.690	-232.814	5627.017	-192.065
10	2.700	-22858.4	4.348	-162.510	-2342.327	7366.965	-186.196
		-22858.4	4.348	-167.302	-105.822	5346.808	-186.196
10	4.049	-22979.8	4.348	-277.414	-2469.319	7133.389	-180.326
		-22979.8	4.348	-282.206	21.169	5106.763	-180.326
10	5.399	-23189.2	4.348	-872.615	-2596.310	6380.631	-174.457
		-23189.2	4.348	-877.407	148.161	4347.537	-174.457
11	0	-23189.4	7.272	-872.615	-2789.810	6267.229	-174.457
		-23189.4	7.272	-877.407	37.802	4351.453	-174.457
11	1.331	-23485.6	7.272	-2072.388	-2915.033	4456.344	-164.778
		-23485.6	7.272	-2077.180	163.025	2534.189	-164.778
11	2.662	-23763.2	7.272	-3371.849	-3040.256	846.312	-155.099
		-23763.2	7.272	-3376.641	288.248	-1082.222	-155.099
11	3.993	-23961.0	7.272	-4345.492	-3165.479	-4228.087	-145.420
		-23961.0	7.272	-4350.284	413.471	-6162.999	-145.420
11	5.324	-24140.6	7.272	-5331.240	-3290.702	-10604.8	-135.741
		-24140.6	7.272	-5336.032	538.694	-12546.1	-135.741
12	0	-24162.1	3.447	4069.592	-2581.845	-10713.3	-135.741
		-24162.1	3.447	4130.836	1316.646	-12511.9	-135.741
12	1.050	-24289.0	3.447	3337.931	-2581.845	-6780.403	-132.123
		-24289.0	3.447	3399.175	1316.646	-8514.620	-132.123
12	2.100	-24407.4	3.447	2580.788	-2581.845	-3624.859	-128.504
		-24407.4	3.447	2642.032	1316.646	-5294.781	-128.504
12	3.149	-24539.2	3.447	1627.028	-2581.845	-1376.657	-124.886
		-24539.2	3.447	1954.439	1359.951	-2467.623	-124.886
12	4.199	-24654.4	3.447	937.563	-2585.796	155.440	-121.268
		-24654.4	3.447	960.217	1458.717	-910.012	-121.268
13	0	-24654.5	4.888	937.563	-2449.474	79.481	-121.268
		-24654.5	4.888	960.217	1625.338	-863.487	-121.268
13	1.050	-24753.7	4.888	-60.789	-2548.259	555.553	-116.135
		-24753.7	4.888	-38.135	1724.124	-363.628	-116.135
13	2.100	-24880.1	4.888	-812.312	-2647.045	0.612866	-111.002
		-24880.1	4.888	-789.658	1822.910	-894.781	-111.002
13	3.150	-25101.8	4.888	-803.958	-2745.831	-941.676	-105.869
		-25101.8	4.888	-781.304	1921.696	-1813.282	-105.869
13	4.200	-25290.1	4.888	-515.259	-2844.617	-1693.154	-100.736
		-25290.1	4.888	-492.604	2020.482	-2540.973	-100.736
14	0	-25290.3	6.467	-515.259	-3024.280	-1790.435	-100.736
		-25290.3	6.467	-492.604	1866.244	-2476.548	-100.736
14	1.050	-25339.3	6.467	-206.914	-3123.060	-2201.162	-93.945
		-25339.3	6.467	-184.260	1965.025	-2863.489	-93.945
14	2.100	-25198.3	6.467	110.718	-3221.841	-2188.800	-87.155
		-25198.3	6.467	133.372	2063.805	-2827.341	-87.155
14	3.150	-25070.8	6.467	232.507	-3320.621	-1904.947	-80.364
		-25070.8	6.467	255.161	2162.585	-2519.701	-80.364
14	4.200	-24964.3	6.467	180.289	-3419.401	-1645.109	-73.574
		-24964.3	6.467	202.943	2261.365	-2236.077	-73.574
15	0	-24964.5	7.990	175.438	-3723.746	-1719.059	-73.574
		-24964.5	7.990	207.794	1973.253	-2208.835	-73.574
15	1.050	-24860.0	7.990	82.687	-3822.549	-1533.011	-65.183
		-24860.0	7.990	115.043	2072.057	-1988.807	-65.183
15	2.100	-24756.3	7.990	-35.462	-3921.353	-1466.333	-56.791
		-24756.3	7.990	-3.106	2170.861	-1888.148	-56.791
15	3.151	-24624.8	7.990	7.108	-4020.157	-1448.668	-48.400
		-24624.8	7.990	39.464	2269.665	-1836.503	-48.400
15	4.201	-24475.6	7.990	109.049	-4118.961	-1324.988	-40.008
		-24475.6	7.990	141.405	2368.469	-1678.842	-40.008
16	0	-24475.9	9.581	109.049	-4377.321	-1468.299	-40.008

ENVOLVENTE para < T > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
		-24475.9	9.581	141.405	2118.352	-1603.161	-40.008
16	1.049	-24318.9	9.581	204.642	-4476.057	-1245.162	-29.953
		-24318.9	9.581	236.998	2217.089	-1346.065	-29.953
16	2.099	-24153.9	9.581	293.454	-4574.794	-933.594	-19.898
		-24153.9	9.581	325.810	2315.826	-1000.540	-19.898
16	3.148	-24073.6	9.581	-20.273	-4673.531	-755.194	-9.842
		-24073.6	9.581	12.083	2414.563	-788.183	-9.842
16	4.198	-24002.5	9.581	-375.482	-4772.268	-956.737	0.212903
		-24002.5	9.581	-343.126	2513.299	-955.768	0.212903
17	0	4.757	23.560	-1680.480	-1.60E-13	4219.310	-56.500
		4.757	23.560	-1879.838	4.17E-13	4697.402	-56.500
17	0.600	4.757	23.560	-1719.937	-1.60E-13	3199.967	-42.375
		4.757	23.560	-1919.295	4.17E-13	3558.536	-42.375
17	1.199	4.757	23.560	-1759.395	-1.60E-13	2156.967	-28.250
		4.757	23.560	-1958.753	4.17E-13	2396.014	-28.250
17	1.799	4.757	23.560	-1798.852	-1.60E-13	1090.312	-14.125
		4.757	23.560	-1998.210	4.17E-13	1209.835	-14.125
17	2.398	4.757	23.560	-1838.309	-1.60E-13	4.41E-05	-5.65E-07
		4.757	23.560	-2037.667	4.17E-13	4.89E-05	-5.65E-07
18	0	-3.820	-23.637	-1081.675	8.78E-13	2785.579	56.728
		-3.820	-23.637	-931.126	1.58E-12	2424.259	56.728
18	0.600	-3.820	-23.637	-1121.163	8.78E-13	2124.724	42.546
		-3.820	-23.637	-970.614	1.58E-12	1853.733	42.546
18	1.200	-3.820	-23.637	-1160.651	8.78E-13	1440.175	28.364
		-3.820	-23.637	-1010.102	1.58E-12	1259.515	28.364
18	1.800	-3.820	-23.637	-1200.139	8.78E-13	731.934	14.182
		-3.820	-23.637	-1049.589	1.58E-12	641.604	14.182
18	2.400	-3.820	-23.637	-1239.626	8.78E-13	2.98E-05	5.67E-07
		-3.820	-23.637	-1089.077	1.58E-12	2.61E-05	5.67E-07
19	0	4.793	-23.548	-759.337	6.93E-13	2011.908	56.515
		4.793	-23.548	-2244.116	1.40E-12	5575.311	56.515
19	0.600	4.793	-23.548	-798.824	6.93E-13	1544.468	42.386
		4.793	-23.548	-2283.603	1.40E-12	4217.020	42.386
19	1.200	4.793	-23.548	-838.310	6.93E-13	1053.337	28.257
		4.793	-23.548	-2323.089	1.40E-12	2835.039	28.257
19	1.800	4.793	-23.548	-877.797	6.93E-13	538.514	14.129
		4.793	-23.548	-2362.576	1.40E-12	1429.365	14.129
19	2.400	4.793	-23.548	-917.284	6.93E-13	2.20E-05	5.65E-07
		4.793	-23.548	-2402.063	1.40E-12	5.76E-05	5.65E-07
20	0	-4.782	23.458	-1074.791	-8.93E-13	2769.170	-56.302
		-4.782	23.458	-1425.773	-2.57E-13	3611.564	-56.302
20	0.600	-4.782	23.458	-1114.280	-8.93E-13	2112.419	-42.226
		-4.782	23.458	-1465.262	-2.57E-13	2744.215	-42.226
20	1.200	-4.782	23.458	-1153.769	-8.93E-13	1431.974	-28.151
		-4.782	23.458	-1504.751	-2.57E-13	1853.171	-28.151
20	1.800	-4.782	23.458	-1193.258	-8.93E-13	727.834	-14.075
		-4.782	23.458	-1544.240	-2.57E-13	938.433	-14.075
20	2.400	-4.782	23.458	-1232.748	-8.93E-13	2.96E-05	-5.63E-07
		-4.782	23.458	-1583.730	-2.57E-13	3.80E-05	-5.63E-07

Mstb. 1 :449.9
Section forces envelope T , GWSP JB (ELU 5), View "ALL"
- Struktur: Staebe
- Envelop Torsion.moment Mx-min, Scaling 1.00E-03
  min: -4.77E+03 max: 3.40E+02 [kNm]
- Envelop Torsion.moment Mx-max, Scaling 1.00E-03
  min: -3.60E+02 max: 4.81E+03 [kNm]
- Text envelopes [kNm]



ENVOLVENTE para < My > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
1	0	-24024.4	-9.508	367.446	4766.223	-926.202	-0.227677
		-24024.4	-9.508	1147.323	-2464.348	-746.223	-0.227677
1	0.0996	-24030.7	-9.508	-122.792	2338.105	-911.057	-1.174
		-24030.7	-9.508	1277.354	-1735.050	-624.081	-1.174
1	0.100	-24030.8	-9.508	-123.048	2338.105	-911.163	-1.182
		-24030.8	-9.508	977.070	-1734.971	-623.137	-1.182
1	1.050	-24091.4	-9.508	-475.724	623.580	-1206.626	-10.212
		-24091.4	-9.508	980.411	1678.295	455.418	-10.212
1	1.500	-24120.1	-9.508	-612.603	623.580	-1455.609	-14.486
		-24120.1	-9.508	813.325	1678.295	854.188	-14.486
1	1.500	-24120.1	-9.508	-612.859	623.580	-1456.133	-14.494
		-24120.1	-9.508	513.013	1678.295	854.736	-14.494
1	2.100	-24168.0	-9.508	-753.482	623.580	-1886.652	-20.196
		-24168.0	-9.508	332.088	1678.295	1087.347	-20.196
1	3.000	-24308.5	-9.508	-647.258	623.580	-2558.549	-28.748
		-24308.5	-9.508	377.870	1678.295	1364.667	-28.748
1	3.000	-24308.6	-9.508	-647.156	623.580	-2559.135	-28.756
		-24308.6	-9.508	77.915	1678.295	1364.816	-28.756
1	3.150	-24331.4	-9.508	-628.969	623.580	-2662.340	-30.180
		-24331.4	-9.508	86.036	1678.295	1369.472	-30.180
1	4.200	-24487.2	-9.508	-497.738	623.580	-3312.093	-40.164
		-24487.2	-9.508	146.702	1678.295	1433.477	-40.164
2	0	-24486.9	-8.079	-497.738	449.058	-3295.837	-40.164
		-24486.9	-8.079	146.702	1359.486	1479.514	-40.164
2	1.050	-24635.2	-8.079	-360.323	449.058	-3808.667	-48.646
		-24635.2	-8.079	213.568	1359.486	1606.208	-48.646
2	2.100	-24766.0	-8.079	-282.691	449.058	-4178.424	-57.127
		-24766.0	-8.079	220.651	1359.486	1801.911	-57.127
2	3.150	-24869.4	-8.079	-365.424	449.058	-4560.362	-65.608
		-24869.4	-8.079	67.369	1359.486	1911.367	-65.608
2	4.199	-24973.8	-8.079	-422.705	449.058	-5024.511	-74.090
		-24973.8	-8.079	-60.461	1359.486	1864.547	-74.090
3	0	-24973.5	-6.428	-422.705	234.639	-5012.614	-74.090
		-24973.5	-6.428	-60.461	904.822	1903.950	-74.090
3	1.050	-25080.4	-6.428	-439.524	234.639	-5508.674	-80.840
		-25080.4	-6.428	-147.847	904.822	1751.233	-80.840
3	2.100	-25208.4	-6.428	-281.864	234.639	-5991.392	-87.590
		-25208.4	-6.428	-60.754	904.822	1537.754	-87.590
3	3.150	-25350.0	-6.428	71.394	234.639	-6164.950	-94.341
		-25350.0	-6.428	221.937	904.822	1559.333	-94.341
3	4.200	-25301.3	-6.428	415.366	234.639	-5877.820	-101.091
		-25301.3	-6.428	495.342	904.822	1967.498	-101.091
4	0	-25301.2	-4.907	415.366	193.560	-5870.985	-101.091
		-25301.2	-4.907	495.342	612.988	1991.728	-101.091
4	1.050	-25113.3	-4.907	739.643	193.560	-5205.768	-106.244

ENVOLVENTE para < My > (y valores concomitantes) "ALL"
(1. línea: MIN.; 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
		-25113.3	-4.907	749.061	612.988	2703.875	-106.244
4	2.100	-24891.7	-4.907	782.898	193.560	-4312.807	-111.396
		-24891.7	-4.907	721.759	612.988	3569.683	-111.396
4	3.150	-24765.4	-4.907	65.386	193.560	-3771.197	-116.549
		-24765.4	-4.907	-66.311	612.988	4010.058	-116.549
4	4.200	-24665.9	-4.907	-897.942	193.560	-4224.072	-121.701
		-24665.9	-4.907	-1100.197	612.988	3381.863	-121.701
5	0	-24665.8	-3.365	-897.942	479.527	-4213.209	-121.701
		-24665.8	-3.365	-1100.197	653.292	3402.300	-121.701
5	1.050	-24550.5	-3.365	-1939.964	454.018	-5750.174	-125.233
		-24550.5	-3.365	-2046.832	678.801	1742.863	-125.233
5	2.099	-24418.6	-3.365	-3536.958	319.678	-8453.955	-128.765
		-24418.6	-3.365	-2739.013	615.492	-797.263	-128.765
5	3.149	-24300.2	-3.365	-4364.512	319.678	-12649.4	-132.296
		-24300.2	-3.365	-3185.126	813.140	-3849.818	-132.296
5	4.198	-24173.3	-3.365	-5166.746	319.678	-17696.2	-135.828
		-24173.3	-3.365	-3916.826	813.140	-7621.641	-135.828
6	0	-24151.8	-7.272	5996.860	1242.088	-17668.7	-135.828
		-24151.8	-7.272	4766.019	1380.810	-7583.036	-135.828
6	1.350	-23970.0	-7.272	4951.498	1242.088	-10342.3	-145.646
		-23970.0	-7.272	3811.380	1380.810	-1857.118	-145.646
6	2.700	-23769.5	-7.272	3918.619	1242.088	-4416.978	-155.464
		-23769.5	-7.272	2869.224	1380.810	2590.251	-155.464
6	4.050	-23484.4	-7.272	2109.818	1905.237	-202.994	-165.281
		-23484.4	-7.272	2031.812	198.577	6098.686	-165.281
6	5.400	-23190.7	-7.272	598.392	961.094	1585.311	-175.099
		-23190.7	-7.272	858.040	325.589	7885.215	-175.099
7	0	-23190.5	-4.275	598.392	957.458	1626.725	-175.099
		-23190.5	-4.275	858.039	50.695	7893.337	-175.099
7	1.350	-22979.5	-4.275	49.306	957.458	2042.207	-180.870
		-22979.5	-4.275	536.892	1399.302	8770.268	-180.870
7	2.700	-22865.6	-4.275	-50.391	911.811	2004.952	-186.641
		-22865.6	-4.275	477.703	1444.949	9395.386	-186.641
7	4.050	-22768.8	-4.275	28.455	911.811	2022.929	-192.412
		-22768.8	-4.275	465.828	1444.949	10065.1	-192.412
7	5.400	-22662.4	-4.275	103.916	911.811	2160.643	-198.183
		-22662.4	-4.275	450.568	1444.949	10732.0	-198.183
8	0	-22662.2	-1.476	103.916	375.089	2186.511	-198.183
		-22662.2	-1.476	450.568	563.351	10772.4	-198.183
8	1.350	-22546.8	-1.476	175.349	375.089	2437.544	-200.175
		-22546.8	-1.476	431.291	563.351	11430.1	-200.175
8	2.700	-22421.9	-1.476	242.180	375.089	2794.547	-202.168
		-22421.9	-1.476	407.412	563.351	12071.4	-202.168
8	4.050	-22311.0	-1.476	139.297	375.089	3135.257	-204.161
		-22311.0	-1.476	213.818	563.351	12573.9	-204.161
8	5.399	-22203.8	-1.476	10.818	375.089	3306.030	-206.153
		-22203.8	-1.476	-5.370	563.351	12784.0	-206.153
9	0	-22203.8	1.522	10.818	-388.113	3305.750	-206.153
		-22203.8	1.522	-5.370	-607.669	12783.1	-206.153
9	1.350	-22310.0	1.522	-117.583	-388.113	3164.939	-204.098
		-22310.0	1.522	-224.503	-607.669	12559.2	-204.098
9	2.700	-22418.5	1.522	-209.861	-388.113	2857.150	-202.044
		-22418.5	1.522	-407.512	-607.669	12045.8	-202.044
9	4.051	-22541.5	1.522	-143.034	-388.113	2545.164	-199.989
		-22541.5	1.522	-431.416	-607.669	11405.7	-199.989
9	5.401	-22656.4	1.522	-71.593	-388.113	2338.523	-197.934
		-22656.4	1.522	-450.707	-607.669	10748.4	-197.934
10	0	-22656.5	4.348	-71.593	-931.433	2311.734	-197.934
		-22656.5	4.348	-450.707	-1492.127	10705.8	-197.934
10	1.350	-22762.3	4.348	3.810	-931.433	2218.541	-192.065
		-22762.3	4.348	-466.012	-1492.127	10039.6	-192.065
10	2.700	-22858.4	4.348	82.552	-931.433	2244.981	-186.196
		-22858.4	4.348	-477.978	-1492.127	9370.675	-186.196
10	4.049	-22979.8	4.348	-66.085	-989.705	2297.877	-180.326
		-22979.8	4.348	-559.149	-1433.856	8755.590	-180.326
10	5.399	-23189.2	4.348	-615.932	-989.705	1860.986	-174.457
		-23189.2	4.348	-877.526	-75.133	7884.516	-174.457
11	0	-23189.4	7.272	-615.932	-994.395	1819.212	-174.457

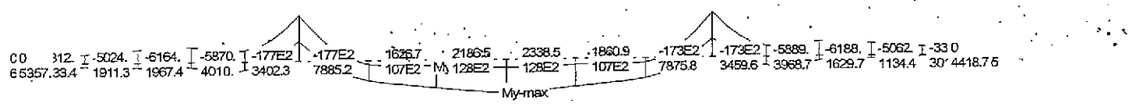
ENVOLVENTE para < My > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
		-23189.4	7.272	-877.526	-334.166	7875.899	-174.457
11	1.331	-23485.6	7.272	-2157.173	-1946.744	-43.955	-164.778
		-23485.6	7.272	-2077.300	-208.943	6058.476	-164.778
11	2.662	-23763.2	7.272	-3932.965	-1279.731	-4250.711	-155.099
		-23763.2	7.272	-2881.139	-1394.034	2567.044	-155.099
11	3.993	-23961.0	7.272	-4951.331	-1279.731	-10101.7	-145.420
		-23961.0	7.272	-3810.060	-1394.034	-1824.444	-145.420
11	5.324	-24140.6	7.272	-5981.801	-1279.731	-17314.6	-135.741
		-24140.6	7.272	-4751.085	-1394.034	-7458.768	-135.741
12	0	-24162.1	3.447	5076.608	-324.394	-17344.3	-135.741
		-24162.1	3.447	3906.385	-802.684	-7499.354	-135.741
12	1.050	-24289.0	3.447	4274.399	-324.394	-12391.2	-132.123
		-24289.0	3.447	3174.724	-802.684	-3737.745	-132.123
12	2.100	-24407.4	3.447	3446.709	-324.394	-8289.563	-128.504
		-24407.4	3.447	2725.230	-604.769	-687.714	-128.504
12	3.149	-24539.2	3.447	1851.479	-462.515	-5682.270	-124.886
		-24539.2	3.447	2034.744	-664.564	1836.258	-124.886
12	4.199	-24654.4	3.447	892.531	-462.515	-4214.231	-121.268
		-24654.4	3.447	1005.249	-664.564	3459.659	-121.268
13	0	-24654.5	4.888	892.531	-195.351	-4224.155	-121.268
		-24654.5	4.888	1005.249	-628.785	3440.149	-121.268
13	1.050	-24753.7	4.888	-70.540	-195.351	-3776.845	-116.135
		-24753.7	4.888	-28.384	-628.785	3968.770	-116.135
13	2.100	-24880.1	4.888	-786.782	-195.351	-4323.501	-111.002
		-24880.1	4.888	-815.187	-628.785	3429.333	-111.002
13	3.150	-25101.8	4.888	-743.148	-195.351	-5220.460	-105.869
		-25101.8	4.888	-842.115	-628.785	2465.503	-105.869
13	4.200	-25290.1	4.888	-419.168	-195.351	-5889.564	-100.736
		-25290.1	4.888	-588.695	-628.785	1655.436	-100.736
14	0	-25290.3	6.467	-419.168	-237.391	-5896.737	-100.736
		-25290.3	6.467	-588.695	-920.645	1629.753	-100.736
14	1.050	-25339.3	6.467	-75.544	-237.391	-6188.051	-93.945
		-25339.3	6.467	-315.630	-920.645	1123.401	-93.945
14	2.100	-25198.3	6.467	277.366	-237.391	-6019.236	-87.155
		-25198.3	6.467	-33.276	-920.645	1003.095	-87.155
14	3.150	-25070.8	6.467	434.433	-237.391	-5541.888	-80.364
		-25070.8	6.467	53.234	-920.645	1117.240	-80.364
14	4.200	-24964.3	6.467	417.495	-237.391	-5051.514	-73.574
		-24964.3	6.467	-34.262	-920.645	1170.828	-73.574
15	0	-24964.5	7.990	417.495	-433.905	-5062.294	-73.574
		-24964.5	7.990	-34.262	-1316.588	1134.400	-73.574
15	1.050	-24860.0	7.990	360.030	-433.905	-4603.507	-65.183
		-24860.0	7.990	-162.301	-1316.588	1081.689	-65.183
15	2.100	-24756.3	7.990	277.169	-433.905	-4227.029	-56.791
		-24756.3	7.990	-315.737	-1316.588	872.549	-56.791
15	3.151	-24624.8	7.990	355.026	-433.905	-3862.507	-48.400
		-24624.8	7.990	-308.453	-1316.588	577.336	-48.400
15	4.201	-24475.6	7.990	492.254	-433.905	-3354.911	-40.008
		-24475.6	7.990	-241.800	-1316.588	351.081	-40.008
16	0	-24475.9	9.581	492.254	-625.901	-3372.787	-40.008
		-24475.9	9.581	-241.800	-1633.068	301.327	-40.008
16	1.049	-24318.9	9.581	623.110	-625.901	-2728.972	-29.953
		-24318.9	9.581	-181.470	-1633.068	137.745	-29.953
16	2.099	-24153.9	9.581	747.185	-625.901	-1959.720	-19.898
		-24153.9	9.581	-127.922	-1633.068	25.585	-19.898
16	3.148	-24073.6	9.581	468.721	-625.901	-1286.626	-9.842
		-24073.6	9.581	-476.911	-1633.068	-256.752	-9.842
16	4.198	-24002.5	9.581	-370.631	-4771.487	-956.739	0.212903
		-24002.5	9.581	-347.977	2512.519	-955.765	0.212903
17	0	4.757	23.560	-707.709	-5.64E-15	1886.449	-56.500
		4.757	23.560	-2660.996	1.03E-13	6570.743	-56.500
17	0.600	4.757	23.560	-747.166	-5.64E-15	1450.321	-42.375
		4.757	23.560	-2700.453	1.03E-13	4963.542	-42.375
17	1.199	4.757	23.560	-786.623	-5.64E-15	990.537	-28.250
		4.757	23.560	-2739.910	1.03E-13	3332.684	-28.250
17	1.799	4.757	23.560	-826.081	-5.64E-15	507.096	-14.125
		4.757	23.560	-2779.367	1.03E-13	1678.170	-14.125
17	2.398	4.757	23.560	-865.538	-5.64E-15	2.08E-05	-5.65E-07

ENVOLVENTE para < My > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
		4.757	23.560	-2818.825	1.03E-13	6.76E-05	-5.65E-07
18	0	-3.820	-23.637	-255.642	1.04E-12	803.088	56.728
		-3.820	-23.637	-2153.115	1.46E-12	5357.049	56.728
18	0.600	-3.820	-23.637	-295.130	1.04E-12	637.855	42.546
		-3.820	-23.637	-2192.602	1.46E-12	4053.326	42.546
18	1.200	-3.820	-23.637	-334.618	1.04E-12	448.929	28.364
		-3.820	-23.637	-2232.090	1.46E-12	2725.910	28.364
18	1.800	-3.820	-23.637	-374.106	1.04E-12	236.311	14.182
		-3.820	-23.637	-2271.578	1.46E-12	1374.801	14.182
18	2.400	-3.820	-23.637	-413.593	1.04E-12	9.93E-06	5.67E-07
		-3.820	-23.637	-2311.066	1.46E-12	5.55E-05	5.67E-07
19	0	4.793	-23.548	-712.719	6.99E-13	1900.026	56.515
		4.793	-23.548	-2246.704	1.39E-12	5581.522	56.515
19	0.600	4.793	-23.548	-752.205	6.99E-13	1460.557	42.386
		4.793	-23.548	-2286.191	1.39E-12	4221.679	42.386
19	1.200	4.793	-23.548	-791.692	6.99E-13	997.396	28.257
		4.793	-23.548	-2325.677	1.39E-12	2838.144	28.257
19	1.800	4.793	-23.548	-831.179	6.99E-13	510.544	14.129
		4.793	-23.548	-2365.164	1.39E-12	1430.918	14.129
19	2.400	4.793	-23.548	-870.666	6.99E-13	2.09E-05	5.65E-07
		4.793	-23.548	-2404.651	1.39E-12	5.77E-05	5.65E-07
20	0	-4.782	23.458	-255.933	-8.30E-13	803.823	-56.302
		-4.782	23.458	-1762.088	-2.70E-13	4418.757	-56.302
20	0.600	-4.782	23.458	-295.422	-8.30E-13	638.409	-42.226
		-4.782	23.458	-1801.577	-2.70E-13	3349.609	-42.226
20	1.200	-4.782	23.458	-334.911	-8.30E-13	449.301	-28.151
		-4.782	23.458	-1841.066	-2.70E-13	2256.768	-28.151
20	1.800	-4.782	23.458	-374.401	-8.30E-13	236.498	-14.075
		-4.782	23.458	-1880.556	-2.70E-13	1140.231	-14.075
20	2.400	-4.782	23.458	-413.890	-8.30E-13	9.93E-06	-5.63E-07
		-4.782	23.458	-1920.045	-2.70E-13	4.61E-05	-5.63E-07

Mstb. 1 :449.9
Section forces envelope My, GWSP JB (ELU 5), View "ALL"
- Struktur: Staebe
- Envelop Moment My-min, Scaling 2.00E-04
  min: -1.77E+04 max: 3.31E+03 [kNm]
- Envelop Moment My-max, Scaling 2.00E-04
  min: -7.62E+03 max: 1.28E+04 [kNm]
- Text envelopes [kNm]



ENVOLVENTE: JC 'ELU 6'

Grupo	Espe.	Hipótesis	Factor	Etapa	Título
A	PERM.	1	1.350		Peso Propio
	Y	3	1.350		Carga Muerta Máxima
	Y	20	0.850000		Pretensado
B	MAS	19	0.900000		gradiente
C	MAS	26	1.500		Carro 2 excéntrico
D	MAS	4	1.500		Sobrecarga centrada vano 1
E	MAS	5	1.500		Sobrecarga centrada vano 2
F	MAS	6	1.500		Sobrecarga centrada vano 3
ALTERNATIVA PARA ENVOLVENTE:					
G	PERM.	1	1.350		Peso Propio
	Y	3	1.350		Carga Muerta Máxima
	Y	20	0.850000		Pretensado
H	MAS	19	0.900000		gradiente
I	MAS	26	1.500		Carro 2 excéntrico
J	MAS	7	1.500		Sobrecarga excéntrica vano 1 (
K	MAS	8	1.500		Sobrecarga excentrica vano 2 (
L	MAS	9	1.500		Sobrecarga excentrica vano 3 (
ALTERNATIVA PARA ENVOLVENTE:					
M	PERM.	1	1.350		Peso Propio
	Y	3	1.350		Carga Muerta Máxima
	Y	20	0.850000		Pretensado
N	MAS	19	0.900000		gradiente
O	MAS	26	1.500		Carro 2 excéntrico
P	MAS	10	1.500		Sobrecarga excéntrica vano 1 (
Q	MAS	11	1.500		Sobrecarga excentrica vano 2 (
R	MAS	12	1.500		Sobrecarga excentrica vano 3 (

ENVOLVENTE para < Vz > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
1	0	-24024.4	-9.508	-309.170	1563.179	-895.038	-0.227677
		-24024.4	-9.508	853.695	1633.556	-841.176	-0.227677
1	1.050	-24091.4	-9.508	-628.929	1563.179	-1393.354	-10.212
		-24091.4	-9.508	463.371	1633.556	-155.448	-10.212
1	2.100	-24168.0	-9.508	-906.687	1563.179	-2234.257	-20.196
		-24168.0	-9.508	115.048	1633.556	113.595	-20.196
1	3.150	-24331.4	-9.508	-782.174	1563.179	-3170.822	-30.180
		-24331.4	-9.508	168.996	1633.556	212.877	-30.180
1	4.200	-24487.2	-9.508	-650.943	1563.179	-3981.451	-40.164
		-24487.2	-9.508	229.662	1633.556	363.997	-40.164
2	0	-24486.9	-8.079	-650.943	1408.508	-3936.416	-40.164
		-24486.9	-8.079	229.662	1347.176	409.170	-40.164
2	1.050	-24635.2	-8.079	-513.528	1408.508	-4610.086	-48.646
		-24635.2	-8.079	296.528	1347.176	622.958	-48.646
2	2.100	-24766.0	-8.079	-435.896	1408.508	-5140.683	-57.127
		-24766.0	-8.079	303.611	1347.176	905.756	-57.127
2	3.150	-24869.4	-8.079	-518.629	1408.508	-5683.461	-65.608
		-24869.4	-8.079	150.329	1347.176	1102.306	-65.608
2	4.199	-24973.8	-8.079	-575.910	1408.508	-6308.451	-74.090
		-24973.8	-8.079	22.499	1347.176	1142.581	-74.090
3	0	-24973.5	-6.428	-575.910	1238.181	-6262.394	-74.090
		-24973.5	-6.428	22.499	917.639	1181.993	-74.090
3	1.050	-25080.4	-6.428	-600.857	1221.444	-3964.155	-80.840
		-25080.4	-6.428	-50.167	-87.650	-306.738	-80.840
3	2.100	-25208.4	-6.428	-513.763	1221.444	-4653.340	-87.590
		-25208.4	-6.428	100.901	934.376	-1919.564	-87.590
3	3.150	-25350.0	-6.428	-231.072	1221.444	-5107.468	-94.341
		-25350.0	-6.428	454.159	934.376	-1691.179	-94.341
3	4.200	-25301.3	-6.428	42.332	1221.444	-5175.011	-101.091

ENVOLVENTE para < Vz > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
		-25301.3	-6.428	798.131	934.376	-1002.107	-101.091
4	0	-25301.2	-4.907	42.332	1157.431	-5137.036	-101.091
		-25301.2	-4.907	798.131	737.314	-975.421	-101.091
4	1.050	-25113.3	-4.907	296.052	1157.431	-4900.534	-106.244
		-25113.3	-4.907	1122.408	737.314	91.686	-106.244
4	2.100	-24891.7	-4.907	268.749	1157.431	-4510.370	-111.396
		-24891.7	-4.907	1165.663	737.314	1386.538	-111.396
4	3.150	-24765.4	-4.907	-519.321	1157.431	-4545.641	-116.549
		-24765.4	-4.907	448.151	737.314	2330.038	-116.549
4	4.200	-24665.9	-4.907	-1553.207	1157.431	-5649.480	-121.701
		-24665.9	-4.907	-515.177	737.314	2279.053	-121.701
5	0	-24665.8	-3.365	-1553.207	1488.893	-5606.771	-121.701
		-24665.8	-3.365	-515.177	813.140	2304.076	-121.701
5	1.050	-24550.5	-3.365	-2582.802	1488.893	-7805.109	-125.233
		-24550.5	-3.365	-1474.239	813.140	1232.283	-125.233
5	2.099	-24418.6	-3.365	-3607.203	1488.893	-11093.2	-128.765
		-24418.6	-3.365	-2428.106	813.140	-855.231	-128.765
5	3.149	-24300.2	-3.365	-4434.757	1488.893	-15362.4	-132.296
		-24300.2	-3.365	-3185.126	813.140	-3849.818	-132.296
5	4.198	-24173.3	-3.365	-5236.991	1488.893	-20482.9	-135.828
		-24173.3	-3.365	-3916.826	813.140	-7621.641	-135.828
6	0	-24151.8	-7.272	4766.019	1380.810	-7583.036	-135.828
		-24151.8	-7.272	6432.681	2508.618	-20412.5	-135.828
6	1.350	-23970.0	-7.272	3811.380	1380.810	-1857.118	-145.646
		-23970.0	-7.272	5387.319	2508.618	-12497.8	-145.646
6	2.700	-23769.5	-7.272	2869.224	1380.810	2590.251	-155.464
		-23769.5	-7.272	4354.440	2508.618	-5984.071	-155.464
6	4.050	-23484.4	-7.272	1581.982	1380.810	5576.774	-165.281
		-23484.4	-7.272	2976.475	2508.618	-1053.684	-165.281
6	5.400	-23190.7	-7.272	453.571	1380.810	6786.634	-175.099
		-23190.7	-7.272	1757.341	2508.618	1977.559	-175.099
7	0	-23190.5	-4.275	453.571	1152.339	6841.314	-175.099
		-23190.5	-4.275	1757.341	2486.615	2085.386	-175.099
7	1.350	-22979.5	-4.275	-95.516	1152.339	7061.285	-180.870
		-22979.5	-4.275	1117.534	2486.615	4004.229	-180.870
7	2.700	-22865.6	-4.275	-129.598	1152.339	6861.200	-186.641
		-22865.6	-4.275	992.730	2486.615	5380.541	-186.641
7	4.050	-22768.8	-4.275	-50.752	1152.339	6772.246	-192.412
		-22768.8	-4.275	980.856	2486.615	6745.510	-192.412
7	5.400	-22662.4	-4.275	24.709	1152.339	6803.030	-198.183
		-22662.4	-4.275	965.596	2486.615	8107.741	-198.183
8	0	-22662.2	-1.476	24.709	428.865	6834.814	-198.183
		-22662.2	-1.476	965.596	1709.633	8192.090	-198.183
8	1.350	-22546.8	-1.476	96.142	428.865	6978.929	-200.175
		-22546.8	-1.476	946.319	1709.633	9545.042	-200.175
8	2.700	-22421.9	-1.476	162.974	428.865	7229.015	-202.168
		-22421.9	-1.476	922.440	1709.633	10881.5	-202.168
8	3.899	-22323.3	-1.476	74.236	428.865	7444.828	-203.938
		-22323.3	-1.476	753.118	1709.633	11959.7	-203.938
8	3.900	-22323.2	-1.476	74.135	428.865	7444.964	-203.940
		-22323.2	-1.476	452.945	959.633	11960.4	-203.940
8	4.050	-22311.0	-1.476	60.090	428.865	7462.807	-204.161
		-22311.0	-1.476	428.846	959.633	12034.2	-204.161
8	5.399	-22203.8	-1.476	-70.896	526.173	12218.3	-206.152
		-22203.8	-1.476	212.305	862.326	7842.931	-206.152
8	5.399	-22203.8	-1.476	-70.985	526.173	12218.3	-206.153
		-22203.8	-1.476	212.253	862.326	7843.018	-206.153
9	0	-22203.8	1.522	-221.987	-1081.837	16058.9	-206.153
		-22203.8	1.522	63.255	-384.408	3984.540	-206.153
9	1.350	-22310.0	1.522	-441.119	-1081.837	15542.5	-204.098
		-22310.0	1.522	-65.147	-384.408	3914.528	-204.098
9	1.499	-22321.8	1.522	-465.165	-1081.837	15467.4	-203.871
		-22321.8	1.522	-79.160	-384.408	3896.244	-203.871
9	1.501	-22321.9	1.522	-765.339	-1831.837	15466.7	-203.870
		-22321.9	1.522	-79.261	-384.408	3896.104	-203.870
9	2.700	-22418.5	1.522	-924.128	-1831.837	14376.6	-202.044
		-22418.5	1.522	-157.424	-384.408	3677.537	-202.044
9	4.051	-22541.5	1.522	-948.032	-1831.837	13039.0	-199.989

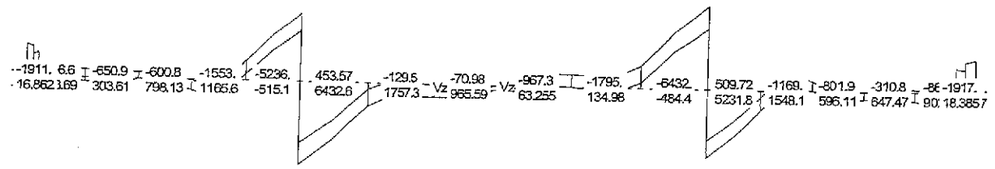
ENVOLVENTE para < Vz > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
		-22541.5	1.522	-90.597	-384.408	3436.350	-199.989
9	5.401	-22656.4	1.522	-967.323	-1831.837	11684.2	-197.934
		-22656.4	1.522	-19.156	-384.408	3300.507	-197.934
10	0	-22656.5	4.348	-967.323	-2753.265	11591.1	-197.934
		-22656.5	4.348	-19.156	-966.774	3273.076	-197.934
10	1.350	-22762.3	4.348	-982.628	-2753.265	10227.6	-192.065
		-22762.3	4.348	56.247	-966.774	3250.664	-192.065
10	2.700	-22858.4	4.348	-994.594	-2753.265	8861.302	-186.196
		-22858.4	4.348	134.989	-966.774	3347.884	-186.196
10	4.049	-22979.8	4.348	-1154.852	-2753.265	7473.946	-180.326
		-22979.8	4.348	65.439	-966.774	3546.490	-180.326
10	5.399	-23189.2	4.348	-1795.407	-2753.265	5506.189	-174.457
		-23189.2	4.348	-484.408	-966.774	3287.134	-174.457
11	0	-23189.4	7.272	-1795.407	-2909.820	5386.956	-174.457
		-23189.4	7.272	-484.408	-1031.512	3245.061	-174.457
11	1.331	-23485.6	7.272	-3039.904	-2909.820	2318.047	-164.778
		-23485.6	7.272	-1639.459	-1031.512	1980.653	-164.778
11	2.662	-23763.2	7.272	-4384.087	-2909.820	-2609.536	-155.099
		-23763.2	7.272	-2894.197	-1031.512	-1023.377	-155.099
11	3.993	-23961.0	7.272	-5402.452	-2909.820	-9061.012	-145.420
		-23961.0	7.272	-3823.118	-1031.512	-5432.245	-145.420
11	5.324	-24140.6	7.272	-6432.922	-2909.820	-16874.4	-135.741
		-24140.6	7.272	-4764.143	-1031.512	-11084.0	-135.741
12	0	-24162.1	3.447	3911.236	-808.379	-7601.006	-135.741
		-24162.1	3.447	5231.829	-1467.754	-20472.2	-135.741
12	1.050	-24289.0	3.447	3179.575	-808.379	-3834.304	-132.123
		-24289.0	3.447	4429.620	-1467.754	-15356.2	-132.123
12	2.100	-24407.4	3.447	2422.431	-808.379	-845.004	-128.504
		-24407.4	3.447	3601.929	-1467.754	-11091.6	-128.504
12	3.149	-24539.2	3.447	1468.672	-808.379	1236.954	-124.886
		-24539.2	3.447	2577.623	-1467.754	-7808.396	-124.886
12	4.199	-24654.4	3.447	509.724	-808.379	2303.118	-121.268
		-24654.4	3.447	1548.127	-1467.754	-5615.075	-121.268
13	0	-24654.5	4.888	509.724	-737.649	2279.795	-121.268
		-24654.5	4.888	1548.127	-1157.877	-5654.684	-121.268
13	1.050	-24753.7	4.888	-453.347	-737.649	2325.150	-116.135
		-24753.7	4.888	514.495	-1157.877	-4556.029	-116.135
13	2.100	-24880.1	4.888	-1169.590	-737.649	1376.539	-111.002
		-24880.1	4.888	-272.309	-1157.877	-4525.432	-111.002
13	3.150	-25101.8	4.888	-1125.955	-737.649	77.624	-105.869
		-25101.8	4.888	-299.236	-1157.877	-4919.229	-105.869
13	4.200	-25290.1	4.888	-801.975	-737.649	-993.435	-100.736
		-25290.1	4.888	-45.817	-1157.877	-5159.261	-100.736
14	0	-25290.3	6.467	-801.975	-941.660	-1021.271	-100.736
		-25290.3	6.467	-45.817	-1223.592	-5198.736	-100.736
14	1.050	-25339.3	6.467	-458.352	-941.660	-1714.517	-93.945
		-25339.3	6.467	227.249	-1223.592	-5135.088	-93.945
14	2.100	-25198.3	6.467	-105.441	-941.660	-1947.634	-87.155
		-25198.3	6.467	509.602	-1223.592	-4685.393	-87.155
14	3.150	-25070.8	6.467	41.770	80.729	-362.929	-80.364
		-25070.8	6.467	596.112	-1223.592	-4001.248	-80.364
14	4.200	-24964.3	6.467	-29.411	-921.861	1129.586	-73.574
		-24964.3	6.467	572.715	-1243.391	-6291.521	-73.574
15	0	-24964.5	7.990	-29.411	-1316.495	1093.641	-73.574
		-24964.5	7.990	572.715	-1399.570	-6333.964	-73.574
15	1.050	-24860.0	7.990	-157.450	-1316.495	1046.023	-65.183
		-24860.0	7.990	515.251	-1399.570	-5712.163	-65.183
15	2.100	-24756.3	7.990	-310.886	-1316.495	841.978	-56.791
		-24756.3	7.990	432.389	-1399.570	-5172.671	-56.791
15	3.151	-24624.8	7.990	-303.603	-1316.495	551.860	-48.400
		-24624.8	7.990	510.247	-1399.570	-4645.135	-48.400
15	4.201	-24475.6	7.990	-236.949	-1316.495	330.699	-40.008
		-24475.6	7.990	647.474	-1399.570	-3974.524	-40.008
16	0	-24475.9	9.581	-236.949	-1632.287	280.960	-40.008
		-24475.9	9.581	647.474	-1570.120	-4024.615	-40.008
16	1.049	-24318.9	9.581	-176.619	-1632.287	122.470	-29.953
		-24318.9	9.581	778.330	-1570.120	-3217.897	-29.953
16	2.099	-24153.9	9.581	-123.071	-1632.287	15.400	-19.898

ENVOLVENTE para < Vz > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
		-24153.9	9.581	902.405	-1570.120	-2285.740	-19.898
16	3.148	-24073.6	9.581	-472.060	-1632.287	-261.845	-9.842
		-24073.6	9.581	623.942	-1570.120	-1449.743	-9.842
16	4.198	-24002.5	9.581	-862.532	-1632.287	-956.042	0.212903
		-24002.5	9.581	303.996	-1570.120	-956.679	0.212903
17	0	4.757	23.560	-2362.449	1.78E-14	5854.780	-56.500
		4.757	23.560	-707.709	-5.64E-15	1886.449	-56.500
17	0.600	4.757	23.560	-2401.906	1.78E-14	4426.569	-42.375
		4.757	23.560	-747.166	-5.64E-15	1450.321	-42.375
17	1.199	4.757	23.560	-2441.363	1.78E-14	2974.702	-28.250
		4.757	23.560	-786.623	-5.64E-15	990.537	-28.250
17	1.799	4.757	23.560	-2480.820	1.78E-14	1499.179	-14.125
		4.757	23.560	-826.081	-5.64E-15	507.096	-14.125
17	2.398	4.757	23.560	-2520.278	1.78E-14	6.04E-05	-5.65E-07
		4.757	23.560	-865.538	-5.64E-15	2.08E-05	-5.65E-07
18	0	-3.820	-23.637	-1753.920	1.17E-12	4398.977	56.728
		-3.820	-23.637	16.862	1.05E-12	149.074	56.728
18	0.600	-3.820	-23.637	-1793.408	1.17E-12	3334.772	42.546
		-3.820	-23.637	-22.626	1.05E-12	147.345	42.546
18	1.200	-3.820	-23.637	-1832.896	1.17E-12	2246.874	28.364
		-3.820	-23.637	-62.114	1.05E-12	121.923	28.364
18	1.800	-3.820	-23.637	-1872.384	1.17E-12	1135.283	14.182
		-3.820	-23.637	-101.602	1.05E-12	72.808	14.182
18	2.400	-3.820	-23.637	-1911.871	1.17E-12	4.59E-05	5.67E-07
		-3.820	-23.637	-141.089	1.05E-12	3.39E-06	5.67E-07
19	0	4.793	-23.548	-2363.213	1.36E-12	5861.138	56.515
		4.793	-23.548	-712.719	6.99E-13	1900.026	56.515
19	0.600	4.793	-23.548	-2402.700	1.36E-12	4431.391	42.386
		4.793	-23.548	-752.205	6.99E-13	1460.557	42.386
19	1.200	4.793	-23.548	-2442.186	1.36E-12	2977.952	28.257
		4.793	-23.548	-791.692	6.99E-13	997.396	28.257
19	1.800	4.793	-23.548	-2481.673	1.36E-12	1500.822	14.129
		4.793	-23.548	-831.179	6.99E-13	510.544	14.129
19	2.400	4.793	-23.548	-2521.160	1.36E-12	6.05E-05	5.65E-07
		4.793	-23.548	-870.666	6.99E-13	2.09E-05	5.65E-07
20	0	-4.782	23.458	-1759.825	-2.70E-13	4413.326	-56.302
		-4.782	23.458	18.385	-8.10E-13	145.432	-56.302
20	0.600	-4.782	23.458	-1799.314	-2.70E-13	3345.536	-42.226
		-4.782	23.458	-21.105	-8.10E-13	144.516	-42.226
20	1.200	-4.782	23.458	-1838.803	-2.70E-13	2254.052	-28.151
		-4.782	23.458	-60.594	-8.10E-13	120.105	-28.151
20	1.800	-4.782	23.458	-1878.293	-2.70E-13	1138.873	-14.075
		-4.782	23.458	-100.083	-8.10E-13	71.900	-14.075
20	2.400	-4.782	23.458	-1917.782	-2.70E-13	4.60E-05	-5.63E-07
		-4.782	23.458	-139.572	-8.10E-13	3.35E-06	-5.63E-07

Mstb. 1 :449.9
Section forces envelope Vz, GWSP JC (ELU 6), View "ALL"
- Struktur: Staebe
- Envelop Shear force Vz-min, Scaling 1.00E-03
  min: -6.43E+03 max: 4.77E+03 [kN]
- Envelop Shear force Vz-max, Scaling 1.00E-03
  min: -4.76E+03 max: 6.43E+03 [kN]
- Text envelopes [kN]



ENVOLVENTE para < T > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
1	0	-24024.4	-9.508	330.283	-2509.087	-784.160	-0.227677
		-24024.4	-9.508	214.241	5705.822	-952.054	-0.227677
1	1.050	-24091.4	-9.508	-24.758	-2410.296	-629.528	-10.212
		-24091.4	-9.508	-140.800	5607.031	-919.275	-10.212
1	2.100	-24168.0	-9.508	-337.799	-2311.505	-854.532	-20.196
		-24168.0	-9.508	-453.841	5508.240	-1266.131	-20.196
1	3.150	-24331.4	-9.508	-248.568	-2212.714	-1212.246	-30.180
		-24331.4	-9.508	-364.610	5409.449	-1745.698	-30.180
1	4.200	-24487.2	-9.508	-152.620	-2113.923	-1481.075	-40.164
		-24487.2	-9.508	-268.662	5310.659	-2136.379	-40.164
2	0	-24486.9	-8.079	-152.620	-2342.673	-1548.613	-40.164
		-24486.9	-8.079	-268.662	5098.357	-1978.633	-40.164
2	1.050	-24635.2	-8.079	-50.479	-2243.904	-1717.641	-48.646
		-24635.2	-8.079	-166.521	4999.588	-2269.487	-48.646
2	2.100	-24766.0	-8.079	-8.121	-2145.135	-1780.628	-57.127
		-24766.0	-8.079	-124.163	4900.820	-2454.299	-57.127
2	3.150	-24869.4	-8.079	-126.129	-2046.367	-1892.830	-65.608
		-24869.4	-8.079	-242.171	4802.051	-2688.325	-65.608
2	4.199	-24973.8	-8.079	-218.684	-1947.598	-2124.275	-74.090
		-24973.8	-8.079	-334.726	4703.283	-3041.595	-74.090
3	0	-24973.5	-6.428	-218.684	-2261.475	-2197.521	-74.090
		-24973.5	-6.428	-334.726	4417.295	-2882.880	-74.090
3	1.050	-25080.4	-6.428	-270.787	-2162.681	-2497.864	-80.840
		-25080.4	-6.428	-386.829	4318.502	-3305.079	-80.840
3	2.100	-25208.4	-6.428	-148.410	-2063.888	-2821.916	-87.590
		-25208.4	-6.428	-264.452	4219.708	-3750.987	-87.590
3	3.150	-25350.0	-6.428	169.564	-1965.094	-2873.860	-94.341
		-25350.0	-6.428	53.522	4120.914	-3924.787	-94.341
3	4.200	-25301.3	-6.428	478.253	-1866.300	-2502.167	-101.091
		-25301.3	-6.428	362.211	4022.120	-3674.950	-101.091
4	0	-25301.2	-4.907	478.253	-2014.055	-2564.111	-101.091
		-25301.2	-4.907	362.211	3908.799	-3548.345	-101.091
4	1.050	-25113.3	-4.907	767.251	-1915.274	-1851.387	-106.244
		-25113.3	-4.907	651.209	3810.018	-2957.461	-106.244
4	2.100	-24891.7	-4.907	775.227	-1816.493	-947.959	-111.396
		-24891.7	-4.907	659.185	3711.237	-2175.873	-111.396
4	3.150	-24765.4	-4.907	22.436	-1717.712	-432.924	-116.549
		-24765.4	-4.907	-93.606	3612.457	-1782.679	-116.549
4	4.200	-24665.9	-4.907	-976.171	-1618.932	-949.416	-121.701
		-24665.9	-4.907	-1092.213	3513.676	-2421.011	-121.701
5	0	-24665.8	-3.365	-976.171	-1437.695	-998.748	-121.701
		-24665.8	-3.365	-1092.213	3739.728	-2303.946	-121.701

ENVOLVENTE para < T > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
5	1.050	-24550.5	-3.365	-1970.500	-1338.947	-2572.914	-125.233
		-24550.5	-3.365	-1783.013	3732.807	-3998.552	-125.233
5	2.099	-24418.6	-3.365	-2655.301	-1296.434	-5410.835	-128.765
		-24418.6	-3.365	-2736.880	3732.807	-6410.159	-128.765
5	3.149	-24300.2	-3.365	-3412.322	-1296.434	-8643.889	-132.296
		-24300.2	-3.365	-3493.900	3732.807	-9728.839	-132.296
5	4.198	-24173.3	-3.365	-4144.022	-1296.434	-12654.2	-135.828
		-24173.3	-3.365	-4225.601	3732.807	-13824.8	-135.828
6	0	-24151.8	-7.272	5352.053	-550.407	-12686.7	-135.828
		-24151.8	-7.272	5780.737	4516.903	-13679.6	-135.828
6	1.350	-23970.0	-7.272	4352.052	-423.395	-6200.209	-145.646
		-23970.0	-7.272	4780.736	4389.891	-6614.384	-145.646
6	2.700	-23769.5	-7.272	3364.535	-296.383	-1053.529	-155.464
		-23769.5	-7.272	3793.219	4262.879	-888.962	-155.464
6	4.050	-23484.4	-7.272	2031.931	-169.372	2571.064	-165.281
		-23484.4	-7.272	2460.615	4135.867	3314.373	-165.281
6	5.400	-23190.7	-7.272	858.159	-42.360	4357.754	-175.099
		-23190.7	-7.272	1286.843	4008.855	5679.805	-175.099
7	0	-23190.5	-4.275	858.159	-164.696	4353.285	-175.099
		-23190.5	-4.275	1286.843	3825.697	5848.920	-175.099
7	1.350	-22979.5	-4.275	263.712	-37.686	5088.837	-180.870
		-22979.5	-4.275	692.396	3698.688	7163.202	-180.870
7	2.700	-22865.6	-4.275	184.269	89.323	5343.096	-186.641
		-22865.6	-4.275	612.953	3571.679	7996.191	-186.641
7	4.050	-22768.8	-4.275	217.755	216.333	5647.249	-192.412
		-22768.8	-4.275	646.439	3444.669	8879.074	-192.412
7	5.400	-22662.4	-4.275	247.855	343.342	6009.902	-198.183
		-22662.4	-4.275	676.540	3317.660	9820.457	-198.183
8	0	-22662.2	-1.476	247.855	-347.606	6009.816	-198.183
		-22662.2	-1.476	676.540	2471.180	9936.818	-198.183
8	1.350	-22546.8	-1.476	273.933	-220.612	6424.535	-200.175
		-22546.8	-1.476	702.618	2344.186	10930.2	-200.175
8	2.700	-22421.9	-1.476	295.410	-93.617	6884.001	-202.168
		-22421.9	-1.476	724.094	2217.191	11968.3	-202.168
8	3.899	-22323.3	-1.476	166.380	19.200	7234.469	-203.938
		-22323.3	-1.476	595.064	2104.374	12832.9	-203.938
8	3.900	-22323.2	-1.476	166.243	19.302	7234.705	-203.940
		-22323.2	-1.476	294.927	1354.272	12833.4	-203.940
8	4.050	-22311.0	-1.476	147.171	33.377	7265.951	-204.161
		-22311.0	-1.476	275.855	1340.197	12883.9	-204.161
8	5.399	-22203.8	-1.476	-25.644	95.134	4475.123	-206.152
		-22203.8	-1.476	168.906	1281.158	14806.1	-206.152
8	5.399	-22203.8	-1.476	-25.696	95.134	4475.081	-206.153
		-22203.8	-1.476	168.836	1281.209	14806.2	-206.153
9	0	-22203.8	1.522	-177.784	-1320.324	14790.5	-206.158
		-22203.8	1.522	20.924	-124.518	4473.115	-206.153
9	1.350	-22310.0	1.522	-286.842	-1394.599	12856.8	-204.098
		-22310.0	1.522	-153.810	-58.837	7255.762	-204.098
9	1.499	-22321.8	1.522	-305.872	-1408.644	12805.0	-203.871
		-22321.8	1.522	-172.839	-44.792	7223.867	-203.871
9	1.501	-22321.9	1.522	-606.009	-2158.746	12804.5	-203.870
		-22321.9	1.522	-172.977	-44.690	7223.626	-203.870
9	2.700	-22418.5	1.522	-724.486	-2271.622	11929.7	-202.044
		-22418.5	1.522	-291.453	68.187	6868.436	-202.044
9	4.051	-22541.5	1.522	-703.024	-2398.646	10892.3	-199.989
		-22541.5	1.522	-269.991	195.210	6415.662	-199.989
9	5.401	-22656.4	1.522	-676.949	-2525.670	9898.923	-197.934
		-22656.4	1.522	-243.916	322.234	6006.981	-197.934
10	0	-22656.5	4.348	-676.949	-3374.071	9779.152	-197.934
		-22656.5	4.348	-243.916	-370.557	6006.000	-197.934
10	1.350	-22762.3	4.348	-646.900	-3501.062	8838.224	-192.065
		-22762.3	4.348	-213.867	-243.566	5649.590	-192.065
10	2.700	-22858.4	4.348	-613.512	-3628.054	7955.710	-186.196
		-22858.4	4.348	-180.479	-116.574	5351.594	-186.196
10	4.049	-22979.8	4.348	-728.416	-3755.046	7113.359	-180.326
		-22979.8	4.348	-295.383	10.418	5093.762	-180.326
10	5.399	-23189.2	4.348	-1323.617	-3882.037	5751.827	-174.457
		-23189.2	4.348	-890.584	137.409	4316.749	-174.457

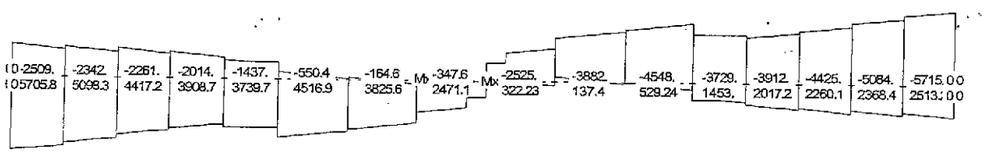
ENVOLVENTE para < T > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
11	0	-23189.4	7.272	-1323.617	-4047.931	5584.866	-174.457
		-23189.4	7.272	-890.584	28.356	4320.239	-174.457
11	1.331	-23485.6	7.272	-2523.390	-4173.154	3173.686	-164.778
		-23485.6	7.272	-2090.358	153.579	2485.436	-164.778
11	2.662	-23763.2	7.272	-3822.851	-4298.377	-1036.642	-155.099
		-23763.2	7.272	-3389.819	278.802	-1148.515	-155.099
11	3.993	-23961.0	7.272	-4796.494	-4423.600	-6711.336	-145.420
		-23961.0	7.272	-4363.462	404.025	-6246.831	-145.420
11	5.324	-24140.6	7.272	-5782.242	-4548.822	-13688.4	-135.741
		-24140.6	7.272	-5349.209	529.248	-12647.5	-135.741
12	0	-24162.1	3.447	4224.813	-3725.204	-13841.3	-135.741
		-24162.1	3.447	4135.687	1310.951	-12613.5	-135.741
12	1.050	-24289.0	3.447	3493.151	-3725.204	-9745.364	-132.123
		-24289.0	3.447	3404.026	1310.951	-8611.179	-132.123
12	2.100	-24407.4	3.447	2736.008	-3725.204	-6426.867	-128.504
		-24407.4	3.447	2646.882	1310.951	-5386.247	-128.504
12	3.149	-24539.2	3.447	1782.249	-3725.204	-4015.714	-124.886
		-24539.2	3.447	1959.290	1354.256	-2553.997	-124.886
12	4.199	-24654.4	3.447	1092.783	-3729.155	-2320.664	-121.268
		-24654.4	3.447	965.068	1453.022	-991.293	-121.268
13	0	-24654.5	4.888	1092.783	-3517.623	-2429.986	-121.268
		-24654.5	4.888	965.068	1622.097	-944.903	-121.268
13	1.050	-24753.7	4.888	94.431	-3616.409	-1790.929	-116.135
		-24753.7	4.888	-33.284	1720.883	-439.950	-116.135
13	2.100	-24880.1	4.888	-657.092	-3715.195	-2182.884	-111.002
		-24880.1	4.888	-784.807	1819.669	-966.009	-111.002
13	3.150	-25101.8	4.888	-648.738	-3813.981	-2962.188	-105.869
		-25101.8	4.888	-776.453	1918.455	-1879.417	-105.869
13	4.200	-25290.1	4.888	-360.038	-3912.767	-3550.682	-100.736
		-25290.1	4.888	-487.753	2017.241	-2602.014	-100.736
14	0	-25290.3	6.467	-360.038	-4030.280	-3682.344	-100.736
		-25290.3	6.467	-487.753	1865.029	-2537.663	-100.736
14	1.050	-25339.3	6.467	-51.694	-4129.061	-3930.095	-93.945
		-25339.3	6.467	-179.409	1963.809	-2919.510	-93.945
14	2.100	-25198.3	6.467	265.938	-4227.841	-3754.758	-87.155
		-25198.3	6.467	138.223	2062.589	-2878.269	-87.155
14	3.150	-25070.8	6.467	387.727	-4326.621	-3307.929	-80.364
		-25070.8	6.467	260.012	2161.369	-2565.537	-80.364
14	4.200	-24964.3	6.467	335.510	-4425.401	-2885.116	-73.574
		-24964.3	6.467	207.794	2260.149	-2276.819	-73.574
15	0	-24964.5	7.990	335.510	-4689.318	-3031.489	-73.574
		-24964.5	7.990	207.794	1973.253	-2208.835	-73.574
15	1.050	-24860.0	7.990	242.758	-4788.122	-2677.332	-65.183
		-24860.0	7.990	115.043	2072.057	-1988.807	-65.183
15	2.100	-24756.3	7.990	124.609	-4886.926	-2442.545	-56.791
		-24756.3	7.990	-3.106	2170.861	-1888.148	-56.791
15	3.151	-24624.8	7.990	167.180	-4985.729	-2256.772	-48.400
		-24624.8	7.990	39.464	2269.665	-1836.503	-48.400
15	4.201	-24475.6	7.990	269.120	-5084.533	-1964.983	-40.008
		-24475.6	7.990	141.405	2368.469	-1678.842	-40.008
16	0	-24475.9	9.581	269.120	-5320.760	-2140.494	-40.008
		-24475.9	9.581	141.405	2118.352	-1603.161	-40.008
16	1.049	-24318.9	9.581	364.713	-5419.496	-1749.362	-29.953
		-24318.9	9.581	236.998	2217.089	-1346.065	-29.953
16	2.099	-24153.9	9.581	453.525	-5518.233	-1269.800	-19.898
		-24153.9	9.581	325.810	2315.826	-1000.540	-19.898
16	3.148	-24073.6	9.581	139.798	-5616.970	-923.405	-9.842
		-24073.6	9.581	12.083	2414.563	-788.183	-9.842
16	4.198	-24002.5	9.581	-215.411	-5715.707	-956.953	0.212903
		-24002.5	9.581	-343.126	2513.299	-955.768	0.212903
17	0	4.757	23.560	-1799.779	-1.87E-13	4505.407	-56.500
		4.757	23.560	-1461.992	3.59E-13	3695.341	-56.500
17	0.600	4.757	23.560	-1839.236	-1.87E-13	3414.540	-42.375
		4.757	23.560	-1501.450	3.59E-13	2806.990	-42.375
17	1.199	4.757	23.560	-1878.693	-1.87E-13	2300.016	-28.250
		4.757	23.560	-1540.907	3.59E-13	1894.983	-28.250
17	1.799	4.757	23.560	-1918.151	-1.87E-13	1161.836	-14.125
		4.757	23.560	-1580.364	3.59E-13	959.320	-14.125

ENVOLVENTE para < T > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
17	2.398	4.757	23.560	-1957.608	-1.87E-13	4.69E-05	-5.65E-07
		4.757	23.560	-1619.821	3.59E-13	3.88E-05	-5.65E-07
18	0	-3.820	-23.637	-1081.675	8.78E-13	2785.579	56.728
		-3.820	-23.637	-259.428	1.29E-12	812.174	56.728
18	0.600	-3.820	-23.637	-1121.163	8.78E-13	2124.724	42.546
		-3.820	-23.637	-298.916	1.29E-12	644.669	42.546
18	1.200	-3.820	-23.637	-1160.651	8.78E-13	1440.175	28.364
		-3.820	-23.637	-338.404	1.29E-12	453.472	28.364
18	1.800	-3.820	-23.637	-1200.139	8.78E-13	731.934	14.182
		-3.820	-23.637	-377.891	1.29E-12	238.583	14.182
18	2.400	-3.820	-23.637	-1239.626	8.78E-13	2.98E-05	5.67E-07
		-3.820	-23.637	-417.379	1.29E-12	1.00E-05	5.67E-07
19	0	4.793	-23.548	-875.846	6.59E-13	2291.524	56.515
		4.793	-23.548	-2244.116	1.40E-12	5575.311	56.515
19	0.600	4.793	-23.548	-915.333	6.59E-13	1754.180	42.386
		4.793	-23.548	-2283.603	1.40E-12	4217.020	42.386
19	1.200	4.793	-23.548	-954.819	6.59E-13	1193.145	28.257
		4.793	-23.548	-2323.089	1.40E-12	2835.039	28.257
19	1.800	4.793	-23.548	-994.306	6.59E-13	608.418	14.129
		4.793	-23.548	-2362.576	1.40E-12	1429.365	14.129
19	2.400	4.793	-23.548	-1033.793	6.59E-13	2.48E-05	5.65E-07
		4.793	-23.548	-2402.063	1.40E-12	5.76E-05	5.65E-07
20	0	-4.782	23.458	-1074.791	-8.93E-13	2769.170	-56.302
		-4.782	23.458	-1149.192	-2.38E-13	2947.742	-56.302
20	0.600	-4.782	23.458	-1114.280	-8.93E-13	2112.419	-42.226
		-4.782	23.458	-1188.681	-2.38E-13	2246.348	-42.226
20	1.200	-4.782	23.458	-1153.769	-8.93E-13	1431.974	-28.151
		-4.782	23.458	-1228.171	-2.38E-13	1521.260	-28.151
20	1.800	-4.782	23.458	-1193.258	-8.93E-13	727.834	-14.075
		-4.782	23.458	-1267.660	-2.38E-13	772.477	-14.075
20	2.400	-4.782	23.458	-1232.748	-8.93E-13	2.96E-05	-5.63E-07
		-4.782	23.458	-1307.149	-2.38E-13	3.14E-05	-5.63E-07

Msfb. 1 :449.9
Section forces envelope T , GWSP JC (ELU 6), View "ALL"
- Struktur: Staebe
- Envelop Torsion.moment Mx-min, Scaling 1.00E-03
  min: -5.72E+03 max: 3.43E+02 [kNm]
- Envelop Torsion.moment Mx-max, Scaling 1.00E-03
  min: -3.71E+02 max: 5.71E+03 [kNm]
- Text envelopes [kNm]



ENVOLVENTE para < My > (y valores concomitantes) "ALL".
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
1	0	-24024.4	-9.508	214.241	5705.822	-952.054	-0.227677
		-24024.4	-9.508	330.283	-2509.087	-784.160	-0.227677
1	1.050	-24091.4	-9.508	-628.929	1563.179	-1393.354	-10.212
		-24091.4	-9.508	463.371	1633.556	-155.448	-10.212
1	2.100	-24168.0	-9.508	-906.687	1563.179	-2234.257	-20.196
		-24168.0	-9.508	115.048	1633.556	113.595	-20.196
1	3.150	-24331.4	-9.508	-782.174	1563.179	-3170.822	-30.180
		-24331.4	-9.508	168.996	1633.556	212.877	-30.180
1	4.200	-24487.2	-9.508	-650.943	1563.179	-3981.451	-40.164
		-24487.2	-9.508	229.662	1633.556	363.997	-40.164
2	0	-24486.9	-8.079	-650.943	1408.508	-3936.416	-40.164
		-24486.9	-8.079	229.662	1347.176	409.170	-40.164
2	1.050	-24635.2	-8.079	-513.528	1408.508	-4610.086	-48.646
		-24635.2	-8.079	296.528	1347.176	622.958	-48.646
2	2.100	-24766.0	-8.079	-435.896	1408.508	-5140.683	-57.127
		-24766.0	-8.079	303.611	1347.176	905.756	-57.127
2	3.150	-24869.4	-8.079	-518.629	1408.508	-5683.461	-65.608
		-24869.4	-8.079	150.329	1347.176	1102.306	-65.608
2	4.199	-24973.8	-8.079	-575.910	1408.508	-6308.451	-74.090
		-24973.8	-8.079	22.499	1347.176	1142.581	-74.090
3	0	-24973.5	-6.428	-575.910	1238.181	-6262.394	-74.090
		-24973.5	-6.428	22.499	917.639	1181.993	-74.090
3	1.050	-25080.4	-6.428	-592.729	1238.181	-6919.335	-80.840
		-25080.4	-6.428	-64.887	917.639	1116.392	-80.840
3	2.100	-25208.4	-6.428	-435.069	1238.181	-7562.934	-87.590
		-25208.4	-6.428	22.206	917.639	990.030	-87.590
3	3.150	-25350.0	-6.428	-81.811	1238.181	-7897.374	-94.341
		-25350.0	-6.428	304.898	917.639	1098.726	-94.341
3	4.200	-25301.3	-6.428	262.161	1238.181	-7771.125	-101.091
		-25301.3	-6.428	578.302	917.639	1594.007	-101.091
4	0	-25301.2	-4.907	262.161	1257.024	-7731.293	-101.091
		-25301.2	-4.907	578.302	637.720	1618.836	-101.091
4	1.050	-25113.3	-4.907	586.438	1257.024	-7226.937	-106.244
		-25113.3	-4.907	832.022	637.720	2418.089	-106.244
4	2.100	-24891.7	-4.907	629.693	1257.024	-6494.835	-111.396
		-24891.7	-4.907	804.719	637.720	3371.003	-111.396
4	3.150	-24765.4	-4.907	-87.819	1257.024	-6114.085	-116.549
		-24765.4	-4.907	16.649	637.720	3898.483	-116.549
4	4.200	-24665.9	-4.907	-1051.147	1257.024	-6727.821	-121.701
		-24665.9	-4.907	-1017.237	637.720	3357.394	-121.701
5	0	-24665.8	-3.365	-1051.147	1623.232	-6681.336	-121.701
		-24665.8	-3.365	-1017.237	678.801	3378.641	-121.701
5	1.050	-24550.5	-3.365	-2010.209	1623.232	-8315.690	-125.233
		-24550.5	-3.365	-2046.832	678.801	1742.863	-125.233
5	2.099	-24418.6	-3.365	-3607.203	1488.893	-11093.2	-128.765
		-24418.6	-3.365	-2739.013	615.492	-797.263	-128.765
5	3.149	-24300.2	-3.365	-4434.757	1488.893	-15362.4	-132.296
		-24300.2	-3.365	-3185.126	813.140	-3849.818	-132.296
5	4.198	-24173.3	-3.365	-5236.991	1488.893	-20482.9	-135.828
		-24173.3	-3.365	-3916.826	813.140	-7621.641	-135.828
6	0	-24151.8	-7.272	6432.681	2508.618	-20412.5	-135.828
		-24151.8	-7.272	4766.019	1380.810	-7583.036	-135.828
6	1.350	-23970.0	-7.272	5387.319	2508.618	-12497.8	-145.646
		-23970.0	-7.272	3811.380	1380.810	-1857.118	-145.646
6	2.700	-23769.5	-7.272	4354.440	2508.618	-5984.071	-155.464
		-23769.5	-7.272	2869.224	1380.810	2590.251	-155.464
6	4.050	-23484.4	-7.272	2545.639	3171.767	-1181.712	-165.281
		-23484.4	-7.272	2031.812	198.577	6098.686	-165.281
6	5.400	-23190.7	-7.272	1034.213	2227.624	1194.970	-175.099
		-23190.7	-7.272	858.040	325.589	7885.215	-175.099
7	0	-23190.5	-4.275	1034.213	2239.653	1291.399	-175.099
		-23190.5	-4.275	858.039	50.695	7893.337	-175.099
7	1.350	-22979.5	-4.275	36.128	960.548	2278.968	-180.870
		-22979.5	-4.275	985.890	2678.406	8786.545	-180.870
7	2.700	-22865.6	-4.275	-63.569	914.901	2223.924	-186.641
		-22865.6	-4.275	926.701	2724.053	10017.8	-186.641
7	4.050	-22768.8	-4.275	15.278	914.901	2224.111	-192.412
		-22768.8	-4.275	914.826	2724.053	11293.6	-192.412

ENVOLVENTE para < My > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
7	5.400	-22662.4	-4.275	90.739	914.901	2344.036	-198.183
		-22662.4	-4.275	899.566	2724.053	12566.7	-198.183
8	0	-22662.2	-1.476	90.739	370.807	2369.879	-198.183
		-22662.2	-1.476	899.566	1767.692	12657.0	-198.183
8	1.350	-22546.8	-1.476	162.172	370.807	2603.125	-200.175
		-22546.8	-1.476	880.289	1767.692	13920.8	-200.175
8	2.700	-22421.9	-1.476	229.003	370.807	2942.341	-202.168
		-22421.9	-1.476	856.410	1767.692	15168.2	-202.168
8	3.899	-22323.3	-1.476	140.266	370.807	3237.335	-203.938
		-22323.3	-1.476	687.089	1767.692	16167.2	-203.938
8	3.900	-22323.2	-1.476	140.164	370.807	3237.542	-203.940
		-22323.2	-1.476	386.915	1017.692	16167.9	-203.940
8	4.050	-22311.0	-1.476	126.119	370.807	3265.263	-204.161
		-22311.0	-1.476	362.816	1017.692	16231.8	-204.161
8	5.399	-22203.8	-1.476	-2.307	370.807	3418.277	-206.152
		-22203.8	-1.476	143.716	1017.692	16643.0	-206.152
8	5.399	-22203.8	-1.476	-2.359	370.807	3418.249	-206.153
		-22203.8	-1.476	143.628	1017.692	16643.0	-206.153
9	0	-22203.8	1.522	-2.359	-397.217	3417.680	-206.153
		-22203.8	1.522	-156.372	-1069.028	16625.8	-206.153
9	1.350	-22310.0	1.522	-130.761	-397.217	3259.078	-204.098
		-22310.0	1.522	-375.505	-1069.028	16198.0	-204.098
9	1.499	-22321.8	1.522	-144.774	-397.217	3230.998	-203.871
		-22321.8	1.522	-399.551	-1069.028	16132.6	-203.871
9	1.501	-22321.9	1.522	-144.875	-397.217	3230.787	-203.870
		-22321.9	1.522	-699.725	-1819.028	16132.0	-203.870
9	2.700	-22418.5	1.522	-223.039	-397.217	2933.497	-202.044
		-22418.5	1.522	-858.514	-1819.028	15120.6	-202.044
9	4.051	-22541.5	1.522	-156.211	-397.217	2603.719	-199.989
		-22541.5	1.522	-882.418	-1819.028	13871.6	-199.989
9	5.401	-22656.4	1.522	-84.771	-397.217	2379.286	-197.934
		-22656.4	1.522	-901.709	-1819.028	12605.4	-197.934
10	0	-22656.5	4.348	-84.771	-942.185	2352.095	-197.934
		-22656.5	4.348	-901.709	-2777.854	12512.1	-197.934
10	1.350	-22762.3	4.348	-9.367	-942.185	2241.114	-192.065
		-22762.3	4.348	-917.014	-2777.854	11237.2	-192.065
10	2.700	-22858.4	4.348	69.375	-942.185	2249.767	-186.196
		-22858.4	4.348	-928.980	-2777.854	9959.419	-186.196
10	4.049	-22979.8	4.348	-517.087	-2275.432	2277.847	-180.326
		-22979.8	4.348	-572.326	-1444.607	8742.589	-180.326
10	5.399	-23189.2	4.348	-1066.934	-2275.432	1232.182	-174.457
		-23189.2	4.348	-890.704	-85.884	7853.728	-174.457
11	0	-23189.4	7.272	-1066.934	-2252.516	1136.849	-174.457
		-23189.4	7.272	-890.704	-343.612	7844.685	-174.457
11	1.331	-23485.6	7.272	-2608.175	-3204.865	-1326.618	-164.778
		-23485.6	7.272	-2090.477	-218.389	6009.723	-164.778
11	2.662	-23763.2	7.272	-4383.967	-2537.852	-6133.664	-155.099
		-23763.2	7.272	-2894.317	-1403.480	2500.751	-155.099
11	3.993	-23961.0	7.272	-5402.333	-2537.852	-12585.0	-145.420
		-23961.0	7.272	-3823.237	-1403.480	-1908.276	-145.420
11	5.324	-24140.6	7.272	-6432.803	-2537.852	-20398.2	-135.741
		-24140.6	7.272	-4764.262	-1403.480	-7560.140	-135.741
12	0	-24162.1	3.447	5231.829	-1467.754	-20472.2	-135.741
		-24162.1	3.447	3911.236	-808.379	-7601.006	-135.741
12	1.050	-24289.0	3.447	4429.620	-1467.754	-15356.2	-132.123
		-24289.0	3.447	3179.575	-808.379	-3834.304	-132.123
12	2.100	-24407.4	3.447	3601.929	-1467.754	-11091.6	-128.504
		-24407.4	3.447	2730.081	-610.464	-779.180	-128.504
12	3.149	-24539.2	3.447	2006.700	-1605.874	-8321.326	-124.886
		-24539.2	3.447	2039.595	-670.259	1749.884	-124.886
12	4.199	-24654.4	3.447	1047.752	-1605.874	-6690.336	-121.268
		-24654.4	3.447	1010.100	-670.259	3378.378	-121.268
13	0	-24654.5	4.888	1047.751	-1263.500	-6733.622	-121.268
		-24654.5	4.888	1010.100	-632.025	3358.733	-121.268
13	1.050	-24753.7	4.888	84.680	-1263.500	-6123.326	-116.135
		-24753.7	4.888	-23.533	-632.025	3892.447	-116.135
13	2.100	-24880.1	4.888	-631.562	-1263.500	-6506.998	-111.002
		-24880.1	4.888	-810.337	-632.025	3358.104	-111.002

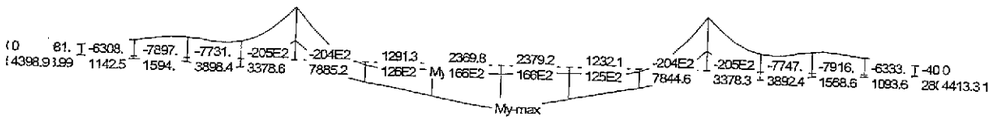
ENVOLVENTE para < My > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
13	3.150	-25101.8	4.888	-587.928	-1263.500	-7240.972	-105.869
		-25101.8	4.888	-837.264	-632.025	2399.368	-105.869
13	4.200	-25290.1	4.888	-263.947	-1263.500	-7747.091	-100.736
		-25290.1	4.888	-583.844	-632.025	1594.395	-100.736
14	0	-25290.3	6.467	-263.947	-1243.391	-7788.645	-100.736
		-25290.3	6.467	-583.844	-921.861	1568.638	-100.736
14	1.050	-25339.3	6.467	79.576	-1243.391	-7916.984	-93.945
		-25339.3	6.467	-310.779	-921.861	1067.379	-93.945
14	2.100	-25198.3	6.467	432.587	-1243.391	-7585.194	-87.155
		-25198.3	6.467	-28.425	-921.861	952.166	-87.155
14	3.150	-25070.8	6.467	589.654	-1243.391	-6944.870	-80.364
		-25070.8	6.467	58.085	-921.861	1071.405	-80.364
14	4.200	-24964.3	6.467	572.715	-1243.391	-6291.521	-73.574
		-24964.3	6.467	-29.411	-921.861	1129.586	-73.574
15	0	-24964.5	7.990	572.715	-1399.570	-6333.964	-73.574
		-24964.5	7.990	-29.411	-1316.495	1093.641	-73.574
15	1.050	-24860.0	7.990	515.251	-1399.570	-5712.163	-65.183
		-24860.0	7.990	-157.450	-1316.495	1046.023	-65.183
15	2.100	-24756.3	7.990	432.389	-1399.570	-5172.671	-56.791
		-24756.3	7.990	-310.886	-1316.495	841.978	-56.791
15	3.151	-24624.8	7.990	510.247	-1399.570	-4645.135	-48.400
		-24624.8	7.990	-303.603	-1316.495	551.860	-48.400
15	4.201	-24475.6	7.990	647.474	-1399.570	-3974.524	-40.008
		-24475.6	7.990	-236.949	-1316.495	330.699	-40.008
16	0	-24475.9	9.581	647.474	-1570.120	-4024.615	-40.008
		-24475.9	9.581	-236.949	-1632.287	280.960	-40.008
16	1.049	-24318.9	9.581	778.330	-1570.120	-3217.897	-29.953
		-24318.9	9.581	-176.619	-1632.287	122.470	-29.953
16	2.099	-24153.9	9.581	902.405	-1570.120	-2285.740	-19.898
		-24153.9	9.581	-123.071	-1632.287	15.400	-19.898
16	3.148	-24073.6	9.581	623.942	-1570.120	-1449.743	-9.842
		-24073.6	9.581	-472.060	-1632.287	-261.845	-9.842
16	4.198	-24002.5	9.581	-215.411	-5715.707	-956.953	0.212903
		-24002.5	9.581	-343.126	2513.299	-955.768	0.212903
17	0	4.757	23.560	-707.709	-5.64E-15	1886.449	-56.500
		4.757	23.560	-2362.449	1.78E-14	5854.780	-56.500
17	0.600	4.757	23.560	-747.166	-5.64E-15	1450.321	-42.375
		4.757	23.560	-2401.906	1.78E-14	4426.569	-42.375
17	1.199	4.757	23.560	-786.623	-5.64E-15	990.537	-28.250
		4.757	23.560	-2441.363	1.78E-14	2974.702	-28.250
17	1.799	4.757	23.560	-826.081	-5.64E-15	507.096	-14.125
		4.757	23.560	-2480.820	1.78E-14	1499.179	-14.125
17	2.398	4.757	23.560	-865.538	-5.64E-15	2.08E-05	-5.65E-07
		4.757	23.560	-2520.278	1.78E-14	6.04E-05	-5.65E-07
18	0	-3.820	-23.637	16.862	1.05E-12	149.074	56.728
		-3.820	-23.637	-1753.920	1.17E-12	4398.977	56.728
18	0.600	-3.820	-23.637	-22.626	1.05E-12	147.345	42.546
		-3.820	-23.637	-1793.408	1.17E-12	3334.772	42.546
18	1.200	-3.820	-23.637	-62.114	1.05E-12	121.923	28.364
		-3.820	-23.637	-1832.896	1.17E-12	2246.874	28.364
18	1.800	-3.820	-23.637	-101.602	1.05E-12	72.808	14.182
		-3.820	-23.637	-1872.384	1.17E-12	1135.283	14.182
18	2.400	-3.820	-23.637	-141.089	1.05E-12	3.39E-06	5.67E-07
		-3.820	-23.637	-1911.871	1.17E-12	4.59E-05	5.67E-07
19	0	4.793	-23.548	-712.719	6.99E-13	1900.026	56.515
		4.793	-23.548	-2363.213	1.36E-12	5861.138	56.515
19	0.600	4.793	-23.548	-752.205	6.99E-13	1460.557	42.386
		4.793	-23.548	-2402.700	1.36E-12	4431.391	42.386
19	1.200	4.793	-23.548	-791.692	6.99E-13	997.396	28.257
		4.793	-23.548	-2442.186	1.36E-12	2977.952	28.257
19	1.800	4.793	-23.548	-831.179	6.99E-13	510.544	14.129
		4.793	-23.548	-2481.673	1.36E-12	1500.822	14.129
19	2.400	4.793	-23.548	-870.666	6.99E-13	2.09E-05	5.65E-07
		4.793	-23.548	-2521.160	1.36E-12	6.05E-05	5.65E-07
20	0	-4.782	23.458	18.385	-8.10E-13	145.432	-56.302
		-4.782	23.458	-1759.825	-2.70E-13	4413.326	-56.302
20	0.600	-4.782	23.458	-21.105	-8.10E-13	144.616	-42.226
		-4.782	23.458	-1799.314	-2.70E-13	3345.536	-42.226

ENVOLVENTE para < My > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
20	1.200	-4.782	23.458	-60.594	-8.10E-13	120.105	-28.151
		-4.782	23.458	-1838.803	-2.70E-13	2254.052	-28.151
20	1.800	-4.782	23.458	-100.083	-8.10E-13	71.900	-14.075
		-4.782	23.458	-1878.293	-2.70E-13	1138.873	-14.075
20	2.400	-4.782	23.458	-139.572	-8.10E-13	3.35E-06	-5.63E-07
		-4.782	23.458	-1917.782	-2.70E-13	4.60E-05	-5.63E-07

Mstb. 1 :449.9
Section forces envelope My, GWSP JC (ELU 6), View "ALL"
- Struktur: Staebe
- Envelop Moment My-min, Scaling 2.00E-04
  min: -2.05E+04 max: 3.42E+03 [kNm]
- Envelop Moment My-max, Scaling 2.00E-04
  min: -7.62E+03 max: 1.66E+04 [kNm]
- Text envelopes [kNm]



ENVOLVENTE: JD 'ELU 7'

Grupo	Espe.	Hipótesis	Factor	Etapa	Título
A	PERM.	1	1.350		Peso Propio
	Y	3	1.350		Carga Muerta Máxima
	Y	20	0.850000		Pretensado
B	MAS	19	0.900000		gradiente
C	MAS	27	1.500		Carro 1 excéntrico
D	MAS	4	1.500		Sobrecarga centrada vano 1
E	MAS	5	1.500		Sobrecarga centrada vano 2
F	MAS	6	1.500		Sobrecarga centrada vano 3
ALTERNATIVA PARA ENVOLVENTE:					
G	PERM.	1	1.350		Peso Propio
	Y	3	1.350		Carga Muerta Máxima
	Y	20	0.850000		Pretensado
H	MAS	19	0.900000		gradiente
I	MAS	27	1.500		Carro 1 excéntrico
J	MAS	7	1.500		Sobrecarga excéntrica vano 1 (
K	MAS	8	1.500		Sobrecarga excentrica vano 2 (
L	MAS	9	1.500		Sobrecarga excentrica vano 3 (
ALTERNATIVA PARA ENVOLVENTE:					
M	PERM.	1	1.350		Peso Propio
	Y	3	1.350		Carga Muerta Máxima
	Y	20	0.850000		Pretensado
N	MAS	19	0.900000		gradiente
O	MAS	27	1.500		Carro 1 excéntrico
P	MAS	10	1.500		Sobrecarga excéntrica vano 1 (
Q	MAS	11	1.500		Sobrecarga excentrica vano 2 (
R	MAS	12	1.500		Sobrecarga excentrica vano 3 (

ENVOLVENTE para < Vz > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
1	0	-24024.4	-9.508	-155.965	623.580	-869.185	-0.227677
		-24024.4	-9.508	1209.068	3638.688	-863.925	-0.227677
1	1.050	-24091.4	-9.508	-475.724	623.580	-1206.626	-10.212
		-24091.4	-9.508	818.744	3638.688	194.970	-10.212
1	2.100	-24168.0	-9.508	-753.482	623.580	-1886.652	-20.196
		-24168.0	-9.508	470.421	3638.688	837.181	-20.196
1	3.150	-24331.4	-9.508	-628.969	623.580	-2662.340	-30.180
		-24331.4	-9.508	524.369	3638.688	1309.631	-30.180
1	4.200	-24487.2	-9.508	-497.738	623.580	-3312.093	-40.164
		-24487.2	-9.508	585.035	3638.688	1833.919	-40.164
2	0	-24486.9	-8.079	-497.738	449.058	-3295.837	-40.164
		-24486.9	-8.079	585.035	3306.844	1939.177	-40.164
2	1.050	-24635.2	-8.079	-360.323	449.058	-3808.667	-48.646
		-24635.2	-8.079	651.901	3306.844	2526.049	-48.646
2	2.100	-24766.0	-8.079	-282.691	449.058	-4178.424	-57.127
		-24766.0	-8.079	658.984	3306.844	3181.930	-57.127
2	3.150	-24869.4	-8.079	-365.424	449.058	-4560.362	-65.608
		-24869.4	-8.079	505.702	3306.844	3751.564	-65.608
2	4.199	-24973.8	-8.079	-422.705	449.058	-5024.511	-74.090
		-24973.8	-8.079	377.872	3306.844	4164.922	-74.090
3	0	-24973.5	-6.428	-422.705	234.639	-5012.614	-74.090
		-24973.5	-6.428	377.872	2770.963	4270.687	-74.090
3	0.600	-25035.2	-6.428	-432.663	234.639	-5294.069	-77.944
		-25035.2	-6.428	327.623	2770.963	4457.163	-77.944
3	0.600	-25035.3	-6.428	-432.676	234.639	-5294.467	-77.949
		-25035.3	-6.428	27.553	2020.963	4457.278	-77.949
3	1.050	-25080.4	-6.428	-447.652	217.902	-2553.494	-80.840
		-25080.4	-6.428	5.206	1015.674	3020.104	-80.840
3	2.100	-25208.3	-6.428	-360.725	217.902	-3081.529	-87.586
		-25208.3	-6.428	156.065	2037.700	1465.370	-87.586
3	2.100	-25208.4	-6.428	-605.185	571.226	303.129	-87.590
		-25208.4	-6.428	100.901	934.376	-1919.564	-87.590
3	2.100	-25208.4	-6.428	-605.129	571.226	302.986	-87.592
		-25208.4	-6.428	100.972	934.376	-1919.557	-87.592
3	3.150	-25350.0	-6.428	-322.494	571.226	-247.001	-94.341
		-25350.0	-6.428	454.159	934.376	-1691.179	-94.341
3	3.600	-25359.7	-6.428	-202.759	571.226	-359.857	-97.229
		-25359.7	-6.428	604.085	934.376	-1448.327	-97.229
3	3.600	-25359.7	-6.428	-502.537	-178.774	-360.125	-97.234
		-25359.7	-6.428	604.363	934.376	-1447.791	-97.234
3	4.200	-25301.3	-6.428	-349.090	-178.774	-590.671	-101.091
		-25301.3	-6.428	798.131	934.376	-1002.107	-101.091
4	0	-25301.2	-4.907	-349.089	-388.401	-599.725	-101.091
		-25301.2	-4.907	798.131	737.314	-975.421	-101.091
4	1.050	-25113.3	-4.907	-95.370	-388.401	-774.203	-106.244
		-25113.3	-4.907	1122.408	737.314	91.686	-106.244
4	2.100	-24891.7	-4.907	-122.673	-388.401	-795.019	-111.396
		-24891.7	-4.907	1165.663	737.314	1386.538	-111.396
4	3.150	-24765.4	-4.907	-910.743	-388.401	-1241.270	-116.549
		-24765.4	-4.907	448.151	737.314	2330.038	-116.549
4	4.200	-24665.9	-4.907	-1944.629	-388.401	-2756.089	-121.701
		-24665.9	-4.907	-515.177	737.314	2279.053	-121.701
5	0	-24665.8	-3.365	-1944.629	-149.504	-2764.771	-121.701
		-24665.8	-3.365	-515.177	813.140	2304.076	-121.701
5	1.050	-24550.5	-3.365	-2974.224	-149.504	-5373.950	-125.233
		-24550.5	-3.365	-1474.239	813.140	1232.283	-125.233
5	2.099	-24418.6	-3.365	-3998.625	-149.504	-9072.882	-128.765
		-24418.6	-3.365	-2428.106	813.140	-855.231	-128.765
5	3.149	-24300.2	-3.365	-4826.179	-149.504	-13752.9	-132.296
		-24300.2	-3.365	-3185.126	813.140	-3849.818	-132.296
5	4.198	-24173.3	-3.365	-5628.413	-149.504	-19284.2	-135.828
		-24173.3	-3.365	-3916.826	813.140	-7621.641	-135.828
6	0	-24151.8	-7.272	4766.019	1380.810	-7583.036	-135.828
		-24151.8	-7.272	6057.552	829.066	-19272.3	-135.828
6	1.350	-23970.0	-7.272	3811.380	1380.810	-1857.118	-145.646
		-23970.0	-7.272	5012.189	829.066	-11864.0	-145.646
6	2.700	-23769.5	-7.272	2869.224	1380.810	2590.251	-155.464
		-23769.5	-7.272	3979.310	829.066	-5856.699	-155.464

ENVOLVENTE para < Vz > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
6	4.050	-23484.4	-7.272	1581.982	1380.810	5576.774	-165.281
		-23484.4	-7.272	2601.346	829.066	-1432.752	-165.281
6	5.400	-23190.7	-7.272	453.571	1380.810	6786.634	-175.099
		-23190.7	-7.272	1382.212	829.066	1092.051	-175.099
7	0	-23190.5	-4.275	453.571	1152.339	6841.314	-175.099
		-23190.5	-4.275	1382.212	846.839	1128.227	-175.099
7	1.350	-22979.5	-4.275	-95.516	1152.339	7061.285	-180.870
		-22979.5	-4.275	742.405	846.839	2540.640	-180.870
7	2.700	-22865.6	-4.275	-129.598	1152.339	6861.200	-186.641
		-22865.6	-4.275	617.601	846.839	3410.522	-186.641
7	4.050	-22768.8	-4.275	-50.752	1152.339	6772.246	-192.412
		-22768.8	-4.275	605.726	846.839	4269.061	-192.412
7	5.400	-22662.4	-4.275	24.709	1152.339	6803.030	-198.183
		-22662.4	-4.275	590.466	846.839	5124.862	-198.183
8	0	-22662.2	-1.476	24.709	428.865	6834.814	-198.183
		-22662.2	-1.476	590.466	191.050	5145.725	-198.183
8	1.350	-22546.8	-1.476	96.142	428.865	6978.929	-200.175
		-22546.8	-1.476	571.189	191.050	5992.307	-200.175
8	2.700	-22421.9	-1.476	162.974	428.865	7229.015	-202.168
		-22421.9	-1.476	547.311	191.050	6822.414	-202.168
8	4.050	-22311.0	-1.476	60.090	428.865	7462.807	-204.161
		-22311.0	-1.476	353.716	191.050	7513.782	-204.161
8	5.399	-22203.8	-1.476	-70.985	526.173	12218.3	-206.153
		-22203.8	-1.476	137.124	93.743	3221.174	-206.153
9	0	-22203.8	1.522	-70.985	-620.479	12216.2	-206.153
		-22203.8	1.522	137.124	-665.549	3208.872	-206.153
9	1.350	-22310.0	1.522	-290.117	-620.479	11903.7	-204.098
		-22310.0	1.522	8.722	-665.549	3238.594	-204.098
9	2.700	-22418.5	1.522	-473.127	-620.479	11301.7	-202.044
		-22418.5	1.522	-83.556	-665.549	3101.338	-202.044
9	4.051	-22541.5	1.522	-497.031	-620.479	10573.0	-199.989
		-22541.5	1.522	-16.729	-665.549	2959.887	-199.989
9	5.401	-22656.4	1.522	-516.321	-620.479	9827.191	-197.934
		-22656.4	1.522	54.712	-665.549	2923.779	-197.934
10	0	-22656.5	4.348	-516.321	-1467.538	9784.802	-197.934
		-22656.5	4.348	54.712	-1232.394	2885.248	-197.934
10	1.350	-22762.3	4.348	-531.626	-1467.538	9030.084	-192.065
		-22762.3	4.348	130.116	-1232.394	2962.546	-192.065
10	2.700	-22858.4	4.348	-543.592	-1467.538	8272.558	-186.196
		-22858.4	4.348	208.858	-1232.394	3159.476	-186.196
10	4.049	-22979.8	4.348	-703.850	-1467.538	7493.976	-180.326
		-22979.8	4.348	139.308	-1232.394	3457.791	-180.326
10	5.399	-23189.2	4.348	-1344.405	-1467.538	6134.993	-174.457
		-23189.2	4.348	-410.539	-1232.394	3298.145	-174.457
11	0	-23189.4	7.272	-1344.405	-1651.699	6069.319	-174.457
		-23189.4	7.272	-410.539	-1297.360	3244.883	-174.457
11	1.331	-23485.6	7.272	-2588.902	-1651.699	3600.706	-164.778
		-23485.6	7.272	-1565.590	-1297.360	2078.795	-164.778
11	2.662	-23763.2	7.272	-3933.085	-1651.699	-726.583	-155.099
		-23763.2	7.272	-2820.329	-1297.360	-826.913	-155.099
11	3.993	-23961.0	7.272	-4951.450	-1651.699	-6577.764	-145.420
		-23961.0	7.272	-3749.249	-1297.360	-5137.460	-145.420
11	5.324	-24140.6	7.272	-5981.920	-1651.699	-13790.8	-135.741
		-24140.6	7.272	-4690.274	-1297.360	-10690.8	-135.741
12	0	-24162.1	3.447	3894.812	-1088.567	-7217.988	-135.741
		-24162.1	3.447	5076.608	-324.394	-17344.3	-135.741
12	1.050	-24289.0	3.447	3163.151	-1088.567	-3468.529	-132.123
		-24289.0	3.447	4274.399	-324.394	-12391.2	-132.123
12	2.100	-24407.4	3.447	2406.007	-1088.567	-496.470	-128.504
		-24407.4	3.447	3446.709	-324.394	-8289.563	-128.504
12	3.149	-24539.2	3.447	1452.248	-1088.567	1568.245	-124.886
		-24539.2	3.447	2422.402	-324.394	-5169.339	-124.886
12	4.199	-24654.4	3.447	493.300	-1088.567	2617.167	-121.268
		-24654.4	3.447	1392.907	-324.394	-3138.971	-121.268
13	0	-24654.5	4.888	493.300	-1027.182	2585.250	-121.268
		-24654.5	4.888	1392.907	-89.728	-3145.218	-121.268
13	1.050	-24753.7	4.888	-469.771	-1027.182	2613.360	-116.135
		-24753.7	4.888	359.274	-89.728	-2209.548	-116.135

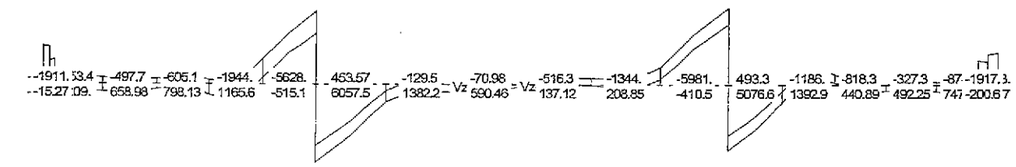
ENVOLVENTE para < Vz > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
13	2.100	-24880.1	4.888	-1186.014	-1027.182	1647.503	-111.002
		-24880.1	4.888	-427.529	-89.728	-2341.935	-111.002
13	3.150	-25101.8	4.888	-1142.379	-1027.182	331.343	-105.869
		-25101.8	4.888	-454.456	-89.728	-2898.717	-105.869
13	4.200	-25290.1	4.888	-818.399	-1027.182	-756.962	-100.736
		-25290.1	4.888	-201.037	-89.728	-3301.734	-100.736
14	0	-25290.3	6.467	-818.399	-1238.871	-794.524	-100.736
		-25290.3	6.467	-201.037	-217.592	-3306.828	-100.736
14	1.050	-25339.3	6.467	-474.776	-1238.871	-1505.015	-93.945
		-25339.3	6.467	72.029	-217.592	-3406.155	-93.945
14	2.100	-25198.3	6.467	-121.865	-1238.871	-1755.376	-87.155
		-25198.3	6.467	354.382	-217.592	-3119.435	-87.155
14	3.150	-25070.8	6.467	25.346	-216.482	-187.915	-80.364
		-25070.8	6.467	440.892	-217.592	-2598.265	-80.364
14	4.200	-24964.3	6.467	-45.835	-1219.072	1287.355	-73.574
		-24964.3	6.467	417.495	-237.391	-5051.514	-73.574
15	0	-24964.5	7.990	-45.835	-1618.619	1241.785	-73.574
		-24964.5	7.990	417.495	-433.905	-5062.294	-73.574
15	1.050	-24860.0	7.990	-173.874	-1618.619	1176.919	-65.183
		-24860.0	7.990	360.030	-433.905	-4603.507	-65.183
15	2.100	-24756.3	7.990	-327.310	-1618.619	955.626	-56.791
		-24756.3	7.990	277.169	-433.905	-4227.029	-56.791
15	3.151	-24624.8	7.990	-320.026	-1618.619	648.259	-48.400
		-24624.8	7.990	355.026	-433.905	-3862.507	-48.400
15	4.201	-24475.6	7.990	-253.373	-1618.619	409.849	-40.008
		-24475.6	7.990	492.254	-433.905	-3354.911	-40.008
16	0	-24475.9	9.581	-253.373	-1936.909	349.876	-40.008
		-24475.9	9.581	492.254	-625.901	-3372.787	-40.008
16	1.049	-24318.9	9.581	-193.043	-1936.909	174.148	-29.953
		-24318.9	9.581	623.110	-625.901	-2728.972	-29.953
16	2.099	-24153.9	9.581	-139.495	-1936.909	49.842	-19.898
		-24153.9	9.581	747.185	-625.901	-1959.720	-19.898
16	3.148	-24073.6	9.581	-488.484	-1936.909	-244.641	-9.842
		-24073.6	9.581	468.721	-625.901	-1286.626	-9.842
16	4.198	-24002.5	9.581	-878.956	-1936.909	-956.074	0.212903
		-24002.5	9.581	148.775	-625.901	-956.465	0.212903
17	0	4.757	23.560	-2838.894	3.81E-14	6997.371	-56.500
		4.757	23.560	-707.709	-5.64E-15	1886.449	-56.500
17	0.600	4.757	23.560	-2878.351	3.81E-14	5283.513	-42.375
		4.757	23.560	-747.166	-5.64E-15	1450.321	-42.375
17	1.199	4.757	23.560	-2917.808	3.81E-14	3545.998	-28.250
		4.757	23.560	-786.623	-5.64E-15	990.537	-28.250
17	1.799	4.757	23.560	-2957.266	3.81E-14	1784.827	-14.125
		4.757	23.560	-826.081	-5.64E-15	507.096	-14.125
17	2.398	4.757	23.560	-2996.723	3.81E-14	7.19E-05	-5.65E-07
		4.757	23.560	-865.538	-5.64E-15	2.08E-05	-5.65E-07
18	0	-3.820	-23.637	-1753.920	1.17E-12	4398.977	56.728
		-3.820	-23.637	-15.271	1.14E-12	226.194	56.728
18	0.600	-3.820	-23.637	-1793.408	1.17E-12	3334.772	42.546
		-3.820	-23.637	-54.759	1.14E-12	205.185	42.546
18	1.200	-3.820	-23.637	-1832.896	1.17E-12	2246.874	28.364
		-3.820	-23.637	-94.247	1.14E-12	160.483	28.364
18	1.800	-3.820	-23.637	-1872.384	1.17E-12	1135.283	14.182
		-3.820	-23.637	-133.735	1.14E-12	92.088	14.182
18	2.400	-3.820	-23.637	-1911.871	1.17E-12	4.59E-05	5.67E-07
		-3.820	-23.637	-173.222	1.14E-12	4.16E-06	5.67E-07
19	0	4.793	-23.548	-2315.790	1.38E-12	5747.326	56.515
		4.793	-23.548	-712.719	6.99E-13	1900.026	56.515
19	0.600	4.793	-23.548	-2355.277	1.38E-12	4346.032	42.386
		4.793	-23.548	-752.205	6.99E-13	1460.557	42.386
19	1.200	4.793	-23.548	-2394.764	1.38E-12	2921.046	28.257
		4.793	-23.548	-791.692	6.99E-13	997.396	28.257
19	1.800	4.793	-23.548	-2434.250	1.38E-12	1472.369	14.129
		4.793	-23.548	-831.179	6.99E-13	510.544	14.129
19	2.400	4.793	-23.548	-2473.737	1.38E-12	5.94E-05	5.65E-07
		4.793	-23.548	-870.666	6.99E-13	2.09E-05	5.65E-07
20	0	-4.782	23.458	-1759.825	-2.70E-13	4413.326	-56.302
		-4.782	23.458	-200.683	-7.89E-13	671.217	-56.302

ENVOLVENTE para < Vz > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
20	0.600	-4.782	23.458	-1799.314	-2.70E-13	3345.536	-42.226
		-4.782	23.458	-240.172	-7.89E-13	538.955	-42.226
20	1.200	-4.782	23.458	-1838.803	-2.70E-13	2254.052	-28.151
		-4.782	23.458	-279.661	-7.89E-13	382.998	-28.151
20	1.800	-4.782	23.458	-1878.293	-2.70E-13	1138.873	-14.075
		-4.782	23.458	-319.150	-7.89E-13	203.346	-14.075
20	2.400	-4.782	23.458	-1917.782	-2.70E-13	4.60E-05	-5.63E-07
		-4.782	23.458	-358.640	-7.89E-13	8.61E-06	-5.63E-07

Mstb. 1:449.9
Section forces envelope Vz, GWSP JD (ELU 7), View "ALL"
- Struktur: Staebe
- Envelop Shear force Vz-min, Scaling 1.00E-03
  min: -5.98E+03 max: 4.77E+03 [kN]
- Envelop Shear force Vz-max, Scaling 1.00E-03
  min: -4.69E+03 max: 6.06E+03 [kN]
- Text envelopes [kN]



ENVOLVENTE para < T > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
1	0	-24024.4	-9.508	330.283	-2509.087	-784.160	-0.227677
		-24024.4	-9.508	722.819	6771.354	-948.951	-0.227677
1	1.050	-24091.4	-9.508	-24.758	-2410.296	-629.528	-10.212
		-24091.4	-9.508	867.778	6672.563	-382.127	-10.212
1	2.100	-24168.0	-9.508	-337.799	-2311.505	-854.532	-20.196
		-24168.0	-9.508	54.737	6573.773	-194.939	-20.196
1	3.150	-24331.4	-9.508	-248.568	-2212.714	-1212.246	-30.180
		-24331.4	-9.508	143.968	6474.982	-140.462	-30.180
1	4.200	-24487.2	-9.508	-152.620	-2113.923	-1481.075	-40.164
		-24487.2	-9.508	239.916	6376.191	2.901	-40.164
2	0	-24486.9	-8.079	-152.620	-2342.673	-1548.613	-40.164
		-24486.9	-8.079	239.916	6098.574	191.953	-40.164
2	1.050	-24635.2	-8.079	-50.479	-2243.904	-1717.641	-48.646
		-24635.2	-8.079	342.057	5999.806	435.023	-48.646
2	2.100	-24766.0	-8.079	-8.121	-2145.135	-1780.628	-57.127
		-24766.0	-8.079	384.415	5901.037	784.135	-57.127
2	3.150	-24869.4	-8.079	-126.129	-2046.367	-1892.830	-65.608
		-24869.4	-8.079	266.407	5802.269	1084.032	-65.608
2	4.199	-24973.8	-8.079	-218.684	-1947.598	-2124.275	-74.090
		-24973.8	-8.079	173.852	5703.500	1264.685	-74.090
3	0	-24973.5	-6.428	-218.684	-2261.475	-2197.521	-74.090
		-24973.5	-6.428	173.852	5267.077	1455.595	-74.090
3	0.600	-25035.2	-6.428	-248.788	-2205.067	-2362.689	-77.944
		-25035.2	-6.428	143.748	5210.669	1525.783	-77.944
3	0.600	-25035.3	-6.428	-248.830	-2204.988	-2362.932	-77.949
		-25035.3	-6.428	-156.294	4460.590	1525.744	-77.949
3	1.050	-25080.4	-6.428	-270.787	-2162.681	-2497.864	-80.840

ENVOLVENTE para < T > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
		-25080.4	-6.428	-178.251	4418.283	1432.424	-80.840
3	2.100	-25208.3	-6.428	-148.598	-2063.947	-2821.781	-87.586
		-25208.3	-6.428	-56.062	4319.549	1205.622	-87.586
3	2.100	-25208.4	-6.428	-148.410	-2063.888	-2821.916	-87.590
		-25208.4	-6.428	-355.874	3569.490	1205.482	-87.590
3	2.100	-25208.4	-6.428	-148.347	-2063.868	-2821.962	-87.592
		-25208.4	-6.428	-355.810	3569.470	1205.392	-87.592
3	3.150	-25350.0	-6.428	169.564	-1965.094	-2873.860	-94.341
		-25350.0	-6.428	-37.900	3470.696	935.680	-94.341
3	3.600	-25359.7	-6.428	304.395	-1922.827	-2762.258	-97.229
		-25359.7	-6.428	96.931	3428.429	954.074	-97.229
3	3.600	-25359.7	-6.428	-239.982	-2319.423	255.834	-97.234
		-25359.7	-6.428	341.808	3075.025	-2063.750	-97.234
3	4.200	-25301.3	-6.428	-66.374	-2262.976	188.868	-101.091
		-25301.3	-6.428	515.416	3018.578	-1781.646	-101.091
4	0	-25301.2	-4.907	-66.374	-2496.424	112.891	-101.091
		-25301.2	-4.907	515.416	2845.336	-1688.037	-101.091
4	1.050	-25113.3	-4.907	222.624	-2397.643	253.776	-106.244
		-25113.3	-4.907	804.414	2746.555	-936.293	-106.244
4	2.100	-24891.7	-4.907	230.600	-2298.862	585.364	-111.396
		-24891.7	-4.907	812.390	2647.774	6.155	-111.396
4	3.150	-24765.4	-4.907	-522.191	-2200.081	528.558	-116.549
		-24765.4	-4.907	59.599	2548.993	560.210	-116.549
4	4.200	-24665.9	-4.907	-1520.798	-2101.300	-559.774	-121.701
		-24665.9	-4.907	-939.008	2450.212	82.738	-121.701
5	0	-24665.8	-3.365	-1520.798	-1932.386	-624.875	-121.701
		-24665.8	-3.365	-939.008	2596.022	164.180	-121.701
5	1.050	-24550.5	-3.365	-2515.127	-1833.639	-2770.688	-125.233
		-24550.5	-3.365	-1629.808	2589.101	-1369.620	-125.233
5	2.099	-24418.6	-3.365	-3199.928	-1791.126	-6180.256	-128.765
		-24418.6	-3.365	-2583.675	2589.101	-3620.421	-128.765
5	3.149	-24300.2	-3.365	-3956.949	-1791.126	-9984.957	-132.296
		-24300.2	-3.365	-3340.695	2589.101	-6778.295	-132.296
5	4.198	-24173.3	-3.365	-4688.649	-1791.126	-14566.9	-135.828
		-24173.3	-3.365	-4072.396	2589.101	-10713.4	-135.828
6	0	-24151.8	-7.272	5425.922	-977.501	-14615.6	-135.828
		-24151.8	-7.272	5331.739	3264.444	-10610.4	-135.828
6	1.350	-23970.0	-7.272	4425.921	-850.489	-8029.418	-145.646
		-23970.0	-7.272	4331.738	3137.432	-4151.363	-145.646
6	2.700	-23769.5	-7.272	3438.403	-723.477	-2783.012	-155.464
		-23769.5	-7.272	3344.221	3010.420	967.893	-155.464
6	4.050	-23484.4	-7.272	2105.800	-596.465	941.307	-165.281
		-23484.4	-7.272	2011.617	2883.408	4565.062	-165.281
6	5.400	-23190.7	-7.272	932.028	-469.453	2827.723	-175.099
		-23190.7	-7.272	837.845	2756.396	6324.328	-175.099
7	0	-23190.5	-4.275	932.028	-525.368	2806.249	-175.099
		-23190.5	-4.275	837.845	2546.593	6438.797	-175.099
7	1.350	-22979.5	-4.275	337.581	-398.358	3641.526	-180.870
		-22979.5	-4.275	243.398	2419.584	7146.925	-180.870
7	2.700	-22865.6	-4.275	258.138	-271.349	3995.508	-186.641
		-22865.6	-4.275	163.955	2292.574	7373.760	-186.641
7	4.050	-22768.8	-4.275	291.624	-144.340	4399.385	-192.412
		-22768.8	-4.275	197.441	2165.565	7650.489	-192.412
7	5.400	-22662.4	-4.275	321.724	-17.330	4861.762	-198.183
		-22662.4	-4.275	227.542	2038.556	7985.718	-198.183
8	0	-22662.2	-1.476	321.724	-661.848	4848.109	-198.183
		-22662.2	-1.476	227.542	1266.839	8052.160	-198.183
8	1.350	-22546.8	-1.476	347.802	-534.854	5362.540	-200.175
		-22546.8	-1.476	253.620	1139.845	8439.458	-200.175
8	2.700	-22421.9	-1.476	369.278	-407.859	5921.718	-202.168
		-22421.9	-1.476	275.096	1012.850	8871.504	-202.168
8	4.050	-22311.0	-1.476	221.039	-280.865	6403.380	-204.161
		-22311.0	-1.476	126.857	885.856	9226.033	-204.161
8	5.399	-22203.8	-1.476	48.173	-219.108	3712.222	-206.153
		-22203.8	-1.476	19.838	826.868	10947.2	-206.153
9	0	-22203.8	1.522	47.086	-1140.107	10172.2	-206.153
		-22203.8	1.522	20.924	-124.518	4473.115	-206.153
9	1.350	-22310.0	1.522	-61.971	-1214.381	8542.000	-204.098

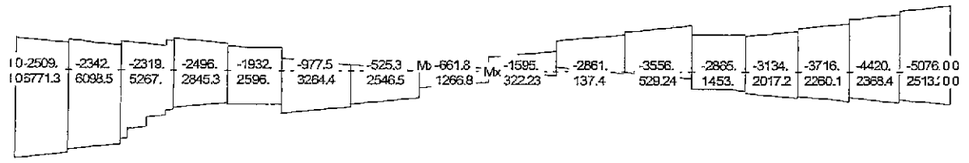
ENVOLVENTE para < T > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
		-22310.0	1.522	-153.810	-58.837	7255.762	-204.098
9	2.700	-22418.5	1.522	-199.615	-1341.405	8278.670	-202.044
		-22418.5	1.522	-291.453	68.187	6868.436	-202.044
9	4.051	-22541.5	1.522	-178.153	-1468.429	7949.894	-199.989
		-22541.5	1.522	-269.991	195.210	6415.662	-199.989
9	5.401	-22656.4	1.522	-152.078	-1595.453	7665.209	-197.934
		-22656.4	1.522	-243.916	322.234	6006.981	-197.934
10	0	-22656.5	4.348	-152.078	-2353.964	7585.032	-197.934
		-22656.5	4.348	-243.916	-370.557	6006.000	-197.934
10	1.350	-22762.3	4.348	-122.029	-2480.955	7352.588	-192.065
		-22762.3	4.348	-213.867	-243.566	5649.590	-192.065
10	2.700	-22858.4	4.348	-88.641	-2607.947	7178.557	-186.196
		-22858.4	4.348	-180.479	-116.574	5351.594	-186.196
10	4.049	-22979.8	4.348	-203.545	-2734.939	7044.691	-180.326
		-22979.8	4.348	-295.383	10.418	5093.762	-180.326
10	5.399	-23189.2	4.348	-798.746	-2861.930	6391.643	-174.457
		-23189.2	4.348	-890.584	137.409	4316.749	-174.457
11	0	-23189.4	7.272	-798.746	-3055.658	6267.051	-174.457
		-23189.4	7.272	-890.584	28.356	4320.239	-174.457
11	1.331	-23485.6	7.272	-1998.520	-3180.881	4554.487	-164.778
		-23485.6	7.272	-2090.358	153.579	2485.436	-164.778
11	2.662	-23763.2	7.272	-3297.981	-3306.104	1042.775	-155.099
		-23763.2	7.272	-3389.819	278.802	-1148.515	-155.099
11	3.993	-23961.0	7.272	-4271.624	-3431.327	-3933.302	-145.420
		-23961.0	7.272	-4363.462	404.025	-6246.831	-145.420
11	5.324	-24140.6	7.272	-5257.371	-3556.549	-10211.7	-135.741
		-24140.6	7.272	-5349.209	529.248	-12647.5	-135.741
12	0	-24162.1	3.447	4053.168	-2862.032	-10330.3	-135.741
		-24162.1	3.447	4135.687	1310.951	-12613.5	-135.741
12	1.050	-24289.0	3.447	3321.507	-2862.032	-6414.628	-132.123
		-24289.0	3.447	3404.026	1310.951	-8611.179	-132.123
12	2.100	-24407.4	3.447	2564.364	-2862.032	-3276.325	-128.504
		-24407.4	3.447	2646.882	1310.951	-5386.247	-128.504
12	3.149	-24539.2	3.447	1610.604	-2862.032	-1045.366	-124.886
		-24539.2	3.447	1959.290	1354.256	-2553.997	-124.886
12	4.199	-24654.4	3.447	921.139	-2865.983	469.490	-121.268
		-24654.4	3.447	965.068	1453.022	-991.293	-121.268
13	0	-24654.5	4.888	921.139	-2739.006	384.935	-121.268
		-24654.5	4.888	965.068	1622.097	-944.903	-121.268
13	1.050	-24753.7	4.888	-77.213	-2837.792	843.762	-116.135
		-24753.7	4.888	-33.284	1720.883	-439.950	-116.135
13	2.100	-24880.1	4.888	-828.736	-2936.578	271.577	-111.002
		-24880.1	4.888	-784.807	1819.669	-966.009	-111.002
13	3.150	-25101.8	4.888	-820.382	-3035.364	-687.957	-105.869
		-25101.8	4.888	-776.453	1918.455	-1879.417	-105.869
13	4.200	-25290.1	4.888	-531.683	-3134.150	-1456.681	-100.736
		-25290.1	4.888	-487.753	2017.241	-2602.014	-100.736
14	0	-25290.3	6.467	-531.683	-3321.491	-1563.688	-100.736
		-25290.3	6.467	-487.753	1865.029	-2537.663	-100.736
14	1.050	-25339.3	6.467	-223.338	-3420.272	-1991.659	-93.945
		-25339.3	6.467	-179.409	1963.809	-2919.510	-93.945
14	2.100	-25198.3	6.467	94.294	-3519.052	-1996.542	-87.155
		-25198.3	6.467	138.223	2062.589	-2878.269	-87.155
14	3.150	-25070.8	6.467	216.083	-3617.832	-1729.933	-80.364
		-25070.8	6.467	260.012	2161.369	-2565.537	-80.364
14	4.200	-24964.3	6.467	163.865	-3716.612	-1487.340	-73.574
		-24964.3	6.467	207.794	2260.149	-2276.819	-73.574
15	0	-24964.5	7.990	163.865	-4025.777	-1611.674	-73.574
		-24964.5	7.990	207.794	1973.253	-2208.835	-73.574
15	1.050	-24860.0	7.990	71.114	-4124.580	-1437.781	-65.183
		-24860.0	7.990	115.043	2072.057	-1988.807	-65.183
15	2.100	-24756.3	7.990	-47.035	-4223.384	-1383.256	-56.791
		-24756.3	7.990	-3.106	2170.861	-1888.148	-56.791
15	3.151	-24624.8	7.990	-4.465	-4322.188	-1377.746	-48.400
		-24624.8	7.990	39.464	2269.665	-1836.503	-48.400
15	4.201	-24475.6	7.990	97.476	-4420.992	-1266.220	-40.008
		-24475.6	7.990	141.405	2368.469	-1678.842	-40.008
16	0	-24475.9	9.581	97.476	-4681.162	-1419.751	-40.008

ENVOLVENTE para < T > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
		-24475.9	9.581	141.405	2118.352	-1603.161	-40.008
16	1.049	-24318.9	9.581	193.069	-4779.898	-1208.759	-29.953
		-24318.9	9.581	236.998	2217.089	-1346.065	-29.953
16	2.099	-24153.9	9.581	281.881	-4878.635	-909.337	-19.898
		-24153.9	9.581	325.810	2315.826	-1000.540	-19.898
16	3.148	-24073.6	9.581	-31.846	-4977.372	-743.083	-9.842
		-24073.6	9.581	12.083	2414.563	-788.183	-9.842
16	4.198	-24002.5	9.581	-387.055	-5076.109	-956.771	0.212903
		-24002.5	9.581	-343.126	2513.299	-955.768	0.212903
17	0	4.757	23.560	-2276.224	-1.67E-13	5647.999	-56.500
		4.757	23.560	-1461.992	3.59E-13	3695.341	-56.500
17	0.600	4.757	23.560	-2315.681	-1.67E-13	4271.483	-42.375
		4.757	23.560	-1501.450	3.59E-13	2806.990	-42.375
17	1.199	4.757	23.560	-2355.138	-1.67E-13	2871.312	-28.250
		4.757	23.560	-1540.907	3.59E-13	1894.983	-28.250
17	1.799	4.757	23.560	-2394.596	-1.67E-13	1447.484	-14.125
		4.757	23.560	-1580.364	3.59E-13	959.320	-14.125
17	2.398	4.757	23.560	-2434.053	-1.67E-13	5.84E-05	-5.65E-07
		4.757	23.560	-1619.821	3.59E-13	3.88E-05	-5.65E-07
18	0	-3.820	-23.637	-1081.675	8.78E-13	2785.579	56.728
		-3.820	-23.637	-291.561	1.39E-12	889.293	56.728
18	0.600	-3.820	-23.637	-1121.163	8.78E-13	2124.724	42.546
		-3.820	-23.637	-331.049	1.39E-12	702.509	42.546
18	1.200	-3.820	-23.637	-1160.651	8.78E-13	1440.175	28.364
		-3.820	-23.637	-370.537	1.39E-12	492.032	28.364
18	1.800	-3.820	-23.637	-1200.139	8.78E-13	731.934	14.182
		-3.820	-23.637	-410.024	1.39E-12	257.863	14.182
18	2.400	-3.820	-23.637	-1239.626	8.78E-13	2.98E-05	5.67E-07
		-3.820	-23.637	-449.512	1.39E-12	1.08E-05	5.67E-07
19	0	4.793	-23.548	-828.423	6.84E-13	2177.711	56.515
		4.793	-23.548	-2244.116	1.40E-12	5575.311	56.515
19	0.600	4.793	-23.548	-867.910	6.84E-13	1668.821	42.386
		4.793	-23.548	-2283.603	1.40E-12	4217.020	42.386
19	1.200	4.793	-23.548	-907.397	6.84E-13	1136.239	28.257
		4.793	-23.548	-2323.089	1.40E-12	2835.039	28.257
19	1.800	4.793	-23.548	-946.883	6.84E-13	579.965	14.129
		4.793	-23.548	-2362.576	1.40E-12	1429.365	14.129
19	2.400	4.793	-23.548	-986.370	6.84E-13	2.37E-05	5.65E-07
		4.793	-23.548	-2402.063	1.40E-12	5.76E-05	5.65E-07
20	0	-4.782	23.458	-1074.791	-8.93E-13	2769.170	-56.302
		-4.782	23.458	-1368.260	-2.16E-13	3473.527	-56.302
20	0.600	-4.782	23.458	-1114.280	-8.93E-13	2112.419	-42.226
		-4.782	23.458	-1407.749	-2.16E-13	2640.687	-42.226
20	1.200	-4.782	23.458	-1153.769	-8.93E-13	1431.974	-28.151
		-4.782	23.458	-1447.238	-2.16E-13	1784.153	-28.151
20	1.800	-4.782	23.458	-1193.258	-8.93E-13	727.834	-14.075
		-4.782	23.458	-1486.727	-2.16E-13	903.924	-14.075
20	2.400	-4.782	23.458	-1232.748	-8.93E-13	2.96E-05	-5.63E-07
		-4.782	23.458	-1526.217	-2.16E-13	3.66E-05	-5.63E-07

Mstb. 1 :449.9
Section forces envelope T , GWSP JD (ELU 7), View "ALL"
- Struktur: Staebe
- Envelop Torsion.moment Mx-min, Scaling 1.00E-03
  min: -5.08E+03 max: 8.78E-13 [kNm]
- Envelop Torsion.moment Mx-max, Scaling 1.00E-03
  min: -3.71E+02 max: 6.77E+03 [kNm]
- Text envelopes [kNm]



ENVOLVENTE para < My > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
1	0	-24024.4	-9.508	722.819	6771.354	-948.951	-0.227677
		-24024.4	-9.508	330.283	-2509.087	-784.160	-0.227677
1	1.050	-24091.4	-9.508	-475.724	623.580	-1206.626	-10.212
		-24091.4	-9.508	818.744	3638.688	194.970	-10.212
1	2.100	-24168.0	-9.508	-753.482	623.580	-1886.652	-20.196
		-24168.0	-9.508	470.421	3638.688	837.181	-20.196
1	3.150	-24331.4	-9.508	-628.969	623.580	-2662.340	-30.180
		-24331.4	-9.508	524.369	3638.688	1309.631	-30.180
1	4.200	-24487.2	-9.508	-497.738	623.580	-3312.093	-40.164
		-24487.2	-9.508	585.035	3638.688	1833.919	-40.164
2	0	-24486.9	-8.079	-497.738	449.058	-3295.837	-40.164
		-24486.9	-8.079	585.035	3306.844	1939.177	-40.164
2	1.050	-24635.2	-8.079	-360.323	449.058	-3808.667	-48.646
		-24635.2	-8.079	651.901	3306.844	2526.049	-48.646
2	2.100	-24766.0	-8.079	-282.691	449.058	-4178.424	-57.127
		-24766.0	-8.079	658.984	3306.844	3181.930	-57.127
2	3.150	-24869.4	-8.079	-365.424	449.058	-4560.362	-65.608
		-24869.4	-8.079	505.702	3306.844	3751.564	-65.608
2	4.199	-24973.8	-8.079	-422.705	449.058	-5024.511	-74.090
		-24973.8	-8.079	377.872	3306.844	4164.922	-74.090
3	0	-24973.5	-6.428	-422.705	234.639	-5012.614	-74.090
		-24973.5	-6.428	377.872	2770.963	4270.687	-74.090
3	0.600	-25035.2	-6.428	-432.663	234.639	-5294.069	-77.944
		-25035.2	-6.428	327.623	2770.963	4457.163	-77.944
3	0.600	-25035.3	-6.428	-432.676	234.639	-5294.467	-77.949
		-25035.3	-6.428	27.553	2020.963	4457.278	-77.949
3	1.050	-25080.4	-6.428	-439.524	234.639	-5508.674	-80.840
		-25080.4	-6.428	-9.514	2020.963	4443.234	-80.840
3	2.100	-25208.3	-6.428	-282.073	234.639	-5991.173	-87.586
		-25208.3	-6.428	77.413	2020.963	4375.013	-87.586
3	2.100	-25208.4	-6.428	-281.864	234.639	-5991.392	-87.590
		-25208.4	-6.428	-222.421	1270.963	4374.958	-87.590
3	2.100	-25208.4	-6.428	-281.793	234.639	-5991.466	-87.592
		-25208.4	-6.428	-222.364	1270.963	4374.896	-87.592
3	3.150	-25350.0	-6.428	71.394	234.639	-6164.950	-94.341
		-25350.0	-6.428	60.271	1270.963	4226.770	-94.341
3	3.600	-25359.7	-6.428	221.321	234.639	-6094.062	-97.229
		-25359.7	-6.428	180.006	1270.963	4285.878	-97.229
3	3.600	-25359.7	-6.428	221.598	234.639	-6093.848	-97.234
		-25359.7	-6.428	-119.773	520.963	4285.932	-97.234
3	4.200	-25301.3	-6.428	415.366	234.639	-5877.820	-101.091
		-25301.3	-6.428	33.675	520.963	4285.043	-101.091
4	0	-25301.2	-4.907	415.366	193.560	-5870.985	-101.091

ENVOLVENTE para < My > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
		-25301.2	-4.907	33.675	155.352	4295.839	-101.091
4	1.050	-25113.3	-4.907	739.643	193.560	-5205.768	-106.244
		-25113.3	-4.907	287.395	155.352	4523.251	-106.244
4	2.100	-24891.7	-4.907	782.898	193.560	-4312.807	-111.396
		-24891.7	-4.907	260.092	155.352	4904.326	-111.396
4	3.150	-24765.4	-4.907	65.386	193.560	-3771.197	-116.549
		-24765.4	-4.907	-527.978	155.352	4859.965	-116.549
4	4.200	-24665.9	-4.907	-897.942	193.560	-4224.072	-121.701
		-24665.9	-4.907	-1561.864	155.352	3747.036	-121.701
5	0	-24665.8	-3.365	-897.942	479.527	-4213.209	-121.701
		-24665.8	-3.365	-1561.864	184.109	3752.515	-121.701
5	1.050	-24550.5	-3.365	-2401.631	-15.164	-5884.531	-125.233
		-24550.5	-3.365	-2046.832	678.801	1742.863	-125.233
5	2.099	-24418.6	-3.365	-3998.625	-149.504	-9072.882	-128.765
		-24418.6	-3.365	-2739.013	615.492	-797.263	-128.765
5	3.149	-24300.2	-3.365	-4826.179	-149.504	-13752.9	-132.296
		-24300.2	-3.365	-3185.126	813.140	-3849.818	-132.296
5	4.198	-24173.3	-3.365	-5628.413	-149.504	-19284.2	-135.828
		-24173.3	-3.365	-3916.826	813.140	-7621.641	-135.828
6	0	-24151.8	-7.272	6057.552	829.066	-19272.3	-135.828
		-24151.8	-7.272	4766.019	1380.810	-7583.036	-135.828
6	1.350	-23970.0	-7.272	5012.189	829.066	-11864.0	-145.646
		-23970.0	-7.272	3811.380	1380.810	-1857.118	-145.646
6	2.700	-23769.5	-7.272	3979.310	829.066	-5856.699	-155.464
		-23769.5	-7.272	2869.224	1380.810	2590.251	-155.464
6	4.050	-23484.4	-7.272	2170.509	1492.215	-1560.779	-165.281
		-23484.4	-7.272	2031.812	198.577	6098.686	-165.281
6	5.400	-23190.7	-7.272	659.083	548.072	309.461	-175.099
		-23190.7	-7.272	858.040	325.589	7885.215	-175.099
7	0	-23190.5	-4.275	659.083	599.876	334.241	-175.099
		-23190.5	-4.275	858.039	50.695	7893.337	-175.099
7	1.350	-22979.5	-4.275	109.997	599.876	831.657	-180.870
		-22979.5	-4.275	536.892	1399.302	8770.268	-180.870
7	2.700	-22865.6	-4.275	10.300	554.229	876.336	-186.641
		-22865.6	-4.275	477.703	1444.949	9395.386	-186.641
7	4.050	-22768.8	-4.275	89.146	554.229	976.247	-192.412
		-22768.8	-4.275	465.828	1444.949	10065.1	-192.412
7	5.400	-22662.4	-4.275	164.607	554.229	1195.895	-198.183
		-22662.4	-4.275	450.568	1444.949	10732.0	-198.183
8	0	-22662.2	-1.476	164.607	56.565	1208.173	-198.183
		-22662.2	-1.476	450.568	563.351	10772.4	-198.183
8	1.350	-22546.8	-1.476	236.041	56.565	1541.130	-200.175
		-22546.8	-1.476	431.291	563.351	11430.1	-200.175
8	2.700	-22421.9	-1.476	302.872	56.565	1980.058	-202.168
		-22421.9	-1.476	407.412	563.351	12071.4	-202.168
8	4.050	-22311.0	-1.476	199.988	56.565	2402.692	-204.161
		-22311.0	-1.476	213.818	563.351	12573.9	-204.161
8	5.399	-22203.8	-1.476	71.509	56.565	2655.390	-206.153
		-22203.8	-1.476	-5.370	563.351	12784.0	-206.153
9	0	-22203.8	1.522	71.509	-678.359	2642.012	-206.153
		-22203.8	1.522	-5.370	-607.669	12783.1	-206.153
9	1.350	-22310.0	1.522	-56.892	-678.359	2583.144	-204.098
		-22310.0	1.522	-224.503	-607.669	12559.2	-204.098
9	2.700	-22418.5	1.522	-149.170	-678.359	2357.298	-202.044
		-22418.5	1.522	-407.512	-607.669	12045.8	-202.044
9	4.051	-22541.5	1.522	-82.343	-678.359	2127.256	-199.989
		-22541.5	1.522	-431.416	-607.669	11405.7	-199.989
9	5.401	-22656.4	1.522	-10.902	-678.359	2002.558	-197.934
		-22656.4	1.522	-450.707	-607.669	10748.4	-197.934
10	0	-22656.5	4.348	-10.902	-1207.805	1964.267	-197.934
		-22656.5	4.348	-450.707	-1492.127	10705.8	-197.934
10	1.350	-22762.3	4.348	64.501	-1207.805	1952.996	-192.065
		-22762.3	4.348	-466.012	-1492.127	10039.6	-192.065
10	2.700	-22858.4	4.348	143.243	-1207.805	2061.359	-186.196
		-22858.4	4.348	-477.978	-1492.127	9370.675	-186.196
10	4.049	-22979.8	4.348	7.784	-1255.325	2209.179	-180.326
		-22979.8	4.348	-572.326	-1444.607	8742.589	-180.326
10	5.399	-23189.2	4.348	-615.932	-989.705	1860.986	-174.457

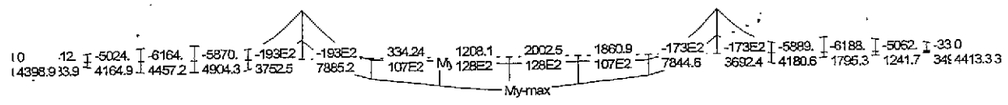
ENVOLVENTE para < My > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
		-23189.2	4.348	-816.835	-351.504	7864.739	-174.457
11	0	-23189.4	7.272	-542.063	-1260.243	1819.034	-174.457
		-23189.4	7.272	-890.704	-343.612	7844.685	-174.457
11	1.331	-23485.6	7.272	-2157.173	-1946.744	-43.955	-164.778
		-23485.6	7.272	-2016.609	-484.237	6107.866	-164.778
11	2.662	-23763.2	7.272	-3932.965	-1279.731	-4250.711	-155.099
		-23763.2	7.272	-2820.448	-1669.328	2697.215	-155.099
11	3.993	-23961.0	7.272	-4951.331	-1279.731	-10101.7	-145.420
		-23961.0	7.272	-3749.369	-1669.328	-1613.491	-145.420
11	5.324	-24140.6	7.272	-5981.801	-1279.731	-17314.6	-135.741
		-24140.6	7.272	-4690.394	-1669.328	-7167.034	-135.741
12	0	-24162.1	3.447	5076.608	-324.394	-17344.3	-135.741
		-24162.1	3.447	3894.812	-1088.567	-7217.988	-135.741
12	1.050	-24289.0	3.447	4274.399	-324.394	-12391.2	-132.123
		-24289.0	3.447	3163.151	-1088.567	-3468.529	-132.123
12	2.100	-24407.4	3.447	3446.709	-324.394	-8289.563	-128.504
		-24407.4	3.447	2713.657	-890.652	-430.647	-128.504
12	3.149	-24539.2	3.447	1851.479	-462.515	-5682.270	-124.886
		-24539.2	3.447	2023.171	-950.446	2081.176	-124.886
12	4.199	-24654.4	3.447	892.531	-462.515	-4214.231	-121.268
		-24654.4	3.447	993.676	-950.446	3692.428	-121.268
13	0	-24654.5	4.888	892.531	-195.351	-4224.155	-121.268
		-24654.5	4.888	993.676	-921.558	3664.188	-121.268
13	1.050	-24753.7	4.888	-70.540	-195.351	-3776.845	-116.135
		-24753.7	4.888	-39.957	-921.558	4180.657	-116.135
13	2.100	-24880.1	4.888	-786.782	-195.351	-4323.501	-111.002
		-24880.1	4.888	-826.760	-921.558	3629.068	-111.002
13	3.150	-25101.8	4.888	-743.148	-195.351	-5220.460	-105.869
		-25101.8	4.888	-853.688	-921.558	2653.086	-105.869
13	4.200	-25290.1	4.888	-419.168	-195.351	-5889.564	-100.736
		-25290.1	4.888	-600.268	-921.558	1830.868	-100.736
14	0	-25290.3	6.467	-419.168	-237.391	-5896.737	-100.736
		-25290.3	6.467	-600.268	-1219.072	1795.385	-100.736
14	1.050	-25339.3	6.467	-75.544	-237.391	-6188.051	-93.945
		-25339.3	6.467	-327.203	-1219.072	1276.881	-93.945
14	2.100	-25198.3	6.467	277.366	-237.391	-6019.236	-87.155
		-25198.3	6.467	-44.849	-1219.072	1144.424	-87.155
14	3.150	-25070.8	6.467	434.433	-237.391	-5541.888	-80.364
		-25070.8	6.467	41.661	-1219.072	1246.418	-80.364
14	4.200	-24964.3	6.467	417.495	-237.391	-5051.514	-73.574
		-24964.3	6.467	-45.835	-1219.072	1287.355	-73.574
15	0	-24964.5	7.990	417.495	-433.905	-5062.294	-73.574
		-24964.5	7.990	-45.835	-1618.619	1241.785	-73.574
15	1.050	-24860.0	7.990	360.030	-433.905	-4603.507	-65.183
		-24860.0	7.990	-173.874	-1618.619	1176.919	-65.183
15	2.100	-24756.3	7.990	277.169	-433.905	-4227.029	-56.791
		-24756.3	7.990	-327.310	-1618.619	955.626	-56.791
15	3.151	-24624.8	7.990	355.026	-433.905	-3862.507	-48.400
		-24624.8	7.990	-320.026	-1618.619	648.259	-48.400
15	4.201	-24475.6	7.990	492.254	-433.905	-3354.911	-40.008
		-24475.6	7.990	-253.373	-1618.619	409.849	-40.008
16	0	-24475.9	9.581	492.254	-625.901	-3372.787	-40.008
		-24475.9	9.581	-253.373	-1936.909	349.876	-40.008
16	1.049	-24318.9	9.581	623.110	-625.901	-2728.972	-29.953
		-24318.9	9.581	-193.043	-1936.909	174.148	-29.953
16	2.099	-24153.9	9.581	747.185	-625.901	-1959.720	-19.898
		-24153.9	9.581	-139.495	-1936.909	49.842	-19.898
16	3.148	-24073.6	9.581	468.721	-625.901	-1286.626	-9.842
		-24073.6	9.581	-488.484	-1936.909	-244.641	-9.842
16	4.198	-24002.5	9.581	-387.055	-5076.109	-956.771	0.212903
		-24002.5	9.581	-343.126	2513.299	-955.768	0.212903
17	0	4.757	23.560	-707.709	-5.64E-15	1886.449	-56.500
		4.757	23.560	-2838.894	3.81E-14	6997.371	-56.500
17	0.600	4.757	23.560	-747.166	-5.64E-15	1450.321	-42.375
		4.757	23.560	-2878.351	3.81E-14	5283.513	-42.375
17	1.199	4.757	23.560	-786.623	-5.64E-15	990.537	-28.250
		4.757	23.560	-2917.808	3.81E-14	3545.998	-28.250
17	1.799	4.757	23.560	-826.081	-5.64E-15	507.096	-14.125

ENVOLVENTE para < My > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
		4.757	23.560	-2957.266	3.81E-14	1784.827	-14.125
17	2.398	4.757	23.560	-865.538	-5.64E-15	2.08E-05	-5.65E-07
		4.757	23.560	-2996.723	3.81E-14	7.19E-05	-5.65E-07
18	0	-3.820	-23.637	-15.271	1.14E-12	226.194	56.728
		-3.820	-23.637	-1753.920	1.17E-12	4398.977	56.728
18	0.600	-3.820	-23.637	-54.759	1.14E-12	205.185	42.546
		-3.820	-23.637	-1793.408	1.17E-12	3334.772	42.546
18	1.200	-3.820	-23.637	-94.247	1.14E-12	160.483	28.364
		-3.820	-23.637	-1832.896	1.17E-12	2246.874	28.364
18	1.800	-3.820	-23.637	-133.735	1.14E-12	92.088	14.182
		-3.820	-23.637	-1872.384	1.17E-12	1135.283	14.182
18	2.400	-3.820	-23.637	-173.222	1.14E-12	4.16E-06	5.67E-07
		-3.820	-23.637	-1911.871	1.17E-12	4.59E-05	5.67E-07
19	0	4.793	-23.548	-712.719	6.99E-13	1900.026	56.515
		4.793	-23.548	-2315.790	1.38E-12	5747.326	56.515
19	0.600	4.793	-23.548	-752.205	6.99E-13	1460.557	42.386
		4.793	-23.548	-2355.277	1.38E-12	4346.032	42.386
19	1.200	4.793	-23.548	-791.692	6.99E-13	997.396	28.257
		4.793	-23.548	-2394.764	1.38E-12	2921.046	28.257
19	1.800	4.793	-23.548	-831.179	6.99E-13	510.544	14.129
		4.793	-23.548	-2434.250	1.38E-12	1472.369	14.129
19	2.400	4.793	-23.548	-870.666	6.99E-13	2.09E-05	5.65E-07
		4.793	-23.548	-2473.737	1.38E-12	5.94E-05	5.65E-07
20	0	-4.782	23.458	-200.683	-7.89E-13	671.217	-56.302
		-4.782	23.458	-1759.825	-2.70E-13	4413.326	-56.302
20	0.600	-4.782	23.458	-240.172	-7.89E-13	538.955	-42.226
		-4.782	23.458	-1799.314	-2.70E-13	3345.536	-42.226
20	1.200	-4.782	23.458	-279.661	-7.89E-13	382.998	-28.151
		-4.782	23.458	-1838.803	-2.70E-13	2254.052	-28.151
20	1.800	-4.782	23.458	-319.150	-7.89E-13	203.346	-14.075
		-4.782	23.458	-1878.293	-2.70E-13	1138.873	-14.075
20	2.400	-4.782	23.458	-358.640	-7.89E-13	8.61E-06	-5.63E-07
		-4.782	23.458	-1917.782	-2.70E-13	4.60E-05	-5.63E-07

Mstb. 1 :449.9
Section forces envelope My, GWSP JD (ELU 7), View "ALL"
- Struktur: Staebe
- Envelop Moment My-min, Scaling 2.00E-04
  min: -1.93E+04 max: 2.66E+03 [kNm]
- Envelop Moment My-max, Scaling 2.00E-04
  min: -7.62E+03 max: 1.28E+04 [kNm]
- Text envelopes [kNm]



ENVOLVENTE: JE ''ELU 8'

Grupo	Espe.	Hipótesis	Factor	Etapa	Título
A	PERM.	1	1.350		Peso Propio
	Y	3	1.350		Carga Muerta Máxima
	Y	20	0.850000		Pretensado
B	MAS	19	0.900000		gradiente
C	MAS	28	1.500		Carro 2 apoyo excentrøco
D	MAS	4	1.500		Sobrecarga centrada vano 1
E	MAS	5	1.500		Sobrecarga centrada vano 2
F	MAS	6	1.500		Sobrecarga centrada vano 3
ALTERNATIVA PARA ENVOLVENTE:					
G	PERM.	1	1.350		Peso Propio
	Y	3	1.350		Carga Muerta Máxima
	Y	20	0.850000		Pretensado
H	MAS	19	0.900000		gradiente
I	MAS	28	1.500		Carro 2 apoyo excentrøco
J	MAS	7	1.500		Sobrecarga excéntrica vano 1 (
K	MAS	8	1.500		Sobrecarga excentrica vano 2 (
L	MAS	9	1.500		Sobrecarga excentrica vano 3 (
ALTERNATIVA PARA ENVOLVENTE:					
M	PERM.	1	1.350		Peso Propio
	Y	3	1.350		Carga Muerta Máxima
	Y	20	0.850000		Pretensado
N	MAS	19	0.900000		gradiente
O	MAS	28	1.500		Carro 2 apoyo excentrøco
P	MAS	10	1.500		Sobrecarga excéntrica vano 1 (
Q	MAS	11	1.500		Sobrecarga excentrica vano 2 (
R	MAS	12	1.500		Sobrecarga excentrica vano 3 (

ENVOLVENTE para < Vz > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
1	0	-24024.4	-9.508	-226.251	2052.710	-900.774	-0.227677
		-24024.4	-9.508	853.695	1633.556	-841.176	-0.227677
1	1.050	-24091.4	-9.508	-546.009	2052.710	-1312.020	-10.212
		-24091.4	-9.508	463.371	1633.556	-155.448	-10.212
1	2.100	-24168.0	-9.508	-823.768	2052.710	-2065.851	-20.196
		-24168.0	-9.508	115.048	1633.556	113.595	-20.196
1	3.150	-24331.4	-9.508	-699.255	2052.710	-2915.345	-30.180
		-24331.4	-9.508	168.996	1633.556	212.877	-30.180
1	4.200	-24487.2	-9.508	-568.024	2052.710	-3638.903	-40.164
		-24487.2	-9.508	229.662	1633.556	363.997	-40.164
2	0	-24486.9	-8.079	-568.024	1887.434	-3579.191	-40.164
		-24486.9	-8.079	229.662	1347.176	409.170	-40.164
2	1.050	-24635.2	-8.079	-430.609	1887.434	-4165.809	-48.646
		-24635.2	-8.079	296.528	1347.176	622.958	-48.646
2	2.100	-24766.0	-8.079	-352.977	1887.434	-4609.355	-57.127
		-24766.0	-8.079	303.611	1347.176	905.756	-57.127
2	3.150	-24869.4	-8.079	-435.710	1887.434	-5065.081	-65.608
		-24869.4	-8.079	150.329	1347.176	1102.306	-65.608
2	4.199	-24973.8	-8.079	-492.991	1887.434	-5603.020	-74.090
		-24973.8	-8.079	22.499	1347.176	1142.581	-74.090
3	0	-24973.5	-6.428	-492.991	1692.273	-5540.726	-74.090
		-24973.5	-6.428	22.499	917.639	1181.993	-74.090
3	1.050	-25080.4	-6.428	-517.938	1675.536	-3155.413	-80.840
		-25080.4	-6.428	-50.167	-87.650	-306.738	-80.840
3	2.100	-25208.4	-6.428	-430.844	1675.536	-3757.525	-87.590
		-25208.4	-6.428	100.901	934.376	-1919.564	-87.590
3	3.150	-25350.0	-6.428	-148.153	1675.536	-4124.579	-94.341
		-25350.0	-6.428	454.159	934.376	-1691.179	-94.341
3	4.200	-25301.3	-6.428	125.252	1675.536	-4105.048	-101.091

ENVOLVENTE para < Vz > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
		-25301.3	-6.428	798.131	934.376	-1002.107	-101.091
4	0	-25301.2	-4.907	125.252	1577.139	-4053.124	-101.091
		-25301.2	-4.907	798.131	737.314	-975.421	-101.091
4	1.050	-25113.3	-4.907	378.971	1577.139	-3729.560	-106.244
		-25113.3	-4.907	1122.408	737.314	91.686	-106.244
4	2.100	-24891.7	-4.907	351.668	1577.139	-3252.334	-111.396
		-24891.7	-4.907	1165.663	737.314	1386.538	-111.396
4	3.150	-24765.4	-4.907	-436.402	1577.139	-3200.542	-116.549
		-24765.4	-4.907	448.151	737.314	2330.038	-116.549
4	4.200	-24665.9	-4.907	-1470.287	1577.139	-4217.319	-121.701
		-24665.9	-4.907	-515.177	737.314	2279.053	-121.701
5	0	-24665.8	-3.365	-1470.288	1862.166	-4161.812	-121.701
		-24665.8	-3.365	-515.177	813.140	2304.076	-121.701
5	1.050	-24550.5	-3.365	-2499.883	1862.166	-6273.117	-125.233
		-24550.5	-3.365	-1474.239	813.140	1232.283	-125.233
5	2.099	-24418.6	-3.365	-3524.284	1862.166	-9474.175	-128.765
		-24418.6	-3.365	-2428.106	813.140	-855.231	-128.765
5	3.149	-24300.2	-3.365	-4351.838	1862.166	-13656.3	-132.296
		-24300.2	-3.365	-3185.126	813.140	-3849.818	-132.296
5	4.198	-24173.3	-3.365	-5154.072	1862.166	-18689.8	-135.828
		-24173.3	-3.365	-3916.826	813.140	-7621.641	-135.828
6	0	-24151.8	-7.272	4766.019	1380.810	-7583.036	-135.828
		-24151.8	-7.272	6870.478	2818.578	-18607.4	-135.828
6	0.0995	-24139.1	-7.272	4695.334	1380.810	-7116.992	-136.551
		-24139.1	-7.272	6793.109	2818.578	-17932.4	-136.551
6	0.101	-24139.0	-7.272	4694.567	1380.810	-7111.970	-136.559
		-24139.0	-7.272	6492.269	2068.578	-17925.3	-136.559
6	1.350	-23970.0	-7.272	3811.380	1380.810	-1857.118	-145.646
		-23970.0	-7.272	5525.115	2068.578	-10476.6	-145.646
6	1.499	-23948.7	-7.272	3706.454	1380.810	-1302.495	-146.732
		-23948.7	-7.272	5410.149	2068.578	-9666.703	-146.732
6	1.501	-23948.5	-7.272	3705.696	1380.810	-1298.543	-146.740
		-23948.5	-7.272	5109.319	1318.578	-9661.073	-146.740
6	2.700	-23769.5	-7.272	2869.224	1380.810	2590.251	-155.464
		-23769.5	-7.272	4192.237	1318.578	-4136.920	-155.464
6	2.999	-23722.5	-7.272	2662.204	1380.810	3406.135	-157.641
		-23722.5	-7.272	3965.098	1318.578	-2927.969	-157.641
6	3.001	-23722.3	-7.272	2648.253	693.228	3485.271	-157.649
		-23722.3	-7.272	3677.485	1256.160	-3000.195	-157.649
6	4.050	-23484.4	-7.272	1568.776	693.228	5639.218	-165.281
		-23484.4	-7.272	2527.477	1256.160	197.004	-165.281
6	5.400	-23190.7	-7.272	440.366	693.228	6831.250	-175.099
		-23190.7	-7.272	1308.343	1256.160	2622.082	-175.099
7	0	-23190.5	-4.275	440.366	463.472	6856.219	-175.099
		-23190.5	-4.275	1308.343	1207.511	2675.263	-175.099
7	1.350	-22979.5	-4.275	-108.721	463.472	7058.363	-180.870
		-22979.5	-4.275	668.536	1207.511	3987.952	-180.870
7	2.700	-22865.6	-4.275	-142.803	463.472	6840.451	-186.641
		-22865.6	-4.275	543.732	1207.511	4758.110	-186.641
7	4.050	-22768.8	-4.275	-63.957	463.472	6733.670	-192.412
		-22768.8	-4.275	531.858	1207.511	5516.925	-192.412
7	5.400	-22662.4	-4.275	11.504	463.472	6746.627	-198.183
		-22662.4	-4.275	516.598	1207.511	6273.003	-198.183
8	0	-22662.2	-1.476	11.504	-257.178	6750.773	-198.183
		-22662.2	-1.476	516.598	505.292	6307.432	-198.183
8	1.350	-22546.8	-1.476	82.937	-257.178	6877.064	-200.175
		-22546.8	-1.476	497.321	505.292	7054.302	-200.175
8	2.700	-22421.9	-1.476	149.768	-257.178	7109.324	-202.168
		-22421.9	-1.476	473.442	505.292	7784.697	-202.168
8	4.050	-22311.0	-1.476	46.885	-257.178	7325.291	-204.161
		-22311.0	-1.476	279.848	505.292	8376.353	-204.161
8	5.399	-22203.8	-1.476	-84.190	-159.871	12062.9	-206.153
		-22203.8	-1.476	63.255	407.985	3984.033	-206.153
9	0	-22203.8	1.522	-84.190	-1299.206	12031.5	-206.153
		-22203.8	1.522	63.255	-384.408	3984.540	-206.153
9	1.350	-22310.0	1.522	-303.322	-1299.206	11701.2	-204.098
		-22310.0	1.522	-65.147	-384.408	3914.528	-204.098
9	2.700	-22418.5	1.522	-486.332	-1299.206	11081.4	-202.044

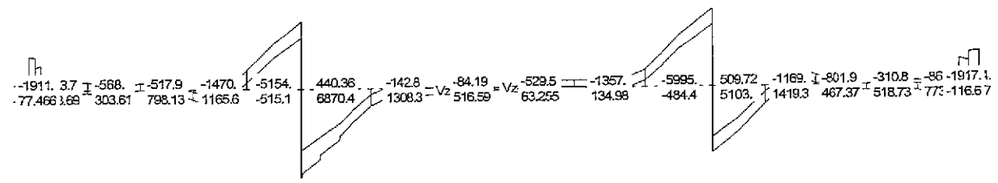
ENVOLVENTE para < Vz > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
		-22418.5	1.522	-157.424	-384.408	3677.537	-202.044
9	4.051	-22541.5	1.522	-510.236	-1299.206	10334.8	-199.989
		-22541.5	1.522	-90.597	-384.408	3436.350	-199.989
9	5.401	-22656.4	1.522	-529.526	-1299.206	9571.172	-197.934
		-22656.4	1.522	-19.156	-384.408	3300.507	-197.934
10	0	-22656.5	4.348	-529.526	-2135.316	9501.448	-197.934
		-22656.5	4.348	-19.156	-966.774	3273.076	-197.934
10	1.350	-22762.3	4.348	-544.831	-2135.316	8728.904	-192.065
		-22762.3	4.348	56.247	-966.774	3250.664	-192.065
10	2.700	-22858.4	4.348	-556.797	-2135.316	7953.554	-186.196
		-22858.4	4.348	134.989	-966.774	3347.884	-186.196
10	4.049	-22979.8	4.348	-717.055	-2135.316	7157.148	-180.326
		-22979.8	4.348	65.439	-966.774	3546.490	-180.326
10	5.399	-23189.2	4.348	-1357.610	-2135.316	5780.340	-174.457
		-23189.2	4.348	-484.408	-966.774	3287.134	-174.457
11	0	-23189.4	7.272	-1357.611	-2303.958	5686.874	-174.457
		-23189.4	7.272	-484.408	-1031.512	3245.061	-174.457
11	1.331	-23485.6	7.272	-2602.107	-2303.958	3200.684	-164.778
		-23485.6	7.272	-1639.459	-1031.512	1980.653	-164.778
11	2.662	-23763.2	7.272	-3946.290	-2303.958	-1144.181	-155.099
		-23763.2	7.272	-2894.197	-1031.512	-1023.377	-155.099
11	3.993	-23961.0	7.272	-4964.655	-2303.958	-7012.938	-145.420
		-23961.0	7.272	-3823.118	-1031.512	-5432.245	-145.420
11	5.324	-24140.6	7.272	-5995.125	-2303.958	-14243.6	-135.741
		-24140.6	7.272	-4764.143	-1031.512	-11084.0	-135.741
12	0	-24162.1	3.447	3911.236	-808.379	-7601.006	-135.741
		-24162.1	3.447	5103.089	-959.484	-17820.8	-135.741
12	1.050	-24289.0	3.447	3179.575	-808.379	-3834.304	-132.123
		-24289.0	3.447	4300.880	-959.484	-12839.9	-132.123
12	2.100	-24407.4	3.447	2422.431	-808.379	-845.004	-128.504
		-24407.4	3.447	3473.190	-959.484	-8710.499	-128.504
12	3.149	-24539.2	3.447	1468.672	-808.379	1236.954	-124.886
		-24539.2	3.447	2448.883	-959.484	-5562.475	-124.886
12	4.199	-24654.4	3.447	509.724	-808.379	2303.118	-121.268
		-24654.4	3.447	1419.388	-959.484	-3504.306	-121.268
13	0	-24654.5	4.888	509.724	-737.649	2279.795	-121.268
		-24654.5	4.888	1419.388	-713.508	-3529.544	-121.268
13	1.050	-24753.7	4.888	-453.347	-737.649	2325.150	-116.135
		-24753.7	4.888	385.755	-713.508	-2566.068	-116.135
13	2.100	-24880.1	4.888	-1169.590	-737.649	1376.539	-111.002
		-24880.1	4.888	-401.048	-713.508	-2670.650	-111.002
13	3.150	-25101.8	4.888	-1125.955	-737.649	77.624	-105.869
		-25101.8	4.888	-427.975	-713.508	-3199.626	-105.869
13	4.200	-25290.1	4.888	-801.975	-737.649	-993.435	-100.736
		-25290.1	4.888	-174.556	-713.508	-3574.838	-100.736
14	0	-25290.3	6.467	-801.975	-941.660	-1021.271	-100.736
		-25290.3	6.467	-174.556	-831.979	-3600.455	-100.736
14	1.050	-25339.3	6.467	-458.352	-941.660	-1714.517	-93.945
		-25339.3	6.467	98.510	-831.979	-3671.979	-93.945
14	2.100	-25198.3	6.467	-105.441	-941.660	-1947.634	-87.155
		-25198.3	6.467	380.863	-831.979	-3357.455	-87.155
14	3.150	-25070.8	6.467	41.770	80.729	-362.929	-80.364
		-25070.8	6.467	467.373	-831.979	-2808.481	-80.364
14	4.200	-24964.3	6.467	-29.411	-921.861	1129.586	-73.574
		-24964.3	6.467	443.976	-851.777	-5233.926	-73.574
15	0	-24964.5	7.990	-29.411	-1316.495	1093.641	-73.574
		-24964.5	7.990	443.976	-1042.117	-5264.340	-73.574
15	1.050	-24860.0	7.990	-157.450	-1316.495	1046.023	-65.183
		-24860.0	7.990	386.511	-1042.117	-4777.742	-65.183
15	2.100	-24756.3	7.990	-310.886	-1316.495	841.978	-56.791
		-24756.3	7.990	303.650	-1042.117	-4373.454	-56.791
15	3.151	-24624.8	7.990	-303.603	-1316.495	551.860	-48.400
		-24624.8	7.990	381.507	-1042.117	-3981.121	-48.400
15	4.201	-24475.6	7.990	-236.949	-1316.495	330.699	-40.008
		-24475.6	7.990	518.735	-1042.117	-3445.714	-40.008
16	0	-24475.9	9.581	-236.949	-1632.287	280.960	-40.008
		-24475.9	9.581	518.735	-1230.705	-3484.050	-40.008
16	1.049	-24318.9	9.581	-176.619	-1632.287	122.470	-29.953

ENVOLVENTE para < Vz > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
		-24318.9	9.581	649.591	-1230.705	-2812.444	-29.953
16	2.099	-24153.9	9.581	-123.071	-1632.287	15.400	-19.898
		-24153.9	9.581	773.666	-1230.705	-2015.400	-19.898
16	3.148	-24073.6	9.581	-472.060	-1632.287	-261.845	-9.842
		-24073.6	9.581	495.202	-1230.705	-1314.514	-9.842
16	4.198	-24002.5	9.581	-862.532	-1632.287	-956.042	0.212903
		-24002.5	9.581	175.256	-1230.705	-956.562	0.212903
17	0	4.757	23.560	-2505.972	1.16E-14	6198.973	-56.500
		4.757	23.560	-707.709	-5.64E-15	1886.449	-56.500
17	0.600	4.757	23.560	-2545.430	1.16E-14	4684.714	-42.375
		4.757	23.560	-747.166	-5.64E-15	1450.321	-42.375
17	1.199	4.757	23.560	-2584.887	1.16E-14	3146.799	-28.250
		4.757	23.560	-786.623	-5.64E-15	990.537	-28.250
17	1.799	4.757	23.560	-2624.344	1.16E-14	1585.227	-14.125
		4.757	23.560	-826.081	-5.64E-15	507.096	-14.125
17	2.398	4.757	23.560	-2663.801	1.16E-14	6.39E-05	-5.65E-07
		4.757	23.560	-865.538	-5.64E-15	2.08E-05	-5.65E-07
18	0	-3.820	-23.637	-1753.920	1.17E-12	4398.977	56.728
		-3.820	-23.637	77.466	1.05E-12	3.623	56.728
18	0.600	-3.820	-23.637	-1793.408	1.17E-12	3334.772	42.546
		-3.820	-23.637	37.978	1.05E-12	38.256	42.546
18	1.200	-3.820	-23.637	-1832.896	1.17E-12	2246.874	28.364
		-3.820	-23.637	-1.509	1.05E-12	49.197	28.364
18	1.800	-3.820	-23.637	-1872.384	1.17E-12	1135.283	14.182
		-3.820	-23.637	-40.997	1.05E-12	36.445	14.182
18	2.400	-3.820	-23.637	-1911.871	1.17E-12	4.59E-05	5.67E-07
		-3.820	-23.637	-80.485	1.05E-12	1.93E-06	5.67E-07
19	0	4.793	-23.548	-2356.874	1.39E-12	5845.926	56.515
		4.793	-23.548	-712.719	6.99E-13	1900.026	56.515
19	0.600	4.793	-23.548	-2396.361	1.39E-12	4419.982	42.386
		4.793	-23.548	-752.205	6.99E-13	1460.557	42.386
19	1.200	4.793	-23.548	-2435.848	1.39E-12	2970.346	28.257
		4.793	-23.548	-791.692	6.99E-13	997.396	28.257
19	1.800	4.793	-23.548	-2475.334	1.39E-12	1497.019	14.129
		4.793	-23.548	-831.179	6.99E-13	510.544	14.129
19	2.400	4.793	-23.548	-2514.821	1.39E-12	6.04E-05	5.65E-07
		4.793	-23.548	-870.666	6.99E-13	2.09E-05	5.65E-07
20	0	-4.782	23.458	-1759.825	-2.70E-13	4413.326	-56.302
		-4.782	23.458	-116.694	-8.09E-13	469.634	-56.302
20	0.600	-4.782	23.458	-1799.314	-2.70E-13	3345.536	-42.226
		-4.782	23.458	-156.183	-8.09E-13	387.768	-42.226
20	1.200	-4.782	23.458	-1838.803	-2.70E-13	2254.052	-28.151
		-4.782	23.458	-195.672	-8.09E-13	282.206	-28.151
20	1.800	-4.782	23.458	-1878.293	-2.70E-13	1138.873	-14.075
		-4.782	23.458	-235.161	-8.09E-13	152.950	-14.075
20	2.400	-4.782	23.458	-1917.782	-2.70E-13	4.60E-05	-5.63E-07
		-4.782	23.458	-274.651	-8.09E-13	6.59E-06	-5.63E-07

Mstb. 1 :449.9
Section forces envelope Vz, GWSP JE (ELU 8), View "ALL"
- Struktur: Staebe
- Envelop Shear force Vz-min, Scaling 1.00E-03
  min: -6.00E+03 max: 4.77E+03 [kN]
- Envelop Shear force Vz-max, Scaling 1.00E-03
  min: -4.76E+03 max: 6.87E+03 [kN]
- Text envelopes [kN]



ENVOLVENTE para < T > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
1	0	-24024.4	-9.508	330.283	-2509.087	-784.160	-0.227677
		-24024.4	-9.508	297.160	6195.353	-957.790	-0.227677
1	1.050	-24091.4	-9.508	-24.758	-2410.296	-629.528	-10.212
		-24091.4	-9.508	-57.880	6096.562	-837.940	-10.212
1	2.100	-24168.0	-9.508	-337.799	-2311.505	-854.532	-20.196
		-24168.0	-9.508	-370.922	5997.771	-1097.725	-20.196
1	3.150	-24331.4	-9.508	-248.568	-2212.714	-1212.246	-30.180
		-24331.4	-9.508	-281.691	5898.980	-1490.221	-30.180
1	4.200	-24487.2	-9.508	-152.620	-2113.923	-1481.075	-40.164
		-24487.2	-9.508	-185.743	5800.189	-1793.831	-40.164
2	0	-24486.9	-8.079	-152.620	-2342.673	-1548.613	-40.164
		-24486.9	-8.079	-185.743	5577.283	-1621.408	-40.164
2	1.050	-24635.2	-8.079	-50.479	-2243.904	-1717.641	-48.646
		-24635.2	-8.079	-83.601	5478.514	-1825.210	-48.646
2	2.100	-24766.0	-8.079	-8.121	-2145.135	-1780.628	-57.127
		-24766.0	-8.079	-41.244	5379.746	-1922.970	-57.127
2	3.150	-24869.4	-8.079	-126.129	-2046.367	-1892.830	-65.608
		-24869.4	-8.079	-159.252	5280.977	-2069.945	-65.608
2	4.199	-24973.8	-8.079	-218.684	-1947.598	-2124.275	-74.090
		-24973.8	-8.079	-251.807	5182.208	-2336.164	-74.090
3	0	-24973.5	-6.428	-218.684	-2261.475	-2197.521	-74.090
		-24973.5	-6.428	-251.807	4871.387	-2161.212	-74.090
3	1.050	-25080.4	-6.428	-270.787	-2162.681	-2497.864	-80.840
		-25080.4	-6.428	-303.910	4772.593	-2496.337	-80.840
3	2.100	-25208.4	-6.428	-148.410	-2063.888	-2821.916	-87.590
		-25208.4	-6.428	-181.533	4673.799	-2855.172	-87.590
3	3.150	-25350.0	-6.428	169.564	-1965.094	-2873.860	-94.341
		-25350.0	-6.428	136.442	4575.006	-2941.898	-94.341
3	4.200	-25301.3	-6.428	478.253	-1866.300	-2502.167	-101.091
		-25301.3	-6.428	445.130	4476.212	-2604.988	-101.091
4	0	-25301.2	-4.907	478.253	-2014.055	-2564.111	-101.091
		-25301.2	-4.907	445.130	4328.507	-2464.433	-101.091
4	1.050	-25113.3	-4.907	767.251	-1915.274	-1851.387	-106.244
		-25113.3	-4.907	734.128	4229.726	-1786.487	-106.244
4	2.100	-24891.7	-4.907	775.227	-1816.493	-947.959	-111.396
		-24891.7	-4.907	742.104	4130.946	-917.837	-111.396
4	3.150	-24765.4	-4.907	22.436	-1717.712	-432.924	-116.549
		-24765.4	-4.907	-10.687	4032.165	-437.580	-116.549
4	4.200	-24665.9	-4.907	-976.171	-1618.932	-949.416	-121.701
		-24665.9	-4.907	-1009.294	3933.384	-988.850	-121.701
5	0	-24665.8	-3.365	-976.171	-1437.695	-998.748	-121.701
		-24665.8	-3.365	-1009.294	4113.001	-858.987	-121.701

ENVOLVENTE para < T > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
5	1.050	-24550.5	-3.365	-1970.500	-1338.947	-2572.914	-125.233
		-24550.5	-3.365	-1700.094	4106.080	-2466.560	-125.233
5	2.099	-24418.6	-3.365	-2655.301	-1296.434	-5410.835	-128.765
		-24418.6	-3.365	-2653.961	4106.080	-4791.134	-128.765
5	3.149	-24300.2	-3.365	-3412.322	-1296.434	-8643.889	-132.296
		-24300.2	-3.365	-3410.981	4106.080	-8022.781	-132.296
5	4.198	-24173.3	-3.365	-4144.022	-1296.434	-12654.2	-135.828
		-24173.3	-3.365	-4142.681	4106.080	-12031.7	-135.828
6	0	-24151.8	-7.272	5352.053	-550.407	-12686.7	-135.828
		-24151.8	-7.272	6218.534	4826.862	-11874.5	-135.828
6	0.0995	-24139.1	-7.272	5278.026	-541.050	-12162.5	-136.551
		-24139.1	-7.272	6144.507	4817.505	-11264.1	-136.551
6	0.101	-24139.0	-7.272	5277.222	-540.949	-12156.9	-136.559
		-24139.0	-7.272	5843.703	4067.403	-11257.7	-136.559
6	1.350	-23970.0	-7.272	4352.052	-423.395	-6200.209	-145.646
		-23970.0	-7.272	4918.533	3949.850	-4593.239	-145.646
6	1.499	-23948.7	-7.272	4242.106	-409.338	-5565.174	-146.732
		-23948.7	-7.272	4808.587	3935.793	-3873.561	-146.732
6	1.501	-23948.5	-7.272	4241.312	-409.237	-5560.644	-146.740
		-23948.5	-7.272	4507.793	3185.691	-3868.581	-146.740
6	2.700	-23769.5	-7.272	3364.535	-296.383	-1053.529	-155.464
		-23769.5	-7.272	3631.016	3072.838	958.189	-155.464
6	2.999	-23722.5	-7.272	3147.455	-268.218	-90.867	-157.641
		-23722.5	-7.272	3413.937	3044.673	2000.630	-157.641
6	3.001	-23722.3	-7.272	3133.469	-955.698	-11.207	-157.649
		-23722.3	-7.272	3126.360	2982.153	1927.808	-157.649
6	4.050	-23484.4	-7.272	2018.726	-856.953	2633.508	-165.281
		-23484.4	-7.272	2011.617	2883.408	4565.062	-165.281
6	5.400	-23190.7	-7.272	844.954	-729.942	4402.371	-175.099
		-23190.7	-7.272	837.845	2756.396	6324.328	-175.099
7	0	-23190.5	-4.275	844.954	-853.562	4368.190	-175.099
		-23190.5	-4.275	837.845	2546.593	6438.797	-175.099
7	1.350	-22979.5	-4.275	250.507	-726.553	5085.915	-180.870
		-22979.5	-4.275	243.398	2419.584	7146.925	-180.870
7	2.700	-22865.6	-4.275	171.064	-599.543	5322.347	-186.641
		-22865.6	-4.275	163.955	2292.574	7373.760	-186.641
7	4.050	-22768.8	-4.275	204.550	-472.534	5608.673	-192.412
		-22768.8	-4.275	197.441	2165.565	7650.489	-192.412
7	5.400	-22662.4	-4.275	234.650	-345.525	5953.198	-198.183
		-22662.4	-4.275	227.542	2038.556	7985.718	-198.183
8	0	-22662.2	-1.476	234.650	-1033.649	5925.776	-198.183
		-22662.2	-1.476	227.542	1266.839	8052.160	-198.183
8	1.350	-22546.8	-1.476	260.728	-906.655	6322.669	-200.175
		-22546.8	-1.476	253.620	1139.845	8439.458	-200.175
8	2.700	-22421.9	-1.476	282.204	-779.661	6764.311	-202.168
		-22421.9	-1.476	275.096	1012.850	8871.504	-202.168
8	4.050	-22311.0	-1.476	133.965	-652.667	7128.436	-204.161
		-22311.0	-1.476	126.857	885.856	9226.033	-204.161
8	5.399	-22203.8	-1.476	-38.901	-590.909	4319.741	-206.153
		-22203.8	-1.476	19.838	826.868	10947.2	-206.153
9	0	-22203.8	1.522	-39.988	-1537.693	10763.1	-206.153
		-22203.8	1.522	20.924	-124.518	4473.115	-206.153
9	1.350	-22310.0	1.522	-149.045	-1611.968	9015.402	-204.098
		-22310.0	1.522	-153.810	-58.837	7255.762	-204.098
9	2.700	-22418.5	1.522	-286.689	-1738.992	8634.508	-202.044
		-22418.5	1.522	-291.453	68.187	6868.436	-202.044
9	4.051	-22541.5	1.522	-265.227	-1866.015	8188.167	-199.989
		-22541.5	1.522	-269.991	195.210	6415.662	-199.989
9	5.401	-22656.4	1.522	-239.152	-1993.039	7785.918	-197.934
		-22656.4	1.522	-243.916	322.234	6006.981	-197.934
10	0	-22656.5	4.348	-239.152	-2756.122	7689.505	-197.934
		-22656.5	4.348	-243.916	-370.557	6006.000	-197.934
10	1.350	-22762.3	4.348	-209.103	-2883.113	7339.527	-192.065
		-22762.3	4.348	-213.867	-243.566	5649.590	-192.065
10	2.700	-22858.4	4.348	-175.715	-3010.105	7047.962	-186.196
		-22858.4	4.348	-180.479	-116.574	5351.594	-186.196
10	4.049	-22979.8	4.348	-290.619	-3137.097	6796.561	-180.326
		-22979.8	4.348	-295.383	10.418	5093.762	-180.326

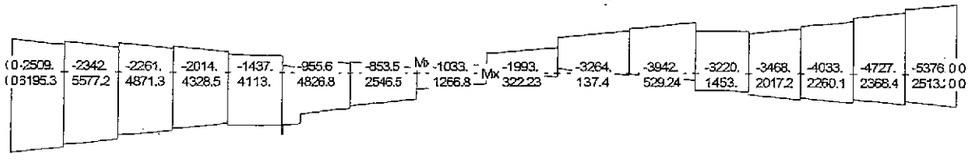
ENVOLVENTE para < T > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
10	5.399	-23189.2	4.348	-885.820	-3264.088	6025.978	-174.457
		-23189.2	4.348	-890.584	137.409	4316.749	-174.457
11	0	-23189.4	7.272	-885.820	-3442.069	5884.784	-174.457
		-23189.4	7.272	-890.584	28.356	4320.239	-174.457
11	1.331	-23485.6	7.272	-2085.594	-3567.292	4056.323	-164.778
		-23485.6	7.272	-2090.358	153.579	2485.436	-164.778
11	2.662	-23763.2	7.272	-3385.054	-3692.514	428.713	-155.099
		-23763.2	7.272	-3389.819	278.802	-1148.515	-155.099
11	3.993	-23961.0	7.272	-4358.697	-3817.737	-4663.262	-145.420
		-23961.0	7.272	-4363.462	404.025	-6246.831	-145.420
11	5.324	-24140.6	7.272	-5344.445	-3942.960	-11057.6	-135.741
		-24140.6	7.272	-5349.209	529.248	-12647.5	-135.741
12	0	-24162.1	3.447	4096.073	-3216.934	-11189.9	-135.741
		-24162.1	3.447	4135.687	1310.951	-12613.5	-135.741
12	1.050	-24289.0	3.447	3364.412	-3216.934	-7229.139	-132.123
		-24289.0	3.447	3404.026	1310.951	-8611.179	-132.123
12	2.100	-24407.4	3.447	2607.269	-3216.934	-4045.794	-128.504
		-24407.4	3.447	2646.882	1310.951	-5386.247	-128.504
12	3.149	-24539.2	3.447	1653.509	-3216.934	-1769.793	-124.886
		-24539.2	3.447	1959.290	1354.256	-2553.997	-124.886
12	4.199	-24654.4	3.447	964.044	-3220.885	-209.895	-121.268
		-24654.4	3.447	965.068	1453.022	-991.293	-121.268
13	0	-24654.5	4.888	964.044	-3073.254	-304.846	-121.268
		-24654.5	4.888	965.068	1622.097	-944.903	-121.268
13	1.050	-24753.7	4.888	-34.308	-3172.040	199.032	-116.135
		-24753.7	4.888	-33.284	1720.883	-439.950	-116.135
13	2.100	-24880.1	4.888	-785.831	-3270.826	-328.102	-111.002
		-24880.1	4.888	-784.807	1819.669	-966.009	-111.002
13	3.150	-25101.8	4.888	-777.478	-3369.612	-1242.585	-105.869
		-25101.8	4.888	-776.453	1918.455	-1879.417	-105.869
13	4.200	-25290.1	4.888	-488.778	-3468.397	-1966.258	-100.736
		-25290.1	4.888	-487.753	2017.241	-2602.014	-100.736
14	0	-25290.3	6.467	-488.778	-3638.667	-2084.063	-100.736
		-25290.3	6.467	-487.753	1865.029	-2537.663	-100.736
14	1.050	-25339.3	6.467	-180.433	-3737.447	-2466.986	-93.945
		-25339.3	6.467	-179.409	1963.809	-2919.510	-93.945
14	2.100	-25198.3	6.467	137.199	-3836.227	-2426.820	-87.155
		-25198.3	6.467	138.223	2062.589	-2878.269	-87.155
14	3.150	-25070.8	6.467	258.987	-3935.007	-2115.162	-80.364
		-25070.8	6.467	260.012	2161.369	-2565.537	-80.364
14	4.200	-24964.3	6.467	206.770	-4033.787	-1827.520	-73.574
		-24964.3	6.467	207.794	2260.149	-2276.819	-73.574
15	0	-24964.5	7.990	206.770	-4331.865	-1961.864	-73.574
		-24964.5	7.990	207.794	1973.253	-2208.835	-73.574
15	1.050	-24860.0	7.990	114.019	-4430.669	-1742.911	-65.183
		-24860.0	7.990	115.043	2072.057	-1988.807	-65.183
15	2.100	-24756.3	7.990	-4.130	-4529.473	-1643.327	-56.791
		-24756.3	7.990	-3.106	2170.861	-1888.148	-56.791
15	3.151	-24624.8	7.990	38.440	-4628.277	-1592.758	-48.400
		-24624.8	7.990	39.464	2269.665	-1836.503	-48.400
15	4.201	-24475.6	7.990	140.381	-4727.081	-1436.173	-40.008
		-24475.6	7.990	141.405	2368.469	-1678.842	-40.008
16	0	-24475.9	9.581	140.381	-4981.344	-1599.929	-40.008
		-24475.9	9.581	141.405	2118.352	-1603.161	-40.008
16	1.049	-24318.9	9.581	235.974	-5080.081	-1343.909	-29.953
		-24318.9	9.581	236.998	2217.089	-1346.065	-29.953
16	2.099	-24153.9	9.581	324.786	-5178.818	-999.459	-19.898
		-24153.9	9.581	325.810	2315.826	-1000.540	-19.898
16	3.148	-24073.6	9.581	11.059	-5277.555	-788.176	-9.842
		-24073.6	9.581	12.083	2414.563	-788.183	-9.842
16	4.198	-24002.5	9.581	-344.150	-5376.291	-956.836	0.212903
		-24002.5	9.581	-343.126	2513.299	-955.768	0.212903
17	0	4.757	23.560	-1943.303	-1.94E-13	4849.600	-56.500
		4.757	23.560	-1461.992	3.59E-13	3695.341	-56.500
17	0.600	4.757	23.560	-1982.760	-1.94E-13	3672.684	-42.375
		4.757	23.560	-1501.450	3.59E-13	2806.990	-42.375
17	1.199	4.757	23.560	-2022.217	-1.94E-13	2472.112	-28.250
		4.757	23.560	-1540.907	3.59E-13	1894.983	-28.250

ENVOLVENTE para < T > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
17	1.799	4.757	23.560	-2061.674	-1.94E-13	1247.884	-14.125
		4.757	23.560	-1580.364	3.59E-13	959.320	-14.125
17	2.398	4.757	23.560	-2101.131	-1.94E-13	5.04E-05	-5.65E-07
		4.757	23.560	-1619.821	3.59E-13	3.88E-05	-5.65E-07
18	0	-3.820	-23.637	-1081.675	8.78E-13	2785.579	56.728
		-3.820	-23.637	-198.824	1.29E-12	666.722	56.728
18	0.600	-3.820	-23.637	-1121.163	8.78E-13	2124.724	42.546
		-3.820	-23.637	-238.311	1.29E-12	535.581	42.546
18	1.200	-3.820	-23.637	-1160.651	8.78E-13	1440.175	28.364
		-3.820	-23.637	-277.799	1.29E-12	380.747	28.364
18	1.800	-3.820	-23.637	-1200.139	8.78E-13	731.934	14.182
		-3.820	-23.637	-317.287	1.29E-12	202.220	14.182
18	2.400	-3.820	-23.637	-1239.626	8.78E-13	2.98E-05	5.67E-07
		-3.820	-23.637	-356.775	1.29E-12	8.56E-06	5.67E-07
19	0	4.793	-23.548	-869.507	6.93E-13	2276.311	56.515
		4.793	-23.548	-2244.116	1.40E-12	5575.311	56.515
19	0.600	4.793	-23.548	-908.994	6.93E-13	1742.771	42.386
		4.793	-23.548	-2283.603	1.40E-12	4217.020	42.386
19	1.200	4.793	-23.548	-948.481	6.93E-13	1185.539	28.257
		4.793	-23.548	-2323.089	1.40E-12	2835.039	28.257
19	1.800	4.793	-23.548	-987.967	6.93E-13	604.615	14.129
		4.793	-23.548	-2362.576	1.40E-12	1429.365	14.129
19	2.400	4.793	-23.548	-1027.454	6.93E-13	2.47E-05	5.65E-07
		4.793	-23.548	-2402.063	1.40E-12	5.76E-05	5.65E-07
20	0	-4.782	23.458	-1074.791	-8.93E-13	2769.170	-56.302
		-4.782	23.458	-1284.270	-2.37E-13	3271.944	-56.302
20	0.600	-4.782	23.458	-1114.280	-8.93E-13	2112.419	-42.226
		-4.782	23.458	-1323.760	-2.37E-13	2489.500	-42.226
20	1.200	-4.782	23.458	-1153.769	-8.93E-13	1431.974	-28.151
		-4.782	23.458	-1363.249	-2.37E-13	1683.361	-28.151
20	1.800	-4.782	23.458	-1193.258	-8.93E-13	727.834	-14.075
		-4.782	23.458	-1402.738	-2.37E-13	853.528	-14.075
20	2.400	-4.782	23.458	-1232.748	-8.93E-13	2.96E-05	-5.63E-07
		-4.782	23.458	-1442.228	-2.37E-13	3.46E-05	-5.63E-07

Mstb. 1 :449.9
Section forces envelope T , GWSP JE (ELU 8), View "ALL"
- Struktur: Staebe
- Envelop Torsion.moment Mx-min, Scaling 1.00E-03
  min: -5.38E+03 max: 8.78E-13 [kNm]
- Envelop Torsion.moment Mx-max, Scaling 1.00E-03
  min: -3.71E+02 max: 6.20E+03 [kNm]
- Text envelopes [kNm]



ENVOLVENTE para < My > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
1	0	-24024.4	-9.508	297.160	6195.353	-957.790	-0.227677
		-24024.4	-9.508	330.283	-2509.087	-784.160	-0.227677
1	1.050	-24091.4	-9.508	-546.009	2052.710	-1312.020	-10.212
		-24091.4	-9.508	463.371	1633.556	-155.448	-10.212
1	2.100	-24168.0	-9.508	-823.768	2052.710	-2065.851	-20.196
		-24168.0	-9.508	115.048	1633.556	113.595	-20.196
1	3.150	-24331.4	-9.508	-699.255	2052.710	-2915.345	-30.180
		-24331.4	-9.508	168.996	1633.556	212.877	-30.180
1	4.200	-24487.2	-9.508	-568.024	2052.710	-3638.903	-40.164
		-24487.2	-9.508	229.662	1633.556	363.997	-40.164
2	0	-24486.9	-8.079	-568.024	1887.434	-3579.191	-40.164
		-24486.9	-8.079	229.662	1347.176	409.170	-40.164
2	1.050	-24635.2	-8.079	-430.609	1887.434	-4165.809	-48.646
		-24635.2	-8.079	296.528	1347.176	622.958	-48.646
2	2.100	-24766.0	-8.079	-352.977	1887.434	-4609.355	-57.127
		-24766.0	-8.079	303.611	1347.176	905.756	-57.127
2	3.150	-24869.4	-8.079	-435.710	1887.434	-5065.081	-65.608
		-24869.4	-8.079	150.329	1347.176	1102.306	-65.608
2	4.199	-24973.8	-8.079	-492.991	1887.434	-5603.020	-74.090
		-24973.8	-8.079	22.499	1347.176	1142.581	-74.090
3	0	-24973.5	-6.428	-492.991	1692.273	-5540.726	-74.090
		-24973.5	-6.428	22.499	917.639	1181.993	-74.090
3	1.050	-25080.4	-6.428	-509.810	1692.273	-6110.594	-80.840
		-25080.4	-6.428	-64.887	917.639	1116.392	-80.840
3	2.100	-25208.4	-6.428	-352.150	1692.273	-6667.119	-87.590
		-25208.4	-6.428	22.206	917.639	990.030	-87.590
3	3.150	-25350.0	-6.428	1.108	1692.273	-6914.485	-94.341
		-25350.0	-6.428	304.898	917.639	1098.726	-94.341
3	4.200	-25301.3	-6.428	345.080	1692.273	-6701.162	-101.091
		-25301.3	-6.428	578.302	917.639	1594.007	-101.091
4	0	-25301.2	-4.907	345.080	1676.732	-6647.381	-101.091
		-25301.2	-4.907	578.302	637.720	1618.836	-101.091
4	1.050	-25113.3	-4.907	669.357	1676.732	-6055.963	-106.244
		-25113.3	-4.907	832.022	637.720	2418.089	-106.244
4	2.100	-24891.7	-4.907	712.612	1676.732	-5236.799	-111.396
		-24891.7	-4.907	804.719	637.720	3371.003	-111.396
4	3.150	-24765.4	-4.907	-4.900	1676.732	-4768.987	-116.549
		-24765.4	-4.907	16.649	637.720	3898.483	-116.549
4	4.200	-24665.9	-4.907	-968.228	1676.732	-5295.660	-121.701
		-24665.9	-4.907	-1017.237	637.720	3357.394	-121.701
5	0	-24665.8	-3.365	-968.228	1996.506	-5236.376	-121.701
		-24665.8	-3.365	-1017.237	678.801	3378.641	-121.701
5	1.050	-24550.5	-3.365	-1927.290	1996.506	-6783.697	-125.233
		-24550.5	-3.365	-2046.832	678.801	1742.863	-125.233
5	2.099	-24418.6	-3.365	-3524.284	1862.166	-9474.175	-128.765
		-24418.6	-3.365	-2739.013	615.492	-797.263	-128.765
5	3.149	-24300.2	-3.365	-4351.838	1862.166	-13656.3	-132.296
		-24300.2	-3.365	-3185.126	813.140	-3849.818	-132.296
5	4.198	-24173.3	-3.365	-5154.072	1862.166	-18689.8	-135.828
		-24173.3	-3.365	-3916.826	813.140	-7621.641	-135.828
6	0	-24151.8	-7.272	6870.478	2818.578	-18607.4	-135.828
		-24151.8	-7.272	4766.019	1380.810	-7583.036	-135.828
6	0.0995	-24139.1	-7.272	6793.109	2818.578	-17932.4	-136.551
		-24139.1	-7.272	4695.334	1380.810	-7116.992	-136.551
6	0.101	-24139.0	-7.272	6492.269	2068.578	-17925.3	-136.559
		-24139.0	-7.272	4694.567	1380.810	-7111.970	-136.559
6	1.350	-23970.0	-7.272	5525.115	2068.578	-10476.6	-145.646
		-23970.0	-7.272	3811.380	1380.810	-1857.118	-145.646
6	1.499	-23948.7	-7.272	5410.149	2068.578	-9666.703	-146.732
		-23948.7	-7.272	3706.454	1380.810	-1302.495	-146.732
6	1.501	-23948.5	-7.272	5109.319	1318.578	-9661.073	-146.740
		-23948.5	-7.272	3705.696	1380.810	-1298.543	-146.740
6	2.700	-23769.5	-7.272	4192.237	1318.578	-4136.920	-155.464
		-23769.5	-7.272	2869.224	1380.810	2590.251	-155.464
6	2.999	-23722.5	-7.272	3678.304	1256.160	-3004.125	-157.641
		-23722.5	-7.272	3434.131	162.149	3513.036	-157.641
6	3.001	-23722.3	-7.272	3677.485	1256.160	-3000.195	-157.649
		-23722.3	-7.272	3133.349	-587.750	3516.540	-157.649

ENVOLVENTE para < My > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
6	4.050	-23484.4	-7.272	2096.641	1919.308	68.977	-165.281
		-23484.4	-7.272	2018.606	-489.005	6161.130	-165.281
6	5.400	-23190.7	-7.272	585.215	975.165	1839.492	-175.099
		-23190.7	-7.272	844.834	-361.993	7929.831	-175.099
7	0	-23190.5	-4.275	585.215	960.548	1881.276	-175.099
		-23190.5	-4.275	844.834	-638.171	7908.242	-175.099
7	1.350	-22979.5	-4.275	22.923	271.682	2276.046	-180.870
		-22979.5	-4.275	536.892	1399.302	8770.268	-180.870
7	2.700	-22865.6	-4.275	-76.774	226.034	2203.175	-186.641
		-22865.6	-4.275	477.703	1444.949	9395.386	-186.641
7	4.050	-22768.8	-4.275	2.073	226.034	2185.535	-192.412
		-22768.8	-4.275	465.828	1444.949	10065.1	-192.412
7	5.400	-22662.4	-4.275	77.534	226.034	2287.632	-198.183
		-22662.4	-4.275	450.568	1444.949	10732.0	-198.183
8	0	-22662.2	-1.476	77.534	-315.237	2285.839	-198.183
		-22662.2	-1.476	450.568	563.351	10772.4	-198.183
8	1.350	-22546.8	-1.476	148.967	-315.237	2501.260	-200.175
		-22546.8	-1.476	431.291	563.351	11430.1	-200.175
8	2.700	-22421.9	-1.476	215.798	-315.237	2822.650	-202.168
		-22421.9	-1.476	407.412	563.351	12071.4	-202.168
8	4.050	-22311.0	-1.476	112.914	-315.237	3127.748	-204.161
		-22311.0	-1.476	213.818	563.351	12573.9	-204.161
8	5.399	-22203.8	-1.476	-15.564	-315.237	3262.908	-206.153
		-22203.8	-1.476	-5.370	563.351	12784.0	-206.153
9	0	-22203.8	1.522	-15.564	-1075.945	3232.978	-206.153
		-22203.8	1.522	-5.370	-607.669	12783.1	-206.153
9	1.350	-22310.0	1.522	-143.966	-1075.945	3056.546	-204.098
		-22310.0	1.522	-224.503	-607.669	12559.2	-204.098
9	2.700	-22418.5	1.522	-236.244	-1075.945	2713.136	-202.044
		-22418.5	1.522	-407.512	-607.669	12045.8	-202.044
9	4.051	-22541.5	1.522	-169.417	-1075.945	2365.529	-199.989
		-22541.5	1.522	-431.416	-607.669	11405.7	-199.989
9	5.401	-22656.4	1.522	-97.976	-1075.945	2123.267	-197.934
		-22656.4	1.522	-450.707	-607.669	10748.4	-197.934
10	0	-22656.5	4.348	-97.976	-1609.963	2068.740	-197.934
		-22656.5	4.348	-450.707	-1492.127	10705.8	-197.934
10	1.350	-22762.3	4.348	-22.572	-1609.963	1939.935	-192.065
		-22762.3	4.348	-466.012	-1492.127	10039.6	-192.065
10	2.700	-22858.4	4.348	-58.170	-1609.963	1930.764	-186.196
		-22858.4	4.348	-477.978	-1492.127	9370.675	-186.196
10	4.049	-22979.8	4.348	-79.290	-1657.483	1961.049	-180.326
		-22979.8	4.348	-572.326	-1444.607	8742.589	-180.326
10	5.399	-23189.2	4.348	-629.137	-1657.483	1506.333	-174.457
		-23189.2	4.348	-890.704	-85.884	7853.728	-174.457
11	0	-23189.4	7.272	-629.137	-1646.654	1436.767	-174.457
		-23189.4	7.272	-890.704	-343.612	7844.685	-174.457
11	1.331	-23485.6	7.272	-2170.378	-2599.003	-443.977	-164.778
		-23485.6	7.272	-2090.477	-218.389	6009.723	-164.778
11	2.662	-23763.2	7.272	-3946.171	-1931.990	-4668.309	-155.099
		-23763.2	7.272	-2894.317	-1403.480	2500.751	-155.099
11	3.993	-23961.0	7.272	-4964.536	-1931.990	-10536.9	-145.420
		-23961.0	7.272	-3823.237	-1403.480	-1908.276	-145.420
11	5.324	-24140.6	7.272	-5995.006	-1931.990	-17767.4	-135.741
		-24140.6	7.272	-4764.262	-1403.480	-7560.140	-135.741
12	0	-24162.1	3.447	5103.089	-959.484	-17820.8	-135.741
		-24162.1	3.447	3911.236	-808.379	-7601.006	-135.741
12	1.050	-24289.0	3.447	4300.880	-959.484	-12839.9	-132.123
		-24289.0	3.447	3179.575	-808.379	-3834.304	-132.123
12	2.100	-24407.4	3.447	3473.190	-959.484	-8710.499	-128.504
		-24407.4	3.447	2730.081	-610.464	-779.180	-128.504
12	3.149	-24539.2	3.447	1877.960	-1097.604	-6075.405	-124.886
		-24539.2	3.447	2039.595	-670.259	1749.884	-124.886
12	4.199	-24654.4	3.447	919.012	-1097.604	-4579.567	-121.268
		-24654.4	3.447	1010.100	-670.259	3378.378	-121.268
13	0	-24654.5	4.888	919.012	-819.131	-4608.482	-121.268
		-24654.5	4.888	1010.100	-632.025	3358.733	-121.268
13	1.050	-24753.7	4.888	-44.059	-819.131	-4133.365	-116.135
		-24753.7	4.888	-23.533	-632.025	3892.447	-116.135

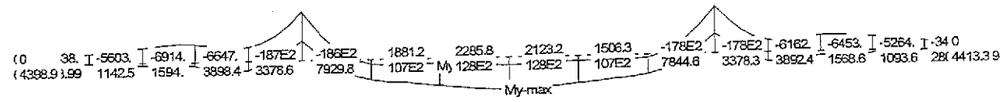
ENVOLVENTE para < My > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
13	2.100	-24880.1	4.888	-760.301	-819.131	-4652.216	-111.002
		-24880.1	4.888	-810.337	-632.025	3358.104	-111.002
13	3.150	-25101.8	4.888	-716.667	-819.131	-5521.369	-105.869
		-25101.8	4.888	-837.264	-632.025	2399.368	-105.869
13	4.200	-25290.1	4.888	-392.687	-819.131	-6162.668	-100.736
		-25290.1	4.888	-583.844	-632.025	1594.395	-100.736
14	0	-25290.3	6.467	-392.687	-851.777	-6190.364	-100.736
		-25290.3	6.467	-583.844	-921.861	1568.638	-100.736
14	1.050	-25339.3	6.467	-49.064	-851.777	-6453.875	-93.945
		-25339.3	6.467	-310.779	-921.861	1067.379	-93.945
14	2.100	-25198.3	6.467	303.847	-851.777	-6257.255	-87.155
		-25198.3	6.467	-28.425	-921.861	952.166	-87.155
14	3.150	-25070.8	6.467	460.914	-851.777	-5752.104	-80.364
		-25070.8	6.467	58.085	-921.861	1071.405	-80.364
14	4.200	-24964.3	6.467	443.976	-851.777	-5233.926	-73.574
		-24964.3	6.467	-29.411	-921.861	1129.586	-73.574
15	0	-24964.5	7.990	443.976	-1042.117	-5264.340	-73.574
		-24964.5	7.990	-29.411	-1316.495	1093.641	-73.574
15	1.050	-24860.0	7.990	386.511	-1042.117	-4777.742	-65.183
		-24860.0	7.990	-157.450	-1316.495	1046.023	-65.183
15	2.100	-24756.3	7.990	303.650	-1042.117	-4373.454	-56.791
		-24756.3	7.990	-310.886	-1316.495	841.978	-56.791
15	3.151	-24624.8	7.990	381.507	-1042.117	-3981.121	-48.400
		-24624.8	7.990	-303.603	-1316.495	551.860	-48.400
15	4.201	-24475.6	7.990	518.735	-1042.117	-3445.714	-40.008
		-24475.6	7.990	-236.949	-1316.495	330.699	-40.008
16	0	-24475.9	9.581	518.735	-1230.705	-3484.050	-40.008
		-24475.9	9.581	-236.949	-1632.287	280.960	-40.008
16	1.049	-24318.9	9.581	649.591	-1230.705	-2812.444	-29.953
		-24318.9	9.581	-176.619	-1632.287	122.470	-29.953
16	2.099	-24153.9	9.581	773.666	-1230.705	-2015.400	-19.898
		-24153.9	9.581	-123.071	-1632.287	15.400	-19.898
16	3.148	-24073.6	9.581	495.202	-1230.705	-1314.514	-9.842
		-24073.6	9.581	-472.060	-1632.287	-261.845	-9.842
16	4.198	-24002.5	9.581	-344.150	-5376.291	-956.836	0.212903
		-24002.5	9.581	-343.126	2513.299	-955.768	0.212903
17	0	4.757	23.560	-707.709	-5.64E-15	1886.449	-56.500
		4.757	23.560	-2505.972	1.16E-14	6198.973	-56.500
17	0.600	4.757	23.560	-747.166	-5.64E-15	1450.321	-42.375
		4.757	23.560	-2545.430	1.16E-14	4684.714	-42.375
17	1.199	4.757	23.560	-786.623	-5.64E-15	990.537	-28.250
		4.757	23.560	-2584.887	1.16E-14	3146.799	-28.250
17	1.799	4.757	23.560	-826.081	-5.64E-15	507.096	-14.125
		4.757	23.560	-2624.344	1.16E-14	1585.227	-14.125
17	2.398	4.757	23.560	-865.538	-5.64E-15	2.09E-05	-5.65E-07
		4.757	23.560	-2663.801	1.16E-14	6.39E-05	-5.65E-07
18	0	-3.820	-23.637	77.466	1.05E-12	3.623	56.728
		-3.820	-23.637	-1753.920	1.17E-12	4398.977	56.728
18	0.600	-3.820	-23.637	37.978	1.05E-12	38.256	42.546
		-3.820	-23.637	-1793.408	1.17E-12	3334.772	42.546
18	1.200	-3.820	-23.637	-1.509	1.05E-12	49.197	28.364
		-3.820	-23.637	-1832.896	1.17E-12	2246.874	28.364
18	1.800	-3.820	-23.637	-40.997	1.05E-12	36.445	14.182
		-3.820	-23.637	-1872.384	1.17E-12	1135.283	14.182
18	2.400	-3.820	-23.637	-80.485	1.05E-12	1.93E-06	5.67E-07
		-3.820	-23.637	-1911.871	1.17E-12	4.59E-05	5.67E-07
19	0	4.793	-23.548	-712.719	6.99E-13	1900.026	56.515
		4.793	-23.548	-2356.874	1.39E-12	5845.926	56.515
19	0.600	4.793	-23.548	-752.205	6.99E-13	1460.557	42.386
		4.793	-23.548	-2396.361	1.39E-12	4419.982	42.386
19	1.200	4.793	-23.548	-791.692	6.99E-13	997.396	28.257
		4.793	-23.548	-2435.848	1.39E-12	2970.346	28.257
19	1.800	4.793	-23.548	-831.179	6.99E-13	510.544	14.129
		4.793	-23.548	-2475.334	1.39E-12	1497.019	14.129
19	2.400	4.793	-23.548	-870.666	6.99E-13	2.09E-05	5.65E-07
		4.793	-23.548	-2514.821	1.39E-12	6.04E-05	5.65E-07
20	0	-4.782	23.458	-116.694	-8.09E-13	469.634	-56.302
		-4.782	23.458	-1759.825	-2.70E-13	4413.326	-56.302

ENVOLVENTE para < My > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
20	0.600	-4.782	23.458	-156.183	-8.09E-13	387.768	-42.226
		-4.782	23.458	-1799.314	-2.70E-13	3345.536	-42.226
20	1.200	-4.782	23.458	-195.672	-8.09E-13	282.206	-28.151
		-4.782	23.458	-1838.803	-2.70E-13	2254.052	-28.151
20	1.800	-4.782	23.458	-235.161	-8.09E-13	152.950	-14.075
		-4.782	23.458	-1878.293	-2.70E-13	1138.873	-14.075
20	2.400	-4.782	23.458	-274.651	-8.09E-13	6.59E-06	-5.63E-07
		-4.782	23.458	-1917.782	-2.70E-13	4.60E-05	-5.63E-07

Mstb. 1 ;449.9
Section forces envelope My, GWSP JE (ELU 8). View "ALL"
- Struktur: Staebe
- Envelop Moment My-min, Scaling 2.00E-04
  min: -1.87E+04 max: 3.26E+03 [kNm]
- Envelop Moment My-max, Scaling 2.00E-04
  min: -7.62E+03 max: 1.28E+04 [kNm]
- Text envelopes [kNm]



ENVOLVENTE: JF 'ELU 9'

Grupo	Espe.	Hipótesis	Factor	Etapa	Título
A	PERM.	1	1.350		Peso Propio
	Y	3	1.350		Carga Muerta Máxima
	Y	20	0.850000		Pretensado
B	MAS	19	0.900000		gradiente
C	MAS	29	1.500		Carro 1 pila excéntrico
D	MAS	4	1.500		Sobrecarga centrada vano 1
E	MAS	5	1.500		Sobrecarga centrada vano 2
F	MAS	6	1.500		Sobrecarga centrada vano 3
ALTERNATIVA PARA ENVOLVENTE:					
G	PERM.	1	1.350		Peso Propio
	Y	3	1.350		Carga Muerta Máxima
	Y	20	0.850000		Pretensado
H	MAS	19	0.900000		gradiente
I	MAS	29	1.500		Carro 1 pila excéntrico
J	MAS	7	1.500		Sobrecarga excéntrica vano 1 (
K	MAS	8	1.500		Sobrecarga excentrica vano 2 (
L	MAS	9	1.500		Sobrecarga excentrica vano 3 (
ALTERNATIVA PARA ENVOLVENTE:					
M	PERM.	1	1.350		Peso Propio
	Y	3	1.350		Carga Muerta Máxima
	Y	20	0.850000		Pretensado
N	MAS	19	0.900000		gradiente
O	MAS	29	1.500		Carro 1 pila excéntrico
P	MAS	10	1.500		Sobrecarga excéntrica vano 1 (
Q	MAS	11	1.500		Sobrecarga excentrica vano 2 (
R	MAS	12	1.500		Sobrecarga excentrica vano 3 (

ENVOLVENTE para < Vz > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
1	0	-24024.4	-9.508	-155.965	623.580	-869.185	-0.227677
		-24024.4	-9.508	859.780	3206.903	-871.986	-0.227677
1	1.050	-24091.4	-9.508	-475.724	623.580	-1206.626	-10.212
		-24091.4	-9.508	469.456	3206.903	-179.869	-10.212
1	2.100	-24168.0	-9.508	-753.482	623.580	-1886.652	-20.196
		-24168.0	-9.508	121.133	3206.903	95.563	-20.196
1	3.150	-24331.4	-9.508	-628.969	623.580	-2662.340	-30.180
		-24331.4	-9.508	175.081	3206.903	201.236	-30.180
1	4.200	-24487.2	-9.508	-497.738	623.580	-3312.093	-40.164
		-24487.2	-9.508	235.747	3206.903	358.745	-40.164
2	0	-24486.9	-8.079	-497.738	449.058	-3295.837	-40.164
		-24486.9	-8.079	235.747	2919.959	451.596	-40.164
2	1.050	-24635.2	-8.079	-360.323	449.058	-3808.667	-48.646
		-24635.2	-8.079	302.613	2919.959	671.773	-48.646
2	2.100	-24766.0	-8.079	-282.691	449.058	-4178.424	-57.127
		-24766.0	-8.079	309.696	2919.959	960.959	-57.127
2	3.150	-24869.4	-8.079	-365.424	449.058	-4560.362	-65.608
		-24869.4	-8.079	156.414	2919.959	1163.898	-65.608
2	4.199	-24973.8	-8.079	-422.705	449.058	-5024.511	-74.090
		-24973.8	-8.079	28.584	2919.959	1210.560	-74.090
3	0	-24973.5	-6.428	-422.705	234.639	-5012.614	-74.090
		-24973.5	-6.428	28.584	2487.105	1304.654	-74.090
3	1.050	-25080.4	-6.428	-447.652	217.902	-2553.494	-80.840
		-25080.4	-6.428	-44.082	1481.815	-177.688	-80.840
3	2.100	-25208.4	-6.428	-360.558	217.902	-3081.798	-87.590
		-25208.4	-6.428	106.986	2503.842	-1784.123	-87.590
3	3.150	-25350.0	-6.428	-77.867	217.902	-3375.045	-94.341
		-25350.0	-6.428	460.244	2503.842	-1549.349	-94.341
3	4.200	-25301.3	-6.428	195.537	217.902	-3281.706	-101.091
		-25301.3	-6.428	804.216	2503.842	-853.887	-101.091
4	0	-25301.2	-4.907	195.538	93.967	-3276.728	-101.091
		-25301.2	-4.907	804.216	2301.249	-777.181	-101.091
4	1.050	-25113.3	-4.907	449.257	93.967	-2879.366	-106.244
		-25113.3	-4.907	1128.493	2301.249	296.315	-106.244
4	2.100	-24891.7	-4.907	421.954	93.967	-2328.342	-111.396
		-24891.7	-4.907	1171.748	2301.249	1597.556	-111.396
4	3.150	-24765.4	-4.907	-366.116	93.967	-2202.752	-116.549
		-24765.4	-4.907	454.236	2301.249	2547.445	-116.549
4	4.200	-24665.9	-4.907	-1400.002	93.967	-3145.732	-121.701
		-24665.9	-4.907	-509.092	2301.249	2502.849	-121.701
5	0	-24665.8	-3.365	-1400.002	345.187	-3138.644	-121.701
		-24665.8	-3.365	-509.092	2369.039	2578.224	-121.701
5	1.050	-24550.5	-3.365	-2429.597	345.187	-5176.176	-125.233
		-24550.5	-3.365	-1468.154	2369.039	1512.817	-125.233
5	1.200	-24532.7	-3.365	-2576.312	345.187	-5556.416	-125.738
		-24532.7	-3.365	-1604.791	2369.039	1277.519	-125.738
5	1.200	-24532.6	-3.365	-2871.048	1151.086	-5277.282	-125.741
		-24532.6	-3.365	-1611.641	813.140	994.691	-125.741
5	2.099	-24418.6	-3.365	-3747.913	1151.086	-8286.308	-128.765
		-24418.6	-3.365	-2428.106	813.140	-855.231	-128.765
5	2.700	-24351.0	-3.365	-4230.517	1151.086	-10708.1	-130.785
		-24351.0	-3.365	-2870.366	813.140	-2472.508	-130.785
5	2.700	-24350.9	-3.365	-4531.163	401.086	-10711.8	-130.788
		-24350.9	-3.365	-2870.955	813.140	-2474.949	-130.788
5	3.149	-24300.2	-3.365	-4875.467	401.086	-12837.8	-132.296
		-24300.2	-3.365	-3185.126	813.140	-3849.818	-132.296
5	4.198	-24173.3	-3.365	-5677.381	401.086	-18418.5	-135.827
		-24173.3	-3.365	-3916.535	813.140	-7619.977	-135.827
5	4.198	-24173.3	-3.365	-5977.701	-348.914	-18420.9	-135.828
		-24173.3	-3.365	-3916.826	813.140	-7621.641	-135.828
6	0	-24151.8	-7.272	4766.019	1380.810	-7583.036	-135.828
		-24151.8	-7.272	6019.584	599.406	-18416.5	-135.828
6	1.350	-23970.0	-7.272	3811.380	1380.810	-1857.118	-145.646
		-23970.0	-7.272	4974.221	599.406	-11059.4	-145.646
6	2.700	-23769.5	-7.272	2869.224	1380.810	2590.251	-155.464
		-23769.5	-7.272	3941.343	599.406	-5103.424	-155.464
6	4.050	-23484.4	-7.272	1581.982	1380.810	5576.774	-165.281
		-23484.4	-7.272	2563.378	599.406	-730.736	-165.281

ENVOLVENTE para < Vz > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
6	5.400	-23190.7	-7.272	453.571	1380.810	6786.634	-175.099
		-23190.7	-7.272	1344.244	599.406	1742.809	-175.099
7	0	-23190.5	-4.275	453.571	1152.339	6841.314	-175.099
		-23190.5	-4.275	1344.244	589.311	1768.469	-175.099
7	1.350	-22979.5	-4.275	-95.516	1152.339	7061.285	-180.870
		-22979.5	-4.275	704.437	589.311	3129.625	-180.870
7	2.700	-22865.6	-4.275	-129.598	1152.339	6861.200	-186.641
		-22865.6	-4.275	579.633	589.311	3948.250	-186.641
7	4.050	-22768.8	-4.275	-50.752	1152.339	6772.246	-192.412
		-22768.8	-4.275	567.759	589.311	4755.531	-192.412
7	5.400	-22662.4	-4.275	24.709	1152.339	6803.030	-198.183
		-22662.4	-4.275	552.499	589.311	5560.076	-198.183
8	0	-22662.2	-1.476	24.709	428.865	6834.814	-198.183
		-22662.2	-1.476	552.499	-83.759	5570.238	-198.183
8	1.350	-22546.8	-1.476	96.142	428.865	6978.929	-200.175
		-22546.8	-1.476	533.222	-83.759	6365.569	-200.175
8	2.700	-22421.9	-1.476	162.974	428.865	7229.015	-202.168
		-22421.9	-1.476	509.343	-83.759	7144.425	-202.168
8	4.050	-22311.0	-1.476	60.090	428.865	7462.807	-204.161
		-22311.0	-1.476	315.749	-83.759	7784.542	-204.161
8	5.399	-22203.8	-1.476	-70.985	526.173	12218.3	-206.153
		-22203.8	-1.476	99.156	-181.066	3440.683	-206.153
9	0	-22203.8	1.522	-70.985	-620.479	12216.2	-206.153
		-22203.8	1.522	99.156	-949.545	3416.358	-206.153
9	1.350	-22310.0	1.522	-290.117	-620.479	11903.7	-204.098
		-22310.0	1.522	-29.246	-949.545	3394.818	-204.098
9	2.700	-22418.5	1.522	-473.127	-620.479	11301.7	-202.044
		-22418.5	1.522	-121.524	-949.545	3206.299	-202.044
9	4.051	-22541.5	1.522	-497.031	-620.479	10573.0	-199.989
		-22541.5	1.522	-54.696	-949.545	3013.585	-199.989
9	5.401	-22656.4	1.522	-516.321	-620.479	9827.191	-197.934
		-22656.4	1.522	16.744	-949.545	2926.214	-197.934
10	0	-22656.5	4.348	-516.321	-1467.538	9784.802	-197.934
		-22656.5	4.348	16.744	-1516.254	2876.155	-197.934
10	1.350	-22762.3	4.348	-531.626	-1467.538	9030.084	-192.065
		-22762.3	4.348	92.148	-1516.254	2902.203	-192.065
10	2.700	-22858.4	4.348	-543.592	-1467.538	8272.558	-186.196
		-22858.4	4.348	170.890	-1516.254	3047.883	-186.196
10	4.049	-22979.8	4.348	-703.850	-1467.538	7493.976	-180.325
		-22979.8	4.348	101.340	-1516.254	3294.949	-180.326
10	5.399	-23189.2	4.348	-1344.405	-1467.538	6134.993	-174.457
		-23189.2	4.348	-448.507	-1516.254	3084.053	-174.457
11	0	-23189.4	7.272	-1344.405	-1651.699	6069.319	-174.457
		-23189.4	7.272	-448.507	-1571.957	3019.032	-174.457
11	1.331	-23485.6	7.272	-2588.902	-1651.699	3600.706	-164.778
		-23485.6	7.272	-1603.558	-1571.957	1802.409	-164.778
11	2.662	-23763.2	7.272	-3933.085	-1651.699	-726.583	-155.099
		-23763.2	7.272	-2858.296	-1571.957	-1153.836	-155.099
11	3.993	-23961.0	7.272	-4951.450	-1651.699	-6577.764	-145.420
		-23961.0	7.272	-3787.217	-1571.957	-5514.919	-145.420
11	5.324	-24140.6	7.272	-5981.920	-1651.699	-13790.8	-135.741
		-24140.6	7.272	-4728.242	-1571.957	-11118.8	-135.741
12	0	-24162.1	3.447	3911.236	-808.379	-7601.006	-135.741
		-24162.1	3.447	5082.518	-863.182	-17399.1	-135.741
12	1.050	-24289.0	3.447	3179.575	-808.379	-3834.304	-132.123
		-24289.0	3.447	4280.309	-863.182	-12439.8	-132.123
12	2.100	-24407.4	3.447	2422.431	-808.379	-845.004	-128.504
		-24407.4	3.447	3452.619	-863.182	-8331.984	-128.504
12	3.149	-24539.2	3.447	1468.672	-808.379	1236.954	-124.886
		-24539.2	3.447	2428.312	-863.182	-5205.556	-124.886
12	4.199	-24654.4	3.447	509.724	-808.379	2303.118	-121.268
		-24654.4	3.447	1398.817	-863.182	-3168.983	-121.268
13	0	-24654.5	4.888	509.724	-737.649	2279.795	-121.268
		-24654.5	4.888	1398.817	-627.365	-3191.469	-121.268
13	1.050	-24753.7	4.888	-453.347	-737.649	2325.150	-116.135
		-24753.7	4.888	365.184	-627.365	-2249.593	-116.135
13	2.100	-24880.1	4.888	-1169.590	-737.649	1376.539	-111.002
		-24880.1	4.888	-421.620	-627.365	-2375.776	-111.002

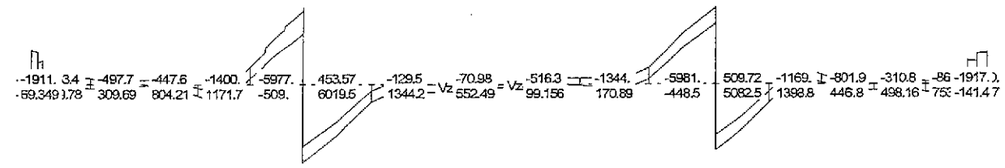
ENVOLVENTE para < Vz > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
13	3.150	-25101.8	4.888	-1125.955	-737.649	77.624	-105.869
		-25101.8	4.888	-448.547	-627.365	-2926.352	-105.869
13	4.200	-25290.1	4.888	-801.975	-737.649	-993.435	-100.736
		-25290.1	4.888	-195.128	-627.365	-3323.164	-100.736
14	0	-25290.3	6.467	-801.975	-941.660	-1021.271	-100.736
		-25290.3	6.467	-195.128	-754.224	-3346.065	-100.736
14	1.050	-25339.3	6.467	-458.352	-941.660	-1714.517	-93.945
		-25339.3	6.467	77.938	-754.224	-3439.187	-93.945
14	2.100	-25198.3	6.467	-105.441	-941.660	-1947.634	-87.155
		-25198.3	6.467	360.292	-754.224	-3146.262	-87.155
14	3.150	-25070.8	6.467	41.770	80.729	-362.929	-80.364
		-25070.8	6.467	446.802	-754.224	-2618.887	-80.364
14	4.200	-24964.3	6.467	-29.411	-921.861	1129.586	-73.574
		-24964.3	6.467	423.405	-774.023	-5065.931	-73.574
15	0	-24964.5	7.990	-29.411	-1316.495	1093.641	-73.574
		-24964.5	7.990	423.405	-969.797	-5093.935	-73.574
15	1.050	-24860.0	7.990	-157.450	-1316.495	1046.023	-65.183
		-24860.0	7.990	365.940	-969.797	-4628.941	-65.183
15	2.100	-24756.3	7.990	-310.886	-1316.495	841.978	-56.791
		-24756.3	7.990	283.078	-969.797	-4246.257	-56.791
15	3.151	-24624.8	7.990	-303.603	-1316.495	551.860	-48.400
		-24624.8	7.990	360.936	-969.797	-3875.529	-48.400
15	4.201	-24475.6	7.990	-236.949	-1316.495	330.699	-40.008
		-24475.6	7.990	498.164	-969.797	-3361.726	-40.008
16	0	-24475.9	9.581	-236.949	-1632.287	280.960	-40.008
		-24475.9	9.581	498.164	-1161.258	-3397.671	-40.008
16	1.049	-24318.9	9.581	-176.619	-1632.287	122.470	-29.953
		-24318.9	9.581	629.020	-1161.258	-2747.655	-29.953
16	2.099	-24153.9	9.581	-123.071	-1632.287	15.400	-19.898
		-24153.9	9.581	753.094	-1161.258	-1972.200	-19.898
16	3.148	-24073.6	9.581	-472.060	-1632.287	-261.845	-9.842
		-24073.6	9.581	474.631	-1161.258	-1292.904	-9.842
16	4.198	-24002.5	9.581	-862.532	-1632.287	-956.042	0.212903
		-24002.5	9.581	154.685	-1161.258	-956.541	0.212903
17	0	4.757	23.560	-2574.226	4.97E-14	6362.656	-56.500
		4.757	23.560	-707.709	-5.64E-15	1886.449	-56.500
17	0.600	4.757	23.560	-2613.683	4.97E-14	4807.476	-42.375
		4.757	23.560	-747.166	-5.64E-15	1450.321	-42.375
17	1.199	4.757	23.560	-2653.141	4.97E-14	3228.640	-28.250
		4.757	23.560	-786.623	-5.64E-15	990.537	-28.250
17	1.799	4.757	23.560	-2692.598	4.97E-14	1626.148	-14.125
		4.757	23.560	-826.081	-5.64E-15	507.096	-14.125
17	2.398	4.757	23.560	-2732.055	4.97E-14	6.55E-05	-5.65E-07
		4.757	23.560	-865.538	-5.64E-15	2.08E-05	-5.65E-07
18	0	-3.820	-23.637	-1753.920	1.17E-12	4398.977	56.728
		-3.820	-23.637	-69.349	1.07E-12	23.104	56.728
18	0.600	-3.820	-23.637	-1793.408	1.17E-12	3334.772	42.546
		-3.820	-23.637	29.861	1.07E-12	52.867	42.546
18	1.200	-3.820	-23.637	-1832.896	1.17E-12	2246.874	28.364
		-3.820	-23.637	-9.627	1.07E-12	58.938	28.364
18	1.800	-3.820	-23.637	-1872.384	1.17E-12	1135.283	14.182
		-3.820	-23.637	-49.114	1.07E-12	41.315	14.182
18	2.400	-3.820	-23.637	-1911.871	1.17E-12	4.59E-05	5.67E-07
		-3.820	-23.637	-88.602	1.07E-12	2.13E-06	5.67E-07
19	0	4.793	-23.548	-2352.692	1.41E-12	5835.889	56.515
		4.793	-23.548	-712.719	6.99E-13	1900.026	56.515
19	0.600	4.793	-23.548	-2392.179	1.41E-12	4412.454	42.386
		4.793	-23.548	-752.205	6.99E-13	1460.557	42.386
19	1.200	4.793	-23.548	-2431.666	1.41E-12	2965.328	28.257
		4.793	-23.548	-791.692	6.99E-13	997.396	28.257
19	1.800	4.793	-23.548	-2471.153	1.41E-12	1494.510	14.129
		4.793	-23.548	-831.179	6.99E-13	510.544	14.129
19	2.400	4.793	-23.548	-2510.639	1.41E-12	6.03E-05	5.65E-07
		4.793	-23.548	-870.666	6.99E-13	2.09E-05	5.65E-07
20	0	-4.782	23.458	-1759.825	-2.70E-13	4413.326	-56.302
		-4.782	23.458	-141.447	-8.21E-13	529.044	-56.302
20	0.600	-4.782	23.458	-1799.314	-2.70E-13	3345.536	-42.226
		-4.782	23.458	-180.936	-8.21E-13	432.325	-42.226

ENVOLVENTE para < Vz > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
20	1.200	-4.782	23.458	-1838.803	-2.70E-13	2254.052	-28.151
		-4.782	23.458	-220.425	-8.21E-13	311.911	-28.151
20	1.800	-4.782	23.458	-1878.293	-2.70E-13	1138.873	-14.075
		-4.782	23.458	-259.915	-8.21E-13	167.803	-14.075
20	2.400	-4.782	23.458	-1917.782	-2.70E-13	4.60E-05	-5.63E-07
		-4.782	23.458	-299.404	-8.21E-13	7.19E-06	-5.63E-07

Mstb. 1 :449.9
Section forces envelope Vz, GWSP JF (ELU 9), View "ALL"
- Struktur: Staebe
- Envelop Shear force Vz-min, Scaling 1.00E-03
  min: -5.98E+03 max: 4.77E+03 [kN]
- Envelop Shear force Vz-max, Scaling 1.00E-03
  min: -4.73E+03 max: 6.02E+03 [kN]
- Text envelopes [kN]



ENVOLVENTE para < T > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
1	0	-24024.4	-9.508	330.283	-2509.087	-784.160	-0.227677
		-24024.4	-9.508	373.531	6339.570	-957.012	-0.227677
1	1.050	-24091.4	-9.508	-24.758	-2410.296	-629.528	-10.212
		-24091.4	-9.508	18.490	6240.779	-756.967	-10.212
1	2.100	-24168.0	-9.508	-337.799	-2311.505	-854.532	-20.196
		-24168.0	-9.508	-294.551	6141.988	-936.557	-20.196
1	3.150	-24331.4	-9.508	-248.568	-2212.714	-1212.246	-30.180
		-24331.4	-9.508	-205.320	6043.197	-1248.858	-30.180
1	4.200	-24487.2	-9.508	-152.620	-2113.923	-1481.075	-40.164
		-24487.2	-9.508	-109.372	5944.406	-1472.273	-40.164
2	0	-24486.9	-8.079	-152.620	-2342.673	-1548.613	-40.164
		-24486.9	-8.079	-109.372	5711.689	-1295.628	-40.164
2	1.050	-24635.2	-8.079	-50.479	-2243.904	-1717.641	-48.646
		-24635.2	-8.079	-7.231	5612.921	-1419.253	-48.646
2	2.100	-24766.0	-8.079	-8.121	-2145.135	-1780.628	-57.127
		-24766.0	-8.079	35.127	5514.152	-1436.836	-57.127
2	3.150	-24869.4	-8.079	-126.129	-2046.367	-1892.830	-65.608
		-24869.4	-8.079	-82.881	5415.384	-1503.634	-65.608
2	4.199	-24973.8	-8.079	-218.684	-1947.598	-2124.275	-74.090
		-24973.8	-8.079	-175.436	5316.615	-1689.676	-74.090
3	0	-24973.5	-6.428	-218.684	-2261.475	-2197.521	-74.090
		-24973.5	-6.428	-175.436	4983.219	-1510.439	-74.090
3	1.050	-25080.4	-6.428	-270.787	-2162.681	-2497.864	-80.840
		-25080.4	-6.428	-227.539	4884.425	-1765.367	-80.840
3	2.100	-25208.4	-6.428	-148.410	-2063.888	-2821.916	-87.590
		-25208.4	-6.428	-105.162	4785.631	-2044.005	-87.590
3	3.150	-25350.0	-6.428	169.564	-1965.094	-2873.860	-94.341
		-25350.0	-6.428	212.812	4686.837	-2050.534	-94.341
3	4.200	-25301.3	-6.428	478.253	-1866.300	-2502.167	-101.091

ENVOLVENTE para < T > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
		-25301.3	-6.428	521.501	4588.044	-1633.426	-101.091
4	0	-25301.2	-4.907	478.253	-2014.055	-2564.111	-101.091
		-25301.2	-4.907	521.501	4409.271	-1489.797	-101.091
4	1.050	-25113.3	-4.907	767.251	-1915.274	-1851.387	-106.244
		-25113.3	-4.907	810.499	4310.490	-731.664	-106.244
4	2.100	-24891.7	-4.907	775.227	-1816.493	-947.959	-111.396
		-24891.7	-4.907	818.475	4211.709	217.173	-111.396
4	3.150	-24765.4	-4.907	22.436	-1717.712	-432.924	-116.549
		-24765.4	-4.907	65.684	4112.928	777.617	-116.549
4	4.200	-24665.9	-4.907	-976.171	-1618.932	-949.416	-121.701
		-24665.9	-4.907	-932.923	4014.148	306.534	-121.701
5	0	-24665.8	-3.365	-976.171	-1437.695	-998.748	-121.701
		-24665.8	-3.365	-932.923	4151.921	438.328	-121.701
5	1.050	-24550.5	-3.365	-1970.500	-1338.947	-2572.914	-125.233
		-24550.5	-3.365	-1623.723	4145.000	-1089.086	-125.233
5	1.200	-24532.7	-3.365	-2112.175	-1324.838	-2883.927	-125.738
		-24532.7	-3.365	-1760.360	4145.000	-1347.714	-125.738
5	1.200	-24532.6	-3.365	-2112.968	-1324.759	-2885.728	-125.741
		-24532.6	-3.365	-2061.125	3395.000	-1349.347	-125.741
5	2.099	-24418.6	-3.365	-2655.301	-1296.434	-5410.835	-128.765
		-24418.6	-3.365	-2877.590	3395.000	-3603.267	-128.765
5	2.700	-24351.0	-3.365	-3097.562	-1296.434	-7164.511	-130.785
		-24351.0	-3.365	-3319.850	3395.000	-5490.395	-130.785
5	2.700	-24350.9	-3.365	-3098.151	-1296.434	-7167.143	-130.788
		-24350.9	-3.365	-3620.439	2645.000	-5493.339	-130.788
5	3.149	-24300.2	-3.365	-3412.322	-1296.434	-8643.889	-132.296
		-24300.2	-3.365	-3934.610	2645.000	-7204.288	-132.296
5	4.198	-24173.3	-3.365	-4143.730	-1296.434	-12652.4	-135.827
		-24173.3	-3.365	-4666.019	2645.000	-11760.8	-135.827
5	4.198	-24173.3	-3.365	-5037.937	-1990.536	-13703.6	-135.828
		-24173.3	-3.365	-4072.396	2589.101	-10713.4	-135.828
6	0	-24151.8	-7.272	5387.954	-1207.161	-13759.8	-135.828
		-24151.8	-7.272	5331.739	3264.444	-10610.4	-135.828
6	1.350	-23970.0	-7.272	4387.953	-1080.149	-7224.885	-145.646
		-23970.0	-7.272	4331.738	3137.432	-4151.363	-145.646
6	2.700	-23769.5	-7.272	3400.435	-953.137	-2029.737	-155.464
		-23769.5	-7.272	3344.221	3010.420	967.893	-155.464
6	4.050	-23484.4	-7.272	2067.832	-826.125	1643.324	-165.281
		-23484.4	-7.272	2011.617	2883.408	4565.062	-165.281
6	5.400	-23190.7	-7.272	894.060	-699.113	3478.482	-175.099
		-23190.7	-7.272	837.845	2756.396	6324.328	-175.099
7	0	-23190.5	-4.275	894.060	-782.895	3446.491	-175.099
		-23190.5	-4.275	837.845	2546.593	6438.797	-175.099
7	1.350	-22979.5	-4.275	299.613	-655.886	4230.510	-180.870
		-22979.5	-4.275	243.398	2419.584	7146.925	-180.870
7	2.700	-22865.6	-4.275	220.170	-528.877	4533.236	-186.641
		-22865.6	-4.275	163.955	2292.574	7373.760	-186.641
7	4.050	-22768.8	-4.275	253.656	-401.867	4885.855	-192.412
		-22768.8	-4.275	197.441	2165.565	7650.489	-192.412
7	5.400	-22662.4	-4.275	283.756	-274.858	5296.975	-198.183
		-22662.4	-4.275	227.542	2038.556	7985.718	-198.183
8	0	-22662.2	-1.476	283.756	-936.657	5272.623	-198.183
		-22662.2	-1.476	227.542	1266.839	8052.160	-198.183
8	1.350	-22546.8	-1.476	309.834	-809.663	5735.802	-200.175
		-22546.8	-1.476	253.620	1139.845	8439.458	-200.175
8	2.700	-22421.9	-1.476	331.310	-682.668	6243.729	-202.168
		-22421.9	-1.476	275.096	1012.850	8871.504	-202.168
8	4.050	-22311.0	-1.476	183.071	-555.674	6674.140	-204.161
		-22311.0	-1.476	126.857	885.856	9226.033	-204.161
8	5.399	-22203.8	-1.476	10.205	-493.917	3931.732	-206.153
		-22203.8	-1.476	19.838	826.868	10947.2	-206.153
9	0	-22203.8	1.522	9.118	-1424.102	10379.7	-206.153
		-22203.8	1.522	20.924	-124.518	4473.115	-206.153
9	1.350	-22310.0	1.522	-99.939	-1498.377	8698.224	-204.098
		-22310.0	1.522	-153.810	-58.837	7255.762	-204.098
9	2.700	-22418.5	1.522	-237.583	-1625.401	8383.631	-202.044
		-22418.5	1.522	-291.453	68.187	6868.436	-202.044
9	4.051	-22541.5	1.522	-216.121	-1752.424	8003.592	-199.989

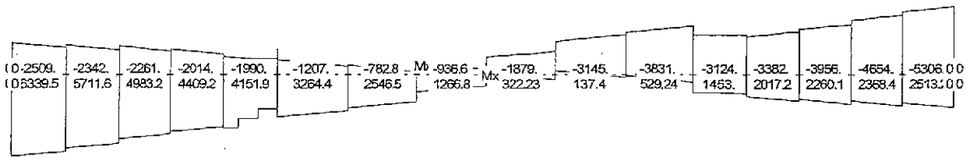
ENVOLVENTE para < T > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
		-22541.5	1.522	-269.991	195.210	6415.662	-199.989
9	5.401	-22656.4	1.522	-190.046	-1879.448	7667.644	-197.934
		-22656.4	1.522	-243.916	322.234	6006.981	-197.934
10	0	-22656.5	4.348	-190.046	-2637.824	7575.939	-197.934
		-22656.5	4.348	-243.916	-370.557	6006.000	-197.934
10	1.350	-22762.3	4.348	-159.997	-2764.816	7292.245	-192.065
		-22762.3	4.348	-213.867	-243.566	5649.590	-192.065
10	2.700	-22858.4	4.348	-126.609	-2891.807	7066.964	-186.196
		-22858.4	4.348	-180.479	-116.574	5351.594	-186.196
10	4.049	-22979.8	4.348	-241.513	-3018.799	6881.848	-180.326
		-22979.8	4.348	-295.383	10.418	5093.762	-180.326
10	5.399	-23189.2	4.348	-836.714	-3145.791	6177.550	-174.457
		-23189.2	4.348	-890.584	137.409	4316.749	-174.457
11	0	-23189.4	7.272	-836.714	-3330.256	6041.200	-174.457
		-23189.4	7.272	-890.584	28.356	4320.239	-174.457
11	1.331	-23485.6	7.272	-2036.488	-3455.478	4278.100	-164.778
		-23485.6	7.272	-2090.358	153.579	2485.436	-164.778
11	2.662	-23763.2	7.272	-3335.948	-3580.701	715.853	-155.099
		-23763.2	7.272	-3389.819	278.802	-1148.515	-155.099
11	3.993	-23961.0	7.272	-4309.591	-3705.924	-4310.761	-145.420
		-23961.0	7.272	-4363.462	404.025	-6246.831	-145.420
11	5.324	-24140.6	7.272	-5295.339	-3831.147	-10639.7	-135.741
		-24140.6	7.272	-5349.209	529.248	-12647.5	-135.741
12	0	-24162.1	3.447	4075.502	-3120.633	-10768.2	-135.741
		-24162.1	3.447	4135.687	1310.951	-12613.5	-135.741
12	1.050	-24289.0	3.447	3343.840	-3120.633	-6829.028	-132.123
		-24289.0	3.447	3404.026	1310.951	-8611.179	-132.123
12	2.100	-24407.4	3.447	2586.697	-3120.633	-3667.279	-128.504
		-24407.4	3.447	2646.882	1310.951	-5386.247	-128.504
12	3.149	-24539.2	3.447	1632.938	-3120.633	-1412.874	-124.886
		-24539.2	3.447	1959.290	1354.256	-2553.997	-124.886
12	4.199	-24654.4	3.447	943.472	-3124.584	125.428	-121.268
		-24654.4	3.447	965.068	1453.022	-991.293	-121.268
13	0	-24654.5	4.888	943.472	-2987.111	33.230	-121.268
		-24654.5	4.888	965.068	1622.097	-944.903	-121.268
13	1.050	-24753.7	4.888	-54.879	-3085.897	515.507	-116.135
		-24753.7	4.888	-33.284	1720.883	-439.950	-116.135
13	2.100	-24880.1	4.888	-806.402	-3184.683	-33.228	-111.002
		-24880.1	4.888	-784.807	1819.669	-966.009	-111.002
13	3.150	-25101.8	4.888	-798.049	-3283.469	-969.311	-105.869
		-25101.8	4.888	-776.453	1918.455	-1879.417	-105.869
13	4.200	-25290.1	4.888	-509.349	-3382.255	-1714.584	-100.736
		-25290.1	4.888	-487.753	2017.241	-2602.014	-100.736
14	0	-25290.3	6.467	-509.349	-3560.912	-1829.672	-100.736
		-25290.3	6.467	-487.753	1865.029	-2537.663	-100.736
14	1.050	-25339.3	6.467	-201.004	-3659.692	-2234.194	-93.945
		-25339.3	6.467	-179.409	1963.809	-2919.510	-93.945
14	2.100	-25198.3	6.467	116.627	-3758.473	-2215.627	-87.155
		-25198.3	6.467	138.223	2062.589	-2878.269	-87.155
14	3.150	-25070.8	6.467	238.416	-3857.253	-1925.569	-80.364
		-25070.8	6.467	260.012	2161.369	-2565.537	-80.364
14	4.200	-24964.3	6.467	186.199	-3956.033	-1659.526	-73.574
		-24964.3	6.467	207.794	2260.149	-2276.819	-73.574
15	0	-24964.5	7.990	186.199	-4259.545	-1791.459	-73.574
		-24964.5	7.990	207.794	1973.253	-2208.835	-73.574
15	1.050	-24860.0	7.990	93.447	-4358.349	-1594.111	-65.183
		-24860.0	7.990	115.043	2072.057	-1988.807	-65.183
15	2.100	-24756.3	7.990	-24.702	-4457.153	-1516.131	-56.791
		-24756.3	7.990	-3.106	2170.861	-1888.148	-56.791
15	3.151	-24624.8	7.990	17.869	-4555.956	-1487.166	-48.400
		-24624.8	7.990	39.464	2269.665	-1836.503	-48.400
15	4.201	-24475.6	7.990	119.810	-4654.760	-1352.185	-40.008
		-24475.6	7.990	141.405	2368.469	-1678.842	-40.008
16	0	-24475.9	9.581	119.810	-4911.898	-1513.551	-40.008
		-24475.9	9.581	141.405	2118.352	-1603.161	-40.008
16	1.049	-24318.9	9.581	215.403	-5010.635	-1279.120	-29.953
		-24318.9	9.581	236.998	2217.089	-1346.065	-29.953
16	2.099	-24153.9	9.581	304.214	-5109.371	-956.259	-19.898

ENVOLVENTE para < T > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
		-24153.9	9.581	325.810	2315.826	-1000.540	-19.898
16	3.148	-24073.6	9.581	-9.513	-5208.108	-766.566	-9.842
		-24073.6	9.581	12.083	2414.563	-788.183	-9.842
16	4.198	-24002.5	9.581	-364.721	-5306.845	-956.815	0.212903
		-24002.5	9.581	-343.126	2513.299	-955.768	0.212903
17	0	4.757	23.560	-1680.480	-1.60E-13	4219.310	-56.500
		4.757	23.560	-1793.069	3.64E-13	4489.315	-56.500
17	0.600	4.757	23.560	-1719.937	-1.60E-13	3199.967	-42.375
		4.757	23.560	-1832.526	3.64E-13	3402.470	-42.375
17	1.199	4.757	23.560	-1759.395	-1.60E-13	2156.967	-28.250
		4.757	23.560	-1871.983	3.64E-13	2291.970	-28.250
17	1.799	4.757	23.560	-1798.852	-1.60E-13	1090.312	-14.125
		4.757	23.560	-1911.440	3.64E-13	1157.813	-14.125
17	2.398	4.757	23.560	-1838.309	-1.60E-13	4.41E-05	-5.65E-07
		4.757	23.560	-1950.897	3.64E-13	4.68E-05	-5.65E-07
18	0	-3.820	-23.637	-1081.675	8.78E-13	2785.579	56.728
		-3.820	-23.637	-206.941	1.31E-12	686.203	56.728
18	0.600	-3.820	-23.637	-1121.163	8.78E-13	2124.724	42.546
		-3.820	-23.637	-246.429	1.31E-12	550.192	42.546
18	1.200	-3.820	-23.637	-1160.651	8.78E-13	1440.175	28.364
		-3.820	-23.637	-285.916	1.31E-12	390.487	28.364
18	1.800	-3.820	-23.637	-1200.139	8.78E-13	731.934	14.182
		-3.820	-23.637	-325.404	1.31E-12	207.090	14.182
18	2.400	-3.820	-23.637	-1239.626	8.78E-13	2.98E-05	5.67E-07
		-3.820	-23.637	-364.892	1.31E-12	8.76E-06	5.67E-07
19	0	4.793	-23.548	-756.749	6.97E-13	2005.696	56.515
		4.793	-23.548	-2352.692	1.41E-12	5835.889	56.515
19	0.600	4.793	-23.548	-796.236	6.97E-13	1539.810	42.386
		4.793	-23.548	-2392.179	1.41E-12	4412.454	42.386
19	1.200	4.793	-23.548	-835.722	6.97E-13	1050.231	28.257
		4.793	-23.548	-2431.666	1.41E-12	2965.328	28.257
19	1.800	4.793	-23.548	-875.209	6.97E-13	536.962	14.129
		4.793	-23.548	-2471.153	1.41E-12	1494.510	14.129
19	2.400	4.793	-23.548	-914.696	6.97E-13	2.20E-05	5.65E-07
		4.793	-23.548	-2510.639	1.41E-12	6.03E-05	5.65E-07
20	0	-4.782	23.458	-1074.791	-8.93E-13	2769.170	-56.302
		-4.782	23.458	-1309.024	-2.48E-13	3331.354	-56.302
20	0.600	-4.782	23.458	-1114.280	-8.93E-13	2112.419	-42.226
		-4.782	23.458	-1348.513	-2.48E-13	2534.058	-42.226
20	1.200	-4.782	23.458	-1153.769	-8.93E-13	1431.974	-28.151
		-4.782	23.458	-1388.002	-2.48E-13	1713.066	-28.151
20	1.800	-4.782	23.458	-1193.258	-8.93E-13	727.834	-14.075
		-4.782	23.458	-1427.491	-2.48E-13	868.381	-14.075
20	2.400	-4.782	23.458	-1232.748	-8.93E-13	2.96E-05	-5.63E-07
		-4.782	23.458	-1466.981	-2.48E-13	3.52E-05	-5.63E-07

Mstb. 1 :449.9
Section forces envelope T, GWSP JF (ELU 9), View "ALL"
- Struktur: Staebe
- Envelop Torsion.moment Mx-min, Scaling 1.00E-03
  min: -5.31E+03 max: 8.78E-13 [kNm]
- Envelop Torsion.moment Mx-max, Scaling 1.00E-03
  min: -3.71E+02 max: 6.34E+03 [kNm]
- Text envelopes [kNm]



ENVOLVENTE para < My > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
1	0	-24024.4	-9.508	373.531	6339.570	-957.012	-0.227677
		-24024.4	-9.508	330.283	-2509.087	-784.160	-0.227677
1	1.050	-24091.4	-9.508	-469.639	2196.926	-1231.047	-10.212
		-24091.4	-9.508	463.371	1633.556	-155.448	-10.212
1	2.100	-24168.0	-9.508	-747.397	2196.926	-1904.683	-20.196
		-24168.0	-9.508	115.048	1633.556	113.595	-20.196
1	3.150	-24331.4	-9.508	-622.884	2196.926	-2673.982	-30.180
		-24331.4	-9.508	168.996	1633.556	212.877	-30.180
1	4.200	-24487.2	-9.508	-491.653	2196.926	-3317.345	-40.164
		-24487.2	-9.508	229.662	1633.556	363.997	-40.164
2	0	-24486.9	-8.079	-497.738	449.058	-3295.837	-40.164
		-24486.9	-8.079	235.747	2919.959	451.596	-40.164
2	1.050	-24635.2	-8.079	-360.323	449.058	-3808.667	-48.646
		-24635.2	-8.079	302.613	2919.959	671.773	-48.646
2	2.100	-24766.0	-8.079	-282.691	449.058	-4178.424	-57.127
		-24766.0	-8.079	309.696	2919.959	960.959	-57.127
2	3.150	-24869.4	-8.079	-365.424	449.058	-4560.362	-65.608
		-24869.4	-8.079	156.414	2919.959	1163.898	-65.608
2	4.199	-24973.8	-8.079	-422.705	449.058	-5024.511	-74.090
		-24973.8	-8.079	28.584	2919.959	1210.560	-74.090
3	0	-24973.5	-6.428	-422.705	234.639	-5012.614	-74.090
		-24973.5	-6.428	28.584	2487.105	1304.654	-74.090
3	1.050	-25080.4	-6.428	-439.524	234.639	-5508.674	-80.840
		-25080.4	-6.428	-58.802	2487.105	1245.442	-80.840
3	2.100	-25208.4	-6.428	-281.864	234.639	-5991.392	-87.590
		-25208.4	-6.428	28.291	2487.105	1125.471	-87.590
3	3.150	-25350.0	-6.428	71.394	234.639	-6164.950	-94.341
		-25350.0	-6.428	310.983	2487.105	1240.556	-94.341
3	4.200	-25301.3	-6.428	415.366	234.639	-5877.820	-101.091
		-25301.3	-6.428	584.387	2487.105	1742.227	-101.091
4	0	-25301.2	-4.907	415.366	193.560	-5870.985	-101.091
		-25301.2	-4.907	584.387	2201.655	1817.076	-101.091
4	1.050	-25113.3	-4.907	739.643	193.560	-5205.768	-106.244
		-25113.3	-4.907	838.107	2201.655	2622.718	-106.244
4	2.100	-24891.7	-4.907	782.898	193.560	-4312.807	-111.396
		-24891.7	-4.907	810.804	2201.655	3582.021	-111.396
4	3.150	-24765.4	-4.907	65.386	193.560	-3771.197	-116.549
		-24765.4	-4.907	22.734	2201.655	4115.889	-116.549
4	4.200	-24665.9	-4.907	-897.942	193.560	-4224.072	-121.701
		-24665.9	-4.907	-1011.152	2201.655	3581.189	-121.701
5	0	-24665.8	-3.365	-897.942	479.527	-4213.209	-121.701
		-24665.8	-3.365	-1011.152	2234.699	3652.789	-121.701
5	1.050	-24550.5	-3.365	-1857.004	479.527	-5686.757	-125.233
		-24550.5	-3.365	-2040.747	2234.699	2023.398	-125.233
5	1.200	-24532.7	-3.365	-1993.641	479.527	-5980.371	-125.738
		-24532.7	-3.365	-2187.462	2234.699	1701.473	-125.738
5	1.200	-24532.6	-3.365	-1994.405	479.527	-5982.073	-125.741
		-24532.6	-3.365	-2488.283	1484.699	1699.482	-125.741
5	2.099	-24418.6	-3.365	-3453.998	345.187	-8303.462	-128.765
		-24418.6	-3.365	-3032.928	1421.391	-780.109	-128.765
5	2.700	-24351.0	-3.365	-4230.517	1151.086	-10708.1	-130.785
		-24351.0	-3.365	-2870.366	813.140	-2472.508	-130.785
5	2.700	-24350.9	-3.365	-4531.163	401.086	-10711.8	-130.788
		-24350.9	-3.365	-2870.955	813.140	-2474.949	-130.788
5	3.149	-24300.2	-3.365	-4875.467	401.086	-12837.8	-132.296
		-24300.2	-3.365	-3185.126	813.140	-3849.818	-132.296
5	4.198	-24173.3	-3.365	-5677.381	401.086	-18418.5	-135.827
		-24173.3	-3.365	-3916.535	813.140	-7619.977	-135.827
5	4.198	-24173.3	-3.365	-5977.701	-348.914	-18420.9	-135.828
		-24173.3	-3.365	-3916.826	813.140	-7621.641	-135.828
6	0	-24151.8	-7.272	6019.584	599.406	-18416.5	-135.828
		-24151.8	-7.272	4766.019	1380.810	-7583.036	-135.828
6	1.350	-23970.0	-7.272	4974.221	599.406	-11059.4	-145.646
		-23970.0	-7.272	3811.380	1380.810	-1857.118	-145.646
6	2.700	-23769.5	-7.272	3941.343	599.406	-5103.424	-155.464
		-23769.5	-7.272	2869.224	1380.810	2590.251	-155.464
6	4.050	-23484.4	-7.272	2132.541	1262.555	-858.763	-165.281
		-23484.4	-7.272	2031.812	198.577	6098.686	-165.281

ENVOLVENTE para < My > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
6	5.400	-23190.7	-7.272	621.116	318.412	960.220	-175.099
		-23190.7	-7.272	858.040	325.589	7885.215	-175.099
7	0	-23190.5	-4.275	621.115	342.349	974.483	-175.099
		-23190.5	-4.275	858.039	50.695	7893.337	-175.099
7	1.350	-22979.5	-4.275	72.029	342.349	1420.642	-180.870
		-22979.5	-4.275	536.892	1399.302	8770.268	-180.870
7	2.700	-22865.6	-4.275	-27.668	296.701	1414.064	-186.641
		-22865.6	-4.275	477.703	1444.949	9395.386	-186.641
7	4.050	-22768.8	-4.275	51.179	296.701	1462.718	-192.412
		-22768.8	-4.275	465.828	1444.949	10065.1	-192.412
7	5.400	-22662.4	-4.275	126.640	296.701	1631.109	-198.183
		-22662.4	-4.275	450.568	1444.949	10732.0	-198.183
8	0	-22662.2	-1.476	126.640	-218.244	1632.686	-198.183
		-22662.2	-1.476	450.568	563.351	10772.4	-198.183
8	1.350	-22546.8	-1.476	198.073	-218.244	1914.392	-200.175
		-22546.8	-1.476	431.291	563.351	11430.1	-200.175
8	2.700	-22421.9	-1.476	264.904	-218.244	2302.069	-202.168
		-22421.9	-1.476	407.412	563.351	12071.4	-202.168
8	4.050	-22311.0	-1.476	162.020	-218.244	2673.452	-204.161
		-22311.0	-1.476	213.818	563.351	12573.9	-204.161
8	5.399	-22203.8	-1.476	33.542	-218.244	2874.899	-206.153
		-22203.8	-1.476	-5.370	563.351	12784.0	-206.153
9	0	-22203.8	1.522	33.542	-962.354	2849.499	-206.153
		-22203.8	1.522	-5.370	-607.669	12783.1	-206.153
9	1.350	-22310.0	1.522	-94.860	-962.354	2739.368	-204.098
		-22310.0	1.522	-224.503	-607.669	12559.2	-204.098
9	2.700	-22418.5	1.522	-187.138	-962.354	2462.259	-202.044
		-22418.5	1.522	-407.512	-607.669	12045.8	-202.044
9	4.051	-22541.5	1.522	-120.311	-962.354	2180.954	-199.989
		-22541.5	1.522	-431.416	-607.669	11405.7	-199.989
9	5.401	-22656.4	1.522	-48.870	-962.354	2004.993	-197.934
		-22656.4	1.522	-450.707	-607.669	10748.4	-197.934
10	0	-22656.5	4.348	-48.870	-1491.665	1955.174	-197.934
		-22656.5	4.348	-450.707	-1492.127	10705.8	-197.934
10	1.350	-22762.3	4.348	26.534	-1491.665	1892.653	-192.065
		-22762.3	4.348	-466.012	-1492.127	10039.6	-192.065
10	2.700	-22858.4	4.348	105.276	-1491.665	1949.766	-186.196
		-22858.4	4.348	-477.978	-1492.127	9370.675	-186.196
10	4.049	-22979.8	4.348	-30.184	-1539.185	2046.336	-180.326
		-22979.8	4.348	-572.326	-1444.607	8742.589	-180.326
10	5.399	-23189.2	4.348	-580.031	-1539.185	1657.905	-174.457
		-23189.2	4.348	-890.704	-85.884	7853.728	-174.457
11	0	-23189.4	7.272	-580.031	-1534.841	1593.183	-174.457
		-23189.4	7.272	-890.704	-343.612	7844.685	-174.457
11	1.331	-23485.6	7.272	-2121.272	-2487.190	-222.199	-164.778
		-23485.6	7.272	-2090.477	-218.389	6009.723	-164.778
11	2.662	-23763.2	7.272	-3897.065	-1820.176	-4381.170	-155.099
		-23763.2	7.272	-2894.317	-1403.480	2500.751	-155.099
11	3.993	-23961.0	7.272	-4915.430	-1820.176	-10184.4	-145.420
		-23961.0	7.272	-3823.237	-1403.480	-1908.276	-145.420
11	5.324	-24140.6	7.272	-5945.900	-1820.176	-17349.5	-135.741
		-24140.6	7.272	-4764.262	-1403.480	-7560.140	-135.741
12	0	-24162.1	3.447	5082.518	-863.182	-17399.1	-135.741
		-24162.1	3.447	3911.236	-808.379	-7601.006	-135.741
12	1.050	-24289.0	3.447	4280.309	-863.182	-12439.8	-132.123
		-24289.0	3.447	3179.575	-808.379	-3834.304	-132.123
12	2.100	-24407.4	3.447	3452.619	-863.182	-8331.984	-128.504
		-24407.4	3.447	2730.081	-610.464	-779.180	-128.504
12	3.149	-24539.2	3.447	1857.389	-1001.302	-5718.487	-124.886
		-24539.2	3.447	2039.595	-670.259	1749.884	-124.886
12	4.199	-24654.4	3.447	898.441	-1001.302	-4244.244	-121.268
		-24654.4	3.447	1010.100	-670.259	3378.378	-121.268
13	0	-24654.5	4.888	898.441	-732.988	-4270.407	-121.268
		-24654.5	4.888	1010.100	-632.025	3358.733	-121.268
13	1.050	-24753.7	4.888	-64.631	-732.988	-3816.890	-116.135
		-24753.7	4.888	-23.533	-632.025	3892.447	-116.135
13	2.100	-24880.1	4.888	-780.873	-732.988	-4357.341	-111.002
		-24880.1	4.888	-810.337	-632.025	3358.104	-111.002

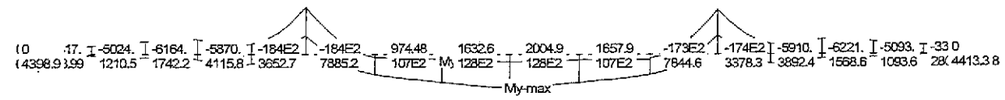
ENVOLVENTE para < My > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
13	3.150	-25101.8	4.888	-737.239	-732.988	-5248.095	-105.869
		-25101.8	4.888	-837.264	-632.025	2399.368	-105.869
13	4.200	-25290.1	4.888	-413.258	-732.988	-5910.994	-100.736
		-25290.1	4.888	-583.844	-632.025	1594.395	-100.736
14	0	-25290.3	6.467	-413.258	-774.023	-5935.974	-100.736
		-25290.3	6.467	-583.844	-921.861	1568.638	-100.736
14	1.050	-25339.3	6.467	-69.635	-774.023	-6221.083	-93.945
		-25339.3	6.467	-310.779	-921.861	1067.379	-93.945
14	2.100	-25198.3	6.467	283.276	-774.023	-6046.063	-87.155
		-25198.3	6.467	-28.425	-921.861	952.166	-87.155
14	3.150	-25070.8	6.467	440.343	-774.023	-5562.510	-80.364
		-25070.8	6.467	58.085	-921.861	1071.405	-80.364
14	4.200	-24964.3	6.467	423.405	-774.023	-5065.931	-73.574
		-24964.3	6.467	-29.411	-921.861	1129.586	-73.574
15	0	-24964.5	7.990	423.405	-969.797	-5093.935	-73.574
		-24964.5	7.990	-29.411	-1316.495	1093.641	-73.574
15	1.050	-24860.0	7.990	365.940	-969.797	-4628.941	-65.183
		-24860.0	7.990	-157.450	-1316.495	1046.023	-65.183
15	2.100	-24756.3	7.990	283.078	-969.797	-4246.257	-56.791
		-24756.3	7.990	-310.886	-1316.495	841.978	-56.791
15	3.151	-24624.8	7.990	360.936	-969.797	-3875.529	-48.400
		-24624.8	7.990	-303.603	-1316.495	551.860	-48.400
15	4.201	-24475.6	7.990	498.164	-969.797	-3361.726	-40.008
		-24475.6	7.990	-236.949	-1316.495	330.699	-40.008
16	0	-24475.9	9.581	498.164	-1161.258	-3397.671	-40.008
		-24475.9	9.581	-236.949	-1632.287	280.960	-40.008
16	1.049	-24318.9	9.581	629.020	-1161.258	-2747.655	-29.953
		-24318.9	9.581	-176.619	-1632.287	122.470	-29.953
16	2.099	-24153.9	9.581	753.094	-1161.258	-1972.200	-19.898
		-24153.9	9.581	-123.071	-1632.287	15.400	-19.898
16	3.148	-24073.6	9.581	474.631	-1161.258	-1292.904	-9.842
		-24073.6	9.581	-472.060	-1632.287	-261.845	-9.842
16	4.198	-24002.5	9.581	-364.721	-5306.845	-956.815	0.212903
		-24002.5	9.581	-343.126	2513.299	-955.768	0.212903
17	0	4.757	23.560	-707.709	-5.64E-15	1886.449	-56.500
		4.757	23.560	-2574.226	4.97E-14	6362.656	-56.500
17	0.600	4.757	23.560	-747.166	-5.64E-15	1450.321	-42.375
		4.757	23.560	-2613.683	4.97E-14	4807.476	-42.375
17	1.199	4.757	23.560	-786.623	-5.64E-15	990.537	-28.250
		4.757	23.560	-2653.141	4.97E-14	3228.640	-28.250
17	1.799	4.757	23.560	-826.081	-5.64E-15	507.096	-14.125
		4.757	23.560	-2692.598	4.97E-14	1626.148	-14.125
17	2.398	4.757	23.560	-865.538	-5.64E-15	2.08E-05	-5.65E-07
		4.757	23.560	-2732.055	4.97E-14	6.55E-05	-5.65E-07
18	0	-3.820	-23.637	69.349	1.07E-12	23.104	56.728
		-3.820	-23.637	-1753.920	1.17E-12	4398.977	56.728
18	0.600	-3.820	-23.637	29.861	1.07E-12	52.867	42.546
		-3.820	-23.637	-1793.408	1.17E-12	3334.772	42.546
18	1.200	-3.820	-23.637	-9.627	1.07E-12	58.938	28.364
		-3.820	-23.637	-1832.896	1.17E-12	2246.874	28.364
18	1.800	-3.820	-23.637	-49.114	1.07E-12	41.315	14.182
		-3.820	-23.637	-1872.384	1.17E-12	1135.283	14.182
18	2.400	-3.820	-23.637	-88.602	1.07E-12	2.13E-06	5.67E-07
		-3.820	-23.637	-1911.871	1.17E-12	4.59E-05	5.67E-07
19	0	4.793	-23.548	-712.719	6.99E-13	1900.026	56.515
		4.793	-23.548	-2352.692	1.41E-12	5835.889	56.515
19	0.600	4.793	-23.548	-752.205	6.99E-13	1460.557	42.386
		4.793	-23.548	-2392.179	1.41E-12	4412.454	42.386
19	1.200	4.793	-23.548	-791.692	6.99E-13	997.396	28.257
		4.793	-23.548	-2431.666	1.41E-12	2965.328	28.257
19	1.800	4.793	-23.548	-831.179	6.99E-13	510.544	14.129
		4.793	-23.548	-2471.153	1.41E-12	1494.510	14.129
19	2.400	4.793	-23.548	-870.666	6.99E-13	2.09E-05	5.65E-07
		4.793	-23.548	-2510.639	1.41E-12	6.03E-05	5.65E-07
20	0	-4.782	23.458	-141.447	-8.21E-13	529.044	-56.302
		-4.782	23.458	-1759.825	-2.70E-13	4413.326	-56.302
20	0.600	-4.782	23.458	-180.936	-8.21E-13	432.325	-42.226
		-4.782	23.458	-1799.314	-2.70E-13	3345.536	-42.226

ENVOLVENTE para < My > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
20	1.200	-4.782	23.458	-220.425	-8.21E-13	311.911	-28.151
		-4.782	23.458	-1838.803	-2.70E-13	2254.052	-28.151
20	1.800	-4.782	23.458	-259.915	-8.21E-13	167.803	-14.075
		-4.782	23.458	-1878.293	-2.70E-13	1138.873	-14.075
20	2.400	-4.782	23.458	-299.404	-8.21E-13	7.19E-06	-5.63E-07
		-4.782	23.458	-1917.782	-2.70E-13	4.60E-05	-5.63E-07

Mstb. 1 :449.9
Section forces envelope My, GWSP JF (ELU 9), View "ALL"
- Struktur: Staebe
- Envelop Moment My-min, Scaling 2.00E-04
  min: -1.84E+04 max: 2.87E+03 [kNm]
- Envelop Moment My-max, Scaling 2.00E-04
  min: -7.62E+03 max: 1.28E+04 [kNm]
- Text envelopes [kNm]



ENVOLVENTE: JG 'ELÚ 10'

Grupo	Espe.	Hipótesis	Factor	Etapa	Título
A	PERM.	1	1.350		Peso Propio
	Y	3	1.350		Carga Muerta Máxima
	Y	20	0.850000		Pretensado
B	MAS	19	0.900000		gradiente
C	MAS	30	1.500		Carro 1 estribo excéntrico
D	MAS	4	1.500		Sobrecarga centrada vano 1
E	MAS	5	1.500		Sobrecarga centrada vano 2
F	MAS	6	1.500		Sobrecarga centrada vano 3
ALTERNATIVA PARA ENVOLVENTE:					
G	PERM.	1	1.350		Peso Propio
	Y	3	1.350		Carga Muerta Máxima
	Y	20	0.850000		Pretensado
H	MAS	19	0.900000		gradiente
I	MAS	30	1.500		Carro 1 estribo excéntrico
J	MAS	7	1.500		Sobrecarga excéntrica vano 1 (
K	MAS	8	1.500		Sobrecarga excentrica vano 2 (
L	MAS	9	1.500		Sobrecarga excentrica vano 3 (
ALTERNATIVA PARA ENVOLVENTE:					
M	PERM.	1	1.350		Peso Propio
	Y	3	1.350		Carga Muerta Máxima
	Y	20	0.850000		Pretensado
N	MAS	19	0.900000		gradiente
O	MAS	30	1.500		Carro 1 estribo excéntrico
P	MAS	10	1.500		Sobrecarga excéntrica vano 1 (
Q	MAS	11	1.500		Sobrecarga excentrica vano 2 (
R	MAS	12	1.500		Sobrecarga excentrica vano 3 (

ENVOLVENTE para < Vz > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
1	0	-24024.4	-9.508	-155.965	623.580	-869.185	-0.227677
		-24024.4	-9.508	1669.942	3848.185	-846.168	-0.227677
1	0.0996	-24030.7	-9.508	-186.288	623.580	-886.507	-1.174
		-24030.7	-9.508	1632.927	3848.185	-681.999	-1.174
1	0.100	-24030.8	-9.508	-186.544	623.580	-886.666	-1.182
		-24030.8	-9.508	1332.615	3098.185	-680.756	-1.182
1	1.050	-24091.4	-9.508	-475.724	623.580	-1206.626	-10.212
		-24091.4	-9.508	979.619	3098.185	411.657	-10.212
1	1.500	-24120.1	-9.508	-612.603	623.580	-1455.609	-14.486
		-24120.1	-9.508	812.533	3098.185	810.071	-14.486
1	1.500	-24120.1	-9.508	-612.859	623.580	-1456.133	-14.494
		-24120.1	-9.508	512.220	2348.185	810.619	-14.494
1	2.100	-24168.0	-9.508	-753.482	623.580	-1886.652	-20.196
		-24168.0	-9.508	331.295	2348.185	1042.754	-20.196
1	3.000	-24308.5	-9.508	-647.258	623.580	-2558.549	-28.748
		-24308.5	-9.508	377.078	2348.185	1319.361	-28.748
1	3.000	-24308.6	-9.508	-730.909	588.208	-1435.419	-28.756
		-24308.6	-9.508	160.875	1633.556	195.794	-28.756
1	3.150	-24331.4	-9.508	-712.721	588.208	-1551.171	-30.180
		-24331.4	-9.508	168.996	1633.556	212.877	-30.180
1	4.200	-24487.2	-9.508	-581.491	588.208	-2288.869	-40.164
		-24487.2	-9.508	229.662	1633.556	363.997	-40.164
2	0	-24486.9	-8.079	-581.491	382.696	-2274.156	-40.164
		-24486.9	-8.079	229.662	1347.176	409.170	-40.164
2	1.050	-24635.2	-8.079	-444.075	382.696	-2874.912	-48.646
		-24635.2	-8.079	296.528	1347.176	622.958	-48.646
2	2.100	-24766.0	-8.079	-366.443	382.696	-3332.595	-57.127
		-24766.0	-8.079	303.611	1347.176	905.756	-57.127
2	3.150	-24869.4	-8.079	-449.177	382.696	-3802.459	-65.608
		-24869.4	-8.079	150.329	1347.176	1102.306	-65.608
2	4.199	-24973.8	-8.079	-506.457	382.696	-4354.535	-74.090
		-24973.8	-8.079	22.499	1347.176	1142.581	-74.090
3	0	-24973.5	-6.428	-506.457	145.006	-4345.352	-74.090
		-24973.5	-6.428	22.499	917.639	1181.993	-74.090
3	1.050	-25080.4	-6.428	-531.404	128.270	-1974.181	-80.840
		-25080.4	-6.428	-50.167	-87.650	-306.738	-80.840
3	2.100	-25208.4	-6.428	-444.311	128.270	-2590.433	-87.590
		-25208.4	-6.428	-100.901	934.376	-1919.564	-87.590
3	3.150	-25350.0	-6.428	-161.620	128.270	-2971.629	-94.341
		-25350.0	-6.428	454.159	934.376	-1691.179	-94.341
3	4.200	-25301.3	-6.428	111.785	128.270	-2966.239	-101.091
		-25301.3	-6.428	798.131	934.376	-1002.107	-101.091
4	0	-25301.2	-4.907	111.785	-5.689	-2964.283	-101.091
		-25301.2	-4.907	798.131	737.314	-975.421	-101.091
4	1.050	-25113.3	-4.907	365.504	-5.689	-2654.858	-106.244
		-25113.3	-4.907	1122.408	737.314	91.686	-106.244
4	2.100	-24891.7	-4.907	338.202	-5.689	-2191.771	-111.396
		-24891.7	-4.907	1165.663	737.314	1386.538	-111.396
4	3.150	-24765.4	-4.907	-449.868	-5.689	-2154.119	-116.549
		-24765.4	-4.907	448.151	737.314	2330.038	-116.549
4	4.200	-24665.9	-4.907	-1483.754	-5.689	-3185.035	-121.701
		-24665.9	-4.907	-515.177	737.314	2279.053	-121.701
5	0	-24665.8	-3.365	-1483.754	246.851	-3181.143	-121.701
		-24665.8	-3.365	-515.177	813.140	2304.076	-121.701
5	1.050	-24550.5	-3.365	-2513.350	246.851	-5306.583	-125.233
		-24550.5	-3.365	-1474.239	813.140	1232.283	-125.233
5	2.099	-24418.6	-3.365	-3537.750	246.851	-8521.776	-128.765
		-24418.6	-3.365	-2428.106	813.140	-855.231	-128.765
5	3.149	-24300.2	-3.365	-4365.305	246.851	-12718.1	-132.296
		-24300.2	-3.365	-3185.126	813.140	-3849.818	-132.296
5	4.198	-24173.3	-3.365	-5167.539	246.851	-17765.6	-135.828
		-24173.3	-3.365	-3916.826	813.140	-7621.641	-135.828
6	0	-24151.8	-7.272	4766.019	1380.810	-7583.036	-135.828
		-24151.8	-7.272	5998.944	1171.751	-17740.7	-135.828
6	1.350	-23970.0	-7.272	3811.380	1380.810	-1857.118	-145.646
		-23970.0	-7.272	4953.581	1171.751	-10411.5	-145.646
6	2.700	-23769.5	-7.272	2869.224	1380.810	2590.251	-155.464
		-23769.5	-7.272	3920.702	1171.751	-4483.356	-155.464

ENVOLVENTE para < Vz > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
6	4.050	-23484.4	-7.272	1581.982	1380.810	5576.774	-165.281
		-23484.4	-7.272	2542.737	1171.751	-138.533	-165.281
6	5.400	-23190.7	-7.272	453.571	1380.810	6786.634	-175.099
		-23190.7	-7.272	1323.604	1171.751	2307.147	-175.099
7	0	-23190.5	-4.275	453.571	1152.339	6841.314	-175.099
		-23190.5	-4.275	1323.604	1136.771	2356.979	-175.099
7	1.350	-22979.5	-4.275	-95.516	1152.339	7061.285	-180.870
		-22979.5	-4.275	683.796	1136.771	3690.270	-180.870
7	2.700	-22865.6	-4.275	-129.598	1152.339	6861.200	-186.641
		-22865.6	-4.275	558.993	1136.771	4481.030	-186.641
7	4.050	-22768.8	-4.275	-50.752	1152.339	6772.246	-192.412
		-22768.8	-4.275	547.118	1136.771	5260.447	-192.412
7	5.400	-22662.4	-4.275	24.709	1152.339	6803.030	-198.183
		-22662.4	-4.275	531.858	1136.771	6037.127	-198.183
8	0	-22662.2	-1.476	24.709	428.865	6834.814	-198.183
		-22662.2	-1.476	531.858	444.088	6068.903	-198.183
8	1.350	-22546.8	-1.476	96.142	428.865	6978.929	-200.175
		-22546.8	-1.476	512.581	444.088	6836.373	-200.175
8	2.700	-22421.9	-1.476	162.974	428.865	7229.015	-202.168
		-22421.9	-1.476	488.702	444.088	7587.368	-202.168
8	4.050	-22311.0	-1.476	60.090	428.865	7462.807	-204.161
		-22311.0	-1.476	295.108	444.088	8199.623	-204.161
8	5.399	-22203.8	-1.476	-70.985	526.173	12218.3	-206.153
		-22203.8	-1.476	78.515	346.780	3827.903	-206.153
9	0	-22203.8	1.522	-70.985	-620.479	12216.2	-206.153
		-22203.8	1.522	78.515	-438.841	3825.922	-206.153
9	1.350	-22310.0	1.522	-290.117	-620.479	11903.7	-204.098
		-22310.0	1.522	-49.886	-438.841	3776.514	-204.098
9	2.700	-22418.5	1.522	-473.127	-620.479	11301.7	-202.044
		-22418.5	1.522	-142.164	-438.841	3560.128	-202.044
9	4.051	-22541.5	1.522	-497.031	-620.479	10573.0	-199.989
		-22541.5	1.522	-75.337	-438.841	3339.545	-199.989
9	5.401	-22656.4	1.522	-516.321	-620.479	9827.191	-197.934
		-22656.4	1.522	-3.896	-438.841	3224.306	-197.934
10	0	-22656.5	4.348	-516.321	-1467.538	9784.802	-197.934
		-22656.5	4.348	-3.896	-1018.069	3194.729	-197.934
10	1.350	-22762.3	4.348	-531.626	-1467.538	9030.084	-192.065
		-22762.3	4.348	71.508	-1018.069	3192.916	-192.065
10	2.700	-22858.4	4.348	-543.592	-1467.538	8272.558	-186.196
		-22858.4	4.348	150.250	-1018.069	3310.736	-186.196
10	4.049	-22979.8	4.348	-703.850	-1467.538	7493.976	-180.326
		-22979.8	4.348	80.700	-1018.069	3529.940	-180.326
10	5.399	-23189.2	4.348	-1344.405	-1467.538	6134.993	-174.457
		-23189.2	4.348	-469.147	-1018.069	3291.183	-174.457
11	0	-23189.4	7.272	-1344.405	-1651.699	6069.319	-174.457
		-23189.4	7.272	-469.147	-1082.932	3246.948	-174.457
11	1.331	-23485.6	7.272	-2588.902	-1651.699	3600.706	-164.778
		-23485.6	7.272	-1624.198	-1082.932	2002.852	-164.778
11	2.662	-23763.2	7.272	-3933.085	-1651.699	-726.583	-155.099
		-23763.2	7.272	-2878.937	-1082.932	-980.865	-155.099
11	3.993	-23961.0	7.272	-4951.450	-1651.699	-6577.764	-145.420
		-23961.0	7.272	-3807.857	-1082.932	-5369.422	-145.420
11	5.324	-24140.6	7.272	-5981.920	-1651.699	-13790.8	-135.741
		-24140.6	7.272	-4748.882	-1082.932	-11000.8	-135.741
12	0	-24162.1	3.447	3907.725	-862.835	-7519.826	-135.741
		-24162.1	3.447	5076.608	-324.394	-17344.3	-135.741
12	1.050	-24289.0	3.447	3176.063	-862.835	-3756.811	-132.123
		-24289.0	3.447	4274.399	-324.394	-12391.2	-132.123
12	2.100	-24407.4	3.447	2418.920	-862.835	-771.196	-128.504
		-24407.4	3.447	3446.709	-324.394	-8289.563	-128.504
12	3.149	-24539.2	3.447	1465.161	-862.835	1307.075	-124.886
		-24539.2	3.447	2422.402	-324.394	-5169.339	-124.886
12	4.199	-24654.4	3.447	506.213	-862.835	2369.552	-121.268
		-24654.4	3.447	1392.907	-324.394	-3138.971	-121.268
13	0	-24654.5	4.888	506.212	-794.084	2344.557	-121.268
		-24654.5	4.888	1392.907	-89.728	-3145.218	-121.268
13	1.050	-24753.7	4.888	-456.859	-794.084	2386.225	-116.135
		-24753.7	4.888	359.274	-89.728	-2209.548	-116.135

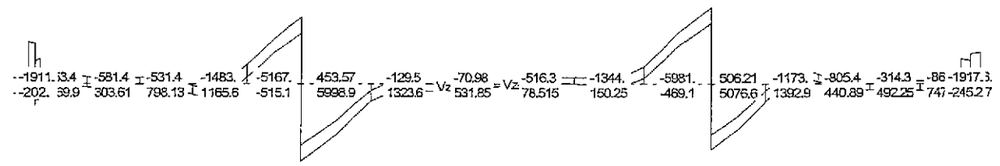
ENVOLVENTE para.< Vz > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivós)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
13	2.100	-24880.1	4.888	-1173.101	-794.084	1433.927	-111.002
		-24880.1	4.888	-427.529	-89.728	-2341.935	-111.002
13	3.150	-25101.8	4.888	-1129.467	-794.084	131.325	-105.869
		-25101.8	4.888	-454.456	-89.728	-2898.717	-105.869
13	4.200	-25290.1	4.888	-805.486	-794.084	-943.421	-100.736
		-25290.1	4.888	-201.037	-89.728	-3301.734	-100.736
14	0	-25290.3	6.467	-805.486	-999.721	-973.154	-100.736
		-25290.3	6.467	-201.037	-217.592	-3306.828	-100.736
14	1.050	-25339.3	6.467	-461.863	-999.721	-1670.088	-93.945
		-25339.3	6.467	72.029	-217.592	-3406.155	-93.945
14	2.100	-25198.3	6.467	-108.952	-999.721	-1906.891	-87.155
		-25198.3	6.467	354.382	-217.592	-3119.435	-87.155
14	3.150	-25070.8	6.467	38.259	22.667	-325.873	-80.364
		-25070.8	6.467	440.892	-217.592	-2598.265	-80.364
14	4.200	-24964.3	6.467	-32.922	-979.923	1162.955	-73.574
		-24964.3	6.467	417.495	-237.391	-5051.514	-73.574
15	0	-24964.5	7.990	-32.922	-1375.598	1125.128	-73.574
		-24964.5	7.990	417.495	-433.905	-5062.294	-73.574
15	1.050	-24860.0	7.990	-160.961	-1375.598	1073.823	-65.183
		-24860.0	7.990	360.030	-433.905	-4603.507	-65.183
15	2.100	-24756.3	7.990	-314.397	-1375.598	866.091	-56.791
		-24756.3	7.990	277.169	-433.905	-4227.029	-56.791
15	3.151	-24624.8	7.990	-307.114	-1375.598	572.285	-48.400
		-24624.8	7.990	355.026	-433.905	-3862.507	-48.400
15	4.201	-24475.6	7.990	-240.460	-1375.598	347.436	-40.008
		-24475.6	7.990	492.254	-433.905	-3354.911	-40.008
16	0	-24475.9	9.581	-240.460	-1691.922	295.695	-40.008
		-24475.9	9.581	492.254	-625.901	-3372.787	-40.008
16	1.049	-24318.9	9.581	-180.130	-1691.922	133.519	-29.953
		-24318.9	9.581	623.110	-625.901	-2728.972	-29.953
16	2.099	-24153.9	9.581	-126.582	-1691.922	22.764	-19.898
		-24153.9	9.581	747.185	-625.901	-1959.720	-19.898
16	3.148	-24073.6	9.581	-475.572	-1691.922	-258.166	-9.842
		-24073.6	9.581	468.721	-625.901	-1286.626	-9.842
16	4.198	-24002.5	9.581	-866.044	-1691.922	-956.048	0.212903
		-24002.5	9.581	148.775	-625.901	-956.465	0.212903
17	0	4.757	23.560	-3113.009	-1.52E-14	7654.743	-56.500
		4.757	23.560	-707.709	-5.64E-15	1886.449	-56.500
17	0.600	4.757	23.560	-3152.466	-1.52E-14	5776.542	-42.375
		4.757	23.560	-747.166	-5.64E-15	1450.321	-42.375
17	1.199	4.757	23.560	-3191.923	-1.52E-14	3874.684	-28.250
		4.757	23.560	-786.623	-5.64E-15	990.537	-28.250
17	1.799	4.757	23.560	-3231.381	-1.52E-14	1949.170	-14.125
		4.757	23.560	-826.081	-5.64E-15	507.096	-14.125
17	2.398	4.757	23.560	-3270.838	-1.52E-14	7.84E-05	-5.65E-07
		4.757	23.560	-865.538	-5.64E-15	2.08E-05	-5.65E-07
18	0	-3.820	-23.637	-1753.920	1.17E-12	4398.977	56.728
		-3.820	-23.637	-202.031	1.15E-12	674.420	56.728
18	0.600	-3.820	-23.637	-1793.408	1.17E-12	3334.772	42.546
		-3.820	-23.637	-241.519	1.15E-12	541.354	42.546
18	1.200	-3.820	-23.637	-1832.896	1.17E-12	2246.874	28.364
		-3.820	-23.637	-281.006	1.15E-12	384.595	28.364
18	1.800	-3.820	-23.637	-1872.384	1.17E-12	1135.283	14.182
		-3.820	-23.637	-320.494	1.15E-12	204.144	14.182
18	2.400	-3.820	-23.637	-1911.871	1.17E-12	4.59E-05	5.67E-07
		-3.820	-23.637	-359.982	1.15E-12	8.64E-06	5.67E-07
19	0	4.793	-23.548	-2258.295	1.39E-12	5609.340	56.515
		4.793	-23.548	-712.719	6.99E-13	1900.026	56.515
19	0.600	4.793	-23.548	-2297.782	1.39E-12	4242.543	42.386
		4.793	-23.548	-752.205	6.99E-13	1460.557	42.386
19	1.200	4.793	-23.548	-2337.269	1.39E-12	2852.053	28.257
		4.793	-23.548	-791.692	6.99E-13	997.396	28.257
19	1.800	4.793	-23.548	-2376.755	1.39E-12	1437.873	14.129
		4.793	-23.548	-831.179	6.99E-13	510.544	14.129
19	2.400	4.793	-23.548	-2416.242	1.39E-12	5.80E-05	5.65E-07
		4.793	-23.548	-870.666	6.99E-13	2.09E-05	5.65E-07
20	0	-4.782	23.458	-1759.825	-2.70E-13	4413.326	-56.302
		-4.782	23.458	-245.265	-8.29E-13	778.219	-56.302

ENVOLVENTE para < Vz > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
20	0.600	-4.782	23.458	-1799.314	-2.70E-13	3345.536	-42.226
		-4.782	23.458	-284.754	-8.29E-13	619.206	-42.226
20	1.200	-4.782	23.458	-1838.803	-2.70E-13	2254.052	-28.151
		-4.782	23.458	-324.243	-8.29E-13	436.499	-28.151
20	1.800	-4.782	23.458	-1878.293	-2.70E-13	1138.873	-14.075
		-4.782	23.458	-363.733	-8.29E-13	230.097	-14.075
20	2.400	-4.782	23.458	-1917.782	-2.70E-13	4.60E-05	-5.63E-07
		-4.782	23.458	-403.222	-8.29E-13	9.68E-06	-5.63E-07

Mstb. 1 :449.9
Section forces envelope Vz, GWSP JG (ELU 10), View "ALL"
- Struktur: Staebe
- Envelop Shear force Vz-min, Scaling 1.00E-03
  min: -5.98E+03 max: 4.77E+03 [kN]
- Envelop Shear force Vz-max, Scaling 1.00E-03
  min: -4.75E+03 max: 6.00E+03 [kN]
- Text envelopes [kN]



ENVOLVENTE para < T > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
1	0	-24024.4	-9.508	330.283	-2509.087	-784.160	-0.227677
		-24024.4	-9.508	1183.694	6980.851	-931.193	-0.227677
1	0.0996	-24030.7	-9.508	296.614	-2499.718	-753.227	-1.174
		-24030.7	-9.508	1150.025	6971.483	-815.279	-1.174
1	0.100	-24030.8	-9.508	296.330	-2499.639	-752.981	-1.182
		-24030.8	-9.508	849.741	6221.404	-814.441	-1.182
1	1.050	-24091.4	-9.508	-24.758	-2410.296	-629.528	-10.212
		-24091.4	-9.508	528.653	6132.060	-165.440	-10.212
1	1.500	-24120.1	-9.508	-176.741	-2368.006	-679.194	-14.486
		-24120.1	-9.508	376.670	6089.771	33.656	-14.486
1	1.500	-24120.1	-9.508	-177.025	-2367.927	-679.352	-14.494
		-24120.1	-9.508	76.386	5339.692	33.837	-14.494
1	2.100	-24168.0	-9.508	-337.799	-2311.505	-854.532	-20.196
		-24168.0	-9.508	-84.388	5283.269	10.634	-20.196
1	3.000	-24308.5	-9.508	-261.796	-2226.886	-1166.140	-28.748
		-24308.5	-9.508	-8.385	5198.651	-73.048	-28.748
1	3.000	-24308.6	-9.508	-345.475	-2262.179	-42.686	-28.756
		-24308.6	-9.508	-224.559	4483.944	-1196.939	-28.756
1	3.150	-24331.4	-9.508	-332.320	-2248.086	-101.077	-30.180
		-24331.4	-9.508	-211.405	4469.850	-1237.216	-30.180
1	4.200	-24487.2	-9.508	-236.372	-2149.295	-457.851	-40.164
		-24487.2	-9.508	-115.457	4371.059	-1467.021	-40.164
2	0	-24486.9	-8.079	-236.372	-2409.034	-526.931	-40.164
		-24486.9	-8.079	-115.457	4138.906	-1338.054	-40.164
2	1.050	-24635.2	-8.079	-134.231	-2310.266	-783.886	-48.646
		-24635.2	-8.079	-13.316	4040.138	-1468.068	-48.646
2	2.100	-24766.0	-8.079	-91.874	-2211.497	-934.799	-57.127

ENVOLVENTE para < T > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
		-24766.0	-8.079	29.042	3941.369	-1492.039	-57.127
2	3.150	-24869.4	-8.079	-209.882	-2112.729	-1134.927	-65.608
		-24869.4	-8.079	-88.966	3842.600	-1565.226	-65.608
2	4.199	-24973.8	-8.079	-302.437	-2013.960	-1454.298	-74.090
		-24973.8	-8.079	-181.521	3743.832	-1757.656	-74.090
3	0	-24973.5	-6.428	-302.437	-2351.107	-1530.259	-74.090
		-24973.5	-6.428	-181.521	3413.753	-1633.100	-74.090
3	1.050	-25080.4	-6.428	-354.540	-2252.314	-1918.551	-80.840
		-25080.4	-6.428	-233.624	3314.959	-1894.418	-80.840
3	2.100	-25208.4	-6.428	-232.163	-2153.520	-2330.552	-87.590
		-25208.4	-6.428	-111.247	3216.165	-2179.445	-87.590
3	3.150	-25350.0	-6.428	85.812	-2054.726	-2470.445	-94.341
		-25350.0	-6.428	206.727	3117.372	-2192.364	-94.341
3	4.200	-25301.3	-6.428	394.500	-1955.933	-2186.700	-101.091
		-25301.3	-6.428	515.416	3018.578	-1781.646	-101.091
4	0	-25301.2	-4.907	394.500	-2113.711	-2251.666	-101.091
		-25301.2	-4.907	515.416	2845.336	-1688.037	-101.091
4	1.050	-25113.3	-4.907	683.498	-2014.930	-1626.879	-106.244
		-25113.3	-4.907	804.414	2746.555	-936.293	-106.244
4	2.100	-24891.7	-4.907	691.475	-1916.149	-811.388	-111.396
		-24891.7	-4.907	812.390	2647.774	6.155	-111.396
4	3.150	-24765.4	-4.907	-61.317	-1817.368	-384.291	-116.549
		-24765.4	-4.907	59.599	2548.993	560.210	-116.549
4	4.200	-24665.9	-4.907	-1059.923	-1718.588	-988.720	-121.701
		-24665.9	-4.907	-939.008	2450.212	82.738	-121.701
5	0	-24665.8	-3.365	-1059.923	-1536.031	-1041.247	-121.701
		-24665.8	-3.365	-939.008	2596.022	164.180	-121.701
5	1.050	-24550.5	-3.365	-2054.252	-1437.283	-2703.321	-125.233
		-24550.5	-3.365	-1629.808	2589.101	-1369.620	-125.233
5	2.099	-24418.6	-3.365	-2739.054	-1394.770	-5629.149	-128.765
		-24418.6	-3.365	-2583.675	2589.101	-3620.421	-128.765
5	3.149	-24300.2	-3.365	-3496.074	-1394.770	-8950.111	-132.296
		-24300.2	-3.365	-3340.695	2589.101	-6778.295	-132.296
5	4.198	-24173.3	-3.365	-4227.774	-1394.770	-13048.3	-135.828
		-24173.3	-3.365	-4072.396	2589.101	-10713.4	-135.828
6	0	-24151.8	-7.272	5367.314	-634.816	-13084.0	-135.828
		-24151.8	-7.272	5331.739	3264.444	-10610.4	-135.828
6	1.350	-23970.0	-7.272	4367.313	-507.804	-6576.952	-145.646
		-23970.0	-7.272	4331.738	3137.432	-4151.363	-145.646
6	2.700	-23769.5	-7.272	3379.795	-380.792	-1409.669	-155.464
		-23769.5	-7.272	3344.221	3010.420	967.893	-155.464
6	4.050	-23484.4	-7.272	2047.192	-253.781	2235.527	-165.281
		-23484.4	-7.272	2011.617	2883.408	4565.062	-165.281
6	5.400	-23190.7	-7.272	873.420	-126.769	4042.819	-175.099
		-23190.7	-7.272	837.845	2756.396	6324.328	-175.099
7	0	-23190.5	-4.275	873.420	-235.436	4035.001	-175.099
		-23190.5	-4.275	837.845	2546.593	6438.797	-175.099
7	1.350	-22979.5	-4.275	278.973	-108.427	4791.155	-180.870
		-22979.5	-4.275	243.398	2419.584	7146.925	-180.870
7	2.700	-22865.6	-4.275	199.530	18.583	5066.016	-186.641
		-22865.6	-4.275	163.955	2292.574	7373.760	-186.641
7	4.050	-22768.8	-4.275	233.015	145.592	5390.771	-192.412
		-22768.8	-4.275	197.441	2165.565	7650.489	-192.412
7	5.400	-22662.4	-4.275	263.116	272.601	5774.026	-198.183
		-22662.4	-4.275	227.542	2038.556	7985.718	-198.183
8	0	-22662.2	-1.476	263.116	-408.810	5771.288	-198.183
		-22662.2	-1.476	227.542	1266.839	8052.160	-198.183
8	1.350	-22546.8	-1.476	289.194	-281.816	6206.606	-200.175
		-22546.8	-1.476	253.620	1139.845	8439.458	-200.175
8	2.700	-22421.9	-1.476	310.670	-154.822	6686.672	-202.168
		-22421.9	-1.476	275.096	1012.850	8871.504	-202.168
8	4.050	-22311.0	-1.476	162.431	-27.828	7089.221	-204.161
		-22311.0	-1.476	126.857	885.856	9226.033	-204.161
8	5.399	-22203.8	-1.476	-10.436	33.930	4318.951	-206.153
		-22203.8	-1.476	19.838	826.868	10947.2	-206.153
9	0	-22203.8	1.522	-11.522	-913.398	10789.2	-206.153
		-22203.8	1.522	20.924	-124.518	4473.115	-206.153
9	1.350	-22310.0	1.522	-120.580	-987.673	9079.920	-204.098

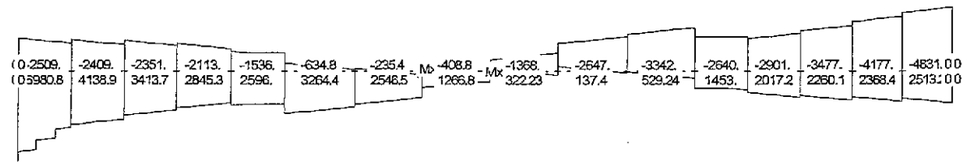
ENVOLVENTE para < T > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
		-22310.0	1.522	-153.810	-58.837	7255.762	-204.098
9	2.700	-22418.5	1.522	-258.223	-1114.697	8737.459	-202.044
		-22418.5	1.522	-291.453	68.187	6868.436	-202.044
9	4.051	-22541.5	1.522	-236.761	-1241.720	8329.552	-199.989
		-22541.5	1.522	-269.991	195.210	6415.662	-199.989
9	5.401	-22656.4	1.522	-210.686	-1368.744	7965.737	-197.934
		-22656.4	1.522	-243.916	322.234	6006.981	-197.934
10	0	-22656.5	4.348	-210.686	-2139.639	7894.513	-197.934
		-22656.5	4.348	-243.916	-370.557	6006.000	-197.934
10	1.350	-22762.3	4.348	-180.637	-2266.631	7582.958	-192.065
		-22762.3	4.348	-213.867	-243.566	5649.590	-192.065
10	2.700	-22858.4	4.348	-147.249	-2393.622	7329.817	-186.196
		-22858.4	4.348	-180.479	-116.574	5351.594	-186.196
10	4.049	-22979.8	4.348	-262.153	-2520.614	7116.839	-180.326
		-22979.8	4.348	-295.383	10.418	5093.762	-180.326
10	5.399	-23189.2	4.348	-857.354	-2647.606	6384.681	-174.457
		-23189.2	4.348	-890.584	137.409	4316.749	-174.457
11	0	-23189.4	7.272	-857.354	-2841.230	6269.116	-174.457
		-23189.4	7.272	-890.584	28.356	4320.239	-174.457
11	1.331	-23485.6	7.272	-2057.128	-2966.453	4478.544	-164.778
		-23485.6	7.272	-2090.358	153.579	2485.436	-164.778
11	2.662	-23763.2	7.272	-3356.589	-3091.676	888.823	-155.099
		-23763.2	7.272	-3389.819	278.802	-1148.515	-155.099
11	3.993	-23961.0	7.272	-4330.232	-3216.899	-4165.264	-145.420
		-23961.0	7.272	-4363.462	404.025	-6246.831	-145.420
11	5.324	-24140.6	7.272	-5315.979	-3342.122	-10521.7	-135.741
		-24140.6	7.272	-5349.209	529.248	-12647.5	-135.741
12	0	-24162.1	3.447	4066.081	-2636.301	-10632.2	-135.741
		-24162.1	3.447	4135.687	1310.951	-12613.5	-135.741
12	1.050	-24289.0	3.447	3334.419	-2636.301	-6702.910	-132.123
		-24289.0	3.447	3404.026	1310.951	-8611.179	-132.123
12	2.100	-24407.4	3.447	2577.276	-2636.301	-3551.051	-128.504
		-24407.4	3.447	2646.882	1310.951	-5386.247	-128.504
12	3.149	-24539.2	3.447	1623.517	-2636.301	-1306.536	-124.886
		-24539.2	3.447	1959.290	1354.256	-2553.997	-124.886
12	4.199	-24654.4	3.447	934.052	-2640.252	221.875	-121.268
		-24654.4	3.447	965.068	1453.022	-991.293	-121.268
13	0	-24654.5	4.888	934.051	-2505.909	144.243	-121.268
		-24654.5	4.888	965.068	1622.097	-944.903	-121.268
13	1.050	-24753.7	4.888	-64.300	-2604.695	616.628	-116.135
		-24753.7	4.888	-33.284	1720.883	-439.950	-116.135
13	2.100	-24880.1	4.888	-815.823	-2703.481	58.001	-111.002
		-24880.1	4.888	-784.807	1819.669	-966.009	-111.002
13	3.150	-25101.8	4.888	-807.470	-2802.266	-887.975	-105.869
		-25101.8	4.888	-776.453	1918.455	-1879.417	-105.869
13	4.200	-25290.1	4.888	-518.770	-2901.052	-1643.140	-100.736
		-25290.1	4.888	-487.753	2017.241	-2602.014	-100.736
14	0	-25290.3	6.467	-518.770	-3082.342	-1742.319	-100.736
		-25290.3	6.467	-487.753	1865.029	-2537.663	-100.736
14	1.050	-25339.3	6.467	-210.425	-3181.122	-2156.733	-93.945
		-25339.3	6.467	-179.409	1963.809	-2919.510	-93.945
14	2.100	-25198.3	6.467	107.206	-3279.903	-2148.057	-87.155
		-25198.3	6.467	138.223	2062.589	-2878.269	-87.155
14	3.150	-25070.8	6.467	228.995	-3378.683	-1867.891	-80.364
		-25070.8	6.467	260.012	2161.369	-2565.537	-80.364
14	4.200	-24964.3	6.467	176.778	-3477.463	-1611.739	-73.574
		-24964.3	6.467	207.794	2260.149	-2276.819	-73.574
15	0	-24964.5	7.990	176.778	-3782.756	-1728.331	-73.574
		-24964.5	7.990	207.794	1973.253	-2208.835	-73.574
15	1.050	-24860.0	7.990	84.026	-3881.560	-1540.877	-65.183
		-24860.0	7.990	115.043	2072.057	-1988.807	-65.183
15	2.100	-24756.3	7.990	-34.123	-3980.364	-1472.791	-56.791
		-24756.3	7.990	-3.106	2170.861	-1888.148	-56.791
15	3.151	-24624.8	7.990	8.448	-4079.168	-1453.720	-48.400
		-24624.8	7.990	39.464	2269.665	-1836.503	-48.400
15	4.201	-24475.6	7.990	110.389	-4177.972	-1328.633	-40.008
		-24475.6	7.990	141.405	2368.469	-1678.842	-40.008
16	0	-24475.9	9.581	110.389	-4436.175	-1473.932	-40.008

ENVOLVENTE para < T > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
		-24475.9	9.581	141.405	2118.352	-1603.161	-40.008
16	1.049	-24318.9	9.581	205.982	-4534.911	-1249.388	-29.953
		-24318.9	9.581	236.998	2217.089	-1346.065	-29.953
16	2.099	-24153.9	9.581	294.793	-4633.648	-936.415	-19.898
		-24153.9	9.581	325.810	2315.826	-1000.540	-19.898
16	3.148	-24073.6	9.581	-18.934	-4732.385	-756.609	-9.842
		-24073.6	9.581	12.083	2414.563	-788.183	-9.842
16	4.198	-24002.5	9.581	-374.142	-4831.122	-956.745	0.212903
		-24002.5	9.581	-343.126	2513.299	-955.768	0.212903
17	0	4.757	23.560	-2550.339	-2.20E-13	6305.371	-56.500
		4.757	23.560	-1461.992	3.59E-13	3695.341	-56.500
17	0.600	4.757	23.560	-2589.796	-2.20E-13	4764.512	-42.375
		4.757	23.560	-1501.450	3.59E-13	2806.990	-42.375
17	1.199	4.757	23.560	-2629.253	-2.20E-13	3199.998	-28.250
		4.757	23.560	-1540.907	3.59E-13	1894.983	-28.250
17	1.799	4.757	23.560	-2668.711	-2.20E-13	1611.827	-14.125
		4.757	23.560	-1580.364	3.59E-13	959.320	-14.125
17	2.398	4.757	23.560	-2708.168	-2.20E-13	6.49E-05	-5.65E-07
		4.757	23.560	-1619.821	3.59E-13	3.88E-05	-5.65E-07
18	0	-3.820	-23.637	-1081.675	8.78E-13	2785.579	56.728
		-3.820	-23.637	-478.321	1.39E-12	1337.519	56.728
18	0.600	-3.820	-23.637	-1121.163	8.78E-13	2124.724	42.546
		-3.820	-23.637	-517.808	1.39E-12	1038.678	42.546
18	1.200	-3.820	-23.637	-1160.651	8.78E-13	1440.175	28.364
		-3.820	-23.637	-557.296	1.39E-12	716.145	28.364
18	1.800	-3.820	-23.637	-1200.139	8.78E-13	731.934	14.182
		-3.820	-23.637	-596.784	1.39E-12	369.919	14.182
18	2.400	-3.820	-23.637	-1239.626	8.78E-13	2.98E-05	5.67E-07
		-3.820	-23.637	-636.272	1.39E-12	1.53E-05	5.67E-07
19	0	4.793	-23.548	-770.928	6.94E-13	2039.726	56.515
		4.793	-23.548	-2244.116	1.40E-12	5575.311	56.515
19	0.600	4.793	-23.548	-810.415	6.94E-13	1565.332	42.386
		4.793	-23.548	-2283.603	1.40E-12	4217.020	42.386
19	1.200	4.793	-23.548	-849.902	6.94E-13	1067.246	28.257
		4.793	-23.548	-2323.089	1.40E-12	2835.039	28.257
19	1.800	4.793	-23.548	-889.388	6.94E-13	545.469	14.129
		4.793	-23.548	-2362.576	1.40E-12	1429.365	14.129
19	2.400	4.793	-23.548	-928.875	6.94E-13	2,23E-05	5.65E-07
		4.793	-23.548	-2402.063	1.40E-12	5.76E-05	5.65E-07
20	0	-4.782	23.458	-1074.791	-8.93E-13	2769.170	-56.302
		-4.782	23.458	-1412.842	-2.56E-13	3580.529	-56.302
20	0.600	-4.782	23.458	-1114.280	-8.93E-13	2112.419	-42.226
		-4.782	23.458	-1452.331	-2.56E-13	2720.939	-42.226
20	1.200	-4.782	23.458	-1153.769	-8.93E-13	1431.974	-28.151
		-4.782	23.458	-1491.820	-2.56E-13	1837.654	-28.151
20	1.800	-4.782	23.458	-1193.258	-8.93E-13	727.834	-14.075
		-4.782	23.458	-1531.310	-2.56E-13	930.674	-14.075
20	2.400	-4.782	23.458	-1232.748	-8.93E-13	2.96E-05	-5.63E-07
		-4.782	23.458	-1570.799	-2.56E-13	3.77E-05	-5.63E-07

Mstb. 1 :449.9
Section forces envelope T , GWSP JG (ELU 10), View "ALL"
- Struktur: Staebe
- Envelop Torsion.moment Mx-min, Scaling 1.00E-03
  min: -4.83E+03 max: 2.73E+02 [kNm]
- Envelop Torsion.moment Mx-max, Scaling 1.00E-03
  min: -3.71E+02 max: 6.98E+03 [kNm]
- Text envelopes [kNm]



ENVOLVENTE para < My > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
1	0	-24024.4	-9.508	1183.694	6980.851	-931.193	-0.227677
		-24024.4	-9.508	330.283	-2509.087	-784.160	-0.227677
1	0.0996	-24030.7	-9.508	-122.792	2338.105	-911.057	-1.174
		-24030.7	-9.508	1276.561	434.840	-667.089	-1.174
1	0.100	-24030.8	-9.508	-123.048	2338.105	-911.163	-1.182
		-24030.8	-9.508	976.277	-315.081	-666.145	-1.182
1	1.050	-24091.4	-9.508	-475.724	623.580	-1206.626	-10.212
		-24091.4	-9.508	979.619	3098.185	411.657	-10.212
1	1.500	-24120.1	-9.508	-612.603	623.580	-1455.609	-14.486
		-24120.1	-9.508	812.533	3098.185	810.071	-14.486
1	1.500	-24120.1	-9.508	-612.859	623.580	-1456.133	-14.494
		-24120.1	-9.508	512.220	2348.185	810.619	-14.494
1	2.100	-24168.0	-9.508	-753.482	623.580	-1886.652	-20.196
		-24168.0	-9.508	331.295	2348.185	1042.754	-20.196
1	3.000	-24308.5	-9.508	-647.258	623.580	-2558.549	-28.748
		-24308.5	-9.508	377.078	2348.185	1319.361	-28.748
1	3.000	-24308.6	-9.508	-647.156	623.580	-2559.135	-28.756
		-24308.6	-9.508	77.123	1598.185	1319.510	-28.756
1	3.150	-24331.4	-9.508	-628.969	623.580	-2662.340	-30.180
		-24331.4	-9.508	85.244	1598.185	1324.047	-30.180
1	4.200	-24487.2	-9.508	-497.738	623.580	-3312.093	-40.164
		-24487.2	-9.508	145.910	1598.185	1387.221	-40.164
2	0	-24486.9	-8.079	-497.738	449.058	-3295.837	-40.164
		-24486.9	-8.079	145.910	1280.814	1430.851	-40.164
2	1.050	-24635.2	-8.079	-360.323	449.058	-3808.667	-48.646
		-24635.2	-8.079	212.776	1280.814	1556.714	-48.646
2	2.100	-24766.0	-8.079	-282.691	449.058	-4178.424	-57.127
		-24766.0	-8.079	219.859	1280.814	1751.585	-57.127
2	3.150	-24869.4	-8.079	-365.424	449.058	-4560.362	-65.608
		-24869.4	-8.079	66.576	1280.814	1860.209	-65.608
2	4.199	-24973.8	-8.079	-422.705	449.058	-5024.511	-74.090
		-24973.8	-8.079	-61.253	1280.814	1812.557	-74.090
3	0	-24973.5	-6.428	-422.705	234.639	-5012.614	-74.090
		-24973.5	-6.428	-61.253	828.007	1849.255	-74.090
3	1.050	-25080.4	-6.428	-439.524	234.639	-5508.674	-80.840
		-25080.4	-6.428	-148.639	828.007	1695.705	-80.840
3	2.100	-25208.4	-6.428	-281.864	234.639	-5991.392	-87.590
		-25208.4	-6.428	-61.546	828.007	1481.395	-87.590
3	3.150	-25350.0	-6.428	71.394	234.639	-6164.950	-94.341
		-25350.0	-6.428	221.145	828.007	1502.142	-94.341
3	4.200	-25301.3	-6.428	415.366	234.639	-5877.820	-101.091
		-25301.3	-6.428	494.550	828.007	1909.474	-101.091
4	0	-25301.2	-4.907	415.366	193.560	-5870.985	-101.091

ENVOLVENTE para < My > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
		-25301.2	-4.907	494.550	538.064	1931.282	-101.091
4	1.050	-25113.3	-4.907	739.643	193.560	-5205.768	-106.244
		-25113.3	-4.907	748.269	538.064	2642.597	-106.244
4	2.100	-24891.7	-4.907	782.898	193.560	-4312.807	-111.396
		-24891.7	-4.907	720.967	538.064	3507.574	-111.396
4	3.150	-24765.4	-4.907	65.386	193.560	-3771.197	-116.549
		-24765.4	-4.907	-67.104	538.064	3947.116	-116.549
4	4.200	-24665.9	-4.907	-981.694	93.904	-4263.376	-121.701
		-24665.9	-4.907	-1017.237	637.720	3357.394	-121.701
5	0	-24665.8	-3.365	-981.695	381.191	-4255.708	-121.701
		-24665.8	-3.365	-1017.237	678.801	3378.641	-121.701
5	1.050	-24550.5	-3.365	-1940.756	381.191	-5817.164	-125.233
		-24550.5	-3.365	-2046.832	678.801	1742.863	-125.233
5	2.099	-24418.6	-3.365	-3537.750	246.851	-8521.776	-128.765
		-24418.6	-3.365	-2739.013	615.492	-797.263	-128.765
5	3.149	-24300.2	-3.365	-4365.305	246.851	-12718.1	-132.296
		-24300.2	-3.365	-3185.126	813.140	-3849.818	-132.296
5	4.198	-24173.3	-3.365	-5167.539	246.851	-17765.6	-135.828
		-24173.3	-3.365	-3916.826	813.140	-7621.641	-135.828
6	0	-24151.8	-7.272	5998.944	1171.751	-17740.7	-135.828
		-24151.8	-7.272	4766.019	1380.810	-7583.036	-135.828
6	1.350	-23970.0	-7.272	4953.581	1171.751	-10411.5	-145.646
		-23970.0	-7.272	3811.380	1380.810	-1857.118	-145.646
6	2.700	-23769.5	-7.272	3920.702	1171.751	-4483.356	-155.464
		-23769.5	-7.272	2869.224	1380.810	2590.251	-155.464
6	4.050	-23484.4	-7.272	2111.901	1834.900	-266.560	-165.281
		-23484.4	-7.272	2031.812	198.577	6098.686	-165.281
6	5.400	-23190.7	-7.272	600.475	890.756	1524.557	-175.099
		-23190.7	-7.272	858.040	325.589	7885.215	-175.099
7	0	-23190.5	-4.275	600.475	889.808	1562.992	-175.099
		-23190.5	-4.275	858.039	50.695	7893.337	-175.099
7	1.350	-22979.5	-4.275	51.389	889.808	1981.286	-180.870
		-22979.5	-4.275	536.892	1399.302	8770.268	-180.870
7	2.700	-22865.6	-4.275	-48.308	844.160	1946.844	-186.641
		-22865.6	-4.275	477.703	1444.949	9395.386	-186.641
7	4.050	-22768.8	-4.275	30.538	844.160	1967.633	-192.412
		-22768.8	-4.275	465.828	1444.949	10065.1	-192.412
7	5.400	-22662.4	-4.275	105.999	844.160	2108.160	-198.183
		-22662.4	-4.275	450.568	1444.949	10732.0	-198.183
8	0	-22662.2	-1.476	105.999	309.602	2131.351	-198.183
		-22662.2	-1.476	450.568	563.351	10772.4	-198.183
8	1.350	-22546.8	-1.476	177.432	309.602	2385.196	-200.175
		-22546.8	-1.476	431.291	563.351	11430.1	-200.175
8	2.700	-22421.9	-1.476	244.264	309.602	2745.012	-202.168
		-22421.9	-1.476	407.412	563.351	12071.4	-202.168
8	4.050	-22311.0	-1.476	141.380	309.602	3088.533	-204.161
		-22311.0	-1.476	213.818	563.351	12573.9	-204.161
8	5.399	-22203.8	-1.476	12.901	309.602	3262.119	-206.153
		-22203.8	-1.476	-5.370	563.351	12784.0	-206.153
9	0	-22203.8	1.522	12.901	-451.650	3259.062	-206.153
		-22203.8	1.522	-5.370	-607.669	12783.1	-206.153
9	1.350	-22310.0	1.522	-115.500	-451.650	3121.064	-204.098
		-22310.0	1.522	-224.503	-607.669	12559.2	-204.098
9	2.700	-22418.5	1.522	-207.778	-451.650	2816.087	-202.044
		-22418.5	1.522	-407.512	-607.669	12045.8	-202.044
9	4.051	-22541.5	1.522	-140.951	-451.650	2506.915	-199.989
		-22541.5	1.522	-431.416	-607.669	11405.7	-199.989
9	5.401	-22656.4	1.522	-69.510	-451.650	2303.085	-197.934
		-22656.4	1.522	-450.707	-607.669	10748.4	-197.934
10	0	-22656.5	4.348	-69.510	-993.480	2273.748	-197.934
		-22656.5	4.348	-450.707	-1492.127	10705.8	-197.934
10	1.350	-22762.3	4.348	5.893	-993.480	2183.366	-192.065
		-22762.3	4.348	-466.012	-1492.127	10039.6	-192.065
10	2.700	-22858.4	4.348	84.635	-993.480	2212.619	-186.196
		-22858.4	4.348	-477.978	-1492.127	9370.675	-186.196
10	4.049	-22979.8	4.348	-50.824	-1041.000	2281.327	-180.326
		-22979.8	4.348	-572.326	-1444.607	8742.589	-180.326
10	5.399	-23189.2	4.348	-615.932	-989.705	1860.986	-174.457

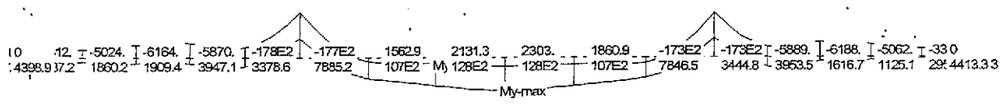
ENVOLVENTE para < My > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
		-23189.2	4.348	-875.443	-137.180	7857.777	-174.457
11	0	-23189.4	7.272	-615.932	-994.395	1819.212	-174.457
		-23189.4	7.272	-875.443	-395.032	7846.572	-174.457
11	1.331	-23485.6	7.272	-2157.173	-1946.744	-43.955	-164.778
		-23485.6	7.272	-2075.217	-269.809	6031.922	-164.778
11	2.662	-23763.2	7.272	-3932.965	-1279.731	-4250.711	-155.099
		-23763.2	7.272	-2879.056	-1454.900	2543.263	-155.099
11	3.993	-23961.0	7.272	-4951.331	-1279.731	-10101.7	-145.420
		-23961.0	7.272	-3807.977	-1454.900	-1845.453	-145.420
11	5.324	-24140.6	7.272	-5981.801	-1279.731	-17314.6	-135.741
		-24140.6	7.272	-4749.002	-1454.900	-7477.004	-135.741
12	0	-24162.1	3.447	5076.608	-324.394	-17344.3	-135.741
		-24162.1	3.447	3907.725	-862.835	-7519.826	-135.741
12	1.050	-24289.0	3.447	4274.399	-324.394	-12391.2	-132.123
		-24289.0	3.447	3176.063	-862.835	-3756.811	-132.123
12	2.100	-24407.4	3.447	3446.709	-324.394	-8289.563	-128.504
		-24407.4	3.447	2726.570	-664.920	-705.373	-128.504
12	3.149	-24539.2	3.447	1851.479	-462.515	-5682.270	-124.886
		-24539.2	3.447	2036.084	-724.715	1820.005	-124.886
12	4.199	-24654.4	3.447	892.531	-462.515	-4214.231	-121.268
		-24654.4	3.447	1006.588	-724.715	3444.813	-121.268
13	0	-24654.5	4.888	892.531	-195.351	-4224.155	-121.268
		-24654.5	4.888	1006.588	-688.461	3423.495	-121.268
13	1.050	-24753.7	4.888	-70.540	-195.351	-3776.845	-116.135
		-24753.7	4.888	-27.044	-688.461	3953.522	-116.135
13	2.100	-24880.1	4.888	-786.782	-195.351	-4323.501	-111.002
		-24880.1	4.888	-813.848	-688.461	3415.492	-111.002
13	3.150	-25101.8	4.888	-743.148	-195.351	-5220.460	-105.869
		-25101.8	4.888	-840.775	-688.461	2453.069	-105.869
13	4.200	-25290.1	4.888	-419.168	-195.351	-5889.564	-100.736
		-25290.1	4.888	-587.356	-688.461	1644.409	-100.736
14	0	-25290.3	6.467	-419.168	-237.391	-5896.737	-100.736
		-25290.3	6.467	-587.356	-979.923	1616.754	-100.736
14	1.050	-25339.3	6.467	-75.544	-237.391	-6188.051	-93.945
		-25339.3	6.467	-314.290	-979.923	1111.808	-93.945
14	2.100	-25198.3	6.467	277.366	-237.391	-6019.236	-87.155
		-25198.3	6.467	-31.937	-979.923	992.909	-87.155
14	3.150	-25070.8	6.467	434.433	-237.391	-5541.888	-80.364
		-25070.8	6.467	54.573	-979.923	1108.461	-80.364
14	4.200	-24964.3	6.467	417.495	-237.391	-5051.914	-73.574
		-24964.3	6.467	-32.922	-979.923	1162.955	-73.574
15	0	-24964.5	7.990	417.495	-433.905	-5062.294	-73.574
		-24964.5	7.990	-32.922	-1375.598	1125.128	-73.574
15	1.050	-24860.0	7.990	360.030	-433.905	-4603.507	-65.183
		-24860.0	7.990	-160.961	-1375.598	1073.823	-65.183
15	2.100	-24756.3	7.990	277.169	-433.905	-4227.029	-56.791
		-24756.3	7.990	-314.397	-1375.598	866.091	-56.791
15	3.151	-24624.8	7.990	355.026	-433.905	-3862.507	-48.400
		-24624.8	7.990	-307.114	-1375.598	572.285	-48.400
15	4.201	-24475.6	7.990	-240.460	-1375.598	347.436	-40.008
		-24475.6	7.990	492.254	-433.905	-3354.911	-40.008
16	0	-24475.9	9.581	492.254	-625.901	-3372.787	-40.008
		-24475.9	9.581	-240.460	-1691.922	295.695	-40.008
16	1.049	-24318.9	9.581	623.110	-625.901	-2728.972	-29.953
		-24318.9	9.581	-180.130	-1691.922	133.519	-29.953
16	2.099	-24153.9	9.581	747.185	-625.901	-1959.720	-19.898
		-24153.9	9.581	-126.582	-1691.922	22.764	-19.898
16	3.148	-24073.6	9.581	468.721	-625.901	-1286.626	-9.842
		-24073.6	9.581	-475.572	-1691.922	-258.166	-9.842
16	4.198	-24002.5	9.581	-374.142	-4831.122	-956.745	0.212903
		-24002.5	9.581	-343.126	2513.299	-955.768	0.212903
17	0	4.757	23.560	-707.709	-5.64E-15	1886.449	-56.500
		4.757	23.560	-3113.009	-1.52E-14	7654.743	-56.500
17	0.600	4.757	23.560	-747.166	-5.64E-15	1450.321	-42.375
		4.757	23.560	-3152.466	-1.52E-14	5776.542	-42.375
17	1.199	4.757	23.560	-786.623	-5.64E-15	990.537	-28.250
		4.757	23.560	-3191.923	-1.52E-14	3874.684	-28.250
17	1.799	4.757	23.560	-826.081	-5.64E-15	507.096	-14.125

ENVOLVENTE para < My > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
		4.757	23.560	-3231.381	-1.52E-14	1949.170	-14.125
17	2.398	4.757	23.560	-865.538	-5.64E-15	2.08E-05	-5.65E-07
		4.757	23.560	-3270.838	-1.52E-14	7.84E-05	-5.65E-07
18	0	-3.820	-23.637	-202.031	1.15E-12	674.420	56.728
		-3.820	-23.637	-1753.920	1.17E-12	4398.977	56.728
18	0.600	-3.820	-23.637	-241.519	1.15E-12	541.354	42.546
		-3.820	-23.637	-1793.408	1.17E-12	3334.772	42.546
18	1.200	-3.820	-23.637	-281.006	1.15E-12	384.595	28.364
		-3.820	-23.637	-1832.896	1.17E-12	2246.874	28.364
18	1.800	-3.820	-23.637	-320.494	1.15E-12	204.144	14.182
		-3.820	-23.637	-1872.384	1.17E-12	1135.283	14.182
18	2.400	-3.820	-23.637	-359.982	1.15E-12	8.64E-06	5.67E-07
		-3.820	-23.637	-1911.871	1.17E-12	4.59E-05	5.67E-07
19	0	4.793	-23.548	-712.719	6.99E-13	1900.026	56.515
		4.793	-23.548	-2258.295	1.39E-12	5609.340	56.515
19	0.600	4.793	-23.548	-752.205	6.99E-13	1460.557	42.386
		4.793	-23.548	-2297.782	1.39E-12	4242.543	42.386
19	1.200	4.793	-23.548	-791.692	6.99E-13	997.396	28.257
		4.793	-23.548	-2337.269	1.39E-12	2852.053	28.257
19	1.800	4.793	-23.548	-831.179	6.99E-13	510.544	14.129
		4.793	-23.548	-2376.755	1.39E-12	1437.873	14.129
19	2.400	4.793	-23.548	-870.666	6.99E-13	2.09E-05	5.65E-07
		4.793	-23.548	-2416.242	1.39E-12	5.80E-05	5.65E-07
20	0	-4.782	23.458	-245.265	-8.29E-13	778.219	-56.302
		-4.782	23.458	-1759.825	-2.70E-13	4413.326	-56.302
20	0.600	-4.782	23.458	-284.754	-8.29E-13	619.206	-42.226
		-4.782	23.458	-1799.314	-2.70E-13	3345.536	-42.226
20	1.200	-4.782	23.458	-324.243	-8.29E-13	436.499	-28.151
		-4.782	23.458	-1838.803	-2.70E-13	2254.052	-28.151
20	1.800	-4.782	23.458	-363.733	-8.29E-13	230.097	-14.075
		-4.782	23.458	-1878.293	-2.70E-13	1138.873	-14.075
20	2.400	-4.782	23.458	-403.222	-8.29E-13	9.68E-06	-5.63E-07
		-4.782	23.458	-1917.782	-2.70E-13	4.60E-05	-5.63E-07

Mstb. 1:449,9
Section forces envelope My, GWSP JG (ELU 10), View "ALL"
- Struktur: Staebe
- Envelop Moment My-min, Scaling 2.00E-04
  min: -1.78E+04 max: 3.26E+03 [kNm]
- Envelop Moment My-max, Scaling 2.00E-04
  min: -7.62E+03 max: 1.28E+04 [kNm]
- Text envelopes [kNm]



ENVOLVENTE: JH 'ELU 11'

Grupo	Espe.	Hipótesis	Factor	Etapa	Título
A	PERM.	1	1.350		Peso Propio
	Y	3	1.350		Carga Muerta Máxima
	Y	20	0.850000		Pretensado
B	MAS	19	0.900000		gradiente
C	MAS	31	1.500		Carro 2 excéntrico
D	MAS	4	1.500		Sobrecarga centrada vano 1
E	MAS	5	1.500		Sobrecarga centrada vano 2
F	MAS	6	1.500		Sobrecarga centrada vano 3

ALTERNATIVA PARA ENVOLVENTE:

Grupo	Espe.	Hipótesis	Factor	Etapa	Título
G	PERM.	1	1.350		Peso Propio
	Y	3	1.350		Carga Muerta Máxima
	Y	20	0.850000		Pretensado
H	MAS	19	0.900000		gradiente
I	MAS	31	1.500		Carro 2 excéntrico
J	MAS	7	1.500		Sobrecarga excéntrica vano 1 (
K	MAS	8	1.500		Sobrecarga excentrica vano 2 (
L	MAS	9	1.500		Sobrecarga excentrica vano 3 (

ALTERNATIVA PARA ENVOLVENTE:

Grupo	Espe.	Hipótesis	Factor	Etapa	Título
M	PERM.	1	1.350		Peso Propio
	Y	3	1.350		Carga Muerta Máxima
	Y	20	0.850000		Pretensado
N	MAS	19	0.900000		gradiente
O	MAS	31	1.500		Carro 2 excéntrico
P	MAS	10	1.500		Sobrecarga excéntrica vano 1 (
Q	MAS	11	1.500		Sobrecarga excentrica vano 2 (
R	MAS	12	1.500		Sobrecarga excentrica vano 3 (

ENVOLVENTE para < Vz > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
1	0	-24024.4	-9.508	-244.207	-467.945	-851.803	-0.227677
		-24024.4	-9.508	853.695	1633.556	-841.176	-0.227677
1	1.050	-24091.4	-9.508	-563.965	-467.945	-1281.903	-10.212
		-24091.4	-9.508	463.371	1633.556	-155.448	-10.212
1	2.100	-24168.0	-9.508	-841.724	-467.945	-2054.590	-20.196
		-24168.0	-9.508	115.048	1633.556	113.595	-20.196
1	3.150	-24331.4	-9.508	-717.211	-467.945	-2922.938	-30.180
		-24331.4	-9.508	168.996	1633.556	212.877	-30.180
1	4.200	-24487.2	-9.508	-585.980	-467.945	-3665.351	-40.164
		-24487.2	-9.508	229.662	1633.556	363.997	-40.164
2	0	-24486.9	-8.079	-585.980	-631.261	-3682.009	-40.164
		-24486.9	-8.079	229.662	1347.176	409.170	-40.164
2	1.050	-24635.2	-8.079	-448.564	-631.261	-4287.479	-48.646
		-24635.2	-8.079	296.528	1347.176	622.958	-48.646
2	2.100	-24766.0	-8.079	-370.933	-631.261	-4749.874	-57.127
		-24766.0	-8.079	303.611	1347.176	905.756	-57.127
2	3.150	-24869.4	-8.079	-453.666	-631.261	-5224.452	-65.608
		-24869.4	-8.079	150.329	1347.176	1102.306	-65.608
2	4.199	-24973.8	-8.079	-510.947	-631.261	-5781.241	-74.090
		-24973.8	-8.079	22.499	1347.176	1142.581	-74.090
3	0	-24973.5	-6.428	-510.947	-818.697	-5806.473	-74.090
		-24973.5	-6.428	22.499	917.639	1181.993	-74.090
3	1.050	-25080.4	-6.428	-535.894	-835.434	-3440.016	-80.840
		-25080.4	-6.428	-50.167	-87.650	-306.738	-80.840
3	2.100	-25208.4	-6.428	-448.800	-835.434	-4060.983	-87.590
		-25208.4	-6.428	100.901	934.376	-1919.564	-87.590
3	3.150	-25350.0	-6.428	-166.109	-835.434	-4446.893	-94.341
		-25350.0	-6.428	454.159	934.376	-1691.179	-94.341
3	4.200	-25301.3	-6.428	107.296	-835.434	-4446.218	-101.091

ENVOLVENTE para < Vz > (y valores concomitantes), "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
		-25301.3	-6.428	798.131	934.376	-1002.107	-101.091
4	0	-25301.2	-4.907	107.296	-921.662	-4474.267	-101.091
		-25301.2	-4.907	798.131	737.314	-975.421	-101.091
4	1.050	-25113.3	-4.907	361.015	-921.662	-4169.556	-106.244
		-25113.3	-4.907	1122.408	737.314	91.686	-106.244
4	2.100	-24891.7	-4.907	333.712	-921.662	-3711.183	-111.396
		-24891.7	-4.907	1165.663	737.314	1386.538	-111.396
4	3.150	-24765.4	-4.907	-454.358	-921.662	-3678.244	-116.549
		-24765.4	-4.907	448.151	737.314	2330.038	-116.549
4	4.200	-24665.9	-4.907	-1488.243	-921.662	-4713.874	-121.701
		-24665.9	-4.907	-515.177	737.314	2279.053	-121.701
5	0	-24665.8	-3.365	-1488.243	-619.309	-4738.744	-121.701
		-24665.8	-3.365	-515.177	813.140	2304.076	-121.701
5	1.050	-24550.5	-3.365	-2517.839	-619.309	-6868.896	-125.233
		-24550.5	-3.365	-1474.239	813.140	1232.283	-125.233
5	2.099	-24418.6	-3.365	-3542.240	-619.309	-10088.8	-128.765
		-24418.6	-3.365	-2428.106	813.140	-855.231	-128.765
5	3.149	-24300.2	-3.365	-4369.794	-619.309	-14289.8	-132.296
		-24300.2	-3.365	-3185.126	813.140	-3849.818	-132.296
5	4.198	-24173.3	-3.365	-5172.028	-619.309	-19342.1	-135.828
		-24173.3	-3.365	-3916.826	813.140	-7621.641	-135.828
6	0	-24151.8	-7.272	4766.019	1380.810	-7583.036	-135.828
		-24151.8	-7.272	6432.056	361.588	-19346.6	-135.828
6	1.350	-23970.0	-7.272	3811.380	1380.810	-1857.118	-145.646
		-23970.0	-7.272	5386.693	361.588	-11432.7	-145.646
6	2.700	-23769.5	-7.272	2869.224	1380.810	2590.251	-155.464
		-23769.5	-7.272	4353.814	361.588	-4919.864	-155.464
6	4.050	-23484.4	-7.272	1581.982	1380.810	5576.774	-165.281
		-23484.4	-7.272	2975.849	361.588	9.678	-165.281
6	5.400	-23190.7	-7.272	453.571	1380.810	6786.634	-175.099
		-23190.7	-7.272	1756.716	361.588	3040.077	-175.099
7	0	-23190.5	-4.275	453.571	1152.339	6841.314	-175.099
		-23190.5	-4.275	1756.716	295.736	3054.266	-175.099
7	1.350	-22979.5	-4.275	-95.516	1152.339	7061.285	-180.870
		-22979.5	-4.275	1116.908	295.736	4972.265	-180.870
7	2.700	-22865.6	-4.275	-129.598	1152.339	6861.200	-186.641
		-22865.6	-4.275	992.105	295.736	6347.732	-186.641
7	4.050	-22768.8	-4.275	-50.752	1152.339	6772.246	-192.412
		-22768.8	-4.275	980.230	295.736	7711.857	-192.412
7	5.400	-22662.4	-4.275	24.709	1152.339	6803.030	-198.183
		-22662.4	-4.275	964.970	295.736	9073.244	-198.183
8	0	-22662.2	-1.476	24.709	428.865	6834.814	-198.183
		-22662.2	-1.476	964.970	-518.276	9068.770	-198.183
8	1.350	-22546.8	-1.476	96.142	428.865	6978.929	-200.175
		-22546.8	-1.476	945.693	-518.276	10420.9	-200.175
8	2.700	-22421.9	-1.476	162.974	428.865	7229.015	-202.168
		-22421.9	-1.476	921.814	-518.276	11756.5	-202.168
8	3.899	-22323.3	-1.476	74.236	428.865	7444.828	-203.938
		-22323.3	-1.476	752.493	-518.276	12834.0	-203.938
8	3.900	-22323.2	-1.476	74.135	428.865	7444.964	-203.940
		-22323.2	-1.476	452.319	231.724	12834.7	-203.940
8	4.050	-22311.0	-1.476	60.090	428.865	7462.807	-204.161
		-22311.0	-1.476	428.220	231.724	12908.4	-204.161
8	5.399	-22203.8	-1.476	-70.896	526.173	12218.3	-206.152
		-22203.8	-1.476	211.679	134.416	8716.234	-206.152
8	5.399	-22203.8	-1.476	-70.985	526.173	12218.3	-206.153
		-22203.8	-1.476	211.627	134.416	8716.321	-206.153
9	0	-22203.8	1.522	-222.612	-348.021	16964.6	-206.153
		-22203.8	1.522	63.255	-384.408	3984.540	-206.153
9	1.350	-22310.0	1.522	-441.745	-348.021	16447.4	-204.098
		-22310.0	1.522	-65.147	-384.408	3914.528	-204.098
9	1.499	-22321.8	1.522	-465.791	-348.021	16372.1	-203.871
		-22321.8	1.522	-79.160	-384.408	3896.244	-203.871
9	1.501	-22321.9	1.522	-765.964	401.979	16371.4	-203.870
		-22321.9	1.522	-79.261	-384.408	3896.104	-203.870
9	2.700	-22418.5	1.522	-924.754	401.979	15280.6	-202.044
		-22418.5	1.522	-157.424	-384.408	3677.537	-202.044
9	4.051	-22541.5	1.522	-948.658	401.979	13942.1	-199.989

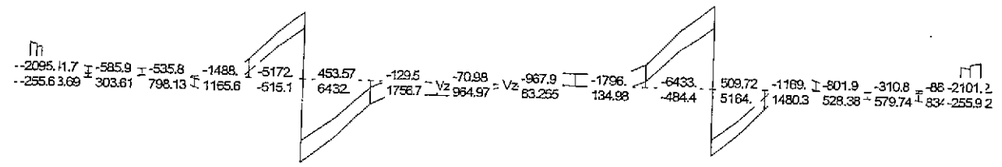
ENVOLVENTE para < Vz > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
		-22541.5	1.522	-90.597	-384.408	3436.350	-199.989
9	5.401	-22656.4	1.522	-967.949	401.979	12586.5	-197.934
		-22656.4	1.522	-19.156	-384.408	3300.507	-197.934
10	0	-22656.5	4.348	-967.949	-557.911	12583.3	-197.934
		-22656.5	4.348	-19.156	-966.774	3273.076	-197.934
10	1.350	-22762.3	4.348	-983.253	-557.911	11219.0	-192.065
		-22762.3	4.348	56.247	-966.774	3250.664	-192.065
10	2.700	-22858.4	4.348	-995.220	-557.911	9851.853	-186.196
		-22858.4	4.348	134.989	-966.774	3347.884	-186.196
10	4.049	-22979.8	4.348	-1155.478	-557.911	8463.653	-180.326
		-22979.8	4.348	65.439	-966.774	3546.490	-180.326
10	5.399	-23189.2	4.348	-1796.033	-557.911	6495.051	-174.457
		-23189.2	4.348	-484.408	-966.774	3287.134	-174.457
11	0	-23189.4	7.272	-1796.033	-758.033	6467.345	-174.457
		-23189.4	7.272	-484.408	-1031.512	3245.061	-174.457
11	1.331	-23485.6	7.272	-3040.529	-758.033	3397.603	-164.778
		-23485.6	7.272	-1639.459	-1031.512	1980.653	-164.778
11	2.662	-23763.2	7.272	-4384.712	-758.033	-1530.812	-155.099
		-23763.2	7.272	-2894.197	-1031.512	-1023.377	-155.099
11	3.993	-23961.0	7.272	-5403.078	-758.033	-7983.121	-145.420
		-23961.0	7.272	-3823.118	-1031.512	-5432.245	-145.420
11	5.324	-24140.6	7.272	-6433.548	-758.033	-15797.3	-135.741
		-24140.6	7.272	-4764.143	-1031.512	-11084.0	-135.741
12	0	-24162.1	3.447	3911.236	-808.379	-7601.006	-135.741
		-24162.1	3.447	5164.096	642.780	-19316.4	-135.741
12	1.050	-24289.0	3.447	3179.575	-808.379	-3834.304	-132.123
		-24289.0	3.447	4361.887	642.780	-14271.5	-132.123
12	2.100	-24407.4	3.447	2422.431	-808.379	-845.004	-128.504
		-24407.4	3.447	3534.197	642.780	-10078.0	-128.504
12	3.149	-24539.2	3.447	1468.672	-808.379	1236.954	-124.886
		-24539.2	3.447	2509.890	642.780	-6865.908	-124.886
12	4.199	-24654.4	3.447	509.724	-808.379	2303.118	-121.268
		-24654.4	3.447	1480.395	642.780	-4743.694	-121.268
13	0	-24654.5	4.888	509.724	-737.649	2279.795	-121.268
		-24654.5	4.888	1480.394	925.411	-4720.037	-121.268
13	1.050	-24753.7	4.888	-453.347	-737.649	2325.150	-116.135
		-24753.7	4.888	446.762	925.411	-3692.503	-116.135
13	2.100	-24880.1	4.888	-1169.590	-737.649	1376.539	-111.002
		-24880.1	4.888	-340.042	925.411	-3733.027	-111.002
13	3.150	-25101.8	4.888	-1125.955	-737.649	77.624	-105.869
		-25101.8	4.888	-366.969	925.411	-4197.944	-105.869
13	4.200	-25290.1	4.888	-801.975	-737.649	-993.435	-100.736
		-25290.1	4.888	-113.550	925.411	-4509.098	-100.736
14	0	-25290.3	6.467	-801.975	-941.660	-1021.271	-100.736
		-25290.3	6.467	-113.550	837.004	-4479.885	-100.736
14	1.050	-25339.3	6.467	-458.352	-941.660	-1714.517	-93.945
		-25339.3	6.467	159.516	837.004	-4487.353	-93.945
14	2.100	-25198.3	6.467	-105.441	-941.660	-1947.634	-87.155
		-25198.3	6.467	441.869	837.004	-4108.775	-87.155
14	3.150	-25070.8	6.467	41.770	80.729	-362.929	-80.364
		-25070.8	6.467	528.380	837.004	-3495.746	-80.364
14	4.200	-24964.3	6.467	-29.411	-921.861	1129.586	-73.574
		-24964.3	6.467	504.983	817.205	-5857.137	-73.574
15	0	-24964.5	7.990	-29.411	-1316.495	1093.641	-73.574
		-24964.5	7.990	504.982	646.016	-5833.639	-73.574
15	1.050	-24860.0	7.990	-157.450	-1316.495	1046.023	-65.183
		-24860.0	7.990	447.518	646.016	-5282.971	-65.183
15	2.100	-24756.3	7.990	-310.886	-1316.495	841.978	-56.791
		-24756.3	7.990	364.656	646.016	-4814.613	-56.791
15	3.151	-24624.8	7.990	-303.603	-1316.495	551.860	-48.400
		-24624.8	7.990	442.514	646.016	-4358.211	-48.400
15	4.201	-24475.6	7.990	-236.949	-1316.495	330.699	-40.008
		-24475.6	7.990	579.742	646.016	-3758.734	-40.008
16	0	-24475.9	9.581	-236.949	-1632.287	280.960	-40.008
		-24475.9	9.581	579.742	467.024	-3739.959	-40.008
16	1.049	-24318.9	9.581	-176.619	-1632.287	122.470	-29.953
		-24318.9	9.581	710.598	467.024	-3004.327	-29.953
16	2.099	-24153.9	9.581	-123.071	-1632.287	15.400	-19.898

ENVOLVENTE para < Vz > (y valores concomitantes) · "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
		-24153.9	9.581	834.672	467.024	-2143.256	-19.898
16	3.148	-24073.6	9.581	-472.060	-1632.287	-261.845	-9.842
		-24073.6	9.581	556.209	467.024	-1378.344	-9.842
16	4.198	-24002.5	9.581	-862.532	-1632.287	-956.042	0.212903
		-24002.5	9.581	236.263	467.024	-956.366	0.212903
17	0	4.757	23.560	-2243.150	4.48E-14	5568.682	-56.500
		4.757	23.560	-436.012	-1.75E-13	1234.875	-56.500
17	0.600	4.757	23.560	-2282.607	4.48E-14	4211.996	-42.375
		4.757	23.560	-475.469	-1.75E-13	961.641	-42.375
17	1.199	4.757	23.560	-2322.064	4.48E-14	2831.654	-28.250
		4.757	23.560	-514.926	-1.75E-13	664.750	-28.250
17	1.799	4.757	23.560	-2361.522	4.48E-14	1427.655	-14.125
		4.757	23.560	-554.383	-1.75E-13	344.203	-14.125
17	2.398	4.757	23.560	-2400.979	4.48E-14	5.76E-05	-5.65E-07
		4.757	23.560	-593.841	-1.75E-13	1.42E-05	-5.65E-07
18	0	-3.820	-23.637	-1937.376	1.18E-12	4839.273	56.728
		-3.820	-23.637	-255.642	1.04E-12	803.088	56.728
18	0.600	-3.820	-23.637	-1976.864	1.18E-12	3664.994	42.546
		-3.820	-23.637	-295.130	1.04E-12	637.855	42.546
18	1.200	-3.820	-23.637	-2016.351	1.18E-12	2467.022	28.364
		-3.820	-23.637	-334.618	1.04E-12	448.929	28.364
18	1.800	-3.820	-23.637	-2055.839	1.18E-12	1245.357	14.182
		-3.820	-23.637	-374.106	1.04E-12	236.311	14.182
18	2.400	-3.820	-23.637	-2095.327	1.18E-12	5.03E-05	5.67E-07
		-3.820	-23.637	-413.593	1.04E-12	9.93E-06	5.67E-07
19	0	4.793	-23.548	-2244.116	1.40E-12	5575.311	56.515
		4.793	-23.548	-441.284	6.93E-13	1248.594	56.515
19	0.600	4.793	-23.548	-2283.603	1.40E-12	4217.020	42.386
		4.793	-23.548	-480.770	6.93E-13	971.983	42.386
19	1.200	4.793	-23.548	-2323.089	1.40E-12	2835.039	28.257
		4.793	-23.548	-520.257	6.93E-13	671.680	28.257
19	1.800	4.793	-23.548	-2362.576	1.40E-12	1429.365	14.129
		4.793	-23.548	-559.744	6.93E-13	347.686	14.129
19	2.400	4.793	-23.548	-2402.063	1.40E-12	5.76E-05	5.65E-07
		4.793	-23.548	-599.231	6.93E-13	1.44E-05	5.65E-07
20	0	-4.782	23.458	-1943.772	-2.42E-13	4854.819	-56.302
		-4.782	23.458	-255.933	-8.30E-13	803.823	-56.302
20	0.600	-4.782	23.458	-1983.262	-2.42E-13	3676.656	-42.226
		-4.782	23.458	-295.422	-8.30E-13	638.409	-42.226
20	1.200	-4.782	23.458	-2022.751	-2.42E-13	2474.799	-28.151
		-4.782	23.458	-334.911	-8.30E-13	449.301	-28.151
20	1.800	-4.782	23.458	-2062.240	-2.42E-13	1249.247	-14.075
		-4.782	23.458	-374.401	-8.30E-13	236.498	-14.075
20	2.400	-4.782	23.458	-2101.729	-2.42E-13	5.04E-05	-5.63E-07
		-4.782	23.458	-413.890	-8.30E-13	9.93E-06	-5.63E-07

Mstb. 1:449.9
Section forces envelope Vz, GWSP JH (ELU 11), View "ALL"
- Struktur: Staebe
- Envelop Shear force Vz-min, Scaling 1.00E-03
  min: -6.43E+03 max: 4.77E+03 [kN]
- Envelop Shear force Vz-max, Scaling 1.00E-03
  min: -4.76E+03 max: 6.43E+03 [kN]
- Text envelopes [kN]



ENVOLVENTE para < T > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
		-24024.4	-9.508	242.041	-3600.612	-766.777	-0.227677
1	0	-24024.4	-9.508	367.446	4766.223	-926.202	-0.227677
		-24091.4	-9.508	-112.999	-3501.821	-704.806	-10.212
1	1.050	-24091.4	-9.508	12.405	4667.432	-732.546	-10.212
		-24168.0	-9.508	-426.041	-3403.030	-1022.469	-20.196
1	2.100	-24168.0	-9.508	-300.636	4568.641	-918.526	-20.196
		-24331.4	-9.508	-336.810	-3304.239	-1472.844	-30.180
1	3.150	-24331.4	-9.508	-211.405	4469.850	-1237.216	-30.180
		-24487.2	-9.508	-240.861	-3205.448	-1834.333	-40.164
1	4.200	-24487.2	-9.508	-115.457	4371.059	-1467.021	-40.164
		-24486.9	-8.079	-240.861	-3422.992	-1934.785	-40.164
2	0	-24486.9	-8.079	-115.457	4138.906	-1338.054	-40.164
		-24635.2	-8.079	-138.720	-3324.223	-2196.453	-48.646
2	1.050	-24635.2	-8.079	-13.316	4040.138	-1468.068	-48.646
		-24766.0	-8.079	-96.363	-3225.454	-2352.079	-57.127
2	2.100	-24766.0	-8.079	29.042	3941.369	-1492.039	-57.127
		-24869.4	-8.079	-214.371	-3126.686	-2556.920	-65.608
2	3.150	-24869.4	-8.079	-88.966	3842.600	-1565.226	-65.608
		-24973.8	-8.079	-306.926	-3027.917	-2881.004	-74.090
2	4.199	-24973.8	-8.079	-181.521	3743.832	-1757.656	-74.090
		-24973.5	-6.428	-306.926	-3314.811	-2991.380	-74.090
3	0	-24973.5	-6.428	-181.521	3413.753	-1633.100	-74.090
		-25080.4	-6.428	-359.029	-3216.017	-3384.386	-80.840
3	1.050	-25080.4	-6.428	-233.624	3314.959	-1894.418	-80.840
		-25208.4	-6.428	-236.652	-3117.223	-3801.102	-87.590
3	2.100	-25208.4	-6.428	-111.247	3216.165	-2179.445	-87.590
		-25350.0	-6.428	81.323	-3018.430	-3945.708	-94.341
3	3.150	-25350.0	-6.428	206.727	3117.372	-2192.364	-94.341
		-25301.3	-6.428	390.011	-2919.636	-3666.678	-101.091
3	4.200	-25301.3	-6.428	515.416	3018.578	-1781.646	-101.091
		-25301.2	-4.907	390.011	-3029.684	-3761.651	-101.091
4	0	-25301.2	-4.907	515.416	2845.336	-1688.037	-101.091
		-25113.3	-4.907	679.009	-2930.903	-3141.577	-106.244
4	1.050	-25113.3	-4.907	804.414	2746.555	-936.293	-106.244
		-24891.7	-4.907	686.985	-2832.122	-2330.800	-111.396
4	2.100	-24891.7	-4.907	812.390	2547.774	6.155	-111.396
		-24765.4	-4.907	-65.806	-2733.342	-1908.416	-116.549
4	3.150	-24765.4	-4.907	59.599	2548.993	560.210	-116.549
		-24665.9	-4.907	-1064.413	-2634.561	-2517.559	-121.701
4	4.200	-24665.9	-4.907	-939.008	2450.212	82.738	-121.701
		-24665.8	-3.365	-1064.413	-2402.191	-2598.848	-121.701
5	0	-24665.8	-3.365	-939.008	2596.022	164.180	-121.701

ENVOLVENTE para < T > (y valores concomitantes) . "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
5	1.050	-24550.5	-3.365	-2058.741	-2303.443	-4265.634	-125.233
		-24550.5	-3.365	-1629.808	2589.101	-1369.620	-125.233
5	2.099	-24418.6	-3.365	-2743.543	-2260.930	-7196.175	-128.765
		-24418.6	-3.365	-2583.675	2589.101	-3620.421	-128.765
5	3.149	-24300.2	-3.365	-3500.564	-2260.930	-10521.8	-132.296
		-24300.2	-3.365	-3340.695	2589.101	-6778.295	-132.296
5	4.198	-24173.3	-3.365	-4232.264	-2260.930	-14624.8	-135.828
		-24173.3	-3.365	-4072.396	2589.101	-10713.4	-135.828
6	0	-24151.8	-7.272	5800.426	-1444.979	-14690.0	-135.828
		-24151.8	-7.272	5331.739	3264.444	-10610.4	-135.828
6	1.350	-23970.0	-7.272	4800.424	-1317.967	-7598.179	-145.646
		-23970.0	-7.272	4331.738	3137.432	-4151.363	-145.646
6	2.700	-23769.5	-7.272	3812.907	-1190.955	-1846.177	-155.464
		-23769.5	-7.272	3344.221	3010.420	967.893	-155.464
6	4.050	-23484.4	-7.272	2480.304	-1063.943	2383.738	-165.281
		-23484.4	-7.272	2011.617	2883.408	4565.062	-165.281
6	5.400	-23190.7	-7.272	1306.532	-936.931	4775.749	-175.099
		-23190.7	-7.272	837.845	2756.396	6324.328	-175.099
7	0	-23190.5	-4.275	1306.531	-1076.471	4732.289	-175.099
		-23190.5	-4.275	837.845	2546.593	6438.797	-175.099
7	1.350	-22979.5	-4.275	712.084	-949.462	6073.150	-180.870
		-22979.5	-4.275	243.398	2419.584	7146.925	-180.870
7	2.700	-22865.6	-4.275	632.641	-822.452	6932.718	-186.641
		-22865.6	-4.275	163.955	2292.574	7373.760	-186.641
7	4.050	-22768.8	-4.275	666.127	-695.443	7842.181	-192.412
		-22768.8	-4.275	197.441	2165.565	7650.489	-192.412
7	5.400	-22662.4	-4.275	696.228	-568.433	8810.143	-198.183
		-22662.4	-4.275	227.542	2038.556	7985.718	-198.183
8	0	-22662.2	-1.476	696.228	-1371.174	8771.155	-198.183
		-22662.2	-1.476	227.542	1266.839	8052.160	-198.183
8	1.350	-22546.8	-1.476	722.306	-1244.180	9791.111	-200.175
		-22546.8	-1.476	253.620	1139.845	8439.458	-200.175
8	2.700	-22421.9	-1.476	743.782	-1117.186	10855.8	-202.168
		-22421.9	-1.476	275.096	1012.850	8871.504	-202.168
8	3.899	-22323.3	-1.476	614.753	-1004.368	11744.0	-203.938
		-22323.3	-1.476	146.066	900.033	9197.612	-203.938
8	3.900	-22323.2	-1.476	314.615	-254.267	11744.5	-203.940
		-22323.2	-1.476	145.929	899.931	9197.825	-203.940
8	4.050	-22311.0	-1.476	295.543	-240.192	11798.0	-204.161
		-22311.0	-1.476	126.857	885.856	9226.033	-204.161
8	5.399	-22203.8	-1.476	122.728	-178.434	9207.331	-206.152
		-22203.8	-1.476	19.908	826.817	10947.2	-206.152
8	5.399	-22203.8	-1.476	122.676	-178.434	9207.369	-206.153
		-22203.8	-1.476	19.838	826.868	10947.2	-206.153
9	0	-22203.8	1.522	-26.783	-858.965	10947.8	-206.153
		-22203.8	1.522	-130.703	147.939	9221.515	-206.153
9	1.350	-22310.0	1.522	-135.840	-933.240	9217.933	-204.098
		-22310.0	1.522	-305.437	213.620	11799.4	-204.098
9	1.499	-22321.8	1.522	-154.870	-947.286	9188.721	-203.871
		-22321.8	1.522	-324.467	227.666	11744.9	-203.871
9	1.501	-22321.9	1.522	-155.007	-947.387	9188.499	-203.870
		-22321.9	1.522	-624.604	977.767	11744.3	-203.870
9	2.700	-22418.5	1.522	-273.484	-1060.264	8854.869	-202.044
		-22418.5	1.522	-743.081	1090.644	10847.3	-202.044
9	4.051	-22541.5	1.522	-252.022	-1187.288	8426.357	-199.989
		-22541.5	1.522	-721.619	1217.668	9784.744	-199.989
9	5.401	-22656.4	1.522	-225.947	-1314.311	8041.938	-197.934
		-22656.4	1.522	-695.544	1344.692	8766.290	-197.934
10	0	-22656.5	4.348	-225.947	-2088.344	7972.860	-197.934
		-22656.5	4.348	-695.544	539.070	8804.532	-197.934
10	1.350	-22762.3	4.348	-195.898	-2215.336	7640.706	-192.065
		-22762.3	4.348	-665.495	666.062	7838.504	-192.065
10	2.700	-22858.4	4.348	-162.510	-2342.327	7366.965	-186.196
		-22858.4	4.348	-632.107	793.053	6930.889	-186.196
10	4.049	-22979.8	4.348	-277.414	-2469.319	7133.389	-180.326
		-22979.8	4.348	-747.011	920.045	6063.439	-180.326
10	5.399	-23189.2	4.348	-872.615	-2596.310	6380.631	-174.457
		-23189.2	4.348	-1342.212	1047.037	4676.807	-174.457

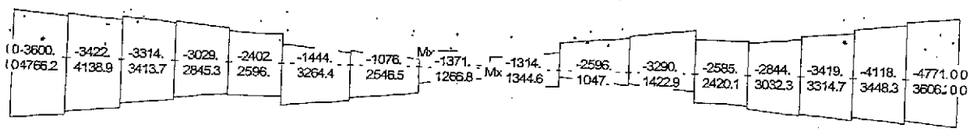
ENVOLVENTE para < T > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
11	0	-23189.4	7.272	-872.615	-2789.810	6267.229	-174.457
		-23189.4	7.272	-1342.212	922.023	4718.264	-174.457
11	1.331	-23485.6	7.272	-2072.388	-2915.033	4456.344	-164.778
		-23485.6	7.272	-2541.985	1047.246	2282.334	-164.778
11	2.662	-23763.2	7.272	-3371.849	-3040.256	846.312	-155.099
		-23763.2	7.272	-3841.446	1172.468	-1952.744	-155.099
11	3.993	-23961.0	7.272	-4345.492	-3165.479	-4228.087	-145.420
		-23961.0	7.272	-4815.089	1297.691	-7652.189	-145.420
11	5.324	-24140.6	7.272	-5331.240	-3290.702	-10604.8	-135.741
		-24140.6	7.272	-5800.837	1422.914	-14654.0	-135.741
12	0	-24162.1	3.447	4069.592	-2581.845	-10713.3	-135.741
		-24162.1	3.447	4223.175	2278.125	-14585.6	-135.741
12	1.050	-24289.0	3.447	3337.931	-2581.845	-6780.403	-132.123
		-24289.0	3.447	3491.513	2278.125	-10491.4	-132.123
12	2.100	-24407.4	3.447	2580.788	-2581.845	-3624.859	-128.504
		-24407.4	3.447	2734.370	2278.125	-7174.661	-128.504
12	3.149	-24539.2	3.447	1627.028	-2581.845	-1376.657	-124.886
		-24539.2	3.447	2046.777	2321.430	-4250.566	-124.886
12	4.199	-24654.4	3.447	937.563	-2585.796	155.440	-121.268
		-24654.4	3.447	1052.556	2420.196	-2596.016	-121.268
13	0	-24654.5	4.888	937.563	-2449.474	79.481	-121.268
		-24654.5	4.888	1052.555	2637.236	-2519.722	-121.268
13	1.050	-24753.7	4.888	-60.789	-2548.259	555.553	-116.135
		-24753.7	4.888	54.204	2736.022	-1922.905	-116.135
13	2.100	-24880.1	4.888	-812.312	-2647.045	0.612866	-111.002
		-24880.1	4.888	-697.319	2834.808	-2357.101	-111.002
13	3.150	-25101.8	4.888	-803.958	-2745.831	-941.676	-105.869
		-25101.8	4.888	-688.966	2933.594	-3178.644	-105.869
13	4.200	-25290.1	4.888	-515.259	-2844.617	-1693.154	-100.736
		-25290.1	4.888	-400.266	3032.380	-3809.378	-100.736
14	0	-25290.3	6.467	-515.259	-3024.280	-1790.435	-100.736
		-25290.3	6.467	-400.266	2919.625	-3710.720	-100.736
14	1.050	-25339.3	6.467	-206.914	-3123.060	-2201.162	-93.945
		-25339.3	6.467	-91.921	3018.405	-4000.709	-93.945
14	2.100	-25198.3	6.467	110.718	-3221.841	-2188.800	-87.155
		-25198.3	6.467	225.711	3117.185	-3867.609	-87.155
14	3.150	-25070.8	6.467	232.507	-3320.621	-1904.947	-80.364
		-25070.8	6.467	347.499	3215.965	-3463.018	-80.364
14	4.200	-24964.3	6.467	180.289	-3419.401	-1645.109	-73.574
		-24964.3	6.467	295.282	3314.745	-3082.442	-73.574
15	0	-24964.5	7.990	180.289	-3723.653	-1759.819	-73.574
		-24964.5	7.990	295.282	3053.174	-2980.180	-73.574
15	1.050	-24860.0	7.990	87.538	-3822.457	-1568.677	-65.183
		-24860.0	7.990	202.530	3151.977	-2668.271	-65.183
15	2.100	-24756.3	7.990	-30.611	-3921.260	-1496.903	-56.791
		-24756.3	7.990	84.382	3250.781	-2475.731	-56.791
15	3.151	-24624.8	7.990	11.959	-4020.064	-1474.145	-48.400
		-24624.8	7.990	126.952	3349.585	-2332.206	-48.400
15	4.201	-24475.6	7.990	113.900	-4118.868	-1345.370	-40.008
		-24475.6	7.990	228.893	3448.389	-2082.665	-40.008
16	0	-24475.9	9.581	113.900	-4376.540	-1488.666	-40.008
		-24475.9	9.581	228.893	3211.278	-1970.333	-40.008
16	1.049	-24318.9	9.581	209.493	-4475.277	-1260.437	-29.953
		-24318.9	9.581	324.486	3310.014	-1621.420	-29.953
16	2.099	-24153.9	9.581	298.305	-4574.014	-943.779	-19.898
		-24153.9	9.581	413.297	3408.751	-1184.077	-19.898
16	3.148	-24073.6	9.581	-15.422	-4672.751	-760.288	-9.842
		-24073.6	9.581	99.571	3507.488	-879.901	-9.842
16	4.198	-24002.5	9.581	-370.631	-4771.487	-956.739	0.212903
		-24002.5	9.581	-255.638	3606.225	-955.668	0.212903
17	0	4.757	23.560	-1408.783	-3.29E-13	3567.736	-56.500
		4.757	23.560	-1461.992	3.59E-13	3695.341	-56.500
17	0.600	4.757	23.560	-1448.240	-3.29E-13	2711.287	-42.375
		4.757	23.560	-1501.450	3.59E-13	2806.990	-42.375
17	1.199	4.757	23.560	-1487.697	-3.29E-13	1831.181	-28.250
		4.757	23.560	-1540.907	3.59E-13	1894.983	-28.250
17	1.799	4.757	23.560	-1527.155	-3.29E-13	927.418	-14.125
		4.757	23.560	-1580.364	3.59E-13	959.320	-14.125

ENVOLVENTE para < T > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
17	2.398	4.757	23.560	-1566.612	-3.29E-13	3.76E-05	-5.65E-07
		4.757	23.560	-1619.821	3.59E-13	3.88E-05	-5.65E-07
18	0	-3.820	-23.637	-1081.675	8.78E-13	2785.579	56.728
		-3.820	-23.637	-715.387	1.30E-12	1906.483	56.728
18	0.600	-3.820	-23.637	-1121.163	8.78E-13	2124.724	42.546
		-3.820	-23.637	-754.875	1.30E-12	1465.401	42.546
18	1.200	-3.820	-23.637	-1160.651	8.78E-13	1440.175	28.364
		-3.820	-23.637	-794.363	1.30E-12	1000.627	28.364
18	1.800	-3.820	-23.637	-1200.139	8.78E-13	731.934	14.182
		-3.820	-23.637	-833.851	1.30E-12	512.160	14.182
18	2.400	-3.820	-23.637	-1239.626	8.78E-13	2.98E-05	5.67E-07
		-3.820	-23.637	-873.338	1.30E-12	2.10E-05	5.67E-07
19	0	4.793	-23.548	-485.314	6.91E-13	1354.264	56.515
		4.793	-23.548	-2244.116	1.40E-12	5575.311	56.515
19	0.600	4.793	-23.548	-524.801	6.91E-13	1051.236	42.386
		4.793	-23.548	-2283.603	1.40E-12	4217.020	42.386
19	1.200	4.793	-23.548	-564.287	6.91E-13	724.515	28.257
		4.793	-23.548	-2323.089	1.40E-12	2835.039	28.257
19	1.800	4.793	-23.548	-603.774	6.91E-13	374.104	14.129
		4.793	-23.548	-2362.576	1.40E-12	1429.365	14.129
19	2.400	4.793	-23.548	-643.261	6.91E-13	1.54E-05	5.65E-07
		4.793	-23.548	-2402.063	1.40E-12	5.76E-05	5.65E-07
20	0	-4.782	23.458	-1074.791	-8.93E-13	2769.170	-56.302
		-4.782	23.458	-1607.457	-2.29E-13	4047.627	-56.302
20	0.600	-4.782	23.458	-1114.280	-8.93E-13	2112.419	-42.226
		-4.782	23.458	-1646.946	-2.29E-13	3071.262	-42.226
20	1.200	-4.782	23.458	-1153.769	-8.93E-13	1431.974	-28.151
		-4.782	23.458	-1686.436	-2.29E-13	2071.203	-28.151
20	1.800	-4.782	23.458	-1193.258	-8.93E-13	727.834	-14.075
		-4.782	23.458	-1725.925	-2.29E-13	1047.449	-14.075
20	2.400	-4.782	23.458	-1232.748	-8.93E-13	2.96E-05	-5.63E-07
		-4.782	23.458	-1765.414	-2.29E-13	4.24E-05	-5.63E-07

Mstb. 1:449.9
Section forces envelope T, GWSP JH (ELU 11), View "ALL"
- Struktur: Staebe
- Envelop Torsion.moment Mx-min, Scaling 1.00E-03
  min: -4.77E+03 max: 8.78E-13 [kNm]
- Envelop Torsion.moment Mx-max, Scaling 1.00E-03
  min: -2.29E-13 max: 4.77E+03 [kNm]
- Text envelopes [kNm]



ENVOLVENTE para < My > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
1	0	-24024.4	-9.508	367.446	4766.223	-926.202	-0.227677
		-24024.4	-9.508	242.041	-3600.612	-766.777	-0.227677
1	1.050	-24091.4	-9.508	-563.965	-467.945	-1281.903	-10.212
		-24091.4	-9.508	463.371	1633.556	-155.448	-10.212
1	2.100	-24168.0	-9.508	-841.724	-467.945	-2054.590	-20.196
		-24168.0	-9.508	115.048	1633.556	113.595	-20.196
1	3.150	-24331.4	-9.508	-717.211	-467.945	-2922.938	-30.180
		-24331.4	-9.508	168.996	1633.556	212.877	-30.180
1	4.200	-24487.2	-9.508	-585.980	-467.945	-3665.351	-40.164
		-24487.2	-9.508	229.662	1633.556	363.997	-40.164
2	0	-24486.9	-8.079	-585.980	-631.261	-3682.009	-40.164
		-24486.9	-8.079	229.662	1347.176	409.170	-40.164
2	1.050	-24635.2	-8.079	-448.564	-631.261	-4287.479	-48.646
		-24635.2	-8.079	296.528	1347.176	622.958	-48.646
2	2.100	-24766.0	-8.079	-370.933	-631.261	-4749.874	-57.127
		-24766.0	-8.079	303.611	1347.176	905.756	-57.127
2	3.150	-24869.4	-8.079	-453.666	-631.261	-5224.452	-65.608
		-24869.4	-8.079	150.329	1347.176	1102.306	-65.608
2	4.199	-24973.8	-8.079	-510.947	-631.261	-5781.241	-74.090
		-24973.8	-8.079	22.499	1347.176	1142.581	-74.090
3	0	-24973.5	-6.428	-510.947	-818.697	-5806.473	-74.090
		-24973.5	-6.428	22.499	917.639	1181.993	-74.090
3	1.050	-25080.4	-6.428	-527.766	-818.697	-6395.196	-80.840
		-25080.4	-6.428	-64.887	917.639	1116.392	-80.840
3	2.100	-25208.4	-6.428	-370.106	-818.697	-6970.577	-87.590
		-25208.4	-6.428	22.206	917.639	990.030	-87.590
3	3.150	-25350.0	-6.428	-16.847	-818.697	-7236.798	-94.341
		-25350.0	-6.428	304.898	917.639	1098.726	-94.341
3	4.200	-25301.3	-6.428	327.124	-818.697	-7042.332	-101.091
		-25301.3	-6.428	578.302	917.639	1594.007	-101.091
4	0	-25301.2	-4.907	327.124	-822.069	-7068.524	-101.091
		-25301.2	-4.907	578.302	637.720	1618.836	-101.091
4	1.050	-25113.3	-4.907	651.401	-822.069	-6495.958	-106.244
		-25113.3	-4.907	832.022	637.720	2418.089	-106.244
4	2.100	-24891.7	-4.907	694.656	-822.069	-5695.648	-111.396
		-24891.7	-4.907	804.719	637.720	3371.003	-111.396
4	3.150	-24765.4	-4.907	-22.856	-822.069	-5246.689	-116.549
		-24765.4	-4.907	16.649	637.720	3898.483	-116.549
4	4.200	-24665.9	-4.907	-986.184	-822.069	-5792.215	-121.701
		-24665.9	-4.907	-1017.237	637.720	3357.394	-121.701
5	0	-24665.8	-3.365	-986.184	-484.969	-5813.309	-121.701
		-24665.8	-3.365	-1017.237	678.801	3378.641	-121.701
5	1.050	-24550.5	-3.365	-1945.246	-484.969	-7379.477	-125.233
		-24550.5	-3.365	-2046.832	678.801	1742.863	-125.233
5	2.099	-24418.6	-3.365	-3542.240	-619.309	-10088.8	-128.765
		-24418.6	-3.365	-2739.013	615.492	-797.263	-128.765
5	3.149	-24300.2	-3.365	-4369.794	-619.309	-14289.8	-132.296
		-24300.2	-3.365	-3185.126	813.140	-3849.818	-132.296
5	4.198	-24173.3	-3.365	-5172.028	-619.309	-19342.1	-135.828
		-24173.3	-3.365	-3916.826	813.140	-7621.641	-135.828
6	0	-24151.8	-7.272	6432.056	361.588	-19346.6	-135.828
		-24151.8	-7.272	4766.019	1380.810	-7583.036	-135.828
6	1.350	-23970.0	-7.272	5386.693	361.588	-11432.7	-145.646
		-23970.0	-7.272	3811.380	1380.810	-1857.118	-145.646
6	2.700	-23769.5	-7.272	4353.814	361.588	-4919.864	-155.464
		-23769.5	-7.272	2869.224	1380.810	2590.251	-155.464
6	4.050	-23484.4	-7.272	2545.013	1024.737	-118.349	-165.281
		-23484.4	-7.272	2031.812	198.577	6098.686	-165.281
6	5.400	-23190.7	-7.272	585.215	975.165	1839.492	-175.099
		-23190.7	-7.272	1306.412	-568.982	8303.210	-175.099
7	0	-23190.5	-4.275	585.215	960.548	1881.276	-175.099
		-23190.5	-4.275	1306.412	-861.080	8272.341	-175.099
7	1.350	-22979.5	-4.275	36.128	960.548	2278.968	-180.870
		-22979.5	-4.275	985.265	487.526	9754.581	-180.870
7	2.700	-22865.6	-4.275	-63.569	914.901	2223.924	-186.641
		-22865.6	-4.275	926.075	533.174	10985.0	-186.641
7	4.050	-22768.8	-4.275	15.278	914.901	2224.111	-192.412
		-22768.8	-4.275	914.201	533.174	12260.0	-192.412

ENVOLVENTE para < My > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
7	5.400	-22662.4	-4.275	90.739	914.901	2344.036	-198.183
		-22662.4	-4.275	898.941	533.174	13532.2	-198.183
8	0	-22662.2	-1.476	90.739	370.807	2369.879	-198.183
		-22662.2	-1.476	898.941	-460.217	13533.7	-198.183
8	1.350	-22546.8	-1.476	162.172	370.807	2603.125	-200.175
		-22546.8	-1.476	879.664	-460.217	14796.7	-200.175
8	2.700	-22421.9	-1.476	229.003	370.807	2942.341	-202.168
		-22421.9	-1.476	855.785	-460.217	16043.2	-202.168
8	3.899	-22323.3	-1.476	140.266	370.807	3237.335	-203.938
		-22323.3	-1.476	686.463	-460.217	17041.5	-203.938
8	3.900	-22323.2	-1.476	140.164	370.807	3237.542	-203.940
		-22323.2	-1.476	386.290	289.783	17042.1	-203.940
8	4.050	-22311.0	-1.476	126.119	370.807	3265.263	-204.161
		-22311.0	-1.476	362.191	289.783	17105.9	-204.161
8	5.399	-22203.8	-1.476	-2.307	370.807	3418.277	-206.152
		-22203.8	-1.476	143.090	289.783	17516.3	-206.152
8	5.399	-22203.8	-1.476	-2.359	370.807	3418.249	-206.153
		-22203.8	-1.476	143.002	289.783	17516.3	-206.153
9	0	-22203.8	1.522	-2.359	-397.217	3417.680	-206.153
		-22203.8	1.522	-156.998	-335.212	17531.5	-206.153
9	1.350	-22310.0	1.522	-130.761	-397.217	3259.078	-204.098
		-22310.0	1.522	-376.131	-335.212	17102.8	-204.098
9	1.499	-22321.8	1.522	-144.774	-397.217	3230.998	-203.871
		-22321.8	1.522	-400.176	-335.212	17037.4	-203.871
9	1.501	-22321.9	1.522	-144.875	-397.217	3230.787	-203.870
		-22321.9	1.522	-700.350	414.788	17036.7	-203.870
9	2.700	-22418.5	1.522	-223.039	-397.217	2933.497	-202.044
		-22418.5	1.522	-859.140	414.788	16024.6	-202.044
9	4.051	-22541.5	1.522	-156.211	-397.217	2603.719	-199.989
		-22541.5	1.522	-883.044	414.788	14774.8	-199.989
9	5.401	-22656.4	1.522	-84.771	-397.217	2379.286	-197.934
		-22656.4	1.522	-902.334	414.788	13507.7	-197.934
10	0	-22656.5	4.348	-84.771	-942.185	2352.095	-197.934
		-22656.5	4.348	-902.334	-582.500	13504.3	-197.934
10	1.350	-22762.3	4.348	-9.367	-942.185	2241.114	-192.065
		-22762.3	4.348	-917.639	-582.500	12228.5	-192.065
10	2.700	-22858.4	4.348	69.375	-942.185	2249.767	-186.196
		-22858.4	4.348	-929.606	-582.500	10950.0	-186.196
10	4.049	-22979.8	4.348	-66.085	-989.705	2297.877	-180.326
		-22979.8	4.348	-1023.953	-534.980	9712.266	-180.326
10	5.399	-23189.2	4.348	-615.932	-989.705	1860.986	-174.457
		-23189.2	4.348	-1342.331	823.743	8213.786	-174.457
11	0	-23189.4	7.272	-615.932	-994.395	1819.212	-174.457
		-23189.4	7.272	-1342.331	550.055	8242.710	-174.457
11	1.331	-23485.6	7.272	-2608.800	-1053.078	-247.057	-164.778
		-23485.6	7.272	-2090.477	-218.389	6009.723	-164.778
11	2.662	-23763.2	7.272	-4384.593	-386.065	-5054.941	-155.099
		-23763.2	7.272	-2894.317	-1403.480	2500.751	-155.099
11	3.993	-23961.0	7.272	-5402.958	-386.065	-11507.1	-145.420
		-23961.0	7.272	-3823.237	-1403.480	-1908.276	-145.420
11	5.324	-24140.6	7.272	-6433.428	-386.065	-19321.1	-135.741
		-24140.6	7.272	-4764.262	-1403.480	-7560.140	-135.741
12	0	-24162.1	3.447	5164.096	642.780	-19316.4	-135.741
		-24162.1	3.447	3911.236	-808.379	-7601.006	-135.741
12	1.050	-24289.0	3.447	4361.887	642.780	-14271.5	-132.123
		-24289.0	3.447	3179.575	-808.379	-3834.304	-132.123
12	2.100	-24407.4	3.447	3534.197	642.780	-10078.0	-128.504
		-24407.4	3.447	2730.081	-610.464	-779.180	-128.504
12	3.149	-24539.2	3.447	1938.967	504.659	-7378.839	-124.886
		-24539.2	3.447	2039.595	-670.259	1749.884	-124.886
12	4.199	-24654.4	3.447	980.019	504.659	-5818.954	-121.268
		-24654.4	3.447	1010.100	-670.259	3378.378	-121.268
13	0	-24654.5	4.888	980.019	819.788	-5798.974	-121.268
		-24654.5	4.888	1010.100	-632.025	3358.733	-121.268
13	1.050	-24753.7	4.888	16.947	819.788	-5259.800	-116.135
		-24753.7	4.888	-23.533	-632.025	3892.447	-116.135
13	2.100	-24880.1	4.888	-699.295	819.788	-5714.592	-111.002
		-24880.1	4.888	-810.337	-632.025	3358.104	-111.002

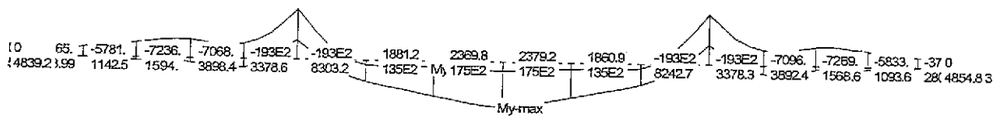
ENVOLVENTE para < My > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
13	3.150	-25101.8	4.888	-655.661	819.788	-6519.688	-105.869
		-25101.8	4.888	-837.264	-632.025	2399.368	-105.869
13	4.200	-25290.1	4.888	-331.680	819.788	-7096.928	-100.736
		-25290.1	4.888	-583.844	-632.025	1594.395	-100.736
14	0	-25290.3	6.467	-331.680	817.205	-7069.793	-100.736
		-25290.3	6.467	-583.844	-921.861	1568.638	-100.736
14	1.050	-25339.3	6.467	11.943	817.205	-7269.249	-93.945
		-25339.3	6.467	-310.779	-921.861	1067.379	-93.945
14	2.100	-25198.3	6.467	364.854	817.205	-7008.576	-87.155
		-25198.3	6.467	-28.425	-921.861	952.166	-87.155
14	3.150	-25070.8	6.467	521.921	817.205	-6439.369	-80.364
		-25070.8	6.467	58.085	-921.861	1071.405	-80.364
14	4.200	-24964.3	6.467	504.983	817.205	-5857.137	-73.574
		-24964.3	6.467	-29.411	-921.861	1129.586	-73.574
15	0	-24964.5	7.990	504.982	646.016	-5833.639	-73.574
		-24964.5	7.990	-29.411	-1316.495	1093.641	-73.574
15	1.050	-24860.0	7.990	447.518	646.016	-5282.971	-65.183
		-24860.0	7.990	-157.450	-1316.495	1046.023	-65.183
15	2.100	-24756.3	7.990	364.656	646.016	-4814.613	-56.791
		-24756.3	7.990	-310.886	-1316.495	841.978	-56.791
15	3.151	-24624.8	7.990	442.514	646.016	-4358.211	-48.400
		-24624.8	7.990	-303.603	-1316.495	551.860	-48.400
15	4.201	-24475.6	7.990	579.742	646.016	-3758.734	-40.008
		-24475.6	7.990	-236.949	-1316.495	330.699	-40.008
16	0	-24475.9	9.581	579.742	467.024	-3739.959	-40.008
		-24475.9	9.581	-236.949	-1632.287	280.960	-40.008
16	1.049	-24318.9	9.581	710.598	467.024	-3004.327	-29.953
		-24318.9	9.581	-176.619	-1632.287	122.470	-29.953
16	2.099	-24153.9	9.581	834.672	467.024	-2143.256	-19.898
		-24153.9	9.581	-123.071	-1632.287	15.400	-19.898
16	3.148	-24073.6	9.581	556.209	467.024	-1378.344	-9.842
		-24073.6	9.581	-472.060	-1632.287	-261.845	-9.842
16	4.198	-24002.5	9.581	-370.631	-4771.487	-956.739	0.212903
		-24002.5	9.581	-255.638	3606.225	-955.668	0.212903
17	0	4.757	23.560	-436.012	-1.75E-13	1234.875	-56.500
		4.757	23.560	-2243.150	4.48E-14	5568.682	-56.500
17	0.600	4.757	23.560	-475.469	-1.75E-13	961.641	-42.375
		4.757	23.560	-2282.607	4.48E-14	4211.996	-42.375
17	1.199	4.757	23.560	-514.926	-1.75E-13	664.750	-28.250
		4.757	23.560	-2322.064	4.48E-14	2831.654	-28.250
17	1.799	4.757	23.560	-554.383	-1.75E-13	344.203	-14.125
		4.757	23.560	-2361.522	4.48E-14	1427.655	-14.125
17	2.398	4.757	23.560	-593.841	-1.75E-13	1.42E-05	-5.65E-07
		4.757	23.560	-2400.979	4.48E-14	5.76E-05	-5.65E-07
18	0	-3.820	-23.637	-255.642	1.04E-12	803.088	56.728
		-3.820	-23.637	-1937.376	1.18E-12	4839.273	56.728
18	0.600	-3.820	-23.637	-295.130	1.04E-12	637.855	42.546
		-3.820	-23.637	-1976.864	1.18E-12	3664.994	42.546
18	1.200	-3.820	-23.637	-334.618	1.04E-12	448.929	28.364
		-3.820	-23.637	-2016.351	1.18E-12	2467.022	28.364
18	1.800	-3.820	-23.637	-374.106	1.04E-12	236.311	14.182
		-3.820	-23.637	-2055.839	1.18E-12	1245.357	14.182
18	2.400	-3.820	-23.637	-413.593	1.04E-12	9.93E-06	5.67E-07
		-3.820	-23.637	-2095.327	1.18E-12	5.03E-05	5.67E-07
19	0	4.793	-23.548	-441.284	6.93E-13	1248.594	56.515
		4.793	-23.548	-2244.116	1.40E-12	5575.311	56.515
19	0.600	4.793	-23.548	-480.770	6.93E-13	971.983	42.386
		4.793	-23.548	-2283.603	1.40E-12	4217.020	42.386
19	1.200	4.793	-23.548	-520.257	6.93E-13	671.680	28.257
		4.793	-23.548	-2323.089	1.40E-12	2835.039	28.257
19	1.800	4.793	-23.548	-559.744	6.93E-13	347.686	14.129
		4.793	-23.548	-2362.576	1.40E-12	1429.365	14.129
19	2.400	4.793	-23.548	-599.231	6.93E-13	1.44E-05	5.65E-07
		4.793	-23.548	-2402.063	1.40E-12	5.76E-05	5.65E-07
20	0	-4.782	23.458	-255.933	-8.30E-13	803.823	-56.302
		-4.782	23.458	-1943.772	-2.42E-13	4854.819	-56.302
20	0.600	-4.782	23.458	-295.422	-8.30E-13	638.409	-42.226
		-4.782	23.458	-1983.262	-2.42E-13	3676.656	-42.226

ENVOLVENTE para < My > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
20	1.200	-4.782	23.458	-334.911	-8.30E-13	449.301	-28.151
		-4.782	23.458	-2022.751	-2.42E-13	2474.799	-28.151
20	1.800	-4.782	23.458	-374.401	-8.30E-13	236.498	-14.075
		-4.782	23.458	-2062.240	-2.42E-13	1249.247	-14.075
20	2.400	-4.782	23.458	-413.890	-8.30E-13	9.93E-06	-5.63E-07
		-4.782	23.458	-2101.729	-2.42E-13	5.04E-05	-5.63E-07

Mstb. 1 :449.9
Section forces envelope My, GWSP JH (ELU 11), View "ALL"
- Struktur: Staebe
- Envelop Moment My-min, Scaling 2.00E-04
 min: -1.93E+04 max: 3.42E+03 [kNm]
- Envelop Moment My-max, Scaling 2.00E-04
 min: -7.62E+03 max: 1.75E+04 [kNm]
- Text envelopes [kNm]



ENVOLVENTE: JI 'ELU 12'

Grupo	Espe.	Hipótesis	Factor	Etapa	Título
A	PERM.	1	1.350		Peso Propio
	Y	3	1.350		Carga Muerta Máxima
	Y	20	0.850000		Pretensado
B	MAS	19	0.900000		gradiente
C	MAS	32	1.500		Carro 1 excéntrico
D	MAS	4	1.500		Sobrecarga centrada vano 1
E	MAS	5	1.500		Sobrecarga centrada vano 2
F	MAS	6	1.500		Sobrecarga centrada vano 3

ALTERNATIVA PARA ENVOLVENTE:

G	PERM.	1	1.350		Peso Propio
	Y	3	1.350		Carga Muerta Máxima
	Y	20	0.850000		Pretensado
H	MAS	19	0.900000		gradiente
I	MAS	32	1.500		Carro 1 excéntrico
J	MAS	7	1.500		Sobrecarga excéntrica vano 1 (
K	MAS	8	1.500		Sobrecarga excentrica vano 2 (
L	MAS	9	1.500		Sobrecarga excentrica vano 3 (

ALTERNATIVA PARA ENVOLVENTE:

M	PERM.	1	1.350		Peso Propio
	Y	3	1.350		Carga Muerta Máxima
	Y	20	0.850000		Pretensado
N	MAS	19	0.900000		gradiente
O	MAS	32	1.500		Carro 1 excéntrico
P	MAS	10	1.500		Sobrecarga excéntrica vano 1 (
Q	MAS	11	1.500		Sobrecarga excentrica vano 2 (
R	MAS	12	1.500		Sobrecarga excentrica vano 3 (

ENVOLVENTE para < Vz > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
1	0	-24024.4	-9.508	-155.965	623.580	-869.185	-0.227677
		-24024.4	-9.508	1251.412	-81.114	-788.385	-0.227677
1	1.050	-24091.4	-9.508	-475.724	623.580	-1206.626	-10.212
		-24091.4	-9.508	861.089	-81.114	314.975	-10.212
1	2.100	-24168.0	-9.508	-753.482	623.580	-1886.652	-20.196
		-24168.0	-9.508	512.766	-81.114	1001.651	-20.196
1	3.150	-24331.4	-9.508	-628.969	623.580	-2662.340	-30.180
		-24331.4	-9.508	566.714	-81.114	1518.567	-30.180
1	4.200	-24487.2	-9.508	-497.738	623.580	-3312.093	-40.164
		-24487.2	-9.508	627.380	-81.114	2087.319	-40.164
2	0	-24486.9	-8.079	-497.738	449.058	-3295.837	-40.164
		-24486.9	-8.079	627.380	-418.928	2079.741	-40.164
2	1.050	-24635.2	-8.079	-360.323	449.058	-3808.667	-48.646
		-24635.2	-8.079	694.246	-418.928	2711.069	-48.646
2	2.100	-24766.0	-8.079	-282.691	449.058	-4178.424	-57.127
		-24766.0	-8.079	701.329	-418.928	3411.405	-57.127
2	3.150	-24869.4	-8.079	-365.424	449.058	-4560.362	-65.608
		-24869.4	-8.079	548.047	-418.928	4025.494	-65.608
2	4.199	-24973.8	-8.079	-422.705	449.058	-5024.511	-74.090
		-24973.8	-8.079	420.217	-418.928	4483.307	-74.090
3	0	-24973.5	-6.428	-422.705	234.639	-5012.614	-74.090
		-24973.5	-6.428	420.217	-963.631	4459.248	-74.090
3	0.600	-25035.2	-6.428	-432.663	234.639	-5294.069	-77.944
		-25035.2	-6.428	369.967	-963.631	4671.113	-77.944
3	0.600	-25035.3	-6.428	-432.676	234.639	-5294.467	-77.949
		-25035.3	-6.428	69.898	-213.631	4671.263	-77.949
3	1.050	-25080.4	-6.428	-447.652	217.902	-2553.494	-80.840
		-25080.4	-6.428	47.551	-1218.920	3253.130	-80.840
3	2.100	-25208.3	-6.428	-360.725	217.902	-3081.529	-87.586
		-25208.3	-6.428	198.410	-196.894	1742.837	-87.586
3	2.100	-25208.4	-6.428	-562.841	-163.368	580.623	-87.590
		-25208.4	-6.428	100.901	934.376	-1919.564	-87.590
3	2.100	-25208.4	-6.428	-562.784	-163.368	580.488	-87.592
		-25208.4	-6.428	100.972	934.376	-1919.557	-87.592
3	3.150	-25350.0	-6.428	-280.149	-163.368	74.958	-94.341
		-25350.0	-6.428	454.159	934.376	-1691.179	-94.341
3	3.600	-25359.7	-6.428	-160.414	-163.368	-18.873	-97.229
		-25359.7	-6.428	604.085	934.376	-1448.327	-97.229
3	3.600	-25359.7	-6.428	-460.193	586.632	-19.106	-97.234
		-25359.7	-6.428	604.363	934.376	-1447.791	-97.234
3	4.200	-25301.3	-6.428	-306.745	586.632	-224.245	-101.091
		-25301.3	-6.428	798.131	934.376	-1002.107	-101.091
4	0	-25301.2	-4.907	-306.745	364.918	-209.055	-101.091
		-25301.2	-4.907	798.131	737.314	-975.421	-101.091
4	1.050	-25113.3	-4.907	-53.025	364.918	-339.072	-106.244
		-25113.3	-4.907	1122.408	737.314	91.686	-106.244
4	2.100	-24891.7	-4.907	-80.328	364.918	-315.427	-111.396
		-24891.7	-4.907	1165.663	737.314	1386.538	-111.396
4	3.150	-24765.4	-4.907	-868.398	364.918	-717.217	-116.549
		-24765.4	-4.907	448.151	737.314	2330.038	-116.549
4	4.200	-24665.9	-4.907	-1902.284	364.918	-2187.576	-121.701
		-24665.9	-4.907	-515.177	737.314	2279.053	-121.701
5	0	-24665.8	-3.365	-1902.284	585.077	-2172.244	-121.701
		-24665.8	-3.365	-515.177	813.140	2304.076	-121.701
5	1.050	-24550.5	-3.365	-2931.879	585.077	-4736.977	-125.233
		-24550.5	-3.365	-1474.239	813.140	1232.283	-125.233
5	2.099	-24418.6	-3.365	-3956.280	585.077	-8391.464	-128.765
		-24418.6	-3.365	-2428.106	813.140	-855.231	-128.765
5	3.149	-24300.2	-3.365	-4783.834	585.077	-13027.1	-132.296
		-24300.2	-3.365	-3185.126	813.140	-3849.818	-132.296
5	4.198	-24173.3	-3.365	-5586.068	585.077	-18513.9	-135.828
		-24173.3	-3.365	-3916.826	813.140	-7621.641	-135.828
6	0	-24151.8	-7.272	4756.019	1380.810	-7583.036	-135.828
		-24151.8	-7.272	6033.661	1536.093	-18476.6	-135.828
6	1.350	-23970.0	-7.272	3811.380	1380.810	-1857.118	-145.646
		-23970.0	-7.272	4988.299	1536.093	-11100.5	-145.646
6	2.700	-23769.5	-7.272	2869.224	1380.810	2590.251	-155.464
		-23769.5	-7.272	3955.420	1536.093	-5125.529	-155.464

ENVOLVENTE para < Vz > (y valores concomitantes). "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
6	4.050	-23484.4	-7.272	1581.982	1380.810	5576.774	-165.281
		-23484.4	-7.272	2577.455	1536.093	-733.836	-165.281
6	5.400	-23190.7	-7.272	453.571	1380.810	6786.634	-175.099
		-23190.7	-7.272	1358.321	1536.093	1758.714	-175.099
7	0	-23190.5	-4.275	453.571	1152.339	6841.314	-175.099
		-23190.5	-4.275	1358.321	1524.439	1824.778	-175.099
7	1.350	-22979.5	-4.275	-95.516	1152.339	7061.285	-180.870
		-22979.5	-4.275	718.514	1524.439	3204.938	-180.870
7	2.700	-22865.6	-4.275	-129.598	1152.339	6861.200	-186.641
		-22865.6	-4.275	593.710	1524.439	4042.567	-186.641
7	4.050	-22768.8	-4.275	-50.752	1152.339	6772.246	-192.412
		-22768.8	-4.275	581.836	1524.439	4868.853	-192.412
7	5.400	-22662.4	-4.275	24.709	1152.339	6803.030	-198.183
		-22662.4	-4.275	566.576	1524.439	5692.402	-198.183
8	0	-22662.2	-1.476	24.709	428.865	6834.814	-198.183
		-22662.2	-1.476	566.576	845.296	5740.036	-198.183
8	1.350	-22546.8	-1.476	96.142	428.865	6978.929	-200.175
		-22546.8	-1.476	547.299	845.296	6554.370	-200.175
8	2.700	-22421.9	-1.476	162.974	428.865	7229.015	-202.168
		-22421.9	-1.476	523.420	845.296	7352.228	-202.168
8	4.050	-22311.0	-1.476	60.090	428.865	7462.807	-204.161
		-22311.0	-1.476	329.826	845.296	8011.347	-204.161
8	5.399	-22203.8	-1.476	-70.985	526.173	12218.3	-206.153
		-22203.8	-1.476	113.233	747.988	3686.490	-206.153
9	0	-22203.8	1.522	-70.985	-620.479	12216.2	-206.153
		-22203.8	1.522	113.233	-31.922	3701.896	-206.153
9	1.350	-22310.0	1.522	-290.117	-620.479	11903.7	-204.098
		-22310.0	1.522	-15.168	-31.922	3699.362	-204.098
9	2.700	-22418.5	1.522	-473.127	-620.479	11301.7	-202.044
		-22418.5	1.522	-107.446	-31.922	3529.850	-202.044
9	4.051	-22541.5	1.522	-497.031	-620.479	10573.0	-199.989
		-22541.5	1.522	-40.619	-31.922	3356.142	-199.989
9	5.401	-22656.4	1.522	-516.321	-620.479	9827.191	-197.934
		-22656.4	1.522	30.822	-31.922	3287.777	-197.934
10	0	-22656.5	4.348	-516.321	-1467.538	9784.802	-197.934
		-22656.5	4.348	30.822	-614.061	3274.663	-197.934
10	1.350	-22762.3	4.348	-531.626	-1467.538	9030.084	-192.065
		-22762.3	4.348	106.225	-614.061	3319.712	-192.065
10	2.700	-22858.4	4.348	-543.592	-1467.538	8272.558	-186.196
		-22858.4	4.348	184.967	-614.061	3484.395	-186.196
10	4.049	-22979.8	4.348	-703.850	-1467.538	7493.976	-180.326
		-22979.8	4.348	115.417	-614.061	3750.461	-180.326
10	5.399	-23189.2	4.348	-1344.405	-1467.538	6134.993	-174.457
		-23189.2	4.348	-434.430	-614.061	3558.567	-174.457
11	0	-23189.4	7.272	-1344.405	-1651.699	6069.319	-174.457
		-23189.4	7.272	-434.430	-690.536	3531.100	-174.457
11	1.331	-23485.6	7.272	-2588.902	-1651.699	3600.706	-164.778
		-23485.6	7.272	-1589.481	-690.536	2333.213	-164.778
11	2.662	-23763.2	7.272	-3933.085	-1651.699	-726.583	-155.099
		-23763.2	7.272	-2844.219	-690.536	-604.294	-155.099
11	3.993	-23961.0	7.272	-4951.450	-1651.699	-6577.764	-145.420
		-23961.0	7.272	-3773.140	-690.536	-4946.641	-145.420
11	5.324	-24140.6	7.272	-5981.920	-1651.699	-13790.8	-135.741
		-24140.6	7.272	-4714.165	-690.536	-10531.8	-135.741
12	0	-24162.1	3.447	3882.530	-488.032	-7036.661	-135.741
		-24162.1	3.447	5076.608	-324.394	-17344.3	-135.741
12	1.050	-24289.0	3.447	3150.868	-488.032	-3300.095	-132.123
		-24289.0	3.447	4274.399	-324.394	-12391.2	-132.123
12	2.100	-24407.4	3.447	2393.725	-488.032	-340.931	-128.504
		-24407.4	3.447	3446.709	-324.394	-8289.563	-128.504
12	3.149	-24539.2	3.447	1439.966	-488.032	1710.890	-124.886
		-24539.2	3.447	2422.402	-324.394	-5169.339	-124.886
12	4.199	-24654.4	3.447	481.017	-488.032	2746.918	-121.268
		-24654.4	3.447	1392.907	-324.394	-3138.971	-121.268
13	0	-24654.5	4.888	481.017	-430.834	2733.056	-121.268
		-24654.5	4.888	1392.907	-89.728	-3145.218	-121.268
13	1.050	-24753.7	4.888	-482.054	-430.834	2748.269	-116.135
		-24753.7	4.888	359.274	-89.728	-2209.548	-116.135

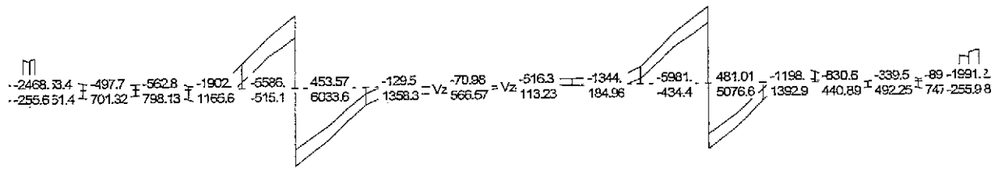
ENVOLVENTE para < Vz > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
13	2.100	-24880.1	4.888	-1198.296	-430.834	1769.516	-111.002
		-24880.1	4.888	-427.529	-89.728	-2341.935	-111.002
13	3.150	-25101.8	4.888	-1154.662	-430.834	440.459	-105.869
		-25101.8	4.888	-454.456	-89.728	-2898.717	-105.869
13	4.200	-25290.1	4.888	-830.681	-430.834	-660.743	-100.736
		-25290.1	4.888	-201.037	-89.728	-3301.734	-100.736
14	0	-25290.3	6.467	-830.681	-646.039	-678.593	-100.736
		-25290.3	6.467	-201.037	-217.592	-3306.828	-100.736
14	1.050	-25339.3	6.467	-487.058	-646.039	-1401.980	-93.945
		-25339.3	6.467	72.029	-217.592	-3406.155	-93.945
14	2.100	-25198.3	6.467	-134.148	-646.039	-1665.237	-87.155
		-25198.3	6.467	354.382	-217.592	-3119.435	-87.155
14	3.150	-25070.8	6.467	13.063	376.349	-110.672	-80.364
		-25070.8	6.467	440.892	-217.592	-2598.265	-80.364
14	4.200	-24964.3	6.467	-58.118	-626.241	1351.702	-73.574
		-24964.3	6.467	417.495	-237.391	-5051.514	-73.574
15	0	-24964.5	7.990	-58.118	-1028.159	1325.134	-73.574
		-24964.5	7.990	417.495	-433.905	-5062.294	-73.574
15	1.050	-24860.0	7.990	-186.156	-1028.159	1247.369	-65.183
		-24860.0	7.990	360.030	-433.905	-4603.507	-65.183
15	2.100	-24756.3	7.990	-339.592	-1028.159	1013.176	-56.791
		-24756.3	7.990	277.169	-433.905	-4227.029	-56.791
15	3.151	-24624.8	7.990	-332.309	-1028.159	692.910	-48.400
		-24624.8	7.990	355.026	-433.905	-3862.507	-48.400
15	4.201	-24475.6	7.990	-265.655	-1028.159	441.601	-40.008
		-24475.6	7.990	492.254	-433.905	-3354.911	-40.008
16	0	-24475.9	9.581	-265.655	-1347.856	401.524	-40.008
		-24475.9	9.581	492.254	-625.901	-3372.787	-40.008
16	1.049	-24318.9	9.581	-205.325	-1347.856	212.906	-29.953
		-24318.9	9.581	623.110	-625.901	-2728.972	-29.953
16	2.099	-24153.9	9.581	-151.777	-1347.856	75.709	-19.898
		-24153.9	9.581	747.185	-625.901	-1959.720	-19.898
16	3.148	-24073.6	9.581	-500.767	-1347.856	-231.664	-9.842
		-24073.6	9.581	468.721	-625.901	-1286.626	-9.842
16	4.198	-24002.5	9.581	-891.239	-1347.856	-955.987	0.212903
		-24002.5	9.581	148.775	-625.901	-956.465	0.212903
17	0	4.757	23.560	-2243.150	4.48E-14	5568.682	-56.500
		4.757	23.560	-549.068	3.27E-13	1506.002	-56.500
17	0.600	4.757	23.560	-2282.607	4.48E-14	4211.996	-42.375
		4.757	23.560	-588.525	3.27E-13	1164.986	-42.375
17	1.199	4.757	23.560	-2322.064	4.48E-14	2831.654	-28.250
		4.757	23.560	-627.982	3.27E-13	800.314	-28.250
17	1.799	4.757	23.560	-2361.522	4.48E-14	1427.655	-14.125
		4.757	23.560	-667.440	3.27E-13	411.985	-14.125
17	2.398	4.757	23.560	-2400.979	4.48E-14	5.76E-05	-5.65E-07
		4.757	23.560	-706.897	3.27E-13	1.70E-05	-5.65E-07
18	0	-3.820	-23.637	-2310.279	1.27E-12	5734.246	56.728
		-3.820	-23.637	-255.642	1.04E-12	803.088	56.728
18	0.600	-3.820	-23.637	-2349.767	1.27E-12	4336.224	42.546
		-3.820	-23.637	-295.130	1.04E-12	637.855	42.546
18	1.200	-3.820	-23.637	-2389.255	1.27E-12	2914.509	28.364
		-3.820	-23.637	-334.618	1.04E-12	448.929	28.364
18	1.800	-3.820	-23.637	-2428.742	1.27E-12	1469.101	14.182
		-3.820	-23.637	-374.106	1.04E-12	236.311	14.182
18	2.400	-3.820	-23.637	-2468.230	1.27E-12	5.92E-05	5.67E-07
		-3.820	-23.637	-413.593	1.04E-12	9.93E-06	5.67E-07
19	0	4.793	-23.548	-2244.116	1.40E-12	5575.311	56.515
		4.793	-23.548	-667.817	6.96E-13	1792.263	56.515
19	0.600	4.793	-23.548	-2283.603	1.40E-12	4217.020	42.386
		4.793	-23.548	-707.303	6.96E-13	1379.735	42.386
19	1.200	4.793	-23.548	-2323.089	1.40E-12	2835.039	28.257
		4.793	-23.548	-746.790	6.96E-13	943.515	28.257
19	1.800	4.793	-23.548	-2362.576	1.40E-12	1429.365	14.129
		4.793	-23.548	-786.277	6.96E-13	483.603	14.129
19	2.400	4.793	-23.548	-2402.063	1.40E-12	5.76E-05	5.65E-07
		4.793	-23.548	-825.764	6.96E-13	1.98E-05	5.65E-07
20	0	-4.782	23.458	-1833.433	-2.67E-13	4589.994	-56.302
		-4.782	23.458	-255.933	-8.30E-13	803.823	-56.302

ENVOLVENTE para < Vz > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
20	0.600	-4.782	23.458	-1872.923	-2.67E-13	3478.037	-42.226
		-4.782	23.458	-295.422	-8.30E-13	638.409	-42.226
20	1.200	-4.782	23.458	-1912.412	-2.67E-13	2342.386	-28.151
		-4.782	23.458	-334.911	-8.30E-13	449.301	-28.151
20	1.800	-4.782	23.458	-1951.901	-2.67E-13	1183.040	-14.075
		-4.782	23.458	-374.401	-8.30E-13	236.498	-14.075
20	2.400	-4.782	23.458	-1991.390	-2.67E-13	4.78E-05	-5.63E-07
		-4.782	23.458	-413.890	-8.30E-13	9.93E-06	-5.63E-07

Mstb. 1 :449.9
Section forces envelope Vz, GWSP JI (ELU 12), View "ALL"
- Struktur: Staebe
- Envelop Shear force Vz-min, Scaling 1.00E-03
  min: -5.98E+03 max: 4.77E+03 [kN]
- Envelop Shear force Vz-max, Scaling 1.00E-03
  min: -4.71E+03 max: 6.03E+03 [kN]
- Text envelopes [kN]



ENVOLVENTE para < T > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
1	0	-24024.4	-9.508	728.001	-4223.758	-731.369	-0.227677
		-24024.4	-9.508	367.446	4766.223	-926.202	-0.227677
1	1.050	-24091.4	-9.508	372.960	-4124.967	-159.105	-10.212
		-24091.4	-9.508	12.405	4667.432	-732.546	-10.212
1	2.100	-24168.0	-9.508	59.919	-4026.176	33.525	-20.196
		-24168.0	-9.508	-300.636	4568.641	-918.526	-20.196
1	3.150	-24331.4	-9.508	149.150	-3927.385	93.443	-30.180
		-24331.4	-9.508	-211.405	4469.850	-1237.216	-30.180
1	4.200	-24487.2	-9.508	245.098	-3828.594	242.247	-40.164
		-24487.2	-9.508	-115.457	4371.059	-1467.021	-40.164
2	0	-24486.9	-8.079	245.098	-4108.777	121.959	-40.164
		-24486.9	-8.079	-115.457	4138.906	-1338.054	-40.164
2	1.050	-24635.2	-8.079	347.239	-4010.008	370.469	-48.646
		-24635.2	-8.079	-13.316	4040.138	-1468.068	-48.646
2	2.100	-24766.0	-8.079	389.597	-3911.240	725.021	-57.127
		-24766.0	-8.079	29.042	3941.369	-1492.039	-57.127
2	3.150	-24869.4	-8.079	271.589	-3812.471	1030.358	-65.608
		-24869.4	-8.079	-88.966	3842.600	-1565.226	-65.608
2	4.199	-24973.8	-8.079	179.034	-3713.703	1216.451	-74.090
		-24973.8	-8.079	-181.521	3743.832	-1757.656	-74.090
3	0	-24973.5	-6.428	179.034	-4142.745	1079.734	-74.090
		-24973.5	-6.428	-181.521	3413.753	-1633.100	-74.090
3	0.600	-25035.2	-6.428	148.930	-4086.337	1153.029	-77.944
		-25035.2	-6.428	-211.625	3357.344	-1775.986	-77.944
3	0.600	-25035.3	-6.428	-151.112	-3336.258	1152.994	-77.949
		-25035.3	-6.428	-211.667	3357.265	-1776.198	-77.949
3	1.050	-25080.4	-6.428	-173.069	-3293.951	1062.004	-80.840

ENVOLVENTE para < T > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
		-25080.4	-6.428	-233.624	3314.959	-1894.418	-80.840
3	2.100	-25208.3	-6.428	-50.880	-3195.217	840.640	-87.586
		-25208.3	-6.428	-111.435	3216.224	-2179.333	-87.586
3	2.100	-25208.4	-6.428	-350.692	-2445.158	840.504	-87.590
		-25208.4	-6.428	-111.247	3216.165	-2179.445	-87.590
3	2.100	-25208.4	-6.428	-350.629	-2445.138	840.415	-87.592
		-25208.4	-6.428	-111.183	3216.145	-2179.483	-87.592
3	3.150	-25350.0	-6.428	-32.718	-2346.364	576.143	-94.341
		-25350.0	-6.428	206.727	3117.372	-2192.364	-94.341
3	3.600	-25359.7	-6.428	102.113	-2304.097	596.866	-97.229
		-25359.7	-6.428	341.558	3075.104	-2064.066	-97.229
3	3.600	-25359.7	-6.428	304.645	-1922.748	-2761.974	-97.234
		-25359.7	-6.428	-160.474	3443.755	1295.078	-97.234
3	4.200	-25301.3	-6.428	478.253	-1866.300	-2502.167	-101.091
		-25301.3	-6.428	13.134	3387.308	1275.816	-101.091
4	0	-25301.2	-4.907	478.253	-2014.055	-2564.111	-101.091
		-25301.2	-4.907	13.134	3116.287	1379.636	-101.091
4	1.050	-25113.3	-4.907	767.251	-1915.274	-1851.387	-106.244
		-25113.3	-4.907	302.132	3017.506	1604.001	-106.244
4	2.100	-24891.7	-4.907	775.227	-1816.493	-947.959	-111.396
		-24891.7	-4.907	310.108	2918.725	2019.070	-111.396
4	3.150	-24765.4	-4.907	22.436	-1717.712	-432.924	-116.549
		-24765.4	-4.907	-442.683	2819.945	2045.745	-116.549
4	4.200	-24665.9	-4.907	-976.171	-1618.932	-949.416	-121.701
		-24665.9	-4.907	-1441.290	2721.164	1040.894	-121.701
5	0	-24665.8	-3.365	-976.171	-1437.695	-998.748	-121.701
		-24665.8	-3.365	-1441.290	2835.912	1130.580	-121.701
5	1.050	-24550.5	-3.365	-1970.500	-1338.947	-2572.914	-125.233
		-24550.5	-3.365	-2132.090	2828.991	-930.421	-125.233
5	2.099	-24418.6	-3.365	-2655.301	-1296.434	-5410.835	-128.765
		-24418.6	-3.365	-3085.957	2828.991	-3708.423	-128.765
5	3.149	-24300.2	-3.365	-3412.322	-1296.434	-8643.889	-132.296
		-24300.2	-3.365	-3842.977	2828.991	-7393.498	-132.296
5	4.198	-24173.3	-3.365	-4144.022	-1296.434	-12654.2	-135.828
		-24173.3	-3.365	-4574.678	2828.991	-11855.8	-135.828
6	0	-24151.8	-7.272	5352.053	-550.407	-12686.7	-135.828
		-24151.8	-7.272	5381.717	3544.377	-11743.7	-135.828
6	1.350	-23970.0	-7.272	4352.052	-423.395	-6200.209	-145.646
		-23970.0	-7.272	4381.716	3417.365	-5217.148	-145.646
6	2.700	-23769.5	-7.272	3364.535	-296.383	-1053.529	-155.464
		-23769.5	-7.272	3394.199	3290.353	-30.420	-155.464
6	4.050	-23484.4	-7.272	2031.931	-169.372	2571.064	-165.281
		-23484.4	-7.272	2061.595	3163.341	3634.221	-165.281
6	5.400	-23190.7	-7.272	858.159	-42.360	4357.754	-175.099
		-23190.7	-7.272	887.823	3036.329	5460.959	-175.099
7	0	-23190.5	-4.275	858.159	-164.696	4353.285	-175.099
		-23190.5	-4.275	887.823	2863.521	5588.312	-175.099
7	1.350	-22979.5	-4.275	263.712	-37.686	5088.837	-180.870
		-22979.5	-4.275	293.376	2736.512	6363.912	-180.870
7	2.700	-22865.6	-4.275	184.269	89.323	5343.096	-186.641
		-22865.6	-4.275	213.933	2609.502	6658.218	-186.641
7	4.050	-22768.8	-4.275	217.755	216.333	5647.249	-192.412
		-22768.8	-4.275	247.419	2482.493	7002.418	-192.412
7	5.400	-22662.4	-4.275	247.855	343.342	6009.902	-198.183
		-22662.4	-4.275	277.520	2355.483	7405.118	-198.183
8	0	-22662.2	-1.476	247.855	-347.606	6009.816	-198.183
		-22662.2	-1.476	277.520	1606.843	7484.765	-198.183
8	1.350	-22546.8	-1.476	273.933	-220.612	6424.535	-200.175
		-22546.8	-1.476	303.598	1479.848	7939.526	-200.175
8	2.700	-22421.9	-1.476	295.410	-93.617	6884.001	-202.168
		-22421.9	-1.476	325.074	1352.854	8439.034	-202.168
8	4.050	-22311.0	-1.476	147.171	33.377	7265.951	-204.161
		-22311.0	-1.476	176.835	1225.860	8861.027	-204.161
8	5.399	-22203.8	-1.476	-25.696	95.134	4475.081	-206.153
		-22203.8	-1.476	69.816	1166.871	10649.7	-206.153
9	0	-22203.8	1.522	-26.783	-858.965	10947.8	-206.153
		-22203.8	1.522	70.902	227.968	4190.471	-206.153
9	1.350	-22310.0	1.522	-135.840	-933.240	9217.933	-204.098

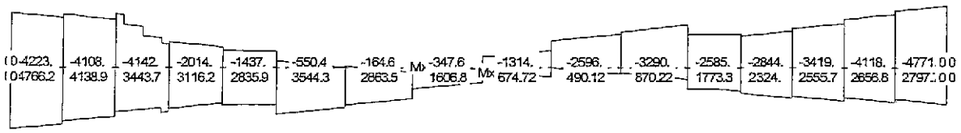
ENVOLVENTE para < T > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
		-22310.0	1.522	-103.832	293.649	7040.596	-204.098
9	2.700	-22418.5	1.522	-273.484	-1060.264	8854.869	-202.044
		-22418.5	1.522	-241.475	420.673	6720.749	-202.044
9	4.051	-22541.5	1.522	-252.022	-1187.288	8426.357	-199.989
		-22541.5	1.522	-220.013	547.697	6335.454	-199.989
9	5.401	-22656.4	1.522	-225.947	-1314.311	8041.938	-197.934
		-22656.4	1.522	-193.938	674.720	5994.251	-197.934
10	0	-22656.5	4.348	-225.947	-2088.344	7972.860	-197.934
		-22656.5	4.348	-193.938	-17.845	6007.587	-197.934
10	1.350	-22762.3	4.348	-195.898	-2215.336	7640.706	-192.065
		-22762.3	4.348	-163.889	109.147	5718.639	-192.065
10	2.700	-22858.4	4.348	-162.510	-2342.327	7366.965	-186.196
		-22858.4	4.348	-130.501	236.138	5488.104	-186.196
10	4.049	-22979.8	4.348	-277.414	-2469.319	7133.389	-180.326
		-22979.8	4.348	-245.405	363.130	5297.734	-180.326
10	5.399	-23189.2	4.348	-872.615	-2596.310	6380.631	-174.457
		-23189.2	4.348	-840.606	490.122	4588.182	-174.457
11	0	-23189.4	7.272	-872.615	-2789.810	6267.229	-174.457
		-23189.4	7.272	-840.606	369.332	4606.277	-174.457
11	1.331	-23485.6	7.272	-2072.388	-2915.033	4456.344	-164.778
		-23485.6	7.272	-2040.380	494.554	2837.997	-164.778
11	2.662	-23763.2	7.272	-3371.849	-3040.256	846.312	-155.099
		-23763.2	7.272	-3339.841	619.777	-729.432	-155.099
11	3.993	-23961.0	7.272	-4345.492	-3165.479	-4228.087	-145.420
		-23961.0	7.272	-4313.484	745.000	-5761.226	-145.420
11	5.324	-24140.6	7.272	-5331.240	-3290.702	-10604.8	-135.741
		-24140.6	7.272	-5299.231	870.223	-12095.4	-135.741
12	0	-24162.1	3.447	4069.592	-2581.845	-10713.3	-135.741
		-24162.1	3.447	4106.981	1631.299	-12049.2	-135.741
12	1.050	-24289.0	3.447	3337.931	-2581.845	-6780.403	-132.123
		-24289.0	3.447	3375.319	1631.299	-8076.970	-132.123
12	2.100	-24407.4	3.447	2580.788	-2581.845	-3624.859	-128.504
		-24407.4	3.447	2618.176	1631.299	-4882.175	-128.504
12	3.149	-24539.2	3.447	1627.028	-2581.845	-1376.657	-124.886
		-24539.2	3.447	1930.583	1674.604	-2080.061	-124.886
12	4.199	-24654.4	3.447	937.563	-2585.796	155.440	-121.268
		-24654.4	3.447	936.362	1773.370	-547.493	-121.268
13	0	-24654.5	4.888	937.563	-2449.474	79.481	-121.268
		-24654.5	4.888	936.361	1928.912	-491.642	-121.268
13	1.050	-24753.7	4.888	-60.789	-2548.259	555.553	-116.135
		-24753.7	4.888	-61.990	2027.698	-16.831	-116.135
13	2.100	-24880.1	4.888	-812.312	-2647.045	0.612866	-111.002
		-24880.1	4.888	-813.513	2126.484	-573.032	-111.002
13	3.150	-25101.8	4.888	-803.958	-2745.831	-941.676	-105.869
		-25101.8	4.888	-805.160	2225.270	-1516.582	-105.869
13	4.200	-25290.1	4.888	-515.259	-2844.617	-1693.154	-100.736
		-25290.1	4.888	-516.460	2324.056	-2269.322	-100.736
14	0	-25290.3	6.467	-515.259	-3024.280	-1790.435	-100.736
		-25290.3	6.467	-516.460	2160.649	-2194.985	-100.736
14	1.050	-25339.3	6.467	-206.914	-3123.060	-2201.162	-93.945
		-25339.3	6.467	-208.115	2259.429	-2606.973	-93.945
14	2.100	-25198.3	6.467	110.718	-3221.841	-2188.800	-87.155
		-25198.3	6.467	109.517	2358.209	-2595.872	-87.155
14	3.150	-25070.8	6.467	232.507	-3320.621	-1904.947	-80.364
		-25070.8	6.467	231.305	2456.989	-2313.280	-80.364
14	4.200	-24964.3	6.467	180.289	-3419.401	-1645.109	-73.574
		-24964.3	6.467	179.088	2555.770	-2054.703	-73.574
15	0	-24964.5	7.990	180.289	-3723.653	-1759.819	-73.574
		-24964.5	7.990	179.088	2261.589	-1977.342	-73.574
15	1.050	-24860.0	7.990	87.538	-3822.457	-1568.677	-65.183
		-24860.0	7.990	86.336	2360.393	-1787.461	-65.183
15	2.100	-24756.3	7.990	-30.611	-3921.260	-1496.903	-56.791
		-24756.3	7.990	-31.812	2459.197	-1716.950	-56.791
15	3.151	-24624.8	7.990	11.959	-4020.064	-1474.145	-48.400
		-24624.8	7.990	10.758	2558.000	-1695.453	-48.400
15	4.201	-24475.6	7.990	113.900	-4118.868	-1345.370	-40.008
		-24475.6	7.990	112.699	2656.804	-1567.939	-40.008
16	0	-24475.9	9.581	113.900	-4376.540	-1488.666	-40.008

ENVOLVENTE para < T > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
		-24475.9	9.581	112.699	2402.784	-1482.597	-40.008
16	1.049	-24318.9	9.581	209.493	-4475.277	-1260.437	-29.953
		-24318.9	9.581	208.292	2501.521	-1255.629	-29.953
16	2.099	-24153.9	9.581	298.305	-4574.014	-943.779	-19.898
		-24153.9	9.581	297.103	2600.257	-940.231	-19.898
16	3.148	-24073.6	9.581	-15.422	-4672.751	-760.288	-9.842
		-24073.6	9.581	-16.623	2698.994	-758.001	-9.842
16	4.198	-24002.5	9.581	-370.631	-4771.487	-956.739	0.212903
		-24002.5	9.581	-371.832	2797.731	-955.713	0.212903
17	0	4.757	23.560	-1680.480	-1.60E-13	4219.310	-56.500
		4.757	23.560	-1303.352	6.91E-13	3314.895	-56.500
17	0.600	4.757	23.560	-1719.937	-1.60E-13	3199.967	-42.375
		4.757	23.560	-1342.809	6.91E-13	2521.656	-42.375
17	1.199	4.757	23.560	-1759.395	-1.60E-13	2156.967	-28.250
		4.757	23.560	-1382.266	6.91E-13	1704.760	-28.250
17	1.799	4.757	23.560	-1798.852	-1.60E-13	1090.312	-14.125
		4.757	23.560	-1421.723	6.91E-13	864.208	-14.125
17	2.398	4.757	23.560	-1838.309	-1.60E-13	4.41E-05	-5.65E-07
		4.757	23.560	-1461.181	6.91E-13	3.50E-05	-5.65E-07
18	0	-3.820	-23.637	-1081.675	8.78E-13	2785.579	56.728
		-3.820	-23.637	-1088.291	1.39E-12	2801.456	56.728
18	0.600	-3.820	-23.637	-1121.163	8.78E-13	2124.724	42.546
		-3.820	-23.637	-1127.778	1.39E-12	2136.631	42.546
18	1.200	-3.820	-23.637	-1160.651	8.78E-13	1440.175	28.364
		-3.820	-23.637	-1167.266	1.39E-12	1448.114	28.364
18	1.800	-3.820	-23.637	-1200.139	8.78E-13	731.934	14.182
		-3.820	-23.637	-1206.754	1.39E-12	735.903	14.182
18	2.400	-3.820	-23.637	-1239.626	8.78E-13	2.98E-05	5.67E-07
		-3.820	-23.637	-1246.242	1.39E-12	2.99E-05	5.67E-07
19	0	4.793	-23.548	-711.847	6.94E-13	1897.933	56.515
		4.793	-23.548	-2244.116	1.40E-12	5575.311	56.515
19	0.600	4.793	-23.548	-751.333	6.94E-13	1458.987	42.386
		4.793	-23.548	-2283.603	1.40E-12	4217.020	42.386
19	1.200	4.793	-23.548	-790.820	6.94E-13	996.350	28.257
		4.793	-23.548	-2323.089	1.40E-12	2835.039	28.257
19	1.800	4.793	-23.548	-830.307	6.94E-13	510.021	14.129
		4.793	-23.548	-2362.576	1.40E-12	1429.365	14.129
19	2.400	4.793	-23.548	-869.794	6.94E-13	2.09E-05	5.65E-07
		4.793	-23.548	-2402.063	1.40E-12	5.76E-05	5.65E-07
20	0	-4.782	23.458	-1074.791	-8.93E-13	2769.170	-56.302
		-4.782	23.458	-1497.118	-2.54E-13	3782.802	-56.302
20	0.600	-4.782	23.458	-1114.280	-8.93E-13	2112.419	-42.226
		-4.782	23.458	-1536.608	-2.54E-13	2872.643	-42.226
20	1.200	-4.782	23.458	-1153.769	-8.93E-13	1431.974	-28.151
		-4.782	23.458	-1576.097	-2.54E-13	1938.790	-28.151
20	1.800	-4.782	23.458	-1193.258	-8.93E-13	727.834	-14.075
		-4.782	23.458	-1615.586	-2.54E-13	981.242	-14.075
20	2.400	-4.782	23.458	-1232.748	-8.93E-13	2.96E-05	-5.63E-07
		-4.782	23.458	-1655.075	-2.54E-13	3.97E-05	-5.63E-07

Mstb. 1 :449.9
Section forces envelope T , GWSP JI (ELU 12), View "ALL"
- Struktur: Staebe
- Envelop Torsion.moment Mx-min, Scaling 1.00E-03
  min: -4.77E+03 max: 3.43E+02 [kNm]
- Envelop Torsion.moment Mx-max, Scaling 1.00E-03
  min: -1.78E+01 max: 4.77E+03 [kNm]
- Text envelopes [kNm]



ENVOLVENTE para < My > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
1	0	-24024.4	-9.508	367.446	4766.223	-926.202	-0.227677
		-24024.4	-9.508	728.001	-4223.758	-731.369	-0.227677
1	1.050	-24091.4	-9.508	-475.724	623.580	-1206.626	-10.212
		-24091.4	-9.508	861.089	-81.114	314.975	-10.212
1	2.100	-24168.0	-9.508	-753.482	623.580	-1886.652	-20.196
		-24168.0	-9.508	512.766	-81.114	1001.651	-20.196
1	3.150	-24331.4	-9.508	-628.969	623.580	-2662.340	-30.180
		-24331.4	-9.508	566.714	-81.114	1518.567	-30.180
1	4.200	-24487.2	-9.508	-497.738	623.580	-3312.093	-40.164
		-24487.2	-9.508	627.380	-81.114	2087.319	-40.164
2	0	-24486.9	-8.079	-497.738	449.058	-3295.837	-40.164
		-24486.9	-8.079	627.380	-418.928	2079.741	-40.164
2	1.050	-24635.2	-8.079	-360.323	449.058	-3808.667	-48.646
		-24635.2	-8.079	694.246	-418.928	2711.069	-48.646
2	2.100	-24766.0	-8.079	-282.691	449.058	-4178.424	-57.127
		-24766.0	-8.079	701.329	-418.928	3411.405	-57.127
2	3.150	-24869.4	-8.079	-365.424	449.058	-4560.362	-65.608
		-24869.4	-8.079	548.047	-418.928	4025.494	-65.608
2	4.199	-24973.8	-8.079	-422.705	449.058	-5024.511	-74.090
		-24973.8	-8.079	420.217	-418.928	4483.307	-74.090
3	0	-24973.5	-6.428	-422.705	234.639	-5012.614	-74.090
		-24973.5	-6.428	420.217	-963.631	4459.248	-74.090
3	0.600	-25035.2	-6.428	-432.663	234.639	-5294.069	-77.944
		-25035.2	-6.428	369.967	-963.631	4671.113	-77.944
3	0.600	-25035.3	-6.428	-432.676	234.639	-5294.467	-77.949
		-25035.3	-6.428	69.898	-213.631	4671.263	-77.949
3	1.050	-25080.4	-6.428	-439.524	234.639	-5508.674	-80.840
		-25080.4	-6.428	32.831	-213.631	4676.261	-80.840
3	2.100	-25208.3	-6.428	-282.073	234.639	-5991.173	-87.586
		-25208.3	-6.428	119.758	-213.631	4652.480	-87.586
3	2.100	-25208.4	-6.428	-281.864	234.639	-5991.392	-87.590
		-25208.4	-6.428	-180.076	536.369	4652.451	-87.590
3	2.100	-25208.4	-6.428	-281.793	234.639	-5991.466	-87.592
		-25208.4	-6.428	-180.019	536.369	4652.398	-87.592
3	3.150	-25350.0	-6.428	71.394	234.639	-6164.950	-94.341
		-25350.0	-6.428	102.615	536.369	4548.729	-94.341
3	3.600	-25359.7	-6.428	221.321	234.639	-6094.062	-97.229
		-25359.7	-6.428	222.351	536.369	4626.862	-97.229
3	3.600	-25359.7	-6.428	221.598	234.639	-6093.848	-97.234
		-25359.7	-6.428	-77.428	1286.369	4626.951	-97.234
3	4.200	-25301.3	-6.428	415.366	234.639	-5877.820	-101.091
		-25301.3	-6.428	76.020	1286.369	4651.469	-101.091
4	0	-25301.2	-4.907	415.366	193.560	-5870.985	-101.091
		-25301.2	-4.907	76.020	908.672	4686.510	-101.091
4	1.050	-25113.3	-4.907	739.643	193.560	-5205.768	-106.244

ENVOLVENTE para < My > (y valores concomitantes) "ALL"
(1. línea: MÍN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
		-25113.3	-4.907	329.739	908.672	4958.383	-106.244
4	2.100	-24891.7	-4.907	782.898	193.560	-4312.807	-111.396
		-24891.7	-4.907	302.437	908.672	5383.917	-111.396
4	3.150	-24765.4	-4.907	65.386	193.560	-3771.197	-116.549
		-24765.4	-4.907	-485.633	908.672	5384.018	-116.549
4	4.200	-24665.9	-4.907	-897.942	193.560	-4224.072	-121.701
		-24665.9	-4.907	-1519.519	908.672	4315.549	-121.701
5	0	-24665.8	-3.365	-897.942	479.527	-4213.209	-121.701
		-24665.8	-3.365	-1519.519	918.691	4345.041	-121.701
5	1.050	-24550.5	-3.365	-1857.004	479.527	-5686.757	-125.233
		-24550.5	-3.365	-2549.114	918.691	2182.062	-125.233
5	2.099	-24418.6	-3.365	-3956.280	585.077	-8391.464	-128.765
		-24418.6	-3.365	-2739.013	615.492	-797.263	-128.765
5	3.149	-24300.2	-3.365	-4783.834	585.077	-13027.1	-132.296
		-24300.2	-3.365	-3185.126	813.140	-3849.818	-132.296
5	4.198	-24173.3	-3.365	-5586.068	585.077	-18513.9	-135.828
		-24173.3	-3.365	-3916.826	813.140	-7621.641	-135.828
6	0	-24151.8	-7.272	6033.661	1536.093	-18476.6	-135.828
		-24151.8	-7.272	4766.019	1380.810	-7583.036	-135.828
6	1.350	-23970.0	-7.272	4988.299	1536.093	-11100.5	-145.646
		-23970.0	-7.272	3811.380	1380.810	-1857.118	-145.646
6	2.700	-23769.5	-7.272	3955.420	1536.093	-5125.529	-155.464
		-23769.5	-7.272	2869.224	1380.810	2590.251	-155.464
6	4.050	-23484.4	-7.272	2146.619	2199.242	-861.863	-165.281
		-23484.4	-7.272	2031.812	198.577	6098.686	-165.281
6	5.400	-23190.7	-7.272	635.193	1255.098	976.124	-175.099
		-23190.7	-7.272	858.040	325.589	7885.215	-175.099
7	0	-23190.5	-4.275	635.193	1277.476	1030.792	-175.099
		-23190.5	-4.275	858.039	50.695	7893.337	-175.099
7	1.350	-22979.5	-4.275	86.106	1277.476	1495.955	-180.870
		-22979.5	-4.275	536.892	1399.302	8770.268	-180.870
7	2.700	-22865.6	-4.275	-13.591	1231.829	1508.381	-186.641
		-22865.6	-4.275	477.703	1444.949	9395.386	-186.641
7	4.050	-22768.8	-4.275	65.256	1231.829	1576.040	-192.412
		-22768.8	-4.275	465.828	1444.949	10065.1	-192.412
7	5.400	-22662.4	-4.275	140.717	1231.829	1763.435	-198.183
		-22662.4	-4.275	450.568	1444.949	10732.0	-198.183
8	0	-22662.2	-1.476	140.717	710.811	1802.484	-198.183
		-22662.2	-1.476	450.568	563.351	10772.4	-198.183
8	1.350	-22546.8	-1.476	212.150	710.811	2103.193	-200.175
		-22546.8	-1.476	431.291	563.351	11430.1	-200.175
8	2.700	-22421.9	-1.476	278.981	710.811	2509.872	-202.168
		-22421.9	-1.476	407.412	563.351	12071.4	-202.168
8	4.050	-22311.0	-1.476	176.097	710.811	2900.257	-204.161
		-22311.0	-1.476	213.818	563.351	12573.9	-204.161
8	5.399	-22203.8	-1.476	47.619	710.811	3120.705	-206.153
		-22203.8	-1.476	-5.370	563.351	12784.0	-206.153
9	0	-22203.8	1.522	47.619	-44.731	3135.036	-206.153
		-22203.8	1.522	-5.370	-607.669	12783.1	-206.153
9	1.350	-22310.0	1.522	-80.783	-44.731	3043.912	-204.098
		-22310.0	1.522	-224.503	-607.669	12559.2	-204.098
9	2.700	-22418.5	1.522	-173.061	-44.731	2785.810	-202.044
		-22418.5	1.522	-407.512	-607.669	12045.8	-202.044
9	4.051	-22541.5	1.522	-106.233	-44.731	2523.511	-199.989
		-22541.5	1.522	-431.416	-607.669	11405.7	-199.989
9	5.401	-22656.4	1.522	-34.793	-44.731	2366.557	-197.934
		-22656.4	1.522	-450.707	-607.669	10748.4	-197.934
10	0	-22656.5	4.348	-84.771	-942.185	2352.095	-197.934
		-22656.5	4.348	-400.729	-1139.415	10707.4	-197.934
10	1.350	-22762.3	4.348	-9.367	-942.185	2241.114	-192.065
		-22762.3	4.348	-416.034	-1139.415	10108.7	-192.065
10	2.700	-22858.4	4.348	69.375	-942.185	2249.767	-186.196
		-22858.4	4.348	-428.000	-1139.415	9507.185	-186.196
10	4.049	-22979.8	4.348	-66.085	-989.705	2297.877	-180.326
		-22979.8	4.348	-522.348	-1091.895	8946.561	-180.326
10	5.399	-23189.2	4.348	-615.932	-989.705	1860.986	-174.457
		-23189.2	4.348	-840.726	266.828	8125.161	-174.457
11	0	-23189.4	7.272	-615.932	-994.395	1819.212	-174.457

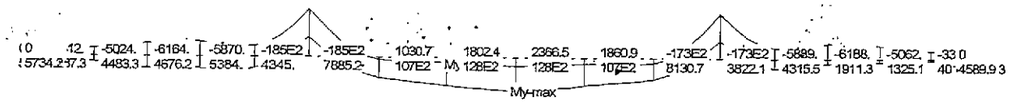
ENVOLVENTE para < My > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
		-23189.4	7.272	-840.726	-2.637	8130.724	-174.457
11	1.331	-23485.6	7.272	-2157.173	-1946.744	-43.955	-164.778
		-23485.6	7.272	-2040.499	122.586	6362.284	-164.778
11	2.662	-23763.2	7.272	-3932.965	-1279.731	-4250.711	-155.099
		-23763.2	7.272	-2844.339	-1062.504	2919.834	-155.099
11	3.993	-23961.0	7.272	-4951.331	-1279.731	-10101.7	-145.420
		-23961.0	7.272	-3773.259	-1062.504	-1422.672	-145.420
11	5.324	-24140.6	7.272	-5981.801	-1279.731	-17314.6	-135.741
		-24140.6	7.272	-4714.284	-1062.504	-7008.013	-135.741
12	0	-24162.1	3.447	5076.608	-324.394	-17344.3	-135.741
		-24162.1	3.447	3882.530	-488.032	-7036.661	-135.741
12	1.050	-24289.0	3.447	4274.399	-324.394	-12391.2	-132.123
		-24289.0	3.447	3150.868	-488.032	-3300.095	-132.123
12	2.100	-24407.4	3.447	3446.709	-324.394	-8289.563	-128.504
		-24407.4	3.447	2701.375	-290.117	-275.108	-128.504
12	3.149	-24539.2	3.447	1851.479	-462.515	-5682.270	-124.886
		-24539.2	3.447	2010.889	-349.911	2223.821	-124.886
12	4.199	-24654.4	3.447	892.531	-462.515	-4214.231	-121.268
		-24654.4	3.447	981.393	-349.911	3822.178	-121.268
13	0	-24654.5	4.888	892.531	-195.351	-4224.155	-121.268
		-24654.5	4.888	981.393	-325.211	3811.994	-121.268
13	1.050	-24753.7	4.888	-70.540	-195.351	-3776.845	-116.135
		-24753.7	4.888	-52.239	-325.211	4315.567	-116.135
13	2.100	-24880.1	4.888	-786.782	-195.351	-4323.501	-111.002
		-24880.1	4.888	-839.043	-325.211	3751.081	-111.002
13	3.150	-25101.8	4.888	-743.148	-195.351	-5220.460	-105.869
		-25101.8	4.888	-865.970	-325.211	2762.202	-105.869
13	4.200	-25290.1	4.888	-419.168	-195.351	-5889.564	-100.736
		-25290.1	4.888	-612.551	-325.211	1927.087	-100.736
14	0	-25290.3	6.467	-419.168	-237.391	-5896.737	-100.736
		-25290.3	6.467	-612.551	-626.241	1911.316	-100.736
14	1.050	-25339.3	6.467	-75.544	-237.391	-6188.051	-93.945
		-25339.3	6.467	-339.485	-626.241	1379.916	-93.945
14	2.100	-25198.3	6.467	277.366	-237.391	-6019.236	-87.155
		-25198.3	6.467	-57.132	-626.241	1234.563	-87.155
14	3.150	-25070.8	6.467	434.433	-237.391	-5541.888	-80.364
		-25070.8	6.467	29.378	-626.241	1323.661	-80.364
14	4.200	-24964.3	6.467	417.495	-237.391	-5051.514	-73.574
		-24964.3	6.467	-58.118	-626.241	1351.702	-73.574
15	0	-24964.5	7.990	417.495	-438.905	-5062.294	-73.574
		-24964.5	7.990	-58.118	-1028.159	1325.134	-73.574
15	1.050	-24860.0	7.990	360.030	-433.905	-4603.507	-65.183
		-24860.0	7.990	-186.156	-1028.159	1247.369	-65.183
15	2.100	-24756.3	7.990	277.169	-433.905	-4227.029	-56.791
		-24756.3	7.990	-339.592	-1028.159	1013.176	-56.791
15	3.151	-24624.8	7.990	355.026	-433.905	-3862.507	-48.400
		-24624.8	7.990	-332.309	-1028.159	692.910	-48.400
15	4.201	-24475.6	7.990	492.254	-433.905	-3354.911	-40.008
		-24475.6	7.990	-265.655	-1028.159	441.601	-40.008
16	0	-24475.9	9.581	492.254	-625.901	-3372.787	-40.008
		-24475.9	9.581	-265.655	-1347.856	401.524	-40.008
16	1.049	-24318.9	9.581	623.110	-625.901	-2728.972	-29.953
		-24318.9	9.581	-205.325	-1347.856	212.906	-29.953
16	2.099	-24153.9	9.581	747.185	-625.901	-1959.720	-19.898
		-24153.9	9.581	-151.777	-1347.856	75.709	-19.898
16	3.148	-24073.6	9.581	468.721	-625.901	-1286.626	-9.842
		-24073.6	9.581	-500.767	-1347.856	-231.664	-9.842
16	4.198	-24002.5	9.581	-370.631	-4771.487	-956.739	0.212903
		-24002.5	9.581	-371.832	2797.731	-955.713	0.212903
17	0	4.757	23.560	-549.068	3.27E-13	1506.002	-56.500
		4.757	23.560	-2243.150	4.48E-14	5568.682	-56.500
17	0.600	4.757	23.560	-588.525	3.27E-13	1164.986	-42.375
		4.757	23.560	-2282.607	4.48E-14	4211.996	-42.375
17	1.199	4.757	23.560	-627.982	3.27E-13	800.314	-28.250
		4.757	23.560	-2322.064	4.48E-14	2831.654	-28.250
17	1.799	4.757	23.560	-667.440	3.27E-13	411.985	-14.125
		4.757	23.560	-2361.522	4.48E-14	1427.655	-14.125
17	2.398	4.757	23.560	-706.897	3.27E-13	1.70E-05	-5.65E-07

ENVOLVENTE para < My > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
		4.757	23.560	-2400.979	4.48E-14	5.76E-05	-5.65E-07
18	0	-3.820	-23.637	-255.642	1.04E-12	803.088	56.728
		-3.820	-23.637	-2310.279	1.27E-12	5734.246	56.728
18	0.600	-3.820	-23.637	-295.130	1.04E-12	637.855	42.546
		-3.820	-23.637	-2349.767	1.27E-12	4336.224	42.546
18	1.200	-3.820	-23.637	-334.618	1.04E-12	448.929	28.364
		-3.820	-23.637	-2389.255	1.27E-12	2914.509	28.364
18	1.800	-3.820	-23.637	-374.106	1.04E-12	236.311	14.182
		-3.820	-23.637	-2428.742	1.27E-12	1469.101	14.182
18	2.400	-3.820	-23.637	-413.593	1.04E-12	9.93E-06	5.67E-07
		-3.820	-23.637	-2468.230	1.27E-12	5.92E-05	5.67E-07
19	0	4.793	-23.548	-667.817	6.96E-13	1792.263	56.515
		4.793	-23.548	-2244.116	1.40E-12	5575.311	56.515
19	0.600	4.793	-23.548	-707.303	6.96E-13	1379.735	42.386
		4.793	-23.548	-2283.603	1.40E-12	4217.020	42.386
19	1.200	4.793	-23.548	-746.790	6.96E-13	943.515	28.257
		4.793	-23.548	-2323.089	1.40E-12	2835.039	28.257
19	1.800	4.793	-23.548	-786.277	6.96E-13	483.603	14.129
		4.793	-23.548	-2362.576	1.40E-12	1429.365	14.129
19	2.400	4.793	-23.548	-825.764	6.96E-13	1.98E-05	5.65E-07
		4.793	-23.548	-2402.063	1.40E-12	5.76E-05	5.65E-07
20	0	-4.782	23.458	-255.933	-8.30E-13	803.823	-56.302
		-4.782	23.458	-1833.433	-2.67E-13	4589.994	-56.302
20	0.600	-4.782	23.458	-295.422	-8.30E-13	638.409	-42.226
		-4.782	23.458	-1872.923	-2.67E-13	3478.037	-42.226
20	1.200	-4.782	23.458	-334.911	-8.30E-13	449.301	-28.151
		-4.782	23.458	-1912.412	-2.67E-13	2342.386	-28.151
20	1.800	-4.782	23.458	-374.401	-8.30E-13	236.498	-14.075
		-4.782	23.458	-1951.901	-2.67E-13	1183.040	-14.075
20	2.400	-4.782	23.458	-413.890	-8.30E-13	9.93E-06	-5.63E-07
		-4.782	23.458	-1991.390	-2.67E-13	4.78E-05	-5.63E-07

Mstb. 1 :449.9
Section forces envelope My, GWSP JI (ELU 12), View "ALL"
- Struktur: Staebe
- Envelop Moment My-min, Scaling 2.00E-04
  min: -1.85E+04 max: 3.14E+03 [kNm]
- Envelop Moment My-max, Scaling 2.00E-04
  min: -7.62E+03 max: 1.28E+04 [kNm]
- Text envelopes [kNm]



ENVOLVENTE: JJ 'ELU 13'

Grupo	Espe.	Hipótesis	Factor	Etapa	Título
A	PERM.	1	1.350		Peso Propio
	Y	3	1.350		Carga Muerta Máxima
	Y	20	0.850000		Pretensado
B	MAS	19	0.900000		gradiente
C	MAS	33	1.500		Carro 2 apoyo excéntrico
D	MAS	4	1.500		Sobrecarga centrada vano 1
E	MAS	5	1.500		Sobrecarga centrada vano 2
F	MAS	6	1.500		Sobrecarga centrada vano 3
ALTERNATIVA PARA ENVOLVENTE:					
G	PERM.	1	1.350		Peso Propio
	Y	3	1.350		Carga Muerta Máxima
	Y	20	0.850000		Pretensado
H	MAS	19	0.900000		gradiente
I	MAS	33	1.500		Carro 2 apoyo excéntrico
J	MAS	7	1.500		Sobrecarga excéntrica vano 1 (
K	MAS	8	1.500		Sobrecarga excentrica vano 2 (
L	MAS	9	1.500		Sobrecarga excentrica vano 3 (
ALTERNATIVA PARA ENVOLVENTE:					
M	PERM.	1	1.350		Peso Propio
	Y	3	1.350		Carga Muerta Máxima
	Y	20	0.850000		Pretensado
N	MAS	19	0.900000		gradiente
O	MAS	33	1.500		Carro 2 apoyo excéntrico
P	MAS	10	1.500		Sobrecarga excéntrica vano 1 (
Q	MAS	11	1.500		Sobrecarga excentrica vano 2 (
R	MAS	12	1.500		Sobrecarga excentrica vano 3 (

ENVOLVENTE para < Vz > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
1	0	-24024.4	-9.508	-155.965	623.580	-869.185	-0.227677
		-24024.4	-9.508	859.569	148.327	-811.539	-0.227677
1	1.050	-24091.4	-9.508	-475.724	623.580	-1206.626	-10.212
		-24091.4	-9.508	469.246	148.327	-119.643	-10.212
1	2.100	-24168.0	-9.508	-753.482	623.580	-1886.652	-20.196
		-24168.0	-9.508	120.922	148.327	155.568	-20.196
1	3.150	-24331.4	-9.508	-628.969	623.580	-2662.340	-30.180
		-24331.4	-9.508	174.870	148.327	261.019	-30.180
1	4.200	-24487.2	-9.508	-497.738	623.580	-3312.093	-40.164
		-24487.2	-9.508	235.536	148.327	418.307	-40.164
2	0	-24486.9	-8.079	-497.738	449.058	-3295.837	-40.164
		-24486.9	-8.079	235.536	-139.017	418.449	-40.164
2	1.050	-24635.2	-8.079	-360.323	449.058	-3808.567	-48.646
		-24635.2	-8.079	302.403	-139.017	638.404	-48.646
2	2.100	-24766.0	-8.079	-282.691	449.058	-4178.424	-57.127
		-24766.0	-8.079	309.486	-139.017	927.368	-57.127
2	3.150	-24869.4	-8.079	-365.424	449.058	-4560.362	-65.608
		-24869.4	-8.079	156.203	-139.017	1130.086	-65.608
2	4.199	-24973.8	-8.079	-422.705	449.058	-5024.511	-74.090
		-24973.8	-8.079	28.373	-139.017	1176.527	-74.090
3	0	-24973.5	-6.428	-422.705	234.639	-5012.614	-74.090
		-24973.5	-6.428	28.373	-568.835	1164.209	-74.090
3	1.050	-25080.4	-6.428	-447.652	217.902	-2553.494	-80.840
		-25080.4	-6.428	-44.293	-1574.125	-318.354	-80.840
3	2.100	-25208.4	-6.428	-360.558	217.902	-3081.798	-87.590
		-25208.4	-6.428	106.775	-552.098	-1925.011	-87.590
3	3.150	-25350.0	-6.428	-77.867	217.902	-3375.045	-94.341
		-25350.0	-6.428	460.033	-552.098	-1690.458	-94.341
3	4.200	-25301.3	-6.428	195.537	217.902	-3281.706	-101.091

ENVOLVENTE para < Vz > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
		-25301.3	-6.428	804.005	-552.098	-995.217	-101.091
4	0	-25301.2	-4.907	195.538	93.967	-3276.728	-101.091
		-25301.2	-4.907	804.005	-748.623	-1015.981	-101.091
4	1.050	-25113.3	-4.907	449.257	93.967	-2879.366	-106.244
		-25113.3	-4.907	1128.282	-748.623	57.294	-106.244
4	2.100	-24891.7	-4.907	421.954	93.967	-2328.342	-111.396
		-24891.7	-4.907	1171.537	-748.623	1358.313	-111.396
4	3.150	-24765.4	-4.907	-366.116	93.967	-2202.752	-116.549
		-24765.4	-4.907	454.025	-748.623	2307.981	-116.549
4	4.200	-24665.9	-4.907	-1400.002	93.967	-3145.732	-121.701
		-24665.9	-4.907	-509.303	-748.623	2263.164	-121.701
5	0	-24665.8	-3.365	-1400.002	345.187	-3138.644	-121.701
		-24665.8	-3.365	-509.303	-671.510	2240.244	-121.701
5	1.050	-24550.5	-3.365	-2429.597	345.187	-5176.176	-125.233
		-24550.5	-3.365	-1468.365	-671.510	1174.616	-125.233
5	2.099	-24418.6	-3.365	-3453.998	345.187	-8303.462	-128.765
		-24418.6	-3.365	-2422.232	-671.510	-906.732	-128.765
5	3.149	-24300.2	-3.365	-4281.552	345.187	-12411.9	-132.296
		-24300.2	-3.365	-3179.252	-671.510	-3895.154	-132.296
5	4.198	-24173.3	-3.365	-5083.786	345.187	-17371.5	-135.828
		-24173.3	-3.365	-3910.952	-671.510	-7660.812	-135.828
6	0	-24151.8	-7.272	4766.019	1380.810	-7583.036	-135.828
		-24151.8	-7.272	6840.388	-226.193	-17434.7	-135.828
6	0.0995	-24139.1	-7.272	4695.334	1380.810	-7116.992	-136.551
		-24139.1	-7.272	6763.020	-226.193	-16762.7	-136.551
6	0.101	-24139.0	-7.272	4694.567	1380.810	-7111.970	-136.559
		-24139.0	-7.272	6462.179	523.807	-16755.6	-136.559
6	1.350	-23970.0	-7.272	3811.380	1380.810	-1857.118	-145.646
		-23970.0	-7.272	5495.026	523.807	-9344.566	-145.646
6	1.499	-23948.7	-7.272	3706.454	1380.810	-1302.495	-146.732
		-23948.7	-7.272	5380.060	523.807	-8539.125	-146.732
6	1.501	-23948.5	-7.272	3705.696	1380.810	-1298.543	-146.740
		-23948.5	-7.272	5079.229	1273.807	-8533.527	-146.740
6	2.700	-23769.5	-7.272	2869.224	1380.810	2590.251	-155.464
		-23769.5	-7.272	4162.147	1273.807	-3045.468	-155.464
6	2.999	-23722.5	-7.272	2662.204	1380.810	3406.135	-157.641
		-23722.5	-7.272	3935.009	1273.807	-1845.525	-157.641
6	3.001	-23722.3	-7.272	2618.163	2148.457	4567.682	-157.649
		-23722.3	-7.272	3677.485	1256.160	-3000.195	-157.649
6	4.050	-23484.4	-7.272	1538.687	2148.457	6690.048	-165.281
		-23484.4	-7.272	2527.477	1256.160	197.004	-165.281
6	5.400	-23190.7	-7.272	410.276	2148.457	7841.458	-175.099
		-23190.7	-7.272	1308.343	1256.160	2622.082	-175.099
7	0	-23190.5	-4.275	410.276	1873.754	7928.281	-175.099
		-23190.5	-4.275	1308.343	1207.511	2675.263	-175.099
7	1.350	-22979.5	-4.275	-138.810	1873.754	8089.803	-180.870
		-22979.5	-4.275	668.536	1207.511	3987.952	-180.870
7	2.700	-22865.6	-4.275	-172.893	1873.754	7831.270	-186.641
		-22865.6	-4.275	543.732	1207.511	4758.110	-186.641
7	4.050	-22768.8	-4.275	-94.046	1873.754	7683.868	-192.412
		-22768.8	-4.275	531.858	1207.511	5516.925	-192.412
7	5.400	-22662.4	-4.275	-18.585	1873.754	7656.204	-198.183
		-22662.4	-4.275	516.598	1207.511	6273.003	-198.183
8	0	-22662.2	-1.476	-18.585	1115.412	7716.289	-198.183
		-22662.2	-1.476	516.598	505.292	6307.432	-198.183
8	1.350	-22546.8	-1.476	52.848	1115.412	7801.963	-200.175
		-22546.8	-1.476	497.321	505.292	7054.302	-200.175
8	2.700	-22421.9	-1.476	119.679	1115.412	7993.607	-202.168
		-22421.9	-1.476	473.442	505.292	7784.697	-202.168
8	4.050	-22311.0	-1.476	16.795	1115.412	8168.958	-204.161
		-22311.0	-1.476	279.848	505.292	8376.353	-204.161
8	5.399	-22203.8	-1.476	-114.279	1212.720	12866.0	-206.153
		-22203.8	-1.476	63.255	407.985	3984.033	-206.153
9	0	-22203.8	1.522	-114.279	37.575	12892.9	-206.153
		-22203.8	1.522	63.255	-384.408	3984.540	-206.153
9	1.350	-22310.0	1.522	-333.412	37.575	12521.9	-204.098
		-22310.0	1.522	-65.147	-384.408	3914.528	-204.098
9	2.700	-22418.5	1.522	-516.421	37.575	11861.5	-202.044

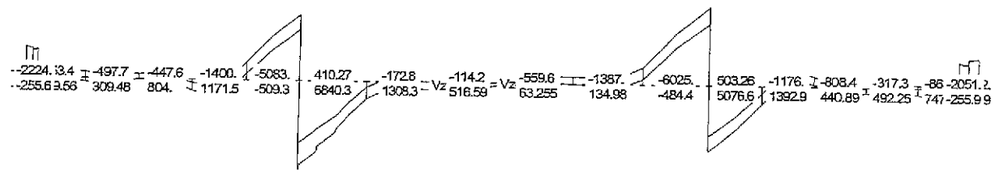
ENVOLVENTE para < Vz > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
		-22418.5	1.522	-157.424	-384.408	3677.537	-202.044
9	4.051	-22541.5	1.522	-540.325	37.575	11074.3	-199.989
		-22541.5	1.522	-90.597	-384.408	3436.350	-199.989
9	5.401	-22656.4	1.522	-559.616	37.575	10270.0	-197.934
		-22656.4	1.522	-19.156	-384.408	3300.507	-197.934
10	0	-22656.5	4.348	-559.616	-827.999	10254.0	-197.934
		-22656.5	4.348	-19.156	-966.774	3273.076	-197.934
10	1.350	-22762.3	4.348	-574.921	-827.999	9440.805	-192.065
		-22762.3	4.348	56.247	-966.774	3250.664	-192.065
10	2.700	-22858.4	4.348	-586.887	-827.999	8624.839	-186.196
		-22858.4	4.348	134.989	-966.774	3347.884	-186.196
10	4.049	-22979.8	4.348	-747.145	-827.999	7787.817	-180.326
		-22979.8	4.348	65.439	-966.774	3546.490	-180.326
10	5.399	-23189.2	4.348	-1387.700	-827.999	6370.394	-174.457
		-23189.2	4.348	-484.408	-966.774	3287.134	-174.457
11	0	-23189.4	7.272	-1387.700	-1022.634	6331.430	-174.457
		-23189.4	7.272	-484.408	-1031.512	3245.061	-174.457
11	1.331	-23485.6	7.272	-2632.196	-1022.634	3805.190	-164.778
		-23485.6	7.272	-1639.459	-1031.512	1980.653	-164.778
11	2.662	-23763.2	7.272	-3976.380	-1022.634	-579.724	-155.099
		-23763.2	7.272	-2894.197	-1031.512	-1023.377	-155.099
11	3.993	-23961.0	7.272	-4994.745	-1022.634	-6488.531	-145.420
		-23961.0	7.272	-3823.118	-1031.512	-5432.245	-145.420
11	5.324	-24140.6	7.272	-6025.215	-1022.634	-13759.2	-135.741
		-24140.6	7.272	-4764.143	-1031.512	-11084.0	-135.741
12	0	-24162.1	3.447	3904.782	-180.911	-7546.185	-135.741
		-24162.1	3.447	5076.608	-324.394	-17344.3	-135.741
12	1.050	-24289.0	3.447	3173.120	-180.911	-3786.259	-132.123
		-24289.0	3.447	4274.399	-324.394	-12391.2	-132.123
12	2.100	-24407.4	3.447	2415.977	-180.911	-803.734	-128.504
		-24407.4	3.447	3446.709	-324.394	-8289.563	-128.504
12	3.149	-24539.2	3.447	1462.218	-180.911	1271.447	-124.886
		-24539.2	3.447	2422.402	-324.394	-5169.339	-124.886
12	4.199	-24654.4	3.447	503.269	-180.911	2330.835	-121.268
		-24654.4	3.447	1392.907	-324.394	-3138.971	-121.268
13	0	-24654.5	4.888	503.269	-111.302	2326.427	-121.268
		-24654.5	4.888	1392.907	-89.728	-3145.218	-121.268
13	1.050	-24753.7	4.888	-459.802	-111.302	2365.005	-116.135
		-24753.7	4.888	359.274	-89.728	-2209.548	-116.135
13	2.100	-24880.1	4.888	-1176.044	-111.302	1409.616	-111.002
		-24880.1	4.888	-427.529	-89.728	-2341.935	-111.002
13	3.150	-25101.8	4.888	-1132.410	-111.302	103.925	-105.869
		-25101.8	4.888	-454.456	-89.728	-2898.717	-105.869
13	4.200	-25290.1	4.888	-808.429	-111.302	-973.912	-100.736
		-25290.1	4.888	-201.037	-89.728	-3301.734	-100.736
14	0	-25290.3	6.467	-808.429	-316.304	-981.000	-100.736
		-25290.3	6.467	-201.037	-217.592	-3306.828	-100.736
14	1.050	-25339.3	6.467	-464.806	-316.304	-1681.023	-93.945
		-25339.3	6.467	72.029	-217.592	-3406.155	-93.945
14	2.100	-25198.3	6.467	-111.896	-316.304	-1920.917	-87.155
		-25198.3	6.467	354.382	-217.592	-3119.435	-87.155
14	3.150	-25070.8	6.467	35.315	706.084	-342.989	-80.364
		-25070.8	6.467	440.892	-217.592	-2598.265	-80.364
14	4.200	-24964.3	6.467	-35.866	-296.506	1142.749	-73.574
		-24964.3	6.467	417.495	-237.391	-5051.514	-73.574
15	0	-24964.5	7.990	-35.866	-691.885	1126.877	-73.574
		-24964.5	7.990	417.495	-433.905	-5062.294	-73.574
15	1.050	-24860.0	7.990	-163.904	-691.885	1072.481	-65.183
		-24860.0	7.990	360.030	-433.905	-4603.507	-65.183
15	2.100	-24756.3	7.990	-317.340	-691.885	861.658	-56.791
		-24756.3	7.990	277.169	-433.905	-4227.029	-56.791
15	3.151	-24624.8	7.990	-310.057	-691.885	564.761	-48.400
		-24624.8	7.990	355.026	-433.905	-3862.507	-48.400
15	4.201	-24475.6	7.990	-243.403	-691.885	336.821	-40.008
		-24475.6	7.990	492.254	-433.905	-3354.911	-40.008
16	0	-24475.9	9.581	-243.403	-1008.239	308.144	-40.008
		-24475.9	9.581	492.254	-625.901	-3372.787	-40.008
16	1.049	-24318.9	9.581	-183.074	-1008.239	142.880	-29.953

ENVOLVENTE para < Vz > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
		-24318.9	9.581	623.110	-625.901	-2728.972	-29.953
16	2.099	-24153.9	9.581	-129.525	-1008.239	29.036	-19.898
		-24153.9	9.581	747.185	-625.901	-1959.720	-19.898
16	3.148	-24073.6	9.581	-478.515	-1008.239	-254.983	-9.842
		-24073.6	9.581	468.721	-625.901	-1286.626	-9.842
16	4.198	-24002.5	9.581	-868.987	-1008.239	-955.953	0.212903
		-24002.5	9.581	148.775	-625.901	-956.465	0.212903
17	0	4.757	23.560	-2243.150	4.48E-14	5568.682	-56.500
		4.757	23.560	-400.984	-2.47E-14	1150.874	-56.500
17	0.600	4.757	23.560	-2282.607	4.48E-14	4211.996	-42.375
		4.757	23.560	-440.441	-2.47E-14	898.640	-42.375
17	1.199	4.757	23.560	-2322.064	4.48E-14	2831.654	-28.250
		4.757	23.560	-479.899	-2.47E-14	622.749	-28.250
17	1.799	4.757	23.560	-2361.522	4.48E-14	1427.655	-14.125
		4.757	23.560	-519.356	-2.47E-14	323.203	-14.125
17	2.398	4.757	23.560	-2400.979	4.48E-14	5.76E-05	-5.65E-07
		4.757	23.560	-558.813	-2.47E-14	1.34E-05	-5.65E-07
18	0	-3.820	-23.637	-2066.519	1.13E-12	5149.219	56.728
		-3.820	-23.637	-255.642	1.04E-12	803.088	56.728
18	0.600	-3.820	-23.637	-2106.007	1.13E-12	3897.453	42.546
		-3.820	-23.637	-295.130	1.04E-12	637.855	42.546
18	1.200	-3.820	-23.637	-2145.495	1.13E-12	2621.995	28.364
		-3.820	-23.637	-334.618	1.04E-12	448.929	28.364
18	1.800	-3.820	-23.637	-2184.982	1.13E-12	1322.844	14.182
		-3.820	-23.637	-374.106	1.04E-12	236.311	14.182
18	2.400	-3.820	-23.637	-2224.470	1.13E-12	5.34E-05	5.67E-07
		-3.820	-23.637	-413.593	1.04E-12	9.93E-06	5.67E-07
19	0	4.793	-23.548	-2244.116	1.40E-12	5575.311	56.515
		4.793	-23.548	-585.938	6.94E-13	1595.757	56.515
19	0.600	4.793	-23.548	-2283.603	1.40E-12	4217.020	42.386
		4.793	-23.548	-625.424	6.94E-13	1232.355	42.386
19	1.200	4.793	-23.548	-2323.089	1.40E-12	2835.039	28.257
		4.793	-23.548	-664.911	6.94E-13	845.262	28.257
19	1.800	4.793	-23.548	-2362.576	1.40E-12	1429.365	14.129
		4.793	-23.548	-704.398	6.94E-13	434.477	14.129
19	2.400	4.793	-23.548	-2402.063	1.40E-12	5.76E-05	5.65E-07
		4.793	-23.548	-743.885	6.94E-13	1.79E-05	5.65E-07
20	0	-4.782	23.458	-1893.060	-2.75E-13	4733.105	-56.302
		-4.782	23.458	-255.933	-8.30E-13	803.823	-56.302
20	0.600	-4.782	23.458	-1932.550	-2.75E-13	3585.371	-42.226
		-4.782	23.458	-295.422	-8.30E-13	638.409	-42.226
20	1.200	-4.782	23.458	-1972.039	-2.75E-13	2413.942	-28.151
		-4.782	23.458	-334.911	-8.30E-13	449.301	-28.151
20	1.800	-4.782	23.458	-2011.528	-2.75E-13	1218.818	-14.075
		-4.782	23.458	-374.401	-8.30E-13	236.498	-14.075
20	2.400	-4.782	23.458	-2051.017	-2.75E-13	4.92E-05	-5.63E-07
		-4.782	23.458	-413.890	-8.30E-13	9.93E-06	-5.63E-07

Mstb. 1 :449.9
Section forces envelope Vz, GWSP JJ (ELU 13), View "ALL"
- Struktur: Staebe
- Envelop Shear force Vz-min, Scaling 1.00E-03
  min: -6.03E+03 max: 4.77E+03 [kN]
- Envelop Shear force Vz-max, Scaling 1.00E-03
  min: -4.76E+03 max: 6.84E+03 [kN]
- Text envelopes [kN]



ENVOLVENTE para < T > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
1	0	-24024.4	-9.508	336.157	-3994.316	-754.523	-0.227677
		-24024.4	-9.508	367.446	4766.223	-926.202	-0.227677
1	1.050	-24091.4	-9.508	-18.883	-3895.525	-593.723	-10.212
		-24091.4	-9.508	12.405	4667.432	-732.546	-10.212
1	2.100	-24168.0	-9.508	-331.925	-3796.734	-812.558	-20.196
		-24168.0	-9.508	-300.636	4568.641	-918.526	-20.196
1	3.150	-24331.4	-9.508	-242.694	-3697.944	-1164.105	-30.180
		-24331.4	-9.508	-211.405	4469.850	-1237.216	-30.180
1	4.200	-24487.2	-9.508	-146.746	-3599.153	-1426.765	-40.164
		-24487.2	-9.508	-115.457	4371.059	-1467.021	-40.164
2	0	-24486.9	-8.079	-146.746	-3828.866	-1539.334	-40.164
		-24486.9	-8.079	-115.457	4138.906	-1338.054	-40.164
2	1.050	-24635.2	-8.079	-44.605	-3730.097	-1702.196	-48.646
		-24635.2	-8.079	-13.316	4040.138	-1468:068	-48.646
2	2.100	-24766.0	-8.079	-2.247	-3631.329	-1759.016	-57.127
		-24766.0	-8.079	29.042	3941.369	-1492.039	-57.127
2	3.150	-24869.4	-8.079	-120.255	-3532.560	-1865.050	-65.608
		-24869.4	-8.079	-88.966	3842.600	-1565.226	-65.608
2	4.199	-24973.8	-8.079	-212.810	-3433.791	-2090.328	-74.090
		-24973.8	-8.079	-181.521	3743.832	-1757.656	-74.090
3	0	-24973.5	-6.428	-212.810	-3747.949	-2215.305	-74.090
		-24973.5	-6.428	-181.521	3413.753	-1633.100	-74.090
3	1.050	-25080.4	-6.428	-264.913	-3649.156	-2509.480	-80.840
		-25080.4	-6.428	-233.624	3314.959	-1894.418	-80.840
3	2.100	-25208.4	-6.428	-142.536	-3550.362	-2827.363	-87.590
		-25208.4	-6.428	-111.247	3216.165	-2179.445	-87.590
3	3.150	-25350.0	-6.428	175.439	-3451.568	-2873.139	-94.341
		-25350.0	-6.428	206.727	3117.372	-2192.364	-94.341
3	4.200	-25301.3	-6.428	484.127	-3352.774	-2495.277	-101.091
		-25301.3	-6.428	515.416	3018.578	-1781.646	-101.091
4	0	-25301.2	-4.907	484.127	-3499.992	-2604.672	-101.091
		-25301.2	-4.907	515.416	2845.336	-1688.037	-101.091
4	1.050	-25113.3	-4.907	773.125	-3401.211	-1885.780	-106.244
		-25113.3	-4.907	804.414	2746.555	-936.293	-106.244
4	2.100	-24891.7	-4.907	781.101	-3302.430	-976.184	-111.396
		-24891.7	-4.907	812.390	2647.774	6.155	-111.396
4	3.150	-24765.4	-4.907	28.310	-3203.649	-454.982	-116.549
		-24765.4	-4.907	59.599	2548.993	560.210	-116.549
4	4.200	-24665.9	-4.907	-970.297	-3104.868	-965.306	-121.701
		-24665.9	-4.907	-939.008	2450.212	82.738	-121.701
5	0	-24665.8	-3.365	-970.297	-2922.345	-1062.581	-121.701
		-24665.8	-3.365	-939.008	2596.022	164.180	-121.701

ENVOLVENTE para < T > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
5	1.050	-24550.5	-3.365	-1964.625	-2823.598	-2630.581	-125.233
		-24550.5	-3.365	-1629.808	2589.101	-1369.620	-125.233
5	2.099	-24418.6	-3.365	-2649.427	-2781.085	-5462.337	-128.765
		-24418.6	-3.365	-2583.675	2589.101	-3620.421	-128.765
5	3.149	-24300.2	-3.365	-3406.448	-2781.085	-8689.225	-132.296
		-24300.2	-3.365	-3340.695	2589.101	-6778.295	-132.296
5	4.198	-24173.3	-3.365	-4138.148	-2781.085	-12693.4	-135.828
		-24173.3	-3.365	-4072.396	2589.101	-10713.4	-135.828
6	0	-24151.8	-7.272	6208.759	-2032.760	-12778.1	-135.828
		-24151.8	-7.272	5331.739	3264.444	-10610.4	-135.828
6	0.0995	-24139.1	-7.272	6134.732	-2023.403	-12168.7	-136.551
		-24139.1	-7.272	5257.712	3255.087	-10088.3	-136.551
6	0.101	-24139.0	-7.272	5833.928	-1273.302	-12162.3	-136.559
		-24139.0	-7.272	5256.908	3254.985	-10082.6	-136.559
6	1.350	-23970.0	-7.272	4908.757	-1155.748	-5510.012	-145.646
		-23970.0	-7.272	4331.738	3137.432	-4151.363	-145.646
6	1.499	-23948.7	-7.272	4798.812	-1141.691	-4791.795	-146.732
		-23948.7	-7.272	4221.792	3123.375	-3519.363	-146.732
6	1.501	-23948.5	-7.272	4241.312	-409.237	-5560.644	-146.740
		-23948.5	-7.272	4477.704	3140.920	-2741.036	-146.740
6	2.700	-23769.5	-7.272	3364.535	-296.383	-1053.529	-155.464
		-23769.5	-7.272	3600.926	3028.067	2049.641	-155.464
6	2.999	-23722.5	-7.272	3147.455	-268.218	-90.867	-157.641
		-23722.5	-7.272	3383.847	2999.902	3083.073	-157.641
6	3.001	-23722.3	-7.272	3146.674	-268.117	-87.510	-157.649
		-23722.3	-7.272	3083.065	3749.800	3086.523	-157.649
6	4.050	-23484.4	-7.272	2031.931	-169.372	2571.064	-165.281
		-23484.4	-7.272	1968.323	3651.055	5678.335	-165.281
6	5.400	-23190.7	-7.272	858.159	-42.360	4357.754	-175.099
		-23190.7	-7.272	794.551	3524.043	7379.152	-175.099
7	0	-23190.5	-4.275	858.159	-164.696	4353.285	-175.099
		-23190.5	-4.275	794.551	3268.008	7525.764	-175.099
7	1.350	-22979.5	-4.275	263.712	-37.686	5088.837	-180.870
		-22979.5	-4.275	200.104	3140.998	8175.444	-180.870
7	2.700	-22865.6	-4.275	184.269	89.323	5343.096	-186.641
		-22865.6	-4.275	120.661	3013.989	8343.830	-186.641
7	4.050	-22768.8	-4.275	217.755	216.333	5647.249	-192.412
		-22768.8	-4.275	154.146	2886.980	8562.111	-192.412
7	5.400	-22662.4	-4.275	247.855	343.342	6009.902	-198.183
		-22662.4	-4.275	184.247	2759.970	8838.892	-198.183
8	0	-22662.2	-1.476	247.855	-347.606	6009.816	-198.183
		-22662.2	-1.476	184.247	1953.386	8933.635	-198.183
8	1.350	-22546.8	-1.476	273.933	-220.612	6424.535	-200.175
		-22546.8	-1.476	210.325	1826.391	9262.492	-200.175
8	2.700	-22421.9	-1.476	295.410	-93.617	6884.001	-202.168
		-22421.9	-1.476	231.801	1699.397	9636.096	-202.168
8	4.050	-22311.0	-1.476	147.171	33.377	7265.951	-204.161
		-22311.0	-1.476	83.562	1572.403	9932.184	-204.161
8	5.399	-22203.8	-1.476	-25.696	95.134	4475.081	-206.153
		-22203.8	-1.476	-23.457	1513.414	11594.9	-206.153
9	0	-22203.8	1.522	-26.783	-858.965	10947.8	-206.153
		-22203.8	1.522	-22.370	533.535	5149.753	-206.153
9	1.350	-22310.0	1.522	-135.840	-933.240	9217.933	-204.098
		-22310.0	1.522	-197.104	599.217	7873.946	-204.098
9	2.700	-22418.5	1.522	-273.484	-1060.264	8854.869	-202.044
		-22418.5	1.522	-334.748	726.240	7428.164	-202.044
9	4.051	-22541.5	1.522	-252.022	-1187.288	8426.357	-199.989
		-22541.5	1.522	-313.286	853.264	6916.936	-199.989
9	5.401	-22656.4	1.522	-225.947	-1314.311	8041.938	-197.934
		-22656.4	1.522	-287.211	980.288	6449.800	-197.934
10	0	-22656.5	4.348	-225.947	-2088.344	7972.860	-197.934
		-22656.5	4.348	-287.211	268.982	6475.161	-197.934
10	1.350	-22762.3	4.348	-195.898	-2215.336	7640.706	-192.065
		-22762.3	4.348	-257.162	395.974	6060.312	-192.065
10	2.700	-22858.4	4.348	-162.510	-2342.327	7366.965	-186.196
		-22858.4	4.348	-223.774	522.966	5703.875	-186.196
10	4.049	-22979.8	4.348	-277.414	-2469.319	7133.389	-180.326
		-22979.8	4.348	-338.678	649.957	5387.603	-180.326

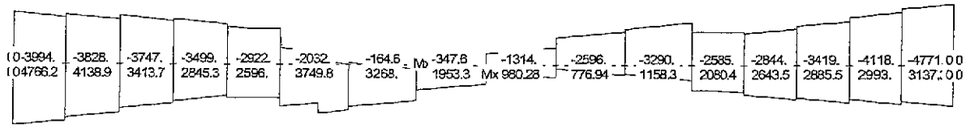
ENVOLVENTE para < T > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip.' decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
10	5.399	-23189.2	4.348	-872.615	-2596.310	6380.631	-174.457
		-23189.2	4.348	-933.879	776.949	4552.149	-174.457
11	0	-23189.4	7.272	-872.615	-2789.810	6267.229	-174.457
		-23189.4	7.272	-933.879	657.421	4582.349	-174.457
11	1.331	-23485.6	7.272	-2072.388	-2915.033	4456.344	-164.778
		-23485.6	7.272	-2133.652	782.644	2689.920	-164.778
11	2.662	-23763.2	7.272	-3371.849	-3040.256	846.312	-155.099
		-23763.2	7.272	-3433.113	907.867	-1001.656	-155.099
11	3.993	-23961.0	7.272	-4345.492	-3165.479	-4228.087	-145.420
		-23961.0	7.272	-4406.756	1033.090	-6157.599	-145.420
11	5.324	-24140.6	7.272	-5331.240	-3290.702	-10604.8	-135.741
		-24140.6	7.272	-5392.504	1158.312	-12615.9	-135.741
12	0	-24162.1	3.447	4069.592	-2581.845	-10713.3	-135.741
		-24162.1	3.447	4129.233	1938.419	-12558.7	-135.741
12	1.050	-24289.0	3.447	3337.931	-2581.845	-6780.403	-132.123
		-24289.0	3.447	3397.571	1938.419	-8563.134	-132.123
12	2.100	-24407.4	3.447	2580.788	-2581.845	-3624.859	-128.504
		-24407.4	3.447	2640.428	1938.419	-5344.978	-128.504
12	3.149	-24539.2	3.447	1627.028	-2581.845	-1376.657	-124.886
		-24539.2	3.447	1952.835	1981.724	-2519.504	-124.886
12	4.199	-24654.4	3.447	937.563	-2585.796	155.440	-121.268
		-24654.4	3.447	958.614	2080.490	-963.576	-121.268
13	0	-24654.5	4.888	937.563	-2449.474	79.481	-121.268
		-24654.5	4.888	958.613	2248.443	-898.271	-121.268
13	1.050	-24753.7	4.888	-60.789	-2548.259	555.553	-116.135
		-24753.7	4.888	-39.738	2347.229	-400.095	-116.135
13	2.100	-24880.1	4.888	-812.312	-2647.045	0.612866	-111.002
		-24880.1	4.888	-791.261	2446.015	-932.932	-111.002
13	3.150	-25101.8	4.888	-803.958	-2745.831	-941.676	-105.869
		-25101.8	4.888	-782.908	2544.801	-1853.117	-105.869
13	4.200	-25290.1	4.888	-515.259	-2844.617	-1693.154	-100.736
		-25290.1	4.888	-494.208	2643.587	-2582.492	-100.736
14	0	-25290.3	6.467	-515.259	-3024.280	-1790.435	-100.736
		-25290.3	6.467	-494.208	2490.384	-2497.392	-100.736
14	1.050	-25339.3	6.467	-206.914	-3123.060	-2201.162	-93.945
		-25339.3	6.467	-185.863	2589.164	-2886.017	-93.945
14	2.100	-25198.3	6.467	110.718	-3221.841	-2188.800	-87.155
		-25198.3	6.467	131.768	2687.944	-2851.552	-87.155
14	3.150	-25070.8	6.467	232.507	-3320.621	-1904.947	-80.364
		-25070.8	6.467	253.557	2786.724	-2545.597	-80.364
14	4.200	-24964.3	6.467	180.289	-3419.401	-1645.109	-73.574
		-24964.3	6.467	201.340	2885.505	-2263.656	-73.574
15	0	-24964.5	7.990	180.289	-3723.653	-1759.819	-73.574
		-24964.5	7.990	201.340	2597.863	-2175.599	-73.574
15	1.050	-24860.0	7.990	87.538	-3822.457	-1568.677	-65.183
		-24860.0	7.990	108.588	2696.667	-1962.349	-65.183
15	2.100	-24756.3	7.990	-30.611	-3921.260	-1496.903	-56.791
		-24756.3	7.990	-9.560	2795.471	-1868.468	-56.791
15	3.151	-24624.8	7.990	11.959	-4020.064	-1474.145	-48.400
		-24624.8	7.990	33.010	2894.275	-1823.602	-48.400
15	4.201	-24475.6	7.990	113.900	-4118.868	-1345.370	-40.008
		-24475.6	7.990	134.951	2993.079	-1672.720	-40.008
16	0	-24475.9	9.581	113.900	-4376.540	-1488.666	-40.008
		-24475.9	9.581	134.951	2742.401	-1575.977	-40.008
16	1.049	-24318.9	9.581	209.493	-4475.277	-1260.437	-29.953
		-24318.9	9.581	230.544	2841.137	-1325.656	-29.953
16	2.099	-24153.9	9.581	298.305	-4574.014	-943.779	-19.898
		-24153.9	9.581	319.355	2939.874	-986.904	-19.898
16	3.148	-24073.6	9.581	-15.422	-4672.751	-760.288	-9.842
		-24073.6	9.581	5.628	3038.611	-781.321	-9.842
16	4.198	-24002.5	9.581	-370.631	-4771.487	-956.739	0.212903
		-24002.5	9.581	-349.580	3137.348	-955.679	0.212903
17	0	4.757	23.560	-1373.755	-1.79E-13	3483.735	-56.500
		4.757	23.560	-1461.992	3.59E-13	3695.341	-56.500
17	0.600	4.757	23.560	-1413.213	-1.79E-13	2648.286	-42.375
		4.757	23.560	-1501.450	3.59E-13	2806.990	-42.375
17	1.199	4.757	23.560	-1452.670	-1.79E-13	1789.180	-28.250
		4.757	23.560	-1540.907	3.59E-13	1894.983	-28.250

ENVOLVENTE para < T > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
17	1.799	4.757	23.560	-1492.127	-1.79E-13	906.418	-14.125
		4.757	23.560	-1580.364	3.59E-13	959.320	-14.125
17	2.398	4.757	23.560	-1531.584	-1.79E-13	3.67E-05	-5.65E-07
		4.757	23.560	-1619.821	3.59E-13	3.88E-05	-5.65E-07
18	0	-3.820	-23.637	-1394.274	8.39E-13	3535.821	56.728
		-3.820	-23.637	-531.932	1.28E-12	1466.187	56.728
18	0.600	-3.820	-23.637	-1433.762	8.39E-13	2687.405	42.546
		-3.820	-23.637	-571.420	1.28E-12	1135.179	42.546
18	1.200	-3.820	-23.637	-1473.250	8.39E-13	1815.296	28.364
		-3.820	-23.637	-610.907	1.28E-12	780.479	28.364
18	1.800	-3.820	-23.637	-1512.737	8.39E-13	919.494	14.182
		-3.820	-23.637	-650.395	1.28E-12	402.086	14.182
18	2.400	-3.820	-23.637	-1552.225	8.39E-13	3.73E-05	5.67E-07
		-3.820	-23.637	-689.883	1.28E-12	1.66E-05	5.67E-07
19	0	4.793	-23.548	-629.968	6.91E-13	1701.427	56.515
		4.793	-23.548	-2244.116	1.40E-12	5575.311	56.515
19	0.600	4.793	-23.548	-669.455	6.91E-13	1311.608	42.386
		4.793	-23.548	-2283.603	1.40E-12	4217.020	42.386
19	1.200	4.793	-23.548	-708.941	6.91E-13	898.097	28.257
		4.793	-23.548	-2323.089	1.40E-12	2835.039	28.257
19	1.800	4.793	-23.548	-748.428	6.91E-13	460.894	14.129
		4.793	-23.548	-2362.576	1.40E-12	1429.365	14.129
19	2.400	4.793	-23.548	-787.915	6.91E-13	1.89E-05	5.65E-07
		4.793	-23.548	-2402.063	1.40E-12	5.76E-05	5.65E-07
20	0	-4.782	23.458	-1208.026	-8.97E-13	3088.949	-56.302
		-4.782	23.458	-1423.510	-2.57E-13	3606.133	-56.302
20	0.600	-4.782	23.458	-1247.515	-8.97E-13	2352.254	-42.226
		-4.782	23.458	-1462.999	-2.57E-13	2740.142	-42.226
20	1.200	-4.782	23.458	-1287.005	-8.97E-13	1591.864	-28.151
		-4.782	23.458	-1502.488	-2.57E-13	1850.456	-28.151
20	1.800	-4.782	23.458	-1326.494	-8.97E-13	807.779	-14.075
		-4.782	23.458	-1541.978	-2.57E-13	937.075	-14.075
20	2.400	-4.782	23.458	-1365.983	-8.97E-13	3.28E-05	-5.63E-07
		-4.782	23.458	-1581.467	-2.57E-13	3.80E-05	-5.63E-07

Mstb. 1 :449.9
Section forces envelope T , GWSP JJ (ELU 13), View "ALL"
- Struktur: Staebe
- Envelop Torsion.moment Mx-min, Scaling 1.00E-03
  min: -4.77E+03 max: 3.43E+02 [kNm]
- Envelop Torsion.moment Mx-max, Scaling 1.00E-03
  min: -2.57E-13 max: 4.77E+03 [kNm]
- Text envelopes [kNm]



ENVOLVENTE para < My > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
1	0	-24024.4	-9.508	367.446	4766.223	-926.202	-0.227677
		-24024.4	-9.508	336.157	-3994.316	-754.523	-0.227677
1	1.050	-24091.4	-9.508	-475.724	623.580	-1206.626	-10.212
		-24091.4	-9.508	469.246	148.327	-119.643	-10.212
1	2.100	-24168.0	-9.508	-753.482	623.580	-1886.652	-20.196
		-24168.0	-9.508	120.922	148.327	155.568	-20.196
1	3.150	-24331.4	-9.508	-628.969	623.580	-2662.340	-30.180
		-24331.4	-9.508	174.870	148.327	261.019	-30.180
1	4.200	-24487.2	-9.508	-497.738	623.580	-3312.093	-40.164
		-24487.2	-9.508	235.536	148.327	418.307	-40.164
2	0	-24486.9	-8.079	-497.738	449.058	-3295.837	-40.164
		-24486.9	-8.079	235.536	-139.017	418.449	-40.164
2	1.050	-24635.2	-8.079	-360.323	449.058	-3808.667	-48.646
		-24635.2	-8.079	302.403	-139.017	638.404	-48.646
2	2.100	-24766.0	-8.079	-282.691	449.058	-4178.424	-57.127
		-24766.0	-8.079	309.486	-139.017	927.368	-57.127
2	3.150	-24869.4	-8.079	-365.424	449.058	-4560.362	-65.608
		-24869.4	-8.079	156.203	-139.017	1130.086	-65.608
2	4.199	-24973.8	-8.079	-422.705	449.058	-5024.511	-74.090
		-24973.8	-8.079	28.373	-139.017	1176.527	-74.090
3	0	-24973.5	-6.428	-416.831	-1251.836	-5030.398	-74.090
		-24973.5	-6.428	22.499	917.639	1181.993	-74.090
3	1.050	-25080.4	-6.428	-433.650	-1251.836	-5520.289	-80.840
		-25080.4	-6.428	-64.887	917.639	1116.392	-80.840
3	2.100	-25208.4	-6.428	-275.990	-1251.836	-5996.839	-87.590
		-25208.4	-6.428	22.206	917.639	990.030	-87.590
3	3.150	-25350.0	-6.428	71.394	234.639	-6164.950	-94.341
		-25350.0	-6.428	310.772	-568.835	1099.448	-94.341
3	4.200	-25301.3	-6.428	415.366	234.639	-5877.820	-101.091
		-25301.3	-6.428	584.176	-568.835	1600.897	-101.091
4	0	-25301.2	-4.907	421.240	-1292.376	-5911.545	-101.091
		-25301.2	-4.907	578.302	637.720	1618.836	-101.091
4	1.050	-25113.3	-4.907	745.517	-1292.376	-5240.161	-106.244
		-25113.3	-4.907	832.022	637.720	2418.089	-106.244
4	2.100	-24891.7	-4.907	788.772	-1292.376	-4341.032	-111.396
		-24891.7	-4.907	804.719	637.720	3371.003	-111.396
4	3.150	-24765.4	-4.907	71.260	-1292.376	-3793.254	-116.549
		-24765.4	-4.907	16.649	637.720	3898.483	-116.549
4	4.200	-24665.9	-4.907	-892.068	-1292.376	-4239.962	-121.701
		-24665.9	-4.907	-1017.237	637.720	3357.394	-121.701
5	0	-24665.8	-3.365	-892.068	-1005.124	-4277.042	-121.701
		-24665.8	-3.365	-1017.237	678.801	3378.641	-121.701
5	1.050	-24550.5	-3.365	-1851.130	-1005.124	-5744.424	-125.233
		-24550.5	-3.365	-2046.832	678.801	1742.863	-125.233
5	2.099	-24418.6	-3.365	-3448.124	-1139.463	-8354.963	-128.765
		-24418.6	-3.365	-2739.013	615.492	-997.263	-128.765
5	3.149	-24300.2	-3.365	-4275.678	-1139.463	-12457.2	-132.296
		-24300.2	-3.365	-3185.126	813.140	-3849.818	-132.296
5	4.198	-24173.3	-3.365	-5077.912	-1139.463	-17410.7	-135.828
		-24173.3	-3.365	-3916.826	813.140	-7621.641	-135.828
6	0	-24151.8	-7.272	6840.388	-226.193	-17434.7	-135.828
		-24151.8	-7.272	4766.019	1380.810	-7583.036	-135.828
6	0.0995	-24139.1	-7.272	6763.020	-226.193	-16762.7	-136.551
		-24139.1	-7.272	4695.334	1380.810	-7116.992	-136.551
6	0.101	-24139.0	-7.272	6462.179	523.807	-16755.6	-136.559
		-24139.0	-7.272	4694.567	1380.810	-7111.970	-136.559
6	1.350	-23970.0	-7.272	4938.321	1256.160	-10034.8	-145.646
		-23970.0	-7.272	4368.085	648.457	-1166.921	-145.646
6	1.499	-23948.7	-7.272	4823.354	1256.160	-9312.504	-146.732
		-23948.7	-7.272	4263.160	648.457	-529.115	-146.732
6	1.501	-23948.5	-7.272	4822.524	1256.160	-9307.346	-146.740
		-23948.5	-7.272	3962.402	1398.457	-524.724	-146.740
6	2.700	-23769.5	-7.272	3905.442	1256.160	-4127.216	-155.464
		-23769.5	-7.272	3125.929	1398.457	3671.999	-155.464
6	2.999	-23722.5	-7.272	3678.304	1256.160	-3004.125	-157.641
		-23722.5	-7.272	3404.041	117.378	4595.480	-157.641
6	3.001	-23722.3	-7.272	3677.485	1256.160	-3000.195	-157.649
		-23722.3	-7.272	3103.260	867.479	4598.951	-157.649

ENVOLVENTE para < My > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
6	4.050	-23484.4	-7.272	2096.641	1919.308	68.977	-165.281
		-23484.4	-7.272	1988.517	966.224	7211.959	-165.281
6	5.400	-23190.7	-7.272	585.215	975.165	1839.492	-175.099
		-23190.7	-7.272	814.745	1093.236	8940.039	-175.099
7	0	-23190.5	-4.275	585.215	960.548	1881.276	-175.099
		-23190.5	-4.275	814.745	772.110	8980.304	-175.099
7	1.350	-22979.5	-4.275	36.128	960.548	2278.968	-180.870
		-22979.5	-4.275	493.598	2120.717	9798.787	-180.870
7	2.700	-22865.6	-4.275	-63.569	914.901	2223.924	-186.641
		-22865.6	-4.275	434.408	2166.364	10365.5	-186.641
7	4.050	-22768.8	-4.275	15.278	914.901	2224.111	-192.412
		-22768.8	-4.275	422.534	2166.364	10976.7	-192.412
7	5.400	-22662.4	-4.275	90.739	914.901	2344.036	-198.183
		-22662.4	-4.275	407.274	2166.364	11585.2	-198.183
8	0	-22662.2	-1.476	90.739	370.807	2369.879	-198.183
		-22662.2	-1.476	407.274	1249.898	11653.8	-198.183
8	1.350	-22546.8	-1.476	162.172	370.807	2603.125	-200.175
		-22546.8	-1.476	387.997	1249.898	12253.1	-200.175
8	2.700	-22421.9	-1.476	229.003	370.807	2942.341	-202.168
		-22421.9	-1.476	364.118	1249.898	12836.0	-202.168
8	4.050	-22311.0	-1.476	126.119	370.807	3265.263	-204.161
		-22311.0	-1.476	170.524	1249.898	13280.0	-204.161
8	5.399	-22203.8	-1.476	-2.359	370.807	3418.249	-206.153
		-22203.8	-1.476	-48.665	1249.898	13431.8	-206.153
9	0	-22203.8	1.522	-2.359	-397.217	3417.680	-206.153
		-22203.8	1.522	-48.665	50.384	13459.7	-206.153
9	1.350	-22310.0	1.522	-130.761	-397.217	3259.078	-204.098
		-22310.0	1.522	-267.798	50.384	13177.4	-204.098
9	2.700	-22418.5	1.522	-223.039	-397.217	2933.497	-202.044
		-22418.5	1.522	-450.807	50.384	12605.5	-202.044
9	4.051	-22541.5	1.522	-156.211	-397.217	2603.719	-199.989
		-22541.5	1.522	-474.711	50.384	11906.9	-199.989
9	5.401	-22656.4	1.522	-84.771	-397.217	2379.286	-197.934
		-22656.4	1.522	-494.001	50.384	11191.2	-197.934
10	0	-22656.5	4.348	-84.771	-942.185	2352.095	-197.934
		-22656.5	4.348	-494.001	-852.588	11174.9	-197.934
10	1.350	-22762.3	4.348	-9.367	-942.185	2241.114	-192.065
		-22762.3	4.348	-509.306	-852.588	10450.4	-192.065
10	2.700	-22858.4	4.348	69.375	-942.185	2249.767	-186.196
		-22858.4	4.348	-521.273	-852.588	9722.956	-186.196
10	4.049	-22979.8	4.348	-66.085	-989.705	2297.877	-180.326
		-22979.8	4.348	-615.621	-805.068	9036.430	-180.326
10	5.399	-23189.2	4.348	-615.932	-989.705	1860.986	-174.457
		-23189.2	4.348	-933.998	553.655	8089.129	-174.457
11	0	-23189.4	7.272	-615.932	-994.395	1819.212	-174.457
		-23189.4	7.272	-933.998	285.453	8106.795	-174.457
11	1.331	-23485.6	7.272	-2157.173	-1946.744	-43.955	-164.778
		-23485.6	7.272	-2133.772	410.676	6214.207	-164.778
11	2.662	-23763.2	7.272	-3932.965	-1279.731	-4250.711	-155.099
		-23763.2	7.272	-2937.611	-774.415	2647.610	-155.099
11	3.993	-23961.0	7.272	-4951.331	-1279.731	-10101.7	-145.420
		-23961.0	7.272	-3866.532	-774.415	-1819.044	-145.420
11	5.324	-24140.6	7.272	-5981.801	-1279.731	-17314.6	-135.741
		-24140.6	7.272	-4807.557	-774.415	-7528.534	-135.741
12	0	-24162.1	3.447	5076.608	-324.394	-17344.3	-135.741
		-24162.1	3.447	3904.782	-180.911	-7546.185	-135.741
12	1.050	-24289.0	3.447	4274.399	-324.394	-12391.2	-132.123
		-24289.0	3.447	3173.120	-180.911	-3786.259	-132.123
12	2.100	-24407.4	3.447	3446.709	-324.394	-8289.563	-128.504
		-24407.4	3.447	2723.627	17.004	-737.911	-128.504
12	3.149	-24539.2	3.447	1851.479	-462.515	-5682.270	-124.886
		-24539.2	3.447	2033.141	-42.791	1784.378	-124.886
12	4.199	-24654.4	3.447	892.531	-462.515	-4214.231	-121.268
		-24654.4	3.447	1003.645	-42.791	3406.096	-121.268
13	0	-24654.5	4.888	892.531	-195.351	-4224.155	-121.268
		-24654.5	4.888	1003.645	-5.679	3405.365	-121.268
13	1.050	-24753.7	4.888	-70.540	-195.351	-3776.845	-116.135
		-24753.7	4.888	-29.987	-5.679	3932.302	-116.135

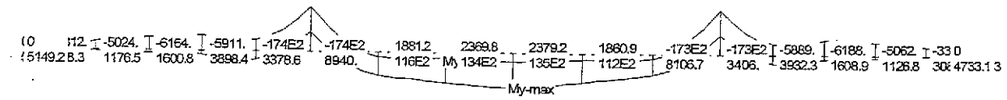
ENVOLVENTE para < My > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
13	2.100	-24880.1	4.888	-786.782	-195.351	-4323.501	-111.002
		-24880.1	4.888	-816.791	-5.679	3391.182	-111.002
13	3.150	-25101.8	4.888	-743.148	-195.351	-5220.460	-105.869
		-25101.8	4.888	-843.718	-5.679	2425.668	-105.869
13	4.200	-25290.1	4.888	-419.168	-195.351	-5889.564	-100.736
		-25290.1	4.888	-590.299	-5.679	1613.918	-100.736
14	0	-25290.3	6.467	-419.168	-237.391	-5896.737	-100.736
		-25290.3	6.467	-590.299	-296.506	1608.909	-100.736
14	1.050	-25339.3	6.467	-75.544	-237.391	-6188.051	-93.945
		-25339.3	6.467	-317.233	-296.506	1100.872	-93.945
14	2.100	-25198.3	6.467	277.366	-237.391	-6019.236	-87.155
		-25198.3	6.467	-34.880	-296.506	978.883	-87.155
14	3.150	-25070.8	6.467	434.433	-237.391	-5541.888	-80.364
		-25070.8	6.467	51.630	-296.506	1091.344	-80.364
14	4.200	-24964.3	6.467	417.495	-237.391	-5051.514	-73.574
		-24964.3	6.467	-35.866	-296.506	1142.749	-73.574
15	0	-24964.5	7.990	417.495	-433.905	-5062.294	-73.574
		-24964.5	7.990	-35.866	-691.885	1126.877	-73.574
15	1.050	-24860.0	7.990	360.030	-433.905	-4603.507	-65.183
		-24860.0	7.990	-163.904	-691.885	1072.481	-65.183
15	2.100	-24756.3	7.990	277.169	-433.905	-4227.029	-56.791
		-24756.3	7.990	-317.340	-691.885	861.658	-56.791
15	3.151	-24624.8	7.990	355.026	-433.905	-3862.507	-48.400
		-24624.8	7.990	-310.057	-691.885	564.761	-48.400
15	4.201	-24475.6	7.990	492.254	-433.905	-3354.911	-40.008
		-24475.6	7.990	-243.403	-691.885	336.821	-40.008
16	0	-24475.9	9.581	492.254	-625.901	-3372.787	-40.008
		-24475.9	9.581	-243.403	-1008.239	308.144	-40.008
16	1.049	-24318.9	9.581	623.110	-625.901	-2728.972	-29.953
		-24318.9	9.581	-183.074	-1008.239	142.880	-29.953
16	2.099	-24153.9	9.581	747.185	-625.901	-1959.720	-19.898
		-24153.9	9.581	-129.525	-1008.239	29.036	-19.898
16	3.148	-24073.6	9.581	468.721	-625.901	-1286.626	-9.842
		-24073.6	9.581	-478.515	-1008.239	-254.983	-9.842
16	4.198	-24002.5	9.581	-370.631	-4771.487	-956.739	0.212903
		-24002.5	9.581	-349.580	3137.348	-955.679	0.212903
17	0	4.757	23.560	-400.984	-2.47E-14	1150.874	-56.500
		4.757	23.560	-2243.150	4.48E-14	5568.682	-56.500
17	0.600	4.757	23.560	-440.441	-2.47E-14	898.640	-42.375
		4.757	23.560	-2282.607	4.48E-14	4211.996	-42.375
17	1.199	4.757	23.560	-479.899	-2.47E-14	622.749	-28.250
		4.757	23.560	-2322.064	4.48E-14	2831.654	-28.250
17	1.799	4.757	23.560	-519.356	-2.47E-14	323.203	-14.125
		4.757	23.560	-2361.522	4.48E-14	1427.655	-14.125
17	2.398	4.757	23.560	-558.813	-2.47E-14	1.34E-05	-5.65E-07
		4.757	23.560	-2400.979	4.48E-14	5.76E-05	-5.65E-07
18	0	-3.820	-23.637	-255.642	1.04E-12	803.088	56.728
		-3.820	-23.637	-2066.519	1.13E-12	5149.219	56.728
18	0.600	-3.820	-23.637	-295.130	1.04E-12	637.855	42.546
		-3.820	-23.637	-2106.007	1.13E-12	3897.453	42.546
18	1.200	-3.820	-23.637	-334.618	1.04E-12	448.929	28.364
		-3.820	-23.637	-2145.495	1.13E-12	2621.995	28.364
18	1.800	-3.820	-23.637	-374.106	1.04E-12	236.311	14.182
		-3.820	-23.637	-2184.982	1.13E-12	1322.844	14.182
18	2.400	-3.820	-23.637	-413.593	1.04E-12	9.93E-06	5.67E-07
		-3.820	-23.637	-2224.470	1.13E-12	5.34E-05	5.67E-07
19	0	4.793	-23.548	-585.938	6.94E-13	1595.757	56.515
		4.793	-23.548	-2244.116	1.40E-12	5575.311	56.515
19	0.600	4.793	-23.548	-625.424	6.94E-13	1232.355	42.386
		4.793	-23.548	-2283.603	1.40E-12	4217.020	42.386
19	1.200	4.793	-23.548	-664.911	6.94E-13	845.262	28.257
		4.793	-23.548	-2323.089	1.40E-12	2835.039	28.257
19	1.800	4.793	-23.548	-704.398	6.94E-13	434.477	14.129
		4.793	-23.548	-2362.576	1.40E-12	1429.365	14.129
19	2.400	4.793	-23.548	-743.885	6.94E-13	1.79E-05	5.65E-07
		4.793	-23.548	-2402.063	1.40E-12	5.76E-05	5.65E-07
20	0	-4.782	23.458	-255.933	-8.30E-13	803.823	-56.302
		-4.782	23.458	-1893.060	-2.75E-13	4733.105	-56.302

ENVOLVENTE para < My > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
20	0.600	-4.782	23.458	-295.422	-8.30E-13	638.409	-42.226
		-4.782	23.458	-1932.550	-2.75E-13	3585.371	-42.226
20	1.200	-4.782	23.458	-334.911	-8.30E-13	449.301	-28.151
		-4.782	23.458	-1972.039	-2.75E-13	2413.942	-28.151
20	1.800	-4.782	23.458	-374.401	-8.30E-13	236.498	-14.075
		-4.782	23.458	-2011.528	-2.75E-13	1218.818	-14.075
20	2.400	-4.782	23.458	-413.890	-8.30E-13	9.93E-06	-5.63E-07
		-4.782	23.458	-2051.017	-2.75E-13	4.92E-05	-5.63E-07

Mstb. 1 :449.9
Section forces envelope My, GWSP JJ (ELU 13), View "ALL"
- Struktur: Staebe
- Envelop Moment My-min, Scaling 2.00E-04
  min: -1.74E+04 max: 3.42E+03 [kNm]
- Envelop Moment My-max, Scaling 2.00E-04
  min: -7.62E+03 max: 1.35E+04 [kNm]
- Text envelopes [kNm]



ENVOLVENTE: JK 'ELU 14'

Grupo	Espe.	Hipótesis	Factor	Etapa	Título
A	PERM.	1	1.350		Peso Propio
	Y	3	1.350		Carga Muerta Máxima
	Y	20	0.850000		Pretensado
B	MAS	19	0.900000		gradiente
C	MAS	34	1.500		Carro 1 pila excéntrico
D	MAS	4	1.500		Sobrecarga centrada vano 1
E	MAS	5	1.500		Sobrecarga centrada vano 2
F	MAS	6	1.500		Sobrecarga centrada vano 3
ALTERNATIVA PARA ENVOLVENTE:					
G	PERM.	1	1.350		Peso Propio
	Y	3	1.350		Carga Muerta Máxima
	Y	20	0.850000		Pretensado
H	MAS	19	0.900000		gradiente
I	MAS	34	1.500		Carro 1 pila excéntrico
J	MAS	7	1.500		Sobrecarga excéntrica vano 1 (
K	MAS	8	1.500		Sobrecarga excentrica vano 2 (
L	MAS	9	1.500		Sobrecarga excentrica vano 3 (
ALTERNATIVA PARA ENVOLVENTE:					
M	PERM.	1	1.350		Peso Propio
	Y	3	1.350		Carga Muerta Máxima
	Y	20	0.850000		Pretensado
N	MAS	19	0.900000		gradiente
O	MAS	34	1.500		Carro 1 pila excéntrico
P	MAS	10	1.500		Sobrecarga excéntrica vano 1 (
Q	MAS	11	1.500		Sobrecarga excentrica vano 2 (
R	MAS	12	1.500		Sobrecarga excentrica vano 3 (

ENVOLVENTE para < Vz > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
1	0	-24024.4	-9.508	-155.965	623.580	-869.185	-0.227677
		-24024.4	-9.508	929.994	95.259	-807.144	-0.227677
1	1.050	-24091.4	-9.508	-475.724	623.580	-1206.626	-10.212
		-24091.4	-9.508	539.671	95.259	-41.296	-10.212
1	2.100	-24168.0	-9.508	-753.482	623.580	-1886.652	-20.196
		-24168.0	-9.508	191.347	95.259	307.867	-20.196
1	3.150	-24331.4	-9.508	-628.969	623.580	-2662.340	-30.180
		-24331.4	-9.508	245.295	95.259	487.269	-30.180
1	4.200	-24487.2	-9.508	-497.738	623.580	-3312.093	-40.164
		-24487.2	-9.508	305.961	95.259	718.509	-40.164
2	0	-24486.9	-8.079	-497.738	449.058	-3295.837	-40.164
		-24486.9	-8.079	305.961	-201.158	716.905	-40.164
2	1.050	-24635.2	-8.079	-360.323	449.058	-3808.667	-48.646
		-24635.2	-8.079	372.828	-201.158	1010.795	-48.646
2	2.100	-24766.0	-8.079	-282.691	449.058	-4178.424	-57.127
		-24766.0	-8.079	379.911	-201.158	1373.694	-57.127
2	3.150	-24869.4	-8.079	-365.424	449.058	-4560.362	-65.608
		-24869.4	-8.079	226.628	-201.158	1650.347	-65.608
2	4.199	-24973.8	-8.079	-422.705	449.058	-5024.511	-74.090
		-24973.8	-8.079	98.799	-201.158	1770.723	-74.090
3	0	-24973.5	-6.428	-422.705	234.639	-5012.614	-74.090
		-24973.5	-6.428	98.799	-651.612	1755.883	-74.090
3	1.050	-25080.4	-6.428	-447.652	217.902	-2553.494	-80.840
		-25080.4	-6.428	26.133	-1656.902	347.274	-80.840
3	2.100	-25208.4	-6.428	-360.558	217.902	-3081.798	-87.590
		-25208.4	-6.428	177.200	-634.875	-1185.429	-87.590
3	3.150	-25350.0	-6.428	-77.867	217.902	-3375.045	-94.341
		-25350.0	-6.428	530.459	-634.875	-876.922	-94.341
3	4.200	-25301.3	-6.428	195.537	217.902	-3281.706	-101.091
		-25301.3	-6.428	874.430	-634.875	-107.727	-101.091
4	0	-25301.2	-4.907	195.538	93.967	-3276.728	-101.091
		-25301.2	-4.907	874.430	-859.686	-131.585	-101.091
4	1.050	-25113.3	-4.907	449.257	93.967	-2879.366	-106.244
		-25113.3	-4.907	1198.707	-859.686	1015.633	-106.244
4	2.100	-24891.7	-4.907	421.954	93.967	-2328.342	-111.396
		-24891.7	-4.907	1241.962	-859.686	2390.596	-111.396
4	3.150	-24765.4	-4.907	-366.116	93.967	-2202.752	-116.549
		-24765.4	-4.907	524.450	-859.686	3414.209	-116.549
4	4.200	-24665.9	-4.907	-1400.002	93.967	-3145.732	-121.701
		-24665.9	-4.907	-438.878	-859.686	3443.335	-121.701
5	0	-24665.8	-3.365	-1400.002	345.187	-3138.644	-121.701
		-24665.8	-3.365	-438.878	-820.599	3416.217	-121.701
5	1.050	-24550.5	-3.365	-2429.597	345.187	-5176.176	-125.233
		-24550.5	-3.365	-1397.940	-820.599	2424.508	-125.233
5	1.200	-24532.7	-3.365	-2576.312	345.187	-5556.416	-125.738
		-24532.7	-3.365	-1534.576	-820.599	2199.740	-125.738
5	1.200	-24532.6	-3.365	-2800.834	-538.552	-4355.002	-125.741
		-24532.6	-3.365	-1611.641	813.140	994.691	-125.741
5	2.099	-24418.6	-3.365	-3677.698	-538.552	-7300.919	-128.765
		-24418.6	-3.365	-2428.106	813.140	-855.231	-128.765
5	2.700	-24351.0	-3.365	-4160.303	-538.552	-9680.507	-130.785
		-24351.0	-3.365	-2870.366	813.140	-2472.508	-130.785
5	2.700	-24350.9	-3.365	-4460.948	211.448	-9684.158	-130.788
		-24350.9	-3.365	-2870.955	813.140	-2474.949	-130.788
5	3.149	-24300.2	-3.365	-4805.253	211.448	-11778.8	-132.296
		-24300.2	-3.365	-3185.126	813.140	-3849.818	-132.296
5	4.198	-24173.3	-3.365	-5607.167	211.448	-17285.7	-135.827
		-24173.3	-3.365	-3916.535	813.140	-7619.977	-135.827
5	4.198	-24173.3	-3.365	-5907.487	961.448	-17288.1	-135.828
		-24173.3	-3.365	-3916.826	813.140	-7621.641	-135.828
6	0	-24151.8	-7.272	4766.019	1380.810	-7583.036	-135.828
		-24151.8	-7.272	5986.970	1869.105	-17238.3	-135.828
6	1.350	-23970.0	-7.272	3811.380	1380.810	-1857.118	-145.646
		-23970.0	-7.272	4941.607	1869.105	-9925.286	-145.646
6	2.700	-23769.5	-7.272	2869.224	1380.810	2590.251	-155.464
		-23769.5	-7.272	3908.728	1869.105	-4013.302	-155.464
6	4.050	-23484.4	-7.272	1581.982	1380.810	5576.774	-165.281
		-23484.4	-7.272	2530.763	1869.105	315.356	-165.281

ENVOLVENTE para < Vz > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
6	5.400	-23190.7	-7.272	453.571	1380.810	6786.634	-175.099
		-23190.7	-7.272	1311.630	1869.105	2744.870	-175.099
7	0	-23190.5	-4.275	453.571	1152.339	6841.314	-175.099
		-23190.5	-4.275	1311.630	1814.587	2824.386	-175.099
7	1.350	-22979.5	-4.275	-95.516	1152.339	7061.285	-180.870
		-22979.5	-4.275	671.822	1814.587	4141.512	-180.870
7	2.700	-22865.6	-4.275	-129.598	1152.339	6861.200	-186.641
		-22865.6	-4.275	547.019	1814.587	4916.107	-186.641
7	4.050	-22768.8	-4.275	-50.752	1152.339	6772.246	-192.412
		-22768.8	-4.275	535.144	1814.587	5679.359	-192.412
7	5.400	-22662.4	-4.275	24.709	1152.339	6803.030	-198.183
		-22662.4	-4.275	519.884	1814.587	6439.874	-198.183
8	0	-22662.2	-1.476	24.709	428.865	6834.814	-198.183
		-22662.2	-1.476	519.884	1105.172	6498.564	-198.183
8	1.350	-22546.8	-1.476	96.142	428.865	6978.929	-200.175
		-22546.8	-1.476	500.607	1105.172	7249.870	-200.175
8	2.700	-22421.9	-1.476	162.974	428.865	7229.015	-202.168
		-22421.9	-1.476	476.728	1105.172	7984.702	-202.168
8	4.050	-22311.0	-1.476	60.090	428.865	7462.807	-204.161
		-22311.0	-1.476	283.134	1105.172	8580.794	-204.161
8	5.399	-22203.8	-1.476	-70.985	526.173	12218.3	-206.153
		-22203.8	-1.476	66.541	1007.864	4192.910	-206.153
9	0	-22203.8	1.522	-70.985	-620.479	12216.2	-206.153
		-22203.8	1.522	66.541	205.932	4219.025	-206.153
9	1.350	-22310.0	1.522	-290.117	-620.479	11903.7	-204.098
		-22310.0	1.522	-61.860	205.932	4153.450	-204.098
9	2.700	-22418.5	1.522	-473.127	-620.479	11301.7	-202.044
		-22418.5	1.522	-154.138	205.932	3920.896	-202.044
9	4.051	-22541.5	1.522	-497.031	-620.479	10573.0	-199.989
		-22541.5	1.522	-87.311	205.932	3684.147	-199.989
9	5.401	-22656.4	1.522	-516.321	-620.479	9827.191	-197.934
		-22656.4	1.522	-15.870	205.932	3552.741	-197.934
10	0	-22656.5	4.348	-516.321	-1467.538	9784.802	-197.934
		-22656.5	4.348	-15.870	-387.157	3549.062	-197.934
10	1.350	-22762.3	4.348	-531.626	-1467.538	9030.084	-192.065
		-22762.3	4.348	59.534	-387.157	3531.086	-192.065
10	2.700	-22858.4	4.348	-543.592	-1467.538	8272.558	-186.196
		-22858.4	4.348	138.276	-387.157	3632.743	-186.196
10	4.049	-22979.8	4.348	-703.850	-1467.538	7493.976	-180.326
		-22979.8	4.348	68.726	-387.157	3835.784	-180.326
10	5.399	-23189.2	4.348	-1344.405	-1467.538	6134.993	-174.457
		-23189.2	4.348	-481.121	-387.157	3580.865	-174.457
11	0	-23189.4	7.272	-1344.405	-1651.699	6069.319	-174.457
		-23189.4	7.272	-481.121	-464.771	3562.928	-174.457
11	1.331	-23485.6	7.272	-2588.902	-1651.699	3600.706	-164.778
		-23485.6	7.272	-1636.172	-464.771	2302.894	-164.778
11	2.662	-23763.2	7.272	-3933.085	-1651.699	-726.583	-155.099
		-23763.2	7.272	-2890.911	-464.771	-696.761	-155.099
11	3.993	-23961.0	7.272	-4951.450	-1651.699	-6577.764	-145.420
		-23961.0	7.272	-3819.831	-464.771	-5101.255	-145.420
11	5.324	-24140.6	7.272	-5981.920	-1651.699	-13790.8	-135.741
		-24140.6	7.272	-4760.856	-464.771	-10748.6	-135.741
12	0	-24162.1	3.447	3890.961	-254.414	-7244.935	-135.741
		-24162.1	3.447	5076.608	-324.394	-17344.3	-135.741
12	1.050	-24289.0	3.447	3159.300	-254.414	-3499.519	-132.123
		-24289.0	3.447	4274.399	-324.394	-12391.2	-132.123
12	2.100	-24407.4	3.447	2402.156	-254.414	-531.503	-128.504
		-24407.4	3.447	3445.709	-324.394	-8289.563	-128.504
12	3.149	-24539.2	3.447	1448.397	-254.414	1529.170	-124.886
		-24539.2	3.447	2422.402	-324.394	-5169.339	-124.886
12	4.199	-24654.4	3.447	489.449	-254.414	2574.049	-121.268
		-24654.4	3.447	1392.907	-324.394	-3138.971	-121.268
13	0	-24654.5	4.888	489.449	-192.108	2567.313	-121.268
		-24654.5	4.888	1392.907	-89.728	-3145.218	-121.268
13	1.050	-24753.7	4.888	-473.622	-192.108	2591.379	-116.135
		-24753.7	4.888	359.274	-89.728	-2209.548	-116.135
13	2.100	-24880.1	4.888	-1189.865	-192.108	1621.478	-111.002
		-24880.1	4.888	-427.529	-89.728	-2341.935	-111.002

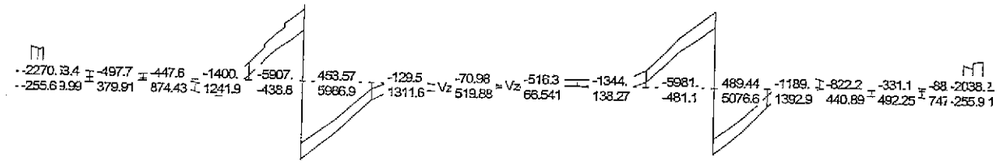
ENVOLVENTE para < Vz > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
13	3.150	-25101.8	4.888	-1146.230	-192.108	301.275	-105.869
		-25101.8	4.888	-454.456	-89.728	-2898.717	-105.869
13	4.200	-25290.1	4.888	-822.250	-192.108	-791.074	-100.736
		-25290.1	4.888	-201.037	-89.728	-3301.734	-100.736
14	0	-25290.3	6.467	-822.250	-403.125	-800.940	-100.736
		-25290.3	6.467	-201.037	-217.592	-3306.828	-100.736
14	1.050	-25339.3	6.467	-478.627	-403.125	-1515.475	-93.945
		-25339.3	6.467	72.029	-217.592	-3406.155	-93.945
14	2.100	-25198.3	6.467	-125.716	-403.125	-1769.879	-87.155
		-25198.3	6.467	354.382	-217.592	-3119.435	-87.155
14	3.150	-25070.8	6.467	21.495	619.264	-206.462	-80.364
		-25070.8	6.467	440.892	-217.592	-2598.265	-80.364
14	4.200	-24964.3	6.467	-49.686	-383.326	1264.765	-73.574
		-24964.3	6.467	417.495	-237.391	-5051.514	-73.574
15	0	-24964.5	7.990	-49.686	-782.579	1246.042	-73.574
		-24964.5	7.990	417.495	-433.905	-5062.294	-73.574
15	1.050	-24860.0	7.990	-177.725	-782.579	1177.131	-65.183
		-24860.0	7.990	360.030	-433.905	-4603.507	-65.183
15	2.100	-24756.3	7.990	-331.161	-782.579	951.794	-56.791
		-24756.3	7.990	277.169	-433.905	-4227.029	-56.791
15	3.151	-24624.8	7.990	-323.877	-782.579	640.382	-48.400
		-24624.8	7.990	355.026	-433.905	-3862.507	-48.400
15	4.201	-24475.6	7.990	-257.224	-782.579	397.928	-40.008
		-24475.6	7.990	492.254	-433.905	-3354.911	-40.008
16	0	-24475.9	9.581	-257.224	-1100.942	366.158	-40.008
		-24475.9	9.581	492.254	-625.901	-3372.787	-40.008
16	1.049	-24318.9	9.581	-196.894	-1100.942	186.388	-29.953
		-24318.9	9.581	623.110	-625.901	-2728.972	-29.953
16	2.099	-24153.9	9.581	-143.346	-1100.942	58.041	-19.898
		-24153.9	9.581	747.185	-625.901	-1959.720	-19.898
16	3.148	-24073.6	9.581	-492.335	-1100.942	-240.484	-9.842
		-24073.6	9.581	468.721	-625.901	-1286.626	-9.842
16	4.198	-24002.5	9.581	-882.807	-1100.942	-955.958	0.212903
		-24002.5	9.581	148.775	-625.901	-956.465	0.212903
17	0	4.757	23.560	-2243.150	4.48E-14	5568.682	-56.500
		4.757	23.560	-425.132	-1.33E-14	1208.785	-56.500
17	0.600	4.757	23.560	-2282.607	4.48E-14	4211.996	-42.375
		4.757	23.560	-464.590	-1.33E-14	942.073	-42.375
17	1.199	4.757	23.560	-2322.064	4.48E-14	3831.654	-28.250
		4.757	23.560	-504.047	-1.33E-14	651.705	-28.250
17	1.799	4.757	23.560	-2361.522	4.48E-14	1427.655	-14.125
		4.757	23.560	-543.504	-1.33E-14	337.681	-14.125
17	2.398	4.757	23.560	-2400.979	4.48E-14	5.76E-05	-5.65E-07
		4.757	23.560	-582.961	-1.33E-14	1.40E-05	-5.65E-07
18	0	-3.820	-23.637	-2112.796	1.19E-12	5260.284	56.728
		-3.820	-23.637	-255.642	1.04E-12	803.088	56.728
18	0.600	-3.820	-23.637	-2152.284	1.19E-12	3980.753	42.546
		-3.820	-23.637	-295.130	1.04E-12	637.855	42.546
18	1.200	-3.820	-23.637	-2191.772	1.19E-12	2677.528	28.364
		-3.820	-23.637	-334.618	1.04E-12	448.929	28.364
18	1.800	-3.820	-23.637	-2231.260	1.19E-12	1350.610	14.182
		-3.820	-23.637	-374.106	1.04E-12	236.311	14.182
18	2.400	-3.820	-23.637	-2270.747	1.19E-12	5.45E-05	5.67E-07
		-3.820	-23.637	-413.593	1.04E-12	9.93E-06	5.67E-07
19	0	4.793	-23.548	-2244.116	1.40E-12	5575.311	56.515
		4.793	-23.548	-612.161	6.94E-13	1658.692	56.515
19	0.600	4.793	-23.548	-2283.603	1.40E-12	4217.020	42.386
		4.793	-23.548	-651.648	6.94E-13	1279.556	42.386
19	1.200	4.793	-23.548	-2323.089	1.40E-12	2835.039	28.257
		4.793	-23.548	-691.135	6.94E-13	876.729	28.257
19	1.800	4.793	-23.548	-2362.576	1.40E-12	1429.365	14.129
		4.793	-23.548	-730.621	6.94E-13	450.210	14.129
19	2.400	4.793	-23.548	-2402.063	1.40E-12	5.76E-05	5.65E-07
		4.793	-23.548	-770.108	6.94E-13	1.85E-05	5.65E-07
20	0	-4.782	23.458	-1880.658	-2.63E-13	4703.337	-56.302
		-4.782	23.458	-255.933	-8.30E-13	803.823	-56.302
20	0.600	-4.782	23.458	-1920.147	-2.63E-13	3563.045	-42.226
		-4.782	23.458	-295.422	-8.30E-13	638.409	-42.226

ENVOLVENTE para < Vz > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
20	1.200	-4.782	23.458	-1959.636	-2.63E-13	2399.058	-28.151
		-4.782	23.458	-334.911	-8.30E-13	449.301	-28.151
20	1.800	-4.782	23.458	-1999.125	-2.63E-13	1211.376	-14.075
		-4.782	23.458	-374.401	-8.30E-13	236.498	-14.075
20	2.400	-4.782	23.458	-2038.615	-2.63E-13	4.89E-05	-5.63E-07
		-4.782	23.458	-413.890	-8.30E-13	9.93E-06	-5.63E-07

Mstb. 1 :449.9
Section forces envelope Vz, GWSP JK (ELU 14), View "ALL"
- Struktur: Staebe
- Envelop Shear force Vz-min, Scaling 1.00E-03
  min: -5.98E+03 max: 4.77E+03 [kN]
- Envelop Shear force Vz-max, Scaling 1.00E-03
  min: -4.76E+03 max: 5.99E+03 [kN]
- Text envelopes [kN]



ENVOLVENTE para < T > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
1	0	-24024.4	-9.508	406.583	-4047.384	-750.128	-0.227677
		-24024.4	-9.508	367.446	4766.223	-926.202	-0.227677
1	1.050	-24091.4	-9.508	51.542	-3948.593	-515.376	-10.212
		-24091.4	-9.508	12.405	4667.432	-732.546	-10.212
1	2.100	-24168.0	-9.508	-261.499	-3849.802	-660.260	-20.196
		-24168.0	-9.508	-300.636	4568.641	-918.526	-20.196
1	3.150	-24331.4	-9.508	-172.269	-3751.011	-937.854	-30.180
		-24331.4	-9.508	-211.405	4469.850	-1237.216	-30.180
1	4.200	-24487.2	-9.508	-76.320	-3652.221	-1126.563	-40.164
		-24487.2	-9.508	-115.457	4371.059	-1467.021	-40.164
2	0	-24486.9	-8.079	-76.320	-3891.006	-1240.878	-40.164
		-24486.9	-8.079	-115.457	4138.906	-1338.054	-40.164
2	1.050	-24635.2	-8.079	25.821	-3792.238	-1329.805	-48.646
		-24635.2	-8.079	-13.316	4040.138	-1468.068	-48.646
2	2.100	-24766.0	-8.079	68.178	-3693.469	-1312.690	-57.127
		-24766.0	-8.079	29.042	3941.369	-1492.039	-57.127
2	3.150	-24869.4	-8.079	-49.830	-3594.700	-1344.789	-65.608
		-24869.4	-8.079	-88.966	3842.600	-1565.226	-65.608
2	4.199	-24973.8	-8.079	-142.385	-3495.932	-1496.132	-74.090
		-24973.8	-8.079	-181.521	3743.832	-1757.656	-74.090
3	0	-24973.5	-6.428	-142.385	-3830.726	-1623.631	-74.090
		-24973.5	-6.428	-181.521	3413.753	-1633.100	-74.090
3	1.050	-25080.4	-6.428	-194.488	-3731.933	-1843.852	-80.840
		-25080.4	-6.428	-233.624	3314.959	-1894.418	-80.840
3	2.100	-25208.4	-6.428	-72.111	-3633.139	-2087.781	-87.590
		-25208.4	-6.428	-111.247	3216.165	-2179.445	-87.590
3	3.150	-25350.0	-6.428	245.864	-3534.345	-2059.603	-94.341
		-25350.0	-6.428	206.727	3117.372	-2192.364	-94.341
3	4.200	-25301.3	-6.428	554.552	-3435.551	-1607.788	-101.091

ENVOLVENTE para < T > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
		-25301.3	-6.428	515.416	3018.578	-1781.646	-101.091
4	0	-25301.2	-4.907	554.552	-3611.054	-1720.276	-101.091
		-25301.2	-4.907	515.416	2845.336	-1688.037	-101.091
4	1.050	-25113.3	-4.907	843.550	-3512.273	-927.440	-106.244
		-25113.3	-4.907	804.414	2746.555	-936.293	-106.244
4	2.100	-24891.7	-4.907	851.526	-3413.493	56.100	-111.396
		-24891.7	-4.907	812.390	2647.774	6.155	-111.396
4	3.150	-24765.4	-4.907	98.735	-3314.712	651.246	-116.549
		-24765.4	-4.907	59.599	2548.993	560.210	-116.549
4	4.200	-24665.9	-4.907	-899.871	-3215.931	214.866	-121.701
		-24665.9	-4.907	-939.008	2450.212	82.738	-121.701
5	0	-24665.8	-3.365	-899.872	-3071.434	113.392	-121.701
		-24665.8	-3.365	-939.008	2596.022	164.180	-121.701
5	1.050	-24550.5	-3.365	-1894.200	-2972.686	-1380.689	-125.233
		-24550.5	-3.365	-1629.808	2589.101	-1369.620	-125.233
5	1.200	-24532.7	-3.365	-2035.876	-2958.577	-1680.259	-125.738
		-24532.7	-3.365	-1766.445	2589.101	-1629.161	-125.738
5	1.200	-24532.6	-3.365	-2336.669	-2208.498	-1682.123	-125.741
		-24532.6	-3.365	-1767.210	2589.101	-1630.673	-125.741
5	2.099	-24418.6	-3.365	-2879.002	-2180.173	-4408.292	-128.765
		-24418.6	-3.365	-2583.675	2589.101	-3620.421	-128.765
5	2.700	-24351.0	-3.365	-3321.262	-2180.173	-6296.268	-130.785
		-24351.0	-3.365	-3025.935	2589.101	-5331.095	-130.785
5	2.700	-24350.9	-3.365	-3621.851	-1430.173	-6299.214	-130.788
		-24350.9	-3.365	-3026.524	2589.101	-5333.666	-130.788
5	3.149	-24300.2	-3.365	-3936.022	-1430.173	-8010.796	-132.296
		-24300.2	-3.365	-3340.695	2589.101	-6778.295	-132.296
5	4.198	-24173.3	-3.365	-4667.431	-1430.173	-12568.8	-135.827
		-24173.3	-3.365	-4072.104	2589.101	-10711.7	-135.827
5	4.198	-24173.3	-3.365	-4144.022	-1296.434	-12654.2	-135.828
		-24173.3	-3.365	-4896.096	3205.362	-10630.0	-135.828
6	0	-24151.8	-7.272	5352.053	-550.407	-12686.7	-135.828
		-24151.8	-7.272	5335.026	3877.389	-10505.4	-135.828
6	1.350	-23970.0	-7.272	4352.052	-423.395	-6200.209	-145.646
		-23970.0	-7.272	4335.025	3750.377	-4041.885	-145.646
6	2.700	-23769.5	-7.272	3364.535	-296.383	-1053.529	-155.464
		-23769.5	-7.272	3347.507	3623.365	1081.807	-155.464
6	4.050	-23484.4	-7.272	2031.931	-169.372	2571.064	-165.281
		-23484.4	-7.272	2014.904	3496.353	4683.413	-165.281
6	5.400	-23190.7	-7.272	858.159	-42.360	4357.754	-175.099
		-23190.7	-7.272	841.132	3369.341	6447.116	-175.099
7	0	-23190.5	-4.275	858.159	-164.696	4353.285	-175.099
		-23190.5	-4.275	841.132	3153.669	6587.920	-175.099
7	1.350	-22979.5	-4.275	263.712	-37.686	5088.837	-180.870
		-22979.5	-4.275	246.685	3026.659	7300.486	-180.870
7	2.700	-22865.6	-4.275	184.269	89.323	5343.096	-186.641
		-22865.6	-4.275	167.242	2899.650	7531.758	-186.641
7	4.050	-22768.8	-4.275	217.755	216.333	5647.249	-192.412
		-22768.8	-4.275	200.728	2772.640	7812.923	-192.412
7	5.400	-22662.4	-4.275	247.855	343.342	6009.902	-198.183
		-22662.4	-4.275	230.828	2645.631	8152.589	-198.183
8	0	-22662.2	-1.476	247.855	-347.606	6009.816	-198.183
		-22662.2	-1.476	230.828	1866.718	8243.292	-198.183
8	1.350	-22546.8	-1.476	273.933	-220.612	6424.535	-200.175
		-22546.8	-1.476	256.906	1739.724	8635.026	-200.175
8	2.700	-22421.9	-1.476	295.410	-93.617	6884.001	-202.168
		-22421.9	-1.476	278.382	1612.730	9071.508	-202.168
8	4.050	-22311.0	-1.476	147.171	33.377	7265.951	-204.161
		-22311.0	-1.476	130.143	1485.736	9430.474	-204.161
8	5.399	-22203.8	-1.476	-25.696	95.134	4475.081	-206.153
		-22203.8	-1.476	23.125	1426.747	11156.1	-206.153
9	0	-22203.8	1.522	-26.783	-858.965	10947.8	-206.153
		-22203.8	1.522	24.211	465.822	4707.600	-206.153
9	1.350	-22310.0	1.522	-135.840	-933.240	9217.933	-204.098
		-22310.0	1.522	-150.523	531.503	7494.684	-204.098
9	2.700	-22418.5	1.522	-273.484	-1060.264	8854.869	-202.044
		-22418.5	1.522	-288.167	658.527	7111.795	-202.044
9	4.051	-22541.5	1.522	-252.022	-1187.288	8426.357	-199.989

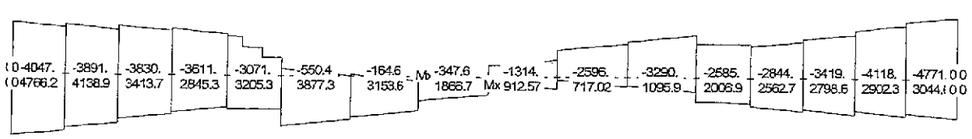
ENVOLVENTE para < T > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
		-22541.5	1.522	-266.705	785.551	6663.459	-199.989
9	5.401	-22656.4	1.522	-225.947	-1314.311	8041.938	-197.934
		-22656.4	1.522	-240.630	912.575	6259.215	-197.934
10	0	-22656.5	4.348	-225.947	-2088.344	7972.860	-197.934
		-22656.5	4.348	-240.630	209.060	6281.986	-197.934
10	1.350	-22762.3	4.348	-195.898	-2215.336	7640.706	-192.065
		-22762.3	4.348	-210.581	336.051	5930.012	-192.065
10	2.700	-22858.4	4.348	-162.510	-2342.327	7366.965	-186.196
		-22858.4	4.348	-177.193	463.043	5636.452	-186.196
10	4.049	-22979.8	4.348	-277.414	-2469.319	7133.389	-180.326
		-22979.8	4.348	-292.097	590.035	5383.057	-180.326
10	5.399	-23189.2	4.348	-872.615	-2596.310	6380.631	-174.457
		-23189.2	4.348	-887.298	717.026	4610.480	-174.457
11	0	-23189.4	7.272	-872.615	-2789.810	6267.229	-174.457
		-23189.4	7.272	-887.298	595.097	4638.106	-174.457
11	1.331	-23485.6	7.272	-2072.388	-2915.033	4456.344	-164.778
		-23485.6	7.272	-2087.071	720.319	2807.677	-164.778
11	2.662	-23763.2	7.272	-3371.849	-3040.256	846.312	-155.099
		-23763.2	7.272	-3386.532	845.542	-821.899	-155.099
11	3.993	-23961.0	7.272	-4345.492	-3165.479	-4228.087	-145.420
		-23961.0	7.272	-4360.175	970.765	-5915.841	-145.420
11	5.324	-24140.6	7.272	-5331.240	-3290.702	-10604.8	-135.741
		-24140.6	7.272	-5345.923	1095.988	-12312.1	-135.741
12	0	-24162.1	3.447	4069.592	-2581.845	-10713.3	-135.741
		-24162.1	3.447	4115.412	1864.917	-12257.4	-135.741
12	1.050	-24289.0	3.447	3337.931	-2581.845	-6780.403	-132.123
		-24289.0	3.447	3383.751	1864.917	-8276.393	-132.123
12	2.100	-24407.4	3.447	2580.788	-2581.845	-3624.859	-128.504
		-24407.4	3.447	2626.608	1864.917	-5072.747	-128.504
12	3.149	-24539.2	3.447	1627.028	-2581.845	-1376.657	-124.886
		-24539.2	3.447	1939.015	1908.222	-2261.781	-124.886
12	4.199	-24654.4	3.447	937.563	-2585.796	155.440	-121.268
		-24654.4	3.447	944.793	2006.988	-720.362	-121.268
13	0	-24654.5	4.888	937.563	-2449.474	79.481	-121.268
		-24654.5	4.888	944.793	2167.638	-657.386	-121.268
13	1.050	-24753.7	4.888	-60.789	-2548.259	555.553	-116.135
		-24753.7	4.888	-53.559	2266.424	-173.721	-116.135
13	2.100	-24880.1	4.888	-812.312	-2647.045	0.612866	-111.002
		-24880.1	4.888	-805.082	2365.210	-721.070	-111.002
13	3.150	-25101.8	4.888	-803.958	-2745.831	-941.676	-105.869
		-25101.8	4.888	-796.728	2463.996	-1655.766	-105.869
13	4.200	-25290.1	4.888	-515.259	-2844.617	-1693.154	-100.736
		-25290.1	4.888	-508.028	2562.782	-2399.653	-100.736
14	0	-25290.3	6.467	-515.259	-3024.280	-1790.435	-100.736
		-25290.3	6.467	-508.028	2403.563	-2317.333	-100.736
14	1.050	-25339.3	6.467	-206.914	-3123.060	-2201.162	-93.945
		-25339.3	6.467	-199.684	2502.343	-2720.468	-93.945
14	2.100	-25198.3	6.467	110.718	-3221.841	-2188.800	-87.155
		-25198.3	6.467	117.948	2601.124	-2700.515	-87.155
14	3.150	-25070.8	6.467	232.507	-3320.621	-1904.947	-80.364
		-25070.8	6.467	239.737	2699.904	-2409.070	-80.364
14	4.200	-24964.3	6.467	180.289	-3419.401	-1645.109	-73.574
		-24964.3	6.467	187.519	2798.684	-2141.640	-73.574
15	0	-24964.5	7.990	180.289	-3723.653	-1759.819	-73.574
		-24964.5	7.990	187.519	2507.169	-2056.434	-73.574
15	1.050	-24860.0	7.990	87.538	-3822.457	-1568.677	-65.183
		-24860.0	7.990	94.768	2605.973	-1857.699	-65.183
15	2.100	-24756.3	7.990	-30.611	-3921.260	-1496.903	-56.791
		-24756.3	7.990	-23.381	2704.777	-1778.332	-56.791
15	3.151	-24624.8	7.990	11.959	-4020.064	-1474.145	-48.400
		-24624.8	7.990	19.189	2803.581	-1747.981	-48.400
15	4.201	-24475.6	7.990	113.900	-4118.868	-1345.370	-40.008
		-24475.6	7.990	121.130	2902.385	-1611.613	-40.008
16	0	-24475.9	9.581	113.900	-4376.540	-1488.666	-40.008
		-24475.9	9.581	121.130	2649.698	-1517.963	-40.008
16	1.049	-24318.9	9.581	209.493	-4475.277	-1260.437	-29.953
		-24318.9	9.581	216.723	2748.434	-1282.147	-29.953
16	2.099	-24153.9	9.581	298.305	-4574.014	-943.779	-19.898

ENVOLVENTE para < T > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
		-24153.9	9.581	305.535	2847.171	-957.900	-19.898
16	3.148	-24073.6	9.581	-15.422	-4672.751	-760.288	-9.842
		-24073.6	9.581	-8.192	2945.908	-766.821	-9.842
16	4.198	-24002.5	9.581	-370.631	-4771.487	-956.739	0.212903
		-24002.5	9.581	-363.401	3044.645	-955.684	0.212903
17	0	4.757	23.560	-1397.904	-1.68E-13	3541.646	-56.500
		4.757	23.560	-1461.992	3.59E-13	3695.341	-56.500
17	0.600	4.757	23.560	-1437.361	-1.68E-13	2691.719	-42.375
		4.757	23.560	-1501.450	3.59E-13	2806.990	-42.375
17	1.199	4.757	23.560	-1476.818	-1.68E-13	1818.135	-28.250
		4.757	23.560	-1540.907	3.59E-13	1894.983	-28.250
17	1.799	4.757	23.560	-1516.275	-1.68E-13	920.896	-14.125
		4.757	23.560	-1580.364	3.59E-13	959.320	-14.125
17	2.398	4.757	23.560	-1555.733	-1.68E-13	3.73E-05	-5.65E-07
		4.757	23.560	-1619.821	3.59E-13	3.88E-05	-5.65E-07
18	0	-3.820	-23.637	-1081.675	8.78E-13	2785.579	56.728
		-3.820	-23.637	-890.808	1.30E-12	2327.494	56.728
18	0.600	-3.820	-23.637	-1121.163	8.78E-13	2124.724	42.546
		-3.820	-23.637	-930.296	1.30E-12	1781.160	42.546
18	1.200	-3.820	-23.637	-1160.651	8.78E-13	1440.175	28.364
		-3.820	-23.637	-969.783	1.30E-12	1211.133	28.364
18	1.800	-3.820	-23.637	-1200.139	8.78E-13	731.934	14.182
		-3.820	-23.637	-1009.271	1.30E-12	617.413	14.182
18	2.400	-3.820	-23.637	-1239.626	8.78E-13	2.98E-05	5.67E-07
		-3.820	-23.637	-1048.759	1.30E-12	2.52E-05	5.67E-07
19	0	4.793	-23.548	-656.191	6.91E-13	1764.362	56.515
		4.793	-23.548	-2244.116	1.40E-12	5575.311	56.515
19	0.600	4.793	-23.548	-695.678	6.91E-13	1358.809	42.386
		4.793	-23.548	-2283.603	1.40E-12	4217.020	42.386
19	1.200	4.793	-23.548	-735.165	6.91E-13	929.564	28.257
		4.793	-23.548	-2323.089	1.40E-12	2835.039	28.257
19	1.800	4.793	-23.548	-774.651	6.91E-13	476.628	14.129
		4.793	-23.548	-2362.576	1.40E-12	1429.365	14.129
19	2.400	4.793	-23.548	-814.138	6.91E-13	1.95E-05	5.65E-07
		4.793	-23.548	-2402.063	1.40E-12	5.76E-05	5.65E-07
20	0	-4.782	23.458	-1074.791	-8.93E-13	2769.170	-56.302
		-4.782	23.458	-1544.342	-2.50E-13	3896.145	-56.302
20	0.600	-4.782	23.458	-1114.280	-8.93E-13	2112.419	-42.226
		-4.782	23.458	-1583.832	-2.50E-13	2957.650	-42.226
20	1.200	-4.782	23.458	-1153.769	-8.93E-13	1431.974	-28.151
		-4.782	23.458	-1623.321	-2.50E-13	1995.462	-28.151
20	1.800	-4.782	23.458	-1193.258	-8.93E-13	727.834	-14.075
		-4.782	23.458	-1662.810	-2.50E-13	1009.578	-14.075
20	2.400	-4.782	23.458	-1232.748	-8.93E-13	2.96E-05	-5.63E-07
		-4.782	23.458	-1702.299	-2.50E-13	4.09E-05	-5.63E-07

Mstb. 1 :449.9
Section forces envelope T , GWSP JK (ELU 14), View "ALL"
- Struktur: Staebe
- Envelop Torsion.moment Mx-min, Scaling 1.00E-03
  min: -4.77E+03 max: 3.43E+02 [kNm]
- Envelop Torsion.moment Mx-max, Scaling 1.00E-03
  min: -2.50E-13 max: 4.77E+03 [kNm]
- Text envelopes [kNm]



ENVOLVENTE para < My > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
1	0	-24024.4	-9.508	367.446	4766.223	-926.202	-0.227677
		-24024.4	-9.508	406.583	-4047.384	-750.128	-0.227677
1	1.050	-24091.4	-9.508	-475.724	623.580	-1206.626	-10.212
		-24091.4	-9.508	539.671	95.259	-41.296	-10.212
1	2.100	-24168.0	-9.508	-753.482	623.580	-1886.652	-20.196
		-24168.0	-9.508	191.347	95.259	307.867	-20.196
1	3.150	-24331.4	-9.508	-628.969	623.580	-2662.340	-30.180
		-24331.4	-9.508	245.295	95.259	487.269	-30.180
1	4.200	-24487.2	-9.508	-497.738	623.580	-3312.093	-40.164
		-24487.2	-9.508	305.961	95.259	718.509	-40.164
2	0	-24486.9	-8.079	-497.738	449.058	-3295.837	-40.164
		-24486.9	-8.079	305.961	-201.158	716.905	-40.164
2	1.050	-24635.2	-8.079	-360.323	449.058	-3808.667	-48.646
		-24635.2	-8.079	372.828	-201.158	1010.795	-48.646
2	2.100	-24766.0	-8.079	-282.691	449.058	-4178.424	-57.127
		-24766.0	-8.079	379.911	-201.158	1373.694	-57.127
2	3.150	-24869.4	-8.079	-365.424	449.058	-4560.362	-65.608
		-24869.4	-8.079	226.628	-201.158	1650.347	-65.608
2	4.199	-24973.8	-8.079	-422.705	449.058	-5024.511	-74.090
		-24973.8	-8.079	98.799	-201.158	1770.723	-74.090
3	0	-24973.5	-6.428	-422.705	234.639	-5012.614	-74.090
		-24973.5	-6.428	98.799	-651.612	1755.883	-74.090
3	1.050	-25080.4	-6.428	-439.524	234.639	-5508.674	-80.840
		-25080.4	-6.428	11.412	-651.612	1770.405	-80.840
3	2.100	-25208.4	-6.428	-281.864	234.639	-5991.392	-87.590
		-25208.4	-6.428	98.506	-651.612	1724.165	-87.590
3	3.150	-25350.0	-6.428	71.394	234.639	-6164.950	-94.341
		-25350.0	-6.428	381.197	-651.612	1912.983	-94.341
3	4.200	-25301.3	-6.428	415.366	234.639	-5877.820	-101.091
		-25301.3	-6.428	654.602	-651.612	2488.387	-101.091
4	0	-25301.2	-4.907	415.366	193.560	-5870.985	-101.091
		-25301.2	-4.907	654.602	-959.279	2462.671	-101.091
4	1.050	-25113.3	-4.907	739.643	193.560	-5205.768	-106.244
		-25113.3	-4.907	908.321	-959.279	3342.036	-106.244
4	2.100	-24891.7	-4.907	782.898	193.560	-4312.807	-111.396
		-24891.7	-4.907	881.018	-959.279	4375.062	-111.396
4	3.150	-24765.4	-4.907	65.386	193.560	-3771.197	-116.549
		-24765.4	-4.907	92.948	-959.279	4982.653	-116.549
4	4.200	-24665.9	-4.907	-897.942	193.560	-4224.072	-121.701
		-24665.9	-4.907	-940.937	-959.279	4521.676	-121.701
5	0	-24665.8	-3.365	-897.942	479.527	-4213.209	-121.701
		-24665.8	-3.365	-940.937	-954.938	4490.782	-121.701
5	1.050	-24550.5	-3.365	-1857.004	479.527	-5686.757	-125.233
		-24550.5	-3.365	-1970.533	-954.938	2935.089	-125.233
5	1.200	-24532.7	-3.365	-1993.641	479.527	-5980.371	-125.738
		-24532.7	-3.365	-2117.248	-954.938	2623.694	-125.738
5	1.200	-24532.6	-3.365	-1994.405	479.527	-5982.073	-125.741
		-24532.6	-3.365	-2418.069	-204.938	2621.762	-125.741
5	2.099	-24418.6	-3.365	-3453.998	345.187	-8303.462	-128.765
		-24418.6	-3.365	-2962.713	-268.247	205.280	-128.765
5	2.700	-24351.0	-3.365	-3936.602	345.187	-10548.8	-130.785
		-24351.0	-3.365	-3094.067	-70.599	-1604.265	-130.785
5	2.700	-24350.9	-3.365	-3937.248	345.187	-10552.1	-130.788
		-24350.9	-3.365	-3394.656	679.401	-1607.020	-130.788
5	3.149	-24300.2	-3.365	-4281.552	345.187	-12411.9	-132.296
		-24300.2	-3.365	-3708.827	679.401	-3216.724	-132.296
5	4.198	-24173.3	-3.365	-5083.466	345.187	-17369.4	-135.827
		-24173.3	-3.365	-4440.235	679.401	-7536.346	-135.827
5	4.198	-24173.3	-3.365	-5083.786	345.187	-17371.5	-135.828
		-24173.3	-3.365	-4740.527	1429.401	-7538.230	-135.828
6	0	-24151.8	-7.272	5983.683	1256.160	-17343.3	-135.828
		-24151.8	-7.272	4769.306	1993.755	-7477.996	-135.828
6	1.350	-23970.0	-7.272	4938.321	1256.160	-10034.8	-145.646
		-23970.0	-7.272	3814.666	1993.755	-1747.641	-145.646
6	2.700	-23769.5	-7.272	3905.442	1256.160	-4127.216	-155.464
		-23769.5	-7.272	2872.510	1993.755	2704.166	-155.464
6	4.050	-23484.4	-7.272	2096.641	1919.308	68.977	-165.281
		-23484.4	-7.272	2035.098	811.522	6217.037	-165.281

ENVOLVENTE para < My > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
6	5.400	-23190.7	-7.272	585.215	975.165	1839.492	-175.099
		-23190.7	-7.272	861.326	938.534	8008.003	-175.099
7	0	-23190.5	-4.275	585.215	960.548	1881.276	-175.099
		-23190.5	-4.275	861.326	657.771	8042.460	-175.099
7	1.350	-22979.5	-4.275	36.128	960.548	2278.968	-180.870
		-22979.5	-4.275	540.179	2006.377	8923.828	-180.870
7	2.700	-22865.6	-4.275	-63.569	914.901	2223.924	-186.641
		-22865.6	-4.275	480.989	2052.025	9553.383	-186.641
7	4.050	-22768.8	-4.275	15.278	914.901	2224.111	-192.412
		-22768.8	-4.275	469.115	2052.025	10227.5	-192.412
7	5.400	-22662.4	-4.275	90.739	914.901	2344.036	-198.183
		-22662.4	-4.275	453.855	2052.025	10898.9	-198.183
8	0	-22662.2	-1.476	90.739	370.807	2369.879	-198.183
		-22662.2	-1.476	453.855	1163.230	10963.5	-198.183
8	1.350	-22546.8	-1.476	162.172	370.807	2603.125	-200.175
		-22546.8	-1.476	434.578	1163.230	11625.7	-200.175
8	2.700	-22421.9	-1.476	229.003	370.807	2942.341	-202.168
		-22421.9	-1.476	410.699	1163.230	12271.4	-202.168
8	4.050	-22311.0	-1.476	126.119	370.807	3265.263	-204.161
		-22311.0	-1.476	217.105	1163.230	12778.3	-204.161
8	5.399	-22203.8	-1.476	-2.359	370.807	3418.249	-206.153
		-22203.8	-1.476	-2.084	1163.230	12992.9	-206.153
9	0	-22203.8	1.522	-2.359	-397.217	3417.680	-206.153
		-22203.8	1.522	-2.084	-17.329	13017.6	-206.153
9	1.350	-22310.0	1.522	-130.761	-397.217	3259.078	-204.098
		-22310.0	1.522	-221.217	-17.329	12798.1	-204.098
9	2.700	-22418.5	1.522	-223.039	-397.217	2933.497	-202.044
		-22418.5	1.522	-404.226	-17.329	12289.1	-202.044
9	4.051	-22541.5	1.522	-156.211	-397.217	2603.719	-199.989
		-22541.5	1.522	-428.130	-17.329	11653.5	-199.989
9	5.401	-22656.4	1.522	-84.771	-397.217	2379.286	-197.934
		-22656.4	1.522	-447.420	-17.329	11000.6	-197.934
10	0	-22656.5	4.348	-84.771	-942.185	2352.095	-197.934
		-22656.5	4.348	-447.420	-912.510	10981.8	-197.934
10	1.350	-22762.3	4.348	-9.367	-942.185	2241.114	-192.065
		-22762.3	4.348	-462.725	-912.510	10320.1	-192.065
10	2.700	-22858.4	4.348	69.375	-942.185	2249.767	-186.196
		-22858.4	4.348	-474.691	-912.510	9655.533	-186.196
10	4.049	-22979.8	4.348	-66.085	-989.705	2297.877	-180.326
		-22979.8	4.348	-569.039	-864.990	9031.884	-180.326
10	5.399	-23189.2	4.348	-615.932	-989.705	1860.986	-174.457
		-23189.2	4.348	-887.417	493.733	8147.459	-174.457
11	0	-23189.4	7.272	-615.932	-994.395	1819.212	-174.457
		-23189.4	7.272	-887.417	223.128	8162.552	-174.457
11	1.331	-23485.6	7.272	-2157.173	-1946.744	-43.955	-164.778
		-23485.6	7.272	-2087.191	348.351	6331.964	-164.778
11	2.662	-23763.2	7.272	-3932.965	-1279.731	-4250.711	-155.099
		-23763.2	7.272	-2891.030	-836.739	2827.367	-155.099
11	3.993	-23961.0	7.272	-4951.331	-1279.731	-10101.7	-145.420
		-23961.0	7.272	-3819.951	-836.739	-1577.286	-145.420
11	5.324	-24140.6	7.272	-5981.801	-1279.731	-17314.6	-135.741
		-24140.6	7.272	-4760.976	-836.739	-7224.775	-135.741
12	0	-24162.1	3.447	5076.608	-324.394	-17344.3	-135.741
		-24162.1	3.447	3890.961	-254.414	-7244.935	-135.741
12	1.050	-24289.0	3.447	4274.399	-324.394	-12391.2	-132.123
		-24289.0	3.447	3159.300	-254.414	-3499.519	-132.123
12	2.100	-24407.4	3.447	3446.709	-324.394	-8289.563	-128.504
		-24407.4	3.447	2709.806	-56.499	-465.680	-128.504
12	3.149	-24539.2	3.447	1851.479	-462.515	-5682.270	-124.886
		-24539.2	3.447	2019.320	-116.293	2042.100	-124.886
12	4.199	-24654.4	3.447	892.531	-462.515	-4214.231	-121.268
		-24654.4	3.447	989.825	-116.293	3649.309	-121.268
13	0	-24654.5	4.888	892.531	-195.351	-4224.155	-121.268
		-24654.5	4.888	989.825	-86.484	3646.250	-121.268
13	1.050	-24753.7	4.888	-70.540	-195.351	-3776.845	-116.135
		-24753.7	4.888	-43.808	-86.484	4158.676	-116.135
13	2.100	-24880.1	4.888	-786.782	-195.351	-4323.501	-111.002
		-24880.1	4.888	-830.612	-86.484	3603.044	-111.002

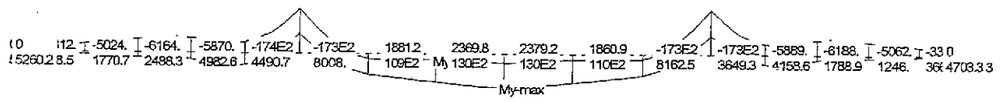
ENVOLVENTE para < My > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
13	3.150	-25101.8	4.888	-743.148	-195.351	-5220.460	-105.869
		-25101.8	4.888	-857.539	-86.484	2623.018	-105.869
13	4.200	-25290.1	4.888	-419.168	-195.351	-5889.564	-100.736
		-25290.1	4.888	-604.119	-86.484	1796.756	-100.736
14	0	-25290.3	6.467	-419.168	-237.391	-5896.737	-100.736
		-25290.3	6.467	-604.119	-383.326	1788.969	-100.736
14	1.050	-25339.3	6.467	-75.544	-237.391	-6188.051	-93.945
		-25339.3	6.467	-331.054	-383.326	1266.421	-93.945
14	2.100	-25198.3	6.467	277.366	-237.391	-6019.236	-87.155
		-25198.3	6.467	-48.700	-383.326	1129.921	-87.155
14	3.150	-25070.8	6.467	434.433	-237.391	-5541.888	-80.364
		-25070.8	6.467	37.810	-383.326	1227.871	-80.364
14	4.200	-24964.3	6.467	417.495	-237.391	-5051.514	-73.574
		-24964.3	6.467	-49.686	-383.326	1264.765	-73.574
15	0	-24964.5	7.990	417.495	-433.905	-5062.294	-73.574
		-24964.5	7.990	-49.686	-782.579	1246.042	-73.574
15	1.050	-24860.0	7.990	360.030	-433.905	-4603.507	-65.183
		-24860.0	7.990	-177.725	-782.579	1177.131	-65.183
15	2.100	-24756.3	7.990	277.169	-433.905	-4227.029	-56.791
		-24756.3	7.990	-331.161	-782.579	951.794	-56.791
15	3.151	-24624.8	7.990	355.026	-433.905	-3862.507	-48.400
		-24624.8	7.990	-323.877	-782.579	640.382	-48.400
15	4.201	-24475.6	7.990	492.254	-433.905	-3354.911	-40.008
		-24475.6	7.990	-257.224	-782.579	397.928	-40.008
16	0	-24475.9	9.581	492.254	-625.901	-3372.787	-40.008
		-24475.9	9.581	-257.224	-1100.942	366.158	-40.008
16	1.049	-24318.9	9.581	623.110	-625.901	-2728.972	-29.953
		-24318.9	9.581	-196.894	-1100.942	186.388	-29.953
16	2.099	-24153.9	9.581	747.185	-625.901	-1959.720	-19.898
		-24153.9	9.581	-143.346	-1100.942	58.041	-19.898
16	3.148	-24073.6	9.581	468.721	-625.901	-1286.526	-9.842
		-24073.6	9.581	-492.335	-1100.942	-240.484	-9.842
16	4.198	-24002.5	9.581	-370.631	-4771.487	-956.739	0.212903
		-24002.5	9.581	-363.401	3044.645	-955.684	0.212903
17	0	4.757	23.560	-425.132	-1.33E-14	1208.785	-56.500
		4.757	23.560	-2243.150	4.48E-14	5568.682	-56.500
17	0.600	4.757	23.560	-464.590	-1.33E-14	942.073	-42.375
		4.757	23.560	-2282.607	4.48E-14	4211.996	-42.375
17	1.199	4.757	23.560	-504.047	-1.33E-14	651.705	-28.250
		4.757	23.560	-2322.064	4.48E-14	2831.654	-28.250
17	1.799	4.757	23.560	-543.504	-1.33E-14	337.681	-14.125
		4.757	23.560	-2361.522	4.48E-14	1427.655	-14.125
17	2.398	4.757	23.560	-582.961	-1.33E-14	1.40E-05	-5.65E-07
		4.757	23.560	-2400.979	4.48E-14	5.76E-05	-5.65E-07
18	0	-3.820	-23.637	-255.642	1.04E-12	803.088	56.728
		-3.820	-23.637	-2112.796	1.19E-12	5260.284	56.728
18	0.600	-3.820	-23.637	-295.130	1.04E-12	637.855	42.546
		-3.820	-23.637	-2152.284	1.19E-12	3980.753	42.546
18	1.200	-3.820	-23.637	-334.618	1.04E-12	448.929	28.364
		-3.820	-23.637	-2191.772	1.19E-12	2677.528	28.364
18	1.800	-3.820	-23.637	-374.106	1.04E-12	236.311	14.182
		-3.820	-23.637	-2231.260	1.19E-12	1350.610	14.182
18	2.400	-3.820	-23.637	-413.593	1.04E-12	9.93E-06	5.67E-07
		-3.820	-23.637	-2270.747	1.19E-12	5.45E-05	5.67E-07
19	0	4.793	-23.548	-612.161	6.94E-13	1658.692	56.515
		4.793	-23.548	-2244.116	1.40E-12	5575.311	56.515
19	0.600	4.793	-23.548	-651.648	6.94E-13	1279.556	42.386
		4.793	-23.548	-2283.603	1.40E-12	4217.020	42.386
19	1.200	4.793	-23.548	-691.135	6.94E-13	876.729	28.257
		4.793	-23.548	-2323.089	1.40E-12	2835.039	28.257
19	1.800	4.793	-23.548	-730.621	6.94E-13	450.210	14.129
		4.793	-23.548	-2362.576	1.40E-12	1429.365	14.129
19	2.400	4.793	-23.548	-770.108	6.94E-13	1.85E-05	5.65E-07
		4.793	-23.548	-2402.063	1.40E-12	5.76E-05	5.65E-07
20	0	-4.782	23.458	-255.933	-8.30E-13	803.823	-56.302
		-4.782	23.458	-1880.658	-2.63E-13	4703.337	-56.302
20	0.600	-4.782	23.458	-295.422	-8.30E-13	638.409	-42.226
		-4.782	23.458	-1920.147	-2.63E-13	3563.045	-42.226

ENVOLVENTE para < My > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
20	1.200	-4.782	23.458	-334.911	-8.30E-13	449.301	-28.151
		-4.782	23.458	-1959.636	-2.63E-13	2399.058	-28.151
20	1.800	-4.782	23.458	-374.401	-8.30E-13	236.498	-14.075
		-4.782	23.458	-1999.125	-2.63E-13	1211.376	-14.075
20	2.400	-4.782	23.458	-413.890	-8.30E-13	9.93E-06	-5.63E-07
		-4.782	23.458	-2038.615	-2.63E-13	4.89E-05	-5.63E-07

Mstb. 1 :449.9
Section forces envelope My, GWSP JK (ELU 14), View "ALL"
- Struktur: Staebe
- Envelop Moment My-min, Scaling 2.00E-04
  min: -1.74E+04 max: 3.42E+03 [kNm]
- Envelop Moment My-max, Scaling 2.00E-04
  min: -7.54E+03 max: 1.30E+04 [kNm]
- Text envelopes [kNm]



ENVOLVENTE: JL 'ELU 15'

Grupo		Hipótesis	Factor	Etapa	Título
A	PERM.	1	1.350		Peso Propio
	Y	3	1.350		Carga Muerta Máxima
	Y	20	0.850000		Pretensado
B	MAS	19	0.900000		gradiente
C	MAS	35	1.500		Carro 1 estribo excéntrico
D	MAS	4	1.500		Sobrecarga centrada vano 1
E	MAS	5	1.500		Sobrecarga centrada vano 2
F	MAS	6	1.500		Sobrecarga centrada vano 3
ALTERNATIVA PARA ENVOLVENTE:					
G	PERM.	1	1.350		Peso Propio
	Y	3	1.350		Carga Muerta Máxima
	Y	20	0.850000		Pretensado
H	MAS	19	0.900000		gradiente
I	MAS	35	1.500		Carro 1 estribo excéntrico
J	MAS	7	1.500		Sobrecarga excéntrica vano 1 (
K	MAS	8	1.500		Sobrecarga excentrica vano 2 (
L	MAS	9	1.500		Sobrecarga excentrica vano 3 (
ALTERNATIVA PARA ENVOLVENTE:					
M	PERM.	1	1.350		Peso Propio
	Y	3	1.350		Carga Muerta Máxima
	Y	20	0.850000		Pretensado
N	MAS	19	0.900000		gradiente
O	MAS	35	1.500		Carro 1 estribo excéntrico
P	MAS	10	1.500		Sobrecarga excéntrica vano 1 (
Q	MAS	11	1.500		Sobrecarga excentrica vano 2 (
R	MAS	12	1.500		Sobrecarga excentrica vano 3 (

ENVOLVENTE para < Vz > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
1	0	-24024.4	-9.508	-155.965	623.580	-869.185	-0.227677
		-24024.4	-9.508	1671.527	-491.595	-760.310	-0.227677
1	0.0996	-24030.7	-9.508	-186.288	623.580	-886.507	-1.174
		-24030.7	-9.508	1634.512	-491.595	-595.983	-1.174
1	0.100	-24030.8	-9.508	-186.544	623.580	-886.666	-1.182
		-24030.8	-9.508	1334.200	258.405	-594.739	-1.182
1	1.050	-24091.4	-9.508	-475.724	623.580	-1206.626	-10.212
		-24091.4	-9.508	981.204	258.405	499.179	-10.212
1	1.500	-24120.1	-9.508	-612.603	623.580	-1455.609	-14.486
		-24120.1	-9.508	814.117	258.405	898.305	-14.486
1	1.500	-24120.1	-9.508	-612.859	623.580	-1456.133	-14.494
		-24120.1	-9.508	513.805	1008.405	898.854	-14.494
1	2.100	-24168.0	-9.508	-753.482	623.580	-1886.652	-20.196
		-24168.0	-9.508	332.880	1008.405	1131.940	-20.196
1	3.000	-24308.5	-9.508	-647.258	623.580	-2558.549	-28.748
		-24308.5	-9.508	378.662	1008.405	1409.972	-28.748
1	3.000	-24308.6	-9.508	-729.324	748.429	-1344.807	-28.756
		-24308.6	-9.508	160.875	1633.556	195.794	-28.756
1	3.150	-24331.4	-9.508	-711.137	748.429	-1460.321	-30.180
		-24331.4	-9.508	168.996	1633.556	212.877	-30.180
1	4.200	-24487.2	-9.508	-579.906	748.429	-2196.356	-40.164
		-24487.2	-9.508	229.662	1633.556	363.997	-40.164
2	0	-24486.9	-8.079	-579.906	540.039	-2176.830	-40.164
		-24486.9	-8.079	229.662	1347.176	409.170	-40.164
2	1.050	-24635.2	-8.079	-442.491	540.039	-2775.923	-48.646
		-24635.2	-8.079	296.528	1347.176	622.958	-48.646
2	2.100	-24766.0	-8.079	-364.859	540.039	-3231.942	-57.127
		-24766.0	-8.079	303.611	1347.176	905.756	-57.127
2	3.150	-24869.4	-8.079	-447.592	540.039	-3700.143	-65.608
		-24869.4	-8.079	150.329	1347.176	1102.306	-65.608
2	4.199	-24973.8	-8.079	-504.873	540.039	-4250.555	-74.090
		-24973.8	-8.079	22.499	1347.176	1142.581	-74.090
3	0	-24973.5	-6.428	-504.873	298.637	-4235.961	-74.090
		-24973.5	-6.428	22.499	917.639	1181.993	-74.090
3	1.050	-25080.4	-6.428	-529.820	281.900	-1863.125	-80.840
		-25080.4	-6.428	-50.167	-87.650	-306.738	-80.840
3	2.100	-25208.4	-6.428	-442.726	281.900	-2477.714	-87.590
		-25208.4	-6.428	100.901	934.376	-1919.564	-87.590
3	3.150	-25350.0	-6.428	-160.035	281.900	-2857.246	-94.341
		-25350.0	-6.428	454.159	934.376	-1691.179	-94.341
3	4.200	-25301.3	-6.428	113.370	281.900	-2850.192	-101.091
		-25301.3	-6.428	798.131	934.376	-1002.107	-101.091
4	0	-25301.2	-4.907	113.370	144.159	-2843.391	-101.091
		-25301.2	-4.907	798.131	737.314	-975.421	-101.091
4	1.050	-25113.3	-4.907	367.089	144.159	-2532.302	-106.244
		-25113.3	-4.907	1122.408	737.314	91.686	-106.244
4	2.100	-24891.7	-4.907	339.786	144.159	-2067.552	-111.396
		-24891.7	-4.907	1165.663	737.314	1386.538	-111.396
4	3.150	-24765.4	-4.907	-448.284	144.159	-2028.236	-116.549
		-24765.4	-4.907	448.151	737.314	2330.038	-116.549
4	4.200	-24665.9	-4.907	-1482.169	144.159	-3057.489	-121.701
		-24665.9	-4.907	-515.177	737.314	2279.053	-121.701
5	0	-24665.8	-3.365	-1482.169	392.505	-3048.827	-121.701
		-24665.8	-3.365	-515.177	813.140	2304.076	-121.701
5	1.050	-24550.5	-3.365	-2511.765	392.505	-5172.604	-125.233
		-24550.5	-3.365	-1474.239	813.140	1232.283	-125.233
5	2.099	-24418.6	-3.365	-3536.166	392.505	-8386.134	-128.765
		-24418.6	-3.365	-2428.106	813.140	-855.231	-128.765
5	3.149	-24300.2	-3.365	-4363.720	392.505	-12580.8	-132.296
		-24300.2	-3.365	-3185.126	813.140	-3849.818	-132.296
5	4.198	-24173.3	-3.365	-5165.954	392.505	-17626.7	-135.828
		-24173.3	-3.365	-3916.826	813.140	-7621.641	-135.828
6	0	-24151.8	-7.272	4766.019	1380.810	-7583.036	-135.828
		-24151.8	-7.272	5994.777	1312.426	-17596.7	-135.828
6	1.350	-23970.0	-7.272	3811.380	1380.810	-1857.118	-145.646
		-23970.0	-7.272	4949.415	1312.426	-10273.1	-145.646
6	2.700	-23769.5	-7.272	2869.224	1380.810	2590.251	-155.464
		-23769.5	-7.272	3916.536	1312.426	-4350.599	-155.464

ENVOLVENTE para < Vz > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
6	4.050	-23484.4	-7.272	1581.982	1380.810	5576.774	-165.281
		-23484.4	-7.272	2538.571	1312.426	-11.401	-165.281
6	5.400	-23190.7	-7.272	453.571	1380.810	6786.634	-175.099
		-23190.7	-7.272	1319.438	1312.426	2428.655	-175.099
7	0	-23190.5	-4.275	453.571	1152.339	6841.314	-175.099
		-23190.5	-4.275	1319.438	1272.071	2484.444	-175.099
7	1.350	-22979.5	-4.275	-95.516	1152.339	7061.285	-180.870
		-22979.5	-4.275	679.630	1272.071	3812.110	-180.870
7	2.700	-22865.6	-4.275	-129.598	1152.339	6861.200	-186.641
		-22865.6	-4.275	554.827	1272.071	4597.246	-186.641
7	4.050	-22768.8	-4.275	-50.752	1152.339	6772.246	-192.412
		-22768.8	-4.275	542.952	1272.071	5371.038	-192.412
7	5.400	-22662.4	-4.275	24.709	1152.339	6803.030	-198.183
		-22662.4	-4.275	527.692	1272.071	6142.093	-198.183
8	0	-22662.2	-1.476	24.709	428.865	6834.814	-198.183
		-22662.2	-1.476	527.692	575.061	6179.222	-198.183
8	1.350	-22546.8	-1.476	96.142	428.865	6978.929	-200.175
		-22546.8	-1.476	508.415	575.061	6941.068	-200.175
8	2.700	-22421.9	-1.476	162.974	428.865	7229.015	-202.168
		-22421.9	-1.476	484.536	575.061	7686.439	-202.168
8	4.050	-22311.0	-1.476	60.090	428.865	7462.807	-204.161
		-22311.0	-1.476	290.942	575.061	8293.071	-204.161
8	5.399	-22203.8	-1.476	-70.985	526.173	12218.3	-206.153
		-22203.8	-1.476	74.349	477.753	3915.726	-206.153
9	0	-22203.8	1.522	-70.985	-620.479	12216.2	-206.153
		-22203.8	1.522	74.349	-311.766	3919.297	-206.153
9	1.350	-22310.0	1.522	-290.117	-620.479	11903.7	-204.098
		-22310.0	1.522	-54.052	-311.766	3864.264	-204.098
9	2.700	-22418.5	1.522	-473.127	-620.479	11301.7	-202.044
		-22418.5	1.522	-146.330	-311.766	3642.252	-202.044
9	4.051	-22541.5	1.522	-497.031	-620.479	10573.0	-199.989
		-22541.5	1.522	-79.503	-311.766	3416.045	-199.989
9	5.401	-22656.4	1.522	-516.321	-620.479	9827.191	-197.934
		-22656.4	1.522	-8.062	-311.766	3295.181	-197.934
10	0	-22656.5	4.348	-516.321	-1467.538	9784.802	-197.934
		-22656.5	4.348	-8.062	-893.976	3270.703	-197.934
10	1.350	-22762.3	4.348	-531.626	-1467.538	9030.084	-192.065
		-22762.3	4.348	67.341	-893.976	3263.265	-192.065
10	2.700	-22858.4	4.348	-543.592	-1467.538	8272.558	-186.196
		-22858.4	4.348	146.083	-893.976	3375.462	-186.196
10	4.049	-22979.8	4.348	-703.850	-1467.538	7493.976	-180.326
		-22979.8	4.348	76.534	-893.976	3589.042	-180.326
10	5.399	-23189.2	4.348	-1344.405	-1467.538	6134.993	-174.457
		-23189.2	4.348	-473.313	-893.976	3344.662	-174.457
11	0	-23189.4	7.272	-1344.405	-1651.699	6069.319	-174.457
		-23189.4	7.272	-473.313	-961.199	3305.602	-174.457
11	1.331	-23485.6	7.272	-2588.902	-1651.699	3600.706	-164.778
		-23485.6	7.272	-1628.365	-961.199	2055.960	-164.778
11	2.662	-23763.2	7.272	-3933.085	-1651.699	-726.583	-155.099
		-23763.2	7.272	-2883.103	-961.199	-933.302	-155.099
11	3.993	-23961.0	7.272	-4951.450	-1651.699	-6577.764	-145.420
		-23961.0	7.272	-3812.024	-961.199	-5327.404	-145.420
11	5.324	-24140.6	7.272	-5981.920	-1651.699	-13790.8	-135.741
		-24140.6	7.272	-4753.049	-961.199	-10964.3	-135.741
12	0	-24162.1	3.447	3905.045	-742.533	-7478.882	-135.741
		-24162.1	3.447	5076.608	-324.394	-17344.3	-135.741
12	1.050	-24289.0	3.447	3173.384	-742.533	-3718.680	-132.123
		-24289.0	3.447	4274.399	-324.394	-12391.2	-132.123
12	2.100	-24407.4	3.447	2416.241	-742.533	-735.878	-128.504
		-24407.4	3.447	3446.709	-324.394	-8289.563	-128.504
12	3.149	-24539.2	3.447	1462.481	-742.533	1339.580	-124.886
		-24539.2	3.447	2422.402	-324.394	-5169.339	-124.886
12	4.199	-24654.4	3.447	503.533	-742.533	2399.245	-121.268
		-24654.4	3.447	1392.907	-324.394	-3138.971	-121.268
13	0	-24654.5	4.888	503.533	-674.732	2377.865	-121.268
		-24654.5	4.888	1392.907	-89.728	-3145.218	-121.268
13	1.050	-24753.7	4.888	-459.538	-674.732	2416.720	-116.135
		-24753.7	4.888	359.274	-89.728	-2209.548	-116.135

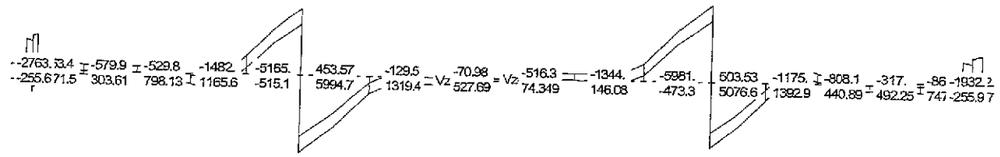
ENVOLVENTE para < Vz > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
13	2.100	-24880.1	4.888	-1175.780	-674.732	1461.608	-111.002
		-24880.1	4.888	-427.529	-89.728	-2341.935	-111.002
13	3.150	-25101.8	4.888	-1132.146	-674.732	156.193	-105.869
		-25101.8	4.888	-454.456	-89.728	-2898.717	-105.869
13	4.200	-25290.1	4.888	-808.166	-674.732	-921.366	-100.736
		-25290.1	4.888	-201.037	-89.728	-3301.734	-100.736
14	0	-25290.3	6.467	-808.165	-881.166	-947.156	-100.736
		-25290.3	6.467	-201.037	-217.592	-3306.828	-100.736
14	1.050	-25339.3	6.467	-464.542	-881.166	-1646.903	-93.945
		-25339.3	6.467	72.029	-217.592	-3406.155	-93.945
14	2.100	-25198.3	6.467	-111.632	-881.166	-1886.520	-87.155
		-25198.3	6.467	354.382	-217.592	-3119.435	-87.155
14	3.150	-25070.8	6.467	35.579	141.223	-308.314	-80.364
		-25070.8	6.467	440.892	-217.592	-2598.265	-80.364
14	4.200	-24964.3	6.467	-35.602	-861.367	1177.701	-73.574
		-24964.3	6.467	417.495	-237.391	-5051.514	-73.574
15	0	-24964.5	7.990	-35.602	-1257.577	1143.673	-73.574
		-24964.5	7.990	417.495	-433.905	-5062.294	-73.574
15	1.050	-24860.0	7.990	-163.641	-1257.577	1089.554	-65.183
		-24860.0	7.990	360.030	-433.905	-4603.507	-65.183
15	2.100	-24756.3	7.990	-317.076	-1257.577	879.008	-56.791
		-24756.3	7.990	277.169	-433.905	-4227.029	-56.791
15	3.151	-24624.8	7.990	-309.793	-1257.577	582.388	-48.400
		-24624.8	7.990	355.026	-433.905	-3862.507	-48.400
15	4.201	-24475.6	7.990	-243.140	-1257.577	354.725	-40.008
		-24475.6	7.990	492.254	-433.905	-3354.911	-40.008
16	0	-24475.9	9.581	-243.140	-1574.214	306.960	-40.008
		-24475.9	9.581	492.254	-625.901	-3372.787	-40.008
16	1.049	-24318.9	9.581	-182.810	-1574.214	141.972	-29.953
		-24318.9	9.581	623.110	-625.901	-2728.972	-29.953
16	2.099	-24153.9	9.581	-129.261	-1574.214	28.406	-19.898
		-24153.9	9.581	747.185	-625.901	-1959.720	-19.898
16	3.148	-24073.6	9.581	-478.251	-1574.214	-255.337	-9.842
		-24073.6	9.581	468.721	-625.901	-1286.626	-9.842
16	4.198	-24002.5	9.581	-868.723	-1574.214	-956.030	0.212903
		-24002.5	9.581	148.775	-625.901	-956.465	0.212903
17	0	4.757	23.560	-2243.150	4.48E-14	5568.682	-56.500
		4.757	23.560	-673.541	1.06E-13	1804.509	-56.500
17	0.600	4.757	23.560	-2282.607	4.48E-14	4211.996	-42.375
		4.757	23.560	-712.999	1.06E-13	1388.866	-42.375
17	1.199	4.757	23.560	-2322.064	4.48E-14	2831.654	-28.250
		4.757	23.560	-752.456	1.06E-13	949.567	-28.250
17	1.799	4.757	23.560	-2361.522	4.48E-14	1427.655	-14.125
		4.757	23.560	-791.913	1.06E-13	486.612	-14.125
17	2.398	4.757	23.560	-2400.979	4.48E-14	5.76E-05	-5.65E-07
		4.757	23.560	-831.370	1.06E-13	1.99E-05	-5.65E-07
18	0	-3.820	-23.637	-2605.920	1.36E-12	5443.789	56.728
		-3.820	-23.637	-255.642	1.04E-12	803.088	56.728
18	0.600	-3.820	-23.637	-2645.408	1.36E-12	4868.381	42.546
		-3.820	-23.637	-295.130	1.04E-12	637.855	42.546
18	1.200	-3.820	-23.637	-2684.896	1.36E-12	3269.280	28.364
		-3.820	-23.637	-334.618	1.04E-12	448.929	28.364
18	1.800	-3.820	-23.637	-2724.383	1.36E-12	1646.486	14.182
		-3.820	-23.637	-374.106	1.04E-12	236.311	14.182
18	2.400	-3.820	-23.637	-2763.871	1.36E-12	6.63E-05	5.67E-07
		-3.820	-23.637	-413.593	1.04E-12	9.93E-06	5.67E-07
19	0	4.793	-23.548	-2244.116	1.40E-12	5575.311	56.515
		4.793	-23.548	-703.716	7.03E-13	1878.419	56.515
19	0.600	4.793	-23.548	-2283.603	1.40E-12	4217.020	42.386
		4.793	-23.548	-743.202	7.03E-13	1444.352	42.386
19	1.200	4.793	-23.548	-2323.089	1.40E-12	2835.039	28.257
		4.793	-23.548	-782.689	7.03E-13	986.593	28.257
19	1.800	4.793	-23.548	-2362.576	1.40E-12	1429.365	14.129
		4.793	-23.548	-822.176	7.03E-13	505.142	14.129
19	2.400	4.793	-23.548	-2402.063	1.40E-12	5.76E-05	5.65E-07
		4.793	-23.548	-861.663	7.03E-13	2.07E-05	5.65E-07
20	0	-4.782	23.458	-1775.019	-2.72E-13	4449.792	-56.302
		-4.782	23.458	-255.933	-8.30E-13	803.823	-56.302

ENVOLVENTE para < Vz > (y valores concomitantes) "ALL"
(1., línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
20	0.600	-4.782	23.458	-1814.508	-2.72E-13	3372.886	-42.226
		-4.782	23.458	-295.422	-8.30E-13	638.409	-42.226
20	1.200	-4.782	23.458	-1853.997	-2.72E-13	2272.285	-28.151
		-4.782	23.458	-334.911	-8.30E-13	449.301	-28.151
20	1.800	-4.782	23.458	-1893.486	-2.72E-13	1147.990	-14.075
		-4.782	23.458	-374.401	-8.30E-13	236.498	-14.075
20	2.400	-4.782	23.458	-1932.976	-2.72E-13	4.64E-05	-5.63E-07
		-4.782	23.458	-413.890	-8.30E-13	9.93E-06	-5.63E-07

Mstb. 1 :449.9
Section forces envelope Vz, GWSP JL (ELU 15), View "ALL"
- Struktur: Staebe
- Envelop Shear force Vz-min, Scaling 1.00E-03
  min: -5.98E+03 max: 4.77E+03 [kN]
- Envelop Shear force Vz-max, Scaling 1.00E-03
  min: -4.75E+03 max: 5.99E+03 [kN]
- Text envelopes [kN]



ENVOLVENTE para < T > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
1	0	-24024.4	-9.508	1148.115	-4634.238	-703.294	-0.227677
		-24024.4	-9.508	367.446	4766.223	-926.202	-0.227677
1	0.0996	-24030.7	-9.508	1114.446	-4624.870	-590.922	-1.174
		-24030.7	-9.508	333.777	4756.855	-891.568	-1.174
1	0.100	-24030.8	-9.508	814.162	-3874.791	-590.114	-1.182
		-24030.8	-9.508	333.493	4756.776	-891.291	-1.182
1	1.050	-24091.4	-9.508	493.075	-3785.447	25.099	-10.212
		-24091.4	-9.508	12.405	4667.432	-732.546	-10.212
1	1.500	-24120.1	-9.508	341.092	-3743.158	208.203	-14.486
		-24120.1	-9.508	-139.577	4625.143	-765.507	-14.486
1	1.500	-24120.1	-9.508	40.808	-2993.079	208.354	-14.494
		-24120.1	-9.508	-139.862	4625.064	-765.633	-14.494
1	2.100	-24168.0	-9.508	-119.967	-2936.656	163.813	-20.196
		-24168.0	-9.508	-300.636	4568.641	-918.526	-20.196
1	3.000	-24308.5	-9.508	-43.963	-2852.038	48.131	-28.748
		-24308.5	-9.508	-224.632	4484.023	-1196.708	-28.748
1	3.000	-24308.6	-9.508	-261.722	-2226.807	-1166.402	-28.756
		-24308.6	-9.508	-306.727	4608.792	17.389	-28.756
1	3.150	-24331.4	-9.508	-248.568	-2212.714	-1212.246	-30.180
		-24331.4	-9.508	-293.573	4594.699	-35.197	-30.180
1	4.200	-24487.2	-9.508	-152.620	-2113.923	-1481.075	-40.164
		-24487.2	-9.508	-197.624	4495.908	-351.284	-40.164
2	0	-24486.9	-8.079	-152.620	-2342.673	-1548.613	-40.164
		-24486.9	-8.079	-197.624	4229.888	-219.047	-40.164
2	1.050	-24635.2	-8.079	-50.479	-2243.904	-1717.641	-48.646
		-24635.2	-8.079	-95.483	4131.119	-435.323	-48.646
2	2.100	-24766.0	-8.079	-8.121	-2145.135	-1780.628	-57.127

ENVOLVENTE para < T > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
2	3.150	-24766.0	-8.079	-53.126	4032.351	-545.558	-57.127
		-24869.4	-8.079	-126.129	-2046.367	-1892.830	-65.608
2	4.199	-24869.4	-8.079	-171.134	3933.582	-705.007	-65.608
		-24973.8	-8.079	-218.684	-1947.598	-2124.275	-74.090
3	0	-24973.8	-8.079	-263.689	3834.814	-983.699	-74.090
		-24973.5	-6.428	-218.684	-2261.475	-2197.521	-74.090
3	1.050	-24973.5	-6.428	-263.689	3477.751	-856.447	-74.090
		-25080.4	-6.428	-270.787	-2162.681	-2497.864	-80.840
3	2.100	-25080.4	-6.428	-315.792	3378.957	-1204.049	-80.840
		-25208.4	-6.428	-148.410	-2063.888	-2821.916	-87.590
3	3.150	-25208.4	-6.428	-193.415	3280.164	-1575.361	-87.590
		-25350.0	-6.428	169.564	-1965.094	-2873.860	-94.341
3	4.200	-25350.0	-6.428	124.560	3181.370	-1674.565	-94.341
		-25301.3	-6.428	478.253	-1866.300	-2502.167	-101.091
4	0	-25301.3	-6.428	433.248	3082.576	-1350.132	-101.091
		-25301.2	-4.907	478.253	-2014.055	-2564.111	-101.091
4	1.050	-25301.2	-4.907	433.248	2895.528	-1254.700	-101.091
		-25113.3	-4.907	767.251	-1915.274	-1851.387	-106.244
4	2.100	-25113.3	-4.907	722.246	2796.747	-589.229	-106.244
		-24891.7	-4.907	775.227	-1816.493	-947.959	-111.396
4	3.150	-24891.7	-4.907	730.222	2697.966	266.945	-111.396
		-24765.4	-4.907	22.436	-1717.712	-432.924	-116.549
4	4.200	-24765.4	-4.907	-22.569	2599.185	734.726	-116.549
		-24665.9	-4.907	-976.171	-1618.932	-949.416	-121.701
5	0	-24665.9	-4.907	-1021.176	2500.405	170.981	-121.701
		-24665.8	-3.365	-976.171	-1437.695	-998.748	-121.701
5	1.050	-24665.8	-3.365	-1021.176	2643.341	253.997	-121.701
		-24550.5	-3.365	-1970.500	-1338.947	-2572.914	-125.233
5	2.099	-24550.5	-3.365	-1711.976	2636.420	-1366.048	-125.233
		-24418.6	-3.365	-2655.301	-1296.434	-5410.835	-128.765
5	3.149	-24418.6	-3.365	-2665.843	2636.420	-3703.093	-128.765
		-24300.2	-3.365	-3412.322	-1296.434	-8643.889	-132.296
5	4.198	-24300.2	-3.365	-3422.863	2636.420	-6947.211	-132.296
		-24173.3	-3.365	-4144.022	-1296.434	-12654.2	-135.828
6	0	-24173.3	-3.365	-4154.563	2636.420	-10968.6	-135.828
		-24151.8	-7.272	5352.053	-550.407	-12686.7	-135.828
6	1.350	-24151.8	-7.272	5342.834	3320.710	-10863.7	-135.828
		-23970.0	-7.272	4352.052	-423.395	-6200.209	-145.646
6	2.700	-23970.0	-7.272	4342.832	3193.698	-4389.723	-145.646
		-23769.5	-7.272	3364.535	-296.383	-1053.529	-155.464
6	4.050	-23769.5	-7.272	3355.315	3066.686	744.510	-155.464
		-23484.4	-7.272	2031.931	-169.372	2571.064	-165.281
6	5.400	-23484.4	-7.272	2022.712	2939.674	4356.657	-165.281
		-23190.7	-7.272	858.159	-42.360	4357.754	-175.099
7	0	-23190.5	-4.275	858.159	-164.696	4353.285	-175.099
		-23190.5	-4.275	848.939	2611.153	6247.978	-175.099
7	1.350	-22979.5	-4.275	263.712	-37.686	5088.837	-180.870
		-22979.5	-4.275	254.492	2484.144	6971.084	-180.870
7	2.700	-22865.6	-4.275	184.269	89.323	5343.096	-186.641
		-22865.6	-4.275	175.049	2357.134	7212.896	-186.641
7	4.050	-22768.8	-4.275	217.755	216.333	5647.249	-192.412
		-22768.8	-4.275	208.535	2230.125	7504.602	-192.412
7	5.400	-22662.4	-4.275	247.855	343.342	6009.902	-198.183
		-22662.4	-4.275	238.636	2103.116	7854.809	-198.183
8	0	-22662.2	-1.476	247.855	-347.606	6009.816	-198.183
		-22662.2	-1.476	238.636	1336.608	7923.951	-198.183
8	1.350	-22546.8	-1.476	273.933	-220.612	6424.535	-200.175
		-22546.8	-1.476	264.714	1209.613	8326.224	-200.175
8	2.700	-22421.9	-1.476	295.410	-93.617	6884.001	-202.168
		-22421.9	-1.476	286.190	1082.619	8773.246	-202.168
8	4.050	-22311.0	-1.476	147.171	33.377	7265.951	-204.161
		-22311.0	-1.476	137.951	955.625	9142.750	-204.161
8	5.399	-22203.8	-1.476	-25.696	95.134	4475.081	-206.153
		-22203.8	-1.476	30.932	896.636	10878.9	-206.153
9	0	-22203.8	1.522	-26.783	-858.965	10947.8	-206.153
		-22203.8	1.522	32.019	-51.876	4407.872	-206.153
9	1.350	-22310.0	1.522	-135.840	-933.240	9217.933	-204.098

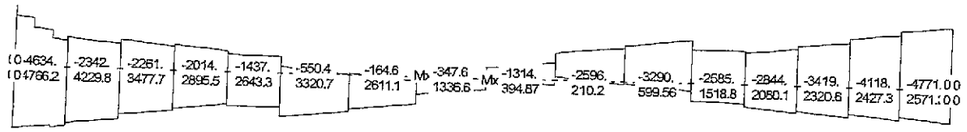
ENVOLVENTE para < T > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
		-22310.0	1.522	-142.715	13.805	7205.499	-204.098
9	2.700	-22418.5	1.522	-273.484	-1060.264	8854.869	-202.044
		-22418.5	1.522	-280.359	140.829	6833.151	-202.044
9	4.051	-22541.5	1.522	-252.022	-1187.288	8426.357	-199.989
		-22541.5	1.522	-258.897	267.852	6395.357	-199.989
9	5.401	-22656.4	1.522	-225.947	-1314.311	8041.938	-197.934
		-22656.4	1.522	-232.822	394.876	6001.655	-197.934
10	0	-22656.5	4.348	-225.947	-2088.344	7972.860	-197.934
		-22656.5	4.348	-232.822	-297.759	6003.626	-197.934
10	1.350	-22762.3	4.348	-195.898	-2215.336	7640.706	-192.065
		-22762.3	4.348	-202.773	-170.767	5662.192	-192.065
10	2.700	-22858.4	4.348	-162.510	-2342.327	7366.965	-186.196
		-22858.4	4.348	-169.385	-43.776	5379.171	-186.196
10	4.049	-22979.8	4.348	-277.414	-2459.319	7133.389	-180.326
		-22979.8	4.348	-284.289	83.216	5136.314	-180.326
10	5.399	-23189.2	4.348	-872.615	-2596.310	6380.631	-174.457
		-23189.2	4.348	-879.490	210.208	4374.276	-174.457
11	0	-23189.4	7.272	-872.615	-2789.810	6267.229	-174.457
		-23189.4	7.272	-879.490	98.669	4380.780	-174.457
11	1.331	-23485.6	7.272	-2072.388	-2915.033	4456.344	-164.778
		-23485.6	7.272	-2079.264	223.892	2560.743	-164.778
11	2.662	-23763.2	7.272	-3371.849	-3040.256	846.312	-155.099
		-23763.2	7.272	-3378.724	349.115	-1058.440	-155.099
11	3.993	-23961.0	7.272	-4345.492	-3165.479	-4228.087	-145.420
		-23961.0	7.272	-4352.367	474.337	-6141.990	-145.420
11	5.324	-24140.6	7.272	-5331.240	-3290.702	-10604.8	-135.741
		-24140.6	7.272	-5338.115	599.560	-12527.9	-135.741
12	0	-24162.1	3.447	4069.592	-2581.845	-10713.3	-135.741
		-24162.1	3.447	4129.497	1376.797	-12491.4	-135.741
12	1.050	-24289.0	3.447	3337.931	-2581.845	-6780.403	-132.123
		-24289.0	3.447	3397.835	1376.797	-8495.555	-132.123
12	2.100	-24407.4	3.447	2580.788	-2581.845	-3624.859	-128.504
		-24407.4	3.447	2640.692	1376.797	-5277.122	-128.504
12	3.149	-24539.2	3.447	1627.028	-2581.845	-1376.657	-124.886
		-24539.2	3.447	1953.099	1420.103	-2451.371	-124.886
12	4.199	-24654.4	3.447	937.563	-2585.796	155.440	-121.268
		-24654.4	3.447	958.877	1518.869	-895.166	-121.268
13	0	-24654.5	4.888	937.563	-2449.474	79.481	-121.268
		-24654.5	4.888	958.877	1685.014	-846.833	-121.268
13	1.050	-24753.7	4.888	-60.789	-2548.259	555.553	-116.135
		-24753.7	4.888	-39.475	1783.800	-348.380	-116.135
13	2.100	-24880.1	4.888	-812.312	-2647.045	0.612866	-111.002
		-24880.1	4.888	-790.998	1882.586	-880.940	-111.002
13	3.150	-25101.8	4.888	-803.958	-2745.831	-941.676	-105.869
		-25101.8	4.888	-782.644	1981.372	-1800.848	-105.869
13	4.200	-25290.1	4.888	-515.259	-2844.617	-1693.154	-100.736
		-25290.1	4.888	-493.944	2080.158	-2529.946	-100.736
14	0	-25290.3	6.467	-515.259	-3024.280	-1790.435	-100.736
		-25290.3	6.467	-493.944	1925.522	-2463.549	-100.736
14	1.050	-25339.3	6.467	-206.914	-3123.060	-2201.162	-93.945
		-25339.3	6.467	-185.600	2024.302	-2851.896	-93.945
14	2.100	-25198.3	6.467	110.718	-3221.841	-2188.800	-87.155
		-25198.3	6.467	132.032	2123.083	-2817.155	-87.155
14	3.150	-25070.8	6.467	232.507	-3320.621	-1904.947	-80.364
		-25070.8	6.467	253.821	2221.863	-2510.922	-80.364
14	4.200	-24964.3	6.467	180.289	-3419.401	-1645.109	-73.574
		-24964.3	6.467	201.604	2320.643	-2228.705	-73.574
15	0	-24964.5	7.990	180.289	-3723.653	-1759.819	-73.574
		-24964.5	7.990	201.604	2032.171	-2158.803	-73.574
15	1.050	-24860.0	7.990	87.538	-3822.457	-1568.677	-65.183
		-24860.0	7.990	108.852	2130.975	-1945.276	-65.183
15	2.100	-24756.3	7.990	-30.611	-3921.260	-1496.903	-56.791
		-24756.3	7.990	-9.297	2229.778	-1851.118	-56.791
15	3.151	-24624.8	7.990	11.959	-4020.064	-1474.145	-48.400
		-24624.8	7.990	33.274	2328.582	-1805.975	-48.400
15	4.201	-24475.6	7.990	113.900	-4118.868	-1345.370	-40.008
		-24475.6	7.990	135.214	2427.386	-1654.816	-40.008
16	0	-24475.9	9.581	113.900	-4376.540	-1488.666	-40.008

ENVOLVENTE para < T > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
		-24475.9	9.581	135.214	2176.426	-1577.161	-40.008
16	1.049	-24318.9	9.581	209.493	-4475.277	-1260.437	-29.953
		-24318.9	9.581	230.807	2275.163	-1326.563	-29.953
16	2.099	-24153.9	9.581	298.305	-4574.014	-943.779	-19.898
		-24153.9	9.581	319.619	2373.900	-987.535	-19.898
16	3.148	-24073.6	9.581	-15.422	-4672.751	-760.288	-9.842
		-24073.6	9.581	5.892	2472.636	-781.675	-9.842
16	4.198	-24002.5	9.581	-370.631	-4771.487	-956.739	0.212903
		-24002.5	9.581	-349.317	2571.373	-955.756	0.212903
17	0	4.757	23.560	-1680.480	-1.60E-13	4219.310	-56.500
		4.757	23.560	-1427.825	4.70E-13	3613.402	-56.500
17	0.600	4.757	23.560	-1719.937	-1.60E-13	3199.967	-42.375
		4.757	23.560	-1467.282	4.70E-13	2745.536	-42.375
17	1.199	4.757	23.560	-1759.395	-1.60E-13	2156.967	-28.250
		4.757	23.560	-1506.739	4.70E-13	1854.013	-28.250
17	1.799	4.757	23.560	-1798.852	-1.60E-13	1090.312	-14.125
		4.757	23.560	-1546.197	4.70E-13	938.835	-14.125
17	2.398	4.757	23.560	-1838.309	-1.60E-13	4.41E-05	-5.65E-07
		4.757	23.560	-1585.654	4.70E-13	3.80E-05	-5.65E-07
18	0	-3.820	-23.637	-1081.675	8.78E-13	2785.579	56.728
		-3.820	-23.637	-1383.932	1.47E-12	3510.999	56.728
18	0.600	-3.820	-23.637	-1121.163	8.78E-13	2124.724	42.546
		-3.820	-23.637	-1423.419	1.47E-12	2668.788	42.546
18	1.200	-3.820	-23.637	-1160.651	8.78E-13	1440.175	28.364
		-3.820	-23.637	-1462.907	1.47E-12	1802.885	28.364
18	1.800	-3.820	-23.637	-1200.139	8.78E-13	731.934	14.182
		-3.820	-23.637	-1502.395	1.47E-12	913.289	14.182
18	2.400	-3.820	-23.637	-1239.626	8.78E-13	2.98E-05	5.67E-07
		-3.820	-23.637	-1541.883	1.47E-12	3.70E-05	5.67E-07
19	0	4.793	-23.548	-756.749	6.97E-13	2005.696	56.515
		4.793	-23.548	-2235.113	1.40E-12	5553.704	56.515
19	0.600	4.793	-23.548	-796.236	6.97E-13	1539.810	42.386
		4.793	-23.548	-2274.599	1.40E-12	4200.815	42.386
19	1.200	4.793	-23.548	-835.722	6.97E-13	1050.231	28.257
		4.793	-23.548	-2314.086	1.40E-12	2824.235	28.257
19	1.800	4.793	-23.548	-875.209	6.97E-13	536.962	14.129
		4.793	-23.548	-2353.573	1.40E-12	1423.963	14.129
19	2.400	4.793	-23.548	-914.696	6.97E-13	2.20E-05	5.65E-07
		4.793	-23.548	-2393.060	1.40E-12	5.74E-05	5.65E-07
20	0	-4.782	23.458	-1089.984	-8.94E-13	2805.637	-56.302
		-4.782	23.458	-1423.510	-2.57E-13	3606.133	-56.302
20	0.600	-4.782	23.458	-1129.474	-8.94E-13	2139.769	-42.226
		-4.782	23.458	-1462.999	-2.57E-13	2740.142	-42.226
20	1.200	-4.782	23.458	-1168.963	-8.94E-13	1450.208	-28.151
		-4.782	23.458	-1502.488	-2.57E-13	1850.456	-28.151
20	1.800	-4.782	23.458	-1208.452	-8.94E-13	736.951	-14.075
		-4.782	23.458	-1541.978	-2.57E-13	937.075	-14.075
20	2.400	-4.782	23.458	-1247.941	-8.94E-13	3.00E-05	-5.63E-07
		-4.782	23.458	-1581.467	-2.57E-13	3.80E-05	-5.63E-07

Mstb. 1 :449.9
Section forces envelope T, GWSP JL (ELU 15), View "ALL"
- Struktur: Staebe
- Envelop Torsion.moment Mx-min, Scaling 1.00E-03
  min: -4.77E+03 max: 3.43E+02 [kNm]
- Envelop Torsion.moment Mx-max, Scaling 1.00E-03
  min: -2.98E+02 max: 4.77E+03 [kNm]
- Text envelopes [kNm]



ENVOLVENTE para < My > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
1	0	-24024.4	-9.508	367.446	4766.223	-926.202	-0.227677
		-24024.4	-9.508	1148.115	-4634.238	-703.294	-0.227677
1	0.0996	-24030.7	-9.508	-122.792	2338.105	-911.057	-1.174
		-24030.7	-9.508	1278.146	-3904.940	-581.073	-1.174
1	0.100	-24030.8	-9.508	-123.048	2338.105	-911.163	-1.182
		-24030.8	-9.508	977.862	-3154.861	-580.128	-1.182
1	1.050	-24091.4	-9.508	-475.724	623.580	-1206.626	-10.212
		-24091.4	-9.508	981.204	258.405	499.179	-10.212
1	1.500	-24120.1	-9.508	-612.603	623.580	-1455.609	-14.486
		-24120.1	-9.508	814.117	258.405	898.305	-14.486
1	1.500	-24120.1	-9.508	-612.859	623.580	-1456.133	-14.494
		-24120.1	-9.508	513.805	1008.405	898.854	-14.494
1	2.100	-24168.0	-9.508	-753.482	623.580	-1886.652	-20.196
		-24168.0	-9.508	332.880	1008.405	1131.940	-20.196
1	3.000	-24308.5	-9.508	-647.258	623.580	-2558.549	-28.748
		-24308.5	-9.508	378.662	1008.405	1409.972	-28.748
1	3.000	-24308.6	-9.508	-647.156	623.580	-2559.135	-28.756
		-24308.6	-9.508	78.707	1758.405	1410.122	-28.756
1	3.150	-24331.4	-9.508	-628.969	623.580	-2662.340	-30.180
		-24331.4	-9.508	86.828	1758.405	1414.896	-30.180
1	4.200	-24487.2	-9.508	-497.738	623.580	-3312.093	-40.164
		-24487.2	-9.508	147.494	1758.405	1479.734	-40.164
2	0	-24486.9	-8.079	-497.738	449.058	-3295.837	-40.164
		-24486.9	-8.079	147.494	1438.158	1528.177	-40.164
2	1.050	-24635.2	-8.079	-360.323	449.058	-3808.667	-48.646
		-24635.2	-8.079	214.361	1438.158	1655.703	-48.646
2	2.100	-24766.0	-8.079	-282.691	449.058	-4178.424	-57.127
		-24766.0	-8.079	221.444	1438.158	1852.238	-57.127
2	3.150	-24869.4	-8.079	-365.424	449.058	-4560.362	-65.608
		-24869.4	-8.079	68.161	1438.158	1962.526	-65.608
2	4.199	-24973.8	-8.079	-422.705	449.058	-5024.511	-74.090
		-24973.8	-8.079	-59.669	1438.158	1916.537	-74.090
3	0	-24973.5	-6.428	-422.705	234.639	-5012.614	-74.090
		-24973.5	-6.428	-59.669	981.637	1958.646	-74.090
3	1.050	-25080.4	-6.428	-439.524	234.639	-5508.674	-80.840
		-25080.4	-6.428	-147.055	981.637	1806.760	-80.840
3	2.100	-25208.4	-6.428	-281.864	234.639	-5991.392	-87.590
		-25208.4	-6.428	-59.961	981.637	1594.114	-87.590
3	3.150	-25350.0	-6.428	71.394	234.639	-6164.950	-94.341
		-25350.0	-6.428	222.730	981.637	1616.525	-94.341
3	4.200	-25301.3	-6.428	415.366	234.639	-5877.820	-101.091
		-25301.3	-6.428	496.134	981.637	2025.521	-101.091
4	0	-25301.2	-4.907	415.366	193.560	-5870.985	-101.091
		-25301.2	-4.907	496.134	687.913	2052.173	-101.091
4	1.050	-25113.3	-4.907	739.643	193.560	-5205.768	-106.244

ENVOLVENTE para < My > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
		-25113.3	-4.907	749.854	687.913	2765.152	-106.244
4	2.100	-24891.7	-4.907	782.898	193.560	-4312.807	-111.396
		-24891.7	-4.907	722.551	687.913	3631.793	-111.396
4	3.150	-24765.4	-4.907	65.386	193.560	-3771.197	-116.549
		-24765.4	-4.907	-65.519	687.913	4072.999	-116.549
4	4.200	-24665.9	-4.907	-897.942	193.560	-4224.072	-121.701
		-24665.9	-4.907	-1099.405	687.913	3445.637	-121.701
5	0	-24665.8	-3.365	-897.942	479.527	-4213.209	-121.701
		-24665.8	-3.365	-1099.405	726.119	3468.458	-121.701
5	1.050	-24550.5	-3.365	-1857.004	479.527	-5686.757	-125.233
		-24550.5	-3.365	-2129.000	726.119	1746.436	-125.233
5	2.099	-24418.6	-3.365	-3536.166	392.505	-8386.134	-128.765
		-24418.6	-3.365	-2739.013	615.492	-797.263	-128.765
5	3.149	-24300.2	-3.365	-4363.720	392.505	-12580.8	-132.296
		-24300.2	-3.365	-3185.126	813.140	-3849.818	-132.296
5	4.198	-24173.3	-3.365	-5165.954	392.505	-17626.7	-135.828
		-24173.3	-3.365	-3916.826	813.140	-7621.641	-135.828
6	0	-24151.8	-7.272	5994.777	1312.426	-17596.7	-135.828
		-24151.8	-7.272	4766.019	1380.810	-7583.036	-135.828
6	1.350	-23970.0	-7.272	4949.415	1312.426	-10273.1	-145.646
		-23970.0	-7.272	3811.380	1380.810	-1857.118	-145.646
6	2.700	-23769.5	-7.272	3916.536	1312.426	-4350.599	-155.464
		-23769.5	-7.272	2869.224	1380.810	2590.251	-155.464
6	4.050	-23484.4	-7.272	2107.735	1975.574	-139.428	-165.281
		-23484.4	-7.272	2031.812	198.577	6098.686	-165.281
6	5.400	-23190.7	-7.272	596.309	1031.431	1646.065	-175.099
		-23190.7	-7.272	858.040	325.589	7885.215	-175.099
7	0	-23190.5	-4.275	596.309	1025.108	1690.457	-175.099
		-23190.5	-4.275	858.039	50.695	7893.337	-175.099
7	1.350	-22979.5	-4.275	47.222	1025.108	2103.127	-180.870
		-22979.5	-4.275	536.892	1399.302	8770.268	-180.870
7	2.700	-22865.6	-4.275	-52.474	979.461	2063.060	-186.641
		-22865.6	-4.275	477.703	1444.949	9395.386	-186.641
7	4.050	-22768.8	-4.275	26.372	979.461	2078.224	-192.412
		-22768.8	-4.275	465.828	1444.949	10065.1	-192.412
7	5.400	-22662.4	-4.275	101.833	979.461	2213.126	-198.183
		-22662.4	-4.275	450.568	1444.949	10732.0	-198.183
8	0	-22662.2	-1.476	101.833	440.576	2241.670	-198.183
		-22662.2	-1.476	450.568	563.351	10772.4	-198.183
8	1.350	-22546.8	-1.476	173.266	440.576	2489.891	-200.175
		-22546.8	-1.476	431.291	563.351	11430.1	-200.175
8	2.700	-22421.9	-1.476	240.097	440.576	2844.083	-202.168
		-22421.9	-1.476	407.412	563.351	12071.4	-202.168
8	4.050	-22311.0	-1.476	137.213	440.576	3181.981	-204.161
		-22311.0	-1.476	213.818	563.351	12573.9	-204.161
8	5.399	-22203.8	-1.476	8.735	440.576	3349.942	-206.153
		-22203.8	-1.476	-5.370	563.351	12784.0	-206.153
9	0	-22203.8	1.522	8.735	-324.575	3352.438	-206.153
		-22203.8	1.522	-5.370	-607.669	12783.1	-206.153
9	1.350	-22310.0	1.522	-119.667	-324.575	3208.814	-204.098
		-22310.0	1.522	-224.503	-607.669	12559.2	-204.098
9	2.700	-22418.5	1.522	-211.944	-324.575	2898.212	-202.044
		-22418.5	1.522	-407.512	-607.669	12045.8	-202.044
9	4.051	-22541.5	1.522	-145.117	-324.575	2583.414	-199.989
		-22541.5	1.522	-431.416	-607.669	11405.7	-199.989
9	5.401	-22656.4	1.522	-73.676	-324.575	2373.960	-197.934
		-22656.4	1.522	-450.707	-607.669	10748.4	-197.934
10	0	-22656.5	4.348	-73.676	-869.386	2349.721	-197.934
		-22656.5	4.348	-450.707	-1492.127	10705.8	-197.934
10	1.350	-22762.3	4.348	-9.367	-942.185	2241.114	-192.065
		-22762.3	4.348	-454.917	-1419.329	10052.2	-192.065
10	2.700	-22858.4	4.348	69.375	-942.185	2249.767	-186.196
		-22858.4	4.348	-466.884	-1419.329	9398.252	-186.196
10	4.049	-22979.8	4.348	-66.085	-989.705	2297.877	-180.326
		-22979.8	4.348	-561.232	-1371.809	8785.141	-180.326
10	5.399	-23189.2	4.348	-615.932	-989.705	1860.986	-174.457
		-23189.2	4.348	-879.609	-13.086	7911.255	-174.457
11	0	-23189.4	7.272	-615.932	-994.395	1819.212	-174.457

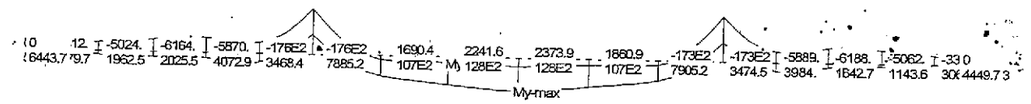
ENVOLVENTE para < My > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
		-23189.4	7.272	-879.609	-273.299	7905.226	-174.457
11	1.331	-23485.6	7.272	-2157.173	-1946.744	-43.955	-164.778
		-23485.6	7.272	-2079.383	-148.076	6085.031	-164.778
11	2.662	-23763.2	7.272	-3932.965	-1279.731	-4250.711	-155.099
		-23763.2	7.272	-2883.223	-1333.167	2590.826	-155.099
11	3.993	-23961.0	7.272	-4951.331	-1279.731	-10101.7	-145.420
		-23961.0	7.272	-3812.143	-1333.167	-1803.435	-145.420
11	5.324	-24140.6	7.272	-5981.801	-1279.731	-17314.6	-135.741
		-24140.6	7.272	-4753.168	-1333.167	-7440.532	-135.741
12	0	-24162.1	3.447	5076.608	-324.394	-17344.3	-135.741
		-24162.1	3.447	3905.045	-742.533	-7478.882	-135.741
12	1.050	-24289.0	3.447	4274.399	-324.394	-12391.2	-132.123
		-24289.0	3.447	3173.384	-742.533	-3718.680	-132.123
12	2.100	-24407.4	3.447	3446.709	-324.394	-8289.563	-128.504
		-24407.4	3.447	2723.890	-544.618	-670.055	-128.504
12	3.149	-24539.2	3.447	1851.479	-462.515	-5682.270	-124.886
		-24539.2	3.447	2033.404	-604.413	1852.511	-124.886
12	4.199	-24654.4	3.447	892.531	-462.515	-4214.231	-121.268
		-24654.4	3.447	1003.909	-604.413	3474.506	-121.268
13	0	-24654.5	4.888	892.531	-195.351	-4224.155	-121.268
		-24654.5	4.888	1003.909	-569.109	3456.803	-121.268
13	1.050	-24753.7	4.888	-70.540	-195.351	-3776.845	-116.135
		-24753.7	4.888	-29.724	-569.109	3984.017	-116.135
13	2.100	-24880.1	4.888	-786.782	-195.351	-4323.501	-111.002
		-24880.1	4.888	-816.527	-569.109	3443.174	-111.002
13	3.150	-25101.8	4.888	-743.148	-195.351	-5220.460	-105.869
		-25101.8	4.888	-843.454	-569.109	2477.937	-105.869
13	4.200	-25290.1	4.888	-419.168	-195.351	-5889.564	-100.736
		-25290.1	4.888	-590.035	-569.109	1666.464	-100.736
14	0	-25290.3	6.467	-419.168	-237.391	-5896.737	-100.736
		-25290.3	6.467	-590.035	-861.367	1642.753	-100.736
14	1.050	-25339.3	6.467	-75.544	-237.391	-6188.051	-93.945
		-25339.3	6.467	-316.969	-861.367	1134.993	-93.945
14	2.100	-25198.3	6.467	277.366	-237.391	-6019.236	-87.155
		-25198.3	6.467	-34.616	-861.367	1013.281	-87.155
14	3.150	-25070.8	6.467	434.433	-237.391	-5541.888	-80.364
		-25070.8	6.467	51.894	-861.367	1126.019	-80.364
14	4.200	-24964.3	6.467	417.495	-237.391	-5051.514	-73.574
		-24964.3	6.467	-35.602	-861.367	1177.701	-73.574
15	0	-24964.5	7.990	417.495	-433.905	-5062.294	-73.574
		-24964.5	7.990	-35.602	-1257.577	1143.673	-73.574
15	1.050	-24860.0	7.990	360.030	-433.905	-4603.507	-65.183
		-24860.0	7.990	-163.641	-1257.577	1089.554	-65.183
15	2.100	-24756.3	7.990	277.169	-433.905	-4227.029	-56.791
		-24756.3	7.990	-317.076	-1257.577	879.008	-56.791
15	3.151	-24624.8	7.990	355.026	-433.905	-3862.507	-48.400
		-24624.8	7.990	-309.793	-1257.577	582.388	-48.400
15	4.201	-24475.6	7.990	492.254	-433.905	-3354.911	-40.008
		-24475.6	7.990	-243.140	-1257.577	354.725	-40.008
16	0	-24475.9	9.581	492.254	-625.901	-3372.787	-40.008
		-24475.9	9.581	-243.140	-1574.214	306.960	-40.008
16	1.049	-24318.9	9.581	623.110	-625.901	-2728.972	-29.953
		-24318.9	9.581	-182.810	-1574.214	141.972	-29.953
16	2.099	-24153.9	9.581	747.185	-625.901	-1959.720	-19.898
		-24153.9	9.581	-129.261	-1574.214	28.406	-19.898
16	3.148	-24073.6	9.581	468.721	-625.901	-1286.626	-9.842
		-24073.6	9.581	-478.251	-1574.214	-255.337	-9.842
16	4.198	-24002.5	9.581	-370.631	-4771.487	-956.739	0.212903
		-24002.5	9.581	-349.317	2571.373	-955.756	0.212903
17	0	4.757	23.560	-673.541	1.06E-13	1804.509	-56.500
		4.757	23.560	-2243.150	4.48E-14	5568.682	-56.500
17	0.600	4.757	23.560	-712.999	1.06E-13	1388.866	-42.375
		4.757	23.560	-2282.607	4.48E-14	4211.996	-42.375
17	1.199	4.757	23.560	-752.456	1.06E-13	949.567	-28.250
		4.757	23.560	-2322.064	4.48E-14	2831.654	-28.250
17	1.799	4.757	23.560	-791.913	1.06E-13	486.612	-14.125
		4.757	23.560	-2361.522	4.48E-14	1427.655	-14.125
17	2.398	4.757	23.560	-831.370	1.06E-13	1.99E-05	-5.65E-07

ENVOLVENTE para < My > (y valores concomitantes) "ALL"
(1. línea: MIN., 2. línea: MAX., 3. línea: Grupos de Hip. decicivos)

Barra	Dist. [m]	N [kN]	Vy [kN]	Vz [kN]	T [kNm]	My [kNm]	Mz [kNm]
		4.757	23.560	-2400.979	4.48E-14	5.76E-05	-5.65E-07
18	0	-3.820	-23.637	-255.642	1.04E-12	803.088	56.728
		-3.820	-23.637	-2605.920	1.36E-12	6443.789	56.728
18	0.600	-3.820	-23.637	-295.130	1.04E-12	637.855	42.546
		-3.820	-23.637	-2645.408	1.36E-12	4868.381	42.546
18	1.200	-3.820	-23.637	-334.618	1.04E-12	448.929	28.364
		-3.820	-23.637	-2684.896	1.36E-12	3269.280	28.364
18	1.800	-3.820	-23.637	-374.106	1.04E-12	236.311	14.182
		-3.820	-23.637	-2724.383	1.36E-12	1646.486	14.182
18	2.400	-3.820	-23.637	-413.593	1.04E-12	9.93E-06	5.67E-07
		-3.820	-23.637	-2763.871	1.36E-12	6.63E-05	5.67E-07
19	0	4.793	-23.548	-703.716	7.03E-13	1878.419	56.515
		4.793	-23.548	-2244.116	1.40E-12	5575.311	56.515
19	0.600	4.793	-23.548	-743.202	7.03E-13	1444.352	42.386
		4.793	-23.548	-2283.603	1.40E-12	4217.020	42.386
19	1.200	4.793	-23.548	-782.689	7.03E-13	986.593	28.257
		4.793	-23.548	-2323.089	1.40E-12	2835.039	28.257
19	1.800	4.793	-23.548	-822.176	7.03E-13	505.142	14.129
		4.793	-23.548	-2362.576	1.40E-12	1429.365	14.129
19	2.400	4.793	-23.548	-861.663	7.03E-13	2.07E-05	5.65E-07
		4.793	-23.548	-2402.063	1.40E-12	5.76E-05	5.65E-07
20	0	-4.782	23.458	-255.933	-8.30E-13	803.823	-56.302
		-4.782	23.458	-1775.019	-2.72E-13	4449.792	-56.302
20	0.600	-4.782	23.458	-295.422	-8.30E-13	638.409	-42.226
		-4.782	23.458	-1814.508	-2.72E-13	3372.886	-42.226
20	1.200	-4.782	23.458	-334.911	-8.30E-13	449.301	-28.151
		-4.782	23.458	-1853.997	-2.72E-13	2272.285	-28.151
20	1.800	-4.782	23.458	-374.401	-8.30E-13	236.498	-14.075
		-4.782	23.458	-1893.486	-2.72E-13	1147.990	-14.075
20	2.400	-4.782	23.458	-413.890	-8.30E-13	9.93E-06	-5.63E-07
		-4.782	23.458	-1932.976	-2.72E-13	4.64E-05	-5.63E-07

Mstb. 1 :449.9
Section forces envelope My, GWSP JL (ELU 15), View "ALL"
- Struktur: Staebe
- Envelop Moment My-min, Scaling 2.00E-04
  min: -1.76E+04 max: 3.35E+03 [kNm]
- Envelop Moment My-max, Scaling 2.00E-04
  min: -7.62E+03 max: 1.28E+04 [kNm]
- Text envelopes [kNm]



DIMENSIONAMIENTO DE ARMADURA LONGITUDINAL

Características mecánicas Sección "SECCION2" (sin coef. homogeneiz.)

Area	Ax =	6.385 m2				
Momento de inercia	Iy =	1.149 m4	Iz =	41.89 m4	Ip =	43.04 m4
Const. de torsión					Ix =	1.636 m4
Momento estático	Zy =	2.415 m3	Zz =	13.56 m3		
Baricentro	ys =	245.00 cm	zs =	79.79 cm	Angulo=	0.0 Grad
Dist. al borde	yl =	-560.00 cm	yr =	560.00 cm		
	zo =	50.21 cm	zu =	-79.79 cm		

M-N-Punto de aplic. de fuerzas en el baricentro de la sección
V-T-Punto de aplic. de fuerzas en el baricentro de la sección
Schubmittelpunkt y = 245.00 cm z = 79.79 cm

Contorno de sección parcial, Sección "SECCION2" (sin coef. homogeneiz.)

Sección parcial	Material	w	*ax[cm2]	*u[cm]	*ix[cm4]	Nr
Puntos de hueco [cm]: (CS 2)						
1 481.57 82.22	2 471.82	96.82	3 457.22	106.58		
4 440.00 110.00	5 422.78	106.58	6 408.18	96.82		
7 398.43 82.22	8 395.00	65.00	9 398.43	47.78		
10 408.18 33.18	11 422.78	23.42	12 440.00	20.00		
13 457.22 23.42	14 471.82	33.18	15 481.57	47.78		
16 485.00 65.00	17 481.57	82.22				
Nombre de la sección maestra: CS 1						
Puntos de hueco [cm]: (CS 2)						
1 91.57 82.22	2 81.82	96.82	3 67.22	106.58		
4 50.00 110.00	5 32.78	106.58	6 18.18	96.82		
7 8.43 82.22	8 5.00	65.00	9 8.43	47.78		
10 18.18 33.18	11 32.78	23.42	12 50.00	20.00		
13 67.22 23.42	14 81.82	33.18	15 91.57	47.78		
16 95.00 65.00	17 91.57	82.22				
Nombre de la sección maestra: CS 1						
Puntos de hueco [cm]: (CS 2)						
1 351.57 82.22	2 341.82	96.82	3 327.22	106.58		
4 310.00 110.00	5 292.78	106.58	6 278.18	96.82		
7 268.43 82.22	8 265.00	65.00	9 268.43	47.78		
10 278.18 33.18	11 292.78	23.42	12 310.00	20.00		
13 327.22 23.42	14 341.82	33.18	15 351.57	47.78		
16 355.00 65.00	17 351.57	82.22				
Nombre de la sección maestra: CS 1						
Puntos de hueco [cm]: (CS 2)						
1 221.57 82.22	2 211.82	96.82	3 197.22	106.58		
4 180.00 110.00	5 162.78	106.58	6 148.18	96.82		
7 138.43 82.22	8 135.00	65.00	9 138.43	47.78		
10 148.18 33.18	11 162.78	23.42	12 180.00	20.00		
13 197.22 23.42	14 211.82	33.18	15 221.57	47.78		
16 225.00 65.00	17 221.57	82.22				
Nombre de la sección maestra: CS 1						
CS 1	H350	1.00	63851.8	2382.486	1.64E+08	6)
Puntos de contorno [cm]:						
1 805.00 130.00	2 -315.00	130.00	3 -315.00	110.00		
4 -55.00 90.00	5 0.00	0.00	6 490.00	0.00		
7 545.00 90.00	8 805.00	110.00	9 805.00	130.00		

Armadura "B1" As-tot =64.47 cm2 (0.10 o/o)

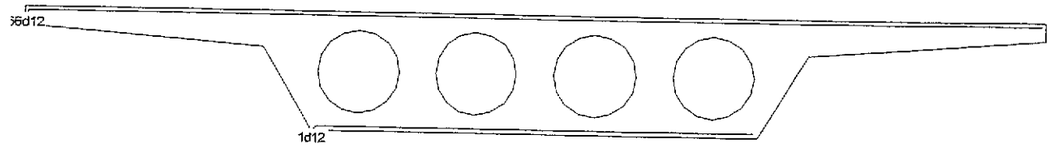
Nombre / Sección	Material	w	Cód.	A[cm2]	y[cm]	z [cm]
LR 2 / CS 1	AEH500	1.0	2	63.33	-310.00	125.00
					800.00	125.00
LR 1 / CS 1	AEH500	1.0	2	1.13	5.00	5.00
					485.00	5.00

Cálc. capacidad última: Viga Sección "SECCION2"/"B1"

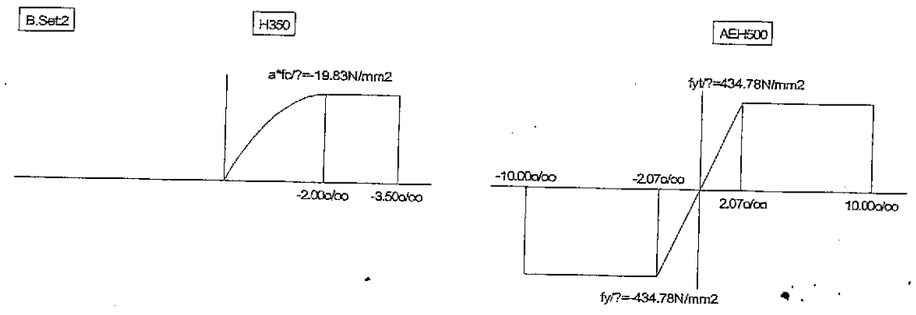
No	Set	N [kN]	My [kNm]	Mz [kNm]	Coef. de seguridad
1	2	-24151.80	-7567.00	0.00	2.759

Parámetros de cálculo empleados:
Set:Norma/TipoDiag/Máx.Deform./Coef.minor.res./Diag.Horm./Coef.Fluencia
Set 2: EH/2/0/Eps=-2.0,-3.5,10.0/Gamma=1.5,1.15/Dia=45/Phi=0

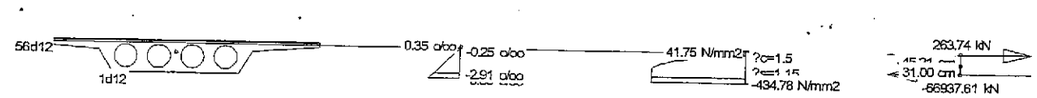
SecciónSECCION2



Material acorde a la sección: "SECCION2"



Análisis de la capacidad resistente última,Sección "SECCION2"



Características mecánicas Sección "SECCION2" (sin coef. homogeneiz.)

Area	Ax =	6.385 m2				
Momento de inercia	Iy =	1.149 m4	Iz =	41.89 m4	Ip =	43.04 m4
Const. de torsión					Ix =	1.636 m4
Momento estático	Zy =	2.415 m3	Zz =	13.56 m3		
Baricentro	ys =	245.00 cm	zs =	79.79 cm	Angulo=	0.0 Grad
Dist. al borde	yl =	-560.00 cm	yr =	560.00 cm		
	zo =	50.21 cm	zu =	-79.79 cm		

M-N-Punto de aplic. de fuerzas en el baricentro de la sección
V-T-Punto de aplic. de fuerzas en el baricentro de la sección
Schubmittelpunkt y = 245.00 cm z = 79.79 cm

Contorno de sección parcial, Sección "SECCION2" (sin coef. homogeneiz.)

Sección parcial			Material			w	*ax[cm2]	*u[cm]	*ix[cm4]	Nr
Puntos de hueco [cm]: (CS 2)										
1	481.57	82.22	2	471.82	96.82	3	457.22	106.58		
4	440.00	110.00	5	422.78	106.58	6	408.18	96.82		
7	398.43	82.22	8	395.00	65.00	9	398.43	47.78		
10	408.18	33.18	11	422.78	23.42	12	440.00	20.00		
13	457.22	23.42	14	471.82	33.18	15	481.57	47.78		
16	485.00	65.00	17	481.57	82.22					
Nombre de la sección maestra: CS 1										
Puntos de hueco [cm]: (CS 2)										
1	91.57	82.22	2	81.82	96.82	3	67.22	106.58		
4	50.00	110.00	5	32.78	106.58	6	18.18	96.82		
7	8.43	82.22	8	5.00	65.00	9	8.43	47.78		
10	18.18	33.18	11	32.78	23.42	12	50.00	20.00		
13	67.22	23.42	14	81.82	33.18	15	91.57	47.78		
16	95.00	65.00	17	91.57	82.22					
Nombre de la sección maestra: CS 1										
Puntos de hueco [cm]: (CS 2)										
1	351.57	82.22	2	341.82	96.82	3	327.22	106.58		
4	310.00	110.00	5	292.78	106.58	6	278.18	96.82		
7	268.43	82.22	8	265.00	65.00	9	268.43	47.78		
10	278.18	33.18	11	292.78	23.42	12	310.00	20.00		
13	327.22	23.42	14	341.82	33.18	15	351.57	47.78		
16	355.00	65.00	17	351.57	82.22					
Nombre de la sección maestra: CS 1										
Puntos de hueco [cm]: (CS 2)										
1	221.57	82.22	2	211.82	96.82	3	197.22	106.58		
4	180.00	110.00	5	162.78	106.58	6	148.18	96.82		
7	138.43	82.22	8	135.00	65.00	9	138.43	47.78		
10	148.18	33.18	11	162.78	23.42	12	180.00	20.00		
13	197.22	23.42	14	211.82	33.18	15	221.57	47.78		
16	225.00	65.00	17	221.57	82.22					
Nombre de la sección maestra: CS 1										
CS 1			H350		1.00		63851.8	2382.486	1.64E+08	6)
Puntos de contorno [cm]:										
1	805.00	130.00	2	-315.00	130.00	3	-315.00	110.00		
4	-55.00	90.00	5	0.00	0.00	6	490.00	0.00		
7	545.00	90.00	8	805.00	110.00	9	805.00	130.00		

Armadura "B1" As-tot =113.60 cm2 (0.18 o/o)

Nombre / Sección	Material	w	Cód.	A[cm2]	y[cm]	z [cm]
LR 2 / CS 1	AEH500	1.0	2	63.33	-310.00	125.00
					800.00	125.00
LR 1 / CS 1	AEH500	1.0	2	50.27	5.00	5.00
					485.00	5.00

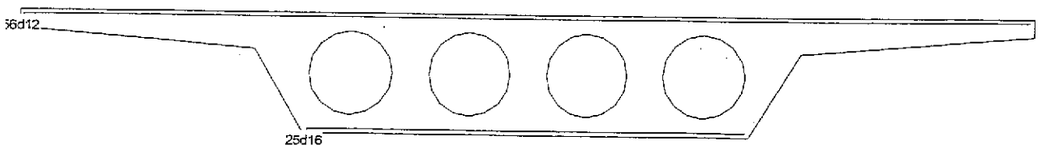
Cálc. capacidad última: Viga Sección "SECCION2"/"B1"

No	Set	N [kN]	My [kNm]	Mz [kNm]	Coef. de seguridad
1	2	-24151.80	3898.00	0.00	4.333

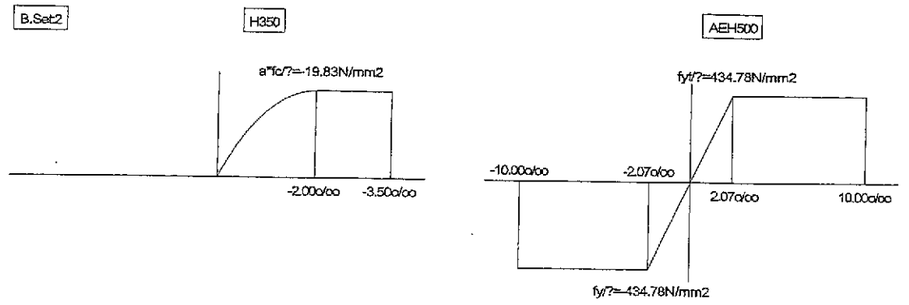
Parámetros de cálculo empleados:
Set:Norma/TipoDiag/Máx.Deform./Coef.minor.res./Diag.Horm./Coef.Fluencia

Set 2: EH/2/0/Eps=-2.0,-3.5,10.0/Gamma=1.5,1.15/Dia=45/Phi=0

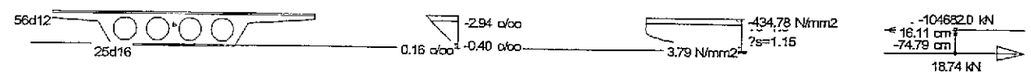
SecciónSECCION2



Material acorde a la sección: "SECCION2"



Análisis de la capacidad resistente última,Sección "SECCION2"



Características mecánicas Sección "SECCION2" (sin coef. homogeneiz.)

Area	Ax =	6.385 m2					
Momento de inercia	Iy =	1.149 m4	Iz =	41.89 m4	Ip =	43.04 m4	
Const. de torsión					Ix =	1.636 m4	
Momento estático	Zy =	2.415 m3	Zz =	13.56 m3			
Baricentro	ys =	245.00 cm	zs =	79.79 cm	Angulo=	0.0 Grad	
Dist. al borde	yl =	-560.00 cm	yr =	560.00 cm			
	zo =	50.21 cm	zu =	-79.79 cm			

M-N-Punto de aplic. de fuerzas en el baricentro de la sección
V-T-Punto de aplic. de fuerzas en el baricentro de la sección
Schubmittelpunkt y = 245.00 cm z = 79.79 cm

Contorno de sección parcial, Sección "SECCION2" (sin coef. homogeneiz.)

Sección parcial			Material			w	*ax[cm2]	*u[cm]	*ix[cm4]	Nr
Puntos de hueco [cm]: (CS 2)										
1	481.57	82.22	2	471.82	96.82	3	457.22	106.58		
4	440.00	110.00	5	422.78	106.58	6	408.18	96.82		
7	398.43	82.22	8	395.00	65.00	9	398.43	47.78		
10	408.18	33.18	11	422.78	23.42	12	440.00	20.00		
13	457.22	23.42	14	471.82	33.18	15	481.57	47.78		
16	485.00	65.00	17	481.57	82.22					
Nombre de la sección maestra: CS 1										
Puntos de hueco [cm]: (CS 2)										
1	91.57	82.22	2	81.82	96.82	3	67.22	106.58		

4	50.00	110.00	5	32.78	106.58	6	18.18	96.82
7	8.43	82.22	8	5.00	65.00	9	8.43	47.78
10	18.18	33.18	11	32.78	23.42	12	50.00	20.00
13	67.22	23.42	14	81.82	33.18	15	91.57	47.78
16	95.00	65.00	17	91.57	82.22			

Nombre de la sección maestra: CS 1
Puntos de hueco [cm]: (CS 2)

1	351.57	82.22	2	341.82	96.82	3	327.22	106.58
4	310.00	110.00	5	292.78	106.58	6	278.18	96.82
7	268.43	82.22	8	265.00	65.00	9	268.43	47.78
10	278.18	33.18	11	292.78	23.42	12	310.00	20.00
13	327.22	23.42	14	341.82	33.18	15	351.57	47.78
16	355.00	65.00	17	351.57	82.22			

Nombre de la sección maestra: CS 1
Puntos de hueco [cm]: (CS 2)

1	221.57	82.22	2	211.82	96.82	3	197.22	106.58
4	180.00	110.00	5	162.78	106.58	6	148.18	96.82
7	138.43	82.22	8	135.00	65.00	9	138.43	47.78
10	148.18	33.18	11	162.78	23.42	12	180.00	20.00
13	197.22	23.42	14	211.82	33.18	15	221.57	47.78
16	225.00	65.00	17	221.57	82.22			

Nombre de la sección maestra: CS 1
CS 1 H350 1.00 63851.8 2382.486 1.64E+08 6)
Puntos de contorno [cm]:

1	805.00	130.00	2	-315.00	130.00	3	-315.00	110.00
4	-55.00	90.00	5	0.00	0.00	6	490.00	0.00
7	545.00	90.00	8	805.00	110.00	9	805.00	130.00

Armadura "B1" As-tot =369.87 cm2 (0.58 o/o)

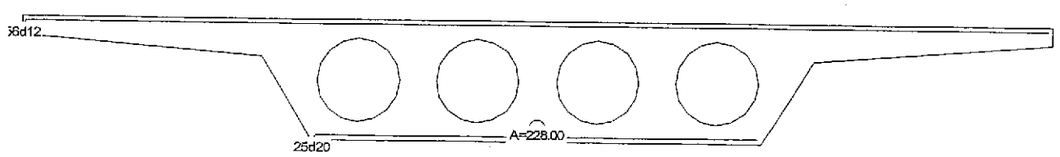
Nombre / Sección	Material	w	Cód.	A[cm2]	y[cm]	z [cm]
PR 1 / CS 1	AEH500	1.0	2	228.00	245.00	15.00
LR 2 / CS 1	AEH500	1.0	2	63.33	-310.00	125.00
					800.00	125.00
LR 1 / CS 1	AEH500	1.0	2	78.54	5.00	5.00
					485.00	5.00

Cálc. capacidad última: Viga Sección "SECCION2"/"B1"

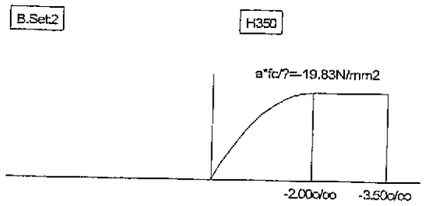
No	Set	N [kN]	My [kNm]	Mz [kNm]	Coef. de seguridad
1	2	-22203.80	17079.70	0.00	1.697

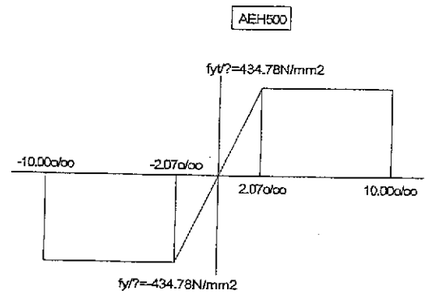
Parámetros de cálculo empleados:
Set:Norma/TipoDiag/Máx.Deform./Coef.minor.res./Diag.Horm./Coef.Fluencia
Set 2: EH/2/0/Eps=-2.0,-3.5,10.0/Gamma=1.5,1.15/Dia=45/Phi=0

SecciónSECCION2

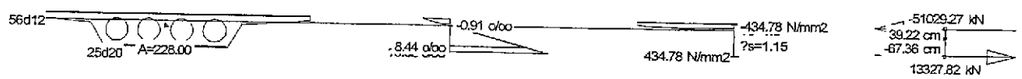


Material acorde a la sección: "SECCION2"





Análisis de la capacidad resistente última, Sección "SECCION2"



Características mecánicas Sección "MACIZA" (sin coef. homogeneiz.)

Area	Ax =	8.865 m2				
Momento de inercia	Iy =	1.311 m4	Iz =	47.25 m4	Ip =	48.56 m4
Const. de torsión					Ix =	1.636 m4
Momento estático	Zy =	2.981 m3	Zz =	16.79 m3		
Baricentro	ys =	245.00 cm	zs =	75.66 cm	Angulo=	0.0 Grad
Dist. al borde	yl =	-560.00 cm	yr =	560.00 cm		
	zo =	54.34 cm	zu =	-75.66 cm		

M-N-Punto de aplic. de fuerzas en el baricentro de la sección
V-T-Punto de aplic. de fuerzas en el baricentro de la sección
Schubmittelpunkt y = 245.00 cm z = 75.66 cm

Contorno de sección parcial, Sección "MACIZA" (sin coef. homogeneiz.)

Sección parcial	Material	w	*ax[cm2]	*u[cm]	*ix[cm4]	Nr
CS 1	H350	1.00	88650.0	2382.486	1.64E+08	3)

Puntos de contorno [cm]:

1	805.00	130.00	2	-315.00	130.00	3	-315.00	110.00
4	-55.00	90.00	5	0.00	0.00	6	490.00	0.00
7	545.00	90.00	8	805.00	110.00	9	805.00	130.00

Armadura "B1" As-tot =405.93 cm2 (0.46 o/o)

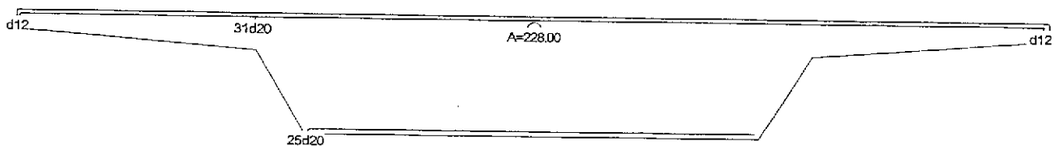
Nombre / Sección	Material	w	Cód.	A[cm2]	y[cm]	z [cm]
PR 1 / CS 1	AEH500	1.0	2	228.00	245.00	115.00
LR 4 / CS 1	AEH500	1.0	2	1.00	800.00	125.00
					545.00	125.00
LR 3 / CS 1	AEH500	1.0	2	1.00	-310.00	125.00
					-55.00	125.00
LR 2 / CS 1	AEH500	1.0	2	97.39	-55.00	125.00
					545.00	125.00
LR 1 / CS 1	AEH500	1.0	2	78.54	5.00	5.00
					485.00	5.00

Cálc. capacidad última: Viga Sección "MACIZA"/"B1"

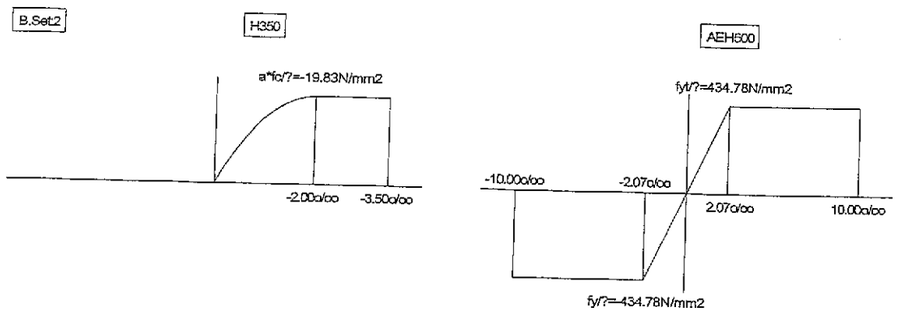
No	Set	N [kN]	My [kNm]	Mz [kNm]	Coef. de seguridad
1	2	-24151.80	-20412.50	0.00	1.649

Parámetros de cálculo empleados:
Set:Norma/TipoDiag/Máx.Deform./Coef.minor.res./Diag.Horm./Coef.Fluencia
Set 2: EH/2/0/Eps=-2.0,-3.5,10.0/Gamma=1.5,1.15/Dia=45/Phi=0

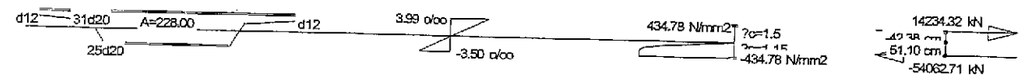
SecciónMACIZA



Material acorde a la sección: "MACIZA"



Análisis de la capacidad resistente última,Sección "MACIZA"



TABLERO.

DIMENSIONAMIENTO A CORTANTE Y TORSIÓN

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

Obra: LAV VALLES-CASTELLBISBAL
Fecha: 28/09/2003
Hora: 20:25:30

Cálculo de secciones a cortante

1 Datos

- Materiales

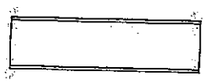
Tipo de hormigón : HA-35
Tipo de acero : B-500-S
fck [MPa] = 35.00
fyk [MPa] = 500.0
?c = 1.50
?s = 1.15

- Tipo de elemento estructural

Tipo : elemento con armadura a cortante

- Sección

Sección : CORTANTE
b [m] = 4.90
h [m] = 1.30



2 Dimensionamiento

Esfuerzo cortante de cálculo Vd [kN] = 6870

Inclinación de las bielas [º] = 32
Inclinación de los cercos [º] = 90.0
? [·1.E-3] = 0
Nd [kN] = -24151
?xd [MPa] = -4.9
?yd [MPa] = 0
?e [º] = 32.2

? [mm]	Separación [mm]	nº ramas	Area [cm²/m]	Tipo	Vsu [kN]
ø 6	---	---	---	---	---
ø 8	---	---	---	---	---
ø 10	---	---	---	---	---
ø 12	---	---	---	---	---

Área estricta [cm²/m] = 57.2
(Cuantía mínima)
Vu1 [kN] = 38535.8
Vcu [kN] = 4366.8

Obra: LAV VALLES-CASTELLBISBAL
Fecha: 28/09/2003
Hora: 20:28:13

Cálculo de secciones a cortante

1 Datos

- Materiales

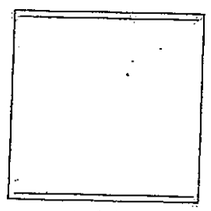
Tipo de hormigón : HA-35
Tipo de acero : B-500-S
fck [MPa] = 35.00
fyk [MPa] = 500.0
?c = 1.50
?s = 1.15

- Tipo de elemento estructural

Tipo : elemento con armadura a cortante

- Sección

Sección : CORTANTE2
b [m] = 1.30
h [m] = 1.30



2 Dimensionamiento

Esfuerzo cortante de cálculo Vd [kN] = 1700

Inclinación de las bielas [º] = 32
Inclinación de los cercos [º] = 90.0
? [-1.E-3] = 0
Nd [kN] =
?xd [MPa] = -0.0
?yd [MPa] = 0
?e [º] = 45.0

? [mm]	Separación [mm]	nº ramas	Area [cm²/m]	Tipo	Vsu [kN]
ø 6	----	----	----	----	----
ø 8	----	----	----	----	----
ø 10	0.10	4	31.4	2	2272.5
ø 12	0.15	4	30.2	2	2181.6

Área estricta [cm²/m] = 23.5
Vul [kN] = 10223.8
Vcu [kN] = 0.0

Torsión según la EHE

Art. 45.2.2. de la EHE

$T_d < T_{u_1}$

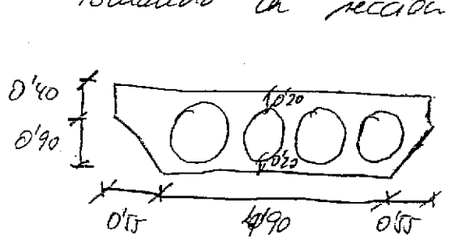
$T_d < T_{u_2}$

$T_d < T_{u_3}$

Torsor de agotamiento de las bielas comprimidas.

$$T_{u_1} = \alpha f_{1cd} A_e \cdot h_e \cdot \frac{\cot g\theta}{1+\cot g^2\theta}$$

Tomando la sección sin voladizos a torsión



$$h_e \leq \frac{A}{u} \begin{cases} \not> h_0 \\ \not< 2c \end{cases}$$

$2c = 2 \times 35 = 70\,cm = 0'7$.

$h_0 = 0'20\,m$

$A = 7'305\,m^2$

$u = 13'81\,m$

$\Rightarrow \frac{A}{u} = 0'53 > 0'20\,m \Rightarrow h_e = 0'20\,m$

$A_e = 5'961\,m^2$

$u_e = 13'07\,m$

$\theta = 30°$

$$T_{u_1} = 1'20 \times 0'6 \times \frac{35}{1'5} \times 5'961 \cdot 10^6 \times 0'2 \cdot 10^{-3} \cdot 0'453 = 8'6 \cdot 10^9\,N \cdot mm = 8600\,kN \cdot m$$

$T_{u_1} = 8600\,kN \cdot m > 4800\,kN \cdot m = T_d$ OK!

$$T_d \leq T_{u_2} = \frac{2 \cdot A_e \cdot A_t}{s} f_{1cd} \cdot \cot g\,\theta$$

$$\frac{A_t}{s} = \frac{T_d}{2 A_e \cdot f_{yd} \cot g\theta} = \frac{4800\,kN \cdot m}{2 \cdot 5'961 \cdot 400\,\cot g 32° \cdot 10^{-3}} = 6'28 \cdot 10^{-4}\,m/m = 6'28\,cm^2/m$$

m^2 N/mm^2

$$T_d \leq T_{u_3} = \frac{2 \cdot A_e \cdot A_t f_{y1d}}{u_e} tg\theta$$

$$\frac{A_t}{u_e} = \frac{T_d}{2 A_e f_{y1d} tg\theta} = \frac{4800}{2 \cdot 5'961 \cdot 400\, tg 32° \cdot 10^3} = 1'61 \cdot 10^{-3}\,m/m = 0'1\,cm/m$$

No hay problemas de interacción torsor, flexión como muestran las tensiones obtenidas en el cálculo.

Interacción torsión cortante

$$\left(\frac{4800}{8600}\right)^{1'69} + \left(\frac{6870'48}{10^{2'258}}\right)^{1'69} = 0'88 \leq 1 \quad OK!$$

$$\beta = 2\left(1 - \frac{h_e}{b}\right) = 2 \cdot \left(1 - \frac{0'20}{1'3}\right) = 1'69$$

VALTER valenciana de estructuras

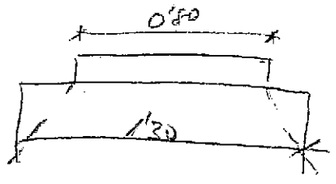
Proyecto .....

Asunto .....

Refuerzo bajo apoyos y en losa

a) Refuerzo en pilas

$N = 1'35 \times (4850'8 + 187626) + 1'5 \cdot (1420'88 + 63805) = 121699$ KN.



$$T_{ad} = 0'25 \cdot N_d \left(\frac{a - a_1}{a}\right) = A_s f_{yd}$$

$a_1 = 0'8$

$a = 1'30$ $\quad A_s = \dfrac{0'25 \cdot 121699 \cdot \frac{1'30 - 0'8}{1'30}\ KN}{400\ N/mm^2 \cdot 10^{-3}} \dfrac{1}{100} = 29'25\ cm^2$

b) Refuerzo en apoyo de estribos

$N = 1'35(671'45 + 21487) + 1'5(55069 + 5759) = 28920'1$ KN

Del lado de la seguridad

$$A_s = \frac{0'25 \cdot 28920'1}{400 \cdot 10^{-3}} \frac{1}{100} = 18\ cm^2$$

VALTER valenciana de estructuras

Proyecto .....

Asunto .....

Refuerzo en anclajes

$P_d = 279 \cdot 0'75 \times 1'9 = 3975'75$ KN. Del lado de la seguridad

$$A_s = \frac{0'25 \cdot 3975'75}{400 \cdot 10^{-3}} \cdot \frac{1}{100} = 24'85\ cm^2$$

TABLERO.

FLEXIÓN TRANSVERSAL

CÁLCULO DE VOLADIZOS EN PUENTES

Obra: LAV VALLÉS CASTELLBISBAL
Estructura: PASO SUPERIOR 0,5

DATOS GEOMETRICOS

Canto prox. A C.L	*a*	0.4 m	
Canto del extremo	*b*	0.2 m	
Longitud del voladizo	*L*	2.6 m	(a>b)

ACCIONES

Peso propio:	P1	10 kN/m
	P2	5 kN/m
Acera:	Espesor	0.2 m
	PA	5 kN/m
	Ancho	1.2 m
Barandilla:	PB	10 kN/m
Pavimento:	Espesor	0.03 m
	PP	2.07 kN/m
	Ancho	1.4 m
Sobrecarga:	PS	4 kN/m
Carro:	PC	66.67 kN/m
	Brazo mom	0.4 m

ESFUERZOS

	Mf (KN.m/m)	V (KN/m)
peso propio	-22.53	-19.50
acera	-12.00	-6.00
barandilla	-26.00	-10.00
Pavimento:	-2.03	-2.90
Total Carga Muerta	-40.03	-18.90
Total Acc. Permanentes	-62.56	-38.40
sobrecarga	-13.52	-10.40
carro	-26.67	-66.67
Total Acc. Tren de Carga	-40.19	-77.07

NIVEL DE CONTROL: Intenso

COEFICIENTES DE COMBINACIÓN Ψ_i	
Ψ_0	0.6
Ψ_1	0.5
Ψ_2	0.2

(Tabla 14, IAP)

COEF. PARCIALES DE SEGURIDAD γ_i	
Acc. Permanente, γ_G	1.35
Acc. Variable, γ_Q	1.50

Tabla 12.1.a EHE corregida con 12.1.b o Tabla15 de la IAP.
Nota: todos los efectos son desfavorables

COEF. PARCIALES DE SEGURIDAD γ_i	
Acc. Permanente, γ_G	1.00
Acc. Variable, γ_Q	1.00

Tabla 12.2 EHE o Tabla 16 IAP
Nota: Todos los efectos son desfavorables

Combinación: $\gamma_{GT} G_T + \gamma_Q Q$ (Sit. Permanente)

VALORES DE CALCULO ELU	
Md (KN.m/m)	Vd (KN/m)
-144.74	-167.44

Combinación: $\gamma_{GT} G_T + \gamma_Q Q$ (cuasipermante/h.armado)

VALORES DE CALCULO ELS	
Md (KN.m/m)	Vd (KN/m)
-70.60	-53.81

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

Obra: LAV VALLES-CASTELLBISBAL
Fecha: 28/09/2003
Hora: 20:57:56

Dimensionamiento de secciones a flexión simple

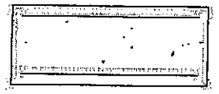
1 Datos

- Materiales

Tipo de hormigón : HA-35
Tipo de acero : B-500-S
fck [MPa] = 35.00
fyk [MPa] = 500.0
?c = 1.50
?s = 1.15

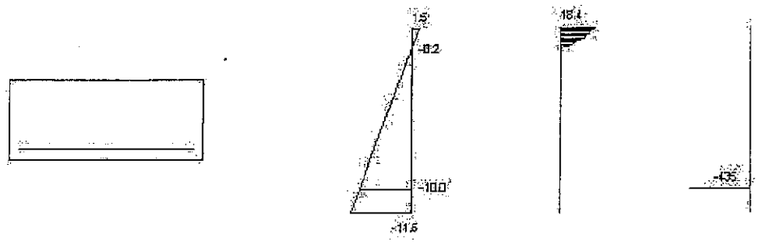
- Sección

Sección : VOLADIZO
b [m] = 1.00
h [m] = 0.40
ri [m] = 0.050
rs [m] = 0.050



2 Dimensionamiento

Md [kN·m] = 144.74



Plano de deformación de agotamiento

x [m] = 0.045

1/r [1/m]·1.E-3 = 32.6

?s ·1.E-3 = 1.5

?i ·1.E-3 = -11.6

Deformación y tensión de armaduras

Profundidad [m]	Armadura [cm²]	Deformación ·1.E-3	Tensión [MPa]
0.050	0.0	-0.2	0.0
0.351	11.2	-10.0	434.8

At_est [cm²] = 11.2

? [mm]	12	14	16	20	25
n°?	10	8	6	4	3
n° capas	1	1	1	1	1
At [cm²]	11.3	12.3	12.1	12.6	14.7
wk [mm]	0.15	0.15	0.17	0.21	0.20

Obra: LAV VALLES-CASTELLBISBAL
Fecha: 28/09/2003
Hora: 21:00:38

Cálculo de secciones a cortante

1 Datos

- Materiales

Tipo de hormigón : HA-35

Tipo de acero : B-500-S

fck [MPa] = 35.00

fyk [MPa] = 500.0

?c = 1.50

?s = 1.15

- Tipo de elemento estructural

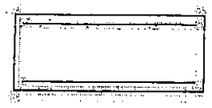
Tipo : elemento sin armadura a cortante

- Sección

Sección : VOLADIZO

b [m] = 1.00

h [m] = 0.40



2 Comprobación

?l [·1.E-3] = 2

Nd [kN] = -15000

Vu [kN] = 267.1

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

Obra: LAV VALLES-CASTELLBISBAL
Fecha: 28/09/2003
Hora: 20:59:06

Comprobación del Estado Límite de Servicio de fisuración debido a solicitaciones normales

1 Datos

- Materiales

Tipo de hormigón: HA-35
Tipo de acero: B-500-S
fck [MPa] = 35.00
fyk [MPa] = 500.0

- Ambiente

Clase general de exposición : I
Clases específicas de exposición :

- Geometría de la sección

Sección : VOLADIZO
b [m] = 1.00
h [m] = 0.40

- Armado de la sección

? [mm] = 12

capa	nº barras	Separación [mm]
1	5	41.00

As [cm²] = 5.7
Ac,ef [cm²] = 900.0

2 Resultados

Mk [kN·m] = 70.6

Separación media entre fisuras sm [mm] =
Deformación media de las armaduras ?sm [·1.E-3] =
Tensión en las armaduras en el instante de fisuración ?sr [MPa] =
Tensión en las armaduras en servicio ?s [MPa] =
Abertura característica de fisura wk [mm] = 0.0

Clase de exposición	wk max [mm]	
	Armado	Pretensado
I	0.4	0.2
IIa, IIb, H	0.3	0.2
IIIa, IIIb, IV, F	0.3	Decompresión
IIIc, Qa, Qb, Qc	0.1	

CÁLCULO DE APARATOS DE APOYO

Resumen de reacciones por apoyo

Pilas	Fx (kN)	Fy (kN)	Fz (kN)
Peso Propio	0'00	0'00	4850'80
C.M. min	0'00	0'00	1590'04
C.M. max	0'00	0'00	1876'26
Envolvente sobrecarga	0'00	0'00	-59'65
	0'00	0'00	1420'88
Envolvente Carro	0'00	0'00	-60'19
	0'00	0'00	638'05
Pretensado	24'39	5'078	-156'07
Frenado	-37'88	-5'8	0'00
Fz. Centrífuga	-5'43	96'97	2'05
Viento con SC	≃ 0'00	73'2	3'12
Viento sin SC	≃ 0'00	138'46	3'42
Gradiente Ter.	0'00	0'00	-182'02
Reológicas	u_x = 0'00399 m	—	—
Temperatura	u_x = 0'00335 m	—	—

tomamos K(SC+Carri)

→ x0'50 con (Carro)

u_{pret_x} = 0'00212 m

Estribos	Fx (kN)	Fy (kN)	Fz (kN)
Peso Propio	0'00	0'00	67'45
C.M. min	0'00	0'00	181'83
C.M. max	0'00	0'00	214'57
Envolvente sobrecarga	0'00	0'00	-402'66
	0'00	0'00	550'69
Envolvente Carro	0'00	0'00	-222'07
	0'00	0'00	579'9
Pretensado	26'71	3'37	22251 / -6750
Frenado	-17'50	-4'72	0'00
Fz. Centrífuga	-3'17	43'03	19'46 / -21'42
Viento con SC	≃ 0'00	32'47	3023 / -3339
Viento sin SC	≃ 0'00	61'25	3567 / -3914
Gradiente Ter.	0'00	0'00	258'53 / -77'31
Reológicas	u_x = 0'00916 m	—	—
Temperatura	u_x ≃ 0'00717 m	—	—

u_{pret_x} = 0'00509 m

DIMENSIONAMIENTO DE NEOPRENOS (recom. MOPU 1982)

NEOPRENO EN: Pilas

Puente LAV

Estados de carga y deformaciones del neopreno

Cargas Verticales (t)		Cargas Horizontales (t)		Giros (rad)		Acortamientos (m)			
V máx	V mín	H long	H transv	Mínimo	Cálculo (eje a)	Elástico	Retracción	Fluencia	Temperatura
878,559	..	6,77	8,379	0,003	0,0005	0,00212	0,00399	0	0,00335
..	616,21	6,77	0	0,003	0,0005	0,00212	0,00399	0	0,00335

Valores recomendados

t	e
15	5

Definición geométrica del neopreno (cotas en mm)

Denominación del neopreno : a*b*n (t+e)

Tipo (A, B, C) A

a (<=b)	b	n	t	e	T	E_{total}
800	800	5	15	5	80	110

Comprobación del neopreno

1ª Combinación acciones					
σ_m >= 200 t/m²	Ok	$\alpha_t = \alpha_T / n <= 3 / S * t^2 / a^2 * \sigma_m / G$	Ok	$\alpha_t = \alpha_T / n <= 3 / S * t^2 / a^2 * \sigma_m / G$	Ok
H <= f * N	Ok	e >= a / S * σ_m / σ_e	Ok	e >= a / S * σ_m / σ_e	Ok
a/10 <= T <= a/5	Ok	e >= 2 mm		e >= 2 mm	
$\tau = \tau_N + \tau_{H\,total} + \tau_{\alpha\,total} < 5G$	Ok				

2ª Combinación acciones					
σ_m >= 200 t/m²	Ok	$\alpha_t = \alpha_T / n <= 3 / S * t^2 / a^2 * \sigma_m / G$	Ok	$\alpha_t = \alpha_T / n <= 3 / S * t^2 / a^2 * \sigma_m / G$	Ok
H <= f * N	Ok	e >= a / S * σ_m / σ_e	Ok	e >= a / S * σ_m / σ_e	Ok
a/10 <= T <= a/5	Ok	e >= 2 mm		e >= 2 mm	
$\tau = \tau_N + \tau_{H\,total} + \tau_{\alpha\,total} < 5G$	Ok				

1ª Combinación acciones (para Vmax)

1ª Comprobación $\tau_{H1\ total}$ <=0.5 G Ok

$\tau_{H1\ total}$ = 11,83 t/m²

2ª Comprobación $\tau_{H\ total}$ <=0.7 G Ok

$\tau_{H\ total}$ = 18,32 t/m²

3ª Comprobación σ_m <= 1500 t/m² Ok

σ_m = 1372,81 t/m²

4ª Comprobación σ_m >= 200 t/m² Ok
H <= f * N Ok

H = 18,34 t
f * N = 126,26

5ª Comprobación a/10 <= T <= a/5 Ok

6ª Comprobación $\alpha_{ta} = \alpha_T / n <= 3 / S * t^2 / a^2 * \sigma_m / G$ Ok

α_{ta} = 0,00070
$3 / S * t^2 / a^2 * \sigma_m / G$ = 0,00109

7ª Comprobación $\tau = \tau_N + \tau_{H\ total} + \tau_{\alpha\ total} < 5G$ Ok

τ_N = 154,44 t/m²
$\tau_{H\ total}$ = 18,32 t/m²
$\tau_{\alpha\ total}$ = 99,56 t/m²

8ª Comprobación $e >= a / S * \sigma_m / \sigma_e$ Ok
e >= 2 mm Ok

$a / S * \sigma_m / \sigma_e$ = 3,43 mm

2ª Combinación acciones (para Vmin)

1ª Comprobación $\tau_{H1\ total}$ <=0.5 G Ok

$\tau_{H1\ total}$ = 11,83 t/m²

2ª Comprobación $\tau_{H\ total}$ <=0.7 G Ok

$\tau_{H\ total}$ = 17,11 t/m²

3ª Comprobación σ_m <= 1500 t/m² Ok

σ_m = 962,83 t/m²

4ª Comprobación σ_m >= 200 t/m² Ok
H <= f * N Ok

H = 14,34 t
f * N = 100,02

5ª Comprobación a/10 <= T <= a/5 Ok

6ª Comprobación $\alpha_{ta} = \alpha_T / n <= 3 / S * t^2 / a^2 * \sigma_m / G$ Ok

α_{ta} = 0,00070
$3 / S * t^2 / a^2 * \sigma_m / G$ = 0,00076

7ª Comprobación $\tau = \tau_N + \tau_{H\ total} + \tau_{\alpha\ total} < 5G$ Ok

τ_N = 108,32 t/m²
$\tau_{H\ total}$ = 17,11 t/m²
$\tau_{\alpha\ total}$ = 99,56 t/m²

8ª Comprobación $e >= a / S * \sigma_m / \sigma_e$ Ok
e >= 2 mm Ok

$a / S * \sigma_m / \sigma_e$ = 2,41 mm

DIMENSIONAMIENTO DE NEOPRENOS (recom. MOPU 1982)

NEOPRENO EN: ESTRIBO
Puente LAV

Estados de carga y deformaciones del neopreno

Cargas Verticales (t)		Cargas Horizontales (t)		Acortamientos (m)				Giros (rad)	
V máx	V mín	H long	H transv	Elástico	Retracción	Fluencia	Temperatura	Mínimo	Cálculo (eje a)
251,2765	-	4,421	6,7525	0,00509	0,00916	0	0,0077	0,003	0,01
-	6,7046	4,421	6,7525	0,00509	0,00916	0	0,0077	0,003	0,01

Definición geométrica del neopreno (cotas en mm)

Denominación del neopreno : a*b*n (t+e) Tipo (A, B, C) A

a (<=b)	b	n	t	e	T	E_{total}
350	500	5	11	4	60	84

Valores recomendados

t	e
11	4

Comprobación del neopreno

1ª Combinación acciones		σ_m >= 200 t/m²	Ok	$\alpha_t = \alpha_T / n <= 3 / S * t^2 / a^2 * \sigma_m / G$	Ok
$\tau_{H1\ total}$ <=0.5 G	Ok	H <= f * N	Ok	$e >= a / S * \sigma_m / \sigma_e$	Ok
$\tau_{H\ total}$ <=0.7 G	Ok	a/10 <= T <= a/5	Ok	e >= 2 mm	Ok
σ_m <= 1500 t/m²	Ok	$\tau = \tau_N + \tau_{H\ total} + \tau_{\alpha\ total} < 5G$	Ok		

2ª Combinación acciones		σ_m >= 200 t/m²	No cumple	$\alpha_t = \alpha_T / n <= 3 / S * t^2 / a^2 * \sigma_m / G$	No cumple
$\tau_{H1\ total}$ <=0.5 G	Ok	H <= f * N	No cumple	$e >= a / S * \sigma_m / \sigma_e$	Ok
$\tau_{H\ total}$ <=0.7 G	Ok	a/10 <= T <= a/5	Ok	e >= 2 mm	Ok
σ_m <= 1500 t/m²	Ok	$\tau = \tau_N + \tau_{H\ total} + \tau_{\alpha\ total} < 5G$	Ok		

Debido a que en la hipótesis de cargas verticales mínimas la reacción es muy baja algunas hipótesis no cumplen. Este problema queda subsanado disponiendo estos neoprenos anclados

El neopreno anclado será por tanto del tipo:

350 x 500 x 166 (66) tipo 4

Anclado con 4 pernos Ø30 de L=200m.

1ª Combinación acciones (para Vmax)

1ª Comprobación $\tau_{H1\ total} <= 0.5\ G$ Ok

$\tau_{H1\ total}$ = 36,58 t/m²

2ª Comprobación $\tau_{H\ total} <= 0.7\ G$ Ok

$\tau_{H\ total}$ = 52,86 t/m²

3ª Comprobación $\sigma_m <= 1500$ t/m² Ok

σ_m = 1435,87 t/m²

4ª Comprobación $\sigma_m >= 200$ t/m² Ok
$H <= f * N$ Ok

H = 14,47 t
f * N = 35,63

5ª Comprobación $a/10 <= T <= a/5$ Ok

6ª Comprobación $\alpha_{ta} = \alpha_T / n <= 3 / S * t^2 / a^2 * \sigma_m / G$ Ok

α_{ta} = 0,00260
$3 / S * t^2 / a^2 * \sigma_m / G$ = 0,00455

7ª Comprobación $\tau = \tau_N + \tau_{H\ total} + \tau_{\alpha\ total} < 5G$ Ok

τ_N = 230,15 t/m²
$\tau_{H\ total}$ = 52,86 t/m²
$\tau_{\alpha\ total}$ = 131,61 t/m²

8ª Comprobación $e >= a / S * \sigma_m / \sigma_e$ Ok
$e >= 2$ mm Ok

$a / S * \sigma_m / \sigma_e$ = 2,24 mm

2ª Combinación acciones (para Vmin)

1ª Comprobación $\tau_{H1\ total} <= 0.5\ G$ Ok

$\tau_{H1\ total}$ = 36,58 t/m²

2ª Comprobación $\tau_{H\ total} <= 0.7\ G$ Ok

$\tau_{H\ total}$ = 52,86 t/m²

3ª Comprobación $\sigma_m <= 1500$ t/m² Ok

σ_m = 38,31 t/m²

4ª Comprobación $\sigma_m >= 200$ t/m² No cumple
$H <= f * N$ No cumple

H = 14,47 t
f * N = 11,17

5ª Comprobación $a/10 <= T <= a/5$ Ok

6ª Comprobación $\alpha_{ta} = \alpha_T / n <= 3 / S * t^2 / a^2 * \sigma_m / G$ No cumple

α_{ta} = 0,00260
$3 / S * t^2 / a^2 * \sigma_m / G$ = 0,00012

7ª Comprobación $\tau = \tau_N + \tau_{H\ total} + \tau_{\alpha\ total} < 5G$ Ok

τ_N = 6,14 t/m²
$\tau_{H\ total}$ = 52,86 t/m²
$\tau_{\alpha\ total}$ = 131,61 t/m²

8ª Comprobación $e >= a / S * \sigma_m / \sigma_e$ Ok
$e >= 2$ mm Ok

$a / S * \sigma_m / \sigma_e$ = 0,06 mm

Relación de rigideces de aparatos de apoyos

Apoyo nº	Neoprenos			$K_{neopreno}$	$K_{x,pila}$ ó $K_{x,estribo}$	$K_{y,pila}$ ó $K_{y,estribo}$	$K_{x,total}$	$K_{y,total}$
	a (mm)	b (mm)	T (mm)					
E-1.1	350	500	60	5250,0	100000000,0	100000000,0	5249,4	5249,4
E-1.2	350	500	60	5250,0	100000000,0	100000000,0	5249,4	5249,4
P-1	800	800	80	14400,0	52164,8	52164,8	11284,8	11284,8
P-2	800	800	80	14400,0	52164,8	52164,8	11284,8	11284,8
E-2.1	350	500	60	5250,0	100000000,0	100000000,0	5249,4	5249,4
E-2.2	350	500	60	5250,0	100000000,0	100000000,0	5249,4	5249,4
							43567,5	43567,5

Notas
G (KN/m²) = 1800 (acciones rápidas)
K experesados en KN/m
K en estribos se ha dado un número que represente un valor infinito de rigidez

Relación de rigideces de aparatos de apoyos

Apoyo nº	Neoprenos			$K_{neopreno}$	$K_{x,pila}$ ó $K_{x,estribo}$	$K_{y,pila}$ ó $K_{y,estribo}$	$K_{x,total}$	$K_{y,total}$
	a (mm)	b (mm)	T (mm)					
E-1.1	350	500	60	2625,0	100000000,0	100000000,0	2624,9	2624,9
E-1.2	350	500	60	2625,0	100000000,0	100000000,0	2624,9	2624,9
P-1	800	800	80	7200,0	52164,8	52164,8	6326,8	6326,8
P-2	800	800	80	7200,0	52164,8	52164,8	6326,8	6326,8
E-2.1	350	500	60	2625,0	100000000,0	100000000,0	2624,9	2624,9
E-2.2	350	500	60	2625,0	100000000,0	100000000,0	2624,9	2624,9
							23153,0	23153,0

Notas

G (KN/m^2) = 900 (acciones rápidas)

K experesados en KN/m

K en estribos se ha dado un número que represente un valor infinito de rigidez

ESTRIBOS

```
 ** CivilCAD2000 (c) 1999 . Autores : L.M.Callís y J.M.Roig **
*************************************************************

PROYECTO DE ESTRIBO
*******************

Nombre del proyecto : estribo1

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

Cotas de definición de la sección media :

  Cota superior del murete de coronación : 113.000 m
  Cota en el área de apoyos : 111.550 m
  Cota de la cara superior de la zapata : 100.000 m
  Cota del terreno de la rasante inferior : 100.500 m

Dimensiones medias de la zapata :

  Anchura de la zapata : 13.200 m
  Longitud de la zarpa delantera :  2.500 m
  Longitud de la zarpa trasera :  9.000 m
  Canto de la zapata :  2.000 m

Dimensiones del muro :

  Anchura del muro : 11.200 m
  Anchura del cargadero :  1.100 m
  Canto del muro de coronación :  0.300 m
  Anchura de la zona de apoyo de la losa de transición :  0.300 m
  Altura del muro de coronación en trasdós del estribo :  1.000 m
  Altura de la parte del cargadero con máximo canto :  0.300 m
  Canto del muro en el entronque con el cargadero :  1.500 m
  Canto de la zona inferior del muro constante.

Apoyos:

   2 situados a  0.500 m del paramento exterior

Definición geométrica de la aleta 1 :

 Longitud total de la aleta : 13.500 m
  Longitud del muro de la aleta :  9.000 m
  Canto del muro de la aleta :  1.500 m
  Canto del voladizo de la aleta :  0.600 m
  Altura de la aleta en su extremo :  0.500 m
  Altura de la parte inferior del muro de la aleta :  5.000 m
  Canto de la parte superior del muro de la aleta :  1.000 m
  Angulo interior de la aleta con el muro :100.0000 g

Definición geométrica de la aleta 2 :

  Longitud total de la aleta : 13.500 m
  Longitud del muro de la aleta :  9.000 m
  Canto del muro de la aleta :  1.500 m
  Canto del voladizo de la aleta :  0.600 m
  Altura de la aleta en su extremo :  0.500 m
  Altura de la parte inferior del muro de la aleta :  5.000 m
  Canto de la parte superior del muro de la aleta :  1.000 m
  Angulo interior de la aleta con el muro :100.0000 g

Materiales :

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

Recubrimientos mecánicos:

  Alzados :  0.050 m  Zapata :  0.070 m

Terreno natural:

  Densidad :  2.000 T/m3  Ang.Roz.Interno :  30.000$
  Ang.Roz Terreno-Zapata :  30.000$

Terreno en trasdós:

  Densidad :  2.000 T/m3  Ang.Roz.Interno :  30.000$ Porosidad :  0.000
  Ang.Roz Terreno-Hormigón :  30.000$

Coeficientes de seguridad
                                    E.L.Servicio      E.L.Ultimo
                                                   Situación  Situación
                                                  persistente accidental
-------------------------------------------------------------------------
                                     E.F.  E.D.   E.F.  E.D.  E.F. E.D.
```



```
-------------------------------------------------------------------------
Peso propio del hormigón            :  1.00  1.00  1.00  1.50  1.00  1.00
Peso propio de las tierras en trasdós :  1.00  1.00  1.00  1.50  1.00  1.00
Empuje de tierras                   :  1.00  1.00  1.00  1.60  1.00  1.00
Sobrecarga en trasdós               :  0.00  1.00  0.00  1.60  0.00  1.00
Acción del nivel freático           :  0.00  1.00  0.00  1.60  0.00  1.00
Acción sísmica                      :  0.00  0.00  0.00  0.00  1.00  1.00
Acciones permanentes del tablero    :  1.00  1.00  1.00  1.50  1.00  1.00
Acciones variables del tablero      :  0.00  1.00  0.00  1.60  0.00  1.00

  E.F. : Coeficiente para el efecto favorable.
  E.D. : Coeficiente para el efecto desfavorable.

  Coeficientes de combinación
     Valor de combinación :  0.600
     Valor frecuente :  0.500
     Valor casi permanente :  0.200

  Coeficientes de minoración de los materiales
     Situación persistente
       Hormigón:  1.500
       Acero:  1.150
     Situación accidental
       Hormigón:  1.300
       Acero:  1.000

Cargas:

  Sobrecarga en trasdós:  1.000 T/m2
  Acción vertical permanente del tablero por apoyo: 95.260 T
  Acción horizontal permanente del tablero por apoyo:  2.400 T
  Acción vertical variable del tablero por apoyo: 53.520 T
  Acción horizontal variable del tablero por apoyo:  4.000 T
  Aceleración sísmica:  0.000 m/s2
  Momento torsor permanente del tablero: 83.180 mT
  Momento torsor variable del tablero:411.000 mT

Cálculo de la estabilidad del estribo
-------------------------------------

El coeficiente de seguridad es el cociente entre efectos
resistentes y efectos inductores al vuelco/deslizamiento.
Ambos efectos están afectados por los coeficientes de seguridad
y de combinación definidos por el usuario.

Coeficiente de seguridad al deslizamiento :  1.935
No se ha considerado la acción del empuje pasivo del terreno.
No se ha considerado la acc. vertical por empuje activo del terreno.

Fvert (T) : Fuerza vertical.
Fhest (T) : Fuerza horizontal estabilizadora.
Fhdes (T) : Fuerza horizontal desestabilizadora.

Acción                                  Fhest    Fhdes    Fvert
-------------------------------------------------------------------
Peso propio de la zapata            :   0.00     0.00   759.00
Peso propio del alzado              :   0.00     0.00   503.30
Peso de tierras sobre la puntera    :   0.00     0.00    33.00
Peso de tierras en el talón         :   0.00     0.00  2182.43
Empuje activo                       :   0.00   648.55     0.00
Empuje pasivo                       :   0.00     0.00     0.00
Sobrecarga. Acción vertical         :   0.00     0.00    84.00
Sobrecarga. Acción horizontal       :   0.00    43.24     0.00
Nivel freático en el intradós       :   0.00     0.00     0.00
Subpresión                          :   0.00     0.00     0.00
Nivel freático en el trasdós        :   0.00     0.00     0.00
Acciones permanentes del tablero    :   0.00     4.80   190.52
Ac. var. verticales del tablero     :   0.00     0.00   107.04
Ac. var. horizontales del tablero   :   0.00     8.00     0.00
Acción sísmica                      :   0.00     0.00     0.00

Coeficiente de seguridad al vuelco :  4.379

No se ha considerado la acción del empuje pasivo del terreno.
No se ha considerado la acc. vertical por empuje activo del terreno.
Mest (mT): Momento estabilizador.
Mdes (mT): Momento desestabilizador.

Acción                                   Mest      Mdes
-------------------------------------------------------
Peso propio de la zapata            :4364.25      0.00
Peso propio del alzado              :1646.72      0.00
Peso de tierras sobre la puntera    :  41.25      0.00
Peso de tierras en el talón         :16919.25      0.00
Empuje activo                       :    0.00   3242.73
Empuje pasivo                       :    0.00      0.00
Sobrecarga. Acción vertical         : 651.00      0.00
```

Sobrecarga. Acción horizontal	:	0.00	324.27
Nivel freático en el intradós	:	0.00	0.00
Subpresión	:	0.00	0.00
Nivel freático en el trasdós	:	0.00	0.00
Acciones permanentes del tablero	:	0.00	-506.52
Ac. var. verticales del tablero	:	0.00	-321.12
Ac. var. horizontales del tablero	:	0.00	108.40
Acción sísmica	:	0.00	0.00

Cálculo de las tensiones en el terreno

Tensiones en la sección media

Combinaciones características:

Acciones permanentes:

Ley de tensiones trapecial.
Tensión en extremo de puntera : 27.111 T/m2
Tensión en extremo de talón : 21.219 T/m2

Mayorando la sobrecarga en trasdós:

Ley de tensiones trapecial.
Tensión en extremo de puntera : 29.455 T/m2
Tensión en extremo de talón : 20.828 T/m2

Mayorando la acción del agua:

Ley de tensiones trapecial.
Tensión en extremo de puntera : 29.019 T/m2
Tensión en extremo de talón : 20.821 T/m2

Mayorando las acciones horizontales del tablero:

Ley de tensiones trapecial.
Tensión en extremo de puntera : 29.168 T/m2
Tensión en extremo de talón : 20.672 T/m2

Mayorando las acciones verticales del tablero:

Ley de tensiones trapecial.
Tensión en extremo de puntera : 29.706 T/m2
Tensión en extremo de talón : 20.699 T/m2

Combinaciones frecuentes:

Mayorando la sobrecarga en trasdós:

Ley de tensiones trapecial.
Tensión en extremo de puntera : 28.074 T/m2
Tensión en extremo de talón : 21.091 T/m2

Mayorando la acción del agua:

Ley de tensiones trapecial.
Tensión en extremo de puntera : 27.747 T/m2
Tensión en extremo de talón : 21.086 T/m2

Mayorando las acciones horizontales del tablero:

Ley de tensiones trapecial.
Tensión en extremo de puntera : 27.859 T/m2
Tensión en extremo de talón : 20.975 T/m2

Mayorando las acciones verticales del tablero:

Ley de tensiones trapecial.
Tensión en extremo de puntera : 28.262 T/m2
Tensión en extremo de talón : 20.994 T/m2

Combinación casi-permanente:

Ley de tensiones trapecial.
Tensión en extremo de puntera : 27.747 T/m2
Tensión en extremo de talón : 21.086 T/m2

Tensión máxima en el terreno bajo la zapata : 29.706 T/m2

Incremento tensional por el momento torsor del tablero

Torsor permanente. Variación tensional inducida = +/- 0.249 T/m2
Torsor variable . Variación tensional inducida = +/- 1.231 T/m2

CALCULO DE LA ZAPATA

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

Esfuerzos longitudinales pml. Signo+

As1: Armadura de tracción de cálculo en cara inferior pml.
As2: Armadura de compresión de cálculo en cara superior pml.
Si As1,As2=-1 -> Sección insuficiente para resistir los esfuerzos.
As3: Armadura de cortante pm2 (incluye armadura mínima).
Si As3=-1 -> No se cumple la comprobación en el hormigón Vd<Vu1.

Nodo	Md(mT)	Nd(T)	As1(cm2/m)	As2(cm2/m)	Vd(T)	Vcu(T)	As3(cm2/m2)
1	47.97	0.00	5.63	0.00	0.00	0.00	0.00
2	89.91	0.00	10.60	0.00	33.19	34.25	0.00
3	28.73	0.00	3.37	0.00	0.00	0.00	0.00
4	5.95	0.00	0.70	0.00	0.00	0.00	0.00
5	0.74	0.00	0.09	0.00	3.42	34.25	0.00
6	0.64	0.00	0.07	0.00	6.07	34.25	0.00
7	1.13	0.00	0.13	0.00	6.44	34.25	0.00
8	1.33	0.00	0.16	0.00	6.20	34.25	0.00
9	1.28	0.00	0.15	0.00	5.90	34.25	0.00
10	1.27	0.00	0.15	0.00	5.75	34.25	0.00
11	2.35	0.00	0.27	0.00	12.02	34.25	0.00
12	3.40	0.00	0.40	0.00	73.10	34.25	8.33
13	221.10	0.00	26.40	0.00	143.68	39.69	14.97
14	2.05	0.00	0.24	0.00	7.17	34.25	0.00
15	1.98	0.00	0.23	0.00	6.91	34.25	0.00
16	1.90	0.00	0.22	0.00	6.65	34.25	0.00
17	1.83	0.00	0.21	0.00	6.39	34.25	0.00
18	1.75	0.00	0.20	0.00	6.12	34.25	0.00
19	1.68	0.00	0.20	0.00	5.87	34.25	0.00
20	1.60	0.00	0.19	0.00	5.61	34.25	0.00
21	1.54	0.00	0.18	0.00	5.37	34.25	0.00
22	1.51	0.00	0.18	0.00	10.37	34.25	0.00
23	27.61	0.00	3.23	0.00	48.44	34.25	8.33
24	196.01	0.00	23.34	0.00	119.03	38.70	11.56
25	0.00	0.00	0.00	0.00	9.30	34.25	0.00
26	1.22	0.00	0.14	0.00	7.10	34.25	0.00
27	2.49	0.00	0.29	0.00	5.34	34.25	0.00
28	3.37	0.00	0.39	0.00	4.26	34.25	0.00
29	3.53	0.00	0.41	0.00	3.74	34.25	0.00
30	3.30	0.00	0.39	0.00	3.52	34.25	0.00
31	2.74	0.00	0.32	0.00	3.52	34.25	0.00
32	1.81	0.00	0.21	0.00	3.55	34.25	0.00
33	0.47	0.00	0.05	0.00	7.77	34.25	0.00
34	31.74	0.00	3.72	0.00	43.41	34.25	8.33
35	190.08	0.00	22.62	0.00	114.00	38.43	10.88
36	0.00	0.00	0.00	0.00	18.73	34.25	0.00
37	0.00	0.00	0.00	0.00	14.29	34.25	0.00
38	3.05	0.00	0.36	0.00	11.36	34.25	0.00
39	5.90	0.00	0.69	0.00	9.18	34.25	0.00
40	6.77	0.00	0.79	0.00	7.63	34.25	0.00
41	6.60	0.00	0.77	0.00	6.59	34.25	0.00
42	5.74	0.00	0.67	0.00	5.83	34.25	0.00
43	4.44	0.00	0.52	0.00	5.27	34.25	0.00
44	3.54	0.00	0.41	0.00	9.86	34.25	0.00
45	30.89	0.00	3.62	0.00	43.88	34.25	8.33
46	190.16	0.00	22.63	0.00	114.46	38.44	10.94
47	0.00	0.00	0.00	0.00	29.76	34.25	0.00
48	0.00	0.00	0.00	0.00	21.51	34.25	0.00
49	3.17	0.00	0.37	0.00	15.49	34.25	0.00
50	7.79	0.00	0.91	0.00	12.54	34.25	0.00
51	9.51	0.00	1.11	0.00	10.34	34.25	0.00
52	9.59	0.00	1.12	0.00	8.68	34.25	0.00
53	8.72	0.00	1.02	0.00	7.41	34.25	0.00
54	7.04	0.00	0.82	0.00	6.28	34.25	0.00
55	5.68	0.00	0.66	0.00	10.33	34.25	0.00
56	30.24	0.00	3.54	0.00	44.45	34.25	8.33
57	190.65	0.00	22.69	0.00	115.03	38.46	11.02
58	0.00	0.00	0.00	0.00	33.56	34.25	0.00
59	0.00	0.00	0.00	0.00	24.73	34.25	0.00
60	3.21	0.00	0.37	0.00	17.80	34.25	0.00
61	8.46	0.00	0.99	0.00	13.71	34.25	0.00
62	10.54	0.00	1.23	0.00	11.27	34.25	0.00
63	10.75	0.00	1.26	0.00	9.41	34.25	0.00
64	9.89	0.00	1.16	0.00	7.93	34.25	0.00
65	8.02	0.00	0.94	0.00	6.57	34.25	0.00
66	6.43	0.00	0.75	0.00	10.42	34.25	0.00
67	30.89	0.00	3.62	0.00	43.88	34.25	8.33
68	190.16	0.00	22.63	0.00	114.46	38.44	10.94
69	0.00	0.00	0.00	0.00	29.76	34.25	0.00

70	0.00	0.00	0.00	0.00	21.51	34.25	0.00
71	3.17	0.00	0.37	0.00	15.49	34.25	0.00
72	7.79	0.00	0.91	0.00	12.54	34.25	0.00
73	9.51	0.00	1.11	0.00	10.34	34.25	0.00
74	9.59	0.00	1.12	0.00	8.68	34.25	0.00
75	8.72	0.00	1.02	0.00	7.41	34.25	0.00
76	7.04	0.00	0.82	0.00	6.28	34.25	0.00
77	5.68	0.00	0.66	0.00	10.33	34.25	0.00
78	31.74	0.00	3.72	0.00	43.41	34.25	8.33
79	190.08	0.00	22.62	0.00	114.00	38.43	10.88
80	0.00	0.00	0.00	0.00	18.73	34.25	0.00
81	0.00	0.00	0.00	0.00	14.29	34.25	0.00
82	3.05	0.00	0.36	0.00	11.36	34.25	0.00
83	5.90	0.00	0.69	0.00	9.18	34.25	0.00
84	6.77	0.00	0.79	0.00	7.63	34.25	0.00
85	6.60	0.00	0.77	0.00	6.59	34.25	0.00
86	5.74	0.00	0.67	0.00	5.83	34.25	0.00
87	4.44	0.00	0.52	0.00	5.27	34.25	0.00
88	3.54	0.00	0.41	0.00	9.86	34.25	0.00
89	27.61	0.00	3.23	0.00	48.44	34.25	8.33
90	196.01	0.00	23.34	0.00	119.03	38.70	11.56
91	0.00	0.00	0.00	0.00	9.30	34.25	0.00
92	1.22	0.00	0.14	0.00	7.10	34.25	0.00
93	2.49	0.00	0.29	0.00	5.34	34.25	0.00
94	3.37	0.00	0.39	0.00	4.26	34.25	0.00
95	3.53	0.00	0.41	0.00	3.74	34.25	0.00
96	3.30	0.00	0.39	0.00	3.52	34.25	0.00
97	2.74	0.00	0.32	0.00	3.52	34.25	0.00
98	1.81	0.00	0.21	0.00	3.55	34.25	0.00
99	0.47	0.00	0.05	0.00	7.77	34.25	0.00
100	3.40	0.00	0.40	0.00	73.10	34.25	8.33
101	221.10	0.00	26.40	0.00	143.68	39.69	14.97
102	2.05	0.00	0.24	0.00	7.17	34.25	0.00
103	1.98	0.00	0.23	0.00	6.91	34.25	0.00
104	1.90	0.00	0.22	0.00	6.65	34.25	0.00
105	1.83	0.00	0.21	0.00	6.39	34.25	0.00
106	1.75	0.00	0.20	0.00	6.12	34.25	0.00
107	1.68	0.00	0.20	0.00	5.87	34.25	0.00
108	1.60	0.00	0.19	0.00	5.61	34.25	0.00
109	1.54	0.00	0.18	0.00	5.37	34.25	0.00
110	1.51	0.00	0.18	0.00	10.37	34.25	0.00
111	47.97	0.00	5.63	0.00	0.00	0.00	0.00
112	89.91	0.00	10.60	0.00	33.19	34.25	0.00
113	28.73	0.00	3.37	0.00	0.00	0.00	0.00
114	5.95	0.00	0.70	0.00	0.00	0.00	0.00
115	0.74	0.00	0.09	0.00	3.42	34.25	0.00
116	0.64	0.00	0.07	0.00	6.07	34.25	0.00
117	1.13	0.00	0.13	0.00	6.44	34.25	0.00
118	1.33	0.00	0.16	0.00	6.20	34.25	0.00
119	1.28	0.00	0.15	0.00	5.90	34.25	0.00
120	1.27	0.00	0.15	0.00	5.75	34.25	0.00
121	2.35	0.00	0.27	0.00	12.02	34.25	0.00

Esfuerzos transversales pml. Signo+

As1: Armadura de tracción de cálculo en cara inferior pml.
As2: Armadura de compresión de cálculo en cara superior pml.
  Si As1,As2=-1 -> Sección insuficiente para resistir los esfuerzos.
As3: Armadura de cortante pm2 (incluye armadura mínima).
  Si As3=-1 -> No se cumple la comprobación en el hormigón Vd<Vu1.

Nodo	Md(mT)	Nd(T)	As1(cm2/m)	As2(cm2/m)	Vd(T)	Vcu(T)	As3(cm2/m2)
1	3.33	0.00	0.39	0.00	1.68	34.25	0.00
2	0.00	0.00	0.00	0.00	104.07	34.25	10.05
3	17.09	0.00	2.00	0.00	9.92	34.25	0.00
4	9.50	0.00	1.11	0.00	13.20	34.25	0.00
5	2.06	0.00	0.24	0.00	23.56	34.25	0.00
6	0.00	0.00	0.00	0.00	27.62	34.25	0.00
7	0.00	0.00	0.00	0.00	27.83	34.25	0.00
8	0.00	0.00	0.00	0.00	26.78	34.25	0.00
9	0.00	0.00	0.00	0.00	25.30	34.25	0.00
10	0.00	0.00	0.00	0.00	23.36	34.25	0.00
11	2.01	0.00	0.23	0.00	13.85	34.25	0.00
12	17.68	0.00	2.07	0.00	12.57	34.25	0.00
13	102.05	0.00	12.04	0.00	104.07	34.25	10.05
14	29.44	0.00	3.45	0.00	32.05	34.25	0.00
15	25.96	0.00	3.04	0.00	34.51	34.25	8.33
16	31.50	0.00	3.69	0.00	44.07	34.25	8.33
17	34.08	0.00	3.99	0.00	47.30	34.25	8.33
18	34.05	0.00	3.99	0.00	46.69	34.25	8.33
19	32.91	0.00	3.86	0.00	44.85	34.25	8.33
20	31.24	0.00	3.66	0.00	42.58	34.25	8.33
21	29.07	0.00	3.41	0.00	39.94	34.25	8.33
22	28.29	0.00	3.31	0.00	36.58	34.25	8.33
23	10.72	0.00	1.25	0.00	4.15	34.25	0.00
24	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25	0.00	0.00	0.00	0.00	10.18	34.25	0.00

26	0.00	0.00	0.00	0.00	14.78	34.25	0.00
27	0.00	0.00	0.00	0.00	19.87	34.25	0.00
28	0.00	0.00	0.00	0.00	29.71	34.25	0.00
29	0.00	0.00	0.00	0.00	38.04	34.25	8.33
30	0.00	0.00	0.00	0.00	44.78	34.25	8.33
31	0.00	0.00	0.00	0.00	50.37	34.25	8.33
32	0.00	0.00	0.00	0.00	55.82	34.25	8.33
33	0.00	0.00	0.00	0.00	65.73	34.25	8.33
34	5.14	0.00	0.60	0.00	3.79	34.25	0.00
35	0.00	0.00	0.00	0.00	0.00	0.00	0.00
36	0.02	0.00	0.00	0.00	10.02	34.25	0.00
37	0.33	0.00	0.04	0.00	12.91	34.25	0.00
38	1.78	0.00	0.21	0.00	15.95	34.25	0.00
39	4.50	0.00	0.53	0.00	18.61	34.25	0.00
40	6.94	0.00	0.81	0.00	23.64	34.25	0.00
41	9.00	0.00	1.05	0.00	28.40	34.25	0.00
42	10.84	0.00	1.27	0.00	32.20	34.25	0.00
43	12.61	0.00	1.47	0.00	35.45	34.25	8.33
44	15.72	0.00	1.84	0.00	42.21	34.25	8.33
45	2.47	0.00	0.29	0.00	4.64	34.25	0.00
46	0.00	0.00	0.00	0.00	0.00	0.00	0.00
47	0.00	0.00	0.00	0.00	11.39	34.25	0.00
48	3.37	0.00	0.39	0.00	12.35	34.25	0.00
49	11.01	0.00	1.29	0.00	13.39	34.25	0.00
50	18.66	0.00	2.18	0.00	14.30	34.25	0.00
51	25.71	0.00	3.01	0.00	15.05	34.25	0.00
52	31.86	0.00	3.73	0.00	15.66	34.25	0.00
53	37.02	0.00	4.34	0.00	16.11	34.25	0.00
54	41.23	0.00	4.84	0.00	17.02	34.25	0.00
55	46.50	0.00	5.46	0.00	20.90	34.25	0.00
56	1.75	0.00	0.20	0.00	5.39	34.25	0.00
57	0.00	0.00	0.00	0.00	0.00	0.00	0.00
58	0.00	0.00	0.00	0.00	13.23	34.25	0.00
59	4.72	0.00	0.55	0.00	12.26	34.25	0.00
60	13.85	0.00	1.62	0.00	11.22	34.25	0.00
61	23.09	0.00	2.70	0.00	10.32	34.25	0.00
62	31.64	0.00	3.71	0.00	9.56	34.25	0.00
63	39.11	0.00	4.59	0.00	8.96	34.25	0.00
64	45.33	0.00	5.32	0.00	8.51	34.25	0.00
65	50.36	0.00	5.91	0.00	8.14	34.25	0.00
66	56.40	0.00	6.63	0.00	3.64	34.25	0.00
67	2.47	0.00	0.29	0.00	6.00	34.25	0.00
68	0.00	0.00	0.00	0.00	0.00	0.00	0.00
69	0.00	0.00	0.00	0.00	14.59	34.25	0.00
70	3.37	0.00	0.39	0.00	11.71	34.25	0.00
71	11.01	0.00	1.29	0.00	8.66	34.25	0.00
72	18.66	0.00	2.18	0.00	6.11	34.25	0.00
73	25.71	0.00	3.01	0.00	3.97	34.25	0.00
74	31.86	0.00	3.73	0.00	2.30	34.25	0.00
75	37.02	0.00	4.34	0.00	1.10	34.25	0.00
76	41.23	0.00	4.84	0.00	0.13	34.25	0.00
77	46.50	0.00	5.46	0.00	0.00	0.00	0.00
78	5.14	0.00	0.60	0.00	6.74	34.25	0.00
79	0.00	0.00	0.00	0.00	0.00	0.00	0.00
80	0.02	0.00	0.00	0.00	14.43	34.25	0.00
81	0.33	0.00	0.04	0.00	9.83	34.25	0.00
82	1.78	0.00	0.21	0.00	5.25	34.25	0.00
83	4.50	0.00	0.53	0.00	1.17	34.25	0.00
84	6.94	0.00	0.81	0.00	0.00	0.00	0.00
85	9.00	0.00	1.05	0.00	0.00	0.00	0.00
86	10.85	0.00	1.27	0.00	0.00	0.00	0.00
87	12.61	0.00	1.47	0.00	0.00	0.00	0.00
88	15.72	0.00	1.84	0.00	0.00	0.00	0.00
89	10.72	0.00	1.25	0.00	7.60	34.25	0.00
90	0.00	0.00	0.00	0.00	0.00	0.00	0.00
91	0.00	0.00	0.00	0.00	12.23	34.25	0.00
92	0.00	0.00	0.00	0.00	6.70	34.25	0.00
93	0.00	0.00	0.00	0.00	0.50	34.25	0.00
94	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95	0.00	0.00	0.00	0.00	0.00	0.00	0.00
96	0.00	0.00	0.00	0.00	0.00	0.00	0.00
97	0.00	0.00	0.00	0.00	0.00	0.00	0.00
98	0.00	0.00	0.00	0.00	0.00	0.00	0.00
99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100	17.68	0.00	2.07	0.00	7.24	34.25	0.00
101	102.05	0.00	12.04	0.00	0.00	0.00	0.00
102	29.44	0.00	3.45	0.00	0.00	0.00	0.00
103	25.96	0.00	3.04	0.00	0.00	0.00	0.00
104	31.50	0.00	3.69	0.00	0.00	0.00	0.00
105	34.08	0.00	3.99	0.00	0.00	0.00	0.00
106	34.05	0.00	3.99	0.00	0.00	0.00	0.00
107	32.91	0.00	3.86	0.00	0.00	0.00	0.00
108	31.24	0.00	3.66	0.00	0.00	0.00	0.00
109	29.07	0.00	3.41	0.00	0.00	0.00	0.00
110	28.29	0.00	3.31	0.00	0.00	0.00	0.00
111	3.33	0.00	0.39	0.00	0.00	0.00	0.00
112	0.00	0.00	0.00	0.00	0.00	0.00	0.00
113	17.09	0.00	2.00	0.00	0.00	0.00	0.00

114	9.50	0.00	1.11	0.00	0.00	0.00	0.00
115	2.06	0.00	0.24	0.00	0.00	0.00	0.00
116	0.00	0.00	0.00	0.00	0.00	0.00	0.00
117	0.00	0.00	0.00	0.00	0.00	0.00	0.00
118	0.00	0.00	0.00	0.00	0.00	0.00	0.00
119	0.00	0.00	0.00	0.00	0.00	0.00	0.00
120	0.00	0.00	0.00	0.00	0.00	0.00	0.00
121	2.01	0.00	0.23	0.00	0.00	0.00	0.00
122	29.44	0.00	3.45	0.00	54.18	34.25	8.33
123	25.96	0.00	3.04	0.00	55.82	34.25	8.33
124	31.50	0.00	3.69	0.00	64.57	34.25	8.33
125	34.08	0.00	3.99	0.00	66.98	34.25	8.33
126	34.06	0.00	3.99	0.00	70.46	34.25	8.33
127	32.92	0.00	3.86	0.00	78.06	34.25	8.33
128	31.24	0.00	3.66	0.00	84.40	34.25	8.33
129	29.07	0.00	3.41	0.00	91.06	34.25	8.33
130	28.29	0.00	3.31	0.00	96.10	34.98	8.80
131	29.44	0.00	3.45	0.00	0.00	0.00	0.00
132	25.96	0.00	3.04	0.00	0.00	0.00	0.00
133	31.50	0.00	3.69	0.00	0.00	0.00	0.00
134	34.08	0.00	3.99	0.00	0.00	0.00	0.00
135	34.06	0.00	3.99	0.00	0.00	0.00	0.00
136	32.92	0.00	3.86	0.00	0.00	0.00	0.00
137	31.24	0.00	3.66	0.00	0.00	0.00	0.00
138	29.07	0.00	3.41	0.00	0.00	0.00	0.00
139	28.29	0.00	3.31	0.00	0.00	0.00	0.00

Esfuerzos longitudinales pm1. Signo-

As1: Armadura de tracción de càlculo en cara superior pm1.
As2: Armadura de compresión de càlculo en cara inferior pm1.
  Si As1,As2=-1 -> Sección insuficiente para resistir los esfuerzos.
As3: Armadura de cortante pm2 (incluye armadura mínima).
  Si As3=-1 -> No se cumple la comprobación en el hormigón Vd<Vu1.

Nodo	Md(mT)	Nd(T)	As1(cm2/m)	As2(cm2/m)	Vd(T)	Vcu(T)	As3(cm2/m2)
1	0.00	0.00	0.00	0.00	-4.20	34.25	0.00
2	0.00	0.00	0.00	0.00	-28.37	34.25	0.00
3	0.00	0.00	0.00	0.00	-32.11	34.25	0.00
4	0.00	0.00	0.00	0.00	-14.26	34.25	0.00
5	0.00	0.00	0.00	0.00	-6.80	34.25	0.00
6	0.00	0.00	0.00	0.00	-5.91	34.25	0.00
7	0.00	0.00	0.00	0.00	-5.64	34.25	0.00
8	0.00	0.00	0.00	0.00	-5.42	34.25	0.00
9	0.00	0.00	0.00	0.00	-5.11	34.25	0.00
10	0.00	0.00	0.00	0.00	-4.43	34.25	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13	0.00	0.00	0.00	0.00	-14.56	39.69	0.00
14	0.00	0.00	0.00	0.00	-7.02	34.25	0.00
15	0.00	0.00	0.00	0.00	-6.75	34.25	0.00
16	0.00	0.00	0.00	0.00	-6.49	34.25	0.00
17	0.00	0.00	0.00	0.00	-6.23	34.25	0.00
18	0.00	0.00	0.00	0.00	-5.97	34.25	0.00
19	0.00	0.00	0.00	0.00	-5.71	34.25	0.00
20	0.00	0.00	0.00	0.00	-5.46	34.25	0.00
21	0.00	0.00	0.00	0.00	-5.26	34.25	0.00
22	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	-9.41	0.00	1.10	0.00	-10.80	38.70	0.00
25	-3.99	0.00	0.47	0.00	-6.86	34.25	0.00
26	-1.04	0.00	0.12	0.00	-8.09	34.25	0.00
27	-0.06	0.00	0.01	0.00	-8.70	34.25	0.00
28	0.00	0.00	0.00	0.00	-8.71	34.25	0.00
29	0.00	0.00	0.00	0.00	-8.40	34.25	0.00
30	0.00	0.00	0.00	0.00	-7.99	34.25	0.00
31	0.00	0.00	0.00	0.00	-7.55	34.25	0.00
32	0.00	0.00	0.00	0.00	-6.74	34.25	0.00
33	0.00	0.00	0.00	0.00	0.00	0.00	0.00
34	0.00	0.00	0.00	0.00	0.00	0.00	0.00
35	-33.47	0.00	3.92	0.00	0.00	0.00	0.00
36	-15.35	0.00	1.80	0.00	-0.11	34.25	0.00
37	-4.02	0.00	0.47	0.00	-2.28	34.25	0.00
38	0.00	0.00	0.00	0.00	-3.79	34.25	0.00
39	0.00	0.00	0.00	0.00	-4.73	34.25	0.00
40	0.00	0.00	0.00	0.00	-5.34	34.25	0.00
41	0.00	0.00	0.00	0.00	-5.63	34.25	0.00
42	0.00	0.00	0.00	0.00	-5.68	34.25	0.00
43	0.00	0.00	0.00	0.00	-5.51	34.25	0.00
44	0.00	0.00	0.00	0.00	0.00	0.00	0.00
45	0.00	0.00	0.00	0.00	0.00	0.00	0.00
46	-52.49	0.00	6.16	0.00	0.00	0.00	0.00
47	-24.83	0.00	2.91	0.00	0.00	0.00	0.00
48	-7.63	0.00	0.89	0.00	0.00	0.00	0.00
49	-0.48	0.00	0.06	0.00	-0.57	34.25	0.00
50	0.00	0.00	0.00	0.00	-2.29	34.25	0.00
51	0.00	0.00	0.00	0.00	-3.48	34.25	0.00

52	0.00	0.00	0.00	0.00	-4.28	34.25	0.00
53	0.00	0.00	0.00	0.00	-4.85	34.25	0.00
54	0.00	0.00	0.00	0.00	-5.33	34.25	0.00
55	0.00	0.00	0.00	0.00	0.00	0.00	0.00
56	0.00	0.00	0.00	0.00	0.00	0.00	0.00
57	-59.42	0.00	6.98	0.00	0.00	0.00	0.00
58	-28.44	0.00	3.33	0.00	0.00	0.00	0.00
59	-9.06	0.00	1.06	0.00	0.00	0.00	0.00
60	-0.86	0.00	0.10	0.00	0.00	0.00	0.00
61	0.00	0.00	0.00	0.00	-1.45	34.25	0.00
62	0.00	0.00	0.00	0.00	-2.84	34.25	0.00
63	0.00	0.00	0.00	0.00	-3.83	34.25	0.00
64	0.00	0.00	0.00	0.00	-4.61	34.25	0.00
65	0.00	0.00	0.00	0.00	-5.30	34.25	0.00
66	0.00	0.00	0.00	0.00	0.00	0.00	0.00
67	0.00	0.00	0.00	0.00	0.00	0.00	0.00
68	-52.49	0.00	6.16	0.00	0.00	0.00	0.00
69	-24.83	0.00	2.91	0.00	0.00	0.00	0.00
70	-7.63	0.00	0.89	0.00	0.00	0.00	0.00
71	-0.48	0.00	0.06	0.00	-0.57	34.25	0.00
72	0.00	0.00	0.00	0.00	-2.29	34.25	0.00
73	0.00	0.00	0.00	0.00	-3.48	34.25	0.00
74	0.00	0.00	0.00	0.00	-4.28	34.25	0.00
75	0.00	0.00	0.00	0.00	-4.85	34.25	0.00
76	0.00	0.00	0.00	0.00	-5.33	34.25	0.00
77	0.00	0.00	0.00	0.00	0.00	0.00	0.00
78	0.00	0.00	0.00	0.00	0.00	0.00	0.00
79	-33.47	0.00	3.92	0.00	0.00	0.00	0.00
80	-15.35	0.00	1.80	0.00	-0.11	34.25	0.00
81	-4.02	0.00	0.47	0.00	-2.28	34.25	0.00
82	0.00	0.00	0.00	0.00	-3.79	34.25	0.00
83	0.00	0.00	0.00	0.00	-4.73	34.25	0.00
84	0.00	0.00	0.00	0.00	-5.34	34.25	0.00
85	0.00	0.00	0.00	0.00	-5.63	34.25	0.00
86	0.00	0.00	0.00	0.00	-5.68	34.25	0.00
87	0.00	0.00	0.00	0.00	-5.51	34.25	0.00
88	0.00	0.00	0.00	0.00	0.00	0.00	0.00
89	0.00	0.00	0.00	0.00	0.00	0.00	0.00
90	-9.41	0.00	1.10	0.00	-10.80	38.70	0.00
91	-3.99	0.00	0.47	0.00	-6.86	34.25	0.00
92	-1.04	0.00	0.12	0.00	-8.09	34.25	0.00
93	-0.06	0.00	0.01	0.00	-8.70	34.25	0.00
94	0.00	0.00	0.00	0.00	-8.71	34.25	0.00
95	0.00	0.00	0.00	0.00	-8.40	34.25	0.00
96	0.00	0.00	0.00	0.00	-7.99	34.25	0.00
97	0.00	0.00	0.00	0.00	-7.55	34.25	0.00
98	0.00	0.00	0.00	0.00	-6.74	34.25	0.00
99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100	0.00	0.00	0.00	0.00	0.00	0.00	0.00
101	0.00	0.00	0.00	0.00	-14.56	39.69	0.00
102	0.00	0.00	0.00	0.00	-7.02	34.25	0.00
103	0.00	0.00	0.00	0.00	-6.75	34.25	0.00
104	0.00	0.00	0.00	0.00	-6.49	34.25	0.00
105	0.00	0.00	0.00	0.00	-6.23	34.25	0.00
106	0.00	0.00	0.00	0.00	-5.97	34.25	0.00
107	0.00	0.00	0.00	0.00	-5.71	34.25	0.00
108	0.00	0.00	0.00	0.00	-5.46	34.25	0.00
109	0.00	0.00	0.00	0.00	-5.26	34.25	0.00
110	0.00	0.00	0.00	0.00	0.00	0.00	0.00
111	0.00	0.00	0.00	0.00	-4.20	34.25	0.00
112	0.00	0.00	0.00	0.00	-28.37	34.25	0.00
113	0.00	0.00	0.00	0.00	-32.11	34.25	0.00
114	0.00	0.00	0.00	0.00	-14.26	34.25	0.00
115	0.00	0.00	0.00	0.00	-6.80	34.25	0.00
116	0.00	0.00	0.00	0.00	-5.91	34.25	0.00
117	0.00	0.00	0.00	0.00	-5.64	34.25	0.00
118	0.00	0.00	0.00	0.00	-5.42	34.25	0.00
119	0.00	0.00	0.00	0.00	-5.11	34.25	0.00
120	0.00	0.00	0.00	0.00	-4.43	34.25	0.00
121	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Esfuerzos transversales pm1. Signo-

As1: Armadura de tracción de càlculo en cara superior pm1.
As2: Armadura de compresión de càlculo en cara inferior pm1.
  Si As1,As2=-1 -> Sección insuficiente para resistir los esfuerzos.
As3: Armadura de cortante pm2 (incluye armadura mínima).
  Si As3=-1 -> No se cumple la comprobación en el hormigón Vd<Vu1.

Nodo	Md(mT)	Nd(T)	As1(cm2/m)	As2(cm2/m)	Vd(T)	Vcu(T)	As3(cm2/m2)
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	-27.98	0.00	3.28	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	-0.43	0.00	0.05	0.00	0.00	0.00	0.00
7	-0.72	0.00	0.08	0.00	0.00	0.00	0.00

8	-0.55	0.00	0.06	0.00	0.00	0.00	0.00
9	-0.43	0.00	0.05	0.00	0.00	0.00	0.00
10	-0.17	0.00	0.02	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	0.00	0.00	0.00	0.00	-7.24	34.25	0.00
13	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	0.00	0.00	0.00	0.00	-7.60	34.25	0.00
25	-6.44	0.00	0.75	0.00	-12.23	34.25	0.00
26	-10.92	0.00	1.28	0.00	-6.70	34.25	0.00
27	-16.30	0.00	1.91	0.00	-0.50	34.25	0.00
28	-21.96	0.00	2.57	0.00	0.00	0.00	0.00
29	-27.41	0.00	3.21	0.00	0.00	0.00	0.00
30	-32.32	0.00	3.79	0.00	0.00	0.00	0.00
31	-36.45	0.00	4.27	0.00	0.00	0.00	0.00
32	-39.47	0.00	4.63	0.00	0.00	0.00	0.00
33	-39.61	0.00	4.65	0.00	0.00	0.00	0.00
34	0.00	0.00	0.00	0.00	-6.74	34.25	0.00
35	0.00	0.00	0.00	0.00	0.00	0.00	0.00
36	-4.04	0.00	0.47	0.00	-14.43	34.25	0.00
37	-1.67	0.00	0.20	0.00	-9.83	34.25	0.00
38	0.00	0.00	0.00	0.00	-5.25	34.25	0.00
39	0.00	0.00	0.00	0.00	-1.17	34.25	0.00
40	0.00	0.00	0.00	0.00	0.00	0.00	0.00
41	0.00	0.00	0.00	0.00	0.00	0.00	0.00
42	0.00	0.00	0.00	0.00	0.00	0.00	0.00
43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
44	0.00	0.00	0.00	0.00	0.00	0.00	0.00
45	0.00	0.00	0.00	0.00	-6.00	34.25	0.00
46	0.00	0.00	0.00	0.00	0.00	0.00	0.00
47	-3.10	0.00	0.36	0.00	-14.59	34.25	0.00
48	0.00	0.00	0.00	0.00	-11.71	34.25	0.00
49	0.00	0.00	0.00	0.00	-8.66	34.25	0.00
50	0.00	0.00	0.00	0.00	-6.11	34.25	0.00
51	0.00	0.00	0.00	0.00	-3.97	34.25	0.00
52	0.00	0.00	0.00	0.00	-2.30	34.25	0.00
53	0.00	0.00	0.00	0.00	-1.10	34.25	0.00
54	0.00	0.00	0.00	0.00	-0.13	34.25	0.00
55	0.00	0.00	0.00	0.00	0.00	0.00	0.00
56	0.00	0.00	0.00	0.00	-5.39	34.25	0.00
57	0.00	0.00	0.00	0.00	0.00	0.00	0.00
58	-2.82	0.00	0.33	0.00	-13.23	34.25	0.00
59	0.00	0.00	0.00	0.00	-12.26	34.25	0.00
60	0.00	0.00	0.00	0.00	-11.22	34.25	0.00
61	0.00	0.00	0.00	0.00	-10.32	34.25	0.00
62	0.00	0.00	0.00	0.00	-9.56	34.25	0.00
63	0.00	0.00	0.00	0.00	-8.96	34.25	0.00
64	0.00	0.00	0.00	0.00	-8.51	34.25	0.00
65	0.00	0.00	0.00	0.00	-8.14	34.25	0.00
66	0.00	0.00	0.00	0.00	-3.64	34.25	0.00
67	0.00	0.00	0.00	0.00	-4.64	34.25	0.00
68	0.00	0.00	0.00	0.00	0.00	0.00	0.00
69	-3.10	0.00	0.36	0.00	-11.39	34.25	0.00
70	0.00	0.00	0.00	0.00	-12.35	34.25	0.00
71	0.00	0.00	0.00	0.00	-13.39	34.25	0.00
72	0.00	0.00	0.00	0.00	-14.30	34.25	0.00
73	0.00	0.00	0.00	0.00	-15.05	34.25	0.00
74	0.00	0.00	0.00	0.00	-15.66	34.25	0.00
75	0.00	0.00	0.00	0.00	-16.11	34.25	0.00
76	0.00	0.00	0.00	0.00	-17.02	34.25	0.00
77	0.00	0.00	0.00	0.00	-20.90	34.25	0.00
78	0.00	0.00	0.00	0.00	-3.79	34.25	0.00
79	0.00	0.00	0.00	0.00	0.00	0.00	0.00
80	-4.04	0.00	0.47	0.00	-10.02	34.25	0.00
81	-1.67	0.00	0.20	0.00	-12.91	34.25	0.00
82	0.00	0.00	0.00	0.00	-15.95	34.25	0.00
83	0.00	0.00	0.00	0.00	-18.61	34.25	0.00
84	0.00	0.00	0.00	0.00	-23.64	34.25	0.00
85	0.00	0.00	0.00	0.00	-28.40	34.25	0.00
86	0.00	0.00	0.00	0.00	-32.20	34.25	0.00
87	0.00	0.00	0.00	0.00	-35.45	34.25	8.33
88	0.00	0.00	0.00	0.00	-42.21	34.25	8.33
89	0.00	0.00	0.00	0.00	-4.15	34.25	0.00
90	0.00	0.00	0.00	0.00	0.00	0.00	0.00
91	-6.44	0.00	0.75	0.00	-10.18	34.25	0.00
92	-10.92	0.00	1.28	0.00	-14.78	34.25	0.00
93	-16.30	0.00	1.91	0.00	-19.87	34.25	0.00
94	-21.96	0.00	2.57	0.00	-29.71	34.25	0.00
95	-27.41	0.00	3.21	0.00	-38.04	34.25	8.33

96	-32.32	0.00	3.79	0.00	-44.78	34.25	8.33
97	-36.45	0.00	4.27	0.00	-50.37	34.25	8.33
98	-39.47	0.00	4.63	0.00	-55.82	34.25	8.33
99	-39.61	0.00	4.65	0.00	-65.73	34.25	8.33
100	0.00	0.00	0.00	0.00	-12.57	34.25	0.00
101	0.00	0.00	0.00	0.00	-104.07	34.25	10.05
102	0.00	0.00	0.00	0.00	-32.05	34.25	0.00
103	0.00	0.00	0.00	0.00	-34.51	34.25	8.33
104	0.00	0.00	0.00	0.00	-44.07	34.25	8.33
105	0.00	0.00	0.00	0.00	-47.30	34.25	8.33
106	0.00	0.00	0.00	0.00	-46.69	34.25	8.33
107	0.00	0.00	0.00	0.00	-44.85	34.25	8.33
108	0.00	0.00	0.00	0.00	-42.58	34.25	8.33
109	0.00	0.00	0.00	0.00	-39.94	34.25	8.33
110	0.00	0.00	0.00	0.00	-36.58	34.25	8.33
111	0.00	0.00	0.00	0.00	-1.68	34.25	0.00
112	-27.38	0.00	3.28	0.00	-104.07	34.25	10.05
113	0.00	0.00	0.00	0.00	-9.92	34.25	0.00
114	0.00	0.00	0.00	0.00	-13.20	34.25	0.00
115	0.00	0.00	0.00	0.00	-23.56	34.25	0.00
116	-0.43	0.00	0.05	0.00	-27.62	34.25	0.00
117	-0.72	0.00	0.08	0.00	-27.83	34.25	0.00
118	-0.55	0.00	0.06	0.00	-26.78	34.25	0.00
119	-0.43	0.00	0.05	0.00	-25.30	34.25	0.00
120	-0.17	0.00	0.02	0.00	-23.36	34.25	0.00
121	0.00	0.00	0.00	0.00	-13.85	34.25	0.00
122	-10.22	0.00	1.20	0.00	0.00	0.00	0.00
123	-26.86	0.00	3.15	0.00	0.00	0.00	0.00
124	-46.47	0.00	5.45	0.00	0.00	0.00	0.00
125	-65.29	0.00	7.68	0.00	0.00	0.00	0.00
126	-81.90	0.00	9.64	0.00	0.00	0.00	0.00
127	-96.00	0.00	11.32	0.00	0.00	0.00	0.00
128	-107.95	0.00	12.74	0.00	0.00	0.00	0.00
129	-118.89	0.00	14.05	0.00	0.00	0.00	0.00
130	-130.23	0.00	15.41	0.00	0.00	0.00	0.00
131	-10.22	0.00	1.20	0.00	-54.18	34.25	8.33
132	-26.86	0.00	3.15	0.00	-55.82	34.25	8.33
133	-46.47	0.00	5.45	0.00	-64.57	34.25	8.33
134	-65.29	0.00	7.68	0.00	-66.98	34.25	8.33
135	-81.90	0.00	9.64	0.00	-70.46	34.25	8.33
136	-96.00	0.00	11.32	0.00	-78.06	34.25	8.33
137	-107.95	0.00	12.74	0.00	-84.40	34.25	8.33
138	-118.89	0.00	14.05	0.00	-91.06	34.25	8.33
139	-130.23	0.00	15.41	0.00	-96.10	34.98	8.80

CALCULO DEL MURO

Esfuerzos longitudinales pml. Signo+

As1: Armadura de tracción de càlculo en cara exterior pml.
As2: Armadura de compresión de càlculo en cara interior pml.
  Si As1,As2=-1 -> Sección insuficiente para resistir los esfuerzos.
As3: Armadura de cortante pm2 (incluye armadura mínima).
  Si As3=-1 -> No se cumple la comprobación en el hormigón Vd<Vu1.

Nodo	Md(mT)	Nd(T)	As1(cm2/m)	As2(cm2/m)	Vd(T)	Vcu(T)	As3(cm2/m2)
61	-12.36	93.46	0.00	0.00	30.62	25.76	7.50
62	-3.68	93.73	0.00	0.00	20.73	25.76	0.00
63	-0.80	81.78	0.00	0.00	10.78	25.76	0.00
64	1.49	61.63	0.00	0.00	9.18	25.76	0.00
65	2.05	45.13	0.00	0.00	8.21	25.76	0.00
66	3.30	41.56	0.00	0.00	7.24	25.76	0.00
67	2.82	24.79	0.00	0.00	6.11	27.27	0.00
68	2.56	11.25	0.00	0.00	2.67	28.78	0.00
69	0.26	1.27	0.00	0.00	-0.07	11.63	0.00
70	-0.24	1.36	0.00	0.00	-0.75	6.45	0.00
71	-13.10	76.24	0.00	0.00	22.26	25.76	0.00
72	-2.33	72.91	0.00	0.00	10.40	25.76	0.00
73	-0.03	60.37	0.00	0.00	1.79	25.76	0.00
74	3.33	49.69	0.00	0.00	-0.80	25.76	0.00
75	-0.45	36.67	0.00	0.00	-2.86	25.76	0.00
76	-4.50	30.67	0.00	0.00	-3.32	25.76	0.00
77	-6.87	22.93	0.00	0.00	-2.19	27.27	0.00
78	-2.55	11.95	0.00	0.00	-2.09	28.78	0.00
79	0.27	0.90	0.00	0.00	-1.28	11.63	0.00
80	-0.07	0.53	0.00	0.00	-0.46	6.45	0.00
81	-23.82	82.70	0.00	0.00	38.11	25.76	7.50
82	-4.75	67.95	0.00	0.00	23.16	25.76	0.00
83	10.89	62.72	0.00	0.00	3.49	25.76	0.00
84	7.03	50.44	0.00	0.00	-2.68	25.76	0.00
85	-0.87	37.76	0.00	0.00	-4.09	25.76	0.00
86	-7.06	27.88	0.00	0.00	-0.79	25.76	0.00
87	-4.57	22.97	0.00	0.00	1.72	27.27	0.00
88	-2.41	12.11	0.00	0.00	2.11	28.78	0.00
89	-0.11	1.09	0.00	0.00	1.41	11.63	0.00
90	0.02	0.56	0.00	0.00	0.32	6.45	0.00

91	-23.82	82.70	0.00	0.00	38.11	25.76	7.50
92	-4.75	67.95	0.00	0.00	23.16	25.76	0.00
93	10.89	62.72	0.00	0.00	3.49	25.76	0.00
94	7.03	50.44	0.00	0.00	-2.68	25.76	0.00
95	-0.87	37.76	0.00	0.00	-4.09	25.76	0.00
96	-7.06	27.88	0.00	0.00	-0.79	25.76	0.00
97	-4.57	22.97	0.00	0.00	1.72	27.27	0.00
98	-2.41	12.11	0.00	0.00	2.11	28.78	0.00
99	-0.11	1.09	0.00	0.00	1.41	11.63	0.00
100	0.02	0.56	0.00	0.00	0.32	6.45	0.00
101	-13.10	76.24	0.00	0.00	22.26	25.76	0.00
102	-2.33	72.91	0.00	0.00	10.40	25.76	0.00
103	-0.03	60.37	0.00	0.00	1.79	25.76	0.00
104	3.33	49.69	0.00	0.00	-0.80	25.76	0.00
105	-0.45	36.67	0.00	0.00	-2.86	25.76	0.00
106	-4.50	30.67	0.00	0.00	-3.32	25.76	0.00
107	-6.87	22.93	0.00	0.00	-2.19	27.27	0.00
108	-2.55	11.95	0.00	0.00	-2.09	28.78	0.00
109	0.27	0.90	0.00	0.00	-1.28	11.63	0.00
110	-0.07	0.53	0.00	0.00	-0.46	6.45	0.00
111	-12.36	93.46	0.00	0.00	30.62	25.76	7.50
112	-3.68	93.73	0.00	0.00	20.73	25.76	0.00
113	-0.60	81.78	0.00	0.00	10.78	25.76	0.00
114	1.49	61.63	0.00	0.00	9.18	25.76	0.00
115	2.05	45.13	0.00	0.00	8.21	25.76	0.00
116	3.30	41.56	0.00	0.00	7.24	25.76	0.00
117	2.82	24.79	0.00	0.00	6.11	27.27	0.00
118	2.56	12.25	0.00	0.00	2.67	28.78	0.00
119	0.26	1.27	0.00	0.00	-0.07	11.63	0.00
120	-0.24	1.36	0.00	0.00	-0.75	6.45	0.00

Esfuerzos transversales pm1. Signo+

As1: Armadura de tracción de cálculo en cara exterior pm1.
As2: Armadura de compresión de cálculo en cara interior pm1.
  Si As1,As2=-1 -> Sección insuficiente para resistir los esfuerzos.
As3: Armadura de cortante pm2 (incluye armadura mínima).
  Si As3=-1 -> No se cumple la comprobación en el hormigón Vd<Vu1.

Nodo	Md(mT)	Nd(T)	As1(cm2/m)	As2(cm2/m)	Vd(T)	Vcu(T)	As3(cm2/m2)
61	0.00	0.00	0.00	0.00	0.00	0.00	0.00
62	-7.18	-1.24	0.00	0.00	6.50	31.21	0.00
63	-35.14	-8.32	0.00	0.00	31.32	31.21	7.50
64	-34.70	-14.59	0.00	0.00	26.00	31.21	0.00
65	-36.57	-16.71	0.00	0.00	23.42	31.21	0.00
66	-39.67	-17.64	0.00	0.00	21.08	31.21	0.00
67	-55.52	-20.53	0.00	0.00	32.70	33.04	0.00
68	-67.88	-22.05	0.00	0.00	43.18	34.86	7.50
69	-11.48	-8.04	0.00	0.00	13.91	14.94	0.00
70	-2.11	-4.22	0.00	0.00	3.00	8.00	0.00
71	0.00	0.00	0.00	0.00	0.00	0.00	0.00
72	0.58	-1.68	0.28	0.10	3.54	31.21	0.00
73	-1.71	-9.66	0.00	0.00	20.82	31.21	0.00
74	-6.64	-13.32	0.00	0.00	19.51	31.21	0.00
75	-11.11	-16.82	0.00	0.00	17.83	31.21	0.00
76	-15.99	-18.91	0.00	0.00	17.66	31.21	0.00
77	-13.96	-20.52	0.00	0.00	22.85	33.04	0.00
78	-15.35	-21.08	0.00	0.00	40.63	34.86	7.50
79	2.51	-11.06	2.38	0.11	6.76	14.08	0.00
80	0.48	-5.79	1.19	0.11	1.26	7.81	0.00
81	0.00	0.00	0.00	0.00	0.00	0.00	0.00
82	2.12	-1.33	0.49	0.00	0.29	31.21	0.00
83	11.49	-9.28	2.87	0.00	5.16	31.21	0.00
84	10.29	-18.32	3.72	0.41	6.51	31.21	0.00
85	3.96	-26.22	3.59	2.32	6.12	31.21	0.00
86	1.74	-18.72	2.39	1.83	7.12	31.21	0.00
87	-0.22	-21.08	0.00	0.00	6.50	33.04	0.00
88	-3.30	-22.64	0.00	0.00	5.77	34.86	0.00
89	-0.31	-8.45	0.00	0.00	-0.20	14.08	0.00
90	-0.05	-4.57	0.00	0.00	0.11	7.81	0.00
91	0.00	0.00	0.00	0.00	0.00	0.00	0.00
92	2.12	-1.33	0.49	0.00	-0.12	31.21	0.00
93	11.49	-9.28	2.87	0.00	-2.96	31.21	0.00
94	10.29	-18.32	3.72	0.41	-3.66	31.21	0.00
95	3.96	-26.22	3.59	2.32	-3.44	31.21	0.00
96	1.74	-18.72	2.39	1.83	-3.78	31.21	0.00
97	-0.22	-21.08	0.00	0.00	-2.74	33.04	0.00
98	-3.30	-22.64	0.00	0.00	1.05	34.86	0.00
99	-0.31	-8.45	0.00	0.00	0.41	14.08	0.00
100	-0.05	-4.57	0.00	0.00	0.23	7.81	0.00
101	0.00	0.00	0.00	0.00	0.00	0.00	0.00
102	0.58	-1.68	0.28	0.10	-2.01	31.21	0.00
103	-1.71	-9.66	0.00	0.00	-12.04	31.21	0.00
104	-6.64	-13.32	0.00	0.00	-11.00	31.21	0.00
105	-11.11	-16.82	0.00	0.00	-9.59	31.21	0.00
106	-15.99	-18.91	0.00	0.00	-8.98	31.21	0.00
107	-13.96	-20.52	0.00	0.00	-10.28	33.04	0.00

108	-15.35	-21.08	0.00	0.00	-14.66	34.86	0.00
109	2.51	-11.06	2.38	0.11	-3.04	14.08	0.00
110	0.48	-5.79	1.19	0.11	-0.57	7.81	0.00
111	0.00	0.00	0.00	0.00	0.00	0.00	0.00
112	-7.18	-1.24	0.00	0.00	-3.78	31.21	0.00
113	-35.14	-8.32	0.00	0.00	-18.16	31.21	0.00
114	-34.70	-14.59	0.00	0.00	-14.68	31.21	0.00
115	-36.57	-16.71	0.00	0.00	-12.30	31.21	0.00
116	-39.67	-17.64	0.00	0.00	-10.39	31.21	0.00
117	-55.52	-20.53	0.00	0.00	-15.07	33.04	0.00
118	-67.88	-22.05	0.00	0.00	-18.48	34.86	0.00
119	-11.48	-8.04	0.00	0.00	-6.89	14.94	0.00
120	-2.11	-4.22	0.00	0.00	-1.33	8.00	0.00

Esfuerzos longitudinales pm1. Signo-

As1: Armadura de tracción de cálculo en cara interior pm1.
As2: Armadura de compresión de cálculo en cara exterior pm1.
  Si As1,As2=-1 -> Sección insuficiente para resistir los esfuerzos.
As3: Armadura de cortante pm2 (incluye armadura mínima).
  Si As3=-1 -> No se cumple la comprobación en el hormigón Vd<Vu1.

Nodo	Md(mT)	Nd(T)	As1(cm2/m)	As2(cm2/m)	Vd(T)	Vcu(T)	As3(cm2/m2)
61	-21.38	156.90	0.00	0.00	17.14	25.76	0.00
62	-9.84	126.69	0.00	0.00	11.15	25.76	0.00
63	-7.39	79.82	0.00	0.00	4.17	25.76	0.00
64	-6.51	60.36	0.00	0.00	2.22	25.76	0.00
65	-6.14	53.80	0.00	0.00	0.55	25.76	0.00
66	-5.06	38.57	0.00	0.00	-0.98	25.76	0.00
67	-0.43	46.20	0.00	0.00	-1.94	27.27	0.00
68	-0.42	24.38	0.00	0.00	-5.37	28.78	0.00
69	-1.00	-0.72	0.50	0.00	-5.12	11.63	0.00
70	-0.79	-0.51	0.78	0.00	-2.22	6.45	0.00
71	-21.40	126.42	0.00	0.00	13.41	25.76	0.00
72	-4.55	114.89	0.00	0.00	6.23	25.76	0.00
73	-1.73	96.55	0.00	0.00	-3.35	25.76	0.00
74	0.31	78.32	0.00	0.00	-4.26	25.76	0.00
75	-3.68	69.42	0.00	0.00	-6.67	25.76	0.00
76	-11.82	54.21	0.00	0.00	-8.15	25.76	0.00
77	-17.06	50.14	0.00	0.00	-7.78	27.27	0.00
78	-8.70	25.68	0.00	0.00	-5.88	28.78	0.00
79	-0.15	1.07	0.00	0.00	-2.79	11.63	0.00
80	-0.14	0.53	0.06	0.00	-0.82	6.45	0.00
81	-39.03	109.61	0.00	0.00	22.81	25.76	0.00
82	-8.53	108.22	0.00	0.00	13.81	25.76	0.00
83	5.04	91.70	0.00	0.00	0.75	25.76	0.00
84	2.02	79.42	0.00	0.00	-6.28	25.76	0.00
85	-5.73	71.34	0.00	0.00	-7.88	25.76	0.00
86	-15.16	54.70	0.00	0.00	-4.93	25.76	0.00
87	-10.53	50.40	0.00	0.00	0.22	27.27	0.00
88	-5.70	25.81	0.00	0.00	0.69	28.78	0.00
89	-0.49	1.12	0.07	0.00	0.50	11.63	0.00
90	-0.01	0.55	0.00	0.00	0.07	6.45	0.00
91	-39.03	109.61	0.00	0.00	22.81	25.76	0.00
92	-8.53	108.22	0.00	0.00	13.81	25.76	0.00
93	5.04	91.70	0.00	0.00	0.75	25.76	0.00
94	2.02	79.42	0.00	0.00	-6.28	25.76	0.00
95	-5.73	71.34	0.00	0.00	-7.88	25.76	0.00
96	-15.16	54.70	0.00	0.00	-4.93	25.76	0.00
97	-10.53	50.40	0.00	0.00	0.22	27.27	0.00
98	-5.70	25.81	0.00	0.00	0.69	28.78	0.00
99	-0.49	1.12	0.07	0.00	0.50	11.63	0.00
100	-0.01	0.55	0.00	0.00	0.07	6.45	0.00
101	-21.40	126.42	0.00	0.00	13.41	25.76	0.00
102	-4.55	114.89	0.00	0.00	6.23	25.76	0.00
103	-1.73	96.55	0.00	0.00	-3.35	25.76	0.00
104	0.31	78.32	0.00	0.00	-4.26	25.76	0.00
105	-3.68	69.42	0.00	0.00	-6.67	25.76	0.00
106	-11.82	54.21	0.00	0.00	-8.15	25.76	0.00
107	-17.06	50.14	0.00	0.00	-7.78	27.27	0.00
108	-8.70	25.68	0.00	0.00	-5.88	28.78	0.00
109	-0.15	1.07	0.00	0.00	-2.79	11.63	0.00
110	-0.14	0.53	0.06	0.00	-0.82	6.45	0.00
111	-21.38	156.90	0.00	0.00	17.14	25.76	0.00
112	-9.84	126.69	0.00	0.00	11.15	25.76	0.00
113	-7.39	79.82	0.00	0.00	4.17	25.76	0.00
114	-6.51	60.36	0.00	0.00	2.22	25.76	0.00
115	-6.14	53.80	0.00	0.00	0.55	25.76	0.00
116	-5.06	38.57	0.00	0.00	-0.98	25.76	0.00
117	-0.43	46.20	0.00	0.00	-1.94	27.27	0.00
118	-0.42	24.38	0.00	0.00	-5.37	28.78	0.00
119	-1.00	-0.72	0.50	0.00	-5.12	11.63	0.00
120	-0.79	-0.51	0.78	0.00	-2.22	6.45	0.00

Esfuerzos transversales pm1. Signo-

As1: Armadura de tracción de cálculo en cara interior pm1.

As2: Armadura de compresión de càlculo en cara exterior pm1.
  Si As1,As2=-1 -> Sección insuficiente para resistir los esfperzos.
As3: Armadura de cortante pm2 (incluye armadura mínima).
  Si As3=-1 -> No se cumple la comprobación en el hormigón Vd<Vu1.

Nodo	Md(mT)	Nd(T)	As1(cm2/m)	As2(cm2/m)	Vd(T)	Vcu(T)	As3(cm2/m2)
61	0.00	0.00	0.00	0.00	0.00	0.00	0.00
62	-12.30	-2.10	2.16	0.00	3.78	31.21	0.00
63	-60.97	-14.17	11.21	0.00	18.16	31.21	0.00
64	-61.49	-25.43	12.58	0.00	14.68	31.21	0.00
65	-67.00	-30.58	14.05	0.00	12.30	31.21	0.00
66	-75.36	-34.83	15.86	0.00	10.39	31.21	0.00
67	-108.22	-39.85	20.53	0.00	15.07	33.04	0.00
68	-134.57	-43.13	23.60	0.00	18.48	34.86	0.00
69	-22.71	-15.84	11.46	0.00	6.89	14.94	0.00
70	-4.37	-8.49	5.17	0.00	1.33	8.00	0.00
71	0.00	0.00	0.00	0.00	0.00	0.00	0.00
72	0.23	-1.11	0.00	0.00	2.01	31.21	0.00
73	-3.86	-9.66	1.71	0.47	12.04	31.21	0.00
74	-13.09	-23.12	4.72	0.50	11.00	31.21	0.00
75	-22.20	-30.03	6.95	0.00	9.59	31.21	0.00
76	-33.58	-35.63	9.38	0.00	8.98	31.21	0.00
77	-44.71	-42.40	11.44	0.00	10.28	33.04	0.00
78	-55.97	-46.08	13.01	0.00	14.66	34.86	0.00
79	0.82	-12.83	0.00	0.00	3.04	14.08	0.00
80	0.18	-6.75	0.00	0.00	0.57	7.81	0.00
81	0.00	0.00	0.00	0.00	0.00	0.00	0.00
82	1.25	-0.84	0.00	0.00	0.12	31.21	0.00
83	6.73	-5.85	0.00	0.00	2.96	31.21	0.00
84	5.60	-12.98	0.00	0.00	3.66	31.21	0.00
85	0.77	-19.44	0.00	0.00	3.44	31.21	0.00
86	-5.12	-38.05	5.12	3.46	3.78	31.21	0.00
87	-10.20	-45.26	6.64	3.57	2.74	33.04	0.00
88	-14.20	-49.09	7.54	3.53	-1.05	34.86	0.00
89	-0.94	-17.96	2.45	1.60	-0.41	14.08	0.00
90	-0.22	-9.48	1.31	0.82	-0.23	7.81	0.00
91	0.00	0.00	0.00	0.00	0.00	0.00	0.00
92	1.25	-0.84	0.00	0.00	-0.29	31.21	0.00
93	6.73	-5.85	0.00	0.00	-5.16	31.21	0.00
94	5.60	-12.98	0.00	0.00	-6.51	31.21	0.00
95	0.77	-19.44	0.00	0.00	-6.12	31.21	0.00
96	-5.12	-38.05	5.12	3.46	-7.12	31.21	0.00
97	-10.20	-45.26	6.64	3.57	-6.50	33.04	0.00
98	-14.20	-49.09	7.54	3.53	-5.77	34.86	0.00
99	-0.94	-17.96	2.45	1.60	0.20	14.08	0.00
100	-0.22	-9.48	1.31	0.82	-0.11	7.81	0.00
101	0.00	0.00	0.00	0.00	0.00	0.00	0.00
102	0.23	-1.11	0.00	0.00	-3.54	31.21	0.00
103	-3.86	-9.66	1.71	0.47	-20.82	31.21	0.00
104	-13.09	-23.12	4.72	0.50	-19.51	31.21	0.00
105	-22.20	-30.03	6.95	0.00	-17.83	31.21	0.00
106	-33.58	-35.63	9.38	0.00	-17.66	31.21	0.00
107	-44.71	-42.40	11.44	0.00	-22.85	33.04	0.00
108	-55.97	-46.08	13.01	0.00	-40.63	34.86	7.50
109	0.82	-12.83	0.00	0.00	-6.76	14.08	0.00
110	0.18	-6.75	0.00	0.00	-1.26	7.81	0.00
111	0.00	0.00	0.00	0.00	0.00	0.00	0.00
112	-12.30	-2.10	2.16	0.00	-6.50	31.21	0.00
113	-60.97	-14.17	11.21	0.00	-31.32	31.21	7.50
114	-61.49	-25.43	12.58	0.00	-26.00	31.21	0.00
115	-67.00	-30.58	14.05	0.00	-23.42	31.21	0.00
116	-75.36	-34.83	15.86	0.00	-21.08	31.21	0.00
117	-108.22	-39.85	20.53	0.00	-32.70	33.04	0.00
118	-134.57	-43.13	23.60	0.00	-43.18	34.86	7.50
119	-22.71	-15.84	11.46	0.00	-13.91	14.94	0.00
120	-4.37	-8.49	5.17	0.00	-3.00	8.00	0.00

CALCULO DE LA ALETA 1

Esfuerzos longitudinales pm1. Signo+

As1: Armadura de tracción de càlculo en cara exterior pm1.
As2: Armadura de compresión de càlculo en cara interior pm1.
  Si As1,As2=-1 -> Sección insuficiente para resistir los esfuerzos.
As3: Armadura de cortante pm2 (incluye armadura mínima).
  Si As3=-1 -> No se cumple la comprobación en el hormigón Vd<Vu1.

Nodo	Md(mT)	Nd(T)	As1(cm2/m)	As2(cm2/m)	Vd(T)	Vcu(T)	As3(cm2/m2)
1	-138.52	-12.46	0.00	0.00	117.96	38.09	15.30
2	-78.65	-11.51	0.00	0.00	91.55	32.00	11.41
3	-19.32	-7.74	0.00	0.00	46.53	25.76	7.50
4	-5.69	-2.45	0.00	0.00	25.63	18.06	7.50
5	17.29	-2.44	4.42	0.00	16.22	18.06	0.00
6	15.90	1.70	3.60	0.00	4.43	18.06	0.00
7	9.92	2.33	2.09	0.00	1.10	18.06	0.00

8	8.64	2.02	1.82	0.00	0.95	18.06	0.00
9	6.26	1.39	1.33	0.00	0.45	18.06	0.00
10	4.21	0.94	0.89	0.00	-1.13	18.06	0.00
11	-109.21	6.23	0.00	0.00	71.03	34.45	7.50
12	-69.26	5.51	0.00	0.00	56.73	30.16	7.50
13	-19.45	5.42	0.00	0.00	31.19	25.76	7.50
14	-1.01	6.56	0.00	0.00	13.91	18.06	0.00
15	11.83	4.86	2.25	0.00	4.08	18.06	0.00
16	9.55	4.62	1.73	0.00	-1.31	18.06	0.00
17	5.99	3.83	0.97	0.00	-2.24	18.06	0.00
18	5.07	3.22	0.83	0.00	-2.19	18.06	0.00
19	2.98	2.14	0.45	0.00	-1.85	18.06	0.00
20	0.87	1.42	0.04	0.00	-1.60	18.06	0.00
21	-89.49	23.64	0.00	0.00	61.38	31.28	7.50
22	-55.40	21.76	0.00	0.00	46.64	27.96	7.50
23	-16.03	18.49	0.00	0.00	24.25	25.76	0.00
24	2.08	13.26	0.00	0.00	9.59	18.06	0.00
25	8.57	11.94	0.64	0.00	0.98	18.06	0.00
26	4.45	7.16	0.21	0.00	-1.81	18.06	0.00
27	2.93	4.50	0.16	0.00	-1.84	18.06	0.00
28	2.30	3.88	0.09	0.00	-1.69	18.06	0.00
29	0.99	2.63	0.00	0.00	-1.24	18.06	0.00
30	0.00	1.76	0.00	0.00	-1.06	18.06	0.00
31	-68.07	37.90	0.00	0.00	51.26	28.24	7.50
32	-40.25	36.64	0.00	0.00	36.50	25.76	7.50
33	-11.70	31.76	0.00	0.00	16.84	25.76	0.00
34	3.84	24.53	0.00	0.00	5.33	18.06	0.00
35	4.87	19.02	0.00	0.00	-0.74	18.06	0.00
36	0.20	8.90	0.00	0.00	-1.33	18.06	0.00
37	0.40	4.97	0.00	0.00	-0.85	18.06	0.00
38	0.22	4.34	0.00	0.00	-0.76	18.06	0.00
39	-0.10	2.94	0.00	0.00	-0.57	18.06	0.00
40	-0.30	1.95	0.00	0.00	-0.60	18.06	0.00
41	-43.59	54.88	0.00	0.00	35.39	25.76	7.50
42	-24.63	51.00	0.00	0.00	22.35	25.76	0.00
43	-7.75	45.50	0.00	0.00	7.73	25.76	0.00
44	3.28	35.23	0.00	0.00	1.27	18.06	0.00
45	1.32	24.92	0.00	0.00	-2.17	18.06	0.00
46	-2.87	10.48	0.00	0.00	0.13	18.06	0.00
47	-0.91	5.38	0.00	0.00	1.71	18.06	0.00
48	-0.73	4.74	0.00	0.00	1.29	18.06	0.00
49	-0.41	3.26	0.00	0.00	0.96	18.06	0.00
50	0.16	2.19	0.00	0.00	0.66	18.06	0.00
51	-18.09	70.18	0.00	0.00	13.55	25.76	0.00
52	-11.19	66.61	0.00	0.00	5.93	25.76	0.00
53	-2.93	59.00	0.00	0.00	-0.97	25.76	0.00
54	-0.49	44.67	0.00	0.00	-2.03	18.06	0.00
55	-0.53	29.43	0.00	0.00	-2.20	18.06	0.00
56	-3.55	12.72	0.00	0.00	-1.67	18.06	0.00
57	-4.20	6.42	0.00	0.00	2.54	18.06	0.00
58	-4.37	5.72	0.00	0.00	14.93	18.06	0.00
59	0.00	3.80	0.00	0.00	21.07	18.06	7.50
60	8.55	2.81	1.71	0.00	17.97	18.06	0.00
61	-12.36	93.46	0.00	0.00	30.62	25.76	7.50
62	-3.68	93.73	0.00	0.00	20.73	25.76	0.00
63	-0.60	81.78	0.00	0.00	10.78	25.76	0.00
64	1.49	61.63	0.00	0.00	9.18	18.06	0.00
65	2.05	45.13	0.00	0.00	8.21	18.06	0.00
66	3.30	41.56	0.00	0.00	7.24	18.06	0.00
67	2.82	24.79	0.00	0.00	6.11	18.06	0.00
68	2.56	11.25	0.00	0.00	2.67	18.06	0.00
69	0.26	1.27	0.00	0.00	-0.07	18.06	0.00
70	-0.24	1.36	0.00	0.00	-0.75	18.06	0.00

Esfuerzos transversales pm1. Signo+

As1: Armadura de tracción de càlculo en cara exterior pm1.
As2: Armadura de compresión de càlculo en cara interior pm1.
  Si As1,As2=-1 -> Sección insuficiente para resistir los esfuerzos.
As3: Armadura de cortante pm2 (incluye armadura mínima).
  Si As3=-1 -> No se cumple la comprobación en el hormigón Vd<Vu1.

Nodo	Md(mT)	Nd(T)	As1(cm2/m)	As2(cm2/m)	Vd(T)	Vcu(T)	As3(cm2/m2)
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	-6.43	-0.11	0.00	0.00	12.81	31.21	0.00
3	-1.31	-0.82	0.00	0.00	8.34	31.21	0.00
4	12.18	-1.64	3.10	0.00	-4.85	21.88	0.00
5	3.96	-2.28	1.21	0.00	1.14	21.88	0.00
6	4.80	-2.27	1.41	0.00	-0.10	21.88	0.00
7	6.59	-2.05	1.81	0.00	-1.34	21.88	0.00
8	6.10	-2.01	1.69	0.00	-0.85	21.88	0.00
9	5.32	-1.94	1.49	0.00	-0.16	21.88	0.00
10	7.76	-1.80	2.06	0.00	-1.97	21.88	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	0.30	-0.25	0.08	0.00	12.26	31.21	0.00
13	5.26	-2.45	1.11	0.00	8.27	31.21	0.00
14	7.90	-3.04	2.24	0.00	-6.14	21.88	0.00

15	6.46	-4.12	2.02	0.00	0.11	21.88	0.00
16	6.01	-4.00	1.90	0.00	-0.84	21.88	0.00
17	6.25	-3.59	1.91	0.00	-2.22	21.88	0.00
18	6.21	-3.51	1.89	0.00	-1.70	21.88	0.00
19	6.46	-3.33	1.93	0.00	-1.20	21.88	0.00
20	7.50	-2.93	2.13	0.00	-3.45	21.88	0.00
21	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	2.34	-0.55	0.43	0.00	11.40	31.21	0.00
23	9.29	-5.16	2.05	0.00	6.09	31.21	0.00
24	7.05	-5.76	2.36	0.00	-8.44	21.88	0.00
25	6.78	-8.44	2.61	0.00	-2.17	21.88	0.00
26	5.38	-7.85	2.21	0.00	-2.76	21.88	0.00
27	4.71	-6.93	1.94	0.00	-4.20	21.88	0.00
28	4.57	-6.72	1.88	0.00	-3.64	21.88	0.00
29	4.38	-6.28	1.78	0.00	-3.30	21.88	0.00
30	4.53	-5.31	1.71	0.00	-5.86	21.88	0.00
31	0.00	0.00	0.00	0.00	0.00	0.00	0.00
32	2.58	-1.06	0.52	0.00	10.81	31.21	0.00
33	7.29	-9.45	2.24	0.00	0.94	31.21	0.00
34	4.84	-10.04	2.34	0.00	-10.60	21.88	0.00
35	2.12	-12.71	1.96	0.90	-5.09	21.88	0.00
36	-0.15	-9.38	0.00	0.00	-5.50	21.88	0.00
37	-1.27	-8.72	0.00	0.00	-6.38	21.88	0.00
38	-1.56	-6.16	0.00	0.00	-5.68	21.88	0.00
39	-1.94	-5.74	0.00	0.00	-5.13	21.88	0.00
40	-1.85	-5.90	0.00	0.00	-7.39	21.88	0.00
41	0.00	0.00	0.00	0.00	0.00	0.00	0.00
42	1.78	-2.09	0.52	0.00	9.24	31.21	0.00
43	-2.00	-9.18	0.00	0.00	-5.30	31.21	0.00
44	-0.53	-15.41	0.00	0.00	-13.48	21.88	0.00
45	-5.54	-11.57	0.00	0.00	-8.80	21.88	0.00
46	-7.76	-9.54	0.00	0.00	-9.29	21.88	0.00
47	-8.16	-8.00	0.00	0.00	-7.92	21.88	0.00
48	-8.36	-7.64	0.00	0.00	-6.68	21.88	0.00
49	-8.39	-6.90	0.00	0.00	-6.44	21.88	0.00
50	-9.02	-5.84	0.00	0.00	-7.67	21.88	0.00
51	0.00	0.00	0.00	0.00	0.00	0.00	0.00
52	-0.63	-5.30	0.00	0.00	3.98	31.21	0.00
53	-15.79	-17.61	0.00	0.00	-11.98	31.21	0.00
54	-10.56	-15.52	0.00	0.00	-18.56	21.88	0.00
55	-18.00	-13.74	0.00	0.00	-13.01	21.88	0.00
56	-21.81	-11.58	0.00	0.00	-13.08	21.88	0.00
57	-14.40	-9.62	0.00	0.00	-22.56	21.88	0.00
58	-10.70	-9.12	0.00	0.00	-26.93	21.88	0.00
59	-17.21	-7.91	0.00	0.00	-4.71	21.88	0.00
60	-15.32	-4.16	0.00	0.00	4.15	21.88	0.00
61	0.00	0.00	0.00	0.00	0.00	0.00	0.00
62	-5.05	-6.62	0.00	0.00	-0.00	31.21	0.00
63	-36.71	-23.44	0.00	0.00	-15.44	31.21	0.00
64	-33.47	-18.83	0.00	0.00	-21.92	22.83	0.00
65	-36.80	-14.82	0.00	0.00	-15.18	23.36	0.00
66	-40.74	-12.62	0.00	0.00	-14.66	24.05	0.00
67	-57.89	-10.55	0.00	0.00	-36.72	27.09	0.00
68	-65.12	-9.99	0.00	0.00	-47.16	28.18	0.00
69	-20.77	-8.57	0.00	0.00	-2.45	21.88	0.00
70	-2.76	-2.39	0.00	0.00	15.27	21.88	0.00

Esfuerzos longitudinales pml. Signo-

As1: Armadura de tracción de cálculo en cara interior pml.
As2: Armadura de compresión de cálculo en cara exterior pml.
  Si As1,As2=-1 -> Sección insuficiente para resistir los esfuerzos.
As3: Armadura de cortante pm2 (incluye armadura mínima).
  Si As3=-1 -> No se cumple la comprobación en el hormigón Vd<Vu1.

Nodo	Md(mT)	Nd(T)	As1(cm2/m)	As2(cm2/m)	Vd(T)	Vcu(T)	As3(cm2/m2)
1	-246.07	-32.53	43.64	0.00	67.46	38.09	0.00
2	-141.62	-29.25	25.88	0.00	52.17	32.00	0.00
3	-38.67	-19.70	8.33	0.00	26.18	25.76	0.00
4	-14.86	-8.66	4.57	0.00	13.77	18.06	0.00
5	9.07	3.16	0.00	0.00	8.08	18.06	0.00
6	8.76	3.19	0.00	0.00	1.57	18.06	0.00
7	5.38	2.50	0.00	0.00	-0.23	18.06	0.00
8	4.62	2.14	0.00	0.00	-0.36	18.06	0.00
9	3.21	1.48	0.00	0.00	-0.85	18.06	0.00
10	1.89	1.00	0.00	0.00	-2.12	18.06	0.00
11	-192.69	-10.65	32.28	0.00	41.74	34.45	0.00
12	-124.48	-9.42	20.88	0.00	33.08	30.16	0.00
13	-38.51	-4.71	6.58	0.00	17.79	25.76	0.00
14	-5.71	1.19	1.22	0.00	7.49	18.06	0.00
15	6.78	6.49	0.00	0.00	1.71	18.06	0.00
16	5.55	5.37	0.00	0.00	-2.75	18.06	0.00
17	3.30	3.92	0.00	0.00	-3.62	18.06	0.00
18	2.73	3.29	0.00	0.00	-3.63	18.06	0.00
19	1.52	2.20	0.00	0.00	-3.24	18.06	0.00
20	0.40	1.46	0.00	0.00	-3.14	18.06	0.00
21	-157.13	9.47	24.16	0.00	36.32	31.28	0.00

22	-99.36	9.29	14.71	0.00	27.42	27.96	0.00
23	-31.80	10.03	3.82	0.00	13.92	25.76	0.00
24	-1.13	13.52	0.00	0.00	5.16	18.06	0.00
25	4.62	10.97	0.00	0.00	-0.98	18.06	0.00
26	2.67	7.06	0.00	0.00	-3.53	18.06	0.00
27	1.63	4.54	0.00	0.00	-3.02	18.06	0.00
28	1.24	3.91	0.00	0.00	-2.80	18.06	0.00
29	0.48	2.66	0.00	0.00	-2.22	18.06	0.00
30	-0.14	1.78	0.00	0.00	-1.94	18.06	0.00
31	-118.99	32.49	15.33	0.00	30.47	28.24	0.00
32	-72.07	28.14	8.18	0.00	21.56	25.76	0.00
33	-23.29	24.91	0.77	0.00	9.70	25.76	0.00
34	0.88	21.07	0.00	0.00	2.84	18.06	0.00
35	2.25	15.21	0.00	0.00	-3.09	18.06	0.00
36	-0.80	9.19	0.00	0.00	-3.72	18.06	0.00
37	0.03	5.04	0.00	0.00	-1.65	18.06	0.00
38	-0.05	4.54	0.00	0.00	-1.48	18.06	0.00
39	-0.30	3.15	0.00	0.00	-1.14	18.06	0.00
40	-0.52	2.11	0.00	0.00	-1.10	18.06	0.00
41	-75.88	56.33	5.63	0.00	21.19	25.76	0.00
42	-44.11	50.88	1.12	0.00	13.31	25.76	0.00
43	-15.34	40.18	0.00	0.00	3.79	25.76	0.00
44	1.28	28.13	0.00	0.00	-0.87	18.06	0.00
45	-0.47	19.35	0.00	0.00	-5.01	18.06	0.00
46	-6.08	11.25	0.12	0.00	-3.39	18.06	0.00
47	-2.01	6.19	0.00	0.00	0.63	18.06	0.00
48	-1.62	5.54	0.00	0.00	0.44	18.06	0.00
49	-0.94	3.85	0.00	0.00	0.35	18.06	0.00
50	-0.02	2.62	0.00	0.00	0.35	18.06	0.00
51	-31.46	92.13	0.00	0.00	8.28	25.76	0.00
52	-20.02	79.06	0.00	0.00	2.89	25.76	0.00
53	-7.73	53.24	0.00	0.00	-5.19	25.76	0.00
54	-2.92	35.20	0.00	0.00	-6.21	18.06	0.00
55	-2.51	21.78	0.00	0.00	-5.38	18.06	0.00
56	-7.38	13.18	0.21	0.00	-4.57	18.06	0.00
57	-8.50	8.36	1.04	0.00	0.17	18.06	0.00
58	-8.84	7.58	1.21	0.00	7.70	18.06	0.00
59	-1.84	5.27	0.00	0.00	10.85	18.06	0.00
60	4.48	2.37	0.00	0.00	9.21	18.06	0.00
61	-21.38	156.90	0.00	0.00	17.14	25.76	0.00
62	-9.84	126.69	0.00	0.00	11.15	25.76	0.00
63	-7.39	79.82	0.00	0.00	4.17	25.76	0.00
64	-6.51	60.36	0.00	0.00	2.22	18.06	0.00
65	-6.14	53.80	0.00	0.00	0.55	18.06	0.00
66	-5.06	38.57	0.00	0.00	-0.98	18.06	0.00
67	-0.43	46.20	0.00	0.00	-1.94	18.06	0.00
68	-0.42	24.38	0.00	0.00	-5.37	18.06	0.00
69	-1.00	-0.72	0.32	0.00	-5.12	18.06	0.00
70	-0.79	-0.51	0.25	0.00	-2.22	18.06	0.00

Esfuerzos transversales pml. Signo-

As1: Armadura de tracción de cálculo en cara interior pml.
As2: Armadura de compresión de cálculo en cara exterior pml.
  Si As1,As2=-1 -> Sección insuficiente para resistir los esfuerzos.
As3: Armadura de cortante pm2 (incluye armadura mínima).
  Si As3=-1 -> No se cumple la comprobación en el hormigón Vd<Vu1.

Nodo	Md(mT)	Nd(T)	As1(cm2/m)	As2(cm2/m)	Vd(T)	Vcu(T)	As3(cm2/m2)
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	-11.79	-0.23	1.86	0.00	7.03	31.21	0.00
3	-2.76	-1.51	0.61	0.00	4.58	31.21	0.00
4	6.72	-0.85	0.00	0.00	-8.92	21.88	0.00
5	2.33	-1.33	0.00	0.00	0.59	21.88	0.00
6	2.72	-1.39	0.00	0.00	-0.24	21.88	0.00
7	3.72	-1.30	0.00	0.00	-2.51	21.88	0.00
8	3.44	-1.28	0.00	0.00	-1.69	21.88	0.00
9	3.03	-1.35	0.00	0.00	-0.43	21.88	0.00
10	4.40	-1.67	0.00	0.00	-3.70	21.88	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	-2.30	-0.33	0.40	0.00	6.74	31.21	0.00
13	2.91	-1.51	0.00	0.00	4.53	31.21	0.00
14	4.39	-1.73	0.00	0.00	-11.23	21.88	0.00
15	3.71	-2.47	0.00	0.00	-0.50	21.88	0.00
16	3.38	-2.80	0.00	0.00	-1.55	21.88	0.00
17	3.48	-2.81	0.00	0.00	-4.06	21.88	0.00
18	3.46	-2.82	0.00	0.00	-3.16	21.88	0.00
19	3.58	-2.83	0.00	0.00	-2.28	21.88	0.00
20	3.80	-3.36	0.00	0.00	-6.91	21.88	0.00
21	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	-0.66	-0.67	0.18	0.00	6.30	31.21	0.00
23	5.33	-3.07	0.00	0.00	3.25	31.21	0.00
24	3.11	-4.66	0.00	0.00	-15.29	21.88	0.00
25	3.87	-4.93	0.00	0.00	-3.79	21.88	0.00
26	2.92	-5.75	0.00	0.00	-4.98	21.88	0.00
27	2.43	-6.06	0.00	0.00	-7.68	21.88	0.00
28	2.32	-6.12	0.00	0.00	-6.67	21.88	0.00

29	2.15	-6.24	0.00	0.00	-6.15	21.88	0.00
30	1.68	-6.64	0.00	0.00	-11.83	21.88	0.00
31	0.00	0.00	0.00	0.00	0.00	0.00	0.00
32	-0.64	-1.26	0.24	0.04	5.99	31.21	0.00
33	4.00	-5.92	0.00	0.00	-0.82	31.21	0.00
34	0.50	-8.48	0.00	0.00	-19.03	21.88	0.00
35	0.95	-9.11	0.00	0.00	-8.97	21.88	0.00
36	-1.05	-11.68	1.51	0.96	-10.03	21.88	0.00
37	-2.68	-10.54	1.86	0.52	-11.81	21.88	0.00
38	-2.95	-11.92	2.08	0.60	-10.57	21.88	0.00
39	-3.60	-12.01	2.26	0.45	-9.68	21.88	0.00
40	-4.81	-11.01	2.45	0.04	-14.98	21.88	0.00
41	0.00	0.00	0.00	0.00	0.00	0.00	0.00
42	-1.39	-2.54	0.51	0.06	5.10	31.21	0.00
43	-4.31	-17.41	2.66	1.27	-8.95	31.21	0.00
44	-4.97	-14.05	2.83	0.34	-23.94	21.88	7.50
45	-10.54	-20.28	4.91	0.00	-15.56	21.88	0.00
46	-14.53	-17.83	5.57	0.00	-17.13	21.88	0.00
47	-15.14	-16.16	5.52	0.00	-14.85	21.88	0.00
48	-15.51	-15.73	5.56	0.00	-12.58	21.88	0.00
49	-15.55	-14.82	5.46	0.00	-12.36	21.88	0.00
50	-16.79	-13.51	5.60	0.00	-15.86	21.88	0.00
51	0.00	0.00	0.00	0.00	0.00	0.00	0.00
52	-3.16	-6.76	1.27	0.25	1.79	31.21	0.00
53	-28.16	-31.57	8.06	0.00	-20.05	31.21	0.00
54	-19.05	-28.46	7.90	0.00	-32.59	21.88	7.50
55	-32.87	-26.47	10.99	0.00	-22.99	21.88	7.50
56	-40.73	-21.72	12.35	0.00	-24.35	21.88	7.50
57	-26.74	-19.46	8.69	0.00	-23.58	21.88	8.65
58	-19.65	-19.99	7.05	0.00	-52.45	21.88	8.94
59	-32.37	-17.97	9.88	0.00	-9.78	21.88	0.00
60	-29.09	-9.84	8.14	0.00	-3.57	21.88	0.00
61	0.00	0.00	0.00	0.00	0.00	0.00	0.00
62	-8.42	-11.19	2.62	0.00	-0.78	31.21	0.00
63	-63.54	-40.99	14.70	0.00	-25.86	31.21	0.00
64	-58.93	-33.65	18.19	0.00	-38.31	22.83	7.50
65	-66.26	-29.04	19.48	0.00	-26.80	23.36	7.50
66	-75.82	-23.61	21.26	0.00	-27.38	24.05	7.50
67	-111.52	-23.17	30.38	0.00	-71.55	27.09	13.00
68	-126.04	-22.97	34.18	0.00	-92.16	28.18	18.71
69	-40.72	-20.15	12.16	0.00	-6.01	21.88	0.00
70	-5.66	-5.72	2.02	0.00	8.55	21.88	0.00

CALCULO DE LA ALETA 2

Esfuerzos longitudinales pml. Signo+

As1: Armadura de tracción de càlculo en cara exterior pml.
As2: Armadura de compresión de càlculo en cara interior pml.
  Si As1,As2=-1 -> Sección insuficiente para resistir los esfuerzos.
As3: Armadura de cortante pm2 (incluye armadura mínima).
  Si As3=-1 -> No se cumple la comprobación en el hormigón Vd<Vu1.

Nodo	Md(mT).	Nd(T)	As1(cm2/m)	As2(cm2/m)	Vd(T)	Vcu(T)	As3(cm2/m2)
111	-12.36	93.46	0.00	0.00	30.62	25.76	7.50
112	-3.68	93.73	0.00	0.00	20.73	25.76	0.00
113	-0.60	81.78	0.00	0.00	10.78	25.76	0.00
114	1.49	61.63	0.00	0.00	9.18	18.06	0.00
115	2.05	45.13	0.00	0.00	8.21	18.06	0.00
116	3.30	41.56	0.00	0.00	7.24	18.06	0.00
117	2.82	24.79	0.00	0.00	6.11	18.06	0.00
118	2.56	11.25	0.00	0.00	2.67	18.06	0.00
119	0.26	1.27	0.00	0.00	-0.07	18.06	0.00
120	-0.24	1.36	0.00	0.00	-0.75	18.06	0.00
121	-18.09	70.18	0.00	0.00	13.55	25.76	0.00
122	-11.19	66.61	0.00	0.00	5.93	25.76	0.00
123	-2.93	59.00	0.00	0.00	-0.97	25.76	0.00
124	-0.49	44.67	0.00	0.00	-2.03	18.06	0.00
125	-0.53	29.43	0.00	0.00	-2.20	18.06	0.00
126	-3.55	12.72	0.00	0.00	-1.67	18.06	0.00
127	-4.20	6.42	0.00	0.00	2.54	18.06	0.00
128	-4.37	5.72	0.00	0.00	14.93	18.06	0.00
129	0.00	3.80	0.00	0.00	21.07	18.06	7.50
130	8.55	2.81	1.71	0.00	17.97	18.06	0.00
131	-43.59	54.88	0.00	0.00	35.39	25.76	7.50
132	-24.63	51.00	0.00	0.00	22.35	25.76	0.00
133	-7.75	45.50	0.00	0.00	7.73	25.76	0.00
134	3.28	35.23	0.00	0.00	1.27	18.06	0.00
135	1.32	24.92	0.00	0.00	-2.17	18.06	0.00
136	-2.87	10.48	0.00	0.00	0.13	18.06	0.00
137	-0.91	5.38	0.00	0.00	1.71	18.06	0.00
138	-0.73	4.74	0.00	0.00	1.29	18.06	0.00
139	-0.41	3.26	0.00	0.00	0.96	18.06	0.00
140	0.16	2.19	0.00	0.00	0.66	18.06	0.00
141	-68.07	37.90	0.00	0.00	51.26	28.24	7.50
142	-40.25	36.64	0.00	0.00	36.50	25.76	7.50

143	-11.70	31.76	0.00	0.00	16.84	25.76	0.00
144	3.84	24.53	0.00	0.00	5.33	18.06	0.00
145	4.87	19.02	0.00	0.00	-0.74	18.06	0.00
146	0.20	8.90	0.00	0.00	-1.33	18.06	0.00
147	0.40	4.97	0.00	0.00	-0.85	18.06	0.00
148	0.22	4.34	0.00	0.00	-0.76	18.06	0.00
149	-0.10	2.94	0.00	0.00	-0.57	18.06	0.00
150	-0.30	1.95	0.00	0.00	-0.60	18.06	0.00
151	-89.49	23.64	0.00	0.00	61.38	31.28	7.50
152	-55.40	21.76	0.00	0.00	46.64	27.96	7.50
153	-16.03	18.49	0.00	0.00	24.25	25.76	0.00
154	2.08	13.26	0.00	0.00	9.59	18.06	0.00
155	8.57	11.94	0.64	0.00	0.98	18.06	0.00
156	4.45	7.16	0.21	0.00	-1.81	18.06	0.00
157	2.93	4.50	0.16	0.00	-1.84	18.06	0.00
158	2.30	3.88	0.09	0.00	-1.69	18.06	0.00
159	0.99	2.63	0.00	0.00	-1.24	18.06	0.00
160	0.00	1.76	0.00	0.00	-1.06	18.06	0.00
161	-109.21	6.23	0.00	0.00	71.03	34.45	7.50
162	-69.26	5.51	0.00	0.00	56.73	30.16	7.50
163	-19.45	5.42	0.00	0.00	31.19	25.76	7.50
164	-1.01	6.56	0.00	0.00	13.91	18.06	0.00
165	11.83	4.86	2.25	0.00	4.08	18.06	0.00
166	9.55	4.62	1.73	0.00	-1.31	18.06	0.00
167	5.99	3.83	0.97	0.00	-2.24	18.06	0.00
168	5.07	3.22	0.83	0.00	-2.19	18.06	0.00
169	2.98	2.14	0.45	0.00	-1.85	18.06	0.00
170	0.87	1.42	0.04	0.00	-1.60	18.06	0.00
171	-138.52	-12.46	0.00	0.00	117.96	38.09	15.30
172	-78.65	-11.51	0.00	0.00	91.55	32.00	11.41
173	-19.32	-7.74	0.00	0.00	46.53	25.76	7.50
174	-5.69	-2.45	0.00	0.00	25.63	18.06	7.50
175	17.29	-2.44	4.42	0.00	16.22	18.06	0.00
176	15.90	1.70	3.60	0.00	4.43	18.06	0.00
177	9.92	2.33	2.09	0.00	1.10	18.06	0.00
178	8.64	2.02	1.82	0.00	0.95	18.06	0.00
179	6.26	1.39	1.33	0.00	0.45	18.06	0.00
180	4.21	0.94	0.89	0.00	-1.13	18.06	0.00

Esfuerzos transversales pml. Signo+

As1: Armadura de tracción de càlculo en cara exterior pml.
As2: Armadura de compresión de càlculo en cara interior pml.
  Si As1,As2=-1 -> Sección insuficiente para resistir los esfuerzos.
As3: Armadura de cortante pm2 (incluye armadura mínima).
  Si As3=-1 -> No se cumple la comprobación en el hormigón Vd<Vu1.

Nodo	Md(mT)	Nd(T)	As1(cm2/m)	As2(cm2/m)	Vd(T)	Vcu(T)	As3(cm2/m2)
111	0.00	0.00	0.00	0.00	0.00	0.00	0.00
112	-5.05	-6.62	0.00	0.00	0.78	31.21	0.00
113	-36.71	-23.44	0.00	0.00	25.86	31.21	0.00
114	-33.47	-18.83	0.00	0.00	38.31	22.83	7.50
115	-36.80	-14.82	0.00	0.00	26.80	23.36	7.50
116	-40.74	-12.62	0.00	0.00	27.38	24.05	7.50
117	-57.89	-10.55	0.00	0.00	71.55	27.09	13.00
118	-65.12	-9.99	0.00	0.00	92.16	28.18	18.71
119	-20.77	-6.57	0.00	0.00	6.01	21.88	0.00
120	-2.76	-2.39	0.00	0.00	-8.55	21.88	0.00
121	0.00	0.00	0.00	0.00	0.00	0.00	0.00
122	-0.63	-5.30	0.00	0.00	-1.79	31.21	0.00
123	-15.79	-17.61	0.00	0.00	20.05	31.21	0.00
124	-10.56	-15.52	0.00	0.00	32.59	21.88	7.50
125	-18.00	-13.74	0.00	0.00	22.99	21.88	7.50
126	-21.81	-11.68	0.00	0.00	24.35	21.88	7.50
127	-14.40	-9.62	0.00	0.00	23.58	21.88	8.65
128	-10.70	-9.12	0.00	0.00	52.45	21.88	8.94
129	-17.21	-7.91	0.00	0.00	9.78	21.88	0.00
130	-15.32	-4.16	0.00	0.00	3.57	21.88	0.00
131	0.00	0.00	0.00	0.00	0.00	0.00	0.00
132	1.78	-2.09	0.52	0.00	-5.10	31.21	0.00
133	-2.00	-9.18	0.00	0.00	8.95	31.21	0.00
134	-0.53	-15.41	0.00	0.00	23.94	21.88	7.50
135	-5.54	-11.57	0.00	0.00	15.56	21.88	0.00
136	-7.76	-9.54	0.00	0.00	17.13	21.88	0.00
137	-8.16	-8.00	0.00	0.00	14.85	21.88	0.00
138	-8.36	-7.64	0.00	0.00	12.58	21.88	0.00
139	-8.39	-6.90	0.00	0.00	12.36	21.88	0.00
140	-9.02	-5.84	0.00	0.00	15.86	21.88	0.00
141	0.00	0.00	0.00	0.00	0.00	0.00	0.00
142	2.58	-1.06	0.52	0.00	-5.99	31.21	0.00
143	7.29	-9.45	2.24	0.00	0.82	31.21	0.00
144	4.84	-10.04	2.34	0.00	19.03	21.88	0.00
145	2.12	-12.71	1.96	0.90	8.97	21.88	0.00
146	-0.15	-9.38	0.00	0.00	10.03	21.88	0.00
147	-1.27	-8.72	0.00	0.00	11.81	21.88	0.00
148	-1.56	-6.16	0.00	0.00	10.57	21.88	0.00
149	-1.94	-5.74	0.00	0.00	9.68	21.88	0.00

150	-1.85	-5.90	0.00	0.00	14.98	21.88	0.00
151	0.00	0.00	0.00	0.00	0.00	0.00	0.00
152	2.34	-0.55	0.43	0.00	-6.30	31.21	0.00
153	9.29	-5.16	2.05	0.00	-3.25	31.21	0.00
154	7.05	-5.76	2.36	0.00	15.29	21.88	0.00
155	6.78	-8.44	2.61	0.00	3.79	21.88	0.00
156	5.38	-7.85	2.21	0.00	4.98	21.88	0.00
157	4.71	-6.93	1.94	0.00	7.68	21.88	0.00
158	4.57	-6.72	1.88	0.00	6.67	21.88	0.00
159	4.38	-6.28	1.78	0.00	6.15	21.88	0.00
160	4.53	-5.31	1.71	0.00	11.83	21.88	0.00
161	0.00	0.00	0.00	0.00	0.00	0.00	0.00
162	0.30	-0.25	0.08	0.00	-6.74	31.21	0.00
163	5.26	-2.45	1.11	0.00	-4.53	31.21	0.00
164	7.90	-3.04	2.24	0.00	11.23	21.88	0.00
165	6.46	-4.12	2.02	0.00	0.50	21.88	0.00
166	6.01	-4.00	1.90	0.00	1.55	21.88	0.00
167	6.25	-3.59	1.91	0.00	4.06	21.88	0.00
168	6.21	-3.51	1.89	0.00	3.16	21.88	0.00
169	6.46	-3.33	1.93	0.00	2.28	21.88	0.00
170	7.50	-2.93	2.13	0.00	6.91	21.88	0.00
171	0.00	0.00	0.00	0.00	0.00	0.00	0.00
172	-6.43	-0.11	0.00	0.00	-7.03	31.21	0.00
173	-1.31	-0.82	0.00	0.00	-4.58	31.21	0.00
174	12.18	-1.64	3.10	0.00	8.92	21.88	0.00
175	3.96	-2.28	1.21	0.00	-0.59	21.88	0.00
176	4.80	-2.27	1.41	0.00	0.24	21.88	0.00
177	6.59	-2.05	1.81	0.00	2.51	21.88	0.00
178	6.10	-2.01	1.69	0.00	1.69	21.88	0.00
179	5.32	-1.94	1.49	0.00	0.43	21.88	0.00
180	7.76	-1.80	2.06	0.00	3.70	21.88	0.00

Esfuerzos longitudinales pml. Signo-

As1: Armadura de tracción de cálculo en cara interior pml.
As2: Armadura de compresión de cálculo en cara exterior pml.
  Si As1,As2=-1 -> Sección insuficiente para resistir los esfuerzos.
As3: Armadura de cortante pm2 (incluye armadura mínima).
  Si As3=-1 -> No se cumple la comprobación en el hormigón Vd<Vu1.

Nodo	Md(mT)	Nd(T)	As1(cm2/m)	As2(cm2/m)	Vd(T)	Vcu(T)	As3(cm2/m2)
111	-21.38	156.90	0.00	0.00	17.14	25.76	0.00
112	-9.84	126.69	0.00	0.00	11.15	25.76	0.00
113	-7.39	79.82	0.00	0.00	4.17	25.76	0.00
114	-6.51	60.36	0.00	0.00	2.22	18.06	0.00
115	-6.14	53.80	0.00	0.00	0.55	18.06	0.00
116	-5.06	38.57	0.00	0.00	-0.98	18.06	0.00
117	-0.43	46.20	0.00	0.00	-1.94	18.06	0.00
118	-0.42	24.38	0.00	0.00	-5.37	18.06	0.00
119	-1.00	-0.72	0.32	0.00	-5.12	18.06	0.00
120	-0.79	-0.51	0.25	0.00	-2.22	18.06	0.00
121	-31.46	92.13	0.00	0.00	8.28	25.76	0.00
122	-20.02	79.06	0.00	0.00	2.89	25.76	0.00
123	-7.73	53.24	0.00	0.00	-5.19	25.76	0.00
124	-2.92	35.20	0.00	0.00	-6.21	18.06	0.00
125	-2.51	21.78	0.00	0.00	-5.38	18.06	0.00
126	-7.38	13.18	0.21	0.00	-4.57	18.06	0.00
127	-8.50	8.36	1.04	0.00	0.17	18.06	0.00
128	-8.84	7.58	1.21	0.00	7.70	18.06	0.00
129	-1.84	5.27	0.00	0.00	10.85	18.06	0.00
130	4.48	2.37	0.00	0.00	9.21	18.06	0.00
131	-75.88	56.33	5.63	0.00	21.19	25.76	0.00
132	-44.11	50.88	1.12	0.00	13.31	25.76	0.00
133	-15.34	40.18	0.00	0.00	3.79	25.76	0.00
134	1.28	28.13	0.00	0.00	-0.87	18.06	0.00
135	-0.47	19.35	0.00	0.00	-5.01	18.06	0.00
136	-6.08	11.25	0.12	0.00	-3.39	18.06	0.00
137	-2.01	6.19	0.00	0.00	0.63	18.06	0.00
138	-1.62	5.54	0.00	0.00	0.44	18.06	0.00
139	-0.94	3.85	0.00	0.00	0.35	18.06	0.00
140	-0.02	2.62	0.00	0.00	0.35	18.06	0.00
141	-118.99	32.49	15.33	0.00	30.47	28.24	0.00
142	-72.07	28.14	8.18	0.00	21.56	25.76	0.00
143	-23.29	24.91	0.77	0.00	9.70	25.76	0.00
144	0.88	21.07	0.00	0.00	2.84	18.06	0.00
145	2.25	15.21	0.00	0.00	-3.09	18.06	0.00
146	-0.80	9.19	0.00	0.00	-3.72	18.06	0.00
147	0.03	5.04	0.00	0.00	-1.65	18.06	0.00
148	-0.05	4.54	0.00	0.00	-1.48	18.06	0.00
149	-0.30	3.15	0.00	0.00	-1.14	18.06	0.00
150	-0.52	2.11	0.00	0.00	-1.10	18.06	0.00
151	-157.13	9.47	24.16	0.00	36.32	31.28	0.00
152	-99.36	9.29	14.71	0.00	27.42	27.96	0.00
153	-31.80	10.03	3.82	0.00	13.92	25.76	0.00
154	-1.13	13.52	0.00	0.00	5.16	18.06	0.00
155	4.62	10.97	0.00	0.00	-0.98	18.06	0.00
156	2.67	7.06	0.00	0.00	-3.53	18.06	0.00

157	1.63	4.54	0.00	0.00	-3.02	18.06	0.00
158	1.24	3.91	0.00	0.00	-2.80	18.06	0.00
159	0.48	2.66	0.00	0.00	-2.22	18.06	0.00
160	-0.14	1.78	0.00	0.00	-1.94	18.06	0.00
161	-192.69	-10.65	32.28	0.00	41.74	34.45	0.00
162	-124.48	-9.42	20.88	0.00	33.08	30.16	0.00
163	-38.51	-4.71	6.58	0.00	17.79	25.76	0.00
164	-5.71	1.19	1.22	0.00	7.49	18.06	0.00
165	6.78	6.49	0.00	0.00	1.71	18.06	0.00
166	5.55	5.37	0.00	0.00	-2.75	18.06	0.00
167	3.30	3.92	0.00	0.00	-3.62	18.06	0.00
168	2.73	3.29	0.00	0.00	-3.63	18.06	0.00
169	1.52	2.20	0.00	0.00	-3.24	18.06	0.00
170	0.40	1.46	0.00	0.00	-3.14	18.06	0.00
171	-246.07	-32.53	43.64	0.00	67.46	38.09	0.00
172	-141.62	-29.25	25.88	0.00	52.17	32.00	0.00
173	-38.67	-19.70	8.33	0.00	26.18	25.76	0.00
174	-14.86	-8.66	4.57	0.00	13.77	18.06	0.00
175	9.07	3.16	0.00	0.00	8.08	18.06	0.00
176	8.76	3.19	0.00	0.00	1.57	18.06	0.00
177	5.38	2.50	0.00	0.00	-0.23	18.06	0.00
178	4.62	2.14	0.00	0.00	-0.36	18.06	0.00
179	3.21	1.48	0.00	0.00	-0.85	18.06	0.00
180	1.89	1.00	0.00	0.00	-2.12	18.06	0.00

Esfuerzos transversales pml. Signo-

As1: Armadura de tracción de cálculo en cara interior pml.
As2: Armadura de compresión de cálculo en cara exterior pml.
  Si As1,As2=-1 -> Sección insuficiente para resistir los esfuerzos.
As3: Armadura de cortante pm2 (incluye armadura mínima).
  Si As3=-1 -> No se cumple la comprobación en el hormigón Vd<Vu1.

Nodo	Md(mT)	Nd(T)	As1(cm2/m)	As2(cm2/m)	Vd(T)	Vcu(T)	As3(cm2/m2)
111	0.00	0.00	0.00	0.00	0.00	0.00	0.00
112	-8.42	-11.19	2.62	0.00	0.00	31.21	0.00
113	-63.54	-40.99	14.70	0.00	15.44	31.21	0.00
114	-58.93	-33.65	18.19	0.00	21.92	22.83	0.00
115	-66.26	-29.04	19.48	0.00	15.18	23.36	0.00
116	-75.82	-23.61	21.26	0.00	14.66	24.05	0.00
117	-111.52	-23.17	30.38	0.00	36.72	27.09	0.00
118	-126.04	-22.97	34.18	0.00	47.16	28.18	0.00
119	-40.72	-20.15	12.16	0.00	2.45	21.88	0.00
120	-5.66	-5.72	2.02	0.00	-15.27	21.88	0.00
121	0.00	0.00	0.00	0.00	0.00	0.00	0.00
122	-3.16	-6.76	1.27	0.25	-3.98	31.21	0.00
123	-28.16	-31.57	8.06	0.00	11.98	31.21	0.00
124	-19.05	-28.46	7.90	0.00	18.56	21.88	0.00
125	-32.87	-26.47	10.99	0.00	13.01	21.88	0.00
126	-40.73	-21.72	12.35	0.00	13.08	21.88	0.00
127	-26.74	-19.46	8.69	0.00	22.56	21.88	0.00
128	-19.65	-19.99	7.05	0.00	26.93	21.88	0.00
129	-32.37	-17.97	9.88	0.00	4.71	21.88	0.00
130	-29.09	-9.84	8.14	0.00	-4.15	21.88	0.00
131	0.00	0.00	0.00	0.00	0.00	0.00	0.00
132	-1.39	-2.54	0.51	0.06	-9.24	31.21	0.00
133	-4.31	-17.41	2.66	1.27	5.30	31.21	0.00
134	-4.97	-14.05	2.83	0.34	13.48	21.88	0.00
135	-10.54	-20.28	4.91	0.00	8.80	21.88	0.00
136	-14.53	-17.83	5.57	0.00	9.29	21.88	0.00
137	-15.14	-16.26	5.52	0.00	7.92	21.88	0.00
138	-15.51	-15.73	5.56	0.00	6.68	21.88	0.00
139	-15.55	-14.82	5.46	0.00	6.44	21.88	0.00
140	-16.79	-13.51	5.60	0.00	7.67	21.88	0.00
141	0.00	0.00	0.00	0.00	0.00	0.00	0.00
142	-0.64	-1.26	0.24	0.04	-10.81	31.21	0.00
143	4.00	-5.92	0.00	0.00	-0.94	31.21	0.00
144	0.50	-8.48	0.00	0.00	10.60	21.88	0.00
145	0.95	-9.11	0.00	0.00	5.09	21.88	0.00
146	-1.05	-11.08	1.51	0.98	5.50	21.88	0.00
147	-2.68	-10.54	1.86	0.52	6.38	21.88	0.00
148	-2.95	-11.92	2.08	0.60	5.68	21.88	0.00
149	-3.60	-12.01	2.26	0.45	5.13	21.88	0.00
150	-4.81	-11.01	2.45	0.04	7.39	21.88	0.00
151	0.00	0.00	0.00	0.00	0.00	0.00	0.00
152	-0.66	-0.67	0.18	0.00	-11.40	31.21	0.00
153	5.33	-3.07	0.00	0.00	-6.09	31.21	0.00
154	3.11	-4.66	0.00	0.00	8.44	21.88	0.00
155	3.87	-4.93	0.00	0.00	2.17	21.88	0.00
156	2.92	-5.75	0.00	0.00	2.76	21.88	0.00
157	2.43	-6.06	0.00	0.00	4.20	21.88	0.00
158	2.32	-6.12	0.00	0.00	3.64	21.88	0.00
159	2.15	-6.24	0.00	0.00	3.30	21.88	0.00
160	1.68	-6.64	0.00	0.00	5.86	21.88	0.00
161	0.00	0.00	0.00	0.00	0.00	0.00	0.00
162	-2.30	-0.33	0.40	0.00	-12.26	31.21	0.00
163	2.91	-1.51	0.00	0.00	-8.27	31.21	0.00

164	4.39	-1.73	0.00	0.00	6.14	21.88	0.00
165	3.71	-2.47	0.00	0.00	-0.11	21.88	0.00
166	3.38	-2.80	0.00	0.00	0.84	21.88	0.00
167	3.48	-2.81	0.00	0.00	2.22	21.88	0.00
168	3.46	-2.82	0.00	0.00	1.70	21.88	0.00
169	3.58	-2.83	0.00	0.00	1.20	21.88	0.00
170	3.80	-3.36	0.00	0.00	3.45	21.88	0.00
171	0.00	0.00	0.00	0.00	0.00	0.00	0.00
172	-11.79	-0.23	1.86	0.00	-12.81	31.21	0.00
173	-2.76	-1.51	0.61	0.00	-8.34	31.21	0.00
174	6.72	-0.85	0.00	0.00	4.85	21.88	0.00
175	2.33	-1.33	0.00	0.00	-1.14	21.88	0.00
176	2.72	-1.39	0.00	0.00	0.10	21.88	0.00
177	3.72	-1.30	0.00	0.00	1.34	21.88	0.00
178	3.44	-1.28	0.00	0.00	0.85	21.88	0.00
179	3.03	-1.35	0.00	0.00	0.16	21.88	0.00
180	4.40	-1.67	0.00	0.00	1.97	21.88	0.00

VOLADIZO DE LA ALETA 1

Esfuerzos en el empotramiento del voladizo por empuje de tierras :

Momento mayorado	Armadura de traccion	Armadura de compresión
8.100mT/m	3.356cm2/m.	0.000cm2/m.

Cortante mayorado	Armadura de cortante
3.600T/m	0.000cm2/m.

Esfuerzos en el empotramiento del voladizo por peso propio :

Momento mayorado	Armadura de tracción	Armadura de compresión
11.391mT	5.935cm2	0.000cm2

VOLADIZO DE LA ALETA 2

Esfuerzos en el empotramiento del voladizo por empuje de tierras :

Momento mayorado	Armadura de traccion	Armadura de compresión
8.100mT/m	3.356cm2/m.	0.000cm2/m.

Cortante mayorado	Armadura de cortante
3.600T/m	0.000cm2/m.

Esfuerzos en el empotramiento del voladizo por peso propio :

Momento mayorado	Armadura de tracción	Armadura de compresión
11.391mT	5.935cm2	0.000cm2

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PROYECTO DE ESTRIBO

Nombre del proyecto : estribo2

DEFINICION GEOMETRICA ESTRIBO

Cotas de definición de la sección media :

- Cota superior del murete de coronación : 109.800 m
- Cota en el área de apoyos : 108.270 m
- Cota de la cara superior de la zapata : 100.000 m
- Cota del terreno de la rasante inferior : 100.500 m

Dimensiones medias de la zapata :

- Anchura de la zapata : 11.600 m
- Longitud de la zarpa delantera : 2.400 m
- Longitud de la zarpa trasera : 4.200 m
- Canto de la zapata : 1.500 m

Dimensiones del muro :

- Anchura del muro : 11.200 m
- Anchura del cargadero : 1.100 m
- Canto del muro de coronación : 0.300 m
- Anchura de la zona de apoyo de la losa de transición : 0.250 m
- Altura del muro de coronación en trasdós del estribo : 1.000 m
- Altura de la parte del cargadero con máximo canto : 0.550 m
- Canto del muro en el entronque con el cargadero : 1.100 m
- Canto de la zona inferior del muro constante.

Apoyos:

2 situados a 0.500 m del paramento exterior

Definición geométrica de la aleta 1 :

- Longitud total de la aleta : 4.200 m
- Longitud del muro de la aleta : 4.200 m
- Canto del muro de la aleta : 0.750 m
- Angulo interior de la aleta con el muro :100.0000 g

Definición geométrica de la aleta 2 :

- Longitud total de la aleta : 4.200 m
- Longitud del muro de la aleta : 4.500 m
- Canto del muro de la aleta : 0.750 m
- Angulo interior de la aleta con el muro :100.0000 g

Materiales :

- fck alzado: 250.000 Kg/cm2 fck zapata: 250.000 Kg/cm2
- fyk : 5100.000 Kg/cm2

Recubrimientos mecánicos:

- Alzados : 0.050 m Zapata : 0.070 m

Terreno natural:

- Densidad : 2.000 T/m3 Ang.Roz.Interno : 30.000§
- Ang.Roz Terreno-Zapata : 30.000§

Terreno en trasdós:

- Densidad : 2.000 T/m3 Ang.Roz.Interno : 30.000§ Porosidad : 0.000
- Ang.Roz Terreno-Hormigón : 30.000§

Coeficientes de seguridad

	E.L.Servicio		E.L.Ultimo Situación persistente		E.L.Ultimo Situación accidental	
	E.F.	E.D.	E.F.	E.D.	E.F.	E.D.
Peso propio del hormigón	1.00	1.00	1.00	1.50	1.00	1.00
Peso propio de las tierras en trasdós	1.00	1.00	1.00	1.50	1.00	1.00
Empuje de tierras	1.00	1.00	1.00	1.60	1.00	1.00
Sobrecarga en trasdós	0.00	1.00	0.00	1.60	0.00	1.00
Acción del nivel freático	0.00	1.00	0.00	1.60	0.00	1.00
Acción sísmica	0.00	0.00	0.00	0.00	1.00	1.00
Acciones permanentes del tablero	1.00	1.00	1.00	1.50	1.00	1.00

Acciones variables del tablero : 0.00 1.00 0.00 1.60 0.00 1.00

E.F. : Coeficiente para el efecto favorable.
E.D. : Coeficiente para el efecto desfavorable.

Coeficientes de combinación
Valor de combinación : 0.600
Valor frecuente : 0.500
Valor casi permanente : 0.200

Coeficientes de minoración de los materiales
Situación persistente
Hormigón: 1.500
Acero: 1.150
Situación accidental
Hormigón: 1.300
Acero: 1.000

Cargas:

Sobrecarga en trasdós: 0.000 T/m2
Acción vertical permanente del tablero por apoyo: 95.260 T
Acción horizontal permanente del tablero por apoyo: 2.400 T
Acción vertical variable del tablero por apoyo: 53.520 T
Acción horizontal variable del tablero por apoyo: 4.000 T
Aceleración sísmica: 0.000 m/s2
Momento torsor permanente del tablero: 83.180 mT
Momento torsor variable del tablero: 4.110 mT

Cálculo de la estabilidad del estribo

El coeficiente de seguridad es el cociente entre efectos resistentes y efectos inductores al vuelco/deslizamiento. Ambos efectos están afectados por los coeficientes de seguridad y de combinación definidos por el usuario.

Coeficiente de seguridad al deslizamiento : 1.231
No se ha considerado la acción del empuje pasivo del terreno.
No se ha considerado la acc. vertical por empuje activo del terreno.
Fvert (T) : Fuerza vertical.
Fhest (T) : Fuerza horizontal estabilizadora.
Fhdes (T) : Fuerza horizontal desestabilizadora.

Acción		Fhest	Fhdes	Fvert
Peso propio de la zapata	:	0.00	0.00	287.10
Peso propio del alzado	:	0.00	0.00	283.98
Peso de tierras sobre la puntera	:	0.00	0.00	27.84
Peso de tierras en el talón	:	0.00	0.00	657.10
Empuje activo	:	0.00	368.06	0.00
Empuje pasivo	:	0.00	0.00	0.00
Sobrecarga. Acción vertical	:	0.00	0.00	0.00
Sobrecarga. Acción horizontal	:	0.00	0.00	0.00
Nivel freático en el intradós	:	0.00	0.00	0.00
Subpresión	:	0.00	0.00	0.00
Nivel freático en el trasdós	:	0.00	0.00	0.00
Acciones permanentes del tablero	:	0.00	4.80	190.52
Ac. var. verticales del tablero	:	0.00	0.00	107.04
Ac. var. horizontales del tablero	:	0.00	8.00	0.00
Acción sísmica	:	0.00	0.00	0.00

Coeficiente de seguridad al vuelco : 2.340

No se ha considerado la acción del empuje pasivo del terreno.
No se ha considerado la acc. vertical por empuje activo del terreno.
Mest (mT): Momento estabilizador.
Mdes (mT): Momento desestabilizador.

Acción		Mest	Mdes
Peso propio de la zapata	:	947.43	0.00
Peso propio del alzado	:	860.46	0.00
Peso de tierras sobre la puntera	:	33.41	0.00
Peso de tierras en el talón	:	3349.35	0.00
Empuje activo	:	0.00	1386.35
Empuje pasivo	:	0.00	0.00
Sobrecarga. Acción vertical	:	0.00	0.00
Sobrecarga. Acción horizontal	:	0.00	0.00
Nivel freático en el intradós	:	0.00	0.00
Subpresión	:	0.00	0.00
Nivel freático en el trasdós	:	0.00	0.00
Acciones permanentes del tablero	:	0.00	-505.61
Ac. var. verticales del tablero	:	0.00	-310.42
Ac. var. horizontales del tablero	:	0.00	78.16
Acción sísmica	:	0.00	0.00

Cálculo de las tensiones en el terreno

Tensiones en la sección media

Combinaciones características:

Acciones permanentes:

Ley de tensiones trapecial.
Tensión en extremo de puntera : 24.400 T/m2
Tensión en extremo de talón : 13.388 T/m2

Mayorando la sobrecarga en trasdós:

Ley de tensiones trapecial.
Tensión en extremo de puntera : 26.101 T/m2
Tensión en extremo de talón : 13.365 T/m2

Mayorando la acción del agua:

Ley de tensiones trapecial.
Tensión en extremo de puntera : 26.101 T/m2
Tensión en extremo de talón : 13.365 T/m2

Mayorando las acciones horizontales del tablero:

Ley de tensiones trapecial.
Tensión en extremo de puntera : 26.472 T/m2
Tensión en extremo de talón : 12.994 T/m2

Mayorando las acciones verticales del tablero:

Ley de tensiones trapecial.
Tensión en extremo de puntera : 26.863 T/m2
Tensión en extremo de talón : 13.721 T/m2

Combinaciones frecuentes:

Mayorando la sobrecarga en trasdós:

Ley de tensiones trapecial.
Tensión en extremo de puntera : 24.967 T/m2
Tensión en extremo de talón : 13.381 T/m2

Mayorando la acción del agua:

Ley de tensiones trapecial.
Tensión en extremo de puntera : 24.967 T/m2
Tensión en extremo de talón : 13.381 T/m2

Mayorando las acciones horizontales del tablero:

Ley de tensiones trapecial.
Tensión en extremo de puntera : 25.245 T/m2
Tensión en extremo de talón : 13.102 T/m2

Mayorando las acciones verticales del tablero:

Ley de tensiones trapecial.
Tensión en extremo de puntera : 25.539 T/m2
Tensión en extremo de talón : 13.648 T/m2

Combinación casi-permanente:

Ley de tensiones trapecial.
Tensión en extremo de puntera : 24.967 T/m2
Tensión en extremo de talón : 13.381 T/m2

Tensión máxima en el terreno bajo la zapata : 26.863 T/m2

Incremento tensional por el momento torsor del tablero

Torsor permanente. Variación tensional inducida = +/- 0.562 T/m2
Torsor variable . Variación tensional inducida = +/- 0.028 T/m2

CALCULO DE LA ZAPATA

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

Esfuerzos longitudinales pm1. Signo+

As1: Armadura de tracción de cálculo en cara inferior pm1.
As2: Armadura de compresión de cálculo en cara superior pm1.
  Si As1,As2=-1 -> Sección insuficiente para resistir los esfuerzos.
As3: Armadura de cortante pm2 (incluye armadura mínima).
  Si As3=-1 -> No se cumple la comprobación en el hormigón Vd<Vu1.

Nodo	Md(mT)	Nd(T)	As1(cm2/m)	As2(cm2/m)	Vd(T)	Vcu(T)	As3(cm2/m2)
1	38.26	0.00	6.07	0.00	17.43	26.49	0.00
2	80.76	0.00	12.92	0.00	34.32	27.84	8.33
3	8.19	0.00	1.29	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.42	26.49	0.00
6	0.00	0.00	0.00	0.00	2.16	26.49	0.00
7	0.12	0.00	0.02	0.00	2.07	26.49	0.00
8	0.19	0.00	0.03	0.00	1.88	26.49	0.00
9	0.20	0.00	0.03	0.00	1.74	26.49	0.00
10	0.21	0.00	0.03	0.00	1.63	26.49	0.00
11	0.29	0.00	0.04	0.00	3.05	26.49	0.00
12	23.37	0.00	3.70	0.00	41.55	26.49	8.33
13	142.45	0.00	23.04	0.00	92.76	31.66	11.87
14	0.31	0.00	0.05	0.00	2.42	26.49	0.00
15	0.29	0.00	0.05	0.00	2.29	26.49	0.00
16	0.27	0.00	0.04	0.00	2.17	26.49	0.00
17	0.26	0.00	0.04	0.00	2.04	26.49	0.00
18	0.24	0.00	0.04	0.00	1.90	26.49	0.00
19	0.22	0.00	0.04	0.00	1.77	26.49	0.00
20	0.21	0.00	0.03	0.00	1.65	26.49	0.00
21	0.19	0.00	0.03	0.00	1.52	26.49	0.00
22	0.18	0.00	0.03	0.00	2.77	26.49	0.00
23	24.13	0.00	3.82	0.00	41.57	26.49	8.33
24	143.26	0.00	23.18	0.00	92.78	31.72	11.86
25	0.00	0.00	0.00	0.00	5.97	26.49	0.00
26	0.00	0.00	0.00	0.00	4.62	26.49	0.00
27	0.00	0.00	0.00	0.00	3.61	26.49	0.00
28	0.00	0.00	0.00	0.00	2.66	26.49	0.00
29	0.00	0.00	0.00	0.00	1.83	26.49	0.00
30	0.00	0.00	0.00	0.00	1.12	26.49	0.00
31	0.00	0.00	0.00	0.00	0.65	26.49	0.00
32	0.00	0.00	0.00	0.00	0.54	26.49	0.00
33	0.00	0.00	0.00	0.00	1.67	26.49	0.00
34	24.65	0.00	3.90	0.00	41.44	26.49	8.33
35	143.54	0.00	23.23	0.00	92.65	31.74	11.83
36	0.00	0.00	0.00	0.00	23.20	26.49	0.00
37	0.00	0.00	0.00	0.00	20.12	26.49	0.00
38	0.00	0.00	0.00	0.00	17.00	26.49	0.00
39	0.00	0.00	0.00	0.00	13.98	26.49	0.00
40	0.00	0.00	0.00	0.00	11.09	26.49	0.00
41	0.00	0.00	0.00	0.00	8.33	26.49	0.00
42	0.81	0.00	0.13	0.00	5.71	26.49	0.00
43	1.42	0.00	0.22	0.00	3.64	26.49	0.00
44	1.60	0.00	0.25	0.00	4.60	26.49	0.00
45	24.90	0.00	3.94	0.00	41.36	26.49	8.33
46	143.67	0.00	23.25	0.00	92.57	31.75	11.82
47	0.00	0.00	0.00	0.00	32.76	26.49	8.33
48	0.00	0.00	0.00	0.00	29.13	26.49	8.33
49	0.00	0.00	0.00	0.00	25.22	26.49	0.00
50	0.00	0.00	0.00	0.00	21.18	26.49	0.00
51	0.00	0.00	0.00	0.00	17.06	26.49	0.00
52	0.13	0.00	0.02	0.00	12.85	26.49	0.00
53	1.75	0.00	0.28	0.00	8.59	26.49	0.00
54	2.53	0.00	0.40	0.00	4.67	26.49	0.00
55	2.64	0.00	0.42	0.00	5.26	26.49	0.00
56	24.98	0.00	3.96	0.00	41.34	26.49	8.33
57	143.70	0.00	23.25	0.00	92.55	31.75	11.81
58	0.00	0.00	0.00	0.00	35.50	26.49	8.33
59	0.00	0.00	0.00	0.00	31.77	26.49	8.33
60	0.00	0.00	0.00	0.00	27.66	26.49	8.33
61	0.00	0.00	0.00	0.00	23.33	26.49	0.00
62	0.00	0.00	0.00	0.00	18.84	26.49	0.00
63	0.14	0.00	0.02	0.00	14.20	26.49	0.00
64	1.98	0.00	0.31	0.00	9.47	26.49	0.00
65	2.82	0.00	0.45	0.00	4.99	26.49	0.00
66	2.94	0.00	0.46	0.00	5.48	26.49	0.00
67	24.90	0.00	3.94	0.00	41.36	26.49	8.33
68	143.67	0.00	23.25	0.00	92.57	31.75	11.82
69	0.00	0.00	0.00	0.00	32.76	26.49	8.33
70	0.00	0.00	0.00	0.00	29.13	26.49	8.33
71	0.00	0.00	0.00	0.00	25.22	26.49	0.00
72	0.00	0.00	0.00	0.00	21.18	26.49	0.00
73	0.00	0.00	0.00	0.00	17.06	26.49	0.00
74	0.13	0.00	0.02	0.00	12.85	26.49	0.00
75	1.75	0.00	0.28	0.00	8.59	26.49	0.00
76	2.53	0.00	0.40	0.00	4.67	26.49	0.00
77	2.64	0.00	0.42	0.00	5.26	26.49	0.00

78	24.65	0.00	3.90	0.00	41.44	26.49	8.33
79	143.54	0.00	23.23	0.00	92.65	31.74	11.83
80	0.00	0.00	0.00	0.00	23.20	26.49	0.00
81	0.00	0.00	0.00	0.00	20.12	26.49	0.00
82	0.00	0.00	0.00	0.00	17.00	26.49	0.00
83	0.00	0.00	0.00	0.00	13.98	26.49	0.00
84	0.00	0.00	0.00	0.00	11.09	26.49	0.00
85	0.00	0.00	0.00	0.00	8.33	26.49	0.00
86	0.81	0.00	0.13	0.00	5.71	26.49	0.00
87	1.42	0.00	0.22	0.00	3.64	26.49	0.00
88	1.60	0.00	0.25	0.00	4.60	26.49	0.00
89	24.13	0.00	3.82	0.00	41.57	26.49	8.33
90	143.26	0.00	23.18	0.00	92.78	31.72	11.86
91	0.00	0.00	0.00	0.00	5.97	26.49	0.00
92	0.00	0.00	0.00	0.00	4.62	26.49	0.00
93	0.00	0.00	0.00	0.00	3.61	26.49	0.00
94	0.00	0.00	0.00	0.00	2.66	26.49	0.00
95	0.00	0.00	0.00	0.00	1.83	26.49	0.00
96	0.00	0.00	0.00	0.00	1.12	26.49	0.00
97	0.00	0.00	0.00	0.00	0.65	26.49	0.00
98	0.00	0.00	0.00	0.00	0.54	26.49	0.00
99	0.00	0.00	0.00	0.00	1.67	26.49	0.00
100	23.37	0.00	3.70	0.00	41.55	26.49	8.33
101	142.45	0.00	23.04	0.00	92.76	31.66	11.87
102	0.31	0.00	0.05	0.00	2.42	26.49	0.00
103	0.29	0.00	0.05	0.00	2.29	26.49	0.00
104	0.27	0.00	0.04	0.00	2.17	26.49	0.00
105	0.26	0.00	0.04	0.00	2.04	26.49	0.00
106	0.24	0.00	0.04	0.00	1.90	26.49	0.00
107	0.22	0.00	0.04	0.00	1.77	26.49	0.00
108	0.21	0.00	0.03	0.00	1.65	26.49	0.00
109	0.19	0.00	0.03	0.00	1.52	26.49	0.00
110	0.18	0.00	0.03	0.00	2.77	26.49	0.00
111	38.26	0.00	6.07	0.00	17.43	26.49	0.00
112	80.76	0.00	12.92	0.00	34.32	27.84	8.33
113	8.19	0.00	1.29	0.00	0.00	0.00	0.00
114	0.00	0.00	0.00	0.00	0.00	0.00	0.00
115	0.00	0.00	0.00	0.00	0.42	26.49	0.00
116	0.00	0.00	0.00	0.00	2.16	26.49	0.00
117	0.12	0.00	0.02	0.00	2.07	26.49	0.00
118	0.19	0.00	0.03	0.00	1.88	26.49	0.00
119	0.20	0.00	0.03	0.00	1.74	26.49	0.00
120	0.21	0.00	0.03	0.00	1.63	26.49	0.00
121	0.29	0.00	0.04	0.00	3.05	26.49	0.00

Esfuerzos transversales pm1. Signo+

As1: Armadura de tracción de cálculo en cara inferior pm1.
As2: Armadura de compresión de cálculo en cara superior pm1.
  Si As1,As2=-1 -> Sección insuficiente para resistir los esfuerzos.
As3: Armadura de cortante pm2 (incluye armadura mínima).
  Si As3=-1 -> No se cumple la comprobación en el hormigón Vd<Vu1.

Nodo	Md(mT)	Nd(T)	As1(cm2/m)	As2(cm2/m)	Vd(T)	Vcu(T)	As3(cm2/m2)
1	0.26	0.00	0.04	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	46.65	26.49	8.33
3	6.56	0.00	1.04	0.00	0.00	0.00	0.00
4	0.81	0.00	0.13	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	2.49	26.49	0.00
6	0.00	0.00	0.00	0.00	4.13	26.49	0.00
7	0.00	0.00	0.00	0.00	3.97	26.49	0.00
8	0.00	0.00	0.00	0.00	3.65	26.49	0.00
9	0.00	0.00	0.00	0.00	3.34	26.49	0.00
10	0.00	0.00	0.00	0.00	3.06	26.49	0.00
11	0.04	0.00	0.01	0.00	1.59	26.49	0.00
12	1.64	0.00	0.26	0.00	3.36	26.49	0.00
13	17.95	0.00	2.84	0.00	46.65	26.49	8.33
14	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	0.00	0.00	0.00	0.00	8.22	26.49	0.00
16	0.71	0.00	0.11	0.00	13.86	26.49	0.00
17	1.65	0.00	0.26	0.00	14.81	26.49	0.00
18	1.76	0.00	0.28	0.00	13.95	26.49	0.00
19	1.69	0.00	0.27	0.00	12.93	26.49	0.00
20	1.58	0.00	0.25	0.00	11.93	26.49	0.00
21	1.46	0.00	0.23	0.00	10.96	26.49	0.00
22	1.57	0.00	0.25	0.00	8.54	26.49	0.00
23	2.09	0.00	0.33	0.00	5.72	26.49	0.00
24	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25	0.00	0.00	0.00	0.00	7.06	26.49	0.00
26	0.00	0.00	0.00	0.00	7.48	26.49	0.00
27	0.00	0.00	0.00	0.00	8.88	26.49	0.00
28	0.00	0.00	0.00	0.00	10.63	26.49	0.00
29	0.00	0.00	0.00	0.00	12.44	26.49	0.00
30	0.00	0.00	0.00	0.00	16.12	26.49	0.00
31	0.00	0.00	0.00	0.00	22.25	26.49	0.00
32	0.00	0.00	0.00	0.00	30.77	26.49	8.33
33	2.48	0.00	0.39	0.00	46.02	26.49	8.33

34	2.28	0.00	0.36	0.00	5.66	26.49	0.00
35	0.00	0.00	0.00	0.00	0.00	0.00	0.00
36	0.00	0.00	0.00	0.00	7.66	26.49	0.00
37	0.16	0.00	0.02	0.00	7.64	26.49	0.00
38	0.40	0.00	0.06	0.00	8.24	26.49	0.00
39	0.66	0.00	0.10	0.00	9.01	26.49	0.00
40	1.33	0.00	0.21	0.00	9.80	26.49	0.00
41	3.01	0.00	0.48	0.00	10.66	26.49	0.00
42	4.67	0.00	0.74	0.00	11.75	26.49	0.00
43	6.35	0.00	1.00	0.00	13.86	26.49	0.00
44	10.66	0.00	1.68	0.00	25.86	26.49	0.00
45	2.35	0.00	0.37	0.00	5.63	26.49	0.00
46	0.00	0.00	0.00	0.00	0.00	0.00	0.00
47	0.00	0.00	0.00	0.00	8.92	26.49	0.00
48	0.00	0.00	0.00	0.00	8.87	26.49	0.00
49	0.00	0.00	0.00	0.00	9.02	26.49	0.00
50	0.78	0.00	0.12	0.00	9.23	26.49	0.00
51	2.87	0.00	0.45	0.00	9.45	26.49	0.00
52	5.22	0.00	0.82	0.00	9.69	26.49	0.00
53	7.61	0.00	1.20	0.00	10.05	26.49	0.00
54	10.21	0.00	1.61	0.00	10.76	26.49	0.00
55	14.50	0.00	2.29	0.00	12.13	26.49	0.00
56	2.36	0.00	0.37	0.00	5.63	26.49	0.00
57	0.00	0.00	0.00	0.00	0.00	0.00	0.00
58	0.00	0.00	0.00	0.00	10.34	26.49	0.00
59	0.00	0.00	0.00	0.00	10.40	26.49	0.00
60	0.00	0.00	0.00	0.00	10.23	26.49	0.00
61	0.50	0.00	0.08	0.00	10.01	26.49	0.00
62	2.86	0.00	0.45	0.00	9.77	26.49	0.00
63	5.33	0.00	0.84	0.00	9.51	26.49	0.00
64	7.90	0.00	1.25	0.00	9.18	26.49	0.00
65	10.74	0.00	1.70	0.00	8.53	26.49	0.00
66	15.40	0.00	2.44	0.00	4.65	26.49	0.00
67	2.35	0.00	0.37	0.00	5.63	26.49	0.00
68	0.00	0.00	0.00	0.00	0.00	0.00	0.00
69	0.00	0.00	0.00	0.00	11.71	26.49	0.00
70	0.00	0.00	0.00	0.00	11.74	26.49	0.00
71	0.00	0.00	0.00	0.00	11.08	26.49	0.00
72	0.78	0.00	0.12	0.00	10.25	26.49	0.00
73	2.87	0.00	0.45	0.00	9.42	26.49	0.00
74	5.22	0.00	0.82	0.00	8.63	26.49	0.00
75	7.61	0.00	1.20	0.00	7.62	26.49	0.00
76	10.21	0.00	1.61	0.00	5.74	26.49	0.00
77	14.50	0.00	2.29	0.00	0.00	0.00	0.00
78	2.28	0.00	0.36	0.00	5.62	26.49	0.00
79	0.00	0.00	0.00	0.00	0.00	0.00	0.00
80	0.00	0.00	0.00	0.00	12.39	26.49	0.00
81	0.16	0.00	0.02	0.00	11.92	26.49	0.00
82	0.40	0.00	0.06	0.00	10.38	26.49	0.00
83	0.66	0.00	0.10	0.00	8.67	26.49	0.00
84	1.33	0.00	0.21	0.00	7.01	26.49	0.00
85	3.01	0.00	0.48	0.00	5.38	26.49	0.00
86	4.67	0.00	0.74	0.00	3.55	26.49	0.00
87	6.35	0.00	1.00	0.00	0.68	26.49	0.00
88	10.66	0.00	1.68	0.00	0.00	0.00	0.00
89	2.09	0.00	0.33	0.00	5.59	26.49	0.00
90	0.00	0.00	0.00	0.00	0.00	0.00	0.00
91	0.00	0.00	0.00	0.00	10.85	26.49	0.00
92	0.00	0.00	0.00	0.00	9.92	26.49	0.00
93	0.00	0.00	0.00	0.00	7.97	26.49	0.00
94	0.00	0.00	0.00	0.00	5.42	26.49	0.00
95	0.00	0.00	0.00	0.00	2.47	26.49	0.00
96	0.00	0.00	0.00	0.00	0.00	0.00	0.00
97	0.00	0.00	0.00	0.00	0.00	0.00	0.00
98	0.00	0.00	0.00	0.00	0.00	0.00	0.00
99	2.48	0.00	0.39	0.00	0.00	0.00	0.00
100	1.64	0.00	0.26	0.00	5.53	26.49	0.00
101	17.95	0.00	2.84	0.00	0.00	0.00	0.00
102	0.00	0.00	0.00	0.00	19.65	26.49	0.00
103	0.00	0.00	0.00	0.00	3.83	26.49	0.00
104	0.71	0.00	0.11	0.00	0.00	0.00	0.00
105	1.65	0.00	0.26	0.00	0.00	0.00	0.00
106	1.76	0.00	0.28	0.00	0.00	0.00	0.00
107	1.69	0.00	0.27	0.00	0.00	0.00	0.00
108	1.58	0.00	0.25	0.00	0.00	0.00	0.00
109	1.46	0.00	0.23	0.00	0.00	0.00	0.00
110	1.57	0.00	0.25	0.00	0.00	0.00	0.00
111	0.26	0.00	0.04	0.00	1.46	26.49	0.00
112	0.00	0.00	0.00	0.00	0.00	0.00	0.00
113	6.56	0.00	1.04	0.00	32.40	26.49	8.33
114	0.81	0.00	0.13	0.00	7.67	26.49	0.00
115	0.00	0.00	0.00	0.00	0.00	0.00	0.00
116	0.00	0.00	0.00	0.00	0.00	0.00	0.00
117	0.00	0.00	0.00	0.00	0.00	0.00	0.00
118	0.00	0.00	0.00	0.00	0.00	0.00	0.00
119	0.00	0.00	0.00	0.00	0.00	0.00	0.00
120	0.00	0.00	0.00	0.00	0.00	0.00	0.00
121	0.04	0.00	0.01	0.00	0.00	0.00	0.00

122	0.00	0.00	0.00	0.00	16.82	26.49	0.00
123	0.00	0.00	0.00	0.00	18.83	26.49	0.00
124	0.71	0.00	0.11	0.00	25.22	26.49	0.00
125	1.65	0.00	0.26	0.00	28.83	26.49	8.33
126	1.76	0.00	0.28	0.00	35.16	26.49	8.33
127	1.69	0.00	0.27	0.00	42.23	26.49	8.33
128	1.58	0.00	0.25	0.00	50.53	26.49	8.33
129	1.46	0.00	0.23	0.00	61.39	26.49	8.33
130	1.57	0.00	0.25	0.00	73.63	26.98	9.06
131	0.00	0.00	0.00	0.00	6.90	26.49	0.00
132	0.00	0.00	0.00	0.00	0.00	0.00	0.00
133	0.71	0.00	0.11	0.00	0.00	0.00	0.00
134	1.65	0.00	0.26	0.00	0.00	0.00	0.00
135	1.76	0.00	0.28	0.00	0.00	0.00	0.00
136	1.69	0.00	0.27	0.00	0.00	0.00	0.00
137	1.58	0.00	0.25	0.00	0.00	0.00	0.00
138	1.46	0.00	0.23	0.00	0.00	0.00	0.00
139	1.57	0.00	0.25	0.00	0.00	0.00	0.00

Esfuerzos longitudinales pml. Signo-

As1: Armadura de tracción de cálculo en cara superior pml.
As2: Armadura de compresión de cálculo en cara inferior pml.
  Si As1,As2=-1 -> Sección insuficiente para resistir los esfuerzos.
As3: Armadura de cortante pm2 (incluye armadura mínima).
  Si As3=-1 -> No se cumple la comprobación en el hormigón Vd<Vu1.

Nodo	Md(mT)	Nd(T)	As1(cm2/m)	As2(cm2/m)	Vd(T)	Vcu(T)	As3(cm2/m2)
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	-51.80	27.84	8.33
3	0.00	0.00	0.00	0.00	-62.83	26.49	8.33
4	-1.34	0.00	0.21	0.00	-15.25	26.49	0.00
5	-0.92	0.00	0.15	0.00	-1.96	26.49	0.00
6	-0.16	0.00	0.02	0.00	-1.79	26.49	0.00
7	0.00	0.00	0.00	0.00	-1.72	26.49	0.00
8	0.00	0.00	0.00	0.00	-1.61	26.49	0.00
9	0.00	0.00	0.00	0.00	-1.45	26.49	0.00
10	0.00	0.00	0.00	0.00	-1.30	26.49	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13	0.00	0.00	0.00	0.00	-4.95	31.66	0.00
14	0.00	0.00	0.00	0.00	-2.35	26.49	0.00
15	0.00	0.00	0.00	0.00	-2.22	26.49	0.00
16	0.00	0.00	0.00	0.00	-2.09	26.49	0.00
17	0.00	0.00	0.00	0.00	-1.96	26.49	0.00
18	0.00	0.00	0.00	0.00	-1.83	26.49	0.00
19	0.00	0.00	0.00	0.00	-1.70	26.49	0.00
20	0.00	0.00	0.00	0.00	-1.57	26.49	0.00
21	0.00	0.00	0.00	0.00	-1.44	26.49	0.00
22	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	-12.56	0.00	1.98	0.00	-0.12	31.72	0.00
25	-9.68	0.00	1.53	0.00	-0.41	26.49	0.00
26	-6.99	0.00	1.10	0.00	-0.89	26.49	0.00
27	-4.71	0.00	0.74	0.00	-1.46	26.49	0.00
28	-3.00	0.00	0.47	0.00	-2.03	26.49	0.00
29	-1.83	0.00	0.29	0.00	-2.52	26.49	0.00
30	-1.16	0.00	0.18	0.00	-2.79	26.49	0.00
31	-0.88	0.00	0.14	0.00	-2.64	26.49	0.00
32	-0.76	0.00	0.12	0.00	-2.03	26.49	0.00
33	-0.82	0.00	0.13	0.00	0.00	0.00	0.00
34	0.00	0.00	0.00	0.00	0.00	0.00	0.00
35	-35.41	0.00	5.62	0.00	0.00	0.00	0.00
36	-26.16	0.00	4.14	0.00	0.00	0.00	0.00
37	-18.43	0.00	2.91	0.00	0.00	0.00	0.00
38	-12.13	0.00	1.92	0.00	0.00	0.00	0.00
39	-7.23	0.00	1.14	0.00	0.00	0.00	0.00
40	-3.56	0.00	0.56	0.00	0.00	0.00	0.00
41	-0.97	0.00	0.15	0.00	0.00	0.00	0.00
42	0.00	0.00	0.00	0.00	0.00	0.00	0.00
43	0.00	0.00	0.00	0.00	-0.52	26.49	0.00
44	0.00	0.00	0.00	0.00	0.00	0.00	0.00
45	0.00	0.00	0.00	0.00	0.00	0.00	0.00
46	-50.70	0.00	8.07	0.00	0.00	0.00	0.00
47	-37.80	0.00	6.00	0.00	0.00	0.00	0.00
48	-26.78	0.00	4.24	0.00	0.00	0.00	0.00
49	-17.63	0.00	2.79	0.00	0.00	0.00	0.00
50	-10.28	0.00	1.62	0.00	0.00	0.00	0.00
51	-4.76	0.00	0.75	0.00	0.00	0.00	0.00
52	-0.87	0.00	0.14	0.00	0.00	0.00	0.00
53	0.00	0.00	0.00	0.00	0.00	0.00	0.00
54	0.00	0.00	0.00	0.00	-0.19	26.49	0.00
55	0.00	0.00	0.00	0.00	0.00	0.00	0.00
56	0.00	0.00	0.00	0.00	0.00	0.00	0.00
57	-55.72	0.00	8.87	0.00	0.00	0.00	0.00
58	-41.76	0.00	6.63	0.00	0.00	0.00	0.00
59	-29.71	0.00	4.71	0.00	0.00	0.00	0.00

60	-19.61	0.00	3.10	0.00	0.00	0.00	0.00
61	-11.44	0.00	1.81	0.00	0.00	0.00	0.00
62	-5.28	0.00	0.83	0.00	0.00	0.00	0.00
63	-0.93	0.00	0.15	0.00	0.00	0.00	0.00
64	0.00	0.00	0.00	0.00	0.00	0.00	0.00
65	0.00	0.00	0.00	0.00	-0.09	26.49	0.00
66	0.00	0.00	0.00	0.00	0.00	0.00	0.00
67	0.00	0.00	0.00	0.00	0.00	0.00	0.00
68	-50.70	0.00	8.07	0.00	0.00	0.00	0.00
69	-37.80	0.00	6.00	0.00	0.00	0.00	0.00
70	-26.78	0.00	4.24	0.00	0.00	0.00	0.00
71	-17.63	0.00	2.79	0.00	0.00	0.00	0.00
72	-10.28	0.00	1.62	0.00	0.00	0.00	0.00
73	-4.76	0.00	0.75	0.00	0.00	0.00	0.00
74	-0.87	0.00	0.14	0.00	0.00	0.00	0.00
75	0.00	0.00	0.00	0.00	0.00	0.00	0.00
76	0.00	0.00	0.00	0.00	-0.19	26.49	0.00
77	0.00	0.00	0.00	0.00	0.00	0.00	0.00
78	0.00	0.00	0.00	0.00	0.00	0.00	0.00
79	-35.41	0.00	5.62	0.00	0.00	0.00	0.00
80	-26.16	0.00	4.14	0.00	0.00	0.00	0.00
81	-18.43	0.00	2.91	0.00	0.00	0.00	0.00
82	-12.13	0.00	1.92	0.00	0.00	0.00	0.00
83	-7.23	0.00	1.14	0.00	0.00	0.00	0.00
84	-3.56	0.00	0.56	0.00	0.00	0.00	0.00
85	-0.97	0.00	0.15	0.00	0.00	0.00	0.00
86	0.00	0.00	0.00	0.00	0.00	0.00	0.00
87	0.00	0.00	0.00	0.00	-0.52	26.49	0.00
88	0.00	0.00	0.00	0.00	0.00	0.00	0.00
89	0.00	0.00	0.00	0.00	0.00	0.00	0.00
90	-12.56	0.00	1.98	0.00	-0.12	31.72	0.00
91	-9.68	0.00	1.53	0.00	-0.41	26.49	0.00
92	-6.99	0.00	1.10	0.00	-0.89	26.49	0.00
93	-4.71	0.00	0.74	0.00	-1.46	26.49	0.00
94	-3.00	0.00	0.47	0.00	-2.03	26.49	0.00
95	-1.83	0.00	0.29	0.00	-2.52	26.49	0.00
96	-1.16	0.00	0.18	0.00	-2.79	26.49	0.00
97	-0.88	0.00	0.14	0.00	-2.64	26.49	0.00
98	-0.76	0.00	0.12	0.00	-2.03	26.49	0.00
99	-0.82	0.00	0.13	0.00	0.00	0.00	0.00
100	0.00	0.00	0.00	0.00	0.00	0.00	0.00
101	0.00	0.00	0.00	0.00	-4.95	31.66	0.00
102	0.00	0.00	0.00	0.00	-2.35	26.49	0.00
103	0.00	0.00	0.00	0.00	-2.22	26.49	0.00
104	0.00	0.00	0.00	0.00	-2.09	26.49	0.00
105	0.00	0.00	0.00	0.00	-1.96	26.49	0.00
106	0.00	0.00	0.00	0.00	-1.83	26.49	0.00
107	0.00	0.00	0.00	0.00	-1.70	26.49	0.00
108	0.00	0.00	0.00	0.00	-1.57	26.49	0.00
109	0.00	0.00	0.00	0.00	-1.44	26.49	0.00
110	0.00	0.00	0.00	0.00	0.00	0.00	0.00
111	0.00	0.00	0.00	0.00	0.00	0.00	0.00
112	0.00	0.00	0.00	0.00	-51.80	27.84	8.33
113	0.00	0.00	0.00	0.00	-62.83	26.49	8.33
114	-1.34	0.00	0.21	0.00	-15.25	26.49	0.00
115	-0.92	0.00	0.15	0.00	-1.96	26.49	0.00
116	-0.16	0.00	0.02	0.00	-1.79	26.49	0.00
117	0.00	0.00	0.00	0.00	-1.72	26.49	0.00
118	0.00	0.00	0.00	0.00	-1.61	26.49	0.00
119	0.00	0.00	0.00	0.00	-1.45	26.49	0.00
120	0.00	0.00	0.00	0.00	-1.30	26.49	0.00
121	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Esfuerzos transversales pml. Signo-

As1: Armadura de tracción de càlculo en cara superior pml.
As2: Armadura de compresión de càlculo en cara inferior pml.
Si As1,As2=-1 -> Sección insuficiente para resistir los esfuerzos.
As3: Armadura de cortante pm2 (incluye armadura mínima).
Si As3=-1 -> No se cumple la comprobación en el hormigón Vd<Vu1.

Nodo	Md(mT)	Nd(T)	As1(cm2/m)	As2(cm2/m)	Vd(T)	Vcu(T)	As3(cm2/m2)
1	0.00	0.00	0.00	0.00	-1.46	26.49	0.00
2	-4.18	0.00	0.66	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	-32.40	26.49	8.33
4	0.00	0.00	0.00	0.00	-7.67	26.49	0.00
5	-0.47	0.00	0.07	0.00	0.00	0.00	0.00
6	-0.31	0.00	0.05	0.00	0.00	0.00	0.00
7	-0.12	0.00	0.02	0.00	0.00	0.00	0.00
8	-0.04	0.00	0.01	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13	0.00	0.00	0.00	0.00	-5.53	26.49	0.00
14	-8.81	0.00	1.39	0.00	-19.65	26.49	0.00
15	-2.82	0.00	0.45	0.00	-3.83	26.49	0.00

16	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23	0.00	0.00	0.00	0.00	-5.59	26.49	0.00
24	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25	-4.06	0.00	0.64	0.00	-10.85	26.49	0.00
26	-4.72	0.00	0.75	0.00	-9.92	26.49	0.00
27	-5.66	0.00	0.89	0.00	-7.97	26.49	0.00
28	-6.66	0.00	1.05	0.00	-5.42	26.49	0.00
29	-7.65	0.00	1.21	0.00	-2.47	26.49	0.00
30	-8.44	0.00	1.33	0.00	0.00	0.00	0.00
31	-8.93	0.00	1.41	0.00	0.00	0.00	0.00
32	-9.14	0.00	1.44	0.00	0.00	0.00	0.00
33	-11.11	0.00	1.75	0.00	0.00	0.00	0.00
34	0.00	0.00	0.00	0.00	-5.62	26.49	0.00
35	0.00	0.00	0.00	0.00	0.00	0.00	0.00
36	-4.33	0.00	0.68	0.00	-12.39	26.49	0.00
37	-3.46	0.00	0.55	0.00	-11.92	26.49	0.00
38	-2.33	0.00	0.37	0.00	-10.38	26.49	0.00
39	-1.12	0.00	0.18	0.00	-8.67	26.49	0.00
40	0.00	0.00	0.00	0.00	-7.01	26.49	0.00
41	0.00	0.00	0.00	0.00	-5.38	26.49	0.00
42	0.00	0.00	0.00	0.00	-3.55	26.49	0.00
43	0.00	0.00	0.00	0.00	-0.68	26.49	0.00
44	-1.39	0.00	0.22	0.00	0.00	0.00	0.00
45	0.00	0.00	0.00	0.00	-5.63	26.49	0.00
46	0.00	0.00	0.00	0.00	0.00	0.00	0.00
47	-4.44	0.00	0.70	0.00	-11.71	26.49	0.00
48	-3.40	0.00	0.54	0.00	-11.74	26.49	0.00
49	-1.74	0.00	0.28	0.00	-11.08	26.49	0.00
50	-0.35	0.00	0.06	0.00	-10.25	26.49	0.00
51	0.00	0.00	0.00	0.00	-9.42	26.49	0.00
52	0.00	0.00	0.00	0.00	-8.63	26.49	0.00
53	0.00	0.00	0.00	0.00	-7.62	26.49	0.00
54	0.00	0.00	0.00	0.00	-5.74	26.49	0.00
55	0.00	0.00	0.00	0.00	0.00	0.00	0.00
56	0.00	0.00	0.00	0.00	-5.63	26.49	0.00
57	0.00	0.00	0.00	0.00	0.00	0.00	0.00
58	-4.42	0.00	0.70	0.00	-10.34	26.49	0.00
59	-3.44	0.00	0.54	0.00	-10.40	26.49	0.00
60	-1.84	0.00	0.29	0.00	-10.23	26.49	0.00
61	0.00	0.00	0.00	0.00	-10.01	26.49	0.00
62	0.00	0.00	0.00	0.00	-9.77	26.49	0.00
63	0.00	0.00	0.00	0.00	-9.51	26.49	0.00
64	0.00	0.00	0.00	0.00	-9.18	26.49	0.00
65	0.00	0.00	0.00	0.00	-8.53	26.49	0.00
66	0.00	0.00	0.00	0.00	-4.65	26.49	0.00
67	0.00	0.00	0.00	0.00	-5.63	26.49	0.00
68	0.00	0.00	0.00	0.00	0.00	0.00	0.00
69	-4.44	0.00	0.70	0.00	-8.92	26.49	0.00
70	-3.40	0.00	0.54	0.00	-8.87	26.49	0.00
71	-1.74	0.00	0.28	0.00	-9.02	26.49	0.00
72	-0.35	0.00	0.06	0.00	-9.23	26.49	0.00
73	0.00	0.00	0.00	0.00	-9.45	26.49	0.00
74	0.00	0.00	0.00	0.00	-9.69	26.49	0.00
75	0.00	0.00	0.00	0.00	-10.05	26.49	0.00
76	0.00	0.00	0.00	0.00	-10.76	26.49	0.00
77	0.00	0.00	0.00	0.00	-12.13	26.49	0.00
78	0.00	0.00	0.00	0.00	-5.66	26.49	0.00
79	0.00	0.00	0.00	0.00	0.00	0.00	0.00
80	-4.33	0.00	0.68	0.00	-7.66	26.49	0.00
81	-3.46	0.00	0.55	0.00	-7.64	26.49	0.00
82	-2.33	0.00	0.37	0.00	-8.24	26.49	0.00
83	-1.12	0.00	0.18	0.00	-9.01	26.49	0.00
84	0.00	0.00	0.00	0.00	-9.80	26.49	0.00
85	0.00	0.00	0.00	0.00	-10.66	26.49	0.00
86	0.00	0.00	0.00	0.00	-11.75	26.49	0.00
87	0.00	0.00	0.00	0.00	-13.86	26.49	0.00
88	-1.39	0.00	0.22	0.00	-25.86	26.49	0.00
89	0.00	0.00	0.00	0.00	-5.72	26.49	0.00
90	0.00	0.00	0.00	0.00	0.00	0.00	0.00
91	-4.06	0.00	0.64	0.00	-7.06	26.49	0.00
92	-4.72	0.00	0.75	0.00	-7.48	26.49	0.00
93	-5.66	0.00	0.89	0.00	-8.88	26.49	0.00
94	-6.66	0.00	1.05	0.00	-10.63	26.49	0.00
95	-7.65	0.00	1.21	0.00	-12.44	26.49	0.00
96	-8.44	0.00	1.33	0.00	-16.12	26.49	0.00
97	-8.93	0.00	1.41	0.00	-22.25	26.49	0.00
98	-9.14	0.00	1.44	0.00	-30.77	26.49	8.33
99	-11.11	0.00	1.75	0.00	-46.02	26.49	8.33
100	0.00	0.00	0.00	0.00	-3.36	26.49	0.00
101	0.00	0.00	0.00	0.00	-46.65	26.49	8.33
102	-8.81	0.00	1.39	0.00	0.00	0.00	0.00
103	-2.82	0.00	0.45	0.00	-8.22	26.49	0.00

104	0.00	0.00	0.00	0.00	-13.86	26.49	0.00
105	0.00	0.00	0.00	0.00	-14.81	26.49	0.00
106	0.00	0.00	0.00	0.00	-13.95	26.49	0.00
107	0.00	0.00	0.00	0.00	-12.93	26.49	0.00
108	0.00	0.00	0.00	0.00	-11.93	26.49	0.00
109	0.00	0.00	0.00	0.00	-10.96	26.49	0.00
110	0.00	0.00	0.00	0.00	-8.54	26.49	0.00
111	0.00	0.00	0.00	0.00	0.00	0.00	0.00
112	-4.18	0.00	0.66	0.00	-46.65	26.49	8.33
113	0.00	0.00	0.00	0.00	0.00	0.00	0.00
114	0.00	0.00	0.00	0.00	0.00	0.00	0.00
115	-0.47	0.00	0.07	0.00	-2.49	26.49	0.00
116	-0.31	0.00	0.05	0.00	-4.13	26.49	0.00
117	-0.12	0.00	0.02	0.00	-3.97	26.49	0.00
118	-0.04	0.00	0.01	0.00	-3.65	26.49	0.00
119	0.00	0.00	0.00	0.00	-3.34	26.49	0.00
120	0.00	0.00	0.00	0.00	-3.06	26.49	0.00
121	0.00	0.00	0.00	0.00	-1.59	26.49	0.00
122	-8.81	0.00	1.39	0.00	-6.90	26.49	0.00
123	-7.83	0.00	1.24	0.00	0.00	0.00	0.00
124	-13.81	0.00	2.18	0.00	0.00	0.00	0.00
125	-21.17	0.00	3.35	0.00	0.00	0.00	0.00
126	-29.42	0.00	4.66	0.00	0.00	0.00	0.00
127	-38.35	0.00	6.09	0.00	0.00	0.00	0.00
128	-48.05	0.00	7.64	0.00	0.00	0.00	0.00
129	-59.04	0.00	9.41	0.00	0.00	0.00	0.00
130	-71.72	0.00	11.45	0.00	0.00	0.00	0.00
131	-8.81	0.00	1.39	0.00	-16.82	26.49	0.00
132	-7.83	0.00	1.24	0.00	-18.83	26.49	0.00
133	-13.81	0.00	2.18	0.00	-25.22	26.49	0.00
134	-21.17	0.00	3.35	0.00	-28.83	26.49	8.33
135	-29.42	0.00	4.66	0.00	-35.16	26.49	8.33
136	-38.35	0.00	6.09	0.00	-42.23	26.49	8.33
137	-48.05	0.00	7.64	0.00	-50.53	26.49	8.33
138	-59.04	0.00	9.41	0.00	-61.39	26.49	8.33
139	-71.72	0.00	11.45	0.00	-73.63	26.98	9.06

CALCULO DEL MURO

Esfuerzos longitudinales pm1. Signo+

As1: Armadura de tracción de cálculo en cara exterior pm1.
As2: Armadura de compresión de cálculo en cara interior pm1.
  Si As1,As2=-1 -> Sección insuficiente para resistir los esfuerzos.
As3: Armadura de cortante pm2 (incluye armadura mínima).
  Si As3=-1 -> No se cumple la comprobación en el hormigón Vd<Vu1.

Nodo	Md(mT)	Nd(T)	As1(cm2/m)	As2(cm2/m)	Vd(T)	Vcu(T)	As3(cm2/m2)
61	-10.00	90.98	0.00	0.00	16.06	19.62	0.00
62	-6.47	80.78	0.00	0.00	11.46	19.62	0.00
63	-3.64	60.37	0.00	0.00	5.94	19.62	0.00
64	-2.30	42.95	0.00	0.00	4.18	19.62	0.00
65	-1.25	33.45	0.00	0.00	3.05	19.62	0.00
66	-0.78	27.27	0.00	0.00	2.26	19.62	0.00
67	-0.10	23.77	0.00	0.00	2.03	23.86	0.00
68	1.46	10.40	0.00	0.00	-0.19	28.03	0.00
69	-0.22	0.98	0.00	0.00	-0.98	10.79	0.00
70	-0.07	0.63	0.00	0.00	-0.22	6.45	0.00
71	-19.95	59.92	0.00	0.00	22.58	19.62	7.50
72	-11.74	56.89	0.00	0.00	16.20	19.62	0.00
73	-2.89	49.91	0.00	0.00	6.81	19.62	0.00
74	0.64	47.28	0.00	0.00	2.35	19.62	0.00
75	1.16	37.56	0.00	0.00	0.69	19.62	0.00
76	0.05	28.97	0.00	0.00	0.23	19.62	0.00
77	-0.29	23.89	0.00	0.00	0.31	23.86	0.00
78	-0.11	12.39	0.00	0.00	0.08	28.03	0.00
79	0.03	1.21	0.00	0.00	-0.15	10.79	0.00
80	-0.02	0.64	0.00	0.00	-0.17	6.45	0.00
81	-29.68	52.16	0.00	0.00	34.10	19.62	7.50
82	-16.98	49.91	0.00	0.00	26.29	19.62	7.50
83	-2.10	47.46	0.00	0.00	13.31	19.62	0.00
84	5.24	42.96	0.00	0.00	4.66	19.62	0.00
85	5.29	35.87	0.00	0.00	0.36	19.62	0.00
86	1.83	28.60	0.00	0.00	-1.16	19.62	0.00
87	-0.76	23.75	0.00	0.00	-0.95	23.86	0.00
88	-0.88	12.25	0.00	0.00	0.37	28.03	0.00
89	-0.10	1.27	0.00	0.00	0.63	10.79	0.00
90	0.00	0.66	0.00	0.00	0.07	6.45	0.00
91	-29.33	51.98	0.00	0.00	33.86	19.62	7.50
92	-16.72	49.73	0.00	0.00	26.07	19.62	7.50
93	-1.95	47.28	0.00	0.00	13.12	19.62	0.00
94	5.29	42.81	0.00	0.00	4.52	19.62	0.00
95	5.26	35.79	0.00	0.00	0.28	19.62	0.00
96	1.77	28.57	0.00	0.00	-1.20	19.62	0.00
97	-0.80	23.61	0.00	0.00	-0.97	23.86	0.00
98	-0.90	12.25	0.00	0.00	0.38	28.03	0.00

99	-0.10	1.27	0.00	0.00	0.65	10.79	0.00
100	0.00	0.66	0.00	0.00	0.07	6.45	0.00
101	-19.03	59.21	0.00	0.00	21.95	19.62	7.50
102	-11.04	56.24	0.00	0.00	15.61	19.62	0.00
103	-2.55	49.44	0.00	0.00	6.29	19.62	0.00
104	0.79	46.90	0.00	0.00	2.02	19.62	0.00
105	1.07	37.41	0.00	0.00	0.48	19.62	0.00
106	-0.12	28.92	0.00	0.00	0.20	19.62	0.00
107	-0.30	23.88	0.00	0.00	0.32	23.86	0.00
108	0.01	12.38	0.00	0.00	-0.03	28.03	0.00
109	0.05	1.20	0.00	0.00	-0.26	10.79	0.00
110	-0.03	0.64	0.00	0.00	-0.20	6.45	0.00
111	-9.13	88.59	0.00	0.00	15.64	19.62	0.00
112	-5.71	78.94	0.00	0.00	10.96	19.62	0.00
113	-3.19	59.53	0.00	0.00	5.46	19.62	0.00
114	-2.02	42.78	0.00	0.00	3.86	19.62	0.00
115	-1.04	33.60	0.00	0.00	2.71	19.62	0.00
116	-0.68	34.48	0.00	0.00	1.67	19.62	0.00
117	-0.37	23.90	0.00	0.00	1.34	23.86	0.00
118	1.45	10.25	0.00	0.00	-0.72	28.03	0.00
119	-0.26	0.86	0.00	0.00	-1.23	10.79	0.00
120	-0.08	0.63	0.00	0.00	-0.26	6.45	0.00

Esfuerzos transversales pm1. Signo+

As1: Armadura de tracción de cálculo en cara exterior pm1.
As2: Armadura de compresión de cálculo en cara interior pm1.
  Si As1,As2=-1 -> Sección insuficiente para resistir los esfuerzos.
As3: Armadura de cortante pm2 (incluye armadura mínima).
  Si As3=-1 -> No se cumple la comprobación en el hormigón Vd<Vu1.

Nodo	Md(mT)	Nd(T)	As1(cm2/m)	As2(cm2/m)	Vd(T)	Vcu(T)	As3(cm2/m2)
61	0.00	0.00	0.00	0.00	0.00	0.00	0.00
62	-1.52	-0.34	0.00	0.00	0.96	23.77	0.00
63	-9.28	-2.36	0.00	0.00	8.84	23.77	0.00
64	-14.50	-4.70	0.00	0.00	14.01	23.77	0.00
65	-15.44	-6.39	0.00	0.00	14.97	23.77	0.00
66	-13.32	-7.24	0.00	0.00	13.30	23.77	0.00
67	-16.40	-9.43	0.00	0.00	16.30	28.90	0.00
68	-27.49	-11.84	0.00	0.00	31.16	33.95	0.00
69	-3.96	-4.05	0.00	0.00	4.55	13.08	0.00
70	-0.97	-2.22	0.00	0.00	1.17	7.81	0.00
71	0.00	0.00	0.00	0.00	0.00	0.00	0.00
72	1.16	-0.30	0.28	0.00	-0.00	23.77	0.00
73	3.09	-2.96	1.01	0.00	5.07	23.77	0.00
74	4.23	-6.56	1.68	0.00	9.23	23.77	0.00
75	4.74	-10.04	2.20	0.06	10.40	23.77	0.00
76	5.27	-13.02	2.66	0.28	9.46	23.77	0.00
77	8.92	-18.22	3.63	0.48	13.35	28.90	0.00
78	15.48	-23.03	4.85	0.34	30.59	33.95	0.00
79	2.04	-8.15	1.93	0.00	2.42	13.08	0.00
80	0.40	-4.82	1.00	0.09	0.54	7.81	0.00
81	0.00	0.00	0.00	0.00	0.00	0.00	0.00
82	0.35	-0.19	0.10	0.00	-0.44	23.77	0.00
83	5.57	-2.05	1.44	0.00	0.67	23.77	0.00
84	11.19	-5.32	3.04	0.00	2.20	23.77	0.00
85	14.55	-9.36	4.24	0.00	2.88	23.77	0.00
86	15.73	-13.65	5.00	0.00	2.76	23.77	0.00
87	30.98	-20.80	7.72	0.00	5.16	28.90	0.00
88	52.73	-27.41	10.64	0.00	6.81	33.95	0.00
89	1.95	-10.40	2.15	0.19	0.12	13.08	0.00
90	0.30	-6.32	1.05	0.37	0.02	7.81	0.00
91	0.00	0.00	0.00	0.00	0.00	0.00	0.00
92	0.39	-0.19	0.11	0.00	0.92	23.77	0.00
93	5.50	-2.07	1.43	0.00	-0.34	23.77	0.00
94	11.03	-5.36	3.01	0.00	-1.45	23.77	0.00
95	14.29	-9.44	4.19	0.00	-1.92	23.77	0.00
96	15.37	-13.76	4.93	0.00	-1.86	23.77	0.00
97	30.24	-20.98	7.61	0.00	-3.29	28.90	0.00
98	51.34	-27.64	10.47	0.00	-4.56	33.95	0.00
99	1.88	-10.49	2.13	0.24	-0.12	13.08	0.00
100	0.29	-6.38	1.05	0.39	0.00	0.00	0.00
101	0.00	0.00	0.00	0.00	0.00	0.00	0.00
102	1.17	-0.30	0.29	0.00	0.67	23.77	0.00
103	2.80	-3.01	0.96	0.00	-3.06	23.77	0.00
104	3.58	-6.72	1.56	0.00	-5.87	23.77	0.00
105	3.78	-10.33	2.02	0.31	-6.61	23.77	0.00
106	4.16	-13.44	2.45	0.58	-6.95	23.77	0.00
107	6.34	-18.84	3.25	1.00	-8.06	28.90	0.00
108	10.53	-19.82	3.77	0.70	-16.14	33.95	0.00
109	2.07	-8.44	1.98	0.00	-1.59	13.08	0.00
110	0.43	-4.99	1.04	0.08	-0.37	7.81	0.00
111	0.00	0.00	0.00	0.00	0.00	0.00	0.00
112	-1.56	-0.35	0.00	0.00	-0.42	23.77	0.00
113	-9.64	-2.39	0.00	0.00	-5.42	23.77	0.00
114	-15.39	-4.85	0.00	0.00	-8.89	23.77	0.00
115	-16.79	-6.65	0.00	0.00	-9.47	23.77	0.00

116	-14.92	-7.62	0.00	0.00	-8.29	23.77	0.00
117	-18.72	-9.98	0.00	0.00	-9.62	28.90	0.00
118	-32.40	-12.55	0.00	0.00	-17.24	33.95	0.00
119	-4.72	-4.30	0.00	0.00	-3.00	13.08	0.00
120	-1.16	-2.36	0.00	0.00	-0.78	7.81	0.00

Esfuerzos longitudinales pml. Signo-

As1: Armadura de tracción de cálculo en cara interior pml.
As2: Armadura de compresión de cálculo en cara exterior pml.
  Si As1,As2=-1 -> Sección insuficiente para resistir los esfuerzos.
As3: Armadura de cortante pm2 (incluye armadura mínima).
  Si As3=-1 -> No se cumple la comprobación en el hormigón Vd<Vu1.

Nodo	Md(mT)	Nd(T)	As1(cm2/m)	As2(cm2/m)	Vd(T)	Vcu(T)	As3(cm2/m2)
61	-16.71	153.59	0.00	0.00	10.03	19.62	0.00
62	-11.06	137.15	0.00	0.00	7.14	19.62	0.00
63	-6.43	108.28	0.00	0.00	3.67	19.62	0.00
64	-4.21	80.03	0.00	0.00	2.42	19.62	0.00
65	-2.84	58.30	0.00	0.00	1.32	19.62	0.00
66	-2.33	45.15	0.00	0.00	-0.48	19.62	0.00
67	-1.92	38.22	0.00	0.00	-1.51	23.86	0.00
68	-0.49	18.49	0.00	0.00	-3.20	28.03	0.00
69	-0.67	-0.24	0.33	0.00	-2.82	10.79	0.00
70	-0.15	0.35	0.09	0.00	-0.50	6.45	0.00
71	-33.41	102.30	0.00	0.00	13.93	19.62	0.00
72	-20.09	97.58	0.00	0.00	9.95	19.62	0.00
73	-5.65	86.61	0.00	0.00	4.10	19.62	0.00
74	-1.27	68.79	0.00	0.00	0.82	19.62	0.00
75	-0.88	61.66	0.00	0.00	-0.83	19.62	0.00
76	-1.73	56.22	0.00	0.00	-1.29	19.62	0.00
77	-2.23	48.51	0.00	0.00	-0.93	23.86	0.00
78	-1.22	24.65	0.00	0.00	-0.91	28.03	0.00
79	-0.05	1.36	0.00	0.00	-0.53	10.79	0.00
80	-0.03	0.71	0.00	0.00	-0.30	6.45	0.00
81	-49.45	89.42	0.78	0.00	20.99	19.62	0.00
82	-28.86	85.99	0.00	0.00	16.13	19.62	0.00
83	-4.68	75.97	0.00	0.00	8.05	19.62	0.00
84	1.27	66.28	0.00	0.00	2.64	19.62	0.00
85	1.46	61.27	0.00	0.00	-0.94	19.62	0.00
86	-0.48	56.67	0.00	0.00	-3.05	19.62	0.00
87	-2.00	50.56	0.00	0.00	-2.77	23.86	0.00
88	-1.93	25.10	0.00	0.00	-0.81	28.03	0.00
89	-0.21	1.37	0.00	0.00	0.39	10.79	0.00
90	0.00	0.66	0.00	0.00	0.04	6.45	0.00
91	-48.85	89.07	0.69	0.00	20.84	19.62	0.00
92	-28.41	85.67	0.00	0.00	15.99	19.62	0.00
93	-4.49	75.74	0.00	0.00	7.93	19.62	0.00
94	1.32	66.13	0.00	0.00	2.55	19.62	0.00
95	1.46	61.18	0.00	0.00	-1.01	19.62	0.00
96	-0.51	56.63	0.00	0.00	-3.11	19.62	0.00
97	-2.05	50.55	0.00	0.00	-2.80	23.86	0.00
98	-1.96	25.09	0.00	0.00	-0.80	28.03	0.00
99	-0.20	1.37	0.00	0.00	0.40	10.79	0.00
100	0.00	0.66	0.00	0.00	0.04	6.45	0.00
101	-31.86	100.98	0.00	0.00	13.55	19.62	0.00
102	-18.91	96.37	0.00	0.00	9.59	19.62	0.00
103	-5.05	85.71	0.00	0.00	3.77	19.62	0.00
104	-1.10	68.35	0.00	0.00	0.46	19.62	0.00
105	-0.87	61.42	0.00	0.00	-1.07	19.62	0.00
106	-1.81	56.12	0.00	0.00	-1.37	19.62	0.00
107	-2.22	48.47	0.00	0.00	-0.90	23.86	0.00
108	-1.15	24.63	0.00	0.00	-1.01	28.03	0.00
109	-0.02	1.36	0.00	0.00	-0.70	10.79	0.00
110	-0.04	0.71	0.00	0.00	-0.36	6.45	0.00
111	-15.20	153.23	0.00	0.00	9.74	19.62	0.00
112	-9.75	137.81	0.00	0.00	6.82	19.62	0.00
113	-5.64	106.63	0.00	0.00	3.32	19.62	0.00
114	-3.69	79.50	0.00	0.00	2.00	19.62	0.00
115	-2.53	54.52	0.00	0.00	0.83	19.62	0.00
116	-2.25	35.84	0.00	0.00	-1.14	19.62	0.00
117	-2.13	38.26	0.00	0.00	-2.26	23.86	0.00
118	-0.57	18.41	0.00	0.00	-3.97	28.03	0.00
119	-0.77	-0.42	0.40	0.00	-3.31	10.79	0.00
120	-0.19	0.28	0.14	0.00	-0.60	6.45	0.00

Esfuerzos transversales pml. Signo-

As1: Armadura de tracción de cálculo en cara interior pml.
As2: Armadura de compresión de cálculo en cara exterior pml.
  Si As1,As2=-1 -> Sección insuficiente para resistir los esfuerzos.
As3: Armadura de cortante pm2 (incluye armadura mínima).
  Si As3=-1 -> No se cumple la comprobación en el hormigón Vd<Vu1.

Nodo	Md(mT)	Nd(T)	As1(cm2/m)	As2(cm2/m)	Vd(T)	Vcu(T)	As3(cm2/m2)
61	0.00	0.00	0.00	0.00	0.00	0.00	0.00

62	-2.70	-0.55	0.65	0.00	0.44	23.77	0.00
63	-15.25	-3.72	3.73	0.00	5.37	23.77	0.00
64	-23.64	-7.51	5.99	0.00	8.69	23.77	0.00
65	-25.06	-10.42	6.64	0.00	9.14	23.77	0.00
66	-21.72	-12.34	6.14	0.00	7.86	23.77	0.00
67	-26.78	-16.30	6.47	0.00	9.42	28.90	0.00
68	-47.93	-19.59	9.06	0.00	16.00	33.95	0.00
69	-6.77	-6.62	3.90	0.00	2.57	13.08	0.00
70	-1.67	-3.64	2.00	0.00	0.67	7.81	0.00
71	0.00	0.00	0.00	0.00	0.00	0.00	0.00
72	0.41	-0.35	0.00	0.00	-0.59	23.77	0.00
73	1.82	-1.85	0.00	0.00	3.05	23.77	0.00
74	2.43	-4.00	0.00	0.00	5.72	23.77	0.00
75	2.52	-5.99	0.00	0.00	6.35	23.77	0.00
76	2.53	-7.58	0.00	0.00	5.63	23.77	0.00
77	3.67	-10.97	0.00	0.00	7.83	28.90	0.00
78	6.54	-14.11	0.00	0.00	14.52	33.95	0.00
79	1.05	-5.02	0.00	0.00	1.36	13.08	0.00
80	0.21	-2.91	0.00	0.00	0.31	7.81	0.00
81	0.00	0.00	0.00	0.00	0.00	0.00	0.00
82	0.00	-0.20	0.00	0.00	-0.79	23.77	0.00
83	3.36	-1.26	0.00	0.00	0.38	23.77	0.00
84	6.64	-3.23	0.00	0.00	1.35	23.77	0.00
85	8.45	-5.73	0.00	0.00	1.71	23.77	0.00
86	8.87	-8.43	0.00	0.00	1.62	23.77	0.00
87	17.23	-12.89	0.00	0.00	3.04	28.90	0.00
88	29.23	-16.99	0.00	0.00	2.20	33.95	0.00
89	1.05	-6.24	0.00	0.00	0.04	13.08	0.00
90	0.16	-3.79	0.00	0.00	-0.01	7.81	0.00
91	0.00	0.00	0.00	0.00	0.00	0.00	0.00
92	-0.03	-0.20	0.03	0.01	0.55	23.77	0.00
93	3.31	-1.27	0.00	0.00	-0.63	23.77	0.00
94	6.53	-3.25	0.00	0.00	-2.34	23.77	0.00
95	8.28	-5.78	0.00	0.00	-3.14	23.77	0.00
96	8.65	-8.51	0.00	0.00	-3.07	23.77	0.00
97	16.77	-13.00	0.00	0.00	-5.52	28.90	0.00
98	28.36	-17.15	0.00	0.00	-9.60	33.95	0.00
99	1.01	-6.30	0.00	0.00	-0.21	13.08	0.00
100	0.15	-3.82	0.00	0.00	-0.04	7.81	0.00
101	0.00	0.00	0.00	0.00	0.00	0.00	0.00
102	0.37	-0.36	0.00	0.00	0.05	23.77	0.00
103	1.62	-1.89	0.00	0.00	-5.11	23.77	0.00
104	2.02	-4.10	0.00	0.00	-9.49	23.77	0.00
105	1.93	-6.16	0.00	0.00	-10.84	23.77	0.00
106	1.84	-7.84	0.00	0.00	-9.98	23.77	0.00
107	2.05	-11.37	0.00	0.00	-13.76	28.90	0.00
108	3.41	-18.64	0.00	0.00	-33.31	33.95	0.00
109	1.06	-5.20	0.00	0.00	-2.80	13.08	0.00
110	0.22	-3.02	0.00	0.00	-0.64	7.81	0.00
111	0.00	0.00	0.00	0.00	0.00	0.00	0.00
112	-2.78	-0.55	0.66	0.00	-0.94	23.77	0.00
113	-15.85	-3.80	3.87	0.00	-8.93	23.77	0.00
114	-25.06	-7.74	6.33	0.00	-14.36	23.77	0.00
115	-27.21	-10.84	7.16	0.00	-15.53	23.77	0.00
116	-24.29	-12.94	6.77	0.00	-14.00	23.77	0.00
117	-30.54	-17.19	7.22	0.00	-16.64	28.90	0.00
118	-56.07	-20.73	10.35	0.00	-33.33	33.95	0.00
119	-8.02	-7.03	4.52	0.00	-5.26	13.08	0.00
120	-1.98	-3.87	2.32	0.00	-1.35	7.81	0.00

CALCULO DE LA ALETA 1

Esfuerzos longitudinales pml. Signo+

As1: Armadura de tracción de cálculo en cara exterior pml.
As2: Armadura de compresión de cálculo en cara interior pml.
  Si As1,As2=-1 -> Sección insuficiente para resistir los esfuerzos.
As3: Armadura de cortante pm2 (incluye armadura mínima).
  Si As3=-1 -> No se cumple la comprobación en el hormigón Vd<Vu1.

Nodo	Md(mT)	Nd(T)	As1(cm2/m)	As2(cm2/m)	Vd(T)	Vcu(T)	As3(cm2/m2)
1	-19.47	-72.76	0.00	0.00	38.67	21.26	7.50
2	-6.78	-65.06	0.00	0.00	27.90	18.22	7.50
3	4.97	-59.38	8.42	4.97	11.90	15.77	0.00
4	6.79	-41.85	7.07	2.36	3.33	15.14	0.00
5	4.00	-20.28	3.67	0.90	-0.54	14.08	0.00
6	0.56	-5.47	0.81	0.42	-1.85	14.08	0.00
7	-0.38	0.57	0.00	0.00	-1.82	14.08	0.00
8	-0.63	0.78	0.00	0.00	-1.61	14.08	0.00
9	-0.83	0.76	0.00	0.00	-1.13	14.08	0.00
10	-0.92	0.69	0.00	0.00	-0.86	14.08	0.00
11	-14.75	-48.74	0.00	0.00	25.00	19.13	7.50
12	-5.89	-43.41	0.00	0.00	17.84	16.63	7.50
13	3.96	-52.10	7.25	4.50	6.41	15.23	0.00
14	5.01	-27.90	4.88	1.41	0.64	14.08	0.00
15	2.62	-11.27	2.18	0.36	-1.14	14.08	0.00

16	-0.14	-0.00	0.00	0.00	-1.28	14.08	0.00
17	-0.47	2.07	0.00	0.00	-0.85	14.08	0.00
18	-0.66	1.77	0.00	0.00	-0.52	14.08	0.00
19	-0.66	1.28	0.00	0.00	-0.12	14.08	0.00
20	-0.47	0.98	0.00	0.00	-0.09	14.08	0.00
21	-11.43	-25.66	0.00	0.00	19.78	16.84	7.50
22	-4.39	-22.37	0.00	0.00	13.29	15.14	0.00
23	2.89	-29.49	4.33	2.32	3.58	14.08	0.00
24	3.49	-14.01	2.79	0.37	-0.13	14.08	0.00
25	1.59	-3.03	0.88	0.00	-1.18	14.08	0.00
26	-0.50	3.32	0.00	0.00	-0.96	14.08	0.00
27	-0.62	3.64	0.00	0.00	-0.50	14.08	0.00
28	-0.71	2.93	0.00	0.00	-0.05	14.08	0.00
29	-0.53	1.94	0.00	0.00	0.27	14.08	0.00
30	-0.21	1.33	0.00	0.00	0.20	14.08	0.00
31	-8.20	-2.94	0.00	0.00	15.48	14.71	7.50
32	-2.82	-1.59	0.00	0.00	9.36	14.08	0.00
33	1.67	-7.06	1.37	0.22	1.63	14.08	0.00
34	1.91	-0.77	0.71	0.00	-0.50	14.08	0.00
35	0.67	5.99	0.00	0.00	-0.95	14.08	0.00
36	-0.67	6.17	0.00	0.00	-0.79	14.08	0.00
37	-0.92	5.32	0.00	0.00	-0.04	14.08	0.00
38	-0.89	4.18	0.00	0.00	0.87	14.08	0.00
39	-0.40	2.61	0.00	0.00	1.36	14.08	0.00
40	0.47	1.61	0.00	0.00	1.26	14.08	0.00
41	-4.76	20.08	0.00	0.00	9.82	14.08	0.00
42	-1.54	19.31	0.00	0.00	4.82	14.08	0.00
43	0.56	16.52	0.00	0.00	0.06	14.08	0.00
44	0.48	14.82	0.00	0.00	-0.66	14.08	0.00
45	-0.03	14.71	0.00	0.00	-0.49	14.08	0.00
46	-0.52	11.62	0.00	0.00	-0.88	14.08	0.00
47	-1.32	7.11	0.00	0.00	0.14	14.08	0.00
48	-1.40	5.39	0.00	0.00	3.01	14.08	0.00
49	-0.05	3.19	0.00	0.00	4.27	14.08	0.00
50	1.91	1.87	0.39	0.00	3.54	14.08	0.00
51	-1.48	44.22	0.00	0.00	3.28	14.08	0.00
52	-0.86	40.79	0.00	0.00	1.08	14.08	0.00
53	-0.39	34.50	0.00	0.00	-0.87	14.08	0.00
54	-0.55	26.16	0.00	0.00	-0.50	14.08	0.00
55	-0.48	20.32	0.00	0.00	0.13	14.08	0.00
56	-0.09	15.18	0.00	0.00	-0.90	14.08	0.00
57	-1.08	9.01	0.00	0.00	-1.57	14.08	0.00
58	-2.75	6.11	0.00	0.00	6.30	14.08	0.00
59	1.38	3.61	0.01	0.00	9.90	14.08	0.00
60	3.28	1.39	0.89	0.00	5.65	14.08	0.00
61	-10.00	90.98	0.00	0.00	16.06	14.08	7.50
62	-6.47	80.78	0.00	0.00	11.46	14.08	0.00
63	-3.64	60.37	0.00	0.00	5.94	14.08	0.00
64	-2.30	42.95	0.00	0.00	4.18	14.08	0.00
65	-1.25	33.45	0.00	0.00	3.05	14.08	0.00
66	-0.78	27.27	0.00	0.00	2.26	14.08	0.00
67	-0.10	23.77	0.00	0.00	2.03	14.08	0.00
68	1.46	10.40	0.00	0.00	-0.19	14.08	0.00
69	-0.22	0.98	0.00	0.00	-0.98	14.08	0.00
70	-0.07	0.63	0.00	0.00	-0.22	14.08	0.00

Esfuerzos transversales pml. Signo+

As1: Armadura de tracción de cálculo en cara exterior pml.
As2: Armadura de compresión de cálculo en cara interior pml.
  Si As1,As2=-1 -> Sección insuficiente para resistir los esfuerzos.
As3: Armadura de cortante pm2 (incluye armadura mínima).
  Si As3=-1 -> No se cumple la comprobación en el hormigón Vd<Vu1.

Nodo	Md(mT)	Nd(T)	As1(cm2/m)	As2(cm2/m)	Vd(T)	Vcu(T)	As3(cm2/m2)
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	-0.76	-0.04	0.00	0.00	2.78	17.06	0.00
3	0.53	-1.43	0.34	0.00	-0.17	17.06	0.00
4	1.26	-1.73	0.62	0.00	-0.83	17.06	0.00
5	1.07	-1.73	0.55	0.00	-1.09	17.06	0.00
6	0.60	-1.37	0.36	0.00	-1.10	17.06	0.00
7	0.31	-0.98	0.22	0.00	-1.05	17.06	0.00
8	0.02	-0.96	0.11	0.10	-0.93	17.06	0.00
9	-0.19	-0.59	0.00	0.00	-0.98	17.06	0.00
10	-0.56	-0.39	0.00	0.00	-0.63	17.06	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	-0.12	-0.15	0.00	0.00	2.75	17.06	0.00
13	0.58	-2.24	0.46	0.05	-0.49	17.06	0.00
14	0.98	-3.05	0.68	0.00	-1.56	17.06	0.00
15	0.45	-3.08	0.50	0.19	-1.87	17.06	0.00
16	-0.13	-1.51	0.00	0.00	-1.82	17.06	0.00
17	-0.32	-1.19	0.00	0.00	-1.68	17.06	0.00
18	-0.51	-1.15	0.00	0.00	-1.42	17.06	0.00
19	-0.79	-1.01	0.00	0.00	-1.33	17.06	0.00
20	-1.17	-0.71	0.00	0.00	-0.71	17.06	0.00
21	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	0.18	-0.44	0.11	0.00	2.44	17.06	0.00

23	0.31	-4.11	0.57	0.36	-1.38	17.06	0.00
24	0.02	-5.20	0.59	0.58	-3.20	17.06	0.00
25	-0.76	-3.72	0.00	0.00	-3.50	17.06	0.00
26	-1.33	-3.09	0.00	0.00	-3.29	17.06	0.00
27	-1.41	-2.54	0.00	0.00	-2.94	17.06	0.00
28	-1.54	-2.33	0.00	0.00	-2.43	17.06	0.00
29	-1.84	-1.98	0.00	0.00	-1.96	17.06	0.00
30	-2.17	-1.42	0.00	0.00	-0.74	17.06	0.00
31	0.00	0.00	0.00	0.00	0.00	0.00	0.00
32	0.19	-0.82	0.16	0.03	1.72	17.06	0.00
33	-0.57	-3.99	0.00	0.00	-2.83	17.06	0.00
34	-1.70	-5.97	0.00	0.00	-5.14	17.06	0.00
35	-2.77	-5.96	0.00	0.00	-5.26	17.06	0.00
36	-3.44	-5.04	0.00	0.00	-4.76	17.06	0.00
37	-3.16	-4.30	0.00	0.00	-4.46	17.06	0.00
38	-3.07	-3.86	0.00	0.00	-3.60	17.06	0.00
39	-3.21	-3.15	0.00	0.00	-2.49	17.06	0.00
40	-3.27	-2.10	0.00	0.00	-0.42	17.06	0.00
41	0.00	0.00	0.00	0.00	0.00	0.00	0.00
42	-0.10	-1.40	0.00	0.00	0.50	17.06	0.00
43	-2.27	-5.85	0.00	0.00	-4.85	17.06	0.00
44	-4.52	-8.47	0.00	0.00	-7.40	17.06	0.00
45	-5.86	-8.38	0.00	0.00	-7.10	17.06	0.00
46	-6.46	-7.15	0.00	0.00	-5.99	17.06	0.00
47	-5.92	-6.45	0.00	0.00	-6.70	17.06	0.00
48	-5.18	-5.85	0.00	0.00	-5.76	17.06	0.00
49	-4.91	-4.49	0.00	0.00	-2.67	17.06	0.00
50	-4.04	-2.37	0.00	0.00	1.06	17.06	0.00
51	0.00	0.00	0.00	0.00	0.00	0.00	0.00
52	-0.74	-2.21	0.00	0.00	-1.34	17.06	0.00
53	-5.28	-8.27	0.00	0.00	-7.42	17.06	0.00
54	-8.79	-10.97	0.00	0.00	-9.91	17.06	0.00
55	-10.09	-10.45	0.00	0.00	-9.03	17.06	0.00
56	-10.21	-9.01	0.00	0.00	-6.85	17.06	0.00
57	-10.65	-9.18	0.00	0.00	-8.41	17.06	0.00
58	-8.91	-9.57	0.00	0.00	-12.86	17.06	0.00
59	-6.65	-5.62	0.00	0.00	-0.74	17.06	0.00
60	-3.47	-1.67	0.00	0.00	4.29	17.06	0.00
61	0.00	0.00	0.00	0.00	0.00	0.00	0.00
62	-2.22	-2.95	0.00	0.00	-2.39	17.06	0.00
63	-10.09	-9.77	0.00	0.00	-8.84	17.06	0.00
64	-14.86	-12.32	0.00	0.00	-11.22	17.06	0.00
65	-15.62	-11.62	0.00	0.00	-10.02	17.06	0.00
66	-14.30	-9.28	0.00	0.00	-7.18	17.06	0.00
67	-15.85	-10.71	0.00	0.00	-8.75	17.06	0.00
68	-19.10	-12.15	0.00	0.00	-18.44	17.60	0.00
69	-6.43	-6.03	0.00	0.00	1.15	17.06	0.00
70	-1.23	-0.98	0.00	0.00	6.30	17.06	0.00

Esfuerzos longitudinales pml. Signo-

As1: Armadura de tracción de cálculo en cara interior pml.
As2: Armadura de compresión de cálculo en cara exterior pml.
  Si As1,As2=-1 -> Sección insuficiente para resistir los esfuerzos.
As3: Armadura de cortante pm2 (incluye armadura mínima).
  Si As3=-1 -> No se cumple la comprobación en el hormigón Vd<Vu1.

Nodo	Md(mT)	Nd(T)	As1(cm2/m)	As2(cm2/m)	Vd(T)	Vcu(T)	As3(cm2/m2)
1	-32.58	-105.79	23.23	0.62	23.44	21.26	0.00
2	-11.67	-93.91	14.64	6.54	16.84	18.22	0.00
3	2.92	-49.44	0.00	0.00	6.99	15.77	0.00
4	4.09	-25.54	0.00	0.00	1.66	15.14	0.00
5	2.32	-12.35	0.00	0.00	-1.72	14.08	0.00
6	0.16	-4.47	0.00	0.00	-3.18	14.08	0.00
7	-0.76	-2.05	0.49	0.00	-3.08	14.08	0.00
8	-1.16	-1.00	0.49	0.00	-2.72	14.08	0.00
9	-1.45	-0.17	0.49	0.00	-1.89	14.08	0.00
10	-1.58	0.25	0.48	0.00	-1.41	14.08	0.00
11	-24.59	-74.67	16.94	0.00	15.37	19.13	0.00
12	-10.15	-66.20	10.98	3.94	10.90	16.63	0.00
13	2.40	-24.95	0.00	0.00	3.80	15.23	0.00
14	3.10	-15.14	0.00	0.00	-0.64	14.08	0.00
15	1.58	-6.24	0.00	0.00	-2.49	14.08	0.00
16	-0.40	-3.09	0.49	0.21	-2.48	14.08	0.00
17	-0.89	0.41	0.24	0.00	-1.39	14.08	0.00
18	-1.18	0.65	0.30	0.00	-0.83	14.08	0.00
19	-1.15	0.71	0.28	0.00	-0.42	14.08	0.00
20	-0.81	0.72	0.18	0.00	-0.23	14.08	0.00
21	-19.01	-44.90	11.55	0.00	12.24	16.84	0.00
22	-7.59	-39.36	7.07	1.80	8.17	15.14	0.00
23	1.74	-11.40	0.00	0.00	2.11	14.08	0.00
24	2.16	-4.08	0.00	0.00	-1.60	14.08	0.00
25	0.97	-0.30	0.00	0.00	-2.60	14.08	0.00
26	-0.90	0.91	0.18	0.00	-2.20	14.08	0.00
27	-1.12	3.01	0.00	0.00	-0.90	14.08	0.00
28	-1.26	2.61	0.09	0.00	-0.37	14.08	0.00
29	-0.93	1.82	0.08	0.00	0.00	0.00	0.00

30	-0.37	1.29	0.00	0.00	0.10	14.08	0.00
31	-13.64	-15.61	6.30	0.00	9.59	14.71	0.00
32	-4.93	-12.87	3.14	0.00	5.76	14.08	0.00
33	0.99	2.05	0.00	0.00	0.24	14.08	0.00
34	1.17	4.77	0.00	0.00	-2.17	14.08	0.00
35	0.38	5.42	0.00	0.00	-2.44	14.08	0.00
36	-1.16	5.09	0.00	0.00	-2.00	14.08	0.00
37	-1.59	5.78	0.00	0.00	-0.63	14.08	0.00
38	-1.55	4.74	0.00	0.00	0.46	14.08	0.00
39	-0.71	2.99	0.00	0.00	0.82	14.08	0.00
40	0.27	1.88	0.00	0.00	0.75	14.08	0.00
41	-7.96	14.21	0.89	0.00	6.06	14.08	0.00
42	-2.73	13.88	0.00	0.00	2.95	14.08	0.00
43	-0.09	13.99	0.00	0.00	-1.75	14.08	0.00
44	0.03	12.30	0.00	0.00	-2.56	14.08	0.00
45	-0.26	10.19	0.00	0.00	-2.06	14.08	0.00
46	-0.92	9.57	0.00	0.00	-1.90	14.08	0.00
47	-2.24	8.70	0.00	0.00	-0.76	14.08	0.00
48	-2.36	6.85	0.00	0.00	1.83	14.08	0.00
49	-0.38	3.88	0.00	0.00	2.60	14.08	0.00
50	1.18	1.78	0.00	0.00	2.14	14.08	0.00
51	-2.57	45.87	0.00	0.00	1.97	14.08	0.00
52	-1.49	41.57	0.00	0.00	-0.56	14.08	0.00
53	-1.16	30.96	0.00	0.00	-3.03	14.08	0.00
54	-0.99	22.77	0.00	0.00	-2.54	14.08	0.00
55	-0.84	16.51	0.00	0.00	-1.48	14.08	0.00
56	-0.32	14.12	0.00	0.00	-1.72	14.08	0.00
57	-1.88	13.16	0.00	0.00	-2.68	14.08	0.00
58	-4.53	8.19	0.48	0.00	2.87	14.08	0.00
59	0.47	2.99	0.00	0.00	6.04	14.08	0.00
60	2.00	1.48	0.00	0.00	3.40	14.08	0.00
61	-16.71	153.59	0.00	0.00	10.03	14.08	0.00
62	-11.06	137.15	0.00	0.00	7.14	14.08	0.00
63	-6.43	108.28	0.00	0.00	3.67	14.08	0.00
64	-4.21	80.03	0.00	0.00	2.42	14.08	0.00
65	-2.84	58.30	0.00	0.00	1.32	14.08	0.00
66	-2.33	45.15	0.00	0.00	-0.48	14.08	0.00
67	-1.92	38.22	0.00	0.00	-1.51	14.08	0.00
68	-0.49	18.49	0.00	0.00	-3.20	14.08	0.00
69	-0.67	-0.24	0.25	0.00	-2.82	14.08	0.00
70	-0.15	0.35	0.01	0.00	-0.50	14.08	0.00

Esfuerzos transversales pml. Signo-

As1: Armadura de tracción de cálculo en cara interior pml.
As2: Armadura de compresión de cálculo en cara exterior pml.
  Si As1,As2=-1 -> Sección insuficiente para resistir los esfuerzos.
As3: Armadura de cortante pm2 (incluye armadura mínima).
  Si As3=-1 -> No se cumple la comprobación en el hormigón Vd<Vu1.

Nodo	Md(mT)	Nd(T)	As1(cm2/m)	As2(cm2/m)	Vd(T)	Vcu(T)	As3(cm2/m2)
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	-1.30	-0.06	0.43	0.00	1.64	17.06	0.00
3	0.32	-0.88	0.00	0.00	-0.27	17.06	0.00
4	0.79	-1.05	0.00	0.00	-1.33	17.06	0.00
5	0.67	-1.04	0.00	0.00	-1.74	17.06	0.00
6	0.36	-0.88	0.00	0.00	-1.79	17.06	0.00
7	0.17	-0.69	0.00	0.00	-1.71	17.06	0.00
8	-0.01	-0.76	0.09	0.08	-1.53	17.06	0.00
9	-0.33	-1.08	0.24	0.01	-1.63	17.06	0.00
10	-0.95	-0.77	0.40	0.00	-1.03	17.06	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	-0.35	-0.21	0.14	0.00	1.62	17.06	0.00
13	0.36	-1.39	0.00	0.00	-0.79	17.06	0.00
14	0.61	-1.86	0.00	0.00	-2.50	17.06	0.00
15	0.25	-1.83	0.00	0.00	-3.00	17.06	0.00
16	-0.25	-1.81	0.29	0.12	-2.95	17.06	0.00
17	-0.56	-2.05	0.42	0.04	-2.73	17.06	0.00
18	-0.88	-2.04	0.53	0.00	-2.33	17.06	0.00
19	-1.33	-1.86	0.66	0.00	-2.19	17.06	0.00
20	-1.97	-1.41	0.81	0.00	-1.15	17.06	0.00
21	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	-0.07	-0.52	0.08	0.03	1.42	17.06	0.00
23	0.18	-2.56	0.00	0.00	-2.25	17.06	0.00
24	-0.18	-4.56	0.57	0.45	-5.11	17.06	0.00
25	-1.26	-6.03	1.12	0.24	-5.61	17.06	0.00
26	-2.21	-5.18	1.34	0.00	-5.33	17.06	0.00
27	-2.35	-4.41	1.29	0.00	-4.78	17.06	0.00
28	-2.57	-4.14	1.33	0.00	-3.98	17.06	0.00
29	-3.07	-3.64	1.43	0.00	-3.23	17.06	0.00
30	-3.64	-2.80	1.51	0.00	-1.22	17.06	0.00
31	0.00	0.00	0.00	0.00	0.00	0.00	0.00
32	-0.05	-0.94	0.12	0.09	0.98	17.06	0.00
33	-0.95	-6.50	1.06	0.40	-4.57	17.06	0.00
34	-2.72	-9.69	2.03	0.15	-8.23	17.06	0.00
35	-4.51	-9.63	2.61	0.00	-8.42	17.06	0.00
36	-5.63	-8.44	2.84	0.00	-7.69	17.06	0.00

37	-5.20	-7.50	2.58	0.00	-7.26	17.06	0.00
38	-5.08	-6.90	2.47	0.00	-5.90	17.06	0.00
39	-5.34	-5.82	2.42	0.00	-4.09	17.06	0.00
40	-5.46	-4.50	2.30	0.00	-0.80	17.06	0.00
41	0.00	0.00	0.00	0.00	0.00	0.00	0.00
42	-0.29	-1.60	0.28	0.08	0.08	17.06	0.00
43	-3.66	-9.53	2.33	0.00	-7.81	17.06	0.00
44	-7.24	-13.78	4.00	0.00	-11.84	17.06	0.00
45	-9.45	-13.47	4.68	0.00	-11.41	17.06	0.00
46	-10.54	-11.90	4.84	0.00	-9.68	17.06	0.00
47	-9.70	-11.39	4.51	0.00	-10.96	17.06	0.00
48	-8.56	-10.73	4.06	0.00	-9.46	17.06	0.00
49	-8.13	-8.90	3.70	0.00	-4.40	17.06	0.00
50	-6.74	-5.36	2.82	0.00	0.45	17.06	0.00
51	0.00	0.00	0.00	0.00	0.00	0.00	0.00
52	-1.19	-3.53	0.81	0.00	-2.24	17.06	0.00
53	-8.48	-13.46	4.36	0.00	-11.93	17.06	0.00
54	-14.13	-18.00	6.74	0.00	-15.87	17.06	0.00
55	-16.26	-17.50	7.38	0.00	-14.56	17.06	0.00
56	-16.60	-14.65	7.15	0.00	-11.06	17.06	0.00
57	-17.47	-16.00	7.60	0.00	-13.94	17.06	0.00
58	-14.72	-18.68	7.02	0.00	-20.99	17.06	7.50
59	-11.01	-11.37	4.94	0.00	-1.88	17.06	0.00
60	-5.81	-3.54	2.30	0.00	2.53	17.06	0.00
61	0.00	0.00	0.00	0.00	0.00	0.00	0.00
62	-3.60	-4.65	1.72	0.00	-3.93	17.06	0.00
63	-16.15	-15.68	7.13	0.00	-14.19	17.06	0.00
64	-23.89	-20.08	10.20	0.00	-17.37	17.06	7.50
65	-25.14	-19.35	10.53	0.00	-16.17	17.06	0.00
66	-23.20	-15.69	9.46	0.00	-11.61	17.06	0.00
67	-26.20	-18.46	10.78	0.00	-14.67	17.06	0.00
68	-31.33	-24.28	13.17	0.00	-18.51	17.60	8.65
69	-10.73	-12.40	4.97	0.00	0.55	17.06	0.00
70	-2.09	-1.81	0.89	0.00	3.74	17.06	0.00

CALCULO DE LA ALETA 2

Esfuerzos longitudinales pml. Signo+

As1: Armadura de tracción de cálculo en cara exterior pml.
As2: Armadura de compresión de cálculo en cara interior pml.
  Si As1,As2=-1 -> Sección insuficiente para resistir los esfuerzos.
As3: Armadura de cortante pm2 (incluye armadura mínima).
  Si As3=-1 -> No se cumple la comprobación en el hormigón Vd<Vu1.

Nodo	Md(mT)	Nd(T)	As1(cm2/m)	As2(cm2/m)	Vd(T)	Vcu(T)	As3(cm2/m2)
111	-9.13	88.59	0.00	0.00	15.64	14.08	7.50
112	-5.71	78.94	0.00	0.00	10.96	14.08	0.00
113	-3.19	59.53	0.00	0.00	5.46	14.08	0.00
114	-2.02	42.78	0.00	0.00	3.86	14.08	0.00
115	-1.04	33.60	0.00	0.00	2.71	14.08	0.00
116	-0.68	34.48	0.00	0.00	1.67	14.08	0.00
117	-0.37	23.90	0.00	0.00	1.34	14.08	0.00
118	1.45	10.25	0.00	0.00	-0.72	14.08	0.00
119	-0.26	0.86	0.00	0.00	-1.23	14.08	0.00
120	-0.08	0.63	0.00	0.00	-0.26	14.08	0.00
121	-1.77	43.93	0.00	0.00	3.65	14.08	0.00
122	-0.94	40.72	0.00	0.00	1.18	14.08	0.00
123	-0.29	34.91	0.00	0.00	-1.00	14.08	0.00
124	-0.41	26.65	0.00	0.00	-0.73	14.08	0.00
125	-0.40	22.43	0.00	0.00	-0.10	14.08	0.00
126	-0.05	15.04	0.00	0.00	-1.23	14.08	0.00
127	-1.36	8.89	0.00	0.00	-1.81	14.08	0.00
128	-3.12	6.30	0.00	0.00	6.95	14.08	0.00
129	1.41	3.92	0.00	0.00	11.11	14.08	0.00
130	3.85	1.56	1.06	0.00	6.71	14.08	0.00
131	-5.51	21.64	0.00	0.00	10.79	14.08	0.00
132	-1.88	20.81	0.00	0.00	5.53	14.08	0.00
133	0.69	18.15	0.00	0.00	0.21	14.08	0.00
134	0.81	16.00	0.00	0.00	-0.80	14.08	0.00
135	0.25	16.43	0.00	0.00	-0.79	14.08	0.00
136	-0.55	11.52	0.00	0.00	-1.14	14.08	0.00
137	-1.45	7.06	0.00	0.00	0.12	14.08	0.00
138	-1.48	5.47	0.00	0.00	2.98	14.08	0.00
139	-0.17	3.36	0.00	0.00	4.29	14.08	0.00
140	1.99	2.04	0.40	0.00	3.74	14.08	0.00
141	-9.40	0.58	0.00	0.00	16.70	14.75	7.50
142	-3.50	1.56	0.00	0.00	10.41	14.08	0.00
143	1.78	-3.50	1.00	0.00	2.06	14.08	0.00
144	2.51	1.55	0.63	0.00	-0.48	14.08	0.00
145	1.19	5.32	0.00	0.00	-1.21	14.08	0.00
146	-0.61	6.37	0.00	0.00	-0.99	14.08	0.00
147	-0.88	5.32	0.00	0.00	-0.20	14.08	0.00
148	-0.89	4.20	0.00	0.00	0.65	14.08	0.00
149	-0.43	2.65	0.00	0.00	1.12	14.08	0.00
150	0.35	1.67	0.00	0.00	1.07	14.08	0.00

151	-13.04	-20.14	0.00	0.00	21.07	16.82	7.50
152	-5.42	-17.51	0.00	0.00	14.54	15.05	0.00
153	2.92	-24.35	3.76	1.73	4.46	14.08	0.00
154	4.30	-11.96	2.83	0.00	0.03	14.08	0.00
155	2.33	-1.76	0.96	0.00	-1.34	14.08	0.00
156	-0.27	3.59	0.00	0.00	-1.18	14.08	0.00
157	-0.50	3.68	0.00	0.00	-0.69	14.08	0.00
158	-0.64	2.92	0.00	0.00	-0.29	14.08	0.00
159	-0.53	1.92	0.00	0.00	0.07	14.08	0.00
160	-0.28	1.32	0.00	0.00	0.01	14.08	0.00
161	-16.77	-41.21	0.00	0.00	26.28	19.06	7.50
162	-7.27	-36.84	0.00	0.00	19.24	16.57	7.50
163	3.91	-45.37	6.47	3.76	7.57	14.81	0.00
164	5.94	-24.68	4.84	0.72	0.99	14.08	0.00
165	3.57	-9.79	2.33	0.00	-1.13	14.08	0.00
166	0.39	-1.63	0.32	0.05	-1.43	14.08	0.00
167	-0.26	2.13	0.00	0.00	-1.02	14.08	0.00
168	-0.53	1.74	0.00	0.00	-0.69	14.08	0.00
169	-0.61	1.23	0.00	0.00	-0.28	14.08	0.00
170	-0.50	0.94	0.00	0.00	-0.19	14.08	0.00
171	-22.13	-64.31	0.00	0.00	41.16	21.21	7.92
172	-8.41	-57.32	0.00	0.00	30.20	18.08	7.50
173	4.90	-54.13	7.80	4.40	13.74	15.50	0.00
174	7.77	-37.66	6.94	1.55	4.63	15.07	0.00
175	5.16	-18.46	3.87	0.29	0.03	14.08	0.00
176	1.45	-4.98	1.07	0.06	-1.64	14.08	0.00
177	-0.03	0.14	0.00	0.00	-1.73	14.08	0.00
178	-0.45	0.74	0.00	0.00	-1.53	14.08	0.00
179	-0.73	0.68	0.00	0.00	-1.09	14.08	0.00
180	-0.86	0.62	0.00	0.00	-0.83	14.08	0.00

Esfuerzos transversales pml. Signo+

As1: Armadura de tracción de càlculo en cara exterior pml.
As2: Armadura de compresión de càlculo en cara interior pml.
  Si As1,As2=-1 -> Sección insuficiente para resistir los esfuerzos.
As3: Armadura de cortante pm2 (incluye armadura mínima).
  Si As3=-1 -> No se cumple la comprobación en el hormigón Vd<Vu1.

Nodo	Md(mT)	Nd(T)	As1(cm2/m)	As2(cm2/m)	Vd(T)	Vcu(T)	As3(cm2/m2)
111	0.00	0.00	0.00	0.00	0.00	0.00	0.00
112	-2.21	-2.88	0.00	0.00	3.59	17.06	0.00
113	-10.46	-9.87	0.00	0.00	14.05	17.06	0.00
114	-15.85	-12.54	0.00	0.00	18.34	17.06	7.50
115	-17.11	-11.87	0.00	0.00	16.90	17.06	0.00
116	-16.14	-9.47	0.00	0.00	12.39	17.06	0.00
117	-18.34	-11.16	0.00	0.00	16.70	17.16	0.00
118	-22.23	-13.35	0.00	0.00	20.80	18.42	8.65
119	-7.65	-7.03	0.00	0.00	-0.48	17.06	0.00
120	-1.48	-1.14	0.00	0.00	-4.42	17.06	0.00
121	0.00	0.00	0.00	0.00	0.00	0.00	0.00
122	-0.69	-2.12	0.00	0.00	1.85	17.06	0.00
123	-5.30	-8.22	0.00	0.00	11.65	17.06	0.00
124	-9.15	-11.01	0.00	0.00	16.08	17.06	0.00
125	-10.86	-10.66	0.00	0.00	15.16	17.06	0.00
126	-11.40	-9.32	0.00	0.00	11.89	17.06	0.00
127	-11.96	-9.63	0.00	0.00	15.59	17.06	0.00
128	-9.91	-10.40	0.00	0.00	23.13	17.06	7.50
129	-7.81	-6.39	0.00	0.00	2.33	17.06	0.00
130	-4.30	-2.06	0.00	0.00	-2.85	17.06	0.00
131	0.00	0.00	0.00	0.00	0.00	0.00	0.00
132	-0.04	-1.30	0.00	0.00	-0.41	17.06	0.00
133	-2.17	-5.63	0.00	0.00	7.34	17.06	0.00
134	-4.56	-8.48	0.00	0.00	11.78	17.06	0.00
135	-6.16	-8.55	0.00	0.00	11.78	17.06	0.00
136	-7.04	-7.50	0.00	0.00	10.43	17.06	0.00
137	-6.44	-6.85	0.00	0.00	11.85	17.06	0.00
138	-5.78	-6.25	0.00	0.00	9.99	17.06	0.00
139	-5.60	-4.96	0.00	0.00	5.07	17.06	0.00
140	-4.84	-2.97	0.00	0.00	-0.21	17.06	0.00
141	0.00	0.00	0.00	0.00	0.00	0.00	0.00
142	0.22	-0.77	0.16	0.01	-1.18	17.06	0.00
143	-0.48	-3.76	0.00	0.00	4.04	17.06	0.00
144	-1.59	-5.87	0.00	0.00	8.04	17.06	0.00
145	-2.79	-6.07	0.00	0.00	8.64	17.06	0.00
146	-3.59	-5.30	0.00	0.00	8.18	17.06	0.00
147	-3.38	-4.59	0.00	0.00	7.70	17.06	0.00
148	-3.37	-4.15	0.00	0.00	6.32	17.06	0.00
149	-3.59	-3.50	0.00	0.00	4.55	17.06	0.00
150	-3.75	-2.58	0.00	0.00	1.19	17.06	0.00
151	0.00	0.00	0.00	0.00	0.00	0.00	0.00
152	0.21	-0.42	0.12	0.00	-1.61	17.06	0.00
153	0.37	-3.85	0.56	0.31	1.79	17.06	0.00
154	0.19	-5.09	0.64	0.51	4.90	17.06	0.00
155	-0.64	-3.77	0.00	0.00	5.70	17.06	0.00
156	-1.26	-3.25	0.00	0.00	5.56	17.06	0.00
157	-1.45	-2.74	0.00	0.00	5.09	17.06	0.00

158	-1.63	-2.54	0.00	0.00	4.28	17.06	0.00
159	-1.99	-2.21	0.00	0.00	3.55	17.06	0.00
160	-2.39	-1.73	0.00	0.00	1.51	17.06	0.00
161	0.00	0.00	0.00	0.00	0.00	0.00	0.00
162	-0.12	-0.17	0.00	0.00	-1.83	17.06	0.00
163	0.54	-2.10	0.42	0.05	0.49	17.06	0.00
164	1.13	-2.98	0.72	0.00	2.33	17.06	0.00
165	0.69	-3.11	0.59	0.11	2.98	17.06	0.00
166	0.06	-2.30	0.28	0.24	3.00	17.06	0.00
167	-0.25	-1.30	0.00	0.00	2.92	17.06	0.00
168	-0.48	-1.26	0.00	0.00	2.49	17.06	0.00
169	-0.80	-1.14	0.00	0.00	2.35	17.06	0.00
170	-1.22	-0.86	0.00	0.00	1.28	17.06	0.00
171	0.00	0.00	0.00	0.00	0.00	0.00	0.00
172	-0.92	-0.06	0.00	0.00	-1.87	17.06	0.00
173	0.42	-1.35	0.30	0.01	0.06	17.06	0.00
174	1.34	-1.69	0.64	0.00	1.19	17.06	0.00
175	1.28	-1.74	0.62	0.00	1.70	17.06	0.00
176	0.81	-1.41	0.43	0.00	1.77	17.06	0.00
177	0.49	-1.07	0.29	0.00	1.84	17.06	0.00
178	0.13	-1.06	0.17	0.07	1.61	17.06	0.00
179	-0.14	-0.66	0.00	0.00	1.71	17.06	0.00
180	-0.54	-0.47	0.00	0.00	1.08	17.06	0.00

Esfuerzos longitudinales pml. Signo-

As1: Armadura de tracción de càlculo en cara interior pml.
As2: Armadura de compresión de càlculo en cara exterior pml.
  Si As1,As2=-1 -> Sección insuficiente para resistir los esfuerzos.
As3: Armadura de cortante pm2 (incluye armadura mínima).
  Si As3=-1 -> No se cumple la comprobación en el hormigón Vd<Vu1.

Nodo	Md(mT)	Nd(T)	As1(cm2/m)	As2(cm2/m)	Vd(T)	Vcu(T)	As3(cm2/m2)
111	-15.20	153.23	0.00	0.00	9.74	14.08	0.00
112	-9.75	137.81	0.00	0.00	6.82	14.08	0.00
113	-5.64	106.63	0.00	0.00	3.32	14.08	0.00
114	-3.69	79.50	0.00	0.00	2.00	14.08	0.00
115	-2.53	54.52	0.00	0.00	0.83	14.08	0.00
116	-2.25	35.84	0.00	0.00	-1.14	14.08	0.00
117	-2.13	38.26	0.00	0.00	-2.26	14.08	0.00
118	-0.57	18.41	0.00	0.00	-3.97	14.08	0.00
119	-0.77	-0.42	0.30	0.00	-3.31	14.08	0.00
120	-0.19	0.28	0.03	0.00	-0.60	14.08	0.00
121	-3.05	45.58	0.00	0.00	2.20	14.08	0.00
122	-1.63	41.62	0.00	0.00	-0.38	14.08	0.00
123	-1.13	31.37	0.00	0.00	-3.13	14.08	0.00
124	-0.94	23.33	0.00	0.00	-2.77	14.08	0.00
125	-0.74	17.05	0.00	0.00	-1.73	14.08	0.00
126	-0.29	14.12	0.00	0.00	-2.16	14.08	0.00
127	-2.33	12.89	0.00	0.00	-3.07	14.08	0.00
128	-5.13	9.49	0.52	0.00	3.25	14.08	0.00
129	0.41	3.26	0.00	0.00	6.79	14.08	0.00
130	2.36	1.56	0.00	0.00	4.06	14.08	0.00
131	-9.21	16.42	1.04	0.00	6.66	14.08	0.00
132	-3.30	16.02	0.00	0.00	3.39	14.08	0.00
133	0.00	15.56	0.00	0.00	-1.53	14.08	0.00
134	0.30	13.51	0.00	0.00	-2.65	14.08	0.00
135	-0.06	10.97	0.00	0.00	-2.34	14.08	0.00
136	-0.97	9.83	0.00	0.00	-2.19	14.08	0.00
137	-2.46	8.64	0.00	0.00	-0.85	14.08	0.00
138	-2.50	7.62	0.00	0.00	1.81	14.08	0.00
139	-0.49	4.04	0.00	0.00	2.61	14.08	0.00
140	1.23	1.89	0.00	0.00	2.27	14.08	0.00
141	-15.63	-10.71	6.37	0.00	10.35	14.75	0.00
142	-6.07	-8.49	2.98	0.00	6.41	14.08	0.00
143	1.05	4.11	0.00	0.00	0.77	14.08	0.00
144	1.54	6.09	0.00	0.00	-2.08	14.08	0.00
145	0.71	6.20	0.00	0.00	-2.66	14.08	0.00
146	-1.07	6.01	0.00	0.00	-2.25	14.08	0.00
147	-1.54	5.81	0.00	0.00	-0.76	14.08	0.00
148	-1.54	4.75	0.00	0.00	0.26	14.08	0.00
149	-0.77	3.04	0.00	0.00	0.67	14.08	0.00
150	0.18	1.93	0.00	0.00	0.64	14.08	0.00
151	-21.67	-37.24	11.50	0.00	13.04	16.82	0.00
152	-9.30	-32.66	6.91	0.46	8.94	15.05	0.00
153	1.75	-8.45	0.00	0.00	2.66	14.08	0.00
154	2.66	-2.36	0.00	0.00	-1.33	14.08	0.00
155	1.43	0.68	0.00	0.00	-2.71	14.08	0.00
156	-0.54	1.46	0.00	0.00	-2.42	14.08	0.00
157	-0.92	3.11	0.00	0.00	-1.13	14.08	0.00
158	-1.14	2.60	0.05	0.00	-0.60	14.08	0.00
159	-0.92	1.78	0.08	0.00	-0.21	14.08	0.00
160	-0.49	1.27	0.00	0.00	-0.06	14.08	0.00
161	-27.90	-64.20	16.76	0.00	16.18	19.06	0.00
162	-12.43	-57.15	10.76	2.13	11.77	16.57	0.00
163	2.35	-21.12	0.00	0.00	4.51	14.81	0.00
164	3.68	-10.86	0.00	0.00	-0.18	14.08	0.00

165	2.17	-5.07	0.00	0.00	-2.41	14.08	0.00
166	0.08	-0.48	0.00	0.00	-2.60	14.08	0.00
167	-0.55	0.59	0.11	0.00	-1.65	14.08	0.00
168	-0.97	0.65	0.23	0.00	-1.10	14.08	0.00
169	-1.08	0.63	0.27	0.00	-0.60	14.08	0.00
170	-0.85	0.64	0.20	0.00	-0.38	14.08	0.00
171	-36.95	-92.50	23.09	0.00	24.99	21.21	0.00
172	-14.37	-82.51	14.29	4.32	18.28	18.08	0.00
173	2.68	-43.76	0.00	0.00	8.14	15.50	0.00
174	4.71	-22.65	0.00	0.00	2.48	15.07	0.00
175	3.05	-10.99	0.00	0.00	-1.05	14.08	0.00
176	0.71	-3.87	0.00	0.00	-2.84	14.08	0.00
177	-0.35	-1.32	0.27	0.03	-2.92	14.08	0.00
178	-0.86	-1.00	0.40	0.00	-2.58	14.08	0.00
179	-1.29	-0.27	0.45	0.00	-1.81	14.08	0.00
180	-1.48	0.13	0.46	0.00	-1.36	14.08	0.00

Esfuerzos transversales pml. Signo-

As1: Armadura de tracción de càlculo en cara interior pml.
As2: Armadura de compresión de càlculo en cara exterior pml.
  Si As1,As2=-1 -> Sección insuficiente para resistir los esfuerzos.
As3: Armadura de cortante pm2 (incluye armadura mínima).
  Si As3=-1 -> No se cumple la comprobación en el hormigón Vd<Vu1.

Nodo	Md(mT)	Nd(T)	As1(cm2/m)	As2(cm2/m)	Vd(T)	Vcu(T)	As3(cm2/m2)
111	0.00	0.00	0.00	0.00	0.00	0.00	0.00
112	-3.58	-4.53	1.70	0.00	2.18	17.06	0.00
113	-16.75	-15.68	7.33	0.00	8.75	17.06	0.00
114	-25.44	-20.44	10.76	0.00	11.45	17.06	0.00
115	-27.54	-19.87	11.39	0.00	10.48	17.06	0.00
116	-26.16	-16.06	10.48	0.00	7.66	17.06	0.00
117	-30.26	-19.26	12.23	0.00	10.01	17.16	0.00
118	-36.42	-26.33	15.12	0.00	20.72	18.42	0.00
119	-12.72	-14.21	5.83	0.00	-1.02	17.06	0.00
120	-2.49	-2.11	1.06	0.00	-7.42	17.06	0.00
121	0.00	0.00	0.00	0.00	0.00	0.00	0.00
122	-1.12	-3.39	0.77	0.00	1.09	17.06	0.00
123	-8.52	-13.37	4.36	0.00	7.25	17.06	0.00
124	-14.71	-18.16	6.95	0.00	10.04	17.06	0.00
125	-17.52	-17.82	7.83	0.00	9.41	17.06	0.00
126	-18.52	-15.17	7.85	0.00	7.37	17.06	0.00
127	-19.60	-16.77	8.39	0.00	9.43	17.06	0.00
128	-16.34	-20.06	7.71	0.00	14.18	17.06	0.00
129	-12.90	-12.72	5.71	0.00	1.05	17.06	0.00
130	-7.18	-4.29	2.84	0.00	-4.82	17.06	0.00
131	0.00	0.00	0.00	0.00	0.00	0.00	0.00
132	-0.28	-1.49	0.27	0.07	-0.82	17.06	0.00
133	-3.50	-9.22	2.24	0.00	4.55	17.06	0.00
134	-7.32	-13.68	4.01	0.00	7.36	17.06	0.00
135	-9.96	-13.77	4.88	0.00	7.33	17.06	0.00
136	-11.48	-12.49	5.22	0.00	6.47	17.06	0.00
137	-10.56	-12.02	4.87	0.00	7.26	17.06	0.00
138	-9.53	-11.50	4.47	0.00	6.09	17.06	0.00
139	-9.27	-9.71	4.17	0.00	3.09	17.06	0.00
140	-8.05	-6.49	3.39	0.00	-0.89	17.06	0.00
141	0.00	0.00	0.00	0.00	0.00	0.00	0.00
142	-0.06	-0.87	0.12	0.08	-2.05	17.06	0.00
143	-0.79	-6.16	0.97	0.42	2.49	17.06	0.00
144	-2.57	-9.54	1.97	0.18	5.02	17.06	0.00
145	-4.55	-9.82	2.65	0.00	5.39	17.06	0.00
146	-5.88	-8.87	2.97	0.00	5.06	17.06	0.00
147	-5.57	-7.96	2.76	0.00	4.74	17.06	0.00
148	-5.57	-7.37	2.69	0.00	3.87	17.06	0.00
149	-5.97	-6.85	2.75	0.00	2.77	17.06	0.00
150	-6.26	-5.73	2.71	0.00	0.67	17.06	0.00
151	0.00	0.00	0.00	0.00	0.00	0.00	0.00
152	-0.09	-0.50	0.09	0.03	-2.73	17.06	0.00
153	0.22	-2.40	0.00	0.00	1.09	17.06	0.00
154	-0.02	-4.45	0.51	0.49	3.06	17.06	0.00
155	-1.07	-6.13	1.06	0.32	3.55	17.06	0.00
156	-2.10	-5.43	1.33	0.00	3.43	17.06	0.00
157	-2.41	-4.72	1.35	0.00	3.13	17.06	0.00
158	-2.72	-4.47	1.42	0.00	2.62	17.06	0.00
159	-3.32	-4.03	1.56	0.00	2.16	17.06	0.00
160	-4.00	-3.69	1.74	0.00	0.92	17.06	0.00
161	0.00	0.00	0.00	0.00	0.00	0.00	0.00
162	-0.40	-0.23	0.16	0.00	-3.09	17.06	0.00
163	0.33	-1.30	0.00	0.00	0.29	17.06	0.00
164	0.71	-1.81	0.00	0.00	1.46	17.06	0.00
165	0.39	-1.81	0.00	0.00	1.85	17.06	0.00
166	-0.09	-1.89	0.24	0.18	1.85	17.06	0.00
167	-0.45	-2.22	0.41	0.09	1.80	17.06	0.00
168	-0.83	-2.22	0.53	0.00	1.52	17.06	0.00
169	-1.35	-2.08	0.69	0.00	1.43	17.06	0.00
170	-2.06	-1.67	0.87	0.00	0.79	17.06	0.00
171	0.00	0.00	0.00	0.00	0.00	0.00	0.00

172	-1.57	-0.10	0.52	0.00	-3.17	17.06	0.00
173	0.25	-0.82	0.00	0.00	0.04	17.06	0.00
174	0.84	-1.03	0.00	0.00	0.74	17.06	0.00
175	0.80	-1.04	0.00	0.00	1.05	17.06	0.00
176	0.49	-0.91	0.00	0.00	1.09	17.06	0.00
177	0.27	-0.78	0.00	0.00	1.13	17.06	0.00
178	0.05	-0.90	0.00	0.00	0.98	17.06	0.00
179	-0.25	-1.21	0.22	0.05	1.03	17.06	0.00
180	-0.94	-0.92	0.41	0.00	0.66	17.06	0.00

PILAS

PILAS

STATIC LOAD CASES

STATIC CASE	CASE TYPE	SELF WT FACTOR
PP	DEAD	1.0000
CM	DEAD	0.0000
SC	LIVE	0.0000
CARRO	LIVE	0.0000
VIENTO	WIND	0.0000
REOLOG	DEAD	0.0000
FRENADO	LIVE	0.0000
TEMP	OTHER	0.0000
VIENTO2	WIND	0.0000

JOINT DATA

JOINT	GLOBAL-X	GLOBAL-Y	GLOBAL-Z	RESTRAINTS	ANGLE-A	ANGLE-B	ANGLE-C
1	0.00000	0.00000	11.30000	0 0 0 0 0 0	0.000	0.000	0.000
2	0.00000	0.00000	0.00000	1 1 1 1 1 1	0.000	0.000	0.000

FRAME ELEMENT DATA

FRAME	JNT-1	JNT-2	SECTION	ANGLE	RELEASES	SEGMENTS	R1	R2	FACTOR	LENGTH
1	1	2	PILA	0.000	000000	4	0.000	0.000	1.000	11.300

JOINT FORCES Load Case PP

JOINT	GLOBAL-X	GLOBAL-Y	GLOBAL-Z	GLOBAL-XX	GLOBAL-YY	GLOBAL-ZZ
1	0.000	0.000	-4850.800	0.000	0.000	0.000

JOINT FORCES Load Case CM

JOINT	GLOBAL-X	GLOBAL-Y	GLOBAL-Z	GLOBAL-XX	GLOBAL-YY	GLOBAL-ZZ
1	0.000	0.000	-1876.260	0.000	0.000	0.000

JOINT FORCES Load Case SC

JOINT	GLOBAL-X	GLOBAL-Y	GLOBAL-Z	GLOBAL-XX	GLOBAL-YY	GLOBAL-ZZ
1	0.000	0.000	-1420.880	0.000	0.000	0.000

JOINT FORCES Load Case CARRO

JOINT	GLOBAL-X	GLOBAL-Y	GLOBAL-Z	GLOBAL-XX	GLOBAL-YY	GLOBAL-ZZ
1	0.000	0.000	-638.050	0.000	0.000	0.000

JOINT FORCES Load Case VIENTO

JOINT	GLOBAL-X	GLOBAL-Y	GLOBAL-Z	GLOBAL-XX	GLOBAL-YY	GLOBAL-ZZ
1	0.000	73.200	0.000	0.000	0.000	0.000

JOINT FORCES Load Case REOLOG

JOINT	GLOBAL-X	GLOBAL-Y	GLOBAL-Z	GLOBAL-XX	GLOBAL-YY	GLOBAL-ZZ
1	21.200	0.000	0.000	0.000	0.000	0.000

JOINT FORCES Load Case FRENADO

JOINT	GLOBAL-X	GLOBAL-Y	GLOBAL-Z	GLOBAL-XX	GLOBAL-YY	GLOBAL-ZZ
1	5.800	0.000	0.000	0.000	0.000	0.000

JOINT FORCES Load Case TEMP

JOINT	GLOBAL-X	GLOBAL-Y	GLOBAL-Z	GLOBAL-XX	GLOBAL-YY	GLOBAL-ZZ

1	21.200	0.000	0.000	0.000	0.000	0.000

JOINT FORCES Load Case VIENTO2

JOINT	GLOBAL-X	GLOBAL-Y	GLOBAL-Z	GLOBAL-XX	GLOBAL-YY	GLOBAL-ZZ
1	0.000	138.460	0.000	0.000	0.000	0.000

FRAME SPAN DISTRIBUTED LOADS Load Case VIENTO

FRAME	TYPE	DIRECTION	DISTANCE-A	VALUE-A	DISTANCE-B	VALUE-B
1	FORCE	GLOBAL-Y	0.0000	33.9500	1.0000	33.9500

FRAME SPAN DISTRIBUTED LOADS Load Case VIENTO2

FRAME	TYPE	DIRECTION	DISTANCE-A	VALUE-A	DISTANCE-B	VALUE-B
1	FORCE	GLOBAL-Y	0.0000	3.5400	1.0000	3.5400

LOAD COMBINATION MULTIPLIERS

COMBO	TYPE	CASE	FACTOR	TYPE	TITLE
ELU1	ADD				COMB1
		PP	1.3500	STATIC(DEAD)	
		CM	1.3500	STATIC(DEAD)	
		SC	1.5000	STATIC(LIVE)	
		CARRO	1.5000	STATIC(LIVE)	
		VIENTO	0.9000	STATIC(WIND)	
		REOLOG	1.5000	STATIC(DEAD)	
		FRENADO	1.5000	STATIC(LIVE)	
		TEMP	0.9000	STATIC(OTHER)	
ELS	ADD				COMB1
		PP	1.0000	STATIC(DEAD)	
		CM	1.0000	STATIC(DEAD)	
		SC	1.0000	STATIC(LIVE)	
		CARRO	1.0000	STATIC(LIVE)	
		VIENTO	1.0000	STATIC(WIND)	
		REOLOG	1.0000	STATIC(DEAD)	
		FRENADO	1.0000	STATIC(LIVE)	
		TEMP	1.0000	STATIC(OTHER)	
ELU2	ADD				COMB1
		PP	1.3500	STATIC(DEAD)	
		CM	1.3500	STATIC(DEAD)	
		VIENTO2	1.5000	STATIC(WIND)	
		REOLOG	1.5000	STATIC(DEAD)	
		TEMP	0.9000	STATIC(OTHER)	

JOINT REACTIONS

JOINT	LOAD	F1	F2	F3	M1	M2	M3
2	PP	0.0000	0.0000	5204.1704	0.0000	0.0000	0.0000
2	CM	0.0000	0.0000	1876.2600	0.0000	0.0000	0.0000
2	SC	0.0000	0.0000	1420.8800	0.0000	0.0000	0.0000
2	CARRO	0.0000	0.0000	638.0500	0.0000	0.0000	0.0000
2	VIENTO	0.0000	-456.8350	0.0000	2994.6978	0.0000	0.0000
2	REOLOG	-21.2000	0.0000	0.0000	0.0000	-239.5600	0.0000
2	FRENADO	-5.8000	0.0000	0.0000	0.0000	-65.5400	0.0000
2	TEMP	-21.2000	0.0000	0.0000	0.0000	-239.5600	0.0000
2	VIENTO2	0.0000	-178.4620	0.0000	1790.6093	0.0000	0.0000
2	ELU1	-59.5800	-411.1515	12646.9761	2695.2280	-673.2540	0.0000
2	ELS	-48.2000	-456.8350	9139.3604	2994.6978	-544.6600	0.0000
2	ELU2	-50.8800	-267.6930	9558.5811	2685.9139	-574.9440	0.0000

FRAME ELEMENT FORCES

FRAME	LOAD	LOC	P	V2	V3	T	M2	M3
1	PP	0.00	-4850.80	0.00	0.00	0.00	0.00	0.00
		2.83	-4939.14	0.00	0.00	0.00	0.00	0.00
		5.65	-5027.49	0.00	0.00	0.00	0.00	0.00
		8.48	-5115.83	0.00	0.00	0.00	0.00	0.00
		11.30	-5204.17	0.00	0.00	0.00	0.00	0.00
1	CM	0.00	-1876.26	0.00	0.00	0.00	0.00	0.00
		2.83	-1876.26	0.00	0.00	0.00	0.00	0.00
		5.65	-1876.26	0.00	0.00	0.00	0.00	0.00
		8.48	-1876.26	0.00	0.00	0.00	0.00	0.00
		11.30	-1876.26	0.00	0.00	0.00	0.00	0.00
1	SC	0.00	-1420.88	0.00	0.00	0.00	0.00	0.00
		2.83	-1420.88	0.00	0.00	0.00	0.00	0.00
		5.65	-1420.88	0.00	0.00	0.00	0.00	0.00
		8.48	-1420.88	0.00	0.00	0.00	0.00	0.00
		11.30	-1420.88	0.00	0.00	0.00	0.00	0.00
1	CARRO	0.00	-638.05	0.00	0.00	0.00	0.00	0.00
		2.83	-638.05	0.00	0.00	0.00	0.00	0.00
		5.65	-638.05	0.00	0.00	0.00	0.00	0.00
		8.48	-638.05	0.00	0.00	0.00	0.00	0.00
		11.30	-638.05	0.00	0.00	0.00	0.00	0.00
1	VIENTO	0.00	0.00	0.00	73.20	0.00	0.00	0.00
		2.83	0.00	0.00	169.11	0.00	-342.26	0.00
		5.65	0.00	0.00	265.02	0.00	-955.46	0.00
		8.48	0.00	0.00	360.93	0.00	-1839.61	0.00
		11.30	0.00	0.00	456.83	0.00	-2994.70	0.00
1	REOLOG	0.00	0.00	0.00	-21.20	0.00	0.00	0.00
		2.83	0.00	0.00	-21.20	0.00	0.00	59.89
		5.65	0.00	0.00	-21.20	0.00	0.00	119.78
		8.48	0.00	0.00	-21.20	0.00	0.00	179.67
		11.30	0.00	0.00	-21.20	0.00	0.00	239.56
1	FRENADO	0.00	0.00	0.00	-5.80	0.00	0.00	0.00
		2.83	0.00	0.00	-5.80	0.00	0.00	16.39
		5.65	0.00	0.00	-5.80	0.00	0.00	32.77
		8.48	0.00	0.00	-5.80	0.00	0.00	49.15
		11.30	0.00	0.00	-5.80	0.00	0.00	65.54
1	TEMP	0.00	0.00	0.00	-21.20	0.00	0.00	0.00
		2.83	0.00	0.00	-21.20	0.00	0.00	59.89
		5.65	0.00	0.00	-21.20	0.00	0.00	119.78
		8.48	0.00	0.00	-21.20	0.00	0.00	179.67
		11.30	0.00	0.00	-21.20	0.00	0.00	239.56
1	VIENTO2	0.00	0.00	0.00	138.46	0.00	0.00	0.00
		2.83	0.00	0.00	148.46	0.00	-405.28	0.00
		5.65	0.00	0.00	158.46	0.00	-838.80	0.00
		8.48	0.00	0.00	168.46	0.00	-1300.58	0.00
		11.30	0.00	0.00	178.46	0.00	-1790.61	0.00
1	ELU1	0.00	-12169.93	-59.58	65.88	0.00	0.00	0.00
		2.83	-12289.19	-59.58	152.20	0.00	-308.03	168.31
		5.65	-12408.45	-59.58	238.52	0.00	-859.92	336.63
		8.48	-12527.71	-59.58	324.83	0.00	-1655.65	504.94
		11.30	-12646.98	-59.58	411.15	0.00	-2695.23	673.25
1	ELS	0.00	-8785.99	-48.20	73.20	0.00	0.00	0.00
		2.83	-8874.33	-48.20	169.11	0.00	-342.26	136.16
		5.65	-8962.68	-48.20	265.02	0.00	-955.46	272.33
		8.48	-9051.02	-48.20	360.93	0.00	-1839.61	408.49
		11.30	-9139.36	-48.20	456.83	0.00	-2994.70	544.66
1	ELU2	0.00	-9081.53	-50.88	207.69	0.00	0.00	0.00
		2.83	-9200.79	-50.88	222.69	0.00	-607.91	143.74
		5.65	-9320.06	-50.88	237.69	0.00	-1258.20	287.47
		8.48	-9439.32	-50.88	252.69	0.00	-1950.87	431.21
		11.30	-9558.58	-50.88	267.69	0.00	-2685.91	574.94

Obra: LAV VALLES-CASTELLBISBAL
Fecha: 29/09/2003
Hora: 1:14:24

Cálculo de secciones a cortante

1 Datos

- Materiales

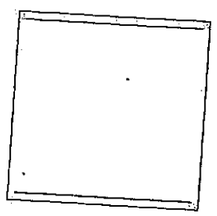
Tipo de hormigón : HA-30
Tipo de acero : B-500-S
fck [MPa] = 30.00
fyk [MPa] = 500.0
?c = 1.50
?s = 1.15

- Tipo de elemento estructural

Tipo : elemento con armadura a cortante

- Sección

Sección : CORTANTE
b [m] = 1.15
h [m] = 1.15



2 Dimensionamiento

Esfuerzo cortante de cálculo Vd [kN] = 415

Inclinación de las bielas [°] = 45
Inclinación de los cercos [°] = 90.0
? [·1.E-3] = 3
Nd [kN] = 0.0
?xd [MPa] = 0.0
?yd [MPa] = 0
?e [°] = 45.0

? [mm]	Separación [mm]	nº ramas	Area [cm²/m]	Tipo	Vsu [kN]
ø 6	---	---	---	---	---
ø 8	0.15	4	13.4	2	530.8
ø 10	0.25	4	12.6	2	497.6
ø 12	0.25	4	18.1	2	716.6

Área estricta [cm²/m] = 11.5
Vul [kN] = 7590.0
Vcu [kN] = 375.3

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Obra: LAV
Fecha: 29/09/2003
Hora: 1:16:12

Cálculo de soportes a pandeo

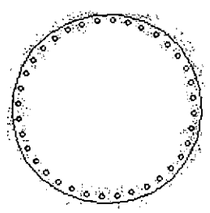
1 Datos

- Materiales

Tipo de hormigón : HA-30
Tipo de acero : B-500-S
fck [MPa] = 30.00
fyk [MPa] = 500.00
?c = 1.50
?s = 1.15

- Sección

Sección : PILA
? [m] = 1.30
r [m] = 0.025
nº barras = 36



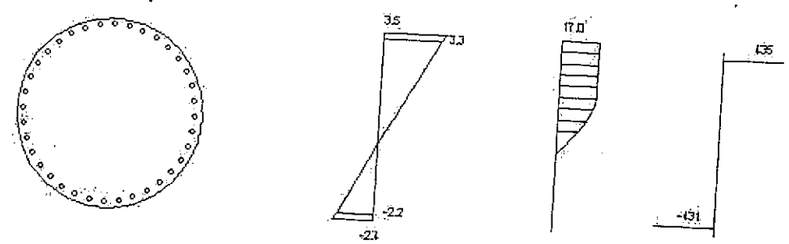
- Estructura

Tipo : Traslacional
L [m] = 11.2

Vinculación de los extremos del soporte :
Vinculación extremo superior de pilar : En ménsula
Vinculación extremo inferior de pilar : Empotramiento

2 Dimensionamiento

Nd [kN] = 12646.98
Md,sup [kN·m] = 820.4
Md,inf [kN·m] = 2778.04



Plano de deformación de agotamiento

x [m] = 0.77
1/r [1/m]·1.E-3 = 4.5
?s ·1.E-3 = 3.5
?i ·1.E-3 = -2.4

Deformación y tensión de armaduras superior e inferior

Profundidad [m]	Deformación ·1.E-3	Tensión [MPa]
0.05	3.3	435
1.25	-2.2	-431

Esbelteces y esfuerzos de diseño:

Esbeltez = 70
Nd [kN] = 12646.98
Nd·etot [kN·m] = 6914.5

Propuesta armadura dimensionamiento

Aest [cm2]	?est [mm]	A [cm2]	? [mm]
286.0	31.8	290.0	32.0

- Parámetros de esbeltez

Longitud de pandeo l0 [m] = 22.40
Esbeltez mecánica ? = 70
? A = ?
? B = 0.00
? = 2.00

- Parámetros de cálculo del método aproximado

ic [m] = 0.3233
is [m] = 0.4243

? = 0.0030

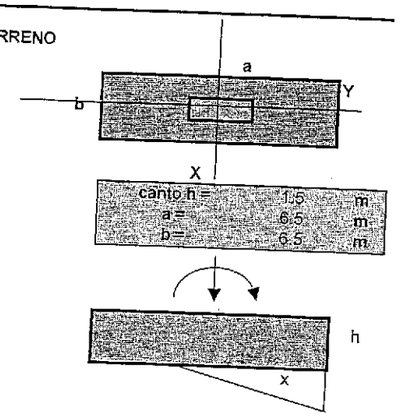
.?y = 0.0022

? = 2.00

ZAPATA PILAR

TENSIONES EN EL TERRENO

AXIL CARACTERÍSTICO	9139.36	kN
PESO PROPIO ZAPATA	1584.38	kN
MOMENTO CARACTERÍSTICO X	2994.7	kN*m
MOMENTO CARACTERÍSTICO Y	544	kN*m



DIRECCION X

CASO 1		
σ1	0.32	N/mm2
σ2	0.15	N/mm2

CASO 1

CASO 2		
x	8.91	m
σ1	0.37	N/mm2

DIRECCION Y

CASO 1		
σ1	0.27	N/mm2
σ2	0.24	N/mm2

CASO 1

CASO 2		
x	9.60	m
σ1	0.37	N/mm2

COEFICIENTE SEGURIDAD A VUELCO

DIRECCION X

Mdest	2994.70	kN
Mest	34852.14	kN
C.S.	11.64	

DIRECCION Y

Mdest	544.00	kN
Mest	34852.14	kN
C.S.	64.07	

ARMADO

ARMADURA EN DIRECCIÓN a

Vd	6524.10 kN	
Md	8868.69 kN*m	
Asx	179.89 cm2	27.6757508 cm2/m
Asmin	87.75 cm2	

ARMADURA EN DIRECCIÓN b

Vd	6524.097 kN	
Md	8868.69 kN*m	
Asy	179.89 cm2	27.67575 cm2/m
Asmin	87.75 cm2	

DIMENSIÓN PILAR

a1	1
b1	1
h	1.5
vuelo	3.25
Crígido	1.625

Asa armadura paralela al lado de dimensión a
Asb armadura paralela al lado de dimensión b

* CARACTERÍSTICAS DEL SUELO adoptadas

$\phi = 33°$, $c = 0.5\ t/m^2$, $\gamma = 1.9\ t/m^3$

$\nexists$ N.f.

$\sigma_{adm} = 2\ Kp/cm^2$

$K_{30} = 5\ Kp/cm^3$

$K = K_{30} \cdot \frac{0.3}{b} = 0.136\ Kp/cm^3$ (JM Rodríguez Ortiz)

Tuando elementos de $1m^2$, en el modelo SF se debe emplear como rigidez del suelo

$K(1m \times 1m) = (0.136\ Kp/cm^3)(100cm)(100cm) = 1360\ KN/m$

Nótese que en los extremos es preciso emplear $K(1m \times 0.5) = \frac{1}{2} K(1m \times 1m)$

* COMPROBACIÓN $\sigma \leq \sigma_{adm}$

La reacción en los nivelles puede compararse directamente con la σ_{adm} (en ELS).

Muro M2 (11m)	$R_z = 243\ KN/m^2$
Muro (9.5m) M2	$R_z = 256\ KN/m^2$
Muro M3 (8m)	$R_z = 225\ KN/m^2$

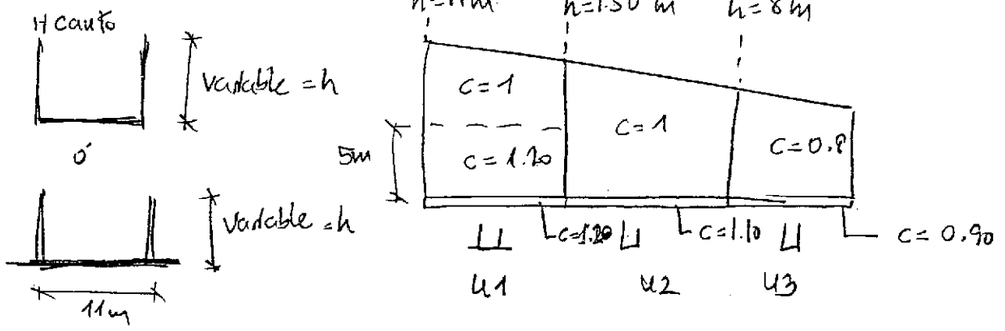
Peso del terreno excavado $= 2.5m * 19\ KN/m^3 = 47.9\ KN/m^2$

$q_{tn\ M2} = 256 - 47.5\ KN/m^2 = 208.5\ Kp/m^2$ en el caso más desfavorable

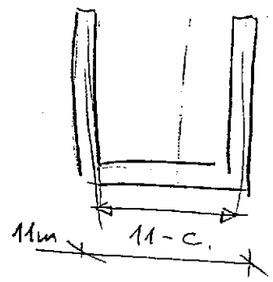
$q_{tn\ M1} = 243 - 47.5 = 195.5\ Kp/m^2$

En definitiva, la solución geométrica propuesta se toma como válida, a pesar de que en un punto del muro de 9.5m se sobrepase la σ_{adm}.

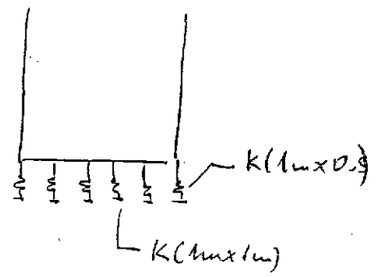
ESQUEMA MUROS



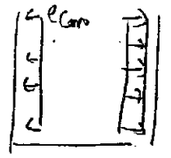
DESCRIPCIÓN DE LAS CARGAS Y DEL MODELO



Cond. contorno:



Scarga Carro $q = 10 KN/m^2$



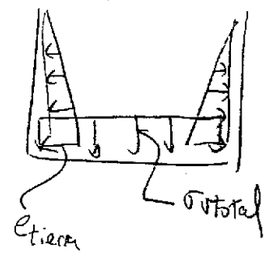
Scarga terreno (Empuje Activo) $K_a = \frac{1 - \sin\phi}{1 + \sin\phi} = 0.2948$

$\sigma_h = K_a \sigma_v$; $e_{carro} = q_{carro} \cdot K_a \cdot 1 = 2.948\ KN/m^2$

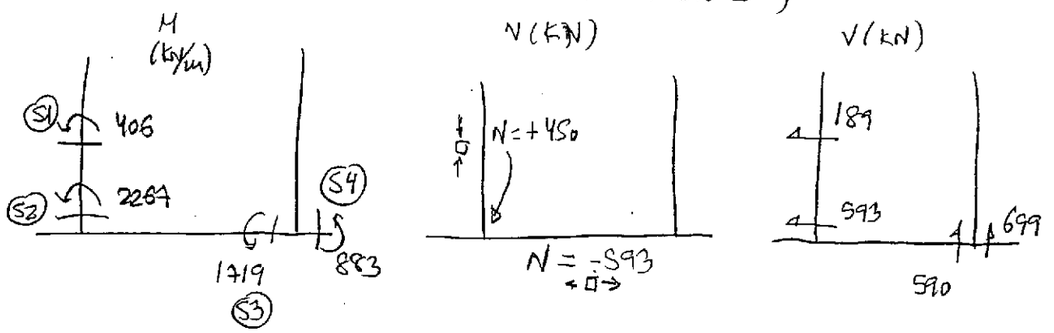
$e_{tierras} = \sigma_v K_a = K_a \cdot \gamma H(m) = 5.5864\ KN/m$

H(m)	e_{carro}	e_{tierra}	$\sigma_{total} = \gamma H + q$
11	2.948	61.5	219
9.5	2,948	53	179
8	2,948	44.7	162

(Unidades KN/m)



ESFUERZOS DE CÁLCULO (ELU = 1.5G + 1.6Q)



(S1) c = 1m

406 kNm

189 kN

ELU Flexión. Md = 406, con $\phi 20/0.20$ cs = 1.54 > 1. OK

$\phi 20/0.20$: Arm. mín. mecánica

$A_s \geq 0{,}04\, A_c \cdot \frac{f_{cd}}{f_{yd}} = 15.34 cm^2/m$

ELU cortante: V_u (kN) : $V_{cu} = 284.4$ kN >> 189 kN OK

↑ $\rho_L = 2‰$

Para $\rho = 1.57‰$ tb cumpliría

(S2) c = 1.20 m

2264 kNm

450 kN

593 kN

ELU flexión: $A_{s\,min} = 18.8 cm^2/m \Rightarrow \phi 25/0.20$ ($24.55 cm^2$)

Nd = 0 (Del lado de la seguridad)

Md = 2264

$\rightarrow A_s = \frac{95 cm^2}{2} = 47.5 \Rightarrow \boxed{\phi 25/0.1\,m}$

ELU cortante

$\rho = 4.1‰$, Nd = -450 kN

$V_{cu} = 493$ kN > $V_u = 593$ kN

A 1 canto útil d → $V_d = 509.9$ kN > V_{cu}

$A_\alpha \rightarrow A_{\alpha\,min} = 8.3 cm^2/m = \frac{A\phi(r)}{s}$

$A\phi 6 = 0.28 cm^2$, r = 5 → s = 0.16

$\boxed{c\phi 6/0.15/0.40}$

(S3) 590 kN

1719 kNm

N = -593 kN

(c = 1.20 m)

ELU flexión: $A_s = \frac{85.2}{2} = 43.0 cm^2 \Rightarrow \boxed{\phi 25/0.10}$ (49.1 cm^2/m)

ELU cortante: Idéntico a (S2)

a 1m del nudo $V_d = 538$ kN > $V_{cu} = 493$ kN

⇒ Armado: $\boxed{c\phi 6/0.15/0.40}$

(S4) 883 kNm

699 kN

(N=0)

(c = 1.20 m)

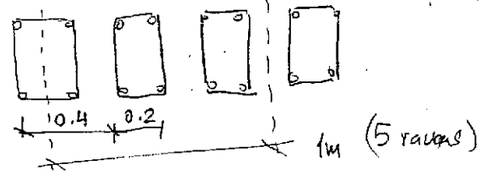
ELU FLEXIÓN: A_s = Arm. mínima $\boxed{\phi 25/0.20}$

$A_{s\,min} = 0.04\, A_c \frac{f_{cd}}{f_{yd}} = 18 \frac{cm^2}{m}$ (24.55 cm^2/m)

ELU CORTANTE: $\rho_L = 2.05$, $V_{cu} = 337$ kN

Si $V_d = 699$ kN → $A_\alpha = 11.1 cm^2/m$

→ $c\phi 8/0.2/0.4$ (12.6 cm^2/m)



— Armadura horizontal —

Mínima EHE 3.2‰ : 2/3 en cara vista, 1/3 c. interna

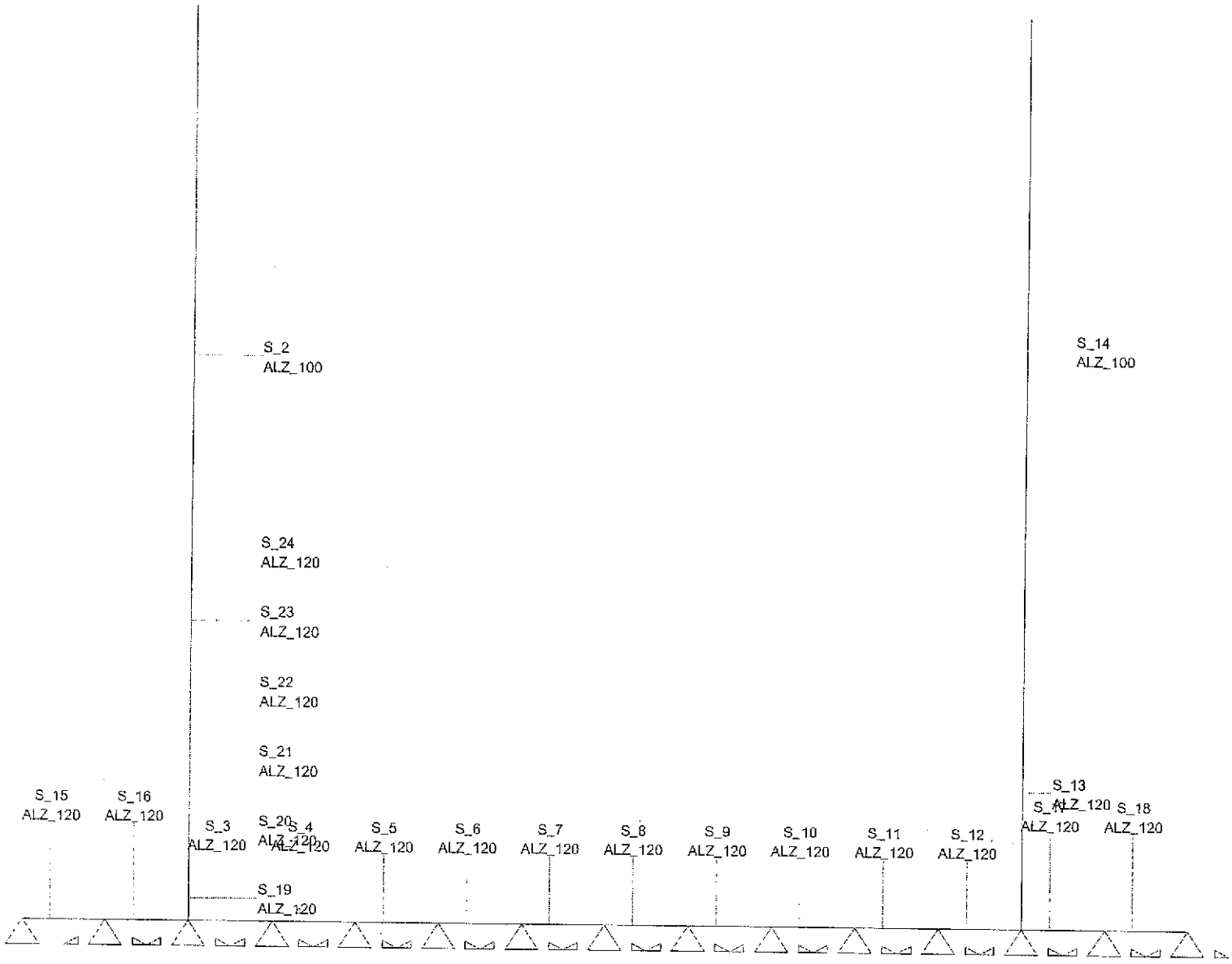
Canto	Cara vista		Cara interna	
1.20	25.6	$\phi 25/0.20$	12.8	$\phi 20/0.20$
1.10	23.5	"	11.7	$\phi 16/0.20$
1	24.3	"	10.7	"
0.9	19.2	$\phi 20/0.15$	9.6	$\phi 16/0.15$
0.8	17.1	"	8.5	$\phi 16/0.15$
(m)	(cm^2/m)		(cm^2/m)	

— ELS FISURACIÓN — (Combinación cuasip.)

$M_{qp} = 1417 \frac{kN \cdot m}{m}$ → $w_k = 0.19 < 0.2$ OK (mín mín)

Structure

Scale 1 :71.2



STRUCTURE 2D

NODE DATA

Id	Coordinates X [m]	Coordinates Z [m]	Supports DX [kN/m]	Supports DZ [kN/m]	Supports RY [kNm]	Specialties
K_1	-2,00	0	B	680,000		
K_2	1,00	0		1360,000		
K_3	2,00	0		1360,000		
K_4	3,00	0		1360,000		
K_5	4,00	0		1360,000		
K_6	5,00	0		1360,000		
K_7	6,00	0		1360,000		
K_8	7,00	0		1360,000		
K_9	8,00	0		1360,000		
K_10	9,00	0		1360,000		
K_11	12,00	0		680,000		
K_12	-1,00	0		1360,000		
K_13	0	0		1360,000		
K_14	10,00	0		1360,000		
K_15	11,00	0		1360,000		
!1	0,00	0,83				
!2	0,00	1,67				
!3	0,00	2,50				
!4	0,00	3,33				
!5	0,00	4,17				
!6	0,00	5,00				
!7	10,00	5,00				
!8	0,00	11,00				
!9	10,00	11,00				

B : Blocked

Cross section: Geometry

Name	Variant	Materials	Type	Dimensions [m]
ALZ_100		1,2	G-R	b=1,00, h=1,00, u1=0,04, u2=0,04
ALZ_120		1,2	G-R	b=1,00, h=1,20, u1=0,04, u2=0,04

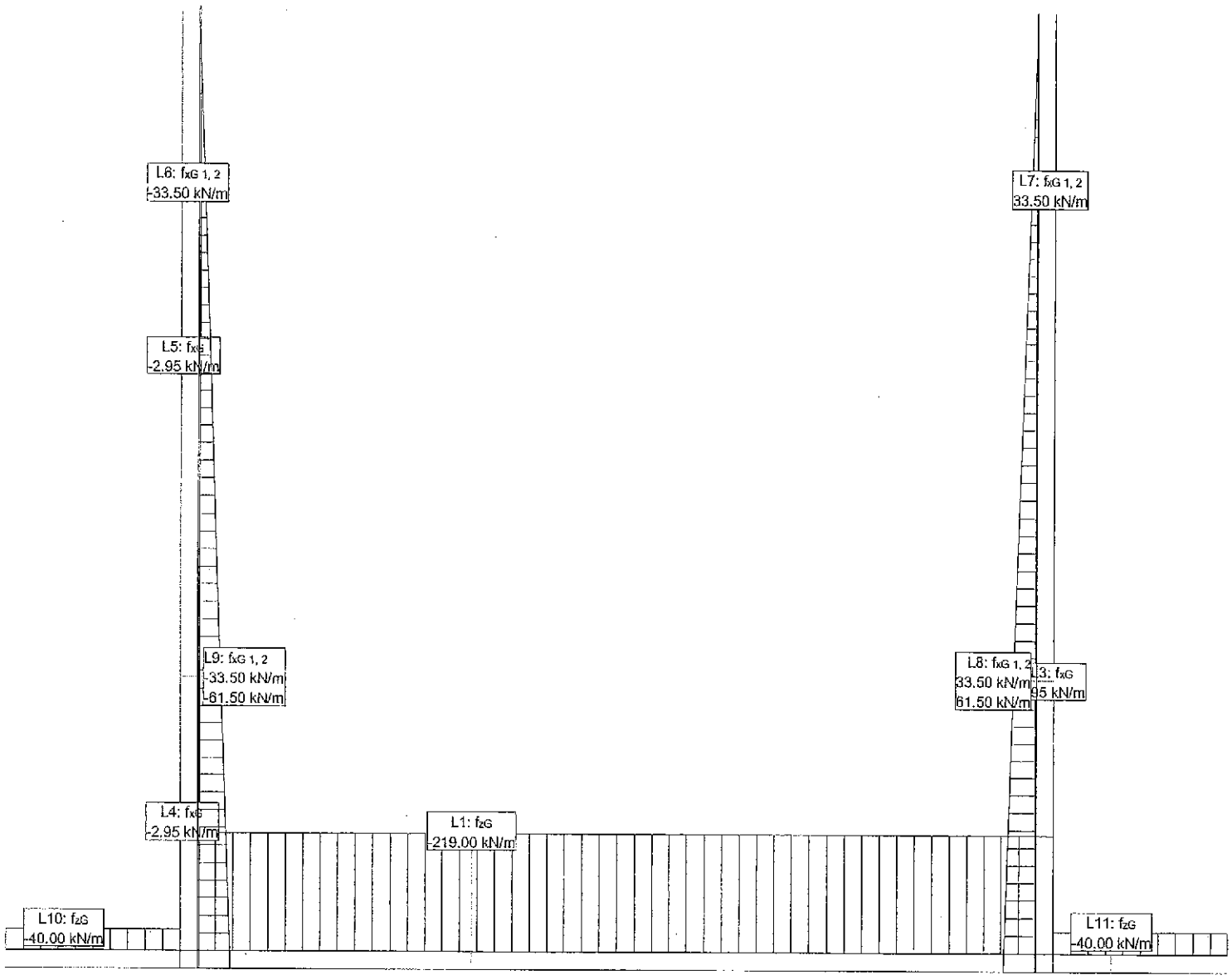
Materials : s. table 'Materials'

Materials

Id	Material	E [kN/mm²]	G [kN/mm²]	? [t/m³]	Material class
1	Concrete	30	10	2,5	H250
2	Reinf. steel	210	70	8,0	AEH500

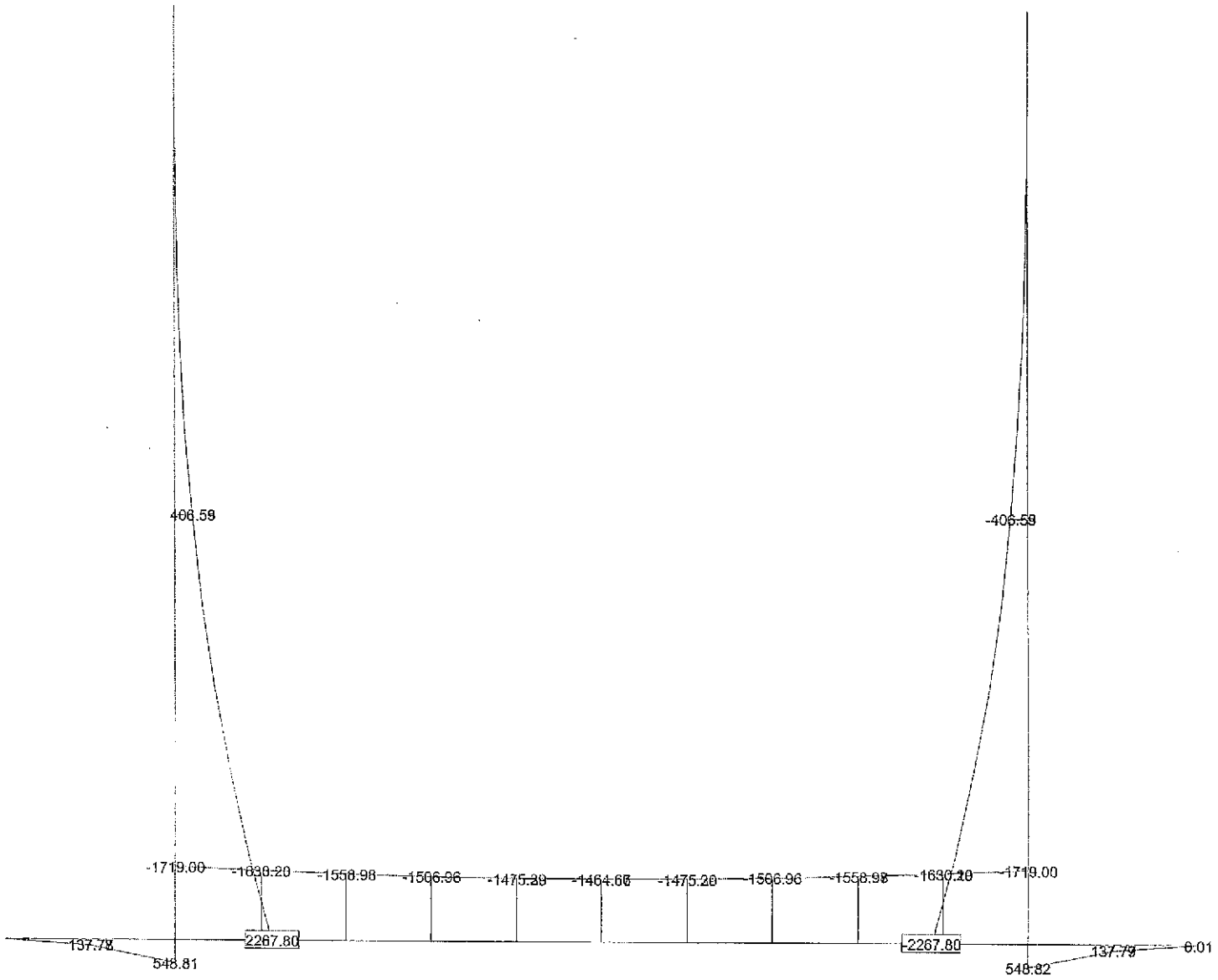
Load case 'EMPUJES': Load case 2

Scale 1 :69.3



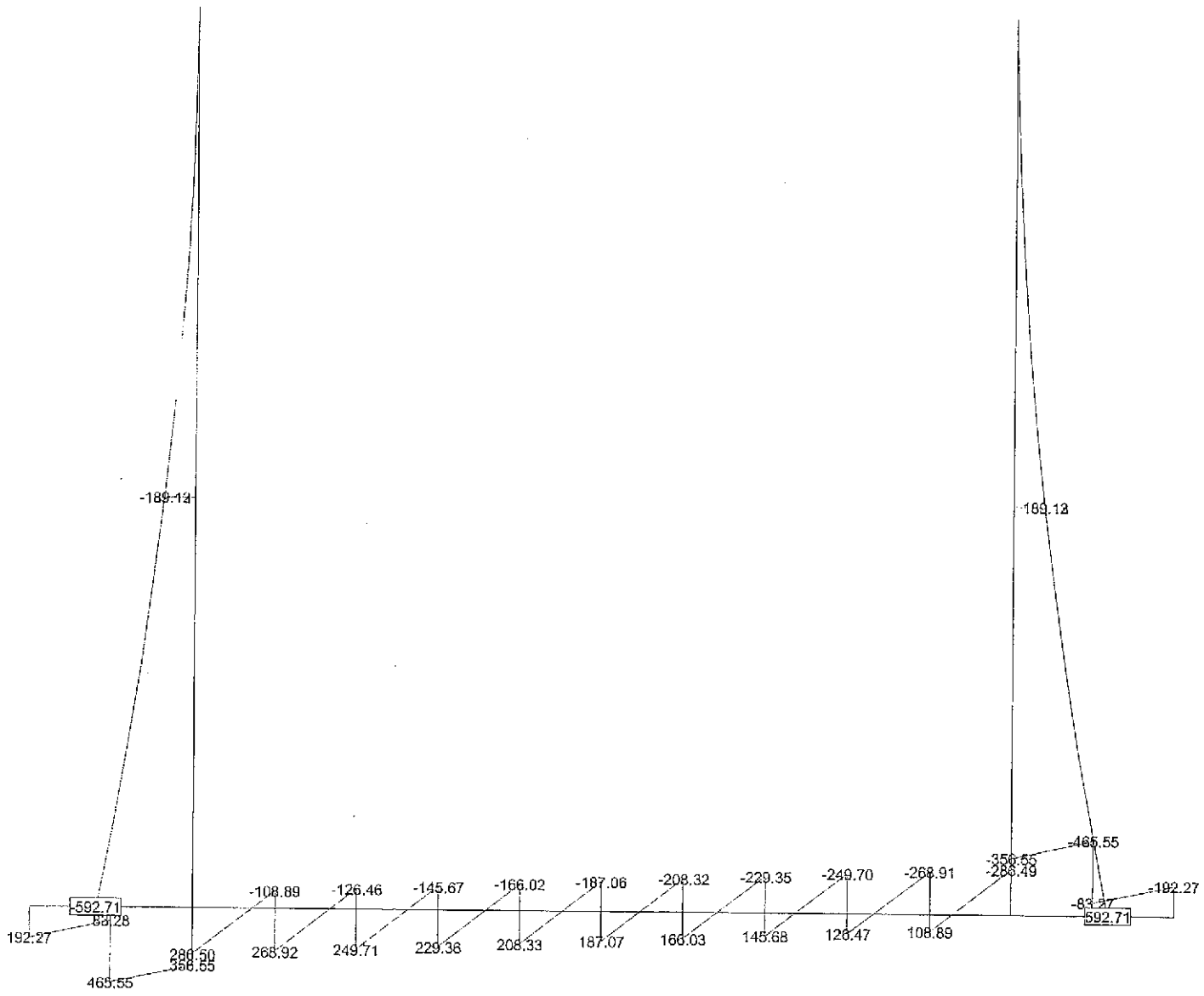
Section force My [kNm] for: ELU

Scale 1 :71.7



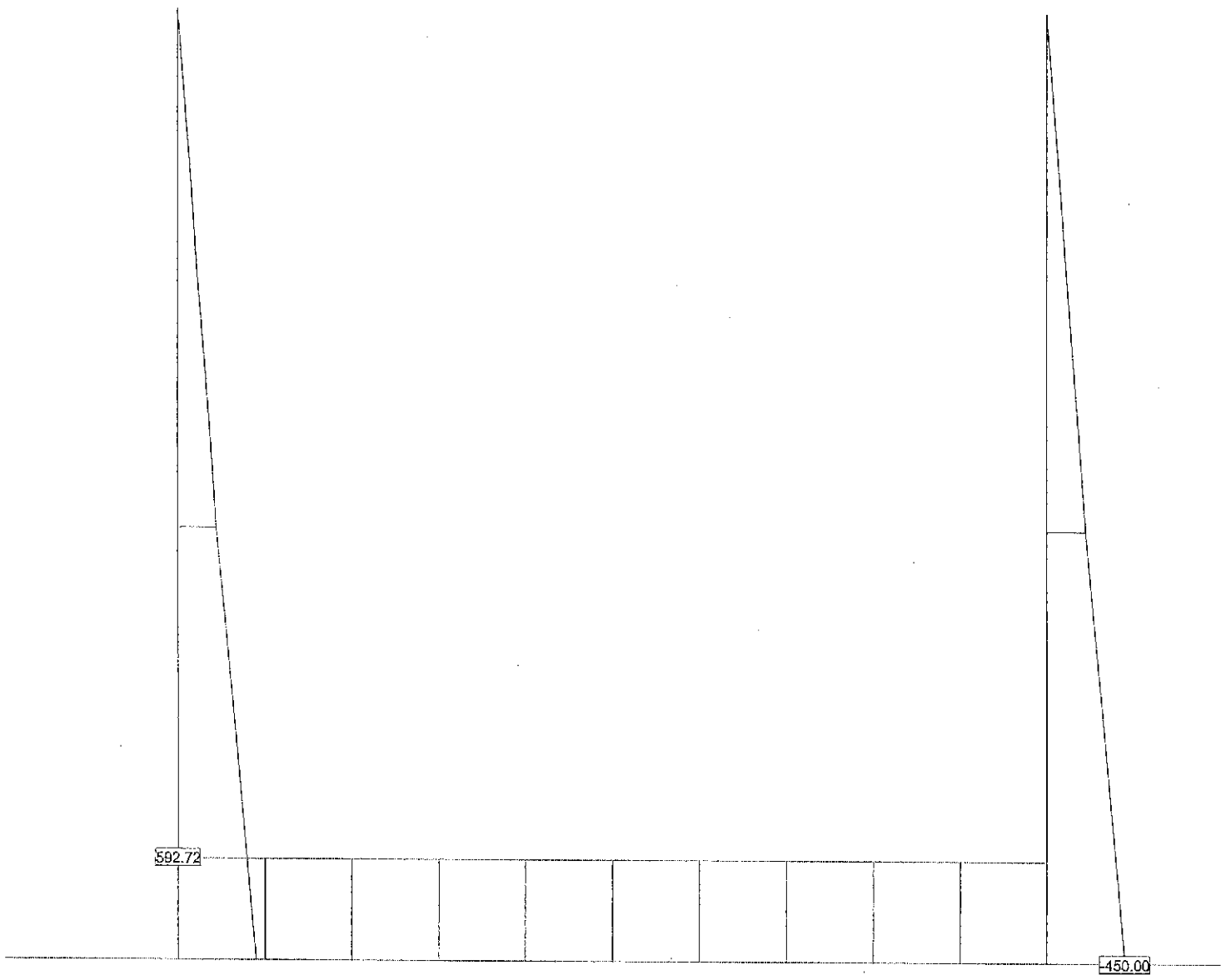
Section force Vz [kN] for: ELU

Scale 1 :75.9



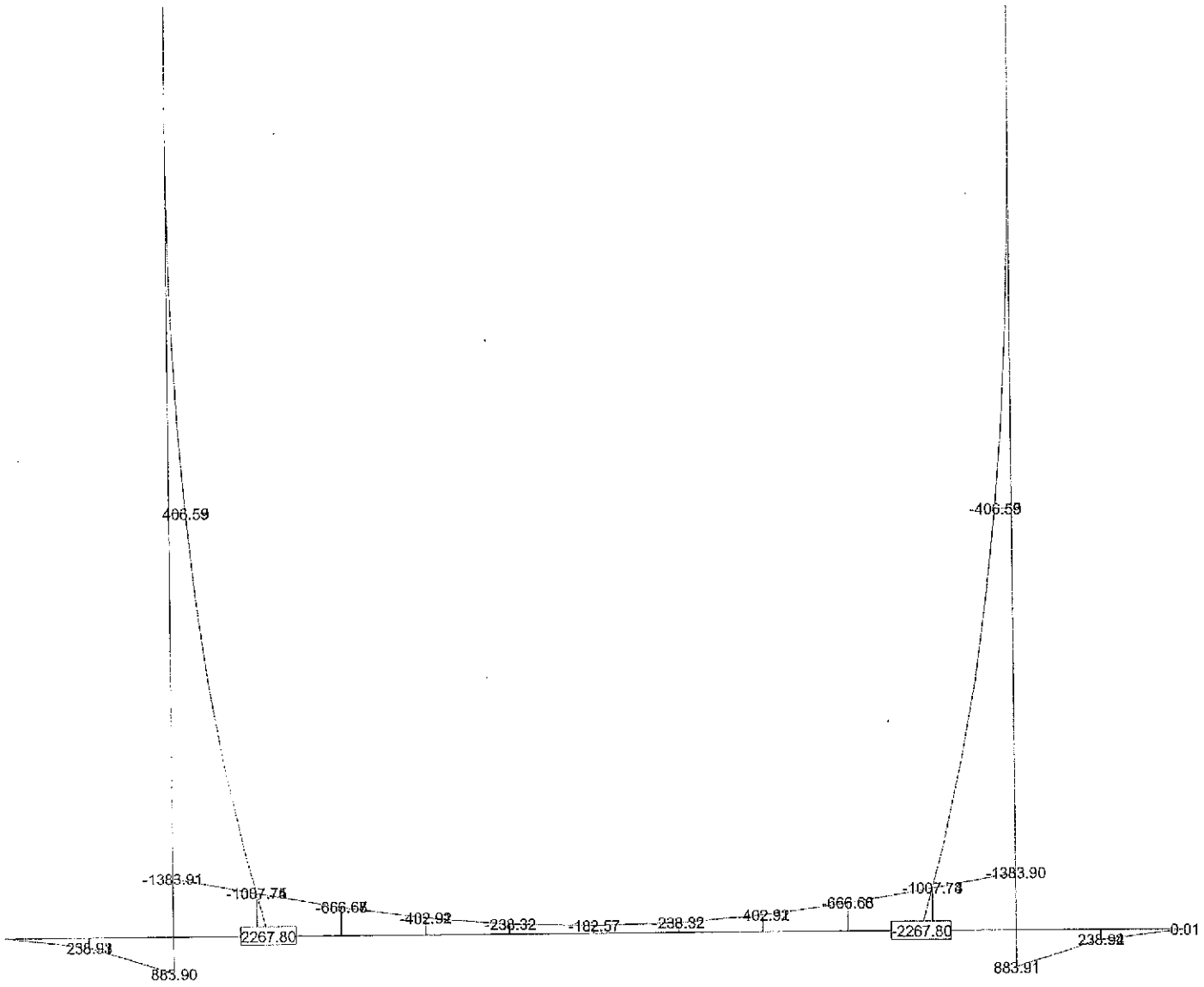
Section force N [kN] for: ELU

Scale 1 :70.0



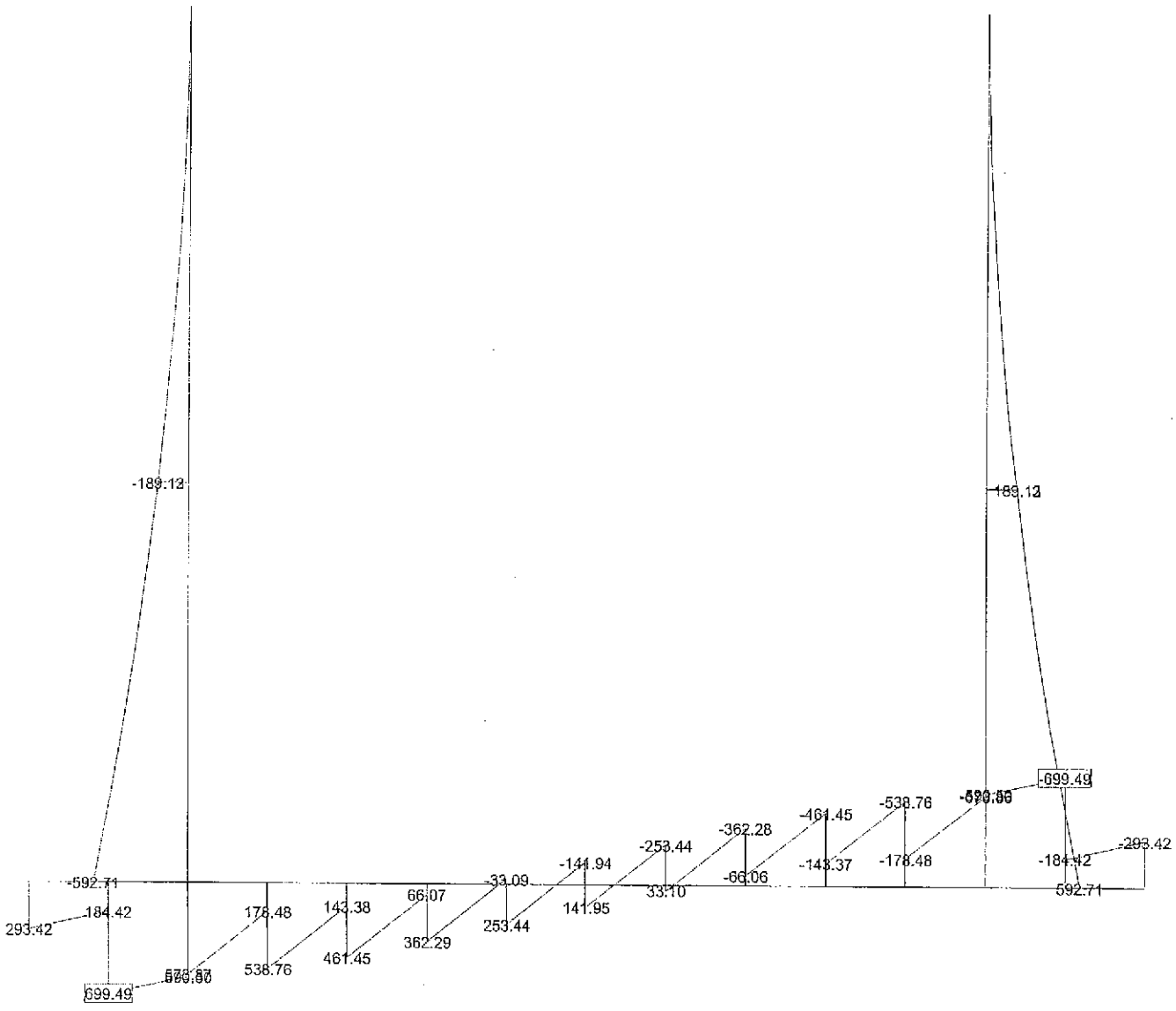
Section force My [kNm] for: ELU
con suelo más rígido

Scale 1 :74.3



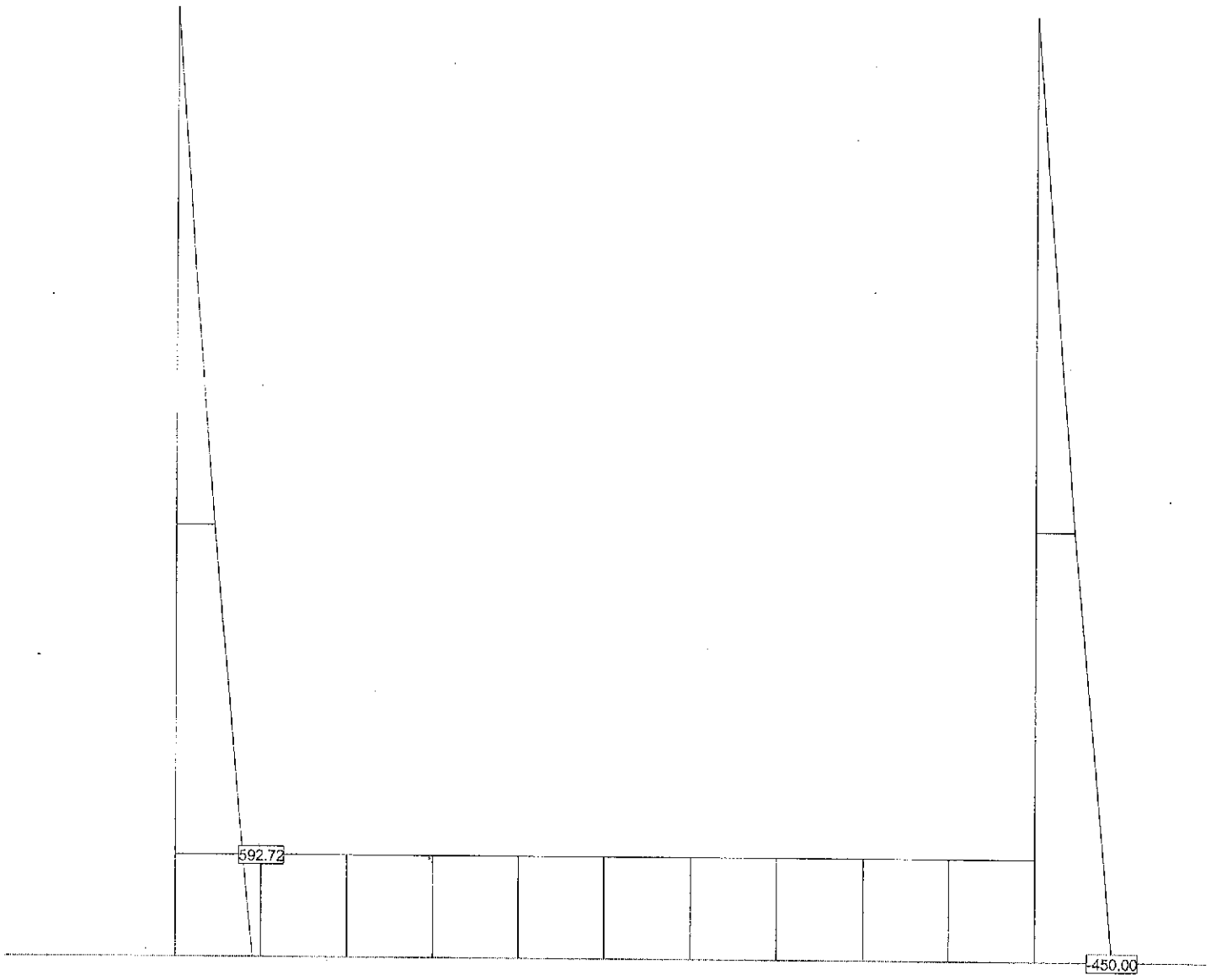
Section force Vz [kN] for: ELU
con suelo más rígido

Scale 1 :80.5



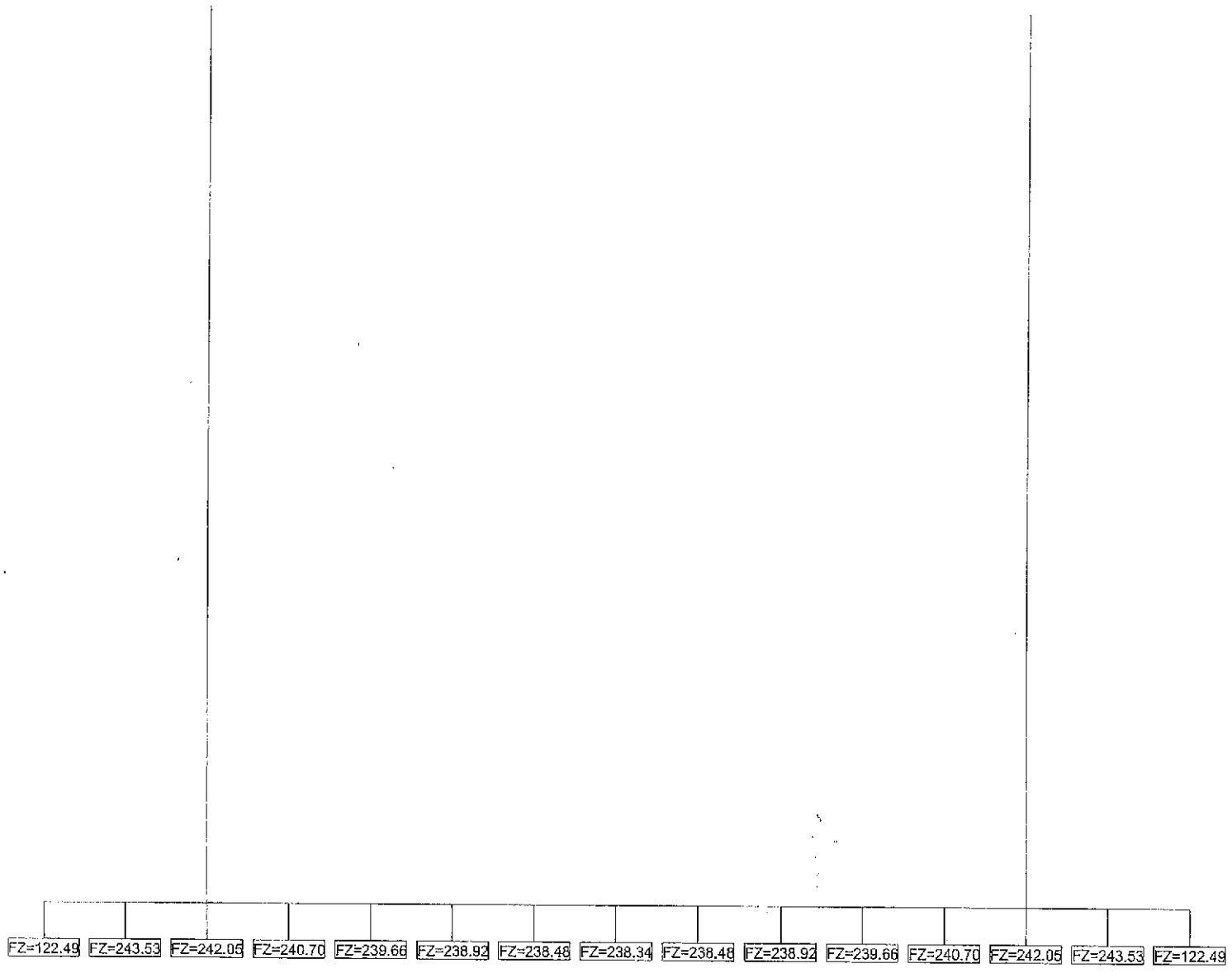
Section force N [kN] for: ELU
con suelo más rígido

Scale 1 :71.4

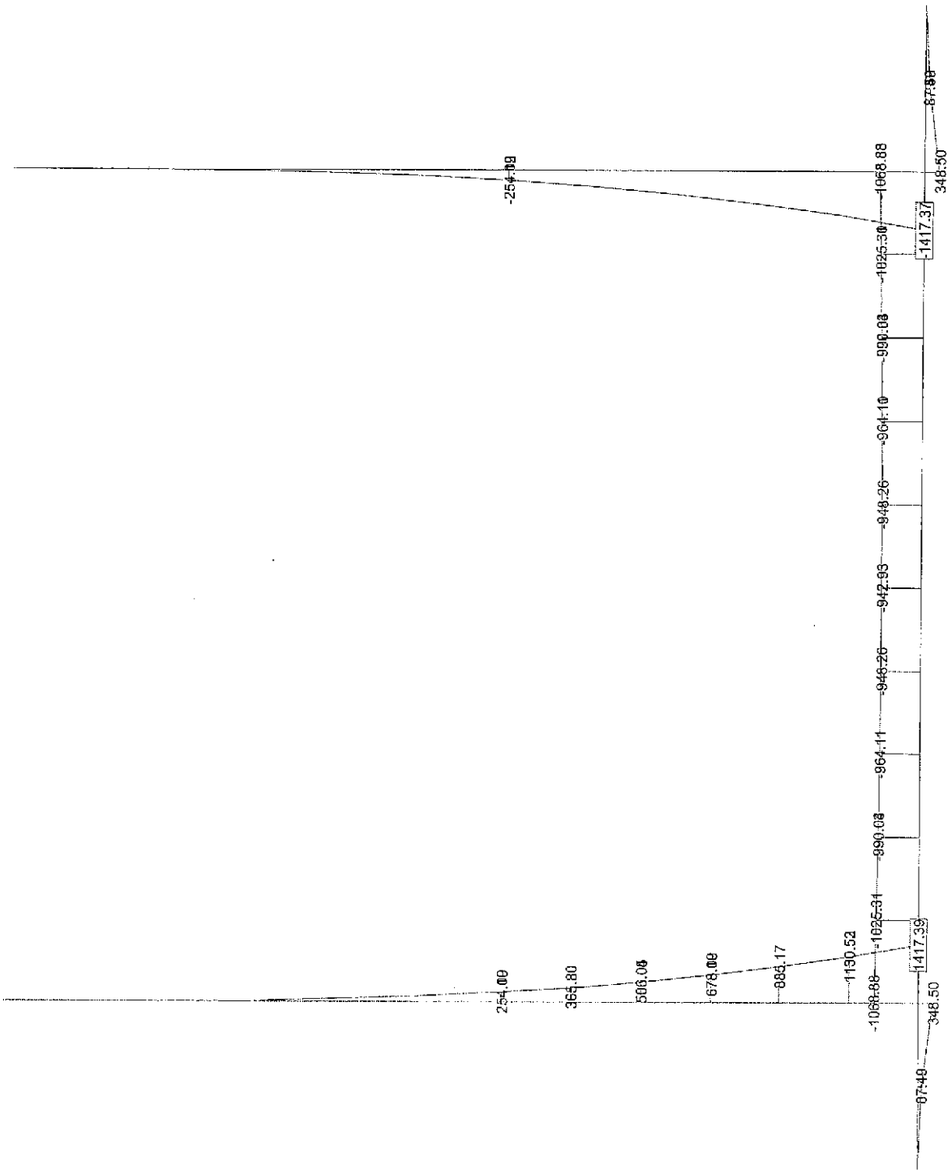


Reactions [kN]/[kNm] for: TOTAL, Sum FX: 0.00, Sum FZ: 3370.00

Scale 1 :73.5



Scale 1:71.1



Section force My [kNm] for: TOTAL

Statik-4 - Version 1.14
VALTER, valenciana de estructuras
CASTELLBISBAL
MURO_CASTELLBISBAL

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

Obra: MUROS_EHE
Fecha: 20/11/2003
Hora: 11:20:54

Cálculo de secciones a flexión compuesta recta

1 Datos

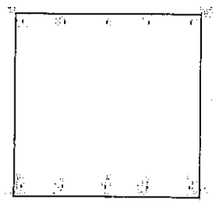
- Materiales

Tipo de hormigón : HA-25
Tipo de acero : B-500-S
fck [MPa] = 25.00
fyk [MPa] = 500.00
?c = 1.50
?s = 1.15

- Sección

Sección : 100R
b [m] = 1.00
h [m] = 1.00
r [m] = 0.050

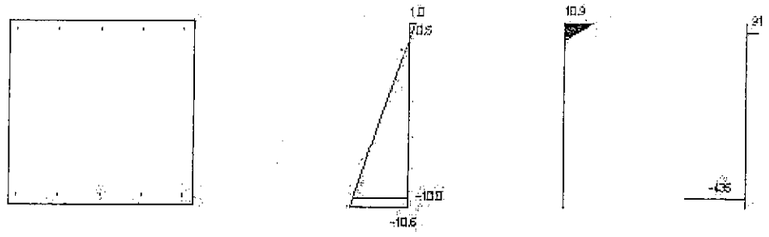
nº barras horizontales = 5
nº barras verticales = 2



2 Comprobación

? [mm] = 20
Nd [kN] = 0
Md [kN·m] = 406

Nu [kN] = -0.0
Mu [kN·m] = 624.8
? = 1.54



Plano de deformación de agotamiento

x [m] = 0.089

1/r [1/m]·1.E-3 = 11.6

?s ·1.E-3 = 0.5

?i ·1.E-3 = -10.0

Deformación y tensión de armaduras superior e inferior

Profundidad [m]	Deformación ·1.E-3	Tensión [MPa]
0.050	1.0	-91.1
0.950	-10.6	434.8

Obra: CASTELLBISBAL
Fecha: 03/12/2003
Hora: 20:17:48

Cálculo de secciones a cortante

1 Datos

- Materiales

Tipo de hormigón : HA-25

Tipo de acero : B-500-S

fck [MPa] = 25.00

fyk [MPa] = 500.0

?c = 1.50

?s = 1.15

- Tipo de elemento estructural

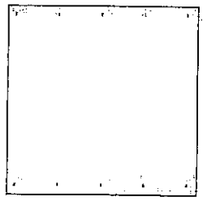
Tipo : elemento sin armadura a cortante

- Sección

Sección : 100R

b [m] = 1.00

h [m] = 1.00



2 Comprobación

?l [·1.E-3] = 1.57

Nd [kN] = 0.0

Vu [kN] = 262.3

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

Obra: MUROS_EHE
Fecha: 20/11/2003
Hora: 11:33:22

Cálculo de secciones a flexión compuesta recta

1 Datos

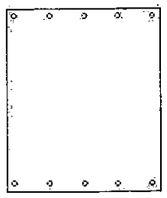
- Materiales

Tipo de hormigón : HA-25
Tipo de acero : B-500-S
fck [MPa] = 25.00
fyk [MPa] = 500.00
?c = 1.50
?s = 1.15

- Sección

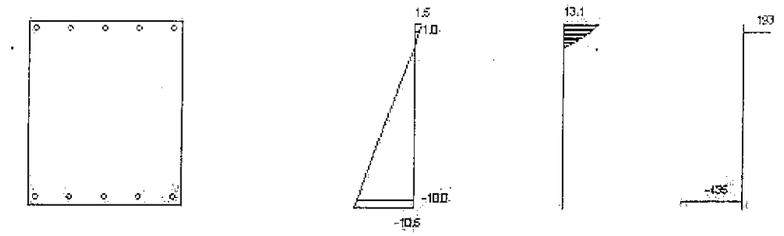
Sección : 120R
b [m] = 1.00
h [m] = 1.20
r [m] = 0.050

nº barras horizontales = 5
nº barras verticales = 2



2 Dimensionamiento

Nd [kN] = 0
Md [kN·m] = 2267



Plano de deformación de agotamiento

x [m] = 0.147
1/r [1/m]·1.E-3 = 10.0
?s ·1.E-3 = 1.5
?i ·1.E-3 = -10.5

Deformación y tensión de armaduras superior e inferior

Profundidad [m]	Deformación ·1.E-3	Tensión [MPa]
0.050	1.0	-192.9
1.150	-10.0	434.8

Propuesta armadura dimensionamiento

Aest [cm2]	?est [mm]	A [cm2]	? [mm]	Nu [kN]	Mu [kN·m]
94.9	34.8	94.9	35	0.0	2267.0

Obra: CASTELLBISBAL
Fecha: 20/11/2003
Hora: 13:15:28

Cálculo de secciones a cortante

1 Datos

- Materiales

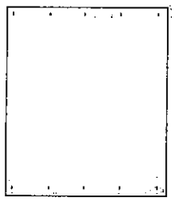
Tipo de hormigón : HA-25
Tipo de acero : B-500-S
fck [MPa] = 25.00
fyk [MPa] = 500.0
?c = 1.50
?s = 1.15

- Tipo de elemento estructural

Tipo : elemento con armadura a cortante

- Sección

Sección : 120R
b [m] = 1.00
h [m] = 1.20



2 Dimensionamiento

Esfuerzo cortante de cálculo Vd [kN] = 600

Inclinación de las bielas [º] = 45
Inclinación de los cercos [º] = 90.0
? [·1.E-3] = 4.1
Nd [kN] = -450
?xd [MPa] = -0.4
?yd [MPa] = 0
?e [º] = 42.9

? [mm]	Separación [mm]	nº ramas	Area [cm²/m]	Tipo	Vsu [kN]
ø 6	0.10	4	11.3	2	466.0
ø 8	0.20	4	10.1	2	414.2
ø 10	0.25	4	12.6	2	517.7
ø 12	0.25	4	18.1	2	745.5

Área estricta [cm²/m] = 8.3
(Cuantía mínima)
Vu1 [kN] = 5750.0
Vcu [kN] = 367.1

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

Obra: MUROS_EHE
Fecha: 20/11/2003
Hora: 12:06:32

Cálculo de secciones a flexión compuesta recta

1 Datos

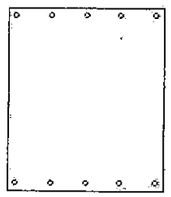
- Materiales

Tipo de hormigón : HA-25
Tipo de acero : B-500-S
fck [MPa] = 25.00
fyk [MPa] = 500.00
?c = 1.50
?s = 1.15

- Sección

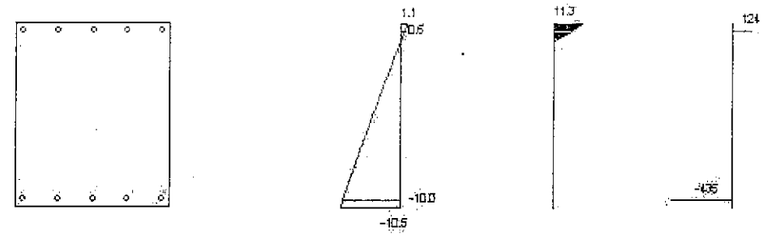
Sección : 120R
b [m] = 1.00
h [m] = 1.20
r [m] = 0.050

nº barras horizontales = 5
nº barras verticales = 2



2 Dimensionamiento

Nd [kN] = -593
Md [kN·m] = 1719



Plano de deformación de agotamiento

x [m] = 0.114
1/r [1/m]·1.E-3 = 9.7
?s ·1.E-3 = 1.1
?i ·1.E-3 = -10.5

Deformación y tensión de armaduras superior e inferior

Profundidad [m]	Deformación ·1.E-3	Tensión [MPa]
0.050	0.6	-124.5
1.150	-10.0	434.8

Propuesta armadura dimensionamiento

Aest [cm2]	?est [mm]	A [cm2]	? [mm]	Nu [kN]	Mu [kN·m]
85.2	32.9	85.2	33	-593.0	1719.0

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

Obra: CASTELLBISBAL
Fecha: 20/11/2003
Hora: 13:16:24

Cálculo de secciones a cortante

1 Datos

- Materiales

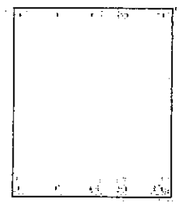
Tipo de hormigón : HA-25
Tipo de acero : B-500-S
fck [MPa] = 25.00
fyk [MPa] = 500.0
?c = 1.50
?s = 1.15

- Tipo de elemento estructural

Tipo : elemento con armadura a cortante

- Sección

Sección : 120R
b [m] = 1.00
h [m] = 1.20



2 Dimensionamiento

Esfuerzo cortante de cálculo Vd [kN] = 590

Inclinación de las bielas [°] = 45
Inclinación de los cercos [°] = 90.0
? [·1.E-3] = 4.1
Nd [kN] = 593
?xd [MPa] = 0.5
?yd [MPa] = 0
?e [°] = 48.1

? [mm]	Separación [mm]	nº ramas	Area [cm²/m]	Tipo	Vsu [kN]
ø 6	0.10	4	11.3	2	466.0
ø 8	0.20	4	10.1	2	414.2
ø 10	0.25	4	12.6	2	517.7
ø 12	0.25	4	18.1	2	745.5

Área estricta [cm²/m] = 8.4
Vul [kN] = 5750.0
Vcu [kN] = 242.8

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

Obra: MUROS_EHE
Fecha: 04/12/2003
Hora: 10:11:41

Cálculo de secciones a flexión compuesta recta

1 Datos

- Materiales

Tipo de hormigón : HA-25
Tipo de acero : B-500-S
fck [MPa] = 25.00
fyk [MPa] = 500.00
?c = 1.50
?s = 1.15

- Sección

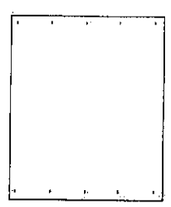
Sección : 120R
b [m] = 1.00
h [m] = 1.20
r [m] = 0.050

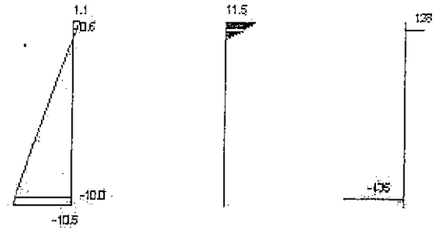
nº barras horizontales = 5
nº barras verticales = 2



2 Dimensionamiento

Nd [kN] = 0
Md [kN·m] = 883





Plano de deformación de agotamiento

x [m] = 0.116
1/r [1/m]·1.E-3 = 9.7
?s ·1.E-3 = 1.1
?i ·1.E-3 = -10.5

Deformación y tensión de armaduras superior e inferior

Profundidad [m]	Deformación ·1.E-3	Tensión [MPa]
0.050	0.6	-128.5
1.150	-10.0	434.8

Propuesta armadura dimensionamiento

Aest [cm2]	?est [mm]	A [cm2]	? [mm]	Nu [kN]	Mu [kN·m]
48.5	24.7	49.1	25	0.0	1180.6

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

Obra: CASTELLBISBAL
Fecha: 04/12/2003
Hora: 10:17:33

Cálculo de secciones a cortante

1 Datos

- Materiales

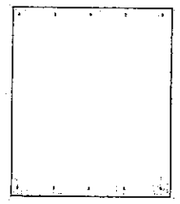
Tipo de hormigón : HA-25
Tipo de acero : B-500-S
fck [MPa] = 25.00
fyk [MPa] = 500.0
?c = 1.50
?s = 1.15

- Tipo de elemento estructural

Tipo : elemento con armadura a cortante

- Sección

Sección : 120R
b [m] = 1.00
h [m] = 1.20



2 Dimensionamiento

Esfuerzo cortante de cálculo Vd [kN] = 699

Inclinación de las bielas [°] = 45
Inclinación de los cercos [°] = 90.0
? [·1.E-3] = 2.05
Nd [kN] = 0.0
?xd [MPa] = 0.0
?yd [MPa] = 0
?e [°] = 45.0

?. [mm]	Separación [mm]	nº ramas	Area [cm²/m]	Tipo	Vsu [kN]
ø 6	0.10	4	11.3	2	466.0
ø 8	0.15	4	13.4	2	552.2
ø 10	0.25	4	12.6	2	517.7
ø 12	0.25	4	18.1	2	745.5

Área estricta [cm²/m] = 10.1
Vu1 [kN] = 5750.0
Vcu [kN] = 281.0

APERTURA DE FISURA SEGÚN LA EHE

Sección en centro luz

Acciones en ELS

N=	0,00	kN
M=	1417,00	kN·m

Parámetros del cálculo de fisuración

β=	1,70	coeficiente de mayoración de la EHE	
c=	0,030	recubrimiento geométrico en m (hasta el estribo)	
s=	0,10	separación entre barras longitudinales en m	
r_m=	0,05	recubrimiento mecánico en m (hasta cdg del grupo de barras)	
k_1=	0,125	coeficiente de influencia del diagrama de tracciones de la EHE	
k_2=	0,50	coeficiente de repetición de carga	
ψ=	0,025	diámetro de la barra más gruesa en m	
A_s=	49,10	Área total de armadura en m^2	(situada en Ac,ef)
B=	1,00	ancho de lasección en m	
H=	1,20	canto de la sección en m	
σ_s=	278,84	tensión en la armadura en servicio N/mm^2	
σ_{sr}=	121,14	tensión en la armadura en el instante en que se fisura el hormigón N/mm^2	
E_s=	200000	Módulo de elasticidad del acero en N/mm^2	
$A_{c,ef}$=	0,24	m^2	

Alargamiento y separación media de fisuras

ε_{sm}=	1,26E-03	Alargamiento medio de las armaduras contando la colaboración del hormigón
s_m=	0,08	Separación media entre fisuras en m

Abertura de fisura

w_k=	**0,17**	**mm**

VALORES MÁXIMOS DE ABERTURA DE FISURA SEGÚN LA EHE

ase de exposic	w_{max} (mm)	
	ormigón armad	Hormigón pretensado
I	0,4	0,2
IIa,IIb, H	0,3	0,2*
IIIa, IIIb, IV, F	0,2	Descompresión
IIIc, Qa, Qb, Q	0,1	

* Adicionalmente deberá comprobarse que las armaduras activas se encuentran en la zona comprimida de la sección, bajo la combinación de acciones cuasipermanentes

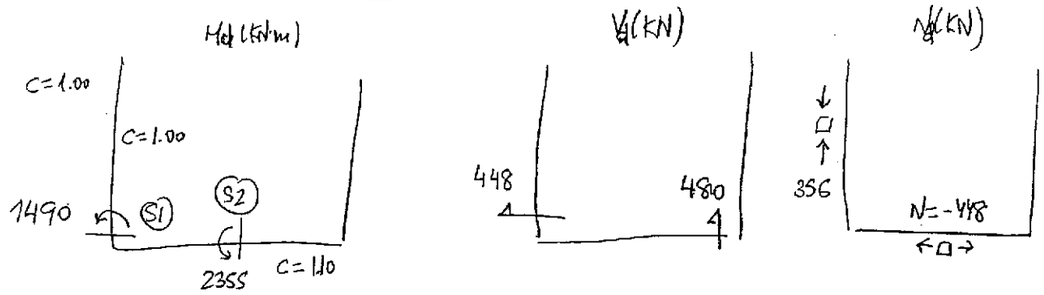
Nota:
- En hormigón armado se calcula bajo la combinación de acciones cuasipermanetes
- En hormigón pretensado se calcula bajo la combinación de acciones frecuentes

VALTER valenciana de estructuras

Proyecto CASTELL BISBAL

Asunto MURO 9.5 m

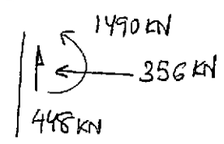
ESFUERZOS DE CÁLCULO



Asuln vertical $\begin{cases} c=1.00\,m, & A_{suln} = 0.04\, A_c \frac{f_{cd}}{f_{yd}} = 15.4\,cm^2/m \Rightarrow \phi 20/0.20 \\ c=1.20\,m, & A_{suln} = 16.86\,cm^2/m \Rightarrow \phi 25/0.20 \end{cases}$

Asuln horizontal $\begin{cases} \text{cuista} = 3.2\cdot10^{-3}\cdot\frac{2}{3} \begin{cases} c=1 \rightarrow \phi 25/0.20 \\ c=1.1 \rightarrow \text{''} \end{cases} \\ \text{c int} = 3.2\cdot10^{-3}\cdot\frac{1}{3} \begin{cases} c=1 \Rightarrow \phi 16/0.20 \\ c=1.1 \Rightarrow \text{''} \end{cases} \end{cases}$

(S1) $c=1.0$



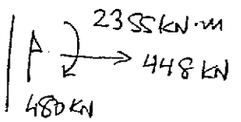
ELU flex: $A_s = 36.95\,cm^2/m \Rightarrow \phi 25/0.10\ (49.1\,cm^2/m)$

ELU Cortante: $\rho_L = 4.91‰$, $V_{cu} = 440.6$ kN

A un canto útil $V_d \simeq 370$ kN $< V_{cu}$

$\Rightarrow$ No precisa arm. de cortante.

(S2) $c=1.1$



ELU flex: $A_s = 59.25\,cm^2/m$

Con $\phi 25/0.10 \rightarrow M_u = 1900$ kN·m

Añadiendo un refuerzo:

$r_m < 0.03 + 0.025 + 0.016 + \frac{0.025}{2} = 0.084$

con lo cual $A_s = 62.4\,cm^2/m$

$\phi 25/0.10$ + Refuerzo $\phi 20/0.20 = 64.8\,cm^2/m > 62.4$ (OK)

ELU cort:

$\rho_L = \frac{\phi 25/0.10}{(110\times100)} = 4.46‰$, $V_{cu} = 333$ kN $\not>$ $V_d = 480$ kN

$\rightarrow$ Arm. mínimo de cortante $8.3\,cm^2/m \Rightarrow c\,\phi 8/0.20/0.6$

VALTER
valenciana de
estructuras

Proyecto CASTELLBISBAL

Asunto MURO 9.5 m

— FISURACIÓN —

$M_{ELS} = 1508$ kNm/m } en S2 (Q) ⇒ $w_k = 20$ mm
$c = 1.10$

Nótese que M_{ELS} se corresponde a la combinación 1.00 G + 1.00 Q cuando en realidad bastaba tomar la combinación cuasipermanente 1.00 G + 0.6 Q, que hubiera resultado dando un momento muy inferior. En cualquier caso para este caso, y la sección más solicitada se comprueba que la fisuración no es un problema, pudiendose con ello omitir las comprobaciones en el resto de secciones.

Fecha

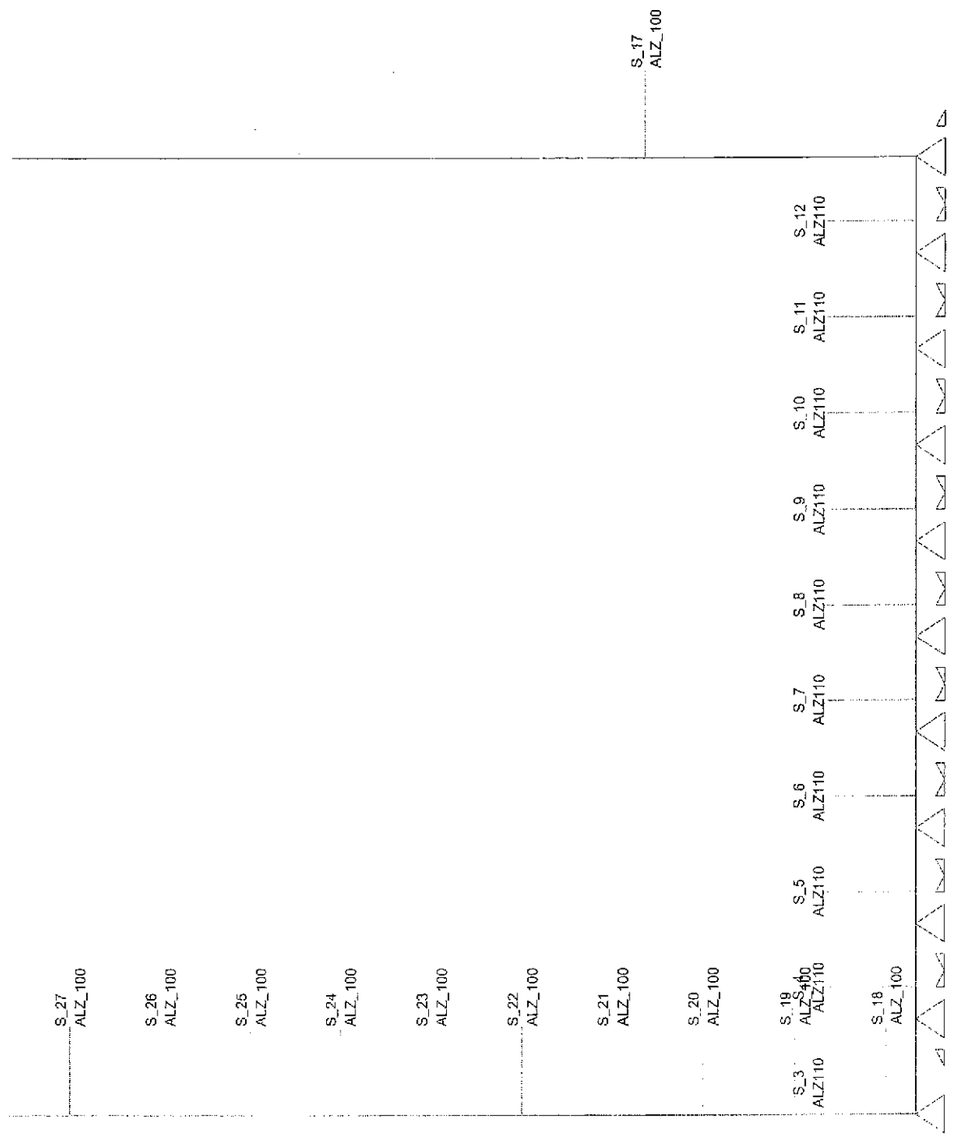
Hoja Nº De

Page 51
04.12.03, 11:04
JUAN

Scale 1 :61.8

Statik-4 - Version 1.14
VALTER, valenciana de estructuras
CASTELLBISBAL
MURO_CASTELLBISBAL

Structure



STRUCTURE 2D

NODE DATA

Id	Coordinates X [m]	Coordinates Z [m]	Supports DX [kN/m]	Supports DZ [kN/m]	Supports RY [kNm]	Specialties
K_2	1,00	0		1360,000		
K_3	2,00	0		1360,000		
K_4	3,00	0		1360,000		
K_5	4,00	0		1360,000		
K_6	5,00	0		1360,000		
K_7	6,00	0		1360,000		
K_8	7,00	0		1360,000		
K_9	8,00	0		1360,000		
K_10	9,00	0		1360,000		
K_13	0	0	B	680,000		
K_14	10,00	0		680,000		
!1	0,00	0,95				
!2	0,00	1,90				
!3	0,00	2,85				
!4	0,00	3,80				
!5	0,00	4,75				
!6	0,00	5,70				
!7	0,00	6,65				
!8	0,00	7,60				
!9	0,00	8,55				
!10	0,00	9,50				
!11	10,00	9,50				

B : Blocked

Cross section: Geometry

Name	Variant	Materials	Type	Dimensions [m]
ALZ_100		1,2	G-R	b=1,00, h=1,00, u1=0,04, u2=0,04
ALZ110		1,2	G-R	b=1,00, h=1,10, u1=0,04, u2=0,04

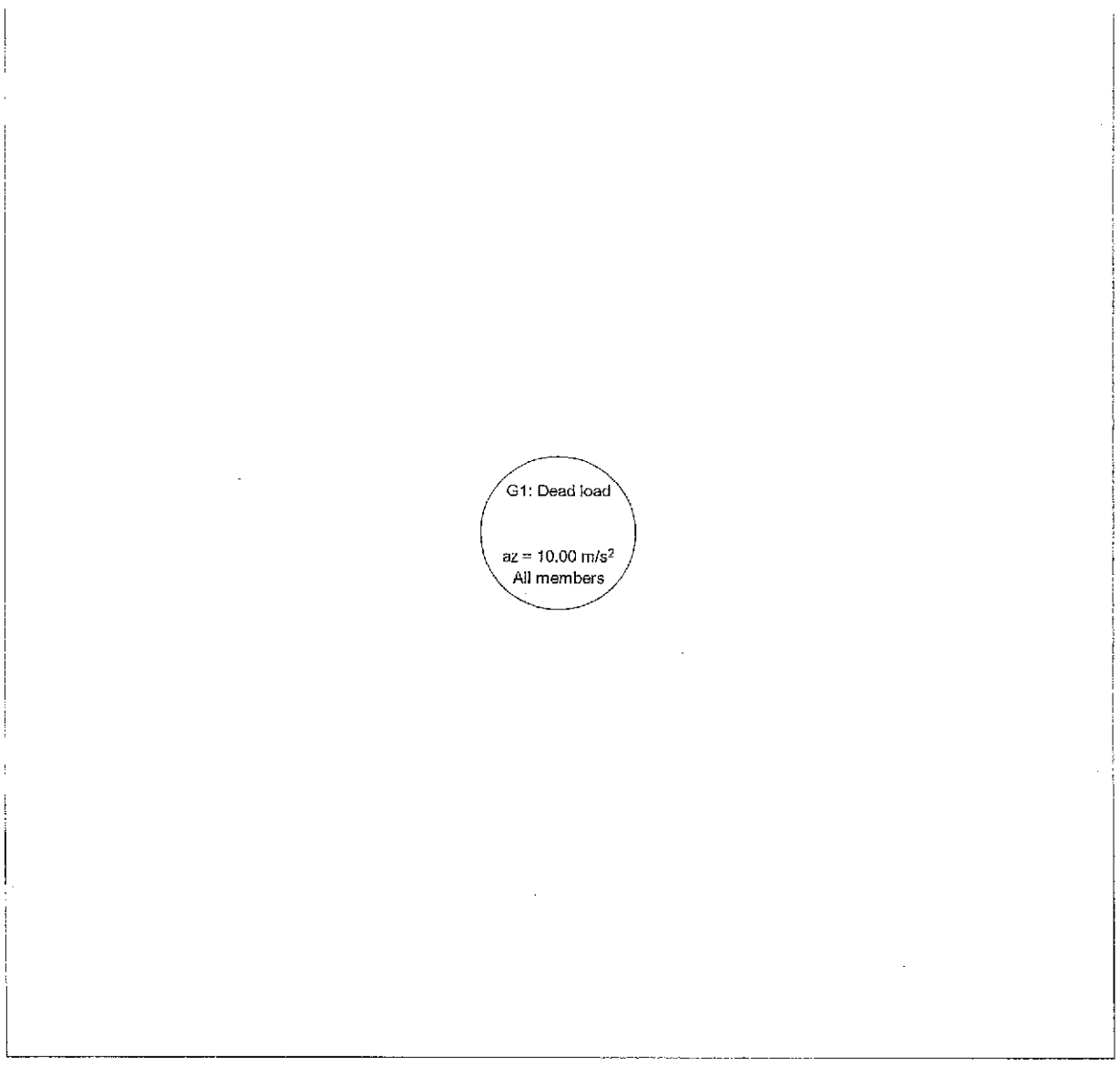
Materials : s. table 'Materials'

Materials

Id	Material	E [kN/mm²]	G [kN/mm²]	? [t/m³]	Material class
1	Concrete	30	10	2,5	H250
2	Reinf. steel	210	70	8,0	AEH500

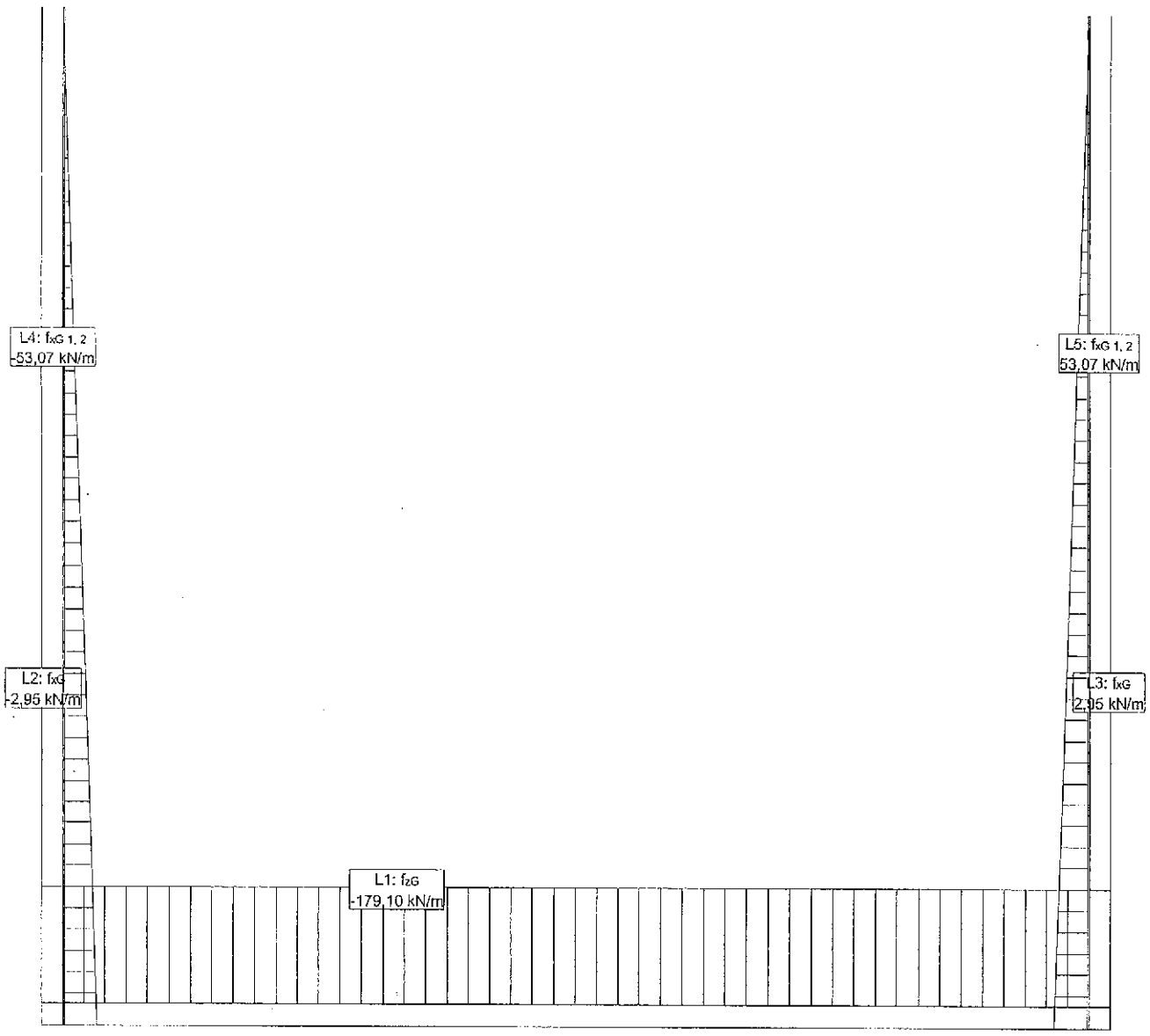
Load case 'EG': AutoDeadLoad

Scale 1 :59.9



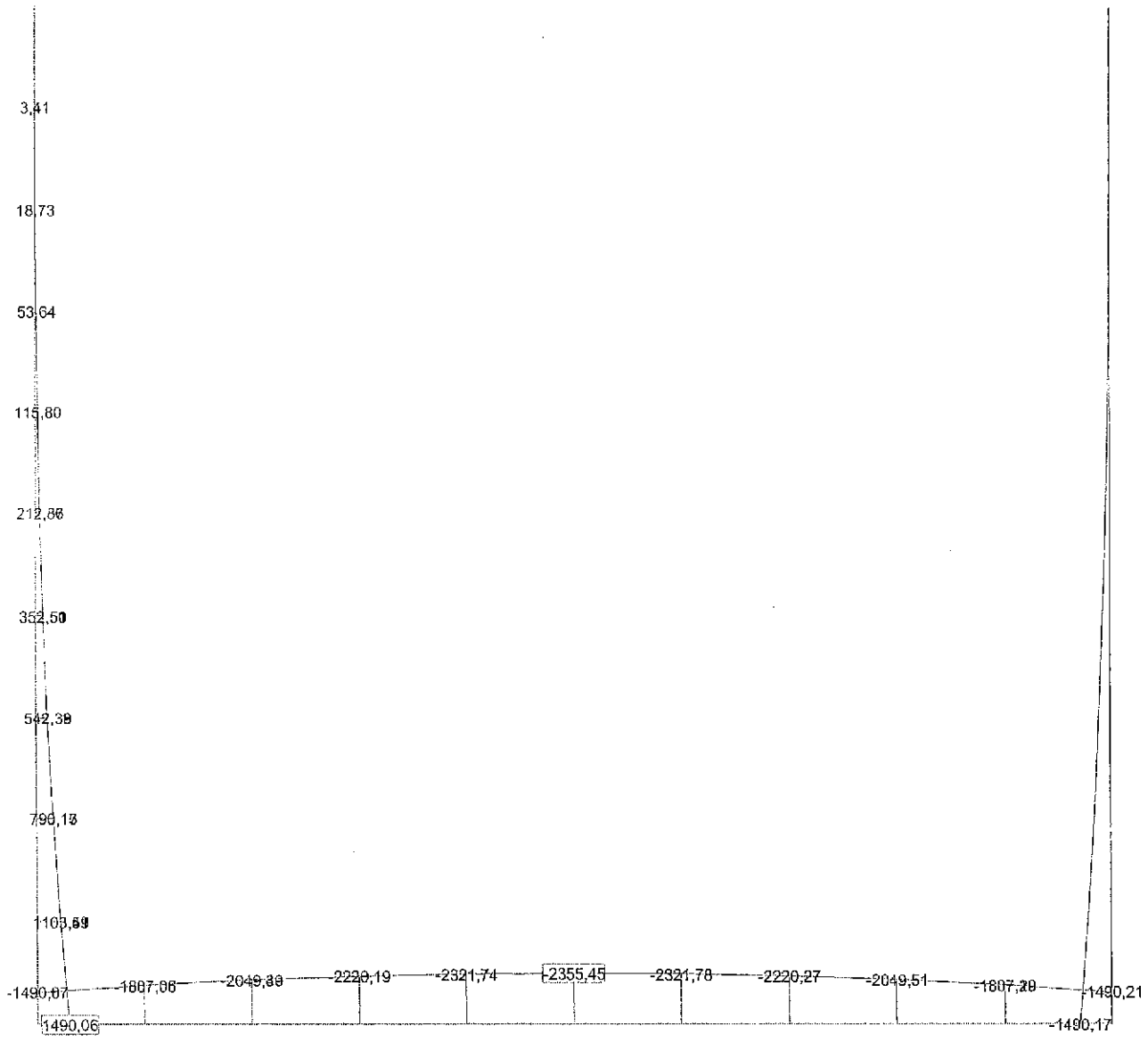
Load case 'EMPUJES': Load case 2

Scale 1 :59.9



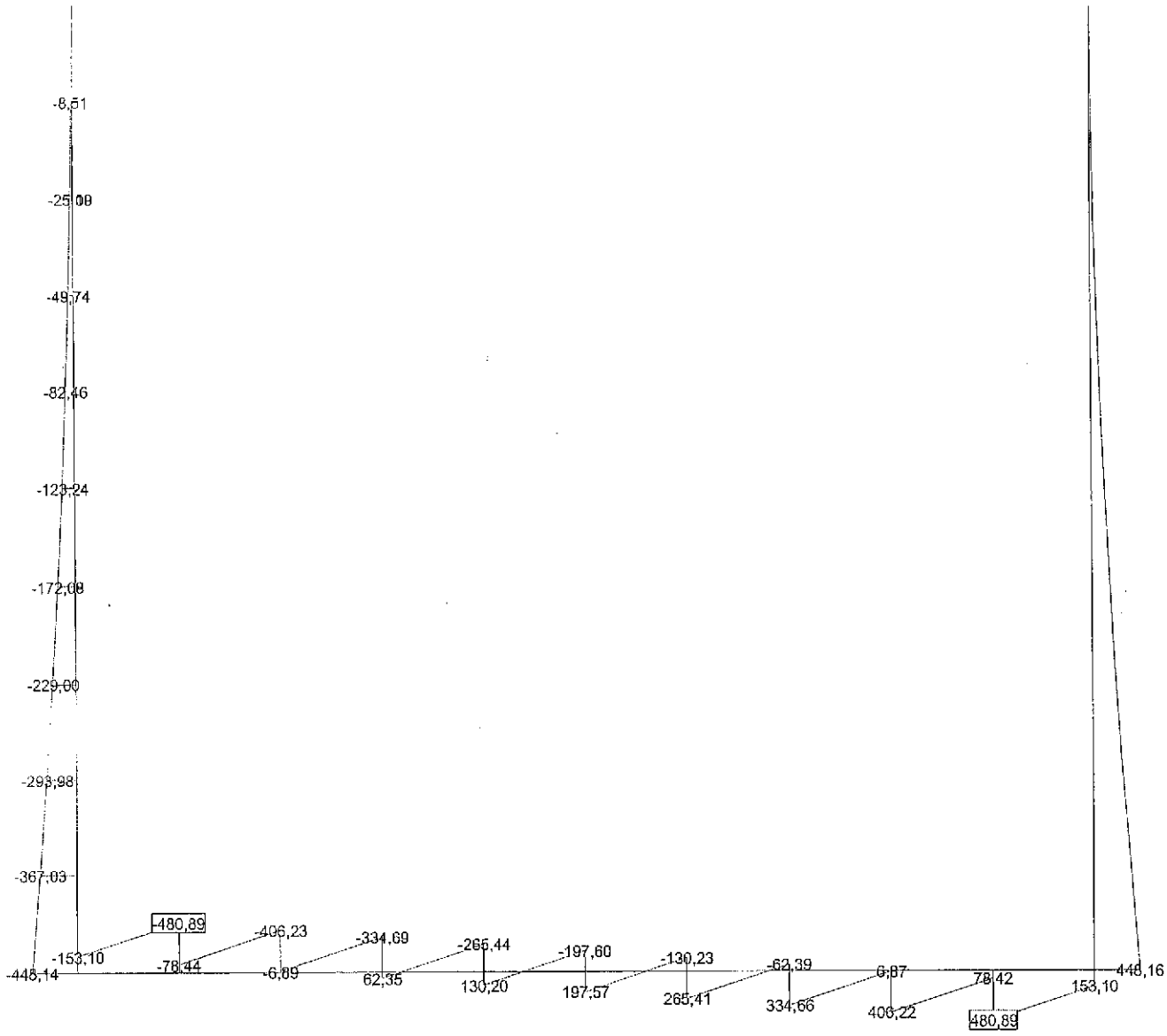
Section force My [kNm] for: ELU

Scale 1 :60.4



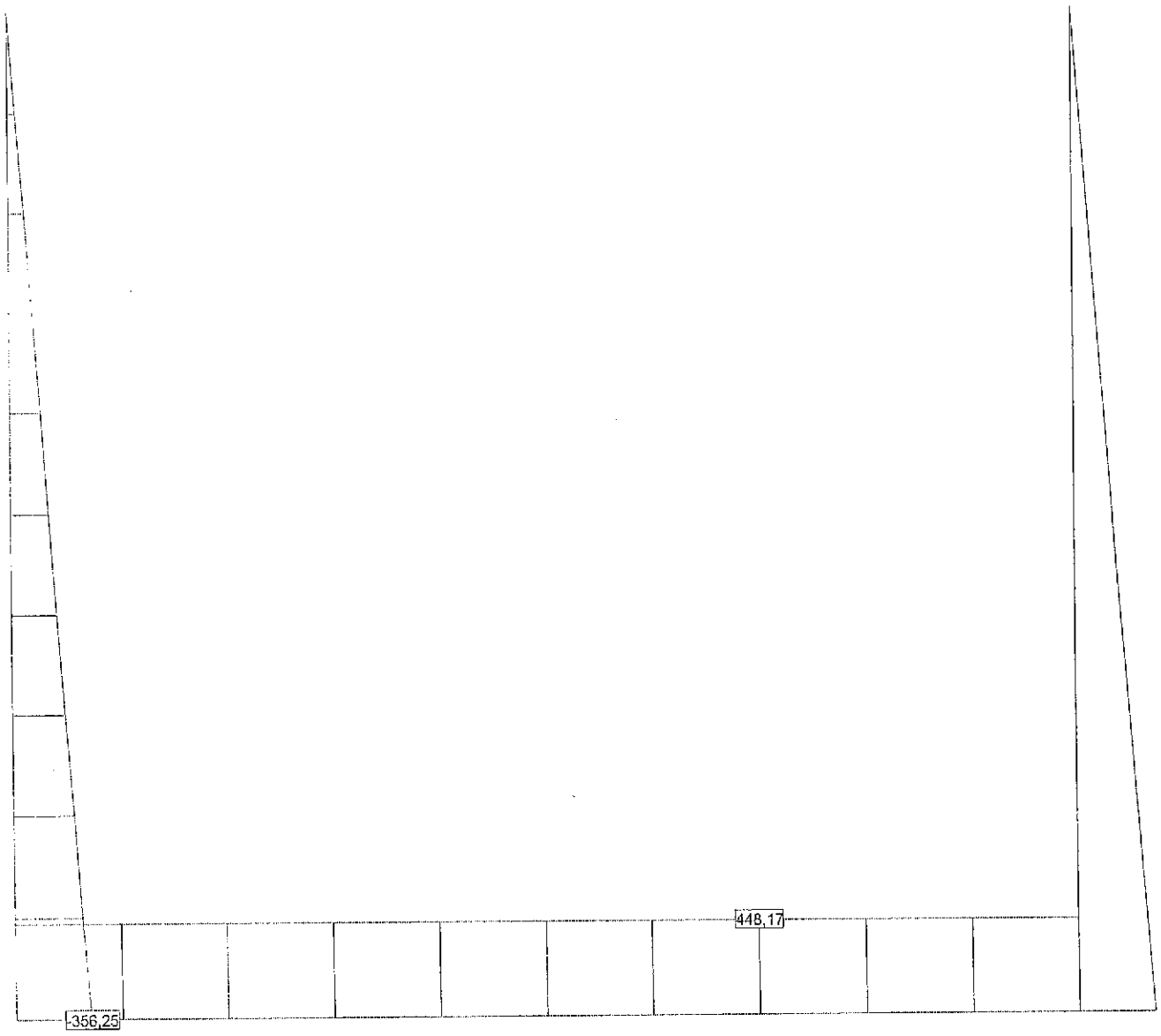
Section force Vz [kN] for: ELU

Scale 1 :63.5



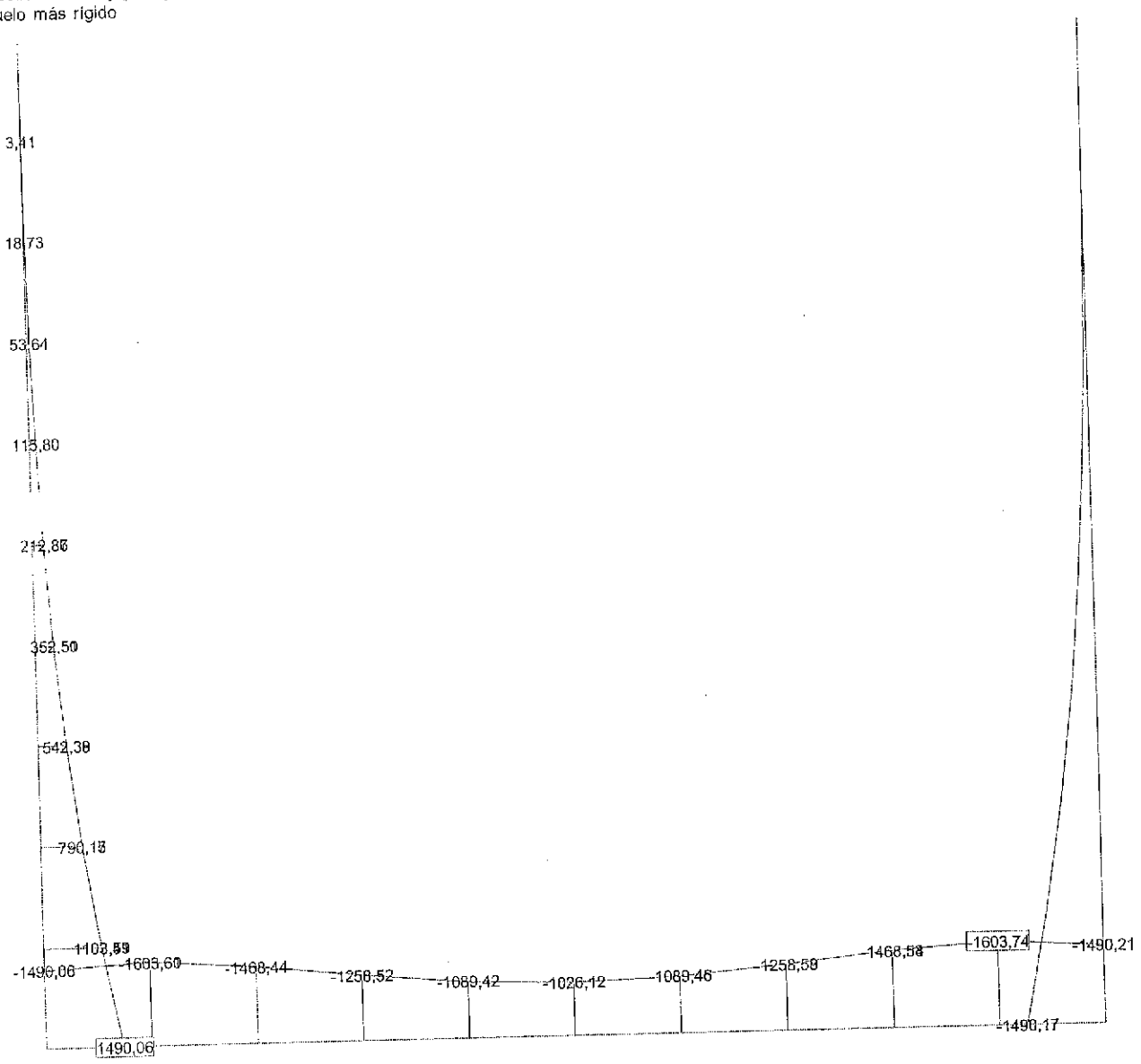
Section force N [kN] for: ELU

Scale 1 :60.4



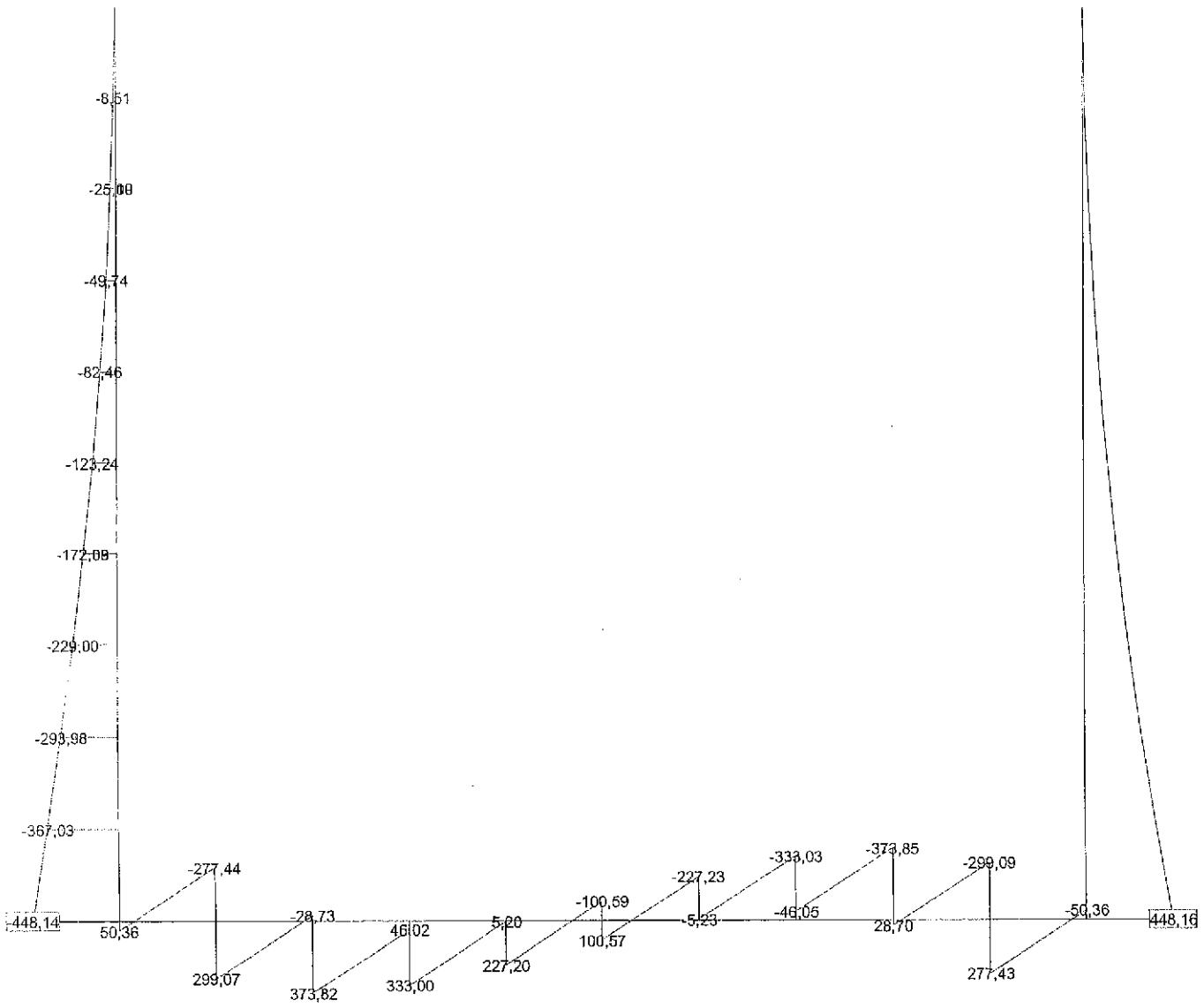
Scale 1 :61.7

Section force My [kNm] for: ELU
suelo más rígido



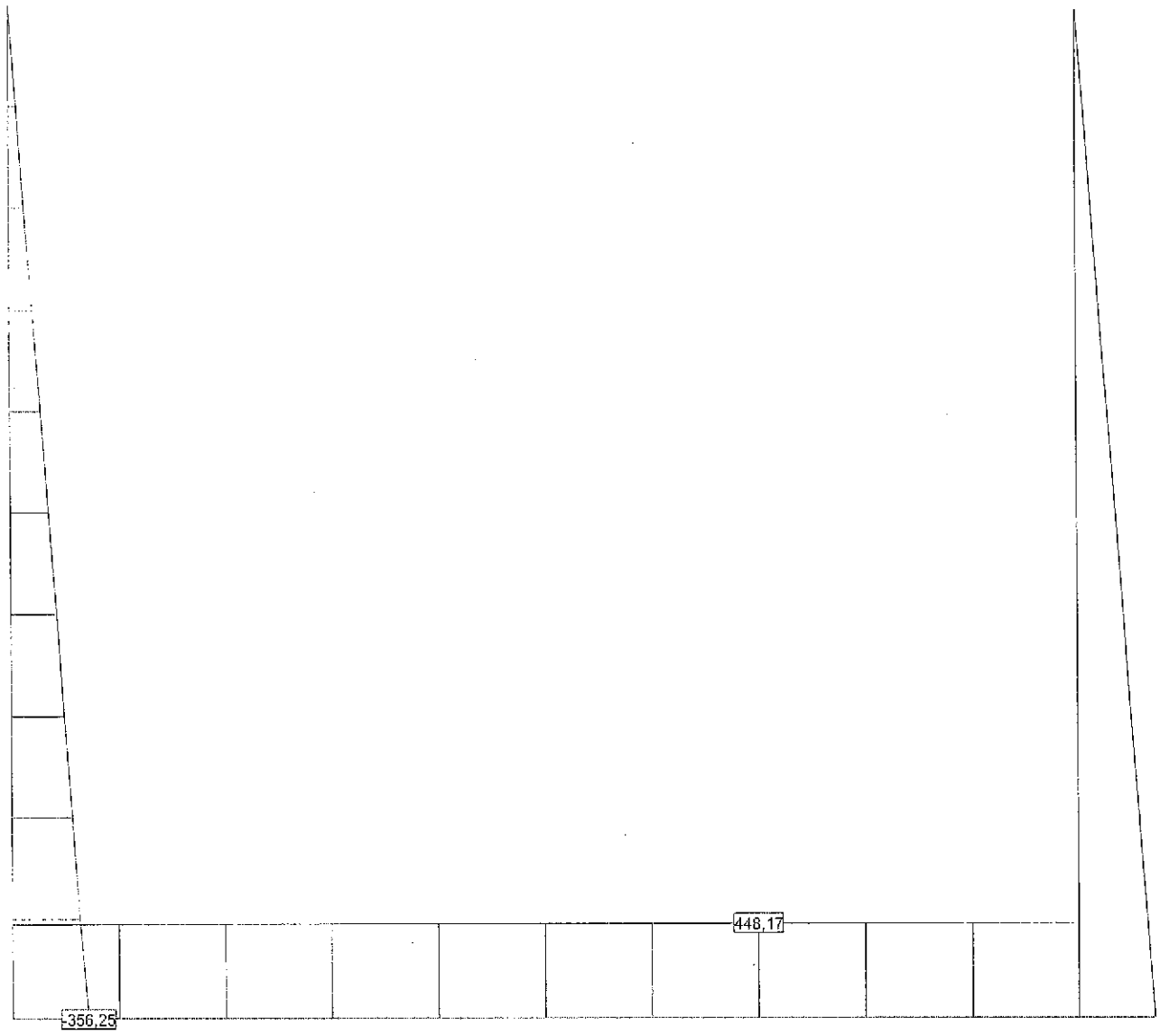
Section force Vz [kN] for: ELU
suelo más rígido

Scale 1 :66.5



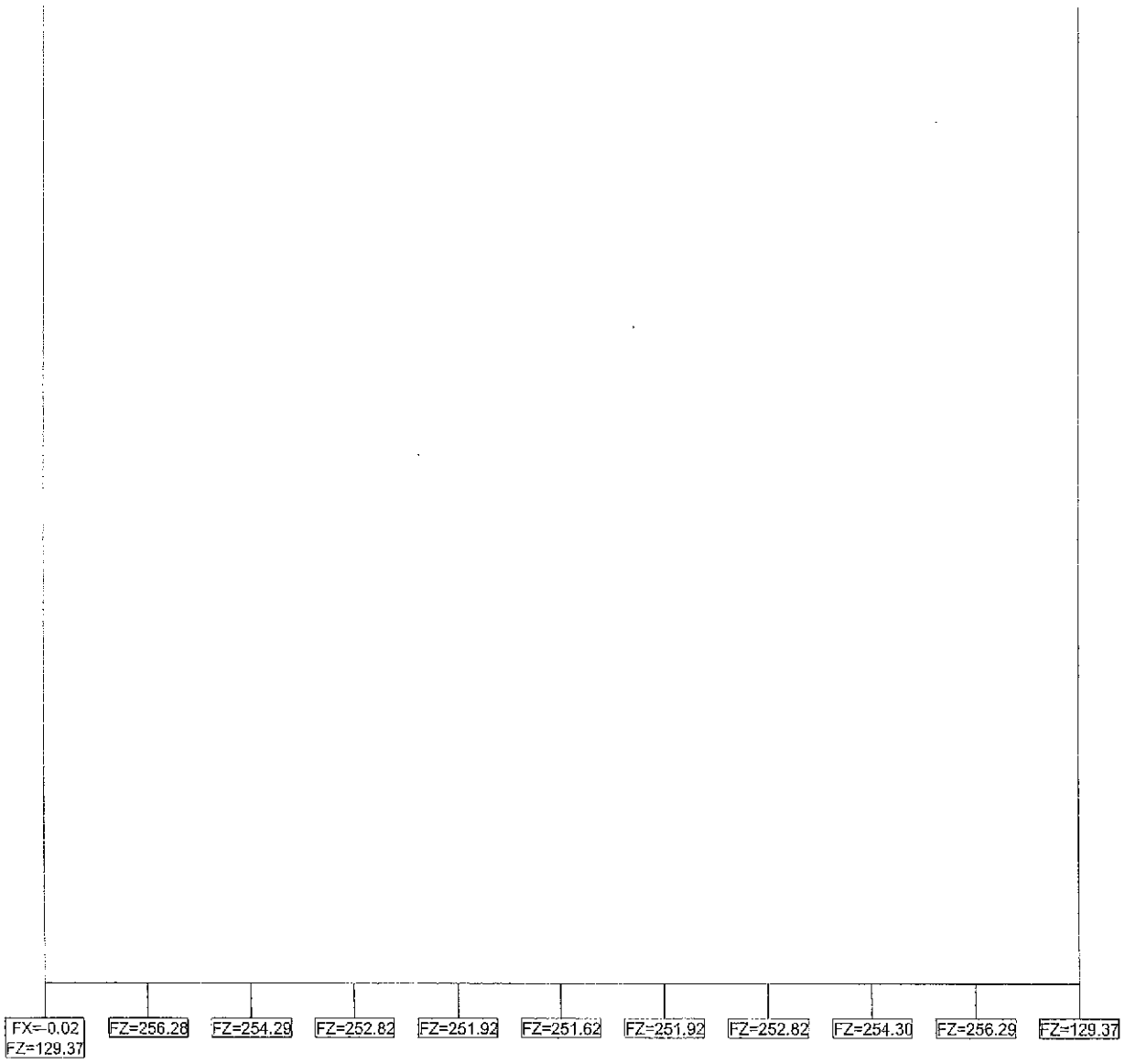
Section force N [kN] for: ELU
suelo más rígido

Scale 1 :61.7

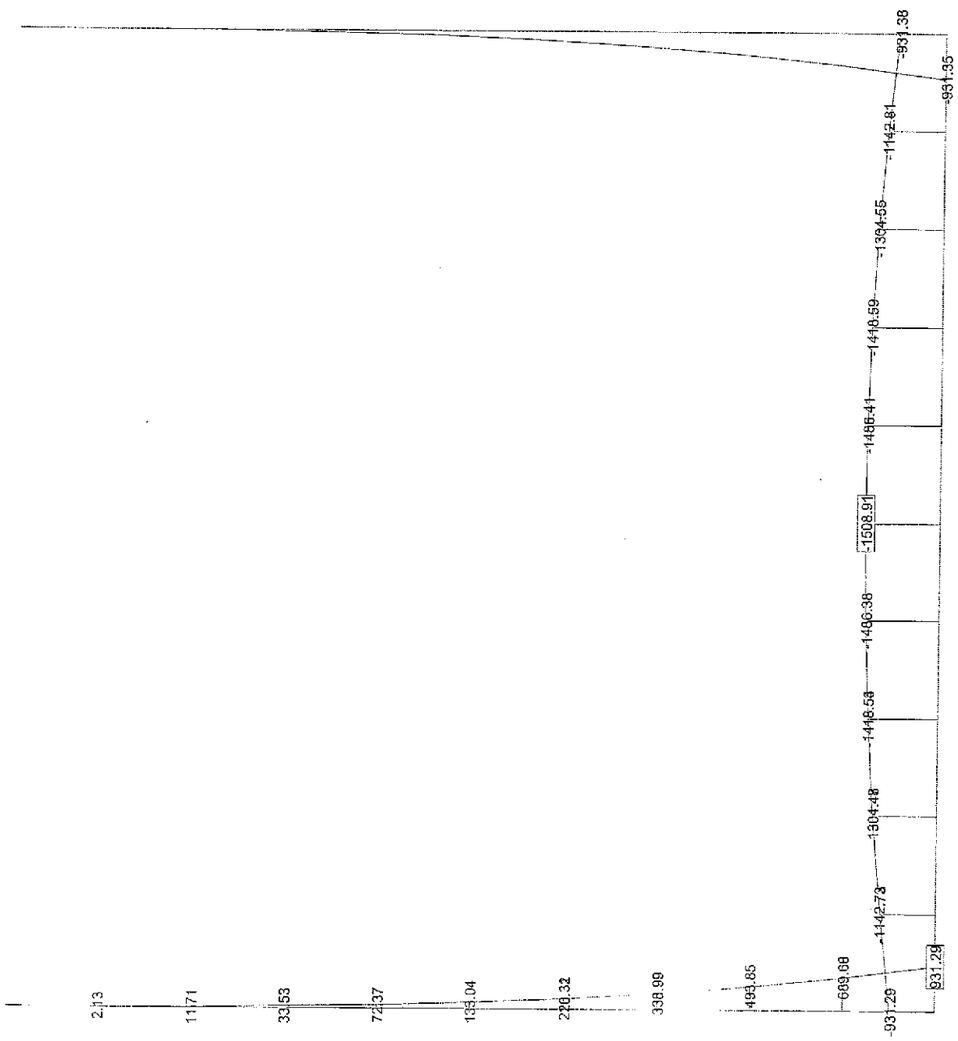


Reactions [kN]/[kNm] for: TOTAL, Sum FX: -0.02, Sum FZ: 2541.00

Scale 1 :64.4



Scale 1:60.4



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Section force My [kNm] for: TOTAL

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

Obra: MUROS_EHE
Fecha: 20/11/2003
Hora: 16:26:54

Cálculo de secciones a flexión compuesta recta

1 Datos

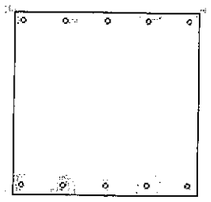
- Materiales

Tipo de hormigón : HA-25
Tipo de acero : B-500-S
fck [MPa] = 25,00
fyk [MPa] = 500,00
?c = 1,50
?s = 1,15

- Sección

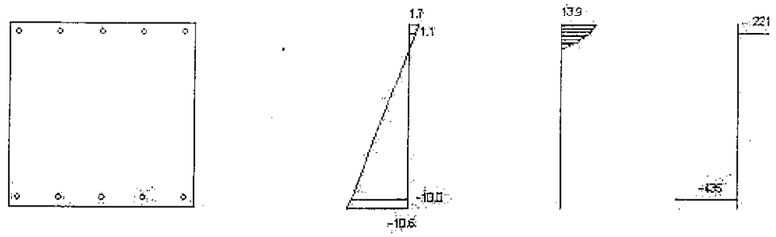
Sección : 100R
b [m] = 1,00
h [m] = 1,00
r [m] = 0,050

nº barras horizontales = 5
nº barras verticales = 2



2 Dimensionamiento

Nd [kN] = 356
Md [kN·m] = 1490



Plano de deformación de agotamiento

x [m] = 0.140

1/r [1/m]·1.E-3 = 12.3

?s ·1.E-3 = 1.7

?i ·1.E-3 = -10.6

Deformación y tensión de armaduras superior e inferior

Profundidad [m]	Deformación ·1.E-3	Tensión [MPa]
0.050	1.1	-221.4
0.950	-10.0	434.8

Propuesta armadura dimensionamiento

Aest [cm2]	?est [mm]	A [cm2]	? [mm]	Nu [kN]	Mu [kN·m]
73,9	29.4	80,4	32	356.0	1732.3

Obra: CASTELLBISBAL
Fecha: 04/12/2003
Hora: 10:40:07

Cálculo de secciones a cortante

1 Datos

- Materiales

Tipo de hormigón : HA-25

Tipo de acero : B-500-S

fck [MPa] = 25.00

fyk [MPa] = 500.0

?c = 1.50

?s = 1.15

- Tipo de elemento estructural

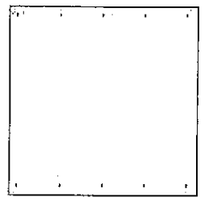
Tipo : elemento sin armadura a cortante

- Sección

Sección : 100R

b [m] = 1.00

h [m] = 1.00



2 Comprobación

?l [·1.E-3] = 4.91

Nd [kN] = -356

Vu [kN] = 440.6

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

Obra: MUROS_EHE
Fecha: 20/11/2003
Hora: 17:23:17

Cálculo de secciones a flexión compuesta recta

1 Datos

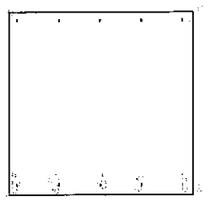
- Materiales

Tipo de hormigón : HA-25
Tipo de acero : B-500-S
fck [MPa] = 25.00
fyk [MPa] = 500.00
?c = 1.50
?s = 1.15

- Sección

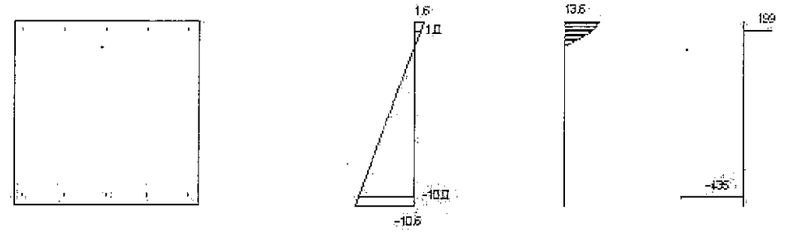
Sección : 110R
b [m] = 1.00
h [m] = 1.10
r [m] = 0.084

nº barras horizontales = 5
nº barras verticales = 2



2 Dimensionamiento

Nd [kN] = -448
Md [kN·m] = 2355



Plano de deformación de agotamiento

x [m] = 0.150
1/r [1/m]·1.E-3 = 11.5
?s ·1.E-3 = 1.7
?i ·1.E-3 = -11.0

Deformación y tensión de armaduras superior e inferior

Profundidad [m]	Deformación ·1.E-3	Tensión [MPa]
0.084	0.8	-152.8
1.016	-10.0	434.8

Propuesta armadura dimensionamiento

Aest [cm2]	?est [mm]	A [cm2]	? [mm]	Nu [kN]	Mu [kN·m]
124.7	39.8	124.7	40	-448.0	2355.0

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

Obra: CASTELLBISBAL
Fecha: 04/12/2003
Hora: 11:29:15

Cálculo de secciones a cortante

1 Datos

- Materiales

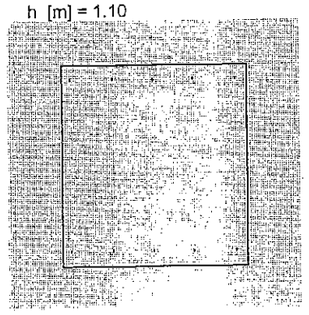
Tipo de hormigón : HA-25
Tipo de acero : B-500-S
fck [MPa] = 25.00
fyk [MPa] = 500.0
γc = 1.50
γs = 1.15

- Tipo de elemento estructural

Tipo : elemento sin armadura a cortante

- Sección

Sección : 110R
b [m] = 1.00
h [m] = 1.10



2 Comprobación

pl [·1.E-3] = 4.46
Nd [kN] = 448
Vu [kN] = 333.3

APERTURA DE FISURA SEGÚN LA EHE

Sección en centro luz

Acciones en ELS

N=	0,00	kN
M=	1508,00	kN·m

Parámetros del cálculo de fisuración

β=	1,70	coeficiente de mayoración de la EHE
c=	0,030	recubrimiento geométrico en m (hasta el estribo)
s=	0,20	separación entre barras longitudinales en m
r_m=	0,08	recubrimiento mecánico en m (hasta cdg del grupo de barras)
k_1=	0,125	coeficiente de influencia del diagrama de tracciones de la EHE
k_2=	0,50	coeficiente de repetición de carga
ϕ=	0,025	diámetro de la barra más gruesa en m
A_s=	64,80	Área total de armadura en m^2 (situada en Ac,ef)
B=	1,00	ancho de lasección en m
H=	1,10	canto de la sección en m
σ_s=	254,50	tensión en la armadura en servicio N/mm^2
σ_{sr}=	87,30	tensión en la armadura en el instante en que se fisura el hormigón N/mm^2
E_s=	200000	Módulo de elasticidad del acero en N/mm^2
$A_{c,ef}$=	0,27	m^2

Alargamiento y separación media de fisuras

ε_{sm}=	1,20E-03	Alargamiento medio de las armaduras contando la colaboración del hormigón
s_m=	0,10	Separación media entre fisuras en m

Abertura de fisura

w_k=	**0,20**	mm

VALORES MÁXIMOS DE ABERTURA DE FISURA SEGÚN LA EHE

ase de exposic	w_{max} (mm)	
	ormigón armad	Hormigón pretensado
I	0,4	0,2
IIa,IIb, H	0,3	0,2*
IIIa, IIIb, IV, F	0,2	Descompresión
IIIc, Qa, Qb, Q	0,1	

* Adicionalmente deberá comprobarse que las armaduras activas se encuentran en la zona comprimida de la sección, bajo la combinación de acciones cuasipermanentes

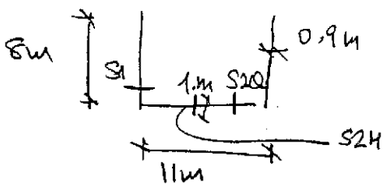
Nota:
- En hormigón armado se calcula bajo la combinación de acciones cuasipermanetes
- En hormigón pretensado se calcula bajo la combinación de acciones frecuentes

VALTER valenciana de estructuras

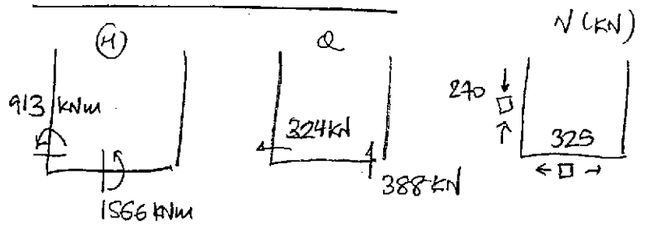
Proyecto CASTELLBISBAL

Asunto MURO 8M

DESCRIPCIÓN

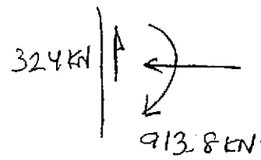


ESFUERZOS DE CÁLCULO



DIMENSIONAMIENTO

S1 | c = 0.90 m



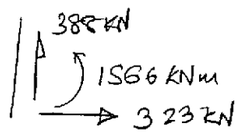
ELU S.N. : $23.7 cm^2 \Rightarrow \phi 25/0.20$ $(24.55 cm^2/m)$

ELU Q : $\rho = 2.73‰$ $V_{cu} = 287.3$ kN.

Teniendo en cuenta el Ncalc favorable

$N = -270$ kN $\Rightarrow V_{cu} = 329$ kN > 324 kN $\Rightarrow$ No precisa A_{st}.

S2 | c = 1.0 m



ELU S.N. : $43.55 cm^2 \Rightarrow$ **$\phi 25/0.10$**

ELU Q : $\rho = 4.91‰$

$V_{cu} = 426$ kN > 388 kN $\Rightarrow$ OK

Mínimos:

Vertical (compresión) : $\phi 16/0.20$

horizontal | c = 0,9 m | c. vista : $19.17 cm^2/m \Rightarrow \phi 25/0.20$

c. int : $9.56 cm^2/m \Rightarrow \phi 16/0.20$

c = 1.00 m | c vista : $21.33 cm^2/m \Rightarrow \phi 25/0.20$

c int : $10.66 cm^2/m \Rightarrow \phi 16/0.20$

— FISURACIÓN —

En losa 1m $M_{qp} = 1007.7$ kN·m $\Rightarrow W_k = 0.15$ mm < 0.2 mm OK

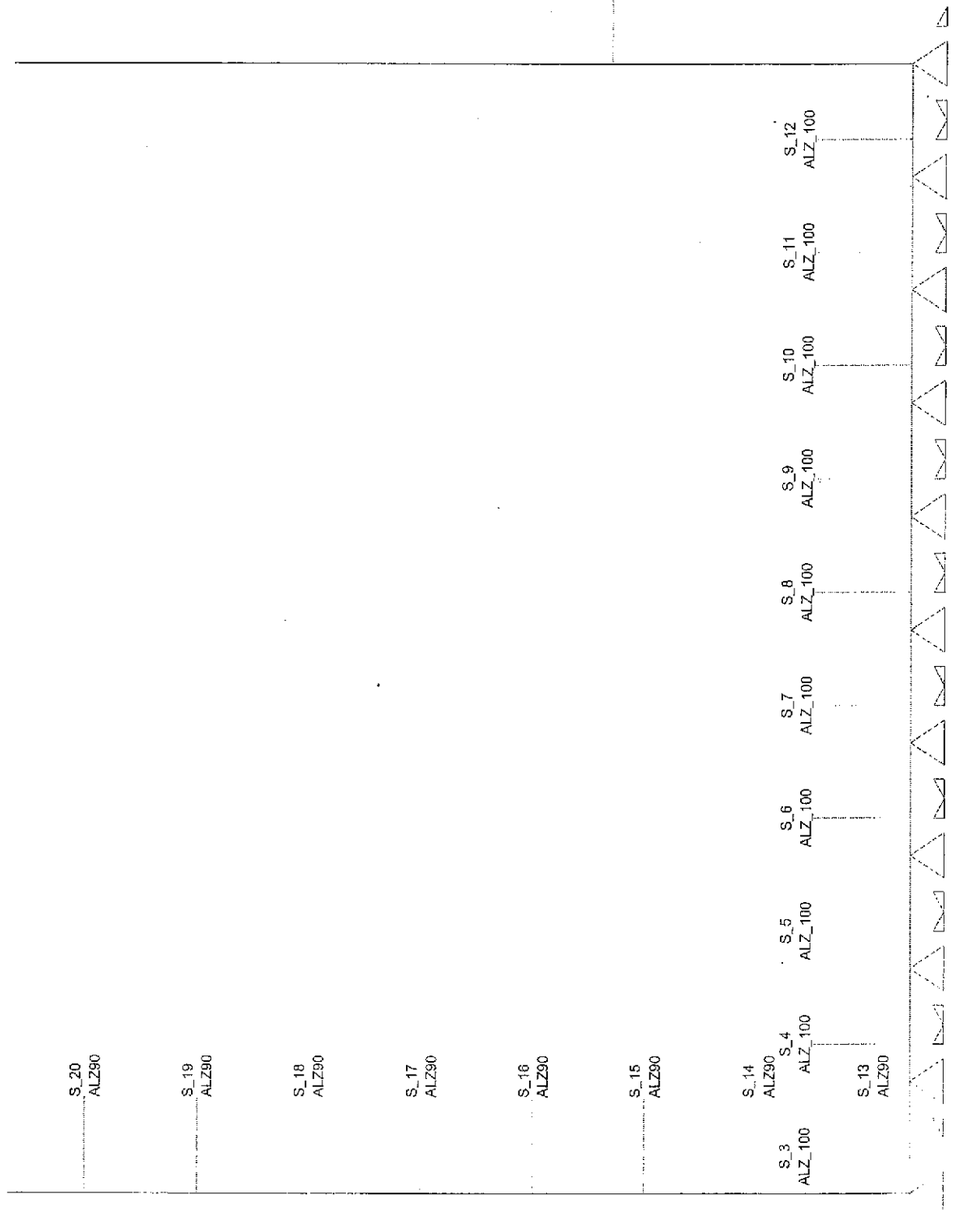
(S2)

Fecha .....

Hoja Nº ..... De .....

Page 86
04.12.03, 11:03
JUAN

Scale 1 :52.3



Statik-4 - Version 1.14
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Structure

STRUCTURE 2D

NODE DATA

Id	Coordinates X [m]	Coordinates Z [m]	Supports DX [kN/m]	Supports DZ [kN/m]	Supports RY [kNm]	Specialties
K_2	1.00	0		1360.000		
K_3	2.00	0		1360.000		
K_4	3.00	0		1360.000		
K_5	4.00	0		1360.000		
K_6	5.00	0		1360.000		
K_7	6.00	0		1360.000		
K_8	7.00	0		1360.000		
K_9	8.00	0		1360.000		
K_10	9.00	0		1360.000		
K_13	0	0	B	680.000		
K_14	10.00	0		680.000		
!1	0.00	1.00				
!2	0.00	2.00				
!3	0.00	3.00				
!4	0.00	4.00				
!5	0.00	5.00				
!6	0.00	6.00				
!7	0.00	7.00				
!8	0.00	8.00				
!9	10.00	8.00				

B : Blocked

MEMBER DATA

ID	Nodes beginning	Nodes end	Cross section Name>Variant	Length [m]	Status	Special case
S_2	K_14	!9	ALZ90	8.00		
S_3	K_13	K_2	ALZ_100	1.00		
S_4	K_2	K_3	ALZ_100	1.00		
S_5	K_3	K_4	ALZ_100	1.00		
S_6	K_4	K_5	ALZ_100	1.00		
S_7	K_5	K_6	ALZ_100	1.00		
S_8	K_6	K_7	ALZ_100	1.00		
S_9	K_7	K_8	ALZ_100	1.00		
S_10	K_8	K_9	ALZ_100	1.00		
S_11	K_9	K_10	ALZ_100	1.00		
S_12	K_10	K_14	ALZ_100	1.00		
S_13	K_13	!1	ALZ90	1.00		
S_14	!1	!2	ALZ90	1.00		
S_15	!2	!3	ALZ90	1.00		
S_16	!3	!4	ALZ90	1.00		
S_17	!4	!5	ALZ90	1.00		
S_18	!5	!6	ALZ90	1.00		
S_19	!6	!7	ALZ90	1.00		
S_20	!7	!8	ALZ90	1.00		

Cross section: Geometry

Name	Variant	Materials	Type	Dimensions [m]
ALZ_100		1,2	G-R	b=1.00, h=1.00, u1=0.04, u2=0.04
ALZ90		1,2	G-R	b=1.00, h=0.90, u1=0.04, u2=0.04

Materials : s. table 'Materials'

Cross section: CS values

Name	Variant	? [°]	EA_x GA_z [kN]	EJ_y [kNm²]	e_z [m]	CS mass Additional mass [t/m]	Materials
ALZ_100		0	3.E+7 6.94441676E+6	2.50000007E+6	0	2.50	1,2
ALZ90		0	2.69999993E+7 6.24997497E+6	1.82250001E+6	0	2.25	1,2

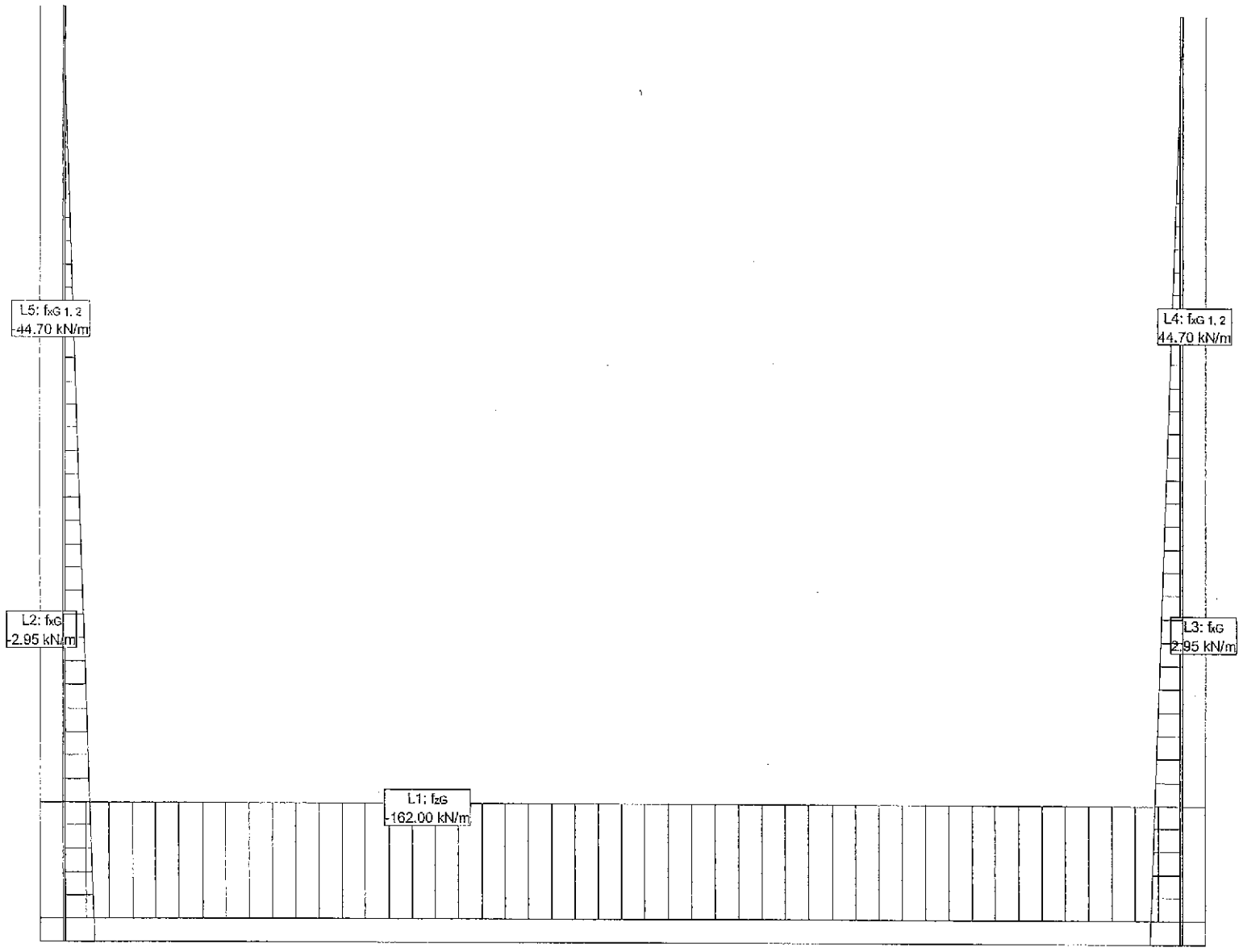
? : Angle between member Y axis and first principal axis of cross section
e_z : Distance center of gravity-axis point
Materials : s. table 'Materials'

Materials

Id	Material	E [kN/mm²]	G [kN/mm²]	? [t/m³]	Material class
1	Concrete	30	10	2.5	H250
2	Reinf. steel	210	70	8.0	AEH500

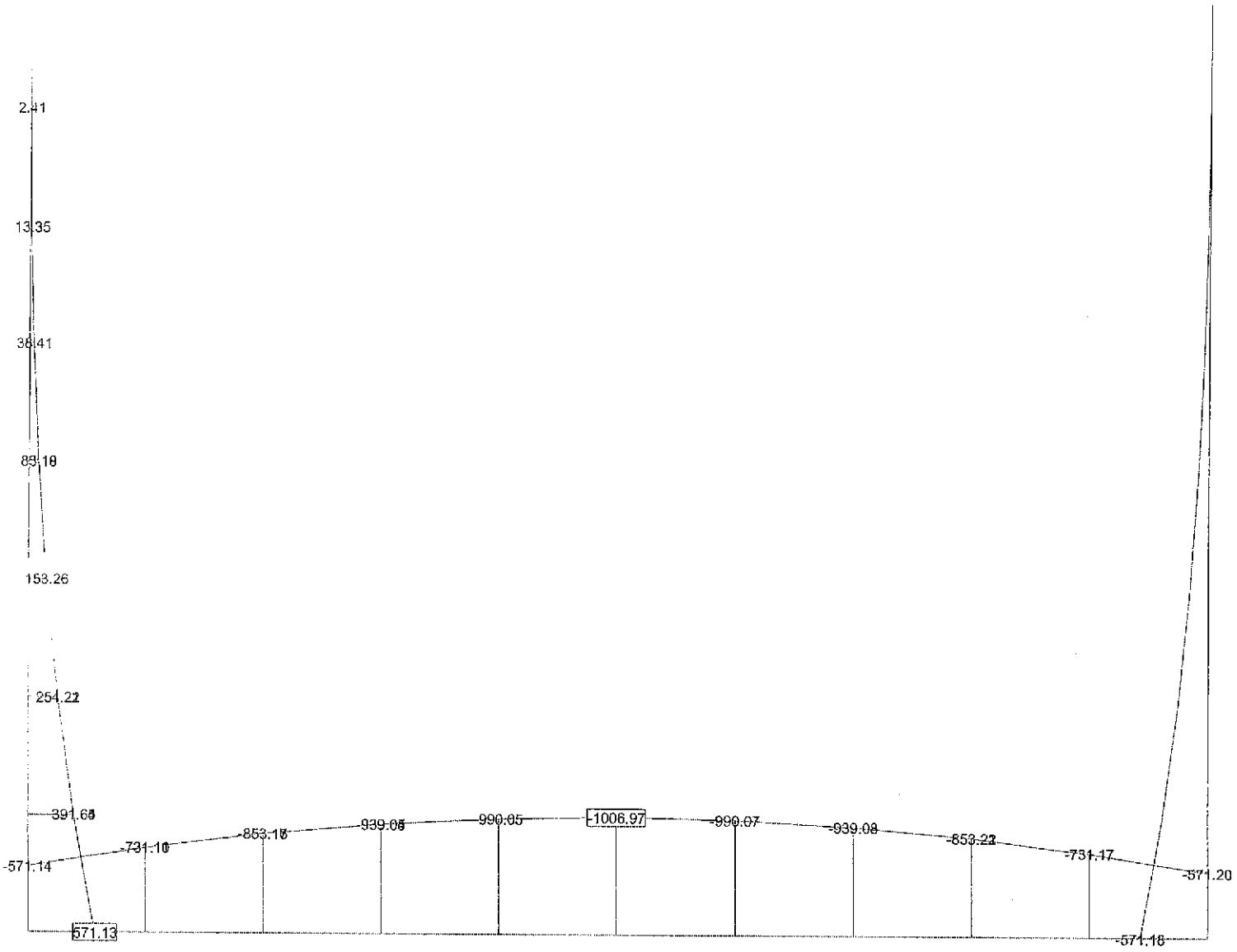
Load case 'EMPUJES': Load case 2

Scale 1 :50.4



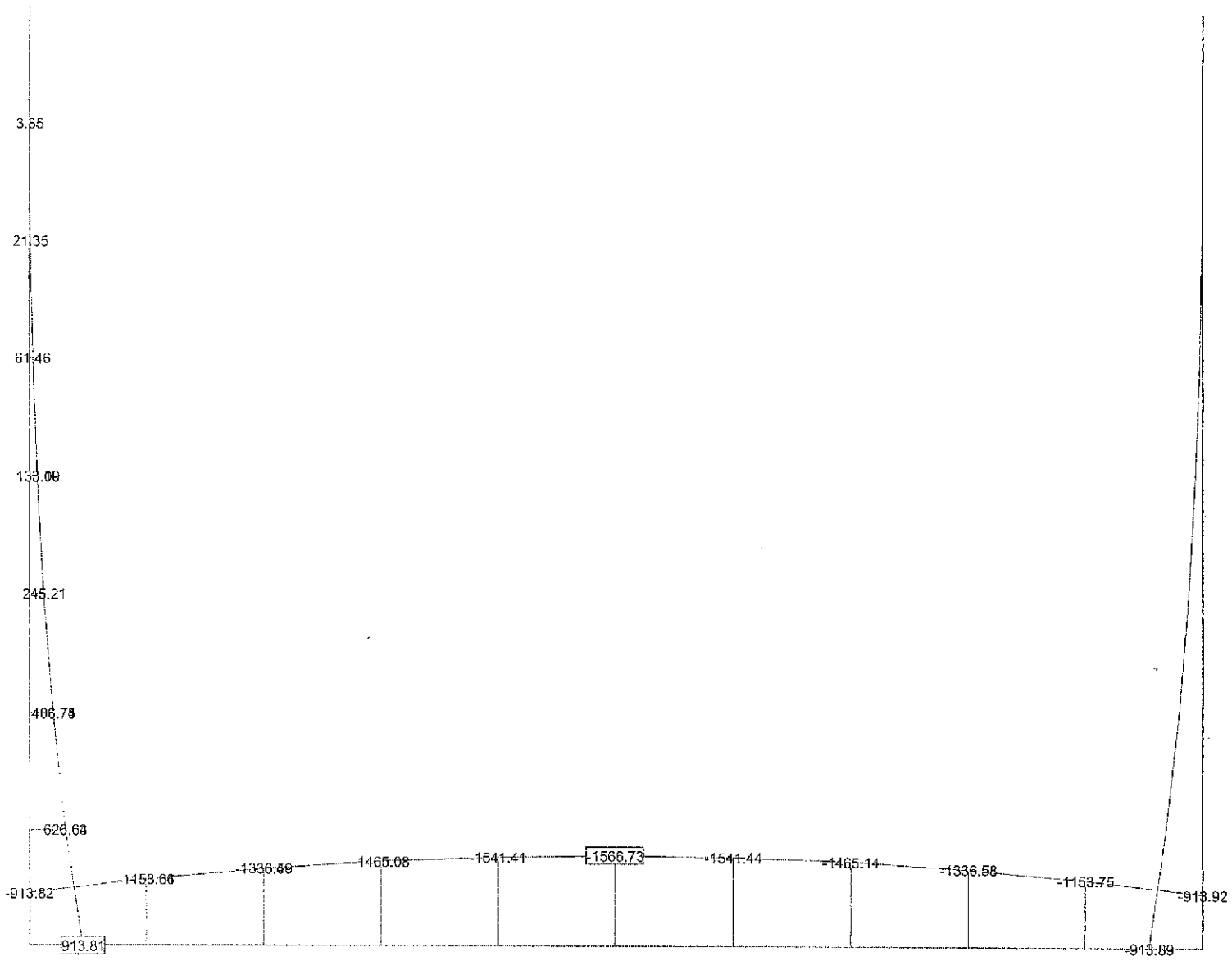
Section force My [kNm] for: TOTAL

Scale 1 :50.9



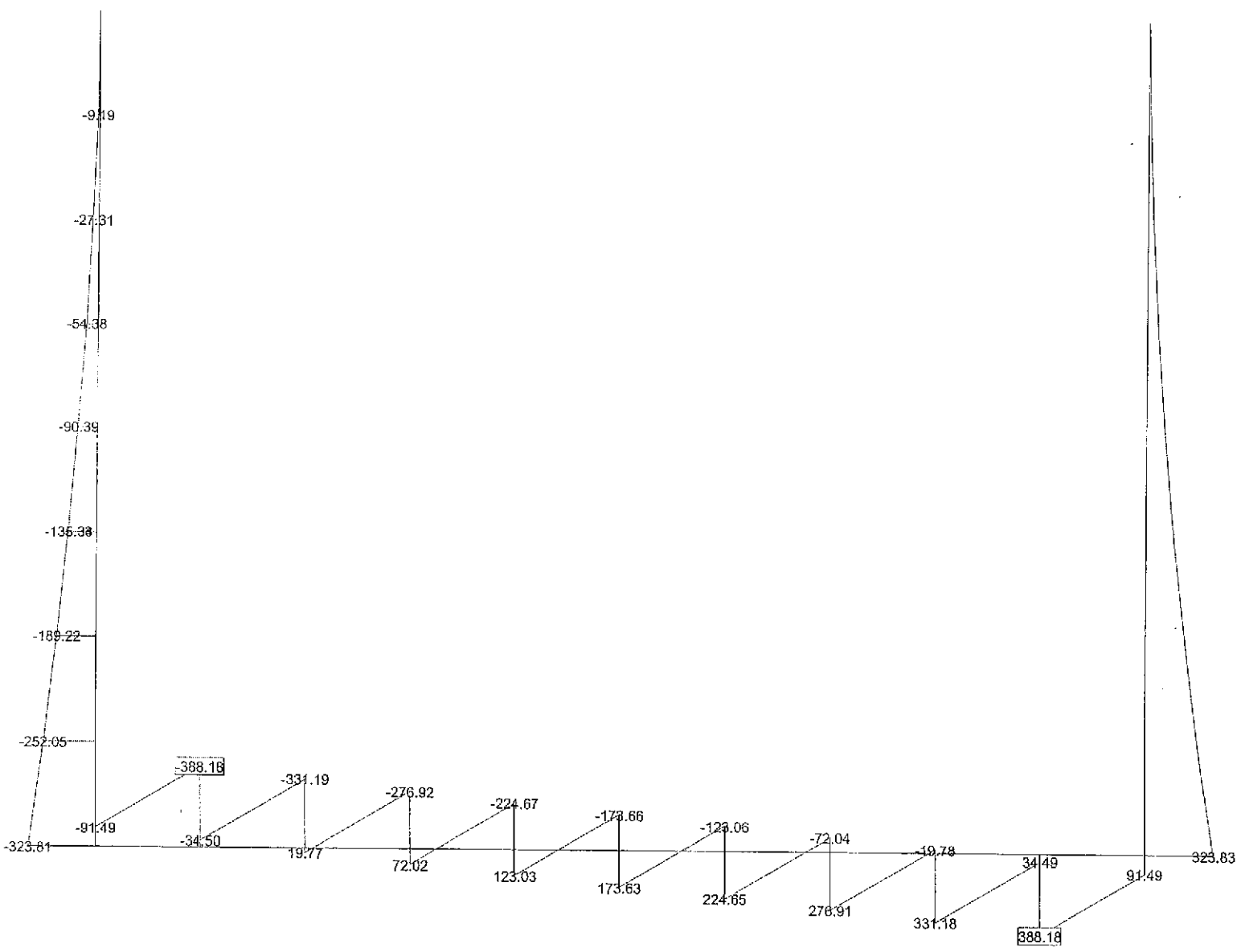
Section force My [kNm] for: ELU

Scale 1 :50.9



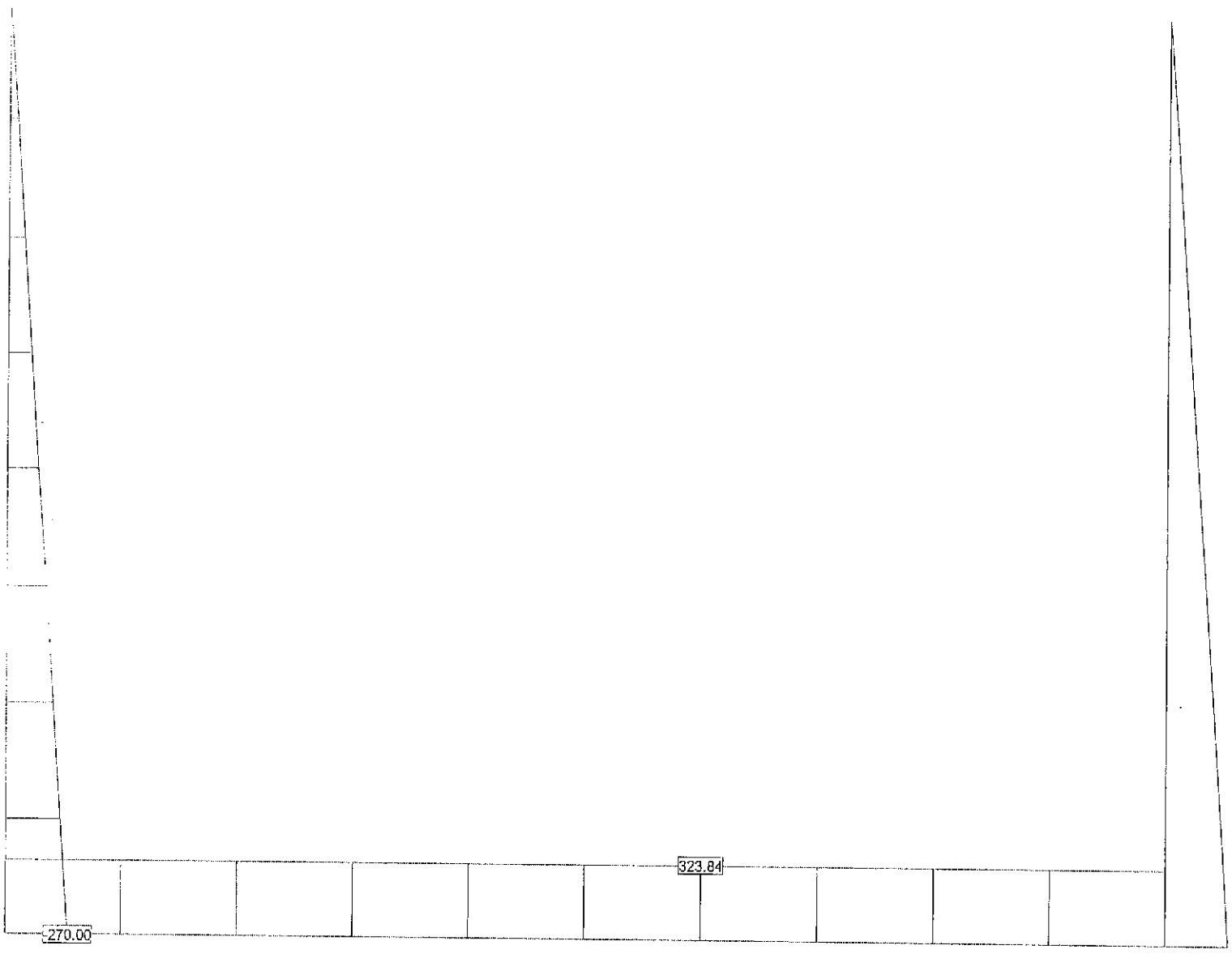
Section force Vz [kN] for: ELU

Scale 1 :55.8



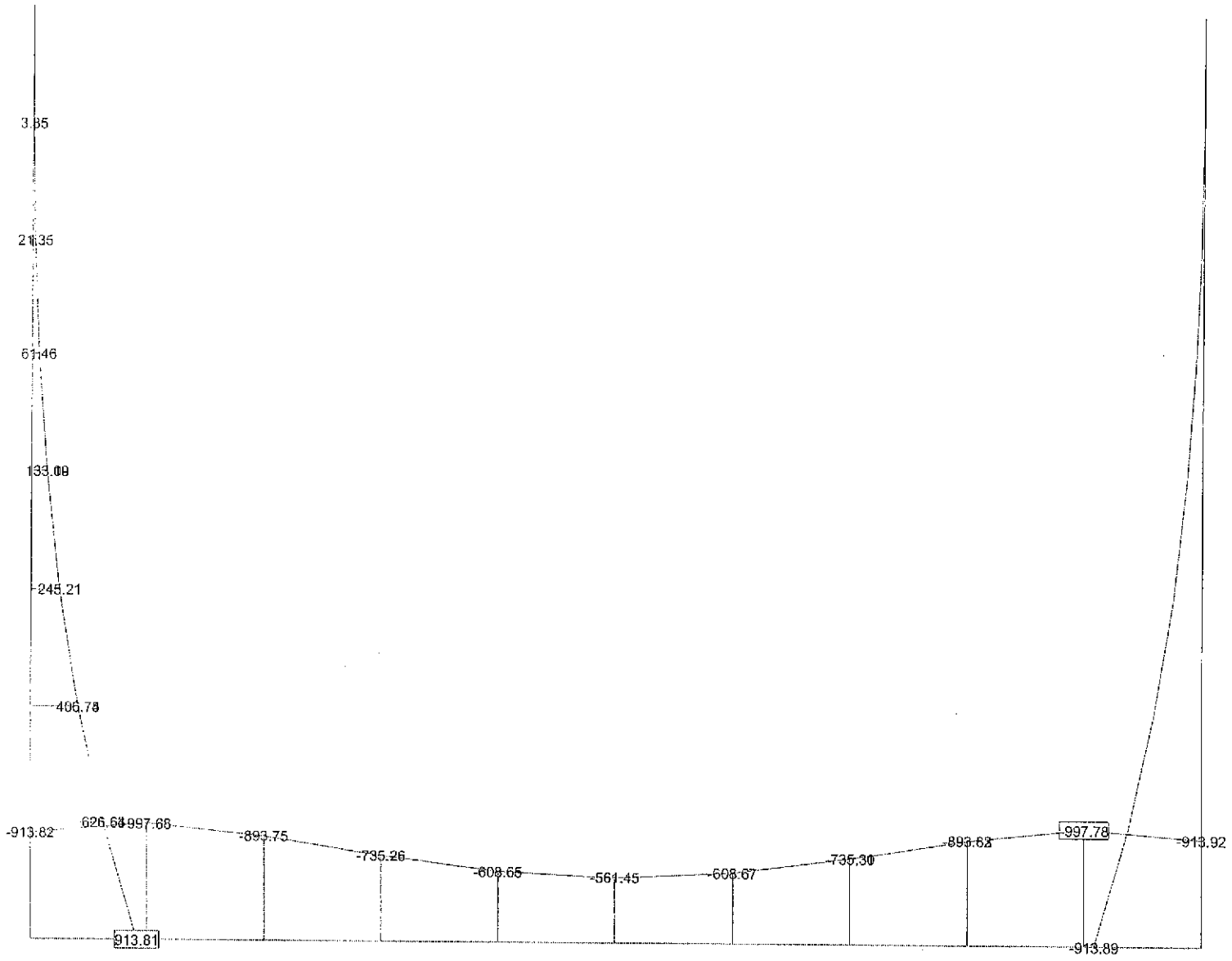
Section force N [kN] for: ELU

Scale 1 :50.9



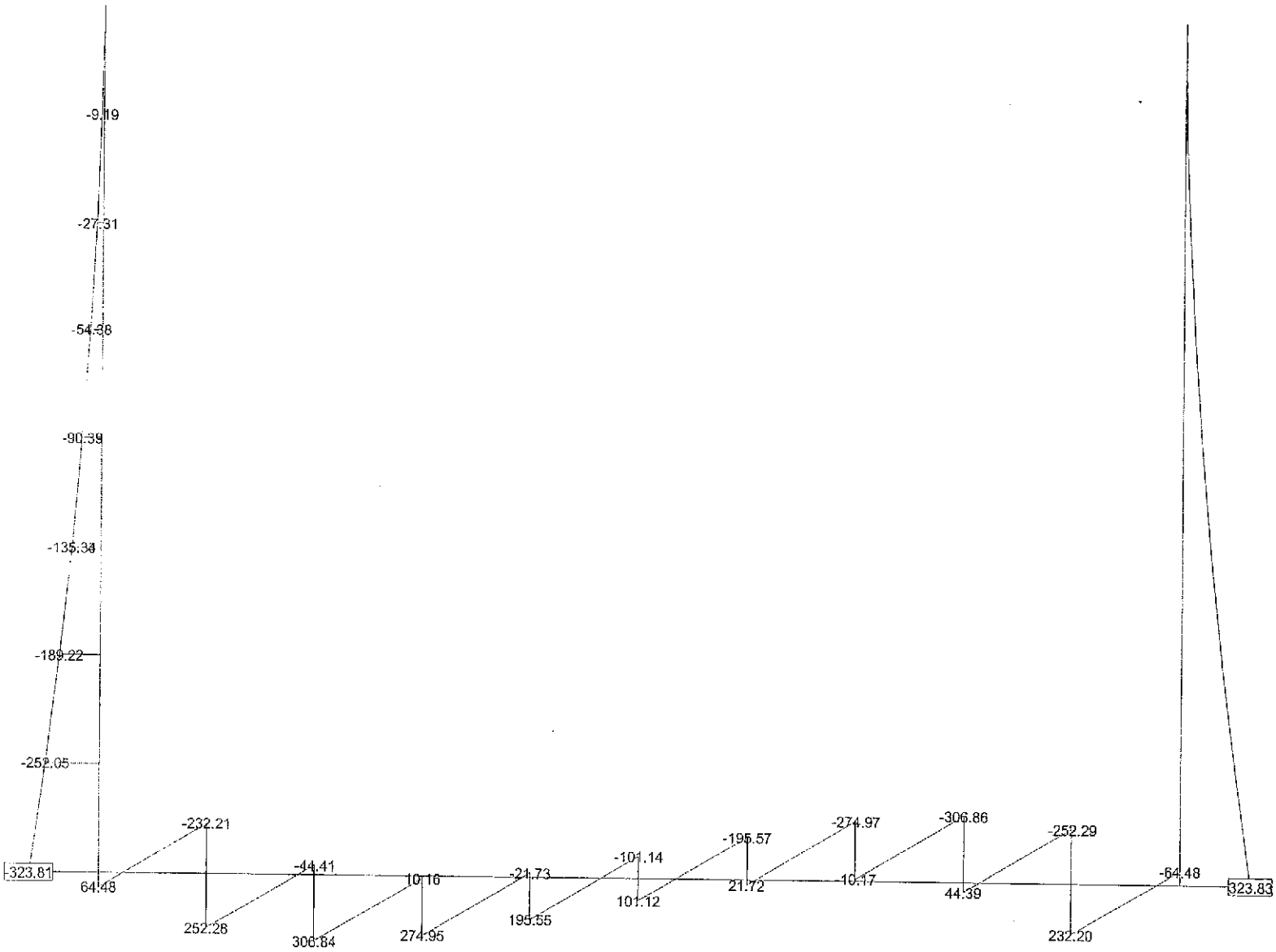
Section force My [kNm] for: ELU

Scale 1 :50.9



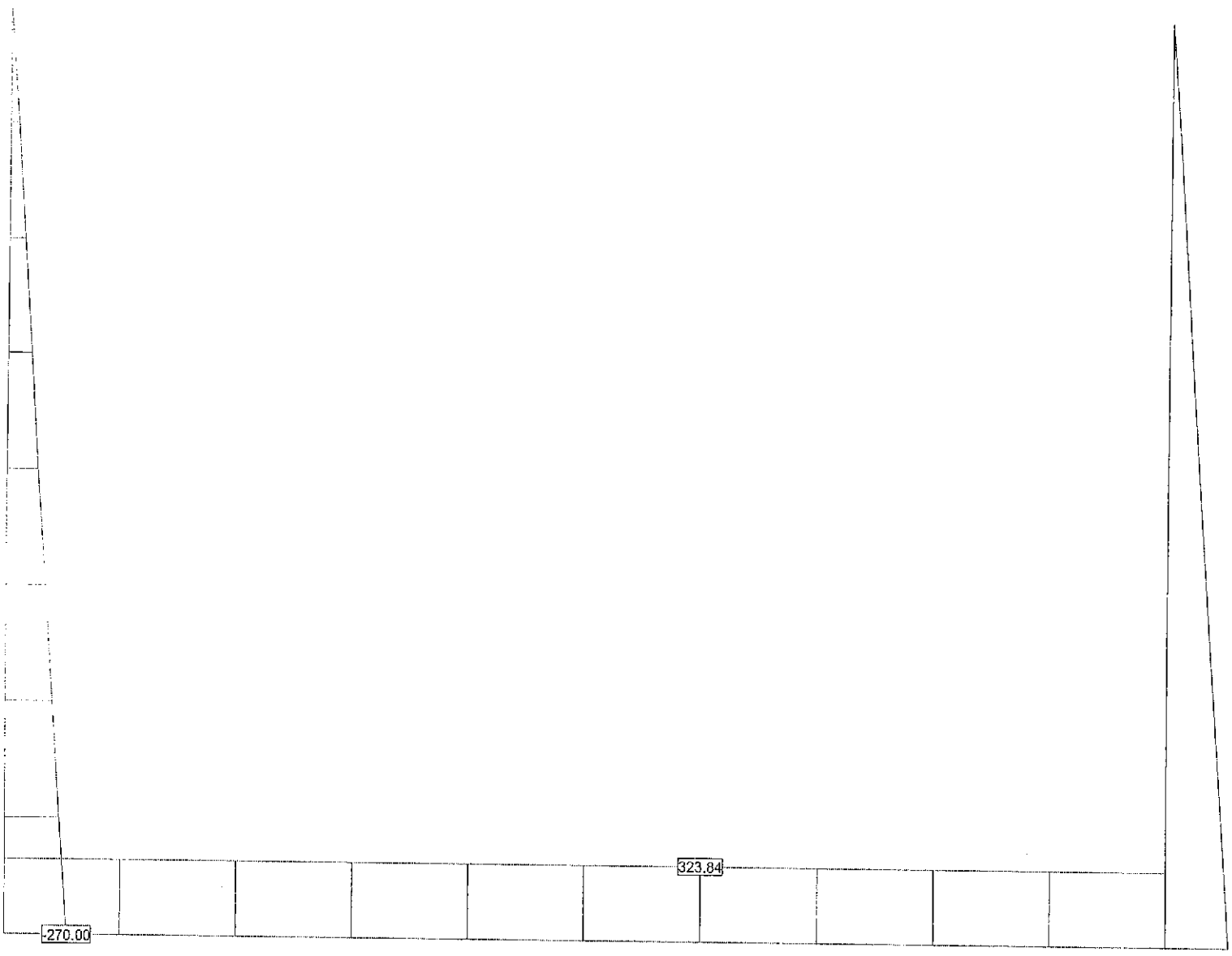
Section force Vz [kN] for: ELU

Scale 1 :54.8



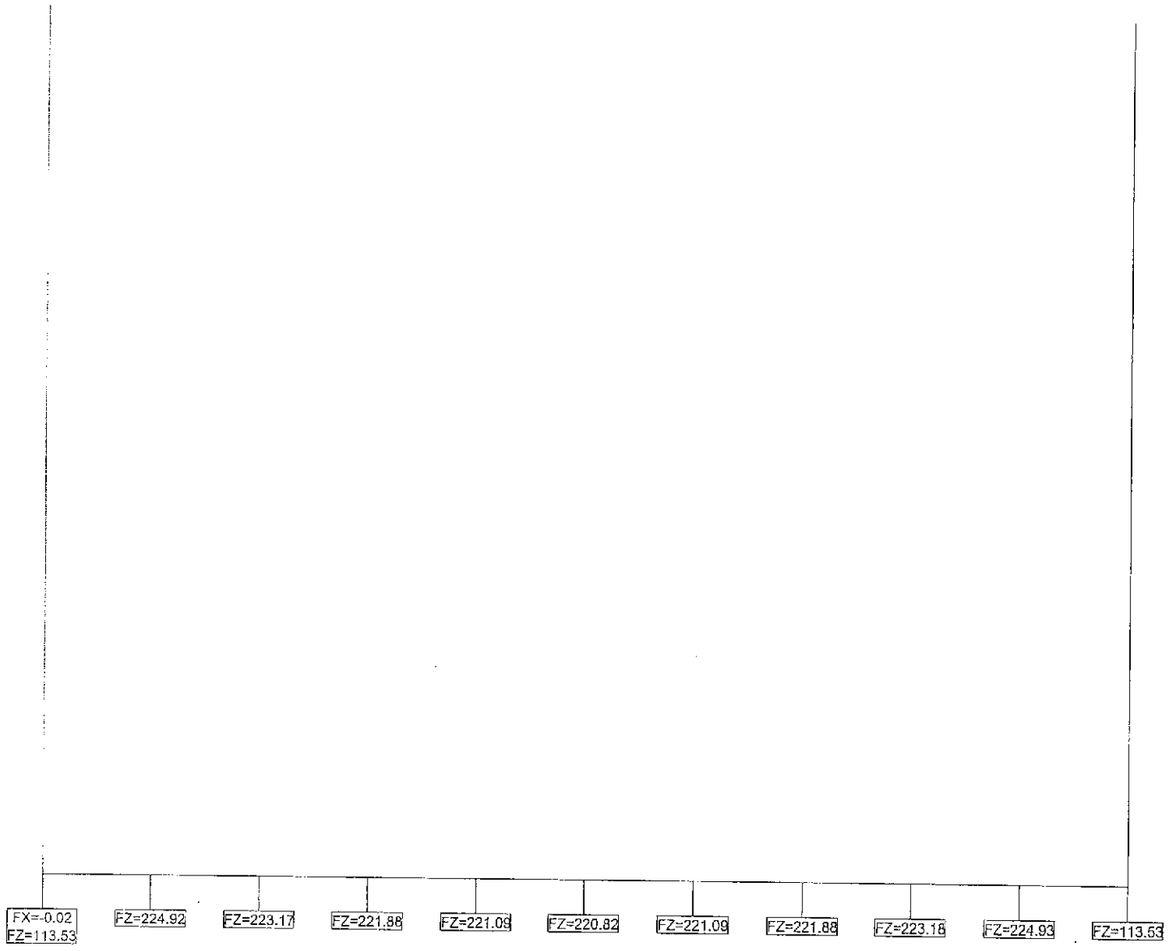
Section force N [kN] for: ELU

Scale 1 :50.9



Reactions [kN]/[kNm] for: TOTAL, Sum FX: -0.02, Sum FZ: 2230.00

Scale 1 :54.5



PRONTUARIO INFORMÁTICO DEL HORMIGÓN ESTRUCTURAL 3.0

Cátedra de Hormigón Estructural ETSICCPM - IECA

Obra: MUROS_EHE
Fecha: 21/11/2003
Hora: 17:48:21

Cálculo de secciones a flexión compuesta recta

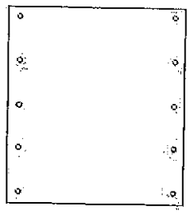
1 Datos

- Materiales

Tipo de hormigón : HA-25
Tipo de acero : B-500-S
fck [MPa] = 25.00
fyk [MPa] = 500.00
?c = 1.50
?s = 1.15

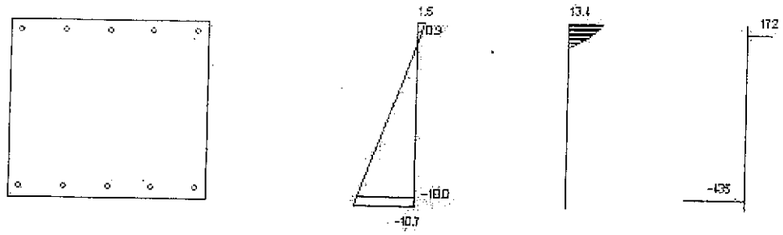
- Sección

Sección : 90R
b [m] = 1.00
h [m] = 0.90
r [m] = 0.050
nº barras horizontales = 5
nº barras verticales = 2



2 Dimensionamiento

Nd [kN] = 270
Md [kN·m] = 913



Plano de deformación de agotamiento

x [m] = 0.113

1/r [1/m]·1.E-3 = 13.6

?s ·1.E-3 = 1.5

?i ·1.E-3 = -10.7

Deformación y tensión de armaduras superior e inferior

Profundidad [m]	Deformación ·1.E-3	Tensión [MPa]
0.050	0.9	-171.8
0.850	-10.0	434.8

Propuesta armadura dimensionamiento

Aest [cm2]	?est [mm]	A [cm2]	? [mm]	Nu [kN]	Mu [kN·m]
47.4	24.1	49.1	25	270.0	970.0

Obra: CASTELLBISBAL
Fecha: 21/11/2003
Hora: 17:53:11

Cálculo de secciones a cortante

1 Datos

- Materiales

Tipo de hormigón : HA-25

Tipo de acero : B-500-S

fck [MPa] = 25.00

fyk [MPa] = 500.0

?c = 1.50

?s = 1.15

- Tipo de elemento estructural

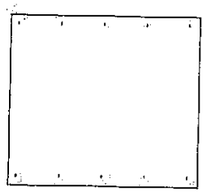
Tipo : elemento sin armadura a cortante

- Sección

Sección : 90R

b [m] = 1.00

h [m] = 0.90



2 Comprobación

?l [·1.E-3] = 2.73

Nd [kN] = -270

Vu [kN] = 325.6

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

Obra: MUROS_EHE
Fecha: 21/11/2003
Hora: 17:59:57

Cálculo de secciones a flexión compuesta recta

1 Datos

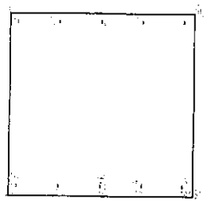
- Materiales

Tipo de hormigón : HA-25
Tipo de acero : B-500-S
fck [MPa] = 25.00
fyk [MPa] = 500.00
?c = 1.50
?s = 1.15

- Sección

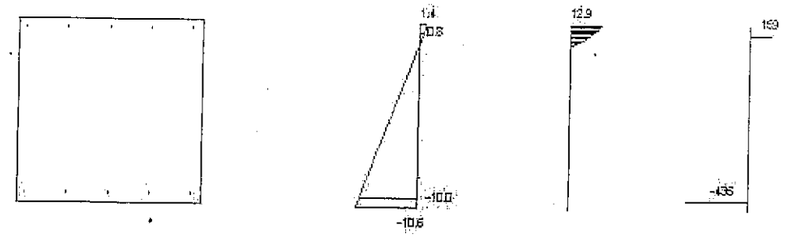
Sección : 100R
b [m] = 1.00
h [m] = 1.00
r [m] = 0.050

nº barras horizontales = 5
nº barras verticales = 2



2 Dimensionamiento

Nd [kN] = -323
Md [kN·m] = 1566



Plano de deformación de agotamiento

x [m] = 0.116
1/r [1/m]·1.E-3 = 12.0
?s·1.E-3 = 1.4
?i·1.E-3 = -10.6

Deformación y tensión de armaduras superior e inferior

Profundidad [m]	Deformación ·1.E-3	Tensión [MPa]
0.050	0.8	-158.8
0.950	-10.0	434.8

Propuesta armadura dimensionamiento

Aest [cm2]	?est [mm]	A [cm2]	? [mm]	Nu [kN]	Mu [kN·m]
87.1	33.3	87.1	33	-323.0	1566.0

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

Obra: CASTELLBISBAL
Fecha: 21/11/2003
Hora: 17:59:33

Cálculo de secciones a cortante

1 Datos

- Materiales

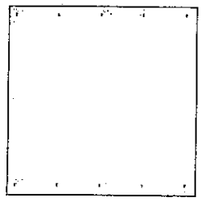
Tipo de hormigón : HA-25
Tipo de acero : B-500-S
fck [MPa] = 25.00
fyk [MPa] = 500.0
?c = 1.50
?s = 1.15

- Tipo de elemento estructural

Tipo : elemento sin armadura a cortante

- Sección

Sección : 100R
b [m] = 1.00
h [m] = 1.00



2 Comprobación

?l [·1.E-3] = 4.91
Nd [kN] = +323
Vu [kN] = 426.4

APERTURA DE FISURA SEGÚN LA EHE

Sección en centro luz

Acciones en ELS

N=	0.00	kN
M=	1007.00	kN·m

Parámetros del cálculo de fisuración

β=	1.70	coeficiente de mayoración de la EHE
c=	0.030	recubrimiento geométrico en m (hasta el estribo)
s=	0.10	separación entre barras longitudinales en m
r_m=	0.05	recubrimiento mecánico en m (hasta cdg del grupo de barras)
k_1=	0.125	coeficiente de influencia del diagrama de tracciones de la EHE
k_2=	0.50	coeficiente de repetición de carga
ϕ=	0.025	diámetro de la barra más gruesa en m
A_s=	49.10	Área total de armadura en m^2 (situada en Ac,ef)
B=	1.00	ancho de lasección en m
H=	1.00	canto de la sección en m
σ_s=	239.87	tensión en la armadura en servicio N/mm^2
σ_{sr}=	101.83	tensión en la armadura en el instante en que se fisura el hormigón N/mm^2
E_s=	200000	Módulo de elasticidad del acero en N/mm^2
$A_{c,ef}$=	0.24	m^2

Alargamiento y separación media de fisuras

ε_{sm}=	1.09E-03	Alargamiento medio de las armaduras contando la colaboración del hormigón
s_m=	0.08	Separación media entre fisuras en m

Abertura de fisura

w_k=	**0.15**	**mm**

VALORES MÁXIMOS DE ABERTURA DE FISURA SEGÚN LA EHE

ase de exposic	w_{max} (mm)	
	ormigón arma	Hormigón pretensado
I	0.4	0.2
IIa,IIb, H	0.3	0,2*
IIIa, IIIb, IV, F	0.2	Descompresión
IIIc, Qa, Qb, Q	0.1	

* Adicionalmente deberá comprobarse que las armaduras activas se encuentran en la zona comprimida de la sección, bajo la combinación de acciones cuasipermanentes

Nota:
- En hormigón armado se calcula bajo la combinación de acciones cuasipermanetes
- En hormigón pretensado se calcula bajo la combinación de acciones frecuentes

TEC' 4
INGENIEROS CONSULTORES

Aribau, 237/241 Entl. 1° Esc. B
08021-BARCELONA
Tel.: 93-202-21-65
Fax: 93-414-32-66

Destinatario:	**Raquel Sahuquillo**	**Fax:**	**96 369 14 60**
Remitente:	**Marcin Warda**		
Fecha:	**03.12.2003**	**N° de páginas:**	**1+11**
Asunto: Revisión de cálculos P.S. 0.5. Muros 1 y 2			

REVISIÓN DE PROYECTO :

L.A.V. MADRID – FRONTERA FRANCESA. TRAMO A: CONEXIÓN VALLÈS CASTELLBISBALL

ESTRUCTURA :

MUROS "U" DE P.S. 0.5

FECHA: **3 de Diciembre 2003**

Revisando el anejo de cálculo del muro U1 se han detectado errores que se han repetido en los anejos correspondientes al resto de los muros. Así les presento problemas observados en los cálculos que necesitan corrección por su parte. También les adjunto las hojas de la memoria de cálculo con las notas correspondientes a las observaciones escritas mas adelante.

Comprobación del terreno:

La memoria de cálculo consta que se han comprobado las tensiones en el terreno bajo la losa de cimentación, no obstante no se ha observado dicha comprobación.

Dimensionamiento a flexión:

- No se ha seguido el mismo criterio en el dimensionamiento de los muros: las armaduras de algunos muros se han calculado con el método de flexión compuesta recta con momento flector y axil y en otros casos despreciando el esfuerzo axil.
- Los diámetros de barras propuestos por el "Prontuario Informático del Hormigón Estructural" parecen algo confusos (33, 35, 40 mm).
- Las cuantías de armaduras presentadas en los planos no corresponden a las propuestas por el "Prontuario Informático del Hormigón Estructural" presentados en el anejo de cálculo.
- En un caso parece que se ha utilizado valor de cortante en vez de momento flector para dimensionar las armaduras.

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Dimensionamiento a cortante:

- El esfuerzo cortante de diseño que se ha utilizado es el que se obtiene en el nudo de unión entre el muro lateral y la losa de cimentación. No obstante la norma EHE permite utilizar el valor en la sección separada un canto útil desde la cara de elemento al cual se une. Teniendo en cuenta que los espesores de estos elementos son grandes (hasta 120 cm) el valor de diseño podría variar lo suficiente como para reducir el numero de cercos.

Presentación de los resultados:

Siguiendo las normas de GIF para la presentación de los resultados de dimensionamiento es necesario:

- marcar en las graficas de leyes de esfuerzos los valores que se está utilizando para el dimensionamiento
- en las hojas de dimensionamiento de las secciones especificar el elemento que se está diseñando
- preparar una tabla resumen de diseño con secciones, esfuerzos y armaduras propuesta para cada elemento

Atentamente,

Marcin Warda
TEC' 4

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Nº ED-069

MURO LATERAL

PRONTUARIO INFORMÁTICO DEL HORMIGÓN ESTRUCTURAL 3.0

Cátedra de Hormigón Estructural ETSICCPM - IECA

Obra: MUROS_EHE
Fecha: 20/11/2003
Hora: 11:33:22

Cálculo de secciones a flexión compuesta recta

1 Datos

- Materiales

Tipo de hormigón : HA-25
Tipo de acero : B-500-S
fck [MPa] = 25.00
fyk [MPa] = 500.00
γc = 1.50
γs = 1.15

- Sección

Sección : 120R
b [m] = 1.00
h [m] = 1.20
r [m] = 0.050

nº barras horizontales = 5
nº barras verticales = 2

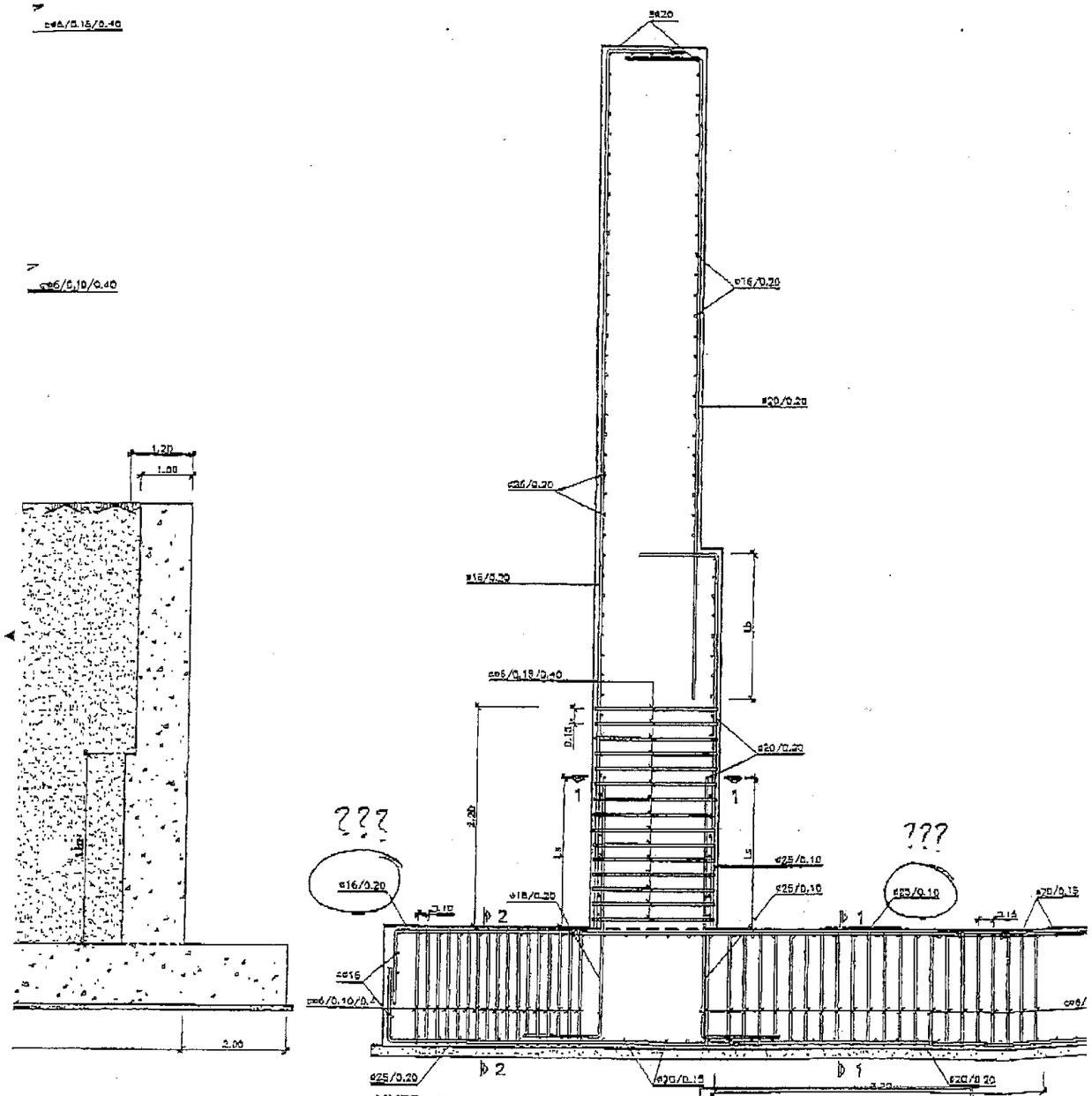


2 Dimensionamiento

Nd [kN] = 0 ← Si se considera $N_d = 0$
Md [kN·m] = 2267

Mejor diseñar la sección para flexión simple, que lleva a menos armadura en la cara de compresión.

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03 DIC. 2003
ENTRADAS
Nº ED-063

DE PLATAFORMA IDAD FRONTERA FRANCESA CASTELLBISBAL	AUTOR COPASA	ESCALA INDICADAS Numérica Gráfica	FECHA AGOSTO 2003	TITULO DEL PLANO MURO U1 GEOMETRIA Y ARMADO

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

Obra: MUROS_EHE
Fecha: 20/11/2003
Hora: 12:11:37

Cálculo de secciones a flexión compuesta recta

1 Datos

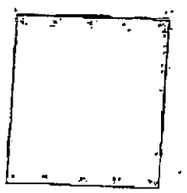
- Materiales

Tipo de formigón : HA-25
Tipo de acero : B-500-S
fck [MPa] = 25.00
fyk [MPa] = 500.00
γc = 1.50
γs = 1.15

- Sección

Sección : 120R
b [m] = 1.00
h [m] = 1.20
r [m] = 0.050

nº barras horizontales = 5
nº barras verticales = 2



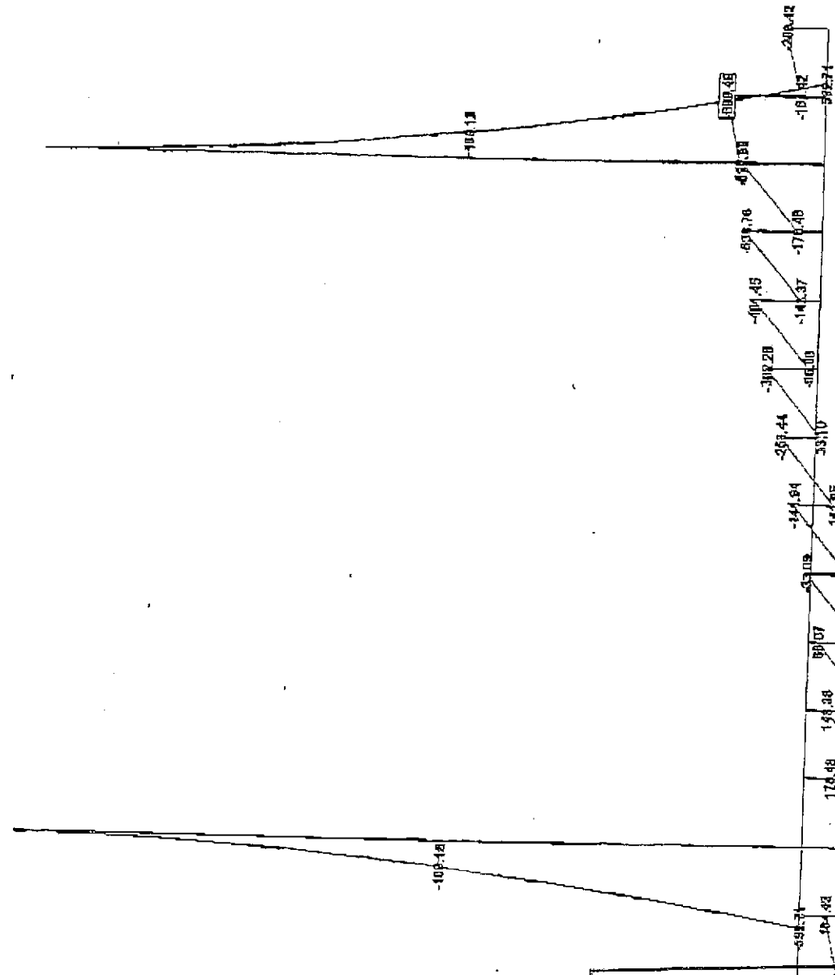
2 Dimensionamiento

Nd [kN] = 0
Md [kN·m] = 699 → parece que corresponde al cortante (Gráficas V_2 for ELU page 28)

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Page 28
20.11.03, 16:50

Scale 1:80,0



Statik-4 - Version 1.14
VALTER, Valenciana de estructuras
CASTELLBISBAL
MURO_CASTELLBISBAL

Section forces Vz [kN] for: ELU
cimentación (más rígido

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Cátedra de Hormigón Estructural ETSICCPM - IECA

Obra: CASTELLBISBAL
Fecha: 20/11/2003
Hora: 13:15:28

Cálculo de secciones a cortante

1 Datos

- Materiales

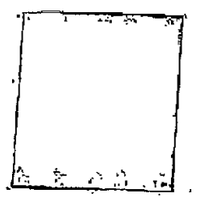
Tipo de hormigón : HA-25
Tipo de acero : B-500-S
fck [MPa] = 25.00
fyk [MPa] = 500.0
γc = 1.50
γs = 1.15

- Tipo de elemento estructural

Tipo : elemento con armadura a cortante

- Sección

Sección : 120R
b [m] = 1.00
h [m] = 1.20



2 Dimensionamiento

Esfuerzo cortante de cálculo Vd [kN] = 600 → A que sección corresponde ?
Inclinación de las bielas [°] = 45
Inclinación de los cercos [°] = 90.0
ρ [1.E-3] = 4.1
Nd [kN] = -450
σxd [MPa] = -0.4
σyd [MPa] = 0
θe [°] = 42.9

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

Obra: CASTELLBISBAL
Fecha: 20/11/2003
Hora: 10:16:49

Cálculo de secciones a cortante

1 Datos

- Materiales

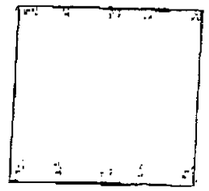
Tipo de hormigón : HA-25
Tipo de acero : B-500-S
fck [MPa] = 25.00
fyk [MPa] = 500.0
γc = 1.50
γs = 1.15

- Tipo de elemento estructural

Tipo : elemento sin armadura a cortante

- Sección

Sección : 100R
b [m] = 1.00
h [m] = 1.00



2 Comprobación

ρl [-1.E-3] = 2
Nd [kN] = 0.0
Vu [kN] = 284.4

FALTA LA HOJA SIGUIENTE

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MURO (U2)

PRONTUARIO INFORMÁTICO DEL HORMIGÓN ESTRUCTURAL 3,0

Cátedra de Hormigón Estructural ETSICCPM - IECA

Obra: MUROS_EHE
Fecha: 20/11/2003
Hora: 17:23:17

Cálculo de secciones a flexión compuesta recta

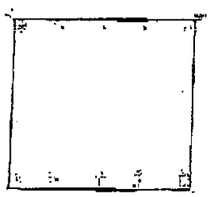
1 Datos

- Materiales

Tipo de hormigón : HA-25
Tipo de acero : B-500-S
fck [MPa] = 25.00
fyk [MPa] = 500.00
γc = 1.50
γs = 1.15

- Sección

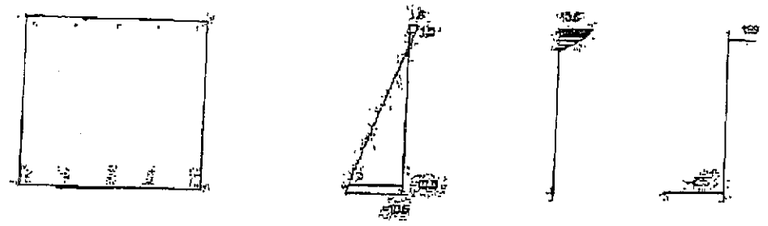
Sección : 110R
b [m] = 1.00
h [m] = 1.10
r [m] = 0.054
nº barras horizontales = 5
nº barras verticales = 2



2 Dimensionamiento

Nd [kN] = -448
Md [kN-m] = 2355

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Plano de deformación de agotamiento

x [m] = 0.160
1/r [1/m]=1.E-3 = 11.5
εs 1.E-3 = 1.7
εi 1.E-3 = -11.0

Deformación y tensión de armaduras superior e inferior

Profundidad [m]	Deformación -1.E-3	Tensión [MPa]
0.084	0.8	-152.8
1.016	-10.0	+34.8

Propuesta armadura dimensionamiento

Aest [cm2]	?est [mm]	A [cm2]	? [mm]	Nu [kN]	Mu [kN-m]
124.7	39.8	124.7	40	-448.0	2355.0

según los planos.

10 ϕ 25 } 59.14 cm² ??? <<< 124.7 cm² ???
5 ϕ 16 }

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ENTRADAS
Nº

MURO U2

PRONTUARIO INFORMÁTICO DEL HORMIGÓN ESTRUCTURAL 3.0

Cátedra de Hormigón Estructural ETSICCPM - IECA

Obra: MUROS_EHE
Fecha: 20/11/2003
Hora: 16:26:54

Cálculo de secciones a flexión compuesta recta

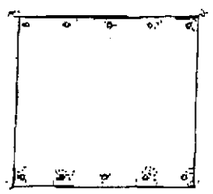
1 Datos

- Materiales

Tipo de hormigón : HA-25
Tipo de acero : B-500-S
fck [MPa] = 25,00
fyk [MPa] = 500,00
γc = 1,50
γs = 1,15

- Sección

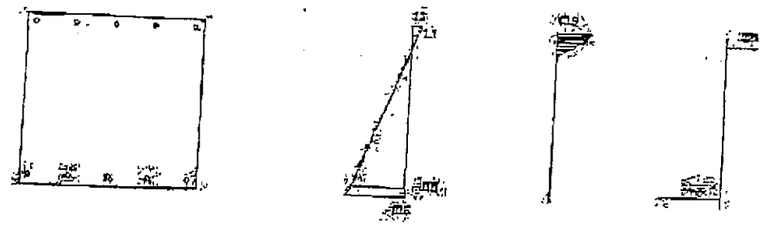
Sección : 100R
b [m] = 1,00
h [m] = 1,00
r [m] = 0,050
nº barras horizontales = 5
nº barras verticales = 2



2 Dimensionamiento

Nd [kN] = 356
Md [kN·m] = 1490

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CÓDIGO: B-132
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ENTRADAS
Nº ED-068



Plano de deformación de agotamiento

x [m] = 0.140
1/r [1/m]·1.E-3 = 12.3
εs·1.E-3 = 1.7
εi·1.E-3 = -10.6

Deformación y tensión de armaduras superior e inferior

Profundidad [m]	Deformación -1.E-3	Tensión [MPa]
0.050	1.1	-221.4
0.950	-10.0	434.8

Propuesta armadura dimensionamiento

Aest [cm2]	Øest [mm]	A [cm2]	? [mm]	Nu [kN]	Mu [kNm]
73.9	29.4	80.4	152	355.0	1782.3

→ 10 ø 32

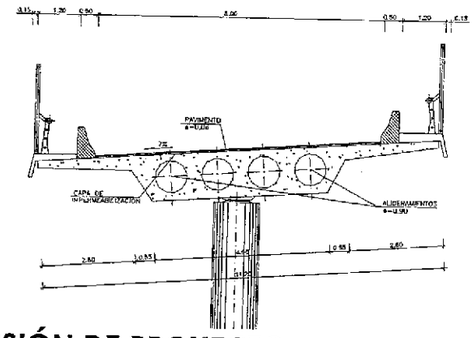
según los planos
5 Ø 16
+ 10 Ø 25 } As = 59.19 cm² < 73.9 ???

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03 DIC. 2003
ENTRADAS
Nº ED-068

VALTER
valenciana de
estructuras

PROYECTO DE CONSTRUCCIÓN

PLATAFORMA LINEA DE ALTA VELOCIDAD MADRID-ZARAGOZA-BARCELONA-FRONTERA FRANCESA.
TRAMO: CONEXIÓN VALLÉS-CASTELLBISBAL



REVISIÓN DE PROYECTO

ESTRUCTURA P.S. 0,5

ENERO DE 2004

1.- MEMORIA

1. ANTECEDENTES Y OBJETO

ANEXOS

A.1. FLECHAS EN TABLERO

A.2. COMPROBACIÓN DESLIZAMIENTO ESTRIBO.

A.3. COMPROBACIÓN DE PILA.

1. ANTECEDENTES Y OBJETO

Tras la revisión de la estructura P.S. 0.5 por TEC'4 con fecha 16 Diciembre de 2003., TEC'4 pidió mejorar los siguientes aspectos de los anejos de cálculo:

- Cálculo de movimientos verticales del tablero.
- Comprobación de deslizamiento en estribos.
- Introducción de las cargas de pretensado y fuerza centrífuga en pilas y corrección de la carga de frenado.

En este documento se adjuntan los listados de cálculo y/o justificaciones de cálculo después de la revisión de la estructura.

FLECHAS EN TABLERO

ENVOLVENTE: LP 'Vacio 1'

Grupo	Espe.	Hipótesis	Factor	Etapa	Título
A	PERM.	1	1.000		Peso Propio
	Y	20	0.900000		Pretensado

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

Barra	Dist. [m]	DX [m]	DY [m]	DZ [m]	RX [rad]	RY [rad]	RZ [rad]
1	0	0.004862	-6.24E-05	-0.000325	-0.000212	-0.001273	1.98E-06
		0.004862	-6.24E-05	-0.000325	-0.000212	-0.001273	1.98E-06
1	2.100	0.004590	6.94E-07	0.002271	-8.16E-05	-0.001166	1.97E-06
		0.004590	6.94E-07	0.002271	-8.16E-05	-0.001166	1.97E-06
1	4.200	0.004314	6.43E-05	0.004429	8.04E-05	-0.000912	1.95E-06
		0.004314	6.43E-05	0.004429	8.04E-05	-0.000912	1.95E-06
2	0	0.004314	6.43E-05	0.004429	8.04E-05	-0.000912	1.95E-06
		0.004314	6.43E-05	0.004429	8.04E-05	-0.000912	1.95E-06
2	2.100	0.004034	0.000120	0.005891	0.000236	-0.000552	1.90E-06
		0.004034	0.000120	0.005891	0.000236	-0.000552	1.90E-06
2	4.199	0.003750	0.000176	0.006508	0.000398	-0.000158	1.84E-06
		0.003750	0.000176	0.006508	0.000398	-0.000158	1.84E-06
3	0	0.003750	0.000176	0.006508	0.000398	-0.000158	1.84E-06
		0.003750	0.000176	0.006508	0.000398	-0.000158	1.84E-06
3	2.100	0.003462	0.000223	0.006273	0.000523	0.000245	1.77E-06
		0.003462	0.000223	0.006273	0.000523	0.000245	1.77E-06
3	4.200	0.003172	0.000269	0.005219	0.000638	0.000579	1.69E-06
		0.003172	0.000269	0.005219	0.000638	0.000579	1.69E-06
4	0	0.003172	0.000269	0.005219	0.000638	0.000579	1.69E-06
		0.003172	0.000269	0.005219	0.000638	0.000579	1.69E-06
4	2.100	0.002883	0.000306	0.003654	0.000705	0.000720	1.59E-06
		0.002883	0.000306	0.003654	0.000705	0.000720	1.59E-06
4	4.200	0.002597	0.000343	0.002051	0.000744	0.000614	1.49E-06
		0.002597	0.000343	0.002051	0.000744	0.000614	1.49E-06
5	0	0.002597	0.000343	0.002051	0.000744	0.000614	1.49E-06
		0.002597	0.000343	0.002051	0.000744	0.000614	1.49E-06
5	2.099	0.002313	0.000369	0.000853	0.000785	0.000408	1.38E-06
		0.002313	0.000369	0.000853	0.000785	0.000408	1.38E-06
5	4.198	0.002032	0.000395	3.70E-12	0.000835	0.000306	1.26E-06
		0.002032	0.000395	3.70E-12	0.000835	0.000306	1.26E-06
6	0	0.002032	0.000395	-1.87E-11	0.000835	0.000306	1.26E-06
		0.002032	0.000395	-1.87E-11	0.000835	0.000306	1.26E-06
6	2.700	0.001675	0.000416	-0.000750	0.000960	0.000103	1.09E-06

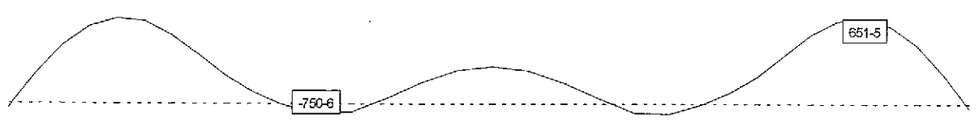
DEFORMATIONEN: ""
ENVOLVENTE para < DZ > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Dist. [m]	DX [m]	DY [m]	DZ [m]	RX [rad]	RY [rad]	RZ [rad]
		0.001675	0.000416	-0.000750	0.000960	0.000103	1.09E-06
6	5.400	0.001324	0.000435	-0.000640	0.001075	-0.000276	9.03E-07
		0.001324	0.000435	-0.000640	0.001075	-0.000276	9.03E-07
7	0	0.001324	0.000435	-0.000640	0.001075	-0.000276	9.03E-07
		0.001324	0.000435	-0.000640	0.001075	-0.000276	9.03E-07
7	2.700	0.000981	0.000439	0.000414	0.001189	-0.000468	6.94E-07
		0.000981	0.000439	0.000414	0.001189	-0.000468	6.94E-07
7	5.400	0.000641	0.000442	0.001622	0.001303	-0.000398	4.72E-07
		0.000641	0.000442	0.001622	0.001303	-0.000398	4.72E-07
8	0	0.000641	0.000442	0.001622	0.001303	-0.000398	4.72E-07
		0.000641	0.000442	0.001622	0.001303	-0.000398	4.72E-07
8	2.700	0.000304	0.000431	0.002541	0.001339	-0.000176	2.40E-07
		0.000304	0.000431	0.002541	0.001339	-0.000176	2.40E-07
8	5.399	-2.93E-05	0.000420	0.002802	0.001374	8.27E-05	4.16E-09
		-2.93E-05	0.000420	0.002802	0.001374	8.27E-05	4.16E-09
9	0	-2.93E-05	0.000420	0.002802	0.001374	8.27E-05	4.16E-09
		-2.93E-05	0.000420	0.002802	0.001374	8.27E-05	4.16E-09
9	2.700	-0.000362	0.000393	0.002519	0.001305	0.000335	-2.32E-07
		-0.000362	0.000393	0.002519	0.001305	0.000335	-2.32E-07
9	5.401	-0.000697	0.000366	0.001582	0.001240	0.000548	-4.64E-07
		-0.000697	0.000366	0.001582	0.001240	0.000548	-4.64E-07
10	0	-0.000697	0.000366	0.001582	0.001240	0.000548	-4.64E-07
		-0.000697	0.000366	0.001582	0.001240	0.000548	-4.64E-07
10	2.700	-0.001035	0.000324	0.000371	0.001114	0.000597	-6.86E-07
		-0.001035	0.000324	0.000371	0.001114	0.000597	-6.86E-07
10	5.399	-0.001376	0.000281	-0.000664	0.001020	0.000383	-8.94E-07
		-0.001376	0.000281	-0.000664	0.001020	0.000383	-8.94E-07
11	0	-0.001376	0.000281	-0.000664	0.001020	0.000383	-8.94E-07
		-0.001376	0.000281	-0.000664	0.001020	0.000383	-8.94E-07
11	2.662	-0.001717	0.000223	-0.000748	0.000946	-3.38E-06	-1.08E-06
		-0.001717	0.000223	-0.000748	0.000946	-3.38E-06	-1.08E-06
11	5.324	-0.002065	0.000163	-4.78E-11	0.000843	-0.000215	-1.24E-06
		-0.002065	0.000163	-4.78E-11	0.000843	-0.000215	-1.24E-06
12	0	-0.002065	0.000163	1.58E-11	0.000843	-0.000215	-1.24E-06
		-0.002065	0.000163	1.58E-11	0.000843	-0.000215	-1.24E-06
12	2.100	-0.002341	0.000105	0.000858	0.000805	-0.000322	-1.36E-06
		-0.002341	0.000105	0.000858	0.000805	-0.000322	-1.36E-06
12	4.199	-0.002620	4.56E-05	0.002063	0.000787	-0.000531	-1.47E-06
		-0.002620	4.56E-05	0.002063	0.000787	-0.000531	-1.47E-06
13	0	-0.002620	4.56E-05	0.002063	0.000787	-0.000531	-1.47E-06

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

Barra	Dist. [m]	DX [m]	DY [m]	DZ [m]	RX [rad]	RY [rad]	RZ [rad]
		-0.002620	4.56E-05	0.002063	0.000787	-0.000531	-1.47E-06
13	2.100	-0.002899	-2.27E-05	0.003666	0.000760	-0.000641	-1.58E-06
		-0.002899	-2.27E-05	0.003666	0.000760	-0.000641	-1.58E-06
13	4.200	-0.003182	-9.20E-05	0.005230	0.000676	-0.000508	-1.67E-06
		-0.003182	-9.20E-05	0.005230	0.000676	-0.000508	-1.67E-06
14	0	-0.003182	-9.20E-05	0.005230	0.000676	-0.000508	-1.67E-06
		-0.003182	-9.20E-05	0.005230	0.000676	-0.000508	-1.67E-06
14	2.100	-0.003465	-0.000171	0.006281	0.000522	-0.000188	-1.75E-06
		-0.003465	-0.000171	0.006281	0.000522	-0.000188	-1.75E-06
14	4.200	-0.003746	-0.000250	0.006512	0.000351	0.000198	-1.83E-06
		-0.003746	-0.000250	0.006512	0.000351	0.000198	-1.83E-06
15	0	-0.003746	-0.000250	0.006512	0.000351	0.000198	-1.83E-06
		-0.003746	-0.000250	0.006512	0.000351	0.000198	-1.83E-06
15	2.100	-0.004021	-0.000338	0.005884	0.000146	0.000573	-1.88E-06
		-0.004021	-0.000338	0.005884	0.000146	0.000573	-1.88E-06
15	4.201	-0.004294	-0.000424	0.004406	-4.90E-05	0.000915	-1.93E-06
		-0.004294	-0.000424	0.004406	-4.90E-05	0.000915	-1.93E-06
16	0	-0.004294	-0.000424	0.004406	-4.90E-05	0.000915	-1.93E-06
		-0.004294	-0.000424	0.004406	-4.90E-05	0.000915	-1.93E-06
16	2.099	-0.004560	-0.000519	0.002231	-0.000241	0.001151	-1.95E-06
		-0.004560	-0.000519	0.002231	-0.000241	0.001151	-1.95E-06
16	4.198	-0.004823	-0.000613	-0.000386	-0.000384	0.001244	-1.96E-06
		-0.004823	-0.000613	-0.000386	-0.000384	0.001244	-1.96E-06

Escala 1 :442,5
Displacements envelope DZ [M], GWSP LP (Vacio 1), View "LIST"
- Struktur: Staebe
- Minimum displacements DZ, Ueberh: 1.0E3
- Maximum displacements DZ, Ueberh: 1.0E3
- Label minimum value DZ-Min. [M]
- Label maximum value DZ-Max. [M]



ENVOLVENTE: LQ 'Vacio 2'

Grupo	Espe.	Hipótesis	Factor	Etapa	Título
A	PERM.	1	1.000		Peso Propio
	Y	20	1.100		Pretensado

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

Barra	Dist. [m]	DX [m]	DY [m]	DZ [m]	RX [rad]	RY [rad]	RZ [rad]
1	0	0.005943	-7.62E-05	-0.000315	-0.000282	-0.001669	2.42E-06
		0.005943	-7.62E-05	-0.000315	-0.000282	-0.001669	2.42E-06
1	2.100	0.005610	8.48E-07	0.003088	-0.000121	-0.001523	2.41E-06
		0.005610	8.48E-07	0.003088	-0.000121	-0.001523	2.41E-06
1	4.200	0.005273	7.86E-05	0.005902	8.21E-05	-0.001177	2.38E-06
		0.005273	7.86E-05	0.005902	8.21E-05	-0.001177	2.38E-06
2	0	0.005273	7.86E-05	0.005902	8.21E-05	-0.001177	2.38E-06
		0.005273	7.86E-05	0.005902	8.21E-05	-0.001177	2.38E-06
2	2.100	0.004930	0.000147	0.007776	0.000282	-0.000691	2.32E-06
		0.004930	0.000147	0.007776	0.000282	-0.000691	2.32E-06
2	4.199	0.004583	0.000215	0.008514	0.000490	-0.000161	2.25E-06
		0.004583	0.000215	0.008514	0.000490	-0.000161	2.25E-06
3	0	0.004583	0.000215	0.008514	0.000490	-0.000161	2.25E-06
		0.004583	0.000215	0.008514	0.000490	-0.000161	2.25E-06
3	2.100	0.004232	0.000272	0.008111	0.000654	0.000372	2.17E-06
		0.004232	0.000272	0.008111	0.000654	0.000372	2.17E-06
3	4.200	0.003877	0.000329	0.006636	0.000802	0.000805	2.06E-06
		0.003877	0.000329	0.006636	0.000802	0.000805	2.06E-06
4	0	0.003877	0.000329	0.006636	0.000802	0.000805	2.06E-06
		0.003877	0.000329	0.006636	0.000802	0.000805	2.06E-06
4	2.100	0.003523	0.000374	0.004510	0.000890	0.000976	1.95E-06
		0.003523	0.000374	0.004510	0.000890	0.000976	1.95E-06
4	4.200	0.003174	0.000419	0.002376	0.000939	0.000809	1.82E-06
		0.003174	0.000419	0.002376	0.000939	0.000809	1.82E-06
5	0	0.003174	0.000419	0.002376	0.000939	0.000809	1.82E-06
		0.003174	0.000419	0.002376	0.000939	0.000809	1.82E-06
5	2.099	0.002828	0.000451	0.000862	0.000985	0.000474	1.68E-06
		0.002828	0.000451	0.000862	0.000985	0.000474	1.68E-06
5	4.198	0.002484	0.000483	7.75E-13	0.001036	0.000213	1.54E-06
		0.002484	0.000483	7.75E-13	0.001036	0.000213	1.54E-06
6	0	0.002484	0.000483	-1.41E-11	0.001036	0.000213	1.54E-06
		0.002484	0.000483	-1.41E-11	0.001036	0.000213	1.54E-06
6	2.700	0.002047	0.000508	-0.000243	0.001164	-0.000193	1.34E-06

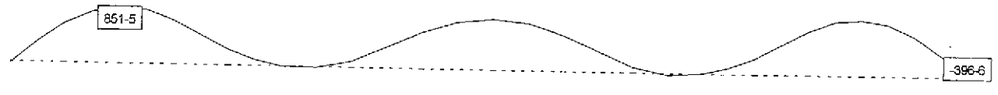
DEFORMATIONEN: ""
ENVOLVENTE para < DZ > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Dist. [m]	DX [m]	DY [m]	DZ [m]	RX [rad]	RY [rad]	RZ [rad]
		0.002047	0.000508	-0.000243	0.001164	-0.000193	1.34E-06
6	5.400	0.001619	0.000532	0.000852	0.001287	-0.000714	1.10E-06
		0.001619	0.000532	0.000852	0.001287	-0.000714	1.10E-06
7	0	0.001619	0.000532	0.000852	0.001287	-0.000714	1.10E-06
		0.001619	0.000532	0.000852	0.001287	-0.000714	1.10E-06
7	2.700	0.001199	0.000537	0.003144	0.001408	-0.000926	8.49E-07
		0.001199	0.000537	0.003144	0.001408	-0.000926	8.49E-07
7	5.400	0.000783	0.000540	0.005474	0.001531	-0.000757	5.77E-07
		0.000783	0.000540	0.005474	0.001531	-0.000757	5.77E-07
8	0	0.000783	0.000540	0.005474	0.001531	-0.000757	5.77E-07
		0.000783	0.000540	0.005474	0.001531	-0.000757	5.77E-07
8	2.700	0.000371	0.000527	0.007161	0.001564	-0.000362	2.94E-07
		0.000371	0.000527	0.007161	0.001564	-0.000362	2.94E-07
8	5.399	-3.58E-05	0.000513	0.007675	0.001594	9.82E-05	5.09E-09
		-3.58E-05	0.000513	0.007675	0.001594	9.82E-05	5.09E-09
9	0	-3.58E-05	0.000513	0.007675	0.001594	9.82E-05	5.09E-09
		-3.58E-05	0.000513	0.007675	0.001594	9.82E-05	5.09E-09
9	2.700	-0.000442	0.000480	0.007123	0.001506	0.000551	-2.84E-07
		-0.000442	0.000480	0.007123	0.001506	0.000551	-2.84E-07
9	5.401	-0.000852	0.000447	0.005406	0.001424	0.000934	-5.67E-07
		-0.000852	0.000447	0.005406	0.001424	0.000934	-5.67E-07
10	0	-0.000852	0.000447	0.005406	0.001424	0.000934	-5.67E-07
		-0.000852	0.000447	0.005406	0.001424	0.000934	-5.67E-07
10	2.700	-0.001265	0.000396	0.003066	0.001278	0.001078	-8.38E-07
		-0.001265	0.000396	0.003066	0.001278	0.001078	-8.38E-07
10	5.399	-0.001682	0.000343	0.000797	0.001178	0.000839	-1.09E-06
		-0.001682	0.000343	0.000797	0.001178	0.000839	-1.09E-06
11	0	-0.001682	0.000343	0.000797	0.001178	0.000839	-1.09E-06
		-0.001682	0.000343	0.000797	0.001178	0.000839	-1.09E-06
11	2.662	-0.002098	0.000272	-0.000252	0.001113	0.000311	-1.32E-06
		-0.002098	0.000272	-0.000252	0.001113	0.000311	-1.32E-06
11	5.324	-0.002524	0.000199	-4.33E-11	0.001028	-9.97E-05	-1.52E-06
		-0.002524	0.000199	-4.33E-11	0.001028	-9.97E-05	-1.52E-06
12	0	-0.002524	0.000199	1.26E-11	0.001028	-9.97E-05	-1.52E-06
		-0.002524	0.000199	1.26E-11	0.001028	-9.97E-05	-1.52E-06
12	2.100	-0.002861	0.000128	0.000867	0.001006	-0.000366	-1.67E-06
		-0.002861	0.000128	0.000867	0.001006	-0.000366	-1.67E-06
12	4.199	-0.003202	5.57E-05	0.002387	0.000999	-0.000703	-1.80E-06
		-0.003202	5.57E-05	0.002387	0.000999	-0.000703	-1.80E-06
13	0	-0.003202	5.57E-05	0.002387	0.000999	-0.000703	-1.80E-06

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

Barra	Dist. [m]	DX [m]	DY [m]	DZ [m]	RX [rad]	RY [rad]	RZ [rad]
		-0.003202	5.57E-05	0.002387	0.000999	-0.000703	-1.80E-06
13	2.100	-0.003543	-2.77E-05	0.004520	0.000968	-0.000875	-1.93E-06
		-0.003543	-2.77E-05	0.004520	0.000968	-0.000875	-1.93E-06
13	4.200	-0.003889	-0.000112	0.006643	0.000859	-0.000714	-2.04E-06
		-0.003889	-0.000112	0.006643	0.000859	-0.000714	-2.04E-06
14	0	-0.003889	-0.000112	0.006643	0.000859	-0.000714	-2.04E-06
		-0.003889	-0.000112	0.006643	0.000859	-0.000714	-2.04E-06
14	2.100	-0.004235	-0.000210	0.008113	0.000660	-0.000301	-2.14E-06
		-0.004235	-0.000210	0.008113	0.000660	-0.000301	-2.14E-06
14	4.200	-0.004578	-0.000306	0.008509	0.000435	0.000211	-2.23E-06
		-0.004578	-0.000306	0.008509	0.000435	0.000211	-2.23E-06
15	0	-0.004578	-0.000306	0.008509	0.000435	0.000211	-2.23E-06
		-0.004578	-0.000306	0.008509	0.000435	0.000211	-2.23E-06
15	2.100	-0.004915	-0.000413	0.007757	0.000169	0.000716	-2.30E-06
		-0.004915	-0.000413	0.007757	0.000169	0.000716	-2.30E-06
15	4.201	-0.005248	-0.000519	0.005865	-8.45E-05	0.001178	-2.36E-06
		-0.005248	-0.000519	0.005865	-8.45E-05	0.001178	-2.36E-06
16	0	-0.005248	-0.000519	0.005865	-8.45E-05	0.001178	-2.36E-06
		-0.005248	-0.000519	0.005865	-8.45E-05	0.001178	-2.36E-06
16	2.099	-0.005573	-0.000634	0.003031	-0.000328	0.001500	-2.39E-06
		-0.005573	-0.000634	0.003031	-0.000328	0.001500	-2.39E-06
16	4.198	-0.005895	-0.000749	-0.000396	-0.000507	0.001628	-2.40E-06
		-0.005895	-0.000749	-0.000396	-0.000507	0.001628	-2.40E-06

Escala 1 :442,5
Displacements envelope DZ [M], GWSP LQ (Vacio 2), View "LIST"
- Struktur: Staebe
- Minimum displacements DZ, Ueberh: 5.0E2
- Maximum displacements DZ, Ueberh: 5.0E2
- Label minimum value DZ-Min. [M]
- Label maximum value DZ-Max. [M]



ENVOLVENTE: LR 'ELS DEFORMACIONES 1'

Grupo	Espe.	Hipótesis	Factor	Etapa	Titulo
A	PERM.	1	1.000		Peso Propio
	Y	3	1.000		Carga Muerta Máxima
	Y	20	0.780000		Pretensado
B	MAS	19	0.600000		gradiente
C	MAS	21	1.000		Carro 2 centrado
D	MAS	4	1.000		Sobrecarga centrada vano 1
E	MAS	5	1.000		Sobrecarga centrada vano 2
F	MAS	6	1.000		Sobrecarga centrada vano 3
ALTERNATIVA PARA ENVOLVENTE:					
G	PERM.	1	1.000		Peso Propio
	Y	3	1.000		Carga Muerta Máxima
	Y	20	0.780000		Pretensado
H	MAS	19	0.600000		gradiente
I	MAS	21	1.000		Carro 2 centrado
J	MAS	7	1.000		Sobrecarga excéntrica vano 1 (
K	MAS	8	1.000		Sobrecarga excentrica vano 2 (
L	MAS	9	1.000		Sobrecarga excentrica vano 3 (
ALTERNATIVA PARA ENVOLVENTE:					
M	PERM.	1	1.000		Peso Propio
	Y	3	1.000		Carga Muerta Máxima
	Y	20	0.780000		Pretensado
N	MAS	19	0.600000		gradiente
O	MAS	21	1.000		Carro 2 centrado
P	MAS	10	1.000		Sobrecarga excéntrica vano 1 (
Q	MAS	11	1.000		Sobrecarga excentrica vano 2 (
R	MAS	12	1.000		Sobrecarga excentrica vano 3 (

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

Barra	Dist. [m]	DX [m]	DY [m]	DZ [m]	RX [rad]	RY [rad]	RZ [rad]
1	0	0.004214	-5.40E-05	-0.000609	-0.000102	-0.000838	1.72E-06
		0.004214	-5.40E-05	-0.000376	-0.000224	-0.001282	1.72E-06
1	2.100	0.003978	6.01E-07	0.000235	7.55E-05	-0.000393	1.71E-06
		0.003978	6.01E-07	0.003005	-9.31E-05	-0.001511	1.71E-06
1	4.200	0.003739	5.57E-05	0.000921	0.000203	-0.000327	1.69E-06
		0.003739	5.57E-05	0.005834	0.000115	-0.001232	1.69E-06
2	0	0.003739	5.57E-05	0.000921	0.000203	-0.000327	1.69E-06
		0.003739	5.57E-05	0.005834	0.000115	-0.001232	1.69E-06
2	2.100	0.003496	0.000104	0.001398	0.000306	-0.000226	1.65E-06
		0.003496	0.000104	0.007937	0.000308	-0.000874	1.65E-06
2	4.199	0.003250	0.000153	0.001621	0.000410	-0.000119	1.60E-06
		0.003250	0.000153	0.009185	0.000507	-0.000478	1.60E-06
3	0	0.003250	0.000153	0.001621	0.000410	-0.000119	1.60E-06
		0.003250	0.000153	0.009185	0.000507	-0.000478	1.60E-06
3	2.100	0.003001	0.000193	0.001604	0.000472	6.61E-06	1.54E-06
		0.003001	0.000193	0.009549	0.000672	-4.27E-05	1.54E-06
3	4.200	0.002749	0.000233	0.001315	0.000532	0.000117	1.46E-06
		0.002749	0.000233	0.008955	0.000836	0.000385	1.46E-06

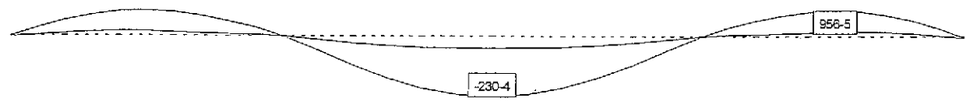
DEFORMATIONEN: ""
ENVOLVENTE para < DZ > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Dist. [m]	DX [m]	DY [m]	DZ [m]	RX [rad]	RY [rad]	RZ [rad]
4	0	0.002749	0.000233	0.001315	0.000532	0.000117	1.46E-06
		0.002749	0.000233	0.008955	0.000836	0.000385	1.46E-06
4	2.100	0.002498	0.000266	0.000893	0.000554	0.000138	1.38E-06
		0.002498	0.000266	0.007557	0.000966	0.000721	1.38E-06
4	4.200	0.002251	0.000297	0.000545	0.000565	5.74E-05	1.29E-06
		0.002251	0.000297	0.005565	0.001082	0.000939	1.29E-06
5	0	0.002251	0.000297	0.000545	0.000565	5.74E-05	1.29E-06
		0.002251	0.000297	0.005565	0.001082	0.000939	1.29E-06
5	2.099	0.002005	0.000320	0.000379	0.000595	3.55E-05	1.19E-06
		0.002005	0.000320	0.003163	0.001219	0.001190	1.19E-06
5	4.198	0.001761	0.000343	-5.78E-12	0.000648	0.000285	1.09E-06
		0.001761	0.000343	5.66E-11	0.001375	0.001672	1.09E-06
6	0	0.001761	0.000343	-9.37E-11	0.001375	0.001672	1.09E-06
		0.001761	0.000343	-1.70E-11	0.000648	0.000285	1.09E-06
6	2.700	0.001452	0.000360	-0.005448	0.001650	0.002093	9.48E-07
		0.001452	0.000360	-0.001334	0.000800	0.000539	9.48E-07
6	5.400	0.001148	0.000377	-0.011190	0.001897	0.001935	7.83E-07
		0.001148	0.000377	-0.002758	0.000932	0.000404	7.83E-07
7	0	0.001148	0.000377	-0.011190	0.001897	0.001935	7.83E-07
		0.001148	0.000377	-0.002758	0.000932	0.000404	7.83E-07
7	2.700	0.000850	0.000380	-0.015986	0.002114	0.001587	6.02E-07
		0.000850	0.000380	-0.003623	0.001063	0.000242	6.02E-07
7	5.400	0.000555	0.000383	-0.019768	0.002330	0.001187	4.09E-07
		0.000555	0.000383	-0.004167	0.001194	0.000166	4.09E-07
8	0	0.000555	0.000383	-0.019768	0.002330	0.001187	4.09E-07
		0.000555	0.000383	-0.004167	0.001194	0.000166	4.09E-07
8	2.700	0.000263	0.000374	-0.022122	0.002434	0.000711	2.08E-07
		0.000263	0.000374	-0.004446	0.001248	0.000128	2.08E-07
8	5.399	-2.54E-05	0.000364	-0.023042	0.002542	0.000138	3.61E-09
		-2.54E-05	0.000364	-0.004599	0.001302	7.47E-05	3.61E-09
9	0	-2.54E-05	0.000364	-0.023042	0.002542	0.000138	3.61E-09
		-2.54E-05	0.000364	-0.004599	0.001302	7.47E-05	3.61E-09
9	2.700	-0.000313	0.000341	-0.022085	0.002493	-0.000443	-2.01E-07
		-0.000313	0.000341	-0.004448	0.001250	1.56E-05	-2.01E-07
9	5.401	-0.000604	0.000317	-0.019695	0.002437	-0.000927	-4.02E-07
		-0.000604	0.000317	-0.004169	0.001196	-2.99E-05	-4.02E-07
10	0	-0.000604	0.000317	-0.019695	0.002437	-0.000927	-4.02E-07
		-0.000604	0.000317	-0.004169	0.001196	-2.99E-05	-4.02E-07
10	2.700	-0.000897	0.000281	-0.015878	0.002261	-0.001351	-5.94E-07
		-0.000897	0.000281	-0.003619	0.001071	-0.000124	-5.94E-07

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

Barra	Dist. [m]	DX [m]	DY [m]	DZ [m]	RX [rad]	RY [rad]	RZ [rad]
10	5.399	-0.001192	0.000243	-0.011048	0.002078	-0.001721	-7.74E-07
		-0.001192	0.000243	-0.002737	0.000956	-0.000305	-7.74E-07
11	0	-0.001192	0.000243	-0.011048	0.002078	-0.001721	-7.74E-07
		-0.001192	0.000243	-0.002737	0.000956	-0.000305	-7.74E-07
11	2.662	-0.001488	0.000193	-0.005373	0.001848	-0.001899	-9.36E-07
		-0.001488	0.000193	-0.001321	0.000838	-0.000450	-9.36E-07
11	5.324	-0.001790	0.000141	-1.47E-10	0.001526	-0.001513	-1.08E-06
		-0.001790	0.000141	-5.76E-11	0.000659	-0.000217	-1.08E-06
12	0	-0.001790	0.000141	1.44E-11	0.000659	-0.000217	-1.08E-06
		-0.001790	0.000141	7.49E-11	0.001526	-0.001513	-1.08E-06
12	2.100	-0.002029	9.07E-05	0.000389	0.000579	2.43E-05	-1.18E-06
		-0.002029	9.07E-05	0.003171	0.001316	-0.001052	-1.18E-06
12	4.199	-0.002270	3.95E-05	0.000568	0.000552	-1.05E-06	-1.28E-06
		-0.002270	3.95E-05	0.005581	0.001152	-0.000819	-1.28E-06
13	0	-0.002270	3.95E-05	0.000568	0.000552	-1.05E-06	-1.28E-06
		-0.002270	3.95E-05	0.005581	0.001152	-0.000819	-1.28E-06
13	2.100	-0.002513	-1.96E-05	0.000925	0.000551	-8.22E-05	-1.37E-06
		-0.002513	-1.96E-05	0.007574	0.001011	-0.000615	-1.37E-06
13	4.200	-0.002758	-7.97E-05	0.001353	0.000527	-6.25E-05	-1.45E-06
		-0.002758	-7.97E-05	0.008971	0.000842	-0.000295	-1.45E-06
14	0	-0.002758	-7.97E-05	0.001353	0.000527	-6.25E-05	-1.45E-06
		-0.002758	-7.97E-05	0.008971	0.000842	-0.000295	-1.45E-06
14	2.100	-0.003003	-0.000149	0.001648	0.000455	4.16E-05	-1.52E-06
		-0.003003	-0.000149	0.009561	0.000629	0.000112	-1.52E-06
14	4.200	-0.003246	-0.000217	0.001666	0.000378	0.000161	-1.58E-06
		-0.003246	-0.000217	0.009191	0.000414	0.000527	-1.58E-06
15	0	-0.003246	-0.000217	0.001666	0.000378	0.000161	-1.58E-06
		-0.003246	-0.000217	0.009191	0.000414	0.000527	-1.58E-06
15	2.100	-0.003485	-0.000293	0.001437	0.000265	0.000259	-1.63E-06
		-0.003485	-0.000293	0.007927	0.000171	0.000900	-1.63E-06
15	4.201	-0.003721	-0.000368	0.000947	0.000153	0.000353	-1.67E-06
		-0.003721	-0.000368	0.005803	-6.01E-05	0.001237	-1.67E-06
16	0	-0.003721	-0.000368	0.000947	0.000153	0.000353	-1.67E-06
		-0.003721	-0.000368	0.005803	-6.01E-05	0.001237	-1.67E-06
16	2.099	-0.003952	-0.000450	0.000241	1.82E-05	0.000407	-1.69E-06
		-0.003952	-0.000450	0.002951	-0.000300	0.001492	-1.69E-06
16	4.198	-0.004180	-0.000531	-0.000650	-0.000218	0.000832	-1.70E-06
		-0.004180	-0.000531	-0.000439	-0.000398	0.001254	-1.70E-06

Escala 1 :442,5
Displacements envelope DZ [M], GWSP LR (ELS DEFORMACIONES 1), View "LIST"
- Struktur: Staebe
- Minimum displacements DZ, Ueberh: 2.0E2
- Maximum displacements DZ, Ueberh: 2.0E2
- Label minimum value DZ-Min. [M]
- Label maximum value DZ-Max. [M]



ENVOLVENTE: LS 'ELS DEFORMACIONES 2'

Grupo	Espe.	Hipótesis	Factor	Etapa	Título
A	PERM.	1	1.000		Peso Propio
	Y	3	1.000		Carga Muerta Máxima
	Y	20	0.780000		Pretensado
B	MAS	19	0.600000		gradiente
C	MAS	22	1.000		Carro 1 centrado
D	MAS	4	1.000		Sobrecarga centrada vano 1
E	MAS	5	1.000		Sobrecarga centrada vano 2
F	MAS	6	1.000		Sobrecarga centrada vano 3
ALTERNATIVA PARA ENVOLVENTE:					
G	PERM.	1	1.000		Peso Propio
	Y	3	1.000		Carga Muerta Máxima
	Y	20	0.780000		Pretensado
H	MAS	19	0.600000		gradiente
I	MAS	22	1.000		Carro 1 centrado
J	MAS	7	1.000		Sobrecarga excéntrica vano 1 (
K	MAS	8	1.000		Sobrecarga excentrica vano 2 (
L	MAS	9	1.000		Sobrecarga excentrica vano 3 (
ALTERNATIVA PARA ENVOLVENTE:					
M	PERM.	1	1.000		Peso Propio
	Y	3	1.000		Carga Muerta Máxima
	Y	20	0.780000		Pretensado
N	MAS	19	0.600000		gradiente
O	MAS	22	1.000		Carro 1 centrado
P	MAS	10	1.000		Sobrecarga excéntrica vano 1 (
Q	MAS	11	1.000		Sobrecarga excentrica vano 2 (
R	MAS	12	1.000		Sobrecarga excentrica vano 3 (

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

Barra	Dist. [m]	DX [m]	DY [m]	DZ [m]	RX [rad]	RY [rad]	RZ [rad]
1	0	0.004214	-5.40E-05	-0.000696	-2.60E-05	-0.000475	1.72E-06
		0.004214	-5.40E-05	-0.000407	-0.000188	-0.001113	1.72E-06
1	2.100	0.003978	6.01E-07	-0.000619	0.000161	-4.90E-05	1.71E-06
		0.003978	6.01E-07	0.002515	-5.16E-05	-0.001348	1.71E-06

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

Barra	Dist. [m]	DX [m]	DY [m]	DZ [m]	RX [rad]	RY [rad]	RZ [rad]
1	4.200	0.003739	5.57E-05	-0.000631	0.000292	-3.41E-05	1.69E-06
		0.003739	5.57E-05	0.005106	0.000160	-0.001087	1.69E-06
2	0	0.003739	5.57E-05	-0.000631	0.000292	-3.41E-05	1.69E-06
		0.003739	5.57E-05	0.005106	0.000160	-0.001087	1.69E-06
2	2.100	0.003496	0.000104	-0.000714	0.000389	-1.42E-05	1.65E-06
		0.003496	0.000104	0.006917	0.000354	-0.000755	1.65E-06
2	4.199	0.003250	0.000153	-0.000847	0.000482	-2.04E-05	1.60E-06
		0.003250	0.000153	0.007937	0.000552	-0.000396	1.60E-06
3	0	0.003250	0.000153	-0.000847	0.000482	-2.04E-05	1.60E-06
		0.003250	0.000153	0.007937	0.000552	-0.000396	1.60E-06
3	2.100	0.003001	0.000193	-0.000948	0.000522	-3.16E-05	1.54E-06
		0.003001	0.000193	0.008163	0.000713	-6.66E-06	1.54E-06
3	4.200	0.002749	0.000233	-0.001030	0.000561	-5.22E-05	1.46E-06
		0.002749	0.000233	0.007539	0.000870	0.000365	1.46E-06
4	0	0.002749	0.000233	-0.001030	0.000561	-5.22E-05	1.46E-06
		0.002749	0.000233	0.007539	0.000870	0.000365	1.46E-06
4	2.100	0.002498	0.000266	-0.000999	0.000562	-0.000123	1.38E-06
		0.002498	0.000266	0.006245	0.000991	0.000634	1.38E-06
4	4.200	0.002251	0.000297	-0.000743	0.000557	-0.000252	1.29E-06
		0.002251	0.000297	0.004508	0.001096	0.000776	1.29E-06
5	0	0.002251	0.000297	-0.000743	0.000557	-0.000252	1.29E-06
		0.002251	0.000297	0.004508	0.001096	0.000776	1.29E-06
5	2.099	0.002005	0.000320	-0.000247	0.000575	-0.000278	1.19E-06
		0.002005	0.000320	0.002537	0.001217	0.000939	1.19E-06
5	4.198	0.001761	0.000343	-2.02E-11	0.000620	1.19E-05	1.09E-06
		0.001761	0.000343	4.26E-11	0.001356	0.001325	1.09E-06
6	0	0.001761	0.000343	-7.49E-11	0.001356	0.001325	1.09E-06
		0.001761	0.000343	-2.24E-12	0.000620	1.19E-05	1.09E-06
6	2.700	0.001452	0.000360	-0.004358	0.001604	0.001646	9.48E-07
		0.001452	0.000360	-0.000698	0.000766	0.000342	9.48E-07
6	5.400	0.001148	0.000377	-0.008822	0.001828	0.001451	7.83E-07
		0.001148	0.000377	-0.001677	0.000893	0.000274	7.83E-07
7	0	0.001148	0.000377	-0.008822	0.001828	0.001451	7.83E-07
		0.001148	0.000377	-0.001677	0.000893	0.000274	7.83E-07
7	2.700	0.000850	0.000380	-0.012333	0.002022	0.001130	6.02E-07
		0.000850	0.000380	-0.002272	0.001021	0.000170	6.02E-07
7	5.400	0.000555	0.000383	-0.014985	0.002217	0.000819	4.09E-07
		0.000555	0.000383	-0.002690	0.001149	0.000143	4.09E-07
8	0	0.000555	0.000383	-0.014985	0.002217	0.000819	4.09E-07
		0.000555	0.000383	-0.002690	0.001149	0.000143	4.09E-07

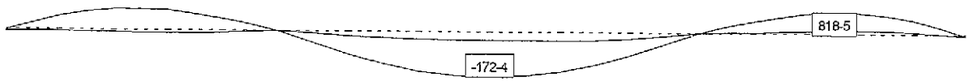
DEFORMATIONEN: ""
ENVOLVENTE para < DZ > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Dist. [m]	DX [m]	DY [m]	DZ [m]	RX [rad]	RY [rad]	RZ [rad]
8	2.700	0.000263	0.000374	-0.016549	0.002304	0.000495	2.08E-07
		0.000263	0.000374	-0.002971	0.001203	0.000146	2.08E-07
8	5.399	-2.54E-05	0.000364	-0.017174	0.002393	0.000132	3.61E-09
		-2.54E-05	0.000364	-0.003222	0.001258	0.000125	3.61E-09
9	0	-2.54E-05	0.000364	-0.017174	0.002393	0.000132	3.61E-09
		-2.54E-05	0.000364	-0.003222	0.001258	0.000125	3.61E-09
9	2.700	-0.000313	0.000341	-0.016523	0.002340	-0.000240	-2.01E-07
		-0.000313	0.000341	-0.003250	0.001208	8.98E-05	-2.01E-07
9	5.401	-0.000604	0.000317	-0.014932	0.002283	-0.000571	-4.02E-07
		-0.000604	0.000317	-0.003202	0.001158	5.91E-05	-4.02E-07
10	0	-0.000604	0.000317	-0.014932	0.002283	-0.000571	-4.02E-07
		-0.000604	0.000317	-0.003202	0.001158	5.91E-05	-4.02E-07
10	2.700	-0.000897	0.000281	-0.012253	0.002119	-0.000904	-5.94E-07
		-0.000897	0.000281	-0.002912	0.001038	-2.86E-05	-5.94E-07
10	5.399	-0.001192	0.000243	-0.008712	0.001956	-0.001248	-7.74E-07
		-0.001192	0.000243	-0.002294	0.000928	-0.000212	-7.74E-07
11	0	-0.001192	0.000243	-0.008712	0.001956	-0.001248	-7.74E-07
		-0.001192	0.000243	-0.002294	0.000928	-0.000212	-7.74E-07
11	2.662	-0.001488	0.000193	-0.004297	0.001754	-0.001459	-9.36E-07
		-0.001488	0.000193	-0.001121	0.000817	-0.000368	-9.36E-07
11	5.324	-0.001790	0.000141	-1.23E-10	0.001470	-0.001169	-1.08E-06
		-0.001790	0.000141	-5.35E-11	0.000645	-0.000154	-1.08E-06
12	0	-0.001790	0.000141	1.17E-11	0.000645	-0.000154	-1.08E-06
		-0.001790	0.000141	6.03E-11	0.001470	-0.001169	-1.08E-06
12	2.100	-0.002029	9.07E-05	0.000273	0.000570	6.98E-05	-1.18E-06
		-0.002029	9.07E-05	0.002544	0.001288	-0.000803	-1.18E-06
12	4.199	-0.002270	3.95E-05	0.000372	0.000549	2.89E-05	-1.28E-06
		-0.002270	3.95E-05	0.004523	0.001149	-0.000654	-1.28E-06
13	0	-0.002270	3.95E-05	0.000372	0.000549	2.89E-05	-1.28E-06
		-0.002270	3.95E-05	0.004523	0.001149	-0.000654	-1.28E-06
13	2.100	-0.002513	-1.96E-05	0.000681	0.000552	-6.62E-05	-1.37E-06
		-0.002513	-1.96E-05	0.006261	0.001028	-0.000525	-1.37E-06
13	4.200	-0.002758	-7.97E-05	0.001091	0.000531	-5.85E-05	-1.45E-06
		-0.002758	-7.97E-05	0.007555	0.000877	-0.000270	-1.45E-06
14	0	-0.002758	-7.97E-05	0.001091	0.000531	-5.85E-05	-1.45E-06
		-0.002758	-7.97E-05	0.007555	0.000877	-0.000270	-1.45E-06
14	2.100	-0.003003	-0.000149	0.001391	0.000462	3.53E-05	-1.52E-06
		-0.003003	-0.000149	0.008175	0.000676	8.14E-05	-1.52E-06
14	4.200	-0.003246	-0.000217	0.001436	0.000387	0.000147	-1.58E-06
		-0.003246	-0.000217	0.007945	0.000471	0.000451	-1.58E-06

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

Barra	Dist. [m]	DX [m]	DY [m]	DZ [m]	RX [rad]	RY [rad]	RZ [rad]
15	0	-0.003246	-0.000217	0.001436	0.000387	0.000147	-1.58E-06
		-0.003246	-0.000217	0.007945	0.000471	0.000451	-1.58E-06
15	2.100	-0.003485	-0.000293	0.001248	0.000275	0.000238	-1.63E-06
		-0.003485	-0.000293	0.006910	0.000234	0.000787	-1.63E-06
15	4.201	-0.003721	-0.000368	0.000813	0.000165	0.000327	-1.67E-06
		-0.003721	-0.000368	0.005080	4.76E-06	0.001098	-1.67E-06
16	0	-0.003721	-0.000368	0.000813	0.000165	0.000327	-1.67E-06
		-0.003721	-0.000368	0.005080	4.76E-06	0.001098	-1.67E-06
16	2.099	-0.003952	-0.000450	0.000170	2.95E-05	0.000378	-1.69E-06
		-0.003952	-0.000450	0.002568	-0.000237	0.001336	-1.69E-06
16	4.198	-0.004180	-0.000531	-0.000655	-0.000207	0.000801	-1.70E-06
		-0.004180	-0.000531	-0.000462	-0.000340	0.001091	-1.70E-06

Escala 1 :442,5
Displacements envelope DZ [M], GWSP LS (ELS DEFORMACIONES 2), View "LIST"
- Struktur: Staebe
- Minimum displacements DZ, Ueberh: 2.0E2
- Maximum displacements DZ, Ueberh: 2.0E2
- Label minimum value DZ-Min. [M]
- Label maximum value DZ-Max. [M]



ENVOLVENTE: LT 'ELS DEFORMACIONES 3'

Grupo	Espe.	Hipótesis	Factor	Etapa	Título
A	PERM.	1	1.000		Peso Propio
	Y	3	1.000		Carga Muerta Máxima
	Y	20	0.780000		Pretensado
B	MAS	19	0.600000		gradiente
C	MAS	31	1.000		Carro 2 excéntrico
D	MAS	4	1.000		Sobrecarga centrada vano 1
E	MAS	5	1.000		Sobrecarga centrada vano 2
F	MAS	6	1.000		Sobrecarga centrada vano 3

ALTERNATIVA PARA ENVOLVENTE:

G	PERM.	1	1.000		Peso Propio
	Y	3	1.000		Carga Muerta Máxima
	Y	20	0.780000		Pretensado
H	MAS	19	0.600000		gradiente
I	MAS	31	1.000		Carro 2 excéntrico
J	MAS	7	1.000		Sobrecarga excéntrica vano 1 (
K	MAS	8	1.000		Sobrecarga excentrica vano 2 (
L	MAS	9	1.000		Sobrecarga excentrica vano 3 (

ALTERNATIVA PARA ENVOLVENTE:

M	PERM.	1	1.000		Peso Propio
	Y	3	1.000		Carga Muerta Máxima
	Y	20	0.780000		Pretensado
N	MAS	19	0.600000		gradiente
O	MAS	31	1.000		Carro 2 excéntrico
P	MAS	10	1.000		Sobrecarga excéntrica vano 1 (
Q	MAS	11	1.000		Sobrecarga excentrica vano 2 (
R	MAS	12	1.000		Sobrecarga excentrica vano 3 (

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

Barra	Dist. [m]	DX [m]	DY [m]	DZ [m]	RX [rad]	RY [rad]	RZ [rad]
1	0	0.004214	-5.40E-05	-0.000609	-0.000102	-0.000838	1.72E-06
		0.004214	-5.40E-05	-0.000383	-0.000253	-0.001261	1.72E-06
1	2.100	0.003978	6.01E-07	0.000235	7.55E-05	-0.000393	1.71E-06
		0.003978	6.01E-07	0.002969	-0.000217	-0.001471	1.71E-06
1	4.200	0.003739	5.57E-05	0.000921	0.000203	-0.000327	1.69E-06
		0.003739	5.57E-05	0.005776	-0.000105	-0.001177	1.69E-06
2	0	0.003739	5.57E-05	0.000921	0.000203	-0.000327	1.69E-06
		0.003739	5.57E-05	0.005776	-0.000105	-0.001177	1.69E-06
2	2.100	0.003496	0.000104	0.001398	0.000306	-0.000226	1.65E-06
		0.003496	0.000104	0.007855	-8.57E-06	-0.000808	1.65E-06
2	4.199	0.003250	0.000153	0.001621	0.000410	-0.000119	1.60E-06
		0.003250	0.000153	0.009096	9.41E-05	-0.000403	1.60E-06
3	0	0.003250	0.000153	0.001621	0.000410	-0.000119	1.60E-06
		0.003250	0.000153	0.009096	9.41E-05	-0.000403	1.60E-06
3	2.100	0.003001	0.000193	0.001604	0.000472	6.61E-06	1.54E-06
		0.003001	0.000193	0.009443	0.000161	3.57E-05	1.54E-06
3	4.200	0.002749	0.000233	0.001315	0.000532	0.000117	1.46E-06
		0.002749	0.000233	0.008857	0.000226	0.000465	1.46E-06
4	0	0.002749	0.000233	0.001315	0.000532	0.000117	1.46E-06
		0.002749	0.000233	0.008857	0.000226	0.000465	1.46E-06
4	2.100	0.002498	0.000266	0.000893	0.000554	0.000138	1.38E-06
		0.002498	0.000266	0.007455	0.000256	0.000797	1.38E-06
4	4.200	0.002251	0.000297	0.000545	0.000565	5.74E-05	1.29E-06
		0.002251	0.000297	0.005494	0.000272	0.001009	1.29E-06
5	0	0.002251	0.000297	0.000545	0.000565	5.74E-05	1.29E-06
		0.002251	0.000297	0.005494	0.000272	0.001009	1.29E-06
5	2.099	0.002005	0.000320	0.000379	0.000595	3.55E-05	1.19E-06
		0.002005	0.000320	0.003106	0.000307	0.001249	1.19E-06
5	4.198	0.001761	0.000343	-5.78E-12	0.000648	0.000285	1.09E-06
		0.001761	0.000343	5.52E-11	0.000362	0.001718	1.09E-06
6	0	0.001761	0.000343	-9.36E-11	0.000362	0.001718	1.09E-06
		0.001761	0.000343	-1.70E-11	0.000648	0.000285	1.09E-06

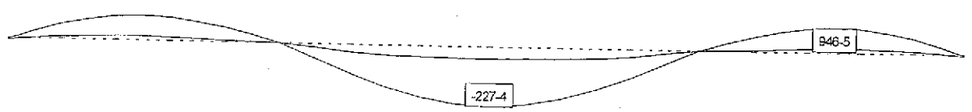
DEFORMATIONEN: ""
ENVOLVENTE para < DZ > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Dist. [m]	DX [m]	DY [m]	DZ [m]	RX [rad]	RY [rad]	RZ [rad]
6	2.700	0.001452	0.000360	-0.005404	0.000504	0.002118	9.48E-07
		0.001452	0.000360	-0.001334	0.000800	0.000539	9.48E-07
6	5.400	0.001148	0.000377	-0.011026	0.000619	0.001938	7.83E-07
		0.001148	0.000377	-0.002758	0.000932	0.000404	7.83E-07
7	0	0.001148	0.000377	-0.011026	0.000619	0.001938	7.83E-07
		0.001148	0.000377	-0.002758	0.000932	0.000404	7.83E-07
7	2.700	0.000850	0.000380	-0.015780	0.000702	0.001566	6.02E-07
		0.000850	0.000380	-0.003623	0.001063	0.000242	6.02E-07
7	5.400	0.000555	0.000383	-0.019452	0.000784	0.001140	4.09E-07
		0.000555	0.000383	-0.004167	0.001194	0.000166	4.09E-07
8	0	0.000555	0.000383	-0.019452	0.000784	0.001140	4.09E-07
		0.000555	0.000383	-0.004167	0.001194	0.000166	4.09E-07
8	2.700	0.000263	0.000374	-0.021799	0.000753	0.000637	2.08E-07
		0.000263	0.000374	-0.004446	0.001248	0.000128	2.08E-07
8	5.399	-2.54E-05	0.000364	-0.022650	0.000776	3.85E-05	3.61E-09
		-2.54E-05	0.000364	-0.004599	0.001302	7.47E-05	3.61E-09
9	0	-2.54E-05	0.000364	-0.022650	0.000776	3.85E-05	3.61E-09
		-2.54E-05	0.000364	-0.004599	0.001302	7.47E-05	3.61E-09
9	2.700	-0.000313	0.000341	-0.021766	0.000815	-0.000559	-2.01E-07
		-0.000313	0.000341	-0.004448	0.001250	1.56E-05	-2.01E-07
9	5.401	-0.000604	0.000317	-0.019386	0.000897	-0.001057	-4.02E-07
		-0.000604	0.000317	-0.004169	0.001196	-2.99E-05	-4.02E-07
10	0	-0.000604	0.000317	-0.019386	0.000897	-0.001057	-4.02E-07
		-0.000604	0.000317	-0.004169	0.001196	-2.99E-05	-4.02E-07
10	2.700	-0.000897	0.000281	-0.015682	0.000857	-0.001490	-5.94E-07
		-0.000897	0.000281	-0.003619	0.001071	-0.000124	-5.94E-07
10	5.399	-0.001192	0.000243	-0.010894	0.000810	-0.001870	-7.74E-07
		-0.001192	0.000243	-0.002737	0.000956	-0.000305	-7.74E-07
11	0	-0.001192	0.000243	-0.010894	0.000810	-0.001870	-7.74E-07
		-0.001192	0.000243	-0.002737	0.000956	-0.000305	-7.74E-07
11	2.662	-0.001488	0.000193	-0.005333	0.000712	-0.002054	-9.36E-07
		-0.001488	0.000193	-0.001321	0.000838	-0.000450	-9.36E-07
11	5.324	-0.001790	0.000141	-1.46E-10	0.000523	-0.001675	-1.08E-06
		-0.001790	0.000141	-5.76E-11	0.000659	-0.000217	-1.08E-06
12	0	-0.001790	0.000141	1.44E-11	0.000659	-0.000217	-1.08E-06
		-0.001790	0.000141	7.33E-11	0.000523	-0.001675	-1.08E-06
12	2.100	-0.002029	9.07E-05	0.000389	0.000579	2.43E-05	-1.18E-06
		-0.002029	9.07E-05	0.003114	0.000416	-0.001216	-1.18E-06
12	4.199	-0.002270	3.95E-05	0.000568	0.000552	-1.05E-06	-1.28E-06
		-0.002270	3.95E-05	0.005510	0.000354	-0.000981	-1.28E-06

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

Barra	Dist. [m]	DX [m]	DY [m]	DZ [m]	RX [rad]	RY [rad]	RZ [rad]
13	0	-0.002270	3.95E-05	0.000568	0.000552	-1.05E-06	-1.28E-06
		-0.002270	3.95E-05	0.005510	0.000354	-0.000981	-1.28E-06
13	2.100	-0.002513	-1.96E-05	0.000925	0.000551	-8.22E-05	-1.37E-06
		-0.002513	-1.96E-05	0.007475	0.000313	-0.000772	-1.37E-06
13	4.200	-0.002758	-7.97E-05	0.001353	0.000527	-6.25E-05	-1.45E-06
		-0.002758	-7.97E-05	0.008878	0.000244	-0.000444	-1.45E-06
14	0	-0.002758	-7.97E-05	0.001353	0.000527	-6.25E-05	-1.45E-06
		-0.002758	-7.97E-05	0.008878	0.000244	-0.000444	-1.45E-06
14	2.100	-0.003003	-0.000149	0.001648	0.000455	4.16E-05	-1.52E-06
		-0.003003	-0.000149	0.009461	0.000129	-2.43E-05	-1.52E-06
14	4.200	-0.003246	-0.000217	0.001666	0.000378	0.000161	-1.58E-06
		-0.003246	-0.000217	0.009108	1.11E-05	0.000406	-1.58E-06
15	0	-0.003246	-0.000217	0.001666	0.000378	0.000161	-1.58E-06
		-0.003246	-0.000217	0.009108	1.11E-05	0.000406	-1.58E-06
15	2.100	-0.003485	-0.000293	0.001437	0.000265	0.000259	-1.63E-06
		-0.003485	-0.000293	0.007853	-0.000136	0.000799	-1.63E-06
15	4.201	-0.003721	-0.000368	0.000947	0.000153	0.000353	-1.67E-06
		-0.003721	-0.000368	0.005753	-0.000272	0.001158	-1.67E-06
16	0	-0.003721	-0.000368	0.000947	0.000153	0.000353	-1.67E-06
		-0.003721	-0.000368	0.005753	-0.000272	0.001158	-1.67E-06
16	2.099	-0.003952	-0.000450	0.000241	1.82E-05	0.000407	-1.69E-06
		-0.003952	-0.000450	0.002920	-0.000420	0.001440	-1.69E-06
16	4.198	-0.004180	-0.000531	-0.000650	-0.000218	0.000832	-1.70E-06
		-0.004180	-0.000531	-0.000445	-0.000426	0.001232	-1.70E-06

Escala 1 :442,5
Displacements envelope DZ [M], GWSP LT (ELS DEFORMACIONES 3), Vlew "LIST"
- Struktur: Staebe
- Minimum displacements DZ, Ueberh: 2.0E2
- Maximum displacements DZ, Ueberh: 2.0E2
- Label minimum value DZ-Min. [M]
- Label maximum value DZ-Max. [M]



ENVOLVENTE: LU 'ELS DEFORMACIONES 4'

Grupo	Espe.	Hipótesis	Factor	Etapa	Título
A	PERM.	1	1.000		Peso Propio
	Y	3	1.000		Carga Muerta Máxima
	Y	20	0.780000		Pretensado
B	MAS	19	0.600000		gradiente
C	MAS	32	1.000		Carro 1 excéntrico
D	MAS	4	1.000		Sobrecarga centrada vano 1
E	MAS	5	1.000		Sobrecarga centrada vano 2
F	MAS	6	1.000		Sobrecarga centrada vano 3
ALTERNATIVA PARA ENVOLVENTE:					
G	PERM.	1	1.000		Peso Propio
	Y	3	1.000		Carga Muerta Máxima
	Y	20	0.780000		Pretensado
H	MAS	19	0.600000		gradiente
I	MAS	32	1.000		Carro 1 excéntrico
J	MAS	7	1.000		Sobrecarga excéntrica vano 1 (
K	MAS	8	1.000		Sobrecarga excentrica vano 2 (
L	MAS	9	1.000		Sobrecarga excentrica vano 3 (
ALTERNATIVA PARA ENVOLVENTE:					
M	PERM.	1	1.000		Peso Propio
	Y	3	1.000		Carga Muerta Máxima
	Y	20	0.780000		Pretensado
N	MAS	19	0.600000		gradiente
O	MAS	32	0.500000		Carro 1 excéntrico
P	MAS	10	1.000		Sobrecarga excéntrica vano 1 (
Q	MAS	11	1.000		Sobrecarga excentrica vano 2 (
R	MAS	12	1.000		Sobrecarga excentrica vano 3 (

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

Barra	Dist. [m]	DX [m]	DY [m]	DZ [m]	RX [rad]	RY [rad]	RZ [rad]
1	0	0.004214	-5.40E-05	-0.000700	-8.81E-05	-0.000479	1.72E-06
		0.004214	-5.40E-05	-0.000407	-0.000188	-0.001113	1.72E-06
1	2.100	0.003978	6.01E-07	-0.000584	-7.45E-05	-1.82E-05	1.71E-06
		0.003978	6.01E-07	0.002615	-5.16E-05	-0.001348	1.71E-06
1	4.200	0.003739	5.57E-05	-0.000551	-0.000118	2.98E-05	1.69E-06
		0.003739	5.57E-05	0.005106	0.000160	-0.001087	1.69E-06
2	0	0.003739	5.57E-05	-0.000551	-0.000118	2.98E-05	1.69E-06
		0.003739	5.57E-05	0.005106	0.000160	-0.001087	1.69E-06
2	2.100	0.003496	0.000104	-0.000607	-0.000195	7.80E-05	1.65E-06
		0.003496	0.000104	0.006917	0.000354	-0.000755	1.65E-06
2	4.199	0.003250	0.000153	-0.000703	-0.000278	9.85E-05	1.60E-06
		0.003250	0.000153	0.007937	0.000552	-0.000396	1.60E-06
3	0	0.003250	0.000153	-0.000703	-0.000278	9.85E-05	1.60E-06
		0.003250	0.000153	0.007937	0.000552	-0.000396	1.60E-06
3	2.100	0.003001	0.000193	-0.000812	-0.000363	0.000101	1.54E-06
		0.003001	0.000193	0.008163	0.000713	-6.66E-06	1.54E-06
3	4.200	0.002749	0.000233	-0.000891	-0.000340	7.62E-05	1.46E-06
		0.002749	0.000233	0.007539	0.000870	0.000365	1.46E-06

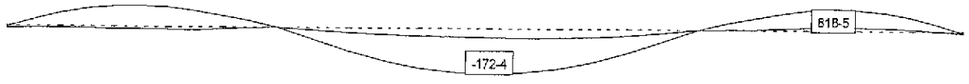
DEFORMATIONEN: ""
ENVOLVENTE para < DZ > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Dist. [m]	DX [m]	DY [m]	DZ [m]	RX [rad]	RY [rad]	RZ [rad]
4	0	0.002749	0.000233	-0.000891	-0.000340	7.62E-05	1.46E-06
		0.002749	0.000233	0.007539	0.000870	0.000365	1.46E-06
4	2.100	0.002498	0.000266	-0.000901	-0.000303	-7.89E-06	1.38E-06
		0.002498	0.000266	0.006245	0.000991	0.000634	1.38E-06
4	4.200	0.002251	0.000297	-0.000666	-0.000274	-0.000152	1.29E-06
		0.002251	0.000297	0.004508	0.001096	0.000776	1.29E-06
5	0	0.002251	0.000297	-0.000666	-0.000274	-0.000152	1.29E-06
		0.002251	0.000297	0.004508	0.001096	0.000776	1.29E-06
5	2.099	0.002005	0.000320	-0.000224	-0.000222	-0.000193	1.19E-06
		0.002005	0.000320	0.002537	0.001217	0.000939	1.19E-06
5	4.198	0.001761	0.000343	-1.99E-11	-0.000144	7.93E-05	1.09E-06
		0.001761	0.000343	4.26E-11	0.001356	0.001325	1.09E-06
6	0	0.001761	0.000343	-7.49E-11	0.001356	0.001325	1.09E-06
		0.001761	0.000343	-3.91E-12	-0.000144	7.93E-05	1.09E-06
6	2.700	0.001452	0.000360	-0.004358	0.001604	0.001646	9.48E-07
		0.001452	0.000360	-0.000754	4.37E-05	0.000387	9.48E-07
6	5.400	0.001148	0.000377	-0.008822	0.001828	0.001451	7.83E-07
		0.001148	0.000377	-0.001738	0.000213	0.000299	7.83E-07
7	0	0.001148	0.000377	-0.008822	0.001828	0.001451	7.83E-07
		0.001148	0.000377	-0.001738	0.000213	0.000299	7.83E-07
7	2.700	0.000850	0.000380	-0.012333	0.002022	0.001130	6.02E-07
		0.000850	0.000380	-0.002368	0.000382	0.000177	6.02E-07
7	5.400	0.000555	0.000383	-0.014985	0.002217	0.000819	4.09E-07
		0.000555	0.000383	-0.002778	0.000552	0.000135	4.09E-07
8	0	0.000555	0.000383	-0.014985	0.002217	0.000819	4.09E-07
		0.000555	0.000383	-0.002778	0.000552	0.000135	4.09E-07
8	2.700	0.000263	0.000374	-0.016549	0.002304	0.000495	2.08E-07
		0.000263	0.000374	-0.003073	0.000647	0.000125	2.08E-07
8	5.399	-2.54E-05	0.000364	-0.017174	0.002393	0.000132	3.61E-09
		-2.54E-05	0.000364	-0.003302	0.000742	9.23E-05	3.61E-09
9	0	-2.54E-05	0.000364	-0.017174	0.002393	0.000132	3.61E-09
		-2.54E-05	0.000364	-0.003302	0.000742	9.23E-05	3.61E-09
9	2.700	-0.000313	0.000341	-0.016523	0.002340	-0.000240	-2.01E-07
		-0.000313	0.000341	-0.003334	0.000732	4.78E-05	-2.01E-07
9	5.401	-0.000604	0.000317	-0.014932	0.002283	-0.000571	-4.02E-07
		-0.000604	0.000317	-0.003259	0.000721	9.86E-06	-4.02E-07
10	0	-0.000604	0.000317	-0.014932	0.002283	-0.000571	-4.02E-07
		-0.000604	0.000317	-0.003259	0.000721	9.86E-06	-4.02E-07
10	2.700	-0.000897	0.000281	-0.012253	0.002119	-0.000904	-5.94E-07
		-0.000897	0.000281	-0.002965	0.000639	-8.26E-05	-5.94E-07

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

Barra	Dist. [m]	DX [m]	DY [m]	DZ [m]	RX [rad]	RY [rad]	RZ [rad]
10	5.399	-0.001192	0.000243	-0.008712	0.001956	-0.001248	-7.74E-07
		-0.001192	0.000243	-0.002320	0.000568	-0.000269	-7.74E-07
11	0	-0.001192	0.000243	-0.008712	0.001956	-0.001248	-7.74E-07
		-0.001192	0.000243	-0.002320	0.000568	-0.000269	-7.74E-07
11	2.662	-0.001488	0.000193	-0.004297	0.001754	-0.001459	-9.36E-07
		-0.001488	0.000193	-0.001141	0.000494	-0.000426	-9.36E-07
11	5.324	-0.001790	0.000141	-1.23E-10	0.001470	-0.001169	-1.08E-06
		-0.001790	0.000141	-5.42E-11	0.000358	-0.000210	-1.08E-06
12	0	-0.001790	0.000141	1.16E-11	0.000358	-0.000210	-1.08E-06
		-0.001790	0.000141	6.03E-11	0.001470	-0.001169	-1.08E-06
12	2.100	-0.002029	9.07E-05	0.000275	0.000313	1.54E-05	-1.18E-06
		-0.002029	9.07E-05	0.002544	0.001288	-0.000803	-1.18E-06
12	4.199	-0.002270	3.95E-05	0.000382	0.000320	-2.28E-05	-1.28E-06
		-0.002270	3.95E-05	0.004523	0.001149	-0.000654	-1.28E-06
13	0	-0.002270	3.95E-05	0.000382	0.000320	-2.28E-05	-1.28E-06
		-0.002270	3.95E-05	0.004523	0.001149	-0.000654	-1.28E-06
13	2.100	-0.002513	-1.96E-05	0.000692	0.000351	-0.000114	-1.37E-06
		-0.002513	-1.96E-05	0.006261	0.001028	-0.000525	-1.37E-06
13	4.200	-0.002758	-7.97E-05	0.001106	0.000359	-0.000102	-1.45E-06
		-0.002758	-7.97E-05	0.007555	0.000877	-0.000270	-1.45E-06
14	0	-0.002758	-7.97E-05	0.001106	0.000359	-0.000102	-1.45E-06
		-0.002758	-7.97E-05	0.007555	0.000877	-0.000270	-1.45E-06
14	2.100	-0.003003	-0.000149	0.001403	0.000317	-3.03E-06	-1.52E-06
		-0.003003	-0.000149	0.008175	0.000676	8.14E-05	-1.52E-06
14	4.200	-0.003246	-0.000217	0.001449	0.000270	0.000114	-1.58E-06
		-0.003246	-0.000217	0.007945	0.000471	0.000451	-1.58E-06
15	0	-0.003246	-0.000217	0.001449	0.000270	0.000114	-1.58E-06
		-0.003246	-0.000217	0.007945	0.000471	0.000451	-1.58E-06
15	2.100	-0.003485	-0.000293	0.001257	0.000185	0.000212	-1.63E-06
		-0.003485	-0.000293	0.006910	0.000234	0.000787	-1.63E-06
15	4.201	-0.003721	-0.000368	0.000820	0.000102	0.000308	-1.67E-06
		-0.003721	-0.000368	0.005080	4.76E-06	0.001098	-1.67E-06
16	0	-0.003721	-0.000368	0.000820	0.000102	0.000308	-1.67E-06
		-0.003721	-0.000368	0.005080	4.76E-06	0.001098	-1.67E-06
16	2.099	-0.003952	-0.000450	0.000173	-6.62E-06	0.000367	-1.69E-06
		-0.003952	-0.000450	0.002568	-0.000237	0.001336	-1.69E-06
16	4.198	-0.004180	-0.000531	-0.000656	-0.000217	0.000800	-1.70E-06
		-0.004180	-0.000531	-0.000462	-0.000340	0.001091	-1.70E-06

Escala 1 :442,5
Displacements envelope DZ [M], GWSP LU (ELS DEFORMACIONES 4), View "LIST"
- Struktur: Staebe
- Minimum displacements DZ, Ueberh: 2.0E2
- Maximum displacements DZ, Ueberh: 2.0E2
- Label minimum value DZ-Min. [M]
- Label maximum value DZ-Max. [M]



ENVOLVENTE: LV 'ELS DEFORMACIONES 5'

Grupo	Espe.	Hipótesis	Factor	Etapa	Título
A	PERM.	1	1.000		Peso Propio
	Y	3	1.000		Carga Muerta Máxima
	Y	20	0.780000		Pretensado
B	MAS	19	0.600000		gradiente
C	MAS	34	1.000		Carro 1 pila excéntrico
D	MAS	4	1.000		Sobrecarga centrada vano 1
E	MAS	5	1.000		Sobrecarga centrada vano 2
F	MAS	6	1.000		Sobrecarga centrada vano 3
ALTERNATIVA PARA ENVOLVENTE:					
G	PERM.	1	1.000		Peso Propio
	Y	3	1.000		Carga Muerta Máxima
	Y	20	0.780000		Pretensado
H	MAS	19	0.600000		gradiente
I	MAS	34	1.000		Carro 1 pila excéntrico
J	MAS	7	1.000		Sobrecarga excéntrica vano 1 (
K	MAS	8	1.000		Sobrecarga excentrica vano 2 (
L	MAS	9	1.000		Sobrecarga excentrica vano 3 (
ALTERNATIVA PARA ENVOLVENTE:					
M	PERM.	1	1.000		Peso Propio
	Y	3	1.000		Carga Muerta Máxima
	Y	20	0.780000		Pretensado
N	MAS	19	0.600000		gradiente
O	MAS	34	1.000		Carro 1 pila excéntrico
P	MAS	10	1.000		Sobrecarga excéntrica vano 1 (
Q	MAS	11	1.000		Sobrecarga excentrica vano 2 (
R	MAS	12	1.000		Sobrecarga excentrica vano 3 (

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

Barra	Dist. [m]	DX [m]	DY [m]	DZ [m]	RX [rad]	RY [rad]	RZ [rad]
1	0	0.004214	-5.40E-05	-0.000626	-0.000139	-0.000769	1.72E-06
		0.004214	-5.40E-05	-0.000407	-0.000188	-0.001113	1.72E-06
1	2.100	0.003978	6.01E-07	9.68E-05	-0.000106	-0.000298	1.71E-06
		0.003978	6.01E-07	0.002615	-5.16E-05	-0.001348	1.71E-06
1	4.200	0.003739	5.57E-05	0.000678	-0.000124	-0.000212	1.69E-06

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

Barra	Dist. [m]	DX [m]	DY [m]	DZ [m]	RX [rad]	RY [rad]	RZ [rad]
		0.003739	5.57E-05	0.005106	0.000160	-0.001087	1.69E-06
2	0	0.003739	5.57E-05	0.000678	-0.000124	-0.000212	1.69E-06
		0.003739	5.57E-05	0.005106	0.000160	-0.001087	1.69E-06
2	2.100	0.003496	0.000104	0.001057	-0.000168	-9.98E-05	1.65E-06
		0.003496	0.000104	0.006917	0.000354	-0.000755	1.65E-06
2	4.199	0.003250	0.000153	0.001221	-0.000213	1.17E-05	1.60E-06
		0.003250	0.000153	0.007937	0.000552	-0.000396	1.60E-06
3	0	0.003250	0.000153	0.001221	-0.000213	1.17E-05	1.60E-06
		0.003250	0.000153	0.007937	0.000552	-0.000396	1.60E-06
3	2.100	0.003001	0.000193	0.001151	-0.000302	0.000133	1.54E-06
		0.003001	0.000193	0.008163	0.000713	-6.66E-06	1.54E-06
3	4.200	0.002749	0.000233	0.000871	-0.000395	0.000233	1.46E-06
		0.002749	0.000233	0.007539	0.000870	0.000365	1.46E-06
4	0	0.002749	0.000233	0.000871	-0.000395	0.000233	1.46E-06
		0.002749	0.000233	0.007539	0.000870	0.000365	1.46E-06
4	2.100	0.002498	0.000266	0.000470	-0.000528	0.000234	1.38E-06
		0.002498	0.000266	0.006245	0.000991	0.000634	1.38E-06
4	4.200	0.002251	0.000297	0.000228	-0.000673	0.000127	1.29E-06
		0.002251	0.000297	0.004508	0.001096	0.000776	1.29E-06
5	0	0.002251	0.000297	0.000228	-0.000673	0.000127	1.29E-06
		0.002251	0.000297	0.004508	0.001096	0.000776	1.29E-06
5	2.099	0.002005	0.000320	0.000179	-0.000771	6.96E-05	1.19E-06
		0.002005	0.000320	0.002537	0.001217	0.000939	1.19E-06
5	4.198	0.001761	0.000343	-9.72E-12	-0.000753	0.000297	1.09E-06
		0.001761	0.000343	4.26E-11	0.001356	0.001325	1.09E-06
6	0	0.001761	0.000343	-7.49E-11	0.001356	0.001325	1.09E-06
		0.001761	0.000343	-1.41E-11	-0.000753	0.000297	1.09E-06
6	2.700	0.001452	0.000360	-0.004358	0.001604	0.001646	9.48E-07
		0.001452	0.000360	-0.001179	-0.000527	0.000542	9.48E-07
6	5.400	0.001148	0.000377	-0.008822	0.001828	0.001451	7.83E-07
		0.001148	0.000377	-0.002431	-0.000319	0.000397	7.83E-07
7	0	0.001148	0.000377	-0.008822	0.001828	0.001451	7.83E-07
		0.001148	0.000377	-0.002431	-0.000319	0.000397	7.83E-07
7	2.700	0.000850	0.000380	-0.012333	0.002022	0.001130	6.02E-07
		0.000850	0.000380	-0.003252	-0.000115	0.000227	6.02E-07
7	5.400	0.000555	0.000383	-0.014985	0.002217	0.000819	4.09E-07
		0.000555	0.000383	-0.003730	9.02E-05	0.000142	4.09E-07
8	0	0.000555	0.000383	-0.014985	0.002217	0.000819	4.09E-07
		0.000555	0.000383	-0.003730	9.02E-05	0.000142	4.09E-07
8	2.700	0.000263	0.000374	-0.016549	0.002304	0.000495	2.08E-07

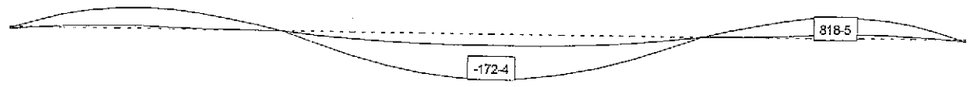
DEFORMATIONEN: ""
ENVOLVENTE para < DZ > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Dist. [m]	DX [m]	DY [m]	DZ [m]	RX [rad]	RY [rad]	RZ [rad]
		0.000263	0.000374	-0.004036	0.000218	9.62E-05	2.08E-07
8	5.399	-2.54E-05	0.000364	-0.017174	0.002393	0.000132	3.61E-09
		-2.54E-05	0.000364	-0.004188	0.000346	3.51E-05	3.61E-09
9	0	-2.54E-05	0.000364	-0.017174	0.002393	0.000132	3.61E-09
		-2.54E-05	0.000364	-0.004188	0.000346	3.51E-05	3.61E-09
9	2.700	-0.000313	0.000341	-0.016523	0.002340	-0.000240	-2.01E-07
		-0.000313	0.000341	-0.004117	0.000367	-3.07E-05	-2.01E-07
9	5.401	-0.000604	0.000317	-0.014932	0.002283	-0.000571	-4.02E-07
		-0.000604	0.000317	-0.003883	0.000386	-8.35E-05	-4.02E-07
10	0	-0.000604	0.000317	-0.014932	0.002283	-0.000571	-4.02E-07
		-0.000604	0.000317	-0.003883	0.000386	-8.35E-05	-4.02E-07
10	2.700	-0.000897	0.000281	-0.012253	0.002119	-0.000904	-5.94E-07
		-0.000897	0.000281	-0.003430	0.000333	-0.000184	-5.94E-07
10	5.399	-0.001192	0.000243	-0.008712	0.001956	-0.001248	-7.74E-07
		-0.001192	0.000243	-0.002605	0.000290	-0.000371	-7.74E-07
11	0	-0.001192	0.000243	-0.008712	0.001956	-0.001248	-7.74E-07
		-0.001192	0.000243	-0.002605	0.000290	-0.000371	-7.74E-07
11	2.662	-0.001488	0.000193	-0.004297	0.001754	-0.001459	-9.36E-07
		-0.001488	0.000193	-0.001277	0.000242	-0.000522	-9.36E-07
11	5.324	-0.001790	0.000141	-1.23E-10	0.001470	-0.001169	-1.08E-06
		-0.001790	0.000141	-5.72E-11	0.000133	-0.000294	-1.08E-06
12	0	-0.001790	0.000141	1.32E-11	0.000133	-0.000294	-1.08E-06
		-0.001790	0.000141	6.03E-11	0.001470	-0.001169	-1.08E-06
12	2.100	-0.002029	9.07E-05	0.000346	0.000107	-5.62E-05	-1.18E-06
		-0.002029	9.07E-05	0.002544	0.001288	-0.000803	-1.18E-06
12	4.199	-0.002270	3.95E-05	0.000508	0.000135	-8.28E-05	-1.28E-06
		-0.002270	3.95E-05	0.004523	0.001149	-0.000654	-1.28E-06
13	0	-0.002270	3.95E-05	0.000508	0.000135	-8.28E-05	-1.28E-06
		-0.002270	3.95E-05	0.004523	0.001149	-0.000654	-1.28E-06
13	2.100	-0.002513	-1.96E-05	0.000845	0.000187	-0.000163	-1.37E-06
		-0.002513	-1.96E-05	0.006261	0.001028	-0.000525	-1.37E-06
13	4.200	-0.002758	-7.97E-05	0.001275	0.000215	-0.000140	-1.45E-06
		-0.002758	-7.97E-05	0.007555	0.000877	-0.000270	-1.45E-06
14	0	-0.002758	-7.97E-05	0.001275	0.000215	-0.000140	-1.45E-06
		-0.002758	-7.97E-05	0.007555	0.000877	-0.000270	-1.45E-06
14	2.100	-0.003003	-0.000149	0.001566	0.000194	-3.07E-05	-1.52E-06
		-0.003003	-0.000149	0.008175	0.000676	8.14E-05	-1.52E-06
14	4.200	-0.003246	-0.000217	0.001597	0.000169	9.63E-05	-1.58E-06
		-0.003246	-0.000217	0.007945	0.000471	0.000451	-1.58E-06
15	0	-0.003246	-0.000217	0.001597	0.000169	9.63E-05	-1.58E-06

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

Barra	Dist. [m]	DX [m]	DY [m]	DZ [m]	RX [rad]	RY [rad]	RZ [rad]
		-0.003246	-0.000217	0.007945	0.000471	0.000451	-1.58E-06
15	2.100	-0.003485	-0.000293	0.001376	0.000106	0.000204	-1.63E-06
		-0.003485	-0.000293	0.006910	0.000234	0.000787	-1.63E-06
15	4.201	-0.003721	-0.000368	0.000905	4.36E-05	0.000308	-1.67E-06
		-0.003721	-0.000368	0.005080	4.76E-06	0.001098	-1.67E-06
16	0	-0.003721	-0.000368	0.000905	4.36E-05	0.000308	-1.67E-06
		-0.003721	-0.000368	0.005080	4.76E-06	0.001098	-1.67E-06
16	2.099	-0.003952	-0.000450	0.000217	-4.29E-05	0.000376	-1.69E-06
		-0.003952	-0.000450	0.002568	-0.000237	0.001336	-1.69E-06
16	4.198	-0.004180	-0.000531	-0.000654	-0.000231	0.000817	-1.70E-06
		-0.004180	-0.000531	-0.000462	-0.000340	0.001091	-1.70E-06

Escala 1:442,5
Displacements envelope DZ [M], GWSP LV (ELS DEFORMACIONES 5), View "LIST"
- Struktur: Staebe
- Minimum displacements DZ, Ueberh: 2.0E2
- Maximum displacements DZ, Ueberh: 2.0E2
- Label minimum value DZ-Min. [M]
- Label maximum value DZ-Max. [M]



ENVOLVENTE: LW 'ELS DEFORMACIONES 6'

Grupo	Espe.	Hipótesis	Factor	Etapa	Título
A	PERM.	1	1.000		Peso Propio
	Y	3	1.000		Carga Muerta Máxima
	Y	20	0.957000		Pretensado
B	MAS	19	0.600000		gradiente
C	MAS	21	1.000		Carro 2 centrado
D	MAS	4	1.000		Sobrecarga centrada vano 1
E	MAS	5	1.000		Sobrecarga centrada vano 2
F	MAS	6	1.000		Sobrecarga centrada vano 3
ALTERNATIVA PARA ENVOLVENTE:					
G	PERM.	1	1.000		Peso Propio
	Y	3	1.000		Carga Muerta Máxima
	Y	20	0.957000		Pretensado
H	MAS	19	0.600000		gradiente
I	MAS	21	1.000		Carro 2 centrado
J	MAS	7	1.000		Sobrecarga excéntrica vano 1 (
K	MAS	8	1.000		Sobrecarga excentrica vano 2 (
L	MAS	9	1.000		Sobrecarga excentrica vano 3 (
ALTERNATIVA PARA ENVOLVENTE:					
M	PERM.	1	1.000		Peso Propio

	Y	3	1.000	Carga Muerta Máxima
	Y	20	0.957000	Pretensado
N	MAS	19	0.600000	gradiente
O	MAS	21	1.000	Carro 2 centrado
P	MAS	10	1.000	Sobrecarga excéntrica vano 1 (
Q	MAS	11	1.000	Sobrecarga excentrica vano 2 (
R	MAS	12	1.000	Sobrecarga excentrica vano 3 (

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

Barra	Dist. [m]	DX [m]	DY [m]	DZ [m]	RX [rad]	RY [rad]	RZ [rad]
1	0	0.005170	-6.63E-05	-0.000600	-0.000163	-0.001188	2.11E-06
		0.005170	-6.63E-05	-0.000368	-0.000286	-0.001632	2.11E-06
1	2.100	0.004880	7.38E-07	0.000958	4.03E-05	-0.000709	2.10E-06
		0.004880	7.38E-07	0.003728	-0.000128	-0.001827	2.10E-06
1	4.200	0.004587	6.84E-05	0.002225	0.000205	-0.000562	2.07E-06
		0.004587	6.84E-05	0.007138	0.000116	-0.001467	2.07E-06
2	0	0.004587	6.84E-05	0.002225	0.000205	-0.000562	2.07E-06
		0.004587	6.84E-05	0.007138	0.000116	-0.001467	2.07E-06
2	2.100	0.004289	0.000128	0.003066	0.000347	-0.000349	2.02E-06
		0.004289	0.000128	0.009606	0.000348	-0.000997	2.02E-06
2	4.199	0.003988	0.000187	0.003396	0.000491	-0.000122	1.96E-06
		0.003988	0.000187	0.010960	0.000589	-0.000481	1.96E-06
3	0	0.003988	0.000187	0.003396	0.000491	-0.000122	1.96E-06
		0.003988	0.000187	0.010960	0.000589	-0.000481	1.96E-06
3	2.100	0.003682	0.000237	0.003231	0.000588	0.000120	1.88E-06
		0.003682	0.000237	0.011176	0.000788	7.04E-05	1.88E-06
3	4.200	0.003373	0.000286	0.002569	0.000677	0.000317	1.79E-06
		0.003373	0.000286	0.010209	0.000981	0.000586	1.79E-06
4	0	0.003373	0.000286	0.002569	0.000677	0.000317	1.79E-06
		0.003373	0.000286	0.010209	0.000981	0.000586	1.79E-06
4	2.100	0.003065	0.000326	0.001651	0.000718	0.000365	1.69E-06
		0.003065	0.000326	0.008315	0.001130	0.000948	1.69E-06
4	4.200	0.002762	0.000364	0.000832	0.000738	0.000230	1.58E-06
		0.002762	0.000364	0.005852	0.001255	0.001112	1.58E-06
5	0	0.002762	0.000364	0.000832	0.000738	0.000230	1.58E-06
		0.002762	0.000364	0.005852	0.001255	0.001112	1.58E-06
5	2.099	0.002460	0.000393	0.000387	0.000772	9.43E-05	1.47E-06
		0.002460	0.000393	0.003171	0.001395	0.001249	1.47E-06
5	4.198	0.002161	0.000421	-8.38E-12	0.000826	0.000202	1.34E-06
		0.002161	0.000421	5.40E-11	0.001552	0.001590	1.34E-06
6	0	0.002161	0.000421	-8.97E-11	0.001552	0.001590	1.34E-06
		0.002161	0.000421	-1.30E-11	0.000826	0.000202	1.34E-06

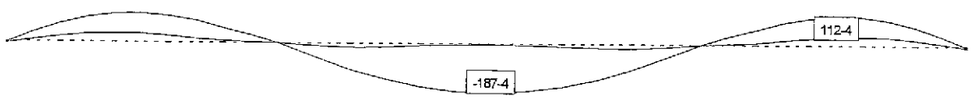
DEFORMATIONEN: ""
ENVOLVENTE para < DZ > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Dist. [m]	DX [m]	DY [m]	DZ [m]	RX [rad]	RY [rad]	RZ [rad]
6	2.700	0.001781	0.000442	-0.005000	0.001831	0.001831	1.16E-06
		0.001781	0.000442	-0.000886	0.000981	0.000276	1.16E-06
6	5.400	0.001408	0.000463	-0.009869	0.002084	0.001547	9.60E-07
		0.001408	0.000463	-0.001436	0.001120	1.61E-05	9.60E-07
7	0	0.001408	0.000463	-0.009869	0.002084	0.001547	9.60E-07
		0.001408	0.000463	-0.001436	0.001120	1.61E-05	9.60E-07
7	2.700	0.001043	0.000467	-0.013570	0.002308	0.001182	7.38E-07
		0.001043	0.000467	-0.001207	0.001257	-0.000164	7.38E-07
7	5.400	0.000681	0.000470	-0.016358	0.002532	0.000869	5.02E-07
		0.000681	0.000470	-0.000758	0.001396	-0.000152	5.02E-07
8	0	0.000681	0.000470	-0.016358	0.002532	0.000869	5.02E-07
		0.000681	0.000470	-0.000758	0.001396	-0.000152	5.02E-07
8	2.700	0.000323	0.000458	-0.018034	0.002633	0.000547	2.56E-07
		0.000323	0.000458	-0.000358	0.001446	-3.66E-05	2.56E-07
8	5.399	-3.12E-05	0.000446	-0.018729	0.002737	0.000152	4.43E-09
		-3.12E-05	0.000446	-0.000285	0.001497	8.83E-05	4.43E-09
9	0	-3.12E-05	0.000446	-0.018729	0.002737	0.000152	4.43E-09
		-3.12E-05	0.000446	-0.000285	0.001497	8.83E-05	4.43E-09
9	2.700	-0.000385	0.000418	-0.018010	0.002671	-0.000252	-2.47E-07
		-0.000385	0.000418	-0.000373	0.001428	0.000206	-2.47E-07
9	5.401	-0.000742	0.000389	-0.016310	0.002600	-0.000586	-4.93E-07
		-0.000742	0.000389	-0.000784	0.001360	0.000312	-4.93E-07
10	0	-0.000742	0.000389	-0.016310	0.002600	-0.000586	-4.93E-07
		-0.000742	0.000389	-0.000784	0.001360	0.000312	-4.93E-07
10	2.700	-0.001101	0.000344	-0.013493	0.002406	-0.000925	-7.29E-07
		-0.001101	0.000344	-0.001234	0.001216	0.000302	-7.29E-07
10	5.399	-0.001463	0.000299	-0.009755	0.002218	-0.001318	-9.50E-07
		-0.001463	0.000299	-0.001444	0.001096	9.93E-05	-9.50E-07
11	0	-0.001463	0.000299	-0.009755	0.002218	-0.001318	-9.50E-07
		-0.001463	0.000299	-0.001444	0.001096	9.93E-05	-9.50E-07
11	2.662	-0.001826	0.000237	-0.004934	0.001995	-0.001620	-1.15E-06
		-0.001826	0.000237	-0.000882	0.000986	-0.000171	-1.15E-06
11	5.324	-0.002196	0.000173	-1.43E-10	0.001690	-0.001411	-1.32E-06
		-0.002196	0.000173	-5.37E-11	0.000822	-0.000115	-1.32E-06
12	0	-0.002196	0.000173	1.15E-11	0.000822	-0.000115	-1.32E-06
		-0.002196	0.000173	7.21E-11	0.001690	-0.001411	-1.32E-06
12	2.100	-0.002489	0.000111	0.000397	0.000757	-1.45E-05	-1.45E-06
		-0.002489	0.000111	0.003179	0.001495	-0.001091	-1.45E-06
12	4.199	-0.002786	4.85E-05	0.000855	0.000740	-0.000153	-1.57E-06
		-0.002786	4.85E-05	0.005868	0.001340	-0.000970	-1.57E-06

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

Barra	Dist. [m]	DX [m]	DY [m]	DZ [m]	RX [rad]	RY [rad]	RZ [rad]
13	0	-0.002786	4.85E-05	0.000855	0.000740	-0.000153	-1.57E-06
		-0.002786	4.85E-05	0.005868	0.001340	-0.000970	-1.57E-06
13	2.100	-0.003083	-2.41E-05	0.001680	0.000736	-0.000289	-1.68E-06
		-0.003083	-2.41E-05	0.008330	0.001195	-0.000821	-1.68E-06
13	4.200	-0.003384	-9.78E-05	0.002604	0.000690	-0.000245	-1.78E-06
		-0.003384	-9.78E-05	0.010221	0.001004	-0.000478	-1.78E-06
14	0	-0.003384	-9.78E-05	0.002604	0.000690	-0.000245	-1.78E-06
		-0.003384	-9.78E-05	0.010221	0.001004	-0.000478	-1.78E-06
14	2.100	-0.003685	-0.000182	0.003269	0.000577	-5.81E-05	-1.87E-06
		-0.003685	-0.000182	0.011183	0.000751	1.28E-05	-1.87E-06
14	4.200	-0.003983	-0.000266	0.003434	0.000453	0.000172	-1.94E-06
		-0.003983	-0.000266	0.010959	0.000488	0.000538	-1.94E-06
15	0	-0.003983	-0.000266	0.003434	0.000453	0.000172	-1.94E-06
		-0.003983	-0.000266	0.010959	0.000488	0.000538	-1.94E-06
15	2.100	-0.004276	-0.000359	0.003095	0.000285	0.000385	-2.00E-06
		-0.004276	-0.000359	0.009585	0.000192	0.001026	-2.00E-06
15	4.201	-0.004566	-0.000451	0.002237	0.000122	0.000585	-2.05E-06
		-0.004566	-0.000451	0.007094	-9.15E-05	0.001470	-2.05E-06
16	0	-0.004566	-0.000451	0.002237	0.000122	0.000585	-2.05E-06
		-0.004566	-0.000451	0.007094	-9.15E-05	0.001470	-2.05E-06
16	2.099	-0.004849	-0.000552	0.000950	-5.94E-05	0.000716	-2.08E-06
		-0.004849	-0.000552	0.003660	-0.000378	0.001801	-2.08E-06
16	4.198	-0.005129	-0.000652	-0.000659	-0.000326	0.001171	-2.09E-06
		-0.005129	-0.000652	-0.000447	-0.000507	0.001594	-2.09E-06

Escala 1 :442,5
Displacements envelope DZ [M], GWSP LW (ELS DEFORMACIONES 6), View "LIST"
- Struktur: Staebe
- Minimum displacements DZ, Ueberh: 2.0E2
- Maximum displacements DZ, Ueberh: 2.0E2
- Label minimum value DZ-Min. [M]
- Label maximum value DZ-Max. [M]



ENVOLVENTE: LX 'ELS DEFORMACIONES 7'

Grupo	Espe.	Hipótesis	Factor	Etapa	Título
A	PERM.	1	1.000		Peso Propio
	Y	3	1.000		Carga Muerta Máxima
	Y	20	0.957000		Pretensado
B	MAS	19	0.600000		gradiente
C	MAS	22	1.000		Carro 1 centrado
D	MAS	4	1.000		Sobrecarga centrada vano 1
E	MAS	5	1.000		Sobrecarga centrada vano 2
F	MAS	6	1.000		Sobrecarga centrada vano 3
ALTERNATIVA PARA ENVOLVENTE:					
G	PERM.	1	1.000		Peso Propio
	Y	3	1.000		Carga Muerta Máxima
	Y	20	0.957000		Pretensado
H	MAS	19	0.600000		gradiente
I	MAS	22	1.000		Carro 1 centrado
J	MAS	7	1.000		Sobrecarga excéntrica vano 1 (
K	MAS	8	1.000		Sobrecarga excentrica vano 2 (
L	MAS	9	1.000		Sobrecarga excentrica vano 3 (
ALTERNATIVA PARA ENVOLVENTE:					
M	PERM.	1	1.000		Peso Propio
	Y	3	1.000		Carga Muerta Máxima
	Y	20	0.957000		Pretensado
N	MAS	19	0.600000		gradiente
O	MAS	22	1.000		Carro 1 centrado
P	MAS	10	1.000		Sobrecarga excéntrica vano 1 (
Q	MAS	11	1.000		Sobrecarga excentrica vano 2 (
R	MAS	12	1.000		Sobrecarga excentrica vano 3 (

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

Barra	Dist. [m]	DX [m]	DY [m]	DZ [m]	RX [rad]	RY [rad]	RZ [rad]
1	0	0.005170	-6.63E-05	-0.000688	-8.77E-05	-0.000825	2.11E-06
		0.005170	-6.63E-05	-0.000399	-0.000250	-0.001463	2.11E-06
1	2.100	0.004880	7.38E-07	0.000104	0.000126	-0.000365	2.10E-06
		0.004880	7.38E-07	0.003338	-8.68E-05	-0.001665	2.10E-06
1	4.200	0.004587	6.84E-05	0.000673	0.000293	-0.000269	2.07E-06
		0.004587	6.84E-05	0.006410	0.000162	-0.001321	2.07E-06
2	0	0.004587	6.84E-05	0.000673	0.000293	-0.000269	2.07E-06
		0.004587	6.84E-05	0.006410	0.000162	-0.001321	2.07E-06
2	2.100	0.004289	0.000128	0.000954	0.000430	-0.000137	2.02E-06
		0.004289	0.000128	0.008585	0.000394	-0.000878	2.02E-06
2	4.199	0.003988	0.000187	0.000928	0.000563	-2.28E-05	1.96E-06
		0.003988	0.000187	0.009712	0.000634	-0.000398	1.96E-06
3	0	0.003988	0.000187	0.000928	0.000563	-2.28E-05	1.96E-06
		0.003988	0.000187	0.009712	0.000634	-0.000398	1.96E-06
3	2.100	0.003682	0.000237	0.000679	0.000638	8.15E-05	1.88E-06
		0.003682	0.000237	0.009790	0.000828	0.000106	1.88E-06
3	4.200	0.003373	0.000286	0.000224	0.000707	0.000148	1.79E-06
		0.003373	0.000286	0.008793	0.001016	0.000565	1.79E-06

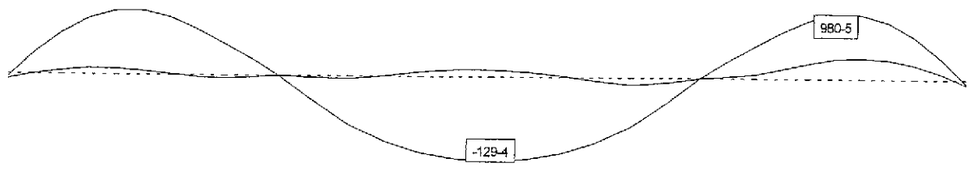
DEFORMATIONEN: ""
ENVOLVENTE para < DZ > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Dist. [m]	DX [m]	DY [m]	DZ [m]	RX [rad]	RY [rad]	RZ [rad]
4	0	0.003373	0.000286	0.000224	0.000707	0.000148	1.79E-06
		0.003373	0.000286	0.008793	0.001016	0.000565	1.79E-06
4	2.100	0.003065	0.000326	-0.000241	0.000727	0.000103	1.69E-06
		0.003065	0.000326	0.007002	0.001155	0.000861	1.69E-06
4	4.200	0.002762	0.000364	-0.000456	0.000730	-8.02E-05	1.58E-06
		0.002762	0.000364	0.004795	0.001269	0.000948	1.58E-06
5	0	0.002762	0.000364	-0.000456	0.000730	-8.02E-05	1.58E-06
		0.002762	0.000364	0.004795	0.001269	0.000948	1.58E-06
5	2.099	0.002460	0.000393	-0.000239	0.000752	-0.000219	1.47E-06
		0.002460	0.000393	0.002545	0.001393	0.000998	1.47E-06
5	4.198	0.002161	0.000421	-2.28E-11	0.000797	-7.08E-05	1.34E-06
		0.002161	0.000421	4.01E-11	0.001533	0.001242	1.34E-06
6	0	0.002161	0.000421	-7.09E-11	0.001533	0.001242	1.34E-06
		0.002161	0.000421	1.76E-12	0.000797	-7.08E-05	1.34E-06
6	2.700	0.001781	0.000442	-0.003910	0.001785	0.001383	1.16E-06
		0.001781	0.000442	-0.000249	0.000947	7.91E-05	1.16E-06
6	5.400	0.001408	0.000463	-0.007501	0.002015	0.001063	9.60E-07
		0.001408	0.000463	-0.000356	0.001080	-0.000114	9.60E-07
7	0	0.001408	0.000463	-0.007501	0.002015	0.001063	9.60E-07
		0.001408	0.000463	-0.000356	0.001080	-0.000114	9.60E-07
7	2.700	0.001043	0.000467	-0.009917	0.002217	0.000725	7.38E-07
		0.001043	0.000467	0.000144	0.001215	-0.000235	7.38E-07
7	5.400	0.000681	0.000470	-0.011575	0.002419	0.000501	5.02E-07
		0.000681	0.000470	0.000719	0.001351	-0.000174	5.02E-07
8	0	0.000681	0.000470	-0.011575	0.002419	0.000501	5.02E-07
		0.000681	0.000470	0.000719	0.001351	-0.000174	5.02E-07
8	2.700	0.000323	0.000458	-0.012461	0.002503	0.000331	2.56E-07
		0.000323	0.000458	0.001118	0.001402	-1.81E-05	2.56E-07
8	5.399	-3.12E-05	0.000446	-0.012861	0.002588	0.000145	4.43E-09
		-3.12E-05	0.000446	0.001091	0.001453	0.000139	4.43E-09
9	0	-3.12E-05	0.000446	-0.012861	0.002588	0.000145	4.43E-09
		-3.12E-05	0.000446	0.001091	0.001453	0.000139	4.43E-09
9	2.700	-0.000385	0.000418	-0.012448	0.002518	-4.89E-05	-2.47E-07
		-0.000385	0.000418	0.000825	0.001386	0.000280	-2.47E-07
9	5.401	-0.000742	0.000389	-0.011547	0.002446	-0.000230	-4.93E-07
		-0.000742	0.000389	0.000183	0.001321	0.000401	-4.93E-07
10	0	-0.000742	0.000389	-0.011547	0.002446	-0.000230	-4.93E-07
		-0.000742	0.000389	0.000183	0.001321	0.000401	-4.93E-07
10	2.700	-0.001101	0.000344	-0.009868	0.002264	-0.000479	-7.29E-07
		-0.001101	0.000344	-0.000527	0.001183	0.000397	-7.29E-07

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

Barra	Dist. [m]	DX [m]	DY [m]	DZ [m]	RX [rad]	RY [rad]	RZ [rad]
10	5.399	-0.001463	0.000299	-0.007419	0.002096	-0.000844	-9.50E-07
		-0.001463	0.000299	-0.001001	0.001068	0.000192	-9.50E-07
11	0	-0.001463	0.000299	-0.007419	0.002096	-0.000844	-9.50E-07
		-0.001463	0.000299	-0.001001	0.001068	0.000192	-9.50E-07
11	2.662	-0.001826	0.000237	-0.003858	0.001901	-0.001180	-1.15E-06
		-0.001826	0.000237	-0.000681	0.000964	-8.93E-05	-1.15E-06
11	5.324	-0.002196	0.000173	-1.19E-10	0.001634	-0.001067	-1.32E-06
		-0.002196	0.000173	-4.96E-11	0.000808	-5.19E-05	-1.32E-06
12	0	-0.002196	0.000173	8.82E-12	0.000808	-5.19E-05	-1.32E-06
		-0.002196	0.000173	5.74E-11	0.001634	-0.001067	-1.32E-06
12	2.100	-0.002489	0.000111	0.000281	0.000748	3.11E-05	-1.45E-06
		-0.002489	0.000111	0.002552	0.001466	-0.000841	-1.45E-06
12	4.199	-0.002786	4.85E-05	0.000659	0.000736	-0.000123	-1.57E-06
		-0.002786	4.85E-05	0.004810	0.001337	-0.000805	-1.57E-06
13	0	-0.002786	4.85E-05	0.000659	0.000736	-0.000123	-1.57E-06
		-0.002786	4.85E-05	0.004810	0.001337	-0.000805	-1.57E-06
13	2.100	-0.003083	-2.41E-05	0.001437	0.000736	-0.000273	-1.68E-06
		-0.003083	-2.41E-05	0.007016	0.001212	-0.000732	-1.68E-06
13	4.200	-0.003384	-9.78E-05	0.002341	0.000694	-0.000241	-1.78E-06
		-0.003384	-9.78E-05	0.008805	0.001039	-0.000453	-1.78E-06
14	0	-0.003384	-9.78E-05	0.002341	0.000694	-0.000241	-1.78E-06
		-0.003384	-9.78E-05	0.008805	0.001039	-0.000453	-1.78E-06
14	2.100	-0.003685	-0.000182	0.003012	0.000584	-6.44E-05	-1.87E-06
		-0.003685	-0.000182	0.009797	0.000798	-1.83E-05	-1.87E-06
14	4.200	-0.003983	-0.000266	0.003203	0.000462	0.000158	-1.94E-06
		-0.003983	-0.000266	0.009712	0.000546	0.000461	-1.94E-06
15	0	-0.003983	-0.000266	0.003203	0.000462	0.000158	-1.94E-06
		-0.003983	-0.000266	0.009712	0.000546	0.000461	-1.94E-06
15	2.100	-0.004276	-0.000359	0.002906	0.000296	0.000364	-2.00E-06
		-0.004276	-0.000359	0.008568	0.000254	0.000913	-2.00E-06
15	4.201	-0.004566	-0.000451	0.002104	0.000133	0.000559	-2.05E-06
		-0.004566	-0.000451	0.006371	-2.67E-05	0.001331	-2.05E-06
16	0	-0.004566	-0.000451	0.002104	0.000133	0.000559	-2.05E-06
		-0.004566	-0.000451	0.006371	-2.67E-05	0.001331	-2.05E-06
16	2.099	-0.004849	-0.000552	0.000879	-4.81E-05	0.000687	-2.08E-06
		-0.004849	-0.000552	0.003276	-0.000315	0.001645	-2.08E-06
16	4.198	-0.005129	-0.000652	-0.000663	-0.000315	0.001141	-2.09E-06
		-0.005129	-0.000652	-0.000470	-0.000448	0.001430	-2.09E-06

Escala 1 :442,5
Displacements envelope DZ [M], GWSP LX (ELS DEFORMACIONES 7), View "LIST"
- Struktur: Staebe
- Minimum displacements DZ, Ueberh: 5.0E2
- Maximum displacements DZ, Ueberh: 5.0E2
- Label minimum value DZ-Min. [M]
- Label maximum value DZ-Max. [M]



ENVOLVENTE: LY 'ELS DEFORMACIONES 8'

Grupo	Espe.	Hipótesis	Factor	Etapa	Título
A	PERM.	1	1.000		Peso Propio
	Y	3	1.000		Carga Muerta Máxima
	Y	20	0.957000		Pretensado
B	MAS	19	0.600000		gradiente
C	MAS	31	1.000		Carro 2 excéntrico
D	MAS	4	1.000		Sobrecarga centrada vano 1
E	MAS	5	1.000		Sobrecarga centrada vano 2
F	MAS	6	1.000		Sobrecarga centrada vano 3
ALTERNATIVA PARA ENVOLVENTE:					
G	PERM.	1	1.000		Peso Propio
	Y	3	1.000		Carga Muerta Máxima
	Y	20	0.957000		Pretensado
H	MAS	19	0.600000		gradiente
I	MAS	31	1.000		Carro 2 excéntrico
J	MAS	7	1.000		Sobrecarga excéntrica vano 1 (
K	MAS	8	1.000		Sobrecarga excentrica vano 2 (
L	MAS	9	1.000		Sobrecarga excentrica vano 3 (
ALTERNATIVA PARA ENVOLVENTE:					
M	PERM.	1	1.000		Peso Propio
	Y	3	1.000		Carga Muerta Máxima
	Y	20	0.957000		Pretensado
N	MAS	19	0.600000		gradiente
O	MAS	31	1.000		Carro 2 excéntrico
P	MAS	10	1.000		Sobrecarga excéntrica vano 1 (
Q	MAS	11	1.000		Sobrecarga excentrica vano 2 (
R	MAS	12	1.000		Sobrecarga excentrica vano 3 (

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

Barra	Dist. [m]	DX [m]	DY [m]	DZ [m]	RX [rad]	RY [rad]	RZ [rad]
1	0	0.005170	-6.63E-05	-0.000600	-0.000163	-0.001188	2.11E-06
		0.005170	-6.63E-05	-0.000375	-0.000315	-0.001611	2.11E-06
1	2.100	0.004880	7.38E-07	0.000958	4.03E-05	-0.000709	2.10E-06
		0.004880	7.38E-07	0.003692	-0.000252	-0.001788	2.10E-06
1	4.200	0.004587	6.84E-05	0.002225	0.000205	-0.000562	2.07E-06
		0.004587	6.84E-05	0.007080	-0.000103	-0.001412	2.07E-06
2	0	0.004587	6.84E-05	0.002225	0.000205	-0.000562	2.07E-06
		0.004587	6.84E-05	0.007080	-0.000103	-0.001412	2.07E-06
2	2.100	0.004289	0.000128	0.003066	0.000347	-0.000349	2.02E-06
		0.004289	0.000128	0.009524	3.21E-05	-0.000931	2.02E-06
2	4.199	0.003988	0.000187	0.003396	0.000491	-0.000122	1.96E-06
		0.003988	0.000187	0.010871	0.000175	-0.000406	1.96E-06
3	0	0.003988	0.000187	0.003396	0.000491	-0.000122	1.96E-06
		0.003988	0.000187	0.010871	0.000175	-0.000406	1.96E-06
3	2.100	0.003682	0.000237	0.003231	0.000588	0.000120	1.88E-06
		0.003682	0.000237	0.011070	0.000276	0.000149	1.88E-06
3	4.200	0.003373	0.000286	0.002569	0.000677	0.000317	1.79E-06
		0.003373	0.000286	0.010111	0.000371	0.000665	1.79E-06
4	0	0.003373	0.000286	0.002569	0.000677	0.000317	1.79E-06
		0.003373	0.000286	0.010111	0.000371	0.000665	1.79E-06
4	2.100	0.003065	0.000326	0.001651	0.000718	0.000365	1.69E-06
		0.003065	0.000326	0.008213	0.000420	0.001024	1.69E-06
4	4.200	0.002762	0.000364	0.000832	0.000738	0.000230	1.58E-06
		0.002762	0.000364	0.005781	0.000445	0.001182	1.58E-06
5	0	0.002762	0.000364	0.000832	0.000738	0.000230	1.58E-06
		0.002762	0.000364	0.005781	0.000445	0.001182	1.58E-06
5	2.099	0.002460	0.000393	0.000387	0.000772	9.43E-05	1.47E-06
		0.002460	0.000393	0.003114	0.000484	0.001308	1.47E-06
5	4.198	0.002161	0.000421	-8.38E-12	0.000826	0.000202	1.34E-06
		0.002161	0.000421	5.26E-11	0.000539	0.001635	1.34E-06
6	0	0.002161	0.000421	-8.96E-11	0.000539	0.001635	1.34E-06
		0.002161	0.000421	-1.30E-11	0.000826	0.000202	1.34E-06
6	2.700	0.001781	0.000442	-0.004956	0.000685	0.001855	1.16E-06
		0.001781	0.000442	-0.000886	0.000981	0.000276	1.16E-06
6	5.400	0.001408	0.000463	-0.009705	0.000806	0.001550	9.60E-07
		0.001408	0.000463	-0.001436	0.001120	1.61E-05	9.60E-07
7	0	0.001408	0.000463	-0.009705	0.000806	0.001550	9.60E-07
		0.001408	0.000463	-0.001436	0.001120	1.61E-05	9.60E-07
7	2.700	0.001043	0.000467	-0.013364	0.000896	0.001161	7.38E-07
		0.001043	0.000467	-0.001207	0.001257	-0.000164	7.38E-07
7	5.400	0.000681	0.000470	-0.016042	0.000986	0.000823	5.02E-07

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

Barra	Dist. [m]	DX [m]	DY [m]	DZ [m]	RX [rad]	RY [rad]	RZ [rad]
		0.000681	0.000470	-0.000758	0.001396	-0.000152	5.02E-07
8	0	0.000681	0.000470	-0.016042	0.000986	0.000823	5.02E-07
		0.000681	0.000470	-0.000758	0.001396	-0.000152	5.02E-07
8	2.700	0.000323	0.000458	-0.017711	0.000952	0.000473	2.56E-07
		0.000323	0.000458	-0.000358	0.001446	-3.66E-05	2.56E-07
8	5.399	-3.12E-05	0.000446	-0.018337	0.000971	5.21E-05	4.43E-09
		-3.12E-05	0.000446	-0.000285	0.001497	8.83E-05	4.43E-09
9	0	-3.12E-05	0.000446	-0.018337	0.000971	5.21E-05	4.43E-09
		-3.12E-05	0.000446	-0.000285	0.001497	8.83E-05	4.43E-09
9	2.700	-0.000385	0.000418	-0.017691	0.000993	-0.000369	-2.47E-07
		-0.000385	0.000418	-0.000373	0.001428	0.000206	-2.47E-07
9	5.401	-0.000742	0.000389	-0.016001	0.001060	-0.000715	-4.93E-07
		-0.000742	0.000389	-0.000784	0.001360	0.000312	-4.93E-07
10	0	-0.000742	0.000389	-0.016001	0.001060	-0.000715	-4.93E-07
		-0.000742	0.000389	-0.000784	0.001360	0.000312	-4.93E-07
10	2.700	-0.001101	0.000344	-0.013297	0.001002	-0.001065	-7.29E-07
		-0.001101	0.000344	-0.001234	0.001216	0.000302	-7.29E-07
10	5.399	-0.001463	0.000299	-0.009601	0.000950	-0.001467	-9.50E-07
		-0.001463	0.000299	-0.001444	0.001096	9.93E-05	-9.50E-07
11	0	-0.001463	0.000299	-0.009601	0.000950	-0.001467	-9.50E-07
		-0.001463	0.000299	-0.001444	0.001096	9.93E-05	-9.50E-07
11	2.662	-0.001826	0.000237	-0.004894	0.000860	-0.001776	-1.15E-06
		-0.001826	0.000237	-0.000882	0.000986	-0.000171	-1.15E-06
11	5.324	-0.002196	0.000173	-1.43E-10	0.000687	-0.001574	-1.32E-06
		-0.002196	0.000173	-5.37E-11	0.000822	-0.000115	-1.32E-06
12	0	-0.002196	0.000173	1.15E-11	0.000822	-0.000115	-1.32E-06
		-0.002196	0.000173	7.05E-11	0.000687	-0.001574	-1.32E-06
12	2.100	-0.002489	0.000111	0.000397	0.000757	-1.45E-05	-1.45E-06
		-0.002489	0.000111	0.003122	0.000594	-0.001255	-1.45E-06
12	4.199	-0.002786	4.85E-05	0.000855	0.000740	-0.000153	-1.57E-06
		-0.002786	4.85E-05	0.005797	0.000541	-0.001133	-1.57E-06
13	0	-0.002786	4.85E-05	0.000855	0.000740	-0.000153	-1.57E-06
		-0.002786	4.85E-05	0.005797	0.000541	-0.001133	-1.57E-06
13	2.100	-0.003083	-2.41E-05	0.001680	0.000736	-0.000289	-1.68E-06
		-0.003083	-2.41E-05	0.008231	0.000497	-0.000979	-1.68E-06
13	4.200	-0.003384	-9.78E-05	0.002604	0.000690	-0.000245	-1.78E-06
		-0.003384	-9.78E-05	0.010129	0.000406	-0.000627	-1.78E-06
14	0	-0.003384	-9.78E-05	0.002604	0.000690	-0.000245	-1.78E-06
		-0.003384	-9.78E-05	0.010129	0.000406	-0.000627	-1.78E-06
14	2.100	-0.003685	-0.000182	0.003269	0.000577	-5.81E-05	-1.87E-06

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

Barra	Dist. [m]	DX [m]	DY [m]	DZ [m]	RX [rad]	RY [rad]	RZ [rad]
		-0.003685	-0.000182	0.011083	0.000251	-0.000124	-1.87E-06
14	4.200	-0.003983	-0.000266	0.003434	0.000453	0.000172	-1.94E-06
		-0.003983	-0.000266	0.010876	8.56E-05	0.000417	-1.94E-06
15	0	-0.003983	-0.000266	0.003434	0.000453	0.000172	-1.94E-06
		-0.003983	-0.000266	0.010876	8.56E-05	0.000417	-1.94E-06
15	2.100	-0.004276	-0.000359	0.003095	0.000285	0.000385	-2.00E-06
		-0.004276	-0.000359	0.009511	-0.000115	0.000925	-2.00E-06
15	4.201	-0.004566	-0.000451	0.002237	0.000122	0.000585	-2.05E-06
		-0.004566	-0.000451	0.007044	-0.000304	0.001391	-2.05E-06
16	0	-0.004566	-0.000451	0.002237	0.000122	0.000585	-2.05E-06
		-0.004566	-0.000451	0.007044	-0.000304	0.001391	-2.05E-06
16	2.099	-0.004849	-0.000552	0.000950	-5.94E-05	0.000716	-2.08E-06
		-0.004849	-0.000552	0.003629	-0.000497	0.001749	-2.08E-06
16	4.198	-0.005129	-0.000652	-0.000659	-0.000326	0.001171	-2.09E-06
		-0.005129	-0.000652	-0.000454	-0.000534	0.001572	-2.09E-06

Escala 1 :442,5
Displacements envelope DZ [M], GWSP LY (ELS DEFORMACIONES 8), View "LIST"
- Struktur: Staebe
- Minimum displacements DZ, Ueberh: 2.0E2
- Maximum displacements DZ, Ueberh: 2.0E2
- Label minimum value DZ-Min. [M]
- Label maximum value DZ-Max. [M]



ENVOLVENTE: LZ 'ELS DEFORMACIONES 9'

Grupo	Espe.	Hipótesis	Factor	Etapa	Título
A	PERM.	1	1.000		Peso Propio
	Y	3	1.000		Carga Muerta Máxima
	Y	20	0.957000		Pretensado
B	MAS	19	0.600000		gradiente
C	MAS	32	1.000		Carro 1 excéntrico
D	MAS	4	1.000		Sobrecarga centrada vano 1
E	MAS	5	1.000		Sobrecarga centrada vano 2
F	MAS	6	1.000		Sobrecarga centrada vano 3
ALTERNATIVA PARA ENVOLVENTE:					
G	PERM.	1	1.000		Peso Propio
	Y	3	1.000		Carga Muerta Máxima
	Y	20	0.957000		Pretensado
H	MAS	19	0.600000		gradiente
I	MAS	32	1.000		Carro 1 excéntrico
J	MAS	7	1.000		Sobrecarga excéntrica vano 1 (
K	MAS	8	1.000		Sobrecarga excentrica vano 2 (
L	MAS	9	1.000		Sobrecarga excentrica vano 3 (
ALTERNATIVA PARA ENVOLVENTE:					
M	PERM.	1	1.000		Peso Propio
	Y	3	1.000		Carga Muerta Máxima
	Y	20	0.957000		Pretensado
N	MAS	19	0.600000		gradiente
O	MAS	32	1.000		Carro 1 excéntrico
P	MAS	10	1.000		Sobrecarga excéntrica vano 1 (
Q	MAS	11	1.000		Sobrecarga excentrica vano 2 (
R	MAS	12	1.000		Sobrecarga excentrica vano 3 (

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

Barra	Dist. [m]	DX [m]	DY [m]	DZ [m]	RX [rad]	RY [rad]	RZ [rad]
1	0	0.005170	-6.63E-05	-0.000691	-0.000150	-0.000829	2.11E-06
		0.005170	-6.63E-05	-0.000399	-0.000250	-0.001463	2.11E-06
1	2.100	0.004880	7.38E-07	0.000139	-0.000110	-0.000334	2.10E-06
		0.004880	7.38E-07	0.003338	-8.68E-05	-0.001665	2.10E-06
1	4.200	0.004587	6.84E-05	0.000752	-0.000116	-0.000205	2.07E-06
		0.004587	6.84E-05	0.006410	0.000162	-0.001321	2.07E-06
2	0	0.004587	6.84E-05	0.000752	-0.000116	-0.000205	2.07E-06
		0.004587	6.84E-05	0.006410	0.000162	-0.001321	2.07E-06
2	2.100	0.004289	0.000128	0.001061	-0.000154	-4.49E-05	2.02E-06
		0.004289	0.000128	0.008585	0.000394	-0.000878	2.02E-06
2	4.199	0.003988	0.000187	0.001072	-0.000196	9.60E-05	1.96E-06
		0.003988	0.000187	0.009712	0.000634	-0.000398	1.96E-06
3	0	0.003988	0.000187	0.001072	-0.000196	9.60E-05	1.96E-06
		0.003988	0.000187	0.009712	0.000634	-0.000398	1.96E-06
3	2.100	0.003682	0.000237	0.000815	-0.000247	0.000214	1.88E-06
		0.003682	0.000237	0.009790	0.000828	0.000106	1.88E-06
3	4.200	0.003373	0.000286	0.000364	-0.000194	0.000276	1.79E-06
		0.003373	0.000286	0.008793	0.001016	0.000565	1.79E-06

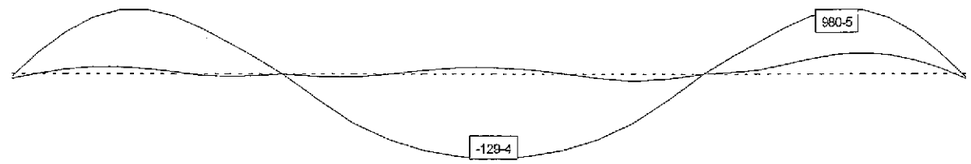
DEFORMATIONEN: ""
ENVOLVENTE para < DZ > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Dist. [m]	DX [m]	DY [m]	DZ [m]	RX [rad]	RY [rad]	RZ [rad]
4	0	0.003373	0.000286	0.000364	-0.000194	0.000276	1.79E-06
		0.003373	0.000286	0.008793	0.001016	0.000565	1.79E-06
4	2.100	0.003065	0.000326	-0.000144	-0.000139	0.000219	1.69E-06
		0.003065	0.000326	0.007002	0.001155	0.000861	1.69E-06
4	4.200	0.002762	0.000364	-0.000379	-0.000101	2.06E-05	1.58E-06
		0.002762	0.000364	0.004795	0.001269	0.000948	1.58E-06
5	0	0.002762	0.000364	-0.000379	-0.000101	2.06E-05	1.58E-06
		0.002762	0.000364	0.004795	0.001269	0.000948	1.58E-06
5	2.099	0.002460	0.000393	-0.000215	-4.59E-05	-0.000134	1.47E-06
		0.002460	0.000393	0.002545	0.001393	0.000998	1.47E-06
5	4.198	0.002161	0.000421	-2.25E-11	3.31E-05	-3.36E-06	1.34E-06
		0.002161	0.000421	4.01E-11	0.001533	0.001242	1.34E-06
6	0	0.002161	0.000421	-7.09E-11	0.001533	0.001242	1.34E-06
		0.002161	0.000421	9.61E-14	3.31E-05	-3.36E-06	1.34E-06
6	2.700	0.001781	0.000442	-0.003910	0.001785	0.001383	1.16E-06
		0.001781	0.000442	-0.000305	0.000225	0.000125	1.16E-06
6	5.400	0.001408	0.000463	-0.007501	0.002015	0.001063	9.60E-07
		0.001408	0.000463	-0.000416	0.000400	-8.88E-05	9.60E-07
7	0	0.001408	0.000463	-0.007501	0.002015	0.001063	9.60E-07
		0.001408	0.000463	-0.000416	0.000400	-8.88E-05	9.60E-07
7	2.700	0.001043	0.000467	-0.009917	0.002217	0.000725	7.38E-07
		0.001043	0.000467	4.80E-05	0.000577	-0.000228	7.38E-07
7	5.400	0.000681	0.000470	-0.011575	0.002419	0.000501	5.02E-07
		0.000681	0.000470	0.000632	0.000754	-0.000182	5.02E-07
8	0	0.000681	0.000470	-0.011575	0.002419	0.000501	5.02E-07
		0.000681	0.000470	0.000632	0.000754	-0.000182	5.02E-07
8	2.700	0.000323	0.000458	-0.012461	0.002503	0.000331	2.56E-07
		0.000323	0.000458	0.001015	0.000845	-3.95E-05	2.56E-07
8	5.399	-3.12E-05	0.000446	-0.012861	0.002588	0.000145	4.43E-09
		-3.12E-05	0.000446	0.001011	0.000937	0.000106	4.43E-09
9	0	-3.12E-05	0.000446	-0.012861	0.002588	0.000145	4.43E-09
		-3.12E-05	0.000446	0.001011	0.000937	0.000106	4.43E-09
9	2.700	-0.000385	0.000418	-0.012448	0.002518	-4.89E-05	-2.47E-07
		-0.000385	0.000418	0.000741	0.000910	0.000238	-2.47E-07
9	5.401	-0.000742	0.000389	-0.011547	0.002446	-0.000230	-4.93E-07
		-0.000742	0.000389	0.000125	0.000884	0.000352	-4.93E-07
10	0	-0.000742	0.000389	-0.011547	0.002446	-0.000230	-4.93E-07
		-0.000742	0.000389	0.000125	0.000884	0.000352	-4.93E-07
10	2.700	-0.001101	0.000344	-0.009868	0.002264	-0.000479	-7.29E-07
		-0.001101	0.000344	-0.000580	0.000784	0.000343	-7.29E-07

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

Barra	Dist. [m]	DX [m]	DY [m]	DZ [m]	RX [rad]	RY [rad]	RZ [rad]
10	5.399	-0.001463	0.000299	-0.007419	0.002096	-0.000844	-9.50E-07
		-0.001463	0.000299	-0.001027	0.000708	0.000135	-9.50E-07
11	0	-0.001463	0.000299	-0.007419	0.002096	-0.000844	-9.50E-07
		-0.001463	0.000299	-0.001027	0.000708	0.000135	-9.50E-07
11	2.662	-0.001826	0.000237	-0.003858	0.001901	-0.001180	-1.15E-06
		-0.001826	0.000237	-0.000702	0.000641	-0.000147	-1.15E-06
11	5.324	-0.002196	0.000173	-1.19E-10	0.001634	-0.001067	-1.32E-06
		-0.002196	0.000173	-5.02E-11	0.000522	-0.000109	-1.32E-06
12	0	-0.002196	0.000173	8.78E-12	0.000522	-0.000109	-1.32E-06
		-0.002196	0.000173	5.74E-11	0.001634	-0.001067	-1.32E-06
12	2.100	-0.002489	0.000111	0.000283	0.000491	-2.33E-05	-1.45E-06
		-0.002489	0.000111	0.002552	0.001466	-0.000841	-1.45E-06
12	4.199	-0.002786	4.85E-05	0.000669	0.000507	-0.000175	-1.57E-06
		-0.002786	4.85E-05	0.004810	0.001337	-0.000805	-1.57E-06
13	0	-0.002786	4.85E-05	0.000669	0.000507	-0.000175	-1.57E-06
		-0.002786	4.85E-05	0.004810	0.001337	-0.000805	-1.57E-06
13	2.100	-0.003083	-2.41E-05	0.001447	0.000535	-0.000321	-1.68E-06
		-0.003083	-2.41E-05	0.007016	0.001212	-0.000732	-1.68E-06
13	4.200	-0.003384	-9.78E-05	0.002357	0.000521	-0.000285	-1.78E-06
		-0.003384	-9.78E-05	0.008805	0.001039	-0.000453	-1.78E-06
14	0	-0.003384	-9.78E-05	0.002357	0.000521	-0.000285	-1.78E-06
		-0.003384	-9.78E-05	0.008805	0.001039	-0.000453	-1.78E-06
14	2.100	-0.003685	-0.000182	0.003025	0.000439	-0.000103	-1.87E-06
		-0.003685	-0.000182	0.009797	0.000798	-1.83E-05	-1.87E-06
14	4.200	-0.003983	-0.000266	0.003216	0.000344	0.000125	-1.94E-06
		-0.003983	-0.000266	0.009712	0.000546	0.000461	-1.94E-06
15	0	-0.003983	-0.000266	0.003216	0.000344	0.000125	-1.94E-06
		-0.003983	-0.000266	0.009712	0.000546	0.000461	-1.94E-06
15	2.100	-0.004276	-0.000359	0.002915	0.000206	0.000338	-2.00E-06
		-0.004276	-0.000359	0.008568	0.000254	0.000913	-2.00E-06
15	4.201	-0.004566	-0.000451	0.002111	7.03E-05	0.000541	-2.05E-06
		-0.004566	-0.000451	0.006371	-2.67E-05	0.001331	-2.05E-06
16	0	-0.004566	-0.000451	0.002111	7.03E-05	0.000541	-2.05E-06
		-0.004566	-0.000451	0.006371	-2.67E-05	0.001331	-2.05E-06
16	2.099	-0.004849	-0.000552	0.000881	-8.43E-05	0.000676	-2.08E-06
		-0.004849	-0.000552	0.003276	-0.000315	0.001645	-2.08E-06
16	4.198	-0.005129	-0.000652	-0.000664	-0.000325	0.001139	-2.09E-06
		-0.005129	-0.000652	-0.000470	-0.000448	0.001430	-2.09E-06

Escala 1 :442,5
Displacements envelope DZ [M], GWSP LZ (ELS DEFORMACIONES 9), View "LIST"
- Struktur: Staebe
- Minimum displacements DZ, Ueberh: 5.0E2
- Maximum displacements DZ, Ueberh: 5.0E2
- Label minimum value DZ-Min. [M]
- Label maximum value DZ-Max. [M]



ENVOLVENTE: MA 'ELS DEFORMACIONES 10'

Grupo	Espe.	Hipótesis	Factor	Etapa	Título
A	PERM.	1	1.000		Peso Propio
	Y	3	1.000		Carga Muerta Máxima
	Y	20	0.957000		Pretensado
B	MAS	19	0.600000		gradiente
C	MAS	34	1.000		Carro 1 pila excéntrico
D	MAS	4	1.000		Sobrecarga centrada vano 1
E	MAS	5	1.000		Sobrecarga centrada vano 2
F	MAS	6	1.000		Sobrecarga centrada vano 3
ALTERNATIVA PARA ENVOLVENTE:					
G	PERM.	1	1.000		Peso Propio
	Y	3	1.000		Carga Muerta Máxima
	Y	20	0.957000		Pretensado
H	MAS	19	0.600000		gradiente
I	MAS	34	1.000		Carro 1 pila excéntrico
J	MAS	7	1.000		Sobrecarga excéntrica vano 1 (
K	MAS	8	1.000		Sobrecarga excentrica vano 2 (
L	MAS	9	1.000		Sobrecarga excentrica vano 3 (
ALTERNATIVA PARA ENVOLVENTE:					
M	PERM.	1	1.000		Peso Propio
	Y	3	1.000		Carga Muerta Máxima
	Y	20	0.957000		Pretensado
N	MAS	19	0.600000		gradiente
O	MAS	34	1.000		Carro 1 pila excéntrico
P	MAS	10	1.000		Sobrecarga excéntrica vano 1 (
Q	MAS	11	1.000		Sobrecarga excentrica vano 2 (
R	MAS	12	1.000		Sobrecarga excentrica vano 3 (

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

Barra	Dist. [m]	DX [m]	DY [m]	DZ [m]	RX [rad]	RY [rad]	RZ [rad]
1	0	0.005170	-6.63E-05	-0.000617	-0.000201	-0.001119	2.11E-06
		0.005170	-6.63E-05	-0.000399	-0.000250	-0.001463	2.11E-06
1	2.100	0.004880	7.38E-07	0.000820	-0.000141	-0.000614	2.10E-06
		0.004880	7.38E-07	0.003338	-8.68E-05	-0.001665	2.10E-06
1	4.200	0.004587	6.84E-05	0.001982	-0.000122	-0.000447	2.07E-06
		0.004587	6.84E-05	0.006410	0.000162	-0.001321	2.07E-06
2	0	0.004587	6.84E-05	0.001982	-0.000122	-0.000447	2.07E-06
		0.004587	6.84E-05	0.006410	0.000162	-0.001321	2.07E-06
2	2.100	0.004289	0.000128	0.002725	-0.000127	-0.000223	2.02E-06
		0.004289	0.000128	0.008585	0.000394	-0.000878	2.02E-06
2	4.199	0.003988	0.000187	0.002996	-0.000131	9.27E-06	1.96E-06
		0.003988	0.000187	0.009712	0.000634	-0.000398	1.96E-06
3	0	0.003988	0.000187	0.002996	-0.000131	9.27E-06	1.96E-06
		0.003988	0.000187	0.009712	0.000634	-0.000398	1.96E-06
3	2.100	0.003682	0.000237	0.002778	-0.000187	0.000246	1.88E-06
		0.003682	0.000237	0.009790	0.000828	0.000106	1.88E-06
3	4.200	0.003373	0.000286	0.002125	-0.000249	0.000433	1.79E-06
		0.003373	0.000286	0.008793	0.001016	0.000565	1.79E-06
4	0	0.003373	0.000286	0.002125	-0.000249	0.000433	1.79E-06
		0.003373	0.000286	0.008793	0.001016	0.000565	1.79E-06
4	2.100	0.003065	0.000326	0.001227	-0.000364	0.000461	1.69E-06
		0.003065	0.000326	0.007002	0.001155	0.000861	1.69E-06
4	4.200	0.002762	0.000364	0.000515	-0.000500	0.000299	1.58E-06
		0.002762	0.000364	0.004795	0.001269	0.000948	1.58E-06
5	0	0.002762	0.000364	0.000515	-0.000500	0.000299	1.58E-06
		0.002762	0.000364	0.004795	0.001269	0.000948	1.58E-06
5	2.099	0.002460	0.000393	0.000188	-0.000594	0.000128	1.47E-06
		0.002460	0.000393	0.002545	0.001393	0.000998	1.47E-06
5	4.198	0.002161	0.000421	-1.23E-11	-0.000575	0.000215	1.34E-06
		0.002161	0.000421	4.01E-11	0.001533	0.001242	1.34E-06
6	0	0.002161	0.000421	-7.09E-11	0.001533	0.001242	1.34E-06
		0.002161	0.000421	-1.01E-11	-0.000575	0.000215	1.34E-06
6	2.700	0.001781	0.000442	-0.003910	0.001785	0.001383	1.16E-06
		0.001781	0.000442	-0.000731	-0.000345	0.000279	1.16E-06
6	5.400	0.001408	0.000463	-0.007501	0.002015	0.001063	9.60E-07
		0.001408	0.000463	-0.001110	-0.000132	9.33E-06	9.60E-07
7	0	0.001408	0.000463	-0.007501	0.002015	0.001063	9.60E-07
		0.001408	0.000463	-0.001110	-0.000132	9.33E-06	9.60E-07
7	2.700	0.001043	0.000467	-0.009917	0.002217	0.000725	7.38E-07
		0.001043	0.000467	-0.000836	7.97E-05	-0.000179	7.38E-07
7	5.400	0.000681	0.000470	-0.011575	0.002419	0.000501	5.02E-07

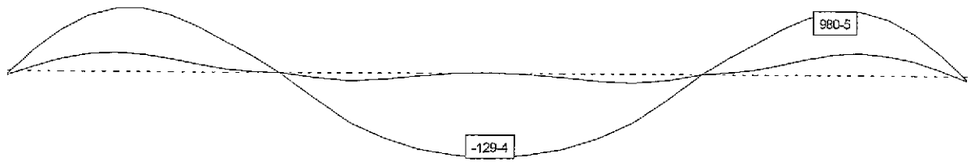
DEFORMATIONEN: ""
ENVOLVENTE para < DZ > (y valores concomitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Dist. [m]	DX [m]	DY [m]	DZ [m]	RX [rad]	RY [rad]	RZ [rad]
		0.000681	0.000470	-0.000320	0.000292	-0.000176	5.02E-07
8	0	0.000681	0.000470	-0.011575	0.002419	0.000501	5.02E-07
		0.000681	0.000470	-0.000320	0.000292	-0.000176	5.02E-07
8	2.700	0.000323	0.000458	-0.012461	0.002503	0.000331	2.56E-07
		0.000323	0.000458	5.18E-05	0.000417	-6.81E-05	2.56E-07
8	5.399	-3.12E-05	0.000446	-0.012861	0.002588	0.000145	4.43E-09
		-3.12E-05	0.000446	0.000125	0.000541	4.87E-05	4.43E-09
9	0	-3.12E-05	0.000446	-0.012861	0.002588	0.000145	4.43E-09
		-3.12E-05	0.000446	0.000125	0.000541	4.87E-05	4.43E-09
9	2.700	-0.000385	0.000418	-0.012448	0.002518	-4.89E-05	-2.47E-07
		-0.000385	0.000418	-4.18E-05	0.000544	0.000160	-2.47E-07
9	5.401	-0.000742	0.000389	-0.011547	0.002446	-0.000230	-4.93E-07
		-0.000742	0.000389	-0.000498	0.000549	0.000258	-4.93E-07
10	0	-0.000742	0.000389	-0.011547	0.002446	-0.000230	-4.93E-07
		-0.000742	0.000389	-0.000498	0.000549	0.000258	-4.93E-07
10	2.700	-0.001101	0.000344	-0.009868	0.002264	-0.000479	-7.29E-07
		-0.001101	0.000344	-0.001045	0.000478	0.000242	-7.29E-07
10	5.399	-0.001463	0.000299	-0.007419	0.002096	-0.000844	-9.50E-07
		-0.001463	0.000299	-0.001312	0.000430	3.30E-05	-9.50E-07
11	0	-0.001463	0.000299	-0.007419	0.002096	-0.000844	-9.50E-07
		-0.001463	0.000299	-0.001312	0.000430	3.30E-05	-9.50E-07
11	2.662	-0.001826	0.000237	-0.003858	0.001901	-0.001180	-1.15E-06
		-0.001826	0.000237	-0.000838	0.000390	-0.000243	-1.15E-06
11	5.324	-0.002196	0.000173	-1.19E-10	0.001634	-0.001067	-1.32E-06
		-0.002196	0.000173	-5.32E-11	0.000296	-0.000192	-1.32E-06
12	0	-0.002196	0.000173	1.04E-11	0.000296	-0.000192	-1.32E-06
		-0.002196	0.000173	5.74E-11	0.001634	-0.001067	-1.32E-06
12	2.100	-0.002489	0.000111	0.000354	0.000285	-9.49E-05	-1.45E-06
		-0.002489	0.000111	0.002552	0.001466	-0.000841	-1.45E-06
12	4.199	-0.002786	4.85E-05	0.000795	0.000322	-0.000235	-1.57E-06
		-0.002786	4.85E-05	0.004810	0.001337	-0.000805	-1.57E-06
13	0	-0.002786	4.85E-05	0.000795	0.000322	-0.000235	-1.57E-06
		-0.002786	4.85E-05	0.004810	0.001337	-0.000805	-1.57E-06
13	2.100	-0.003083	-2.41E-05	0.001600	0.000371	-0.000369	-1.68E-06
		-0.003083	-2.41E-05	0.007016	0.001212	-0.000732	-1.68E-06
13	4.200	-0.003384	-9.78E-05	0.002525	0.000377	-0.000323	-1.78E-06
		-0.003384	-9.78E-05	0.008805	0.001039	-0.000453	-1.78E-06
14	0	-0.003384	-9.78E-05	0.002525	0.000377	-0.000323	-1.78E-06
		-0.003384	-9.78E-05	0.008805	0.001039	-0.000453	-1.78E-06
14	2.100	-0.003685	-0.000182	0.003187	0.000316	-0.000130	-1.87E-06

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

Barra	Dist. [m]	DX [m]	DY [m]	DZ [m]	RX [rad]	RY [rad]	RZ [rad]
		-0.003685	-0.000182	0.009797	0.000798	-1.83E-05	-1.87E-06
14	4.200	-0.003983	-0.000266	0.003364	0.000243	0.000107	-1.94E-06
		-0.003983	-0.000266	0.009712	0.000546	0.000461	-1.94E-06
15	0	-0.003983	-0.000266	0.003364	0.000243	0.000107	-1.94E-06
		-0.003983	-0.000266	0.009712	0.000546	0.000461	-1.94E-06
15	2.100	-0.004276	-0.000359	0.003034	0.000126	0.000330	-2.00E-06
		-0.004276	-0.000359	0.008568	0.000254	0.000913	-2.00E-06
15	4.201	-0.004566	-0.000451	0.002196	1.22E-05	0.000541	-2.05E-06
		-0.004566	-0.000451	0.006371	-2.67E-05	0.001331	-2.05E-06
16	0	-0.004566	-0.000451	0.002196	1.22E-05	0.000541	-2.05E-06
		-0.004566	-0.000451	0.006371	-2.67E-05	0.001331	-2.05E-06
16	2.099	-0.004849	-0.000552	0.000925	-0.000121	0.000685	-2.08E-06
		-0.004849	-0.000552	0.003276	-0.000315	0.001645	-2.08E-06
16	4.198	-0.005129	-0.000652	-0.000662	-0.000339	0.001156	-2.09E-06
		-0.005129	-0.000652	-0.000470	-0.000448	0.001430	-2.09E-06

Escala 1 :442,5
Displacements envelope DZ [M], GWSP MA (ELS DEFORMACIONES 10), View "LIST"
- Struktur: Staebe
- Minimum displacements DZ, Ueberh: 5.0E2
- Maximum displacements DZ, Ueberh: 5.0E2
- Label minimum value DZ-Min. [M]
- Label maximum value DZ-Max. [M]



ENVOLVENTE: MB 'ELS DEFORMACIONES PERMANENTES'

Grupo	Espe.	Hipótesis	Factor	Etapa	Título
A	PERM.	1	1.000		Peso Propio
	Y	3	1.000		Carga Muerta Máxima
	Y	20	0.780000		Pretensado

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

Barra	Dist. [m]	DX [m]	DY [m]	DZ [m]	RX [rad]	RY [rad]	RZ [rad]
1	0	0.004214	-5.40E-05	-0.000457	-0.000131	-0.000839	1.72E-06
		0.004214	-5.40E-05	-0.000457	-0.000131	-0.000839	1.72E-06
1	2.100	0.003978	6.01E-07	0.001251	-2.00E-05	-0.000780	1.71E-06
		0.003978	6.01E-07	0.001251	-2.00E-05	-0.000780	1.71E-06
1	4.200	0.003739	5.57E-05	0.002707	0.000107	-0.000643	1.69E-06
		0.003739	5.57E-05	0.002707	0.000107	-0.000643	1.69E-06
2	0	0.003739	5.57E-05	0.002707	0.000107	-0.000643	1.69E-06
		0.003739	5.57E-05	0.002707	0.000107	-0.000643	1.69E-06
2	2.100	0.003496	0.000104	0.003769	0.000220	-0.000440	1.65E-06
		0.003496	0.000104	0.003769	0.000220	-0.000440	1.65E-06
2	4.199	0.003250	0.000153	0.004341	0.000337	-0.000212	1.60E-06
		0.003250	0.000153	0.004341	0.000337	-0.000212	1.60E-06
3	0	0.003250	0.000153	0.004341	0.000337	-0.000212	1.60E-06
		0.003250	0.000153	0.004341	0.000337	-0.000212	1.60E-06
3	2.100	0.003001	0.000193	0.004404	0.000420	4.10E-05	1.54E-06
		0.003001	0.000193	0.004404	0.000420	4.10E-05	1.54E-06
3	4.200	0.002749	0.000233	0.003927	0.000499	0.000274	1.46E-06
		0.002749	0.000233	0.003927	0.000499	0.000274	1.46E-06
4	0	0.002749	0.000233	0.003927	0.000499	0.000274	1.46E-06
		0.002749	0.000233	0.003927	0.000499	0.000274	1.46E-06
4	2.100	0.002498	0.000266	0.003069	0.000544	0.000401	1.38E-06
		0.002498	0.000266	0.003069	0.000544	0.000401	1.38E-06
4	4.200	0.002251	0.000297	0.002088	0.000574	0.000396	1.29E-06
		0.002251	0.000297	0.002088	0.000574	0.000396	1.29E-06
5	0	0.002251	0.000297	0.002088	0.000574	0.000396	1.29E-06
		0.002251	0.000297	0.002088	0.000574	0.000396	1.29E-06
5	2.099	0.002005	0.000320	0.001163	0.000622	0.000411	1.19E-06
		0.002005	0.000320	0.001163	0.000622	0.000411	1.19E-06
5	4.198	0.001761	0.000343	1.20E-11	0.000689	0.000644	1.09E-06
		0.001761	0.000343	1.20E-11	0.000689	0.000644	1.09E-06
6	0	0.001761	0.000343	-3.65E-11	0.000689	0.000644	1.09E-06
		0.001761	0.000343	-3.65E-11	0.000689	0.000644	1.09E-06

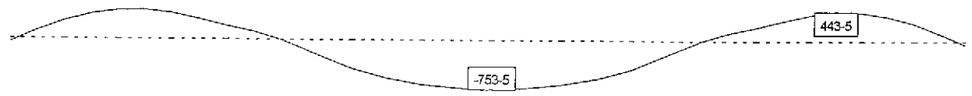
DEFORMATIONEN: ""
ENVOLVENTE para < DZ > (y valores concómitantes)
(1. línea: MIN., 2. línea: MAX.)

Barra	Dist. [m]	DX [m]	DY [m]	DZ [m]	RX [rad]	RY [rad]	RZ [rad]
6	2.700	0.001452	0.000360	-0.002228	0.000852	0.000838	9.48E-07
		0.001452	0.000360	-0.002228	0.000852	0.000838	9.48E-07
6	5.400	0.001148	0.000377	-0.004386	0.000996	0.000644	7.83E-07
		0.001148	0.000377	-0.004386	0.000996	0.000644	7.83E-07
7	0	0.001148	0.000377	-0.004386	0.000996	0.000644	7.83E-07
		0.001148	0.000377	-0.004386	0.000996	0.000644	7.83E-07
7	2.700	0.000850	0.000380	-0.005820	0.001134	0.000422	6.02E-07
		0.000850	0.000380	-0.005820	0.001134	0.000422	6.02E-07
7	5.400	0.000555	0.000383	-0.006773	0.001273	0.000287	4.09E-07
		0.000555	0.000383	-0.006773	0.001273	0.000287	4.09E-07
8	0	0.000555	0.000383	-0.006773	0.001273	0.000287	4.09E-07
		0.000555	0.000383	-0.006773	0.001273	0.000287	4.09E-07
8	2.700	0.000263	0.000374	-0.007293	0.001332	0.000191	2.08E-07
		0.000263	0.000374	-0.007293	0.001332	0.000191	2.08E-07
8	5.399	-2.54E-05	0.000364	-0.007527	0.001391	7.86E-05	3.61E-09
		-2.54E-05	0.000364	-0.007527	0.001391	7.86E-05	3.61E-09
9	0	-2.54E-05	0.000364	-0.007527	0.001391	7.86E-05	3.61E-09
		-2.54E-05	0.000364	-0.007527	0.001391	7.86E-05	3.61E-09
9	2.700	-0.000313	0.000341	-0.007289	0.001340	-3.94E-05	-2.01E-07
		-0.000313	0.000341	-0.007289	0.001340	-3.94E-05	-2.01E-07
9	5.401	-0.000604	0.000317	-0.006763	0.001289	-0.000144	-4.02E-07
		-0.000604	0.000317	-0.006763	0.001289	-0.000144	-4.02E-07
10	0	-0.000604	0.000317	-0.006763	0.001289	-0.000144	-4.02E-07
		-0.000604	0.000317	-0.006763	0.001289	-0.000144	-4.02E-07
10	2.700	-0.000897	0.000281	-0.005798	0.001162	-0.000297	-5.94E-07
		-0.000897	0.000281	-0.005798	0.001162	-0.000297	-5.94E-07
10	5.399	-0.001192	0.000243	-0.004343	0.001045	-0.000537	-7.74E-07
		-0.001192	0.000243	-0.004343	0.001045	-0.000537	-7.74E-07
11	0	-0.001192	0.000243	-0.004343	0.001045	-0.000537	-7.74E-07
		-0.001192	0.000243	-0.004343	0.001045	-0.000537	-7.74E-07
11	2.662	-0.001488	0.000193	-0.002201	0.000922	-0.000742	-9.36E-07
		-0.001488	0.000193	-0.002201	0.000922	-0.000742	-9.36E-07
11	5.324	-0.001790	0.000141	-7.68E-11	0.000737	-0.000568	-1.08E-06
		-0.001790	0.000141	-7.68E-11	0.000737	-0.000568	-1.08E-06
12	0	-0.001790	0.000141	2.95E-11	0.000737	-0.000568	-1.08E-06
		-0.001790	0.000141	2.95E-11	0.000737	-0.000568	-1.08E-06
12	2.100	-0.002029	9.07E-05	0.001171	0.000645	-0.000345	-1.18E-06
		-0.002029	9.07E-05	0.001171	0.000645	-0.000345	-1.18E-06
12	4.199	-0.002270	3.95E-05	0.002104	0.000597	-0.000336	-1.28E-06
		-0.002270	3.95E-05	0.002104	0.000597	-0.000336	-1.28E-06

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

Barra	Dist. [m]	DX [m]	DY [m]	DZ [m]	RX [rad]	RY [rad]	RZ [rad]
13	0	-0.002270	3.95E-05	0.002104	0.000597	-0.000336	-1.28E-06
		-0.002270	3.95E-05	0.002104	0.000597	-0.000336	-1.28E-06
13	2.100	-0.002513	-1.96E-05	0.003091	0.000567	-0.000343	-1.37E-06
		-0.002513	-1.96E-05	0.003091	0.000567	-0.000343	-1.37E-06
13	4.200	-0.002758	-7.97E-05	0.003952	0.000508	-0.000221	-1.45E-06
		-0.002758	-7.97E-05	0.003952	0.000508	-0.000221	-1.45E-06
14	0	-0.002758	-7.97E-05	0.003952	0.000508	-0.000221	-1.45E-06
		-0.002758	-7.97E-05	0.003952	0.000508	-0.000221	-1.45E-06
14	2.100	-0.003003	-0.000149	0.004430	0.000402	1.68E-06	-1.52E-06
		-0.003003	-0.000149	0.004430	0.000402	1.68E-06	-1.52E-06
14	4.200	-0.003246	-0.000217	0.004366	0.000290	0.000245	-1.58E-06
		-0.003246	-0.000217	0.004366	0.000290	0.000245	-1.58E-06
15	0	-0.003246	-0.000217	0.004366	0.000290	0.000245	-1.58E-06
		-0.003246	-0.000217	0.004366	0.000290	0.000245	-1.58E-06
15	2.100	-0.003485	-0.000293	0.003785	0.000149	0.000461	-1.63E-06
		-0.003485	-0.000293	0.003785	0.000149	0.000461	-1.63E-06
15	4.201	-0.003721	-0.000368	0.002709	1.56E-05	0.000653	-1.67E-06
		-0.003721	-0.000368	0.002709	1.56E-05	0.000653	-1.67E-06
16	0	-0.003721	-0.000368	0.002709	1.56E-05	0.000653	-1.67E-06
		-0.003721	-0.000368	0.002709	1.56E-05	0.000653	-1.67E-06
16	2.099	-0.003952	-0.000450	0.001235	-0.000128	0.000778	-1.69E-06
		-0.003952	-0.000450	0.001235	-0.000128	0.000778	-1.69E-06
16	4.198	-0.004180	-0.000531	-0.000498	-0.000246	0.000827	-1.70E-06
		-0.004180	-0.000531	-0.000498	-0.000246	0.000827	-1.70E-06

Escala 1 :442,5
Displacements envelope DZ [M], GWSP MB (ELS DEFORMACIONES PERMANENTES), View "LIST"
- Struktur: Staebe
- Minimum displacements DZ, Ueberh: 5.0E2
- Maximum displacements DZ, Ueberh: 5.0E2
- Label minimum value DZ-Min. [M]
- Label maximum value DZ-Max. [M]



CÁLCULO DE FLECHA DIFERIDA (MÉTODO DE MARÍ)

Según Marí (U.P.C.)

$$Y_d = Y_{\varphi} + Y_{cs}$$
b) a)

a) Flecha retracción → $Y_{cs} = \frac{\varepsilon_{cs}}{d} \frac{K_b}{1+6n\rho} \frac{L^2}{8}$

$\varepsilon_{cs} = 0'00025$ m/m ; $d = 1'25$ m ; K_b (viene interpo vigas con losas) $= 0'50$

$L = 32'32$ m. , $A_c = 6'38$ m²

$n\rho' = \frac{E_s \cdot A_s}{E_c \cdot A_c} = \frac{200000 \cdot 75'36 cm^2 \cdot 10^{-4} m^2/cm^2}{10000 \cdot \sqrt{(35+8)} \cdot 6'38 m^2} = 6'74 \cdot 10^{-3}$

$\boxed{Y_{cs} = \frac{0'00025}{1'25} \cdot \frac{0'50}{1+6 \cdot 6'74 \cdot 10^{-3}} \cdot \frac{32'32^2}{8} = 0'0063 m}$

b) Flecha fluencia → $Y_{\varphi} = Y_{cp} \cdot \varphi \cdot \frac{K_{\varphi}}{1+6 \cdot n\rho'}$

$K_{\varphi} = \frac{x_f}{d} + \left(1 - \frac{x_f}{d}\right) \frac{N}{N_{es}^2} = \frac{0'10}{1'25} + \left(1 - \frac{0'10}{1'25}\right) \frac{30132}{32587'7} = 0'93$

x_f (fibra neutra en flexión simple) $= 1'20$ m

$N_{es}^2 = \frac{M_g \cdot A_6}{W_b} = \frac{11737'7 \cdot 6'38}{2'298} = 32587'70$ kN

M_g (momento carga permanente) $= 8458'1 + 3279'6 = 11737'7$ kN·m

$W_b = \frac{1'149 m^4}{0'50 m} = 2'298 m^3$

$Y_{cp} = 0'00753$ m (flecha permanente) ; $\varphi = 2'34$

$\boxed{Y_{\varphi} = Y_{cp} \cdot \varphi \cdot \frac{K_{\varphi}}{1+6n\rho'} = 0'0073 \cdot 2'34 \frac{0'93}{1+6 \cdot 6'74 \cdot 10^{-3}} = 0'0157 m}$

Luego la flecha diferida será:

$\boxed{Y_d = Y_{\varphi} + Y_{cs} = 0'0157 + 0'006 = 0'0217 m}$

$\boxed{\text{Flecha total} = 0'023 m + 0'0217 m \simeq 0'045 m.}$

La relación flecha luz será por tanto.

$\frac{L}{718}$ Aceptable

COMPROBACIÓN DESLIZAMIENTO ESTRIBO

* Comprobación a deslizamiento de estribo.

En el estribo 2, el coeficiente a deslizamiento que aparece es 1'231. El hecho de que tenga ese valor es debido a que el programa de cálculo (Civicons) realiza el cálculo del mismo con coeficientes de seguridad de E.L.U. y por tanto un coeficiente de deslizamiento igual 1, es superiante.

Comprobemos que ésto es así:

Las acciones sobre el estribo con: según muestra el anejo

	F_{Adest} (t)	F_{Vert} (t)
Peso propio de la zapata	0	287'10
Peso propio del alzado	0	283'98
Peso tierras sobre puntera	0	27'84
Peso tierras trasdós	0	657'10
Empuje	368'06	0
Acciones permanent. tablero	4'80	190'52
Acciones variables s/tablero	0	107'04
Acciones variables s. tablero	8'00	0

Resulta obvio que la peor de las situaciones es la situación en vacío para el posible deslizamiento del estribo.

$$\gamma_{desli} = \frac{F_{estabilizadoras}}{F_{desestabilizadoras}} = \frac{N \cdot tg\varphi}{F_{adest}}$$

$N_{(vacío)} = 287'10 + 283'98 + 27'84 + 657'10 = 1256'02$ t.

$\varphi = 30°$

$F_{adest}{}_{(vacío)} = 368'06$ t.

Luego

$$\gamma_{desl.} = \frac{1256'02 \cdot tg\,30°}{368'06} = 1'97 \gg 1'5$$

El programa lo que realiza después es dividir ese valor por el coeficiente de seguridad de las acciones de esta manera:

coef. seguridad acciones $\sim \frac{1'97}{1'6} = 1'231$ (valor del programa).

Luego como $\gamma_{desli} = 1'97 \gg 1'50$ No hay problemas de deslizamiento del estribo.

Además del lado de la seguridad se obvian los efectos beneficiosos del empuje pasivo y la fuerza vertical por empuje activo, que harían aumentar más dicho valor.

COMPROBACIÓN DE PILA

ENTRADA DE DATOS

S T A T I C L O A D C A S E S

STATIC CASE	CASE TYPE	SELF WT FACTOR
PP	DEAD	1,0000
CM	DEAD	0,0000
SC	LIVE	0,0000
CARRO	LIVE	0,0000
VIENTO	WIND	0,0000
REOLOG	DEAD	0,0000
FRENADO	LIVE	0,0000
TEMP	OTHER	0,0000
VIENTO2	WIND	0,0000
PRETEN	DEAD	0,0000
FZCENTRI	LIVE	0,0000

J O I N T D A T A

JOINT	GLOBAL-X	GLOBAL-Y	GLOBAL-Z	RESTRAINTS	ANGLE-A	ANGLE-B	ANGLE-C
1	0,00000	0,00000	11,30000	0 0 0 0 0 0	0,000	0,000	0,000
2	0,00000	0,00000	0,00000	1 1 1 1 1 1	0,000	0,000	0,000

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

FRAME	JNT-1	JNT-2	SECTION	ANGLE	RELEASES	SEGMENTS	R1	R2	FACTOR	LENGTH
1	1	2	PILA	0,000	000000	4	0,000	0,000	1,000	11,300

J O I N T F O R C E S Load Case PP

JOINT	GLOBAL-X	GLOBAL-Y	GLOBAL-Z	GLOBAL-XX	GLOBAL-YY	GLOBAL-ZZ
1	0,000	0,000	-4850,800	0,000	0,000	0,000

J O I N T F O R C E S Load Case CM

JOINT	GLOBAL-X	GLOBAL-Y	GLOBAL-Z	GLOBAL-XX	GLOBAL-YY	GLOBAL-ZZ
1	0,000	0,000	-1876,260	0,000	0,000	0,000

J O I N T F O R C E S Load Case SC

JOINT	GLOBAL-X	GLOBAL-Y	GLOBAL-Z	GLOBAL-XX	GLOBAL-YY	GLOBAL-ZZ
1	0,000	0,000	-1420,880	0,000	0,000	0,000

J O I N T F O R C E S Load Case CARRO

JOINT	GLOBAL-X	GLOBAL-Y	GLOBAL-Z	GLOBAL-XX	GLOBAL-YY	GLOBAL-ZZ
1	0,000	0,000	-638,050	0,000	0,000	0,000

J O I N T F O R C E S Load Case VIENTO

JOINT	GLOBAL-X	GLOBAL-Y	GLOBAL-Z	GLOBAL-XX	GLOBAL-YY	GLOBAL-ZZ
1	0,000	73,200	0,000	0,000	0,000	0,000

J O I N T F O R C E S Load Case REOLOG

JOINT	GLOBAL-X	GLOBAL-Y	GLOBAL-Z	GLOBAL-XX	GLOBAL-YY	GLOBAL-ZZ
1	21,200	0,000	0,000	0,000	0,000	0,000

J O I N T F O R C E S Load Case FRENADO

JOINT	GLOBAL-X	GLOBAL-Y	GLOBAL-Z	GLOBAL-XX	GLOBAL-YY	GLOBAL-ZZ
1	37,880	5,800	0,000	0,000	0,000	0,000

J O I N T F O R C E S Load Case TEMP

JOINT	GLOBAL-X	GLOBAL-Y	GLOBAL-Z	GLOBAL-XX	GLOBAL-YY	GLOBAL-ZZ
1	21,200	0,000	0,000	0,000	0,000	0,000

J O I N T F O R C E S Load Case VIENTO2

JOINT	GLOBAL-X	GLOBAL-Y	GLOBAL-Z	GLOBAL-XX	GLOBAL-YY	GLOBAL-ZZ
1	0,000	138,460	0,000	0,000	0,000	0,000

J O I N T F O R C E S Load Case PRETEN

JOINT	GLOBAL-X	GLOBAL-Y	GLOBAL-Z	GLOBAL-XX	GLOBAL-YY	GLOBAL-ZZ
1	24,390	5,078	0,000	0,000	0,000	0,000

J O I N T F O R C E S Load Case FZCENTRI

JOINT	GLOBAL-X	GLOBAL-Y	GLOBAL-Z	GLOBAL-XX	GLOBAL-YY	GLOBAL-ZZ
1	5,430	96,970	0,000	0,000	0,000	0,000

F R A M E S P A N D I S T R I B U T E D L O A D S Load Case VIENTO

FRAME	TYPE	DIRECTION	DISTANCE-A	VALUE-A	DISTANCE-B	VALUE-B
1	FORCE	GLOBAL-Y	0,0000	33,9500	1,0000	33,9500

F R A M E S P A N D I S T R I B U T E D L O A D S Load Case VIENTO2

FRAME	TYPE	DIRECTION	DISTANCE-A	VALUE-A	DISTANCE-B	VALUE-B
1	FORCE	GLOBAL-Y	0,0000	3,5400	1,0000	3,5400

SALIDA DE DATOS

L O A D C O M B I N A T I O N M U L T I P L I E R S

COMBO	TYPE	CASE	FACTOR	TYPE	TITLE
ELU3	ADD				COMB1
		PP	1,3500	STATIC(DEAD)	
		CM	1,3500	STATIC(DEAD)	
		SC	0,6750	STATIC(LIVE)	

	CARRO	0,6750	STATIC(LIVE)
	VIENTO	0,9000	STATIC(WIND)
	REOLOG	1,5000	STATIC(DEAD)
	FRENADO	1,5000	STATIC(LIVE)
	TEMP	0,9000	STATIC(OTHER)
	PRETEN	1,0000	STATIC(DEAD)
	FZCENTRI	1,5000	STATIC(LIVE)

ELS	ADD			COMB1
	PP	1,0000	STATIC(DEAD)	
	CM	1,0000	STATIC(DEAD)	
	SC	1,0000	STATIC(LIVE)	
	CARRO	1,0000	STATIC(LIVE)	
	VIENTO	1,0000	STATIC(WIND)	
	REOLOG	1,0000	STATIC(DEAD)	
	FRENADO	1,0000	STATIC(LIVE)	
	TEMP	1,0000	STATIC(OTHER)	
	PRETEN	1,0000	STATIC(DEAD)	

ELU2	ADD			COMB1
	PP	1,3500	STATIC(DEAD)	
	CM	1,3500	STATIC(DEAD)	
	VIENTO2	1,5000	STATIC(WIND)	
	REOLOG	1,5000	STATIC(DEAD)	
	TEMP	0,9000	STATIC(OTHER)	
	PRETEN	1,0000	STATIC(DEAD)	

ELU1	ADD			COMB1
	PP	1,3500	STATIC(DEAD)	
	CM	1,3500	STATIC(DEAD)	
	SC	1,5000	STATIC(LIVE)	
	CARRO	1,5000	STATIC(LIVE)	
	VIENTO	0,9000	STATIC(WIND)	
	REOLOG	1,5000	STATIC(DEAD)	
	FRENADO	1,5000	STATIC(LIVE)	
	TEMP	0,9000	STATIC(OTHER)	
	PRETEN	1,0000	STATIC(DEAD)	

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

JOINT	LOAD	U1	U2	U3	R1	R2	R3
1	PP	0,0000	0,0000	-1,498E-03	0,0000	0,0000	0,0000
1	CM	0,0000	0,0000	-5,590E-04	0,0000	0,0000	0,0000
1	SC	0,0000	0,0000	-4,233E-04	0,0000	0,0000	0,0000
1	CARRO	0,0000	0,0000	-1,901E-04	0,0000	0,0000	0,0000
1	VIENTO	0,0000	0,0263	0,0000	-3,204E-03	0,0000	0,0000
1	REOLOG	2,562E-03	0,0000	0,0000	0,0000	3,378E-04	0,0000
1	FRENADO	4,578E-03	7,009E-04	0,0000	-9,243E-05	6,037E-04	0,0000
1	TEMP	2,562E-03	0,0000	0,0000	0,0000	3,378E-04	0,0000
1	VIENTO2	0,0000	0,0185	0,0000	-2,419E-03	0,0000	0,0000
1	PRETEN	2,947E-03	6,137E-04	0,0000	-8,092E-05	3,887E-04	0,0000
1	FZCENTRI	6,562E-04	0,0117	0,0000	-1,545E-03	8,653E-05	0,0000
1	ELU3	0,0169	0,0429	-3,191E-03	-5,422E-03	2,235E-03	0,0000
1	ELS	0,0126	0,0276	-2,670E-03	-3,378E-03	1,668E-03	0,0000
1	ELU2	9,096E-03	0,0284	-2,777E-03	-3,709E-03	1,200E-03	0,0000
1	ELU1	0,0160	0,0253	-3,697E-03	-3,104E-03	2,105E-03	0,0000
2	PP	0,0000	0,0000	0,0000	0,0000	0,0000	0,0000
2	CM	0,0000	0,0000	0,0000	0,0000	0,0000	0,0000
2	SC	0,0000	0,0000	0,0000	0,0000	0,0000	0,0000
2	CARRO	0,0000	0,0000	0,0000	0,0000	0,0000	0,0000
2	VIENTO	0,0000	0,0000	0,0000	0,0000	0,0000	0,0000
2	REOLOG	0,0000	0,0000	0,0000	0,0000	0,0000	0,0000
2	FRENADO	0,0000	0,0000	0,0000	0,0000	0,0000	0,0000
2	TEMP	0,0000	0,0000	0,0000	0,0000	0,0000	0,0000
2	VIENTO2	0,0000	0,0000	0,0000	0,0000	0,0000	0,0000

2	PRETEN	0,0000	0,0000	0,0000	0,0000	0,0000	0,0000
2	FZCENTRI	0,0000	0,0000	0,0000	0,0000	0,0000	0,0000
2	ELU3	0,0000	0,0000	0,0000	0,0000	0,0000	0,0000
2	ELS	0,0000	0,0000	0,0000	0,0000	0,0000	0,0000
2	ELU2	0,0000	0,0000	0,0000	0,0000	0,0000	0,0000
2	ELU1	0,0000	0,0000	0,0000	0,0000	0,0000	0,0000

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

FRAME	LOAD	LOC	P	V2	V3	T	M2	M3
1	PP							
		0,00	-4850,80	0,00	0,00	0,00	0,00	0,00
		2,83	-4939,14	0,00	0,00	0,00	0,00	0,00
		5,65	-5027,49	0,00	0,00	0,00	0,00	0,00
		8,48	-5115,83	0,00	0,00	0,00	0,00	0,00
		11,30	-5204,17	0,00	0,00	0,00	0,00	0,00
1	CM							
		0,00	-1876,26	0,00	0,00	0,00	0,00	0,00
		2,83	-1876,26	0,00	0,00	0,00	0,00	0,00
		5,65	-1876,26	0,00	0,00	0,00	0,00	0,00
		8,48	-1876,26	0,00	0,00	0,00	0,00	0,00
		11,30	-1876,26	0,00	0,00	0,00	0,00	0,00
1	SC							
		0,00	-1420,88	0,00	0,00	0,00	0,00	0,00
		2,83	-1420,88	0,00	0,00	0,00	0,00	0,00
		5,65	-1420,88	0,00	0,00	0,00	0,00	0,00
		8,48	-1420,88	0,00	0,00	0,00	0,00	0,00
		11,30	-1420,88	0,00	0,00	0,00	0,00	0,00
1	CARRO							
		0,00	-638,05	0,00	0,00	0,00	0,00	0,00
		2,83	-638,05	0,00	0,00	0,00	0,00	0,00
		5,65	-638,05	0,00	0,00	0,00	0,00	0,00
		8,48	-638,05	0,00	0,00	0,00	0,00	0,00
		11,30	-638,05	0,00	0,00	0,00	0,00	0,00
1	VIENTO							
		0,00	0,00	0,00	73,20	0,00	0,00	0,00
		2,83	0,00	0,00	169,11	0,00	-342,26	0,00
		5,65	0,00	0,00	265,02	0,00	-955,46	0,00
		8,48	0,00	0,00	360,93	0,00	-1839,61	0,00
		11,30	0,00	0,00	456,83	0,00	-2994,70	0,00
1	REOLOG							
		0,00	0,00	-21,20	0,00	0,00	0,00	0,00
		2,83	0,00	-21,20	0,00	0,00	0,00	59,89
		5,65	0,00	-21,20	0,00	0,00	0,00	119,78
		8,48	0,00	-21,20	0,00	0,00	0,00	179,67
		11,30	0,00	-21,20	0,00	0,00	0,00	239,56
1	FRENADO							
		0,00	0,00	-37,88	5,80	0,00	0,00	0,00
		2,83	0,00	-37,88	5,80	0,00	-16,39	107,01
		5,65	0,00	-37,88	5,80	0,00	-32,77	214,02
		8,48	0,00	-37,88	5,80	0,00	-49,15	321,03
		11,30	0,00	-37,88	5,80	0,00	-65,54	428,04
1	TEMP							
		0,00	0,00	-21,20	0,00	0,00	0,00	0,00
		2,83	0,00	-21,20	0,00	0,00	0,00	59,89
		5,65	0,00	-21,20	0,00	0,00	0,00	119,78
		8,48	0,00	-21,20	0,00	0,00	0,00	179,67
		11,30	0,00	-21,20	0,00	0,00	0,00	239,56
1	VIENTO2							
		0,00	0,00	0,00	138,46	0,00	0,00	0,00
		2,83	0,00	0,00	148,46	0,00	-405,28	0,00
		5,65	0,00	0,00	158,46	0,00	-838,80	0,00
		8,48	0,00	0,00	168,46	0,00	-1300,58	0,00
		11,30	0,00	0,00	178,46	0,00	-1790,61	0,00
1	PRETEN							
		0,00	0,00	-24,39	5,08	0,00	0,00	0,00

	2,83	0,00	-24,39	5,08	0,00	-14,35	68,90
	5,65	0,00	-24,39	5,08	0,00	-28,69	137,80
	8,48	0,00	-24,39	5,08	0,00	-43,04	206,71
	11,30	0,00	-24,39	5,08	0,00	-57,38	275,61
1	FZCENTRI						
	0,00	0,00	-5,43	96,97	0,00	0,00	0,00
	2,83	0,00	-5,43	96,97	0,00	-273,94	15,34
	5,65	0,00	-5,43	96,97	0,00	-547,88	30,68
	8,48	0,00	-5,43	96,97	0,00	-821,82	46,02
	11,30	0,00	-5,43	96,97	0,00	-1095,76	61,36
1	ELU3						
	0,00	-10471,31	-140,24	225,11	0,00	0,00	0,00
	2,83	-10590,57	-140,24	311,43	0,00	-757,87	396,16
	5,65	-10709,83	-140,24	397,75	0,00	-1759,58	792,33
	8,48	-10829,10	-140,24	484,07	0,00	-3005,15	1188,49
	11,30	-10948,36	-140,24	570,38	0,00	-4494,56	1584,66
1	ELS						
	0,00	-8785,99	-104,67	84,08	0,00	0,00	0,00
	2,83	-8874,33	-104,67	179,99	0,00	-372,99	295,69
	5,65	-8962,68	-104,67	275,90	0,00	-1016,93	591,39
	8,48	-9051,02	-104,67	371,80	0,00	-1931,80	887,08
	11,30	-9139,36	-104,67	467,71	0,00	-3117,62	1182,77
1	ELU2						
	0,00	-9081,53	-75,27	212,77	0,00	0,00	0,00
	2,83	-9200,79	-75,27	227,77	0,00	-622,26	212,64
	5,65	-9320,06	-75,27	242,77	0,00	-1286,89	425,28
	8,48	-9439,32	-75,27	257,77	0,00	-1993,91	637,91
	11,30	-9558,58	-75,27	272,77	0,00	-2743,30	850,55
1	ELU1						
	0,00	-12169,93	-132,09	79,66	0,00	0,00	0,00
	2,83	-12289,19	-132,09	165,98	0,00	-346,96	373,15
	5,65	-12408,45	-132,09	252,29	0,00	-937,76	746,31
	8,48	-12527,71	-132,09	338,61	0,00	-1772,42	1119,46
	11,30	-12646,98	-132,09	424,93	0,00	-2850,92	1492,62

Referencia: P-1
Dimensiones: 650 x 650 x 160
Armados: Xi:Ø25 c/ 10 Yi:Ø25 c/ 10 Xs:Ø12 c/ 10 Ys:Ø12 c/ 10

COMPROBACION	VALORES	ESTADO
Tensiones sobre el terreno (1)		
- Tensión media:	Máximo: 3 Kp/cm2 Calculado: 2.563 Kp/cm2	CUMPLE
- Tensión máxima acc. gravitatorias:	Máximo: 3.75 Kp/cm2 Calculado: 3.45 Kp/cm2	CUMPLE
Flexión en la zapata		
- En dirección X:	Momento: 1074.22 Tn·m	CUMPLE
- En dirección Y:	Momento: 1015.62 Tn·m	CUMPLE
Vuelco de la zapata (2)		
- En dirección X:	Reserva seguridad: 982.6 %	CUMPLE
- En dirección Y:	Reserva seguridad: 3214.8 %	CUMPLE
Compresión oblícua en la zapata (1)	Máximo: 509.69 Tn/m2 Calculado: 217.38 Tn/m2	CUMPLE
Cortante en la zapata		
- En dirección X:	Cortante: 304.16 Tn	CUMPLE
- En dirección Y:	Cortante: 269.82 Tn	CUMPLE
Canto mínimo (3)	Mínimo: 25 cm Calculado: 160 cm	CUMPLE
Espacio para anclar arranques en cimentación	Mínimo: 0 cm	
- P-1:	Calculado: 150 cm	CUMPLE
Cuantía geométrica mínima (1)	Mínimo: 0.0018	
- En dirección X:	Calculado: 0.0038	CUMPLE
- En dirección Y:	Calculado: 0.0038	CUMPLE
Cuantía mínima necesaria por flexión (4)	Mínimo: 0.0016	
- Armado inferior dirección X:	Calculado: 0.0031	CUMPLE
- Armado inferior dirección Y:	Calculado: 0.0031	CUMPLE

Diámetro mínimo de las barras (5)	Mínimo: 12 mm	
- Parrilla inferior:	Calculado: 25 mm	CUMPLE
- Parrilla superior:	Calculado: 12 mm	CUMPLE
Separación máxima entre barras (6)	Máximo: 30 cm	
- Armado inferior dirección X:	Calculado: 10 cm	CUMPLE
- Armado inferior dirección Y:	Calculado: 10 cm	CUMPLE
- Armado superior dirección X:	Calculado: 10 cm	CUMPLE
- Armado superior dirección Y:	Calculado: 10 cm	CUMPLE
Separación mínima entre barras (7)	Mínimo: 10 cm	
- Armado inferior dirección X:	Calculado: 10 cm	CUMPLE
- Armado inferior dirección Y:	Calculado: 10 cm	CUMPLE
- Armado superior dirección X:	Calculado: 10 cm	CUMPLE
- Armado superior dirección Y:	Calculado: 10 cm	CUMPLE
Longitud de anclaje (8)		
- Armado inf. dirección X hacia der.:	Mínimo: 52 cm Calculado: 275 cm	CUMPLE
- Armado inf. dirección X hacia izq.:	Mínimo: 52 cm Calculado: 275 cm	CUMPLE
- Armado inf. dirección Y hacia arriba:	Mínimo: 49 cm Calculado: 278 cm	CUMPLE
- Armado inf. dirección Y hacia abajo:	Mínimo: 49 cm Calculado: 278 cm	CUMPLE
- Armado sup. dirección X hacia der.:	Mínimo: 15 cm Calculado: 140 cm	CUMPLE
- Armado sup. dirección X hacia izq.:	Mínimo: 15 cm Calculado: 140 cm	CUMPLE
- Armado sup. dirección Y hacia arriba:	Mínimo: 15 cm Calculado: 143 cm	CUMPLE
- Armado sup. dirección Y hacia abajo:	Mínimo: 15 cm Calculado: 143 cm	CUMPLE
Longitud mínima de las patillas		

- Armado inf. dirección X hacia der.:	Mínimo: 25 cm Calculado: 150 cm	CUMPLE
- Armado inf. dirección X hacia izq.:	Mínimo: 25 cm Calculado: 150 cm	CUMPLE
- Armado inf. dirección Y hacia arriba:	Mínimo: 25 cm Calculado: 150 cm	CUMPLE
- Armado inf. dirección Y hacia abajo:	Mínimo: 25 cm Calculado: 150 cm	CUMPLE
- Armado sup. dirección X hacia der.:	Mínimo: 12 cm Calculado: 15 cm	CUMPLE
- Armado sup. dirección X hacia izq.:	Mínimo: 12 cm Calculado: 15 cm	CUMPLE
- Armado sup. dirección Y hacia arriba:	Mínimo: 12 cm Calculado: 15 cm	CUMPLE
- Armado sup. dirección Y hacia abajo:	Mínimo: 12 cm Calculado: 15 cm	CUMPLE

Se cumplen todas las comprobaciones

NOTAS:
(1) Criterio de CYPE Ingenieros
(2) Si el % de reserva de seguridad es mayor que cero, quiere decir que los coeficientes de seguridad al vuelco son mayores que los valores estrictos exigidos para todas las combinaciones de equilibrio.
(3) Artículo 59.8.1 (norma EHE-98)
(4) Artículo 42.3.2 (norma EHE-98)
(5) Recomendación del Artículo 59.8.2 (norma EHE-98)
(6) Artículo 59.8.2 (norma EHE-98)
(7) Recomendación del libro "Cálculo de estructuras de cimentación", J. Calavera. ed. INTEMAC, 1991
(8) Criterio del libro "Cálculo de estructuras de cimentación", J. Calavera. ed. INTEMAC, 1991

INFORMACION ADICIONAL:
- Zapata de tipo rígido (Artículo 59.2 (norma EHE-98))
- Relación rotura pésima (En dirección X): 0.57
- Relación rotura pésima (En dirección Y): 0.54
- Cortante de agotamiento (En dirección X): 329.45 Tn
- Cortante de agotamiento (En dirección Y): 329.45 Tn

Obra: LAV
Fecha: 28/01/2004
Hora: 11:22:40

Cálculo de secciones a flexión compuesta recta

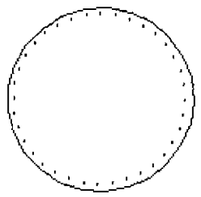
1 Datos

- Materiales

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

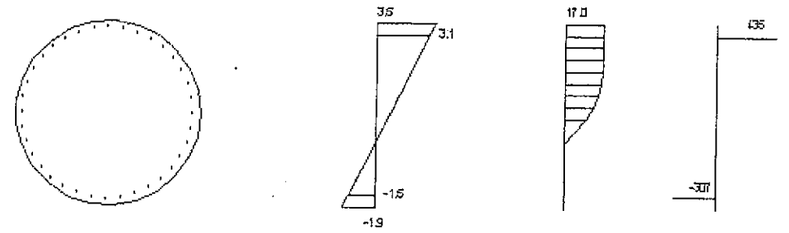
- Sección

Sección : PILA
ϕ [m] = 1.30
r [m] = 0.025
n° barras = 36



2 Comprobación

ϕ [mm] = 32
Nd [kN] = 10948.36
Md [kN·m] = 4766
Nu [kN] = 15111.2
Mu [kN·m] = 6527.0
γ = 1.38



Plano de deformación de agotamiento

x [m] = 0.840
1/r [1/m]·1.E-3 = 4.2
εs ·1.E-3 = 3.1
εi ·1.E-3 = -1.5

Deformación y tensión de armaduras superior e inferior

Profundidad [m]	Deformación ·1.E-3	Tensión [MPa]
0.091	3.5	-434.8
1.209	-1.9	307.3

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

Obra: LAV VALLES-CASTELLBISBAL
Fecha: 28/01/2004
Hora: 11:23:50

Cálculo de secciones a cortante

1 Datos

- Materiales

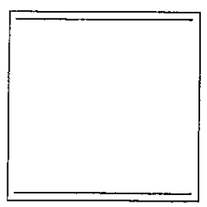
Tipo de hormigón : HA-30
Tipo de acero : B-500-S
fck [MPa] = 30.00
fyk [MPa] = 500.0
γc = 1.50
γs = 1.15

- Tipo de elemento estructural

Tipo : elemento con armadura a cortante

- Sección

Sección : CORTANTE
b [m] = 1.15
h [m] = 1.15



2 Dimensionamiento

Esfuerzo cortante de cálculo Vd [kN] = 586

Inclinación de las bielas [°] = 45
Inclinación de los cercos [°] = 90.0
ρ [·1.E-3] = 3
Nd [kN] = 0.0
σxd [MPa] = 0.0
σyd [MPa] = 0
θe [°] = 45.0

ϕ [mm]	Separación [mm]	nº ramas	Area [cm²/m]	Tipo	Vsu [kN]
ø 6	---	---	---	---	---
ø 8	0.15	4	13.4	2	530.8
ø 10	0.25	4	12.6	2	497.6
ø 12	0.25	4	18.1	2	716.6

Área estricta [cm²/m] = 11.5
(Cuantía mínima)
Vul [kN] = 7590.0
Vcu [kN] = 375.3

Ariño

TEC' 4
INGENIEROS CONSULTORES

Aribau, 237/241 Entl. 1º Esc. B
08021-BARCELONA
Tel.: 93-202-21-65
Fax: 93-414-32-66

Destinatario:	**Raquel Sahuquillo**	**Fax:**	**96 369 14 6**
Remitente:	**Marcin Warda**		
Fecha:	**16.12.2003**	**Nº de páginas:**	**1**
Asunto: Revisión de cálculos P.S. 0.5			

REVISIÓN DE PROYECTO :

L.A.V. MADRID – FRONTERA FRANCESA. TRAMO A: CONEXIÓN VALLÈS CASTELLBISBALL

ESTRUCTURA :

P.S. 0.5

FECHA: **16 de Diciembre 2003**

ANEJO DE CÁLCULOS Y PLANOS		Presente	Debe mejorarse	Observaciones
1	Definición de cargas	SI	NO	
2	Hipótesis de cargas	SI	NO	
3	Definición de materiales	SI	NO	
4	Coherencia con ambiente	SI	NO	
5	Replanteo geométrico	SI	NO	
6	Datos geotécnicos	SI	NO	
7	CALCULOS ESTRUCTURALES			
7.1	TABLERO -ELU	SI	NO	
7.2	TABLERO -ELS	SI	SI	No se han observado cálculos de movimientos verticales
7.3	ESTRIBOS	SI	SI	Uno de los estribos no cumple condición de deslizamiento F.S. <1.50
7.4	PILAS	SI	SI	No se han considerado cargas ni del pretensado ni de la fuerza centrífuga. Carga de frenado introducida al programa como Fx corresponde a la fuerza que actúa en la dirección transversal Fy.
7.5	APARATOS DE APOYO	SI	NO	
8	PLANOS	SI	NO	

Atentamente,

Marcin Warda
TEC' 4

COPASA
OBRA L.A.V. - Conexión Vallés-
CÓDIGO: B-132 Castellbisbal
15 JUL. 2004
ENTRADAS
Nº AD-232

Esto habíamos aclarado con Raquel... → subíamos valores mayorados y por lo tanto el coeficiente [illegible] y lo ha dejado así por cumplir [illegible]

UTE LLOBREGAT SVII (INTRAESA-TEC'4)

HOJA DE ENVÍO DE FAX

PARA: EVA MARTÍN	DE: ANTONIO ARIÑO MORENO
ORGANIZACIÓN: COPASA	FECHA: 28 de julio de 2004
NÚMERO DE FAX: 93-772-37-90	NÚM. TOTAL DE PÁGINAS INCLUYENDO LA CUBIERTA: 1+1
TELÉFONO: 93-771-17-37	Nº DE REFERENCIA DEL REMITENTE:
ASUNTO: ESTRIBO 1 Y PILAS DEL P.S. 0,5	SU REFERENCIA:

☒ URGENTE ☐ PARA REVISAR ☐ COMENTARIOS ☐ RESPONDA ☐ RECICLAR

NOTAS Y COMENTARIOS:

Eva,

Adjunto aprobación del estribo 1 y nueva sección de las pilas del P.S. 0,5.

Un saludo,

Antonio Ariño Moreno

COPASA
OBRA L.A.V. - Conexión Vallés-
CÓDIGO: B-132 Castellbisbal
28 JUL. 2004
ENTRADAS
Nº AD-241

Oficina de Obra: C/ Terç de Nostra Senyora de Montserrat nº 6, entlo.
08740 - Sant Andreu de la Barca (Barcelona)

UTE LLOBREGAT S-VII (INTRAESA-TEC'4)
C/ Terç de Nostra Senyora de Montserrat nº 8, entlo.
08740 - Sant Andreu de la Barca (Barcelona)
Tel: 936-535-156 Fax: 936-822-361

INFORME ESTRIBO 1 Y NUEVA SECCIÓN PILAS P.S. 0,5

PROYECTO DE CONSTRUCCIÓN DE PLATAFORMA
L.A.V. MADRID-ZARAGOZA-BARCELONA-FRONTERA FRANCESA
TRAMO: CONEXIÓN VALLÉS - CASTELLBISBAL

El presente informe revisa la memoria de cálculo del estribo 1 del paso superior 0.5 presentada por CYFE, S.A. para COPASA con fecha 29 de junio 2004 y cálculo para la nueva sección de pila realizada por VALTER recibida con fecha 23 de julio de 2004.

El estribo 1 se comprueba a deslizamiento en los cálculos presentados dando respuesta al informe realizado por la ACO con fecha 16 de diciembre de 2003. Las pilas de ϕ 1.70 m. aprobadas por la ACO con fecha del 9 de julio de 2004 se modifican a una sección elíptica de 1.20 x 1.30 m. Las bases de cálculo y el cálculo de la estructura están de acuerdo con las normativas utilizadas y con las instrucciones y recomendaciones para la redacción de proyectos de plataforma del GIF.

La asistencia a la dirección de obra formada por la U.T.E. de las empresas INGENIERÍA DE TRAZADOS Y ESTRUCTURAS, S.A. (INTRAESA) y TEC-CUATRO, S.A. en el proyecto de la L.A.V. Tramo: Conexión Vallés - Castellbisbal, aprueba los cálculos presentados del estribo 1 y de la nueva sección de las pilas del P.S. 0,5.

Barcelona, 28 de julio de 2004

JEAC
Antonio Ariño Moreno

COPASA
OBRA L.A.V. - Conexión Vallés-Castellbisbal
CÓDIGO: B-132
28 JUL. 2004
ENTRADAS
Nº 00247

GIF
Gestor de Infraestructuras Ferroviarias

COPASA
CONSTRUCCIONES PARAÑO, S.A.

DIMENSIONAMIENTO PILAS
PASO SUPERIOR 0,5

MEMORIA

PROYECTO DE CONSTRUCCIÓN DE PLATAFORMA

LÍNEA DE ALTA VELOCIDAD
Madrid-Zaragoza-Barcelona-Frontera francesa

TRAMO: *Conexión Vallés-Castellbisbal*
Provincia: Barcelona

Longitud: 3,30 Km.

JUNIO-04

ANEJO DE CÁLCULO. COMPROBACIÓN DE LA CAPACIDAD DE LAS PILAS CORRESPONDIENTES AL PASO SUPERIOT 0.5 DEL PROYECTO DE CONSTRUCCIÓN DE LA PLATAFORMA LÍNEA DE ALTA VELOCIDAD MADRID-ZARAGOZA-BARCELONA-FRONTERA FRANCESA. TRAMO: CONEXIÓN VALLÈS – CASTELLBISBAL

ANTECEDENTES

En el marco de la construcción del paso superior PS0.5, incluida en el *Proyecto de construcción de la plataforma línea de alta velocidad Madrid-Zaragoza-Barcelona-Frontera Francesa. Tramo: Conexión Vallès – Castellbisbal* surge la necesidad de modificar las pilas de esta estructura, aumentando su diámetro de 1,30 a 1,70 metros. A los efectos de determinar la armadura necesaria para esta nueva configuración, CYFE, S.A., empresa subcontratada para la construcción de esta estructura encarga a Josep M. Torné, ingeniero de caminos, canales y puertos, colegiado 12.502, la redacción del presente anejo de cálculo.

OBJETO

El objeto de este anejo es determinar la seguridad estructural asociada a la variación del diámetro de las pilas de la estructura Paso Superior 0.5

DESCRIPCIÓN DE LA ESTRUCTURA

Las pilas que se estudian forman parte del paso superior PS 0.5. Se trata de una estructura de 3 vanos de 21+ 32,32 + 21 metros de luz. El tablero, en curva, esta formado por una losa aligerada de 11,20 metros de ancho.

DOCUMENTACIÓN BASE PARA LA REDACCIÓN DE ESTE ANEJO

Para la redacción de este anejo se ha partido de la documentación redactada por la empresa Valter Valenciana de Estruturas redactada tras la revisión que TEC'4 llevó a cabo de la documentación original.

MÉTODOLOGÍA

Mediante el programa de cálculo Prontuario Informático del Hormigón Estructural 3.0 se determina la capacidad de la pila de acuerdo con la nueva configuración geométrica y con las variaciones en el armado que se proponen a raíz de un primer tanteo llevado a cabo por el autor de este anejo.

Las solicitaciones que actúan sobre las pilas se obtienen del anejo redactado por Valter.

Se pretende que esta nueva configuración aporte un margen de seguridad similar al correspondiente a la estructura original.

Cabe indicar que la variación geométrica que se propone conlleva una variación en el reparto de los esfuerzos horizontales que el tablero transmite a pilas y estribos. Esta variación no se tiene en cuenta en este estudio, puesto que no se dispone de datos suficientes para llevarlo a cabo y ser, además, la seguridad adicional que se obtiene para esta estructura más que suficiente para absorber estos incrementos.

RESUMEN DE RESULTADOS

Para los esfuerzos de cálculo en las secciones que se analizan se han tomado los procedentes del anejo de cálculo redactado por Valter:

En la base: Md = 4766 kNxm Nd = 10948 kN

El valor del axil se ha incrementado con el incremento de peso de la pila: Nd= 10948 kN + 11,30 x 1,50 x 3,1416 x ($0,85^2$-$0,65^2$) x 25 = 11.347 kN

	Armado original	**Nu**	**Mu**	**CSCM**	**Armado propuesto**	**Nu**	**Mu**	**CSCM**
Cortante	d12a15	Cuantía mínima (11,5cm²/ml)			D12a15	Cuantía mínima (15cm²/ml)		
Flexión. S1	36d32	15111,2	6527,0	1,36	36d20	20223,50	8594,60	1,80
Flexión S2	28d25				36d20	22314,0	8319,90	2,00

DOCUMENTACIÓN ANEJA

Se anejan resultados del programa de cálculo Prontuario Informático del Hormigón, correspondientes al análisis a flexión recta y cortante de la pila de 1,70 metros de diámetro.

Tarragona, 29 de junio de 2004
Josep M. Torné Sans
Ingeniero de caminos
Colegiado 12502

COPASA

COMPROBACIONES

Obra: cyfe2
Fecha: 27/06/2004
Hora: 21:15:12

CÁLCULO A FLEXIÓN EN SECCIÓN BASE

Cálculo de secciones a flexión compuesta recta

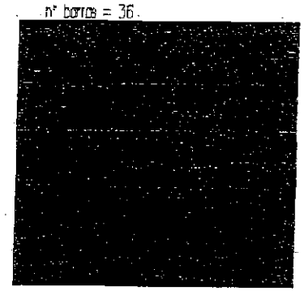
1 Datos

- Materiales

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

- Sección

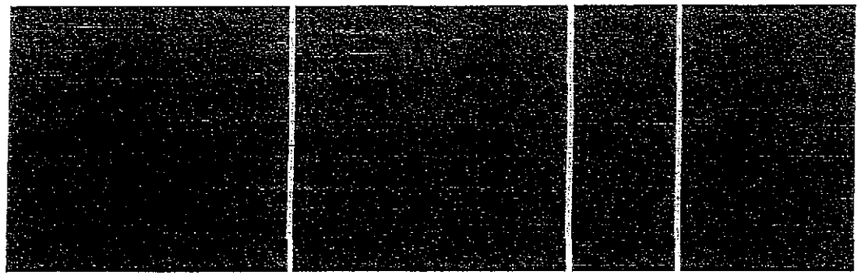
Sección : PILAMODIFICADA
ϕ [m] = 1.70
r [m] = 0.045
nº barras = 36



2 Comprobación

ϕ [mm] = 20
Nd [kN] = 11347
Md [kN·m] = 4766

Nu [kN] = 20412.4
Mu [kN·m] = 8573.3
γ = 1.80



Plano de deformación de agotamiento

x [m] = 1.061

1/r [1/m]·1.E-3 = 3.3

εs ·1.E-3 = 3.5

εi ·1.E-3 = -2.1

Deformación y tensión de armaduras superior e inferior

Profundidad [m]	Deformación ·1.E-3	Tensión [MPa]
0.098	3.2	-434.8
1.602	-1.8	356.5

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

Obra: cyfe2
Fecha: 27/06/2004
Hora: 21:17:54

DIMENSIONAMIENTO A FLEXIÓN EN SECCIÓN DE CAMBIO DE ARMADO

Cálculo de secciones a flexión compuesta recta

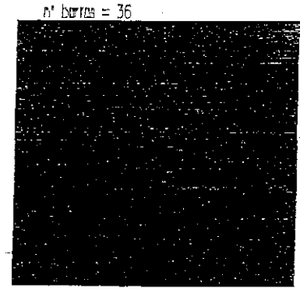
1 Datos

- Materiales

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

- Sección

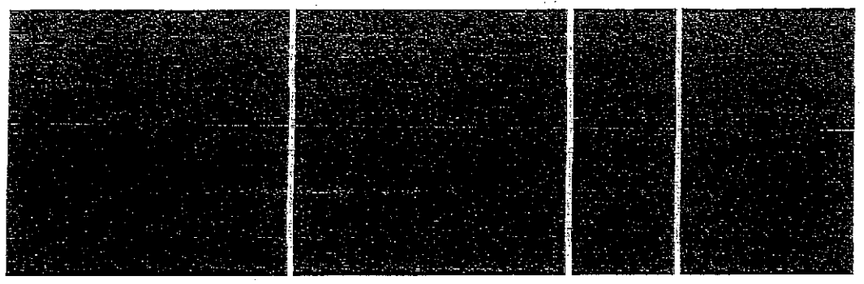
Sección : PILAMODIFICADA
ϕ [m] = 1.70
r [m] = 0.045
nº barras = 36



2 Comprobación

ϕ [mm] = 20
Nd [kN] = 11146
Md [kN·m] = 4156

Nu [kN] = 22314.0
Mu [kN·m] = 8319.9
γ = 2.00



Plano de deformación de agotamiento

x [m] = 1.129

1/r [1/m]·1.E-3 = 3.1

εs ·1.E-3 = 3.5

εi ·1.E-3 = -1.8

Deformación y tensión de armaduras superior e inferior

Profundidad [m]	Deformación ·1.E-3	Tensión [MPa]
0.088	3.2	-434.8
1.602	-1.5	293.3

Obra:
Fecha: 27/06/2004
Hora: 21:21:26

Cálculo de secciones a cortante

1 Datos

- Materiales

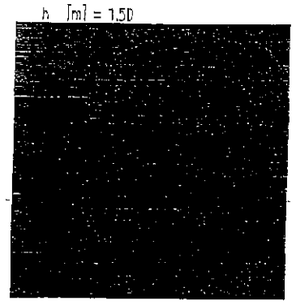
Tipo de hormigón : HA-30
Tipo de acero : B-500-S
fck [MPa] = 30.00
fyk [MPa] = 500.00
γc = 1.50
γs = 1.15

- Tipo de elemento estructural

Tipo : elemento con armadura a cortante

- Sección

Sección : PILA
bD [m] = 1.50
h [m] = 1.50



2 Dimensionamiento

Esfuerzo cortante de cálculo Vd [kN] = 586

Inclinación de las bielas [°] = 45
Inclinación de los cercos [°] = 90.0
ρ [·1.E-3] = 4.6
Nd [kN] = 11347.0
σxd [MPa] = 5.0
σyd [MPa] = 0
θe [°] = 31.2

ϕ [mm]	Separación [mm]	nº ramas	Area [cm²/m]	Tipo	Vsu [kN]	Vu2 [kN]
ø 6	----	---	---	---	---	---
ø 8	0.10	4	20.1	2	1053.6	---
ø 10	0.20	4	15.7	2	823.1	---
ø 12	0.25	4	18.1	2	948.2	---

Área estricta [cm²/m] = 15.0

(Cuantía mínima)

Vul [kN] = 13140.0

Vcu [kN] = 1026.0

UTE LLOBREGAT S-VII (INTRAESA-TEC'4)

HOJA DE ENVÍO DE FAX

PARA: EVA MARTÍN	DE: ANTONIO ARIÑO MORENO
ORGANIZACIÓN: COPASA	FECHA: 9 de julio de 2004
NÚMERO DE FAX: 93-772-37-90	NÚM. TOTAL DE PÁGINAS INCLUYENDO LA CUBIERTA: 1+1
TELÉFONO: 93-771-17-37	Nº DE REFERENCIA DEL REMITENTE:
ASUNTO: PILAS P.S. 0,5	SU REFERENCIA:

☒ URGENTE ☐ PARA REVISAR ☐ COMENTARIOS ☐ RESPONDA ☐ RECICLAR

NOTAS Y COMENTARIOS:

Eva,

Adjunto aprobación de los cálculos presentados de las pilas del paso superior 0.5.

Con respecto a las pilas como ya te he mencionado por teléfono, falta modificar los planos presentados en la revisión de proyecto estructura P.S. 0.5 con fecha enero de 2004 aumentando la armadura superior de las zapatas de las pilas con 3ϕ12/ml en ambas direcciones.

Un saludo,

Antonio Ariño Moreno

COPASA
OBRA L.A.V. - Conexión Vallés-
CÓDIGO: B-132 Castellbisbal
09 JUL. 2004
ENTRADAS
Nº 85-224

Oficina de Obra: C/ Terç de Nostra Sanyora de Montserrat nº 6, entlo.
08740 - Sant Andreu de la Barca (Barcelona)
TEL: 936-535-156 FAX: 936-822-361

9.Jul. 2004 16:39 UTE LLOBREGAT 936822361 Nº6973 P. 2
UTE LLOBREGAT

UTE LLOBREGAT S-VII (INTRAESA-TEC'4)
C/ Terç de Nostra Sanyora de Montserrat nº 6, entlo.
08740 - Sant Andreu de la Barca (Barcelona)
Tel: 936-535-156 Fax: 936-822-361

INFORME PILAS P.S. 0,5

PROYECTO DE CONSTRUCCIÓN DE PLATAFORMA
L.A.V. MADRID-ZARAGOZA-BARCELONA-FRONTERA FRANCESA
TRAMO: CONEXIÓN VALLÉS - CASTELLBISBAL

El presente informe revisa la memoria de cálculo de las pilas del paso superior 0.5 presentada por CYFE, S.A. para COPASA con fecha 29 de junio 2004.

La memoria de cálculo parte de los momentos flectores y esfuerzos axiles en la base de las pilas presentados por VALTER con fecha 16 de diciembre de 2003. El anejo presentado determina la seguridad estructural al aumentar el diámetro de las pilas del paso superior 0.5 de 1.30 a 1.70 m. La memoria presenta los siguientes apartados: antecedentes, descripción de la estructura, documentación base para la redacción del anejo, metodología, resultados. Las bases de cálculo y el cálculo de la estructura están de acuerdo con las normativas utilizadas y con las instrucciones y recomendaciones para la redacción de proyectos de plataforma del GIF.

La asistencia a la dirección de obra formada por la U.T.E. de las empresas INGENIERÍA DE TRAZADOS Y ESTRUCTURAS, S.A. (INTRAESA) y TEC-CUATRO, S.A. en el proyecto de la L.A.V. Tramo: Conexión Vallés - Castellbisbal, aprueba los cálculos presentados de las pilas del P.S. 0,5.

Barcelona, 9 de julio de 2004

JEAC
Antonio Ariño Moreno

COPASA
OBRA L.A.V. - Conexión Vallés-
CÓDIGO: B-132 Castellbisbal
09 JUL. 2004
ENTRADAS
Nº 85-224

GIF
Gestor de Infraestructuras Ferroviarias

COPASA
CONSTRUCCIONES PARAMO, S.A.

DIMENSIONAMIENTO PANTALLAS ESTRIBO 1

PASO SUPERIOR 0,5

PLANOS

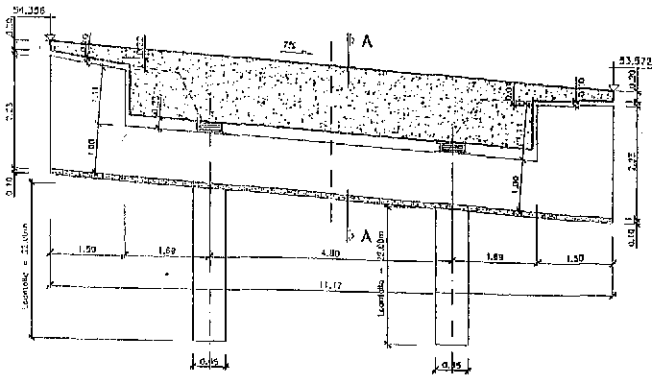
PROYECTO DE CONSTRUCCIÓN DE PLATAFORMA

LÍNEA DE ALTA VELOCIDAD
Madrid-Zaragoza-Barcelona-Frontera francesa

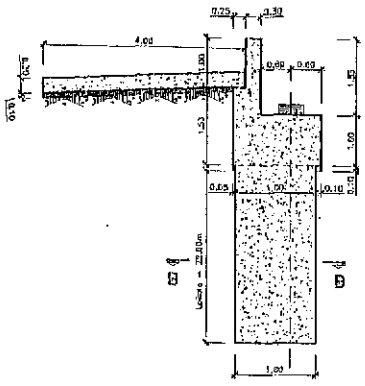
TRAMO: *Conexión Vallés-Castellbisbal*
Provincia: Barcelona

Longitud: 3,30 Km.

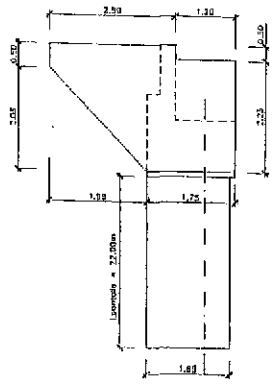
JUNIO-04



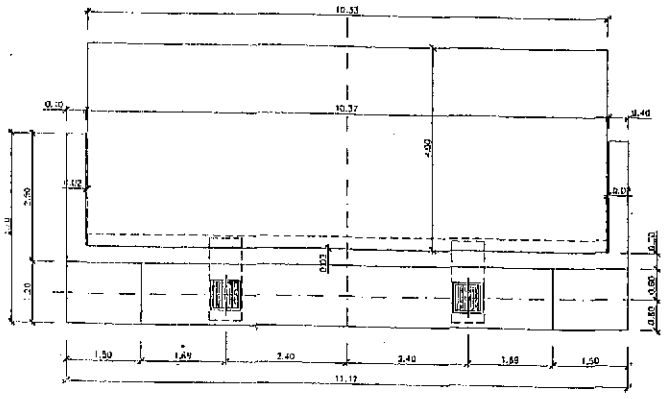
ALZADO FRONTAL E-1
ESCALA 1:50



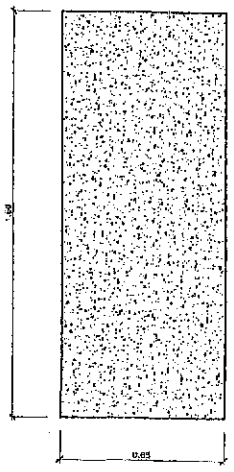
SECCION A-A
ESCALA 1:50



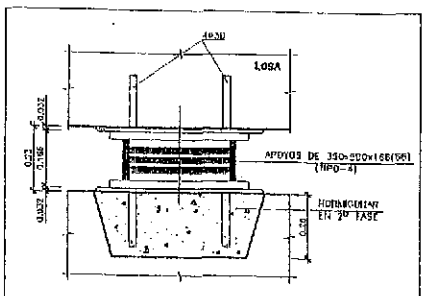
ALZADO DE ALETA
ESCALA 1:50



PLANTA ESTRIBO E-1
ESCALA 1:50



SECCION B-B
ESCALA 1:50



DETALLE DE APOYOS ARMADOS ANCLADOS
S/E

CUADRO DE CARACTERISTICAS SEGUN EHE / TIBE EA 95

SISTEMA	IDENTIFICACION	DESCRIPCION	RESIST. CARACT. (N/mm²)	COEFICIENTE PARCIAL
HORMIGON	CIMENTACION Y ESTRIBOS ALZADO DE VIGAS (PILETAS)	HA-25/B/20/IIa HA-30/B/20/IIa HA-35/B/20/IIa		γ_c=1.50
ACERO PASIVO	ARMADURAS PASIVAS	B 500 S B 500 T		γ_s=1.15
ACERO ACTIVO	ARMADURA ACTIVA	Y-1860 S7		γ_s=1.15
EJECUCION	ESPECIAL DE PERFORACION			γ_f=1.60 (CONTROLADO) γ_f=1.50

NOTAS:

1.- EL HORMIGON DEBERA CUMPLIR CON LOS REQUISITOS DE LIMITACION DEL CONTENIDO DE AGUA Y CEMENTO INDICADOS EN LA TABLA 37.3.2.a DE LA EHE.

2.- TABLA DE LONGITUDES DE SOLAPO Y ANCLAJE PARA ARMADURAS PASIVAS.

HA-25 (fck=250)	SOLAPO (Ls) (cm)		ANCLAJE (Lb) (cm)	
ø (mm)	Ls1	Ls2	Lb1	Lb2
10	50	75	28	38
12	60	85	33	45
14	70	100	39	50
16	80	114	45	57
20	100	140	56	71
25	125	200	64	131
32	308	439	154	219

HA-30 (fck=300)	SOLAPO (Ls) (cm)		ANCLAJE (Lb) (cm)	
ø (mm)	Ls1	Ls2	Lb1	Lb2
10	50	72	25	36
12	60	86	30	43
14	70	100	35	50
16	80	114	40	57
20	101	146	50	73
25	192	228	81	114
32	265	372	133	186

HA-35 (fck=350)	SOLAPO (Ls) (cm)		ANCLAJE (Lb) (cm)	
ø (mm)	Ls1	Ls2	Lb1	Lb2
10	45	71	25	36
12	56	86	30	43
14	70	100	35	50
16	80	114	40	57
20	100	145	50	71
25	125	210	75	105
32	244	344	123	172

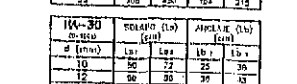
LOS SUBINDICES 1 y 2 EN LAS LONGITUDES DE SOLAPO Y ANCLAJE DE LAS BARRAS SE REFIEREN A LA POSICION DE LA BARRA A ANCLAR O SOLAPAR, EN LA PIEZA RESPECTO A LA DIRECCION DEL HORMIGONADO.

LA EHE DEFINE:

a) POSICION I DE ADHERENCIA BUENA, PARA LAS ARMADURAS QUE DURANTE EL HORMIGONADO FORMAN CON LA HORIZONTAL UN ANGULO COMPRENDIDO ENTRE 45ª Y 90º O QUE EN EL CASO DE FORMAR UN ANGULO INFERIOR A 45º, ESTAN SITUADAS EN LA MITAD INFERIOR DE LA SECCION O A UNA DISTANCIA IGUAL O MAYOR A 30cm DE LA CARA SUPERIOR DE UNA CAPA DE HORMIGONADO.

b) POSICION II DE ADHERENCIA DEFICIENTE, PARA LAS ARMADURAS QUE, DURANTE EL HORMIGONADO NO SE ENCUENTRAN EN NINGUNO DE LOS CASOS ANTERIORES.

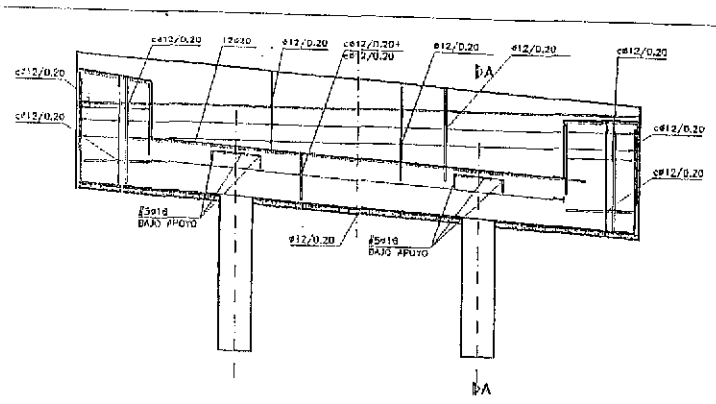
3.- RECUBRIMIENTOS NOMINALES (r nom.)



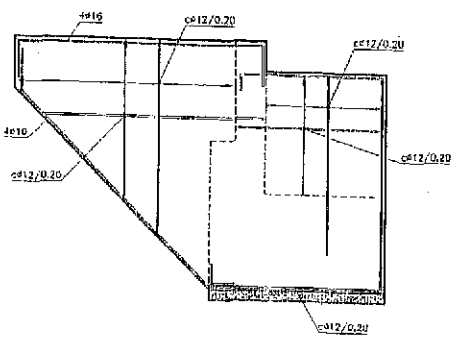
ESTRIBOS Y PILAS..... r nom. = 3.5 cm.
CIMENTACION..... r nom. = 5.0 cm.

NOTA:
LAS PANTALLAS SE EMPOTRARAN UN MINIMO DE 4.50 m EN EL PAQUETE DE GRAVAS.

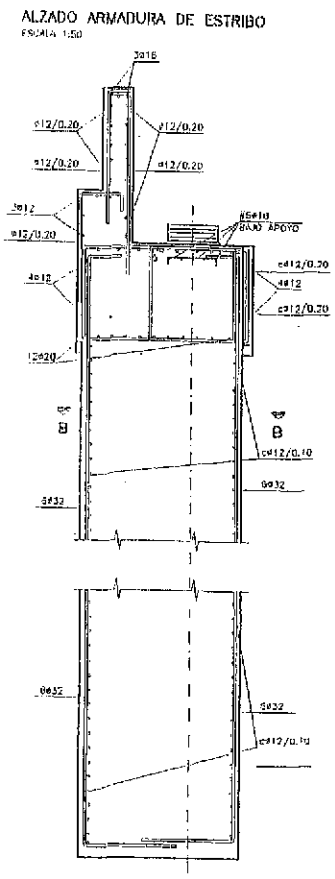
GIF Gestor de Infraestructuras Ferroviarias	TITULO PROYECTO DE CONSTRUCCION DE PLATAFORMA LINEA DE ALTA VELOCIDAD MADRID - ZARAGOZA - BARCELONA - FRONTERA FRANCESA TRAMO: CONEXIÓN VALLES - CASTELLBISBAL	AUTOR COPASA	ESCALA Numérica / Gráfica	FECHA MAYO 2004	TITULO DEL PLANO P.S. 0,5 ESTRIBO 1 DEFINICION GEOMETRICA	Nº DE PLANO E-02.01 (1) Hoja 1 de 1	



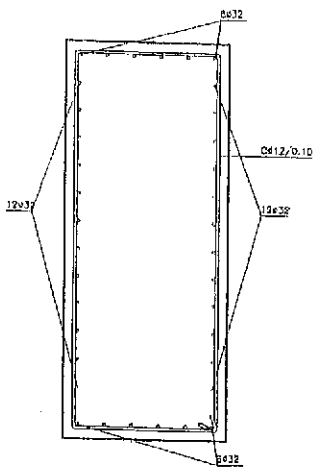
ALZADO ARMADURA DE ESTRIBO
ESCALA 1:50



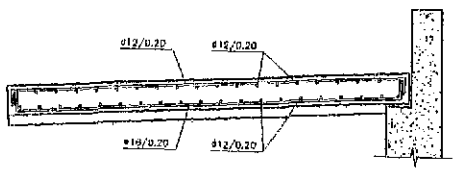
ARMADO ALETA
ESCALA 1:25



SECCION A-A
ESCALA 1:25



SECCION B-B
ESCALA 1:10



ARMADO LOSA DE TRANSICION
ESCALA 1:25

CUADRO DE CARACTERISTICAS SEGUN EHE / TIBE EA 95

SISTEMA	IDENTIFICACION	DESCRIPCION	RESIST. CARACT. (N/mm²)	COEFICIENTE PARCIAL
HORMIGON	CIMENTACION Y ESTRIBOS ALZADO DE VIGAS (PILETAS)	HA-25/B/20/IIa HA-30/B/20/IIa HA-35/B/20/IIa		γ_c=1.50
ACERO PASIVO	ARMADURAS PASIVAS	B 500 S B 500 T		γ_s=1.15
ACERO ACTIVO	ARMADURA ACTIVA	Y-1860 S7		γ_s=1.15
EJECUCION	ESPECIAL DE PERFORACION			γ_f=1.60 (CONTROLADO) γ_f=1.50

NOTAS:

1.- EL HORMIGON DEBERA CUMPLIR CON LOS REQUISITOS DE LIMITACION DEL CONTENIDO DE AGUA Y CEMENTO INDICADOS EN LA TABLA 37.3.2.a DE LA EHE.

2.- TABLA DE LONGITUDES DE SOLAPO Y ANCLAJE PARA ARMADURAS PASIVAS.

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14	70	100	39	50
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20	100	143	56	71
25	125	210	64	131
32	308	451	154	219

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12	60	86	30	43
14	70	100	35	50
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20	104	148	52	75
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16	80	114	40	57
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32	245	344	123	172

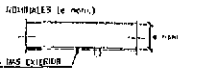
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LA EHE DEFINE:

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b) POSICION II DE ADHERENCIA DEFICIENTE, PARA LAS ARMADURAS QUE, DURANTE EL HORMIGONADO NO SE ENCUENTRAN EN NINGUNO DE LOS CASOS ANTERIORES.

3.- RECUBRIMIENTOS NOMINALES (r nom.)



ESTRIBOS Y PILAS..... r nom. = 3.5 cm.
CIMENTACION..... r nom. = 5.0 cm.

NOTA:
P.E. SIGNIFICA PARAMENTO EXTERIOR
P.I. SIGNIFICA PARAMENTO INTERIOR

GIF Gestor de Infraestructuras Ferroviarias	TITULO PROYECTO DE CONSTRUCCION DE PLATAFORMA LINEA DE ALTA VELOCIDAD MADRID - ZARAGOZA - BARCELONA - FRONTERA FRANCESA TRAMO: CONEXIÓN VALLES - CASTELLBISBAL	AUTOR COPASA	ESCALA Numérica / Gráfica	FECHA MAYO 2004	TITULO DEL PLANO P.S. 0,5 ESTRIBO 1 ARMADURA (1)	Nº DE PLANO E-02.02 (1) Hoja 1 de 2	

COMPROBACIONES

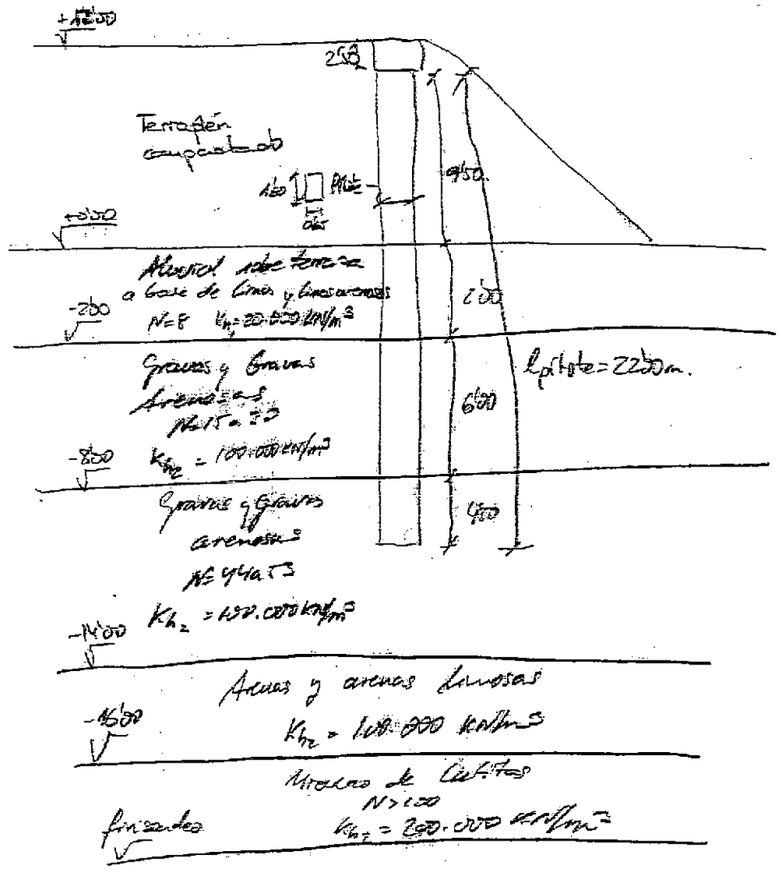
VALTER valenciana de estructuras

Proyecto L.A.V. VALLES - CASTELBISBAL

Asunto ESTRIBO PILOTADO (PILOTE APANTALLADO)

Cálculo de carga de hundimiento del pilote:

El siguiente es la sección transversal del estribo con estratos que cruza según el anejo geotécnico:



Fecha 21-05-04

De la información geotécnica se sabe que:

estrato de gravas { γ_f (gravas) = 10 t/m³ ; $\sigma_p = 2N = 2 \cdot 50 = 100 \text{ Kp/cm}^2 = 1000 \text{ t/m}^2$

Considerando sólo la resistencia de este estrato.

Perímetro pilote = 0'65 × 2 + 1'60 × 2 = 4'5 m.

Área pilote = 0'65 × 1'60 = 1'04 m²

$Q_{hundimiento} = 10 \text{ (t/m}^2\text{)} \times 4'5 \text{ (m)} \times (6+4+5)\text{(m)} + 1000 \text{ (t/m}^2\text{)} \times 1'04 \text{ (m}^2\text{)} = 1512'5 \text{ Tn}$

Se toma un coef. de seguridad de F=2'50 (punta y fuste) según el anejo geotécnico:

$Q_{hundimiento,adm} = \frac{1512'5}{2'5} = 605 \text{ Tn}$.

La carga máxima sobre los pilotes es de:

$Q_{table} = 251'57$ Tn (reacción máxima sobre losa + cargadero).

Peso del cargadero = 25 t/m³ × 32'68 m³ / 12 pilotes = 68'05 t/pilote.

Peso pilote = L × A × γ_H = 22 (m) × 1'04 × 25 t/m³ = 57'2 t/pilote.

Luego la máxima reacción sobre un pilote será:

$Q_T = 251'57 + 49'85 + 57'2 = 398'62 \text{ t} < Q_h = 605 \text{ Tn}$

Tope estructural del pilote:

$$T_e = \alpha \cdot f_{yk} \cdot S_a + \rho \cdot f_{ck} \cdot S_b$$

$f_{ck} = 225 \text{ Kp/cm}^2$; $\alpha = 0'25$; $S_b = 1'04 = 10400 \text{ cm}^2$

$S_a = 20 \times 3'14 = 62'83 \text{ cm}^2$; $f_{yk} = 3500 \text{ Kp/cm}^2$; $\rho = 0'20$

$T_e = [0'20 \times 3500 \times 62'83 + 0'25 \times 225 \times 1040] = 65092 \text{ Kp} = 650'92 \text{ t}$.

luego no se supera el tope estructural 349'62t < 650'92t OK!

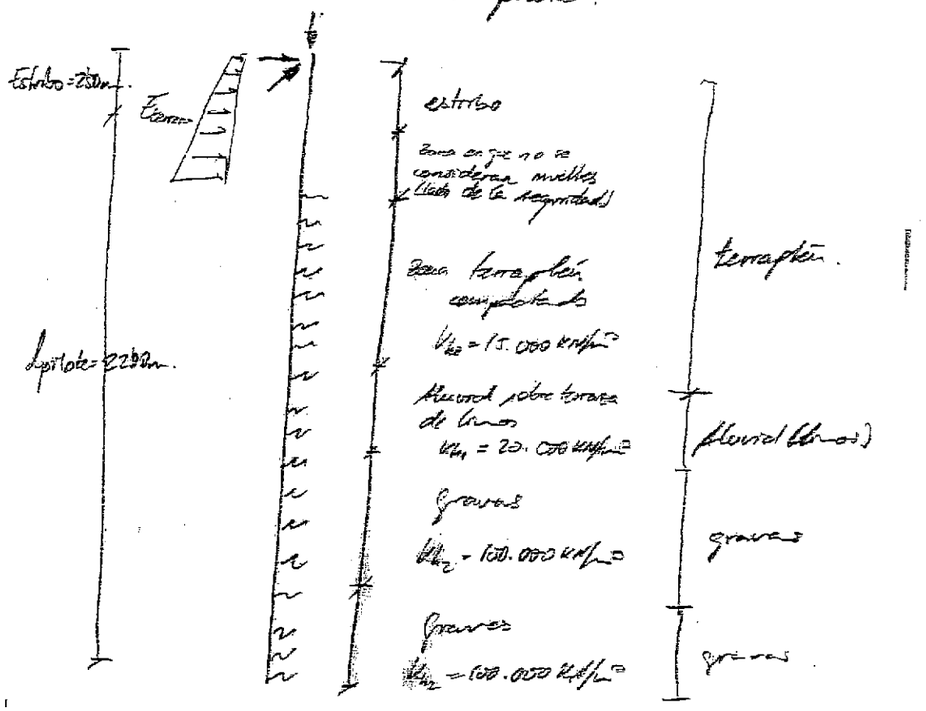
* Modelo de cálculo de los pilotes.

En el cálculo de los pilotes se tomará del lado de la seguridad que los 3'00 m primeros del terraplén no ejercen acción al desplazamiento de los pilotes.

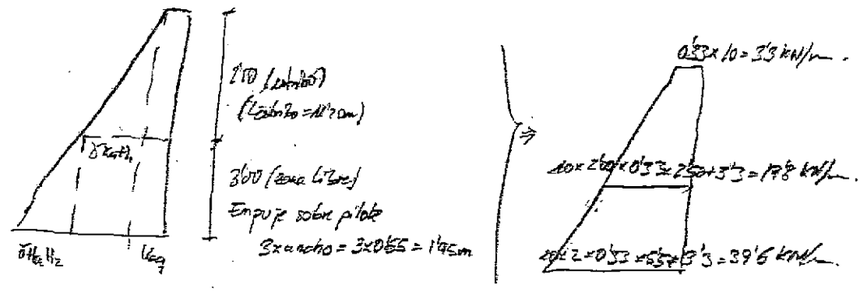
Por otro lado el anejo geotécnico no da un coeficiente de balasto horizontal para el terraplén, por lo que se toma un valor habitual para rellenos de terraplén compactados k_h = 15.000 kN/m³ (rellenos de terraplén)

De este modo hacemos un modelo de cálculo del pilote tal y como muestra la figura siguiente.

Modelo estructural del pilote:



Empujes:



Las acciones sobre cada pilote serán:

		F_z (kN)	F_x (kN)	F_y (kN)
Peso propio		6714+4985	—	—
CH mín.		1833	—	—
CH máx		2145'7	—	—
Elevat. SC		-4026'0 5508'9	—	—
Envol. Carro		-2267 kN 5299 kN	—	—
Pret		22251 6750	—	—
Frenado		—	17'50	4'92
F_z Centrífuga		-198'8/-216'2	3'17	4'303
ψ=0'6 (Gr. 2 cons.)	Viento con SC	3[illegible]/-3[illegible]	—	32'47×0'6=19'48
	Viento sin SC	3[illegible]/-3[illegible]	—	61'25
	Gradiente	288'5=277'31	—	—
	Reológicos	—	1'164	—
ψ=0'6	Temperatura	—	9'27×0'6=5'56	—

Se toma como la combinación más desfavorable:

$\frac{1'00}{1'50}$ (PP + (CH$_{min}$) + 1'50 (Real + Emp) + 1'6 (SC + Carro + F_{re} + $F_{z\,cent}$) + + 0'60 · (V + T + GT).

+ N_{conc} × 0'325 (m) ← excentricidad.

$M_{max\,cimientos}$ = 2675'68 kN·m
$M_{transversal}$ = 67 kN·m
N_{conc} = 290 kN

⇒ M_{max} = 6647'11 kN
N_{conc} = 3971 kN.

⇒ ρ ⇒ 36 Ø32.

Q_{max} = 566 kN·m.
N_{conc} = 290 kN.

⇒ cØ12/6'10 (Estado de la armadura de flexión)

PILOTES DE ESTRIBOS

PILOTE KN-m Units

S T A T I C L O A D C A S E S

STATIC CASE	CASE TYPE	SELF WT FACTOR
PP	DEAD	1.0000
EMPUJE	DEAD	0.0000
CM	DEAD	0.0000
SC	DEAD	0.0000
CARRO	DEAD	0.0000
PRET	DEAD	0.0000
FRENADO	DEAD	0.0000
FCENTRI	DEAD	0.0000
VIENTO	DEAD	0.0000
REOLOGI	DEAD	0.0000
TEMPERAT	DEAD	0.0000

J O I N T D A T A

JOINT	GLOBAL-X	GLOBAL-Y	GLOBAL-Z	RESTRAINTS	ANGLE-A	ANGLE-B	ANGLE-C
1	0.00000	0.00000	0.00000	0 0 1 0 0 0	0.000	0.000	0.000
2	0.00000	0.00000	0.50000	0 0 0 0 0 0	0.000	0.000	0.000
3	0.00000	0.00000	1.00000	0 0 0 0 0 0	0.000	0.000	0.000
4	0.00000	0.00000	1.50000	0 0 0 0 0 0	0.000	0.000	0.000
5	0.00000	0.00000	2.00000	0 0 0 0 0 0	0.000	0.000	0.000
6	0.00000	0.00000	2.50000	0 0 0 0 0 0	0.000	0.000	0.000
7	0.00000	0.00000	3.00000	0 0 0 0 0 0	0.000	0.000	0.000
8	0.00000	0.00000	3.50000	0 0 0 0 0 0	0.000	0.000	0.000
9	0.00000	0.00000	4.00000	0 0 0 0 0 0	0.000	0.000	0.000
10	0.00000	0.00000	4.50000	0 0 0 0 0 0	0.000	0.000	0.000
11	0.00000	0.00000	5.00000	0 0 0 0 0 0	0.000	0.000	0.000
12	0.00000	0.00000	5.50000	0 0 0 0 0 0	0.000	0.000	0.000
13	0.00000	0.00000	6.00000	0 0 0 0 0 0	0.000	0.000	0.000
14	0.00000	0.00000	6.50000	0 0 0 0 0 0	0.000	0.000	0.000
15	0.00000	0.00000	7.00000	0 0 0 0 0 0	0.000	0.000	0.000
16	0.00000	0.00000	7.50000	0 0 0 0 0 0	0.000	0.000	0.000
17	0.00000	0.00000	8.00000	0 0 0 0 0 0	0.000	0.000	0.000
18	0.00000	0.00000	8.50000	0 0 0 0 0 0	0.000	0.000	0.000
19	0.00000	0.00000	9.00000	0 0 0 0 0 0	0.000	0.000	0.000
20	0.00000	0.00000	9.50000	0 0 0 0 0 0	0.000	0.000	0.000
21	0.00000	0.00000	10.00000	0 0 0 0 0 0	0.000	0.000	0.000
22	0.00000	0.00000	10.50000	0 0 0 0 0 0	0.000	0.000	0.000
23	0.00000	0.00000	11.00000	0 0 0 0 0 0	0.000	0.000	0.000
24	0.00000	0.00000	11.50000	0 0 0 0 0 0	0.000	0.000	0.000
25	0.00000	0.00000	12.00000	0 0 0 0 0 0	0.000	0.000	0.000
26	0.00000	0.00000	12.50000	0 0 0 0 0 0	0.000	0.000	0.000
27	0.00000	0.00000	13.00000	0 0 0 0 0 0	0.000	0.000	0.000
28	0.00000	0.00000	13.50000	0 0 0 0 0 0	0.000	0.000	0.000
29	0.00000	0.00000	14.00000	0 0 0 0 0 0	0.000	0.000	0.000
30	0.00000	0.00000	14.50000	0 0 0 0 0 0	0.000	0.000	0.000
31	0.00000	0.00000	15.00000	0 0 0 0 0 0	0.000	0.000	0.000
32	0.00000	0.00000	15.50000	0 0 0 0 0 0	0.000	0.000	0.000
33	0.00000	0.00000	16.00000	0 0 0 0 0 0	0.000	0.000	0.000
34	0.00000	0.00000	16.50000	0 0 0 0 0 0	0.000	0.000	0.000
35	0.00000	0.00000	17.00000	0 0 0 0 0 0	0.000	0.000	0.000
36	0.00000	0.00000	17.50000	0 0 0 0 0 0	0.000	0.000	0.000
37	0.00000	0.00000	18.00000	0 0 0 0 0 0	0.000	0.000	0.000
38	0.00000	0.00000	18.50000	0 0 0 0 0 0	0.000	0.000	0.000
39	0.00000	0.00000	19.00000	0 0 0 0 0 0	0.000	0.000	0.000
40	0.00000	0.00000	22.00000	0 0 0 0 0 0	0.000	0.000	0.000
47	0.00000	0.00000	24.50000	0 0 0 0 0 0	0.000	0.000	0.000

J O I N T S P R I N G D A T A

JOINT	K-U1	K-U2	K-U3	K-R1	K-R2	K-R3
27	4875.000	4875.000	0.000	0.000	0.000	0.000
28	4875.000	4875.000	0.000	0.000	0.000	0.000
29	4875.000	4875.000	0.000	0.000	0.000	0.000
30	4875.000	4875.000	0.000	0.000	0.000	0.000
31	4875.000	4875.000	0.000	0.000	0.000	0.000
32	4875.000	4875.000	0.000	0.000	0.000	0.000
33	4875.000	4875.000	0.000	0.000	0.000	0.000
34	4875.000	4875.000	0.000	0.000	0.000	0.000
35	4875.000	4875.000	0.000	0.000	0.000	0.000
36	4875.000	4875.000	0.000	0.000	0.000	0.000
37	4875.000	4875.000	0.000	0.000	0.000	0.000
38	4875.000	4875.000	0.000	0.000	0.000	0.000
39	2467.000	2467.000	0.000	0.000	0.000	0.000
26	5687.000	5687.000	0.000	0.000	0.000	0.000
23	6500.000	6500.000	0.000	0.000	0.000	0.000
24	6500.000	6500.000	0.000	0.000	0.000	0.000
25	6500.000	6500.000	0.000	0.000	0.000	0.000
22	19500.000	19500.000	0.000	0.000	0.000	0.000
2	32500.000	32500.000	0.000	0.000	0.000	0.000
3	32500.000	32500.000	0.000	0.000	0.000	0.000
4	32500.000	32500.000	0.000	0.000	0.000	0.000
5	32500.000	32500.000	0.000	0.000	0.000	0.000
6	32500.000	32500.000	0.000	0.000	0.000	0.000
7	32500.000	32500.000	0.000	0.000	0.000	0.000
8	32500.000	32500.000	0.000	0.000	0.000	0.000
9	32500.000	32500.000	0.000	0.000	0.000	0.000
10	32500.000	32500.000	0.000	0.000	0.000	0.000
11	32500.000	32500.000	0.000	0.000	0.000	0.000
12	32500.000	32500.000	0.000	0.000	0.000	0.000
13	32500.000	32500.000	0.000	0.000	0.000	0.000
14	32500.000	32500.000	0.000	0.000	0.000	0.000
15	32500.000	32500.000	0.000	0.000	0.000	0.000
16	32500.000	32500.000	0.000	0.000	0.000	0.000
17	32500.000	32500.000	0.000	0.000	0.000	0.000
18	32500.000	32500.000	0.000	0.000	0.000	0.000
19	32500.000	32500.000	0.000	0.000	0.000	0.000
20	32500.000	32500.000	0.000	0.000	0.000	0.000
21	32500.000	32500.000	0.000	0.000	0.000	0.000
1	32500.000	32500.000	0.000	0.000	0.000	0.000

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

FRAME	JNT-1	JNT-2	SECTION	ANGLE	RELEASES	SEGMENTS	R1	R2	FACTOR	LENGTH
1	1	2	PILOTE2	0.000	000000	2	0.000	0.000	1.000	0.500
2	2	3	PILOTE2	0.000	000000	2	0.000	0.000	1.000	0.500
3	3	4	PILOTE2	0.000	000000	2	0.000	0.000	1.000	0.500
4	4	5	PILOTE2	0.000	000000	2	0.000	0.000	1.000	0.500
5	5	6	PILOTE2	0.000	000000	2	0.000	0.000	1.000	0.500
6	6	7	PILOTE2	0.000	000000	2	0.000	0.000	1.000	0.500
7	7	8	PILOTE2	0.000	000000	2	0.000	0.000	1.000	0.500
8	8	9	PILOTE2	0.000	000000	2	0.000	0.000	1.000	0.500
9	9	10	PILOTE2	0.000	000000	2	0.000	0.000	1.000	0.500
10	10	11	PILOTE2	0.000	000000	2	0.000	0.000	1.000	0.500
11	11	12	PILOTE2	0.000	000000	2	0.000	0.000	1.000	0.500
12	12	13	PILOTE2	0.000	000000	2	0.000	0.000	1.000	0.500
13	13	14	PILOTE2	0.000	000000	2	0.000	0.000	1.000	0.500
14	14	15	PILOTE2	0.000	000000	2	0.000	0.000	1.000	0.500
15	15	16	PILOTE2	0.000	000000	2	0.000	0.000	1.000	0.500
16	16	17	PILOTE2	0.000	000000	2	0.000	0.000	1.000	0.500

	17	17	18	PILOTE2	0.000	000000	2	0.000	0.000	1.000
0.500										
	18	18	19	PILOTE2	0.000	000000	2	0.000	0.000	1.000
0.500										
	19	19	20	PILOTE2	0.000	000000	2	0.000	0.000	1.000
0.500										
	20	20	21	PILOTE2	0.000	000000	2	0.000	0.000	1.000
0.500										
	21	21	22	PILOTE2	0.000	000000	2	0.000	0.000	1.000
0.500										
	22	22	23	PILOTE2	0.000	000000	2	0.000	0.000	1.000
0.500										
	23	23	24	PILOTE2	0.000	000000	2	0.000	0.000	1.000
0.500										
	24	24	25	PILOTE2	0.000	000000	2	0.000	0.000	1.000
0.500										
	25	25	26	PILOTE2	0.000	000000	2	0.000	0.000	1.000
0.500										
	26	26	27	PILOTE2	0.000	000000	2	0.000	0.000	1.000
0.500										
	27	27	28	PILOTE2	0.000	000000	2	0.000	0.000	1.000
0.500										
	28	28	29	PILOTE2	0.000	000000	2	0.000	0.000	1.000
0.500										
	29	29	30	PILOTE2	0.000	000000	2	0.000	0.000	1.000
0.500										
	30	30	31	PILOTE2	0.000	000000	2	0.000	0.000	1.000
0.500										
	31	31	32	PILOTE2	0.000	000000	2	0.000	0.000	1.000
0.500										
	32	32	33	PILOTE2	0.000	000000	2	0.000	0.000	1.000
0.500										
	33	33	34	PILOTE2	0.000	000000	2	0.000	0.000	1.000
0.500										
	34	34	35	PILOTE2	0.000	000000	2	0.000	0.000	1.000
0.500										
	35	35	36	PILOTE2	0.000	000000	2	0.000	0.000	1.000
0.500										
	36	36	37	PILOTE2	0.000	000000	2	0.000	0.000	1.000
0.500										
	37	37	38	PILOTE2	0.000	000000	2	0.000	0.000	1.000
0.500										
	38	38	39	PILOTE2	0.000	000000	2	0.000	0.000	1.000
0.500										
	39	39	40	PILOTE2	0.000	000000	2	0.000	0.000	1.000
3.000										
	46	40	47	PILOTE2	0.000	000000	2	0.000	0.000	1.000
2.500										

J O I N T F O R C E S Load Case PP

JOINT	GLOBAL-X	GLOBAL-Y	GLOBAL-Z	GLOBAL-XX	GLOBAL-YY	GLOBAL-ZZ
47	0.000	0.000	-1079.950	0.000	0.000	0.000

J O I N T F O R C E S Load Case CM

JOINT	GLOBAL-X	GLOBAL-Y	GLOBAL-Z	GLOBAL-XX	GLOBAL-YY	GLOBAL-ZZ
47	0.000	0.000	-181.830	0.000	0.000	0.000

J O I N T F O R C E S Load Case SC

JOINT	GLOBAL-X	GLOBAL-Y	GLOBAL-Z	GLOBAL-XX	GLOBAL-YY	GLOBAL-ZZ
47	0.000	0.000	402.660	0.000	0.000	0.000

J O I N T F O R C E S Load Case CARRO

JOINT	GLOBAL-X	GLOBAL-Y	GLOBAL-Z	GLOBAL-XX	GLOBAL-YY	GLOBAL-ZZ
47	0.000	0.000	222.070	0.000	0.000	0.000

J O I N T F O R C E S Load Case PRET

JOINT	GLOBAL-X	GLOBAL-Y	GLOBAL-Z	GLOBAL-XX	GLOBAL-YY	GLOBAL-ZZ
47	26.710	3.370	222.510	0.000	0.000	0.000

J O I N T F O R C E S Load Case FRENADO

JOINT	GLOBAL-X	GLOBAL-Y	GLOBAL-Z	GLOBAL-XX	GLOBAL-YY	GLOBAL-ZZ
47	17.500	4.920	0.000	0.000	0.000	0.000

J O I N T F O R C E S Load Case FZCENTRI

JOINT	GLOBAL-X	GLOBAL-Y	GLOBAL-Z	GLOBAL-XX	GLOBAL-YY	GLOBAL-ZZ
47	3.170	43.030	0.000	0.000	0.000	0.000

J O I N T F O R C E S Load Case VIENTO

JOINT	GLOBAL-X	GLOBAL-Y	GLOBAL-Z	GLOBAL-XX	GLOBAL-YY	GLOBAL-ZZ
47	0.000	32.470	0.000	0.000	0.000	0.000

J O I N T F O R C E S Load Case REOLOGI

JOINT	GLOBAL-X	GLOBAL-Y	GLOBAL-Z	GLOBAL-XX	GLOBAL-YY	GLOBAL-ZZ
47	11.640	0.000	0.000	0.000	0.000	0.000

J O I N T F O R C E S Load Case TEMPERAT

JOINT	GLOBAL-X	GLOBAL-Y	GLOBAL-Z	GLOBAL-XX	GLOBAL-YY	GLOBAL-ZZ
47	9.770	0.000	0.000	0.000	0.000	0.000

F R A M E S P A N D I S T R I B U T E D L O A D S Load Case EMPUJE

FRAME	TYPE	DIRECTION	DISTANCE-A	VALUE-A	DISTANCE-B	VALUE-B
46	FORCE	GLOBAL-X	0.0000	108.9000	1.0000	18.4800
39	FORCE	GLOBAL-X	0.0000	77.2200	1.0000	38.6100

PILOTE KN-m Units

S T A T I C L O A D C A S E S

STATIC CASE	CASE TYPE	SELF WT FACTOR
PP	DEAD	1.0000
EMPUJE	DEAD	0.0000
CM	DEAD	0.0000
SC	DEAD	0.0000
CARRO	DEAD	0.0000
PRET	DEAD	0.0000
FRENADO	DEAD	0.0000
FZCENTRI	DEAD	0.0000
VIENTO	DEAD	0.0000
REOLOGI	DEAD	0.0000
TEMPERAT	DEAD	0.0000

J O I N T D A T A

JOINT	GLOBAL-X	GLOBAL-Y	GLOBAL-Z	RESTRAINTS	ANGLE-A	ANGLE-B	ANGLE-C
1	0.00000	0.00000	0.00000	0 0 1 0 0 0	0.000	0.000	0.000
2	0.00000	0.00000	0.50000	0 0 0 0 0 0	0.000	0.000	0.000
3	0.00000	0.00000	1.00000	0 0 0 0 0 0	0.000	0.000	0.000
4	0.00000	0.00000	1.50000	0 0 0 0 0 0	0.000	0.000	0.000
5	0.00000	0.00000	2.00000	0 0 0 0 0 0	0.000	0.000	0.000

5	0.00000	0.00000	2.50000	0 0 0 0 0 0	0.000	0.000	0.000
7	0.00000	0.00000	3.00000	0 0 0 0 0 0	0.000	0.000	0.000
8	0.00000	0.00000	3.50000	0 0 0 0 0 0	0.000	0.000	0.000
9	0.00000	0.00000	4.00000	0 0 0 0 0 0	0.000	0.000	0.000
10	0.00000	0.00000	4.50000	0 0 0 0 0 0	0.000	0.000	0.000
11	0.00000	0.00000	5.00000	0 0 0 0 0 0	0.000	0.000	0.000
12	0.00000	0.00000	5.50000	0 0 0 0 0 0	0.000	0.000	0.000
13	0.00000	0.00000	6.00000	0 0 0 0 0 0	0.000	0.000	0.000
14	0.00000	0.00000	6.50000	0 0 0 0 0 0	0.000	0.000	0.000
15	0.00000	0.00000	7.00000	0 0 0 0 0 0	0.000	0.000	0.000
16	0.00000	0.00000	7.50000	0 0 0 0 0 0	0.000	0.000	0.000
17	0.00000	0.00000	8.00000	0 0 0 0 0 0	0.000	0.000	0.000
18	0.00000	0.00000	8.50000	0 0 0 0 0 0	0.000	0.000	0.000
19	0.00000	0.00000	9.00000	0 0 0 0 0 0	0.000	0.000	0.000
20	0.00000	0.00000	9.50000	0 0 0 0 0 0	0.000	0.000	0.000
21	0.00000	0.00000	10.00000	0 0 0 0 0 0	0.000	0.000	0.000
22	0.00000	0.00000	10.50000	0 0 0 0 0 0	0.000	0.000	0.000
23	0.00000	0.00000	11.00000	0 0 0 0 0 0	0.000	0.000	0.000
24	0.00000	0.00000	11.50000	0 0 0 0 0 0	0.000	0.000	0.000
25	0.00000	0.00000	12.00000	0 0 0 0 0 0	0.000	0.000	0.000
26	0.00000	0.00000	12.50000	0 0 0 0 0 0	0.000	0.000	0.000
27	0.00000	0.00000	13.00000	0 0 0 0 0 0	0.000	0.000	0.000
28	0.00000	0.00000	13.50000	0 0 0 0 0 0	0.000	0.000	0.000
29	0.00000	0.00000	14.00000	0 0 0 0 0 0	0.000	0.000	0.000
30	0.00000	0.00000	14.50000	0 0 0 0 0 0	0.000	0.000	0.000
31	0.00000	0.00000	15.00000	0 0 0 0 0 0	0.000	0.000	0.000
32	0.00000	0.00000	15.50000	0 0 0 0 0 0	0.000	0.000	0.000
33	0.00000	0.00000	16.00000	0 0 0 0 0 0	0.000	0.000	0.000
34	0.00000	0.00000	16.50000	0 0 0 0 0 0	0.000	0.000	0.000
35	0.00000	0.00000	17.00000	0 0 0 0 0 0	0.000	0.000	0.000
36	0.00000	0.00000	17.50000	0 0 0 0 0 0	0.000	0.000	0.000
37	0.00000	0.00000	18.00000	0 0 0 0 0 0	0.000	0.000	0.000
38	0.00000	0.00000	18.50000	0 0 0 0 0 0	0.000	0.000	0.000
39	0.00000	0.00000	19.00000	0 0 0 0 0 0	0.000	0.000	0.000
40	0.00000	0.00000	22.00000	0 0 0 0 0 0	0.000	0.000	0.000
47	0.00000	0.00000	24.50000	0 0 0 0 0 0	0.000	0.000	0.000

J O I N T S P R I N G D A T A

JOINT	K-U1	K-U2	K-U3	K-R1	K-R2	K-R3
27	4875.000	4875.000	0.000	0.000	0.000	0.000
28	4875.000	4875.000	0.000	0.000	0.000	0.000
29	4875.000	4875.000	0.000	0.000	0.000	0.000
30	4875.000	4875.000	0.000	0.000	0.000	0.000
31	4875.000	4875.000	0.000	0.000	0.000	0.000
32	4875.000	4875.000	0.000	0.000	0.000	0.000
33	4875.000	4875.000	0.000	0.000	0.000	0.000
34	4875.000	4875.000	0.000	0.000	0.000	0.000
35	4875.000	4875.000	0.000	0.000	0.000	0.000
36	4875.000	4875.000	0.000	0.000	0.000	0.000
37	4875.000	4875.000	0.000	0.000	0.000	0.000
38	4875.000	4875.000	0.000	0.000	0.000	0.000
39	2467.000	2467.000	0.000	0.000	0.000	0.000
26	5687.000	5687.000	0.000	0.000	0.000	0.000
23	6500.000	6500.000	0.000	0.000	0.000	0.000
24	6500.000	6500.000	0.000	0.000	0.000	0.000
25	6500.000	6500.000	0.000	0.000	0.000	0.000
22	19500.000	19500.000	0.000	0.000	0.000	0.000
2	32500.000	32500.000	0.000	0.000	0.000	0.000
3	32500.000	32500.000	0.000	0.000	0.000	0.000
4	32500.000	32500.000	0.000	0.000	0.000	0.000
5	32500.000	32500.000	0.000	0.000	0.000	0.000
6	32500.000	32500.000	0.000	0.000	0.000	0.000
7	32500.000	32500.000	0.000	0.000	0.000	0.000
8	32500.000	32500.000	0.000	0.000	0.000	0.000
9	32500.000	32500.000	0.000	0.000	0.000	0.000
10	32500.000	32500.000	0.000	0.000	0.000	0.000
11	32500.000	32500.000	0.000	0.000	0.000	0.000
12	32500.000	32500.000	0.000	0.000	0.000	0.000
13	32500.000	32500.000	0.000	0.000	0.000	0.000
14	32500.000	32500.000	0.000	0.000	0.000	0.000
15	32500.000	32500.000	0.000	0.000	0.000	0.000
16	32500.000	32500.000	0.000	0.000	0.000	0.000
17	32500.000	32500.000	0.000	0.000	0.000	0.000
18	32500.000	32500.000	0.000	0.000	0.000	0.000
19	32500.000	32500.000	0.000	0.000	0.000	0.000
20	32500.000	32500.000	0.000	0.000	0.000	0.000
21	32500.000	32500.000	0.000	0.000	0.000	0.000
1	32500.000	32500.000	0.000	0.000	0.000	0.000

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

FRAME	JNT-1	JNT-2	SECTION	ANGLE	RELEASES	SEGMENTS	R1	R2	FACTOR	LENGTH
1	1	2	PILOTE2	0.000	000000	2	0.000	0.000	1.000	0.500
2	2	3	PILOTE2	0.000	000000	2	0.000	0.000	1.000	0.500
3	3	4	PILOTE2	0.000	000000	2	0.000	0.000	1.000	0.500
4	4	5	PILOTE2	0.000	000000	2	0.000	0.000	1.000	0.500
5	5	6	PILOTE2	0.000	000000	2	0.000	0.000	1.000	0.500
6	6	7	PILOTE2	0.000	000000	2	0.000	0.000	1.000	0.500
7	7	8	PILOTE2	0.000	000000	2	0.000	0.000	1.000	0.500
8	8	9	PILOTE2	0.000	000000	2	0.000	0.000	1.000	0.500
9	9	10	PILOTE2	0.000	000000	2	0.000	0.000	1.000	0.500
10	10	11	PILOTE2	0.000	000000	2	0.000	0.000	1.000	0.500
11	11	12	PILOTE2	0.000	000000	2	0.000	0.000	1.000	0.500
12	12	13	PILOTE2	0.000	000000	2	0.000	0.000	1.000	0.500
13	13	14	PILOTE2	0.000	000000	2	0.000	0.000	1.000	0.500
14	14	15	PILOTE2	0.000	000000	2	0.000	0.000	1.000	0.500
15	15	16	PILOTE2	0.000	000000	2	0.000	0.000	1.000	0.500
16	16	17	PILOTE2	0.000	000000	2	0.000	0.000	1.000	0.500
17	17	18	PILOTE2	0.000	000000	2	0.000	0.000	1.000	0.500
18	18	19	PILOTE2	0.000	000000	2	0.000	0.000	1.000	0.500
19	19	20	PILOTE2	0.000	000000	2	0.000	0.000	1.000	0.500
20	20	21	PILOTE2	0.000	000000	2	0.000	0.000	1.000	0.500
21	21	22	PILOTE2	0.000	000000	2	0.000	0.000	1.000	0.500
22	22	23	PILOTE2	0.000	000000	2	0.000	0.000	1.000	0.500
23	23	24	PILOTE2	0.000	000000	2	0.000	0.000	1.000	0.500
24	24	25	PILOTE2	0.000	000000	2	0.000	0.000	1.000	0.500
25	25	26	PILOTE2	0.000	000000	2	0.000	0.000	1.000	0.500
26	26	27	PILOTE2	0.000	000000	2	0.000	0.000	1.000	0.500
27	27	28	PILOTE2	0.000	000000	2	0.000	0.000	1.000	0.500
28	28	29	PILOTE2	0.000	000000	2	0.000	0.000	1.000	0.500
29	29	30	PILOTE2	0.000	000000	2	0.000	0.000	1.000	0.500
30	30	31	PILOTE2	0.000	000000	2	0.000	0.000	1.000	0.500
31	31	32	PILOTE2	0.000	000000	2	0.000	0.000	1.000	0.500
32	32	33	PILOTE2	0.000	000000	2	0.000	0.000	1.000	0.500
33	33	34	PILOTE2	0.000	000000	2	0.000	0.000	1.000	0.500

	34	34	35	PILOTE2	0.000	000000	2	0.000	0.000	1.000
0.500										
	35	35	36	PILOTE2	0.000	000000	2	0.000	0.000	1.000
0.500										
	36	36	37	PILOTE2	0.000	000000	2	0.000	0.000	1.000
0.500										
	37	37	38	PILOTE2	0.000	000000	2	0.000	0.000	1.000
0.500										
	38	38	39	PILOTE2	0.000	000000	2	0.000	0.000	1.000
0.500										
	39	39	40	PILOTE2	0.000	000000	2	0.000	0.000	1.000
3.000										
	46	40	47	PILOTE2	0.000	000000	2	0.000	0.000	1.000
2.500										

J O I N T F O R C E S Load Case PP

JOINT	GLOBAL-X	GLOBAL-Y	GLOBAL-Z	GLOBAL-XX	GLOBAL-YY	GLOBAL-ZZ
47	0.000	0.000	-1079.950	0.000	0.000	0.000

J O I N T F O R C E S Load Case CM

JOINT	GLOBAL-X	GLOBAL-Y	GLOBAL-Z	GLOBAL-XX	GLOBAL-YY	GLOBAL-ZZ
47	0.000	0.000	-181.830	0.000	0.000	0.000

J O I N T F O R C E S Load Case SC

JOINT	GLOBAL-X	GLOBAL-Y	GLOBAL-Z	GLOBAL-XX	GLOBAL-YY	GLOBAL-ZZ
47	0.000	0.000	402.660	0.000	0.000	0.000

J O I N T F O R C E S Load Case CARRO

JOINT	GLOBAL-X	GLOBAL-Y	GLOBAL-Z	GLOBAL-XX	GLOBAL-YY	GLOBAL-ZZ
47	0.000	0.000	222.070	0.000	0.000	0.000

J O I N T F O R C E S Load Case PRET

JOINT	GLOBAL-X	GLOBAL-Y	GLOBAL-Z	GLOBAL-XX	GLOBAL-YY	GLOBAL-ZZ
47	26.710	3.370	222.510	0.000	0.000	0.000

J O I N T F O R C E S Load Case FRENADO

JOINT	GLOBAL-X	GLOBAL-Y	GLOBAL-Z	GLOBAL-XX	GLOBAL-YY	GLOBAL-ZZ
47	17.500	4.920	0.000	0.000	0.000	0.000

J O I N T F O R C E S Load Case FZCENTRI

JOINT	GLOBAL-X	GLOBAL-Y	GLOBAL-Z	GLOBAL-XX	GLOBAL-YY	GLOBAL-ZZ
47	3.170	43.030	0.000	0.000	0.000	0.000

J O I N T F O R C E S Load Case VIENTO

JOINT	GLOBAL-X	GLOBAL-Y	GLOBAL-Z	GLOBAL-XX	GLOBAL-YY	GLOBAL-ZZ
47	0.000	32.470	0.000	0.000	0.000	0.000

J O I N T F O R C E S Load Case REOLOGI

JOINT	GLOBAL-X	GLOBAL-Y	GLOBAL-Z	GLOBAL-XX	GLOBAL-YY	GLOBAL-ZZ
47	11.640	0.000	0.000	0.000	0.000	0.000

J O I N T F O R C E S Load Case TEMPERAT

JOINT	GLOBAL-X	GLOBAL-Y	GLOBAL-Z	GLOBAL-XX	GLOBAL-YY	GLOBAL-ZZ
47	9.770	0.000	0.000	0.000	0.000	0.000

F R A M E S P A N D I S T R I B U T E D L O A D S Load Case EMPUJE

FRAME	TYPE	DIRECTION	DISTANCE-A	VALUE-A	DISTANCE-B	VALUE-B
46	FORCE	GLOBAL-X	0.0000	108.9000	1.0000	18.4800
39	FORCE	GLOBAL-X	0.0000	77.2200	1.0000	38.6100

Obra: LAV VALLES CASTELLBISBAL
Fecha: 21/05/2004
Hora: 17:58:43

Cálculo de secciones a flexión compuesta esviada

1 Datos

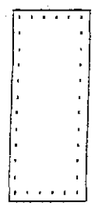
- Materiales

Tipo de hormigón : HA-25
Tipo de acero : B-500-S
fck [MPa] = 25.00
fyk [MPa] = 500.00
γc = 1.50
γs = 1.15

- Sección

Sección : 65X160
b [m] = 0.65
h [m] = 1.60
r [m] = 0.070

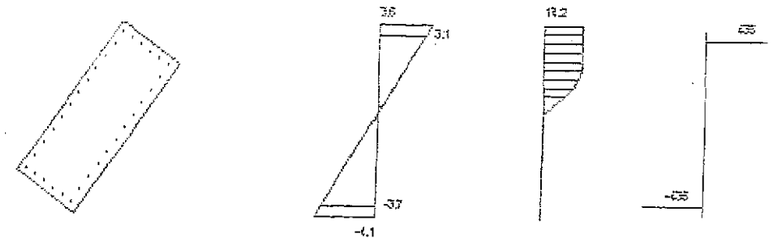
nº barras horizontales = 6
nº barras verticales = 12



2 Comprobación

ϕ [mm] = 32
Nd [kN] = 03971
Mxd [kN·m] = 6647.11
Myd [kN·m] = 657

Nu [kN] = 03971
Mxu [kN·m] = 7025.6
Myu [kN·m] = 704.9
γ = 1.06



Plano de deformación de agotamiento

x [m] = 0.77
ß [°] = 34.7
1/r [1/m]·1.E-3 = 4.5
εs ·1.E-3 = 3.5
εi ·1.E-3 = -4.1

Deformación y tensión de armaduras superior e inferior

Profundidad [m]	Deformación ·1.E-3	Tensión [MPa]
0.10	3.1	435
1.59	-3.7	-435

Obra: LAV VALLES CASTELLBISBAL
Fecha: 21/05/2004
Hora: 17:51:50

Cálculo de secciones a cortante

1 Datos

- Materiales

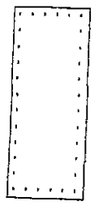
```
Tipo de hormigón : HA-25
Tipo de acero    : B-500-S
fck [MPa]        = 25.00
fyk [MPa]        = 500.00
γc               = 1.50
γs               = 1.15
```

- Tipo de elemento estructural

```
Tipo : elemento con armadura a cortante
```

- Sección

```
Sección : 65X160
b0  [m] = 0.65
h   [m] = 1.60
```



2 Comprobación

```
Tipo de armadura: cercos a 90.0°
separación s [m]  = 0.10
φ [mm]            = 12
nº ramas:           2
Area [cm²/m]      = 22.6
ρ [·1.E-3]        = 4

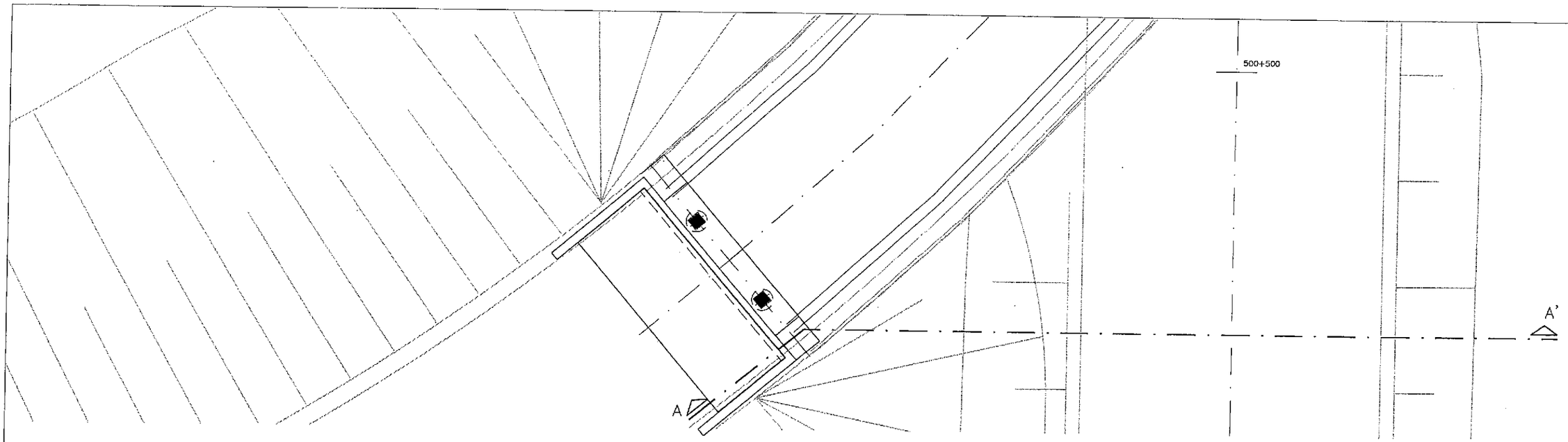
Inclinación de las bielas θ[°] = 45
Nd [kN]    = 0.0
σyd [MPa] = 0.0

Vu1 [kN]   = 4972.5
Vu2 [kN]   = 1540.3
Vcu [kN]   = 291.7
Vsu [kN]   = 1248.6
```

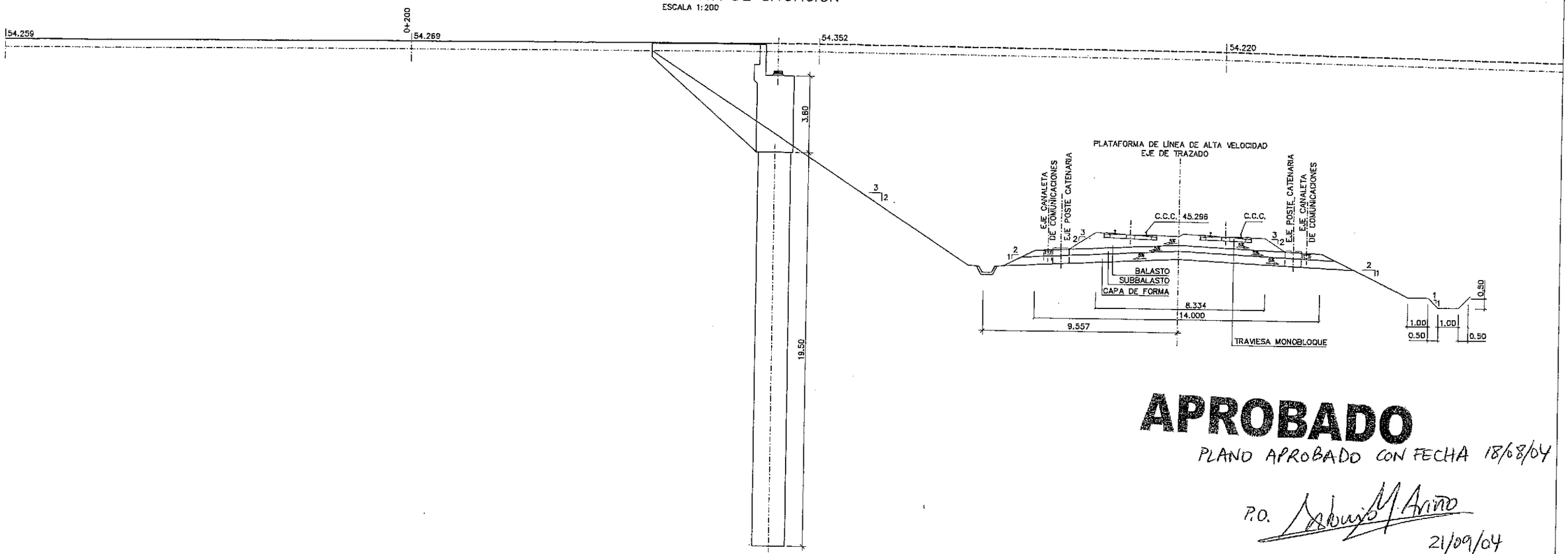
- Resistencia a cortante:

```
Vu [kN]    = 1540.3
```

P.S. 0,5



PLANTA DE SITUACIÓN
ESCALA 1:200

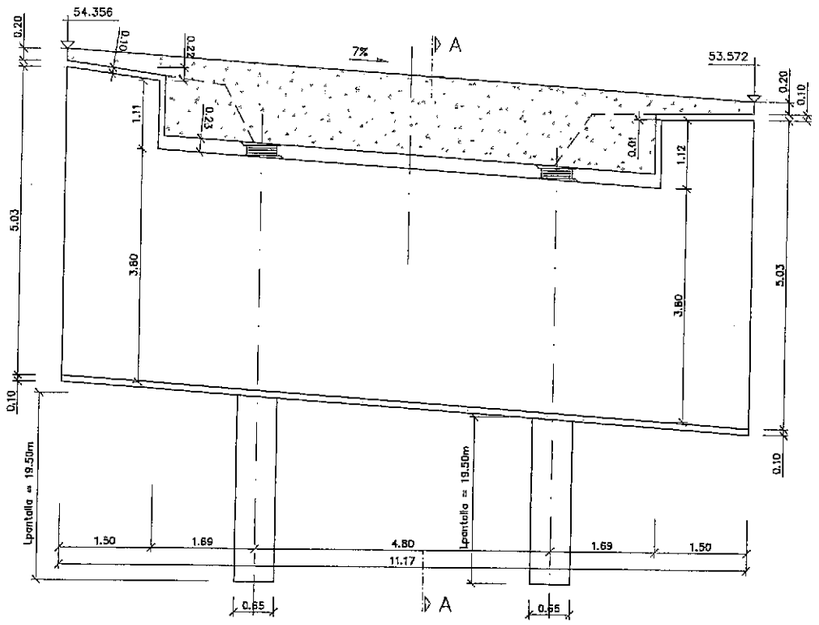


SECCIÓN A–A'
ESCALA 1:200

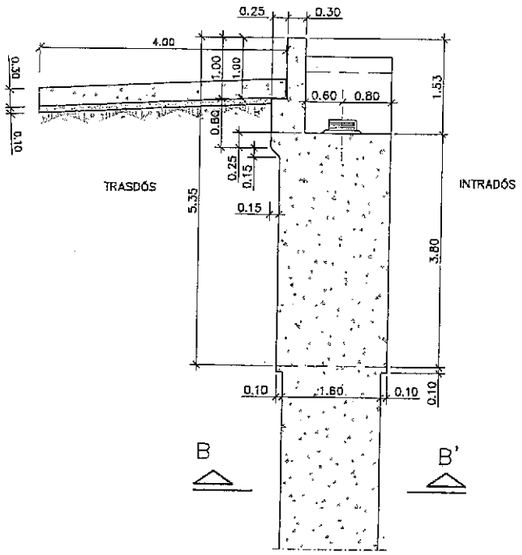
APROBADO
PLANO APROBADO CON FECHA 18/08/04
P.O. Jesús M. Arinto
21/09/04

CROQUIS
PLANO NUEVO

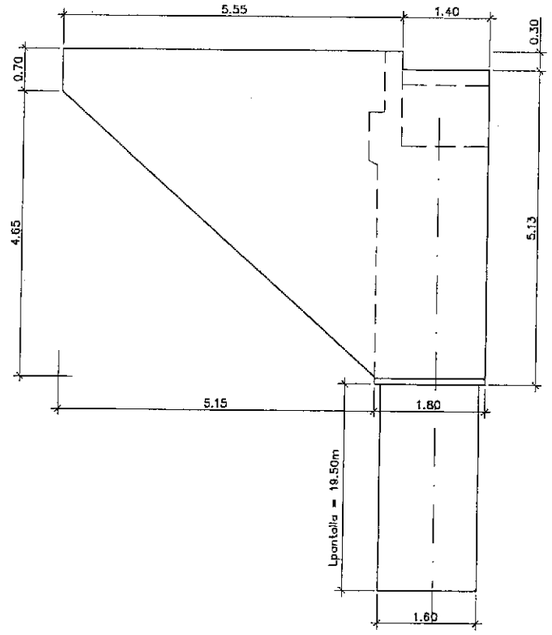
GIF Gestor de Infraestructuras Ferroviarias	TÍTULO PROYECTO DE CONSTRUCCIÓN DE PLATAFORMA LINEA DE ALTA VELOCIDAD MADRID - ZARAGOZA - BARCELONA - FRONTERA FRANCESA TRAMO: CONNEXIÓN VALLÉS-CASTELLBISBAL	AUTOR Intraesa Ingeniería de Trazados y Estructuras; Tec'4 Ingenieros Consultores	ESCALA 1/200 Numérica; Gráfica 0 1.25 2.50 m	FECHA AGOSTO-2004	TÍTULO DEL PLANO P.S. 0.5 ESTRIBO 1 PLANTA Y ALZADO	Nº DE PLANO 2.9.2.1/1 Hoja — de —



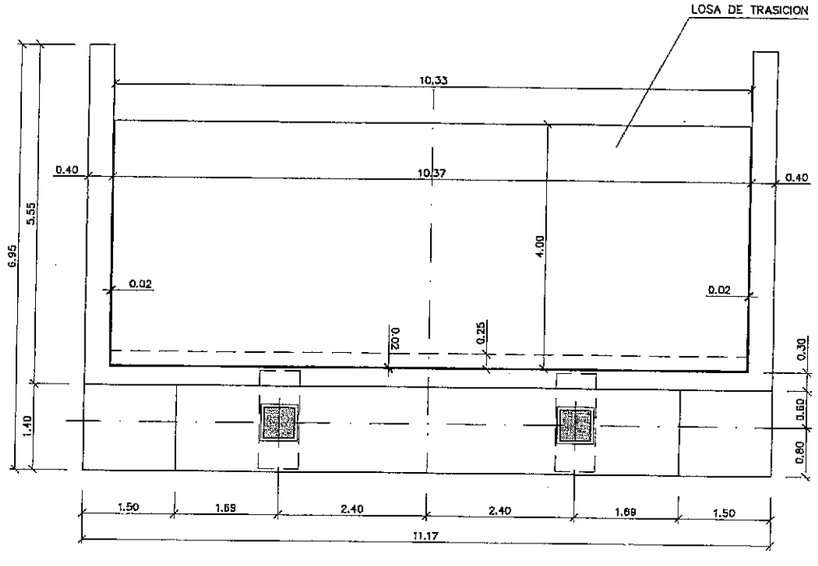
ALZADO FRONTAL E-1
ESCALA 1:100



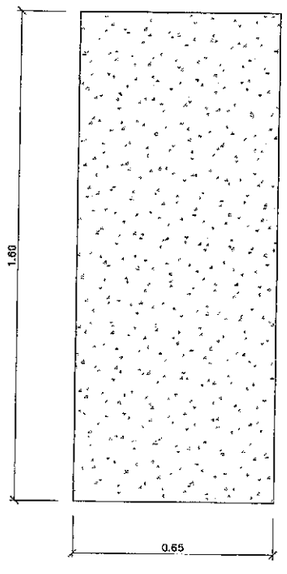
GEOMETRIA ESTRIBO
ESCALA 1:100



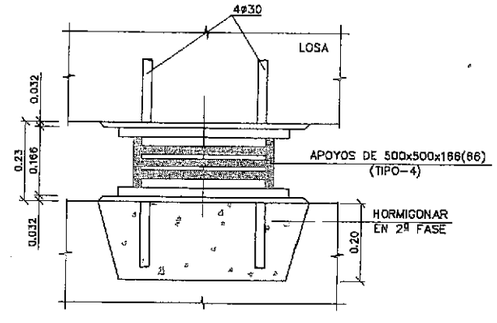
ALZADO DE ALETA
ESCALA 1:100



PLANTA ESTRIBO E-1
ESCALA 1:100



SECCION B-B
ESCALA 1:20



DETALLE DE APOYOS ARMADOS ANCLADOS
S/E

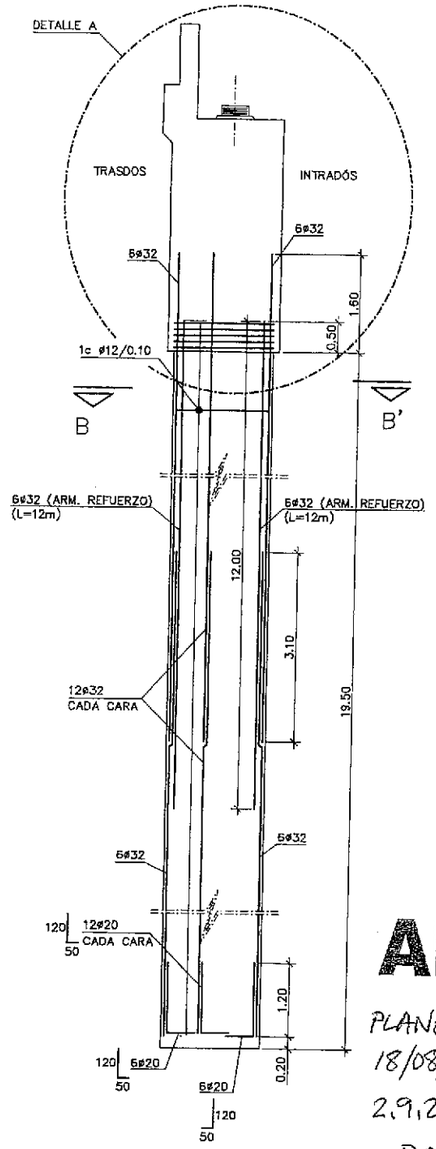
NOTA:
LAS PANTALLAS SE EMPOTRARAN UN MÍNIMO DE 4.50 m EN EL PAQUETE DE GRAVAS.

APROBADO

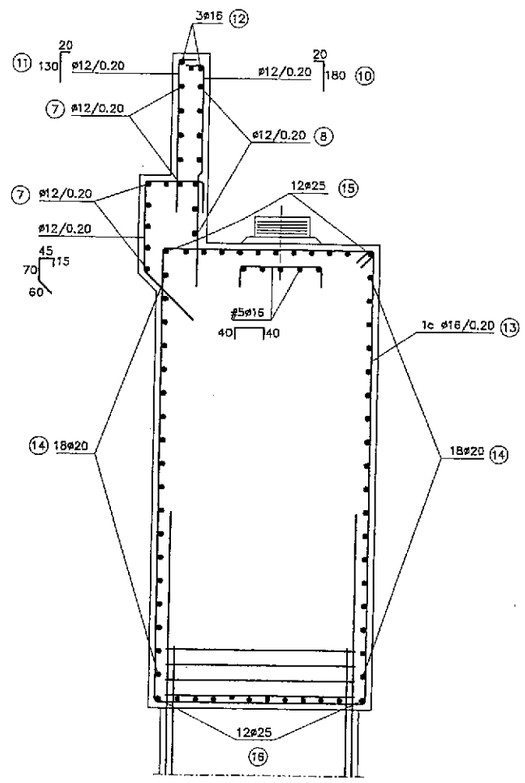
PLANO APROBADO CON FECHA 18/08/04. SUSTITUYE A PLANO 2.9.2.1 HOJA 6/12

P.O. 21/09/04

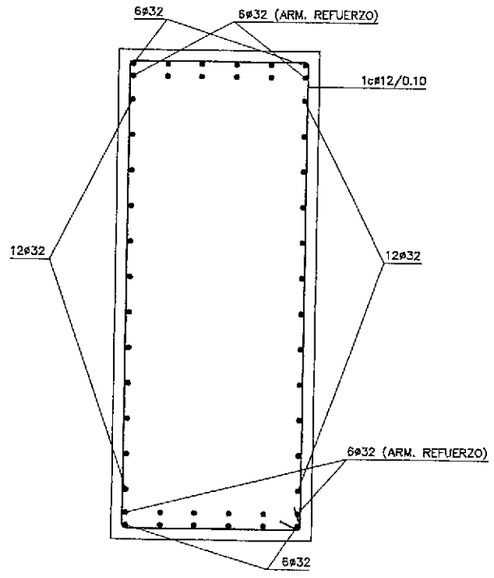
GIF Gestor de Infraestructuras Ferroviarias	TÍTULO PROYECTO DE CONSTRUCCIÓN DE PLATAFORMA LINEA DE ALTA VELOCIDAD MADRID - ZARAGOZA - BARCELONA - FRONTERA FRANCESA TRAMO: CONNEXIÓN VALLÉS-CASTELLBISBAL	AUTOR Intraesa Ingeniería de Trazados y Estructuras / Tec 4 Ingenieros Consultores	ESCALA 1/50 Numérica / Gráfica 0 0,625 1,25 m	FECHA AGOSTO-2004	TÍTULO DEL PLANO P.S. 0.5 ESTRIBO 1 DEFINICIÓN GEOMETRICA	Nº DE PLANO 2.9.2.1/1 Hoja 6 de 12



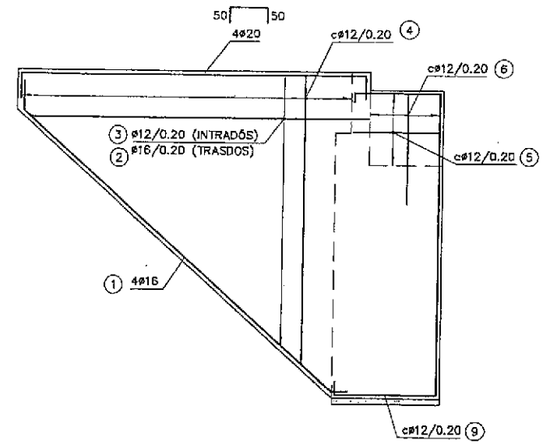
SECCIÓN A–A'
ARMADURA PANTALLA
ESCALA 1:100



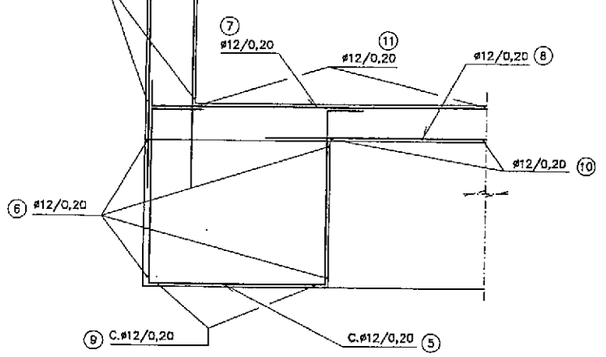
DETALLE A
ARMADURA ESTRIBO–1
ESCALA 1:50



SECCIÓN B–B'
ARMADURA PANTALLA
ESCALA 1:20



ARMADO ALETA
ESCALA 1:100



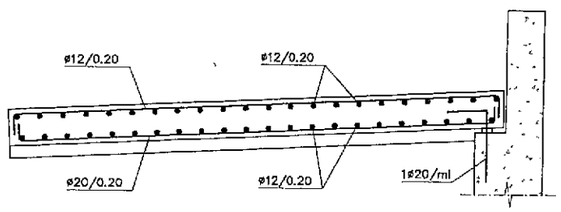
SECCION C–C
ESCALA 1:50

APROBADO

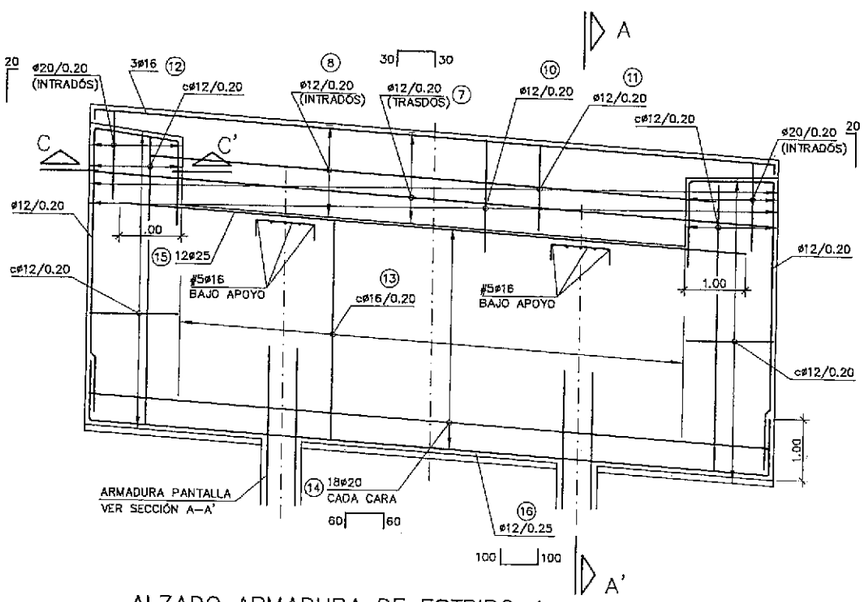
PLANO APROBADO CON FECHA 18/08/04. SUSTITUYE A PLANO 2.9.2.1 HOJA 6/12

P.O.

21/09/04



ARMADO LOSA DE TRANSICION
ESCALA 1:50



ALZADO ARMADURA DE ESTRIBO–1
ESCALA 1:100

NOTA DE MATERIALES

NIVELES DE CONTROL Y COEFICIENTES DE SEGURIDAD:

- Acero para armar, nivel normal (γ_s = 1,15)
- Hormigon control estadistico (γ_c = 1,50)
- Ejecucion (Tablero y Pilas) nivel intenso
- Ejecucion (Resto obra) nivel normal
- Los coeficientes de seguridad de las acciones son los correspondientes a la IAP–98

ACERO (ARMADURAS):

- B500S fy = 500 N/mm2

PARA ANCLAJES Y SOLAPES, SE SEGUIRAN LAS PRESCRIPCIONES CONTENIDAS EN EL ARTICULO 66 DE LA INSTRUCCION EHE
LOS RECUBRIMIENTOS NOMINALES SE DETERMINARAN SEGUN EL ARTICULO 37 DE LA INSTRUCCION EHE PARA UN AMBIENTE IIb y IIa.

HORMIGONES:

HORMIGON TIPO	fck (N/mm2)	ELEMENTO ESTRUCTURAL	RECUBRIMIENTO NOMINAL
HP–40 B 20 IIb	40	Tablero	3,5 cm.
HA–30 B 20 IIb	30	Alzados de Pilas	3,5 cm.
HA–25 B 20 IIb	25	Alzados de Estribos	4,0 cm.
HA–25 B 20 IIa	25	Zapatas y pilotes	3,5 cm.
HM–15	15	Capas de regularizacion	

GIF Gestor de Infraestructuras Ferroviarias

TITULO PROYECTO DE CONSTRUCCIÓN DE PLATAFORMA
LINEA DE ALTA VELOCIDAD
MADRID - ZARAGOZA - BARCELONA - FRONTERA FRANCESA
TRAMO: CONNEXIÓN VALLÉS-CASTELLBISBAL

AUTOR Intraesa Ingeniería de Trazados y Estructuras — Tec 4 Ingenieros Consultores

ESCALA 1/50 Numérica — Gráfica 0 0.625 1.25 m

FECHA AGOSTO-2004

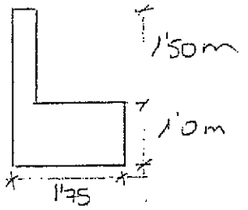
TÍTULO DEL PLANO
P.S. 0.5
ESTRIBO 1
ARMADURAS

Nº DE PLANO 2.9.2.1/1
Hoja 7 de 12

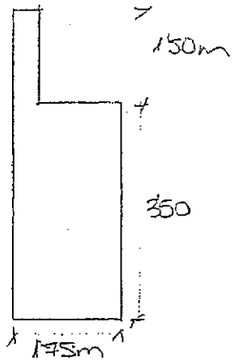
tec4 INGENIEROS CONSULTORES

ESTRIBO P.S. 05

Estribo inicial



Nuevo estribo



1' Verificacion carga hundimiento

Nuevo estribo ⇒ incremento carga vertical sobre pilas pantalla.

$$\Delta N = 2'50 \cdot 1'75 \cdot 2'50 \cdot 11'17 = 122'17T$$

Carga de hundimiento pila pantalla = $Q_h = 605T$

Carga vertical = $N + \Delta N = 349'62T + 122'17T = 471'79T < Q_h$

2' Comprobacion pila pantalla

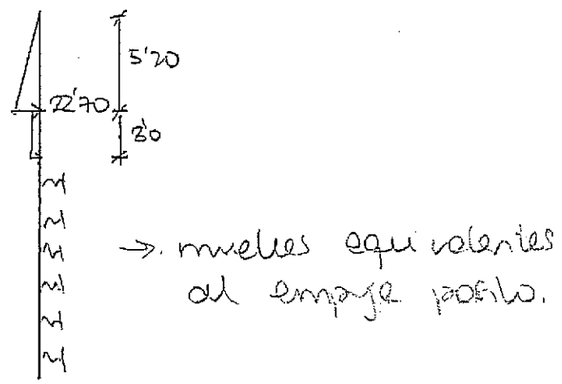
Características geotécnicas terreno:

Relleno: 9'50 - 2'50 ⇒ $\Delta h = 7m$; $K_h = 15.000\ kN/m^3$

Aluvial: 2'50 - 0'50 ⇒ $\Delta h = 2m$; $K_h = 20.000\ kN/m^3$

Gravas: 0'50 - -12'50 ⇒ $\Delta h = 13m$; $K_h = 100.000\ kN/m^3$

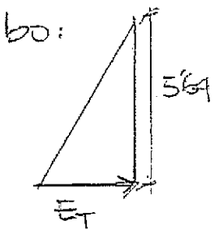
Cargas:



→ niveles equivalentes al empuje pasivo.

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- Empuje de tierras sobre estribo:



Primeros 7m ⇒ $\phi = 30°$ $\delta = 2'0\ T/m^3$ = $ka = 0'33$

$$E_T = \delta \cdot ka \cdot h \cdot L = 2'0 \cdot 0'33 \cdot 5'64 \cdot \frac{11'20}{2}$$

$$E_T = 20'84\ T/m$$

- Empuje por sc en trasdós 3 T/m^2 sobre estribo



$$E_{SC} = ka \cdot q = 0'33 \cdot 3T/m^2 \cdot \frac{11'20}{2} = 5'54\ T/m$$



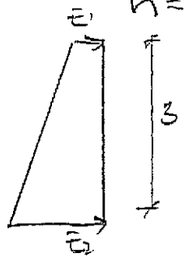
$$E_{TOT} = 20'84 + 5'54 = 26'38\ T/m.$$

- Empuje sobre 3m libres de la pila pantalla

$$E = \gamma \cdot ka \cdot h + q \cdot ka$$

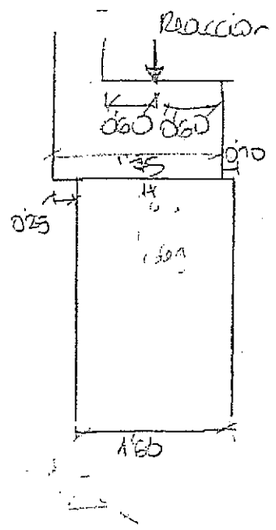
$h = 5'64$ ⇒ $E = 2'0 \cdot 0'33\ 5'64 + 3'0 \cdot 0'33 = 4'71\ T/m$

$h = 8'64$ ⇒ $E = 2'0 \cdot 0'33 \cdot 8'64 + 3'0 \cdot 0'33 = 6'70\ T/m^2$



$$E_1 = 4'71 \cdot 0'65 = 3'06\ T/m$$

$$E_2 = 6'70 \cdot 0'65 = 4'35\ T/m$$



Reacción neopreno

	F_x	F_y	F_z	M_x	M_y
PPtablero			-61'14		6'71
Cm			-21'416		2'15
SC			-55'07		5'51
camo			-57'99		+5'8
Ret.	2'67	0'34	-22'25		2'22
Frenado	-1'75	-0'99			
F.centrif.	-0'32	4'3	-1'95		
Viento		6'12	-3'56		
Grad Temp			-2'58		2'6
Temp	2'2				
Real.	2'20				

Peso propio estribo: $2'50 \times 3'69 \times 1'75 \times \frac{11'17}{2} = 88'94\,T = F_z$

$M_y = 85'52 \times (-0'175) = -15'56\ Tm$

$(\frac{1'75}{2} - 0'5) - \frac{1'60}{2}$

Combinación más desfavorable: (control intenso)

EW: 1'35·(PP + cm + empiere + Ret + Real) +

1'50·(sc + camo + frenado + f.centrif.) +

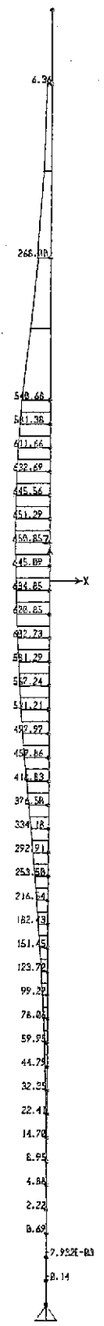
0'60·1'50·(viento + temp + grad. ter.)

$M_d = 651'3\,Tm$ $M_k = 496'2\ Tm$

$N_d = 464'T.$ $N_k = 340'71\ T$

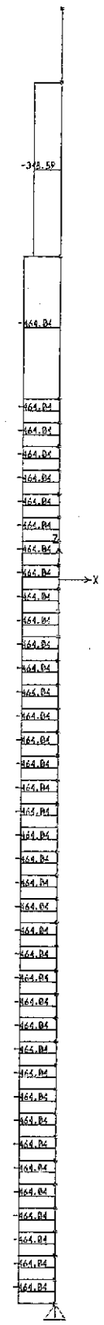
$V_d = 19\ T$

SAP2000 9/14/04 12:03:40



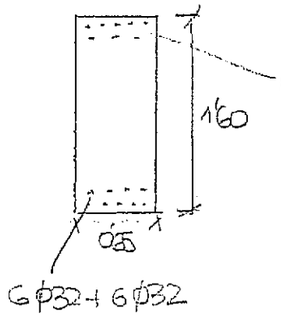
SAP2000 v8.2.3 - File:pilapantalla14sept - Moment 3-3 Diagram (ELU) - Ton, m, C Units

SAP2000 9/14/04 12:04:45

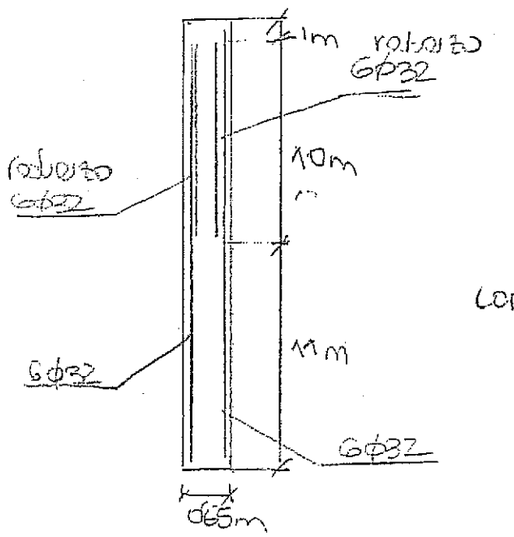


SAP2000 v8.2.3 - File:pilapantalla14sept - Axial Force Diagram (ELU) - Ton, m, C Units

Dimensionamiento:



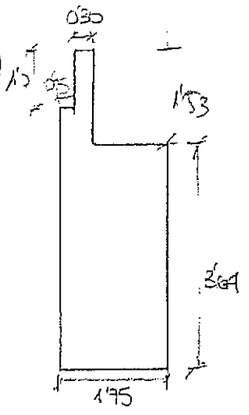
Flexión compuesta recta → 12φ32 + 12φ32



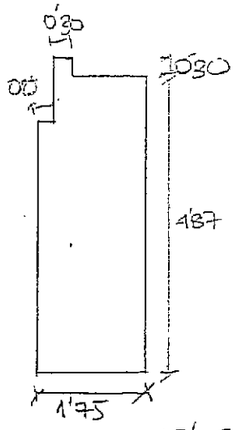
cortante: 1C φ12/0'10 en todo el pilar

3' Dimensionamiento estribos

Sección 1:



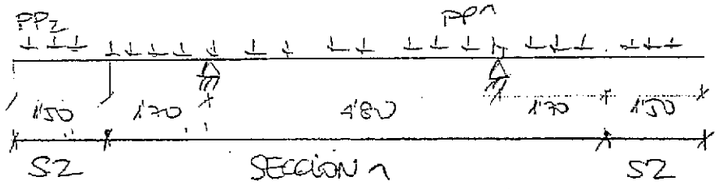
Sección 2:



pp1 = 17'41 T/m

pp2 = 19'78 T/m

Cargas

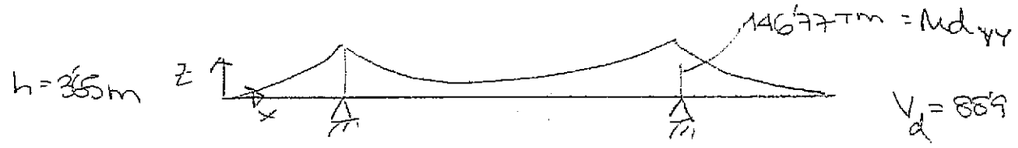


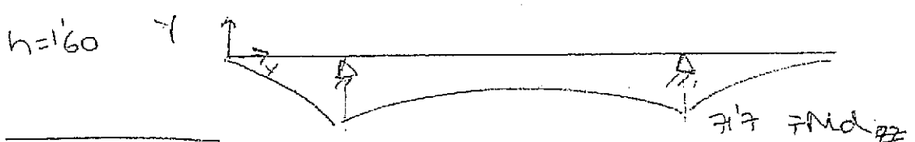
Empuje tierras:

$$E_1 = \frac{1}{2}\cdot \gamma \cdot K_a \cdot h^2 = \frac{1}{2}\cdot 2\cdot 0'33\cdot (3'64+1'53\cdot 10)^2 = 6'74\ T/m$$

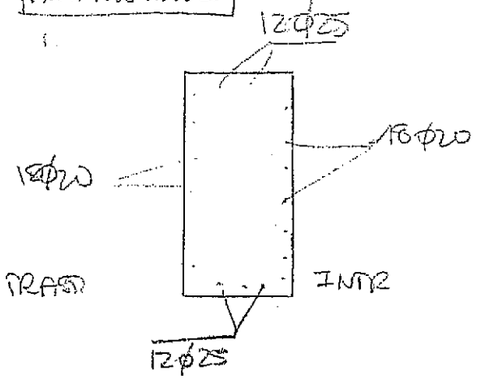
$$E_2 = q\cdot k_a \cdot h = 1'98\ T/m$$

$$M = E\cdot \frac{h}{3} = 7'97\ T\,m/m.$$





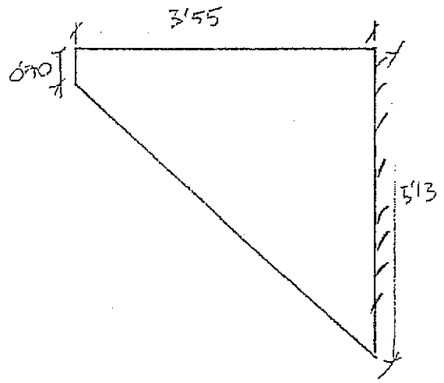
Am mínima



$Md_x = 146'77$, $h = 3'65m \Rightarrow$ Am mín

$Md_z = 91'70$; $h = 1'60 \Rightarrow$ Am mín

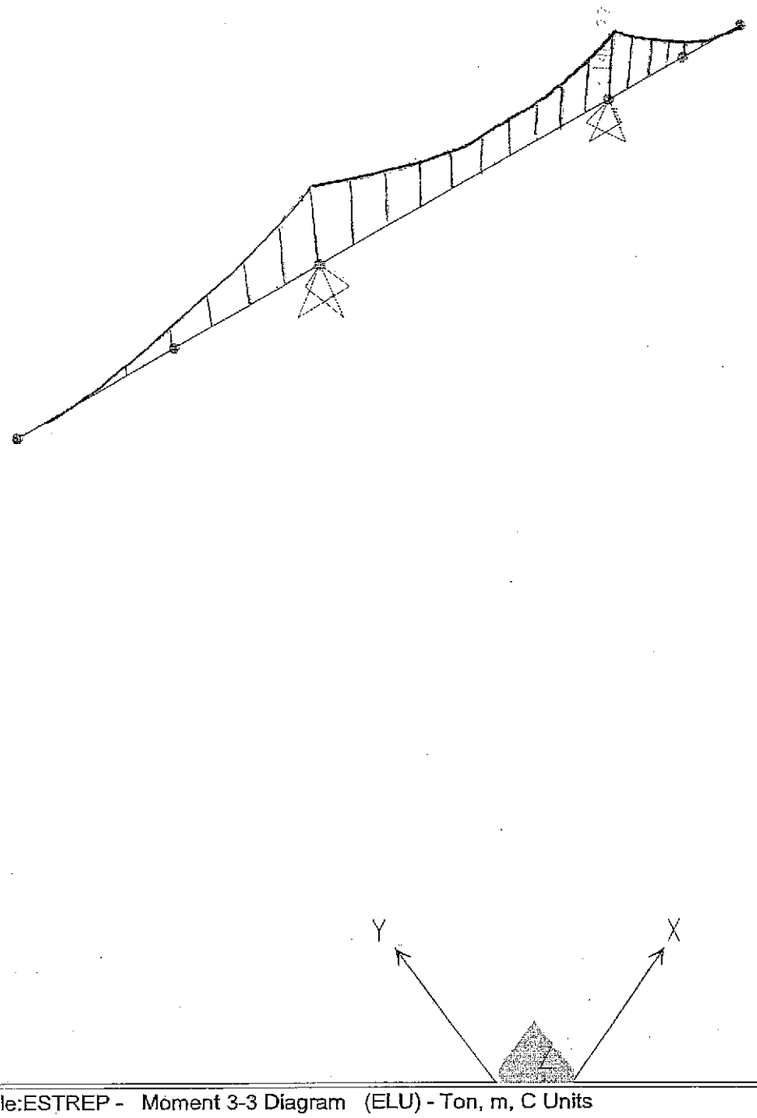
4' Dimensionamiento alebos.



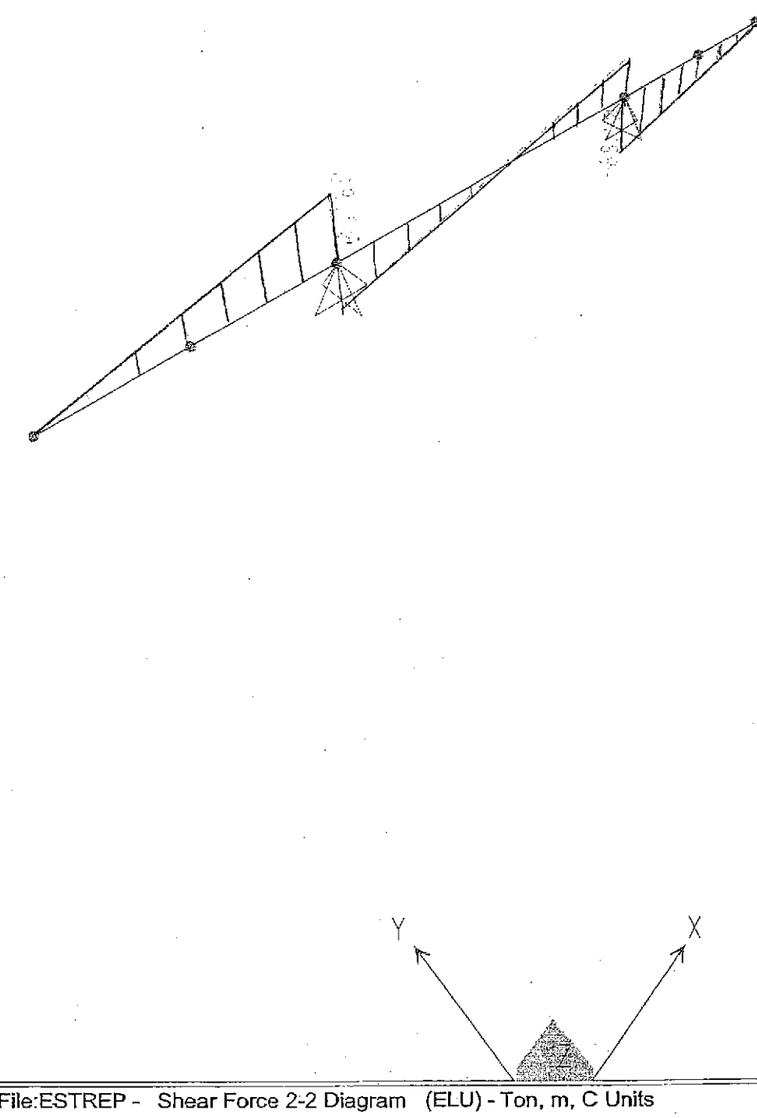
Cargas: peso propio $\gamma_H = 2'5\ T/m^3$

empuje de tierras $\delta_T = 2\ T/m^3$.

sobrecarga tráfico: $3\ T/m^2$



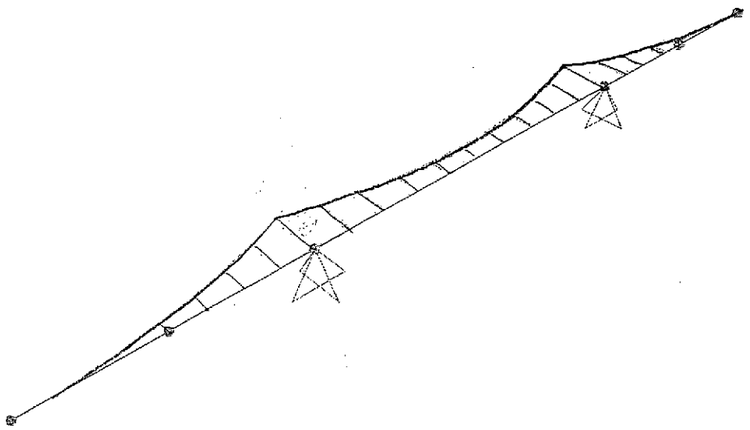
SAP2000 v8.2.3 - File:ESTREP - Moment 3-3 Diagram (ELU) - Ton, m, C Units

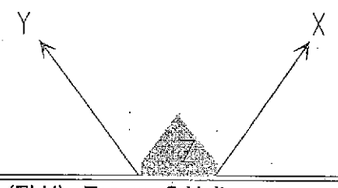


SAP2000 v8.2.3 - File:ESTREP - Shear Force 2-2 Diagram (ELU) - Ton, m, C Units

SAP2000

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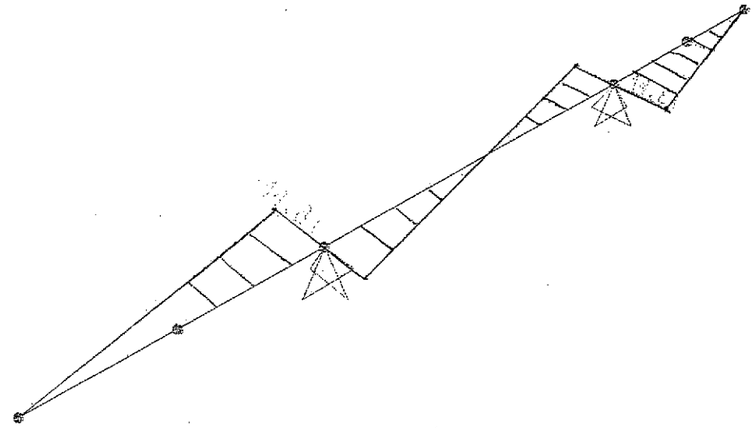


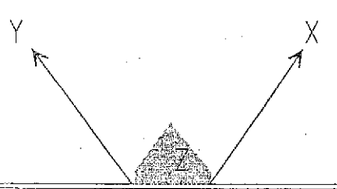


SAP2000 v8.2.3 - File:ESTREP - Moment 2-2 Diagram (ELU) - Ton, m, C Units

SAP2000

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SAP2000 v8.2.3 - File:ESTREP - Shear Force 3-3 Diagram (ELU) - Ton, m, C Units

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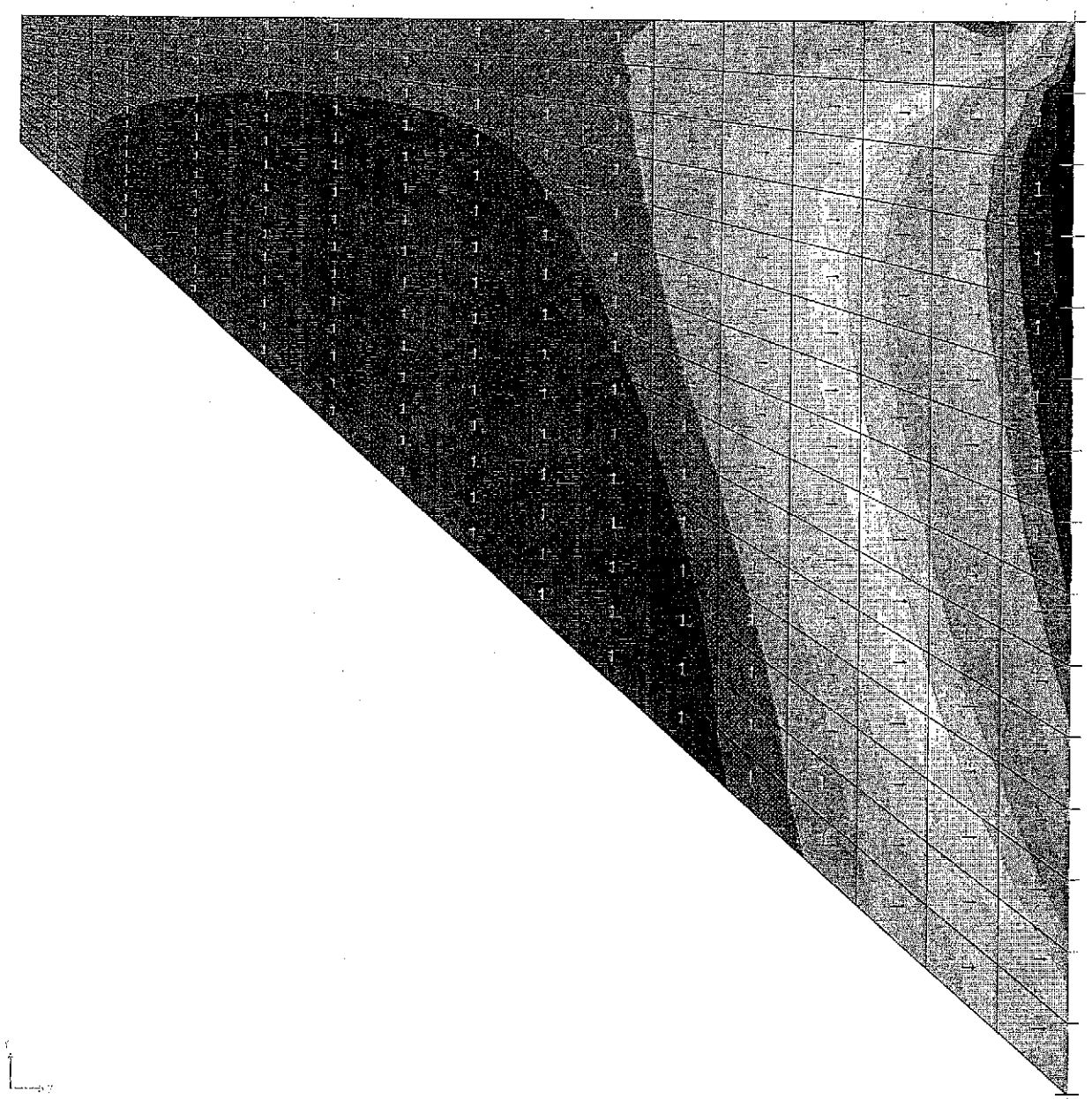


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SAP2000 v8.2.3 - File:ALETAS - Resultant M11 Diagram (ELU) - Ton, m, C Units

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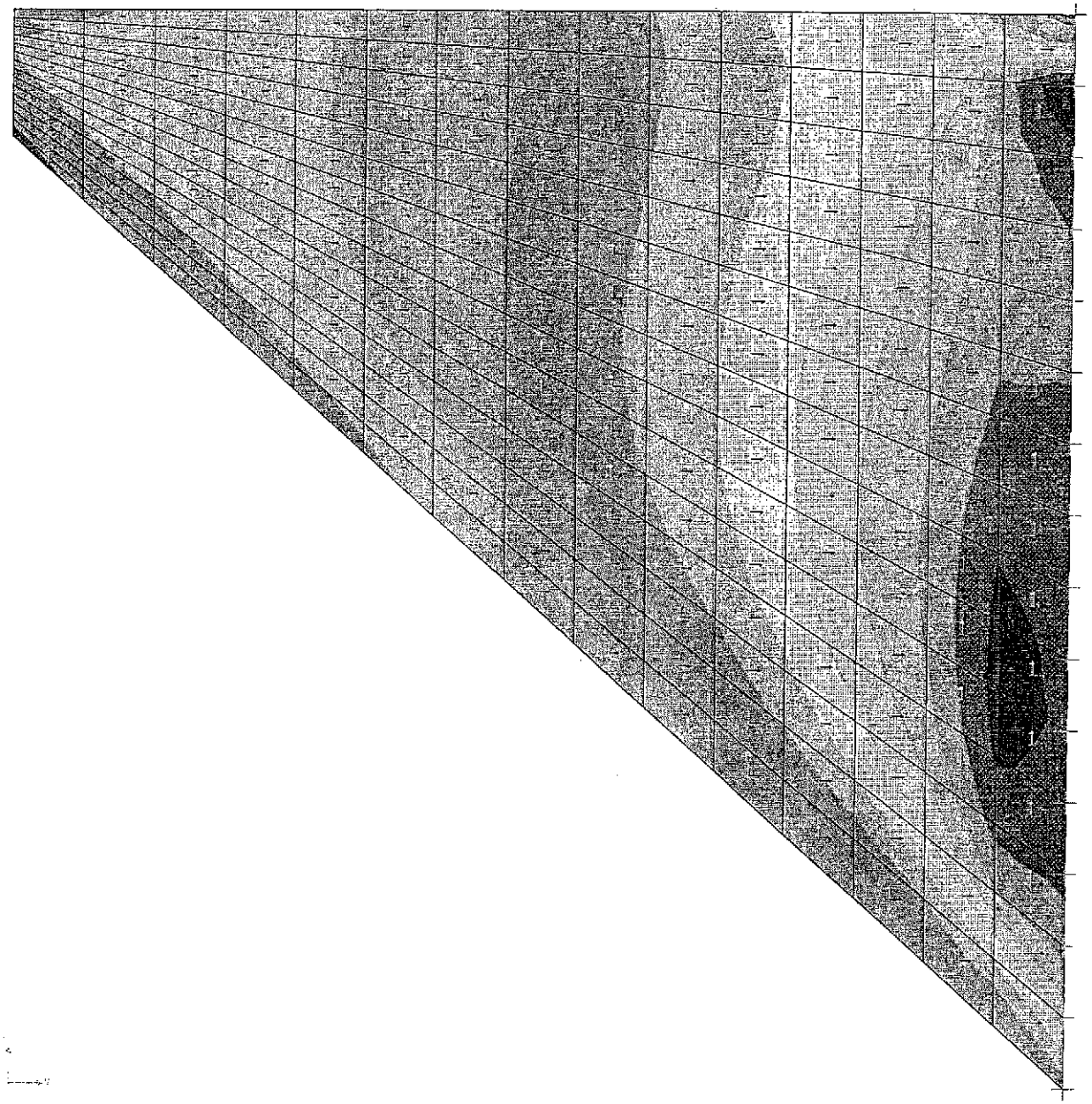


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SAP2000 v8.2.3 - File:ALETAS - Resultant M22 Diagram (ELU) - Ton, m, C Units

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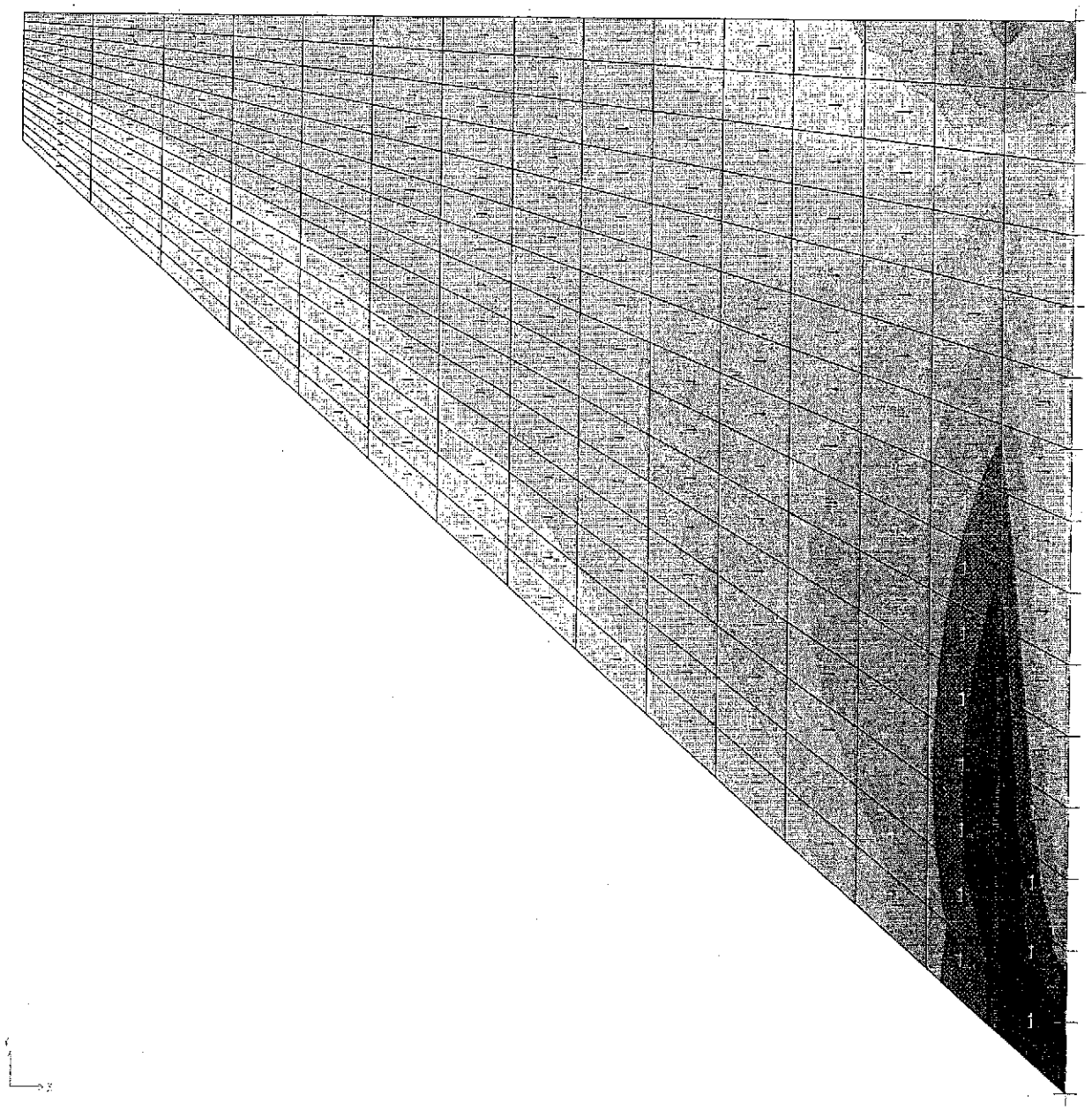


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SAP2000 v8.2.3 - File:ALETAS - Resultant V13 Diagram (ELU) - Ton, m, C Units

SAP2000

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SAP2000 v8.2.3 - File:ALETAS - Resultant V23 Diagram (ELU) - Ton, m, C Units

PASO BAJO AUTOPISTA AP7

PASO BAJO AUTOPISTA AP-7

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1.- MEMORIA

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6. CONCLUSIONES

VALTER valenciana de estructuras
L.A.V. MADRID-FRONTERA FRANCESA. TRAMO A: CONEXIÓN VALLÉS CASTELLBISBAL
PASO BAJO AUTOPISTA A-7

ANEXOS

A.1. MODELO DE CÁLCULO Y DIMENSIONAMIENTO DE LOSA
A.2. DIMENSIONAMIENTO DE PANTALLA EMPOTRADA EN LOSA
A.3. DIMENSIONAMIENTO DE PANTALLAS EN VOLADIZO
A.4. DIMENSIONAMIENTO DE MUROS

1. ANTECEDENTES Y OBJETO

A petición de la empresa constructora COPASA, adjudicataria de la ejecución de la obra "PROYECTO DE CONSTRUCCIÓN DE PLATAFORMA LÍNEA DE ALTA VELOCIDAD MADRID-ZARAGOZA-BARCELONA-FRONTERA FRANCESA. TRAMO A: CONEXIÓN VALLÉS-CASTELLBISBAL", se redacta el presente documento, cuyo objetivo es la comprobación y dimensionamiento, a nivel estructural, de la losa, la pantalla y los muros del paso bajo Autopista A-7, situada en el P.K. 501+300, debido a que la estructura se cambia de una losa con forma rectangular apoyada en pantalla de micropilotes y de pilotes, a una losa esviada apoyada en un muro pantalla de 0.65 m de espesor. También se sustituye la pantalla de pilotes para la contención de las tierras por pantallas en voladizo y muros de contención convencionales, dependiendo de la altura de contención de tierras.

La propuesta analizada, consiste en una losa con canto constante de 0.80 m, con un esviaje aproximado de 39g, un ancho de 72.50 m y una luz interior de 12.50 m, pantallas apoyadas en losa de 0.65 m de canto y una longitud de 17.00 m, pantallas en voladizo, y muros convencionales de contención de altura y canto variables.

Se ha realizado para ello los cálculos necesarios dimensionando tanto la losa, pantallas y muros, de forma que se cumplan los coeficientes de seguridad frente a los distintos estados límite, de una manera justificada que se expone en los puntos siguientes.

2. DESCRIPCIÓN

Se trata de una estructura situada en el P.K. 501+300 que salva el paso de la Autopista A-7, permitiendo el paso del L.A.V bajo ella. Está formada por una

losa de 0.80 m de canto empotrada en las pantallas laterales, con una luz interior de 12.50 m.

Las pantallas de 0.65 m de espesor se encuentran alineadas según un eje esviado de 39g respecto al eje de la losa empotrada en las mismas. La separación entre las pantallas es de 12.50 m.

Las pantallas se han dimensionado de hormigón armado, con una longitud de 17.00 m en el ancho de la losa. En la cabeza de la pantalla se ha dispuesto un dado de hormigón armado de 1.00 m de canto, el cual se ha aprovechado para proyectar el estribo de apoyo de losa.

También se han dimensionado las aletas del paso inferior, formadas por pantallas para la contención de tierras, de espesor y longitud variables, y por muros convencionales de altura variables.

3. FASES DE EJECUCIÓN

La ejecución de la estructura se realizará en varias fases debido a la circulación de trenes en servicio durante la construcción. Las fases que se van a seguir serán las siguientes:

FASE 1:

- Demolición de las aletas del paso inferior existente
- Relleno en la zona de paso inferior existente
- Construcción de las aletas 3, 4 y 5

FASE 2:

- Construcción de la plataforma de desvío provisional
- Paso de circulaciones a dicha vía

- Relleno en la zona de aletas 1 y 2
- Construcción de pantallas
- Construcción de la losa superior y losas de transición

FASE 3:

- Reposición de la plataforma de la autopista A-7
- Paso de circulaciones a la autopista

FASE 4:

- Demolición de la plataforma de desvío provisional
- Excavación por debajo del tablero
- Ejecución de la solera

4. BASES DE CÁLCULO

4.1. NORMATIVA UTILIZADA

Para la redacción del presente documento se ha considerado las siguientes Normas e Instrucciones:

- *IAP-98. Instrucción sobre las acciones a considerar en el proyecto de puentes de carretera. Ministerio de Fomento 1998.*
- *EHE-1998. Instrucción de Hormigón Estructural.*
- *NCSR-02 Norma de construcción sismorresistente.*

4.2. CARACTERÍSTICAS DE LOS MATERIALES

Las características de los materiales considerados son las que se indican a continuación:

HORMIGÓN ARMADO

PANTALLA

Tipo	HA-25 / B / 20 / IIa
Nivel de control	Normal
Resistencia característica f_{ck}	25 N/mm²
Resistencia media f_{cm}	33 N/mm²
Resistencia característica a tracción $f_{ct,k}$	1.80 N/mm²
Resistencia media a tracción $f_{ct,m}$	2.60 N/mm²
SITUACIONES PERSISTENTES O TRANSITORIAS	
Coeficiente de minoración γ_c	1.50
Resistencia de cálculo f_{cd}	16.67 N/mm²
SITUACIONES ACCIDENTALES	
Coeficiente de minoración γ_c	1.30
Resistencia de cálculo f_{cd}	19.23 N/mm²
MODULO DE ELASTICIDAD	
Módulo de Elasticidad inicial E_{co}	32000 N/mm²
Módulo de Elasticidad secante E_c	27000 N/mm²
Módulo de Poisson νc	0.20

LOSA

Tipo	HA-25 / B / 20 / IIb
Nivel de control	Normal
Resistencia característica f_{ck}	25 N/mm²
Resistencia media f_{cm}	33 N/mm²
Resistencia característica a tracción $f_{ct,k}$	1.80 N/mm²
Resistencia media a tracción $f_{ct,m}$	2.60 N/mm²

SITUACIONES PERSISTENTES O TRANSITORIAS	
Coeficiente de minoración γ_c	1.50
Resistencia de cálculo f_{cd}	16.67 N/mm²
SITUACIONES ACCIDENTALES	
Coeficiente de minoración γ_c	1.30
Resistencia de cálculo f_{cd}	19.23 N/mm²
MODULO DE ELASTICIDAD	
Módulo de Elasticidad inicial E_{co}	32000 N/mm²
Módulo de Elasticidad secante E_c	27000 N/mm²
Módulo de Poisson νc	0.20

ARMADURAS PASIVAS

Tipo	B - 500 S
Nivel de control	Normal
Resistencia característica f_{yk}	500 MPa
Coeficiente de minoración γ_s (situac. Persistentes o transitorias)	1.15
Resistencia de cálculo f_{yd}	443.5 MPa
Módulo de Elasticidad E_s	210 000 Mpa

RELLENO EN TRASDOS

Tipo	Granular.
Peso específico γ	20 kN/m³
Coeficiente de empuje activo Ka	0.33
Coeficiente de empuje al reposo Kr	0.50

4.3. CARACTERÍSTICAS DEL CIMIENTO

Para el dimensionamiento de la cimentación se ha tenido en cuenta las características del terreno dadas en el informe geotécnico del proyecto.

A continuación se describe la estratigrafía del terreno en el emplazamiento de la obra, tomada del informe geotécnico del proyecto original, empleada para la obtención de la carga admisible de los pilotes.

En este paso inferior, la altura de terraplén es del orden de 10.00 m, mientras que la máxima profundidad de vaciado será en torno a 8.00 m.

La estratigrafía del terreno desde la coronación del terraplén es la siguiente:

Nivel 1:	
Tipo	Relleno
Potencia	11.00 m
Coeficiente de rozamiento	28°
Cohesión	5.0 kN/m²
Densidad	19.0 kN/m³
K_{100}	50000 kN/m³
N_{30}	20-30
Nivel 2	
Tipo	Alternancia de aluvial limoso y arenoso
Potencia	3.00 m
Coeficiente de rozamiento	30°
Cohesión	5.0 kN/m²
Densidad	19.0 kN/m³
K_{100}	65000 kN/m³
N_{30}	30-40
Nivel 3	
Tipo	Gravas
Potencia	6.00 m
Coeficiente de rozamiento	34°
Cohesión	0.0 kN/m²
Densidad	19.0 kN/m³
K_{100}	80000 kN/m³
N_{30}	60-40
Nivel 4	
Tipo	Aluvial de predominio arenoso
Potencia	4.00 m
Coeficiente de rozamiento	32°
Cohesión	0.0 kN/m²
Densidad	20.0 kN/m³
K_{100}	80000 kN/m³
N_{30}	30-40

Nivel 5	
Tipo	Terciario de lutitas
Potencia	>24.00 m
Coeficiente de rozamiento	28°
Cohesión	50.0 kN/m²
Densidad	20.0 kN/m³
K_{100}	200000 kN/m³
N_{30}	>100(rechazo)

El nivel freático se sitúa a una profundidad de 16.00 m desde la coronación del propio terraplén.

4.4. DURABILIDAD

Se deben diferenciar dos tipos de exposición:

- para la pantalla, la cual se encuentra enterrada, se ha considerado el tipo de exposición normal con humedad alta IIa.
- Para el tablero, se ha considerado el tipo de exposición normal con humedad media IIb.

Como consecuencia del tipo de ambiente el hormigón a emplear en la ejecución de la pantalla debe cumplir las siguientes características para el tipo de exposición IIa:

- la relación máxima agua/cemento debe ser de 0.60
- el contenido mínimo en cemento debe ser 275 kg/m³
- los recubrimientos mínimos serán de 50 mm.

Como consecuencia del tipo de ambiente el hormigón del tablero a emplear en la ejecución debe cumplir las siguientes características para el tipo de exposición IIb:

- la relación máxima agua/cemento debe ser de 0.55
- el contenido mínimo en cemento debe ser 300 kg/m³
- los recubrimientos mínimos serán de 40 mm.

4.5. ACCIONES CONSIDERADAS

4.5.1. Acciones permanentes

Las cargas permanentes están constituidas por los pesos de los distintos elementos que forman parte de la estructura. Corresponden a acciones que actúan en todo momento y son constantes en posición y magnitud. Comprenden el peso propio y las cargas muertas. Sus valores se deducen de las dimensiones de los elementos especificadas en los planos y de sus pesos específicos correspondientes.

4.5.1.1. Peso propio

Corresponde al peso de los elementos estructurales, con su sección bruta, aplicándole el peso específico del material:

Peso propio hormigón: 25.00 kN/m³

4.5.1.2. Cargas muertas

Son las debidas a los elementos no estructurales que gravitan sobre la estructura, tales como: pavimentos, barreras, etc. Se han considerado los siguientes valores característicos:

Pavimento (e=0.06m)	24 kN/m³
Barreras	10 kN/m (por borde)

Aceras(e= 0.20 m)	25 kN/m³

4.5.2. Acciones permanentes de valor no constante

Acciones que actúan en todo momento pero cuya magnitud no es constante.

Se incluyen aquellas acciones cuya variación sea función del tiempo transcurrido y se produzca en un solo sentido, tendiendo hacia un determinado valor límite (acciones reológicas, pretensado, asientos del terreno bajo las cimentaciones), y aquellas otras acciones originadas por el terreno cuya magnitud varía en función de la interacción terreno-estructura.

4.5.2.1. Acciones reológicas

Las acciones reológicas se obtienen a partir de los valores característicos de las deformaciones provocadas por la retracción y la fluencia.

La deformación debida a la retracción del hormigón es función de la humedad relativa del ambiente, del espesor ficticio de la pieza, de la cuantía de armadura, de las condiciones de amasado del hormigón y del tiempo transcurrido desde su puesta en obra.

La deformación debida a la fluencia del hormigón bajo carga constante se considera proporcional a la deformación elástica instantánea.

Este tipo de acciones originan estados tensionales que son variables tanto en altura (geometría, condiciones de borde) como en planta (grado de soleamiento, etc.). Se ha optado por

tener en cuenta su efecto sobre la fisuración de la estructura, disponiendo la armadura necesaria.

La Instrucción EHE define los valores dados en la tabla adjunta:

CUANTÍAS GEOMÉTRICAS MÍNIMAS, EN TANTO POR 1000, REFERIDAS A LA SECCIÓN TOTAL DE HORMIGÓN			
		B-400 S	B-500 S
LOSAS (*)		2.0	1.8
MUROS (**)	HORIZONTAL	4.0	3.2
	VERTICAL	1.2	0.9

(*) Cuantía mínima de cada una de las armaduras, longitudinal y transversal repartida en las dos caras. Las losas apoyadas sobre el terreno requieren un estudio especial.

(**) La cuantía mínima vertical es la correspondiente a la cara de tracción. Se recomienda disponer en la cara opuesta una armadura mínima igual al 30% de la consignada.
La armadura mínima horizontal deberá repartirse en ambas caras. Para muros vistos por ambas caras debe disponerse el 50% en cada cara. Para muros vistos por una sola cara podrán disponerse hasta 2/3 de la armadura total en la cara vista. En el caso de que se dispongan juntas verticales de contracción a distancias no superiores a 7.5 m con la armadura horizontal interrumpida, las cuantías horizontales mínimas pueden reducirse a la mitad.

4.5.2.2. Acciones debidas al terreno

En el cálculo de los elementos de contención de tierras, se tienen en cuenta las acciones debidas al relleno del trasdós, considerando independientemente los efectos del peso del terreno y de los empujes.

El peso del terreno se determina aplicando al volumen de terreno que gravita sobre la superficie del elemento horizontal, el peso específico del relleno vertido y compactado.

El empuje sobre los elementos estructurales se determinará de acuerdo con los conceptos geotécnicos, en función de las características del terreno y de la interacción terreno-estructura.

Con el fin de quedarnos del lado de la seguridad, se considerará el empuje activo o el empuje en reposo, según sea más desfavorable para los distintos esfuerzos que se estén analizando, con los valores de los coeficientes de empuje indicados anteriormente.

En ningún caso en que su actuación sea desfavorable para el efecto estudiado, el valor del empuje será inferior al equivalente del empuje hidrostático de un fluido de peso específico 5 kN/m³.

En el caso de asientos del terreno, sus valores se deducen de los parámetros o condiciones establecidas en el preceptivo estudio geotécnico, teniendo en cuenta las características del terreno, la tipología y geometría de la cimentación, y las cargas transmitidas.

4.5.3. Sobrecargas de uso

Son acciones externas a la estructura que pueden actuar o no sobre ella por razón de su uso.

Las componentes verticales del tren de cargas corresponden a las tres acciones siguientes actuando simultáneamente: Sobrecarga Uniforme, Vehículo pesado, Tráfico ferroviario y Sobrecarga en aceras.

En los valores de las cargas definidas a continuación está ya incluido el correspondiente coeficiente de impacto, que tiene en cuenta el carácter dinámico de las cargas, que se suponen aplicadas estáticamente.

Para el cálculo de la losa superior se ha empleado las cargas indicadas en la instrucción IAP, mientras para la solera dispuesta debajo de las vías del LAV, se ha mantenido la de proyecto, en el

cual se han considerado las cargas de tráfico ferroviario indicadas en este documento.

4.5.3.1. Sobrecarga uniforme

Se considera una sobrecarga uniforme de 4 KN/m² extendida en toda la plataforma de la estructura o en parte de ella, según sea más desfavorable para el elemento en estudio.

4.5.3.2. Vehículo pesado

Vehículo pesado de la Instrucción de 600 kN, cuyo eje longitudinal se considerará paralelo al de la calzada, formado por seis cargas puntuales de 100 kN cada una.

La separación entre cargas en sentido longitudinal será de 1.50 m, y en sentido transversal de 2.00 m. La superficie de apoyo sobre la que actuará cada carga será de 0.20 m, paralelamente al eje del vehículo, por 0.60 m de ancho.

La disposición transversal del vehículo pesado dentro de la plataforma cumplirá con la siguiente limitación: la distancia mínima de una de las líneas de carga a bordes de la plataforma será de 0.50 m.

En plataformas de ancho mayor a 12.0 m, se considerará la actuación de uno o dos vehículos pesados, según sea más desfavorable.

En caso de que exista mediana fija, se podrán colocar los dos vehículos pesados a un mismo lado de la mediana cuando la anchura de esta zona de la plataforma sea superior a 12.0 m.

Nunca podrán estar situados dos vehículos pesados en una misma línea paralela a la directriz de la plataforma, debiendo ser

la distancia transversal mínima entre líneas de cargas de diferentes vehículos pesados situados en la misma zona de la plataforma será de 2.0 m.

4.5.3.3. Sobrecarga en aceras

Se considera una sobrecarga uniforme de 4 kN/m² extendida en toda la superficie, o en parte de ella, según sea más desfavorable para el elemento en estudio, de aceras, pistas para ciclistas o ciclomotores, zonas reservadas para el paso de animales y medianas, físicamente separadas de la plataforma.

A efectos locales, si dichas zonas no se encuentran protegidas por una defensa rígida que impida el paso accidental de un vehículo, se comprobarán además con una carga de 60 kN, supuesta actuando sobre una superficie de 0.30 x 0.30 m² en la posición más desfavorable, no compatible con la sobrecarga uniforme de aceras, ni con la sobrecarga uniforme de la plataforma, ni con las cargas del vehículo definidas anteriormente.

4.5.3.4. Frenado

El frenado, arranque o cambio de velocidad de los vehículos, dará lugar a una acción cuyo valor se estima en 1/20 de la sobrecarga sobre la plataforma de la estructura.

Sobrecarga Total Plataforma = Q_{SU} + Q_{SP} = 3625 + 1200 = 4825 kN

Frenado Tablero = 4825 / 20 = 241.25 kN

Dado que la vía dispone de carriles de sentidos opuestos de circulación, se considera como de dirección única, puesto que esta hipótesis resulta más desfavorable.

Según la vigente Instrucción de acciones, los valores mínimo y máximo para la acción de frenado se establecen en función de la anchura de la plataforma, por lo que el frenado mínimo y máximo que puede actuar sobre la estructura de anchura de plataforma b = 13.75 m son:

Valor mínimo = 20 x 13.75 = 275 kN

Valor máximo = 60 x 13.75 = 825 kN

Estos valores límite se referirán no sólo a los elementos directamente solicitados, sino también a aquellos otros en los que la acción se transmita de forma indirecta.

La acción del frenado y arranque, con los valores definidos anteriormente, se considerará aplicada en la dirección del eje de la plataforma de la estructura y actuando a nivel de la superficie del pavimento, como una acción uniformemente distribuida en la longitud de la estructura.

4.5.3.5. Sobrecarga en terraplenes

A efectos del cálculo de empujes del terreno sobre elementos de la estructura en contacto con él, se considerará actuando en la parte superior del terraplén, en la zona por donde pueda discurrir el tráfico, una sobrecarga uniforme de 10 kN/m².

Esta sobrecarga se tendrá en cuenta únicamente en los casos en que las cargas producidas por el tráfico actúen a una distancia, medida en horizontal desde la parte superior de la

estructura, menor o igual a la mitad de la altura del elemento de la estructura sobre el que actúe el empuje.

En determinados casos, deberán tenerse en cuenta los empujes locales debidos a la actuación de un eje del vehículo pesado del tren de cargas definido.

4.5.3.6. Empuje sobre barandillas y barreras

Esta acción tiene carácter local y, por tanto, sólo se utilizará para la comprobación del elemento de contención y de sus anclajes, sin que deba ser considerada a efectos de ninguna otra verificación de la seguridad general de la estructura.

4.5.4. Acciones térmicas

Las acciones térmicas se tendrán la componente de variación uniforme de temperatura (ΔT) que experimenta el elemento estructural, asociada fundamentalmente al rango anual de la temperatura ambiente en el lugar de su emplazamiento.

Para la determinación de los efectos que producen se consideran los coeficientes de dilatación térmica de los materiales utilizados:

Hormigón: $\alpha_h = 10^{-5}\ °C^{-1}$

Acero: $\alpha_a = 1.2\ 10^{-5}\ °C^{-1}$

4.5.4.1. Variación uniforme de temperatura

La componente de variación uniforme de temperatura depende de la temperatura efectiva (temperatura media en sus

secciones transversales) mínima y máxima que pueda alcanzar el elemento en un período de tiempo determinado.

Su valor depende de la tipología estructural del elemento, sus dimensiones, los materiales que lo constituyen, y de los valores de la temperatura ambiente de la zona climática en que se vaya a ubicar el puente.

A efectos de la evaluación de las acciones térmicas, la ubicación de la estructura se encuentra incluida en la Zona III, correspondiente al Litoral Mediterráneo.

El valor característico de la variación uniforme anual de la temperatura del tablero (ΔT), diferencia entre los valores medios mínimos y máximos a lo largo del año de la temperatura media en sus secciones transversales, se obtiene a partir de la siguiente expresión, válida para la verificación de las situaciones persistentes durante la vida útil de la estructura en el caso de tableros de hormigón:

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

Siendo:

z = Número árabe que corresponde al número romano que designa la zona climática, en nuestro caso 3.

h = Canto del tablero (m), con $h_{min} \le h \le h_{max}$. En el caso de h variable a lo largo de la directriz de la estructura se tomará el h medio.

s = Separación entre ejes de vigas (m) para tableros de vigas de hormigón, con valor comprendido entre 1.5 m $\le s \le$ 3.5 m. En otro caso s = 1.

Las constantes K, a, b, c, h_{min} y h_{max} se recogen en la siguiente tabla para las tipologías transversales más habituales en el diseño de puentes de hormigón y metálicos.

Coeficientes para la determinación de la Variación Uniforme de Temperatura del tablero						
Tipología	k	a	b	c	h_{min} (m)	h_{max} (m)
Losa maciza hormigón	23.89	0.292	-0.139	0	0.30	1.20
Losa aligerada hormigón	24.91	0.292	-0.172	0	0.60	1.50
Cajón hormigón	29.13	0.301	-0.148	0	1.70	4.00
Vigas hormigón	26.90	0.300	-0.088	0.057	1.00	2.50
Cajón metálico	39.77	0.234	-0.069	0	1.50	4.50
Vigas metálicas	40.11	0.228	-0.072	0	2.00	6.00

En nuestro caso las constantes consideradas son:

K = 23.89
a = 0,292
b = – 0,139
h = 0.80 m
s = 1

Por lo que resulta una variación uniforme de valor:

$\Delta T = 34\ °C$

Esta variación se reparte de la siguiente forma:

$\Delta T^+ = 22.64\ °C$

$\Delta T^- = -11.32\ °C$

4.5.4.2. Gradiente térmico positivo

Se define como gradiente térmico vertical positivo del tablero la diferencia de temperatura entre la fibra superior y la inferior del tablero, dividida por la distancia entre ambas fibras, con unidades, por tanto de grados Celsius por metro (°C/m). A efectos de cálculo de las acciones sobre el tablero, esta variación de temperatura se supondrá lineal entre ambas fibras.

Para una losa maciza de hormigón, la diferencia de temperaturas vertical positiva entre la fibra superior e inferior ΔT_{SI} se determina con la expresión:

$$\Delta T_{SI} = K_1 \ K_2 \ \Delta T_{SI,ref}$$

Siendo:

K_1 = Factor de corrección relativo al canto del tablero.

K_2 = Factor de corrección relativo al espesor del pavimento bituminoso.

$\Delta T_{SI,ref}$ = Diferencia de temperaturas de referencia.

En nuestro caso, para la localidad de Martorell (Barcelona) se puede adoptar como diferencia de temperatura de referencia $\Delta T_{SI,ref} = 12\ °C$, y los coeficientes correctores para una losa de 0.80 m de canto son:

$K_1 = 0.9$ $K_2 = 1.25$

Con lo que el gradiente térmico vertical positivo será:

$\Delta T_{SI} = 0.90 \times 1.25 \times 12.00\ °C = 1.12 \times 12.00 = 13.5°C$

$\nabla T^+ = \Delta T_{SI} / h = 13.5 / 0.80 = 16.875\ °C/m$

4.5.4.3. Gradiente térmico negativo

Los mayores gradientes térmicos inversos aparecen en las horas previas al amanecer en los meses de invierno, como consecuencia del fenómeno de enfriamiento del tablero.

Para un tablero de hormigón con pavimento bituminoso se puede despreciar la diferencia de temperaturas entre la fibra superior e inferior del tablero, por lo que no es necesaria esta comprobación.

4.5.5. Viento

La acción del viento se asimilará a una carga estática, función de la velocidad de cálculo del viento en la zona de emplazamiento.

Como la estructura se encuentra enterrada no se ve afectada por la acción del viento.

4.5.6. Nieve

La sobrecarga de nieve se supondrá actuando en todas aquellas superficies del tablero sobre las que no se ha considerado la actuación de la sobrecarga de uso.

De no existir datos suficientes de la zona en la que se ubicará el puente, se podrá tomar como valor característico de la sobrecarga de nieve el que se indica en la Instrucción IAP-98, cuyas especificaciones serán válidas siempre que la ubicación de la estructura no se encuentre en un lugar conocido por sus condiciones extremas de viento o nieve o en altitudes superiores a los 2000 metros.

En el caso que nos ocupa no es necesario considerar la sobrecarga de nieve, pues ya se ha considerado la actuación de la sobrecarga de uso en toda la superficie del tablero de la estructura..

4.5.7. Acciones Sísmicas

Las acciones sísmicas en puentes se considerarán únicamente cuando el valor de la aceleración de cálculo resulte igual o superior a 0.04 g.

4.5.7.1. Aceleración sísmica de cálculo

La aceleración de cálculo en el terreno a_c a considerar en el estudio sísmico para una estructura en servicio adopta la expresión:

$$a_c = \rho \; a_b$$

Siendo a_b la aceleración sísmica básica y ρ el coeficiente de riesgo.

De acuerdo con la Norma de Construcción Sismorresistente (NCSR-02), la aceleración sísmica básica a_b de la localidad de Barcelona adopta el valor:

$$a_b = 0.04 \text{ g}$$

Según la importancia de la estructura, la aceleración de cálculo en el terreno se obtiene multiplicando los valores básicos por un coeficiente ρ función del nivel de daño. Las categorías de los puentes, atendiendo a criterios de afección y acciones sísmicas, se definen de acuerdo con el uso a que se destine la estructura y con los daños que pueda ocasionar su destrucción.

En nuestro caso, podemos calificarlo de puente de normal importancia , siendo entonces el coeficiente de riesgo:

$$\rho = 1.00$$

Que corresponde, para una vida útil de la estructura de 100 años. Se obtiene, por tanto, para la estructura, una aceleración de cálculo de valor:

$$a_c = 0.04 \text{ g}$$

Por lo tanto, la acción sísmica no es necesaria tenerla en cuenta en el cálculo.

4.6. HIPÓTESIS DE CARGA

4.6.1. Valores representativos

De acuerdo con la Instrucción IAPF, los valores representativos de las acciones utilizados para la verificación de los estados límites serán:

4.6.1.1. Permanentes (G)

Para las acciones permanentes se considerará un único valor representativo, coincidente con el valor característico G_k, excepto en el caso de la acción correspondiente al peso del balasto y en su caso, las acciones producidas por los servicios situados sobre la estructura, para la que se considerarán dos valores representativos $G_{k,sup}$ y $G_{k,inf}$.

4.6.1.2. Permanentes de valor no constante (G*)

- *Presolicitaciones*

Para las acciones originadas por las presolicitaciones definidas anteriormente se considerará un único valor representativo, coincidente con el valor característico $P_{k,t}$ correspondiente al instante t en el que se realiza la comprobación del estado límite.

- *Acciones Reológicas*

Para las acciones de origen reológico, fluencia y retracción, se considerará un único valor representativo, coincidente con el

valor característico $R_{k,t}$ correspondiente al instante t en el que se realiza la comprobación.

- *Acciones debidas al terreno*

Para las acciones correspondientes al peso del terreno se considerará un único valor representativo, coincidente con el valor característico $G^*_{WT,k}$.

Para las acciones correspondientes al empuje del terreno y movimientos del terreno bajo las cimentaciones se considerará el valor representativo de acuerdo con lo expuesto anteriormente.

4.6.1.3. Variables (Q)

Cada una de las acciones variables podrá considerarse con los siguientes valores representativos:

- *Valor característico Qk*

será el valor de la acción cuando actúe aisladamente, como ha sido definido anteriormente.

- *Valor de combinación ψ0 Qk:*

será el valor de la acción cuando actúe con alguna otra acción variable, para tener en cuenta la pequeña probabilidad de que actúen simultáneamente los valores más desfavorables de varias acciones independientes.

- *Valor frecuente ψ1 Qk:*

será el valor de la acción que sea sobrepasado durante un período de corta duración respecto a la vida útil dla estructura (5% del tiempo). Corresponde a un período de retorno de una semana.

- *Valor casi-permanente ψ2 Qk:*

será el valor de la acción que sea sobrepasado durante una gran parte de la vida útil dla estructura (el 50% o más del tiempo) o bien el valor medio.

Los valores de los coeficientes y se recogen en la siguiente tabla.

VALORES DE LOS COEFICIENTES ψ			
	ψ_0	ψ_1	ψ_2
Viento	0.60	0.50	0.20
Temperatura	0.60	0.50	0.20
Cargas de tráfico	0.80	0.50	0.00

4.6.1.4. Accidentales (A)

Para las acciones accidentales se considerará un único valor representativo coincidente con el valor característico A_k.

4.6.2. Valores de cálculo

Los valores de cálculo de las diferentes acciones serán los obtenidos aplicando el correspondiente coeficiente parcial de seguridad γ_F a los valores representativos de las acciones definidas anteriormente.

Los coeficientes parciales de seguridad se indican en la siguiente tabla:

COEFICIENTES DE SEGURIDAD γ_F						
ESTADOS LIMITES	ÚLTIMOS				DE SERVICIO	
SITUACIONES	PERSISTENTES Y TRANSITORIAS		ACCIDENTALES		PERSISTENTES Y TRANSITORIAS	
ACCIÓN	Favorable	Desfavorable	Favorable	Desfavorable	Favorable	Desfavorable
PERMANENTE γ_G	1.00	1.35	1.00	1.00	1.00	1.00

PERMANENTE DE VALOR NO CONSTANTE γ_{G^*}	Pretensado P_1 Postesas Pretesas	1.00	1.00	1.00	1.00	0.90 0.95	1.10 1.05
	Pretensado P_2	1.00	1.35	1.00	1.00	1.00	1.00
	Presolicitación	0.95	1.05	1.00	1.00	1.00	1.00
	Reológica	1.00	1.35	1.00	1.00	1.00	1.00
	Acción del terreno	1.00	1.50	1.00	1.00	1.00	1.00
VARIABLE γ_Q		0.00	1.50	0.00	1.00	0.00	1.00
ACCIDENTAL γ_A				1.00	1.00		

4.6.3. Hipótesis de Carga

Según la Instrucción IAPF, las hipótesis de carga a considerar se formarán combinando los valores de calculo de las acciones cuya actuación pueda ser simultanea, según los criterios generales que se indican a continuación:

A) ESTADOS LÍMITE ÚLTIMOS

Para la comprobación de los Estados Límites Últimos se considerarán las situaciones persistentes y transitorias, y las accidentales con o sin sismo.

A1) Situaciones persistentes o transitorias

Las combinaciones de las distintas acciones consideradas en estas situaciones, excepto en el ELU de fatiga, se realizan de acuerdo con el siguiente criterio:

$$\sum_{j\geq 1} \gamma_{G,j}\, G_{k,j} + \sum_{i\geq 1} \gamma_{G^*,i}\, G^{*}_{k,i} + \gamma_{Q,1}\, Q_{k,1} + \sum_{i>1} \gamma_{Q,i}\, \Psi_{0,i}\, Q_{k,i}$$

donde:

$G_{k,j}$ = Valor representativo de cada acción permanente.

$G^{*}_{k,i}$ = Valor representativo de cada acción permanente de valor no constante.

$Q_{k,1}$ = Valor representativo (valor característico) de la acción variable dominante.

$\psi_{0,i}\ Q_{k,i}$ = Valores representativos (valores de combinación) de las acciones variables concomitantes con la acción variable dominante.

En general, deberán realizarse tantas hipótesis o combinaciones como sea necesario, considerando, en cada una de ellas, una de las acciones variables como dominante y el resto como concomitantes.

Además, se deberán tener en cuenta las siguientes observaciones:

- *Si la acción de la sobrecarga de uso es considerada como dominante, se tomará ésta con su valor representativo y la acción del viento con su valor reducido, aplicándose además los coeficientes ψ indicados anteriormente.*
- *Si la acción del viento es considerada como dominante, se tomara esta acción con su valor representativo y no se considerará la actuación simultánea de la acción de la sobrecarga de uso.*

A2) Situaciones accidentales

Se distinguirán dos tipos de situaciones accidentales:

- *Las provocadas por choques de vehículos, locomotoras, barcos, etc., sobre los distintos elementos dla estructura.*
- *Las provocadas por la acción sísmica.*

A2a) Situaciones accidentales sin sismo

Las combinaciones de las distintas acciones consideradas en estas situaciones se realizarán de acuerdo con el siguiente criterio:

$$\sum_{j\geq 1} \gamma_{G,j}\ G_{k,j} + \sum_{i\geq 1} \gamma_{G^*,i}\ G^{-}_{k,i} + \gamma_{Q,1}\ \Psi_{1,1}\ Q_{k,1} + \sum_{i>1} \gamma_{Q,i}\ \Psi_{2,i}\ Q_{k,i} + \gamma_{A}\ A_{k}$$

donde:

$G_{k,j}$ = Valor representativo de cada acción permanente.

$G^{*}_{k,i}$ = Valor representativo de cada acción permanente de valor no constante.

$\psi_{1,1}\ Q_{k,1}$= Valor representativo frecuente de la acción variable dominante.

$\psi_{2,i}\ Q_{k,i}$ = Valores representativos casi-permanentes de las acciones variables concomitantes con la acción variable dominante y la acción accidental.

A_k = Valor representativo característico de la acción accidental.

Para estas combinaciones serán de aplicación las observaciones indicadas en el planteamiento de las combinaciones A1).

A2b) Situaciones accidentales de sismo

Las combinaciones de las distintas acciones consideradas en estas situaciones se realizarán de acuerdo con el siguiente criterio:

$$\sum_{j\geq 1} \gamma_{G,j}\ G_{k,j} + \sum_{i\geq 1} \gamma_{G^*,i}\ G^{*}_{k,i} + \gamma_{Q,1}\ \Psi_{2,1}\ Q_{k,1} + \gamma_{A}\ A_{E,k}$$

donde:

$G_{k,j}$ = Valor representativo de cada acción permanente.

$G^{*}_{k,i}$ = Valor representativo de cada acción permanente de valor no constante.

$\psi_{2,1}\ Q_{k,1}$ = Valor representativo casi-permanentes de la acción relativa a la sobrecarga de uso. En puentes de baja o media intensidad de tráfico, no será necesario considerar esta acción.

$A_{E,k}$ = Valor representativo característico de la acción sísmica.

B) ESTADOS LÍMITE DE SERVICIO

Para las comprobaciones relativas a los Estados Límites de servicio se considerarán únicamente las situaciones persistentes y transitorias, excluyéndose las accidentales.

Las combinaciones de las distintas acciones consideradas en estas situaciones, se realizarán de acuerdo con el siguiente criterio:

B1) Combinación Característica (poco probable o rara)

$$\sum_{j\geq 1} G_{k,j} + \sum_{i\geq 1} \gamma_{G^*,i}\, G^{-}_{k,i} + \gamma_{Q,1}\, Q_{k,1} + \sum_{i>1} \gamma_{Q,i}\, \Psi_{0,i}\, Q_{k,i}$$

B2) Combinación Frecuente

$$\sum_{j\geq 1} G_{k,j} + \sum_{i\geq 1} \gamma_{G^*,i}\, G^{-}_{k,i} + \gamma_{Q,1}\, \Psi_{1,1}\, Q_{k,1} + \sum_{i>1} \gamma_{Q,i}\, \Psi_{2,i}\, Q_{k,i}$$

B3) Combinación Casi-permanente

$$\sum_{j\geq 1} G_{k,j} + \sum_{i\geq 1} \gamma_{G^*,i}\, G^{-}_{k,i} + \sum_{i\geq 1} \gamma_{Q,i}\, \Psi_{2,i}\, Q_{k,i}$$

Para las tres combinaciones serán de aplicación las observaciones indicadas en el planteamiento de las combinaciones A1).

5. CALCULOS ESTRUCTURALES

5.1. MODELO ESTRUCTURAL

Para el cálculo de la estructura se han realizado dos modelos, un modelo bidimensional para el cálculo de la losa, y un modelo pórtico de 1.00 m de ancho, para el dimensionamiento de las pantallas empotradas a la losa.

Por otra parte se han dimensionado pantallas en voladizo y muros convencionales que forman las aletas de la estructura para el soporte de las tierras.

5.1.1. Proceso del cálculo del tablero

El tablero de la estructura proyectada está formado por una losa de canto constante.

Para el cálculo de la losa se ha empleado un modelo bidimensional de elementos finitos tipo placa, procesado mediante el programa CEDRUS del paquete informático CUBUS. Se ha considerado la geometría real del tablero.

Para el cálculo del tablero se ha seguido el borrador de la IAPF "Instrucción de acciones a considerar en el proyecto de puentes de ferrocarril".

El cálculo realizado ha sido estático teniendo en cuenta la naturaleza dinámica de las cargas del tráfico ferroviario mediante coeficientes de impacto.

El tipo de apoyo considerado, en el modelo bidimensional de la losa, ha sido un empotramiento lineal, considerando la rigidez de la pantalla.

5.1.2. Proceso de cálculo de la pantalla

Para la contención de tierras se han dimensionado tres muros pantalla de alturas variables:

- Pantalla tipo 1: pantalla de 17.00 m en voladizo, con una altura libre entre 8.00 y 6.00 m, con un espesor de 0.65 m.
- Pantalla tipo 2: pantalla de 12.00 m en voladizo, con una altura libre entre 6.00 y 4.00 m, con un espesor de 0.65 m.
- Pantalla tipo 3: pantalla de 8.00 m en voladizo, con una altura libre entre 4.00 y 2.00 m, con un espesor de 0.40 m.

Para el dimensionamiento de las pantallas se ha realizado el cálculo de la misma frente a esfuerzos horizontales que le trasmite el relleno del terraplén.

Se ha realizado un modelo de elementos finitos tipo barra, tomando una franja de 1.00 m de ancho de pantalla. En este modelo se ha tenido en cuenta la coacción del terreno mediante una serie de muelles horizontales con las siguientes constantes elásticas extraídas del informe geotécnico:

Profundidad: 15.00 m ⇒ 50000 kN/m³

Profundidad: de15.00 a 25.00 m ⇒ 50000 kN/m³

Se ha considerado el siguiente modelo de cálculo:

- Se considera que la pantalla tiene permitido el movimiento en cabeza, por lo que trabaja como ménsula con las constantes elásticas horizontales mencionadas. El cálculo de empujes del terreno se realiza con el coeficiente de empuje activo.

Se ha determinado el tope estructural del muro pantalla proyectado de 0.65 m de espesor.

Para la determinación del tope estructural se ha empleado la fórmula proporcionada por el libro de Jose Mª Rodríguez Ortiz, "Curso aplicado de cimentaciones", 1982.

$$Te = \alpha.fyk.Sa+\beta.fck.Sb+\kappa.fy'k.Sc$$

S_a, área de acero
S_b, área de hormigón
S_c, área de la camisa metálica

f_{yk}, resistencia característica de armaduras
f_{ck}, resistencia característica del hormigón

5.1.3. Proceso del cálculo de muros

Para la contención de tierras se han dimensionado dos muros convencionales de alturas variables (3.00 m y 2.00 m).

La comprobación de la estabilidad del muro se ha realizado con el programa CYPE Arquitectura, Ingeniería y Construcción, en su módulo sobre Muros de Contención.

Esta comprobación de estabilidad corresponde a las comprobaciones realizadas por el programa para la zapata, siendo tres: deslizamiento, vuelco y hundimiento.

COMPROBACIÓN AL HUNDIMIENTO

Se obtiene la ley de tensiones debajo de la zapata, que puede ser trapecial o triangular, pudiéndose producir de esta forma un despegue.

A partir de esta ley de tensiones se realizan las siguientes comprobaciones:

$\sigma_{media} \leq \sigma_{adm}$

$\sigma_{max} \leq 1.25\sigma_{adm}$

COMPROBACIÓN AL DESLIZAMIENTO

Se determina el coeficiente de rozamiento μ_c, necesario en la base de la zapata para el equilibrio, de la siguiente forma:

$$\mu_c = \frac{\sum V_d (\text{resultante de cargas horizontales})}{\sum N_d (\text{resultante de cargas verticales})}$$

Si μ_c es menor del coeficiente de rozamiento terreno – cimiento, es estable.

COMPROBACIÓN AL VUELCO

Con las combinaciones de equilibrio del muro, se determina el punto de paso de la resultante por la base de la zapata. Siendo e su excentricidad y B el ancho de la misma, se define el coeficiente de reserva de seguridad x como:

$$x = \left(\frac{0.5B}{e} - 1 \right) 100$$

Cuando la resultante quede dentro del ancho de la zapata hay estabilidad al vuelco, y el valor de x es positivo. Cuanto mayor sea, más estabilidad habrá al vuelco.

5.2. CÁLCULO DE ESFUERZOS Y DIMENSIONAMIENTO

Los modelos utilizados emplean el método de rigidez para la obtención de desplazamientos en los nudos, a partir de los cuales se obtienen los esfuerzos en placas y reacciones en apoyos. Los resultados se obtienen para cada hipótesis simple de carga y combinación, obtenidas éstas según la normativa correspondiente en cada caso.

Se ha comprobado el estado límite de agotamiento frente a solicitaciones normales y frente a cortante siguiendo el articulado de la instrucción EHE.

5.2.1. Flexión.

Se adopta el máximo entre el armado de cálculo y la armadura mínima de la EHE.

5.2.2. Cortante.

Se ha comprobado en las secciones más desfavorables, siguiendo la metodología expuesta en la EHE.

5.2.3. Fisuración.

Se ha comprobado en las secciones más desfavorables, siguiendo la metodología expuesta en la EHE.

Para la comprobación del estado límite de fisuración se ha tenido en cuenta el artículo 49.2.4 de la instrucción EHE, en el que se limita la máxima abertura de fisura en función del ambiente:

ELEMENTO	AMBIENTE	w_{max}(mm)
OBRA DE FABRICA	IIa	0.3

6. CONCLUSIONES

En el presente documento se ha procedido al dimensionamiento de la estructura del PASO BAJO AUTOPISTA A-7, situada en el P.K. 501+300 incluida en el "PROYECTO DE CONSTRUCCIÓN DE PLATAFORMA LÍNEA DE ALTA VELOCIDAD MADRID-ZARAGOZA-BARCELONA-FRONTERA FRANCESA. TRAMO A: CONEXIÓN VALLÉS-CASTELLBISBAL", esto es, de su tablero, pantallas y muros. Se ha realizado para ello los cálculos necesarios obteniendo dimensiones y armados y comprobando los coeficientes de seguridad frente a los distintos estados límite, de una manera justificada que se ha expuesto en los puntos anteriores.

Se ha procedido al cálculo del tablero y su dimensionado según el articulado de la EHE.

Se ha dimensionado la sección y las armaduras de las pantallas y muros de acuerdo con el articulado de la EHE.

El presente Documento se adjunta el desarrollo de los cálculos realizados, así como Planos de definición y detalles de la estructura de la estructura.

Valencia, Febrero de 2004

La Ingeniera Autora de la Memoria de Cálculo

Fdo.- Raquel SAHUQUILLO BORRÁS

Ingeniera de Caminos, C. y P.

MODELO DE CÁLCULO Y DIMENSIONAMIENTO DE LA LOSA

VALTER valenciana de estructuras

Proyecto: LAV / PASO BAJO AUTOPISTA A-7

Asunto:

DIMENSIONAMIENTO DE LOSA

DATOS: Losa empotrada en pantalla de 0'65 m de ancho

Pasa autopista por encima

Terreno: 30 cm min a 70 cm máx

HA-25

CARGAS VERTICALES

PP ——— 25 kN/m³

CM

Pavimento mín (e=0'6 m) 1'44 kN/m²

" máx (1'5 x Pav. mín) ... 2'16 kN/m²

Barreras ——— 10 kN/m

Aceras (e=0'2 m) ——— 25 kN/m³

SC ——— 4 kN/m²

CARRO - (3 posiciones) - - - 2 x 600 kN

TIERRAS

Mín (0'3 x 20 kN/m³) - - - 6 kN/m²

Máx (0'7 x 20 kN/m³) - - - 14 kN/m²

CARGAS HORIZONTALES

FRENADO: 250 kN / 12'5 = 20 kN/m

REOLÓGICAS: $\Delta T = 25°C$

TEMPERATURA: $\Delta T = K \cdot \varepsilon^{a} \cdot h^{b} \cdot \sqrt[1]{\ } = 23'89\ 3^{0'5-0'5} \cdot 0'8^{0'5-0'5} = 34°C \cdot \frac{2}{3}$

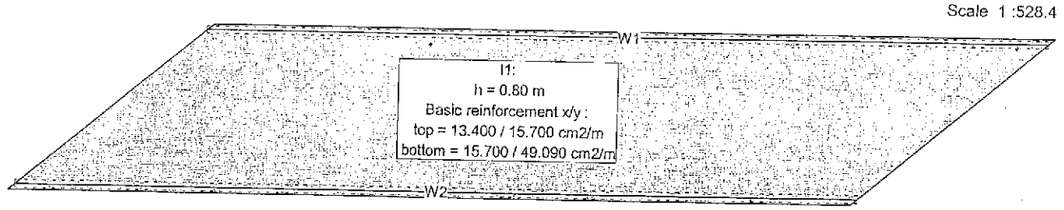
$\Delta T = 22'6°C$

Fecha .....

Hoja Nº ..... De .....

Structure

Scale 1 :528.4



STRUCTURE DATA

THICKNESS AND MATERIAL

Isotropic	Young [kN/m2]	v -	Thickness [m]	Top surface level [m]
I1	2.7E+7	0.2	0.80	0

WALLS

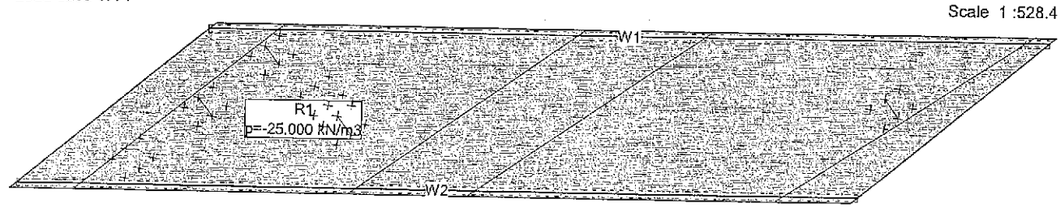
Id	compr. only	Type	sdz [kN/m2]	srx [kN]	sry [kN]	Width [m]	Height [m]	Young [kN/m2]
W1 like W1: W2		general	blocked	(2.262E+5)	blocked	0.65	8.50	2.1E+7

LIST OF LOAD CASES

vLF Number	vTyp	Action	Title
1	Loads	Dead load	PP
2	Loads	Dead load	PAVIMENTO MÁXIMO
3	Loads	Superimposed D.L.	PAVIMENTO MÍNIMO
4	Loads	Dead load	ACERAS
6	Loads	Dead load	BARRERA
7	Loads	Imposed load (exclusive)	CARRO POS1
8	Loads	Imposed load (exclusive)	CARRO POS2
9	Loads	Imposed load (exclusive)	CARRO POS3
10	Loads	Generated imposed load (additive)	Imposed load (add.) from LC 5, Field 1
11	Loads	Generated imposed load (additive)	Imposed load (add.) from LC 5, Field 2
12	Loads	Dead load	CARGA TIERRAS

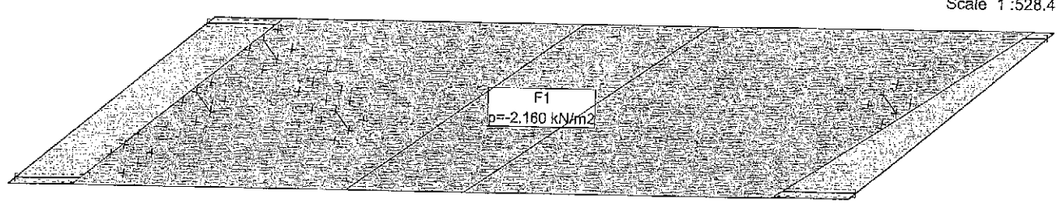
Load case 1: PP

Scale 1 :528.4

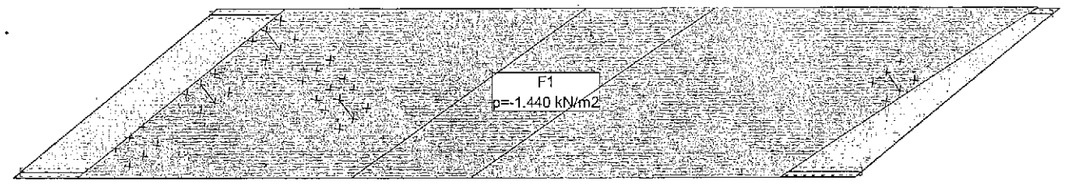


Load case 2: PAVIMENTO MÁXIMO

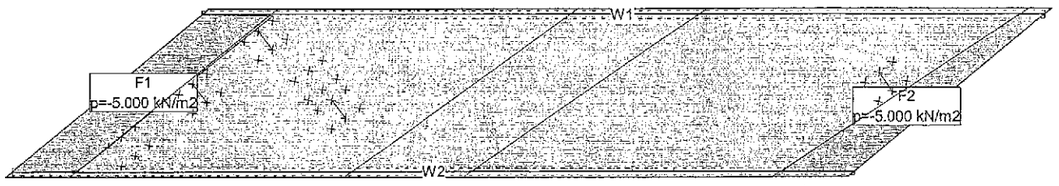
Scale 1 :528.4



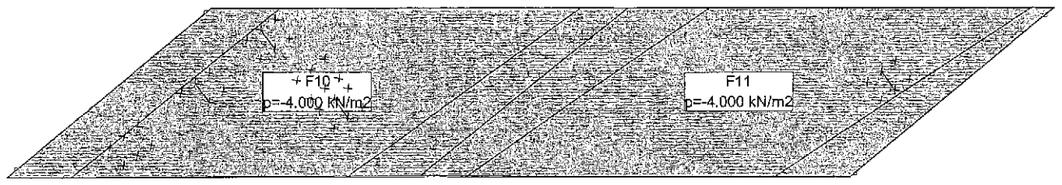
Load case 3: PAVIMENTO MÍNIMO Scale 1 :528.4



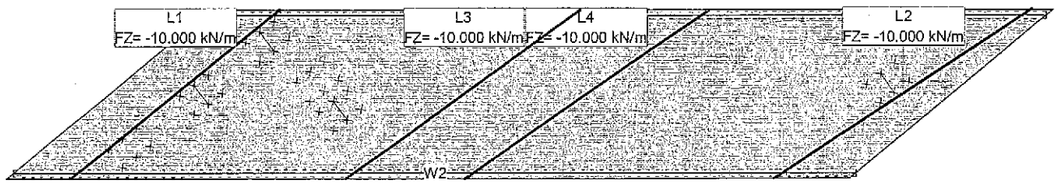
Load case 4: ACERAS Scale 1 :528.4



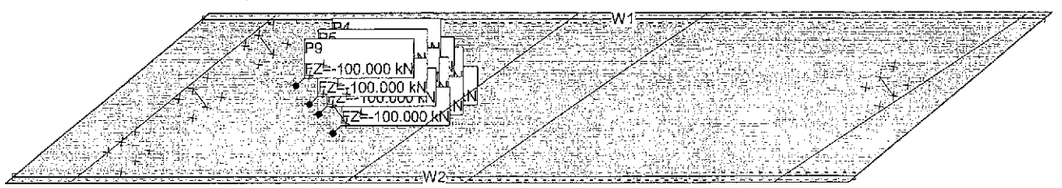
Load case 5: SC UNIFORME Scale 1 :528.4



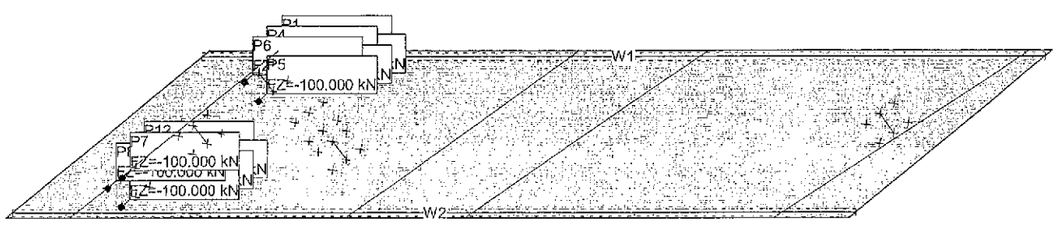
Load case 6: BARRERA Scale 1 :528.4



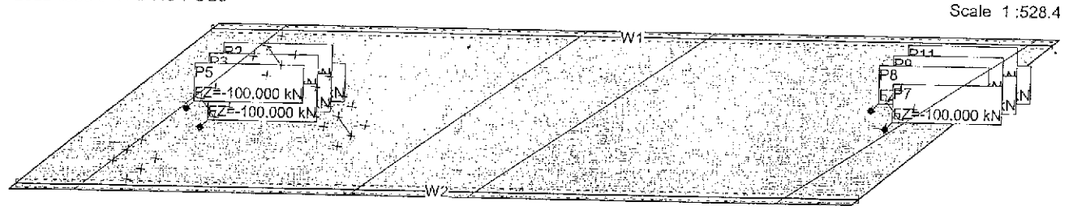
Load case 7: CARRO POS1 Scale 1 :528.4



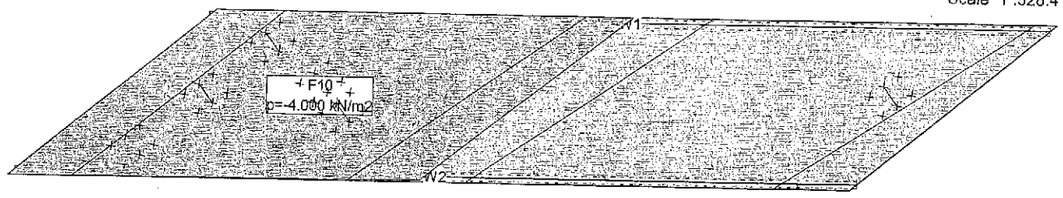
Load case 8: CARRO POS2 Scale 1 :528.4



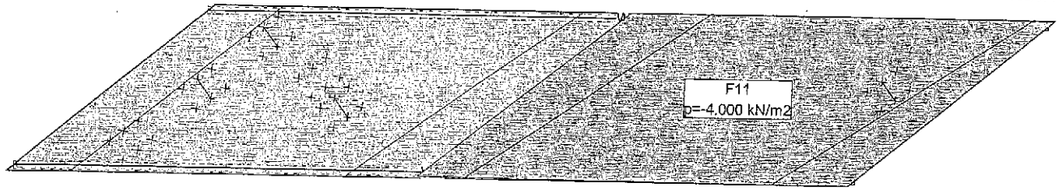
Load case 9: CARRO POS3 Scale 1 :528.4



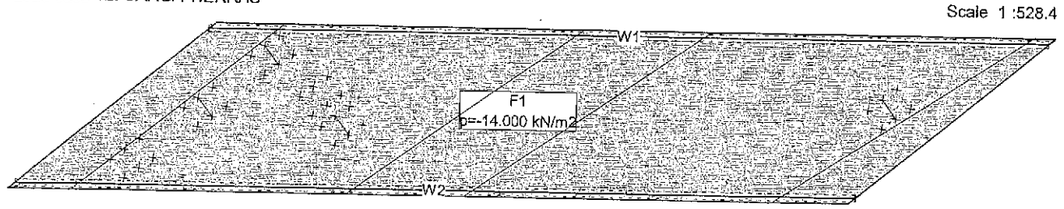
Load case 10: Imposed load (add.) from LC 5, Field 1 Scale 1 :528.4



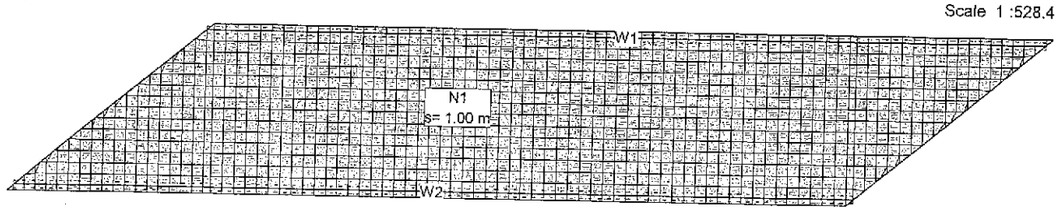
Load case 11: Imposed load (add.) from LC 5, Field 2 Scale 1 :528.4



Load case 12: CARGA TIERRAS Scale 1 :528.4



Fe-Netz Scale 1 :528.4



LIMIT STATE SPECIFICATION Code: EH 91 (Superposition according to Code type EC2)

ACTION: !Imposed load

plus where critical	L10: [1.00] Imposed load (add.) from LC 5, Field 1
plus where critical	L11: [1.00] Imposed load (add.) from LC 5, Field 2
plus where critical	
either	L7: [1.00] CARRO POS1
or	L8: [1.00] CARRO POS2
or	L9: [1.00] CARRO POS3

ACTION: PERMANENTES

Loading

Permanent
- L1: [1.00] PP
- L4: [1.00] ACERAS
- L6: [1.00] BARRERA
- L2: [1.00] PAVIMENTO MÁXIMO
- L12: [1.00] CARGA TIERRAS

Alternative loading

Permanent
- L1: [1.00] PP
- L3: [1.00] PAVIMENTO MÍNIMO
- L4: [1.00] ACERAS
- L6: [1.00] BARRERA
- L12: [1.00] CARGA TIERRAS

LIMIT STATE SPECIFICATION: ELU-1

Limit state: Ultimate (ULS)

Actions		Design situations	
Nr	Name	1	2
1	PERMANENTES	1.5	1
2	Imposed load	1.6	1.6

LOAD CASE COMBINATION: CORTANTE 2

+- L1: [1.50] PP
+- L2: [1.50] PAVIMENTO MÁXIMO
+- L4: [1.50] ACERAS
+- L6: [1.50] BARRERA
+- L9: [1.60] CARRO POS3
+- L10: [1.60] Imposed load (add.) from LC 5, Field 1
+- L12: [1.50] CARGA TIERRAS

LOAD CASE COMBINATION: CORTANTE

+- L1: [1.50] PP
+- L2: [1.50] PAVIMENTO MÁXIMO
+- L4: [1.50] ACERAS
+- L6: [1.50] BARRERA
+- L8: [1.60] CARRO POS2
+- L10: [1.60] Imposed load (add.) from LC 5, Field 1
+- L12: [1.50] CARGA TIERRAS

LOAD CASE COMBINATION: DESPLAZAMIENTOS

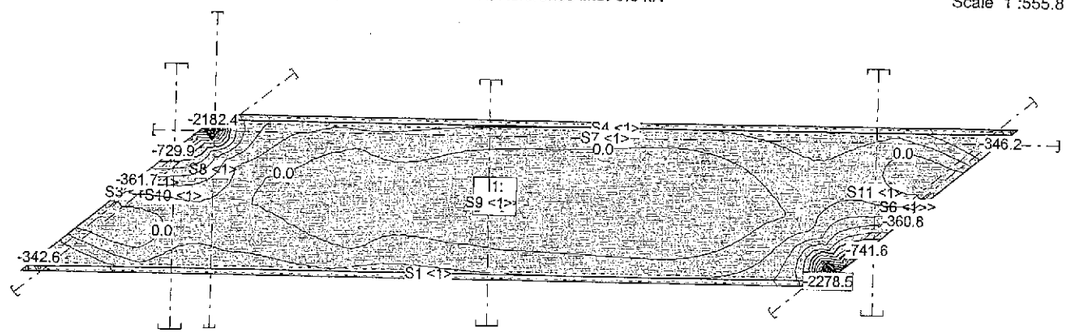
+- L1: [1.00] PP
+- L2: [1.00] PAVIMENTO MÁXIMO
+- L4: [1.00] ACERAS
+- L6: [1.00] BARRERA
+- L7: [1.00] CARRO POS1
+- L8: [1.00] CARRO POS2
+- L9: [1.00] CARRO POS3
+- L10: [1.00] Imposed load (add.) from LC 5, Field 1
+- L11: [1.00] Imposed load (add.) from LC 5, Field 2
+- L12: [1.00] CARGA TIERRAS

LOAD CASE COMBINATION: FISURACIÓN

+- L1: [1.00] PP
+- L2: [1.00] PAVIMENTO MÁXIMO
+- L4: [1.00] ACERAS
+- L6: [1.00] BARRERA
+- L7: [0.60] CARRO POS1
+- L8: [0.60] CARRO POS2
+- L9: [0.60] CARRO POS3
+- L10: [0.60] Imposed load (add.) from LC 5, Field 1
+- L11: [0.60] Imposed load (add.) from LC 5, Field 2
+- L12: [1.00] CARGA TIERRAS

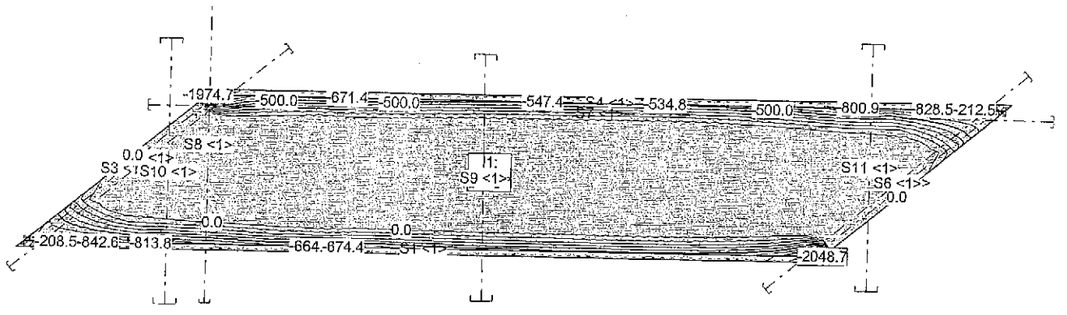
Reinforcement moments maxt: ELU-1, Equidistance: 100.0 kN, Reference line: 0.0 kN

Scale 1 :555.8



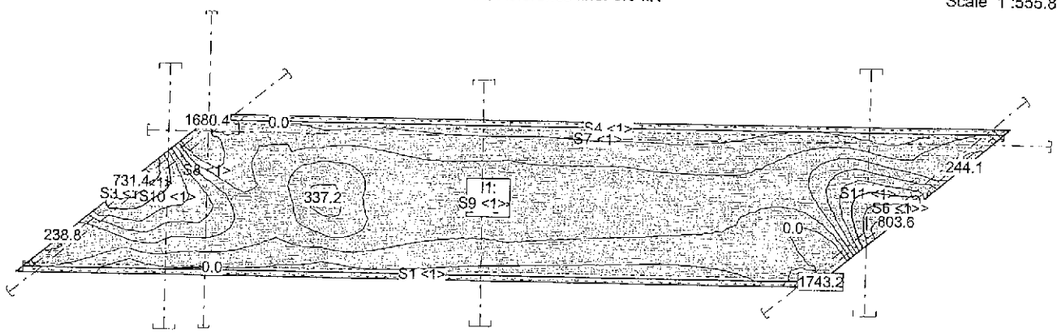
Reinforcement moments mayt: ELU-1, Equidistance: 100.0 kN, Reference line: 0.0 kN

Scale 1 :555.8

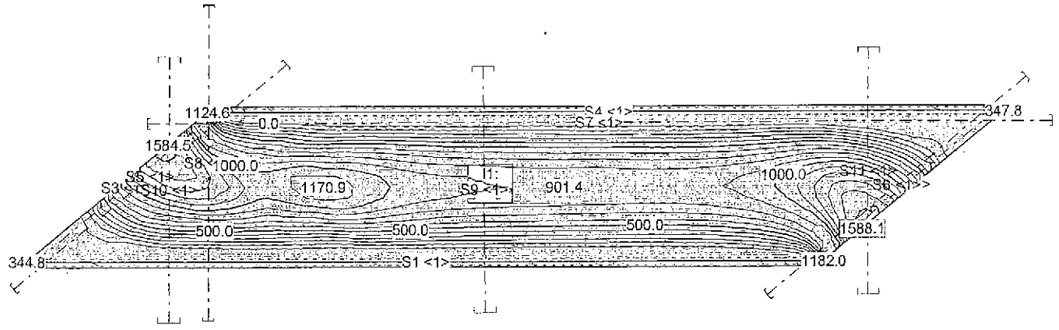


Reinforcement moments maxb: ELU-1, Equidistance: 100.0 kN, Reference line: 0.0 kN

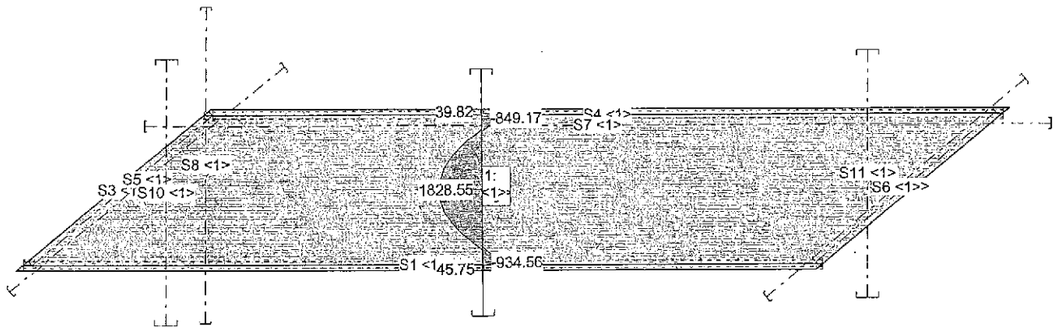
Scale 1 :555.8



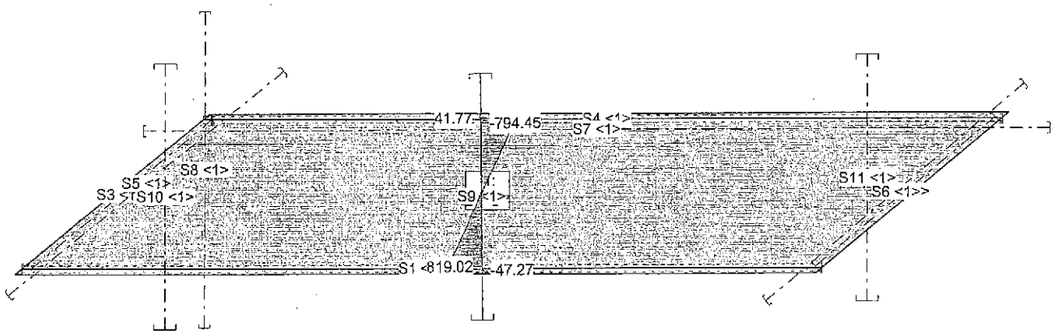
Reinforcement moments mayb: ELU-1, Equidistance: 100.0 kN, Reference line: 0.0 kN
Scale 1 :557.0



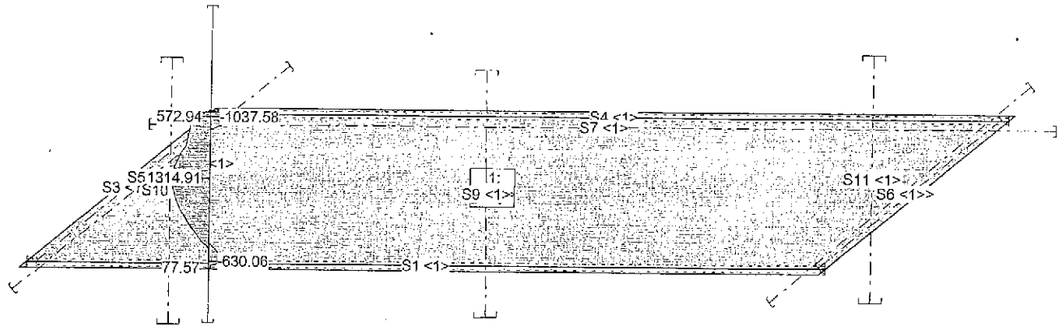
Beam section(s): Envelopes of dimensioning moments [kNm], Specification ELU-1
Scale 1 :555.8



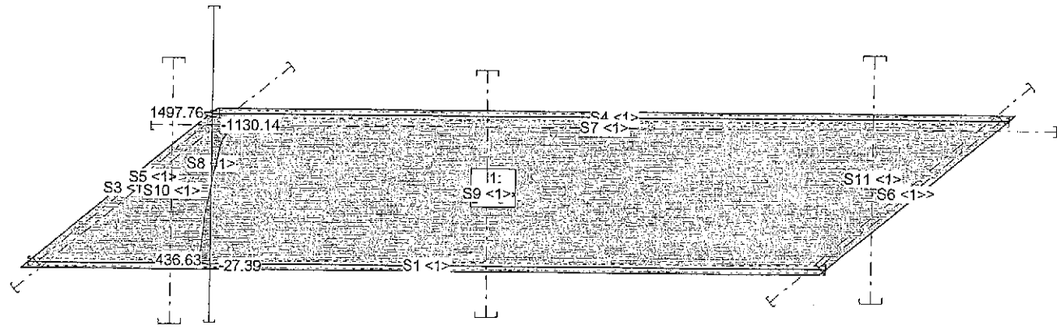
Beam section(s): Envelopes of dimensioning shear forces [kN], Specification ELU-1
Scale 1 :555.8



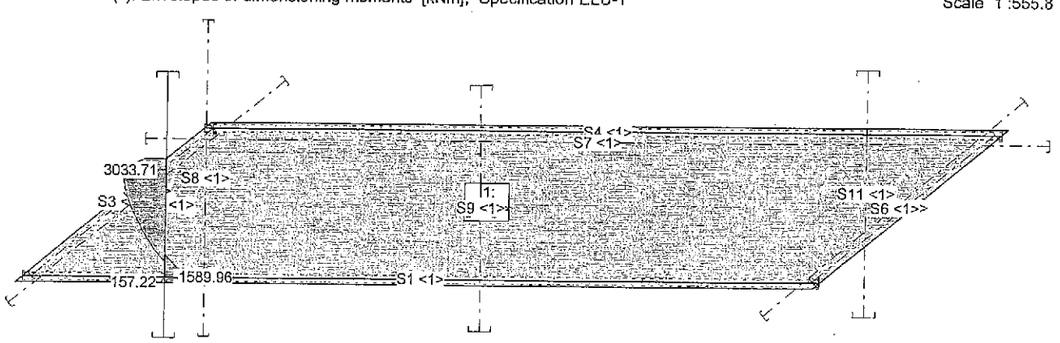
Beam section(s): Envelopes of dimensioning moments [kNm], Specification ELU-1
Scale 1 :555.8



Beam section(s): Envelopes of dimensioning shear forces [kN], Specification ELU-1
Scale 1 :555.8

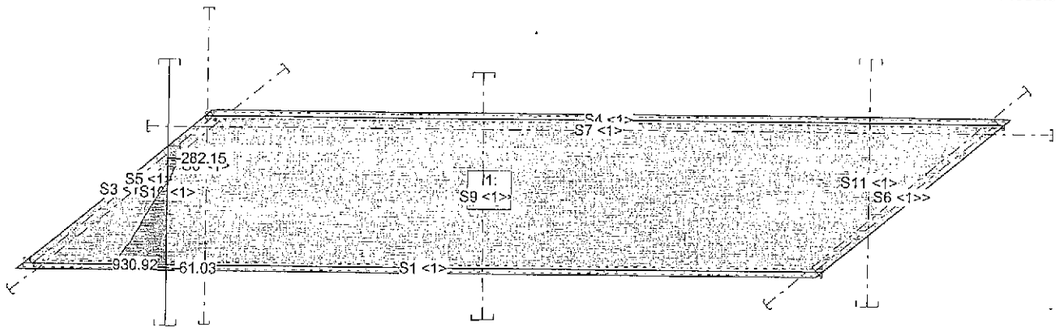


Beam section(s): Envelopes of dimensioning moments [kNm], Specification ELU-1
Scale 1 :555.8



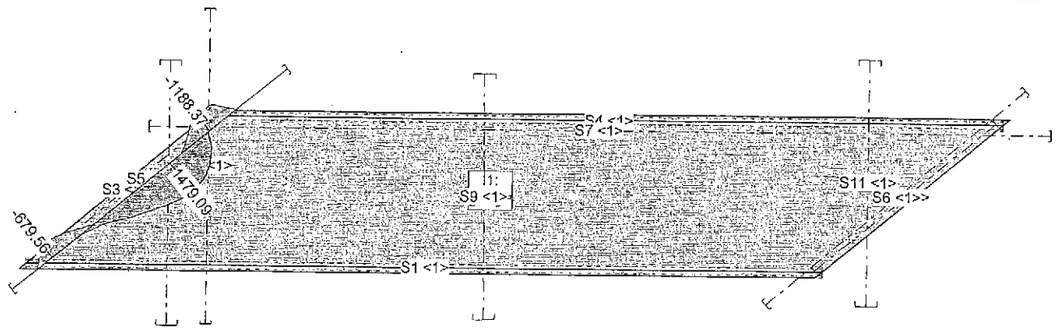
Beam section(s): Envelopes of dimensioning shear forces [kN], Specification ELU-1

Scale 1 :555.8



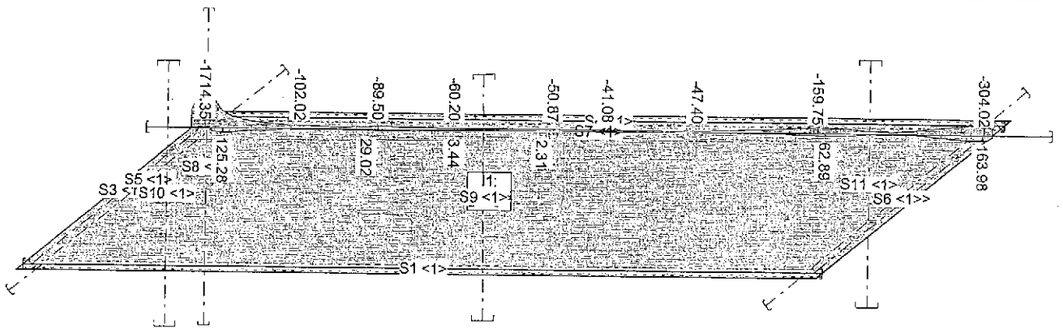
Beam section(s): Envelopes of dimensioning moments [kNm], Specification ELU-1

Scale 1 :558.1



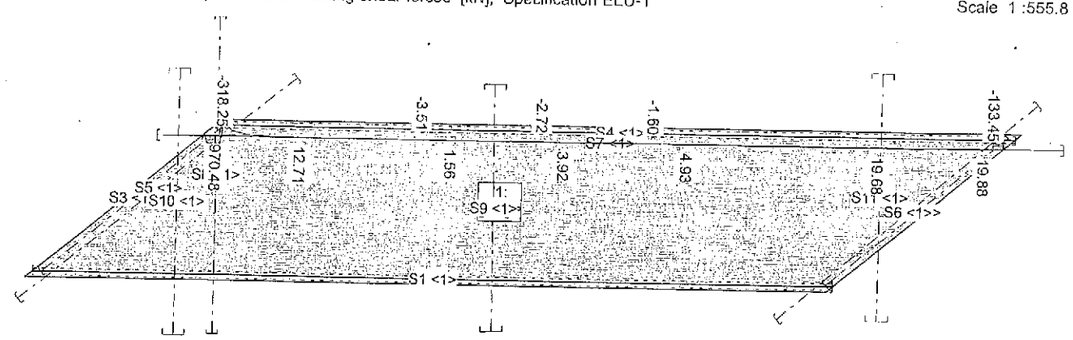
Beam section(s): Envelopes of dimensioning moments [kNm], Specification ELU-1

Scale 1 :555.8



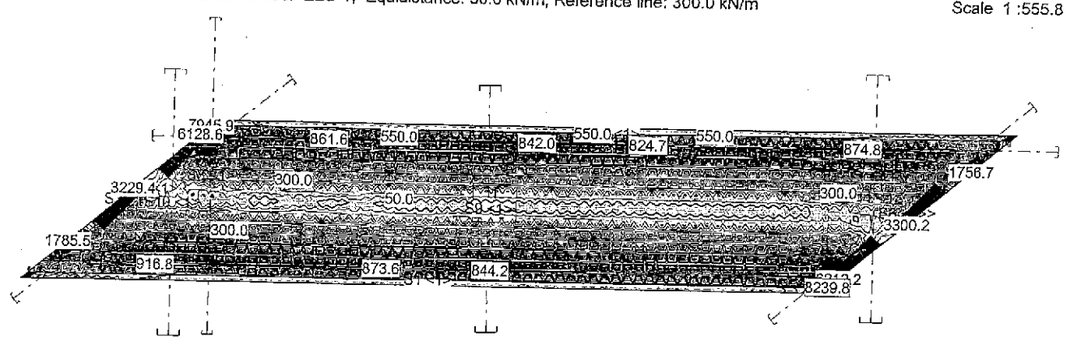
Beam section(s): Envelopes of dimensioning shear forces [kN], Specification ELU-1

Scale 1 :555.8



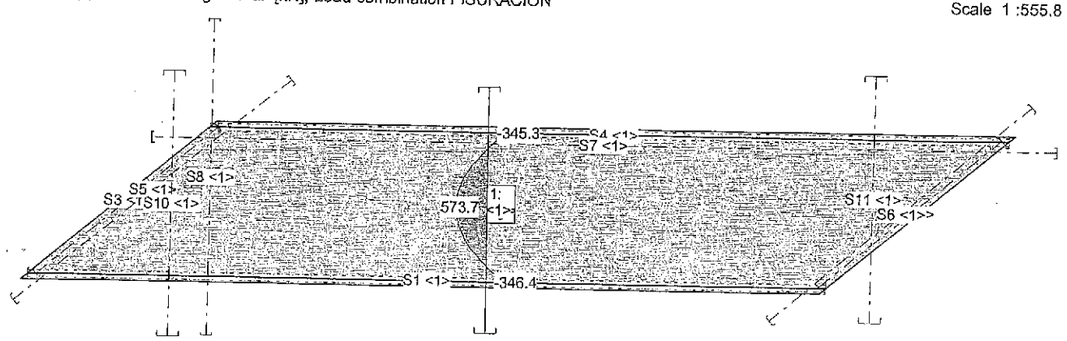
Envelopes of maximum shear forces: ELU-1, Equidistance: 50.0 kN/m, Reference line: 300.0 kN/m

Scale 1 :555.8



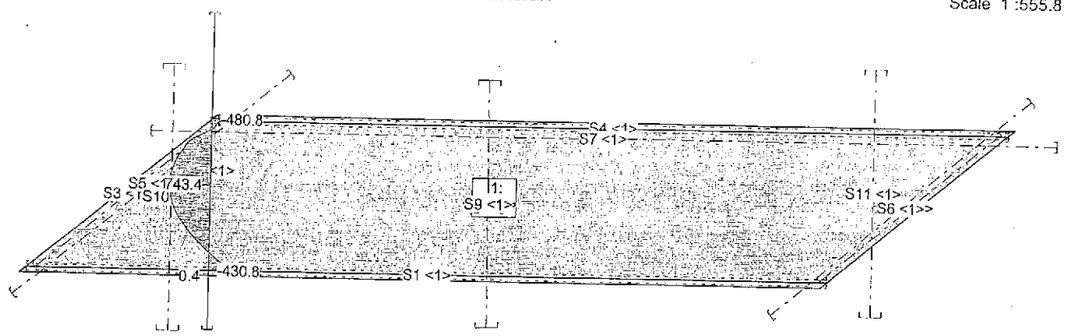
Section(s): Moments longitudinal [kN], Load combination FISURACIÓN

Scale 1 :555.8



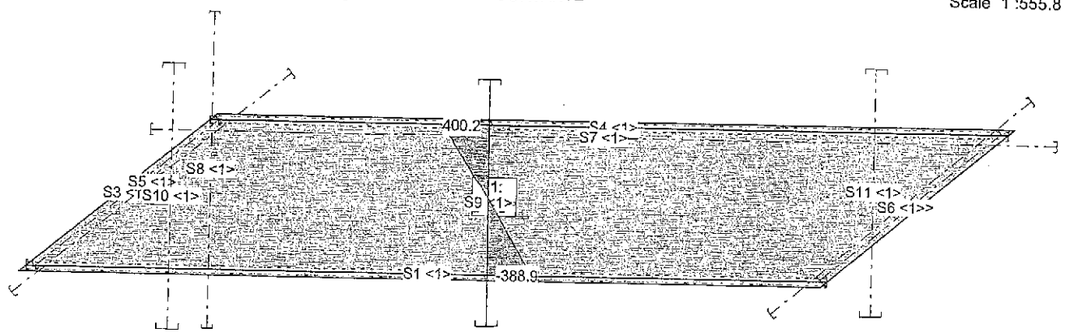
Section(s): Moments longitudinal [kN], Load combination FISURACIÓN

Scale 1 :555.8



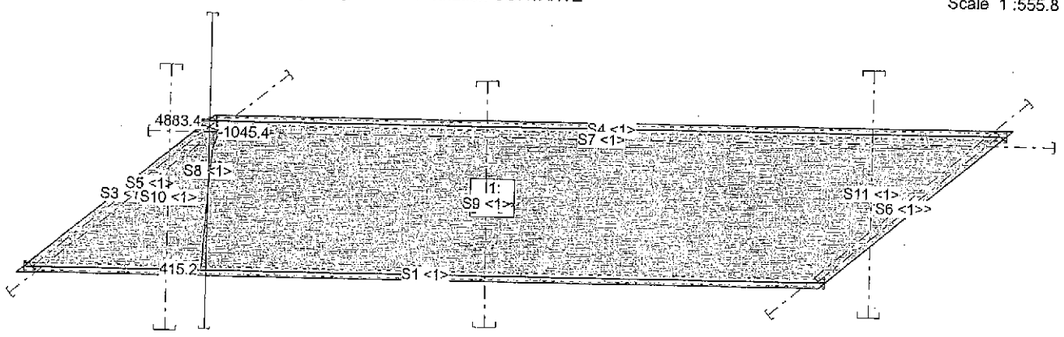
Section(s): Shear forces longitudinal [kN/m], Load combination CORTANTE

Scale 1 :555.8

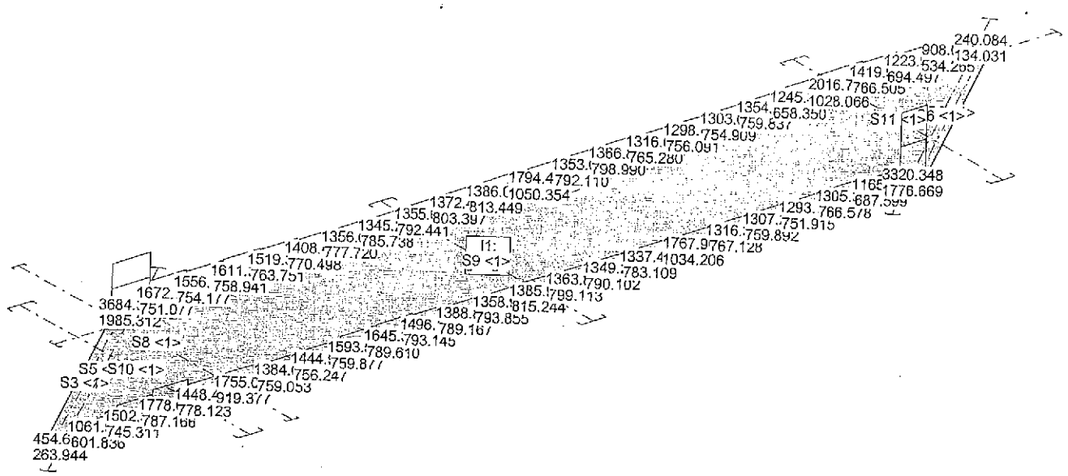


Section(s): Shear forces longitudinal [kN/m], Load combination CORTANTE

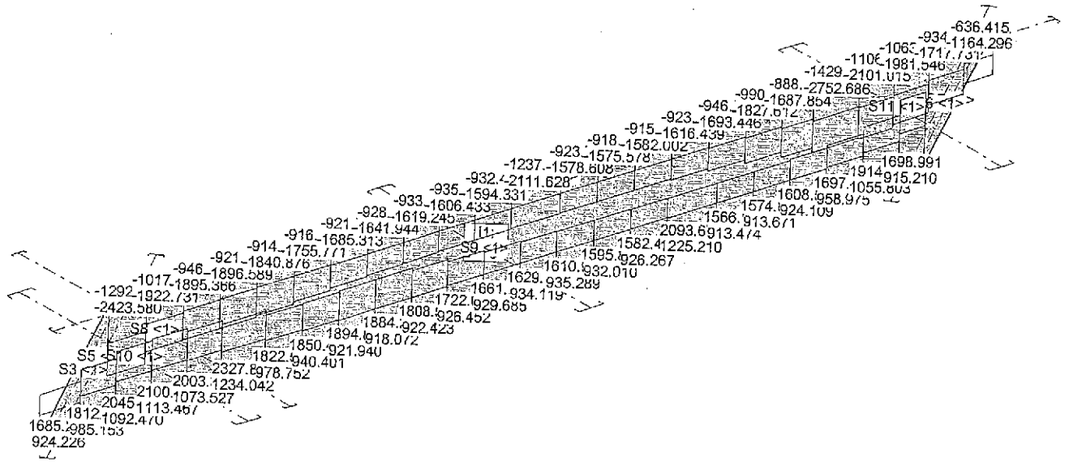
Scale 1 :555.8



Envelopes of reaction forces Columns: ELU-1
Walls values sectionwise presented, Identifications: Walls: [kN]

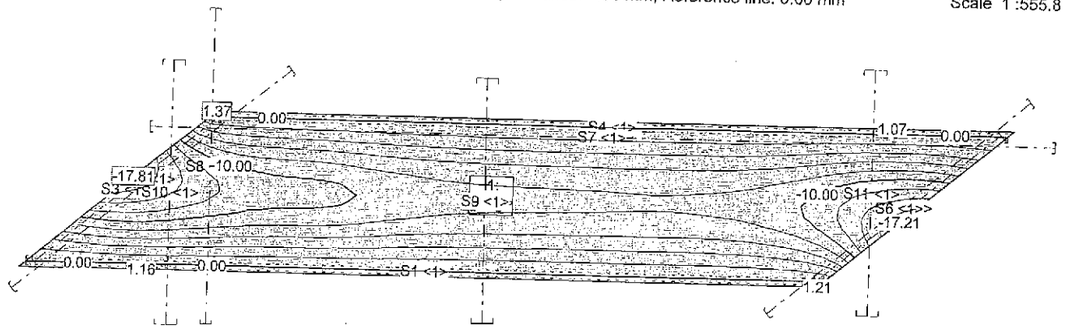


Envelopes of reaction moments Columns: ELU-1
Walls values sectionwise presented, Identifications: Walls: [kNm]



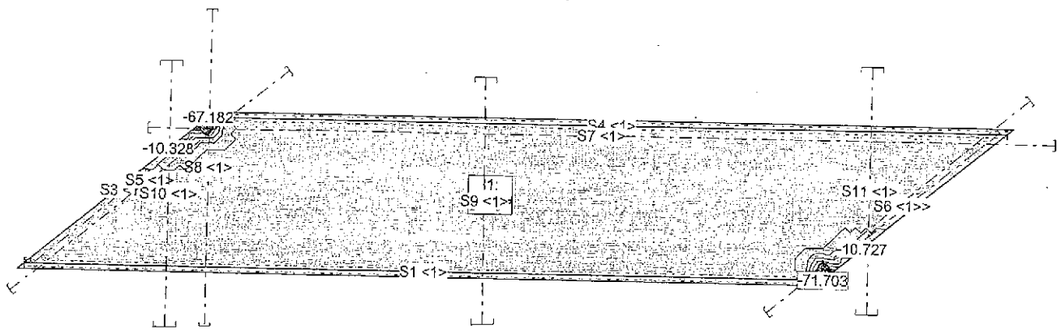
Bending deflection: Load combination DESPLAZAMIENTOS, Equidistance: 2.00 mm, Reference line: 0.00 mm

Scale 1 :555.8



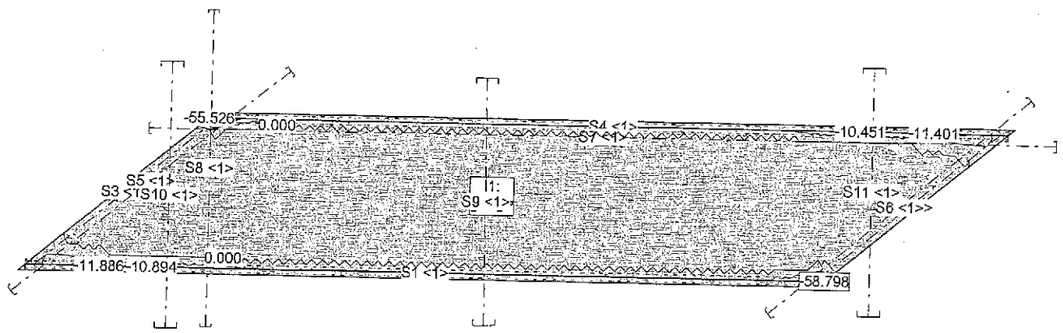
Reinforcement cross sections axt (Additional to reinforcing steel) :
Equidistance: 5.000 cm2/m, Reference line: 0.000 cm2/m
Specification: ELU-1, H250, AEH500, γc=1.50, γs=1.15

Scale 1 :555.8



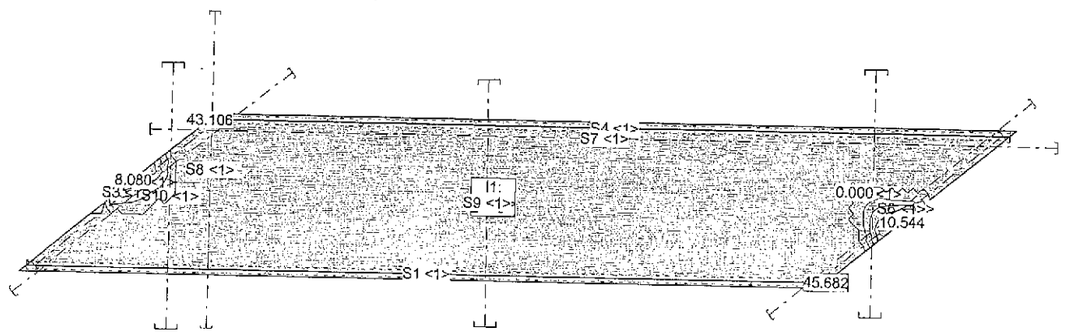
Reinforcement cross sections ayt (Additional to reinforcing steel) :
Equidistance: 5.000 cm2/m, Reference line: 0.000 cm2/m
Specification: ELU-1, H250, AEH500, γc=1.50, γs=1.15

Scale 1 :555.8



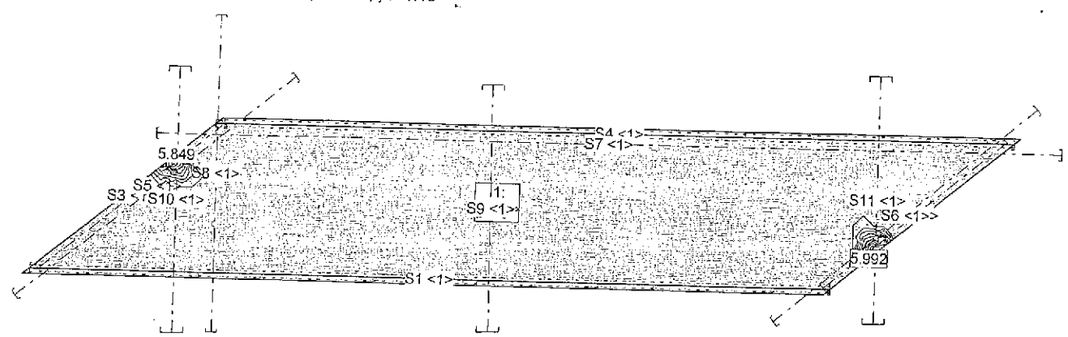
Reinforcement cross sections axb (Additional to reinforcing steel) :
Equidistance: 2.000 cm2/m, Reference line: 0.000 cm2/m
Specification: ELU-1, H250, AEH500, γc=1.50, γs=1.15

Scale 1 :555.8



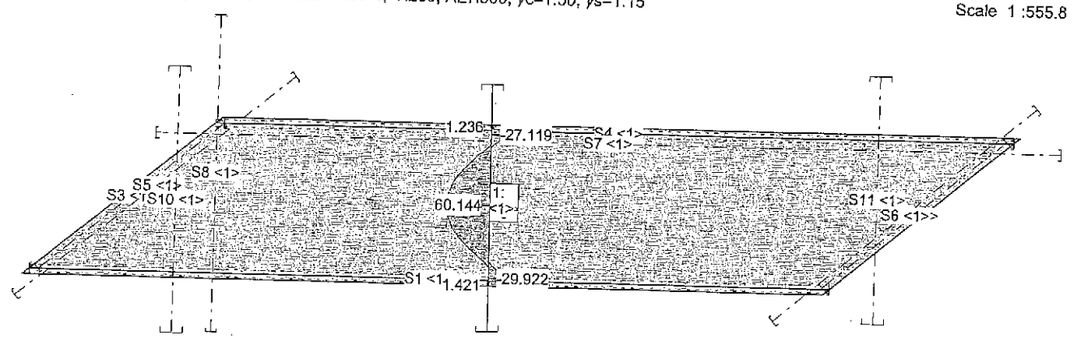
Reinforcement cross sections ayb (Additional to reinforcing steel) :
Equidistance: 0.500 cm2/m, Reference line: 0.000 cm2/m
Specification: ELU-1, H250, AEH500, γc=1.50, γs=1.15

Scale 1 :555.8



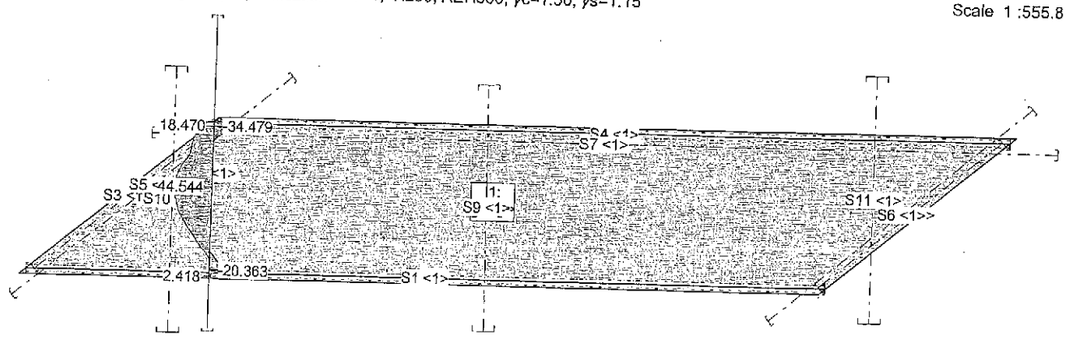
Beam section(s): As [cm2], Specification ELU-1, H250, AEH500, γc=1.50, γs=1.15

Scale 1 :555.8



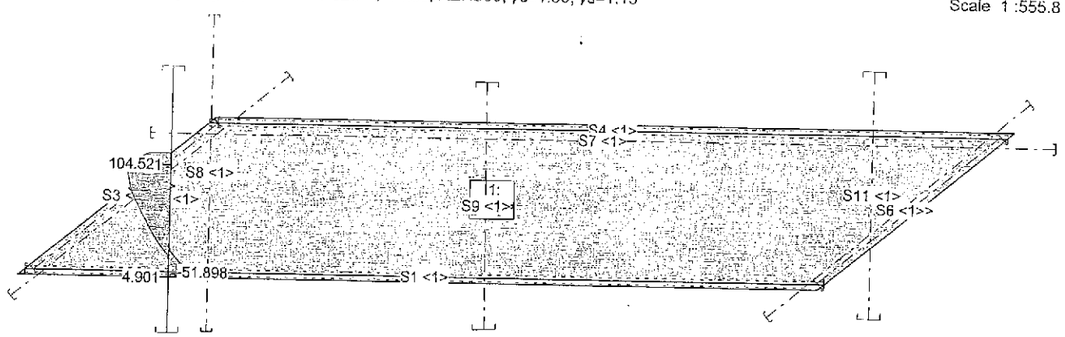
Beam section(s): As [cm2], Specification ELU-1, H250, AEH500, γc=1.50, γs=1.15

Scale 1 :555.8



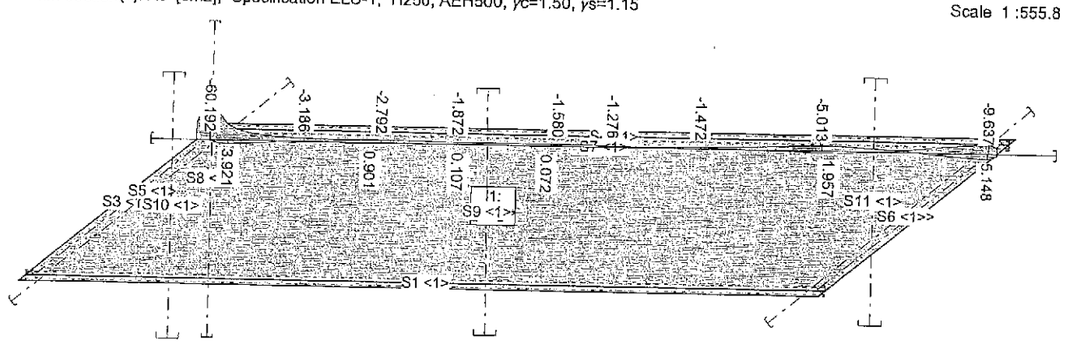
Beam section(s): As [cm2], Specification ELU-1, H250, AEH500, γc=1.50, γs=1.15

Scale 1 :555.8



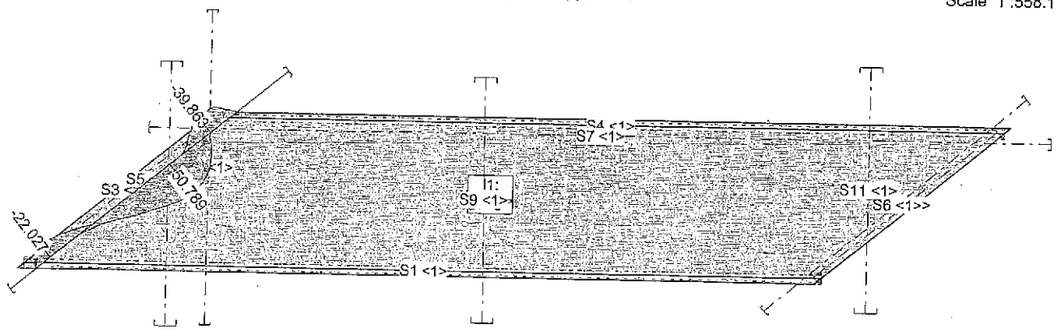
Beam section(s): As [cm2], Specification ELU-1, H250, AEH500, γc=1.50, γs=1.15

Scale 1 :555.8



Beam section(s): As [cm2], Specification ELU-1, H250, AEH500, γc=1.50, γs=1.15

Scale 1 :558.1



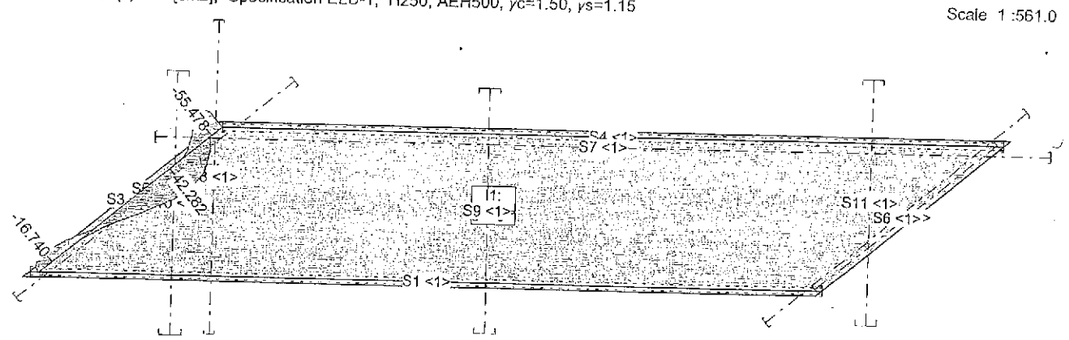
Cedrus-4, Version 3.02

LAV PASO BAJO AUTOPISTA A7
LOSA

16.02.04, 16:49
ALEJANDRO

Beam section(s): As [cm2], Specification ELU-1, H250, AEH500, γc=1.50, γs=1.15

Scale 1 :561.0



DIMENSIONAMIENTO DE PANTALLA EMPOTRADA EN LOSA

VALTER valenciana de estructuras

Proyecto LAV / PASO BAJO AUTOPISTA A7

Asunto

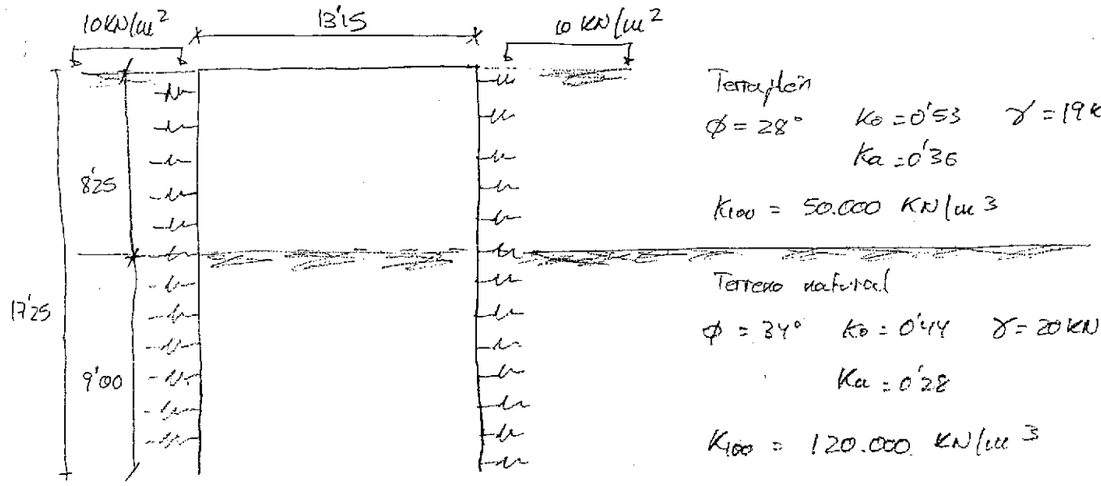
II DIMENSIONAMIENTO PANTALLA EMPOTRADA A LA LOSA

El modelo de cálculo ha sido un pórtico de 1 m de ancho.

Se han introducido constantes elásticas para representar el comportamiento horizontal de las pantallas.

El coeficiente de reacción horizontal empleado es:

$K_{30} = 120000\ KN/m^3$



Terraplén
$\phi = 28°$ $K_o = 0'53$ $\gamma = 19\ KN/m^3$
$K_a = 0'36$

$K_{100} = 50.000\ KN/m^3$

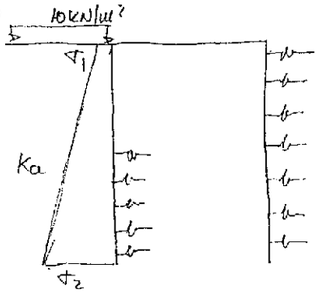
Terreno natural
$\phi = 34°$ $K_o = 0'44$ $\gamma = 20\ KN/m^3$
$K_a = 0'28$

$K_{100} = 120.000\ KN/m^3$

Los muelles se disponen cada metro salvo en el primero

CASOS DE CARGA HORIZONTAL

① 10KN/m²



- Empuje activo $\sigma_1 = 36\ KN/m^2$ $\sigma_2 = 127'8\ KN/m^2$
- Frenado
- Retracción
- T°

(Modelo de Hormigones caso 2)

Fecha

Hoja Nº De

STRUCTURE 2D

NODE DATA

Id	Coordinates X [m]	Coordinates Z [m]	Supports DX [kN/m]	Supports DZ [kN/m]	Supports RY [kNm]	Specialties
K_1	0	0	60000.000	B		
K_2	0.00	1.00	1.2E+5			
K_3	0.00	2.00	1.2E+5			
K_4	0.00	3.00	1.2E+5			
K_5	0.00	4.00	1.2E+5			
K_6	0.00	5.00	1.2E+5			
K_7	0.00	6.00	1.2E+5			
K_8	0.00	7.00	1.2E+5			
K_9	0.00	8.00	1.2E+5			
K_10	0.00	9.00	1.2E+5			
K_11	0.00	9.45				
K_13	13.50	0	60000.000	B		
K_14	13.50	1.00	1.2E+5			
K_15	13.50	2.00	1.2E+5			
K_16	13.50	3.00	1.2E+5			
K_17	13.50	4.00	1.2E+5			
K_18	13.50	5.00	1.2E+5			
K_19	13.50	6.00	1.2E+5			
K_20	13.50	7.00	1.2E+5			
K_21	13.50	8.00	1.2E+5			
K_22	13.50	9.00	1.2E+5			
K_23	13.50	9.45				
K_32	0.00	17.70				
K_33	13.50	10.48	50000.000			
K_34	13.50	11.51	50000.000			
K_35	13.50	12.54	50000.000			
K_36	13.50	13.57	50000.000			
K_37	13.50	14.61	50000.000			
K_38	13.50	15.64	50000.000			
K_39	13.50	16.67	50000.000			
K_40	13.50	17.70	25000.000			
!1	0.00	10.48				
!2	0.00	11.51				
!3	0.00	12.54				
!4	0.00	13.57				
!5	0.00	14.61				
!6	0.00	15.64				
!7	0.00	16.67				

B : Blocked

MEMBER DATA

ID	Nodes beginning	Nodes end	Cross section Name>Variant	Length [m]	Status	Special case
S_1	K_1	K_2	PANTALLA	1.00		
S_2	K_2	K_3	PANTALLA	1.00		
S_3	K_3	K_4	PANTALLA	1.00		
S_4	K_4	K_5	PANTALLA	1.00		
S_5	K_5	K_6	PANTALLA	1.00		
S_6	K_6	K_7	PANTALLA	1.00		
S_7	K_7	K_8	PANTALLA	1.00		
S_8	K_8	K_9	PANTALLA	1.00		
S_9	K_9	K_10	PANTALLA	1.00		
S_10	K_10	K_11	PANTALLA	0.45		
S_12	K_32	K_40	DINTEL	13.50		
S_13	K_13	K_14	PANTALLA	1.00		
S_14	K_14	K_15	PANTALLA	1.00		
S_15	K_15	K_16	PANTALLA	1.00		
S_16	K_16	K_17	PANTALLA	1.00		
S_17	K_17	K_18	PANTALLA	1.00		
S_18	K_18	K_19	PANTALLA	1.00		
S_19	K_19	K_20	PANTALLA	1.00		
S_20	K_20	K_21	PANTALLA	1.00		
S_21	K_21	K_22	PANTALLA	1.00		
S_22	K_22	K_23	PANTALLA	0.45		
S_24	K_40	K_39	PANTALLA	1.03		
S_25	K_39	K_38	PANTALLA	1.03		
S_26	K_38	K_37	PANTALLA	1.03		
S_27	K_37	K_36	PANTALLA	1.03		
S_28	K_36	K_35	PANTALLA	1.03		
S_29	K_35	K_34	PANTALLA	1.03		
S_30	K_34	K_33	PANTALLA	1.03		
S_31	K_33	K_23	PANTALLA	1.03		

ID	Nodes beginning	Nodes end	Cross section Name>Variant	Length [m]	Status	Special case
S_32	K_11	!1	PANTALLA	1.03		
S_33	!1	!2	PANTALLA	1.03		
S_34	!2	!3	PANTALLA	1.03		
S_35	!3	!4	PANTALLA	1.03		
S_36	!4	!5	PANTALLA	1.03		
S_37	!5	!6	PANTALLA	1.03		
S_38	!6	!7	PANTALLA	1.03		
S_39	!7	K_32	PANTALLA	1.03		

Cross section: Geometry

Name	Variant	Materials	Type	Dimensions [m]
DINTEL		1	S-R	b=1.00, h=0.80
PANTALLA		1	S-R	b=1.00, h=0.65

Materials : s. table 'Materials'

Cross section: CS values

Name	Variant	β [°]	EA_x GA_z [kN]	EJ_y [kNm²]	e_z [m]	CS mass Additional mass [t/m]	Materials
DINTEL		0	2.16000003E+7 6.66664004E+6	1.15199999E+6	0	2.00	1
PANTALLA		0	1.75499994E+7 5.41664481E+6	6.17906274E+5	0	1.62	1

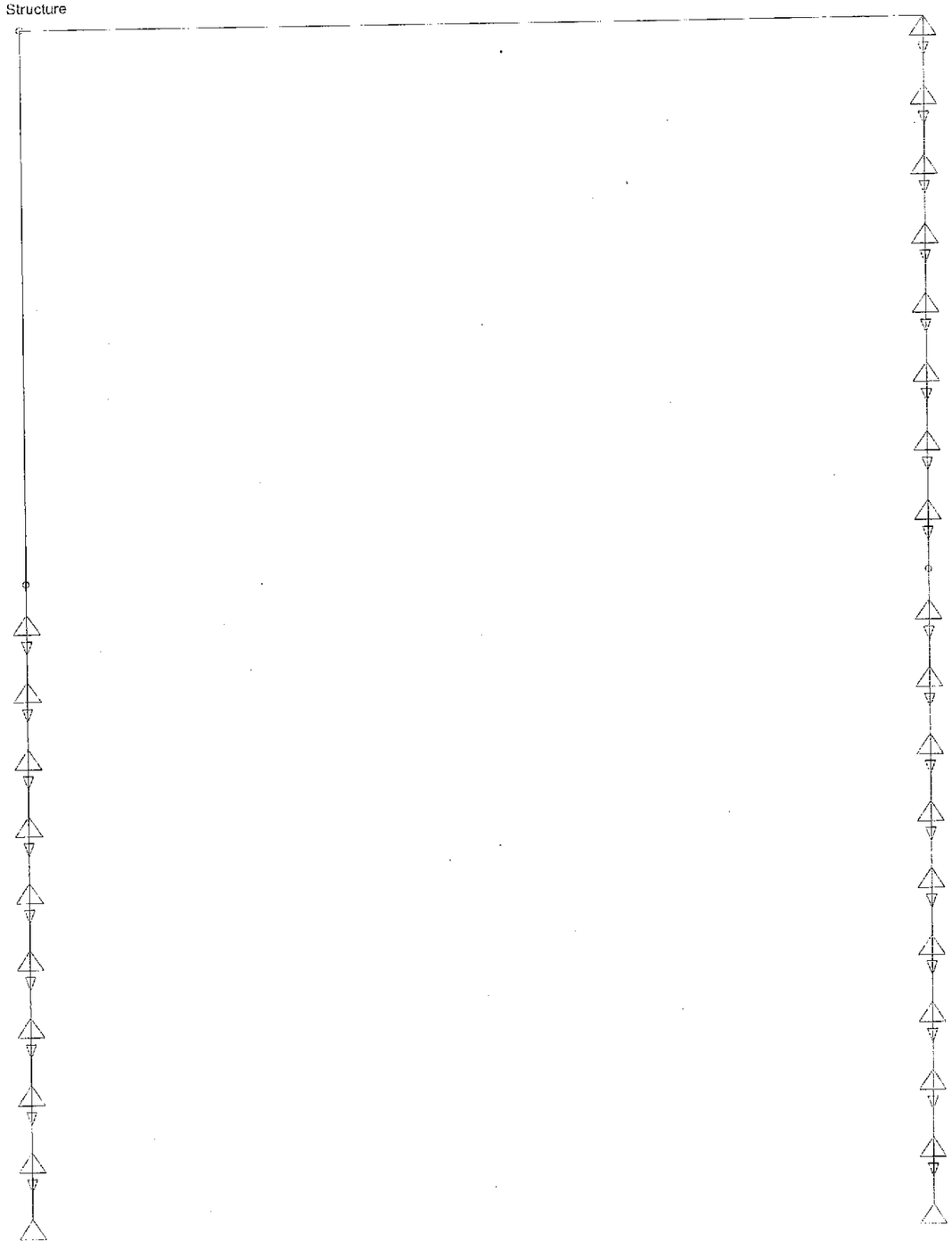
β : Angle between member Y axis and first principal axis of cross section
e_z : Distance center of gravity-axis point
Materials : s. table 'Materials'

Materials

Id	Material	E [kN/mm²]	G [kN/mm²]	ρ [t/m³]	Material class
1	Concrete	27	10	2.5	H250

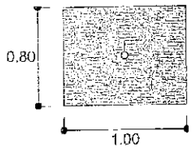
Structure

Scale 1 :81.8



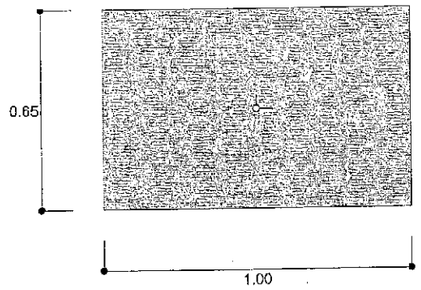
DINTEL: Concrete (H250)

Scale 1 :50.0



PANTALLA: Concrete (H250)

Scale 1 :20.0

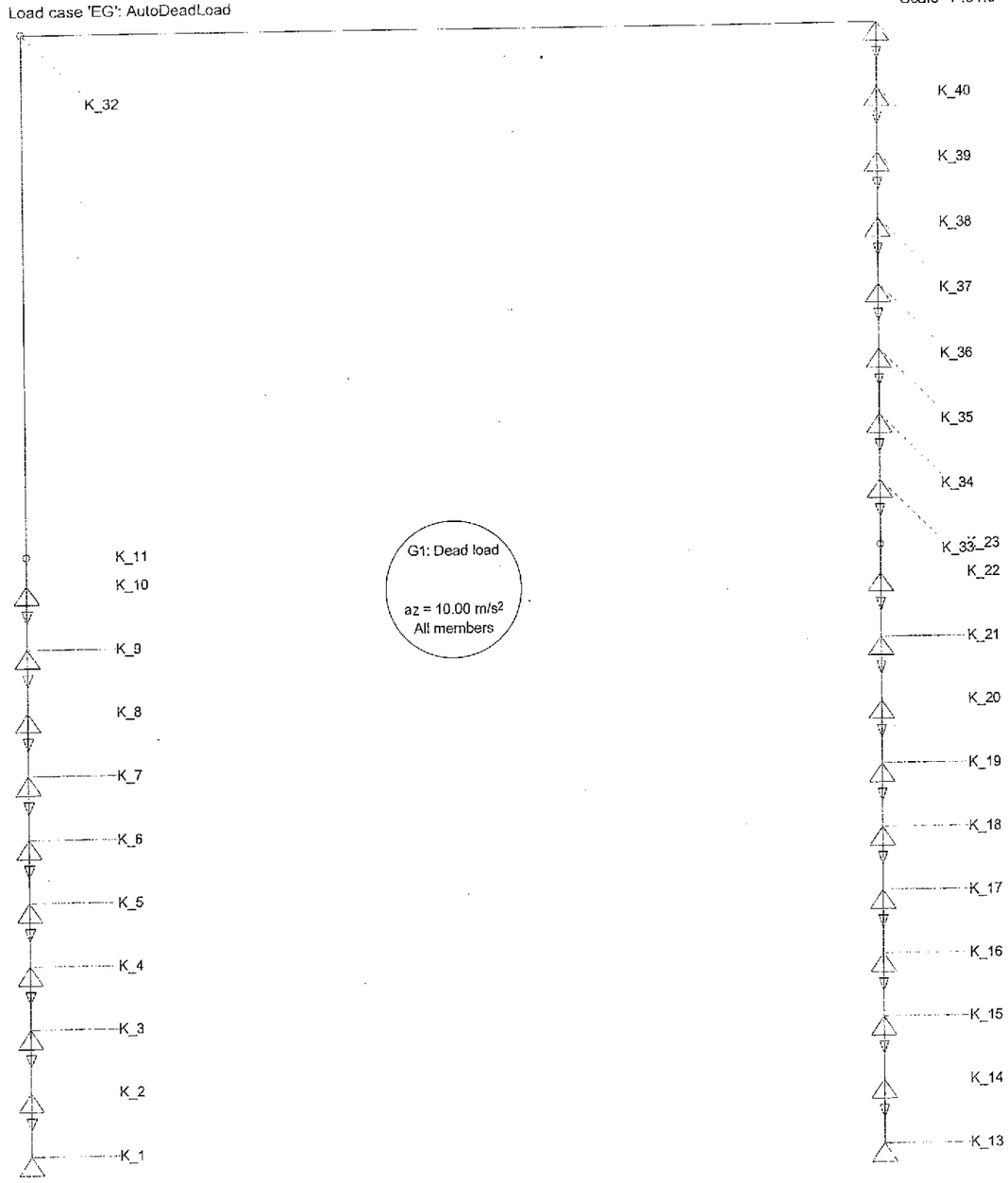


LIST OF LOAD CASES

Load case	Type	Action	List of load cases
EG	Loads	Dead load	AutoDeadLoad [1]
L2	Loads	Superimp. DL	PAVIMENTO MAXIMO [2]
L3	Loads	Dead load	PAVIMENTO MÍNIMO [3]
L4	Loads	Superimp. DL	SOBRECARGA DINTEL [4]
L5	Loads	Superimp. DL	EMPUJE SC TRASDÓS [5]
L6	Loads	Superimp. DL	EMPUJE TERRENO TRASDÓS [6]
L7	Loads	Live load (Additive)	CARRO POSICION 1 X1 [7]
L8	Loads	Live load (Additive)	CARRO POSICION 2 [8]
L9	Loads	Superimp. DL	EMPUJE REPOSO [9]

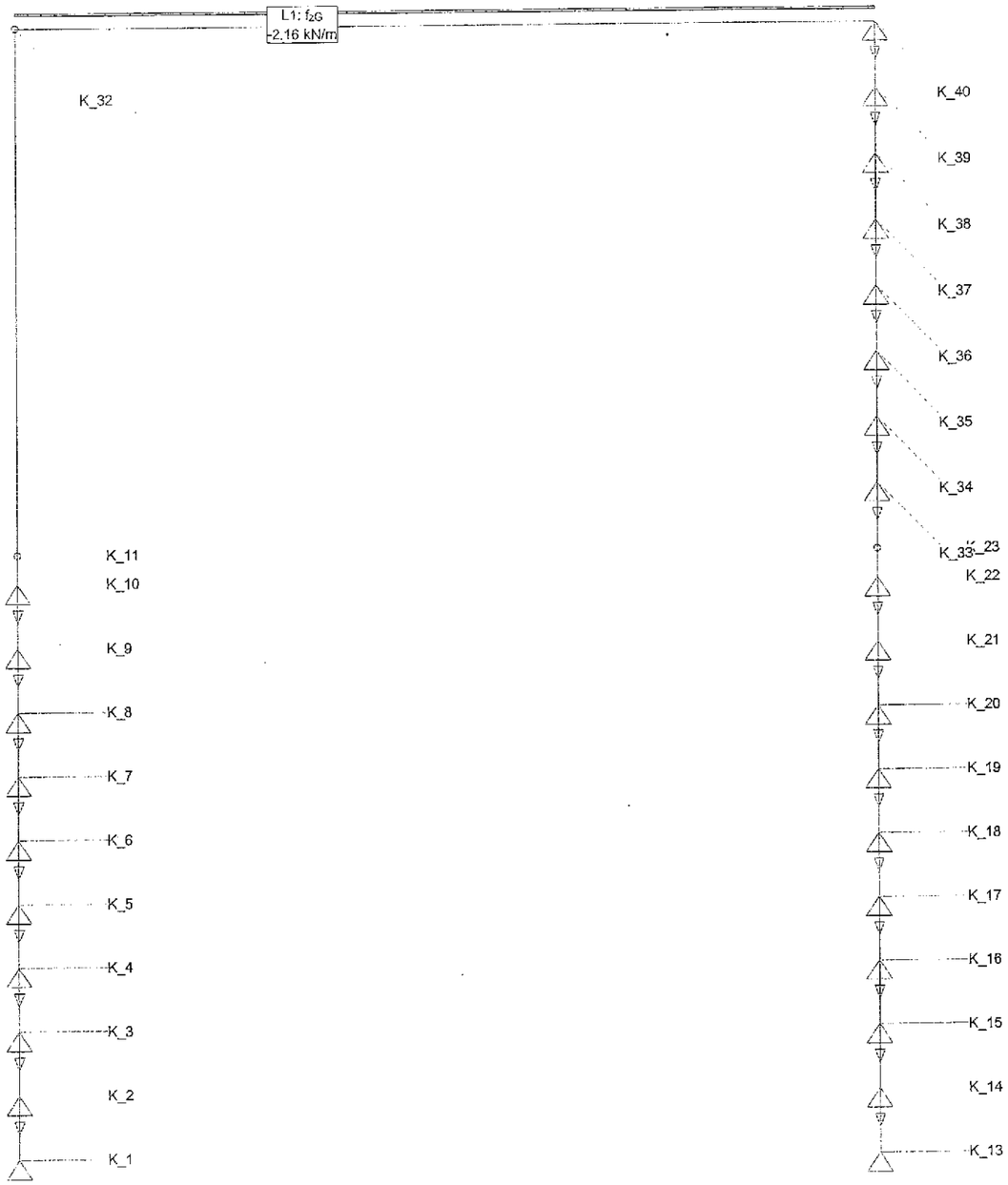
Load case 'EG': AutoDeadLoad

Scale 1 :91.9



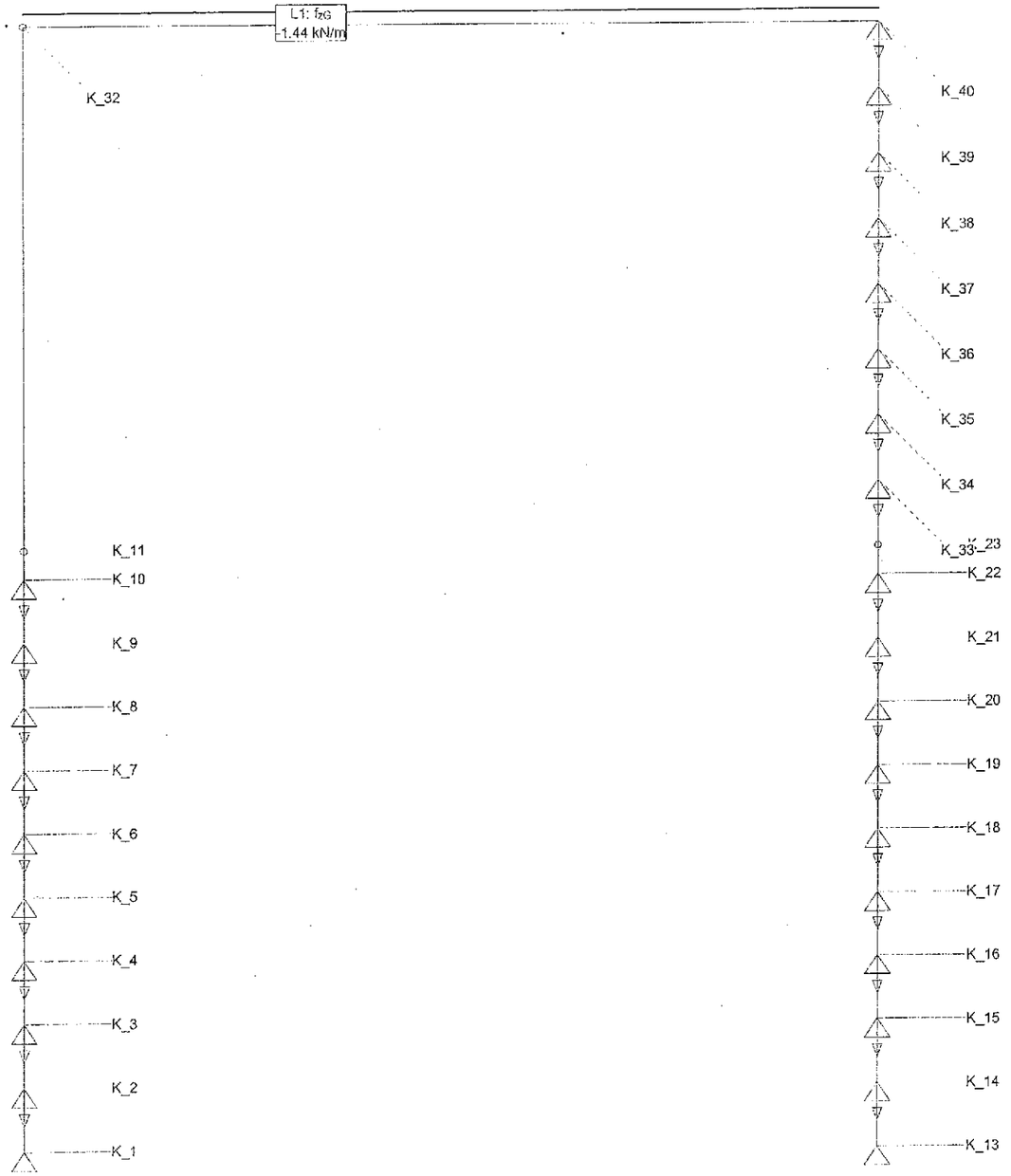
Hipótesis de carga 'L2': PAVIMENTO MAXIMO

Scale 1 :92.0



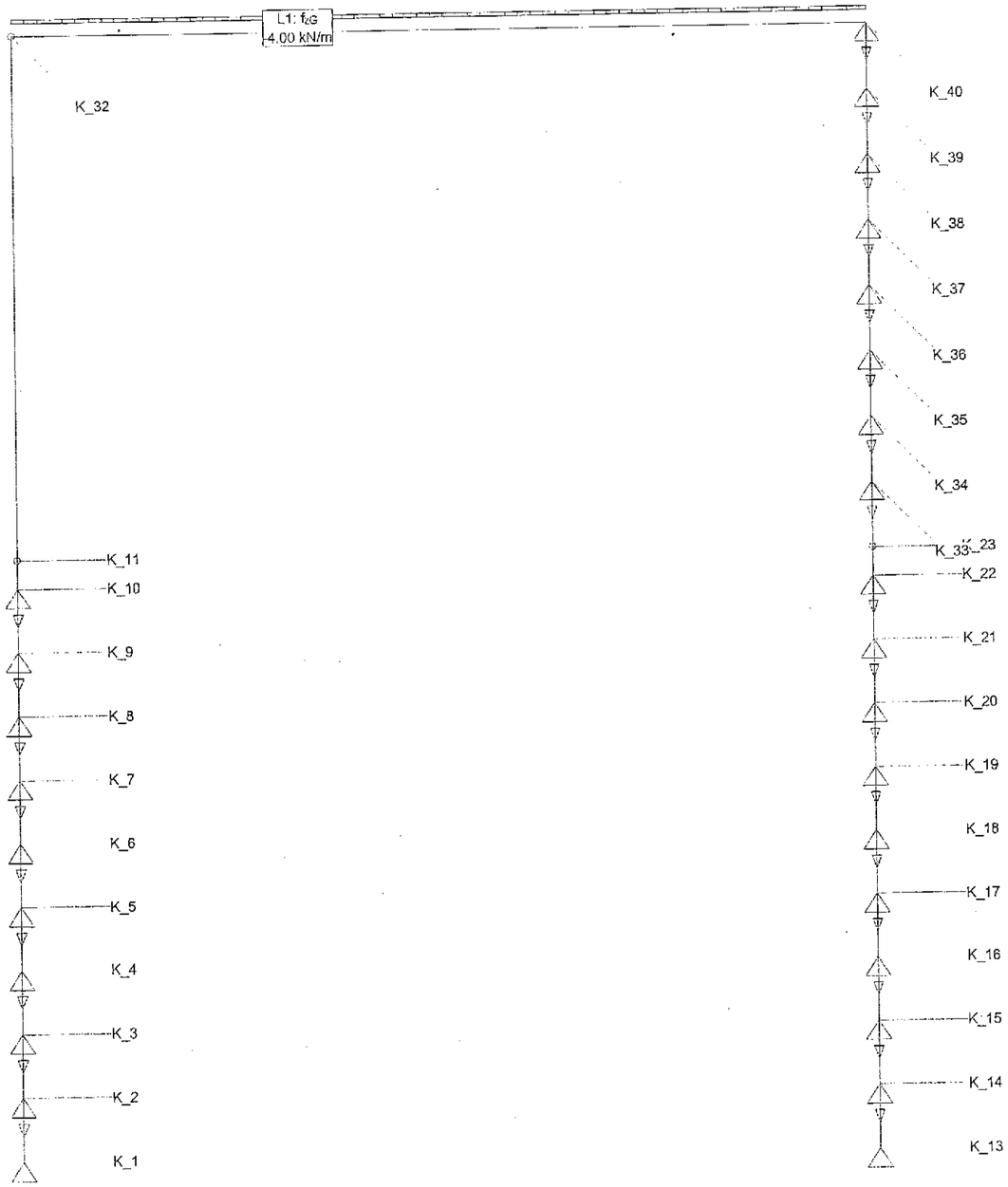
Load case 'L3': PAVIMENTO MÍNIMO

Scale 1 :92.0



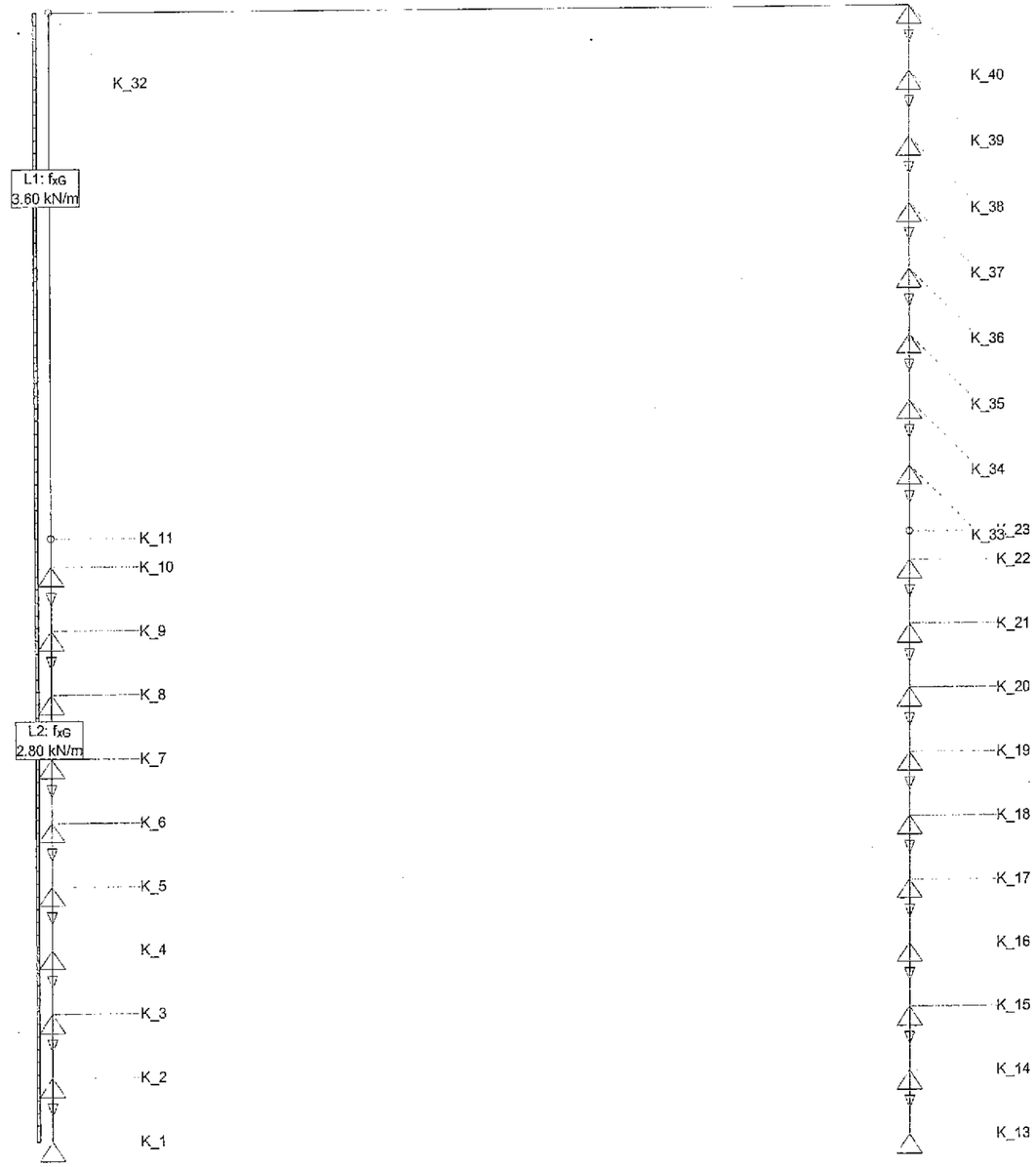
Load case 'L4': SOBRECARGA DINTEL

Scale 1 :92.0



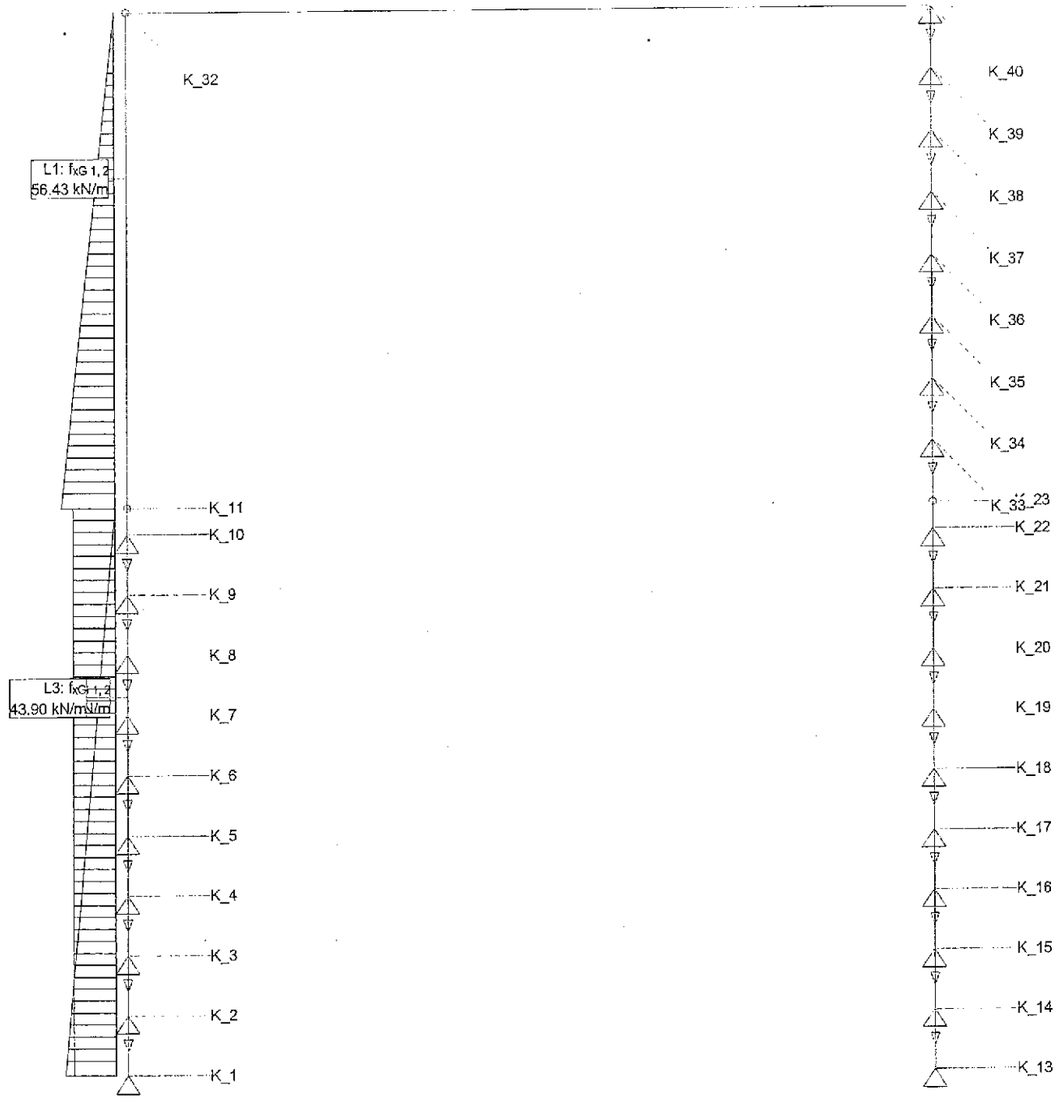
Load case 'L5': EMPUJE SC TRASDÓS

Scale 1 :94.3



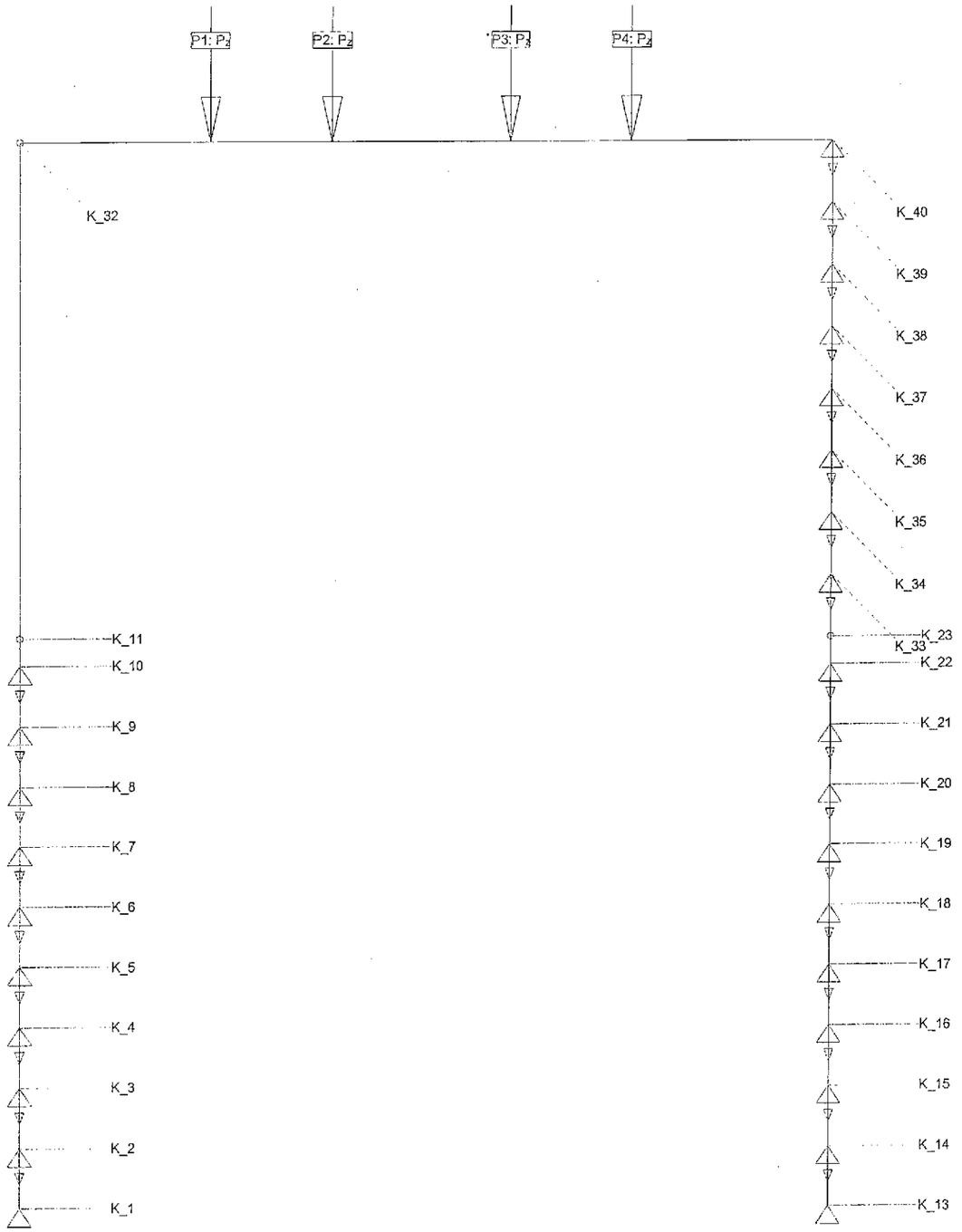
Load case 'L6': EMPUJE TERRENO TRASDÓS

Scale 1 :102.6



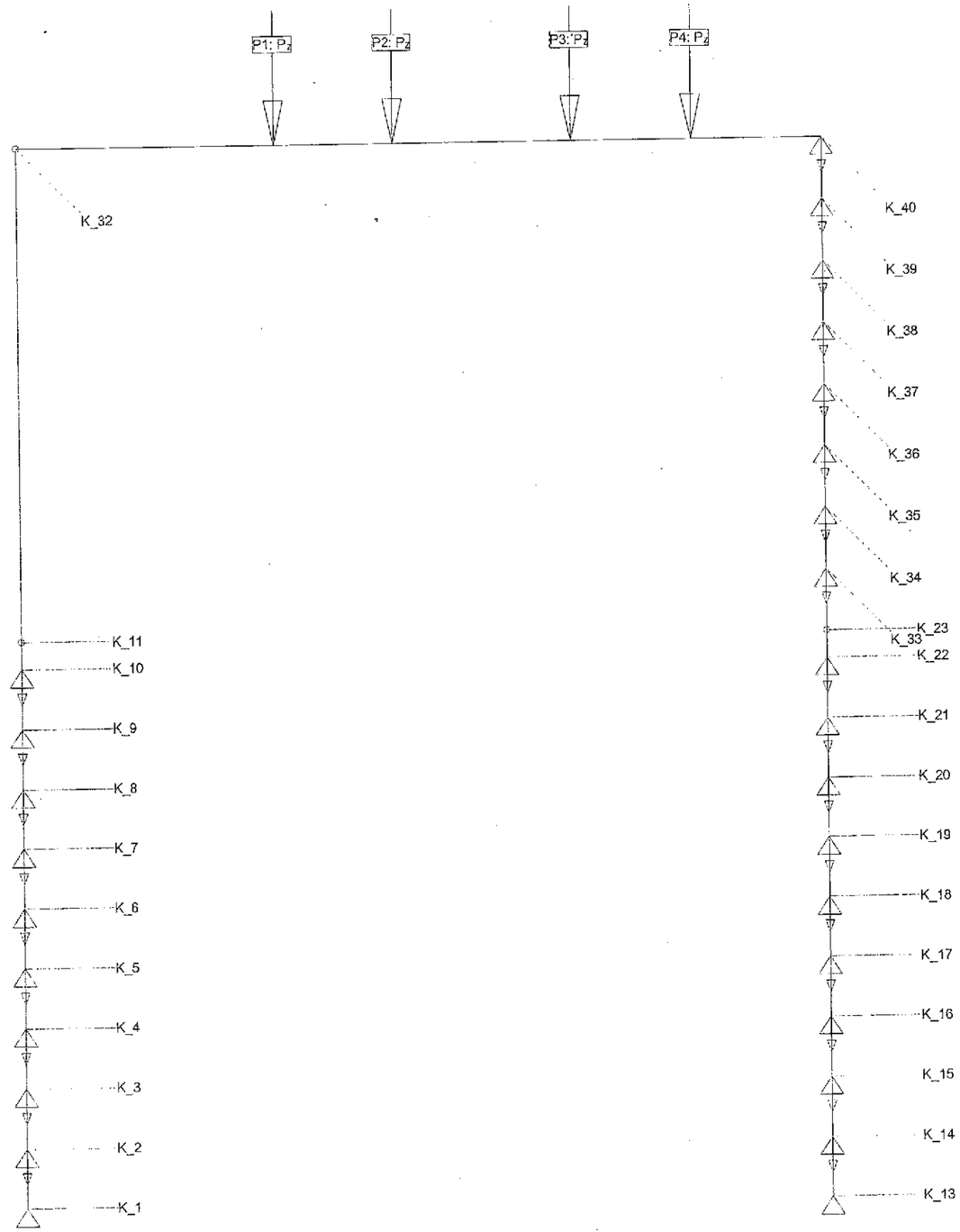
Load case 'L7': CARRO POSICION 1 X1

Scale 1 :92.7



Load case 'L8': CARRO POSICION 2

Scale 1 :92.7



LIMIT STATE SPECIFICATION Code: Spanish Code EH-91 (Überlagerung gemäss Normtyp EC2)

ACTION: PERMANENTES

Permanent	EG: [1.00] AutoDeadLoad
plus where critical	
either	L3: [1.00] PAVIMENTO MÍNIMO
or	L2: [1.00] PAVIMENTO MAXIMO

ACTION: VARIABLES

Loads	
Permanent	L6: [1.00] EMPUJE TERRENO TRASDÓS
plus where critical	L5: [1.00] EMPUJE SC TRASDÓS
plus where critical	L4: [1.00] SOBRECARGA DINTEL
plus where critical	L7: [1.00] CARRO POSICION 1 X1
Alternative load	
Permanent	L6: [1.00] EMPUJE TERRENO TRASDÓS
plus where critical	L5: [1.00] EMPUJE SC TRASDÓS
plus where critical	L4: [1.00] SOBRECARGA DINTEL
plus where critical	L8: [1.00] CARRO POSICION 2

LIMIT STATE SPECIFICATION: ELU
Verification type: Structural safety (ULS)

Actions		Hazard scenarios	
Nr	Name	1	2
1	PERMANENTES	1.5	1
2	VARIABLES	1.6	1.6

LOAD COMBINATION: FISURACIÓN
+- L2: [1.00] PAVIMENTO MAXIMO
+- L4: [0.60] SOBRECARGA DINTEL
+- L5: [0.60] EMPUJE SC TRASDÓS
+- L6: [0.60] EMPUJE TERRENO TRASDÓS
+- L7: [1.00] CARRO POSICION 1 X1

LOAD COMBINATION: FISURACION1
+- EG: [1.00] AutoDeadLoad
+- L2: [1.00] PAVIMENTO MAXIMO
+- L4: [1.00] SOBRECARGA DINTEL
+- L5: [1.00] EMPUJE SC TRASDÓS
+- L6: [1.00] EMPUJE TERRENO TRASDÓS
+- L8: [1.00] CARRO POSICION 2

LOAD COMBINATION: FISURACION2
+- EG: [1.00] AutoDeadLoad
+- L3: [1.00] PAVIMENTO MÍNIMO
+- L6: [1.00] EMPUJE TERRENO TRASDÓS

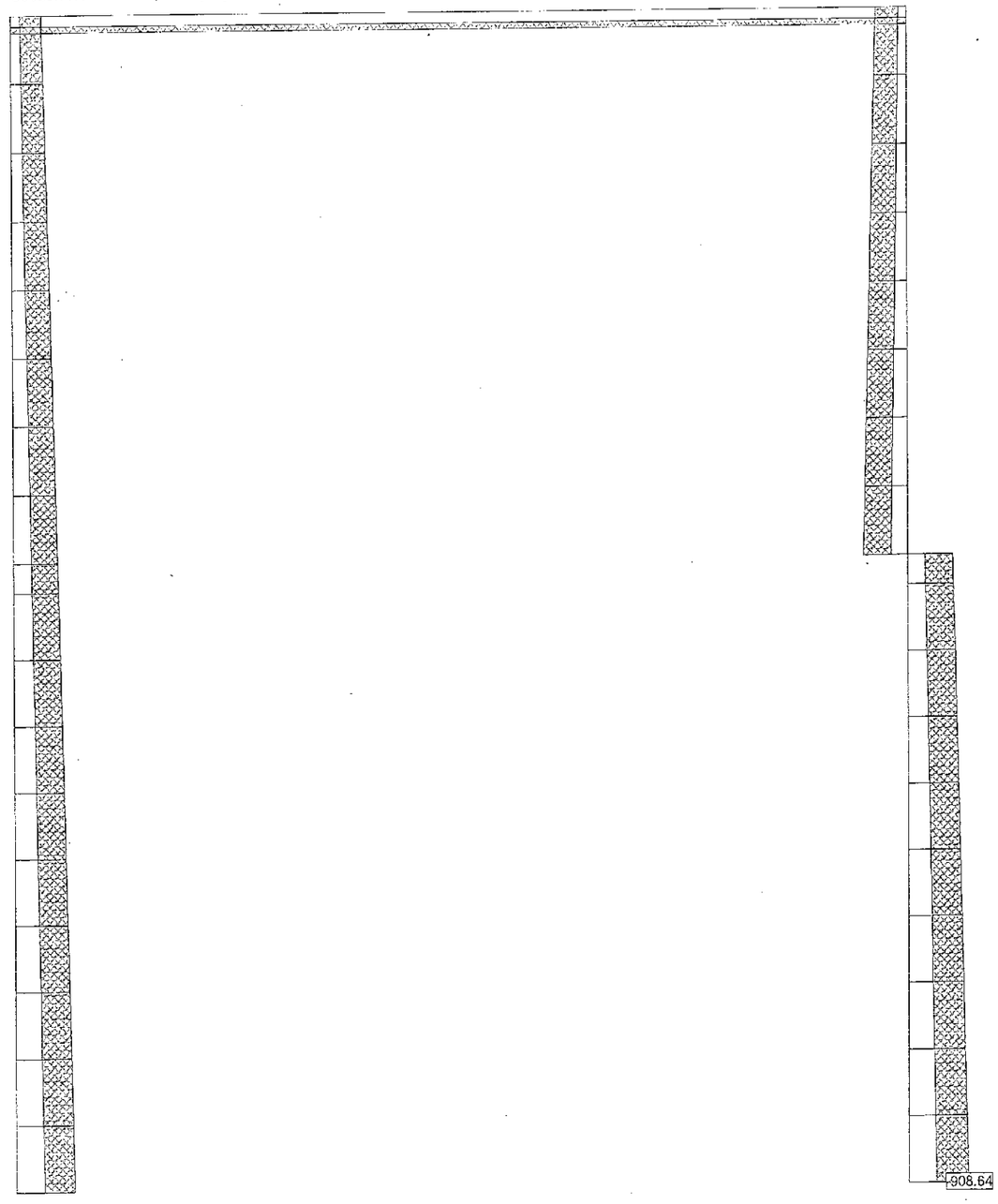
LOAD COMBINATION: DESPLAZ
+- EG: [1.00] AutoDeadLoad
+- L2: [1.00] PAVIMENTO MAXIMO
+- L4: [1.00] SOBRECARGA DINTEL
+- L5: [1.00] EMPUJE SC TRASDÓS
+- L6: [1.00] EMPUJE TERRENO TRASDÓS
+- L8: [1.00] CARRO POSICION 2

LOAD COMBINATION: DESPLAZ2
+- EG: [1.00] AutoDeadLoad
+- L3: [1.00] PAVIMENTO MÍNIMO
+- L6: [1.00] EMPUJE TERRENO TRASDÓS

LOAD COMBINATION: DESPLAZAMIENTOS
+- L2: [1.00] PAVIMENTO MAXIMO
+- L4: [1.00] SOBRECARGA DINTEL
+- L5: [1.00] EMPUJE SC TRASDÓS
+- L6: [1.00] EMPUJE TERRENO TRASDÓS
+- L7: [1.00] CARRO POSICION 1 X1

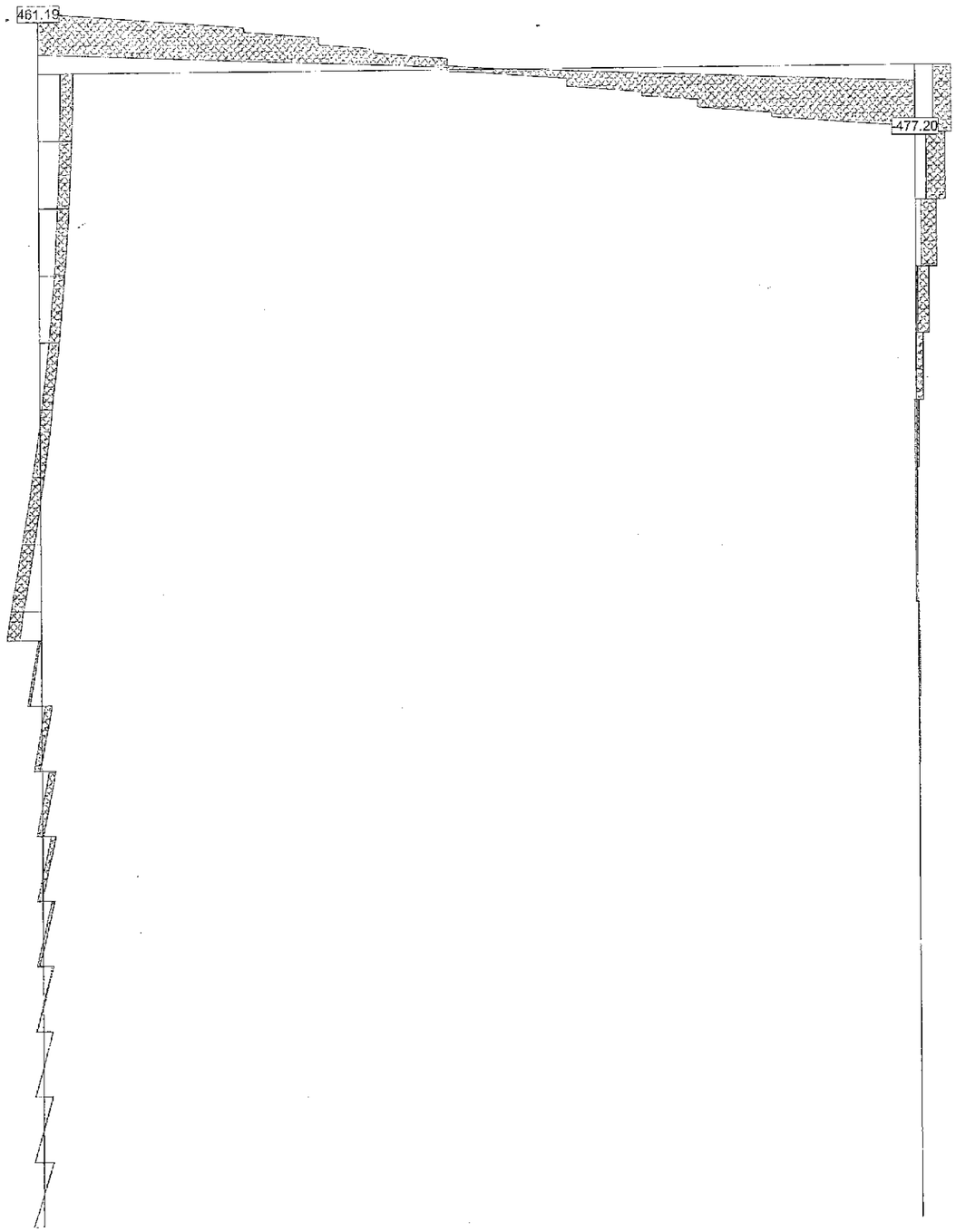
Section force envelopes N [kN] Loads: ELU

Scale 1:86.9



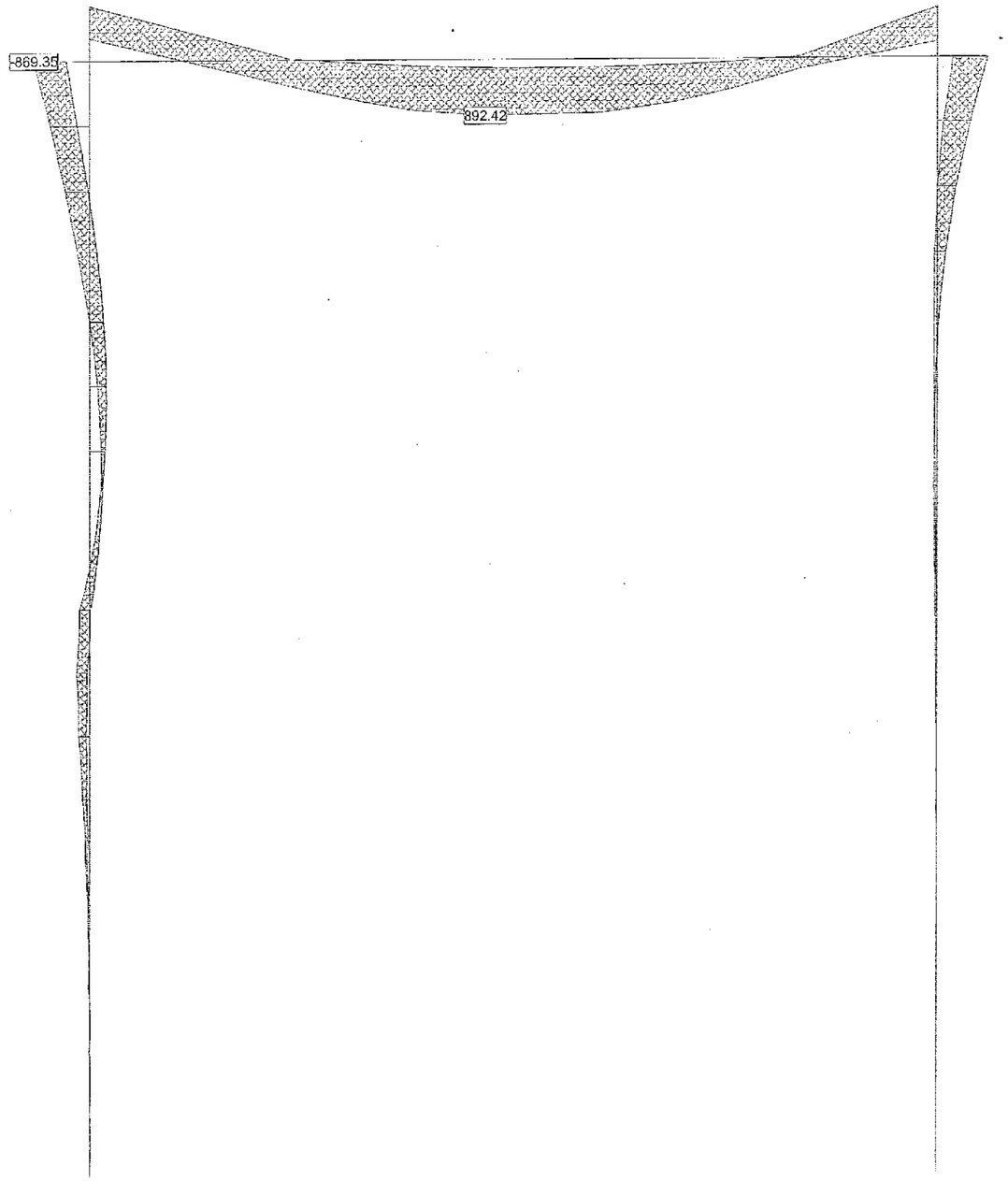
Section force envelopes Vz [kN] Loads: ELU

Scale 1 :85.8



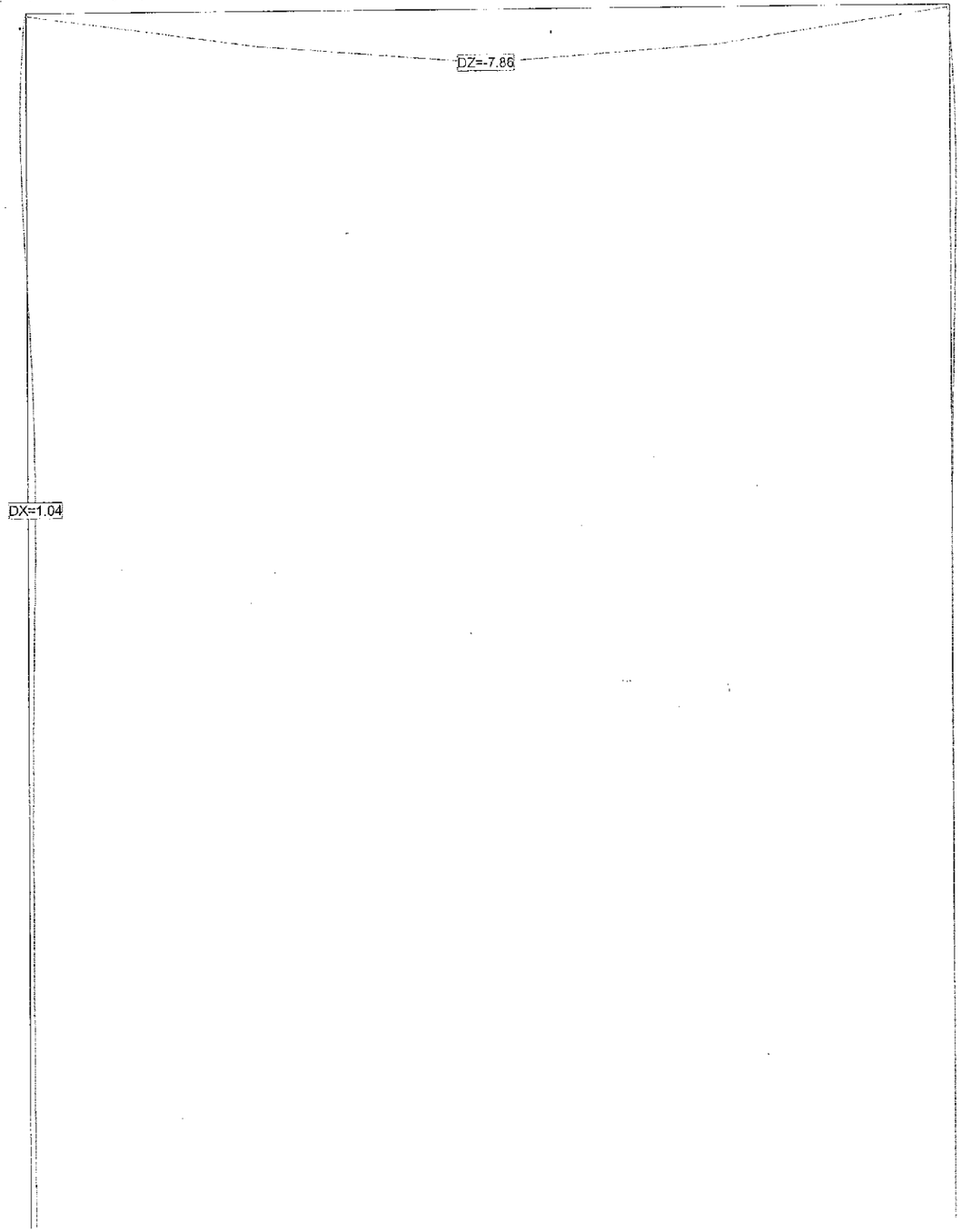
Section force envelopes My [kNm] Loads: ELU

Scale 1 :91.5



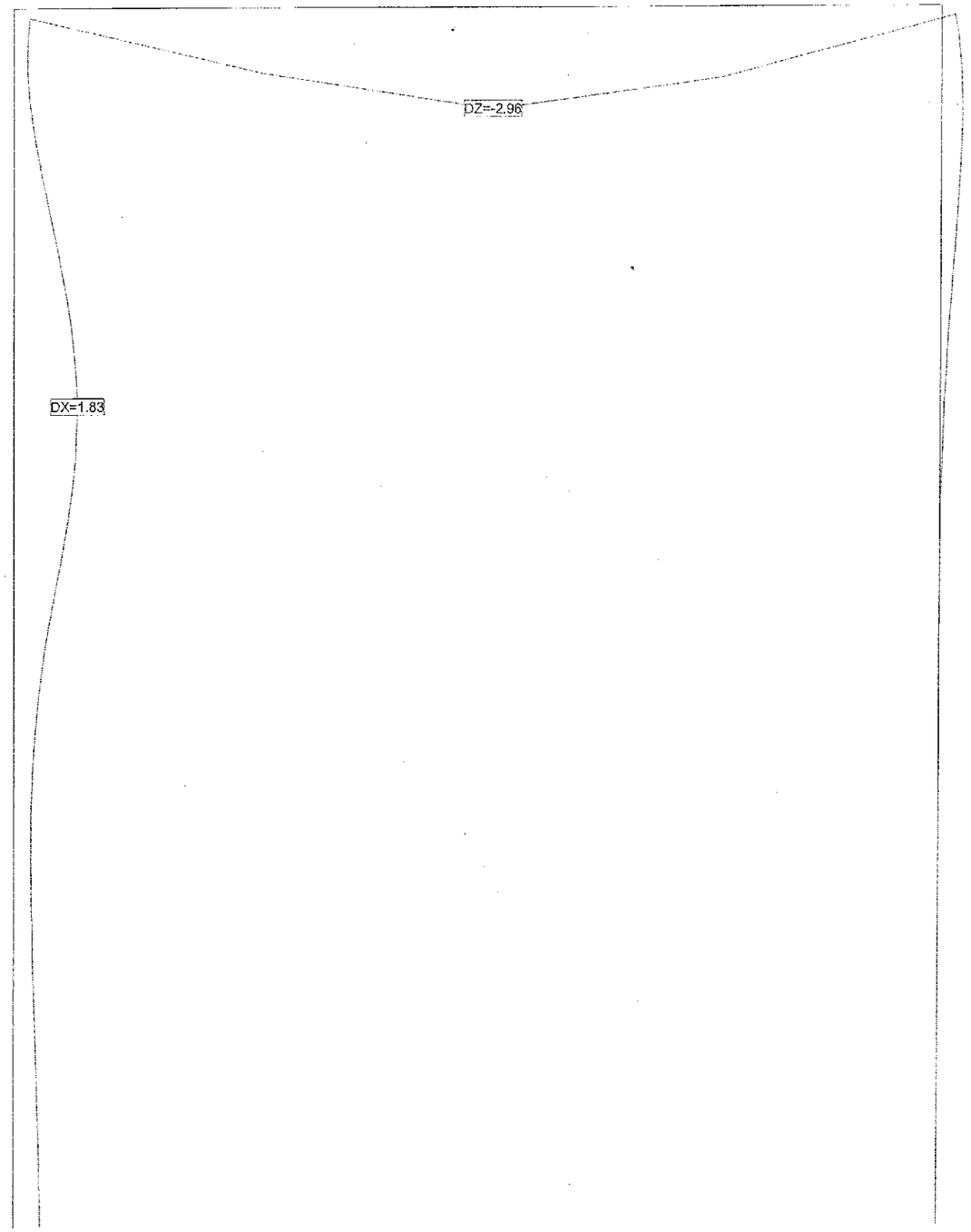
Displacements [mm] for: DESPLAZ, exaggerated scale: 100.0

Scale 1 :81.7



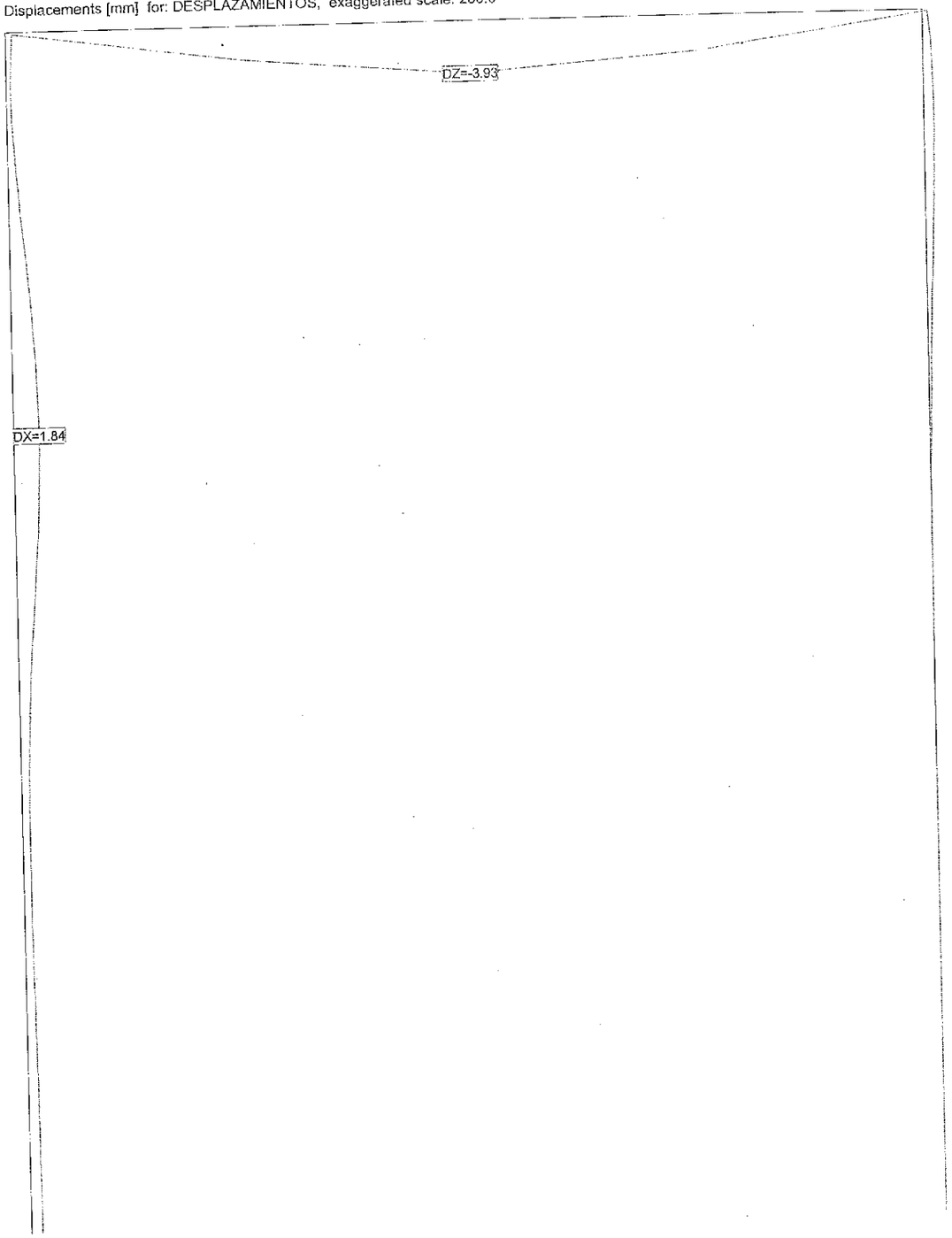
Displacements [mm] for: DESPLAZ2, exaggerated scale: 500.0

Scale 1 :81.3



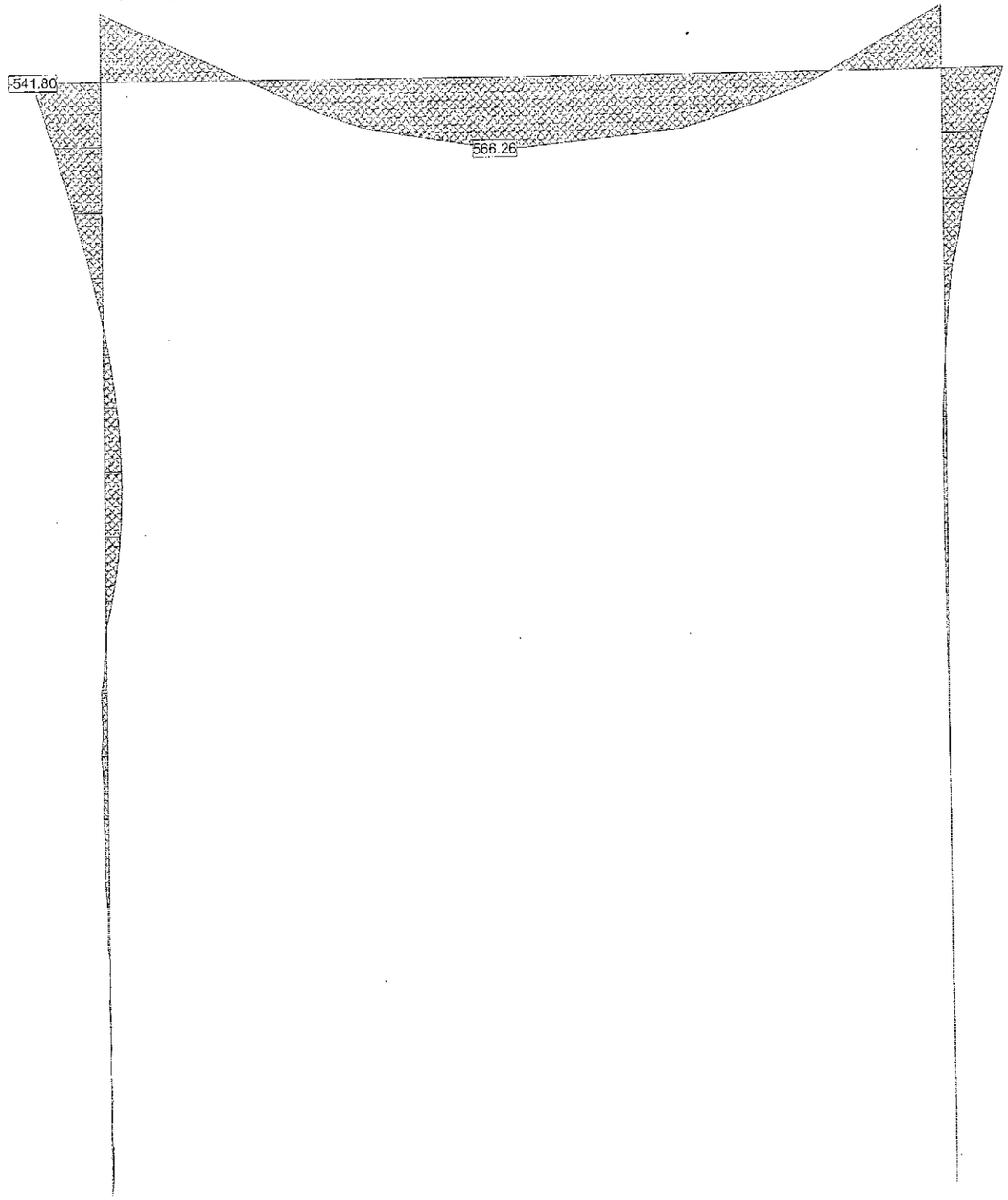
Displacements [mm] for: DESPLAZAMIENTOS, exaggerated scale: 200.0

Scale 1 :80.4



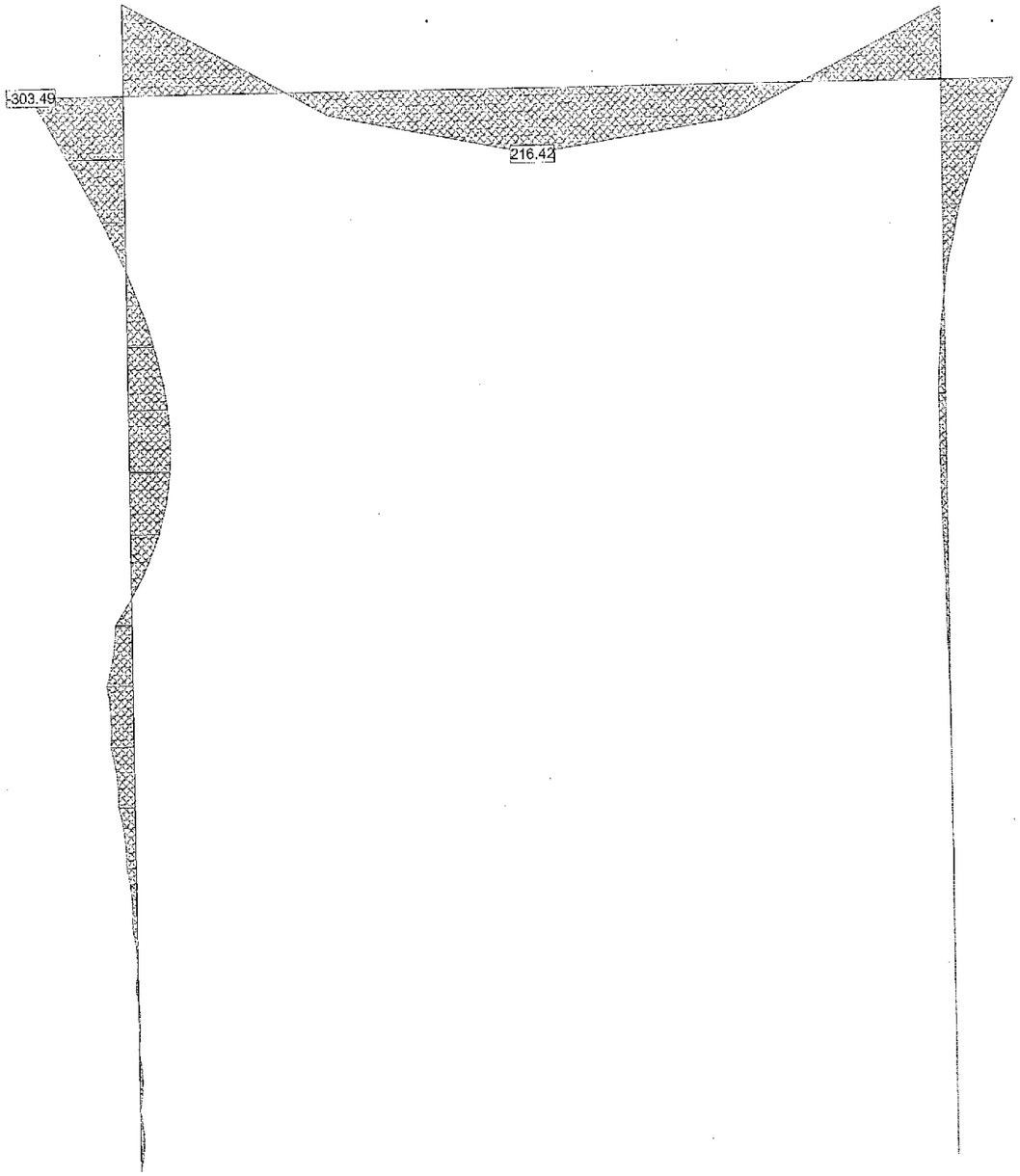
Section force My [kNm] for: FISURACION1

Scale 1 :94.1



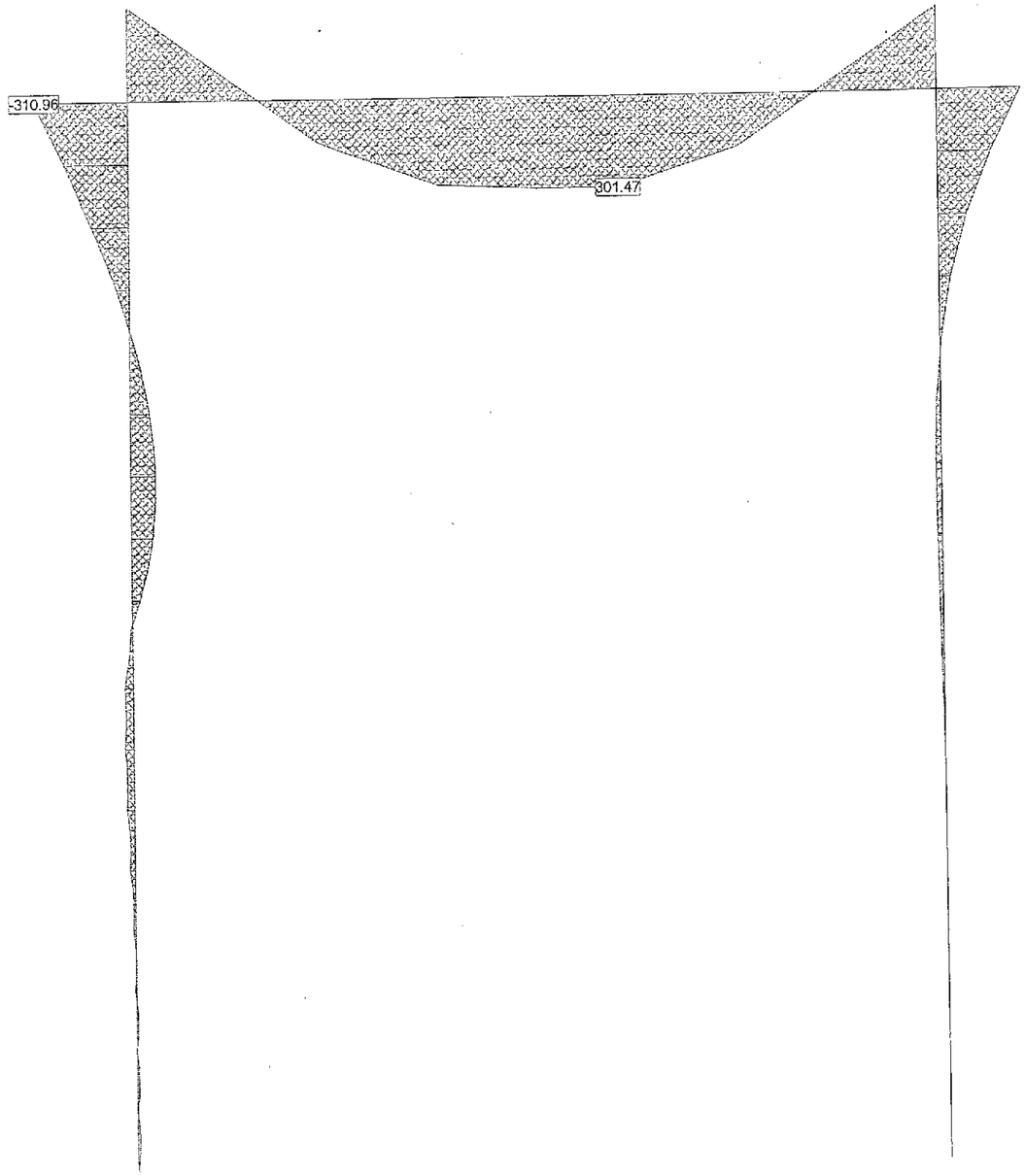
Scale 1 :97.9

Section force My [kNm] for: FISURACION2



Scale 1 :99.2

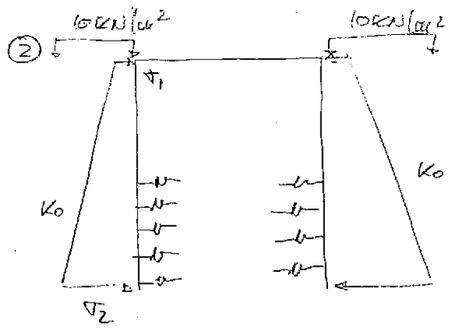
Section force My [kNm] for: FISURACIÓN



VALTER
valenciana de
estructuras

Proyecto: LAV / PASO BAJO AUTOPISTA A7

Asunto:



Empuje $\begin{cases} \sigma_1 = 5'3\,kN/m^2 \\ \sigma_2 = 0'53\,(17'25 \cdot 20 + 10) = 188'15\,kN/m^2 \end{cases}$

Retracción

Frenado

(Modelo bidimensional I)

CASOS DE CARGA VERTICAL

① PP + CMmin

② PP + CMmáx + SC + Carro centrado

③ " " " + Carro descentrado

Fecha .....

Hoja Nº ..... De .....

STRUCTURE 2D

NODE DATA

Id	Coordinates X [m]	Coordinates Z [m]	Supports DX [kN/m]	Supports DZ [kN/m]	Supports RY [kNm]	Specialties
K_1	0	0	60000.000	B		
K_2	0.00	1.00	1.2E+5			
K_3	0.00	2.00	1.2E+5			
K_4	0.00	3.00	1.2E+5			
K_5	0.00	4.00	1.2E+5			
K_6	0.00	5.00	1.2E+5			
K_7	0.00	6.00	1.2E+5			
K_8	0.00	7.00	1.2E+5			
K_9	0.00	8.00	1.2E+5			
K_10	0.00	9.00	1.2E+5			
K_11	0.00	9.45				
K_12	0.00	17.70				
K_13	13.50	0	60000.000	B		
K_14	13.50	1.00	1.2E+5			
K_15	13.50	2.00	1.2E+5			
K_16	13.50	3.00	1.2E+5			
K_17	13.50	4.00	1.2E+5			
K_18	13.50	5.00	1.2E+5			
K_19	13.50	6.00	1.2E+5			
K_20	13.50	7.00	1.2E+5			
K_21	13.50	8.00	1.2E+5			
K_22	13.50	9.00	1.2E+5			
K_23	13.50	9.45				
K_25	13.50	17.70				

B : Blocked

MEMBER DATA

ID	Nodes beginning	Nodes end	Cross section Name>Variant	Length [m]	Status	Special case
S_1	K_1	K_2	PANTALLA	1.00		
S_2	K_2	K_3	PANTALLA	1.00		
S_3	K_3	K_4	PANTALLA	1.00		
S_4	K_4	K_5	PANTALLA	1.00		
S_5	K_5	K_6	PANTALLA	1.00		
S_6	K_6	K_7	PANTALLA	1.00		
S_7	K_7	K_8	PANTALLA	1.00		
S_8	K_8	K_9	PANTALLA	1.00		
S_9	K_9	K_10	PANTALLA	1.00		
S_10	K_10	K_11	PANTALLA	0.45		
S_11	K_11	K_12	PANTALLA	8.25		
S_12	K_12	K_25	DINTEL	13.50		
S_13	K_13	K_14	PANTALLA	1.00		
S_14	K_14	K_15	PANTALLA	1.00		
S_15	K_15	K_16	PANTALLA	1.00		
S_16	K_16	K_17	PANTALLA	1.00		
S_17	K_17	K_18	PANTALLA	1.00		
S_18	K_18	K_19	PANTALLA	1.00		
S_19	K_19	K_20	PANTALLA	1.00		
S_20	K_20	K_21	PANTALLA	1.00		
S_21	K_21	K_22	PANTALLA	1.00		
S_22	K_22	K_23	PANTALLA	0.45		
S_23	K_25	K_23	PANTALLA	8.25		

Cross section: Geometry

Name	Variant	Materials	Type	Dimensions [m]
DINTEL		1	S-R	b=1.00, h=0.80
PANTALLA		1	S-R	b=1.00, h=0.65

Materials : s. table 'Materials'

Cross section: CS values

Name	Variant	β [°]	EA_x GA_z [kN]	EJ_y [kNm²]	e_z [m]	CS mass Additional mass [t/m]	Materials
DINTEL		0	2.16000003E+7 6.66664004E+6	1.15199999E+6	0	2.00	1
PANTALLA		0	1.75499994E+7 5.41664481E+6	6.17906274E+5	0	1.62	1

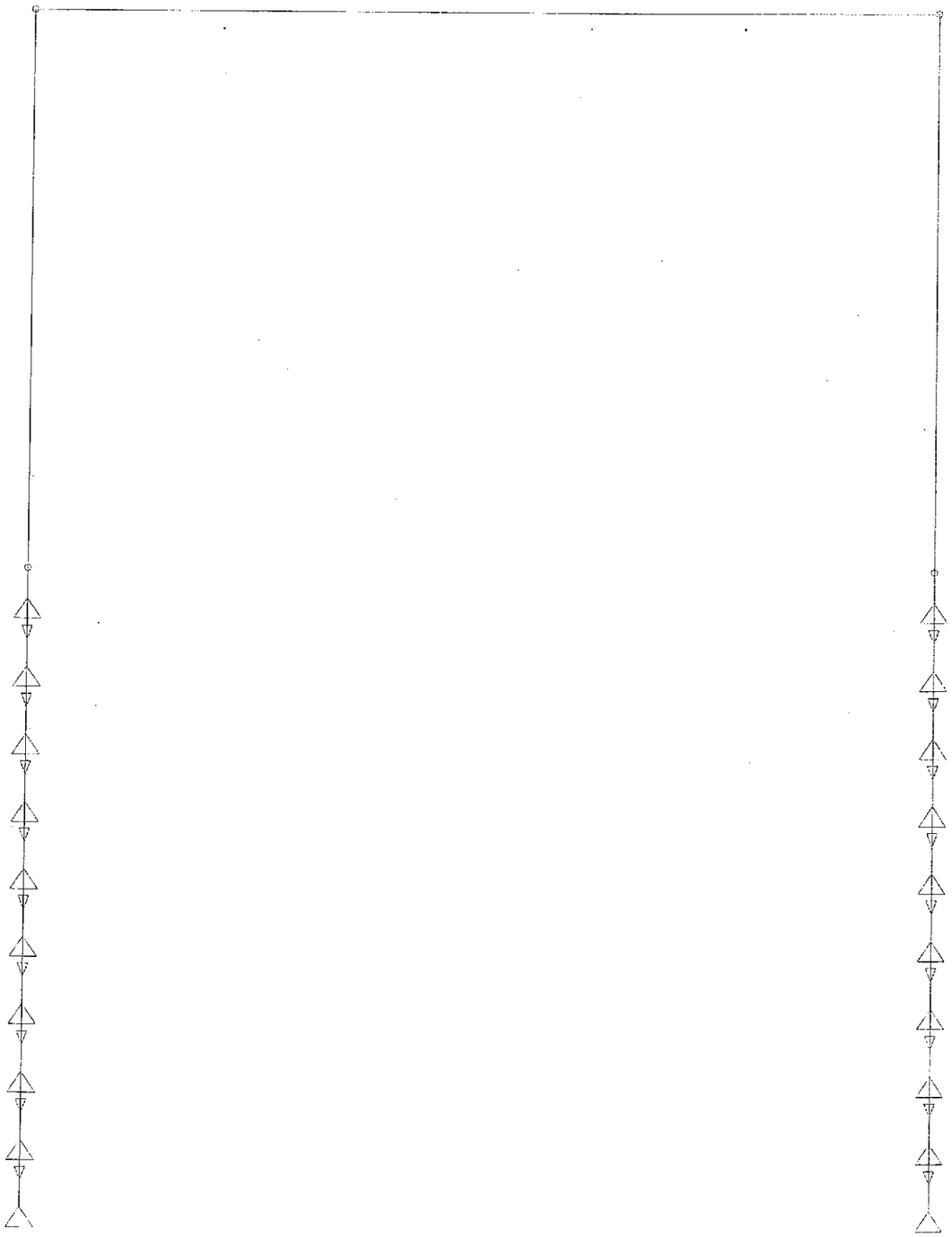
β : Angle between member Y axis and first principal axis of cross section
e_z : Distance center of gravity-axis point
Materials : s. table 'Materials'

Materials

Id	Material	E [kN/mm²]	G [kN/mm²]	ρ [t/m³]	Material class
1	Concrete	27	10	2.5	H250

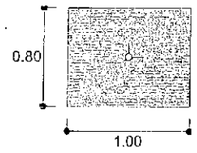
Structure

Scale 1 :81.8



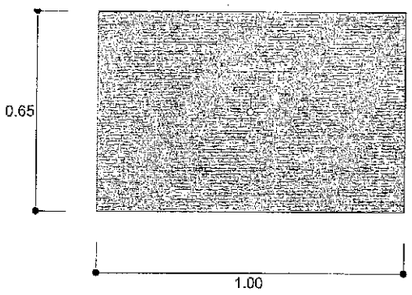
DINTEL: Concrete (H250)

Scale 1 :50.0



PANTALLA: Concrete (H250)

Scale 1 :20.0

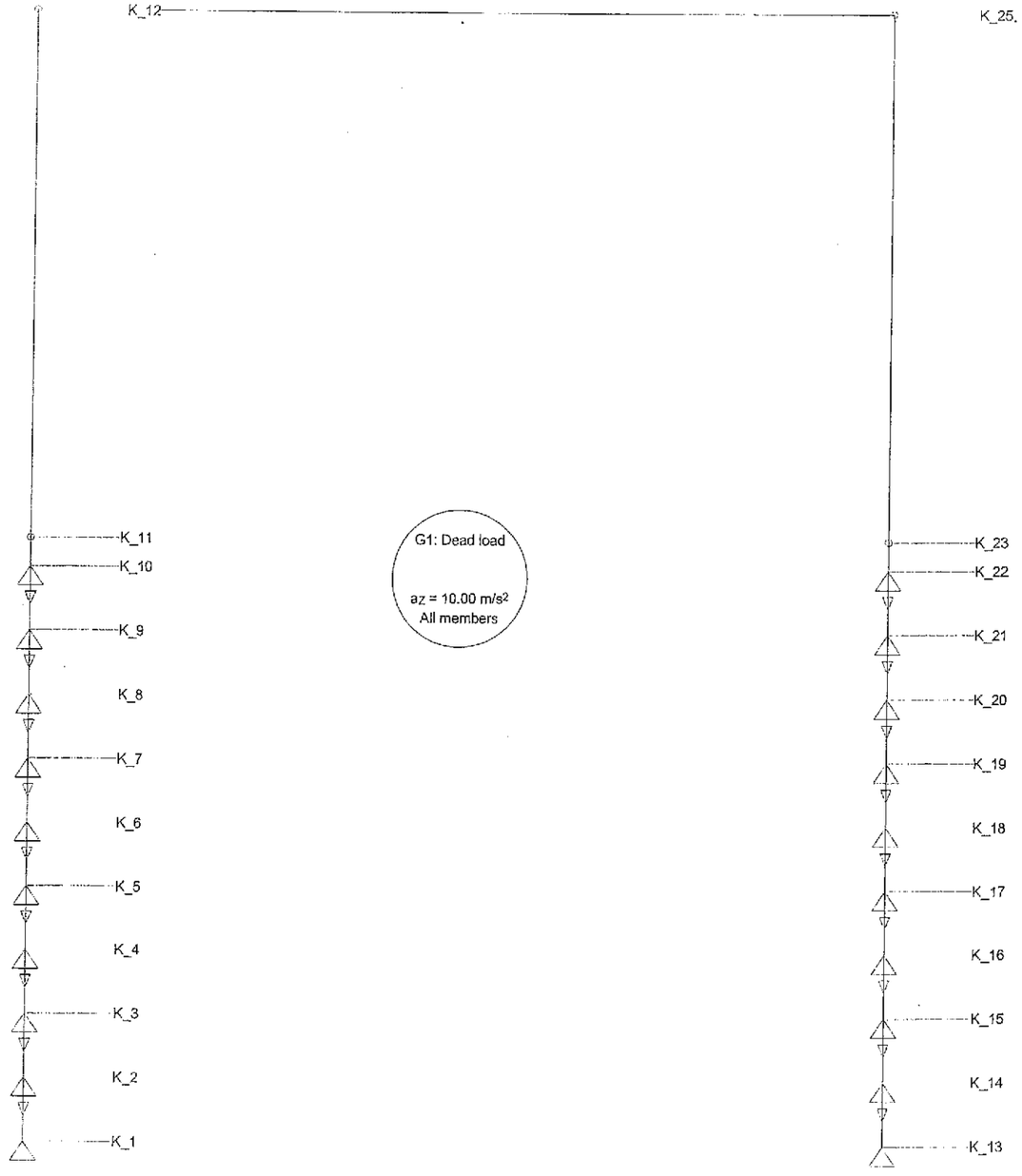


LIST OF LOAD CASES

Load case	Type	Action	List of load cases
EG	Loads	Dead load	AutoDeadLoad [1]
L2	Loads	Superimp. DL	PAVIMENTO MAXIMO [2]
L3	Loads	Dead load	PAVIMENTO MÍNIMO [3]
L4	Loads	Superimp. DL	SOBRECARGA DINTEL [4]
L5	Loads	Superimp. DL	EMPUJE SC TRASDÓS [5]
L6	Loads	Superimp. DL	EMPUJE TERRENO TRASDÓS [6]
L7	Loads	Live load (Additive)	CARRO POSICION 1 X1 [7]
L8	Loads	Live load (Additive)	CARRO POSICION 2 [8]
L9	Loads	Superimp. DL	EMPUJE REPOSO [9]

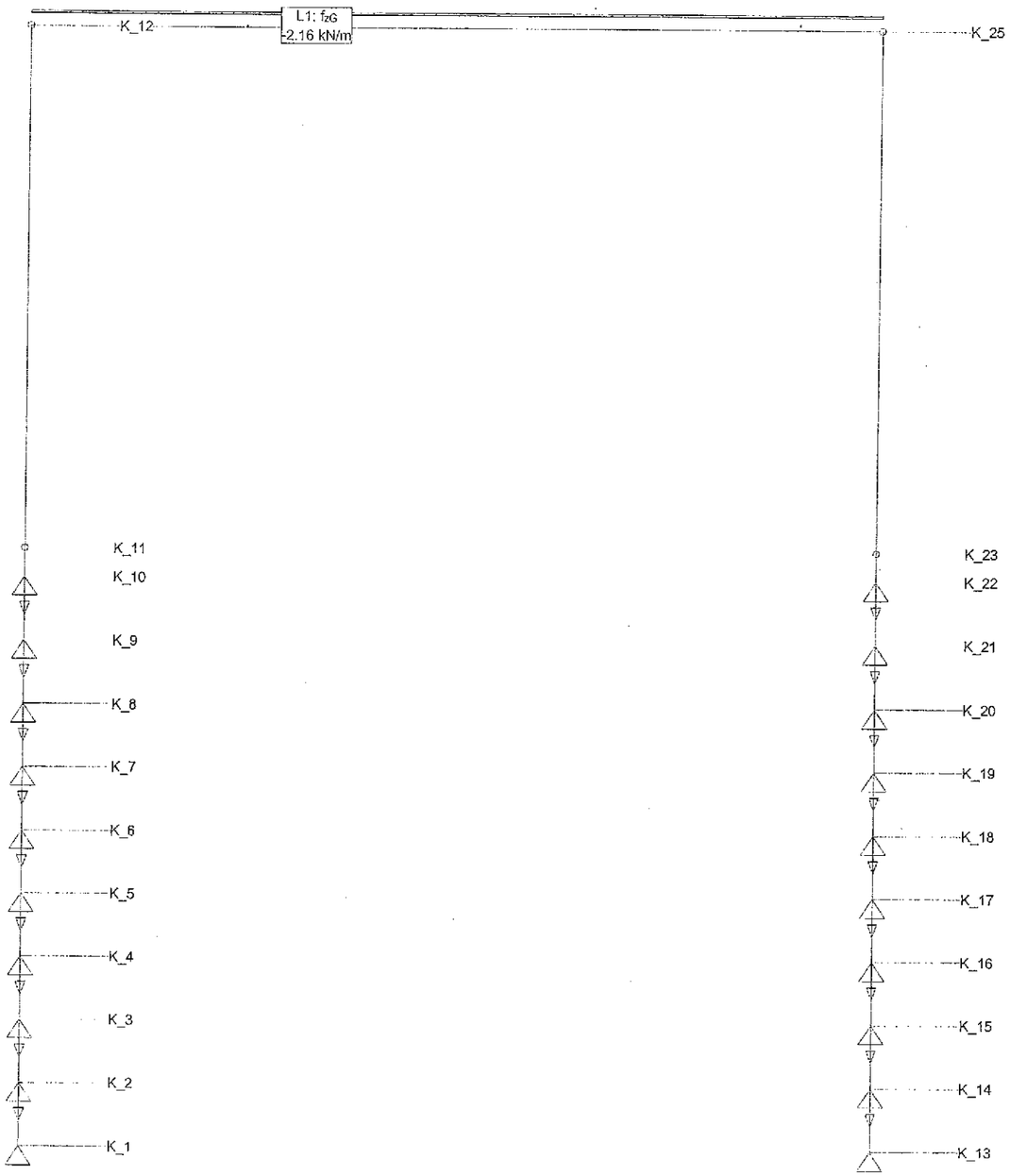
Load case 'EG': AutoDeadLoad

Scale 1 :91.8



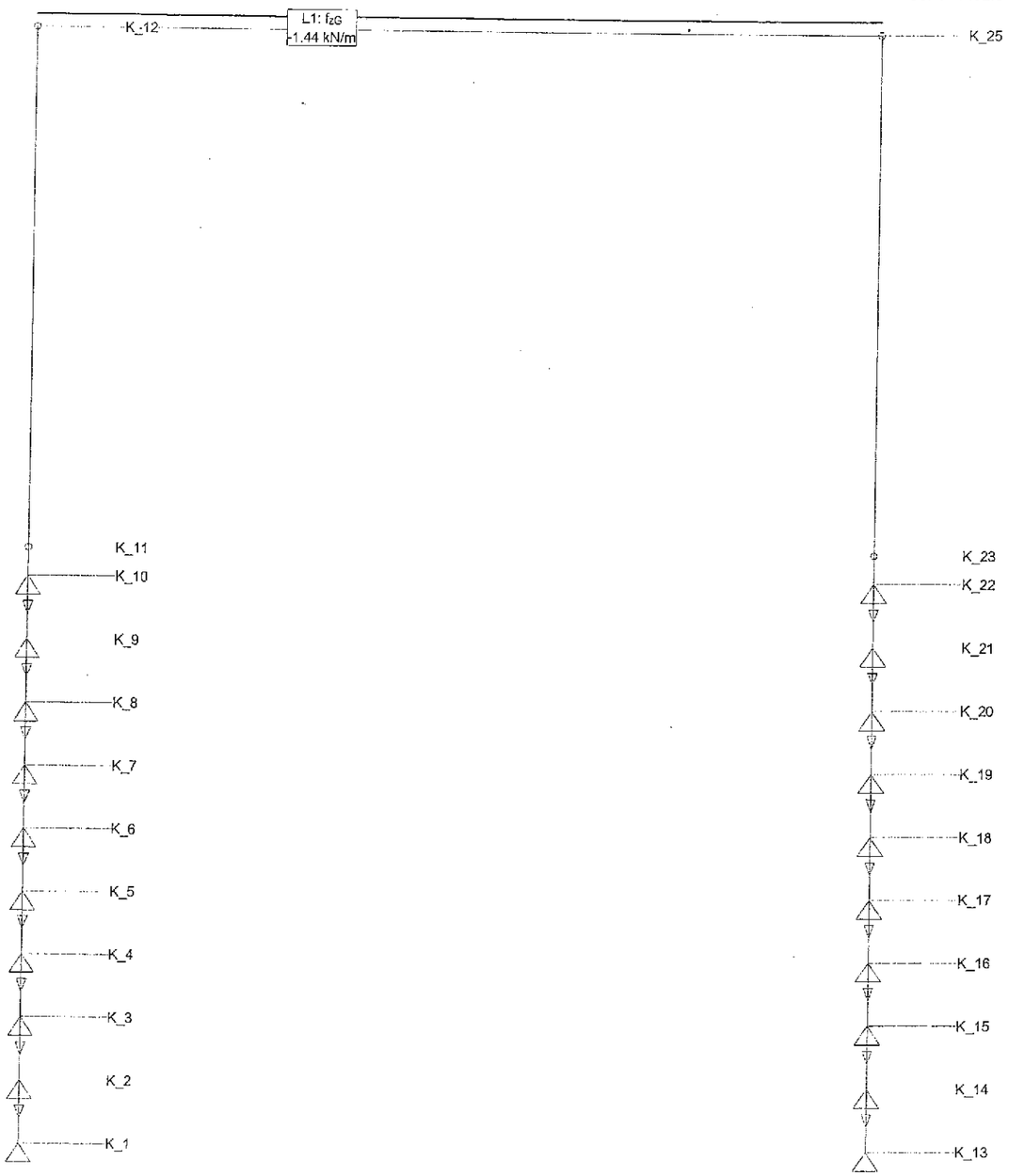
Hipótesis de carga 'L2': PAVIMENTO MAXIMO

Scale 1 :92.0



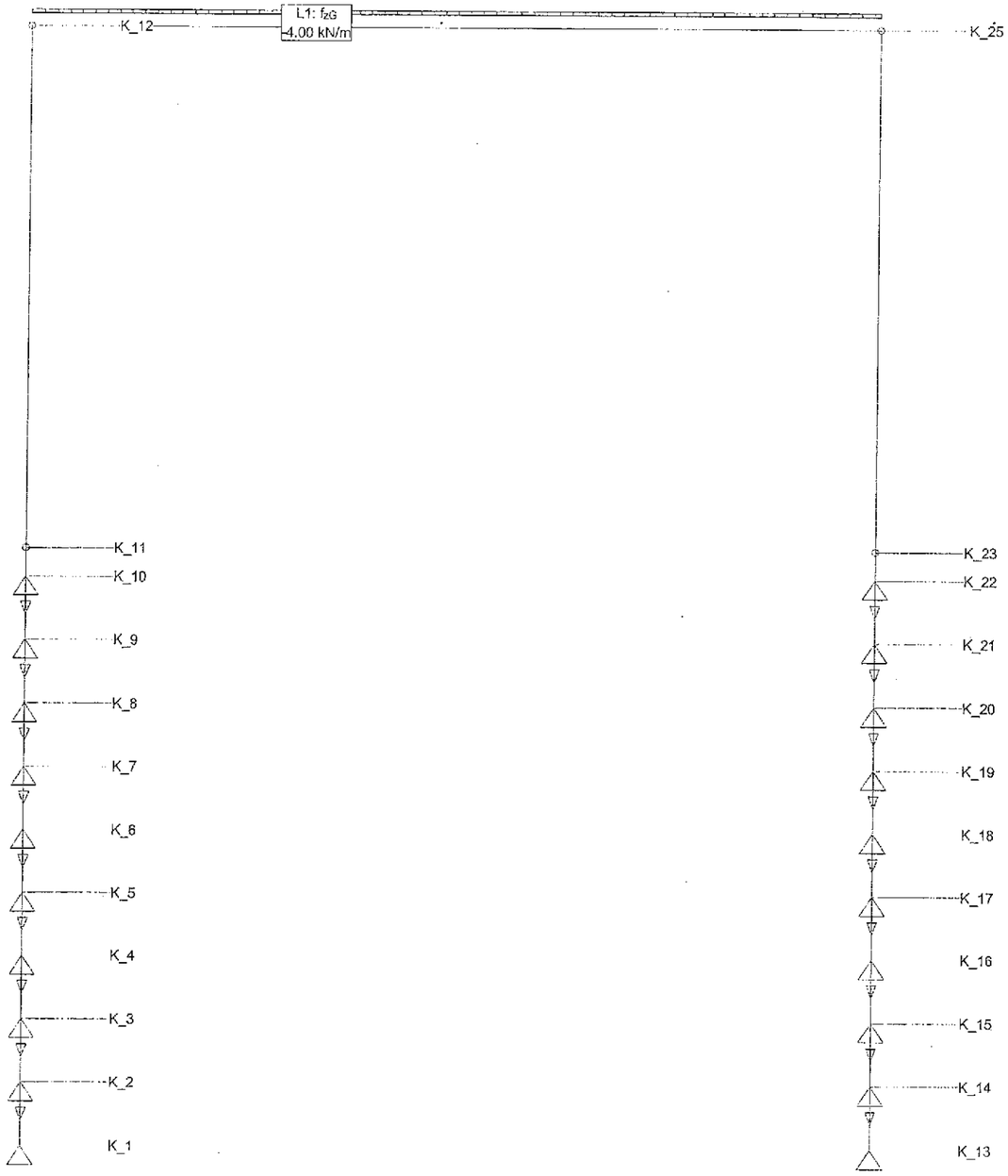
Load case 'L3': PAVIMENTO MÍNIMO

Scale 1 :92.0



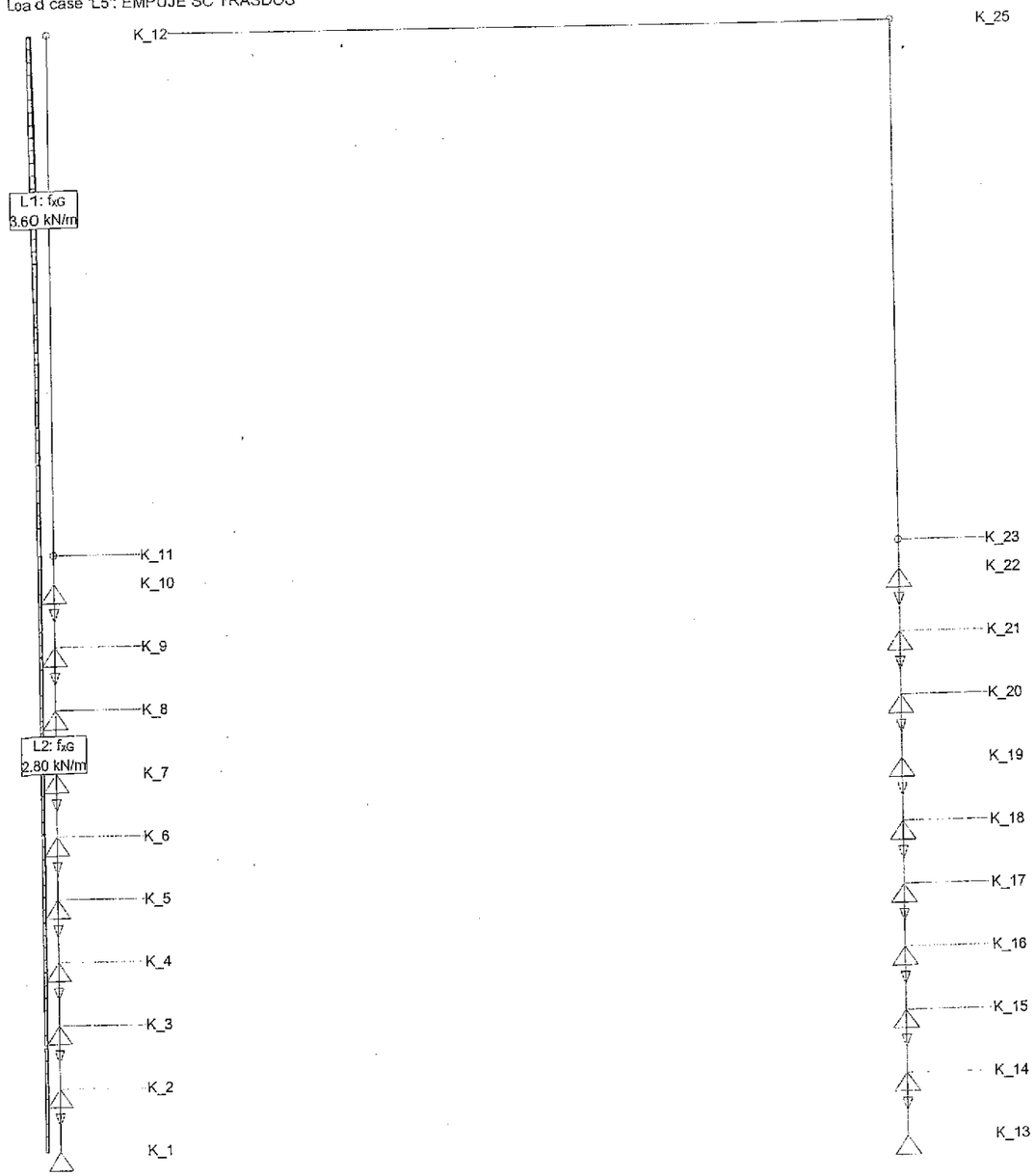
Load case 'L4': SOBRECARGA DINTEL

Scale 1 :92.0



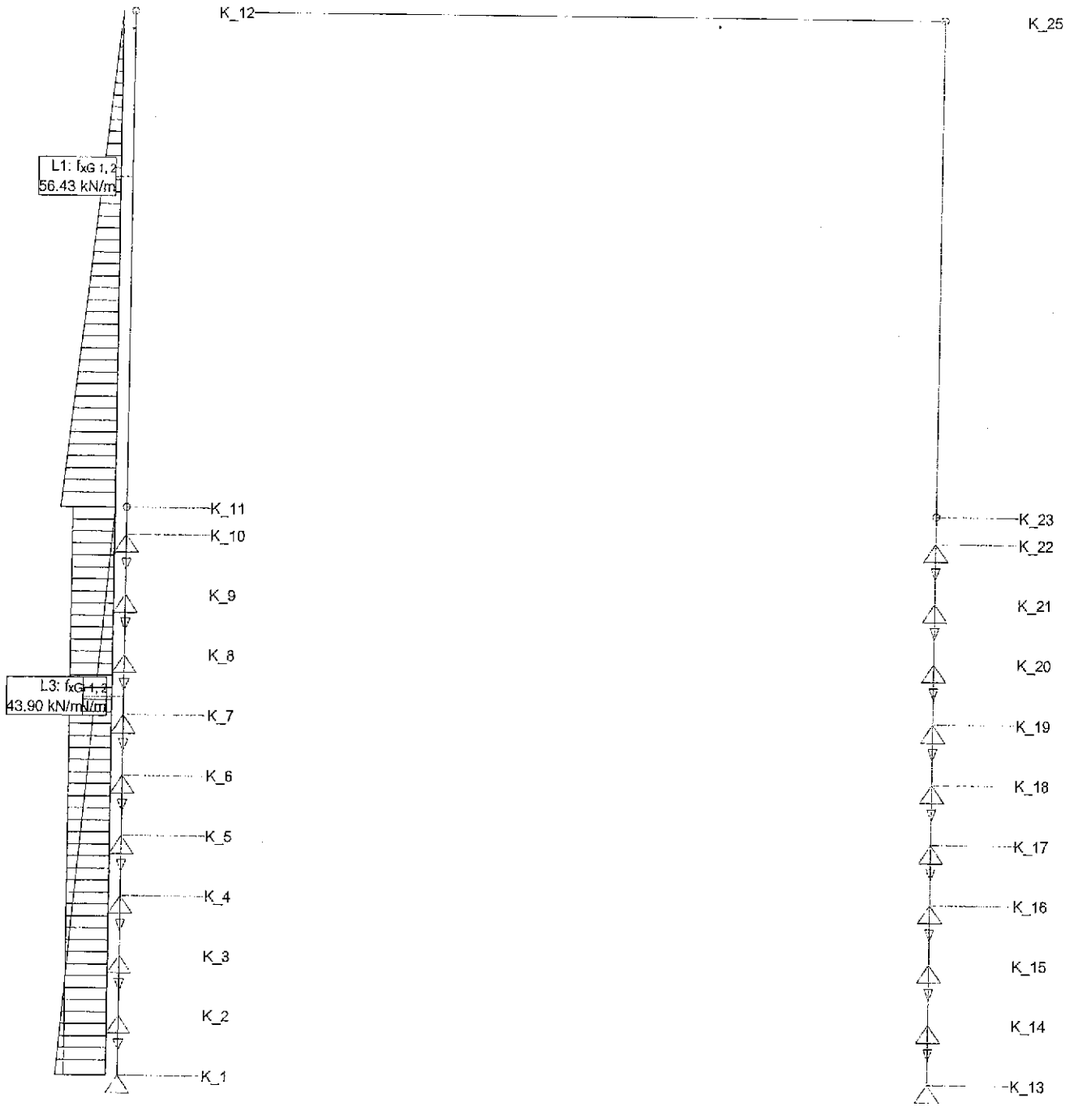
Load case 'L5': EMPUJE SC TRASDÓS

Scale 1 :94.3



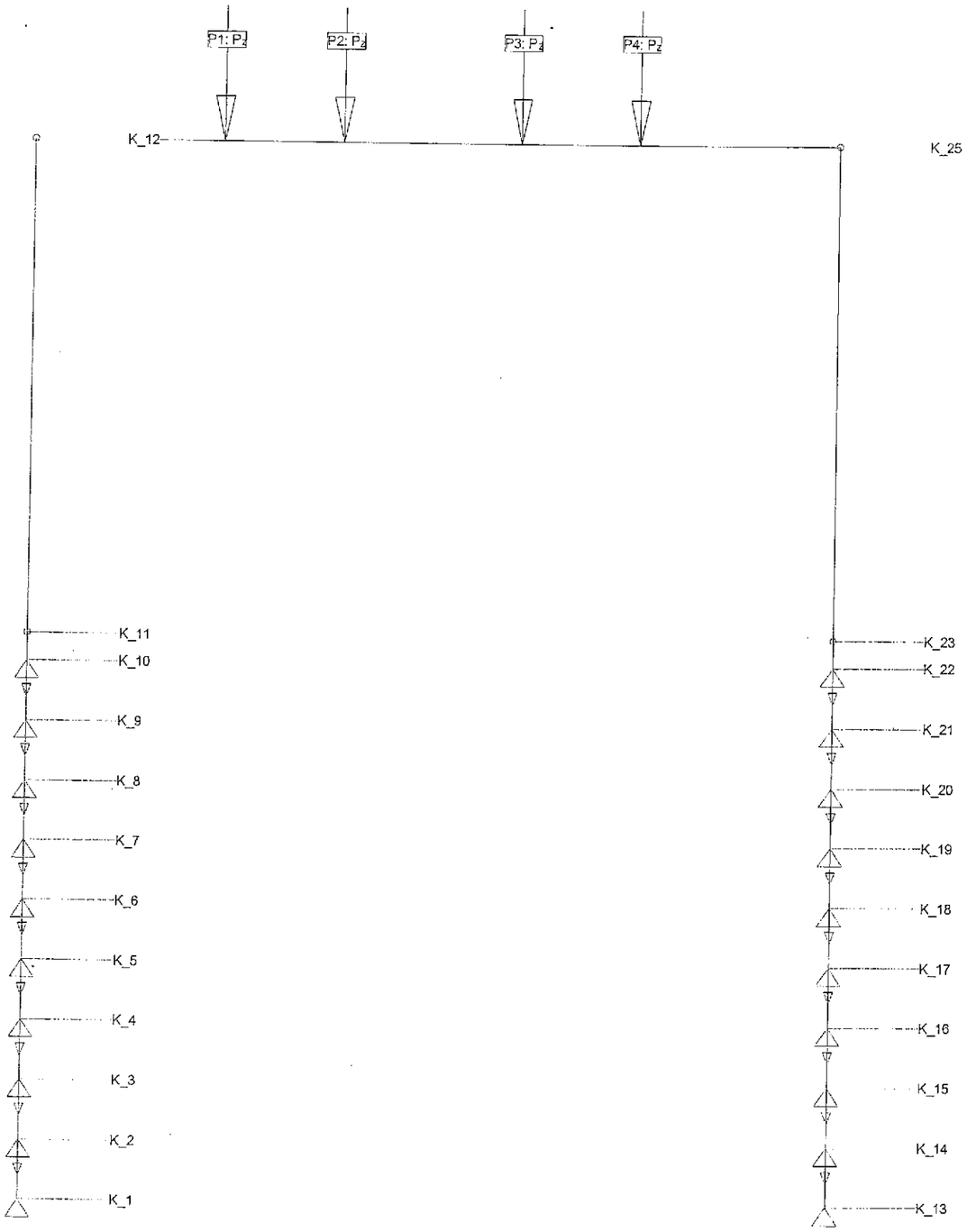
Load case 'L6': EMPUJE TERRENO TRASDÓS

Scale 1 :102.6



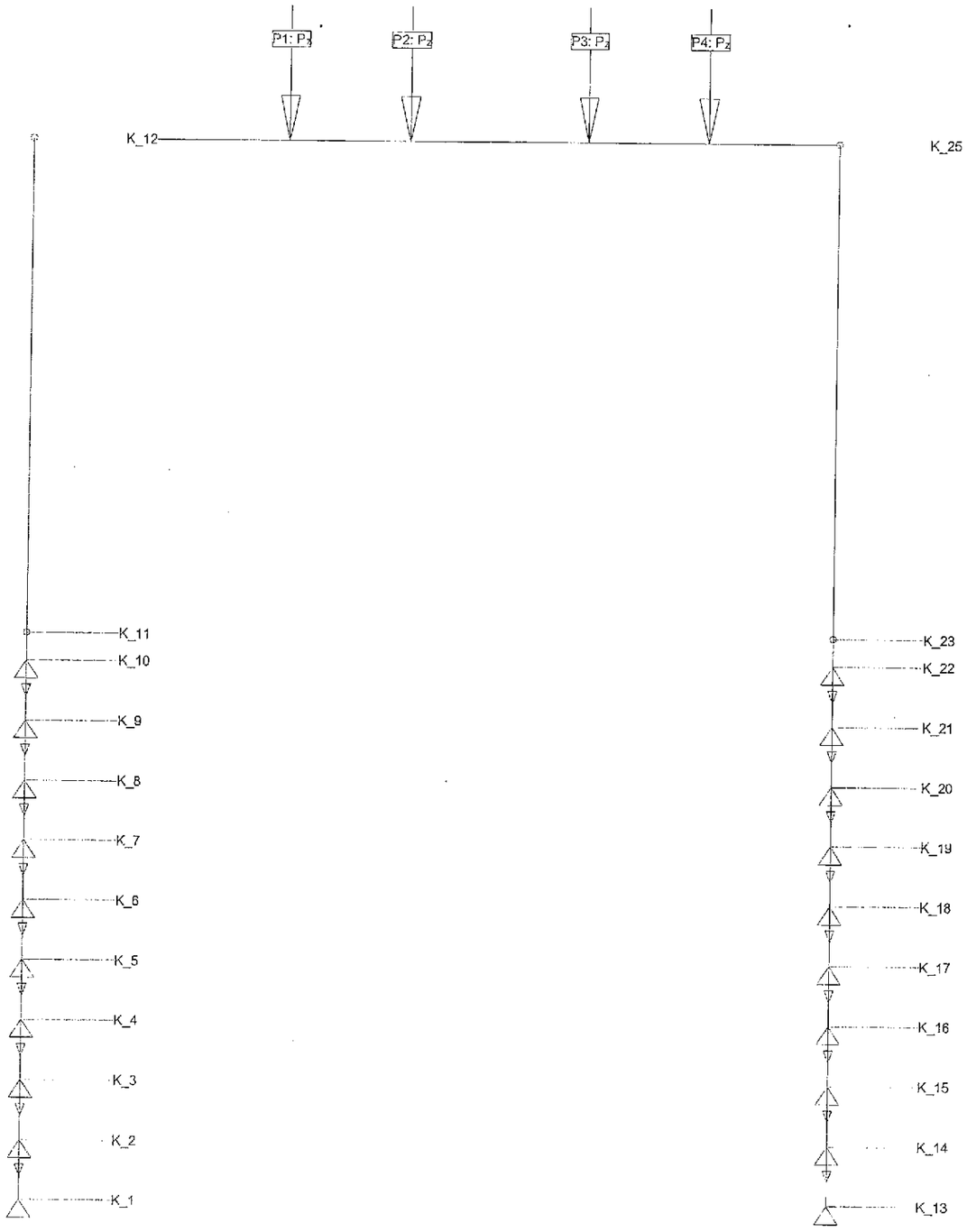
Load case 'L7': CARRO POSICION 1 X1

Scale 1 :92.7



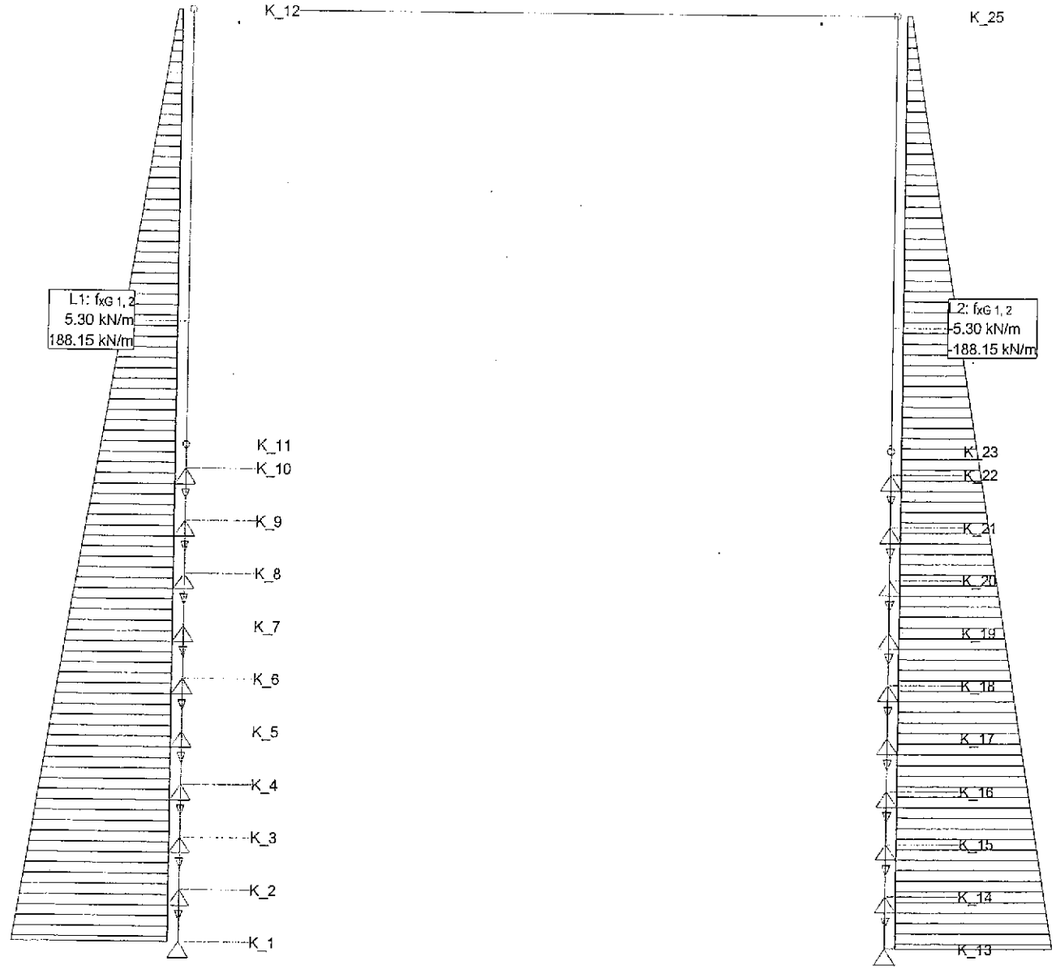
Load case 'L8': CARRO POSICION 2

Scale 1 :92.7



Load case 'L9': EMPUJE REPOSO

Scale 1 :117.1



LIMIT STATE SPECIFICATION Code: Spanish Code EH-91 (Überlagerung gemäss Normtyp EC2)

ACTION: PERMANENTES

Permanent	EG: [1.00] AutoDeadLoad
plus where critical	
either	L2: [1.00] PAVIMENTO MAXIMO
or	L3: [1.00] PAVIMENTO MÍNIMO

ACTION: VARIABLES

Loads	
plus where critical	L4: [1.00] SOBRECARGA DINTEL
plus where critical	L7: [1.00] CARRO POSICION 1 X1
plus permanent	L9: [1.00] EMPUJE REPOSO
Alternative load	
plus where critical	L4: [1.00] SOBRECARGA DINTEL
plus where critical	L8: [1.00] CARRO POSICION 2
plus permanent	L9: [1.00] EMPUJE REPOSO

LIMIT STATE SPECIFICATION: ELU
Verification type: Structural safety (ULS)

Actions		Hazard scenarios	
Nr	Name	1	2
1	PERMANENTES	1.5	1
2	VARIABLES	1.6	1.6

LOAD COMBINATION: FISURACION3
+- EG: [1.00] AutoDeadLoad
+- L3: [1.00] PAVIMENTO MÍNIMO
+- L9: [1.00] EMPUJE REPOSO

LOAD COMBINATION: FISURACIÓN
+- L2: [1.00] PAVIMENTO MAXIMO
+- L4: [0.60] SOBRECARGA DINTEL
+- L9: [1.00] EMPUJE REPOSO
+- EG: [1.00] AutoDeadLoad
+- L7: [1.00] CARRO POSICION 1 X1

LOAD COMBINATION: FISURACION2
+- EG: [1.00] AutoDeadLoad
+- L2: [1.00] PAVIMENTO MAXIMO
+- L4: [1.00] SOBRECARGA DINTEL
+- L8: [1.00] CARRO POSICION 2
+- L9: [1.00] EMPUJE REPOSO

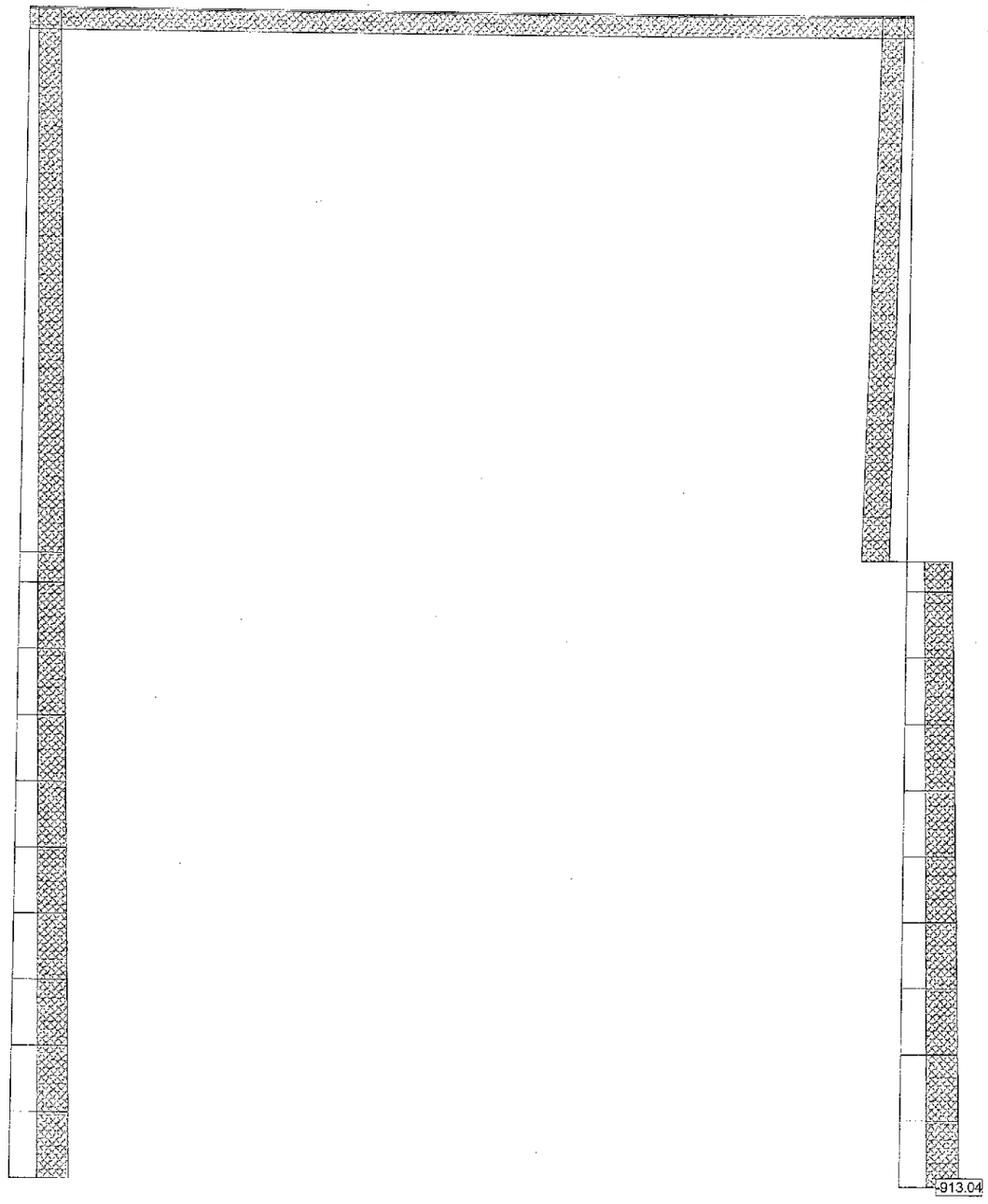
LOAD COMBINATION: DESPLAZMIN
+- EG: [1.00] AutoDeadLoad
+- L3: [1.00] PAVIMENTO MÍNIMO
+- L9: [1.00] EMPUJE REPOSO

LOAD COMBINATION: DESPLAZAMIENTOS
+- L2: [1.00] PAVIMENTO MAXIMO
+- L4: [1.00] SOBRECARGA DINTEL
+- L9: [1.00] EMPUJE REPOSO
+- L8: [1.00] CARRO POSICION 2
+- EG: [1.00] AutoDeadLoad

LOAD COMBINATION: DESPLAZ2
+- EG: [1.00] AutoDeadLoad
+- L2: [1.00] PAVIMENTO MAXIMO
+- L4: [1.00] SOBRECARGA DINTEL
+- L7: [1.00] CARRO POSICION 1 X1
+- L9: [1.00] EMPUJE REPOSO

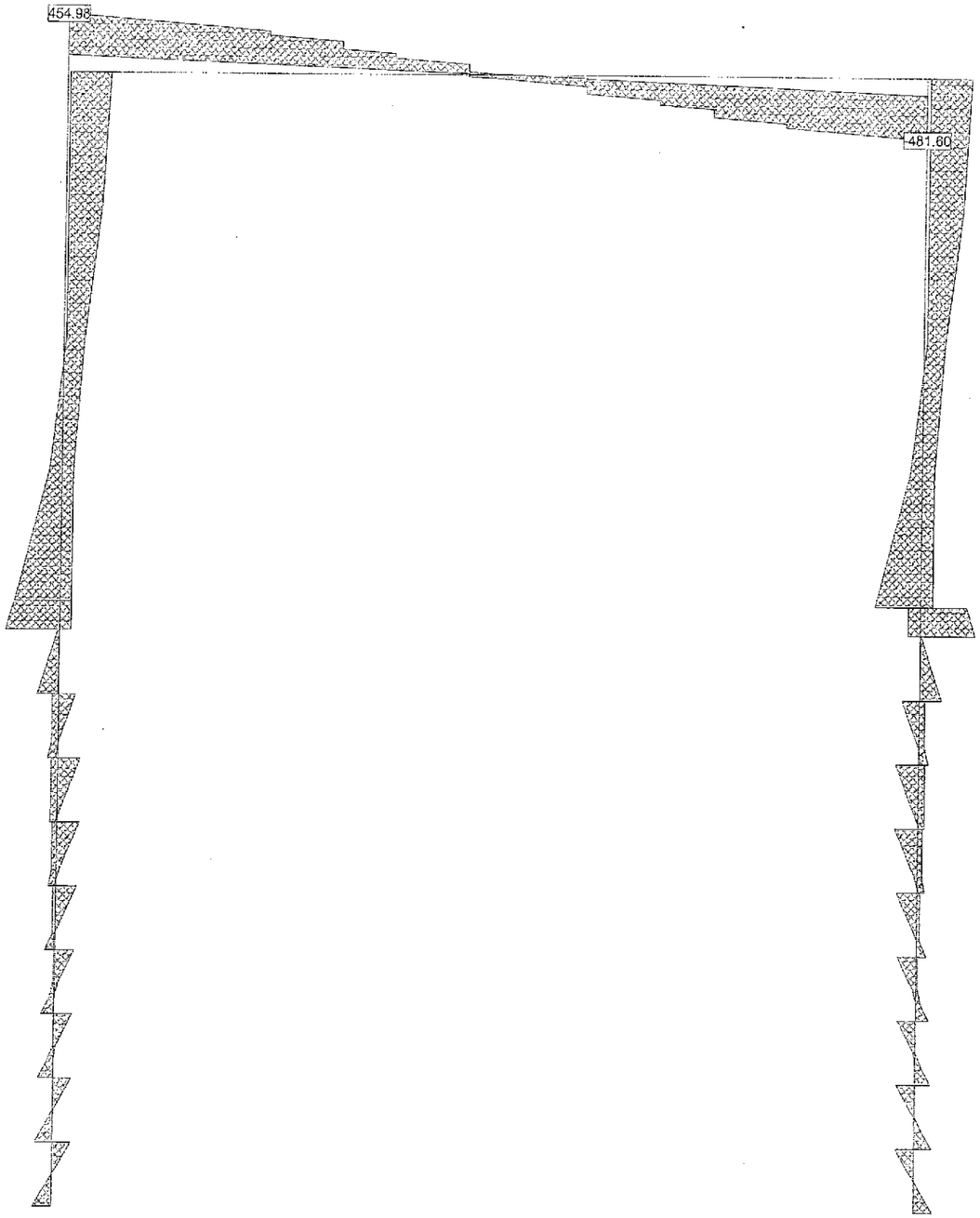
Section force envelopes N [kN] Loads: ELU

Scale 1:87.0



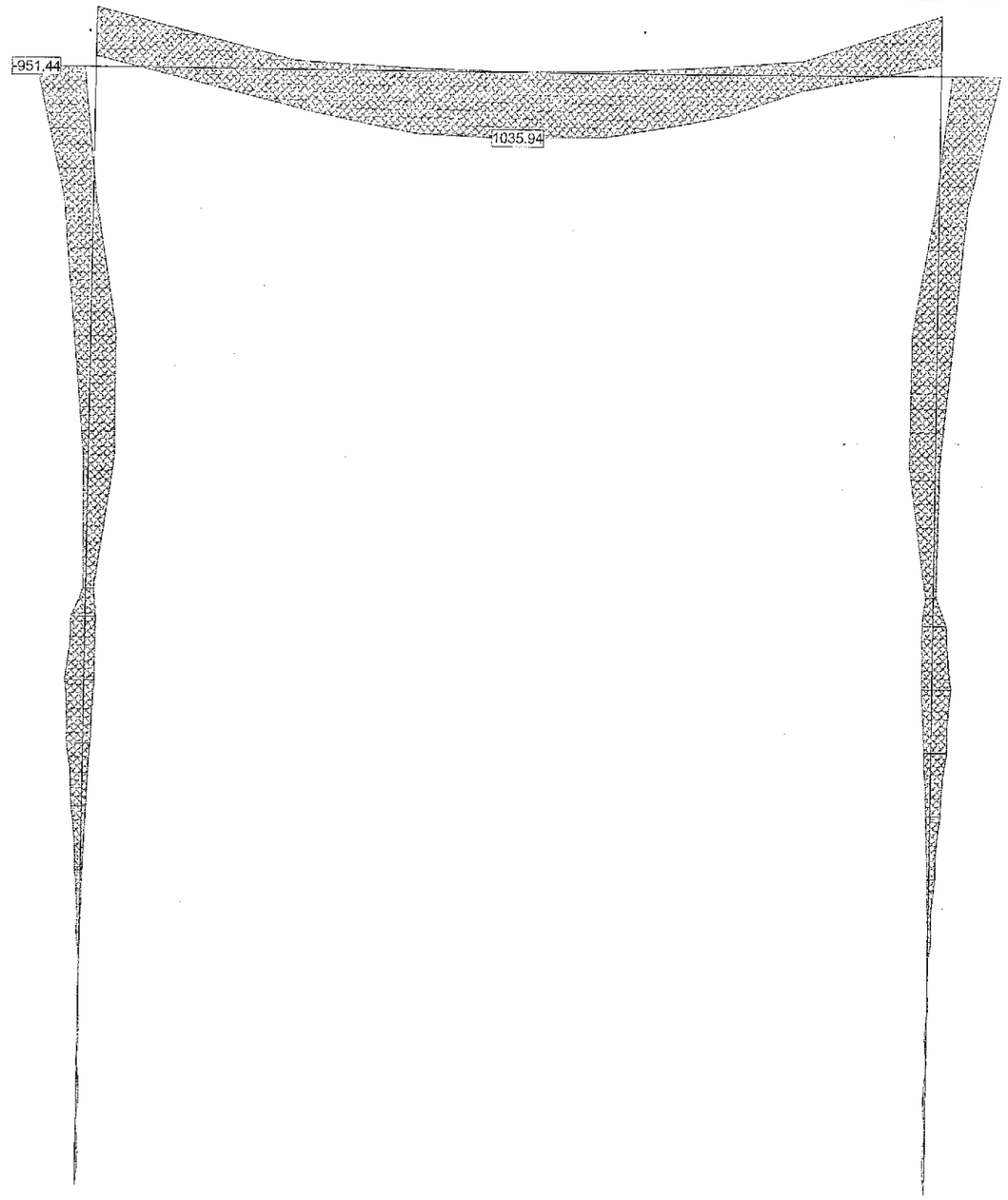
Section force envelopes Vz [kN] Loads: ELU

Scale 1 :89.5



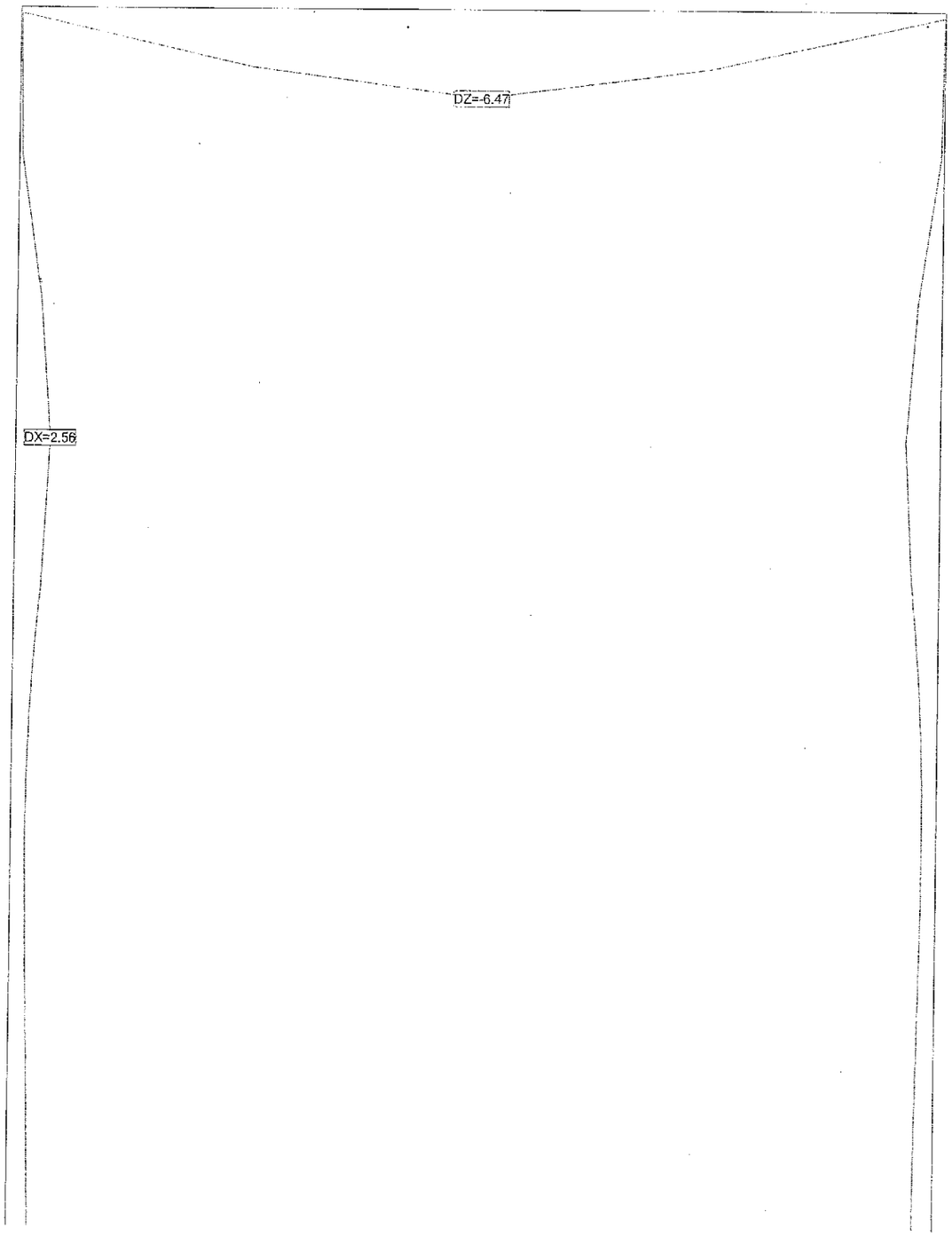
Section force envelopes My [kNm] Loads: ELU

Scale 1 :92.9



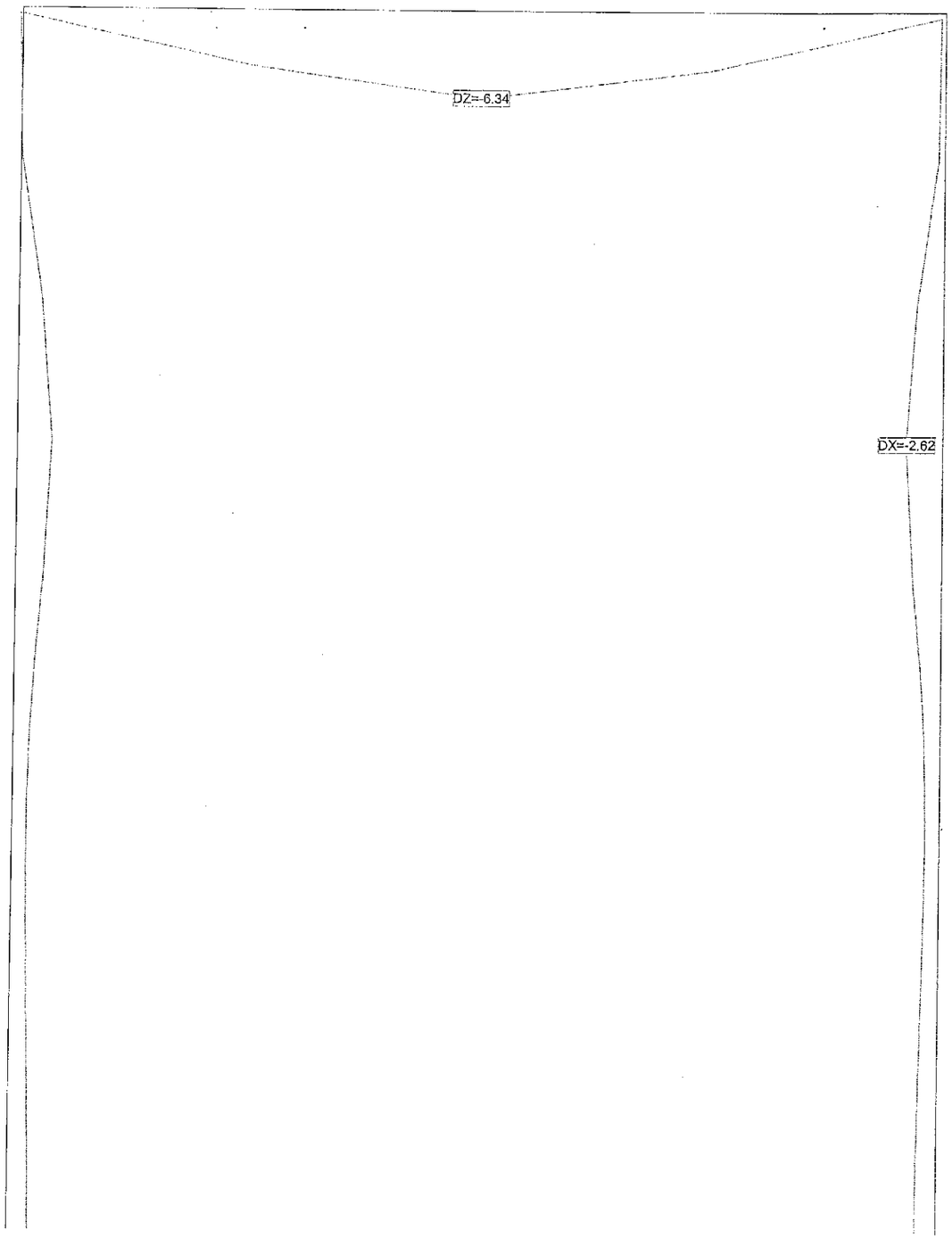
Displacements [mm] for: DESPLAZ2, exaggerated scale: 200.0

Scale 1 :79.5



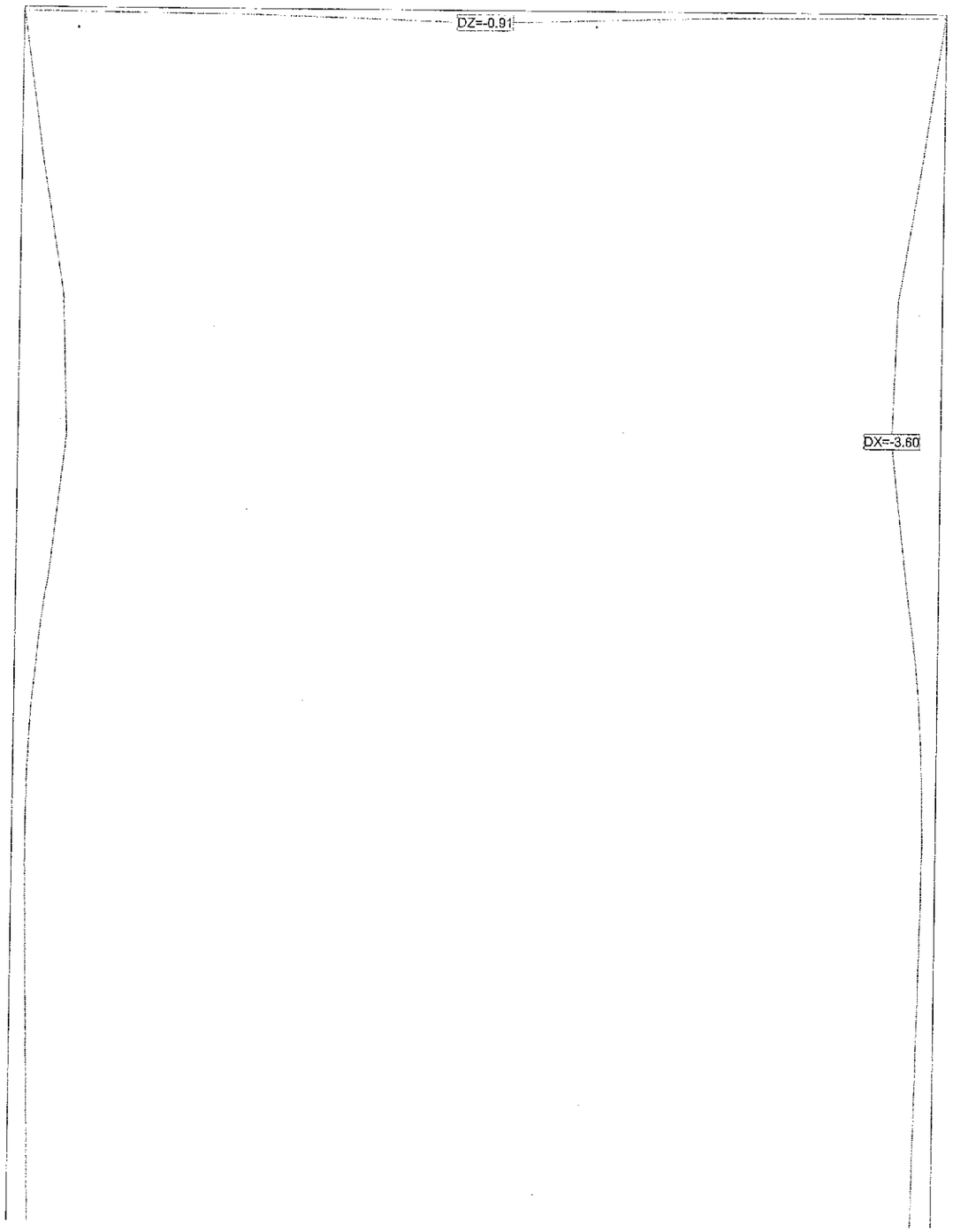
Displacements [mm] for: DESPLAZAMIENTOS, exaggerated scale: 200.0

Scale 1 :79.7



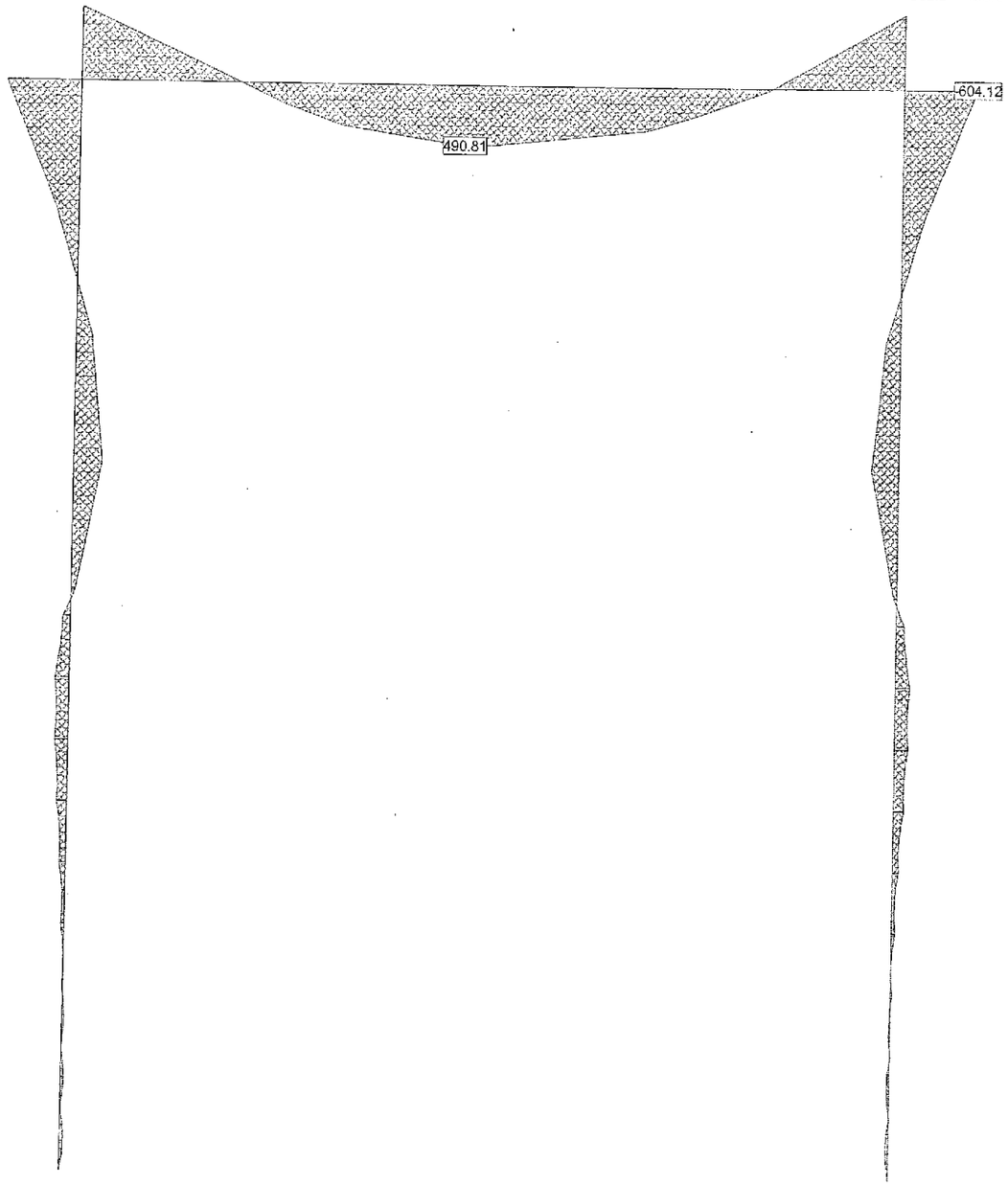
Displacements [mm] for: DESPLAZMIN, exaggerated scale: 200.0

Scale 1 :79.5



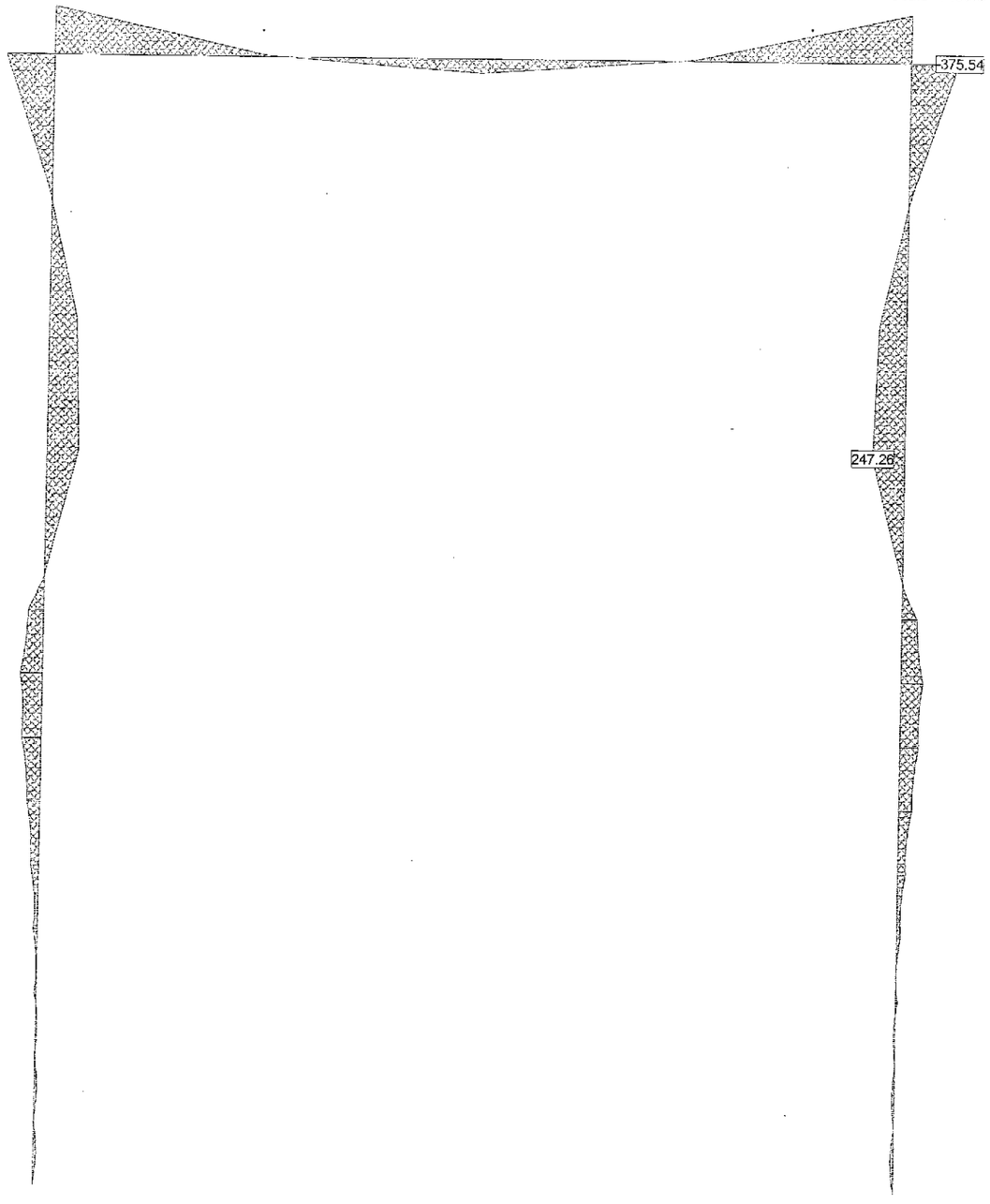
Section force My [kNm] for: FISURACION2

Scale 1 :96.0



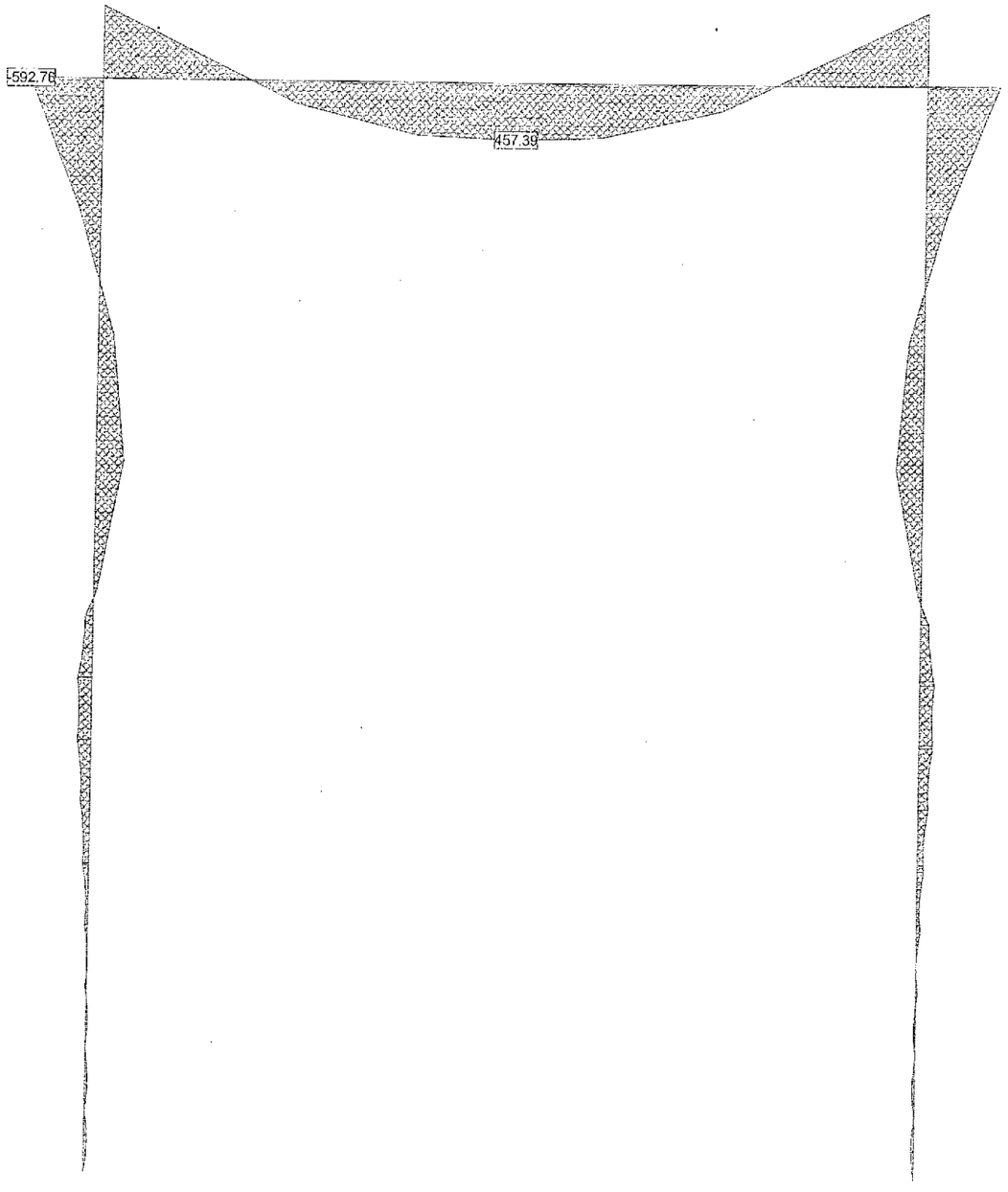
Section force My [kNm] for: FISURACION3

Scale 1 :90.5



Section force My [kNm] for: FISURACIÓN

Scale 1 :95.8



VALTER
valenciana de estructuras

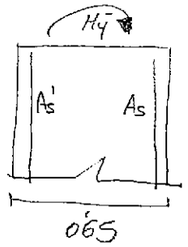
Proyecto UAU / PASO BAJO AUTOPISTA A7

Asunto

DIMENSIONAMIENTO DE LA PANTALLA EMBOTRADA A LA LOSA

$\begin{cases} M_y^- = -970'43 \text{ KN·m} \\ Q = 430 \text{ KN} \\ N = 460 \text{ KN} \end{cases}$

$\begin{cases} M_y^+ = 410 \text{ KN·m} \\ Q = 150 \text{ KN·m} \\ N = 580 \text{ KN·m} \end{cases}$



$A_s' = \phi 25/0'10$

2c ϕ 10/0'20 pul

$A_s = \phi 20/0'20$

(no necesita armadura de cortante)

Fecha

Hoja Nº ..... De

Obra: PANTALLA
Fecha: 10/02/2004
Hora: 9:18:56

Cálculo de secciones a flexión compuesta recta

1 Datos

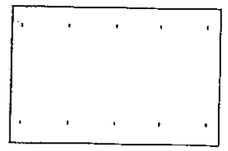
- Materiales

Tipo de hormigón : HA-25
Tipo de acero : B-500-S
fck [MPa] = 25.00
fyk [MPa] = 500.00
γc = 1.50
γs = 1.15

- Sección

Sección : PA
b [m] = 1.00
h [m] = 0.65
r [m] = 0.090

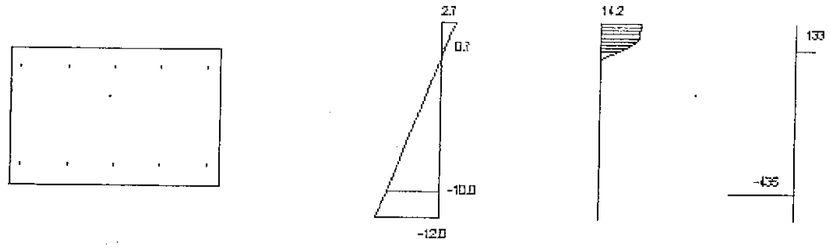
nº barras horizontales = 5
nº barras verticales = 2



2 Comprobación

ϕ [mm] = 20
Nd [kN] = 580
Md [kN·m] = 410

Nu [kN] = 799.1
Mu [kN·m] = 563.1
γ = 1.38



Plano de deformación de agotamiento

x [m] = 0.119

1/r [1/m]·1.E-3 = 22.7

εs ·1.E-3 = 0.7

εi ·1.E-3 = -10.0

Deformación y tensión de armaduras superior e inferior

Profundidad [m]	Deformación ·1.E-3	Tensión [MPa]
0.090	2.7	-133.2
0.560	-12.0	434.8

Óbra: PANTALLA
Fecha: 10/02/2004
Hora: 9:19:23

Cálculo de secciones a flexión compuesta recta

1 Datos

- Materiales

Tipo de hormigón : HA-25

Tipo de acero : B-500-S

fck [MPa] = 25.00

fyk [MPa] = 500.00

γc = 1.50

γs = 1.15

- Sección

Sección : PA

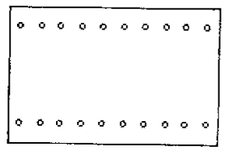
b [m] = 1.00

h [m] = 0.65

r [m] = 0.090

nº barras horizontales = 10

nº barras verticales = 2



2 Comprobación

ϕ [mm] = 25

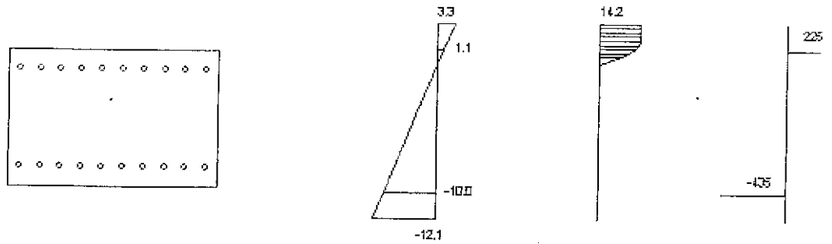
Nd [kN] = 430

Md [kN·m] = 970.43

Nu [kN] = 521.8

Mu [kN·m] = 1177.6

γ = 1.21



Plano de deformación de agotamiento

x [m] = 0.138

1/r [1/m]·1.E-3 = 23.7

εs ·1.E-3 = 1.1

εi ·1.E-3 = -10.0

Deformación y tensión de armaduras superior e inferior

Profundidad [m]	Deformación ·1.E-3	Tensión [MPa]
0.090	3.3	-225.3
0.560	-12.1	434.8

Obra: PASO BAJO AUTOPISTA A-7
Fecha: 10/02/2004
Hora: 9:22:54

Cálculo de secciones a cortante

1 Datos

- Materiales

Tipo de hormigón : HA-25

Tipo de acero : B-500-S

fck [MPa] = 25.00

fyk [MPa] = 500.0

?c = 1.50

?s = 1.15

- Tipo de elemento estructural

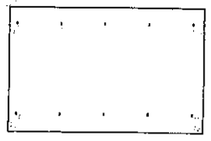
Tipo : elemento sin armadura a cortante

- Sección

Sección : PA

b [m] = 1.00

h [m] = 0.65



2 Comprobación

?l [·1.E-3] = 2.4

Nd [kN] = 0.0

Vu [kN] = 195.1

Obra: PASO BAJO AUTOPISTA A-7
Fecha: 10/02/2004
Hora: 9:22:54

Cálculo de secciones a cortante

1 Datos

- Materiales

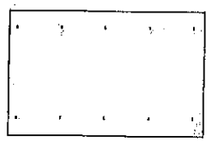
Tipo de hormigón : HA-25
Tipo de acero : B-500-S
fck [MPa] = 25.00
fyk [MPa] = 500.0
?c = 1.50
?s = 1.15

- Tipo de elemento estructural

Tipo : elemento sin armadura a cortante

- Sección

Sección : PA
b [m] = 1.00
h [m] = 0.65



2 Comprobación

?l [·1.E-3] = 2.4
Nd [kN] = 0.0
Vu [kN] = 195.1

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

Obra: PASO BAJO AUTOPISTA A-7
Fecha: 10/02/2004
Hora: 9:21:59

Cálculo de secciones a cortante

1 Datos

- Materiales

Tipo de hormigón : HA-25
Tipo de acero : B-500-S
fck [MPa] = 25.00
fyk [MPa] = 500.0
?c = 1.50
?s = 1.15

- Tipo de elemento estructural

Tipo : elemento con armadura a cortante

- Sección

Sección : PA
b [m] = 1.00
h [m] = 0.65



2 Comprobación

Tipo de armadura: cercos a 90.0º
separación s [m] = 0.20
? [mm] = 10
nº ramas: 4
Area [cm²/m] = 15.7
? [·1.E-3] = 7.55
Inclinación de las bielas ?[º] = 45
Nd [kN] = 0.0
?yd [MPa] = 0

Vu1 [kN] = 2800.0

Vu2 [kN] = 552.4

Vcu [kN] = 238.2

Vsu [kN] = 314.2

- Resistencia a cortante:

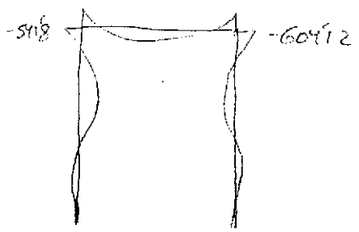
Vu [kN] = 552.4

VALTER
valenciana de estructuras

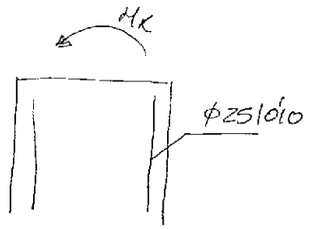
Proyecto LAV | PASO ELEVADO AUTOPISTA A-7

Asunto

COMPROBACIÓN FISURACIÓN



$M_k^- = -604'12$



$w = 0'22mm < 0'3mm$ ✓

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

Obra: PASO BAJO AUTOPISTA A-7
Fecha: 16/02/2004
Hora: 17:42:32

Comprobación del Estado Límite de Servicio de fisuración debido a solicitaciones normales

1 Datos

- Materiales

Tipo de hormigón: HA-25
Tipo de acero: B-500-S
fck [MPa] = 25.00
fyk [MPa] = 500.0

- Ambiente

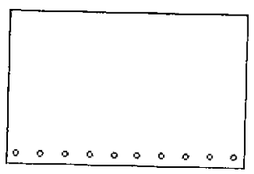
Clase general de exposición : IIa
Clases específicas de exposición :

- Geometría de la sección

Sección : PANTALLA
b [m] = 1.00
h [m] = 0.65

- Armado de la sección

ϕ [mm] = 25



capa	nº barras	Separación [mm]
1	10	42.50

As [cm²] = 49.1
Ac,ef [cm²] = 1.63E3

2 Resultados

Mk [kN·m] = 604

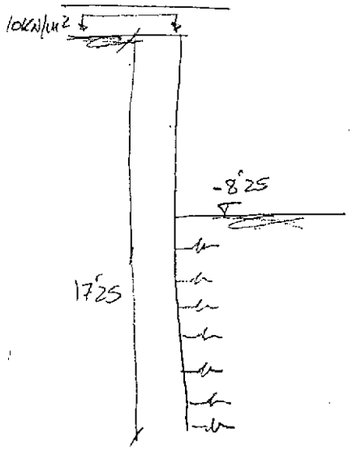
Separación media entre fisuras sm [mm] = 122.0
Deformación media de las armaduras εsm [·1.E-3] = 1.05
Tensión en las armaduras en el instante de fisuración σsr [MPa] = 78.5
Tensión en las armaduras en servicio σs [MPa] = 223.8
Abertura característica de fisura wk [mm] = 0.22

Clase de exposición	wk max [mm]	
	Armado	Pretensado
I	0.4	0.2
IIa, IIb, H	0.3	0.2
IIIa, IIIb, IV, F	0.3	Decompresión
IIIc, Qa, Qb, Qc	0.1	

DIMENSIONAMIENTO DE PANTALLAS EN VOLADIZO

DIMENSIONAMIENTO DE PANTALLAS EN VOLADIZO

• PANTALLA TIPO 1



Terraplén

$\phi = 28°$ $K_0 = 0'53$ $\gamma = 19\ kN/m^3$

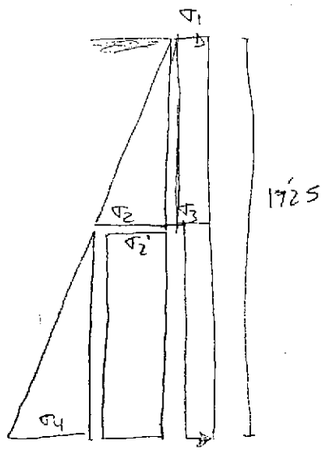
$K_a = 0'36$ $K_{100} = 50.000\ kN/m^3$

Terreno natural

$\phi = 31°$ $K_0 = 0'44$ $\gamma = 20\ kN/m^3$ $K_a = 0'28$

$K_{100} = 120.000\ kN/m^3$

Los anclajes se disponen cada metro.



$\sigma_1 = 0'36 \cdot 10 = 3'6\ kN/m^2$ $\quad \sigma_3 = 2'8\ kN/m^2$

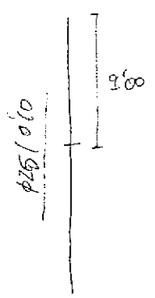
$\sigma_2 = 0'36 \cdot 19 \cdot 8'25 = 56'43\ kN/m^2$

$\sigma_2' = 0'28 \cdot 20 \cdot 8'25 = 46'2\ kN/m^2$

$\sigma_4 = 0'28 \cdot 20 \cdot 9 = 50'4\ kN/m^2$

Si $e = 0'80$ m ⇒ Desplaz. en cabeza = 3'35 cm

Si $e = 1'00$ m ⇒ Desplaz. en cabeza = 2'09 cm

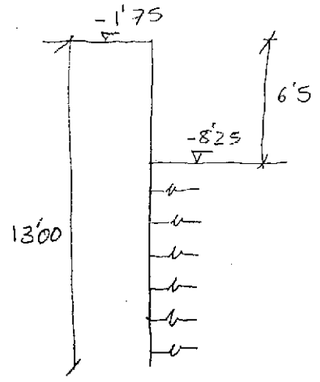


$M^- = 1275\ kN \cdot m$ $\quad N = 294\ kN$ ⇒ φ25 l o'l o

$Q_{máx} = 394\ kN$ ⇒ $c\phi\ 8\ |\ o'20\ |\ o'20$

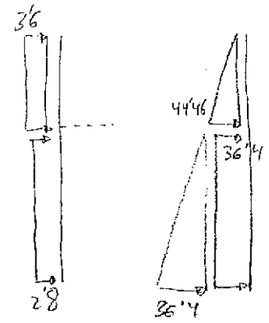
DIMENSIONAMIENTO DE PANTALLAS EN VOLADIZO

• PANTALLA TIPO 2



$e = 0'70$

Empuje activo:



$c = 0'7$ ⇒ Desplaz máx = 1'91 cm

$e = 0'65$ ⇒ " " = 2'20 cm

$M^-_{máx} = 660\ kN \cdot m$ $\quad N = 156\ kN$ ⇒ φ20 l o'l o

$Q_{máx} = 252\ kN$ ⇒ $c\phi\ 8\ |\ o'20\ |\ o'20$

PANTALLA1 KN-m Units PAGE 1
2/16/04 21:34:13

S T A T I C L O A D C A S E S

STATIC CASE	CASE TYPE	SELF WT FACTOR
LOAD1	DEAD	1.0000
EMPUJE	LIVE	0.0000

PANTALLA1 KN-m Units PAGE 2
2/16/04 21:34:13

J O I N T D A T A

JOINT	GLOBAL-X	GLOBAL-Y	GLOBAL-Z	RESTRAINTS	ANGLE-A	ANGLE-B	ANGLE-C
1	0.00000	0.00000	17.25000	0 0 0 0 0 0	0.000	0.000	0.000
2	0.00000	0.00000	8.00000	0 0 0 0 0 0	0.000	0.000	0.000
3	0.00000	0.00000	0.00000	0 0 1 0 0 0	0.000	0.000	0.000
4	0.00000	0.00000	7.00000	0 0 0 0 0 0	0.000	0.000	0.000
5	0.00000	0.00000	6.00000	0 0 0 0 0 0	0.000	0.000	0.000
6	0.00000	0.00000	5.00000	0 0 0 0 0 0	0.000	0.000	0.000
7	0.00000	0.00000	4.00000	0 0 0 0 0 0	0.000	0.000	0.000
8	0.00000	0.00000	3.00000	0 0 0 0 0 0	0.000	0.000	0.000
9	0.00000	0.00000	2.00000	0 0 0 0 0 0	0.000	0.000	0.000
10	0.00000	0.00000	1.00000	0 0 0 0 0 0	0.000	0.000	0.000
12	0.00000	0.00000	9.00000	0 0 0 0 0 0	0.000	0.000	0.000

PANTALLA1 KN-m Units PAGE 3
2/16/04 21:34:13

J O I N T S P R I N G D A T A

JOINT	K-U1	K-U2	K-U3	K-R1	K-R2	K-R3
12	60000.000	60000.000	0.000	0.000	0.000	0.000
3	60000.000	60000.000	0.000	0.000	0.000	0.000
2	120000.000	120000.000	0.000	0.000	0.000	0.000
4	120000.000	120000.000	0.000	0.000	0.000	0.000
5	120000.000	120000.000	0.000	0.000	0.000	0.000
6	120000.000	120000.000	0.000	0.000	0.000	0.000
7	120000.000	120000.000	0.000	0.000	0.000	0.000
8	120000.000	120000.000	0.000	0.000	0.000	0.000
9	120000.000	120000.000	0.000	0.000	0.000	0.000
10	120000.000	120000.000	0.000	0.000	0.000	0.000

PANTALLA1 KN-m Units PAGE 4
2/16/04 21:34:13

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

FRAME	JNT-1	JNT-2	SECTION	ANGLE	RELEASES	SEGMENTS	R1	R2	FACTOR LENGTH
1	12	2	PANTALLA	0.000	000000	2	0.000	0.000	1.000
2	2	4	PANTALLA	0.000	000000	2	0.000	0.000	1.000
3	4	5	PANTALLA	0.000	000000	2	0.000	0.000	1.000
4	5	6	PANTALLA	0.000	000000	2	0.000	0.000	1.000
5	6	7	PANTALLA	0.000	000000	2	0.000	0.000	1.000
6	7	8	PANTALLA	0.000	000000	2	0.000	0.000	1.000
7	8	9	PANTALLA	0.000	000000	2	0.000	0.000	1.000
8	1	12	PANTALLA	0.000	000000	2	0.000	0.000	1.000
9	9	10	PANTALLA	0.000	000000	2	0.000	0.000	1.000
10	10	3	PANTALLA	0.000	000000	2	0.000	0.000	1.000

PANTALLA1 KN-m Units PAGE 5
2/16/04 21:34:13

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

MAT LABEL	MODULUS OF ELASTICITY	POISSON'S RATIO	THERMAL COEFF	WEIGHT PER UNIT VOL	MASS PER UNIT VOL
STEEL	199947979	0.300	1.170E-05	76.820	7.827
CONC	24821128.4	0.200	9.900E-06	23.562	2.401
OTHER	24821128.4	0.200	9.900E-06	23.562	2.401

PANTALLA1 KN-m Units PAGE 6
2/16/04 21:34:13

M A T E R I A L D E S I G N D A T A

MAT LABEL	DESIGN CODE	STEEL FY	CONCRETE FC	REBAR FY	CONCRETE FCS	REBAR FYS
STEEL	S	248211.284				
CONC	C		27579.032	413685.473	27579.032	275790.316
OTHER	N					

PANTALLA1 KN-m Units PAGE 7
2/16/04 21:34:13

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

SECTION LABEL	MAT LABEL	SECTION TYPE	DEPTH	FLANGE WIDTH TOP	FLANGE THICK TOP	WEB THICK	FLANGE WIDTH BOTTOM	FLANGE THICK BOTTOM
PANTALLA	CONC		1.000	1.000	0.000	0.000	0.000	0.000

PANTALLA1 KN-m Units PAGE 8
2/16/04 21:34:13

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

SECTION LABEL	AREA	TORSIONAL INERTIA	MOMENTS OF INERTIA I33	MOMENTS OF INERTIA I22	SHEAR AREAS A2	SHEAR AREAS A3
PANTALLA	1.000	0.141	8.333E-02	8.333E-02	0.833	0.833

PANTALLA1 KN-m Units PAGE 9
2/16/04 21:34:13

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

SECTION LABEL	SECTION MODULII S33	SECTION MODULII S22	PLASTIC MODULII Z33	PLASTIC MODULII Z22	RADII OF GYRATION R33	RADII OF GYRATION R22
PANTALLA	0.167	0.167	0.250	0.250	0.289	0.289

PANTALLA1 KN-m Units PAGE 10
2/16/04 21:34:13

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

SECTION LABEL	TOTAL WEIGHT	TOTAL MASS
PANTALLA	406.438	41.412

PANTALLA1 KN-m Units PAGE 11
2/16/04 21:34:13

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

SECTION LABEL	MAT LABEL	SHELL TYPE	MEMBRANE THICK	BENDING THICK	MATERIAL ANGLE
SSEC1	CONC	4	1.000	1.000	0.000

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

SECTION LABEL	TOTAL WEIGHT	TOTAL MASS
SSEC1	0.000	0.000

F R A M E S P A N D I S T R I B U T E D L O A D S Load Case EMPUJE

FRAME	TYPE	DIRECTION	DISTANCE-A	VALUE-A	DISTANCE-B	VALUE-B
8	FORCE	GLOBAL-X	0.0000	3.6000	1.0000	60.0300
1	FORCE	GLOBAL-X	0.0000	49.0000	1.0000	54.6000
2	FORCE	GLOBAL-X	0.0000	54.6000	1.0000	60.2000
3	FORCE	GLOBAL-X	0.0000	60.2000	1.0000	65.8000
4	FORCE	GLOBAL-X	0.0000	65.8000	1.0000	71.4000
5	FORCE	GLOBAL-X	0.0000	71.4000	1.0000	77.0000
6	FORCE	GLOBAL-X	0.0000	77.0000	1.0000	82.6000
7	FORCE	GLOBAL-X	0.0000	82.6000	1.0000	88.2000
9	FORCE	GLOBAL-X	0.0000	88.2000	1.0000	93.8000
10	FORCE	GLOBAL-X	0.0000	93.8000	1.0000	99.4000

L O A D C O M B I N A T I O N M U L T I P L I E R S

COMBO	TYPE	CASE	FACTOR	TYPE	TITLE
H1	ADD				ELU1
		LOAD1	1,0000	STATIC(DEAD)	
		EMPUJE	1,5000	STATIC(LIVE)	
FLECHAS	ADD				COMB1
		LOAD1	1,0000	STATIC(DEAD)	
		EMPUJE	1,0000	STATIC(LIVE)	

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

JOINT	LOAD	U1	U2	U3	R1	R2	R3
1	LOAD1	0,0000	0,0000	-1,412E-04	0,0000	0,0000	0,0000
1	EMPUJE	0,0209	0,0000	0,0000	0,0000	2,285E-03	0,0000
1	H1	0,0313	0,0000	-1,412E-04	0,0000	3,428E-03	0,0000
1	FLECHAS	0,0209	0,0000	-1,412E-04	0,0000	2,285E-03	0,0000
2	LOAD1	0,0000	0,0000	-1,006E-04	0,0000	0,0000	0,0000
2	EMPUJE	2,025E-03	0,0000	0,0000	0,0000	1,096E-03	0,0000
2	H1	3,038E-03	0,0000	-1,006E-04	0,0000	1,644E-03	0,0000
2	FLECHAS	2,025E-03	0,0000	-1,006E-04	0,0000	1,096E-03	0,0000
3	LOAD1	0,0000	0,0000	0,0000	0,0000	0,0000	0,0000
3	EMPUJE	6,618E-04	0,0000	0,0000	0,0000	-1,106E-04	0,0000
3	H1	9,926E-04	0,0000	0,0000	0,0000	-1,659E-04	0,0000
3	FLECHAS	6,618E-04	0,0000	0,0000	0,0000	-1,106E-04	0,0000
4	LOAD1	0,0000	0,0000	-9,137E-05	0,0000	0,0000	0,0000
4	EMPUJE	1,137E-03	0,0000	0,0000	0,0000	7,115E-04	0,0000
4	H1	1,705E-03	0,0000	-9,137E-05	0,0000	1,067E-03	0,0000
4	FLECHAS	1,137E-03	0,0000	-9,137E-05	0,0000	7,115E-04	0,0000
5	LOAD1	0,0000	0,0000	-8,116E-05	0,0000	0,0000	0,0000
5	EMPUJE	6,119E-04	0,0000	0,0000	0,0000	3,939E-04	0,0000
5	H1	9,178E-04	0,0000	-8,116E-05	0,0000	5,908E-04	0,0000
5	FLECHAS	6,119E-04	0,0000	-8,116E-05	0,0000	3,939E-04	0,0000
6	LOAD1	0,0000	0,0000	-7,001E-05	0,0000	0,0000	0,0000
6	EMPUJE	3,619E-04	0,0000	0,0000	0,0000	1,636E-04	0,0000
6	H1	5,429E-04	0,0000	-7,001E-05	0,0000	2,454E-04	0,0000
6	FLECHAS	3,619E-04	0,0000	-7,001E-05	0,0000	1,636E-04	0,0000
7	LOAD1	0,0000	0,0000	-5,790E-05	0,0000	0,0000	0,0000
7	EMPUJE	2,966E-04	0,0000	0,0000	0,0000	1,584E-05	0,0000
7	H1	4,449E-04	0,0000	-5,790E-05	0,0000	2,376E-05	0,0000
7	FLECHAS	2,966E-04	0,0000	-5,790E-05	0,0000	1,584E-05	0,0000
8	LOAD1	0,0000	0,0000	-4,485E-05	0,0000	0,0000	0,0000
8	EMPUJE	3,398E-04	0,0000	0,0000	0,0000	-6,621E-05	0,0000
8	H1	5,096E-04	0,0000	-4,485E-05	0,0000	-9,931E-05	0,0000
8	FLECHAS	3,398E-04	0,0000	-4,485E-05	0,0000	-6,621E-05	0,0000
9	LOAD1	0,0000	0,0000	-3,085E-05	0,0000	0,0000	0,0000
9	EMPUJE	4,356E-04	0,0000	0,0000	0,0000	-1,027E-04	0,0000
9	H1	6,534E-04	0,0000	-3,085E-05	0,0000	-1,540E-04	0,0000
9	FLECHAS	4,356E-04	0,0000	-3,085E-05	0,0000	-1,027E-04	0,0000
10	LOAD1	0,0000	0,0000	-1,590E-05	0,0000	0,0000	0,0000
10	EMPUJE	5,489E-04	0,0000	0,0000	0,0000	-1,123E-04	0,0000
10	H1	8,233E-04	0,0000	-1,590E-05	0,0000	-1,685E-04	0,0000
10	FLECHAS	5,489E-04	0,0000	-1,590E-05	0,0000	-1,123E-04	0,0000

12	LOAD1	0,0000	0,0000	-1,089E-04	0,0000	0,0000	0,0000
12	EMPUJE	3,329E-03	0,0000	0,0000	0,0000	1,484E-03	0,0000
12	H1	4,994E-03	0,0000	-1,089E-04	0,0000	2,226E-03	0,0000
12	FLECHAS	3,329E-03	0,0000	-1,089E-04	0,0000	1,484E-03	0,0000

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

FRAME	LOAD	LOC	P	V2	V3	T	M2	M3
1	LOAD1							
		0,00	-194,38	0,00	0,00	0,00	0,00	0,00
		5,0E-01	-206,16	0,00	0,00	0,00	0,00	0,00
		1,00	-217,94	0,00	0,00	0,00	0,00	0,00
1	EMPUJE							
		0,00	0,00	-62,72	0,00	0,00	0,00	762,64
		5,0E-01	0,00	-87,92	0,00	0,00	0,00	800,24
		1,00	0,00	-114,52	0,00	0,00	0,00	850,80
1	H1							
		0,00	-194,38	-94,08	0,00	0,00	0,00	1143,96
		5,0E-01	-206,16	-131,88	0,00	0,00	0,00	1200,36
		1,00	-217,94	-171,78	0,00	0,00	0,00	1276,19
1	FLECHAS							
		0,00	-194,38	-62,72	0,00	0,00	0,00	762,64
		5,0E-01	-206,16	-87,92	0,00	0,00	0,00	800,24
		1,00	-217,94	-114,52	0,00	0,00	0,00	850,80
2	LOAD1							
		0,00	-217,94	0,00	0,00	0,00	0,00	0,00
		5,0E-01	-229,73	0,00	0,00	0,00	0,00	0,00
		1,00	-241,51	0,00	0,00	0,00	0,00	0,00
2	EMPUJE							
		0,00	0,00	128,50	0,00	0,00	0,00	850,80
		5,0E-01	0,00	100,50	0,00	0,00	0,00	793,49
		1,00	0,00	71,10	0,00	0,00	0,00	750,53
2	H1							
		0,00	-217,94	192,75	0,00	0,00	0,00	1276,19
		5,0E-01	-229,73	150,75	0,00	0,00	0,00	1190,23
		1,00	-241,51	106,65	0,00	0,00	0,00	1125,80
2	FLECHAS							
		0,00	-217,94	128,50	0,00	0,00	0,00	850,80
		5,0E-01	-229,73	100,50	0,00	0,00	0,00	793,49
		1,00	-241,51	71,10	0,00	0,00	0,00	750,53
3	LOAD1							
		0,00	-241,51	0,00	0,00	0,00	0,00	0,00
		5,0E-01	-253,29	0,00	0,00	0,00	0,00	0,00
		1,00	-265,07	0,00	0,00	0,00	0,00	0,00
3	EMPUJE							
		0,00	0,00	207,53	0,00	0,00	0,00	750,53
		5,0E-01	0,00	176,73	0,00	0,00	0,00	654,40
		1,00	0,00	144,53	0,00	0,00	0,00	574,03
3	H1							
		0,00	-241,51	311,30	0,00	0,00	0,00	1125,80
		5,0E-01	-253,29	265,10	0,00	0,00	0,00	981,61
		1,00	-265,07	216,80	0,00	0,00	0,00	861,04
3	FLECHAS							
		0,00	-241,51	207,53	0,00	0,00	0,00	750,53
		5,0E-01	-253,29	176,73	0,00	0,00	0,00	654,40
		1,00	-265,07	144,53	0,00	0,00	0,00	574,03
4	LOAD1							
		0,00	-265,07	0,00	0,00	0,00	0,00	0,00
		5,0E-01	-276,85	0,00	0,00	0,00	0,00	0,00
		1,00	-288,63	0,00	0,00	0,00	0,00	0,00
4	EMPUJE							
		0,00	0,00	217,96	0,00	0,00	0,00	574,03
		5,0E-01	0,00	184,36	0,00	0,00	0,00	473,39
		1,00	0,00	149,36	0,00	0,00	0,00	389,90

4	H1							
		0,00	-265,07	326,94	0,00	0,00	0,00	861,04
		5,0E-01	-276,85	276,54	0,00	0,00	0,00	710,08
		1,00	-288,63	224,04	0,00	0,00	0,00	584,85
4	FLECHAS							
		0,00	-265,07	217,96	0,00	0,00	0,00	574,03
		5,0E-01	-276,85	184,36	0,00	0,00	0,00	473,39
		1,00	-288,63	149,36	0,00	0,00	0,00	389,90
5	LOAD1							
		0,00	-288,63	0,00	0,00	0,00	0,00	0,00
		5,0E-01	-300,41	0,00	0,00	0,00	0,00	0,00
		1,00	-312,19	0,00	0,00	0,00	0,00	0,00
5	EMPUJE							
		0,00	0,00	192,79	0,00	0,00	0,00	389,90
		5,0E-01	0,00	156,39	0,00	0,00	0,00	302,55
		1,00	0,00	118,59	0,00	0,00	0,00	233,74
5	H1							
		0,00	-288,63	289,19	0,00	0,00	0,00	584,85
		5,0E-01	-300,41	234,59	0,00	0,00	0,00	453,82
		1,00	-312,19	177,89	0,00	0,00	0,00	350,61
5	FLECHAS							
		0,00	-288,63	192,79	0,00	0,00	0,00	389,90
		5,0E-01	-300,41	156,39	0,00	0,00	0,00	302,55
		1,00	-312,19	118,59	0,00	0,00	0,00	233,74
6	LOAD1							
		0,00	-312,19	0,00	0,00	0,00	0,00	0,00
		5,0E-01	-323,97	0,00	0,00	0,00	0,00	0,00
		1,00	-335,75	0,00	0,00	0,00	0,00	0,00
6	EMPUJE							
		0,00	0,00	154,19	0,00	0,00	0,00	233,74
		5,0E-01	0,00	114,99	0,00	0,00	0,00	166,39
		1,00	0,00	74,39	0,00	0,00	0,00	118,98
6	H1							
		0,00	-312,19	231,28	0,00	0,00	0,00	350,61
		5,0E-01	-323,97	172,48	0,00	0,00	0,00	249,58
		1,00	-335,75	111,58	0,00	0,00	0,00	178,48
6	FLECHAS							
		0,00	-312,19	154,19	0,00	0,00	0,00	233,74
		5,0E-01	-323,97	114,99	0,00	0,00	0,00	166,39
		1,00	-335,75	74,39	0,00	0,00	0,00	118,98
7	LOAD1							
		0,00	-335,75	0,00	0,00	0,00	0,00	0,00
		5,0E-01	-347,53	0,00	0,00	0,00	0,00	0,00
		1,00	-359,31	0,00	0,00	0,00	0,00	0,00
7	EMPUJE							
		0,00	0,00	115,16	0,00	0,00	0,00	118,98
		5,0E-01	0,00	73,16	0,00	0,00	0,00	71,85
		1,00	0,00	29,76	0,00	0,00	0,00	46,06
7	H1							
		0,00	-335,75	172,74	0,00	0,00	0,00	178,48
		5,0E-01	-347,53	109,74	0,00	0,00	0,00	107,77
		1,00	-359,31	44,64	0,00	0,00	0,00	69,09
7	FLECHAS							
		0,00	-335,75	115,16	0,00	0,00	0,00	118,98
		5,0E-01	-347,53	73,16	0,00	0,00	0,00	71,85
		1,00	-359,31	29,76	0,00	0,00	0,00	46,06
8	LOAD1							
		0,00	0,00	0,00	0,00	0,00	0,00	0,00
		4,13	-97,19	0,00	0,00	0,00	0,00	0,00
		8,25	-194,38	0,00	0,00	0,00	0,00	0,00
8	EMPUJE							
		0,00	0,00	0,00	0,00	0,00	0,00	0,00
		4,13	0,00	-73,04	0,00	0,00	0,00	110,64
		8,25	0,00	-262,47	0,00	0,00	0,00	762,64
8	H1							
		0,00	0,00	0,00	0,00	0,00	0,00	0,00
		4,13	-97,19	-109,57	0,00	0,00	0,00	165,97
		8,25	-194,38	-393,71	0,00	0,00	0,00	1143,96
8	FLECHAS							

	0,00	0,00	0,00	0,00	0,00	0,00	0,00
	4,13	-97,19	-73,04	0,00	0,00	0,00	110,64
	8,25	-194,38	-262,47	0,00	0,00	0,00	762,64
9	LOAD1						
	0,00	-359,31	0,00	0,00	0,00	0,00	0,00
	5,0E-01	-371,10	0,00	0,00	0,00	0,00	0,00
	1,00	-382,88	0,00	0,00	0,00	0,00	0,00
9	EMPUJE						
	0,00	0,00	82,03	0,00	0,00	0,00	46,06
	5,0E-01	0,00	37,23	0,00	0,00	0,00	16,18
	1,00	0,00	-8,97	0,00	0,00	0,00	9,06
9	H1						
	0,00	-359,31	123,05	0,00	0,00	0,00	69,09
	5,0E-01	-371,10	55,85	0,00	0,00	0,00	24,28
	1,00	-382,88	-13,45	0,00	0,00	0,00	13,59
9	FLECHAS						
	0,00	-359,31	82,03	0,00	0,00	0,00	46,06
	5,0E-01	-371,10	37,23	0,00	0,00	0,00	16,18
	1,00	-382,88	-8,97	0,00	0,00	0,00	9,06
10	LOAD1						
	0,00	-382,88	0,00	0,00	0,00	0,00	0,00
	5,0E-01	-394,66	0,00	0,00	0,00	0,00	0,00
	1,0E+00	-406,44	0,00	0,00	0,00	0,00	0,00
10	EMPUJE						
	0,00	0,00	56,89	0,00	0,00	0,00	9,06
	5,0E-01	0,00	9,29	0,00	0,00	0,00	-7,54
	1,0E+00	0,00	-39,71	0,00	0,00	0,00	0,00
10	H1						
	0,00	-382,88	85,34	0,00	0,00	0,00	13,59
	5,0E-01	-394,66	13,94	0,00	0,00	0,00	-11,32
	1,0E+00	-406,44	-59,56	0,00	0,00	0,00	0,00
10	FLECHAS						
	0,00	-382,88	56,89	0,00	0,00	0,00	9,06
	5,0E-01	-394,66	9,29	0,00	0,00	0,00	-7,54
	1,0E+00	-406,44	-59,56	0,00	0,00	0,00	0,00

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S T A T I C L O A D C A S E S

STATIC CASE	CASE TYPE	SELF WT FACTOR
LOAD1	DEAD	1,0000
EMPUJE	LIVE	0,0000

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J O I N T D A T A

JOINT	GLOBAL-X	GLOBAL-Y	GLOBAL-Z	RESTRAINTS	ANGLE-A	ANGLE-B	ANGLE-C
1	0,00000	0,00000	19,00000	0 0 0 0 0 0	0,000	0,000	0,000
2	0,00000	0,00000	6,00000	0 0 1 0 0 0	0,000	0,000	0,000
3	0,00000	0,00000	12,50000	0 0 0 0 0 0	0,000	0,000	0,000
9	0,00000	0,00000	12,00000	0 0 0 0 0 0	0,000	0,000	0,000
10	0,00000	0,00000	11,00000	0 0 0 0 0 0	0,000	0,000	0,000
11	0,00000	0,00000	10,00000	0 0 0 0 0 0	0,000	0,000	0,000
12	0,00000	0,00000	9,00000	0 0 0 0 0 0	0,000	0,000	0,000
13	0,00000	0,00000	8,00000	0 0 0 0 0 0	0,000	0,000	0,000
14	0,00000	0,00000	7,00000	0 0 0 0 0 0	0,000	0,000	0,000

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J O I N T S P R I N G D A T A

JOINT	K-U1	K-U2	K-U3	K-R1	K-R2	K-R3
13	120000,000	120000,000	0,000	0,000	0,000	0,000
14	120000,000	120000,000	0,000	0,000	0,000	0,000
12	120000,000	120000,000	0,000	0,000	0,000	0,000
11	120000,000	120000,000	0,000	0,000	0,000	0,000
9	85000,000	85000,000	0,000	0,000	0,000	0,000
10	120000,000	120000,000	0,000	0,000	0,000	0,000
2	60000,000	60000,000	0,000	0,000	0,000	0,000
3	25000,000	25000,000	0,000	0,000	0,000	0,000

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

FRAME	JNT-1	JNT-2	SECTION	ANGLE	RELEASES	SEGMENTS	R1	R2	FACTOR	LENGTH
1	14	2	PANTALLA	0,000	000000	2	0,000	0,000	1,000	1,000
3	3	9	PANTALLA	0,000	000000	2	0,000	0,000	1,000	0,500
5	1	3	PANTALLA	0,000	000000	2	0,000	0,000	1,000	6,500
9	9	10	PANTALLA	0,000	000000	2	0,000	0,000	1,000	1,000
10	10	11	PANTALLA	0,000	000000	2	0,000	0,000	1,000	1,000
11	11	12	PANTALLA	0,000	000000	2	0,000	0,000	1,000	1,000
12	12	13	PANTALLA	0,000	000000	2	0,000	0,000	1,000	1,000
13	13	14	PANTALLA	0,000	000000	2	0,000	0,000	1,000	1,000

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MATERIAL PROPERTY DATA

MAT LABEL	MODULUS OF ELASTICITY	POISSON'S RATIO	THERMAL COEFF	WEIGHT PER UNIT VOL	MASS PER UNIT VOL
STEEL	199947979	0,300	1,170E-05	76,820	7,827
CONC	24821128,4	0,200	9,900E-06	23,562	2,401
OTHER	24821128,4	0,200	9,900E-06	23,562	2,401

MATERIAL DESIGN DATA

MAT LABEL	DESIGN CODE	STEEL FY	CONCRETE FC	REBAR FY	CONCRETE FCS	REBAR FYS
STEEL	S 248211,284					
CONC	C		27579,032	413685,473	27579,032	275790,316
OTHER	N					

FRAME SECTION PROPERTY DATA

SECTION LABEL	MAT LABEL	SECTION TYPE	DEPTH	FLANGE WIDTH TOP	FLANGE THICK TOP	WEB THICK	FLANGE WIDTH BOTTOM	FLANGE THICK BOTTOM
PANTALLA	CONC		0,700	1,000	0,000	0,000	0,000	0,000

FRAME SECTION PROPERTY DATA

SECTION LABEL	AREA	TORSIONAL INERTIA	MOMENTS OF INERTIA I33	MOMENTS OF INERTIA I22	SHEAR AREAS A2	SHEAR AREAS A3
PANTALLA	0,700	6,492E-02	2,858E-02	5,833E-02	0,583	0,583

FRAME SECTION PROPERTY DATA

SECTION LABEL	SECTION MODULII S33	SECTION MODULII S22	PLASTIC MODULII Z33	PLASTIC MODULII Z22	RADII OF GYRATION R33	RADII OF GYRATION R22
PANTALLA	8,167E-02	0,117	0,123	0,175	0,202	0,289

FRAME SECTION PROPERTY DATA

SECTION LABEL	TOTAL WEIGHT	TOTAL MASS
PANTALLA	214,411	21,846

SHELL SECTION PROPERTY DATA

SECTION LABEL	MAT LABEL	SHELL TYPE	MEMBRANE THICK	BENDING THICK	MATERIAL ANGLE
SSEC1	CONC	4	1,000	1,000	0,000

SHELL SECTION PROPERTY DATA

SECTION LABEL	TOTAL WEIGHT	TOTAL MASS
SSEC1	0,000	0,000

FRAME SPAN DISTRIBUTED LOADS Load Case EMPUJE

FRAME	TYPE	DIRECTION	DISTANCE-A	VALUE-A	DISTANCE-B	VALUE-B
5	FORCE	GLOBAL-X	0,0000	3,6000	1,0000	48,0600

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L O A D C O M B I N A T I O N M U L T I P L I E R S

COMBO	TYPE	CASE	FACTOR	TYPE	TITLE
H1	ADD				ELU1
		LOAD1	1,0000	STATIC(DEAD)	
		EMPUJE	1,5000	STATIC(LIVE)	
H2	ADD				ELS
		LOAD1	1,0000	STATIC(DEAD)	
		EMPUJE	1,0000	STATIC(LIVE)	
FLECHAS	ADD				COMB1
		EMPUJE	1,0000	STATIC(LIVE)	
		LOAD1	1,0000	STATIC(DEAD)	

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

JOINT	LOAD	U1	U2	U3	R1	R2	R3
1	LOAD1	0,0000	0,0000	-8,021E-05	0,0000	0,0000	0,0000
1	EMPUJE	0,0191	0,0000	0,0000	0,0000	2,728E-03	0,0000
1	H1	0,0287	0,0000	-8,021E-05	0,0000	4,092E-03	0,0000
1	H2	0,0191	0,0000	-8,021E-05	0,0000	2,728E-03	0,0000
1	FLECHAS	0,0191	0,0000	-8,021E-05	0,0000	2,728E-03	0,0000
2	LOAD1	0,0000	0,0000	0,0000	0,0000	0,0000	0,0000
2	EMPUJE	-2,217E-04	0,0000	0,0000	0,0000	-6,383E-05	0,0000
2	H1	-3,326E-04	0,0000	0,0000	0,0000	-9,575E-05	0,0000
2	H2	-2,217E-04	0,0000	0,0000	0,0000	-6,383E-05	0,0000
2	FLECHAS	-2,217E-04	0,0000	0,0000	0,0000	-6,383E-05	0,0000
3	LOAD1	0,0000	0,0000	-6,016E-05	0,0000	0,0000	0,0000
3	EMPUJE	2,617E-03	0,0000	0,0000	0,0000	1,779E-03	0,0000
3	H1	3,925E-03	0,0000	-6,016E-05	0,0000	2,668E-03	0,0000
3	H2	2,617E-03	0,0000	-6,016E-05	0,0000	1,779E-03	0,0000
3	FLECHAS	2,617E-03	0,0000	-6,016E-05	0,0000	1,779E-03	0,0000
9	LOAD1	0,0000	0,0000	-5,696E-05	0,0000	0,0000	0,0000
9	EMPUJE	1,790E-03	0,0000	0,0000	0,0000	1,487E-03	0,0000
9	H1	2,686E-03	0,0000	-5,696E-05	0,0000	2,230E-03	0,0000
9	H2	1,790E-03	0,0000	-5,696E-05	0,0000	1,487E-03	0,0000
9	FLECHAS	1,790E-03	0,0000	-5,696E-05	0,0000	1,487E-03	0,0000
10	LOAD1	0,0000	0,0000	-4,984E-05	0,0000	0,0000	0,0000
10	EMPUJE	6,108E-04	0,0000	0,0000	0,0000	9,009E-04	0,0000
10	H1	9,163E-04	0,0000	-4,984E-05	0,0000	1,351E-03	0,0000
10	H2	6,108E-04	0,0000	-4,984E-05	0,0000	9,009E-04	0,0000
10	FLECHAS	6,108E-04	0,0000	-4,984E-05	0,0000	9,009E-04	0,0000
11	LOAD1	0,0000	0,0000	-4,177E-05	0,0000	0,0000	0,0000
11	EMPUJE	-2,324E-05	0,0000	0,0000	0,0000	4,370E-04	0,0000
11	H1	-3,486E-05	0,0000	-4,177E-05	0,0000	6,554E-04	0,0000
11	H2	-2,324E-05	0,0000	-4,177E-05	0,0000	4,370E-04	0,0000
11	FLECHAS	-2,324E-05	0,0000	-4,177E-05	0,0000	4,370E-04	0,0000
12	LOAD1	0,0000	0,0000	-3,275E-05	0,0000	0,0000	0,0000
12	EMPUJE	-2,799E-04	0,0000	0,0000	0,0000	1,445E-04	0,0000
12	H1	-4,198E-04	0,0000	-3,275E-05	0,0000	2,167E-04	0,0000
12	H2	-2,799E-04	0,0000	-3,275E-05	0,0000	1,445E-04	0,0000
12	FLECHAS	-2,799E-04	0,0000	-3,275E-05	0,0000	1,445E-04	0,0000
13	LOAD1	0,0000	0,0000	-2,278E-05	0,0000	0,0000	0,0000
13	EMPUJE	-3,265E-04	0,0000	0,0000	0,0000	-2,256E-06	0,0000
13	H1	-4,897E-04	0,0000	-2,278E-05	0,0000	-3,383E-06	0,0000
13	H2	-3,265E-04	0,0000	-2,278E-05	0,0000	-2,256E-06	0,0000
13	FLECHAS	-3,265E-04	0,0000	-2,278E-05	0,0000	-2,256E-06	0,0000
14	LOAD1	0,0000	0,0000	-1,187E-05	0,0000	0,0000	0,0000
14	EMPUJE	-2,847E-04	0,0000	0,0000	0,0000	-5,446E-05	0,0000
14	H1	-4,270E-04	0,0000	-1,187E-05	0,0000	-8,169E-05	0,0000
14	H2	-2,847E-04	0,0000	-1,187E-05	0,0000	-5,446E-05	0,0000
14	FLECHAS	-2,847E-04	0,0000	-1,187E-05	0,0000	-5,446E-05	0,0000

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

FRAME	LOAD	LOC	P	V2	V3	T	M2	M3
1	LOAD1							
		0,00	-197,92	0,00	0,00	0,00	0,00	0,00
		5,0E-01	-206,16	0,00	0,00	0,00	0,00	0,00
		1,00	-214,41	0,00	0,00	0,00	0,00	0,00
1	EMPUJE							
		0,00	0,00	13,30	0,00	0,00	0,00	13,30
		5,0E-01	0,00	13,30	0,00	0,00	0,00	6,65
		1,00	0,00	13,30	0,00	0,00	0,00	0,00
1	H1							
		0,00	-197,92	19,96	0,00	0,00	0,00	19,96
		5,0E-01	-206,16	19,96	0,00	0,00	0,00	9,98
		1,00	-214,41	19,96	0,00	0,00	0,00	0,00
1	H2							
		0,00	-197,92	13,30	0,00	0,00	0,00	13,30
		5,0E-01	-206,16	13,30	0,00	0,00	0,00	6,65
		1,00	-214,41	13,30	0,00	0,00	0,00	0,00
1	FLECHAS							
		0,00	-197,92	13,30	0,00	0,00	0,00	13,30
		5,0E-01	-206,16	13,30	0,00	0,00	0,00	6,65
		1,00	-214,41	13,30	0,00	0,00	0,00	0,00
3	LOAD1							
		0,00	-107,21	0,00	0,00	0,00	0,00	0,00
		2,5E-01	-111,33	0,00	0,00	0,00	0,00	0,00
		5,0E-01	-115,45	0,00	0,00	0,00	0,00	0,00
3	EMPUJE							
		0,00	0,00	-102,48	0,00	0,00	0,00	389,12
		2,5E-01	0,00	-102,48	0,00	0,00	0,00	414,74
		5,0E-01	0,00	-102,48	0,00	0,00	0,00	440,36
3	H1							
		0,00	-107,21	-153,71	0,00	0,00	0,00	583,68
		2,5E-01	-111,33	-153,71	0,00	0,00	0,00	622,11
		5,0E-01	-115,45	-153,71	0,00	0,00	0,00	660,54
3	H2							
		0,00	-107,21	-102,48	0,00	0,00	0,00	389,12
		2,5E-01	-111,33	-102,48	0,00	0,00	0,00	414,74
		5,0E-01	-115,45	-102,48	0,00	0,00	0,00	440,36
3	FLECHAS							
		0,00	-107,21	-102,48	0,00	0,00	0,00	389,12
		2,5E-01	-111,33	-102,48	0,00	0,00	0,00	414,74
		5,0E-01	-115,45	-102,48	0,00	0,00	0,00	440,36
5	LOAD1							
		0,00	0,00	0,00	0,00	0,00	0,00	0,00
		3,25	-53,60	0,00	0,00	0,00	0,00	0,00
		6,50	-107,21	0,00	0,00	0,00	0,00	0,00
5	EMPUJE							
		0,00	0,00	0,00	0,00	0,00	0,00	0,00
		3,25	0,00	-47,82	0,00	0,00	0,00	58,15
		6,50	0,00	-167,90	0,00	0,00	0,00	389,12
5	H1							
		0,00	0,00	0,00	0,00	0,00	0,00	0,00
		3,25	-53,60	-71,74	0,00	0,00	0,00	87,22
		6,50	-107,21	-251,84	0,00	0,00	0,00	583,68
5	H2							
		0,00	0,00	0,00	0,00	0,00	0,00	0,00

3,25	-53,60	-47,82	0,00	0,00	0,00	58,15
6,50	-107,21	-167,90	0,00	0,00	0,00	389,12
5 FLECHAS						
0,00	0,00	0,00	0,00	0,00	0,00	0,00
3,25	-53,60	-47,82	0,00	0,00	0,00	58,15
6,50	-107,21	-167,90	0,00	0,00	0,00	389,12
9 LOAD1						
0,00	-115,45	0,00	0,00	0,00	0,00	0,00
5,0E-01	-123,70	0,00	0,00	0,00	0,00	0,00
1,00	-131,95	0,00	0,00	0,00	0,00	0,00
9 EMPUJE						
0,00	0,00	49,71	0,00	0,00	0,00	440,36
5,0E-01	0,00	49,71	0,00	0,00	0,00	415,50
1,00	0,00	49,71	0,00	0,00	0,00	390,65
9 H1						
0,00	-115,45	74,57	0,00	0,00	0,00	660,54
5,0E-01	-123,70	74,57	0,00	0,00	0,00	623,25
1,00	-131,95	74,57	0,00	0,00	0,00	585,97
9 H2						
0,00	-115,45	49,71	0,00	0,00	0,00	440,36
5,0E-01	-123,70	49,71	0,00	0,00	0,00	415,50
1,00	-131,95	49,71	0,00	0,00	0,00	390,65
9 FLECHAS						
0,00	-115,45	49,71	0,00	0,00	0,00	440,36
5,0E-01	-123,70	49,71	0,00	0,00	0,00	415,50
1,00	-131,95	49,71	0,00	0,00	0,00	390,65
10 LOAD1						
0,00	-131,95	0,00	0,00	0,00	0,00	0,00
5,0E-01	-140,19	0,00	0,00	0,00	0,00	0,00
1,0E+00	-148,44	0,00	0,00	0,00	0,00	0,00
10 EMPUJE						
0,00	0,00	123,01	0,00	0,00	0,00	390,65
5,0E-01	0,00	123,01	0,00	0,00	0,00	329,14
1,0E+00	0,00	123,01	0,00	0,00	0,00	267,63
10 H1						
0,00	-131,95	184,52	0,00	0,00	0,00	585,97
5,0E-01	-140,19	184,52	0,00	0,00	0,00	493,71
1,0E+00	-148,44	184,52	0,00	0,00	0,00	401,45
10 H2						
0,00	-131,95	123,01	0,00	0,00	0,00	390,65
5,0E-01	-140,19	123,01	0,00	0,00	0,00	329,14
1,0E+00	-148,44	123,01	0,00	0,00	0,00	267,63
10 FLECHAS						
0,00	-131,95	123,01	0,00	0,00	0,00	390,65
5,0E-01	-140,19	123,01	0,00	0,00	0,00	329,14
1,0E+00	-148,44	123,01	0,00	0,00	0,00	267,63
11 LOAD1						
0,00	-148,44	0,00	0,00	0,00	0,00	0,00
5,0E-01	-156,68	0,00	0,00	0,00	0,00	0,00
1,00	-164,93	0,00	0,00	0,00	0,00	0,00
11 EMPUJE						
0,00	0,00	120,23	0,00	0,00	0,00	267,63
5,0E-01	0,00	120,23	0,00	0,00	0,00	207,52
1,00	0,00	120,23	0,00	0,00	0,00	147,41
11 H1						
0,00	-148,44	180,34	0,00	0,00	0,00	401,45
5,0E-01	-156,68	180,34	0,00	0,00	0,00	311,28
1,00	-164,93	180,34	0,00	0,00	0,00	221,11
11 H2						
0,00	-148,44	120,23	0,00	0,00	0,00	267,63
5,0E-01	-156,68	120,23	0,00	0,00	0,00	207,52
1,00	-164,93	120,23	0,00	0,00	0,00	147,41
11 FLECHAS						
0,00	-148,44	120,23	0,00	0,00	0,00	267,63
5,0E-01	-156,68	120,23	0,00	0,00	0,00	207,52
1,00	-164,93	120,23	0,00	0,00	0,00	147,41
12 LOAD1						
0,00	-164,93	0,00	0,00	0,00	0,00	0,00
5,0E-01	-173,18	0,00	0,00	0,00	0,00	0,00

1,00	-181,42	0,00	0,00	0,00	0,00	0,00
12 EMPUJE						
0,00	0,00	86,64	0,00	0,00	0,00	147,41
5,0E-01	0,00	86,64	0,00	0,00	0,00	104,09
1,00	0,00	86,64	0,00	0,00	0,00	60,77
12 H1						
0,00	-164,93	129,96	0,00	0,00	0,00	221,11
5,0E-01	-173,18	129,96	0,00	0,00	0,00	156,13
1,00	-181,42	129,96	0,00	0,00	0,00	91,15
12 H2						
0,00	-164,93	86,64	0,00	0,00	0,00	147,41
5,0E-01	-173,18	86,64	0,00	0,00	0,00	104,09
1,00	-181,42	86,64	0,00	0,00	0,00	60,77
12 FLECHAS						
0,00	-164,93	86,64	0,00	0,00	0,00	147,41
5,0E-01	-173,18	86,64	0,00	0,00	0,00	104,09
1,00	-181,42	86,64	0,00	0,00	0,00	60,77
13 LOAD1						
0,00	-181,42	0,00	0,00	0,00	0,00	0,00
5,0E-01	-189,67	0,00	0,00	0,00	0,00	0,00
1,0E+00	-197,92	0,00	0,00	0,00	0,00	0,00
13 EMPUJE						
0,00	0,00	47,46	0,00	0,00	0,00	60,77
5,0E-01	0,00	47,46	0,00	0,00	0,00	37,04
1,0E+00	0,00	47,46	0,00	0,00	0,00	13,30
13 H1						
0,00	-181,42	71,20	0,00	0,00	0,00	91,15
5,0E-01	-189,67	71,20	0,00	0,00	0,00	55,55
1,0E+00	-197,92	71,20	0,00	0,00	0,00	19,96
13 H2						
0,00	-181,42	47,46	0,00	0,00	0,00	60,77
5,0E-01	-189,67	47,46	0,00	0,00	0,00	37,04
1,0E+00	-197,92	47,46	0,00	0,00	0,00	13,30
13 FLECHAS						
0,00	-181,42	47,46	0,00	0,00	0,00	60,77
5,0E-01	-189,67	47,46	0,00	0,00	0,00	37,04
1,0E+00	-197,92	47,46	0,00	0,00	0,00	13,30

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

Obra: PANTALLA
Fecha: 10/02/2004
Hora: 10:26:35

Cálculo de secciones a flexión compuesta recta

1 Datos

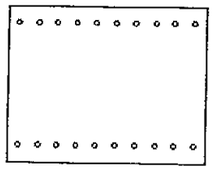
- Materiales

Tipo de hormigón : HA-25
Tipo de acero : B-500-S
fck [MPa] = 25.00
fyk [MPa] = 500.00
?c = 1.50
?s = 1.15

- Sección

Sección : PA1
b [m] = 1.00
h [m] = 0.80
r [m] = 0.090

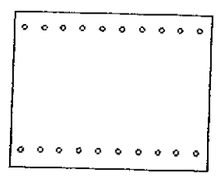
nº barras horizontales = 10
nº barras verticales = 2



2 Comprobación

? [mm] = 25
Nd [kN] = 294
Md [kN·m] = 1275

Nu [kN] = 341.4
Mu [kN·m] = 1479.3
? = 1.16









Plano de deformación de agotamiento

x [m] = 0.145
1/r [1/m]·1.E-3 = 17.7
?s ·1.E-3 = 1.0
?i ·1.E-3 = -10.0

Deformación y tensión de armaduras superior e inferior

Profundidad [m]	Deformación ·1.E-3	Tensión [MPa]
0.090	2.6	-194.7
0.710	-11.6	434.8

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

Obra: · PANTALLA
Fecha: 10/02/2004
Hora: 10:59:37

Cálculo de secciones a flexión compuesta recta

1 Datos

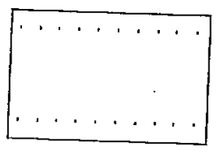
- Materiales

Tipo de hormigón : HA-25
Tipo de acero : B-500-S
fck [MPa] = 25.00
fyk [MPa] = 500.00
?c = 1.50
?s = 1.15

- Sección

Sección : PA2
b [m] = 1.00
h [m] = 0.65
r [m] = 0.090

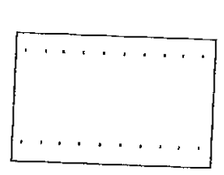
nº barras horizontales = 10
nº barras verticales = 2



2 Comprobación

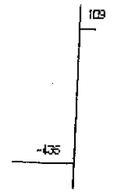
? [mm] = 20
Nd [kN] = 156
Md [kN·m] = 660

Nu [kN] = 174.2
Mu [kN·m] = 736.9
? = 1.12









Plano de deformación de agotamiento

x [m] = 0.114
1/r [1/m]·1.E-3 = 22.4
?s ·1.E-3 = 0.5
?i ·1.E-3 = -10.0

Deformación y tensión de armaduras superior e inferior

Profundidad [m]	Deformación ·1.E-3	Tensión [MPa]
0.090	2.6	-109.2
0.560	-12.0	434.8

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

Obra: PASO BAJO AUTOPISTA A-7
Fecha: 10/02/2004
Hora: 10:29:48

Cálculo de secciones a cortante

1 Datos

- Materiales

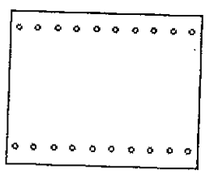
Tipo de hormigón : HA-25
Tipo de acero : B-500-S
fck [MPa] = 25.00
fyk [MPa] = 500.0
?c = 1.50
?s = 1.15

- Tipo de elemento estructural

Tipo : elemento con armadura a cortante

- Sección

Sección : PA1
b [m] = 1.00
h [m] = 0.80



2 Comprobación

Tipo de armadura: cercos a 90.0°
separación s [m] = 0.20
? [mm] = 8
nº ramas: 4
Area [cm²/m] = 10.1
? [·1.E-3] = 6

Inclinación de las bielas ?[°] = 45
Nd [kN] = 0.0
?yd [MPa] = 0

Vu1 [kN] = 3550.0
Vu2 [kN] = 525.4
Vcu [kN] = 268.0
Vsu [kN] = 257.4

- Resistencia a cortante:

Vu [kN] = 525.4

Obra: PASO BAJO AUTOPISTA A-7
Fecha: 10/02/2004
Hora: 11:02:09

Cálculo de secciones a cortante

1 Datos

- Materiales

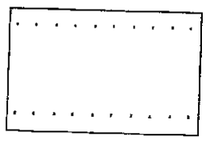
Tipo de hormigón : HA-25
Tipo de acero : B-500-S
fck [MPa] = 25.00
fyk [MPa] = 500.0
?c = 1.50
?s = 1.15

- Tipo de elemento estructural

Tipo : elemento con armadura a cortante

- Sección

Sección : PA2
b [m] = 1.00
h [m] = 0.65



2 Comprobación

Tipo de armadura: cercos a 90.0º
separación s [m] = 0.20
? [mm] = 8
nº ramas: 4
Area [cm²/m] = 10.1
? [·1.E-3] = 4.8

Inclinación de las bielas ?[º] = 45
Nd [kN] = 0.0
?yd [MPa] = 0

Vu1 [kN] = 2800.0
Vu2 [kN] = 405.9
Vcu [kN] = 204.8
Vsu [kN] = 201.1

- Resistencia a cortante:

Vu [kN] = 405.9

VALTER
valenciana de estructuras

Proyecto GAN CASTELL - BÍSBAL

Asunto PASO BAJO RVH Y VBU

TOPE ESTRUCTURAL PANTALLAS

$$Te = \alpha \cdot f_{yk} \cdot Sa + \beta \cdot f_{ck} \cdot Sb + \chi \cdot f_{y'k} \cdot Sc$$

		PA1	PA2
Sa : área de acero (cm^2/m)	Sa	59'14	41'47
Sb : " " hormigón (cm^2)	Sb	10000	7000
Sc : " " coronisa hormigón	Sc	0	0

f_{yk} : resist. caract. armaduras ($3500 kg/cm^2$)

f_{ck} : " " hormigón ($225 kg/cm^2$ in situ)

$\alpha = 0'32$
$\beta = 0'2$
} Pantalla hormigonada in situ con lodos bentoníticos

PANTALLA	Te (KN)
1	5162 >> Nmáx
2	3614 >> Nmáx

Fecha

Hoja Nº De

DIMENSIONAMIENTO DE MUROS

ÍNDICE

1.- DATOS DE LA OBRA

2.- DESCRIPCIÓN

3.- COMPROBACIÓN

1.- DATOS DE LA OBRA

Hormigón: HA-25, Control estadístico
Acero: B 500 S, Control normal
Recubrimiento (Trasdós) : 5.00 cm
Recubrimiento (Intradós) : 5.00 cm
Recubrimiento (Superior) : 5.00 cm
Recubrimiento (Inferior) : 5.00 cm
Recubrimiento (Lateral) : 5.00 cm
Tamaño máximo del árido: 20.0 mm
Abertura límite de fisuras: 0.3 mm
Espesor hormigón limpieza: 10.0 cm
Tensión admisible del terreno: 2.0 Kp/cm2
Coeficiente rozamiento terreno-cimiento: 0.6
Tipo de empuje que produce la acción: Activo
Tipo de empuje que produce la reacción: Pasivo
Combinaciones de hormigón: EHE, Control normal
Combinaciones para tensiones sobre el terreno: Acciones Caracteristicas
Combinaciones de equilibrio: EHE, Control normal

2.- DESCRIPCIÓN

DESCRIPCION DE SECCIONES

Referencia: H-2

- Longitud del muro: 1.00 m
- Cota en arranque: 0.00 m

Referencia: H-3

- Longitud del muro: 1.00 m
- Cota en arranque: 0.00 m

LISTADO DE TERRENOS

Referencia: H-2

- Situación de peso propio:
- Coronación:
Carga hacia abajo en coronación: 0 Tn/m
Carga hacia intradós en coronación: 0 Tn/m
Momento de compresión hacia intradós en coronación: 0 mTn/m
- Trasdós:
Con relleno: Cota: 2.00 m
Angulo de talud: 0.00 Grados
Densidad aparente: 1.80 Tn/m3
Densidad sumergida: 1.10 Tn/m3
Angulo rozamiento interno: 30.00 Grados
Evacuación por drenaje: 100.00 %
Porcentaje de empuje pasivo: 0.00 %
Cota empuje pasivo: 0.00 m
Carga 1:
Tipo: Uniforme
Valor: 1.00 Tn/m2
- Intradós:
Con relleno: Cota: 0.50 m
Angulo de talud: 0.00 Grados
Densidad aparente: 2.00 Tn/m3
Densidad sumergida: 1.10 Tn/m3
Angulo rozamiento interno: 30.00 Grados
Evacuación por drenaje: 100.00 %
Porcentaje de empuje pasivo: 0.00 %
Cota empuje pasivo: 0.00 m
- Esfuerzos en arranque de muro. ESTADO DE PESO PROPIO (PP):

	Cortante (Tn/m)	Momento (mTn/m)
Trasdós	1.867	1.467
Intradós	0.000	0.000
Total	1.867	1.467

- Situación de sobrecarga 1:
- Coronación:
Carga hacia abajo en coronación: 0 Tn/m
Carga hacia intradós en coronación: 0 Tn/m
Momento de compresión hacia intradós en coronación: 0 mTn/m
- Trasdós:
Con relleno: Cota: 2.00 m
Angulo de talud: 0.00 Grados
Densidad aparente: 1.80 Tn/m3
Densidad sumergida: 1.10 Tn/m3
Angulo rozamiento interno: 30.00 Grados
Evacuación por drenaje: 100.00 %
Porcentaje de empuje pasivo: 0.00 %
Cota empuje pasivo: 0.00 m
Carga 1:
Tipo: Uniforme
Valor: 1.00 Tn/m2
- Intradós:
Con relleno: Cota: 0.50 m
Angulo de talud: 0.00 Grados
Densidad aparente: 2.00 Tn/m3
Densidad sumergida: 1.10 Tn/m3
Angulo rozamiento interno: 30.00 Grados
Evacuación por drenaje: 100.00 %

Porcentaje de empuje pasivo: 0.00 %
Cota empuje pasivo: 0.00 m
- Esfuerzos en arranque de muro. ESTADO DE SOBRECARGA (SBC):

	Cortante (Tn/m)	Momento (mTn/m)
Trasdós	1.867	1.467
Intradós	0.000	0.000
Total	1.867	1.467

- Esfuerzos de arranque de muro. DIFERENCIA ESTADO DE SOBRECARGA Y PESO PROPIO (SBC - PP):

	Cortante (Tn/m)	Momento (mTn/m)
Trasdós	0.000	0.000
Intradós	0.000	0.000
Total	0.000	0.000

Referencia: H-3

- Situación de peso propio:
- Coronación:
Carga hacia abajo en coronación: 0 Tn/m
Carga hacia intradós en coronación: 0 Tn/m
Momento de compresión hacia intradós en coronación: 0 mTn/m
- Trasdós:
Con relleno: Cota: 3.00 m
Angulo de talud: 0.00 Grados
Densidad aparente: 1.80 Tn/m3
Densidad sumergida: 1.10 Tn/m3
Angulo rozamiento interno: 30.00 Grados
Evacuación por drenaje: 100.00 %
Porcentaje de empuje pasivo: 0.00 %
Cota empuje pasivo: 0.00 m
- Intradós:
No hay cargas.
- Esfuerzos en arranque de muro. ESTADO DE PESO PROPIO (PP):

	Cortante (Tn/m)	Momento (mTn/m)
Trasdós	2.700	2.700
Intradós	0.000	0.000
Total	2.700	2.700

- Situación de sobrecarga 1:
- Coronación:
Carga hacia abajo en coronación: 0 Tn/m
Carga hacia intradós en coronación: 0 Tn/m
Momento de compresión hacia intradós en coronación: 0 mTn/m
- Trasdós:
Con relleno: Cota: 3.00 m
Angulo de talud: 0.00 Grados
Densidad aparente: 1.80 Tn/m3
Densidad sumergida: 1.10 Tn/m3
Angulo rozamiento interno: 30.00 Grados
Evacuación por drenaje: 100.00 %
Porcentaje de empuje pasivo: 0.00 %
Cota empuje pasivo: 0.00 m
Carga 1:
Tipo: Uniforme
Valor: 1.00 Tn/m2
- Intradós:
Con relleno: Cota: 0.50 m
Angulo de talud: 0.00 Grados
Densidad aparente: 1.80 Tn/m3
Densidad sumergida: 1.10 Tn/m3
Angulo rozamiento interno: 30.00 Grados
Evacuación por drenaje: 100.00 %
Porcentaje de empuje pasivo: 0.00 %
Cota empuje pasivo: 0.00 m
- Esfuerzos en arranque de muro. ESTADO DE SOBRECARGA (SBC):

	Cortante (Tn/m)	Momento (mTn/m)
Trasdós	3.700	4.200
Intradós	0.000	0.000
Total	3.700	4.200

- Esfuerzos de arranque de muro. DIFERENCIA ESTADO DE SOBRECARGA Y PESO PROPIO (SBC - PP):

	Cortante (Tn/m)	Momento (mTn/m)
Trasdós	1.000	1.500
Intradós	0.000	0.000
Total	1.000	1.500

MUROS CALCULADOS

Referencia	Espesor inferior	Espesor superior	Altura	Ar. Vert. T.	Ar. Vert. I.	Ar. Horz. T.	Ar. Horz. I.	Ar. Coronación
H-2	25.00 cm	25.00 cm	2.00 m	Ø10 c/ 15	Ø10 c/ 20	Ø10 c/ 15	Ø10 c/ 15	Barras superiores 2 Ø12
H-3	30.00 cm	30.00 cm	3.00 m	Ø12 c/ 15	Ø10 c/ 20	Ø10 c/ 15	Ø10 c/ 15	Barras superiores 2 Ø12

Nota:
- Ar. Vert. T.: Armado vertical trasdós
- Ar. Vert. I.: Armado vertical intradós
- Ar. Horz. T.: Armado horizontal trasdós
- Ar. Horz. I.: Armado horizontal intradós
- Ar. Coronación: Armado en coronación

Referencias	Geometría	Armado
H-2	Vuelo izquierdo: 95.0 cm Vuelo derecho: 95.0 cm Canto: 50.0 cm	Base inferior: Ø12 c/ 20 Longitudinal inferior: Ø12 c/ 20 Superior Longitudinal: Ø12 c/ 20 Superior Transversal: Ø12 c/ 20
H-3	Vuelo izquierdo: 130.0 cm Vuelo derecho: 130.0 cm Canto: 65.0 cm	Base inferior: Ø12 c/ 15 Longitudinal inferior: Ø12 c/ 15 Superior Longitudinal: Ø12 c/ 20 Superior Transversal: Ø12 c/ 20

3.- COMPROBACIÓN

Referencia: H-2		
COMPROBACION	VALORES	ESTADO
Comprobación a rasante en arranque muro		
- Muro H-2 -> Arranque:		CUMPLE
Espesor mínimo del tramo	Mínimo: 20 cm	
- Muro H-2 -> Tramo 1:	Calculado: 25 cm	CUMPLE
Cuantía mínima geométrica horizontal	Mínimo: 0.0008	
- Muro H-2 -> Tramo 1 -> Trasdós (0.00 m):	Calculado: 0.0021	CUMPLE
- Muro H-2 -> Tramo 1 -> Intradós (0.00 m):	Calculado: 0.0021	CUMPLE
Cuantía mínima mecánica horizontal por cara		
- Muro H-2 -> Tramo 1 -> Trasdós:	Mínimo: 0.00042 Calculado: 0.0021	CUMPLE
- Muro H-2 -> Tramo 1 -> Intradós:	Mínimo: 0.00032 Calculado: 0.0021	CUMPLE
Separación libre mínima armaduras horizontales	Mínimo: 2.5 cm	
- Muro H-2 -> Tramo 1 -> Trasdós:	Calculado: 14 cm	CUMPLE
- Muro H-2 -> Tramo 1 -> Intradós:	Calculado: 14 cm	CUMPLE
Separación máxima armaduras horizontales	Máximo: 30 cm	
- Muro H-2 -> Tramo 1 -> Trasdós:	Calculado: 15 cm	CUMPLE
- Muro H-2 -> Tramo 1 -> Intradós:	Calculado: 15 cm	CUMPLE
Cuantía mínima geométrica vertical cara traccionada	Mínimo: 0.0009	
- Muro H-2 -> Tramo 1 -> Trasdós (0.00 m):	Calculado: 0.0021	CUMPLE
Cuantía mínima mecánica vertical cara traccionada	Mínimo: 0.00154	
- Muro H-2 -> Tramo 1 -> Trasdós (0.00 m):	Calculado: 0.0021	CUMPLE
Cuantía mínima geométrica vertical cara comprimida	Mínimo: 0.00027	
- Muro H-2 -> Tramo 1 -> Intradós (0.00 m):	Calculado: 0.00158	CUMPLE
Cuantía mínima mecánica vertical cara comprimida	Mínimo: 1e-005	
- Muro H-2 -> Tramo 1 -> Intradós (0.00 m):	Calculado: 0.00158	CUMPLE
Cuantía máxima geométrica de armadura vertical total	Máximo: 0.04	
- Muro H-2 -> Tramo 1 -> (2.00 m):	Calculado: 0.00367	CUMPLE
Separación libre mínima armaduras verticales	Mínimo: 2.5 cm	
- Muro H-2 -> Tramo 1 -> Trasdós:	Calculado: 14 cm	CUMPLE
- Muro H-2 -> Tramo 1 -> Intradós:	Calculado: 19 cm	CUMPLE
Separación máxima armaduras verticales	Máximo: 30 cm	
- Muro H-2 -> Tramo 1 -> Trasdós:	Calculado: 15 cm	CUMPLE
- Muro H-2 -> Tramo 1 -> Intradós:	Calculado: 20 cm	CUMPLE
Comprobación a flexocompresión		
- Muro H-2 -> Tramo 1:		CUMPLE
Comprobación a cortante	Máximo: 9.28 Tn/m	
- Muro H-2 -> Tramo 1:	Calculado: 2.37 Tn/m	CUMPLE
Comprobación de fisuración	Máximo: 0.3 mm	
- Muro H-2 -> Tramo 1:	Calculado: 0.11 mm	CUMPLE
Comprobación de las longitudes de solape		
- Muro H-2 -> Tramo 1 -> Base trasdós:	Mínimo: 35 cm Calculado: 50 cm	CUMPLE
- Muro H-2 -> Tramo 1 -> Base intradós:	Mínimo: 25 cm Calculado: 25 cm	CUMPLE
Comprobación del anclaje del armado base en coronación	Mínimo: 13.5 cm	
- Muro H-2 -> Coronación -> Trasdós:	Calculado: 13.5 cm	CUMPLE
- Muro H-2 -> Coronación -> Intradós:	Calculado: 13.5 cm	CUMPLE
Area mínima longitudinal cara superior viga de coronación	Mínimo: 2.3 cm2	
- Muro H-2 -> Coronación:	Calculado: 2.3 cm2	CUMPLE
Tensiones sobre el terreno		
- Zapata H-2 -> Tensión media:	Máximo: 2 Kp/cm2 Calculado: 0.386 Kp/cm2	CUMPLE
- Zapata H-2 -> Tensión máxima acc. gravitatorias:	Máximo: 2.5 Kp/cm2 Calculado: 0.505 Kp/cm2	CUMPLE
Flexión en zapata (acciones estáticas)		
- Zapata H-2 -> Momento positivo en vuelo derecho:	Momento: 0.00 Tn·m	CUMPLE

- Zapata H-2 -> Momento negativo en vuelo derecho:	Momento: -1.24 Tn·m	CUMPLE
- Zapata H-2 -> Momento positivo sección ref. derecha:	Momento: 0.00 Tn·m	CUMPLE
- Zapata H-2 -> Momento negativo sección ref. derecha:	Momento: -1.33 Tn·m	CUMPLE
- Zapata H-2 -> Momento positivo en vuelo izquierdo:	Momento: 1.66 Tn·m	CUMPLE
- Zapata H-2 -> Momento negativo en vuelo izquierdo:	Momento: 0.00 Tn·m	CUMPLE
- Zapata H-2 -> Momento positivo sección ref. izquierda:	Momento: 1.78 Tn·m	CUMPLE
- Zapata H-2 -> Momento negativo sección ref. izquierda:	Momento: 0.00 Tn·m	CUMPLE
Coeficiente de rozamiento terreno-cimiento	Máximo: 0.5773	
- Zapata H-2:	Calculado: 0.4889	CUMPLE
Vuelco de la zapata		
- Zapata H-2:	Reserva seguridad: 548.6 %	CUMPLE
Compresión oblicua (acciones estáticas)	Máximo: 229.36 Tn	
- Zapata H-2 -> Vuelo derecho:	Calculado: 2.35 Tn	CUMPLE
- Zapata H-2 -> Vuelo izquierdo:	Calculado: 3.24 Tn	CUMPLE
Esfuerzo cortante (acciones estáticas)	Máximo: 13.44 Tn	
- Zapata H-2 -> Vuelo derecho:	Calculado: 1.42 Tn	CUMPLE
- Zapata H-2 -> Vuelo izquierdo:	Calculado: 1.89 Tn	CUMPLE
Canto mínimo	Mínimo: 25 cm	
- Zapata H-2:	Calculado: 50 cm	CUMPLE
Longitud de anclaje		
- Zapata H-2 -> Arranque izquierdo del muro:	Mínimo: 18 cm Calculado: 40 cm	CUMPLE
- Zapata H-2 -> Arranque derecho del muro:	Mínimo: 18 cm Calculado: 40 cm	CUMPLE
- Zapata H-2 -> Armado superior vuelo der. hacia izquierda:	Mínimo: 43 cm Calculado: 126 cm	CUMPLE
- Zapata H-2 -> Armado superior vuelo der. hacia derecha:	Mínimo: 51 cm Calculado: 55 cm	CUMPLE
- Zapata H-2 -> Armado base inferior vuelo izq. hacia izquierda:	Mínimo: 30 cm Calculado: 79 cm	CUMPLE
- Zapata H-2 -> Armado base inferior vuelo izq. hacia derecha:	Mínimo: 30 cm Calculado: 150 cm	CUMPLE
Cuantía geométrica mínima	Mínimo: 0.001	
- Zapata H-2 -> Armado inferior longitudinal:	Calculado: 0.0012	CUMPLE
- Zapata H-2 -> Armado inferior transversal:	Calculado: 0.0012	CUMPLE
Cuantía mínima necesaria por flexión	Mínimo: 0.0002	
- Zapata H-2 -> Armado inferior transversal:	Calculado: 0.0012	CUMPLE
- Zapata H-2 -> Armado sup. transversal vuelo derecho:	Calculado: 0.0012	CUMPLE
- Zapata H-2 -> Armado sup. transversal sección ref. derecha:	Calculado: 0.0012	CUMPLE
Diámetro mínimo de las barras	Mínimo: 12 mm	
- Zapata H-2 -> Armaduras de la zapata:	Calculado: 12 mm	CUMPLE
Separación máxima entre barras	Máximo: 30 cm	
- Zapata H-2 -> Armado inferior transversal:	Calculado: 20 cm	CUMPLE
- Zapata H-2 -> Armado inferior longitudinal:	Calculado: 20 cm	CUMPLE
- Zapata H-2 -> Armado superior transversal:	Calculado: 20 cm	CUMPLE
- Zapata H-2 -> Armado superior longitudinal:	Calculado: 20 cm	CUMPLE
Separación mínima entre barras	Mínimo: 10 cm	
- Zapata H-2 -> Armado inferior transversal:	Calculado: 20 cm	CUMPLE
- Zapata H-2 -> Armado inferior longitudinal:	Calculado: 20 cm	CUMPLE
- Zapata H-2 -> Armado superior transversal:	Calculado: 20 cm	CUMPLE
- Zapata H-2 -> Armado superior longitudinal:	Calculado: 20 cm	CUMPLE
Longitud mínima de las patillas	Mínimo: 11 cm	
- Zapata H-2 -> Armado superior vuelo izq. hacia izquierda:	Calculado: 15 cm	CUMPLE
- Zapata H-2 -> Armado superior vuelo izq. hacia derecha:	Calculado: 15 cm	CUMPLE
- Zapata H-2 -> Armado base inferior vuelo izq. hacia izquierda:	Calculado: 39 cm	CUMPLE
- Zapata H-2 -> Armado base inferior vuelo izq. hacia derecha:	Calculado: 39 cm	CUMPLE
Se cumplen todas las comprobaciones		

Referencia: H-3		
COMPROBACION	VALORES	ESTADO
Comprobación a rasante en arranque muro		
- Muro H-3 -> Arranque:		CUMPLE
Espesor mínimo del tramo	Mínimo: 20 cm	
- Muro H-3 -> Tramo 1:	Calculado: 30 cm	CUMPLE
Cuantía mínima geométrica horizontal	Mínimo: 0.0008	
- Muro H-3 -> Tramo 1 -> Trasdós (0.00 m):	Calculado: 0.00175	CUMPLE
- Muro H-3 -> Tramo 1 -> Intradós (0.00 m):	Calculado: 0.00175	CUMPLE
Cuantía mínima mecánica horizontal por cara		
- Muro H-3 -> Tramo 1 -> Trasdós:	Mínimo: 0.00051 Calculado: 0.00175	CUMPLE
- Muro H-3 -> Tramo 1 -> Intradós:	Mínimo: 0.00027 Calculado: 0.00175	CUMPLE
Separación libre mínima armaduras horizontales	Mínimo: 2.5 cm	
- Muro H-3 -> Tramo 1 -> Trasdós:	Calculado: 14 cm	CUMPLE
- Muro H-3 -> Tramo 1 -> Intradós:	Calculado: 14 cm	CUMPLE
Separación máxima armaduras horizontales	Máximo: 30 cm	
- Muro H-3 -> Tramo 1 -> Trasdós:	Calculado: 15 cm	CUMPLE
- Muro H-3 -> Tramo 1 -> Intradós:	Calculado: 15 cm	CUMPLE
Cuantía mínima geométrica vertical cara traccionada	Mínimo: 0.0009	
- Muro H-3 -> Tramo 1 -> Trasdós (0.00 m):	Calculado: 0.00252	CUMPLE
Cuantía mínima mecánica vertical cara traccionada	Mínimo: 0.00154	
- Muro H-3 -> Tramo 1 -> Trasdós (0.00 m):	Calculado: 0.00252	CUMPLE
Cuantía mínima geométrica vertical cara comprimida	Mínimo: 0.00027	
- Muro H-3 -> Tramo 1 -> Intradós (0.00 m):	Calculado: 0.00131	CUMPLE
Cuantía mínima mecánica vertical cara comprimida	Mínimo: 2e-005	
- Muro H-3 -> Tramo 1 -> Intradós (0.00 m):	Calculado: 0.00131	CUMPLE
Cuantía máxima geométrica de armadura vertical total	Máximo: 0.04	
- Muro H-3 -> Tramo 1 -> (3.00 m):	Calculado: 0.00383	CUMPLE
Separación libre mínima armaduras verticales	Mínimo: 2.5 cm	
- Muro H-3 -> Tramo 1 -> Trasdós:	Calculado: 13.8 cm	CUMPLE
- Muro H-3 -> Tramo 1 -> Intradós:	Calculado: 19 cm	CUMPLE
Separación máxima armaduras verticales	Máximo: 30 cm	
- Muro H-3 -> Tramo 1 -> Trasdós:	Calculado: 15 cm	CUMPLE
- Muro H-3 -> Tramo 1 -> Intradós:	Calculado: 20 cm	CUMPLE
Comprobación a flexocompresión		
- Muro H-3 -> Tramo 1:		CUMPLE
Comprobación a cortante	Máximo: 11.63 Tn/m	
- Muro H-3 -> Tramo 1:	Calculado: 4.89 Tn/m	CUMPLE
Comprobación de fisuración	Máximo: 0.3 mm	
- Muro H-3 -> Tramo 1:	Calculado: 0.23 mm	CUMPLE
Comprobación de las longitudes de solape		
- Muro H-3 -> Tramo 1 -> Base trasdós:	Mínimo: 45 cm Calculado: 60 cm	CUMPLE
- Muro H-3 -> Tramo 1 -> Base intradós:	Mínimo: 25 cm Calculado: 25 cm	CUMPLE
Comprobación del anclaje del armado base en coronación		
- Muro H-3 -> Coronación -> Trasdós:	Mínimo: 18.2 cm Calculado: 20 cm	CUMPLE
- Muro H-3 -> Coronación -> Intradós:	Mínimo: 18.5 cm Calculado: 20 cm	CUMPLE
Area mínima longitudinal cara superior viga de coronación	Mínimo: 2.3 cm2	
- Muro H-3 -> Coronación:	Calculado: 2.3 cm2	CUMPLE
Tensiones sobre el terreno		
- Zapata H-3 -> Tensión media:	Máximo: 2 Kp/cm2 Calculado: 0.522 Kp/cm2	CUMPLE
- Zapata H-3 -> Tensión máxima acc. gravitatorias:	Máximo: 2.5 Kp/cm2 Calculado: 0.659 Kp/cm2	CUMPLE
Flexión en zapata (acciones estáticas)		
- Zapata H-3 -> Momento positivo en vuelo derecho:	Momento: 0.00 Tn·m	CUMPLE
- Zapata H-3 -> Momento negativo en vuelo derecho:	Momento: -3.60 Tn·m	CUMPLE

- Zapata H-3 -> Momento positivo sección ref. derecha:	Momento: 0.00 Tn·m	CUMPLE
- Zapata H-3 -> Momento negativo sección ref. derecha:	Momento: -3.83 Tn·m	CUMPLE
- Zapata H-3 -> Momento positivo en vuelo izquierdo:	Momento: 4.73 Tn·m	CUMPLE
- Zapata H-3 -> Momento negativo en vuelo izquierdo:	Momento: 0.00 Tn·m	CUMPLE
- Zapata H-3 -> Momento positivo sección ref. izquierda:	Momento: 5.04 Tn·m	CUMPLE
- Zapata H-3 -> Momento negativo sección ref. izquierda:	Momento: 0.00 Tn·m	CUMPLE
Coeficiente de rozamiento terreno-cimiento	Máximo: 0.5773	
- Zapata H-3:	Calculado: 0.5213	CUMPLE
Vuelco de la zapata		
- Zapata H-3:	Reserva seguridad: 508.7 %	CUMPLE
Compresión oblicua (acciones estáticas)	Máximo: 305.82 Tn	
- Zapata H-3 -> Vuelo derecho:	Calculado: 5.09 Tn	CUMPLE
- Zapata H-3 -> Vuelo izquierdo:	Calculado: 6.83 Tn	CUMPLE
Esfuerzo cortante (acciones estáticas)		
- Zapata H-3 -> Vuelo derecho:	Máximo: 15.4 Tn Calculado: 3.07 Tn	CUMPLE
- Zapata H-3 -> Vuelo izquierdo:	Máximo: 16.95 Tn Calculado: 4.01 Tn	CUMPLE
Canto mínimo	Mínimo: 25 cm	
- Zapata H-3:	Calculado: 65 cm	CUMPLE
Longitud de anclaje		
- Zapata H-3 -> Arranque izquierdo del muro:	Mínimo: 18 cm Calculado: 55 cm	CUMPLE
- Zapata H-3 -> Arranque derecho del muro:	Mínimo: 21 cm Calculado: 55 cm	CUMPLE
- Zapata H-3 -> Armado superior vuelo der. hacia izquierda:	Mínimo: 43 cm Calculado: 165 cm	CUMPLE
- Zapata H-3 -> Armado superior vuelo der. hacia derecha:	Mínimo: 43 cm Calculado: 75 cm	CUMPLE
- Zapata H-3 -> Armado base inferior vuelo izq. hacia izquierda:	Mínimo: 30 cm Calculado: 114 cm	CUMPLE
- Zapata H-3 -> Armado base inferior vuelo izq. hacia derecha:	Mínimo: 30 cm Calculado: 204 cm	CUMPLE
Cuantía geométrica mínima	Mínimo: 0.001	
- Zapata H-3 -> Armado inferior longitudinal:	Calculado: 0.0012	CUMPLE
- Zapata H-3 -> Armado inferior transversal:	Calculado: 0.0012	CUMPLE
Cuantía mínima necesaria por flexión		
- Zapata H-3 -> Armado inferior transversal:	Mínimo: 0.0004 Calculado: 0.0012	CUMPLE
- Zapata H-3 -> Armado sup. transversal vuelo derecho:	Mínimo: 0.0003 Calculado: 0.0009	CUMPLE
- Zapata H-3 -> Armado sup. transversal sección ref. derecha:	Mínimo: 0.0003 Calculado: 0.0009	CUMPLE
Diámetro mínimo de las barras	Mínimo: 12 mm	
- Zapata H-3 -> Armaduras de la zapata:	Calculado: 12 mm	CUMPLE
Separación máxima entre barras	Máximo: 30 cm	
- Zapata H-3 -> Armado inferior transversal:	Calculado: 15 cm	CUMPLE
- Zapata H-3 -> Armado inferior longitudinal:	Calculado: 15 cm	CUMPLE
- Zapata H-3 -> Armado superior transversal:	Calculado: 20 cm	CUMPLE
- Zapata H-3 -> Armado superior longitudinal:	Calculado: 20 cm	CUMPLE
Separación mínima entre barras	Mínimo: 10 cm	
- Zapata H-3 -> Armado inferior transversal:	Calculado: 15 cm	CUMPLE
- Zapata H-3 -> Armado inferior longitudinal:	Calculado: 15 cm	CUMPLE
- Zapata H-3 -> Armado superior transversal:	Calculado: 20 cm	CUMPLE
- Zapata H-3 -> Armado superior longitudinal:	Calculado: 20 cm	CUMPLE
Longitud mínima de las patillas	Mínimo: 11 cm	
- Zapata H-3 -> Armado superior vuelo izq. hacia izquierda:	Calculado: 15 cm	CUMPLE
- Zapata H-3 -> Armado superior vuelo izq. hacia derecha:	Calculado: 15 cm	CUMPLE
- Zapata H-3 -> Armado base inferior vuelo izq. hacia izquierda:	Calculado: 54 cm	CUMPLE
- Zapata H-3 -> Armado base inferior vuelo izq. hacia derecha:	Calculado: 54 cm	CUMPLE

Se cumplen todas las comprobaciones

ÍNDICE

1.- DATOS DE LA OBRA

2.- DESCRIPCIÓN

3.- COMPROBACIÓN

1.- DATOS DE LA OBRA

Hormigón: HA-25, Control estadístico
Acero: B 500 S, Control normal
Recubrimiento (Trasdós) : 5.00 cm
Recubrimiento (Intradós) : 5.00 cm
Recubrimiento (Superior) : 5.00 cm
Recubrimiento (Inferior) : 5.00 cm
Recubrimiento (Lateral) : 5.00 cm
Tamaño máximo del árido: 20.0 mm
Abertura límite de fisuras: 0.3 mm
Espesor hormigón limpieza: 10.0 cm
Tensión admisible del terreno: 2.0 Kp/cm2
Coeficiente rozamiento terreno-cimiento: 0.6
Tipo de empuje que produce la acción: Activo
Tipo de empuje que produce la reacción: Pasivo
Combinaciones de hormigón: EHE, Control normal
Combinaciones para tensiones sobre el terreno: Acciones Caracteristicas
Combinaciones de equilibrio: EHE, Control normal

2.- DESCRIPCIÓN

DESCRIPCION DE SECCIONES

Referencia: H-4a

- Longitud del muro: 1.00 m
- Cota en arranque: 0.00 m

Referencia: H-5a

- Longitud del muro: 1.00 m
- Cota en arranque: 0.00 m

LISTADO DE TERRENOS

Referencia: H-4a

- Situación de peso propio:
- Coronación:
Carga hacia abajo en coronación: 0 Tn/m
Carga hacia intradós en coronación: 0 Tn/m
Momento de compresión hacia intradós en coronación: 0 mTn/m
- Trasdós:
Con relleno: Cota: 4.00 m
Angulo de talud: 0.00 Grados
Densidad aparente: 1.80 Tn/m3
Densidad sumergida: 1.10 Tn/m3
Angulo rozamiento interno: 30.00 Grados
Evacuación por drenaje: 100.00 %
Porcentaje de empuje pasivo: 0.00 %
Cota empuje pasivo: 0.00 m
- Intradós:
No hay cargas.
- Esfuerzos en arranque de muro. ESTADO DE PESO PROPIO (PP):

	Cortante (Tn/m)	Momento (mTn/m)
Trasdós	4.800	6.400
Intradós	0.000	0.000
Total	4.800	6.400

- Situación de sobrecarga 1:
- Coronación:
Carga hacia abajo en coronación: 0 Tn/m
Carga hacia intradós en coronación: 0 Tn/m
Momento de compresión hacia intradós en coronación: 0 mTn/m
- Trasdós:
Con relleno: Cota: 4.00 m
Angulo de talud: 0.00 Grados
Densidad aparente: 1.80 Tn/m3
Densidad sumergida: 1.10 Tn/m3
Angulo rozamiento interno: 30.00 Grados
Evacuación por drenaje: 100.00 %
Porcentaje de empuje pasivo: 0.00 %
Cota empuje pasivo: 0.00 m
Carga 1:
Tipo: Uniforme
Valor: 1.00 Tn/m2
- Intradós:
Con relleno: Cota: 0.50 m
Angulo de talud: 0.00 Grados
Densidad aparente: 1.80 Tn/m3
Densidad sumergida: 1.10 Tn/m3
Angulo rozamiento interno: 30.00 Grados
Evacuación por drenaje: 100.00 %
Porcentaje de empuje pasivo: 0.00 %
Cota empuje pasivo: 0.00 m
- Esfuerzos en arranque de muro. ESTADO DE SOBRECARGA (SBC):

	Cortante (Tn/m)	Momento (mTn/m)
Trasdós	6.133	9.067
Intradós	0.000	0.000
Total	6.133	9.067

- Esfuerzos de arranque de muro. DIFERENCIA ESTADO DE SOBRECARGA Y PESO PROPIO (SBC - PP):

	Cortante (Tn/m)	Momento (mTn/m)
Trasdós	1.333	2.667
Intradós	0.000	0.000
Total	1.333	2.667

Referencia: H-5a

- Situación de peso propio:
- Coronación:
Carga hacia abajo en coronación: 0 Tn/m
Carga hacia intradós en coronación: 0 Tn/m
Momento de compresión hacia intradós en coronación: 0 mTn/m
- Trasdós:
Con relleno: Cota: 5.00 m
Angulo de talud: 0.00 Grados
Densidad aparente: 1.80 Tn/m3
Densidad sumergida: 1.10 Tn/m3
Angulo rozamiento interno: 30.00 Grados
Evacuación por drenaje: 100.00 %
Porcentaje de empuje pasivo: 0.00 %
Cota empuje pasivo: 0.00 m
- Intradós:
No hay cargas.
- Esfuerzos en arranque de muro. ESTADO DE PESO PROPIO (PP):

	Cortante (Tn/m)	Momento (mTn/m)
Trasdós	7.500	12.500
Intradós	0.000	0.000
Total	7.500	12.500

- Situación de sobrecarga 1:
- Coronación:
Carga hacia abajo en coronación: 0 Tn/m
Carga hacia intradós en coronación: 0 Tn/m
Momento de compresión hacia intradós en coronación: 0 mTn/m
- Trasdós:
Con relleno: Cota: 5.00 m
Angulo de talud: 0.00 Grados
Densidad aparente: 1.80 Tn/m3
Densidad sumergida: 1.10 Tn/m3
Angulo rozamiento interno: 30.00 Grados
Evacuación por drenaje: 100.00 %
Porcentaje de empuje pasivo: 0.00 %
Cota empuje pasivo: 0.00 m
Carga 1:
Tipo: Uniforme
Valor: 1.00 Tn/m2
- Intradós:
Con relleno: Cota: 0.50 m
Angulo de talud: 0.00 Grados
Densidad aparente: 1.80 Tn/m3
Densidad sumergida: 1.10 Tn/m3
Angulo rozamiento interno: 30.00 Grados
Evacuación por drenaje: 100.00 %
Porcentaje de empuje pasivo: 0.00 %
Cota empuje pasivo: 0.00 m
- Esfuerzos en arranque de muro. ESTADO DE SOBRECARGA (SBC):

	Cortante (Tn/m)	Momento (mTn/m)
Trasdós	9.167	16.667
Intradós	0.000	0.000
Total	9.167	16.667

- Esfuerzos de arranque de muro. DIFERENCIA ESTADO DE SOBRECARGA Y PESO PROPIO (SBC - PP):

	Cortante (Tn/m)	Momento (mTn/m)
Trasdós	1.667	4.167
Intradós	0.000	0.000
Total	1.667	4.167

MUROS CALCULADOS

Referencia	Espesor inferior	Espesor superior	Altura	Ar. Vert. T.	Ar. Vert. I.	Ar. Horz. T.	Ar. Horz. I.	Ar. Coronación
H-4a	30.00 cm	30.00 cm	4.00 m	Armado base Ø10 c/ 15 Refuerzo 1 Ø16 c/ 15 h= 1.50	Ø10 c/ 20	Ø10 c/ 15	Ø10 c/ 15	Barras superiores 2 Ø12
H-5a	45.00 cm	45.00 cm	5.00 m	Armado base Ø16 c/ 20 Refuerzo 1 Ø16 c/ 20 h= 1.50	Ø12 c/ 20	Ø12 c/ 15	Ø12 c/ 15	Barras superiores 3 Ø12

Nota:
- Ar. Vert. T.: Armado vertical trasdós
- Ar. Vert. I.: Armado vertical intradós
- Ar. Horz. T.: Armado horizontal trasdós
- Ar. Horz. I.: Armado horizontal intradós
- Ar. Coronación: Armado en coronación

Referencias	Geometría	Armado
H-4a	Vuelo izquierdo: 155.0 cm Vuelo derecho: 155.0 cm Canto: 70.0 cm	Base inferior: Ø16 c/ 20 Longitudinal inferior: Ø16 c/ 20 Superior Longitudinal: Ø12 c/ 20 Superior Transversal: Ø12 c/ 20
H-5a	Vuelo izquierdo: 190.0 cm Vuelo derecho: 190.0 cm Canto: 95.0 cm	Base inferior: Ø16 c/ 20 Longitudinal inferior: Ø16 c/ 20 Superior Longitudinal: Ø16 c/ 20 Superior Transversal: Ø12 c/ 20

3.- COMPROBACIÓN

Referencia: H-4a		
COMPROBACION	VALORES	ESTADO
Comprobación a rasante en arranque muro		
- Muro H-4a -> Arranque:		CUMPLE
Espesor mínimo del tramo	Mínimo: 20 cm	
- Muro H-4a -> Tramo 1:	Calculado: 30 cm	CUMPLE
Cuantía mínima geométrica horizontal	Mínimo: 0.0008	
- Muro H-4a -> Tramo 1 -> Trasdós (0.00 m):	Calculado: 0.00175	CUMPLE
- Muro H-4a -> Tramo 1 -> Intradós (0.00 m):	Calculado: 0.00175	CUMPLE
Cuantía mínima mecánica horizontal por cara		
- Muro H-4a -> Tramo 1 -> Trasdós:	Mínimo: 0.00125 Calculado: 0.00175	CUMPLE
- Muro H-4a -> Tramo 1 -> Intradós:	Mínimo: 0.00027 Calculado: 0.00175	CUMPLE
Separación libre mínima armaduras horizontales	Mínimo: 2.5 cm	
- Muro H-4a -> Tramo 1 -> Trasdós:	Calculado: 14 cm	CUMPLE
- Muro H-4a -> Tramo 1 -> Intradós:	Calculado: 14 cm	CUMPLE
Separación máxima armaduras horizontales	Máximo: 30 cm	
- Muro H-4a -> Tramo 1 -> Trasdós:	Calculado: 15 cm	CUMPLE
- Muro H-4a -> Tramo 1 -> Intradós:	Calculado: 15 cm	CUMPLE
Cuantía mínima geométrica vertical cara traccionada	Mínimo: 0.0009	
- Muro H-4a -> Tramo 1 -> Trasdós (0.00 m):	Calculado: 0.00622	CUMPLE
- Muro H-4a -> Tramo 1 -> Trasdós (1.50 m):	Calculado: 0.00175	CUMPLE
Cuantía mínima mecánica vertical cara traccionada	Mínimo: 0.00154	
- Muro H-4a -> Tramo 1 -> Trasdós (0.00 m):	Calculado: 0.00622	CUMPLE
- Muro H-4a -> Tramo 1 -> Trasdós (1.50 m):	Calculado: 0.00175	CUMPLE
Cuantía mínima geométrica vertical cara comprimida	Mínimo: 0.00027	
- Muro H-4a -> Tramo 1 -> Intradós (0.00 m):	Calculado: 0.00131	CUMPLE
- Muro H-4a -> Tramo 1 -> Intradós (1.50 m):	Calculado: 0.00131	CUMPLE
Cuantía mínima mecánica vertical cara comprimida	Mínimo: 2e-005	
- Muro H-4a -> Tramo 1 -> Intradós (0.00 m):	Calculado: 0.00131	CUMPLE
- Muro H-4a -> Tramo 1 -> Intradós (1.50 m):	Calculado: 0.00131	CUMPLE
Cuantía máxima geométrica de armadura vertical total	Máximo: 0.04	
- Muro H-4a -> Tramo 1 -> (4.00 m):	Calculado: 0.00306	CUMPLE
- Muro H-4a -> Tramo 1 -> (1.50 m):	Calculado: 0.00753	CUMPLE
Separación libre mínima armaduras verticales	Mínimo: 2.5 cm	
- Muro H-4a -> Tramo 1 -> Trasdós:	Calculado: 6.2 cm	CUMPLE
- Muro H-4a -> Tramo 1 -> Intradós:	Calculado: 19 cm	CUMPLE
Separación máxima armaduras verticales	Máximo: 30 cm	
- Muro H-4a -> Tramo 1 -> Trasdós:	Calculado: 15 cm	CUMPLE
- Muro H-4a -> Tramo 1 -> Intradós:	Calculado: 20 cm	CUMPLE
Comprobación a flexocompresión		
- Muro H-4a -> Tramo 1:		CUMPLE
Comprobación a cortante	Máximo: 15.75 Tn/m	
- Muro H-4a -> Tramo 1:	Calculado: 8.35 Tn/m	CUMPLE
Comprobación de fisuración	Máximo: 0.3 mm	
- Muro H-4a -> Tramo 1:	Calculado: 0.28 mm	CUMPLE
Comprobación de las longitudes de solape		
- Muro H-4a -> Tramo 1 -> Base trasdós:	Mínimo: 35 cm Calculado: 35 cm	CUMPLE
- Muro H-4a -> Tramo 1 -> Base intradós:	Mínimo: 25 cm Calculado: 25 cm	CUMPLE
Comprobación del anclaje del armado base en coronación	Mínimo: 18.5 cm	
- Muro H-4a -> Coronación -> Trasdós:	Calculado: 18.5 cm	CUMPLE
- Muro H-4a -> Coronación -> Intradós:	Calculado: 18.5 cm	CUMPLE
Area mínima longitudinal cara superior viga de coronación	Mínimo: 2.3 cm2	
- Muro H-4a -> Coronación:	Calculado: 2.3 cm2	CUMPLE
Tensiones sobre el terreno		

- Zapata H-4a -> Tensión media:	Máximo: 2 Kp/cm2 Calculado: 0.632 Kp/cm2	CUMPLE
- Zapata H-4a -> Tensión máxima acc. gravitatorias:	Máximo: 2.5 Kp/cm2 Calculado: 0.857 Kp/cm2	CUMPLE
Flexión en zapata (acciones estáticas)		
- Zapata H-4a -> Momento positivo en vuelo derecho:	Momento: 0.00 Tn·m	CUMPLE
- Zapata H-4a -> Momento negativo en vuelo derecho:	Momento: -7.71 Tn·m	CUMPLE
- Zapata H-4a -> Momento positivo sección ref. derecha:	Momento: 0.00 Tn·m	CUMPLE
- Zapata H-4a -> Momento negativo sección ref. derecha:	Momento: -8.12 Tn·m	CUMPLE
- Zapata H-4a -> Momento positivo en vuelo izquierdo:	Momento: 9.59 Tn·m	CUMPLE
- Zapata H-4a -> Momento negativo en vuelo izquierdo:	Momento: 0.00 Tn·m	CUMPLE
- Zapata H-4a -> Momento positivo sección ref. izquierda:	Momento: 10.11 Tn·m	CUMPLE
- Zapata H-4a -> Momento negativo sección ref. izquierda:	Momento: 0.00 Tn·m	CUMPLE
Coeficiente de rozamiento terreno-cimiento	Máximo: 0.5773	
- Zapata H-4a:	Calculado: 0.5762	CUMPLE
Vuelco de la zapata		
- Zapata H-4a:	Reserva seguridad: 423.0 %	CUMPLE
Compresión oblicua (acciones estáticas)	Máximo: 331.3 Tn	
- Zapata H-4a -> Vuelo derecho:	Calculado: 9.09 Tn	CUMPLE
- Zapata H-4a -> Vuelo izquierdo:	Calculado: 11.52 Tn	CUMPLE
Esfuerzo cortante (acciones estáticas)		
- Zapata H-4a -> Vuelo derecho:	Máximo: 16.02 Tn Calculado: 5.9 Tn	CUMPLE
- Zapata H-4a -> Vuelo izquierdo:	Máximo: 19.4 Tn Calculado: 7.31 Tn	CUMPLE
Canto mínimo	Mínimo: 25 cm	
- Zapata H-4a:	Calculado: 70 cm	CUMPLE
Longitud de anclaje		
- Zapata H-4a -> Arranque izquierdo del muro:	Mínimo: 18 cm Calculado: 60 cm	CUMPLE
- Zapata H-4a -> Arranque derecho del muro:	Mínimo: 28 cm Calculado: 60 cm	CUMPLE

- Zapata H-4a -> Armado superior vuelo der. hacia izquierda:	Mínimo: 43 cm Calculado: 190 cm	CUMPLE
- Zapata H-4a -> Armado superior vuelo der. hacia derecha:	Mínimo: 43 cm Calculado: 95 cm	CUMPLE
- Zapata H-4a -> Armado base inferior vuelo izq. hacia izquierda:	Mínimo: 40 cm Calculado: 139 cm	CUMPLE
- Zapata H-4a -> Armado base inferior vuelo izq. hacia derecha:	Mínimo: 40 cm Calculado: 234 cm	CUMPLE
Cuantía geométrica mínima	Mínimo: 0.001	
- Zapata H-4a -> Armado inferior longitudinal:	Calculado: 0.0015	CUMPLE
- Zapata H-4a -> Armado inferior transversal:	Calculado: 0.0015	CUMPLE
Cuantía mínima necesaria por flexión		
- Zapata H-4a -> Armado inferior transversal:	Mínimo: 0.0006 Calculado: 0.0015	CUMPLE
- Zapata H-4a -> Armado sup. transversal vuelo derecho:	Mínimo: 0.0005 Calculado: 0.0009	CUMPLE
- Zapata H-4a -> Armado sup. transversal sección ref. derecha:	Mínimo: 0.0005 Calculado: 0.0009	CUMPLE
Diámetro mínimo de las barras	Mínimo: 12 mm	
- Zapata H-4a -> Armaduras de la zapata:	Calculado: 12 mm	CUMPLE
Separación máxima entre barras	Máximo: 30 cm	
- Zapata H-4a -> Armado inferior transversal:	Calculado: 20 cm	CUMPLE
- Zapata H-4a -> Armado inferior longitudinal:	Calculado: 20 cm	CUMPLE
- Zapata H-4a -> Armado superior transversal:	Calculado: 20 cm	CUMPLE
- Zapata H-4a -> Armado superior longitudinal:	Calculado: 20 cm	CUMPLE
Separación mínima entre barras	Mínimo: 10 cm	
- Zapata H-4a -> Armado inferior transversal:	Calculado: 20 cm	CUMPLE
- Zapata H-4a -> Armado inferior longitudinal:	Calculado: 20 cm	CUMPLE
- Zapata H-4a -> Armado superior transversal:	Calculado: 20 cm	CUMPLE
- Zapata H-4a -> Armado superior longitudinal:	Calculado: 20 cm	CUMPLE
Longitud mínima de las patillas		
- Zapata H-4a -> Armado superior vuelo izq. hacia izquierda:	Mínimo: 11 cm Calculado: 15 cm	CUMPLE
- Zapata H-4a -> Armado superior vuelo izq. hacia derecha:	Mínimo: 11 cm	

	Calculado: 15 cm	CUMPLE
- Zapata H-4a -> Armado base inferior vuelo izq. hacia izquierda:	Mínimo: 15 cm Calculado: 59 cm	CUMPLE
- Zapata H-4a -> Armado base inferior vuelo izq. hacia derecha:	Mínimo: 15 cm Calculado: 59 cm	CUMPLE
Se cumplen todas las comprobaciones		

Referencia: H-5a		
COMPROBACION	VALORES	ESTADO
Comprobación a rasante en arranque muro		
- Muro H-5a -> Arranque:		CUMPLE
Espesor mínimo del tramo	Mínimo: 20 cm	
- Muro H-5a -> Tramo 1:	Calculado: 45 cm	CUMPLE
Cuantía mínima geométrica horizontal	Mínimo: 0.0008	
- Muro H-5a -> Tramo 1 -> Trasdós (0.00 m):	Calculado: 0.00168	CUMPLE
- Muro H-5a -> Tramo 1 -> Intradós (0.00 m):	Calculado: 0.00168	CUMPLE
Cuantía mínima mecánica horizontal por cara		
- Muro H-5a -> Tramo 1 -> Trasdós:	Mínimo: 0.0009 Calculado: 0.00168	CUMPLE
- Muro H-5a -> Tramo 1 -> Intradós:	Mínimo: 0.00026 Calculado: 0.00168	CUMPLE
Separación libre mínima armaduras horizontales	Mínimo: 2.5 cm	
- Muro H-5a -> Tramo 1 -> Trasdós:	Calculado: 13.8 cm	CUMPLE
- Muro H-5a -> Tramo 1 -> Intradós:	Calculado: 13.8 cm	CUMPLE
Separación máxima armaduras horizontales	Máximo: 30 cm	
- Muro H-5a -> Tramo 1 -> Trasdós:	Calculado: 15 cm	CUMPLE
- Muro H-5a -> Tramo 1 -> Intradós:	Calculado: 15 cm	CUMPLE
Cuantía mínima geométrica vertical cara traccionada	Mínimo: 0.0009	
- Muro H-5a -> Tramo 1 -> Trasdós (0.00 m):	Calculado: 0.00447	CUMPLE
- Muro H-5a -> Tramo 1 -> Trasdós (1.50 m):	Calculado: 0.00224	CUMPLE
Cuantía mínima mecánica vertical cara traccionada	Mínimo: 0.00154	
- Muro H-5a -> Tramo 1 -> Trasdós (0.00 m):	Calculado: 0.00447	CUMPLE
- Muro H-5a -> Tramo 1 -> Trasdós (1.50 m):	Calculado: 0.00224	CUMPLE
Cuantía mínima geométrica vertical cara comprimida	Mínimo: 0.00027	
- Muro H-5a -> Tramo 1 -> Intradós (0.00 m):	Calculado: 0.00126	CUMPLE
- Muro H-5a -> Tramo 1 -> Intradós (1.50 m):	Calculado: 0.00126	CUMPLE
Cuantía mínima mecánica vertical cara comprimida		

- Muro H-5a -> Tramo 1 -> Intradós (0.00 m):	Mínimo: 3e-005 Calculado: 0.00126	CUMPLE
- Muro H-5a -> Tramo 1 -> Intradós (1.50 m):	Mínimo: 2e-005 Calculado: 0.00126	CUMPLE
Cuantía máxima geométrica de armadura vertical total	Máximo: 0.04	
- Muro H-5a -> Tramo 1 -> (5.00 m):	Calculado: 0.0035	CUMPLE
- Muro H-5a -> Tramo 1 -> (1.50 m):	Calculado: 0.00573	CUMPLE
Separación libre mínima armaduras verticales	Mínimo: 2.5 cm	
- Muro H-5a -> Tramo 1 -> Trasdós:	Calculado: 8.4 cm	CUMPLE
- Muro H-5a -> Tramo 1 -> Intradós:	Calculado: 18.8 cm	CUMPLE
Separación máxima armaduras verticales	Máximo: 30 cm	
- Muro H-5a -> Tramo 1 -> Trasdós:	Calculado: 20 cm	CUMPLE
- Muro H-5a -> Tramo 1 -> Intradós:	Calculado: 20 cm	CUMPLE
Comprobación a flexocompresión		
- Muro H-5a -> Tramo 1:		CUMPLE
Comprobación a cortante	Máximo: 20.3 Tn/m	
- Muro H-5a -> Tramo 1:	Calculado: 12.01 Tn/m	CUMPLE
Comprobación de fisuración	Máximo: 0.3 mm	
- Muro H-5a -> Tramo 1:	Calculado: 0.3 mm	CUMPLE
Comprobación de las longitudes de solape		
- Muro H-5a -> Tramo 1 -> Base trasdós:	Mínimo: 75 cm Calculado: 75 cm	CUMPLE
- Muro H-5a -> Tramo 1 -> Base intradós:	Mínimo: 30 cm Calculado: 30 cm	CUMPLE
Comprobación del anclaje del armado base en coronación		
- Muro H-5a -> Coronación -> Trasdós:	Mínimo: 32.6 cm Calculado: 33.5 cm	CUMPLE
- Muro H-5a -> Coronación -> Intradós:	Mínimo: 33.2 cm Calculado: 33.5 cm	CUMPLE
Area mínima longitudinal cara superior viga de coronación	Mínimo: 2.3 cm2	
- Muro H-5a -> Coronación:	Calculado: 3.4 cm2	CUMPLE
Tensiones sobre el terreno		
- Zapata H-5a -> Tensión media:	Máximo: 2 Kp/cm2 Calculado: 0.812 Kp/cm2	CUMPLE
- Zapata H-5a -> Tensión máxima acc. gravitatorias:	Máximo: 2.5 Kp/cm2 Calculado: 1.054 Kp/cm2	CUMPLE
Flexión en zapata (acciones estáticas)		
- Zapata H-5a -> Momento positivo en vuelo derecho:	Momento: 0.00 Tn·m	CUMPLE
- Zapata H-5a -> Momento negativo en vuelo derecho:	Momento: -13.66 Tn·m	CUMPLE
- Zapata H-5a -> Momento positivo sección ref. derecha:	Momento: 0.00 Tn·m	CUMPLE
- Zapata H-5a -> Momento negativo sección ref. derecha:	Momento: -14.54 Tn·m	CUMPLE
- Zapata H-5a -> Momento positivo en vuelo izquierdo:	Momento: 17.97 Tn·m	CUMPLE
- Zapata H-5a -> Momento negativo en vuelo izquierdo:	Momento: 0.00 Tn·m	CUMPLE
- Zapata H-5a -> Momento positivo sección ref. izquierda:	Momento: 19.19 Tn·m	CUMPLE
- Zapata H-5a -> Momento negativo sección ref. izquierda:	Momento: 0.00 Tn·m	CUMPLE
Coeficiente de rozamiento terreno-cimiento	Máximo: 0.5773	
- Zapata H-5a:	Calculado: 0.5513	CUMPLE
Vuelco de la zapata		
- Zapata H-5a:	Reserva seguridad: 528.5 %	CUMPLE
Compresión oblicua (acciones estáticas)	Máximo: 458.72 Tn	
- Zapata H-5a -> Vuelo derecho:	Calculado: 13.27 Tn	CUMPLE
- Zapata H-5a -> Vuelo izquierdo:	Calculado: 17.81 Tn	CUMPLE
Esfuerzo cortante (acciones estáticas)		
- Zapata H-5a -> Vuelo derecho:	Máximo: 18.83 Tn Calculado: 7.81 Tn	CUMPLE
- Zapata H-5a -> Vuelo izquierdo:	Máximo: 22.81 Tn Calculado: 10.19 Tn	CUMPLE
Canto mínimo	Mínimo: 25 cm	
- Zapata H-5a:	Calculado: 95 cm	CUMPLE
Longitud de anclaje		
- Zapata H-5a -> Arranque izquierdo del muro:	Mínimo: 21 cm Calculado: 85 cm	CUMPLE
- Zapata H-5a -> Arranque derecho del muro:	Mínimo: 28 cm Calculado: 85 cm	CUMPLE

- Zapata H-5a -> Armado superior vuelo der. hacia izquierda:	Mínimo: 43 cm Calculado: 238 cm	CUMPLE
- Zapata H-5a -> Armado superior vuelo der. hacia derecha:	Mínimo: 43 cm Calculado: 105 cm	CUMPLE
- Zapata H-5a -> Armado base inferior vuelo izq. hacia izquierda:	Mínimo: 40 cm Calculado: 174 cm	CUMPLE
- Zapata H-5a -> Armado base inferior vuelo izq. hacia derecha:	Mínimo: 40 cm Calculado: 307 cm	CUMPLE
Cuantía geométrica mínima	Mínimo: 0.001	
- Zapata H-5a -> Armado inferior longitudinal:	Calculado: 0.0011	CUMPLE
- Zapata H-5a -> Armado inferior transversal:	Calculado: 0.0011	CUMPLE
Cuantía mínima necesaria por flexión		
- Zapata H-5a -> Armado inferior transversal:	Mínimo: 0.0006 Calculado: 0.0011	CUMPLE
- Zapata H-5a -> Armado sup. transversal vuelo derecho:	Mínimo: 0.0005 Calculado: 0.0006	CUMPLE
- Zapata H-5a -> Armado sup. transversal sección ref. derecha:	Mínimo: 0.0005 Calculado: 0.0006	CUMPLE
Diámetro mínimo de las barras	Mínimo: 12 mm	
- Zapata H-5a -> Armaduras de la zapata:	Calculado: 12 mm	CUMPLE
Separación máxima entre barras	Máximo: 30 cm	
- Zapata H-5a -> Armado inferior transversal:	Calculado: 20 cm	CUMPLE
- Zapata H-5a -> Armado inferior longitudinal:	Calculado: 20 cm	CUMPLE
- Zapata H-5a -> Armado superior transversal:	Calculado: 20 cm	CUMPLE
- Zapata H-5a -> Armado superior longitudinal:	Calculado: 20 cm	CUMPLE
Separación mínima entre barras	Mínimo: 10 cm	
- Zapata H-5a -> Armado inferior transversal:	Calculado: 20 cm	CUMPLE
- Zapata H-5a -> Armado inferior longitudinal:	Calculado: 20 cm	CUMPLE
- Zapata H-5a -> Armado superior transversal:	Calculado: 20 cm	CUMPLE
- Zapata H-5a -> Armado superior longitudinal:	Calculado: 20 cm	CUMPLE
Longitud mínima de las patillas		
- Zapata H-5a -> Armado superior vuelo izq. hacia izquierda:	Mínimo: 11 cm Calculado: 15 cm	CUMPLE
- Zapata H-5a -> Armado superior vuelo izq. hacia derecha:	Mínimo: 11 cm Calculado: 15 cm	CUMPLE
- Zapata H-5a -> Armado base inferior vuelo izq. hacia izquierda:	Mínimo: 15 cm Calculado: 84 cm	CUMPLE
- Zapata H-5a -> Armado base inferior vuelo izq. hacia derecha:	Mínimo: 15 cm Calculado: 84 cm	CUMPLE
Se cumplen todas las comprobaciones		

INGENIEROS CONSULTORES

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Destinatario:	Raquel Sahuquillo	Fax:	96 369 14 6
Remitente:	Marcin Warda		
Fecha:	06.03.2004	Nº de páginas:	1
Asunto: Revisión de cálculos Paso Bajo Autopista A7			

REVISIÓN DE PROYECTO :

L.A.V. MADRID – FRONTERA FRANCESA. TRAMO A: CONEXIÓN VALLÈS CASTELLBISBALL

ESTRUCTURA :

Paso Bajo Autopist A7

FECHA: **06 de Marzo 2004**

ANEJO DE CÁLCULOS Y PLANOS		Presente	Debe mejorarse	Observaciones
1	Definición de cargas	SI	NO	
2	Hipótesis de cargas	SI	NO	
3	Definición de materiales	SI	NO	
4	Coherencia con ambiente	SI	NO	
5	Replanteo geométrico	SI	NO	
6	Datos geotécnicos	SI	NO	
7	CALCULOS ESTRUCTURALES			
7.1	Tablero, Muros, Solera-ELS	SI	NO	
7.2	Tablero, Muros, Solera-ELU	SI	NO	
8	PLANOS	SI	NO	

Atentamente,

Marcin Warda
TEC' 4

COPASA
OBRA L.A.V. - Conexión Vallès-Castellbisbal
CÓDIGO: B-132
11 MAR. 2004
ENTRADAS
Nº E.D.-126

ENTRADA UTE LLOBREGAT
Nº Reg: 1583
Fecha: 11-03-04

UTE LLOBREGAT S-VII (INTRAESA-TEC'4)
C/ Terç de Nostra Senyora de Montserrat nº 8, entlo.
08740 - Sant Andreu de la Barca (Barcelona)
Tel: 936-535-156 Fax: 936-822-361

INFORME PANTALLA 1
PASO BAJO AUTOPISTA A-7 (L.A.V.)
PROYECTO DE CONSTRUCCIÓN DE PLATAFORMA
L.A.V. MADRID-ZARAGOZA-BARCELONA-FRONTERA FRANCESA
TRAMO: CONEXIÓN VALLÉS - CASTELLBISBAL

El presente informe revisa la memoria de cálculo de la pantalla 1 del PASO BAJO AUTOPISTA A-7 (L.A.V.) presentada por COPASA con fecha 21 de septiembre de 2004.

La memoria de cálculo presentada anteriormente con un cambio de tipología de pantalla de pilotes de Ø 1.00 m. (proyecto) a muro pantalla de 1.00 m. modifica la armadura en el presente informe.

La asistencia a la dirección de obra formada por la U.T.E. de las empresas INGENIERÍA DE TRAZADOS Y ESTRUCTURAS, S.A. (INTRAESA) y TEC-CUATRO, S.A. en el proyecto de la L.A.V. Tramo: Conexión Vallés - Castellbisbal, aprueba los cálculos presentados de la pantalla 1 del PASO BAJO AUTOPISTA A-7 (L.A.V.) con la modificación en la disposición de armadura del esquema adjunto.

Barcelona, 27 de septiembre de 2004

JEAC
Antonio Ariño Moreno

COPASA
OBRA L.A.V. - Conexión Vallès-Castellbisbal
CÓDIGO: B-132
27 SET. 2004
ENTRADAS
Nº ED-304

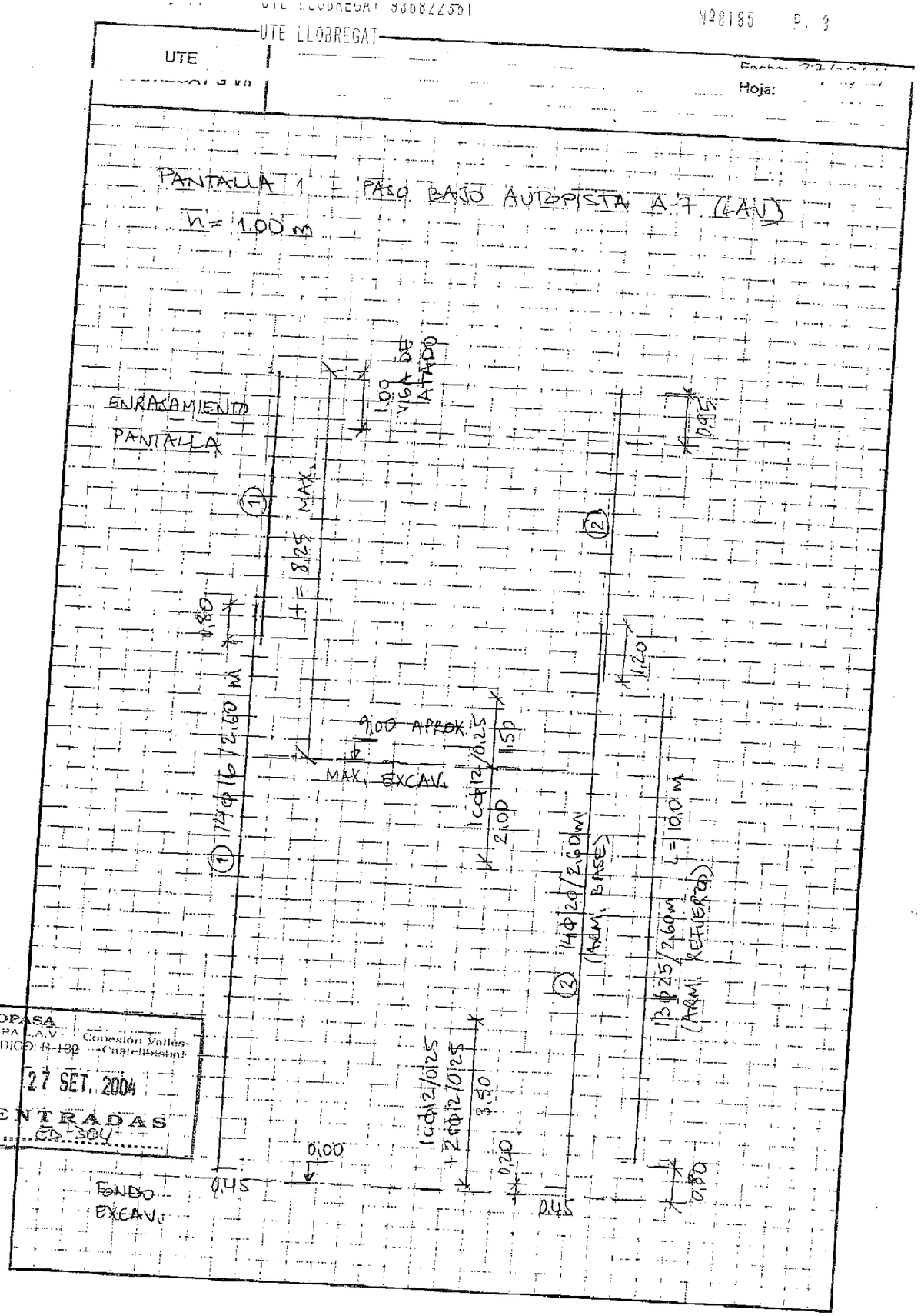
UTE LLOBREGAT

UTE

Hoja:

PANTALLA 1 + PASO BAJO AUTOPISTA A-7 (LAN)

h = 1,00 m



COPASA
OBRA L.A.V. Conexión Valles-
CÓDIGO: 6-138 -Castellbisbal-
27 SET. 2004
ENTRADAS
Nº ..... 304 .....

PASO INFERIOR BAJO RAMAL VALLÉS – MARTORELL Y VÍA BARCELONA - MARTORELL

PASO INFERIOR BAJO RAMAL VALLÉS-MARTORELL Y VÍA BARCELONA-MARTORELL

1.- MEMORIA

1. ANTECEDENTES Y OBJETO
2. DESCRIPCIÓN
3. FASES DE EJECUCIÓN
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   - 4.2. CARACTERÍSTICAS DE LOS MATERIALES
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     - 5.2.2. Cortante.
     - 5.2.3. Fisuración.
6. CONCLUSIONES

VALTER valenciana de estructuras
L.A.V. MADRID-FRONTERA FRANCESA. TRAMO A: CONEXIÓN VALLÉS CASTELLBISBAL
PASO BAJO RAMAL VALLÉS-MARTORELL Y VÍA BERCELONA-MARTORELL

ANEXOS

A.1. MODELO DE CÁLCULO Y DIMENSIONAMIENTO DE LOSA SUPERIOR
A.2. DIMENSIONAMIENTO DEL MARCO (HASTIALES Y LOSA INFERIOR)
A.3. DIMENSIONAMIENTO DE MUROS

2.- PLANOS

1. ANTECEDENTES Y OBJETO

A petición de la empresa constructora COPASA, adjudicataria de la ejecución de la obra "PROYECTO DE CONSTRUCCIÓN DE PLATAFORMA LÍNEA DE ALTA VELOCIDAD MADRID-ZARAGOZA-BARCELONA-FRONTERA FRANCESA. TRAMO A: CONEXIÓN VALLÉS-CASTELLBISBAL", se redacta el presente documento, cuyo objetivo es la comprobación y dimensionamiento, a nivel estructural, de un marco, las pantallas y los muros del paso bajo ramal Vallés-Martorell y vía Barcelona-Martorell(L.A.V.), situada en el P.K. 501+800, debido a que la estructura se cambia de una losa con forma rectangular apoyada en pantalla de micropilotes y de pilotes, a un marco esviado. También se sustituye la pantalla de pilotes para la contención de las tierras por pantallas en voladizo y muros de contención convencionales, dependiendo de la altura de contención de tierras.

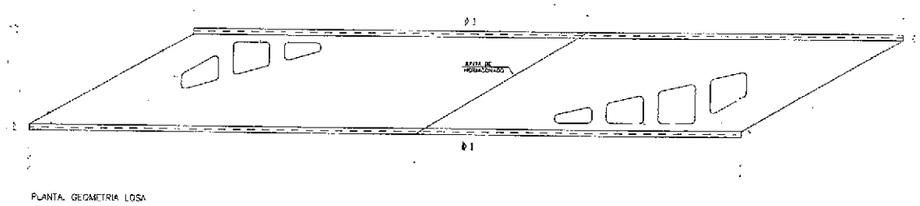
Se ha realizado para ello los cálculos necesarios dimensionando tanto el marco, pantallas y muros, de forma que se cumplan los coeficientes de seguridad frente a los distintos estados límite, de una manera justificada que se expone en los puntos siguientes.

2. DESCRIPCIÓN

Se trata de una estructura situada en el P.K. 501+800 que salva el paso del ramal de ferrocarril Vallés-Martorell y la Vía Barcelona-Martorell, permitiendo el paso del L.A.V.

La propuesta analizada, consiste en un marco, con un esviaje de 33g, formado por una losa superior con canto constante de 0.90 m, un ancho de 94.50 m y una luz interior de 12.50 m, empotrada en unos hastiales de 0.80 m de

canto y una losa de cimentación de 0.80 m de canto, pantallas en voladizo, y muros convencionales de contención de altura y canto variables.



PLANTA. GEOMETRIA LOSA

La sección transversal de la estructura está formada por dos vías con las siguientes características:

- *Una vía de 1.435 m de ancho.*
- *Plataforma de balasto bajo la vía de 5.00 m de ancho.*
- *Dos espacios para alojar servicios, paseos... de 1.75 m*

También se han dimensionado las aletas del paso inferior, formadas por pantallas para la contención de tierras, de espesor y longitud variables, y por muros convencionales de altura variables.

3. FASES DE EJECUCIÓN

La ejecución de la estructura se realizará en varias fases debido a la circulación de trenes en servicio durante la construcción. Las fases que se van a seguir serán las siguientes:

FASE 1:

- Ejecución de la aleta 2
- Corte del ramal Vallés-Martorell, dejando la vía sin servicio provisionalmente
- Ejecución de la fase 1 del marco

FASE 2:

- Restitución del tráfico por el ramal Vallés-Martorell
- Corte de la vía Barcelona-Martorell
- Ejecución de la fase 2 del marco
- Ejecución de la aleta 1

FASE 3:

- Reposición de la vía Barcelona-Martorell
- Finalmente, montaje de la línea de alta velocidad LAV.

4. BASES DE CÁLCULO

4.1. NORMATIVA UTILIZADA

Para la redacción del presente documento se ha considerado las siguientes Normas e Instrucciones:

- *IAPF-2001.Instrucción de acciones a considerar en el proyecto de puentes de ferrocarril (Borrador G)*
- *IAPF-1975. Instrucción relativa a las acciones a considerar en el proyecto de puentes de ferrocarril.*
- *EHE-1998. Instrucción de Hormigón Estructural.*
- *NCSR-02 Norma de construcción sismorresistente.*

4.2. CARACTERÍSTICAS DE LOS MATERIALES

Las características de los materiales considerados son las que se indican a continuación:

HORMIGÓN ARMADO

PANTALLAS EN VOLADIZO

Tipo	HA-25 / B / 20 / IIa
Nivel de control	Normal
Resistencia característica f_{ck}	25 N/mm²
Resistencia media f_{cm}	33 N/mm²
Resistencia característica a tracción $f_{ct,k}$	1.80 N/mm²
Resistencia media a tracción $f_{ct,m}$	2.60 N/mm²
SITUACIONES PERSISTENTES O TRANSITORIAS	
Coeficiente de minoración γ_c	1.50
Resistencia de cálculo f_{cd}	16.67 N/mm²
SITUACIONES ACCIDENTALES	
Coeficiente de minoración γ_c	1.30
Resistencia de cálculo f_{cd}	19.23 N/mm²
MODULO DE ELASTICIDAD	
Módulo de Elasticidad inicial E_{co}	32000 N/mm²
Módulo de Elasticidad secante E_c	27000 N/mm²
Módulo de Poisson ν_C	0.20

MARCO

Tipo	HA-30 / B / 20 / IIb
Nivel de control	Normal
Resistencia característica f_{ck}	30 N/mm²
Resistencia media f_{cm}	38 N/mm²
Resistencia característica a tracción $f_{ct,k}$	2.03 N/mm²
Resistencia media a tracción $f_{ct,m}$	2.89 N/mm²
SITUACIONES PERSISTENTES O TRANSITORIAS	
Coeficiente de minoración γ_c	1.50
Resistencia de cálculo f_{cd}	20.00 N/mm²

SITUACIONES ACCIDENTALES	
Coeficiente de minoración γ_c	1.30
Resistencia de cálculo f_{cd}	23.07 N/mm²
MODULO DE ELASTICIDAD	
Módulo de Elasticidad inicial E_{co}	33 620 N/mm²
Módulo de Elasticidad secante E_c	28 577 N/mm²
Módulo de Poisson νc	0.20

ARMADURAS PASIVAS

Tipo	B - 500 S
Nivel de control	Normal
Resistencia característica f_{yk}	500 MPa
Coeficiente de minoración γ_s (situac. Persistentes o transitorias)	1.15
Resistencia de cálculo f_{yd}	443.5 MPa
Módulo de Elasticidad E_s	210 000 Mpa

RELLENO EN TRASDOS

Tipo	Granular.
Peso específico γ	20 kN/m³
Coeficiente de empuje activo Ka	0.33
Coeficiente de empuje al reposo Kr	0.50

4.3. CARACTERÍSTICAS DEL CIMIENTO

Para el dimensionamiento de la cimentación se ha tenido en cuenta las características del terreno dadas en el informe geotécnico del proyecto.

A continuación se describe la estratigrafía del terreno en el emplazamiento de la obra, tomada del informe geotécnico del proyecto original, empleada para la obtención de la carga admisible de los pilotes.

En este paso inferior, la altura de terraplén es del orden de 10.00 m, mientras que la máxima profundidad de vaciado será en torno a 8.00 m.

La estratigrafía del terreno desde la coronación del terraplén es la siguiente:

Nivel 1:	
Tipo	Relleno
Potencia	11.00 m
Coeficiente de rozamiento	28°
Cohesión	5.0 kN/m²
Densidad	19.0 kN/m³
K_{100}	50000 kN/m³
N_{30}	20-30
Nivel 2	
Tipo	Alternancia de aluvial limoso y arenoso
Potencia	3.00 m
Coeficiente de rozamiento	30°
Cohesión	5.0 kN/m²
Densidad	19.0 kN/m³
K_{100}	65000 kN/m³
N_{30}	30-40
Nivel 3	
Tipo	Gravas
Potencia	6.00 m
Coeficiente de rozamiento	34°
Cohesión	0.0 kN/m²
Densidad	19.0 kN/m³
K_{100}	80000 kN/m³
N_{30}	60-40
Nivel 4	
Tipo	Aluvial de predominio arenoso
Potencia	4.00 m
Coeficiente de rozamiento	32°
Cohesión	0.0 kN/m²
Densidad	20.0 kN/m³
K_{100}	80000 kN/m³
N_{30}	30-40

Nivel 5	
Tipo	Terciario de lutitas
Potencia	>24.00 m
Coeficiente de rozamiento	28°
Cohesión	50.0 kN/m²
Densidad	20.0 kN/m³
K_{100}	200000 kN/m³
N_{30}	>100(rechazo)

El nivel freático se sitúa a una profundidad de 16.00 m desde la coronación del propio terraplén.

4.4. DURABILIDAD

Se deben diferenciar dos tipos de exposición:

- para las pantallas y muros, la cual se encuentra enterrada, se ha considerado el tipo de exposición normal con humedad alta IIa.
- Para el marco, se ha considerado el tipo de exposición normal con humedad media IIb.

Como consecuencia del tipo de ambiente el hormigón a emplear en la ejecución de la pantalla debe cumplir las siguientes características para el tipo de exposición IIa:

- la relación máxima agua/cemento debe ser de 0.60
- el contenido mínimo en cemento debe ser 275 kg/m³
- los recubrimientos mínimos serán de 50 mm.

Como consecuencia del tipo de ambiente el hormigón del marco a emplear en la ejecución debe cumplir las siguientes características para el tipo de exposición IIb:

- la relación máxima agua/cemento debe ser de 0.55
- el contenido mínimo en cemento debe ser 300 kg/m³

los recubrimientos mínimos serán de 40 mm.

4.5. ACCIONES CONSIDERADAS

4.5.1. Acciones permanentes

Las cargas permanentes están constituidas por los pesos de los distintos elementos que forman parte de la estructura. Corresponden a acciones que actúan en todo momento y son constantes en posición y magnitud. Comprenden el peso propio y las cargas muertas. Sus valores se deducen de las dimensiones de los elementos especificadas en los planos y de sus pesos específicos correspondientes.

4.5.1.1. Peso propio

Corresponde al peso de los elementos estructurales, con su sección bruta, aplicándole el peso específico del material:

Peso propio hormigón: 25.00 kN/m³

4.5.1.2. Cargas muertas

Son las debidas a los elementos no estructurales que gravitan sobre la estructura, tales como: pavimentos, barreras, etc. Se han considerado los siguientes valores característicos:

▪ *Balasto*	*16.0 kN/m³*
▪ *Tierra*	*20.0 kN/m³*
▪ *Peso traviesas por vía*	*5.2 kN/m*

- *Peso carriles por vía* *1.2 kN/m*
- *Peso conducciones, cableado...* *3.0 kN/m*
- *Carga muerta en paseos* *5.0 kN/m²*
- *Imposta ,barandillas* *5.5 kN/m*
- *Canaleta* *1.4 kN/m*
- *Muretes en borde de losa* *2.5 kN/m*

Se han considerado tres valores para la carga de balasto. El valor nominal de 0.25 m, el valor mínimo de 0.70*0.25m y el valor máximo de 1.30*0.25 m.

4.5.2. Acciones permanentes de valor no constante

Acciones que actúan en todo momento pero cuya magnitud no es constante.

Se incluyen aquellas acciones cuya variación sea función del tiempo transcurrido y se produzca en un solo sentido, tendiendo hacia un determinado valor límite (acciones reológicas, pretensado, asientos del terreno bajo las cimentaciones), y aquellas otras acciones originadas por el terreno cuya magnitud varía en función de la interacción terreno-estructura.

4.5.3. Acciones reológicas

Las acciones reológicas se obtienen a partir de los valores característicos de las deformaciones provocadas por la retracción y la fluencia.

La deformación debida a la retracción del hormigón es función de la humedad relativa del ambiente, del espesor ficticio de la pieza, de la cuantía de armadura, de las condiciones de amasado del hormigón y del tiempo transcurrido desde su puesta en obra.

La deformación debida a la fluencia del hormigón bajo carga constante se considera proporcional a la deformación elástica instantánea.

Este tipo de acciones originan estados tensionales que son variables tanto en altura (geometría, condiciones de borde) como en planta (grado de soleamiento, etc.). Se ha optado por tener en cuenta su efecto sobre la fisuración de la estructura, disponiendo la armadura necesaria.

La Instrucción EHE define los valores dados en la tabla adjunta:

CUANTÍAS GEOMÉTRICAS MÍNIMAS, EN TANTO POR 1000, REFERIDAS A LA SECCIÓN TOTAL DE HORMIGÓN			
		B-400 S.	B-500 S
LOSAS (*)		2.0	1.8
MUROS (**)	HORIZONTAL	4.0	3.2
	VERTICAL	1.2	0.9

(*) Cuantía mínima de cada una de las armaduras, longitudinal y transversal repartida en las dos caras. Las losas apoyadas sobre el terreno requieren un estudio especial.

(**) La cuantía mínima vertical es la correspondiente a la cara de tracción. Se recomienda disponer en la cara opuesta una armadura mínima igual al 30% de la consignada.
La armadura mínima horizontal deberá repartirse en ambas caras. Para muros vistos por ambas caras debe disponerse el 50% en cada cara. Para muros vistos por una sola cara podrán disponerse hasta 2/3 de la armadura total en la cara vista. En el caso de que se dispongan juntas verticales de contracción a distancias no superiores a 7.5 m con la armadura horizontal interrumpida, las cuantías horizontales mínimas pueden reducirse a la mitad.

4.5.4. Acciones debidas al terreno

En el cálculo de los elementos de contención de tierras, se tienen en cuenta las acciones debidas al relleno del trasdós, considerando independientemente los efectos del peso del terreno y de los empujes.

El peso del terreno se determina aplicando al volumen de terreno que gravita sobre la superficie del elemento horizontal, el peso específico del relleno vertido y compactado.

El empuje sobre los elementos estructurales se determinará de acuerdo con los conceptos geotécnicos, en función de las características del terreno y de la interacción terreno-estructura.

Con el fin de quedarnos del lado de la seguridad, se considerará el empuje activo o el empuje en reposo, según sea más desfavorable para los distintos esfuerzos que se estén analizando, con los valores de los coeficientes de empuje indicados anteriormente.

En ningún caso en que su actuación sea desfavorable para el efecto estudiado, el valor del empuje será inferior al equivalente del empuje hidrostático de un fluido de peso específico 5 kN/m^3.

En el caso de asientos del terreno, sus valores se deducen de los parámetros o condiciones establecidas en el preceptivo estudio geotécnico, teniendo en cuenta las características del terreno, la tipología y geometría de la cimentación, y las cargas transmitidas.

4.5.5. Sobrecargas de uso

Son acciones externas a la estructura que pueden actuar o no sobre ella por razón de su uso.

Las componentes verticales del tren de cargas corresponden a las dos acciones siguientes actuando simultáneamente: Carga del tráfico ferroviario y sobrecarga en aceras y paseos.

4.5.5.1. Tráfico ferroviario.

Se considera la carga más desfavorable entre las definidas por la IAPF-2001 y la IAPF-1975

- IAPF-2001:

Las componentes verticales del esquema de cargas denominado tren UIC 71 que representa el efecto estático correspondiente a una sola vía, están constituidas por las acciones siguientes actuando simultáneamente:

a) *Cuatro ejes de 250 kN, dispuestos en el eje de la vía, separados longitudinalmente entre sí 1.60 m.*
b) *Una sobrecarga uniforme repartida de 80 kN/m extendida en la longitud y posición que sea más desfavorable para el efecto estudiado. No se dispondrá esta sobrecarga en una longitud igual a 6.40 m centrada en los cuatro ejes definidos en a).*

Estas cargas serán afectadas por un coeficiente de clasificación α. El valor del coeficiente α será:

α = 1.21 para vía de ancho RENFE.
α = 1.21 para vía de ancho internacional.
α = 0.91 para vía métrica.

- IAPF-1975:

Se considerara para cada elemento el tren tipo que dé una sobrecarga más desfavorable entre los que a continuación se indican, correspondientes a circulación por una vía.

TREN TIPO A. Esta constituido por tres ejes de 30 toneladas separados entre sí 1.50 m.

TREN TIPO B. Esta constituido por una sobrecarga uniforme repartida de 12 toneladas por metro, extendida en una longitud de 15 o 30 m, seguida inmediatamente de otras sobrecargas uniformemente repartidas de 10 y 1 tonelada por metro.

4.5.5.2. Sobrecarga en aceras

Se considera una sobrecarga uniforme de 5 kN/m² extendida en toda la superficie, o en parte de ella, según sea más desfavorable para el elemento en estudio, de aceras, paseos de servicio y zonas del tablero no afectadas directamente por el tráfico ferroviario.

4.5.5.3. Ubicación transversal de las cargas.

En puentes con balasto, para prever la posibilidad de ripado de la vía, se tendrá en cuenta un eventual desplazamiento de 0,30 metros con respecto a su eje inicial.

4.5.5.4. Excentricidad de la carga.

El efecto de una posible distribución de las cargas no simétrica entre los carriles se tendrá en cuenta considerando una relación de cargas entre las dos ruedas que forman cada eje igual a 1,25. La excentricidad resultante será entonces e = r/18, siendo r la separación entre apoyos de ruedas.

4.5.5.5. Efectos dinámicos.

La solicitaciones y deformaciones reales en un puente debidas al tráfico ferroviario son de naturaleza dinámica, pudiendo resultar valores máximos incrementados o reducidos respecto de las solicitaciones obtenidas en el cálculo estático.

El cálculo dinámico será necesario, según la IAPF, para las componentes verticales de las cargas.

Para líneas cuya velocidad de proyecto sea inferior a 220 km/h, los efectos dinámicos se evalúan mediante el

coeficiente de impacto Φ que multiplica a las acciones debidas a las sobrecargas de uso.

El coeficiente de impacto, según la IAPF, para vía de mantenimiento bueno toma un valor de:

$\Phi = 1.23$

con $1.00 \leq \Phi \leq 2.00$

$L_\Phi = 13.50\ m$

La aplicación del coeficiente de impacto implica que se cumplan las siguientes condiciones:

- Velocidad inferior a 220 km/h
- Puente de tipología convencional.
- Puente cuya primera frecuencia propia de flexión, f_0, sometido a cargas permanentes, se encuentra dentro del siguiente huso:

Límite superior $f_0 = 94.76 \cdot L_\Phi^{-0.748} = 13.68 Hz$

Límite inferior $f_0 = 80 / L_\Phi = 5.93\ Hz$

$(4m < L_\Phi < 20m)$

Para la estructura de estudio,

$$f_0(Hz) = \frac{1}{0.15} = 6.66 Hz$$

luego resulta de aplicación el método del coeficiente de impacto.

4.5.5.6. Frenado y arranque.

El valor característico de esta acción, correspondiente a una sola vía, es el siguiente:

Frenado:

$q_{l,k} = \alpha * 20(kN/m) * L(m) \leq \alpha * 6000\ (kN)$

En nuestro caso 1113 kN/vía.

Arranque:

$q'_{l,k} = \alpha * 33(kN/m) * L'(m) \leq \alpha * 1000\ (kN)$

En nuestro caso 1210 kN/vía.

4.5.5.7. Sobrecarga en terraplenes

A efectos del cálculo de empujes del terreno sobre elementos de la estructura en contacto con él, se considerará actuando en la parte superior del terraplén, en la zona por donde pueda discurrir el tráfico, una sobrecarga uniforme de 10 kN/m².

Esta sobrecarga se tendrá en cuenta únicamente en los casos en que las cargas producidas por el tráfico actúen a una distancia, medida en horizontal desde la parte superior de la estructura, menor o igual a la mitad de la altura del elemento de la estructura sobre el que actúe el empuje.

En determinados casos, deberán tenerse en cuenta los empujes locales debidos a la actuación de un eje del vehículo pesado del tren de cargas definido.

4.5.6. Acciones Sísmicas

Las acciones sísmicas en puentes se considerarán únicamente cuando el valor de la aceleración de cálculo resulte igual o superior a 0.04 g.

4.5.6.1. Aceleración sísmica de cálculo

La aceleración de cálculo en el terreno a_c a considerar en el estudio sísmico para una estructura en servicio adopta la expresión:

$a_c = \rho\ a_b$

Siendo a_b la aceleración sísmica básica y ρ el coeficiente de riesgo.

De acuerdo con la Norma de Construcción Sismorresistente (NCSR-02), la aceleración sísmica básica a_b de la localidad de Barcelona adopta el valor:

$a_b = 0.04\ g$

Según la importancia del puente, la aceleración de cálculo en el terreno se obtiene multiplicando los valores básicos por un coeficiente ρ función del nivel de daño. Las categorías de los puentes, atendiendo a criterios de afección y acciones sísmicas, se definen de acuerdo con el uso a que se destine la estructura y con los daños que pueda ocasionar su destrucción.

En nuestro caso, podemos calificarlo de puente de normal importancia , siendo entonces el coeficiente de riesgo:

$\rho = 1.00$

Que corresponde, para una vida útil del puente de 100 años. Se obtiene, por tanto, para la estructura, una aceleración de cálculo de valor:

$a_c = 0.04$ g

Por lo tanto, la acción sísmica no es necesaria tenerla en cuenta en el cálculo.

4.6. HIPÓTESIS DE CARGA

4.6.1. Valores representativos

De acuerdo con la Instrucción IAPF, los valores representativos de las acciones utilizados para la verificación de los estados límites serán:

4.6.1.1. Permanentes (G)

Para las acciones permanentes se considerará un único valor representativo, coincidente con el valor característico G_k, excepto en el caso de la acción correspondiente al peso del balasto y en su caso, las acciones producidas por los servicios situados sobre el puente, para la que se considerarán dos valores representativos $G_{k,sup}$ y $G_{k,inf}$.

4.6.1.2. Permanentes de valor no constante (G*)

- *Presolicitaciones*

Para las acciones originadas por las presolicitaciones definidas anteriormente se considerará un único valor representativo, coincidente con el valor característico $P_{k,t}$ correspondiente al instante t en el que se realiza la comprobación del estado límite.

- *Acciones Reológicas*

Para las acciones de origen reológico, fluencia y retracción, se considerará un único valor representativo, coincidente con el valor característico $R_{k,t}$ correspondiente al instante t en el que se realiza la comprobación.

- *Acciones debidas al terreno*

Para las acciones correspondientes al peso del terreno se considerará un único valor representativo, coincidente con el valor característico $G^*_{wt,k}$.

Para las acciones correspondientes al empuje del terreno y movimientos del terreno bajo las cimentaciones se considerará el valor representativo de acuerdo con lo expuesto anteriormente.

4.6.1.3. Variables (Q)

Cada una de las acciones variables podrá considerarse con los siguientes valores representativos:

- *Valor característico Qk*

será el valor de la acción cuando actúe aisladamente, como ha sido definido anteriormente.

- *Valor de combinación $\psi 0$ Qk:*

será el valor de la acción cuando actúe con alguna otra acción variable, para tener en cuenta la pequeña probabilidad de que actúen simultáneamente los valores más desfavorables de varias acciones independientes.

- *Valor frecuente $\psi 1$ Qk:*

será el valor de la acción que sea sobrepasado durante un período de corta duración respecto a la vida útil del puente (5%

del tiempo). Corresponde a un período de retorno de una semana.

- *Valor casi-permanente ψ_2 Qk:*

será el valor de la acción que sea sobrepasado durante una gran parte de la vida útil del puente (el 50% o más del tiempo) o bien el valor medio.

Los valores de los coeficientes y se recogen en la siguiente tabla.

VALORES DE LOS COEFICIENTES ψ			
ψ_0	ψ_0	ψ_1	ψ_2
Viento	0.60	0.50	0.20
Temperatura	0.60	0.50	0.20
Cargas de tráfico	0.80	0.50	0.00

4.6.1.4. Accidentales (A)

Para las acciones accidentales se considerará un único valor representativo coincidente con el valor característico A_k.

4.6.2. Valores de cálculo

Los valores de cálculo de las diferentes acciones serán los obtenidos aplicando el correspondiente coeficiente parcial de seguridad γ_F a los valores representativos de las acciones definidas anteriormente.

Los coeficientes parciales de seguridad se indican en la siguiente tabla:

COEFICIENTES DE SEGURIDAD γ_F							
ESTADOS LIMITES		ÚLTIMOS				DE SERVICIO	
SITUACIONES		PERSISTENTES Y TRANSITORIAS		ACCIDENTALES		PERSISTENTES Y TRANSITORIAS	
ACCIÓN		Favorable	Desfavo-rable	Favorable	Desfavo-rable	Favorable	Desfavo-rable
PERMANENTE γ_G		1.00	1.35	1.00	1.00	1.00	1.00
PERMANENTE DE VALOR NO CONSTANTE γ_{G^*}	Pretensado P_1 Postesas Pretesas	1.00	1.00	1.00	1.00	0.90 0.95	1.10 1.05
	Pretensado P_2	1.00	1.35	1.00	1.00	1.00	1.00
	Presolicitación	0.95	1.05	1.00	1.00	1.00	1.00
	Reológica	1.00	1.35	1.00	1.00	1.00	1.00
	Acción del terreno	1.00	1.50	1.00	1.00	1.00	1.00
VARIABLE γ_Q		0.00	1.50	0.00	1.00	0.00	1.00
ACCIDENTAL γ_A				1.00	1.00		

4.6.3. Hipótesis de Carga

Según la Instrucción IAPF, las hipótesis de carga a considerar se formarán combinando los valores de calculo de las acciones cuya actuación pueda ser simultanea, según los criterios generales que se indican a continuación:

A) ESTADOS LÍMITE ÚLTIMOS

Para la comprobación de los Estados Límites Últimos se considerarán las situaciones persistentes y transitorias, y las accidentales con o sin sismo.

A1) Situaciones persistentes o transitorias

Las combinaciones de las distintas acciones consideradas en estas situaciones, excepto en el ELU de fatiga, se realizan de acuerdo con el siguiente criterio:

$$\sum_{j\geq 1} \gamma_{G,j}\, G_{k,j} + \sum_{i\geq 1} \gamma_{G^*,i}\, G^{-}_{k,i} + \gamma_{Q,1}\, Q_{k,1} + \sum_{i>1} \gamma_{Q,i}\, \Psi_{0,i}\, Q_{k,i}$$

donde:

$G_{k,j}$ = Valor representativo de cada acción permanente.

$G^*_{k,i}$ = Valor representativo de cada acción permanente de valor no constante.

$Q_{k,1}$ = Valor representativo (valor característico) de la acción variable dominante.

$\psi_{0,i}\ Q_{k,i}$ = Valores representativos (valores de combinación) de las acciones variables concomitantes con la acción variable dominante.

En general, deberán realizarse tantas hipótesis o combinaciones como sea necesario, considerando, en cada una de ellas, una de las acciones variables como dominante y el resto como concomitantes.

Además, se deberán tener en cuenta las siguientes observaciones:

- *Si la acción de la sobrecarga de uso es considerada como dominante, se tomará ésta con su valor representativo y la acción del viento con su valor reducido, aplicándose además los coeficientes ψ indicados anteriormente.*
- *Si la acción del viento es considerada como dominante, se tomara esta acción con su valor representativo y no se considerará la actuación simultánea de la acción de la sobrecarga de uso.*

A2) Situaciones accidentales

Se distinguirán dos tipos de situaciones accidentales:

- *Las provocadas por choques de vehículos, locomotoras, barcos, etc., sobre los distintos elementos del puente.*
- *Las provocadas por la acción sísmica.*

A2a) Situaciones accidentales sin sismo

Las combinaciones de las distintas acciones consideradas en estas situaciones se realizarán de acuerdo con el siguiente criterio:

$$\sum_{j\geq 1} \gamma_{G,j}\ G_{k,j} + \sum_{i\geq 1} \gamma_{G^*,i}\ G^*_{k,i} + \gamma_{Q,1}\ \Psi_{1,1}\ Q_{k,1} + \sum_{i>1} \gamma_{Q,i}\ \Psi_{2,i}\ Q_{k,i} + \gamma_A\ A_k$$

donde:

$G_{k,j}$ = Valor representativo de cada acción permanente.

$G^*_{k,i}$ = Valor representativo de cada acción permanente de valor no constante.

$\psi_{1,1}\ Q_{k,1}$ = Valor representativo frecuente de la acción variable dominante.

$\psi_{2,i}\ Q_{k,i}$ = Valores representativos casi-permanentes de las acciones variables concomitantes con la acción variable dominante y la acción accidental.

A_k = Valor representativo característico de la acción accidental.

Para estas combinaciones serán de aplicación las observaciones indicadas en el planteamiento de las combinaciones A1).

A2b) Situaciones accidentales de sismo

Las combinaciones de las distintas acciones consideradas en estas situaciones se realizarán de acuerdo con el siguiente criterio:

$$\sum_{j\geq 1} \gamma_{G,j}\ G_{k,j} + \sum_{i\geq 1} \gamma_{G^*,i}\ G^*_{k,i} + \gamma_{Q,1}\ \Psi_{2,1}\ Q_{k,1} + \gamma_A\ A_{E,k}$$

donde:

$G_{k,j}$ = Valor representativo de cada acción permanente.

$G^*_{k,i}$ = Valor representativo de cada acción permanente de valor no constante.

$\psi_{2,1}\ Q_{k,1}$ = Valor representativo casi-permanentes de la acción relativa a la sobrecarga de uso. En puentes de baja o media intensidad de tráfico, no será necesario considerar esta acción.

$A_{E,k}$ = Valor representativo característico de la acción sísmica.

B) ESTADOS LÍMITE DE SERVICIO

Para las comprobaciones relativas a los Estados Límites de servicio se considerarán únicamente las situaciones persistentes y transitorias, excluyéndose las accidentales.

Las combinaciones de las distintas acciones consideradas en estas situaciones, se realizarán de acuerdo con el siguiente criterio:

B1) Combinación Característica (poco probable o rara)

$$\sum_{j\geq 1} G_{k,j} + \sum_{i\geq 1} \gamma_{G^*,i}\, G^-_{k,i} + \gamma_{Q,1}\, Q_{k,1} + \sum_{i>1} \gamma_{Q,i}\, \Psi_{0,i}\, Q_{k,i}$$

B2) Combinación Frecuente

$$\sum_{j\geq 1} G_{k,j} + \sum_{i\geq 1} \gamma_{G^*,i}\, G^-_{k,i} + \gamma_{Q,1}\, \Psi_{1,1}\, Q_{k,1} + \sum_{i>1} \gamma_{Q,i}\, \Psi_{2,i}\, Q_{k,i}$$

B3) Combinación Casi-permanente

$$\sum_{j\geq 1} G_{k,j} + \sum_{i\geq 1} \gamma_{G^*,i}\, G^-_{k,i} + \sum_{i\geq 1} \gamma_{Q,i}\, \Psi_{2,i}\, Q_{k,i}$$

Para las tres combinaciones serán de aplicación las observaciones indicadas en el planteamiento de las combinaciones A1).

5. CALCULOS ESTRUCTURALES

5.1. MODELO ESTRUCTURAL

5.1.1. Proceso del cálculo del tablero

El tablero de la estructura proyectada está formado por una losa de canto constante.

Para el cálculo de la losa se ha empleado un modelo bidimensional de elementos finitos tipo placa, procesado mediante el programa CEDRUS del paquete informático CUBUS. Se ha considerado la geometría real del tablero.

El cálculo realizado ha sido estático teniendo en cuenta la naturaleza dinámica de las cargas del tráfico ferroviario mediante coeficientes de impacto.

El tipo de apoyo considerado, en el modelo bidimensional de la losa, ha sido un empotramiento lineal, considerando la rigidez de la pantalla.

En realidad, para tener en cuenta los distintos estados de la losa durante la construcción, se han realizado dos modelos, uno con la losa ejecutada en la fase 1 y otro modelo con la losa completa.

5.1.2. Proceso de cálculo del marco

Para el cálculo del marco se ha empleado un modelo tridimensional mediante un modelo de elementos finitos tipo placa, procesado mediante el programa SOFISTIK. Se ha considerado la geometría real del marco en el modelo.

5.1.3. Proceso de cálculo de la pantalla

Para la contención de tierras se han dimensionado dos muros pantalla de alturas variables:

- Pantalla tipo 1: pantalla de 17.00 m en voladizo, con una altura libre entre 8.00 y 6.50 m, con un espesor de 1.00 m.
- Pantalla tipo 2: pantalla de 13.00 m en voladizo, con una altura libre entre 6.50 y 5.00 m, con un espesor de 0.70 m.

Para el dimensionamiento de las pantallas se ha realizado el cálculo de la misma frente a esfuerzos horizontales que le trasmite el relleno del terraplén.

Se ha realizado un modelo de elementos finitos tipo barra, tomando una franja de 1.00 m de ancho de pantalla. En este modelo se ha tenido en cuenta la coacción del terreno mediante una serie de muelles horizontales con las siguientes constantes elásticas extraídas del informe geotécnico:

Profundidad: 15.00 m ⇒ 50000 kN/m³

Profundidad: de15.00 a 25.00 m ⇒ 65000 kN/m³

Se ha considerado el siguiente modelo de cálculo:

- Se considera que la pantalla tiene permitido el movimiento en cabeza, por lo que trabaja como ménsula con las constantes elásticas horizontales mencionadas. El cálculo de empujes del terreno se realiza con el coeficiente de empuje activo.

Se ha determinado el tope estructural de cada uno de los muros pantalla.

Para la determinación del tope estructural se ha empleado la fórmula proporcionada por el libro de Jose Mª Rodríguez Ortiz, "Curso aplicado de cimentaciones", 1982.

$$Te = \alpha.fyk.Sa+\beta.fck.Sb+\kappa.fy'k.Sc$$

S_a, área de acero
S_b, área de hormigón
S_c, área de la camisa metálica

f_{yk}, resistencia característica de armaduras
f_{ck}, resistencia característica del hormigón

5.1.4. Proceso del cálculo de muros

Para la contención de tierras se han dimensionado cuatro muros convencionales de alturas variables (5.00, 4.00, 3.00 m y 2.00 m).

La comprobación de la estabilidad del muro se ha realizado con el programa CYPE Arquitectura, Ingeniería y Construcción, en su módulo sobre Muros de Contención.

Esta comprobación de estabilidad corresponde a las comprobaciones realizadas por el programa para la zapata, siendo tres: deslizamiento, vuelco y hundimiento.

COMPROBACIÓN AL HUNDIMIENTO

Se obtiene la ley de tensiones debajo de la zapata, que puede ser trapecial o triangular, pudiéndose producir de esta forma un despegue.

A partir de esta ley de tensiones se realizan las siguientes comprobaciones:

$\sigma_{media} \leq \sigma_{adm}$

$\sigma_{max} \leq 1.25\sigma_{adm}$

COMPROBACIÓN AL DESLIZAMIENTO

Se determina el coeficiente de rozamiento μ_c, necesario en la base de la zapata para el equilibrio, de la siguiente forma:

$$\mu_c = \frac{\Sigma V_d(\text{resultante de cargas horizontales})}{\Sigma N_d(\text{resultante de cargas verticales})}$$

Si μ_c es menor del coeficiente de rozamiento terreno – cimiento, es estable.

COMPROBACIÓN AL VUELCO

Con las combinaciones de equilibrio del muro, se determina el punto de paso de la resultante por la base de la zapata. Siendo e su excentricidad y B el ancho de la misma, se define el coeficiente de reserva de seguridad x como:

$$x = \left(\frac{0.5B}{e} - 1\right)100$$

Cuando la resultante quede dentro del ancho de la zapata hay estabilidad al vuelco, y el valor de x es positivo. Cuanto mayor sea, más estabilidad habrá al vuelco.

5.2. CÁLCULO DE ESFUERZOS Y DIMENSIONAMIENTO

Los modelos utilizados emplean el método de rigidez para la obtención de desplazamientos en los nudos, a partir de los cuales se

obtienen los esfuerzos en placas y reacciones en apoyos. Los resultados se obtienen para cada hipótesis simple de carga y combinación, obtenidas éstas según la normativa correspondiente en cada caso.

Se ha comprobado el estado límite de agotamiento frente a solicitaciones normales y frente a cortante siguiendo el articulado de la instrucción EHE.

5.2.1. Flexión.

Se adopta el máximo entre el armado de cálculo y la armadura mínima de la EHE.

5.2.2. Cortante.

Se ha comprobado en las secciones más desfavorables, siguiendo la metodología expuesta en la EHE.

5.2.3. Fisuración.

Se ha comprobado en las secciones más desfavorables, siguiendo la metodología expuesta en la EHE.

Para la comprobación del estado límite de fisuración se ha tenido en cuenta el artículo 49.2.4 de la instrucción EHE, en el que se limita la máxima abertura de fisura en función del ambiente:

ELEMENTO	AMBIENTE	$w_{máx}$(mm)
OBRA DE FABRICA	IIa	0.3

6. CONCLUSIONES

En el presente documento se ha procedido al dimensionamiento de la estructura del PASO BAJO RAMAL VALLÉS-MARTORELL Y VÍA BARCELONA-MARTORELL, situada en el P.K. 501+800 incluida en el "PROYECTO DE CONSTRUCCIÓN DE PLATAFORMA LÍNEA DE ALTA VELOCIDAD MADRID-ZARAGOZA-BARCELONA-FRONTERA FRANCESA. TRAMO A: CONEXIÓN VALLÉS-CASTELLBISBAL", esto es, de su tablero, pantallas y muros. Se ha realizado para ello los cálculos necesarios obteniendo dimensiones y armados y comprobando los coeficientes de seguridad frente a los distintos estados límite, de una manera justificada que se ha expuesto en los puntos anteriores.

Se ha procedido al cálculo del tablero y su dimensionado según el articulado de la EHE.

Se ha dimensionado la sección y las armaduras de las pantallas y muros de acuerdo con el articulado de la EHE.

El presente Documento se adjunta el desarrollo de los cálculos realizados, así como Planos de definición y detalles de la estructura del puente.

Valencia, Febrero de 2004

La Ingeniera Autora de la Memoria de Cálculo



Fdo.- Raquel SAHUQUILLO BORRÁS

Ingeniera de Caminos, C. y P.

MODELO DE CÁLCULO Y DIMENSIONAMIENTO DE LA LOSA SUPERIOR

ACCIONES

- PP ——————— 25 kN/m³
- CM

- Balasto: $\gamma = 16\ kN/m^3$
  Área balasto = 2'11 m² (h_{eq} = 0'25 m) } ——— 4 kN/m² en 8'5 m
  Hip. 1: valor característico = 4 kN/m²
  Hip. 2: valor máx (30% más) = 5'2 kN/m²
  Hip. 3: " mín (30% menos) = 2'8 kN/m²

- Tierras: $\gamma = 20\ kN/m^3$
  Área tierras = 3'23 m² (h_{eq} = 0'38 m) } ——— 7'6 kN/m² en 8'5 m

- Muretes: $\gamma_{hor} = 25\ kN/m^3$
  Área murete = 0'1 m² } ——— 2'5 kN/m

- Carriles y traviesas:

q traviesas = ——————— 5'2 kN/m
q carriles = ——————— 1'2 kN/m
6'4 kN/m
3'2 kN/m por carril

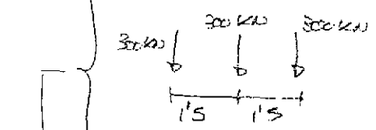
- Conductos de cableado, canaleta, imposta y barandillas

Cables ——————— q = 3 kN/ml
Imposta (A = 0'18 m²) ——— q = 25 x 0'18 = 4'5 kN/ml/lateral
Canaleta (A = 0'05 m²) ——— q = 25 x 0'05 = 1'4 kN/ml/lateral
Barandilla ——————— q = 1'00 kN/ml/barandilla
9'9 kN/ml

- SC DE USO SEGÚN IPF-75

(1) SC EN PASEOS : 5 kN/m² (50% incompatible con la SC ferroviaria)

(2) TREN TIPO A



⇒ la distribuimos en los ejes de las vías en 3 posiciones (centrado y descentrado)

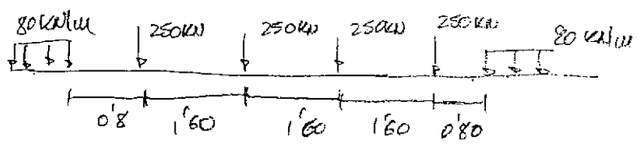
TREN TIPO B

SC UNIFORME 120 kN/ml en toda la vía

A estas dos SC se aplica un C IMPACTO = 1'41 (según IPF-75)

$$I = \frac{114\sqrt{L}}{3'1 - 1'76\sqrt{L} + L} \quad \text{donde } L = 13'50\ m$$

- SC DE USO SEGÚN IAPF-99



80 · 1'49 = 119'5 kN/m
250 · 1'49 = 373'5 kN/m

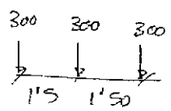
$\alpha = 1'21$

$$\phi = \frac{1'44}{\sqrt{L_\phi} - 0'2} + 0'82 = \frac{1'44}{\sqrt{13'5} - 0'2} + 0'82 = 1'23 \quad \text{(coef. de mayoración)}$$

$L_\phi = 13'5$

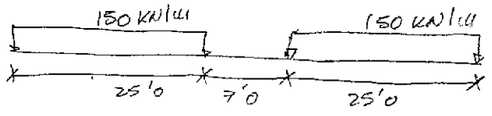
CARGAS SOBRE LA LOSA DE CIMENTACIÓN

- P.P ... 25 kN/m²
- CM
  - Balasto: $\gamma = 16\ kN/m^3$, $h_{eq} = 0'70\ m$ } ⇒ ... 11'20 kN/m²
    valor máx ... 14'56 kN/m²
    valor mín ... 7'84 kN/m²
  - Carriles y traviesas ... 6'4 kN/m
- SC IPF-75
  - Tren tipo A:



(2 posiciones < centrado / excéntrico)
$\phi = 1'41$

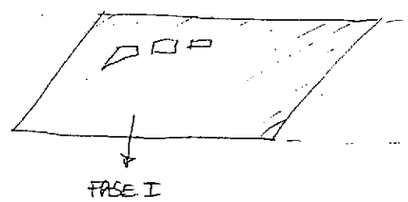
  - Tren tipo B: su efecto es menor que el tren 50kN/m del EC-1
  - Tren 50kN/m EC 1.3



Del lado de la seguridad se ha considerado un coeficiente de impacto $\phi = 1'23$. Tb se ha considerado un coef. de clasif. fricción $\alpha = 1'21$.

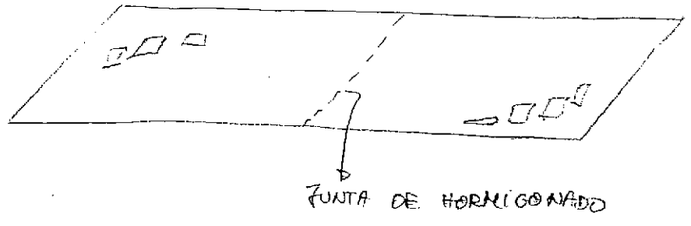
DIMENSIONAMIENTO DE LA LOSA

Para el dimensionamiento de la losa se han tenido en cuenta las fases constructivas, ya que en una primera fase únicamente se construye la mitad de



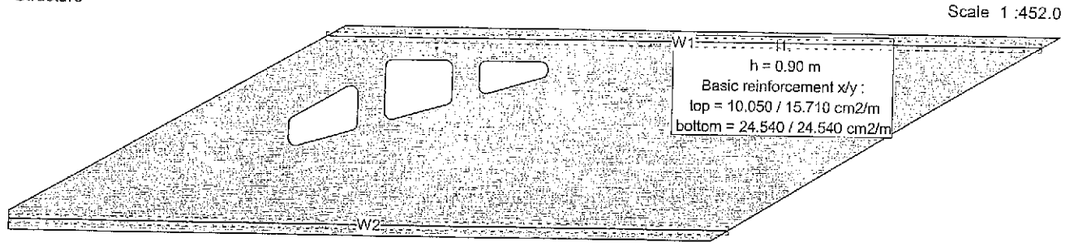
la losa dejando una junta de hormigonado con las esperas correspondientes.

En una segunda fase, se construye el resto de la losa, pasando a formar una única losa



Structure

Scale 1 :452.0



STRUCTURE DATA

THICKNESS AND MATERIAL

Isotropic	Young [kN/m2]	ν -	Thickness [m]	Top surface level [m]
I1	2.1E+7	0.2	0.90	0

WALLS

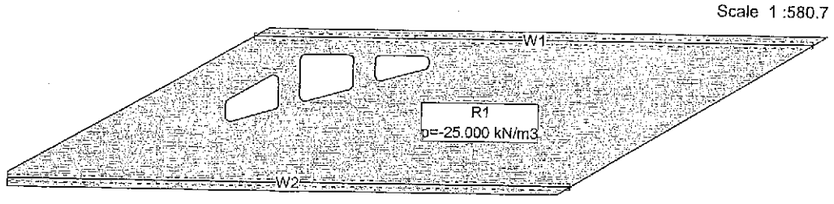
Id	compr. only	Type	sdz [kN/m2]	srx [kN]	sry [kN]	Width [m]	Height [m]	Young [kN/m2]
W1		general	blocked	(2.563E+5)	free	0.65	7.50	2.1E+7
like W1: W2								

LIST OF LOAD CASES

vLF Number	vTyp	Action	Title
1	Loads	Dead load	PP
2	Loads	Dead load	RETRACCION
3	Loads	Superimposed D.L.	BALASTO MAX
4	Loads	Superimposed D.L.	BALASTO MIN
5	Loads	Superimposed D.L.	BALASTO CARACTERISTICO
6	Loads	Dead load	TIERRAS
7	Loads	Dead load	MURETES
8	Loads	Dead load	CARRIL
9	Loads	Dead load	IMPOSTA
10	Loads	Imposed load (additive)	TREN A EXCENTRICO POSICION 1 V-M
11	Loads	Imposed load (additive)	Load case 11
12	Loads	Imposed load (additive)	TREN A CENTRADO V-M
13	Loads	Imposed load (additive)	Load case 13
14	Loads	Imposed load (additive)	TREN A EXCENTRICO POSICION 2 V-M
15	Loads	Imposed load (additive)	Load case 15
16	Loads	Imposed load (additive)	TREN B V-M
17	Loads	Imposed load (additive)	Load case 17
18	Loads	Imposed load (additive)	SC PASEOS
19	Loads	Imposed load (additive)	SC EXCENTRICA IAPF99 1 V-M
20	Loads	Imposed load (additive)	Load case 20
21	Loads	Imposed load (additive)	SC EXCENTRICA IAPF99 2 V-M
22	Loads	Imposed load (additive)	Load case 22
23	Loads	Imposed load (additive)	SC CENTRADA IAPF99 V-M
24	Loads	Imposed load (additive)	Load case 24

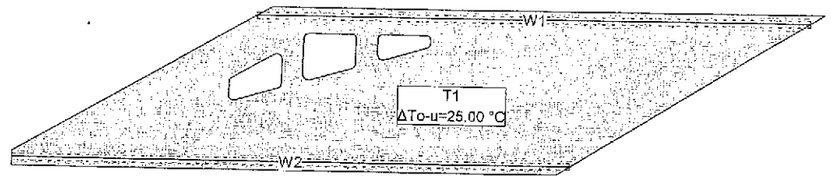
Load case 1: PP

Scale 1 :580.7



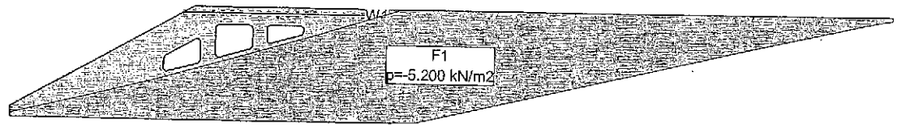
Load case 2: RETRACCION

Scale 1 :580.7



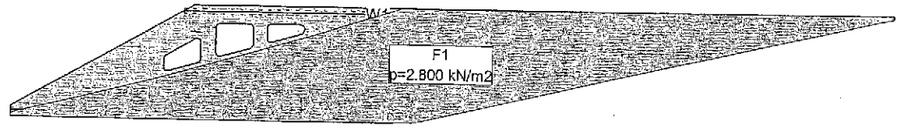
Load case 3: BALASTO MAX

Scale 1 :828.7



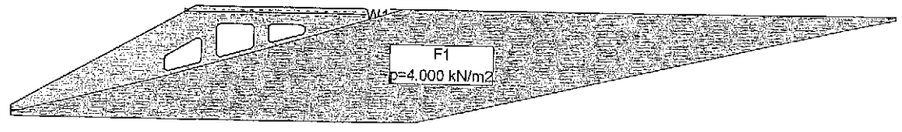
Load case 4: BALASTO MIN

Scale 1 :828.7



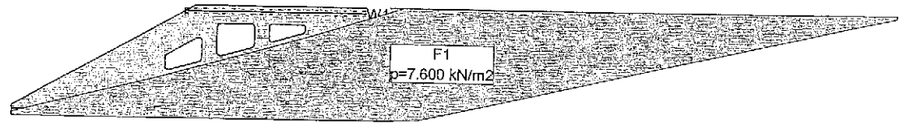
Load case 5: BALASTO CARACTERISTICO

Scale 1 :828.7



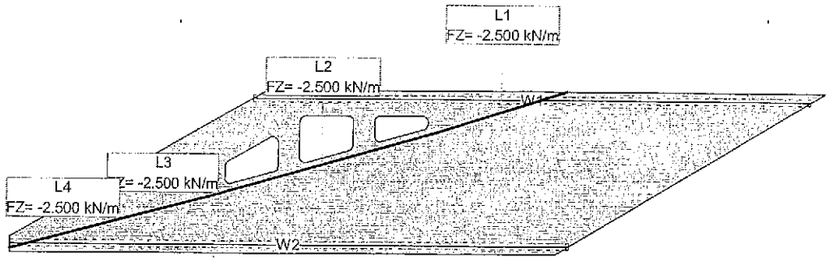
Load case 6: TIERRAS

Scale 1 :828.7



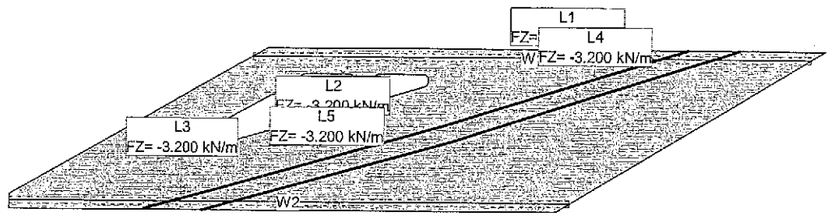
Load case 7: MURETES

Scale 1 :580.7



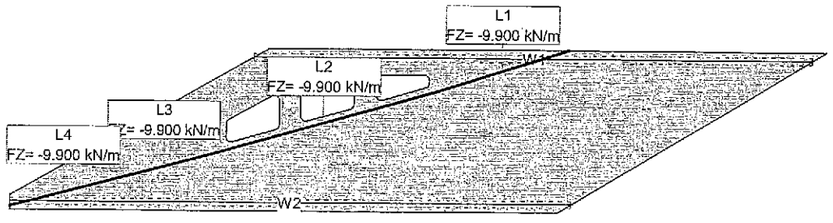
Load case 8: CARRIL

Scale 1 :580.7



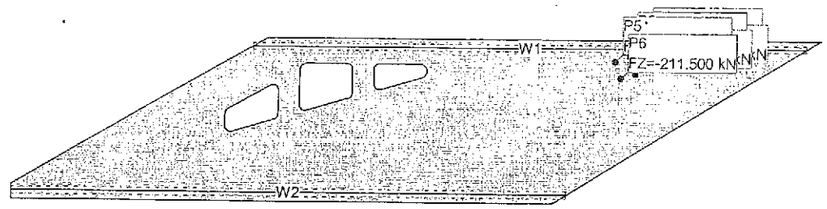
Load case 9: IMPOSTA

Scale 1 :580.7



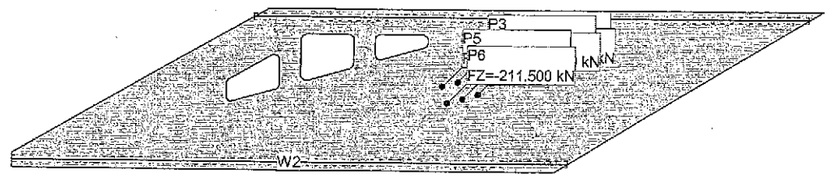
Load case 10: TREN A EXCENTRICO POSICION 1 V-M

Scale 1 :580.7



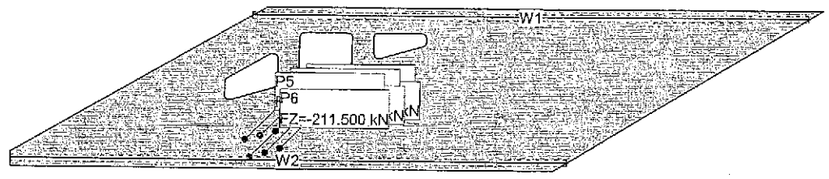
Load case 12: TREN A CENTRADO V-M

Scale 1 :580.7



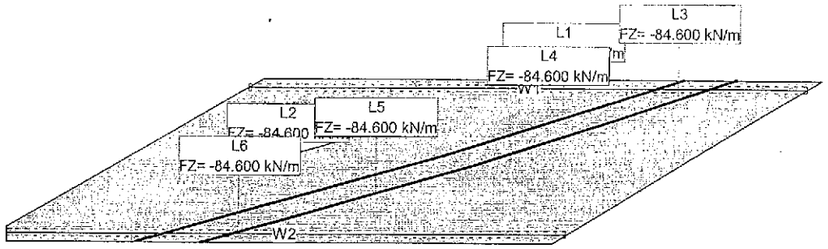
Load case 14: TREN A EXCENTRICO POSICION 2 V-M

Scale 1 :580.7



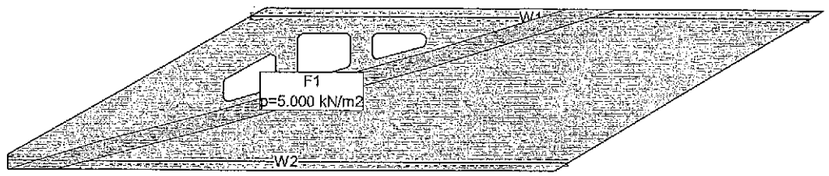
Load case 16: TREN B V-M

Scale 1 :580.7



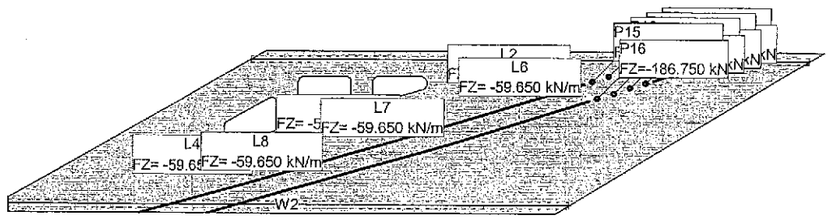
Load case 18: SC PASEOS

Scale 1 :580.7



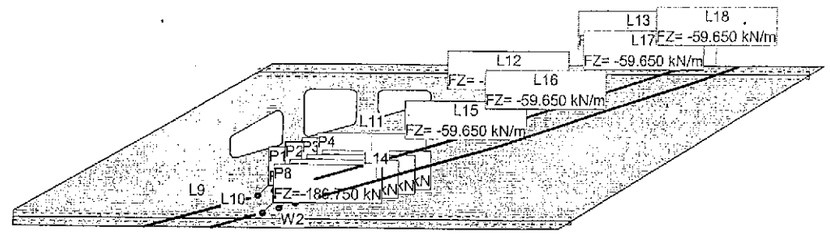
Load case 19: SC EXCENTRICA IAPF99 1 V-M

Scale 1 :580.7



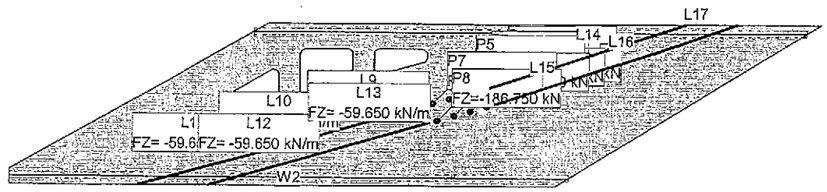
Load case 21: SC EXCENTRICA IAPF99 2 V-M

Scale 1 :580.7



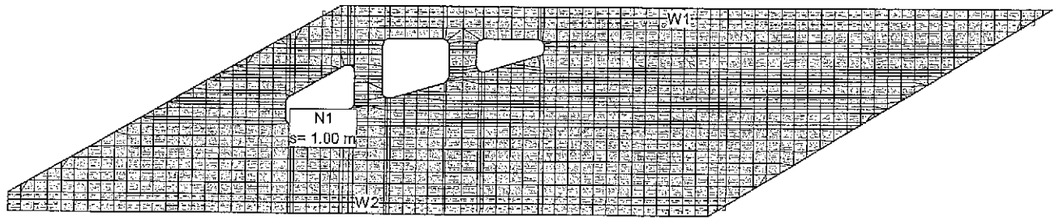
Load case 23: SC CENTRADA IAPF99 V-M

Scale 1 :580.7



Fe-Netz

Scale 1 :452.0



LIMIT STATE SPECIFICATION Code: EH 91 (Superposition according to Code type EC2)
ACTION: CARGAS MUERTAS

Permanent

either
- L1: [1.00] PP
- L2: [1.00] RETRACCION
- L3: [1.00] BALASTO MAX
- L6: [1.00] TIERRAS
- L7: [1.00] MURETES
- L8: [1.00] CARRIL
- L9: [1.00] IMPOSTA

or
- L2: [1.00] RETRACCION
- L1: [1.00] PP
- L4: [1.00] BALASTO MIN
- L6: [1.00] TIERRAS
- L7: [1.00] MURETES
- L8: [1.00] CARRIL
- L9: [1.00] IMPOSTA

or
L2: [1.00] RETRACCION
L1: [1.00] PP
L5: [1.00] BALASTO CARACTERISTICO
L6: [1.00] TIERRAS
L7: [1.00] MURETES
L8: [1.00] CARRIL
L9: [1.00] IMPOSTA

ACTION: VARIABLES
plus where critical L18: [0.50] SC PASEOS
plus where critical
either L19: [1.00] SC EXCENTRICA IAPF99 1 V-M
L20: [1.00] Load case 20
or L21: [1.00] SC EXCENTRICA IAPF99 2 V-M
L22: [1.00] Load case 22
or L23: [1.00] SC CENTRADA IAPF99 V-M
L24: [1.00] Load case 24
or L10: [1.00] TREN A EXCENTRICO POSICION 1 V-M
L11: [1.00] Load case 11
or L12: [1.00] TREN A CENTRADO V-M
L13: [1.00] Load case 13
or L14: [1.00] TREN A EXCENTRICO POSICION 2 V-M
L15: [1.00] Load case 15
or L16: [1.00] TREN B V-M
L17: [1.00] Load case 17

LIMIT STATE SPECIFICATION: ELU 1
Limit state: Ultimate (ULS)

Actions		Design situations	
Nr	Name	1	2
1	CARGAS MUERTAS	1.35	1
2	VARIABLES	1.5	1.5

LIMIT STATE SPECIFICATION Code: EH 91 (Superposition according to Code type EC2)
ACTION: CARGAS MUERTAS
Permanent
either L1: [1.00] PP
L2: [1.00] RETRACCION
L3: [1.00] BALASTO MAX
L6: [1.00] TIERRAS
L7: [1.00] MURETES
L8: [1.00] CARRIL
L9: [1.00] IMPOSTA
or L2: [1.00] RETRACCION
L1: [1.00] PP
L4: [1.00] BALASTO MIN
L6: [1.00] TIERRAS
L7: [1.00] MURETES
L8: [1.00] CARRIL
L9: [1.00] IMPOSTA
or L2: [1.00] RETRACCION
L1: [1.00] PP
L5: [1.00] BALASTO CARACTERISTICO
L6: [1.00] TIERRAS
L7: [1.00] MURETES
L8: [1.00] CARRIL
L9: [1.00] IMPOSTA

Cypecad Version 3.02
Valter, Valenciana de Estructuras
LAV PASO BAJO RAMAL VALLES-MARTORELL
LOSA
16.02.04, 19:35
RAQUEL

ACTION: SC PASEOS
plus where critical L18: [1.00] SC PASEOS

LIMIT STATE SPECIFICATION: ELU 2
Limit state: Ultimate (ULS)

Actions		Design situations	
Nr	Name	1	2
1	CARGAS MUERTAS	1.35	1
2	SC PASEOS	1.5	1.5

LIMIT STATE SPECIFICATION Code: EH 91 (Superposition according to Code type EC2)
ACTION: CARGAS MUERTAS
Permanent
either L1: [1.00] PP
L2: [1.00] RETRACCION
L3: [1.00] BALASTO MAX
L6: [1.00] TIERRAS
L7: [1.00] MURETES
L8: [1.00] CARRIL
L9: [1.00] IMPOSTA
or L2: [1.00] RETRACCION
L1: [1.00] PP
L4: [1.00] BALASTO MIN
L6: [1.00] TIERRAS
L7: [1.00] MURETES
L8: [1.00] CARRIL
L9: [1.00] IMPOSTA
or L2: [1.00] RETRACCION
L1: [1.00] PP
L5: [1.00] BALASTO CARACTERISTICO
L6: [1.00] TIERRAS
L7: [1.00] MURETES
L8: [1.00] CARRIL
L9: [1.00] IMPOSTA

ACTION: SC PASEOS
plus where critical L18: [1.00] SC PASEOS

LIMIT STATE SPECIFICATION: ELS 2
Limit state: Serviceability (SLS): Frequent

Actions		Design situations
Nr	Name	1
1	CARGAS MUERTAS	1
2	SC PASEOS	1

LIMIT STATE SPECIFICATION Code: EH 91 (Superposition according to Code type EC2)
ACTION: CARGAS MUERTAS
Permanent
either L1: [1.00] PP
L2: [1.00] RETRACCION
L3: [1.00] BALASTO MAX
L6: [1.00] TIERRAS
L7: [1.00] MURETES
L8: [1.00] CARRIL
L9: [1.00] IMPOSTA
or L2: [1.00] RETRACCION
L1: [1.00] PP
L4: [1.00] BALASTO MIN
L6: [1.00] TIERRAS
L7: [1.00] MURETES
L8: [1.00] CARRIL

L9: [1.00] IMPOSTA
or L2: [1.00] RETRACCION
L1: [1.00] PP
L5: [1.00] BALASTO CARACTERISTICO
L6: [1.00] TIERRAS
L7: [1.00] MURETES
L8: [1.00] CARRIL
L9: [1.00] IMPOSTA

ACTION: VARIABLES
plus where critical L18: [0.50] SC PASEOS
plus where critical
either L19: [1.00] SC EXCENTRICA IAPF99 1 V-M
L20: [1.00] Load case 20
or L21: [1.00] SC EXCENTRICA IAPF99 2 V-M
L22: [1.00] Load case 22
or L23: [1.00] SC CENTRADA IAPF99 V-M
L24: [1.00] Load case 24
or L10: [1.00] TREN A EXCENTRICO POSICION 1 V-M
L11: [1.00] Load case 11
or L12: [1.00] TREN A CENTRADO V-M
L13: [1.00] Load case 13
or L14: [1.00] TREN A EXCENTRICO POSICION 2 V-M
L15: [1.00] Load case 15
or L16: [1.00] TREN B V-M
L17: [1.00] Load case 17

LIMIT STATE SPECIFICATION: ELS 3
Limit state: Serviceability (SLS): Frequent

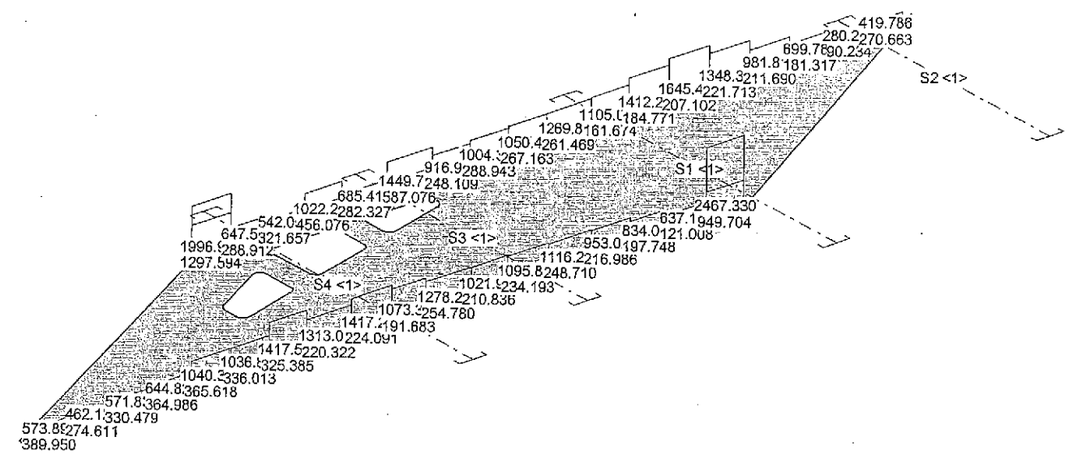
Actions		Design situations
Nr	Name	1
1	CARGAS MUERTAS	1
2	VARIABLES	1

LIMIT STATE SPECIFICATION Code: EH 91 (Superposition according to Code type EC2)
ACTION: CARGAS MUERTAS
Permanent
either L1: [1.00] PP
L2: [1.00] RETRACCION
L3: [1.00] BALASTO MAX
L6: [1.00] TIERRAS
L7: [1.00] MURETES
L8: [1.00] CARRIL
L9: [1.00] IMPOSTA
or L2: [1.00] RETRACCION
L1: [1.00] PP
L4: [1.00] BALASTO MIN
L6: [1.00] TIERRAS
L7: [1.00] MURETES
L8: [1.00] CARRIL
L9: [1.00] IMPOSTA
or L2: [1.00] RETRACCION
L1: [1.00] PP
L5: [1.00] BALASTO CARACTERISTICO
L6: [1.00] TIERRAS
L7: [1.00] MURETES
L8: [1.00] CARRIL
L9: [1.00] IMPOSTA

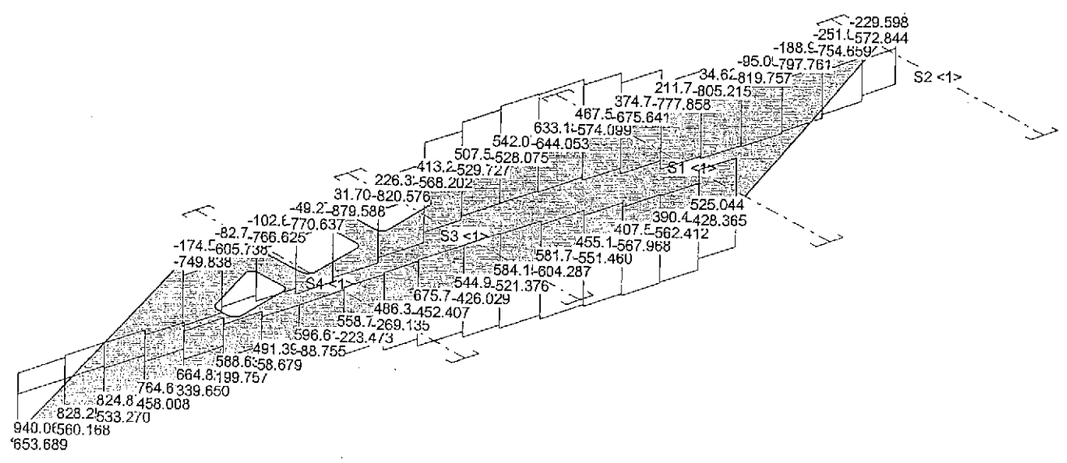
LIMIT STATE SPECIFICATION: ELS
Limit state: Serviceability (SLS): Frequent

Actions		Design situations
Nr	Name	1
1	CARGAS MUERTAS	1

Envelopes of reaction forces Columns: ELU 1
Walls values sectionwise presented, Identifications: Walls: [kN]



Envelopes of reaction moments Columns: ELU 1
Walls values sectionwise presented, Identifications: Walls: [kNm]



Envelopes of column reactions and corresponding components
Limit state specification: ELU 1

Columns	RZ<* RZ RZ [kN]	Rmx Rmx<* Rmx [kNm]	Rmy Rmy Rmy<* [kNm]	RZ>* Rz Rz [kN]	Rmx RMx>* Rmx [kNm]	Rmy Rmy RMy>* [kNm]

Line support W1.0:

Starting point: (-16.52, 14.50); Direction: 0.00°
Support length: 52.45m; x direction: 0.00°

Segment from [m]	to [m]	Length [m]	RZ<* RZ [kN]	Rmx Rmx<* [kNm]	RZ>* RZ [kN]	Rmx Rmx>* [kNm]
0.00	2.90	2.90	1297.594*	-193.258	1996.966*	-727.835
			1979.680	-749.838*	1305.239	-174.528*
2.90	5.47	2.57	288.912*	-82.797	647.501*	-605.738
			647.501	-605.738*	288.912	-82.797*
5.47	8.44	2.97	321.657*	-163.392	542.053*	-766.625
			542.053	-766.625*	328.486	-102.636*
8.44	11.17	2.73	456.076*	-49.546	1022.278*	-770.637
			1022.278	-770.637*	456.485	-49.278*
11.17	14.47	3.30	282.327*	1.512	685.412*	-879.588
			685.412	-879.588*	392.931	31.703*
14.47	17.82	3.35	587.076*	169.295	1449.739*	-820.576
			1449.739	-820.576*	802.859	226.328*
17.82	20.62	2.80	248.109*	302.515	916.927*	-526.089
			732.294	-568.202*	341.927	413.269*
20.62	23.42	2.80	288.943*	363.195	1004.320*	-444.492
			840.233	-529.727*	399.274	507.520*
23.42	26.22	2.80	267.163*	371.236	1050.480*	-469.699
			898.481	-528.075*	369.955	542.074*
26.22	29.54	3.32	261.469*	470.352	1269.876*	-584.155
			1099.988	-644.053*	359.955	633.184*
29.54	32.32	2.78	161.674*	346.864	1105.086*	-547.480
			974.480	-574.099*	222.822	467.531*
32.32	35.27	2.95	184.771*	236.138	1412.258*	-675.641
			1412.258	-675.641*	250.488	374.755*
35.27	38.21	2.95	207.102*	136.646	1645.403*	-548.777
			1494.293	-777.858*	283.483	211.795*
38.21	41.16	2.95	221.713*	17.743	1348.311*	-783.287
			1199.717	-805.215*	304.412	34.628*
41.16	44.11	2.95	211.690*	-96.873	981.813*	-802.395
			875.948	-819.757*	215.215	-95.091*
44.11	47.05	2.95	181.317*	-188.996	699.780*	-777.976
			626.134	-797.761*	181.317	-188.996*
47.05	50.00	2.95	90.234*	-356.649	280.269*	-636.027
			265.602	-754.659*	107.746	-251.099*
50.00	52.45	2.45	270.663*	-304.222	419.786*	-498.978
			413.476	-572.844*	276.964	-229.598*

Line support W2.0:

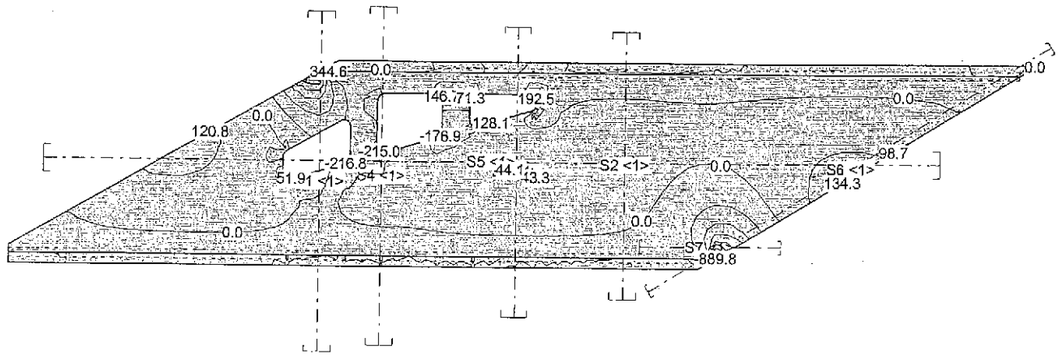
Starting point: (-39.50, 0.80); Direction: 0.00°
Support length: 52.85m; x direction: 0.00°

Segment from [m]	to [m]	Length [m]	RZ<* RZ [kN]	Rmx Rmx<* [kNm]	RZ>* RZ [kN]	Rmx Rmx>* [kNm]
0.00	3.40	3.40	389.950*	666.005	573.892*	928.009
			391.866	653.689*	572.006	940.064*
3.40	6.32	2.92	274.611*	575.227	462.128*	813.485
			279.501	560.168*	457.351	828.259*
6.32	9.23	2.92	330.479*	557.291	571.833*	801.104
			339.049	533.270*	562.985	824.872*
9.23	12.15	2.92	364.986*	489.615	644.824*	749.018
			365.015	458.008*	538.884	764.610*

Segment from [m]	to [m]	Length [m]	RZ<* RZ [kN]	Rmx Rmx<* [kNm]	RZ>* RZ [kN]	Rmx Rmx>* [kNm]
12.15	15.06	2.92	365.618*	340.259	1040.345*	664.827
			366.032	339.650*	1040.345	664.827*
15.06	17.98	2.92	336.013*	201.538	1036.856*	588.638
			336.415	199.757*	1036.856	588.638*
17.98	20.71	2.73	325.385*	62.242	1417.553*	491.390
			326.918	58.679*	1417.553	491.390*
20.71	24.04	3.33	220.322*	-62.690	1313.019*	596.619
			306.161	-88.755*	1313.019	596.619*
24.04	27.01	2.97	224.091*	-152.149	1417.289*	558.707
			314.878	-223.473*	1417.289	558.707*
27.01	29.49	2.49	191.683*	-171.610	1073.303*	438.762
			269.327	-269.135*	879.389	486.364*
29.49	32.83	3.34	254.780*	-339.919	1278.228*	635.781
			347.292	-452.407*	1116.935	675.717*
32.83	35.53	2.69	210.836*	-281.845	1021.966*	500.736
			287.707	-426.029*	885.883	544.985*
35.53	38.52	2.99	234.193*	-369.121	1095.812*	525.721
			322.341	-521.376*	941.794	584.151*
38.52	41.74	3.22	248.710*	-441.056	1116.210*	476.383
			341.356	-604.287*	932.118	581.740*
41.74	44.54	2.80	216.986*	-401.962	953.028*	382.646
			297.567	-551.460*	758.058	455.166*
44.54	47.34	2.80	197.748*	-404.736	834.083*	321.055
			273.696	-567.968*	681.184	407.517*
47.34	50.14	2.80	121.008*	-383.040	637.133*	332.627
			177.956	-562.412*	532.987	390.423*
50.14	52.85	2.72	949.704*	-189.969	2467.330*	520.923
			1285.684	-428.365*	1941.649	525.044*

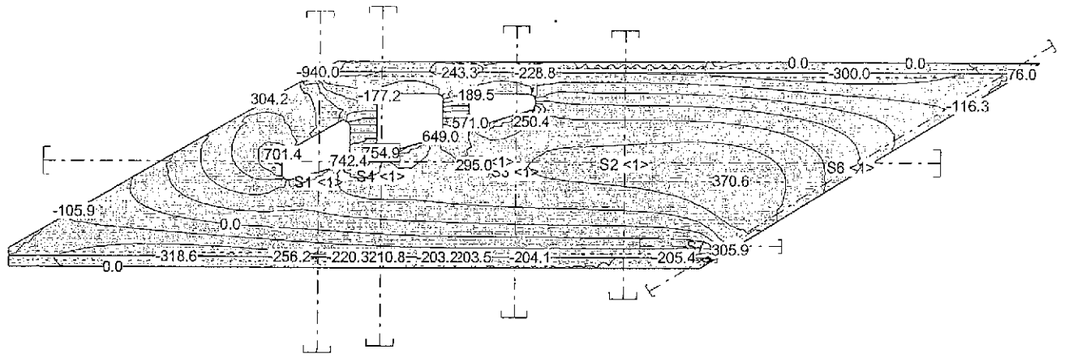
Sectional forces mx: Load case 1, Equidistance: 100.0 kN, Reference line: 0.0 kN

Scale 1 :459.2



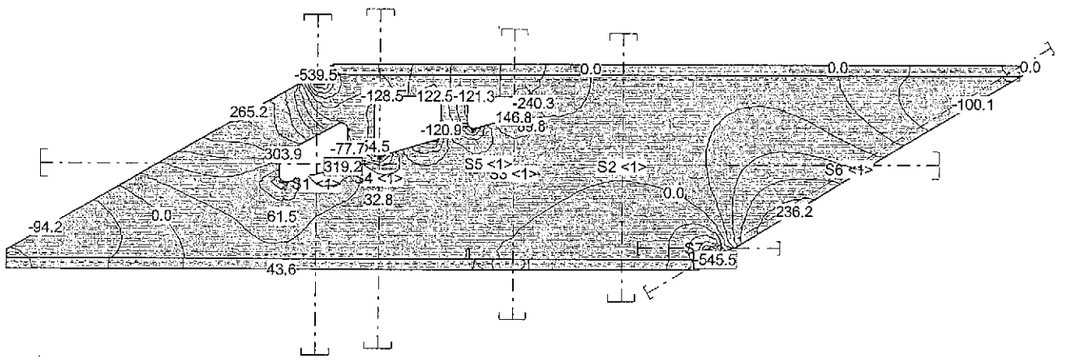
Sectional forces mx: Load case 1, Equidistance: 100.0 kN, Reference line: 0.0 kN

Scale 1 :459.2



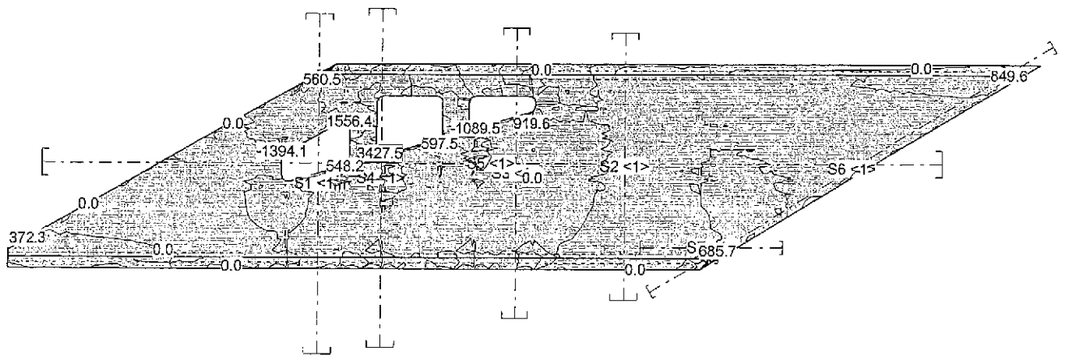
Sectional forces mxy: Load case 1, Equidistance: 50.0 kN, Reference line: 0.0 kN

Scale 1 :459.2



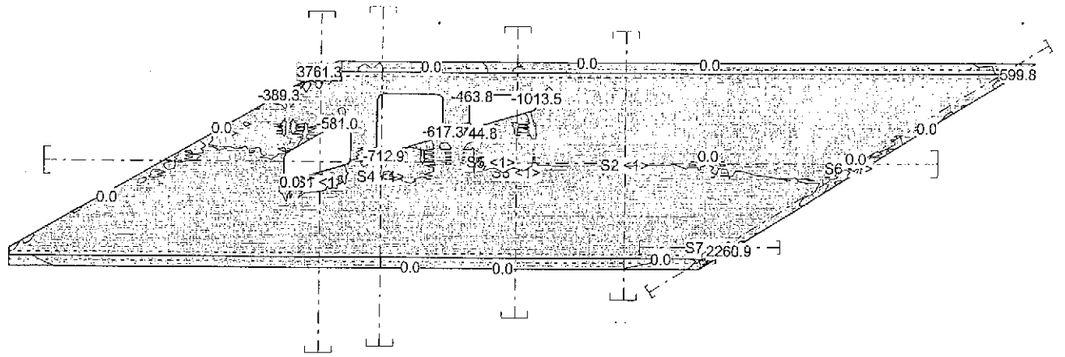
Sectional forces vx: Load case 1, Equidistance: 500.0 kN/m, Reference line: 0.0 kN/m

Scale 1 :459.2



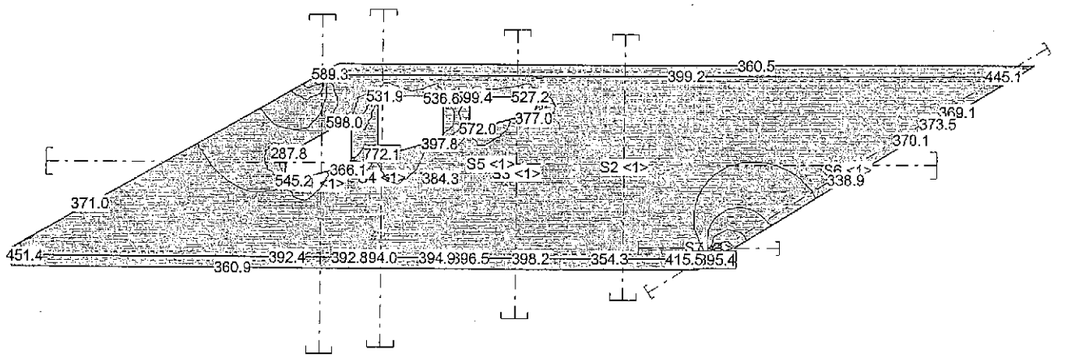
Sectional forces vy: Load case 1, Equidistance: 500.0 kN/m, Reference line: 0.0 kN/m

Scale 1 :459.2



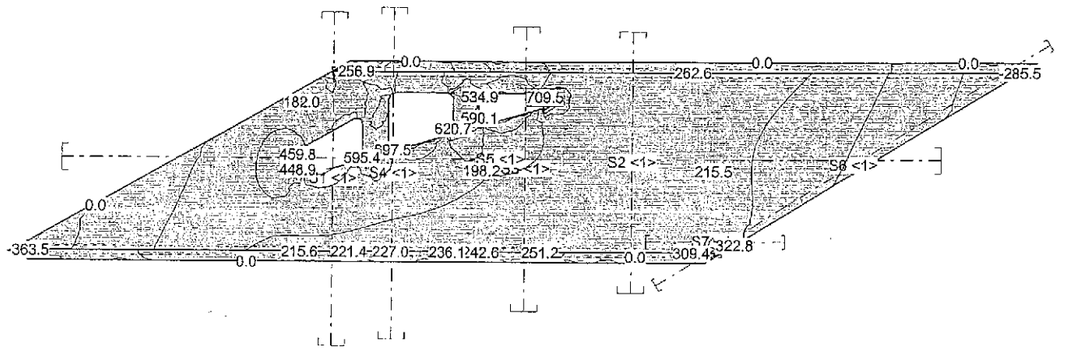
Sectional forces mx: Load case 2, Equidistance: 100.0 kN, Reference line: 0.0 kN

Scale 1 :461.8



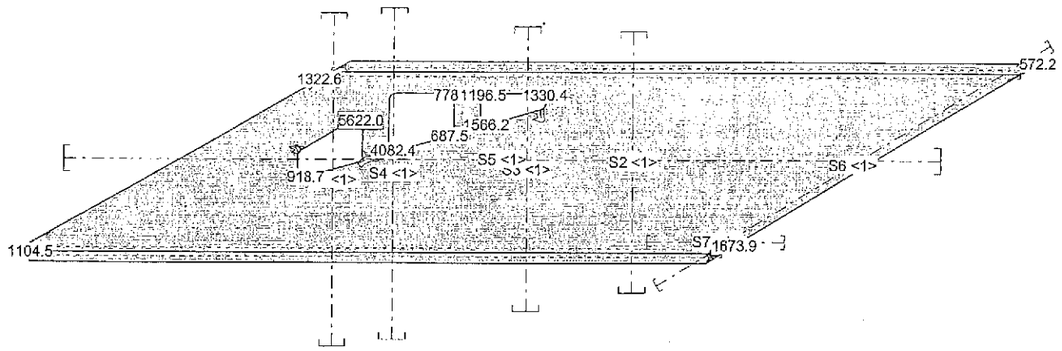
Sectional forces mx: Load case 2, Equidistance: 100.0 kN, Reference line: 0.0 kN

Scale 1 :468.7



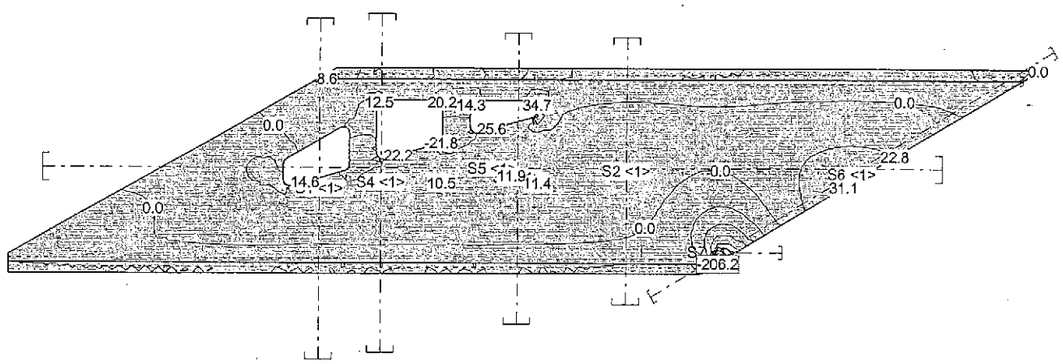
Sectional forces vtot: Load case 2, Equidistance: 500.0 kN/m, Reference line: 0.0 kN/m

Scale 1 :470.7



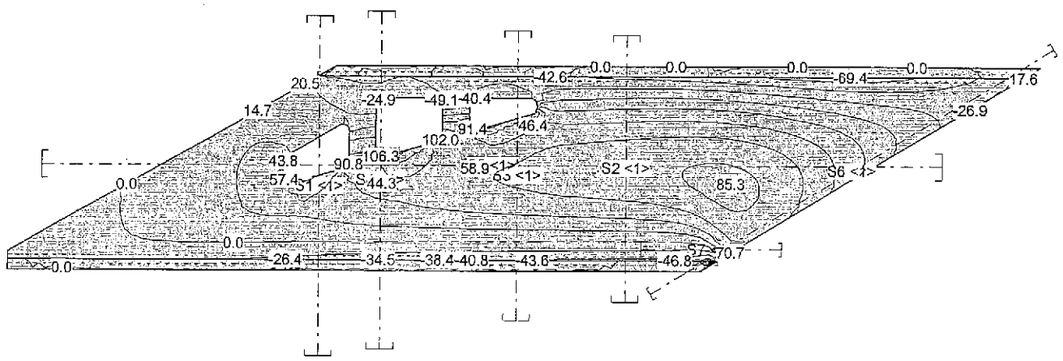
Sectional forces mx: Load case 3, Equidistance: 20.0 kN, Reference line: 0.0 kN

Scale 1 :459.2



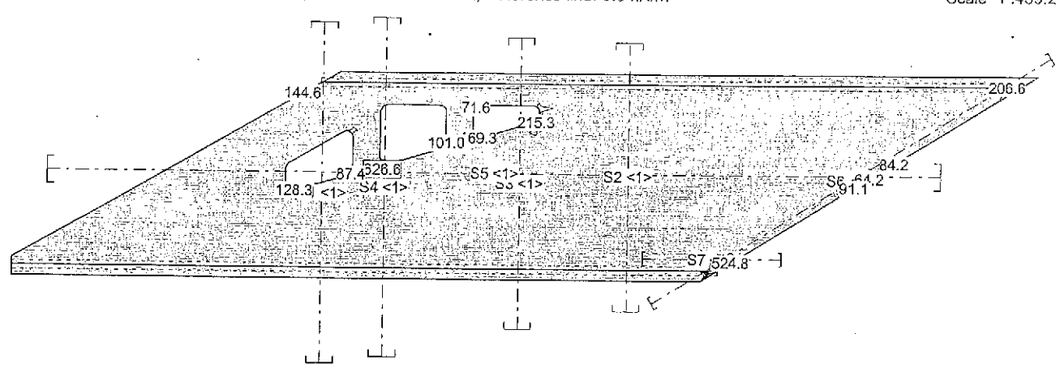
Sectional forces mx: Load case 3, Equidistance: 20.0 kN, Reference line: 0.0 kN

Scale 1 :459.2



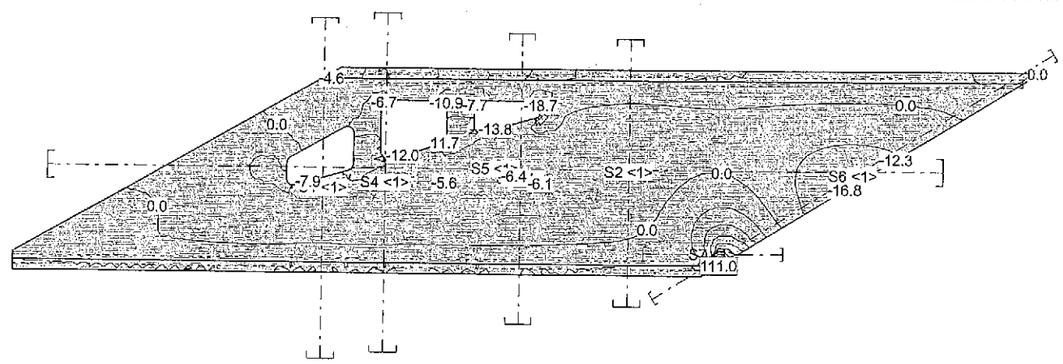
Sectional forces vtot: Load case 3, Equidistance: 100.0 kN/m, Reference line: 0.0 kN/m

Scale 1 :459.2



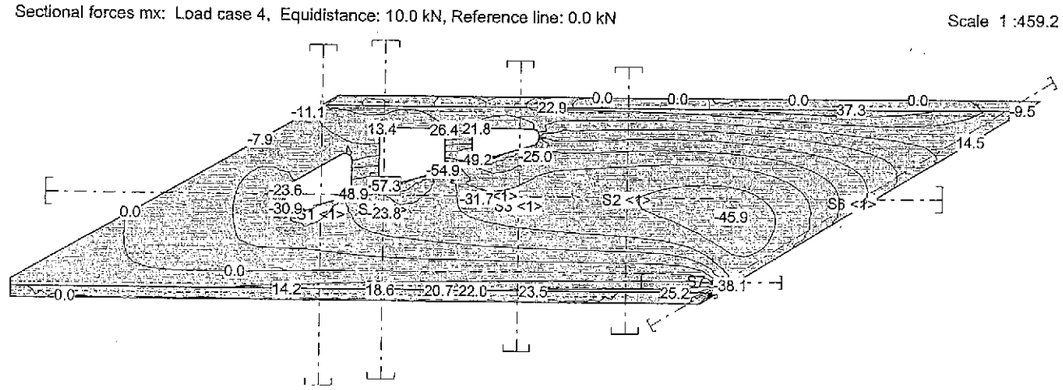
Sectional forces mx: Load case 4, Equidistance: 10.0 kN, Reference line: 0.0 kN

Scale 1 :459.2



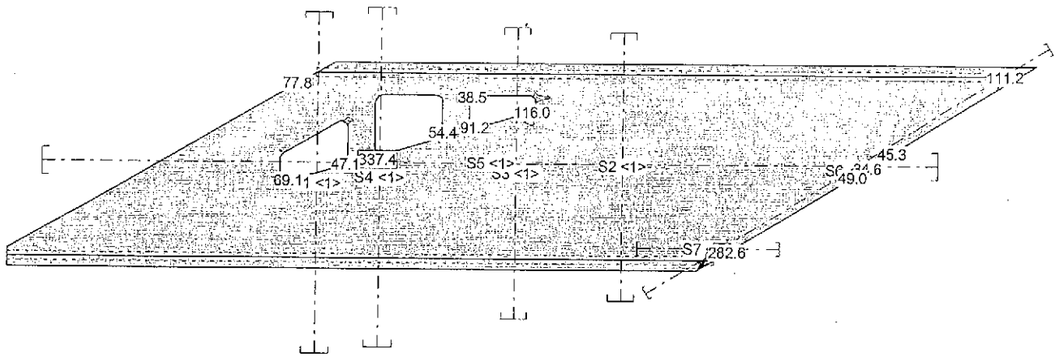
Sectional forces mx: Load case 4, Equidistance: 10.0 kN, Reference line: 0.0 kN

Scale 1 :459.2



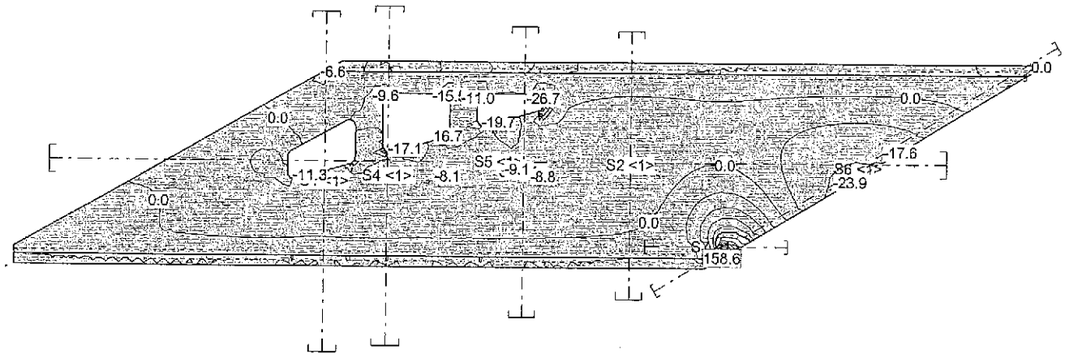
Sectional forces vtot: Load case 4, Equidistance: 50.0 kN/m, Reference line: 0.0 kN/m

Scale 1 :459.2



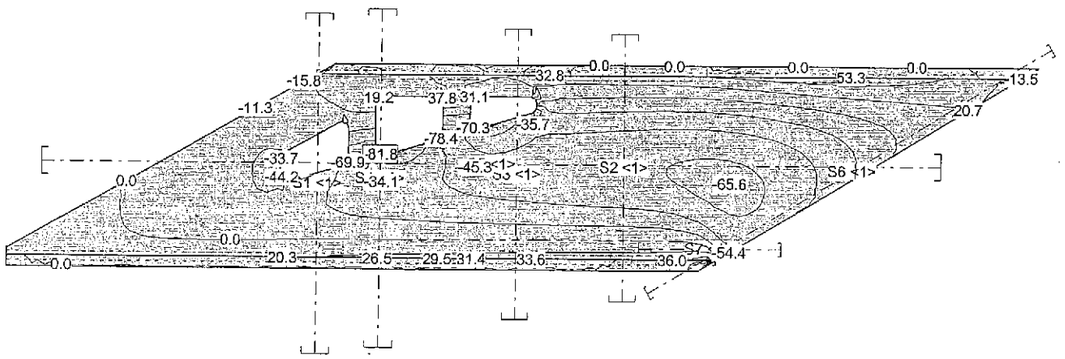
Sectional forces mx: Load case 5, Equidistance: 10.0 kN, Reference line: 0.0 kN

Scale 1 :459.2



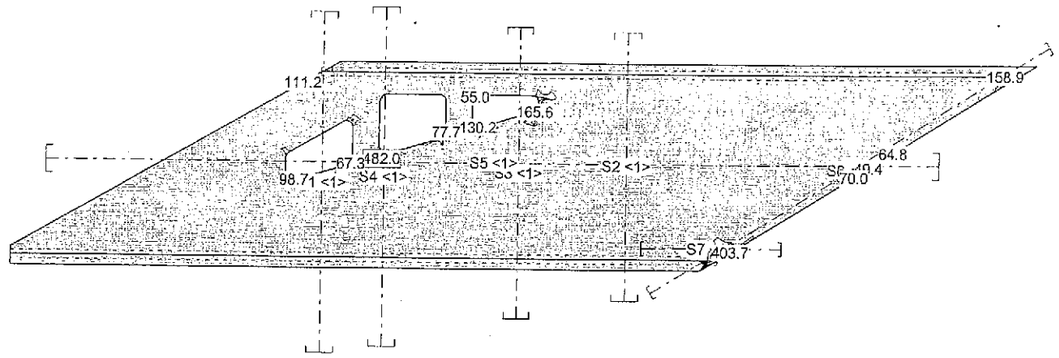
Sectional forces mx: Load case 5, Equidistance: 20.0 kN, Reference line: 0.0 kN

Scale 1 :459.2



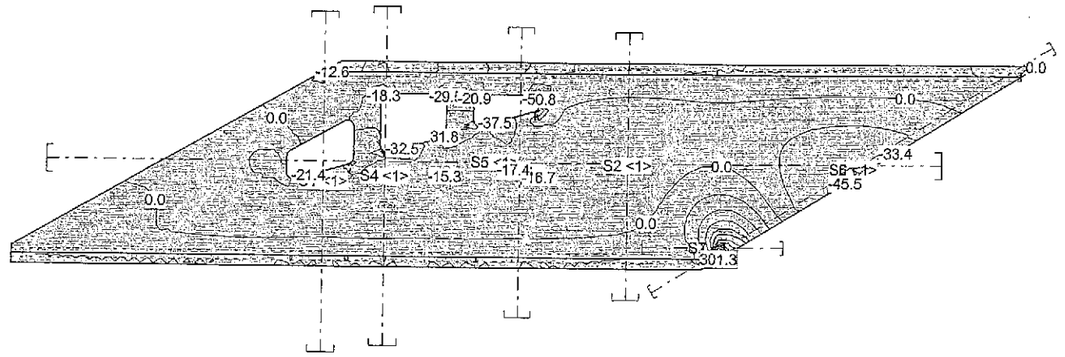
Sectional forces vtot: Load case 5, Equidistance: 50.0 kN/m, Reference line: 0.0 kN/m

Scale 1 :459.2



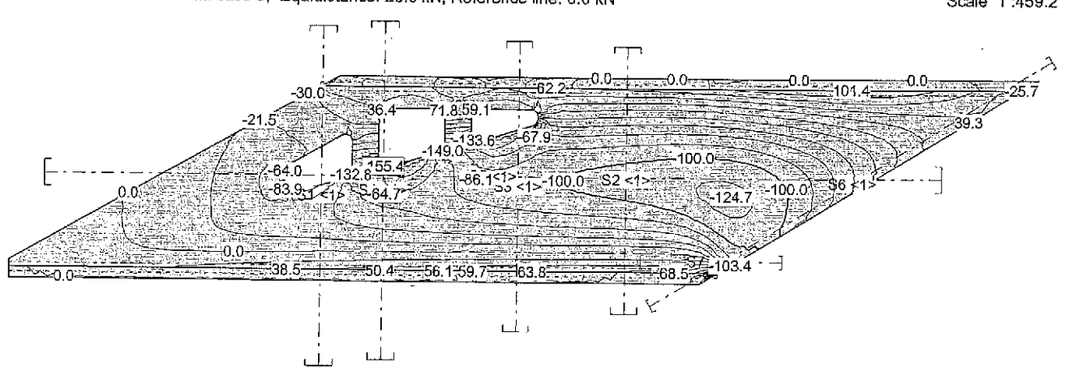
Sectional forces mx: Load case 6, Equidistance: 20.0 kN, Reference line: 0.0 kN

Scale 1 :459.2



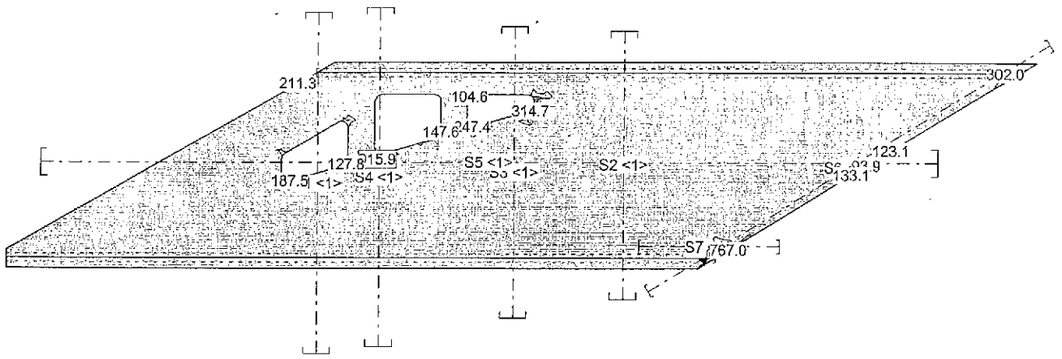
Sectional forces mx: Load case 6, Equidistance: 20.0 kN, Reference line: 0.0 kN

Scale 1 :459.2



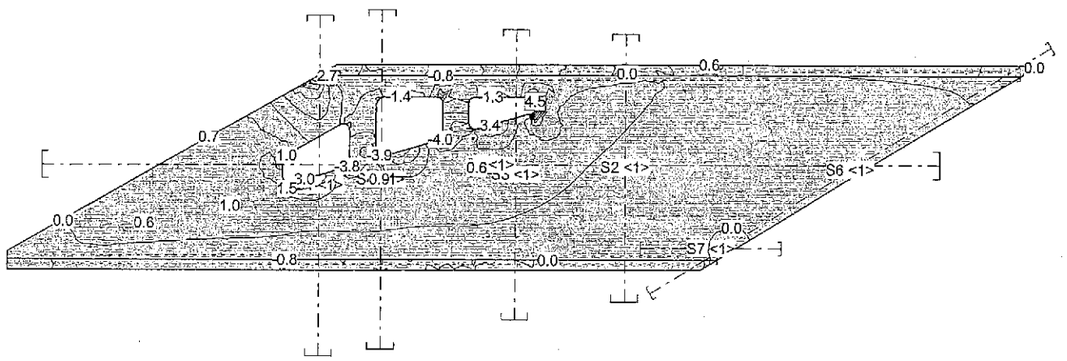
Sectional forces vtot: Load case 6, Equidistance: 100.0 kN/m, Reference line: 0.0 kN/m

Scale 1 :459.2



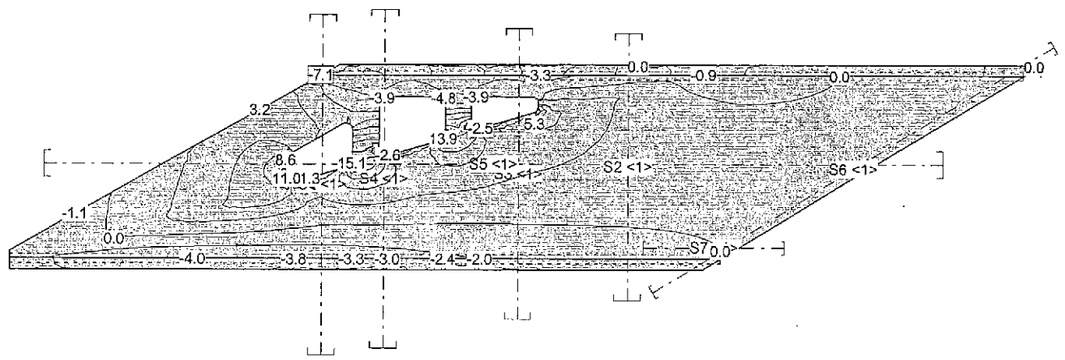
Sectional forces mx: Load case 7, Equidistance: 1.0 kN, Reference line: 0.0 kN

Scale 1 :459.2



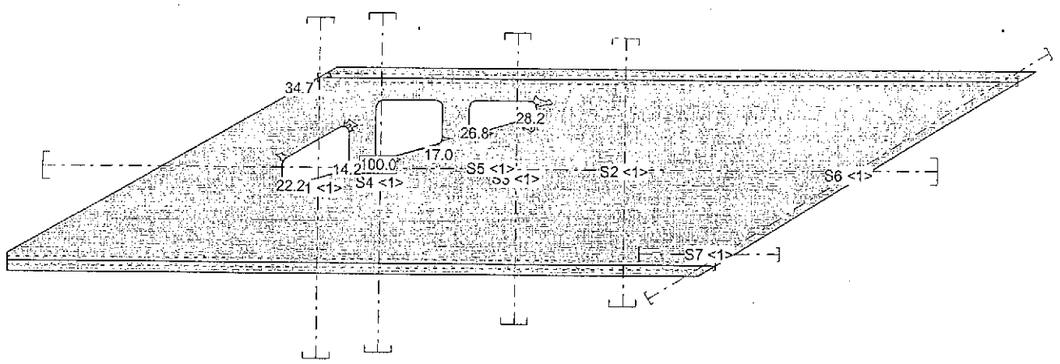
Sectional forces mx: Load case 7, Equidistance: 2.0 kN, Reference line: 0.0 kN

Scale 1 :459.2



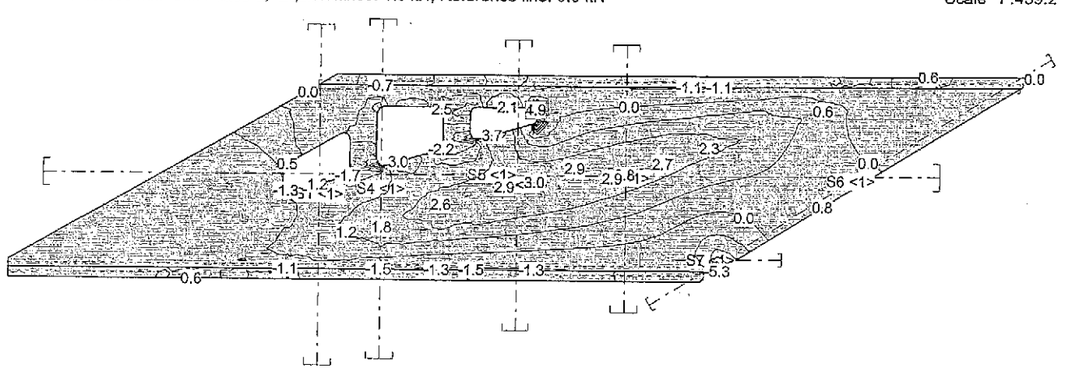
Sectional forces vtot: Load case 7, Equidistance: 10.0 kN/m, Reference line: 0.0 kN/m

Scale 1 :459.2



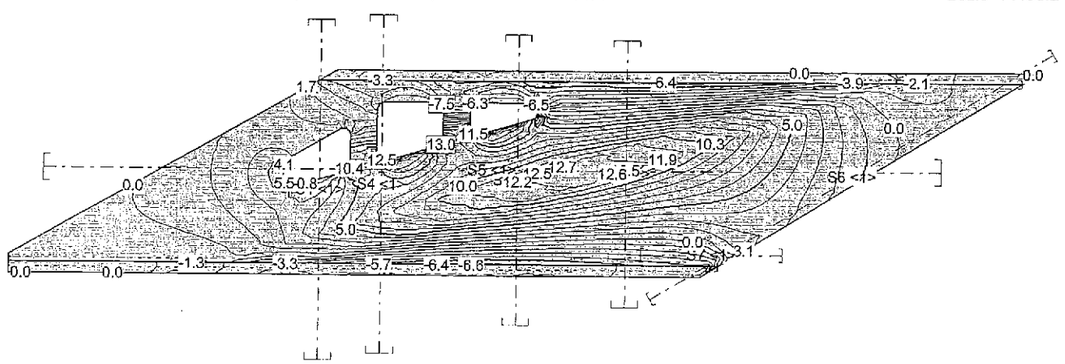
Sectional forces mx: Load case 8, Equidistance: 1.0 kN, Reference line: 0.0 kN

Scale 1 :459.2



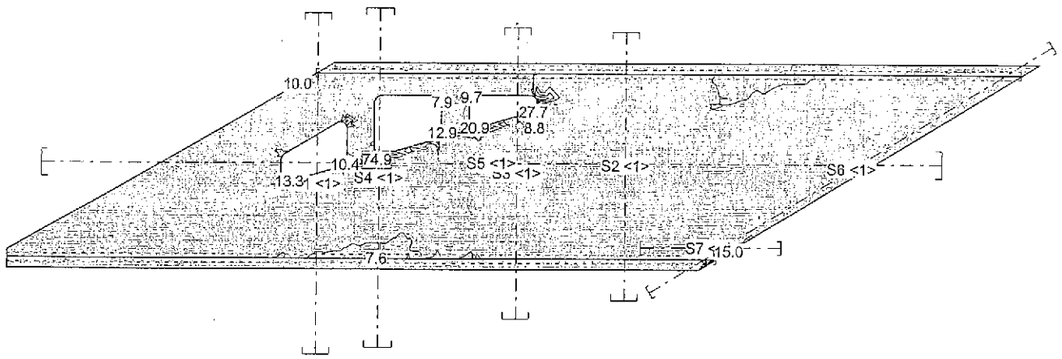
Sectional forces mx: Load case 8, Equidistance: 1.0 kN, Reference line: 0.0 kN

Scale 1 :459.2



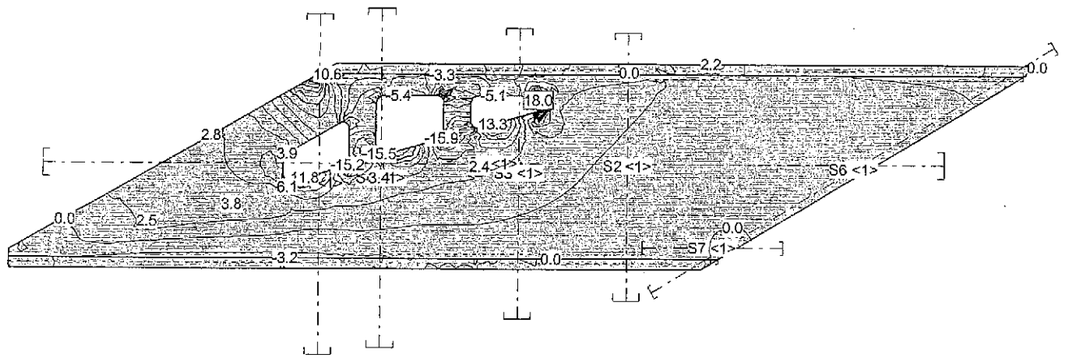
Sectional forces vtot: Load case 8, Equidistance: 5.0 kN/m, Reference line: 0.0 kN/m

Scale 1 :459.2



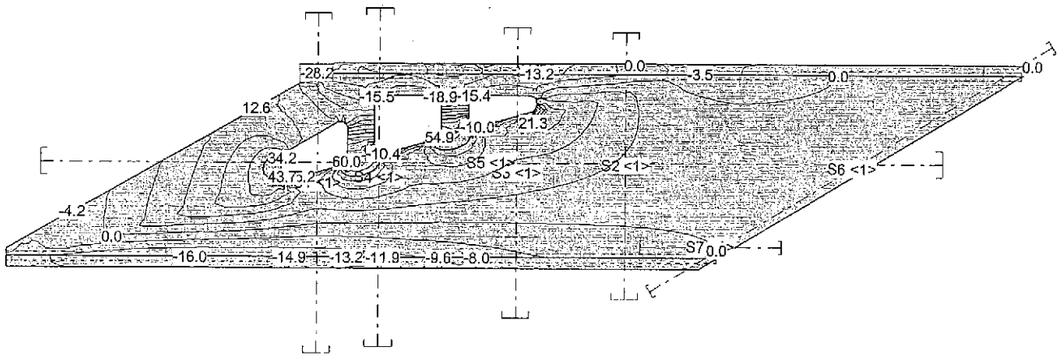
Sectional forces mx: Load case 9, Equidistance: 2.0 kN, Reference line: 0.0 kN

Scale 1 :459.2



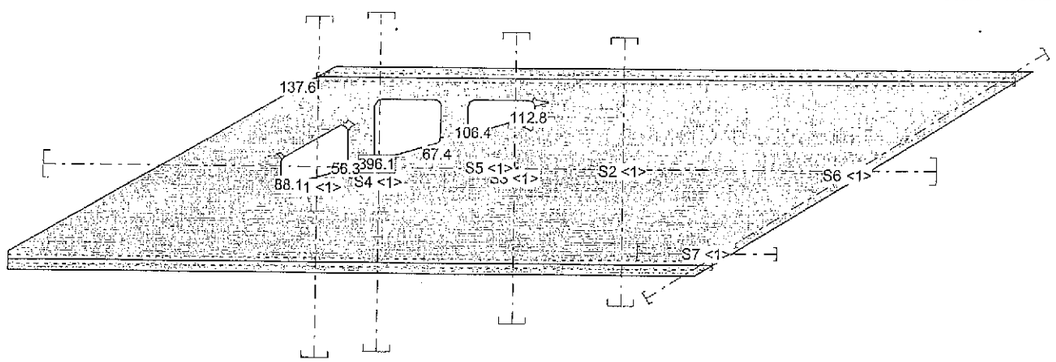
Sectional forces mx: Load case 9, Equidistance: 5.0 kN, Reference line: 0.0 kN

Scale 1 :459.2



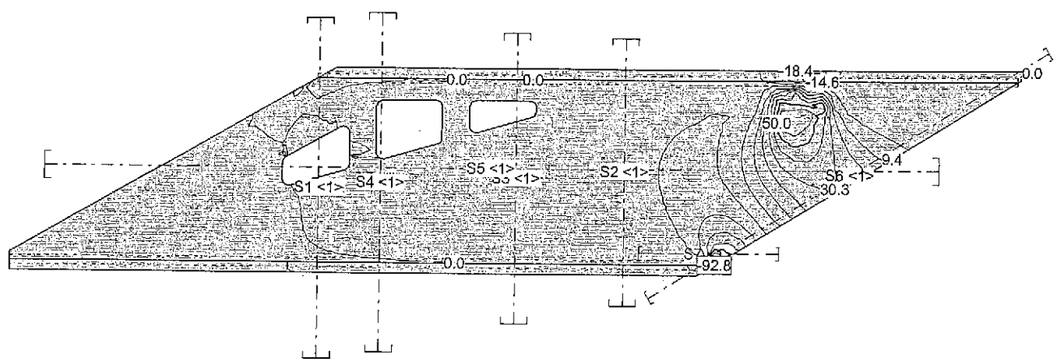
Sectional forces vtot: Load case 9, Equidistance: 50.0 kN/m, Reference line: 0.0 kN/m

Scale 1 :459.2



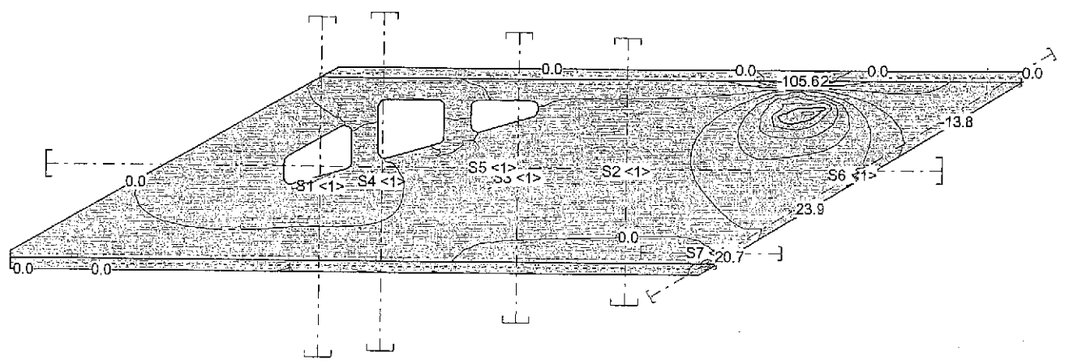
Sectional forces mx: Load case 10, Equidistance: 10.0 kN, Reference line: 0.0 kN

Scale 1 :459.2



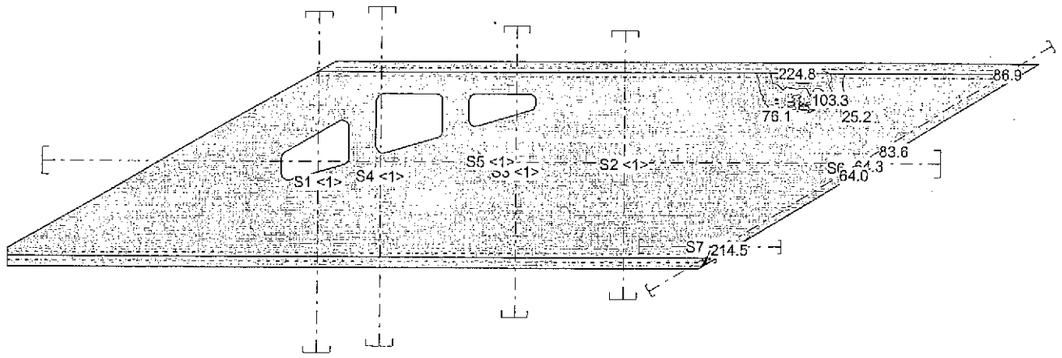
Sectional forces mx: Load case 10, Equidistance: 20.0 kN, Reference line: 0.0 kN

Scale 1 :459.2



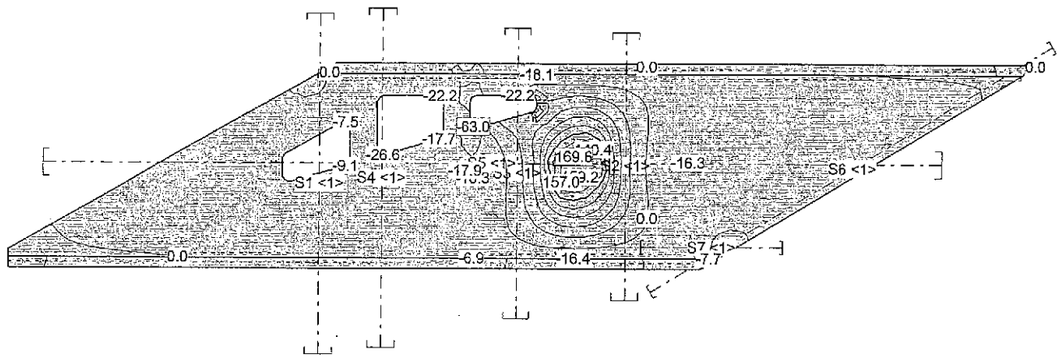
Sectional forces vtot: Load case 10, Equidistance: 50.0 kN/m, Reference line: 0.0 kN/m

Scale 1 :459.2



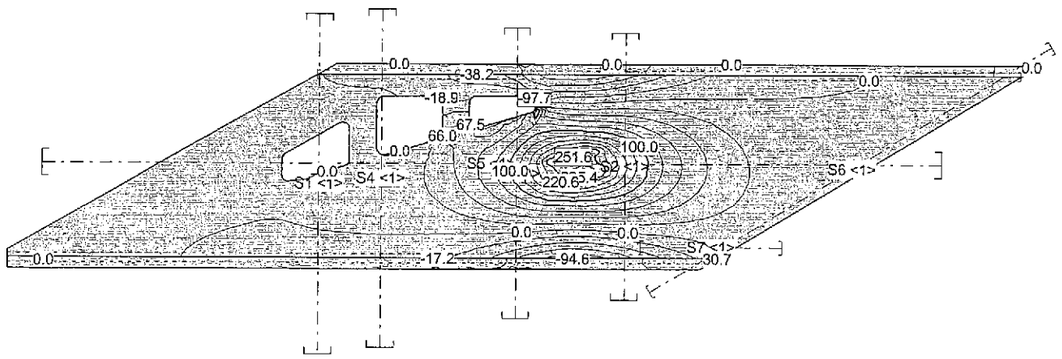
Sectional forces mx: Load case 12, Equidistance: 20.0 kN, Reference line: 0.0 kN

Scale 1 :459.2



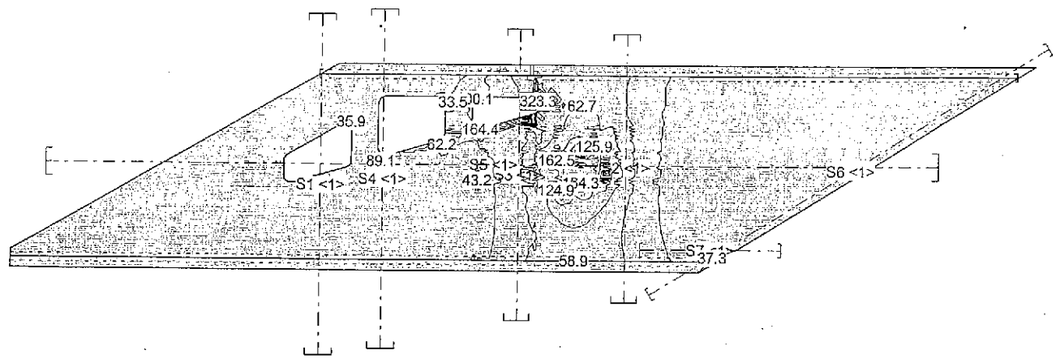
Sectional forces mx: Load case 12, Equidistance: 20.0 kN, Reference line: 0.0 kN

Scale 1 :459.2



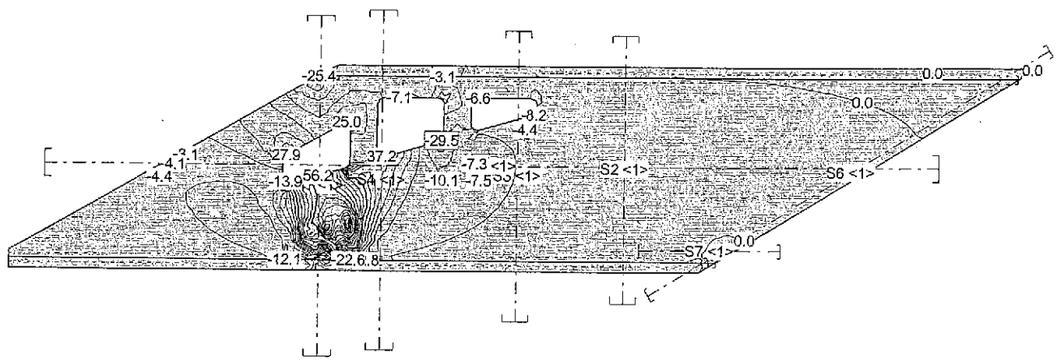
Sectional forces vtot: Load case 12, Equidistance: 20.0 kN/m, Reference line: 0.0 kN/m

Scale 1 :459.2



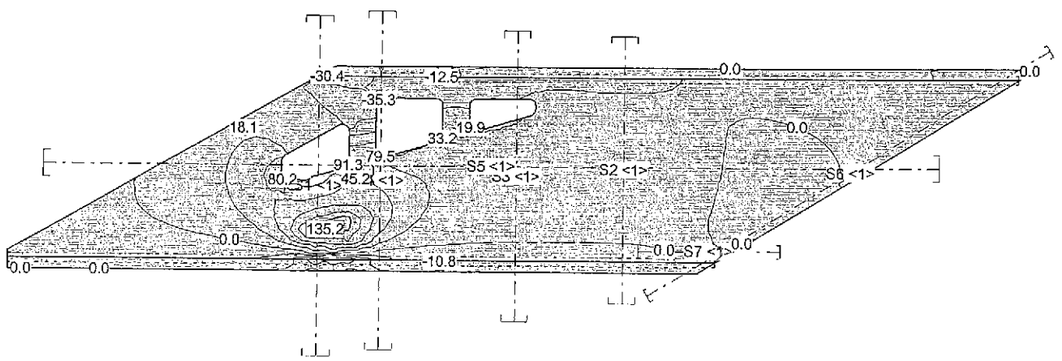
Sectional forces mx: Load case 14, Equidistance: 5.0 kN, Reference line: 0.0 kN

Scale 1 :459.2



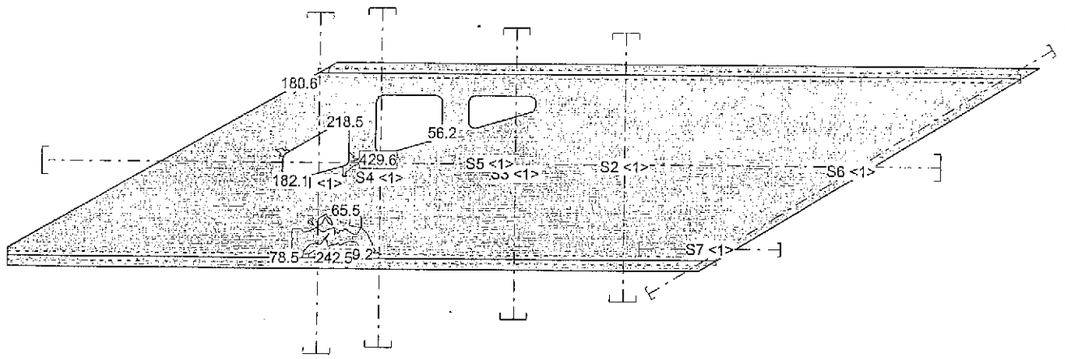
Sectional forces mx: Load case 14, Equidistance: 20.0 kN, Reference line: 0.0 kN

Scale 1 :459.2



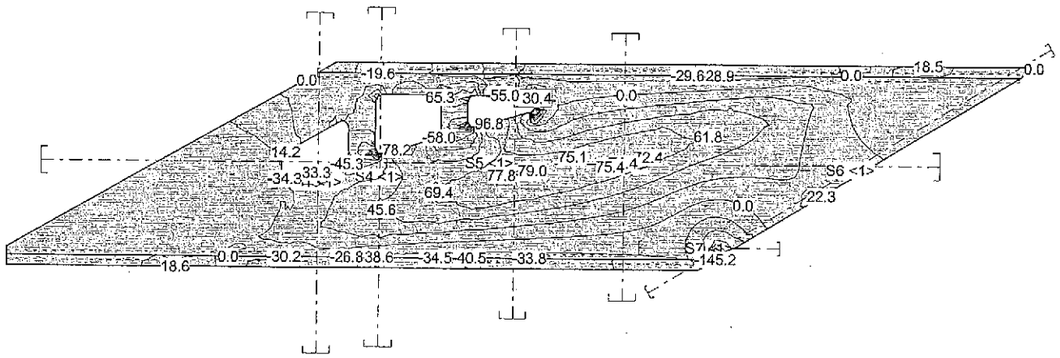
Sectional forces vtot: Load case 14, Equidistance: 50.0 kN/m, Reference line: 0.0 kN/m

Scale 1 :459.2



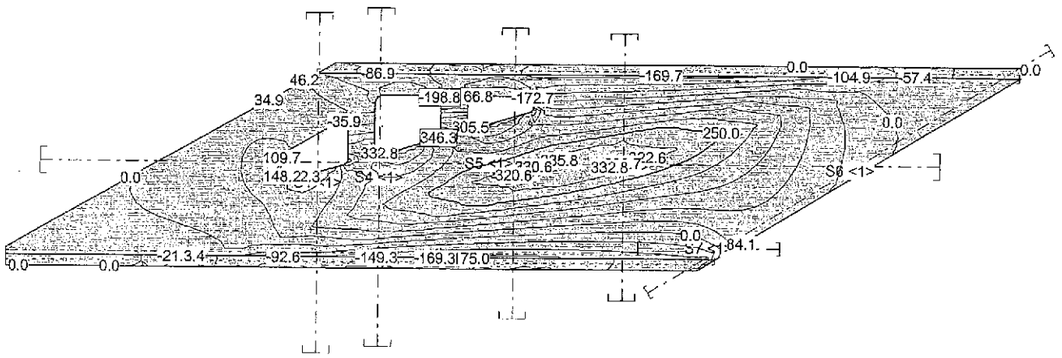
Sectional forces mx: Load case 16, Equidistance: 20.0 kN, Reference line: 0.0 kN

Scale 1 :459.2



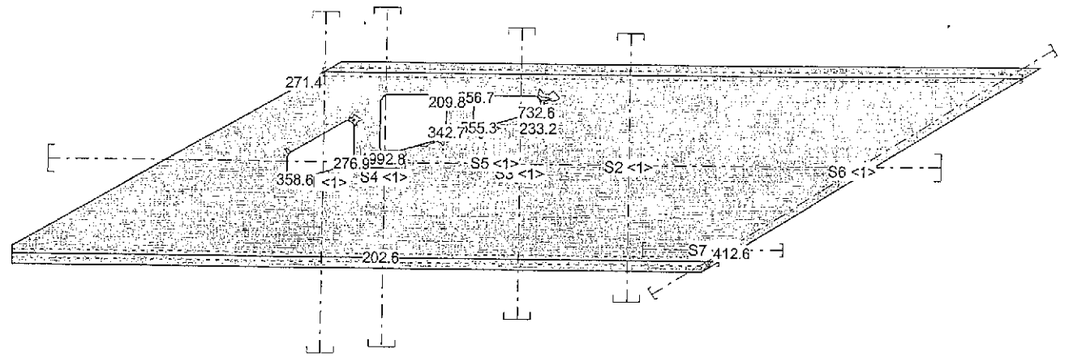
Sectional forces mx: Load case 16, Equidistance: 50.0 kN, Reference line: 0.0 kN

Scale 1 :459.2



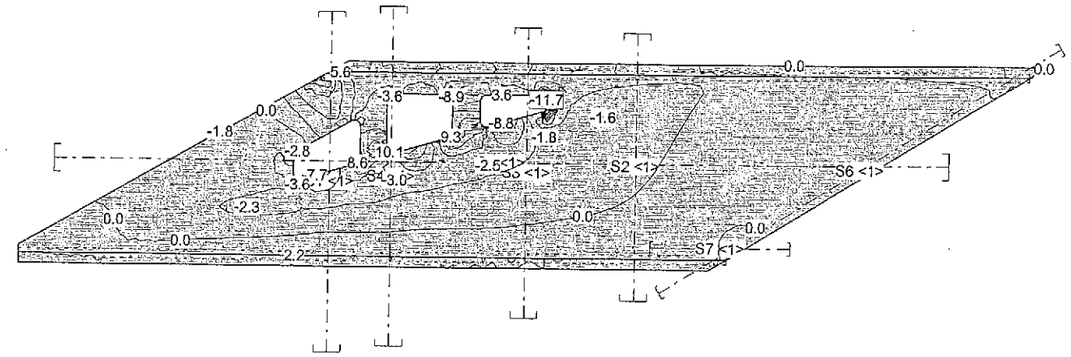
Sectional forces vtot: Load case 16, Equidistance: 200.0 kN/m, Reference line: 0.0 kN/m

Scale 1 :459.2



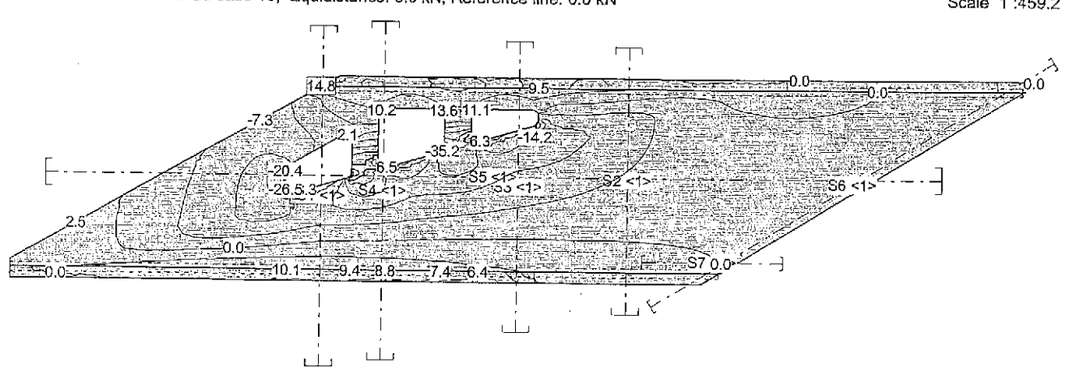
Sectional forces mx: Load case 18, Equidistance: 2.0 kN, Reference line: 0.0 kN

Scale 1 :459.2



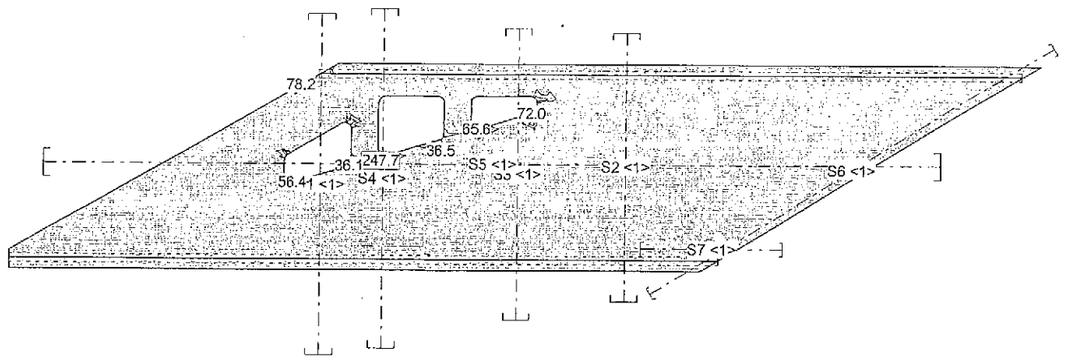
Sectional forces mx: Load case 18, Equidistance: 5.0 kN, Reference line: 0.0 kN

Scale 1 :459.2



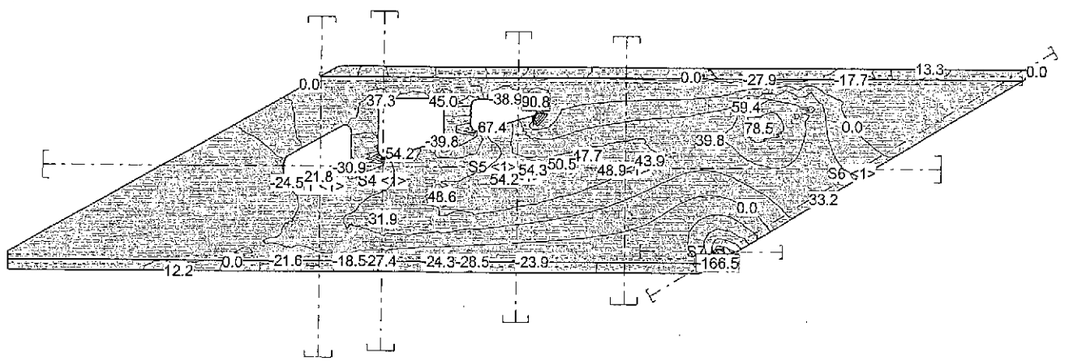
Sectional forces vtot: Load case 18, Equidistance: 20.0 kN/m, Reference line: 0.0 kN/m

Scale 1 :459.2



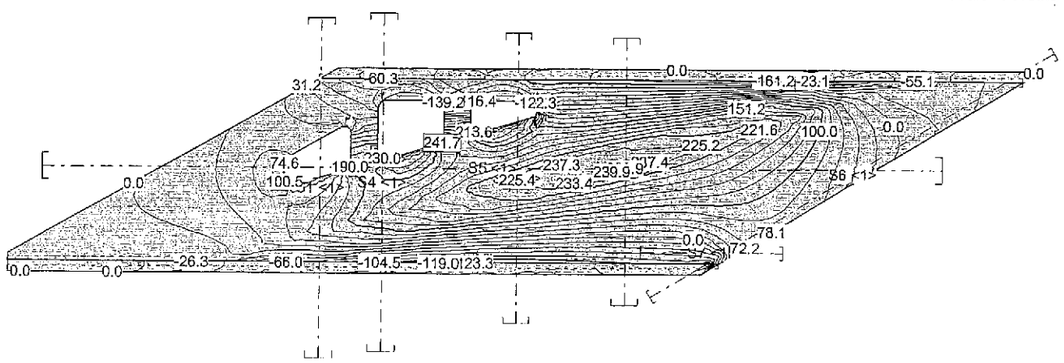
Sectional forces mx: Load case 19, Equidistance: 20.0 kN, Reference line: 0.0 kN

Scale 1 :459.2



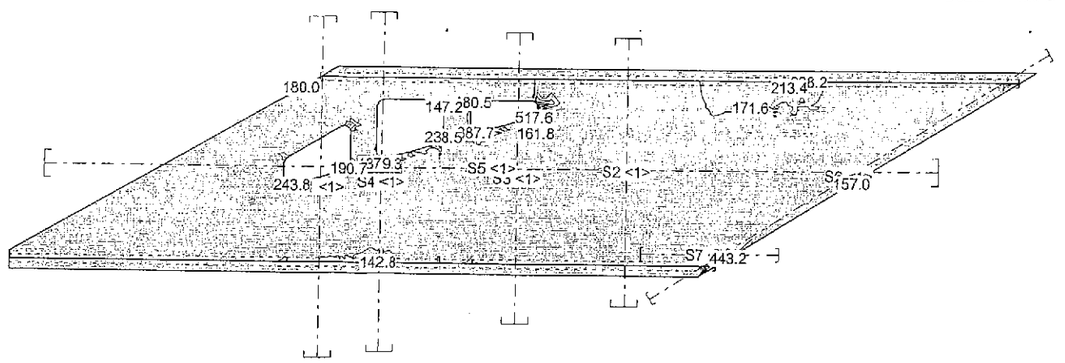
Sectional forces mx: Load case 19, Equidistance: 20.0 kN, Reference line: 0.0 kN

Scale 1 :459.2



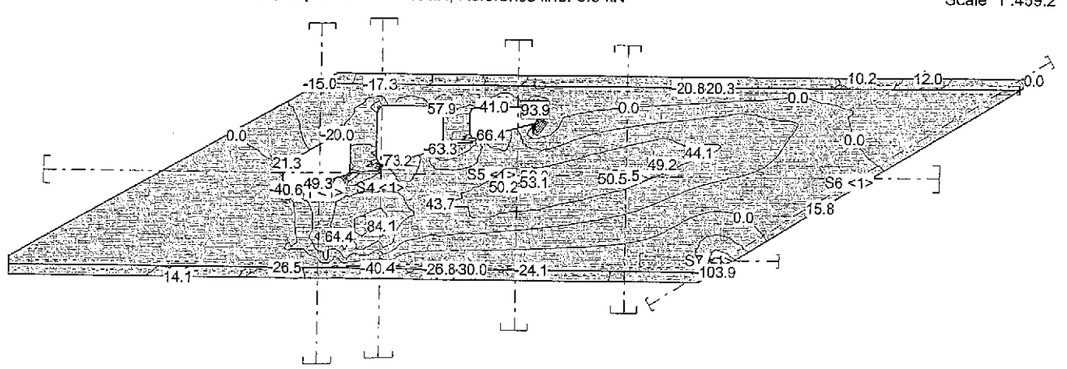
Sectional forces vtot: Load case 19, Equidistance: 100.0 kN/m, Reference line: 0.0 kN/m

Scale 1 :459.2



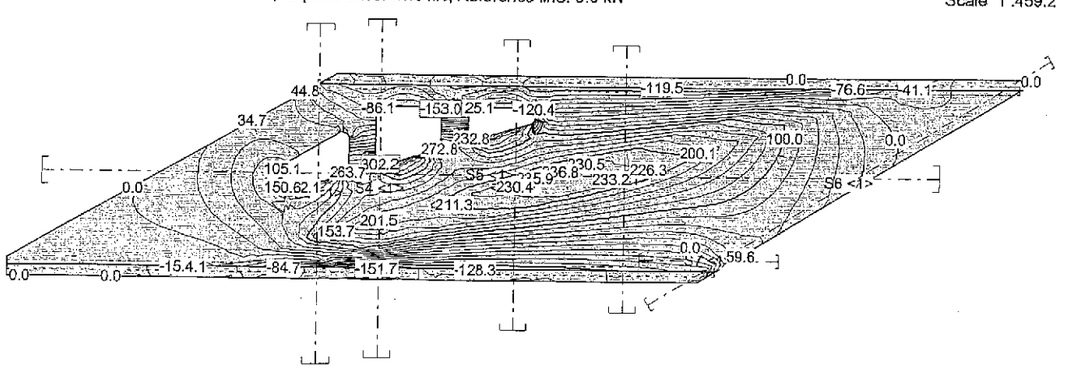
Sectional forces mx: Load case 21, Equidistance: 20.0 kN, Reference line: 0.0 kN

Scale 1 :459.2

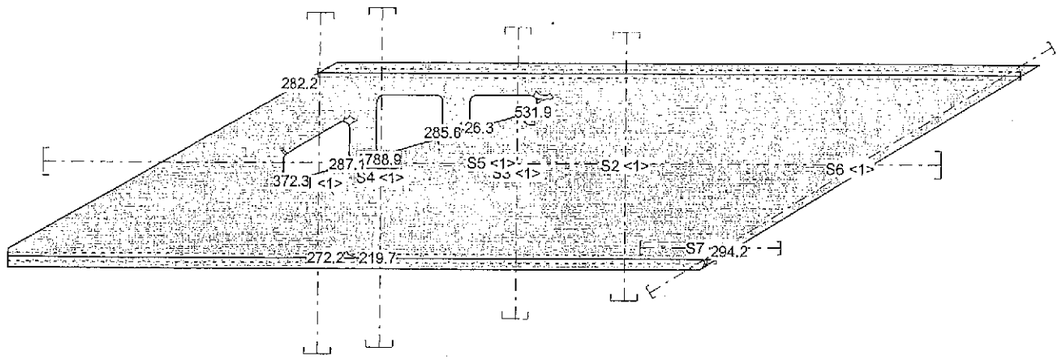


Sectional forces mx: Load case 21, Equidistance: 20.0 kN, Reference line: 0.0 kN

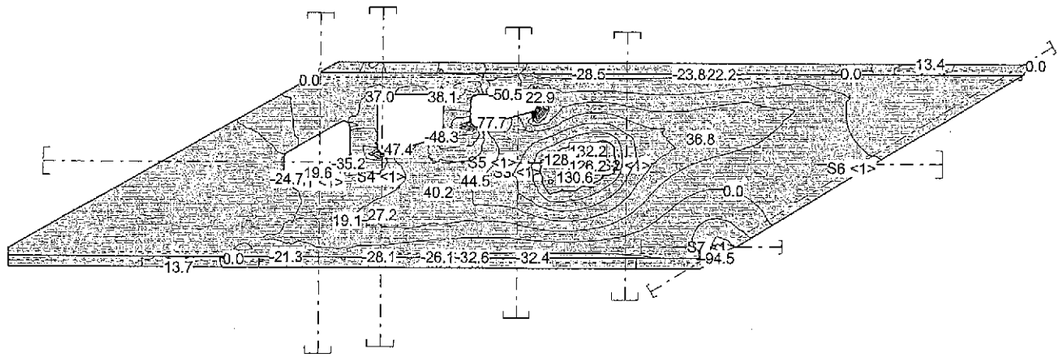
Scale 1 :459.2



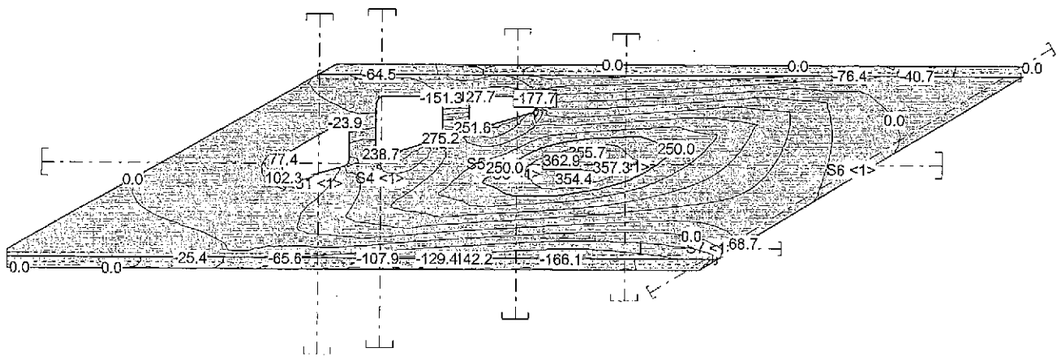
Sectional forces vtot: Load case 21, Equidistance: 200.0 kN/m, Reference line: 0.0 kN/m — Scale 1 :459.2



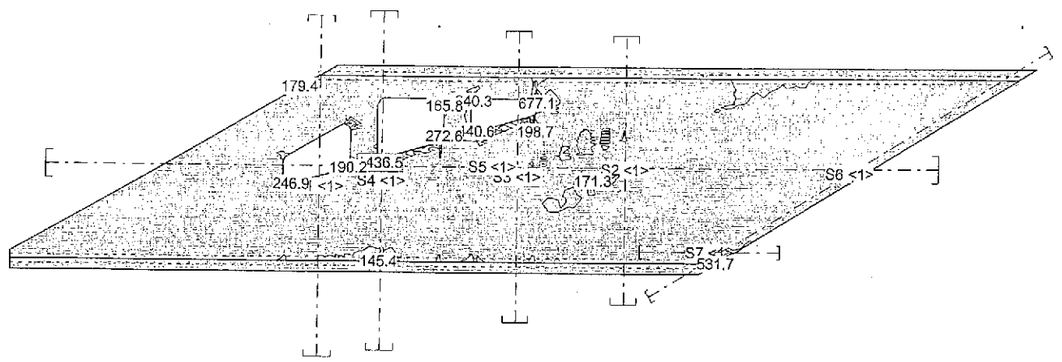
Sectional forces mx: Load case 23, Equidistance: 20.0 kN, Reference line: 0.0 kN — Scale 1 :459.2



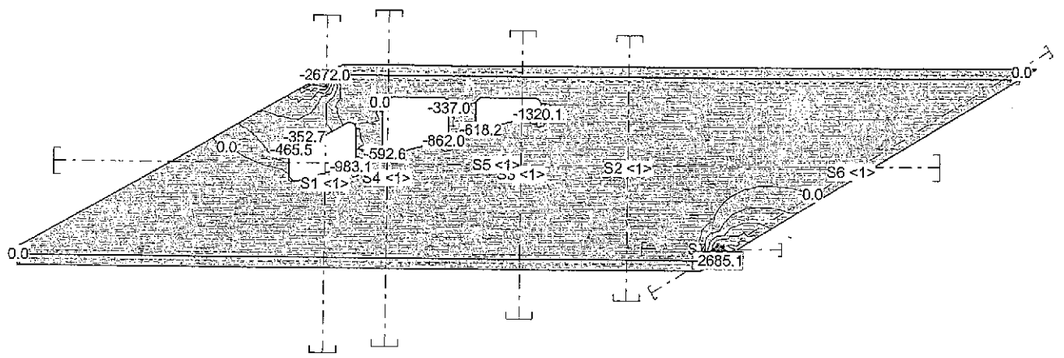
Sectional forces mx: Load case 23, Equidistance: 50.0 kN, Reference line: 0.0 kN — Scale 1 :459.2



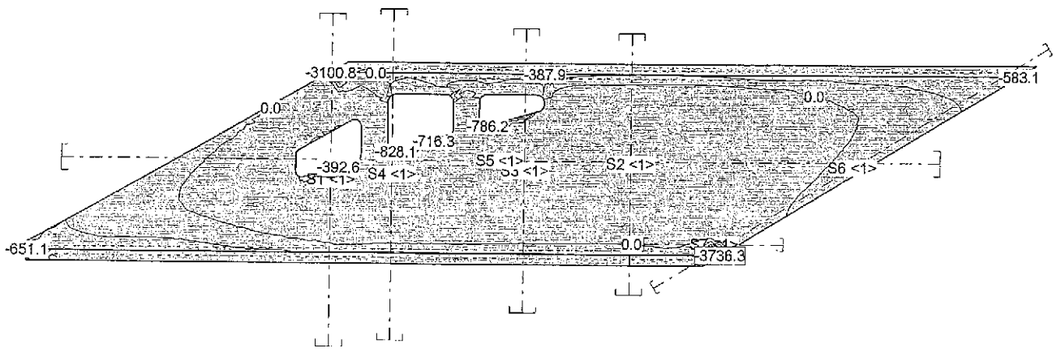
Sectional forces vtot: Load case 23, Equidistance: 100.0 kN/m, Reference line: 0.0 kN/m — Scale 1 :459.2



Reinforcement moments maxt: ELU 1, Equidistance: 200.0 kN, Reference line: 0.0 kN — Scale 1 :463.8

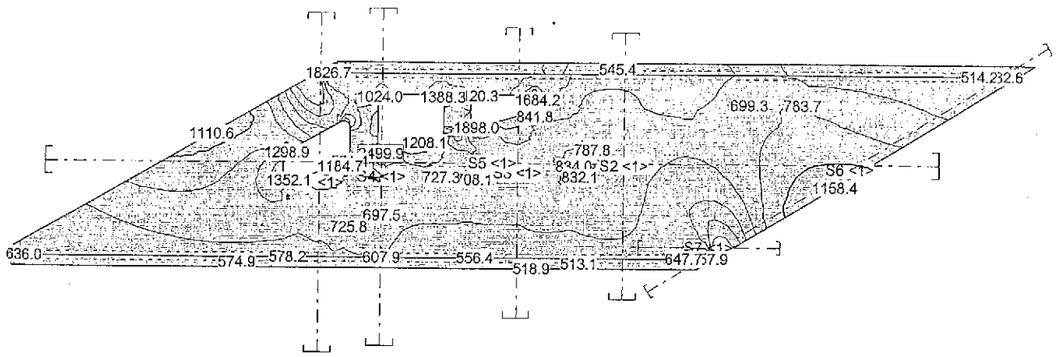


Reinforcement moments mayt: ELU 1, Equidistance: 200.0 kN, Reference line: 0.0 kN — Scale 1 :468.7



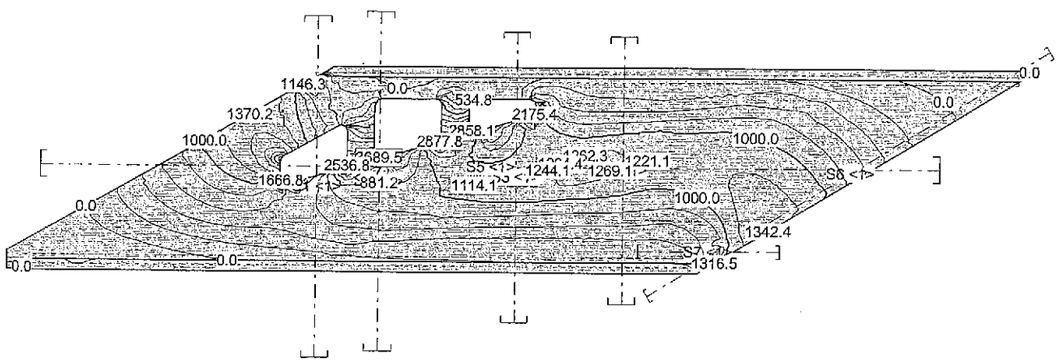
Reinforcement moments maxb: ELU 1, Equidistance: 200.0 kN, Reference line: 0.0 kN

Scale 1 :461.8



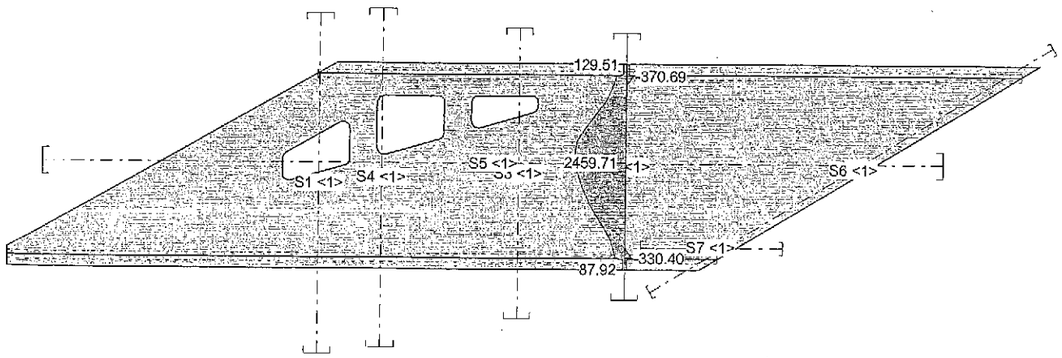
Reinforcement moments mayb: ELU 1, Equidistance: 200.0 kN, Reference line: 0.0 kN

Scale 1 :459.2



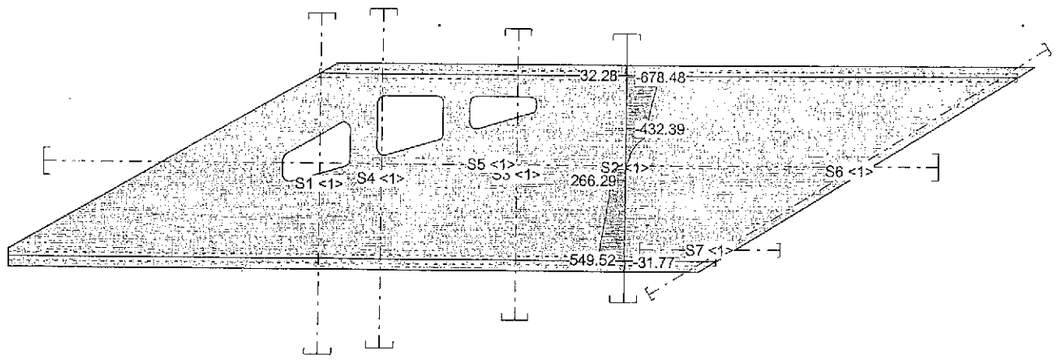
Beam section(s): Envelopes of dimensioning moments [kNm], Specification ELU 1

Scale 1 :459.2



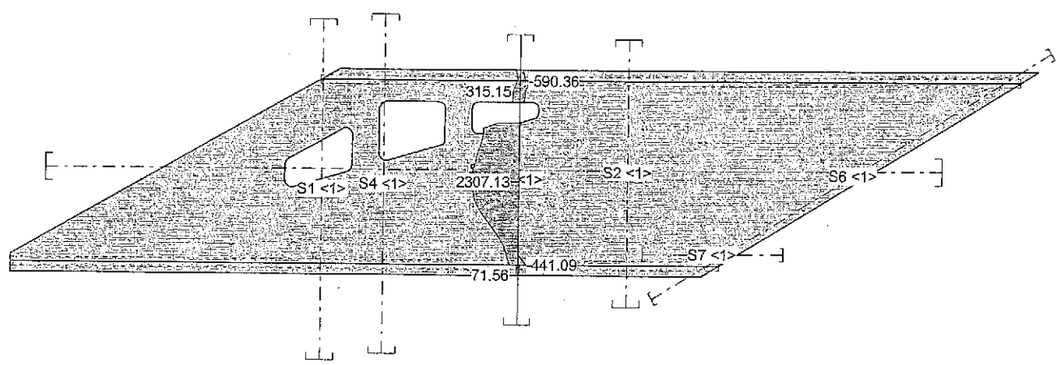
Beam section(s): Envelopes of dimensioning shear forces [kN], Specification ELU 1

Scale 1 :459.2



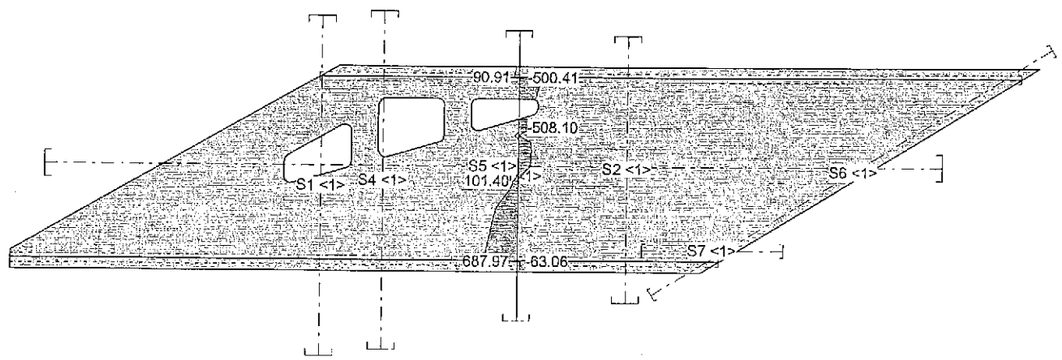
Beam section(s): Envelopes of dimensioning moments [kNm], Specification ELU 1

Scale 1 :459.2



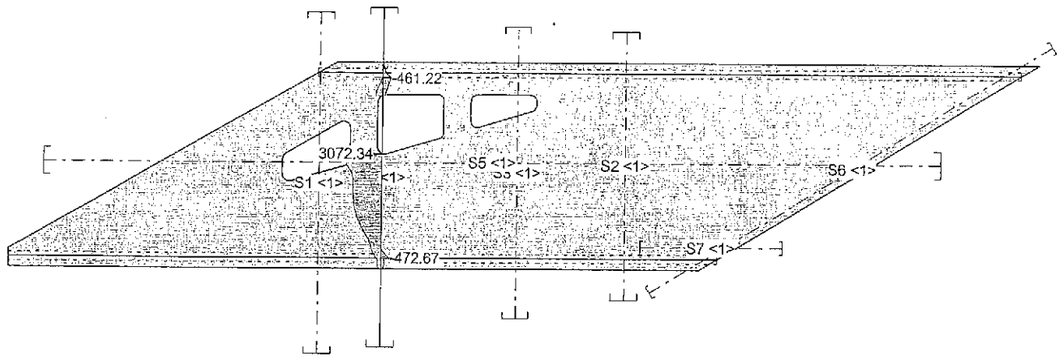
Beam section(s): Envelopes of dimensioning shear forces [kN], Specification ELU 1

Scale 1 :459.2



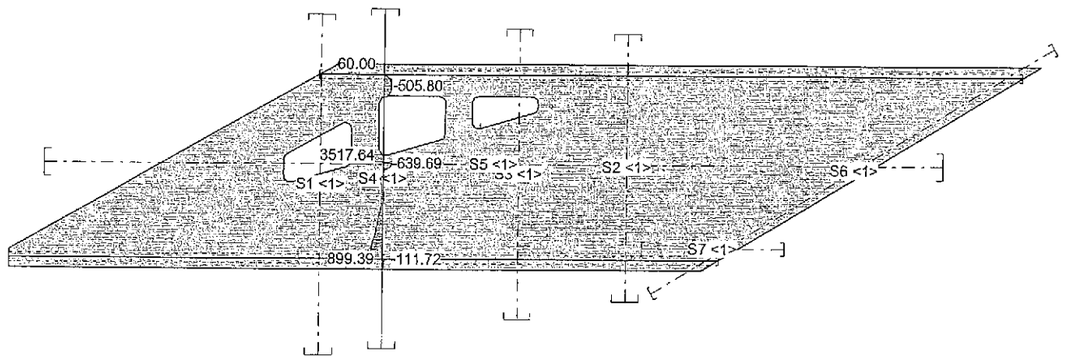
Beam section(s): Envelopes of dimensioning moments [kNm], Specification ELU 1

Scale 1 :459.2



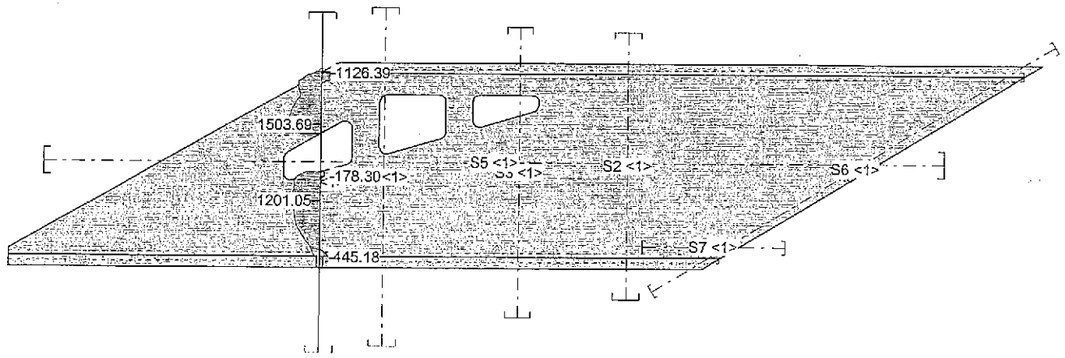
Beam section(s): Envelopes of dimensioning shear forces [kN], Specification ELU 1

Scale 1 :459.2



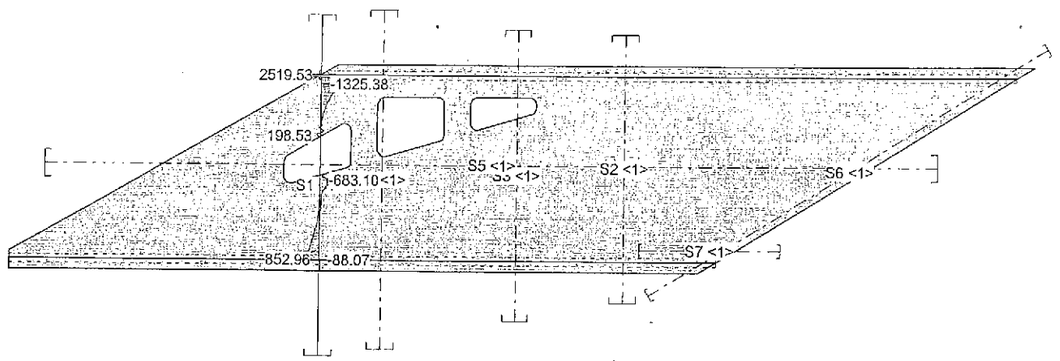
Beam section(s): Envelopes of dimensioning moments [kNm], Specification ELU 1

Scale 1 :459.2



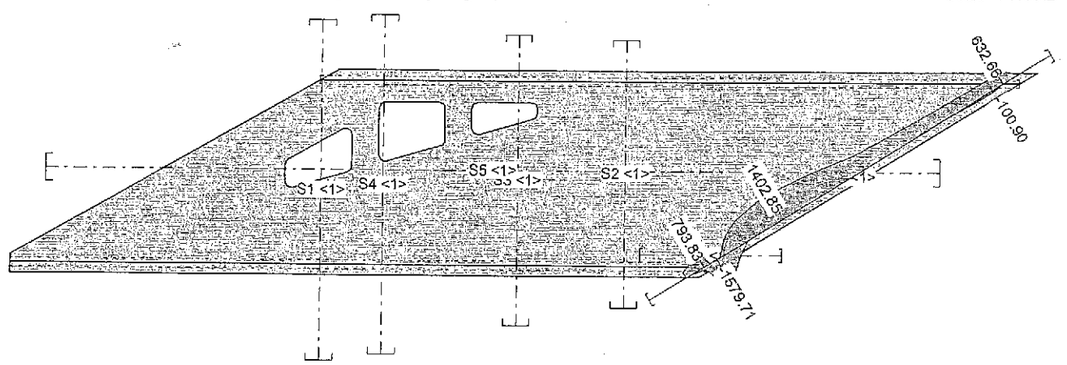
Beam section(s): Envelopes of dimensioning shear forces [kN], Specification ELU 1

Scale 1 :459.2



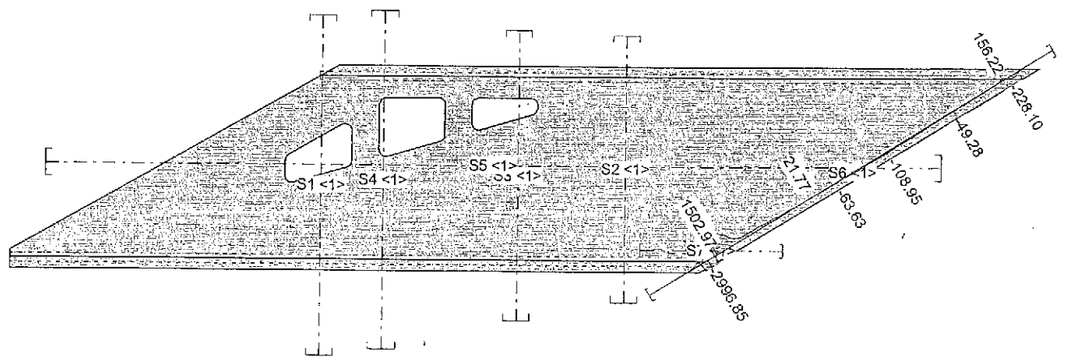
Beam section(s): Envelopes of dimensioning moments [kNm], Specification ELU 1

Scale 1 :459.2

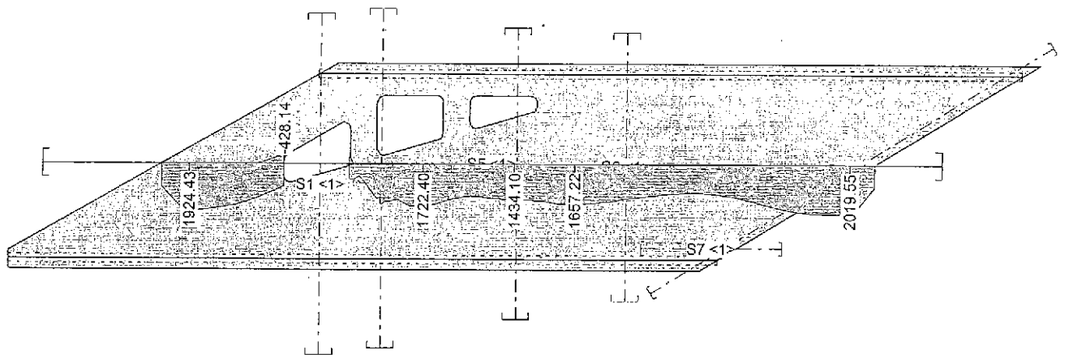


Beam section(s): Envelopes of dimensioning shear forces [kN], Specification ELU 1

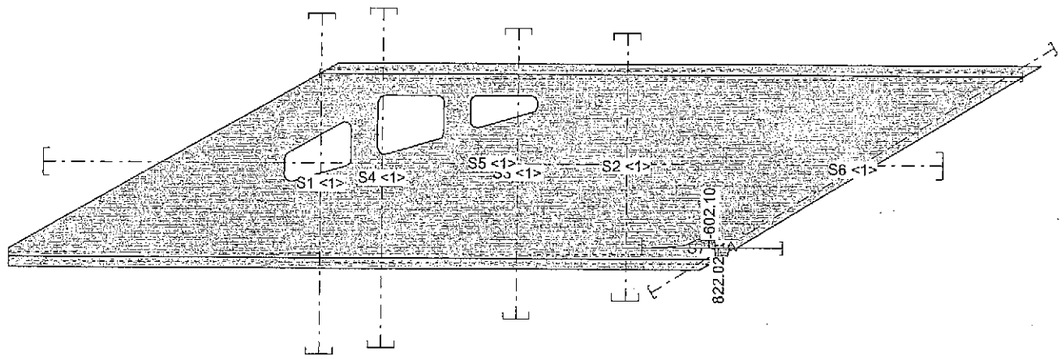
Scale 1 :459.2



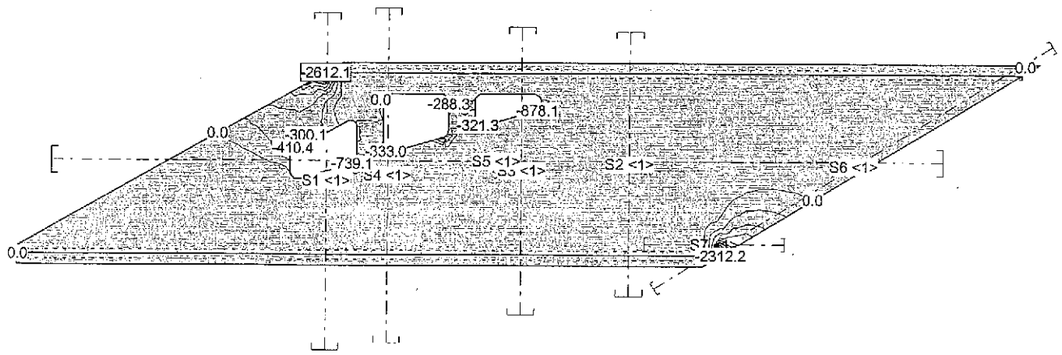
Beam section(s): Envelopes of dimensioning moments [kNm], Specification ELU 1 Scale 1 :459.2



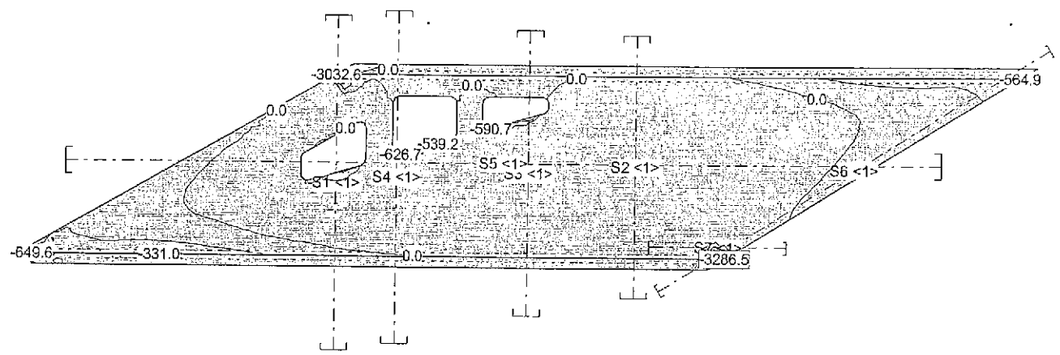
Beam section(s): Envelopes of dimensioning shear forces [kN], Specification ELU 1 Scale 1 :459.2



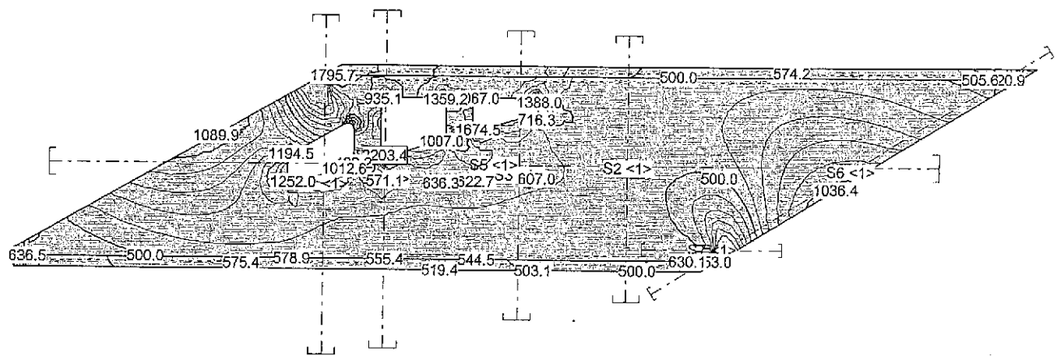
Reinforcement moments maxt: ELU 2, Equidistance: 200.0 kN, Reference line: 0.0 kN Scale 1 :463.8



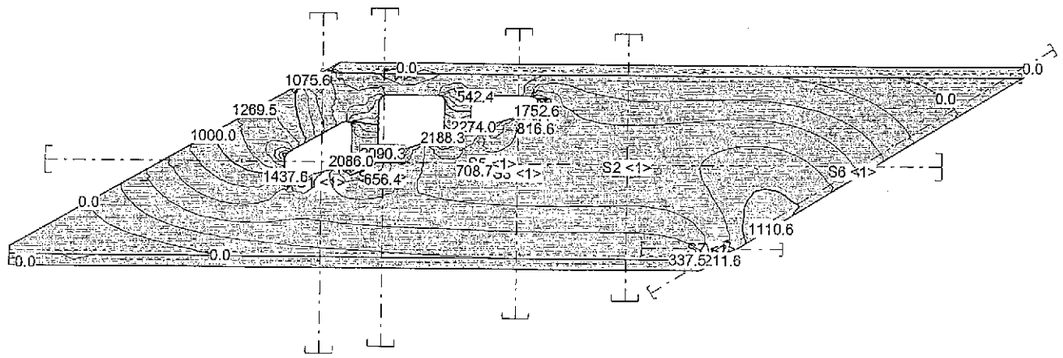
Reinforcement moments mayt: ELU 2, Equidistance: 200.0 kN, Reference line: 0.0 kN Scale 1 :468.7



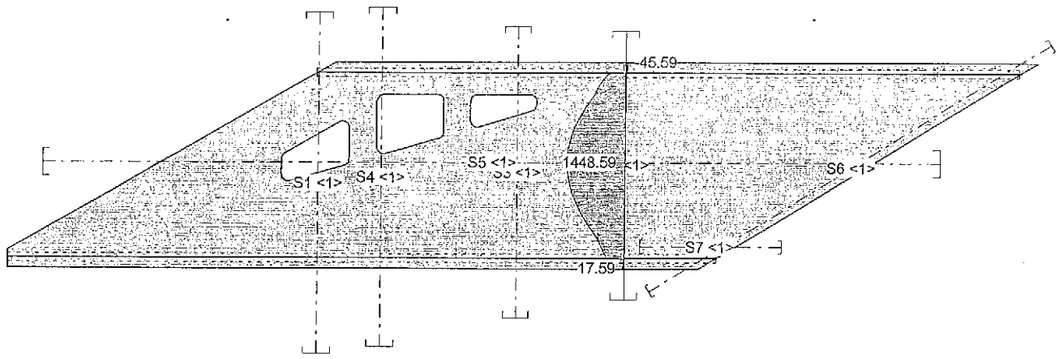
Reinforcement moments maxb: ELU 2, Equidistance: 100.0 kN, Reference line: 0.0 kN Scale 1 :461.8



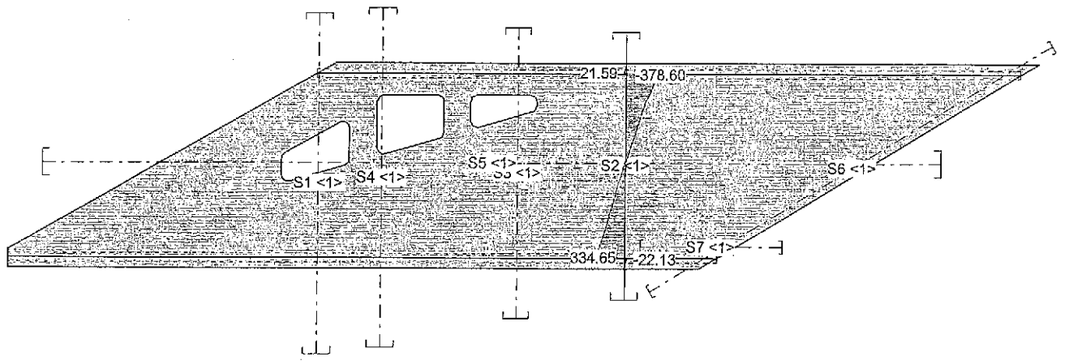
Reinforcement moments mayb: ELU 2, Equidistance: 200.0 kN, Reference line: 0.0 kN Scale 1 :459.2



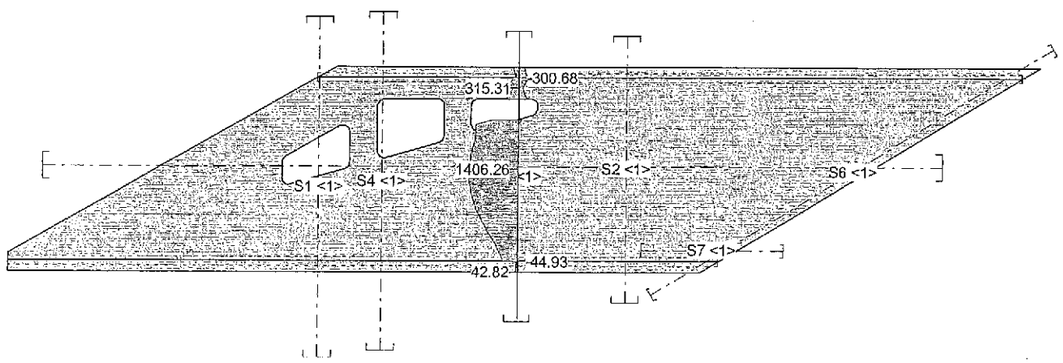
Beam section(s): Envelopes of dimensioning moments [kNm], Specification ELU 2 Scale 1 :459.2



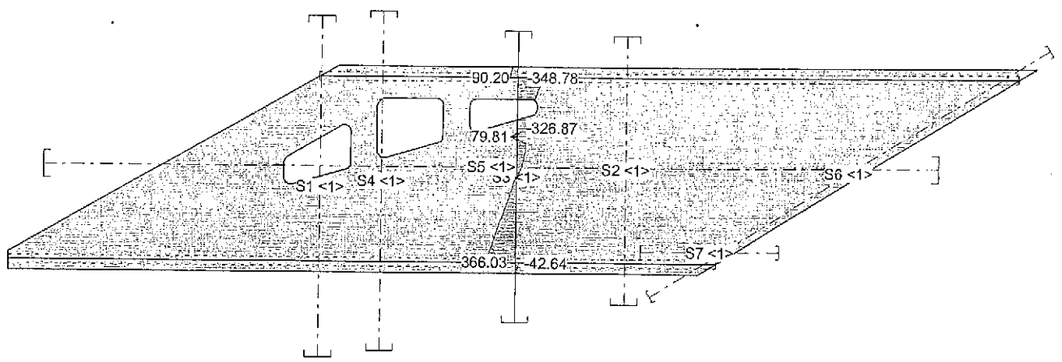
Beam section(s): Envelopes of dimensioning shear forces [kN], Specification ELU 2 Scale 1 :459.2



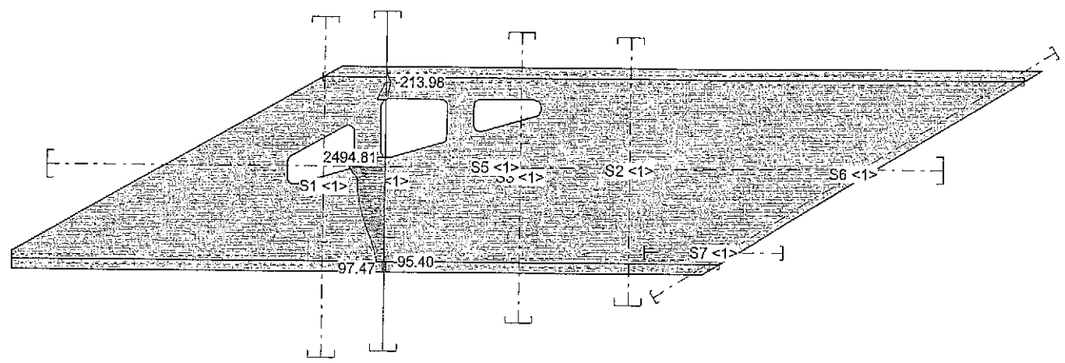
Beam section(s): Envelopes of dimensioning moments [kNm], Specification ELU 2 Scale 1 :459.2



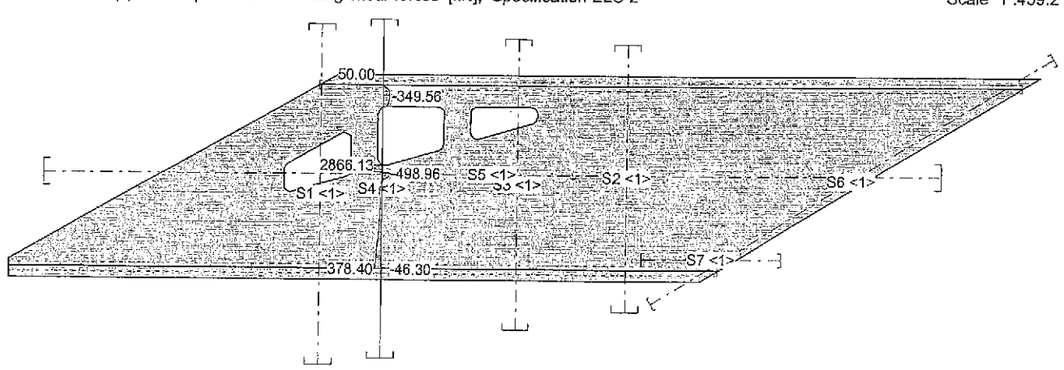
Beam section(s): Envelopes of dimensioning shear forces [kN], Specification ELU 2 Scale 1 :459.2



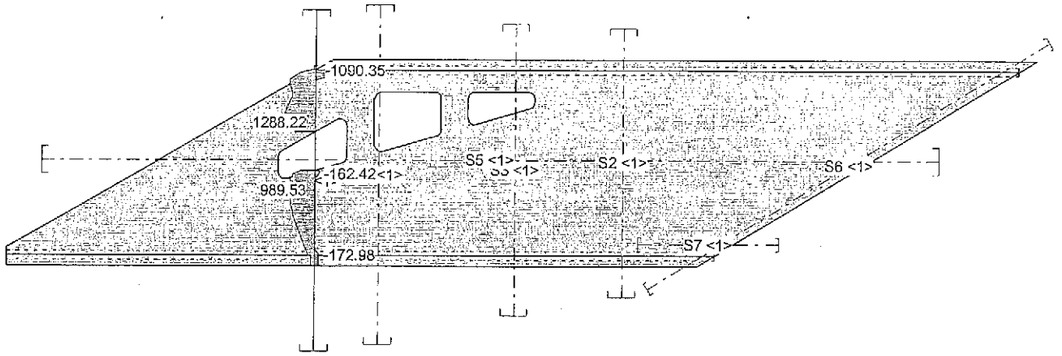
Beam section(s): Envelopes of dimensioning moments [kNm], Specification ELU 2 Scale 1 :459.2



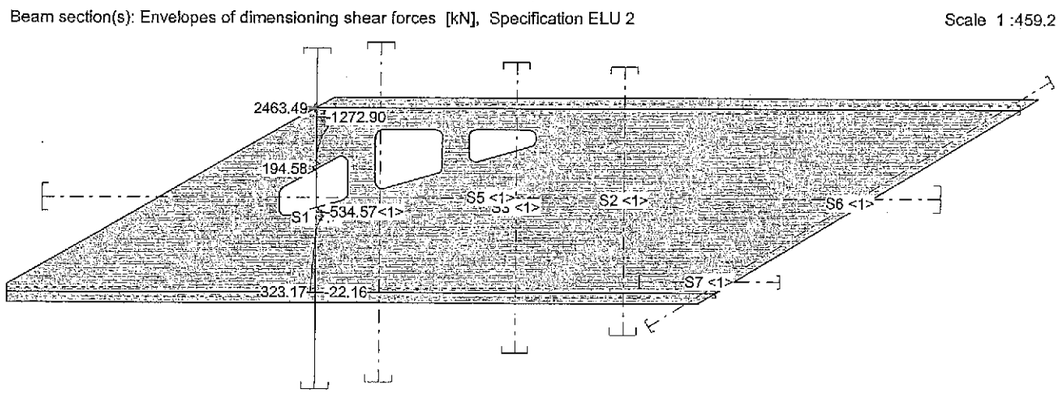
Beam section(s): Envelopes of dimensioning shear forces [kN], Specification ELU 2 Scale 1 :459.2



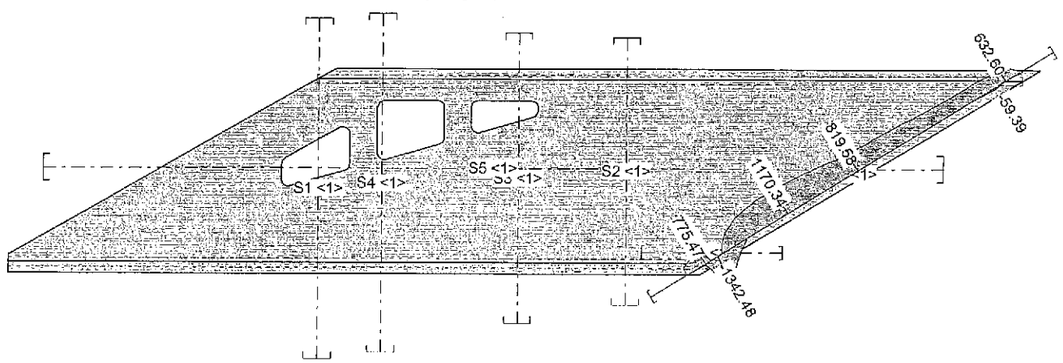
Beam section(s): Envelopes of dimensioning moments [kNm], Specification ELU 2 — Scale 1 :459.2



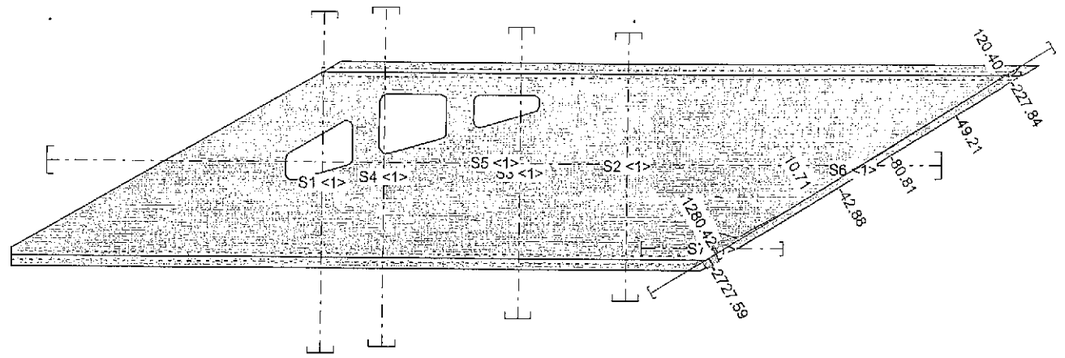
Beam section(s): Envelopes of dimensioning shear forces [kN], Specification ELU 2 — Scale 1 :459.2



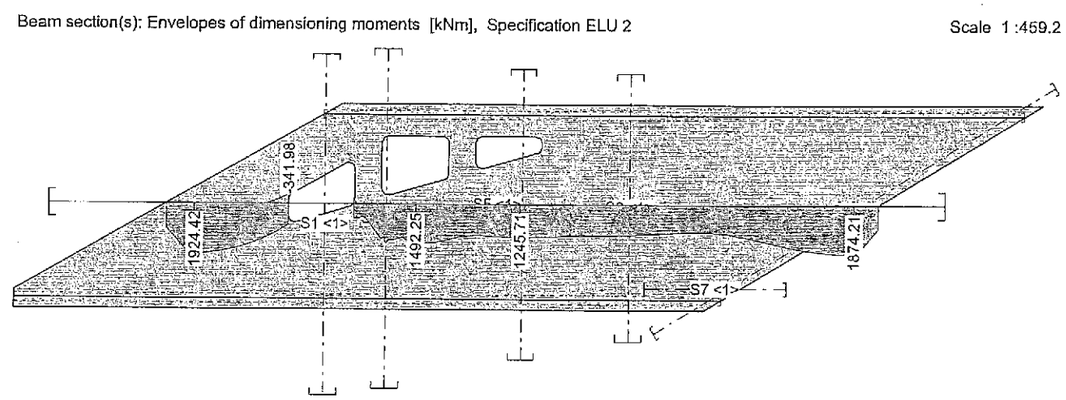
Beam section(s): Envelopes of dimensioning moments [kNm], Specification ELU 2 — Scale 1 :459.2



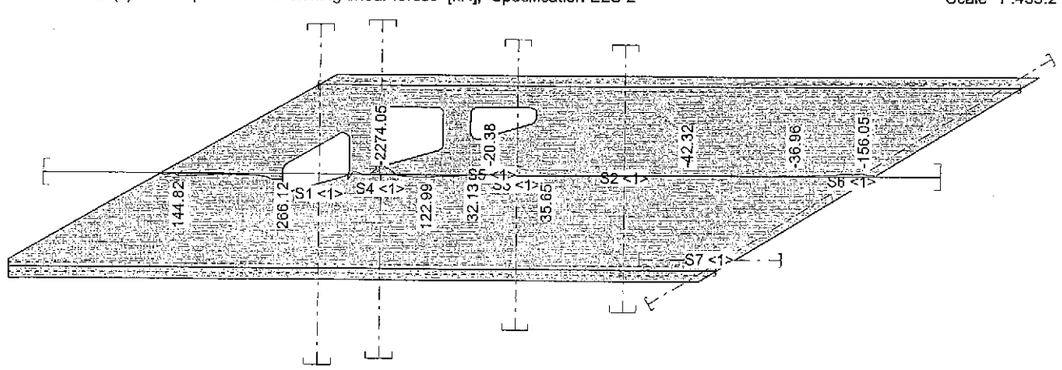
Beam section(s): Envelopes of dimensioning shear forces [kN], Specification ELU 2 — Scale 1 :459.2



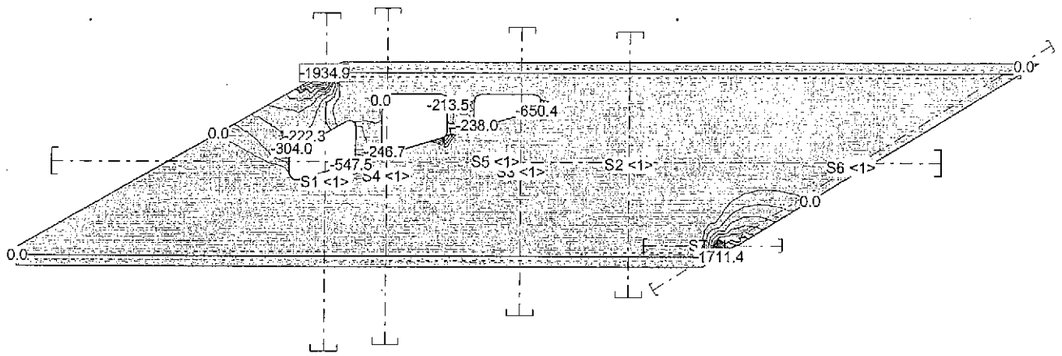
Beam section(s): Envelopes of dimensioning moments [kNm], Specification ELU 2 — Scale 1 :459.2



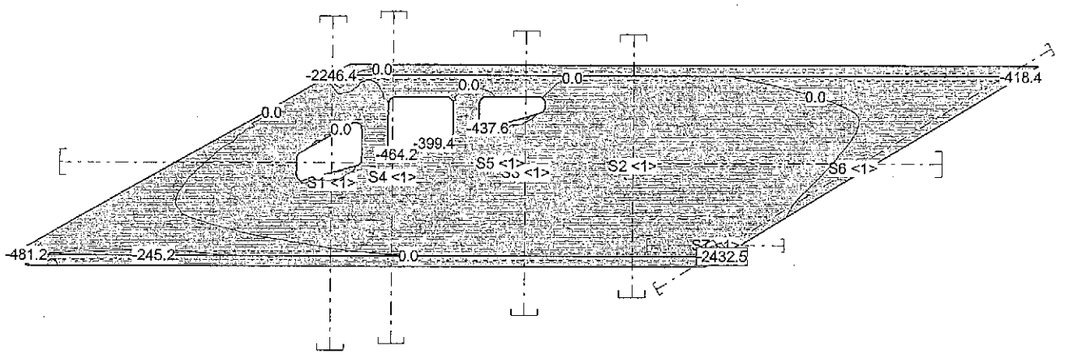
Beam section(s): Envelopes of dimensioning shear forces [kN], Specification ELU 2 — Scale 1 :459.2



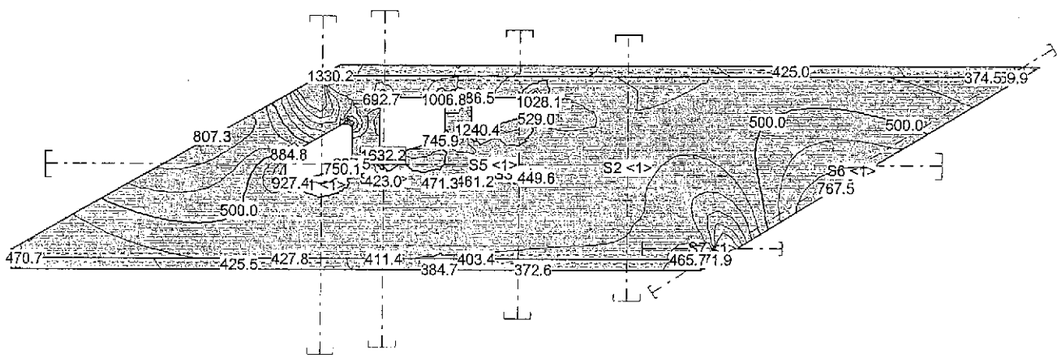
Reinforcement moments maxt: ELS, Equidistance: 100.0 kN, Reference line: 0.0 kN Scale 1 :463.8



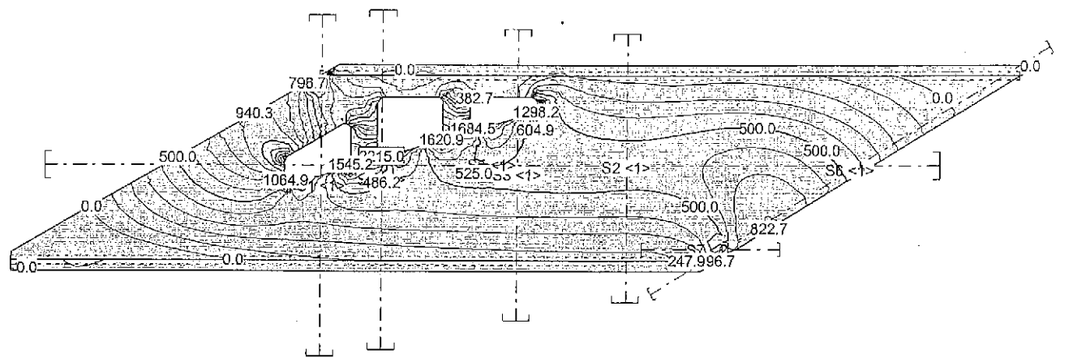
Reinforcement moments mayt: ELS, Equidistance: 200.0 kN, Reference line: 0.0 kN Scale 1 :468.7



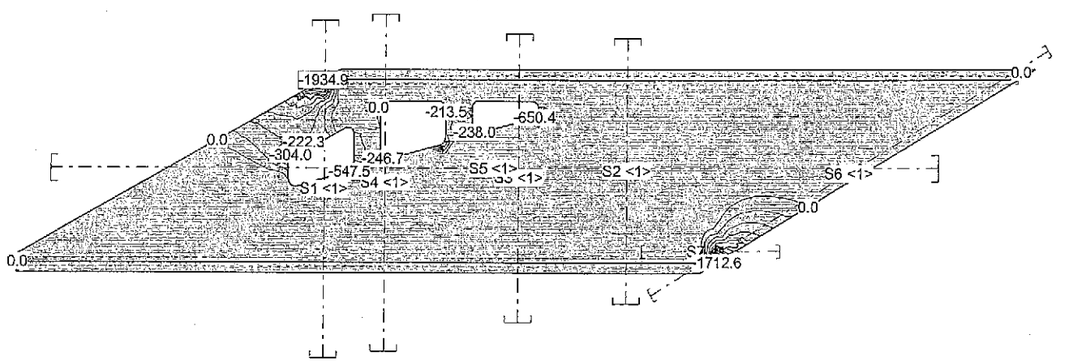
Reinforcement moments maxb: ELS, Equidistance: 100.0 kN, Reference line: 0.0 kN Scale 1 :461.8



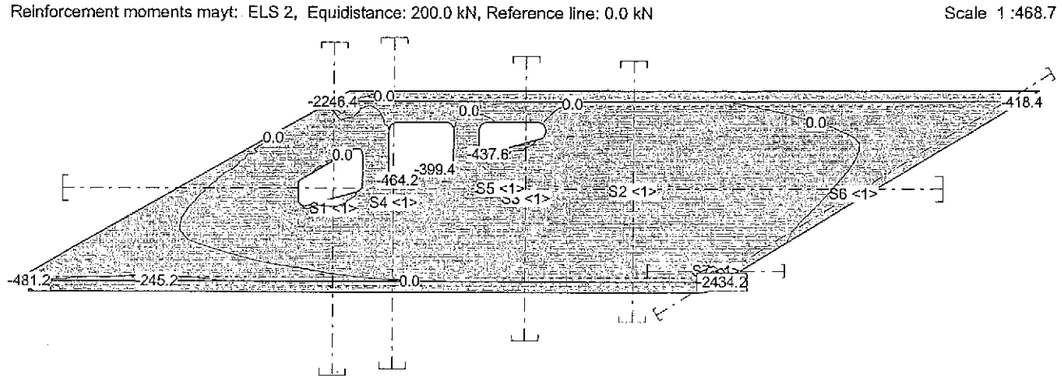
Reinforcement moments mayb: ELS, Equidistance: 100.0 kN, Reference line: 0.0 kN Scale 1 :459.2



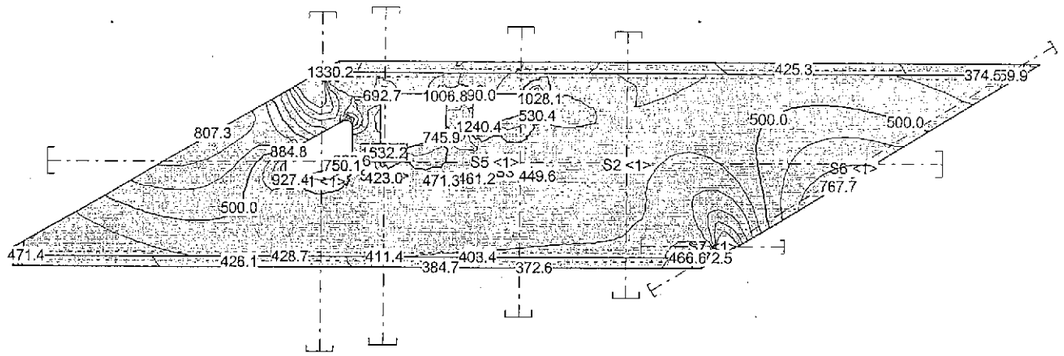
Reinforcement moments maxt: ELS 2, Equidistance: 100.0 kN, Reference line: 0.0 kN Scale 1 :463.8



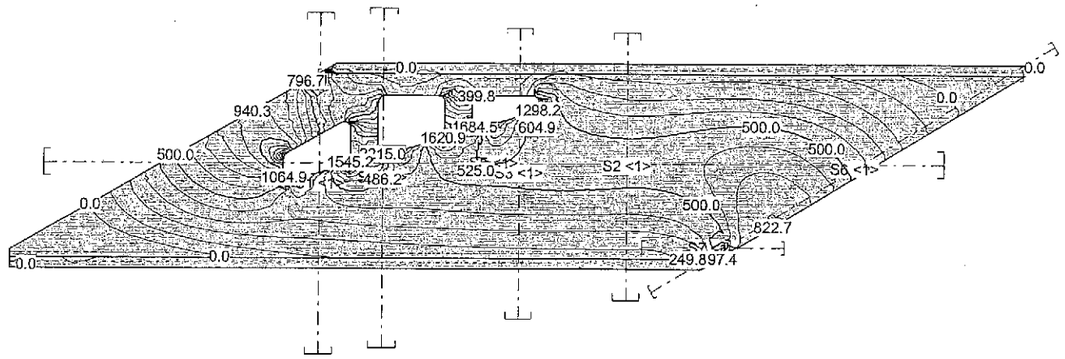
Reinforcement moments mayt: ELS 2, Equidistance: 200.0 kN, Reference line: 0.0 kN Scale 1 :468.7



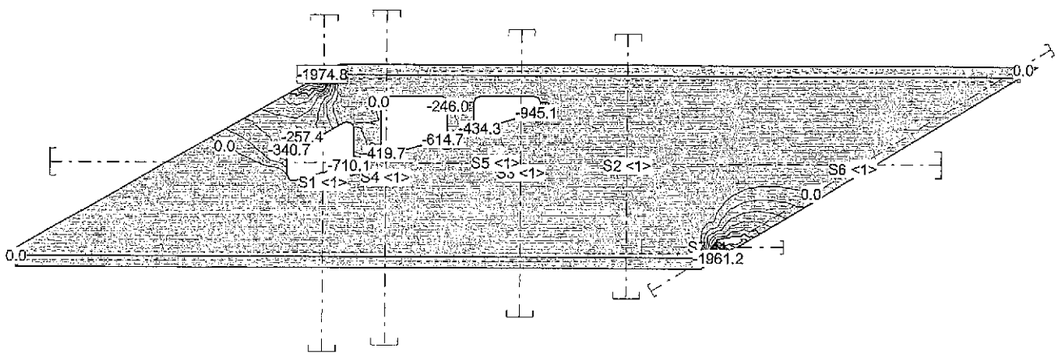
Reinforcement moments maxb: ELS 2, Equidistance: 100.0 kN, Reference line: 0.0 kN Scale 1 :461.8



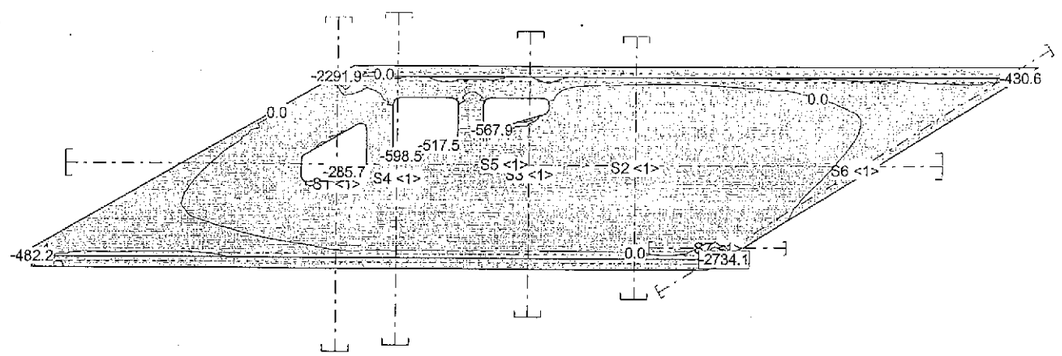
Reinforcement moments mayb: ELS 2, Equidistance: 100.0 kN, Reference line: 0.0 kN Scale 1 :459.2



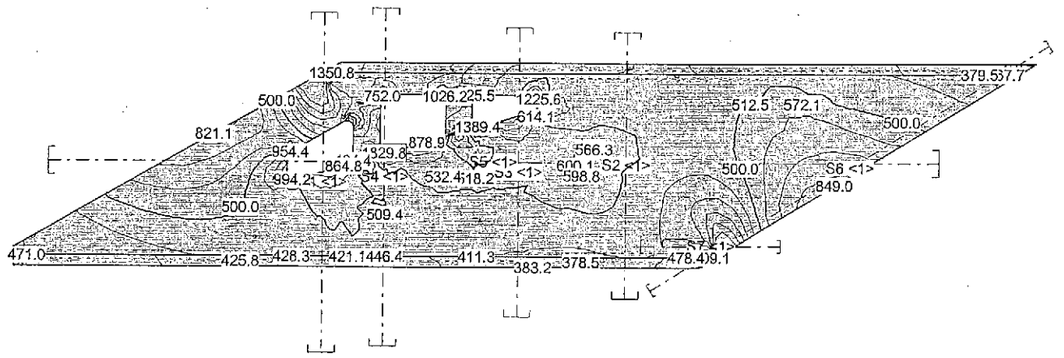
Reinforcement moments maxt: ELS 3, Equidistance: 100.0 kN, Reference line: 0.0 kN Scale 1 :463.8



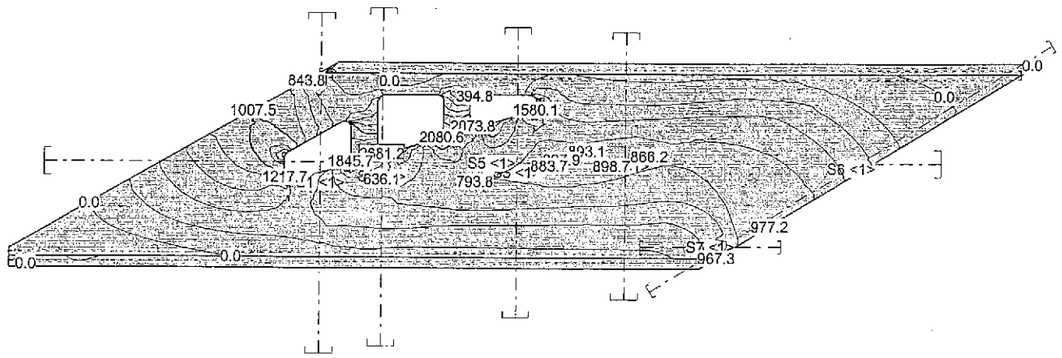
Reinforcement moments mayt: ELS 3, Equidistance: 200.0 kN, Reference line: 0.0 kN Scale 1 :468.7



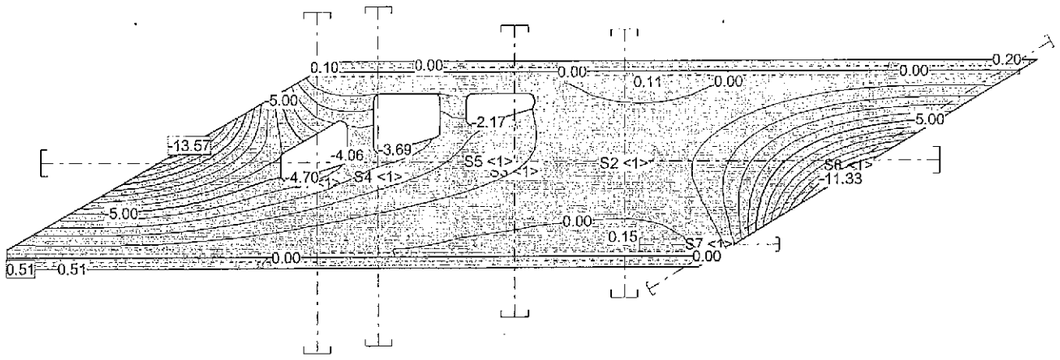
Reinforcement moments maxb: ELS 3, Equidistance: 100.0 kN, Reference line: 0.0 kN Scale 1 :461.8



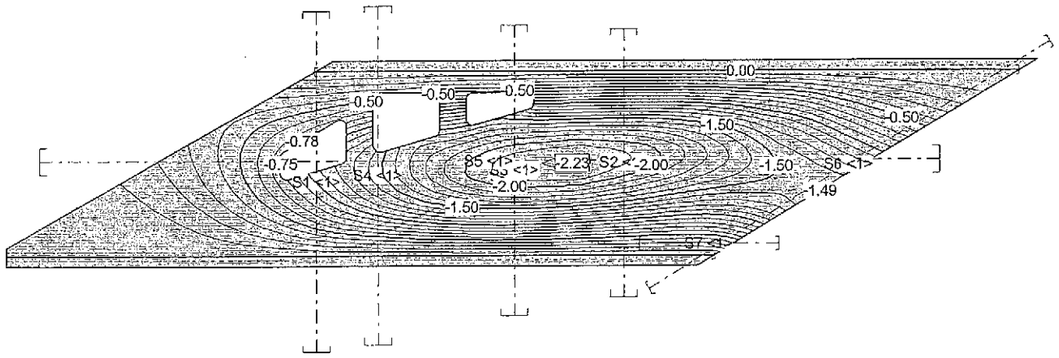
Reinforcement moments mayb: ELS 3, Equidistance: 200.0 kN, Reference line: 0.0 kN Scale 1 :459.2



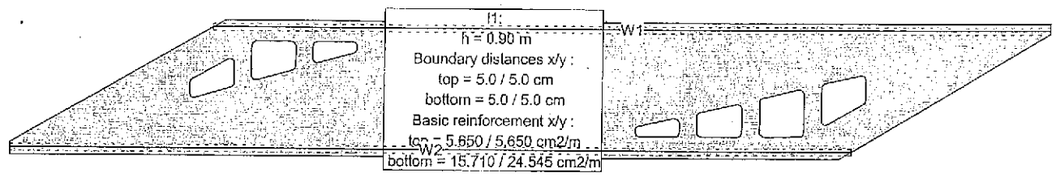
Envelope of deflections: Minima: FLECHA PERMANENTE, Equidistance: 1.00 mm, Reference line: 0.00 mm — Scale 1 :459.9



Envelope of deflections: Minima: FLECHA ACTIVA, Equidistance: 0.10 mm, Reference line: 0.00 mm — Scale 1 :459.2



Structure — Scale 1 :700.0



STRUCTURE DATA

THICKNESS AND MATERIAL

Isotropic	Young [kN/m2]	v -	Thickness [m]	Top surface level [m]
I1	2.1E+7	0.2	0.90	0

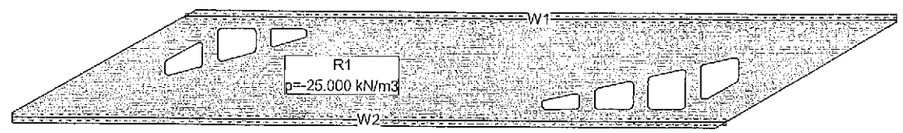
WALLS

Id	compr. only	Type	sdz [kN/m2]	srx [kN]	sry [kN]	Width [m]	Height [m]	Young [kN/m2]
W1		general	blocked	(4.48E+5)	free	0.80	8.00	2.1E+7
like W1: W2								

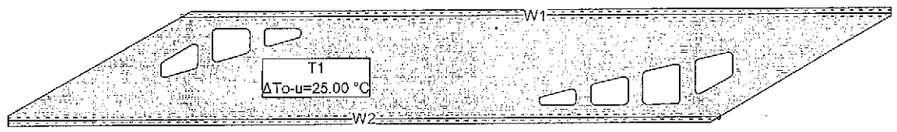
LIST OF LOAD CASES

vLF Number	vTyp	Action	Title
1	Loads	Dead load	PP
2	Loads	Dead load	RETRACCION
3	Loads	Superimposed D.L.	BALASTO MAX
4	Loads	Superimposed D.L.	BALASTO MIN
5	Loads	Superimposed D.L.	BALASTO CARACTERISTICO
6	Loads	Dead load	TIERRAS
7	Loads	Dead load	MURETES
8	Loads	Dead load	CARRIL
9	Loads	Dead load	IMPOSTA
10	Loads	Imposed load (additive)	TREN A EXCENTRICO POSICION 1 V-M
11	Loads	Imposed load (additive)	TREN A EXCENTRICO POSICION 1 B-M
12	Loads	Imposed load (additive)	TREN A CENTRADO V-M
13	Loads	Imposed load (additive)	TREN A CENTRADO B-M
14	Loads	Imposed load (additive)	TREN A EXCENTRICO POSICION 2 V-M
15	Loads	Imposed load (additive)	TREN A EXCENTRICO POSICION 2 B-M
16	Loads	Imposed load (additive)	TREN B V-M
17	Loads	Imposed load (additive)	TREN B B-M
18	Loads	Imposed load (additive)	SC PASEOS
19	Loads	Imposed load (additive)	SC EXCENTRICA IAPF99 1 V-M
20	Loads	Imposed load (additive)	SC EXCENTRICA IAPF99 1 B-M
21	Loads	Imposed load (additive)	SC EXCENTRICA IAPF99 2 V-M
22	Loads	Imposed load (additive)	SC EXCENTRICA IAPF99 2 B-M
23	Loads	Imposed load (additive)	SC CENTRADA IAPF99 V-M
24	Loads	Imposed load (additive)	SC CENTRADA IAPF99 B-M

Load case 1: PP — Scale 1 :828.7



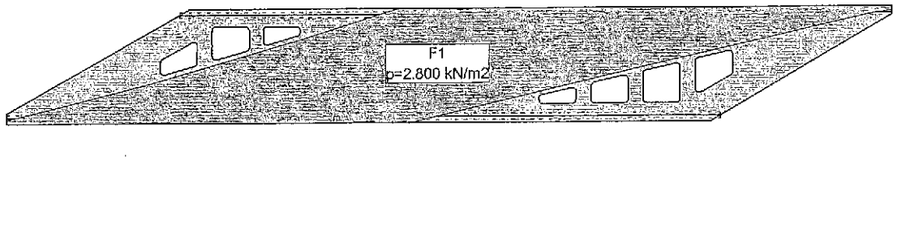
Load case 2: RETRACCION Scale 1 :828.7



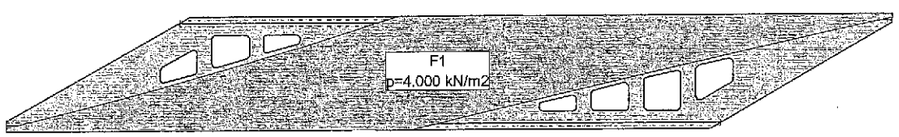
Load case 3: BALASTO MAX Scale 1 :828.7



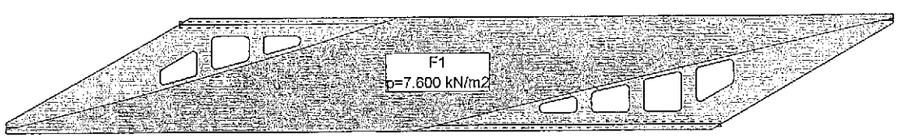
Load case 4: BALASTO MIN Scale 1 :828.7



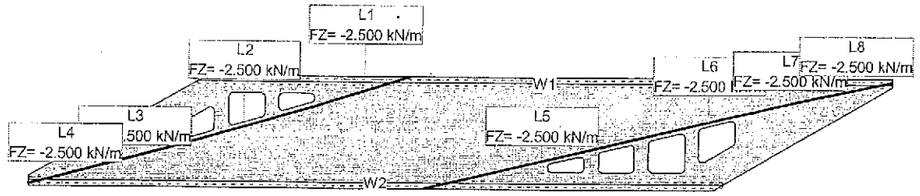
Load case 5: BALASTO CARACTERISTICO Scale 1 :828.7



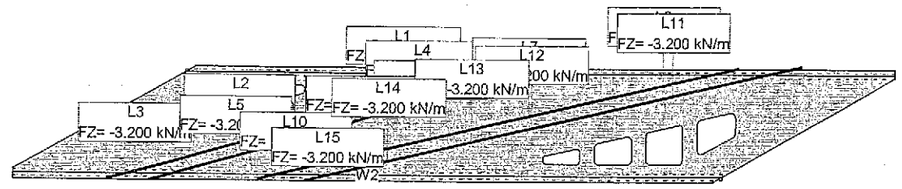
Load case 6: TIERRAS Scale 1 :828.7



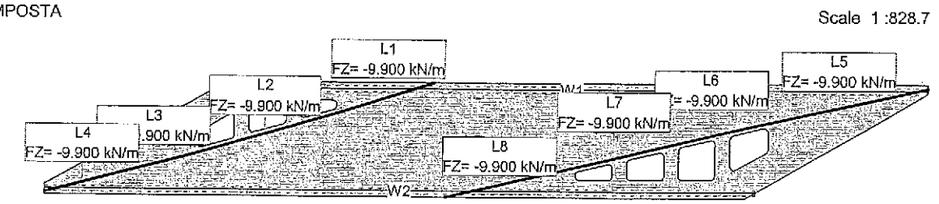
Load case 7: MURETES Scale 1 :845.3



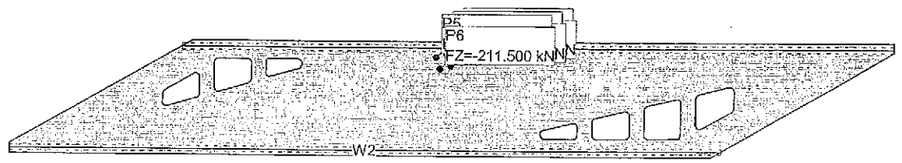
Load case 8: CARRIL Scale 1 :828.7



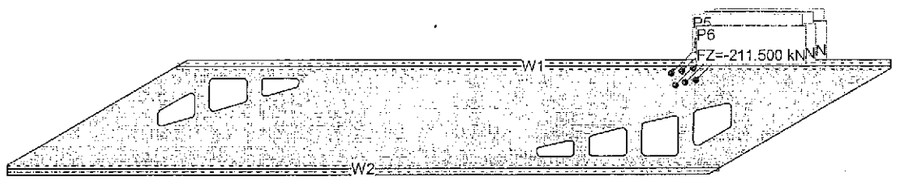
Load case 9: IMPOSTA Scale 1 :828.7



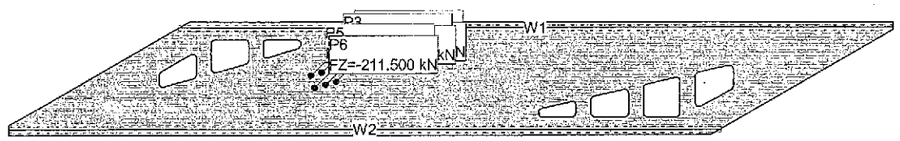
Load case 10: TREN A EXCENTRICO POSICION 1 V-M Scale 1 :828.7



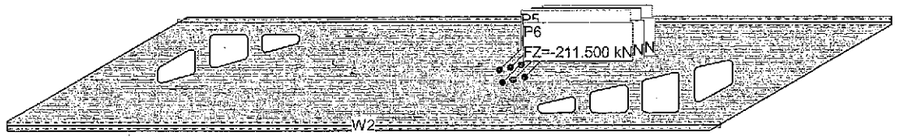
Load case 11: TREN A EXCENTRICO POSICION 1 B-M Scale 1 :828.7



Load case 12: TREN A CENTRADO V-M Scale 1 :828.7



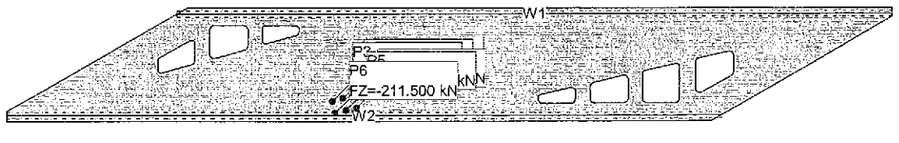
Load case 13: TREN A CENTRADO B-M Scale 1 :828.7



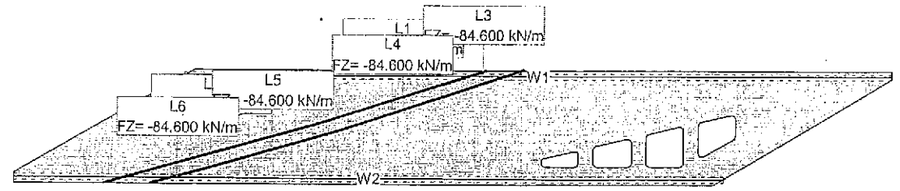
Load case 14: TREN A EXCENTRICO POSICION 2 V-M Scale 1 :828.7



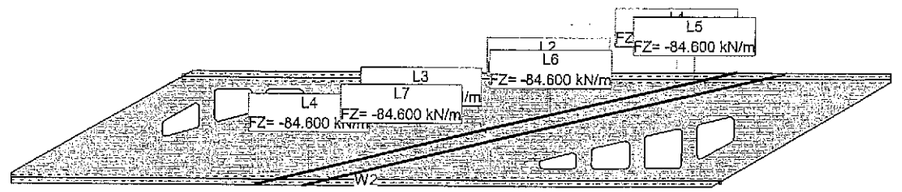
Load case 15: TREN A EXCENTRICO POSICION 2 B-M Scale 1 :828.7



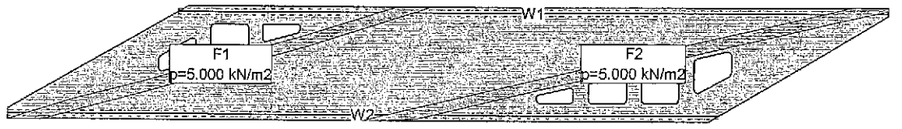
Load case 16: TREN B V-M Scale 1 :828.7



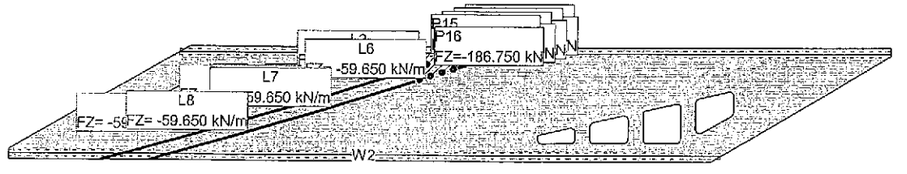
Load case 17: TREN B B-M Scale 1 :828.7



Load case 18: SC PASEOS Scale 1 :828.7

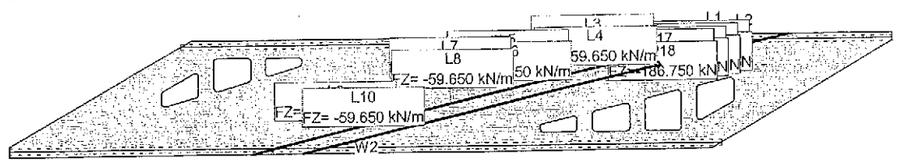


Load case 19: SC EXCENTRICA IAPF99 1 V-M Scale 1 :828.7



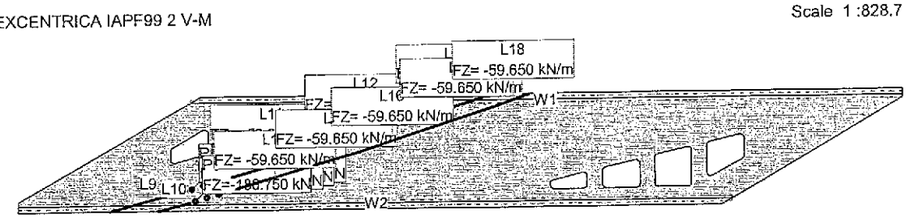
Load case 20: SC EXCENTRICA IAPF99 1 B-M

Scale 1 :828.7



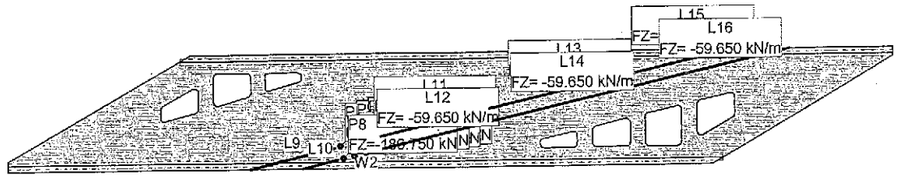
Load case 21: SC EXCENTRICA IAPF99 2 V-M

Scale 1 :828.7



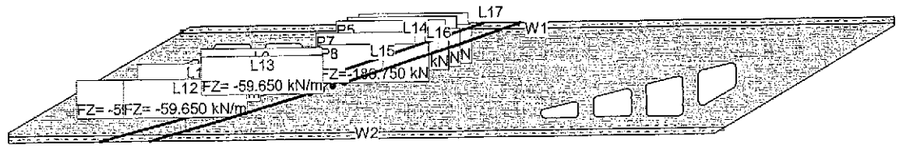
Load case 22: SC EXCENTRICA IAPF99 2 B-M

Scale 1 :828.7



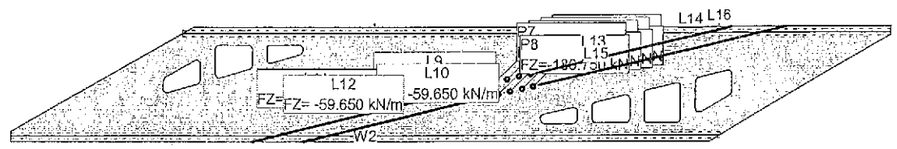
Load case 23: SC CENTRADA IAPF99 V-M

Scale 1 :828.7



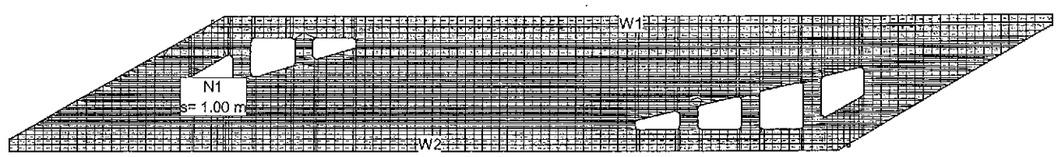
Load case 24: SC CENTRADA IAPF99 B-M

Scale 1 :828.7



Fe-Netz

Scale 1 :700.0



LIMIT STATE SPECIFICATION Code: EH 91 (Superposition according to Code type EC2)
ACTION: CARGAS MUERTAS

Permanent		
either	L1: [1.00]	PP
	L2: [1.00]	RETRACCION
	L3: [1.00]	BALASTO MAX
	L6: [1.00]	TIERRAS
	L7: [1.00]	MURETES
	L8: [1.00]	CARRIL
	L9: [1.00]	IMPOSTA
or	L2: [1.00]	RETRACCION
	L1: [1.00]	PP
	L4: [1.00]	BALASTO MIN
	L6: [1.00]	TIERRAS
	L7: [1.00]	MURETES
	L8: [1.00]	CARRIL
	L9: [1.00]	IMPOSTA
or	L2: [1.00]	RETRACCION
	L1: [1.00]	PP
	L5: [1.00]	BALASTO CARACTERISTICO
	L6: [1.00]	TIERRAS
	L7: [1.00]	MURETES
	L8: [1.00]	CARRIL
	L9: [1.00]	IMPOSTA

LIMIT STATE SPECIFICATION: PP + CM
Limit state: Serviceability (SLS): Frequent

Actions		Design situations
Nr	Name	1
1	CARGAS MUERTAS	1

LIMIT STATE SPECIFICATION Code: EH 91 (Superposition according to Code type EC2)
ACTION: VARIABLES

plus where critical	L18: [0.50]	SC PASEOS
plus where critical		
either	L19: [1.00]	SC EXCENTRICA IAPF99 1 V-M
	L20: [1.00]	SC EXCENTRICA IAPF99 1 B-M
or	L21: [1.00]	SC EXCENTRICA IAPF99 2 V-M
	L22: [1.00]	SC EXCENTRICA IAPF99 2 B-M
or	L23: [1.00]	SC CENTRADA IAPF99 V-M
	L24: [1.00]	SC CENTRADA IAPF99 B-M
or	L10: [1.00]	TREN A EXCENTRICO POSICION 1 V-M
	L11: [1.00]	TREN A EXCENTRICO POSICION 1 B-M
or	L12: [1.00]	TREN A CENTRADO V-M
	L13: [1.00]	TREN A CENTRADO B-M
or	L14: [1.00]	TREN A EXCENTRICO POSICION 2 V-M
	L15: [1.00]	TREN A EXCENTRICO POSICION 2 B-M
or	L16: [1.00]	TREN B V-M
	L17: [1.00]	TREN B B-M

LIMIT STATE SPECIFICATION: SC
Limit state: Serviceability (SLS): Frequent

Actions		Design situations
Nr	Name	1
1	VARIABLES	1

LIMIT STATE SPECIFICATION Code: EH 91 (Superposition according to Code type EC2)
ACTION: CARGAS MUERTAS

Permanent		
either	L1: [1.00]	PP
	L2: [1.00]	RETRACCION
	L3: [1.00]	BALASTO MAX
	L6: [1.00]	TIERRAS
	L7: [1.00]	MURETES
	L8: [1.00]	CARRIL
	L9: [1.00]	IMPOSTA
or	L2: [1.00]	RETRACCION
	L1: [1.00]	PP
	L4: [1.00]	BALASTO MIN
	L6: [1.00]	TIERRAS
	L7: [1.00]	MURETES
	L8: [1.00]	CARRIL
	L9: [1.00]	IMPOSTA
or	L2: [1.00]	RETRACCION
	L1: [1.00]	PP
	L5: [1.00]	BALASTO CARACTERISTICO
	L6: [1.00]	TIERRAS
	L7: [1.00]	MURETES
	L8: [1.00]	CARRIL
	L9: [1.00]	IMPOSTA

ACTION: SC PASEOS

plus where critical	L18: [1.00]	SC PASEOS

LIMIT STATE SPECIFICATION: ELS 2
Limit state: Serviceability (SLS): Frequent

Actions		Design situations
Nr	Name	1
1	CARGAS MUERTAS	1
2	SC PASEOS	1

LIMIT STATE SPECIFICATION Code: EH 91 (Superposition according to Code type EC2)
ACTION: CARGAS MUERTAS

Permanent		
either	L1: [1.00]	PP
	L2: [1.00]	RETRACCION
	L3: [1.00]	BALASTO MAX
	L6: [1.00]	TIERRAS
	L7: [1.00]	MURETES
	L8: [1.00]	CARRIL
	L9: [1.00]	IMPOSTA
or	L2: [1.00]	RETRACCION
	L1: [1.00]	PP
	L4: [1.00]	BALASTO MIN
	L6: [1.00]	TIERRAS
	L7: [1.00]	MURETES
	L8: [1.00]	CARRIL
	L9: [1.00]	IMPOSTA
or	L2: [1.00]	RETRACCION
	L1: [1.00]	PP
	L5: [1.00]	BALASTO CARACTERISTICO
	L6: [1.00]	TIERRAS
	L7: [1.00]	MURETES
	L8: [1.00]	CARRIL
	L9: [1.00]	IMPOSTA

ACTION: VARIABLES

plus where critical	L18: [0.50]	SC PASEOS
plus where critical		
either	L19: [1.00]	SC EXCENTRICA IAPF99 1 V-M
	L20: [1.00]	SC EXCENTRICA IAPF99 1 B-M
or	L21: [1.00]	SC EXCENTRICA IAPF99 2 V-M
	L22: [1.00]	SC EXCENTRICA IAPF99 2 B-M
or	L23: [1.00]	SC CENTRADA IAPF99 V-M
	L24: [1.00]	SC CENTRADA IAPF99 B-M
or	L10: [1.00]	TREN A EXCENTRICO POSICION 1 V-M
	L11: [1.00]	TREN A EXCENTRICO POSICION 1 B-M
or	L12: [1.00]	TREN A CENTRADO V-M
	L13: [1.00]	TREN A CENTRADO B-M
or	L14: [1.00]	TREN A EXCENTRICO POSICION 2 V-M
	L15: [1.00]	TREN A EXCENTRICO POSICION 2 B-M
or	L16: [1.00]	TREN B V-M
	L17: [1.00]	TREN B B-M

LIMIT STATE SPECIFICATION: ELS 3
Limit state: Serviceability (SLS): Frequent

Actions		Design situations
Nr	Name	1
1	CARGAS MUERTAS	1
2	VARIABLES	1

LIMIT STATE SPECIFICATION Code: EH 91 (Superposition according to Code type EC2)
ACTION: CARGAS MUERTAS

Permanent		
either	L1: [1.00]	PP
	L2: [1.00]	RETRACCION
	L3: [1.00]	BALASTO MAX
	L6: [1.00]	TIERRAS
	L7: [1.00]	MURETES
	L8: [1.00]	CARRIL
	L9: [1.00]	IMPOSTA
or	L2: [1.00]	RETRACCION
	L1: [1.00]	PP
	L4: [1.00]	BALASTO MIN
	L6: [1.00]	TIERRAS

L7: [1.00] MURETES
L8: [1.00] CARRIL
L9: [1.00] IMPOSTA
or L2: [1.00] RETRACCION
L1: [1.00] PP
L5: [1.00] BALASTO CARACTERISTICO
L6: [1.00] TIERRAS
L7: [1.00] MURETES
L8: [1.00] CARRIL
L9: [1.00] IMPOSTA

LIMIT STATE SPECIFICATION: ELS
Limit state: Serviceability (SLS): Frequent

Actions		Design situations
Nr	Name	1
1	CARGAS MUERTAS	1

LIMIT STATE SPECIFICATION Code: EH 91 (Superposition according to Code type EC2)
ACTION: CARGAS MUERTAS
Permanent
either L1: [1.00] PP
L2: [1.00] RETRACCION
L3: [1.00] BALASTO MAX
L6: [1.00] TIERRAS
L7: [1.00] MURETES
L8: [1.00] CARRIL
L9: [1.00] IMPOSTA
or L2: [1.00] RETRACCION
L1: [1.00] PP
L4: [1.00] BALASTO MIN
L6: [1.00] TIERRAS
L7: [1.00] MURETES
L8: [1.00] CARRIL
L9: [1.00] IMPOSTA
or L2: [1.00] RETRACCION
L1: [1.00] PP
L5: [1.00] BALASTO CARACTERISTICO
L6: [1.00] TIERRAS
L7: [1.00] MURETES
L8: [1.00] CARRIL
L9: [1.00] IMPOSTA

ACTION: VARIABLES
plus where critical L18: [0.50] SC PASEOS
plus where critical
either L19: [1.00] SC EXCENTRICA IAPF99 1 V-M
L20: [1.00] SC EXCENTRICA IAPF99 1 B-M
or L21: [1.00] SC EXCENTRICA IAPF99 2 V-M
L22: [1.00] SC EXCENTRICA IAPF99 2 B-M
or L23: [1.00] SC CENTRADA IAPF99 V-M
L24: [1.00] SC CENTRADA IAPF99 B-M
or L10: [1.00] TREN A EXCENTRICO POSICION 1 V-M
L11: [1.00] TREN A EXCENTRICO POSICION 1 B-M
or L12: [1.00] TREN A CENTRADO V-M
L13: [1.00] TREN A CENTRADO B-M
or L14: [1.00] TREN A EXCENTRICO POSICION 2 V-M
L15: [1.00] TREN A EXCENTRICO POSICION 2 B-M
or L16: [1.00] TREN B V-M
L17: [1.00] TREN B B-M

LIMIT STATE SPECIFICATION: ELU 1
Limit state: Ultimate (ULS)

Actions		Design situations	
Nr	Name	1	2
1	CARGAS MUERTAS	1.35	1
2	VARIABLES	1.5	1.5

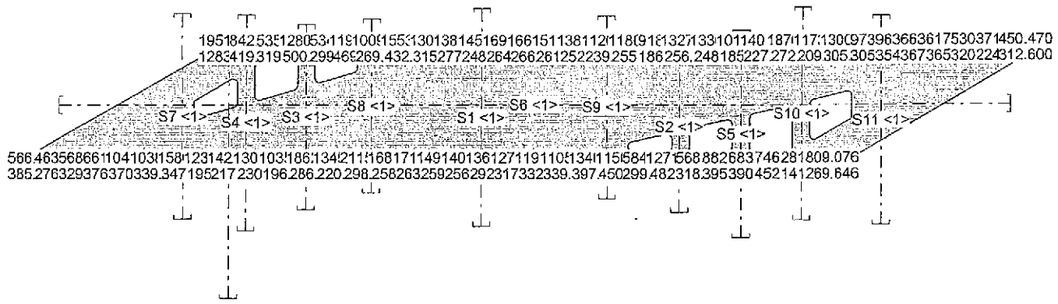
LIMIT STATE SPECIFICATION Code: EH 91 (Superposition according to Code type EC2)
ACTION: CARGAS MUERTAS
Permanent
either L1: [1.00] PP
L2: [1.00] RETRACCION
L3: [1.00] BALASTO MAX
L6: [1.00] TIERRAS
L7: [1.00] MURETES
L8: [1.00] CARRIL
L9: [1.00] IMPOSTA
or L2: [1.00] RETRACCION
L1: [1.00] PP
L4: [1.00] BALASTO MIN
L6: [1.00] TIERRAS
L7: [1.00] MURETES
L8: [1.00] CARRIL
L9: [1.00] IMPOSTA
or L2: [1.00] RETRACCION
L1: [1.00] PP
L5: [1.00] BALASTO CARACTERISTICO
L6: [1.00] TIERRAS
L7: [1.00] MURETES
L8: [1.00] CARRIL
L9: [1.00] IMPOSTA

ACTION: SC PASEOS
plus where critical L18: [1.00] SC PASEOS

LIMIT STATE SPECIFICATION: ELU 2
Limit state: Ultimate (ULS)

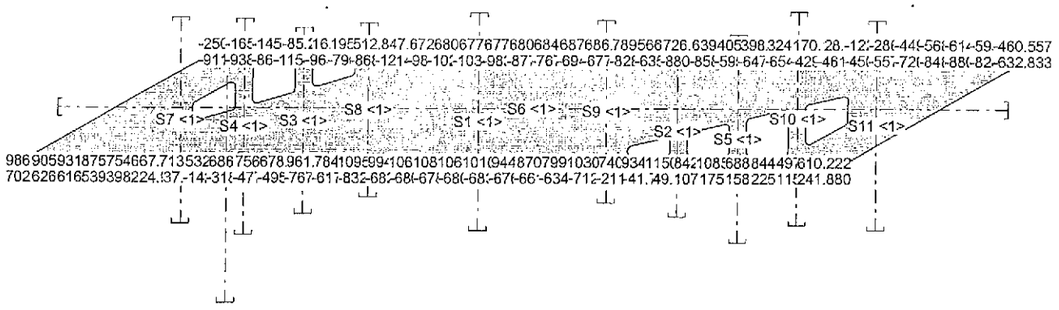
Actions		Design situations	
Nr	Name	1	2
1	CARGAS MUERTAS	1.35	1
2	SC PASEOS	1.5	1.5

Envelopes of reaction forces Columns: ELU 1
Walls values sectionwise presented, Identifications: Walls: [kN]
Scale 1 :720.1



Envelopes of reaction moments Columns: ELU 1
Walls values sectionwise presented, Identifications: Walls: [kNm]

Scale 1 :721.9



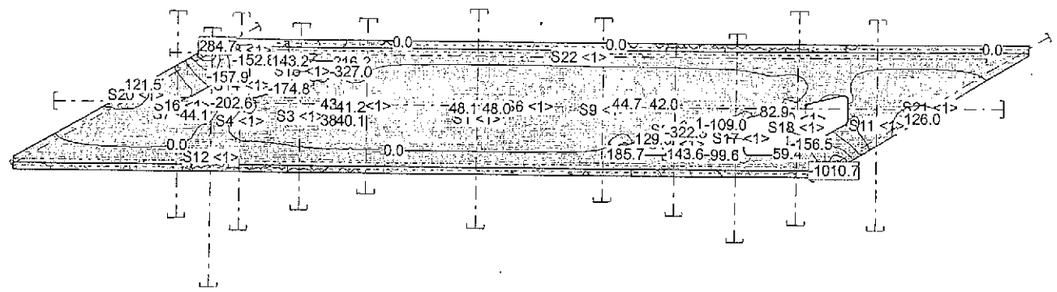
Envelopes of column reactions and corresponding components
Limit state specification: ELU 1

Columns	RZ<* RZ [kN]	Rmx Rmx<* [kNm]	Rmy Rmy Rmy<* [kNm]	RZ>* Rz Rz [kN]	Rmx RMx>* Rmx [kNm]	Rmy Rmy RMy>* [kNm]
Line support W1.0:						
Starting point: (-16.52, 14.50); Direction: 0.00°						
Support length: 95.90m; x direction: 0.00°						
Segment from [m] / to [m] / Length [m]						
0.00 / 2.90 / 2.90	1283.120* 1935.497	-262.510 -911.013*	1951.100* 1289.386	-892.751 -250.413*		
2.90 / 6.32 / 3.42	419.325* 842.160	-165.873 -938.217*	842.160* 419.325	-938.217 -165.873*		
6.32 / 9.09 / 2.76	319.604* 535.091	-207.503 -862.364*	535.091* 327.900	-862.364 -145.673*		
9.09 / 12.47 / 3.39	500.418* 1280.742	-85.339 -1154.228*	1280.742* 500.723	-1154.228 -85.234*		
12.47 / 15.44 / 2.97	299.453* 534.834	16.220 -963.458*	534.834* 299.764	-963.458 16.986*		
15.44 / 17.88 / 2.44	469.880* 1192.459	147.820 -796.799*	1192.459* 641.832	-796.799 195.897*		
17.88 / 20.79 / 2.91	269.924* 823.264	378.918 -868.876*	1009.256* 370.380	-788.969 512.845*		
20.79 / 24.68 / 3.89	432.148* 1327.768	610.862 -1214.431*	1553.893* 592.287	-1125.404 847.419*		
24.68 / 27.60 / 2.91	315.194* 1124.893	500.505 -987.813*	1301.568* 430.975	-914.601 672.268*		
27.60 / 30.51 / 2.91	277.989* 1210.287	505.407 -1029.478*	1383.431* 381.178	-954.346 680.365*		
30.51 / 33.43 / 2.91	248.043* 1280.314	391.453 -1033.653*	1454.995* 343.644	-780.045 677.421*		
33.43 / 36.34 / 2.91	264.278* 1371.463	503.011 -983.383*	1694.380* 357.133	-780.525 677.817*		
36.34 / 39.26 / 2.91	266.514* 1500.642	498.423 -877.460*	1666.331* 361.573	-801.248 680.766*		
39.26 / 42.17 / 2.91	261.026* 1353.749	505.776 -767.055*	1517.283* 354.294	-689.095 684.529*		
42.17 / 45.08 / 2.91	252.899* 1227.409	510.270 -694.045*	1387.579* 343.137	-614.207 687.374*		
45.08 / 48.00 / 2.91	239.176* 953.673	510.629 -677.419*	1120.952* 324.546	-571.002 686.068*		
48.00 / 51.42 / 3.42	255.837* 1008.474	569.534 -828.173*	1180.414* 351.972	-734.471 789.743*		
51.42 / 53.96 / 2.55	186.169* 792.647	412.262 -635.962*	918.951* 258.071	-569.451 566.889*		
53.96 / 57.44 / 3.48	256.163* 1154.432	517.233 -880.465*	1327.821* 356.021	-798.086 726.354*		
57.44 / 60.89 / 3.45	248.790* 1170.566	437.698 -858.016*	1336.435* 349.026	-791.294 639.620*		
60.89 / 63.42 / 2.52	185.913* 891.636	294.815 -595.743*	1012.779* 260.687	-558.709 405.689*		
63.42 / 66.39 / 2.97	227.523* 1257.796	297.805 -647.277*	1401.109* 316.364	-618.544 398.595*		
66.39 / 69.68 / 3.29	272.269* 1560.780	247.462 -654.469*	1870.421* 375.295	-375.912 324.499*		
69.68 / 72.52 / 2.84	209.632* 974.647	132.568 -429.555*	1173.750* 287.025	-416.070 170.176*		
72.52 / 75.95 / 3.43	305.254* 1300.382	28.074 -461.928*	1300.382* 305.254	-461.928 28.074*		
75.95 / 78.86 / 2.92	305.514* 973.004	-122.782 -450.605*	973.004* 305.514	-450.605 -122.782*		
78.86 / 81.78 / 2.92	354.294* 875.388	-286.413 -557.256*	963.417* 354.294	-555.956 -286.413*		
81.78 / 84.70 / 2.92	367.790* 638.252	-465.044 -726.760*	663.945* 376.885	-712.976 -449.752*		
84.70 / 87.62 / 2.92	365.962* 612.155	-568.505 -848.259*	617.325* 365.976	-842.181 -568.411*		
87.62 / 90.54 / 2.92	320.906* 529.166	-617.236 -880.867*	530.843* 321.535	-878.655 -614.320*		
90.54 / 93.46 / 2.92	224.940* 370.353	-594.782 -828.309*	371.098* 225.348	-827.467 -593.268*		
93.46 / 95.90 / 2.43	312.600* 450.342	-461.912 -632.833*	450.470* 312.728	-631.478 -460.557*		
Line support W2.0:						
Starting point: (-39.50, 0.80); Direction: 0.00°						
Support length: 95.86m; x direction: 0.00°						
Segment from [m] / to [m] / Length [m]						
0.00 / 3.40 / 3.40	385.463* 386.712	706.290 702.601*	566.799* 565.836	980.740 986.572*		
3.40 / 6.32 / 2.92	276.894* 281.188	632.358 626.350*	463.573* 461.517	897.384 905.389*		
6.32 / 9.23 / 2.92	329.162* 337.572	630.102 616.848*	568.610* 565.734	917.056 931.769*		
9.23 / 12.15 / 2.92	376.075* 376.886	567.732 539.291*	661.447* 648.598	861.173 875.683*		
12.15 / 15.06 / 2.92	370.821* 370.821	398.473 398.473*	1044.594* 934.925	754.311 754.956*		
15.06 / 17.98 / 2.92	339.145* 339.145	224.942 224.942*	1038.335* 1038.335	667.887 667.887*		
17.98 / 21.53 / 3.55	347.932*	39.280	1580.094*	713.487		

Segment from [m]	to [m]	Length [m]	RZ<* RZ [kN]	Rmx Rmx<* [kNm]	RZ>* RZ [kN]	Rmx Rmx>* [kNm]
			349.874	37.979*	1580.094	713.487*
21.53	24.04	2.51	195.083*	-107.062	1239.778*	375.018
			271.628	-142.101*	1177.590	532.763*
24.04	27.01	2.97	217.458*	-228.895	1422.952*	676.238
			306.313	-318.784*	1284.422	686.181*
27.01	30.15	3.14	230.663*	-318.413	1303.483*	659.731
			325.151	-477.372*	1104.723	756.358*
30.15	32.83	2.69	196.302*	-371.525	1035.825*	627.590
			267.427	-495.108*	907.816	678.310*
32.83	36.49	3.66	286.057*	-488.856	1862.979*	875.402
			391.761	-767.302*	1675.939	961.978*
36.49	39.23	2.74	220.405*	-459.654	1345.387*	712.079
			300.026	-617.446*	1200.776	784.291*
39.23	42.81	3.58	298.630*	-615.790	2115.686*	997.485
			406.086	-832.348*	1926.850	1095.042*
42.81	45.72	2.91	258.555*	-498.497	1685.524*	916.525
			351.160	-682.114*	1523.763	994.976*
45.72	48.64	2.91	263.844*	-505.165	1710.270*	817.136
			356.688	-680.066*	1426.377	1061.329*
48.64	51.55	2.91	259.376*	-503.611	1499.053*	1007.328
			352.193	-678.565*	1335.020	1082.835*
51.55	54.47	2.91	256.225*	-504.913	1409.061*	986.687
			350.108	-680.325*	1243.878	1061.984*
54.47	57.38	2.91	292.539*	-395.261	1361.987*	934.934
			405.500	-683.343*	1184.850	1010.190*
57.38	60.30	2.91	317.176*	-488.662	1278.452*	871.596
			435.345	-676.538*	1100.585	944.892*
60.30	63.21	2.91	332.057*	-487.004	1192.506*	799.283
			455.215	-661.417*	1016.065	870.228*
63.21	66.13	2.91	339.559*	-471.749	1105.539*	732.635
			464.433	-634.668*	933.304	799.630*
66.13	70.01	3.89	397.320*	-533.560	1346.774*	947.323
			542.996	-712.877*	1074.173	1030.183*
70.01	72.46	2.44	450.651*	-146.528	1156.920*	740.373
			617.295	-211.153*	1156.920	740.373*
72.46	75.43	2.97	299.524*	-24.576	584.337*	934.292
			408.224	-41.728*	584.337	934.292*
75.43	78.79	3.37	482.089*	49.706	1271.119*	1150.404
			482.089	49.706*	1271.119	1150.404*
78.79	81.40	2.61	318.534*	161.006	568.571*	842.069
			332.315	107.455*	568.571	842.069*
81.40	84.99	3.59	395.165*	175.989	882.190*	1085.261
			395.165	175.989*	882.190	1085.261*
84.99	87.43	2.44	390.701*	165.730	683.497*	648.108
			397.047	158.186*	673.984	688.445*
87.43	90.97	3.54	452.376*	229.635	746.010*	822.726
			452.982	225.974*	744.529	844.254*
90.97	93.53	2.56	144.457*	116.425	289.061*	495.839
			144.710	115.900*	286.062	497.634*
93.53	95.86	2.33	1269.646*	241.880	1809.076*	537.232
			1269.646	241.880*	1808.271	610.222*

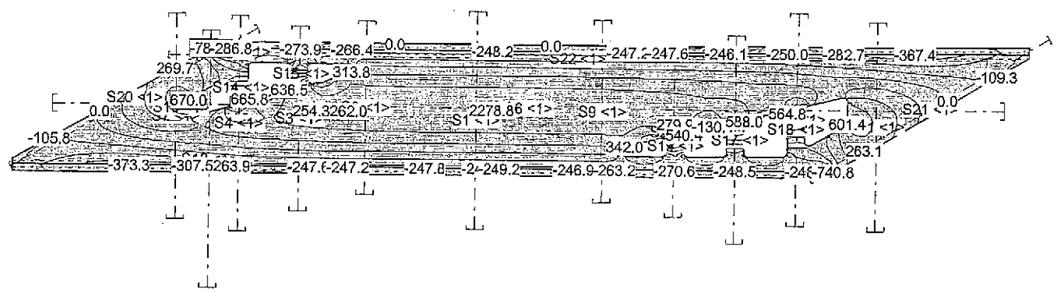
Sectional forces mx: Load case 1, Equidistance: 100.0 kN, Reference line: 0.0 kN

Scale 1 :718.1



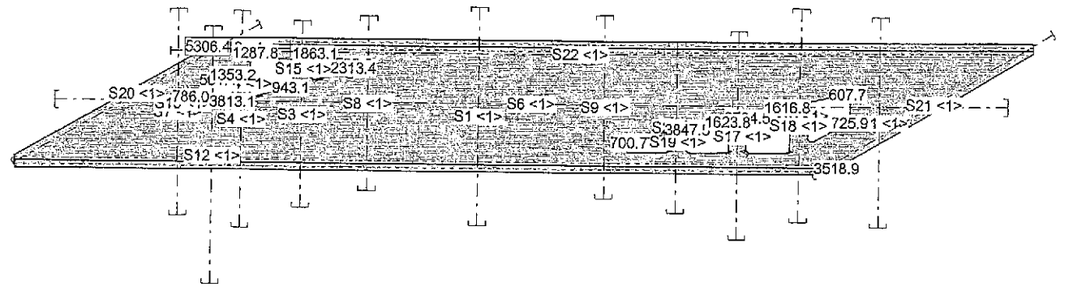
Sectional forces mx: Load case 1, Equidistance: 100.0 kN, Reference line: 0.0 kN

Scale 1 :718.1



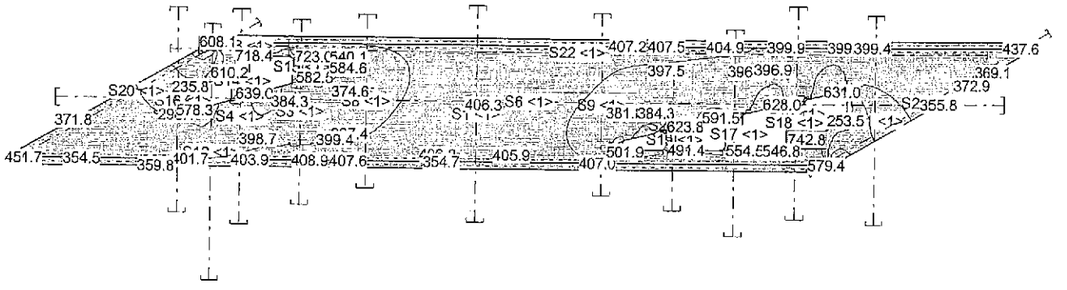
Sectional forces vtot: Load case 1, Equidistance: 500.0 kN/m, Reference line: 0.0 kN/m

Scale 1 :718.1

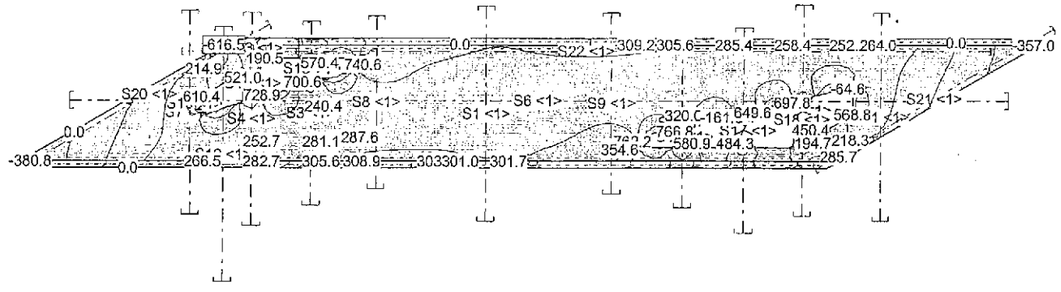


Sectional forces mx: Load case 2, Equidistance: 100.0 kN, Reference line: 0.0 kN

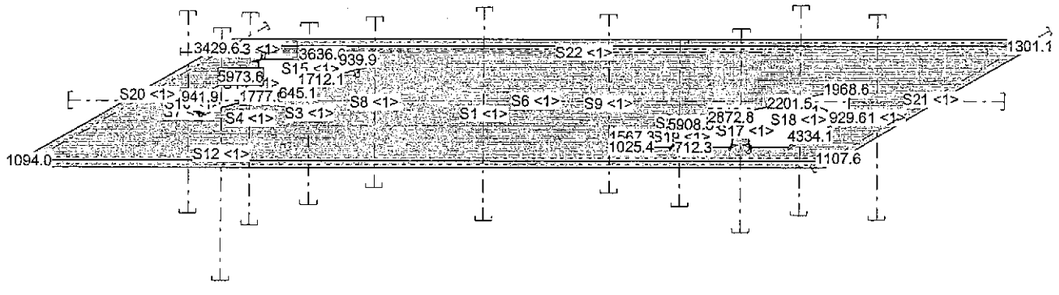
Scale 1 :722.6



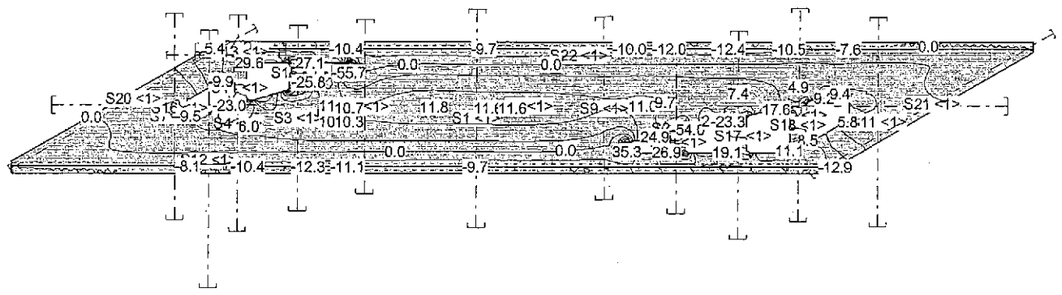
Sectional forces mx: Load case 2, Equidistance: 100.0 kN, Reference line: 0.0 kN Scale 1 :729.6



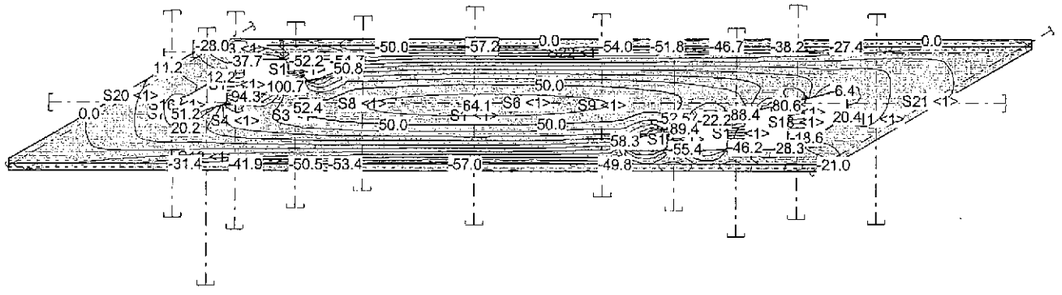
Sectional forces vtot: Load case 2, Equidistance: 1000.0 kN/m, Reference line: 0.0 kN/m Scale 1 :731.9



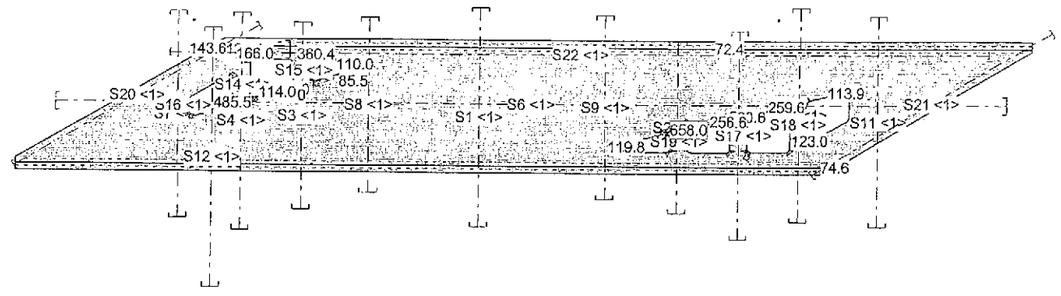
Sectional forces mx: Load case 3, Equidistance: 5.0 kN, Reference line: 0.0 kN Scale 1 :718.1



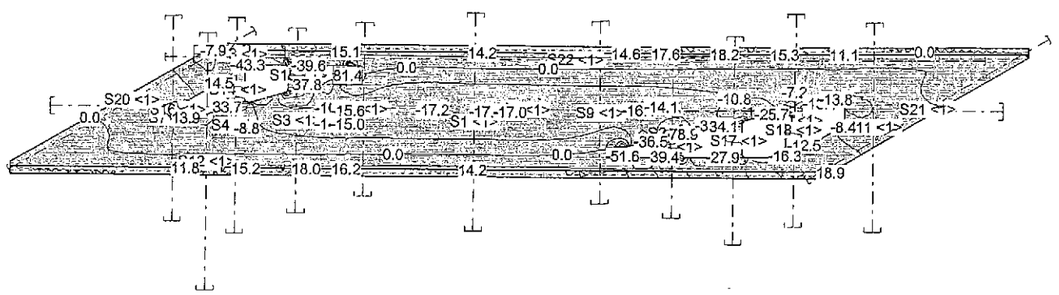
Sectional forces mx: Load case 3, Equidistance: 10.0 kN, Reference line: 0.0 kN Scale 1 :718.1



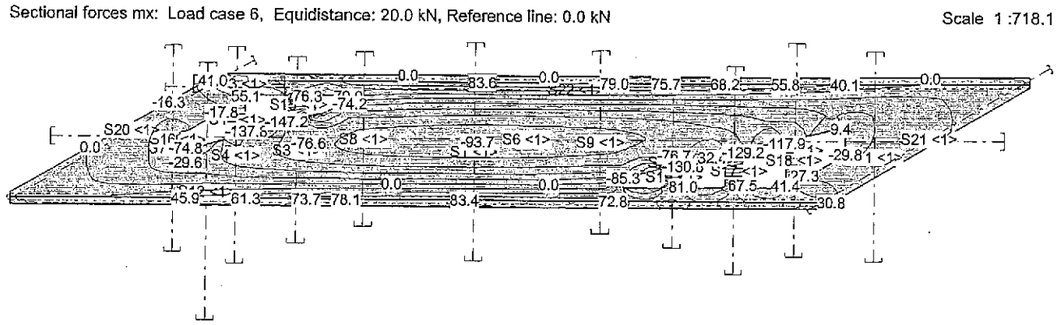
Sectional forces vtot: Load case 3, Equidistance: 50.0 kN/m, Reference line: 0.0 kN/m Scale 1 :718.1



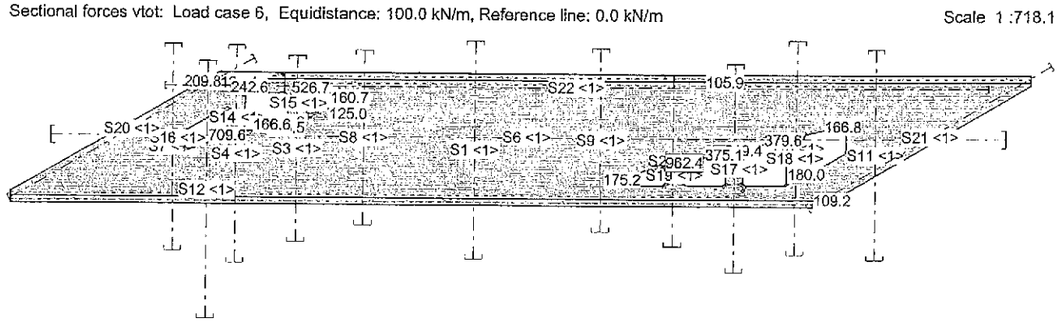
Sectional forces mx: Load case 6, Equidistance: 10.0 kN, Reference line: 0.0 kN Scale 1 :718.1



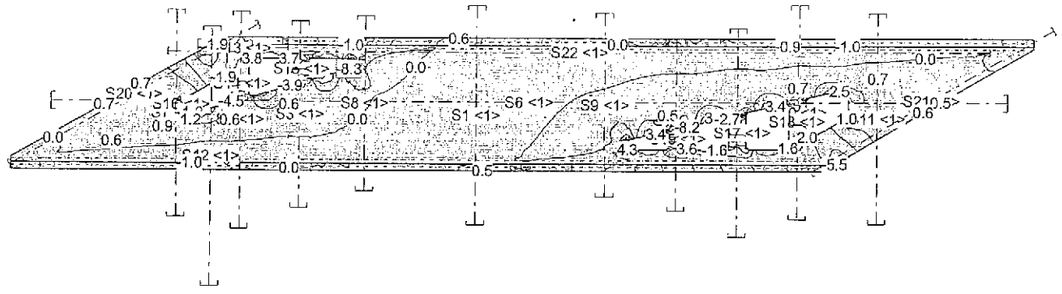
Sectional forces mx: Load case 6, Equidistance: 20.0 kN, Reference line: 0.0 kN Scale 1 :718.1



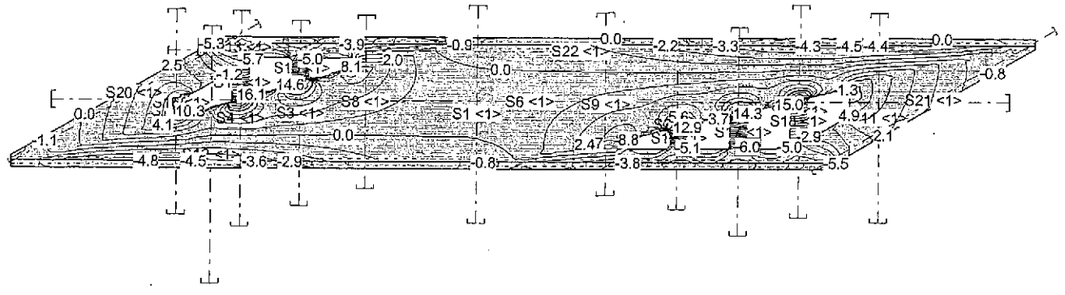
Sectional forces vtot: Load case 6, Equidistance: 100.0 kN/m, Reference line: 0.0 kN/m Scale 1 :718.1



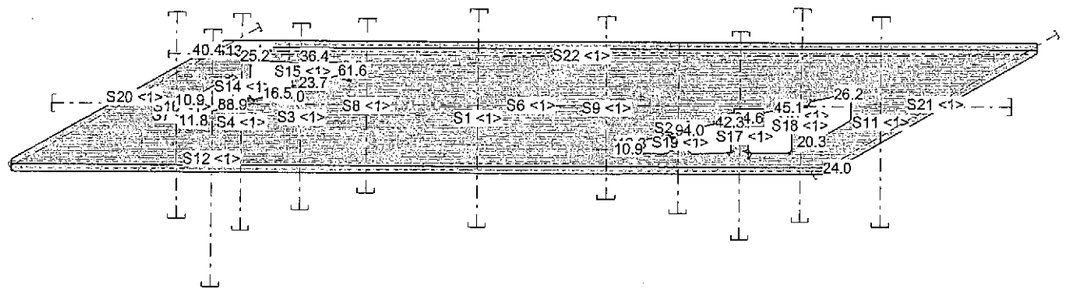
Sectional forces mx: Load case 7, Equidistance: 1.0 kN, Reference line: 0.0 kN Scale 1 :718.1



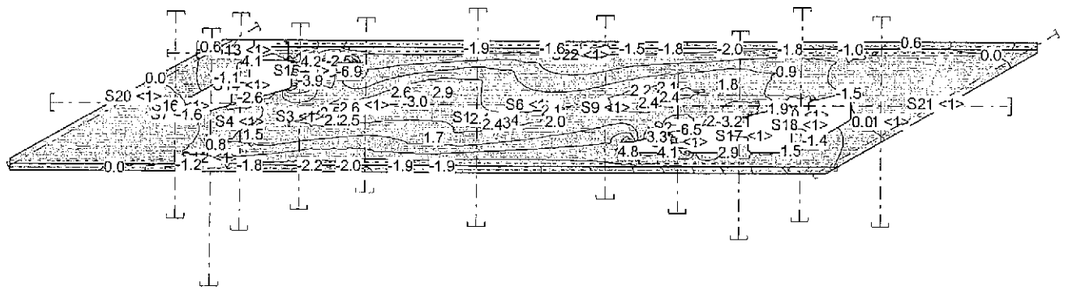
Sectional forces mx: Load case 7, Equidistance: 1.0 kN, Reference line: 0.0 kN Scale 1 :718.1



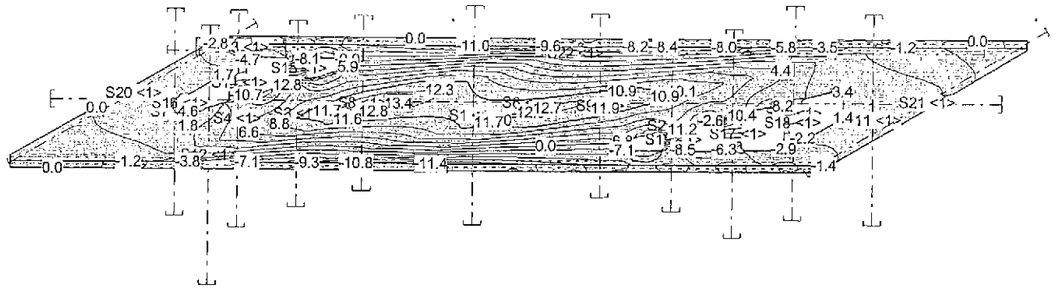
Sectional forces vtot: Load case 7, Equidistance: 10.0 kN/m, Reference line: 0.0 kN/m Scale 1 :718.1



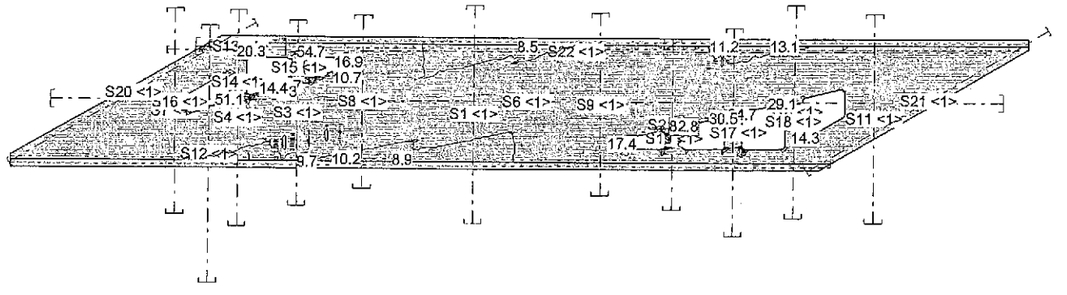
Sectional forces mx: Load case 8, Equidistance: 1.0 kN, Reference line: 0.0 kN Scale 1 :718.1



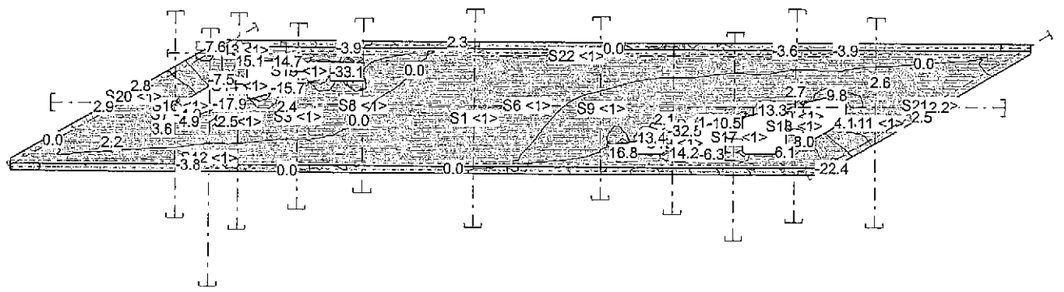
Sectional forces mx: Load case 8, Equidistance: 2.0 kN, Reference line: 0.0 kN Scale 1 :718.1



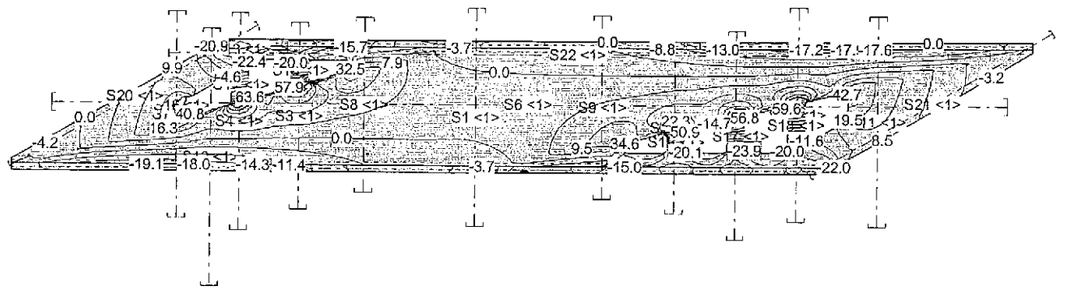
Sectional forces vtot: Load case 8, Equidistance: 5.0 kN/m, Reference line: 0.0 kN/m Scale 1 :718.1



Sectional forces mx: Load case 9, Equidistance: 5.0 kN, Reference line: 0.0 kN Scale 1 :718.1

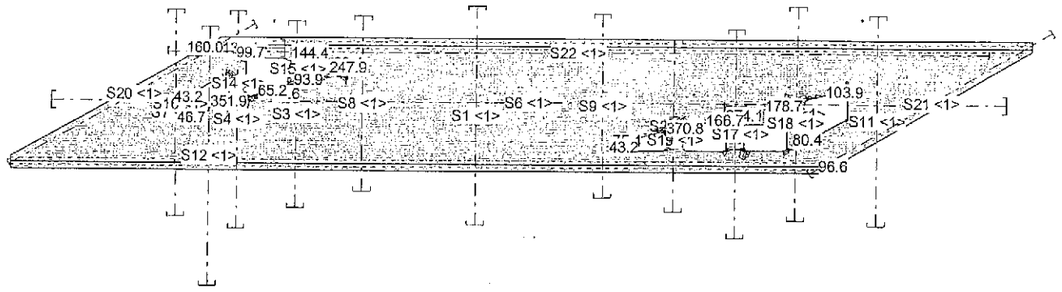


Sectional forces mx: Load case 9, Equidistance: 5.0 kN, Reference line: 0.0 kN Scale 1 :718.1



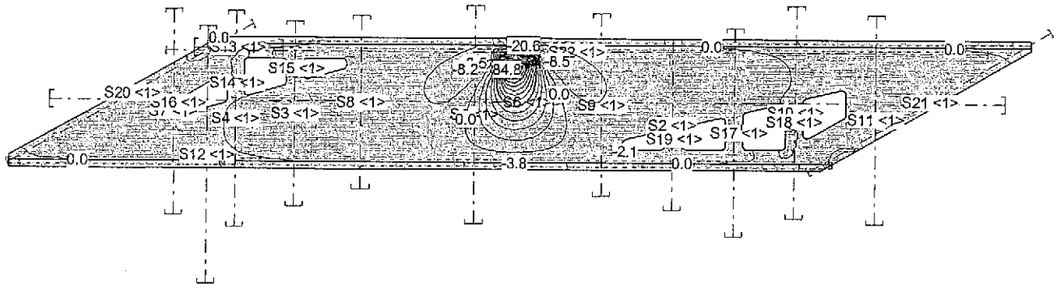
Sectional forces vtot: Load case 9, Equidistance: 20.0 kN/m, Reference line: 0.0 kN/m

Scale 1 :718.1



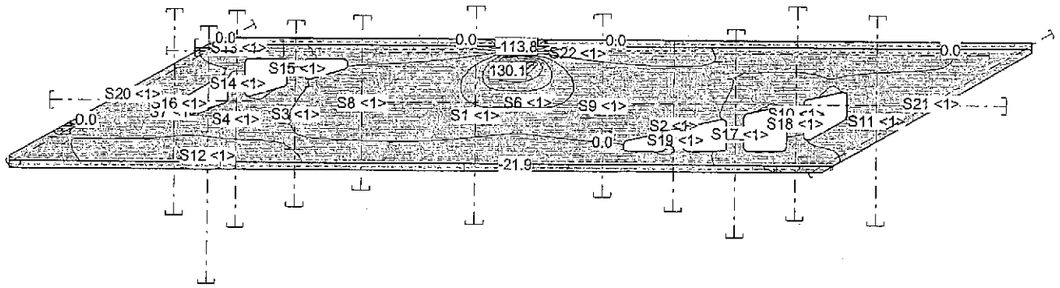
Sectional forces mx: Load case 10, Equidistance: 5.0 kN, Reference line: 0.0 kN

Scale 1 :718.1



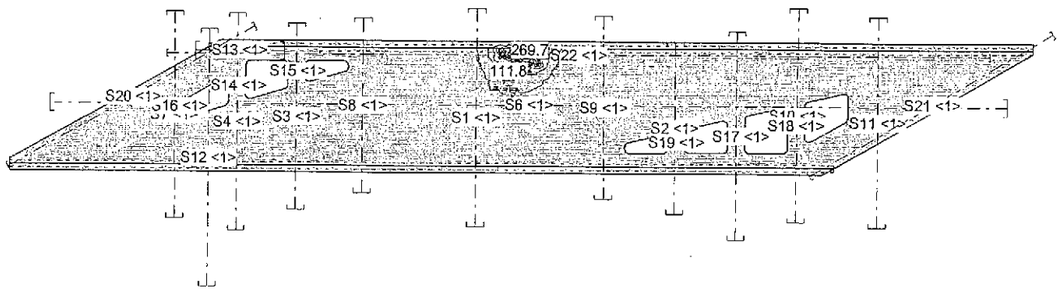
Sectional forces mx: Load case 10, Equidistance: 20.0 kN, Reference line: 0.0 kN

Scale 1 :718.1



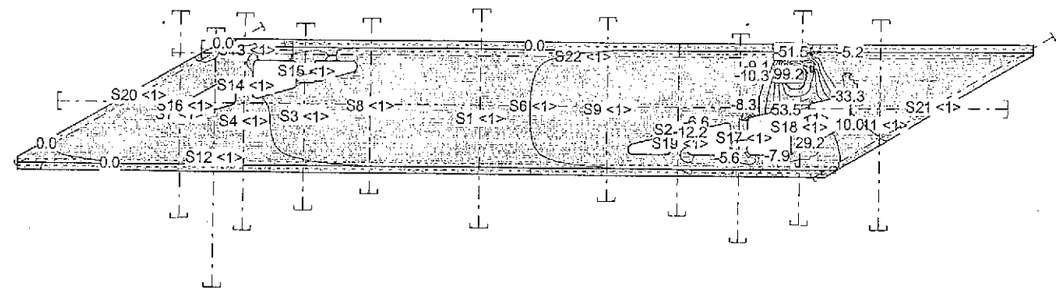
Sectional forces vtot: Load case 10, Equidistance: 20.0 kN/m, Reference line: 0.0 kN/m

Scale 1 :718.1



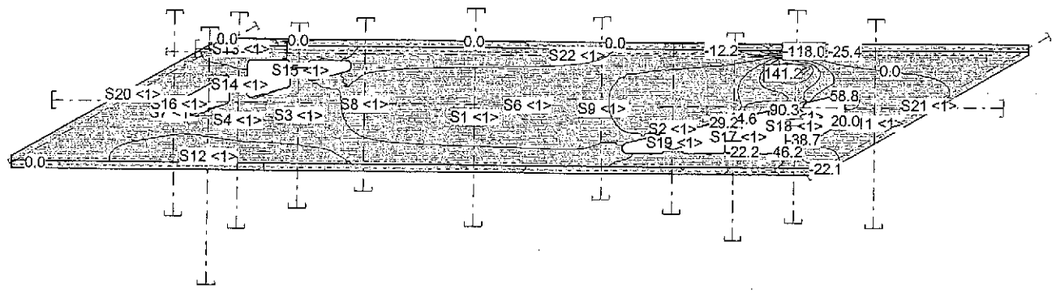
Sectional forces mx: Load case 11, Equidistance: 10.0 kN, Reference line: 0.0 kN

Scale 1 :718.1



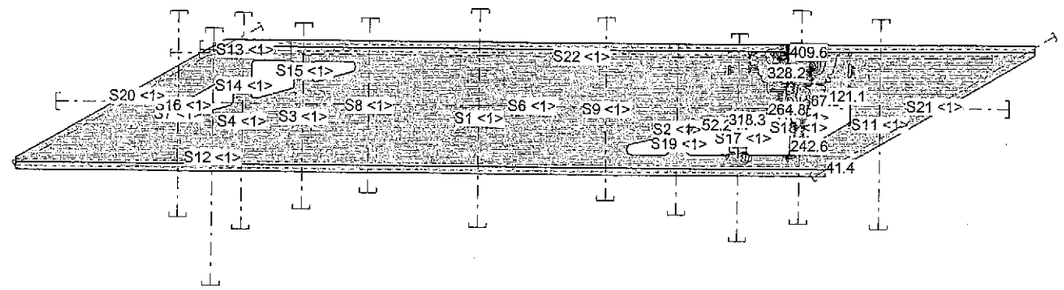
Sectional forces mx: Load case 11, Equidistance: 20.0 kN, Reference line: 0.0 kN

Scale 1 :718.1



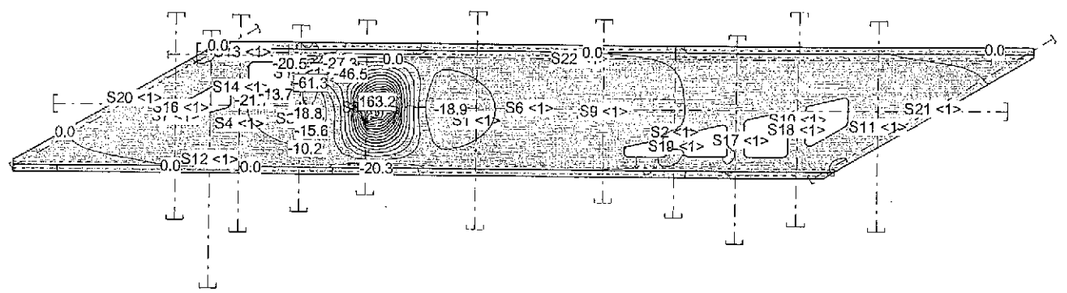
Sectional forces vtot: Load case 11, Equidistance: 20.0 kN/m, Reference line: 0.0 kN/m

Scale 1 :718.1



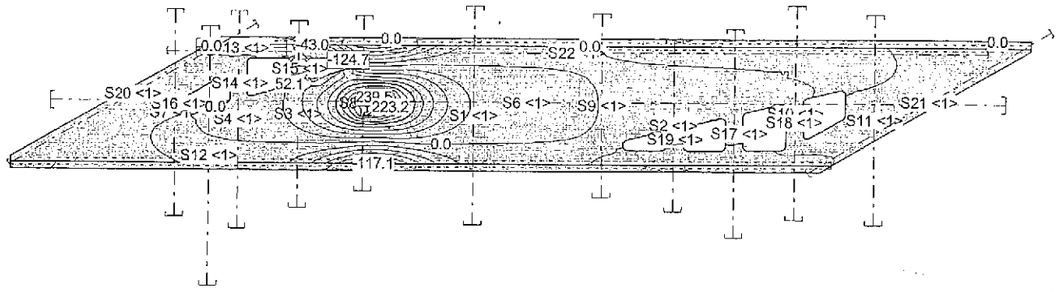
Sectional forces mx: Load case 12, Equidistance: 10.0 kN, Reference line: 0.0 kN

Scale 1 :718.1



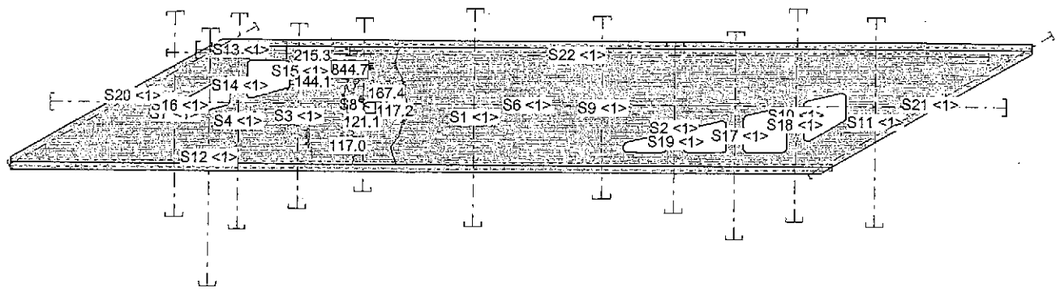
Sectional forces mx: Load case 12, Equidistance: 20.0 kN, Reference line: 0.0 kN

Scale 1 :718.1



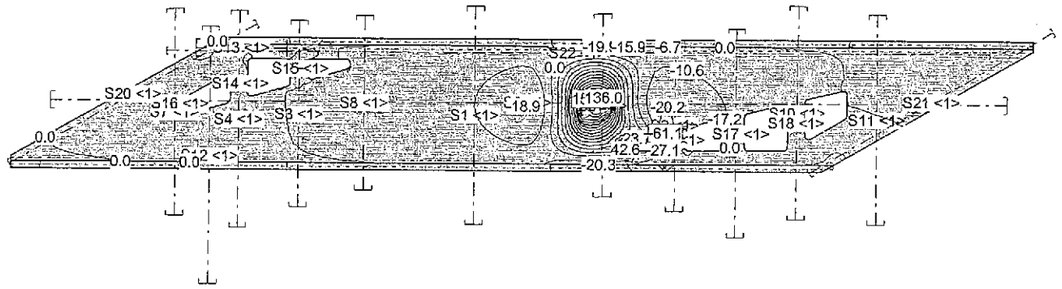
Sectional forces vtot: Load case 12, Equidistance: 50.0 kN/m, Reference line: 0.0 kN/m

Scale 1 :718.1



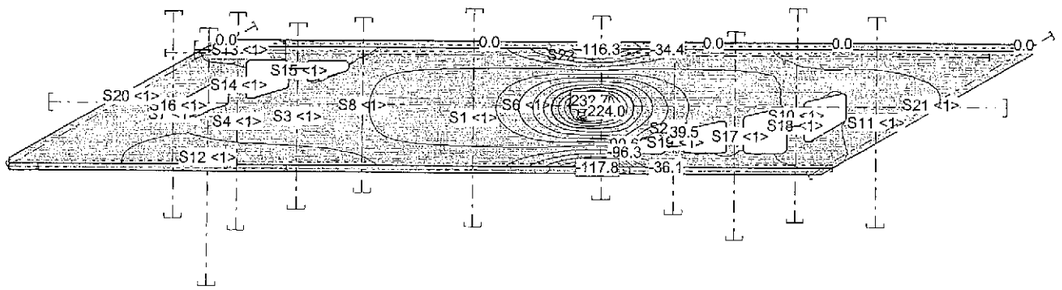
Sectional forces mx: Load case 13, Equidistance: 10.0 kN, Reference line: 0.0 kN

Scale 1 :718.1



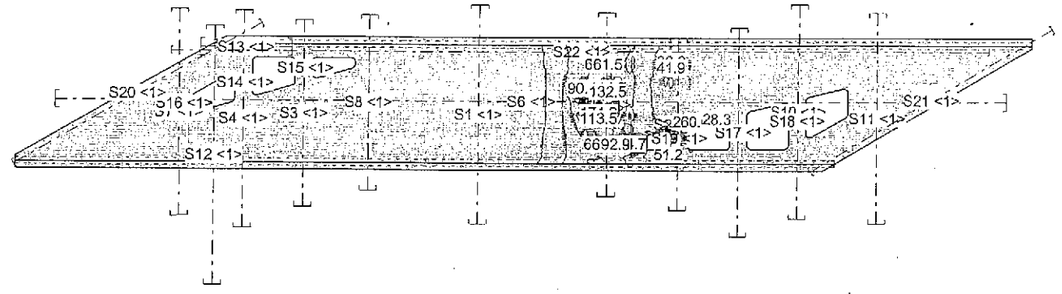
Sectional forces mx: Load case 13, Equidistance: 20.0 kN, Reference line: 0.0 kN

Scale 1 :718.1



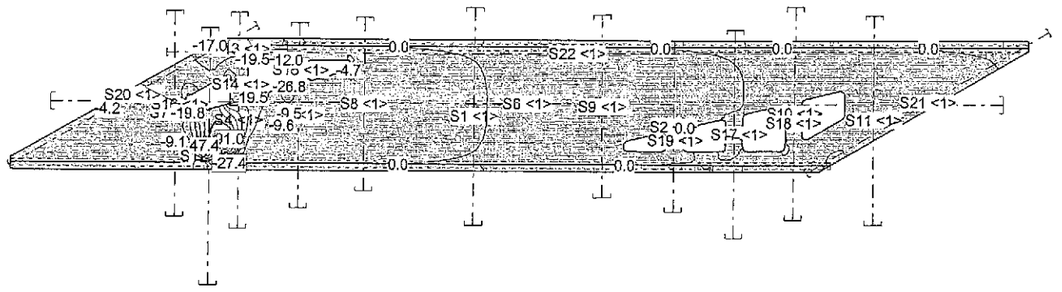
Sectional forces vtot: Load case 13, Equidistance: 20.0 kN/m, Reference line: 0.0 kN/m

Scale 1 :718.1



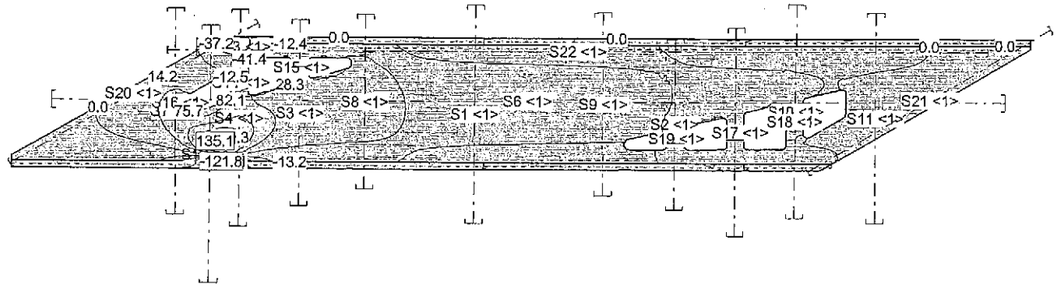
Sectional forces mx: Load case 14, Equidistance: 10.0 kN, Reference line: 0.0 kN

Scale 1 :718.1



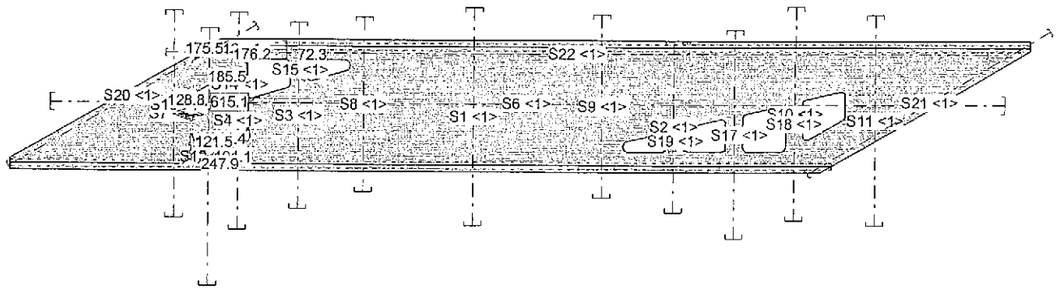
Sectional forces mx: Load case 14, Equidistance: 20.0 kN, Reference line: 0.0 kN

Scale 1 :718.1



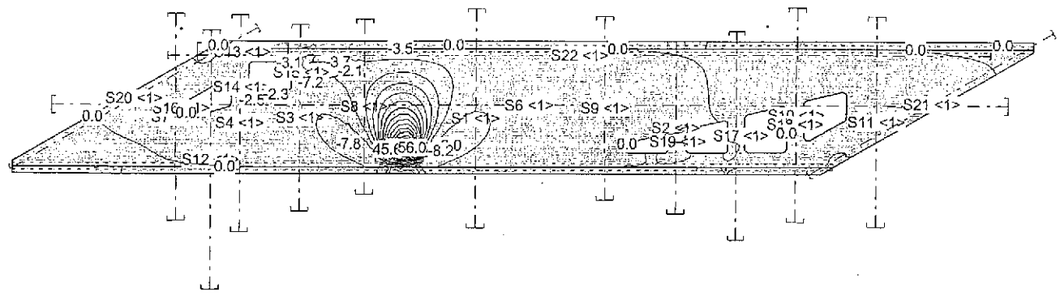
Sectional forces vtot: Load case 14, Equidistance: 50.0 kN/m, Reference line: 0.0 kN/m

Scale 1 :718.1



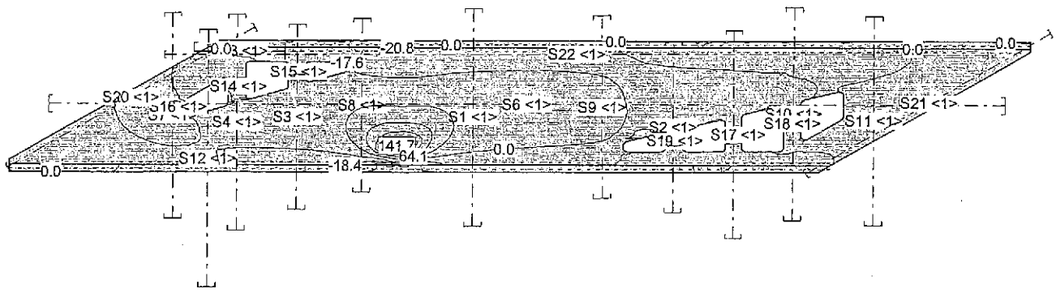
Sectional forces mx: Load case 15, Equidistance: 5.0 kN, Reference line: 0.0 kN

Scale 1 :718.1



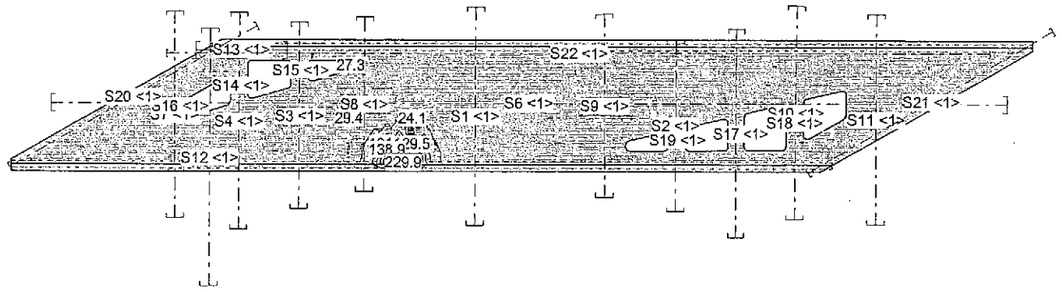
Sectional forces mx: Load case 15, Equidistance: 20.0 kN, Reference line: 0.0 kN

Scale 1 :718.1



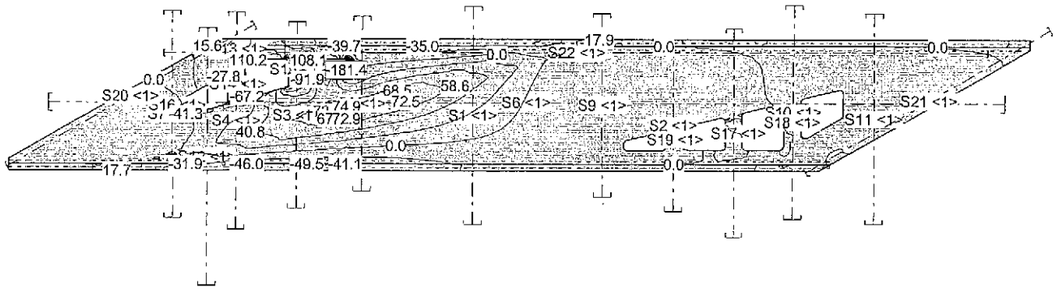
Sectional forces vtot: Load case 15, Equidistance: 20.0 kN/m, Reference line: 0.0 kN

Scale 1 :718.1



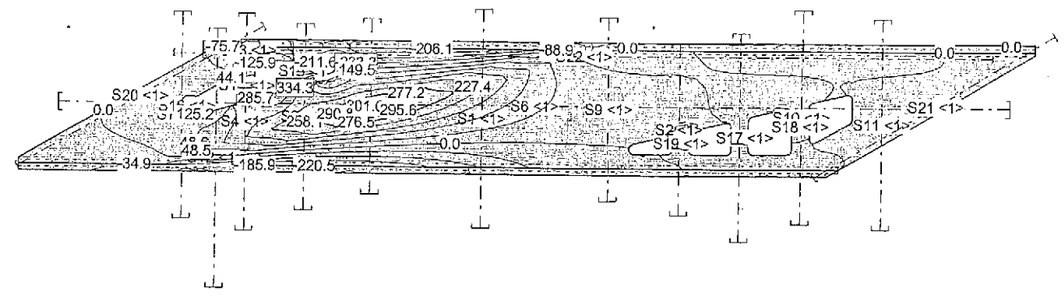
Sectional forces mx: Load case 16, Equidistance: 20.0 kN, Reference line: 0.0 kN

Scale 1 :718.1



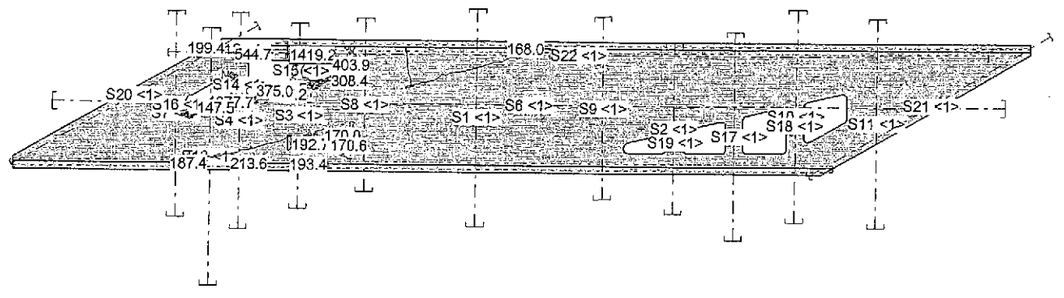
Sectional forces mx: Load case 16, Equidistance: 50.0 kN, Reference line: 0.0 kN

Scale 1 :718.1



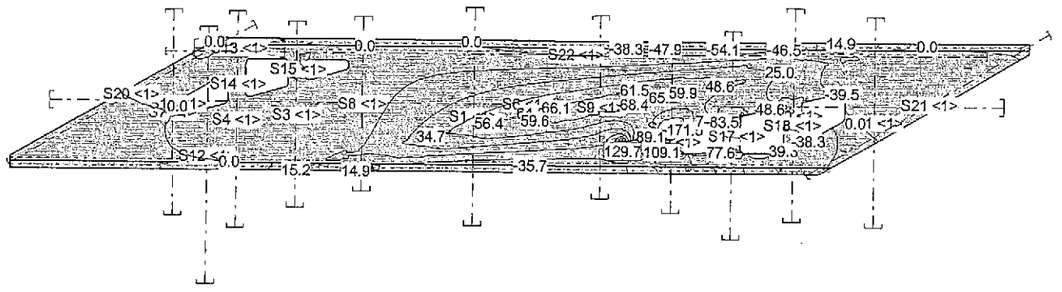
Sectional forces vtot: Load case 16, Equidistance: 100.0 kN/m, Reference line: 0.0 kN/m

Scale 1 :718.1



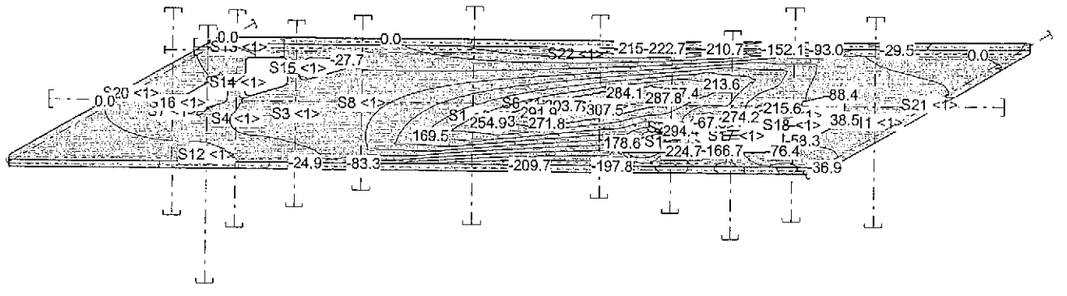
Sectional forces mx: Load case 17, Equidistance: 20.0 kN, Reference line: 0.0 kN

Scale 1 :718.1

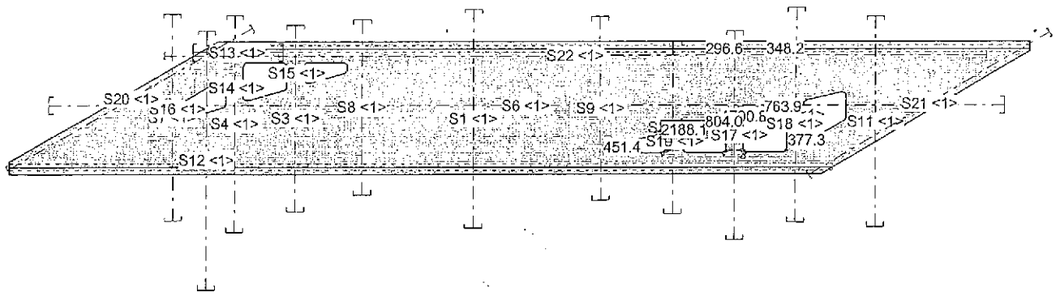


Sectional forces mx: Load case 17, Equidistance: 50.0 kN, Reference line: 0.0 kN

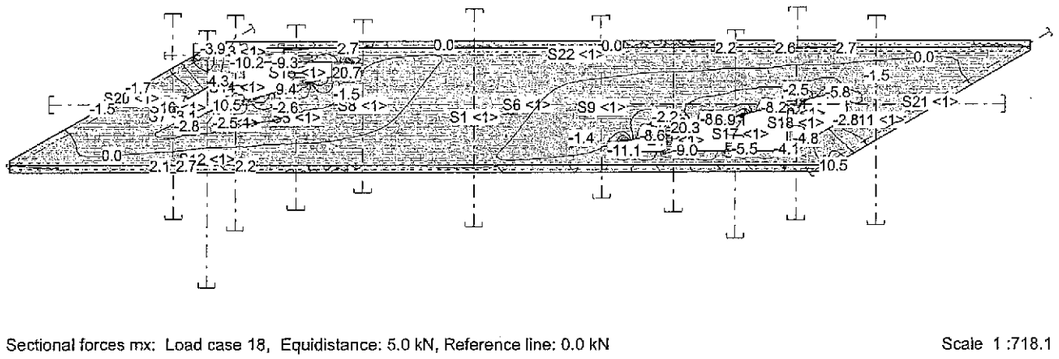
Scale 1 :718.1



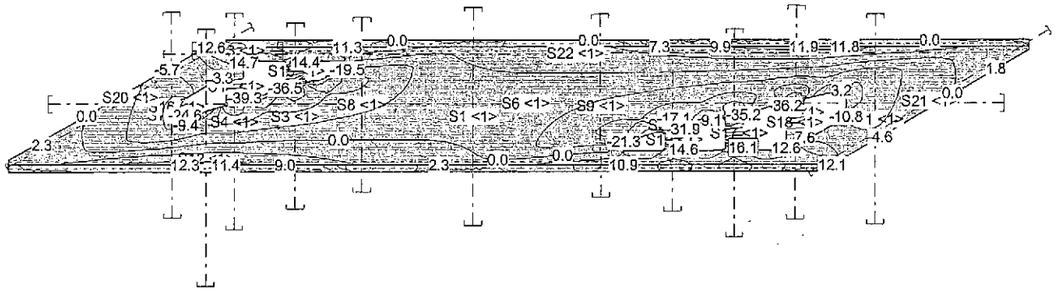
Sectional forces vtot: Load case 17, Equidistance: 200.0 kN/m, Reference line: 0.0 kN/m Scale 1 :718.1



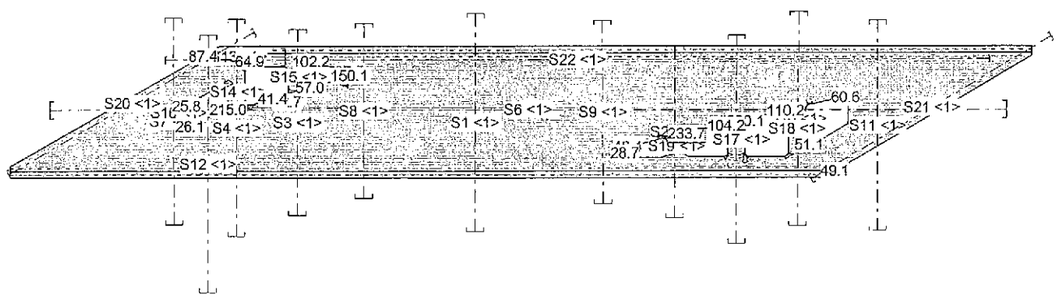
Sectional forces mx: Load case 18, Equidistance: 2.0 kN, Reference line: 0.0 kN Scale 1 :718.1



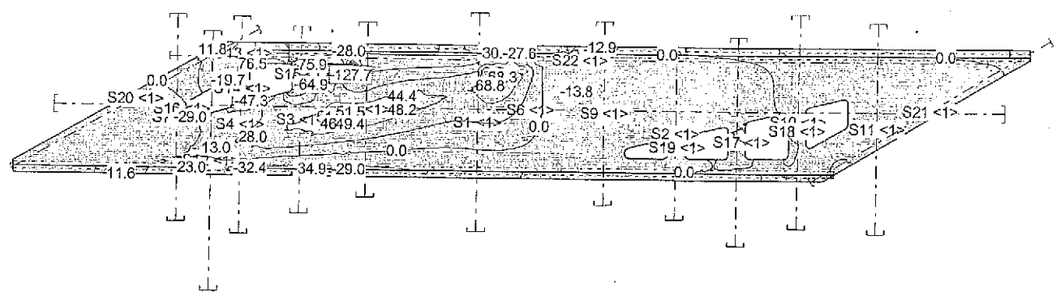
Sectional forces mx: Load case 18, Equidistance: 5.0 kN, Reference line: 0.0 kN Scale 1 :718.1



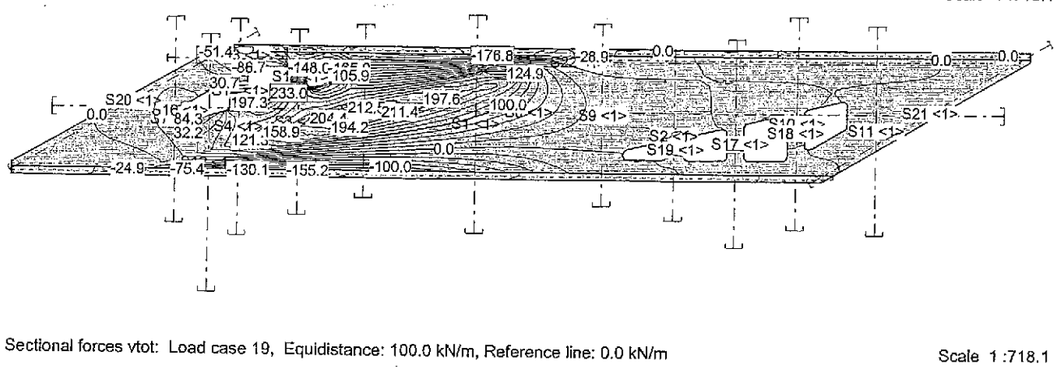
Sectional forces vtot: Load case 18, Equidistance: 20.0 kN/m, Reference line: 0.0 kN/m Scale 1 :718.1



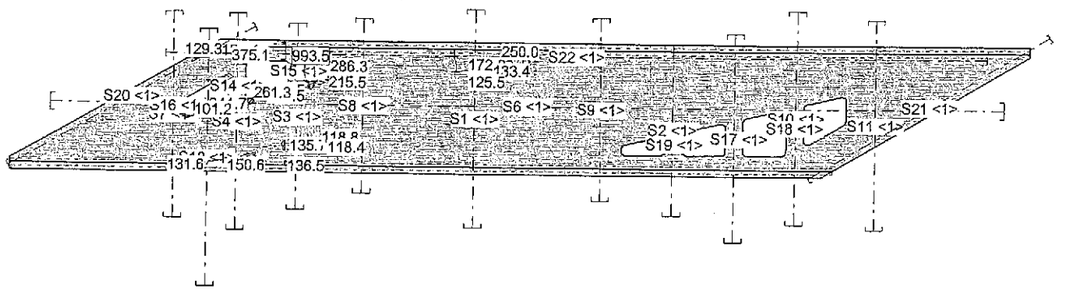
Sectional forces mx: Load case 19, Equidistance: 20.0 kN, Reference line: 0.0 kN Scale 1 :718.1



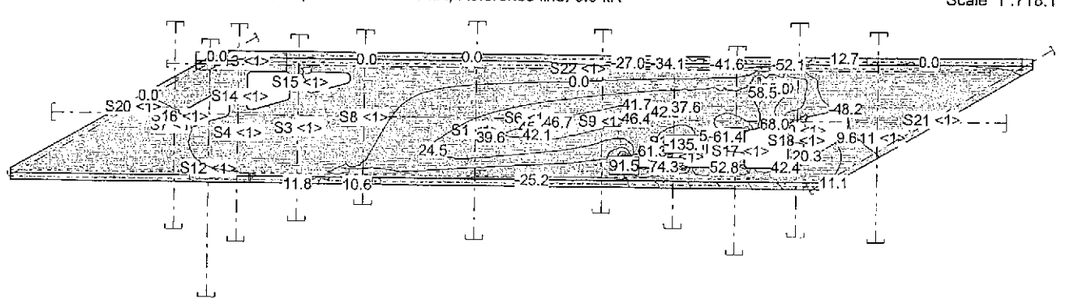
Sectional forces mx: Load case 19, Equidistance: 20.0 kN, Reference line: 0.0 kN Scale 1 :718.1



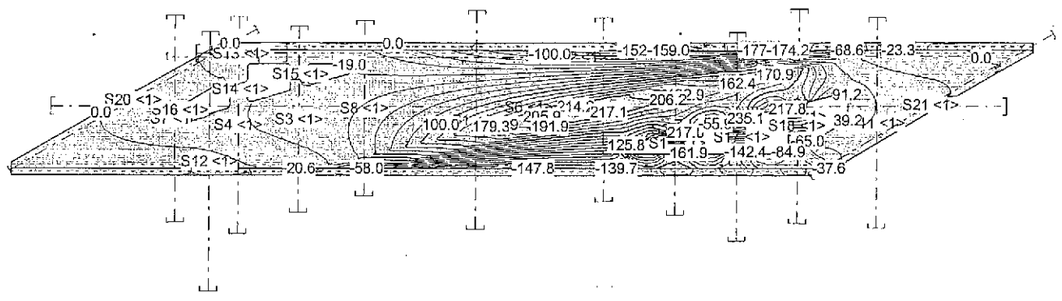
Sectional forces vtot: Load case 19, Equidistance: 100.0 kN/m, Reference line: 0.0 kN/m Scale 1 :718.1



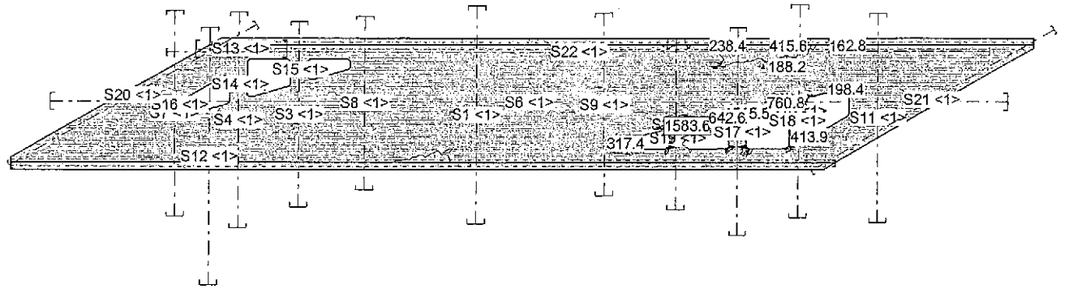
Sectional forces mx: Load case 20, Equidistance: 20.0 kN, Reference line: 0.0 kN Scale 1 :718.1



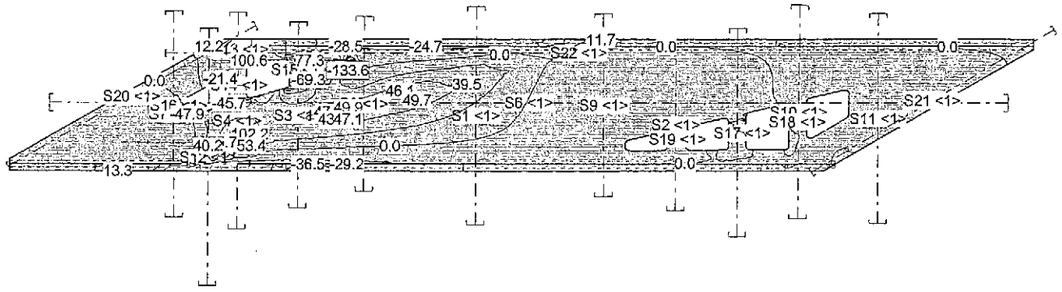
Sectional forces mx: Load case 20, Equidistance: 20.0 kN, Reference line: 0.0 kN Scale 1 :718.1



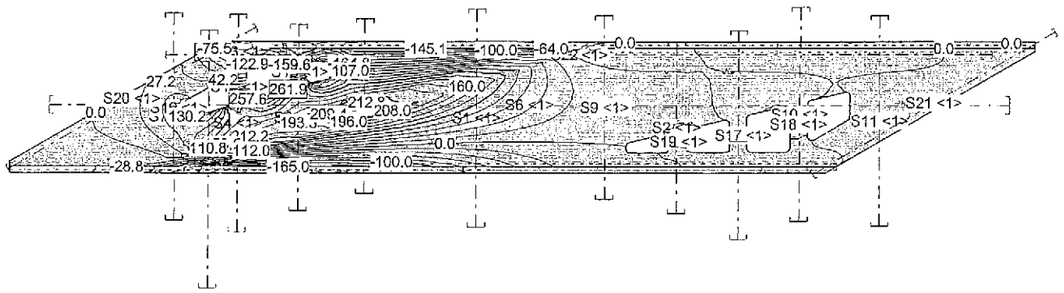
Sectional forces vtot: Load case 20, Equidistance: 100.0 kN/m, Reference line: 0.0 kN/m Scale 1 :718.1



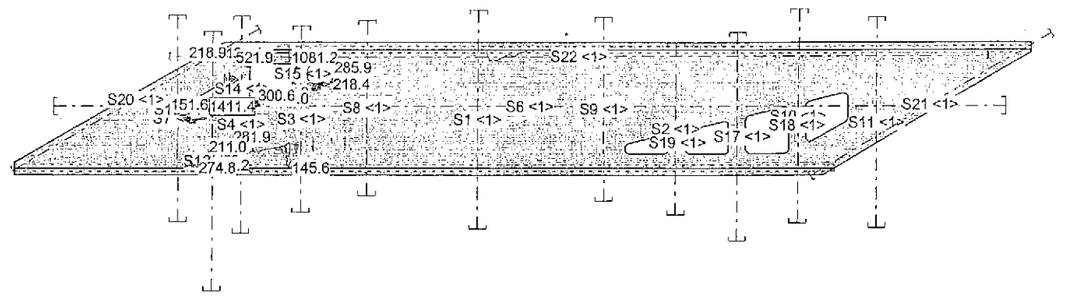
Sectional forces mx: Load case 21, Equidistance: 20.0 kN, Reference line: 0.0 kN Scale 1 :718.1



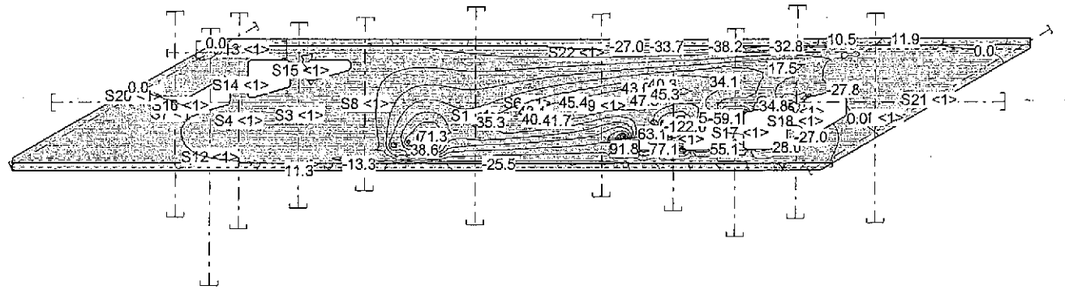
Sectional forces mx: Load case 21, Equidistance: 20.0 kN, Reference line: 0.0 kN Scale 1 :718.1



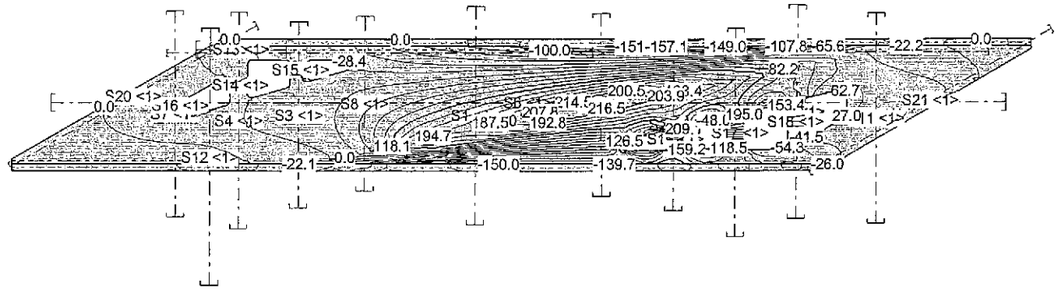
Sectional forces vtot: Load case 21, Equidistance: 100.0 kN/m, Reference line: 0.0 kN/m Scale 1 :718.1



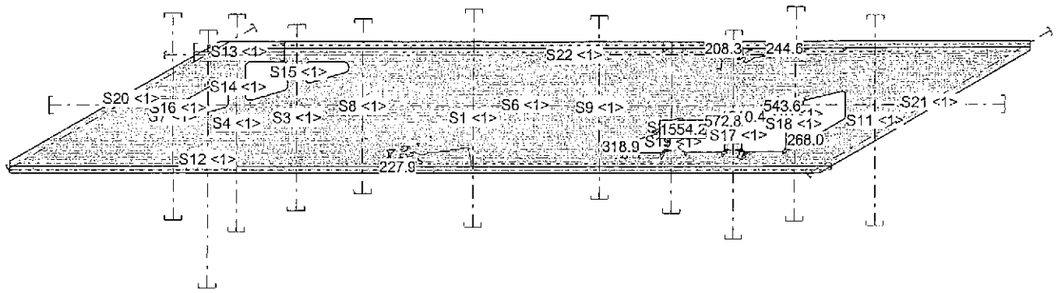
Sectional forces mx: Load case 22, Equidistance: 10.0 kN, Reference line: 0.0 kN Scale 1 :718.1



Sectional forces mx: Load case 22, Equidistance: 20.0 kN, Reference line: 0.0 kN Scale 1 :718.1

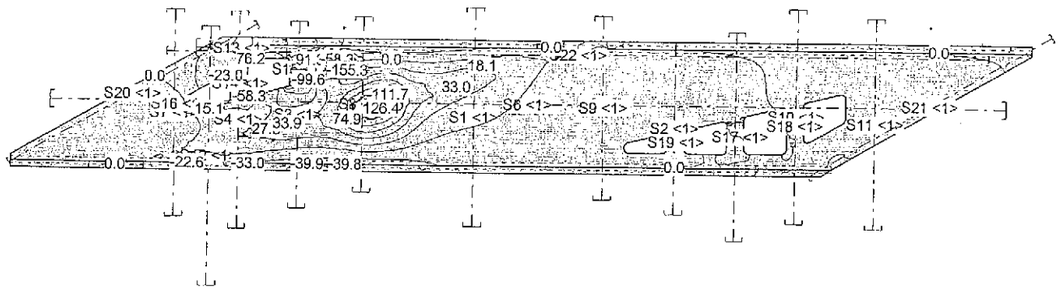


Sectional forces vtot: Load case 22, Equidistance: 100.0 kN/m, Reference line: 0.0 kN/m Scale 1 :718.1



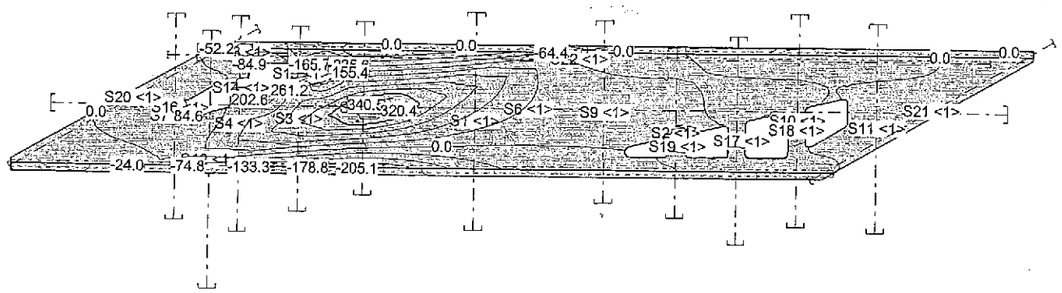
Sectional forces mx: Load case 23, Equidistance: 20.0 kN, Reference line: 0.0 kN

Scale 1 :718.1



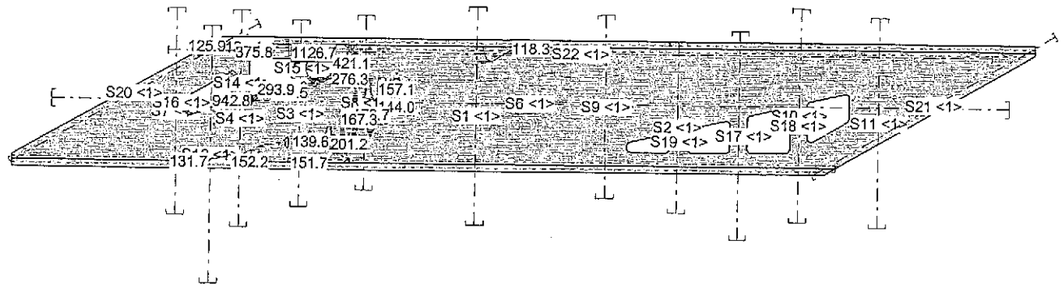
Sectional forces mx: Load case 23, Equidistance: 50.0 kN, Reference line: 0.0 kN

Scale 1 :718.1



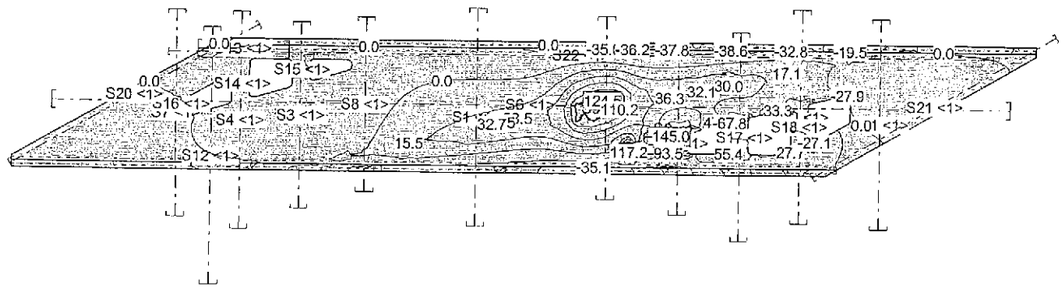
Sectional forces vtot: Load case 23, Equidistance: 100.0 kN/m, Reference line: 0.0 kN/m

Scale 1 :718.1



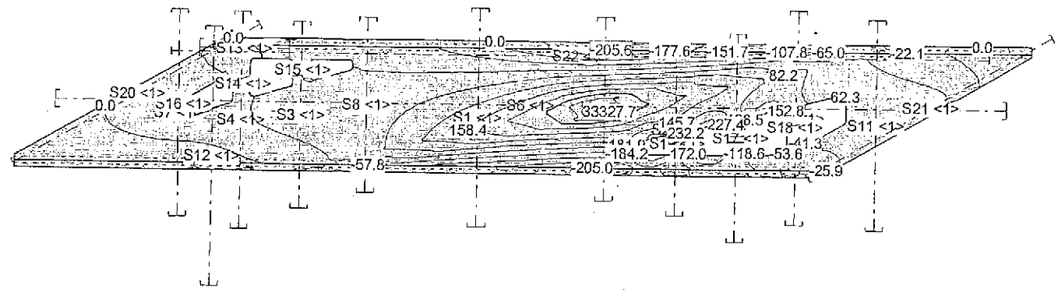
Sectional forces mx: Load case 24, Equidistance: 20.0 kN, Reference line: 0.0 kN

Scale 1 :718.1



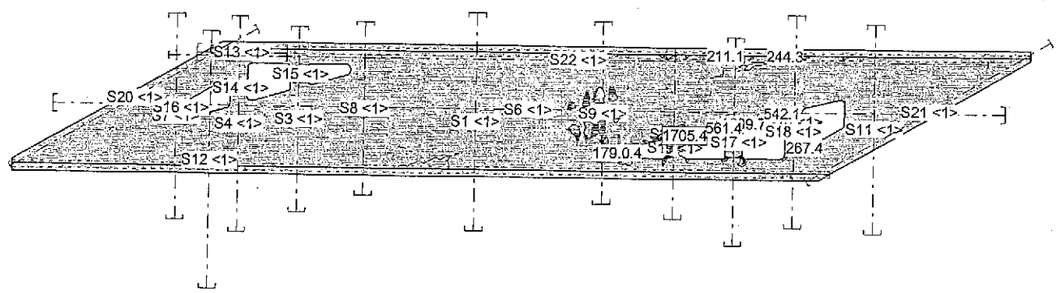
Sectional forces mx: Load case 24, Equidistance: 50.0 kN, Reference line: 0.0 kN

Scale 1 :718.1



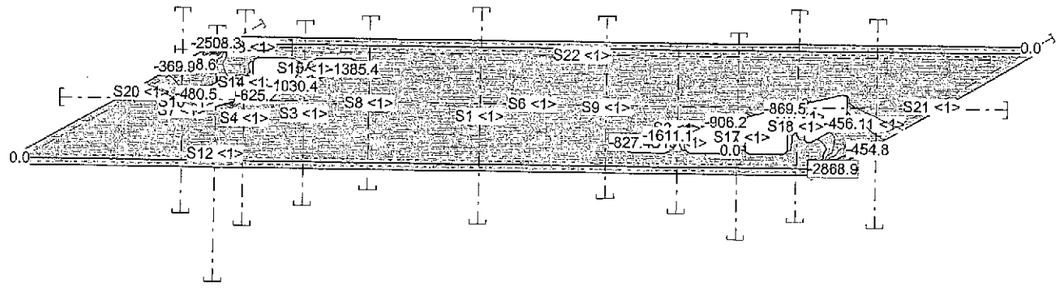
Sectional forces vtot: Load case 24, Equidistance: 100.0 kN/m, Reference line: 0.0 kN/m

Scale 1 :718.1



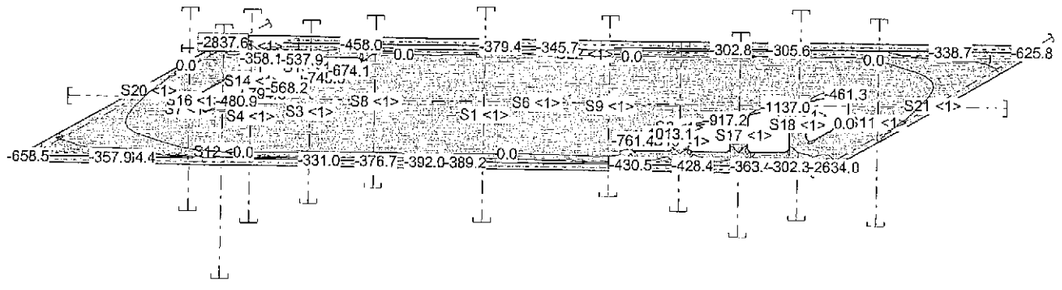
Reinforcement moments maxt: ELU 1, Equidistance: 200.0 kN, Reference line: 0.0 kN

Scale 1 :722.4



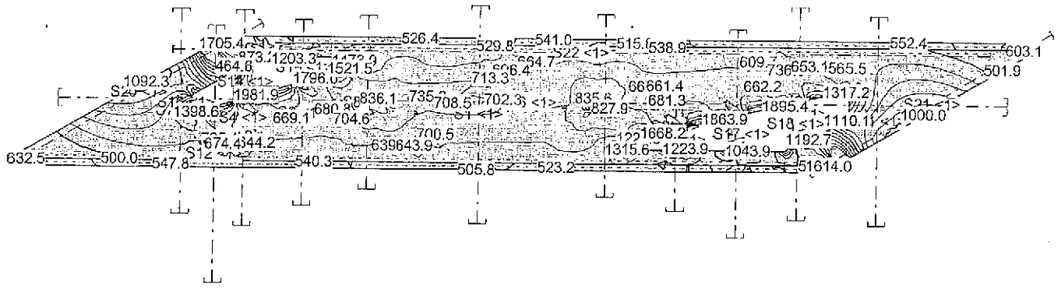
Reinforcement moments mayt: ELU 1, Equidistance: 200.0 kN, Reference line: 0.0 kN

Scale 1 :729.6



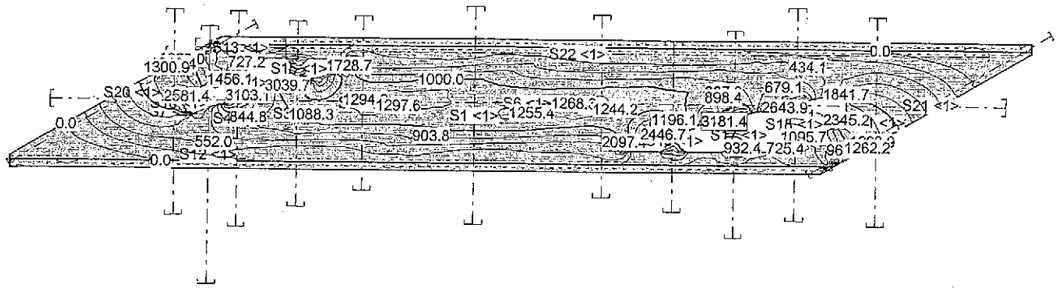
Reinforcement moments maxb: ELU 1, Equidistance: 100.0 kN, Reference line: 0.0 kN

Scale 1 :722.6



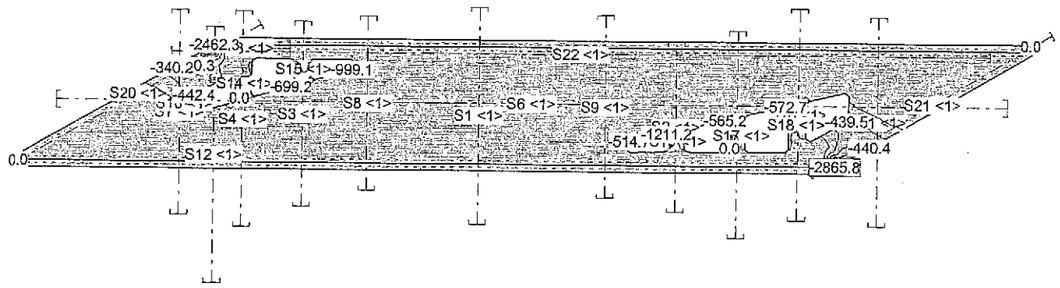
Reinforcement moments mayb: ELU 1, Equidistance: 200.0 kN, Reference line: 0.0 kN

Scale 1 :718.1



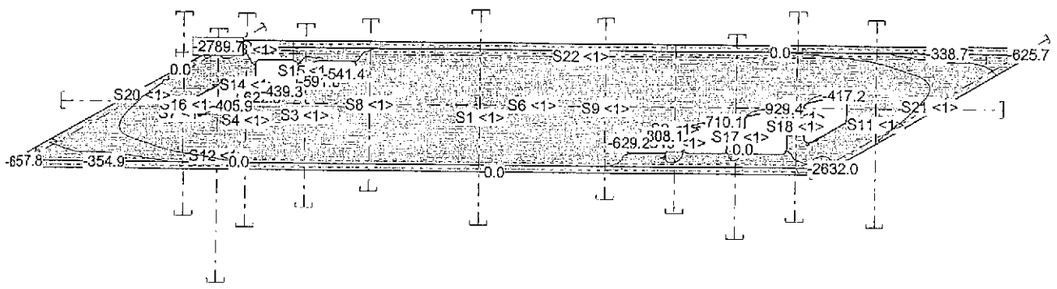
Reinforcement moments maxt: ELU 2, Equidistance: 200.0 kN, Reference line: 0.0 kN

Scale 1 :722.4



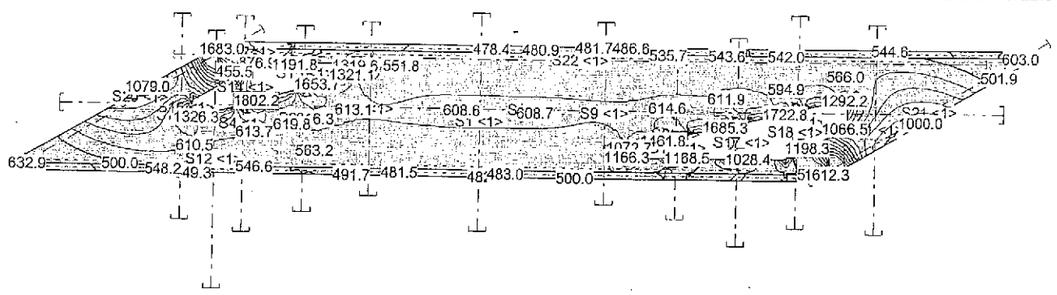
Reinforcement moments mayt: ELU 2, Equidistance: 200.0 kN, Reference line: 0.0 kN

Scale 1 :729.6



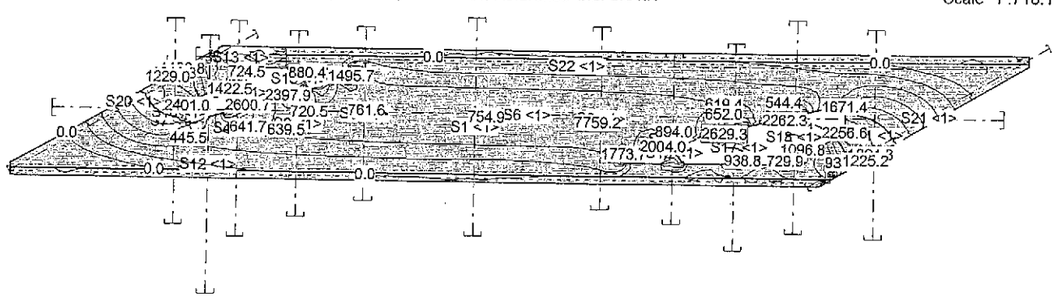
Reinforcement moments maxb: ELU 2, Equidistance: 100.0 kN, Reference line: 0.0 kN

Scale 1 :722.6



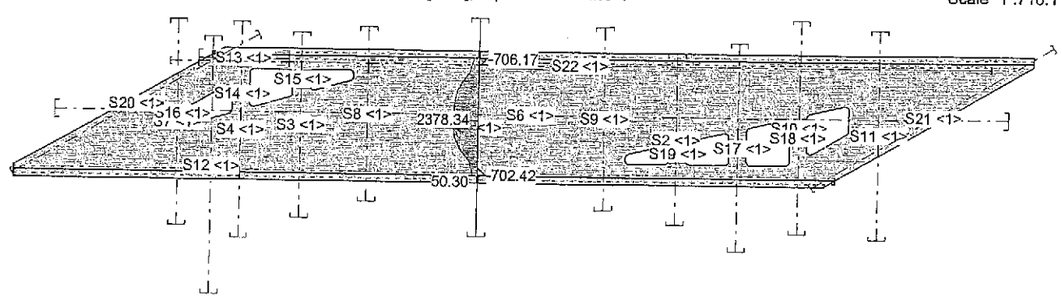
Reinforcement moments mayb: ELU 2, Equidistance: 200.0 kN, Reference line: 0.0 kN

Scale 1 :718.1



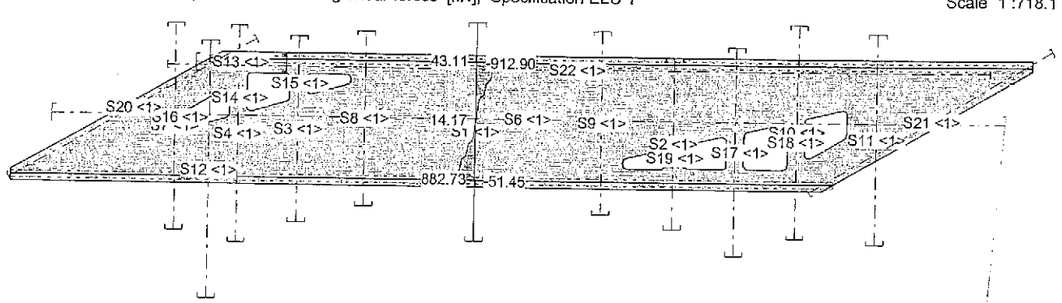
Beam section(s): Envelopes of dimensioning moments [kNm], Specification ELU 1

Scale 1 :718.1



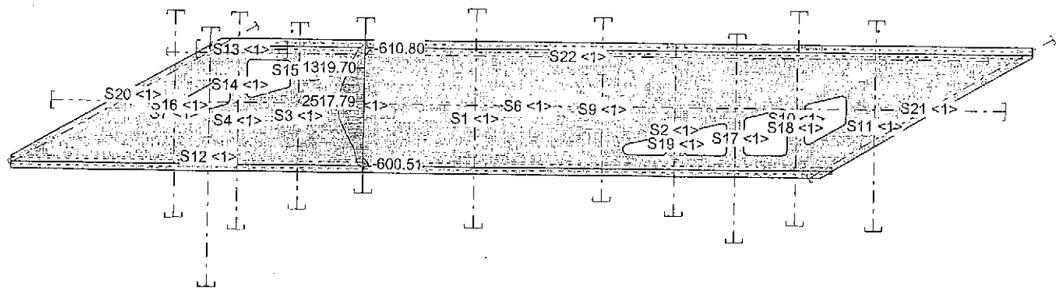
Beam section(s): Envelopes of dimensioning shear forces [kN], Specification ELU 1

Scale 1 :718.1



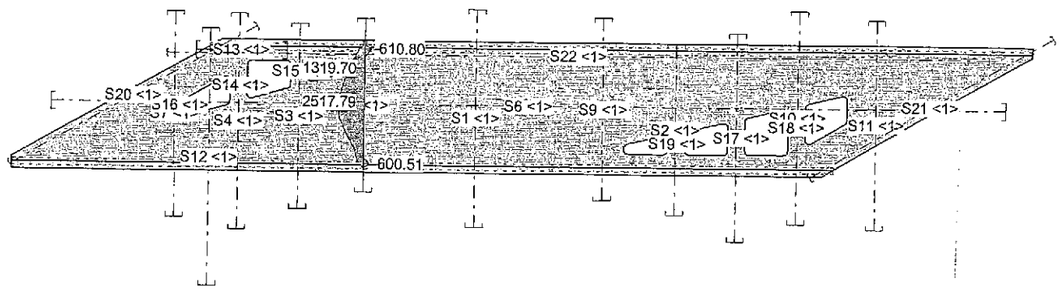
Beam section(s): Envelopes of dimensioning moments [kNm], Specification ELU 1

Scale 1 :718.1

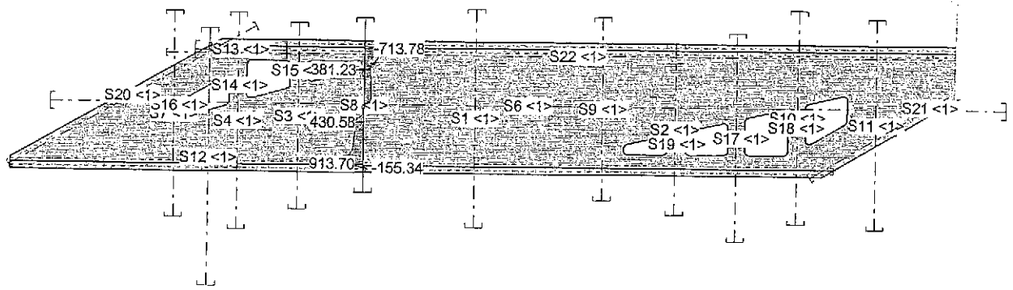


Beam section(s): Envelopes of dimensioning moments [kNm], Specification ELU 1

Scale 1 :718.1

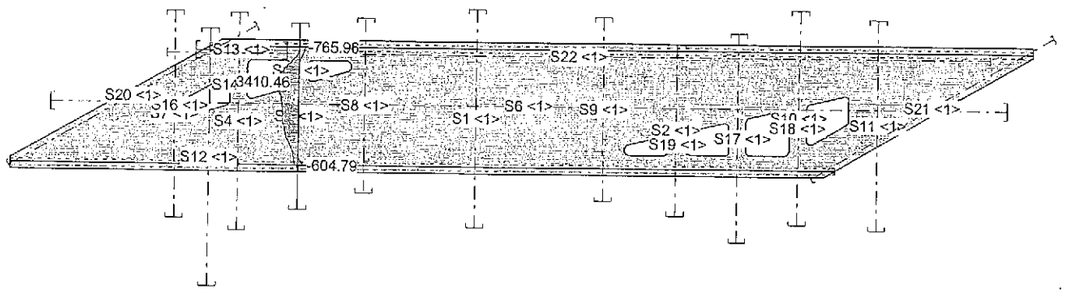


Beam section(s): Envelopes of dimensioning shear forces [kN], Specification ELU 1



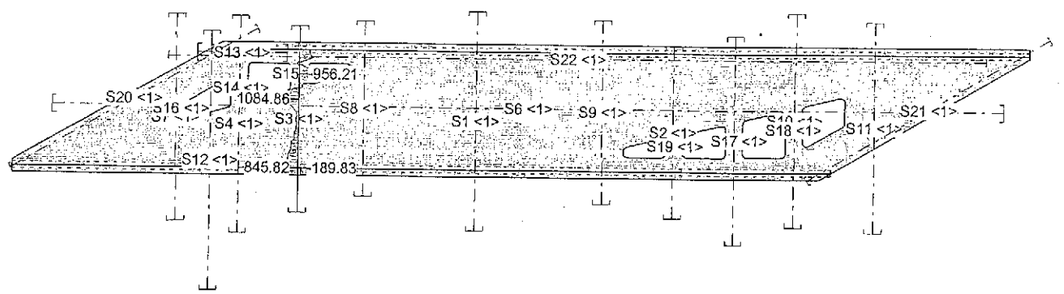
Beam section(s): Envelopes of dimensioning moments [kNm], Specification ELU 1

Scale 1 :718.1



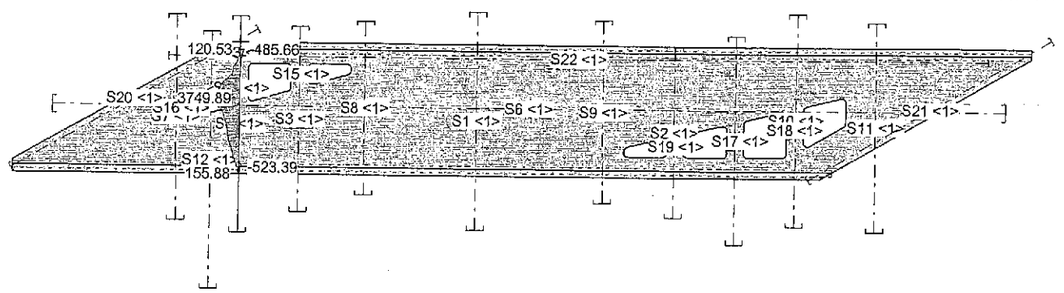
Beam section(s): Envelopes of dimensioning shear forces [kN], Specification ELU 1

Scale 1 :718.1



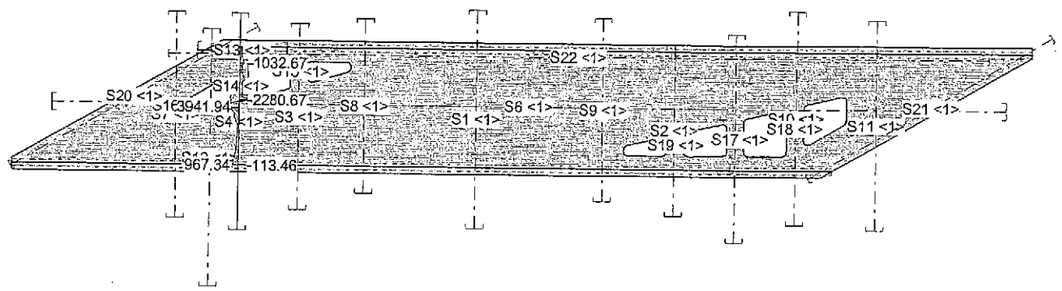
Beam section(s): Envelopes of dimensioning moments [kNm], Specification ELU 1

Scale 1 :718.1



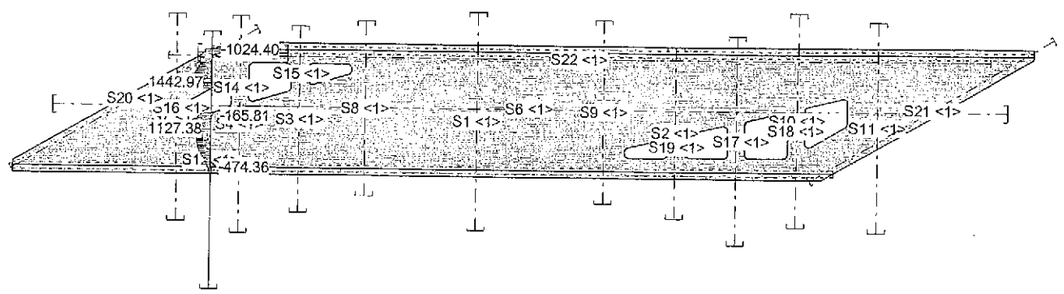
Beam section(s): Envelopes of dimensioning shear forces [kN], Specification ELU 1

Scale 1 :718.1

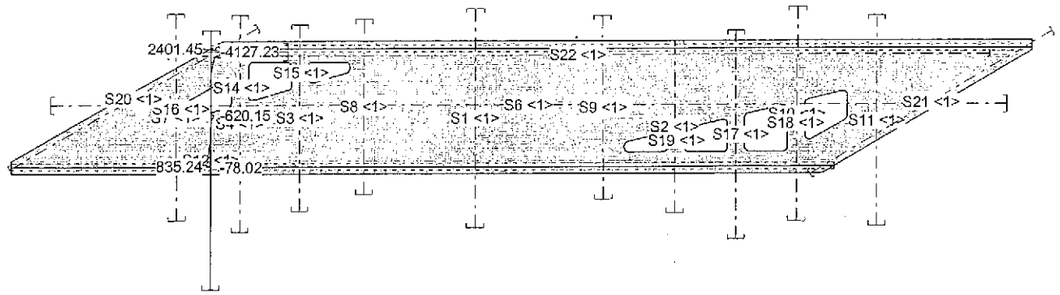


Beam section(s): Envelopes of dimensioning moments [kNm], Specification ELU 1

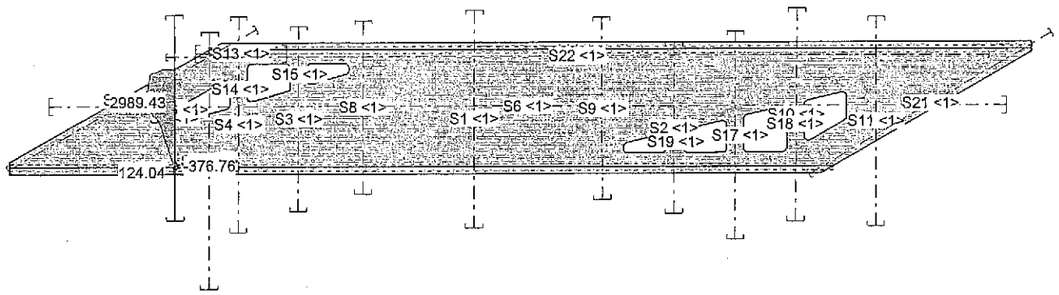
Scale 1 :718.1



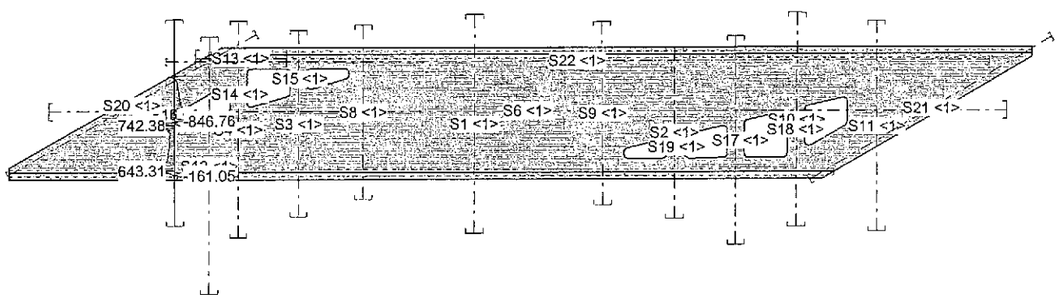
Beam section(s): Envelopes of dimensioning shear forces [kN], Specification ELU 1
Scale 1 :718.1



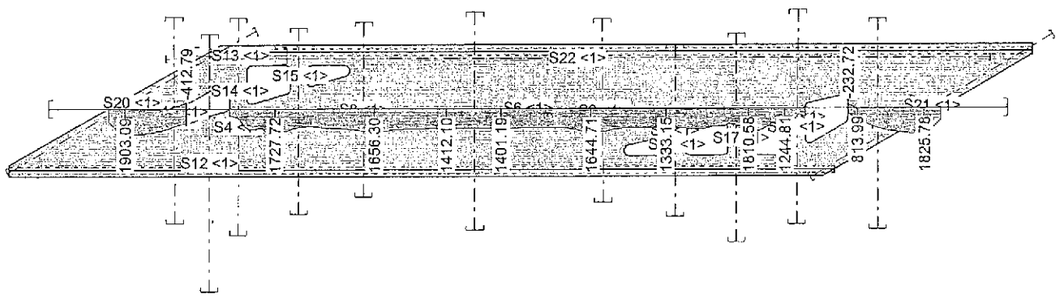
Beam section(s): Envelopes of dimensioning moments [kNm], Specification ELU 1
Scale 1 :718.1



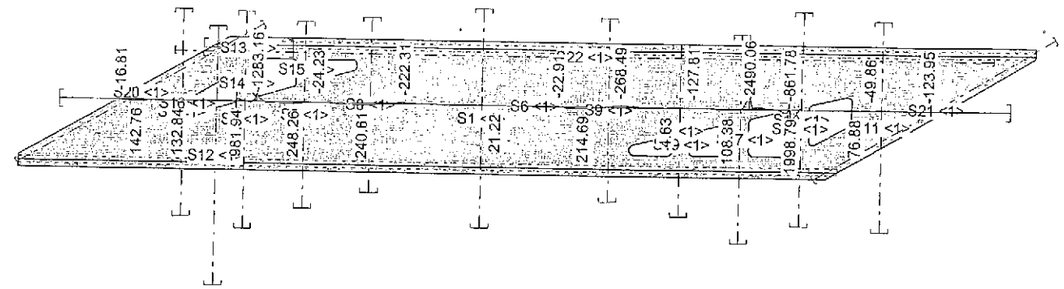
Beam section(s): Envelopes of dimensioning shear forces [kN], Specification ELU 1
Scale 1 :718.1



Beam section(s): Envelopes of dimensioning moments [kNm], Specification ELU 1
Scale 1 :718.1

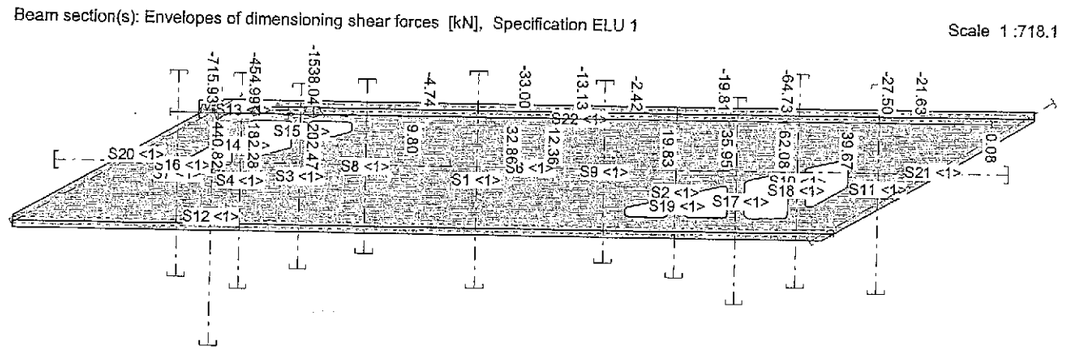


Beam section(s): Envelopes of dimensioning shear forces [kN], Specification ELU 1
Scale 1 :718.1

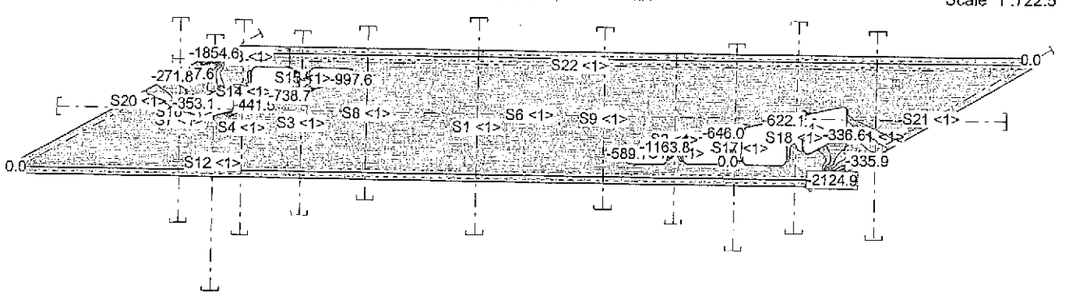


Beam section(s): Envelopes of dimensioning moments [kNm], Specification ELU 1
Scale 1 :718.1

Beam section(s): Envelopes of dimensioning shear forces [kN], Specification ELU 1
Scale 1 :718.1

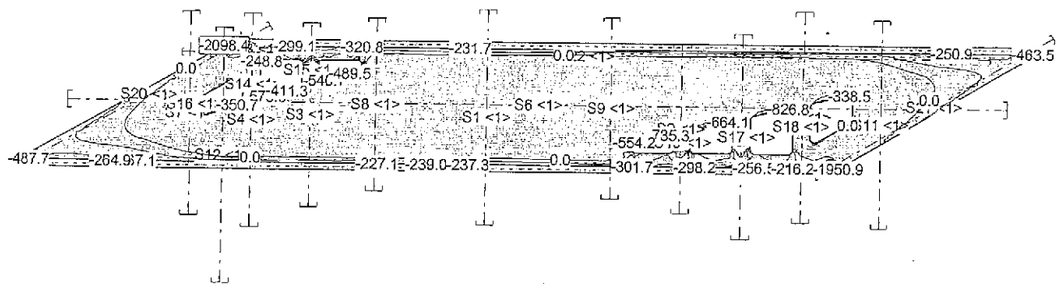


Reinforcement moments maxt: ELS 3, Equidistance: 100.0 kN, Reference line: 0.0 kN
Scale 1 :722.5



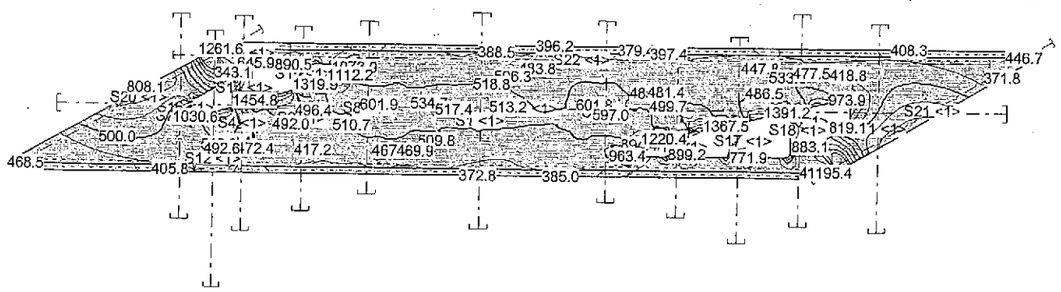
Reinforcement moments mayt: ELS 3, Equidistance: 100.0 kN, Reference line: 0.0 kN

Scale 1 :729.6



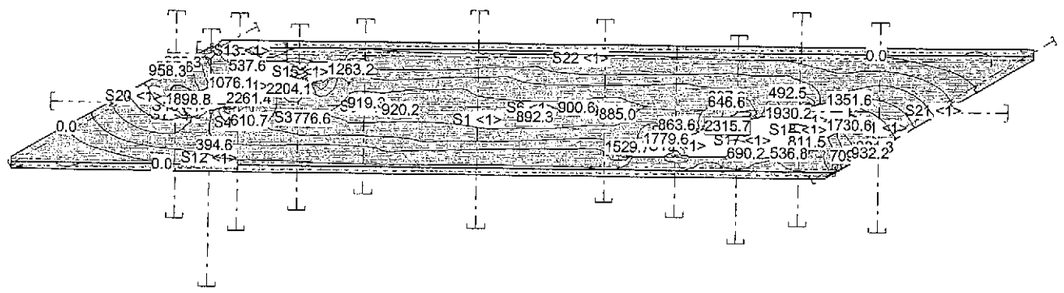
Reinforcement moments maxb: ELS 3, Equidistance: 100.0 kN, Reference line: 0.0 kN

Scale 1 :722.6



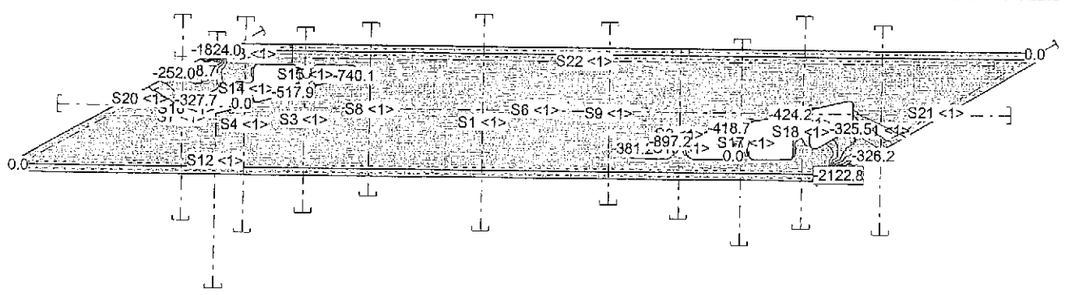
Reinforcement moments mayb: ELS 3, Equidistance: 200.0 kN, Reference line: 0.0 kN

Scale 1 :718.1



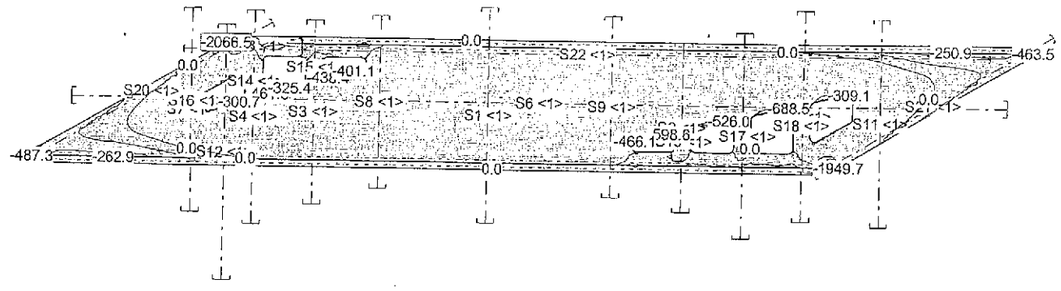
Reinforcement moments maxt: ELS, Equidistance: 100.0 kN, Reference line: 0.0 kN

Scale 1 :722.5



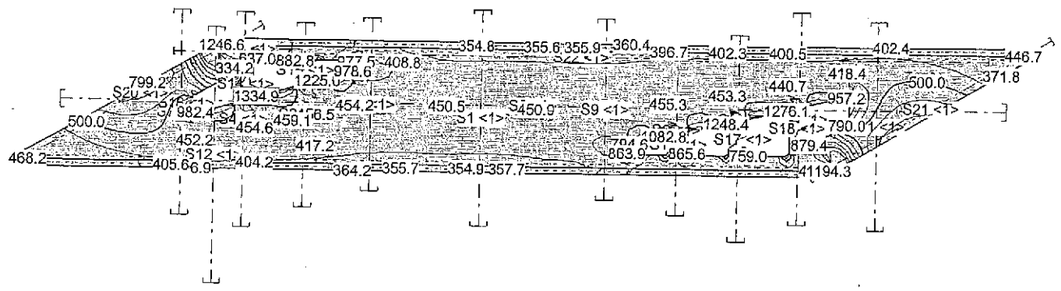
Reinforcement moments mayt: ELS, Equidistance: 100.0 kN, Reference line: 0.0 kN

Scale 1 :729.6



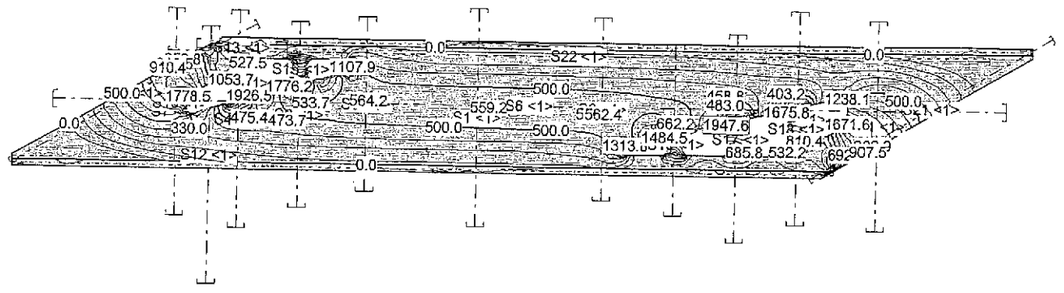
Reinforcement moments maxb: ELS, Equidistance: 100.0 kN, Reference line: 0.0 kN

Scale 1 :722.6



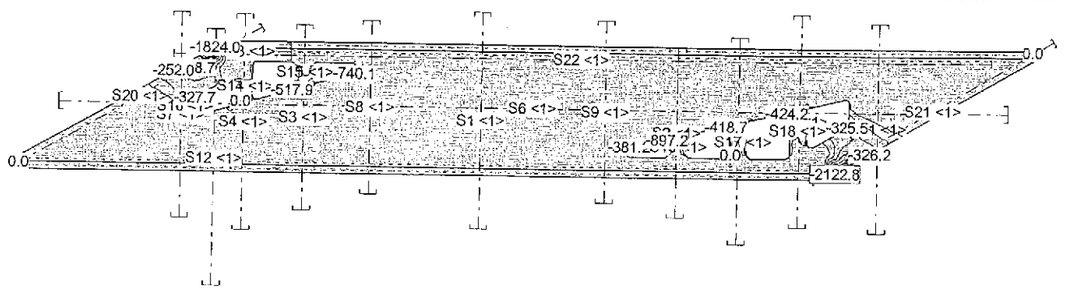
Reinforcement moments mayb: ELS, Equidistance: 100.0 kN, Reference line: 0.0 kN

Scale 1 :718.1



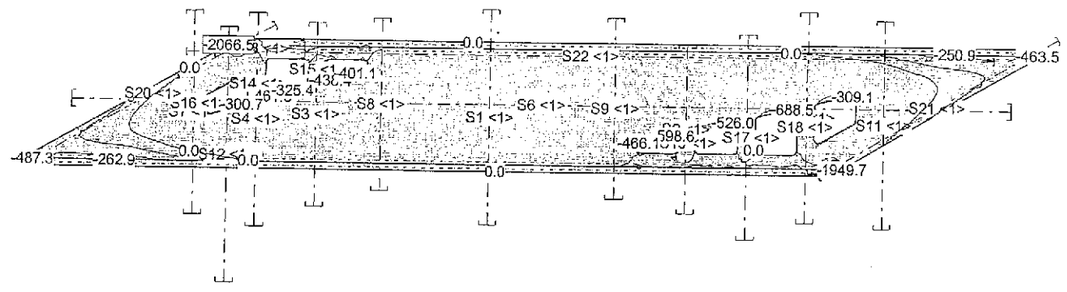
Reinforcement moments maxt: ELS 2, Equidistance: 100.0 kN, Reference line: 0.0 kN

Scale 1 :722.5



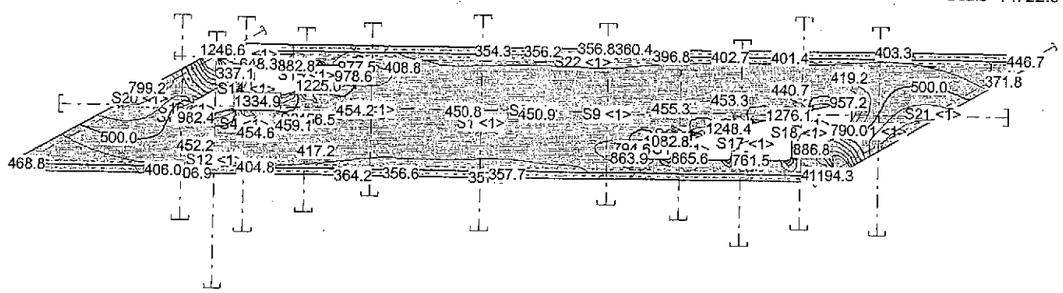
Reinforcement moments mayt: ELS 2, Equidistance: 100.0 kN, Reference line: 0.0 kN

Scale 1 :729.6



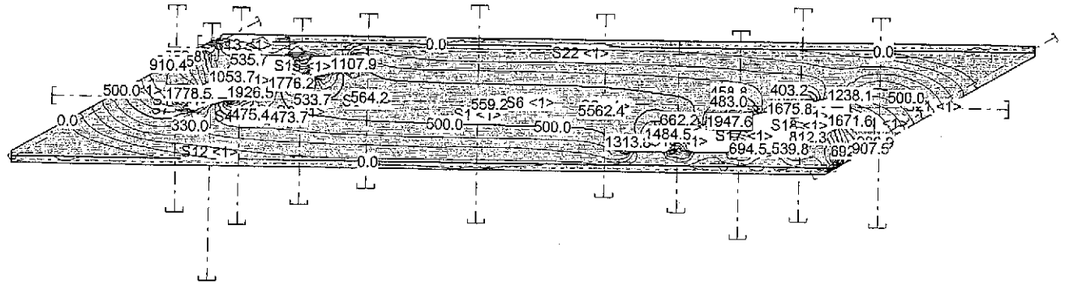
Reinforcement moments maxb: ELS 2, Equidistance: 100.0 kN, Reference line: 0.0 kN

Scale 1 :722.6



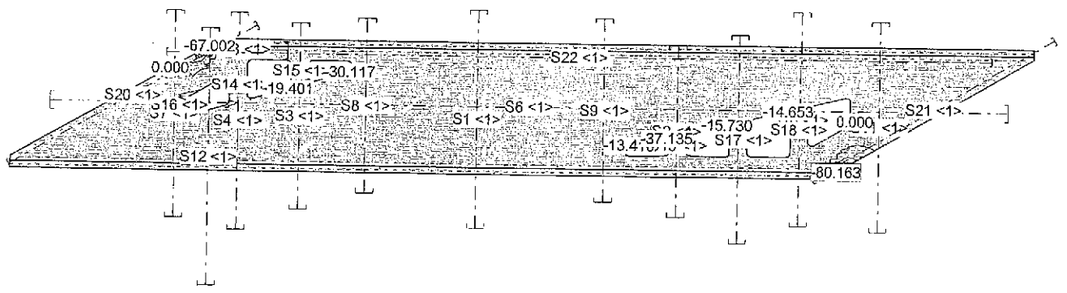
Reinforcement moments mayb: ELS 2, Equidistance: 100.0 kN, Reference line: 0.0 kN

Scale 1 :718.1



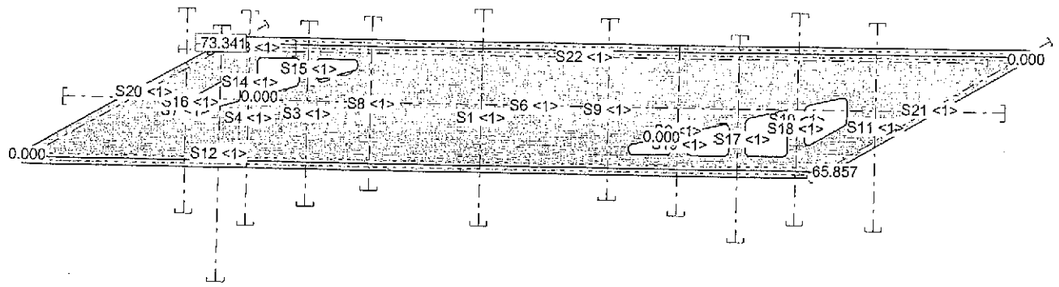
Reinforcement cross sections axt (Additional to reinforcing steel) :
Equidistance: 5.000 cm2/m, Reference line: 0.000 cm2/m
Specification: ELU 1, H300, AEH500, γc=1.50, γs=1.15

Scale 1 :718.1



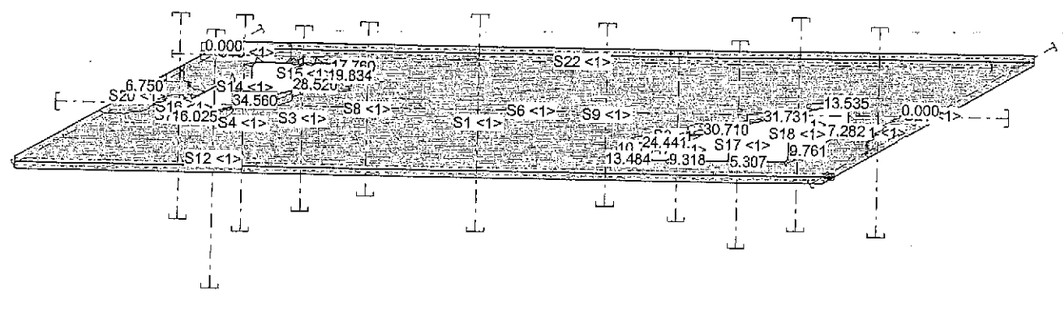
Reinforcement cross sections ayt (Additional to reinforcing steel) :
Equidistance: 5.000 cm2/m, Reference line: 0.000 cm2/m
Specification: ELU 1, H300, AEH500, γc=1.50, γs=1.15

Scale 1 :725.5



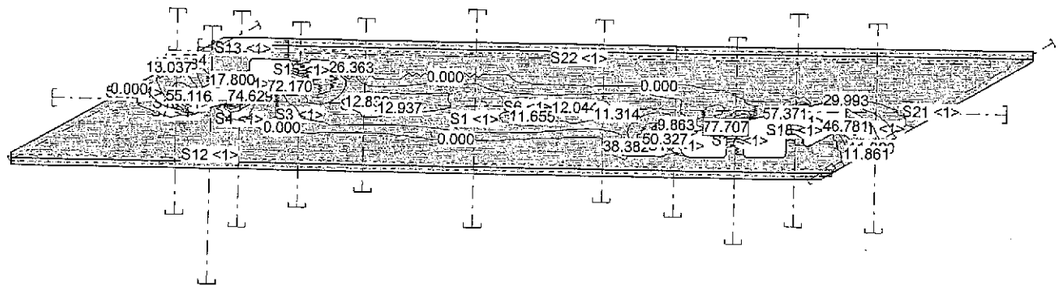
Reinforcement cross sections axb (Additional to reinforcing steel) :
Equidistance: 5.000 cm2/m, Reference line: 0.000 cm2/m
Specification: ELU 1, H300, AEH500, γc=1.50, γs=1.15

Scale 1 :718.1



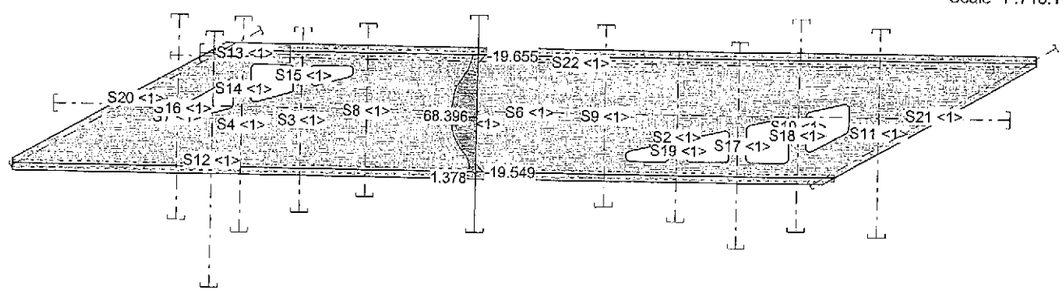
Reinforcement cross sections ayb (Additional to reinforcing steel) :
Equidistance: 5.000 cm2/m, Reference line: 0.000 cm2/m
Specification: ELU 1, H300, AEH500, γc=1.50, γs=1.15

Scale 1 :718.1



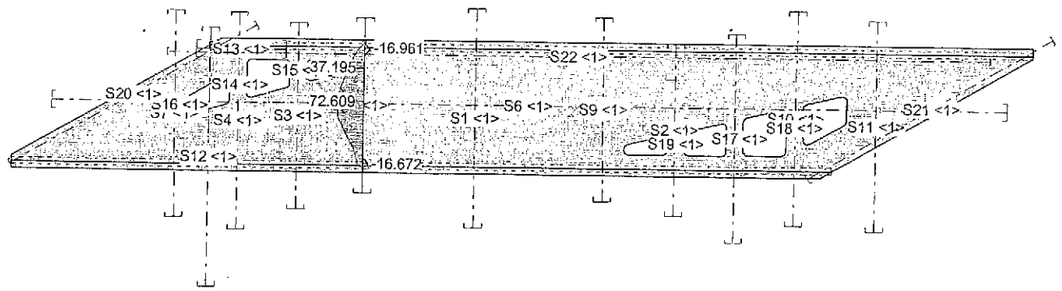
Beam section(s): As [cm2], Specification ELU 1, H300, AEH500, γc=1.50, γs=1.15

Scale 1 :718.1



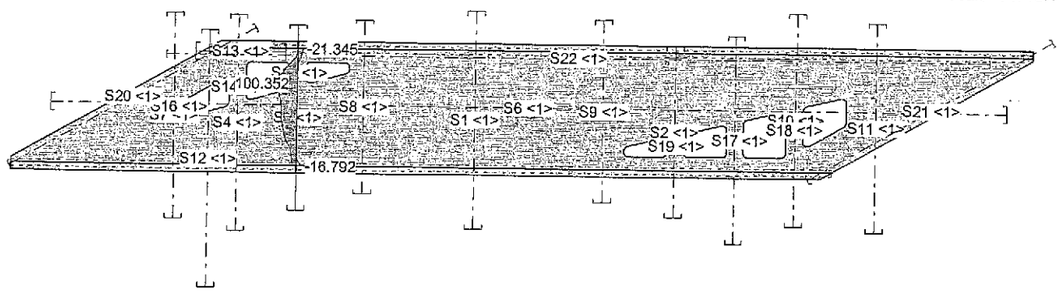
Beam section(s): As [cm2], Specification ELU 1, H300, AEH500, γc=1.50, γs=1.15

Scale 1 :718.1



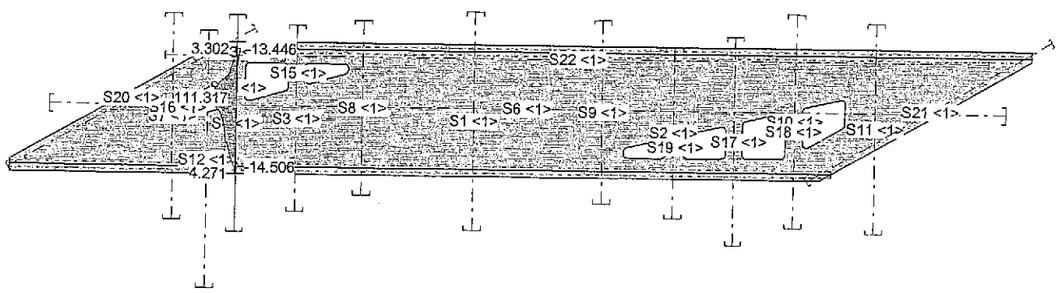
Beam section(s): As [cm2], Specification ELU 1, H300, AEH500, γc=1.50, γs=1.15

Scale 1 :718.1



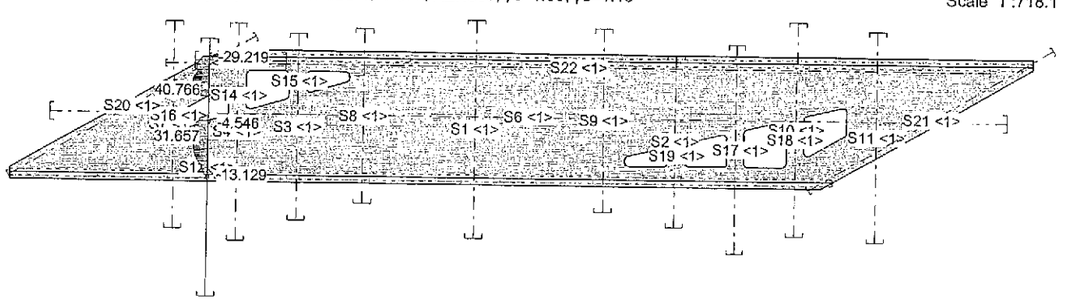
Beam section(s): As [cm2], Specification ELU 1, H300, AEH500, γc=1.50, γs=1.15

Scale 1 :718.1



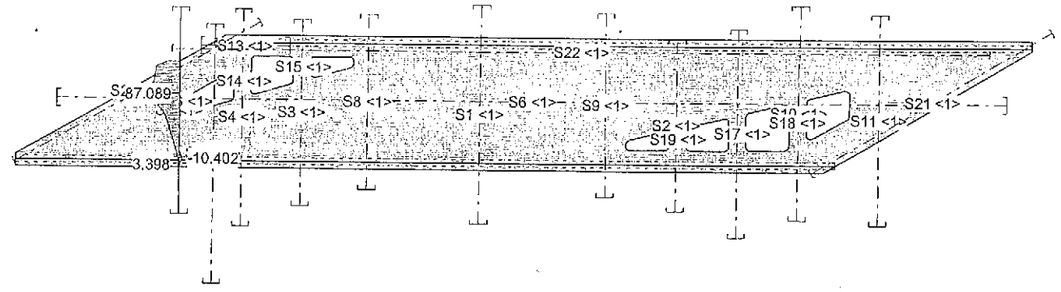
Beam section(s): As [cm2], Specification ELU 1, H300, AEH500, γc=1.50, γs=1.15

Scale 1 :718.1



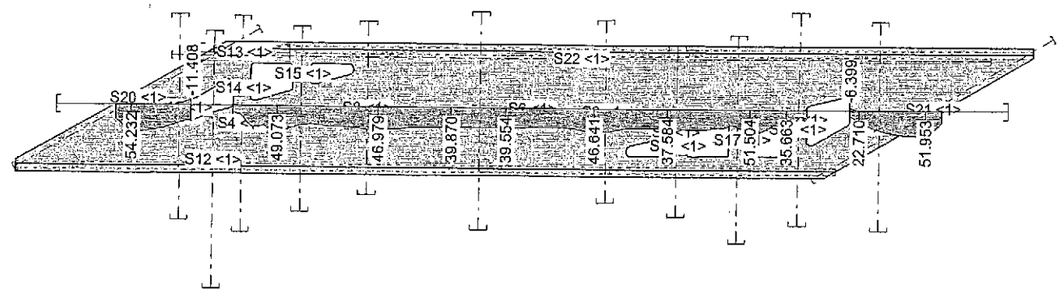
Beam section(s): As [cm2], Specification ELU 1, H300, AEH500, γc=1.50, γs=1.15

Scale 1 :718.1



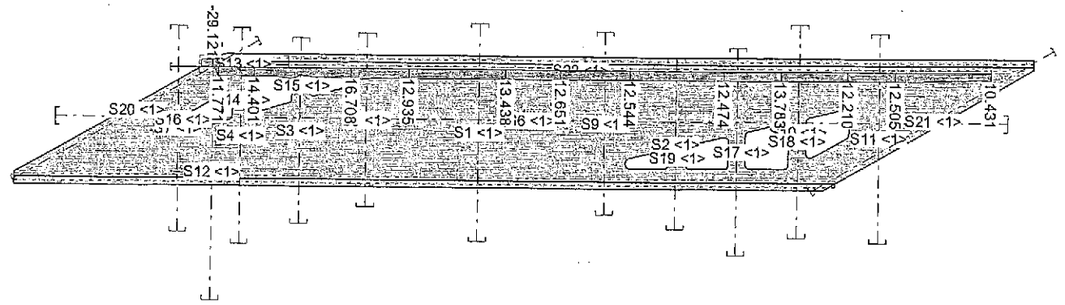
Beam section(s): As [cm2], Specification ELU 1, H300, AEH500, γc=1.50, γs=1.15

Scale 1 :718.1



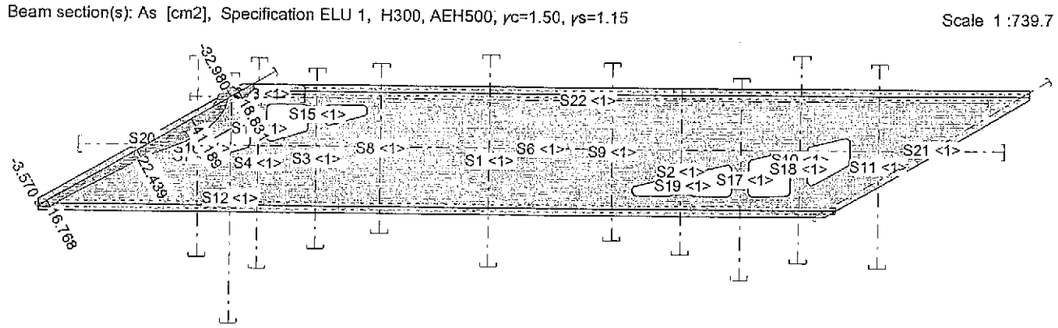
Beam section(s): As [cm2], Specification ELU 1, H300, AEH500, γc=1.50, γs=1.15

Scale 1 :718.1



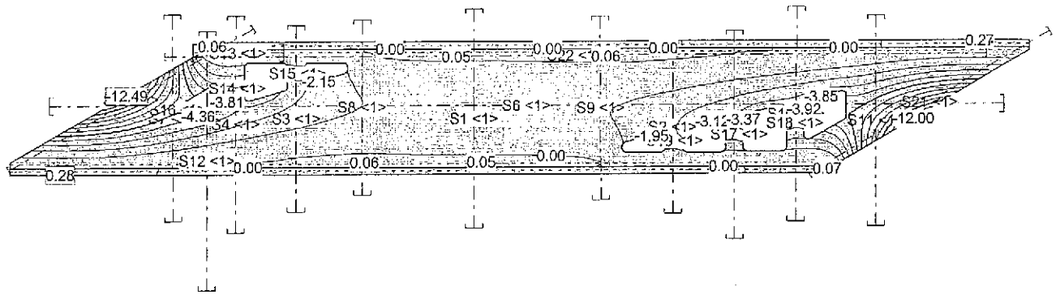
Beam section(s): As [cm2], Specification ELU 1, H300, AEH500, γc=1.50, γs=1.15

Scale 1 :739.7



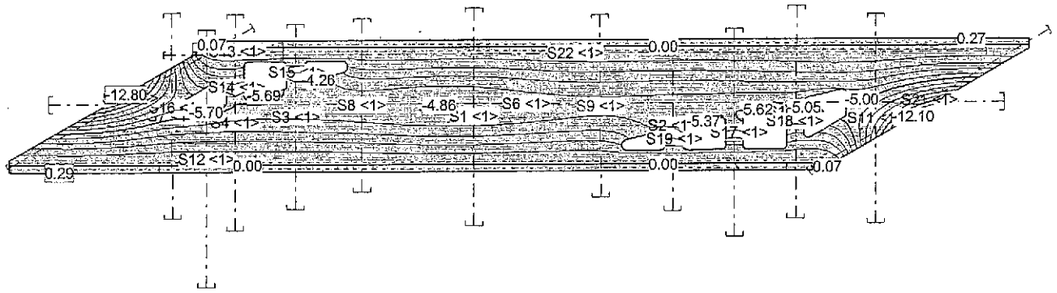
Envelope of deflections: Minima: ELS 2, Equidistance: 1.00 mm, Reference line: 0.00 mm

Scale 1 :718.1



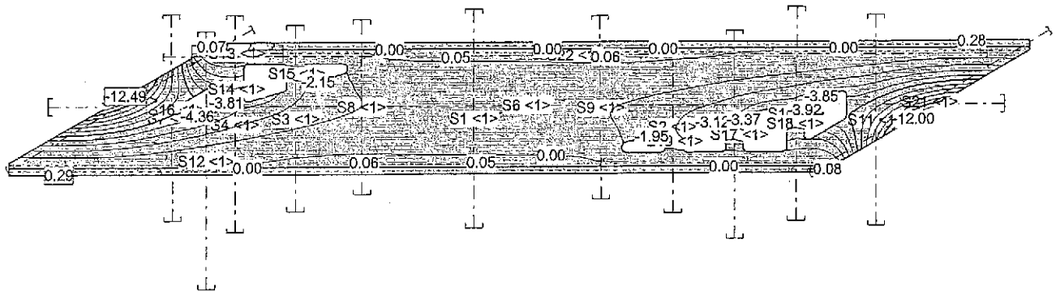
Envelope of deflections: Minima: ELS 3, Equidistance: 1.00 mm, Reference line: 0.00 mm

Scale 1 :718.1



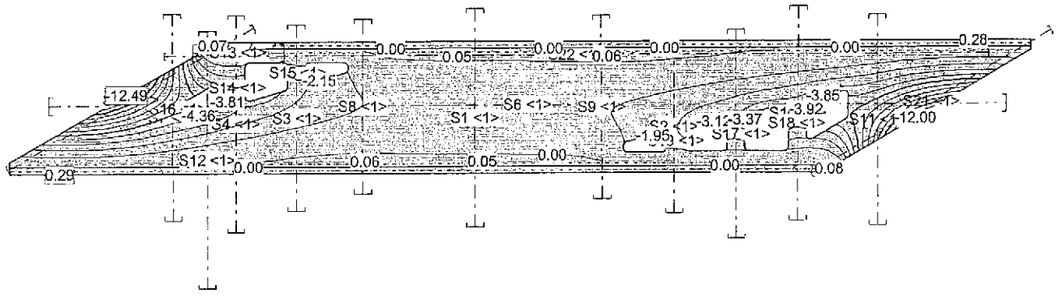
Envelope of deflections: Minima: ELS, Equidistance: 1.00 mm, Reference line: 0.00 mm

Scale 1 :718.1



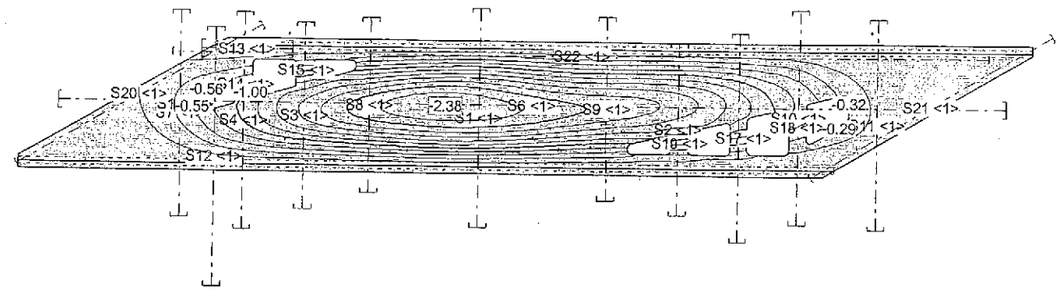
Envelope of deflections: Minima: PP + CM, Equidistance: 1.00 mm, Reference line: 0.00 mm

Scale 1 :718.1



Envelope of deflections: Minima: SC, Equidistance: 0.20 mm, Reference line: 0.00 mm

Scale 1 :718.1



Obra: PASO BAJO RVM Y VBM
Fecha: 16/02/2004
Hora: 13:17:01

Cálculo de secciones a cortante

1 Datos

- Materiales

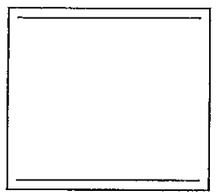
Tipo de hormigón : HA-25
Tipo de acero : B-500-S
fck [MPa] = 25.00
fyk [MPa] = 500.0
γc = 1.50
γs = 1.15

- Tipo de elemento estructural

Tipo : elemento con armadura a cortante

- Sección

Sección : LOSA
b [m] = 1.00
h [m] = 0.90



2 Comprobación

Tipo de armadura: cercos a 90.0°
separación s [m] = 0.2
ϕ [mm] = 10
nº ramas: 4
Area [cm²/m] = 15.7 ← 5φ20
ρ [·1.E-3] = 1.74

Inclinación de las bielas θ[°] = 45
Nd [kN] = 0.0
σyd [MPa] = 0

Vu1 [kN] = 4250.0
Vu2 [kN] = 689.9
Vcu [kN] = 206.1
Vsu [kN] = 483.8

- Resistencia a cortante:

Vu [kN] = 689.9

VALTER
valenciana de estructuras

Proyecto PAN. CASTELL RIBBAL

Asunto PASO BAJO RVM Y VBM

COMPROBACIÓN ELS

Se comprobarán mediante el programa informático de la EHE, dos secciones más desfavorables:

- Sección centro-luz: M_k = 300 KN ⇒ $w_k = 0'27 \text{ mm} < 0'3 \text{ mm}$
- Sección empotramiento con lastrales: M_k = 321 KN.m

$M_{fis} = 355'8$ KN.m > M_k

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

Obra: PASO BAJO RVM Y VBM
Fecha: 12/02/2004
Hora: 12:57:44

Comprobación del Estado Límite de Servicio de fisuración debido a solicitaciones normales

1 Datos

- Materiales

Tipo de hormigón: HA-25
Tipo de acero: B-500-S
fck [MPa] = 25.00
fyk [MPa] = 500.0

- Ambiente

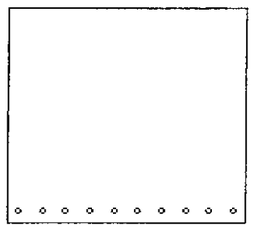
Clase general de exposición : IIb
Clases específicas de exposición :

- Geometría de la sección

Sección : LOSA
b [m] = 1.00
h [m] = 0.90

- Armado de la sección

ϕ [mm] = 25



capa	nº barras	Separación [mm]
1	10	47.50

As [cm²] = 49.1
Ac,ef [cm²] = 2.25E3

Fecha

Hoja Nº De

2 Resultados

Mk [kN·m] = 900

Separación media entre fisuras sm [mm] = 148.0

Deformación media de las armaduras εsm [·1.E-3] = 1.06

Tensión en las armaduras en el instante de fisuración σsr [MPa] = 102.0

Tensión en las armaduras en servicio σs [MPa] = 234.3

Abertura característica de fisura wk [mm] = 0.27

Clase de exposición	wk max [mm]	
	Armado	Pretensado
I	0.4	0.2
IIa, IIb, H	0.3	0.2
IIIa, IIIb, IV, F	0.3	Decompresión
IIIc, Qa, Qb, Qc	0.1	

Obra: PASO BAJO RVM Y VBM
Fecha: 12/02/2004
Hora: 13:03:49

Comprobación del Estado Límite de Servicio de fisuración debido a solicitaciones normales

1 Datos

- Materiales

Tipo de hormigón: HA-25

Tipo de acero: B-500-S

fck [MPa] = 25.00

fyk [MPa] = 500.0

- Ambiente

Clase general de exposición : IIb

Clases específicas de exposición :

- Geometría de la sección

Sección : LOSA

b [m] = 1.00

h [m] = 0.90

- Armado de la sección

ϕ [mm] = 16

capa	nº barras	Separación [mm]
1	5	43.00

As [cm²] = 10.1

Ac,ef [cm²] = 1.63E3

2 Resultados

Mk [kN·m] = 321

Separación media entre fisuras sm [mm] =

Deformación media de las armaduras εsm [·1.E-3] =

Tensión en las armaduras en el instante de fisuración σsr [MPa] =

Tensión en las armaduras en servicio σs [MPa] =

Abertura característica de fisura wk [mm] = 0,0

Clase de exposición	wk max [mm]	
	Armado	Pretensado
I	0.4	0.2
IIa, IIb, H	0.3	0.2
IIIa, IIIb, IV, F	0.3	Decompresión
IIIc, Qa, Qb, Qc	0.1	

VALTER
valenciana de
estructuras

Proyecto LAU CASTELL - BÉSBAL

Asunto

II ELS DEFORMACIÓN

· FLECHA ACTIVA : 0'6·SC ⇒ $f = -2'38\ mm = \frac{L}{5252} < \frac{1}{1200}$ = FADMISIBLE

· FLECHA PERMANENTE. CARGAS PERMANENTES

$f = -12'49\ mm = \frac{L}{1000'8} < \frac{L}{1000}$ = FADMISIBLE

Fecha

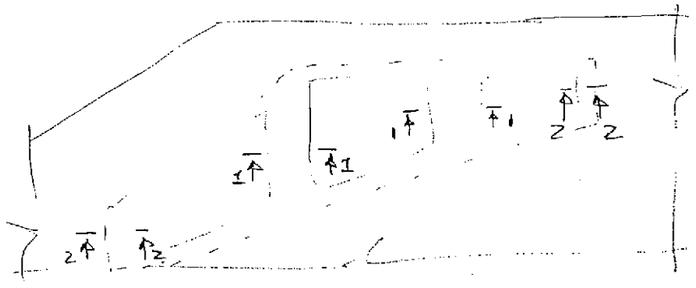
Hoja Nº De

VALTER
valenciana de estructuras

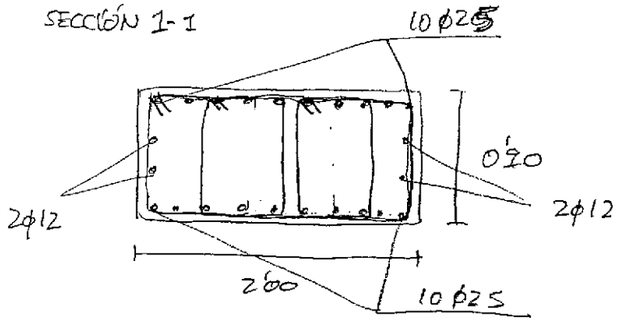
Proyecto ... LAV CASTELL - BILBAO ...

Asunto ... PASO BAJO RVM Y VBM ...

DIMENSIONAMIENTO ZUNCHOS EN HUECOS



SECCIÓN 1-1

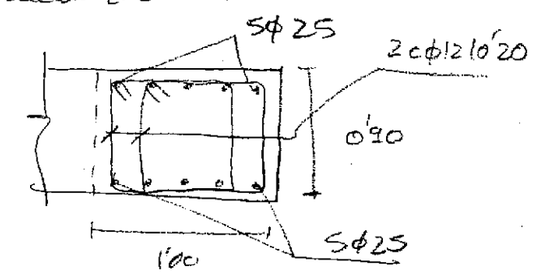


$V_d = 1242'42$ KN

$A_\alpha = 23'8$ cm²/m

3c ϕ 12/10'20

SECCIÓN 2-2



$V_d = 1109$ KN

$A_\alpha = 20$ cm²/m

2cϕ12/10'20

Fecha ..... Hoja Nº ..... De .....

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

Obra: PASO BAJO RVM Y VBM
Fecha: 12/02/2004
Hora: 11:57:41

Cálculo de secciones a cortante

1 Datos

- Materiales

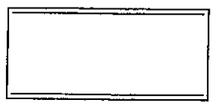
Tipo de hormigón : HA-30
Tipo de acero : B-500-S
fck [MPa] = 30.00
fyk [MPa] = 500.0
γc = 1.50
γs = 1.15

- Tipo de elemento estructural

Tipo : elemento con armadura a cortante

- Sección

Sección : ZUNCHOH
b [m] = 2.00
h [m] = 0.90



2 Dimensionamiento

Esfuerzo cortante de cálculo Vd [kN] = 1109

Inclinación de las bielas [º] = 45
Inclinación de los cercos [º] = 90.0
ρ [·1.E-3] = 2.73
Nd [kN] = 0.0
σxd [MPa] = 0.0
σyd [MPa] = 0
θe [º] = 45.0

ϕ [mm]	Separación [mm]	nº ramas	Area [cm²/m]	Tipo	Vsu [kN]
ø 6	----	----	----	----	----
ø 8	0.10	4	20.1	2	619.3
ø 10	0.15	4	20.9	2	645.1
ø 12	0.20	4	22.6	2	696.7

Área estricta [cm²/m] = 20.0

(Cuantía mínima)

Vul [kN] = 10200.0

Vcu [kN] = 508.9

Obra: PASO BAJO RVM Y VBM
Fecha: 12/02/2004
Hora: 11:57:49

Cálculo de secciones a cortante

1 Datos

- Materiales

Tipo de hormigón : HA-30
Tipo de acero : B-500-S
fck [MPa] = 30.00
fyk [MPa] = 500.0
γc = 1.50
γs = 1.15

- Tipo de elemento estructural

Tipo : elemento con armadura a cortante

- Sección

Sección : ZUNCHOH
b [m] = 2.00
h [m] = 0.90



2 Dimensionamiento

Esfuerzo cortante de cálculo Vd [kN] = 1242

Inclinación de las bielas [º] = 45
Inclinación de los cercos [º] = 90.0
p [·1.E-3] = 2.73
Nd [kN] = 0.0
σxd [MPa] = 0.0
σyd [MPa] = 0
θe [º] = 45.0

ϕ [mm]	Separación [mm]	nº ramas	Area [cm²/m]	Tipo	Vsu [kN]
ø 6	----	----	----	----	----
ø 8	----	----	----	----	----
ø 10	0.10	4	31.4	2	967.6
ø 12	0.15	4	30.2	2	928.9

Área estricta [cm²/m] = 23.8

Vu1 [kN] = 10200.0

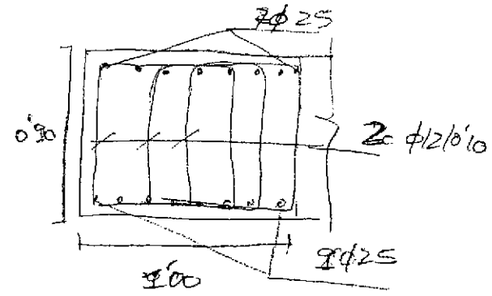
Vcu [kN] = 508.9

VALTER
valenciana de estructuras

Proyecto LAU CASTELL-BISBAL

Asunto PASO SAJO RUK Y VBM

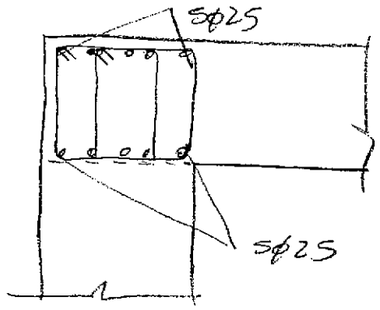
1 DIMENSIONAMIENTO DEL ZUNCHO DE BORDE A-A



$$\begin{cases} V_d = 1402 \text{ KN} \\ A_{sx} = 35'4 \text{ cm}^2/\text{m} \\ 2c\,\phi\,12/0'10 \end{cases}$$

$$\begin{cases} M_d^+ = 1417 \text{ KN·m} \Rightarrow 1\phi25 \\ M_d^- = 1149 \text{ KN·m} \Rightarrow 7\phi25 \end{cases}$$

2 DIMENSIONAMIENTO DEL ZUNCHO DE BORDE B-B



$$\begin{cases} V_d = 920 \text{ KN} \\ A_{sx} = 23'4 \text{ cm}^2/\text{m} \\ 2c\,\phi\,12/0'20 \end{cases}$$

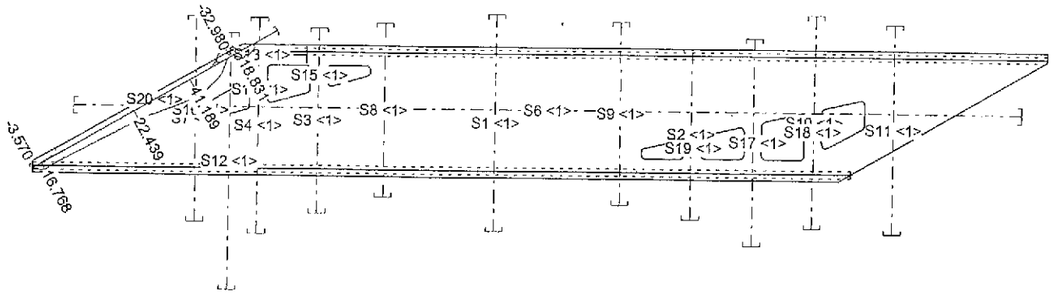
$$\begin{cases} M_d = 580 \text{ KN·m} \\ 5\phi25 \end{cases}$$

Fecha .....

Hoja Nº ..... De .....

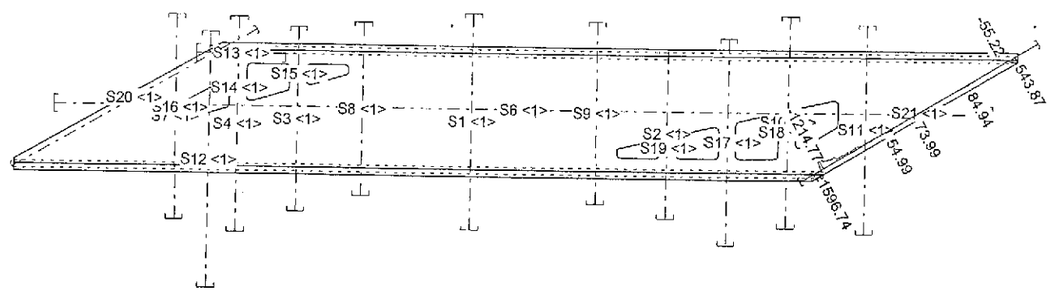
Beam section(s): As [cm2], Specification ELU 1, H300, AEH500, γc=1.50, γs=1.15

Scale 1:723.8



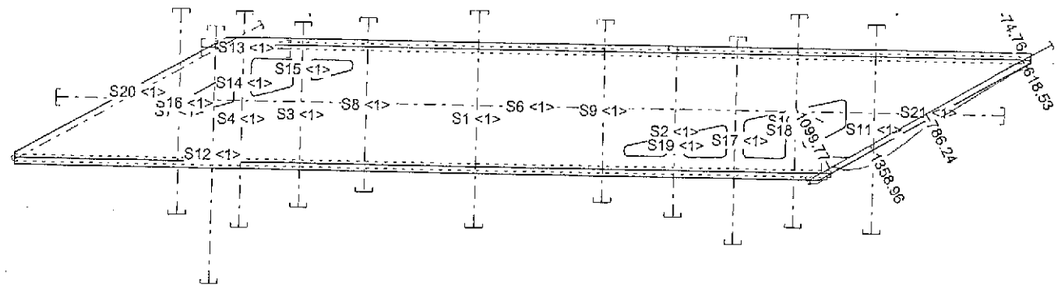
Beam section(s): Envelopes of dimensioning shear forces [kN], Specification ELU 1

Scale 1:726.5



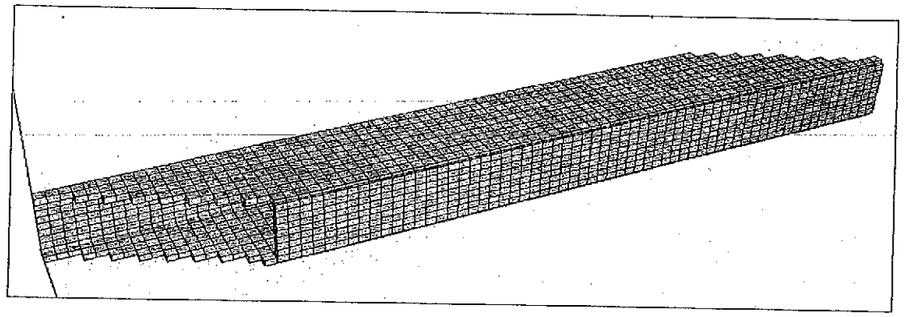
Beam section(s): Envelopes of dimensioning moments [kNm], Specification ELU 1

Scale 1 :722.9

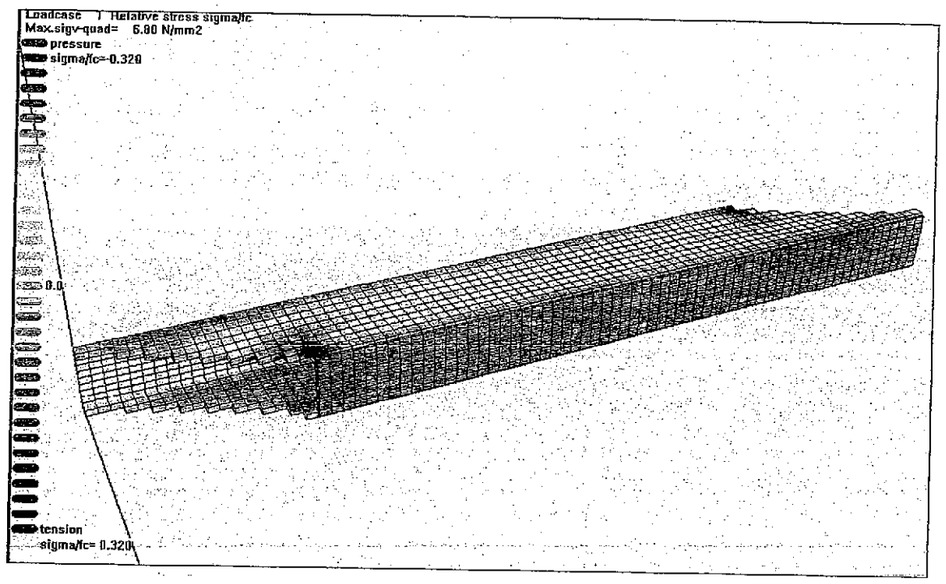


DIMENSIONAMIENTO DE LOS HASTIALES Y LOSA INFERIOR

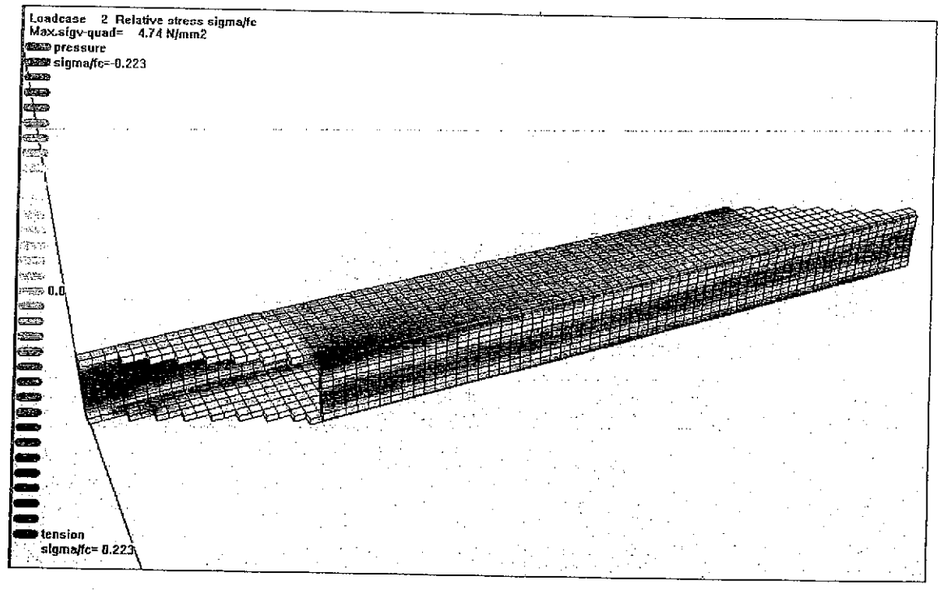
MODELO DE ELEMENTOS FINITOS DEL MARCO



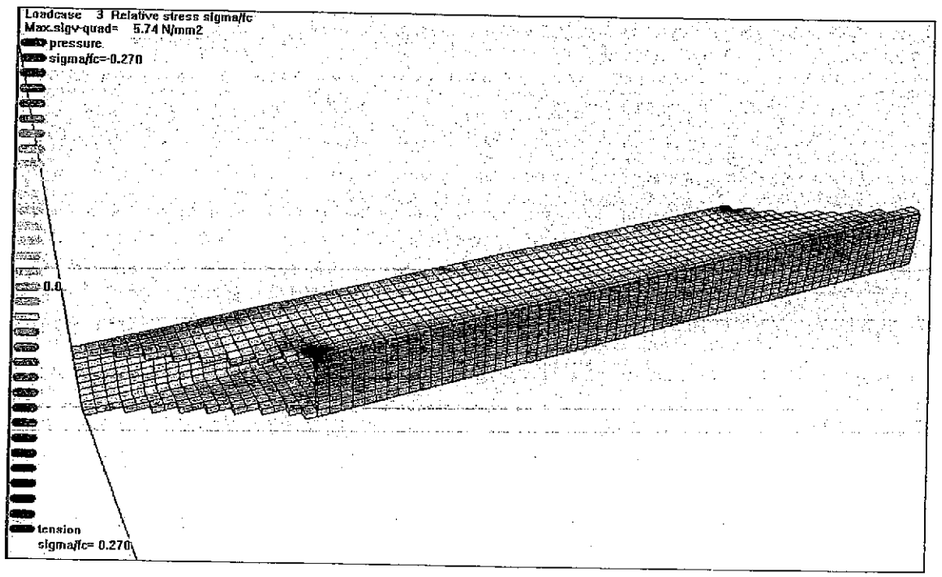
DEFORMADA Y TENSIONES DE PESO PROPIO



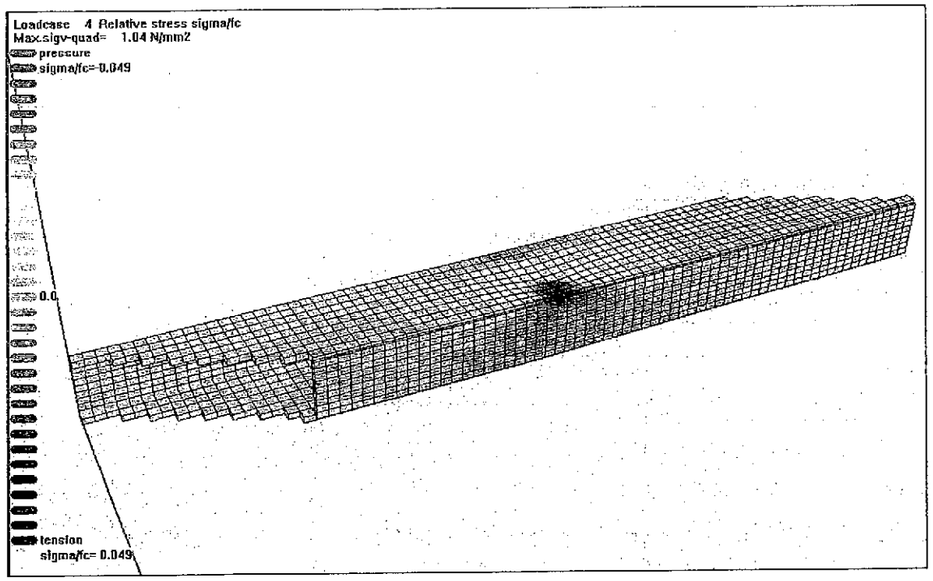
DEFORMADA Y TENSIONES DE EMPUJE AL REPOSO



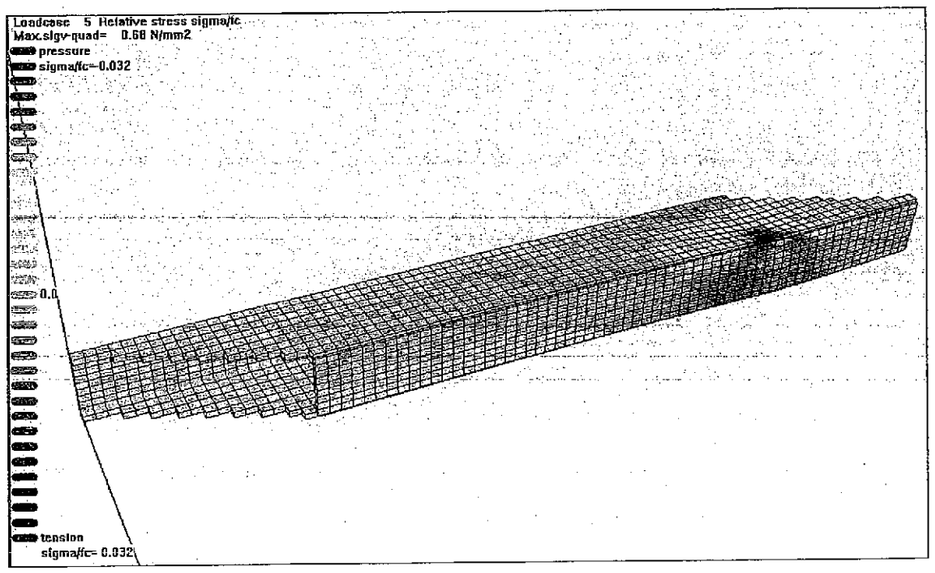
DEFORMADA Y TENSIONES DEBIDAS A CARGAS MUERTAS



DEFORMADA Y TENSIONES DEBIDAS AL TREN TIPO A EXCÉNTRICO POSICIÓN 1 DEL RVM (IPF-75)

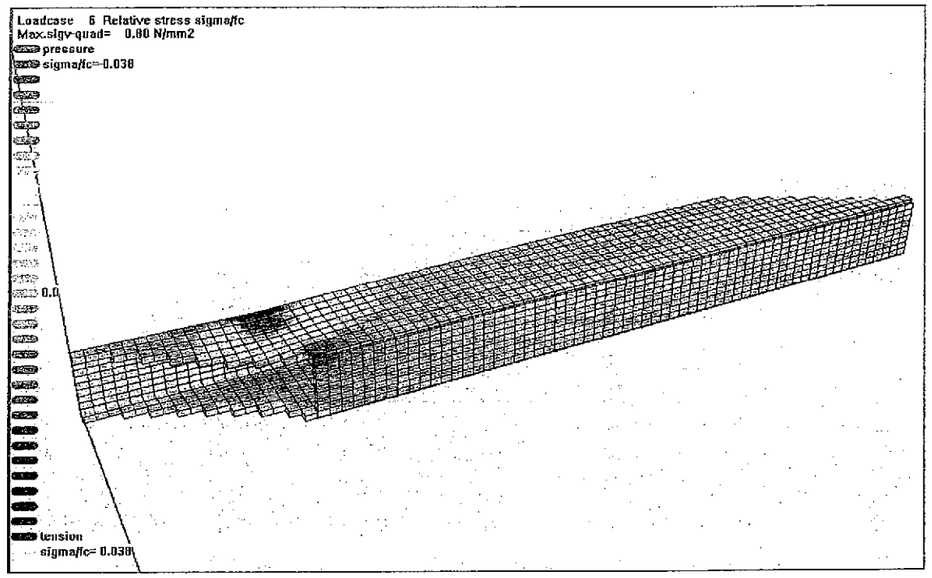


DEFORMADA Y TENSIONES DEBIDAS AL TREN TIPO A EXCÉNTRICO POSICIÓN 1 DE LA VBM (IPF-75)

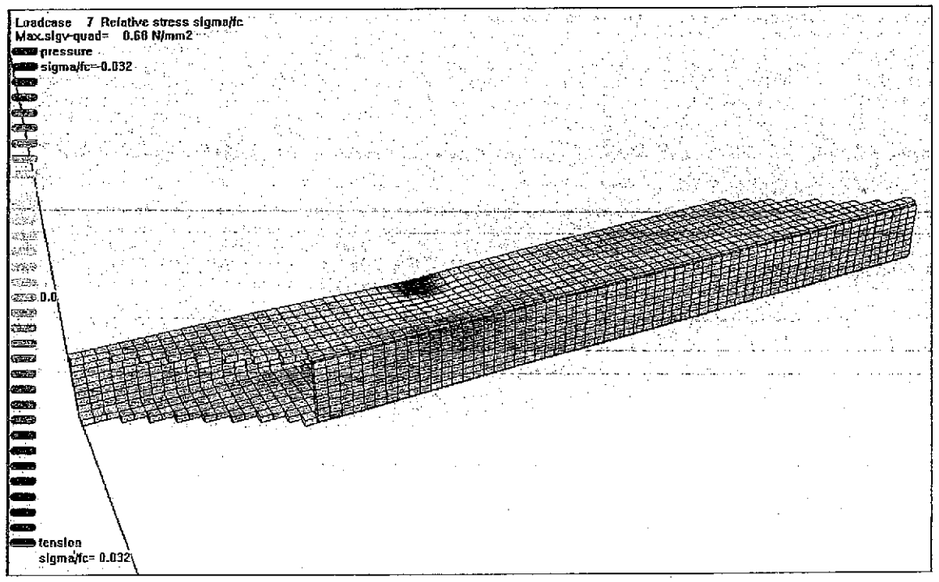


VALIER valenciana de estructuras
L.A.V. MADRID-FRONTERA FRANCESA. TRAMO A: CONEXIÓN VALLÉS CASTELLBISBAL
PASO BAJO RAMAL VALLÉS-MARTORELL Y VÍA BERCELONA-MARTORELL

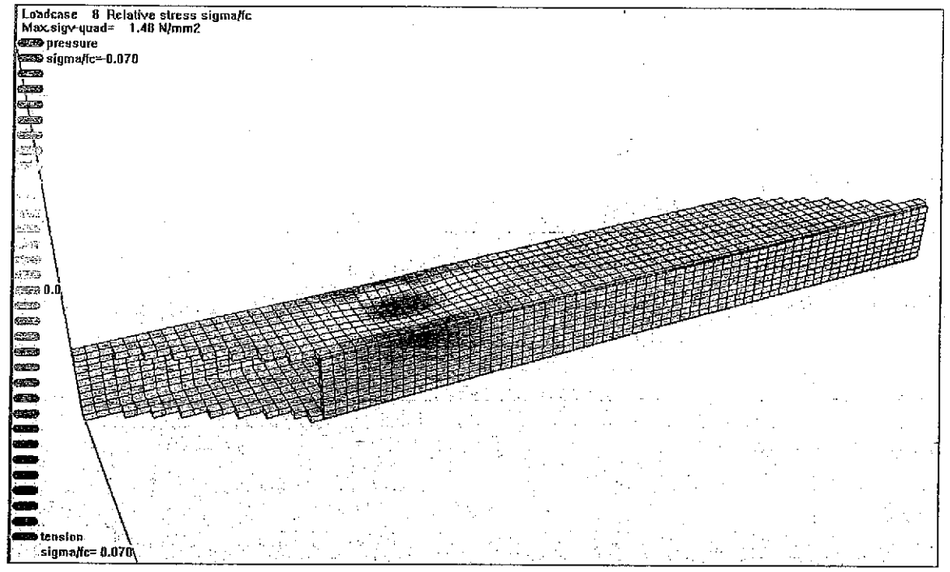
DEFORMADA Y TENSIONES DEBIDAS AL TREN TIPO A EXCÉNTRICO POSICIÓN 2 DEL RVM (IPF-75)



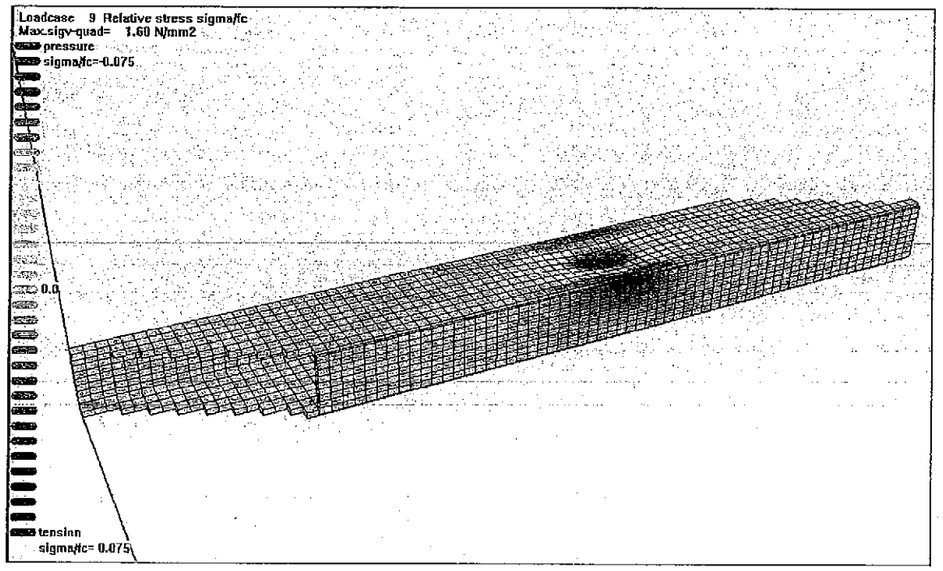
DEFORMADA Y TENSIONES DEBIDAS AL TREN TIPO A EXCÉNTRICO POSICIÓN 2 DE LA VBM (IPF-75)



DEFORMADA Y TENSIONES DEBIDAS AL TREN TIPO A CENTRADO DEL RVM (IPF-75)

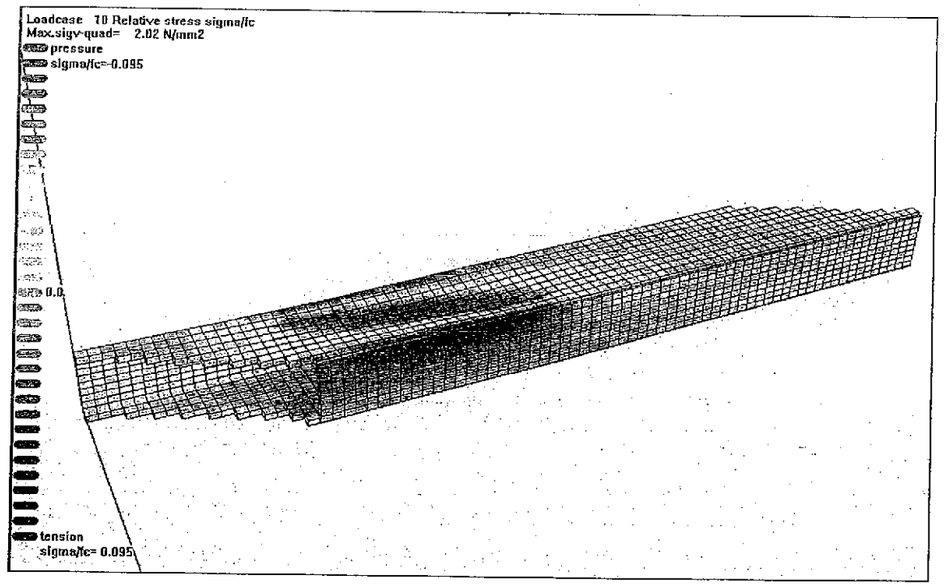


DEFORMADA Y TENSIONES DEBIDAS AL TREN TIPO A CENTRADO DE LA VBM (IPF-75)

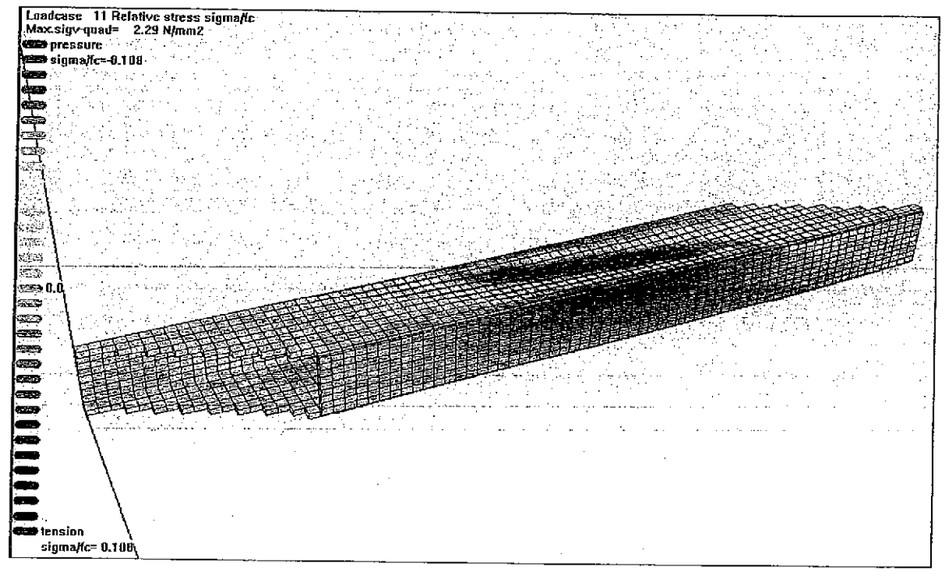


VALIEK valenciana de estructuras
L.A.V. MADRID-FRONTERA FRANCESA. TRAMO A: CONEXIÓN VALLES CASTELLBISBAL
PASO BAJO RAMAL VALLÉS-MARTORELL Y VÍA BERCELONA-MARTORELL

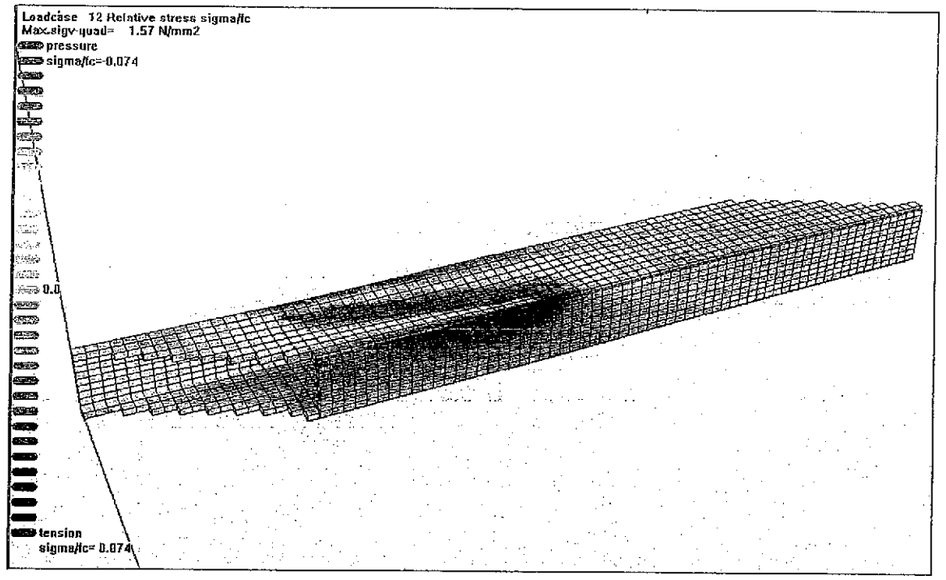
DEFORMADA Y TENSIONES DEBIDAS AL TREN TIPO B DEL RVM (IPF-75)



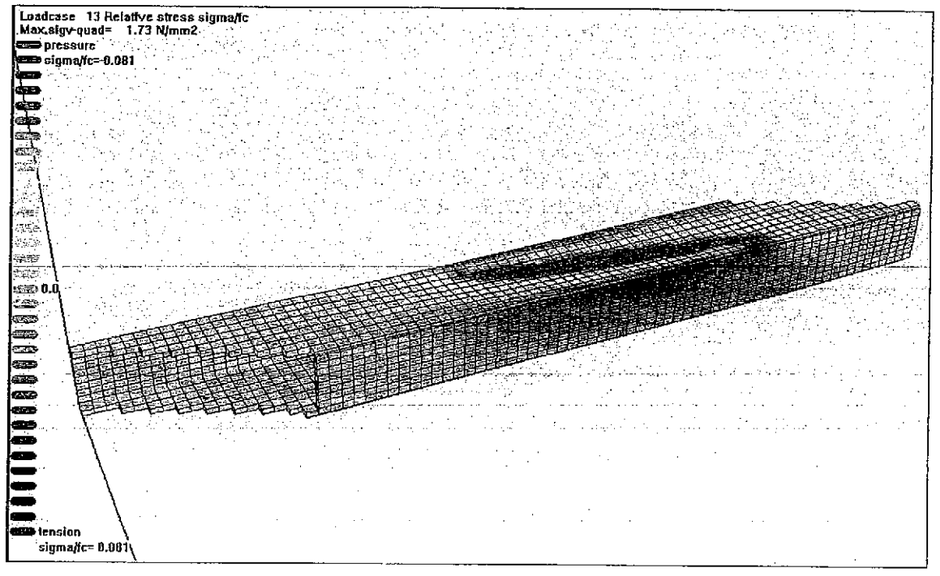
DEFORMADA Y TENSIONES DEBIDAS AL TREN TIPO B DEL RVM (IPF-75)



DEFORMADA Y TENSIONES DEBIDAS AL TREN POSICIÓN 1 DEL RVM (IAPF-99)

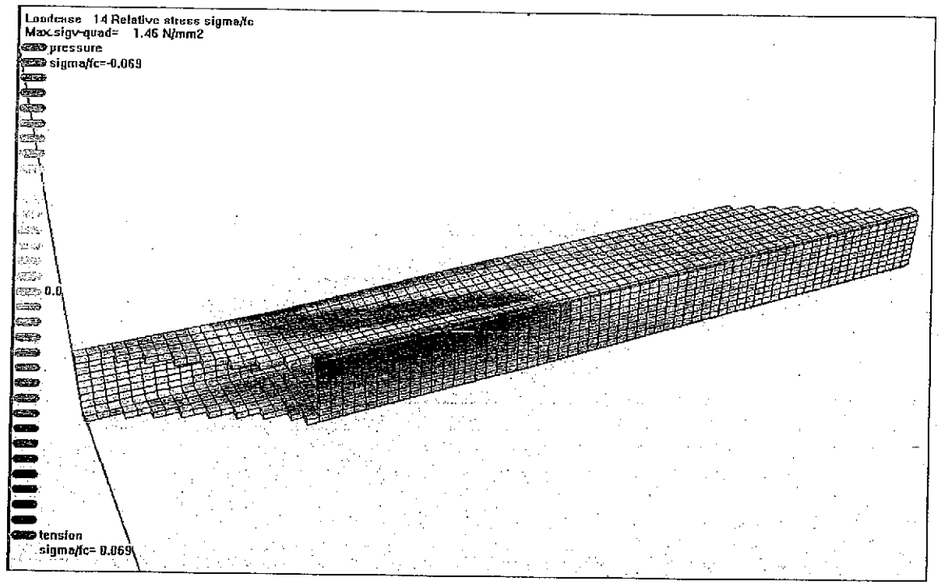


DEFORMADA Y TENSIONES DEBIDAS AL TREN POSICIÓN 1 DE LA VBM (IAPF-99)

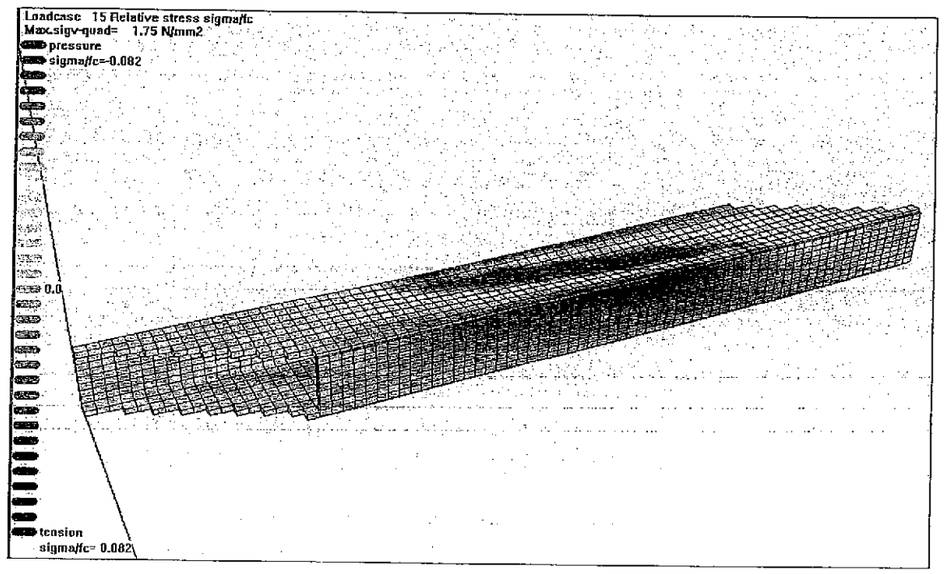


VALTER valenciana de estructuras
EA 9. MADRID-FRONTERA FRANCESA. TRAMO A: CONEXIÓN VALLÉS CASTELLBISBAL
PASO BAJO RAMAL VALLÉS-MARTORELL Y VÍA BERCELONA-MARTORELL

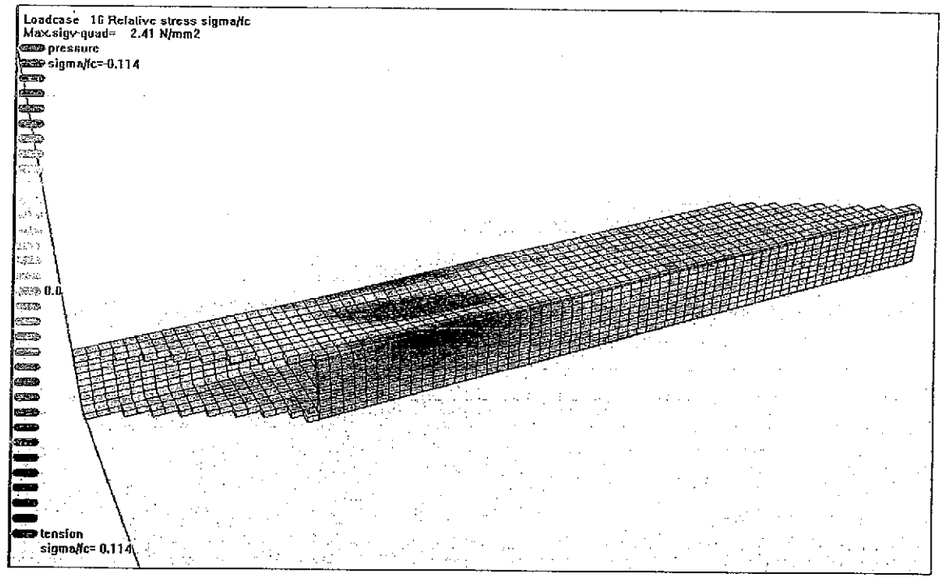
DEFORMADA Y TENSIONES DEBIDAS AL TREN POSICIÓN 2 DEL RVM (IAPF-99)



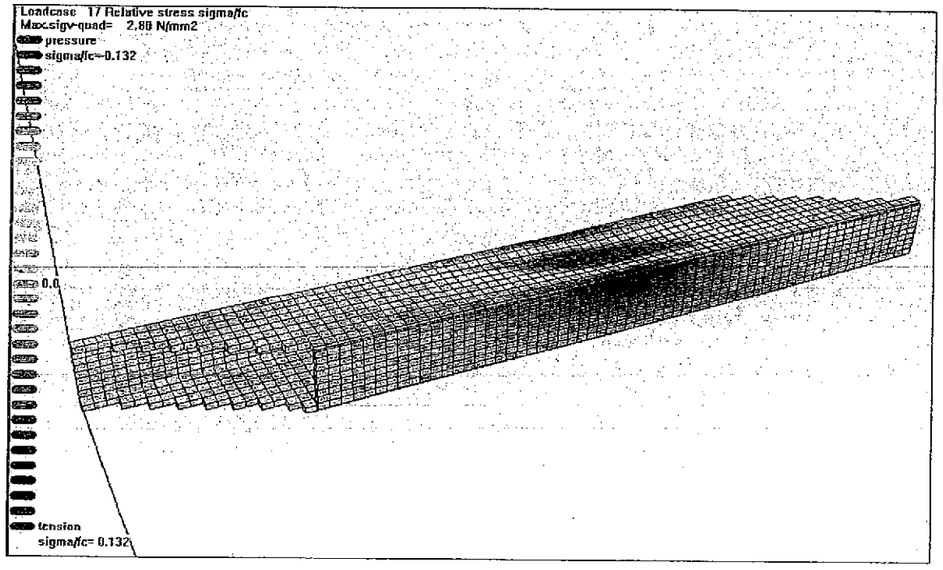
DEFORMADA Y TENSIONES DEBIDAS AL TREN POSICIÓN 2 DE LA VBM (IAPF-99)



DEFORMADA Y TENSIONES DEBIDAS AL TREN CENTRADO DEL RVM (IAPF-99)

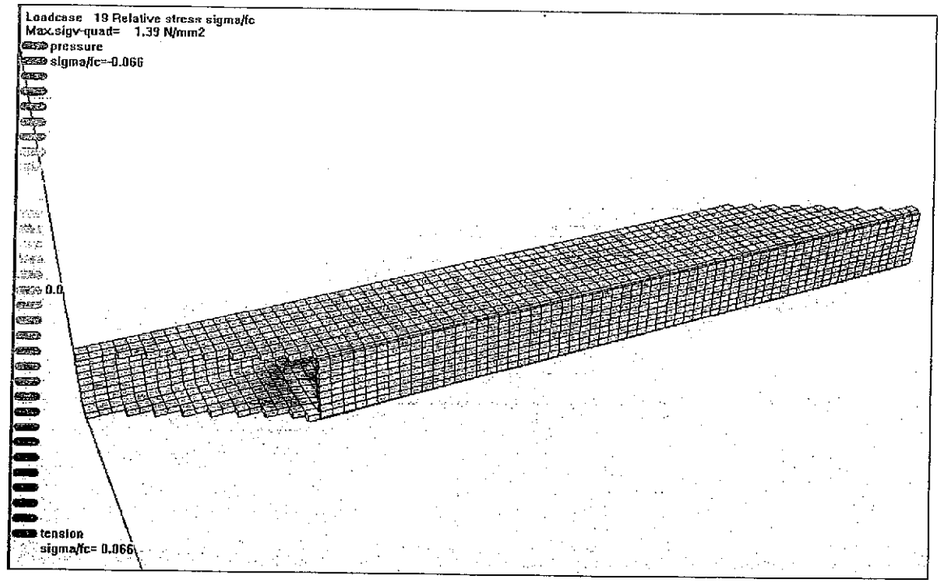


DEFORMADA Y TENSIONES DEBIDAS AL TREN CENTRADO DE LA VBM (IAPF-99)

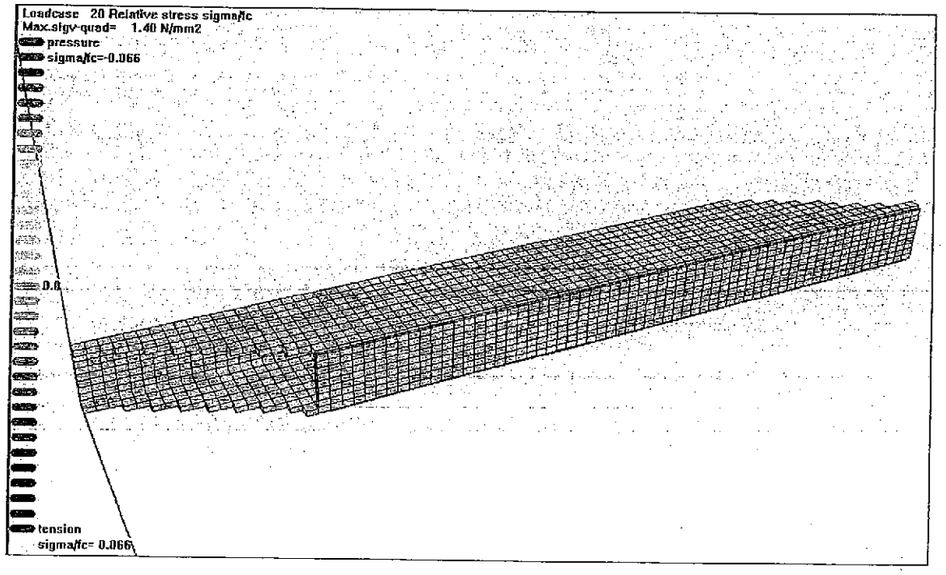


VALTER valenciana de estructuras
LA.V. MADRID-FRONTERA FRANCESA. TRAMO A: CONEXIÓN VALLES CASTELLBISBAL
PASO BAJO RAMAL VALLÉS-MARTORELL Y VÍA BERCELONA-MARTORELL

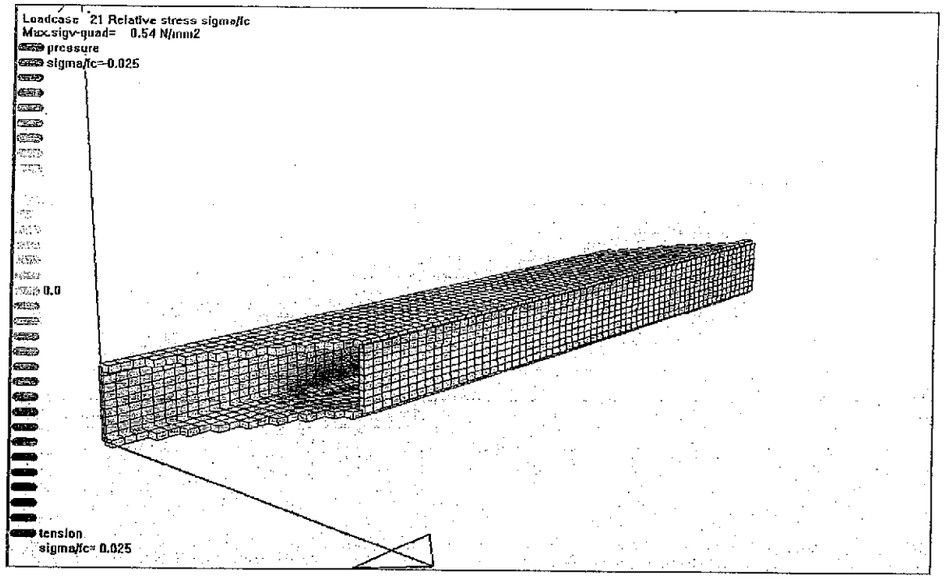
DEFORMADA Y TENSIONES DEBIDAS AL TREN EXCENTRICO DEL LAV (IPF-75)



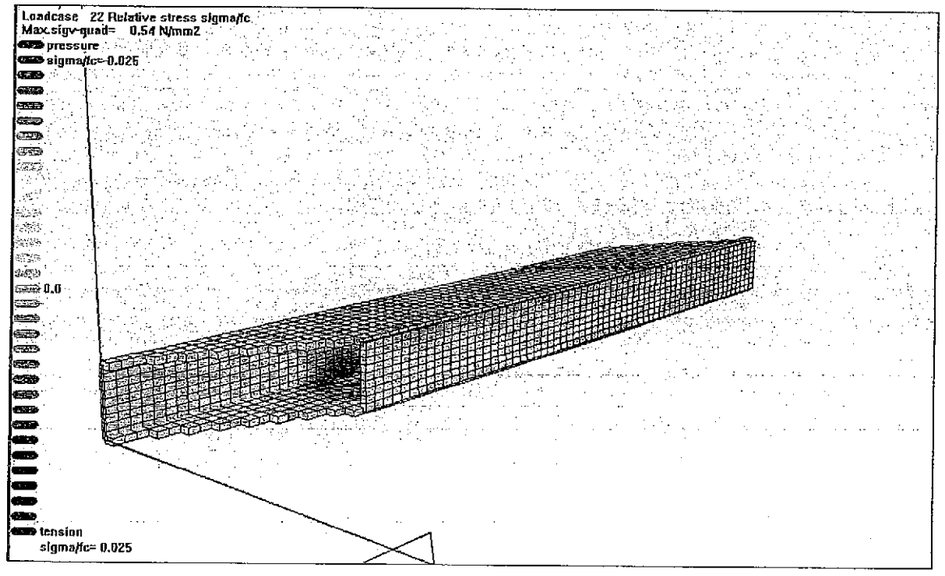
DEFORMADA Y TENSIONES DEBIDAS AL TREN CENTRADO DEL LAV (IPF-75)

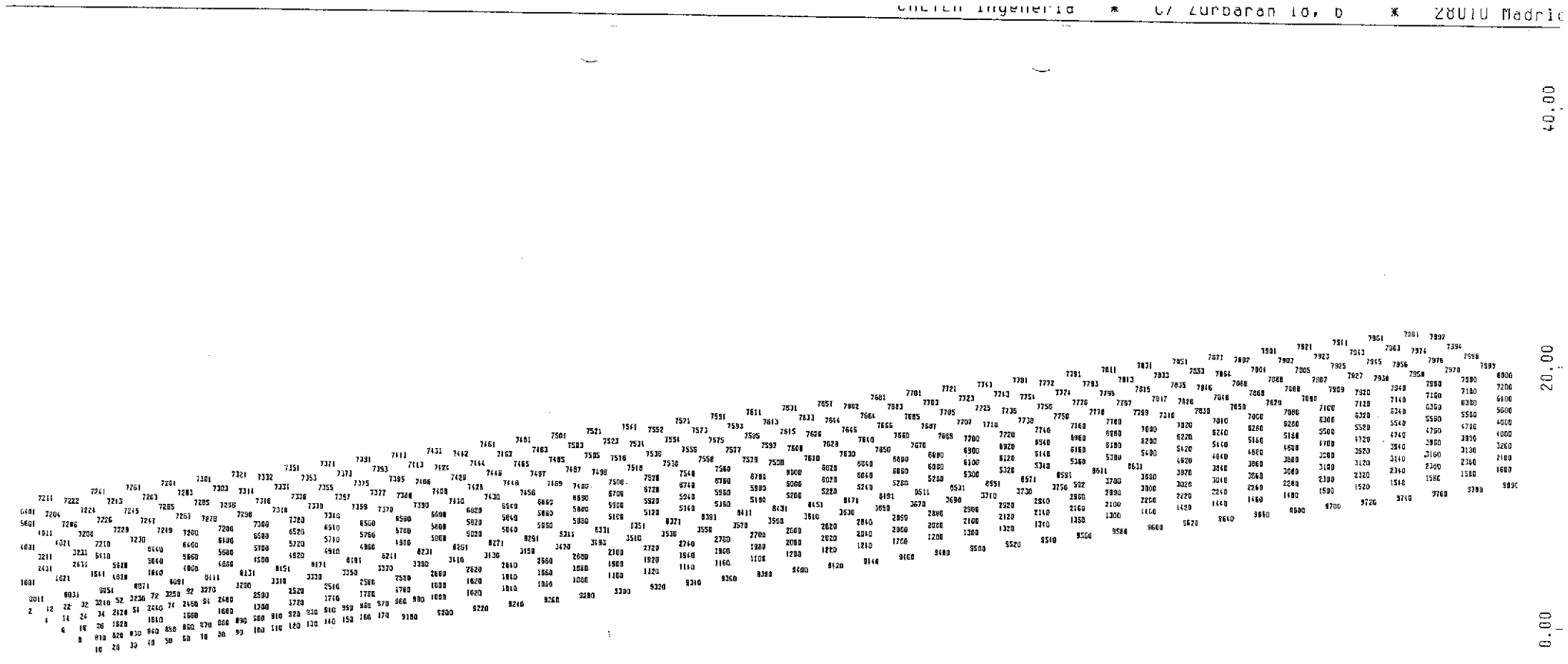


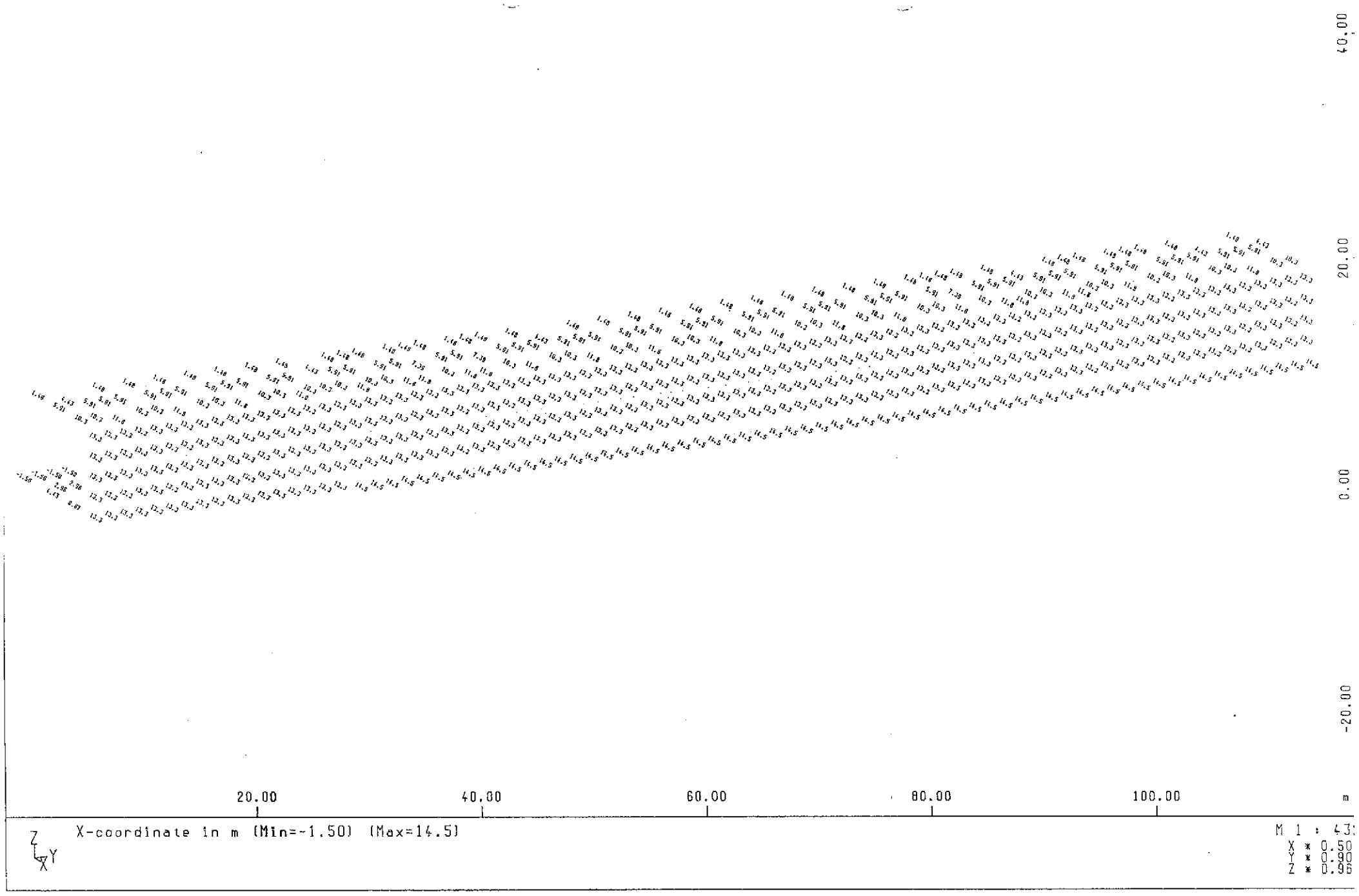
DEFORMADA Y TENSIONES DEBIDAS AL TREN SW/2 EXCENTRICO DEL LAV (EC-1.3)

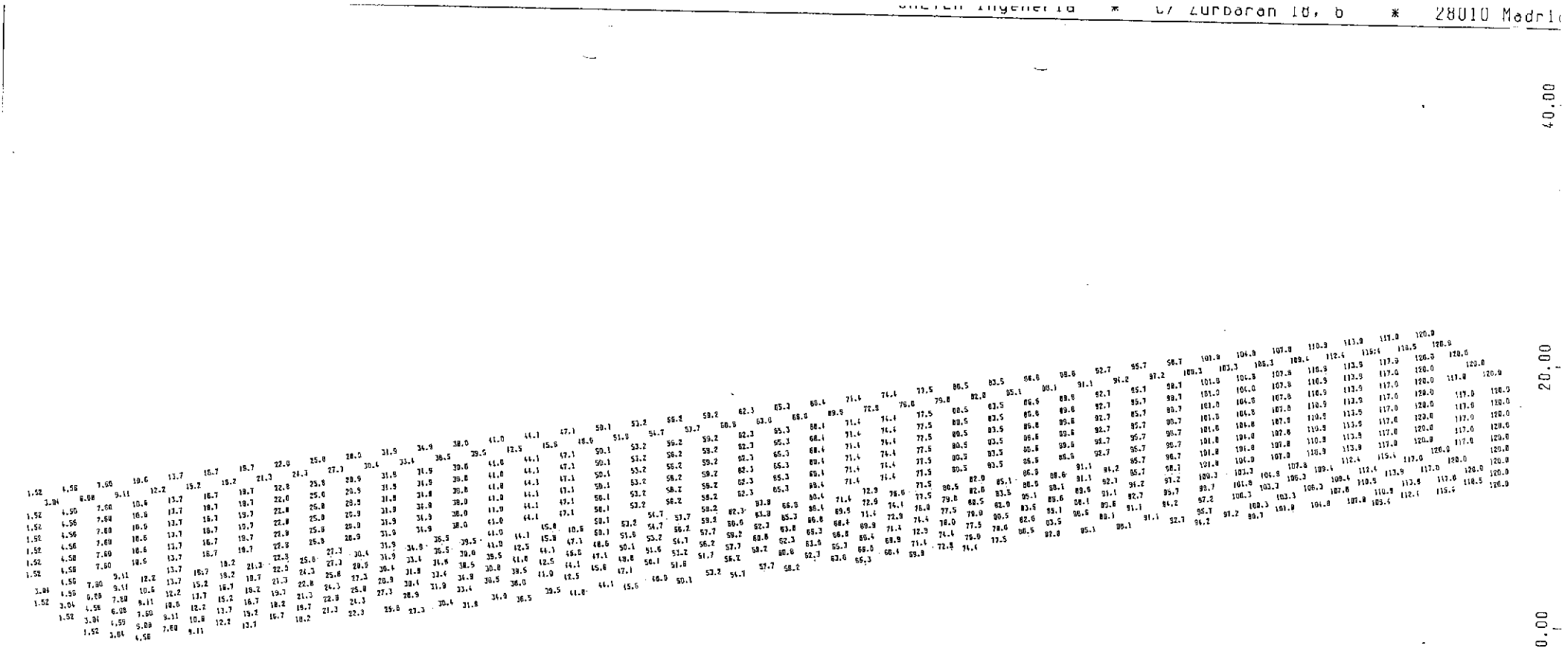


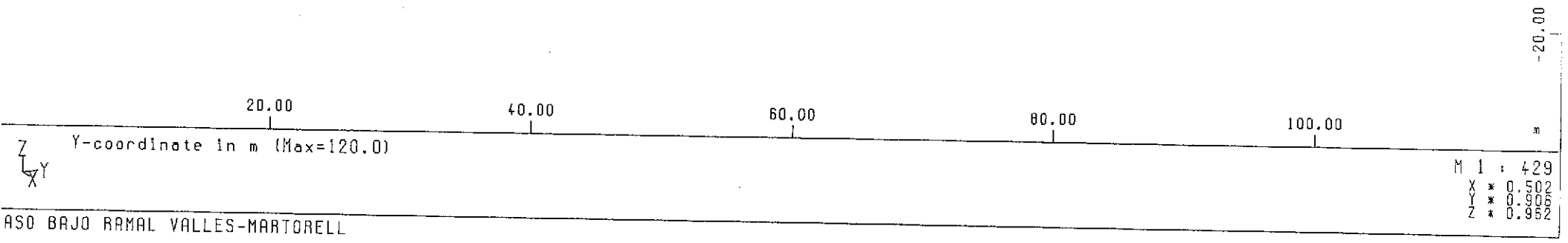
DEFORMADA Y TENSIONES DEBIDAS AL TREN SW/2 EXCENTRICO DEL LAV (EC-1.3)




40.00
20.00
0.00
-20.00
20.00
40.00
60.00
80.00
100.00
m
Numbers of nodes (Max=9800)
M 1 : 431
X * 0.502
Y * 0.906
Z * 0.962

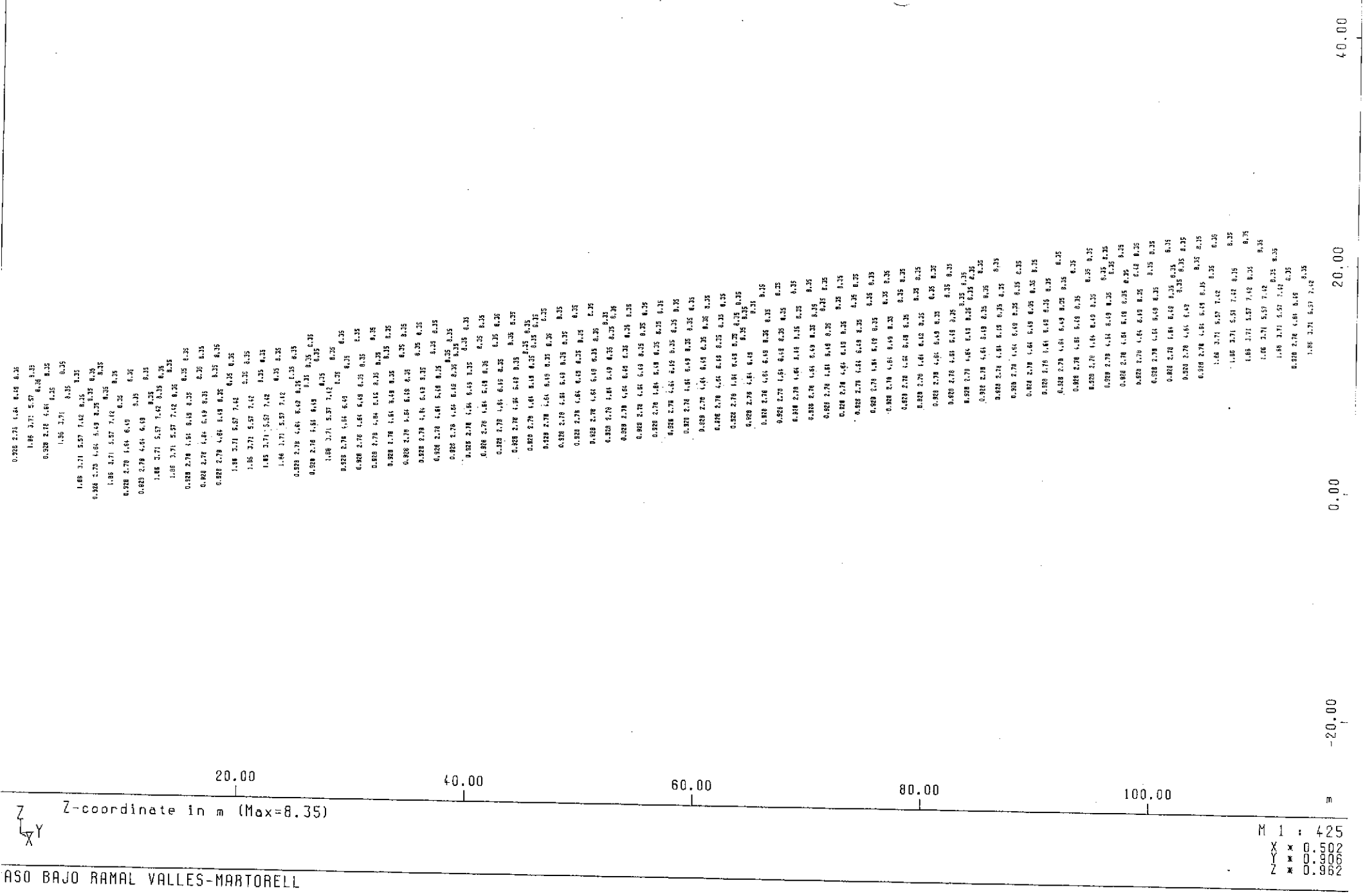

40.00
20.00
0.00
-20.00
20.00
40.00
60.00
80.00
100.00
m
X-coordinate in m (Min=-1.50) (Max=14.5)
M 1 : 43
X * 0.50
Y * 0.90
Z * 0.96





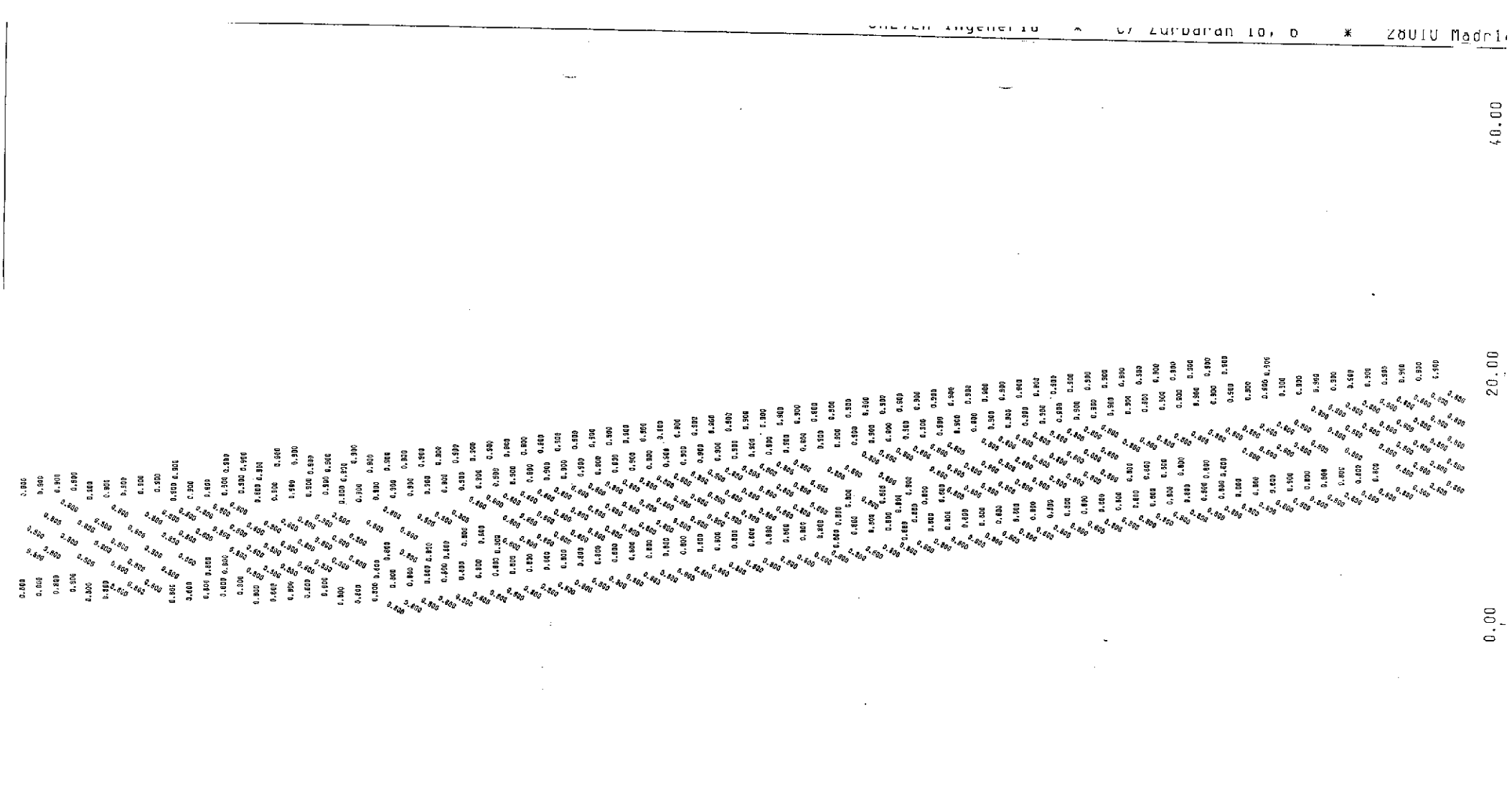
ASO BAJO RAMAL VALLES-MARTORELL

PAGE 7189

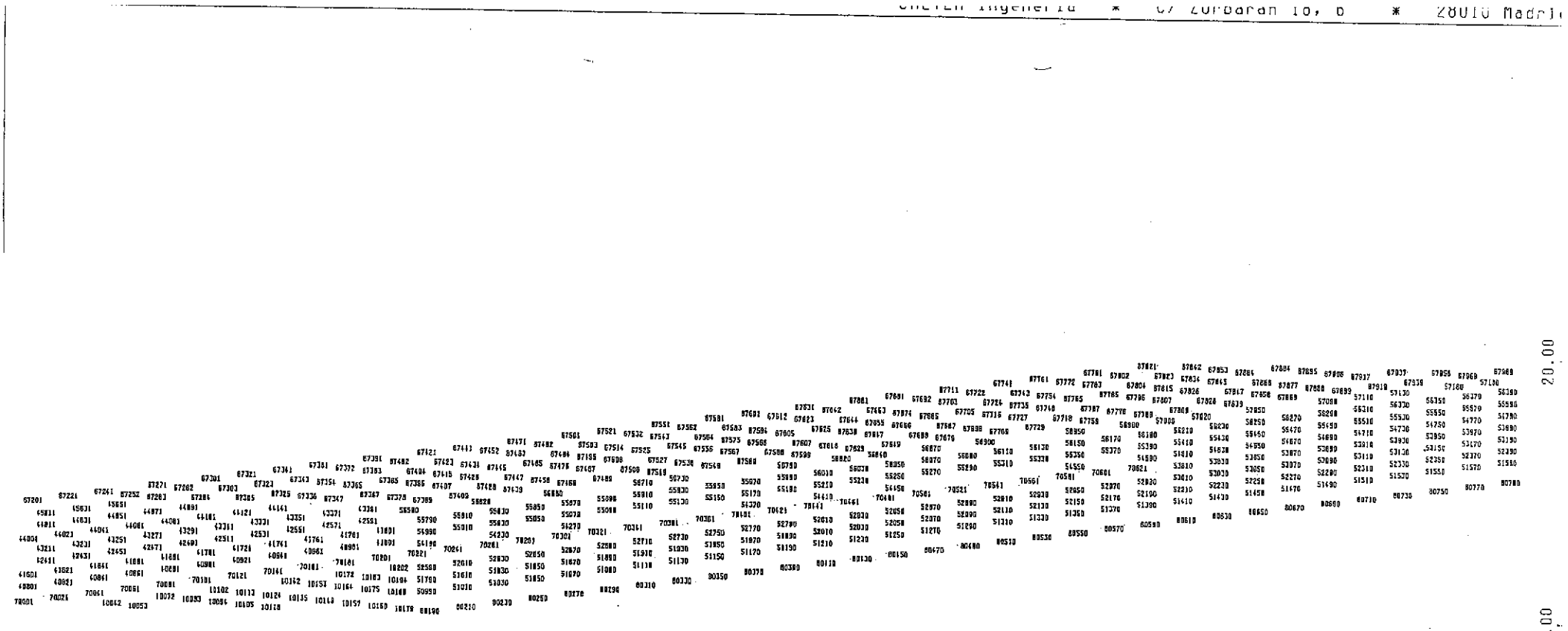


ASO BAJO RAMAL VALLES-MARTORELL

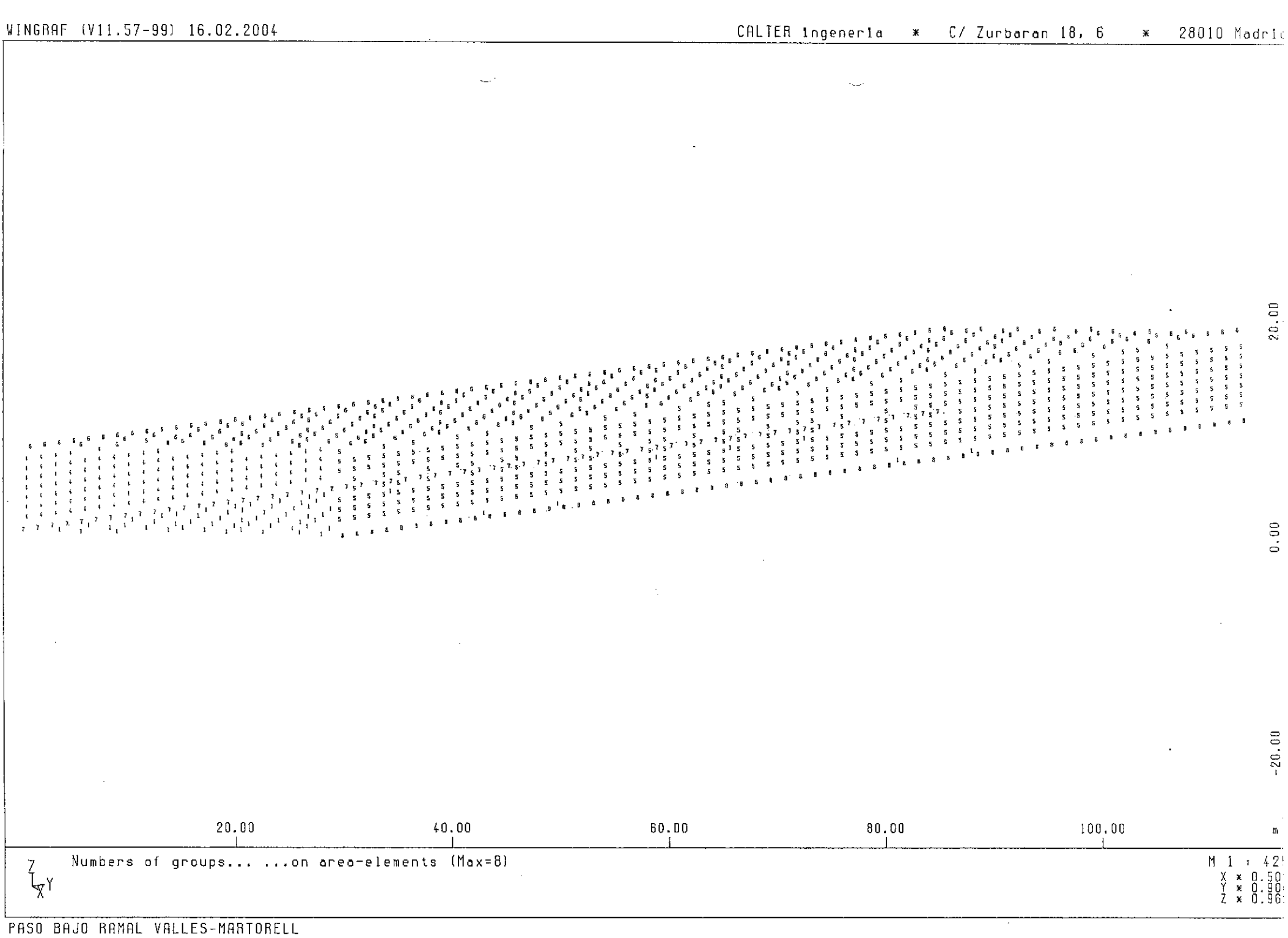
PAGE 7190


0.00
20.00
40.00
20.00
40.00
60.00
80.00
100.00
m
Node plate thickness in Nodes in m (Max=0.900)
M 1 : 432
X * 0.502
Y * 0.906
Z * 0.962

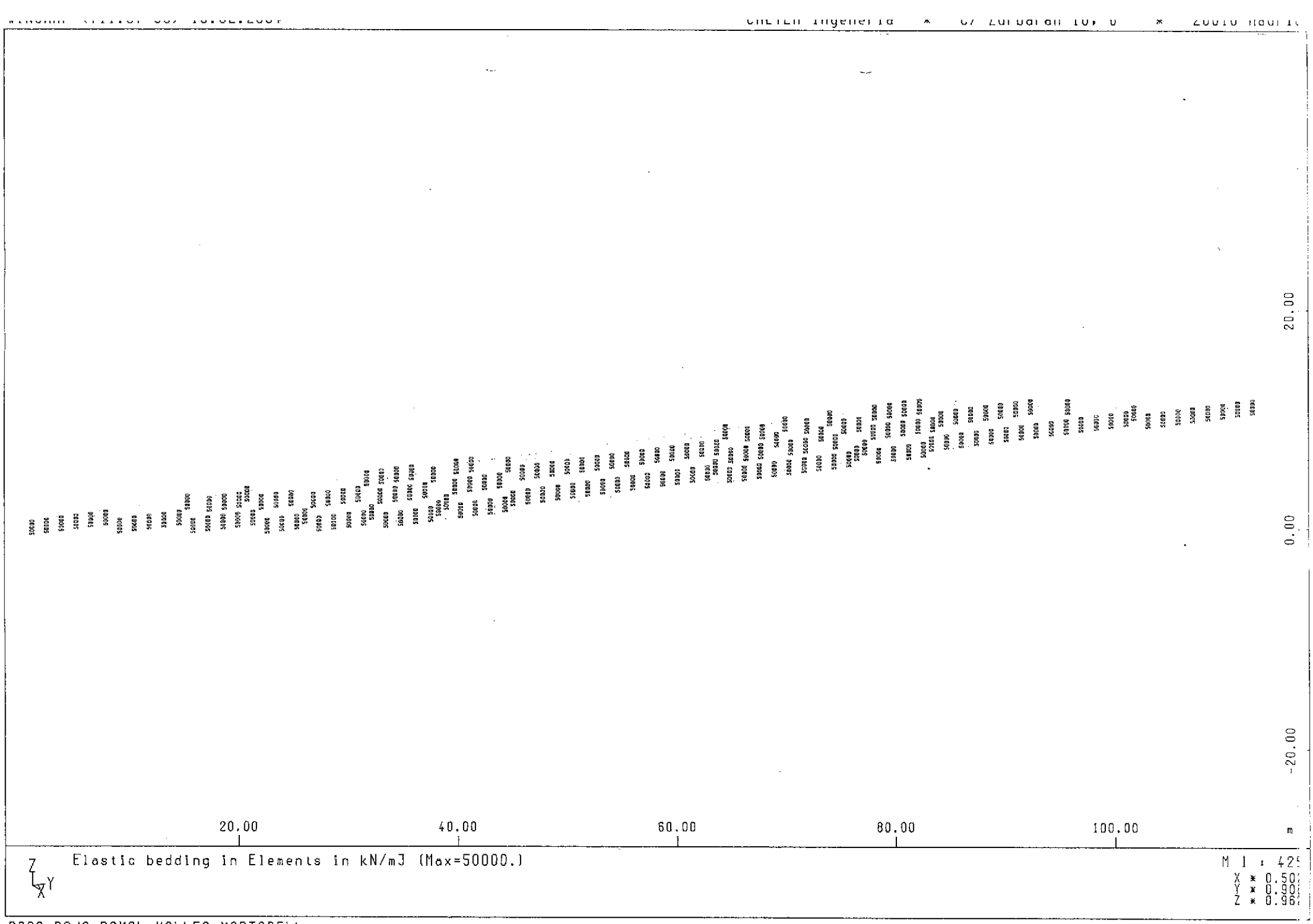
-20.00
0.00
20.00
-20.00
20.00
40.00
60.00
80.00
100.00
m
Node coordinate systems in Nodes
M 1 : 447
X * 0.502
Y * 0.906
Z * 0.962



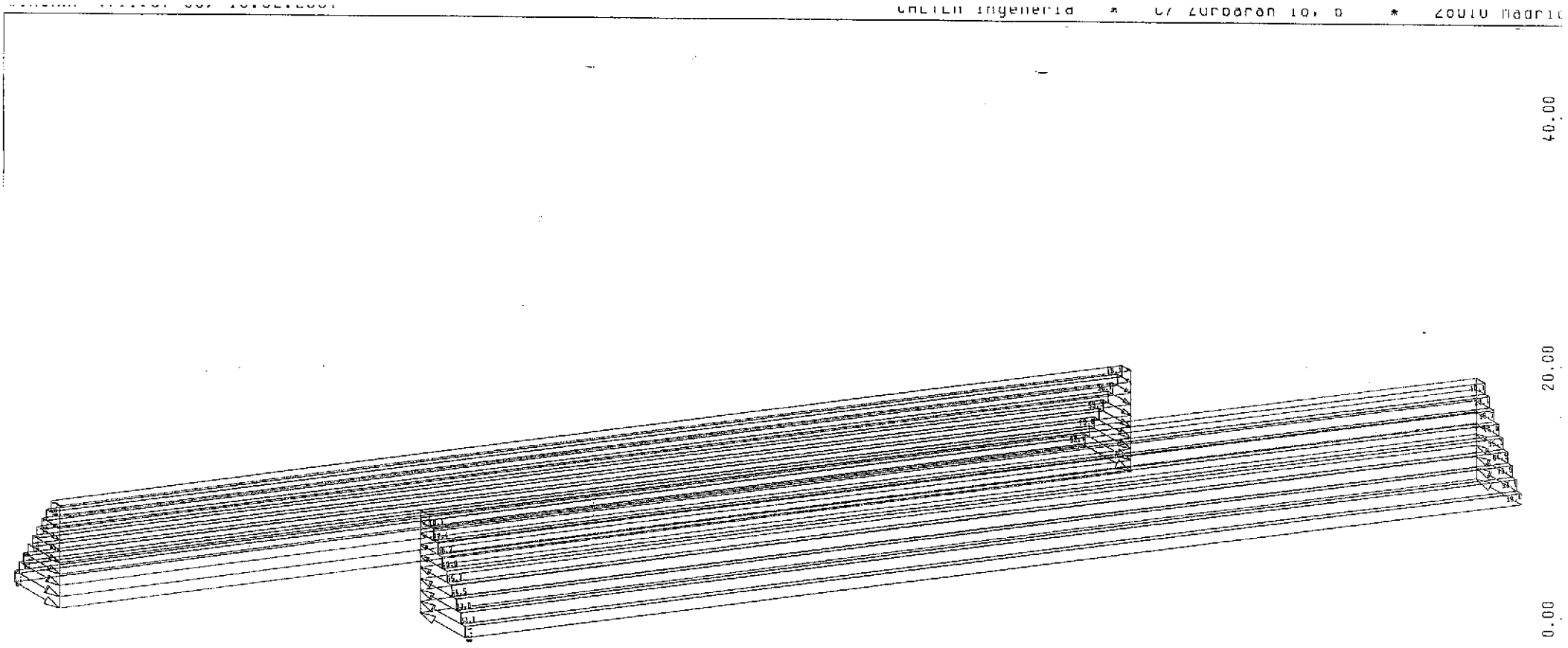
PASO BAJO RAMAL VALLES-MARTORELL

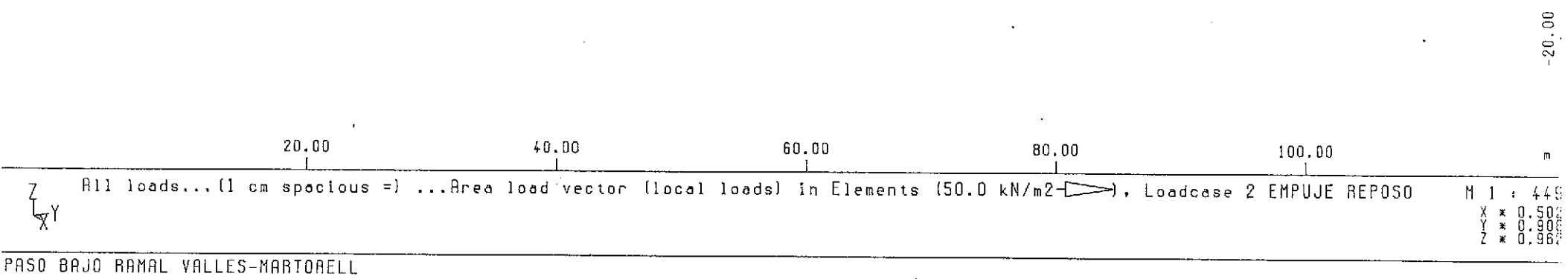


PASO BAJO RAMAL VALLES-MARTORELL

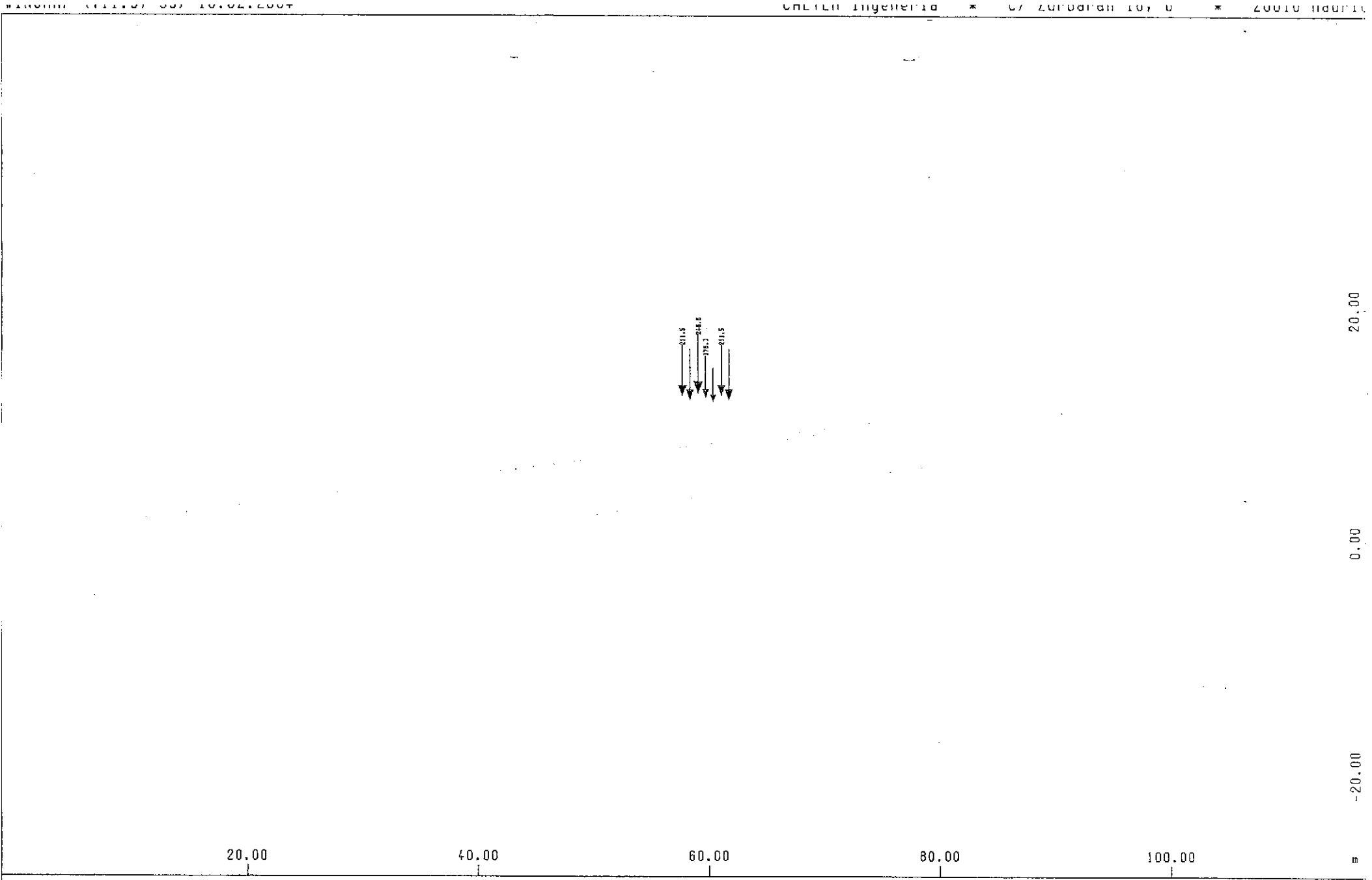

20.00
40.00
60.00
80.00
100.00
m
-20.00
Elastic bedding in Elements in kN/m3 (Max=50000.)
Z
Y
X

40.00
20.00
0.00
-20.00
20.00
40.00
60.00
80.00
100.00
m
All loads...(1 cm spacious =) ...Area dead load in global Z in Elements (20.0 kN/m2), Loadcase 1 PESO PROPIO
Z
Y
X


40.00
20.00
0.00

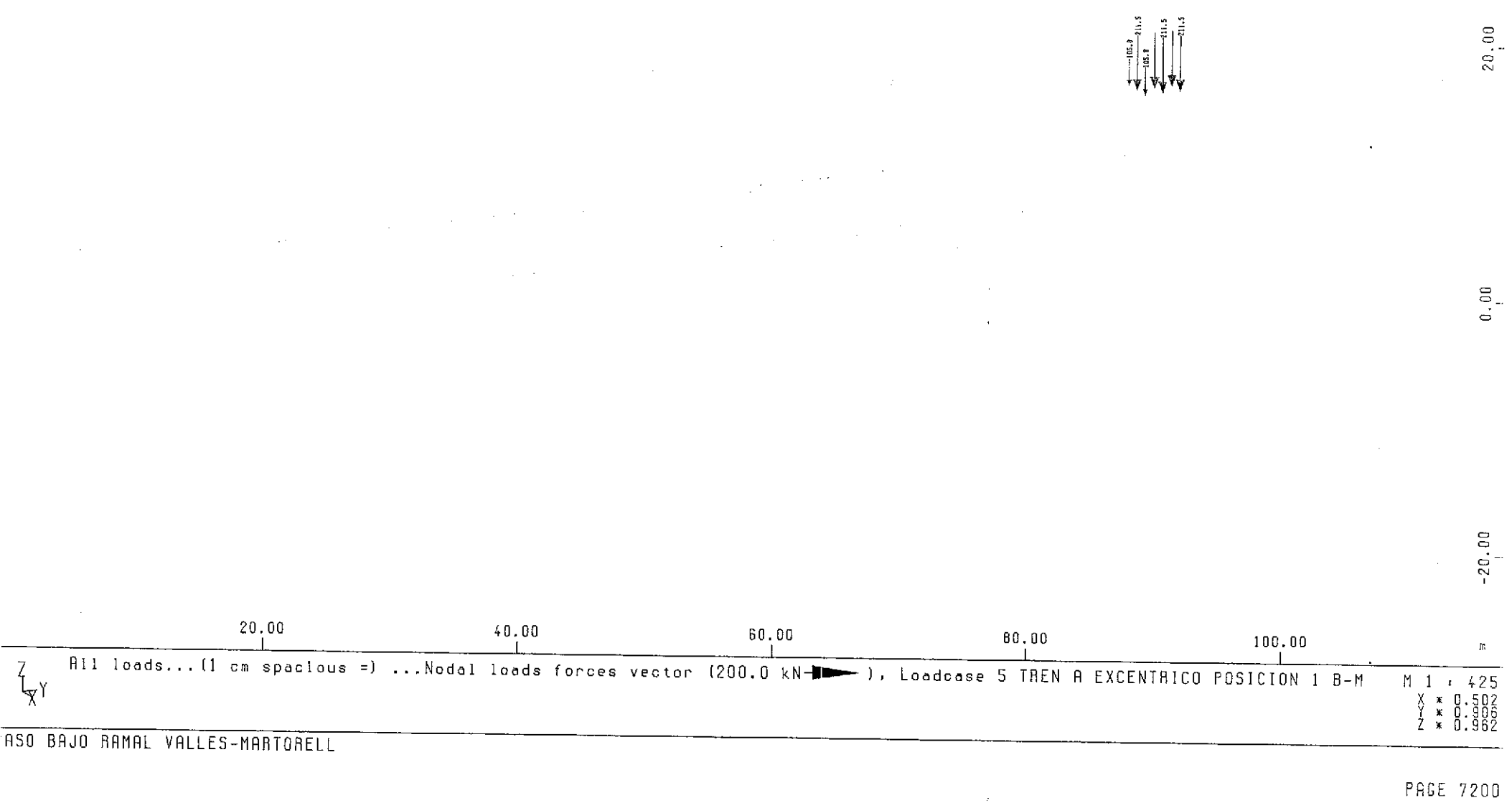

-20.00
20.00
40.00
60.00
80.00
100.00
m
Z
Y
X
All loads...(1 cm spacious =) ...Area load vector (local loads) in Elements (50.0 kN/m2), Loadcase 2 EMPUJE REPOSO
M 1 : 449
X * 0.500
Y * 0.990
Z * 0.962

40.00
20.00
0.00
-20.00
20.00
40.00
60.00
80.00
100.00
m
Z
Y
X
All loads...(1 cm spacious =) ...Area load vector (local loads) in Elements (10.0 kN/m2), Loadcase 3 cargas muertas
M 1 : 425
X * 0.502
Y * 0.990
Z * 0.962



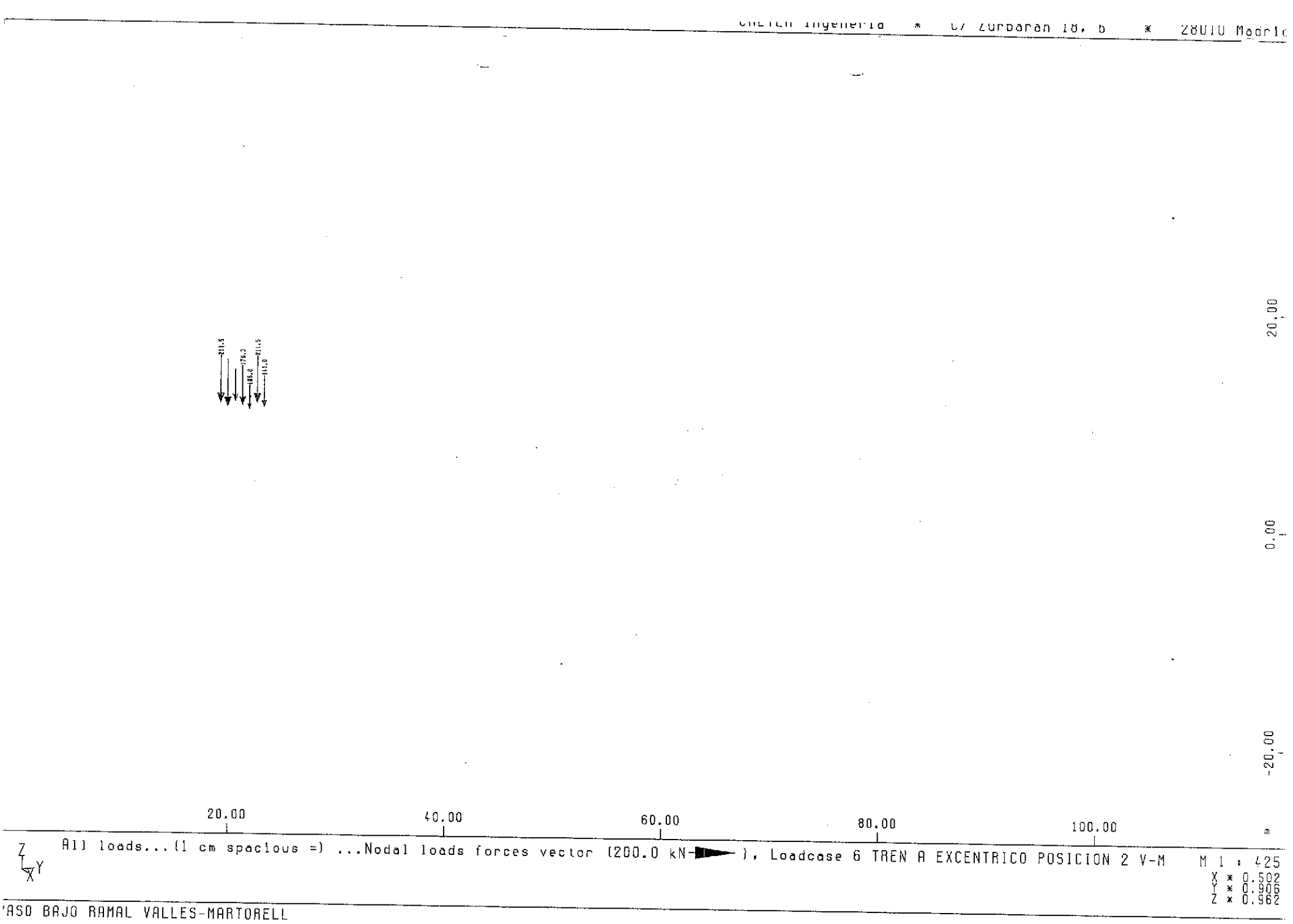
PASO BAJO RAMAL VALLES-MARTORELL

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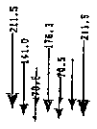


PASO BAJO RAMAL VALLES-MARTORELL

211.5
176.3
185.8
211.5
141.8


20.00
40.00
60.00
80.00
100.00
m
20.00
0.00
-20.00
All loads...(1 cm spacious =) ...Nodal loads forces vector (200.0 kN), Loadcase 6 TREN A EXCENTRICO POSICION 2 V-M
M 1 : 425
X * 0.502
Y * 0.906
Z * 0.962

211.5
211.5
185.8
211.5
185.8
20.00
40.00
60.00
80.00
100.00
m
20.00
0.00
-20.00
All loads...(1 cm spacious =) ...Nodal loads forces vector (200.0 kN), Loadcase 7 TREN A EXCENTRICO POSICION 2 B-M
M 1 : 425
X * 0.502
Y * 0.906
Z * 0.962



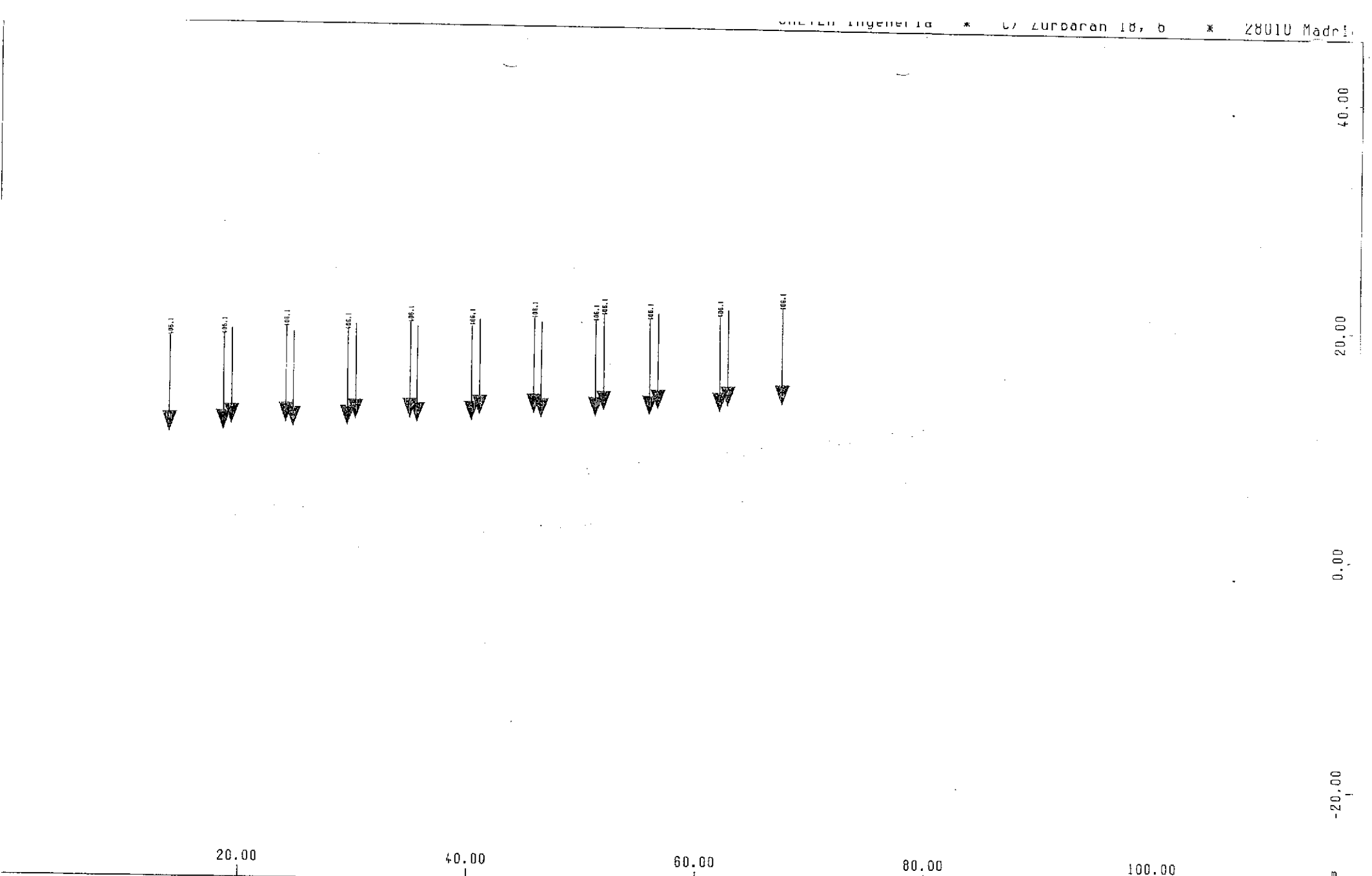
20.00

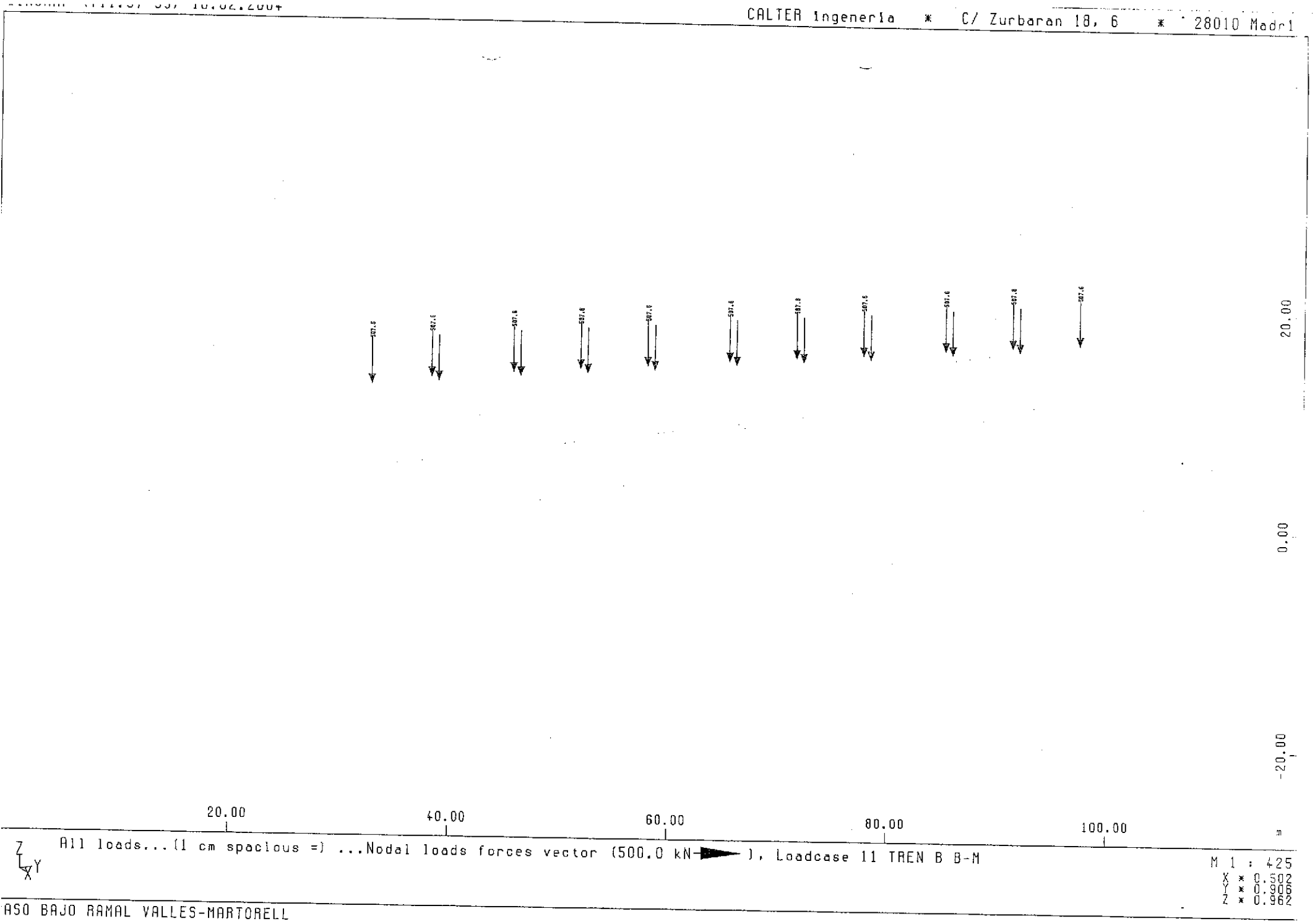
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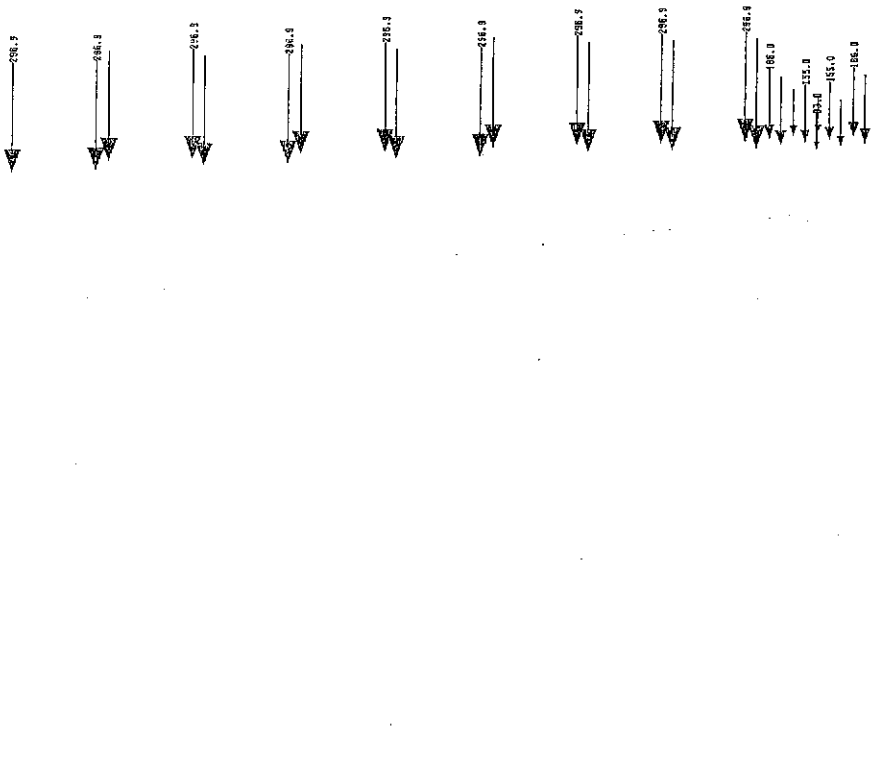
20.00

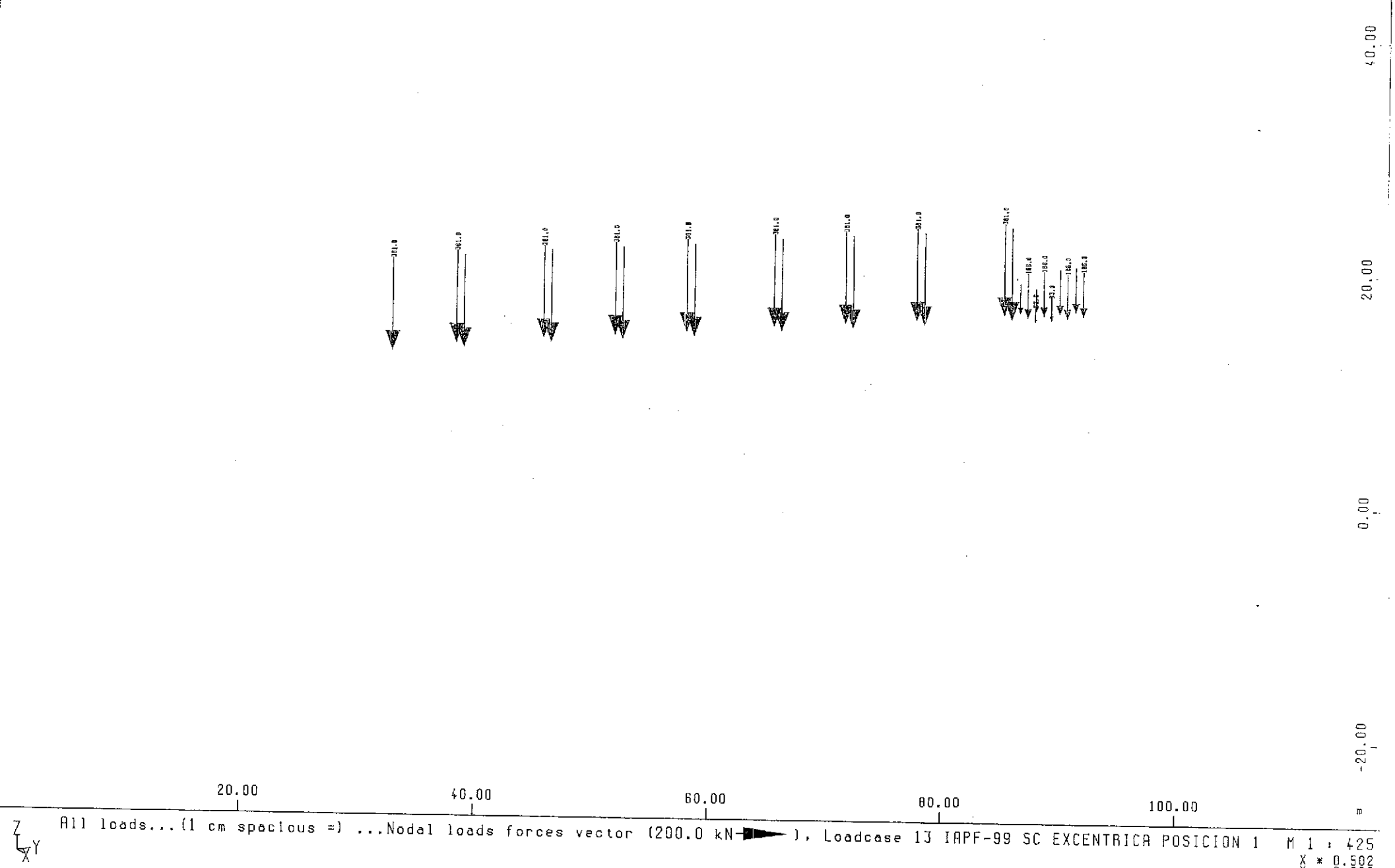
0.00

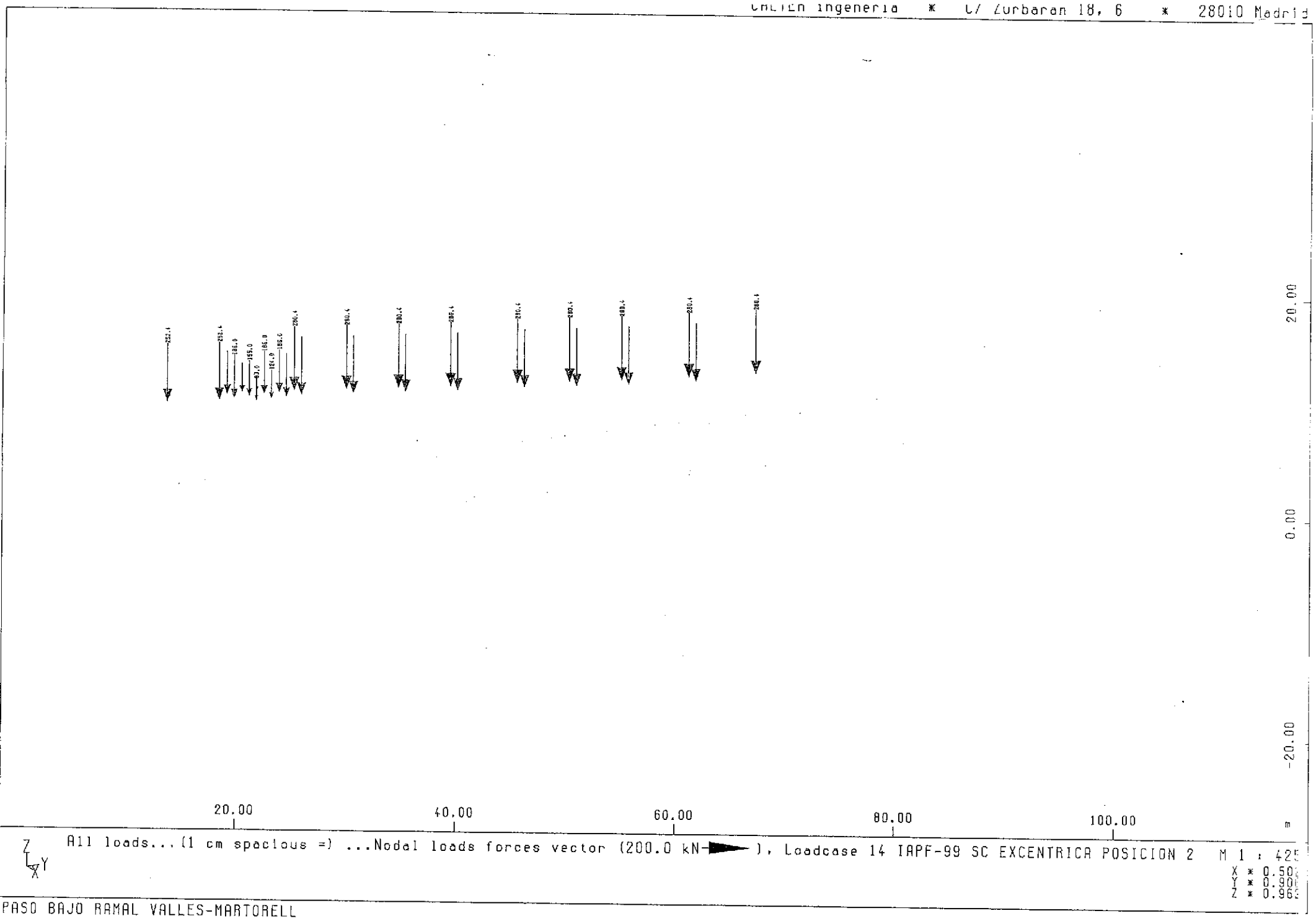
-20.00


40.00
20.00
0.00
-20.00
20.00
40.00
60.00
80.00
100.00
m
All loads...(1 cm spacious =) ...Nodal loads forces vector (200.0 kN), Loadcase 10 TREN B V-M
M 1 : 425
X * 0.502
Y * 0.906
Z * 0.962

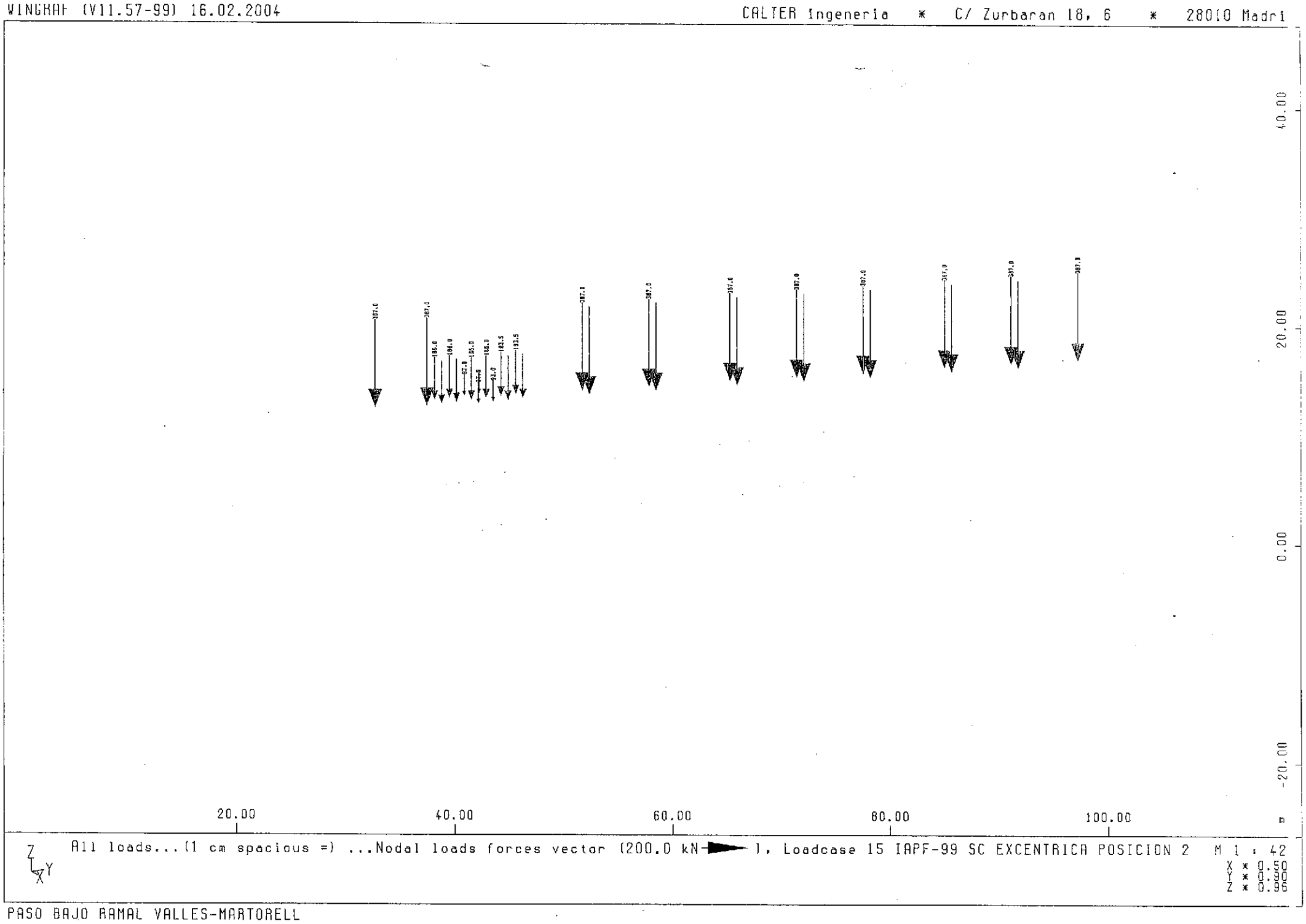

20.00
0.00
-20.00
20.00
40.00
60.00
80.00
100.00
m
All loads...(1 cm spacious =) ...Nodal loads forces vector (500.0 kN), Loadcase 11 TREN B B-M
M 1 : 425
X * 0.502
Y * 0.906
Z * 0.962


20.00
0.00
-20.00
20.00
40.00
60.00
80.00
100.00
m
All loads...(1 cm spacious =) ...Nodal loads forces vector (200.0 kN), Loadcase 12 IAPF-99 SC EXCENTRICA POSICION 1
M 1 : 425
X * 0.502
Y * 0.906
Z * 0.362

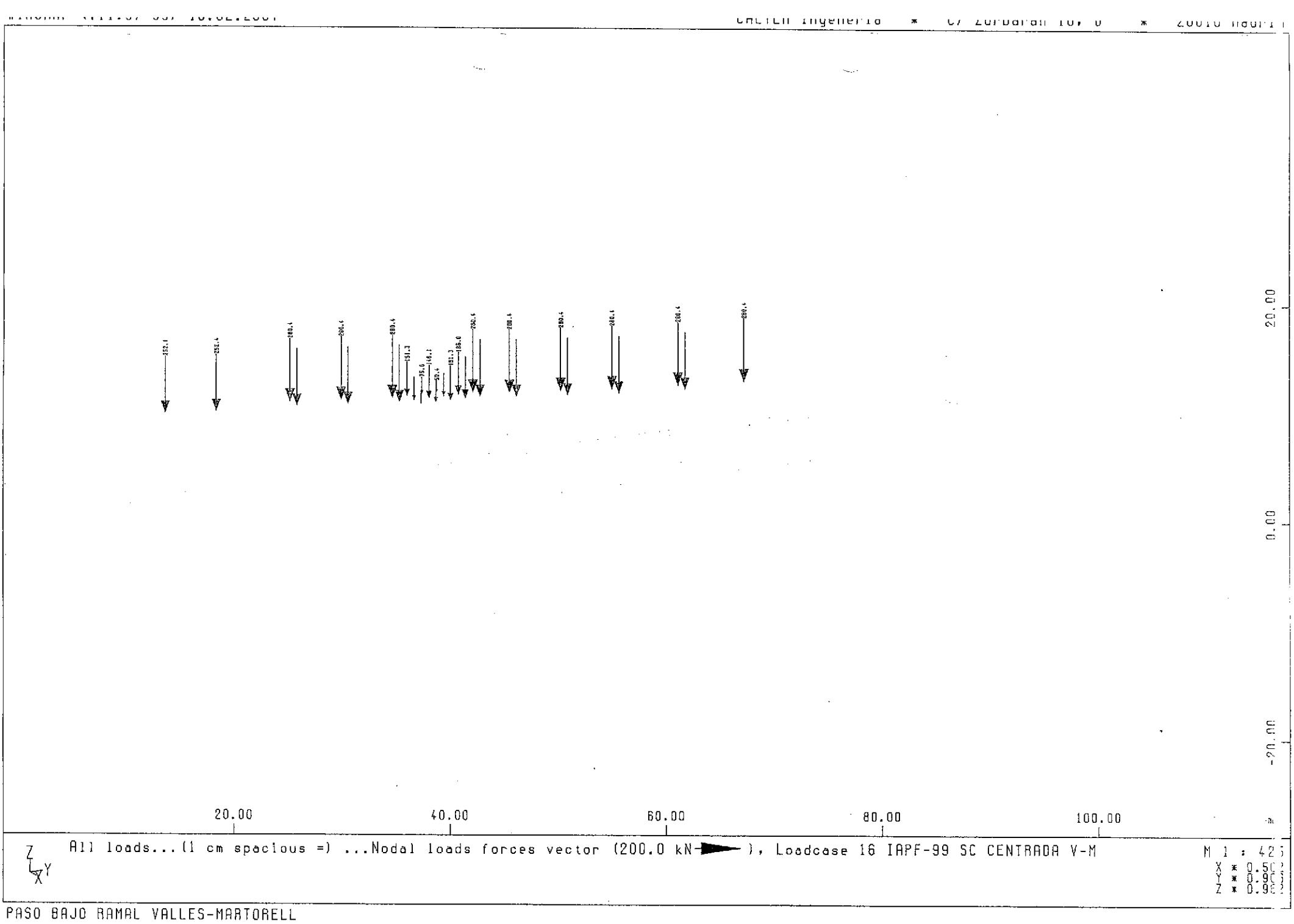

40.00
20.00
0.00
-20.00
20.00
40.00
60.00
80.00
100.00
m
All loads...(1 cm spacious =) ...Nodal loads forces vector (200.0 kN), Loadcase 13 IAPF-99 SC EXCENTRICA POSICION 1
M 1 : 425
X * 0.502
Y * 0.906
Z * 0.362



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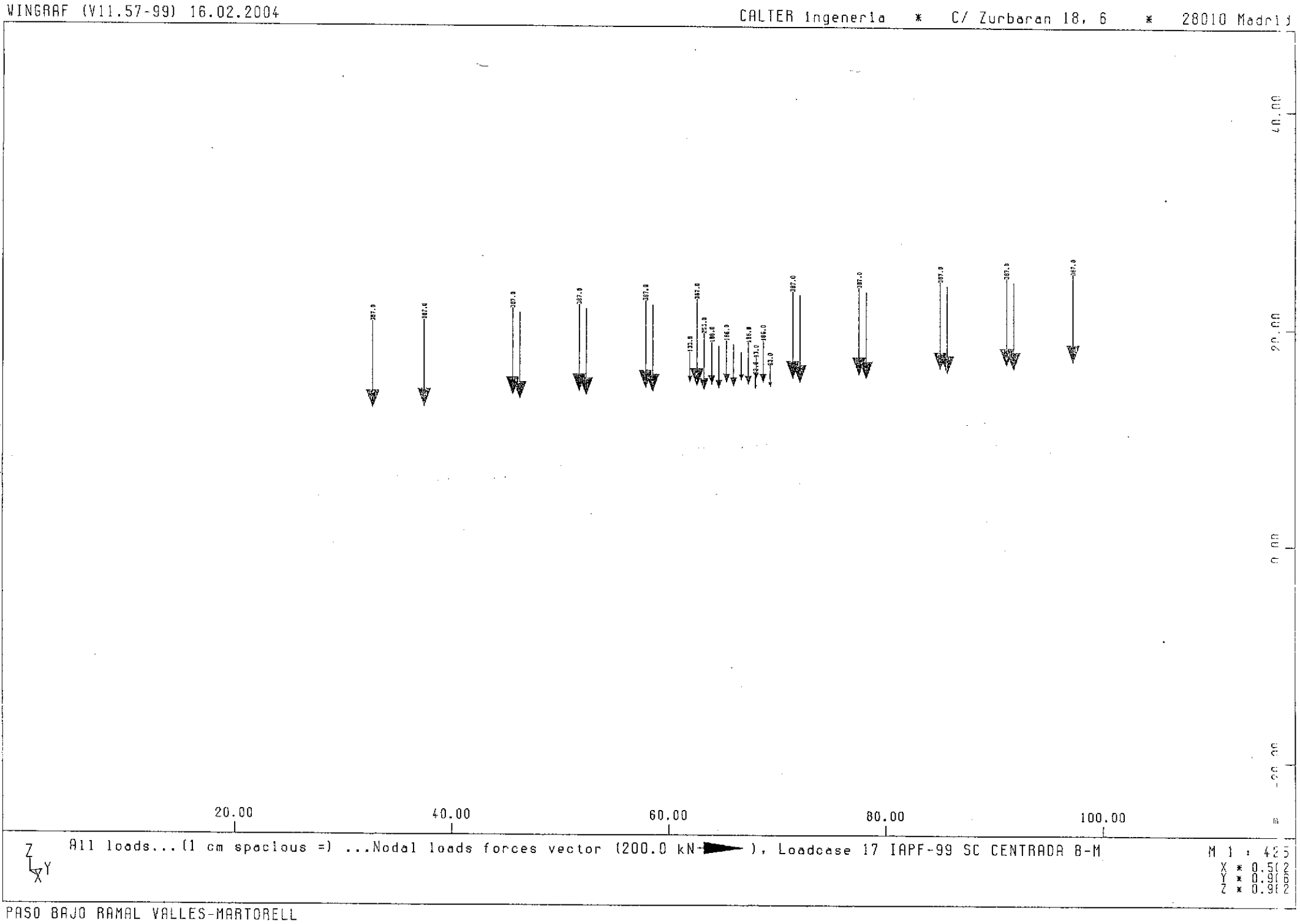
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PASO BAJO RAMAL VALLES-MARTORELL

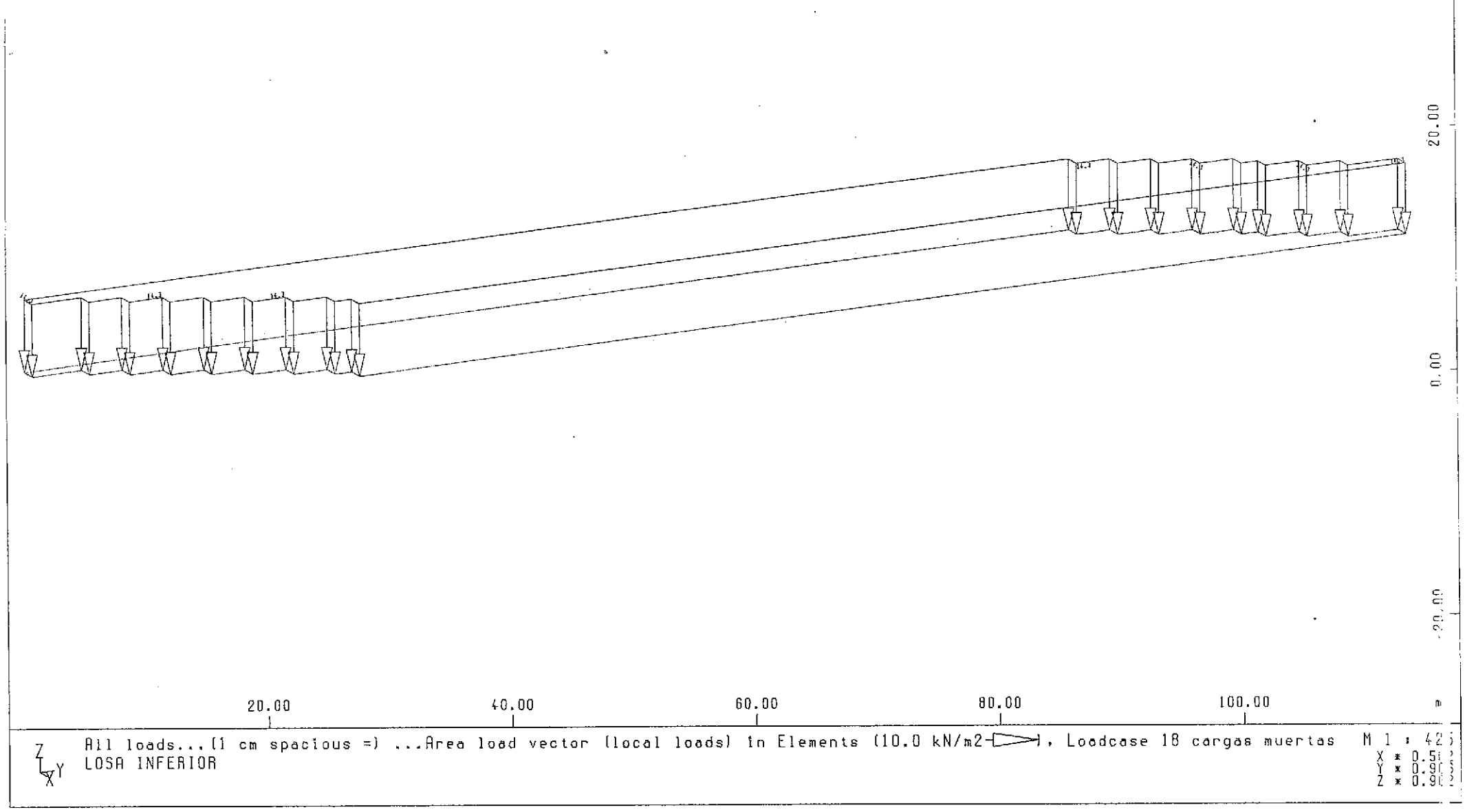
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VINGRAF (V11.57-99) 16.02.2004 CALTER Ingeneria * C/ Zurbaran 18, 6 * 28010 Madrid

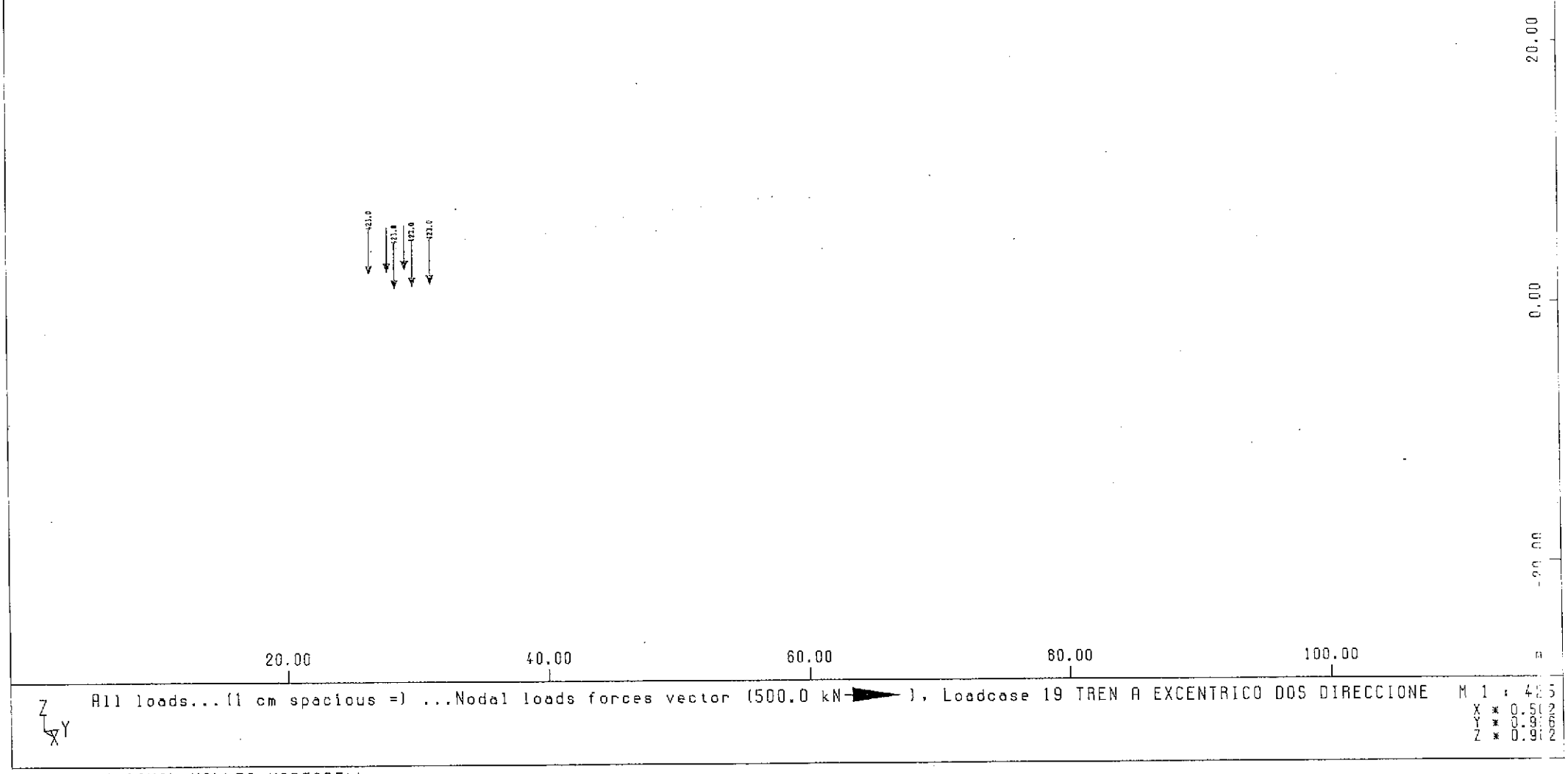


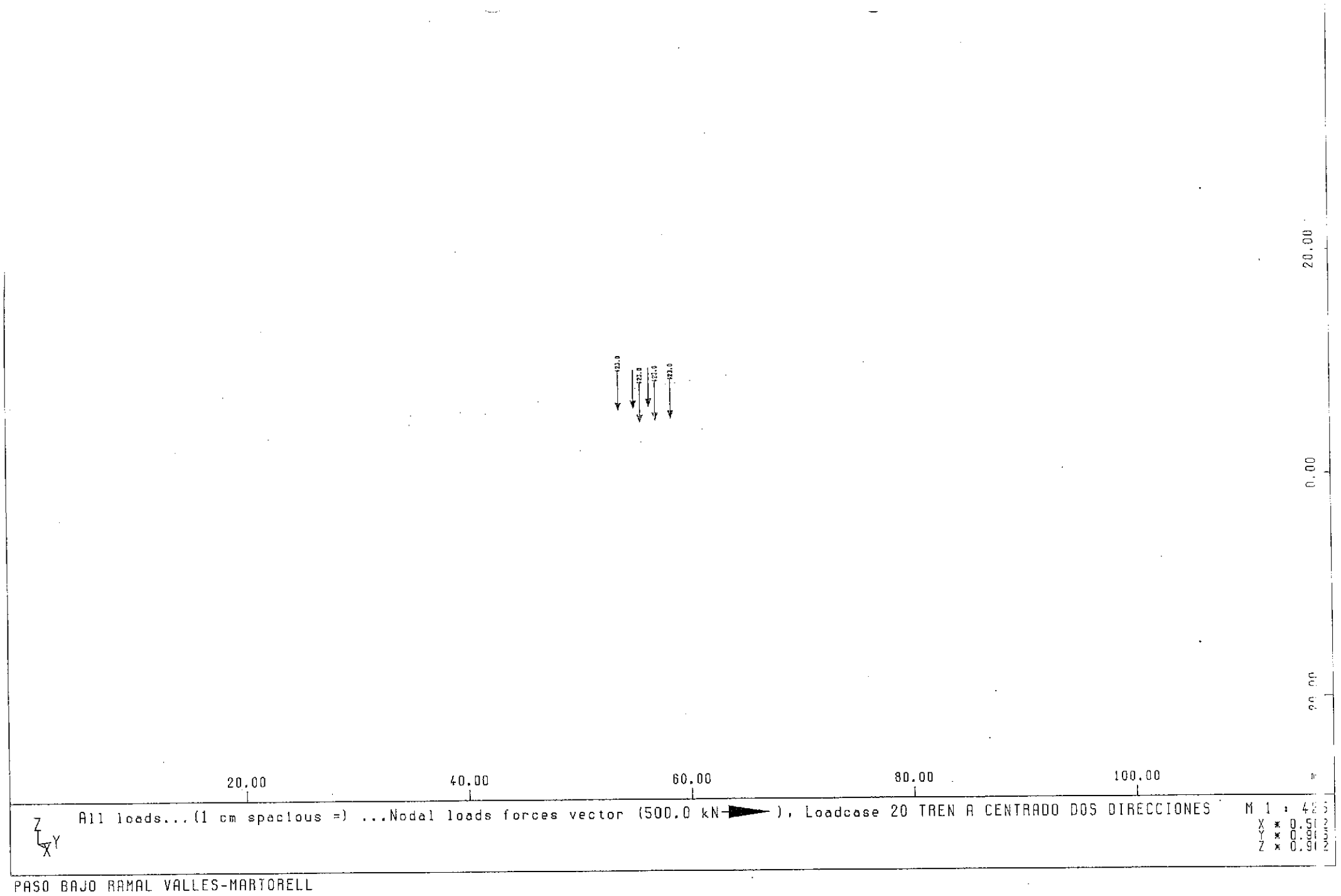
PASO BAJO RAMAL VALLES-MARTORELL

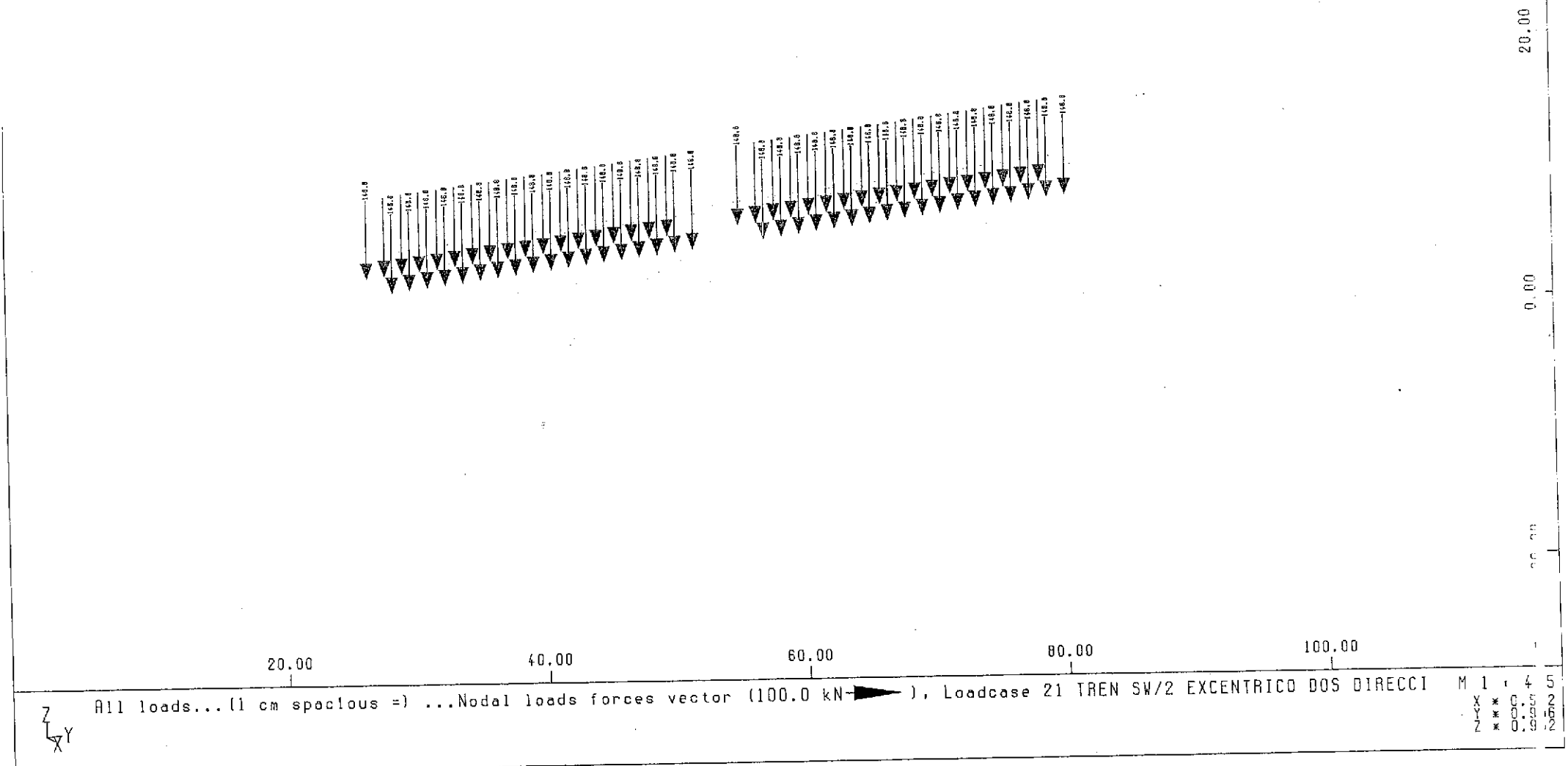
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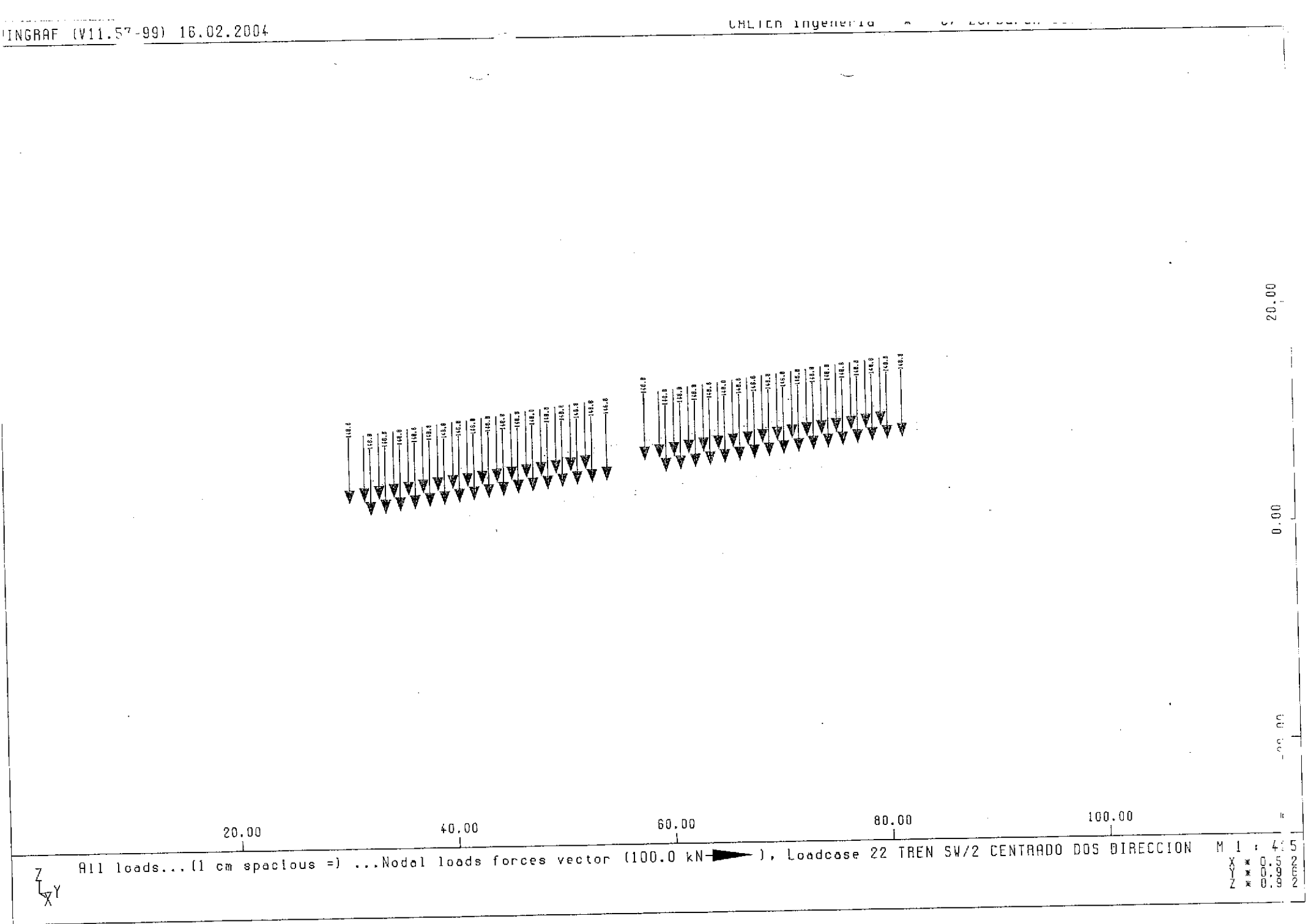


WINGRAF (V11.57-99) 16.02.2004 CALTER Ingeneria * C/ Zurbaran 18, 6 * 28010 Madrid

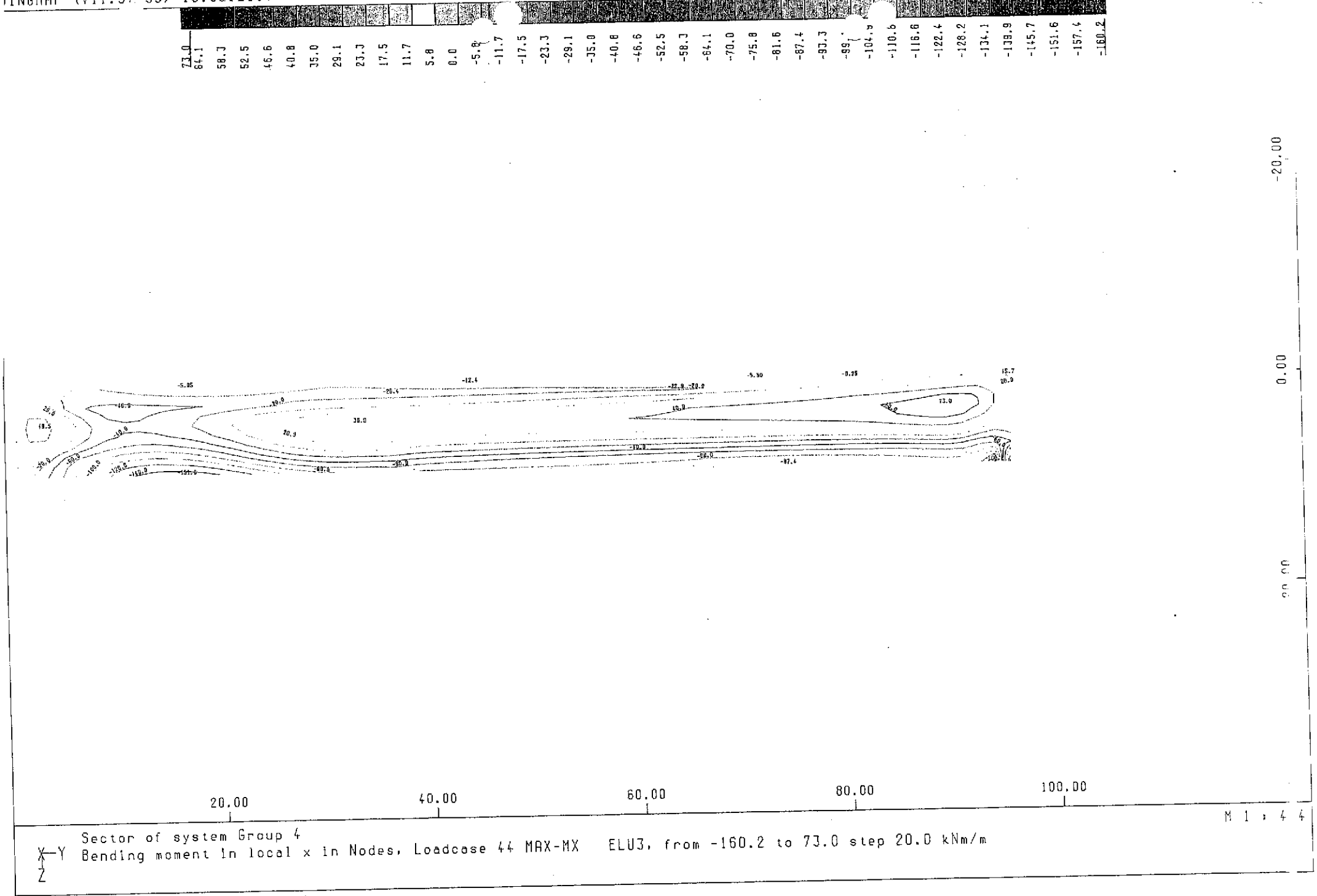


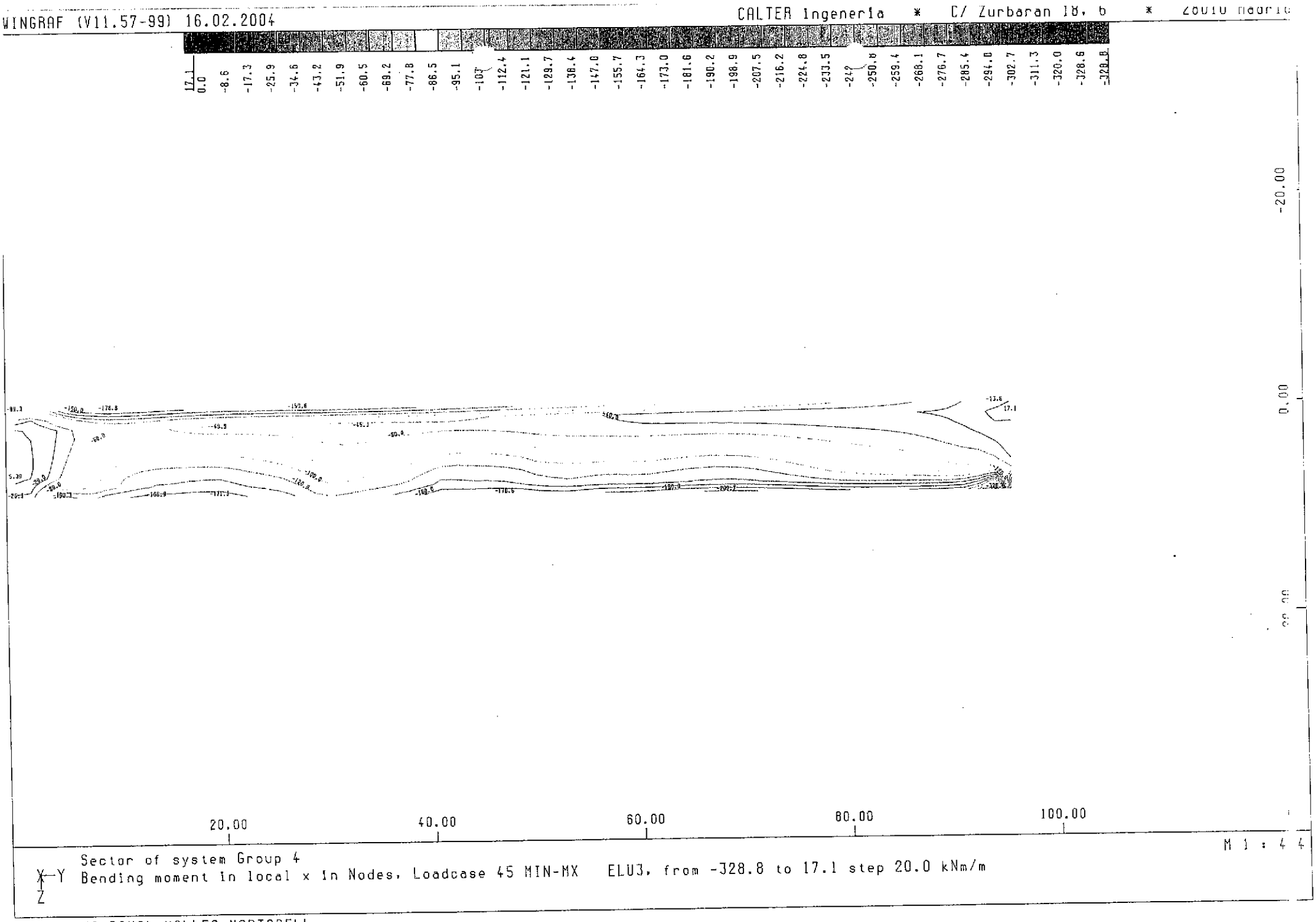

20.00
0.00
20.00
40.00
60.00
80.00
100.00
All loads...(1 cm spacious =) ...Nodal loads forces vector (500.0 kN), Loadcase 20 TREN A CENTRADO DOS DIRECCIONES
M 1 : 42
X * 0.50
Y * 0.86
Z * 0.90

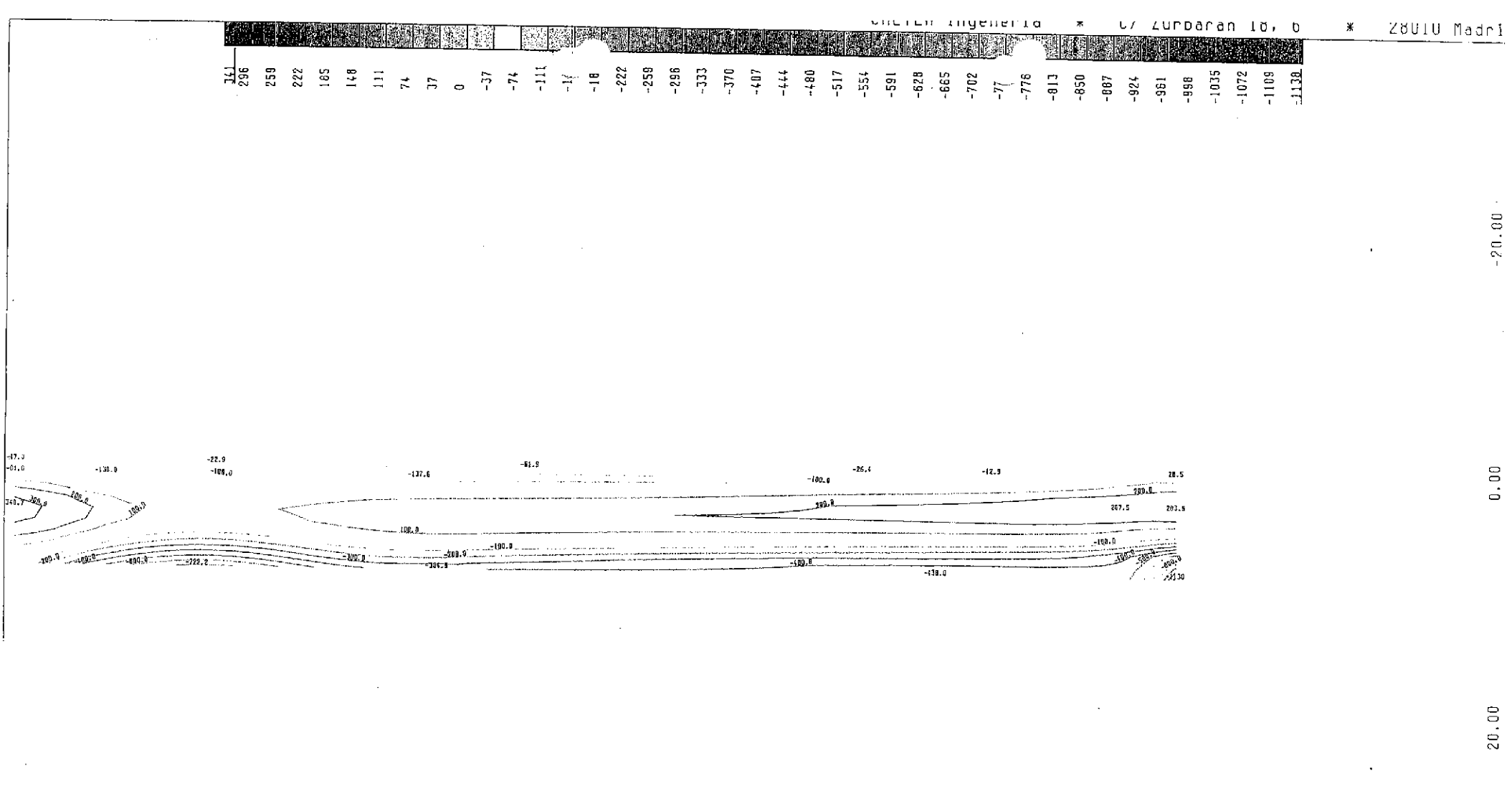

0.00
20.00
40.00
60.00
80.00
100.00
All loads...(1 cm spacious =) ...Nodal loads forces vector (100.0 kN), Loadcase 21 TREN SW/2 EXCENTRICO DOS DIRECCI
M 1 : 45
X * 0.95
Y * 0.95
Z * 0.95


20.00
40.00
60.00
80.00
100.00
m
All loads...(1 cm spacious =) ...Nodal loads forces vector (100.0 kN), Loadcase 22 TREN SW/2 CENTRADO DOS DIRECCION
M 1 : 4
X * 0.5
Y * 0.9
Z * 0.9

20.00
40.00
60.00
80.00
100.00
m
All loads...(1 cm spacious =) ...Area load vector (local loads) in Elements (100.0 kN/m2), Loadcase 23 peso de tierras
M 1 : 42
X * 0.5
Y * 0.9
Z * 0.9

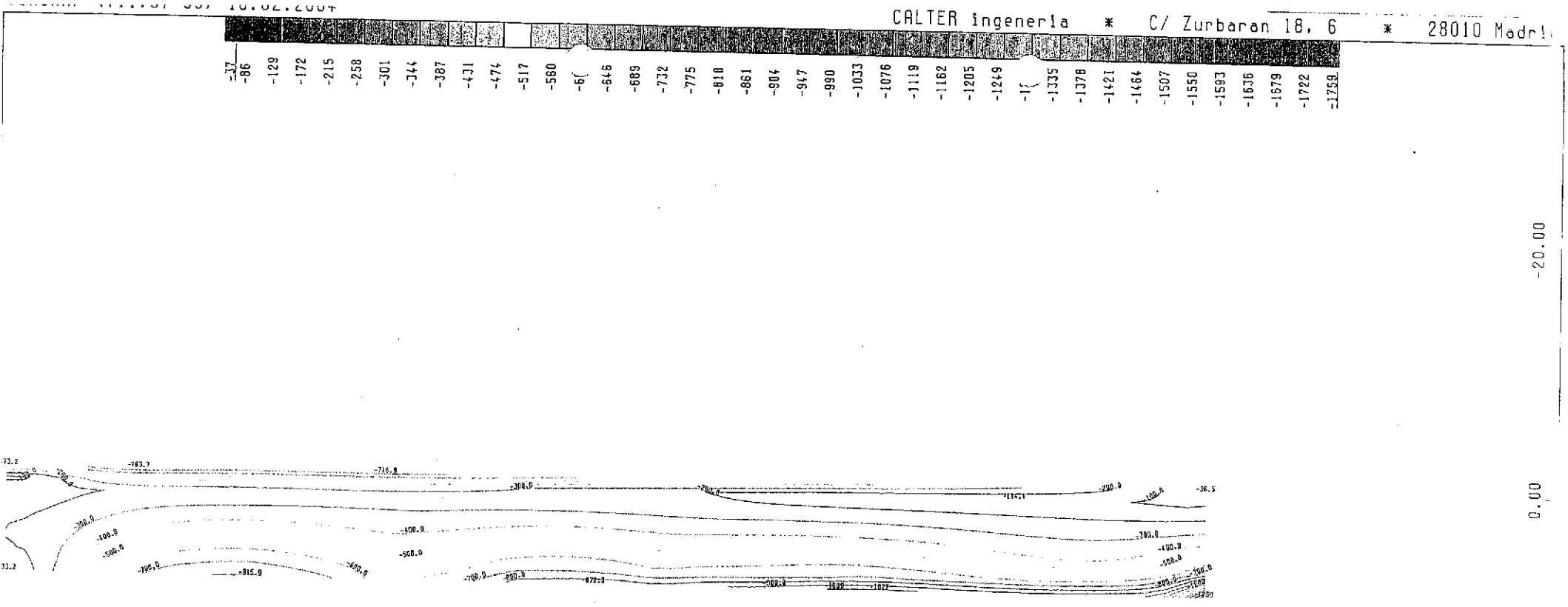

73.0
64.1
58.3
52.5
46.6
40.8
35.0
29.1
23.3
17.5
11.7
5.8
0.0
-5.8
-11.7
-17.5
-23.3
-29.1
-35.0
-40.8
-46.6
-52.5
-58.3
-64.1
-70.0
-75.8
-81.6
-87.4
-93.3
-99
-104.9
-110.6
-116.6
-122.4
-128.2
-134.1
-139.9
-145.7
-151.6
-157.4
-160.2
-20.00
0.00
20.00
20.00
40.00
60.00
80.00
100.00
M 1 : 4 4
Sector of system Group 4
Bending moment in local x in Nodes, Loadcase 44 MAX-MX ELU3, from -160.2 to 73.0 step 20.0 kNm/m
X
Y
Z


17.1
0.0
-8.6
-17.3
-25.9
-34.6
-43.2
-51.9
-60.5
-69.2
-77.8
-86.5
-95.1
-103
-112.4
-121.1
-129.7
-138.4
-147.0
-155.7
-164.3
-173.0
-181.6
-190.2
-198.9
-207.5
-216.2
-224.8
-233.5
-242
-250.6
-259.4
-268.1
-276.7
-285.4
-294.0
-302.7
-311.3
-320.0
-328.6
-328.8
-20.00
0.00
20.00
20.00
40.00
60.00
80.00
100.00
M 1 : 4 4
Sector of system Group 4
Bending moment in local x in Nodes, Loadcase 45 MIN-MX ELU3, from -328.8 to 17.1 step 20.0 kNm/m
X
Y
Z



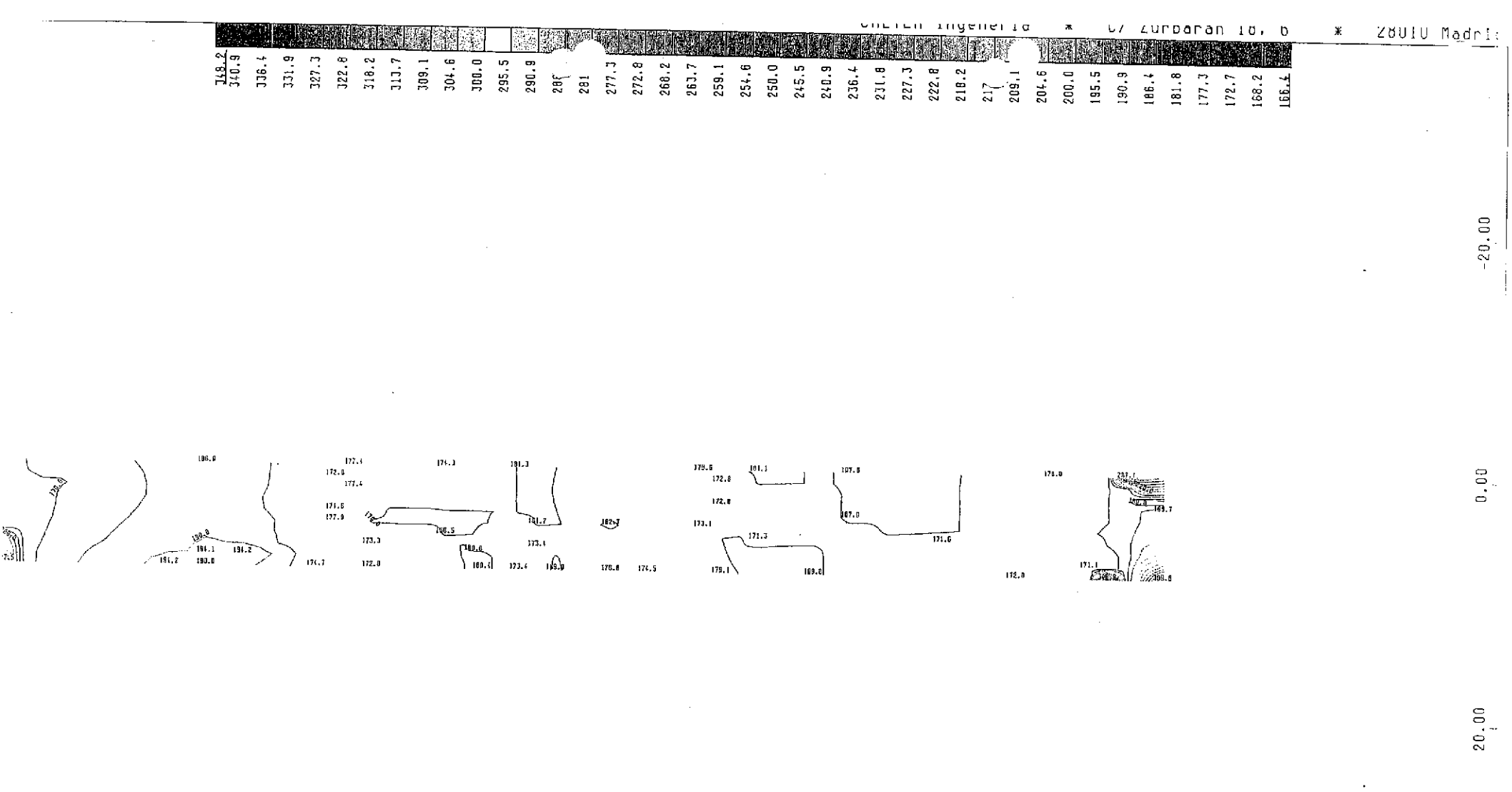
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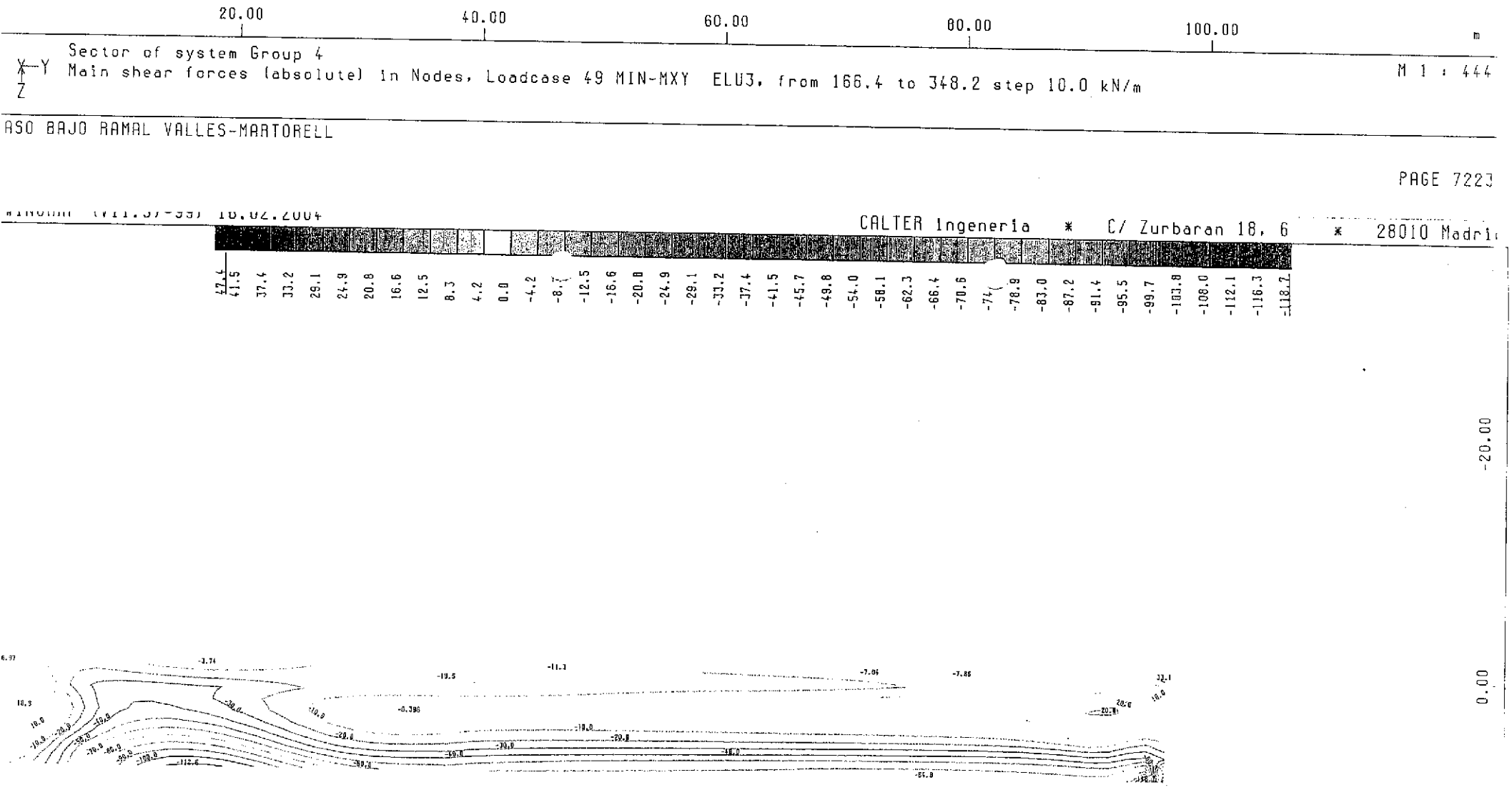
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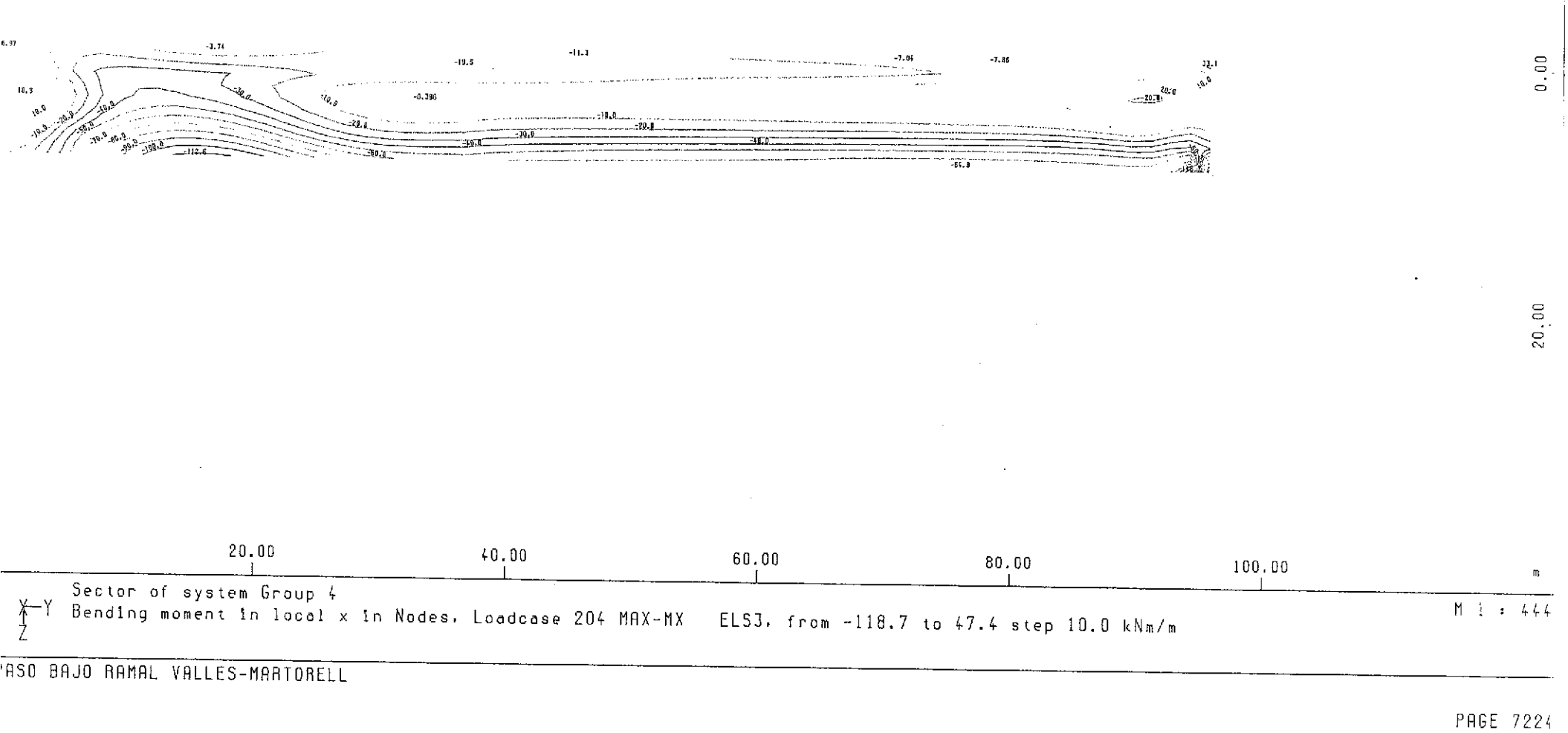


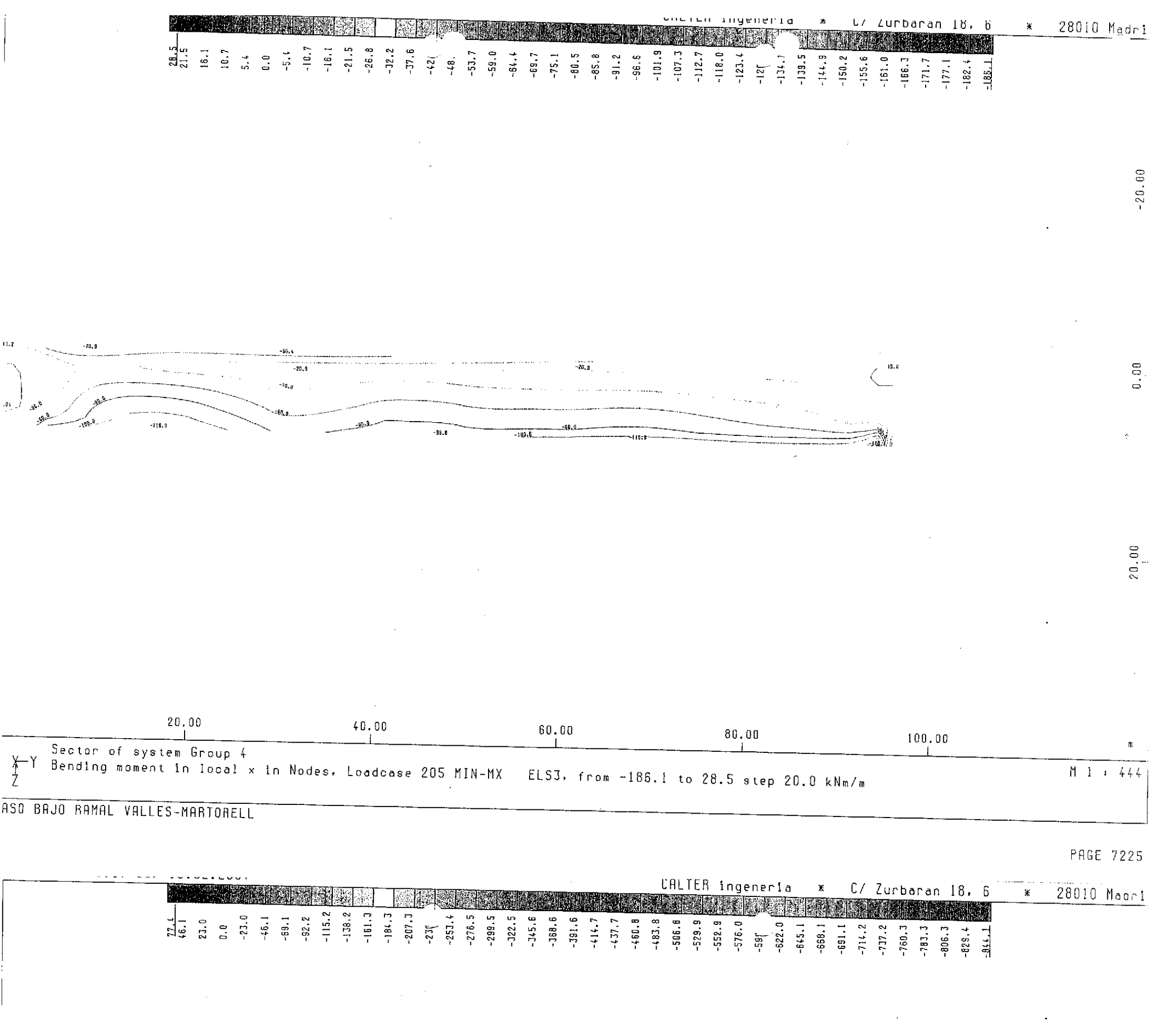
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CALTER Ingeneria * C/ Zurbaran 18, 6 * 28010 Madri
348.2
340.9
336.4
331.9
327.3
322.8
318.2
313.7
309.1
304.6
300.0
295.5
290.9
286
281
277.3
272.8
268.2
263.7
259.1
254.6
250.0
245.5
240.9
236.4
231.8
227.3
222.8
218.2
217
209.1
204.6
200.0
195.5
190.9
186.4
181.8
177.3
172.7
168.2
166.4
-20.00
0.00
20.00


20.00
40.00
60.00
80.00
100.00
m
Sector of system Group 4
Main shear forces (absolute) in Nodes, Loadcase 49 MIN-MXY ELU3, from 166.4 to 348.2 step 10.0 kN/m
M 1 : 444
ASO BAJO RAMAL VALLES-MARTORELL
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CALTER Ingeneria * C/ Zurbaran 18, 6 * 28010 Madri
47.4
41.5
37.4
33.2
29.1
24.9
20.8
16.6
12.5
8.3
4.2
0.0
-4.2
-8.3
-12.5
-16.6
-20.8
-24.9
-29.1
-33.2
-37.4
-41.5
-45.7
-49.8
-54.0
-58.1
-62.3
-66.4
-70.6
-74
-78.9
-83.0
-87.2
-91.4
-95.5
-99.7
-103.8
-108.0
-112.1
-116.3
-118.2
-20.00
0.00
20.00


20.00
40.00
60.00
80.00
100.00
m
Sector of system Group 4
Bending moment in local x in Nodes, Loadcase 204 MAX-MX ELS3, from -118.7 to 47.4 step 10.0 kNm/m
M 1 : 444
'ASO BAJO RAMAL VALLES-MARTORELL
PAGE 7224
0.00
20.00

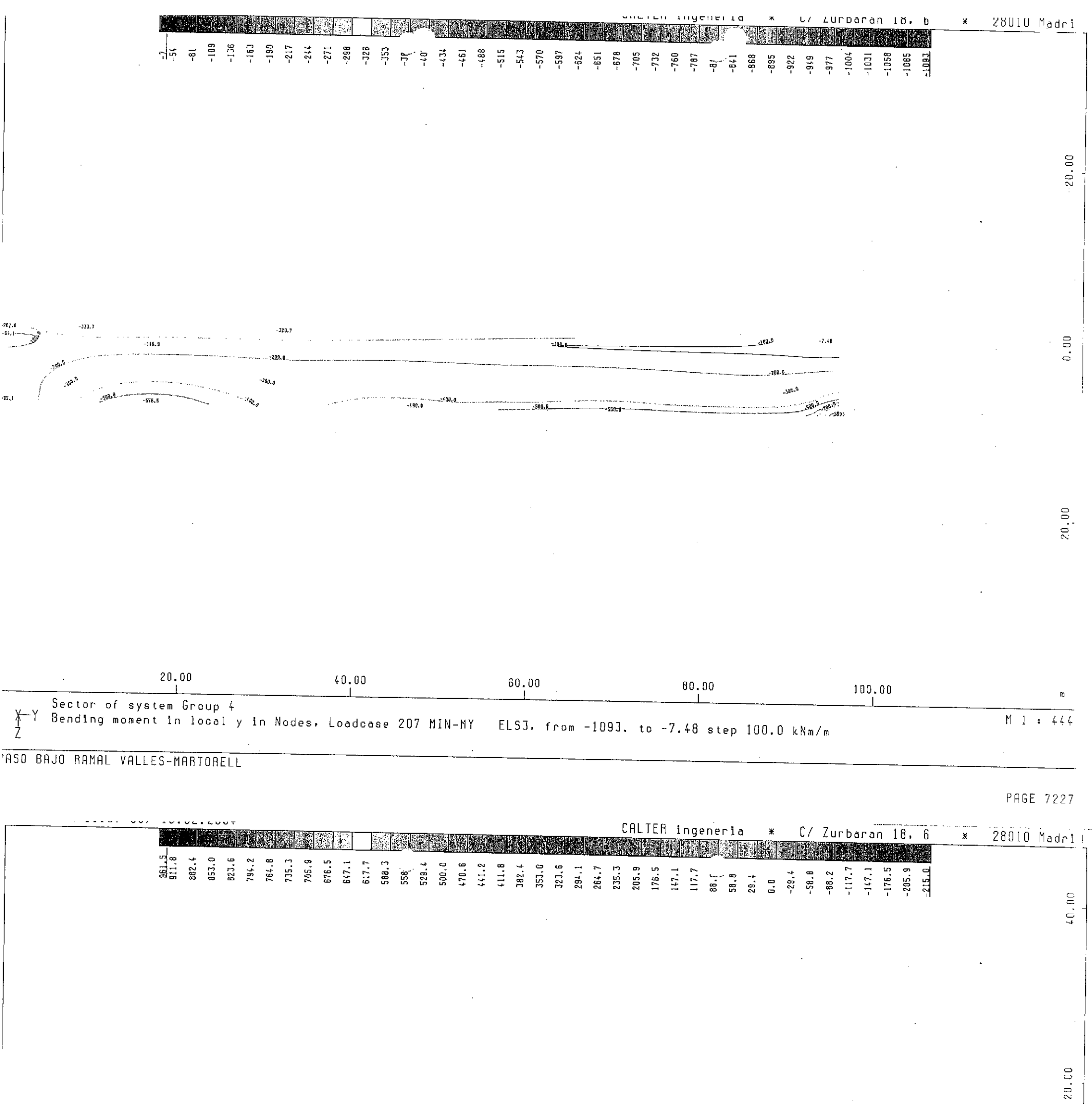


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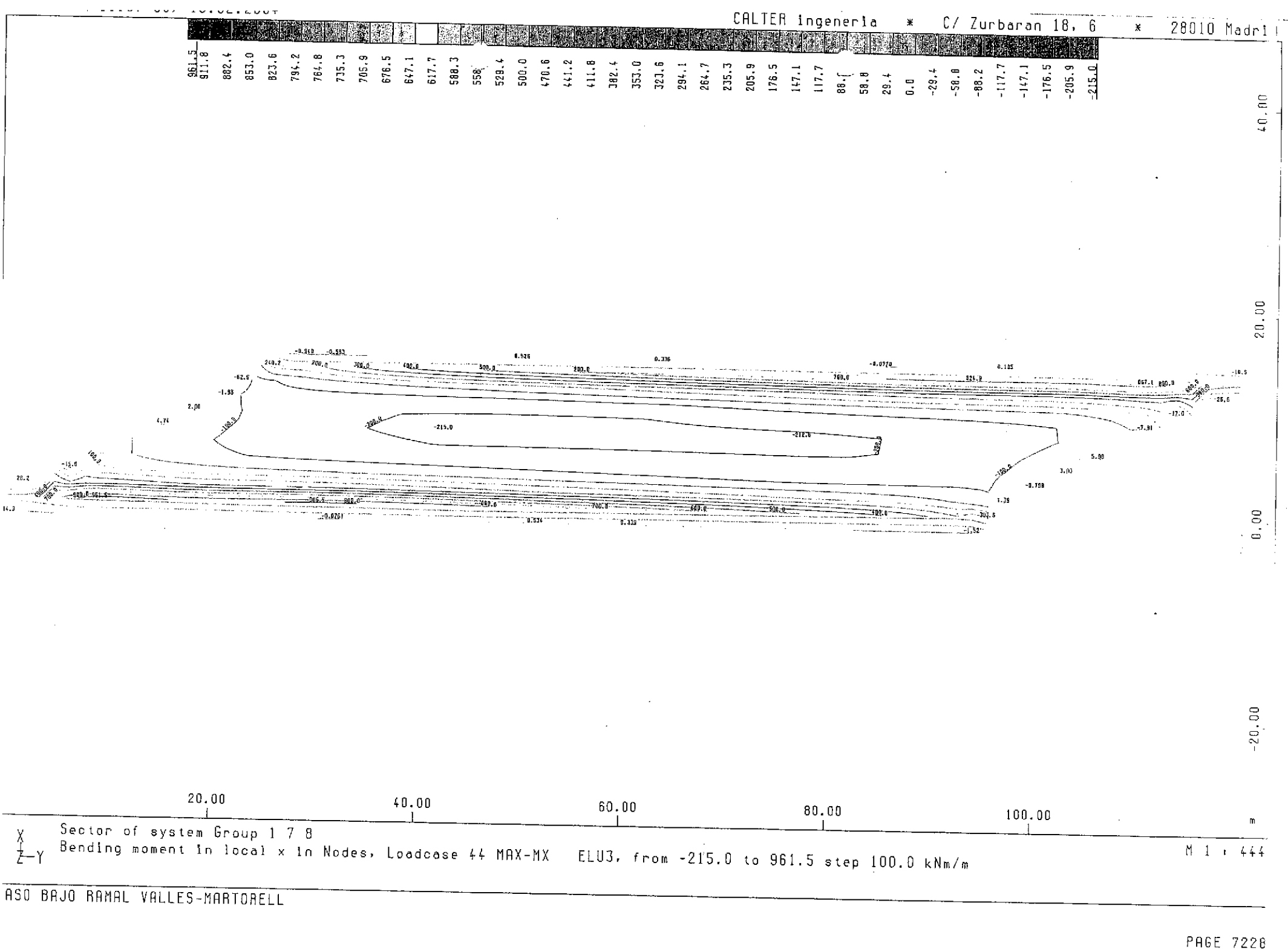
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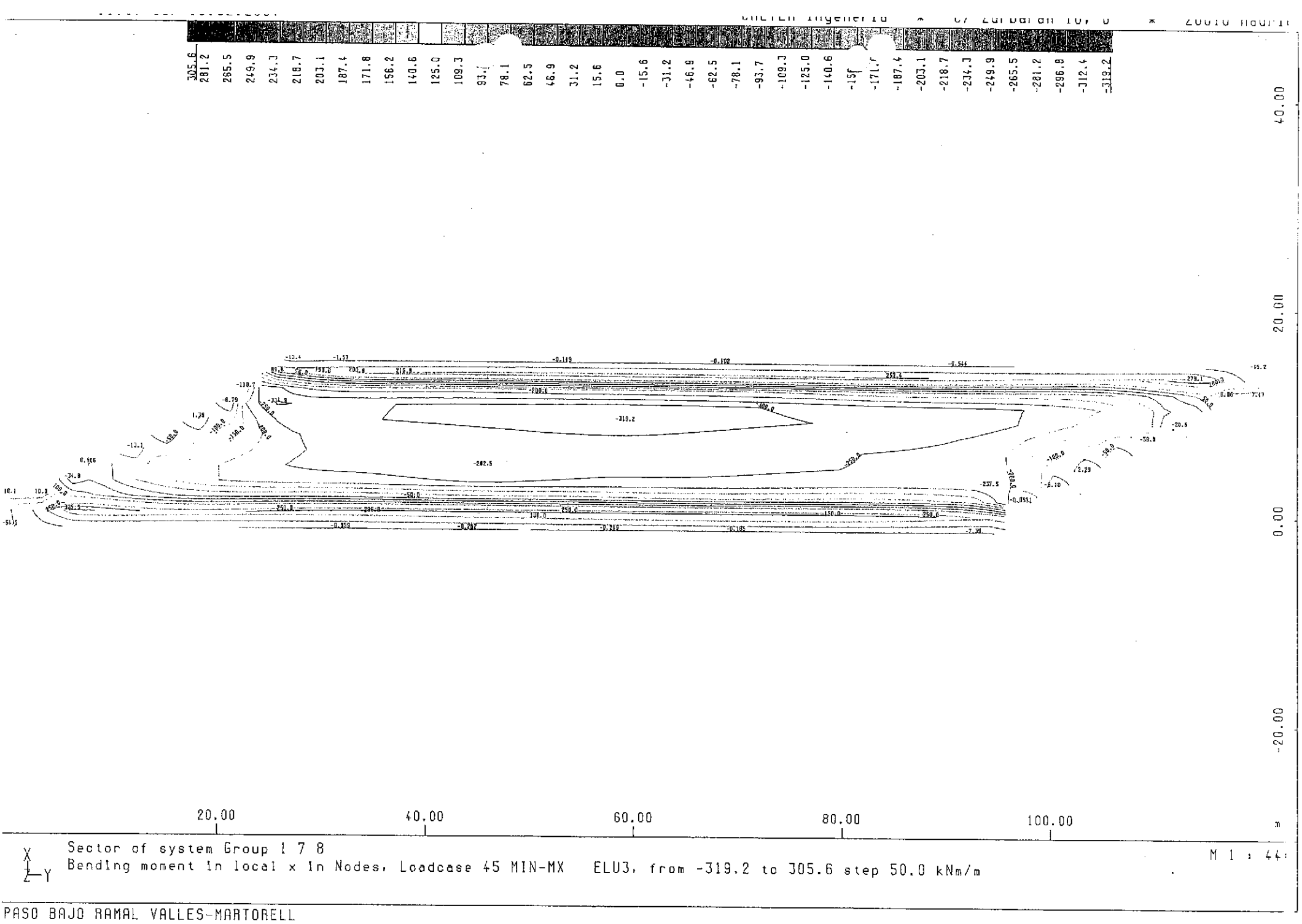
'ASO BAJO RAMAL VALLES-MARTORELL

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ASO BAJO RAMAL VALLES-MARTORELL

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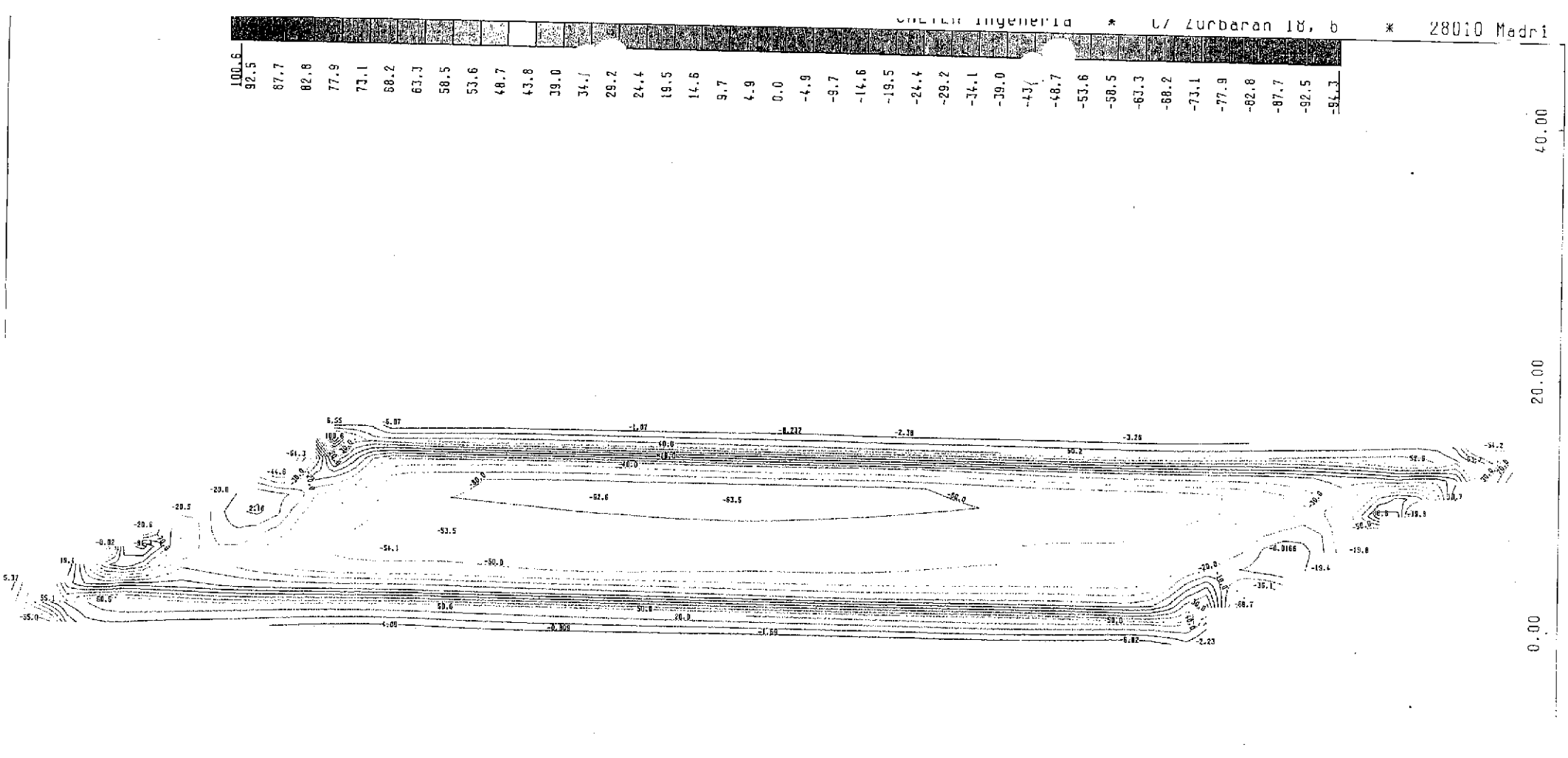


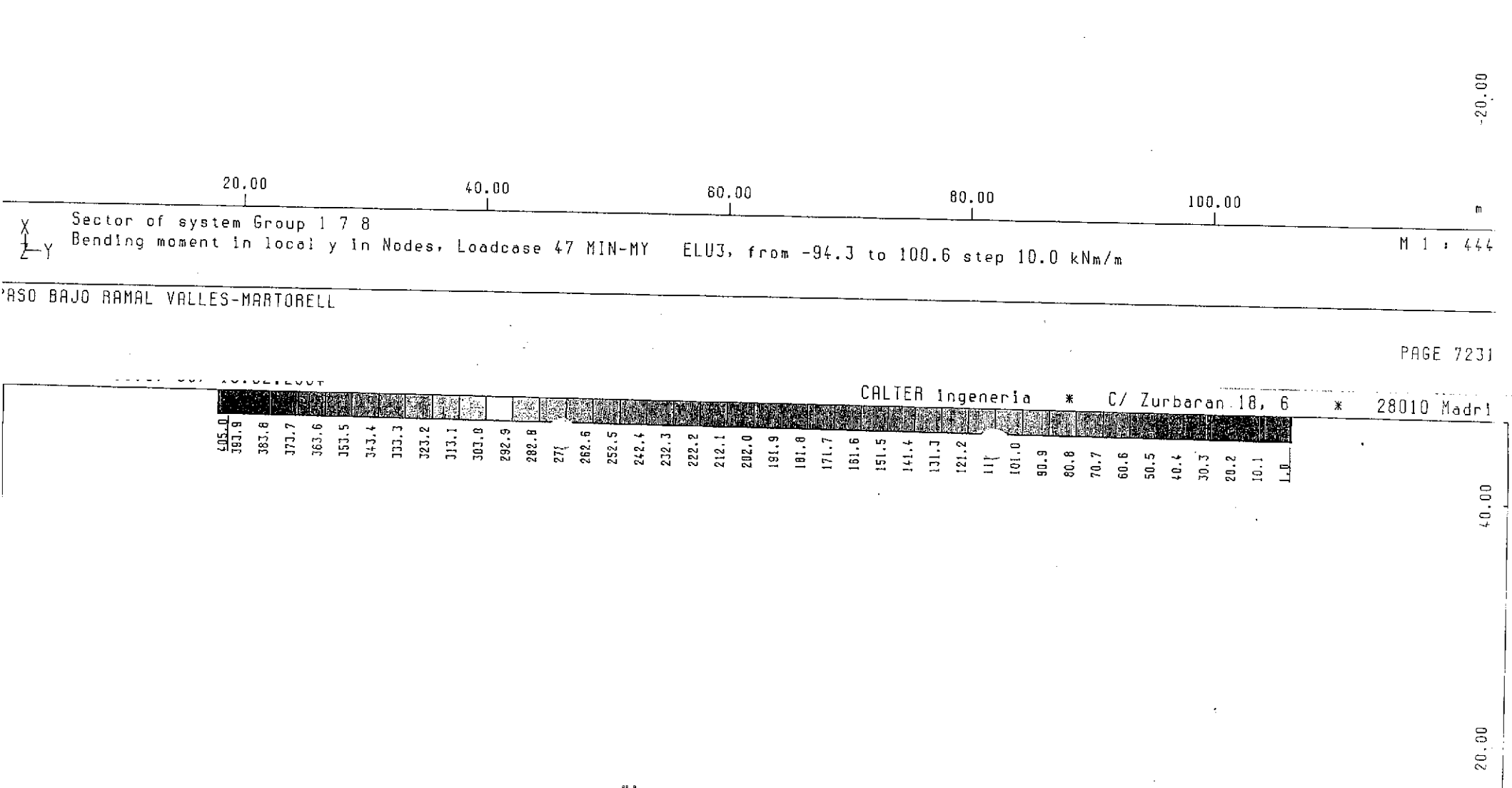
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PASO BAJO RAMAL VALLES-MARTORELL

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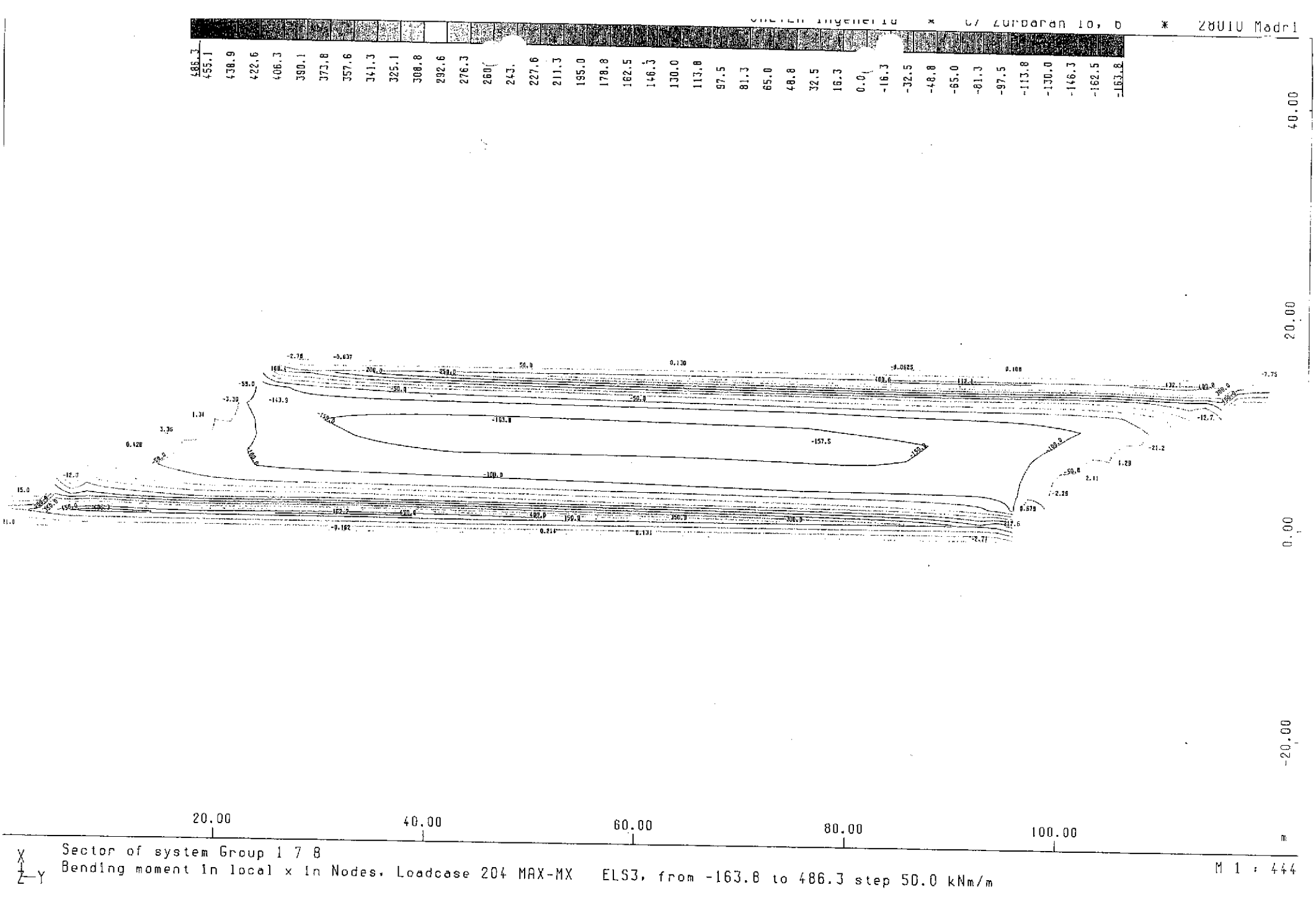


'ASO BAJO RAMAL VALLES-MARTORELL

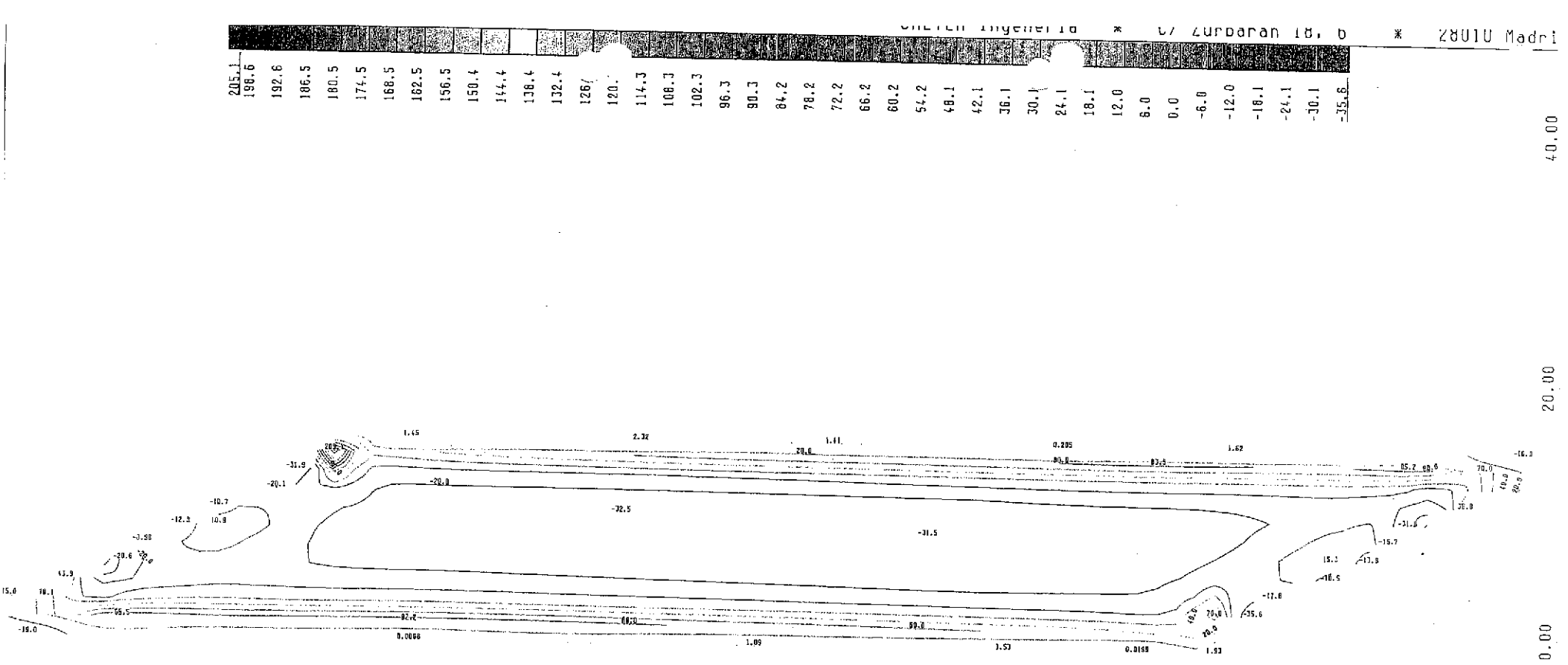
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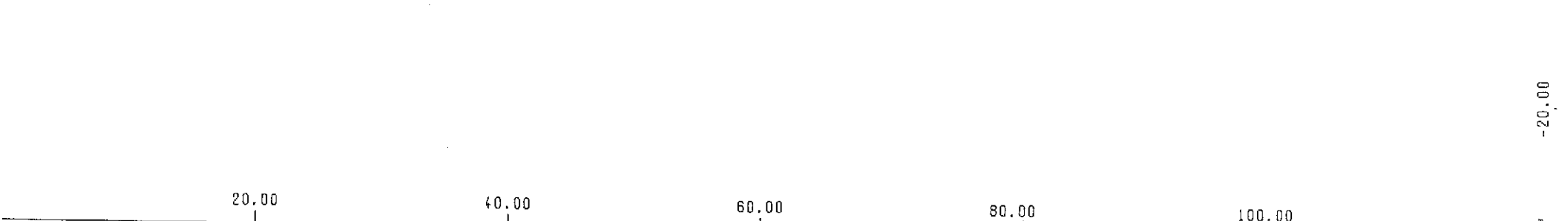
ASO BAJO RAMAL VALLES-MARTORELL

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CALIER Ingeneria * C/ Zurbaran 18, 6 * 28010 Madri
486.3
455.1
438.9
422.6
406.3
390.1
373.8
357.6
341.3
325.1
308.8
292.6
276.3
260.
243.
227.6
211.3
195.0
178.8
162.5
146.3
130.0
113.8
97.5
81.3
65.0
48.8
32.5
16.3
0.0
-16.3
-32.5
-48.8
-65.0
-81.3
-97.5
-113.8
-130.0
-146.3
-162.5
-163.8
40.00
20.00
0.00
-20.00
20.00
40.00
60.00
80.00
100.00
m
Sector of system Group 1 7 8
Bending moment in local x in Nodes, Loadcase 204 MAX-MX ELS3, from -163.8 to 486.3 step 50.0 kNm/m
M 1 : 444

CALIER Ingeneria * C/ Zurbaran 18, 6 * 28010 Madri
229.4
208.5
197.5
186.5
175.5
164.6
153.6
142.6
131.7
120.7
109.7
98.7
87.8
76.
65.8
54.9
43.9
32.9
21.9
11.0
0.0
-11.0
-21.9
-32.9
-43.9
-54.9
-65.8
-76.8
-87.8
-98.
-109.7
-120.7
-131.7
-142.6
-153.6
-164.6
-175.5
-186.5
-197.5
-208.5
-209.4
40.00
20.00
0.00
-20.00
20.00
40.00
60.00
80.00
100.00
m
Sector of system Group 1 7 8
Bending moment in local x in Nodes, Loadcase 205 MIN-MX ELS3, from -209.4 to 229.4 step 50.0 kNm/m
M 1 : 444



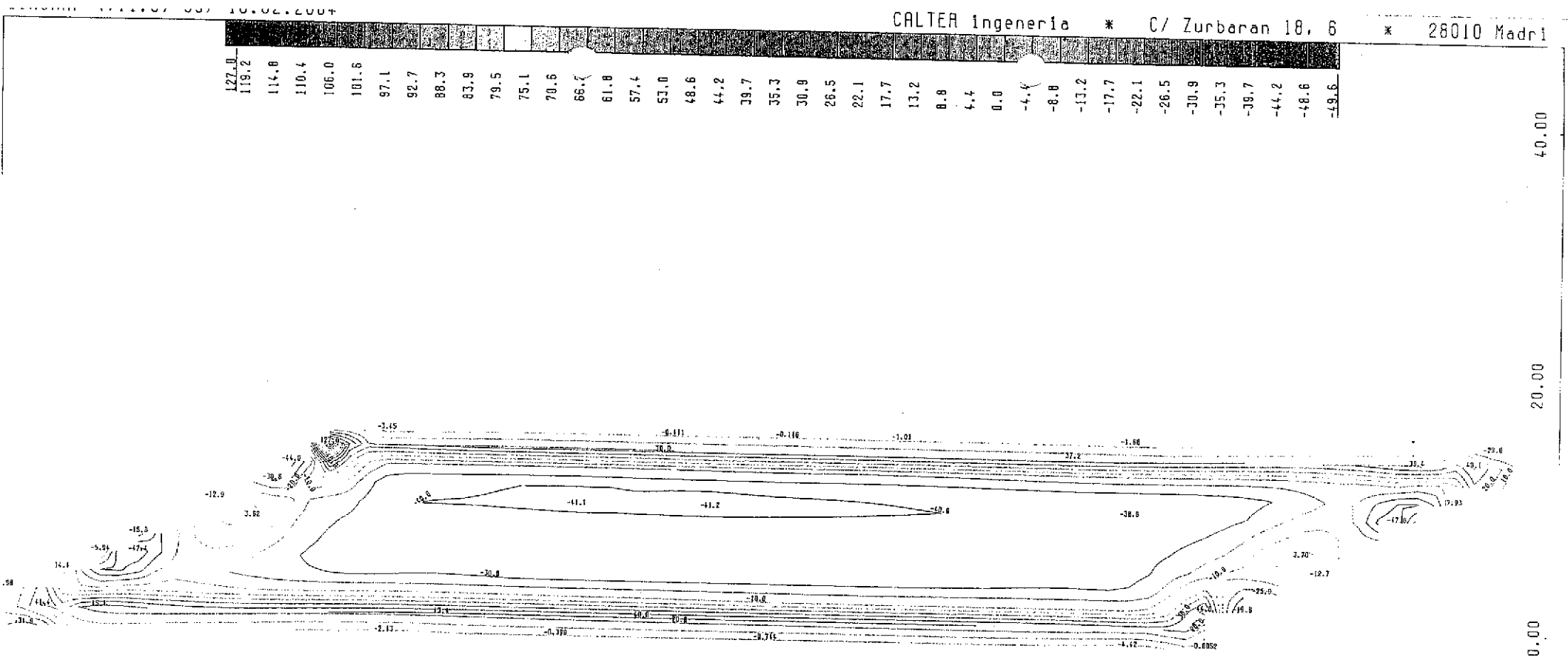


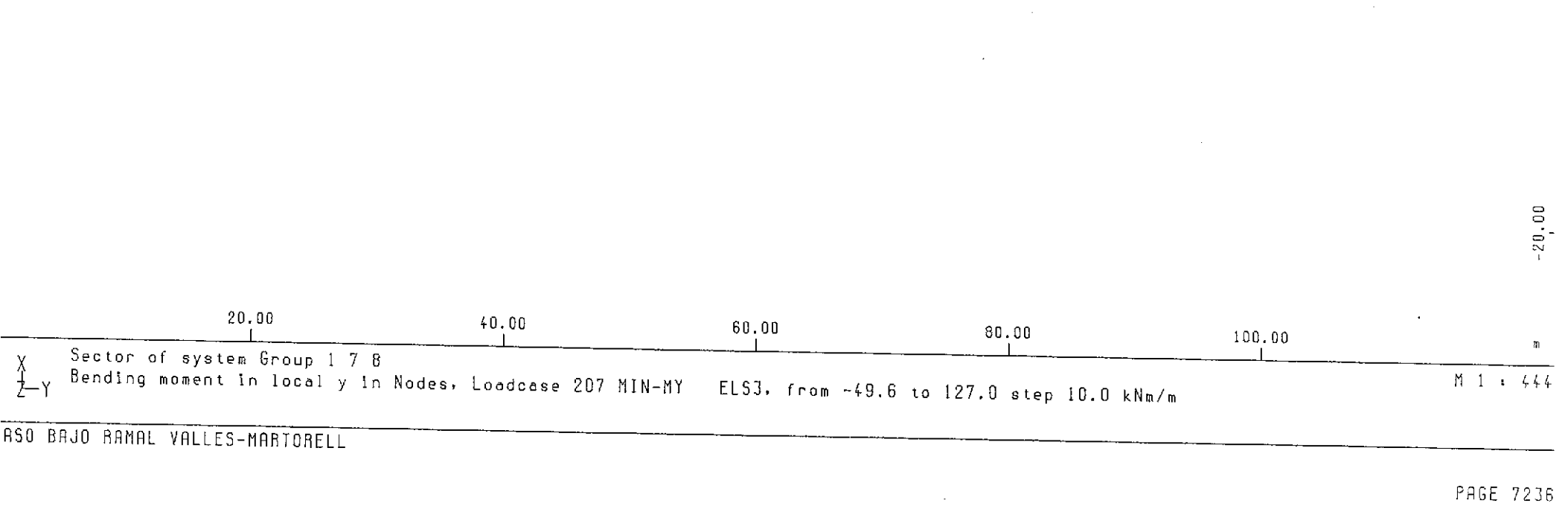
Sector of system Group 1 7 8
Bending moment in local y in Nodes, Loadcase 206 MAX-MY ELS3, from -35.6 to 205.1 step 20.0 kNm/m

M 1 : 444

PASO BAJO RAMAL VALLES-MARTORELL

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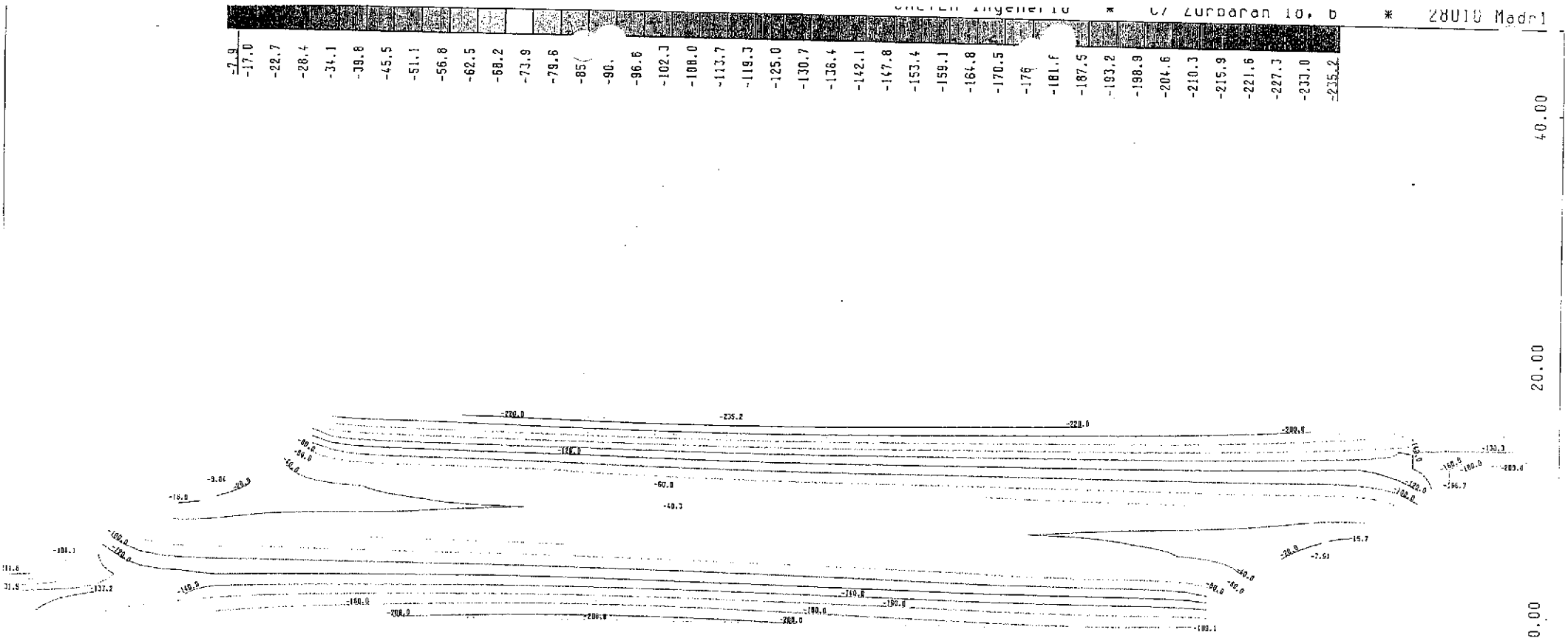


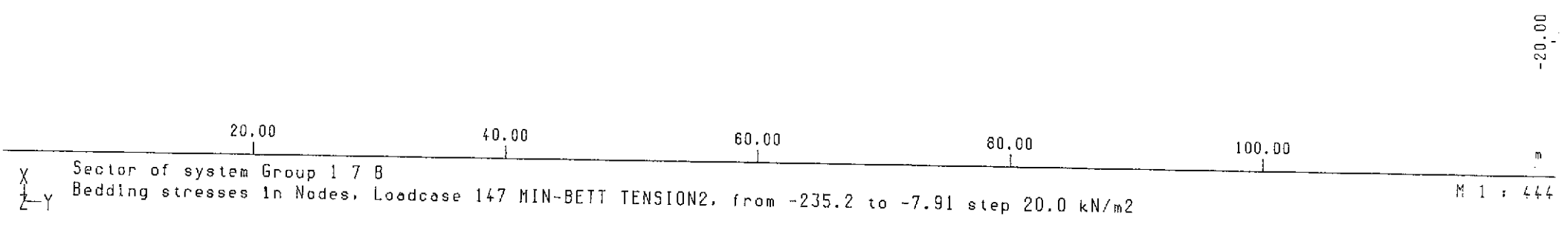
Sector of system Group 1 7 8
Bending moment in local y in Nodes, Loadcase 207 MIN-MY ELS3, from -49.6 to 127.0 step 10.0 kNm/m

M 1 : 444

PASO BAJO RAMAL VALLES-MARTORELL

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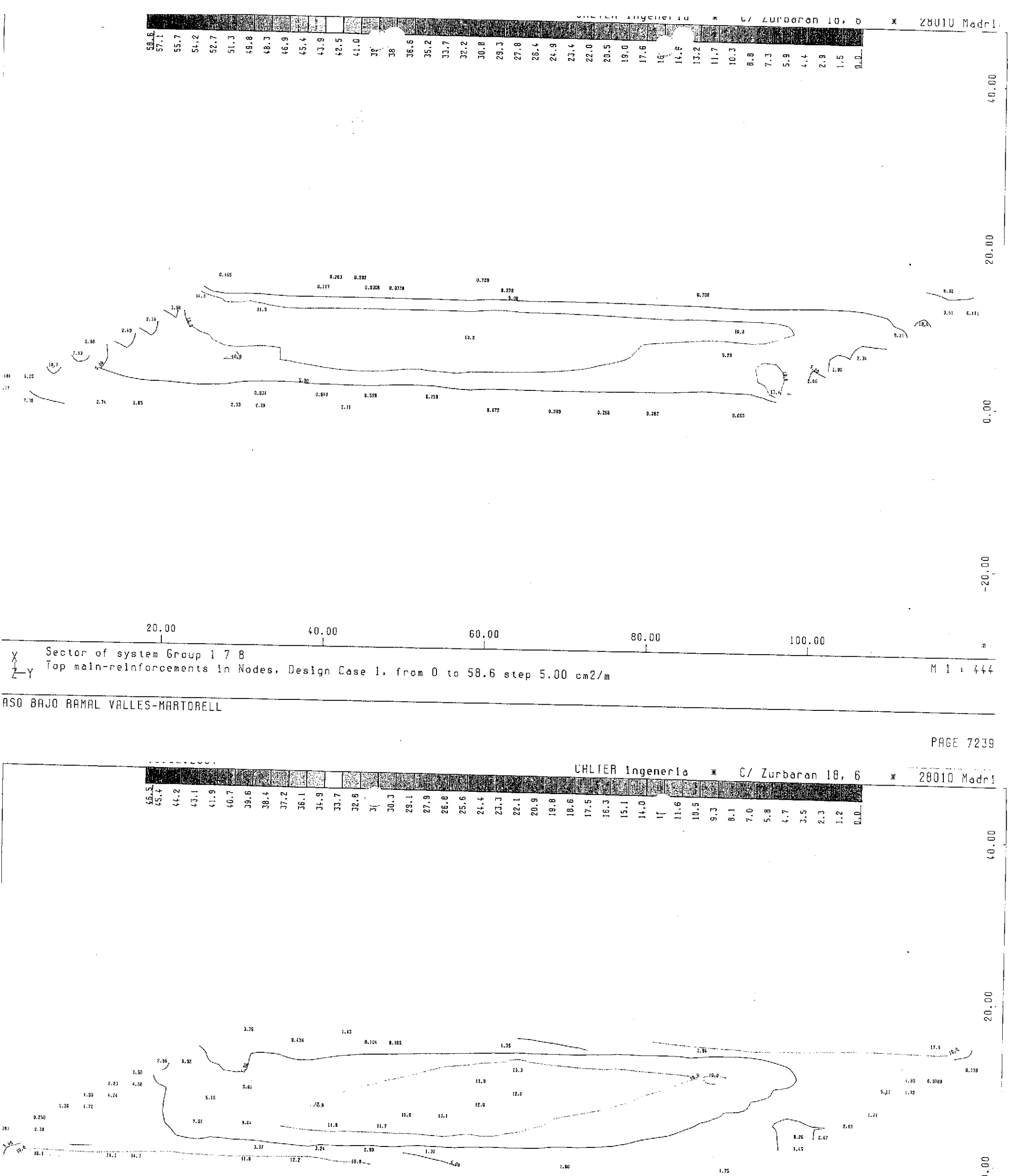


Sector of system Group 1 7 8
Bedding stresses in Nodes, Loadcase 147 MIN-BETT TENSION2, from -235.2 to -7.91 step 20.0 kN/m2

M 1 : 444

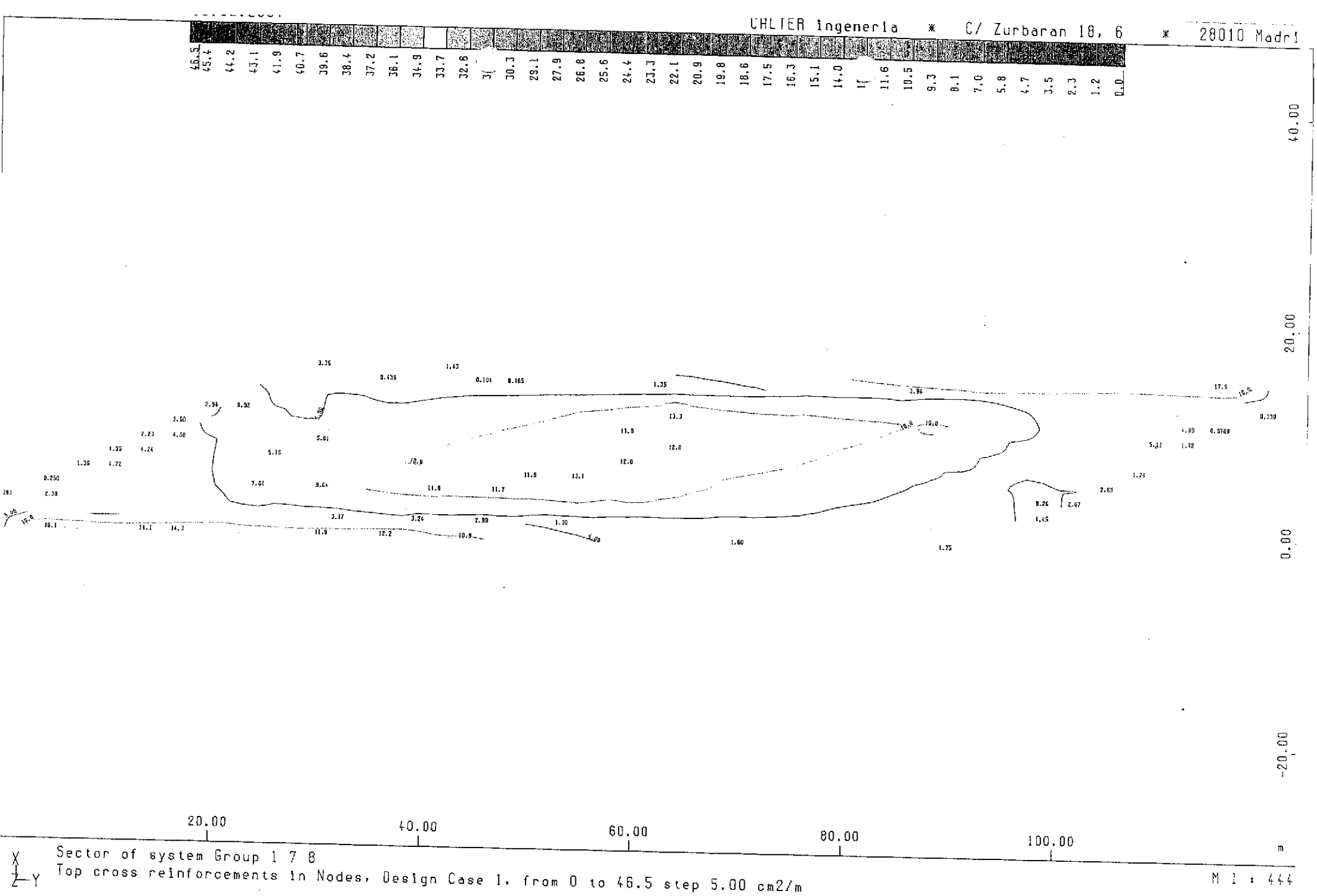
Sector of system Group 1 7 8
Bedding stresses in Nodes, Loadcase 148 MAX-BETT TENSION3, from -145.8 to 8.42 step 10.0 kN/m2

M 1 : 444



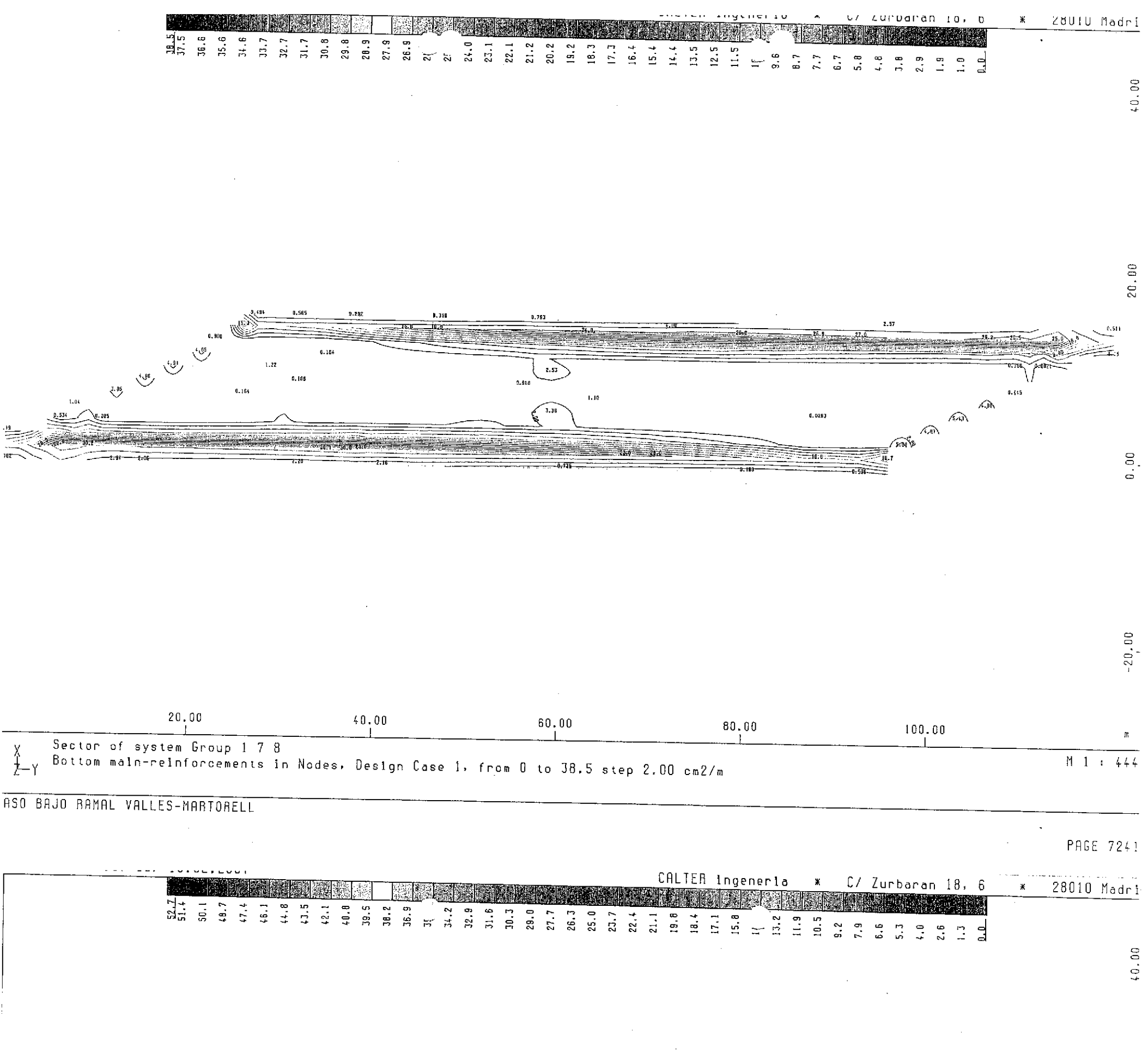
ASO BAJO RAMAL VALLES-MARTORELL

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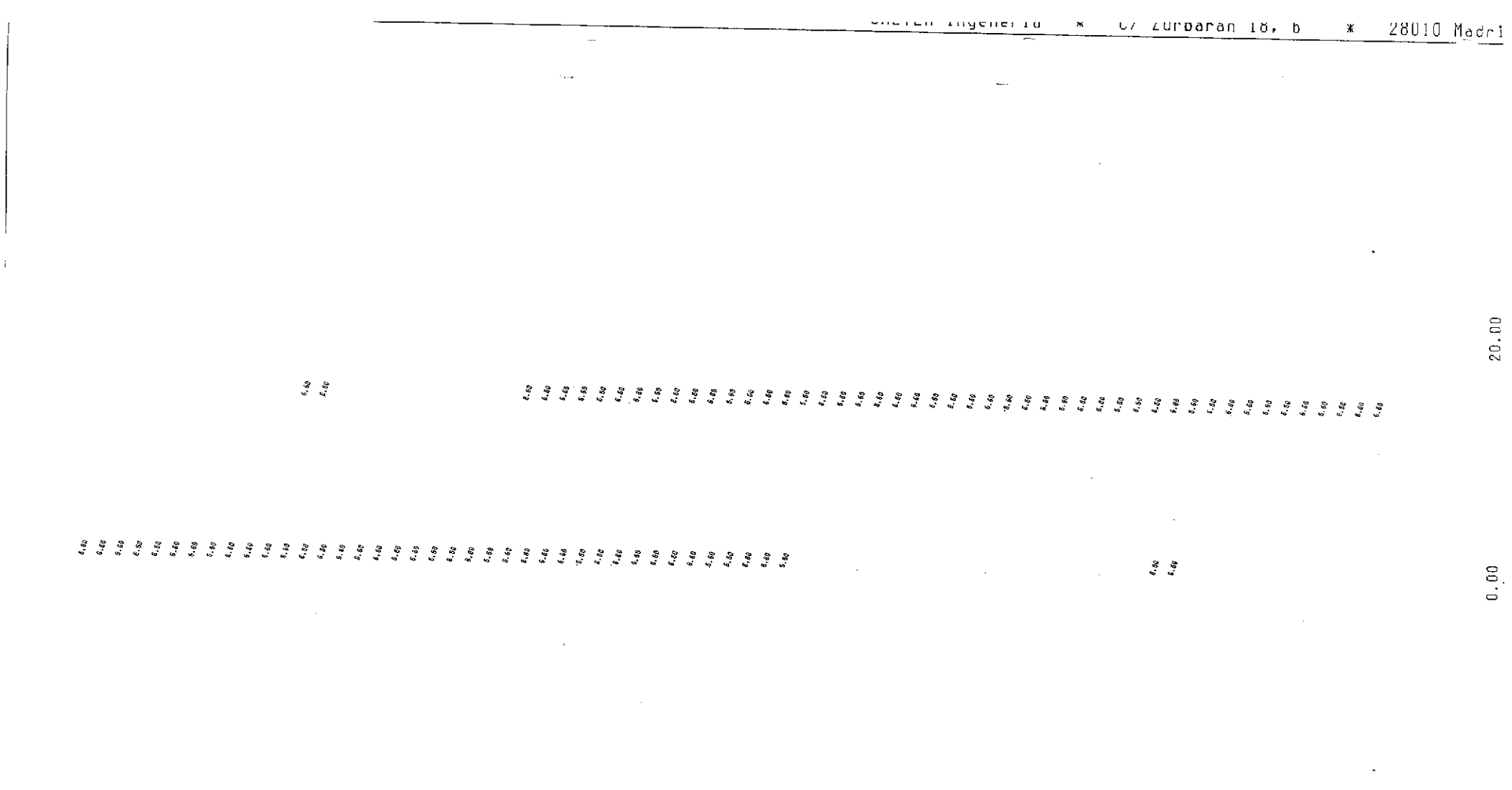
ASO BAJO RAMAL VALLES-MARTORELL

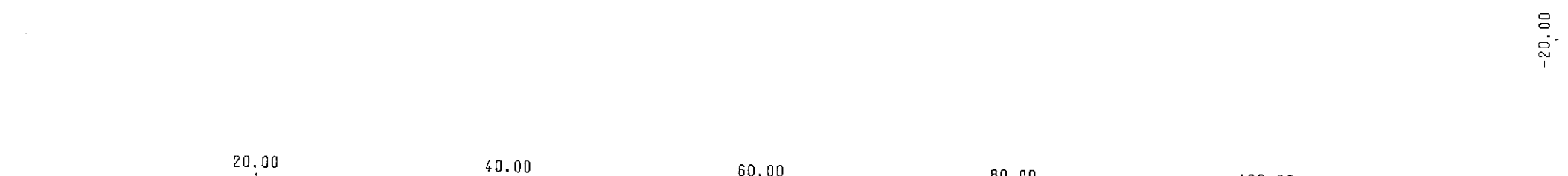
PAGE 7240



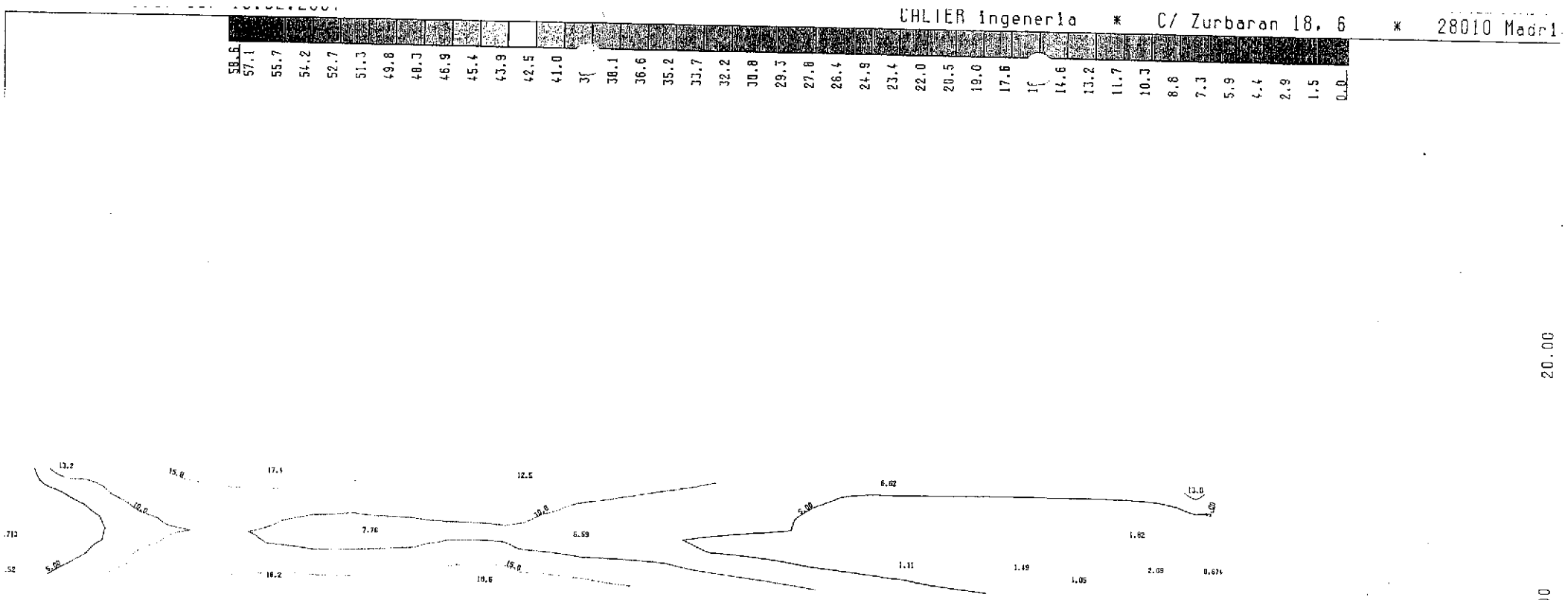
ASO BAJO RAMAL VALLES-MARTORELL

ASO BAJO RAMAL VALLES-MARTORELL

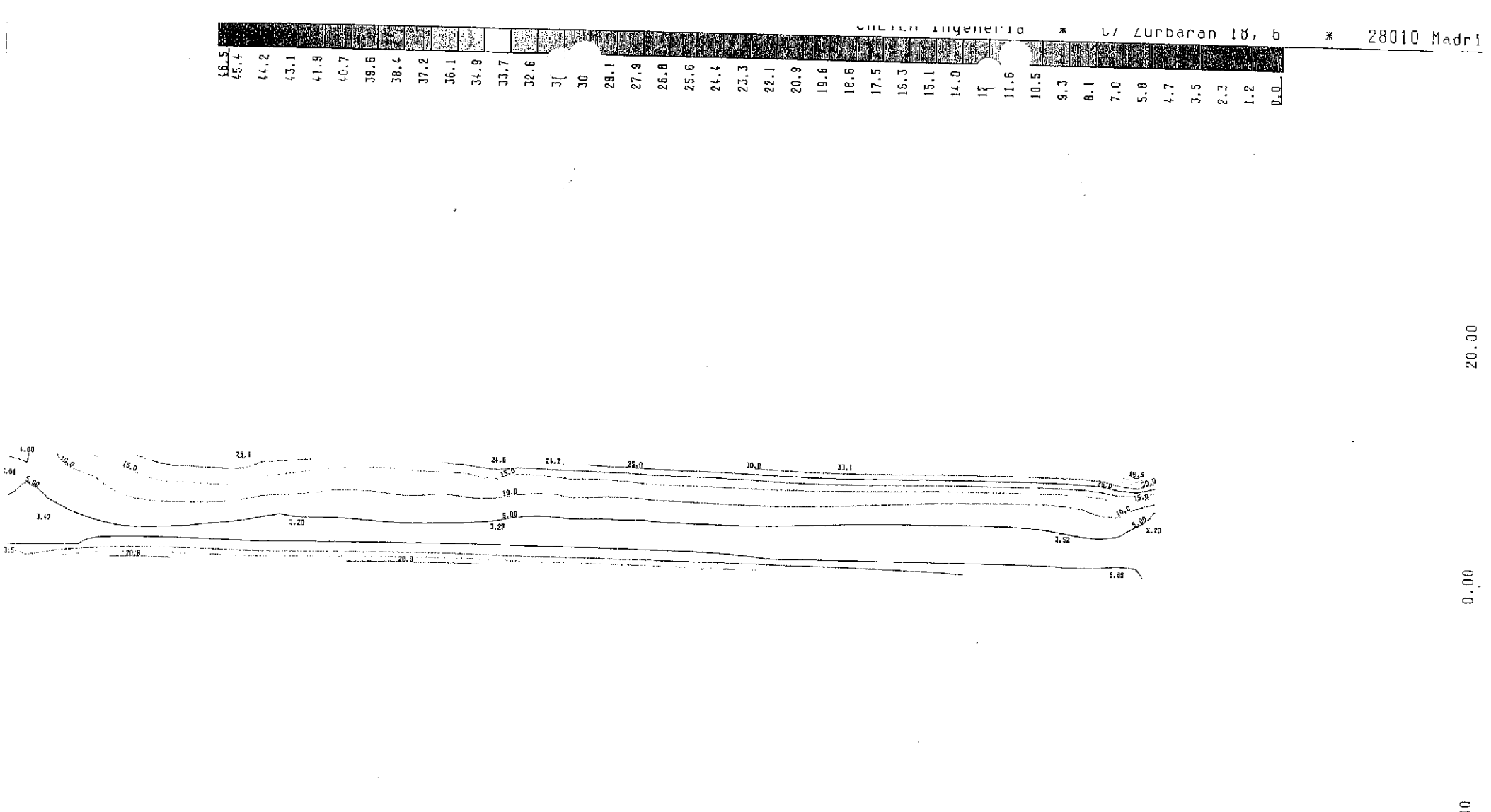


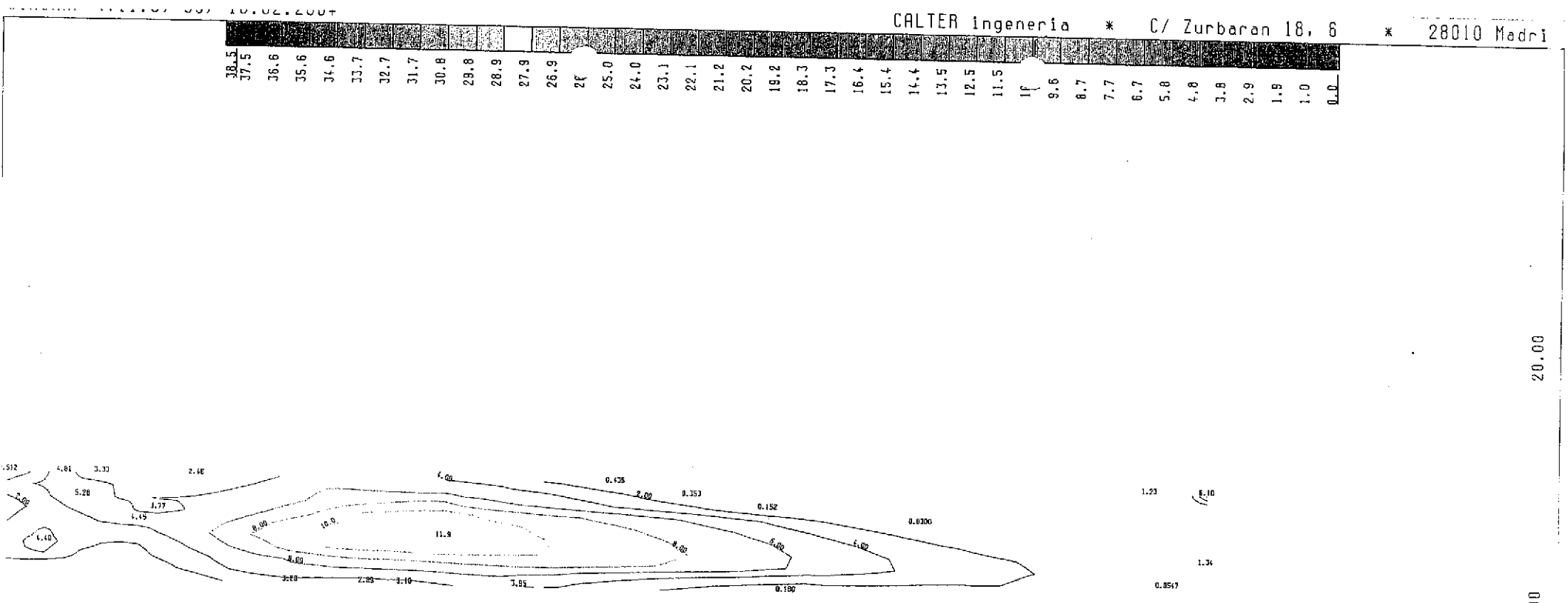


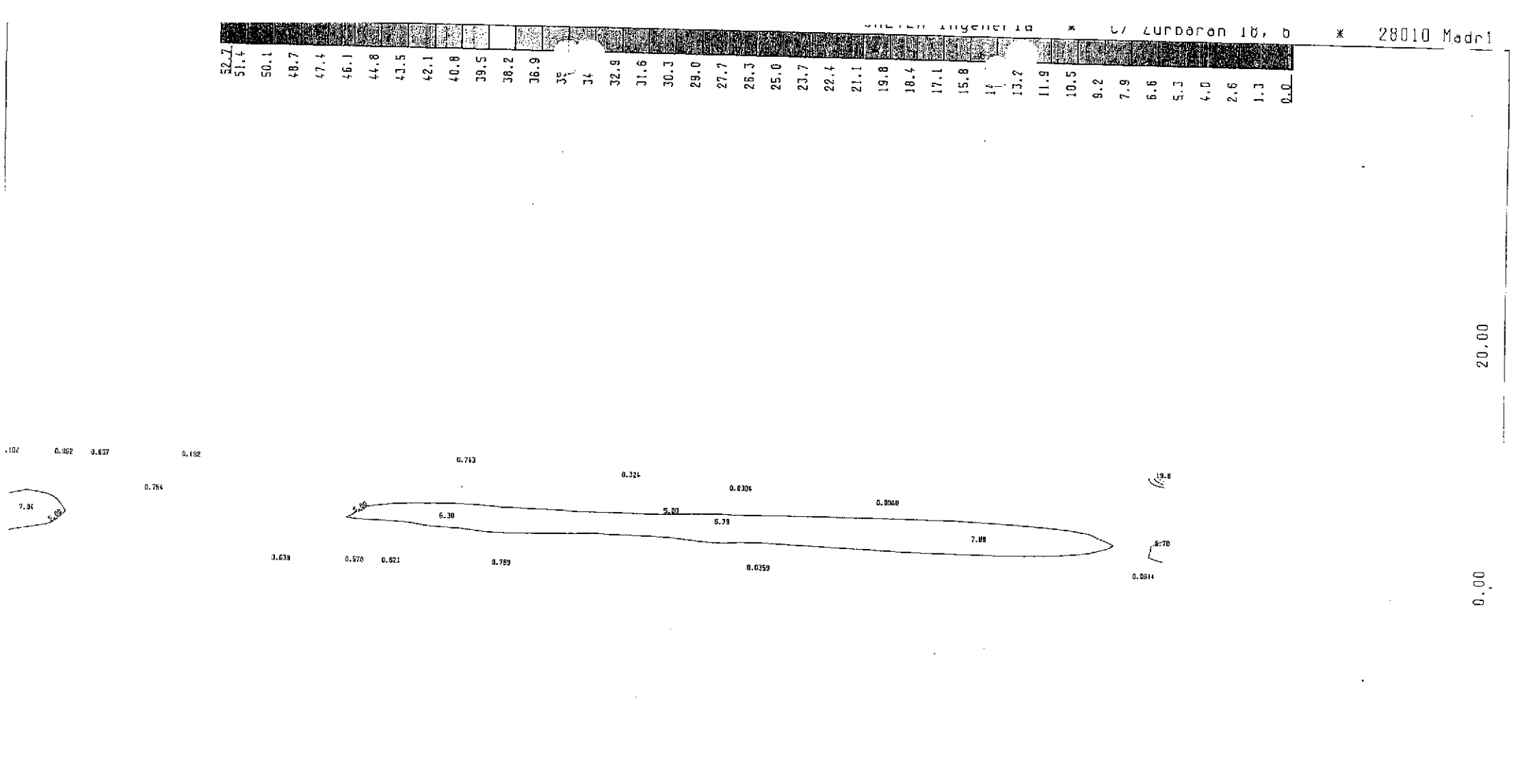
ASO BAJO RAMAL VALLES-MARTORELL



ASO BAJO RAMAL VALLES-MARTORELL


CALTER Ingeneria * C/ Zurbaran 18, 6 * 28010 Madri
46.5
45.4
44.2
43.1
41.9
40.7
39.6
38.4
37.2
36.1
34.9
33.7
32.6
30
29.1
27.9
26.8
25.6
24.4
23.3
22.1
20.9
19.8
18.6
17.5
16.3
15.1
14.0
11.6
10.5
9.3
8.1
7.0
5.8
4.7
3.5
2.3
1.2
0.0
20.00
0.00
-20.00
20.00
40.00
60.00
80.00
100.00
m
Z
X—Y
Sector of system Group 4
Top cross reinforcements in Nodes, Design Case 1, from 0 to 46.5 step 5.00 cm2/m
M 1 : 444


CALTER ingeneria * C/ Zurbaran 18, 6 * 28010 Madri
38.5
37.5
36.6
35.6
34.6
33.7
32.7
31.7
30.8
29.8
28.9
27.9
26.9
25.0
24.0
23.1
22.1
21.2
20.2
19.2
18.3
17.3
16.4
15.4
14.4
13.5
12.5
11.5
9.6
8.7
7.7
6.7
5.8
4.8
3.8
2.9
1.9
1.0
0.0
20.00
0.00
-20.00
20.00
40.00
60.00
80.00
100.00
m
Z
X—Y
Sector of system Group 4
Top cross reinforcements in Nodes, Design Case 1, from 0 to 38.5 step 2.00 cm2/m
M 1 : 444


52.7
51.4
50.1
48.7
47.4
46.1
44.8
43.5
42.1
40.8
39.5
38.2
36.9
32.9
31.6
30.3
29.0
27.7
26.3
25.0
23.7
22.4
21.1
19.8
18.4
17.1
15.8
13.2
11.9
10.5
9.2
7.9
6.6
5.3
4.0
2.6
1.3
0.0
20.00
0.00
-20.00
20.00
40.00
60.00
80.00
100.00
m
Z
Y
Sector of system Group 4
Bottom cross reinforcements in Nodes, Design Case 1, from 0 to 52.7 step 5.00 cm2/m
M 1 : 444

20.00
0.00
-20.00
20.00
40.00
60.00
80.00
100.00
m
Z
Y
Sector of system Group 4
Punching and shear-reinforcement in Nodes in cm2/m2, Design Case 1 (Max=26.8)
M 1 : 447

DIMENSIONAMIENTO DE PANTALLAS

File: PANTALLA1 KN-m Units PAGE 1
2/12/04 18:49:31

S T A T I C L O A D C A S E S

STATIC CASE	CASE TYPE	SELF WT FACTOR
LOAD1	DEAD	1.0000
EMPUJE	LIVE	0.0000

File: PANTALLA1 KN-m Units PAGE 2
2/12/04 18:49:31

J O I N T D A T A

JOINT	GLOBAL-X	GLOBAL-Y	GLOBAL-Z	RESTRAINTS	ANGLE-A	ANGLE-B	ANGLE-C
1	0.00000	0.00000	17.00000	0 0 0 0 0 0	0.000	0.000	0.000
3	0.00000	0.00000	0.00000	0 0 1 0 0 0	0.000	0.000	0.000
26	0.00000	0.00000	9.00000	0 0 0 0 0 0	0.000	0.000	0.000
27	0.00000	0.00000	8.00000	0 0 0 0 0 0	0.000	0.000	0.000
28	0.00000	0.00000	7.00000	0 0 0 0 0 0	0.000	0.000	0.000
29	0.00000	0.00000	6.00000	0 0 0 0 0 0	0.000	0.000	0.000
30	0.00000	0.00000	5.00000	0 0 0 0 0 0	0.000	0.000	0.000
31	0.00000	0.00000	4.00000	0 0 0 0 0 0	0.000	0.000	0.000
32	0.00000	0.00000	3.00000	0 0 0 0 0 0	0.000	0.000	0.000
33	0.00000	0.00000	2.00000	0 0 0 0 0 0	0.000	0.000	0.000
34	0.00000	0.00000	1.00000	0 0 0 0 0 0	0.000	0.000	0.000

File: PANTALLA1 KN-m Units PAGE 3
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J O I N T S P R I N G D A T A

JOINT	K-U1	K-U2	K-U3	K-R1	K-R2	K-R3
3	32500.000	32500.000	0.000	0.000	0.000	0.000
26	25000.000	25000.000	0.000	0.000	0.000	0.000
33	65000.000	65000.000	0.000	0.000	0.000	0.000
34	65000.000	65000.000	0.000	0.000	0.000	0.000
27	50000.000	50000.000	0.000	0.000	0.000	0.000
28	50000.000	50000.000	0.000	0.000	0.000	0.000
29	50000.000	50000.000	0.000	0.000	0.000	0.000
30	50000.000	50000.000	0.000	0.000	0.000	0.000
31	50000.000	50000.000	0.000	0.000	0.000	0.000
32	50000.000	50000.000	0.000	0.000	0.000	0.000

File: PANTALLA1 KN-m Units PAGE 4
2/12/04 18:49:31

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

MAT LABEL	MODULUS OF ELASTICITY	POISSON'S RATIO	THERMAL COEFF	WEIGHT PER UNIT VOL	MASS PER UNIT VOL
STEEL	199947979	0,300	1,170E-05	76,820	7,827
CONC	24821128,4	0,200	9,900E-06	23,562	2,401
OTHER	24821128,4	0,200	9,900E-06	23,562	2,401

File: PANTALLA1 KN-m Units PAGE 6
2/16/04 20:30:45

M A T E R I A L D E S I G N D A T A

MAT LABEL	DESIGN CODE	STEEL FY	CONCRETE FC	REBAR FY	CONCRETE FCS	REBAR FYS
STEEL	S	248211,284				
CONC	C		27579,032	413685,473	27579,032	275790,316
OTHER	N					

File: PANTALLA1 KN-m Units PAGE 7
2/16/04 20:30:45

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

SECTION LABEL	MAT LABEL	SECTION TYPE	DEPTH	FLANGE WIDTH TOP	FLANGE THICK TOP	WEB THICK	FLANGE WIDTH BOTTOM	FLANGE THICK BOTTOM
PANTALLA	CONC		1,000	1,000	0,000	0,000	0,000	0,000

File: PANTALLA1 KN-m Units PAGE 8
2/16/04 20:30:45

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

SECTION LABEL	AREA	TORSIONAL INERTIA	MOMENTS OF INERTIA I33	I22	SHEAR AREAS A2	A3
PANTALLA	1,000	0,141	8,333E-02	8,333E-02	0,833	0,833

File: PANTALLA1 KN-m Units PAGE 9
2/16/04 20:30:45

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

SECTION LABEL	SECTION MODULII S33	S22	PLASTIC MODULII Z33	Z22	RADII OF GYRATION R33	R22
PANTALLA	0,167	0,167	0,250	0,250	0,289	0,289

File: PANTALLA1 KN-m Units PAGE 10
2/16/04 20:30:45

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

SECTION LABEL	TOTAL WEIGHT	TOTAL MASS
PANTALLA	400,547	40,812

File: PANTALLA1 KN-m Units PAGE 11
2/16/04 20:30:45

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

SECTION LABEL	MAT LABEL	SHELL TYPE	MEMBRANE THICK	BENDING THICK	MATERIAL ANGLE
SSEC1	CONC	4	1,000	1,000	0,000

File: PANTALLA1 KN-m Units PAGE 12
2/16/04 20:30:45

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

SECTION LABEL	TOTAL WEIGHT	TOTAL MASS
SSEC1	0,000	0,000

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

FRAME	JNT-1	JNT-2	SECTION	ANGLE	RELEASES	SEGMENTS	R1	R2	FACTOR	LENGTH
25	1	26	PANTALLA	0.000	000000	2	0.000	0.000	1.000	8.000
27	26	27	PANTALLA	0.000	000000	2	0.000	0.000	1.000	1.000
28	27	28	PANTALLA	0.000	000000	2	0.000	0.000	1.000	1.000
29	28	29	PANTALLA	0.000	000000	2	0.000	0.000	1.000	1.000
30	29	30	PANTALLA	0.000	000000	2	0.000	0.000	1.000	1.000
31	30	31	PANTALLA	0.000	000000	2	0.000	0.000	1.000	1.000
32	31	32	PANTALLA	0.000	000000	2	0.000	0.000	1.000	1.000
33	32	33	PANTALLA	0.000	000000	2	0.000	0.000	1.000	1.000
34	33	34	PANTALLA	0.000	000000	2	0.000	0.000	1.000	1.000
35	34	3	PANTALLA	0.000	000000	2	0.000	0.000	1.000	1.000

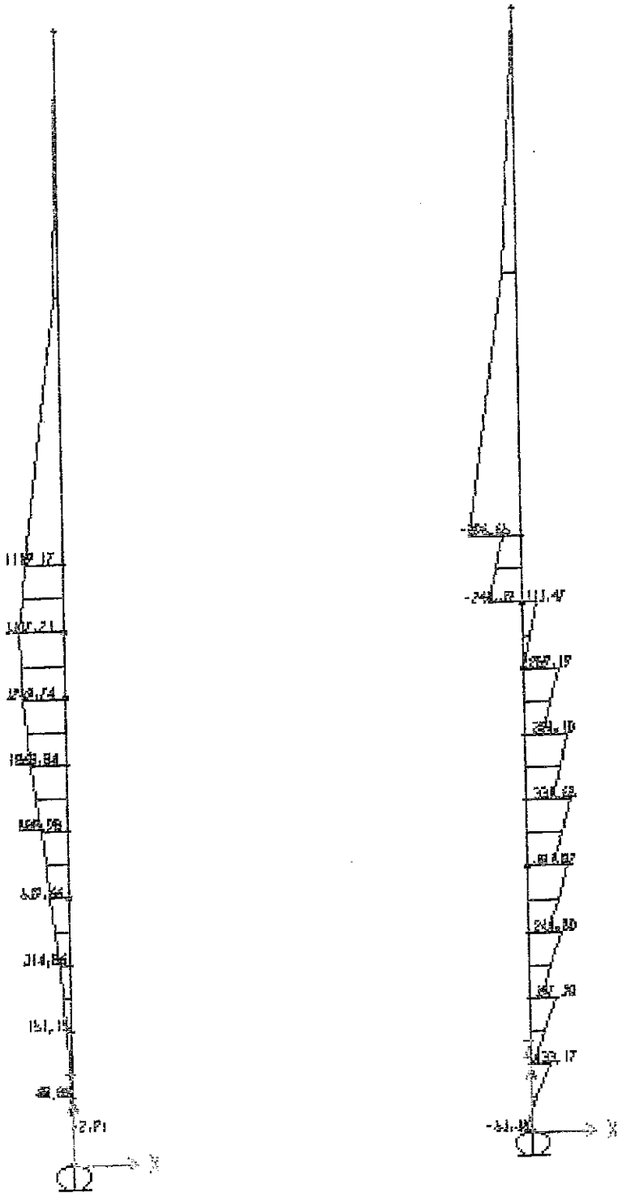
File: PANTALLA1 KN-m Units PAGE 5
2/12/04 18:49:31

F R A M E S P A N D I S T R I B U T E D L O A D S Load Case EMPUJE

FRAME	TYPE	DIRECTION	DISTANCE-A	VALUE-A	DISTANCE-B	VALUE-B
25	FORCE	GLOBAL-X	0.0000	3.6000	0.1250	10.4471
25	FORCE	GLOBAL-X	0.1250	10.4471	0.2500	17.2941
25	FORCE	GLOBAL-X	0.2500	17.2941	0.3750	24.1412
25	FORCE	GLOBAL-X	0.3750	24.1412	0.5000	30.9882
25	FORCE	GLOBAL-X	0.5000	30.9882	0.6250	37.8353
25	FORCE	GLOBAL-X	0.6250	37.8353	0.7500	44.6824
25	FORCE	GLOBAL-X	0.7500	44.6824	0.8750	51.5294
25	FORCE	GLOBAL-X	0.8750	51.5294	1.0000	58.3765
27	FORCE	GLOBAL-X	0.0000	58.3765	1.0000	65.2235
28	FORCE	GLOBAL-X	0.0000	65.2235	1.0000	72.0706
29	FORCE	GLOBAL-X	0.0000	72.0706	1.0000	78.9176
30	FORCE	GLOBAL-X	0.0000	78.9176	1.0000	85.7647
31	FORCE	GLOBAL-X	0.0000	85.7647	1.0000	92.6118
32	FORCE	GLOBAL-X	0.0000	92.6118	1.0000	99.4588
33	FORCE	GLOBAL-X	0.0000	99.4588	1.0000	106.3059
34	FORCE	GLOBAL-X	0.0000	106.3059	1.0000	113.1529
35	FORCE	GLOBAL-X	0.0000	113.1529	1.0000	120.0000

MODELO PANTALLA 1

LEY DE ESFUERZOS FLECTORES Y CORTANTES



VALTER valenciana de estructuras
L.A.V. MADRID-FRONTERA FRANCESA. TRAMO A: CONEXIÓN VALLÉS CASTELLBISBAL
PASO BAJO RAMAL VALLÉS-MARTORELL Y VÍA BERCELONA-MARTORELL

File: PANTALLA1 KN-m Units PAGE 1
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L O A D C O M B I N A T I O N M U L T I P L I E R S

COMBO	TYPE	CASE	FACTOR	TYPE	TITLE
H1	ADD				ELU1
		LOAD1	1.0000	STATIC(DEAD)	
		EMPUJE	1.6000	STATIC(LIVE)	
FLECHAS	ADD				COMB1
		LOAD1	1.0000	STATIC(DEAD)	
		EMPUJE	1.0000	STATIC(LIVE)	

File: PANTALLA1 KN-m Units PAGE 2
2/12/04 18:49:06

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

JOINT	LOAD	U1	U2	U3	R1	R2	R3
1	LOAD1	0.0000	0.0000	-1.372E-04	0.0000	0.0000	0.0000
1	EMPUJE	0.0255	0.0000	0.0000	0.0000	2.557E-03	0.0000
1	H1	0.0408	0.0000	-2.058E-04	0.0000	4.091E-03	0.0000
1	FLECHAS	0.0255	0.0000	-1.372E-04	0.0000	2.557E-03	0.0000
3	LOAD1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	EMPUJE	1.026E-03	0.0000	0.0000	0.0000	4.968E-05	0.0000
3	H1	1.642E-03	0.0000	0.0000	0.0000	7.948E-05	0.0000
3	FLECHAS	1.026E-03	0.0000	0.0000	0.0000	4.968E-05	0.0000
26	LOAD1	0.0000	0.0000	-1.068E-04	0.0000	0.0000	0.0000
26	EMPUJE	6.178E-03	0.0000	0.0000	0.0000	1.844E-03	0.0000
26	H1	9.885E-03	0.0000	-1.602E-04	0.0000	2.950E-03	0.0000
26	FLECHAS	6.178E-03	0.0000	-1.068E-04	0.0000	1.844E-03	0.0000
27	LOAD1	0.0000	0.0000	-9.872E-05	0.0000	0.0000	0.0000
27	EMPUJE	4.498E-03	0.0000	0.0000	0.0000	1.478E-03	0.0000
27	H1	7.197E-03	0.0000	-1.481E-04	0.0000	2.365E-03	0.0000
27	FLECHAS	4.498E-03	0.0000	-9.872E-05	0.0000	1.478E-03	0.0000
28	LOAD1	0.0000	0.0000	-8.970E-05	0.0000	0.0000	0.0000
28	EMPUJE	3.219E-03	0.0000	0.0000	0.0000	1.091E-03	0.0000
28	H1	5.151E-03	0.0000	-1.346E-04	0.0000	1.746E-03	0.0000
28	FLECHAS	3.219E-03	0.0000	-8.970E-05	0.0000	1.091E-03	0.0000
29	LOAD1	0.0000	0.0000	-7.974E-05	0.0000	0.0000	0.0000
29	EMPUJE	2.321E-03	0.0000	0.0000	0.0000	7.439E-04	0.0000
29	H1	3.714E-03	0.0000	-1.196E-04	0.0000	1.190E-03	0.0000
29	FLECHAS	2.321E-03	0.0000	-7.974E-05	0.0000	7.439E-04	0.0000
30	LOAD1	0.0000	0.0000	-6.882E-05	0.0000	0.0000	0.0000
30	EMPUJE	1.742E-03	0.0000	0.0000	0.0000	4.661E-04	0.0000
30	H1	2.787E-03	0.0000	-1.032E-04	0.0000	7.457E-04	0.0000
30	FLECHAS	1.742E-03	0.0000	-6.882E-05	0.0000	4.661E-04	0.0000
31	LOAD1	0.0000	0.0000	-5.696E-05	0.0000	0.0000	0.0000
31	EMPUJE	1.401E-03	0.0000	0.0000	0.0000	2.671E-04	0.0000
31	H1	2.241E-03	0.0000	-8.543E-05	0.0000	4.274E-04	0.0000
31	FLECHAS	1.401E-03	0.0000	-5.696E-05	0.0000	2.671E-04	0.0000
32	LOAD1	0.0000	0.0000	-4.414E-05	0.0000	0.0000	0.0000
32	EMPUJE	1.218E-03	0.0000	0.0000	0.0000	1.419E-04	0.0000
32	H1	1.949E-03	0.0000	-6.621E-05	0.0000	2.271E-04	0.0000
32	FLECHAS	1.218E-03	0.0000	-4.414E-05	0.0000	1.419E-04	0.0000
33	LOAD1	0.0000	0.0000	-3.038E-05	0.0000	0.0000	0.0000
33	EMPUJE	1.125E-03	0.0000	0.0000	0.0000	7.573E-05	0.0000
33	H1	1.800E-03	0.0000	-4.556E-05	0.0000	1.212E-04	0.0000
33	FLECHAS	1.125E-03	0.0000	-3.038E-05	0.0000	7.573E-05	0.0000
34	LOAD1	0.0000	0.0000	-1.566E-05	0.0000	0.0000	0.0000

34	EMPUJE	1.072E-03	0.0000	0.0000	0.0000	5.115E-05	0.0000
34	H1	1.716E-03	0.0000	-2.349E-05	0.0000	8.183E-05	0.0000
34	FLECHAS	1.072E-03	0.0000	-1.566E-05	0.0000	5.115E-05	0.0000

File: PANTALLA1 KN-m Units PAGE 3
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F R A M E E L E M E N T F O R C E S

FRAME	LOAD	LOC	P	V2	V3	T	M2	M3
25	LOAD1							
		0.00	0.00	0.00	0.00	0.00	0.00	0.00
		4.00	-94.25	0.00	0.00	0.00	0.00	0.00
		8.00	-188.49	0.00	0.00	0.00	0.00	0.00
25	EMPUJE							
		0.00	0.00	0.00	0.00	0.00	0.00	0.00
		4.00	0.00	-69.18	0.00	0.00	0.00	101.84
		8.00	0.00	-247.91	0.00	0.00	0.00	699.48
25	H1							
		0.00	0.00	0.00	0.00	0.00	0.00	0.00
		4.00	-141.37	-110.68	0.00	0.00	0.00	162.94
		8.00	-282.74	-396.65	0.00	0.00	0.00	1119.17
25	FLECHAS							
		0.00	0.00	0.00	0.00	0.00	0.00	0.00
		4.00	-94.25	-69.18	0.00	0.00	0.00	101.84
		8.00	-188.49	-247.91	0.00	0.00	0.00	699.48
27	LOAD1							
		0.00	-188.49	0.00	0.00	0.00	0.00	0.00
		5.0E-01	-200.27	0.00	0.00	0.00	0.00	0.00
		1.00	-212.05	0.00	0.00	0.00	0.00	0.00
27	EMPUJE							
		0.00	0.00	-93.45	0.00	0.00	0.00	699.48
		5.0E-01	0.00	-123.49	0.00	0.00	0.00	753.65
		1.00	0.00	-155.25	0.00	0.00	0.00	823.26
27	H1							
		0.00	-282.74	-149.51	0.00	0.00	0.00	1119.17
		5.0E-01	-300.41	-197.58	0.00	0.00	0.00	1205.83
		1.00	-318.08	-248.39	0.00	0.00	0.00	1317.21
27	FLECHAS							
		0.00	-188.49	-93.45	0.00	0.00	0.00	699.48
		5.0E-01	-200.27	-123.49	0.00	0.00	0.00	753.65
		1.00	-212.05	-155.25	0.00	0.00	0.00	823.26
28	LOAD1							
		0.00	-212.05	0.00	0.00	0.00	0.00	0.00
		5.0E-01	-223.84	0.00	0.00	0.00	0.00	0.00
		1.00	-235.62	0.00	0.00	0.00	0.00	0.00
28	EMPUJE							
		0.00	0.00	69.67	0.00	0.00	0.00	823.26
		5.0E-01	0.00	36.20	0.00	0.00	0.00	796.72
		1.00	0.00	1.02	0.00	0.00	0.00	787.34
28	H1							
		0.00	-318.08	111.47	0.00	0.00	0.00	1317.21
		5.0E-01	-335.75	57.93	0.00	0.00	0.00	1274.75
		1.00	-353.42	1.64	0.00	0.00	0.00	1259.74
28	FLECHAS							
		0.00	-212.05	69.67	0.00	0.00	0.00	823.26
		5.0E-01	-223.84	36.20	0.00	0.00	0.00	796.72
		1.00	-235.62	1.02	0.00	0.00	0.00	787.34
29	LOAD1							
		0.00	-235.62	0.00	0.00	0.00	0.00	0.00
		5.0E-01	-247.40	0.00	0.00	0.00	0.00	0.00
		1.00	-259.18	0.00	0.00	0.00	0.00	0.00
29	EMPUJE							
		0.00	0.00	161.99	0.00	0.00	0.00	787.34
		5.0E-01	0.00	125.10	0.00	0.00	0.00	715.49
		1.00	0.00	86.50	0.00	0.00	0.00	662.52
29	H1							
		0.00	-353.42	259.19	0.00	0.00	0.00	1259.74
		5.0E-01	-371.10	200.16	0.00	0.00	0.00	1144.79
		1.00	-388.77	138.40	0.00	0.00	0.00	1060.04

VALER valenciana de estructuras
PASO BAJO RAMAL VALLÉS-MARTORELL Y VÍA BERCELONA-MARTORELL

29	FLECHAS						
	0.00	-235.62	161.99	0.00	0.00	0.00	787.34
	5.0E-01	-247.40	125.10	0.00	0.00	0.00	715.49
	1.00	-259.18	86.50	0.00	0.00	0.00	662.52
30	LOAD1						
	0.00	-259.18	0.00	0.00	0.00	0.00	0.00
	5.0E-01	-270.96	0.00	0.00	0.00	0.00	0.00
	1.00	-282.74	0.00	0.00	0.00	0.00	0.00
30	EMPUJE						
	0.00	0.00	202.56	0.00	0.00	0.00	662.52
	5.0E-01	0.00	162.25	0.00	0.00	0.00	571.25
	1.00	0.00	120.22	0.00	0.00	0.00	500.56
30	H1						
	0.00	-388.77	324.10	0.00	0.00	0.00	1060.04
	5.0E-01	-406.44	259.59	0.00	0.00	0.00	914.00
	1.00	-424.11	192.35	0.00	0.00	0.00	800.90
30	FLECHAS						
	0.00	-259.18	202.56	0.00	0.00	0.00	662.52
	5.0E-01	-270.96	162.25	0.00	0.00	0.00	571.25
	1.00	-282.74	120.22	0.00	0.00	0.00	500.56
31	LOAD1						
	0.00	-282.74	0.00	0.00	0.00	0.00	0.00
	5.0E-01	-294.52	0.00	0.00	0.00	0.00	0.00
	1.00	-306.30	0.00	0.00	0.00	0.00	0.00
31	EMPUJE						
	0.00	0.00	207.30	0.00	0.00	0.00	500.56
	5.0E-01	0.00	163.56	0.00	0.00	0.00	407.78
	1.00	0.00	118.11	0.00	0.00	0.00	337.29
31	H1						
	0.00	-424.11	331.68	0.00	0.00	0.00	800.90
	5.0E-01	-441.78	261.70	0.00	0.00	0.00	652.44
	1.00	-459.45	188.98	0.00	0.00	0.00	539.66
31	FLECHAS						
	0.00	-282.74	207.30	0.00	0.00	0.00	500.56
	5.0E-01	-294.52	163.56	0.00	0.00	0.00	407.78
	1.00	-306.30	118.11	0.00	0.00	0.00	337.29
32	LOAD1						
	0.00	-306.30	0.00	0.00	0.00	0.00	0.00
	5.0E-01	-318.08	0.00	0.00	0.00	0.00	0.00
	1.00	-329.86	0.00	0.00	0.00	0.00	0.00
32	EMPUJE						
	0.00	0.00	188.14	0.00	0.00	0.00	337.29
	5.0E-01	0.00	140.97	0.00	0.00	0.00	254.94
	1.00	0.00	92.10	0.00	0.00	0.00	196.60
32	H1						
	0.00	-459.45	301.02	0.00	0.00	0.00	539.66
	5.0E-01	-477.12	225.56	0.00	0.00	0.00	407.90
	1.00	-494.79	147.36	0.00	0.00	0.00	314.56
32	FLECHAS						
	0.00	-306.30	188.14	0.00	0.00	0.00	337.29
	5.0E-01	-318.08	140.97	0.00	0.00	0.00	254.94
	1.00	-329.86	92.10	0.00	0.00	0.00	196.60
33	LOAD1						
	0.00	-329.86	0.00	0.00	0.00	0.00	0.00
	5.0E-01	-341.64	0.00	0.00	0.00	0.00	0.00
	1.00	-353.42	0.00	0.00	0.00	0.00	0.00
33	EMPUJE						
	0.00	0.00	153.00	0.00	0.00	0.00	196.60
	5.0E-01	0.00	102.41	0.00	0.00	0.00	132.67
	1.00	0.00	50.12	0.00	0.00	0.00	94.47
33	H1						
	0.00	-494.79	244.80	0.00	0.00	0.00	314.56
	5.0E-01	-512.47	163.86	0.00	0.00	0.00	212.28
	1.00	-530.14	80.19	0.00	0.00	0.00	151.15
33	FLECHAS						
	0.00	-329.86	153.00	0.00	0.00	0.00	196.60
	5.0E-01	-341.64	102.41	0.00	0.00	0.00	132.67
	1.00	-353.42	50.12	0.00	0.00	0.00	94.47
34	LOAD1						
	0.00	-353.42	0.00	0.00	0.00	0.00	0.00

	5.0E-01	-365.20	0.00	0.00	0.00	0.00	0.00
	1.00	-376.99	0.00	0.00	0.00	0.00	0.00
34	EMPUJE						
	0.00	0.00	123.25	0.00	0.00	0.00	94.47
	5.0E-01	0.00	69.24	0.00	0.00	0.00	46.27
	1.00	0.00	13.52	0.00	0.00	0.00	25.51
34	H1						
	0.00	-530.14	197.20	0.00	0.00	0.00	151.15
	5.0E-01	-547.81	110.79	0.00	0.00	0.00	74.04
	1.00	-565.48	21.63	0.00	0.00	0.00	40.82
34	FLECHAS						
	0.00	-353.42	123.25	0.00	0.00	0.00	94.47
	5.0E-01	-365.20	69.24	0.00	0.00	0.00	46.27
	1.00	-376.99	13.52	0.00	0.00	0.00	25.51
35	LOAD1						
	0.00	-376.99	0.00	0.00	0.00	0.00	0.00
	5.0E-01	-388.77	0.00	0.00	0.00	0.00	0.00
	1.0E+00	-400.55	0.00	0.00	0.00	0.00	0.00
35	EMPUJE						
	0.00	0.00	83.23	0.00	0.00	0.00	25.51
	5.0E-01	0.00	25.80	0.00	0.00	0.00	-1.82
	1.0E+00	0.00	-33.35	0.00	0.00	0.00	0.00
35	H1						
	0.00	-565.48	133.17	0.00	0.00	0.00	40.82
	5.0E-01	-583.15	41.28	0.00	0.00	0.00	-2.91
	1.0E+00	-600.82	-53.35	0.00	0.00	0.00	0.00
35	FLECHAS						
	0.00	-376.99	83.23	0.00	0.00	0.00	25.51
	5.0E-01	-388.77	25.80	0.00	0.00	0.00	-1.82
	1.0E+00	-400.55	-33.35	0.00	0.00	0.00	0.00

L.A.V. MADRID-FRONTERA FRANCESA. TRAMO A: CONEXIÓN VALLÉS CASTELLBISBAL
PASO BAJO RAMAL VALLÉS-MARTORELL Y VÍA BERCELONA-MARTORELL

File: PANTALLA2 KN-m Units PAGE 1
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S T A T I C L O A D C A S E S

STATIC CASE	CASE TYPE	SELF WT FACTOR
LOAD1	DEAD	1.0000
EMPUJE	LIVE	0.0000

File: PANTALLA2 KN-m Units PAGE 2
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J O I N T D A T A

JOINT	GLOBAL-X	GLOBAL-Y	GLOBAL-Z	RESTRAINTS	ANGLE-A	ANGLE-B	ANGLE-C
1	0.00000	0.00000	13.00000	0 0 0 0 0 0	0.000	0.000	0.000
3	0.00000	0.00000	0.00000	0 0 1 0 0 0	0.000	0.000	0.000
40	0.00000	0.00000	7.00000	0 0 0 0 0 0	0.000	0.000	0.000
41	0.00000	0.00000	6.00000	0 0 0 0 0 0	0.000	0.000	0.000
42	0.00000	0.00000	5.00000	0 0 0 0 0 0	0.000	0.000	0.000
43	0.00000	0.00000	4.00000	0 0 0 0 0 0	0.000	0.000	0.000
44	0.00000	0.00000	3.00000	0 0 0 0 0 0	0.000	0.000	0.000
45	0.00000	0.00000	2.00000	0 0 0 0 0 0	0.000	0.000	0.000
46	0.00000	0.00000	1.00000	0 0 0 0 0 0	0.000	0.000	0.000
48	0.00000	0.00000	6.50000	0 0 0 0 0 0	0.000	0.000	0.000

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J O I N T S P R I N G D A T A

JOINT	K-U1	K-U2	K-U3	K-R1	K-R2	K-R3
3	32500.000	32500.000	0.000	0.000	0.000	0.000
41	37500.000	37500.000	0.000	0.000	0.000	0.000
42	50000.000	50000.000	0.000	0.000	0.000	0.000
43	50000.000	50000.000	0.000	0.000	0.000	0.000
44	50000.000	50000.000	0.000	0.000	0.000	0.000
45	50000.000	50000.000	0.000	0.000	0.000	0.000
46	50000.000	50000.000	0.000	0.000	0.000	0.000
48	12500.000	12500.000	0.000	0.000	0.000	0.000

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

FRAME	JNT-1	JNT-2	SECTION	ANGLE	RELEASES	SEGMENTS	R1	R2	FACTOR	LENGTH
40	1	40	PANTALLA	0.000	000000	2	0.000	0.000	1.000	6.000
43	41	42	PANTALLA	0.000	000000	2	0.000	0.000	1.000	1.000
44	42	43	PANTALLA	0.000	000000	2	0.000	0.000	1.000	1.000
45	43	44	PANTALLA	0.000	000000	2	0.000	0.000	1.000	1.000
46	44	45	PANTALLA	0.000	000000	2	0.000	0.000	1.000	1.000
47	45	46	PANTALLA	0.000	000000	2	0.000	0.000	1.000	1.000
48	46	3	PANTALLA	0.000	000000	2	0.000	0.000	1.000	0.500
51	40	48	PANTALLA	0.000	000000	2	0.000	0.000	1.000	0.500
52	48	41	PANTALLA	0.000	000000	2	0.000	0.000	1.000	0.500

S T A T I C L O A D C A S E S

STATIC CASE	CASE TYPE	SELF WT FACTOR
LOAD1	DEAD	1,0000
EMPUJE	LIVE	0,0000

File: PANTALLA2 KN-m Units PAGE 2
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M A T E R I A L P R O P E R T Y D A T A

MAT LABEL	MODULUS OF ELASTICITY	POISSON'S RATIO	THERMAL COEFF	WEIGHT PER UNIT VOL	MASS PER UNIT VOL
STEEL	199947979	0,300	1,170E-05	76,820	7,827
CONC	24821128,4	0,200	9,900E-06	23,562	2,401
OTHER	24821128,4	0,200	9,900E-06	23,562	2,401

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M A T E R I A L D E S I G N D A T A

MAT LABEL	DESIGN CODE	STEEL FY	CONCRETE FC	REBAR FY	CONCRETE FCS	REBAR FYS
STEEL	S	248211,284				
CONC	C		27579,032	413685,473	27579,032	275790,316
OTHER	N					

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

SECTION LABEL	MAT LABEL	SECTION TYPE	DEPTH	FLANGE WIDTH TOP	FLANGE THICK TOP	WEB THICK	FLANGE WIDTH BOTTOM	FLANGE THICK BOTTOM
PANTALLA	CONC		0,700	1,000	0,000	0,000	0,000	0,000

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

SECTION LABEL	AREA	TORSIONAL INERTIA	MOMENTS OF INERTIA I33	I22	SHEAR AREAS A2	A3
PANTALLA	0,700	6,492E-02	2,858E-02	5,833E-02	0,583	0,583

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

SECTION LABEL	SECTION MODULII S33	S22	PLASTIC MODULII Z33	Z22	RADII OF GYRATION R33	R22
PANTALLA	8,167E-02	0,117	0,123	0,175	0,202	0,289

File: PANTALLA2 KN-m Units PAGE 7
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F R A M E S E C T I O N P R O P E R T Y D A T A

SECTION LABEL	TOTAL WEIGHT	TOTAL MASS
PANTALLA	214,411	21,846

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

SECTION LABEL	MAT LABEL	SHELL TYPE	MEMBRANE THICK	BENDING THICK	MATERIAL ANGLE
SSEC1	CONC	4	1,000	1,000	0,000

File: PANTALLA2 KN-m Units PAGE 9
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S H E L L S E C T I O N P R O P E R T Y D A T A

SECTION LABEL	TOTAL WEIGHT	TOTAL MASS
SSEC1	0,000	0,000

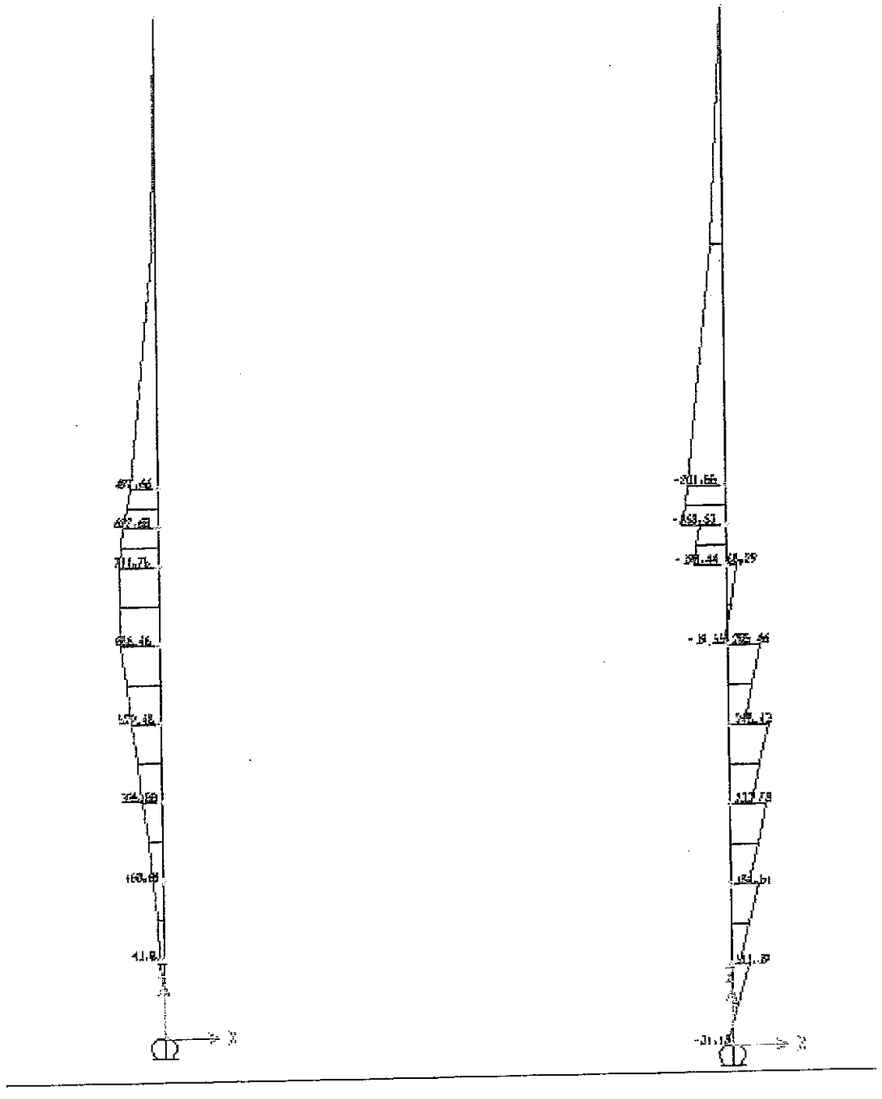
File: PANTALLA2 KN-m Units PAGE 5
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F R A M E S P A N D I S T R I B U T E D L O A D S Load Case EMPUJE

FRAME	TYPE	DIRECTION	DISTANCE-A	VALUE-A	DISTANCE-B	VALUE-B
40	FORCE	GLOBAL-X	0.0000	3.6000	0.1667	10.4400
40	FORCE	GLOBAL-X	0.1667	10.4400	0.3333	17.2800
40	FORCE	GLOBAL-X	0.3333	17.2800	0.5000	24.1200
40	FORCE	GLOBAL-X	0.5000	24.1200	0.6667	30.9600
40	FORCE	GLOBAL-X	0.6667	30.9600	0.8333	37.8000
43	FORCE	GLOBAL-X	0.0000	51.4800	1.0000	58.3200
44	FORCE	GLOBAL-X	0.0000	58.3200	1.0000	65.1600
45	FORCE	GLOBAL-X	0.0000	65.1600	1.0000	72.0000
46	FORCE	GLOBAL-X	0.0000	72.0000	1.0000	78.8400
47	FORCE	GLOBAL-X	0.0000	78.8400	1.0000	85.6800
48	FORCE	GLOBAL-X	0.0000	85.6800	1.0000	92.5200
40	FORCE	GLOBAL-X	0.8333	37.8000	0.9167	41.2200
40	FORCE	GLOBAL-X	0.9167	41.2200	1.0000	44.6400
51	FORCE	GLOBAL-X	0.0000	44.6400	1.0000	48.0600
52	FORCE	GLOBAL-X	0.0000	48.0600	1.0000	51.4800

MODELO PANTALLA 2

LEY DE ESFUERZOS FLECTORES Y CORTANTES



VALIEK valenciana de estructuras
PASO BAJO RAMAL VALLÉS-MARTORELL Y VÍA BERCELONA-MARTORELL

File: PANTALLA2 KN-m Units PAGE 1
2/12/04 18:45:37

L O A D C O M B I N A T I O N M U L T I P L I E R S

COMBO	TYPE	CASE	FACTOR	TYPE	TITLE
H1	ADD				ELU1
		LOAD1	1.0000	STATIC(DEAD)	
		EMPUJE	1.6000	STATIC(LIVE)	
FLECHAS	ADD				COMB1
		LOAD1	1.0000	STATIC(DEAD)	
		EMPUJE	1.0000	STATIC(LIVE)	

File: PANTALLA2 KN-m Units PAGE 2
2/12/04 18:45:37

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

JOINT	LOAD	U1	U2	U3	R1	R2	R3
1	LOAD1	0.0000	0.0000	-8.021E-05	0.0000	0.0000	0.0000
1	EMPUJE	0.0250	0.0000	0.0000	0.0000	3.184E-03	0.0000
1	H1	0.0399	0.0000	-1.203E-04	0.0000	5.095E-03	0.0000
1	FLECHAS	0.0250	0.0000	-8.021E-05	0.0000	3.184E-03	0.0000
3	LOAD1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	EMPUJE	5.993E-04	0.0000	0.0000	0.0000	1.353E-04	0.0000
3	H1	9.590E-04	0.0000	0.0000	0.0000	2.165E-04	0.0000
3	FLECHAS	5.993E-04	0.0000	0.0000	0.0000	1.353E-04	0.0000
40	LOAD1	0.0000	0.0000	-6.313E-05	0.0000	0.0000	0.0000
40	EMPUJE	6.695E-03	0.0000	0.0000	0.0000	2.481E-03	0.0000
40	H1	0.0107	0.0000	-9.469E-05	0.0000	3.970E-03	0.0000
40	FLECHAS	6.695E-03	0.0000	-6.313E-05	0.0000	2.481E-03	0.0000
41	LOAD1	0.0000	0.0000	-5.696E-05	0.0000	0.0000	0.0000
41	EMPUJE	4.445E-03	0.0000	0.0000	0.0000	1.942E-03	0.0000
41	H1	7.113E-03	0.0000	-8.543E-05	0.0000	3.107E-03	0.0000
41	FLECHAS	4.445E-03	0.0000	-5.696E-05	0.0000	1.942E-03	0.0000
42	LOAD1	0.0000	0.0000	-4.984E-05	0.0000	0.0000	0.0000
42	EMPUJE	2.813E-03	0.0000	0.0000	0.0000	1.333E-03	0.0000
42	H1	4.500E-03	0.0000	-7.475E-05	0.0000	2.132E-03	0.0000
42	FLECHAS	2.813E-03	0.0000	-4.984E-05	0.0000	1.333E-03	0.0000
43	LOAD1	0.0000	0.0000	-4.177E-05	0.0000	0.0000	0.0000
43	EMPUJE	1.772E-03	0.0000	0.0000	0.0000	8.043E-04	0.0000
43	H1	2.835E-03	0.0000	-6.265E-05	0.0000	1.287E-03	0.0000
43	FLECHAS	1.772E-03	0.0000	-4.177E-05	0.0000	8.043E-04	0.0000
44	LOAD1	0.0000	0.0000	-3.275E-05	0.0000	0.0000	0.0000
44	EMPUJE	1.188E-03	0.0000	0.0000	0.0000	4.316E-04	0.0000
44	H1	1.902E-03	0.0000	-4.912E-05	0.0000	6.905E-04	0.0000
44	FLECHAS	1.188E-03	0.0000	-3.275E-05	0.0000	4.316E-04	0.0000
45	LOAD1	0.0000	0.0000	-2.278E-05	0.0000	0.0000	0.0000
45	EMPUJE	8.925E-04	0.0000	0.0000	0.0000	2.221E-04	0.0000
45	H1	1.428E-03	0.0000	-3.417E-05	0.0000	3.554E-04	0.0000
45	FLECHAS	8.925E-04	0.0000	-2.278E-05	0.0000	2.221E-04	0.0000
46	LOAD1	0.0000	0.0000	-1.187E-05	0.0000	0.0000	0.0000
46	EMPUJE	7.312E-04	0.0000	0.0000	0.0000	1.429E-04	0.0000
46	H1	1.170E-03	0.0000	-1.780E-05	0.0000	2.287E-04	0.0000
46	FLECHAS	7.312E-04	0.0000	-1.187E-05	0.0000	1.429E-04	0.0000
48	LOAD1	0.0000	0.0000	-6.016E-05	0.0000	0.0000	0.0000
48	EMPUJE	5.501E-03	0.0000	0.0000	0.0000	2.235E-03	0.0000
48	H1	8.801E-03	0.0000	-9.024E-05	0.0000	3.576E-03	0.0000
48	FLECHAS	5.501E-03	0.0000	-6.016E-05	0.0000	2.235E-03	0.0000

File: PANTALLA2 KN-m Units PAGE 3
2/12/04 18:45:37

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

FRAME	LOAD	LOC	P	V2	V3	T	M2	M3
40	LOAD1							
		0.00	0.00	0.00	0.00	0.00	0.00	0.00
		3.00	-49.48	0.00	0.00	0.00	0.00	0.00
		6.00	-98.96	0.00	0.00	0.00	0.00	0.00
40	EMPUJE							
		0.00	0.00	0.00	0.00	0.00	0.00	0.00
		3.00	0.00	-41.58	0.00	0.00	0.00	46.98
		6.00	0.00	-144.72	0.00	0.00	0.00	311.04
40	H1							
		0.00	0.00	0.00	0.00	0.00	0.00	0.00
		3.00	-74.22	-66.53	0.00	0.00	0.00	75.17
		6.00	-148.44	-231.55	0.00	0.00	0.00	497.66
40	FLECHAS							
		0.00	0.00	0.00	0.00	0.00	0.00	0.00
		3.00	-49.48	-41.58	0.00	0.00	0.00	46.98
		6.00	-98.96	-144.72	0.00	0.00	0.00	311.04
43	LOAD1							
		0.00	-115.45	0.00	0.00	0.00	0.00	0.00
		5.0E-01	-123.70	0.00	0.00	0.00	0.00	0.00
		1.0E+00	-131.95	0.00	0.00	0.00	0.00	0.00
43	EMPUJE							
		0.00	0.00	42.68	0.00	0.00	0.00	444.84
		5.0E-01	0.00	16.09	0.00	0.00	0.00	430.08
		1.0E+00	0.00	-12.22	0.00	0.00	0.00	429.04
43	H1							
		0.00	-173.18	68.29	0.00	0.00	0.00	711.75
		5.0E-01	-185.55	25.74	0.00	0.00	0.00	688.12
		1.0E+00	-197.92	-19.55	0.00	0.00	0.00	686.46
43	FLECHAS							
		0.00	-115.45	42.68	0.00	0.00	0.00	444.84
		5.0E-01	-123.70	16.09	0.00	0.00	0.00	430.08
		1.0E+00	-131.95	-12.22	0.00	0.00	0.00	429.04
44	LOAD1							
		0.00	-131.95	0.00	0.00	0.00	0.00	0.00
		5.0E-01	-140.19	0.00	0.00	0.00	0.00	0.00
		1.00	-148.44	0.00	0.00	0.00	0.00	0.00
44	EMPUJE							
		0.00	0.00	128.41	0.00	0.00	0.00	429.04
		5.0E-01	0.00	98.40	0.00	0.00	0.00	372.27
		1.00	0.00	66.67	0.00	0.00	0.00	330.93
44	H1							
		0.00	-197.92	205.46	0.00	0.00	0.00	686.46
		5.0E-01	-210.29	157.44	0.00	0.00	0.00	595.62
		1.00	-222.66	106.68	0.00	0.00	0.00	529.48
44	FLECHAS							
		0.00	-131.95	128.41	0.00	0.00	0.00	429.04
		5.0E-01	-140.19	98.40	0.00	0.00	0.00	372.27
		1.00	-148.44	66.67	0.00	0.00	0.00	330.93
45	LOAD1							
		0.00	-148.44	0.00	0.00	0.00	0.00	0.00
		5.0E-01	-156.68	0.00	0.00	0.00	0.00	0.00
		1.0E+00	-164.93	0.00	0.00	0.00	0.00	0.00
45	EMPUJE							
		0.00	0.00	155.27	0.00	0.00	0.00	330.93
		5.0E-01	0.00	121.84	0.00	0.00	0.00	261.58
		1.0E+00	0.00	86.69	0.00	0.00	0.00	209.38
45	H1							
		0.00	-222.66	248.43	0.00	0.00	0.00	529.48
		5.0E-01	-235.03	194.94	0.00	0.00	0.00	418.53
		1.0E+00	-247.40	138.70	0.00	0.00	0.00	335.00
45	FLECHAS							
		0.00	-148.44	155.27	0.00	0.00	0.00	330.93
		5.0E-01	-156.68	121.84	0.00	0.00	0.00	261.58
		1.0E+00	-164.93	86.69	0.00	0.00	0.00	209.38

PASO BAJO RAMAL VALLÉS-MARTORELL Y VÍA BERCELONA-MARTORELL

46	LOAD1							
		0.00	-164.93	0.00	0.00	0.00	0.00	0.00
		5.0E-01	-173.18	0.00	0.00	0.00	0.00	0.00
		1.0E+00	-181.42	0.00	0.00	0.00	0.00	0.00
46	EMPUJE							
		0.00	0.00	146.11	0.00	0.00	0.00	209.38
		5.0E-01	0.00	109.26	0.00	0.00	0.00	145.46
		1.0E+00	0.00	70.69	0.00	0.00	0.00	100.40
46	H1							
		0.00	-247.40	233.78	0.00	0.00	0.00	335.00
		5.0E-01	-259.77	174.82	0.00	0.00	0.00	232.74
		1.0E+00	-272.14	113.11	0.00	0.00	0.00	160.64
46	FLECHAS							
		0.00	-164.93	146.11	0.00	0.00	0.00	209.38
		5.0E-01	-173.18	109.26	0.00	0.00	0.00	145.46
		1.0E+00	-181.42	70.69	0.00	0.00	0.00	100.40
47	LOAD1							
		0.00	-181.42	0.00	0.00	0.00	0.00	0.00
		5.0E-01	-189.67	0.00	0.00	0.00	0.00	0.00
		1.0E+00	-197.92	0.00	0.00	0.00	0.00	0.00
47	EMPUJE							
		0.00	0.00	115.32	0.00	0.00	0.00	100.40
		5.0E-01	0.00	75.05	0.00	0.00	0.00	52.74
		1.0E+00	0.00	33.06	0.00	0.00	0.00	25.64
47	H1							
		0.00	-272.14	184.51	0.00	0.00	0.00	160.64
		5.0E-01	-284.51	120.07	0.00	0.00	0.00	84.38
		1.0E+00	-296.88	52.90	0.00	0.00	0.00	41.03
47	FLECHAS							
		0.00	-181.42	115.32	0.00	0.00	0.00	100.40
		5.0E-01	-189.67	75.05	0.00	0.00	0.00	52.74
		1.0E+00	-197.92	33.06	0.00	0.00	0.00	25.64
48	LOAD1							
		0.00	-197.92	0.00	0.00	0.00	0.00	0.00
		5.0E-01	-206.16	0.00	0.00	0.00	0.00	0.00
		1.00	-214.41	0.00	0.00	0.00	0.00	0.00
48	EMPUJE							
		0.00	0.00	69.62	0.00	0.00	0.00	25.64
		5.0E-01	0.00	25.93	0.00	0.00	0.00	1.68
		1.00	0.00	-19.48	0.00	0.00	0.00	0.00
48	H1							
		0.00	-296.88	111.39	0.00	0.00	0.00	41.03
		5.0E-01	-309.25	41.48	0.00	0.00	0.00	2.69
		1.00	-321.62	-31.17	0.00	0.00	0.00	0.00
48	FLECHAS							
		0.00	-197.92	69.62	0.00	0.00	0.00	25.64
		5.0E-01	-206.16	25.93	0.00	0.00	0.00	1.68
		1.00	-214.41	-19.48	0.00	0.00	0.00	0.00
51	LOAD1							
		0.00	-98.96	0.00	0.00	0.00	0.00	0.00
		2.5E-01	-103.08	0.00	0.00	0.00	0.00	0.00
		5.0E-01	-107.21	0.00	0.00	0.00	0.00	0.00
51	EMPUJE							
		0.00	0.00	-144.72	0.00	0.00	0.00	311.04
		2.5E-01	0.00	-156.09	0.00	0.00	0.00	348.63
		5.0E-01	0.00	-167.90	0.00	0.00	0.00	389.12
51	H1							
		0.00	-148.44	-231.55	0.00	0.00	0.00	497.66
		2.5E-01	-154.62	-249.75	0.00	0.00	0.00	557.81
		5.0E-01	-160.81	-268.63	0.00	0.00	0.00	622.60
51	FLECHAS							
		0.00	-98.96	-144.72	0.00	0.00	0.00	311.04
		2.5E-01	-103.08	-156.09	0.00	0.00	0.00	348.63
		5.0E-01	-107.21	-167.90	0.00	0.00	0.00	389.12
52	LOAD1							
		0.00	-107.21	0.00	0.00	0.00	0.00	0.00
		2.5E-01	-111.33	0.00	0.00	0.00	0.00	0.00
		5.0E-01	-115.45	0.00	0.00	0.00	0.00	0.00
52	EMPUJE							
		0.00	0.00	-99.14	0.00	0.00	0.00	389.12
		2.5E-01	0.00	-111.37	0.00	0.00	0.00	415.43
		5.0E-01	0.00	-124.02	0.00	0.00	0.00	444.84

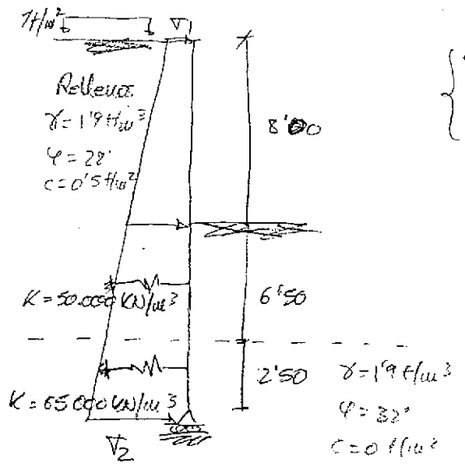
52	H1						
	0.00	-160.81	-158.62	0.00	0.00	0.00	622.60
	2.5E-01	-166.99	-178.19	0.00	0.00	0.00	664.68
	5.0E-01	-173.18	-198.44	0.00	0.00	0.00	711.75
52	FLECHAS						
	0.00	-107.21	-99.14	0.00	0.00	0.00	389.12
	2.5E-01	-111.33	-111.37	0.00	0.00	0.00	415.43
	5.0E-01	-115.45	-124.02	0.00	0.00	0.00	444.84

VALTER valenciana de estructuras

Proyecto LAV CASTELL-BISBAL

Asunto PASO BAJO RAM Y VIA

0 PANTALLA ALIBRE = 8'-6'5 m L = 17'00 EN VOLADIZO

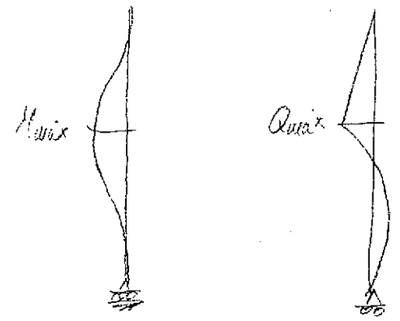


$$\begin{cases} \sigma_1 = Ka \cdot q = 3'6\ KN/m^2 \\ \sigma_2 = Ka\,(h\,\gamma + q) = 0'36(17 \cdot 19 + 10) = 119'88\ KN/m \end{cases}$$

Espesor = 1'60 m

Desplaz. máx = 2'5 cm

ESFUERZOS OBTENIDOS



$$\begin{cases} M_{máx,d} = 1320\ KN \cdot m \\ N_d = 353'1\ KN \end{cases} \Rightarrow A_s = \phi 25/10'10$$

$$\begin{cases} N_{máx,d} = 600'82\ KN \\ Q_{máx,d} = 396'65\ KN \end{cases}$$

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

Obra: PANTALLAS
Fecha: 12/02/2004
Hora: 18:27:16

Cálculo de secciones a flexión compuesta recta

1 Datos

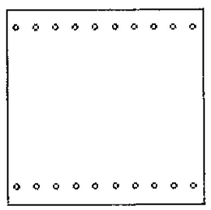
- Materiales

Tipo de hormigón : HA-25
Tipo de acero : B-500-S
fck [MPa] = 25.00
fyk [MPa] = 500.00
γc = 1.50
γs = 1.15

- Sección

Sección : PANTALLA1
b [m] = 1.00
h [m] = 1.00
r [m] = 0.090

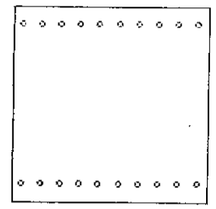
nº barras horizontales = 10
nº barras verticales = 2

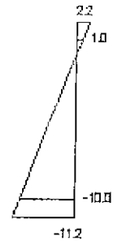


2 Comprobación

ϕ [mm] = 25
Nd [kN] = 353.4
Md [kN·m] = 1320

Nu [kN] = 539.4
Mu [kN·m] = 2014.7
γ = 1.53









Plano de deformación de agotamiento

x [m] = 0.167
1/r [1/m]·1.E-3 = 13.5
εs ·1.E-3 = 1.0
εi ·1.E-3 = -10.0

Deformación y tensión de armaduras superior e inferior

Profundidad [m]	Deformación -1.E-3	Tensión [MPa]
0.090	2.2	-206.6
0.910	-11.2	434.8

Obra: PASO BAJO RVM Y VBM
Fecha: 12/02/2004
Hora: 18:29:30

Cálculo de secciones a cortante

1 Datos

- Materiales

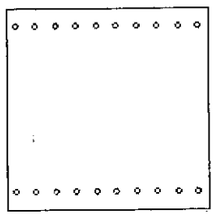
Tipo de hormigón : HA-25
Tipo de acero : B-500-S
fck [MPa] = 25.00
fyk [MPa] = 500.0
γc = 1.50
γs = 1.15

- Tipo de elemento estructural

Tipo : elemento con armadura a cortante

- Sección

Sección : PANTALLA1
b [m] = 1.00
h [m] = 1.00



2 Dimensionamiento

Esfuerzo cortante de cálculo Vd [kN] = 396

Inclinación de las bielas [°] = 45
Inclinación de los cercos [°] = 90.0
ρ [·1.E-3] = 4.9
Nd [kN] = 0.0
σxd [MPa] = 0.0
σyd [MPa] = 0
θe [°] = 45.0

ϕ [mm]	Separación [mm]	nº ramas	Area [cm²/m]	Tipo	Vsu [kN]
ø 6	0.10	4	11.3	2	371.0
ø 8	0.20	4	10.1	2	329.7
ø 10	0.25	4	12.6	2	412.2
ø 12	0.25	4	18.1	2	593.5

Área estricta [cm²/m] = 8.3
(Cuantía mínima)
Vu1 [kN] = 4550.0
Vcu [kN] = 308.1

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

Obra: PASO BAJO RVM Y VBM
Fecha: 16/02/2004
Hora: 20:52:02

Comprobación del Estado Límite de Servicio de fisuración debido a solicitaciones normales

1 Datos

- Materiales

Tipo de hormigón: HA-25
Tipo de acero: B-500-S
fck [MPa] = 25.00
fyk [MPa] = 500.0

- Ambiente

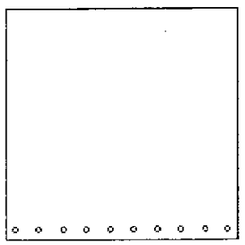
Clase general de exposición : IIa
Clases específicas de exposición :

- Geometría de la sección

Sección : PANTALLA
b [m] = 1.00
h [m] = 1.00

- Armado de la sección

ϕ [mm] = 25



capa	nº barras	Separación [mm]
1	10	42.50

As [cm²] = 49.1
Ac,ef [cm²] = 2.3E3

2 Resultados

Mk [kN·m] = 823.26

Separación media entre fisuras sm [mm] = 139.0
Deformación media de las armaduras εsm [·1.E-3] = 0.79
Tensión en las armaduras en el instante de fisuración σsr [MPa] = 110.8
Tensión en las armaduras en servicio σs [MPa] = 190.0
Abertura característica de fisura wk [mm] = 0.19

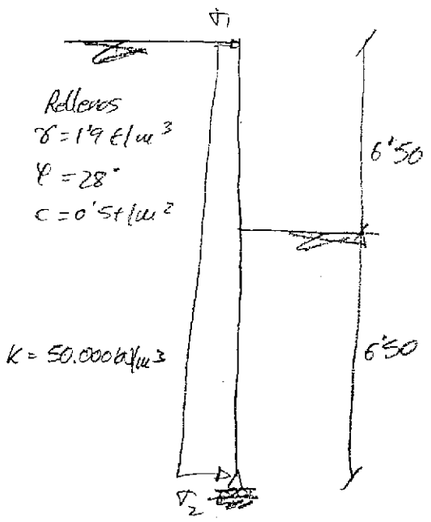
Clase de exposición	wk max [mm]	
	Armado	Pretensado
I	0.4	0.2
IIa, IIb, H	0.3	0.2
IIIa, IIIb, IV, F	0.3	Decompresión
IIIc, Qa, Qb, Qc	0.1	

VALTER
valenciana de estructuras

Proyecto LAV CASTELL-BISBAL

Asunto PASO BAJO RVM Y VBM

0 PANTALLA $H_{LIBRE} = 6'5m - 5m$ $L = 13'60$ EN VOLADIZO



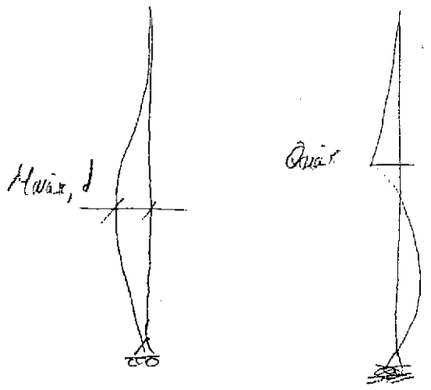
$\sigma_1 = K_a \cdot q = 36\ kN/m^2$

$\sigma_2 = K_a(\gamma h + q) = 0'36(13'19 + 10) = 92'52$

Espesor = 0'70 m

Desplaz. máx = 2'5 cm

ESFUERZOS OBTENIDOS



$M_{máx,d} = 711'75\ kN \cdot m$

$N_d = 198\ kN$

$N_{máx,d} = 321'62\ kN$

$Q_{máx,d} = 268'63\ kN$

Fecha

Hoja Nº De

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

Obra: PANTALLAS
Fecha: 12/02/2004
Hora: 18:31:02

Cálculo de secciones a flexión compuesta recta

1 Datos

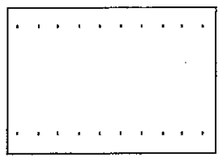
- Materiales

Tipo de hormigón : HA-25
Tipo de acero : B-500-S
fck [MPa] = 25.00
fyk [MPa] = 500.00
γc = 1.50
γs = 1.15

- Sección

Sección : PANTALLA2
b [m] = 1.00
h [m] = 0.70
r [m] = 0.090

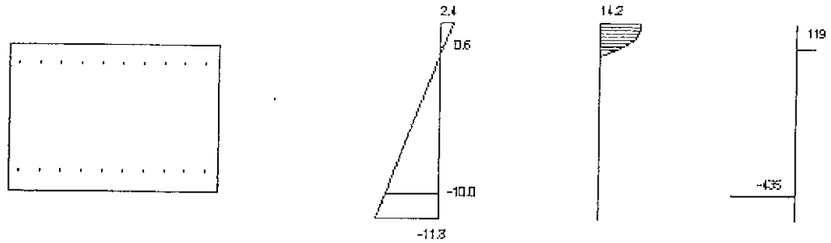
nº barras horizontales = 10
nº barras verticales = 2



2 Comprobación

ϕ [mm] = 20
Nd [kN] = 198
Md [kN·m] = 711.75

Nu [kN] = 228.9
Mu [kN·m] = 823.2
γ = 1.16



Plano de deformación de agotamiento

x [m] = 0.119

1/r [1/m]·1.E-3 = 20.4

εs ·1.E-3 = 0.6

εi ·1.E-3 = -10.0

Deformación y tensión de armaduras superior e inferior

Profundidad [m]	Deformación ·1.E-3	Tensión [MPa]
0.090	2.4	-118.6
0.610	-11.8	434.8

Obra: PASO BAJO RVM Y VBM
Fecha: 12/02/2004
Hora: 18:34:56

Cálculo de secciones a cortante

1 Datos

- Materiales

Tipo de hormigón : HA-25

Tipo de acero : B-500-S

fck [MPa] = 25.00

fyk [MPa] = 500.0

γc = 1.50

γs = 1.15

- Tipo de elemento estructural

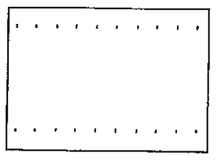
Tipo : elemento con armadura a cortante

- Sección

Sección : PANTALLA2

b [m] = 1.00

h [m] = 0.70



2 Dimensionamiento

Esfuerzo cortante de cálculo Vd [kN] = 269

Inclinación de las bielas [º] = 45

Inclinación de los cercos [º] = 90.0

ρ [·1.E-3] = 0

Nd [kN] = 0.0

σxd [MPa] = 0.0

σyd [MPa] = 0

θe [º] = 45.0

ϕ [mm]	Separación [mm]	nº ramas	Area [cm²/m]	Tipo	Vsu [kN]
ø 6	----	----	----	----	----
ø 8	0.15	4	13.4	2	294.9
ø 10	0.25	4	12.6	2	276.5
ø 12	0.25	4	18.1	2	398.1

Área estricta [cm²/m] = 12.2

Vu1 [kN] = 3050.0

Vcu [kN] = 0.0

VALTER
valenciana de estructuras

Proyecto GAV CASTELL - BÍSBAL

Asunto PASO BAJO RVK Y VBH

Ø TOPE ESTRUCTURAL PANTALLAS

$Te = \alpha \cdot f_{yd} \cdot Sa + \beta \cdot f_{cd} \cdot Sb + \chi \cdot f_{yk} \cdot Sc$

		PA1	PA2
Sa : área de acero (cm^2/m)	Sa	59'14	41'47
Sb : " " hormigón (cm^2)	Sb	10000	7000
Sc : " " camisa hormigón	Sc	0	0

f_{yk} : resist. caract. armaduras ($3500 kg/cm^2$)

f_{ck} : " " hormigón ($225 kg/cm^2$ in situ)

$\alpha = 0'32$
$\beta = 0'2$
} Pantalla hormigonada in situ con lodos bentoníticos

PANTALLA	Te (KN)
1	5162 >> Nmáx
2	3614 >> Nmáx

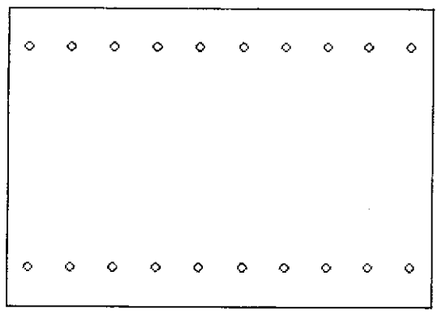
Obra: PASO BAJO RVM Y VBM
Fecha: 16/02/2004
Hora: 20:56:16

Características geométricas de las secciones

1 Datos

- Sección

Sección : PANTALLA23
b [m] = 1.00
h [m] = 0.70
ri [m] = 0.050
rs [m] = 0.050
A_i [cm2] = 10.00
A_s [cm2] = 10.00



2 Resultados

	Sección bruta	Sección homogeneizada
A [m²]	0.70	0.75
Ix [m4]	0.0286	0.0317
Iy [m4]	0.0583	0.0621
ix [m]	0.20	0.21
iy [m]	0.29	0.29
x´g [m]	0.50	0.50
y´g [m]	0.35	0.35

	Sección fisurada
Ix [m4]	0.0061
Mfis [kN·m]	232.3
y´fis [m]	0.0583

DIMENSIONAMIENTO DE MUROS

ÍNDICE

1.- DATOS DE LA OBRA

2.- DESCRIPCIÓN

3.- COMPROBACIÓN

1.- DATOS DE LA OBRA

Hormigón: HA-25, Control estadístico
Acero: B 500 S, Control normal
Recubrimiento (Trasdós) : 5.00 cm
Recubrimiento (Intradós) : 5.00 cm
Recubrimiento (Superior) : 5.00 cm
Recubrimiento (Inferior) : 5.00 cm
Recubrimiento (Lateral) : 5.00 cm
Tamaño máximo del árido: 20.0 mm
Abertura límite de fisuras: 0.3 mm
Espesor hormigón limpieza: 10.0 cm
Tensión admisible del terreno: 2.0 Kp/cm2
Coeficiente rozamiento terreno-cimiento: 0.6
Tipo de empuje que produce la acción: Activo
Tipo de empuje que produce la reacción: Pasivo
Combinaciones de hormigón: EHE, Control normal
Combinaciones para tensiones sobre el terreno: Acciones Caracteristicas
Combinaciones de equilibrio: EHE, Control normal

2.- DESCRIPCIÓN

DESCRIPCION DE SECCIONES

Referencia: H-2

- Longitud del muro: 1.00 m
- Cota en arranque: 0.00 m

Referencia: H-3

- Longitud del muro: 1.00 m
- Cota en arranque: 0.00 m

LISTADO DE TERRENOS

Referencia: H-2

- Situación de peso propio:
- Coronación:
Carga hacia abajo en coronación: 0 Tn/m
Carga hacia intradós en coronación: 0 Tn/m
Momento de compresión hacia intradós en coronación: 0 mTn/m
- Trasdós:
Con relleno: Cota: 2.00 m
Angulo de talud: 0.00 Grados
Densidad aparente: 1.80 Tn/m3
Densidad sumergida: 1.10 Tn/m3
Angulo rozamiento interno: 30.00 Grados
Evacuación por drenaje: 100.00 %
Porcentaje de empuje pasivo: 0.00 %
Cota empuje pasivo: 0.00 m
Carga 1:
Tipo: Uniforme
Valor: 1.00 Tn/m2
- Intradós:
Con relleno: Cota: 0.50 m
Angulo de talud: 0.00 Grados
Densidad aparente: 2.00 Tn/m3
Densidad sumergida: 1.10 Tn/m3
Angulo rozamiento interno: 30.00 Grados
Evacuación por drenaje: 100.00 %
Porcentaje de empuje pasivo: 0.00 %
Cota empuje pasivo: 0.00 m
- Esfuerzos en arranque de muro. ESTADO DE PESO PROPIO (PP):

	Cortante (Tn/m)	Momento (mTn/m)
Trasdós	1.867	1.467
Intradós	0.000	0.000
Total	1.867	1.467

- Situación de sobrecarga 1:
- Coronación:
Carga hacia abajo en coronación: 0 Tn/m
Carga hacia intradós en coronación: 0 Tn/m
Momento de compresión hacia intradós en coronación: 0 mTn/m
- Trasdós:
Con relleno: Cota: 2.00 m
Angulo de talud: 0.00 Grados
Densidad aparente: 1.80 Tn/m3
Densidad sumergida: 1.10 Tn/m3
Angulo rozamiento interno: 30.00 Grados
Evacuación por drenaje: 100.00 %
Porcentaje de empuje pasivo: 0.00 %
Cota empuje pasivo: 0.00 m
Carga 1:
Tipo: Uniforme
Valor: 1.00 Tn/m2
- Intradós:
Con relleno: Cota: 0.50 m
Angulo de talud: 0.00 Grados
Densidad aparente: 2.00 Tn/m3
Densidad sumergida: 1.10 Tn/m3
Angulo rozamiento interno: 30.00 Grados
Evacuación por drenaje: 100.00 %

Porcentaje de empuje pasivo: 0.00 %
Cota empuje pasivo: 0.00 m
- Esfuerzos en arranque de muro. ESTADO DE SOBRECARGA (SBC):

	Cortante (Tn/m)	Momento (mTn/m)
Trasdós	1.867	1.467
Intradós	0.000	0.000
Total	1.867	1.467

- Esfuerzos de arranque de muro. DIFERENCIA ESTADO DE SOBRECARGA Y PESO PROPIO (SBC - PP):

	Cortante (Tn/m)	Momento (mTn/m)
Trasdós	0.000	0.000
Intradós	0.000	0.000
Total	0.000	0.000

Referencia: H-3

- Situación de peso propio:
- Coronación:
Carga hacia abajo en coronación: 0 Tn/m
Carga hacia intradós en coronación: 0 Tn/m
Momento de compresión hacia intradós en coronación: 0 mTn/m
- Trasdós:
Con relleno: Cota: 3.00 m
Angulo de talud: 0.00 Grados
Densidad aparente: 1.80 Tn/m3
Densidad sumergida: 1.10 Tn/m3
Angulo rozamiento interno: 30.00 Grados
Evacuación por drenaje: 100.00 %
Porcentaje de empuje pasivo: 0.00 %
Cota empuje pasivo: 0.00 m
- Intradós:
No hay cargas.
- Esfuerzos en arranque de muro. ESTADO DE PESO PROPIO (PP):

	Cortante (Tn/m)	Momento (mTn/m)
Trasdós	2.700	2.700
Intradós	0.000	0.000
Total	2.700	2.700

- Situación de sobrecarga 1:
- Coronación:
Carga hacia abajo en coronación: 0 Tn/m
Carga hacia intradós en coronación: 0 Tn/m
Momento de compresión hacia intradós en coronación: 0 mTn/m
- Trasdós:
Con relleno: Cota: 3.00 m
Angulo de talud: 0.00 Grados
Densidad aparente: 1.80 Tn/m3
Densidad sumergida: 1.10 Tn/m3
Angulo rozamiento interno: 30.00 Grados
Evacuación por drenaje: 100.00 %
Porcentaje de empuje pasivo: 0.00 %
Cota empuje pasivo: 0.00 m
Carga 1:
Tipo: Uniforme
Valor: 1.00 Tn/m2
- Intradós:
Con relleno: Cota: 0.50 m
Angulo de talud: 0.00 Grados
Densidad aparente: 1.80 Tn/m3
Densidad sumergida: 1.10 Tn/m3
Angulo rozamiento interno: 30.00 Grados
Evacuación por drenaje: 100.00 %
Porcentaje de empuje pasivo: 0.00 %
Cota empuje pasivo: 0.00 m
- Esfuerzos en arranque de muro. ESTADO DE SOBRECARGA (SBC):

	Cortante (Tn/m)	Momento (mTn/m)
Trasdós	3.700	4.200
Intradós	0.000	0.000
Total	3.700	4.200

- Esfuerzos de arranque de muro. DIFERENCIA ESTADO DE SOBRECARGA Y PESO PROPIO (SBC - PP):

	Cortante (Tn/m)	Momento (mTn/m)
Trasdós	1.000	1.500
Intradós	0.000	0.000
Total	1.000	1.500

MUROS CALCULADOS

Referencia	Espesor inferior	Espesor superior	Altura	Ar. Vert. T.	Ar. Vert. I.	Ar. Horz. T.	Ar. Horz. I.	Ar. Coronación
H-2	25.00 cm	25.00 cm	2.00 m	Ø10 c/ 15	Ø10 c/ 20	Ø10 c/ 15	Ø10 c/ 15	Barras superiores 2 Ø12
H-3	30.00 cm	30.00 cm	3.00 m	Ø12 c/ 15	Ø10 c/ 20	Ø10 c/ 15	Ø10 c/ 15	Barras superiores 2 Ø12

Nota:
- Ar. Vert. T.: Armado vertical trasdós
- Ar. Vert. I.: Armado vertical intradós
- Ar. Horz. T.: Armado horizontal trasdós
- Ar. Horz. I.: Armado horizontal intradós
- Ar. Coronación: Armado en coronación

Referencias	Geometría	Armado
H-2	Vuelo izquierdo: 95.0 cm Vuelo derecho: 95.0 cm Canto: 50.0 cm	Base inferior: Ø12 c/ 20 Longitudinal inferior: Ø12 c/ 20 Superior Longitudinal: Ø12 c/ 20 Superior Transversal: Ø12 c/ 20
H-3	Vuelo izquierdo: 130.0 cm Vuelo derecho: 130.0 cm Canto: 65.0 cm	Base inferior: Ø12 c/ 15 Longitudinal inferior: Ø12 c/ 15 Superior Longitudinal: Ø12 c/ 20 Superior Transversal: Ø12 c/ 20

3.- COMPROBACIÓN

Referencia: H-2		
COMPROBACION	VALORES	ESTADO
Comprobación a rasante en arranque muro		
- Muro H-2 -> Arranque:		CUMPLE
Espesor mínimo del tramo	Mínimo: 20 cm	
- Muro H-2 -> Tramo 1:	Calculado: 25 cm	CUMPLE
Cuantía mínima geométrica horizontal	Mínimo: 0.0008	
- Muro H-2 -> Tramo 1 -> Trasdós (0.00 m):	Calculado: 0.0021	CUMPLE
- Muro H-2 -> Tramo 1 -> Intradós (0.00 m):	Calculado: 0.0021	CUMPLE
Cuantía mínima mecánica horizontal por cara		
- Muro H-2 -> Tramo 1 -> Trasdós:	Mínimo: 0.00042 Calculado: 0.0021	CUMPLE
- Muro H-2 -> Tramo 1 -> Intradós:	Mínimo: 0.00032 Calculado: 0.0021	CUMPLE
Separación libre mínima armaduras horizontales	Mínimo: 2.5 cm	
- Muro H-2 -> Tramo 1 -> Trasdós:	Calculado: 14 cm	CUMPLE
- Muro H-2 -> Tramo 1 -> Intradós:	Calculado: 14 cm	CUMPLE
Separación máxima armaduras horizontales	Máximo: 30 cm	
- Muro H-2 -> Tramo 1 -> Trasdós:	Calculado: 15 cm	CUMPLE
- Muro H-2 -> Tramo 1 -> Intradós:	Calculado: 15 cm	CUMPLE
Cuantía mínima geométrica vertical cara traccionada	Mínimo: 0.0009	
- Muro H-2 -> Tramo 1 -> Trasdós (0.00 m):	Calculado: 0.0021	CUMPLE
Cuantía mínima mecánica vertical cara traccionada	Mínimo: 0.00154	
- Muro H-2 -> Tramo 1 -> Trasdós (0.00 m):	Calculado: 0.0021	CUMPLE
Cuantía mínima geométrica vertical cara comprimida	Mínimo: 0.00027	
- Muro H-2 -> Tramo 1 -> Intradós (0.00 m):	Calculado: 0.00158	CUMPLE
Cuantía mínima mecánica vertical cara comprimida	Mínimo: 1e-005	
- Muro H-2 -> Tramo 1 -> Intradós (0.00 m):	Calculado: 0.00158	CUMPLE
Cuantía máxima geométrica de armadura vertical total	Máximo: 0.04	
- Muro H-2 -> Tramo 1 -> (2.00 m):	Calculado: 0.00367	CUMPLE
Separación libre mínima armaduras verticales	Mínimo: 2.5 cm	
- Muro H-2 -> Tramo 1 -> Trasdós:	Calculado: 14 cm	CUMPLE
- Muro H-2 -> Tramo 1 -> Intradós:	Calculado: 19 cm	CUMPLE
Separación máxima armaduras verticales	Máximo: 30 cm	
- Muro H-2 -> Tramo 1 -> Trasdós:	Calculado: 15 cm	CUMPLE
- Muro H-2 -> Tramo 1 -> Intradós:	Calculado: 20 cm	CUMPLE
Comprobación a flexocompresión		
- Muro H-2 -> Tramo 1:		CUMPLE
Comprobación a cortante	Máximo: 9.28 Tn/m	
- Muro H-2 -> Tramo 1:	Calculado: 2.37 Tn/m	CUMPLE
Comprobación de fisuración	Máximo: 0.3 mm	
- Muro H-2 -> Tramo 1:	Calculado: 0.11 mm	CUMPLE
Comprobación de las longitudes de solape		
- Muro H-2 -> Tramo 1 -> Base trasdós:	Mínimo: 35 cm Calculado: 50 cm	CUMPLE
- Muro H-2 -> Tramo 1 -> Base intradós:	Mínimo: 25 cm Calculado: 25 cm	CUMPLE
Comprobación del anclaje del armado base en coronación	Mínimo: 13.5 cm	
- Muro H-2 -> Coronación -> Trasdós:	Calculado: 13.5 cm	CUMPLE
- Muro H-2 -> Coronación -> Intradós:	Calculado: 13.5 cm	CUMPLE
Area mínima longitudinal cara superior viga de coronación	Mínimo: 2.3 cm2	
- Muro H-2 -> Coronación:	Calculado: 2.3 cm2	CUMPLE
Tensiones sobre el terreno		
- Zapata H-2 -> Tensión media:	Máximo: 2 Kp/cm2 Calculado: 0.386 Kp/cm2	CUMPLE
- Zapata H-2 -> Tensión máxima acc. gravitatorias:	Máximo: 2.5 Kp/cm2 Calculado: 0.505 Kp/cm2	CUMPLE
Flexión en zapata (acciones estáticas)		
- Zapata H-2 -> Momento positivo en vuelo derecho:	Momento: 0.00 Tn·m	CUMPLE

- Zapata H-2 -> Momento negativo en vuelo derecho:	Momento: -1.24 Tn·m	CUMPLE
- Zapata H-2 -> Momento positivo sección ref. derecha:	Momento: 0.00 Tn·m	CUMPLE
- Zapata H-2 -> Momento negativo sección ref. derecha:	Momento: -1.33 Tn·m	CUMPLE
- Zapata H-2 -> Momento positivo en vuelo izquierdo:	Momento: 1.66 Tn·m	CUMPLE
- Zapata H-2 -> Momento negativo en vuelo izquierdo:	Momento: 0.00 Tn·m	CUMPLE
- Zapata H-2 -> Momento positivo sección ref. izquierda:	Momento: 1.78 Tn·m	CUMPLE
- Zapata H-2 -> Momento negativo sección ref. izquierda:	Momento: 0.00 Tn·m	CUMPLE
Coeficiente de rozamiento terreno-cimiento	Máximo: 0.5773	
- Zapata H-2:	Calculado: 0.4889	CUMPLE
Vuelco de la zapata		
- Zapata H-2:	Reserva seguridad: 548.6 %	CUMPLE
Compresión oblicua (acciones estáticas)	Máximo: 229.36 Tn	
- Zapata H-2 -> Vuelo derecho:	Calculado: 2.35 Tn	CUMPLE
- Zapata H-2 -> Vuelo izquierdo:	Calculado: 3.24 Tn	CUMPLE
Esfuerzo cortante (acciones estáticas)	Máximo: 13.44 Tn	
- Zapata H-2 -> Vuelo derecho:	Calculado: 1.42 Tn	CUMPLE
- Zapata H-2 -> Vuelo izquierdo:	Calculado: 1.89 Tn	CUMPLE
Canto mínimo	Mínimo: 25 cm	
- Zapata H-2:	Calculado: 50 cm	CUMPLE
Longitud de anclaje		
- Zapata H-2 -> Arranque izquierdo del muro:	Mínimo: 18 cm Calculado: 40 cm	CUMPLE
- Zapata H-2 -> Arranque derecho del muro:	Mínimo: 18 cm Calculado: 40 cm	CUMPLE
- Zapata H-2 -> Armado superior vuelo der. hacia izquierda:	Mínimo: 43 cm Calculado: 126 cm	CUMPLE
- Zapata H-2 -> Armado superior vuelo der. hacia derecha:	Mínimo: 51 cm Calculado: 55 cm	CUMPLE
- Zapata H-2 -> Armado base inferior vuelo izq. hacia izquierda:	Mínimo: 30 cm Calculado: 79 cm	CUMPLE
- Zapata H-2 -> Armado base inferior vuelo izq. hacia derecha:	Mínimo: 30 cm Calculado: 150 cm	CUMPLE
Cuantía geométrica mínima	Mínimo: 0.001	
- Zapata H-2 -> Armado inferior longitudinal:	Calculado: 0.0012	CUMPLE
- Zapata H-2 -> Armado inferior transversal:	Calculado: 0.0012	CUMPLE
Cuantía mínima necesaria por flexión	Mínimo: 0.0002	
- Zapata H-2 -> Armado inferior transversal:	Calculado: 0.0012	CUMPLE
- Zapata H-2 -> Armado sup. transversal vuelo derecho:	Calculado: 0.0012	CUMPLE
- Zapata H-2 -> Armado sup. transversal sección ref. derecha:	Calculado: 0.0012	CUMPLE
Diámetro mínimo de las barras	Mínimo: 12 mm	
- Zapata H-2 -> Armaduras de la zapata:	Calculado: 12 mm	CUMPLE
Separación máxima entre barras	Máximo: 30 cm	
- Zapata H-2 -> Armado inferior transversal:	Calculado: 20 cm	CUMPLE
- Zapata H-2 -> Armado inferior longitudinal:	Calculado: 20 cm	CUMPLE
- Zapata H-2 -> Armado superior transversal:	Calculado: 20 cm	CUMPLE
- Zapata H-2 -> Armado superior longitudinal:	Calculado: 20 cm	CUMPLE
Separación mínima entre barras	Mínimo: 10 cm	
- Zapata H-2 -> Armado inferior transversal:	Calculado: 20 cm	CUMPLE
- Zapata H-2 -> Armado inferior longitudinal:	Calculado: 20 cm	CUMPLE
- Zapata H-2 -> Armado superior transversal:	Calculado: 20 cm	CUMPLE
- Zapata H-2 -> Armado superior longitudinal:	Calculado: 20 cm	CUMPLE
Longitud mínima de las patillas	Mínimo: 11 cm	
- Zapata H-2 -> Armado superior vuelo izq. hacia izquierda:	Calculado: 15 cm	CUMPLE
- Zapata H-2 -> Armado superior vuelo izq. hacia derecha:	Calculado: 15 cm	CUMPLE
- Zapata H-2 -> Armado base inferior vuelo izq. hacia izquierda:	Calculado: 39 cm	CUMPLE
- Zapata H-2 -> Armado base inferior vuelo izq. hacia derecha:	Calculado: 39 cm	CUMPLE
Se cumplen todas las comprobaciones		

Referencia: H-3		
COMPROBACION	VALORES	ESTADO
Comprobación a rasante en arranque muro		
- Muro H-3 -> Arranque:		CUMPLE
Espesor mínimo del tramo	Mínimo: 20 cm	
- Muro H-3 -> Tramo 1:	Calculado: 30 cm	CUMPLE
Cuantía mínima geométrica horizontal	Mínimo: 0.0008	
- Muro H-3 -> Tramo 1 -> Trasdós (0.00 m):	Calculado: 0.00175	CUMPLE
- Muro H-3 -> Tramo 1 -> Intradós (0.00 m):	Calculado: 0.00175	CUMPLE
Cuantía mínima mecánica horizontal por cara		
- Muro H-3 -> Tramo 1 -> Trasdós:	Mínimo: 0.00051 Calculado: 0.00175	CUMPLE
- Muro H-3 -> Tramo 1 -> Intradós:	Mínimo: 0.00027 Calculado: 0.00175	CUMPLE
Separación libre mínima armaduras horizontales	Mínimo: 2.5 cm	
- Muro H-3 -> Tramo 1 -> Trasdós:	Calculado: 14 cm	CUMPLE
- Muro H-3 -> Tramo 1 -> Intradós:	Calculado: 14 cm	CUMPLE
Separación máxima armaduras horizontales	Máximo: 30 cm	
- Muro H-3 -> Tramo 1 -> Trasdós:	Calculado: 15 cm	CUMPLE
- Muro H-3 -> Tramo 1 -> Intradós:	Calculado: 15 cm	CUMPLE
Cuantía mínima geométrica vertical cara traccionada	Mínimo: 0.0009	
- Muro H-3 -> Tramo 1 -> Trasdós (0.00 m):	Calculado: 0.00252	CUMPLE
Cuantía mínima mecánica vertical cara traccionada	Mínimo: 0.00154	
- Muro H-3 -> Tramo 1 -> Trasdós (0.00 m):	Calculado: 0.00252	CUMPLE
Cuantía mínima geométrica vertical cara comprimida	Mínimo: 0.00027	
- Muro H-3 -> Tramo 1 -> Intradós (0.00 m):	Calculado: 0.00131	CUMPLE
Cuantía mínima mecánica vertical cara comprimida	Mínimo: 2e-005	
- Muro H-3 -> Tramo 1 -> Intradós (0.00 m):	Calculado: 0.00131	CUMPLE
Cuantía máxima geométrica de armadura vertical total	Máximo: 0.04	
- Muro H-3 -> Tramo 1 -> (3.00 m):	Calculado: 0.00383	CUMPLE
Separación libre mínima armaduras verticales	Mínimo: 2.5 cm	
- Muro H-3 -> Tramo 1 -> Trasdós:	Calculado: 13.8 cm	CUMPLE
- Muro H-3 -> Tramo 1 -> Intradós:	Calculado: 19 cm	CUMPLE
Separación máxima armaduras verticales	Máximo: 30 cm	
- Muro H-3 -> Tramo 1 -> Trasdós:	Calculado: 15 cm	CUMPLE
- Muro H-3 -> Tramo 1 -> Intradós:	Calculado: 20 cm	CUMPLE
Comprobación a flexocompresión		
- Muro H-3 -> Tramo 1:		CUMPLE
Comprobación a cortante	Máximo: 11.63 Tn/m	
- Muro H-3 -> Tramo 1:	Calculado: 4.89 Tn/m	CUMPLE
Comprobación de fisuración	Máximo: 0.3 mm	
- Muro H-3 -> Tramo 1:	Calculado: 0.23 mm	CUMPLE
Comprobación de las longitudes de solape		
- Muro H-3 -> Tramo 1 -> Base trasdós:	Mínimo: 45 cm Calculado: 60 cm	CUMPLE
- Muro H-3 -> Tramo 1 -> Base intradós:	Mínimo: 25 cm Calculado: 25 cm	CUMPLE
Comprobación del anclaje del armado base en coronación		
- Muro H-3 -> Coronación -> Trasdós:	Mínimo: 18.2 cm Calculado: 20 cm	CUMPLE
- Muro H-3 -> Coronación -> Intradós:	Mínimo: 18.5 cm Calculado: 20 cm	CUMPLE
Area mínima longitudinal cara superior viga de coronación	Mínimo: 2.3 cm2	
- Muro H-3 -> Coronación:	Calculado: 2.3 cm2	CUMPLE
Tensiones sobre el terreno		
- Zapata H-3 -> Tensión media:	Máximo: 2 Kp/cm2 Calculado: 0.522 Kp/cm2	CUMPLE
- Zapata H-3 -> Tensión máxima acc. gravitatorias:	Máximo: 2.5 Kp/cm2 Calculado: 0.659 Kp/cm2	CUMPLE
Flexión en zapata (acciones estáticas)		
- Zapata H-3 -> Momento positivo en vuelo derecho:	Momento: 0.00 Tn·m	CUMPLE
- Zapata H-3 -> Momento negativo en vuelo derecho:	Momento: -3.60 Tn·m	CUMPLE

- Zapata H-3 -> Momento positivo sección ref. derecha:	Momento: 0.00 Tn·m	CUMPLE
- Zapata H-3 -> Momento negativo sección ref. derecha:	Momento: -3.83 Tn·m	CUMPLE
- Zapata H-3 -> Momento positivo en vuelo izquierdo:	Momento: 4.73 Tn·m	CUMPLE
- Zapata H-3 -> Momento negativo en vuelo izquierdo:	Momento: 0.00 Tn·m	CUMPLE
- Zapata H-3 -> Momento positivo sección ref. izquierda:	Momento: 5.04 Tn·m	CUMPLE
- Zapata H-3 -> Momento negativo sección ref. izquierda:	Momento: 0.00 Tn·m	CUMPLE
Coeficiente de rozamiento terreno-cimiento	Máximo: 0.5773	
- Zapata H-3:	Calculado: 0.5213	CUMPLE
Vuelco de la zapata		
- Zapata H-3:	Reserva seguridad: 508.7 %	CUMPLE
Compresión oblicua (acciones estáticas)	Máximo: 305.82 Tn	
- Zapata H-3 -> Vuelo derecho:	Calculado: 5.09 Tn	CUMPLE
- Zapata H-3 -> Vuelo izquierdo:	Calculado: 6.83 Tn	CUMPLE
Esfuerzo cortante (acciones estáticas)		
- Zapata H-3 -> Vuelo derecho:	Máximo: 15.4 Tn Calculado: 3.07 Tn	CUMPLE
- Zapata H-3 -> Vuelo izquierdo:	Máximo: 16.95 Tn Calculado: 4.01 Tn	CUMPLE
Canto mínimo	Mínimo: 25 cm	
- Zapata H-3:	Calculado: 65 cm	CUMPLE
Longitud de anclaje		
- Zapata H-3 -> Arranque izquierdo del muro:	Mínimo: 18 cm Calculado: 55 cm	CUMPLE
- Zapata H-3 -> Arranque derecho del muro:	Mínimo: 21 cm Calculado: 55 cm	CUMPLE
- Zapata H-3 -> Armado superior vuelo der. hacia izquierda:	Mínimo: 43 cm Calculado: 165 cm	CUMPLE
- Zapata H-3 -> Armado superior vuelo der. hacia derecha:	Mínimo: 43 cm Calculado: 75 cm	CUMPLE
- Zapata H-3 -> Armado base inferior vuelo izq. hacia izquierda:	Mínimo: 30 cm Calculado: 114 cm	CUMPLE
- Zapata H-3 -> Armado base inferior vuelo izq. hacia derecha:	Mínimo: 30 cm Calculado: 204 cm	CUMPLE
Cuantía geométrica mínima	Mínimo: 0.001	
- Zapata H-3 -> Armado inferior longitudinal:	Calculado: 0.0012	CUMPLE
- Zapata H-3 -> Armado inferior transversal:	Calculado: 0.0012	CUMPLE
Cuantía mínima necesaria por flexión		
- Zapata H-3 -> Armado inferior transversal:	Mínimo: 0.0004 Calculado: 0.0012	CUMPLE
- Zapata H-3 -> Armado sup. transversal vuelo derecho:	Mínimo: 0.0003 Calculado: 0.0009	CUMPLE
- Zapata H-3 -> Armado sup. transversal sección ref. derecha:	Mínimo: 0.0003 Calculado: 0.0009	CUMPLE
Diámetro mínimo de las barras	Mínimo: 12 mm	
- Zapata H-3 -> Armaduras de la zapata:	Calculado: 12 mm	CUMPLE
Separación máxima entre barras	Máximo: 30 cm	
- Zapata H-3 -> Armado inferior transversal:	Calculado: 15 cm	CUMPLE
- Zapata H-3 -> Armado inferior longitudinal:	Calculado: 15 cm	CUMPLE
- Zapata H-3 -> Armado superior transversal:	Calculado: 20 cm	CUMPLE
- Zapata H-3 -> Armado superior longitudinal:	Calculado: 20 cm	CUMPLE
Separación mínima entre barras	Mínimo: 10 cm	
- Zapata H-3 -> Armado inferior transversal:	Calculado: 15 cm	CUMPLE
- Zapata H-3 -> Armado inferior longitudinal:	Calculado: 15 cm	CUMPLE
- Zapata H-3 -> Armado superior transversal:	Calculado: 20 cm	CUMPLE
- Zapata H-3 -> Armado superior longitudinal:	Calculado: 20 cm	CUMPLE
Longitud mínima de las patillas	Mínimo: 11 cm	
- Zapata H-3 -> Armado superior vuelo izq. hacia izquierda:	Calculado: 15 cm	CUMPLE
- Zapata H-3 -> Armado superior vuelo izq. hacia derecha:	Calculado: 15 cm	CUMPLE
- Zapata H-3 -> Armado base inferior vuelo izq. hacia izquierda:	Calculado: 54 cm	CUMPLE
- Zapata H-3 -> Armado base inferior vuelo izq. hacia derecha:	Calculado: 54 cm	CUMPLE
Se cumplen todas las comprobaciones		

ÍNDICE

1.- DATOS DE LA OBRA

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1.- DATOS DE LA OBRA

Hormigón: HA-25, Control estadístico
Acero: B 500 S, Control normal
Recubrimiento (Trasdós) : 5.00 cm
Recubrimiento (Intradós) : 5.00 cm
Recubrimiento (Superior) : 5.00 cm
Recubrimiento (Inferior) : 5.00 cm
Recubrimiento (Lateral) : 5.00 cm
Tamaño máximo del árido: 20.0 mm
Abertura límite de fisuras: 0.3 mm
Espesor hormigón limpieza: 10.0 cm
Tensión admisible del terreno: 2.0 Kp/cm2
Coeficiente rozamiento terreno-cimiento: 0.6
Tipo de empuje que produce la acción: Activo
Tipo de empuje que produce la reacción: Pasivo
Combinaciones de hormigón: EHE, Control normal
Combinaciones para tensiones sobre el terreno: Acciones Caracteristicas
Combinaciones de equilibrio: EHE, Control normal

2.- DESCRIPCIÓN

DESCRIPCION DE SECCIONES

Referencia: H-4a

- Longitud del muro: 1.00 m
- Cota en arranque: 0.00 m

Referencia: H-5a

- Longitud del muro: 1.00 m
- Cota en arranque: 0.00 m

LISTADO DE TERRENOS

Referencia: H-4a

- Situación de peso propio:
- Coronación:
Carga hacia abajo en coronación: 0 Tn/m
Carga hacia intradós en coronación: 0 Tn/m
Momento de compresión hacia intradós en coronación: 0 mTn/m
- Trasdós:
Con relleno: Cota: 4.00 m
Angulo de talud: 0.00 Grados
Densidad aparente: 1.80 Tn/m3
Densidad sumergida: 1.10 Tn/m3
Angulo rozamiento interno: 30.00 Grados
Evacuación por drenaje: 100.00 %
Porcentaje de empuje pasivo: 0.00 %
Cota empuje pasivo: 0.00 m
- Intradós:
No hay cargas.
- Esfuerzos en arranque de muro. ESTADO DE PESO PROPIO (PP):

	Cortante (Tn/m)	Momento (mTn/m)
Trasdós	4.800	6.400
Intradós	0.000	0.000
Total	4.800	6.400

- Situación de sobrecarga 1:
- Coronación:
Carga hacia abajo en coronación: 0 Tn/m
Carga hacia intradós en coronación: 0 Tn/m
Momento de compresión hacia intradós en coronación: 0 mTn/m
- Trasdós:
Con relleno: Cota: 4.00 m
Angulo de talud: 0.00 Grados
Densidad aparente: 1.80 Tn/m3
Densidad sumergida: 1.10 Tn/m3
Angulo rozamiento interno: 30.00 Grados
Evacuación por drenaje: 100.00 %
Porcentaje de empuje pasivo: 0.00 %
Cota empuje pasivo: 0.00 m
Carga 1:
Tipo: Uniforme
Valor: 1.00 Tn/m2
- Intradós:
Con relleno: Cota: 0.50 m
Angulo de talud: 0.00 Grados
Densidad aparente: 1.80 Tn/m3
Densidad sumergida: 1.10 Tn/m3
Angulo rozamiento interno: 30.00 Grados
Evacuación por drenaje: 100.00 %
Porcentaje de empuje pasivo: 0.00 %
Cota empuje pasivo: 0.00 m
- Esfuerzos en arranque de muro. ESTADO DE SOBRECARGA (SBC):

	Cortante (Tn/m)	Momento (mTn/m)
Trasdós	6.133	9.067
Intradós	0.000	0.000
Total	6.133	9.067

- Esfuerzos de arranque de muro. DIFERENCIA ESTADO DE SOBRECARGA Y PESO PROPIO (SBC - PP):

	Cortante (Tn/m)	Momento (mTn/m)
Trasdós	1.333	2.667
Intradós	0.000	0.000
Total	1.333	2.667

Referencia: H-5a

- Situación de peso propio:
- Coronación:
Carga hacia abajo en coronación: 0 Tn/m
Carga hacia intradós en coronación: 0 Tn/m
Momento de compresión hacia intradós en coronación: 0 mTn/m
- Trasdós:
Con relleno: Cota: 5.00 m
Angulo de talud: 0.00 Grados
Densidad aparente: 1.80 Tn/m3
Densidad sumergida: 1.10 Tn/m3
Angulo rozamiento interno: 30.00 Grados
Evacuación por drenaje: 100.00 %
Porcentaje de empuje pasivo: 0.00 %
Cota empuje pasivo: 0.00 m
- Intradós:
No hay cargas.
- Esfuerzos en arranque de muro. ESTADO DE PESO PROPIO (PP):

	Cortante (Tn/m)	Momento (mTn/m)
Trasdós	7.500	12.500
Intradós	0.000	0.000
Total	7.500	12.500

- Situación de sobrecarga 1:
- Coronación:
Carga hacia abajo en coronación: 0 Tn/m
Carga hacia intradós en coronación: 0 Tn/m
Momento de compresión hacia intradós en coronación: 0 mTn/m
- Trasdós:
Con relleno: Cota: 5.00 m
Angulo de talud: 0.00 Grados
Densidad aparente: 1.80 Tn/m3
Densidad sumergida: 1.10 Tn/m3
Angulo rozamiento interno: 30.00 Grados
Evacuación por drenaje: 100.00 %
Porcentaje de empuje pasivo: 0.00 %
Cota empuje pasivo: 0.00 m
Carga 1:
Tipo: Uniforme
Valor: 1.00 Tn/m2
- Intradós:
Con relleno: Cota: 0.50 m
Angulo de talud: 0.00 Grados
Densidad aparente: 1.80 Tn/m3
Densidad sumergida: 1.10 Tn/m3
Angulo rozamiento interno: 30.00 Grados
Evacuación por drenaje: 100.00 %
Porcentaje de empuje pasivo: 0.00 %
Cota empuje pasivo: 0.00 m
- Esfuerzos en arranque de muro. ESTADO DE SOBRECARGA (SBC):

	Cortante (Tn/m)	Momento (mTn/m)
Trasdós	9.167	16.667
Intradós	0.000	0.000
Total	9.167	16.667

- Esfuerzos de arranque de muro. DIFERENCIA ESTADO DE SOBRECARGA Y PESO PROPIO (SBC - PP):

	Cortante (Tn/m)	Momento (mTn/m)
Trasdós	1.667	4.167
Intradós	0.000	0.000
Total	1.667	4.167

MUROS CALCULADOS

Referencia	Espesor inferior	Espesor superior	Altura	Ar. Vert. T.	Ar. Vert. I.	Ar. Horz. T.	Ar. Horz. I.	Ar. Coronación
H-4a	30.00 cm	30.00 cm	4.00 m	Armado base Ø10 c/ 15 Refuerzo 1 Ø16 c/ 15 h= 1.50	Ø10 c/ 20	Ø10 c/ 15	Ø10 c/ 15	Barras superiores 2 Ø12
H-5a	45.00 cm	45.00 cm	5.00 m	Armado base Ø16 c/ 20 Refuerzo 1 Ø16 c/ 20 h= 1.50	Ø12 c/ 20	Ø12 c/ 15	Ø12 c/ 15	Barras superiores 3 Ø12

Nota:
- Ar. Vert. T.: Armado vertical trasdós
- Ar. Vert. I.: Armado vertical intradós
- Ar. Horz. T.: Armado horizontal trasdós
- Ar. Horz. I.: Armado horizontal intradós
- Ar. Coronación: Armado en coronación

Referencias	Geometría	Armado
H-4a	Vuelo izquierdo: 155.0 cm Vuelo derecho: 155.0 cm Canto: 70.0 cm	Base inferior: Ø16 c/ 20 Longitudinal inferior: Ø16 c/ 20 Superior Longitudinal: Ø12 c/ 20 Superior Transversal: Ø12 c/ 20
H-5a	Vuelo izquierdo: 190.0 cm Vuelo derecho: 190.0 cm Canto: 95.0 cm	Base inferior: Ø16 c/ 20 Longitudinal inferior: Ø16 c/ 20 Superior Longitudinal: Ø16 c/ 20 Superior Transversal: Ø12 c/ 20

3.- COMPROBACIÓN

Referencia: H-4a		
COMPROBACION	VALORES	ESTADO
Comprobación a rasante en arranque muro		
- Muro H-4a -> Arranque:		CUMPLE
Espesor mínimo del tramo	Mínimo: 20 cm	
- Muro H-4a -> Tramo 1:	Calculado: 30 cm	CUMPLE
Cuantía mínima geométrica horizontal	Mínimo: 0.0008	
- Muro H-4a -> Tramo 1 -> Trasdós (0.00 m):	Calculado: 0.00175	CUMPLE
- Muro H-4a -> Tramo 1 -> Intradós (0.00 m):	Calculado: 0.00175	CUMPLE
Cuantía mínima mecánica horizontal por cara		
- Muro H-4a -> Tramo 1 -> Trasdós:	Mínimo: 0.00125 Calculado: 0.00175	CUMPLE
- Muro H-4a -> Tramo 1 -> Intradós:	Mínimo: 0.00027 Calculado: 0.00175	CUMPLE
Separación libre mínima armaduras horizontales	Mínimo: 2.5 cm	
- Muro H-4a -> Tramo 1 -> Trasdós:	Calculado: 14 cm	CUMPLE
- Muro H-4a -> Tramo 1 -> Intradós:	Calculado: 14 cm	CUMPLE
Separación máxima armaduras horizontales	Máximo: 30 cm	
- Muro H-4a -> Tramo 1 -> Trasdós:	Calculado: 15 cm	CUMPLE
- Muro H-4a -> Tramo 1 -> Intradós:	Calculado: 15 cm	CUMPLE
Cuantía mínima geométrica vertical cara traccionada	Mínimo: 0.0009	
- Muro H-4a -> Tramo 1 -> Trasdós (0.00 m):	Calculado: 0.00622	CUMPLE
- Muro H-4a -> Tramo 1 -> Trasdós (1.50 m):	Calculado: 0.00175	CUMPLE
Cuantía mínima mecánica vertical cara traccionada	Mínimo: 0.00154	
- Muro H-4a -> Tramo 1 -> Trasdós (0.00 m):	Calculado: 0.00622	CUMPLE
- Muro H-4a -> Tramo 1 -> Trasdós (1.50 m):	Calculado: 0.00175	CUMPLE
Cuantía mínima geométrica vertical cara comprimida	Mínimo: 0.00027	
- Muro H-4a -> Tramo 1 -> Intradós (0.00 m):	Calculado: 0.00131	CUMPLE
- Muro H-4a -> Tramo 1 -> Intradós (1.50 m):	Calculado: 0.00131	CUMPLE
Cuantía mínima mecánica vertical cara comprimida	Mínimo: 2e-005	
- Muro H-4a -> Tramo 1 -> Intradós (0.00 m):	Calculado: 0.00131	CUMPLE
- Muro H-4a -> Tramo 1 -> Intradós (1.50 m):	Calculado: 0.00131	CUMPLE
Cuantía máxima geométrica de armadura vertical total	Máximo: 0.04	
- Muro H-4a -> Tramo 1 -> (4.00 m):	Calculado: 0.00306	CUMPLE
- Muro H-4a -> Tramo 1 -> (1.50 m):	Calculado: 0.00753	CUMPLE
Separación libre mínima armaduras verticales	Mínimo: 2.5 cm	
- Muro H-4a -> Tramo 1 -> Trasdós:	Calculado: 6.2 cm	CUMPLE
- Muro H-4a -> Tramo 1 -> Intradós:	Calculado: 19 cm	CUMPLE
Separación máxima armaduras verticales	Máximo: 30 cm	
- Muro H-4a -> Tramo 1 -> Trasdós:	Calculado: 15 cm	CUMPLE
- Muro H-4a -> Tramo 1 -> Intradós:	Calculado: 20 cm	CUMPLE
Comprobación a flexocompresión		
- Muro H-4a -> Tramo 1:		CUMPLE
Comprobación a cortante	Máximo: 15.75 Tn/m	
- Muro H-4a -> Tramo 1:	Calculado: 8.35 Tn/m	CUMPLE
Comprobación de fisuración	Máximo: 0.3 mm	
- Muro H-4a -> Tramo 1:	Calculado: 0.28 mm	CUMPLE
Comprobación de las longitudes de solape		
- Muro H-4a -> Tramo 1 -> Base trasdós:	Mínimo: 35 cm Calculado: 35 cm	CUMPLE
- Muro H-4a -> Tramo 1 -> Base intradós:	Mínimo: 25 cm Calculado: 25 cm	CUMPLE
Comprobación del anclaje del armado base en coronación	Mínimo: 18.5 cm	
- Muro H-4a -> Coronación -> Trasdós:	Calculado: 18.5 cm	CUMPLE
- Muro H-4a -> Coronación -> Intradós:	Calculado: 18.5 cm	CUMPLE
Area mínima longitudinal cara superior viga de coronación	Mínimo: 2.3 cm2	
- Muro H-4a -> Coronación:	Calculado: 2.3 cm2	CUMPLE
Tensiones sobre el terreno		

- Zapata H-4a -> Tensión media:	Máximo: 2 Kp/cm2 Calculado: 0.632 Kp/cm2	CUMPLE
- Zapata H-4a -> Tensión máxima acc. gravitatorias:	Máximo: 2.5 Kp/cm2 Calculado: 0.857 Kp/cm2	CUMPLE
Flexión en zapata (acciones estáticas)		
- Zapata H-4a -> Momento positivo en vuelo derecho:	Momento: 0.00 Tn·m	CUMPLE
- Zapata H-4a -> Momento negativo en vuelo derecho:	Momento: -7.71 Tn·m	CUMPLE
- Zapata H-4a -> Momento positivo sección ref. derecha:	Momento: 0.00 Tn·m	CUMPLE
- Zapata H-4a -> Momento negativo sección ref. derecha:	Momento: -8.12 Tn·m	CUMPLE
- Zapata H-4a -> Momento positivo en vuelo izquierdo:	Momento: 9.59 Tn·m	CUMPLE
- Zapata H-4a -> Momento negativo en vuelo izquierdo:	Momento: 0.00 Tn·m	CUMPLE
- Zapata H-4a -> Momento positivo sección ref. izquierda:	Momento: 10.11 Tn·m	CUMPLE
- Zapata H-4a -> Momento negativo sección ref. izquierda:	Momento: 0.00 Tn·m	CUMPLE
Coeficiente de rozamiento terreno-cimiento	Máximo: 0.5773	
- Zapata H-4a:	Calculado: 0.5762	CUMPLE
Vuelco de la zapata		
- Zapata H-4a:	Reserva seguridad: 423.0 %	CUMPLE
Compresión oblicua (acciones estáticas)	Máximo: 331.3 Tn	
- Zapata H-4a -> Vuelo derecho:	Calculado: 9.09 Tn	CUMPLE
- Zapata H-4a -> Vuelo izquierdo:	Calculado: 11.52 Tn	CUMPLE
Esfuerzo cortante (acciones estáticas)		
- Zapata H-4a -> Vuelo derecho:	Máximo: 16.02 Tn Calculado: 5.9 Tn	CUMPLE
- Zapata H-4a -> Vuelo izquierdo:	Máximo: 19.4 Tn Calculado: 7.31 Tn	CUMPLE
Canto mínimo	Mínimo: 25 cm	
- Zapata H-4a:	Calculado: 70 cm	CUMPLE
Longitud de anclaje		
- Zapata H-4a -> Arranque izquierdo del muro:	Mínimo: 18 cm Calculado: 60 cm	CUMPLE
- Zapata H-4a -> Arranque derecho del muro:	Mínimo: 28 cm Calculado: 60 cm	CUMPLE
- Zapata H-4a -> Armado superior vuelo der. hacia izquierda:	Mínimo: 43 cm Calculado: 190 cm	CUMPLE
- Zapata H-4a -> Armado superior vuelo der. hacia derecha:	Mínimo: 43 cm Calculado: 95 cm	CUMPLE
- Zapata H-4a -> Armado base inferior vuelo izq. hacia izquierda:	Mínimo: 40 cm Calculado: 139 cm	CUMPLE
- Zapata H-4a -> Armado base inferior vuelo izq. hacia derecha:	Mínimo: 40 cm Calculado: 234 cm	CUMPLE
Cuantía geométrica mínima	Mínimo: 0.001	
- Zapata H-4a -> Armado inferior longitudinal:	Calculado: 0.0015	CUMPLE
- Zapata H-4a -> Armado inferior transversal:	Calculado: 0.0015	CUMPLE
Cuantía mínima necesaria por flexión		
- Zapata H-4a -> Armado inferior transversal:	Mínimo: 0.0006 Calculado: 0.0015	CUMPLE
- Zapata H-4a -> Armado sup. transversal vuelo derecho:	Mínimo: 0.0005 Calculado: 0.0009	CUMPLE
- Zapata H-4a -> Armado sup. transversal sección ref. derecha:	Mínimo: 0.0005 Calculado: 0.0009	CUMPLE
Diámetro mínimo de las barras	Mínimo: 12 mm	
- Zapata H-4a -> Armaduras de la zapata:	Calculado: 12 mm	CUMPLE
Separación máxima entre barras	Máximo: 30 cm	
- Zapata H-4a -> Armado inferior transversal:	Calculado: 20 cm	CUMPLE
- Zapata H-4a -> Armado inferior longitudinal:	Calculado: 20 cm	CUMPLE
- Zapata H-4a -> Armado superior transversal:	Calculado: 20 cm	CUMPLE
- Zapata H-4a -> Armado superior longitudinal:	Calculado: 20 cm	CUMPLE
Separación mínima entre barras	Mínimo: 10 cm	
- Zapata H-4a -> Armado inferior transversal:	Calculado: 20 cm	CUMPLE
- Zapata H-4a -> Armado inferior longitudinal:	Calculado: 20 cm	CUMPLE
- Zapata H-4a -> Armado superior transversal:	Calculado: 20 cm	CUMPLE
- Zapata H-4a -> Armado superior longitudinal:	Calculado: 20 cm	CUMPLE
Longitud mínima de las patillas		
- Zapata H-4a -> Armado superior vuelo izq. hacia izquierda:	Mínimo: 11 cm Calculado: 15 cm	CUMPLE
- Zapata H-4a -> Armado superior vuelo izq. hacia derecha:	Mínimo: 11 cm	

	Calculado: 15 cm	CUMPLE
- Zapata H-4a -> Armado base inferior vuelo izq. hacia izquierda:	Mínimo: 15 cm Calculado: 59 cm	CUMPLE
- Zapata H-4a -> Armado base inferior vuelo izq. hacia derecha:	Mínimo: 15 cm Calculado: 59 cm	CUMPLE
Se cumplen todas las comprobaciones		

Referencia: H-5a		
COMPROBACION	VALORES	ESTADO
Comprobación a rasante en arranque muro		
- Muro H-5a -> Arranque:		CUMPLE
Espesor mínimo del tramo	Mínimo: 20 cm	
- Muro H-5a -> Tramo 1:	Calculado: 45 cm	CUMPLE
Cuantía mínima geométrica horizontal	Mínimo: 0.0008	
- Muro H-5a -> Tramo 1 -> Trasdós (0.00 m):	Calculado: 0.00168	CUMPLE
- Muro H-5a -> Tramo 1 -> Intradós (0.00 m):	Calculado: 0.00168	CUMPLE
Cuantía mínima mecánica horizontal por cara		
- Muro H-5a -> Tramo 1 -> Trasdós:	Mínimo: 0.0009 Calculado: 0.00168	CUMPLE
- Muro H-5a -> Tramo 1 -> Intradós:	Mínimo: 0.00026 Calculado: 0.00168	CUMPLE
Separación libre mínima armaduras horizontales	Mínimo: 2.5 cm	
- Muro H-5a -> Tramo 1 -> Trasdós:	Calculado: 13.8 cm	CUMPLE
- Muro H-5a -> Tramo 1 -> Intradós:	Calculado: 13.8 cm	CUMPLE
Separación máxima armaduras horizontales	Máximo: 30 cm	
- Muro H-5a -> Tramo 1 -> Trasdós:	Calculado: 15 cm	CUMPLE
- Muro H-5a -> Tramo 1 -> Intradós:	Calculado: 15 cm	CUMPLE
Cuantía mínima geométrica vertical cara traccionada	Mínimo: 0.0009	
- Muro H-5a -> Tramo 1 -> Trasdós (0.00 m):	Calculado: 0.00447	CUMPLE
- Muro H-5a -> Tramo 1 -> Trasdós (1.50 m):	Calculado: 0.00224	CUMPLE
Cuantía mínima mecánica vertical cara traccionada	Mínimo: 0.00154	
- Muro H-5a -> Tramo 1 -> Trasdós (0.00 m):	Calculado: 0.00447	CUMPLE
- Muro H-5a -> Tramo 1 -> Trasdós (1.50 m):	Calculado: 0.00224	CUMPLE
Cuantía mínima geométrica vertical cara comprimida	Mínimo: 0.00027	
- Muro H-5a -> Tramo 1 -> Intradós (0.00 m):	Calculado: 0.00126	CUMPLE
- Muro H-5a -> Tramo 1 -> Intradós (1.50 m):	Calculado: 0.00126	CUMPLE
Cuantía mínima mecánica vertical cara comprimida		

- Muro H-5a -> Tramo 1 -> Intradós (0.00 m):	Mínimo: 3e-005 Calculado: 0.00126	CUMPLE
- Muro H-5a -> Tramo 1 -> Intradós (1.50 m):	Mínimo: 2e-005 Calculado: 0.00126	CUMPLE
Cuantía máxima geométrica de armadura vertical total	Máximo: 0.04	
- Muro H-5a -> Tramo 1 -> (5.00 m):	Calculado: 0.0035	CUMPLE
- Muro H-5a -> Tramo 1 -> (1.50 m):	Calculado: 0.00573	CUMPLE
Separación libre mínima armaduras verticales	Mínimo: 2.5 cm	
- Muro H-5a -> Tramo 1 -> Trasdós:	Calculado: 8.4 cm	CUMPLE
- Muro H-5a -> Tramo 1 -> Intradós:	Calculado: 18.8 cm	CUMPLE
Separación máxima armaduras verticales	Máximo: 30 cm	
- Muro H-5a -> Tramo 1 -> Trasdós:	Calculado: 20 cm	CUMPLE
- Muro H-5a -> Tramo 1 -> Intradós:	Calculado: 20 cm	CUMPLE
Comprobación a flexocompresión		
- Muro H-5a -> Tramo 1:		CUMPLE
Comprobación a cortante	Máximo: 20.3 Tn/m	
- Muro H-5a -> Tramo 1:	Calculado: 12.01 Tn/m	CUMPLE
Comprobación de fisuración	Máximo: 0.3 mm	
- Muro H-5a -> Tramo 1:	Calculado: 0.3 mm	CUMPLE
Comprobación de las longitudes de solape		
- Muro H-5a -> Tramo 1 -> Base trasdós:	Mínimo: 75 cm Calculado: 75 cm	CUMPLE
- Muro H-5a -> Tramo 1 -> Base intradós:	Mínimo: 30 cm Calculado: 30 cm	CUMPLE
Comprobación del anclaje del armado base en coronación		
- Muro H-5a -> Coronación -> Trasdós:	Mínimo: 32.6 cm Calculado: 33.5 cm	CUMPLE
- Muro H-5a -> Coronación -> Intradós:	Mínimo: 33.2 cm Calculado: 33.5 cm	CUMPLE
Area mínima longitudinal cara superior viga de coronación	Mínimo: 2.3 cm2	
- Muro H-5a -> Coronación:	Calculado: 3.4 cm2	CUMPLE
Tensiones sobre el terreno		
- Zapata H-5a -> Tensión media:	Máximo: 2 Kp/cm2 Calculado: 0.812 Kp/cm2	CUMPLE
- Zapata H-5a -> Tensión máxima acc. gravitatorias:	Máximo: 2.5 Kp/cm2 Calculado: 1.054 Kp/cm2	CUMPLE
Flexión en zapata (acciones estáticas)		
- Zapata H-5a -> Momento positivo en vuelo derecho:	Momento: 0.00 Tn·m	CUMPLE
- Zapata H-5a -> Momento negativo en vuelo derecho:	Momento: -13.66 Tn·m	CUMPLE
- Zapata H-5a -> Momento positivo sección ref. derecha:	Momento: 0.00 Tn·m	CUMPLE
- Zapata H-5a -> Momento negativo sección ref. derecha:	Momento: -14.54 Tn·m	CUMPLE
- Zapata H-5a -> Momento positivo en vuelo izquierdo:	Momento: 17.97 Tn·m	CUMPLE
- Zapata H-5a -> Momento negativo en vuelo izquierdo:	Momento: 0.00 Tn·m	CUMPLE
- Zapata H-5a -> Momento positivo sección ref. izquierda:	Momento: 19.19 Tn·m	CUMPLE
- Zapata H-5a -> Momento negativo sección ref. izquierda:	Momento: 0.00 Tn·m	CUMPLE
Coeficiente de rozamiento terreno-cimiento	Máximo: 0.5773	
- Zapata H-5a:	Calculado: 0.5513	CUMPLE
Vuelco de la zapata		
- Zapata H-5a:	Reserva seguridad: 528.5 %	CUMPLE
Compresión oblicua (acciones estáticas)	Máximo: 458.72 Tn	
- Zapata H-5a -> Vuelo derecho:	Calculado: 13.27 Tn	CUMPLE
- Zapata H-5a -> Vuelo izquierdo:	Calculado: 17.81 Tn	CUMPLE
Esfuerzo cortante (acciones estáticas)		
- Zapata H-5a -> Vuelo derecho:	Máximo: 18.83 Tn Calculado: 7.81 Tn	CUMPLE
- Zapata H-5a -> Vuelo izquierdo:	Máximo: 22.81 Tn Calculado: 10.19 Tn	CUMPLE
Canto mínimo	Mínimo: 25 cm	
- Zapata H-5a:	Calculado: 95 cm	CUMPLE
Longitud de anclaje		
- Zapata H-5a -> Arranque izquierdo del muro:	Mínimo: 21 cm Calculado: 85 cm	CUMPLE
- Zapata H-5a -> Arranque derecho del muro:	Mínimo: 28 cm Calculado: 85 cm	CUMPLE

- Zapata H-5a -> Armado superior vuelo der. hacia izquierda:	Mínimo: 43 cm Calculado: 238 cm	CUMPLE
- Zapata H-5a -> Armado superior vuelo der. hacia derecha:	Mínimo: 43 cm Calculado: 105 cm	CUMPLE
- Zapata H-5a -> Armado base inferior vuelo izq. hacia izquierda:	Mínimo: 40 cm Calculado: 174 cm	CUMPLE
- Zapata H-5a -> Armado base inferior vuelo izq. hacia derecha:	Mínimo: 40 cm Calculado: 307 cm	CUMPLE
Cuantía geométrica mínima	Mínimo: 0.001	
- Zapata H-5a -> Armado inferior longitudinal:	Calculado: 0.0011	CUMPLE
- Zapata H-5a -> Armado inferior transversal:	Calculado: 0.0011	CUMPLE
Cuantía mínima necesaria por flexión		
- Zapata H-5a -> Armado inferior transversal:	Mínimo: 0.0006 Calculado: 0.0011	CUMPLE
- Zapata H-5a -> Armado sup. transversal vuelo derecho:	Mínimo: 0.0005 Calculado: 0.0006	CUMPLE
- Zapata H-5a -> Armado sup. transversal sección ref. derecha:	Mínimo: 0.0005 Calculado: 0.0006	CUMPLE
Diámetro mínimo de las barras	Mínimo: 12 mm	
- Zapata H-5a -> Armaduras de la zapata:	Calculado: 12 mm	CUMPLE
Separación máxima entre barras	Máximo: 30 cm	
- Zapata H-5a -> Armado inferior transversal:	Calculado: 20 cm	CUMPLE
- Zapata H-5a -> Armado inferior longitudinal:	Calculado: 20 cm	CUMPLE
- Zapata H-5a -> Armado superior transversal:	Calculado: 20 cm	CUMPLE
- Zapata H-5a -> Armado superior longitudinal:	Calculado: 20 cm	CUMPLE
Separación mínima entre barras	Mínimo: 10 cm	
- Zapata H-5a -> Armado inferior transversal:	Calculado: 20 cm	CUMPLE
- Zapata H-5a -> Armado inferior longitudinal:	Calculado: 20 cm	CUMPLE
- Zapata H-5a -> Armado superior transversal:	Calculado: 20 cm	CUMPLE
- Zapata H-5a -> Armado superior longitudinal:	Calculado: 20 cm	CUMPLE
Longitud mínima de las patillas		
- Zapata H-5a -> Armado superior vuelo izq. hacia izquierda:	Mínimo: 11 cm Calculado: 15 cm	CUMPLE
- Zapata H-5a -> Armado superior vuelo izq. hacia derecha:	Mínimo: 11 cm Calculado: 15 cm	CUMPLE
- Zapata H-5a -> Armado base inferior vuelo izq. hacia izquierda:	Mínimo: 15 cm Calculado: 84 cm	CUMPLE
- Zapata H-5a -> Armado base inferior vuelo izq. hacia derecha:	Mínimo: 15 cm Calculado: 84 cm	CUMPLE
Se cumplen todas las comprobaciones		

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INGENIEROS CONSULTORES

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Remitente:	Marcin Warda		
Fecha:	05.03.2004	Nº de páginas:	1+3
Asunto: Revisión de cálculos Paso Bajo Ramal V-M			

REVISIÓN DE PROYECTO :

L.A.V. MADRID – FRONTERA FRANCESA. TRAMO A: CONEXIÓN VALLÈS CASTELLBISBALL

ESTRUCTURA :

Paso Bajo Ramal Vallès – Martorell

FECHA: **05 de Marzo 2004**

ANEJO DE CÁLCULOS Y PLANOS		Presente	Debe mejorarse	Observaciones
1	Definición de cargas	SI	NO	
2	Hipótesis de cargas	SI	NO	
3	Definición de materiales	SI	NO	
4	Coherencia con ambiente	SI	NO	
5	Replanteo geométrico	SI	NO	
6	Datos geotécnicos	SI	NO	
7	CALCULOS ESTRUCTURALES			
7.1	Tablero, Muros, Solera-ELS	SI	NO	
7.2	Tablero, Muros, Solera-ELU	SI	SI	En las gráficas donde se presentan las cuantías de armadura de la solera los valores correspondientes a la armadura inferior en los extremos (de 25 a 30 cm2/m) son superiores a la armadura dibujada en los planos – ϕ 25 a 20 cm. (ver hoja adjunta) La armadura de cortante en los extremos de la losa no coincide con la cuantía calculada. 2 cercos de 12 mm cada 10cm (ver hoja adjunta)
8	PLANOS	SI	NO	

Atentamente,

Marcin Warda
TEC° 4

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OBRA L.A.V. Conexión Vallès-Castellbisbal
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DIMENSIONAMIENTO
MURO 4B ALETA 2

PASO BAJO RAMAL VALLÉS-MARTORELL
Y VIA BARCELONA-MARTORELL

PROYECTO DE CONSTRUCCIÓN DE PLATAFORMA

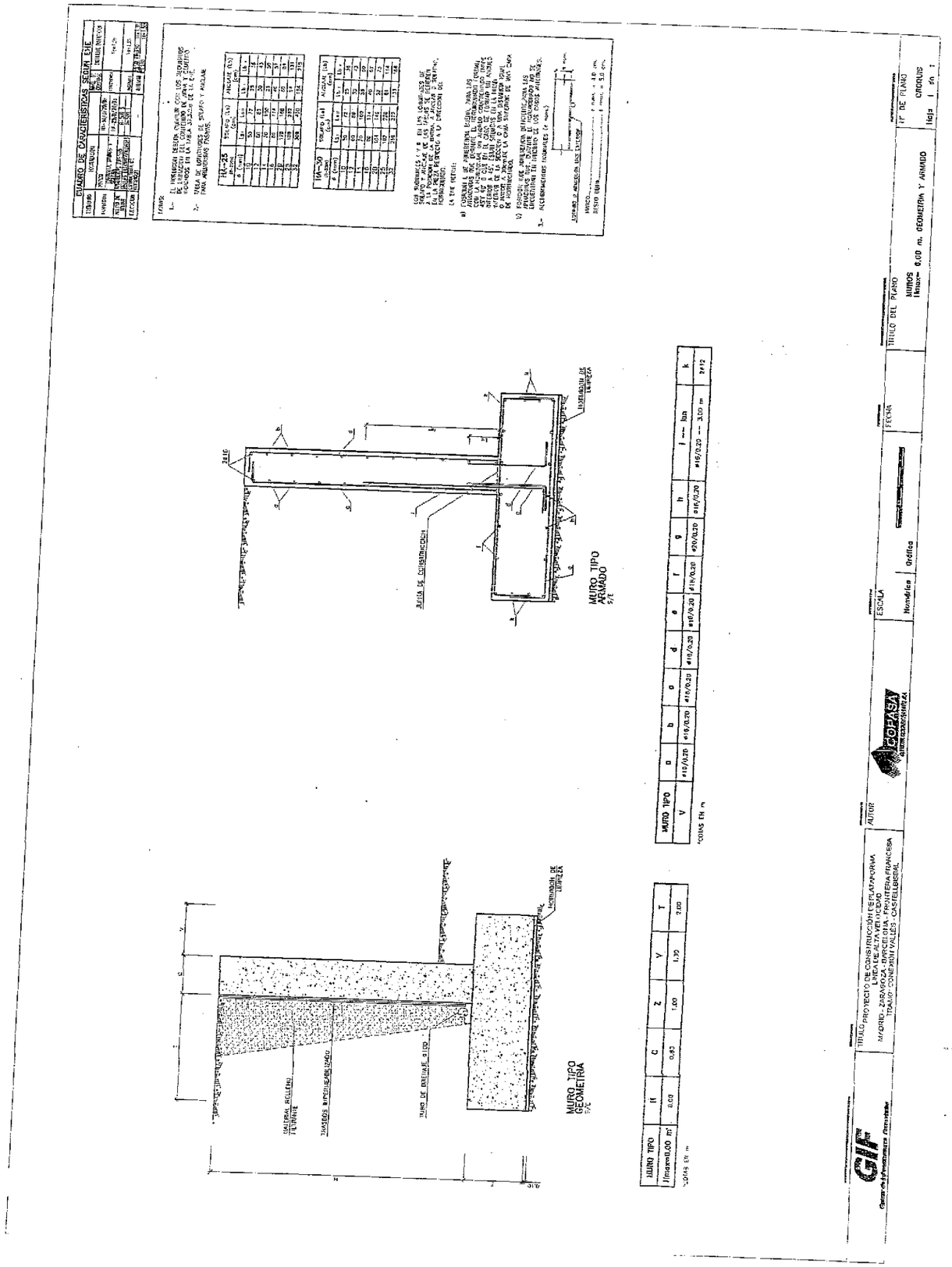
LÍNEA DE ALTA VELOCIDAD
Madrid-Zaragoza-Barcelona-Frontera francesa

TRAMO: *Conexión Vallés-Castellbisbal*
Provincia: Barcelona

Longitud: 3,30 Km.

JUNIO-04

CROQUIS



COMPROBACIONES

** CivilCAD2000 (c) 1999 . Autores : L.M.Callís y J.M.Roig **
****

PROYECTO DE MURO DE HORMIGON ARMADO
****

CARACTERISTICAS DE LOS MATERIALES
==========

Resistencia característica del hormigón de la zapata : 250.000 Kg/m2.
Resistencia característica del hormigón del alzado : 250.000 Kg/m2.
Límite elástico del acero de la armadura pasiva : 5100.000 Kg/m2.
Recubrimiento mecánico en la zapata : 0.100 m.
Recubrimiento mecánico en el alzado : 0.050 m.
Abertura de fisura máxima para la zapata : 0.300 mm.
Abertura de fisura máxima para el alzado : 0.300 mm.

DEFINICION DEL TERRENO
==========

Densidad del terreno en trasdós : 2.000 T/m3.
Densidad del terreno existente : 2.000 T/m3.
Angulo de rozamiento interno del terreno en trasdós : 30.000 °.
Angulo de rozamiento interno del terreno existente : 30.000 °.
Angulo de rozamiento terreno-hormigón bajo la zapata : 30.000 °.
Angulo de rozamiento terreno-hormigón en el trasdós del alzado : 20.000 °.
Angulo de rozamiento terreno-terreno en el trasdós: 30.000
Porosidad del terreno en trasdós (tanto por uno) : 0.000

COEFICIENTES DE SEGURIDAD
==========

	E.L.Servicio		E.L.Ultimo Situación persistente		Situación accidental
	E.F.	E.D.	E.F.	E.D.	E.F.
Peso propio del hormigón	1.00	1.00	1.00	1.50	1.00
Peso propio de las tierras	1.00	1.00	1.00	1.50	1.00
Empuje del terreno	1.00	1.00	1.00	1.60	1.00
Acción de la sobrecarga	0.00	1.00	0.00	1.60	0.00
Acción del agua	0.00	1.00	0.00	1.60	0.00
Acción sísmica	0.00	0.00	0.00	0.00	1.00
Acciones exteriores permanentes	1.00	1.00	1.00	1.50	1.00
Acciones exteriores variables	0.00	1.00	0.00	1.60	0.00

E.F. : Coeficiente para el efecto favorable.
E.D. : Coeficiente para el efecto desfavorable.

Coeficientes de combinación
Valor de combinación : 0.600
Valor frecuente : 0.500
Valor casi permanente : 0.200

Coeficientes de minoración de los materiales
Situación persistente
Hormigón: 1.500
Acero: 1.150
Situación accidental
Hormigón: 1.300
Acero: 1.000

MODULO 1:
==========

Cargas actuantes en el muro

Peso propio. Densidad del hormigón : 2.500 T/m3
Sobrecarga en trasdós : 1.000 T/m2.
Cota del nivel freático en trasdós : 0.000 m.
Cota del nivel freático en intradós : 0.000 m.
Flector de acción permanente en coronación : 0.000 mT/m.
Axil de acción permanente en coronación : 0.000 T/m.
Cortante de acción permanente en coronación : 0.000 T/m.
Flector de acción variable en coronación : 0.000 mT/m.
Axil de acción variable en coronación : 0.000 T/m.
Cortante de acción variable en coronación : 0.000 T/m.
Aceleración sísmica ac : 1.815 m/s2

Definición geométrica del módulo

Longitud : 10.000 m.
Cota de coronación en lado izquierdo :106.000 m.
Cota de coronación en lado derecho :106.000 m.
Cota inferior del terreno en lado izquierdo :100.500 m.
Cota inferior del terreno en lado derecho :100.500 m.
Cota de la cara superior de la zapata en lado izquierdo :100.000 m.
Cota de la cara superior de la zapata en lado derecho :100.000 m.
Cota de coronación de las tierras en trasdós en lado izquierdo :106.000 m.
Cota de coronación de las tierras en trasdós en lado derecho :106.000 m.
Angulo del talud de tierras en trasdós con la horizontal : 0.000 °.
Canto del alzado en coronación : 0.600 m.
Talud del alzado en cara interior : Vertical
Talud del alzado en cara exterior : Vertical
Longitud de la zarpa delantera : 1.300 m.
Longitud de la zarpa trasera : 2.600 m.
Canto de la zapata en el extremo de la zarpa delantera : 0.900 m.
Variación transversal del canto de la zapata : Nula
Altura del tacón bajo zapata : 0.000 m.
Canto del tacón en el empotramiento con la zapata : 0.000 m.

Cálculo de la estabilidad del muro

El coeficiente de seguridad es el cociente entre efectos resistentes y efectos inductores al vuelco/deslizamiento. Ambos efectos están afectados por los coeficientes de seguridad y de combinación definidos por el usuario.

Coeficiente de seguridad al deslizamiento : 1.190
Coeficiente de seguridad para la situación persistente: 1.190
Coeficiente de seguridad para la situación accidental: 1.633
No se ha considerado la acción del empuje pasivo del terreno.
No se ha considerado la acc. vertical por empuje activo del terreno.

Fvert (T) : Fuerza vertical.
Fhest (T) : Fuerza horizontal estabilizadora.
Fhdes (T) : Fuerza horizontal desestabilizadora.

Acción	Fhest	Fhdes	Fvert
Peso propio de la zapata	0.00	0.00	87.75
Peso propio del alzado	0.00	0.00	90.00
Peso de tierras sobre la puntera	0.00	0.00	13.00
Peso de tierras en el talón	0.00	0.00	240.00
Empuje activo	0.00	122.53	0.00
Empuje pasivo	0.00	0.00	0.00
Sobrecarga. Acción vertical	0.00	0.00	20.00
Sobrecarga. Acción horizontal	0.00	17.76	0.00
Acción sísmica	0.00	27.65	0.00
Acciones permanentes en coronación	0.00	0.00	0.00
Acciones variables en coronación	0.00	0.00	0.00
Nivel freático en el intradós	0.00	0.00	0.00
Subpresión	0.00	0.00	0.00
Nivel freático en el trasdós	0.00	0.00	0.00

Coeficiente de seguridad al vuelco : 2.235
Coeficiente de seguridad para la situación persistente: 2.235
Coeficiente de seguridad para la situación accidental: 2.569

Mest (mT): Momento estabilizador.
Mdes (mT): Momento desestabilizador.

Acción	Mest	Mdes
Peso propio de la zapata	171.11	0.00
Peso propio del alzado	144.00	0.00
Peso de tierras sobre la puntera	8.45	0.00
Peso de tierras en el talón	696.00	0.00
Empuje activo	0.00	281.82
Empuje pasivo	0.00	0.00
Sobrecarga. Acción vertical	58.00	0.00
Sobrecarga. Acción horizontal	0.00	61.26
Acción sísmica	0.00	114.46
Acciones permanentes en coronación	0.00	0.00
Acciones variables en coronación	0.00	0.00
Nivel freático en el intradós	0.00	0.00
Subpresión	0.00	0.00
Nivel freático en el trasdós	0.00	0.00

Cálculo de las tensiones en el terreno

Combinaciones características:

Acciones permanentes:

Ley de tensiones trapecial.
Tensión en extremo de puntera : 15.077 T/m2
Tensión en extremo de talón : 7.013 T/m2

Mayorando la sobrecarga en trasdós:

Ley de tensiones trapecial.
Tensión en extremo de puntera : 17.257 T/m2
Tensión en extremo de talón : 5.858 T/m2

Mayorando las acciones en coronación:

Ley de tensiones trapecial.
Tensión en extremo de puntera : 16.385 T/m2
Tensión en extremo de talón : 6.320 T/m2

Mayorando la acción del agua:

Ley de tensiones trapecial.
Tensión en extremo de puntera : 16.385 T/m2
Tensión en extremo de talón : 6.320 T/m2

Combinaciones frecuentes:

Mayorando la sobrecarga en trasdós:

Ley de tensiones trapecial.
Tensión en extremo de puntera : 16.167 T/m2
Tensión en extremo de talón : 6.435 T/m2

Mayorando las acciones en coronación:

Ley de tensiones trapecial.
Tensión en extremo de puntera : 15.513 T/m2
Tensión en extremo de talón : 6.782 T/m2

Mayorando la acción del agua:

Ley de tensiones trapecial.
Tensión en extremo de puntera : 15.513 T/m2
Tensión en extremo de talón : 6.782 T/m2

Combinación casi-permanente:

Ley de tensiones trapecial.
Tensión en extremo de puntera : 15.513 T/m2
Tensión en extremo de talón : 6.782 T/m2

Tensión máxima en el terreno bajo la zapata : 17.257 T/m2

Cálculo del alzado del muro
---

z : Cota donde se realiza el cálculo.
Md : Momento flector mayorado por metro lineal de muro.
Nd : Axil mayorado por metro lineal de muro.
As1 : Armadura de tracción de cálculo por metro lineal de muro.

As2 : Armadura de compresión de cálculo por metro lineal de muro.
Vd : Cortante mayorado por metro lineal de muro.
At : Armadura de cortante por metro lineal de alzado de muro.

z(m)	Md(mT/m)	Nd(T/m)	As1(cm2/m)	As2(cm2/m)	Vd(T/m)	At(cm2/m2)
106.000	0.000	0.000	0.000	0.000	0.000	0.000
105.400	0.113	0.000	0.046	0.000	0.429	0.000
104.800	0.579	0.000	0.238	0.000	1.180	0.000
104.200	1.593	0.000	0.654	0.000	2.253	0.000
103.600	3.347	0.000	1.378	0.000	3.648	0.000
103.000	6.035	0.000	2.492	0.000	5.364	0.000
102.400	9.849	0.000	4.085	0.000	7.403	0.000
101.800	14.982	0.000	6.254	0.000	9.763	0.000
101.200	21.628	0.000	9.103	0.000	12.445	0.000
100.600	29.980	0.000	12.754	0.000	15.449	0.000
100.000	40.231	0.000	17.351	0.000	18.775	0.508

Cálculo de la zarpa delantera del muro

Momento flector mayorado por metro lineal de zapata : 21.862 mT/m
Armadura de tracción por metro lineal de zapata : 6.238 cm2/m
Cortante de cálculo Vd en la sección S2 : 11.853 T/m
Armadura de cortante : 0.000 cm2/m2

Cálculo de la zarpa trasera del muro

Momento flector mayorado por metro lineal de zapata : 25.919 mT/m
Armadura de tracción por metro lineal de zapata : 7.413 cm2/m
Cortante de cálculo Vd en la sección S2 : 14.869 T/m
Armadura de cortante : 0.000 cm2/m2

ÍNDICE

1.- DATOS DE LA OBRA

2.- DESCRIPCIÓN

3.- COMPROBACIÓN

1.- DATOS DE LA OBRA

Hormigón: HA-25, Control estadístico
Acero: B 500 S, Control normal
Recubrimiento (Trasdós) : 3.00 cm
Recubrimiento (Intradós) : 3.00 cm
Recubrimiento (Superior) : 5.00 cm
Recubrimiento (Inferior) : 5.00 cm
Recubrimiento (Lateral) : 5.00 cm
Tamaño máximo del árido: 30.0 mm
Abertura límite de fisuras: 0.3 mm
Espesor hormigón limpieza: 10.0 cm
Tensión admisible del terreno: 2.0 Kp/cm2
Coeficiente rozamiento terreno-cimiento: 0.6
Tipo de empuje que produce la acción: Activo
Tipo de empuje que produce la reacción: Pasivo
Combinaciones de hormigón: EHE, Control normal
Combinaciones para tensiones sobre el terreno: Acciones Caracteristicas
Combinaciones de equilibrio: EHE, Control normal

2.- DESCRIPCIÓN

DESCRIPCION DE SECCIONES

Referencia: M-6

- Longitud del muro: 1.00 m
- Cota en arranque: 0.00 m

LISTADO DE TERRENOS

Referencia: M-6

- Situación de peso propio:
- Coronación:
Carga hacia abajo en coronación: 0 Tn/m
Carga hacia intradós en coronación: 0 Tn/m
Momento de compresión hacia intradós en coronación: 0 mTn/m
- Trasdós:
Con relleno: Cota: 6.00 m
Angulo de talud: 0.00 Grados
Densidad aparente: 1.80 Tn/m3
Densidad sumergida: 1.10 Tn/m3
Angulo rozamiento interno: 30.00 Grados
Evacuación por drenaje: 100.00 %
Porcentaje de empuje pasivo: 100.00 %
Cota empuje pasivo: -0.50 m
- Intradós:
Con relleno: Cota: 0.20 m
Angulo de talud: 0.00 Grados
Densidad aparente: 1.80 Tn/m3
Densidad sumergida: 1.10 Tn/m3
Angulo rozamiento interno: 30.00 Grados
Evacuación por drenaje: 100.00 %
Porcentaje de empuje pasivo: 100.00 %
Cota empuje pasivo: -0.50 m
- Esfuerzos en arranque de muro. ESTADO DE PESO PROPIO (PP):

	Cortante (Tn/m)	Momento (mTn/m)
Trasdós	10.800	21.600
Intradós	0.000	0.000
Total	10.800	21.600

- Situación de sobrecarga 1:
- Coronación:
Carga hacia abajo en coronación: 0 Tn/m
Carga hacia intradós en coronación: 0 Tn/m
Momento de compresión hacia intradós en coronación: 0 mTn/m
- Trasdós:
Con relleno: Cota: 6.00 m
Angulo de talud: 0.00 Grados
Densidad aparente: 1.80 Tn/m3
Densidad sumergida: 1.10 Tn/m3
Angulo rozamiento interno: 30.00 Grados
Evacuación por drenaje: 100.00 %
Porcentaje de empuje pasivo: 100.00 %
Cota empuje pasivo: -0.50 m
Carga 1:
Tipo: Uniforme
Valor: 1.00 Tn/m2
- Intradós:
Con relleno: Cota: 0.20 m
Angulo de talud: 0.00 Grados
Densidad aparente: 1.80 Tn/m3
Densidad sumergida: 1.10 Tn/m3
Angulo rozamiento interno: 30.00 Grados
Evacuación por drenaje: 100.00 %
Porcentaje de empuje pasivo: 100.00 %
Cota empuje pasivo: -0.50 m
- Esfuerzos en arranque de muro. ESTADO DE SOBRECARGA (SBC):

	Cortante (Tn/m)	Momento (mTn/m)
Trasdós	12.800	27.600
Intradós	0.000	0.000
Total	12.800	27.600

- Esfuerzos de arranque de muro. DIFERENCIA ESTADO DE SOBRECARGA Y PESO PROPIO (SBC - PP):

	Cortante (Tn/m)	Momento (mTn/m)
Trasdós	2.000	6.000
Intradós	0.000	0.000
Total	2.000	6.000

MUROS CALCULADOS

Referencia	Espesor inferior	Espesor superior	Altura	Ar. Vert. T.	Ar. Vert. I.	Ar. Horz. T.	Ar. Horz. I.	Ar. Coronación
M-6	60.00 cm	60.00 cm	6.00 m	Armado base Ø16 c/ 20 Refuerzo 1 Ø16 c/ 20 h= 1.50	Ø12 c/ 20	Ø16 c/ 20	Ø16 c/ 20	Barras superiores 3 Ø16

Nota:
- Ar. Vert. T.: Armado vertical trasdós
- Ar. Vert. I.: Armado vertical intradós
- Ar. Horz. T.: Armado horizontal trasdós
- Ar. Horz. I.: Armado horizontal intradós
- Ar. Coronación: Armado en coronación

Referencias	Geometría	Armado
M-6	Vuelo izquierdo: 195.0 cm Vuelo derecho: 195.0 cm Canto: 85.0 cm	Base inferior: Ø16 c/ 20 Longitudinal inferior: Ø16 c/ 20 Superior Longitudinal: Ø12 c/ 15 Superior Transversal: Ø12 c/ 15

3.- COMPROBACIÓN

Referencia: M-6		
COMPROBACION	VALORES	ESTADO
Comprobación a rasante en arranque muro - Muro M-6 -> Tramo 1:		CUMPLE
Espesor mínimo del tramo - Muro M-6 -> Tramo 1:	Mínimo: 20 cm Calculado: 60 cm	CUMPLE
Cuantía mínima geométrica horizontal - Muro M-6 -> Tramo 1 -> Trasdós (0.00 m): - Muro M-6 -> Tramo 1 -> Intradós (0.00 m):	Mínimo: 0.0008 Calculado: 0.00168 Calculado: 0.00168	CUMPLE CUMPLE
Cuantía mínima mecánica horizontal por cara - Muro M-6 -> Tramo 1 -> Trasdós:	Mínimo: 0.00068	
- Muro M-6 -> Tramo 1 -> Intradós:	Calculado: 0.00168 Mínimo: 0.00019 Calculado: 0.00168	CUMPLE CUMPLE
Separación libre mínima armaduras horizontales - Muro M-6 -> Tramo 1 -> Trasdós: - Muro M-6 -> Tramo 1 -> Intradós:	Mínimo: 3.8 cm Calculado: 18.4 cm Calculado: 18.4 cm	CUMPLE CUMPLE
Separación máxima armaduras horizontales - Muro M-6 -> Tramo 1 -> Trasdós: - Muro M-6 -> Tramo 1 -> Intradós:	Máximo: 30 cm Calculado: 20 cm Calculado: 20 cm	CUMPLE CUMPLE
Cuantía mínima geométrica vertical cara traccionada - Muro M-6 -> Tramo 1 -> Trasdós (0.00 m): - Muro M-6 -> Tramo 1 -> Trasdós (1.50 m):	Mínimo: 0.0009 Calculado: 0.00336 Calculado: 0.00168	CUMPLE CUMPLE
Cuantía mínima mecánica vertical cara traccionada - Muro M-6 -> Tramo 1 -> Trasdós (0.00 m): - Muro M-6 -> Tramo 1 -> Trasdós (1.50 m):	Mínimo: 0.00154 Calculado: 0.00336 Calculado: 0.00168	CUMPLE CUMPLE
Cuantía mínima geométrica vertical cara comprimida - Muro M-6 -> Tramo 1 -> Intradós (0.00 m): - Muro M-6 -> Tramo 1 -> Intradós (1.50 m):	Mínimo: 0.00027 Calculado: 0.00095 Calculado: 0.00095	CUMPLE CUMPLE
Cuantía mínima mecánica vertical cara comprimida - Muro M-6 -> Tramo 1 -> Intradós (0.00 m): - Muro M-6 -> Tramo 1 -> Intradós (1.50 m):	Mínimo: 3e-005 Calculado: 0.00095 Mínimo: 2e-005 Calculado: 0.00095	CUMPLE CUMPLE
Cuantía máxima geométrica de armadura vertical total - Muro M-6 -> Tramo 1 -> (6.00 m): - Muro M-6 -> Tramo 1 -> (1.50 m):	Máximo: 0.04 Calculado: 0.00262 Calculado: 0.0043	CUMPLE CUMPLE
Separación libre mínima armaduras verticales - Muro M-6 -> Tramo 1 -> Trasdós: - Muro M-6 -> Tramo 1 -> Intradós:	Mínimo: 3.8 cm Calculado: 7.6 cm Calculado: 17.6 cm	CUMPLE CUMPLE
Separación máxima armaduras verticales - Muro M-6 -> Tramo 1 -> Trasdós:	Máximo: 30 cm Calculado: 20 cm	CUMPL

- Muro M-6 -> Tramo 1 -> Intradós:	Calculado: 20 cm	E CUMPLE
Comprobación a flexocompresión - Muro M-6 -> Tramo 1:		CUMPLE
Comprobación a cortante - Muro M-6 -> Tramo 1:	Máximo: 24.55 Tn/m Calculado: 16.21 Tn/m	CUMPLE
Comprobación de fisuración - Muro M-6 -> Tramo 1:	Máximo: 0.3 mm Calculado: 0.3 mm	CUMPLE
Comprobación de las longitudes de solape - Muro M-6 -> Tramo 1 -> Base trasdós:	Mínimo: 55 cm Calculado: 55 cm	CUMPLE
- Muro M-6 -> Tramo 1 -> Base intradós:	Mínimo: 30 cm Calculado: 35 cm	CUMPLE
Comprobación del anclaje del armado base en coronación - Muro M-6 -> Coronación -> Trasdós:	Mínimo: 51.5 cm Calculado: 51.5 cm	CUMPLE
- Muro M-6 -> Coronación -> Intradós:	Mínimo: 52.1 cm Calculado: 52.4 cm	CUMPLE
Area mínima longitudinal cara superior viga de coronación - Muro M-6 -> Coronación:	Mínimo: 4.1 cm2 Calculado: 6.1 cm2	CUMPLE
Tensiones sobre el terreno - Zapata M-6 -> Tensión media:	Máximo: 2 Kp/cm2 Calculado: 0.896 Kp/cm2	CUMPLE
- Zapata M-6 -> Tensión máxima acc. gravitatorias:	Máximo: 2.5 Kp/cm2 Calculado: 1.267 Kp/cm2	CUMPLE
Flexión en zapata (acciones estáticas) - Zapata M-6 -> Momento positivo en vuelo derecho:	Momento: 0.00 Tn·m	CUMPLE
- Zapata M-6 -> Momento negativo en vuelo derecho:	Momento: -19.14 Tn·m	CUMPLE
- Zapata M-6 -> Momento positivo sección ref. derecha:	Momento: 0.00 Tn·m	CUMPLE
- Zapata M-6 -> Momento negativo sección ref. derecha:	Momento: -20.72 Tn·m	CUMPLE
- Zapata M-6 -> Momento positivo en vuelo izquierdo:	Momento: 26.30 Tn·m	CUMPLE
- Zapata M-6 -> Momento negativo en vuelo izquierdo:	Momento: 0.00 Tn·m	CUMPLE
- Zapata M-6 -> Momento positivo sección ref. izquierda:	Momento: 28.62 Tn·m	CUMPL

- Zapata M-6 -> Momento negativo sección ref. izquierda:	Momento: 0.00 Tn·m	E CUMPLE
Coeficiente de rozamiento terreno-cimiento - Zapata M-6:	Máximo: 0.5773 Calculado: 0.5526	CUMPLE
Vuelco de la zapata - Zapata M-6:	Reserva seguridad: 364.0 %	CUMPLE
Compresión oblicua (acciones estáticas) - Zapata M-6 -> Vuelo derecho:	Máximo: 407.75 Tn Calculado: 17.99 Tn	CUMPLE
- Zapata M-6 -> Vuelo izquierdo:	Calculado: 25.34 Tn	CUMPLE
Esfuerzo cortante (acciones estáticas) - Zapata M-6 -> Vuelo derecho:	Máximo: 19.53 Tn Calculado: 11.79 Tn	CUMPLE
- Zapata M-6 -> Vuelo izquierdo:	Máximo: 21.5 Tn Calculado: 16.13 Tn	CUMPLE
Canto mínimo - Zapata M-6:	Mínimo: 25 cm Calculado: 85 cm	CUMPLE
Longitud de anclaje - Zapata M-6 -> Arranque izquierdo del muro:	Mínimo: 21 cm Calculado: 75 cm	CUMPLE
- Zapata M-6 -> Arranque derecho del muro:	Mínimo: 28 cm Calculado: 75 cm	CUMPLE
- Zapata M-6 -> Armado superior vuelo der. hacia izquierda:	Mínimo: 43 cm Calculado: 266 cm	CUMPLE
- Zapata M-6 -> Armado superior vuelo der. hacia derecha:	Mínimo: 43 cm Calculado: 130 cm	CUMPLE
- Zapata M-6 -> Armado base inferior vuelo izq. hacia izquierda:	Mínimo: 40 cm Calculado: 179 cm	CUMPLE
- Zapata M-6 -> Armado base inferior vuelo izq. hacia derecha:	Mínimo: 40 cm Calculado: 315 cm	CUMPLE
Cuantía geométrica mínima - Zapata M-6 -> Armado inferior longitudinal:	Mínimo: 0.001 Calculado: 0.0012	CUMPLE
- Zapata M-6 -> Armado inferior transversal:	Calculado: 0.0012	CUMPLE
Cuantía mínima necesaria por flexión - Zapata M-6 -> Armado inferior transversal:	Mínimo: 0.0011	

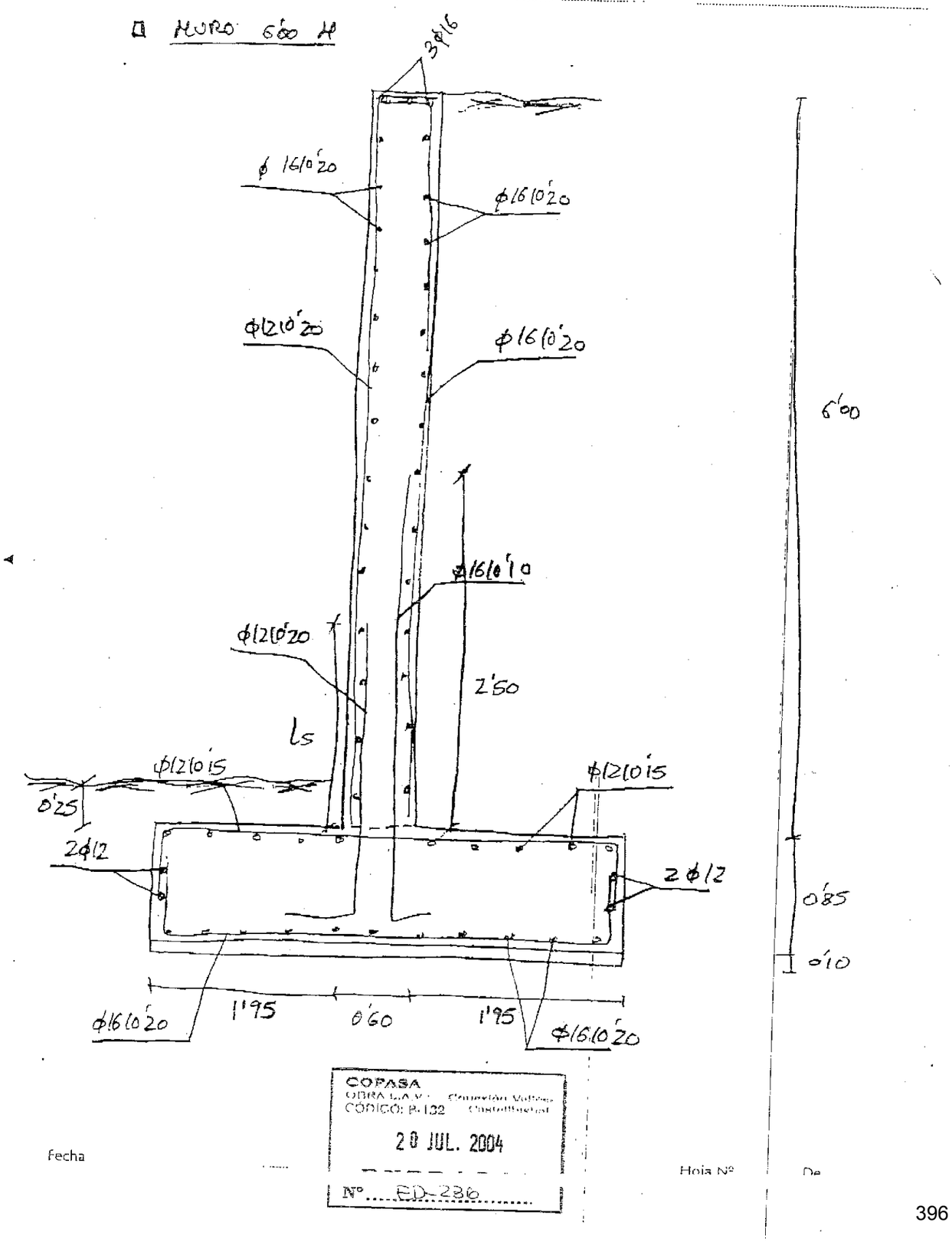
	Calculado: 0.0012	CUMPLE
- Zapata M-6 -> Armado sup. transversal vuelo derecho:	Mínimo: 0.0009	
	Calculado: 0.0009	CUMPLE
- Zapata M-6 -> Armado sup. transversal sección ref. derecha:	Mínimo: 0.0009	
	Calculado: 0.0009	CUMPLE
Diámetro mínimo de las barras	Mínimo: 12 mm	
- Zapata M-6 -> Armaduras de la zapata:	Calculado: 12 mm	CUMPLE
Separación máxima entre barras	Máximo: 30 cm	
- Zapata M-6 -> Armado inferior transversal:	Calculado: 20 cm	CUMPLE
- Zapata M-6 -> Armado inferior longitudinal:	Calculado: 20 cm	CUMPLE
- Zapata M-6 -> Armado superior transversal:	Calculado: 15 cm	CUMPLE
- Zapata M-6 -> Armado superior longitudinal:	Calculado: 15 cm	CUMPLE
Separación mínima entre barras	Mínimo: 10 cm	
- Zapata M-6 -> Armado inferior transversal:	Calculado: 20 cm	CUMPLE
- Zapata M-6 -> Armado inferior longitudinal:	Calculado: 20 cm	CUMPLE
- Zapata M-6 -> Armado superior transversal:	Calculado: 15 cm	CUMPLE
- Zapata M-6 -> Armado superior longitudinal:	Calculado: 15 cm	CUMPLE
Longitud mínima de las patillas		
- Zapata M-6 -> Armado superior vuelo izq. hacia izquierda:	Mínimo: 11 cm	
	Calculado: 25 cm	CUMPLE
- Zapata M-6 -> Armado superior vuelo izq. hacia derecha:	Mínimo: 11 cm	
	Calculado: 25 cm	CUMPLE
- Zapata M-6 -> Armado base inferior vuelo izq. hacia izquierda:	Mínimo: 15 cm	
	Calculado: 74 cm	CUMPLE
- Zapata M-6 -> Armado base inferior vuelo izq. hacia derecha:	Mínimo: 15 cm	
	Calculado: 74 cm	CUMPLE
Se cumplen todas las comprobaciones		

VAITEC valenciana de estructuras

Proyecto PAC Pista cavidad [illegible]

Asunto

MURO 6'00 M



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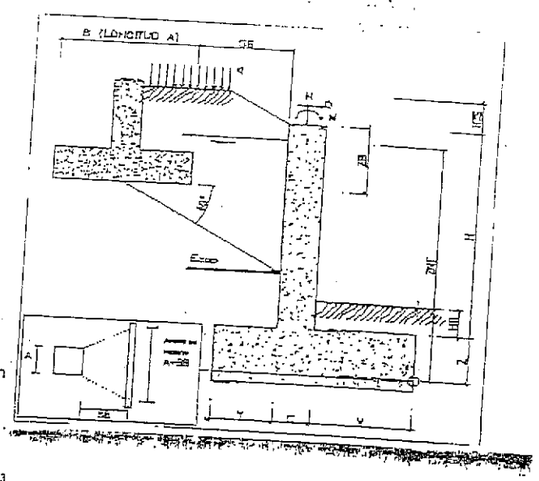
Fecha

Hoja Nº De

MUROS EN MENSULA CON TALON

MURO TIPO I

DATOS GEOMETRICOS



MURO		
TALON	T	1.95 m
ESPESOR ALZADO	C	0.60 m
VUELO	V	1.95 m
CANTO ZAP	Z	0.85 m
ALTURA ALZADO	H	6.00 m
ANCHO TOTAL ZAPATA		4.50 m
ALTURA TOTAL		6.85 m
CIMENTACION CERCANA		
ANCHO ZAPATA	B	
LARGO ZAPATA	A	1.50 m
PROFUNDIDAD	ZB	0.00 m
SEPARACION MINIMA A MURO	SB	-0.55 m
AXIL EN PILAR	NB	2.95 m
EMPUJE	E_{ZAP}	0.00 kN
		0.00 kN/m

(E_{zap} distribuido en una longitud A+SB, según criterio del Civil Engineering Code of Practice)

MATERIALES

HORMIGON		
PESO ESP		25.00 kN/m³
fck		30.00 N/mm²
COEF MINORACION		1.50
fcd		20.00 N/mm²
ACERO		12.00 N/mm²
fyk		
COEF MINORACION		510.00 N/mm²
fyd		1.15
		443.48 N/mm²

ACCIONES TERRENO

RELLENO TRASDOS

PESO ESP	P	20.00 kN/m³
PESO ESP SUMERGIDO	PSUM	10.00 kN/m³
ANG ROZ INT	ϕ	30.00 °
ALTURA S/CORONAC	HTS	0.00 m
ALTURA NIVEL FREATICO	ZNF	0.00 m
ALTURA "SECA"	HS	6.85 m
COEF EMP ACT	K_A	0.33
SOBRECARGA UNIFORME	q	10.00 kN/m²

CIMENTACION

COEF ROZ TERR/ZAP

	μ	0.58 tgϕ
Arenas sin limos		0.55
Arenas limosas		0.45
Limos		0.35
Roca sana rugosa		0.60
TENSION ADMISIBLE	σ	2.00 kp/cm²

EMPUJE PASIVO DE TIERRAS (DESLIZAMIENTO)

PESO ESP	γ_{ip}	20.00 kN/m³
ANG ROZ	ϕ	30.00 °
COEF EMP PAS	K_P	1.67
ALTURA TIERRAS INTRADÓS	HTI	0.25 m

ACCIONES EN CORONACION

AXIL CORONACION	N	0.00 kN
FLECTOR CORONACION	M	0.00 kN m
CORTANTE CORONACION	Q	0.00 kN

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MUROS EN MENSULA CON TALON

MURO TIPO I

ACCIONES CIMENTACIÓN

ACCIONES VERTICALES

		DIST A PUNTA	DIST A CDG BASE ZAP
ALZADO	90.00 kN	-2.25	0.00 m
ZAPATA	95.63 kN	-2.25	0.00 m
TERR S/TALON	234.00 kN	-3.53	-1.28 m
N CORONACION	0.00 kN	-2.25	0.00 m
TOTAL	**419.63 kN**		

ACCIONES HORIZONTALES

		ALTURA A BASE ZAPATA
TERR ALZADO SECO	156.41 kN	2.28 m
TERR ALZADO	0.00 kN	0.00 m
MOJADO	0.00 kN	0.00 m
AGUA	0.00 kN	0.00 m
TERR S/ALZADO	0.00 kN	0.00 m
SC TRASDOS	22.83 kN	3.43 m
CORONACION	0.00 kN	3.43 m
ZAP. CERCANA	0.00 kN	6.85 m
EMP PASIVO INTRADÓS	-18.33 kN	4.30 m
TOTAL	**160.91 kN**	0.37 m

MOM ESTABILIZ. PUNTA

		MOMENTOS CDG ZAPATA
ALZADO	-202.50 kN m	0.00 kN m
ZAPATA	-215.16 kN m	0.00 kN m
TERR S/TALON	-624.85 kN m	-298.35 kN m
N CORONACION	0.00 kN m	0.00 kN m
EMP PASIVO INTRADÓS	-6.72 kN m	0.00 kN m
TOTAL	**-1249.23 kN m**	**TOTAL** **-298.35 kN m**

MOM DESESTAB. PUNTA

TERR ALZADO SECO	357.13 kN m		357.13 kN m
TERR ALZADO	0.00 kN m		0.00 kN m
MOJADO	0.00 kN m		0.00 kN m
AGUA	0.00 kN m		0.00 kN m
TERR S/ALZADO	0.00 kN m		0.00 kN m
SC TRASDOS	78.20 kN m		78.20 kN m
Q CORONACION	0.00 kN m		0.00 kN m
M CORONACION	0.00 kN m		0.00 kN m
ZAP. CERCANA	0.00 kN m		0.00 kN m
TOTAL	**435.34 kN m**	**TOTAL**	**435.34 kN m**

136.99

DESLIZAMIENTO

ROZ MAX 242.27 kN

COEF SEG DESLIZ 1.51 Ok

VUELCO

COEF SEG VUELCO 2.87 Ok

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UTE LLOBREGAT

UTE LLOBREGAT SVII (INTRAESA-TECSA)

HOJA DE ENVÍO DE FAX

PARA: EVA MARTÍN	DE: ANTONIO ARIÑO MORENO
ORGANIZACIÓN: COPASA	FECHA: 27 de julio de 2004
NÚMERO DE FAX: 93-772-37-90	NÚM. TOTAL DE PÁGINAS INCLUYENDO LA CUBIERTA: 1+6
TELÉFONO: 93-771-17-37	Nº DE REFERENCIA DEL REMITENTE:
ASUNTO: MURO 4C (ALETA PASO BAJO RAMAL V-M)	SU REFERENCIA:

☒ URGENTE ☐ PARA REVISAR ☐ COMENTARIOS ☐ RESPONDA ☐ RECICLAR

NOTAS Y COMENTARIOS:

Eva,

Adjunto una copia de nuestra comprobación del muro 4C Aleta 1 del Paso Bajo Ramal Vallés-Martorell y Vía Barcelona-Martorell. En principio no se debería considerar el empuje pasivo en la puntera de la zapata obteniendo así un coeficiente de estabilidad al rozamiento de 1.199. Incluso en el caso de considerar este empuje pasivo obtenemos un coeficiente de 1.358.

La asistencia técnica a la dirección de obra no puede aprobar los cálculos presentados por la contrata con fecha 27 de julio de 2004, por la diferencia de resultados obtenidos con las comprobaciones adjuntas.

Un saludo,

Antonio Ariño Moreno

COPASA
OBRA L.A.V. Conexión Vallés-
CÓDIGO: B-132 Castellbisbal
27 JUL. 2004
ENTRADAS
Nº E1-243

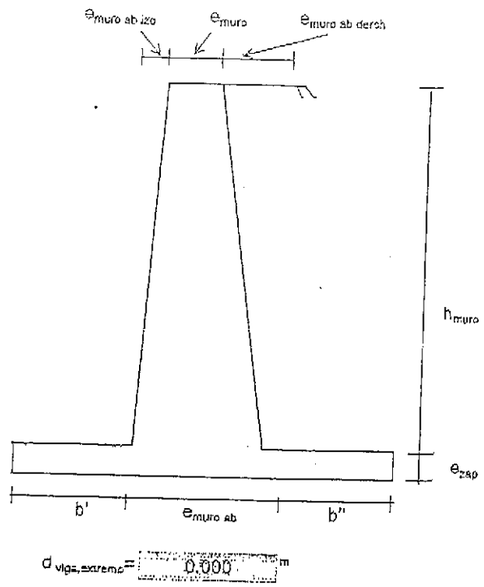
SALIDA	UTE Llobregat
Nº Reg:	696
Fecha:	27-07-04

Oficina de Obra: C/ Terç de Nostra Senyora de Montserrat nº 8, entlo.
08740 - Sant Andreu de la Barca (Barcelona)

UTE LLOBREGAT

1.-GEOMETRIA Y CARACTERISTICAS DEL TERRENO

h_{muro}=	6.000	m
e_{muro}=	0.600	m
e_{zap}=	0.850	m
b'=	1.950	m
b"=	1.950	m
$e_{muro\ ab\ derch}$=	0.000	m
$e_{muro\ ab\ izq}$=	0.000	m
$b_{tacón}$=	0.000	m
$h_{tacón}$=	0.000	m
$h_{tierras\ izq}$=	0.250	m
ϕ=	30.000	°
ϕ deslizamiento=	30.000	°
γ=	2.000	t/m3
σ_{adm}=	20.000	t/m2
c=	0.000	t/m2
cot(α)=	0.000	°
β=	0.000	°



h_{tot}=	6.850	m
$e_{muro\ ab}$=	0.600	m
b_{zap}=	4.500	m

$d_{viga_extremo}$= 0.000 m

Coeficientes de empuje activo

ANGULO DE ROZAMIENTO INTERNO ϕ	ANGULO DE ROZAMIENTO DE TERRENO Y MURO δ	ANGULO DEL TALUD DEL TERRENO β	INCLINACION DEL MURO α	EMPUJE ACTIVO HORIZONTAL λ_h	EMPUJE ACTIVO VERTICAL λ_v
30.000	20.000	0.000	90.000	0.279	0.102

2.-ACCIONES

Las acciones siguientes son las que se deberán considerar en el cálculo:

2.1.- EMPUJE DE TIERRAS+SOBRECARGA

p= 1.000 t/m2

P_h= (γ z+p senα/sen(α+β)) λ_h = 0.559 z + 0.279
P_v= (γ z+p senα/sen(α+β)) λ_v = 0.203 z + 0.102

$$y=z\frac{2\,z\,\gamma+3\,p}{3\,z\,\gamma+6\,p}=z\frac{4.000\,z+3.000}{6.000\,z+6.000}$$

$$y(z=h_{tot})=r(z=6.850)=h\frac{2\,h\,\gamma+3\,p}{3\,h\,\gamma+6\,p}=$$ 4.421 m

$P_h(z=h_{tot})$= (γ h_{tot}^2/2+p h_{tot} senα/sen(α+β)) λ_h = 15.023 t
$P_v(z=h_{tot})$= (γ h_{tot}^2/2+p h_{tot} senα/sen(α+β)) λ_v = 5.468 t

☐ Desarrolla Ep

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K_p = 1.800

2.2.-PESO PROPIO, PESO DE TIERRAS, REACCIONES EN CABEZA

W_{muro}=	$\frac{h_{muro}(e_{muro}+e_{muro\ ab})}{2}\gamma_h$ =	9.000	t
W_{muro1}=	$h_{muro}\ e_{muro}\ \gamma_h$ =	9.000	t
W_{muro2}=	$\frac{h_{muro}\ e_{muro\ ab\ izq}}{2}\gamma_h$ =	0.000	t
W_{muro3}=	$\frac{h_{muro}\ e_{muro\ ab\ der}}{2}\gamma_h$ =	0.000	t
$W_{tacón}$=	$b_{tacón}\ h_{tacón}\ \gamma_h$ =	0.000	t
W_{zap}=	$b_{zap}\ e_{zap}\ \gamma_h$ =	9.563	t
$W_{tierras}$=	$b''\ h_{tierras}\ \gamma_{tierras}$ =	23.400	t
$P_{tierras}$=	$h_{tierras}\ \gamma_{tierras}$ =	12.000	t
$W_{tierras\ iz}$=	$b'\ h_{tierras}\ \gamma_{tierras}$ =	0.975	t
$R_{viga,min}$=		0.000	t
$R_{viga,máx}$=		0.000	t
$R_{frenado}$=		0.000	t

3.-ANALISIS DE LA ESTABILIDAD

3.1.-ESTABILIDAD AL DESLIZAMIENTO

Nmax

$$C_{sd}=\frac{\mu N + E_p}{E_H - \mu E_v} = 1.199 \quad <1.5$$

N = W = 42.938 t
μ = 0.364
E = 15.023 t

para el nivel de cimentación cogemos el angulo 30.000

Nmin

$$C_{sd}=\frac{\mu N + E_p}{E_H - \mu E_v} = 1.199 \quad <1.5$$

N = W = 42.938 t
μ = 0.364
E = 15.023 t

para el nivel de cimentación cogemos el angulo 30.000

3.2.-ESTABILIDAD AL VUELCO

Nmax

$$c_{sv}=\frac{M_e}{M_v} = 3.813 \quad >2 \text{ OK!}$$

$M_e = W\ w + P_v\ (y\ cot\alpha + e_{muro} + e_{muro\ ab\ izq} + b') + E_p\ w_p$

$M_v = P_h\ (h_{tot}-y) + E_p\ w_p + E_{frenado}\ y_{frenado}$

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27 JUL. 2004
ENTRADAS
Nº ED-243

$y_{frenado}$ = 6.850 m

w_{muro1}=	2.250	m	E_1=	0.900	
w_{muro2}=	1.950	m	E_2=	3.960	
w_{muro3}=	2.550	m	E_3=	3.960	
w_h=	2.250	m	R_1=	0.765	
$w_{tacón}$=	0.000	m	R_2=	1.301	
w_{p1}=	0.425	m	R_3=	0.000	
w_{p2}=	0.283	m	R_4=	0.000	
w_{p3}=	0.000	m	$w_{tierras}$=	3.525	
w_{p4}=	0.000	m			
r_{viga}=	1.950	m			

M_e= 139.145 m t
M_v= 36.488 m t

Nmin

$$c_{sv}=\frac{M_e}{M_v} = 3.813 \quad >2 \text{ OK!}$$

$M_e = W\ w + P_v\ (y\ cot\alpha + e_{muro} + e_{muro\ ab\ izq} + b') + E_p\ w_p$

$M_v = P_h\ (h_{tot}-y) + E_p\ w_p$

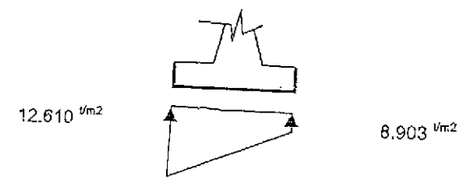
M_e= 139.145 m t
M_v= 36.488 m t

3.3.-COMPROBACIÓN DE TENSIONES EN EL TERRENO

N= 48.405 t
M= 6.256 t·m

A= 4.500 m2
I= 7.594 m4

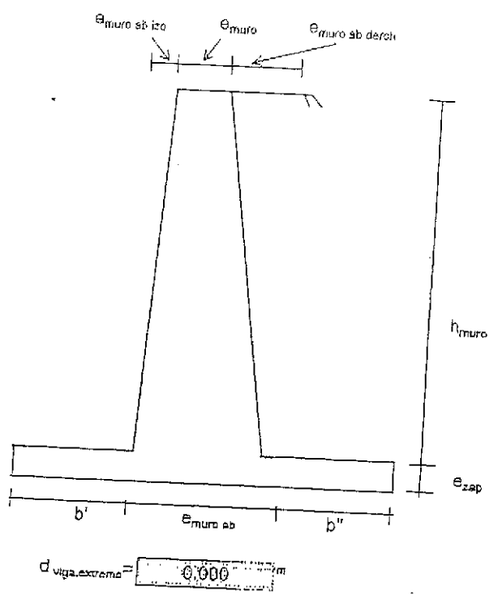
$$\sigma=\frac{N}{A}+\frac{M\ y}{I} = 12.610 \text{ t/m2} \quad < 26.667 \text{ OK!}$$



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27 JUL. 2004
ENTRADAS
Nº ED-243

1.-GEOMETRIA Y CARACTERISTICAS DEL [illegible]

h_{muro}=	6.000	m
e_{muro}=	0.600	m
e_{zap}=	0.858	m
b'=	1.950	m
b''=	1.950	m
$e_{muro\ ab\ derch}$=	0.000	m
$e_{muro\ ab\ izq}$=	0.000	m
$b_{tacón}$=	0.000	m
$h_{tacón}$=	0.000	m
$h_{tierras\ iz}$=	0.250	m
ϕ=	30.000	°
ϕ deslizamiento=	30.000	°
γ=	2.000	t/m3
σ_{adm}=	20.000	t/m2
c=	0.000	t/m2
cot(α)=	0.000	
β=	0.000	°



h_{tot}=	6.850	m
$e_{muro\ ab}$=	0.600	m
b_{zap}=	4.500	m

$d_{viga,extremo}$= 0.000 m

Coeficientes de empuje activo

ANGULO DE ROZAMIENTO INTERNO ϕ	ANGULO DE ROZAMIENTO DE TERRENO Y MURO δ	ANGULO DEL TALUD DEL TERRENO β	INCLINACION DEL MURO α	EMPUJE ACTIVO HORIZONTAL λ_h	EMPUJE ACTIVO VERTICAL λ_v
30.000	20.000	0.000	90.000	0.279	0.102

2.-ACCIONES

Las acciones siguientes son las que se deberán considerar en el cálculo:

2.1.- EMPUJE DE TIERRAS+SOBRECARGA

p= 1.000 t/m2

P_h= (γ z+p senα/sen(α+β)) λ_h = 0.559 z + 0.279
P_v= (γ z+p senα/sen(α+β)) λ_v = 0.203 z + 0.102

$$y = z\,\frac{2\,z\,\gamma+3\,p}{3\,z\,\gamma+6\,p} = z\,\frac{4.000\,z+3.000}{6.000\,z+6.000}$$

$$y(z=h_{tot}) = h\,\frac{2\,h\,\gamma+3\,p}{3\,h\,\gamma+6\,p} = 4.421 \text{ m}$$

$P_h(z=h_{tot})$= (γ h_{tot}^2/2+p h_{tot} senα/sen(α+β)) λ_h = 15.023 t
$P_v(z=h_{tot})$= (γ h_{tot}^2/2+p h_{tot} senα/sen(α+β)) λ_v = 5.468 t

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OBRA L.A.V. Conexión Vallés-Castellbisbal
CÓDIGO: B-132
27 JUL. 2004
ENTRADAS
Nº E0-243

☑ Desarrolla Ep

Ep = 2.066

K_p = 1.800

2.2.-PESO PROPIO, PESO DE TIERRAS, REACCIONES EN CABEZA

W_{muro}=	$\frac{h_{muro}\,(e_{muro}+e_{muro\ ab})}{2}\,\gamma_h$ =	9.000	t
W_{muro1}=	$h_{muro}\,e_{muro}\,\gamma_h$ =	9.000	t
W_{muro2}=	$\frac{h_{muro}\,e_{muro\ ab\ izq}}{2}\,\gamma_h$ =	0.000	t
W_{muro3}=	$\frac{h_{muro}\,e_{muro\ ab\ der}}{2}\,\gamma_h$ =	0.000	t
$W_{tacón}$=	$b_{tacón}\,h_{tacón}\,\gamma_h$ =	0.000	t
W_{zap}=	$b_{zap}\,e_{zap}\,\gamma_h$ =	9.563	t
$W_{tierras}$=	$b''\,h_{tierras}\,\gamma_{tierras}$ =	23.400	t
$P_{tierras}$=	$h_{tierras}\,\gamma_{tierras}$ =	12.000	t
$W_{tierras\ iz}$=	$b'\,h_{tierras}\,\gamma_{tierras}$ =	0.975	t
$R_{viga,mín}$=	0.000	t	
$R_{viga,máx}$=	0.000	t	
$R_{frenado}$=	0.000	t	

3.-ANALISIS DE LA ESTABILIDAD

3.1.-ESTABILIDAD AL DESLIZAMIENTO

Nmax

$$C_{sd} = \frac{\mu\,N + E_p}{E_H - \mu\,E_v} = 1.358 \quad <1.5$$

N = W = 42.938 t
μ = 0.364
E = 15.023 t

para el nivel de cimentación cogemos el angulo 30.000

Nmín

$$C_{sd} = \frac{\mu\,N + E_p}{E_H - \mu\,E_v} = 1.358 \quad <1.5$$

N = W = 42.938 t
μ = 0.364
E = 15.023 t

para el nivel de cimentación cogemos el angulo 30.000

3.2.-ESTABILIDAD AL VUELCO

Nmax

$$C_{sv} = \frac{M_e}{M_v} = 3.832 \quad >2 \text{ OK!}$$

M_e = W w + P_v (y cotα + e_{muro} + $e_{muro\ ab\ izq}$ + b') + E_p w_p

M_v = P_h (h_{tot}-y) + E_p w_p + $E_{frenado}$ $y_{frenado}$

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27 JUL. 2004
ENTRADAS
Nº E0-243

UTE LLOBREGAT 00 m

$y_{frenado}$ = 0.850 m

w_{muro1}= 2.250 m
w_{muro2}= 1.950 m
w_{muro3}= 2.550 m

w_h= 2.250 m
$w_{tacón}$= 0.000 m

w_{p1}= 0.425 m
w_{p2}= 0.283 m
w_{p3}= 0.000 m
w_{p4}= 0.000 m
r_{viga}= 1.950 m

E_1= 0.900
E_2= 3.960
E_3= 3.960

R_1= 0.765
R_2= 1.301
R_3= 0.000
R_4= 0.000

$w_{tierras}$= 3.525

M_s= 139.838 mt
M_v= 36.488 mt

Nmin

$$c_{sv} = \frac{M_s}{M_v} = 3.832 \quad >2 \text{ OK!}$$

$M_s = W\,w + P_v\,(y\ \text{cot}\alpha + e_{muro} + e_{muro\ ab\ izq} + b') + E_p\,w_p$

$M_v = P_h\,(h_{tot}-y) + E_p\,w_p$

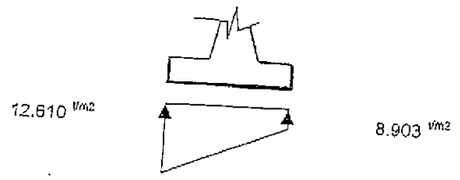
M_s= 139.838 mt
M_v= 36.488 mt

3.3.-COMPROBACIÓN DE TENSIONES EN EL TERRENO

N= 48.405 t
M= 6.256 t·m

A= 4.500 m2
I= 7.594 m4

$$\sigma = \frac{N}{A} + \frac{M\,y}{I} = 12.610 \text{ t/m2} \quad < 26.667 \text{ OK!}$$



COPASA
OBRA L.A.V. - Conexión Vallés-Castellbisbal
CÓDIGO: B-132
27 JUL. 2004
ENTRADAS
Nº ..... 243 .....

UTE LLOBREGAT S-VII (INTRAESA-TEC'4)
C/ Terç de Nostra Senyora de Montserrat nº 8, entlo.
08740 - Sant Andreu de la Barca (Barcelona)
Tel: 936-535-156 Fax: 936-822-361

INFORME MURO 4C ALETA 1
PASO BAJO RAMAL VALLÉS-MARTORELL Y VIA BARCELONA-MARTORELL

PROYECTO DE CONSTRUCCIÓN DE PLATAFORMA
L.A.V. MADRID-ZARAGOZA-BARCELONA-FRONTERA FRANCESA
TRAMO: CONEXIÓN VALLÉS - CASTELLBISBAL

El presente informe revisa los cálculos del muro 4C aleta 2 del PASO BAJO RAMAL VALLÉS-MARTORELL Y VIA BARCELONA-MARTORELL presentado por COPASA con fecha 27 de julio 2004.

En la revisión de los cálculos presentados no se obtiene el coeficiente de seguridad al deslizamiento de 1.5 por lo que se proponen las siguientes modificaciones: aumentar el canto de la zapata de 0.85 a 1.00 m.; desplazar la zapata hacia el talón dejando 1.70 en lugar de 1.95 m. de puntera y 2.20 en lugar de 1.95 m de talón; aumentar la armadura superior transversal de la zapata de 7ϕ12/ml a 10ϕ12/ml.

La asistencia a la dirección de obra formada por la U.T.E. de las empresas INGENIERÍA DE TRAZADOS Y ESTRUCTURAS, S.A. (INTRAESA) y TEC-CUATRO, S.A. en el proyecto de la L.A.V. Tramo: Conexión Vallés - Castellbisbal, aprueba los cálculos presentados con las modificaciones en la geometría y armadura de la zapata mencionada para el muro 4C aleta 1 del PASO BAJO RAMAL VALLÉS-MARTORELL Y VIA BARCELONA-MARTORELL.

Barcelona, 28 de julio de 2004

JEAC
Antonio Ariño Moreno

UTE LLOBREGAT 936822361

COPASA
OBRA L.A.V. - Conexión Vallés-Castellbisbal
CÓDIGO: B-132
28 JUL. 2004
ENTRADAS
Nº ..... 246 .....

GIF
Gestor de Infraestructuras Ferroviarias

COPASA
CONSTRUCCIONES FARAMO, S.A.

PASO BAJO RAMAL VALLÉS-MARTORELL Y VIA BARCELONA-MARTORELL

DIMENSIONAMIENTO MURO 5B ALETA 2 Hmáx=8.35m

PROYECTO DE CONSTRUCCIÓN DE PLATAFORMA

LÍNEA DE ALTA VELOCIDAD
Madrid-Zaragoza-Barcelona-Frontera francesa

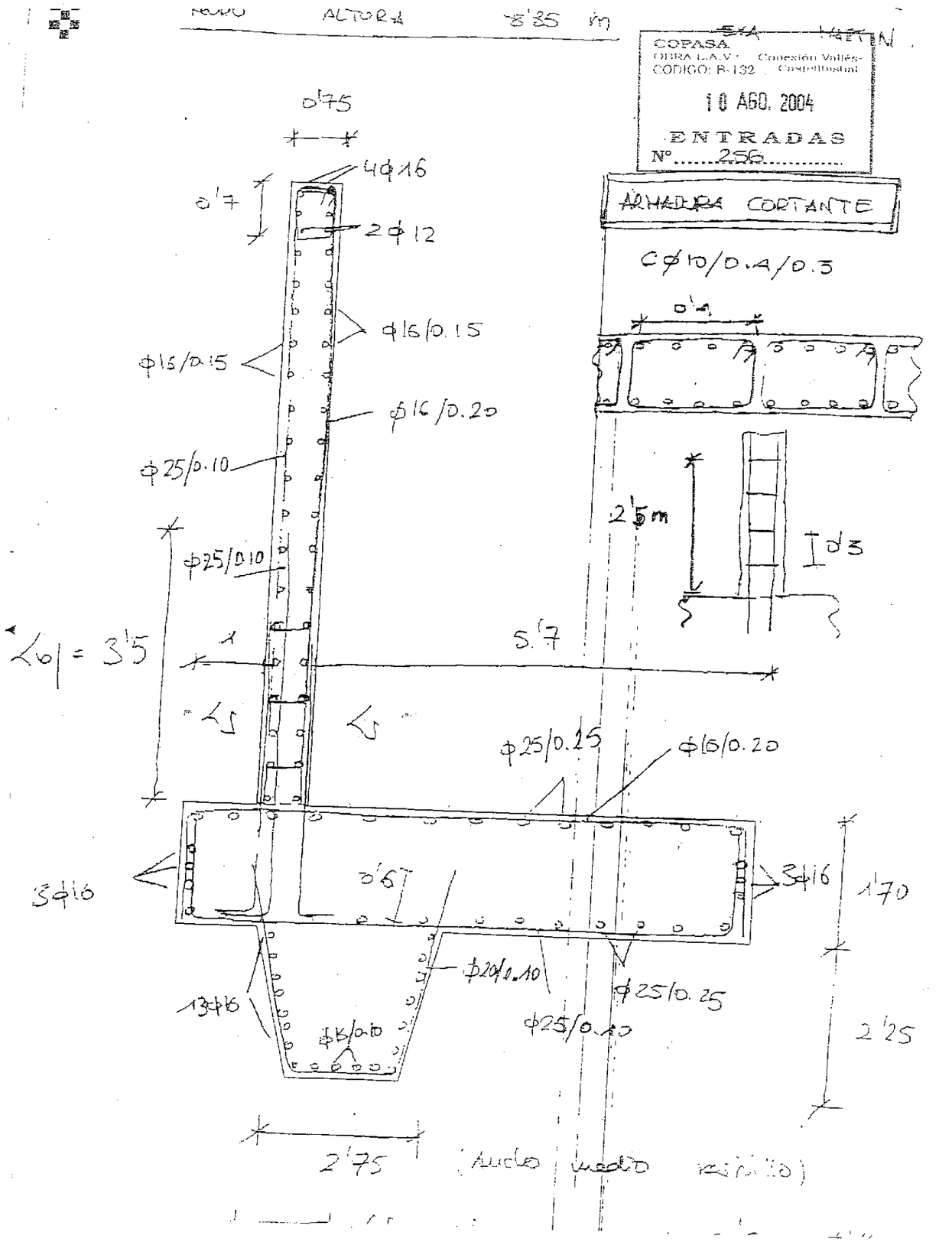
TRAMO: *Conexión Vallés-Castellbisbal*
Provincia: Barcelona

Longitud: 3,30 Km.

5/12/2003

GIF
Gestor de Infraestructuras Ferroviarias

CROQUIS

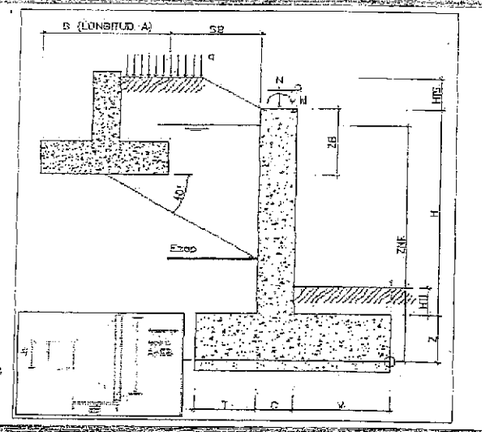


VALTER

MUROS EN MENSULA CON TALON

MURO TIPO I

DATOS GEOMETRICOS



MURO		
TALON	T	1,00 m
ESPESOR ALZADO	C	0,75 m
VUELO	V	5,70 m
CANTO ZAP	Z	1,70 m
ALTURA ALZADO	H	8,35 m
ANCHO TOTAL ZAPATA		7,45 m
ALTURA TOTAL		10,05 m
CIMENTACION CERCANA		
ANCHO ZAPATA	B	1,50 m
LARGO ZAPATA	A	0,00 m
PROFUNDIDAD	ZB	-0,55 m
SEPARACION MINIMA A MURO	SB	2,95 m
AXIL EN PILAR	NB	0,00 kN
EMPUJE	E_{ZAP}	0,00 kN/m

(E_{zap} distribuido en una longitud A+SB, según criterio del Civil Engineering Code of Practice)

MATERIALES

HORMIGON		
PESO ESP		25,00 kN/m³
fck		25,00 N/mm²
COEF MINORACION		1,50
fcd		16,67 N/mm²
f1cd		10,00 N/mm²
ACERO		
fyk		510,00 N/mm²
COEF MINORACION		1,15
fyd		443,48 N/mm²

ACCIONES TRASDOS

RELLENO TRASDOS			
PESO ESP	P	20,00 kN/m³	
PESO ESP SUMERGIDO	PSUM	10,00 kN/m³	
ANG ROZ INT	ϕ	30,00 °	0,523598776 rad
ANGULO TALUD	α	20,00 °	0,34906585 rad
ALTURA S/CORONAC	HTS	0,36 m	
COEF EMP ACT	K_A	0,41	
SOBRECARGA UNIFORME	q	30,00 kN/m²	
CIMENTACION			
COEF ROZ TERR/ZAP	μ	0,58 tgϕ	
	Arenas sin limos	0,55	
	Arenas limosas	0,45	
	Limos	0,35	
	Roca sana rugosa	0,60	
TENSION ADMISIBLE	σ	2,50 kp/cm²	
EMPUJE PASIVO DE TIERRAS (DESLIZAMIENTO)			
PESO ESP	γ_{tp}	20,00 kN/m³	
ANG ROZ	ϕ	30,00 °	
COEF MINORACIÓN DE Kp		1,50	
COEF EMP PAS	K_P	2,00	
ALTURA TIERRAS INTRADÓS	HTI	0,00 m	
PROFUNDIDAD DE RASTRILLO	HRI	2,25 m	
ALTURA DE TIERRAS NO EFECTIVA A EFECTOS DE PASIVO	HNI	0,00 m	
ALTURA TOTAL DEL EMP PASIVO	HPAS	3,95 m	
ANCHO MEDIO DEL RASTRILLO	ARAS	2,75 m	
DIST Xg,Alz-Xg,rastrillo	DRAS	1,50 m	

MUROS EN MENSULA CON TALON

MURO TIPO I

ACCIONES EN CORONACION		
AXIL CORONACION	N	0,00 kN
FLECTOR CORONACION	M	0,00 kN m
CORTANTE CORONACION	Q	0,00 kN

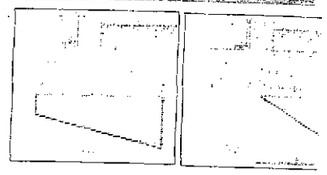
VALTER

MUROS EN MENSULA CON TALON

MURO TIPO I

TENSIONES EN ZAPATA

	kN/m²	kp/cm²	
CASO 1			
σ1	123,58	1,24	Ok
σ2	169,48	1,69	Ok
CASO 1			
CASO 2			
x	-		m
σ1	-	-	-



ESFUERZOS DE CALCULO

MURO

(Axil y flector en la base. Cortante a un canto útil de la base)

m-kN

	AXIL	FLECTOR	CORTANTE	C.S.
PESO PROPIO	156,56			1,35
TERRENO		803,81	242,40	1,50
TERRENO S/ALZADO		105,11	23,07	1,00
SC TERRENO		433,19	95,06	1,50
ESF CORONACION	0,00	0,00	0,00	1,50
ZAPATA CERCANA		0,00	0,00	1,50
SUMA CARACT	156,56	1342,11	360,53	
SUMA MAYORADA	211,36	1960,62	529,26	

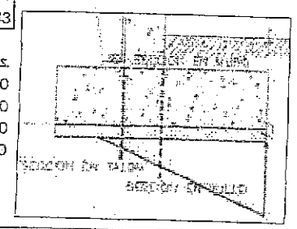
VUELO ZAPATA

(Sección S_{flex} a 0,15 E del paramento exterior del muro, hacia el trasdós)
(Sección S_{cort} a un canto útil del paramento exterior del muro)
(Se descuenta el peso propio del tramo de zapata a la derecha de la sección de cálculo)

			FLECTOR	CORTANTE	resutl tens	BRAZO RESULT	C.S.
TENSION EN PUNTA	123,58	tens	2244,96	551,04	822,40	2,73	1,5
TENSION EN SECION S_{flex}	159,39	pp zap	690,41	172,13	242,25	2,85	1
TENSION EN SECION S_{cort}	148,53	CARACT	1554,55	378,91			
		MAYORADO	2677,03	654,43			

TALON ZAPATA

	FLECTOR	CORTANTE	C.S.
PESO PROPIO	21,25	42,50	1,50
TERRENO	83,50	167,00	1,50
TERRENO S/ALZADO	3,64	7,28	1,50
SC TERRENO	15,00	30,00	1,50
SUMA CARACT	123,39	246,78	
SUMA MAYORADA	185,08	370,17	



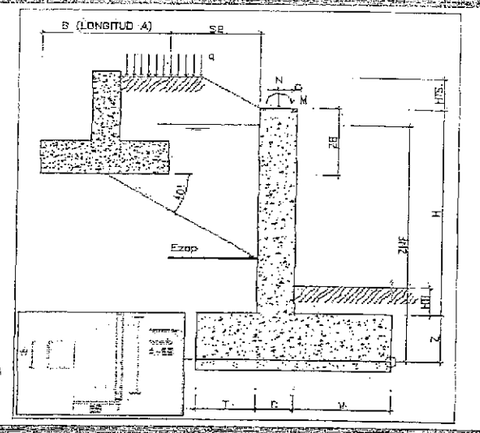
COMPROBACION ESTRUCTURA DE HORMIGON

	ALZADO MURO (cara fraccionada)	VUELO ZAPATA (cara inf zap)	TALON ZAPATA (cara sup zap)	ALZADO MURO (cara compr)
Nd	211,359			1960,616
Md	1960,616	2677,027	185,085	88,374
Vd	494,261	654,429	370,169	-
K (red axil)	1,000	1,000	1,000	1,000
p1	0,003	0,001	0,001	0,000
ξ	1,535	1,348	1,348	1,535
Vu1	3500,000	8250,000	8250,000	3500,000
Vu2	278,272	307,131	338,041	274,486
$As_{tracc.\ calc}$ (cm^2/m)	76,563	45,731	3,162	-18,547
Amin mecánica	11,2745098	25,55555556	25,55555556	
Amin geométrica horiz(A.C.)	12			12
				6,75

MUROS EN MENSULA CON TALON

MURO TIPO I

DATOS GEOMETRICOS



MURO		
TALON	T	1,00 m
ESPESOR ALZADO	C	0,75 m
VUELO	V	5,70 m
CANTO ZAP	Z	1,75 m
ALTURA ALZADO	H	8,30 m
ANCHO TOTAL ZAPATA		7,45 m
ALTURA TOTAL		10,05 m
CIMENTACION CERCANA		
ANCHO ZAPATA	B	1,50 m
LARGO ZAPATA	A	0,00 m
PROFUNDIDAD	ZB	0,55 m
SEPARACION MINIMA A MURO	SB	2,95 m
AXIL EN PILAR	NB	0,00 kN
EMPUJE	E_{ZAP}	0,00 kN/m

(E_{zap} distribuido en una longitud A+SB, según criterio del Civil Engineering Code of Practice)

MATERIALES

HORMIGON		
PESO ESP		25,00 kN/m^3
fck		25,00 N/mm^2
COEF MINORACION		1,50
fcd		16,67 N/mm^2
f1cd		10,00 N/mm^2
ACERO		
fyk		510,00 N/mm^2
COEF MINORACION		1,15
fyd		443,48 N/mm^2

ACCIONES TRASDOS

RELLENO TRASDOS			
PESO ESP	P	20,00 kN/m^3	
PESO ESP SUMERGIDO	PSUM	10,00 kN/m^3	
ANG ROZ INT	ϕ	30,00 °	0,523598776 rad
ANGULO TALUD	α	20,00 °	0,34906585 rad
ALTURA S/CORONAC	HTS	0,36 m	
COEF EMP ACT	K_A	0,41	
SOBRECARGA UNIFORME	q	30,00 kN/m^2	
CIMENTACION			
COEF ROZ TERR/ZAP	μ	0,58 tgϕ	

Arenas sin limos	0,55
Arenas limosas	0,45
Limos	0,35
Roca sana rugosa	0,60

TENSION ADMISIBLE	σ	2,50 kp/cm^2	
EMPUJE PASIVO DE TIERRAS (DESLIZAMIENTO)			
PESO ESP	γ_{tp}	20,00 kN/m^3	
ANG ROZ	ϕ	30,00 °	
COEF MINORACIÓN DE Kp		1,50	
COEF EMP PAS	K_p	2,00	
ALTURA TIERRAS INTRADÓS	HTI	0,00 m	
PROFUNDIDAD DE RASTRILLO	HRI	2,25 m	
ALTURA DE TIERRAS NO EFECTIVA A EFECTOS DE PASIVO	HNI	0,00 m	
ALTURA TOTAL DEL EMP PASIVO	HPAS	3,95 m	
ANCHO MEDIO DEL RASTRILLO	ARAS	2,75 m	
DIST Xg,Alz-Xg,rastrillo	DRAS	1,50 m	

10/08/2004

VALTER

MUROS EN MENSULA CON TALON

MURO TIPO I

ACCIONES EN CORONACION

AXIL CORONACION	N	0,00 kN
FLECTOR CORONACION	M	0,00 kN m
CORTANTE CORONACION	Q	0,00 kN

MUROS EN MENSULA CON TALON

MURO TIPO I

ACCIONES CIMENTACION

ACCIONES VERTICALES

		DIST A PUNTA	DIST A CDG BASE ZAP
ALZADO	156,56 kN	-6,08	-2,35 m
ZAPATA	316,63 kN	-3,73	0,00 m
RASTRILLO	154,69 KN	-4,58	-0,85 m
TERR S/TALON	167,18 kN	-6,95	-3,23 m
SOBRECARGA S/TALON VERT	30,00 kN	-6,95	-3,23 m
SOBRECARGA S/TALON HOR	52,27 kN	-6,45	-2,73 m
TERR ALZADO SECO	214,33 kN	-6,45	-2,73 m
N CORONACION	0,00 kN	-6,08	-2,35 m
TOTAL	**1071,66** kN		

ACCIONES HORIZONTALES

		ALTURA A BASE ZAPATA
TERR ALZADO SECO	588,86 kN	1,85 m
SC TRASDOS	143,62 kN	3,90 m
CORONACION	0,00 kN	10,05 m
ZAP. CERCANA	0,00 kN	7,50 m
EMP PASIVO INTRADÓS	-312,05 kN	-0,93 m
TOTAL	**420,43** kN	

MOM ESTABILIZ. PUNTA

		MOMENTOS CDG ZAPATA
ALZADO	-951,12 kN m	-367,92 kN m
ZAPATA	-1179,43 kN m	0,00 kN m
RASTRILLO	-707,70 kN m	-131,48 kN m
TERR S/TALON	-1161,91 kN m	-539,16 kN m
SOBRECARGA S/TALON VERT	-208,50 kN m	-96,75 kN m
SOBRECARGA S/TALON HOR	-337,17 kN m	-142,45 kN m
TERR ALZADO SECO	-1382,41 kN m	-584,04 kN m
N CORONACION	0,00 kN m	0,00 kN m
EMP PASIVO INTRADÓS	291,25 kN m	0,00 kN m
TOTAL	**-5636,99** kN m	**TOTAL** **-1861,81** kN m

MOM DESESTAB. PUNTA

TERR ALZADO SECO	1089,39 kN m		1089,39 kN m	
SC TRASDOS	560,13 kN m		560,13 kN m	
Q CORONACION	0,00 kN m		0,00 kN m	
M CORONACION	0,00 kN m		0,00 kN m	
ZAP. CERCANA	0,00 kN m		0,00 kN m	
TOTAL	**1649,52** kN m	**TOTAL**	**1649,52** kN m	-212,28

DESLIZAMIENTO

ROZ MAX	630,27 kN
COEF SEG DESLIZ	1,50 Ok

VUELCO

COEF SEG VUELCO	3,42 Ok

10/08/2004

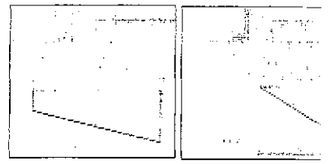
VALTER

MUROS EN MENSULA CON TALON

MURO TIPO I

TENSIONES EN ZAPATA

	kN/m²	kp/cm²	
CASO 1			
σ1	123,58	1,24	Ok
σ2	169,48	1,69	Ok
CASO 1			
CASO 2			
x	-		m
σ1	-	-	-



ESFUERZOS DE CÁLCULO m kN

MURO *(Axil y flector en la base. Cortante a un canto útil de la base)*

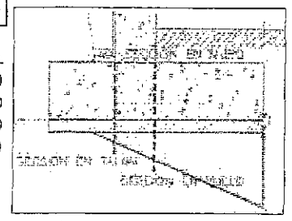
	AXIL	FLECTOR	CORTANTE	C.S.
PESO PROPIO	156,56			1,00
TERRENO		803,81	242,40	1,00
TERRENO S/ALZADO		105,11	23,07	1,00
SC TERRENO		433,19	95,06	0,30
ESF CORONACION	0,00	0,00	0,00	0,30
ZAPATA CERCANA		0,00	0,00	0,30
SUMA CARACT	156,56	1342,11	360,53	
SUMA MAYORADA	156,56	1038,88	293,99	

VUELO ZAPATA *(Sección S_{flex} a 0,15 E del paramento exterior del muro, hacia el trasdós)*
(Sección S_{cort} a un canto útil del paramento exterior del muro)
(Se descuenta el peso propio del tramo de zapata a la derecha de la sección de cálculo)

			FLECTOR	CORTANTE	result tens	BRAZO RESULT	C.S.
TENSION EN PUNTA	123,58	tens	2244,96	551,04	822,40	2,73	1
TENSION EN SECION S_{flex}	159,39	pp zap	690,41	172,13	242,25	2,85	1
TENSION EN SECION S_{cort}	148,53	CARACT	1554,55	378,91			
		MAYORADO	1554,55	378,91			

TALON ZAPATA

	FLECTOR	CORTANTE	C.S.
PESO PROPIO	21,25	42,50	1,00
TERRENO	83,50	167,00	1,00
TERRENO S/ALZADO	3,64	7,28	1,00
SC TERRENO	15,00	30,00	0,30
SUMA CARACT	123,39	246,78	
SUMA MAYORADA	112,89	225,78	



COMPROBACION ESTRUCTURA DE HORMIGON

	ALZADO MURO (cara traccionada)	VUELO ZAPATA (cara inf zap)	TALON ZAPATA (cara sup zap)	ALZADO MURO (cara compr)
Nd	156,563			1038,881
Md	1038,881	1554,547	112,890	52,565
Vd	293,987	378,911	225,779	-
K (red axil)	1,000	1,000	1,000	1,000
p1	0,001	0,001	0,000	0,000
ξ	1,535	1,348	1,348	1,535
Vu1	3500,000	8250,000	8250,000	3500,000
Vu2	184,851	307,131	253,531	145,443
Amin mecánica	11,2745098	25,55555556	25,55555556	
Amin geométrica				12
horiz(A.C.)	12			6,75

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

Obra: Muros Castellbisbal
Fecha: 10/08/2004
Hora: 17:58:15

Comprobación de secciones a flexión simple

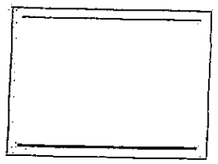
1 Datos

- Materiales

Tipo de hormigón : HA-25
Tipo de acero : B-500-S
fck [MPa] = 25.00
fyk [MPa] = 500.00
?c = 1.50
?s = 1.15

- Sección

Sección : MURO_75
b [m] = 1.00
h [m] = 0.75
ri [m] = 0.050
rs [m] = 0.050



2 Comprobación

At [cm²] = 49.1
Ac [cm²] = 10.1

Mu [kN·m] = 1363.0









Plano de deformación de agotamiento

x [m] = 0.159
1/r [1/m]·1.E-3 = 18.4
?s·1.E-3 = 2.9
?i·1.E-3 = -10.9

Deformación y tensión de armaduras

Profundidad [m]	Armadura [cm²]	Deformación ·1.E-3	Tensión [MPa]
0.050	10.1	2.0	-399.7
0.700	49.1	-9.9	434.8

Gestor de Infraestructuras Ferroviarias

COPASA

CÁLCULO

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

Obra: Muros Castellbisbal
Fecha: 10/08/2004
Hora: 17:52:42

Comprobación de secciones a flexión simple

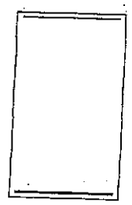
1 Datos

- Materiales

Tipo de hormigón : HA-25
Tipo de acero : B-500-S
fck [MPa] = 25.00
fyk [MPa] = 500.00
γc = 1.50
γs = 1.15

- Sección

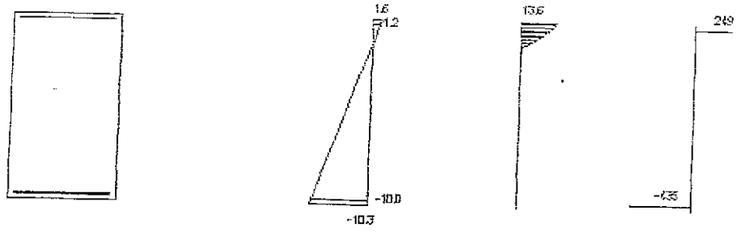
Sección : ZAPATA_1.7_M
b [m] = 1.00
h [m] = 1.70
ri [m] = 0.050
rs [m] = 0.050



2 Comprobación

At [cm²] = 49.1
Ac [cm²] = 10.1

Mu [kN·m] = 3352.8



Plano de deformación de agotamiento

x [m] = 0.228

1/r [1/m]·1.E-3 = 7.0

?s ·1.E-3 = 1.6

?i ·1.E-3 = -10.3

Deformación y tensión de armaduras

Profundidad [m]	Armadura [cm²]	Deformación ·1.E-3	Tensión [MPa]
0.050	10.1	1.2	-249.2
1.650	49.1	-10.0	434.8

Obra: Muros Castellbisbal
Fecha: 10/08/2004
Hora: 17:53:26

Comprobación del Estado Límite de Servicio de fisuración debido a solicitaciones normales

1 Datos

- Materiales

Tipo de hormigón: HA-25

Tipo de acero: B-500-S

fck [MPa] = 25.00

fyk [MPa] = 500.00

- Ambiente

Clase general de exposición : I

Clases específicas de exposición :

- Geometría de la sección

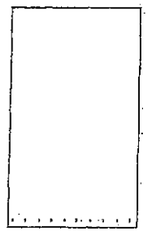
Sección : ZAPATA_1.7_M

b [m] = 1.00

h [m] = 1.70

- Armado de la sección

? [mm] = 25



capa	nº barras	Separación [mm]
1	10	47.5

As [cm²] = 49.1

Ac,ef [cm²] = 2350.0

2 Resultados

Mk [kN·m] = 1554

Separación media entre fisuras sm [mm] = 151.0

Deformación media de las armaduras ?sm [·1.E-3] = 0.65

Tensión en las armaduras en el instante de fisuración ?sr [MPa] = 174.9

Tensión en las armaduras en servicio ?s [MPa] = 204.4

Abertura característica de fisura wk [mm] = 0.17

Clase de exposición	wk max [mm]	
	Armado	Pretensado
I	0.4	0.2
IIa, IIb, H	0.3	0.2
IIIa, IIIb, IV, F	0.2	Decompresión
IIIc, Qa, Qb, Qc	0.1	

Obra: Muros Castellbisbal
Fecha: 10/08/2004
Hora: 18:29:51

Dimensionamiento de secciones a flexión simple

1 Datos

- Materiales

Tipo de hormigón : HA-25

Tipo de acero : B-500-S

fck [MPa] = 25.00

fyk [MPa] = 500.00

?c = 1.50

?s = 1.15

- Sección

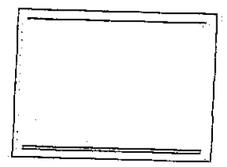
Sección : MURO_75

b [m] = 1.00

h [m] = 0.75

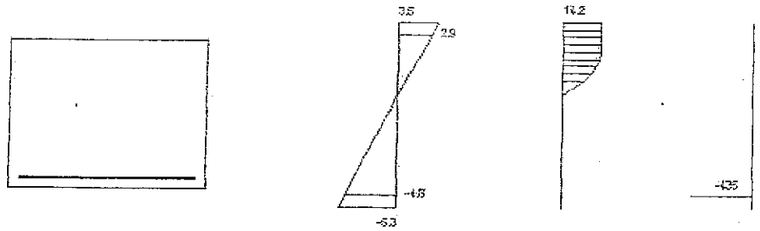
ri [m] = 0.050

rs [m] = 0.050



2 Dimensionamiento

Md [kN·m] = 1960.6



Plano de deformación de agotamiento

x [m] = 0.297

1/r [1/m]·1.E-3 = 11.8

?s ·1.E-3 = 3.5

?i ·1.E-3 = -5.3

Deformación y tensión de armaduras

Profundidad [m]	Armadura [cm²]	Deformación ·1.E-3	Tensión [MPa]
0.050	0.0	2.9	0.0
0.700	78.2	-4.8	434.8

At_est [cm²] = 78.2

? [mm]	12	14	16	20	25
n°?	—	—	—	25	16
n° capas	—	—	—	2	1
At [cm²]	—	—	—	78.5	78.5
wk [mm]	—	—	—	0.27	0.29

Obra: Muros Castellbisbal
Fecha: 10/08/2004
Hora: 18:31:28

Comprobación del Estado Límite de Servicio de fisuración debido a solicitaciones normales

1 Datos

- Materiales

Tipo de hormigón: HA-25

Tipo de acero: B-500-S

fck [MPa] = 25.00

fyk [MPa] = 500.00

- Ambiente

Clase general de exposición : I

Clases específicas de exposición :

- Geometría de la sección

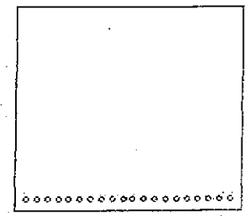
Sección : MURO_90

b [m] = 1.00

h [m] = 0.90

- Armado de la sección

? [mm] = 25



capa	n° barras	Separación [mm]
1	20	47.5

As [cm²] = 98.2

Ac,ef [cm²] = 2250.0

2 Resultados

Mk [kN·m] = 1554

Separación media entre fisuras sm [mm] = 108.0

Deformación media de las armaduras ?sm [·1.E-3] = 1.00

Tensión en las armaduras en el instante de fisuración ?sr [MPa] = 58.8

Tensión en las armaduras en servicio ?s [MPa] = 209.0

Abertura característica de fisura wk [mm] = 0.19

Clase de exposición	wk max [mm]	
	Armado	Pretensado
I	0.4	0.2
IIa, IIb, H	0.3	0.2
IIIa, IIIb, IV, F	0.2	Descompresión
IIIc, Qa, Qb, Qc	0.1	

Obra: Muros Castellbisbal
Fecha: 10/08/2004
Hora: 17:59:26

Comprobación del Estado Límite de Servicio de fisuración debido a solicitaciones normales

1 Datos

- Materiales

Tipo de hormigón: HA-25

Tipo de acero: B-500-S

fck [MPa] = 25.00

fyk [MPa] = 500.00

- Ambiente

Clase general de exposición : I

Clases específicas de exposición :

- Geometría de la sección

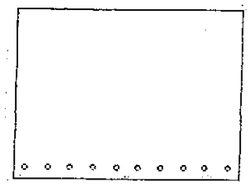
Sección : MURO 75

b [m] = 1.00

h [m] = 0.75

- Armado de la sección

? [mm] = 25



capa	nº barras	Separación [mm]
1	10	47.5

As [cm²] = 49.1

Ac,ef [cm²] = 1875.0

2 Resultados

Mk [kN·m] = 721

Separación media entre fisuras sm [mm] = 138.0

Deformación media de las armaduras ?sm [·1.E-3] = 1.07

Tensión en las armaduras en el instante de fisuración ?sr [MPa] = 88.3

Tensión en las armaduras en servicio ?s [MPa] = 230.0

Abertura característica de fisura wk [mm] = 0.25

Clase de exposición	wk max [mm]	
	Armado	Pretensado
I	0.4	0.2
IIa, IIb, H	0.3	0.2
IIIa, IIIb, IV, F	0.2	Descompresión
IIIc, Qa, Qb, Qc	0.1	

Obra: Muros Castellbisbal
Fecha: 10/08/2004
Hora: 18:37:39

Cálculo de secciones a cortante

1 Datos

- Materiales

Tipo de hormigón : HA-25

Tipo de acero : B-500-S

fck [MPa] = 25.00

fyk [MPa] = 500.00

?c = 1.50

?s = 1.15

- Tipo de elemento estructural

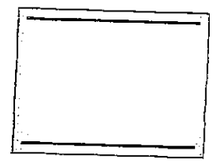
Tipo : elemento con armadura a cortante

- Sección

Sección : MURO_75

b0 [m] = 1.00

h [m] = 0.75



2 Comprobación

Tipo de armadura: cercos a 90.0º

separación s [m] = 0.3

? [mm] = 10

nº ramas: 4

Area [cm²/m] = 10.5

? [·1.E-3] = 14

Inclinación de las bielas ?[º] = 45

Nd [kN] = 0.0

?yd [MPa] = 0.0

Vu1 [kN] = 3500.0

Vu2 [kN] = 615.3

Vcu [kN] = 351.4

Vsu [kN] = 263.9

- Resistencia a cortante:

Vu [kN] = 615.3

GIF
Gestor de Infraestructuras Ferroviarias

COPASA
CONSTRUCCIONES PAMANO, S.A.

DIMENSIONAMIENTO MUROS 5 Y 6 ALETA 2

PASO INFERIOR RAMAL VALLÉS - MARTORELL

VIA 1
BARCELONA - MARTORELL

PROYECTO DE CONSTRUCCIÓN DE PLATAFORMA

LÍNEA DE ALTA VELOCIDAD
Madrid-Zaragoza-Barcelona-Frontera francesa

TRAMO: *Conexión Vallés-Castellbisbal*
Provincia: Barcelona

Longitud: 3,30 Km.

MAYO-04

GIF
Gestor de Infraestructuras Ferroviarias

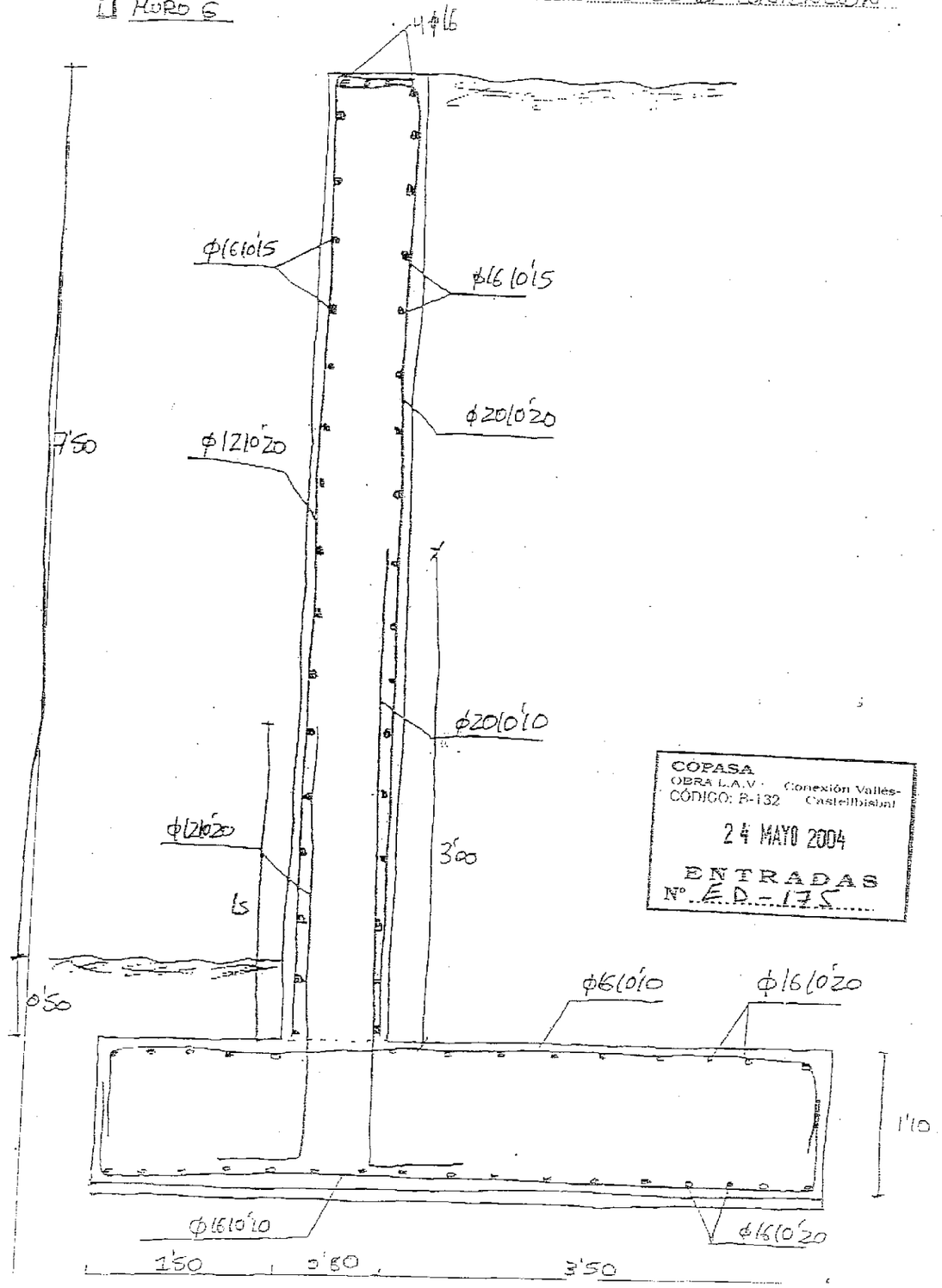
CROQUIS

VALTER valenciana de estructuras

Proyecto PASO PAZO ADIF Y UBH

Asunto MUROS DE CONTENCIÓN

MURO 6



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24 MAYO 2004
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Nº E.D.-175

Fecha ...

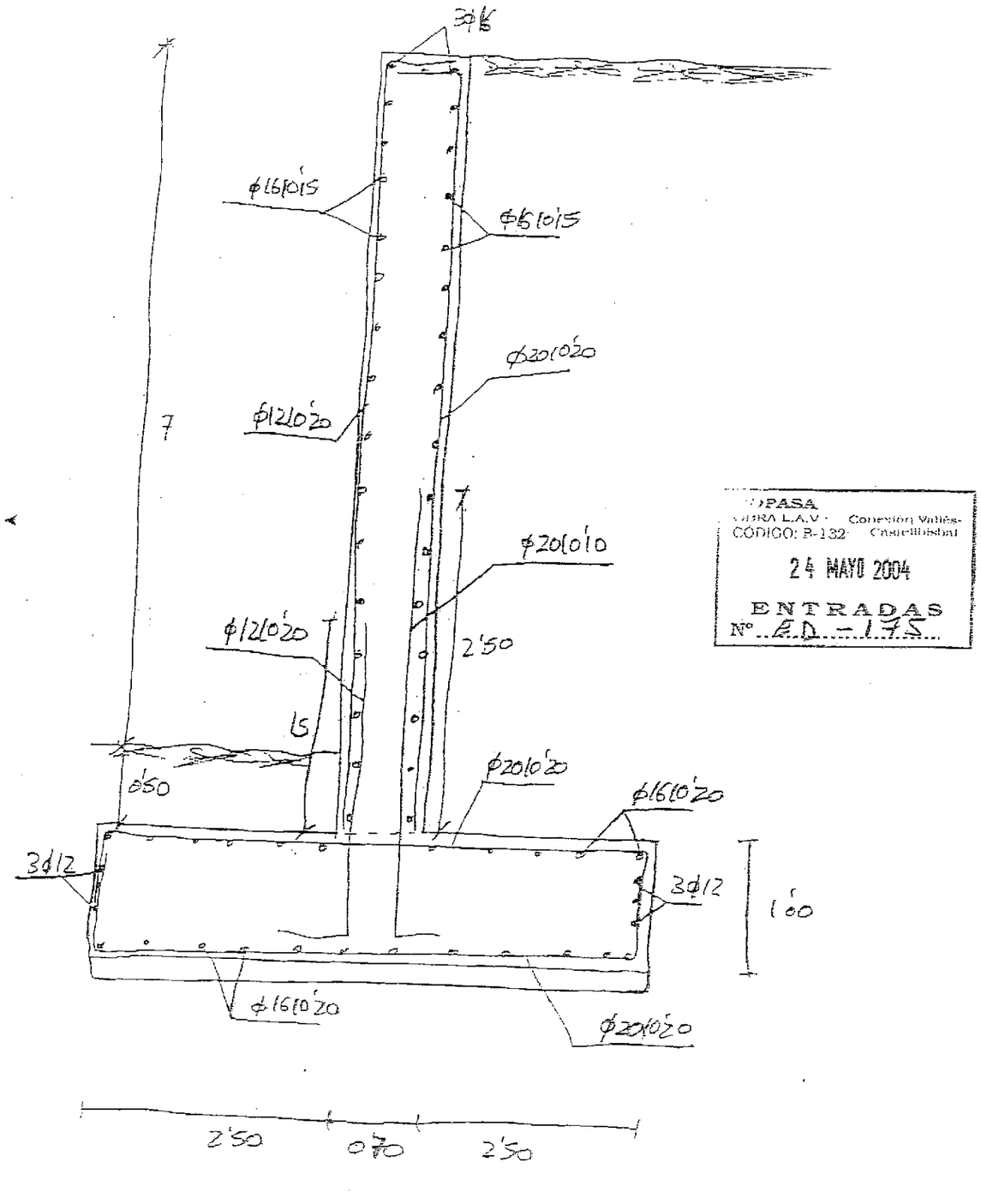
Hoja Nº ... De ...

VALTER valenciana de estructuras

Proyecto PASO PAZO ADIF Y UBH

Asunto MUROS DE CONTENCIÓN

MURO 5



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24 MAYO 2004
ENTRADAS
Nº E.D.-175

Fecha ...

Hoja Nº ... De ...

COMPROBACIONES

ÍNDICE

1.- DATOS DE LA OBRA

2.- DESCRIPCIÓN

3.- COMPROBACIÓN

1.- DATOS DE LA OBRA

Hormigón: HA-25, Control estadístico
Acero: B 500 S, Control normal
Recubrimiento (Trasdós) : 3.00 cm
Recubrimiento (Intradós) : 3.00 cm
Recubrimiento (Superior) : 5.00 cm
Recubrimiento (Inferior) : 5.00 cm
Recubrimiento (Lateral) : 5.00 cm
Tamaño máximo del árido: 30.0 mm
Abertura límite de fisuras: 0.3 mm
Espesor hormigón limpieza: 10.0 cm
Tensión admisible del terreno: 2.0 Kp/cm2
Coeficiente rozamiento terreno-cimiento: 0.6
Tipo de empuje que produce la acción: Activo
Tipo de empuje que produce la reacción: Pasivo
Combinaciones de hormigón: EHE, Control normal
Combinaciones para tensiones sobre el terreno: Acciones Características
Combinaciones de equilibrio: EHE, Control normal

2.- DESCRIPCIÓN

DESCRIPCION DE SECCIONES

Referencia: M-1

- Longitud del muro: 5.00 m
- Cota en arranque: 0.00 m

Referencia: M-2

- Longitud del muro: 5.00 m
- Cota en arranque: 0.00 m

LISTADO DE TERRENOS

Referencia: M-1

- Situación de peso propio:
- Coronación:
Carga hacia abajo en coronación: 0 Tn/m
Carga hacia intradós en coronación: 0 Tn/m
Momento de compresión hacia intradós en coronación: 0 mTn/m
- Trasdós:
Con relleno: Cota: 8.00 m
Angulo de talud: 0.00 Grados
Densidad aparente: 2.00 Tn/m3
Densidad sumergida: 1.10 Tn/m3
Angulo rozamiento interno: 30.00 Grados
Evacuación por drenaje: 100.00 %
Porcentaje de empuje pasivo: 100.00 %
Cota empuje pasivo: -0.50 m

- Intradós:
Con relleno: Cota: 0.50 m
Angulo de talud: 0.00 Grados
Densidad aparente: 2.00 Tn/m3
Densidad sumergida: 1.10 Tn/m3
Angulo rozamiento interno: 30.00 Grados
Evacuación por drenaje: 100.00 %
Porcentaje de empuje pasivo: 100.00 %
Cota empuje pasivo: -0.50 m
- Esfuerzos en arranque de muro. ESTADO DE PESO PROPIO (PP):

	Cortante (Tn/m)	Momento (mTn/m)
Trasdós	21.333	56.889
Intradós	0.000	0.000
Total	21.333	56.889

- Situación de sobrecarga 1:
- Coronación:
Carga hacia abajo en coronación: 0 Tn/m
Carga hacia intradós en coronación: 0 Tn/m
Momento de compresión hacia intradós en coronación: 0 mTn/m
- Trasdós:
Con relleno: Cota: 8.00 m
Angulo de talud: 0.00 Grados
Densidad aparente: 2.00 Tn/m3
Densidad sumergida: 1.10 Tn/m3
Angulo rozamiento interno: 30.00 Grados
Evacuación por drenaje: 100.00 %
Porcentaje de empuje pasivo: 100.00 %
Cota empuje pasivo: -0.50 m
Carga 1:
Tipo: Uniforme
Valor: 1.00 Tn/m2
- Intradós:
Con relleno: Cota: 0.50 m
Angulo de talud: 0.00 Grados
Densidad aparente: 2.00 Tn/m3
Densidad sumergida: 1.10 Tn/m3
Angulo rozamiento interno: 30.00 Grados
Evacuación por drenaje: 100.00 %
Porcentaje de empuje pasivo: 100.00 %
Cota empuje pasivo: -0.50 m
- Esfuerzos en arranque de muro. ESTADO DE SOBRECARGA (SBC):

	Cortante (Tn/m)	Momento (mTn/m)
Trasdós	24.000	67.556
Intradós	0.000	0.000
Total	24.000	67.556

- Esfuerzos de arranque de muro. DIFERENCIA ESTADO DE SOBRECARGA Y PESO PROPIO (SBC - PP):

	Cortante (Tn/m)	Momento (mTn/m)
Trasdós	2.667	10.667
Intradós	0.000	0.000
Total	2.667	10.667

Referencia: M-2

- Situación de peso propio:
- Coronación:
Carga hacia abajo en coronación: 0 Tn/m
Carga hacia intradós en coronación: 0 Tn/m
Momento de compresión hacia intradós en coronación: 0 mTn/m
- Trasdós:
Con relleno: Cota: 7.50 m
Angulo de talud: 0.00 Grados
Densidad aparente: 2.00 Tn/m3
Densidad sumergida: 1.10 Tn/m3
Angulo rozamiento interno: 30.00 Grados
Evacuación por drenaje: 100.00 %
Porcentaje de empuje pasivo: 100.00 %
Cota empuje pasivo: -0.50 m
- Intradós:
Con relleno: Cota: 0.50 m
Angulo de talud: 0.00 Grados
Densidad aparente: 2.00 Tn/m3
Densidad sumergida: 1.10 Tn/m3
Angulo rozamiento interno: 30.00 Grados
Evacuación por drenaje: 100.00 %
Porcentaje de empuje pasivo: 100.00 %
Cota empuje pasivo: -0.50 m
- Esfuerzos en arranque de muro. ESTADO DE PESO PROPIO (PP):

	Cortante (Tn/m)	Momento (mTn/m)
Trasdós	18.750	46.875
Intradós	0.000	0.000
Total	18.750	46.875

- Situación de sobrecarga 1:
- Coronación:
Carga hacia abajo en coronación: 0 Tn/m
Carga hacia intradós en coronación: 0 Tn/m
Momento de compresión hacia intradós en coronación: 0 mTn/m
- Trasdós:
Con relleno: Cota: 7.50 m
Angulo de talud: 0.00 Grados
Densidad aparente: 2.00 Tn/m3
Densidad sumergida: 1.10 Tn/m3
Angulo rozamiento interno: 30.00 Grados
Evacuación por drenaje: 100.00 %
Porcentaje de empuje pasivo: 100.00 %
Cota empuje pasivo: -0.50 m
Carga 1:
Tipo: Uniforme
Valor: 1.00 Tn/m2

- Intradós:
Con relleno: Cota: 0.50 m
Angulo de talud: 0.00 Grados
Densidad aparente: 2.00 Tn/m3
Densidad sumergida: 1.10 Tn/m3
Angulo rozamiento interno: 30.00 Grados
Evacuación por drenaje: 100.00 %
Porcentaje de empuje pasivo: 100.00 %
Cota empuje pasivo: -0.50 m
- Esfuerzos en arranque de muro. ESTADO DE SOBRECARGA (SBC):

	Cortante (Tn/m)	Momento (mTn/m)
Trasdós	21.250	56.250
Intradós	0.000	0.000
Total	21.250	56.250

- Esfuerzos de arranque de muro. DIFERENCIA ESTADO DE SOBRECARGA Y PESO PROPIO (SBC - PP):

	Cortante (Tn/m)	Momento (mTn/m)
Trasdós	2.500	9.375
Intradós	0.000	0.000
Total	2.500	9.375

MUROS CALCULADOS

Referencia	Espesor inferior	Espesor superior	Altura	Ar. Vert. T.	Ar. Vert. I.	Ar. Horz. T.	Ar. Horz. I.	Ar. Coronación
M-1	80.00 cm	80.00 cm	8.00 m	Armado base Ø16 c/ 15 Refuerzo 1 Ø25 c/ 15 h= 2.60	Ø10 c/ 30	Ø16 c/ 20	Ø16 c/ 30	Barras superiores 4 Ø16
M-2	70.00 cm	70.00 cm	7.60 m	Armado base Ø20 c/ 20 Refuerzo 1 Ø20 c/ 20 h= 2.50	Ø12 c/ 20	Ø16 c/ 15	Ø16 c/ 15	Barras superiores 3 Ø16

Nota:
- Ar. Vert. T.: Armado vertical trasdós
- Ar. Vert. I.: Armado vertical intradós
- Ar. Horz. T.: Armado horizontal trasdós
- Ar. Horz. I.: Armado horizontal intradós
- Ar. Coronación: Armado en coronación

Referencias	Geometría	Armado
M-1	Vuelo izquierdo: 150.0 cm Vuelo derecho: 350.0 cm Canto: 110.0 cm	Base inferior: Ø16 c/ 10 Longitudinal inferior: Ø16 c/ 20 Superior Longitudinal: Ø16 c/ 20 Superior Transversal: Ø16 c/ 10
M-2	Vuelo izquierdo: 250.0 cm Vuelo derecho: 250.0 cm Canto: 100.0 cm	Base inferior: Ø20 c/ 20 Longitudinal inferior: Ø16 c/ 20 Superior Longitudinal: Ø16 c/ 20 Superior Transversal: Ø20 c/ 20

3.- COMPROBACIÓN

Referencia: M-1		
COMPROBACION	VALORES	ESTADO
Comprobación a rasante en arranque muro - Muro M-1 -> Tramo 1:		CUMPLE
Espesor mínimo del tramo - Muro M-1 -> Tramo 1:	Mínimo: 20 cm Calculado: 80 cm	CUMPLE
Cuantía mínima geométrica horizontal - Muro M-1 -> Tramo 1 -> Trasdós (0.00 m): - Muro M-1 -> Tramo 1 -> Intradós (0.00 m):	Mínimo: 0.0008 Calculado: 0.00126 Calculado: 0.00084	CUMPLE CUMPLE
Cuantía mínima mecánica horizontal por cara - Muro M-1 -> Tramo 1 -> Trasdós: - Muro M-1 -> Tramo 1 -> Intradós:	Mínimo: 0.00116 Calculado: 0.00126 Mínimo: 7e-005 Calculado: 0.00084	CUMPLE CUMPLE
Separación libre mínima armaduras horizontales - Muro M-1 -> Tramo 1 -> Trasdós: - Muro M-1 -> Tramo 1 -> Intradós:	Mínimo: 3.8 cm Calculado: 18.4 cm Calculado: 28.4 cm	CUMPLE CUMPLE
Separación máxima armaduras horizontales - Muro M-1 -> Tramo 1 -> Trasdós: - Muro M-1 -> Tramo 1 -> Intradós:	Máximo: 30 cm Calculado: 20 cm Calculado: 30 cm	CUMPLE CUMPLE
Cuantía mínima geométrica vertical cara fraccionada - Muro M-1 -> Tramo 1 -> Trasdós (0.00 m): - Muro M-1 -> Tramo 1 -> Trasdós (2.60 m):	Mínimo: 0.0009 Calculado: 0.00577 Calculado: 0.00168	CUMPLE CUMPLE
Cuantía mínima mecánica vertical cara fraccionada - Muro M-1 -> Tramo 1 -> Trasdós (0.00 m): - Muro M-1 -> Tramo 1 -> Trasdós (2.60 m):	Mínimo: 0.00154 Calculado: 0.00577 Calculado: 0.00168	CUMPLE CUMPLE
Cuantía mínima geométrica vertical cara comprimida - Muro M-1 -> Tramo 1 -> Intradós (0.00 m): - Muro M-1 -> Tramo 1 -> Intradós (2.60 m):	Mínimo: 0.00027 Calculado: 0.00033 Calculado: 0.00033	CUMPLE CUMPLE

Cuantía mínima mecánica vertical cara comprimida		
- Muro M-1 -> Tramo 1 -> Intradós (0.00 m):	Mínimo: 4e-005 Calculado: 0.00033	CUMPLE
- Muro M-1 -> Tramo 1 -> Intradós (2.60 m):	Mínimo: 3e-005 Calculado: 0.00033	CUMPLE
Cuantía máxima geométrica de armadura vertical total		
- Muro M-1 -> Tramo 1 -> (8.00 m):	Máximo: 0.04 Calculado: 0.00201	CUMPLE
- Muro M-1 -> Tramo 1 -> (2.60 m):	Calculado: 0.0061	CUMPLE
Separación libre mínima armaduras verticales		
- Muro M-1 -> Tramo 1 -> Trasdós:	Mínimo: 3.8 cm Calculado: 4.7 cm	CUMPLE
- Muro M-1 -> Tramo 1 -> Intradós:	Calculado: 28 cm	CUMPLE
Separación máxima armaduras verticales		
- Muro M-1 -> Tramo 1 -> Trasdós:	Máximo: 30 cm Calculado: 15 cm	CUMPLE
- Muro M-1 -> Tramo 1 -> Intradós:	Calculado: 30 cm	CUMPLE
Comprobación a flexocompresión		
- Muro M-1 -> Tramo 1:		CUMPLE
Comprobación a cortante		
- Muro M-1 -> Tramo 1:	Máximo: 38.03 Tn/m Calculado: 30.05 Tn/m	CUMPLE
Comprobación de fisuración		
- Muro M-1 -> Tramo 1:	Máximo: 0.3 mm Calculado: 0.26 mm	CUMPLE
Comprobación de las longitudes de solape		
- Muro M-1 -> Tramo 1 -> Base trasdós:	Mínimo: 65 cm Calculado: 65 cm	CUMPLE
- Muro M-1 -> Tramo 1 -> Base intradós:	Mínimo: 25 cm Calculado: 25 cm	CUMPLE
Comprobación del anclaje del armado base en coronación		
- Muro M-1 -> Coronación -> Trasdós:	Mínimo: 71.6 cm Calculado: 71.6 cm	CUMPLE
- Muro M-1 -> Coronación -> Intradós:	Mínimo: 72.5 cm Calculado: 72.5 cm	CUMPLE
Area mínima longitudinal cara superior viga de coronación		
- Muro M-1 -> Coronación:	Mínimo: 4.1 cm2 Calculado: 8.1 cm2	CUMPLE
Tensiones sobre el terreno		
- Zapata M-1 -> Tensión media:	Máximo: 2 Kp/cm2 Calculado: 1.542 Kp/cm2	CUMPLE
- Zapata M-1 -> Tensión máxima acc. gravitatorias:	Máximo: 2.5 Kp/cm2 Calculado: 2.412 Kp/cm2	CUMPLE
Flexión en zapata (acciones estáticas)		
- Zapata M-1 -> Momento positivo en vuelo derecho:	Momento: 0.00 Tn·m	CUMPLE
- Zapata M-1 -> Momento negativo en vuelo derecho:	Momento: -79.24 Tn·m	CUMPLE
- Zapata M-1 -> Momento positivo sección ref. derecha:	Momento: 0.00 Tn·m	CUMPLE
- Zapata M-1 -> Momento negativo sección ref. derecha:	Momento: -83.40 Tn·m	CUMPLE
- Zapata M-1 -> Momento positivo en vuelo izquierdo:	Momento: 32.07 Tn·m	CUMPLE
- Zapata M-1 -> Momento negativo en vuelo izquierdo:	Momento: 0.00 Tn·m	CUMPLE

- Zapata M-1 -> Momento positivo sección ref. izquierda:	Momento: 37.18 Tn·m	CUMPLE
- Zapata M-1 -> Momento negativo sección ref. izquierda:	Momento: 0.00 Tn·m	CUMPLE
Coeficiente de rozamiento terreno-cimiento		
- Zapata M-1:	Máximo: 0.5773 Calculado: 0.4385	CUMPLE
Vuelco de la zapata		
- Zapata M-1:	Reserva seguridad: 248.1 %	CUMPLE
Compresión oblicua (acciones estáticas)		
- Zapata M-1 -> Vuelo derecho:	Máximo: 535.17 Tn Calculado: 35.91 Tn	CUMPLE
- Zapata M-1 -> Vuelo izquierdo:	Calculado: 41.04 Tn	CUMPLE
Esfuerzo cortante (acciones estáticas)		
- Zapata M-1 -> Vuelo derecho:	Máximo: 31.09 Tn Calculado: 31.03 Tn	CUMPLE
- Zapata M-1 -> Vuelo izquierdo:	Calculado: 13.39 Tn	CUMPLE
Canto mínimo		
- Zapata M-1:	Mínimo: 25 cm Calculado: 110 cm	CUMPLE
Longitud de anclaje		
- Zapata M-1 -> Arranque izquierdo del muro:	Mínimo: 18 cm Calculado: 100 cm	CUMPLE
- Zapata M-1 -> Arranque derecho del muro:	Mínimo: 94 cm Calculado: 100 cm	CUMPLE
- Zapata M-1 -> Armado superior vuelo der. hacia izquierda:	Mínimo: 57 cm Calculado: 243 cm	CUMPLE
- Zapata M-1 -> Armado superior vuelo der. hacia derecha:	Mínimo: 57 cm Calculado: 265 cm	CUMPLE
- Zapata M-1 -> Armado base inferior vuelo izq. hacia izquierda:	Mínimo: 49 cm Calculado: 134 cm	CUMPLE
- Zapata M-1 -> Armado base inferior vuelo izq. hacia derecha:	Mínimo: 40 cm Calculado: 512 cm	CUMPLE
Cuantía geométrica mínima		
- Zapata M-1 -> Armado inferior longitudinal:	Mínimo: 0.001 Calculado: 0.001	CUMPLE
- Zapata M-1 -> Armado inferior transversal:	Calculado: 0.0019	CUMPLE
Cuantía mínima necesaria por flexión		
- Zapata M-1 -> Armado inferior transversal:	Mínimo: 0.0009 Calculado: 0.0019	CUMPLE
- Zapata M-1 -> Armado sup. transversal vuelo derecho:	Mínimo: 0.0015 Calculado: 0.0019	CUMPLE
- Zapata M-1 -> Armado sup. transversal sección ref. derecha:	Mínimo: 0.0015 Calculado: 0.0019	CUMPLE
Diámetro mínimo de las barras		
- Zapata M-1 -> Armaduras de la zapata:	Mínimo: 12 mm Calculado: 16 mm	CUMPLE
Separación máxima entre barras		
- Zapata M-1 -> Armado inferior transversal:	Máximo: 30 cm Calculado: 10 cm	CUMPLE
- Zapata M-1 -> Armado inferior longitudinal:	Calculado: 20 cm	CUMPLE
- Zapata M-1 -> Armado superior transversal:	Calculado: 10 cm	CUMPLE
- Zapata M-1 -> Armado superior longitudinal:	Calculado: 20 cm	CUMPLE

Separación mínima entre barras	Mínimo: 10 cm	
- Zapata M-1 -> Armado inferior transversal:	Calculado: 10 cm	CUMPLE
- Zapata M-1 -> Armado inferior longitudinal:	Calculado: 20 cm	CUMPLE
- Zapata M-1 -> Armado superior transversal:	Calculado: 10 cm	CUMPLE
- Zapata M-1 -> Armado superior longitudinal:	Calculado: 20 cm	CUMPLE
Longitud mínima de las patillas	Mínimo: 15 cm	
- Zapata M-1 -> Armado superior vuelo izq. hacia izquierda:	Calculado: 30 cm	CUMPLE
- Zapata M-1 -> Armado superior vuelo izq. hacia derecha:	Calculado: 30 cm	CUMPLE
- Zapata M-1 -> Armado base inferior vuelo izq. hacia izquierda:	Calculado: 99 cm	CUMPLE
- Zapata M-1 -> Armado base inferior vuelo izq. hacia derecha:	Calculado: 99 cm	CUMPLE
Se cumplen todas las comprobaciones		

Referencia: M-2

COMPROBACION	VALORES	ESTADO
Comprobación a rasante en arranque muro		
- Muro M-2 -> Tramo 1:		CUMPLE
Espesor mínimo del tramo	Mínimo: 20 cm	
- Muro M-2 -> Tramo 1:	Calculado: 70.01 cm	CUMPLE
Cuantía mínima geométrica horizontal	Mínimo: 0.0008	
- Muro M-2 -> Tramo 1 -> Trasdós (0.00 m):	Calculado: 0.00192	CUMPLE
- Muro M-2 -> Tramo 1 -> Intradós (0.00 m):	Calculado: 0.00192	CUMPLE
Cuantía mínima mecánica horizontal por cara	Mínimo: 0.0009	
- Muro M-2 -> Tramo 1 -> Trasdós:	Calculado: 0.00192	CUMPLE
- Muro M-2 -> Tramo 1 -> Intradós:	Mínimo: 0.00017	
	Calculado: 0.00192	CUMPLE
Separación libre mínima armaduras horizontales	Mínimo: 3.8 cm	
- Muro M-2 -> Tramo 1 -> Trasdós:	Calculado: 13.4 cm	CUMPLE
- Muro M-2 -> Tramo 1 -> Intradós:	Calculado: 13.4 cm	CUMPLE
Separación máxima armaduras horizontales	Máximo: 30 cm	
- Muro M-2 -> Tramo 1 -> Trasdós:	Calculado: 15 cm	CUMPLE
- Muro M-2 -> Tramo 1 -> Intradós:	Calculado: 15 cm	CUMPLE
Cuantía mínima geométrica vertical cara traccionada	Mínimo: 0.0009	
- Muro M-2 -> Tramo 1 -> Trasdós (0.00 m):	Calculado: 0.00449	CUMPLE
- Muro M-2 -> Tramo 1 -> Trasdós (2.50 m):	Calculado: 0.00225	CUMPLE
Cuantía mínima mecánica vertical cara traccionada	Mínimo: 0.00154	
- Muro M-2 -> Tramo 1 -> Trasdós (0.00 m):	Calculado: 0.00449	CUMPLE
- Muro M-2 -> Tramo 1 -> Trasdós (2.50 m):	Calculado: 0.00225	CUMPLE
Cuantía mínima geométrica vertical cara comprimida	Mínimo: 0.00027	
- Muro M-2 -> Tramo 1 -> Intradós (0.00 m):	Calculado: 0.00081	CUMPLE
- Muro M-2 -> Tramo 1 -> Intradós (2.50 m):	Calculado: 0.00081	CUMPLE

Cuantía mínima mecánica vertical cara comprimida		
- Muro M-2 -> Tramo 1 -> Intradós (0.00 m):	Mínimo: 4e-005	
	Calculado: 0.00081	CUMPLE
- Muro M-2 -> Tramo 1 -> Intradós (2.50 m):	Mínimo: 3e-005	
	Calculado: 0.00081	CUMPLE
Cuantía máxima geométrica de armadura vertical total	Máximo: 0.04	
- Muro M-2 -> Tramo 1 -> (7.60 m):	Calculado: 0.00306	CUMPLE
- Muro M-2 -> Tramo 1 -> (2.50 m):	Calculado: 0.0053	CUMPLE
Separación libre mínima armaduras verticales	Mínimo: 3.8 cm	
- Muro M-2 -> Tramo 1 -> Trasdós:	Calculado: 7 cm	CUMPLE
- Muro M-2 -> Tramo 1 -> Intradós:	Calculado: 17.6 cm	CUMPLE
Separación máxima armaduras verticales	Máximo: 30 cm	
- Muro M-2 -> Tramo 1 -> Trasdós:	Calculado: 20 cm	CUMPLE
- Muro M-2 -> Tramo 1 -> Intradós:	Calculado: 20 cm	CUMPLE
Comprobación a flexocompresión		
- Muro M-2 -> Tramo 1:		CUMPLE
Comprobación a cortante	Máximo: 31.17 Tn/m	
- Muro M-2 -> Tramo 1:	Calculado: 27.04 Tn/m	CUMPLE
Comprobación de fisuración	Máximo: 0.3 mm	
- Muro M-2 -> Tramo 1:	Calculado: 0.29 mm	CUMPLE
Comprobación de las longitudes de solape	Mínimo: 110 cm	
- Muro M-2 -> Tramo 1 -> Base trasdós:	Calculado: 110 cm	CUMPLE
- Muro M-2 -> Tramo 1 -> Base intradós:	Mínimo: 30 cm	
	Calculado: 35 cm	CUMPLE
Comprobación del anclaje del armado base en coronación	Mínimo: 61 cm	
- Muro M-2 -> Coronación -> Trasdós:	Calculado: 61 cm	CUMPLE
- Muro M-2 -> Coronación -> Intradós:	Mínimo: 62.2 cm	
	Calculado: 62.5 cm	CUMPLE
Area mínima longitudinal cara superior viga de coronación	Mínimo: 4.1 cm2	
- Muro M-2 -> Coronación:	Calculado: 6.1 cm2	CUMPLE
Tensiones sobre el terreno	Máximo: 2 Kp/cm2	
- Zapata M-2 -> Tensión media:	Calculado: 1.185 Kp/cm2	CUMPLE
- Zapata M-2 -> Tensión máxima acc. gravitatorias:	Máximo: 2.5 Kp/cm2	
	Calculado: 1.582 Kp/cm2	CUMPLE
Flexión en zapata (acciones estáticas)		
- Zapata M-2 -> Momento positivo en vuelo derecho:	Momento: 0.00 Tn·m	CUMPLE
- Zapata M-2 -> Momento negativo en vuelo derecho:	Momento: -40.14 Tn·m	CUMPLE
- Zapata M-2 -> Momento positivo sección ref. derecha:	Momento: 0.00 Tn·m	CUMPLE
- Zapata M-2 -> Momento negativo sección ref. derecha:	Momento: -43.20 Tn·m	CUMPLE
- Zapata M-2 -> Momento positivo en vuelo izquierdo:	Momento: 52.79 Tn·m	CUMPLE
- Zapata M-2 -> Momento negativo en vuelo izquierdo:	Momento: 0.00 Tn·m	CUMPLE

- Zapata M-2 -> Momento positivo sección ref. izquierda:	Momento: 57.07 Tn·m	CUMPLE
- Zapata M-2 -> Momento negativo sección ref. izquierda:	Momento: 0.00 Tn·m	CUMPLE
Coeficiente de rozamiento terreno-cimiento		
- Zapata M-2:	Máximo: 0.5773 Calculado: 0.5185	CUMPLE
Vuelco de la zapata		
- Zapata M-2:	Reserva seguridad: 475.8 %	CUMPLE
Compresión oblicua (acciones estáticas)	Máximo: 484.2 Tn	
- Zapata M-2 -> Vuelo derecho:	Calculado: 29.85 Tn	CUMPLE
- Zapata M-2 -> Vuelo izquierdo:	Calculado: 39.98 Tn	CUMPLE
Esfuerzo cortante (acciones estáticas)	Máximo: 27.2 Tn	
- Zapata M-2 -> Vuelo derecho:	Calculado: 20.1 Tn	CUMPLE
- Zapata M-2 -> Vuelo izquierdo:	Calculado: 26.38 Tn	CUMPLE
Canto mínimo	Mínimo: 25 cm	
- Zapata M-2:	Calculado: 100 cm	CUMPLE
Longitud de anclaje		
- Zapata M-2 -> Arranque izquierdo del muro:	Mínimo: 21 cm Calculado: 90 cm	CUMPLE
- Zapata M-2 -> Arranque derecho del muro:	Mínimo: 60 cm Calculado: 90 cm	CUMPLE
- Zapata M-2 -> Armado superior vuelo der. hacia izquierda:	Mínimo: 84 cm Calculado: 329 cm	CUMPLE
- Zapata M-2 -> Armado superior vuelo der. hacia derecha:	Mínimo: 84 cm Calculado: 170 cm	CUMPLE
- Zapata M-2 -> Armado base inferior vuelo izq. hacia izquierda:	Mínimo: 60 cm Calculado: 234 cm	CUMPLE
- Zapata M-2 -> Armado base inferior vuelo izq. hacia derecha:	Mínimo: 60 cm Calculado: 393 cm	CUMPLE
Cuantía geométrica mínima	Mínimo: 0.001	
- Zapata M-2 -> Armado inferior longitudinal:	Calculado: 0.0011	CUMPLE
- Zapata M-2 -> Armado inferior transversal:	Calculado: 0.0016	CUMPLE
Cuantía mínima necesaria por flexión	Mínimo: 0.0014	
- Zapata M-2 -> Armado inferior transversal:	Calculado: 0.0016	CUMPLE
- Zapata M-2 -> Armado sup. transversal vuelo derecho:	Mínimo: 0.0012 Calculado: 0.0016	CUMPLE
- Zapata M-2 -> Armado sup. transversal sección ref. derecha:	Mínimo: 0.0012 Calculado: 0.0016	CUMPLE
Diámetro mínimo de las barras	Mínimo: 12 mm	
- Zapata M-2 -> Armaduras de la zapata:	Calculado: 16 mm	CUMPLE
Separación máxima entre barras	Máximo: 30 cm	
- Zapata M-2 -> Armado inferior transversal:	Calculado: 20 cm	CUMPLE
- Zapata M-2 -> Armado inferior longitudinal:	Calculado: 20 cm	CUMPLE
- Zapata M-2 -> Armado superior transversal:	Calculado: 20 cm	CUMPLE
- Zapata M-2 -> Armado superior longitudinal:	Calculado: 20 cm	CUMPLE

Separación mínima entre barras	Mínimo: 10 cm	
- Zapata M-2 -> Armado inferior transversal:	Calculado: 20 cm	CUMPLE
- Zapata M-2 -> Armado inferior longitudinal:	Calculado: 20 cm	CUMPLE
- Zapata M-2 -> Armado superior transversal:	Calculado: 20 cm	CUMPLE
- Zapata M-2 -> Armado superior longitudinal:	Calculado: 20 cm	CUMPLE
Longitud mínima de las patillas	Mínimo: 25 cm	
- Zapata M-2 -> Armado superior vuelo izq. hacia izquierda:	Calculado: 25 cm	CUMPLE
- Zapata M-2 -> Armado superior vuelo izq. hacia derecha:	Calculado: 25 cm	CUMPLE
- Zapata M-2 -> Armado base inferior vuelo izq. hacia izquierda:	Calculado: 89 cm	CUMPLE
- Zapata M-2 -> Armado base inferior vuelo izq. hacia derecha:	Calculado: 89 cm	CUMPLE
Se cumplen todas las comprobaciones		

HOJA DE ENVÍO DE FAX

PARA: MAR DIEZ	DE: ANTONIO ARIÑO MORENO
ORGANIZACIÓN: COPASA	FECHA: 27 de mayo de 2004
NÚMERO DE FAX: 93-772-37-90	NÚM. TOTAL DE PÁGINAS INCLUYENDO LA CUBIERTA: 1+3
TELÉFONO: 93-771-17-37	Nº DE REFERENCIA DEL REMITENTE:
ASUNTO: MUROS PASO BAJO RAMAL VALLÉS-MARTORELL	SU REFERENCIA:

☒ URGENTE ☐ PARA REVISAR ☐ COMENTARIOS ☐ RESPONDA ☐ RECICLAR

NOTAS Y COMENTARIOS:

Mar,

Revisados los cálculos del dimensionamiento de los muros 5 y 6 aleta 2 del Paso Bajo Ramal Vallés-Martorell presentados el 24 de mayo de 2004. Se recomienda realizar las modificaciones en la geometría y armado de los mismos de acuerdo a los esquemas adjuntos. El armado adjunto es valido para ambos muros y la geometría es similar en ambos con pequeñas variaciones.

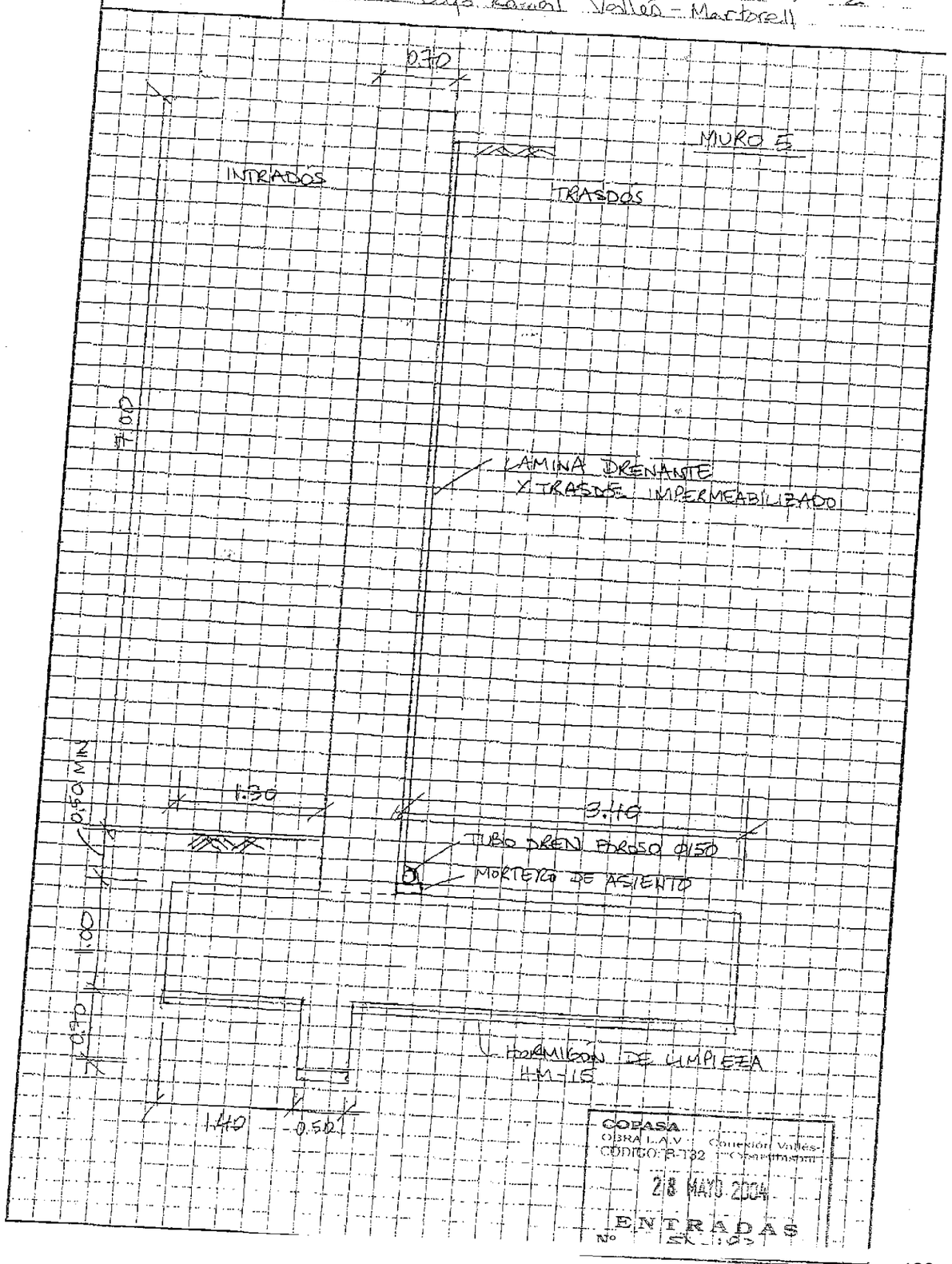
Un saludo,

Antonio Ariño

COPASA
OBRA L.A.V. - Conexión Vallés-
CÓDIGO: B-132 Castellbisbal
28 MAYO 2004
ENTRADAS
Nº EA-183

Oficina de Obra: C/ Terç de Nostra Senyora de Montserrat nº 8, entlo.
08740 - Sant Andreu de la Barca (Barcelona)
TEL: 936-535-156 FAX: 936-822-361

UTE LLOBREGAT S VII — MURO 5 7.5 m — Paso Bajo Ramal Vallés - Martorell — Fecha: 27/05/04 — Hoja: 2



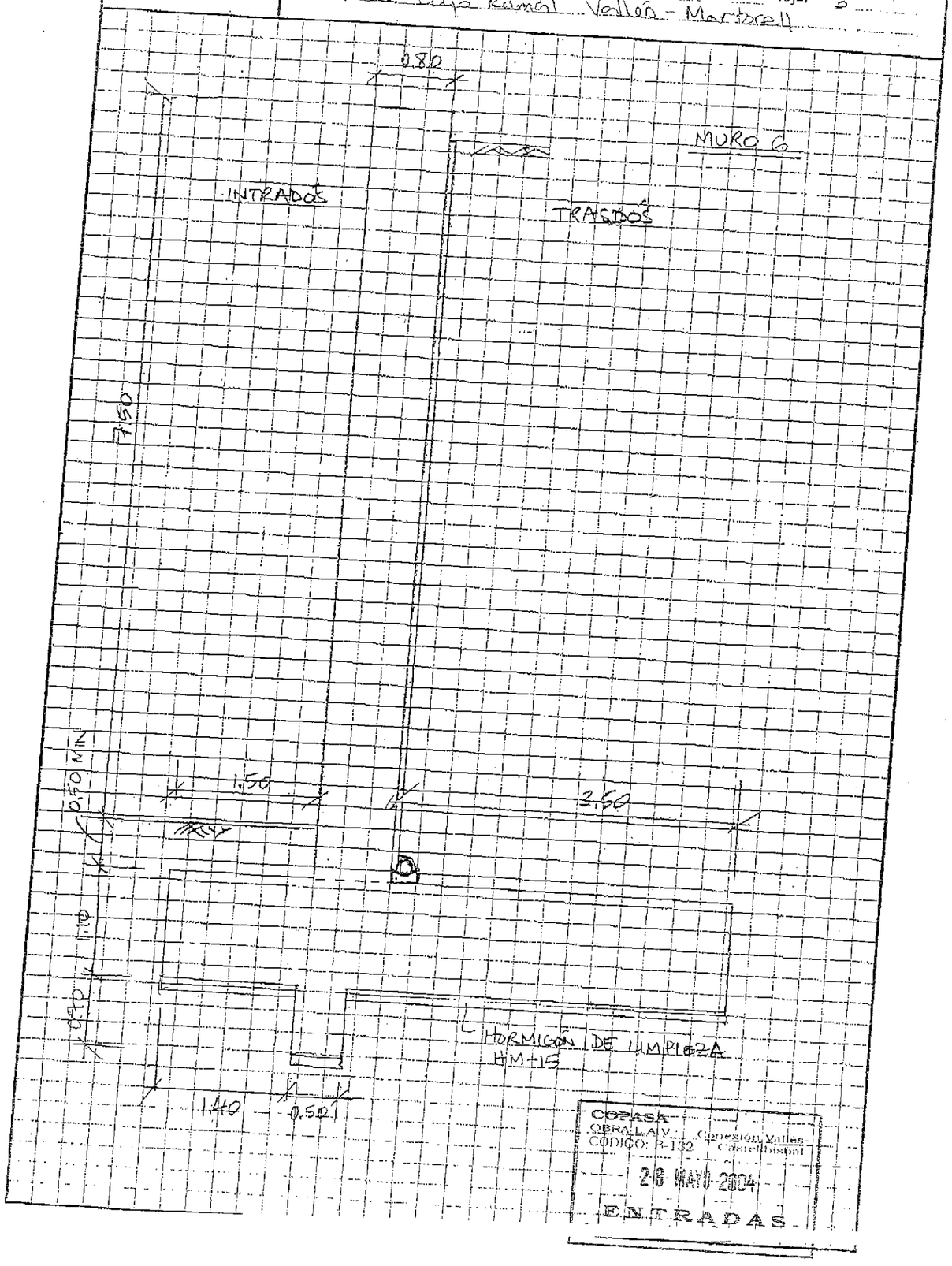
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28 MAYO 2004
ENTRADAS
Nº EA-183

UTE LLOBREGAT

UTE LLOBREGAT S VII

MURO 6 - 8.0 m
Paso Bajo Ramal Vallés - Martorell

Fecha: 27/05/04
Hoja: 3



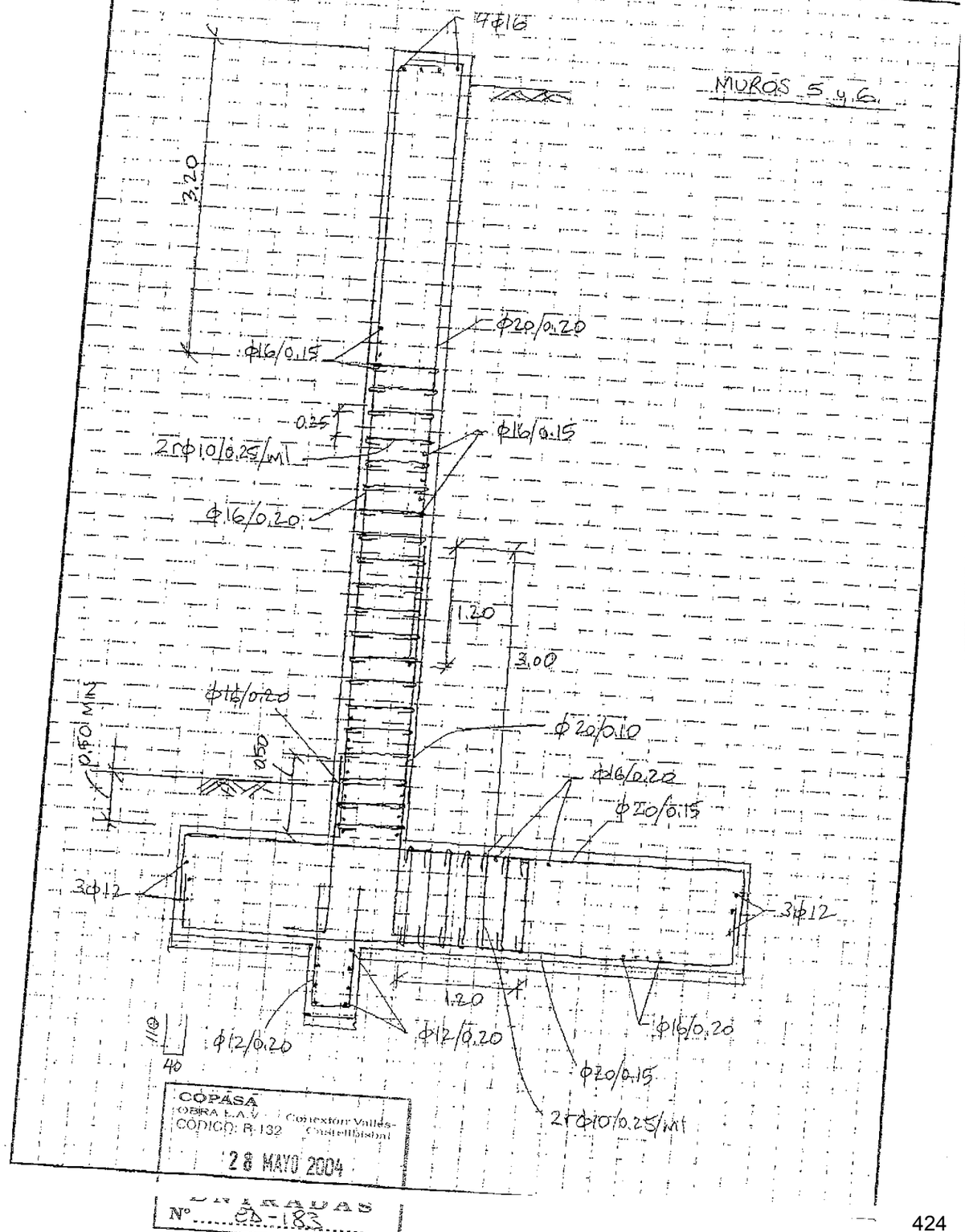
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28 MAYO 2004
ENTRADAS

UTE LLOBREGAT

UTE LLOBREGAT S VII

MUROS 5 y 6
Paso Bajo Ramal Vallés - Martorell

Fecha: 27/05/04
Hoja: 4



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CÓDIGO: B-132
28 MAYO 2004
ENTRADAS
Nº CA-183

GIF
Gestor de Infraestructuras Ferroviarias

COPASA
CONSTRUCCIONES PARAÑO, S.A.

PASO BAJO RAMAL VALLÉS-MARTORELL Y VIA BARCELONA-MARTORELL

DIMENSIONAMIENTO CAJÓN TRAMO SIN TALÓN

PROYECTO DE CONSTRUCCIÓN DE PLATAFORMA

LÍNEA DE ALTA VELOCIDAD
Madrid-Zaragoza-Barcelona-Frontera francesa

TRAMO: *Conexión Vallés-Castellbisbal*
Provincia: Barcelona

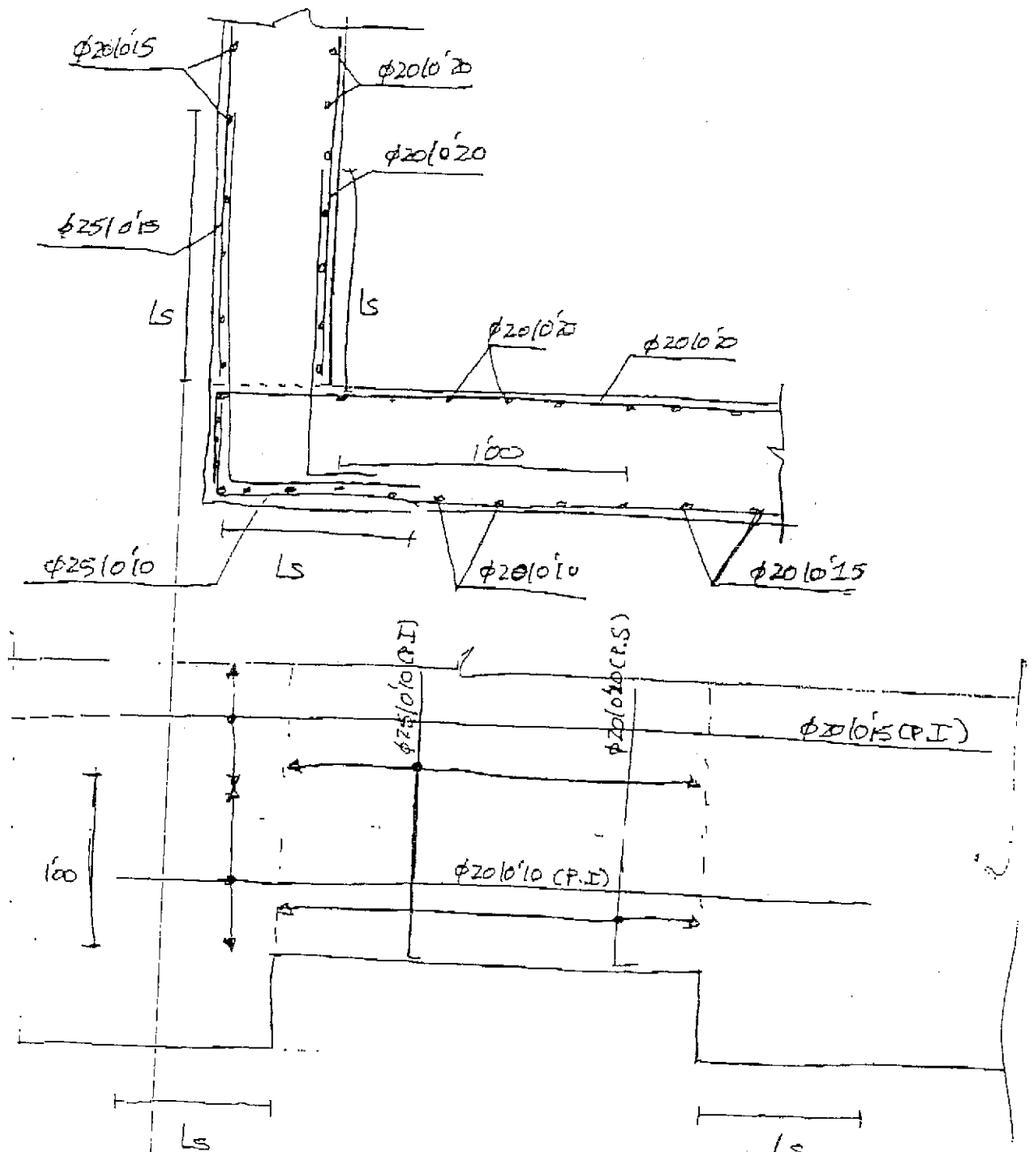
Longitud: 3,30 Km.

VALTER
valenciana de estructuras

Proyecto PASO BAJO RAMAL Y VIA

Asunto

☐ ARMADO EN EL TRAMO SIN CAJÓN



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13 MAYO 2004
ENTRADAS
Nº E0-164

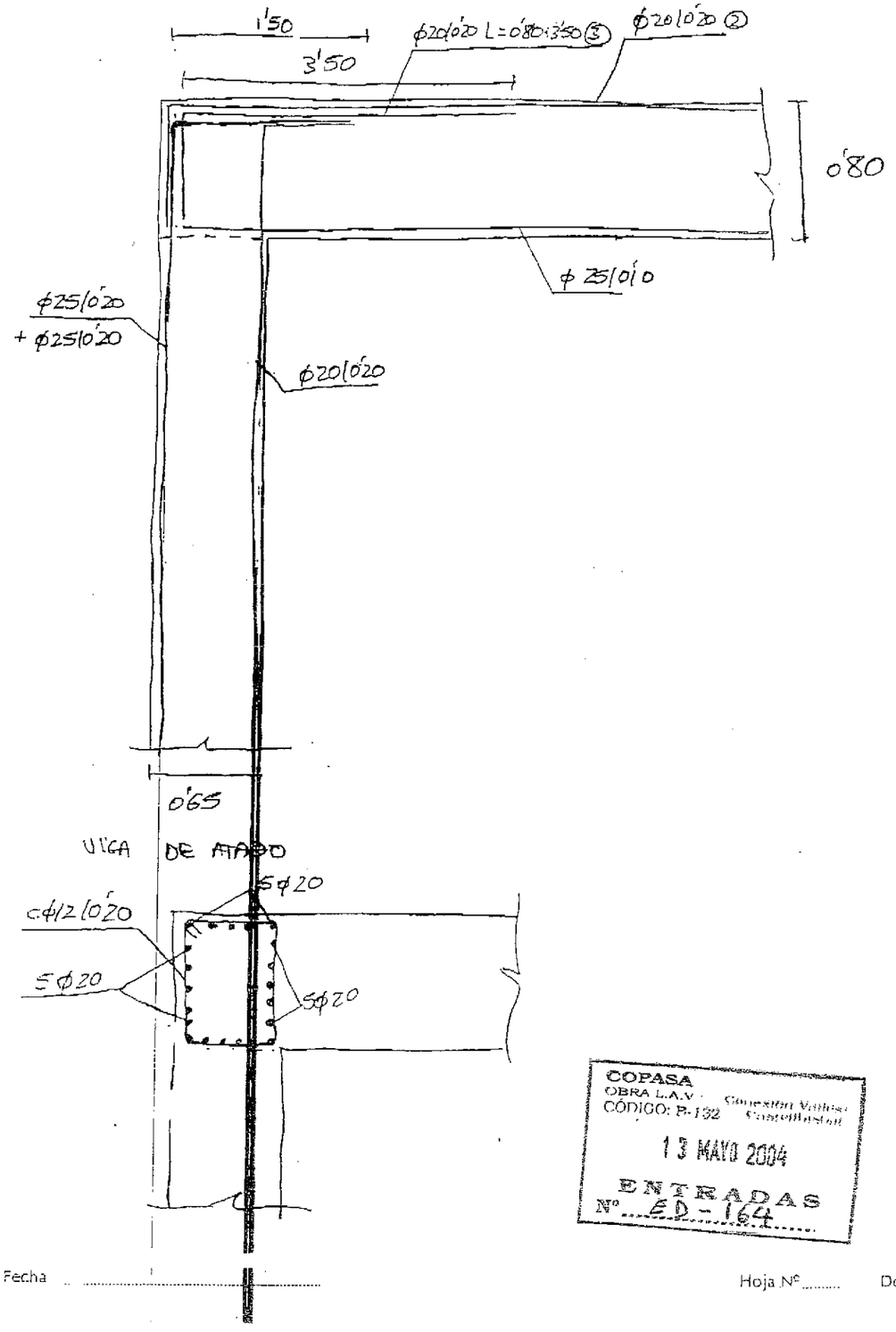
Fecha

VALTER
valenciana de estructuras

Proyecto PASO BAJO A7

Asunto

MODIFICACIÓN ESTRIBOS



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OBRA L.A.V. Conexión Vallés Cerdanyola
CÓDIGO: B-132
13 MAYO 2004
ENTRADAS
Nº ED-164

Fecha

Hoja Nº De

PASO INFERIOR BAJO RAMAL VALLÉS – BARCELONA

PASO INFERIOR BAJO RAMAL VALLÉS-BARCELONA

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VALTER valenciana de estructuras
L.A.V. MADRID-FRONTERA FRANCESA. TRAMO A: CONEXIÓN VALLÉS CASTELLBISBAL
CÁLCULO ESTRUCTURAL PK 502+267

ANEXOS

A.1. MODELO DE CÁLCULO DE LA LOSA
A.2. DIMENSIONAMIENTO DE LOSA
A.3. DIMENSIONAMIENTO DE PANTALLA
A.4. DIMENSIONAMIENTO DE MUROS

2.- PLANOS

1. ANTECEDENTES Y OBJETO

A petición de la empresa constructora COPASA, adjudicataria de la ejecución de la obra "PROYECTO DE CONSTRUCCIÓN DE PLATAFORMA LÍNEA DE ALTA VELOCIDAD MADRID-ZARAGOZA-BARCELONA-FRONTERA FRANCESA. TRAMO A: CONEXIÓN VALLÉS-CASTELLBISBAL", se redacta el presente informe, cuyo objetivo es la comprobación y dimensionamiento, a nivel estructural, de la losa, las pantallas y los muros del paso bajo ramal Vallés-Barcelona(L.A.V.), situada en el P.K. 502+267, debido a que la estructura se cambia de una losa con forma rectangular apoyada en pantalla de micropilotes, a una losa esviada empotrada en un muro pantalla. También se sustituye la pantalla de pilotes para la contención de las tierras por muros pantalla y de contención convencionales.

La propuesta analizada, consiste en una losa con canto constante de 0.90 m, con un esviaje de 40°, un ancho de 25.00 m y una luz de 12.50 m, pantallas de 0.65 m de canto y longitudes variables, y muros convencionales de contención de altura y canto variables.

Se ha realizado para ello los cálculos necesarios dimensionando tanto la losa, pantallas y muros, de forma que se cumplan los coeficientes de seguridad frente a los distintos estados límite, de una manera justificada que se expone en los puntos siguientes.

2. DESCRIPCIÓN

Se trata de una estructura situada en el P.K. 502+267 que salva el paso del ramal de ferrocarril Vallés-Castellbisbal, permitiendo el paso del L.A.V. Se trata de una losa empotrada sobre una pantalla continua, con una luz de 12.50 m.

La sección transversal de la estructura está formada por:

- *Una vía de 1.435 m de ancho.*
- *Plataforma de balasto bajo la vía de 5.00 m de ancho.*
- *Dos espacios para alojar servicios, paseos... de 1.75 m*

El ancho de la sección transversal de la plataforma es de 25.00 m. La vía tienen un esviaje respecto del tablero de aproximadamente 40° , por lo que la longitud de vía sobre el tablero es de 27.50 m.

Las pantallas de 0.65 m de espesor se encuentra alineada según un eje esviado de 40° respecto al eje de la losa empotrada en las mismas. La separación entre las pantallas es de 12.50 m.

Las pantallas se han dimensionado de hormigón armado, con una longitud de 19.00 m en el ancho de la losa.

También se han dimensionado las aletas del paso inferior, formadas po pantallas para la contención de tierras, de espesor y longitud variables, y por muros convencionales de altura variables.

3. BASES DE CÁLCULO

3.1. NORMATIVA UTILIZADA

Para la redacción del presente documento se ha considerado las siguientes Normas e Instrucciones:

- *IAPF-2001.Instrucción de acciones a considerar en el proyecto de puentes de ferrocarril (Borrador G)*
- *IAPF-1975. Instrucción relativa a las acciones a considerar en el proyecto de puentes de ferrocarril.*
- *EHE-1998. Instrucción de Hormigón Estructural.*
- *NCSE-02 Norma de construcción sismorresistente.*

3.2. CARACTERÍSTICAS DE LOS MATERIALES

Las características de los materiales considerados son las que se indican a continuación:

HORMIGÓN ARMADO

PANTALLA Y MUROS

Tipo	HA-25 / B / 20 / IIa
Nivel de control	Normal
Resistencia característica f_{ck}	25 N/mm²
Resistencia media f_{cm}	33 N/mm²
Resistencia característica a tracción $f_{ct,k}$	1.80 N/mm²
Resistencia media a tracción $f_{ct,m}$	2.60 N/mm²
SITUACIONES PERSISTENTES O TRANSITORIAS	
Coeficiente de minoración γ_c	1.50
Resistencia de cálculo f_{cd}	16.67 N/mm²
SITUACIONES ACCIDENTALES	
Coeficiente de minoración γ_c	1.30
Resistencia de cálculo f_{cd}	19.23 N/mm²
MODULO DE ELASTICIDAD	
Módulo de Elasticidad inicial E_{co}	32000 N/mm²
Módulo de Elasticidad secante E_c	27000 N/mm²
Módulo de Poisson νC	0.20

LOSA

Tipo	HA-30 / B / 20 / IIb
Nivel de control	Normal
Resistencia característica f_{ck}	30 N/mm²
Resistencia media f_{cm}	38 N/mm²
Resistencia característica a tracción $f_{ct,k}$	2.03 N/mm²
Resistencia media a tracción $f_{ct,m}$	2.89 N/mm²
SITUACIONES PERSISTENTES O TRANSITORIAS	
Coeficiente de minoración γ_c	1.50
Resistencia de cálculo f_{cd}	20.00 N/mm²

SITUACIONES ACCIDENTALES	
Coeficiente de minoración γ_c	1.30
Resistencia de cálculo f_{cd}	23.07 N/mm²
MODULO DE ELASTICIDAD	
Módulo de Elasticidad inicial E_{co}	33 620 N/mm²
Módulo de Elasticidad secante E_c	28 577 N/mm²
Módulo de Poisson νC	0.20

ARMADURAS PASIVAS

Tipo	B - 500 S
Nivel de control	Normal
Resistencia característica f_{yk}	500 MPa
Coeficiente de minoración γ_s (situac. Persistentes o transitorias)	1.15
Resistencia de cálculo f_{yd}	443.5 MPa
Módulo de Elasticidad E_s	210 000 Mpa

RELLENO EN TRASDOS

Tipo	Granular
Peso específico γ	19 kN/m³
Coeficiente de empuje activo Ka	0.36
Coeficiente de empuje al reposo Kr	0.50

3.3. CARACTERÍSTICAS DEL CIMIENTO

Para el dimensionamiento de la cimentación se ha tenido en cuenta las características del terreno dadas en el informe geotécnico del proyecto.

A continuación se describe la estratigrafía del terreno en el emplazamiento de la obra, tomada del informe geotécnico del proyecto original, empleada para la obtención de la carga admisible de los pilotes.

Terreno de cimentación

Nivel 1

Tipo	Relleno
Potencia	13.00 m
Coeficiente de rozamiento	28°
Cohesión	5.0 kN/m²
Densidad	19.0 kN/m³

Nivel 2

Tipo	Depósitos aluviales
Potencia	26.00 m
Coeficiente de rozamiento	32°
Cohesión	0.0 kN/m²
Densidad	19.0 kN/m³

3.4. DURABILIDAD

Se deben diferenciar dos tipos de exposición:

- para la pantalla, la cual se encuentra enterrada, se ha considerado el tipo de exposición normal con humedad alta IIa.
- Para el tablero, se ha considerado el tipo de exposición normal con humedad media IIb.

Como consecuencia del tipo de ambiente el hormigón a emplear en la ejecución de la pantalla debe cumplir las siguientes características para el tipo de exposición IIa:

- la relación máxima agua/cemento debe ser de 0.60
- el contenido mínimo en cemento debe ser 275 kg/m³
- los recubrimientos mínimos serán de 50 mm.

Como consecuencia del tipo de ambiente el hormigón del tablero a emplear en la ejecución debe cumplir las siguientes características para el tipo de exposición IIb:

- la relación máxima agua/cemento debe ser de 0.55
- el contenido mínimo en cemento debe ser 300 kg/m³

los recubrimientos mínimos serán de 40 mm.

3.5. ACCIONES CONSIDERADAS

3.5.1. Acciones permanentes

Las cargas permanentes están constituidas por los pesos de los distintos elementos que forman parte de la estructura. Corresponden a acciones que actúan en todo momento y son constantes en posición y magnitud. Comprenden el peso propio y las cargas muertas. Sus valores se deducen de las dimensiones de los elementos especificadas en los planos y de sus pesos específicos correspondientes.

3.5.1.1. Peso propio

Corresponde al peso de los elementos estructurales, con su sección bruta, aplicándole el peso específico del material:

Peso propio hormigón: 25.00 kN/m³

3.5.1.2. Cargas muertas

Son las debidas a los elementos no estructurales que gravitan sobre la estructura, tales como: pavimentos, barreras, etc. Se han considerado los siguientes valores característicos:

- *Espesor balasto (0.35 m)* — *16.0 kN/m³*
- *Hormigón de forma (0.19 m)* — *25.0 kN/m³*
- *Tierra(0.21 m)* — *20.0 kN/m³*
- *Peso traviesas por vía* — *5.2 kN/m*
- *Peso carriles por vía* — *1.2 kN/m*
- *Peso conducciones, cableado...* — *3.0 kN/m*
- *Carga muerta en paseos* — *5.0 kN/m²*
- *Imposta ,barandillas* — *5.5 kN/m*
- *Canaleta* — *1.4 kN/m*
- *Muretes en borde de losa* — *2.5 kN/m*

Se han considerado tres valores para la carga de balasto. El valor nominal de 0.35 m, el valor mínimo de 0.70*0.35m y el valor máximo de 1.30*0.35 m.

3.5.2. Acciones permanentes de valor no constante

Acciones que actúan en todo momento pero cuya magnitud no es constante.

Se incluyen aquellas acciones cuya variación sea función del tiempo transcurrido y se produzca en un solo sentido, tendiendo hacia un determinado valor límite (acciones reológicas, pretensado, asientos del terreno bajo las cimentaciones), y aquellas otras acciones originadas por el terreno cuya magnitud varía en función de la interacción terreno-estructura.

3.5.3. Acciones reológicas

Las acciones reológicas se obtienen a partir de los valores característicos de las deformaciones provocadas por la retracción y la fluencia.

La deformación debida a la retracción del hormigón es función de la humedad relativa del ambiente, del espesor ficticio de la pieza, de la cuantía de armadura, de las condiciones de amasado del hormigón y del tiempo transcurrido desde su puesta en obra.

La deformación debida a la fluencia del hormigón bajo carga constante se considera proporcional a la deformación elástica instantánea.

Este tipo de acciones originan estados tensionales que son variables tanto en altura (geometría, condiciones de borde) como en planta (grado de soleamiento, etc.). Se ha optado por tener en cuenta su efecto sobre la fisuración de la estructura, disponiendo la armadura necesaria.

La Instrucción EHE define los valores dados en la tabla adjunta:

CUANTÍAS GEOMÉTRICAS MÍNIMAS, EN TANTO POR 1000, REFERIDAS A LA SECCIÓN TOTAL DE HORMIGÓN			
		B-400 S	B-500 S
LOSAS (*)		2.0	1.8
MUROS (**)	HORIZONTAL	4.0	3.2
	VERTICAL	1.2	0.9

(*) Cuantía mínima de cada una de las armaduras, longitudinal y transversal repartida en las dos caras. Las losas apoyadas sobre el terreno requieren un estudio especial.

(**) La cuantía mínima vertical es la correspondiente a la cara de tracción. Se recomienda disponer en la cara opuesta una armadura mínima igual al 30% de la consignada.

La armadura mínima horizontal deberá repartirse en ambas caras. Para muros vistos por ambas caras debe disponerse el 50% en cada cara. Para muros vistos por una sola cara podrán disponerse hasta 2/3 de la armadura total en la cara vista. En el caso de que se dispongan juntas verticales de contracción a distancias no superiores a 7.5 m con la armadura horizontal interrumpida, las cuantías horizontales mínimas pueden reducirse a la mitad.

3.5.4. Acciones debidas al terreno

En el cálculo de los elementos de contención de tierras, se tienen en cuenta las acciones debidas al relleno del trasdós, considerando independientemente los efectos del peso del terreno y de los empujes.

El peso del terreno se determina aplicando al volumen de terreno que gravita sobre la superficie del elemento horizontal, el peso específico del relleno vertido y compactado.

El empuje sobre los elementos estructurales se determinará de acuerdo con los conceptos geotécnicos, en función de las características del terreno y de la interacción terreno-estructura.

Con el fin de quedarnos del lado de la seguridad, se considerará el empuje activo o el empuje en reposo, según sea más desfavorable para los distintos esfuerzos que se estén analizando, con los valores de los coeficientes de empuje indicados anteriormente.

En ningún caso en que su actuación sea desfavorable para el efecto estudiado, el valor del empuje será inferior al equivalente del empuje hidrostático de un fluido de peso específico 5 kN/m³.

En el caso de asientos del terreno, sus valores se deducen de los parámetros o condiciones establecidas en el preceptivo estudio

geotécnico, teniendo en cuenta las características del terreno, la tipología y geometría de la cimentación, y las cargas transmitidas.

3.5.5. Sobrecargas de uso

Son acciones externas a la estructura que pueden actuar o no sobre ella por razón de su uso.

Las componentes verticales del tren de cargas corresponden a las dos acciones siguientes actuando simultáneamente: Carga del tráfico ferroviario y sobrecarga en aceras y paseos.

3.5.5.1. Tráfico ferroviario.

Se considera la carga más desfavorable entre las definidas por la IAPF-2001 y la IAPF-1975

- IAPF-2001:

Las componentes verticales del esquema de cargas denominado tren UIC 71 que representa el efecto estático correspondiente a una sola vía, están constituidas por las acciones siguientes actuando simultáneamente:

a) *Cuatro ejes de 250 kN, dispuestos en el eje de la vía, separados longitudinalmente entre sí 1.60 m.*
b) *Una sobrecarga uniforme repartida de 80 kN/m extendida en la longitud y posición que sea más desfavorable para el efecto estudiado. No se dispondrá esta sobrecarga en una longitud igual a 6.40 m centrada en los cuatro ejes definidos en a).*

Estas cargas serán afectadas por un coeficiente de clasificación α. El valor del coeficiente α será:

$\alpha = 1.21$ para vía de ancho RENFE.

α = 1.21 para vía de ancho internacional.
α = 0.91 para vía métrica.

- IAPF-1975:

Se considerara para cada elemento el tren tipo que dé una sobrecarga más desfavorable entre los que a continuación se indican, correspondientes a circulación por una vía.

TREN TIPO A. Esta constituido por tres ejes de 30 toneladas separados entre sí 1.50 m.

TREN TIPO B. Esta constituido por una sobrecarga uniforme repartida de 12 toneladas por metro, extendida en una longitud de 15 o 30 m, seguida inmediatamente de otras sobrecargas uniformemente repartidas de 10 y 1 tonelada por metro.

3.5.5.2. Sobrecarga en aceras

Se considera una sobrecarga uniforme de 5 kN/m² extendida en toda la superficie, o en parte de ella, según sea más desfavorable para el elemento en estudio, de aceras, paseos de servicio y zonas del tablero no afectadas directamente por el tráfico ferroviario.

3.5.5.3. Ubicación transversal de las cargas.

En puentes con balasto, para prever la posibilidad de ripado de la vía, se tendrá en cuenta un eventual desplazamiento de 0.30 metros con respecto a su eje inicial.

3.5.5.4. Excentricidad de la carga.

El efecto de una posible distribución de las cargas no simétrica entre los carriles se tendrá en cuenta considerando una relación de cargas entre las dos ruedas que forman cada eje igual a 1.25. La excentricidad resultante será entonces e = r/18, siendo r la separación entre apoyos de ruedas.

3.5.5.5. Efectos dinámicos.

La solicitaciones y deformaciones reales en un puente debidas al tráfico ferroviario son de naturaleza dinámica, pudiendo resultar valores máximos incrementados o reducidos respecto de las solicitaciones obtenidas en el cálculo estático.

El cálculo dinámico será necesario, según la IAPF, para las componentes verticales de las cargas.

Para líneas cuya velocidad de proyecto sea inferior a 220 km/h, los efectos dinámicos se evalúan mediante el coeficiente de impacto Φ que multiplica a las acciones debidas a las sobrecargas de uso.

El coeficiente de impacto, según la IAPF, para vía de mantenimiento normal toma un valor de:

$$\Phi_3 = \frac{2.16}{\sqrt{L_\Phi} - 0.2} + 0.73 = 1.357$$

con $1.00 \leq \Phi \leq 2.00$

L_Φ=13.30 m

La aplicación del coeficiente de impacto implica que se cumplan las siguientes condiciones:

- Velocidad inferior a 220 km/h
- Puente de tipología convencional.
- Puente cuya primera frecuencia propia de flexión, f_0, sometido a cargas permanentes, se encuentra dentro del siguiente huso:

Límite superior $f_0 = 94.76 \cdot L_\Phi^{-0.748} = 13.68 Hz$

Límite inferior $f_0 = 23.58 \cdot L_\Phi^{-0.592} = 5.10 Hz$

(20m< L_Φ<100m)

Para la estructura de estudio,

$$f_0(Hz) = \frac{1}{0.15} = 6.66 Hz$$

luego resulta de aplicación el método del coeficiente de impacto.

3.5.5.6. Frenado y arranque.

El valor característico de esta acción, correspondiente a una sola vía, es el siguiente:

Frenado:

$q_{l,k} = \alpha$*20(kN/m)*L(m) $\leq \alpha$ *6000 (kN)

En nuestro caso 665 kN/vía.

Arranque:

$q'_{l,k} = \alpha$*33(kN/m)*L'(m) $\leq \alpha$ *1000 (kN)

En nuestro caso 1100 kN/vía.

3.5.5.7. Sobrecarga en terraplenes

A efectos del cálculo de empujes del terreno sobre elementos de la estructura en contacto con él, se considerará actuando en la parte superior del terraplén, en la zona por donde pueda discurrir el tráfico, una sobrecarga uniforme de 10 kN/m².

Esta sobrecarga se tendrá en cuenta únicamente en los casos en que las cargas producidas por el tráfico actúen a una distancia, medida en horizontal desde la parte superior de la estructura, menor o igual a la mitad de la altura del elemento de la estructura sobre el que actúe el empuje.

En determinados casos, deberán tenerse en cuenta los empujes locales debidos a la actuación de un eje del vehículo pesado del tren de cargas definido.

3.5.6. Acciones Sísmicas

Las acciones sísmicas en puentes se considerarán únicamente cuando el valor de la aceleración de cálculo resulte igual o superior a 0.04 g.

3.5.6.1. Aceleración sísmica de cálculo

La aceleración de cálculo en el terreno a_c a considerar en el estudio sísmico para una estructura en servicio adopta la expresión:

$a_c = \rho \ a_b$

Siendo a_b la aceleración sísmica básica y ρ el coeficiente de riesgo.

De acuerdo con la Norma de Construcción Sismorresistente (NCSE-94), la aceleración sísmica básica a_b de la localidad de Barcelona adopta el valor:

$a_b = 0.04\ g$

Según la importancia del puente, la aceleración de cálculo en el terreno se obtiene multiplicando los valores básicos por un coeficiente ρ función del nivel de daño. Las categorías de los puentes, atendiendo a criterios de afección y acciones sísmicas, se definen de acuerdo con el uso a que se destine la estructura y con los daños que pueda ocasionar su destrucción.

En nuestro caso, podemos calificarlo de puente de normal importancia , siendo entonces el coeficiente de riesgo:

$\rho = 1.00$

Que corresponde, para una vida útil del puente de 100 años. Se obtiene, por tanto, para la estructura, una aceleración de cálculo de valor:

$a_c = 0.04\ g$

Por lo tanto, la acción sísmica no es necesaria tenerla en cuenta en el cálculo.

3.6. HIPÓTESIS DE CARGA

3.6.1. Valores representativos

De acuerdo con la Instrucción IAPF, los valores representativos de las acciones utilizados para la verificación de los estados límites serán:

3.6.1.1. Permanentes (G)

Para las acciones permanentes se considerará un único valor representativo, coincidente con el valor característico G_k, excepto en el caso de la acción correspondiente al peso del balasto y en su caso, las acciones producidas por los servicios situados sobre el puente, para la que se considerarán dos valores representativos $G_{k,sup}$ y $G_{k,inf}$.

3.6.1.2. Permanentes de valor no constante (G*)

- *Presolicitaciones*

Para las acciones originadas por las presolicitaciones definidas anteriormente se considerará un único valor representativo, coincidente con el valor característico $P_{k,t}$ correspondiente al instante t en el que se realiza la comprobación del estado límite.

- *Acciones Reológicas*

Para las acciones de origen reológico, fluencia y retracción, se considerará un único valor representativo, coincidente con el valor característico $R_{k,t}$ correspondiente al instante t en el que se realiza la comprobación.

- *Acciones debidas al terreno*

Para las acciones correspondientes al peso del terreno se considerará un único valor representativo, coincidente con el valor característico $G^*_{wr,k}$.

Para las acciones correspondientes al empuje del terreno y movimientos del terreno bajo las cimentaciones se considerará el valor representativo de acuerdo con lo expuesto anteriormente.

3.6.1.3. Variables (Q)

Cada una de las acciones variables podrá considerarse con los siguientes valores representativos:

- *Valor característico Qk*

será el valor de la acción cuando actúe aisladamente, como ha sido definido anteriormente.

- *Valor de combinación ψ0 Qk:*

será el valor de la acción cuando actúe con alguna otra acción variable, para tener en cuenta la pequeña probabilidad de que actúen simultáneamente los valores más desfavorables de varias acciones independientes.

- *Valor frecuente ψ1 Qk:*

será el valor de la acción que sea sobrepasado durante un período de corta duración respecto a la vida útil del puente (5% del tiempo). Corresponde a un período de retorno de una semana.

- *Valor casi-permanente ψ2 Qk:*

será el valor de la acción que sea sobrepasado durante una gran parte de la vida útil del puente (el 50% o más del tiempo) o bien el valor medio.

Los valores de los coeficientes y se recogen en la siguiente tabla.

VALORES DE LOS COEFICIENTES ψ		
ψ0	ψ1	ψ2
0.60	0.50	0.20

3.6.1.4. Accidentales (A)

Para las acciones accidentales se considerará un único valor representativo coincidente con el valor característico A_k.

3.6.2. Valores de cálculo

Los valores de cálculo de las diferentes acciones serán los obtenidos aplicando el correspondiente coeficiente parcial de seguridad γ_F a los valores representativos de las acciones definidas anteriormente.

Los coeficientes parciales de seguridad se indican en la siguiente tabla:

COEFICIENTES DE SEGURIDAD γf							
ESTADOS LIMITES		ÚLTIMOS				DE SERVICIO	
SITUACIONES		PERSISTENTES Y TRANSITORIAS		ACCIDENTALES		PERSISTENTES Y TRANSITORIAS	
ACCIÓN		Favorable	Desfavorable	Favorable	Desfavorable	Favorable	Desfavorable
PERMANENTE γ_G		1.00	1.35	1.00	1.00	1.00	1.00
PERMANENTE DE VALOR NO CONSTANTE γ_{G^*}	Pretensado P_1 Postesas Pretesas	1.00	1.00	1.00	1.00	0.90 0.95	1.10 1.05
	Pretensado P_2	1.00	1.35	1.00	1.00	1.00	1.00
	Presolicitación	0.95	1.05	1.00	1.00	1.00	1.00
	Reológica	1.00	1.35	1.00	1.00	1.00	1.00
	Acción del terreno	1.00	1.50	1.00	1.00	1.00	1.00
VARIABLE γ_Q		0.00	1.50	0.00	1.00	0.00	1.00
ACCIDENTAL γ_A				1.00	1.00		

3.6.3. Hipótesis de Carga

Según la Instrucción IAPF, las hipótesis de carga a considerar se formarán combinando los valores de calculo de las acciones cuya actuación pueda ser simultanea, según los criterios generales que se indican a continuación:

A) ESTADOS LÍMITE ÚLTIMOS

Para la comprobación de los Estados Límites Últimos se considerarán las situaciones persistentes y transitorias, y las accidentales con o sin sismo.

A1) Situaciones persistentes o transitorias

Las combinaciones de las distintas acciones consideradas en estas situaciones, excepto en el ELU de fatiga, se realizan de acuerdo con el siguiente criterio:

$$\sum_{j\geq 1} \gamma_{G,j}\, G_{k,j} + \sum_{i\geq 1} \gamma_{G^*,i}\, G^{-}_{k,i} + \gamma_{Q,1}\, Q_{k,1} + \sum_{i>1} \gamma_{Q,i}\, \Psi_{0,i}\, Q_{k,i}$$

donde:

$G_{k,j}$ = Valor representativo de cada acción permanente.

$G^{*}_{k,i}$ = Valor representativo de cada acción permanente de valor no constante.

$Q_{k,1}$ = Valor representativo (valor característico) de la acción variable dominante.

$\psi_{0,i}\, Q_{k,i}$ = Valores representativos (valores de combinación) de las acciones variables concomitantes con la acción variable dominante.

En general, deberán realizarse tantas hipótesis o combinaciones como sea necesario, considerando, en cada una de ellas, una de las acciones variables como dominante y el resto como concomitantes.

Además, se deberán tener en cuenta las siguientes observaciones:

- *Si la acción de la sobrecarga de uso es considerada como dominante, se tomará ésta con su valor representativo y la acción del viento con su valor reducido, aplicándose además los coeficientes ψ indicados anteriormente.*

- *Si la acción del viento es considerada como dominante, se tomara esta acción con su valor representativo y no se considerará la actuación simultánea de la acción de la sobrecarga de uso.*

A2) Situaciones accidentales

Se distinguirán dos tipos de situaciones accidentales:

- *Las provocadas por choques de vehículos, locomotoras, barcos, etc., sobre los distintos elementos del puente.*
- *Las provocadas por la acción sísmica.*

A2a) Situaciones accidentales sin sismo

Las combinaciones de las distintas acciones consideradas en estas situaciones se realizarán de acuerdo con el siguiente criterio:

$$\sum_{j\geq 1} \gamma_{G,j}\, G_{k,j} + \sum_{i\geq 1} \gamma_{G^*,i}\, G^{-}_{k,i} + \gamma_{Q,1}\, \Psi_{1,1}\, Q_{k,1} + \sum_{i>1} \gamma_{Q,i}\, \Psi_{2,i}\, Q_{k,i} + \gamma_{A}\, A_{k}$$

donde:

$G_{k,j}$ = Valor representativo de cada acción permanente.

$G^{*}_{k,i}$ = Valor representativo de cada acción permanente de valor no constante.

$\psi_{1,i}\, Q_{k,1}$ = Valor representativo frecuente de la acción variable dominante.

$\psi_{2,i}\, Q_{k,i}$ = Valores representativos casi-permanentes de las acciones variables concomitantes con la acción variable dominante y la acción accidental.

A_k = Valor representativo característico de la acción accidental.

Para estas combinaciones serán de aplicación las observaciones indicadas en el planteamiento de las combinaciones A1).

A2b) Situaciones accidentales de sismo

Las combinaciones de las distintas acciones consideradas en estas situaciones se realizarán de acuerdo con el siguiente criterio:

$$\sum_{j\geq 1} \gamma_{G,j}\, G_{k,j} + \sum_{i\geq 1} \gamma_{G^*,i}\, G^{*}_{k,i} + \gamma_{Q,1}\, \Psi_{2,1}\, Q_{k,1} + \gamma_{A}\, A_{E,k}$$

donde:

G_{kj} = Valor representativo de cada acción permanente.

$G^{*}_{k,i}$ = Valor representativo de cada acción permanente de valor no constante.

$\psi_{2,1}\ Q_{k,1}$ = Valor representativo casi-permanentes de la acción relativa a la sobrecarga de uso. En puentes de baja o media intensidad de tráfico, no será necesario considerar esta acción.

$A_{E,k}$ = Valor representativo característico de la acción sísmica.

B) ESTADOS LÍMITE DE SERVICIO

Para las comprobaciones relativas a los Estados Límites de servicio se considerarán únicamente las situaciones persistentes y transitorias, excluyéndose las accidentales.

Las combinaciones de las distintas acciones consideradas en estas situaciones, se realizarán de acuerdo con el siguiente criterio:

B1) Combinación Característica (poco probable o rara)

$$\sum_{j\geq 1} G_{k,j} + \sum_{i\geq 1} \gamma_{G^{*},i}\ G^{-}_{k,i} + \gamma_{Q,1}\ Q_{k,1} + \sum_{i>1} \gamma_{Q,i}\ \Psi_{0,i}\ Q_{k,i}$$

B2) Combinación Frecuente

$$\sum_{j\geq 1} G_{k,j} + \sum_{i\geq 1} \gamma_{G^{*},i}\ G^{-}_{k,i} + \gamma_{Q,1}\ \Psi_{1,1}\ Q_{k,1} + \sum_{i>1} \gamma_{Q,i}\ \Psi_{2,i}\ Q_{k,i}$$

B3) Combinación Casi-permanente

$$\sum_{j\geq 1} G_{k,j} + \sum_{i\geq 1} \gamma_{G^{*},i}\ G^{-}_{k,i} + \sum_{i\geq 1} \gamma_{Q,i}\ \Psi_{2,i}\ Q_{k,i}$$

Para las tres combinaciones serán de aplicación las observaciones indicadas en el planteamiento de las combinaciones A1).

4. CALCULOS ESTRUCTURALES

4.1. MODELO ESTRUCTURAL

4.1.1. Proceso del cálculo del tablero

El tablero de la estructura proyectada está formado por una losa de canto constante.

Para el cálculo de la losa se ha empleado un modelo bidimensional de elementos finitos tipo placa, procesado mediante el programa CEDRUS del paquete informático CUBUS. Se ha considerado la geometría real del tablero.

Para el cálculo del tablero se ha seguido el borrador de la IAPF "Instrucción de acciones a considerar en el proyecto de puentes de ferrocarril".

El cálculo realizado ha sido estático teniendo en cuenta la naturaleza dinámica de las cargas del tráfico ferroviario mediante coeficientes de impacto.

El tipo de apoyo considerado, en el modelo bidimensional de la losa, ha sido un empotramiento lineal, considerando la rigidez de la pantalla.

4.1.2. Proceso del cálculo de las pantallas

Para la contención de tierras se han dimensionado tres muros pantalla de alturas variables:

- Pantalla tipo 1: pantalla de 17.00 m en voladizo, con una altura libre entre 8.00 y 6.00 m, con un espesor de 0.65 m.

- Pantalla tipo 2: pantalla de 12.00 m en voladizo, con una altura libre entre 6.00 y 4.00 m, con un espesor de 0.65 m.

- Pantalla tipo 3: pantalla de 8.00 m en voladizo, con una altura libre entre 4.00 y 2.00 m, con un espesor de 0.40 m.

Para el dimensionamiento de las pantallas se ha realizado el cálculo de la misma frente a esfuerzos horizontales que le trasmite el relleno del terraplén.

Se ha realizado un modelo de elementos finitos tipo barra, tomando una franja de 1.00 m de ancho de pantalla. En este modelo se ha tenido en cuenta la coacción del terreno mediante una serie de muelles horizontales con las siguientes constantes elásticas extraídas del informe geotécnico:

Profundidad: 15.00 m ⇒ 50000 kN/m³

Profundidad: de15.00 a 25.00 m ⇒ 50000 kN/m³

Se ha considerado el siguiente modelo de cálculo:

- Se considera que la pantalla tiene permitido el movimiento en cabeza, por lo que trabaja como ménsula con las constantes elásticas horizontales mencionadas. El cálculo de empujes del terreno se realiza con el coeficiente de empuje activo.

Se ha determinado el tope estructural del muro pantalla proyectado de 0.65 m de espesor.

Para la determinación del tope estructural se ha empleado la fórmula proporcionada por el libro de Jose Mª Rodríguez Ortiz, "Curso aplicado de cimentaciones", 1982.

$$Te = \alpha.fyk.Sa+\beta.fck.Sb+\kappa.fy'k.Sc$$

S_a, área de acero
S_b, área de hormigón
S_c, área de la camisa metálica

f_{yk}, resistencia característica de armaduras
f_{ck}, resistencia característica del hormigón

El valor del tope estructural obtenido es de 4038 kN, mucho mayor que el axil máximo obtenido.

4.1.3. Proceso del cálculo de muros

Para la contención de tierras se han dimensionado dos muros convencionales de alturas variables (3.00 m y 2.00 m).

La comprobación de la estabilidad del muro se ha realizado con el programa CYPE Arquitectura, Ingeniería y Construcción, en su módulo sobre Muros de Contención.

Esta comprobación de estabilidad corresponde a las comprobaciones realizadas por el programa para la zapata, siendo tres: deslizamiento, vuelco y hundimiento.

COMPROBACIÓN AL HUNDIMIENTO

Se obtiene la ley de tensiones debajo de la zapata, que puede ser trapecial o triangular, pudiéndose producir de esta forma un despegue.

A partir de esta ley de tensiones se realizan las siguientes comprobaciones:

$\sigma media \leq \sigma adm$

$\sigma_{max} \leq 1.25\sigma_{adm}$

COMPROBACIÓN AL DESLIZAMIENTO

Se determina el coeficiente de rozamiento μ_c, necesario en la base de la zapata para el equilibrio, de la siguiente forma:

$$\mu_c = \frac{\Sigma V_d (\text{resultante de cargas horizontales})}{\Sigma N_d (\text{resultante de cargas verticales})}$$

Si μ_c es menor del coeficiente de rozamiento terreno – cimiento, es estable.

COMPROBACIÓN AL VUELCO

Con las combinaciones de equilibrio del muro, se determina el punto de paso de la resultante por la base de la zapata. Siendo e su excentricidad y B el ancho de la misma, se define el coeficiente de reserva de seguridad x como:

$$x = \left(\frac{0.5B}{e} - 1 \right) 100$$

Cuando la resultante quede dentro del ancho de la zapata hay estabilidad al vuelco, y el valor de x es positivo. Cuanto mayor sea, más estabilidad habrá al vuelco.

4.2. CÁLCULO DE ESFUERZOS Y DIMENSIONAMIENTO

Los modelos utilizados emplean el método de rigidez para la obtención de desplazamientos en los nudos, a partir de los cuales se obtienen los esfuerzos en placas y reacciones en apoyos. Los resultados se obtienen para cada hipótesis simple de carga y combinación, obtenidas éstas según la normativa correspondiente en cada caso.

Se ha comprobado el estado límite de agotamiento frente a solicitaciones normales y frente a cortante siguiendo el articulado de la instrucción EHE.

Para la comprobación del estado límite de fisuración se ha tenido en cuenta el artículo 49.2.4 de la instrucción EHE, en el que se limita la máxima abertura de fisura en función del ambiente:

ELEMENTO	AMBIENTE	$w_{máx}$(mm)
OBRA DE FABRICA	IIa	0.3

4.2.1. Flexión.

Se adopta el máximo entre el armado de cálculo y la armadura mínima de la EHE.

4.2.2. Cortante.

Se ha comprobado en las secciones más desfavorables, siguiendo la metodología expuesta en la EHE.

4.2.3. Fisuración.

Se ha comprobado en las secciones más desfavorables, siguiendo la metodología expuesta en la EHE.

5. CONCLUSIONES

En el presente documento se ha procedido al dimensionamiento de la estructura del P.K. 502+267 incluida en el "PROYECTO DE CONSTRUCCIÓN DE PLATAFORMA LÍNEA DE ALTA VELOCIDAD MADRID-ZARAGOZA-BARCELONA-FRONTERA FRANCESA. TRAMO A: CONEXIÓN VALLÉS-CASTELLBISBAL", esto es, de su tablero, pantallas y muros. Se ha realizado para ello los cálculos necesarios obteniendo dimensiones y armados y comprobando los coeficientes de seguridad frente a los distintos estados límite, de una manera justificada que se ha expuesto en los puntos anteriores.

Se ha procedido al cálculo del tablero y su dimensionado según el articulado de la EHE.

Se ha procedido al cálculo de las pantallas y muros, y su dimensionado según el articulado de la EHE.

El presente Documento se adjunta el desarrollo de los cálculos realizados, así como Planos de definición y detalles de la estructura del puente.

Valencia, Noviembre de 2003

La Ingeniera Autora de la Memoria de Cálculo

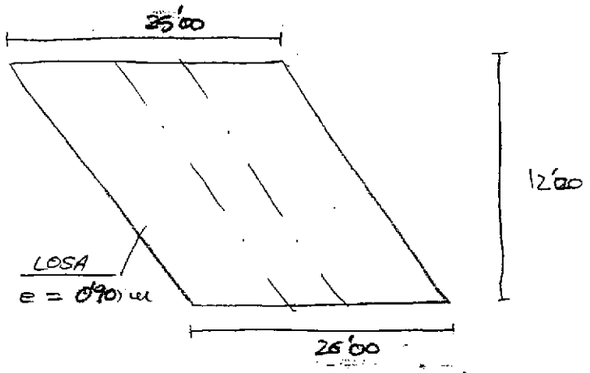
VALTER valenciana de estructuras

Fdo.- Raquel Sahuquillo Borrás

Ingeniera de Caminos, C. y P.

MODELO DE CÁLCULO

CÁLCULO DE LOSA



HA-30

CARGAS CONSIDERADAS IAPE-(1999)

* PESO PROPIO : $\gamma = 25\ KN/m^3$

* CARGAS MUERTAS

A) BALASTO : $\gamma_{bal} = 16\ KN/m^3$

Se considera un espesor de balasto de 0'35m ⇒ 5'60 KN/m^2

Hip. 1 (valor característico) = 5'60 KN/m^2

Hip. 2 (valor máximo 30% más) = 7'28 KN/m^2

Hip. 3 (valor mínimo 30% menos) = 3'92 KN/m^2

El balasto se encuentra en un ancho de 5'3m

B) HORMIGÓN DE FORMA

Se considera un espesor de 0'19m ⇒ $25\frac{KN}{m^3} \times 0'19m = 4'75\frac{KN}{m^2}$

Se reparte en un área de 8'7m.

C) TIERRA

Se considera un espesor de 0'21m ⇒ $20\frac{KN}{m^3} \times 0'21m = 4'2\frac{KN}{m^2}$

Se reparte en un ancho de 10m.

D) MURETES

2'5 KN/m en bordes de losa

E) CARRILES : 1'2 KN/ml

F) TRAVIESAS : 5'2 KN/ml

G) CONDUCTOS DE CABLEADO, CANALETA, IMPOSTA Y BARANDILLAS :

Cables : 3 KN/ml
Impostа : 4'5 KN/ml/impostа
Canaleta : 1'4 KN/ml/impostа
Barandilla : 1'00 KN/ml/barandilla

⇒ q = 9'9 KN/ml

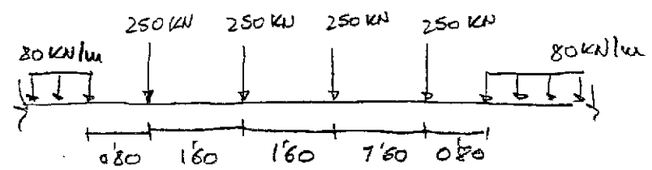
* SOBRECARGAS DE USO SEGÚN IAPF-99

A) VERTICALES DE TRÁFICO

A.1) 4 ejes de 250 KN en el eje de vía separados 1'6 m

A.2) Sobrecarga uniforme 80 KN/m

Estas cargas serán afectadas por un coef. de clasificación, α, cuyo valor será de 1'21 para vía de ancho RENFE



B) VERTICALES EN ACERAS Y PASEOS

5 KN/m² x 1'45m = 7'25 KN/ml

C) UBICACIÓN DE LA VÍA

En puentes con balasto, se tendrá en cuenta un eventual desplazamiento transversal de 0'30 m del eje inicial por ripado.

D) EXCENTRICIDAD DE LA CARGA

$e = 1/18 = 17/18 = 0'95$ adicionada al apartado c

$r = 1'667 + 0'095 = 1'7$ m

⇓ EXCENTRICIDAD TOTAL = 0'4 m

E) EFECTOS DINÁMICOS

Coef. de impacto (vía con mantenimiento normal):

$$\phi_3 = \frac{2'16}{\sqrt{L_\phi} - 0'2} + 0'73 \qquad \text{con } 1'00 \leq \phi_3 \leq 2'60$$

$L_\phi = 13'3$ m luz en la dirección ppal de la losa

$\phi_3 = 1'357$

Este coef. se aplica a la SC vertical de tráfico ferroviario

* SOBRECARGAS SEGÚN IAPF-75:

TREN TIPO A: 3 cargas de 30 t separadas 1'5 m

" " B: 12 t/m en todo el puente

Según IAPF-75 para vanos simplemente apoyados se le aplica un coef. de impacto:

$$I = \frac{114 \cdot \sqrt{L}}{3'10 - 1'76\sqrt{L} + L}$$

donde $L = 13'50$ m $\Rightarrow I = 41'33 \Rightarrow$ Coef. impacto = 1'41

VALTER
valenciana de estructuras

Proyecto PASO BAJO RAVAL VALLÉS-BARCELONA

Asunto

1 ACCIONES HORIZONTALES

- FRENADO Y ARRANQUE (ACCIÓN RÁPIDA)

Frenado: $q = \alpha \cdot 20 \cdot L \leq \alpha \cdot 6000$ kN

$q = 1'21 \cdot 20 \cdot 27'5 = 665'5$ kN //

Arranque: $q' = \alpha \cdot 33 \cdot L' \leq \alpha \cdot 1000$ kN

$q' = 1'21 \cdot 33 \cdot 27'5 = 1098$ kN //

Si se reparte la carga horizontal en un estribo y en una longitud de reparto de 15'3 m.

$\frac{1098}{15'3} = 71'76$ kN/m $\simeq 72$ kN/m

- RETRACCIÓN (ACCIÓN LENTA)

$\Delta l = 0'00025 \cdot L = 0'00025 \cdot 275 = 0'0069$ mm

- TEMPERATURA (ACCIÓN LENTA)

$\Delta T = 25°C \Rightarrow \Delta l = 0'0069$ mm

$\Rightarrow H = 108'125$ kN

$H_{neoprenos} = 14'73$ kN

Fecha

Hoja Nº De

DATOS de la ESTRUCTURA

ESPESOR Y MATERIAL

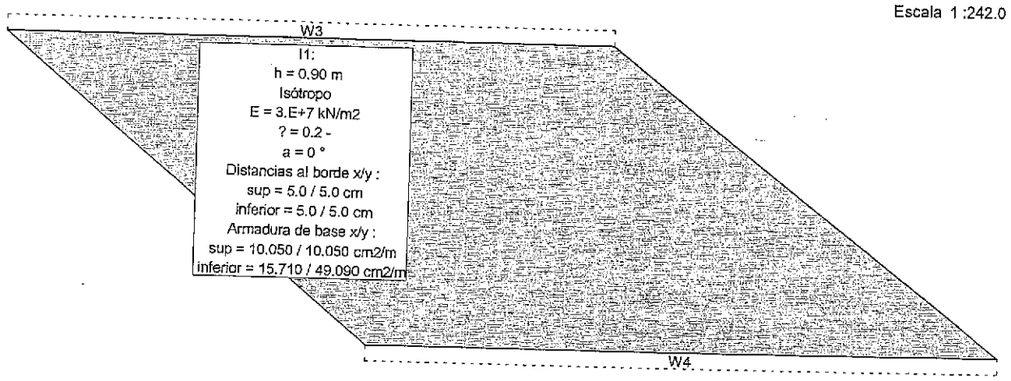
Isótropo	Young [kN/m2]	? -	Espesor [m]	Cota sup. [m]
I1	3.E+7	0.2	0.90	0

PAREDES

Id	compr. solo	Tipo	sdz [kN/m2]	srx [kN]	sry [kN]	Ancho [m]	Altura [m]	Young [kN/m2]
W3	*	general	Bloqueado	(1.012E+5)	Libre	0.65	19.00	2.1E+7
como W3: W4								

Estructura

Escala 1 :242.0

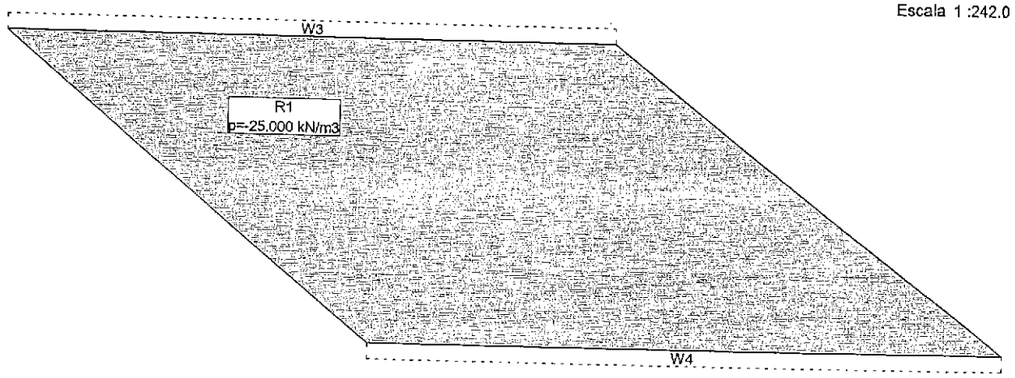


LISTA DE HIPOTESIS DE CARGA

Número de HC	Tipo	Acción	Título
1	Cargas	Peso propio	PESO PROPIO
2	Cargas	Carga permanente	BALASTO
3	Cargas	Carga permanente	HORMIGON DE FORMA
4	Cargas	Carga permanente	TIERRAS
5	Cargas	Carga permanente	MURETES
6	Cargas	Carga permanente	CARRILES Y TRAVIESAS
7	Cargas	Carga permanente	BARANDILLAS, IMPOSTA,ETC
8	Cargas	Carga útil (exclusiva)	SC IAPF99
9	Cargas	Carga útil (aditiva)	SC ACERAS
10	Cargas	Carga útil (exclusiva)	SC IAPF75
11	Cargas	Carga útil (exclusiva)	SC IAPF B
12	Cargas	Carga útil (exclusiva)	SC IAPF99 DESCENTRADA
13	Cargas	Carga útil (exclusiva)	SC IAPF75 A DESC

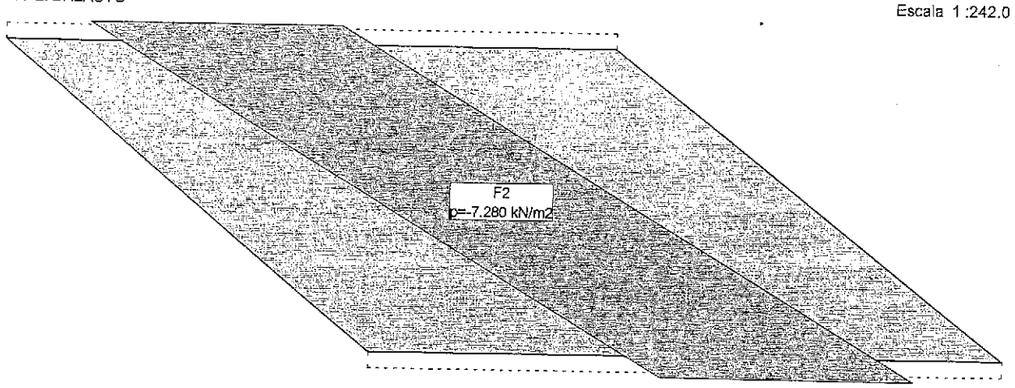
HC 1: PESO PROPIO

Escala 1 :242.0



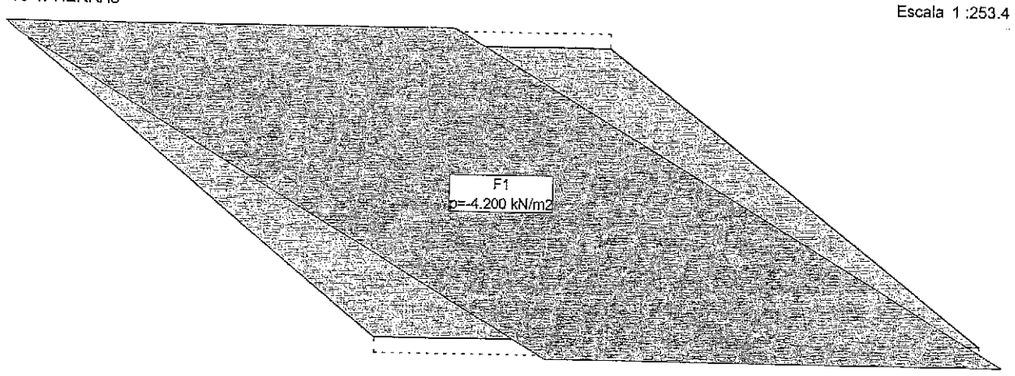
HC 2: BALASTO

Escala 1 :242.0



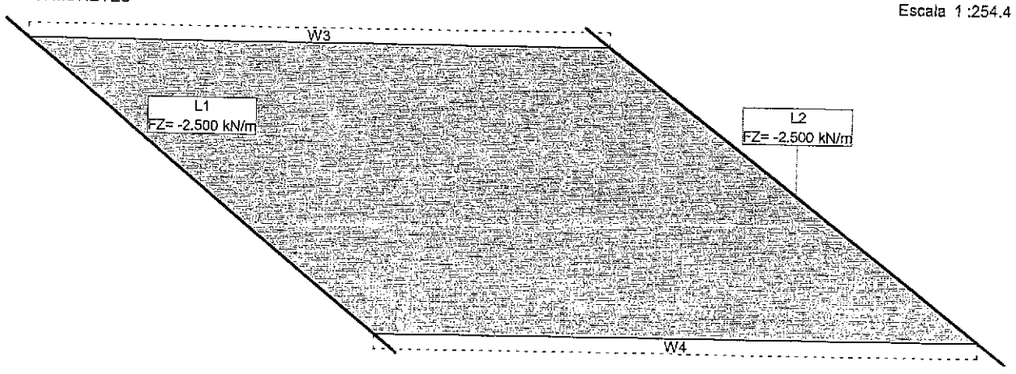
HC 4: TIERRAS

Escala 1 :253.4



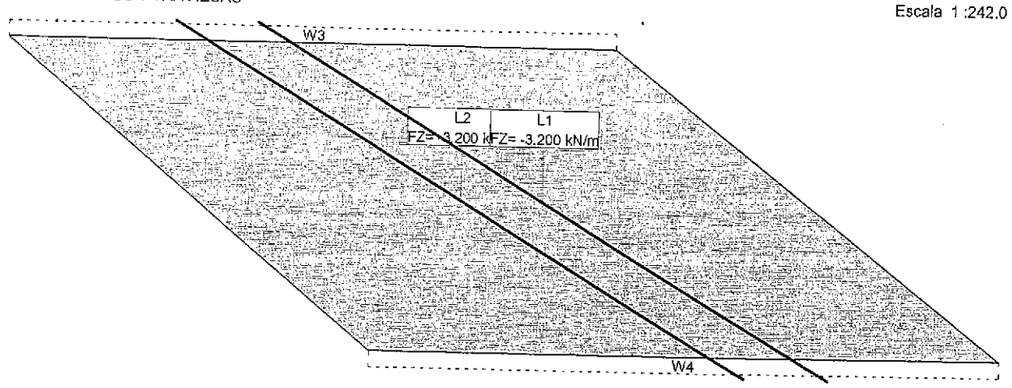
HC 5: MURETES

Escala 1 :254.4



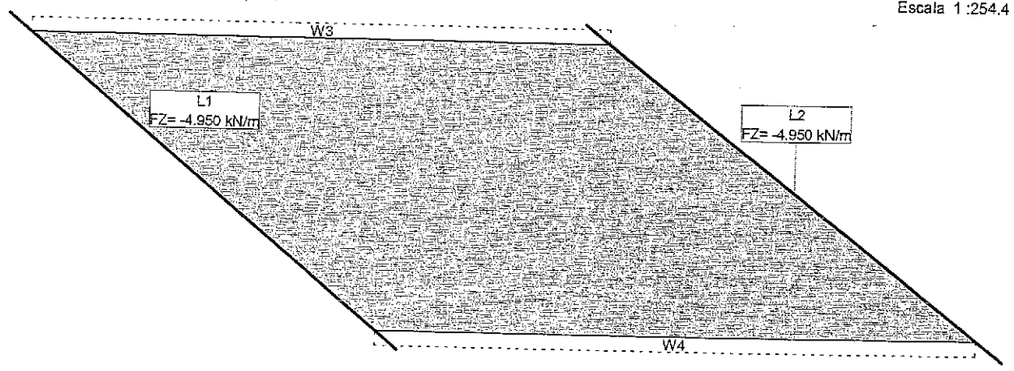
HC 6: CARRILES Y TRAVIESAS

Escala 1 :242.0



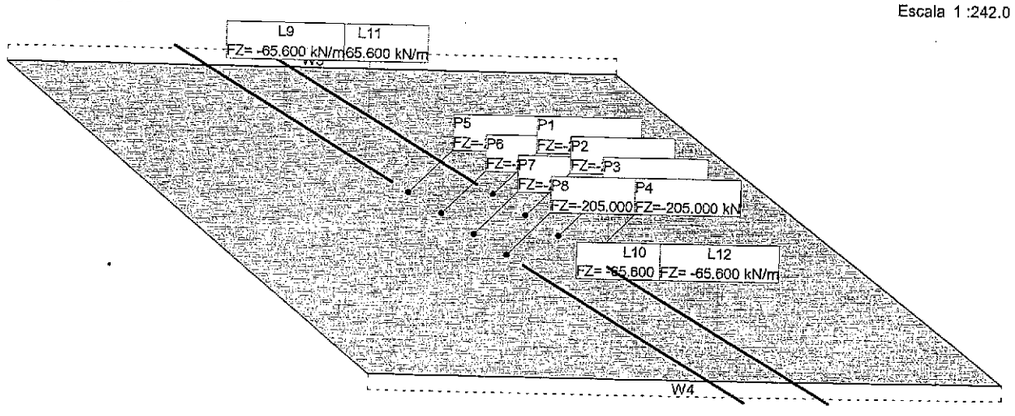
HC 7: BARANDILLAS, IMPOSTA,ETC

Escala 1 :254.4



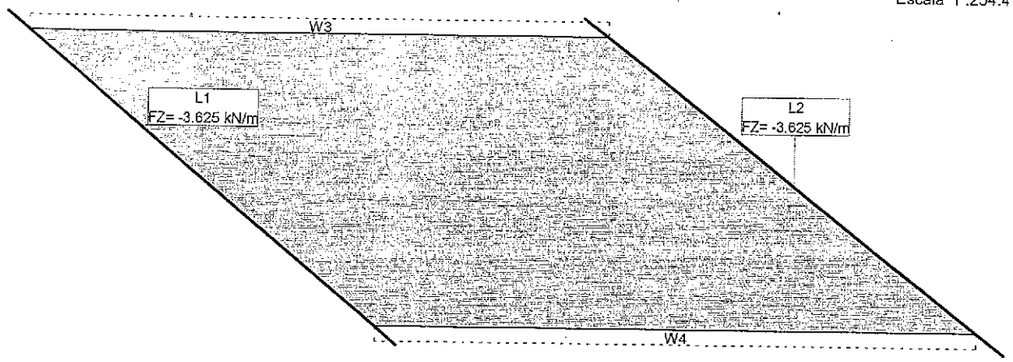
HC 8: SC IAPF99

Escala 1 :242.0



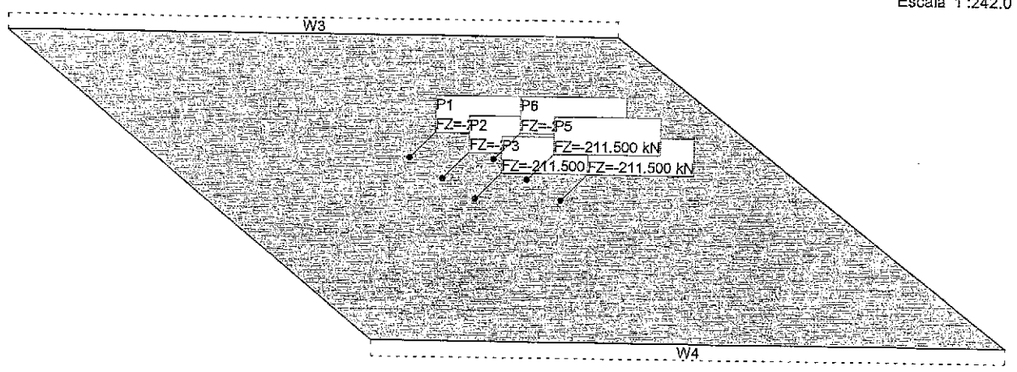
HC 9: SC ACERAS

Escala 1 :254.4



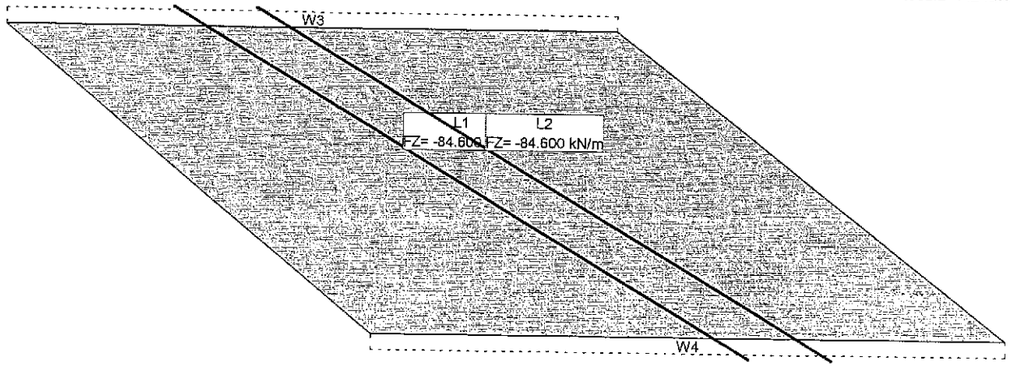
HC 10: SC IAPF75

Escala 1 :242.0



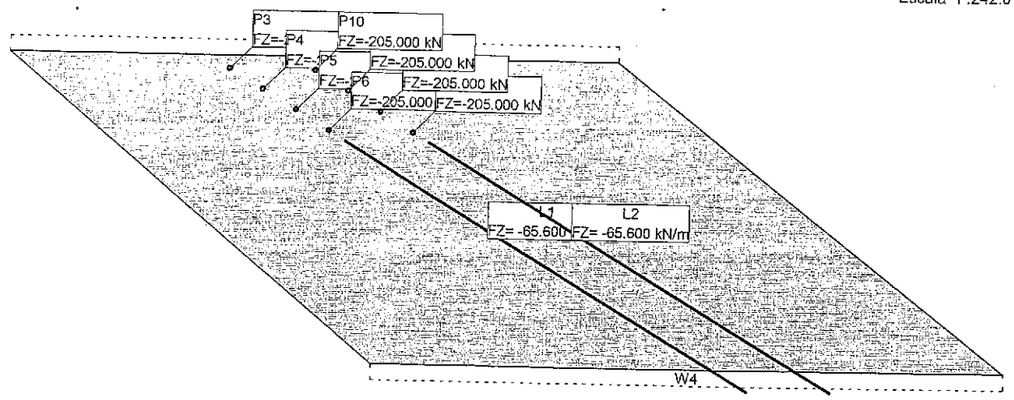
HC 11: SC IAPF B

Escala 1 :242.0



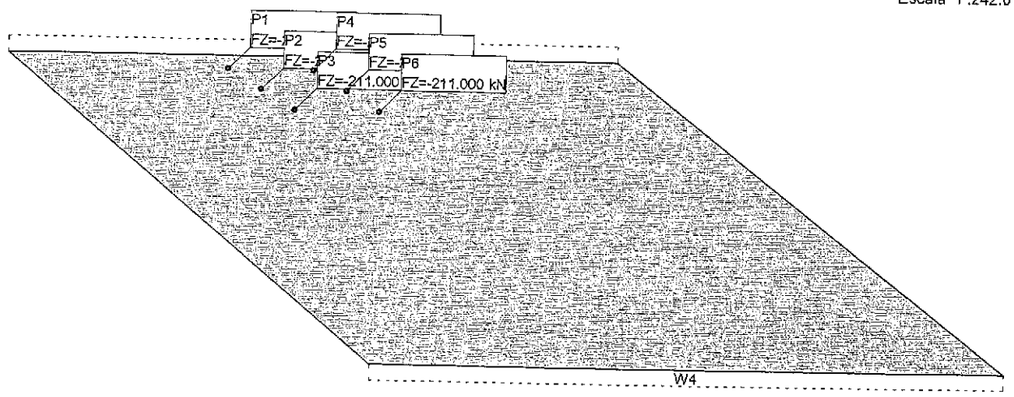
HC 12: SC IAPF99 DESCENTRADA

Escala 1 :242.0



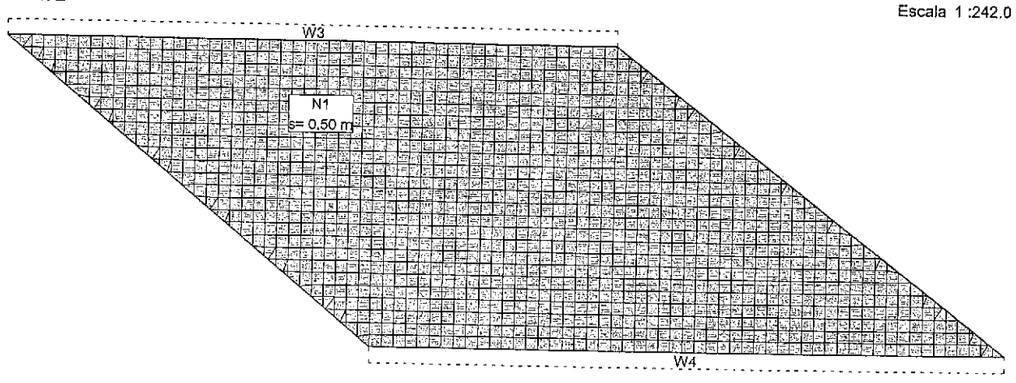
HC 13: SC IAPF75 A DESC

Escala 1 :242.0



Fe-Netz

Escala 1 :242.0



DIMENSIONAMIENTO DE LOSA

COMBINACION DE CARGAS: ELU 4 DESC

+ - L1: [1.35] PESO PROPIO
+ - L2: [1.35] BALASTO
+ - L3: [1.35] HORMIGON DE FORMA
+ - L4: [1.35] TIERRAS
+ - L5: [1.35] MURETES
+ - L6: [1.35] CARRILES Y TRAVIESAS
+ - L7: [1.35] BARANDILLAS, IMPOSTA,ETC
+ - L9: [1.50] SC ACERAS
+ - L13: [1.50] SC IAPF75 A DESC

COMBINACION DE CARGAS: ELU

+ - L1: [1.35] PESO PROPIO
+ - L2: [1.35] BALASTO
+ - L4: [1.35] TIERRAS
+ - L5: [1.35] MURETES
+ - L7: [1.35] BARANDILLAS, IMPOSTA,ETC
+ - L8: [1.50] SC IAPF99
+ - L9: [1.50] SC ACERAS

COMBINACION DE CARGAS: ELU1

+ - L1: [1.35] PESO PROPIO
+ - L2: [1.35] BALASTO
+ - L3: [1.35] HORMIGON DE FORMA
+ - L4: [1.35] TIERRAS
+ - L5: [1.35] MURETES
+ - L6: [1.35] CARRILES Y TRAVIESAS
+ - L7: [1.35] BARANDILLAS, IMPOSTA,ETC
+ - L9: [1.50] SC ACERAS
+ - L10: [1.50] SC IAPF75

COMBINACION DE CARGAS: ELU2

+ - L1: [1.35] PESO PROPIO
+ - L2: [1.35] BALASTO
+ - L3: [1.35] HORMIGON DE FORMA
+ - L4: [1.35] TIERRAS
+ - L5: [1.35] MURETES
+ - L6: [1.35] CARRILES Y TRAVIESAS
+ - L9: [1.50] SC ACERAS
+ - L11: [1.50] SC IAPF B

COMBINACION DE CARGAS: ELU3 DESC

+ - L1: [1.35] PESO PROPIO
+ - L2: [1.35] BALASTO
+ - L3: [1.35] HORMIGON DE FORMA
+ - L4: [1.35] TIERRAS
+ - L5: [1.35] MURETES
+ - L6: [1.35] CARRILES Y TRAVIESAS
+ - L7: [1.35] BARANDILLAS, IMPOSTA,ETC
+ - L9: [1.50] SC ACERAS
+ - L12: [1.50] SC IAPF99 DESCENTRADA

COMBINACION DE CARGAS: REACCIONES

+ - L1: [1.00] PESO PROPIO
+ - L2: [1.00] BALASTO
+ - L3: [1.00] HORMIGON DE FORMA
+ - L4: [1.00] TIERRAS
+ - L5: [1.00] MURETES
+ - L6: [1.00] CARRILES Y TRAVIESAS
+ - L7: [1.00] BARANDILLAS, IMPOSTA,ETC
+ - L8: [1.00] SC IAPF99
+ - L9: [1.00] SC ACERAS

COMBINACION DE CARGAS: REACCIONES1

+ - L1: [1.00] PESO PROPIO
+ - L2: [1.00] BALASTO
+ - L3: [1.00] HORMIGON DE FORMA
+ - L4: [1.00] TIERRAS
+ - L5: [1.00] MURETES
+ - L6: [1.00] CARRILES Y TRAVIESAS
+ - L7: [1.00] BARANDILLAS, IMPOSTA,ETC
+ - L9: [1.00] SC ACERAS
+ - L10: [1.00] SC IAPF75

COMBINACION DE CARGAS: REACCIONES2

+ - L1: [1.00] PESO PROPIO
+ - L2: [1.00] BALASTO
+ - L3: [1.00] HORMIGON DE FORMA
+ - L4: [1.00] TIERRAS
+ - L5: [1.00] MURETES
+ - L6: [1.00] CARRILES Y TRAVIESAS
+ - L9: [1.00] SC ACERAS
+ - L11: [1.00] SC IAPF B

ESPECIFICACION DE ENVOLVENTES Código: EH 91 (Combinación según el código EC2)

ACCIÓN: !Peso propio

Permanente	L1: [1.00] PESO PROPIO
Plus Permanete	L2: [1.00] BALASTO
	L3: [1.00] HORMIGON DE FORMA
	L4: [1.00] TIERRAS
	L5: [1.00] MURETES
	L6: [1.00] CARRILES Y TRAVIESAS
	L7: [1.00] BARANDILLAS, IMPOSTA,ETC

ACCIÓN: !Sobrecargas

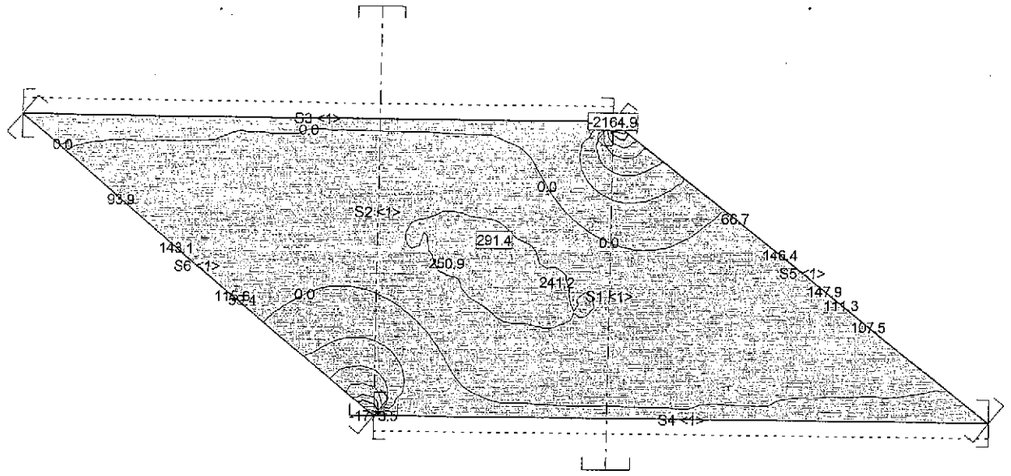
Plus si es crítica	L9: [1.00] SC ACERAS
Plus si es crítica	
Y	L8: [1.00] SC IAPF99
O	L10: [1.00] SC IAPF75
O	L11: [1.00] SC IAPF B
O	L12: [1.00] SC IAPF99 DESCENTRADA
O	L13: [1.00] SC IAPF75 A DESC

ESPECIFICACIÓN DE ENVOLVENTES: !Estado límite
Tipo de verificación: Estado límite

Acciones		Combinaciones	
Nr	Name	1	2
1	!Peso propio	1.35	1
2	!Sobrecargas	1.5	1.5

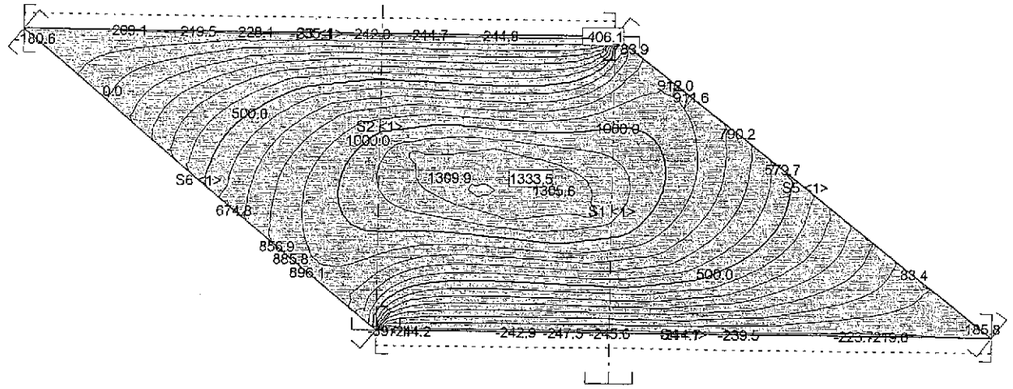
Solicitaciones mx: Combinación de cargas ELU, Equidistancia: 200.0 kN, Línea de referencia: 0.0 kN

Escala 1 :249.3



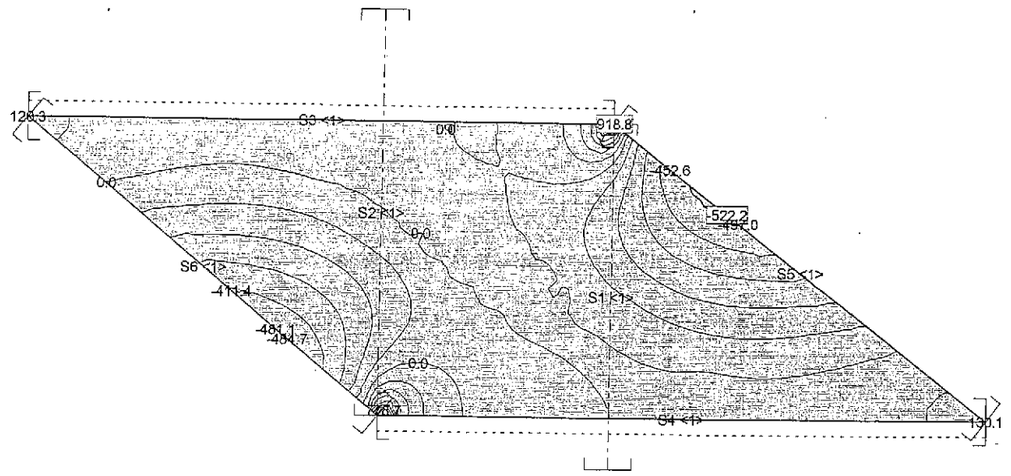
Solicitaciones mx: Combinación de cargas ELU, Equidistancia: 100.0 kN, Línea de referencia: 0.0 kN

Escala 1 :249.3



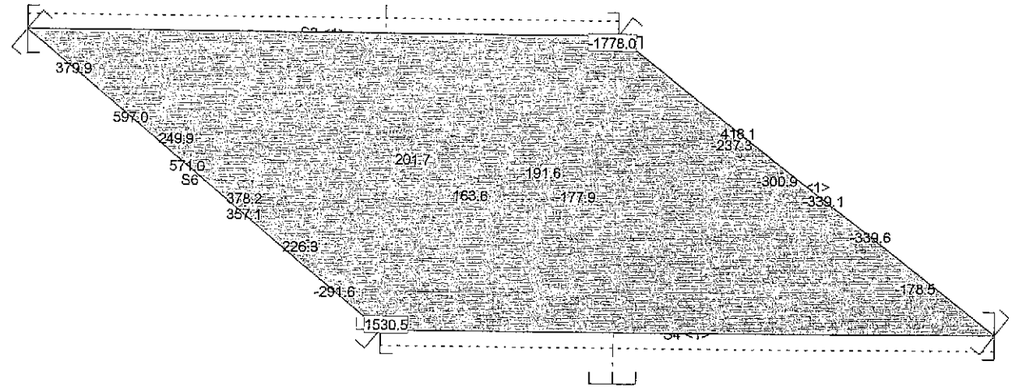
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Escala 1 :251.0



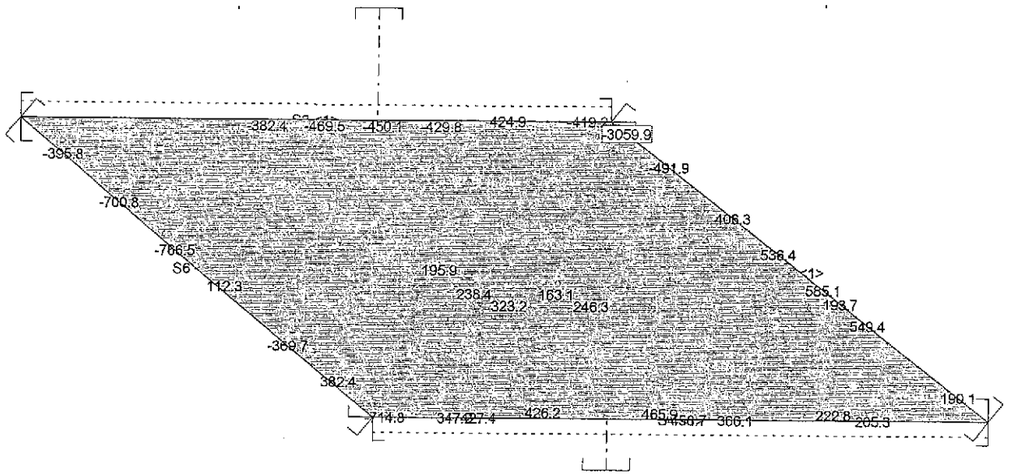
Solicitaciones vx: Combinación de cargas ELU, Equidistancia: 500.0 kN/m

Escala 1 :249.3



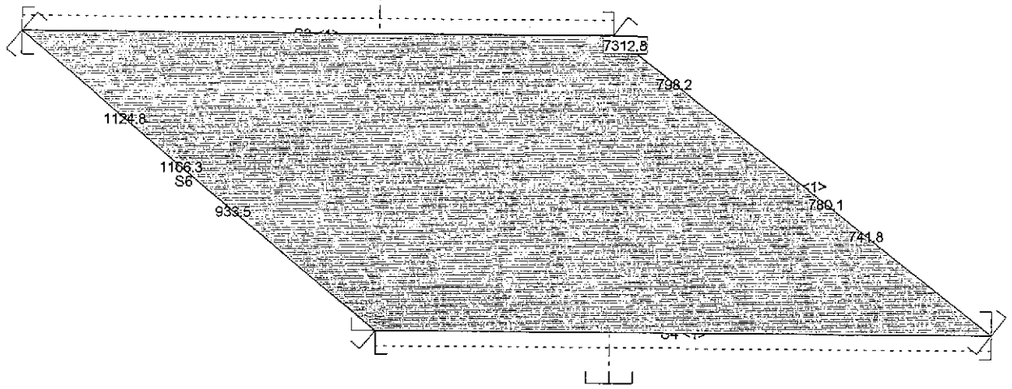
Solicitaciones vy: Combinación de cargas ELU, Equidistancia: 500.0 kN/m

Escala 1 :249.3



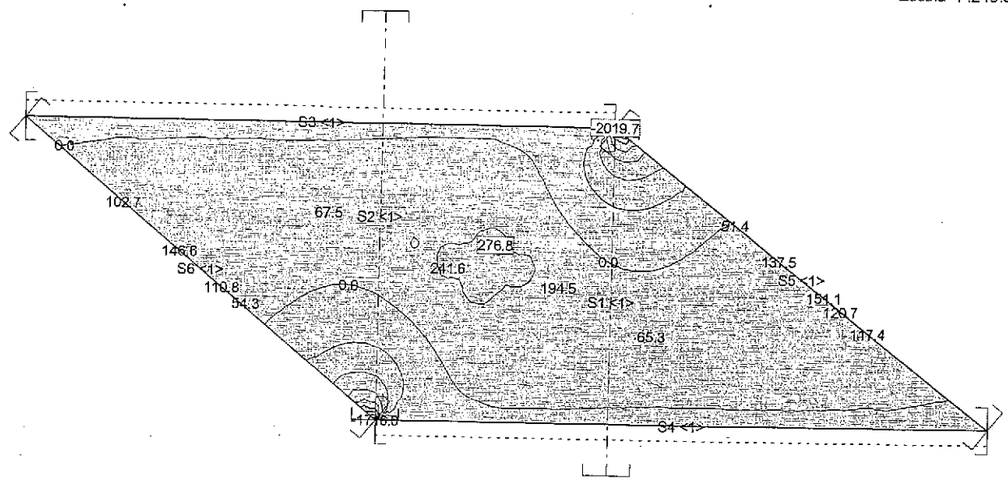
Solicitaciones vtot: Combinación de cargas ELU, Equidistancia: 500.0 kN/m

Escala 1 :249.3



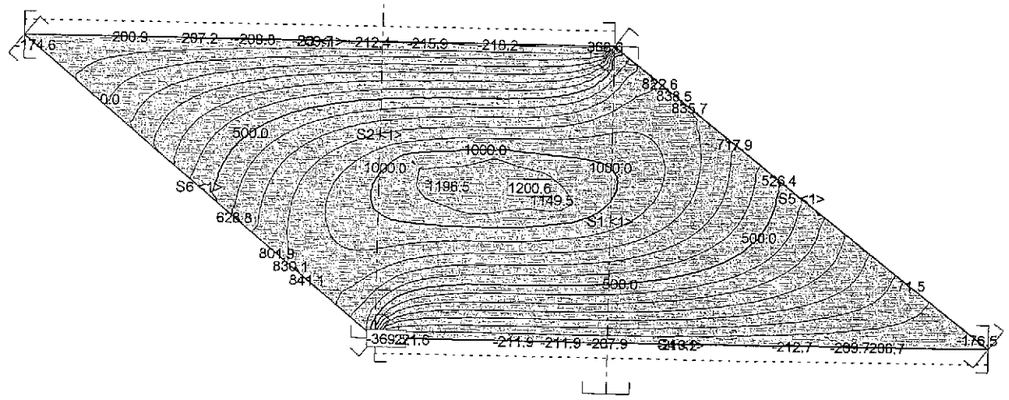
Solicitaciones mx: Combinación de cargas ELU1, Equidistancia: 200.0 kN, Línea de referencia: 0.0 kN

Escala 1 :249.3



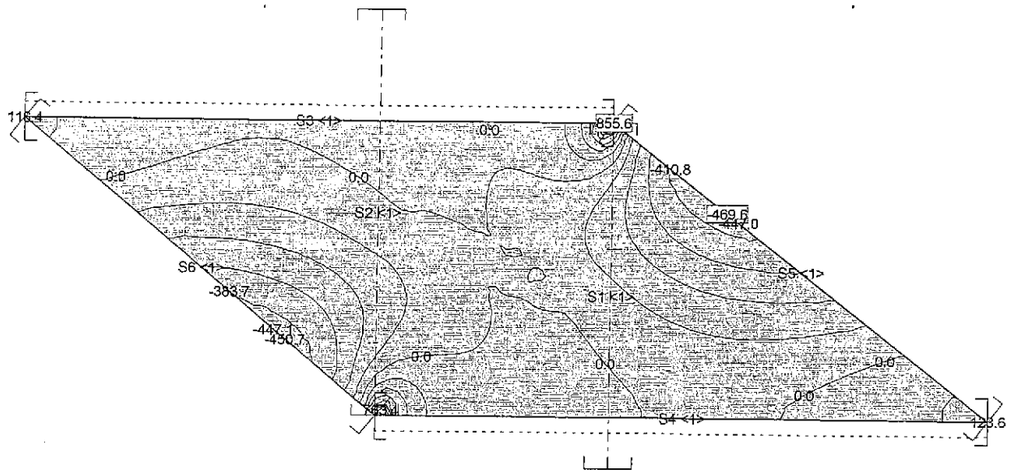
Solicitaciones mx: Combinación de cargas ELU1, Equidistancia: 100.0 kN, Línea de referencia: 0.0 kN

Escala 1 :249.3



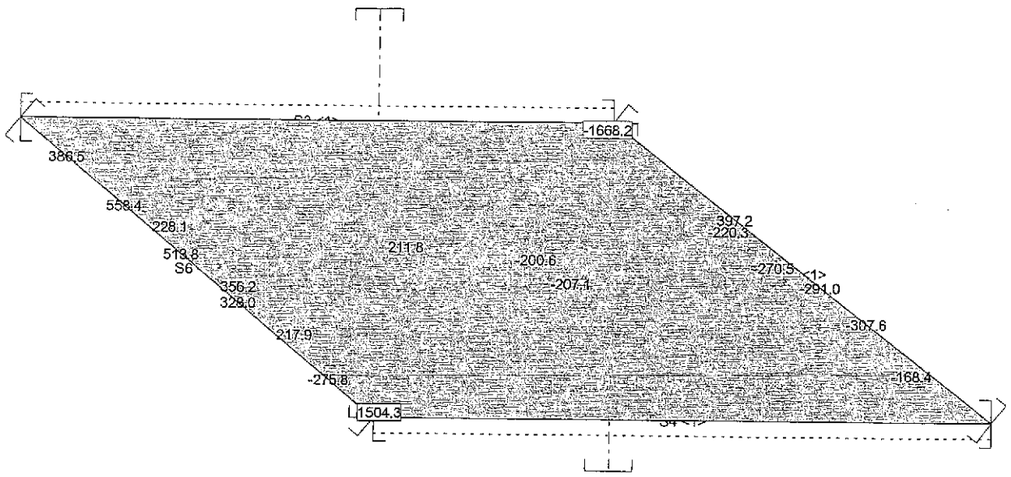
Solicitaciones mxy: Combinación de cargas ELU1, Equidistancia: 100.0 kN, Línea de referencia: 0.0 kN

Escala 1 :251.0



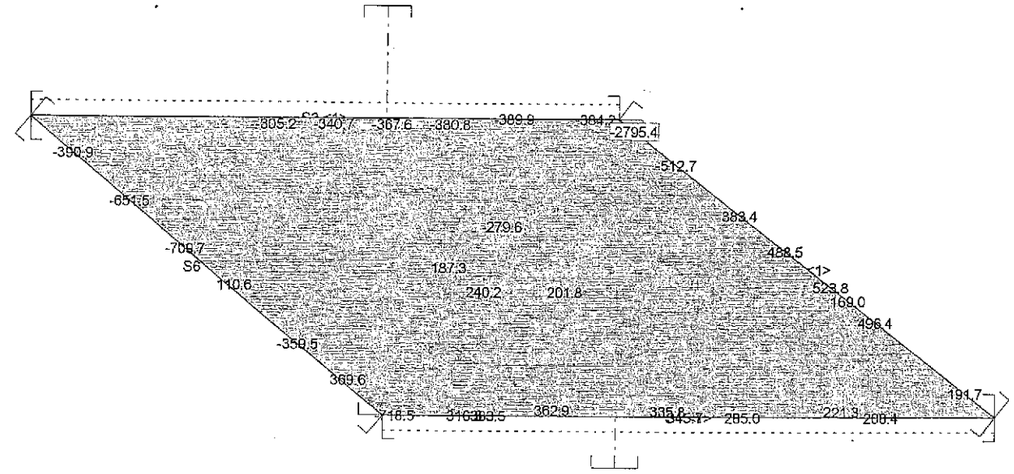
Solicitaciones vx: Combinación de cargas ELU1, Equidistancia: 500.0 kN/m

Escala 1 :249.3



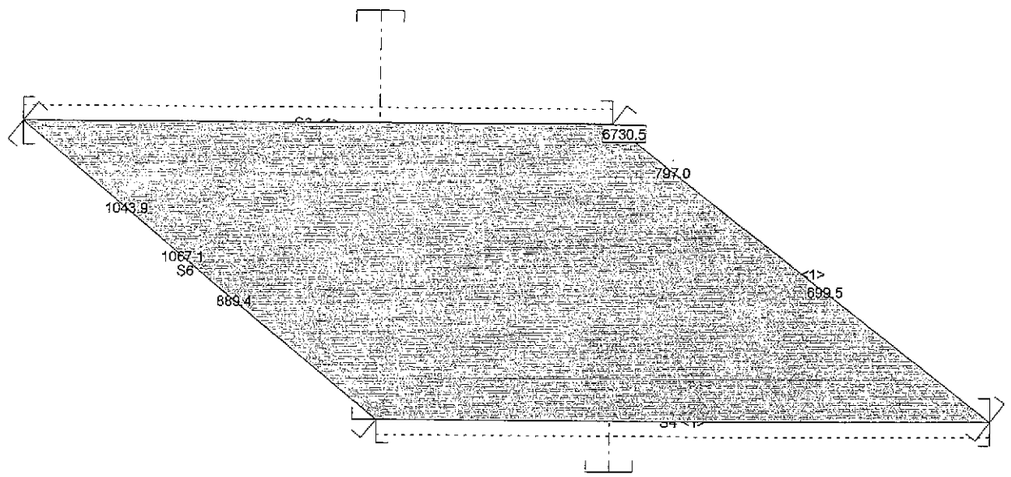
Solicitaciones vy: Combinación de cargas ELU1, Equidistancia: 500.0 kN/m

Escala 1 :249.3



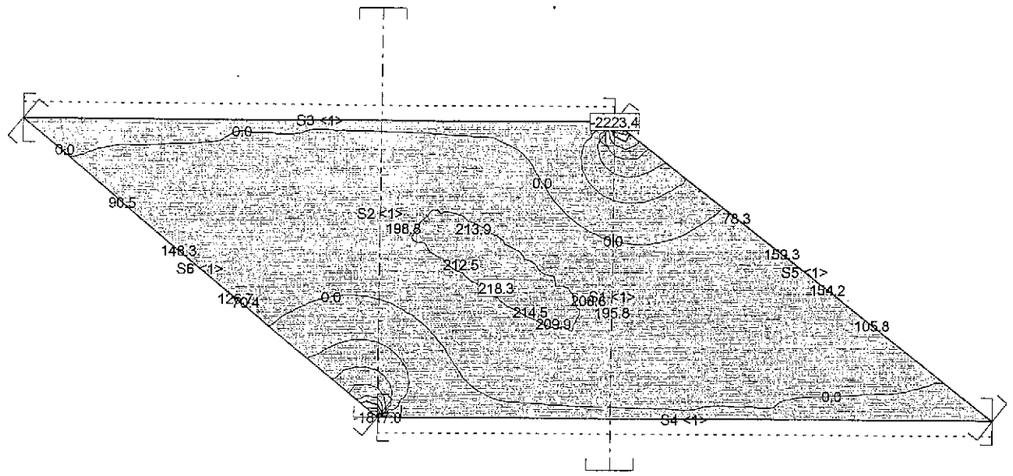
Solicitaciones vtot: Combinación de cargas ELU1, Equidistancia: 500.0 kN/m

Escala 1 :249.3



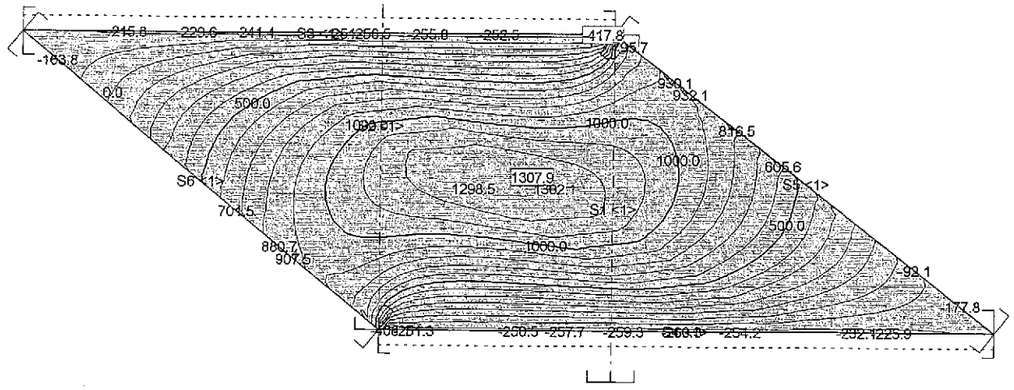
Solicitaciones mx: Combinación de cargas ELU2, Equidistancia: 200.0 kN, Línea de referencia: 0.0 kN

Escala 1 :249.3



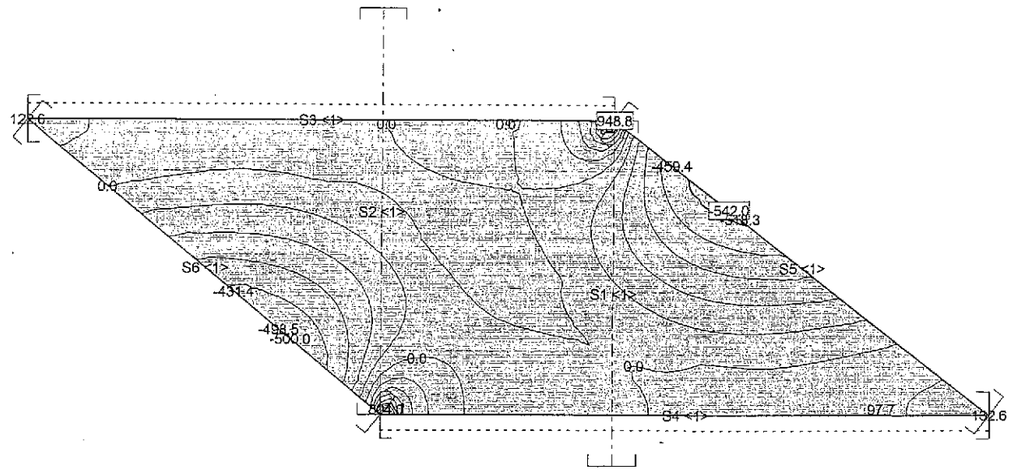
Solicitaciones mx: Combinación de cargas ELU2, Equidistancia: 100.0 kN, Línea de referencia: 0.0 kN

Escala 1 :249.3



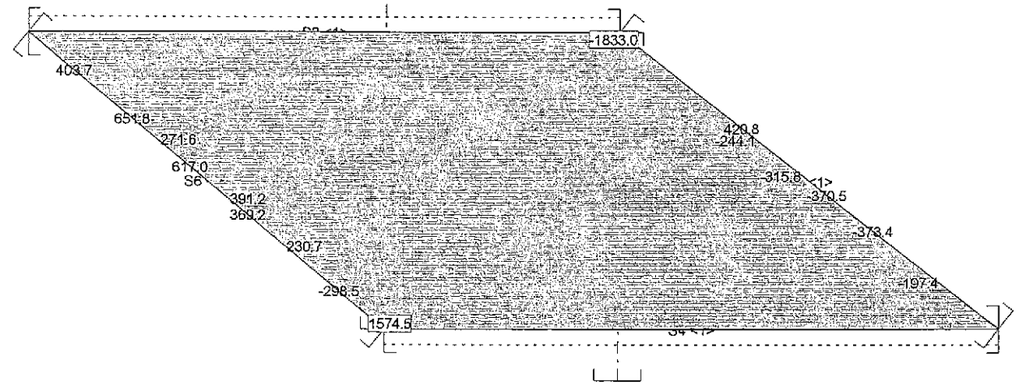
Solicitaciones mxy: Combinación de cargas ELU2, Equidistancia: 100.0 kN, Línea de referencia: 0.0 kN

Escala 1 :251.0



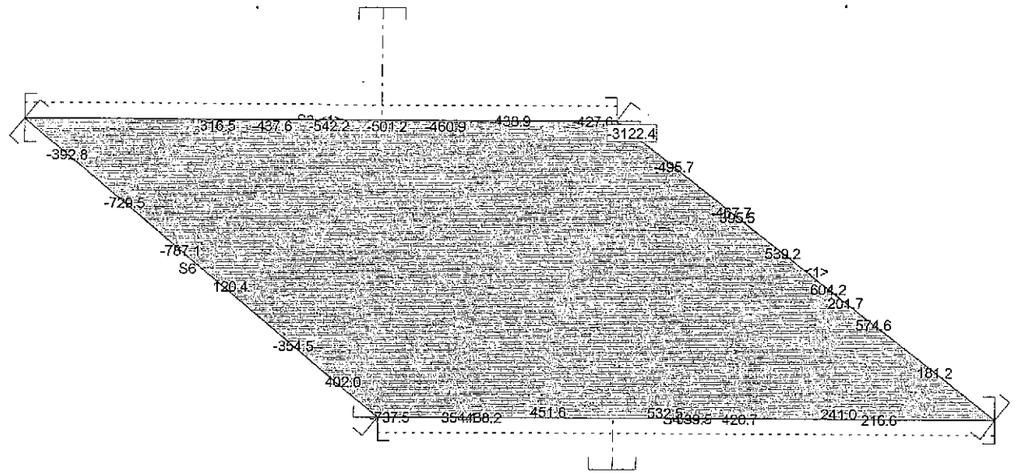
Solicitaciones vx: Combinación de cargas ELU2, Equidistancia: 500.0 kN/m

Escala 1 :249.3



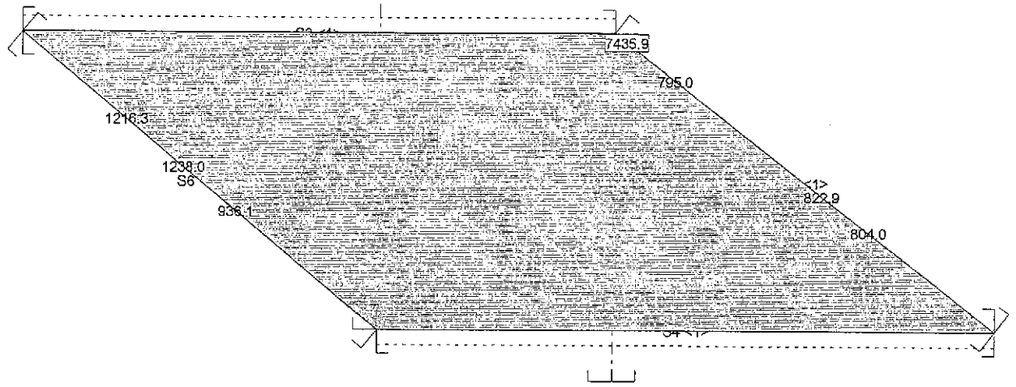
Solicitaciones vy: Combinación de cargas ELU2, Equidistancia: 500.0 kN/m

Escala 1 :249.3



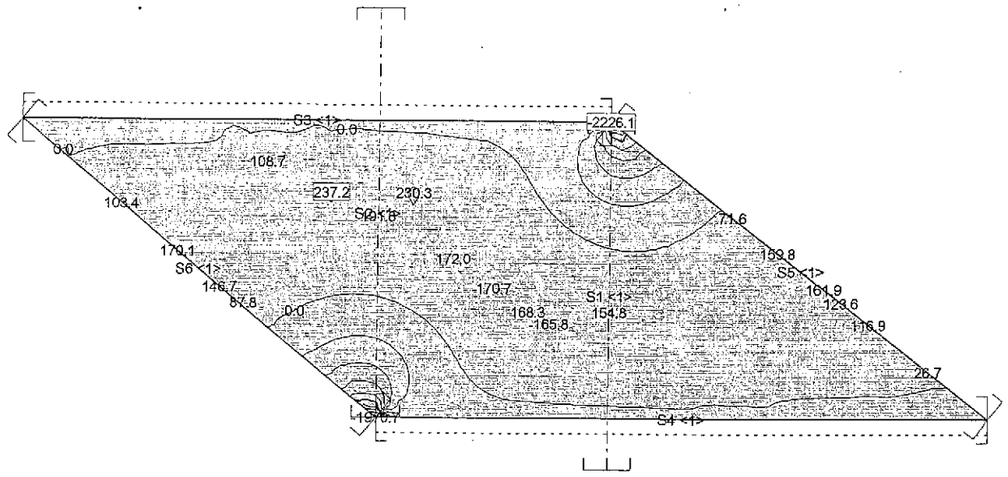
Solicitaciones vtot: Combinación de cargas ELU2, Equidistancia: 500.0 kN/m

Escala 1 :249.3



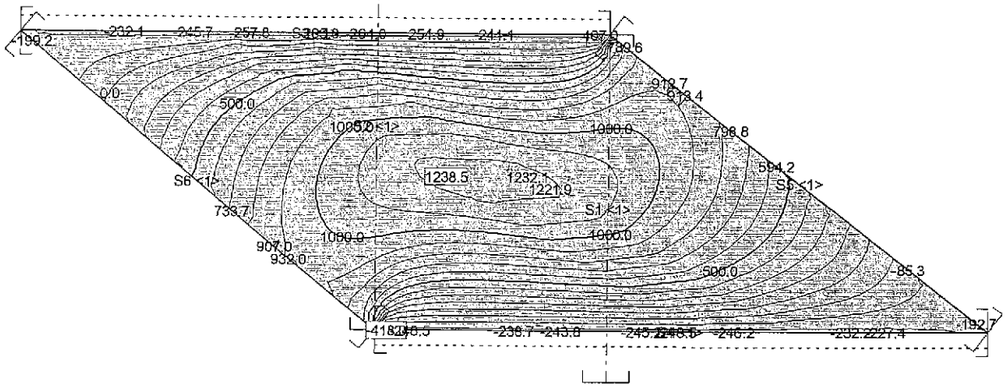
Solicitaciones mx: Combinación de cargas ELU3 DESC, Equidistancia: 200.0 kN, Línea de referencia: 0.0 kN

Escala 1 :249.3



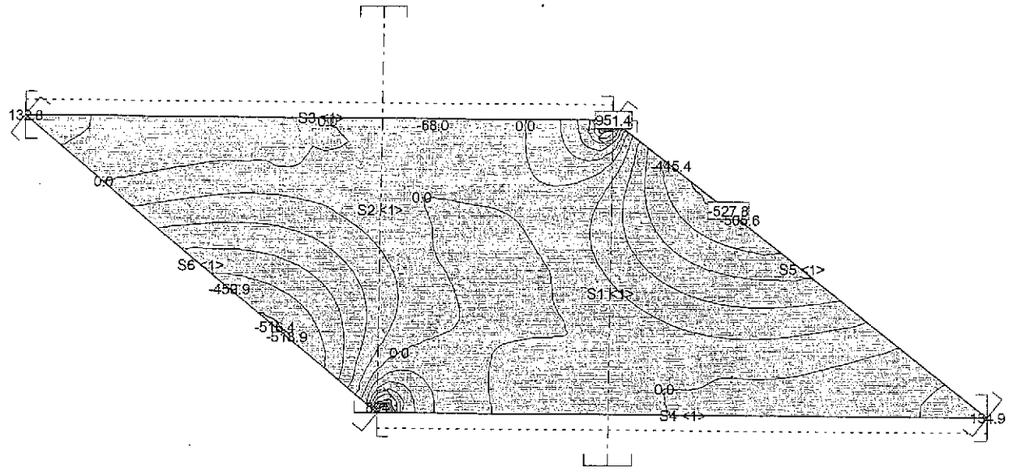
Solicitaciones mx: Combinación de cargas ELU3 DESC, Equidistancia: 100.0 kN, Línea de referencia: 0.0 kN

Escala 1 :249.3



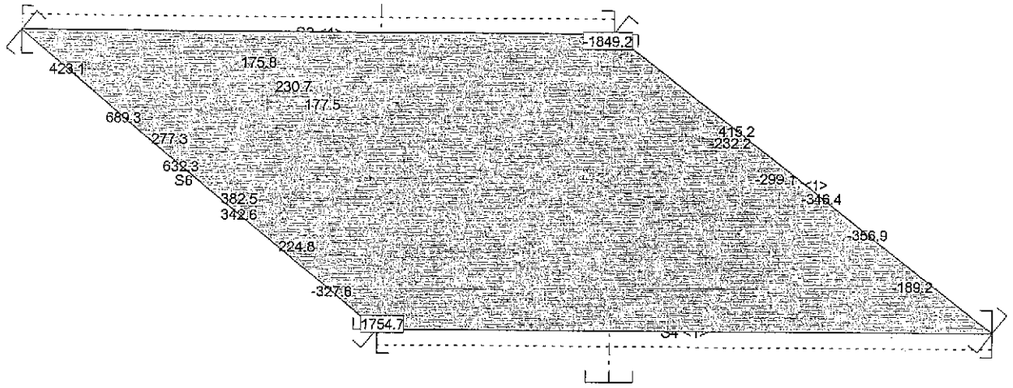
Solicitaciones mxy: Combinación de cargas ELU3 DESC, Equidistancia: 100.0 kN, Línea de referencia: 0.0 kN

Escala 1 :251.0



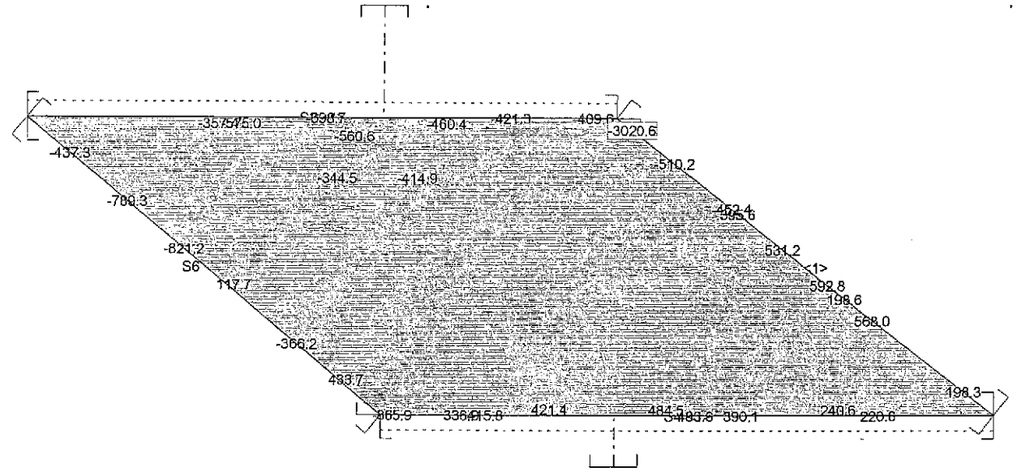
Solicitaciones vx: Combinación de cargas ELU3 DESC, Equidistancia: 500.0 kN/m

Escala 1 :249.3



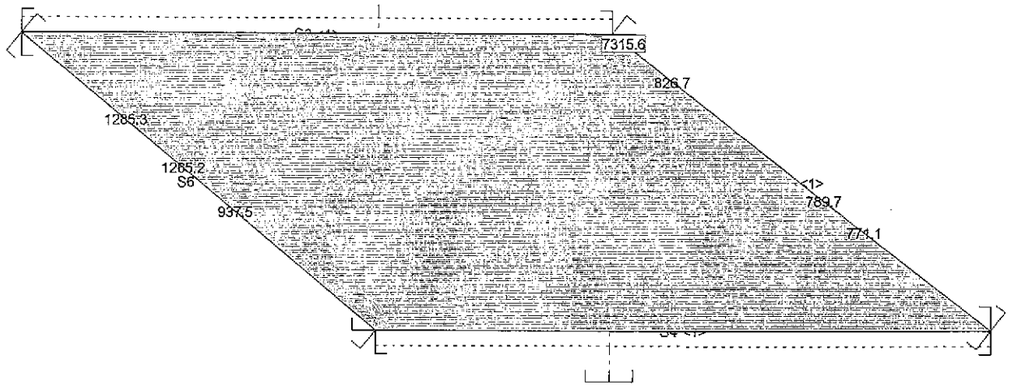
Solicitaciones vy: Combinación de cargas ELU3 DESC, Equidistancia: 500.0 kN/m

Escala 1 :249.3



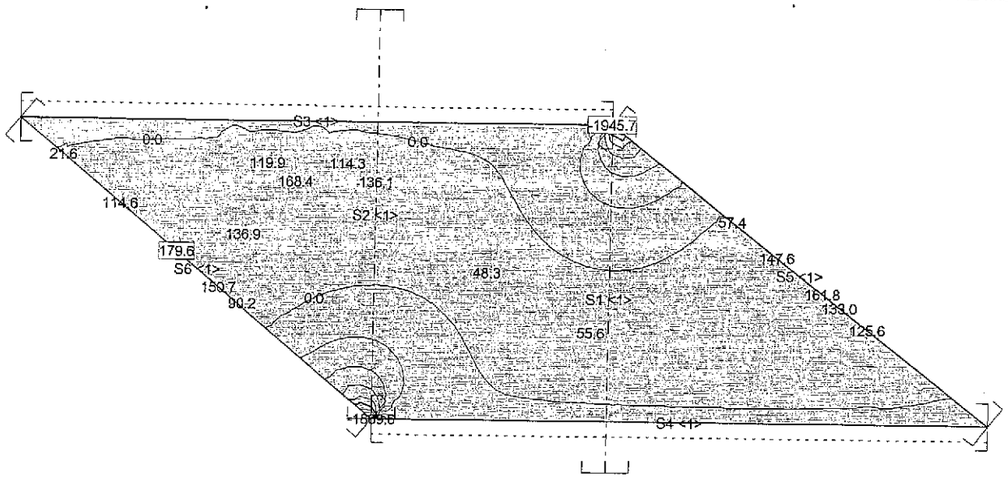
Solicitaciones vtot: Combinación de cargas ELU3 DESC, Equidistancia: 500.0 kN/m

Escala 1 :249.3



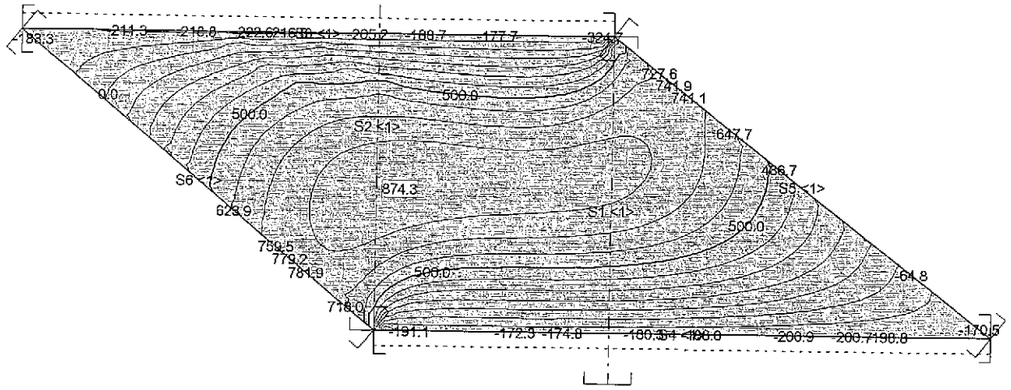
Solicitaciones mx: Combinación de cargas ELU 4 DESC, Equidistancia: 200.0 kN, Línea de referencia: 0.0 kN

Escala 1 :249.3



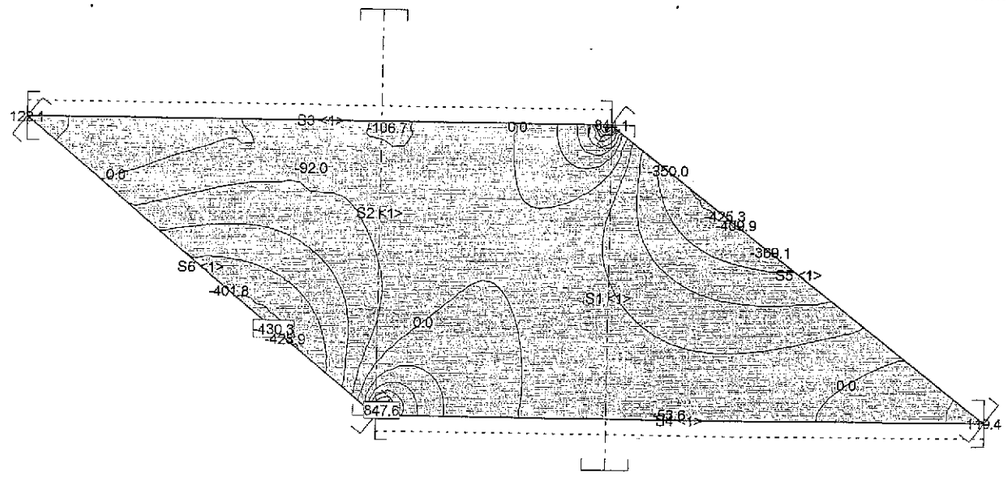
Solicitaciones mx: Combinación de cargas ELU 4 DESC, Equidistancia: 100.0 kN, Línea de referencia: 0.0 kN

Escala 1 :249.3



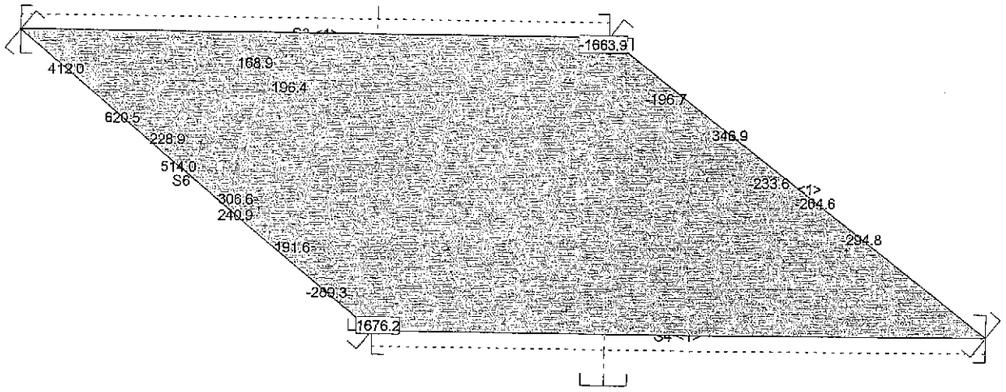
Solicitaciones mxy: Combinación de cargas ELU 4 DESC, Equidistancia: 100.0 kN, Línea de referencia: 0.0 kN

Escala 1 :251.0



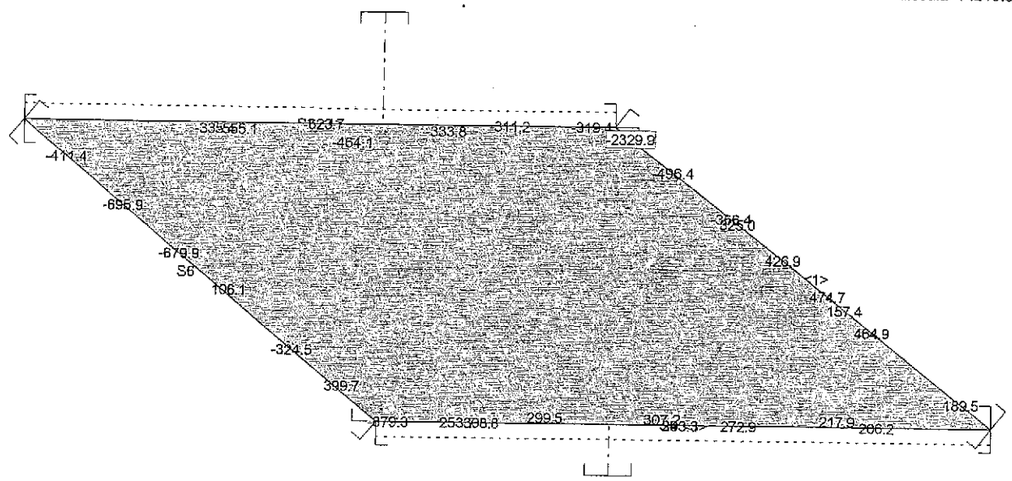
Solicitaciones vx: Combinación de cargas ELU 4 DESC, Equidistancia: 500.0 kN/m

Escala 1 :249.3



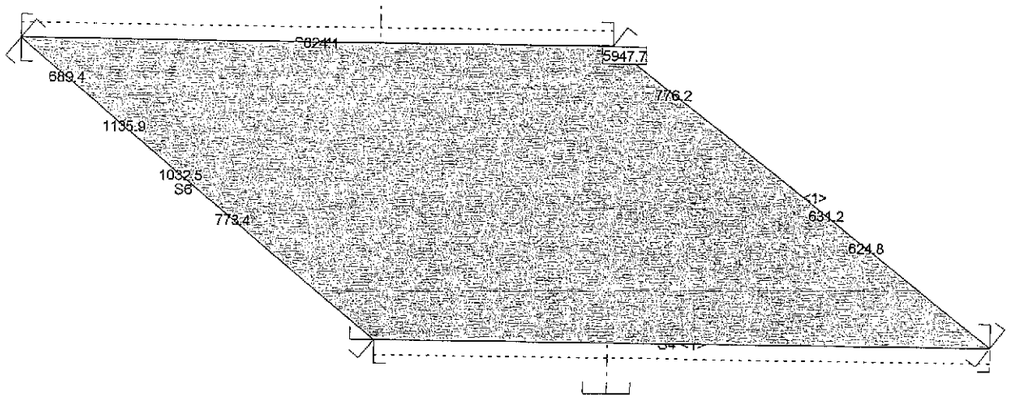
Solicitaciones vy: Combinación de cargas ELU 4 DESC, Equidistancia: 500.0 kN/m

Escala 1 :249.3



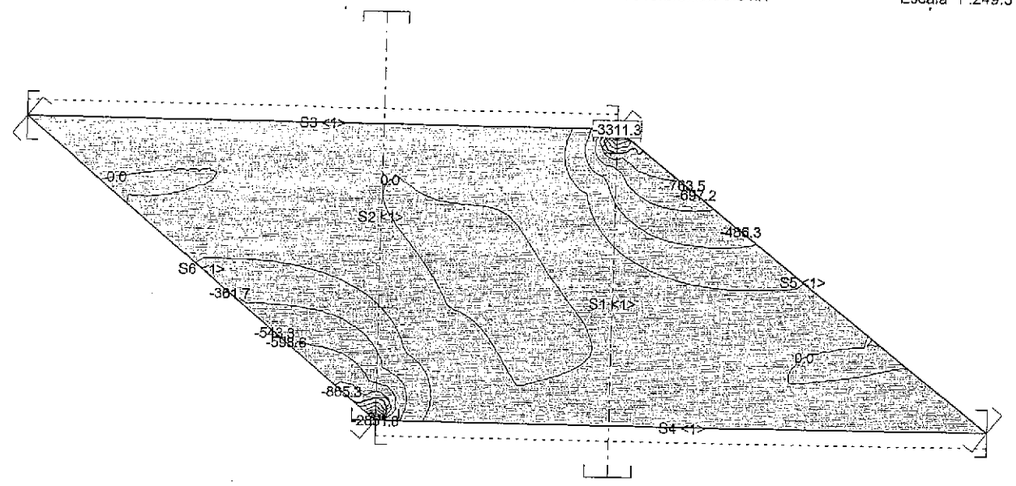
Solicitaciones vtot: Combinación de cargas ELU 4 DESC, Equidistancia: 500.0 kN/m

Escala 1 :249.3



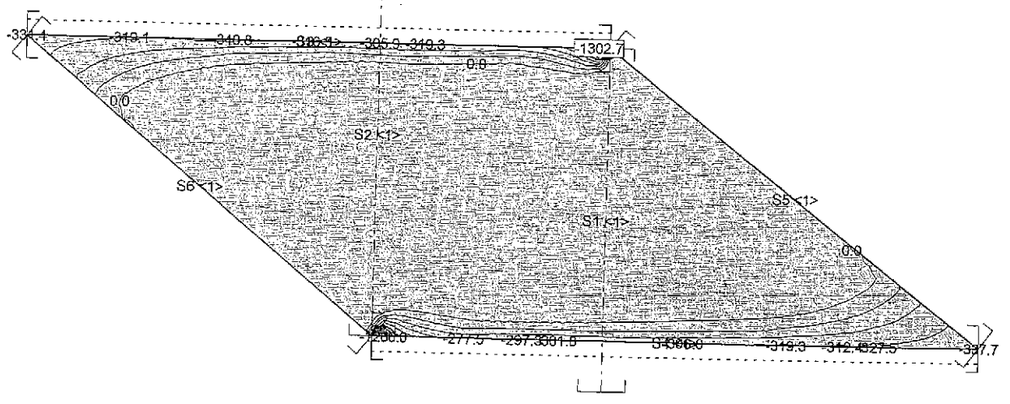
Momentos de dimensionamiento maxt: !Estado límite, Equidistancia: 200.0 kN, Línea de referencia: 0.0 kN

Escala 1 :249.3



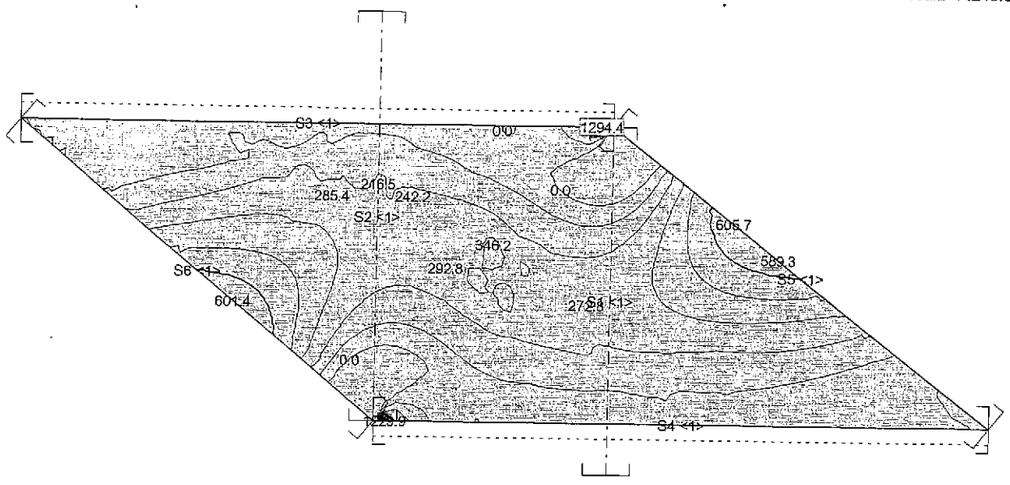
Momentos de dimensionamiento mayt: !Estado límite, Equidistancia: 100.0 kN, Línea de referencia: 0.0 kN

Escala 1 :252.2



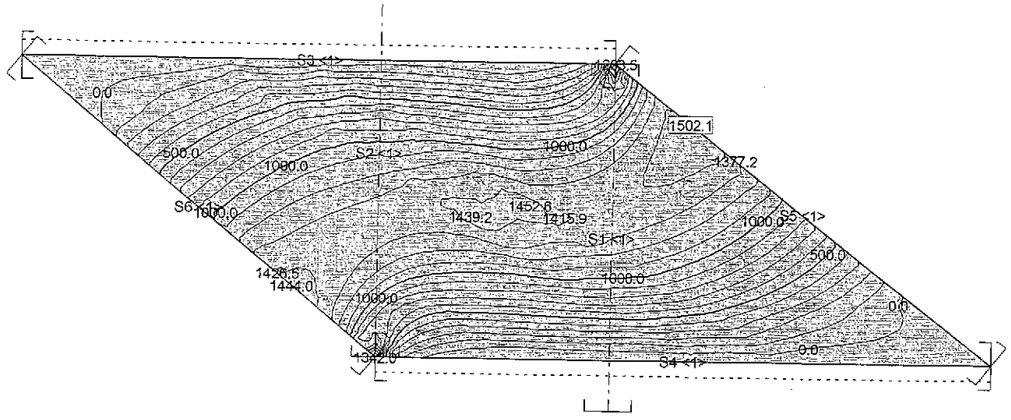
Momentos de dimensionamiento maxb: !Estado límite, Equidistancia: 100.0 kN, Línea de referencia: 0.0 kN

Escala 1 :249.3



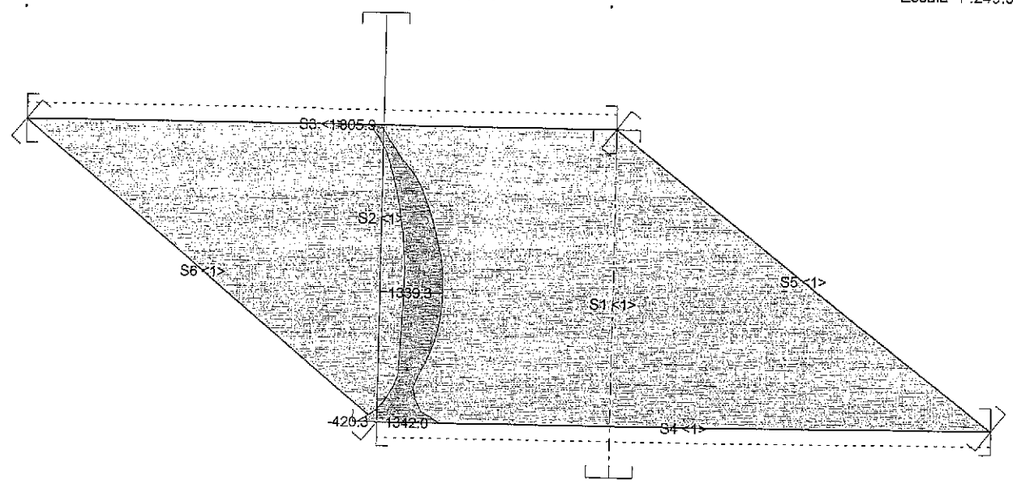
Momentos de dimensionamiento mayb: !Estado límite, Equidistancia: 100.0 kN, Línea de referencia: 0.0 kN

Escala 1 :249.3



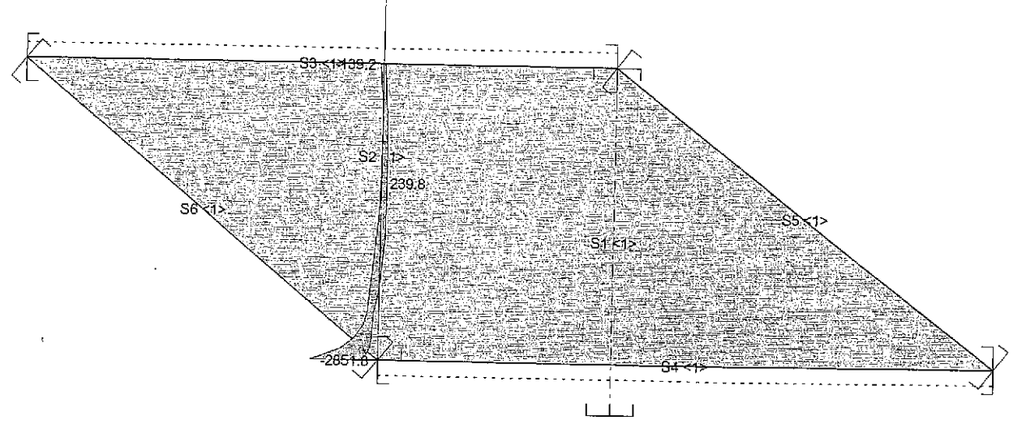
Sección(es): Envolventes Momentos de armadura Longitudinal [kN], !Estado límite

Escala 1 :249.3



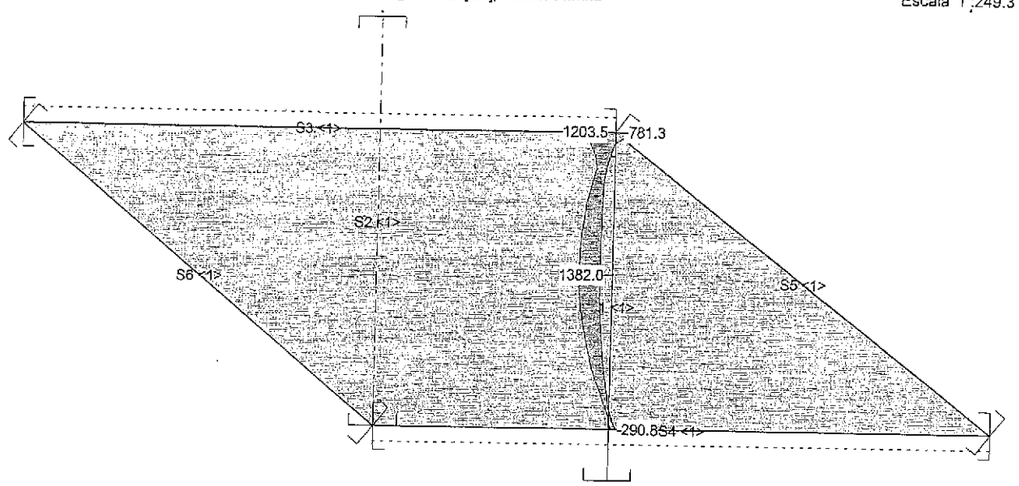
Sección(es): Envolventes Momentos de armadura Transversal [kN], !Estado límite

Escala 1 :249.3



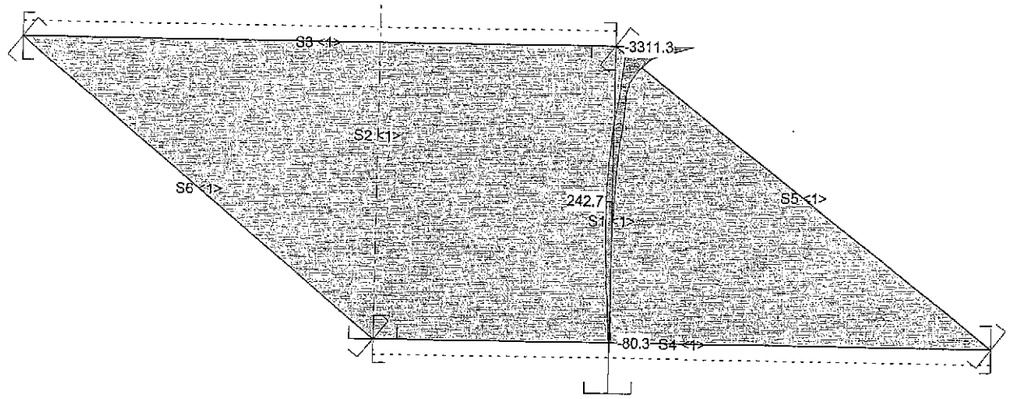
Sección(es): Envolventes Momentos de armadura Longitudinal [kN], !Estado límite

Escala 1 :249.3



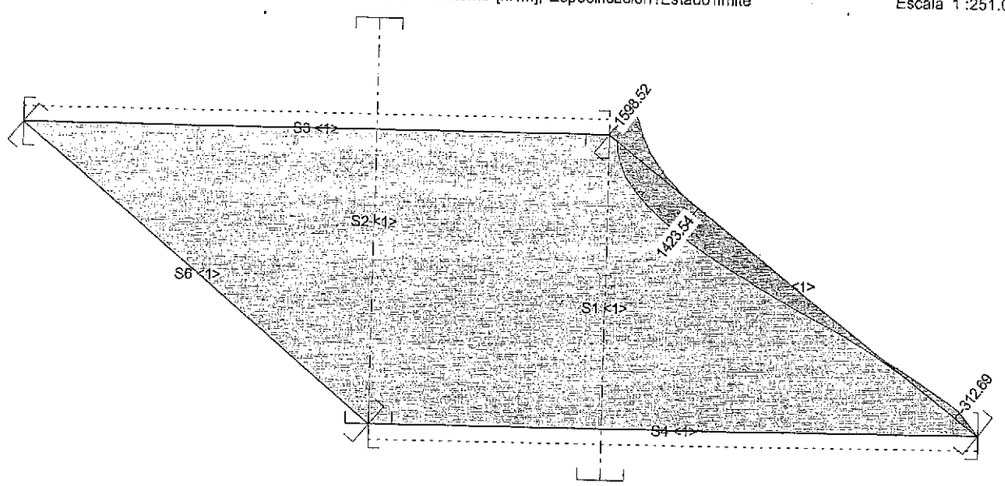
Sección(es): Envolventes Momentos de armadura Transversal [kN], !Estado límite

Escala 1 :249.3



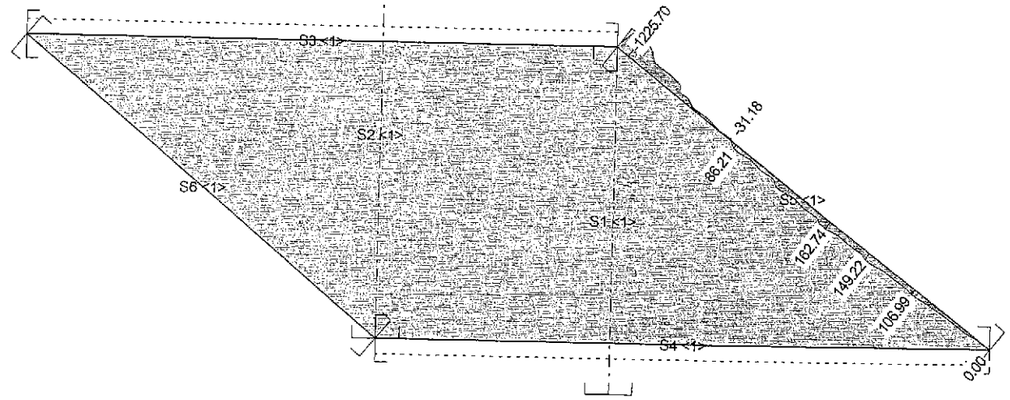
Sección(es) de viga: Envolvente de momentos de dimensionamiento [kNm], Especificación !Estado límite

Escala 1 :251.0



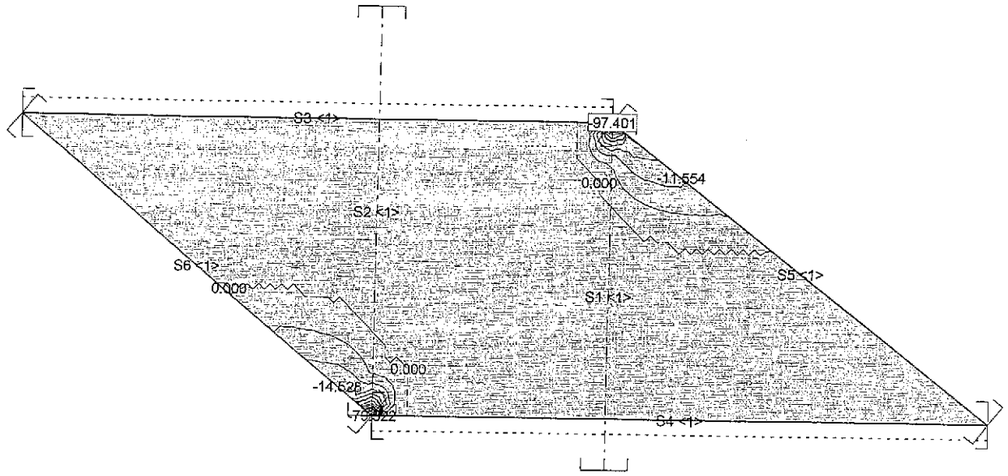
Sección(es) de viga: Envolvente de esfuerzos de corte [kN], Especificación !Estado límite

Escala 1 :249.3



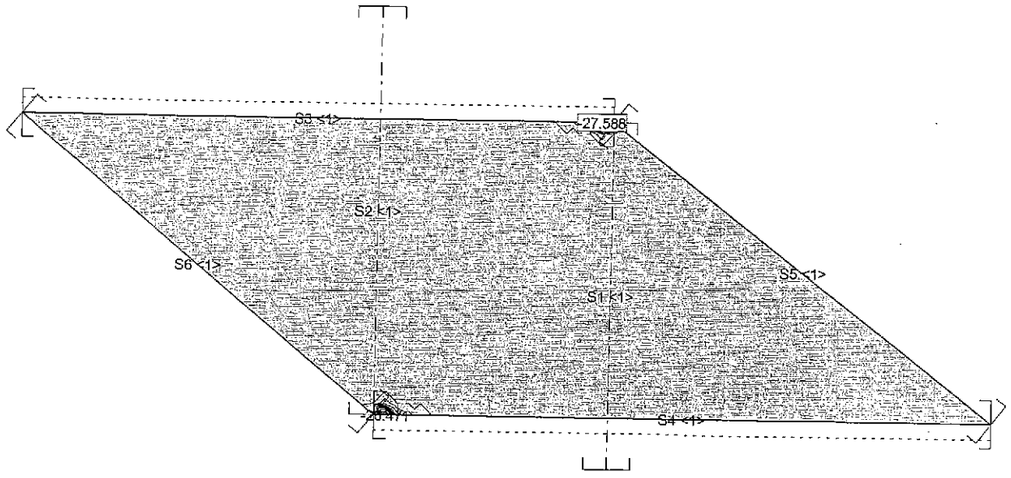
Secciones de armaduras axt (Adicional a la armadfura base) :
Equidistancia: 5.000 cm2/m, Línea de referencia: 0.000 cm2/m
Especificación: !Estado límite, H300, AEH500, ?c=1.50, ?s=1.15

Escala 1 :249.3



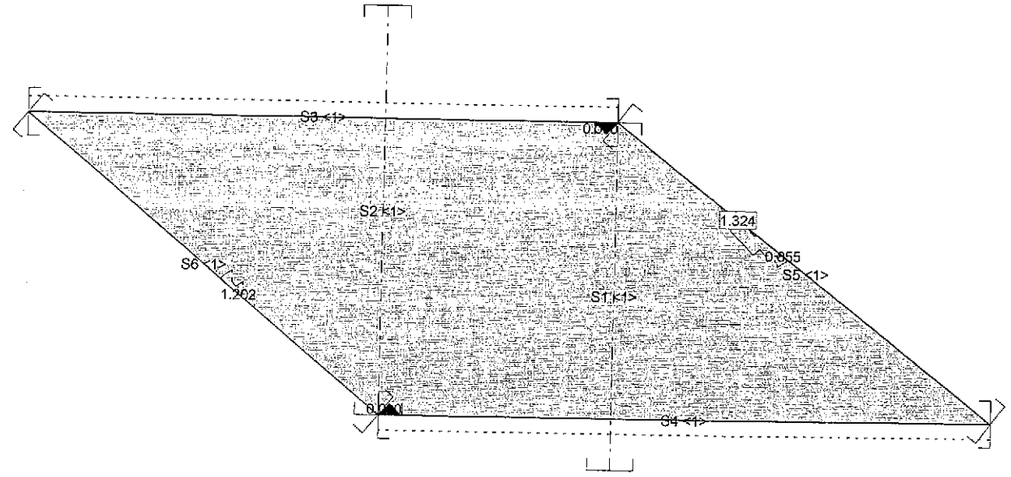
Secciones de armaduras ayt (Adicional a la armadfura base) :
Equidistancia: 2.000 cm2/m, Línea de referencia: 0.000 cm2/m
Especificación: !Estado límite, H300, AEH500, ?c=1.50, ?s=1.15

Escala 1 :249.3



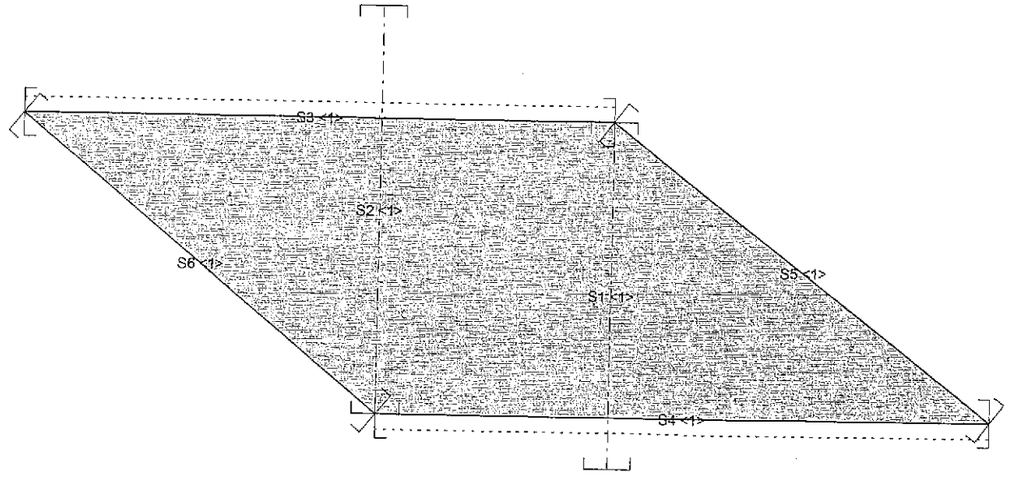
Secciones de armaduras axb (Adicional a la armadfura base) :
Equidistancia: 1.000 cm2/m, Línea de referencia: 0.000 cm2/m
Especificación: !Estado límite, H300, AEH500, ?c=1.50, ?s=1.15

Escala 1 :249.3



Secciones de armaduras ayb (Adicional a la armadfura base) :
Equidistancia: 10000.000 cm2/m, Línea de referencia: 0.000 cm2/m
Especificación: !Estado límite, H300, AEH500, ?c=1.50, ?s=1.15

Escala 1 :249.3



ESPECIFICACION DE ENVOLVENTES Código: EH 91 (Combinación según el código EC2)

ACCIÓN: !Peso propio
Permanente
Plus Permanete

L1: [1.00] PESO PROPIO
L2: [1.00] BALASTO
L3: [1.00] HORMIGON DE FORMA
L4: [1.00] TIERRAS
L5: [1.00] MURETES
L6: [1.00] CARRILES Y TRAVIESAS
L7: [1.00] BARANDILLAS, IMPOSTA,ETC

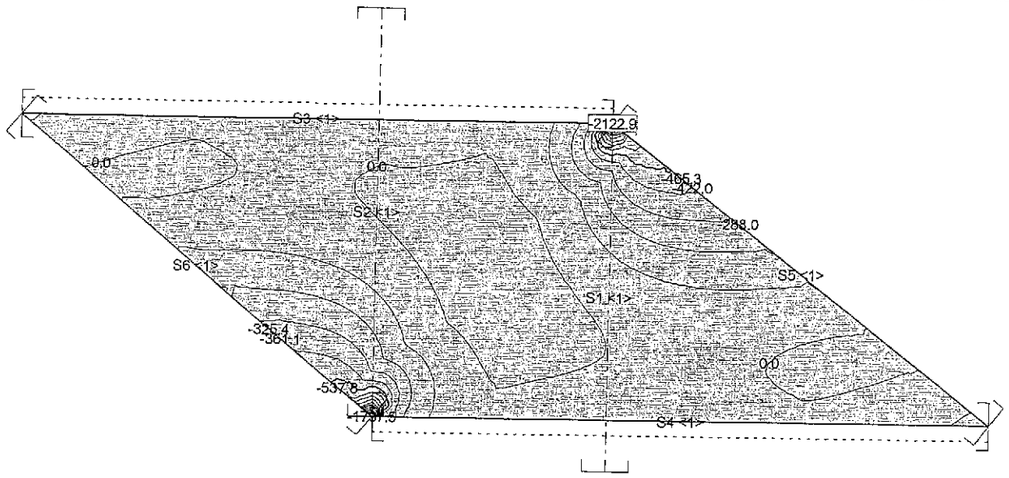
ACCIÓN: !Sobrecargas

Plus si es crítica	L9: [1.00] SC ACERAS
Plus si es crítica	
Y	L8: [1.00] SC IAPF99
O	L10: [1.00] SC IAPF75
O	L11: [1.00] SC IAPF B
O	L12: [1.00] SC IAPF99 DESCENTRADA
O	L13: [1.00] SC IAPF75 A DESC

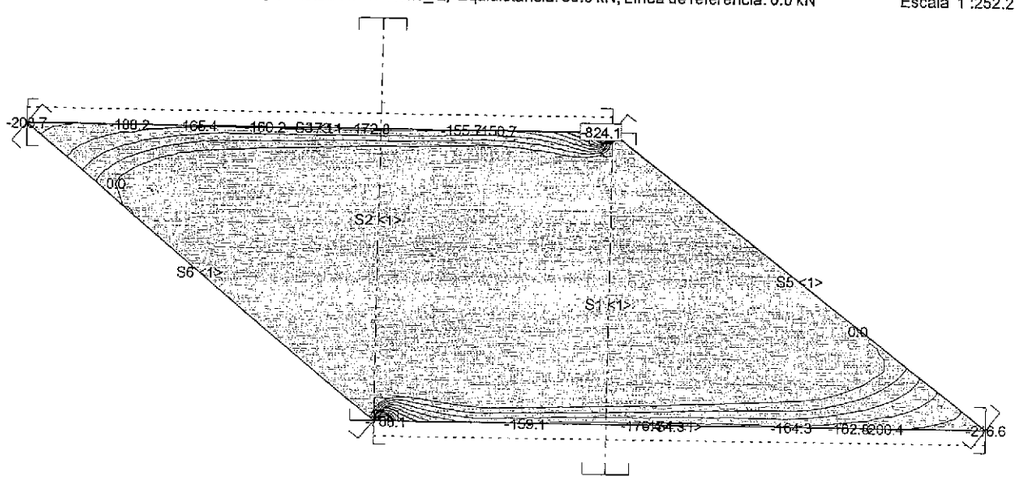
ESPECIFICACIÓN DE ENVOLVENTES: !Estado de servicio_Q
Tipo de verificación: Estado de servicio: Combinación casi permanete

Acciones		Combinaciones
Nr	Name	1
1	!Peso propio	1
2	!Sobrecargas	0.3

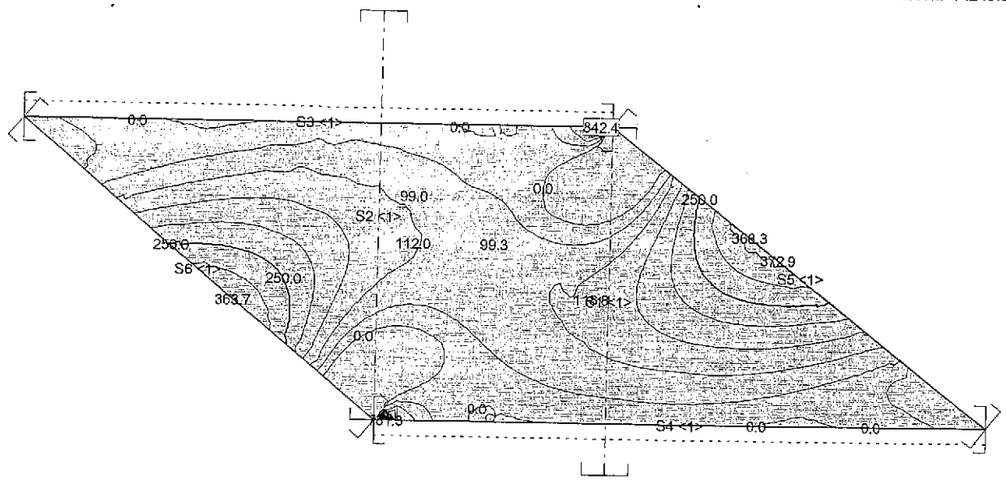
Momentos de dimensionamiento maxt: !Estado de servicio_Q, Equidistancia: 100.0 kN, Línea de referencia: 0.0 kN Escala 1 :249.3



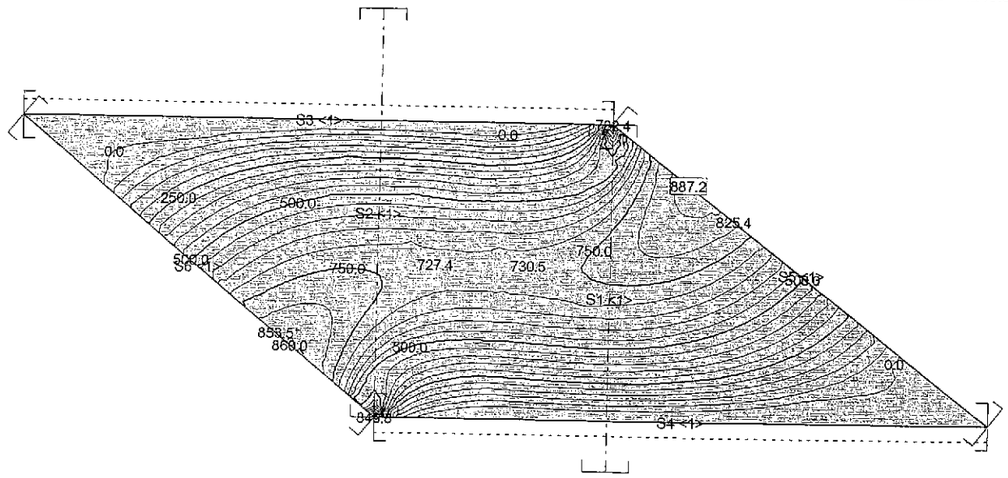
Momentos de dimensionamiento mayt: !Estado de servicio_Q, Equidistancia: 50.0 kN, Línea de referencia: 0.0 kN Escala 1 :252.2



Momentos de dimensionamiento maxb: !Estado de servicio_Q, Equidistancia: 50.0 kN, Línea de referencia: 0.0 kN Escala 1 :249.3



Momentos de dimensionamiento mayb: !Estado de servicio_Q, Equidistancia: 50.0 kN, Línea de referencia: 0.0 kN Escala 1 :249.3



ESPECIFICACION DE ENVOLVENTES Código: EH 91 (Combinación según el código EC2)

ACCIÓN: !Peso propio

Permanente	L1: [1.00] PESO PROPIO
Plus Permanete	L2: [1.00] BALASTO
	L3: [1.00] HORMIGON DE FORMA
	L4: [1.00] TIERRAS
	L5: [1.00] MURETES
	L6: [1.00] CARRILES Y TRAVIESAS
	L7: [1.00] BARANDILLAS, IMPOSTA,ETC

ACCIÓN: !Sobrecargas

Plus si es crítica	L9: [1.00] SC ACERAS
Plus si es crítica	
Y	L8: [1.00] SC IAPF99
O	L10: [1.00] SC IAPF75
O	L11: [1.00] SC IAPF B
O	L12: [1.00] SC IAPF99 DESCENTRADA
O	L13: [1.00] SC IAPF75 A DESC

ESPECIFICACIÓN DE ENVOLVENTES: !Estado de servicio_H
Tipo de verificación: Estado de servicio: Combinación frecuente

Acciones		Combinaciones
Nr	Name	1
1	!Peso propio	1
2	!Sobrecargas	0.5

ESPECIFICACION DE ENVOLVENTES

Código: EH 91 (Combinación según el código EC2)

ACCIÓN: !Peso propio

Permanente	L1: [1.00] PESO PROPIO
Plus Permanete	L2: [1.00] BALASTO
	L3: [1.00] HORMIGON DE FORMA
	L4: [1.00] TIERRAS
	L5: [1.00] MURETES
	L6: [1.00] CARRILES Y TRAVIESAS
	L7: [1.00] BARANDILLAS, IMPOSTA,ETC

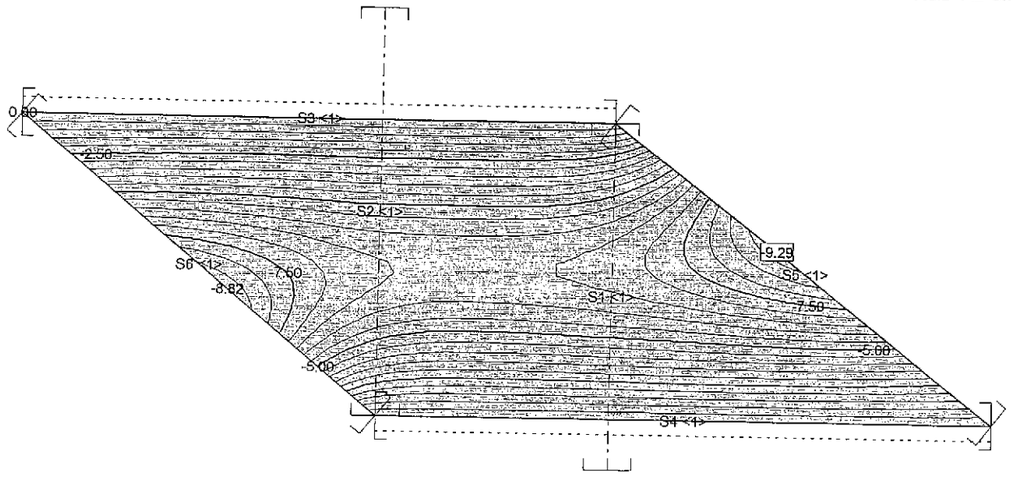
ACCIÓN: !Sobrecargas

Plus si es crítica	L9: [1.00] SC ACERAS
Plus si es crítica	
Y	L8: [1.00] SC IAPF99
O	L10: [1.00] SC IAPF75
O	L11: [1.00] SC IAPF B
O	L12: [1.00] SC IAPF99 DESCENTRADA
O	L13: [1.00] SC IAPF75 A DESC

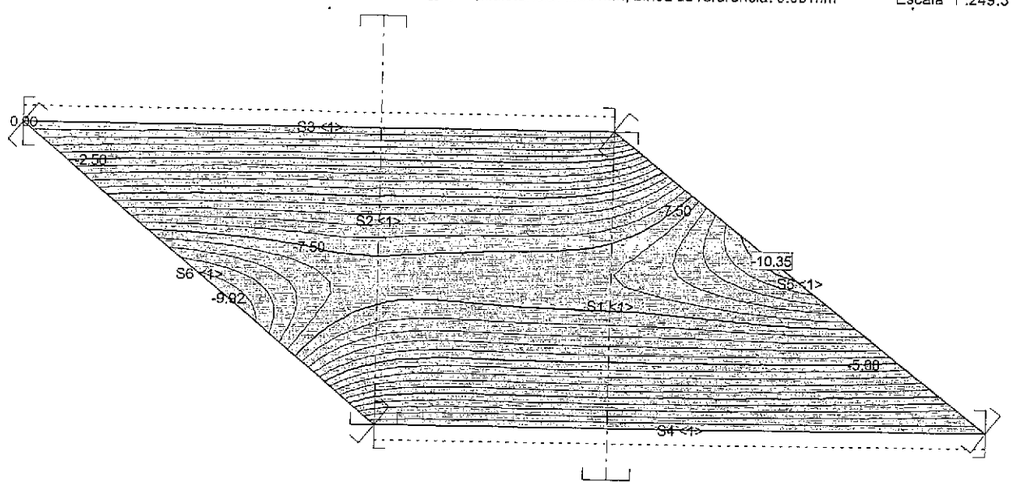
ESPECIFICACIÓN DE ENVOLVENTES: !Estado de servicio_S
Tipo de verificación: Estado de servicio: Combinación poco frecuente

Acciones		Combinaciones
Nr	Name	1
1	!Peso propio	1
2	!Sobrecargas	1

Envolvente de deformaciones: Mínima: !Estado de servicio_H, Equidistancia: 0.50 mm, Línea de referencia: 0.00 mm Escala 1 :249.3



Envolvente de deformaciones: Mínima: !Estado de servicio_S, Equidistancia: 0.50 mm, Línea de referencia: 0.00 mm Escala 1 :249.3



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

Obra: PASO INFERIOR LAV
Fecha: 27/10/2003
Hora: 20:20:13

Cálculo de secciones a cortante

1 Datos

- Materiales

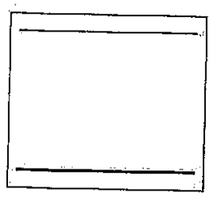
Tipo de hormigón : HA-30
Tipo de acero : B-500-S
fck [MPa] = 30.00
fyk [MPa] = 500.0
?c = 1.50
?s = 1.15

- Tipo de elemento estructural

Tipo : elemento con armadura a cortante

- Sección

Sección : LOSA
b [m] = 1.00
h [m] = 0.90



2 Comprobación

Tipo de armadura: cercos a 90.0º
separación s [m] = 0.10
? [mm] = 12
nº ramas: 4
Area [cm²/m] = 45.2
? [·1.E-3] = 7

Inclinación de las bielas ?[º] = 45
Nd [kN] = 0.0
?yd [MPa] = 0

Vu1 [kN] = 4860.0
Vu2 [kN] = 1655.5
Vcu [kN] = 334.5
Vsu [kN] = 1321.0

- Resistencia a cortante:

Vu [kN] = 1655.5

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

Obra: PASO INFERIOR LAV
Fecha: 27/10/2003
Hora: 20:22:52

Comprobación del Estado Límite de Servicio de fisuración debido a solicitaciones normales

1 Datos

- Materiales

Tipo de hormigón: HA-30
Tipo de acero: B-500-S
fck [MPa] = 30.00
fyk [MPa] = 500.0

- Ambiente

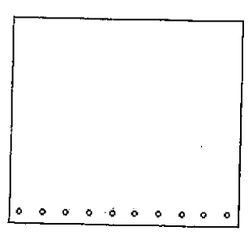
Clase general de exposición : IIb
Clases específicas de exposición :

- Geometría de la sección

Sección : LOSA
b [m] = 1.00
h [m] = 0.90

- Armado de la sección

? [mm] = 25



capa	nº barras	Separación [mm]
1	10	47.50

As [cm²] = 49.1
Ac,ef [cm²] = 2.25E3

2 Resultados

Mk [kN·m] = 887.2

Separación media entre fisuras sm [mm] = 148.0
Deformación media de las armaduras ?sm [·1.E-3] = 1.01
Tensión en las armaduras en el instante de fisuración ?sr [MPa] = 114.4
Tensión en las armaduras en servicio ?s [MPa] = 230.6
Abertura característica de fisura wk [mm] = 0.25

Clase de exposición	wk max [mm]	
	Armado	Pretensado
I	0.4	0.2
IIa, IIb, H	0.3	0.2
IIIa, IIIb, IV, F	0.3	Decompresión
IIIc, Qa, Qb, Qc	0.1	

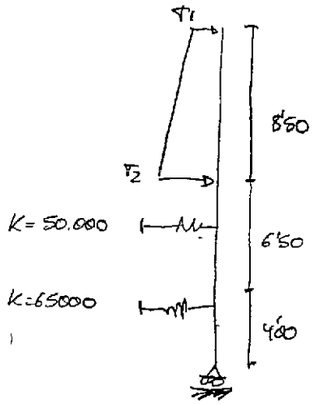
DIMENSIONAMIENTO DE PANTALLAS

VALTER valenciana de estructuras

Proyecto RAMAL VALLÈS - BARCELONA

Asunto PANTALLA

☐ PANTALLA HLIBRE = 8-6 m L = 12'00 m EN VOLADIZO

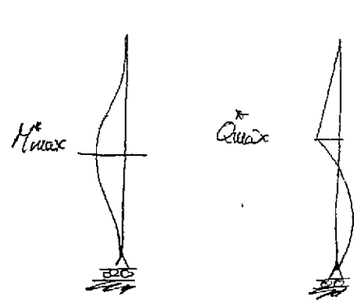


$\sigma_1 = ka \cdot q = 0'36\ t/m^2$

$\sigma_2 = ka(h \cdot b \cdot \gamma + q) = 0'36(8'5 \cdot 1 \cdot 1'9 + 1) = 6'174\ t/m^2$

$q = 1\ t/m^2$

ESFUERZOS OBTENIDOS



$M^*_{max,d} = 1309'24\ KN \cdot m$

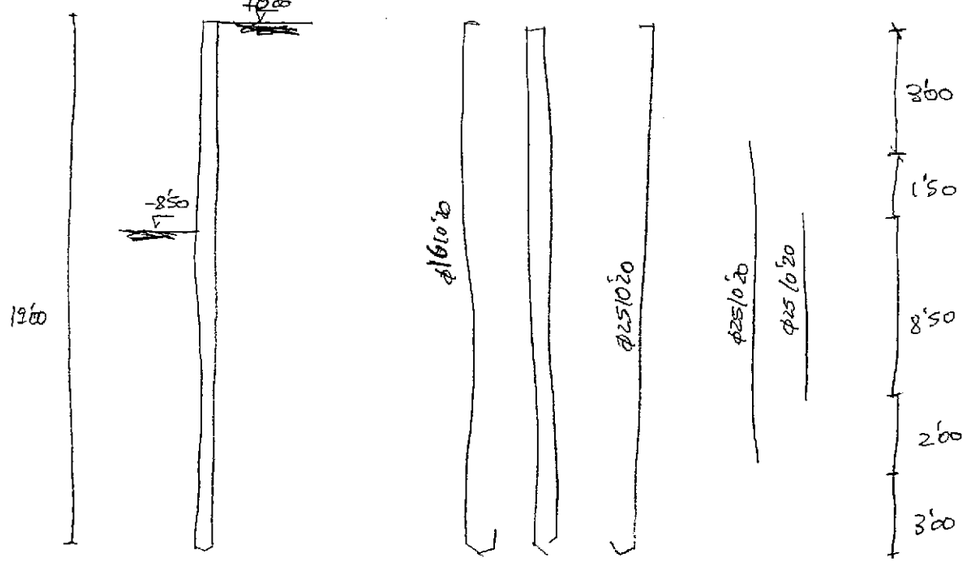
$N^*_d = -206'75\ KN$

$N^*_{max,d} = -392'83\ KN$

$Q^*_{max,d} = -414'82\ KN$

$\Rightarrow As = \phi 25\,10'20 + \phi 25\,10'10$

ARMADO PROPUESTO



Fecha

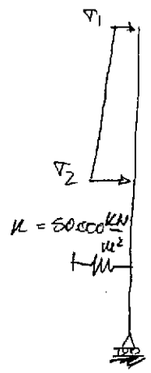
Hoja Nº De

VALTER valenciana de estructuras

Proyecto RAMAL VALLÈS - BARCELONA

Asunto PANTALLA

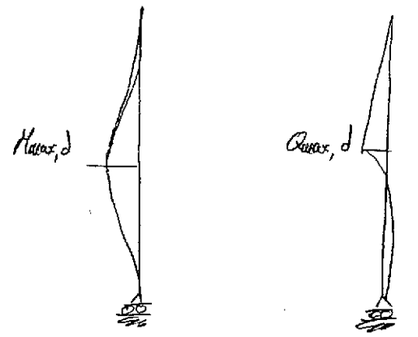
☐ PANTALLA HLIBRE = 6-4 m L = 12'00 EN VOLADIZO E=0'65 m



$\sigma_1 = ka \cdot q = 0'36\ t/m^2$

$\sigma_2 = ka(6 \cdot 1 \cdot 1'9 + 1) = 4'464\ t/m^2$

ESFUERZOS OBTENIDOS



$M_{max,d} = 533\ KN \cdot m$

$N_d = -144'73\ KN$

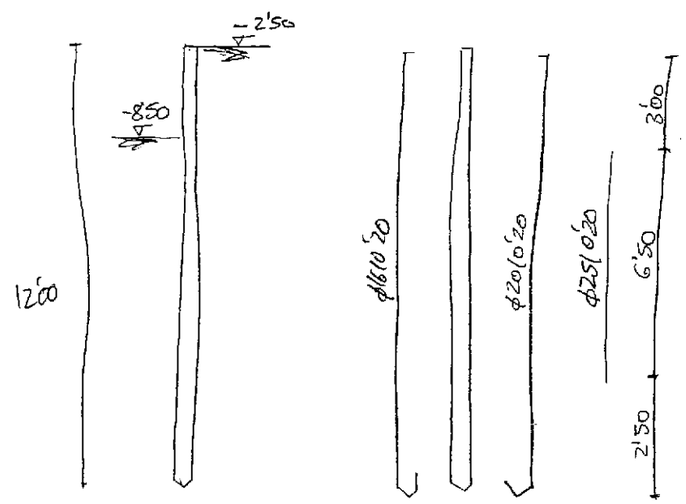
$N_{max,d} = 248'10\ KN$

$Q_{max,d} = 216'22\ KN$

$\Rightarrow As = \phi 25\,10'20 + \phi 20\,10'20$

$\Rightarrow C\phi 12\,10'20\,10'20$

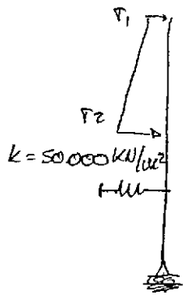
ARMADO PROPUESTO



Fecha

Hoja Nº De

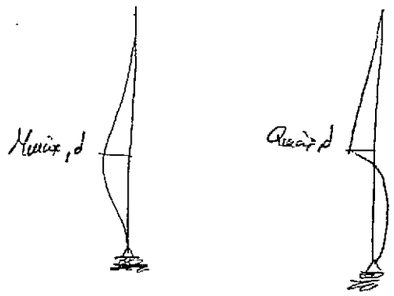
☐ PANTALLA H LIBRE = 4-2 m L = 8'00 m EN VOLADIZO E = 0'40 m



$\sigma_1 = 0'36\ t/m^2$

$\sigma_2 = k_a (4\ 1.1'9 + 1) - 3'096\ t/m^2$

ESFUERZOS OBTENIDOS



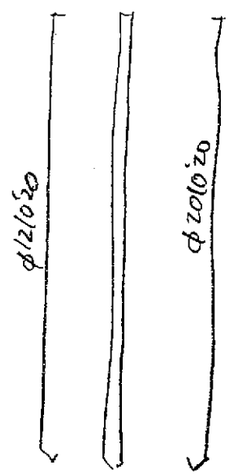
$M_{máx,d} = 154'44\ KN \cdot m$ ⇒ As = φ 20 10'20

$N_d = 68'6\ KN$

$N_{max,d} = 101'79\ KN$

$Q_{max,d} = 103'3\ KN$ ⇒ c φ 10/0'15 10'20

ARMADO PROPUESTO



☐ TOPE ESTRUCTURAL.

$T_e = \alpha \cdot f_{yk} \cdot S_a + \beta \cdot f_{ck} \cdot S_b + \chi \cdot f_{y'k} \cdot S_c$

Sa : área de acero Sa = 99'35 cm²/m

Sb : " " hormigón Sb = 6500 cm²

Sc : " " camisa metálica Sc = 0

f_{yk} : resistencia caract. de armaduras $f_{yk} = 3500\ kg/cm^2$

f_{ck} : " " " hormigón $f_{ck} = 225\ kg/cm^2$ (in situ)

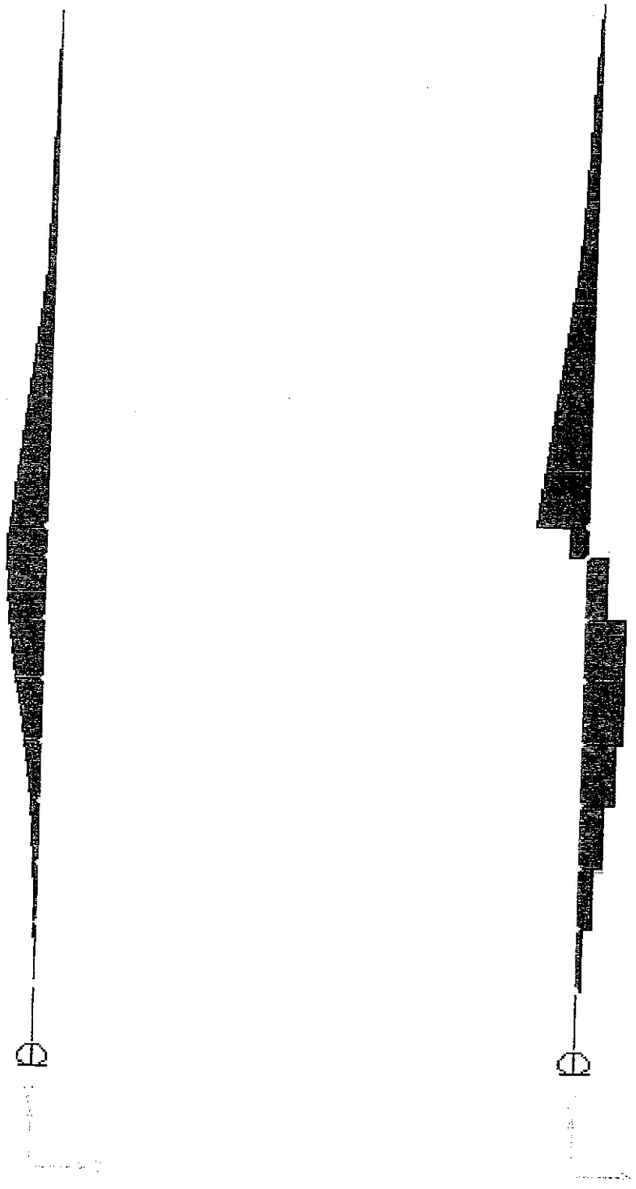
$\alpha = 0'32$, $\beta = 0'2$ } Pantalla hormigonada in situ con lodos bentoníticos

$T_e = 403'77\ t = 4037'7\ KN$

$N_{máx} = 393\ KN << T_e$ (OK!)

MODELO PANTALLA 1

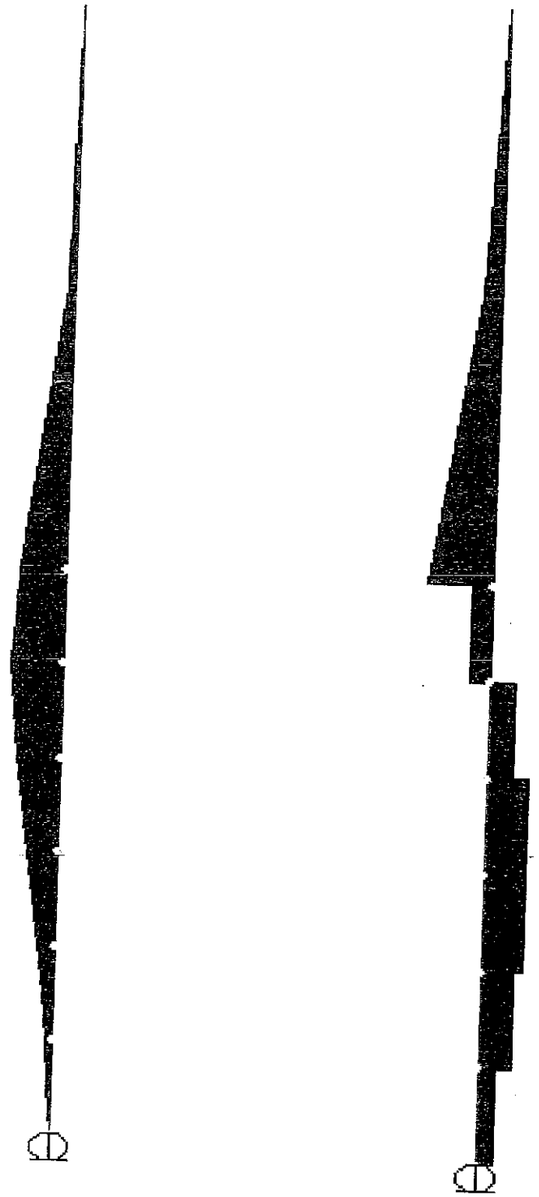
LEY DE ESFUERZOS FLECTORES Y CORTANTES





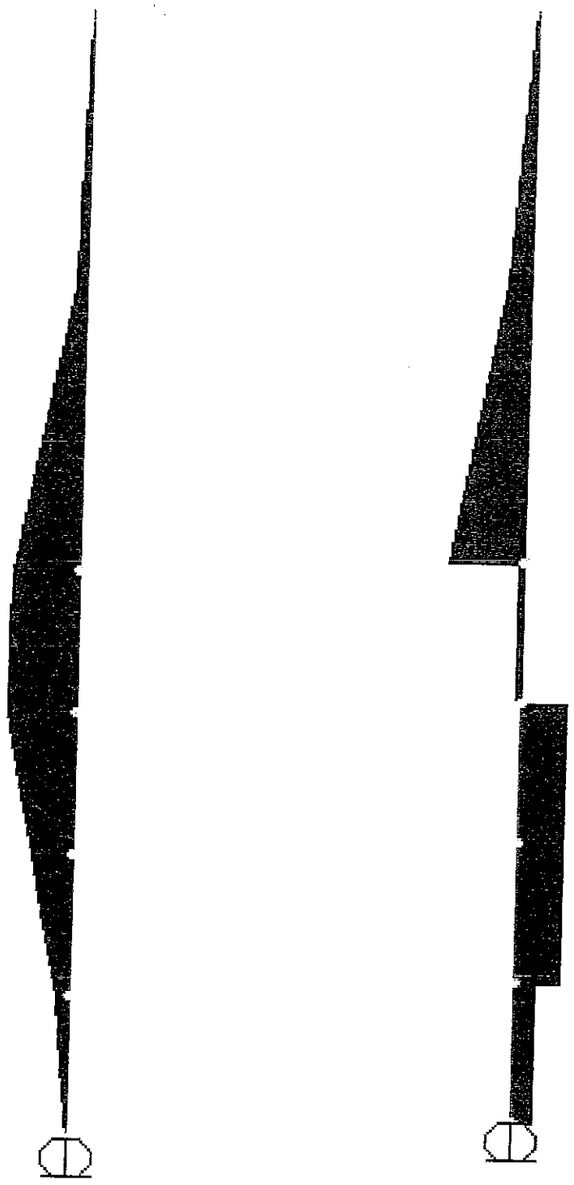
MODELO PANTALLA 2

LEY DE ESFUERZOS FLECTORES Y CORTANTES



MODELO PANTALLA 3

LEY DE ESFUERZOS FLECTORES Y CORTANTES



PANTALLA KN-m Units PAGE 1
11/3/03 18:23:02

S T A T I C L O A D C A S E S

STATIC CASE	CASE TYPE	SELF WT FACTOR
LOAD1	DEAD	1,0000
EMPUJE	LIVE	0,0000
FRENADO	LIVE	0,0000
EXCENTRI	LIVE	0,0000
RETRTEM	LIVE	0,0000

PANTALLA KN-m Units PAGE 2
11/3/03 18:23:02

J O I N T D A T A

JOINT	GLOBAL-X	GLOBAL-Y	GLOBAL-Z	RESTRAINTS	ANGLE-A	ANGLE-B	ANGLE-C
1	0,00000	0,00000	19,00000	0 0 0 0 0 0	0,000	0,000	0,000
11	0,00000	0,00000	10,00000	0 0 0 0 0 0	0,000	0,000	0,000
12	0,00000	0,00000	9,00000	0 0 0 0 0 0	0,000	0,000	0,000
13	0,00000	0,00000	8,00000	0 0 0 0 0 0	0,000	0,000	0,000
14	0,00000	0,00000	7,00000	0 0 0 0 0 0	0,000	0,000	0,000
15	0,00000	0,00000	6,00000	0 0 0 0 0 0	0,000	0,000	0,000
16	0,00000	0,00000	5,00000	0 0 0 0 0 0	0,000	0,000	0,000
17	0,00000	0,00000	4,00000	0 0 0 0 0 0	0,000	0,000	0,000
18	0,00000	0,00000	3,00000	0 0 0 0 0 0	0,000	0,000	0,000
19	0,00000	0,00000	2,00000	0 0 1 0 0 0	0,000	0,000	0,000
21	0,00000	0,00000	10,50000	0 0 0 0 0 0	0,000	0,000	0,000

PANTALLA KN-m Units PAGE 3
11/3/03 18:23:02

J O I N T S P R I N G D A T A

JOINT	K-U1	K-U2	K-U3	K-R1	K-R2	K-R3
17	65000,000	0,000	0,000	0,000	0,000	0,000
18	65000,000	0,000	0,000	0,000	0,000	0,000
19	65000,000	0,000	0,000	0,000	0,000	0,000
13	50000,000	0,000	0,000	0,000	0,000	0,000
14	50000,000	0,000	0,000	0,000	0,000	0,000
15	50000,000	0,000	0,000	0,000	0,000	0,000
16	50000,000	0,000	0,000	0,000	0,000	0,000
12	50000,000	0,000	0,000	0,000	0,000	0,000
11	37500,000	0,000	0,000	0,000	0,000	0,000
21	25000,000	0,000	0,000	0,000	0,000	0,000

PANTALLA KN-m Units PAGE 4
11/3/03 18:23:02

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

FRAME	JNT-1	JNT-2	SECTION	ANGLE	RELEASES	SEGMENTS	R1	R2	FACTOR	LENGTH
8	1	21	PANTALLA	0,000	000000	2	0,000	0,000	1,000	8,500
11	11	12	PANTALLA	0,000	000000	2	0,000	0,000	1,000	1,000
12	12	13	PANTALLA	0,000	000000	2	0,000	0,000	1,000	1,000
13	13	14	PANTALLA	0,000	000000	2	0,000	0,000	1,000	1,000
14	14	15	PANTALLA	0,000	000000	2	0,000	0,000	1,000	1,000
15	15	16	PANTALLA	0,000	000000	2	0,000	0,000	1,000	1,000
16	16	17	PANTALLA	0,000	000000	2	0,000	0,000	1,000	

1,000										
	17	17	18	PANTALLA	0,000	000000	2	0,000	0,000	1,000
1,000										
	18	18	19	PANTALLA	0,000	000000	2	0,000	0,000	1,000
1,000										
	22	21	11	PANTALLA	0,000	000000	2	0,000	0,000	1,000
0,500										

PANTALLA KN-m Units PAGE 5
11/3/03 18:23:02

F R A M E S P A N D I S T R I B U T E D L O A D S Load Case EMPUJE

FRAME	TYPE	DIRECTION	DISTANCE-A	VALUE-A	DISTANCE-B	VALUE-B
8	FORCE	GLOBAL-X	0,0000	3,6000	1,0000	61,4700

PANTALLA KN-m Units PAGE 1
11/3/03 18:23:19

L O A D C O M B I N A T I O N M U L T I P L I E R S

COMBO	TYPE	CASE	FACTOR	TYPE	TITLE
H2	ADD				ELS
		LOAD1	1,0000	STATIC(DEAD)	
		EMPUJE	1,0000	STATIC(LIVE)	

PANTALLA KN-m Units PAGE 2
11/3/03 18:23:19

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

JOINT	LOAD	F1	F2	F3	M1	M2	M3
19	LOAD1	0,0000	0,0000	260,3558	0,0000	0,0000	0,0000
19	EMPUJE	0,0000	0,0000	0,0000	0,0000	0,0000	0,0000
19	H2	0,0000	0,0000	260,3558	0,0000	0,0000	0,0000

PANTALLA KN-m Units PAGE 3
11/3/03 18:23:19

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

FRAME	LOAD	LOC	P	V2	V3	T	M2	M3
8	LOAD1							
		0,00	0,00	0,00	0,00	0,00	0,00	0,00
		4,25	-65,09	0,00	0,00	0,00	0,00	0,00
		8,50	-130,18	0,00	0,00	0,00	0,00	0,00
8	EMPUJE							
		0,00	0,00	0,00	0,00	0,00	0,00	0,00
		4,25	0,00	-76,79	0,00	0,00	0,00	119,62
		8,50	0,00	-276,55	0,00	0,00	0,00	826,90
8	H2							
		0,00	0,00	0,00	0,00	0,00	0,00	0,00
		4,25	-65,09	-76,79	0,00	0,00	0,00	119,62
		8,50	-130,18	-276,55	0,00	0,00	0,00	826,90
11	LOAD1							
		0,00	-137,84	0,00	0,00	0,00	0,00	0,00
		5,0E-01	-145,49	0,00	0,00	0,00	0,00	0,00
		1,00	-153,15	0,00	0,00	0,00	0,00	0,00
11	EMPUJE							
		0,00	0,00	102,90	0,00	0,00	0,00	872,85
		5,0E-01	0,00	102,90	0,00	0,00	0,00	821,41
		1,00	0,00	102,90	0,00	0,00	0,00	769,96
11	H2							
		0,00	-137,84	102,90	0,00	0,00	0,00	872,85
		5,0E-01	-145,49	102,90	0,00	0,00	0,00	821,41
		1,00	-153,15	102,90	0,00	0,00	0,00	769,96
12	LOAD1							
		0,00	-153,15	0,00	0,00	0,00	0,00	0,00
		5,0E-01	-160,81	0,00	0,00	0,00	0,00	0,00
		1,00	-168,47	0,00	0,00	0,00	0,00	0,00
12	EMPUJE							
		0,00	0,00	201,06	0,00	0,00	0,00	769,96
		5,0E-01	0,00	201,06	0,00	0,00	0,00	669,43
		1,00	0,00	201,06	0,00	0,00	0,00	568,90
12	H2							
		0,00	-153,15	201,06	0,00	0,00	0,00	769,96
		5,0E-01	-160,81	201,06	0,00	0,00	0,00	669,43
		1,00	-168,47	201,06	0,00	0,00	0,00	568,90
13	LOAD1							
		0,00	-168,47	0,00	0,00	0,00	0,00	0,00

5,0E-01	-176,12	0,00	0,00	0,00	0,00	0,00
1,0E+00	-183,78	0,00	0,00	0,00	0,00	0,00
13 EMPUJE						
0,00	0,00	204,85	0,00	0,00	0,00	568,90
5,0E-01	0,00	204,85	0,00	0,00	0,00	466,48
1,0E+00	0,00	204,85	0,00	0,00	0,00	364,05
13 H2						
0,00	-168,47	204,85	0,00	0,00	0,00	568,90
5,0E-01	-176,12	204,85	0,00	0,00	0,00	466,48
1,0E+00	-183,78	204,85	0,00	0,00	0,00	364,05
14 LOAD1						
0,00	-183,78	0,00	0,00	0,00	0,00	0,00
5,0E-01	-191,44	0,00	0,00	0,00	0,00	0,00
1,0E+00	-199,10	0,00	0,00	0,00	0,00	0,00
14 EMPUJE						
0,00	0,00	164,32	0,00	0,00	0,00	364,05
5,0E-01	0,00	164,32	0,00	0,00	0,00	281,89
1,0E+00	0,00	164,32	0,00	0,00	0,00	199,73
14 H2						
0,00	-183,78	164,32	0,00	0,00	0,00	364,05
5,0E-01	-191,44	164,32	0,00	0,00	0,00	281,89
1,0E+00	-199,10	164,32	0,00	0,00	0,00	199,73
15 LOAD1						
0,00	-199,10	0,00	0,00	0,00	0,00	0,00
5,0E-01	-206,75	0,00	0,00	0,00	0,00	0,00
1,0E+00	-214,41	0,00	0,00	0,00	0,00	0,00
15 EMPUJE						
0,00	0,00	111,77	0,00	0,00	0,00	199,73
5,0E-01	0,00	111,77	0,00	0,00	0,00	143,85
1,0E+00	0,00	111,77	0,00	0,00	0,00	87,96
15 H2						
0,00	-199,10	111,77	0,00	0,00	0,00	199,73
5,0E-01	-206,75	111,77	0,00	0,00	0,00	143,85
1,0E+00	-214,41	111,77	0,00	0,00	0,00	87,96
16 LOAD1						
0,00	-214,41	0,00	0,00	0,00	0,00	0,00
5,0E-01	-222,07	0,00	0,00	0,00	0,00	0,00
1,0E+00	-229,73	0,00	0,00	0,00	0,00	0,00
16 EMPUJE						
0,00	0,00	65,05	0,00	0,00	0,00	87,96
5,0E-01	0,00	65,05	0,00	0,00	0,00	55,44
1,0E+00	0,00	65,05	0,00	0,00	0,00	22,91
16 H2						
0,00	-214,41	65,05	0,00	0,00	0,00	87,96
5,0E-01	-222,07	65,05	0,00	0,00	0,00	55,44
1,0E+00	-229,73	65,05	0,00	0,00	0,00	22,91
17 LOAD1						
0,00	-229,73	0,00	0,00	0,00	0,00	0,00
5,0E-01	-237,38	0,00	0,00	0,00	0,00	0,00
1,0E+00	-245,04	0,00	0,00	0,00	0,00	0,00
17 EMPUJE						
0,00	0,00	22,34	0,00	0,00	0,00	22,91
5,0E-01	0,00	22,34	0,00	0,00	0,00	11,74
1,0E+00	0,00	22,34	0,00	0,00	0,00	5,767E-01
17 H2						
0,00	-229,73	22,34	0,00	0,00	0,00	22,91
5,0E-01	-237,38	22,34	0,00	0,00	0,00	11,74
1,0E+00	-245,04	22,34	0,00	0,00	0,00	5,767E-01
18 LOAD1						
0,00	-245,04	0,00	0,00	0,00	0,00	0,00
5,0E-01	-252,70	0,00	0,00	0,00	0,00	0,00
1,0E+00	-260,36	0,00	0,00	0,00	0,00	0,00
18 EMPUJE						
0,00	0,00	5,767E-01	0,00	0,00	0,00	5,767E-01
5,0E-01	0,00	5,767E-01	0,00	0,00	0,00	2,883E-01
1,0E+00	0,00	5,767E-01	0,00	0,00	0,00	0,00
18 H2						
0,00	-245,04	5,767E-01	0,00	0,00	0,00	5,767E-01

5,0E-01	-252,70	5,767E-01	0,00	0,00	0,00	2,883E-01
1,0E+00	-260,36	5,767E-01	0,00	0,00	0,00	0,00
22 LOAD1						
0,00	-130,18	0,00	0,00	0,00	0,00	0,00
2,5E-01	-134,01	0,00	0,00	0,00	0,00	0,00
5,0E-01	-137,84	0,00	0,00	0,00	0,00	0,00
22 EMPUJE						
0,00	0,00	-91,91	0,00	0,00	0,00	826,90
2,5E-01	0,00	-91,91	0,00	0,00	0,00	849,88
5,0E-01	0,00	-91,91	0,00	0,00	0,00	872,85
22 H2						
0,00	-130,18	-91,91	0,00	0,00	0,00	826,90
2,5E-01	-134,01	-91,91	0,00	0,00	0,00	849,88
5,0E-01	-137,84	-91,91	0,00	0,00	0,00	872,85

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S T A T I C L O A D C A S E S

STATIC CASE	CASE TYPE	SELF WT FACTOR
LOAD1	DEAD	1,0000
EMPUJE	LIVE	0,0000
FRENADO	LIVE	0,0000
EXCENTRI	LIVE	0,0000
RETRTEM	LIVE	0,0000

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J O I N T D A T A

JOINT	GLOBAL-X	GLOBAL-Y	GLOBAL-Z	RESTRAINTS	ANGLE-A	ANGLE-B	ANGLE-C
1	0,00000	0,00000	19,00000	0 0 0 0 0 0	0,000	0,000	0,000
8	0,00000	0,00000	13,00000	0 0 0 0 0 0	0,000	0,000	0,000
9	0,00000	0,00000	12,00000	0 0 0 0 0 0	0,000	0,000	0,000
10	0,00000	0,00000	11,00000	0 0 0 0 0 0	0,000	0,000	0,000
11	0,00000	0,00000	10,00000	0 0 0 0 0 0	0,000	0,000	0,000
12	0,00000	0,00000	9,00000	0 0 0 0 0 0	0,000	0,000	0,000
13	0,00000	0,00000	8,00000	0 0 0 0 0 0	0,000	0,000	0,000
14	0,00000	0,00000	7,00000	0 0 1 0 0 0	0,000	0,000	0,000

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J O I N T S P R I N G D A T A

JOINT	K-U1	K-U2	K-U3	K-R1	K-R2	K-R3
13	50000,000	0,000	0,000	0,000	0,000	0,000
14	50000,000	0,000	0,000	0,000	0,000	0,000
12	50000,000	0,000	0,000	0,000	0,000	0,000
11	50000,000	0,000	0,000	0,000	0,000	0,000
9	50000,000	0,000	0,000	0,000	0,000	0,000
10	50000,000	0,000	0,000	0,000	0,000	0,000
8	25000,000	0,000	0,000	0,000	0,000	0,000

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

FRAME	JNT-1	JNT-2	SECTION	ANGLE	RELEASES	SEGMENTS	R1	R2	FACTOR	LENGTH
5	1	8	PANTALLA	0,000	000000	2	0,000	0,000	1,000	6,000
7	8	9	PANTALLA	0,000	000000	2	0,000	0,000	1,000	1,000
9	9	10	PANTALLA	0,000	000000	2	0,000	0,000	1,000	1,000
10	10	11	PANTALLA	0,000	000000	2	0,000	0,000	1,000	1,000
11	11	12	PANTALLA	0,000	000000	2	0,000	0,000	1,000	1,000
12	12	13	PANTALLA	0,000	000000	2	0,000	0,000	1,000	1,000
13	13	14	PANTALLA	0,000	000000	2	0,000	0,000	1,000	1,000

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F R A M E S P A N D I S T R I B U T E D L O A D S Load Case EMPUJE

FRAME	TYPE	DIRECTION	DISTANCE-A	VALUE-A	DISTANCE-B	VALUE-B
5	FORCE	GLOBAL-X	0,0000	3,6000	0,1667	10,4082
5	FORCE	GLOBAL-X	0,1667	10,4082	0,3333	17,2165
5	FORCE	GLOBAL-X	0,3333	17,2165	0,5000	24,0247
5	FORCE	GLOBAL-X	0,5000	24,0247	0,6667	30,8329
5	FORCE	GLOBAL-X	0,6667	30,8329	0,8333	37,6412
5	FORCE	GLOBAL-X	0,8333	37,6412	1,0000	44,4494

LOAD COMBINATION MULTIPLIERS

COMBO	TYPE	CASE	FACTOR	TYPE	TITLE
H1	ADD				ELU1
		LOAD1	1,3500	STATIC(DEAD)	
		EMPUJE	1,5000	STATIC(LIVE)	
H2	ADD				ELS
		LOAD1	1,0000	STATIC(DEAD)	
		EMPUJE	1,0000	STATIC(LIVE)	

JOINT REACTIONS

JOINT	LOAD	F1	F2	F3	M1	M2	M3
14	LOAD1	0,0000	0,0000	183,7806	0,0000	0,0000	0,0000
14	EMPUJE	0,0000	0,0000	0,0000	0,0000	0,0000	0,0000
14	H1	0,0000	0,0000	248,1038	0,0000	0,0000	0,0000
14	H2	0,0000	0,0000	183,7806	0,0000	0,0000	0,0000

FRAME ELEMENT FORCES

FRAME	LOAD	LOC	P	V2	V3	T	M2	M3
5	LOAD1							
		0,00	0,00	0,00	0,00	0,00	0,00	0,00
		3,00	-45,95	0,00	0,00	0,00	0,00	0,00
		6,00	-91,89	0,00	0,00	0,00	0,00	0,00
5	EMPUJE							
		0,00	0,00	0,00	0,00	0,00	0,00	0,00
		3,00	0,00	-41,44	0,00	0,00	0,00	46,84
		6,00	0,00	-144,15	0,00	0,00	0,00	309,90
5	H1							
		0,00	0,00	0,00	0,00	0,00	0,00	0,00
		3,00	-62,03	-62,16	0,00	0,00	0,00	70,26
		6,00	-124,05	-216,22	0,00	0,00	0,00	464,84
5	H2							
		0,00	0,00	0,00	0,00	0,00	0,00	0,00
		3,00	-45,95	-41,44	0,00	0,00	0,00	46,84
		6,00	-91,89	-144,15	0,00	0,00	0,00	309,90
7	LOAD1							
		0,00	-91,89	0,00	0,00	0,00	0,00	0,00
		5,0E-01	-99,55	0,00	0,00	0,00	0,00	0,00
		1,00	-107,21	0,00	0,00	0,00	0,00	0,00
7	EMPUJE							
		0,00	0,00	-45,41	0,00	0,00	0,00	309,90
		5,0E-01	0,00	-45,41	0,00	0,00	0,00	332,60
		1,00	0,00	-45,41	0,00	0,00	0,00	355,30
7	H1							
		0,00	-124,05	-68,11	0,00	0,00	0,00	464,84
		5,0E-01	-134,39	-68,11	0,00	0,00	0,00	498,90
		1,00	-144,73	-68,11	0,00	0,00	0,00	532,96
7	H2							
		0,00	-91,89	-45,41	0,00	0,00	0,00	309,90
		5,0E-01	-99,55	-45,41	0,00	0,00	0,00	332,60
		1,00	-107,21	-45,41	0,00	0,00	0,00	355,30
9	LOAD1							
		0,00	-107,21	0,00	0,00	0,00	0,00	0,00
		5,0E-01	-114,86	0,00	0,00	0,00	0,00	0,00
		1,00	-122,52	0,00	0,00	0,00	0,00	0,00
9	EMPUJE							
		0,00	0,00	56,76	0,00	0,00	0,00	355,30
		5,0E-01	0,00	56,76	0,00	0,00	0,00	326,92
		1,00	0,00	56,76	0,00	0,00	0,00	298,55
9	H1							
		0,00	-144,73	85,14	0,00	0,00	0,00	532,96
		5,0E-01	-155,06	85,14	0,00	0,00	0,00	490,39
		1,00	-165,40	85,14	0,00	0,00	0,00	447,82
9	H2							
		0,00	-107,21	56,76	0,00	0,00	0,00	355,30
		5,0E-01	-114,86	56,76	0,00	0,00	0,00	326,92
		1,00	-122,52	56,76	0,00	0,00	0,00	298,55
10	LOAD1							
		0,00	-122,52	0,00	0,00	0,00	0,00	0,00
		5,0E-01	-130,18	0,00	0,00	0,00	0,00	0,00
		1,0E+00	-137,84	0,00	0,00	0,00	0,00	0,00
10	EMPUJE							
		0,00	0,00	94,29	0,00	0,00	0,00	298,55
		5,0E-01	0,00	94,29	0,00	0,00	0,00	251,40
		1,0E+00	0,00	94,29	0,00	0,00	0,00	204,25
10	H1							
		0,00	-165,40	141,44	0,00	0,00	0,00	447,82
		5,0E-01	-175,74	141,44	0,00	0,00	0,00	377,10
		1,0E+00	-186,08	141,44	0,00	0,00	0,00	306,38
10	H2							
		0,00	-122,52	94,29	0,00	0,00	0,00	298,55
		5,0E-01	-130,18	94,29	0,00	0,00	0,00	251,40
		1,0E+00	-137,84	94,29	0,00	0,00	0,00	204,25
11	LOAD1							
		0,00	-137,84	0,00	0,00	0,00	0,00	0,00
		5,0E-01	-145,49	0,00	0,00	0,00	0,00	0,00
		1,00	-153,15	0,00	0,00	0,00	0,00	0,00
11	EMPUJE							
		0,00	0,00	93,26	0,00	0,00	0,00	204,25
		5,0E-01	0,00	93,26	0,00	0,00	0,00	157,62
		1,00	0,00	93,26	0,00	0,00	0,00	110,99
11	H1							
		0,00	-186,08	139,89	0,00	0,00	0,00	306,38
		5,0E-01	-196,42	139,89	0,00	0,00	0,00	236,43
		1,00	-206,75	139,89	0,00	0,00	0,00	166,49
11	H2							
		0,00	-137,84	93,26	0,00	0,00	0,00	204,25
		5,0E-01	-145,49	93,26	0,00	0,00	0,00	157,62
		1,00	-153,15	93,26	0,00	0,00	0,00	110,99
12	LOAD1							
		0,00	-153,15	0,00	0,00	0,00	0,00	0,00
		5,0E-01	-160,81	0,00	0,00	0,00	0,00	0,00
		1,00	-168,47	0,00	0,00	0,00	0,00	0,00
12	EMPUJE							
		0,00	0,00	71,65	0,00	0,00	0,00	110,99
		5,0E-01	0,00	71,65	0,00	0,00	0,00	75,17
		1,00	0,00	71,65	0,00	0,00	0,00	39,34
12	H1							
		0,00	-206,75	107,47	0,00	0,00	0,00	166,49
		5,0E-01	-217,09	107,47	0,00	0,00	0,00	112,75
		1,00	-227,43	107,47	0,00	0,00	0,00	59,02
12	H2							
		0,00	-153,15	71,65	0,00	0,00	0,00	110,99
		5,0E-01	-160,81	71,65	0,00	0,00	0,00	75,17
		1,00	-168,47	71,65	0,00	0,00	0,00	39,34
13	LOAD1							
		0,00	-168,47	0,00	0,00	0,00	0,00	0,00
		5,0E-01	-176,12	0,00	0,00	0,00	0,00	0,00
		1,0E+00	-183,78	0,00	0,00	0,00	0,00	0,00
13	EMPUJE							
		0,00	0,00	39,34	0,00	0,00	0,00	39,34
		5,0E-01	0,00	39,34	0,00	0,00	0,00	19,67

	1,0E+00	0,00	39,34	0,00	0,00	0,00	0,00
13	H1						
	0,00	-227,43	59,02	0,00	0,00	0,00	59,02
	5,0E-01	-237,77	59,02	0,00	0,00	0,00	29,51
	1,0E+00	-248,10	59,02	0,00	0,00	0,00	0,00
13	H2						
	0,00	-168,47	39,34	0,00	0,00	0,00	39,34
	5,0E-01	-176,12	39,34	0,00	0,00	0,00	19,67
	1,0E+00	-183,78	39,34	0,00	0,00	0,00	0,00

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STATIC LOAD CASES

STATIC CASE	CASE TYPE	SELF WT FACTOR
LOAD1	DEAD	1,0000
EMPUJE	LIVE	0,0000
FRENADO	LIVE	0,0000
EXCENTRI	LIVE	0,0000
RETRTEM	LIVE	0,0000

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JOINT DATA

JOINT	GLOBAL-X	GLOBAL-Y	GLOBAL-Z	RESTRAINTS	ANGLE-A	ANGLE-B	ANGLE-C
1	0,00000	0,00000	19,00000	0 0 0 0 0 0	0,000	0,000	0,000
8	0,00000	0,00000	13,00000	0 0 0 0 0 0	0,000	0,000	0,000
9	0,00000	0,00000	12,00000	0 0 0 0 0 0	0,000	0,000	0,000
10	0,00000	0,00000	11,00000	0 0 1 0 0 0	0,000	0,000	0,000
18	0,00000	0,00000	15,00000	0 0 0 0 0 0	0,000	0,000	0,000
19	0,00000	0,00000	14,00000	0 0 0 0 0 0	0,000	0,000	0,000

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JOINT SPRING DATA

JOINT	K-U1	K-U2	K-U3	K-R1	K-R2	K-R3
9	50000,000	0,000	0,000	0,000	0,000	0,000
10	25000,000	0,000	0,000	0,000	0,000	0,000
8	50000,000	0,000	0,000	0,000	0,000	0,000
19	50000,000	0,000	0,000	0,000	0,000	0,000
18	25000,000	0,000	0,000	0,000	0,000	0,000

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FRAME ELEMENT DATA

FRAME	JNT-1	JNT-2	SECTION	ANGLE	RELEASES	SEGMENTS	R1	R2	FACTOR	LENGTH
7	8	9	PANTALLA	0,000	000000	2	0,000	0,000	1,000	1,000
9	9	10	PANTALLA	0,000	000000	2	0,000	0,000	1,000	1,000
16	1	18	PANTALLA	0,000	000000	2	0,000	0,000	1,000	4,000
18	18	19	PANTALLA	0,000	000000	2	0,000	0,000	1,000	1,000
19	19	8	PANTALLA	0,000	000000	2	0,000	0,000	1,000	1,000

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FRAME SPAN DISTRIBUTED LOADS Load Case EMPUJE

FRAME	TYPE	DIRECTION	DISTANCE-A	VALUE-A	DISTANCE-B	VALUE-B
16	FORCE	GLOBAL-X	0,0000	3,6000	0,2500	10,4082
16	FORCE	GLOBAL-X	0,2500	10,4082	0,5000	17,2165
16	FORCE	GLOBAL-X	0,5000	17,2165	0,7500	24,0247
16	FORCE	GLOBAL-X	0,7500	24,0247	0,7500	24,0247
16	FORCE	GLOBAL-X	0,7500	24,0247	1,0000	30,8329

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LOAD COMBINATION MULTIPLIERS

COMBO	TYPE	CASE	FACTOR	TYPE	TITLE
H1	ADD				ELU1
		LOAD1	1,3500	STATIC(DEAD)	
		EMPUJE	1,5000	STATIC(LIVE)	
H2	ADD				ELS
		LOAD1	1,0000	STATIC(DEAD)	
		EMPUJE	1,0000	STATIC(LIVE)	

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JOINT REACTIONS

JOINT	LOAD	F1	F2	F3	M1	M2	M3
10	LOAD1	0,0000	0,0000	75,3972	0,0000	0,0000	0,0000
10	EMPUJE	0,0000	0,0000	0,0000	0,0000	0,0000	0,0000
10	H1	0,0000	0,0000	101,7862	0,0000	0,0000	0,0000
10	H2	0,0000	0,0000	75,3972	0,0000	0,0000	0,0000

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FRAME ELEMENT FORCES

FRAME	LOAD	LOC	P	V2	V3	T	M2	M3
7	LOAD1							
		0,00	-56,55	0,00	0,00	0,00	0,00	0,00
		5,0E-01	-61,26	0,00	0,00	0,00	0,00	0,00
		1,00	-65,97	0,00	0,00	0,00	0,00	0,00
7	EMPUJE							
		0,00	0,00	42,76	0,00	0,00	0,00	61,98
		5,0E-01	0,00	42,76	0,00	0,00	0,00	40,60
		1,00	0,00	42,76	0,00	0,00	0,00	19,22
7	H1							
		0,00	-76,34	64,14	0,00	0,00	0,00	92,98
		5,0E-01	-82,70	64,14	0,00	0,00	0,00	60,91
		1,00	-89,06	64,14	0,00	0,00	0,00	28,84
7	H2							
		0,00	-56,55	42,76	0,00	0,00	0,00	61,98
		5,0E-01	-61,26	42,76	0,00	0,00	0,00	40,60
		1,00	-65,97	42,76	0,00	0,00	0,00	19,22
9	LOAD1							
		0,00	-65,97	0,00	0,00	0,00	0,00	0,00
		5,0E-01	-70,68	0,00	0,00	0,00	0,00	0,00
		1,00	-75,40	0,00	0,00	0,00	0,00	0,00
9	EMPUJE							
		0,00	0,00	19,22	0,00	0,00	0,00	19,22
		5,0E-01	0,00	19,22	0,00	0,00	0,00	9,61
		1,00	0,00	19,22	0,00	0,00	0,00	0,00
9	H1							
		0,00	-89,06	28,84	0,00	0,00	0,00	28,84
		5,0E-01	-95,42	28,84	0,00	0,00	0,00	14,42
		1,00	-101,79	28,84	0,00	0,00	0,00	0,00
9	H2							
		0,00	-65,97	19,22	0,00	0,00	0,00	19,22
		5,0E-01	-70,68	19,22	0,00	0,00	0,00	9,61
		1,00	-75,40	19,22	0,00	0,00	0,00	0,00
16	LOAD1							
		0,00	0,00	0,00	0,00	0,00	0,00	0,00

		2,00	-18,85	0,00	0,00	0,00	0,00	0,00
		4,00	-37,70	0,00	0,00	0,00	0,00	0,00
16	EMPUJE							
		0,00	0,00	0,00	0,00	0,00	0,00	0,00
		2,00	0,00	-20,82	0,00	0,00	0,00	16,28
		4,00	0,00	-68,87	0,00	0,00	0,00	101,42
16	H1							
		0,00	0,00	0,00	0,00	0,00	0,00	0,00
		2,00	-25,45	-31,22	0,00	0,00	0,00	24,42
		4,00	-50,89	-103,30	0,00	0,00	0,00	152,13
16	H2							
		0,00	0,00	0,00	0,00	0,00	0,00	0,00
		2,00	-18,85	-20,82	0,00	0,00	0,00	16,28
		4,00	-37,70	-68,87	0,00	0,00	0,00	101,42
18	LOAD1							
		0,00	-37,70	0,00	0,00	0,00	0,00	0,00
		5,0E-01	-42,41	0,00	0,00	0,00	0,00	0,00
		1,00	-47,12	0,00	0,00	0,00	0,00	0,00
18	EMPUJE							
		0,00	0,00	-3,54	0,00	0,00	0,00	101,42
		5,0E-01	0,00	-3,54	0,00	0,00	0,00	103,19
		1,00	0,00	-3,54	0,00	0,00	0,00	104,96
18	H1							
		0,00	-50,89	-5,31	0,00	0,00	0,00	152,13
		5,0E-01	-57,25	-5,31	0,00	0,00	0,00	154,79
		1,00	-63,62	-5,31	0,00	0,00	0,00	157,44
18	H2							
		0,00	-37,70	-3,54	0,00	0,00	0,00	101,42
		5,0E-01	-42,41	-3,54	0,00	0,00	0,00	103,19
		1,00	-47,12	-3,54	0,00	0,00	0,00	104,96
19	LOAD1							
		0,00	-47,12	0,00	0,00	0,00	0,00	0,00
		5,0E-01	-51,84	0,00	0,00	0,00	0,00	0,00
		1,00	-56,55	0,00	0,00	0,00	0,00	0,00
19	EMPUJE							
		0,00	0,00	42,98	0,00	0,00	0,00	104,96
		5,0E-01	0,00	42,98	0,00	0,00	0,00	83,47
		1,00	0,00	42,98	0,00	0,00	0,00	61,98
19	H1							
		0,00	-63,62	64,47	0,00	0,00	0,00	157,44
		5,0E-01	-69,98	64,47	0,00	0,00	0,00	125,21
		1,00	-76,34	64,47	0,00	0,00	0,00	92,98
19	H2							
		0,00	-47,12	42,98	0,00	0,00	0,00	104,96
		5,0E-01	-51,84	42,98	0,00	0,00	0,00	83,47
		1,00	-56,55	42,98	0,00	0,00	0,00	61,98

DIMENSIONAMIENTO DE MUROS

ÍNDICE

1.- DATOS DE LA OBRA

2.- DESCRIPCIÓN

3.- COMPROBACIÓN

1.- DATOS DE LA OBRA

Hormigón: HA-25, Control estadístico
Acero: B 500 S, Control normal
Recubrimiento (Trasdós) : 5.00 cm
Recubrimiento (Intradós) : 5.00 cm
Recubrimiento (Superior) : 5.00 cm
Recubrimiento (Inferior) : 5.00 cm
Recubrimiento (Lateral) : 5.00 cm
Tamaño máximo del árido: 20.0 mm
Abertura límite de fisuras: 0.3 mm
Espesor hormigón limpieza: 10.0 cm
Tensión admisible del terreno: 2.0 Kp/cm2
Coeficiente rozamiento terreno-cimiento: 0.6
Tipo de empuje que produce la acción: Activo
Tipo de empuje que produce la reacción: Pasivo
Combinaciones de hormigón: EHE, Control normal
Combinaciones para tensiones sobre el terreno: Acciones Caracteristicas
Combinaciones de equilibrio: EHE, Control normal

2.- DESCRIPCIÓN

DESCRIPCION DE SECCIONES

Referencia: H-2

- Longitud del muro: 5.00 m
- Cota en arranque: 0.00 m

Referencia: H-3

- Longitud del muro: 5.00 m
- Cota en arranque: 0.00 m

LISTADO DE TERRENOS

Referencia: H-2

- Situación de peso propio:
- Coronación:
Carga hacia abajo en coronación: 0 Tn/m
Carga hacia intradós en coronación: 0 Tn/m
Momento de compresión hacia intradós en coronación: 0 mTn/m
- Trasdós:
No hay cargas.
- Intradós:
Con relleno: Cota: 2.00 m
Angulo de talud: 0.00 Grados
Densidad aparente: 2.00 Tn/m3
Densidad sumergida: 1.10 Tn/m3
Angulo rozamiento interno: 30.00 Grados
Evacuación por drenaje: 100.00 %
Porcentaje de empuje pasivo: 0.00 %
Cota empuje pasivo: 0.00 m
- Esfuerzos en arranque de muro. ESTADO DE PESO PROPIO (PP):

	Cortante (Tn/m)	Momento (mTn/m)
Trasdós	0.000	0.000
Intradós	-1.333	-0.889
Total	-1.333	-0.889

- Situación de sobrecarga 1:
- Coronación:
Carga hacia abajo en coronación: 0 Tn/m
Carga hacia intradós en coronación: 0 Tn/m
Momento de compresión hacia intradós en coronación: 0 mTn/m
- Trasdós:
No hay cargas.
- Intradós:
Con relleno: Cota: 2.00 m
Angulo de talud: 0.00 Grados
Densidad aparente: 2.00 Tn/m3
Densidad sumergida: 1.10 Tn/m3
Angulo rozamiento interno: 30.00 Grados
Evacuación por drenaje: 100.00 %
Porcentaje de empuje pasivo: 0.00 %
Cota empuje pasivo: 0.00 m
Carga 1:
Tipo: Uniforme
Valor: 1.00 Tn/m2
- Esfuerzos en arranque de muro. ESTADO DE SOBRECARGA (SBC):

	Cortante (Tn/m)	Momento (mTn/m)
Trasdós	0.000	0.000
Intradós	-2.000	-1.556
Total	-2.000	-1.556

- Esfuerzos de arranque de muro. DIFERENCIA ESTADO DE SOBRECARGA Y PESO PROPIO (SBC - PP):

	Cortante (Tn/m)	Momento (mTn/m)
Trasdós	0.000	0.000

Intradós	-0.667	-0.667
Total	-0.667	-0.667

Referencia: H-3

- Situación de peso propio:
- Coronación:
Carga hacia abajo en coronación: 0 Tn/m
Carga hacia intradós en coronación: 0 Tn/m
Momento de compresión hacia intradós en coronación: 0 mTn/m
- Trasdós:
No hay cargas.
- Intradós:
Con relleno: Cota: 3.00 m
Angulo de talud: 0.00 Grados
Densidad aparente: 1.80 Tn/m3
Densidad sumergida: 1.10 Tn/m3
Angulo rozamiento interno: 30.00 Grados
Evacuación por drenaje: 100.00 %
Porcentaje de empuje pasivo: 0.00 %
Cota empuje pasivo: 0.00 m
- Esfuerzos en arranque de muro. ESTADO DE PESO PROPIO (PP):

	Cortante (Tn/m)	Momento (mTn/m)
Trasdós	0.000	0.000
Intradós	-2.700	-2.700
Total	-2.700	-2.700

- Situación de sobrecarga 1:
- Coronación:
Carga hacia abajo en coronación: 0 Tn/m
Carga hacia intradós en coronación: 0 Tn/m
Momento de compresión hacia intradós en coronación: 0 mTn/m
- Trasdós:
No hay cargas.
- Intradós:
Con relleno: Cota: 3.00 m
Angulo de talud: 0.00 Grados
Densidad aparente: 1.80 Tn/m3
Densidad sumergida: 1.10 Tn/m3
Angulo rozamiento interno: 30.00 Grados
Evacuación por drenaje: 100.00 %
Porcentaje de empuje pasivo: 0.00 %
Cota empuje pasivo: 0.00 m
Carga 1:
Tipo: Uniforme
Valor: 1.00 Tn/m2
- Esfuerzos en arranque de muro. ESTADO DE SOBRECARGA (SBC):

	Cortante (Tn/m)	Momento (mTn/m)
Trasdós	0.000	0.000
Intradós	-3.700	-4.200
Total	-3.700	-4.200

- Esfuerzos de arranque de muro. DIFERENCIA ESTADO DE SOBRECARGA Y PESO PROPIO (SBC - PP):

	Cortante (Tn/m)	Momento (mTn/m)
Trasdós	0.000	0.000
Intradós	-1.000	-1.500
Total	-1.000	-1.500

MUROS CALCULADOS

Referencia	Espesor inferior	Espesor superior	Altura	Ar. Vert. T.	Ar. Vert. I.	Ar. Horz. T.	Ar. Horz. I.	Ar. Coronación
H-2	25.00 cm	25.00 cm	2.00 m	Ø10 c/ 20	Ø10 c/ 15	Ø10 c/ 15	Ø10 c/ 15	Barras superiores 2 Ø12
H-3	30.00 cm	30.00 cm	3.00 m	Ø10 c/ 20	Ø12 c/ 15	Ø10 c/ 15	Ø10 c/ 15	Barras superiores 2 Ø12

Nota:
- Ar. Vert. T.: Armado vertical trasdós
- Ar. Vert. I.: Armado vertical intradós
- Ar. Horz. T.: Armado horizontal trasdós
- Ar. Horz. I.: Armado horizontal intradós
- Ar. Coronación: Armado en coronación

Referencias	Geometría	Armado
H-2	Vuelo izquierdo: 95.0 cm Vuelo derecho: 95.0 cm Canto: 50.0 cm	Base inferior: Ø12 c/ 20 Longitudinal inferior: Ø12 c/ 20 Superior Longitudinal: Ø12 c/ 20 Superior Transversal: Ø12 c/ 20
H-3	Vuelo izquierdo: 130.0 cm Vuelo derecho: 130.0 cm Canto: 65.0 cm	Base inferior: Ø12 c/ 15 Longitudinal inferior: Ø12 c/ 15 Superior Longitudinal: Ø12 c/ 20 Superior Transversal: Ø12 c/ 20

3.- COMPROBACIÓN

Referencia: H-2		
COMPROBACION	VALORES	ESTADO
Comprobación a rasante en arranque muro		
- Muro H-2 -> Arranque:		CUMPLE
Espesor mínimo del tramo	Mínimo: 20 cm	
- Muro H-2 -> Tramo 1:	Calculado: 25 cm	CUMPLE
Cuantía mínima geométrica horizontal	Mínimo: 0.0008	
- Muro H-2 -> Tramo 1 -> Trasdós (0.00 m):	Calculado: 0.0021	CUMPLE
- Muro H-2 -> Tramo 1 -> Intradós (0.00 m):	Calculado: 0.0021	CUMPLE
Cuantía mínima mecánica horizontal por cara		
- Muro H-2 -> Tramo 1 -> Trasdós:	Mínimo: 0.00032 Calculado: 0.0021	CUMPLE

- Muro H-2 -> Tramo 1 -> Intradós:	Mínimo: 0.00042 Calculado: 0.0021	CUMPLE
Separación libre mínima armaduras horizontales	Mínimo: 2.5 cm	
- Muro H-2 -> Tramo 1 -> Trasdós:	Calculado: 14 cm	CUMPLE
- Muro H-2 -> Tramo 1 -> Intradós:	Calculado: 14 cm	CUMPLE
Separación máxima armaduras horizontales	Máximo: 30 cm	
- Muro H-2 -> Tramo 1 -> Trasdós:	Calculado: 15 cm	CUMPLE
- Muro H-2 -> Tramo 1 -> Intradós:	Calculado: 15 cm	CUMPLE
Cuantía mínima geométrica vertical cara traccionada	Mínimo: 0.0009	
- Muro H-2 -> Tramo 1 -> Intradós (0.00 m):	Calculado: 0.0021	CUMPLE
Cuantía mínima mecánica vertical cara traccionada	Mínimo: 0.00154	
- Muro H-2 -> Tramo 1 -> Intradós (0.00 m):	Calculado: 0.0021	CUMPLE
Cuantía mínima geométrica vertical cara comprimida	Mínimo: 0.00027	
- Muro H-2 -> Tramo 1 -> Trasdós (0.00 m):	Calculado: 0.00158	CUMPLE
Cuantía mínima mecánica vertical cara comprimida	Mínimo: 1e-005	
- Muro H-2 -> Tramo 1 -> Trasdós (0.00 m):	Calculado: 0.00158	CUMPLE
Cuantía máxima geométrica de armadura vertical total	Máximo: 0.04	
- Muro H-2 -> Tramo 1 -> (2.00 m):	Calculado: 0.00367	CUMPLE
Separación libre mínima armaduras verticales	Mínimo: 2.5 cm	
- Muro H-2 -> Tramo 1 -> Trasdós:	Calculado: 19 cm	CUMPLE
- Muro H-2 -> Tramo 1 -> Intradós:	Calculado: 14 cm	CUMPLE
Separación máxima armaduras verticales	Máximo: 30 cm	
- Muro H-2 -> Tramo 1 -> Trasdós:	Calculado: 20 cm	CUMPLE
- Muro H-2 -> Tramo 1 -> Intradós:	Calculado: 15 cm	CUMPLE
Comprobación a flexocompresión		
- Muro H-2 -> Tramo 1:		CUMPLE
Comprobación a cortante	Máximo: 9.28 Tn/m	
- Muro H-2 -> Tramo 1:	Calculado: 2.59 Tn/m	CUMPLE
Comprobación de fisuración	Máximo: 0.3 mm	
- Muro H-2 -> Tramo 1:	Calculado: 0.12 mm	CUMPLE
Comprobación de las longitudes de solape		
- Muro H-2 -> Tramo 1 -> Base trasdós:	Mínimo: 25 cm Calculado: 25 cm	CUMPLE
- Muro H-2 -> Tramo 1 -> Base intradós:	Mínimo: 35 cm Calculado: 35 cm	CUMPLE
Comprobación del anclaje del armado base en coronación	Mínimo: 13.5 cm	
- Muro H-2 -> Coronación -> Trasdós:	Calculado: 13.5 cm	CUMPLE
- Muro H-2 -> Coronación -> Intradós:	Calculado: 13.5 cm	CUMPLE
Area mínima longitudinal cara superior viga de coronación	Mínimo: 2.3 cm2	
- Muro H-2 -> Coronación:	Calculado: 2.3 cm2	CUMPLE
Tensiones sobre el terreno		
- Zapata H-2 -> Tensión media:	Máximo: 2 Kp/cm2 Calculado: 0.359 Kp/cm2	CUMPLE
- Zapata H-2 -> Tensión máxima acc. gravitatorias:	Máximo: 2.5 Kp/cm2 Calculado: 0.453 Kp/cm2	CUMPLE
Flexión en zapata (acciones estáticas)		
- Zapata H-2 -> Momento positivo en vuelo derecho:	Momento: 1.80 Tn·m	CUMPLE
- Zapata H-2 -> Momento negativo en vuelo derecho:	Momento: 0.00 Tn·m	CUMPLE
- Zapata H-2 -> Momento positivo sección ref. derecha:	Momento: 1.94 Tn·m	CUMPLE
- Zapata H-2 -> Momento negativo sección ref. derecha:	Momento: 0.00 Tn·m	CUMPLE
- Zapata H-2 -> Momento positivo en vuelo izquierdo:	Momento: 0.00 Tn·m	CUMPLE
- Zapata H-2 -> Momento negativo en vuelo izquierdo:	Momento: -1.33 Tn·m	CUMPLE
- Zapata H-2 -> Momento positivo sección ref. izquierda:	Momento: 0.00 Tn·m	CUMPLE
- Zapata H-2 -> Momento negativo sección ref. izquierda:	Momento: -1.43 Tn·m	CUMPLE
Coeficiente de rozamiento terreno-cimiento	Máximo: 0.5773	
- Zapata H-2:	Calculado: 0.576	CUMPLE
Vuelco de la zapata		
- Zapata H-2:	Reserva seguridad: 665.4 %	CUMPLE
Compresión oblicua (acciones estáticas)	Máximo: 229.36 Tn	
- Zapata H-2 -> Vuelo derecho:	Calculado: 3.7 Tn	CUMPLE

- Zapata H-2 -> Vuelo izquierdo:	Calculado: 2.7 Tn	CUMPLE
Esfuerzo cortante (acciones estáticas)	Máximo: 13.44 Tn	
- Zapata H-2 -> Vuelo derecho:	Calculado: 2.01 Tn	CUMPLE
- Zapata H-2 -> Vuelo izquierdo:	Calculado: 1.49 Tn	CUMPLE
Canto mínimo	Mínimo: 25 cm	
- Zapata H-2:	Calculado: 50 cm	CUMPLE
Longitud de anclaje		
- Zapata H-2 -> Arranque izquierdo del muro:	Mínimo: 18 cm Calculado: 40 cm	CUMPLE
- Zapata H-2 -> Arranque derecho del muro:	Mínimo: 18 cm Calculado: 40 cm	CUMPLE
- Zapata H-2 -> Armado superior vuelo izq. hacia izquierda:	Mínimo: 51 cm Calculado: 55 cm	CUMPLE
- Zapata H-2 -> Armado superior vuelo izq. hacia derecha:	Mínimo: 43 cm Calculado: 126 cm	CUMPLE
- Zapata H-2 -> Armado base inferior vuelo der. hacia izquierda:	Mínimo: 30 cm Calculado: 150 cm	CUMPLE
- Zapata H-2 -> Armado base inferior vuelo der. hacia derecha:	Mínimo: 30 cm Calculado: 79 cm	CUMPLE
Cuantía geométrica mínima	Mínimo: 0.001	
- Zapata H-2 -> Armado inferior longitudinal:	Calculado: 0.0012	CUMPLE
- Zapata H-2 -> Armado inferior transversal:	Calculado: 0.0012	CUMPLE
Cuantía mínima necesaria por flexión	Mínimo: 0.0002	
- Zapata H-2 -> Armado inferior transversal:	Calculado: 0.0012	CUMPLE
- Zapata H-2 -> Armado sup. transversal vuelo izquierdo:	Calculado: 0.0012	CUMPLE
- Zapata H-2 -> Armado sup. transversal sección ref. izquierda:	Calculado: 0.0012	CUMPLE
Diámetro mínimo de las barras	Mínimo: 12 mm	
- Zapata H-2 -> Armaduras de la zapata:	Calculado: 12 mm	CUMPLE
Separación máxima entre barras	Máximo: 30 cm	
- Zapata H-2 -> Armado inferior transversal:	Calculado: 20 cm	CUMPLE
- Zapata H-2 -> Armado inferior longitudinal:	Calculado: 20 cm	CUMPLE
- Zapata H-2 -> Armado superior transversal:	Calculado: 20 cm	CUMPLE
- Zapata H-2 -> Armado superior longitudinal:	Calculado: 20 cm	CUMPLE
Separación mínima entre barras	Mínimo: 10 cm	
- Zapata H-2 -> Armado inferior transversal:	Calculado: 20 cm	CUMPLE
- Zapata H-2 -> Armado inferior longitudinal:	Calculado: 20 cm	CUMPLE
- Zapata H-2 -> Armado superior transversal:	Calculado: 20 cm	CUMPLE
- Zapata H-2 -> Armado superior longitudinal:	Calculado: 20 cm	CUMPLE
Longitud mínima de las patillas	Mínimo: 11 cm	
- Zapata H-2 -> Armado superior vuelo izq. hacia izquierda:	Calculado: 15 cm	CUMPLE
- Zapata H-2 -> Armado superior vuelo izq. hacia derecha:	Calculado: 15 cm	CUMPLE
- Zapata H-2 -> Armado base inferior vuelo izq. hacia izquierda:	Calculado: 39 cm	CUMPLE
- Zapata H-2 -> Armado base inferior vuelo izq. hacia derecha:	Calculado: 39 cm	CUMPLE
Se cumplen todas las comprobaciones		

Referencia: H-3		
COMPROBACION	VALORES	ESTADO
Comprobación a rasante en arranque muro		
- Muro H-3 -> Arranque:		CUMPLE
Espesor mínimo del tramo	Mínimo: 20 cm	
- Muro H-3 -> Tramo 1:	Calculado: 30 cm	CUMPLE
Cuantía mínima geométrica horizontal	Mínimo: 0.0008	
- Muro H-3 -> Tramo 1 -> Trasdós (0.00 m):	Calculado: 0.00175	CUMPLE
- Muro H-3 -> Tramo 1 -> Intradós (0.00 m):	Calculado: 0.00175	CUMPLE
Cuantía mínima mecánica horizontal por cara		
- Muro H-3 -> Tramo 1 -> Trasdós:	Mínimo: 0.00027 Calculado: 0.00175	CUMPLE
- Muro H-3 -> Tramo 1 -> Intradós:	Mínimo: 0.00051 Calculado: 0.00175	CUMPLE
Separación libre mínima armaduras horizontales	Mínimo: 2.5 cm	
- Muro H-3 -> Tramo 1 -> Trasdós:	Calculado: 14 cm	CUMPLE
- Muro H-3 -> Tramo 1 -> Intradós:	Calculado: 14 cm	CUMPLE
Separación máxima armaduras horizontales	Máximo: 30 cm	
- Muro H-3 -> Tramo 1 -> Trasdós:	Calculado: 15 cm	CUMPLE

- Muro H-3 -> Tramo 1 -> Intradós:	Calculado: 15 cm	CUMPLE
Cuantía mínima geométrica vertical cara traccionada	Mínimo: 0.0009	
- Muro H-3 -> Tramo 1 -> Intradós (0.00 m):	Calculado: 0.00252	CUMPLE
Cuantía mínima mecánica vertical cara traccionada	Mínimo: 0.00154	
- Muro H-3 -> Tramo 1 -> Intradós (0.00 m):	Calculado: 0.00252	CUMPLE
Cuantía mínima geométrica vertical cara comprimida	Mínimo: 0.00027	
- Muro H-3 -> Tramo 1 -> Trasdós (0.00 m):	Calculado: 0.00131	CUMPLE
Cuantía mínima mecánica vertical cara comprimida	Mínimo: 2e-005	
- Muro H-3 -> Tramo 1 -> Trasdós (0.00 m):	Calculado: 0.00131	CUMPLE
Cuantía máxima geométrica de armadura vertical total	Máximo: 0.04	
- Muro H-3 -> Tramo 1 -> (3.00 m):	Calculado: 0.00383	CUMPLE
Separación libre mínima armaduras verticales	Mínimo: 2.5 cm	
- Muro H-3 -> Tramo 1 -> Trasdós:	Calculado: 19 cm	CUMPLE
- Muro H-3 -> Tramo 1 -> Intradós:	Calculado: 13.8 cm	CUMPLE
Separación máxima armaduras verticales	Máximo: 30 cm	
- Muro H-3 -> Tramo 1 -> Trasdós:	Calculado: 20 cm	CUMPLE
- Muro H-3 -> Tramo 1 -> Intradós:	Calculado: 15 cm	CUMPLE
Comprobación a flexocompresión		
- Muro H-3 -> Tramo 1:		CUMPLE
Comprobación a cortante	Máximo: 11.63 Tn/m	
- Muro H-3 -> Tramo 1:	Calculado: 4.88 Tn/m	CUMPLE
Comprobación de fisuración	Máximo: 0.3 mm	
- Muro H-3 -> Tramo 1:	Calculado: 0.23 mm	CUMPLE
Comprobación de las longitudes de solape		
- Muro H-3 -> Tramo 1 -> Base trasdós:	Mínimo: 25 cm Calculado: 25 cm	CUMPLE
- Muro H-3 -> Tramo 1 -> Base intradós:	Mínimo: 45 cm Calculado: 45 cm	CUMPLE
Comprobación del anclaje del armado base en coronación		

- Muro H-3 -> Coronación -> Trasdós:	Mínimo: 18.5 cm Calculado: 18.5 cm	CUMPLE
- Muro H-3 -> Coronación -> Intradós:	Mínimo: 18.2 cm Calculado: 18.2 cm	CUMPLE
Area mínima longitudinal cara superior viga de coronación	Mínimo: 2.3 cm2	
- Muro H-3 -> Coronación:	Calculado: 2.3 cm2	CUMPLE
Tensiones sobre el terreno		
- Zapata H-3 -> Tensión media:	Máximo: 2 Kp/cm2 Calculado: 0.482 Kp/cm2	CUMPLE
- Zapata H-3 -> Tensión máxima acc. gravitatorias:	Máximo: 2.5 Kp/cm2 Calculado: 0.564 Kp/cm2	CUMPLE
Flexión en zapata (acciones estáticas)		
- Zapata H-3 -> Momento positivo en vuelo derecho:	Momento: 4.76 Tn·m	CUMPLE
- Zapata H-3 -> Momento negativo en vuelo derecho:	Momento: 0.00 Tn·m	CUMPLE
- Zapata H-3 -> Momento positivo sección ref. derecha:	Momento: 5.09 Tn·m	CUMPLE
- Zapata H-3 -> Momento negativo sección ref. derecha:	Momento: 0.00 Tn·m	CUMPLE
- Zapata H-3 -> Momento positivo en vuelo izquierdo:	Momento: 0.00 Tn·m	CUMPLE
- Zapata H-3 -> Momento negativo en vuelo izquierdo:	Momento: -3.52 Tn·m	CUMPLE
- Zapata H-3 -> Momento positivo sección ref. izquierda:	Momento: 0.00 Tn·m	CUMPLE
- Zapata H-3 -> Momento negativo sección ref. izquierda:	Momento: -3.74 Tn·m	CUMPLE
Coeficiente de rozamiento terreno-cimiento	Máximo: 0.5773	
- Zapata H-3:	Calculado: 0.5678	CUMPLE
Vuelco de la zapata		
- Zapata H-3:	Reserva seguridad: 789.6 %	CUMPLE
Compresión oblicua (acciones estáticas)	Máximo: 305.82 Tn	
- Zapata H-3 -> Vuelo derecho:	Calculado: 7.1 Tn	CUMPLE
- Zapata H-3 -> Vuelo izquierdo:	Calculado: 5.16 Tn	CUMPLE
Esfuerzo cortante (acciones estáticas)		
- Zapata H-3 -> Vuelo derecho:	Máximo: 16.95 Tn Calculado: 3.99 Tn	CUMPLE
- Zapata H-3 -> Vuelo izquierdo:	Máximo: 15.4 Tn Calculado: 2.95 Tn	CUMPLE

Canto mínimo	Mínimo: 25 cm	
- Zapata H-3:	Calculado: 65 cm	CUMPLE
Longitud de anclaje		
- Zapata H-3 -> Arranque izquierdo del muro:	Mínimo: 21 cm Calculado: 55 cm	CUMPLE
- Zapata H-3 -> Arranque derecho del muro:	Mínimo: 18 cm Calculado: 55 cm	CUMPLE
- Zapata H-3 -> Armado superior vuelo izq. hacia izquierda:	Mínimo: 43 cm Calculado: 75 cm	CUMPLE
- Zapata H-3 -> Armado superior vuelo izq. hacia derecha:	Mínimo: 43 cm Calculado: 165 cm	CUMPLE
- Zapata H-3 -> Armado base inferior vuelo der. hacia izquierda:	Mínimo: 30 cm Calculado: 204 cm	CUMPLE
- Zapata H-3 -> Armado base inferior vuelo der. hacia derecha:	Mínimo: 30 cm Calculado: 114 cm	CUMPLE
Cuantía geométrica mínima	Mínimo: 0.001	
- Zapata H-3 -> Armado inferior longitudinal:	Calculado: 0.0012	CUMPLE
- Zapata H-3 -> Armado inferior transversal:	Calculado: 0.0012	CUMPLE
Cuantía mínima necesaria por flexión		
- Zapata H-3 -> Armado inferior transversal:	Mínimo: 0.0004 Calculado: 0.0012	CUMPLE
- Zapata H-3 -> Armado sup. transversal vuelo izquierdo:	Mínimo: 0.0003 Calculado: 0.0009	CUMPLE
- Zapata H-3 -> Armado sup. transversal sección ref. izquierda:	Mínimo: 0.0003 Calculado: 0.0009	CUMPLE
Diámetro mínimo de las barras	Mínimo: 12 mm	
- Zapata H-3 -> Armaduras de la zapata:	Calculado: 12 mm	CUMPLE
Separación máxima entre barras	Máximo: 30 cm	
- Zapata H-3 -> Armado inferior transversal:	Calculado: 15 cm	CUMPLE
- Zapata H-3 -> Armado inferior longitudinal:	Calculado: 15 cm	CUMPLE
- Zapata H-3 -> Armado superior transversal:	Calculado: 20 cm	CUMPLE
- Zapata H-3 -> Armado superior longitudinal:	Calculado: 20 cm	CUMPLE
Separación mínima entre barras	Mínimo: 10 cm	
- Zapata H-3 -> Armado inferior transversal:	Calculado: 15 cm	CUMPLE
- Zapata H-3 -> Armado inferior longitudinal:	Calculado: 15 cm	CUMPLE
- Zapata H-3 -> Armado superior transversal:	Calculado: 20 cm	CUMPLE
- Zapata H-3 -> Armado superior longitudinal:	Calculado: 20 cm	CUMPLE
Longitud mínima de las patillas	Mínimo: 11 cm	
- Zapata H-3 -> Armado superior vuelo izq. hacia izquierda:	Calculado: 15 cm	CUMPLE
- Zapata H-3 -> Armado superior vuelo izq. hacia derecha:	Calculado: 15 cm	CUMPLE
- Zapata H-3 -> Armado base inferior vuelo izq. hacia izquierda:	Calculado: 54 cm	CUMPLE
- Zapata H-3 -> Armado base inferior vuelo izq. hacia derecha:	Calculado: 54 cm	CUMPLE
Se cumplen todas las comprobaciones		

ÍNDICE

1.- DATOS DE LA OBRA

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1.- DATOS DE LA OBRA

Hormigón: HA-25, Control estadístico
Acero: B 500 S, Control normal
Recubrimiento (Trasdós) : 5.00 cm
Recubrimiento (Intradós) : 5.00 cm
Recubrimiento (Superior) : 5.00 cm
Recubrimiento (Inferior) : 5.00 cm
Recubrimiento (Lateral) : 5.00 cm
Tamaño máximo del árido: 20.0 mm
Abertura límite de fisuras: 0.3 mm
Espesor hormigón limpieza: 10.0 cm
Tensión admisible del terreno: 2.0 Kp/cm2
Coeficiente rozamiento terreno-cimiento: 0.6
Tipo de empuje que produce la acción: Activo
Tipo de empuje que produce la reacción: Pasivo
Combinaciones de hormigón: EHE, Control normal
Combinaciones para tensiones sobre el terreno: Acciones Caracteristicas
Combinaciones de equilibrio: EHE, Control normal

2.- DESCRIPCIÓN

DESCRIPCION DE SECCIONES

Referencia: H-4a

- Longitud del muro: 1.00 m
- Cota en arranque: 0.00 m

Referencia: H-5a

- Longitud del muro: 1.00 m
- Cota en arranque: 0.00 m

LISTADO DE TERRENOS

Referencia: H-4a

- Situación de peso propio:
- Coronación:
Carga hacia abajo en coronación: 0 Tn/m
Carga hacia intradós en coronación: 0 Tn/m
Momento de compresión hacia intradós en coronación: 0 mTn/m
- Trasdós:
Con relleno: Cota: 4.00 m
Angulo de talud: 0.00 Grados
Densidad aparente: 1.80 Tn/m3
Densidad sumergida: 1.10 Tn/m3
Angulo rozamiento interno: 30.00 Grados
Evacuación por drenaje: 100.00 %
Porcentaje de empuje pasivo: 0.00 %
Cota empuje pasivo: 0.00 m
- Intradós:
No hay cargas.
- Esfuerzos en arranque de muro. ESTADO DE PESO PROPIO (PP):

	Cortante (Tn/m)	Momento (mTn/m)
Trasdós	4.800	6.400
Intradós	0.000	0.000
Total	4.800	6.400

- Situación de sobrecarga 1:
- Coronación:
Carga hacia abajo en coronación: 0 Tn/m
Carga hacia intradós en coronación: 0 Tn/m
Momento de compresión hacia intradós en coronación: 0 mTn/m
- Trasdós:
Con relleno: Cota: 4.00 m
Angulo de talud: 0.00 Grados
Densidad aparente: 1.80 Tn/m3
Densidad sumergida: 1.10 Tn/m3
Angulo rozamiento interno: 30.00 Grados
Evacuación por drenaje: 100.00 %
Porcentaje de empuje pasivo: 0.00 %
Cota empuje pasivo: 0.00 m
Carga 1:
Tipo: Uniforme
Valor: 1.00 Tn/m2
- Intradós:
Con relleno: Cota: 0.50 m
Angulo de talud: 0.00 Grados
Densidad aparente: 1.80 Tn/m3
Densidad sumergida: 1.10 Tn/m3
Angulo rozamiento interno: 30.00 Grados
Evacuación por drenaje: 100.00 %
Porcentaje de empuje pasivo: 0.00 %
Cota empuje pasivo: 0.00 m
- Esfuerzos en arranque de muro. ESTADO DE SOBRECARGA (SBC):

	Cortante (Tn/m)	Momento (mTn/m)
Trasdós	6.133	9.067
Intradós	0.000	0.000
Total	6.133	9.067

- Esfuerzos de arranque de muro. DIFERENCIA ESTADO DE SOBRECARGA Y PESO PROPIO (SBC - PP):

	Cortante (Tn/m)	Momento (mTn/m)
Trasdós	1.333	2.667
Intradós	0.000	0.000
Total	1.333	2.667

Referencia: H-5a

- Situación de peso propio:
- Coronación:
Carga hacia abajo en coronación: 0 Tn/m
Carga hacia intradós en coronación: 0 Tn/m
Momento de compresión hacia intradós en coronación: 0 mTn/m
- Trasdós:
Con relleno: Cota: 5.00 m
Angulo de talud: 0.00 Grados
Densidad aparente: 1.80 Tn/m3
Densidad sumergida: 1.10 Tn/m3
Angulo rozamiento interno: 30.00 Grados
Evacuación por drenaje: 100.00 %
Porcentaje de empuje pasivo: 0.00 %
Cota empuje pasivo: 0.00 m
- Intradós:
No hay cargas.
- Esfuerzos en arranque de muro. ESTADO DE PESO PROPIO (PP):

	Cortante (Tn/m)	Momento (mTn/m)
Trasdós	7.500	12.500
Intradós	0.000	0.000
Total	7.500	12.500

- Situación de sobrecarga 1:
- Coronación:
Carga hacia abajo en coronación: 0 Tn/m
Carga hacia intradós en coronación: 0 Tn/m
Momento de compresión hacia intradós en coronación: 0 mTn/m
- Trasdós:
Con relleno: Cota: 5.00 m
Angulo de talud: 0.00 Grados
Densidad aparente: 1.80 Tn/m3
Densidad sumergida: 1.10 Tn/m3
Angulo rozamiento interno: 30.00 Grados
Evacuación por drenaje: 100.00 %
Porcentaje de empuje pasivo: 0.00 %
Cota empuje pasivo: 0.00 m
Carga 1:
Tipo: Uniforme
Valor: 1.00 Tn/m2
- Intradós:
Con relleno: Cota: 0.50 m
Angulo de talud: 0.00 Grados
Densidad aparente: 1.80 Tn/m3
Densidad sumergida: 1.10 Tn/m3
Angulo rozamiento interno: 30.00 Grados
Evacuación por drenaje: 100.00 %

Porcentaje de empuje pasivo: 0.00 %
Cota empuje pasivo: 0.00 m
- Esfuerzos en arranque de muro. ESTADO DE SOBRECARGA (SBC):

	Cortante (Tn/m)	Momento (mTn/m)
Trasdós	9.167	16.667
Intradós	0.000	0.000
Total	9.167	16.667

- Esfuerzos de arranque de muro. DIFERENCIA ESTADO DE SOBRECARGA Y PESO PROPIO (SBC - PP):

	Cortante (Tn/m)	Momento (mTn/m)
Trasdós	1.667	4.167
Intradós	0.000	0.000
Total	1.667	4.167

MUROS CALCULADOS

Referencia	Espesor inferior	Espesor superior	Altura	Ar. Vert. T.	Ar. Vert. I.	Ar. Horz. T.	Ar. Horz. I.	Ar. Coronación
H-4a	30.00 cm	30.00 cm	4.00 m	Armado base Ø10 c/ 15 Refuerzo 1 Ø16 c/ 15 h= 1.50	Ø10 c/ 20	Ø10 c/ 15	Ø10 c/ 15	Barras superiores 2 Ø12
H-5a	35.00 cm	35.00 cm	5.00 m	Armado base Ø12 c/ 15 Refuerzo 1 Ø20 c/ 15 h= 1.70	Ø10 c/ 15	Ø12 c/ 15	Ø10 c/ 15	Barras superiores 2 Ø12

Nota:
- Ar. Vert. T.: Armado vertical trasdós
- Ar. Vert. I.: Armado vertical intradós
- Ar. Horz. T.: Armado horizontal trasdós
- Ar. Horz. I.: Armado horizontal intradós
- Ar. Coronación: Armado en coronación

Referencias	Geometría	Armado
H-4a	Vuelo izquierdo: 155.0 cm Vuelo derecho: 155.0 cm Canto: 70.0 cm	Base inferior: Ø16 c/ 20 Longitudinal inferior: Ø16 c/ 20 Superior Longitudinal: Ø12 c/ 20 Superior Transversal: Ø12 c/ 20
H-5a	Vuelo izquierdo: 190.0 cm Vuelo derecho: 190.0 cm Canto: 95.0 cm	Base inferior: Ø16 c/ 20 Longitudinal inferior: Ø16 c/ 20 Superior Longitudinal: Ø16 c/ 20 Superior Transversal: Ø12 c/ 20

3.- COMPROBACIÓN

Referencia: H-4a		
COMPROBACION	VALORES	ESTADO
Comprobación a rasante en arranque muro		
- Muro H-4a -> Arranque:		CUMPLE
Espesor mínimo del tramo	Mínimo: 20 cm	
- Muro H-4a -> Tramo 1:	Calculado: 30 cm	CUMPLE
Cuantía mínima geométrica horizontal	Mínimo: 0.0008	
- Muro H-4a -> Tramo 1 -> Trasdós (0.00 m):	Calculado: 0.00175	CUMPLE
- Muro H-4a -> Tramo 1 -> Intradós (0.00 m):	Calculado: 0.00175	CUMPLE
Cuantía mínima mecánica horizontal por cara		
- Muro H-4a -> Tramo 1 -> Trasdós:	Mínimo: 0.00125 Calculado: 0.00175	CUMPLE
- Muro H-4a -> Tramo 1 -> Intradós:	Mínimo: 0.00027 Calculado: 0.00175	CUMPLE
Separación libre mínima armaduras horizontales	Mínimo: 2.5 cm	
- Muro H-4a -> Tramo 1 -> Trasdós:	Calculado: 14 cm	CUMPLE
- Muro H-4a -> Tramo 1 -> Intradós:	Calculado: 14 cm	CUMPLE
Separación máxima armaduras horizontales	Máximo: 30 cm	
- Muro H-4a -> Tramo 1 -> Trasdós:	Calculado: 15 cm	CUMPLE
- Muro H-4a -> Tramo 1 -> Intradós:	Calculado: 15 cm	CUMPLE
Cuantía mínima geométrica vertical cara traccionada	Mínimo: 0.0009	
- Muro H-4a -> Tramo 1 -> Trasdós (0.00 m):	Calculado: 0.00622	CUMPLE
- Muro H-4a -> Tramo 1 -> Trasdós (1.50 m):	Calculado: 0.00175	CUMPLE
Cuantía mínima mecánica vertical cara traccionada	Mínimo: 0.00154	
- Muro H-4a -> Tramo 1 -> Trasdós (0.00 m):	Calculado: 0.00622	CUMPLE
- Muro H-4a -> Tramo 1 -> Trasdós (1.50 m):	Calculado: 0.00175	CUMPLE
Cuantía mínima geométrica vertical cara comprimida	Mínimo: 0.00027	
- Muro H-4a -> Tramo 1 -> Intradós (0.00 m):	Calculado: 0.00131	CUMPLE
- Muro H-4a -> Tramo 1 -> Intradós (1.50 m):	Calculado: 0.00131	CUMPLE
Cuantía mínima mecánica vertical cara comprimida	Mínimo: 2e-005	
- Muro H-4a -> Tramo 1 -> Intradós (0.00 m):	Calculado: 0.00131	CUMPLE
- Muro H-4a -> Tramo 1 -> Intradós (1.50 m):	Calculado: 0.00131	CUMPLE
Cuantía máxima geométrica de armadura vertical total	Máximo: 0.04	
- Muro H-4a -> Tramo 1 -> (4.00 m):	Calculado: 0.00306	CUMPLE
- Muro H-4a -> Tramo 1 -> (1.50 m):	Calculado: 0.00753	CUMPLE
Separación libre mínima armaduras verticales	Mínimo: 2.5 cm	
- Muro H-4a -> Tramo 1 -> Trasdós:	Calculado: 6.2 cm	CUMPLE
- Muro H-4a -> Tramo 1 -> Intradós:	Calculado: 19 cm	CUMPLE
Separación máxima armaduras verticales	Máximo: 30 cm	
- Muro H-4a -> Tramo 1 -> Trasdós:	Calculado: 15 cm	CUMPLE
- Muro H-4a -> Tramo 1 -> Intradós:	Calculado: 20 cm	CUMPLE
Comprobación a flexocompresión		
- Muro H-4a -> Tramo 1:		CUMPLE
Comprobación a cortante	Máximo: 15.75 Tn/m	
- Muro H-4a -> Tramo 1:	Calculado: 8.35 Tn/m	CUMPLE
Comprobación de fisuración	Máximo: 0.3 mm	
- Muro H-4a -> Tramo 1:	Calculado: 0.28 mm	CUMPLE

Comprobación de las longitudes de solape		
- Muro H-4a -> Tramo 1 -> Base trasdós:	Mínimo: 35 cm Calculado: 35 cm	CUMPLE
- Muro H-4a -> Tramo 1 -> Base intradós:	Mínimo: 25 cm Calculado: 25 cm	CUMPLE
Comprobación del anclaje del armado base en coronación	Mínimo: 18.5 cm	
- Muro H-4a -> Coronación -> Trasdós:	Calculado: 18.5 cm	CUMPLE
- Muro H-4a -> Coronación -> Intradós:	Calculado: 18.5 cm	CUMPLE
Area mínima longitudinal cara superior viga de coronación	Mínimo: 2.3 cm2	
- Muro H-4a -> Coronación:	Calculado: 2.3 cm2	CUMPLE
Tensiones sobre el terreno		
- Zapata H-4a -> Tensión media:	Máximo: 2 Kp/cm2 Calculado: 0.632 Kp/cm2	CUMPLE
- Zapata H-4a -> Tensión máxima acc. gravitatorias:	Máximo: 2.5 Kp/cm2 Calculado: 0.857 Kp/cm2	CUMPLE
Flexión en zapata (acciones estáticas)		
- Zapata H-4a -> Momento positivo en vuelo derecho:	Momento: 0.00 Tn·m	CUMPLE
- Zapata H-4a -> Momento negativo en vuelo derecho:	Momento: -7.71 Tn·m	CUMPLE
- Zapata H-4a -> Momento positivo sección ref. derecha:	Momento: 0.00 Tn·m	CUMPLE
- Zapata H-4a -> Momento negativo sección ref. derecha:	Momento: -8.12 Tn·m	CUMPLE
- Zapata H-4a -> Momento positivo en vuelo izquierdo:	Momento: 9.59 Tn·m	CUMPLE
- Zapata H-4a -> Momento negativo en vuelo izquierdo:	Momento: 0.00 Tn·m	CUMPLE
- Zapata H-4a -> Momento positivo sección ref. izquierda:	Momento: 10.11 Tn·m	CUMPLE
- Zapata H-4a -> Momento negativo sección ref. izquierda:	Momento: 0.00 Tn·m	CUMPLE
Coeficiente de rozamiento terreno-cimiento	Máximo: 0.5773	
- Zapata H-4a:	Calculado: 0.5762	CUMPLE
Vuelco de la zapata		
- Zapata H-4a:	Reserva seguridad: 423.0 %	CUMPLE
Compresión oblicua (acciones estáticas)	Máximo: 331.3 Tn	
- Zapata H-4a -> Vuelo derecho:	Calculado: 9.09 Tn	CUMPLE
- Zapata H-4a -> Vuelo izquierdo:	Calculado: 11.52 Tn	CUMPLE
Esfuerzo cortante (acciones estáticas)		
- Zapata H-4a -> Vuelo derecho:	Máximo: 16.02 Tn Calculado: 5.9 Tn	CUMPLE
- Zapata H-4a -> Vuelo izquierdo:	Máximo: 19.4 Tn Calculado: 7.31 Tn	CUMPLE
Canto mínimo	Mínimo: 25 cm	
- Zapata H-4a:	Calculado: 70 cm	CUMPLE
Longitud de anclaje		
- Zapata H-4a -> Arranque izquierdo del muro:	Mínimo: 18 cm Calculado: 60 cm	CUMPLE
- Zapata H-4a -> Arranque derecho del muro:	Mínimo: 28 cm Calculado: 60 cm	CUMPLE
- Zapata H-4a -> Armado superior vuelo der. hacia izquierda:	Mínimo: 43 cm Calculado: 190 cm	CUMPLE
- Zapata H-4a -> Armado superior vuelo der. hacia derecha:	Mínimo: 43 cm Calculado: 95 cm	CUMPLE
- Zapata H-4a -> Armado base inferior vuelo izq. hacia izquierda:	Mínimo: 40 cm Calculado: 139 cm	CUMPLE
- Zapata H-4a -> Armado base inferior vuelo izq. hacia derecha:	Mínimo: 40 cm Calculado: 234 cm	CUMPLE
Cuantía geométrica mínima	Mínimo: 0.001	
- Zapata H-4a -> Armado inferior longitudinal:	Calculado: 0.0015	CUMPL

- Zapata H-4a -> Armado inferior transversal:	Calculado: 0.0015	E
Cuantía mínima necesaria por flexión		CUMPL E
- Zapata H-4a -> Armado inferior transversal:	Mínimo: 0.0006 Calculado: 0.0015	CUMPL E
- Zapata H-4a -> Armado sup. transversal vuelo derecho:	Mínimo: 0.0005 Calculado: 0.0009	CUMPL E
- Zapata H-4a -> Armado sup. transversal sección ref. derecha:	Mínimo: 0.0005 Calculado: 0.0009	CUMPL E
Diámetro mínimo de las barras	Mínimo: 12 mm	
- Zapata H-4a -> Armaduras de la zapata:	Calculado: 12 mm	CUMPL E
Separación máxima entre barras	Máximo: 30 cm	
- Zapata H-4a -> Armado inferior transversal:	Calculado: 20 cm	CUMPL E
- Zapata H-4a -> Armado inferior longitudinal:	Calculado: 20 cm	
- Zapata H-4a -> Armado superior transversal:	Calculado: 20 cm	CUMPL E
- Zapata H-4a -> Armado superior longitudinal:	Calculado: 20 cm	CUMPL E
Separación mínima entre barras	Mínimo: 10 cm	
- Zapata H-4a -> Armado inferior transversal:	Calculado: 20 cm	CUMPL E
- Zapata H-4a -> Armado inferior longitudinal:	Calculado: 20 cm	
- Zapata H-4a -> Armado superior transversal:	Calculado: 20 cm	CUMPL E
- Zapata H-4a -> Armado superior longitudinal:	Calculado: 20 cm	CUMPL E
Longitud mínima de las patillas		CUMPL E
- Zapata H-4a -> Armado superior vuelo izq. hacia izquierda:	Mínimo: 11 cm Calculado: 15 cm	CUMPL E
- Zapata H-4a -> Armado superior vuelo izq. hacia derecha:	Mínimo: 11 cm Calculado: 15 cm	CUMPL E
- Zapata H-4a -> Armado base inferior vuelo izq. hacia izquierda:	Mínimo: 15 cm Calculado: 59 cm	CUMPL E
- Zapata H-4a -> Armado base inferior vuelo izq. hacia derecha:	Mínimo: 15 cm Calculado: 59 cm	CUMPL E
Se cumplen todas las comprobaciones		

Referencia: H-5a		
COMPROBACION	VALORES	ESTADO
Comprobación a rasante en arranque muro		
- Muro H-5a -> Arranque:		CUMPL E
Espesor mínimo del tramo	Mínimo: 20 cm	
- Muro H-5a -> Tramo 1:	Calculado: 35.01 cm	CUMPL E
Cuantía mínima geométrica horizontal	Mínimo: 0.0008	
- Muro H-5a -> Tramo 1 -> Trasdós (0.00 m):	Calculado: 0.00216	CUMPL E
- Muro H-5a -> Tramo 1 -> Intradós (0.00 m):	Calculado: 0.0015	CUMPL E
Cuantía mínima mecánica horizontal por cara		
- Muro H-5a -> Tramo 1 -> Trasdós:	Mínimo: 0.00163 Calculado: 0.00216	CUMPL E
- Muro H-5a -> Tramo 1 -> Intradós:	Mínimo: 0.0003 Calculado: 0.0015	CUMPL E
Separación libre mínima armaduras horizontales	Mínimo: 2.5 cm	
- Muro H-5a -> Tramo 1 -> Trasdós:	Calculado: 13.8 cm	CUMPL E
- Muro H-5a -> Tramo 1 -> Intradós:	Calculado: 14 cm	CUMPL E
Separación máxima armaduras horizontales	Máximo: 30 cm	
- Muro H-5a -> Tramo 1 -> Trasdós:	Calculado: 15 cm	CUMPL E
- Muro H-5a -> Tramo 1 -> Intradós:	Calculado: 15 cm	CUMPL E
Cuantía mínima geométrica vertical cara traccionada	Mínimo: 0.0009	
- Muro H-5a -> Tramo 1 -> Trasdós (0.00 m):	Calculado: 0.00814	CUMPL

- Muro H-5a -> Tramo 1 -> Trasdós (1.70 m):	Calculado: 0.00216	E CUMPLE
Cuantía mínima mecánica vertical cara traccionada	Mínimo: 0.00154	
- Muro H-5a -> Tramo 1 -> Trasdós (0.00 m):	Calculado: 0.00814	CUMPLE
- Muro H-5a -> Tramo 1 -> Trasdós (1.70 m):	Calculado: 0.00216	CUMPLE
Cuantía mínima geométrica vertical cara comprimida	Mínimo: 0.00027	
- Muro H-5a -> Tramo 1 -> Intradós (0.00 m):	Calculado: 0.0015	CUMPLE
- Muro H-5a -> Tramo 1 -> Intradós (1.70 m):	Calculado: 0.0015	CUMPLE
Cuantía mínima mecánica vertical cara comprimida		
- Muro H-5a -> Tramo 1 -> Intradós (0.00 m):	Mínimo: 3e-005 Calculado: 0.0015	CUMPLE
- Muro H-5a -> Tramo 1 -> Intradós (1.70 m):	Mínimo: 2e-005 Calculado: 0.0015	CUMPLE
Cuantía máxima geométrica de armadura vertical total	Máximo: 0.04	
- Muro H-5a -> Tramo 1 -> (5.00 m):	Calculado: 0.00366	CUMPLE
- Muro H-5a -> Tramo 1 -> (1.70 m):	Calculado: 0.00964	CUMPLE
Separación libre mínima armaduras verticales	Mínimo: 2.5 cm	
- Muro H-5a -> Tramo 1 -> Trasdós:	Calculado: 5.9 cm	CUMPLE
- Muro H-5a -> Tramo 1 -> Intradós:	Calculado: 14 cm	CUMPLE
Separación máxima armaduras verticales	Máximo: 30 cm	
- Muro H-5a -> Tramo 1 -> Trasdós:	Calculado: 15 cm	CUMPLE
- Muro H-5a -> Tramo 1 -> Intradós:	Calculado: 15 cm	CUMPLE
Comprobación a flexocompresión		
- Muro H-5a -> Tramo 1:		CUMPLE
Comprobación a cortante	Máximo: 19.78 Tn/m	

- Muro H-5a -> Tramo 1:	Calculado: 12.48 Tn/m	CUMPLE
Comprobación de fisuración	Máximo: 0.3 mm	
- Muro H-5a -> Tramo 1:	Calculado: 0.3 mm	CUMPLE
Comprobación de las longitudes de solape		
- Muro H-5a -> Tramo 1 -> Base trasdós:	Mínimo: 45 cm Calculado: 45 cm	CUMPLE
- Muro H-5a -> Tramo 1 -> Base intradós:	Mínimo: 25 cm Calculado: 25 cm	CUMPLE
Comprobación del anclaje del armado base en coronación		
- Muro H-5a -> Coronación -> Trasdós:	Mínimo: 23.2 cm Calculado: 23.2 cm	CUMPLE
- Muro H-5a -> Coronación -> Intradós:	Mínimo: 23.5 cm Calculado: 23.5 cm	CUMPLE
Area mínima longitudinal cara superior viga de coronación	Mínimo: 2.3 cm2	
- Muro H-5a -> Coronación:	Calculado: 2.3 cm2	CUMPLE
Tensiones sobre el terreno		
- Zapata H-5a -> Tensión media:	Máximo: 2 Kp/cm2 Calculado: 0.796 Kp/cm2	CUMPLE
- Zapata H-5a -> Tensión máxima acc. gravitatorias:	Máximo: 2.5 Kp/cm2 Calculado: 1.077 Kp/cm2	CUMPLE
Flexión en zapata (acciones estáticas)		
- Zapata H-5a -> Momento positivo en vuelo derecho:	Momento: 0.00 Tn·m	CUMPLE
- Zapata H-5a -> Momento negativo en vuelo derecho:	Momento: -14.79 Tn·m	CUMPLE
- Zapata H-5a -> Momento positivo sección ref. derecha:	Momento: 0.00 Tn·m	CUMPLE
- Zapata H-5a -> Momento negativo sección ref. derecha:	Momento: -15.53 Tn·m	CUMPLE
- Zapata H-5a -> Momento positivo en vuelo izquierdo:	Momento: 18.21 Tn·m	CUMPLE
- Zapata H-5a -> Momento negativo en vuelo izquierdo:	Momento: 0.00 Tn·m	CUMPLE
- Zapata H-5a -> Momento positivo sección ref. izquierda:	Momento: 19.17 Tn·m	CUMPLE
- Zapata H-5a -> Momento negativo sección ref. izquierda:	Momento: 0.00 Tn·m	

		CUMPLE
		CUMPLE
		CUMPLE
Coeficiente de rozamiento terreno-cimiento	Máximo: 0.5773	
- Zapata H-5a:	Calculado: 0.5761	CUMPLE
Vuelco de la zapata		
- Zapata H-5a:	Reserva seguridad: 435.0 %	CUMPLE
Compresión oblicua (acciones estáticas)	Máximo: 458.72 Tn	
- Zapata H-5a -> Vuelo derecho:	Calculado: 14.26 Tn	CUMPLE
- Zapata H-5a -> Vuelo izquierdo:	Calculado: 17.87 Tn	CUMPLE
Esfuerzo cortante (acciones estáticas)		
- Zapata H-5a -> Vuelo derecho:	Máximo: 18.83 Tn Calculado: 8.47 Tn	CUMPLE
- Zapata H-5a -> Vuelo izquierdo:	Máximo: 22.81 Tn Calculado: 10.38 Tn	CUMPLE
Canto mínimo	Mínimo: 25 cm	
- Zapata H-5a:	Calculado: 95 cm	CUMPLE
Longitud de anclaje		
- Zapata H-5a -> Arranque izquierdo del muro:	Mínimo: 18 cm Calculado: 85 cm	CUMPLE
- Zapata H-5a -> Arranque derecho del muro:	Mínimo: 60 cm Calculado: 85 cm	CUMPLE
- Zapata H-5a -> Armado superior vuelo der. hacia izquierda:	Mínimo: 43 cm Calculado: 229 cm	CUMPLE
- Zapata H-5a -> Armado superior vuelo der. hacia derecha:	Mínimo: 43 cm Calculado: 105 cm	CUMPLE
- Zapata H-5a -> Armado base inferior vuelo izq. hacia izquierda:	Mínimo: 40 cm Calculado: 174 cm	CUMPLE
- Zapata H-5a -> Armado base inferior vuelo izq. hacia	Mínimo: 40 cm Calculado: 299 cm	

derecha:		CUMPLE
		CUMPLE
Cuantía geométrica mínima	Mínimo: 0.001	
- Zapata H-5a -> Armado inferior longitudinal:	Calculado: 0.0011	CUMPLE
- Zapata H-5a -> Armado inferior transversal:	Calculado: 0.0011	CUMPLE
Cuantía mínima necesaria por flexión		
- Zapata H-5a -> Armado inferior transversal:	Mínimo: 0.0006 Calculado: 0.0011	CUMPLE
- Zapata H-5a -> Armado sup. transversal vuelo derecho:	Mínimo: 0.0005 Calculado: 0.0006	CUMPLE
- Zapata H-5a -> Armado sup. transversal sección ref. derecha:	Mínimo: 0.0005 Calculado: 0.0006	CUMPLE
Diámetro mínimo de las barras	Mínimo: 12 mm	
- Zapata H-5a -> Armaduras de la zapata:	Calculado: 12 mm	CUMPLE
Separación máxima entre barras	Máximo: 30 cm	
- Zapata H-5a -> Armado inferior transversal:	Calculado: 20 cm	CUMPLE
- Zapata H-5a -> Armado inferior longitudinal:	Calculado: 20 cm	CUMPLE
- Zapata H-5a -> Armado superior transversal:	Calculado: 20 cm	CUMPLE
- Zapata H-5a -> Armado superior longitudinal:	Calculado: 20 cm	CUMPLE
Separación mínima entre barras	Mínimo: 10 cm	
- Zapata H-5a -> Armado inferior transversal:	Calculado: 20 cm	CUMPLE
- Zapata H-5a -> Armado inferior longitudinal:	Calculado: 20 cm	CUMPLE
- Zapata H-5a -> Armado superior transversal:	Calculado: 20 cm	CUMPLE
- Zapata H-5a -> Armado superior longitudinal:	Calculado: 20 cm	CUMPLE

Longitud mínima de las patillas		
- Zapata H-5a -> Armado superior vuelo izq. hacia izquierda:	Mínimo: 11 cm Calculado: 15 cm	CUMPLE
- Zapata H-5a -> Armado superior vuelo izq. hacia derecha:	Mínimo: 11 cm Calculado: 15 cm	CUMPLE
- Zapata H-5a -> Armado base inferior vuelo izq. hacia izquierda:	Mínimo: 15 cm Calculado: 84 cm	CUMPLE
- Zapata H-5a -> Armado base inferior vuelo izq. hacia derecha:	Mínimo: 15 cm Calculado: 84 cm	CUMPLE
Se cumplen todas las comprobaciones		

TEC-CUATRO, S.A.
Aribau 237-241,esc B, entlo
08021 BARCELONA
Tel. 93 202 21 65*
Fax 93 414 32 66
e-mail: tec-cuatro@tec-cuatro.es

INGENIEROS CONSULTORES

INFORME PASO INFERIOR RAMAL VALLÉS – BARCELONA

P.K. 502+267
PROYECTO DE CONSTRUCCIÓN DE PLATAFORMA
L.A.V. MADRID –ZARAGOZA-BARCELONA-FRONTERA FRANCESA
TRAMO: CONEXIÓN VALLÈS-CASTELLBISBAL

El presente informe revisa la memoria de los cálculos efectuados en Paso Inferior Ramal Vallés – Barcelona P.K. 502+267, por VALTER valenciana de estructuras a petición de la empresa constructora COPASA, con fecha Septiembre de 2003.

Como indica la memoria se ha cambiado la tipología de una losa con forma rectangular apoyada en pantalla de pilotes / micropilotes a una losa esviada apoyada en un muro pantalla. La memoria presenta los siguientes apartados dentro de las bases de cálculo: normativa utilizada, características de los materiales, características del cimiento, acciones consideradas y hipótesis de carga. Seguidamente, la memoria presenta los cálculos estructurales con los siguientes apartados: modelo de cálculo, cálculo de esfuerzos y dimensionamiento. Las bases de cálculo y el cálculos estructurales están de acuerdo con las normativas utilizadas y con las instrucciones y recomendaciones para la redacción de proyectos de plataforma del GIF.

De la revisión de la memoria se tienen las siguientes consideraciones:

- Falta definir geométricamente con un cuadro de coordenadas los puntos de replanteo de los estribos del Paso Inferior además de incluir el punto donde cruzan los ejes de vía.
- La pantalla de 0.80 bajo los estribos podría ser reducida a 0.65 con un proceso constructivo que contemplara una excavación de intradós una vez la losa del puente pueda servir de apoyo en cabeza de la pantalla. En el caso de que la pantalla pudiera tener una fase provisional como autoportante, dada su altura se deberían analizar los desplazamientos en cabeza para que no se genere un problema de desplome del paramento vertical.
- Para el cálculo del empuje en las pantallas se debe considerar una sobrecarga de 3 T/m^2 de acuerdo a la instrucción. En el caso de pantalla autoportante se puede considerar una sobrecarga de 1 T/m^2 en fase provisional.
- Falta información de las condiciones de contorno empleadas en CEDRUS.
- Falta indicar en los cálculos como se ha hecho el reparto local de cargas y el resultado para cada tipo de tren.
- Falta información de la situación de los trenes sobre la losa. Posición exacta de los mismos y casos evaluados. Hay que garantizar esta posición para evitar posibles levantamientos de la losa al ser esviada.
- Falta mostrar las diferentes combinaciones de acciones empleadas en el cálculo de la losa.
- Los coeficientes de mayoración empleados que aparecen en el apartado A1.4 Esfuerzos indica un nivel de control de ejecución intenso que debe aparecer reflejado en el cuadro de características materiales.
- Falta mostrar el cuadro de características materiales en los planos además de las notas necesarias tal y como aparecen en el proyecto original
- Falta justificar la armadura de refuerzo bajo los apoyos.

INGENIEROS CONSULTORES

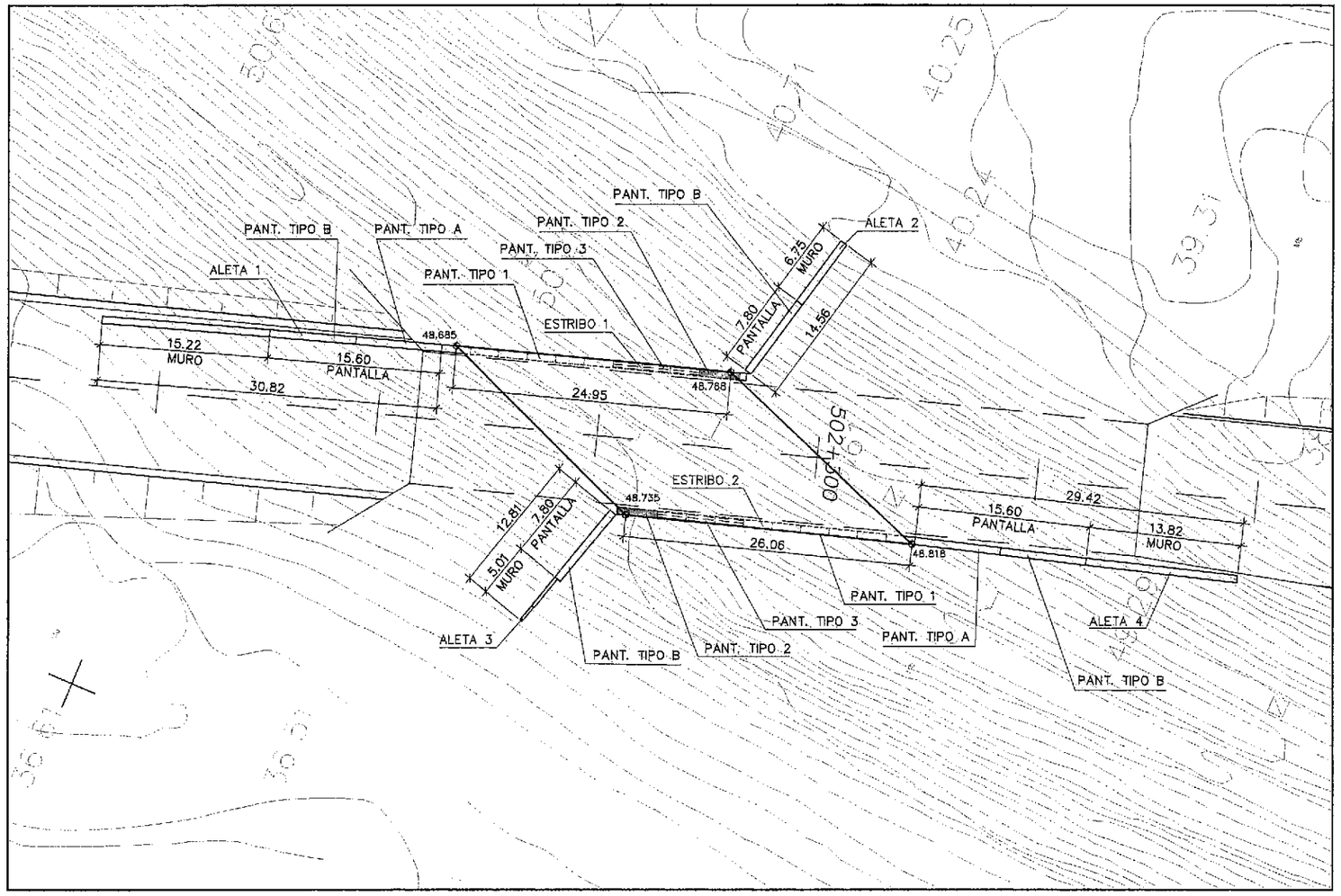
- Falta mostrar el cálculo del espaldón del estribo para las acciones transmitidas a través de los neoprenos verticales.
- Falta la comprobación de la capacidad vertical portante de las pantallas bajo los apoyos que justifique como suficiente la clava utilizada.
- Falta indicar en los planos donde van los neoprenos verticales, además de la comprobación del espesor de los mismos que garantice los desplazamientos de retracción y temperatura en la dirección transversal
- Falta analizar el espaciamiento de la armadura total de la losa en las esquinas con armadura de refuerzo para garantizar que sea posible hormigonar la misma.
- Es conveniente aportar planos de despiece para los diferentes elementos estructurales permitiendo de esta forma ver que se prevén los anclajes y solapes necesarios según la instrucción.
- No aparecen las longitudes de solape de barras en los planos. Además se debería incluir una nota en los planos de armadura referente a anclajes y solapes según la instrucción.
- Falta incluir planos con el proceso constructivo y detalle de puesta a tierra tal y como aparecen en el proyecto original.

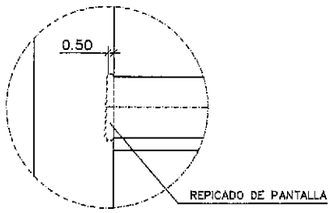
La dirección de obra de la U.T.E. de las empresas INGENIERÍA DE TRAZADOS Y ESTRUCTURAS, S.A. (INTRAESA) y TEC-CUATRO, S.A. en el proyecto de la L.A.V. Tramo: Conexión Vallès – Castellbisbal, se determina que la estructura de la nueva tipología parece viable aunque faltan por comprobar los puntos anteriormente mencionados para la aprobación de la misma.

Barcelona, 10 de Septiembre de 2003

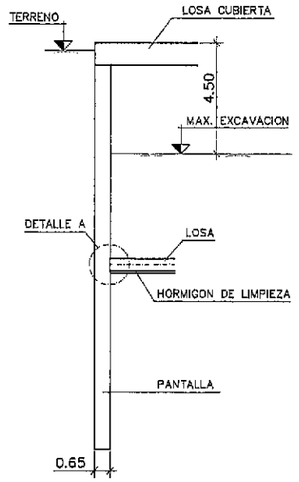
Responsable del Proyecto
Antonio Ariño Moreno

PASO BAJO RAMAL VALLÉS - BARCELONA (L.A.V.)

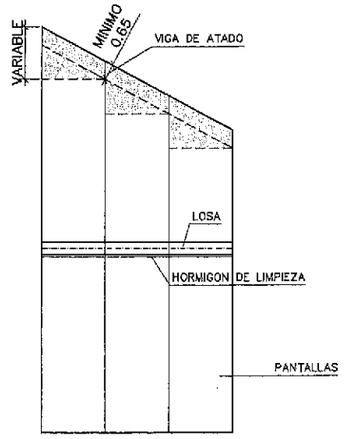




DETALLE A
S/E



VISTA FRONTAL
PANTALLA TIPO
ESCALA: 1/25



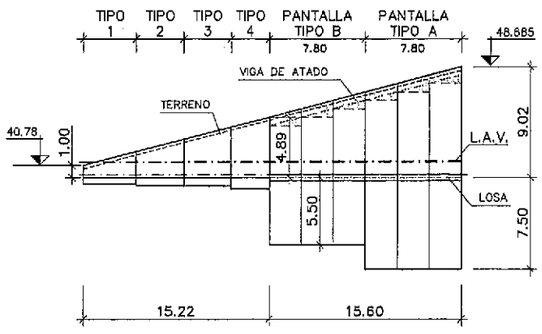
VISTA LATERAL
PANTALLA ALETAS
ESCALA: 1/25

NOTA: EN FASE PROVISIONAL LAS PANTALLAS TENDRÁN UN VOLADIZO MÁXIMO DE 4.50m.

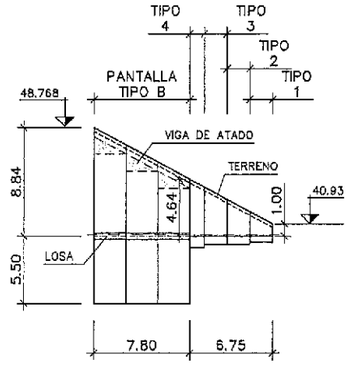
LA LOSA SE EJECUTARÁ POR BATACHES, UNA VEZ EJECUTADAS LAS PANTALLAS (3 PANELES) Y LA VIGA DE ATADO.

LOS BATACHES SE EJECUTARÁN MANTETINEDO SIEMPRE LA MITAD DEL PANEL CON VOLADIZO MÁXIMO DE 4.50m.

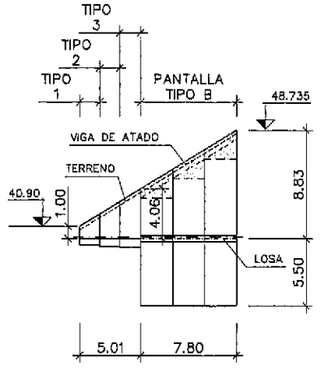
VISTA LATERAL
ALETA 1



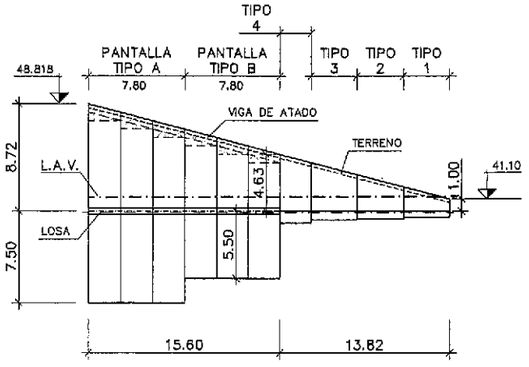
VISTA LATERAL
ALETA 2



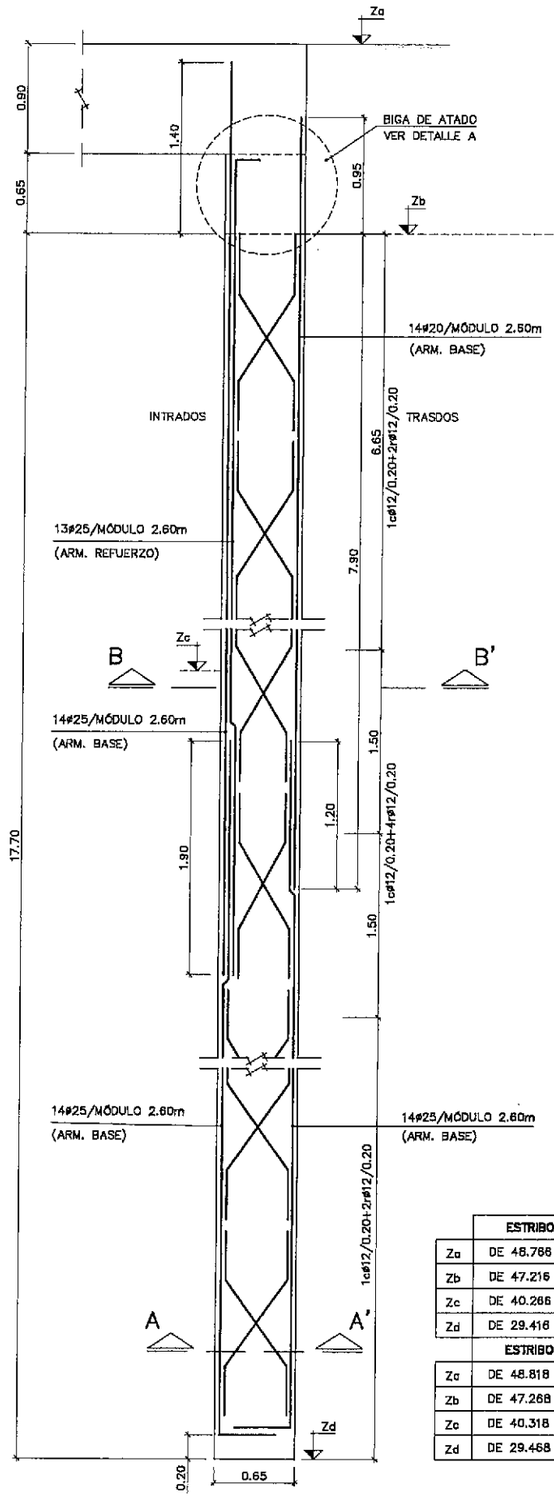
VISTA LATERAL
ALETA 3



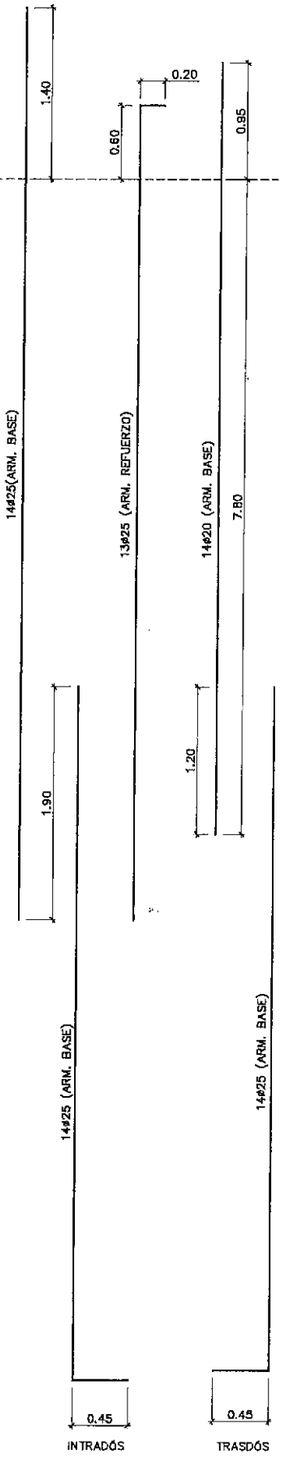
VISTA LATERAL
ALETA 4



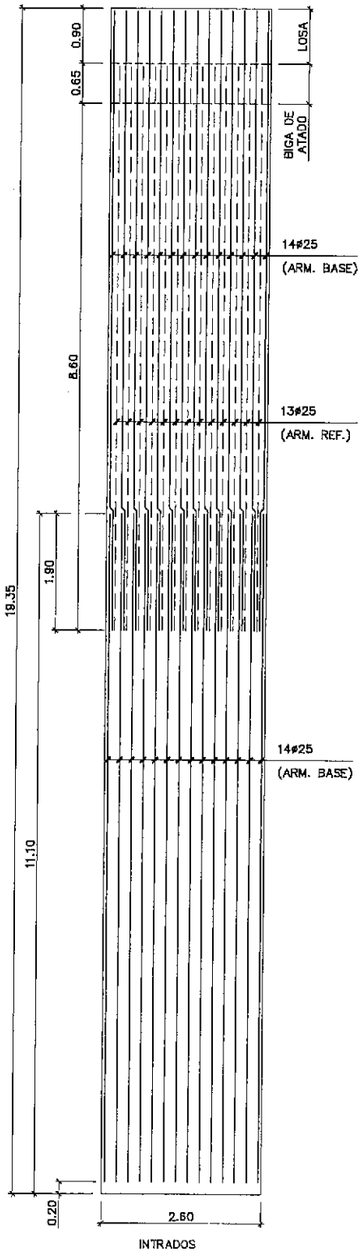
GIF Gestor de Infraestructuras Ferroviarias	TÍTULO PROYECTO DE CONSTRUCCIÓN DE PLATAFORMA LINEA DE ALTA VELOCIDAD MADRID - ZARAGOZA - BARCELONA - FRONTERA FRANCESA TRAMO: CONEXIÓN VALLÉS- CASTELLBISBAL	AUTOR Intraesa Ingeniería de Trazados y Estructuras · Tec'4 Ingenieros Consultores	ESCALA 1/50 Numérica · Gráfica 0 0.625 1.25 m	FECHA SEPTIEMBRE-2004	TÍTULO DEL PLANO PASO BAJO RAMAL VALLES–BARCELONA (L.A.V.) DEFINICIÓN GEOMETRICA DETALLES	Nº DE PLANO 2.9.1.3/2 Hoja — de 21

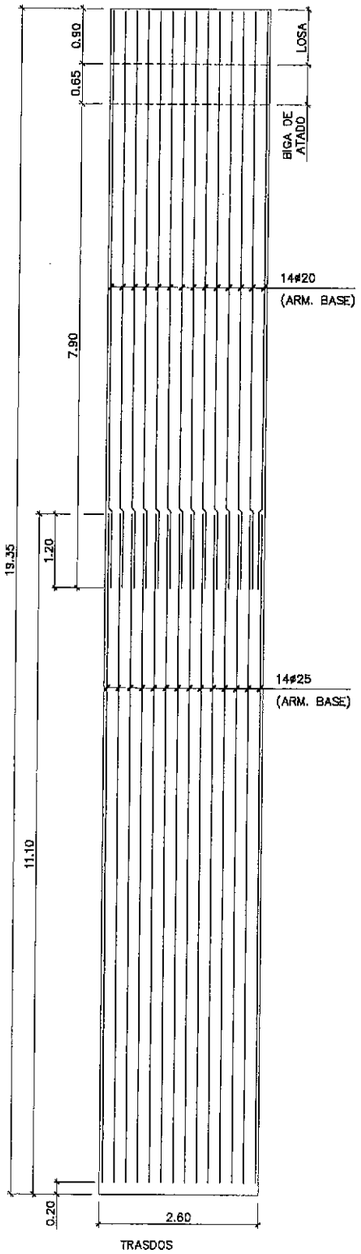


	ESTRIBO 1
Za	DE 48.786 a 48.885
Zb	DE 47.216 A 47.135
Zc	DE 40.266 A 40.185
Zd	DE 29.416 A 29.335
	ESTRIBO 2
Za	DE 48.818 a 48.735
Zb	DE 47.268 A 47.185
Zc	DE 40.318 A 40.235
Zd	DE 29.468 A 29.385

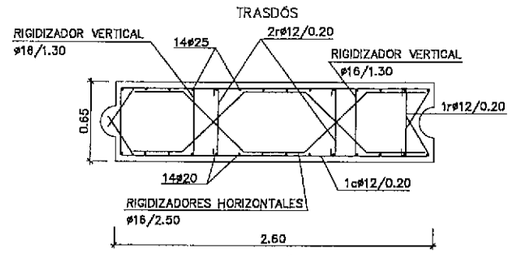


GEOMETRIA Y ARMADO PANTALLA TIPO 1
ESCALA 1:50

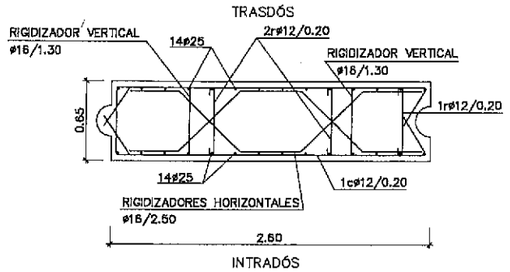




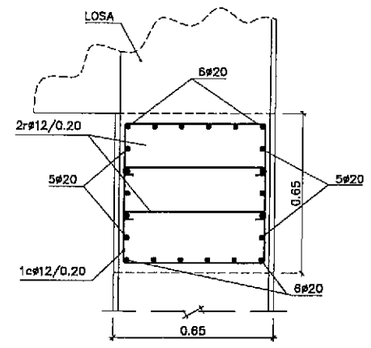
SECCION PANTALLA TIPO 1
ESCALA 1:100



SECCIÓN A–A'
ESCALA: 1:50



SECCIÓN B–B'
ESCALA: 1:50



DETALLE A – VIGA ATADO
ARMADURA
ESCALA: 1:25

MATERIAL	TIPO		CONTROL	COEFICIENTES
HORMIGÓN	LOSA	HA–30/B/20/IIb	NORMAL	γ_c = 1.50
	CIMENTACIÓN	HA–25/P/20/IIa	NORMAL	γ_c = 1.50
	LIMPIEZA	HM–15	NORMAL	γ_c = 1.50
ACERO	B 500 S		NORMAL	γ_s = 1.15
EJECUCIÓN	LOSA		INTENSO	γ_f = 1.50
	CIMENTACIÓN		INTENSO	γ_f = 1.50

LOS SOLAPES, SEPARACIONES MÍNIMAS ENTRE BARRAS Y LONGITUDES DE ANCLAJE NO ESPECIFICADOS EN EL PLANO SERAN LOS PRESCRITOS POR LA INSTRUCCIÓN EHE.

SE DISPONDRÁN SEPARADORES EN LA ARMADURA INFERIOR CADA 50 VECES EL DIÁMETRO DE LAS BARRAS.

LOS COEFICIENTES DE SEGURIDAD DE LAS ACCIONES SON LAS CORRESPONDIENTES A LA IAP–98

LOS RECUBRIMIENTOS DE LAS ARMADURAS PASIVAS SERÁN:
A) LOSA: 3.5cm
B) CIMETACIÓN: 7cm

GIF Gestor de Infraestructuras Ferroviarias

TÍTULO: PROYECTO DE CONSTRUCCIÓN DE PLATAFORMA
LINEA DE ALTA VELOCIDAD
MADRID - ZARAGOZA - BARCELONA - FRONTERA FRANCESA
TRAMO: CONEXIÓN VALLÉS- CASTELLBISBAL

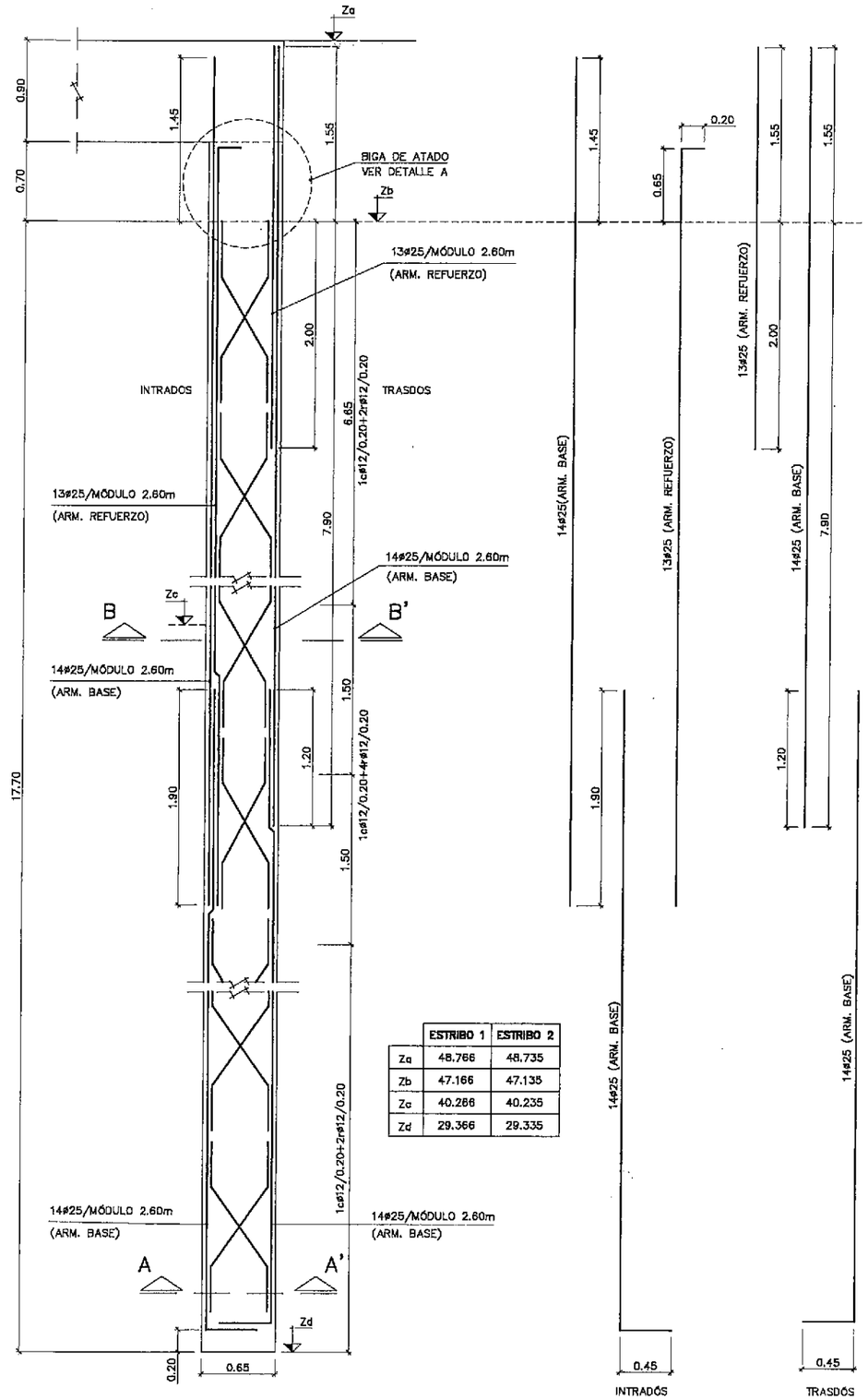
AUTOR: Intraesa Ingeniería de Trazados y Estructuras · Tec'4 Ingenieros Consultores

ESCALA: 1/50 Numérica · 1/100 Gráfica · 0 0.625 1.25 m · 0 1.25 2.50 m

FECHA: SEPTIEMBRE-2004

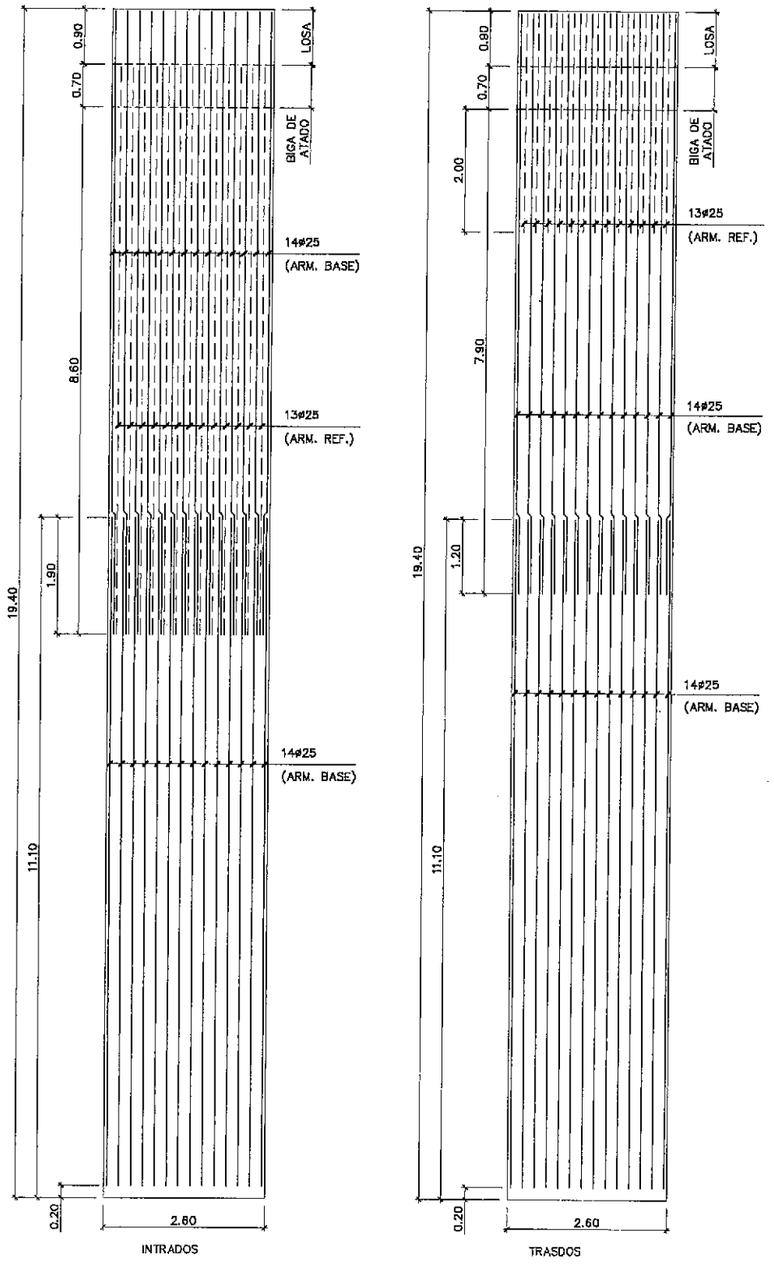
TÍTULO DEL PLANO: PASO BAJO RAMAL VALLES–BARCELONA (L.A.V.)
DEFINICIÓN GEOMETRICA Y ARMADO
DESPIECE

Nº DE PLANO: 2.9.1.3/2
Hoja – de –

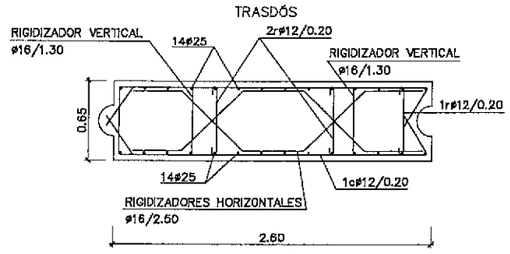


	ESTRIBO 1	ESTRIBO 2
Za	48.766	48.735
Zb	47.166	47.135
Zc	40.266	40.235
Zd	29.366	29.335

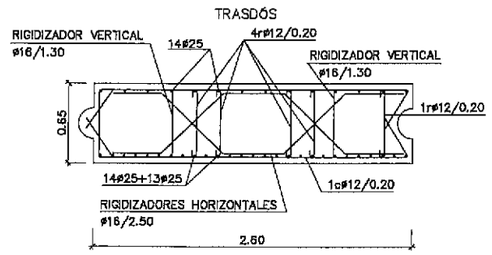
GEOMETRIA Y ARMADO PANTALLA TIPO 2
ESCALA 1:50



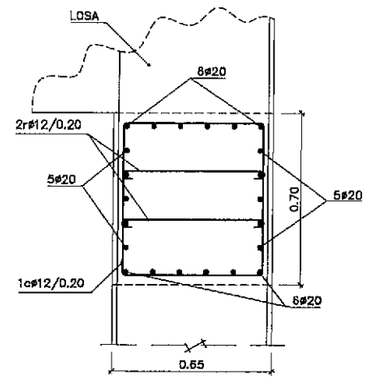
SECCION PANTALLA TIPO 2
ESCALA 1:100



SECCIÓN A–A'
ESCALA: 1:50



SECCIÓN B–B'
ESCALA: 1:50



DETALLE A – VIGA ATADO ARMADURA
ESCALA: 1:25

MATERIAL	TIPO		CONTROL	COEFICIENTES
HORMIGÓN	LOSA	HA–30/B/20/IIb	NORMAL	$\gamma_c = 1.50$
	CIMENTACIÓN	HA–25/P/20/IIa	NORMAL	$\gamma_c = 1.50$
	LIMPIEZA	HM–15	NORMAL	$\gamma_c = 1.50$
ACERO	B 500 S		NORMAL	$\gamma_s = 1.15$
EJECUCIÓN	LOSA		INTENSO	$\gamma_f = 1.50$
	CIMENTACIÓN		INTENSO	$\gamma_f = 1.50$

LOS SOLAPES, SEPARACIONES MÍNIMAS ENTRE BARRAS Y LONGITUDES DE ANCLAJE NO ESPECIFICADOS EN EL PLANO SERAN LOS PRESCRITOS POR LA INSTRUCCIÓN EHE.

SE DISPONDRÁN SEPARADORES EN LA ARMADURA INFERIOR CADA 50 VECES EL DIÁMETRO DE LAS BARRAS.

LOS COEFICIENTES DE SEGURIDAD DE LAS ACCIONES SON LAS CORRESPONDIENTES A LA IAP–98

LOS RECUBRIMIENTOS DE LAS ARMADURAS PASIVAS SERÁN:
A) LOSA: 3.5cm
B) CIMETACIÓN: 7cm

GIF Gestor de Infraestructuras Ferroviarias

TÍTULO: PROYECTO DE CONSTRUCCIÓN DE PLATAFORMA
LINEA DE ALTA VELOCIDAD
MADRID - ZARAGOZA - BARCELONA - FRONTERA FRANCESA
TRAMO: CONEXIÓN VALLÉS- CASTELLBISBAL

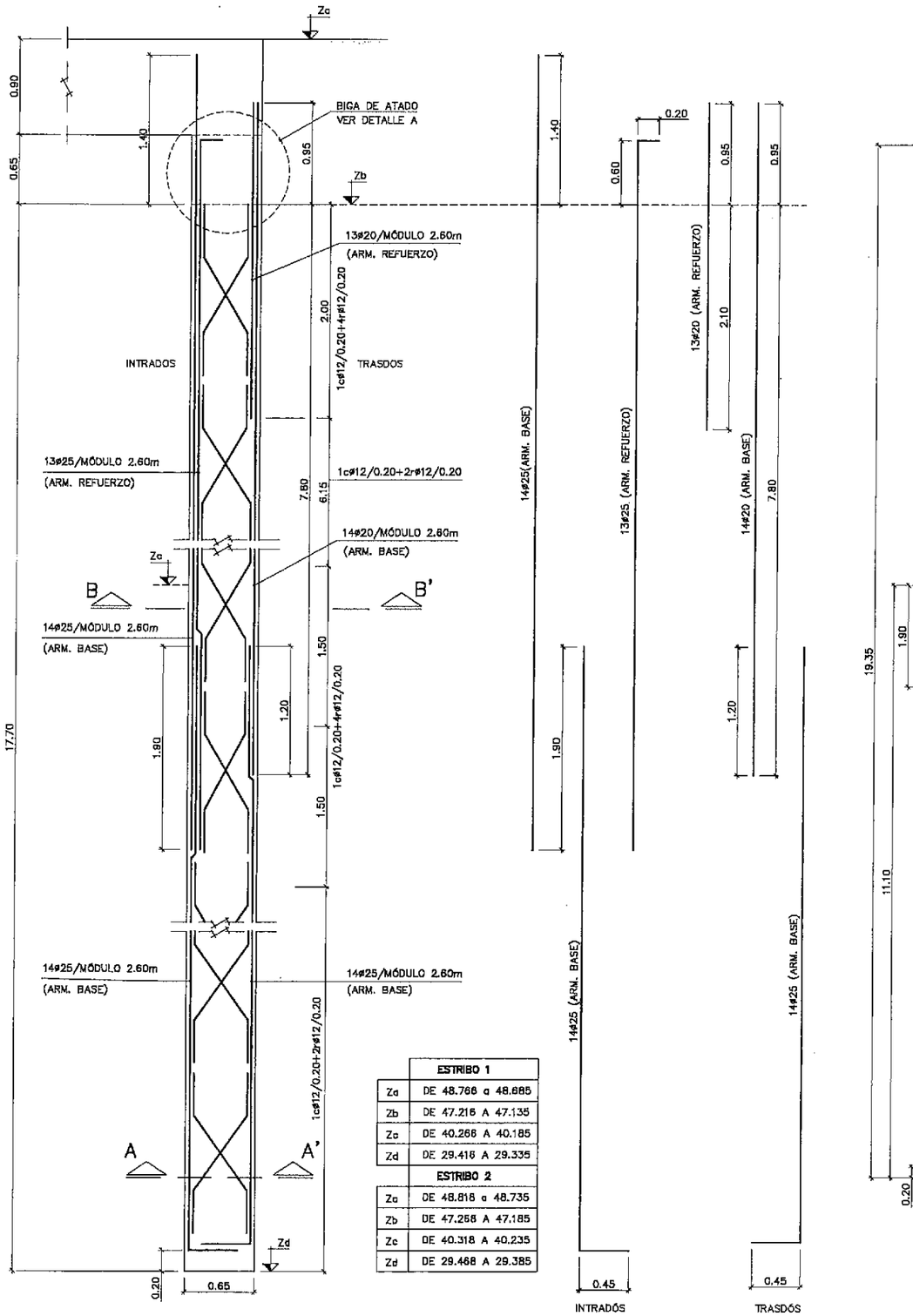
AUTOR: Intraesa Ingeniería de Trazados y Estructuras; Tec'4 Ingenieros Consultores

ESCALA: 1/50 Numérica; 1/100 Gráfica; 0 0.625 1.25 m; 0 1.25 2.50 m

FECHA: SEPTIEMBRE-2004

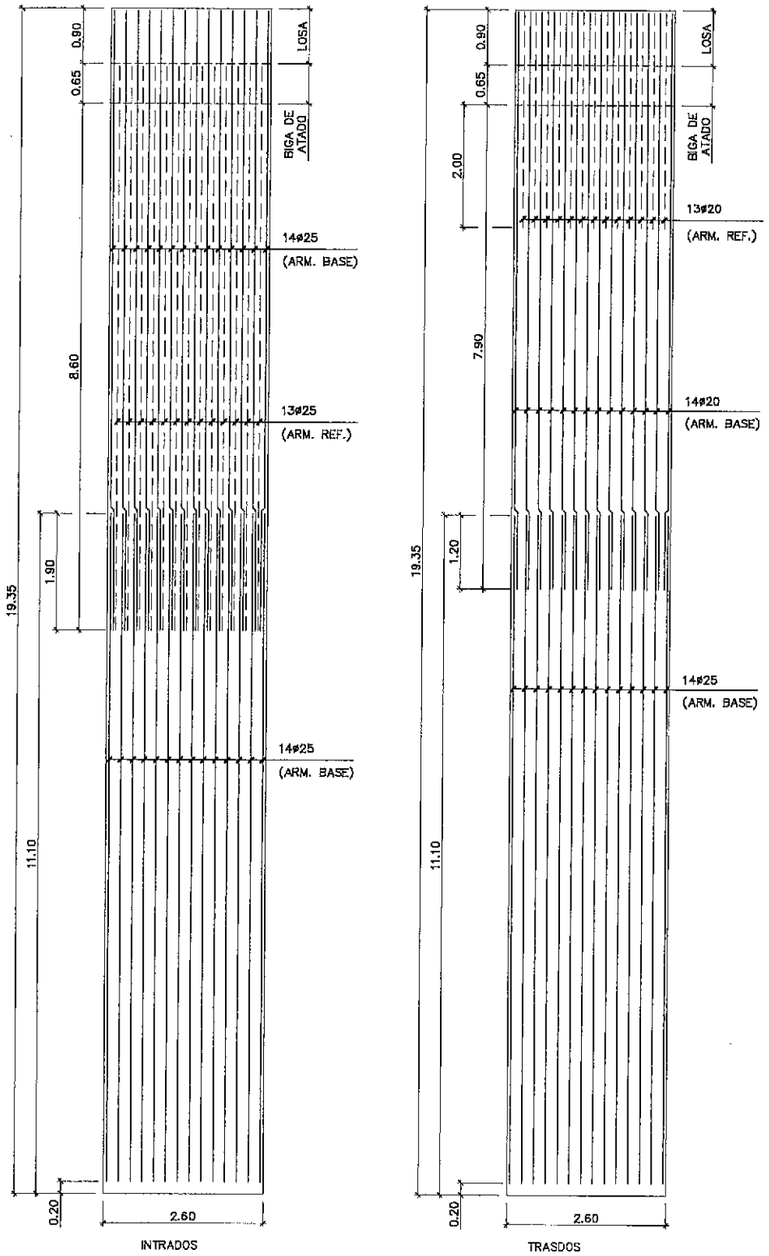
TÍTULO DEL PLANO: PASO BAJO RAMAL VALLES–BARCELONA (L.A.V.)
DEFINICIÓN GEOMETRICA Y ARMADO
DESPIECE

Nº DE PLANO: 2.9.1.3/2
Hoja – de –

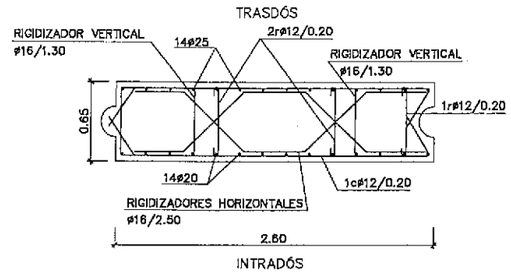


ESTRIBO 1	
Za	DE 48.766 a 48.685
Zb	DE 47.216 A 47.135
Zc	DE 40.266 A 40.185
Zd	DE 29.416 A 29.335
ESTRIBO 2	
Za	DE 48.818 a 48.735
Zb	DE 47.268 A 47.185
Zc	DE 40.318 A 40.235
Zd	DE 29.468 A 29.385

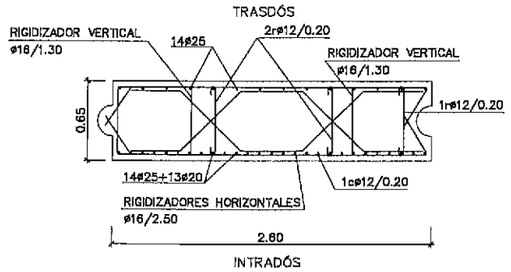
GEOMETRIA Y ARMADO PANTALLA TIPO 3
ESCALA 1:50



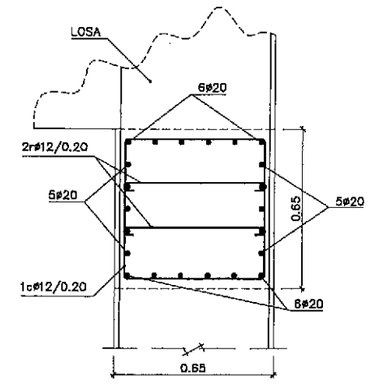
SECCION PANTALLA TIPO 3
ESCALA 1:100



SECCIÓN A–A'
ESCALA: 1:50



SECCIÓN B–B'
ESCALA: 1:50



DETALLE A – VIGA ATADO ARMADURA
ESCALA: 1:25

MATERIAL	TIPO		CONTROL	COEFICIENTES
HORMIGÓN	LOSA	HA–30/B/20/IIb	NORMAL	$\gamma_c = 1.50$
	CIMENTACIÓN	HA–25/P/20/IIa	NORMAL	$\gamma_c = 1.50$
	LIMPIEZA	HM–15	NORMAL	$\gamma_c = 1.50$
ACERO	B 500 S		NORMAL	$\gamma_s = 1.15$
EJECUCIÓN	LOSA		INTENSO	$\gamma_f = 1.50$
	CIMENTACIÓN		INTENSO	$\gamma_f = 1.50$

LOS SOLAPES, SEPARACIONES MÍNIMAS ENTRE BARRAS Y LONGITUDES DE ANCLAJE NO ESPECIFICADOS EN EL PLANO SERÁN LOS PRESCRITOS POR LA INSTRUCCIÓN EHE.

SE DISPONDRÁN SEPARADORES EN LA ARMADURA INFERIOR CADA 50 VECES EL DIÁMETRO DE LAS BARRAS.

LOS COEFICIENTES DE SEGURIDAD DE LAS ACCIONES SON LAS CORRESPONDIENTES A LA IAP–98

LOS RECUBRIMIENTOS DE LAS ARMADURAS PASIVAS SERÁN:
A) Llosa: 3.5cm
B) CIMETACIÓN: 7cm

GIF Gestor de Infraestructuras Ferroviarias

TÍTULO: PROYECTO DE CONSTRUCCIÓN DE PLATAFORMA
LINEA DE ALTA VELOCIDAD
MADRID - ZARAGOZA - BARCELONA - FRONTERA FRANCESA
TRAMO: CONEXIÓN VALLÉS- CASTELLBISBAL

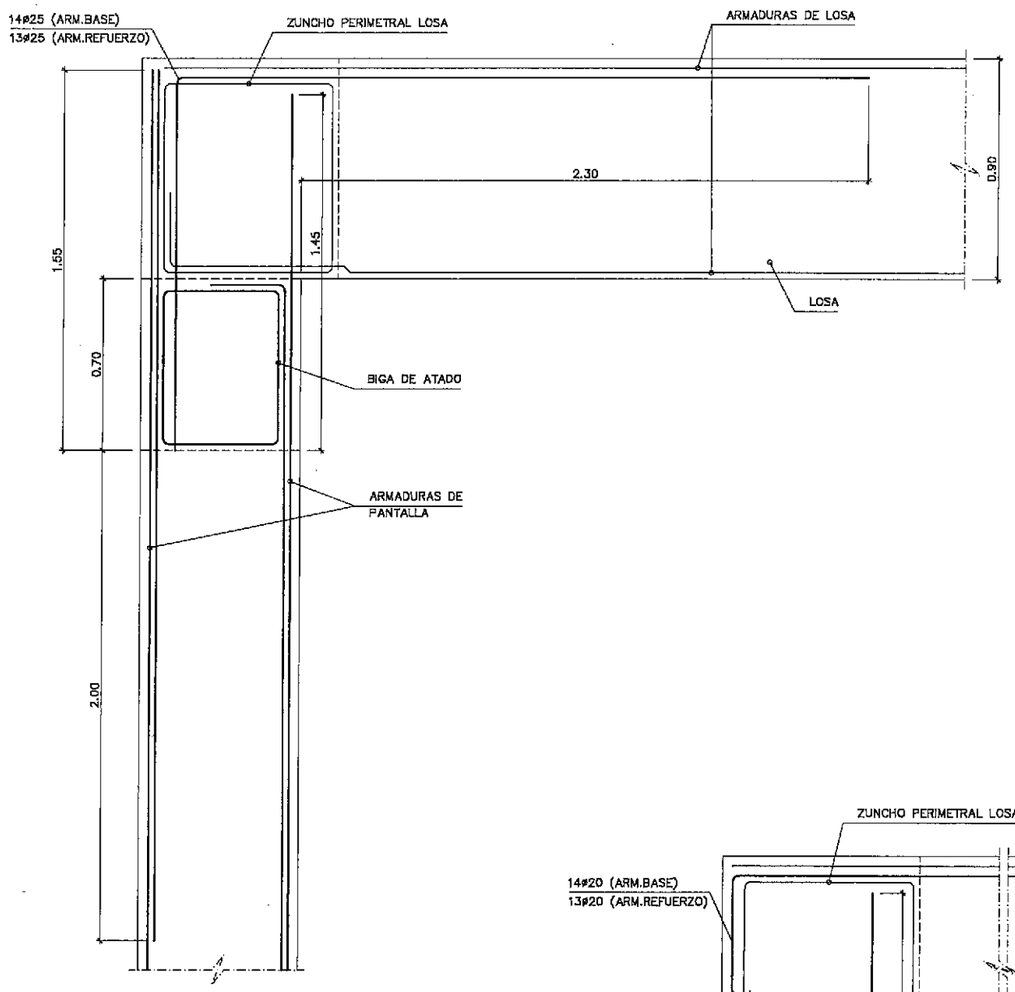
AUTOR: Intraesa Ingeniería de Trazados y Estructuras; Tec 4 Ingenieros Consultores

ESCALA: 1/50 Numérica; 1/100 Gráfica (0 0.625 1.25 m / 0 1.25 2.50 m)

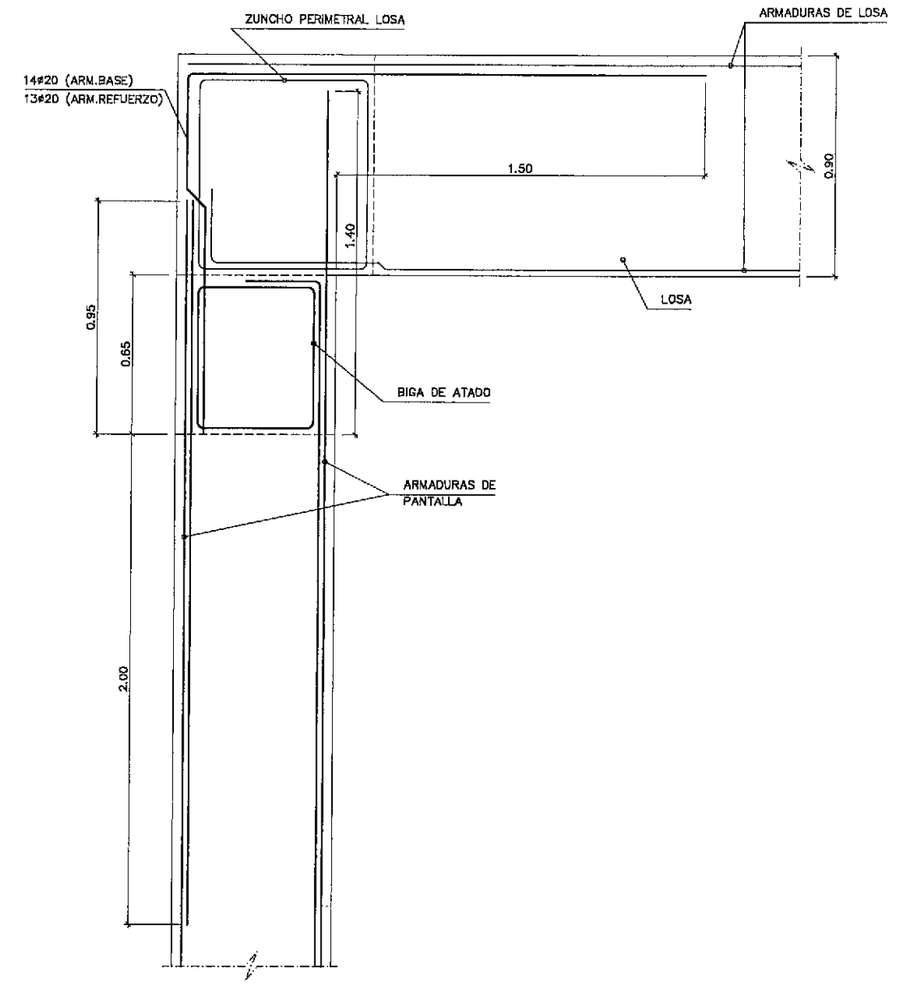
FECHA: SEPTIEMBRE-2004

TÍTULO DEL PLANO: PASO BAJO RAMAL VALLES–BARCELONA (L.A.V.)
DEFINICIÓN GEOMETRICA Y ARMADO
DESPIECE

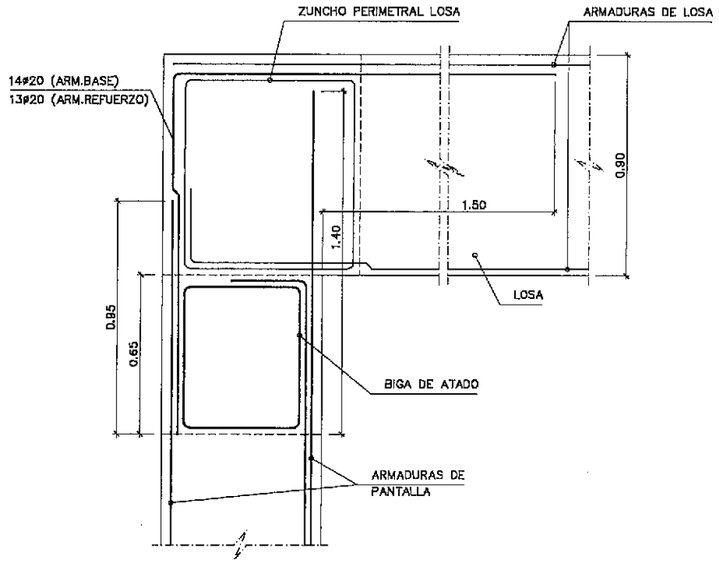
Nº DE PLANO: 2.9.1.3/2
Hoja – de –



DETALLE ANCLAJE ENTRE
LOSA Y PANTALLA TIPO 2



DETALLE ANCLAJE ENTRE
LOSA Y PANTALLA TIPO 3



DETALLE ANCLAJE ENTRE
LOSA Y PANTALLA TIPO 1

GIF Gestor de Infraestructuras Ferroviarias

TÍTULO PROYECTO DE CONSTRUCCIÓN DE PLATAFORMA
LINEA DE ALTA VELOCIDAD
MADRID - ZARAGOZA - BARCELONA - FRONTERA FRANCESA
TRAMO: CONEXIÓN VALLÉS- CASTELLBISBAL

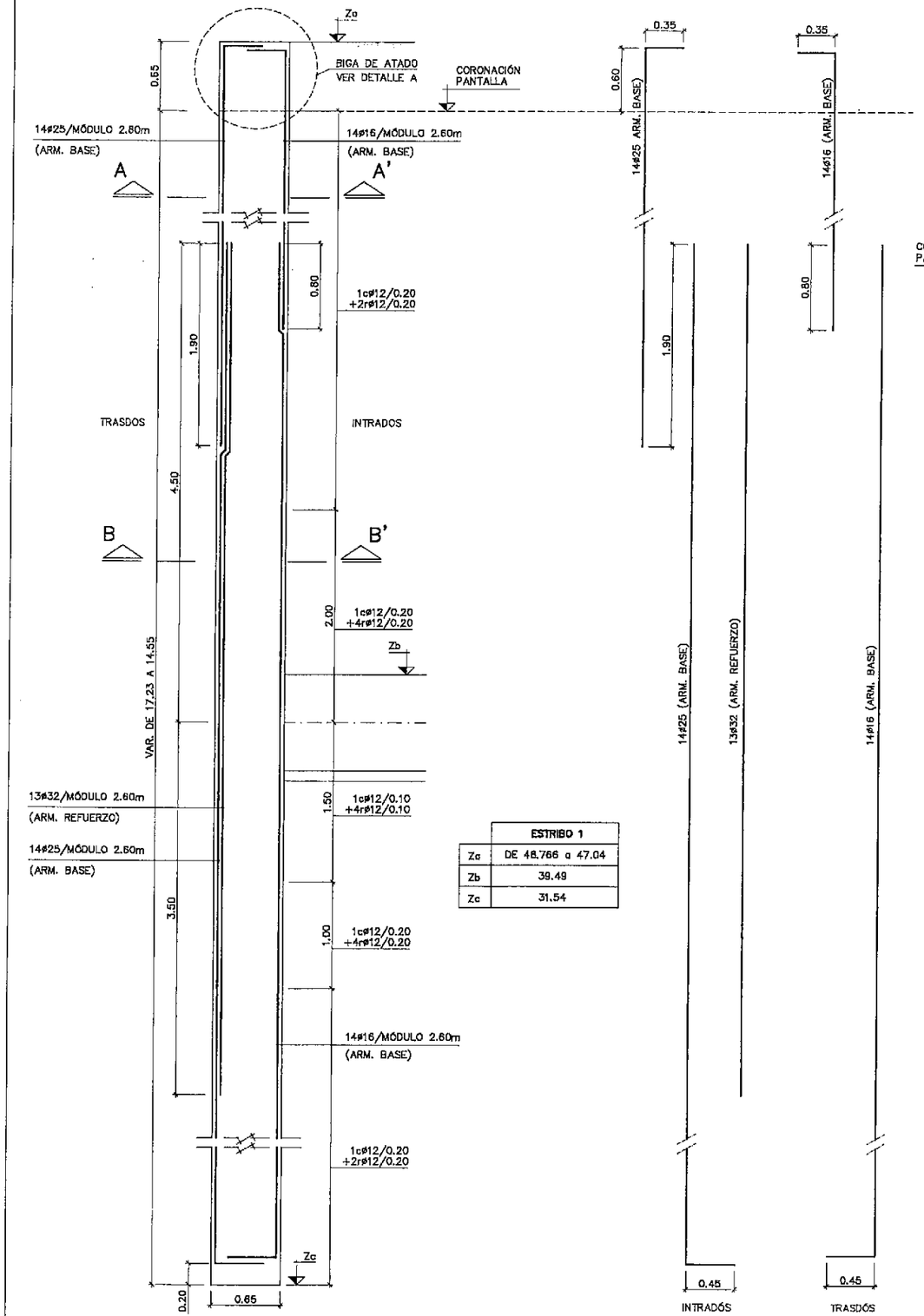
AUTOR Intraesa Ingeniería de Trazados y Estructuras · Tec'4 Ingenieros Consultores

ESCALA 1/25 Numérica | Gráfica 0 0.375 0.625 m

FECHA SEPTIEMBRE-2004

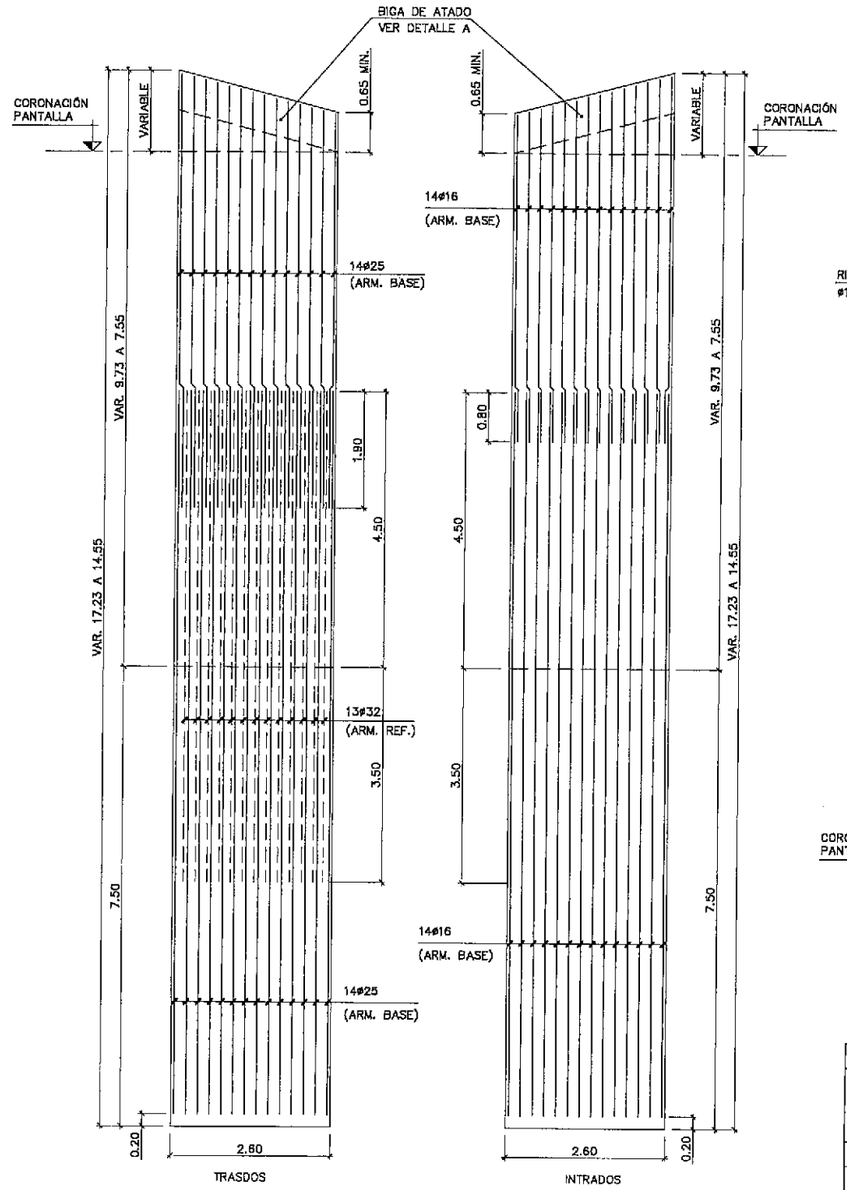
TÍTULO DEL PLANO
PASO BAJO RAMAL VALLES-BARCELONA (L.A.V.)
DEFINICIÓN GEOMETRICA Y ARMADO
DETALLES ANCLAJE PANTALLAS Y LOSA

Nº DE PLANO 2.9.1.3/2
Hoja – de –

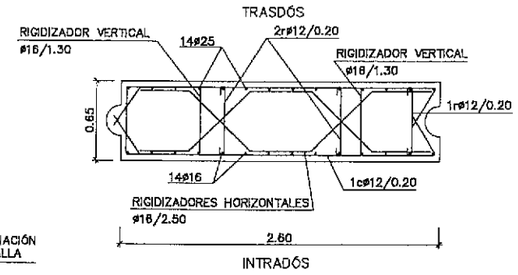


	ESTRIBO 1
Za	DE 48.766 a 47.04
Zb	39.49
Zc	31.54

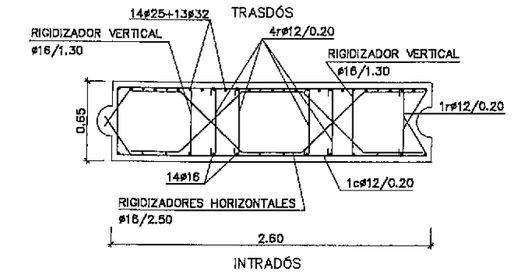
GEOMETRIA Y ARMADO PANTALLA TIPO A ALETAS
ESCALA 1:50



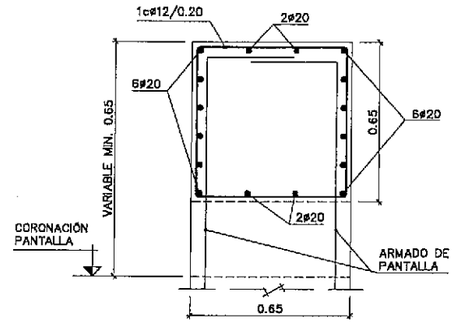
SECCION PANTALLA TIPO A ALETAS
ESCALA 1:100



SECCIÓN A–A'
ESCALA: 1:50



SECCIÓN B–B'
ESCALA: 1:50



DETALLE A – VIGA ATADO
ARMADURA
ESCALA: 1:25

MATERIAL	TIPO		CONTROL	COEFICIENTES
HORMIGÓN	LOSA	HA–30/B/20/II.b	NORMAL	$\gamma_c = 1.50$
	CIMENTACIÓN	HA–25/P/20/II.a	NORMAL	$\gamma_c = 1.50$
	LIMPIEZA	HM–15	NORMAL	$\gamma_c = 1.50$
ACERO	B 500 S		NORMAL	$\gamma_s = 1.15$
EJECUCIÓN	LOSA		INTENSO	$\gamma_f = 1.50$
	CIMENTACIÓN		INTENSO	$\gamma_f = 1.50$

LOS SOLAPES, SEPARACIONES MÍNIMAS ENTRE BARRAS Y LONGITUDES DE ANCLAJE NO ESPECIFICADOS EN EL PLANO SERAN LOS PRESCRITOS POR LA INSTRUCCIÓN EHE.

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GIF Gestor de Infraestructuras Ferroviarias

TÍTULO: PROYECTO DE CONSTRUCCIÓN DE PLATAFORMA
LINEA DE ALTA VELOCIDAD
MADRID - ZARAGOZA - BARCELONA - FRONTERA FRANCESA
TRAMO: CONEXIÓN VALLÉS- CASTELLBISBAL

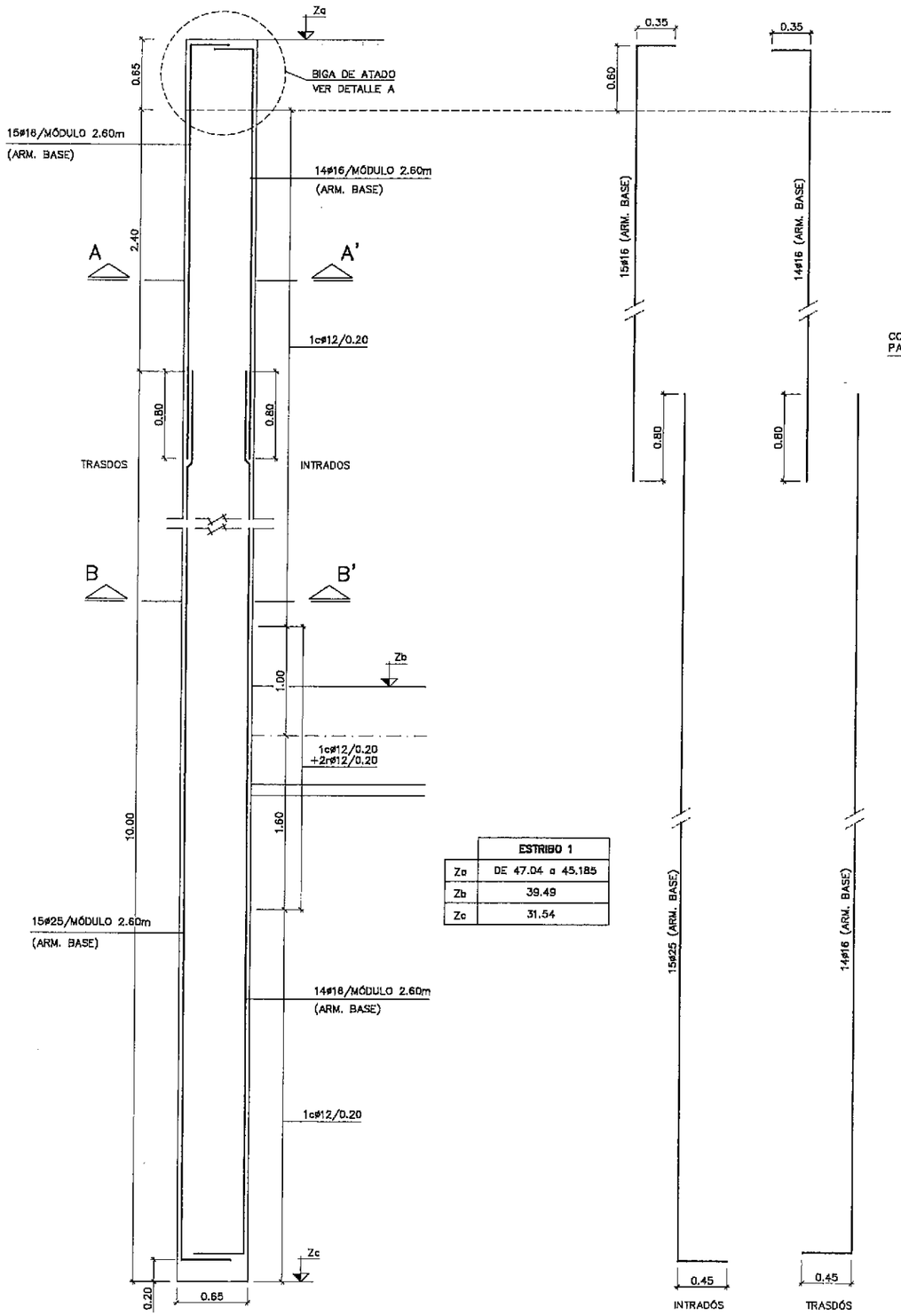
AUTOR: Intraesa Ingeniería de Trazados y Estructuras · Tec'4 Ingenieros Consultores

ESCALA: 1/50 Numérica · 1/100 Gráfica · 0 0.625 1.25 m · 0 1.25 2.50 m

FECHA: SEPTIEMBRE-2004

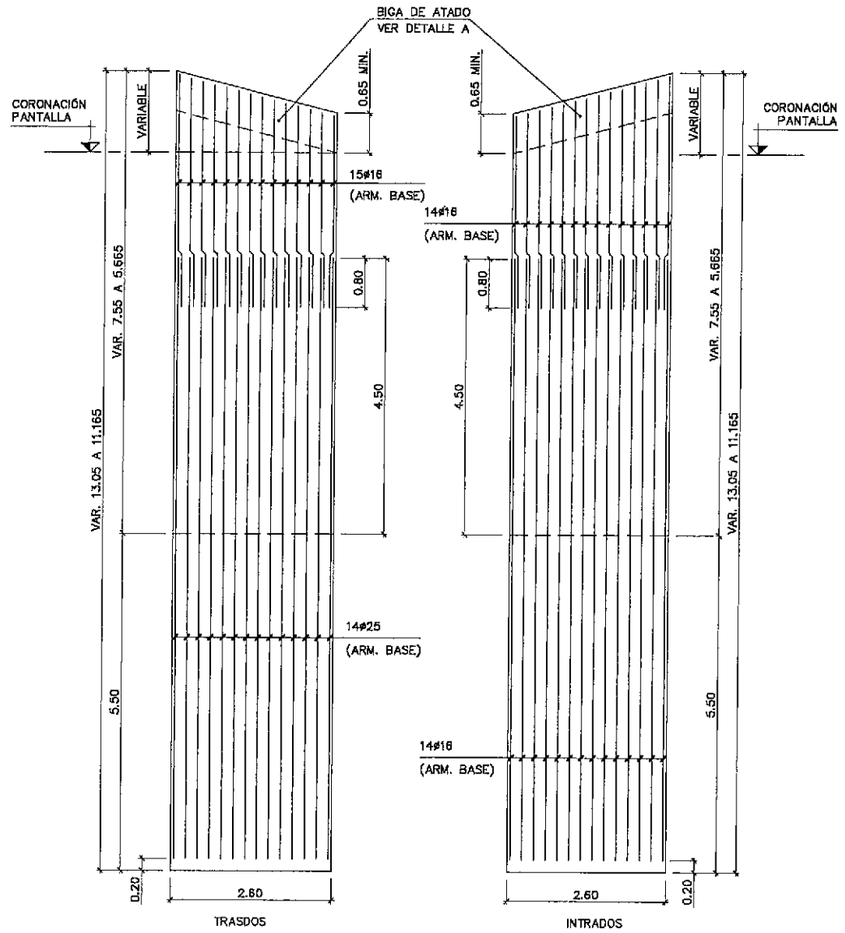
TÍTULO DEL PLANO: PASO BAJO RAMAL VALLES–BARCELONA (L.A.V.)
DEFINICIÓN GEOMETRICA Y ARMADO
DESPIECE

Nº DE PLANO: 2.9.1.3/2
Hoja – de –

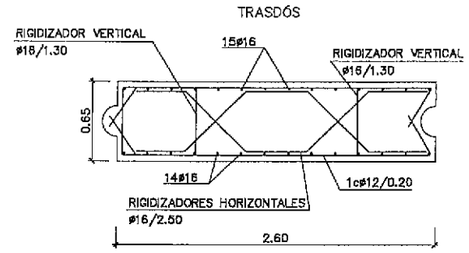


	ESTRIBO 1
Za	DE 47.04 a 45.185
Zb	39.49
Zc	31.54

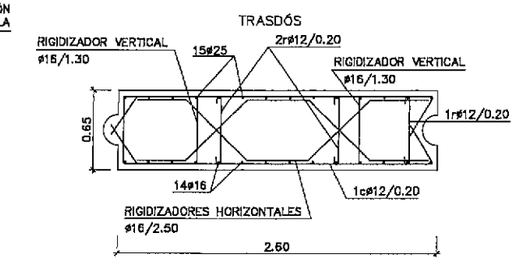
GEOMETRIA Y ARMADO PANTALLA TIPO B ALETAS
ESCALA 1:50



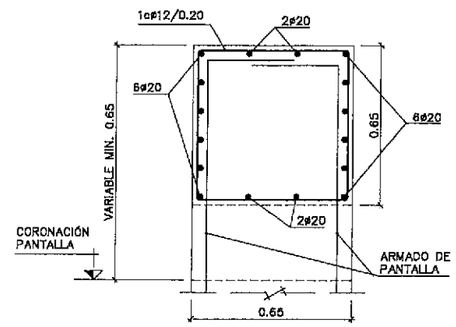
SECCION PANTALLA TIPO B ALETAS
ESCALA 1:100



SECCIÓN A–A'
ESCALA: 1:50



SECCIÓN B–B'
ESCALA: 1:50



DETALLE A – VIGA ATADO
ARMADURA
ESCALA: 1:25

MATERIAL	TIPO		CONTROL	COEFICIENTES
HORMIGÓN	LOSA	HA–30/B/20/IIb	NORMAL	γ_c = 1.50
	CIMENTACIÓN	HA–25/P/20/IIa	NORMAL	γ_c = 1.50
	LIMPIEZA	HM–15	NORMAL	γ_c = 1.50
ACERO	B 500 S		NORMAL	γ_s = 1.15
EJECUCIÓN	LOSA		INTENSO	γ_f = 1.50
	CIMENTACIÓN		INTENSO	γ_f = 1.50

LOS SOLAPES, SEPARACIONES MÍNIMAS ENTRE BARRAS Y LONGITUDES DE ANCLAJE NO ESPECIFICADOS EN EL PLANO SERÁN LOS PRESCRITOS POR LA INSTRUCCIÓN EHE.

SE DISPONDRÁN SEPARADORES EN LA ARMADURA INFERIOR CADA 50 VECES EL DIÁMETRO DE LAS BARRAS.

LOS COEFICIENTES DE SEGURIDAD DE LAS ACCIONES SON LAS CORRESPONDIENTES A LA IAP–98

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A) LOSA: 3.5cm
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GIF Gestor de Infraestructuras Ferroviarias

TÍTULO: PROYECTO DE CONSTRUCCIÓN DE PLATAFORMA
LINEA DE ALTA VELOCIDAD
MADRID - ZARAGOZA - BARCELONA - FRONTERA FRANCESA
TRAMO: CONEXIÓN VALLÉS- CASTELLBISBAL

AUTOR: Intraesa Ingeniería de Trazados y Estructuras · Tec'4 Ingenieros Consultores

ESCALA: 1/50 · 1/100 Numérica · Gráfica 0 0.625 1.25 m / 0 1.25 2.50 m

FECHA: SEPTIEMBRE-2004

TÍTULO DEL PLANO: PASO BAJO RAMAL VALLES–BARCELONA (L.A.V.)
DEFINICIÓN GEOMETRICA Y ARMADO
DESPIECE

Nº DE PLANO: 2.9.1.3/2
Hoja – de –

REACCIONES: Combinación de cargas REACCIONES

Apoyo lineal W3.0:

Inicio: (8.18, 17.60) Dirección: -0.01°
Longitud del soporte: 25.00m; Dirección X: -0.01°

Nudos	RZ [kN]	Rmx [kNm]	Rmy [kNm]
1	-10.235	-26.866	
5	20.025	-54.348	
7	28.020	-54.921	
10	35.148	-55.449	
14	42.764	-55.928	
18	49.575	-56.357	
23	56.351	-56.735	
29	60.718	-57.061	
36	87.745	-57.341	
44	7.371	-57.510	
1277	140.351	-57.846	
1278	65.526	-57.944	
1279	90.072	-58.062	
1280	93.210	-58.142	
1281	96.817	-58.201	
1282	102.041	-58.234	
1283	110.247	-58.301	
1284	140.278	-58.375	
1285	140.117	-58.408	
1286	144.157	58.424	
1287	141.534	-58.406	
1288	144.165	-58.416	
1289	146.687	-58.420	
1290	149.026	-58.388	
1291	175.795	-58.386	
1292	173.022	-58.382	
1293	175.121	-58.400	
1294	173.101	-58.399	
1295	170.612	58.349	
1296	170.458	-58.298	
1297	167.634	-58.229	
1298	169.694	-58.691	
1299	171.103	-59.144	
1300	167.434	-59.054	
1301	166.805	-58.970	
1302	169.450	-58.874	
1303	162.916	-58.817	
1304	162.074	-58.763	
1305	157.938	-58.673	
1306	153.757	-58.604	
1307	167.217	-58.550	
1308	83.481	-58.506	
665	204.063	-58.722	
690	110.856	-58.767	
715	122.869	-58.996	
740	108.626	-59.373	
765	91.151	-59.968	
790	64.341	-60.872	
815	0.916	-62.232	
840	36.152	-64.352	
865	-1565.146	67.208	
2	3589.418	-38.503	
Sumas	7778.568	-2992.264	

(1) 2216.8

Apoyo lineal W4.0:

Inicio: (23.28, 5.09) Dirección: -0.01°
Longitud del soporte: 26.00m; Dirección X: -0.01°

Nudos	RZ [kN]	Rmx [kNm]	Rmy [kNm]
4	3244.263	37.361	
392	-1378.529	65.527	
417	42.142	62.924	
442	10.407	61.008	
467	67.405	59.813	
492	91.670	59.055	
517	107.697	58.597	
542	120.990	58.354	
567	109.019	58.259	
592	200.118	58.343	
1353	82.921	58.300	
1354	161.479	58.482	

128.45 ×1.5 / 192.68 → arm. mínima

(2) 2077.4

REACCIONES: Combinación de cargas REACCIONES1

Apoyo lineal W3.0:

Inicio: (8.18, 17.60) Dirección: -0.01°
Longitud del soporte: 25.00m; Dirección X: -0.01°

Nudos	RZ [kN]	Rmx [kNm]	Rmy [kNm]
1	-9.265	-25.295	
5	20.389	-51.169	
7	28.698	-51.702	
10	35.759	-52.189	
14	43.388	-52.622	
18	50.075	-53.000	
23	56.641	-53.322	
29	60.859	-53.584	
36	86.213	-53.795	
44	10.935	-53.887	
1277	135.396	-54.124	
1278	65.201	-54.125	
1279	87.982	-54.132	
1280	90.517	-54.086	
1281	95.139	-54.003	
1282	97.322	-53.877	
1283	101.847	53.756	
1284	107.255	-53.611	
1285	108.378	-53.410	
1286	111.561	-53.203	
1287	112.119	-52.977	
1288	115.282	-52.784	
1289	118.231	-52.595	
1290	118.761	-52.378	
1291	122.681	-52.186	
1292	122.951	-52.005	
1293	125.972	-51.880	
1294	128.810	-51.780	
1295	128.406	-51.670	
1296	132.320	-51.594	
1297	132.814	51.534	
1298	137.413	-51.969	
1299	141.397	-52.421	
1300	140.969	-52.409	
1301	143.051	-52.414	
1302	142.497	-52.412	
1303	144.189	52.448	
1304	145.375	-52.481	
1305	143.295	-52.475	
1306	140.840	-52.477	
1307	159.902	-52.479	
1308	79.403	-52.476	
665	187.896	-52.693	
690	104.272	-52.742	
715	114.765	-52.947	
740	101.453	-53.277	
765	84.996	-53.799	
790	59.893	-54.600	
815	1.108	-55.818	
840	32.979	-57.736	
865	-1438.978	-60.333	
2	3257.047	-34.749	
Sumas	6801.367	-2717.430	

(1) 1996.1

Apoyo lineal W4.0:

Inicio: (23.28, 5.09) Dirección: -0.01°
Longitud del soporte: 26.00m; Dirección X: 0.01°

Nudos	RZ [kN]	Rmx [kNm]	Rmy [kNm]
4	3067.585	34.279	
392	-1305.288	59.843	
417	39.753	57.325	
442	9.558	55.440	
467	63.285	54.216	
492	85.860	53.386	
517	100.448	52.822	
542	112.113	52.441	
567	100.889	52.185	
592	181.159	52.078	
1353	75.550	51.849	
1354	144.194	51.814	

(2) 1960.74

REACCIONES: Combinación de cargas REACCIONES2

Apoyo lineal W3.0:

Inicio: (8.18, 17.60) Dirección: -0.01°
Longitud del soporte: 25.00m; Dirección X: -0.01°

Nudos	RZ [kN]	Rmx [kNm]	Rmy [kNm]
1	12.022	26.451	
5	15.581	-53.510	
7	23.619	54.090	
10	31.203	-54.637	
14	38.958	-55.147	
18	46.052	-55.617	
23	53.110	-56.046	
29	57.799	-56.433	
36	84.999	-56.785	
44	5.617	-57.032	
1277	137.999	-57.455	
1278	64.194	-57.651	
1279	89.036	-57.875	
1280	92.684	-58.069	
1281	98.898	-58.253	
1282	102.903	-58.421	
1283	112.593	-58.634	
1284	156.111	-58.872	
1285	156.336	-59.079	
1286	161.008	-59.259	
1287	156.706	-59.395	
1288	159.127	-59.550	
1289	161.339	-59.690	
1290	164.760	-59.786	
1291	204.242	59.908	
1292	199.849	-60.017	
1293	201.379	-60.119	
1294	196.567	-60.172	
1295	192.317	-60.147	
1296	190.283	-60.094	
1297	185.480	-59.998	
1298	185.837	-60.425	
1299	185.458	-60.823	
1300	179.721	-60.646	
1301	177.202	-60.463	
1302	171.989	-60.259	
1303	169.819	-60.093	
1304	167.438	-59.929	
1305	161.882	-59.733	
1306	156.477	-59.564	
1307	169.130	-59.419	
1308	83.592	-59.294	
665	205.200	-59.445	
690	110.531	-59.433	
715	122.684	-59.620	
740	108.476	-59.965	
765	91.236	-60.537	
790	64.825	61.424	
815	2.166	-62.770	
840	37.273	-64.875	
865	1549.594	-67.711	
2	3557.710	-38.815	
Sumas	8087.778	-3023.435	

(1) 2203,6

Nudos cada 0,50m.

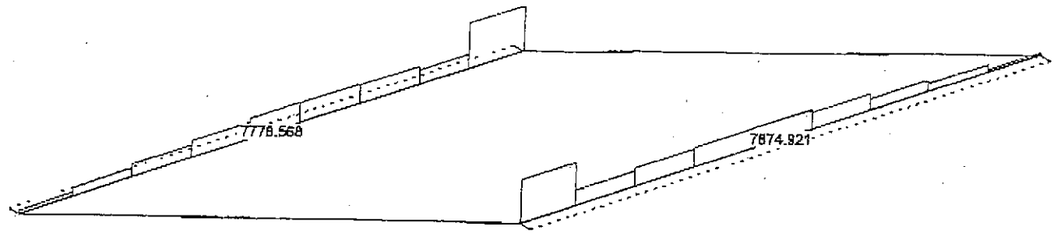
Apoyo lineal W4.0:

Inicio: (23.28, 5.09) Dirección: -0.01°
Longitud del soporte: 26.00m; Dirección X: -0.01°

Nudos	RZ [kN]	Rmx [kNm]	Rmy [kNm]
4	3208.881	37.545	
392	-1361.018	65.987	
417	43.600	63.404	
442	12.002	61.503	
467	58.102	60.317	
492	91.840	59.568	
517	107.468	59.122	
542	120.519	58.898	
567	108.213	58.891	
592	200.306	58.955	
1353	82.064	58.963	
1354	161.937	59.210	

(2) 2063,4

Fuerzas de reacciones Columnas: Combinación de cargas REACCIONES
Reacciones de paredes por segmentos, Texto: Paredes: [kN]
Suma de reacciones RZ = 15653.469[kN]

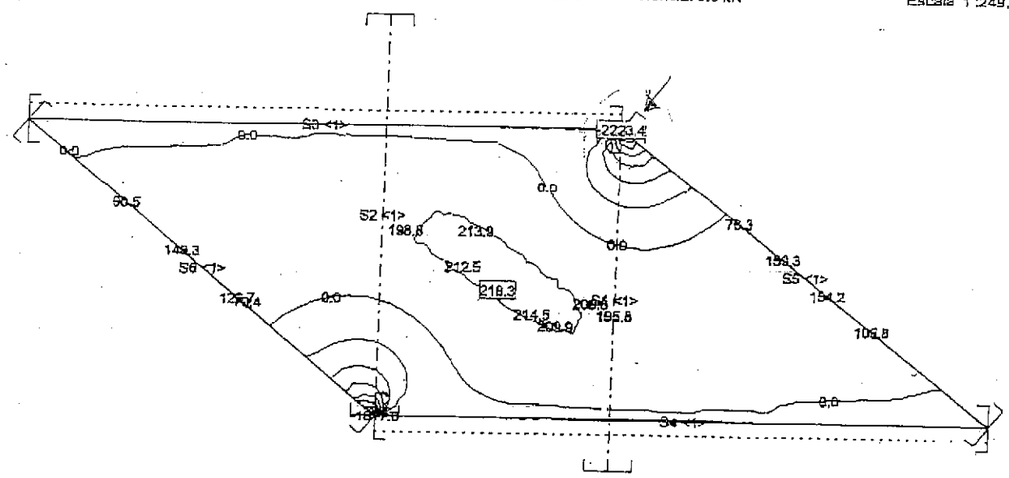


Cedrus-4, Version 3.02
VALTER, valenciana de estructuras
LOSA
PASO INFERIOR LAV

Página 71
27.10.03, 20:01
ING2

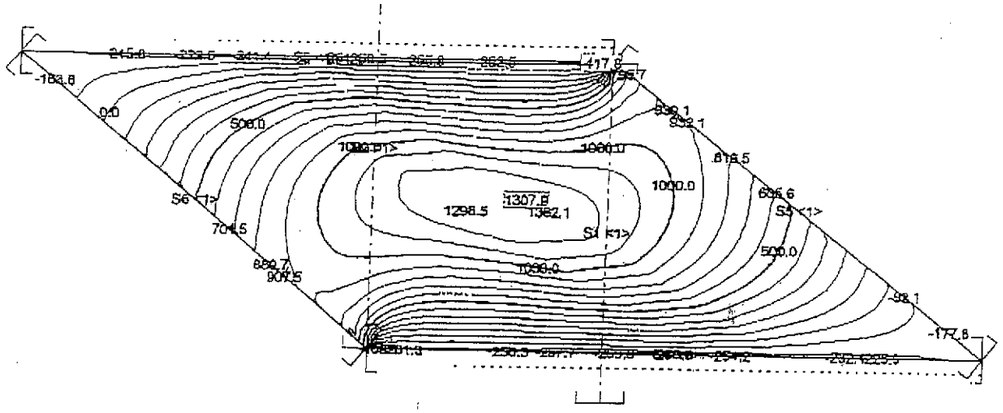
Solicitaciones mx: Combinación de cargas ELU2, Equidistancia: 200.0 kN, Línea de referencia: 0.0 kN

Escala 1 :249,3



Solicitaciones mx: Combinación de cargas ELU2, Equidistancia: 100.0 kN, Línea de referencia: 0.0 kN

Escala 1 :249,3



Cedrus-4, Version 3.02
VALTER, valenciana de estructuras
LOSA
PASO INFERIOR LAV

Página 95
05.11.03, 12:50
ING2

ESPECIFICACION DE ENVOLVENTES Código: EH 91 (Combinación según el código EC2)

ACCIÓN: !Peso propio

Permanente	L1: [1,00]	PESO PROPIO
Plus Permanete	L2: [1,00]	BALASTO
	L3: [1,00]	HORMIGON DE FORMA
	L4: [1,00]	TIERRAS
	L5: [1,00]	MURETES
	L6: [1,00]	CARRILES Y TRAVIESAS
	L7: [1,00]	BARANDILLAS, IMPOSTA,ETC

ACCIÓN: !Sobrecargas

Plus si es crítica	L9: [1,00]	SC ACERAS
Plus si es crítica		
Y	L8: [1,00]	SC IAPF99
O	L10: [1,00]	SC IAPF75
O	L11: [1,00]	SC IAPF B
O	L12: [1,00]	SC IAPF99 DESCENTRADA
O	L13: [1,00]	SC IAPF75 A DESC

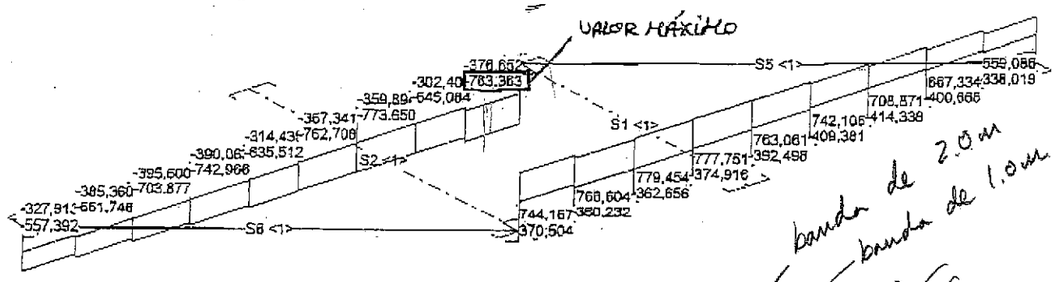
2.1081

NOTA
SE DECIDE USAR 1081 KN-m. en el borde de 2.0m. Conversación telefónica con Raquel 5/11/03

ESPECIFICACIÓN DE ENVOLVENTES: !Estado límite
Tipo de verificación: Estado límite

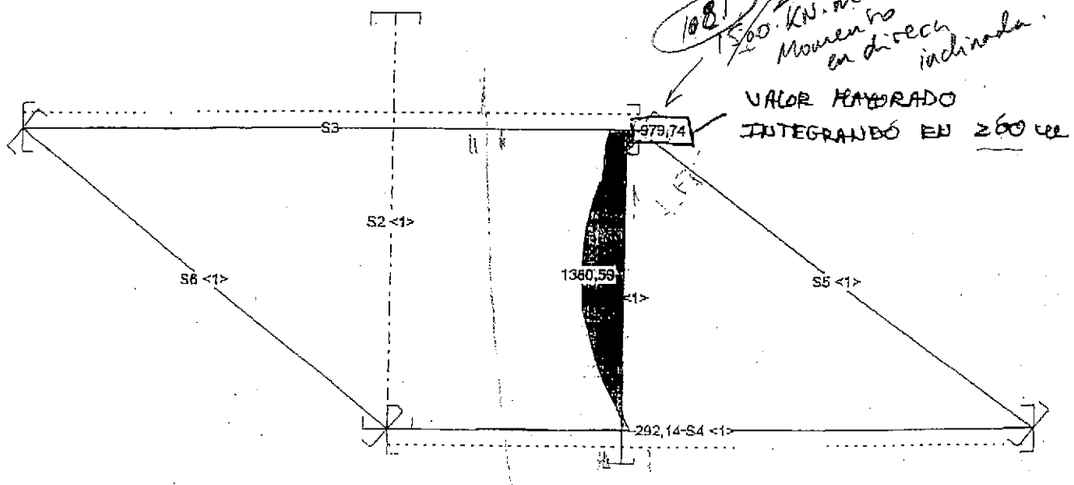
Acciones		Combinaciones	
Nr	Name	1	2
1	!Peso propio	1,35	1
2	!Sobrecargas	1,5	1,5

Envolventes de momentos de reacciones Columnas: !Estado límite
Reacciones de paredes por segmentos, Identificaciones: Paredes: [kNm]



Sección(es) de viga: Envolvente de momentos de dimensionamiento [kNm]. Especificación !Estado límite

Escala 1 :249,3



Envolventes de reacciones de columnas y componentes asociados
Especificación de envolvente: !Estado límite

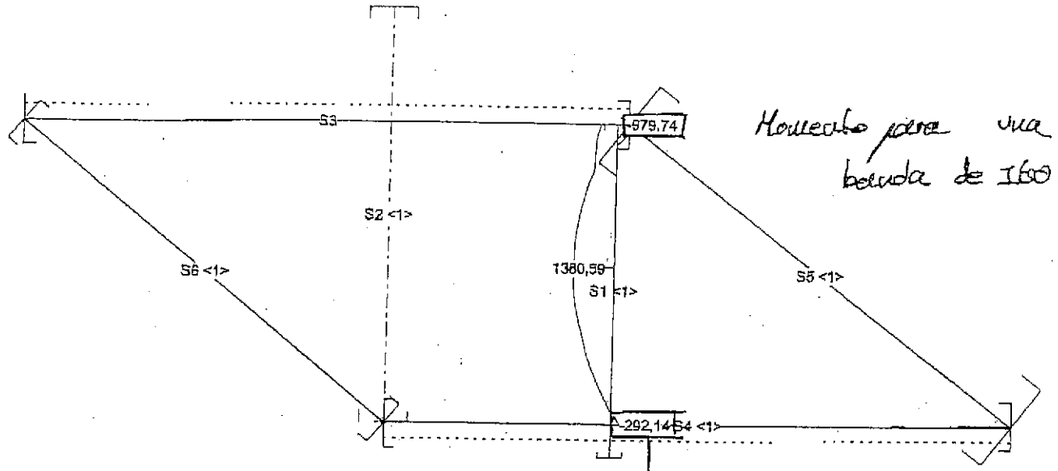
Columnas	RZ<* RZ RZ [kN]	Rmx Rmx<* Rmx [kNm]	Rmy Rmy Rmy<* [kNm]	RZ>* Rz Rz [kN]	Rmx RMx>* Rmx [kNm]	Rmy Rmy RMy>* [kNm]
Apoyo lineal W3.0:						
Inicio: (8,18, 17,60); Dirección: 0,01°						
Longitud del soporte: 25,00m; Dirección X: -0,01°						
Segmento						
de [m]	hasta [m]	Longitud [m]				
0,00	2,68	2,68	115,713* 185,248	-401,719 -667,392*	201,112* 132,254	-462,975 -327,913*
2,68	5,60	2,92	348,280* 511,166	-417,597 -661,748*	518,342* 356,757	-603,186 -385,360*
5,60	8,52	2,92	504,038* 822,197	395,600 -703,877*	823,124* 504,038	-675,331 -395,600*
8,52	11,44	2,92	590,085* 1479,227	-330,063 -742,966*	1479,227* 590,085	-742,966 -330,063*
11,44	13,88	2,43	524,134* 1509,113	-314,439 -635,512*	1509,113* 524,134	-635,512 -314,439*
13,88	16,83	2,95	633,225* 1415,846	-373,167 -762,708*	1565,746* 634,380	-752,626 -367,341*
16,83	19,80	2,97	604,675* 1341,253	-363,856 -773,650*	1344,528* 607,949	-755,688 -359,894*
19,80	22,28	2,48	396,142* 865,414	-305,799 645,084*	891,261* 401,989	-641,688 -302,403*
22,28	25,00	2,72	1439,950* 2677,985	-385,777 -763,363*	2677,985* 1507,839	-763,363 -376,652*

NOTA SE DECIDE USAR 770 KN.m. en el resto de modulos excepto extremo. Conversación Telef. con Raquel 5/11/03

Apoyo lineal W4.0:
Inicio: (23,28, 5,09); Dirección: -0,01°
Longitud del soporte: 26,00m; Dirección X: -0,01°

Segmento de [m]	hasta [m]	Longitud [m]	RZ<* RZ [kN]	Rmx Rmx<* [kNm]	RZ>* RZ [kN]	Rmx Rmx>* [kNm]
0,00	2,72	2,72	1428,686* 1428,686	370,504 370,504*	2496,243* 2496,243	744,167 744,167*
2,72	5,70	2,97	499,138* 499,363	364,261 360,232*	1093,539* 1087,314	762,575 766,604*
5,70	8,67	2,97	598,252* 601,382	366,793 362,656*	1332,592* 1329,462	775,316 779,454*
8,67	11,61	2,95	633,802* 634,768	381,209 374,916*	1452,574* 1419,116	759,913 777,751*
11,61	14,54	2,93	632,395* 633,066	396,981 392,498*	1571,873* 1571,873	763,061 763,061*
14,54	17,46	2,93	588,481* 589,704	411,508 409,381*	1263,717* 1263,717	742,106 742,106*
17,46	20,39	2,93	488,911* 491,656	444,693 414,338*	746,550* 746,550	708,871 708,871*
20,39	23,32	2,93	332,658* 340,964	423,271 400,668*	480,240* 478,527	563,546 667,334*
23,32	26,00	2,68	105,466* 119,264	414,945 339,019*	182,765* 169,503	477,625 559,086*

Sección(es) de viga: Envolvente de momentos de dimensionamiento [kNm], Especificación !Estado límite — Escala 1 :253,0



Momento para una banda de 1,50 m

(-1080/1.5 = -720 KN.m)

(-980/1.5 = -653.3 KN.m)

→ Md = -979'74 KN.m momento de calculo para el dimensionamiento de la armadura en las esquinas (-295/1.5 = -196.7 KN.m)

→ Md = -292'14 KN.m momento de calculo para el dimensionamiento de la armadura en la pantalla en la zona central.

NOTA: Los reacciones (listado y gráficos) enviado esta mañana son en la ~~banda~~ longitud indicada en el listado. Por lo tanto para Rmx = -769'688 KN.m ⇒ $\frac{-769'688}{2'97} = -259'154$ KN.m

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Paso Bajo Ramal Valles-Barcelona (LAV)

BAJO RAMAL V-B\P065Dm4.spw, P065Dm4.momento en cabeza fase defin.m

05/11/03

General Data

Licensed User	: BAJO RAMAL V-B\P065Dm4.spw
File Name	: P065Dm4.spw
Problem Name	: P065Dm4.momento en cabeza fase defin.m
Length (m)	: 19.350
Number of Elements	: 100
Number of Layers	: 3
Number of Loading Steps	: 1
Profile from Catalogue	: 3

Data of Layers

Step 0, Left side

Layer	Top (m)	Bottom (m)	Wd (kN/m³)	Ws (kN/m³)	Zw (m)	Cap (m)	q (kN/m²)	c (kN/m²)	Ka (-)	Kp (-)	Kn (-)	Dw -(m)
1	0.000	8.500	19.000	20.000	18.000	0.000	30.000	0.000	0.360	4.450	0.530	0.020
2	8.500	13.000	19.000	20.000	18.000	0.000	0.000	0.000	0.360	4.450	0.530	0.020
3	13.000	19.350	19.000	20.000	18.000	0.000	0.000	0.000	0.310	5.940	0.470	0.020

Step 0, Right side

Layer	Top (m)	Bottom (m)	Wd (kN/m³)	Ws (kN/m³)	Zw (m)	Cap (m)	q (kN/m²)	c (kN/m²)	Ka (-)	Kp (-)	Kn (-)	Dw (m)
1	0.000	8.500	19.000	20.000	18.000	0.000	30.000	0.000	0.360	4.450	0.530	0.020
2	8.500	13.000	19.000	20.000	18.000	0.000	0.000	0.000	0.360	4.450	0.530	0.020
3	13.000	19.350	19.000	20.000	18.000	0.000	0.000	0.000	0.310	5.940	0.470	0.020

Step 1, Left side

Layer	Top (m)	Bottom (m)	Wd (kN/m³)	Ws (kN/m³)	Zw (m)	Cap (m)	q (kN/m²)	c (kN/m²)	Ka (-)	Kp (-)	Kn (-)	Dw (m)
1	0.000	8.500	0.000	10.000	18.000	0.000	0.000	0.000	1.000	1.000	1.000	1.000
2	8.500	13.000	19.000	20.000	18.000	0.000	0.000	0.000	0.360	4.450	0.530	0.020
3	13.000	19.350	19.000	20.000	18.000	0.000	0.000	0.000	0.310	5.940	0.470	0.020

Step 1, Right side

Layer	Top (m)	Bottom (m)	Wd (kN/m³)	Ws (kN/m³)	Zw (m)	Cap (m)	q (kN/m²)	c (kN/m²)	Ka (-)	Kp (-)	Kn (-)	Dw (m)
1	0.000	8.500	19.000	20.000	18.000	0.000	30.000	0.000	0.360	4.450	0.530	0.020
2	8.500	13.000	19.000	20.000	18.000	0.000	0.000	0.000	0.360	4.450	0.530	0.020
3	13.000	19.350	19.000	20.000	18.000	0.000	0.000	0.000	0.310	5.940	0.470	0.020

Data of Anchors and Lateral Forces

Step 0 :

Point	Fx (kN/m)	Fa (kN/m)	Fw (m)
0	0.000	0.000	0.020
1	0.000	0.000	0.020
2	0.000	0.000	0.020
3	0.000	0.000	0.020

Step 1 :

Point	Fx (kN/m)	Fa (kN/m)	Fw (m)
0	0.000	100000.000	-0.001
1	0.000	0.000	0.020
2	0.000	0.000	0.020
3	0.000	0.000	0.020

BAJO RAMAL V-B\P065Dm4.spw, P065Dm4.momento en cabeza fase defin.m

Data of Axial Forces and Moment

Step	NA (kN/m)	NB (kN/m)	MA (kNm/m)
0	0.000	0.000	0.000
1	0.000	0.000	-720.000

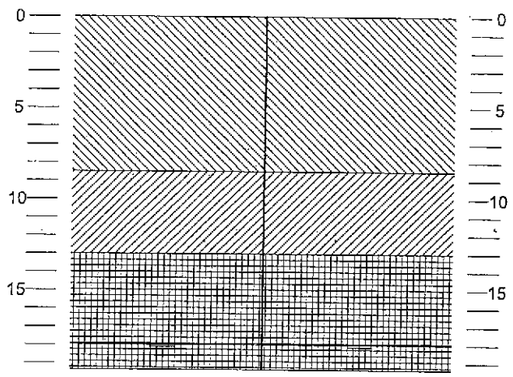
← -1080/1.5 por info. VALTER para pantallas en esquinas

Catalogue of Profiles

No	Profile Name	Area (m²/m)	Weight (kN/m³)	E (GN/m²)	h (m)	i (m)	EI (kNm²/m)
1	Pantalla 1.0 m	1.000000	25.000	25.000	1.000000	0.288675	2083331.4
2	Pantalla 0.80 m	0.800000	25.000	25.000	0.800000	0.230940	1066665.7
3	Pantalla 0.65 m	0.650000	25.000	25.000	0.650000	0.187639	572136.4
4	Profile 4	0.100000	78.000	210.000	0.200000	0.021822	10000.0
5	Profile 5	0.100000	78.000	210.000	0.200000	0.021822	10000.0
6	Profile 6	0.100000	78.000	210.000	0.200000	0.021822	10000.0
7	Profile 7	0.100000	78.000	210.000	0.200000	0.021822	10000.0
8	Profile 8	0.100000	78.000	210.000	0.200000	0.021822	10000.0
9	Profile 9	0.100000	78.000	210.000	0.200000	0.021822	10000.0
10	Profile 10	0.100000	78.000	210.000	0.200000	0.021822	10000.0
11	Profile 11	0.100000	78.000	210.000	0.200000	0.021822	10000.0
12	Profile 12	0.100000	78.000	210.000	0.200000	0.021822	10000.0
13	Profile 13	0.100000	78.000	210.000	0.200000	0.021822	10000.0
14	Profile 14	0.100000	78.000	210.000	0.200000	0.021822	10000.0
15	Profile 15	0.100000	78.000	210.000	0.200000	0.021822	10000.0
16	Profile 16	0.100000	78.000	210.000	0.200000	0.021822	10000.0
17	Profile 17	0.100000	78.000	210.000	0.200000	0.021822	10000.0
18	Profile 18	0.100000	78.000	210.000	0.200000	0.021822	10000.0
19	Profile 19	0.100000	78.000	210.000	0.200000	0.021822	10000.0
20	Profile 20	0.100000	78.000	210.000	0.200000	0.021822	10000.0

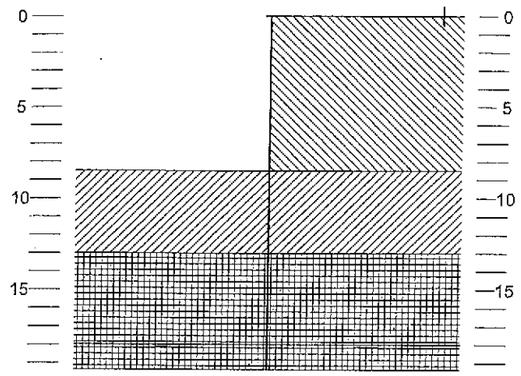
Cross Sections

Step 0 :



BAJO RAMAL V-B\P065Dm4.spw, P065Dm4.momento en cabeza fase defin.m

Step 1 :



Results after Step 1 :

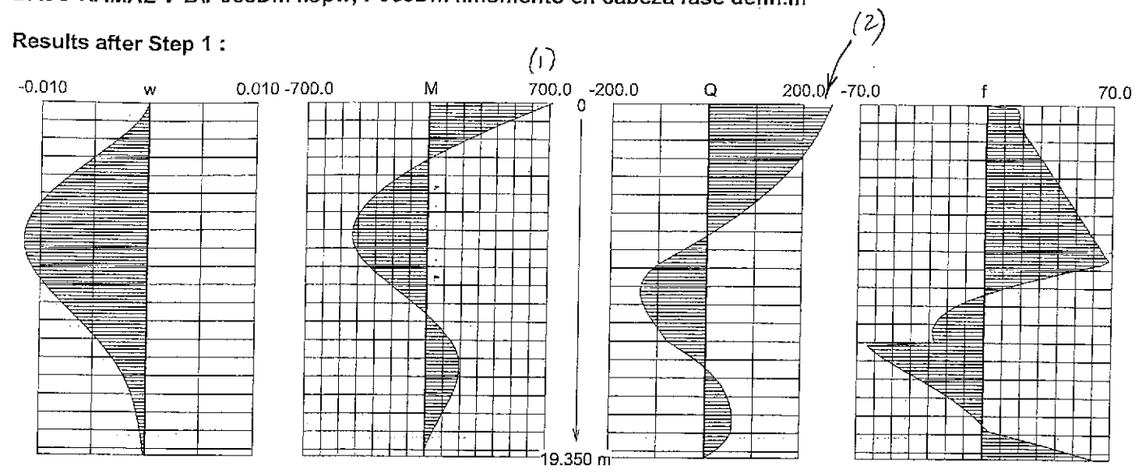
i	z (m)	w (m)	M (kNm)	Q- (kN)	Q+ (kN)	F (kN)	f (kN/m²)
0	0.000	-0.000003	720.000000	0.000000	261.128265	261.128265	0.000000
1	0.193	-0.000103	669.863162	257.935470	257.935470	0.000000	-16.542979
2	0.386	-0.000248	620.362047	254.546664	254.546664	0.000000	-17.558580
3	0.580	-0.000433	571.524791	251.062571	251.062571	0.000000	-17.959242
4	0.773	-0.000655	523.358830	247.596796	247.596796	0.000000	-17.957383
5	0.966	-0.000912	475.848578	244.274046	244.274046	0.000000	-17.216321
6	1.159	-0.001199	428.996406	240.783733	240.783733	0.000000	-18.084523
7	1.352	-0.001515	382.843155	237.038157	237.038157	0.000000	-19.407130
8	1.545	-0.001855	337.438138	233.037318	233.037318	0.000000	-20.729736
9	1.739	-0.002218	292.830666	228.781215	228.781215	0.000000	-21.938675
10	1.932	-0.002599	249.070052	224.269849	224.269849	0.000000	-23.374953
11	2.125	-0.002997	206.205608	219.503219	219.503219	0.000000	-24.697565
12	2.318	-0.003409	164.286646	214.481326	214.481326	0.000000	-26.020171
13	2.511	-0.003831	123.362479	209.204170	209.204170	0.000000	-27.342777
14	2.705	-0.004261	83.482418	203.671750	203.671750	0.000000	-28.517629
15	2.898	-0.004697	44.695777	197.884066	197.884066	0.000000	-29.988000
16	3.091	-0.005135	7.051867	191.841120	191.841120	0.000000	-31.310601
17	3.284	-0.005574	-29.400000	185.542909	185.542909	0.000000	-32.633218
18	3.477	-0.006011	-64.610510	178.989436	178.989436	0.000000	-33.955819
19	3.670	-0.006444	-98.530353	172.180699	172.180699	0.000000	-35.278430
20	3.864	-0.006871	-131.110215	165.116698	165.116698	0.000000	-36.412376
21	4.057	-0.007289	-162.300785	157.797434	157.797434	0.000000	-37.923648
22	4.250	-0.007696	-192.052749	150.222907	150.222907	0.000000	-39.246254
23	4.443	-0.008091	-220.316797	142.393116	142.393116	0.000000	-40.568865
24	4.636	-0.008472	-247.043615	134.308062	134.308062	0.000000	-41.891472
25	4.830	-0.008836	-272.183892	125.967744	125.967744	0.000000	-42.991330
26	5.023	-0.009183	-295.688315	117.372163	117.372163	0.000000	-44.536689
27	5.216	-0.009510	-317.507572	108.521318	108.521318	0.000000	-45.859301
28	5.409	-0.009817	-337.592350	99.415211	99.415211	0.000000	-47.181902
29	5.602	-0.010102	-355.893338	90.053839	90.053839	0.000000	-48.504518
30	5.795	-0.010364	-372.361222	80.437204	80.437204	0.000000	-49.827124
31	5.989	-0.010601	-386.946692	70.565306	70.565306	0.000000	-50.886072
32	6.182	-0.010813	-399.600435	60.438144	60.438144	0.000000	-52.472342
33	6.375	-0.011000	-410.273137	50.055719	50.055719	0.000000	-53.794948
34	6.568	-0.011159	-418.915488	39.418031	39.418031	0.000000	-55.117554
35	6.761	-0.011291	-425.478175	28.525079	28.525079	0.000000	-56.440166
36	6.955	-0.011396	-429.911885	17.376863	17.376863	0.000000	-57.465031
37	7.148	-0.011472	-432.167307	5.973385	5.973385	0.000000	-59.085378
38	7.341	-0.011520	-432.195128	-5.685358	-5.685358	0.000000	-60.407995
39	7.534	-0.011540	-429.946035	-17.599363	-17.599363	0.000000	-61.730596
40	7.727	-0.011532	-425.370718	-29.768632	-29.768632	0.000000	-63.053207
41	7.920	-0.011497	-418.419862	-42.193165	-42.193165	0.000000	-64.375819
42	8.114	-0.011434	-409.044157	-54.872961	-54.872961	0.000000	-65.359773
43	8.307	-0.011344	-397.194289	-67.808020	-67.808020	0.000000	-67.021031
44	8.500	-0.011229	-382.820947	-80.998343	-80.998343	0.000000	-68.343642
45	8.696	-0.011087	-365.741165	-93.594986	-93.594986	0.000000	-64.268587

BAJO RAMAL V-B\P065Dm4.spw, P065Dm4.momento en cabeza fase defin.m

46	8.891	-0.010920	-346.367898	-104.442853	-104.442853	0.000000	-55.630087
47	9.087	-0.010730	-325.037938	-113.596738	-113.596738	0.000000	-46.703495
48	9.283	-0.010519	-302.076387	-121.121341	-121.121341	0.000000	-38.390832
49	9.478	-0.010287	-277.794805	-127.090384	-127.090384	0.000000	-30.610477
50	9.674	-0.010037	-252.489541	-131.585650	-131.585650	0.000000	-22.935031
51	9.870	-0.009770	-226.440252	-134.695970	-134.695970	0.000000	-15.868980
52	10.065	-0.009487	-199.908630	-136.516172	-136.516172	0.000000	-9.334369
53	10.261	-0.009192	-173.137329	-137.146012	-137.146012	0.000000	-3.213469
54	10.457	-0.008884	-146.349113	-136.689089	-136.689089	0.000000	2.331240
55	10.652	-0.008567	-119.746201	-135.251783	-135.251783	0.000000	7.370800
56	10.848	-0.008242	-93.509834	-132.942189	-132.942189	0.000000	11.783643
57	11.043	-0.007911	-67.800035	-129.869097	-129.869097	0.000000	15.759446
58	11.239	-0.007575	-42.755569	-126.140999	-126.140999	0.000000	19.020908
59	11.435	-0.007236	-18.494098	-121.865144	-121.865144	0.000000	21.815587
60	11.630	-0.006896	4.887489	-117.146634	-117.146634	0.000000	24.197487
61	11.826	-0.006556	27.312576	-112.087588	-112.087588	0.000000	25.811459
62	12.022	-0.006218	48.724156	-106.786346	-106.786346	0.000000	27.047153
63	12.217	-0.005884	69.084024	-101.336744	-101.336744	0.000000	27.946677
64	12.413	-0.005554	88.371824	-95.827438	-95.827438	0.000000	28.108704
65	12.609	-0.005230	106.583982	-90.341290	-90.341290	0.000000	27.990551
66	12.804	-0.004913	123.732514	-84.954807	-84.954807	0.000000	27.622990
67	13.000	-0.004604	139.843731	-79.737636	-79.737636	0.000000	26.618219
68	13.192	-0.004309	153.999359	-67.391731	-67.391731	0.000000	64.301589
69	13.385	-0.004024	165.820933	-55.478167	-55.478167	0.000000	61.728311
70	13.577	-0.003750	175.397596	-44.058801	-44.058801	0.000000	59.475865
71	13.770	-0.003488	182.829450	-33.185669	-33.185669	0.000000	56.337472
72	13.962	-0.003237	188.225689	-22.901220	-22.901220	0.000000	53.564839
73	14.155	-0.002998	191.702782	-13.238650	-13.238650	0.000000	50.065130
74	14.347	-0.002772	193.382740	-4.222330	-4.222330	0.000000	46.960000
75	14.539	-0.002558	193.391461	4.131687	4.131687	0.000000	43.510505
76	14.732	-0.002357	191.857188	11.815093	11.815093	0.000000	39.810394
77	14.924	-0.002168	188.909076	18.826694	18.826694	0.000000	36.518755
78	15.117	-0.001991	184.675895	25.171727	25.171727	0.000000	32.875819
79	15.309	-0.001826	179.284853	30.861144	30.861144	0.000000	29.632380
80	15.502	-0.001673	172.860576	35.910873	35.910873	0.000000	26.164399
81	15.694	-0.001531	165.524217	40.341045	40.341045	0.000000	23.073812
82	15.886	-0.001399	157.392728	44.175228	44.175228	0.000000	19.969703
83	16.079	-0.001278	148.578266	47.439647	47.439647	0.000000	16.914088
84	16.271	-0.001167	139.187765	50.162410	50.162410	0.000000	14.181057
85	16.464	-0.001064	129.322640	52.372745	52.372745	0.000000	11.452513
86	16.656	-0.000970	119.078648	54.100252	54.100252	0.000000	8.997432
87	16.848	-0.000883	108.545881	55.374176	55.374176	0.000000	6.635021
88	17.041	-0.000804	97.808908	56.222702	56.222702	0.000000	4.396508
89	17.233	-0.000731	86.947042	56.672283	56.672283	0.000000	2.341568
90	17.426	-0.000663	76.034733	56.746998	56.746998	0.000000	0.387124
91	17.618	-0.000601	65.142083	56.467946	56.467946	0.000000	-1.453396
92	17.811	-0.000542	54.335477	55.852678	55.852678	0.000000	-3.187917
93	18.003	-0.000487	43.781978	53.837234	53.837234	0.000000	-10.497104
94	18.195	-0.000435	33.755985	50.369941	50.369941	0.000000	-18.058818
95	18.388	-0.000385	24.536180	45.457957	45.457957	0.000000	-25.450694
96	18.580	-0.000337	16.397028	39.137946	39.137946	0.000000	-32.916724
97	18.773	-0.000290	9.607472	31.430672	31.430672	0.000000	-39.934062
98	18.965	-0.000243	4.433796	22.342964	22.342964	0.000000	-47.331812
99	19.158	-0.000197	1.142066	11.870294	11.870294	0.000000	-54.262539
100	19.350	-0.000151	0.000000	0.000000	0.000000	0.000000	-61.824448

BAJO RAMAL V-B\P065Dm4.spw, P065Dm4.momento en cabeza fase defin.m

Results after Step 1 :



Maxima : -0.011540 m | 720.000000 kNm/m | 257.935470 kN/m (2) | 68.343642 kN/m²

(1) $-72.0 \cdot 1.5 = -108.0$ T.m. $49.5\ cm^2$

↑ valor max. dirección esviada.
(979.74 KN.m — Valter 5/11/03).

$49.5 \cdot 2.60 = 128.7\ cm^2$ $27\phi25$ (14+13).

(2) $25.79 \cdot 2.60 = 67.1$ T

$67.1 \cdot \frac{1.6}{1.5} = \frac{107.36}{100.65}$ T

1cϕ12/0.20 + 2rϕ12/0.20 $V_{u2} = 114.27$ T

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Paso Bajo Ramal Valles-Barcelona (LAV)

05/11/03

BAJO RAMAL V-B\P065Dm3.spw, P065Dm3.momento en cabeza fase defin.m

General Data

Licensed User	: BAJO RAMAL V-B\P065Dm3.spw
File Name	: P065Dm3.spw
Problem Name	: P065Dm3.momento en cabeza fase defin.m
Length (m)	: 19.350
Number of Elements	: 100
Number of Layers	: 3
Number of Loading Steps	: 1
Profile from Catalogue	: 3

Data of Layers

Step 0, Left side

Layer	Top (m)	Bottom (m)	Wd (kN/m³)	Ws (kN/m³)	Zw (m)	Cap (m)	q (kN/m²)	c (kN/m²)	Ka (-)	Kp (-)	Kn (-)	Dw (m)
1	0.000	8.500	19.000	20.000	18.000	0.000	30.000	0.000	0.360	4.450	0.530	0.020
2	8.500	13.000	19.000	20.000	18.000	0.000	0.000	0.000	0.360	4.450	0.530	0.020
3	13.000	19.350	19.000	20.000	18.000	0.000	0.000	0.000	0.310	5.940	0.470	0.020

Step 0, Right side

Layer	Top (m)	Bottom (m)	Wd (kN/m³)	Ws (kN/m³)	Zw (m)	Cap (m)	q (kN/m²)	c (kN/m²)	Ka (-)	Kp (-)	Kn (-)	Dw (m)
1	0.000	8.500	19.000	20.000	18.000	0.000	30.000	0.000	0.360	4.450	0.530	0.020
2	8.500	13.000	19.000	20.000	18.000	0.000	0.000	0.000	0.360	4.450	0.530	0.020
3	13.000	19.350	19.000	20.000	18.000	0.000	0.000	0.000	0.310	5.940	0.470	0.020

Step 1, Left side

Layer	Top (m)	Bottom (m)	Wd (kN/m³)	Ws (kN/m³)	Zw (m)	Cap (m)	q (kN/m²)	c (kN/m²)	Ka (-)	Kp (-)	Kn (-)	Dw (m)
1	0.000	8.500	0.000	10.000	18.000	0.000	0.000	0.000	1.000	1.000	1.000	1.000
2	8.500	13.000	19.000	20.000	18.000	0.000	0.000	0.000	0.360	4.450	0.530	0.020
3	13.000	19.350	19.000	20.000	18.000	0.000	0.000	0.000	0.310	5.940	0.470	0.020

Step 1, Right side

Layer	Top (m)	Bottom (m)	Wd (kN/m³)	Ws (kN/m³)	Zw (m)	Cap (m)	q (kN/m²)	c (kN/m²)	Ka (-)	Kp (-)	Kn (-)	Dw (m)
1	0.000	8.500	19.000	20.000	18.000	0.000	30.000	0.000	0.360	4.450	0.530	0.020
2	8.500	13.000	19.000	20.000	18.000	0.000	0.000	0.000	0.360	4.450	0.530	0.020
3	13.000	19.350	19.000	20.000	18.000	0.000	0.000	0.000	0.310	5.940	0.470	0.020

Data of Anchors and Lateral Forces

Step 0 :

Point	Fx (kN/m)	Fa (kN/m)	Fw (m)
0	0.000	0.000	0.020
1	0.000	0.000	0.020
2	0.000	0.000	0.020
3	0.000	0.000	0.020

Step 1 :

Point	Fx (kN/m)	Fa (kN/m)	Fw (m)
0	0.000	100000.000	-0.001
1	0.000	0.000	0.020
2	0.000	0.000	0.020
3	0.000	0.000	0.020

BAJO RAMAL V-B\P065Dm3.spw, P065Dm3.momento en cabeza fase defin.m

Data of Axial Forces and Moment

Step	NA (kN/m)	NB (kN/m)	MA (kNm/m)
0	0.000	0.000	0.000
1	0.000	0.000	-197.000

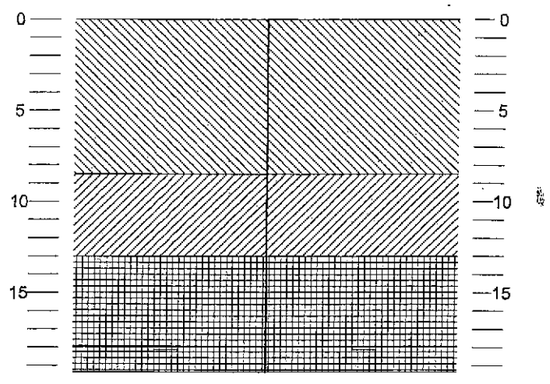
← -295/1.5 por info. VALTEPE para pantallas excepto esquinas.

Catalogue of Profiles

No	Profile Name	Area (m²/m)	Weight (kN/m³)	E (GN/m²)	h (m)	i (m)	EI (kNm²/m)
1	Pantalla 1.0 m	1.000000	25.000	25.000	1.000000	0.288675	2083331.4
2	Pantalla 0.80 m	0.800000	25.000	25.000	0.800000	0.230940	1066665.7
3	Pantalla 0.65 m	0.650000	25.000	25.000	0.650000	0.187639	572136.4
4	Profile 4	0.100000	78.000	210.000	0.200000	0.021822	10000.0
5	Profile 5	0.100000	78.000	210.000	0.200000	0.021822	10000.0
6	Profile 6	0.100000	78.000	210.000	0.200000	0.021822	10000.0
7	Profile 7	0.100000	78.000	210.000	0.200000	0.021822	10000.0
8	Profile 8	0.100000	78.000	210.000	0.200000	0.021822	10000.0
9	Profile 9	0.100000	78.000	210.000	0.200000	0.021822	10000.0
10	Profile 10	0.100000	78.000	210.000	0.200000	0.021822	10000.0
11	Profile 11	0.100000	78.000	210.000	0.200000	0.021822	10000.0
12	Profile 12	0.100000	78.000	210.000	0.200000	0.021822	10000.0
13	Profile 13	0.100000	78.000	210.000	0.200000	0.021822	10000.0
14	Profile 14	0.100000	78.000	210.000	0.200000	0.021822	10000.0
15	Profile 15	0.100000	78.000	210.000	0.200000	0.021822	10000.0
16	Profile 16	0.100000	78.000	210.000	0.200000	0.021822	10000.0
17	Profile 17	0.100000	78.000	210.000	0.200000	0.021822	10000.0
18	Profile 18	0.100000	78.000	210.000	0.200000	0.021822	10000.0
19	Profile 19	0.100000	78.000	210.000	0.200000	0.021822	10000.0
20	Profile 20	0.100000	78.000	210.000	0.200000	0.021822	10000.0

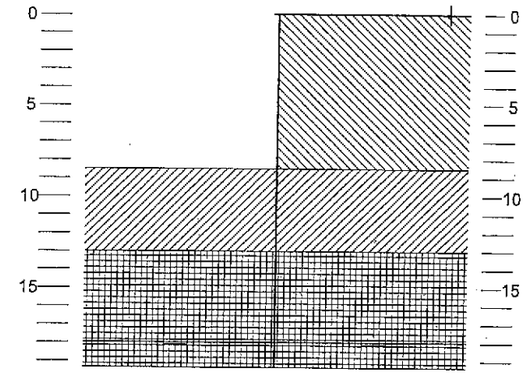
Cross Sections

Step 0 :



BAJO RAMAL V-B\P065Dm3.spw, P065Dm3.momento en cabeza fase defin.m

Step 1 :

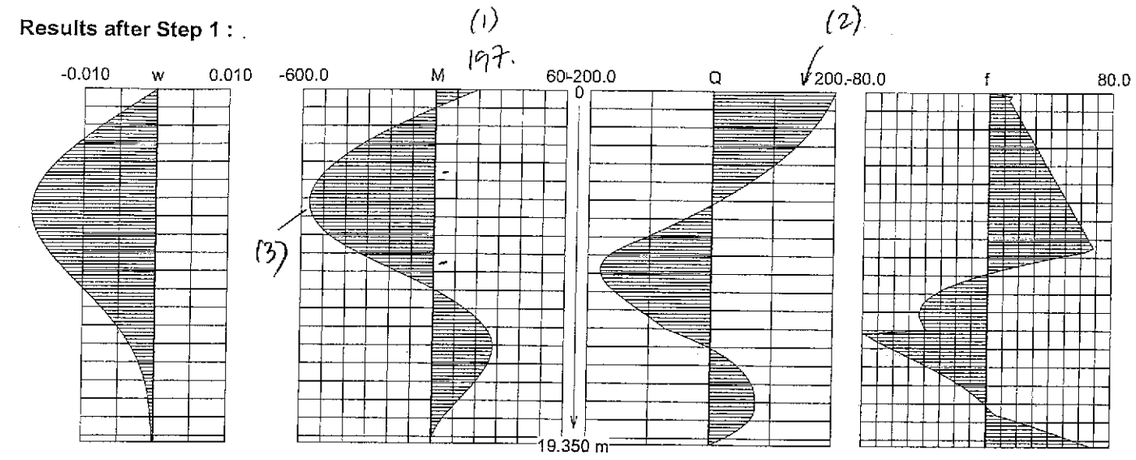


Results after Step 1 :

i	z (m)	w (m)	M (kNm)	Q- (kN)	Q+ (kN)	F (kN)	f (kN/m²)
0	0.000	-0.000002	197.000000	0.000000	200.671650	200.671650	0.000000
1	0.193	-0.000696	158.506353	197.850811	197.850811	0.000000	-14.615746
2	0.386	-0.001399	120.523682	195.381552	195.381552	0.000000	-12.794088
3	0.580	-0.002111	83.042683	192.657030	192.657030	0.000000	-14.043928
4	0.773	-0.002828	46.112667	189.677244	189.677244	0.000000	-15.439306
5	0.966	-0.003549	9.782949	186.442195	186.442195	0.000000	-16.761912
6	1.159	-0.004269	-25.897161	182.951882	182.951882	0.000000	-18.084523
7	1.352	-0.004989	-60.878349	179.206306	179.206306	0.000000	-19.407130
8	1.545	-0.005704	-95.111305	175.205467	175.205467	0.000000	-20.729736
9	1.739	-0.006413	-128.546715	170.949364	170.949364	0.000000	-21.938675
10	1.932	-0.007114	-161.135267	166.437998	166.437998	0.000000	-23.374953
11	2.125	-0.007804	-192.827649	161.671368	161.671368	0.000000	-24.697565
12	2.318	-0.008481	-223.574548	156.649475	156.649475	0.000000	-26.020171
13	2.511	-0.009144	-253.326654	151.372319	151.372319	0.000000	-27.342777
14	2.705	-0.009791	-282.034652	145.839899	145.839899	0.000000	-28.517629
15	2.898	-0.010419	-309.649231	140.052215	140.052215	0.000000	-29.988000
16	3.091	-0.011027	-336.121079	134.009269	134.009269	0.000000	-31.310601
17	3.284	-0.011613	-361.400883	127.711058	127.711058	0.000000	-32.633218
18	3.477	-0.012176	-385.439332	121.157585	121.157585	0.000000	-33.955819
19	3.670	-0.012713	-408.187112	114.348848	114.348848	0.000000	-35.278430
20	3.864	-0.013224	-429.594912	107.284847	107.284847	0.000000	-36.412376
21	4.057	-0.013707	-449.613420	99.965583	99.965583	0.000000	-37.923648
22	4.250	-0.014160	-468.193322	92.391056	92.391056	0.000000	-39.246254
23	4.443	-0.014583	-485.285308	84.561265	84.561265	0.000000	-40.568865
24	4.636	-0.014974	-500.840064	76.476211	76.476211	0.000000	-41.891472
25	4.830	-0.015333	-514.808279	68.135893	68.135893	0.000000	-42.991330
26	5.023	-0.015658	-527.140639	59.540312	59.540312	0.000000	-44.536689
27	5.216	-0.015949	-537.787834	50.689468	50.689468	0.000000	-45.859295
28	5.409	-0.016205	-546.700550	41.583360	41.583360	0.000000	-47.181907
29	5.602	-0.016425	-553.829476	32.221988	32.221988	0.000000	-48.504518
30	5.795	-0.016609	-559.125299	22.605353	22.605353	0.000000	-49.827124
31	5.989	-0.016756	-562.538706	12.733455	12.733455	0.000000	-50.886072
32	6.182	-0.016867	-564.020387	2.606293	2.606293	0.000000	-52.472342
33	6.375	-0.016942	-563.521027	-7.776132	-7.776132	0.000000	-53.794948
34	6.568	-0.016979	-560.991316	-18.413820	-18.413820	0.000000	-55.117554
35	6.761	-0.016980	-556.381941	-29.306772	-29.306772	0.000000	-56.440166
36	6.955	-0.016944	-549.643589	-40.454987	-40.454987	0.000000	-57.465026
37	7.148	-0.016873	-540.726948	-51.858466	-51.858466	0.000000	-59.085383
38	7.341	-0.016767	-529.582707	-63.517209	-63.517209	0.000000	-60.407995
39	7.534	-0.016626	-516.161553	-75.431214	-75.431214	0.000000	-61.730596
40	7.727	-0.016451	-500.414173	-87.600483	-87.600483	0.000000	-63.053207
41	7.920	-0.016244	-482.291255	-100.025016	-100.025016	0.000000	-64.375819
42	8.114	-0.016006	-461.743488	-112.704812	-112.704812	0.000000	-65.359773
43	8.307	-0.015737	-438.721558	-125.639871	-125.639871	0.000000	-67.021031
44	8.500	-0.015440	-413.176154	-138.830194	-138.830194	0.000000	-68.343642
45	8.696	-0.015111	-384.811399	-151.120635	-151.120635	0.000000	-62.706332

46	8.891	-0.014757	-354.268899	-161.091584	-161.091584	0.000000	-51.133072
47	9.087	-0.014379	-321.991638	-168.853759	-168.853759	0.000000	-39.602934
48	9.283	-0.013980	-288.399963	-174.527800	-174.527800	0.000000	-28.949189
49	9.478	-0.013561	-253.889780	-178.242964	-178.242964	0.000000	-19.052123
50	9.674	-0.013125	-218.830993	-180.135750	-180.135750	0.000000	-9.657071
51	9.870	-0.012675	-183.566229	-180.348504	-180.348504	0.000000	-1.085480
52	10.065	-0.012213	-148.409831	-179.028007	-179.028007	0.000000	6.771779
53	10.261	-0.011740	-113.647127	-176.324074	-176.324074	0.000000	13.795577
54	10.457	-0.011260	-79.533972	-172.388178	-172.388178	0.000000	20.081102
55	10.652	-0.010775	-46.296552	-167.372116	-167.372116	0.000000	25.723395
56	10.848	-0.010286	-14.131448	-161.426726	-161.426726	0.000000	30.333622
57	11.043	-0.009797	16.794058	-154.700672	-154.700672	0.000000	34.492585
58	11.239	-0.009308	46.341446	-147.339293	-147.339293	0.000000	37.558056
59	11.435	-0.008823	74.400202	-139.483541	-139.483541	0.000000	40.080367
60	11.630	-0.008342	100.886863	-131.268995	-131.268995	0.000000	42.125877
61	11.826	-0.007869	125.743881	-122.824971	-122.824971	0.000000	43.081755
62	12.022	-0.007403	148.938317	-114.273710	-114.273710	0.000000	43.628883
63	12.217	-0.006948	170.460386	-105.729659	-105.729659	0.000000	43.815646
64	12.413	-0.006504	190.321870	-97.298842	-97.298842	0.000000	43.014372
65	12.609	-0.006073	208.554416	-89.078301	-89.078301	0.000000	41.941536
66	12.804	-0.005656	225.207736	-81.155630	-81.155630	0.000000	40.629082
67	13.000	-0.005253	240.347712	-73.608573	-73.608573	0.000000	38.505393
68	13.192	-0.004873	253.047821	-58.392556	-58.392556	0.000000	79.250089
69	13.385	-0.004510	262.889015	-43.893877	-43.893877	0.000000	75.122689
70	13.577	-0.004163	270.015288	-30.174465	-30.174465	0.000000	71.455271
71	13.770	-0.003834	274.581311	-17.283417	-17.283417	0.000000	66.792995
72	13.962	-0.003522	276.750021	-5.257509	-5.257509	0.000000	62.634937
73	14.155	-0.003228	276.690305	5.878189	5.878189	0.000000	57.697917
74	14.347	-0.002952	274.574812	16.109608	16.109608	0.000000	53.288641
75	14.539	-0.002694	270.577921	25.432883	25.432883	0.000000	48.558724
76	14.732	-0.002454	264.873852	33.853497	33.853497	0.000000	43.630124
77	14.924	-0.002230	257.634961	41.385370	41.385370	0.000000	39.228505
78	15.117	-0.002024	249.030204	48.049908	48.049908	0.000000	34.531285
79	15.309	-0.001833	239.223789	53.875027	53.875027	0.000000	30.339161
80	15.502	-0.001658	228.374027	58.894153	58.894153	0.000000	26.005834
81	15.694	-0.001497	216.632360	63.145225	63.145225	0.000000	22.141000
82	15.886	-0.001351	204.142591	66.669696	66.669696	0.000000	18.356620
83	16.079	-0.001217	191.040305	69.511543	69.511543	0.000000	14.724596
84	16.271	-0.001096	177.452474	71.716303	71.716303	0.000000	11.483125
85	16.464	-0.000987	163.497250	73.330128	73.330128	0.000000	8.361788
86	16.656	-0.000888	149.283929	74.398873	74.398873	0.000000	5.566380
87	16.848	-0.000799	134.913101	74.967215	74.967215	0.000000	2.960115
88	17.041	-0.000718	120.476950	75.077821	75.077821	0.000000	0.573088
89	17.233	-0.000646	106.059721	74.770544	74.770544	0.000000	-1.600401
90	17.426	-0.000580	91.738333	74.081676	74.081676	0.000000	-3.569264
91	17.618	-0.000520	77.617827	72.682632	72.682632	0.000000	-7.286688
92	17.811	-0.000465	63.907480	69.818617	69.818617	0.000000	-14.839456
93	18.003	-0.000415	50.880431	65.580634	65.580634	0.000000	-22.072828
94	18.195	-0.000367	38.797919	60.001379	60.001379	0.000000	-29.058620
95	18.388	-0.000322	27.915356	53.108724	53.108724	0.000000	-35.713238
96	18.580	-0.000279	18.480935	44.949831	44.949831	0.000000	-42.494234
97	18.773	-0.000237	10.735568	35.553188	35.553188	0.000000	-48.687269
98	18.965	-0.000196	4.916237	24.931198	24.931198	0.000000	-55.322865
99	19.158	-0.000156	1.258777	13.083351	13.083351	0.000000	-61.387808
100	19.350	-0.000115	0.000000	0.000000	0.000000	0.000000	-68.142453

Results after Step 1 :



(1) $19.7 \cdot 1.6 = 31.5$ T·m. $13.1\ cm^2$. 5φ20 ($15.71\ cm^2$)

(2) $19.78 \cdot 2.60 = 51.43$

$51.43 \cdot 1.6 = 82.28$ T

@-1.0 m · $18.64 \cdot 2.60 = 48.46$

$48.46 \cdot 1.6 = 77.54$ T

1c φ12/0.20 + 2r φ12/0.20 $V_{u2} = 80.16$ T

(3) $56.4 \cdot 1.6 = 90.24$ T·m. $40.3\ cm^2/m$.

$40.3 \cdot 2.60 \simeq 105\ cm^2$ 22φ25 (14+8).

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BAJO RAMAL V-B\P065Dm2.spw, P065Dm2.momento en cabeza fase defin.m

06/11/03

General Data

Licensed User	: BAJO RAMAL V-B\P065Dm2.spw
File Name	: P065Dm2.spw
Problem Name	: P065Dm2.momento en cabeza fase defin.m
Length (m)	: 19.350
Number of Elements	: 100
Number of Layers	: 3
Number of Loading Steps	: 1
Profile from Catalogue	: 3

Data of Layers

Step 0, Left side

Layer	Top (m)	Bottom (m)	Wd (kN/m³)	Ws (kN/m³)	Zw (m)	Cap (m)	q (kN/m²)	c (kN/m²)	Ka (-)	Kp (-)	Kn (-)	Dw (m)
1	0.000	8.500	19.000	20.000	18.000	0.000	30.000	0.000	0.360	4.450	0.530	0.020
2	8.500	13.000	19.000	20.000	18.000	0.000	0.000	0.000	0.360	4.450	0.530	0.020
3	13.000	19.350	19.000	20.000	18.000	0.000	0.000	0.000	0.310	5.940	0.470	0.020

Step 0, Right side

Layer	Top (m)	Bottom (m)	Wd (kN/m³)	Ws (kN/m³)	Zw (m)	Cap (m)	q (kN/m²)	c (kN/m²)	Ka (-)	Kp (-)	Kn (-)	Dw (m)
1	0.000	8.500	19.000	20.000	18.000	0.000	30.000	0.000	0.360	4.450	0.530	0.020
2	8.500	13.000	19.000	20.000	18.000	0.000	0.000	0.000	0.360	4.450	0.530	0.020
3	13.000	19.350	19.000	20.000	18.000	0.000	0.000	0.000	0.310	5.940	0.470	0.020

Step 1, Left side

Layer	Top (m)	Bottom (m)	Wd (kN/m³)	Ws (kN/m³)	Zw (m)	Cap (m)	q (kN/m²)	c (kN/m²)	Ka (-)	Kp (-)	Kn (-)	Dw (m)
1	0.000	8.500	0.000	10.000	18.000	0.000	0.000	0.000	1.000	1.000	1.000	1.000
2	8.500	13.000	19.000	20.000	18.000	0.000	0.000	0.000	0.360	4.450	0.530	0.020
3	13.000	19.350	19.000	20.000	18.000	0.000	0.000	0.000	0.310	5.940	0.470	0.020

Step 1, Right side

Layer	Top (m)	Bottom (m)	Wd (kN/m³)	Ws (kN/m³)	Zw (m)	Cap (m)	q (kN/m²)	c (kN/m²)	Ka (-)	Kp (-)	Kn (-)	Dw (m)
1	0.000	8.500	19.000	20.000	18.000	0.000	30.000	0.000	0.360	4.450	0.530	0.020
2	8.500	13.000	19.000	20.000	18.000	0.000	0.000	0.000	0.360	4.450	0.530	0.020
3	13.000	19.350	19.000	20.000	18.000	0.000	0.000	0.000	0.310	5.940	0.470	0.020

Data of Anchors and Lateral Forces

Step 0 :

Point	Fx (kN/m)	Fa (kN/m)	Fw (m)
0	0.000	0.000	0.020
1	0.000	0.000	0.020
2	0.000	0.000	0.020
3	0.000	0.000	0.020

Step 1 :

Point	Fx (kN/m)	Fa (kN/m)	Fw (m)
0	0.000	100000.000	-0.001
1	0.000	0.000	0.020
2	0.000	0.000	0.020
3	0.000	0.000	0.020

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Data of Axial Forces and Moment

Step	NA (kN/m)	NB (kN/m)	MA (kNm/m)
0	0.000	0.000	0.000
1	0.000	0.000	0.000

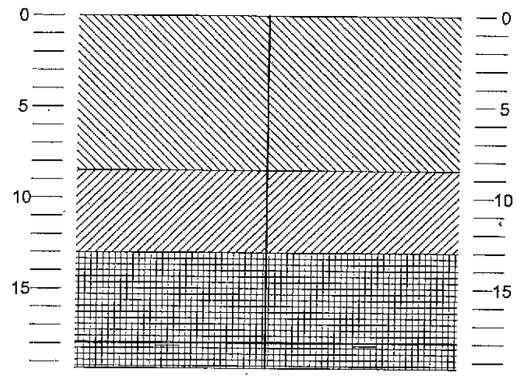
← sin imponer un momento en cabeza

Catalogue of Profiles

No	Profile Name	Area (m²/m)	Weight (kN/m³)	E (GN/m²)	h (m)	i (m)	EI (kNm²/m)
1	Pantalla 1.0 m	1.000000	25.000	25.000	1.000000	0.288675	2083331.4
2	Pantalla 0.80 m	0.800000	25.000	25.000	0.800000	0.230940	1066665.7
3	Pantalla 0.65 m	0.650000	25.000	25.000	0.650000	0.187639	572136.4
4	Profile 4	0.100000	78.000	210.000	0.200000	0.021822	10000.0
5	Profile 5	0.100000	78.000	210.000	0.200000	0.021822	10000.0
6	Profile 6	0.100000	78.000	210.000	0.200000	0.021822	10000.0
7	Profile 7	0.100000	78.000	210.000	0.200000	0.021822	10000.0
8	Profile 8	0.100000	78.000	210.000	0.200000	0.021822	10000.0
9	Profile 9	0.100000	78.000	210.000	0.200000	0.021822	10000.0
10	Profile 10	0.100000	78.000	210.000	0.200000	0.021822	10000.0
11	Profile 11	0.100000	78.000	210.000	0.200000	0.021822	10000.0
12	Profile 12	0.100000	78.000	210.000	0.200000	0.021822	10000.0
13	Profile 13	0.100000	78.000	210.000	0.200000	0.021822	10000.0
14	Profile 14	0.100000	78.000	210.000	0.200000	0.021822	10000.0
15	Profile 15	0.100000	78.000	210.000	0.200000	0.021822	10000.0
16	Profile 16	0.100000	78.000	210.000	0.200000	0.021822	10000.0
17	Profile 17	0.100000	78.000	210.000	0.200000	0.021822	10000.0
18	Profile 18	0.100000	78.000	210.000	0.200000	0.021822	10000.0
19	Profile 19	0.100000	78.000	210.000	0.200000	0.021822	10000.0
20	Profile 20	0.100000	78.000	210.000	0.200000	0.021822	10000.0

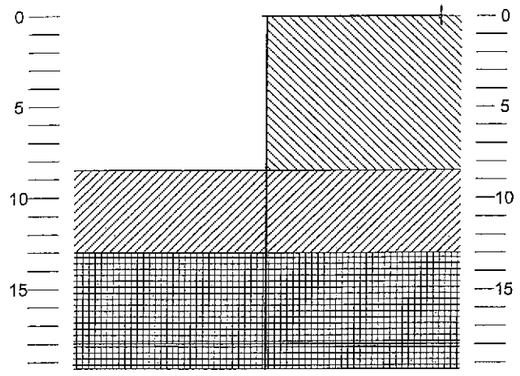
Cross Sections

Step 0 :



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Step 1 :



Results after Step 1 :

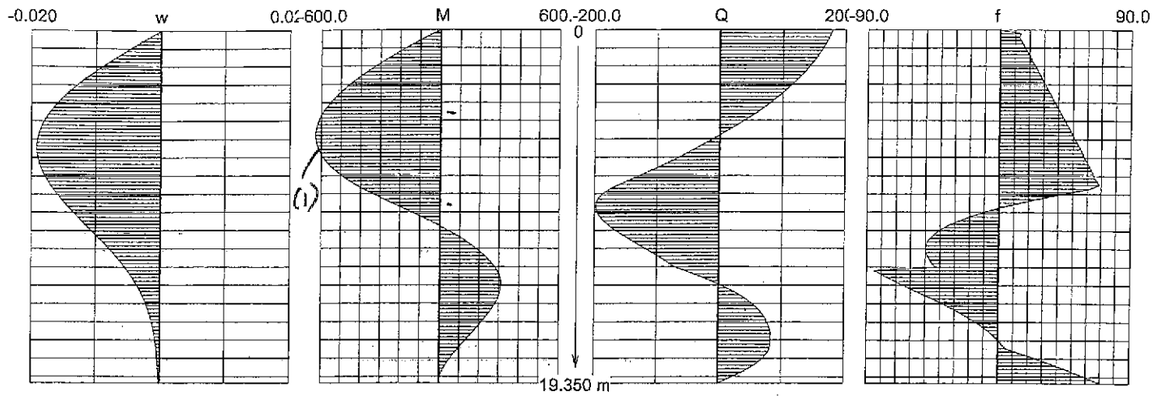
j	z (m)	w (m)	M (kNm)	Q- (kN)	Q+ (kN)	F (kN)	f (kN/m²)
0	0.000	-0.000002	0.000000	0.000000	178.702221	178.702221	0.000000
1	0.193	-0.000919	-34.263111	176.021751	176.021751	0.000000	-13.888446
2	0.386	-0.001834	-68.028805	173.552492	173.552492	0.000000	-12.794088
3	0.580	-0.002745	-101.292827	170.827970	170.827970	0.000000	-14.043928
4	0.773	-0.003648	-134.005864	167.848184	167.848184	0.000000	-15.439306
5	0.966	-0.004544	-166.118606	164.613135	164.613135	0.000000	-16.761912
6	1.159	-0.005428	-197.581738	161.122823	161.122823	0.000000	-18.084518
7	1.352	-0.006300	-228.345949	157.377247	157.377247	0.000000	-19.407130
8	1.545	-0.007156	-258.361927	153.376408	153.376408	0.000000	-20.729736
9	1.739	-0.007996	-287.580360	149.120305	149.120305	0.000000	-21.938675
10	1.932	-0.008817	-315.951934	144.608939	144.608939	0.000000	-23.374953
11	2.125	-0.009618	-343.427339	139.842309	139.842309	0.000000	-24.697565
12	2.318	-0.010396	-369.957261	134.820416	134.820416	0.000000	-26.020171
13	2.511	-0.011150	-395.492389	129.543259	129.543259	0.000000	-27.342782
14	2.705	-0.011878	-419.983410	124.010839	124.010839	0.000000	-28.517629
15	2.898	-0.012579	-443.381012	118.223156	118.223156	0.000000	-29.987995
16	3.091	-0.013251	-465.635882	112.180209	112.180209	0.000000	-31.310606
17	3.284	-0.013892	-486.698709	105.881999	105.881999	0.000000	-32.633212
18	3.477	-0.014502	-506.520180	99.328525	99.328525	0.000000	-33.955824
19	3.670	-0.015079	-525.050983	92.519788	92.519788	0.000000	-35.278430
20	3.864	-0.015621	-542.241806	85.455788	85.455788	0.000000	-36.412371
21	4.057	-0.016129	-558.043336	78.136524	78.136524	0.000000	-37.923648
22	4.250	-0.016599	-572.406261	70.561996	70.561996	0.000000	-39.246259
23	4.443	-0.017033	-585.281269	62.732206	62.732206	0.000000	-40.568860
24	4.636	-0.017428	-596.619048	54.647151	54.647151	0.000000	-41.891477
25	4.830	-0.017785	-606.370285	46.306834	46.306834	0.000000	-42.991325
26	5.023	-0.018102	-614.485669	37.711253	37.711253	0.000000	-44.536689
27	5.216	-0.018379	-620.915886	28.860408	28.860408	0.000000	-45.859301
28	5.409	-0.018615	-625.611625	19.754300	19.754300	0.000000	-47.181907
29	5.602	-0.018811	-628.523573	10.392929	10.392929	0.000000	-48.504513
30	5.795	-0.018966	-629.602418	0.776294	0.776294	0.000000	-49.827124
31	5.989	-0.019079	-628.798848	-9.095604	-9.095604	0.000000	-50.886072
32	6.182	-0.019152	-626.063551	-19.222766	-19.222766	0.000000	-52.472342
33	6.375	-0.019184	-621.347215	-29.605191	-29.605191	0.000000	-53.794948
34	6.568	-0.019175	-614.600526	-40.242880	-40.242880	0.000000	-55.117560
35	6.761	-0.019127	-605.774173	-51.135832	-51.135832	0.000000	-56.440166
36	6.955	-0.019038	-594.818844	-62.284047	-62.284047	0.000000	-57.465026
37	7.148	-0.018911	-581.685226	-73.687526	-73.687526	0.000000	-59.085383
38	7.341	-0.018747	-566.324007	-85.346268	-85.346268	0.000000	-60.407990
39	7.534	-0.018545	-548.685875	-97.260274	-97.260274	0.000000	-61.730601
40	7.727	-0.018307	-528.721518	-109.429543	-109.429543	0.000000	-63.053207
41	7.920	-0.018036	-506.381623	-121.854075	-121.854075	0.000000	-64.375813
42	8.114	-0.017731	-481.616878	-134.533871	-134.533871	0.000000	-65.359773
43	8.307	-0.017394	-454.377971	-147.468931	-147.468931	0.000000	-67.021036
44	8.500	-0.017028	-424.615590	-160.659254	-160.659254	0.000000	-68.343642
45	8.696	-0.016630	-391.991236	-172.834146	-172.834146	0.000000	-62.116796

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46	8.891	-0.016205	-357.232812	-182.474182	-182.474182	0.000000	-49.436082
47	9.087	-0.015756	-320.823375	-189.711180	-189.711180	0.000000	-36.923459
48	9.283	-0.015286	-283.219215	-194.686891	-194.686891	0.000000	-25.386281
49	9.478	-0.014797	-244.848066	-197.551525	-197.551525	0.000000	-14.690431
50	9.674	-0.014291	-206.107590	-198.462227	-198.462227	0.000000	-4.646439
51	9.870	-0.013772	-167.364179	-197.581535	-197.581535	0.000000	4.493327
52	10.065	-0.013241	-128.952045	-195.075829	-195.075829	0.000000	12.849774
53	10.261	-0.012702	-91.172624	-191.113810	-191.113810	0.000000	20.214383
54	10.457	-0.012157	-54.294261	-185.865012	-185.865012	0.000000	26.779582
55	10.652	-0.011608	-18.552192	-179.498365	-179.498365	0.000000	32.649472
56	10.848	-0.011057	15.851208	-172.180829	-172.180829	0.000000	37.334367
57	11.043	-0.010508	48.745908	-164.076106	-164.076106	0.000000	41.562682
58	11.239	-0.009962	79.993471	-155.343430	-155.343430	0.000000	44.554469
59	11.435	-0.009422	109.486069	-146.136461	-146.136461	0.000000	46.974332
60	11.630	-0.008888	137.145293	-136.602270	-136.602270	0.000000	48.893287
61	11.826	-0.008364	162.920773	-126.880421	-126.880421	0.000000	49.601270
62	12.022	-0.007851	186.788635	-117.102163	-117.102163	0.000000	49.889071
63	12.217	-0.007350	208.749796	-107.389706	-107.389706	0.000000	49.807472
64	12.413	-0.006863	228.828142	-97.855611	-97.855611	0.000000	48.643342
65	12.609	-0.006391	247.068586	-88.602257	-88.602257	0.000000	47.210990
66	12.804	-0.005936	263.535031	-79.721403	-79.721403	0.000000	45.542841
67	13.000	-0.005499	278.308260	-71.293827	-71.293827	0.000000	42.997837
68	13.192	-0.005086	290.458554	-54.992697	-54.992697	0.000000	84.901719
69	13.385	-0.004693	299.551451	-39.516153	-39.516153	0.000000	80.189347
70	13.577	-0.004319	305.751579	-24.926122	-24.926122	0.000000	75.989745
71	13.770	-0.003965	309.234139	-11.270566	-11.270566	0.000000	70.754176
72	13.962	-0.003630	310.182277	1.415908	1.415908	0.000000	66.075385
73	14.155	-0.003316	308.784580	13.111332	13.111332	0.000000	60.598052
74	14.347	-0.003021	305.232729	23.805550	23.805550	0.000000	55.699052
75	14.539	-0.002747	299.719305	33.499326	33.499326	0.000000	50.488417
76	14.732	-0.002491	292.435787	42.203376	42.203376	0.000000	45.098705
77	14.924	-0.002255	283.570733	49.937349	49.937349	0.000000	40.281109
78	15.117	-0.002037	273.308158	56.728779	56.728779	0.000000	35.188756
79	15.309	-0.001836	261.826129	62.612001	62.612001	0.000000	30.641781
80	15.502	-0.001653	249.295552	67.627063	67.627063	0.000000	25.984777
81	15.694	-0.001486	235.879186	71.818634	71.818634	0.000000	21.831099
82	15.886	-0.001333	221.730851	75.234922	75.234922	0.000000	17.793167
83	16.079	-0.001196	206.994857	77.926600	77.926600	0.000000	13.946518
84	16.271	-0.001071	191.805621	79.945770	79.945770	0.000000	10.516510
85	16.464	-0.000959	176.287499	81.344946	81.344946	0.000000	7.249617
86	16.656	-0.000859	160.554794	82.176082	82.176082	0.000000	4.328833
87	16.848	-0.000768	144.711957	82.489627	82.489627	0.000000	1.633047
88	17.041	-0.000688	128.853960	82.333644	82.333644	0.000000	-0.808202
89	17.233	-0.000615	113.066841	81.752954	81.752954	0.000000	-3.024427
90	17.426	-0.000550	97.428398	80.788346	80.788346	0.000000	-4.997969
91	17.618	-0.000491	82.099563	78.534975	78.534975	0.000000	-11.736307
92	17.811	-0.000438	67.343136	74.838913	74.838913	0.000000	-19.150580
93	18.003	-0.000388	53.427141	69.799778	69.799778	0.000000	-26.245495
94	18.195	-0.000343	40.605959	63.459745	63.459745	0.000000	-33.021005
95	18.388	-0.000300	29.126517	55.854141	55.854141	0.000000	-39.407275
96	18.580	-0.000259	19.227440	47.033902	47.033902	0.000000	-45.938745
97	18.773	-0.000219	11.139445	37.030295	37.030295	0.000000	-51.832161
98	18.965	-0.000180	5.088855	25.857731	25.857731	0.000000	-58.190437
99	19.158	-0.000141	1.300514	13.517152	13.517152	0.000000	-63.940824
100	19.350	-0.000102	0.000000	0.000000	0.000000	0.000000	-70.401833

BAJO RAMAL V-B\P065Dm2.spw, P065Dm2.momento en cabeza fase defin.m

Results after Step 1 :



Maxima : -0.019184 m -629.602418 kNm/m -198.462227 kN/m -84.901719 kN/m²

(1) $62.96 \cdot 1.6 = 100.74$ T·m. $45.6\ cm^2/m$.

$45.6 - 2.60 = 118.56\ cm^2$. $25\phi25$ (14 + 11).

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BAJO RAMAL V-B\P065Dm.spw, P065Dm.fase defin.m

06/11/03

General Data

Licensed User	: BAJO RAMAL V-B\P065Dm.spw
File Name	: P065Dm.spw
Problem Name	: P065Dm.fase defin.m
Length (m)	: 19.350
Number of Elements	: 100
Number of Layers	: 3
Number of Loading Steps	: 1
Profile from Catalogue	: 3

Data of Layers

Step 0, Left side

Layer	Top (m)	Bottom (m)	Wd (kN/m³)	Ws (kN/m³)	Zw (m)	Cap (m)	q (kN/m²)	c (kN/m²)	Ka (-)	Kp (-)	Kn (-)	Dw (m)
1	0.000	8.500	19.000	20.000	18.000	0.000	30.000	0.000	0.360	4.450	0.530	0.020
2	8.500	13.000	19.000	20.000	18.000	0.000	0.000	0.000	0.360	4.450	0.530	0.020
3	13.000	19.350	19.000	20.000	18.000	0.000	0.000	0.000	0.310	5.940	0.470	0.020

Step 0, Right side

Layer	Top (m)	Bottom (m)	Wd (kN/m³)	Ws (kN/m³)	Zw (m)	Cap (m)	q (kN/m²)	c (kN/m²)	Ka (-)	Kp (-)	Kn (-)	Dw (m)
1	0.000	8.500	19.000	20.000	18.000	0.000	30.000	0.000	0.360	4.450	0.530	0.020
2	8.500	13.000	19.000	20.000	18.000	0.000	0.000	0.000	0.360	4.450	0.530	0.020
3	13.000	19.350	19.000	20.000	18.000	0.000	0.000	0.000	0.310	5.940	0.470	0.020

Step 1, Left side

Layer	Top (m)	Bottom (m)	Wd (kN/m³)	Ws (kN/m³)	Zw (m)	Cap (m)	q (kN/m²)	c (kN/m²)	Ka (-)	Kp (-)	Kn (-)	Dw (m)
1	0.000	8.500	0.000	10.000	18.000	0.000	0.000	0.000	1.000	1.000	1.000	1.000
2	8.500	13.000	19.000	20.000	18.000	0.000	0.000	0.000	0.360	4.450	0.530	0.020
3	13.000	19.350	19.000	20.000	18.000	0.000	0.000	0.000	0.310	5.940	0.470	0.020

Step 1, Right side

Layer	Top (m)	Bottom (m)	Wd (kN/m³)	Ws (kN/m³)	Zw (m)	Cap (m)	q (kN/m²)	c (kN/m²)	Ka (-)	Kp (-)	Kn (-)	Dw (m)
1	0.000	8.500	19.000	20.000	18.000	0.000	30.000	0.000	0.360	4.450	0.530	0.020
2	8.500	13.000	19.000	20.000	18.000	0.000	0.000	0.000	0.360	4.450	0.530	0.020
3	13.000	19.350	19.000	20.000	18.000	0.000	0.000	0.000	0.310	5.940	0.470	0.020

Data of Anchors and Lateral Forces

Step 0 :

Point	Fx (kN/m)	Fa (kN/m)	Fw (m)
0	0.000	0.000	0.020
1	0.000	0.000	0.020
2	0.000	0.000	0.020
3	0.000	0.000	0.020

Step 1 :

Point	Fx (kN/m)	Fa (kN/m)	Fw (m)
0	0.000	100000.000	-0.001
1	0.000	0.000	0.020
2	0.000	0.000	0.020
3	0.000	0.000	0.020

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Data of Axial Forces and Moment

Step	NA (kN/m)	NB (kN/m)	MA (kNm/m)
0	0.000	0.000	0.000
1	0.000	0.000	169.000

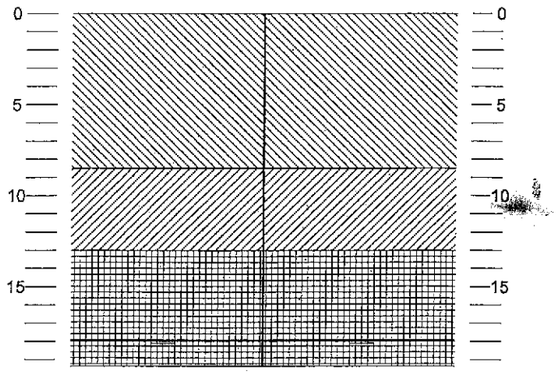
Frenado/Arranque

Catalogue of Profiles

No	Profile Name	Area (m²/m)	Weight (kN/m³)	E (GN/m²)	h (m)	i (m)	EI (kNm²/m)
1	Pantalla 1.0 m	1.000000	25.000	25.000	1.000000	0.288675	2083331.4
2	Pantalla 0.80 m	0.800000	25.000	25.000	0.800000	0.230940	1066665.7
3	Pantalla 0.65 m	0.650000	25.000	25.000	0.650000	0.187639	572136.4
4	Profile 4	0.100000	78.000	210.000	0.200000	0.021822	10000.0
5	Profile 5	0.100000	78.000	210.000	0.200000	0.021822	10000.0
6	Profile 6	0.100000	78.000	210.000	0.200000	0.021822	10000.0
7	Profile 7	0.100000	78.000	210.000	0.200000	0.021822	10000.0
8	Profile 8	0.100000	78.000	210.000	0.200000	0.021822	10000.0
9	Profile 9	0.100000	78.000	210.000	0.200000	0.021822	10000.0
10	Profile 10	0.100000	78.000	210.000	0.200000	0.021822	10000.0
11	Profile 11	0.100000	78.000	210.000	0.200000	0.021822	10000.0
12	Profile 12	0.100000	78.000	210.000	0.200000	0.021822	10000.0
13	Profile 13	0.100000	78.000	210.000	0.200000	0.021822	10000.0
14	Profile 14	0.100000	78.000	210.000	0.200000	0.021822	10000.0
15	Profile 15	0.100000	78.000	210.000	0.200000	0.021822	10000.0
16	Profile 16	0.100000	78.000	210.000	0.200000	0.021822	10000.0
17	Profile 17	0.100000	78.000	210.000	0.200000	0.021822	10000.0
18	Profile 18	0.100000	78.000	210.000	0.200000	0.021822	10000.0
19	Profile 19	0.100000	78.000	210.000	0.200000	0.021822	10000.0
20	Profile 20	0.100000	78.000	210.000	0.200000	0.021822	10000.0

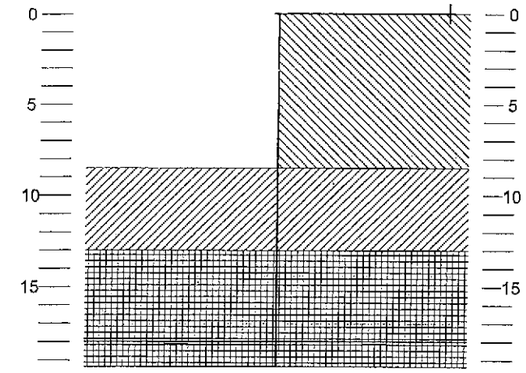
Cross Sections

Step 0 :



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Step 1 :

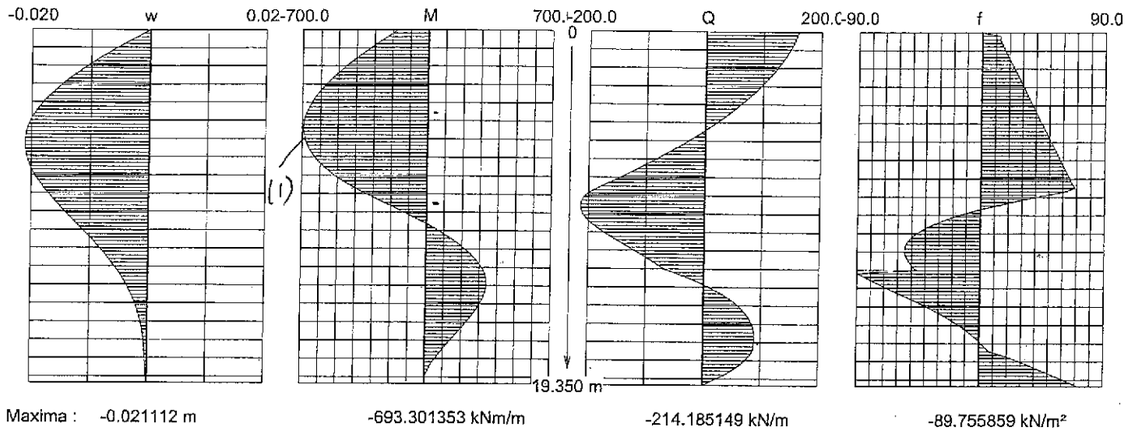


Results after Step 1 :

I	z (m)	w (m)	M (kNm)	Q- (kN)	Q+ (kN)	F (kN)	f (kN/m²)
0	0.000	-0.000002	-169.000000	0.000000	159.854326	159.854326	0.000000
1	0.193	-0.001111	-199.633671	157.294271	157.294271	0.000000	-13.264534
2	0.386	-0.002207	-229.781557	154.825013	154.825013	0.000000	-12.794083
3	0.580	-0.003288	-259.427770	152.100490	152.100490	0.000000	-14.043933
4	0.773	-0.004352	-288.522999	149.120705	149.120705	0.000000	-15.439301
5	0.966	-0.005397	-317.017932	145.885656	145.885656	0.000000	-16.761912
6	1.159	-0.006422	-344.863255	142.395343	142.395343	0.000000	-18.084523
7	1.352	-0.007424	-372.009658	138.649767	138.649767	0.000000	-19.407130
8	1.545	-0.008402	-398.407828	134.648928	134.648928	0.000000	-20.729736
9	1.739	-0.009354	-424.008451	130.392825	130.392825	0.000000	-21.938675
10	1.932	-0.010279	-448.762217	125.881459	125.881459	0.000000	-23.374953
11	2.125	-0.011174	-472.619814	121.114829	121.114829	0.000000	-24.697565
12	2.318	-0.012038	-495.531927	116.092936	116.092936	0.000000	-26.020171
13	2.511	-0.012870	-517.449246	110.815780	110.815780	0.000000	-27.342777
14	2.705	-0.013668	-538.322459	105.283360	105.283360	0.000000	-28.517629
15	2.898	-0.014431	-558.102252	99.495676	99.495676	0.000000	-29.988000
16	3.091	-0.015158	-576.739314	93.452730	93.452730	0.000000	-31.310601
17	3.284	-0.015847	-594.184332	87.154519	87.154519	0.000000	-32.633218
18	3.477	-0.016498	-610.387995	80.601046	80.601046	0.000000	-33.955819
19	3.670	-0.017108	-625.300989	73.792309	73.792309	0.000000	-35.278430
20	3.864	-0.017678	-638.874003	66.728308	66.728308	0.000000	-36.412376
21	4.057	-0.018206	-651.057725	59.409044	59.409044	0.000000	-37.923648
22	4.250	-0.018692	-661.802841	51.834517	51.834517	0.000000	-39.246254
23	4.443	-0.019135	-671.060041	44.004726	44.004726	0.000000	-40.568865
24	4.636	-0.019533	-678.780011	35.919672	35.919672	0.000000	-41.891472
25	4.830	-0.019888	-684.913440	27.579354	27.579354	0.000000	-42.991330
26	5.023	-0.020198	-689.411015	18.983773	18.983773	0.000000	-44.536689
27	5.216	-0.020463	-692.223423	10.132928	10.132928	0.000000	-45.859301
28	5.409	-0.020683	-693.301353	1.026820	1.026820	0.000000	-47.181907
29	5.602	-0.020858	-692.595493	-8.334551	-8.334551	0.000000	-48.504513
30	5.795	-0.020987	-690.056530	-17.951186	-17.951186	0.000000	-49.827124
31	5.989	-0.021072	-685.635152	-27.823084	-27.823084	0.000000	-50.886072
32	6.182	-0.021112	-679.282046	-37.950246	-37.950246	0.000000	-52.472342
33	6.375	-0.021107	-670.947901	-48.332671	-48.332671	0.000000	-53.794948
34	6.568	-0.021059	-660.583403	-58.970359	-58.970359	0.000000	-55.117554
35	6.761	-0.020968	-648.139242	-69.863311	-69.863311	0.000000	-56.440166
36	6.955	-0.020835	-633.566104	-81.011527	-81.011527	0.000000	-57.465031
37	7.148	-0.020660	-616.814678	-92.415006	-92.415006	0.000000	-59.085383
38	7.341	-0.020445	-597.835650	-104.073748	-104.073748	0.000000	-60.407990
39	7.534	-0.020191	-576.579710	-115.987753	-115.987753	0.000000	-61.730596
40	7.727	-0.019900	-552.997544	-128.157023	-128.157023	0.000000	-63.053212
41	7.920	-0.019572	-527.039841	-140.581555	-140.581555	0.000000	-64.375813
42	8.114	-0.019210	-498.657287	-153.261351	-153.261351	0.000000	-65.359773
43	8.307	-0.018816	-467.800572	-166.196410	-166.196410	0.000000	-67.021031
44	8.500	-0.018391	-434.420382	-179.386733	-179.386733	0.000000	-68.343642
45	8.696	-0.017932	-398.141651	-191.462508	-191.462508	0.000000	-61.611097

46	8.891	-0.017447	-359.766317	-200.818685	-200.818685	0.000000	-47.980395
47	9.087	-0.016937	-319.811809	-207.605183	-207.605183	0.000000	-34.624990
48	9.283	-0.016406	-278.765250	-211.981859	-211.981859	0.000000	-22.329980
49	9.478	-0.015856	-237.081676	-214.116896	-214.116896	0.000000	-10.948908
50	9.674	-0.015291	-195.182563	-214.185149	-214.185149	0.000000	-0.348230
51	9.870	-0.014712	-153.454687	-212.366472	-212.366472	0.000000	9.278964
52	10.065	-0.014123	-112.249309	-208.844056	-208.844056	0.000000	18.063672
53	10.261	-0.013527	-71.881682	-203.802802	-203.802802	0.000000	25.720684
54	10.457	-0.012926	-32.630869	-197.427730	-197.427730	0.000000	32.525878
55	10.652	-0.012322	5.260128	-189.902465	-189.902465	0.000000	38.591103
56	10.848	-0.011719	41.583958	-181.407792	-181.407792	0.000000	43.340168
57	11.043	-0.011119	76.168229	-172.120308	-172.120308	0.000000	47.628123
58	11.239	-0.010524	108.874568	-162.211161	-162.211161	0.000000	50.556872
59	11.435	-0.009935	139.597444	-151.844909	-151.844909	0.000000	52.889041
60	11.630	-0.009357	168.262775	-141.178472	-141.178472	0.000000	54.699677
61	11.826	-0.008789	194.826341	-130.360201	-130.360201	0.000000	55.195260
62	12.022	-0.008235	219.272030	-119.529061	-119.529061	0.000000	55.260918
63	12.217	-0.007695	241.609930	-108.813919	-108.813919	0.000000	54.949446
64	12.413	-0.007171	261.874296	-98.332934	-98.332934	0.000000	53.474413
65	12.609	-0.006665	280.121403	-88.193052	-88.193052	0.000000	51.734092
66	12.804	-0.006177	296.427315	-78.489599	-78.489599	0.000000	49.761297
67	13.000	-0.005710	310.885575	-69.305949	-69.305949	0.000000	46.855357
68	13.192	-0.005270	322.563684	-52.072824	-52.072824	0.000000	89.755859
69	13.385	-0.004851	331.013894	-35.756128	-35.756128	0.000000	84.542466
70	13.577	-0.004453	336.418504	-20.417773	-20.417773	0.000000	79.887266
71	13.770	-0.004077	338.970291	-6.104732	-6.104732	0.000000	74.160834
72	13.962	-0.003723	338.869698	7.150265	7.150265	0.000000	69.036443
73	14.155	-0.003391	336.322175	19.327917	19.327917	0.000000	63.096642
74	14.347	-0.003081	331.535684	30.421443	30.421443	0.000000	57.778781
75	14.539	-0.002792	324.718379	40.435588	40.435588	0.000000	52.157005
76	14.732	-0.002524	316.076495	49.385567	49.385567	0.000000	46.372948
77	14.924	-0.002276	305.812439	57.295957	57.295957	0.000000	41.199948
78	15.117	-0.002049	294.123098	64.199553	64.199553	0.000000	35.769927
79	15.309	-0.001840	281.198370	70.136206	70.136206	0.000000	30.920068
80	15.502	-0.001649	267.219918	75.151646	75.151646	0.000000	25.986736
81	15.694	-0.001476	252.360152	79.296317	79.296317	0.000000	21.586828
82	15.886	-0.001319	236.781434	82.624215	82.624215	0.000000	17.332802
83	16.079	-0.001178	220.635504	85.191752	85.191752	0.000000	13.303301
84	16.271	-0.001050	204.063120	87.056646	87.056646	0.000000	9.712990
85	16.464	-0.000936	187.193912	88.276851	88.276851	0.000000	6.322306
86	16.656	-0.000834	170.146435	88.909522	88.909522	0.000000	3.295161
87	16.848	-0.000743	153.028418	89.010027	89.010027	0.000000	0.523464
88	17.041	-0.000662	135.937197	88.631010	88.631010	0.000000	-1.963819
89	17.233	-0.000589	118.960327	87.821501	87.821501	0.000000	-4.216193
90	17.426	-0.000525	102.197410	86.407245	86.407245	0.000000	-7.327751
91	17.618	-0.000467	85.856178	83.438630	83.438630	0.000000	-15.461536
92	17.811	-0.000414	70.223199	79.045877	79.045877	0.000000	-22.760378
93	18.003	-0.000366	55.562232	73.335820	73.335820	0.000000	-29.739880
94	18.195	-0.000322	42.121938	66.358576	66.358576	0.000000	-36.339812
95	18.388	-0.000281	30.142154	58.155716	58.155716	0.000000	-42.501865
96	18.580	-0.000241	19.853513	48.781338	48.781338	0.000000	-48.824885
97	18.773	-0.000203	11.478212	38.269040	38.269040	0.000000	-54.467865
98	18.965	-0.000165	5.233665	26.634914	26.634914	0.000000	-60.594406
99	19.158	-0.000128	1.335532	13.881115	13.881115	0.000000	-66.081860
100	19.350	-0.000091	0.000000	0.000000	0.000000	0.000000	-72.297474

Results after Step 1 :



Maxima : -0.021112 m -693.301353 kNm/m -214.185149 kN/m -89.755859 kN/m²

control interno

(1) $69.33 \cdot 1.5^{d} = 104.0$ T·m.

$47.3\ cm^2/m$.

$47.3 \cdot 2.60 \triangleq 123\ cm^2$. 26φ25 (14+12).

14φ25 $M_u = 570$ kN·m.

$M_k = 356$ kN·m.

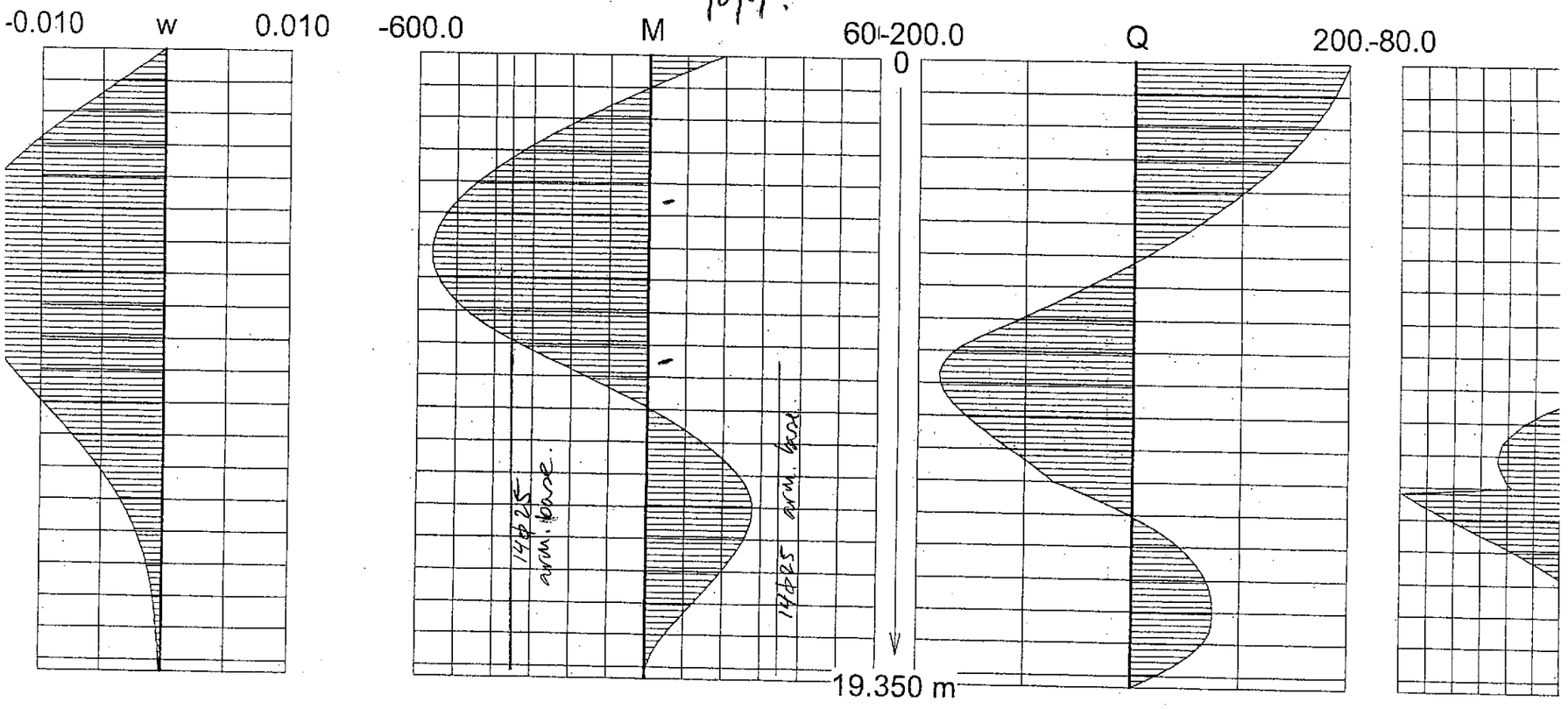
V2003 - Sheet Pile Wall

O RAMAL V-B\P065Dm3.spw, P065Dm3.momento en cabeza fase defin.m

ults after Step 1 :

(1)

197.



ıa : -0.016980 m

-564.020387 kNm/m

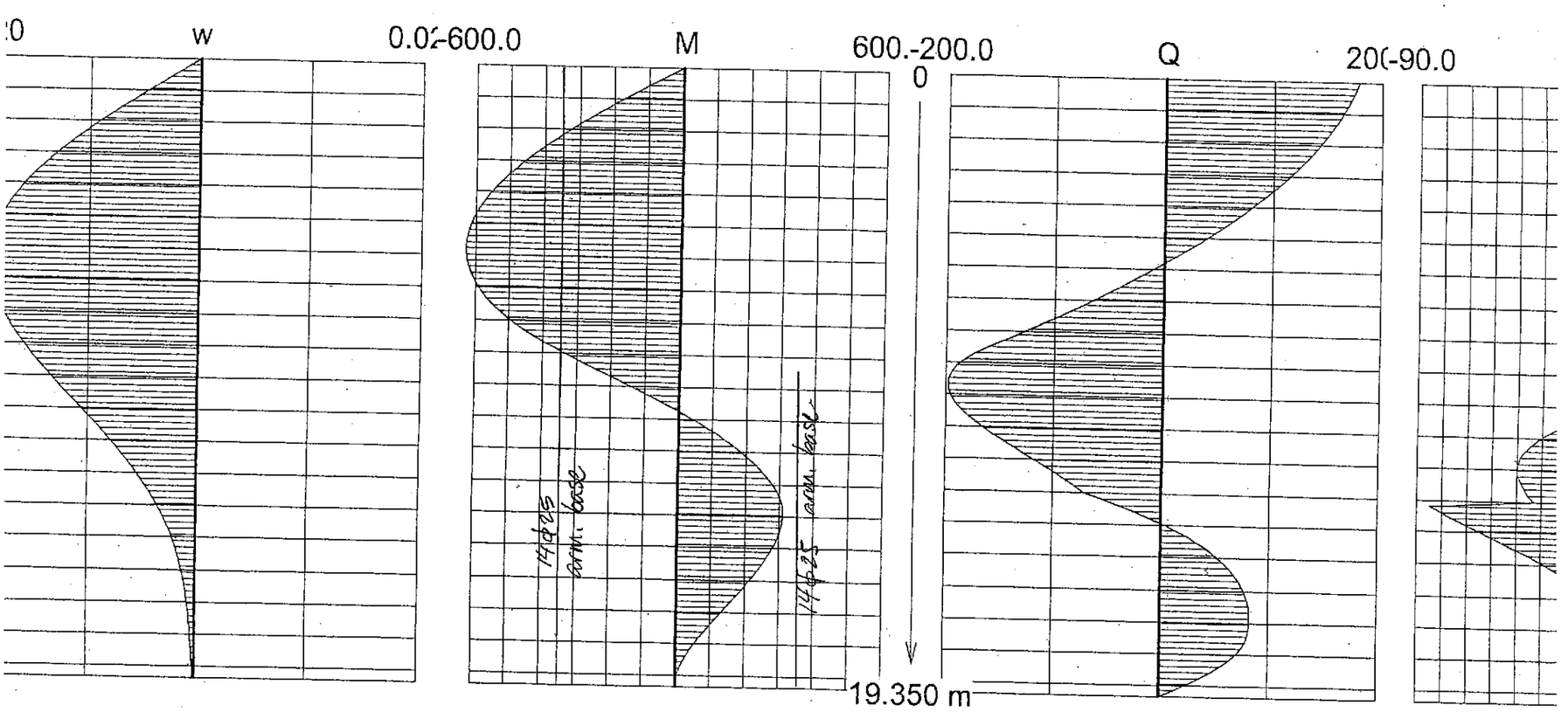
197.850811 kN/m

(2)

PW2003 - Sheet Pile Wall

AJO RAMAL V-B\P065Dm2.spw, P065Dm2.momento en cabeza fase defin.m

esults after Step 1 :



kima : -0.019184 m

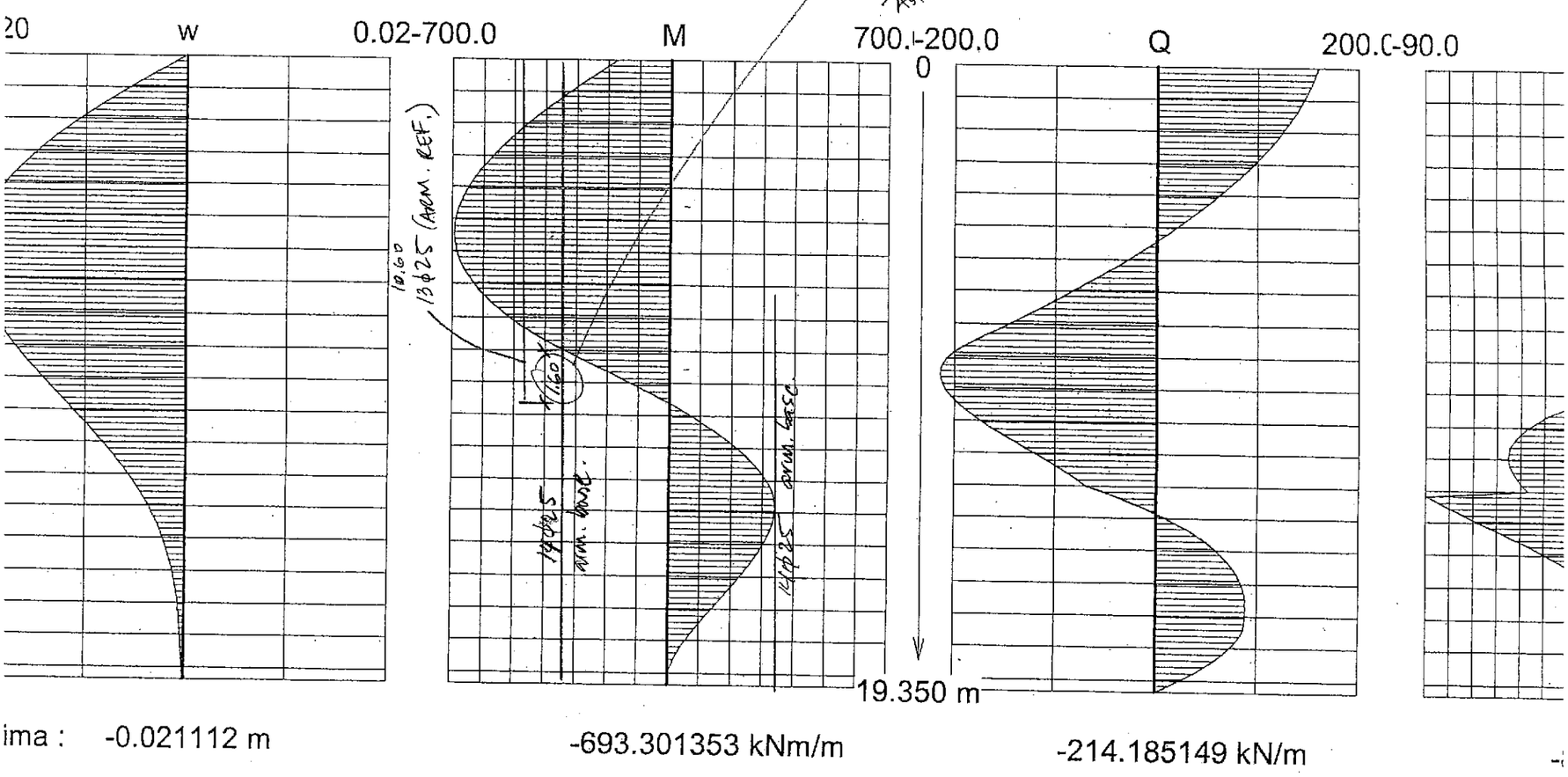
-629.602418 kNm/m

-198.462227 kN/m

W2003 - Sheet Pile Wall

JO RAMAL V-B\P065Dm.spw, P065Dm.fase defin.m

sults after Step 1 :



ima : -0.021112 m

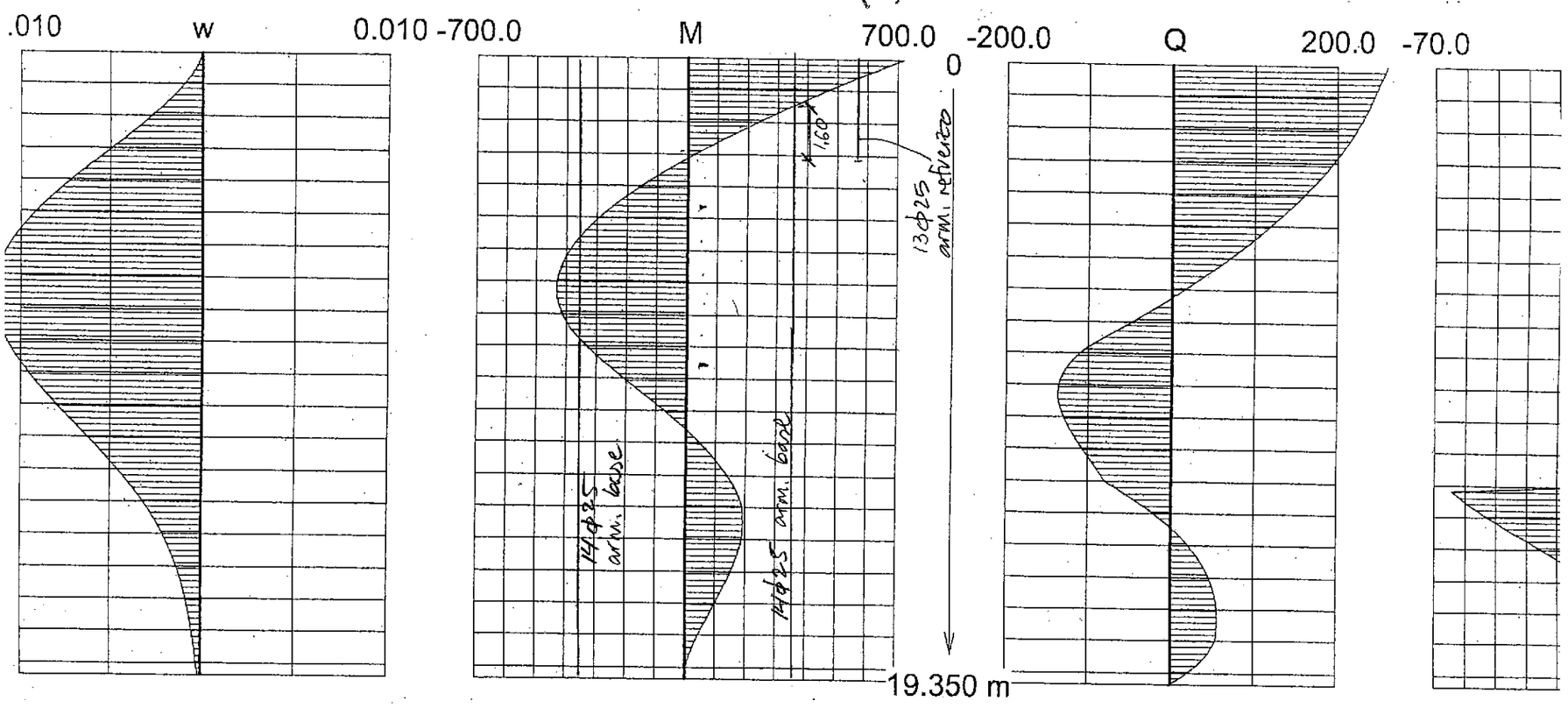
-693.301353 kNm/m

-214.185149 kN/m

PW2003 - Sheet Pile Wall

AJO RAMAL V-B\P065Dm4.spw, P065Dm4.momento en cabeza fase defin.m

esults after Step 1 :



xima : -0.011540 m

720.000000 kNm/m

257.935470 kN/m

Cortante

Sección:

h = 65.0 cm
d' = 7.0 cm
b = 260.0 cm
d = 58.00 cm

Materiales:

Hormigón: **H - 250** f_c = 250 Kp/cm²
f_{cd} = 166.7 Kp/cm²

Acero: **B 500 S** f_s = 5000 Kp/cm²

Esfuerzo cortante V_{rd} = 107.40 T

Esfuerzo cortante de agotamiento por compresión en el alma, V_{u1}

Resistencia por compresión del hormigón: $f_{1cd} = 0{,}6 * f_{cd}$ = 100.0 Kp/cm²

Tensión axil efectiva en la sección: $\delta'_{cd} = N_d / A_c$ = 0.00 Kp/cm²

Coeficiente por reducción por efecto del esfuerzo axil: $K = 5/3 * (1 + \delta'_{cd}/f_{cd})$ = 1.67 siempre menor que 1,0

$V_{u1} = K * f_{1cd} * b_0 * d$ = 754.00 T > V_{rd} = 107.40 T
O.K.

Esfuerzo cortante de agotamiento por tracción en el alma, V_{u2}

$\xi = 1 + (200/d)^{0.5}$ = 1.59

Armadura longitudinal: **numero de barras, n =** 27 **barra ϕ =** 25

A_s = 132.54 cm²

Cuantía geometrica de armadura longitudinal: $\rho_l = A_s / (b_0 * d)$ = 0.0088 siempre menor que 0,02

Caso 1º: *Piezas sin armadura de cortante*

$V_{u2} = [0{,}12 * \xi * (100 * \rho_l * f_{ck})^{1/3} - 0{,}15 * \delta'_{cd}] * b_0 * d$ = 80.45 T < V_{rd} = 107.40 T
Aumentar la sección o armar a cortante

Caso 2º: *Piezas con armadura de cortante*

Contribución del hormigón a la resistencia a cortante

$V_{cu} = [0{,}10 * \xi * (100 * \rho_l * f_{ck})^{1/3} - 0{,}15 * \delta'_{cd}] * b_0 * d$ = 67.04 T

Contribución de la armadura transversal a la resistencia a cortante

En la sección 2 **cercos de ϕ** 12 **a cada** 20 **cm**

A_{90} = 22.62 cm²/m

$V_{su} = A_{90} * f_{y90,d} * 0{,}9 * d$ = 47.23 T

$V_{u2} = V_{cu} + V_{su}$ = 114.27 T > V_{rd} = 107.40
O.K.

Cortante

Sección:

h = 65.0 cm
d' = 7.0 cm
b = 260.0 cm
d = 58.00 cm

Materiales:

Hormigón: **H - 250** f_c = 250 Kp/cm²
f_{cd} = 166.7 Kp/cm²

Acero: **B 500 S** f_s = 5000 Kp/cm²

Esfuerzo cortante V_{rd} = 107.40 T

Esfuerzo cortante de agotamiento por compresión en el alma, V_{u1}

Resistencia por compresión del hormigón: $f_{1cd} = 0{,}6 * f_{cd}$ = 100.0 Kp/cm²

Tensión axil efectiva en la sección: $\delta'_{cd} = N_d / A_c$ = 0.00 Kp/cm²

Coeficiente por reducción por efecto del esfuerzo axil: $K = 5/3 * (1 + \delta'_{cd}/f_{cd})$ = 1.67 siempre menor que 1,0

$V_{u1} = K * f_{1cd} * b_0 * d$ = 754.00 T > V_{rd} = 107.40 T
O.K.

Esfuerzo cortante de agotamiento por tracción en el alma, V_{u2}

$\xi = 1 + (200/d)^{0.5}$ = 1.59

Armadura longitudinal: **numero de barras, n =** 27 **barra ϕ =** 20

A_s = 84.82 cm²

Cuantía geometrica de armadura longitudinal: $\rho_l = A_s / (b_0 * d)$ = 0.0056 siempre menor que 0,02

Caso 1º: *Piezas sin armadura de cortante*

$V_{u2} = [0{,}12 * \xi * (100 * \rho_l * f_{ck})^{1/3} - 0{,}15 * \delta'_{cd}] * b_0 * d$ = 69.33 T < V_{rd} = 107.40 T
Aumentar la sección o armar a cortante

Caso 2º: *Piezas con armadura de cortante*

Contribución del hormigón a la resistencia a cortante

$V_{cu} = [0{,}10 * \xi * (100 * \rho_l * f_{ck})^{1/3} - 0{,}15 * \delta'_{cd}] * b_0 * d$ = 57.77 T

Contribución de la armadura transversal a la resistencia a cortante

En la sección 2 **cercos de ϕ** 12 **a cada** 20 **cm**

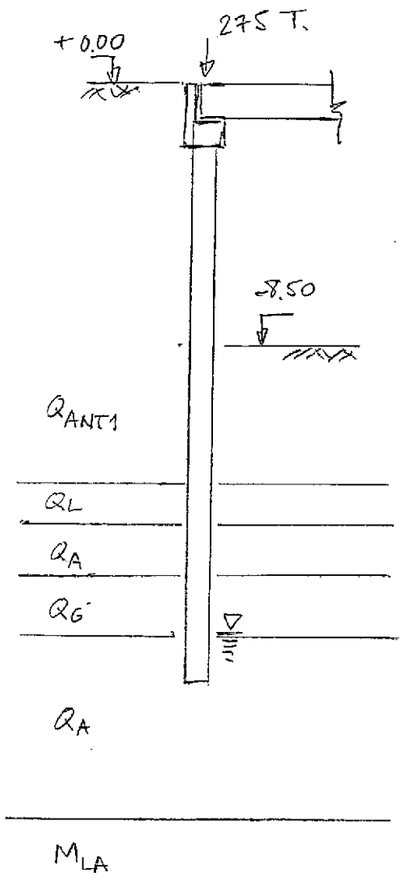
A_{90} = 22.62 cm²/m

$V_{su} = A_{90} * f_{y90,d} * 0{,}9 * d$ = 47.23 T

$V_{u2} = V_{cu} + V_{su}$ = 105.00 T < V_{rd} = 107.40
Aumentar la sección o poner mas armadura a cortante

1cφ12/0.20 + 4rφ12/0.20
en 2,0m por debajo coronación de pantalla

PANTALLA - Paso Bajo Ramal Valles-Barcelona (L.A.V.).



Q_{ANT1} - Rellenos
Q_L Limos y Limos arenosos
Q_A Arenas y arenas limosas con gravas
Q_G Gravas y gravas arenosas
M_{LA} Lutitas y lutitas arenosas preconsolidadas.

Se considera para el cálculo de hundimiento una carga máx. de servicio de 275 Ton. en un apoyo. Dicha carga se repartirá en un modulo de pantalla de 2.60 m.

Se considera un valor en punta de 268 Ton/m. obtenido considerando una media entre terreno arenas con gravas y gravas arenosas.
Para el fuste. se utilizan los siguientes valores

Q_{ANT1}	F_{ANT1}	$= 8.2\ T/m^2$
Q_L	F_L	$\approx 9.0\ T/m^2$
Q_A	F_A	$= 12.0\ T/m^2$
Q_G	F_G	$= 15.0\ T/m^2$

Se utiliza un empotramiento de 8E bajo la capa de limos $8 \cdot 0.65 = 5.20$, situando el fondo de excavación en la cota

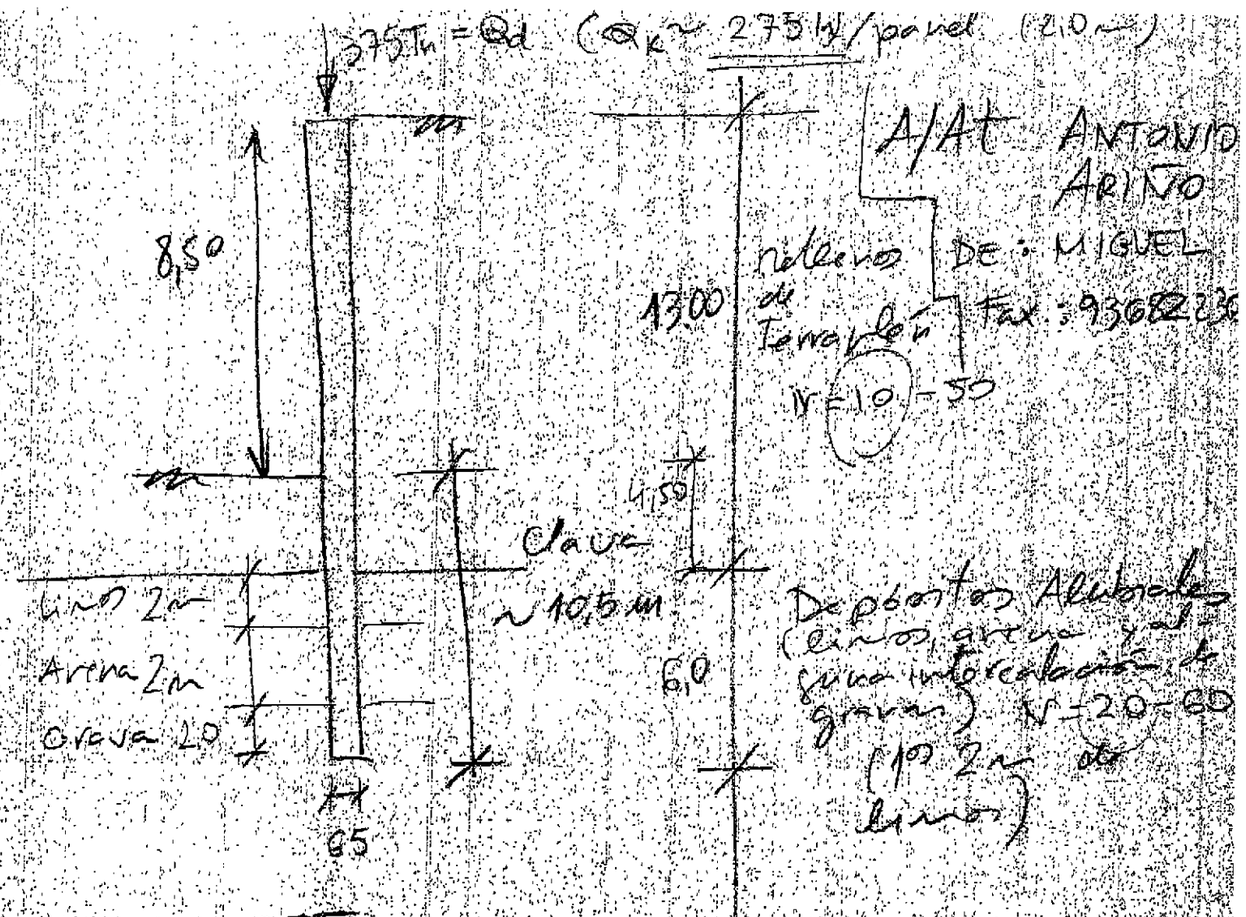
$14.30 + 5.20 = -19.50$ aprox.

$$Q_a = \frac{268 \cdot 2.60}{3} + \frac{(4.5 \times 8.0 + 1.3 \times 9.0 + 1.7 \times 12.0 + 2.0 \times 15.0) 2.60}{3}$$

$$= 232.2 + 85.0 = 317.2\ \text{Ton} > 275\ \text{Ton}$$

Longitud de pantalla por debajo de la cota -2,35.
$L = \frac{17.00}{17.15}$ m. excavación máx. $\frac{-19.35}{-19.50}$ m.
(aprox. 1.50 m dentro del N.F. -18.0 m)

Para el caso de pantalla empotrada en cabeza con la losa de 1.0 m, la carga máx. considerada es de 225 Ton. Dicha carga repartida en un modulo de pantalla de 2.60 m.
Se aconseja en este caso mantener la misma clava de proyecto con una longitud total de pantalla desde la cota -1.00 m (cota inferior de la losa) de $L = 18.35$ m. ($L = 17.0$ m desde la cota -2.35 m).



Carga admisible:

$$Q_a = \frac{245 \times 2m}{3} + \frac{2m \times 9 + 2 \times 12 + 2,0 \times 15}{2} \times 2m =$$

F_S → 3 → 2

$= 235$ T/panel

4e = 2,6 m

Empotrado 3e ~ la capa de Grava → P = 291 T/m

$$Q_a = \frac{291 \times 2,60}{3} + \frac{2 \times 9 + 2 \times 12 + 2,6 \times 15}{2} \times 4,5 \times 8$$

$= 275$ Tn ~ Qk ok!

Se toma el valor medio entre 245 y 291 → 268

$$Q_a = \frac{268 \times 2,60}{3} + \frac{4,5 \times 8 + 1,3 \times 9 + 1,7 \times 12 + 2,0 \times 15}{2}$$

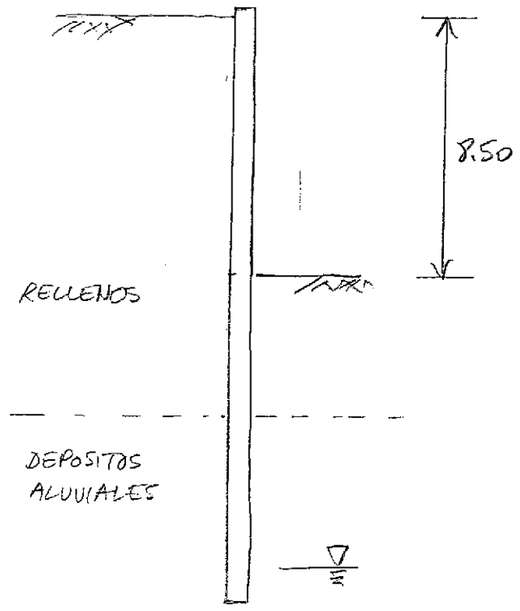
$\approx 281,3$ Tn

2Φ

aumentar clava en 1,3 m → entrando entonces en la capa Q_A

Fuste límite 1 kg/cm² por cara

PANTALLA – Paso Bajo Ramal Valles-Barcelona (L.A.V.)



0–13 m.
$\gamma = 1.9$ Ton/m³ $N = 10-50$
$\phi = 28°$ $c = 0.5$ Ton/m²
$K_{100} = 5$ Kp/cm³

13–24 m aprox.
$\gamma = 1.9$ Ton/m³ $N = 20-60$
$\phi = 32°$ $c = 0$ Ton/m².
$K_{100} = 8$ Kp/cm³

Momento en cabeza debido a acciones horizontales (Frenado y arranque ; retracción ; Temperatura):

$M_a = 11.65\ (1.45) = 16.9$ T·m. 169 KN.m.

Arranque por informe de VALTER
$1098/15.3 = 71.8$ KN/m. $71.8 \cdot 4.0 = 287.2$ KN.

$H = 287.2 + 14.73 = 301.93$ KN
└ asumir que se lo lleva un modulo de pantalla

$301.93/2.60 = 116.1$ KN.m.

VALTER valenciana de estructuras

Proyecto PASO BAJO RAMAL VALLES-BARCELONA

Asunto

ACCIONES HORIZONTALES

- FRENADO Y ARRANQUE (ACCIÓN RÁPIDA)

Frenado: $q = \alpha \cdot 20 \cdot L \leq \alpha \cdot 6000$ KN

$q = 1'21 \cdot 20 \cdot 27'5 = 665'5$ KN //

Arranque: $q' = \alpha \cdot 33 \cdot L' \leq \alpha \cdot 1000$ KN

$q' = 1'21 \cdot 33 \cdot 27'5 = 1098$ KN //

Si se reparte la carga horizontal en los dos estribos y en una longitud de reparto de 15'3 m.

$\frac{1098}{15'3 \cdot 2} = 35'9$ KN/m $\simeq 36$ KN/m (1)

Suponiendo los neoprenos separados 4'00 m, a cada neopreno le corresponde una carga horizontal de:

$288 + 14.7 = 302.7$ $30.3/2.60 = 11.65$ T.

36 KN/m · 4'00 m = 144 KN ⇒ $H^* = 216$ KN

- RETRACCIÓN (ACCIÓN LENTA)

$\Delta l = 0'00025 \cdot L = 0'00025 \cdot 27'5 = 0'0069$ mm

- TEMPERATURA (ACCIÓN LENTA)

$\Delta T = 25°C \Rightarrow \Delta l = 0'0069$ mm

} ⇒ $H = 108'25$ KN (dividido por 7 neoprenos)

$H_{neopreno} = 14'73$ KN

$14.73/4.0 = 3.68$ KN/ml.

(1) 3.6 T/m · 4.0 = 14.4 T 14.4 · 1.6 = 23.04 T

23.04 · 0.40 = 9.2 T·m.

14.4 + 14.73 = 29.13 T 29.13 · 1.6 = 46.61 T

46.61 · 0.40 = 18.64 T·m ← arm. mín. 21.1 cm²

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65Dm.spw, P065Dm.momento en cabeza fase defin.m

General Data

Licensed User	: 65Dm.spw
File Name	: P065Dm.spw
Problem Name	: P065Dm.momento en cabeza fase defin.m
Length (m)	: 20.300
Number of Elements	: 100
Number of Layers	: 3
Number of Loading Steps	: 1
Profile from Catalogue	: 3

Data of Layers

Step 0, Left side

Layer	Top (m)	Bottom (m)	Wd (kN/m³)	Ws (kN/m³)	Zw (m)	Cap (m)	q (kN/m²)	c (kN/m²)	Ka (-)	Kp (-)	Kn (-)	Dw (m)
1	0.000	8.500	19.000	20.000	18.000	0.000	30.000	0.000	0.360	4.450	0.530	0.020
2	8.500	13.000	19.000	20.000	18.000	0.000	0.000	0.000	0.360	4.450	0.530	0.020
3	13.000	20.300	19.000	20.000	18.000	0.000	0.000	0.000	0.310	5.940	0.470	0.020

Step 0, Right side

Layer	Top (m)	Bottom (m)	Wd (kN/m³)	Ws (kN/m³)	Zw (m)	Cap (m)	q (kN/m²)	c (kN/m²)	Ka (-)	Kp (-)	Kn (-)	Dw (m)
1	0.000	8.500	19.000	20.000	18.000	0.000	30.000	0.000	0.360	4.450	0.530	0.020
2	8.500	13.000	19.000	20.000	18.000	0.000	0.000	0.000	0.360	4.450	0.530	0.020
3	13.000	20.300	19.000	20.000	18.000	0.000	0.000	0.000	0.310	5.940	0.470	0.020

Step 1, Left side

Layer	Top (m)	Bottom (m)	Wd (kN/m³)	Ws (kN/m³)	Zw (m)	Cap (m)	q (kN/m²)	c (kN/m²)	Ka (-)	Kp (-)	Kn (-)	Dw (m)
1	0.000	8.500	0.000	10.000	18.000	0.000	0.000	0.000	1.000	1.000	1.000	1.000
2	8.500	13.000	19.000	20.000	18.000	0.000	0.000	0.000	0.360	4.450	0.530	0.020
3	13.000	20.300	19.000	20.000	18.000	0.000	0.000	0.000	0.310	5.940	0.470	0.020

Step 1, Right side

Layer	Top (m)	Bottom (m)	Wd (kN/m³)	Ws (kN/m³)	Zw (m)	Cap (m)	q (kN/m²)	c (kN/m²)	Ka (-)	Kp (-)	Kn (-)	Dw (m)
1	0.000	8.500	19.000	20.000	18.000	0.000	30.000	0.000	0.360	4.450	0.530	0.020
2	8.500	13.000	19.000	20.000	18.000	0.000	0.000	0.000	0.360	4.450	0.530	0.020
3	13.000	20.300	19.000	20.000	18.000	0.000	0.000	0.000	0.310	5.940	0.470	0.020

Data of Anchors and Lateral Forces

Step 0 :

Point	Fx (kN/m)	Fa (kN/m)	Fw (m)
0	0.000	0.000	0.020
1	0.000	0.000	0.020
2	0.000	0.000	0.020
3	0.000	0.000	0.020

Step 1 :

Point	Fx (kN/m)	Fa (kN/m)	Fw (m)
0	0.000	100000.000	-0.001
1	0.000	0.000	0.020
2	0.000	0.000	0.020
3	0.000	0.000	0.020

65Dm.spw, P065Dm.momento en cabeza fase defin.m

Data of Axial Forces and Moment

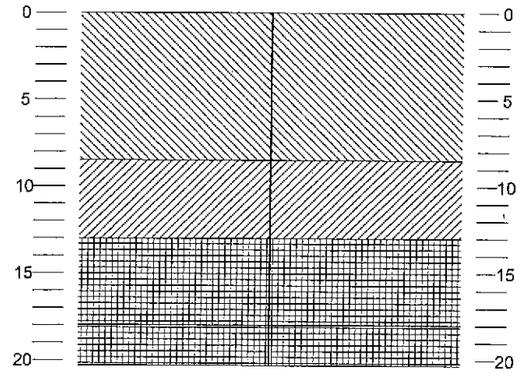
Step	NA (kN/m)	NB (kN/m)	MA (kNm/m)
0	0.000	0.000	0.000
1	0.000	0.000	169.000

Catalogue of Profiles

No	Profile Name	Area (m²/m)	Weight (kN/m³)	E (GN/m²)	h (m)	i (m)	EI (kNm²/m)
1	Pantalla 1.0 m	1.000000	25.000	25.000	1.000000	0.288675	2083331.4
2	Pantalla 0.80 m	0.800000	25.000	25.000	0.800000	0.230940	1066665.7
3	Pantalla 0.65 m	0.650000	25.000	25.000	0.650000	0.187639	572136.4
4	Profile 4	0.100000	78.000	210.000	0.200000	0.021822	10000.0
5	Profile 5	0.100000	78.000	210.000	0.200000	0.021822	10000.0
6	Profile 6	0.100000	78.000	210.000	0.200000	0.021822	10000.0
7	Profile 7	0.100000	78.000	210.000	0.200000	0.021822	10000.0
8	Profile 8	0.100000	78.000	210.000	0.200000	0.021822	10000.0
9	Profile 9	0.100000	78.000	210.000	0.200000	0.021822	10000.0
10	Profile 10	0.100000	78.000	210.000	0.200000	0.021822	10000.0
11	Profile 11	0.100000	78.000	210.000	0.200000	0.021822	10000.0
12	Profile 12	0.100000	78.000	210.000	0.200000	0.021822	10000.0
13	Profile 13	0.100000	78.000	210.000	0.200000	0.021822	10000.0
14	Profile 14	0.100000	78.000	210.000	0.200000	0.021822	10000.0
15	Profile 15	0.100000	78.000	210.000	0.200000	0.021822	10000.0
16	Profile 16	0.100000	78.000	210.000	0.200000	0.021822	10000.0
17	Profile 17	0.100000	78.000	210.000	0.200000	0.021822	10000.0
18	Profile 18	0.100000	78.000	210.000	0.200000	0.021822	10000.0
19	Profile 19	0.100000	78.000	210.000	0.200000	0.021822	10000.0
20	Profile 20	0.100000	78.000	210.000	0.200000	0.021822	10000.0

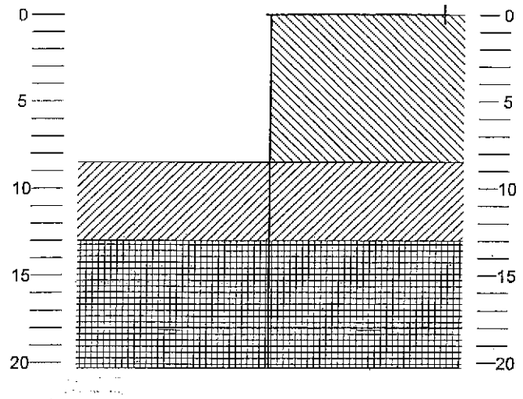
Cross Sections

Step 0 :



65Dm.spw, P065Dm.momento en cabeza fase defin.m

Step 1 :



Results after Step 1 :

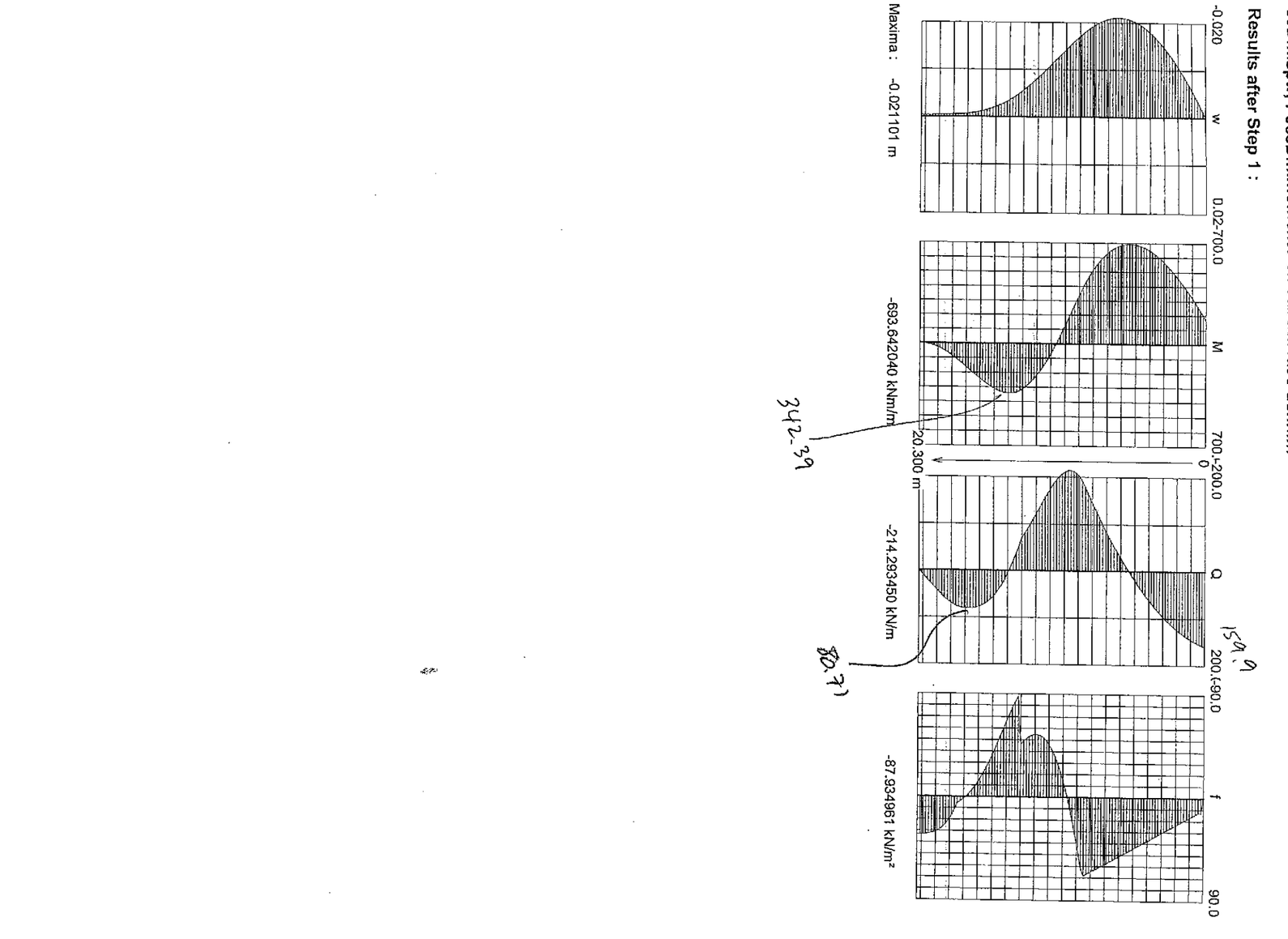
i	z (m)	w (m)	M (kNm)	Q- (kN)	Q+ (kN)	F (kN)	f (kN/m²)
0	0.000	-0.000002	-169.000000	0.000000	159.904973	159.904973	0.000000
1	0.202	-0.001163	-201.093075	157.250124	157.250124	0.000000	-13.142817
2	0.405	-0.002310	-232.653808	154.644180	154.644180	0.000000	-12.837163
3	0.607	-0.003440	-263.658799	151.758083	151.758083	0.000000	-14.287609
4	0.810	-0.004551	-294.051350	148.591833	148.591833	0.000000	-15.597291
5	1.012	-0.005642	-323.774764	145.145430	145.145430	0.000000	-17.061401
6	1.214	-0.006709	-352.772342	141.418874	141.418874	0.000000	-18.448297
7	1.417	-0.007751	-380.987388	137.412165	137.412165	0.000000	-19.737483
8	1.619	-0.008765	-408.363203	133.125302	133.125302	0.000000	-21.222094
9	1.821	-0.009751	-434.843090	128.558287	128.558287	0.000000	-22.608985
10	2.024	-0.010705	-460.370351	123.711119	123.711119	0.000000	-23.877675
11	2.226	-0.011627	-484.888289	118.583797	118.583797	0.000000	-25.382782
12	2.429	-0.012513	-508.340206	113.176323	113.176323	0.000000	-26.637803
13	2.631	-0.013364	-530.669404	107.488695	107.488695	0.000000	-28.156574
14	2.833	-0.014176	-551.819186	101.520915	101.520915	0.000000	-29.543465
15	3.036	-0.014949	-571.732854	95.272981	95.272981	0.000000	-30.778000
16	3.238	-0.015681	-590.353710	88.744894	88.744894	0.000000	-32.317262
17	3.440	-0.016371	-607.625058	81.936654	81.936654	0.000000	-33.704158
18	3.643	-0.017017	-623.490198	74.848262	74.848262	0.000000	-34.918187
19	3.845	-0.017619	-637.892434	67.479716	67.479716	0.000000	-36.477950
20	4.048	-0.018175	-650.775067	59.831017	59.831017	0.000000	-37.678320
21	4.250	-0.018684	-662.081401	51.902165	51.902165	0.000000	-39.251743
22	4.452	-0.019146	-671.754738	43.693159	43.693159	0.000000	-40.638644
23	4.655	-0.019560	-679.738379	35.204001	35.204001	0.000000	-41.818512
24	4.857	-0.019926	-685.975627	26.434690	26.434690	0.000000	-43.412431
25	5.060	-0.020242	-690.409785	17.385226	17.385226	0.000000	-44.578640
26	5.262	-0.020509	-692.984156	8.055608	8.055608	0.000000	-46.186228
27	5.464	-0.020726	-693.642040	-1.554162	-1.554162	0.000000	-47.573119
28	5.667	-0.020894	-692.326741	-11.444085	-11.444085	0.000000	-48.718833
29	5.869	-0.021012	-688.981561	-21.614162	-21.614162	0.000000	-50.346916
30	6.071	-0.021081	-683.549803	-32.064392	-32.064392	0.000000	-51.733812
31	6.274	-0.021101	-675.974768	-42.794774	-42.794774	0.000000	-52.859025
32	6.476	-0.021073	-666.199760	-53.805310	-53.805310	0.000000	-54.507604
33	6.679	-0.020997	-654.168080	-65.095999	-65.095999	0.000000	-55.619158
34	6.881	-0.020874	-639.823031	-76.666841	-76.666841	0.000000	-57.281396
35	7.083	-0.020705	-623.107915	-88.517835	-88.517835	0.000000	-58.668287
36	7.286	-0.020492	-603.966034	-100.648983	-100.648983	0.000000	-59.759350
37	7.488	-0.020236	-582.340692	-113.060284	-113.060284	0.000000	-61.442084
38	7.690	-0.019938	-558.175189	-125.751738	-125.751738	0.000000	-62.828980
39	7.893	-0.019600	-531.412830	-138.723346	-138.723346	0.000000	-63.899547
40	8.095	-0.019225	-501.996915	-151.975106	-151.975106	0.000000	-65.602772
41	8.298	-0.018813	-469.870747	-165.507019	-165.507019	0.000000	-66.659670
42	8.500	-0.018368	-434.977630	-179.319085	-179.319085	0.000000	-68.376564
43	8.705	-0.017886	-397.014138	-191.879496	-191.879496	0.000000	-61.270298
44	8.909	-0.017375	-356.784294	-201.478983	-201.478983	0.000000	-47.056309
45	9.114	-0.016839	-314.876098	-208.290043	-208.290043	0.000000	-33.224683

65Dm.spw, P065Dm.momento en cabeza fase defin.m

46	9.318	-0.016279	-271.841070	-212.496893	-212.496893	0.000000	-20.621814
47	9.523	-0.015699	-228.192058	-214.293450	-214.293450	0.000000	-8.763693
48	9.727	-0.015103	-184.401463	-213.881261	-213.881261	0.000000	2.020534
49	9.932	-0.014493	-140.899894	-211.467414	-211.467414	0.000000	11.774863
50	10.136	-0.013873	-98.075246	-207.262475	-207.262475	0.000000	20.612446
51	10.341	-0.013246	-56.272195	-201.478462	-201.478462	0.000000	28.214698
52	10.545	-0.012615	-15.792102	-194.326891	-194.326891	0.000000	35.056721
53	10.750	-0.011982	23.106696	-186.016917	-186.016917	0.000000	40.536459
54	10.955	-0.011351	60.208223	-176.753572	-176.753572	0.000000	45.187049
55	11.159	-0.010725	95.337852	-166.736135	-166.736135	0.000000	49.105083
56	11.364	-0.010105	128.360976	-156.156625	-156.156625	0.000000	51.607366
57	11.568	-0.009495	159.181380	-145.198438	-145.198438	0.000000	53.716603
58	11.773	-0.008896	187.739358	-134.035122	-134.035122	0.000000	54.455200
59	11.977	-0.008311	214.009582	-122.829293	-122.829293	0.000000	54.930534
60	12.182	-0.007742	237.998774	-111.731701	-111.731701	0.000000	54.134595
61	12.386	-0.007190	259.743196	-100.880425	-100.880425	0.000000	53.192529
62	12.591	-0.006657	279.305988	-90.400199	-90.400199	0.000000	51.123054
63	12.795	-0.006144	296.774380	-80.401862	-80.401862	0.000000	49.011456
64	13.000	-0.005653	312.256813	-70.981924	-70.981924	0.000000	45.950917
65	13.203	-0.005189	324.840497	-53.131127	-53.131127	0.000000	87.934961
66	13.406	-0.004748	333.910007	-36.321576	-36.321576	0.000000	82.805670
67	13.608	-0.004331	339.683671	-20.624147	-20.624147	0.000000	77.710045
68	13.811	-0.003938	342.392300	-6.091102	-6.091102	0.000000	71.591355
69	14.014	-0.003570	342.275506	7.243041	7.243041	0.000000	65.685433
70	14.217	-0.003226	339.578203	19.360496	19.360496	0.000000	59.691897
71	14.419	-0.002907	334.547331	30.259066	30.259066	0.000000	53.953317
72	14.622	-0.002612	327.428820	39.950906	39.950906	0.000000	47.743054
73	14.825	-0.002340	318.464814	48.461212	48.461212	0.000000	41.922690
74	15.028	-0.002091	307.891163	55.826851	55.826851	0.000000	36.283936
75	15.231	-0.001864	295.935201	62.094966	62.094966	0.000000	30.877414
76	15.433	-0.001659	282.813803	67.321562	67.321562	0.000000	25.874238
77	15.636	-0.001474	268.731732	71.570100	71.570100	0.000000	20.928759
78	15.839	-0.001308	253.880267	74.910104	74.910104	0.000000	16.453222
79	16.042	-0.001160	238.436112	77.415800	77.415800	0.000000	12.343330
80	16.244	-0.001030	222.560580	79.164797	79.164797	0.000000	8.658401
81	16.447	-0.000915	206.399027	80.236818	80.236818	0.000000	5.280892
82	16.650	-0.000815	190.080556	80.712484	80.712484	0.000000	2.343182
83	16.853	-0.000729	173.717947	80.672155	80.672155	0.000000	-0.198665
84	17.056	-0.000656	157.407821	80.194842	80.194842	0.000000	-2.351296
85	17.258	-0.000593	141.231019	79.357171	79.357171	0.000000	-4.146886
86	17.461	-0.000541	125.255333	78.211245	78.211245	0.000000	-5.644956
87	17.664	-0.000498	109.634334	75.858875	75.858875	0.000000	-11.588030
88	17.867	-0.000463	94.590330	72.520350	72.520350	0.000000	-16.445936
89	18.069	-0.000435	80.303328	68.392545	68.392545	0.000000	-20.434678
90	18.272	-0.000412	66.923367	63.574196	63.574196	0.000000	-23.735709
91	18.475	-0.000394	54.575961	58.208432	58.208432	0.000000	-26.432335
92	18.678	-0.000380	43.358748	52.427095	52.427095	0.000000	-28.479493
93	18.881	-0.000370	33.345098	46.337667	46.337667	0.000000	-29.997182
94	19.083	-0.000361	24.588862	40.025209	40.025209	0.000000	-31.249792
95	19.286	-0.000355	17.128692	33.554554	33.554554	0.000000	-31.875148
96	19.489	-0.000350	10.991899	26.972717	26.972717	0.000000	-32.422842
97	19.692	-0.000345	6.197806	20.311486	20.311486	0.000000	-32.813946
98	19.894	-0.000341	2.760554	13.590186	13.590186	0.000000	-33.273762
99	20.097	-0.000338	0.691330	6.818596	6.818596	0.000000	-33.357586
100	20.300	-0.000334	0.000000	0.000000	0.000000	0.000000	-33.589143

65Dm.spw, P065Dm.momento en cabeza fase defin.m

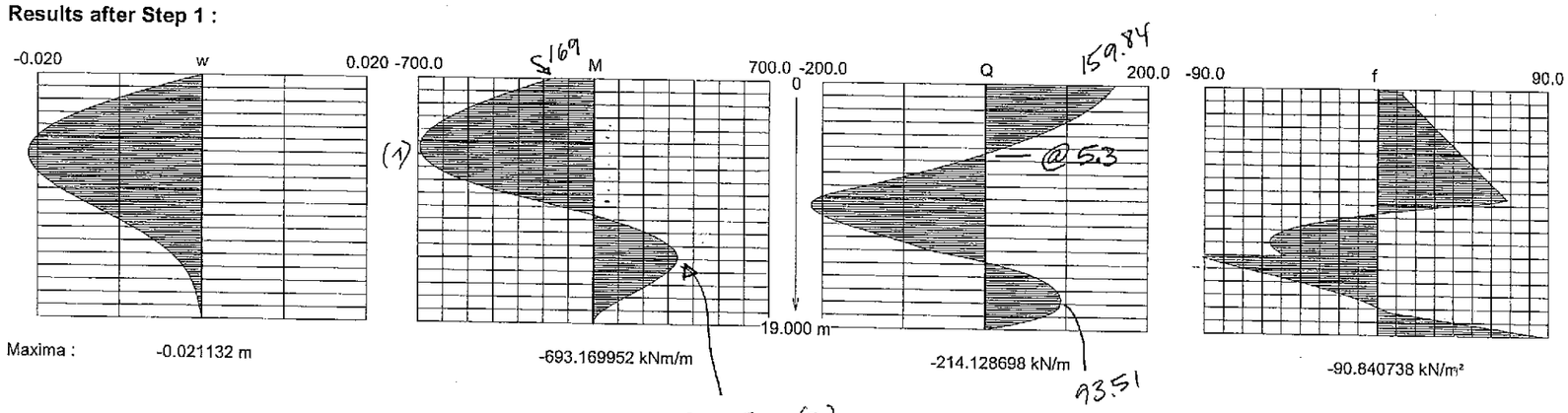
Results after Step 1 :



P065Dm.spw, P065Dm.momento en cabeza fase defin.m pantalla 19.0 m.

100 19.000 0.000022 0.000000 0.000000 0.000000 0.000000 -88.953585

Results after Step 1 :



(1) $69.3 \cdot 1.6 = 110.88$ T.m. → 51.1 cm² 11ϕ25

-693 con ~~10ϕ25 $w_k = 0.26$ c = 30 mm.~~ 12ϕ25 $w_k = 0.27$ c = 50 mm.

58.92 cm².

(10ϕ25 + 2ϕ25)/ml INDICADOS

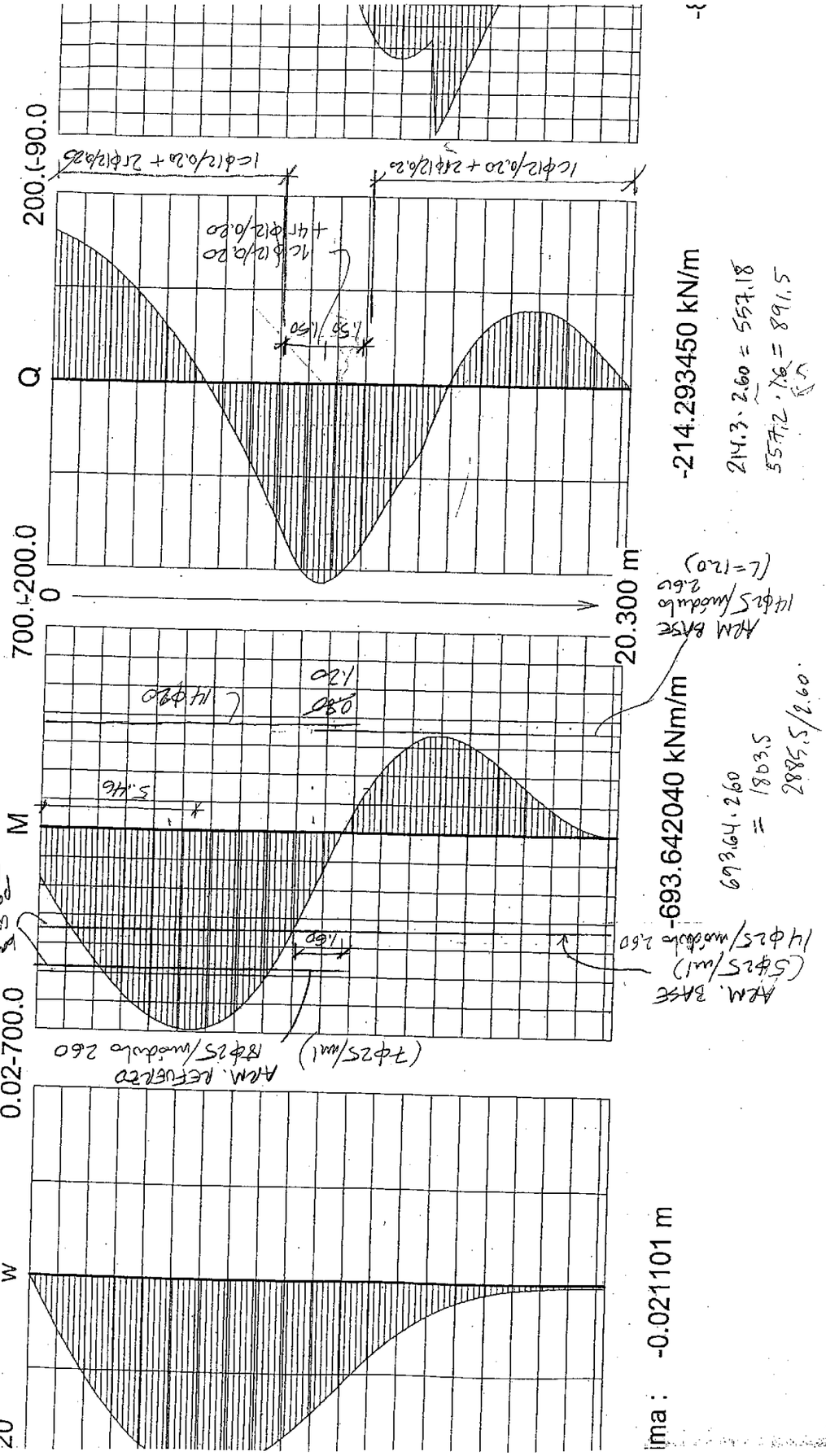
(2) $33.58 \cdot 1.6 = 53.73$ T.m. → 23 cm² 5ϕ25 o 8ϕ20.

33.6 con 9ϕ20 $w_k = 0.28$ c = 50 mm.

7ϕ25 0.24

arm. base { 5ϕ25 (24.55 cm²) —— $M_u \approx 57.5$ T.m. / 1.6 = (35.94 T.m.)
5ϕ20/ml (15.7 cm²) —— $M_n \approx 37.5$ T.m.

arm min. { 6ϕ16/ml — $M_u \approx 29.0$ T.m.
5ϕ16 25.0 T.m. / 1.6 = 15.6 T.m.



Cortante

Sección:

h =	65.0	cm
d´ =	7.0	cm
b =	260.0	cm
d =	58.00	cm

Materiales:

Hormigón: **H - 250** f_c = 250 Kp/cm²
f_{cd} = 166.7 Kp/cm²

Acero: **B 500 S** f_s = 5000 Kp/cm²

Esfuerzo cortante V_{rd} = 89.15 T

Esfuerzo cortante de agotamiento por compresión en el alma, V_{u1}

Resistencia por compresión del hormigón: $f_{1cd} = 0,6*f_{cd}$ = 100.0 Kp/cm²

Tensión axil efectiva en la sección: $\delta`_{cd} = N_d/A_c$ = 0.00 Kp/cm²

Coeficiente por reducción por efecto del esfuerzo axil: $K = 5/3*(1+\delta'_{cd}/f_{cd})$ = 1.67 siempre menor que 1,0

$V_{u1} = K*f_{1cd}*b_0*d$ = 754.00 T > V_{rd} = 89.15 T
O.K.

Esfuerzo cortante de agotamiento por tracción en el alma, V_{u2}

$\xi = 1+(200/d)^{0.5}$ = 1.59

Armadura longitudinal: **numero de barras, n =** 14 **barra ϕ =** 16

A_s = 28.15 cm²

Cuantía geometrica de armadura longitudinal: $\rho_l = A_s/(b_0*d)$ = 0.0019 siempre menor que 0,02

Caso 1º: *Piezas sin armadura de cortante*

$V_{u2} = [0,12*\xi*(100*\rho_l*f_{ck})^{1/3} - 0,15*\delta'_{cd}]*b_0*d$ = 48.00 T < V_{rd} = 89.15 T
Aumentar la sección o armar a cortante

Caso 2º: *Piezas con armadura de cortante*

Contribución del hormigón a la resistencia a cortante

$V_{cu} = [0,10*\xi*(100*\rho_l*f_{ck})^{1/3} - 0,15*\delta'_{cd}]*b_0*d$ = 40.00 T

Contribución de la armadura transversal a la resistencia a cortante

En la sección 2.5 **cercos de ϕ** 12 **a cada** 20 **cm**

A_{90} = 28.27 cm²/m

$V_{su} = A_{90}*f_{y90,d}*0,9*d$ = 59.04 T

$V_{u2} = V_{cu} + V_{su}$ = 99.03 T > V_{rd} = 89.15
O.K.

1cϕ12/0.20 + 2+ϕ12/0.20 V_{u2} = 87.23 T

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20/11/03

bandeja3.spw, P-bandeja3.momento en cabeza fase defin.

General Data

Licensed User	: bandeja3.spw
File Name	: P-bandeja3.spw
Problem Name	: P-bandeja3.momento en cabeza fase defin.
Length (m)	: 16.000
Number of Elements	: 100
Number of Layers	: 4
Number of Loading Steps	: 1
Profile from Catalogue	: 3

Data of Layers

Step 0, Left side

Layer	Top (m)	Bottom (m)	Wd (kN/m³)	Ws (kN/m³)	Zw (m)	Cap (m)	q (kN/m²)	c (kN/m²)	Ka (-)	Kp (-)	Kn (-)	Dw (m)
1	0.000	4.000	19.000	20.000	18.000	0.000	30.000	5.000	0.360	4.450	0.530	0.020
2	4.000	8.500	19.000	20.000	18.000	0.000	0.000	5.000	0.360	4.450	0.530	0.020
3	8.500	13.000	19.000	20.000	18.000	0.000	0.000	5.000	0.360	4.450	0.530	0.020
4	13.000	16.000	19.000	20.000	18.000	0.000	0.000	0.000	0.310	5.940	0.470	0.020

Step 0, Right side

Layer	Top (m)	Bottom (m)	Wd (kN/m³)	Ws (kN/m³)	Zw (m)	Cap (m)	q (kN/m²)	c (kN/m²)	Ka (-)	Kp (-)	Kn (-)	Dw (m)
1	0.000	4.000	19.000	20.000	18.000	0.000	30.000	5.000	0.360	4.450	0.530	0.020
2	4.000	8.500	19.000	20.000	18.000	0.000	0.000	5.000	0.360	4.450	0.530	0.020
3	8.500	13.000	19.000	20.000	18.000	0.000	0.000	5.000	0.360	4.450	0.530	0.020
4	13.000	16.000	19.000	20.000	18.000	0.000	0.000	0.000	0.310	5.940	0.470	0.020

QANTI
QL QA QG

Step 1, Left side

Layer	Top (m)	Bottom (m)	Wd (kN/m³)	Ws (kN/m³)	Zw (m)	Cap (m)	q (kN/m²)	c (kN/m²)	Ka (-)	Kp (-)	Kn (-)	Dw (m)
1	0.000	4.000	19.000	20.000	18.000	0.000	30.000	5.000	0.360	4.450	0.530	0.020
2	4.000	8.500	19.000	20.000	18.000	0.000	0.000	5.000	0.360	4.450	0.530	0.020
3	8.500	13.000	19.000	20.000	18.000	0.000	0.000	5.000	0.360	4.450	0.530	0.020
4	13.000	16.000	19.000	20.000	18.000	0.000	0.000	0.000	0.310	5.940	0.470	0.020

Step 1, Right side

Layer	Top (m)	Bottom (m)	Wd (kN/m³)	Ws (kN/m³)	Zw (m)	Cap (m)	q (kN/m²)	c (kN/m²)	Ka (-)	Kp (-)	Kn (-)	Dw (m)
1	0.000	4.000	0.000	10.000	18.000	0.000	0.000	0.000	1.000	1.000	1.000	1.000
2	4.000	8.500	0.000	10.000	18.000	0.000	0.000	0.000	1.000	1.000	1.000	1.000
3	8.500	13.000	19.000	20.000	18.000	0.000	0.000	5.000	0.360	4.450	0.530	0.020
4	13.000	16.000	19.000	20.000	18.000	0.000	0.000	0.000	0.310	5.940	0.470	0.020

Data of Anchors and Lateral Forces

Step 0 :

Point	Fx (kN/m)	Fa (kN/m)	Fw (m)
0	0.000	0.000	0.020
1	0.000	0.000	0.020
2	0.000	0.000	0.020
3	0.000	0.000	0.020
4	0.000	0.000	0.020

Step 1 :

Point	Fx (kN/m)	Fa (kN/m)	Fw (m)
0	0.000	0.000	0.020
1	0.000	0.000	0.020
2	0.000	100000.000	-0.001
3	0.000	0.000	0.020
4	0.000	0.000	0.020

bandeja3.spw, P-bandeja3.momento en cabeza fase defin.

Data of Axial Forces and Moment

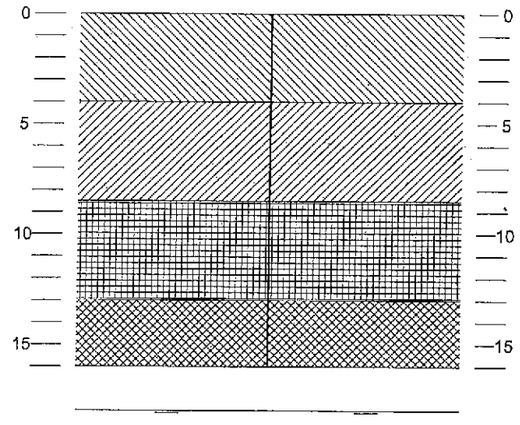
Step	NA (kN/m)	NB (kN/m)	MA (kNm/m)
0	0.000	0.000	0.000
1	0.000	0.000	0.000

Catalogue of Profiles

No	Profile Name	Area (m²/m)	Weight (kN/m³)	E (GN/m²)	h (m)	I (m)	EI (kNm²/m)
1	Pantalla 1.0 m	1.000000	25.000	25.000	1.000000	0.288675	2083331.4
2	Pantalla 0.80 m	0.800000	25.000	25.000	0.800000	0.230940	1066665.7
3	Pantalla 0.65 m	0.650000	25.000	25.000	0.650000	0.187639	572136.4
4	Profile 4	0.100000	78.000	210.000	0.200000	0.021822	10000.0
5	Profile 5	0.100000	78.000	210.000	0.200000	0.021822	10000.0
6	Profile 6	0.100000	78.000	210.000	0.200000	0.021822	10000.0
7	Profile 7	0.100000	78.000	210.000	0.200000	0.021822	10000.0
8	Profile 8	0.100000	78.000	210.000	0.200000	0.021822	10000.0
9	Profile 9	0.100000	78.000	210.000	0.200000	0.021822	10000.0
10	Profile 10	0.100000	78.000	210.000	0.200000	0.021822	10000.0
11	Profile 11	0.100000	78.000	210.000	0.200000	0.021822	10000.0
12	Profile 12	0.100000	78.000	210.000	0.200000	0.021822	10000.0
13	Profile 13	0.100000	78.000	210.000	0.200000	0.021822	10000.0
14	Profile 14	0.100000	78.000	210.000	0.200000	0.021822	10000.0
15	Profile 15	0.100000	78.000	210.000	0.200000	0.021822	10000.0
16	Profile 16	0.100000	78.000	210.000	0.200000	0.021822	10000.0
17	Profile 17	0.100000	78.000	210.000	0.200000	0.021822	10000.0
18	Profile 18	0.100000	78.000	210.000	0.200000	0.021822	10000.0
19	Profile 19	0.100000	78.000	210.000	0.200000	0.021822	10000.0
20	Profile 20	0.100000	78.000	210.000	0.200000	0.021822	10000.0

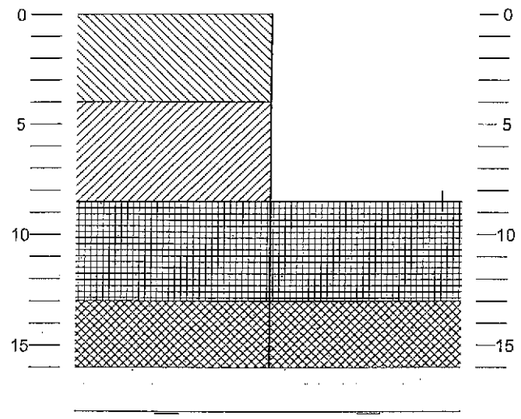
Cross Sections

Step 0 :



bandeja3.spw, P-bandeja3.momento en cabeza fase defin.

Step 1 :

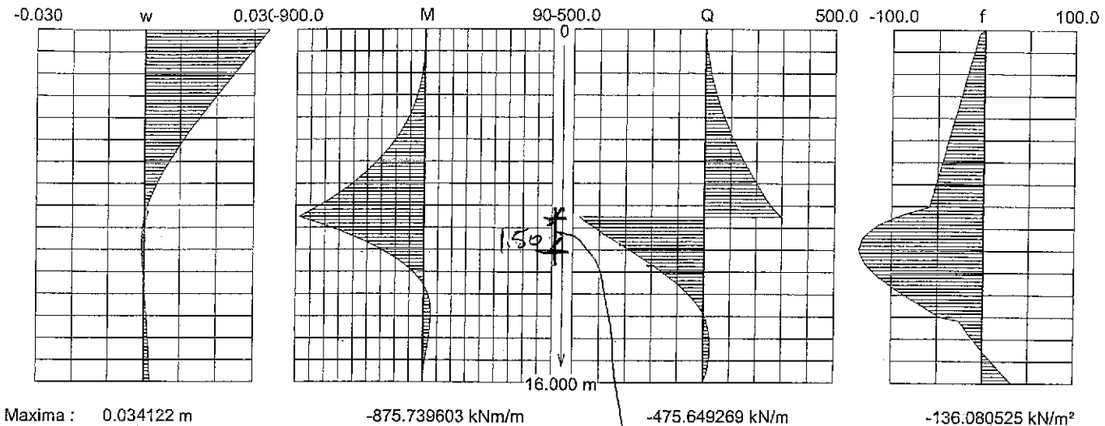


Results after Step 1 :

i	z (m)	w (m)	M (kNm)	Q- (kN)	Q+ (kN)	F (kN)	f (kN/m²)
0	0.000	0.034122	0.000000	0.000000	0.000000	0.000000	0.000000
1	0.160	0.033362	-0.068444	0.855552	0.855552	0.000000	5.347200
2	0.320	0.032603	-0.287785	1.886208	1.886208	0.000000	6.441600
3	0.480	0.031843	-0.686039	3.091968	3.091968	0.000000	7.536000
4	0.640	0.031083	-1.291223	4.472832	4.472832	0.000000	8.630400
5	0.800	0.030323	-2.131354	6.028800	6.028800	0.000000	9.724800
6	0.960	0.029563	-3.234447	7.759872	7.759872	0.000000	10.819200
7	1.120	0.028804	-4.628521	9.666048	9.666048	0.000000	11.913600
8	1.280	0.028045	-6.341591	11.747328	11.747328	0.000000	13.008000
9	1.440	0.027286	-8.401674	14.003712	14.003712	0.000000	14.102400
10	1.600	0.026527	-10.836787	16.435200	16.435200	0.000000	15.196800
11	1.760	0.025769	-13.674947	19.041792	19.041792	0.000000	16.291200
12	1.920	0.025011	-16.944169	21.823488	21.823488	0.000000	17.385600
13	2.080	0.024254	-20.672471	24.780288	24.780288	0.000000	18.480000
14	2.240	0.023499	-24.887869	27.912192	27.912192	0.000000	19.574400
15	2.400	0.022744	-29.618381	31.219200	31.219200	0.000000	20.668800
16	2.560	0.021990	-34.892022	34.701312	34.701312	0.000000	21.763200
17	2.720	0.021239	-40.736809	38.358528	38.358528	0.000000	22.857600
18	2.880	0.020489	-47.180759	42.190848	42.190848	0.000000	23.952000
19	3.040	0.019741	-54.251889	46.198272	46.198272	0.000000	25.046400
20	3.200	0.018995	-61.978214	50.380800	50.380800	0.000000	26.140800
21	3.360	0.018253	-70.387753	54.738432	54.738432	0.000000	27.235200
22	3.520	0.017513	-79.508521	59.271168	59.271168	0.000000	28.329600
23	3.680	0.016777	-89.368535	63.979008	63.979008	0.000000	29.424000
24	3.840	0.016045	-99.995812	68.861952	68.861952	0.000000	30.518400
25	4.000	0.015318	-111.418368	73.920000	73.920000	0.000000	31.612800
26	4.161	0.014592	-123.720798	79.176907	79.176907	0.000000	32.651596
27	4.321	0.013872	-136.882285	84.610485	84.610485	0.000000	33.959862
28	4.482	0.013158	-150.931222	90.220733	90.220733	0.000000	34.846261
29	4.643	0.012451	-165.896003	96.007653	96.007653	0.000000	35.943602
30	4.804	0.011751	-181.805022	101.971244	101.971244	0.000000	37.040938
31	4.964	0.011060	-198.686671	108.111505	108.111505	0.000000	38.376631
32	5.125	0.010378	-216.569345	114.428437	114.428437	0.000000	39.235602
33	5.286	0.009705	-235.481437	120.922041	120.922041	0.000000	40.332944
34	5.446	0.009043	-255.451341	127.592315	127.592315	0.000000	41.689212
35	5.607	0.008393	-276.507449	134.439260	134.439260	0.000000	42.527609
36	5.768	0.007755	-298.678157	141.462876	141.462876	0.000000	43.624944
37	5.929	0.007131	-321.991856	148.663163	148.663163	0.000000	44.722280
38	6.089	0.006521	-346.476942	156.040121	156.040121	0.000000	46.105987
39	6.250	0.005927	-372.161806	163.593750	163.593750	0.000000	46.916950
40	6.411	0.005349	-399.074844	171.324050	171.324050	0.000000	48.014286
41	6.571	0.004790	-427.244448	179.231020	179.231020	0.000000	49.418562
42	6.732	0.004250	-456.699011	187.314662	187.314662	0.000000	50.208957
43	6.893	0.003730	-487.466929	195.574974	195.574974	0.000000	51.306286
44	7.054	0.003233	-519.576593	204.011958	204.011958	0.000000	52.403627
45	7.214	0.002759	-553.056398	212.625612	212.625612	0.000000	53.835337
46	7.375	0.002310	-587.934736	221.415937	221.415937	0.000000	54.598292
47	7.536	0.001888	-624.240003	230.382934	230.382934	0.000000	55.695634
48	7.696	0.001494	-662.000590	239.526601	239.526601	0.000000	57.147919
49	7.857	0.001129	-701.244893	248.846939	248.846939	0.000000	57.890298
50	8.018	0.000797	-742.001303	258.343948	258.343948	0.000000	58.987634
51	8.179	0.000498	-784.453808	269.953890	269.953890	0.000000	72.111441
52	8.339	0.000234	-828.931700	283.548767	283.548767	0.000000	84.967981
53	8.500	0.000008	-875.739603	298.949582	-475.649269	-774.598851	95.657236
54	8.661	-0.000180	-800.653776	-458.752130	-458.752130	0.000000	104.951174
55	8.821	-0.000332	-728.380549	-440.648033	-440.648033	0.000000	113.150606
56	8.982	-0.000451	-659.099618	-421.514661	-421.514661	0.000000	118.840820
57	9.143	-0.000540	-592.962283	-401.527736	-401.527736	0.000000	124.142391
58	9.304	-0.000603	-530.091888	-380.859399	-380.859399	0.000000	128.374764
59	9.464	-0.000641	-470.584498	-359.677010	-359.677010	0.000000	132.389931
60	9.625	-0.000658	-414.509357	-338.146963	-338.146963	0.000000	133.727000
61	9.786	-0.000656	-361.909988	-316.422963	-316.422963	0.000000	134.931677
62	9.946	-0.000638	-312.805905	-294.650079	-294.650079	0.000000	136.080525
63	10.107	-0.000606	-267.194048	-272.964132	-272.964132	0.000000	134.695323
64	10.268	-0.000562	-225.050313	-251.491243	-251.491243	0.000000	133.371981
65	10.429	-0.000507	-186.331125	-230.347534	-230.347534	0.000000	131.327385
66	10.589	-0.000444	-150.975067	-209.638974	-209.638974	0.000000	129.428500
67	10.750	-0.000375	-118.904505	-189.461355	-189.461355	0.000000	125.326826
68	10.911	-0.000299	-90.027221	-169.900398	-169.900398	0.000000	121.496627
69	11.071	-0.000220	-64.238013	-151.031963	-151.031963	0.000000	117.927719
70	11.232	-0.000138	-41.420254	-132.922370	-132.922370	0.000000	112.481944
71	11.393	-0.000054	-21.447392	-115.628804	-115.628804	0.000000	107.413453
72	11.554	0.000031	-4.184379	-99.199805	-99.199805	0.000000	102.043472
73	11.714	0.000117	10.510984	-83.675822	-83.675822	0.000000	97.024894
74	11.875	0.000202	22.786795	-69.089833	-69.089833	0.000000	90.596205
75	12.036	0.000285	32.795907	-55.468002	-55.468002	0.000000	84.607646
76	12.196	0.000368	40.694884	-42.830379	-42.830379	0.000000	78.985144
77	12.357	0.000449	46.643081	-31.191629	-31.191629	0.000000	72.290373
78	12.518	0.000527	50.801837	-20.561769	-20.561769	0.000000	66.023975
79	12.679	0.000603	53.333784	-10.946915	-10.946915	0.000000	59.719590
80	12.839	0.000677	54.402289	-2.350033	-2.350033	0.000000	53.730512
81	13.000	0.000749	54.170997	5.228340	5.228340	0.000000	47.070640
82	13.158	0.000817	53.017896	9.377596	9.377596	0.000000	26.261114
83	13.316	0.000882	51.244924	13.080051	13.080051	0.000000	23.433259
84	13.474	0.000945	48.923292	16.327289	16.327289	0.000000	20.552139
85	13.632	0.001006	46.125499	19.111426	19.111426	0.000000	17.621120
86	13.789	0.001066	42.925258	21.424961	21.424961	0.000000	14.735892
87	13.947	0.001123	39.397448	23.260630	23.260630	0.000000	11.618158
88	14.105	0.001178	35.618088	24.611264	24.611264	0.000000	8.548316
89	14.263	0.001232	31.664332	25.469649	25.469649	0.000000	5.432816
90	14.421	0.001285	27.614486	25.828399	25.828399	0.000000	2.270570
91	14.579	0.001337	23.548046	25.679831	25.679831	0.000000	-0.940304
92	14.737	0.001387	19.545754	25.015868	25.015868	0.000000	-4.202297
93	14.895	0.001437	15.689664	23.827941	23.827941	0.000000	-7.518525
94	15.053	0.001485	12.063227	22.106929	22.106929	0.000000	-10.892481
95	15.211	0.001534	8.751382	19.843112	19.843112	0.000000	-14.327956
96	15.368	0.001582	5.840651	17.026148	17.026148	0.000000	-17.942446
97	15.526	0.001629	3.419237	13.645092	13.645092	0.000000	-21.399089
98	15.684	0.001677	1.577117	9.688435	9.688435	0.000000	-25.042133
99	15.842	0.001724	0.406120	5.144187	5.144187	0.000000	-28.761063
100	16.000	0.001772	0.000000	0.000000	0.000000	0.000000	-32.558146

BAJO RAMAL V-B\P-bandeja3.spw, P-bandeja3.momento en cabeza fase defin.

Results after Step 1 :



Maxima : 0.034122 m -875.739603 kNm/m -475.649269 kN/m -136.080525 kN/m²

0,0183 (0,80) -879,7 (0,80) 1cΦ12/0,10 + 4rΦ12/0,10 (208,7)

47,56 · 1,5 = 71,34 T/1,00

71,34 · 2,60 = 185,48 T /2,60

Cortante

Sección:

h =	65.0	cm
d´ =	7.0	cm
b =	260.0	cm
d =	58.00	cm

Materiales:

Hormigón: **H - 250** f_c = 250 Kp/cm²
f_{cd} = 166.7 Kp/cm²

Acero: **B 500 S** f_s = 5000 Kp/cm²

Esfuerzo cortante V_{rd} = 185.25 T ← 47,5 x 1,5 x 2,60 obtenido en Geotechnic Delft.

Esfuerzo cortante de agotamiento por compresión en el alma, V_{u1}

Resistencia por compresión del hormigón: $f_{1cd} = 0{,}6 * f_{cd}$ = 100.0 Kp/cm²

Tensión axil efectiva en la sección: $\delta'_{cd} = N_d / A_c$ = 0.00 Kp/cm²

Coeficiente por reducción por efecto del esfuerzo axil: $K = 5/3 * (1 + \delta'_{cd} / f_{cd})$ = 1.67 siempre menor que 1,0

$V_{u1} = K * f_{1cd} * b_0 * d$ = 754.00 T > V_{rd} = 185.25 T
O.K.

Esfuerzo cortante de agotamiento por tracción en el alma, V_{u2}

$\xi = 1 + (200/d)^{0.5}$ = 1.59

Armadura longitudinal: **numero de barras, n =** 21 **barra ϕ =** 32

A_s = 168.89 cm²

Cuantía geometrica de armadura longitudinal: $\rho_l = A_s / (b_0 * d)$ = 0.0112 siempre menor que 0,02

Caso 1º: *Piezas sin armadura de cortante*

$V_{u2} = [0{,}12 * \xi * (100 * \rho_l * f_{ck})^{1/3} - 0{,}15 * \delta'_{cd}] * b_0 * d$ = 87.22 T < V_{rd} = 185.25 T
Aumentar la sección o armar a cortante

Caso 2º: *Piezas con armadura de cortante*

Contribución del hormigón a la resistencia a cortante

$V_{cu} = [0{,}10 * \xi * (100 * \rho_l * f_{ck})^{1/3} - 0{,}15 * \delta'_{cd}] * b_0 * d$ = 72.68 T

Contribución de la armadura transversal a la resistencia a cortante

En la sección 3 **cercos de ϕ** 12 **a cada** 10 **cm**

A_{90} = 67.86 cm²/m

$V_{su} = A_{90} * f_{y90,d} * 0{,}9 * d$ = 141.69 T

$V_{u2} = V_{cu} + V_{su}$ = 214.37 T > V_{rd} = 185.25
O.K.

BAJO RAMAL V-B\P-bandeja3b.spw, P-bandeja3b.momento en cabeza fase defin

General Data

Licensed User	: BAJO RAMAL V-B\P-bandeja3b.spw
File Name	: P-bandeja3b.spw
Problem Name	: P-bandeja3b.momento en cabeza fase defin
Length (m)	: 16.000
Number of Elements	: 100
Number of Layers	: 4
Number of Loading Steps	: 1
Profile from Catalogue	: 3

Data of Layers

Step 0, Left side

Layer	Top (m)	Bottom (m)	Wd (kN/m³)	Ws (kN/m³)	Zw (m)	Cap (m)	q (kN/m²)	c (kN/m²)	Ka (-)	Kp (-)	Kn (-)	Dw (m)
1	0.000	5.000	19.000	20.000	18.000	0.000	30.000	5.000	0.360	4.450	0.530	0.020
2	5.000	8.500	19.000	20.000	18.000	0.000	0.000	5.000	0.360	4.450	0.530	0.020
3	8.500	13.000	19.000	20.000	18.000	0.000	0.000	5.000	0.360	4.450	0.530	0.020
4	13.000	16.000	19.000	20.000	18.000	0.000	0.000	0.000	0.310	5.940	0.470	0.020

Step 0, Right side

Layer	Top (m)	Bottom (m)	Wd (kN/m³)	Ws (kN/m³)	Zw (m)	Cap (m)	q (kN/m²)	c (kN/m²)	Ka (-)	Kp (-)	Kn (-)	Dw (m)
1	0.000	5.000	19.000	20.000	18.000	0.000	30.000	5.000	0.360	4.450	0.530	0.020
2	5.000	8.500	19.000	20.000	18.000	0.000	0.000	5.000	0.360	4.450	0.530	0.020
3	8.500	13.000	19.000	20.000	18.000	0.000	0.000	5.000	0.360	4.450	0.530	0.020
4	13.000	16.000	19.000	20.000	18.000	0.000	0.000	0.000	0.310	5.940	0.470	0.020

Step 1, Left side

Layer	Top (m)	Bottom (m)	Wd (kN/m³)	Ws (kN/m³)	Zw (m)	Cap (m)	q (kN/m²)	c (kN/m²)	Ka (-)	Kp (-)	Kn (-)	Dw (m)
1	0.000	5.000	19.000	20.000	18.000	0.000	30.000	5.000	0.360	4.450	0.530	0.020
2	5.000	8.500	19.000	20.000	18.000	0.000	0.000	5.000	0.360	4.450	0.530	0.020
3	8.500	13.000	19.000	20.000	18.000	0.000	0.000	5.000	0.360	4.450	0.530	0.020
4	13.000	16.000	19.000	20.000	18.000	0.000	0.000	0.000	0.310	5.940	0.470	0.020

Step 1, Right side

Layer	Top (m)	Bottom (m)	Wd (kN/m³)	Ws (kN/m³)	Zw (m)	Cap (m)	q (kN/m²)	c (kN/m²)	Ka (-)	Kp (-)	Kn (-)	Dw (m)
1	0.000	5.000	0.000	10.000	18.000	0.000	0.000	0.000	1.000	1.000	1.000	1.000
2	5.000	8.500	19.000	20.000	18.000	0.000	0.000	5.000	0.360	4.450	0.530	0.020
3	8.500	13.000	19.000	20.000	18.000	0.000	0.000	5.000	0.360	4.450	0.530	0.020
4	13.000	16.000	19.000	20.000	18.000	0.000	0.000	0.000	0.310	5.940	0.470	0.020

Data of Anchors and Lateral Forces

Step 0 :

Point	Fx (kN/m)	Fa (kN/m)	Fw (m)
0	0.000	0.000	0.020
1	0.000	0.000	0.020
2	0.000	0.000	0.020
3	0.000	0.000	0.020
4	0.000	0.000	0.020

Step 1 :

Point	Fx (kN/m)	Fa (kN/m)	Fw (m)
0	0.000	0.000	0.020
1	0.000	0.000	0.020
2	0.000	0.000	0.020
3	0.000	0.000	0.020
4	0.000	0.000	0.020

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Data of Axial Forces and Moment

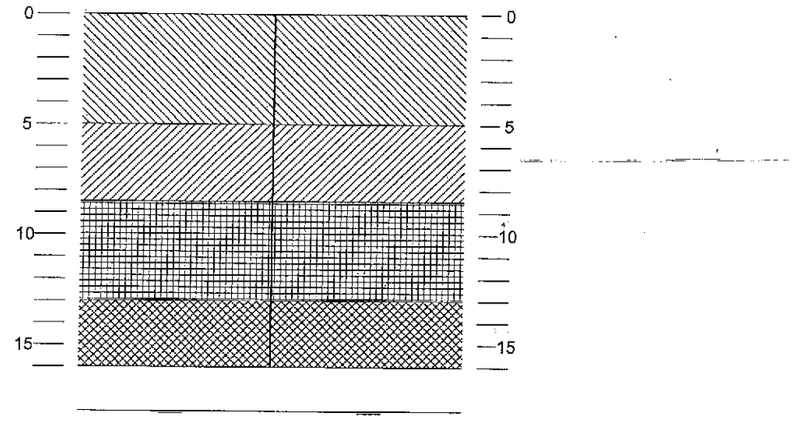
Step	NA (kN/m)	NB (kN/m)	MA (kNm/m)
0	0.000	0.000	0.000
1	0.000	0.000	0.000

Catalogue of Profiles

No	Profile Name	Area (m²/m)	Weight (kN/m³)	E (GN/m²)	h (m)	i (m)	EI (kNm²/m)
1	Pantalla 1.0 m	1.000000	25.000	25.000	1.000000	0.288675	2083331.4
2	Pantalla 0.80 m	0.800000	25.000	25.000	0.800000	0.230940	1066665.7
3	Pantalla 0.65 m	0.650000	25.000	25.000	0.650000	0.187639	572136.4
4	Profile 4	0.100000	78.000	210.000	0.200000	0.021822	10000.0
5	Profile 5	0.100000	78.000	210.000	0.200000	0.021822	10000.0
6	Profile 6	0.100000	78.000	210.000	0.200000	0.021822	10000.0
7	Profile 7	0.100000	78.000	210.000	0.200000	0.021822	10000.0
8	Profile 8	0.100000	78.000	210.000	0.200000	0.021822	10000.0
9	Profile 9	0.100000	78.000	210.000	0.200000	0.021822	10000.0
10	Profile 10	0.100000	78.000	210.000	0.200000	0.021822	10000.0
11	Profile 11	0.100000	78.000	210.000	0.200000	0.021822	10000.0
12	Profile 12	0.100000	78.000	210.000	0.200000	0.021822	10000.0
13	Profile 13	0.100000	78.000	210.000	0.200000	0.021822	10000.0
14	Profile 14	0.100000	78.000	210.000	0.200000	0.021822	10000.0
15	Profile 15	0.100000	78.000	210.000	0.200000	0.021822	10000.0
16	Profile 16	0.100000	78.000	210.000	0.200000	0.021822	10000.0
17	Profile 17	0.100000	78.000	210.000	0.200000	0.021822	10000.0
18	Profile 18	0.100000	78.000	210.000	0.200000	0.021822	10000.0
19	Profile 19	0.100000	78.000	210.000	0.200000	0.021822	10000.0
20	Profile 20	0.100000	78.000	210.000	0.200000	0.021822	10000.0

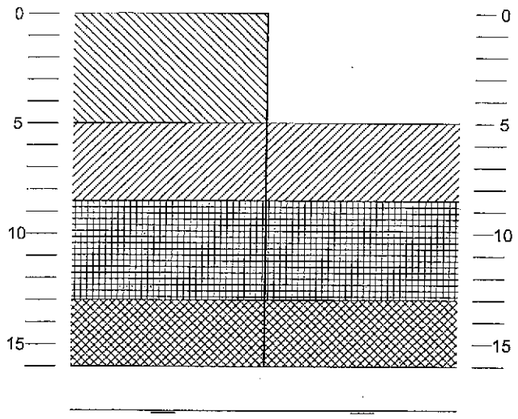
Cross Sections

Step 0 :



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Step 1 :



Results after Step 1 :

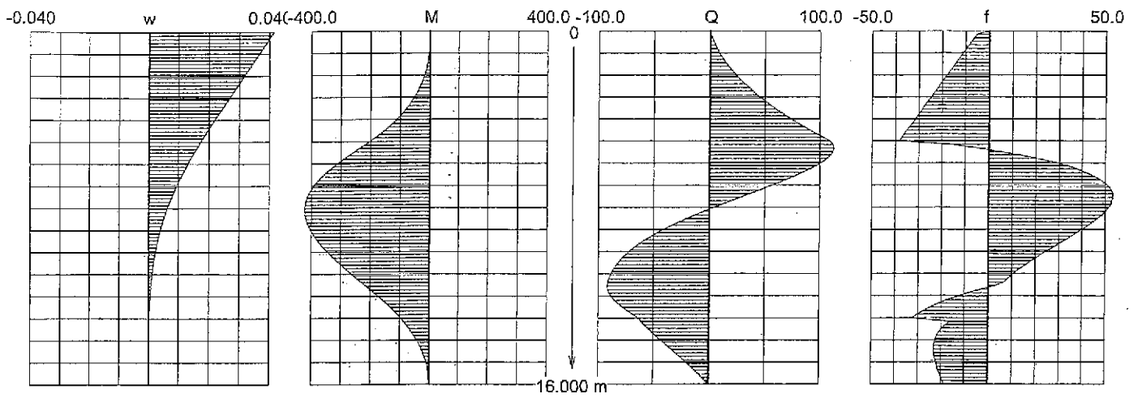
i	z (m)	w (m)	M (kNm)	Q- (kN)	Q+ (kN)	F (kN)	f (kN/m²)
0	0.000	0.041538	0.000000	0.000000	0.000000	0.000000	0.000000
1	0.161	0.040737	-0.069610	0.863163	0.863163	0.000000	5.361261
2	0.323	0.039935	-0.292790	1.904266	1.904266	0.000000	6.426562
3	0.484	0.039134	-0.698239	3.123309	3.123309	0.000000	7.571696
4	0.645	0.038332	-1.314659	4.520291	4.520291	0.000000	8.676907
5	0.806	0.037531	-2.170748	6.095213	6.095213	0.000000	9.782124
6	0.968	0.036729	-3.295207	7.848075	7.848075	0.000000	10.820136
7	1.129	0.035928	-4.716735	9.778876	9.778876	0.000000	11.992553
8	1.290	0.035127	-6.464033	11.887617	11.887617	0.000000	13.097770
9	1.452	0.034327	-8.565800	14.174298	14.174298	0.000000	14.115315
10	1.613	0.033526	-11.050737	16.638918	16.638918	0.000000	15.308199
11	1.774	0.032727	-13.947543	19.281478	19.281478	0.000000	16.413416
12	1.935	0.031928	-17.284918	22.101977	22.101977	0.000000	17.518627
13	2.097	0.031129	-21.091563	25.100416	25.100416	0.000000	18.508883
14	2.258	0.030332	-25.396177	28.276795	28.276795	0.000000	19.729062
15	2.419	0.029536	-30.227460	31.631113	31.631113	0.000000	20.834273
16	2.581	0.028741	-35.614112	35.163371	35.163371	0.000000	21.804062
17	2.742	0.027948	-41.584833	38.873569	38.873569	0.000000	23.044708
18	2.903	0.027157	-48.168323	42.761707	42.761707	0.000000	24.149925
19	3.065	0.026367	-55.393282	46.827784	46.827784	0.000000	25.099241
20	3.226	0.025581	-63.288409	51.071800	51.071800	0.000000	26.360348
21	3.387	0.024797	-71.882406	55.493757	55.493757	0.000000	27.465571
22	3.548	0.024017	-81.203971	60.093652	60.093652	0.000000	28.570776
23	3.710	0.023240	-91.281805	64.871488	64.871488	0.000000	29.492815
24	3.871	0.022468	-102.144607	69.827263	69.827263	0.000000	30.781211
25	4.032	0.021700	-113.821079	74.960978	74.960978	0.000000	31.886429
26	4.194	0.020937	-126.339918	80.272633	80.272633	0.000000	32.787994
27	4.355	0.020180	-139.729826	85.762227	85.762227	0.000000	34.096857
28	4.516	0.019429	-154.019503	91.429761	91.429761	0.000000	35.202075
29	4.677	0.018686	-169.237647	97.275234	97.275234	0.000000	36.307286
30	4.839	0.017950	-185.412960	103.298647	103.298647	0.000000	37.181562
31	5.000	0.017223	-202.574142	109.500000	109.500000	0.000000	38.517720
32	5.159	0.016514	-220.187947	111.930701	111.930701	0.000000	15.287428
33	5.318	0.015815	-238.056757	112.705769	112.705769	0.000000	4.874642
34	5.477	0.015127	-255.928802	111.971357	111.971357	0.000000	-4.618943
35	5.636	0.014450	-273.575268	109.869941	109.869941	0.000000	-13.216453
36	5.795	0.013786	-290.789694	106.539978	106.539978	0.000000	-20.943164
37	5.955	0.013134	-307.387296	102.115587	102.115587	0.000000	-27.652444
38	6.114	0.012495	-323.212961	96.835630	96.835630	0.000000	-33.207277
39	6.273	0.011871	-338.139740	90.815315	90.815315	0.000000	-37.863616
40	6.432	0.011262	-352.058503	84.163417	84.163417	0.000000	-41.835836
41	6.591	0.010669	-364.877021	76.983667	76.983667	0.000000	-45.155660
42	6.750	0.010091	-376.519153	69.374559	69.374559	0.000000	-47.856025
43	6.909	0.009530	-386.923996	61.429182	61.429182	0.000000	-49.970925
44	7.068	0.008987	-396.045017	53.235090	53.235090	0.000000	-51.535170
45	7.227	0.008461	-403.849165	44.874194	44.874194	0.000000	-52.584252

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46	7.386	0.007952	-410.315962	36.422683	36.422683	0.000000	-53.154157
47	7.545	0.007462	-415.436594	27.950983	27.950983	0.000000	-53.281132
48	7.705	0.006990	-419.212993	19.523741	19.523741	0.000000	-52.670262
49	7.864	0.006537	-421.656914	11.199838	11.199838	0.000000	-52.351591
50	8.023	0.006102	-422.789026	3.032432	3.032432	0.000000	-51.367333
51	8.182	0.005686	-422.638006	-4.930969	-4.930969	0.000000	-50.084283
52	8.341	0.005289	-421.239646	-12.648416	-12.648416	0.000000	-48.537403
53	8.500	0.004910	-418.635980	-20.083390	-20.083390	0.000000	-46.760843
54	8.661	0.004547	-414.830334	-27.275758	-27.275758	0.000000	-44.673093
55	8.821	0.004202	-409.896657	-34.121111	-34.121111	0.000000	-42.783456
56	8.982	0.003875	-403.892467	-40.597701	-40.597701	0.000000	-40.227267
57	9.143	0.003567	-396.878381	-46.688701	-46.688701	0.000000	-37.832298
58	9.304	0.003277	-388.917344	-52.381976	-52.381976	0.000000	-35.361957
59	9.464	0.003004	-380.073895	-57.669831	-57.669831	0.000000	-33.049094
60	9.625	0.002748	-370.413473	-62.548753	-62.548753	0.000000	-30.303863
61	9.786	0.002509	-360.001768	-67.019134	-67.019134	0.000000	-27.766342
62	9.946	0.002286	-348.904115	-71.084993	-71.084993	0.000000	-25.411619
63	10.107	0.002079	-337.184936	-74.753683	-74.753683	0.000000	-22.786894
64	10.268	0.001888	-324.907226	-78.035593	-78.035593	0.000000	-20.384534
65	10.429	0.001710	-312.132092	-80.943850	-80.943850	0.000000	-18.063708
66	10.589	0.001547	-298.918336	-83.494012	-83.494012	0.000000	-15.938512
67	10.750	0.001398	-285.322086	-85.703762	-85.703762	0.000000	-13.725155
68	10.911	0.001261	-271.396485	-87.592601	-87.592601	0.000000	-11.731919
69	11.071	0.001137	-257.191420	-89.181546	-89.181546	0.000000	-9.930906
70	11.232	0.001024	-242.753302	-90.492816	-90.492816	0.000000	-8.144534
71	11.393	0.000922	-228.124898	-91.549538	-91.549538	0.000000	-6.563491
72	11.554	0.000831	-213.377819	-91.969671	-91.969671	0.000000	-2.609522
73	11.714	0.000749	-198.638489	-91.453101	-91.453101	0.000000	3.228563
74	11.875	0.000676	-184.050509	-90.086204	-90.086204	0.000000	8.490043
75	12.036	0.000611	-169.743850	-87.952217	-87.952217	0.000000	13.254578
76	12.196	0.000554	-155.835390	-85.130840	-85.130840	0.000000	17.633606
77	12.357	0.000504	-142.429508	-81.697917	-81.697917	0.000000	21.322503
78	12.518	0.000461	-129.618721	-77.725210	-77.725210	0.000000	24.675199
79	12.679	0.000423	-117.484354	-73.280246	-73.280246	0.000000	27.608472
80	12.839	0.000391	-106.097225	-68.426253	-68.426253	0.000000	30.337456
81	13.000	0.000363	-95.518334	-63.222169	-63.222169	0.000000	32.323503
82	13.158	0.000341	-85.734743	-60.703317	-60.703317	0.000000	15.942101
83	13.316	0.000321	-76.373656	-57.870452	-57.870452	0.000000	17.929525
84	13.474	0.000306	-67.480025	-54.782197	-54.782197	0.000000	19.545918
85	13.632	0.000293	-59.089953	-51.492057	-51.492057	0.000000	20.823671
86	13.789	0.000283	-51.231494	-48.048425	-48.048425	0.000000	21.933962
87	13.947	0.000275	-43.925462	-44.494639	-44.494639	0.000000	22.492316
88	14.105	0.000269	-37.186220	-40.869099	-40.869099	0.000000	22.946456
89	14.263	0.000264	-31.022442	-37.205421	-37.205421	0.000000	23.187835
90	14.421	0.000261	-25.437858	-33.532645	-33.532645	0.000000	23.245418
91	14.579	0.000259	-20.431953	-29.875477	-29.875477	0.000000	23.146633
92	14.737	0.000258	-16.000634	-26.254564	-26.254564	0.000000	22.917171
93	14.895	0.000258	-12.136842	-22.686807	-22.686807	0.000000	22.580741
94	15.053	0.000258	-8.831118	-19.185694	-19.185694	0.000000	22.158943
95	15.211	0.000258	-6.072116	-15.761667	-15.761667	0.000000	21.671057
96	15.368	0.000259	-3.847050	-12.422504	-12.422504	0.000000	21.268554
97	15.526	0.000260	-2.142084	-9.173725	-9.173725	0.000000	20.561892
98	15.684	0.000261	-0.942657	-6.019013	-6.019013	0.000000	19.966532
99	15.842	0.000263	-0.233736	-2.960657	-2.960657	0.000000	19.356684
100	16.000	0.000264	0.000000	0.000000	0.000000	0.000000	18.738335

BAJO RAMAL V-B\P-bandeja3b.spw, P-bandeja3b.momento en cabeza fase defin

Results after Step 1 :



Maxima :	0.041538 m	-422.789026 kNm/m	112.705769 kN/m	53.281132 kN/m²

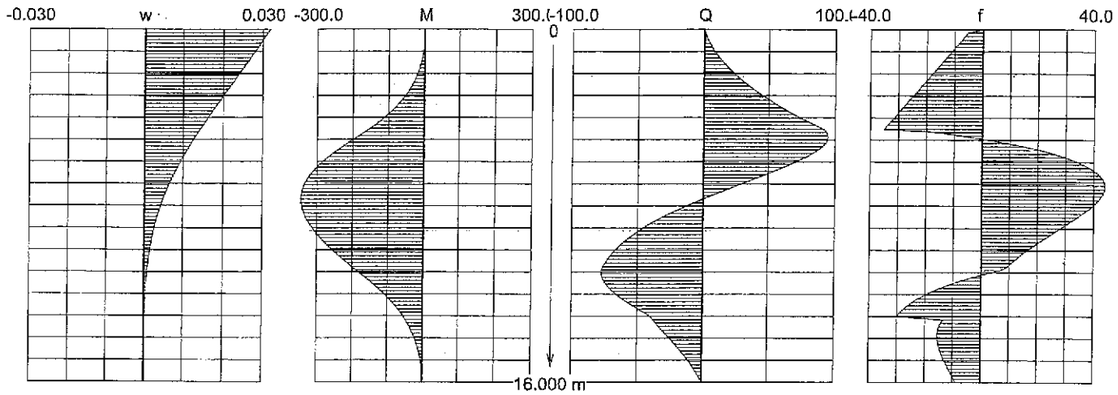
¿ con 5 m en voladizo.

BAJO RAMAL V-B\P-bandeja3b.spw, P-bandeja3b.momento en cabeza fase defin

General Data

Licensed User	: BAJO RAMAL V-B\P-bandeja3b.spw
File Name	: P-bandeja3b.spw
Problem Name	: P-bandeja3b.momento en cabeza fase defin
Length (m)	: 16.000
Number of Elements	: 100
Number of Layers	: 4
Number of Loading Steps	: 1
Profile from Catalogue	: 3

Results after Step 1 :



Maxima : 0.032004 m -345.115749 kNm/m 94.471952 kN/m 43.857288 kN/m²

↑ con 4.5 m en voladizo.

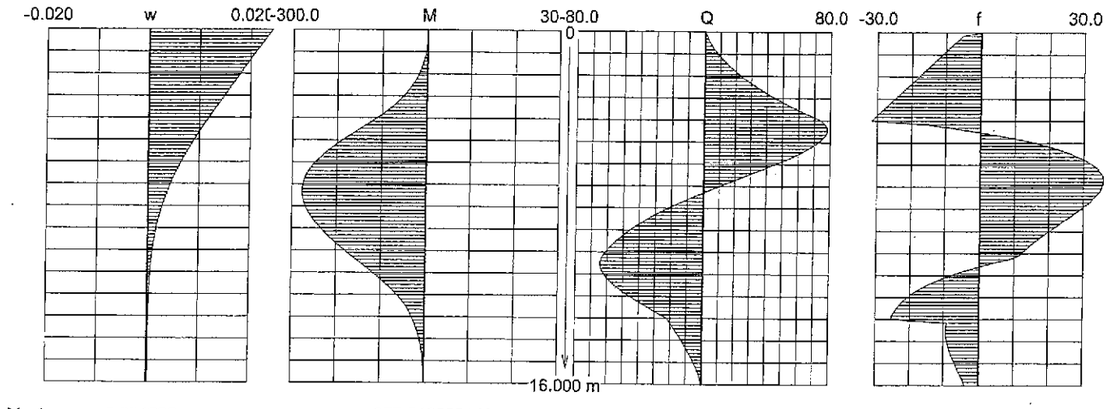
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BAJO RAMAL V-B\P-bandeja3b.spw, P-bandeja3b.momento en cabeza fase defin

General Data

Licensed User	: BAJO RAMAL V-B\P-bandeja3b.spw
File Name	: P-bandeja3b.spw
Problem Name	: P-bandeja3b.momento en cabeza fase defin
Length (m)	: 16.000
Number of Elements	: 100
Number of Layers	: 4
Number of Loading Steps	: 1
Profile from Catalogue	: 3

Results after Step 1 :



Maxima : 0.024226 m -277.548029 kNm/m 78.061552 kN/m 35.701081 kN/m²

↑ con 4.0 m en voladizo.

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andeja4.spw, P-bandeja3.momento en cabeza fase defin. 28/11/03

General Data

Licensed User	: andeja4.spw
File Name	: P-bandeja4.spw
Problem Name	: P-bandeja3.momento en cabeza fase defin.
Length (m)	: 12.000
Number of Elements	: 100
Number of Layers	: 4
Number of Loading Steps	: 1
Profile from Catalogue	: 3

Data of Layers

Step 0, Left side

Layer	Top (m)	Bottom (m)	Wd (kN/m³)	Ws (kN/m³)	Zw (m)	Cap (m)	q (kN/m²)	c (kN/m²)	Ka (-)	Kp (-)	Kn (-)	Dw (m)
1	0.000	3.000	19.000	20.000	16.000	0.000	30.000	5.000	0.360	4.450	0.530	0.020
2	3.000	6.500	19.000	20.000	16.000	0.000	0.000	5.000	0.360	4.450	0.530	0.020
3	6.500	11.000	19.000	20.000	16.000	0.000	0.000	5.000	0.360	4.450	0.530	0.020
4	11.000	12.000	19.000	20.000	16.000	0.000	0.000	0.000	0.310	5.940	0.470	0.020

Step 0, Right side

Layer	Top (m)	Bottom (m)	Wd (kN/m³)	Ws (kN/m³)	Zw (m)	Cap (m)	q (kN/m²)	c (kN/m²)	Ka (-)	Kp (-)	Kn (-)	Dw (m)
1	0.000	3.000	19.000	20.000	16.000	0.000	30.000	5.000	0.360	4.450	0.530	0.020
2	3.000	6.500	19.000	20.000	16.000	0.000	0.000	5.000	0.360	4.450	0.530	0.020
3	6.500	11.000	19.000	20.000	16.000	0.000	0.000	5.000	0.360	4.450	0.530	0.020
4	11.000	12.000	19.000	20.000	16.000	0.000	0.000	0.000	0.310	5.940	0.470	0.020

Step 1, Left side

Layer	Top (m)	Bottom (m)	Wd (kN/m³)	Ws (kN/m³)	Zw (m)	Cap (m)	q (kN/m²)	c (kN/m²)	Ka (-)	Kp (-)	Kn (-)	Dw (m)
1	0.000	3.000	19.000	20.000	16.000	0.000	30.000	5.000	0.360	4.450	0.530	0.020
2	3.000	6.500	19.000	20.000	16.000	0.000	0.000	5.000	0.360	4.450	0.530	0.020
3	6.500	11.000	19.000	20.000	16.000	0.000	0.000	5.000	0.360	4.450	0.530	0.020
4	11.000	12.000	19.000	20.000	16.000	0.000	0.000	0.000	0.310	5.940	0.470	0.020

Step 1, Right side

Layer	Top (m)	Bottom (m)	Wd (kN/m³)	Ws (kN/m³)	Zw (m)	Cap (m)	q (kN/m²)	c (kN/m²)	Ka (-)	Kp (-)	Kn (-)	Dw (m)
1	0.000	3.000	0.000	10.000	16.000	0.000	0.000	0.000	1.000	1.000	1.000	1.000
2	3.000	6.500	0.000	10.000	16.000	0.000	0.000	0.000	1.000	1.000	1.000	1.000
3	6.500	11.000	19.000	20.000	16.000	0.000	0.000	5.000	0.360	4.450	0.530	0.020
4	11.000	12.000	19.000	20.000	16.000	0.000	0.000	0.000	0.310	5.940	0.470	0.020

Data of Anchors and Lateral Forces

Step 0 :

Point	Fx (kN/m)	Fa (kN/m)	Fw (m)
0	0.000	0.000	0.020
1	0.000	0.000	0.020
2	0.000	0.000	0.020
3	0.000	0.000	0.020
4	0.000	0.000	0.020

Step 1 :

Point	Fx (kN/m)	Fa (kN/m)	Fw (m)
0	0.000	0.000	0.020
1	0.000	0.000	0.020
2	0.000	100000.000	-0.001
3	0.000	0.000	0.020
4	0.000	0.000	0.020

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Data of Axial Forces and Moment

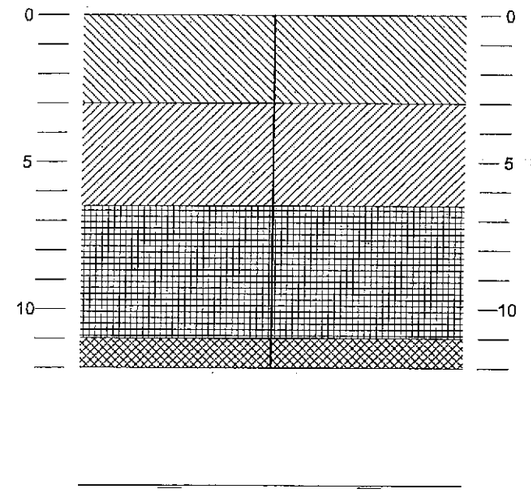
Step	NA (kN/m)	NB (kN/m)	MA (kNm/m)
0	0.000	0.000	0.000
1	0.000	0.000	0.000

Catalogue of Profiles

No	Profile Name	Area (m²/m)	Weight (kN/m³)	E (GN/m²)	h (m)	i (m)	EI (kNm²/m)
1	Pantalla 1.0 m	1.000000	25.000	25.000	1.000000	0.288675	2083331.4
2	Pantalla 0.80 m	0.800000	25.000	25.000	0.800000	0.230940	1066665.7
3	Pantalla 0.65 m	0.650000	25.000	25.000	0.650000	0.187639	572136.4
4	Profile 4	0.100000	78.000	210.000	0.200000	0.021822	10000.0
5	Profile 5	0.100000	78.000	210.000	0.200000	0.021822	10000.0
6	Profile 6	0.100000	78.000	210.000	0.200000	0.021822	10000.0
7	Profile 7	0.100000	78.000	210.000	0.200000	0.021822	10000.0
8	Profile 8	0.100000	78.000	210.000	0.200000	0.021822	10000.0
9	Profile 9	0.100000	78.000	210.000	0.200000	0.021822	10000.0
10	Profile 10	0.100000	78.000	210.000	0.200000	0.021822	10000.0
11	Profile 11	0.100000	78.000	210.000	0.200000	0.021822	10000.0
12	Profile 12	0.100000	78.000	210.000	0.200000	0.021822	10000.0
13	Profile 13	0.100000	78.000	210.000	0.200000	0.021822	10000.0
14	Profile 14	0.100000	78.000	210.000	0.200000	0.021822	10000.0
15	Profile 15	0.100000	78.000	210.000	0.200000	0.021822	10000.0
16	Profile 16	0.100000	78.000	210.000	0.200000	0.021822	10000.0
17	Profile 17	0.100000	78.000	210.000	0.200000	0.021822	10000.0
18	Profile 18	0.100000	78.000	210.000	0.200000	0.021822	10000.0
19	Profile 19	0.100000	78.000	210.000	0.200000	0.021822	10000.0
20	Profile 20	0.100000	78.000	210.000	0.200000	0.021822	10000.0

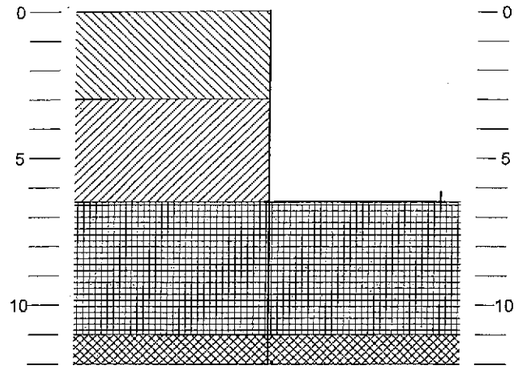
Cross Sections

Step 0 :



andeja4.spw, P-bandeja3.momento en cabeza fase defin.

Step 1 :



Results after Step 1 :

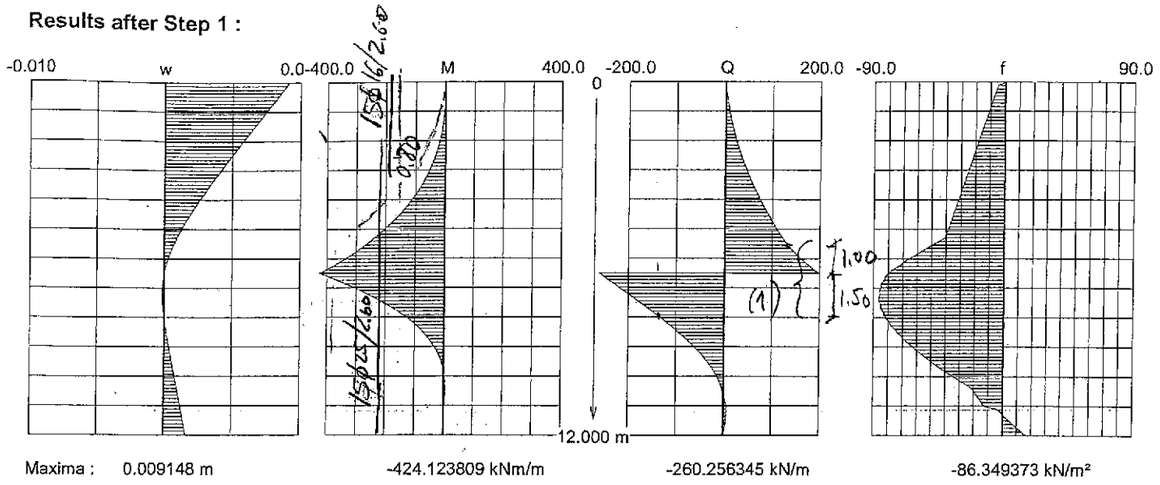
i	z	w	M	Q-	Q+	F-	f
	(m)	(m)	(kNm)	(kN)	(kN)	(kN)	(kN/m²)
0	0.000	0.009148	0.000000	0.000000	0.000000	0.000000	0.000000
1	0.120	0.008946	-0.037515	0.625248	0.625248	0.000000	5.210400
2	0.240	0.008744	-0.155969	1.348992	1.348992	0.000000	6.031200
3	0.360	0.008543	-0.367183	2.171232	2.171232	0.000000	6.852000
4	0.480	0.008341	-0.682975	3.091968	3.091968	0.000000	7.672800
5	0.600	0.008139	-1.115165	4.111200	4.111200	0.000000	8.493600
6	0.720	0.007937	-1.675572	5.228928	5.228928	0.000000	9.314400
7	0.840	0.007736	-2.376017	6.445152	6.445152	0.000000	10.135200
8	0.960	0.007534	-3.228319	7.759872	7.759872	0.000000	10.956000
9	1.080	0.007333	-4.244296	9.173088	9.173088	0.000000	11.776800
10	1.200	0.007131	-5.435770	10.684800	10.684800	0.000000	12.597600
11	1.320	0.006930	-6.814558	12.295008	12.295008	0.000000	13.418400
12	1.440	0.006729	-8.392481	14.003712	14.003712	0.000000	14.239200
13	1.560	0.006528	-10.181359	15.810912	15.810912	0.000000	15.060000
14	1.680	0.006328	-12.193010	17.716608	17.716608	0.000000	15.880800
15	1.800	0.006127	-14.439254	19.720800	19.720800	0.000000	16.701600
16	1.920	0.005927	-16.931912	21.823488	21.823488	0.000000	17.522400
17	2.040	0.005728	-19.682801	24.024672	24.024672	0.000000	18.343200
18	2.160	0.005529	-22.703743	26.324352	26.324352	0.000000	19.164000
19	2.280	0.005331	-26.006556	28.722528	28.722528	0.000000	19.984800
20	2.400	0.005133	-29.603059	31.219200	31.219200	0.000000	20.805600
21	2.520	0.004936	-33.505073	33.814368	33.814368	0.000000	21.626400
22	2.640	0.004740	-37.724417	36.508032	36.508032	0.000000	22.447200
23	2.760	0.004544	-42.272911	39.300192	39.300192	0.000000	23.268000
24	2.880	0.004350	-47.162373	42.190848	42.190848	0.000000	24.088800
25	3.000	0.004157	-52.404624	45.180000	45.180000	0.000000	24.909600
26	3.121	0.003965	-58.044794	48.285678	48.285678	0.000000	25.666760
27	3.241	0.003773	-64.065800	51.490987	51.490987	0.000000	26.710908
28	3.362	0.003584	-70.479665	54.795927	54.795927	0.000000	27.313554
29	3.483	0.003396	-77.298415	58.200499	58.200499	0.000000	28.136959
30	3.603	0.003210	-84.534074	61.704703	61.704703	0.000000	29.201700
31	3.724	0.003026	-92.198666	65.308537	65.308537	0.000000	29.783752
32	3.845	0.002845	-100.304216	69.012004	69.012004	0.000000	30.607165
33	3.966	0.002666	-108.862748	72.815101	72.815101	0.000000	31.430554
34	4.086	0.002490	-117.886287	76.717830	76.717830	0.000000	32.522742
35	4.207	0.002317	-127.386857	80.720190	80.720190	0.000000	33.077355
36	4.328	0.002147	-137.376483	84.822182	84.822182	0.000000	33.900760
37	4.448	0.001981	-147.867189	89.023805	89.023805	0.000000	35.013525
38	4.569	0.001819	-158.871000	93.325059	93.325059	0.000000	35.547554
39	4.690	0.001660	-170.399940	97.725945	97.725945	0.000000	36.370959
40	4.810	0.001506	-182.466034	102.226463	102.226463	0.000000	37.504317
41	4.931	0.001357	-195.081305	106.826611	106.826611	0.000000	38.017752
42	5.052	0.001212	-208.257780	111.526391	111.526391	0.000000	38.841157
43	5.172	0.001073	-222.007481	116.325803	116.325803	0.000000	39.995100
44	5.293	0.000939	-236.342510	121.226108	121.226108	0.000000	40.498388
45	5.414	0.000812	-251.301263	126.661800	126.661800	0.000000	44.923074

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46	5.534	0.000691	-266.947946	132.626093	132.626093	0.000000	49.702442
47	5.655	0.000576	-283.345800	139.109771	139.109771	0.000000	53.584116
48	5.776	0.000469	-300.556797	146.101032	146.101032	0.000000	57.779017
49	5.897	0.000370	-318.641318	153.585325	153.585325	0.000000	61.853661
50	6.017	0.000279	-337.657814	161.545175	161.545175	0.000000	66.332083
51	6.138	0.000196	-357.662436	169.959993	169.959993	0.000000	69.543950
52	6.259	0.000122	-378.708652	178.805875	178.805875	0.000000	73.106463
53	6.379	0.000058	-400.846832	188.055393	188.055393	0.000000	77.079317
54	6.500	0.000005	-424.123809	197.677367	-260.256345	-457.933712	79.520446
55	6.618	-0.000038	-393.878436	-250.554398	-250.554398	0.000000	82.219890
56	6.737	-0.000071	-364.791414	-240.693083	-240.693083	0.000000	82.868193
57	6.855	-0.000095	-336.879762	-230.703707	-230.703707	0.000000	84.655729
58	6.974	-0.000111	-310.156786	-220.617677	-220.617677	0.000000	84.756555
59	7.092	-0.000119	-284.632076	-210.466315	-210.466315	0.000000	86.028492
60	7.211	-0.000120	-260.311529	-200.280690	-200.280690	0.000000	85.593487
61	7.329	-0.000114	-237.197389	-190.091464	-190.091464	0.000000	86.349373
62	7.447	-0.000103	-215.288294	-179.928807	-179.928807	0.000000	86.124212
63	7.566	-0.000087	-194.579330	-169.822583	-169.822583	0.000000	84.926252
64	7.684	-0.000066	-175.062126	-159.801312	-159.801312	0.000000	84.926025
65	7.803	-0.000040	-156.724986	-149.892603	-149.892603	0.000000	83.266462
66	7.921	-0.000011	-139.553004	-140.123094	-140.123094	0.000000	82.792449
67	8.039	0.000022	-123.528178	-130.518403	-130.518403	0.000000	81.395686
68	8.158	0.000058	-108.629537	-121.103097	-121.103097	0.000000	79.120218
69	8.276	0.000096	-94.833261	-111.900668	-111.900668	0.000000	77.986686
70	8.395	0.000137	-82.112816	-102.933525	-102.933525	0.000000	75.354143
71	8.513	0.000180	-70.439074	-94.222999	-94.222999	0.000000	73.818017
72	8.632	0.000224	-59.780448	-85.789350	-85.789350	0.000000	70.871000
73	8.750	0.000270	-50.103012	-77.651796	-77.651796	0.000000	68.962322
74	8.868	0.000317	-41.370624	-69.828541	-69.828541	0.000000	66.298771
75	8.987	0.000366	-33.545043	-62.336813	-62.336813	0.000000	62.955697
76	9.105	0.000415	-26.586046	-55.192915	-55.192915	0.000000	60.541508
77	9.224	0.000465	-20.451529	-48.412270	-48.412270	0.000000	56.980210
78	9.342	0.000515	-15.097609	-42.009486	-42.009486	0.000000	54.260881
79	9.461	0.000565	-10.478720	-35.998415	-35.998415	0.000000	50.513202
80	9.579	0.000616	-6.547696	-30.392217	-30.392217	0.000000	47.510153
81	9.697	0.000667	-3.255849	-25.203426	-25.203426	0.000000	43.972805
82	9.816	0.000718	-0.553039	-20.444025	-20.444025	0.000000	39.994966
83	9.934	0.000770	1.612262	-16.125507	-16.125507	0.000000	36.597610
84	10.053	0.000821	3.292921	-12.258947	-12.258947	0.000000	32.492101
85	10.171	0.000872	4.543093	-8.855069	-8.855069	0.000000	28.846424
86	10.289	0.000923	5.418187	-5.924306	-5.924306	0.000000	24.836975
87	10.408	0.000974	5.969936	-3.394119	-3.394119	0.000000	21.262076
88	10.526	0.001024	6.233763	-1.061619	-1.061619	0.000000	19.766949
89	10.645	0.001075	6.233387	1.067967	1.067967	0.000000	17.895681
90	10.763	0.001125	5.993145	2.989444	2.989444	0.000000	16.283703
91	10.882	0.001175	5.537989	4.697637	4.697637	0.000000	14.354563
92	11.000	0.001225	4.893482	6.187374	6.187374	0.000000	12.624890
93	11.125	0.001278	4.095285	6.583787	6.583787	0.000000	3.171304
94	11.250	0.001331	3.267358	6.663046	6.663046	0.000000	0.634072
95	11.375	0.001383	2.449875	6.416670	6.416670	0.000000	-1.971008
96	11.500	0.001436	1.684075	5.836132	5.836132	0.000000	-4.644304
97	11.625	0.001488	1.012264	4.912852	4.912852	0.000000	-7.386240
98	11.750	0.001540	0.477823	3.638197	3.638197	0.000000	-10.197240
99	11.875	0.001593	0.125218	2.003486	2.003486	0.000000	-13.077688
100	12.000	0.001645	0.000000	0.000000	0.000000	0.000000	-16.027888

andeja4.spw, P-bandeja3.momento en cabeza fase defin.

Results after Step 1 :



Maxima : 0.009148 m -424.123809 kNm/m -260.256345 kN/m -86.349373 kN/m²

$M_d = 42.4 \cdot 1.5 = 63.6$ T.m.

$63.6 \cdot 2.60 = 165.36$ T.m/2.60 m. 70.65 cm².

$15\phi 25$ 73.63 cm²

(1) $26.0 \cdot 1.5 \cdot 2.60 = 101.4$ T. /2.60

$1c\phi 12/0.20 + 2r\phi 12/0.20$ (102.34 T)

(2) $1c\phi 12/0.20$ 78.73 T

$78.7/(1.5 \cdot 2.6) = 20$ T.

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28/11/03

andeja4b.spw, P-bandeja3b.momento en cabeza fase defin

General Data

Licensed User	: andeja4b.spw
File Name	: P-bandeja4b.spw
Problem Name	: P-bandeja3b.momento en cabeza fase defin
Length (m)	: 12.000
Number of Elements	: 100
Number of Layers	: 4
Number of Loading Steps	: 1
Profile from Catalogue	: 3

Data of Layers

Step 0, Left side

Layer	Top (m)	Bottom (m)	Wd (kN/m³)	Ws (kN/m³)	Zw (m)	Cap (m)	q (kN/m²)	c (kN/m²)	Ka (-)	Kp (-)	Kn (-)	Dw (m)
1	0.000	4.500	19.000	20.000	16.000	0.000	30.000	5.000	0.360	4.450	0.530	0.020
2	4.500	6.500	19.000	20.000	16.000	0.000	0.000	5.000	0.360	4.450	0.530	0.020
3	6.500	11.000	19.000	20.000	16.000	0.000	0.000	5.000	0.360	4.450	0.530	0.020
4	11.000	12.000	19.000	20.000	16.000	0.000	0.000	0.000	0.310	5.940	0.470	0.020

Step 0, Right side

Layer	Top (m)	Bottom (m)	Wd (kN/m³)	Ws (kN/m³)	Zw (m)	Cap (m)	q (kN/m²)	c (kN/m²)	Ka (-)	Kp (-)	Kn (-)	Dw (m)
1	0.000	4.500	19.000	20.000	16.000	0.000	30.000	5.000	0.360	4.450	0.530	0.020
2	4.500	6.500	19.000	20.000	16.000	0.000	0.000	5.000	0.360	4.450	0.530	0.020
3	6.500	11.000	19.000	20.000	16.000	0.000	0.000	5.000	0.360	4.450	0.530	0.020
4	11.000	12.000	19.000	20.000	16.000	0.000	0.000	0.000	0.310	5.940	0.470	0.020

Step 1, Left side

Layer	Top (m)	Bottom (m)	Wd (kN/m³)	Ws (kN/m³)	Zw (m)	Cap (m)	q (kN/m²)	c (kN/m²)	Ka (-)	Kp (-)	Kn (-)	Dw (m)
1	0.000	4.500	19.000	20.000	16.000	0.000	30.000	5.000	0.360	4.450	0.530	0.020
2	4.500	6.500	19.000	20.000	16.000	0.000	0.000	5.000	0.360	4.450	0.530	0.020
3	6.500	11.000	19.000	20.000	16.000	0.000	0.000	5.000	0.360	4.450	0.530	0.020
4	11.000	12.000	19.000	20.000	16.000	0.000	0.000	0.000	0.310	5.940	0.470	0.020

Step 1, Right side

Layer	Top (m)	Bottom (m)	Wd (kN/m³)	Ws (kN/m³)	Zw (m)	Cap (m)	q (kN/m²)	c (kN/m²)	Ka (-)	Kp (-)	Kn (-)	Dw (m)
1	0.000	4.500	0.000	10.000	16.000	0.000	0.000	0.000	1.000	1.000	1.000	1.000
2	4.500	6.500	19.000	20.000	16.000	0.000	0.000	5.000	0.360	4.450	0.530	0.020
3	6.500	11.000	19.000	20.000	16.000	0.000	0.000	5.000	0.360	4.450	0.530	0.020
4	11.000	12.000	19.000	20.000	16.000	0.000	0.000	0.000	0.310	5.940	0.470	0.020

← voladizo máx 4.50 fase provisional

Data of Anchors and Lateral Forces

Step 0 :

Point	Fx (kN/m)	Fa (kN/m)	Fw (m)
0	0.000	0.000	0.020
1	0.000	0.000	0.020
2	0.000	0.000	0.020
3	0.000	0.000	0.020
4	0.000	0.000	0.020

Step 1 :

Point	Fx (kN/m)	Fa (kN/m)	Fw (m)
0	0.000	0.000	0.020
1	0.000	0.000	0.020
2	0.000	0.000	0.020
3	0.000	0.000	0.020
4	0.000	0.000	0.020

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Data of Axial Forces and Moment

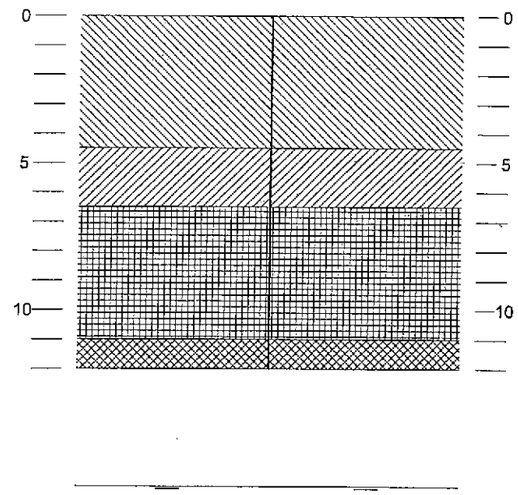
Step	NA (kN/m)	NB (kN/m)	MA (kNm/m)
0	0.000	0.000	0.000
1	0.000	0.000	0.000

Catalogue of Profiles

No	Profile Name	Area (m²/m)	Weight (kN/m³)	E (GN/m²)	h (m)	i (m)	EI (kNm²/m)
1	Pantalla 1.0 m	1.000000	25.000	25.000	1.000000	0.288675	2083331.4
2	Pantalla 0.80 m	0.800000	25.000	25.000	0.800000	0.230940	1066665.7
3	Pantalla 0.65 m	0.650000	25.000	25.000	0.650000	0.187639	572136.4
4	Profile 4	0.100000	78.000	210.000	0.200000	0.021822	10000.0
5	Profile 5	0.100000	78.000	210.000	0.200000	0.021822	10000.0
6	Profile 6	0.100000	78.000	210.000	0.200000	0.021822	10000.0
7	Profile 7	0.100000	78.000	210.000	0.200000	0.021822	10000.0
8	Profile 8	0.100000	78.000	210.000	0.200000	0.021822	10000.0
9	Profile 9	0.100000	78.000	210.000	0.200000	0.021822	10000.0
10	Profile 10	0.100000	78.000	210.000	0.200000	0.021822	10000.0
11	Profile 11	0.100000	78.000	210.000	0.200000	0.021822	10000.0
12	Profile 12	0.100000	78.000	210.000	0.200000	0.021822	10000.0
13	Profile 13	0.100000	78.000	210.000	0.200000	0.021822	10000.0
14	Profile 14	0.100000	78.000	210.000	0.200000	0.021822	10000.0
15	Profile 15	0.100000	78.000	210.000	0.200000	0.021822	10000.0
16	Profile 16	0.100000	78.000	210.000	0.200000	0.021822	10000.0
17	Profile 17	0.100000	78.000	210.000	0.200000	0.021822	10000.0
18	Profile 18	0.100000	78.000	210.000	0.200000	0.021822	10000.0
19	Profile 19	0.100000	78.000	210.000	0.200000	0.021822	10000.0
20	Profile 20	0.100000	78.000	210.000	0.200000	0.021822	10000.0

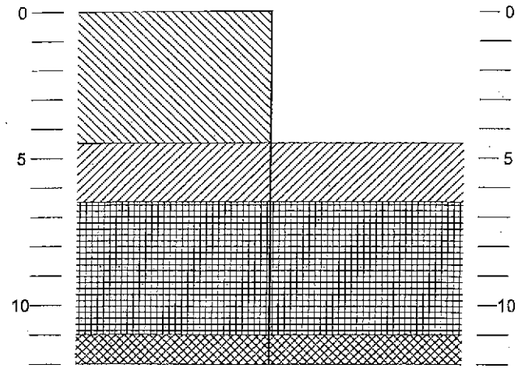
Cross Sections

Step 0 :



andeja4b.spw, P-bandeja3b.momento en cabeza fase defin

Step 1 :



Results after Step 1 :

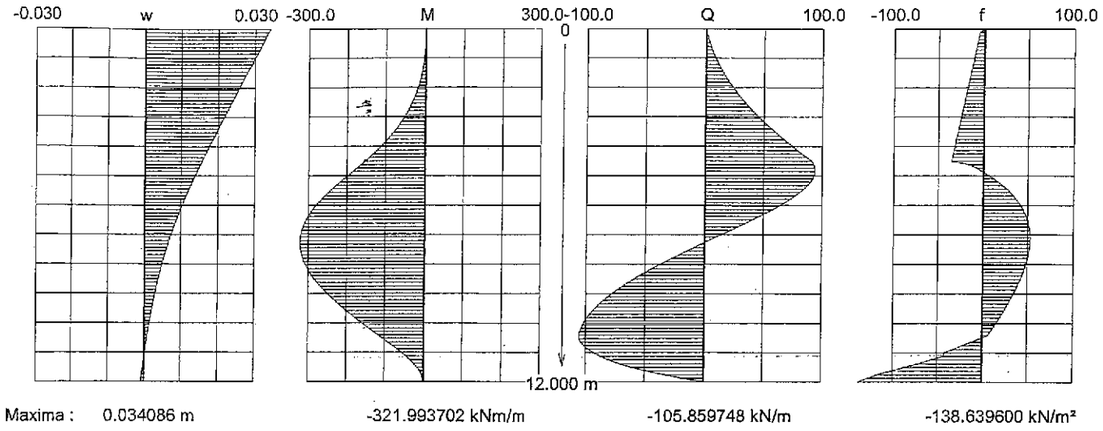
i	z (m)	w (m)	M (kNm)	Q- (kN)	Q+ (kN)	F- (kN)	f (kN/m²)
0	0.000	0.034086	0.000000	0.000000	0.000000	0.000000	0.000000
1	0.122	0.033578	-0.038577	0.634372	0.634372	0.000000	5.199770
2	0.243	0.033071	-0.160459	1.369920	1.369920	0.000000	6.078909
3	0.365	0.032563	-0.377953	2.206644	2.206644	0.000000	6.858393
4	0.486	0.032056	-0.703363	3.144543	3.144543	0.000000	7.751231
5	0.608	0.031548	-1.148995	4.183619	4.183619	0.000000	8.517016
6	0.730	0.031041	-1.727153	5.323871	5.323871	0.000000	9.346328
7	0.851	0.030533	-2.450143	6.565299	6.565299	0.000000	10.259736
8	0.973	0.030026	-3.330270	7.907904	7.907904	0.000000	11.004959
9	1.095	0.029519	-4.379840	9.351684	9.351684	0.000000	11.834262
10	1.216	0.029012	-5.611157	10.896640	10.896640	0.000000	12.768231
11	1.338	0.028505	-7.036526	12.542772	12.542772	0.000000	13.492885
12	1.459	0.027998	-8.668254	14.290080	14.290080	0.000000	14.440562
13	1.581	0.027491	-10.518644	16.138565	16.138565	0.000000	15.151516
14	1.703	0.026985	-12.600003	18.088225	18.088225	0.000000	15.980820
15	1.824	0.026479	-14.924635	20.139061	20.139061	0.000000	16.949058
16	1.946	0.025974	-17.504846	22.291074	22.291074	0.000000	17.639451
17	2.068	0.025469	-20.352941	24.544262	24.544262	0.000000	18.468754
18	2.189	0.024964	-23.481225	26.898627	26.898627	0.000000	19.457562
19	2.311	0.024460	-26.902003	29.354167	29.354167	0.000000	20.127377
20	2.432	0.023957	-30.627580	31.910884	31.910884	0.000000	21.129893
21	2.554	0.023454	-34.670262	34.568776	34.568776	0.000000	21.786000
22	2.676	0.022953	-39.042354	37.327845	37.327845	0.000000	22.615320
23	2.797	0.022452	-43.756161	40.188090	40.188090	0.000000	23.638388
24	2.919	0.021953	-48.823988	43.149511	43.149511	0.000000	24.273943
25	3.041	0.021454	-54.258141	46.212107	46.212107	0.000000	25.103246
26	3.162	0.020958	-60.070924	49.375880	49.375880	0.000000	26.146884
27	3.284	0.020462	-66.274642	52.640829	52.640829	0.000000	26.761877
28	3.405	0.019969	-72.881602	56.006954	56.006954	0.000000	27.819215
29	3.527	0.019477	-79.904108	59.474255	59.474255	0.000000	28.420500
30	3.649	0.018988	-87.354465	63.042732	63.042732	0.000000	29.249811
31	3.770	0.018501	-95.244979	66.712385	66.712385	0.000000	30.327711
32	3.892	0.018016	-103.587955	70.483214	70.483214	0.000000	30.908434
33	4.014	0.017534	-112.395697	74.355219	74.355219	0.000000	31.737746
34	4.135	0.017054	-121.680512	78.328400	78.328400	0.000000	32.836207
35	4.257	0.016578	-131.454704	82.402757	82.402757	0.000000	33.396369
36	4.378	0.016106	-141.730579	86.578291	86.578291	0.000000	34.508545
37	4.500	0.015637	-152.520441	90.855000	90.855000	0.000000	35.054992
38	4.618	0.015187	-163.315161	92.655241	92.655241	0.000000	15.256280
39	4.735	0.014741	-174.271582	93.603910	93.603910	0.000000	8.108282
40	4.853	0.014299	-185.292537	93.752327	93.752327	0.000000	1.257771
41	4.971	0.013862	-196.286850	93.151003	93.151003	0.000000	-5.095966
42	5.088	0.013429	-207.169238	91.849586	91.849586	0.000000	-11.123222
43	5.206	0.013002	-217.860201	89.896795	89.896795	0.000000	-16.549076
44	5.324	0.012579	-228.285917	87.340362	87.340362	0.000000	-21.664686
45	5.441	0.012163	-238.378264	84.229539	84.229539	0.000000	-26.588231

andeja4b.spw, P-bandeja3b.momento en cabeza fase defin

46	5.559	0.011752	-248.077875	80.663858	80.663858	0.000000	-30.217636
47	5.676	0.011347	-257.333625	76.683888	76.683888	0.000000	-34.016838
48	5.794	0.010948	-266.099094	72.329086	72.329086	0.000000	-36.905102
49	5.912	0.010556	-274.332438	67.637751	67.637751	0.000000	-39.757076
50	6.029	0.010170	-281.996246	62.646994	62.646994	0.000000	-42.656043
51	6.147	0.009791	-289.057404	57.392697	57.392697	0.000000	-44.527941
52	6.265	0.009419	-295.486945	51.909494	51.909494	0.000000	-46.467822
53	6.382	0.009054	-301.259900	46.230742	46.230742	0.000000	-48.536342
54	6.500	0.008697	-306.355150	40.388502	40.388502	0.000000	-49.510508
55	6.618	0.008345	-310.781866	34.373817	34.373817	0.000000	-50.971907
56	6.737	0.008000	-314.490131	28.254661	28.254661	0.000000	-51.421479
57	6.855	0.007663	-317.469271	22.059694	22.059694	0.000000	-52.499720
58	6.974	0.007334	-319.711923	15.816221	15.816221	0.000000	-52.466160
59	7.092	0.007012	-321.213882	9.550196	9.550196	0.000000	-53.101907
60	7.211	0.006699	-321.973934	3.286232	3.286232	0.000000	-52.638353
61	7.329	0.006393	-321.993702	-2.952378	-2.952378	0.000000	-52.869576
62	7.447	0.006095	-321.277490	-9.143645	-9.143645	0.000000	-52.468364
63	7.566	0.005806	-319.832131	-15.266855	-15.266855	0.000000	-51.455546
64	7.684	0.005524	-317.666838	-21.302541	-21.302541	0.000000	-51.149881
65	7.803	0.005249	-314.793056	-27.232445	-27.232445	0.000000	-49.831126
66	7.921	0.004983	-311.224323	-33.039481	-33.039481	0.000000	-49.212169
67	8.039	0.004724	-306.976136	-38.707691	-38.707691	0.000000	-48.035678
68	8.158	0.004472	-302.065813	-44.222196	-44.222196	0.000000	-46.340378
69	8.276	0.004228	-296.512379	-49.569144	-49.569144	0.000000	-45.313119
70	8.395	0.003992	-290.336436	-54.735658	-54.735658	0.000000	-43.416084
71	8.513	0.003762	-283.560062	-59.709773	-59.709773	0.000000	-42.153517
72	8.632	0.003539	-276.206698	-64.480378	-64.480378	0.000000	-40.089118
73	8.750	0.003323	-268.301055	-69.037149	-69.037149	0.000000	-38.616703
74	8.868	0.003114	-259.869024	-73.370482	-73.370482	0.000000	-36.723161
75	8.987	0.002911	-250.937595	-77.471425	-77.471425	0.000000	-34.461706
76	9.105	0.002714	-241.534784	-81.331604	-81.331604	0.000000	-32.713381
77	9.224	0.002523	-231.689569	-84.943148	-84.943148	0.000000	-30.349109
78	9.342	0.002338	-221.431833	-88.298619	-88.298619	0.000000	-28.436195
79	9.461	0.002158	-210.792320	-91.390931	-91.390931	0.000000	-25.985815
80	9.579	0.001984	-199.802597	-94.213270	-94.213270	0.000000	-23.918127
81	9.697	0.001814	-188.495027	-96.759023	-96.759023	0.000000	-21.574178
82	9.816	0.001649	-176.902748	-99.021693	-99.021693	0.000000	-19.014034
83	9.934	0.001488	-165.059665	-100.994822	-100.994822	0.000000	-16.721432
84	10.053	0.001331	-153.000450	-102.671913	-102.671913	0.000000	-14.093202
85	10.171	0.001178	-140.760553	-104.046350	-104.046350	0.000000	-11.647771
86	10.289	0.001029	-128.376217	-105.111323	-105.111323	0.000000	-9.025195
87	10.408	0.000882	-115.884509	-105.859748	-105.859748	0.000000	-6.289286
88	10.526	0.000739	-103.364539	-105.588641	-105.588641	0.000000	2.297517
89	10.645	0.000598	-90.944899	-104.165282	-104.165282	0.000000	11.961000
90	10.763	0.000459	-78.762631	-101.579685	-101.579685	0.000000	21.911839
91	10.882	0.000322	-66.956073	-97.819959	-97.819959	0.000000	31.594336
92	11.000	0.000187	-55.665088	-92.872238	-92.872238	0.000000	41.929839
93	11.125	0.000046	-44.386918	-87.578476	-87.578476	0.000000	42.350096
94	11.250	-0.000094	-33.883589	-80.474796	-80.474796	0.000000	56.829440
95	11.375	-0.000234	-24.383393	-71.528340	-71.528340	0.000000	71.571648
96	11.500	-0.000372	-16.118923	-60.703168	-60.703168	0.000000	86.601376
97	11.625	-0.000510	-9.327445	-47.960484	-47.960484	0.000000	101.941472
98	11.750	-0.000648	-4.248079	-33.309369	-33.309369	0.000000	117.208920
99	11.875	-0.000785	-1.083122	-17.329950	-17.329950	0.000000	127.835352
100	12.000	-0.000923	0.000000	0.000000	0.000000	0.000000	138.639600

andeja4b.spw, P-bandeja4b.momento en cabeza fase defin

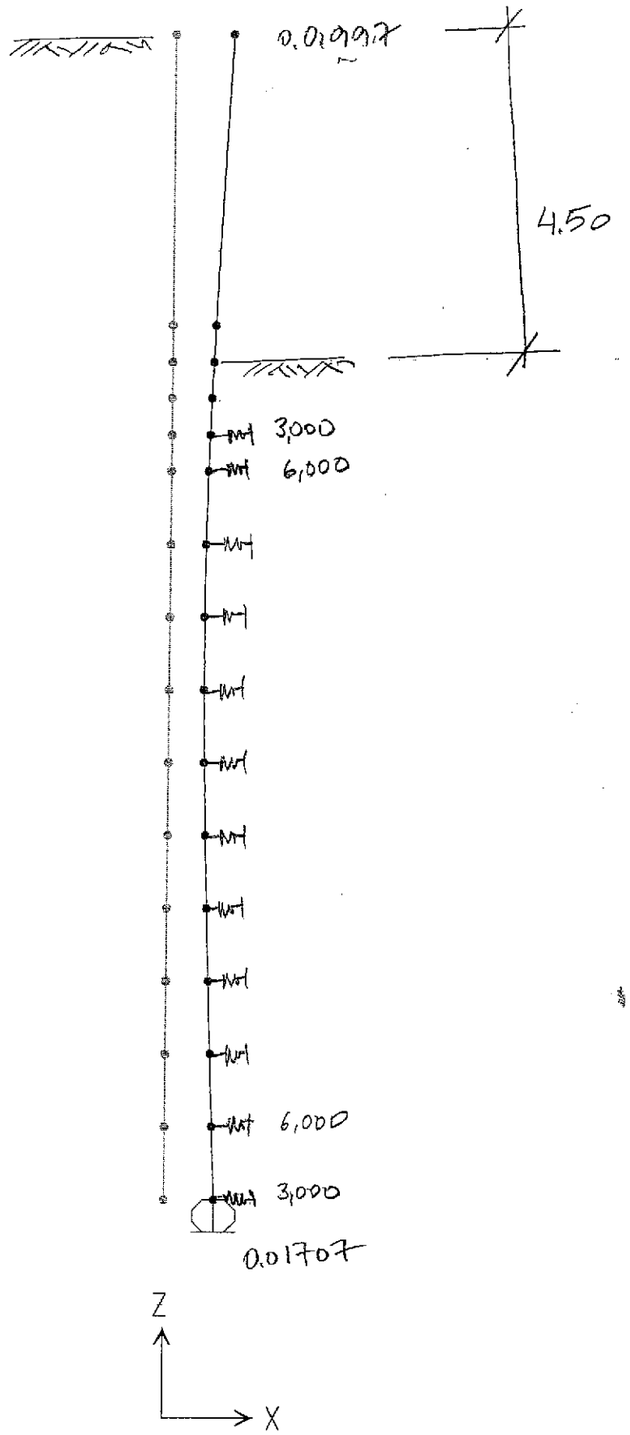
Results after Step 1 :



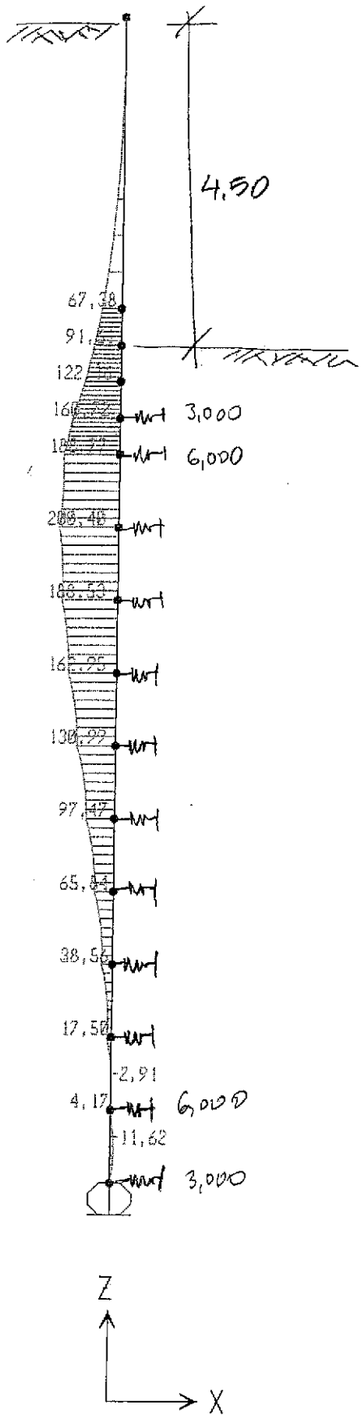
Maxima : 0.034086 m -321.993702 kNm/m -105.859748 kN/m -138.639600 kN/m²

$32.2 \cdot 1.5 = 48.3$ T.m. $20.24\ cm^2$.

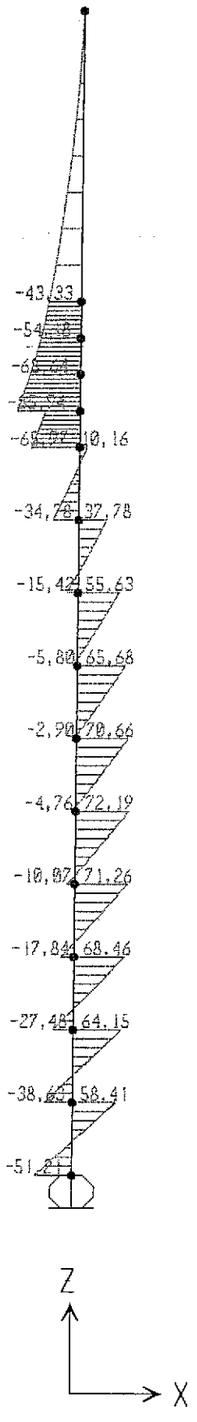
$5\phi 25$ /m l. $24.54\ cm^2$



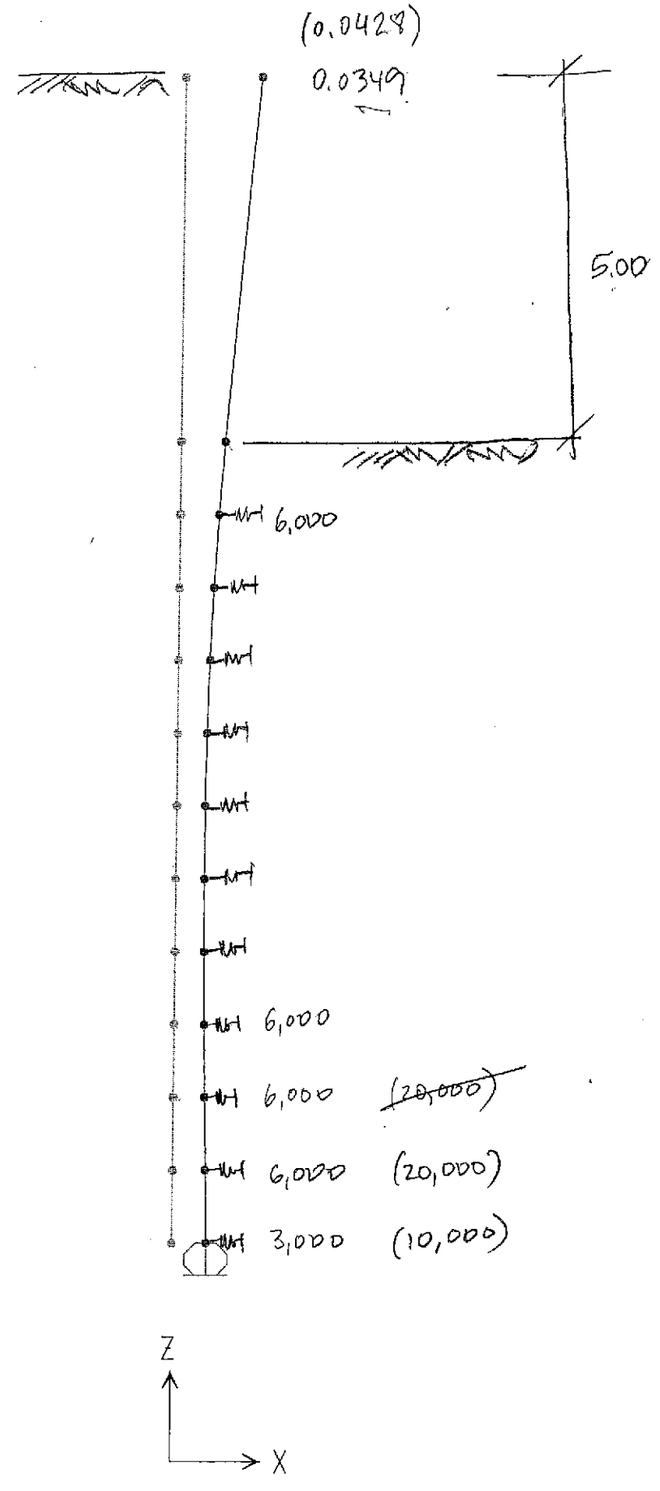
SAP2000 v6.11 - File:P-bandeja5 - Deformed Shape (EMPUJE) - KN-m Units



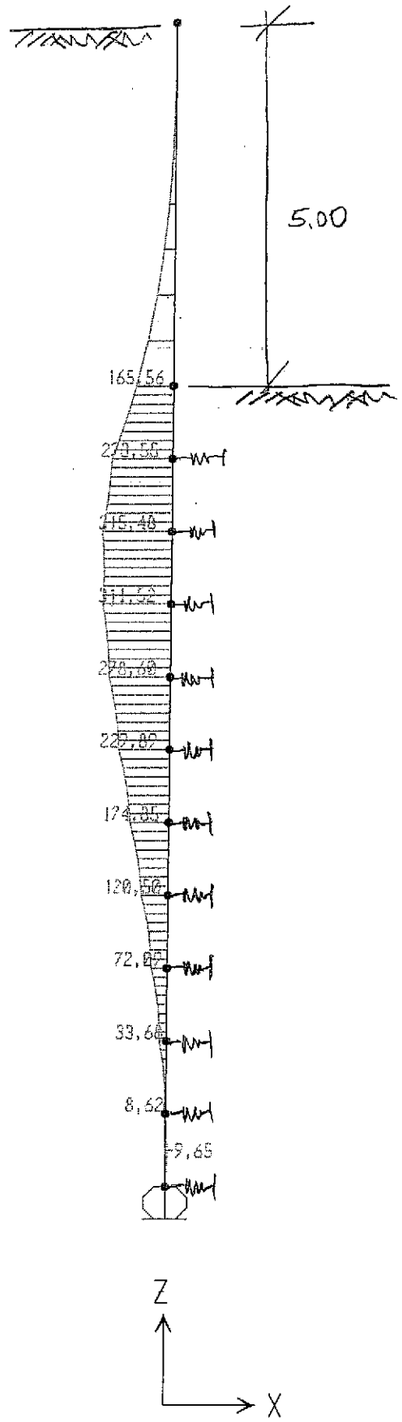
SAP2000 v6.11 - File:P-bandeja5 - Moment 3-3 Diagram (EMPUJE) - KN-m Units



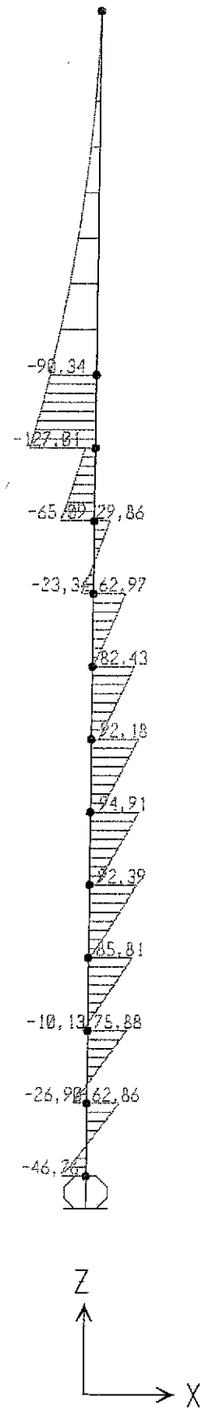
SAP2000 v6.11 - File:P-bandeja5 - Shear Force 2-2 Diagram (EMPUJE) - KN-m Units



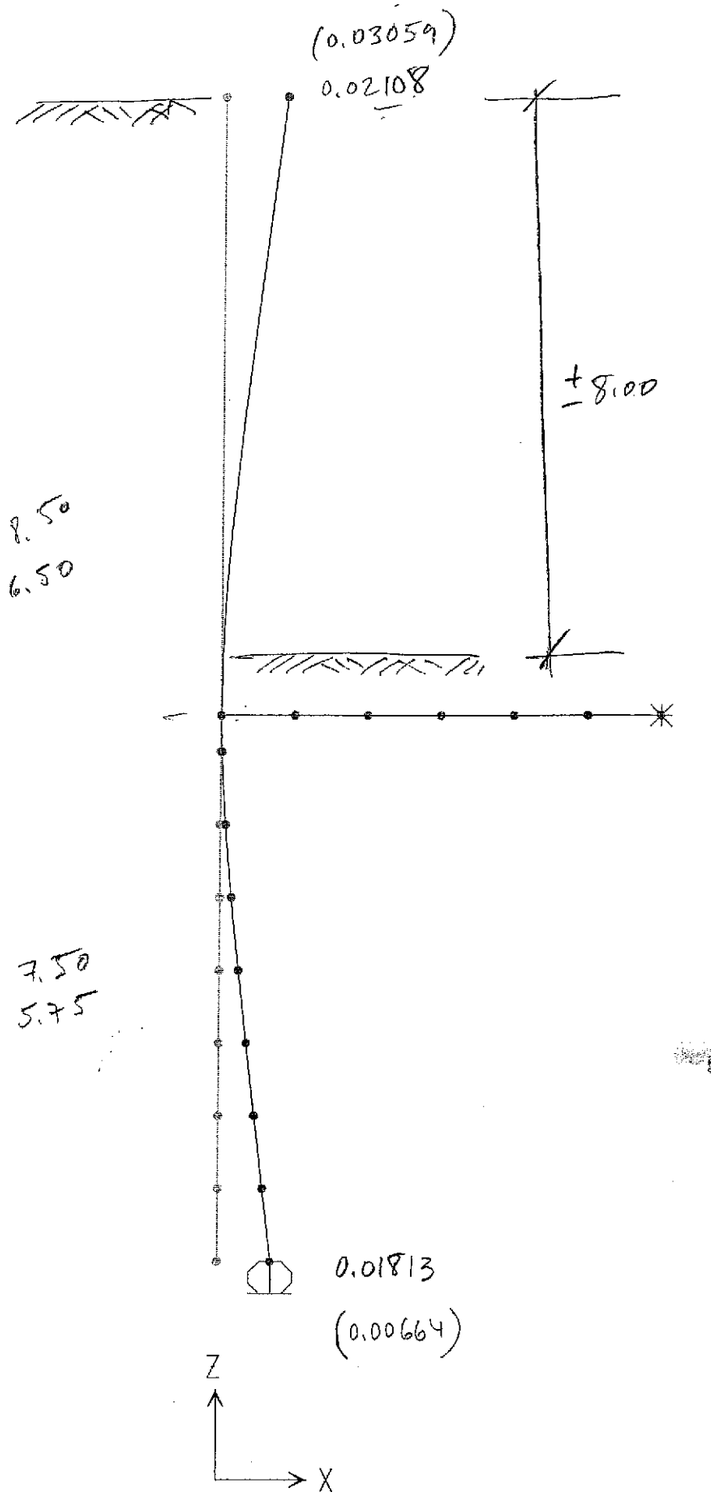
SAP2000 v6.11 - File:P-bandeja4 - Deformed Shape (EMPUJE) - KN-m Units



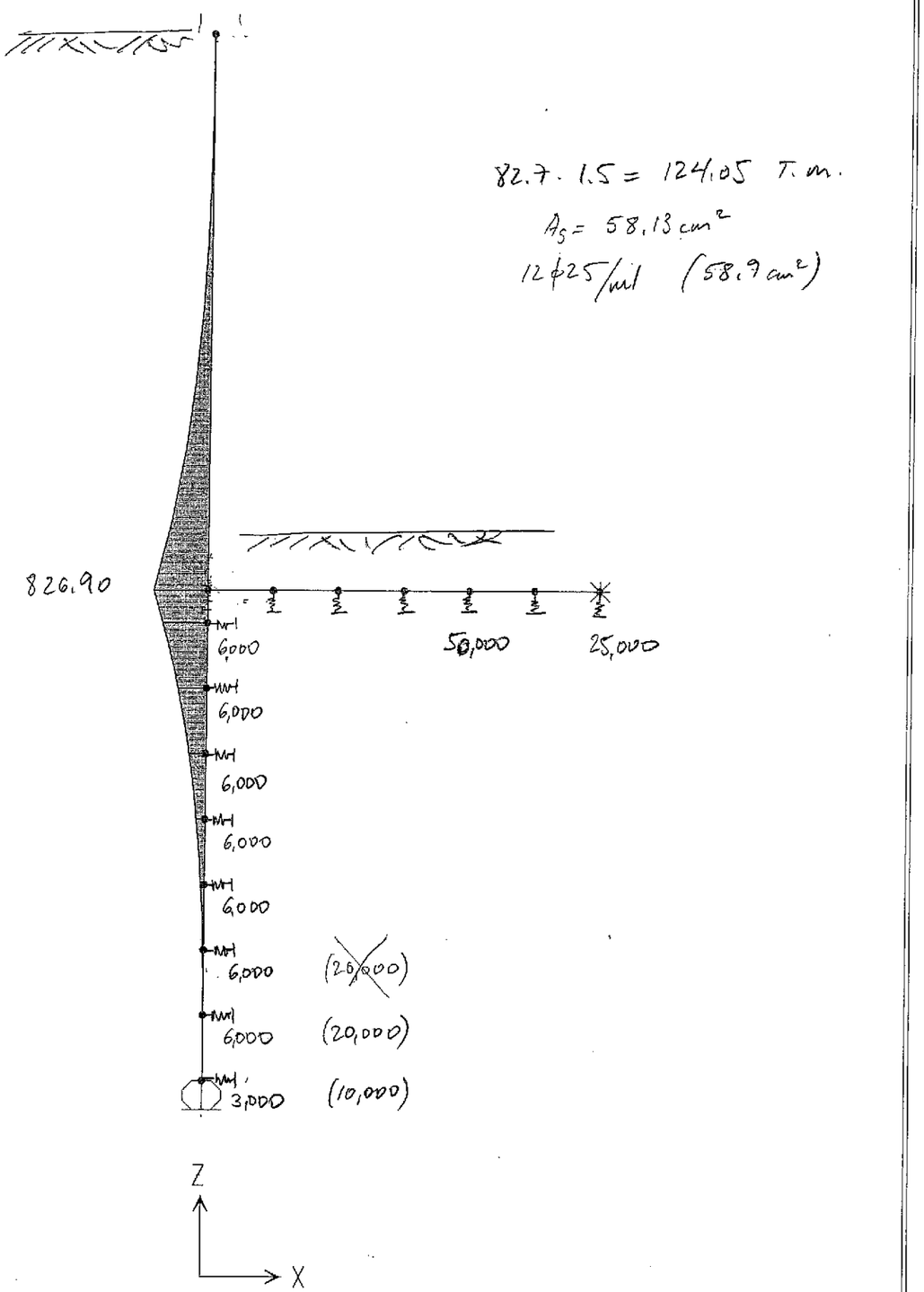
SAP2000 v6.11 - File:P-bandeja4 - Moment 3-3 Diagram (EMPUJE) - KN-m Units



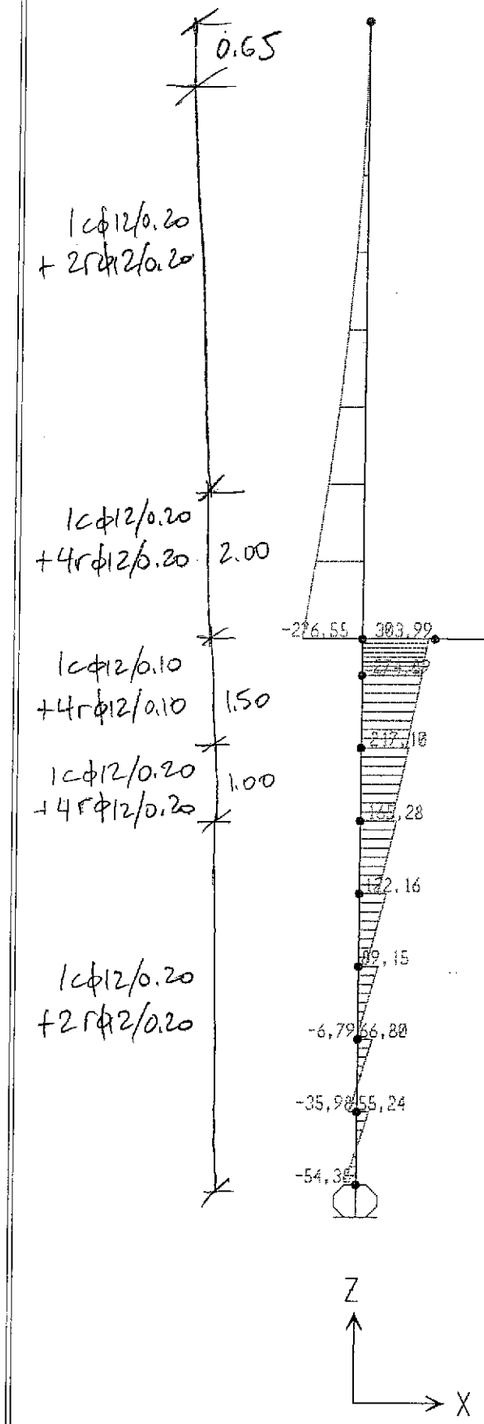
SAP2000 v6.11 - File:P-bandeja4 - Shear Force 2-2 Diagram (EMPUJE) - KN-m Units



SAP2000 v6.11 - File:P-bandeja3 - Deformed Shape (EMPUJE) - KN-m Units



SAP2000 v6.11 - File:P-bandeja3 - Moment 3-3 Diagram (EMPUJE) - KN-m Units



30.4 · 1.5 = 45.6 T/1.00.

45.6 · 2.60 = 118.56 T./2.60

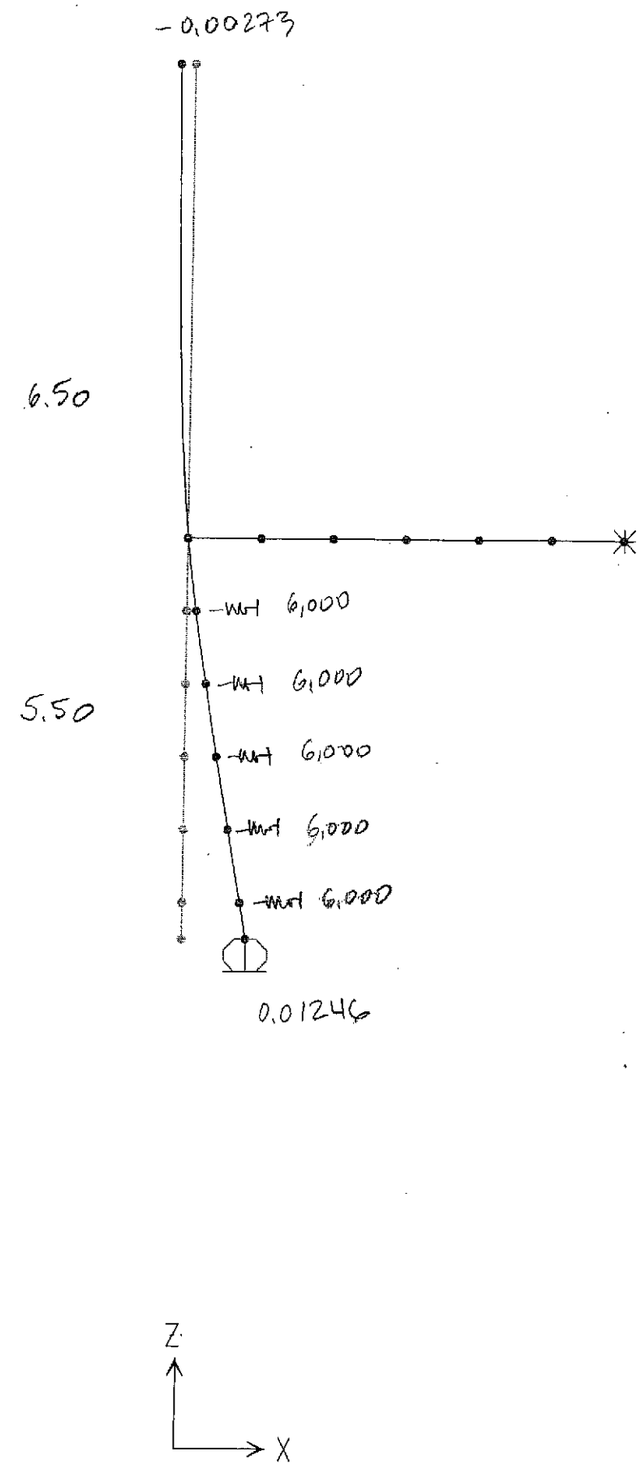
1cφ12/0.20
+4rφ12/0.20 (137.88)

21.7 · 1.5 = 32.55 T/1.00

32.55 · 2.60 = 84.63T/2.60

1cφ12/0.20
+2rφ12/0.20 (114.27)

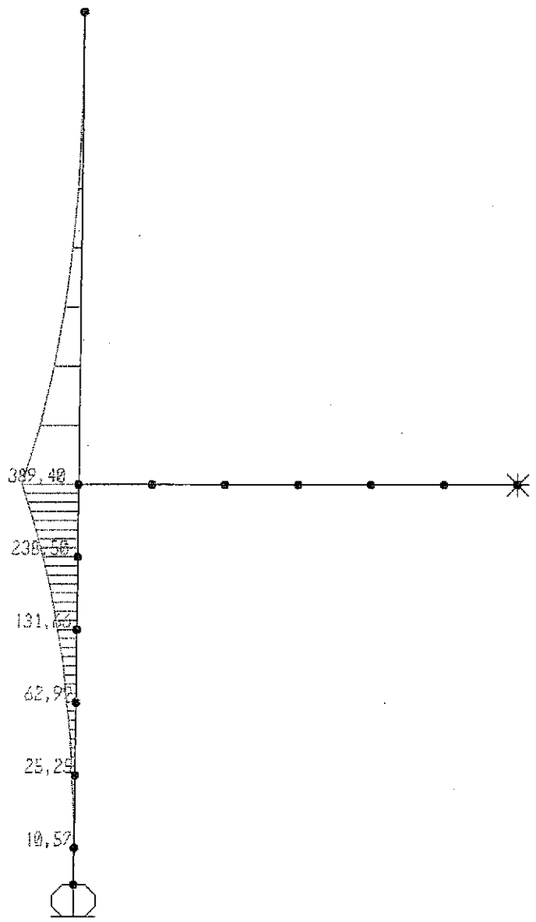
SAP2000 v6.11 - File:P-bandeja3 - Shear Force 2-2 Diagram (EMPUJE) - KN-m Units



SAP2000 v6.11 - File:P2-bandeja2 - Deformed Shape (EMPUJE) - KN-m Units

SAP2000

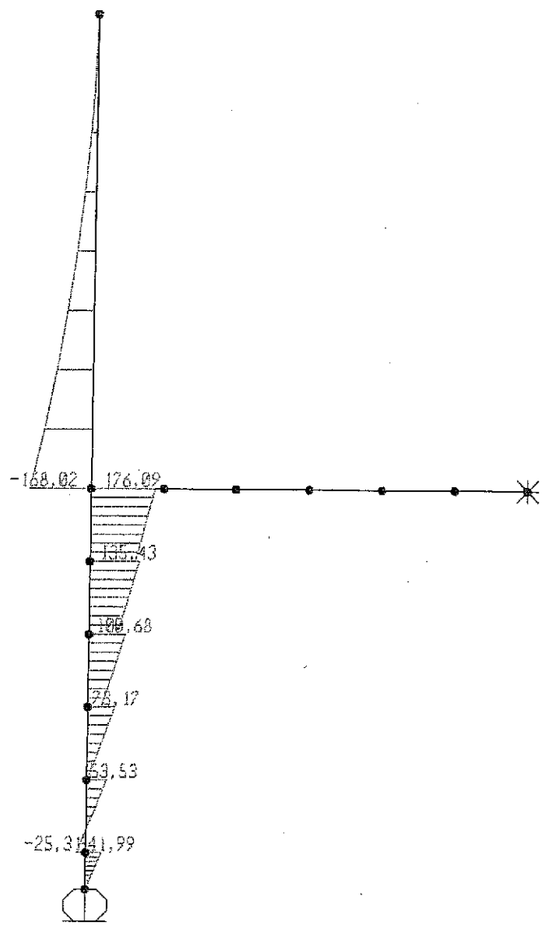
noviembre 28,2003 10:43



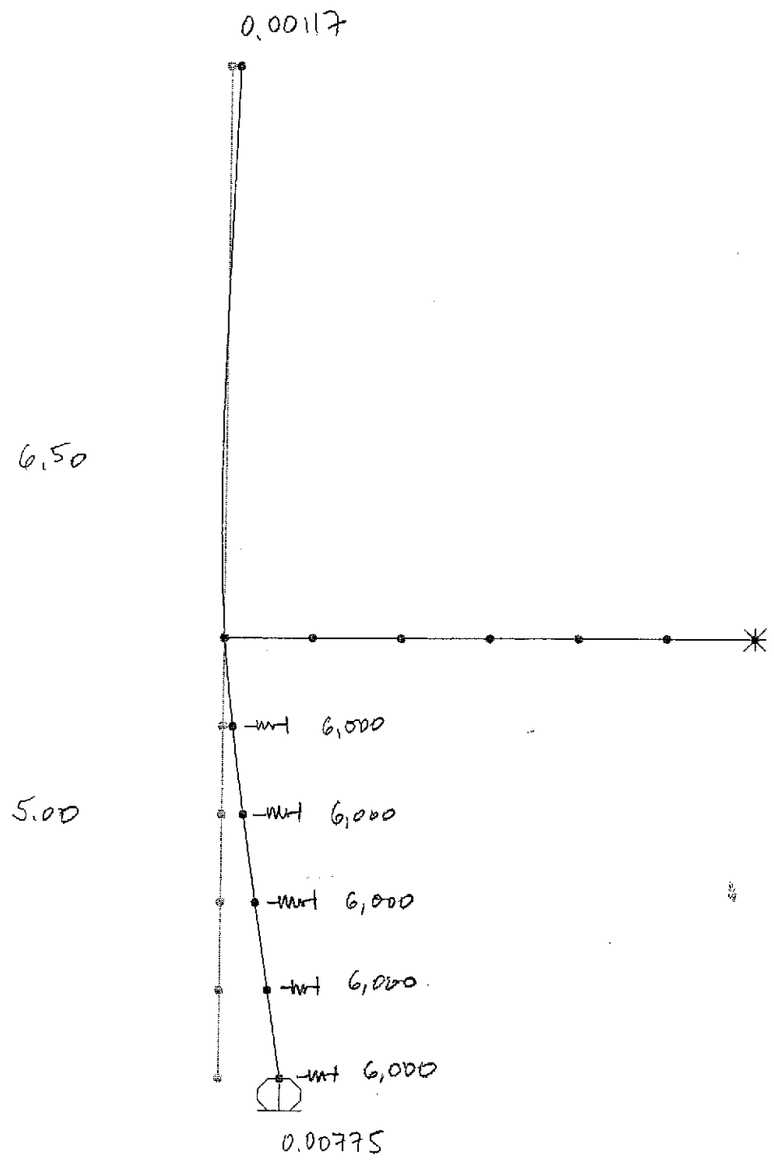
SAP2000 v6.11 - File:P2-bandeja2 - Moment 3-3 Diagram (EMPUJE) - KN-m Units

SAP2000

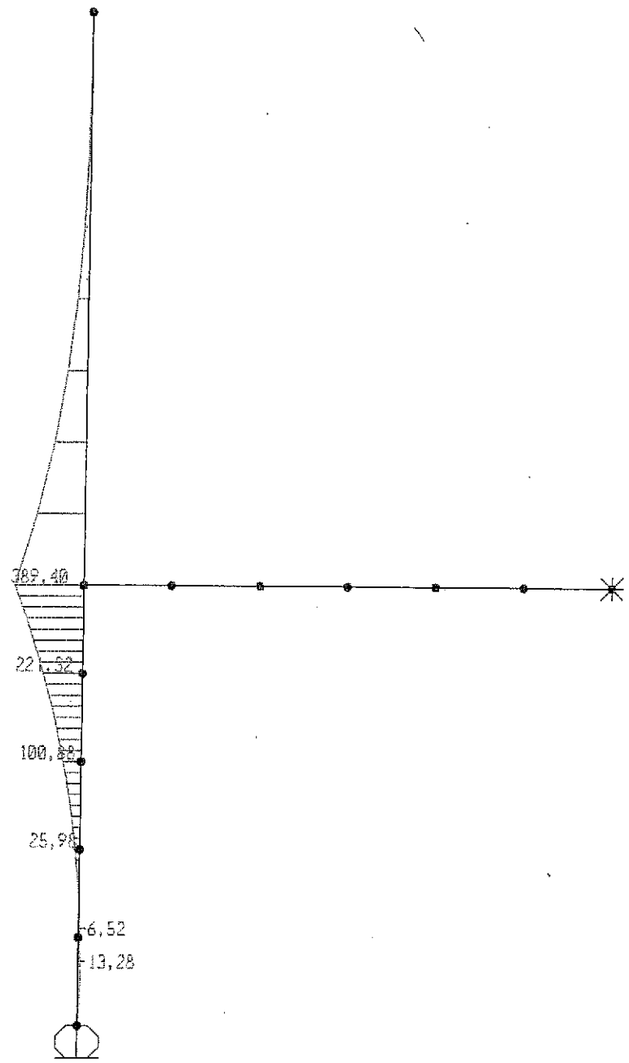
noviembre 28,2003 13:17



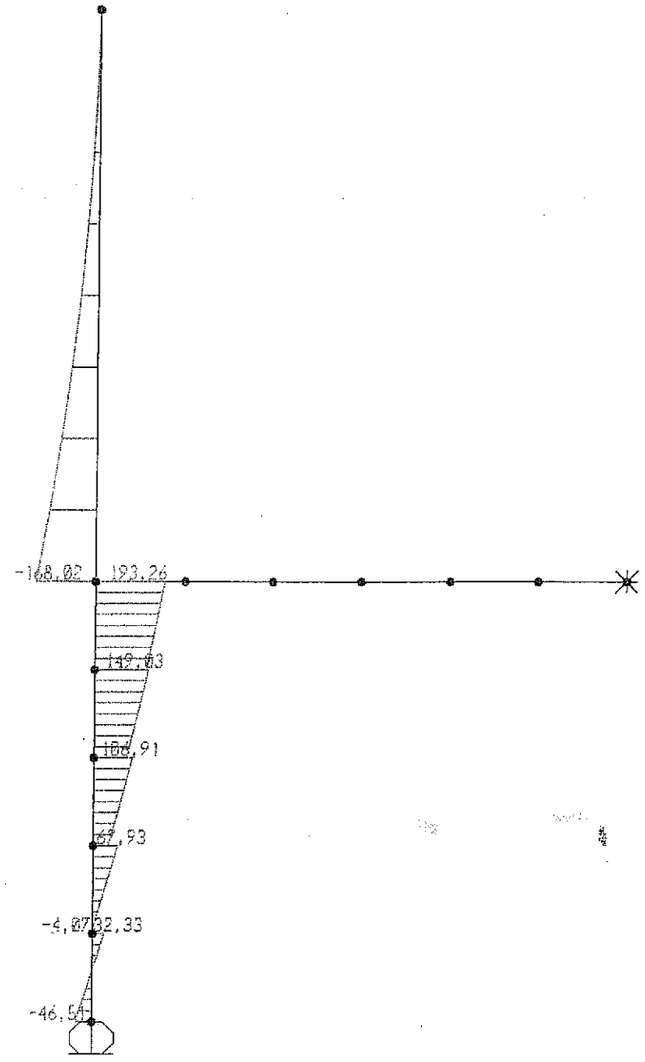
SAP2000 v6.11 - File:P2-bandeja2 - Shear Force 2-2 Diagram (EMPUJE) - KN-m Units



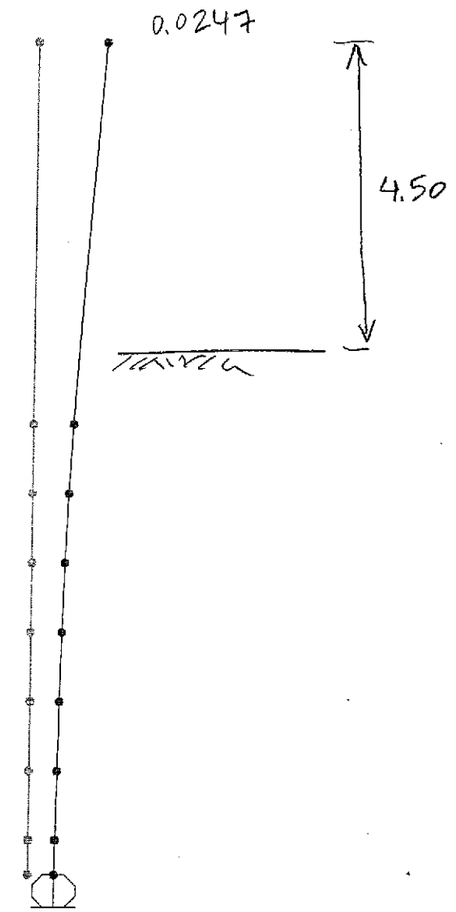
SAP2000 v6.11 - File:P2-bandeja3 - Deformed Shape (EMPUJE) - KN-m Units

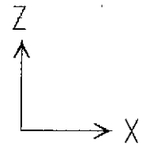


SAP2000 v6.11 - File:P2-bandeja3 - Moment 3-3 Diagram (EMPUJE) - KN-m Units



SAP2000 v6.11 - File:P2-bandeja3 - Shear Force 2-2 Diagram (EMPUJE) - KN-m Units

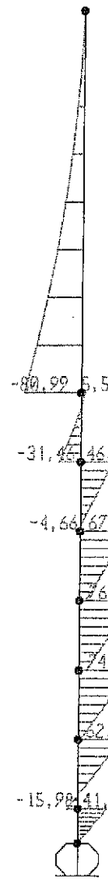




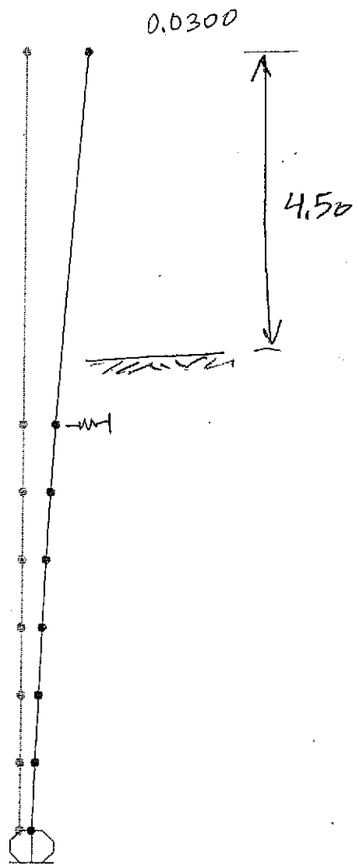
SAP2000 v6.11 - File:P2-5 - Deformed Shape (EMPUJE) - KN-m Units

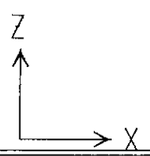


SAP2000 v6.11 - File:P2-5 - Moment 3-3 Diagram (EMPUJE) - KN-m Units



SAP2000 v6.11 - File:P2-5 - Shear Force 2-2 Diagram (EMPUJE) - KN-m Units

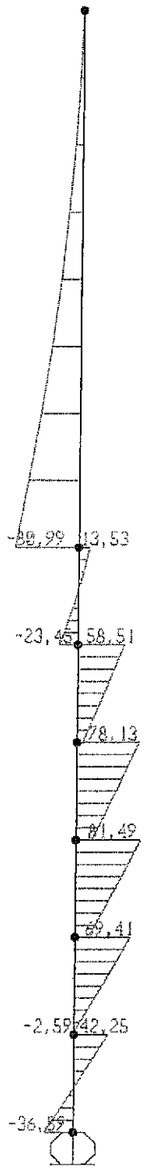




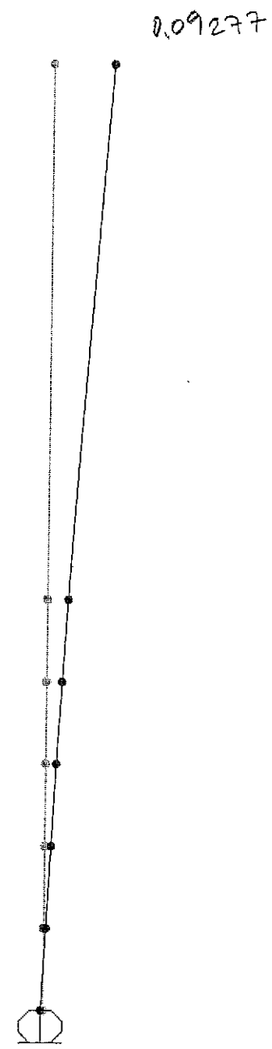
SAP2000 v6.11 - File:P2-4 - Deformed Shape (EMPUJE) - KN-m Units



SAP2000 v6.11 - File:P2-4 - Moment 3-3 Diagram (EMPUJE) - KN-m Units



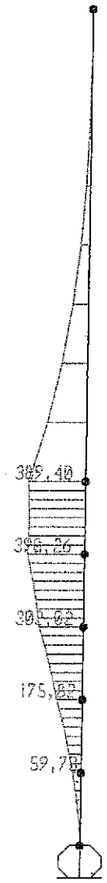
SAP2000 v6.11 - File:P2-4 - Shear Force 2-2 Diagram (EMPUJE) - KN-m Units

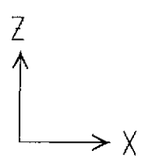


SAP2000 v6.11 - File:P2-3 - Deformed Shape (EMPUJE) - KN-m Units

SAP2000

noviembre 27,2003 14:30

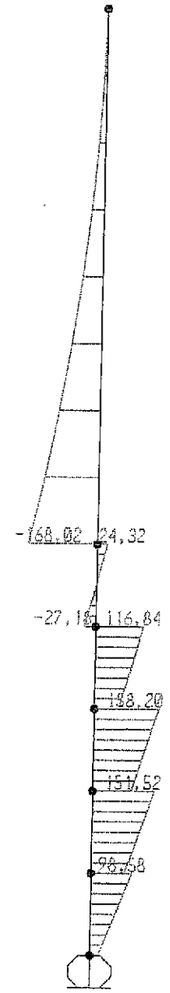




SAP2000 v6.11 - File:P2-3 - Moment 3-3 Diagram (EMPUJE) - KN-m Units

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noviembre 27,2003 14:30



SAP2000 v6.11 - File:P2-3 - Shear Force 2-2 Diagram (EMPUJE) - KN-m Units

Paso Bajo Ramal Valles - Barcelona

- Coeficiente de reacción horizontal

Medios coherentes.

$N = SPT \approx \cancel{8}\ 15$ $\qquad$ SPT ~~6 - 11~~

asumir $q_c = 2N = \cancel{17}\ 30$

$K_b = 4 q_c = 4 \cdot \cancel{17}\ 30 = \cancel{68}\ 120\ kp/cm^2$

$\cancel{68}\ 120\ \frac{kp}{cm^2} \cdot \frac{KN}{100\ kp} \cdot \frac{100^2\ cm^2}{m^2} = \cancel{6800}\ 12{,}000\ \frac{KN}{m^2}$

} Q_L

Medios incoherentes.

Q_{ANTI} $\qquad$ SPT $10 - 15$

$K_b = \underset{\sim}{4N} = 4 \cdot 15 = 60\ \frac{kp}{cm^2}$
q_c

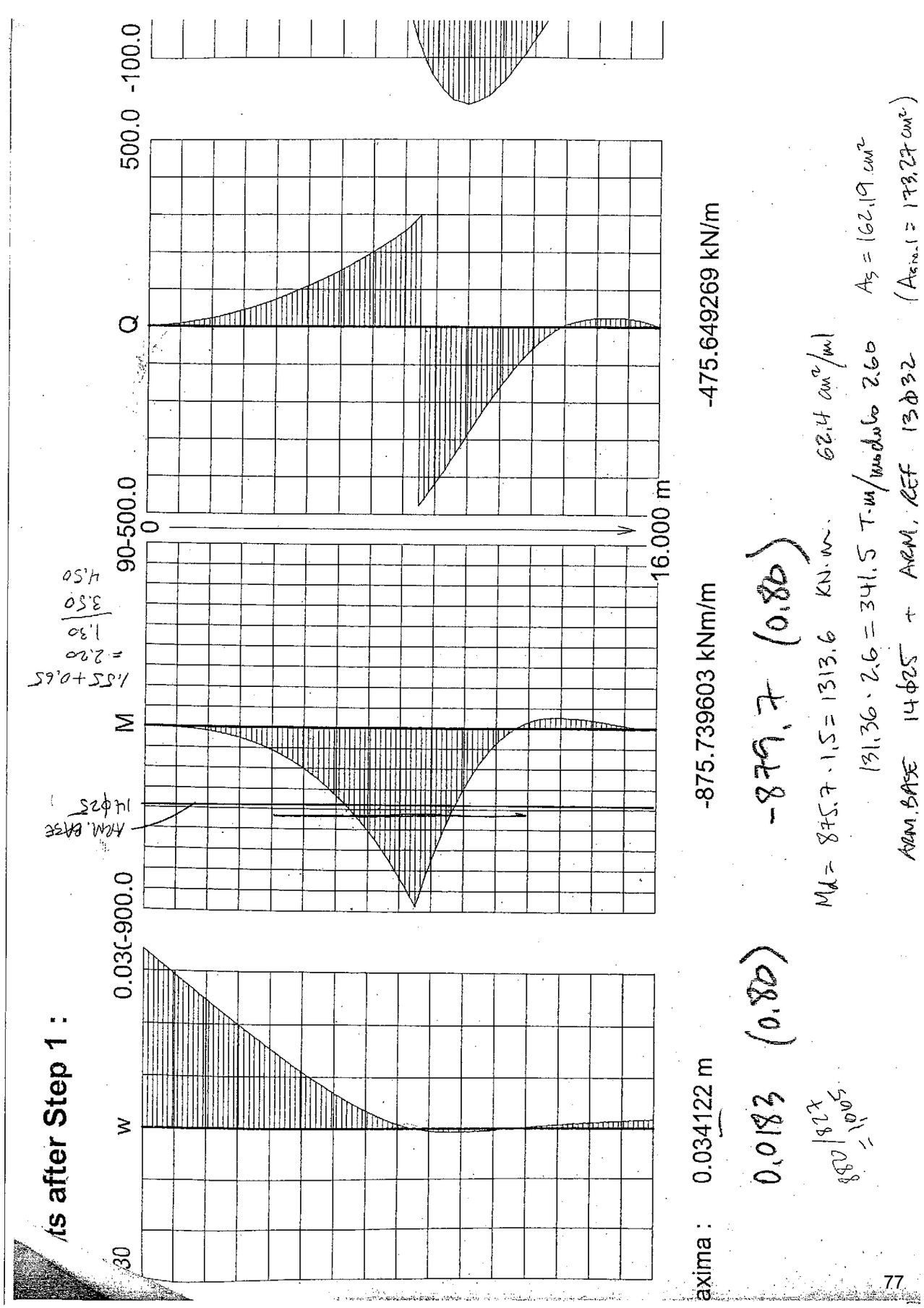
$6000\ \frac{KN}{m^2}$

Dep. Aluviales $\qquad$ SPT $\simeq 52$

$K_b = 4 \cdot 52 = 208\ kp/cm^2$

$20{,}800\ KN/m^2$.

} Q_L, Q_A, Q_6



$M_d = 875.7 \cdot 1.5 = 1313.6$ KN·m/ml $\qquad A_s = 162{,}19\ cm^2$

$131{,}36 \cdot 2.6 = 341.5$ T·m/modulo 2.60 $\qquad 62{,}4\ cm^2/ml$

+ ARM. REF 13Ø32 $\qquad (A_{ARM.} = 173{,}27\ cm^2)$

f Loading Steps : 1
m Catalogue : 3

$M_d = 345.1 \cdot 1.5 = 517.65$ KN.m.

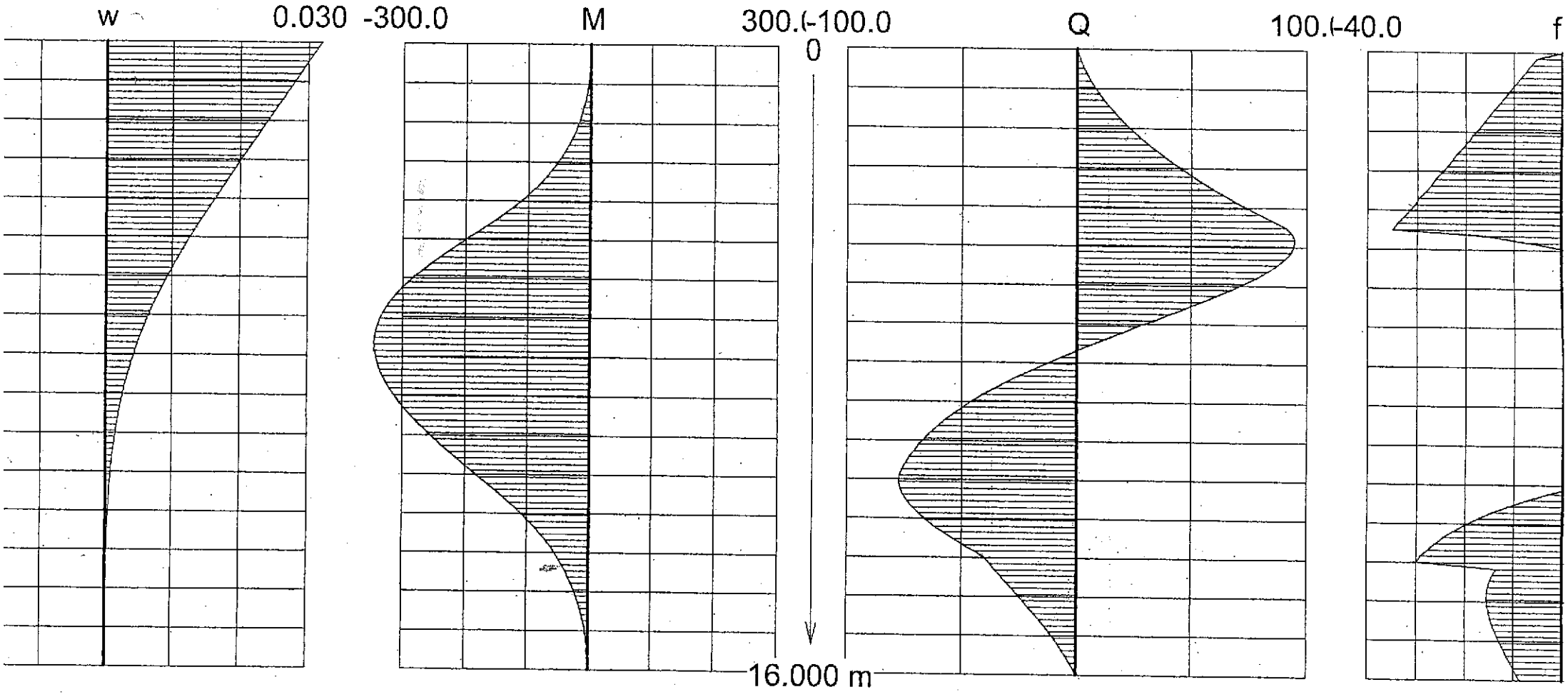
$51.8 \cdot 2.6 = 134.68$ T.m/mod. 2,60

ARM. BASE 14φ25

$A_s = 56.7\ cm^2$

($A_{s\,real} = 68.72\ cm^2$)

after Step 1 :



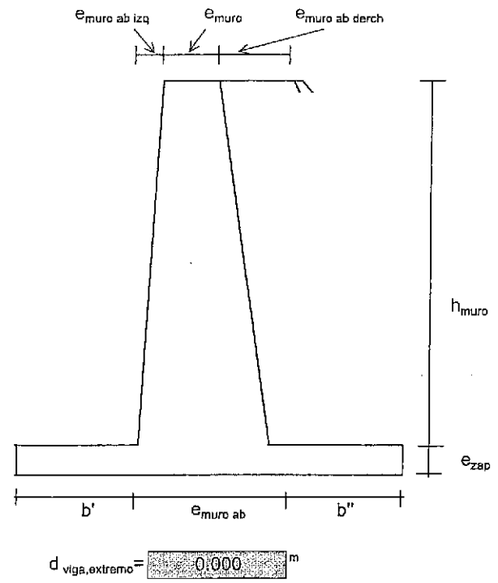
↑ con 4.5 m en voladizo.

ALETAS - MURO TIPO 4

1.-GEOMETRIA Y CARACTERISTICAS DEL TERRENO

06/07/04

h_{muro}=	5.000	m
e_{muro}=	0.350	m
e_{zap}=	0.950	m
b'=	1.900	m
b''=	1.900	m
$e_{muro\ ab\ derch}$=	0.000	m
$e_{muro\ ab\ izq}$=	0.000	m
$b_{tacón}$=	0.000	m
$h_{tacón}$=	0.000	m
$h_{tierras\ iz}$=	0.500	m
ϕ=	30.000	°
ϕ deslizamiento=	30.000	°
γ=	1.800	t/m3
σ_{adm}=	20.000	t/m2
c=	0.000	t/m2
cot(α)=	0.000	
β=	0.000	°



h_{tot}=	5.950	m
$e_{muro\ ab}$=	0.350	m
b_{zap}=	4.150	m

$d_{viga,extremo}$= 0.000 m

Coeficientes de empuje activo

ANGULO DE ROZAMIENTO INTERNO ϕ	ANGULO DE ROZAMIENTO DE TERRENO Y MURO δ	ANGULO DEL TALUD DEL TERRENO β	INCLINACION DEL MURO α	EMPUJE ACTIVO HORIZONTAL λ_h	EMPUJE ACTIVO VERTICAL λ_v
30.000	20.000	0.000	90.000	0.279	0.102

2.-ACCIONES

Las acciones siguientes son las que se deberán considerar en el cálculo:

2.1.- EMPUJE DE TIERRAS+SOBRECARGA

p= 1.000 t/m2

$P_h = (\gamma\ z + p\ sen\alpha/sen(\alpha+\beta))\ \lambda_h = 0.503\ z + 0.279$

$P_v = (\gamma\ z + p\ sen\alpha/sen(\alpha+\beta))\ \lambda_v = 0.183\ z + 0.102$

$$y = z\ \frac{2\ z\ \gamma + 3\ p}{3\ z\ \gamma + 6\ p} = z\ \frac{3.600\ z + 3.000}{5.400\ z + 6.000}$$

$$y(z=h_{tot}) = (z=5.950) = h\ \frac{2\ h\ \gamma + 3\ p}{3\ h\ \gamma + 6\ p} = 3.811 \text{ m}$$

$P_h(z=h_{tot}) = (\gamma\ h_{tot}^2/2 + p\ h_{tot}\ sen\alpha/sen(\alpha+\beta))\ \lambda_h$ = 10.564 t

$P_v(z=h_{tot}) = (\gamma\ h_{tot}^2/2 + p\ h_{tot}\ sen\alpha/sen(\alpha+\beta))\ \lambda_v$ = 3.845 t

☑ Desarrolla Ep Ep = 3.001

K_p = 1.800

2.2.-PESO PROPIO, PESO DE TIERRAS, REACCIONES EN CABEZA

W_{muro}=	$\frac{h_{muro}\ (e_{muro}+e_{muro\ ab})}{2}\ \gamma_h$ =	4.375	t
W_{muro1}=	$h_{muro}\ e_{muro}\ \gamma_h$ =	4.375	t
W_{muro2}=	$\frac{h_{muro}\ e_{muro\ ab\ izq}}{2}\ \gamma_h$ =	0.000	t
W_{muro3}=	$\frac{h_{muro}\ e_{muro\ ab\ der}}{2}\ \gamma_h$ =	0.000	t
$W_{tacón}$=	$b_{tacón}\ h_{tacón}\ \gamma_h$ =	0.000	t
W_{zap}=	$b_{zap}\ e_{zap}\ \gamma_h$ =	9.856	t
$W_{tierras}$=	$b''\ h_{tierras}\ \gamma_{tierras}$ =	17.100	t
$P_{tierras}$=	$h_{tierras}\ \gamma_{tierras}$ =	9.000	t
$W_{tierras\ iz}$=	$b'\ h_{tierras}\ \gamma_{tierras}$ =	1.710	t

$R_{viga,min}$= 0.000 t

$R_{viga,máx}$= 0.000 t

$R_{frenado}$= 0.000 t

3.-ANALISIS DE LA ESTABILIDAD

3.1.-ESTABILIDAD AL DESLIZAMIENTO

Nmax

$$C_{sd} = \frac{\mu\ N + E_p}{E_H - \mu\ E_v} = \mathbf{1.640} \quad >1.5 \text{ OK!}$$

N = W = 33.041 t

μ = 0.364

E = 10.564 t

para el nivel de cimentación cogemos el angulo 30.000

Nmin

$$C_{sd} = \frac{\mu\ N + E_p}{E_H - \mu\ E_v} = \mathbf{1.640} \quad >1.5 \text{ OK!}$$

N = W = 33.041 t

μ = 0.364

E = 10.564 t

para el nivel de cimentación cogemos el angulo 30.000

3.2.-ESTABILIDAD AL VUELCO

Nmax

$$c_{sv} = \frac{M_e}{M_v} = \mathbf{4.235} \quad >2 \text{ OK!}$$

$M_e = W\ w + P_v\ (y\ cot\alpha + e_{muro} + e_{muro\ ab\ izq} + b') + E_p\ w_p$

$M_v = P_h\ (h_{tot} - y) + E_p\ w_p + E_{frenado}\ y_{frenado}$

h_{viga} = 0.00 m

$y_{frenado}$ = 5.950 m

w_{muro1}=	2.075	m	E_1=	1.620	
w_{muro2}=	1.900	m	E_2=	4.698	
w_{muro3}=	2.250	m	E_3=	4.698	
w_h=	2.075	m	R_1=	1.539	
$w_{tacón}$=	0.000	m	R_2=	1.462	
			R_3=	0.000	
w_{p1}=	0.475	m	R_4=	0.000	
w_{p2}=	0.317	m			
w_{p3}=	0.000	m	$w_{tierras}$=	3.200	
w_{p4}=	0.000	m			
r_{viga}=	1.900	m			

M_e= 95.720 m t

M_v= 22.601 m t

Nmin

$$c_{sv} = \frac{M_e}{M_v} = \mathbf{4.235} \quad >2 \text{ OK!}$$

$M_e = W\,w + P_v\,(y\,\cot\alpha + e_{muro} + e_{muro\ ab\ izq} + b') + E_p\,w_p$

$M_v = P_h\,(h_{tot}-y) + E_p\,w_p$

M_e= 95.720 m t

M_v= 22.601 m t

3.3.-COMPROBACIÓN DE TENSIONES EN EL TERRENO

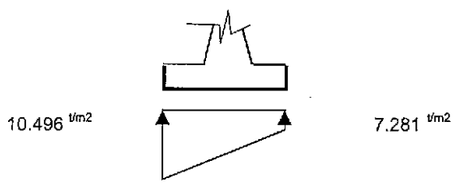
N= 36.886 t

M= 4.614 t.m

A= 4.150 m2

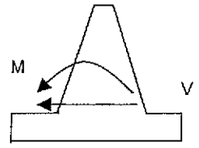
I= 5.956 m4

$$\sigma = \frac{N}{A} + \frac{M\,y}{I} = 10.496 \text{ t/m2} \quad < 26.667 \text{ OK!}$$



4.-DIMENSIONAMIENTO

4.1.-ARMADURA MURO EN LA BASE



E1 =	1.397	t	y1 =	2.500	m
E2 =	6.286	t	y2 =	1.667	m

Momento flector en la base

M = E1 y1 + E2 y2 + R d = 13.969 m t

M_d = 20.954 m t = 209.538 kN m

Geometría de la sección en la base

h = 0.350 m r = 0.050 m

d = 0.300 m

Materiales

Hormigón HA - 25 Acero B 500 S

f_{cd} = $f_{ck}/1,5$ = 16.667 N mm2

f_{yd} = $f_{yk}/1,15$ = 434.783 N mm2

Dimensionamiento

$U_0 = 0,85\,f_{cd}\,b\,d$ = 4 250 kN

Md= 210 < $0,375*U_0*d$ = 478 kN m

$U_{s1} = U_0\,(1-(1-2\,M_d/(U_0\,d))^{\wedge}0,5)$ = 767 817 N

A_{s1} = 1765.979 mm2 = 17.660 cm2

ϕ = 20

n = 7

$A_{s1,real}$ = 21.991 cm2

ARM REAL ϕ 20/14 O.K.

ARMADURA MÍNIMA

$A_{min\ vert} = 9^{o/oo}\ A_c$ = 3.150 $cm^2/_{ml}$

ϕ = 16

n = 5

ARM MINV. ϕ 16/20 O.K.

$A_{min\ hz} = 3,2^{o/oo}\ A_c$ = 5.600 $cm^2/_{ml}$

ϕ = 16

n = 4

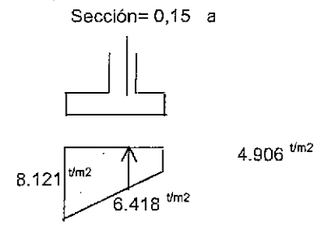
En cada cara ARM MINH ϕ 16/25 O.K.

Existen juntas distanciadas <7,5 m SI

4.2.-ARMADURA DE LA ZAPATA

DIMENSIONAMIENTO A FLEXIÓN: SECCIÓN S_1

SECCIÓN S_1



d' = 1.953 m d'' = 0.000 m

Esfuerzos

M = 10.312 mT

M_d = 155 kN m

Geometría de la sección

h = 0.950 m d = 0.900 m

r = 0.05 m z = 0.850 m

Materiales

Hormigón HA - 25 Acero B 500 S

f_{cd} = f_{ck}/1,5 = 16.667 N mm2

f_{yd} = f_{yk}/1,15 = 434.783 N mm2

Dimensionamiento

U_0= 0,85 f_{cd} b d= 12 750 kN

M_d= 155 < ,375*U_0*d = 4 303 kN m

Md< 0,375 U_0 d Caso 1

U_{s1} = U_0 (1-(1-2 M_d/(U_0 d))^0,5)= 173 043 N

A_{s1} = 398.000 mm2 = 3.980 cm2

ϕ = 12

n = 7

ARM REAL ϕ 12/14 O.K $A_{s1,real}$ = 7.917 cm2

A_{min} = $1,8^{o/oo}$ A_c = 17.100 cm2/ml

ϕ = 20

n = 5

En cada cara ARM REAL ϕ 20/20 O.K $A_{s1,real}$ = 15.708 cm2

Si el momento es menor q el valor absoluto del momento mayorado en la sección de referenica del peso propio de la zapata y de las tierras q descansan en ella se debe colocar una armadura superior q soporte la diferencia de los valores absolutos mayorados debidos a las reacciones del terreno por un lado y al peso propio de la zapata y de las tierras que están sobre ella por el otro.

M = 21.670 mT

M_{dif} = 11.358 mT

M_d = 170.365 kN m

U_0 = 0,85 f_{cd} b d= 12 750 kN

M_d = 170.365 < ,375*U_0*d = 4 303 kN m

M_d < 0,375 U_0 d Caso 1

U_{s1} = U_0 (1-(1-2 M_d/(U_0 d))^0,5)= 190 721 N

A_{s1} = 438.658 mm2 = 4.387 cm2

ϕ = 20

n = 6

ARM REAL ϕ 20/17 O.K $A_{s1,real}$ = 18.850 cm2

COMPROBACIÓN A CORTANTE: SECCIÓN S_2

SECCION S_2: 1.000 m del extremo de la zapata

Piezas sin armadura de cortante $V_d < V_u$

El esfuerzo cortante de agotamiento por tracción en el alma vale

$$V_u = (0{,}12\ \zeta\ (100\ \rho_l\ f_{ck})^{1/3} - 0{,}15\ \sigma_{cd}')\ b_0\ d$$

con

f_{ck} = 25.000 N/mm2

ζ = 1+(200/d)^{0,5} = 1.471

$$\rho = \frac{A_s}{b_0\ d} = 0.00175$$

σ_{cd} = 0.000

V_u = 259 674 N

σ_{s2} = 5.680 T/m2

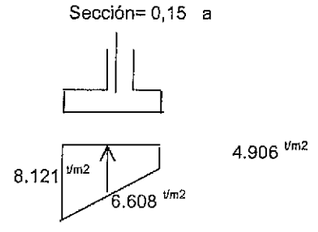
$V_{d\ reacción}$ = 79 397 N

$V_{d\ cálculo}$ = 106 228

Vu>Vd O.K!

DIMENSIONAMIENTO A FLEXIÓN: SECCIÓN S'_1

SECCIÓN S'_1



d' = 1.953 m

Esfuerzos

M = 14.518 mT

M_d = 218 kN m

Geometría de la sección

h = 0.950 m d = 0.900 m

r = 0.05 m z = 0.850 m

Materiales

Hormigón HA - 25 B 500 S

f_{cd} = f_{ck}/1,5 = 16.667 N mm2

f_{yd} = f_{yk}/1,15 = 434.783 N mm2

Dimensionamiento

U_0 = 0,85 f_{cd} b d= 12 750 kN

M_d = 218 < ,375*U_0*d = 4 303 kN m

M_d < 0,375 U_0 d Caso 1

U_{s1} = U_0 (1-(1-2 M_d/(U_0 d))^0,5)= 244 308 N

A_{s1} = 561.909 mm2 = 5.619 cm2

ϕ = 12

n = 7

ARM REAL ϕ 12/14 O.K $A_{s1,real}$ = 7.917 cm2

A_{min} = 1,8$^{o/oo}$ A_c = 17.100 cm2/ml

ϕ = 20

n = 5

En cada cara ARM REAL ϕ 20/20 O.K $A_{s1,real}$ = 15.708 cm2

COMPROBACIÓN A CORTANTE: SECCIÓN S'$_2$

Sección S_2' : 1.000 m del extremo de la zapata

Piezas sin armadura de cortante Vd < Vu

El esfuerzo cortante de agotamiento por tracción en el alma vale

$$V_u = (0{,}12\ \zeta\ (100\ \rho_l\ f_{ck})^{1/3} - 0{,}15\ \sigma_{cd}')\ b_0\ d$$

con

f_{ck} = 25.000 N/mm2

ζ =1+(200/d)^{0,5} = 1.471

$$\rho = \frac{A_s}{b_0\ d} = 0.0017$$

σ_{cd} = 0.000

V_u = 259 674 N

$\sigma_{s2'}$ = 7.346 T/m2

V_d = 116 000 N

Vu<Vd **O.K!**

5.-COMPROBACIÓN A CORTANTE

Piezas sin armadura de cortante $V_d < V_u$

El esfuerzo cortante de agotamiento por tracción en el alma vale

$$V_u = (0{,}12\ \zeta\ (100\ \rho_l\ f_{ck})^{1/3} - 0{,}15\ \sigma_{cd}')\ b_0\ d$$

con

f_{ck} = 25.000 N/mm2

ζ =1+(200/d)^{0,5} = 1.816

$$\rho = \frac{A_s}{b_0 * d} = 0.0073$$

σ_{cd} = 0.1250 N/mm2

V_u = 166 784 N

V_d = E_1+ E_2 = 115 246 N

Vu>Vd **O.K!**

Flexión simple

06/07/04

Sección:

h = 35.0 cm
d´ = 11.0 cm
b = 100.0 cm

Materiales:

Hormigón: **H - 250** f_c = 250 Kp/cm²
f_{cd} = 166.7 Kp/cm²

Acero: **B 500 S** f_s = 5000 Kp/cm²

Dimensionamento:

M_d = 25.01 mT

$U_0 = 0{,}85*d*b*f_{cd}$ = 340.00 T

$0{,}3*U_0*d$ = 24.48 mT

U_{s1} = 126.44 T

U_{s2} = 4.04 T

A_{s1} = 29.08 cm²

A_{s2} = 0.93 cm²

$A_{s1,min}$ = 3.15 cm²

$A_{s2,min}$ = 3.15 cm²

ϕ_1 = 12
n_1 = 7

ϕ = 8
n = 5

ϕ_2 = 20
n_2 = 7

$A_{s1,real}$ = 29.91 cm²
O.K.

$A_{s2,real}$ = 2.51 cm²
Añadir armadura

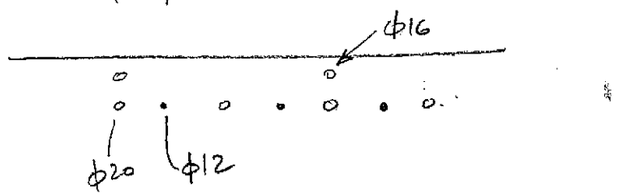
ELU OK

ELS ←

separación de barras: 7.1 cm

Aleta 1 Tipo. Paso bajo Ramal Valles - Barc.

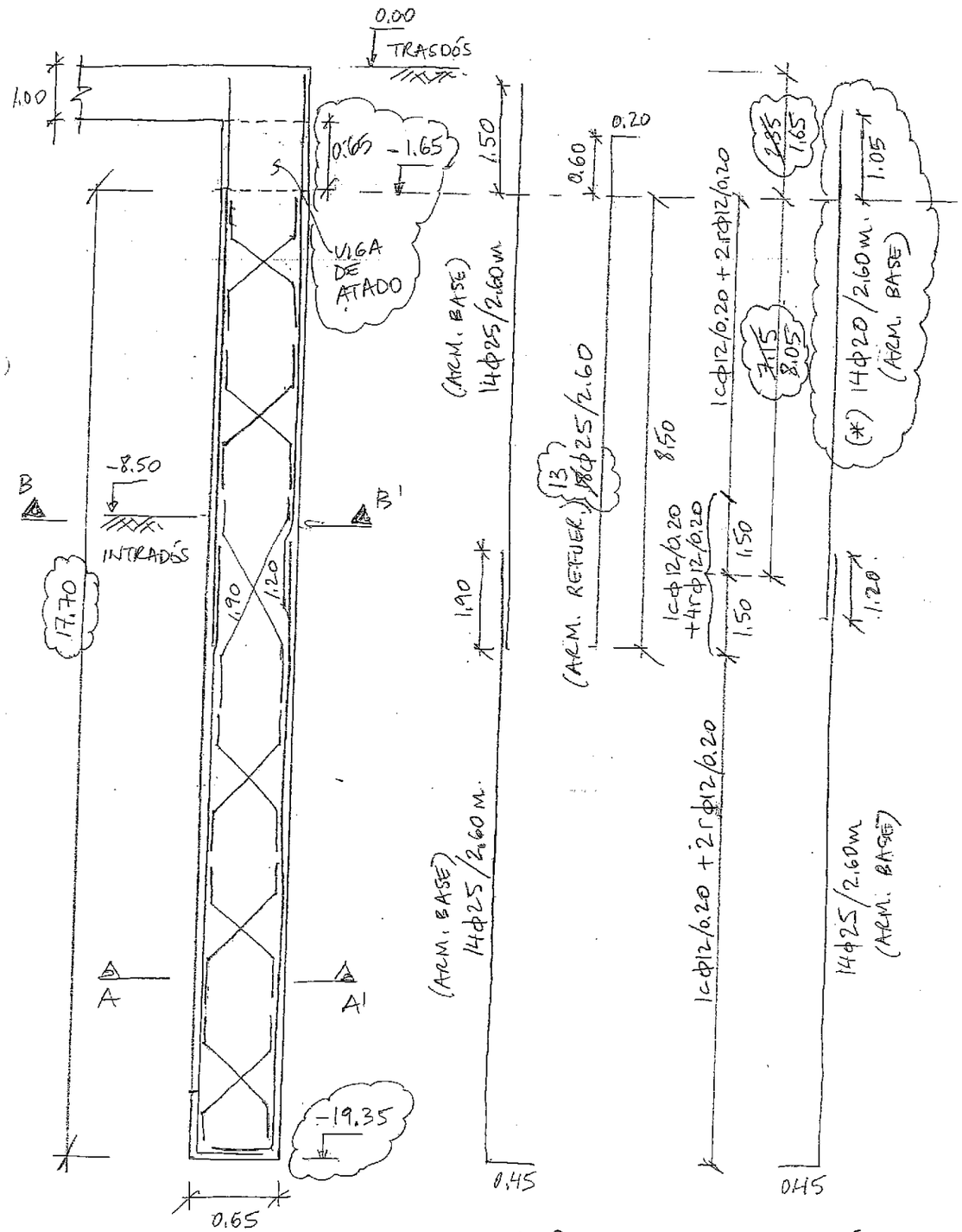
Añadir φ16/0.30



anclar ± 0.40 aprox. con resina epoxy barras de 2.50 aprox. La arm. φ12 debería desplazarse hacia el trasdós en la parte superior.

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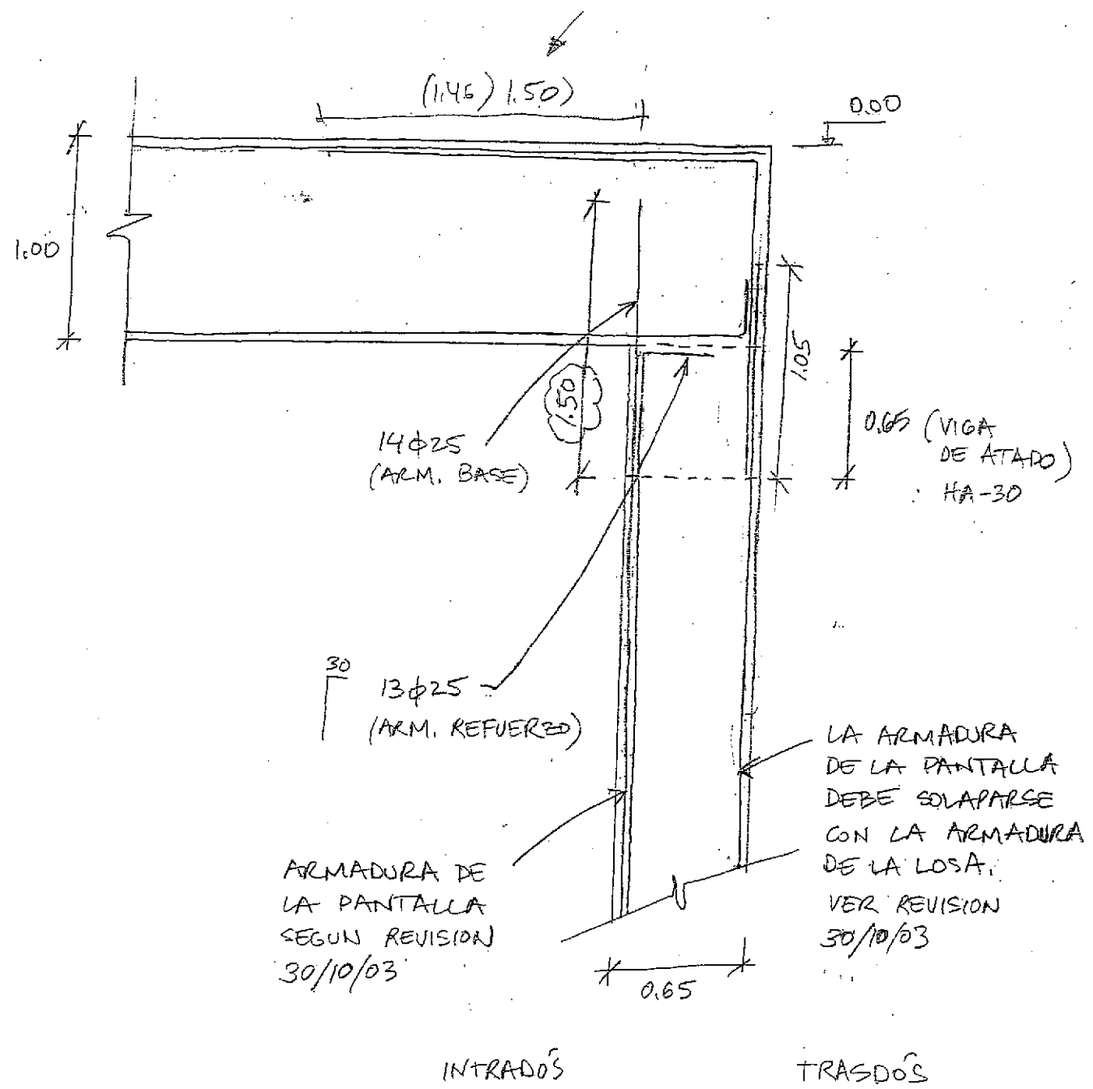
PANTALLA – Paso Bajo Ramal Valles-Barcelona (L.A.V.)



(*) ARM. DE TRASDÓS PARA UN $M_d \leq -20.0$ Ton·m DEBIDO AL EMPOTRAMIENTO LOSA – PANTALLA

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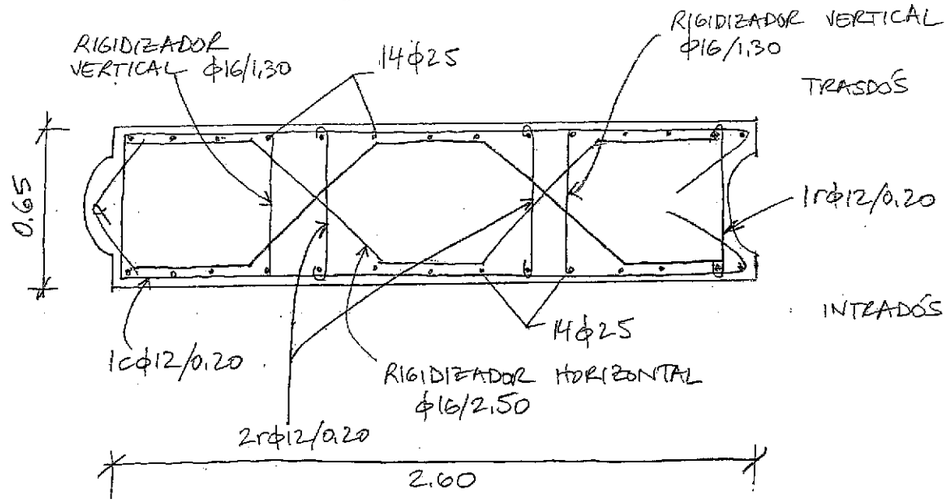
PANTALLA – Paso Bajo Ramal Valles-Barcelona (L.A.V.)



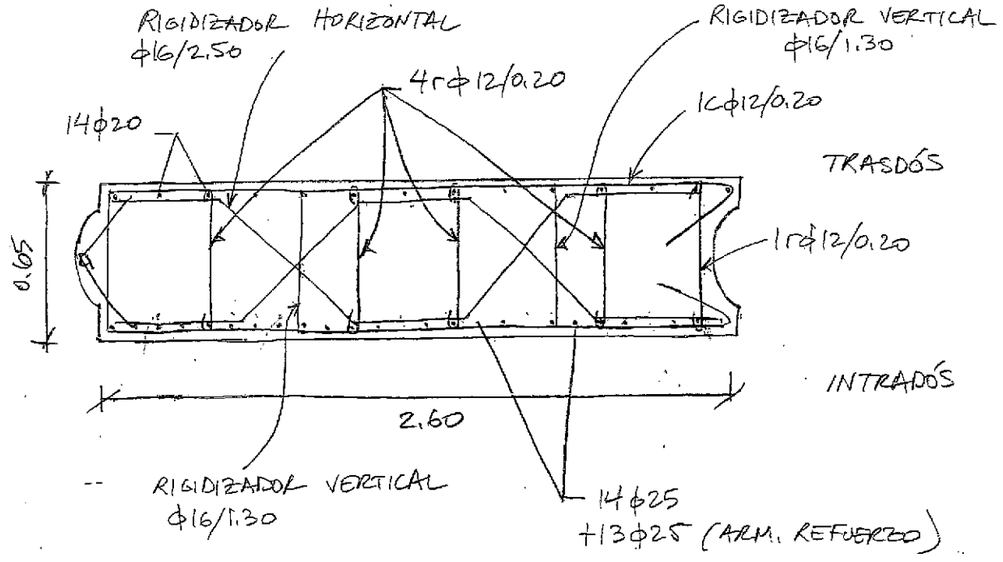
NOTA.- ARMADURA DE VIGA DE ATADO NO INCLUIDA.
VIGA DE ATADO CON HORMIGÓN HA-30

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SECCIÓN A-A'

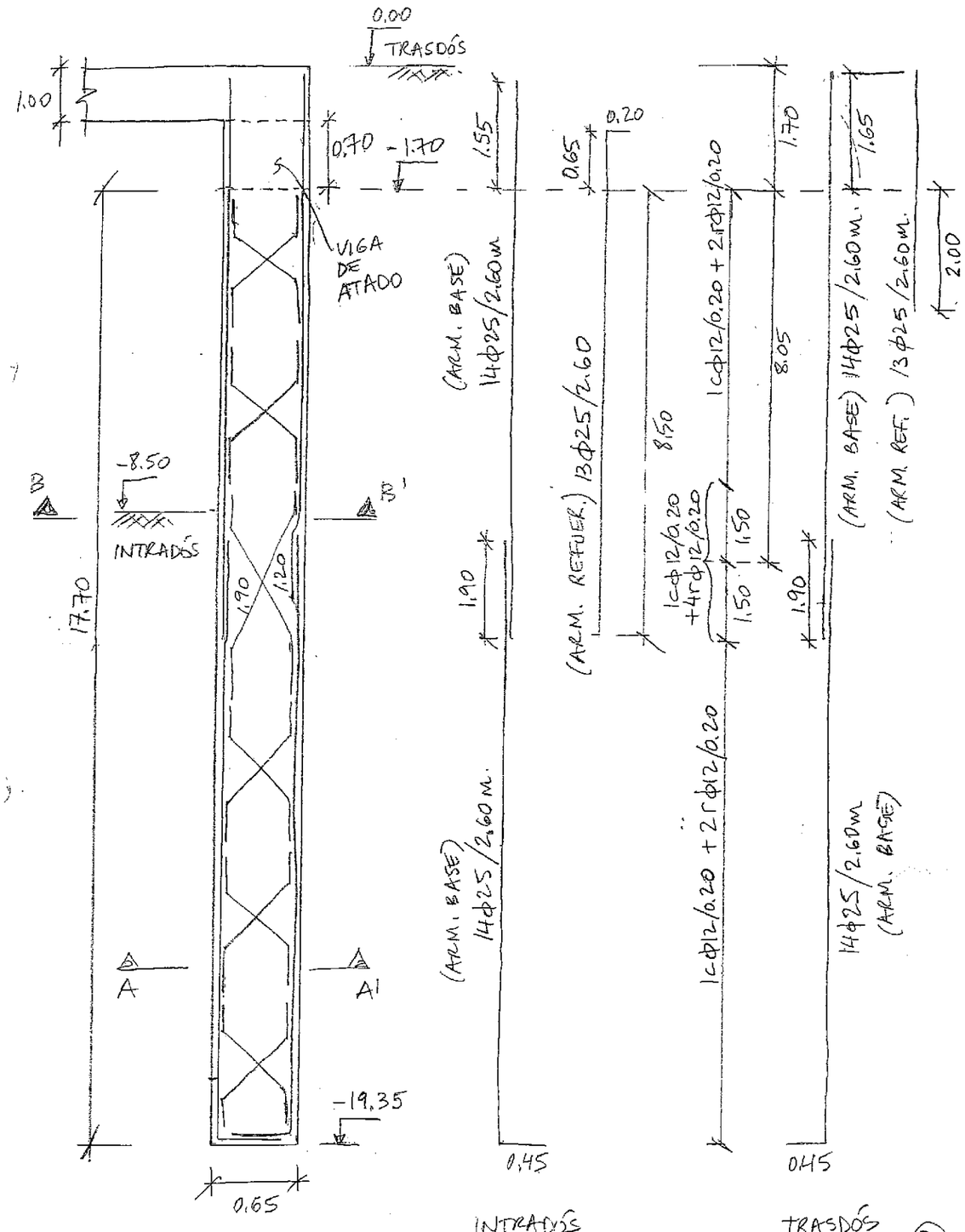


SECCIÓN B-B'

PANTALLA TIPO 2

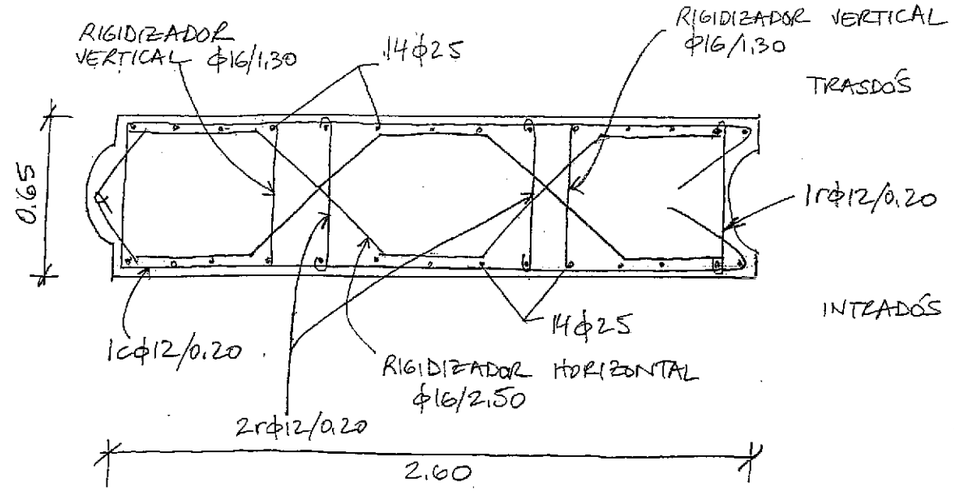
06/11/03

PANTALLA – Paso Bajo Ramal Valles-Barcelona (L.A.V.)

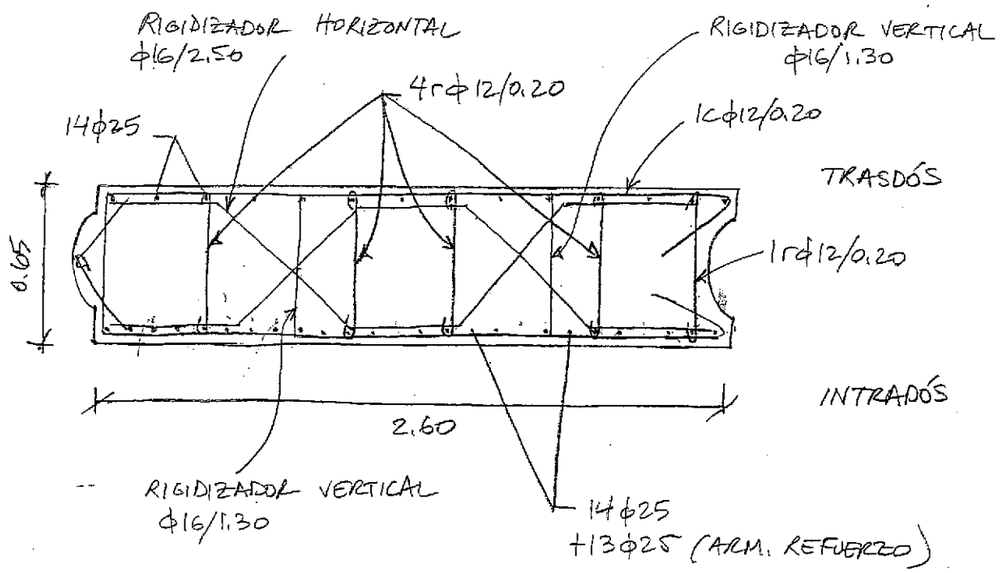


PANTALLA TIPO 2

PANTALLA – Paso Bajo Ramal Valles-Barcelona (L.A.V.)



SECCIÓN A-A'

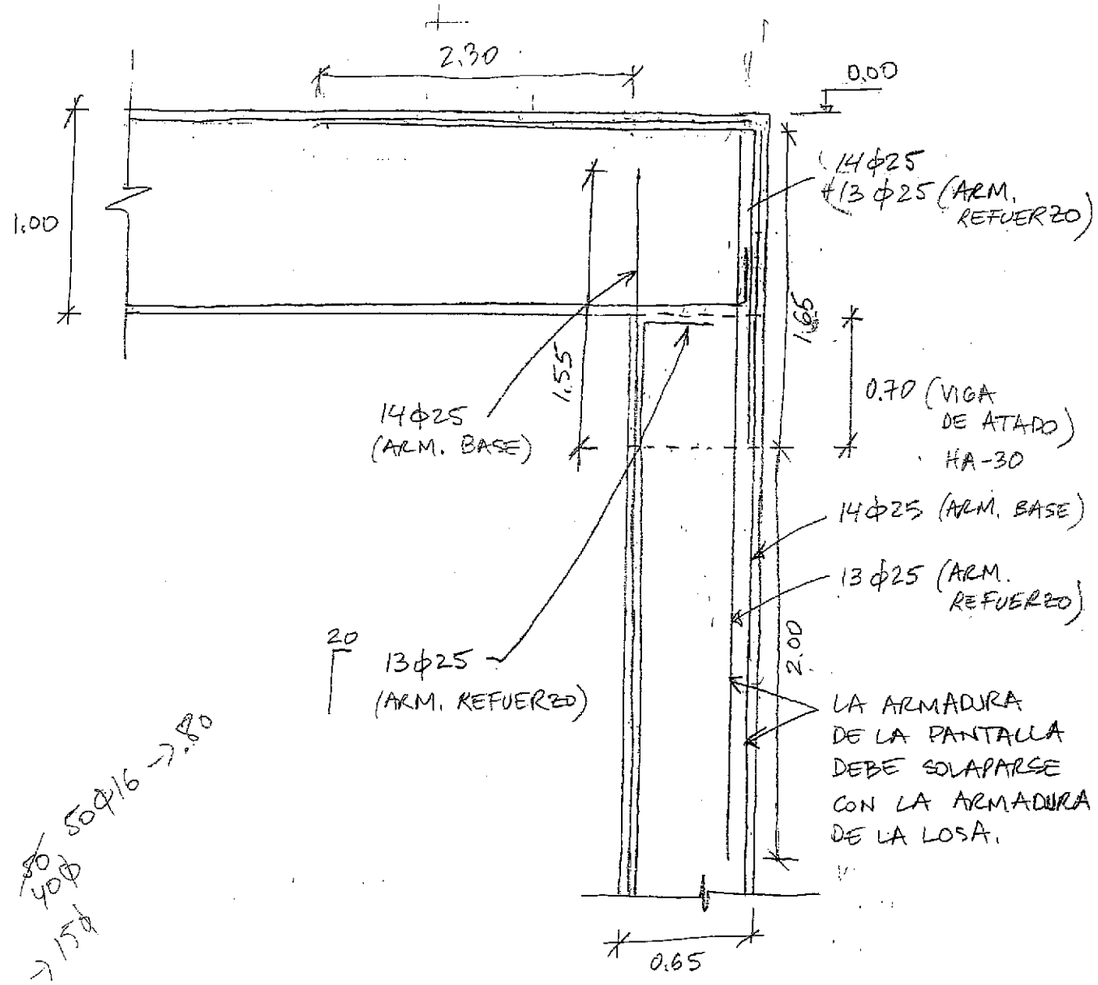


SECCIÓN B-B'

06/11/03

PANTALLA TIPO 2

PANTALLA – Paso Bajo Ramal Valles-Barcelona (L.A.V.)

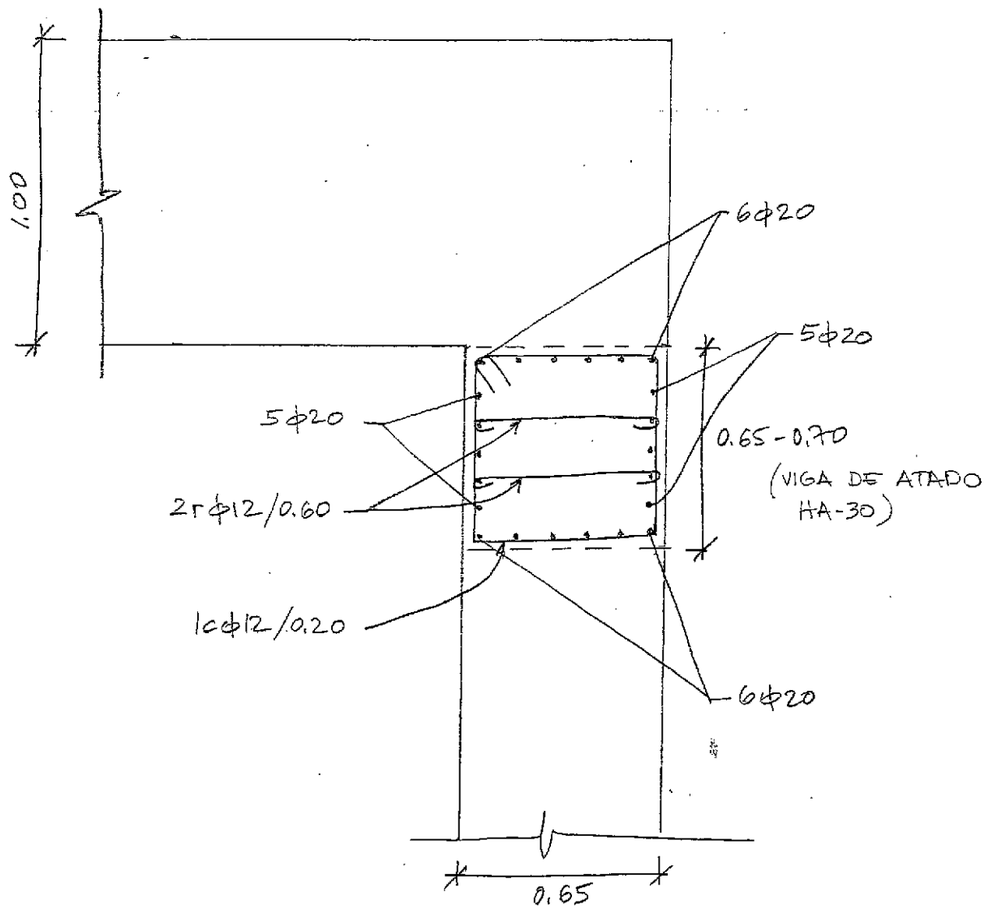


NOTA.- ARMADURA DE VIGA DE ATADO NO INCLUIDA.
VIGA DE ATADO CON HORMIGÓN HA-30

06/11/03

Paso Bajo Ramal Valles-Barcelona (LAV)

VIGA DE ATADO



PANTALLA TIPO 2

06/11/03

PANTALLA - Paso Bajo Ramal Valles-Barcelona (L.A.V.)

NOTA.- ACTUALIZAR ESTE CUADRO TAMBIEN EN LA PANTALLA TIPO 1

CUADRO DE CARACTERÍSTICAS DE MATERIALES

MATERIAL	TIPO		CONTROL	COEFICIENTES
HORMIGÓN	LOSA	HA-30/B/20/II.b	NORMAL	γ_c = 1.50
	CIMENTACIÓN	HA-25/P/20/II.a	NORMAL	γ_c = 1.50
	LIMPIEZA	HM-15	NORMAL	γ_c = 1.50
ACERO	B 500 S		NORMAL	γ_s = 1.15
EJECUCIÓN	LOSA		INTENSO	γ_f = 1.50
	CIMENTACIÓN		INTENSO	γ_f = 1.50

LOS SOLAPES, SEPARACIONES MÍNIMAS ENTRE BARRAS Y LONGITUDES DE ANCLAJE NO ESPECIFICADOS EN EL PLANO SERAN LOS PRESCRITOS POR LA INSTRUCCIÓN EHE.

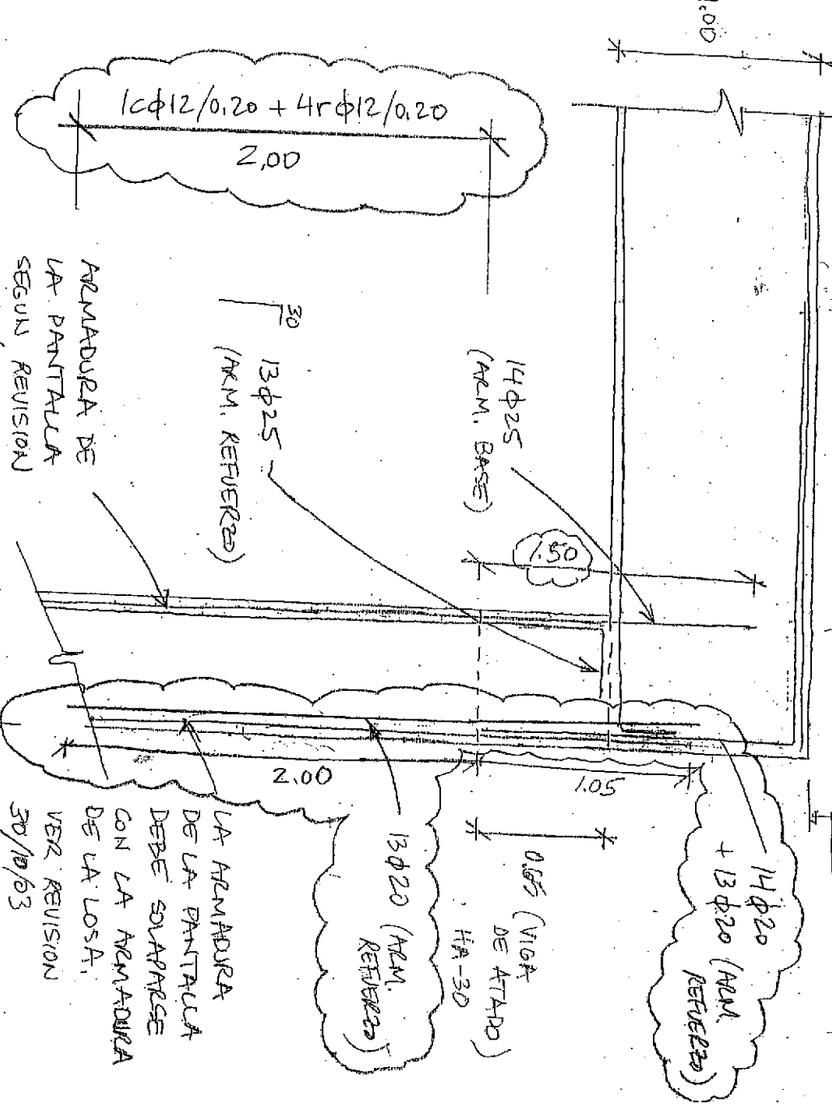
SE DISPONDRÁN SEPARADORES EN LA ARMADURA INFERIOR CADA 50 VECES EL DIÁMETRO DE LAS BARRAS.

LOS RECUBRIMIENTOS DE LAS ARMADURAS PASIVAS SERÁN:
A) LOSA: 3,5 cm
B) CIMETACIÓN: 7,0 cm

LOS COEFICIENTES DE SEGURIDAD DE LAS ACCIONES SON LAS CORRESPONDIENTES A LA IAP-98

REVISION 05/11/03 LOSA EMPOTRADA 3 MODULOS (7.80) A AMBOS LADOS JUNTO PANTALLA TIPO 2

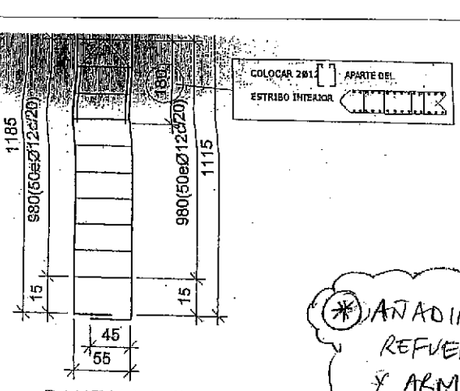
PANTALLA - Paso Bajo Ramal Valles – Barcelona (L.A.V.)



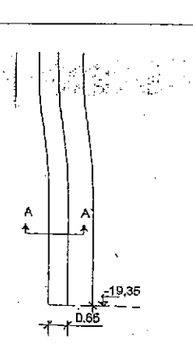
NOTA.- ARMADURA DE VIGA DE ATADO NO INCLUIDA.
VIGA DE ATADO CON HORMIGON HA-30

(9) 3





PANTALLA INFERIOR



SECCIÓN TIPO

AÑADIR 13⌀20 (ARM. REFUERZO) EN TRASDÓS Y ARM. DE CORTANTE A 1c⌀12/0.20 + 4r⌀12/0.20 SEGUN REVISION 5/11/03

ACTUALIZAR POR FAX CON FECHA 30/10/03 HA-30/B/20/IIb

REVISION 30/11/03

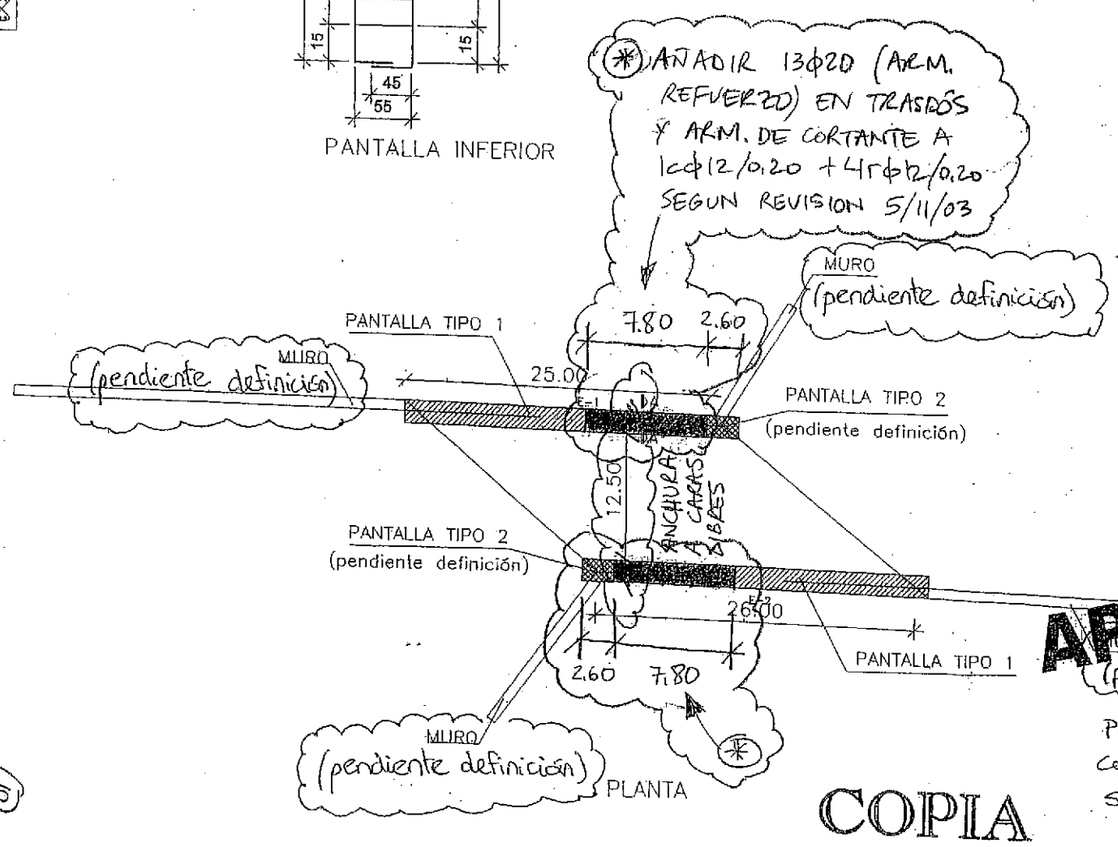
CUADRO DE CARACTERÍSTICAS DE MATERIALES

MATERIAL		TIPO	CONTROL	COEFICIENTES
HORMIGÓN	LOSA	~~HA-30/B/20/IIb~~	NORMAL	γ_c = 1.50
	ALZADOS	HA-25/P/20/IIb	NORMAL	γ_c = 1.50
	CIMENTACION	HA-25/P/20/IIa	NORMAL	γ_c = 1.50
	LIMPIEZA	HM-15	NORMAL	γ_c = 1.50
ACERO	B 500 S		NORMAL	γ_s = 1.15
EJECUCIÓN	LOSA Y ALZADOS		INTENSO	γ_f = 1.50
	CIMENTACION		INTENSO	γ_f = 1.50

LOS SOLAPES, SEPARACIONES MINIMAS ENTRE BARRAS Y LONGITUDES DE ANCLAJE NO ESPECIFICADOS EN EL PLANO SERAN LOS PRESCRITOS POR LA INSTRUCCION EHE.

SE DISPONDRAN SEPARADORES EN LA ARMADURA INFERIOR CADA 50 VECES EL DIAMETRO DE LAS BARRAS.

LOS RECUBRIMIENTOS DE LAS ARMADURAS PASIVAS SERAN:
A) LOSA Y ALZADOS: 3cm
B) CIMENTACIÓN: 5cm



PLANTA

GUIA

APROBADO

PLANO APROBADO CON CORRECCIONES INDICADAS. SUSTITUYE A PLANO 2.9.1.3.

4/11/03

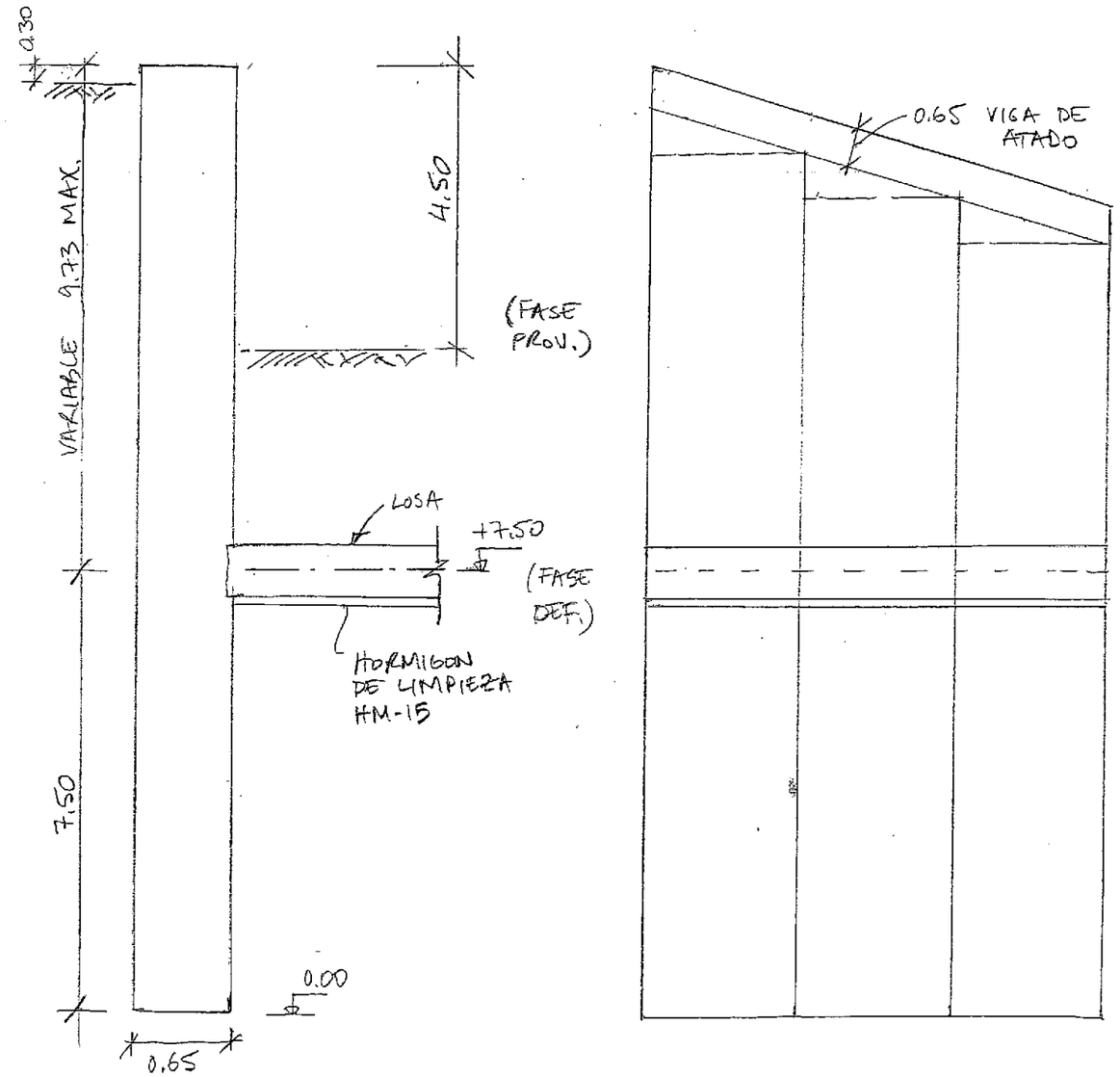
COPIA

STRUCCIÓN DE PLATAFORMA E ALTA VELOCIDAD . ARCELONA - FRONTERA FRANCESA N VALLÉS - CASTELLBISBAL	AUTOR CONSTRUCCIONES PAVASAL S.A.	ESCALA CROQUIS Numérica / Gráfica 0 1.25 2.50 m	FECHA OCTUBRE-03	TÍTULO DEL PLANO PASO BAJO RAMAL VALLÉS-BARCELONA ESTRIBOS. PANTALLA TIPO 1	Nº DE PLANO 2.9.1.3 (1) Hoja de

88

21/11/03

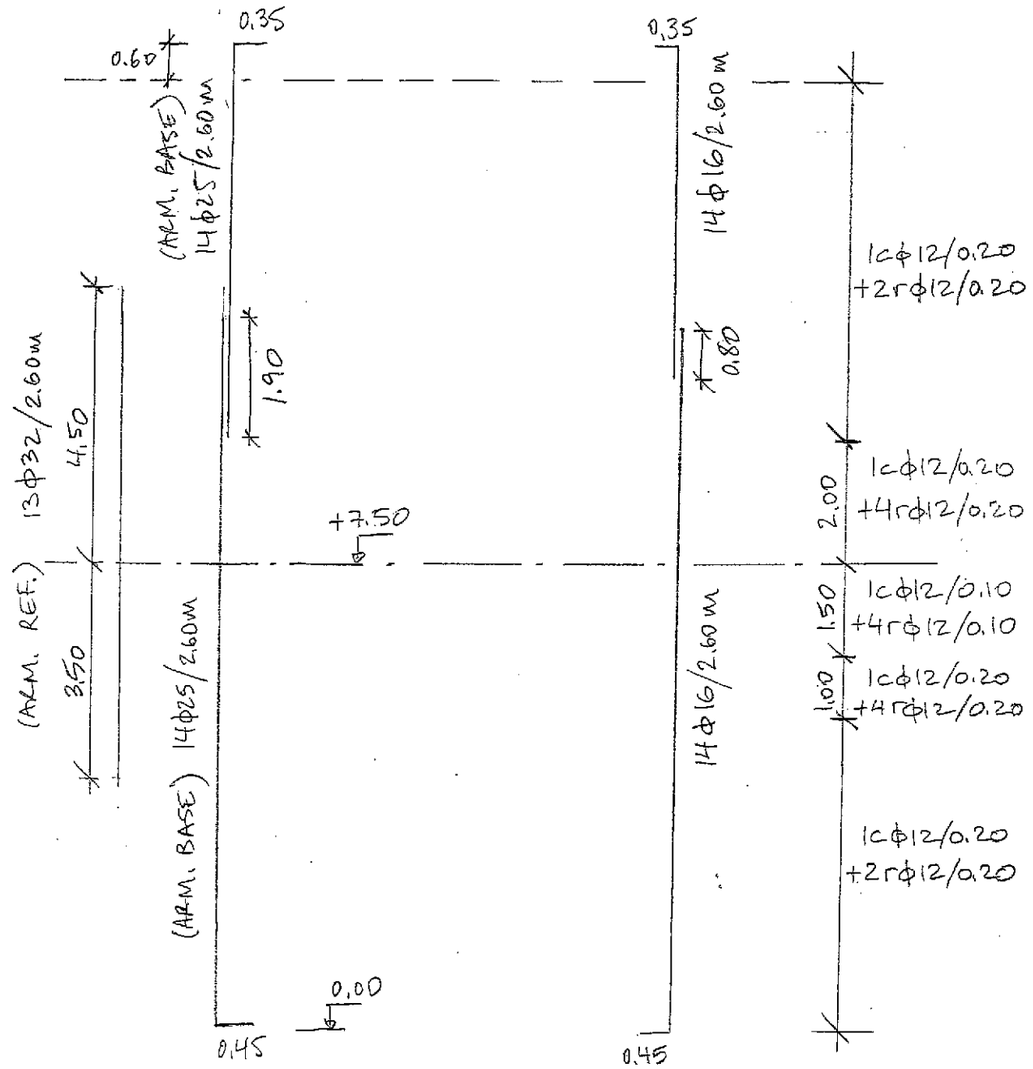
PASO BAJO RAMAL VALLES-BARCELONA
ALETAS - PANTALLA TIPO 1



NOTAS:- EN FASE PROVISIONAL LAS PANTALLAS TENDRÁN UN VOLADIZO MÁX. DE 4.50 M.
LA LOSA SE EJECUTARÁ POR BATACHES UNA VEZ EJECUTADAS LAS PANTALLAS (3 PANELES) Y LA VIGA DE ATADO.
LOS BATACHES SE EJECUTARÁN MANTIENDO SIEMPRE LA MITAD DEL PANEL CON UN VOLADIZO MÁX. DE 4.50 M.

21/11/03

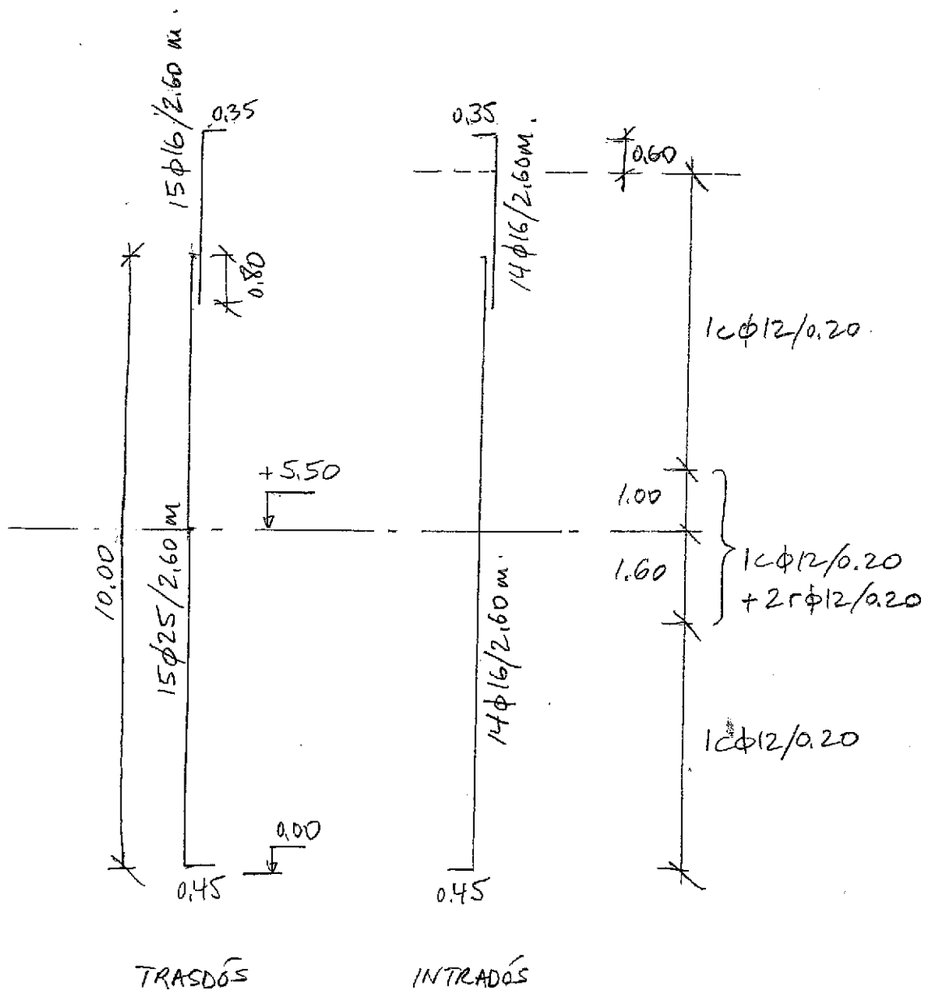
PASO BAJO RAMAL VALLES-BARCELONA
ALETAS - PANTALLA TIPO 1



TRASDÓS INTRADÓS

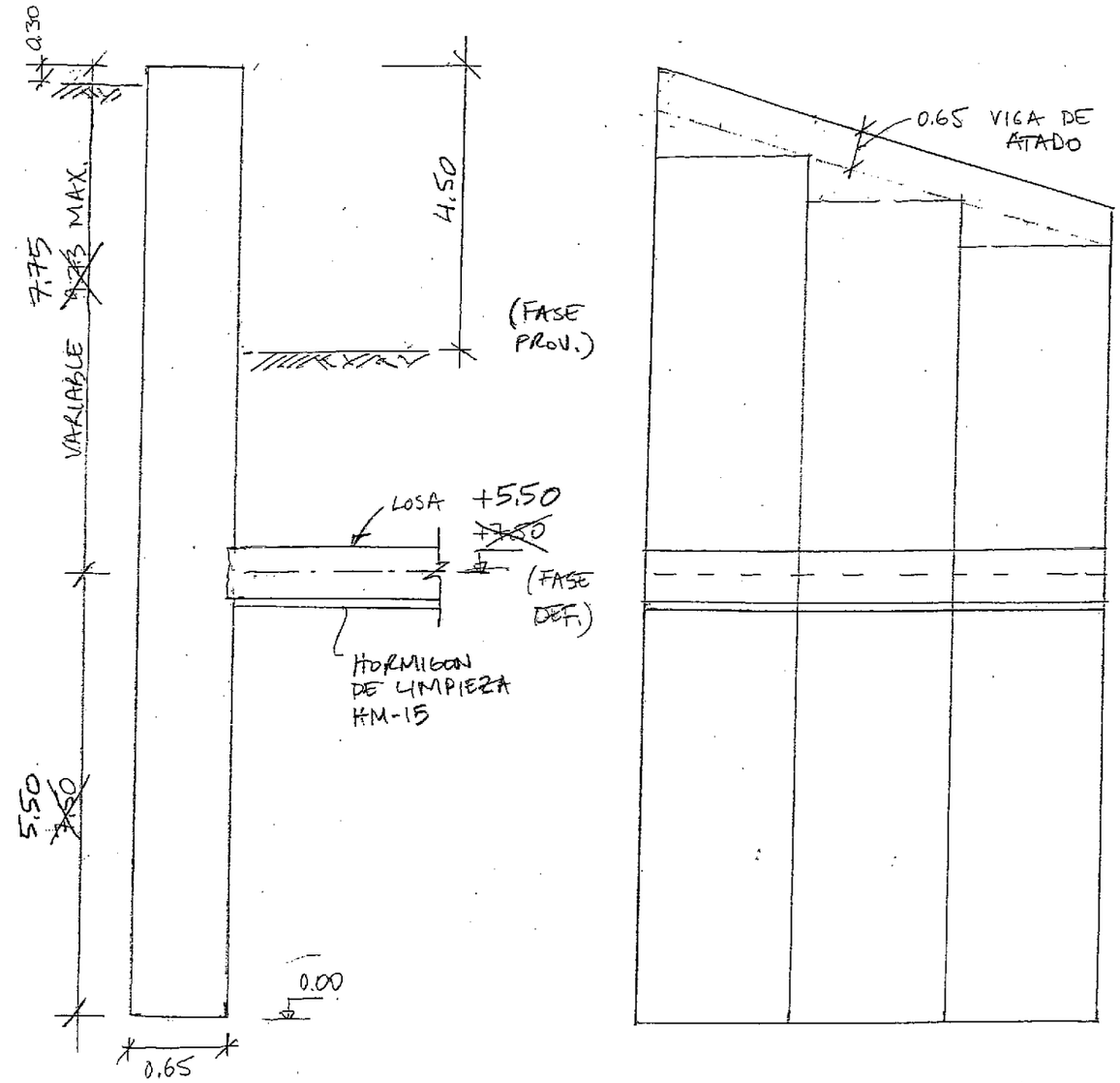
28/11/03

PASO BAJO RAMAL VALLES - BARCELONA
ALETAS - PANTALLA TIPO 2.



28/11/03

PASO BAJO RAMAL VALLES - BARCELONA
ALETAS - PANTALLA TIPO ~~2~~

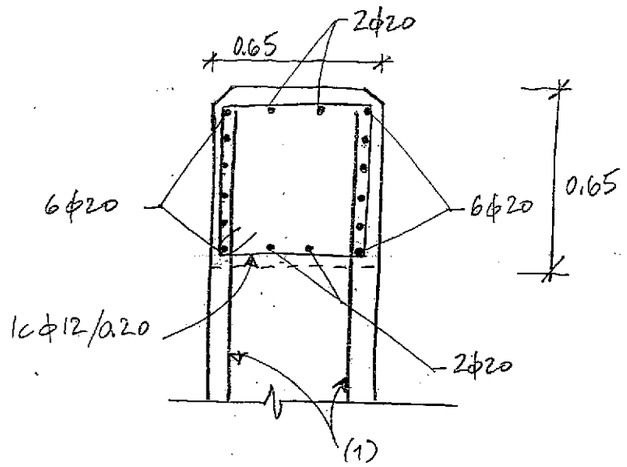


NOTAS.- EN FASE PROVISIONAL LAS PANTALLAS TENDRÁN UN VOLADIZO MÁX. DE 4,50 M.
LA LOSA SE EJECUTARÁ POR BATACHES UNA VEZ EJECUTADAS LAS PANTALLAS (3 PANELES) Y LA VIGA DE ATADO.
LOS BATACHES SE EJECUTARÁN MANTIENDO SIEMPRE LA MITAD DEL PANEL CON UN VOLADIZO MÁX. DE 4,50 M.

12/01/04

PASO BAJO RAMAL VALLES - BARCELONA

VIGA DE ATADO EN ALETAS



(1) NOTA.-

LA ARMADURA DE LA PANTALLA (ϕ16/0.20/CADA CARA) DEBE TENER LA LONGITUD DE ANCLAJE SEGUN LA NORMA CON LA VIGA DE ATADO. (0,40 para ϕ16 - prolongación recta)

VER LOS ALZADOS ENVIADOS JUNTO A LA ARMADURA DE PANTALLAS EN ALETAS PARA MÁS INFORMACIÓN.

30/01/04

GIF
Gestor de Infraestructuras Ferroviarias

COPASA
CONSTRUCCIONES PARARO, S.A.

DIMENSIONAMIENTO DE MUROS
ALETAS PASO BAJO RAMAL VALLÉS-BARCELONA
P.K. 502+267

PROYECTO DE CONSTRUCCIÓN DE PLATAFORMA

LÍNEA DE ALTA VELOCIDAD
Madrid-Zaragoza-Barcelona-Frontera francesa

TRAMO: *Conexión Vallés-Castellbisbal*
Provincia: Barcelona

Longitud: 3,30 Km.

ÍNDICE

1.- CÁLCULO

2.- PLANOS

ÍNDICE

1.- DATOS DE LA OBRA

2.- DESCRIPCIÓN

3.- COMPROBACIÓN

1.- DATOS DE LA OBRA

Hormigón: HA-25, Control estadístico
Acero: B 500 S, Control normal
Recubrimiento (Trasdós) : 5.00 cm
Recubrimiento (Intradós) : 5.00 cm
Recubrimiento (Superior) : 5.00 cm
Recubrimiento (Inferior) : 5.00 cm
Recubrimiento (Lateral) : 5.00 cm
Tamaño máximo del árido: 20.0 mm
Abertura límite de fisuras: 0.3 mm
Espesor hormigón limpieza: 10.0 cm
Tensión admisible del terreno: 2.0 Kp/cm2
Coeficiente rozamiento terreno-cimiento: 0.6
Tipo de empuje que produce la acción: Activo
Tipo de empuje que produce la reacción: Pasivo
Combinaciones de hormigón: EHE, Control normal
Combinaciones para tensiones sobre el terreno: Acciones Caracteristicas
Combinaciones de equilibrio: EHE, Control normal

2.- DESCRIPCIÓN

DESCRIPCION DE SECCIONES

Referencia: H-2

- Longitud del muro: 5.00 m
- Cota en arranque: 0.00 m

Referencia: H-3

- Longitud del muro: 5.00 m
- Cota en arranque: 0.00 m

LISTADO DE TERRENOS

Referencia: H-2

- Situación de peso propio:
- Coronación:
Carga hacia abajo en coronación: 0 Tn/m
Carga hacia intradós en coronación: 0 Tn/m
Momento de compresión hacia intradós en coronación: 0 mTn/m
- Trasdós:
No hay cargas.
- Intradós:
Con relleno: Cota: 2.00 m
Angulo de talud: 0.00 Grados
Densidad aparente: 2.00 Tn/m3
Densidad sumergida: 1.10 Tn/m3
Angulo rozamiento interno: 30.00 Grados
Evacuación por drenaje: 100.00 %
Porcentaje de empuje pasivo: 0.00 %
Cota empuje pasivo: 0.00 m
- Esfuerzos en arranque de muro. ESTADO DE PESO PROPIO (PP):

	Cortante (Tn/m)	Momento (mTn/m)
Trasdós	0.000	0.000
Intradós	-1.333	-0.889
Total	-1.333	-0.889

- Situación de sobrecarga 1:
- Coronación:
Carga hacia abajo en coronación: 0 Tn/m
Carga hacia intradós en coronación: 0 Tn/m
Momento de compresión hacia intradós en coronación: 0 mTn/m
- Trasdós:
No hay cargas.
- Intradós:
Con relleno: Cota: 2.00 m
Angulo de talud: 0.00 Grados
Densidad aparente: 2.00 Tn/m3
Densidad sumergida: 1.10 Tn/m3
Angulo rozamiento interno: 30.00 Grados
Evacuación por drenaje: 100.00 %
Porcentaje de empuje pasivo: 0.00 %
Cota empuje pasivo: 0.00 m
Carga 1:
Tipo: Uniforme
Valor: 1.00 Tn/m2
- Esfuerzos en arranque de muro. ESTADO DE SOBRECARGA (SBC):

	Cortante (Tn/m)	Momento (mTn/m)
Trasdós	0.000	0.000
Intradós	-2.000	-1.556
Total	-2.000	-1.556

- Esfuerzos de arranque de muro. DIFERENCIA ESTADO DE SOBRECARGA Y PESO PROPIO (SBC - PP):

	Cortante (Tn/m)	Momento (mTn/m)
Trasdós	0.000	0.000

Intradós	-0.667	-0.667
Total	-0.667	-0.667

Referencia: H-3

- Situación de peso propia:
- Coronación:
Carga hacia abajo en coronación: 0 Tn/m
Carga hacia intradós en coronación: 0 Tn/m
Momento de compresión hacia intradós en coronación: 0 mTn/m
- Trasdós:
No hay cargas.
- Intradós:
Con relleno: Cota: 3.00 m
Angulo de talud: 0.00 Grados
Densidad aparente: 1.80 Tn/m3
Densidad sumergida: 1.10 Tn/m3
Angulo rozamiento interno: 30.00 Grados
Evacuación por drenaje: 100.00 %
Porcentaje de empuje pasivo: 0.00 %
Cota empuje pasivo: 0.00 m
- Esfuerzos en arranque de muro. ESTADO DE PESO PROPIO (PP):

	Cortante (Tn/m)	Momento (mTn/m)
Trasdós	0.000	0.000
Intradós	-2.700	-2.700
Total	-2.700	-2.700

- Situación de sobrecarga 1:
- Coronación:
Carga hacia abajo en coronación: 0 Tn/m
Carga hacia intradós en coronación: 0 Tn/m
Momento de compresión hacia intradós en coronación: 0 mTn/m
- Trasdós:
No hay cargas.
- Intradós:
Con relleno: Cota: 3.00 m
Angulo de talud: 0.00 Grados
Densidad aparente: 1.80 Tn/m3
Densidad sumergida: 1.10 Tn/m3
Angulo rozamiento interno: 30.00 Grados
Evacuación por drenaje: 100.00 %
Porcentaje de empuje pasivo: 0.00 %
Cota empuje pasivo: 0.00 m
Carga 1:
Tipo: Uniforme
Valor: 1.00 Tn/m2
- Esfuerzos en arranque de muro. ESTADO DE SOBRECARGA (SBC):

	Cortante (Tn/m)	Momento (mTn/m)
Trasdós	0.000	0.000
Intradós	-3.700	-4.200
Total	-3.700	-4.200

- Esfuerzos de arranque de muro. DIFERENCIA ESTADO DE SOBRECARGA Y PESO PROPIO (SBC - PP):

	Cortante (Tn/m)	Momento (mTn/m)
Trasdós	0.000	0.000
Intradós	-1.000	-1.500
Total	-1.000	-1.500

MUROS CALCULADOS

Referencia	Espesor inferior	Espesor superior	Altura	Ar. Vert. T.	Ar. Vert. I.	Ar. Horz. T.	Ar. Horz. I.	Ar. Coronación
H-2	25.00 cm	25.00 cm	2.00 m	Ø10 c/ 20	Ø10 c/ 15	Ø10 c/ 15	Ø10 c/ 15	Barras superiores 2 Ø12
H-3	30.00 cm	30.00 cm	3.00 m	Ø10 c/ 20	Ø12 c/ 15	Ø10 c/ 15	Ø10 c/ 15	Barras superiores 2 Ø12

Nota:
- Ar. Vert. T.: Armado vertical trasdós
- Ar. Vert. I.: Armado vertical intradós
- Ar. Horz. T.: Armado horizontal trasdós
- Ar. Horz. I.: Armado horizontal intradós
- Ar. Coronación: Armado en coronación

Referencias	Geometría	Armado
H-2	Vuelo izquierdo: 95.0 cm Vuelo derecho: 95.0 cm Canto: 50.0 cm	Base inferior: Ø12 c/ 20 Longitudinal inferior: Ø12 c/ 20 Superior Longitudinal: Ø12 c/ 20 Superior Transversal: Ø12 c/ 20
H-3	Vuelo izquierdo: 130.0 cm Vuelo derecho: 130.0 cm Canto: 65.0 cm	Base inferior: Ø12 c/ 15 Longitudinal inferior: Ø12 c/ 15 Superior Longitudinal: Ø12 c/ 20 Superior Transversal: Ø12 c/ 20

3.- COMPROBACIÓN

Referencia: H-2 COMPROBACION	VALORES	ESTADO
Comprobación a rasante en arranque muro		
- Muro H-2 -> Arranque:		
Espesor mínimo del tramo		CUMPLE
- Muro H-2 -> Tramo 1:	Mínimo: 20 cm Calculado: 25 cm	
Cuantía mínima geométrica horizontal		CUMPLE
- Muro H-2 -> Tramo 1 -> Trasdós (0.00 m):	Mínimo: 0.0008 Calculado: 0.0021	CUMPLE
- Muro H-2 -> Tramo 1 -> Intradós (0.00 m):	Calculado: 0.0021	CUMPLE
Cuantía mínima mecánica horizontal por cara		
- Muro H-2 -> Tramo 1 -> Trasdós:	Mínimo: 0.00032 Calculado: 0.0021	CUMPLE

- Muro H-2 -> Tramo 1 -> Intradós:		
Separación libre mínima armaduras horizontales	Mínimo: 0.00042 Calculado: 0.0021	CUMPLE
- Muro H-2 -> Tramo 1 -> Trasdós:	Mínimo: 2.5 cm Calculado: 14 cm	CUMPLE
- Muro H-2 -> Tramo 1 -> Intradós:	Calculado: 14 cm	CUMPLE
Separación máxima armaduras horizontales	Máximo: 30 cm	
- Muro H-2 -> Tramo 1 -> Trasdós:	Calculado: 15 cm	CUMPLE
- Muro H-2 -> Tramo 1 -> Intradós:	Calculado: 15 cm	CUMPLE
Cuantía mínima geométrica vertical cara traccionada	Mínimo: 0.0009	
- Muro H-2 -> Tramo 1 -> Intradós (0.00 m):	Calculado: 0.0021	CUMPLE
Cuantía mínima mecánica vertical cara traccionada	Mínimo: 0.00154	
- Muro H-2 -> Tramo 1 -> Intradós (0.00 m):	Calculado: 0.0021	CUMPLE
Cuantía mínima geométrica vertical cara comprimida	Mínimo: 0.00027	
- Muro H-2 -> Tramo 1 -> Trasdós (0.00 m):	Calculado: 0.00158	CUMPLE
Cuantía mínima mecánica vertical cara comprimida	Mínimo: 1e-005	
- Muro H-2 -> Tramo 1 -> Trasdós (0.00 m):	Calculado: 0.00158	CUMPLE
Cuantía máxima geométrica de armadura vertical total	Máximo: 0.04	
- Muro H-2 -> Tramo 1 -> (2.00 m):	Calculado: 0.00367	CUMPLE
Separación libre mínima armaduras verticales	Mínimo: 2.5 cm	
- Muro H-2 -> Tramo 1 -> Trasdós:	Calculado: 19 cm	CUMPLE
- Muro H-2 -> Tramo 1 -> Intradós:	Calculado: 14 cm	CUMPLE
Separación máxima armaduras verticales	Máximo: 30 cm	
- Muro H-2 -> Tramo 1 -> Trasdós:	Calculado: 20 cm	CUMPLE
- Muro H-2 -> Tramo 1 -> Intradós:	Calculado: 15 cm	CUMPLE
Comprobación a flexocompresión		
- Muro H-2 -> Tramo 1:		CUMPLE
Comprobación a cortante		
- Muro H-2 -> Tramo 1:	Máximo: 9.28 Tn/m	
	Calculado: 2.59 Tn/m	CUMPLE
Comprobación de fisuración	Máximo: 0.3 mm	
- Muro H-2 -> Tramo 1:	Calculado: 0.12 mm	CUMPLE
Comprobación de las longitudes de solape		
- Muro H-2 -> Tramo 1 -> Base trasdós:	Mínimo: 25 cm Calculado: 25 cm	CUMPLE
- Muro H-2 -> Tramo 1 -> Base intradós:	Mínimo: 35 cm Calculado: 35 cm	CUMPLE
Comprobación del anclaje del armado base en coronación	Mínimo: 13.5 cm	
- Muro H-2 -> Coronación -> Trasdós:	Calculado: 13.5 cm	CUMPLE
- Muro H-2 -> Coronación -> Intradós:	Calculado: 13.5 cm	CUMPLE
Area mínima longitudinal cara superior viga de coronación	Mínimo: 2.3 cm2	
- Muro H-2 -> Coronación:	Calculado: 2.3 cm2	CUMPLE
Tensiones sobre el terreno		
- Zapata H-2 -> Tensión media:	Máximo: 2 Kp/cm2 Calculado: 0.359 Kp/cm2	CUMPLE
- Zapata H-2 -> Tensión máxima acc. gravitatorias:	Máximo: 2.5 Kp/cm2 Calculado: 0.453 Kp/cm2	CUMPLE
Flexión en zapata (acciones estáticas)		
- Zapata H-2 -> Momento positivo en vuelo derecho:	Momento: 1.80 Tn·m	CUMPLE
- Zapata H-2 -> Momento negativo en vuelo derecho:	Momento: 0.00 Tn·m	CUMPLE
- Zapata H-2 -> Momento positivo sección ref. derecha:	Momento: 1.94 Tn·m	CUMPLE
- Zapata H-2 -> Momento negativo sección ref. derecha:	Momento: 0.00 Tn·m	CUMPLE
- Zapata H-2 -> Momento positivo en vuelo izquierdo:	Momento: 0.00 Tn·m	CUMPLE
- Zapata H-2 -> Momento negativo en vuelo izquierdo:	Momento: -1.33 Tn·m	CUMPLE
- Zapata H-2 -> Momento positivo sección ref. izquierda:	Momento: 0.00 Tn·m	CUMPLE
- Zapata H-2 -> Momento negativo sección ref. izquierda:	Momento: -1.43 Tn·m	CUMPLE
Coeficiente de rozamiento terreno-cimiento	Máximo: 0.5773	
- Zapata H-2:	Calculado: 0.576	CUMPLE
Vuelco de la zapata		
- Zapata H-2:	Reserva seguridad: 665.4 %	CUMPLE
Compresión oblicua (acciones estáticas)	Máximo: 229.36 Tn	
- Zapata H-2 -> Vuelo derecho:	Calculado: 3.7 Tn	CUMPLE

- Zapata H-2 -> Vuelo izquierdo:	Calculado: 2.7 Tn	CUMPLE
Esfuerzo cortante (acciones estáticas)	Máximo: 13.44 Tn	
- Zapata H-2 -> Vuelo derecho:	Calculado: 2.01 Tn	CUMPLE
- Zapata H-2 -> Vuelo izquierdo:	Calculado: 1.49 Tn	CUMPLE
Canto mínimo	Mínimo: 25 cm	
- Zapata H-2:	Calculado: 50 cm	CUMPLE
Longitud de anclaje		
- Zapata H-2 -> Arranque izquierdo del muro:	Mínimo: 18 cm Calculado: 40 cm	CUMPLE
- Zapata H-2 -> Arranque derecho del muro:	Mínimo: 18 cm Calculado: 40 cm	CUMPLE
- Zapata H-2 -> Armado superior vuelo izq. hacia izquierda:	Mínimo: 51 cm Calculado: 55 cm	CUMPLE
- Zapata H-2 -> Armado superior vuelo izq. hacia derecha:	Mínimo: 43 cm Calculado: 126 cm	CUMPLE
- Zapata H-2 -> Armado base inferior vuelo der. hacia izquierda:	Mínimo: 30 cm Calculado: 150 cm	CUMPLE
- Zapata H-2 -> Armado base inferior vuelo der. hacia derecha:	Mínimo: 30 cm Calculado: 79 cm	CUMPLE
Cuantía geométrica mínima	Mínimo: 0.001	
- Zapata H-2 -> Armado inferior longitudinal:	Calculado: 0.0012	CUMPLE
- Zapata H-2 -> Armado inferior transversal:	Calculado: 0.0012	CUMPLE
Cuantía mínima necesaria por flexión	Mínimo: 0.0002	
- Zapata H-2 -> Armado inferior transversal:	Calculado: 0.0012	CUMPLE
- Zapata H-2 -> Armado sup. transversal vuelo izquierdo:	Calculado: 0.0012	CUMPLE
- Zapata H-2 -> Armado sup. transversal sección ref. izquierda:	Calculado: 0.0012	CUMPLE
Diámetro mínimo de las barras	Mínimo: 12 mm	
- Zapata H-2 -> Armaduras de la zapata:	Calculado: 12 mm	CUMPLE
Separación máxima entre barras	Máximo: 30 cm	
- Zapata H-2 -> Armado inferior transversal:	Calculado: 20 cm	CUMPLE
- Zapata H-2 -> Armado inferior longitudinal:	Calculado: 20 cm	CUMPLE
- Zapata H-2 -> Armado superior transversal:	Calculado: 20 cm	CUMPLE
- Zapata H-2 -> Armado superior longitudinal:	Calculado: 20 cm	CUMPLE
Separación mínima entre barras	Mínimo: 10 cm	
- Zapata H-2 -> Armado inferior transversal:	Calculado: 20 cm	CUMPLE
- Zapata H-2 -> Armado inferior longitudinal:	Calculado: 20 cm	CUMPLE
- Zapata H-2 -> Armado superior transversal:	Calculado: 20 cm	CUMPLE
- Zapata H-2 -> Armado superior longitudinal:	Calculado: 20 cm	CUMPLE
Longitud mínima de las patillas	Mínimo: 11 cm	
- Zapata H-2 -> Armado superior vuelo izq. hacia izquierda:	Calculado: 15 cm	CUMPLE
- Zapata H-2 -> Armado superior vuelo izq. hacia derecha:	Calculado: 15 cm	CUMPLE
- Zapata H-2 -> Armado base inferior vuelo izq. hacia izquierda:	Calculado: 39 cm	CUMPLE
- Zapata H-2 -> Armado base inferior vuelo izq. hacia derecha:	Calculado: 39 cm	CUMPLE

Se cumplen todas las comprobaciones

Referencia: H-3

COMPROBACION	VALORES	ESTADO
Comprobación a rasante en arranque muro		
- Muro H-3 -> Arranque:		CUMPLE
Espesor mínimo del tramo	Mínimo: 20 cm	
- Muro H-3 -> Tramo 1:	Calculado: 30 cm	CUMPLE
Cuantía mínima geométrica horizontal	Mínimo: 0.0008	
- Muro H-3 -> Tramo 1 -> Trasdós (0.00 m):	Calculado: 0.00175	CUMPLE
- Muro H-3 -> Tramo 1 -> Intradós (0.00 m):	Calculado: 0.00175	CUMPLE
Cuantía mínima mecánica horizontal por cara		
- Muro H-3 -> Tramo 1 -> Trasdós:	Mínimo: 0.00027 Calculado: 0.00175	CUMPLE
- Muro H-3 -> Tramo 1 -> Intradós:	Mínimo: 0.00051 Calculado: 0.00175	CUMPLE
Separación libre mínima armaduras horizontales	Mínimo: 2.5 cm	
- Muro H-3 -> Tramo 1 -> Trasdós:	Calculado: 14 cm	CUMPLE
- Muro H-3 -> Tramo 1 -> Intradós:	Calculado: 14 cm	CUMPLE
Separación máxima armaduras horizontales	Máximo: 30 cm	
- Muro H-3 -> Tramo 1 -> Trasdós:	Calculado: 15 cm	CUMPLE

- Muro H-3 -> Tramo 1 -> Intradós:		
Cuantía mínima geométrica vertical cara traccionada	Calculado: 15 cm	CUMPLE
- Muro H-3 -> Tramo 1 -> Intradós (0.00 m):		
Cuantía mínima mecánica vertical cara traccionada	Mínimo: 0.0009	
- Muro H-3 -> Tramo 1 -> Intradós (0.00 m):	Calculado: 0.00252	CUMPLE
Cuantía mínima geométrica vertical cara comprimida	Mínimo: 0.00154	
- Muro H-3 -> Tramo 1 -> Trasdós (0.00 m):	Calculado: 0.00252	CUMPLE
Cuantía mínima mecánica vertical cara comprimida	Mínimo: 0.00027	
- Muro H-3 -> Tramo 1 -> Trasdós (0.00 m):	Calculado: 0.00131	CUMPLE
Cuantía máxima geométrica de armadura vertical total	Mínimo: 2e-005	
- Muro H-3 -> Tramo 1 -> (3.00 m):	Calculado: 0.00131	CUMPLE
Separación libre mínima armaduras verticales	Máximo: 0.04	
- Muro H-3 -> Tramo 1 -> Trasdós:	Calculado: 0.00383	CUMPLE
- Muro H-3 -> Tramo 1 -> Intradós:	Mínimo: 2.5 cm	
	Calculado: 19 cm	CUMPLE
Separación máxima armaduras verticales	Calculado: 13.8 cm	CUMPLE
- Muro H-3 -> Tramo 1 -> Trasdós:	Máximo: 30 cm	
- Muro H-3 -> Tramo 1 -> Intradós:	Calculado: 20 cm	CUMPLE
	Calculado: 15 cm	CUMPLE
Comprobación a flexocompresión		
- Muro H-3 -> Tramo 1:		CUMPLE
Comprobación a cortante		
- Muro H-3 -> Tramo 1:	Máximo: 11.63 Tn/m	
	Calculado: 4.88 Tn/m	CUMPLE
Comprobación de fisuración	Máximo: 0.3 mm	
- Muro H-3 -> Tramo 1:	Calculado: 0.23 mm	CUMPLE
Comprobación de las longitudes de solape		
- Muro H-3 -> Tramo 1 -> Base trasdós:	Mínimo: 25 cm Calculado: 25 cm	CUMPLE
- Muro H-3 -> Tramo 1 -> Base intradós:	Mínimo: 45 cm Calculado: 45 cm	CUMPLE
Comprobación del anclaje del armado base en coronación		

- Muro H-3 -> Coronación -> Trasdós:		
	Mínimo: 18.5 cm Calculado: 18.5 cm	CUMPLE
- Muro H-3 -> Coronación -> Intradós:		
	Mínimo: 18.2 cm Calculado: 18.2 cm	CUMPLE
Area mínima longitudinal cara superior viga de coronación		
- Muro H-3 -> Coronación:	Mínimo: 2.3 cm2	
	Calculado: 2.3 cm2	CUMPLE
Tensiones sobre el terreno		
- Zapata H-3 -> Tensión media:		
	Máximo: 2 Kp/cm2 Calculado: 0.482 Kp/cm2	CUMPLE
- Zapata H-3 -> Tensión máxima acc. gravitatorias:		
	Máximo: 2.5 Kp/cm2 Calculado: 0.564 Kp/cm2	CUMPLE
Flexión en zapata (acciones estáticas)		
- Zapata H-3 -> Momento positivo en vuelo derecho:	Momento: 4.76 Tn·m	CUMPLE
- Zapata H-3 -> Momento negativo en vuelo derecho:	Momento: 0.00 Tn·m	CUMPLE
- Zapata H-3 -> Momento positivo sección ref. derecha:	Momento: 5.09 Tn·m	CUMPLE
- Zapata H-3 -> Momento negativo sección ref. derecha:	Momento: 0.00 Tn·m	CUMPLE
- Zapata H-3 -> Momento positivo en vuelo izquierdo:	Momento: 0.00 Tn·m	CUMPLE
- Zapata H-3 -> Momento negativo en vuelo izquierdo:	Momento: -3.52 Tn·m	CUMPLE
- Zapata H-3 -> Momento positivo sección ref. izquierda:	Momento: 0.00 Tn·m	CUMPLE
- Zapata H-3 -> Momento negativo sección ref. izquierda:	Momento: -3.74 Tn·m	CUMPLE
Coeficiente de rozamiento terreno-cimiento		
- Zapata H-3:	Máximo: 0.5773	
	Calculado: 0.5678	CUMPLE
Vuelco de la zapata		
- Zapata H-3:	Reserva seguridad: 789.6 %	CUMPLE
Compresión oblicua (acciones estáticas)	Máximo: 305.82 Tn	
- Zapata H-3 -> Vuelo derecho:	Calculado: 7.1 Tn	CUMPLE
- Zapata H-3 -> Vuelo izquierdo:	Calculado: 5.16 Tn	CUMPLE
Esfuerzo cortante (acciones estáticas)		
- Zapata H-3 -> Vuelo derecho:	Máximo: 16.95 Tn Calculado: 3.99 Tn	CUMPLE
- Zapata H-3 -> Vuelo izquierdo:	Máximo: 15.4 Tn Calculado: 2.95 Tn	CUMPLE

Canto mínimo		
- Zapata H-3:	Mínimo: 25 cm Calculado: 65 cm	CUMPLE
Longitud de anclaje		
- Zapata H-3 -> Arranque izquierdo del muro:	Mínimo: 21 cm Calculado: 55 cm	CUMPLE
- Zapata H-3 -> Arranque derecho del muro:	Mínimo: 18 cm Calculado: 55 cm	CUMPLE
- Zapata H-3 -> Armado superior vuelo izq. hacia izquierda:	Mínimo: 43 cm Calculado: 75 cm	CUMPLE
- Zapata H-3 -> Armado superior vuelo izq. hacia derecha:	Mínimo: 43 cm Calculado: 165 cm	CUMPLE
- Zapata H-3 -> Armado base inferior vuelo der. hacia izquierda:	Mínimo: 30 cm Calculado: 204 cm	CUMPLE
- Zapata H-3 -> Armado base inferior vuelo der. hacia derecha:	Mínimo: 30 cm Calculado: 114 cm	CUMPLE
Cuantía geométrica mínima		
- Zapata H-3 -> Armado inferior longitudinal:	Mínimo: 0.001 Calculado: 0.0012	CUMPLE
- Zapata H-3 -> Armado inferior transversal:	Calculado: 0.0012	CUMPLE
Cuantía mínima necesaria por flexión		
- Zapata H-3 -> Armado inferior transversal:	Mínimo: 0.0004 Calculado: 0.0012	CUMPLE
- Zapata H-3 -> Armado sup. transversal vuelo izquierdo:	Mínimo: 0.0003 Calculado: 0.0009	CUMPLE
- Zapata H-3 -> Armado sup. transversal sección ref. izquierda:	Mínimo: 0.0003 Calculado: 0.0009	CUMPLE
Diámetro mínimo de las barras		
- Zapata H-3 -> Armaduras de la zapata:	Mínimo: 12 mm Calculado: 12 mm	CUMPLE
Separación máxima entre barras		
- Zapata H-3 -> Armado inferior transversal:	Máximo: 30 cm Calculado: 15 cm	CUMPLE
- Zapata H-3 -> Armado inferior longitudinal:	Calculado: 15 cm	CUMPLE
- Zapata H-3 -> Armado superior transversal:	Calculado: 20 cm	CUMPLE
- Zapata H-3 -> Armado superior longitudinal:	Calculado: 20 cm	CUMPLE
Separación mínima entre barras		
- Zapata H-3 -> Armado inferior transversal:	Mínimo: 10 cm Calculado: 15 cm	CUMPLE
- Zapata H-3 -> Armado inferior longitudinal:	Calculado: 15 cm	CUMPLE
- Zapata H-3 -> Armado superior transversal:	Calculado: 20 cm	CUMPLE
- Zapata H-3 -> Armado superior longitudinal:	Calculado: 20 cm	CUMPLE
Longitud mínima de las patillas	Mínimo: 11 cm	
- Zapata H-3 -> Armado superior vuelo izq. hacia izquierda:	Calculado: 15 cm	CUMPLE
- Zapata H-3 -> Armado superior vuelo izq. hacia derecha:	Calculado: 15 cm	CUMPLE
- Zapata H-3 -> Armado base inferior vuelo izq. hacia izquierda:	Calculado: 54 cm	CUMPLE
- Zapata H-3 -> Armado base inferior vuelo izq. hacia derecha:	Calculado: 54 cm	CUMPLE
Se cumplen todas las comprobaciones		

ÍNDICE

1.- DATOS DE LA OBRA

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1.- DATOS DE LA OBRA

Hormigón: HA-25, Control estadístico
Acero: B 500 S, Control normal
Recubrimiento (Trasdós) : 5.00 cm
Recubrimiento (Intradós) : 5.00 cm
Recubrimiento (Superior) : 5.00 cm
Recubrimiento (Inferior) : 5.00 cm
Recubrimiento (Lateral) : 5.00 cm
Tamaño máximo del árido: 20.0 mm
Abertura límite de fisuras: 0.3 mm
Espesor hormigón limpieza: 10.0 cm
Tensión admisible del terreno: 2.0 Kp/cm2
Coeficiente rozamiento terreno-cimiento: 0.6
Tipo de empuje que produce la acción: Activo
Tipo de empuje que produce la reacción: Pasivo
Combinaciones de hormigón: EHE, Control normal
Combinaciones para tensiones sobre el terreno: Acciones Características
Combinaciones de equilibrio: EHE, Control normal

2.- DESCRIPCIÓN

DESCRIPCION DE SECCIONES

Referencia: H-4a

- Longitud del muro: 1.00 m
- Cota en arranque: 0.00 m

Referencia: H-5a

- Longitud del muro: 1.00 m
- Cota en arranque: 0.00 m

LISTADO DE TERRENOS

Referencia: H-4a

- Situación de peso propio:
- Coronación:
Carga hacia abajo en coronación: 0 Tn/m
Carga hacia intradós en coronación: 0 Tn/m
Momento de compresión hacia intradós en coronación: 0 mTn/m
- Trasdós:
Con relleno: Cota: 4.00 m
Angulo de talud: 0.00 Grados
Densidad aparente: 1.80 Tn/m3
Densidad sumergida: 1.10 Tn/m3
Angulo rozamiento interno: 30.00 Grados
Evacuación por drenaje: 100.00 %
Porcentaje de empuje pasivo: 0.00 %
Cota empuje pasivo: 0.00 m
- Intradós:
No hay cargas.
- Esfuerzos en arranque de muro. ESTADO DE PESO PROPIO (PP):

	Cortante (Tn/m)	Momento (mTn/m)
Trasdós	4.800	6.400
Intradós	0.000	0.000
Total	4.800	6.400

- Situación de sobrecarga 1:
- Coronación:
Carga hacia abajo en coronación: 0 Tn/m
Carga hacia intradós en coronación: 0 Tn/m
Momento de compresión hacia intradós en coronación: 0 mTn/m
- Trasdós:
Con relleno: Cota: 4.00 m
Angulo de talud: 0.00 Grados
Densidad aparente: 1.80 Tn/m3
Densidad sumergida: 1.10 Tn/m3
Angulo rozamiento interno: 30.00 Grados
Evacuación por drenaje: 100.00 %
Porcentaje de empuje pasivo: 0.00 %
Cota empuje pasivo: 0.00 m
Carga 1:
Tipo: Uniforme
Valor: 1.00 Tn/m2
- Intradós:
Con relleno: Cota: 0.50 m
Angulo de talud: 0.00 Grados
Densidad aparente: 1.80 Tn/m3
Densidad sumergida: 1.10 Tn/m3
Angulo rozamiento interno: 30.00 Grados
Evacuación por drenaje: 100.00 %
Porcentaje de empuje pasivo: 0.00 %
Cota empuje pasivo: 0.00 m
- Esfuerzos en arranque de muro. ESTADO DE SOBRECARGA (SBC):

	Cortante (Tn/m)	Momento (mTn/m)
Trasdós	6.133	9.067
Intradós	0.000	0.000
Total	6.133	9.067

- Esfuerzos de arranque de muro. DIFERENCIA ESTADO DE SOBRECARGA Y PESO PROPIO (SBC - PP):

	Cortante (Tn/m)	Momento (mTn/m)
Trasdós	1.333	2.667
Intradós	0.000	0.000
Total	1.333	2.667

Referencia: H-5a

- Situación de peso propio:
- Coronación:
Carga hacia abajo en coronación: 0 Tn/m
Carga hacia intradós en coronación: 0 Tn/m
Momento de compresión hacia intradós en coronación: 0 mTn/m
- Trasdós:
Con relleno: Cota: 5.00 m
Angulo de talud: 0.00 Grados
Densidad aparente: 1.80 Tn/m3
Densidad sumergida: 1.10 Tn/m3
Angulo rozamiento interno: 30.00 Grados
Evacuación por drenaje: 100.00 %
Porcentaje de empuje pasivo: 0.00 %
Cota empuje pasivo: 0.00 m
- Intradós:
No hay cargas.
- Esfuerzos en arranque de muro. ESTADO DE PESO PROPIO (PP):

	Cortante (Tn/m)	Momento (mTn/m)
Trasdós	7.500	12.500
Intradós	0.000	0.000
Total	7.500	12.500

- Situación de sobrecarga 1:
- Coronación:
Carga hacia abajo en coronación: 0 Tn/m
Carga hacia intradós en coronación: 0 Tn/m
Momento de compresión hacia intradós en coronación: 0 mTn/m
- Trasdós:
Con relleno: Cota: 5.00 m
Angulo de talud: 0.00 Grados
Densidad aparente: 1.80 Tn/m3
Densidad sumergida: 1.10 Tn/m3
Angulo rozamiento interno: 30.00 Grados
Evacuación por drenaje: 100.00 %
Porcentaje de empuje pasivo: 0.00 %
Cota empuje pasivo: 0.00 m
Carga 1:
Tipo: Uniforme
Valor: 1.00 Tn/m2
- Intradós:
Con relleno: Cota: 0.50 m
Angulo de talud: 0.00 Grados
Densidad aparente: 1.80 Tn/m3
Densidad sumergida: 1.10 Tn/m3
Angulo rozamiento interno: 30.00 Grados
Evacuación por drenaje: 100.00 %
Porcentaje de empuje pasivo: 0.00 %
Cota empuje pasivo: 0.00 m
- Esfuerzos en arranque de muro. ESTADO DE SOBRECARGA (SBC):

	Cortante (Tn/m)	Momento (mTn/m)
Trasdós	9.167	16.667
Intradós	0.000	0.000
Total	9.167	16.667

- Esfuerzos de arranque de muro. DIFERENCIA ESTADO DE SOBRECARGA Y PESO PROPIO (SBC - PP):

	Cortante (Tn/m)	Momento (mTn/m)
Trasdós	1.667	4.167
Intradós	0.000	0.000
Total	1.667	4.167

MUROS CALCULADOS

Referencia	Espesor inferior	Espesor superior	Altura	Ar. Vert. T.	Ar. Vert. I.	Ar. Horz. T.	Ar. Horz. I.	Ar. Coronación
H-4a	30.00 cm	30.00 cm	4.00 m	Armado base Ø10 c/ 15 Refuerzo 1 Ø16 c/ 15 h= 1.50	Ø10 c/ 20	Ø10 c/ 15	Ø10 c/ 15	Barras superiores 2 Ø12
H-5a	35.00 cm	35.00 cm	5.00 m	Armado base Ø12 c/ 15 Refuerzo 1 Ø20 c/ 15 h= 1.70	Ø10 c/ 15	Ø12 c/ 15	Ø10 c/ 15	Barras superiores 2 Ø12

Nota:
- Ar. Vert. T.: Armado vertical trasdós
- Ar. Vert. I.: Armado vertical intradós
- Ar. Horz. T.: Armado horizontal trasdós
- Ar. Horz. I.: Armado horizontal intradós
- Ar. Coronación: Armado en coronación

Referencias	Geometría	Armado
H-4a	Vuelo izquierdo: 155.0 cm Vuelo derecho: 155.0 cm Canto: 70.0 cm	Base inferior: Ø16 c/ 20 Longitudinal inferior: Ø16 c/ 20 Superior Longitudinal: Ø12 c/ 20 Superior Transversal: Ø12 c/ 20
H-5a	Vuelo izquierdo: 190.0 cm Vuelo derecho: 190.0 cm Canto: 95.0 cm	Base inferior: Ø16 c/ 20 Longitudinal inferior: Ø16 c/ 20 Superior Longitudinal: Ø16 c/ 20 Superior Transversal: Ø12 c/ 20

3.- COMPROBACIÓN

Referencia: H-4a		
COMPROBACION	VALORES	ESTADO
Comprobación a rasante en arranque muro		
- Muro H-4a -> Arranque:		CUMPLE
Espesor mínimo del tramo		
- Muro H-4a -> Tramo 1:	Mínimo: 20 cm Calculado: 30 cm	CUMPLE
Cuantía mínima geométrica horizontal		
- Muro H-4a -> Tramo 1 -> Trasdós (0.00 m):	Mínimo: 0.0008 Calculado: 0.00175	CUMPLE
- Muro H-4a -> Tramo 1 -> Intradós (0.00 m):	Calculado: 0.00175	CUMPLE
Cuantía mínima mecánica horizontal por cara		
- Muro H-4a -> Tramo 1 -> Trasdós:	Mínimo: 0.00125 Calculado: 0.00175	CUMPLE
- Muro H-4a -> Tramo 1 -> Intradós:	Mínimo: 0.00027 Calculado: 0.00175	CUMPLE
Separación libre mínima armaduras horizontales		
- Muro H-4a -> Tramo 1 -> Trasdós:	Mínimo: 2.5 cm Calculado: 14 cm	CUMPLE
- Muro H-4a -> Tramo 1 -> Intradós:	Calculado: 14 cm	CUMPLE
Separación máxima armaduras horizontales		
- Muro H-4a -> Tramo 1 -> Trasdós:	Máxima: 30 cm Calculado: 15 cm	CUMPLE
- Muro H-4a -> Tramo 1 -> Intradós:	Calculado: 15 cm	CUMPLE
Cuantía mínima geométrica vertical cara traccionada		
- Muro H-4a -> Tramo 1 -> Trasdós (0.00 m):	Mínimo: 0.0009 Calculado: 0.00622	CUMPLE
- Muro H-4a -> Tramo 1 -> Trasdós (1.50 m):	Calculado: 0.00175	CUMPLE
Cuantía mínima mecánica vertical cara traccionada		
- Muro H-4a -> Tramo 1 -> Trasdós (0.00 m):	Mínimo: 0.00154 Calculado: 0.00622	CUMPLE
- Muro H-4a -> Tramo 1 -> Trasdós (1.50 m):	Calculado: 0.00175	CUMPLE
Cuantía mínima geométrica vertical cara comprimida		
- Muro H-4a -> Tramo 1 -> Intradós (0.00 m):	Mínimo: 0.00027 Calculado: 0.00131	CUMPLE
- Muro H-4a -> Tramo 1 -> Intradós (1.50 m):	Calculado: 0.00131	CUMPLE
Cuantía mínima mecánica vertical cara comprimida		
- Muro H-4a -> Tramo 1 -> Intradós (0.00 m):	Mínimo: 2e-005 Calculado: 0.00131	CUMPLE
- Muro H-4a -> Tramo 1 -> Intradós (1.50 m):	Calculado: 0.00131	CUMPLE
Cuantía máxima geométrica de armadura vertical total		
- Muro H-4a -> Tramo 1 -> (4.00 m):	Máximo: 0.04 Calculado: 0.00306	CUMPLE
- Muro H-4a -> Tramo 1 -> (1.50 m):	Calculado: 0.00753	CUMPLE
Separación libre mínima armaduras verticales		
- Muro H-4a -> Tramo 1 -> Trasdós:	Mínimo: 2.5 cm Calculado: 6.2 cm	CUMPLE
- Muro H-4a -> Tramo 1 -> Intradós:	Calculado: 19 cm	CUMPLE
Separación máxima armaduras verticales		
- Muro H-4a -> Tramo 1 -> Trasdós:	Máximo: 30 cm Calculado: 15 cm	CUMPLE
- Muro H-4a -> Tramo 1 -> Intradós:	Calculado: 20 cm	CUMPLE
Comprobación a flexocompresión		
- Muro H-4a -> Tramo 1:		CUMPLE
Comprobación a cortante		
- Muro H-4a -> Tramo 1:	Máximo: 15.75 Tn/m Calculado: 8.35 Tn/m	CUMPLE
Comprobación de fisuración		
- Muro H-4a -> Tramo 1:	Máximo: 0.3 mm Calculado: 0.28 mm	CUMPLE

Comprobación de las longitudes de solape		
- Muro H-4a -> Tramo 1 -> Base trasdós:	Mínimo: 35 cm Calculado: 35 cm	CUMPLE
- Muro H-4a -> Tramo 1 -> Base intradós:	Mínimo: 25 cm Calculado: 25 cm	CUMPLE
Comprobación del anclaje del armado base en coronación		
- Muro H-4a -> Coronación -> Trasdós:	Mínimo: 18.5 cm Calculado: 18.5 cm	CUMPLE
- Muro H-4a -> Coronación -> Intradós:	Calculado: 18.5 cm	CUMPLE
Area mínima longitudinal cara superior viga de coronación		
- Muro H-4a -> Coronación:	Mínimo: 2.3 cm2 Calculado: 2.3 cm2	CUMPLE
Tensiones sobre el terreno		
- Zapata H-4a -> Tensión media:	Máximo: 2 Kp/cm2 Calculado: 0.632 Kp/cm2	CUMPLE
- Zapata H-4a -> Tensión máxima acc. gravitatorias:	Máximo: 2.5 Kp/cm2 Calculado: 0.857 Kp/cm2	CUMPLE
Flexión en zapata (acciones estáticas)		
- Zapata H-4a -> Momento positivo en vuelo derecho:	Momento: 0.00 Tn·m	CUMPLE
- Zapata H-4a -> Momento negativo en vuelo derecho:	Momento: -7.71 Tn·m	CUMPLE
- Zapata H-4a -> Momento positivo sección ref. derecha:	Momento: 0.00 Tn·m	CUMPLE
- Zapata H-4a -> Momento negativo sección ref. derecha:	Momento: -8.12 Tn·m	CUMPLE
- Zapata H-4a -> Momento positivo en vuelo izquierdo:	Momento: 9.59 Tn·m	CUMPLE
- Zapata H-4a -> Momento negativo en vuelo izquierdo:	Momento: 0.00 Tn·m	CUMPLE
- Zapata H-4a -> Momento positivo sección ref. izquierda:	Momento: 10.11 Tn·m	CUMPLE
- Zapata H-4a -> Momento negativo sección ref. izquierda:	Momento: 0.00 Tn·m	CUMPLE
Coeficiente de rozamiento terreno-cimiento	Máximo: 0.5773	CUMPLE
- Zapata H-4a:	Calculado: 0.5762	CUMPLE
Vuelco de la zapata		
- Zapata H-4a:	Reserva seguridad: 423.0 %	CUMPLE
Compresión oblicua (acciones estáticas)	Máximo: 331.3 Tn	
- Zapata H-4a -> Vuelo derecho:	Calculado: 9.09 Tn	CUMPLE
- Zapata H-4a -> Vuelo izquierdo:	Calculado: 11.52 Tn	CUMPLE
Esfuerzo cortante (acciones estáticas)		
- Zapata H-4a -> Vuelo derecho:	Máximo: 16.02 Tn Calculado: 5.9 Tn	CUMPLE
- Zapata H-4a -> Vuelo izquierdo:	Máximo: 19.4 Tn Calculado: 7.31 Tn	CUMPLE
Canto mínimo		
- Zapata H-4a:	Mínimo: 25 cm Calculado: 70 cm	CUMPLE
Longitud de anclaje		
- Zapata H-4a -> Arranque izquierdo del muro:	Mínimo: 18 cm Calculado: 60 cm	CUMPLE
- Zapata H-4a -> Arranque derecho del muro:	Mínimo: 28 cm Calculado: 60 cm	CUMPLE
- Zapata H-4a -> Armado superior vuelo der. hacia izquierda:	Mínimo: 43 cm Calculado: 190 cm	CUMPLE
- Zapata H-4a -> Armado superior vuelo der. hacia derecha:	Mínimo: 43 cm Calculado: 95 cm	CUMPLE
- Zapata H-4a -> Armado base inferior vuelo izq. hacia izquierda:	Mínimo: 40 cm Calculado: 139 cm	CUMPLE
- Zapata H-4a -> Armado base inferior vuelo izq. hacia derecha:	Mínimo: 40 cm Calculado: 234 cm	CUMPLE
Cuantía geométrica mínima		
- Zapata H-4a -> Armado inferior longitudinal:	Mínimo: 0.001 Calculado: 0.0015	CUMPL

- Zapata H-4a -> Armado inferior transversal:	Calculado: 0.0015	E
		CUMPL E
Cuantía mínima necesaria por flexión		
- Zapata H-4a -> Armado inferior transversal:	Mínimo: 0.0006 Calculado: 0.0015	CUMPL E
- Zapata H-4a -> Armado sup. transversal vuelo derecho:	Mínimo: 0.0005 Calculado: 0.0009	CUMPL E
- Zapata H-4a -> Armado sup. transversal sección ref. derecha:	Mínimo: 0.0005 Calculado: 0.0009	CUMPL E
		CUMPL E
Diámetro mínimo de las barras		
- Zapata H-4a -> Armaduras de la zapata:	Mínimo: 12 mm Calculado: 12 mm	CUMPL E
Separación máxima entre barras		
- Zapata H-4a -> Armado inferior transversal:	Máximo: 30 cm Calculado: 20 cm	CUMPL E
- Zapata H-4a -> Armado inferior longitudinal:	Calculado: 20 cm	CUMPL E
- Zapata H-4a -> Armado superior transversal:	Calculado: 20 cm	CUMPL E
- Zapata H-4a -> Armado superior longitudinal:	Calculado: 20 cm	CUMPL E
		CUMPL E
Separación mínima entre barras		
- Zapata H-4a -> Armado inferior transversal:	Mínimo: 10 cm Calculado: 20 cm	CUMPL E
- Zapata H-4a -> Armado inferior longitudinal:	Calculado: 20 cm	CUMPL E
- Zapata H-4a -> Armado superior transversal:	Calculado: 20 cm	CUMPL E
- Zapata H-4a -> Armado superior longitudinal:	Calculado: 20 cm	CUMPL E
		CUMPL E
Longitud mínima de las patillas		
- Zapata H-4a -> Armado superior vuelo izq. hacia izquierda:	Mínimo: 11 cm Calculado: 15 cm	CUMPL E
- Zapata H-4a -> Armado superior vuelo izq. hacia derecha:	Mínimo: 11 cm Calculado: 15 cm	CUMPL E
- Zapata H-4a -> Armado base inferior vuelo izq. hacia izquierda:	Calculado: 59 cm Mínimo: 15 cm Calculado: 59 cm	CUMPL E CUMPL E
- Zapata H-4a -> Armado base inferior vuelo izq. hacia derecha:		
Se cumplen todas las comprobaciones		

Referencia: H-5a

COMPROBACION	VALORES	ESTADO
Comprobación a rasante en arranque muro		
- Muro H-5a -> Arranque:		CUMPL E
Espesor mínimo del tramo	Mínimo: 20 cm	
- Muro H-5a -> Tramo 1:	Calculado: 35.01 cm	CUMPL E
Cuantía mínima geométrica horizontal	Mínimo: 0.0008	
- Muro H-5a -> Tramo 1 -> Trasdós (0.00 m):	Calculado: 0.00216	CUMPL E
- Muro H-5a -> Tramo 1 -> Intradós (0.00 m):	Calculado: 0.0015	CUMPL E
Cuantía mínima mecánica horizontal por cara		
- Muro H-5a -> Tramo 1 -> Trasdós:	Mínimo: 0.00163 Calculado: 0.00216	CUMPL E
- Muro H-5a -> Tramo 1 -> Intradós:	Mínimo: 0.0003 Calculado: 0.0015	CUMPL E
Separación libre mínima armaduras horizontales	Mínimo: 2.5 cm	
- Muro H-5a -> Tramo 1 -> Trasdós:	Calculado: 13.8 cm	CUMPL E
- Muro H-5a -> Tramo 1 -> Intradós:	Calculado: 14 cm	CUMPL E
Separación máxima armaduras horizontales	Máximo: 30 cm	
- Muro H-5a -> Tramo 1 -> Trasdós:	Calculado: 15 cm	CUMPL E
- Muro H-5a -> Tramo 1 -> Intradós:	Calculado: 15 cm	CUMPL E
Cuantía mínima geométrica vertical cara traccionada	Mínimo: 0.0009	
- Muro H-5a -> Tramo 1 -> Trasdós (0.00 m):	Calculado: 0.00814	CUMPL

- Muro H-5a -> Tramo 1 -> Trasdós (1.70 m):		
Cuantía mínima mecánica vertical cara traccionada	Calculado: 0.00216	CUMPLE
- Muro H-5a -> Tramo 1 -> Trasdós (0.00 m):	Mínimo: 0.00154	
	Calculado: 0.00814	CUMPLE
- Muro H-5a -> Tramo 1 -> Trasdós (1.70 m):	Calculado: 0.00216	CUMPLE
Cuantía mínima geométrica vertical cara comprimida	Mínimo: 0.00027	
- Muro H-5a -> Tramo 1 -> Intradós (0.00 m):	Calculado: 0.0015	CUMPLE
- Muro H-5a -> Tramo 1 -> Intradós (1.70 m):	Calculado: 0.0015	CUMPLE
Cuantía mínima mecánica vertical cara comprimida	Mínimo: 3e-005 Calculado: 0.0015	CUMPLE
- Muro H-5a -> Tramo 1 -> Intradós (0.00 m):	Mínimo: 2e-005 Calculado: 0.0015	CUMPLE
- Muro H-5a -> Tramo 1 -> Intradós (1.70 m):		
Cuantía máxima geométrica de armadura vertical total	Máximo: 0.04	
- Muro H-5a -> Tramo 1 -> (5.00 m):	Calculado: 0.00366	CUMPLE
- Muro H-5a -> Tramo 1 -> (1.70 m):	Calculado: 0.00964	CUMPLE
Separación libre mínima armaduras verticales	Mínimo: 2.5 cm	
- Muro H-5a -> Tramo 1 -> Trasdós:	Calculado: 5.9 cm	CUMPLE
- Muro H-5a -> Tramo 1 -> Intradós:	Calculado: 14 cm	CUMPLE
Separación máxima armaduras verticales	Máximo: 30 cm	
- Muro H-5a -> Tramo 1 -> Trasdós:	Calculado: 15 cm	CUMPLE
- Muro H-5a -> Tramo 1 -> Intradós:	Calculado: 15 cm	CUMPLE
Comprobación a flexocompresión		
- Muro H-5a -> Tramo 1:		CUMPLE
Comprobación a cortante	Máximo: 19.78 Tn/m	

- Muro H-5a -> Tramo 1:		
Comprobación de fisuración	Calculado: 12.48 Tn/m	CUMPLE
- Muro H-5a -> Tramo 1:	Máximo: 0.3 mm	
	Calculado: 0.3 mm	CUMPLE
Comprobación de las longitudes de solape		
- Muro H-5a -> Tramo 1 -> Base trasdós:	Mínimo: 45 cm Calculado: 45 cm	CUMPLE
- Muro H-5a -> Tramo 1 -> Base intradós:	Mínimo: 25 cm Calculado: 25 cm	CUMPLE
Comprobación del anclaje del armado base en coronación		
- Muro H-5a -> Coronación -> Trasdós:	Mínimo: 23.2 cm Calculado: 23.2 cm	CUMPLE
- Muro H-5a -> Coronación -> Intradós:	Mínimo: 23.5 cm Calculado: 23.5 cm	CUMPLE
Area mínima longitudinal cara superior viga de coronación		
- Muro H-5a -> Coronación:	Mínimo: 2.3 cm2 Calculado: 2.3 cm2	CUMPLE
Tensiones sobre el terreno		
- Zapata H-5a -> Tensión media:	Máximo: 2 Kp/cm2 Calculado: 0.796 Kp/cm2	CUMPLE
- Zapata H-5a -> Tensión máxima acc. gravitatorias:	Máximo: 2.5 Kp/cm2 Calculado: 1.077 Kp/cm2	CUMPLE
Flexión en zapata (acciones estáticas)		
- Zapata H-5a -> Momento positivo en vuelo derecho:	Momento: 0.00 Tn·m	CUMPLE
- Zapata H-5a -> Momento negativo en vuelo derecho:	Momento: -14.79 Tn·m	CUMPLE
- Zapata H-5a -> Momento positivo sección ref. derecha:	Momento: 0.00 Tn·m	CUMPLE
- Zapata H-5a -> Momento negativo sección ref. derecha:	Momento: -15.53 Tn·m	CUMPLE
- Zapata H-5a -> Momento positivo en vuelo izquierdo:	Momento: 18.21 Tn·m	CUMPLE
- Zapata H-5a -> Momento negativo en vuelo izquierdo:	Momento: 0.00 Tn·m	CUMPLE
- Zapata H-5a -> Momento positivo sección ref. izquierda:	Momento: 19.17 Tn·m	CUMPLE
- Zapata H-5a -> Momento negativo sección ref. izquierda:	Momento: 0.00 Tn·m	

Coeficiente de rozamiento terreno-cimiento		CUMPLE
- Zapata H-5a:	Máximo: 0.5773 Calculado: 0.5761	CUMPLE
Vuelco de la zapata		CUMPLE
- Zapata H-5a:	Reserva seguridad: 435.0 %	CUMPLE
Compresión oblicua (acciones estáticas)	Máximo: 458.72 Tn	CUMPLE
- Zapata H-5a -> Vuelo derecho:	Calculado: 14.26 Tn	CUMPLE
- Zapata H-5a -> Vuelo izquierdo:	Calculado: 17.87 Tn	CUMPLE
Esfuerzo cortante (acciones estáticas)		
- Zapata H-5a -> Vuelo derecho:	Máximo: 18.83 Tn Calculado: 8.47 Tn	CUMPLE
- Zapata H-5a -> Vuelo izquierdo:	Máximo: 22.81 Tn Calculado: 10.38 Tn	CUMPLE
Canto mínimo		
- Zapata H-5a:	Mínimo: 25 cm Calculado: 95 cm	CUMPLE
Longitud de anclaje		
- Zapata H-5a -> Arranque izquierdo del muro:	Mínimo: 18 cm Calculado: 85 cm	CUMPLE
- Zapata H-5a -> Arranque derecho del muro:	Mínimo: 60 cm Calculado: 85 cm	CUMPLE
- Zapata H-5a -> Armado superior vuelo der. hacia izquierda:	Mínimo: 43 cm Calculado: 229 cm	CUMPLE
- Zapata H-5a -> Armado superior vuelo der. hacia derecha:	Mínimo: 43 cm Calculado: 105 cm	CUMPLE
- Zapata H-5a -> Armado base inferior vuelo izq. hacia izquierda:	Mínimo: 40 cm Calculado: 174 cm	CUMPLE
- Zapata H-5a -> Armado base inferior vuelo izq. hacia derecha:	Mínimo: 40 cm Calculado: 299 cm	CUMPLE
Cuantía geométrica mínima	Mínimo: 0.001	CUMPLE
- Zapata H-5a -> Armado inferior longitudinal:	Calculado: 0.0011	CUMPLE
- Zapata H-5a -> Armado inferior transversal:	Calculado: 0.0011	CUMPLE
Cuantía mínima necesaria por flexión		
- Zapata H-5a -> Armado inferior transversal:	Mínimo: 0.0006 Calculado: 0.0011	CUMPLE
- Zapata H-5a -> Armado sup. transversal vuelo derecho:	Mínimo: 0.0005 Calculado: 0.0006	CUMPLE
- Zapata H-5a -> Armado sup. transversal sección ref. derecha:	Mínimo: 0.0005 Calculado: 0.0006	CUMPLE
Diámetro mínimo de las barras		
- Zapata H-5a -> Armaduras de la zapata:	Mínimo: 12 mm Calculado: 12 mm	CUMPLE
Separación máxima entre barras		
- Zapata H-5a -> Armado inferior transversal:	Máximo: 30 cm Calculado: 20 cm	CUMPLE
- Zapata H-5a -> Armado inferior longitudinal:	Calculado: 20 cm	CUMPLE
- Zapata H-5a -> Armado superior transversal:	Calculado: 20 cm	CUMPLE
- Zapata H-5a -> Armado superior longitudinal:	Calculado: 20 cm	CUMPLE
Separación mínima entre barras		
- Zapata H-5a -> Armado inferior transversal:	Mínimo: 10 cm Calculado: 20 cm	CUMPLE
- Zapata H-5a -> Armado inferior longitudinal:	Calculado: 20 cm	CUMPLE
- Zapata H-5a -> Armado superior transversal:	Calculado: 20 cm	CUMPLE
- Zapata H-5a -> Armado superior longitudinal:	Calculado: 20 cm	CUMPLE

Longitud mínima de las patillas		
- Zapata H-5a -> Armado superior vuelo izq. hacia izquierda:	Mínimo: 11 cm Calculado: 15 cm	CUMPLE
- Zapata H-5a -> Armado superior vuelo izq. hacia derecha:	Mínimo: 11 cm Calculado: 15 cm	CUMPLE
- Zapata H-5a -> Armado base inferior vuelo izq. hacia izquierda:	Mínimo: 15 cm Calculado: 84 cm	CUMPLE
- Zapata H-5a -> Armado base inferior vuelo izq. hacia derecha:	Mínimo: 15 cm Calculado: 84 cm	CUMPLE
Se cumplen todas las comprobaciones		

UTE LLOBREGAT

UTE LLOBREGAT [illegible] 4)

HOJA DE ENVÍO DE FAX

PARA: EVA MARTÍN	DE: ANTONIO ARIÑO MORENO
ORGANIZACIÓN: COPASA	FECHA: 20 de febrero de 2004
NÚMERO DE FAX: 93-772-37-90	NÚM. TOTAL DE PÁGINAS INCLUYENDO LA CUBIERTA: 1+4
TELÉFONO: 93-771-17-37	Nº DE REFERENCIA DEL REMITENTE:
ASUNTO: ALETAS PASO BAJO RAMAL VALLES-BARC. (LAV)	SU REFERENCIA:

☒ URGENTE ☐ PARA REVISAR ☐ COMENTARIOS ☐ RESPONDA ☐ RECICLAR

NOTAS Y COMENTARIOS:

Eva,

Adjunto planos aprobados con correcciones de las aletas del Paso Bajo Ramal Vallès – Barcelona (LAV). En el muro Tipo 4 he cambiado la armadura transveral inferior a Ø16/0.20 según los cálculos que tenemos del 09/01/04.

Un saludo,

Antonio Ariño

COPASA
OBRA L.A.V. - Conexión Vallés-
CODIGO: B-132 Castellbisbal
20 FEB. 2004
ENTRADAS
Nº 20.1.12

Oficina de Obra: C/ Terç de Nostra Senyora de Montserrat nº 8, entlo.
08740 - Sant Andreu de la Barca (Barcelona)
TEL: 936-535-156 FAX: 936-822-361

Dimensionado UTE LLOBREGAT muros

[illegible] Vallés – Barcelona P.K. 502+267 09/01/04

Porcentaje de empuje pasivo: 0.00 %
Cota empuje pasivo: 0.00 m
- Esfuerzos en arranque de muro. ESTADO DE SOBRECARGA (SBC):

	Cortante (Tn/m)	Momento (mTn/m)
Trasdós	9.167	16.667
Intradós	0.000	0.000
Total	9.167	16.667

- Esfuerzos de arranque de muro. DIFERENCIA ESTADO DE SOBRECARGA Y PESO PROPIO (SBC - PP):

	Cortante (Tn/m)	Momento (mTn/m)
Trasdós	1.667	4.167
Intradós	0.000	0.000
Total	1.667	4.167

MUROS CALCULADOS

Referencia	Espesor inferior	Espesor superior	Altura	Ar. Vert. T.	Ar. Vert. I.	Ar. Horz. T.	Ar. Horz. I.	Ar. Coronación
H-4a	30.00 cm	30.00 cm	4.00 m	Armado base Ø10 c/ 15 Refuerzo 1 Ø16 c/ 15 h= 1.50	Ø10 c/ 20	Ø10 c/ 15	Ø10 c/ 15	Barras superiores 2 Ø12
H-5a	35.00 cm	35.00 cm	5.00 m	Armado base Ø12 c/ 15 Refuerzo 1 Ø20 c/ 15 h= 1.70	Ø10 c/ 15	Ø12 c/ 15	Ø10 c/ 15	Barras superiores 2 Ø12

Nota:
- Ar. Vert. T.: Armado vertical trasdós
- Ar. Vert. I.: Armado vertical intradós
- Ar. Horz. T.: Armado horizontal trasdós
- Ar. Horz. I.: Armado horizontal intradós
- Ar. Coronación: Armado en coronación

Referencias	Geometría	Armado
H-4a	Vuelo izquierdo: 155.0 cm Vuelo derecho: 155.0 cm Canto: 70.0 cm	Base inferior: Ø16 c/ 20 Longitudinal inferior: Ø16 c/ 20 Superior Longitudinal: Ø12 c/ 20 Superior Transversal: Ø12 c/ 20
H-5a	Vuelo izquierdo: 190.0 cm Vuelo derecho: 190.0 cm Canto: 95.0 cm	Base inferior: Ø16 c/ 20 Longitudinal inferior: Ø16 c/ 20 Superior Longitudinal: Ø16 c/ 20 Superior Transversal: Ø12 c/ 20

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ELIMINAR

GIF

TÍTULO: PROYECTO DE CONSTRUCCIÓN DE PLATAFORMA LÍNEA DE ALTA VELOCIDAD MADRID - ZARAGOZA - BARCELONA - FRONTERA FRANCESA TRAMO: CONEXIÓN VALLÉS - CASTELLBISBAL

AUTOR: COPASA

NOTA: SE TIENEN QUE VOLVER A NUMERAR TODOS LOS PLANOS DE ESTA ESTRUCTURA UNA VEZ FINALIZADOS

PLANO APROBADO CON CORRECCIONES INDICADAS. SUSTITUYE A PLANO 2.2.1.1.3

20/1/04

APROBADO

E-2

E-1

ALETA Nº4

ALETA Nº3

ALETA Nº2

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UTE LLOBREGAT

110

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20-Feb-2004-18:19 —— UTE LLOBREGAT 93682261 —— P. 3

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20-Feb-2004-18:19 —— UTE LLOBREGAT 93682261 —— P. 4

MURO TIPO 3. GEOMETRIA
ESCALA 1:25

MURO TIPO 4. GEOMETRIA
ESCALA 1:25

MURO TIPO 3. ARMADO
ESCALA 1:25

MURO TIPO 4. ARMADO
ESCALA 1:25

MURO TIPO 1. GEOMETRIA
ESCALA 1:25

MURO TIPO 2. GEOMETRIA
ESCALA 1:25

MURO TIPO 1. ARMADO
ESCALA 1:25

MURO TIPO 2. ARMADO
ESCALA 1:25

ELIMINAR

ELIMINAR

APROBADO

VER NOTA HOJA 1 de 3

PLANO APROBADO CON CORRECCIONES INDICADAS

SUSTITUYE A PLANO 2.9.1.3

20/2/04

APROBADO

PLANO APROBADO CON CORRECCIONES INDICADAS

SUSTITUYE A PLANO 2.9.1.3

20/02/04

VER NOTA HOJA 1 de 3

N94370

N94370

GIF	TÍTULO PROYECTO DE CONSTRUCCIÓN DE PLATAFORMA LÍNEA DE ALTA VELOCIDAD MADRID - ZARAGOZA - BARCELONA - FRONTERA FRANCESA TRAMO: CONEXIÓN VALLÉS - CASTELLBISBAL	AUTOR	COPASA	ESCALA Numérica / Gráfico	FECHA ~~SEPTIEMBRE 2003~~ ENERO-2004	TÍTULO DEL PLANO PASO BAJO RAVAL VALLES-BARCELONA (L.A.V.) MUROS MUROS 3 Y 4. GEOMETRIA Y ARMADO	Nº PLANO 2.9.1.3 HOJA 3 DE 3

GIF	TÍTULO PROYECTO DE CONSTRUCCIÓN DE PLATAFORMA LÍNEA DE ALTA VELOCIDAD MADRID - ZARAGOZA - BARCELONA - FRONTERA FRANCESA TRAMO: CONEXIÓN VALLÉS - CASTELLBISBAL	AUTOR	COPASA	ESCALA Numérica / Gráfico	FECHA SEPTIEMBRE 2003	TÍTULO DEL PLANO PASO BAJO RAVAL VALLES-BARCELONA (L.A.V.) MUROS MUROS 1 Y 2. GEOMETRIA Y ARMADO	Nº PLANO 2.9.1.2 HOJA 3 DE 3